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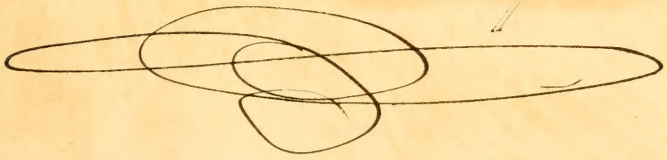

On the 85th Anniversary of

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FOR

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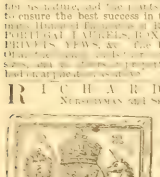

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Cedrus Deodara, 2 to 3 feet	,, Laricio, 2 to 3 feet
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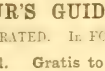

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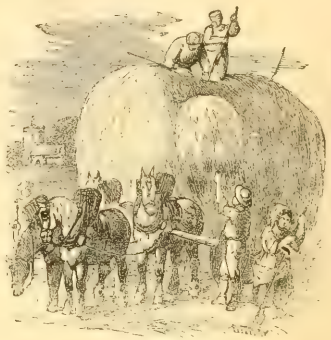
CLOVER SEEDS,

WHICH THEY MIX EXPRESSLY TO SUIT THE SOIL FOR WHICH THEY ARE REQUIRED.



SUTTON'S MIXTURES OF PERMANENT GRASS AND CLOVER SEEDS,

FOR LAYING DOWN LAND TO MEADOW OR PASTURE.

PRICES ACCORDING TO QUANTITIES REQUIRED AND PURPOSES FOR WHICH THE SEEDS ARE INTENDED.

In these Mixtures the large Seeds are supplied in one mixture, and the small in another, to be sown at two casts. The sorts contained in them are grown in different localities, and gathered separately by the hand expressly for this purpose, by which means all noxious weeds are excluded. They consist of the most nutritive kinds of FESCUES, POAS, SWEET VERNAL, PERENNIAL CLOVERS, LOLIUMS, &c., and each kind being kept separate, they are subsequently mixed in such sorts and proportions as are most suitable to the soil to be laid down. In this we use our discretion, in accordance with our many years' experience in all parts of the kingdom, as well as in foreign parts. We find our customers are generally pleased to leave this point to our professional judgment, *but we are equally happy to execute orders from prescriptions sent by the purchaser. In the latter case, however, it is desirable to inquire the cost*, as it may be greater than that of our own prescription; though we think our own cannot generally be surpassed, if it can be equalled. The quantity we usually supply is 2 bushels of large Seeds and 12 lb. of small Seeds per acre.

☞ *Should Grass Seeds be offered at lower prices than ours, we would advise intending purchasers to inquire the quantity supplied per acre of Natural Grasses and Clovers.*

Cheaper Permanent Mixtures.

These are also supplied at the rate of 2 bushels per acre, including Clovers and good Permanent Grass Seeds, but omitting some of the more expensive kinds.

Mixture for Reclaimed Marshes and Heath Lands.

Many acres of land of this description have been successfully laid down to Permanent Pasture by us, including much of the sandy soil at the Aldershot Camp.

Mixture for good Black Peaty Soil.

These soils produce excellent pasture when sown with the proper kinds of Seeds.

Grass Seeds for Cultivation with Sewage & other Liquid Manure.

Having for several years been engaged in supplying various Grass Seeds for experiments with Liquid Manure on the Bagshot Sands, the Aldershot Camp, and other poor soils, we are now prepared to offer the sorts which have been found to thrive best under this treatment, and confidently recommend their cultivation as highly remunerative and profitable. The quantity required per acre is 3 bushels, and the present price is 8*s.* per bushel.

Mixture for Laying down Chalky or Gravelly Uplands and Sheep Downs.

For this purpose Grass Seeds are annually collected from dry and hilly districts, where they are found growing spontaneously; and, after many years' experience, we can confidently assure our friends that a *good and permanent* sward may be obtained on *any* upland from this mixture.

Mixture for Laying down Water Meadows.

In this department also we have been very successful, many customers having expressed their great gratification at the effect of these Seeds.

Permanent Evergreen Grasses for Churchyards and Cemeteries.

We have had the honour of supplying His Grace the Archbishop of Canterbury and many others of the Clergy with Grass Seeds for Churchyards and Cemeteries, which have given great satisfaction. Price of Seed, 18*s.* per bushel (2½ bushels required per acre).

Mixture for Orchards and Pastures Overshaded with Trees.

An excellent Mixture can be supplied, suitable for this purpose.

Mixture to Lay down New Park Lawns.

For this purpose all coarse-growing kinds are carefully excluded, and the sward will at all seasons present a luxuriant verdure, so desirable in Parks contiguous to the Mansion. The cost of Seeds for this purpose will be 18*s.* per bushel.

Mixture for fine Garden Lawns,

Including only the finest and shortest growing kinds. Price 1*s.* per lb., or 20*s.* per bushel.

Gentlemen possessing Perennial Clover Seeds, &c., can be supplied with a proper Mixture of GRASSES to sow with them, as under:—

Mixed Fescues, Cocksfoot, Loliums, Poas, Sweet Vernal, &c.,

Best sorts for Permanent Pasture (omitting Clovers and other heavy seeds).

Two bushels of the above, and 12 lb. of mixed Clovers, will be the proper quantities per acre for Permanent Pasture.

MIXED GRASS SEEDS, of coarse kinds, for Cover, &c.
Do. do. do. for Railway Embankments, &c.

Mixtures for Four Years', Three Years', and Two Years' Lay.

Mixture of GRASSES, CLOVERS, &c., for Three or Four Years' Pasture, Hay, or Soiling (2 bushels per acre).

Mixture of GRASSES, CLOVERS, &c., for Two Years' Pasture, Hay, or Soiling (1 bushel per acre, containing a larger proportion of Clover Seeds).

Renovating Mixture for Improving Old Pastures.

Our Renovating Mixture consists of the finest Grasses and Perennial Clovers. If the Seeds are sown *early in the season*, the improvement in the pasture will be very great, and at a small expense. *Quantity of seed required, 8 to 12 lb. per acre.* Sow in March and April, or after hay cart at Midsummer.

N.B.—Those intending Laying down or Improving Pastures are recommended to communicate with us, stating the nature of the soil and the number of acres to be sown, when we shall be pleased to advise what kinds would be most suitable, and to quote lowest prices for the Seeds.

MR. MARTIN SUTTON'S ESSAY on PASTURES, from the "Journal of the Royal Agricultural Society of England," is supplied Gratis with every parcel of Grass Seeds.

All other kinds of FARM SEEDS, also GARDEN SEEDS, FLOWER SEEDS, &c., can be supplied, a PRICED LIST of which will be forwarded post free on application.

All Goods carriage free, excepting very small parcels; 5 per cent. allowed for cash payments.

A reference or remittance is requested from unknown Correspondents.

SUTTON AND SONS, ROYAL BERKSHIRE SEED ESTABLISHMENT, READING.

Rhododendrons

JOHN WATERER begs to offer the following Six [illegible]

Hardy Scarlet Rhododendrons

JOHN WATERER'S SATISFACTION OF HARDY [illegible]

New Rhododendrons

JOHN WATERER [illegible]

American Plants, New Hardy Rhododendrons

WATERER AND CUTBUSH'S PRICED [illegible] OF AMERICAN PLANTS [illegible]

To the Trade. Chinese Arbor vitæ

HUSSEY AND SON have in stock [illegible]

To the Trade

CUTBUSH'S LAWN GRASS SEED [illegible]

British Fern Catalogue

ROBERT SIM [illegible]

Fuchsias and Verbenas

H. CANNELL [illegible]

Select Catalogues of Seeds and Plants

RICHARD [illegible] NEW [illegible]

DICKSON'S NEW [illegible]

NEW PLANTS

[illegible]

CHRYSANTHEMUMS [illegible]

To Noblemen, Gardeners, &c

MESSRS. JOHN H. DAVIS AND CO. [illegible]

Transplanted Larch and Quicks

CHIVAS [illegible]

Extra strong Fruiting Vines

JAMES [illegible]

B. S. WILLIAMS [illegible]

Rust's Thames Bank Peach

O'SHEEN AND JANE [illegible]

MAGNIFICENT [illegible]

To the Trade—Surplus Stock

PEAR AND APPLE STOCKS [illegible]

Lancashire Show Gooseberries and Currants

M. [illegible]

Chrysanthemums—Notice

ADAM FORSYTH [illegible]

To the Trade

W. HOADE [illegible]

FLOWER SEEDS FOR PRESENT SOWING

LARCH [illegible] RHODODENDRONS

Northampton Nurseries

JOHN PERKINS [illegible]

SUTTON'S UNRIVALLED COLLECTIONS

New Seeds. Growth of 1863

SUTTON AND SONS [illegible]

Lilium Brownii

JOHN [illegible]

HYACINTHS [illegible]

CARLTON GRANGE [illegible]

Just published price 1s. Gratis to Customers

CATALOGUE [illegible]

INTERNATIONAL [illegible]

The Gardeners' Chronicle.

SATURDAY, JANUARY 2, 1864.

[illegible]

So [illegible] which seems to commend itself to the notice of a New Year's Address, is the necessity which [illegible] to make some reference to the events of the past year. [illegible] of the year 1863 [illegible] of plant or cultivation, and the [illegible] of which a period of unusual warmth [illegible] have been [illegible]. Whether [illegible] Summer had [illegible] reflecting on the horticultural events of last year, and speculating on the prospects of the current year, will be [illegible].

In the [illegible] in the early part of last year, at the [illegible] of the Royal Horticultural Society, [illegible] think, be seen matter for present congratulation, with much of [illegible] to be [illegible] horticulturists, and to keep up an interest in their pursuit on the part of the public, [illegible]

occurring, as it did, early in the year, when frosts had but a few days disappeared, its success was the more remarkable. Whether we English have profited by the lessons there to be learnt, especially in the matter of effective arrangement, remains to be seen. The more artistic arrangement of the objects exhibited, however, was not the only feature that was worthy of our imitation —there was another equally important, and one to which we should do well to pay more attention, viz., the endeavour to blend Science with Art. The eye was to be gratified, and not the eye only, but the intellect of the spectator. How much the interest to the professional visitor was enhanced by this combination need hardly be said, and no better means of popularising botany could well be adopted. The Congress, too, furnished another excellent means of bringing together the botanists and the horticulturists; of showing practically to each their mutual relations and mutual duties. Here, again, the general public had a means offered them of appreciating the practical applications of botany. It is too much to expect it to understand the abstract portions of the science unless its special taste inclines in that direction; but we can hardly conceive any surer mode of placing botany and scientific horticulture on a better footing with the public than by means of such gatherings as these. No slight gain arises, too, from the intermingling of the students and the workers from every country. We may boast that in this country horticulture is in a very advanced condition, but for all that we have something to learn. Our botanical ranks, moreover, are not so crowded but that we should be the better for accessions to the number, and there can be few better plans for recruiting the force than those offered by such a Congress.

The other example to which we alluded was the Edinburgh Fruit Show, held in the past autumn, and which, as a display of the better kinds of fruit—of Grapes especially, has never, we believe, been equalled. We speak not so much of the superiority of special exhibitions, though some remarkably fine bunches were shown, as of the general excellence of the Grapes, which were staged in great profusion. It was at least made evident by this meeting, that the modern appliances of horticulture are sufficient to outweigh natural difficulties and disadvantages, and that the skill of our leading horticulturists is equal to the realisation of successful—nay, of eminently successful results, in whatever locality it may be brought into application. The opportunity which this exhibition afforded for the friendly association of the gardeners of the north and the south, was not one of its least advantages, and it will remain as one of the pleasant recollections of many who were present.

The summer and autumn of last year were quite exceptional in their heat, as was manifested by the fruiting and flowering of numerous plants which ordinarily do not come to perfection in this country. The thorough ripening of the wood, too, which took place this autumn, gives good promise for the coming season, except in those not infrequent cases where plants produced their flowers a second time.

On the whole, however, as far as we are concerned, the retrospect is a sad one. Our losses last year were exceptionally heavy. We miss from among us our great chieftains, and no small number of our rank and file. Few years, it is to be hoped, could furnish such an obituary list as that of 1865. Taking merely prominent names that had an interest for botanists or horticulturists, and naming them merely in the order in which they were taken from us, we find WILLIAM SHARP MACLEAY, formerly well known as a scientific man in this country, and a liberal patron of horticulture in Australia. In the same month (January) HUGH FALCONER was removed from among us—better known as a geologist than a botanist, but still held in grateful recollection as the successor of ROYLE at the Botanic Garden at Saharunpore. In February Sir R. SCHOMBURGK, the discoverer of the Victoria regia, was summoned to his rest. In May we lost ALEXANDER SMITH, who had as large an acquaintance with economic botany as any one now living, and whose manuscripts we yet hope to hear will be given to the public. CHARLES WATERTON, the veteran naturalist, and a frequent contributor to our columns, terminated his long life about the same time. In June we had to lament the loss of Sir JOSEPH PAXTON, one whose name was perhaps more widely known than either of those we have mentioned, and whose memory will endure as long as Chatsworth and the Crystal Palace remain in existence, and the reminiscences of the Great Exhibition of 1851 survive. In August HUGH CUMING, the traveller, a diligent collector in almost all branches of natural history, was removed from among us; and two days afterwards the veteran Sir W. HOOKER succumbed. He had devoted a long life to the advancement of botany, and to him mainly we owe the proud position which Kew has attained as the first of botanic gardens. Little more than two months after death had thus removed one great botanical chief from our midst, JOHN LINDLEY was laid in the grave—the friend of HOOKER, and the acknowledged chief of horticulture in this country.

In the face of such a list as this, we might well be anxious for the future, were it not for the conviction that in these days of constant progress, individual talent and individual zeal, however desirable, are less important than in bygone times, when so much depended on the exertions of one, or at least of very few men. We may not have such giants again; but there are still among us some of foremost eminence, while the number of humbler devotees, small though it be in proportion to what it ought to be, is yet larger than of old.

With all our regrets, then, and they are of the deepest, we think there is no reason to look with apprehension to the coming time. On the contrary, we look forward with hope that the future of Horticulture will be even brighter than the past has been, and that because the alliance between the botanists on the one side, and the horticulturists on the other, will have become more intimate; for assuredly in proportion as that intimacy is strengthened, will the botanist and the gardener, cultivators of intermingled sciences, be held in increased estimation by the world at large.

THE year which has just passed away has brought us its full share of NOVELTIES, in the shape of beautiful and useful objects worthy of every care on the part of the horticulturist or florist. We have had perhaps nothing brought out so startling as the Victoria was in its day, or as the Rafflesia will be when the suggestion we recently made has had time to bear fruit, for Welwitschia it appears has again failed, but we have nevertheless secured many important additions to our collections from foreign lands, and in the department of home-productions there are everywhere signs of progress.

If in casting a look backwards to the more prominent of the objects which have been brought into view, we commence with the aristocratic Orchid family, we shall find that amongst the now favourite Odontoglots, some gems of the first water have been discovered. There is for example Odontoglossum Alexandræ and O. Bluntii—whether they be one or twain we leave orchidologists to settle—which take rank amongst the most beautiful of their race; while scarcely less lovely, but of another type, are O. Hallii and radiatum. Then the fine genus Phalænopsis has received some most welcome additions, in the shape of P. sumatrana and P. Lüddemanniana; what Prof. REICHENBACH calls the finest of the forms of Lælia elegans has appeared in the variety he has named Wolstenholmiæ; and Lissochilus Horsfallii, from the Calabar region, has given us a grand addition to the terrestrial race.

Amongst stove plants we may refer to Anthurium magnificum as having won and kept a foremost rank amongst the now fashionable class of fine-leaved species. This plant was introduced by Mr. WEIR (whose sad case we adverted to a short time since), and has successively borne the names of grande and cordifolium, but its recent publication in the *Revue Horticole*, with a plate, under the first-mentioned name, will give to that a place in the annals of science which the others cannot claim. Another lovely plant of this category is the Calathea Veitchiana, the finest of the dark mottled-leaved plants cultivated under the name of Maranta; while another very curious example of the same family, and beautiful withal, differing in presenting a remarkably light and lively tint of green in conjunction with regularly-disposed dark blotches, and shown as an unnamed species of Maranta, now bears the designation of Calathea tubispatha, from the remarkable tubular form of the spathe whence its flowers issue. Of stove plants valuable for their blossoms, the most important acquisition which occurs to us is the Manettia micans, which may be described as resembling M. cordifolia, but with larger flowers, produced in greater abundance on the numerous short lateral branches.

A few important additions have been made to the list of hardy perennials. Primula Parryi, a broad-leaved, dark purple species from the Rocky Mountains, is a grand acquisition in its class; so also is Pentstemon grandiflius, with ovate glaucous leaves and large lilac flowers, from the same region. Anemone angulosa, one of the Hepatica race, comes as a choice spring flower, quite eclipsing the Hepaticas which have long been familiar as garden flowers; while in Abronia fragrans, another Rocky Mountain denizen, we gain the finest known species of its genus, and what seems to be a valuable hardy rock plant.

Of choice exotic Ferns, Adiantum farleyense, shown at one of the Kensington meetings, is the most curious and most beautiful addition of the past year. It adds to the grandeur of A. trapeziforme a most charming drooping and excessively leafy and fringy character of growth, while the fructifying parts, sparingly produced, resemble A. tenerum. This is West Indian, and, being reported as a seedling, may possibly be a hybrid, and if so will possess still higher interest. From South America we have derived the curious scrambling flexuose refracted Gymnogramma with finely-cut leaves, which bears the name of G. flexuosa. The Gleichenia cryptocarpa of Chili, a well-marked example of the more elegant of the Gleichenias, has been introduced to public notice as hardy in Yorkshire; while from North-west America has come the Polystichum munitum, a fine evergreen Fern allied to the falcinellum of Madeira, and to our own Lonchitis. New native Ferns have been acquired, either as wild plants or cultivated sports, in considerable numbers. We may mention as occurring amongst the more interesting of them which we hope shortly to notice more fully, a form of Polystichum angulare called parvissimum, a Fern of extreme elegance and symmetry, and Asplenium Adiantum-nigrum Bellairsiæ as remarkable for its curious eccentricity of development.

The raisers of new Seedling flowers have not been inactive, but during the year have made valuable contributions to the general progress. We cannot follow them in detail, for their name is legion; but we may refer to a few in illustration. Thus, Mr. PARSONS is working on with the Achimenes year by year, obtaining some advance in size, form, colour, or quality. Mr. TURNER has introduced to our notice some exquisitely beautiful Alpine Auriculas. In Azaleas we have additions, but nothing like the advances made in the previous year by the advent of Mr. VEITCH'S Stella and its kindred kinds. Cinerarias have yielded us one fine dark self, called Lord Amberley. Of the many new Chrysanthemums we should point especially to Gloria Mundi as the flower of the year—a flower of exquisite form, and remarkable for its brilliant colour, which is a rich golden yellow; while Golden Beverley, another shade of pure yellow, and lovely in tint, though hardly equalling the former in quality, may surpass it in usefulness as a show or decorative plant. The ranks of the Fuchsias have as usual been acceptably replenished from the stores of Mr. BANKS; as those of Pelargoniums have from the choice seedlings of Mr. HOYLE, Mr. BECK, and others. BEATON'S Bedding Pelargoniums are working a revolution amongst "bedding stuff," the earlier varieties having already made a reputation; while many later ones still in Mr. W. PAUL'S hands, will usefully supplement, and in certain cases surpass, the originals. Mr. FLEMING, too, has gained in this direction some useful improvements on the score of colour, Mr. WILLS has been successfully working from the leafage point of view, and others right and left are devoting themselves to the production of new sorts; so that probably in no modern flower is there so fair a prospect of a succession of acquisitions as amongst those bedding races of Pelargoniums. The double Pyrethrums perhaps come next to them in this respect, only they differ in being comparatively new and unknown. In the hands of Mr. SALTER and others, they are, however, surely progressing, for many very beautiful and distinct sorts have been gained, and many more, we cannot doubt, are buried in the womb of time. Those grand old flowers, the herbaceous Lobelias, after standing still for many years have at length made a new start, and in place of the mere scarlets and purples of former days, we shall now have a variety of most pleasing shades of colour, including pinks, roses, carmines, crimsons, maroons, violets, and many intermediate tints. In the Snowflake Lobelia, too, a pure white variety of Lobelia ramosa, we have gained a

superior white flower for summer massing. The Mimulus has undergone a strange metamorphosis in a duplex-flowered race, which has sprung up, and seems to be permanent, as Mr. BULL already holds several distinct varieties. Our readers will doubtless remember, from the description of them we have already given, that they are changed by the conversion of the calyx into the semblance of a coloured corolla, so that the blossoms grow hose-in-hose fashion, the true corolla falling off early as usual, while the coloured calyx remains for a long time fresh and perfect. Amongst English-raised Roses, that called Dr. Lindley is, we know, held in high esteem by skilled rosarians, and we ourselves have full confidence that it will prove worthy of its name. Mr. WILLS, amongst Verbenas, has given us quite a new race, which, from its close dwarf habit and profusion of blossoms, will probably revive some of the prestige of that flower as a summer bedder. And finally, lest we tire the patience of our readers, the Violet has not escaped improvement, as witness Mr. GRAHAM'S new variety called The Czar, which in point of size and vigour eclipses all that have preceded it.

In the department of Fruits the acquisitions, if not so numerous, are at least as important. We need only mention such productions as the Golden Lady Downes', the Muscat Champion, and Mrs. Pince's Muscat amongst Grapes, and point to the Early Alfred and Alexandra Noblesse, worthy successors of Early Albert and Early Victoria, amongst Peaches, in order to illustrate this, and to indicate the channels along which at the present day the current of improvement is most strongly setting in.

And if we cannot record such striking advances in the Culinary department, it is not for want of effort, nor indeed of effort in the right direction, witness the many selected Peas, the hybridised Cabbages and Kales, the seedling Potatos, which from time to time appear, but which in many cases have to be fixed by a long course of careful selection before they can be said to have any real existence; and after all, in a variety of instances, are but a reversion, or something very like it, to a pure or true stock of some old sort, from which in the ordinary course of cultivation the form usually grown has gradually, and it may be imperceptibly, diverged. We have, however, in the Tail-podded Radish something more like a novelty to include in this summary of the year's progress, and concerning the introduction of which we refer to a short paragraph subjoined.

— WE find the following interesting account of the RAT-TAIL RADISH, by Dr. LAWSON in the last number of the Nova Scotia "Journal of Agriculture": At the July Exhibition of the Royal Botanic Society, Mr. BULL exhibited "a new Radish, in which instead of the root the seed pods, which have the flavour of a Radish, are eaten." The vegetable referred to is no doubt the same as "the Spottiswoode Rat-tail Radish," of which a full description and engraving were published by Dr. LAWSON in DOWNING'S "Horticulturist," (New York), August 1860. It had been in cultivation for some years at the Edinburgh Botanic Garden, and in Canada. It is a delicious vegetable, a native of Java (not of India), and appears to have been in cultivation in some parts of India for a considerable time, particularly in the neighbourhood of Benares. It had indeed been referred to in the "Revue Horticole" by M. COURTOIS GERARD, as the Madras Radish. However it is not referred to in "Hortus Maderaspatensis," and the name Madras Radish must be dropped as having probably originated in some error. It was introduced to Europe by Mrs. Colonel SPOTTISWOODE, who, on Dr. LAWSON'S suggestion, sent seeds to Prof. BALFOUR, and it was successfully reared by Mr. MCNAB in the Edinburgh Botanic Garden. Cultivators of this Radish regard it as one of the most valuable vegetables that have been introduced for many years, being far superior in delicacy of flavour to the best varieties of Root Radish. The pods have a peculiar pungent yet delicate flavour, and are perfectly succulent, and may be used either as salad or to form a pickle. Its cultivation is extremely simple, very much that of the common Root Radish. "Notwithstanding," adds Dr. LAWSON, "the opinions expressed by writers in the 'Revue Horticole,' we believe the plant to be identical with the Raphanus caudatus of botanists. The French horticulturists seem to find their pods comparatively short, while those of R. caudatus are described by botanists as 3 or 4 feet in length. It must be observed, however, that there are many varieties of the Rat-tail Radish, varying in the length of their pods, and that a good stock is only obtained by carefully saving seed from the very long attenuate-podded plants. Fourteen or 15 inches was found to be a good length for the pods in Canada. In moister climates they will no doubt grow much larger, under good management, and in Nova Scotia we need not despair of obtaining pods that will approach DE CANDOLLE'S description : 'Siliqua tota planta longior, imo 4-5 pedalis,' &c. We are sorry to see the root referred to as edible. In the true large-podded varieties, the root is quite worthless, and the pods alone should be used. The young leaves, however, are succulent, and edible, and have the same flavour."

New Plants.

323. CYMBIDIUM HOOKERIANUM, *Rchb. fil.*

Foliis lineari-ligulatis acutis (3pedalibus), vaginis emarginc striatis, pedunculo perlecto racemoso grandiflore floribus illos Cymbidii eburnei aspernantibus, sepalis petalisque stellatis, oblongis obtuse acutis, petalis paulo angustioribus, labello trifido, laciniis lateralibus basi subsemicordatis, seu aquatilibus antice angulatis, lacinia antice subcordata ovata transversa bilobula, lineis geminis velutinis a basi diverginibus basin lacinie antice, labello ceterum hinc illinc subvelutino. Sepala et petala virida. Labellum et columna alba maculis guttis atropurpureis.

A magnificent species, with the habit of Cymbidium giganteum, but with larger flowers of a pale Apple green; the lip and column being whitish, with numerous purple blotches. The delicacy of colours is very beautiful.

What must prove to be this plant, flowered years ago at Exeter with Messrs. Veitch, under Mr. Dominy's care. We saw it with buds at the Royal Exotic Nursery, Chelsea; and we were told the development of flowers was very slow, so that the plant is expected to be one of the grand ornaments of the International Flower Show.

No doubt Messrs. Veitch will be glad to obtain the name before the opening of the flowers—an excellent name too, given with the writer's best wishes as a gratulation for the first new year's day of his Kew directorship, to Dr. Hooker. *Rchb. fil.*

EXTRACTS FROM THE JOURNAL OF MR. JOHN GOULD VEITCH, DURING A TRIP TO THE AUSTRALIAN COLONIES AND THE SOUTH SEA ISLANDS.

SHOULD you consider that the accompanying extracts from the Journal of my son John, who is at present travelling in Australia and the adjacent islands, would be of interest to your readers, they are at your service for publication in the *Gardeners' Chronicle*. These extracts, you will find, contain brief notes on the botany and horticulture of those countries, and are just jotted down on the spot, without any embellishment or attempt at fine descriptions, and are simply the impressions produced on one of the first English horticulturists who has visited those, or at least some of those parts. *James Veitch, Royal Exotic Nursery, Chelsea.* [We feel greatly pleased in inserting this letter, as we are sure that the horticultural and botanical gleanings of so intelligent and adventurous a traveller as Mr. J. G. Veitch will possess much interest for our readers.]

August 2, 1864.—On the afternoon of this day I left Plymouth Sound for Sydney, N. S. W., in the ship La Hogue, commanded by Captain Williams. We were 40 saloon passengers, including many old Australian colonists. Our voyage of 95 days was a long one, and naturally monotonous, the occasional sight of a ship being our only change. My chief amusement consisted in attending to a collection of plants in Wardian cases, intended for distribution among my friends in Sydney, which enabled me to learn the best mode of packing plants for such voyages, with their treatment on board ship. My experience goes to show that all hard-wooded plants, such as Camellias, Indian Azaleas, Rhododendrons, Conifers, Roses, &c., will travel with the greatest safety, provided that a sufficient supply of water is given to them previous to the case being closed up, and they are kept on deck exposed to the light during the voyage.

With soft-wooded plants, such as Verbenas, Petunias, Geraniums, Carnations, &c., I failed; their tendency to grow whilst crossing the tropics, seemed to exhaust their strength. The loss in sending such plants so great a distance will, I fear, always be great.

With the exception of an indistinct view of Madeira on the 15th of August, no land was seen previous to making the Australian coast, and our pleasure was consequently all the greater on finding ourselves entering the heads of Sydney harbour, with an early prospect of once more walking on *terra firma*.

Sydney, November 5, 1864.—The harbour of Port Jackson, seven miles from the entrance of which lies the city of Sydney, is the finest and most picturesque I ever saw. As we sailed up it, I could not avoid exclaiming, "How splendid!" A series of the most beautiful views presented themselves, changing every moment as a fresh promontory or bay, over which were scattered numerous suburban houses and ornamental grounds, appeared in sight. One thing only is wanting, viz., luxuriant vegetation.

I was immediately struck, and greatly disappointed with, the brown, burnt-up appearance of the country. We anchored almost abreast of the Botanical Gardens. In a few moments the ship's deck was crowded with the friends of the various passengers; amongst the number was Mr. Charles Moore, the Director of the Sydney Botanical Gardens, who welcomed me to Australia with the greatest kindness, and insisted on my making his house my home at once, and as long as I staid in the country.

One's ideas on landing in a country where everything is new and strange, are somewhat confused. One sees more than can be remembered or described. My first impressions of Sydney and its immediate vicinity were most favourable. The delightful climate, and the thorough English appearance of everything connected with the town, struck me very much. Sydney itself is more remarkable for its general extent than for any individual buildings or streets. The latter are narrow and not peculiarly clean. The great centre of attraction, and that which Sydney may justly be proud of, is the Botanical Garden. On the eastern side of the town is a large public square or park called Hyde Park. It is most ornamentally planted with fine avenues of Coniferæ and evergreen trees. The Sydney Museum, one of its finest buildings, is situated on one side of the park. The collection of objects of Natural History is already large, particularly of insects and reptiles. Sydney's grand feature, however, and that which one never ceases to admire, is its harbour. In the immediate vicinity of no large city, probably, are there so many and such varied sites for buildings and ornamental grounds. The principal drive out of Sydney is the South Head Road, leading to the Southern Point, which forms the entrance to the harbour, and on which there is a brilliant revolving light. It was at this spot that the deplorable wreck of the Dunbar took place some years since.

A very fair insight into the vegetation of this district is obtained by a ride along the road, whilst here and there one meets with the most picturesque views of the noble harbour, with the rocky and thinly vegetated points of land jutting into it.

I noticed many plants in a wild state which I had previously known under greenhouse culture in England. The cliffs are of sandstone formation.

Subjoined is a list of the principal plants that fell under my notice:—Acacias, Banksias, Boronia serrulata (the native Rose), and others; Callistemons, Ceratopetalum gummiferum (the native Christmas Tree, so-called from the persistent calyx turning a bright red colour at this season, and answering the purpose of Holly-berries), Ceratopetalum apetalum, Correas, Dendrobium speciosum (the native Rock Lily), Elæocarpus reticulatus, Epacris grandiflora, Eriostemon buxifolius, E. neriifolius,] Eucalypti (various), Grevillea robusta, Hakeas, Leptospermums, Melaleucas, Pimeleas, Tetratheeas, Smilax glycyphylla, Xanthorrhœas (the Australian Grass tree), and numerous Ferns, of which the most striking were Gleichenia flabellata and microphylla, Schizæa dichotoma, and Todea australis.

(*To be continued.*)

THE CHRISTMAS ROSE.

THIS fine old herbaceous plant may be said to be the datum peg of all the year's botany, the first flower of the season, a plant of it now before me being in full bloom this day (December 28), having been indoors only about a week, and kept in a sitting room. The Christmas Rose is most valuable at this festive season for supplying cut flowers; its large pure white buds, finely tipped with pink, are borne on very stiff stems, 4 or 5 inches in length, and when open the flower is found to consist of five petals, or rather floral leaves, and to measure about 3 inches across. These leaves are very stiff and showy, consisting of a calyx, pure white inside, and white tipped with pink outside; to make amends for this anomaly, however, there is a corolla of beautiful pale green petals, about 15 in number, in the form of inverted cones, elegantly cut, and so arranged within the calyx as to give the general appearance of the flower a greenish hue. These little horns are much shorter than the stamens, and are only discovered by close examination. The stamens, say 100 in number, with orange-coloured anthers, give a fulness to the flower, and are not unlike the "Glory on the Figure" in the St. John's-wort.* In both cases there is a resemblance to the halo or rays of glory that the ancient painters were in the habit of placing around the heads of the Holy Family.

The architecture of the pistil of the Christmas Rose is exceedingly ornamental, resembling as it does a vase elaborately carved and twisted. The general effect of this dead white flower, with its centre of green and orange, is very striking, its dark-coloured leaves setting off the blossoms to much advantage. The leaves themselves, like every other portion of this interesting plant, are thick and leathery, and at the time when the flowers appear are at least one year older than the blossoms whose delicate organisation they are destined to defend. Opening into beauty, as this plant does, at such an inclement season as Christmas in England

* Hypericum of this name. Loudon says "origin unknown." Dr. Rock says the translation is as above, "over the image or figure, and *hyper*, upon or over.

generally is, some natural protection seems necessary, and we find that this is handsomely provided, for upon a stiff footstalk are arranged some nine or ten leaves, springing from a common centre, like the groined roof of some old church, thereby forming a penthouse 8 or 9 inches in diameter over the blossom-buds below, whilst at the same time sun and air have free access to them. The leaf when detached from the plant is in character and appearance quite a miniature Palm, and the whole plant, although only a couple of handbreadths in height, has so much individuality about it, that it could not fail to attract notice on that account alone; but when we come to speak of it as associated with the festive season of Christmas, we turn over a new leaf, or rather we must advert to the old pages of its history.

At the bare mention of its scientific name—Helleborus, the golden honours on its head vanish, and the whole plant seems an apostate; suffice it therefore to state that the Christmas Rose is a relation of those beautiful garden flowers the Ranunculus and Anemone, as well as of the gaudy Pæony and the wild clambering Clematis; indeed the English name of Clematis vitalba, the Traveller's Joy, is quite a household word; we find the plant in every high hedge in the western counties of England, delighting the traveller with masses of blossoms as large as haystacks, for I have seen this Clematis in a jungle 100 feet long and 30 feet wide, in one mass of flower. Let the Christmas Rose then be associated with the Traveller's Joy in its family circle, for they are really allied; but let no one venture to name the deadly Hellebore.

The Lily, the Lily of the Valley, the Violet, the Snowdrop, the Passion-flower, and even the Judas Tree may be quoted to show that the nomenclature of our plants is now and ever has been associated with real life and history, and we could very ill spare a well-known name from our list—least of all could we spare the name of Rose, associated as it ever has been with loveliness.

If the Christmas Rose were to appear in June with its five white petals in some thorny jungle, elbowing itself into notice like the Bramble, its flower might pass muster among those of the Dog Rose, where the five pink-tipped white petals are so well known to prevail; but when we see the order of Nature so strongly reversed, that this tiny evergreen herb lets the spring, summer, and even the autumn, pass by, and flowers in the very depth of winter, we need not wonder at its being so highly prized. About a week before Christmas it may be potted and placed in a cottage window to bloom, to effect which no costly arrangement is needed; a disabled basin, with no hole in the bottom, will hold earth enough for this hardy herbaceous plant, and to those who may have to purchase the plant, it will not cost more than 6*d*.; the clumsiest tyro, too, that ever planted Kale with a dibber, will be gardener enough to do the work, for such is the determined character of the plant to thrive under difficulties, that no one need despair of having the Christmas Rose in full bloom at Christmas.

Nothing could compensate us for the loss of Christmas festivities. It is thoroughly English to have "mirth and jollitie" at this season, and the bard wrote well when he said—

> "A Christmas gambol oft would cheer
> The poor man's heart through half the year."

There is great joy in an atmosphere of flowers, and there is no end to their beauty, so that what has often been applied to pictures, may truly be said of them—

> "A thing of beauty is a joy for ever."

Alex. Forsyth.

THE LATE SIR WILLIAM HOOKER.

THE following eloquent passages bearing testimony to the memory and services of the late Sir W. Hooker, have just appeared in the 41st volume of Silliman's American Journal of Science and Art, with the well-known signature of "A. G." (Prof. Asa Gray). They form the concluding paragraphs of a very able and discriminating notice of the deceased botanist's labours, and as coming from one well qualified to judge, and one untrammelled by national feeling, are doubly worthy of perusal; and for these reasons we reproduce them here:—

"Our survey of what Sir William Hooker did for science would be incomplete indeed, if it were confined to his published works—numerous and important as they are—and to the wise and efficient administration through which, in the short space of 24 years, a Queen's flower and kitchen garden and pleasure grounds have been transformed into an imperial botanical establishment of unrivalled interest and value. Account should be taken of the spirit in which he worked, of the researches and explorations he promoted, of the aid and encouragement he extended to his fellow-laborers, especially to young and rising botanists, and of the means and appliances he gathered for their use no less than for his own.

"The single-mindedness with which he gave himself to his scientific work, and the conscientiousness with which he lived *for* science while he lived *by* it, were above all praise. Eminently fitted to shine in society, remarkably good-looking, and of the most pleasing address, frank, cordial, and withal of a very genial disposition, he never dissipated his time and energies in the rounds of fashionable life, but ever avoided the social prominence and worldly distinctions which some sedulously seek. So that—however it may or ought to be regarded in a country where Court honours and Government rewards have a factitious importance—we count it a high compliment to his sense and modesty that no such distinctions were ever conferred upon him, in recognition of all that he accomplished at Kew.

"Nor was there in him, while standing in a position like that occupied by Banks and Smith in his early days, the least manifestation of a tendency to overshadow the science with his own importance, or of indifference to its general advancement. Far from monopolising even the choicest botanical materials which large expenditure of time, and toil, and money brought into his hands, he delighted in setting other botanists to work upon whatever portion they wished to elaborate; not only imparting freely, even to comparatively young and untried men of promise, the multitude of specimens he could distribute, and giving to all comers free access to his whole herbarium, but sending portions of it to distant investigators, so long as this could be done without too great detriment or inconvenience. He not only watched for opportunities of attaching botanists to Government expeditions and voyages, and secured the publication of their results, but also largely assisted many private collectors, whose fullest sets are among the treasures of far the richest herbarium ever accumulated in one man's life-time, if not the amplest anywhere in existence.

"One of the later and not least important services which Sir William Hooker has rendered to Botany is the inauguration, through his recommendation and influence, of a plan for the publication, under Government patronage, of the Floras of the different British colonies and possessions, scattered over every part of the world. Some of these (that of Hong Kong and that of the British West Indies) are already completed; others (like that of Australia, and the Cape Flora of Harvey and Sonder, adopted into the series), are in course of publication; and still others are ready to be commenced.

"The free and cordial way in which Hooker worked in conjunction with others is partly seen in the various names which are associated with his in authorship. This came in part from the wide range of subjects over which his survey extended, a range which must have contributed much to the breadth of his views and the sureness of his judgment. Invaluable as such extent of study is, in the present state and prospects of our science, we can hardly expect to see again a botanist so widely and so well acquainted both with cryptogamic and phanerogamic botany, or one capable of doing so much for the advancement and illustration of both.

"Our narrative of Sir William Hooker's scientific career and our estimate of his influence has, we trust, clearly, though incidentally, informed our readers what manner of man he was. To the wide circle of botanists in which he has so long filled so conspicuous a place, to his surviving American friends and correspondents, some of whom have known him long and well,—and 'none knew him but to love him, nor named him but to praise,' it is superfluous to say that Sir William Hooker was one of the most admirable of men, a model Christian gentleman."

Home Correspondence.

Odontoglossum Bluntii and Alexandræ.—You ask for my views about the identity or difference of the two new Odontoglossa, Alexandræ and Bluntii. Notwithstanding you will shortly have from me some figures and remarks on these plants, yet I think it better to answer your question at once as well as I can. I was supplied a few months ago by my English friends and correspondents with many flowers of Odontoglossums, and should be very thankful if they would continue so to do. I feel quite convinced now that our knowledge will increase a good deal by these vast supplies. We shall gain, no doubt, quite unexpected rays of light as to the limits of variation in species. No doubt, as I have already said, it is a pity that we must name all these kinds immediately they flower, as it would be much safer to wait for a few years, to allow of more careful observation. But it must be done. As to myself, I feel already quite persuaded that there are mules which disturb our botanical feelings. Mr. Stuart Low was so good as to send me at two different times flowers of the shape of Odontoglossum gloriosum, and yet with some very decided characters approaching those of what we call "radiatum." Thus I can well imagine that Mr. Weir (in my eyes one of the few modern careful collectors, since he has sent home very valuable herbaria), has felt persuaded that all the white-flowered Odontoglots he observed, in innumerable variations, belonged to one species. For my part, I believe there are two species, and mules too between them. Alexandræ has the longer thinner more crispy flowers, bearing an acute lip, and longer freer lamellæ on the lip. Bluntii has thicker, shorter, not much crisped flowers, and very short keels to the retuse lip. I hope to see a set of my sketches produced in the *Gardeners' Chronicle*. Alexandræ is quite in the way of Odontoglossum crispum, Bluntii is in the way of Odontoglossum Pescatorei. I would recommend the question to Messrs. Veitch, who have at their disposal the services of Mr. Dominy, who raises the seedlings of Orchids with an extraordinary facility. He should take seeds of both types, and then cross the two together. Then in the course of, let us say 10 years, we would see more clearly. I quite understand Mr. Weir believing these to be one, since he seems not to have thought of hybrids. I can imagine that a century or two hence a Japanese or a New Zealand gardener will be sent to Europe as a collector, to secure in the Jura Mountains a harvest of Narcissi, in ignorance of there being mules; when having collected not only what we call Narcissus poeticus and pseudo-Narcissus, but also the mules, so nicely called by Monsieur Grenier super-pseudo-Narcisso-poeticus, pseudo-Narcisso poeticus, sub-pseudo-Narcisso-poeticus—would he not become nervous to find the *savants* at home speaking about two different species? *H. G. Reichb. fil.*

Orange indigenous to Central Italy.—Can any of your correspondents state if the Orange is indigenous to Central Italy; and if so, can they kindly give the exact locality? *W. H.* [It is held by the best authorities that the Orange and several allied fruits are all of Eastern origin, introduced to Europe at a comparatively modern date, but of very ancient and general cultivation in Asia.]

Mr. Paterson's Potatos.—Potatos are so much influenced by the soil and circumstances under which they are cultivated, that the individual experience of one grower cannot be regarded as conclusively determining the merits of any particular variety. I know, from experience, that several sorts of Potatos, of undoubted excellence grown in some neighbouring districts, are absolutely worthless when grown in the heavy land of this locality. Mr. Whiting's opinion concerning the value of some of Mr. Paterson's Potatos must be understood as applying to the locality in which the experiment of their cultivation was tried, and his testimony is valuable and interesting to those who seek in such discussions for reliable information to guide them in the important matter of selecting a good Potato for future cultivation, but Mr. Whiting's opinion is fairly balanced by evidence from another locality. Mr. Dean has fairly and ably stated his experience in the cultivation of Paterson's Potatos, and announces results justifying the commendations these Potatos have received. Let me, as one interested in the elucidation of facts bearing on the diverse influence of the soils and circumstances of various localities on the fruit and vegetables we cultivate, add my experience in regard to the merits of some of Mr. Paterson's Potatos. Early in the year I obtained from Messrs. Lawson three kinds of Potatos sent out by Mr. Paterson—Victoria, Regent, and Rock—considering from the testimonials in their favour that they were best calculated for garden culture. In setting these Potatos I treated them precisely as I do my general crop; they were set on the surface of winter-dug ground, in rows 2½ feet apart, and immediately earthed up. The dressing employed was principally charred earth and burnt woody matters. I grew on the same land near them, Dalmahoys, Regents, Pink-eyed Regents, Prince of Wales, Skerry Blue, Rocks, and Flukes, and several other kinds experimentally. The growth of these varieties and Mr. Paterson's was equally healthy and luxuriant up to the period when, owing to a low prevailing temperature, and an excess of rain in August, the dreaded disease made its appearance; then the superior constitutional vigour of the Scotch Potatos was seen. All my old kinds succumbed to the disease; the haulm and leaves turned black and withered. Paterson's kinds, though exhibiting indications of the disease, appeared to have in a most active vitality the power of resisting the disease. The haulm remained green and succulent, and some terminal leaves continued to expand until late in the autumn. On securing the Potatos in October, I found that nearly all my old and favourite sorts—Pink-eyed Regent, Regent, Dalmahoy, and others—were badly diseased, even to the extent of half the crop. The still living haulm of Paterson's varieties led me to hope for better results, and I was justified in my anticipations, for, on taking up Paterson's Victoria, Regent, and Rock, but few instances of disease were observed, while the crop of sound tubers was most abundant and excellent. Although P. Rocks were free from disease, the sample was spoilt by a peculiarity in the season, which induced a second growth, particularly affecting Rocks. With a result so satisfactory, at least in two instances, I believe I may venture to give my testimony in favour of two at least of Mr. Paterson's Potatos, and I may add that I am confirmed in this opinion by the experience of a neighbour, a large Potato grower, who has been equally successful in growing the several sorts I have named. *Wm. Ingram, Belvoir.*—Having last year occasion to add about an acre of old turf land to my garden, I resolved to plant a considerable portion of it with Potatos; and hearing so good an account of Paterson's seedlings, I desired Mr. Turner, of Slough (who I believe acted as Mr. Paterson's

agent), to supply me with some of each variety, which he accordingly did—I believe 12 kinds. They were all carefully planted, together with 13 other varieties, which I had collected in various parts of the country the previous autumn, being anxious to discover the kinds that were best suited for my neighbourhood. All were put in the ground the same week, and without a particle of manure. During the summer several of my horticultural friends inspected the growth of this batch of Potatos with much interest, Paterson's being a long way the favourites, in consequence of the luxuriance of the haulm, which quite outstripped all the others. At the proper period for testing the cropping qualities a few friends were invited, and an afternoon devoted to carefully examining the lot. The unanimous decision was that only three out of Paterson's seedlings were worth growing, viz., Queen Victoria, Napoleon, and Scotch Blue. The majority of the others were either so ugly in appearance, or so scanty in crop, as to call forth laughter from the lookers on when the produce of a root was exposed; consequently the lot was looked upon as a complete "sell." The three varieties before named I resolved to grow again this year; they have turned out moderately well, but by no means equal to many older kinds. I was led to believe from drawings and testimonials that they were of beautiful form; but I cannot show more plainly they have not been so with me than by stating the following fact:—A prize of a guinea was offered at a local show for the best eight dishes of Potatos in the last week in August. I had about a score of roots of every variety I grew dug for the purpose of selecting fine handsome tubers from. I won the prize, but not one of Paterson's Seedlings were able to put in an appearance among the prize tubers. *C. J. Perry, The Cedars, Castle Bromwich, near Birmingham, Dec. 30, 1865.*

Mildness of the Season.—I have sent you a sample of Rivers' Eliza Strawberries, gathered this day (Jan. 3) from the open ground; and should the weather continue equally mild, we shall shortly have a good dish of them. *John Ingram, Huntingdon.* [The fruit in question was almost full-grown, but it was colourless, and, though nearly ripe, was without flavour.]

Camellias in Bloom out of doors in Cornwall.—At this season, when Nature seems at rest, anything in the shape of flowers is, as may be imagined, hailed with delight, particularly when out of doors: it may not, therefore, be out of place to state that we have here on open walls very fine specimens of Camellias, blooming profusely. Our old Double White has attained a height of 14 feet, and it measures as much across, thus presenting an area of 196 feet of glossy foliage, intermixed with an abundance of pure white blossoms. Other sorts succeed equally well, though they are at present not so large. We give them no protection during winter, but our Cornish winters are mild compared with those about London and many other places. Camellias are, however, perfectly hardy, and might doubtless be used for out-door decoration more extensively than they are in many other counties besides Cornwall. *Rich. Pointer, Gr. to Beauchamp Tucker, Esq., Trevince, Cornwall.*

Education of Gardeners.—Your correspondent "Brassica" (see p. 1203, 1865) appears to object to the refined appellation of "student" being applied to young gardeners, and adds, "Let me see a man dig, and I will tell you what he is worth." To know how to dig properly is doubtless a useful item in a gardener's education, but it must be evident that there are many other points pertaining to his business on which he requires to be equally well informed; and I do not see that the scheme for the mental improvement of gardeners promulgated by the Royal Horticultural Society particularly favours the "kid-glove fraternity." I should say that the term "student" belongs quite as much to those who are being instructed in horticulture as to learners in any other business or profession, nor does the necessity for manual labour in this calling at all disqualify the designation. Surely it is high time something was done to improve the intellectual status of gardeners, a fact of which the Royal Horticultural Society is evidently aware, and I have no fear that educating men in the science of their business, and enabling them to use their tongues to advantage, will at all induce them to neglect the practical department of their art. *Reason.*

Double-glazing.—This does undoubtedly prevent evaporation to a very great extent, a fact which will be understood by every practical gardener, for when he puts in cuttings of any kind of plant that would easily dry up and perish, he takes care to cover them with glass of some kind, in order to prevent evaporation. If therefore double-glazing had no other advantages than that of preventing so much watering, it would in some cases be worth adopting. Some have objected to it from an idea that a double roof must necessarily soon get dirty between the glasses, and so become impervious to light. This however is, I consider, a very trivial objection, for I have seen shades put over houses in the summer for four or five hours during the day time, and during just that part of the day when the plants need most light, and when not a single ray of the sun's glorious beams could possibly penetrate the gloom. Is a double roof worse than this? Again, is it possible that the glasses can become more dirty than those we so often see daubed over with whitewash? This practice, which has become so "fashionable" in such a very short time, has not perhaps met with half so much opposition as double-glazing has. We need not go to the opposite extreme if we have double roofs, and because we can keep the plants less exposed to sudden changes of temperature, keep them "simmering in steam;" we need not "ride a hobby to death." I am sure I often wish we could keep our plants a little less exposed to the air without "cooking" them. We have roasted a good many in summer, and boiling them could not be worse. No good practical gardener would think of shutting up plants in a hothouse or greenhouse without a breath of air; but if he could have the admission of air more under his control it would be a great advantage. Let every one, however, try for himself, which is generally less trouble than being perplexed in listening too long to argument. There is nothing like one's own experience, and experiment might easily be tried on a small scale. If any one is building a house with deep sash bars or rafters, it would be very easy to double-glaze. Instead of the lower edges being "chamfered" off, let there be a groove made, a little wider than the thickness of the glass to be used, about half an inch from the under side of the bars or rafters. This groove should be made the whole length, and when the outer glazing is done, a piece of the wood on the under side of the rafter, as near the ridge as possible, should be cut out the length of one of the squares. This will, of course, allow a pane of glass to be slipped in and pushed down to the bottom, then another, and so on up to the top, edge to edge, and the top one might be kept in its place by nailing in the little slips cut out at first. Those who have such houses already built could glaze the under side by nailing on two very small strips of wood to form the groove. On this plan a good-sized house could be glazed on the under side for 6*l.* or 7*l.* The glass could, if necessary, be all taken out once or twice a year, washed and replaced in a few hours, and the cost at first would not be more than a perishable woollen cloth and roller. *D. G.* [This is a very good suggestion, for those who may be disposed to submit the matter to direct experiment.]

Aranja (*Physianthus*) *albens* (see p. 1178, 1865).—This useful climber fruited freely with me at Oakley Hall, in Hampshire, about the years 1856 or 1857. It was planted in a border prepared for it, and was trained to the back wall of a very cool greenhouse. I could have gathered more than a quarter of a peck of fruit from it at one time. Tacsonia mollissima also fruited with me about the same time. It was planted at the back of a large conservatory, and after the back wall was furnished with branches, strong shoots of it were trained down the rafters, from which the laterals were allowed to hang in graceful festoons; and in this way they produced flowers and fruit in abundance. The latter is white in colour, and about the shape and size of a hen's egg. *B. Robins, Oakley Park, Suffolk.*

Evening Work for Gardeners.—Your "40 years a Gardener" (see p. 1228, 1865) says, "The long winter evenings are a great inducement to resort to the public-house or cards." If a man is inclined towards these things, depriving him of an hour's candle-light will not prevent him from following them; but I hope that those who are aspiring to be gardeners in the present day, have found out that the public-house and the card table are not the right schools in which they can obtain the education they require. Why, I have professed to have been gardening for upwards of 50 years, and I found the truth of this statement out as long ago as that. True enough, "the public-house and cards" were resorted to by many then, but things are much altered now, and in the present day such practices are, I hope, rather the exception than the rule. I should like to know how a young man can become a "gardener," deserving the name, unless he has an opportunity of improving himself in reading; and when can he do this if he does not take advantage of the long winter evenings? I have found it to be hard work to scrape together the little knowledge which I possess, even by taking the early dawn in summer as well as the evening for improvement; and I still find it necessary to make the most of all my opportunities in order to keep pace with the times. As to the work done in the "evenings," I have never found occasion to employ the men under my charge during that time, as by proper management such work may be done in wet weather much more profitably than by keeping men out to catch colds and rheumatism, thus rendering them unfit for a good day's work, especially "now that glass erections are so common, as also convenient sheds, with warming apparatus," &c. I have no doubt that "40 years a Gardener," like myself, knows what it has been to rough it in cold weather under some upstart superior, but such usages are fast dying away, as men now-a-days know when they are ill or well treated, and act accordingly. Bygone practices would not therefore succeed. Belonging, as I do, to the family of the Standstills, it may have been more difficult for me to learn than it was for "40 years a Gardener;" nevertheless I still plod on in my old-fashioned way, reading all I can that is likely to make me useful to others or to benefit myself, and what I practised when young, now that I am getting old I recommend to others. Be up in the morning, so as to have time to search the woods, valleys, and hills within your reach, and to procure specimens of all you can find, and dry them carefully. Do the same in the evening, as time and weather permit. Lay them by till some one wiser than yourself occurs to tell you their names. Never be above being told, and make up your mind to get something out of every man, as of every book you meet with bearing on your business; and whatever contrary advice you may get, heed it not; keep clear of the "public-house and cards," stand up for your own use of "the evenings." Read! read! read! *Jasper Standstill.*

American Erica Tetralix.—You have given several remarks on Calluna vulgaris growing in America. Allow me to direct your attention to an old statement of Erica Tetralix growing in Surinam. Weigelt, a German collector, one of those good old-fashioned collectors who knew the necessity of drying botanical specimens, sent it to Dresden. I possess such a specimen myself. It has been indicated by my father in his "Flora Germanica Excursoria," p. 413, sub No. 2774. It rather appears that no one has taken any notice of this indication, and even Mr. Bentham, who overlooks nothing, did not allude to it in his celebrated monograph of Erica in the "Prodromus," no doubt because he had no faith in its truth. Now-a-days, I presume, the old statement will have a new interest. *H. G. Reb. fil.*

Societies.

ROYAL HORTICULTURAL.—The following extra medals were awarded at the International Fruit Show held in the gardens at South Kensington in the middle of December last, viz., the Silver Flora to Malta, for a very complete collection of the more useful products of that island; and a similar award to the Cape of Good Hope, for dried fruits. To Mr. R. Webb, of Reading, was given a Silver Knightian for very fine samples of Apples and Pears, and a collection of Filberts; two other medals of the same kind were also awarded—one to Mr. R. Budd, gr. to Lord Darnley, Cobham Hall, Kent, for vegetables—the other to Messrs. Rivers & Son for little Oranges in pots, well furnished with ripe fruit. To the Rev. G. W. St. John, Woodstock, was awarded a Silver Banksian for Apples, Pears, Potatos, and Brussels Sprouts, the last being contributed to show the good effects of using house sewage in the growth of these and similar winter Greens. Messrs. Barr & Sugden also received a Silver Banksian for a beautiful collection of Gourds, and similar marks of distinction were conferred upon Messrs. Dewar, of Newcastle, for Celery, Beet, and other vegetables; on M. Capeinick, of Ghent, for an interesting exhibition of Apples and Pears; and on J. Corbière, Esq., Normandy, for some large and fine examples of Pears. The other awards made on the occasion will be found mentioned in our report of the International Show, at p. 1180 of our last year's Volume.

Notices of Books.

Lives of Boulton and Watt. By Samuel Smiles. 8vo, pp. 520. London, 1865. Murray.

Mr. Smiles is well known to a large circle of readers from the pleasant fluency with which he has recorded the story contained in the "Lives of the Engineers." The present volume, which concludes the series, is a worthy supplement to those which have preceded it. Beginning with the ball of Æolus, with which Hero of Alexandria astonished his compatriots, Mr. Smiles traces the history of the steam engine from its infancy to the invention of the condensing engine by Watt. The history of Watt's life has often been told, but it is one that bears repeating over and over again, as it affords one of the best illustrations of the efficacy of patient continuous study. Most men would have turned their attention to other subjects in the face of rebuffs and disappointments such as Watt had to encounter. But "though discouraged by these misadventures, he was far from defeated, but went on as before, battling down every difficulty inch by inch, and holding good the ground he had won, becoming every day more strongly convinced that he was in the right track." His association with Boulton, from which better things might have been hoped, was, for a time at least, beset with even greater difficulties and graver anxieties than had been before experienced by him. At length, aided in no small degree by the faithful service of William Murdoch, himself an inventor, and the one to whom we owe the practical application of coal gas for lighting purposes, prosperity dawned on the firm of Boulton & Watt.

A pleasant chapter in Mr. Smiles' book is that devoted to the "Lunar Society," so called because its meetings were held monthly at the full of the moon, to enable distant members to drive home by moonlight. Boulton and Watt were prominent

members of this, perhaps the most distinguished of the provincial literary and scientific coteries at that time existing in this country. Withering, the physician and botanist; Priestly, the chemist; Wedgwood, the potter; and other scarcely less well known persons, were among the "lunatics;" but "Dr. Darwin was regarded as the patriarch of the Society. His fame as a doctor, philosopher, and poet, was great throughout the Midland Counties. He was extremely speculative in all directions, even in such matters as driving wheel carriages by steam." His professional engagements, however, prevented him from attending the meeting very regularly, but he would excuse himself by such a letter as that with which we close our notice of this very agreeable book. Dr. Darwin's letter runs thus:—"Dear Boulton,—I am sorry the infernal divinities who visit mankind with diseases, and are therefore at perpetual war with the doctors, should have prevented my seeing all your great men at Soho to-day. Lord! what inventions, what wit, what rhetoric metaphysical, mechanical and pyrotechnical, will be on the wing, bandied like a shuttlecock from one to another of your troop of philosophers! While poor I, I by myself I, imprisoned in a post-chaise, am joggled and jostled and bumped and bruised along the king's high road to make war upon a stomach-ache or a fever!"

BOOKS RECEIVED.—*Constitutionalism of the Future' or Parliament the Mirror of the Nation.* By James Lorimer, 8vo, pp. 188. Edinburgh: A. & C. Black. Fortunately for us we are not called upon to express any opinions on matters political, and hence we may confine ourselves to mentioning that this book contains a "scheme for the universal recognition and subordination of political rights." The basis of this scheme is that every adult male should be entitled to one vote in the absence of any disqualification; age and political experience should confer further privileges on the citizen, as also property, education, and profession. So far, then, this scheme resembles in its principles those on which the natural system of classification is founded, and according to which everything is taken into consideration that can be used for the purpose, and due subordination of characters is ensured by giving the greatest weight to those points which from whatever cause are most important. Whether this analogy will have any weight with our readers we know not, but they will at any rate admit that Mr. Lorimer's proposals are more "natural" than the "artificial" schemes at present in use.

Florists' Flowers.

HAVING read with much pleasure the interesting article by "Rambler" (see p. 1182 of your last year's volume) on that most beautiful of all autumnal flowers, the GLADIOLUS, I cannot refrain from addressing to you a few remarks on points in which I differ from the opinion expressed by "Rambler;" and I am induced to do so from the fact that the result of the experience gained by four years' careful personal observation of nearly all the new varieties of this lovely plant may not be unwelcome to those of your readers who are about to enter on its cultivation, and wish for some guide to enable them to make their selections from trade lists. On looking through the list of varieties enumerated in your Paper, I find that under the head of "Varieties of recent introduction" the names are placed alphabetically, and not, as I have always endeavoured to keep them, according to the year in which they came out, keeping the novelties of each year separate. This order I shall now try to observe. Beginning with the year now closed, I shall enumerate the really good varieties which came out in it for the first time, and so go back for the three years over which my experience extends. Last spring two French trade lists came under my notice: the one, that of a well-known and highly respectable firm, only announced four new varieties for 1865, whereas the other, not so well known in this country, announced nearly 20. From previous experience of the dealings of the first-named house, I felt perfectly safe in getting at once the four it announced, and Madame Furtado, Fulton, Madame de Sevigné, and Meyerbeer, proved really distinct and valuable additions, the third-named being an improvement in shape and delicacy of colour on the beautiful old variety Le Poussin; Fulton being a very distinct and well-shaped light red; and the first-named, one of the most exquisitely shaped and delicately streaked and tinted varieties I have yet seen. The remaining 16 kinds I got only on trial, and with the exception of two—Adelina Patti and Madame Isidore Salles (only the former of which was sufficiently distinct to keep) all were quite worthless, the majority of them being pale blushes, except Charles Smith, which was no improvement on the old variety Raphael.

The year 1864 produced 8 novelties:—Charles Dickens, a very pretty streaked blush; James Carter, an improvement on Le Poussin, with rather deeper ground colour; James Veitch, quite one of the finest varieties out—magnificent flowers regularly disposed on the spike, and in colour bold and distinct; Princess of Wales, a fine large white blotched with rose, an improvement on Reine Victoria in habit and size of flower; Prince of Wales, a fine bright red, with white throat and marks, but medium-sized flower; Stuart Low, a peculiar colour, resembling Leonardo da Vinci, but worthless from its small poor flowers and dwarf weak habit; Walter Scott, a low-growing kind, with distinct bright rose-coloured flowers, a nice addition; Peter Lawson, a worthless kind.

With the exception of James Veitch, the novelties of 1863 were of a far higher order in beauty and distinctness than those of 1864. They consisted of John Waterer, quite one of the grandest varieties in cultivation, and for shape and brilliancy of colour unexcelled by any other; Edulia, a most distinct and lovely variety, flowers of medium size, bright rose, with white eye and throat; Imperatrice Eugénie, most distinct and peculiar in shape, white ground, prettily and distinctly striped with rose; Stevenson, one of the finest and most brilliant rose selfs in cultivation.

Among those mentioned by "Rambler," which I have discarded from my collection as unworthy of cultivation, either from possessing no great merit or some disqualifying fault, are Charles Smith, Empereur Maximilien, L'Ornement des Parterres, Madame Allester, M. Camille Bernardin, Peter Lawson, Stuart Low. Roi Leopold I have never seen. The varieties Dr. Lindley and Madame Domage I should class among the older varieties, as they have been out now some four if not five years.

Among the other varieties mentioned, I have discarded the following:—Clemence, Diane, El Dorado, Endymion, Lord Raglan (surpassed by Auguste Haas), Madame Haquin, Madame Binder, Madame Pereire, Madame Rabourdin, Princess Clotilde. Several others mentioned I have not in my collection, and have never heard that they possessed any distinguishing merits, having never seen them at any of the great shows I have attended.

For next year are announced six novelties, all raised by Mr. Souchet, of Versailles, the king of Gladiolus raisers; they are as follows:—Eurydice, Milton, Shakespere, Newton, Lord Byron, and Marshal Vaillant; all of these I have got from Paris, except the last, the roots of which were too small to send out; likewise three others, also raised by Souchet, viz., Cherubini, Le Danté, Gallilee, said to be first-rate; Samuel Weymouth and Eleanor Norman are also good English known kinds.

The following may be considered as nearly perfect a collection as may be, embracing only really good varieties (the new kinds of this year being of course as yet unproved) as grown by me in the county of Cork, where the mild climate is particularly suitable to their perfection:—

1. Adelina Patti, 1865
2. Madame de Sevigné, 1865
3. Madame Furtado, 1865
4. Fulton, 1865
5. Meyerbeer, 1865
6. Charles Dickens, 1864
7. James Carter, 1864
8. James Veitch, 1864
9. Princess of Wales, 1864
10. Prince, 1864
11. Walter Scott, 1864
12. John Waterer, 1863
13. Edulia, 1863
14. Stevenson, 1863
15. Imperatrice Eugénie, 1863
16. Le Poussin, 1862
17. Madame Besseville, 1862
18. Auguste Haas
19. Carl Wagner
20. Achille
21. Ceres
22. Comte de Morny
23. Calendulaceus
24. Canari
25. Cardinal
26. Dr. Lindley
27. Dr. Andry
28. Duc de Malakoff
29. Eleanor Norman
30. John Bull
31. Jeanne d'Arc
32. James Watt
33. Junon
34. La Quintinie
35. Madame Vilmorin
36. Madame Lesoble
37. Madame Poignant
38. Madame de Vatry
39. Madlle. Adèle Souchet
40. Madlle. Marie
41. Marie Dumortier
42. Maréchal MacMahon
43. Napoleon III.
44. Ninon de L'Enclos
45. Ophir (best yellow)
46. Reine Victoria
47. Rembrandt
48. Rubens
49. Linné
50. Eurydice
51. Shakespere
52. Milton
53. Newton
54. Lord Byron
55. Cherubini
56. Le Danté
57. Gallilee.

W. E. G.

The Apiary.

WE have had inquiries from various correspondents respecting a disease which is frequently very fatal among bees, viz., DYSENTERY; and requesting information as to the cause, and advice as to the best means of effecting a cure, when it has fairly taken possession of a hive. Dysentery usually shows itself after a period of long-continued cold weather, particularly if this is followed by a very warm and damp state of the atmosphere.

There is little doubt that this disease is caused by an undue retention of the fæces, from the bees having been detained close prisoners by a protracted period of cold and wet. This is more particularly noticeable, if this season of cold, or otherwise unpropitious weather, sets in after Christmas. Bees can only maintain the requisite amount of internal heat by a large consumption of food, and being unable to rid themselves of the accumulation of fæces, and being too cleanly in their habits willingly to void them within their own hive, a condition of disease is set up which may soon prove fatal to the whole community. Then the interior of the hive presents a very different appearance to that which is usually characteristic of these insects. The floor-board and the surfaces of the combs become covered with a dark fœtid discharge. The bees themselves being greatly distended, and unable to fly, rush or roll out of the hive, soiling the alighting place and the vicinity of the doorway, as well as each other. In a very short space of time the ground for a considerable distance in front of the hive may be covered with the dead and dying, and the population, which before consisted of some thousands of inmates, be reduced to a few hundreds. If mild genial weather then prevail, the progress of the disease may be arrested at this point, and this small nucleus of a commonwealth endeavour to struggle on to strength and prosperity. Too often the struggle is in vain, and if a cold unpropitious spring sets in, the bees are too few in numbers to obtain sufficient supplies for their wants, and to keep up the required temperature within the hive.

It is almost invariably found that the queen is the last survivor of the population and frequently retains considerable activity when all the rest are dead. The cause of this has not been to our mind very satisfactorily explained, so far as we have seen, but that it is a wise provision there is little doubt.

We believe there is no real cure for dysentery; that is, that there is no mode of medicinal treatment likely to prove successful. Mr. S. B. Fox, writing some years since in the pages of a contemporary, then advocated the administration of food to which a small quantity of rum had been added. One or two others, at the same time and subsequently, have indorsed his views, relating instances in which this treatment had been successful in eradicating the disease. But we have very great doubts as to any beneficial results having been effected by the addition of the spirit to the food. Probably the bees would have rallied just as well with the food minus the rum. Natural causes may have so far already arrested the disease, and a judicious supply of food, which may be really needed to keep the bees from starvation. will help to establish a complete recovery. We doubt if Mr. Fox now believes in the efficacy of his nostrum, as we know that he has of late pursued a very different course of treatment.

Our own plan, which is, we imagine, very similar to that followed by the apiarian alluded to, consists in giving the bees an entire change of domicile. With frames this is a very easy matter. The combs are lifted out one after the other, and any very dirty or mouldy portion is cut away, or the comb altogether rejected. The state of the population as to numbers, the appearance of the queen, the presence or otherwise of brood or eggs, are carefully noted prior to the combs which are retained, being transferred to their clean hive. If not too much depopulated, the hive may be able so far to recover itself as to become a strong stock in the course of the summer; but, usually, little good can be looked for from it until the following year.

When two or more hives in an apiary have been thus affected, we almost invariably unite two or more together. With frame hives, again, this is easy. All the frames are lifted out, the queen searched for, and half, or a less number, only of the combs are placed in the new box. The brood is always to be located in the centre. Those combs which contain no brood are shifted towards the sides. The other hive is now visited and similarly treated, the frames as inspected being placed temporarily in another box. In this colony the queen must be found and destroyed; a few only of the combs with brood, if any, and the clustering bees are placed in the temporary hive. The covers of both hives are put on, and the bees allowed to settle. In an hour or two the frames of the second hive may be gently lifted out and shifted into the first, where the spaces are already made to receive them. The straggling bees must be brushed or shaken in on the top of the frames, and the cover replaced as quickly as possible. We have seldom or ever had any fighting, and the united populations proceed to their labours with increased energy and vigour. Bee-keepers must always bear in mind that one strong colony is worth more than two or three weak ones. With bees, as with men, "union is strength." We may have more to say on this subject of dysentery and its treatment in ordinary hives.

We have received from a correspondent an extract from the *Hamilton Advertiser* of October 1, 1864, giving the following account of the EXTRAORDINARY PRODUCT OF ONE HIVE in that year. The correctness of the statement is vouched for by the owner of the bees, who is well known by our correspondent to be a person of position and veracity. "*Carluke.*—Lately this season an amateur among the bees had a hive which weighed as follows:—Top hive, 160 lb.; second hive, 76 lb.; and the old hive, 92 lb.; altogether, 328 lb. This has been a year of exuberance among the honey, and the present instance is a good illustration. Can the Heather blooms of Carnwath or Douglas produce any better?"

Garden Memoranda.

BURY HILL, MANSFIELD, NOTTS, THE SEAT OF SIR EDWARD WALKER.—We conceive that the interest of a garden report is considerably enhanced when it includes a notice of those circumstances of soil, position, and altitude which directly or indirectly affect the particular locality in which the garden is situated. We are better able to understand

the extent to which the art of gardening has been pursued, and to appreciate the labour of the gardener, when we have a fair understanding of the local privileges or difficulties of his position.

In illustration of this, as regards soil, while one man may be so fortunate as to find a soil elaborated by natural operations, and suited to the large majority of plants he cultivates—such as may be found in the rich loamy deposits of ancient river valleys (on which so many of our most famous gardens are situated), or the alluvium left by mightier agencies than mere fluvial currents—another has to work out his gardening results on an intractable clay, while a third finds his skill taxed to the utmost to form a soil on chalk downs or limestone hills, or on the light sandy or gravelly drifts which are spread so largely over the country. Again, elevation may fairly be taken into account: the merest tyro can readily understand the difference between a valley climate and that found on a breezy hill; and, to further realise the climatic influences which affect the place, rainfall should be taken into account. The unequal distribution of rain in Britain has recently been very fully demonstrated by Mr. Symons, in his useful compilation, "British Rainfall."

In proceeding to describe the garden named at the head of this paper, we will endeavour further to illustrate our meaning by noting the peculiar geological or other features which the neighbourhood may present, and which may influence the gardens at Bury Hill. As we approach Mansfield, we remark a boldly undulated open country, exhibiting the distinctive features of the formation called by geologists the Permian; we notice as we advance thriving plantations of Oak, which tree we always fancy is more thoroughly at home on this formation than any other—witness the trees at Welbeck, and in Lord Bagot's park; healthy Larch plantations tell us of a light, dry, and open soil, more or less silicious; and the occurrence of such land is immediately assured to us by broad tracts of unreclaimed moorland, growing Heath and Gorse, the former unmistakably indicating a sandy soil free from the presence of lime. These are but incidental features. We find the general expanse of the country under cultivation. Farms of mixed arable and pasture land occupy both the hill sides and valleys, and the character of the crops tells us that the soil has the elements of fertility. The cultivated land is without those defects so noticeable in some counties, of tall straggling hedges, and gaunt miserable hedgerow timber. The whole country is open, breezy, and cheerful, and we do not encounter any local circumstances calculated to exert an injurious effect on any garden within its scope. The smoke from the tall chimneys of the coal mines which appear in the distant landscape, can have no unfavourable influence, while proximity to the mines naturally cheapens fuel (coal is obtained at 5*s.* per ton), and places a gardener in an enviable position in that respect.

Nearing Mansfield we have an opportunity of remarking in the extensively worked stone quarry the rocky substratum of the county, and we can scarcely help envying a place that possesses good building stone, coal, a good soil, and pure water, afforded by a little river which runs partly through the town. Going from Mansfield to Bury Hill we pass a deep cutting made in a hill side, for a peculiar and very valuable sand, in great demand as casting sand in the Mansfield iron foundries. The value of an acre of land affording this sand exceeds 2000*l.*

In our remarks we have attributed special advantages as attending certain formations. Before entering on an examination of the garden, we may shortly describe the nature of the soil and subsoil existing in the immediate neighbourhood. We find, as we have already observed, at Mansfield, a substratum of rock, which probably extends throughout the locality; and further up, and forming the bulk of the hills above the town, we have sand of a particularly close and compact character, while in its bed; a subsoil of a mixed shale and clay, the upper crust of stone beds, also occurs in certain places. The surface soil is partly derived from the decay of the various substrata, and partly made up of a sandy and gravelly drift, which overspreads the land in the neighbourhood. Bury Hill enjoys an elevated position, the altitude of the place being upwards of 600 feet above the sea; the air is pure and bracing, and uncontaminated by the miasmatic exhalations of sheets of stagnant water, called lakes! which render so many of our fine old places unhealthy. The average rainfall is 25 inches.

Entering the estate from the Mansfield Road, and on our way to the gardens, we pass near the mansion, which is built of the stone of the neighbourhood, and is a substantial and handsome structure, without any extraordinary architectural pretensions, but of an extent that promises to afford everything desirable for purposes of state or domestic convenience.

The pleasure gardens which partly surround the house are not extensive, but from their elevated position a rich and interesting landscape is commanded, in itself a noble garden, and perhaps more enjoyable in this peculiar position than any intervening displays or attempts of landscape art. Although shrubs and flowers are largely distributed about the place, there is no formal flower garden. A broad and an imposing walk runs through the pleasure garden west of the house, and on each side are flower beds of various character, making the walk attractive and enjoyable. This walk runs parallel with the range of hothouses, which are partly concealed by raised beds planted with Rhododendrons and other evergreen shrubs. We must return towards the mansion to appreciate the excellent and somewhat novel arrangement of these hothouses, an arrangement which will commend itself to many gentlemen, interested, as Sir Edward Walker is, in the pursuit of horticulture. It consists in connecting the range of hothouses with the mansion by means of an ornamental verandah, and an (intermediate) conservatory. The proprietor has thus at command at all times and seasons an agreeable walk amongst his fruit and flowers, and, if so disposed, he can, with his friends, walk into the fruit-house after dinner, in evening costume, and enjoy a dessert fresh from the trees, and Mr. Speed has provided so many temptations to lovers of fruit that we did not wonder to hear that the Vineries were often visited by Sir Edward and his family.

Commencing our inspection of the range by first passing through the conservatory, which at the period of our visit was gay with Fuchsias, Liliums, and Heaths, while many fine specimen Camellias and Azaleas gave promise of a brilliant display later in the season, we enter the first house in the range, which is devoted to Vines; and here we may say that the special object of our visit to Bury Hill was to inspect the Vineries, and to note all the peculiarities of Mr. Speed's management, and our preliminary examination of the soil and circumstances natural to the locality was made to assist us in the inquiry as to the existence of any special property in it, or other advantage in the place, that enabled Mr. Speed to grow Grapes surpassing in size and general excellence all that had ever before been grown in the Midland districts. The practical deduction from an analysis of the physical circumstances of the position is, that there exists the advantage of a poor, dry, and wholesome soil, favourable for ordinary Grape culture, but affording nothing calculated to induce the extraordinary development which, in Mr. Speed's words, the several varieties he has cultivated have obtained. The range of forcing houses comprises early Vinery, Peach-house, Vinery, Fig-house, Vinery, Peach-house, Muscat Vinery, Pine stoves. We were too late to see the Grapes in the first Vinery, the dimensions of which are 50 feet by 18; but the vigorous and well-ripened wood told of health and fruitfulness, and we could readily believe that bunches of Hamburgh Grapes were cut from this house weighing 6 lb. each; this house contains nine Hamburgh and two Muscat Vines, planted five years since; the Vines completely fill the house; they are pruned on the rod and spur system. The house is heated with a hot-air flue, and has a pit filled with leaf-soil in the centre of the space within it. The border is concreted, and the soil of which it is composed is the top spit of the land of the adjoining pastures, mixed with lime, scraps, charred matters, and bone-dust. The border is raised from the surface, and is a little over 2 feet in thickness, and 16 feet wide; it is aërated by 3-inch earthen pipes, passing through and through the borders, and entering the house opposite the flue. The border is external, and the Vines are brought into the house. We observed that Mr. Speed had washed the whole of the flues and stone-work with sulphur. Passing through the early Peach-house we reach a second Vinery 50 feet by 25 feet, which had been planted 2½ years with three Lady Downes' Seedling, three Barbarossa, four Muscat of Alexandria, and one Trebbiana. These Vines are particularly vigorous, and have reached the back of the house. In cropping, the Barbarossa were restricted to four bunches each, the bunches averaging 5 lb. Mr. Speed thinks the Barbarossa one of the best winter Grapes; it was kept by him last year until the 28th April. The Muscats were allowed to bear 6 or 7 bunches, and would average 2½ to 3 lb. Lady Downes' had 8 or 9 bunches, and these were very large and handsome. This variety of Grape is valued very much at Bury Hill; we never saw Vines of the same age bearing a finer or better crop of fruit. To maintain a vigorous and unchecked development from the very moment the Vine begins its growth from an eye, until its period of rest arrives, is one of the points in Mr. Speed's management; the most vigorous and prolific Barbarossas and Lady Downes' were, we were told, struck in the month of January from eyes, and planted out in the April of the year they were planted. Many of our fruit, and even forest trees, injured when young by being cramped and retarded, never make healthy or large trees. We have had an opportunity of observing that a Barbarossa checked and injured in its early growth never afterwards grew kindly or well; it may be one reason why this variety enjoys so little favour. The border belonging to this house is not paved, the subsoil being a compact sand; the Vines are planted within the house. The next Vinery is 80 feet by 15 feet; it is planted with three Muscats, three Hamburghs, two Barbarossa, a Lady Downes', and Alicante. There is an example here, showing that it is injudicious to plant a strong-growing, robust, hardy Vine next to those of a less vigorous character; the association of a Barbarossa with a Muscat has been evidently prejudicial to the latter, while the Hamburgh and Muscat agree. *T.*

Miscellaneous.

Alpine Vegetation.—In the interesting letters from abroad, by the Dean of Chichester, which appeared in the volume of "Good Words" for 1864, are the following remarks on the various plants that particularly attracted his attention in the course of his passage over the Simplon. Our botanical readers, we think, will be gratified by their perusal:—"No one who has not walked among high mountains really knows the charm of wild flowers. There are parts of England where a few species suffice to clothe the meadows and coppices in gay colours; our own Kent, for instance, with its Primroses and Anemones, followed by its Blue-bells and Campion, and Foxgloves; but compared with the Flora of the Alps, ours is poor indeed. In the mountain valleys we have every paddock of mowing Grass bright with the purple Salvia and three-coloured Polygala, white, pink, and blue, while thick in the undergrowth are all our English meadow flowers, larger in size and brighter in hue; Orchises, Speedwells, Ranunculuses, Scabious red and purple, are far more various and beautiful than with us, glittering with tufts of feathery bloom. Then in every patch of corn we have the Larkspur, and Venus's Looking-glass, and the bright yellow Pimpernel, and not unfrequently the graceful Gladiolus, so that the spaces between the furrows often gleam with a lustre of continuous pink and blue. But all this is nothing to the Alpine pastures. Anemones red and golden and white, opening their vase-like blooms to the sun; Columbines, tufted pink, or deep purple; Monkshood, with its solemn green and its violet spikes of flowers; and then as we mount higher, the ever lovely and ever welcome Alpine Rhododendron, with its ferruginous leaf and bright rose-coloured flowers lighting up whole tracts of mountain side, fringing the edges of the terraced cliffs, and nestling even on the road-side banks for the delight of the passing traveller. But this is not all, nor near it. On these rocks, as we look up, are Saxifrages of all hues and sizes, clothing every chink with glaucous verdure; that gleam of delicate rose-coloured light, far up, is due to a colony of lovely Pinks, fixed, as you will know if you climb for them as I have done, into the rock by an obstinate tap root which you may sever but cannot extract. Near them, where all the shade seems touched with ultramarine, hundreds of minute Campanula bells are clustering amid their tiny delicate foliage. Nor can we omit mention, in passing, of the Ferns which enrich these masses of rock and these road-side mountain walls. On the Simplon, I have not observed any whose names are not familiar to the most ordinary amateur; but of these, the abundance, and the marvellous beauty have been a constant delight. The staple Fern of rocks and walls in the lower Alpine valleys is the graceful Asplenium Trichomanes; not, as with us, a minute star of stunted fronds, but clothing with its ample fringe whole masses of rock and masonry. As soon as the traveller loses this in his upward journey, all the Alpine Ferns proper succeed to it, the Polypodium, Phegopteris, Dryopteris, Calcareum, and the most elegant of them all, the Cystopteris fragilis. I need not add, for any observant traveller, that the mountain pastures, where they dip down to the bed of the torrent, stand thick with the fresh green leaves of the Oreopteris, giving out its pleasant scent as the foot brushes it. One thing somewhat surprised me, that on the Simplon I did not anywhere see the Parsley Fern (Allosorus crispus), so common in other parts of the Alps, and on the shores of our English lakes. To compensate for this disappointment, magnificent specimens of the Lonchitis or Holly-fern occurred on our way up. But let us proceed with our flowers. Higher yet, we pass from those commonly known by the general name of Alpine to those which are really and exclusively indigenous on mountain heights. First of all, the lovely Gentians, spotting the moist track of the melting snow with stars of intensest blue: not the large bell-flower so named, though that is grand in form and colour, and abounds here likewise, but the smaller and flatter, deeper in colour, and lying close to the ground; and another, even smaller again and closer still to the ground, and deeper yet in indescribable intensity of colour. These first: and then the little clustered Alpine Primula or Auricula, of the colour of the pale Damask Rose, populous on the spongy bank and yielding hillock; giving up easily to the hand its roots amply furnished with protecting earth, but, as I have known by repeated trial, most difficult of culture at home. Nay, this is more or less true of all Alpine plants; they may, after careful transport, and with due observance of their wild habits, survive, and even bloom for a year or two; but we cannot create a climate for them, and gradually, under the adverse influence of our air, they degenerate, and finally die. Among the Gentians and Primulas are usually found the moisture-loving little

Pinguicula, with its delicate lilac flower, digitalis-like, depending gracefully from its inclining stem; and the other variety, beautifully fringed, and deep violet purple in colour. Pansies, too, abound, yellow and purple; the latter generally choosing for themselves some shelving nook, and there pouring their multitudes profusely, to the exclusion of every other flower."

Sicilian Mode of Eating Strawberries.—Throughout Sicily it is the custom to eat Strawberries along with sugar and the juice of an Orange or two. The Strawberries, a small kind, come to table without their stalks, are crushed with white pounded sugar, and the juice of an Orange is squeezed over them. The result is a most fragrant and agreeable compound, much superior, in my opinion, to Strawberries and cream. Indeed, I think it is all but worth while to make a journey to Sicily to be initiated into this mode of eating Strawberries. *Bennet's Mentone, 3d Edition.*

Calendar of Operations.

(For the ensuing week.)

THE new year has set in with weather equally mild with that of the close of the last, thus affording a good opportunity for forwarding arrears, if any, of late autumn work. At this time of year, when home enjoyments occupy more than usual attention, let every gardener make it his particular business to contribute, as far as lies in his power, to the gratification and pleasure of his employers and their friends. The plant houses and their occupants will be of the first importance at this dull season; and, to be appreciated, they should be arranged in such a manner as to display themselves to the best advantage. Great care should be taken of plants now in flower, in order to preserve them in that state as long as possible; due attention should also be paid to bringing others forward, in order that a proper succession may be kept up. Let perfect order and neatness be evident in everything; for if this point be attended to, it will compensate in a great measure for the absence of a more extensive floral display. Hybrid Rhododendrons and Chinese Azalcas will now be coming in, to assist with the Camellias, early Epacrises, Indian Daphnes, and numerous other good things, in producing a rich display of flowers. A few more of the above should therefore now be put into a mild heat.

FLOWER GARDEN AND PLANT HOUSES.

Let perfect neatness prevail out as well as indoors, in order to compensate for the absence of more brilliant attractions. Remove all fallen leaves, and let the surface of the soil in borders and clumps be forked over, or made clean with the rake. The walks should be put into perfect order, and, if necessary, receive a slight sprinkling of clean fine gravel. Let drains and grids be examined and cleaned; and if in very rainy weather the water lies on any parts of the walks, let the defect be remedied by introducing a new drain, or by filling up the low places with new gravel; nothing interferes so much with the enjoyableness of any place, at this season, as damp dirty walks. If the turf is wet in any part of the pleasure ground, the winter season, during mild weather like the present, is an excellent time for remedying it, by cutting drains wherever they are required. In doing this, keep the drains at the greatest possible distance from trees, to prevent their being choked up by roots; but in parts where the proximity of trees is unavoidable, let them be filled with broken rubble to within 12 or 15 inches of the surface, in order that a passage may be secured for the water, even if roots do enter the drains. In filling the latter up with soil, let it be well rammed in, to prevent any after sinking of the surface.

CARNATIONS AND PICOTEES.—During the present mild weather keep the frames open as much as possible, and do not water unless the plants absolutely require it. Keep green-fly down by means of fumigation.

DAHLIAS.—If not already done, let all ground intended for these next year be well trenched, throwing the surface up in ridges with the view of exposing as much as possible of it to frost. Examine roots of choice sorts now and then to see whether or not they are in good condition. If rotting they might be started into growth in gentle heat.

FUCHSIAS.—Old plants of these may now be pruned in, repotted, and placed in gentle heat. When fairly started, strike cuttings from them; these under good culture will make handsome plants for flowering next July.

HOLLYHOCKS.—See that cuttings of these do not damp off, an evil to which they are liable in dull weather. Remove all decaying leaves, and give as little water as is consistent with healthy growth.

PANSIES.—Where these are grown in pots, prepare soil for them now, in order that it may be ready and in good condition when they receive their final shift next month. Keep the plants hardy, and as near the glass as possible.

PELARGONIUMS.—Continue to give air whenever the weather will admit of it; but avoid cold draughts, and keep out frost. On the other hand, be careful not to use too much fire heat.

TULIPS.—Keep these safe from heavy rains; frost, when it occurs, can then do them little harm.

FORCING GARDEN.

PINES.—During the next few weeks care should be taken to limit the application of exciting influences, or the plants will be induced to grow at a rate very disproportionate to the amount of light which they are at liberty to enjoy. The object to be aimed at in Pine-growing, is not the producing a large plant with gross exuberant foliage, but rather the production of small yet healthy plants, with short sturdy leaves, while the roots are revelling in rich compost, which they will continue to do even through the winter months, if the bottom-heat is kept at from 80° to 85°. This end is not, however, to be obtained through starving the plants by an inadequate supply of water and soil, but by affording, along with a proportionate quantity of these requisites, a free circulation of air. If this point, in connexion with a proper supply of water, be duly attended to, and if a healthy root-action be secured, the plants, though small, will be filled with highly-elaborated sap; and, as a natural consequence, will produce large, well-swelled and highly-flavoured fruit.

VINES.—Be content with moderate progress for the present; but take advantage of every fine day to allow the temperature to rise 15° or 20° higher than that at which it is kept during the night. Where the buds are not yet broken, the rods may be syringed daily with water the temperature of which is about 70°; and, after the buds break, it should be used from 10° to 15° warmer. When sharp frost is expected during the night, syringing in the afternoons should be avoided; as the water becomes congealed about the laps of the glass, sometimes breaking it, and the front gutter or spout for carrying away the water from the roof becomes choked up with ice. Too much steam from the vapour troughs has also a similar tendency. Admit air on every favourable opportunity; and proportion the moisture in the atmosphere to the amount of daylight. Be careful that the fermenting material over the roots does not get too hot—a moderate warmth, not exceeding 75° or 80° in the dung, is sufficient; but, at the same time, it should be frequently examined, that it does not fall too low during cold weather, or the check will injure the roots. Where Grapes are still hanging, remove the faded leaves, which are no longer of any service to the Vines, and prune in at once all spurs on which no fruit is hanging.

HARDY FRUIT AND KITCHEN GARDEN.

To prevent any difficulty in digging up Celery or Cardoons, when the ground is hard frozen, let a portion of each, about as much as will suffice for a couple of weeks, be always under protection, either by means of loose litter, Fern, or thatched hurdles, or some other convenient material which will exclude frost. These coverings should be put on while the ground is in an uncongealed state, as it would otherwise do harm rather than good, by preventing the sun and air from acting upon the soil in case of a change of weather. It must however be understood that the portion which is covered up is not to be left untouched till the arrival of frosty weather, but used in the regular rotation; and as the covering is taken off the part for present use, it is to be moved forward to a similar space beyond, so that a supply for the next ensuing fortnight shall always be under protection, except of course when the ground is in a frozen state. If, by means of spare frames or other contrivances, a portion of such crops as Parsley, Spinach, &c., can be protected, the plan will be found very convenient when the ground is covered with snow. Some Horse-radish, Jerusalem Artichokes, Parsnips, &c., should be got up and laid in moist soil for present use.

STATE OF THE WEATHER AT CHISWICK, NEAR LONDON, for the Week ending Jan 27, 1866, as observed at the Horticultural Gardens.

Day of Month	Day of Week	Barometer		Temperature of the Air.			Temperature of the Soil. 1 foot deep.	Wind	Rain
		Max.	Min	Max.	Min	Mean			
		in.	in.	deg.	deg.	deg.	deg.		in.
Thurs.	21	29.585	29.402	50	34	42	42	S.W.	....
Fri.	22	29.611	29.447	49	34	41½	42	S.W.	....
Sat.	23	29.611	29.522	49	36	42½	42	S.W.	....
Sun.	24	29.597	29.441	48	36	42	42	S.W.	....
Mon.	25	29.600	29.440	49	36	42½	42	S.W.	....
Tues.	26	29.606	29.041	47	32	39½	42	S.W.	....
Wed.	27	29.651	29.482	44	30	37	42	S.W.	....
Average		29.578	29.559	48	34	41	42		.71

Dec. 28—Fine: densely clouded: boisterous, with rain
— 29—Fine: very fine: slight frost at night: clear at night
— 30—Fine: very clear: cold: fine: overcast: cold
— 31—Boisterous and showery: overcast at night
Jan 1—Very clear and cold: fine: overcast: fine: slightly overcast: slight frost
— 2—Fine: densely overcast, boisterous with rain at night
— 3—Clear and fine: very fine: overcast

Mean temperature of the week, 1.1 below the average.

STATE OF THE WEATHER AT CHISWICK.

During the last 10 years, for the ensuing Week, ending Jan. 13, inclusive.

Jan.	Average Highest Temp.	Average Lowest Temp.	Mean Temp.	No. of Years on which it Rained	Greatest Quantity of Rain.	Prevailing Winds.							
						N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.
	deg.	deg.	deg.		in.								
Sunday .. 7	41.6	28.6	33.1	14	0.31 in.	5	6	1	2	1	5	4	2
Mon. .. 8	40.1	30.0	35.1	13	0.26	1	2	3	1	1	6	5	4
Tues. .. 9	40.0	29.8	34.9	14	0.70	1	1	2	1	1	5	6	4
Wed. .. 10	42.0	30.1	36.2	16	0.49	3	0	3	1	1	5	4	3
Thurs .. 11	41.9	30.8	36.4	20	0.27	1	0	5	1	1	5	4	3
Friday .. 12	42.1	30.9	36.6	16	0.37	2	1	4	1	1	5	4	3
Satur. .. 13	43.0	32.1	37.6	18	0.82	1	2	5	1	1	5	3	2

The highest temperature during the above period occurred on the 7th, 1845, 48th; 1862, and 12th, 1847—therm 54 deg., and the lowest on the 7th and 8th, 1841, and 8th 1861—therm 6 deg.

The amount of rain which fell in 1865 was 26.97 inches, or 2 inches below the average of the preceding 24 years.

MONTHLY DEPTH OF RAIN, in inches and hundredth parts of an inch, which fell at Chiswick in the years 1841 to 1865 inclusive.

	1841	1842	1843	1844	1845	1846	1847	1848	1849	1850	1851	1852	1853	1854	1855	1856	1857	1858	1859	1860	1861	1862	1863	1864	1865
January	in. 1.11	in. 1.66	in. 1.33	in. 2.35	in. 2.67	in. 1.91	in. 1.16	in. 1.73	in. 1.43	in. 1.49	in. 0.62	in. 2.11	in. 1.94	in. 0.41	in. 0.61	in. 2.21	in. 0.82	in. 1.45	in. 2.19	in. 0.57	in. 3.69	in. 1.67	in. 1.62	in. 1.70	in. 1.62
February	0.76	1.02	2.35	2.27	0.68	1.34	3.12	0.95	1.73	1.13	3.47	2.72	2.11	1.94	0.72	0.88	0.77	1.20	1.41	0.88	0.76	0.76	0.76	0.76	1.60
March	1.31	0.47	2.33	2.97	1.09	1.47	1.34	3.12	0.47	0.47	0.95	1.47	0.14	1.57	0.97	0.72	0.88	0.77	1.20	1.41	0.88	0.76	0.76	0.76	1.60
April	1.98	0.15	1.62	0.93	3.88	0.74	0.43	3.06	0.74	0.38	1.70	0.62	0.98	1.06	0.60	0.77	1.06	0.82	1.06	0.82	1.06	0.82	1.06	0.82	1.06
May	3.16	1.73	5.53	0.32	1.30	1.53	0.32	0.32	1.30	1.53	0.32	0.32	1.30	1.53	0.32	0.32	1.30	1.53	0.32	0.32	1.30	1.53	0.32	0.32	1.30
June	2.46	1.08	1.62	0.96	1.62	0.96	1.62	0.96	1.62	0.96	1.62	0.96	1.62	0.96	1.62	0.96	1.62	0.96	1.62	0.96	1.62	0.96	1.62	0.96	1.62
July	3.56	1.62	2.10	2.31	1.47	0.73	2.15	0.73	1.47	0.73	2.15	0.73	1.47	0.73	2.15	0.73	1.47	0.73	2.15	0.73	1.47	0.73	2.15	0.73	1.47
August	2.60	2.84	3.28	1.84	2.72	4.50	1.70	2.61	1.83	1.37	2.72	2.72	2.11	1.94	0.41	0.61	2.21	0.82	1.83	2.19	0.57	3.69	0.57	3.69	0.57
September	3.71	3.89	0.98	1.23	2.67	2.67	1.83	1.37	2.72	2.72	2.11	1.94	0.41	0.61	2.21	0.82	1.83	2.19	0.57	3.69	0.57	3.69	0.57	3.69	0.57
October	1.61	1.71	4.10	2.97	0.68	1.34	3.12	0.95	1.73	1.13	3.47	2.72	2.11	1.94	0.41	0.61	2.21	0.82	1.83	2.19	0.57	3.69	0.57	3.69	0.57
November	3.44	4.43	2.13	3.06	2.11	1.20	2.64	2.64	2.64	2.64	2.64	2.64	2.64	2.64	2.64	2.64	2.64	2.64	2.64	2.64	2.64	2.64	2.64	2.64	2.64
December	2.61	2.61	2.61	2.61	2.61	2.61	2.61	2.61	2.61	2.61	2.61	2.61	2.61	2.61	2.61	2.61	2.61	2.61	2.61	2.61	2.61	2.61	2.61	2.61	2.61
Total	25.82	25.71	30.48	24.82	26.90	21.00	21.21	20.65	18.84	17.52	22.26	21.21	18.85	17.55	12.50	14.07	17.45	14.49	19.89	16.47	19.16	20.24	14.83	19.57	17.39

Notices to Correspondents.

AMERICAN BLIGHT. *J. G.* The unexamined liquor of the gas-works is certainly often used with success, and is not injurious to the stems of Apple trees, if applied in winter. The bark should be well scraped, and the liquor then applied with a brush, so as to penetrate every crevice. Pear trees affected with canker may be treated in a similar way, or they may be scrubbed with soap and water and sand, or treated as mentioned below.

HYACINTHS: *H. S. M. D.* The injury has probably been caused by the heated fumes rising from the gas-pipes, aggravated by the dry heating of the room. Such injuries are by no means uncommon, and are difficult to obviate. We conclude that the water was kept in a proper condition. Hot evenings and cold days are both subjects to the healthy growth of plants, and these appear to be the conditions to which your plants were subjected.

INSECTS: *M. Z.* The insects sent, from American Apple trees, are the small common Mussel Scale or Coccus of the Apple (supposed to have been first imported from Europe to America). If very numerous they will doubtless injure the trees, if left to themselves, but not more than other trees. The best plan of destroying them is to make a suds of soft soap, lime, soot, and water, and plaster the trees well over with it towards the end of April; this will prevent the eggs from hatching, and the young from escaping. *W.*

NAMES OF FRUIT. *Perfect Mentioner.* Many thanks. Most of the Apples sent are local sorts. Those known were correctly named as under:—Ribston Pippin, Tower of Glamnis, except Orange Blenheim, which is Blenheim Pippin; and Cam'ne-Bron, which is Winter Quarrenden.—*G. H. S.* 1, Pearl Pippin; 2, Baxter's Pearmain; 3, Winter Cassane Pear.—*A. W.* 1, Vermilion; 2, Glou Morceau; 3 and 4, rotten.—*T. J.* Glou Morceau.

NAMES OF PLANTS. *W. K.* 1, apparently some Ornithogalum; 2, Reseda juncea.—*A. B.* The specimens are insufficient. 1 and 2, Polygonum angulare; 3, Lastrea dilatata.—*R. J. H.* Thyrsacanthus rutilans.

PRIMULA SINENSIS. *H. Cathcart, de Soux.* The blooms sent are remarkably fine, richly coloured, full, and densely fringed; they are evidently the produce of a capital strain of this useful winter flower.

TIPTU PALM: *G. B.* We will inquire.

WEEDS: *G. H. J.* Try the effect of repeated pouring of boiling water round the edges of the bed; but take care that the water does not spread so as to injure your Mushrooms.

THE EARLIEST and BEST OUT-DOOR GROWN PEA we have tasted this season—vide *Journal of Horticulture* of the 12th of June, 1865; it was also favourably noticed in the *Gardeners' Chronicle* of June 3, 1865.

The above Early Pea is now being sent out by ROBERT H PONTER, at 1s. 6d. per quart. Height 3 feet. The kind was gathered from in good condition as early as the 20th of May, and was sent to the Editor as above on the 28th.

None genuine except from accredited Agents.

All over two-quart packages free on Great Western Railway.

ROBERT H. PONTER, Seed Merchant, Taunton.

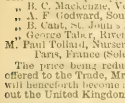
THE ESSEX RIVAL PEA.—This variety has proved to be the finest, best-flavoured, and most productive EARLY PEA in cultivation. See Testimonials in "Journal of Horticulture" of December 5, and in *Gardeners' Chronicle* of December 9. Price 1s. 6d. per quart.

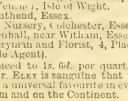
To be obtained of the proprietor, Mr. Thomas ELEY, Sible Hedingham, near Halstead, Essex. Also of the following appointed Agents :—

Messrs. Peter Lawson & Son, 23, King Street, Cheapside, London, E.C.
Mr. James Veitch, Royal Exotic Nursery, Chelsea.
Messrs. Cooper & Bolton, 152, Fleet Street, London, E.C.
" Fraser, Richardson, & Good, 82, Bishopgate Within, E.C.
" Richard Lowe & Co., High Green, Wolverhampton, Staffordshire.
" J. Roberts & Son, Denbigh.
" Fisher, Holmes, & Co., Handsworth Nursery, Sheffield, Yorkshire.
" Salmarsh & Son, Chelmsford, Essex.
" Sutton & Sons, Reading, Berkshire.
" Joseph Trimble & Sons, Penrith, Cumberland.
Mr. Christopher Quincey, Market-place, Northamptonshire.
" B. C. Mackenzie, Ventnor, Isle of Wight.
" A. F. Godward, Southend, Essex.
" E. Rumsey, Sons, & Sharp, Colchester, Essex.
" George Tabor, Rivenhall, near Witham, Essex.
M. Paul Tollard, Nurseryman and Florist, 4, Place des Trois Marics, Paris, France. (Sole Agent.)

The price being reduced to 1s. 6d. per quart, and liberal terms offered to the Trade, Mr. ELEY is sanguine that the Essex Rival Pea will henceforth become a universal favourite in every garden throughout the United Kingdom and on the Continent.

N.B.—The height of the Essex Rival is 3 feet, and being of a hardy and robust nature, may be sown in any month (weather permitting), from the 1st of November to the end of July. See Mr. ELEY's remarks on "Garden Culture," which will be forwarded with Testimonials free on application.





LAXTON'S PROLIFIC EARLY LONG-POD PEA.—We have much pleasure in introducing this valuable variety, raised by Thomas LAXTON, Esq., Stamford, to notice of the Trade; some pods (in a green state) were exhibited by us at Mark Lane in June last, average 11 and 12 Peas in a pod, and they were considered by several eminent growers of the London Seed Trade to be an excellent late variety. For a second early Pea and a Pea for early sowing in autumn, there is no Pea of a similar class in cultivation to equal it, and we feel every confidence that it will be in general cultivation in a very few years hence. The Pea has the same habit and character as DICKSON'S FAVOURITE and AUVERGNE, except that the pods are nearly double the size of these varieties. We have been favoured with the annexed Testimonials, wherein will be found full corroboration of our own opinion as to its being "a first-class Pea."

COPY OF TESTIMONIALS.

"GENTLEMEN,—In reply to your inquiries respecting Mr. LAXTON'S New Early Long-podded Pea, I beg to inform you that I have seen no variety more than once or occasion, grow so be well with Dickson's Favourite and the Auvergne. I have also personally tested, and can confidently recommend the New Pea as a first-class second early variety; the pods are finer and more uniform in size than those of Dickson's Favourite, the Auvergne, or any other variety ripening so early.—Your obedient Servant, M. MATHIZON, Gardener to the Marquis of Exeter, K.G., Burghley Park."

" Stamford, Nov. 11, 1865.

"GENTLEMEN,—I have seen the New Early Prolific Long-podded Pea, raised by Mr. LAXTON, growing side by side, under similar circumstances, with Dickson's Favourite, the Auvergne, and can consider the former quite a distinct variety, the pods being large, more of the Scimitar shape, and containing upon an average from 10 to 14 peas in a pod. Sown on March 1st, side by side Sangster's No. 1, the new Peas were fit to be gathered four days after this variety. I consider it decidedly an improvement upon all other early Peas out.—I am, Gentlemen, your obedient Servant, GEORGE ARMITT, Agent to Chaplin Farms, and one of the Committee and Exhibitor of Stamford Horticultural Society."

" Stamford, November, 1865.

"GENTLEMEN,—During the past three years I have grown Mr. LAXTON'S Seedling Peas growing under similar circumstances with about 50 other sorts, and consider the Early Prolific Long-podded Variety has the largest and most early pod of any I have grown. It is an immense cropper, and is certainly a very distinct and superior Pea in every respect to Dickson's Favourite and the Auvergne.—"I am, Gentlemen, obedient Servant, CHARLES CLARK, Superintendent Stamford Horticultural Society's Exhibitions.

"P.S.—I grow a great number of Peas, but have seen none to be compared to Mr. LAXTON'S."

In Sealed Quarts and Pints, 2s. 6d. per quart, 2s per pint.
Price to the Trade on application.

The following Seedsmen have ordered supplies of this invaluable Pea :—

Austin & McAsian, Messrs., Glasgow [Dalkeith
Ballantyne & Son, Messrs., Beck, Henderson, & Co., Messrs., Upper Thames Street, E.C.
Benary, Ernst, M., Erfurt, Prussia
Boll, John, Mr., Wigan [Lyons
Bonnefond, C. et fils, MM., Brotherton, W., Mr., Leeds
Brown, Stephen, Mr., Sudbury
Bunyard & Co., Messrs., Maidstone
Church, W., Mr., Mulbarton
Cooper & Bolton, Messrs., Fleet St.
Cuthbert, W. & Son, Messrs., Highgate
Davidson, J., Mr., Ayr
Davies, Thos. & Co., Messrs., Liverpool
Dean, W., Mr., Bradford
Dicksons & Brown, Messrs., Manchester
Dicksons & Co., Messrs., Edinburgh
Dods, W., Mr., Haddington
Drummond & Sons, Messrs., Dublin
Drummond & Sons, Messrs., Stirling
Fairbeal & Son, Messrs., Borough Market, S.E.
Fisher, Holmes, & Co., Messrs., Sheffield
Gadd & Son, Messrs., Worthing
Hamaford, W., Mr., Teignmouth
Hargreaves, J. & A., Messrs., Lancaster
Henderson, E. & Son, Messrs., St. John's Wood
Hurst & Son, Messrs., Londenhall Street, E.C.
Higgins, D. H., Mr., Clonmel
Jenkinson, M., Mr., Newcastle, Staffordshire
Ker, R., Mr., Liverpool
Kivington, G., Mr., Boston, Thames
Lee, J. & C., Messrs., Hammersmith
Mackay, J. W., Mr., Dublin
Maule & Son, Messrs., Bristol
Measham, Hy., Mr., Hook Norton
Nelson, John, Mr., Bristol
Nutting & Son, Messrs., Barbican
Parson, John, Mr., Leamington
Perpoint, B. L., Mr., Warrington
Platz & Son, Messrs., Erfurt, Prussia
Pontey, Mrs., Plymouth
Poulter, R. H., Mr., Taunton
Quincy, C., Mr., Peterborough
Reilly, G., Mr., Dunham
Reuthe, G., Mr., Kensington
Samson & Co., Messrs., Kilmarnock
Sang & Son, Messrs., Kirkcaldy
Saunderson, M., Mr., Derby
Sibbald, F., Mr., Bishop Auckland
Smale, W. B., Mr., Torquay
Spence, E. B., Mr., Darlington
Sutton & Sons, Messrs., Reading
Taylor, E., Mr., Malton
Thomson & Sons, Messrs., Glasgow
Toole & Co., Messrs., Dublin
Van Houtte, M., Ghent
Waite, Barnell & Co., Messrs., High Holborn
Williamson, G., Mr., Thetford
Wood & Ingram, Messrs., Huntingdon
Wood & Son, Messrs., Maresfield
Wood, James, Mr., Gatesborough
Wood, John, Mr., Hockliffe
Woolley, H., Mr., Moulton

JAMES CARTER & CO., Seedsmen, 237 and 238, High Holborn, W.C.

DIXON'S YORKSHIRE HERO PEA is the best Dwarf Green Wrinkled Marrow in cultivation. See Testimonials in *Gardeners' Chronicle* of November 18.

Price 2s. per quart. Price to the Trade on application.

E. P. DIXON & SON, Yorkshire Seed Establishment, 57, Queen Street, Hull.

DICKSON'S "FIRST and BEST" EARLY PEA. THE BEST EARLY PEA IN CULTIVATION.

This Pea has been tested against all the best early varieties known, and is pronounced by most of the best practical Gardeners in the kingdom to be superior to any other Early Pea for earliness, productiveness, and general good quality. Price 1s. 6d. per quart, 2s. 6d.

PRICED CATALOGUES of KITCHEN-GARDEN, FLOWER, and AGRICULTURAL SEEDS; also separate CATALOGUES of the Various Classes of Nursery Stock will be forwarded, post free, on application.

FRANCIS & ARTHUR DICKSON & SONS, The Old Established Seed Warehouse, 106, Eastgate Street, and Upton Nurseries, Chester.

To the Trade and Others.
ON OFFER AT ADVANTAGEOUS PRICES.

GENUINE NEW ONION, MANGEL, TURNIP, CARROT, CABBAGE, PARSNIP, SCARLET RUNNER BEANS, &c. See Special Priced List on application.

A vast quantity of excellent CABBAGE PLANTS still on offer at 2s. 6d. per 1000 for cash, of several of the best varieties.

FREDERICK GEE, Seed Merchant and Grower, Biggleswade, Beds.

ANDERSON'S INTERMEDIATE STOCK.—This beautiful variety of Stock is extensively used in the principal flower gardens in East Lothian for masses or ribboning purposes, and has called forth the admiration of all who have seen it grown in such perfection. It is of a fine rose colour, and breeds true with almost any colour. It should be sown for delivery, prices and particulars of which will be forwarded on application. The following are among Testimonials recently received as to the Superior Quality of their Seeds to those usually grown in this country, as well as to the very efficient manner in which their export packing is effected :—

From A. N. ELLIS, Esq., *Queenstown, County Cloyd Hope.—July 9.*

"I may mention that the case referred to was in splendid order, looking as fine after three months' sea and six weeks' land carriage as if only yesterday packed."

From Messrs. CROUCH, *Portland, Victoria.—September* 16.

"We may remark that Messrs. Sutton's shipment of seeds have given us great satisfaction, and are equal to any we have had. The Grasses, Clovers, and Lucerne are up. We find the crop will be far too thick. If the vegetable seeds turn out as well, we may say that, without exception, they are the best set of seeds ever received in this place from Europe."

From G. MARRIOTT, Esq., *Superintendent of the Government and Botanical Gardens, Auckland, New Zealand.—October* 5.

"I received some vegetable seeds, also some flower seeds from your firm some 18 months ago, and they turned out first-rate."

From Sir R. MONTGOMERY, *Lieutenant-Governor, Pretoria,*

"I am happy to tell you that the seeds you sent last year answered very well. I carried off the first prize both for vegetables and flowers, as you will see by an extract from the *Lahore Chronicle*, which I enclose."

From the Rev R. G. LAMB, *Green Point, Cape Town.—November* 7.

"Your seeds have answered right well; one pinch of such as yours is worth a handful of the stuff sold here, which generally goes to seed before coming to anything."

From Mr. CHAS. HASELDEN, *Bayer Farm, near Auckland, New Zealand.—October* 6.

"The Grass Seeds you sent me arrived in excellent condition, and already present a luxuriant appearance, with the promise of abundant feed early in the coming season."

Royal Berkshire Seed Establishment, Reading.

To the Trade.—Pampas Grass Seed.

SUTTON AND SONS having succeeded in harvesting a good plump SEED of the above, can supply it on advantageous terms. Price to the Trade on application.

SUTTON & SONS, Seed Growers, Reading.

The Agricultural Gazette.

SATURDAY, JANUARY 6, 1866.

THE past year has not wanted agricultural excitement. Looking back through the quarter of a century with which this Journal has been connected, we remember no year which has been so stirred up by circumstances—none more full of agitation, energy, and effort, whether for attainment or resistance. It has been a year of low prices in Mark Lane, and of inferior produce in our corn fields; and though generally one of good prices in the meat market, yet unusually disastrous for stock-keepers. The outcry for laying down arable land in permanent pasture which received such check in 1863, when, owing to the drought, only the plough-land of the country was productive—which, however, has since revived under the stimulating contrast of the prices of bread and meat respectively—has received another check in 1865, when small-pox in sheep, typhus in pigs, and rinderpest among our herds, have combined to show the excessive risks of animal life under the artificial conditions of intensive agriculture.

The lessons of the coming year we can hardly doubt will be severer still. Those of the past have been very gradually learned; but we hope that everybody now, unless indeed it be the High Sheriff of BUCKINGHAMSHIRE,* knows well by heart that this dreadful poison, which is being spread throughout the country by unrestricted cattle traffic, and ruining hundreds of our farmers, must be rigidly confined within its present limits, or it will ruin all. It is now, we hope, well known that cattle tainted with the rinderpest are as veritable and dangerous a plague as dogs with rabies—"biting," indeed, not only any of their kind with which they come in contact, but any that touches anything that *they* have touched. So virulently fatal a poison—one so active and so easily conveyed—nowhere exists. No one believed this in the outset of the plague, unless, indeed, it were Professor GAMGEE, who had for years been fighting such an unsuccessful fight with *vis inertiæ* on these subjects, that when he proved at length to have been correct, the habit of incredulity was too strong for him. Had the evil been realised at first, it could and would have been destroyed at once. But not having been believed, any central authority, order, or instruction directed against it was necessarily powerless. Even now we learn that cattle destroyed by order are half buried, and dogs have carried the diseased flesh from village to village, and neighbours have not had the public spirit to inform against offenders; but with public opinion then laughing it to scorn, how would the exercise of unusual authority have been possible?

No one, however, is laughing at it now; and the sooner that Government interferes with more energetic authority, with severer penalties, and over the whole area of the country, the better. The losses already reported under a system which acts as a premium on secrecy, have now risen from a few hundreds to many thousands weekly. In a single county the deaths had risen to 250 daily during the last week of the year. The Quarter Sessions of the different counties have during the past week generally adopted or taken measures for exercising the powers of restriction with which the recent Order invested them. And it behoves the Government now to interfere for the completion of the system of supervision for the whole country, by overruling the few instances in which the powers conferred may have been refused.

It appears from Mr. WADDINGTON's reply on Wednesday to the Lincolnshire deputation, that a scheme for mutual insurance to be offered to stock-owners has been drawn up by Sir J. KAY-SHUTTLEWORTH, and is at least under consideration. We may, however, rest assured that no scheme with anything like a national guarantee against natural risks, whether unusual or not, will ever be sanctioned by Parliament. But it is possible that some method of dealing with the difficulty may be adopted by which a certain amount of remuneration shall be offered for that self-sacrifice which obedience to arbitrary law involves. Be this as it may, it is plain that not only all parties within the agricultural world, but the whole country, is aroused. However diverse may be the interests of the various passengers and crew—whatever contests may arise among them in fair weather—it only needs the imminence of so great a common danger to make us feel that we all row in one boat after all. And, not only as landlord, tenant, and labourer, but as regards agriculture, manufactures, and commerce, as we believe that share and share alike of so great a disaster to be inevitable, so we have no doubt that share and share alike will be cheerfully accepted.

The cattle plague has for the present swallowed up all the other agricultural interests of the year, but these have not been unimportant. The occurrence and disappearance, under rigid quarantine, of the small-pox among sheep in Sussex, and the unusual fatality among pigs, have important relations to the more serious plague among our cattle. We have had the relations of landlord and tenant discussed, both before the Royal Commission on the Law of Hypothec in Scotland, and before the Societies and Clubs all over the island, which have earnestly protested against the excessive preservation of game.—The discussions before the National Agricultural Society and the Central Farmers' Club, and the evidence before another Royal Commission, have ventilated the question of the general and professional education of the farmer.—Social Science Congresses, Metropolitan Societies, and Farmers' Clubs, have had the condition of the labourer, his cottage, his relation to the master, the gang system, night schools, village hospitals, and the prize system, under consideration.—The General Election has opened up a new field for public-spirited effort to the tenant farmer—one of whom, the first we doubt not of a number, will sit in Parliament the representative we believe, not only of practical agriculture, but of wise and moderate views on all the existing relations which the tenant-farmer sustains.—Of the details of actual farm practice many could be named as having excited great interest in agricultural circles during the past year. The utilisation of

* See another column.

town sewage has made a great step forwards by the power at length conferred on the Metropolis Sewage Company.—The corresponding subjects of Land Drainage, Irrigation, and the Water Supply have been discussed.—Dr. VOELCKER has made known the existence of new sources of Potash Salts for manure in Germany; and of new sources of Phosphate of Lime in North Wales.—And on the general question of the condition of business on the farm and in the market, Mr. LAMPORT before the Wigton Farmers' Club read what we take leave to describe as the most important agricultural Paper of the year (see page 878, 1865). It has more than once astonished us that so little attention has hitherto been directed to the extremely able and suggestive reasonings which were then laid before the agricultural public.

Even from this very imperfect list—from which we have omitted, by the way, all mention of the agitation for the repeal of the Malt Tax, in which so large a section of the agricultural body take so deep an interest,—it will appear how many topics of great importance have engaged our attention in 1865. As already said, they have for the present all been swallowed up by the great calamity which has befallen our stock owners; and on this, almost alone, for many months of 1866, no doubt the attention of agriculturists will be almost exclusively directed.

—— IF we were implement makers, we should ask real friends to point out defects, and here is a case in point: On showing a cultivator at work, a friend spoke of its good points. "Thank you," said we, "please point out the defects." The cultivator soon got into foul ground, the tines cleared themselves admirably, except the centre tine; well, the main or keel bar was straight, the remedy was to bend it upwards, and it *was* a remedy. In all cultivators it is most desirable to have them as low as possible, and if the tines are properly arranged they will not choke in foul ground. Experience founded on ample deduction has proved, taking the low-set FINLAYSON as a type (having two tines on the fore cross bar, one in the centre with keel bar, and two tines on hind cross-bar), that with five tines covering 36 inches, with tine paths of 7½ inches apart, two stays to strengthen tine bars, and some simple leverage, you have a cultivator equal to two horses on light soils, and for three horses on heavier soils; and with such a space for riddance there is no choking. And if your tines are diamond-shaped, you have the minimum of resistance to draught and the maximum of disintegration and maximum of resistance to longitudinal and lateral strains. Two wheels in front allow the pilot wheel to be nearer the front bar, and the length dedicated in the older types to keeping this wheel clear of the leading tine, is better devoted to increasing the space formerly allowed between fore and hinder tine bar for the reception of the centre tine, and for raising and disposing of roots, &c. We know from experience that such a cultivator would beat COLEMAN'S, RANSOME'S, or BARRETT & EXALL'S long-legged things on sloping ground, and would face them on level ground. Did you ever see a prize offered for the best plough or cultivator for sloping ground? What a commotion it would make—"For the best plough for working across a slope, 5*l.*!" and yet thousands of acres are habitually ploughed across the slope.

—— CINDERS A STOMACHIC FOR PIGS. MECHI was laughed at for saying so some years ago, but he was quite right. In many districts all the labourers' wives are careful to give a few cinders every two or three days to their pigs. *B. M. F.*

THE RINDERPEST IN THE CHEESE AND DAIRY DISTRICTS.

I HOPE you will permit me to address the landowners of Cheshire and Shropshire through your columns on a matter which I think you and they will deem of sufficient importance to sanction the favour.

A somewhat intimate acquaintance with the condition and management of landed property in these counties has led me to conclusions bearing on the cattle plague, which I am desirous of expressing, because I believe they may possibly have a beneficial influence, not, perhaps, in assuaging the present malady, but in preparing for any similar visitation, and in mitigating the evils of a disease which is of very frequent recurrence in the cheese-making and dairying districts—pleuro-pneumonia.

It is acknowledged on all hands that the present plague is contagious and infectious; not endemic, but epidemic in its character; that, in fact, though diseased animals may infect the air, the air, without the presence of diseased animals to infect it, could not, like the malaria of Egypt and Italy, originate disease. Isolation is, therefore, believed on all hands to be a sure means by which the scourge can be mastered, if all communication between the diseased and the healthy can be stopped. At present the practice in Cheshire and the surrounding counties is to give the stock the range of the fields at all times of the year. It matters not what may be the state of the atmosphere, or the condition of a neighbour's herd, or how near that herd may be, the fields are the refuge of whatever animals the farmer possesses. In large farms, if the animals are confined to particular fields in the centre, isolation may be effected, but the opportunities of doing this are very rare. Isolation, to be effected at all, as a rule, must be accomplished at the homestead. And where in Cheshire and Shropshire are the homesteads in which can be collected with safety and comfort the stock of a well-provided farm?

In nearly all instances the only buildings in which stock can be housed are the cow shippons, which are low, close, and cramped, and it is the practice to collect the milking cows at certain periods in these buildings, where they are crowded in a stifling atmosphere until the time comes for turning them out again. This arrangement necessarily predisposes the cows to infection, as it is not an unusual thing for them to be at one period of the day—when in the shippon—in a temperature of from 50° to 60°; and at another—when in the fields—below freezing point. In fact, I have myself on more than one occasion stood in a shippon in which the only ventilation has been a direct draught across the building, when the temperature at the head of the cow has been 60°, and that at her tail verging upon 30°, owing to the extreme cold which the draught has taken through the building.

There are few resident agriculturists who will deny that this state of things exists, and those who have reflected upon it will admit that such accommodation does not allow of the housing of stock for any length of time with security of health. If this be admitted, where is the capability of isolation at the homestead? I do not know of 20 homesteads in all the north-western cheese-making district where the proper accommodation of the whole stock of a farm exists. In some cases the shippons may be better than in others—there may be less direct draught, and the cows may be less crowded—but in one and all, such has been the effect of cramming hay into the lofts above the cows in destroying proper ventilation, that nothing short of clearing away the loft and the hay, and giving free vent to the ridge of the building, will render them healthy under all changes of the weather. And this alteration would only improve the character of these particular buildings, and the necessary isolation could not be carried out by the use of them only. They are not now capacious enough for the cows in profit, if proper room be given to each; what is to be done with the store stock? Where are the foldyards? Ought there not to be at the homestead of every stock farmer some yards, with shedding, where neat stock of all ages may have the benefit of litter and the comfort of shelter? In 19 out of 20 farms in Cheshire and Shropshire there are no enclosed yards, and the tenant is consequently precluded from bringing home his store stock to rest under his eye, and receive the care and attention which Lord Spencer so rightly declared was more likely to prevent the disease than all the medicine in the world to cure it. The young cattle must either remain in the fields, or be crammed into buildings already overcrowded, the consequences of which would be worse than leaving them in the fields. In saying this, moreover, I exclude the injury done to the pastures themselves, which are so injured by being trodden into mire in the winter that they seldom recover the effect before winter comes again, which affords additional reason for homestead accommodation.

These observations bring me to another consideration of importance. If it is desirable to afford facilities at the homestead for collecting and protecting the whole stock of the farm, are there not other reasons than the existence of a special disease, recognisable by a dairy and cheese-making farmer, which would render comfort and shelter highly profitable?

Fold-yards and covering are valuable not only because warmth saves food and makes flesh and fat cheaply, but because it enables the farmer to economise his straw, both as fodder and litter, and to preserve his manure after it is made. Thus we have in the application of shelter, 1st, the better health of stock under ordinary circumstances; 2d, a better means of isolating and tending them under extraordinary circumstances; 3d, the saving of straw where straw is scanty; and, 4th, the preservation of manure where, owing to the little straw grown, farm-yard manure is scanty too. There is a difference of opinion whether stock are healthier wholly under cover, or in fold yards with sheds to run under in foul weather, but I believe the opinion is unanimous that one or other is far preferable to no covering at all, and the fact that all stock require less food with shelter than without it goes far to support the conclusion.

As all these advantages are gained by covered yards, they commend themselves to landowners in Cheshire and Shropshire, who would indeed do well to consider whether they might not profitably apply the spaces which generally exist in front of the farm buildings (as receptacles of dung thrown out of the shippons, and for all kinds of wasteful uses) as fold-yards, with covering over the whole or portions of them.

If there exists in England any district in which shelter and comfort at the homestead is specially needed, it is in those counties to which my remarks have been particularly applied; and the very care with which past generations have housed their hay showed that they considered shelter profitable in that particular, though they were so short-sighted as to sacrifice the health and comfort of their stock to attain it. *J. Bailey Denton.*

THE CATTLE PLAGUE.

1. The following returns were issued yesterday:—

These returns do not profess to give the total number of cases which have occurred in Great Britain, but only those which have been ascertained from the official information received at the office from inspectors, whether appointed by the Clerk of the Council, or by the local authorities. The divisions of England are those of the census. Column 1 only records the cases reported as having commenced during the weeks indicated by the headings, "back" cases being added to column 2.

Cases reported to the Privy Council Office as having occurred in the following Districts of England and Scotland, from the commencement of the Disease.

Districts.	1 Number Attacked. Week ending October 14.	Week ending October 21.	Week ending October 28.	Week ending November 4.	Week ending November 11.	Week ending November 18.	Week ending November 25.	Week ending December 2.	Week ending December 9.	Week ending December 16.	Week ending December 23.	Week ending December 30.	2 Total Reported Cases from Commencement of Disease. Attacked.	Killed.	Died.	Recovered.	Remaining.
1. Metropolitan Police District	1												1				
2. Eastern Counties	5	3	1	1									10	10			
3. South Midland Counties	1	1											2	2			
4. Eastern Counties	2	1											3	3			
5. South Western Counties	1	1											2	2			
6. West Midland Counties	1	1											2	2			
7. North Midland Counties	1	1											2	2			
8. Yorkshire	1	1											2	2			
9. Northern Counties	1	1											2	2			
10. Monmouthshire and Wales	1	1											2	2			
11. Scotland	1	1											2	2			
12.	15	11	1	1									28	28			

2. INDEMNITY FOR LOSSES. It is said that when the disease visited this country 100 years ago, the Government accompanied the order to slaughter with a promise to pay, but whether the full value or only a part we do not know. It seems indeed a plausible argument that what is done for the public benefit the public purse should pay. Let us look into this question, however, a little closer. No doubt the relief suggested would in some instances be true charity, although it might establish a dangerous precedent, but in other instances it would reward those who were most culpable. How many instances are there of dealers and others buying animals at fairs and in tainted districts, and thus bringing the disease into places where it had never appeared before? How often have we read of animals purchased in Islington Market when the disease was well known to exist, and carrying with them the fatal infection into districts previously healthy. Are such persons to be rewarded for their carelessness or folly? It would be indeed most difficult to draw the line, even if compensation were to be allowed. If there are instances of sound animals being ordered by inspectors to be slaughtered, on the same principle that a house is pulled down when close to a fire to prevent that fire extending,

there then would be much reason and justice in the claim. But we doubt whether any instances of this kind can be adduced, although no doubt there are a great number of cases of beasts half fat, or even milch cows in good condition, being sold for the purpose of slaughter because the disease has appeared on the farm they are sent from. In such cases a claim for compensation cannot be made, inasmuch as the owners receive a good portion, probably two-thirds of the value of the stock, and voluntarily accept the loss in preference to taking the risk of losing the whole. Again, we find from the latest returns that out of 55,386 animals attacked with the plague, 29,700 have died and 12,380 have been killed. Now, supposing compensation were demanded for the latter, at what value could they be assessed? Not surely at their previous value in a sound state, but that only which they would fairly realise if there were no restrictions to forbid the sale of plague-stricken animals, and this would be the salvage price of the carcase alone. We find from the Table referred to, that about 12 per cent. of the number attacked have recovered; these evidently embraced the mildest and most favourable cases, and we cannot suppose if there had been no power to kill, that of the 12,380 slaughtered, 5 per cent. of this number would have recovered—probably not more than 1 per cent., and yet it is on these 600 or 120 only, as the case might be, that compensation could reasonably be demanded. Now, we feel sure that not 1 per cent. of the number killed by inspectors' order have been destroyed without the willing consent of the owners, We hazard another assertion equally safe—that not 1 per cent. of the whole number killed have been refused treatment by the inspectors when the owners wished it to be tried. How then is there any just claim on the public purse for compensation for animals that have died or have been killed? We are inclined to think, however, that the London cowkeepers at least have a moral although no legal claim on the Corporation of London (the owners of Islington Market) for some portion of compensation for their heavy losses, and that this wealthy body, instead of withdrawing their 1000*l.* because the public did not back their subscription, should have increased it to some 20,000*l.* or 50,000*l.* for such a laudable purpose, inasmuch as it was Islington Market that spread the poison to the town dairies and even to the country, and it was the unwillingness to interfere with this market that has in a great measure deterred the Government from adopting more uniform and more stringent measures throughout the country. If the cost of so many public corporation dinners were appropriated to the purpose, the contribution we have suggested would soon be made up. Although our arguments are opposed to the claim for general compensation which has been set up, yet they tend to support with great force the fair demand that might be made for the salvage value of all cattle that were either killed or had died from the disease, and which might be estimated at from 1*l.* to 2*l.* 10*s.* each. In all cases where these animals were, for the real or supposed good of the country, buried with their skins, the owners, we consider, have the strongest moral claim on the Government for the value of the carcases; and although the same may be small as compared with the previous value of the animals, yet where the losses have been many, the claim would be substantial, and if granted very seasonable. With regard to the Government Inspectors, who no doubt were at first appointed somewhat inconsiderately, and invested with too great power and responsibility, and are now snubbed by the withdrawing of this power, just as they began to know how to use it with discretion, we agree with Dr. Crisp, who considers that it would have been better to have appointed one man of superior ability and acquirements for each county, whose duty it would have been to overlook the other Inspectors, and having thoroughly informed himself of the characteristics of the disease, have ensured uniformity of action by keeping up frequent communication with head-quarters, to advise as to treatment and disinfection, and to ensure that the Inspectors did not by inadvertence communicate the disease to sound animals. At the same time, hastily appointed as they were, they have done their best, and preserved many districts from the disease, and have not deserved those shameful and unwarrantable attacks that have been made on them, even by respectable men. *W. C. S.*

3. ON PREVENTION *(abridged)*.—What are the facts? First, that the disease is unquestionably the true rinderpest, or steppe-murrain of Russia. It is recognisable by marks and qualities scarcely less plain than those by which we recognise small-pox to be small-pox.

Secondly, the disease is propagated from animal to animal by contagion, direct and indirect. In vulgar phrase, it is "catching," and it is produced in no other way. It is not indigenous here; it never springs up spontaneously in this country. The contagion is probably more swift, subtle, sure, and far-reaching than that of any other known disorder, whether of men or of brutes. The deadly poison is capable of being carried to a considerable distance by the air, and to any distance by things, animate or inanimate, to which it may cling, and it clings readily.

Thirdly, the disease is a very fatal one. Its death-rate is appalling—90 in 100, they say; and it is absolutely incurable. With or without what is called treatment, a small number of recoveries happen; but there are no cures. I do not mean that medical care is useless or inexpedient. There are measures relating to food, temperature, cleanliness, support, even medicine (measures that are defensive against all weakening influences), which sometimes may turn the hesitating scale, and give the victory to the restorative force of nature. But there is no specific plan or antidote that can stop or chase away the disease, any more than there is for the cure or the cutting short of small-pox. This is alike true of all the specific fevers. They run a definite course.

Fourthly, the very same disease has afflicted these realms before; probably often, certainly 120 years ago; when, notwithstanding strenuous but ill-sustained struggles made against it, it remained for no less than 12 years a curse and drain upon the country. Since then till now it has not revisited us.

This fact, or these facts, are of weighty import. They show the tenacity of the disorder in spite of great pains taken to dislodge and expel it. They show also that it is not ineradicable—that our land may be freed from its presence. They confirm, moreover, if any confirmation were needed, the belief that the plague is of foreign origin, and has been imported into England now as it was in 1745.

If all this be so, surely it is time to turn our thoughts from the sick and the dying to the animals that are yet left among us alive, in health, and uninfected—to abandon the vain search after impossible specific remedies, and to adopt the true and sole nostrum, which is prevention. This is still within the scope of our power. It is daily becoming more difficult.

The one object of our warfare should be the material exciting cause of the pestilence. That cause removed, the all-important problem is solved at once: *tollitur effectus.*

Its full solution involves three indispensable conditions:—

1. Our living and healthy cattle must be protected against all possible access of the infecting matter. They must be kept away from the poison, and the poison must be kept away from them.

2. The actual poison itself, wherever it may have been deposited or left behind by sick or dead animals, must, with the most scrupulous care, be destroyed and expunged.

3. The reintroduction of the specific poison into this country from the Continent must be prevented.

The first of these three conditions, the preservation of the remaining cattle sound, implies absolute isolation for a time. It can never be insured so long as cattle, whether fat or lean, are permitted to travel or to be carried from place to place, or to be collected in fairs or markets. The bringing these beasts together from divers parts of the kingdom to a central point, whence they are presently to be scattered again to divers other parts, would be and has been a certain and prolific way of perpetuating and spreading the malady; and this is true of other maladies also, such as the foot-and-mouth disease.

For cattle markets, the substitution must necessarily be dead-meat markets. London and other towns are partly supplied in this manner already. The ubiquity of railroads in England renders the extension of this plan much more feasible than it could have been in 1745. No doubt much loss and suffering and serious inconvenience will at first be produced by so great a change of system; but without it the ultimate loss and suffering would be far more serious and severe. The great temporary evil will be more than compensated by greater and permanent benefits.

Methods of purification and disinfection are well known, and of sufficiently easy application.

Whatever sacrifices the new system may demand will be made in vain, unless effectual means are devised, and vigilantly and rigorously used, for barring out all further entrance of the exotic mischief into this country. Railroads abroad are rapidly multiplying, and the passage between Russia—the home of the plague—and England is daily becoming shorter and more direct. Our insular position should make it easier for us than for our Continental neighbours to guard against the influx of the evil, yet among them the transit of the disease across inland borders has been a rule, then successfully averted by quarantine regulations watchfully enforced.

This third and essential condition of continued safety would alone require that the substitution of meat markets for cattle markets should be made permanent.

And other equal safeguards would follow that wholesome change. It would be an unspeakable benefit and blessing to the inhabitants of this great city if the damage and dangers to both man and beast from cattle driving through our crowded streets, if the pollutions of offensive and noxious dung, of hides and heads, and the sights and smells that have no business there, if the filth and abominations of animal lairs and slaughter-houses could at once and for ever be abolished from among us.

It is beyond my competence or purpose to describe in detail how the several ends suggested may be attained; but there can be no rational doubt that in this wealthy, energetic, practical country, if their importance be rightly apprehended, and their difficulties earnestly grappled with, they are all as possible as they are indisputably desirable. *Thomas Watson, M.D., Haverilla Street, Cavendish Square, in the Times.*

4. LOCAL REPORTS.—*Bradford.*—It has lost much of its virulence in this district. Mr. Collins reports that of 64 cows which had been under his treatment, 26 have recovered. Mr. Carter reports that since the commencement 73 cows have been attacked, of which 51 have died, 19 recovered, and three are still affected.

Buckingham.—The Duke of Buckingham: Since the disease has appeared in the country I have never held any other view than that the strictest quarantine regulations were necessary to arrest it. That view is confirmed by all that has passed, and the Government even seems to have adopted it. I believe it was necessary in the first instance to stop the transit of cattle entirely, even from one part of a farm to another, where a public road intervenes.—Mr. N. G. Lambert (High Sheriff) thought such a motion should not be carried unless some extreme necessity could be shown,—unless it were proved that the disease had committed great ravages and was on the increase. But so far as the south of the county was concerned, they had little or nothing of it; and from what he had heard at Aylesbury, he believed in the northern part of the county it was on the decrease. Gentlemen present might not be aware of the actual proportion of cattle attacked. There were some 7½ million cattle in the country. The number attacked was about 60,000, or less than 1 per cent.; those which had died were 35,000, or 1½ per cent. About 13,000 had been slaughtered, which would increase the percentage slightly. The Government had taken the prudent course they ought to have done, and had not been forced to extreme measures by writers in the press, who were urging them on.

Cheshire.—The number of cases reported to the 1st inst. comprises:—Died, 4541; killed, 216; under treatment, 1703; recovered, 334; total, 6794. Since the 25th ult. fresh cases have appeared in 30 additional townships, making a total of 164 places in which the disease has manifested itself. The number attacked during the past week has been 2155, or 307 per diem; and those dead and killed, 1721, or 245 per diem.

Cornwall.—It continues to make sad havoc. Since last week's report the loss in Truro and neighbourhood has reached 330.

Devonshire, Jan. 2.—At the County Quarter Sessions Mr. Watts called attention to the alarming fact, that in the district of Ideford diseased cattle had been so negligently buried that dogs had eaten the carcases and been found with diseased meat in their mouths running about the public streets. In the same district, where the disease was raging to a fearful extent, cattle were removed from place to place without the penalties being enforced; this was owing to the illness of the only policeman stationed in the district.—Earl Fortescue said he thought it desirable to state in that court his firm conviction that nothing could supersede the necessity of her Majesty's subjects lending their aid, whether officially or unofficially, to the laws enacted for the protection and benefit of the community. He thought it highly discreditable to the district in question that the offenders had not been informed against merely because of the illness of the constable, and that other persons did not like to take upon themselves the odium of informing, although in the interests of the public. This case at Ideford had vindicated the prediction of those who opposed the introduction of the police, on the ground that the system would tend to sap and undermine the sense of individual responsibility in her Majesty's subjects by encouraging the delegation of every public duty to paid officials.—Mr. T. D. Acland, M.P., said, with regard to inspectors, that the farmers had a perfect horror of them, as they spread the disease in their various visits. He thought others than the officials should enforce the law; unless they did, but little would be done in staying the plague.

Gloucestershire, Jan. 2.—A resolution that the Court of Quarter Sessions desired to urge upon her Majesty's Government, by petition and resolution, the necessity of some positive order being issued by the Government which should have the effect of entirely stopping the transit of cattle along any highway or turnpike road in the country, and also the sale or exposure of any beast in any fair or market throughout the country except under stringent restrictions, was carried by a large majority.

Hants, Jan. 1.—The Marquis of Winchester said that up to the 23d of December the whole number of cattle attacked was 245, out of which 59 had been killed, 158 died, and 21 had recovered or still remained under treatment. From this he thought that they had no great reason to be alarmed. He had been in communication with Sir James Ferguson, of Ayrshire. The justices for the county of Ayr had put into force the latest consolidated Order, had for two months past stopped all fairs and markets, had now extended their restrictions until the 1st of March next, and had forbidden the importation of any sheep or cattle into the county, fining in the full penalty any offender reported to them. The result had been that the plague, which appeared in five or six different parts of the county, was at first isolated, and was now entirely extinct within the county, although raging in every adjoining county.—Sir John Simeon, M.P., said that in the Isle of Wight they had been severely visited by the disease, but they contrived by judicious supervision and the exercise of proper inspection at the ports of disembarcation to keep themselves clear from a fresh importation of diseased stock, and at this moment he was happy to say that the island did not contain a single case of disease or infection. When they had a portion of a county like the Isle of Wight perfectly free from infection, he thought it a monstrous hardship to say that the farmers of the island should not be free to transfer their stock from a portion of their own farm to another portion

in carrying on that ordinary cattle traffic so essential to the welfare of the agriculturist.

Herefordshire.—There is no material improvement in the infected district in this county.

Huntingdonshire, Jan. 1.—At the Huntingdonshire General Quarter Sessions, the following resolutions were passed :—"That this Court, by virtue of an increase of the powers given to them by an Order of her Majesty's Most Hon. Privy Council, dated the 16th day of December, 1865, do hereby declare and order accordingly that all fairs and markets for the sale of cattle, sheep, and pigs be stopped, and the removal of any stock over or along any highway from the premises of the owner, or from any place whatever where they must previously have been for 21 days, be only sanctioned under a certificate from a magistrate and inspector specially appointed for that purpose ; and that the carriage of any manure, hay, or straw, or infected matter to or removal from any such premises or place aforesaid without such sanction as aforesaid be prohibited." "That in the opinion of this Court the penalty, not exceeding 20*l.*, should be on each animal, instead of (as under existing Orders) on each offence."

Isle of Ely.—About 70 deaths have now been recorded at Sutton. Mr. J. Warth has lost several. Mr. S. Parkinson has only four alive out of 21 ; Mr. R. Shepperson 12 alive out of 40 ; Mr. J. Tibbett, only 19 alive out of about 70. In Chatteris the disease has somewhat abated ; 15 animals have died during the past week, and eight are under treatment. At Willingham there have been 450 deaths, and there are only about 200 cattle now remaining in the parish.

Kent.—The plague has considerably abated, and in parts of East Kent has apparently died out altogether. Up to December 20, 340 beasts had been attacked, of which only 32 had recovered, in the Wingham district. It is, however, only fair to state that, of the remaining 308, 71 had been slaughtered and pronounced fit for food. In the Isle of Thanet the plague is still virulent. The Messrs. Champion, of Sarre, have lost 49 beasts out of a large herd, in which at the present time only 11 remain healthy.

Lancashire (North), Dec. 30.—A special meeting of the Royal North Lancashire Agricultural Society was held at Preston, and the following memorial to Sir George Grey was adopted :—"That, considering the losses already experienced, &c., this meeting earnestly prays the attention of Her Majesty's Government to the establishment of a system of national insurance which, well considered, would inspire public confidence and afford adequate protection."

Lincolnshire.—Messrs. Carrington and Sandall, of Thurlby Fen, have 18 dead out of 21. The disease has also appeared in two other cases at Hacconby and Deeping Fen. At Coabit 27 deaths were reported last week. The disease still spreads in the neighbourhood of Boston. Mr. W. Bartholomew has lost a herd of 25 at Blankney. In the Spilsby district the disease is continuing its ravages. At Croft, Mrs. Heanley has lost no fewer than 26 head. In the neighbourhood of Louth the disease is extending.

Nottingham.—Mr. Paget, late M.P. for Nottingham, said he wished to call attention to the very great importance of the subject, not only to farmers, but to the general public. The Government had put power into their hands, and they ought to exercise it. It not only concerned the destruction of cattle, for he could conceive no greater blow than this would be to corn farming. He believed the large produce of our country as compared with other countries was owing not so much to the superiority of the land or its cultivation as to the quality and quantity of manure for strong lands.—It was determined to send a circular to the following effect to the different Petty Sessional courts in the county, with respect to licences for removing cattle :—"The magistrates are requested not to give any licence for the removal of fat cattle for slaughter without first satisfying themselves by sufficient evidence of the sanitary state of the district from which it is intended to remove such cattle. That the licence shall specify the cattle to be removed, and shall be placed in the hands of a policeman, in whose custody the cattle shall remain from the time of their leaving the farm to their being removed to the final destination. That 1*s.* shall be charged for such certificate, and 2*s.* 6*d.* for the services of the policeman."

Oxfordshire, Jan. 2.—At the Quarter Sessions for this county a resolution for putting in force the last Order in Council, and preventing the removal of cattle from and to any place in the county for one month from the 3d inst. was carried.

Shropshire (North), Dec. 29.—An important meeting of landowners and farmers, with the Lord Lieutenant (Lord Hill) in the chair, was held at Whitchurch, and resolutions were adopted—"That petitions be presented to the First Lord of the Treasury, the Chancellor of the Exchequer, and both Houses of Parliament, praying that the Government take into their immediate consideration the urgent and pressing claims of stock owners whose herds have been destroyed by the plague for such alleviation of their difficulties as Parliament in its wisdom may think fit, and calling the attention of Parliament to the precedent of 1745-6." And, "That the said petitioners also pray that the several cattle plague associations that have been established be sanctioned and assisted by the Government in discharging such claims as may be made upon them by the insured, and which the funds of the said associations may not extend to, thereby giving them a national character."

South Lincolnshire, Jan. 3.—A deputation from the neighbourhood of Holbeach and Long Sutton had an interview yesterday with Mr. Waddington at the Home Office, for the purpose of presenting two petitions to her Majesty, praying for the immediate assembling of Parliament and for the consideration of a scheme of national insurance of cattle by Government. The petitions were signed by about 1500 graziers, farmers, and others in the locality.—Mr. Barker referred to the inability of the local mutual cattle insurance societies to deal with a subject of such magnitude, and stated that it had become now a question of national importance. The deaths from the disease formed but a small proportion to the actual loss, for the graziers, in their terror and alarm, in order to make the first loss the least, were sending store beasts to be slaughtered which were utterly unripe and unfit to be killed. He earnestly craved, on behalf of the locality he represented, the advice and assistance of the Government in the shape of insurance, as the only means to give confidence to the community and prevent the frightful destruction of cattle now daily taking place.—The Sub-Dean of Lincoln proceeded to sketch a plan whereby funds might be placed at the disposal of Government by the agriculturists themselves sufficient in amount to meet the present emergency and to provide for the future. Government, who were now collecting statistical returns of cattle in the land, might impose a registration fee of 1*s.* on every beast. Reckoning the amount at 7,000,000 head (the number estimated), this would yield 350,000*l.* A national insurance might then be established under Goverment sanction, and at a rate estimated by the Government actuary, at every market town in the kingdom through one of these three agencies—1, the Post-offices, after the manner of the savings-banks ; 2, the Collectors of Inland Revenue ; 3, the Boards of Guardians. The preliminary expense being defrayed, there would still be a large disposable surplus which would be available as a guarantee fund, or, if necessary, to meet the deficiency arising from insurances paid up.—Mr. John Clark could assure the hon. gentleman that the calamity could not be exaggerated. He had himself witnessed Islington Market yesterday, and had, to his great sorrow, seen young cattle sold for meat which ought to have been fatted two years hence. That he had personally inspected Newgate and Leadenhall Markets that morning, and had seen sides of beef offered for sale at 4*d.* per lb. He was informed by the salesmen that there was never known such a glut before of that description of unripe meat. Yesterday at Islington the prime fat beasts only realised 8*s.* per stone of 14 lb., and he saw small inferior lean beasts sold at 5*l.* and 6*l.* each. The future supply of animal food for the people was fearfully jeopardised, and if confidence were not immediately restored by a Government measure of insurance the yards would be shortly cleared of cattle. —Mr. Ward said, if Government would sanction national insurance, that would restore confidence, and the agriculturists themselves could find ample funds.—Mr. Waddington said that a scheme of cattle insurance had been submitted by Sir J. Kay-Shuttleworth to the Chancellor of the Exchequer, and had no doubt been carefully considered. The petitioners were quite right that the only course to urge was the immediate assembling of Parliament ; for, as they were aware, until Parliament met, no one had authority to deal with the public funds.—Mr. Ayliff wished to state that immediate action was the vital import of the matter. If Parliament met on the 17th of February, and then took the matter into consideration in its ordinary progress, it would be a matter of small importance to Lincolnshire, for before action was taken all the cattle would be dead.

Staffordshire (North).—It continues its ravages along the northern borders of the county. Mr. Heler, Craddocks Moss, Audley, has lost 16 head of cattle, and has 11 beasts down with the plague. During the last week seven more animals have died of the disease on the farm of Mr. Hammond, Madeley, in addition to 20 deaths in the previous week. In the stock of 33 head of cattle belonging to Mr. Tomkinson, farmer, near Audley, 28 have died. Mr. Glover, farmer, Batterley, has had 19 cows attacked, and lost 12 of them. Nearly the whole of the stock of cattle belonging to Mr. J. Blockley, Radwood, near Whitmore, consisting of about 40 fine animals, has been destroyed by the pest.

Suffolk, Jan. 1.—At a general meeting of the County Cattle Plague Association, it appeared that the total number of stock insured in the association is 25,727 ; the total amount insured being 274,663*l.*, and the total per centage paid, 2766*l.*

Warwickshire, Jan. 2.—At the Quarter Sessions of the Peace for this county a deputation from the Warwickshire County Stock Insurance Association presented the following resolutions, which had been passed at a meeting held at Warwick :—1. That the owners of stock should be allowed to remove cattle from place to place on their own farms, provided they did not drive them along a public highway. 2. That the removal of fat stock should be allowed during the daytime only, if certified by an inspector or a magistrate, upon condition that the same be slaughtered within 48 hours. 3. That the Court be requested to urge upon her Majesty's Government the necessity of enforcing the last Order in Council to its fullest extent, and that the magistrates be requested to appoint additional inspectors. A committee was appointed to consider as to the best course to be pursued.

Windsor, Dec. 3.—A numerously attended meeting of agriculturists and landowners was held, under the presidency of Major-General F. H. G. Seymour, at the Castle Hotel, Windsor, for the purpose of considering a mutual association for the insurance of cattle. It was resolved that the association should extend over an area the limits of which should be those of the South Bucks, East Berks, Wraysbury, Egham, and Windsor Forest Agricultural Societies, and all parishes within a 10 mile radius of Windsor : a committee, with Major-General the Hon. A. N. Hood as chairman. Mr. Cannon stated that in the Maidenhead division of the county of Berks, and since he was made Inspector on the 16th of August, no less than 283 beasts had perished from the plague. The value of the cattle so lost he considered amounted to about 2623*l.* 10*s.*, the cases of disease principally occurring in the districts of Bray, Cookham, and Winkfield. Out of the 283 cattle only nine were insured in the Reading Association.—The Chairman advocated the use of homœopathy in the treatment of sick cattle.—Mr. Irons said that three out of five cattle which he had treated homœopathically had recovered from the disease.

Worcestershire.—There is happily no extension of the plague in this county, which may be attributed, in a great measure, to the strict precautions adopted by the authorities.

Yorkshire.—There have been numerous fresh outbreaks in both the East and North Ridings ; while on the high wolds and moors, and in the low-lying extensive tracts of Ryedale and Pickering, the disease continues its ravages, the middle elevations are yet clear. There is also a much-remarked exemption of fat stock from the plague. The panic caused by the plague continues, and in the two weeks 25,000*l.* worth of cattle from places not yet infected have been insured at Malton. Here also very great attention has been paid to the alleged identity of the plague with the small-pox, and various methods of experiment with vaccine matter are about to be tried. The hardship imposed upon feeders of stock by the operation of the Orders in Council is much felt in this district, more especially in the large wold division of Buckrose, which borders on Malton, Scarborough, and Driffield, but cannot send stock to any of these markets, and there is no market in the division. For the North Riding Malton district the return shows that there have been in the two months 204 cases of rinderpest, of which 115 are dead, 14 were killed, 38 have recovered, and the rest remain under treatment. The inference drawn from the remarks appended to each case of attack, as made in the return, was that the plague was introduced from York market (kept open against all remonstrance for weeks after the districts were closed), and taken to Wigganthorpe, Old Malton, Newsham, and Barton, and thence spread throughout the district. The return for the Buckrose (East Riding) division is, approximately :—The number of cases in the wold district included in this division since the outbreak at Leppington, eight weeks ago, is about 360, of which about 130 are dead, about a dozen were destroyed just at first, and about 220 are recovering, showing a much more successful issue on the wolds than on the Malton side of the water. A return of the cattle affected in the Bulmer West division of the North Riding shows that 260 beasts have been attacked—165 of which have died, 55 are still ill, 10 have been killed, and only 20 recovered. The returns which have been made from the neighbourhood of Easingwold show that in this district there have been no less than 452 deaths. In the neighbourhood of Boroughbridge the disease is steadily making progress. At Northallerton it is greatly on the increase, there having been in the division of Allertonshire 146 cases. At Darlington the disease is extending.

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5. RAILWAY TRAFFIC.—The Order in Council of the 16th December extends the power of the "local authorities ;" but adds :—"Provided always, that nothing contained in this clause shall make it unlawful for any person to send or carry such animal by railway through or out of such jurisdiction, or to send or carry any such animal, if brought by sea from any place out of Great Britain into such jurisdiction, to the nearest convenient railway station, for the purpose of carrying it through or out of such jurisdiction."

Now, this traffic to, by, and from railways is doing as much or more harm than all the other movement of cattle. Any one living near a railway station in

a part of the country where the plague is raging, may see day by day strings of wretched animals driven by to be put on the rail, and taken to London. In many cases the drivers refuse, when asked, to give the names of the owners, it being quite understood by everyone that the animals—if not diseased themselves—are being sent away in consequence of the murrain having broken out on the farms from whence they come.

The whole country is infected by this means. The railways are spreading the disease into every corner of the kingdom, and until the movement of cattle, more especially by rail, is absolutely stopped, nothing whatever will have been done—as is too well proved—to arrest the evil. *W. Wells (in the Times).*

6. THE EXPERIENCE IN HOLLAND.—The disease rages mostly in the commune of Ketchel and Spaland, near to Schiedam, where the date of the first case has been stated as the 10th of August. Out of 2386 cattle attacked between the 10th of August and the 18th of November, 1407 occurred here, of which 266 died, 541 were killed, and 212 recovered. Except a few isolated cases, the disease only rages in one of our provinces, South Holland (in 87 out of its 198 communes), and at the last report it had ceased in 36, and was still prevalent in 51 communes. Arranging the communes in order, in two, out of 5086 cattle, 2306, or 45 per cent., were attacked. In seven, with 12,217 beasts, 2336, or 19.12 per cent. were attacked. In eight, containing 19,691, 1218, or 10.89 per cent. were attacked. In five, 300 out of 2803 cattle, or 10.7 per cent. In all the 87 communes (that have suffered), from the 10th of August to the 18th of November, 8735 have been attacked, of which 2728 died, 2203 were killed, 2478 recovered, leaving 625 still under treatment. The result of the disease was unknown in 700 cases, and deducting these, and also those under treatment, we have on the remainder a per centage of 36.82 dead, 29.73 killed, and 43.45 recovered. It appears that in some communes the beasts have suffered more in the stalls than in the meadows. The purification of the stalls with chlorine and carbonic acid (?) has often had a good result. The disease, when a herd is attacked, lasts from two to three months before the whole have recovered. The disease is more violent in the stables, but contagion can, perhaps, be there more easily prevented. Cold and damp weather exercises a bad effect upon the disease. In general the treatment is symptomatic. The animals are covered during the day in the meadows, and removed at night into the stalls. The use of warm water, light food, and frequent washings with clean water, sometimes mixed with vinegar, or carbonic acid (?) for the mouth, nostrils, eyes, and anus—above all, separation in the stalls of sound and convalescent animals from those affected, has been found very effective. Killing is most frequently resorted to in those parts of the country where cattle are mostly kept for fatting, and they endeavour to kill them in time to save them for meat. Where rearing of cattle is carried on, either for butchers' meat, or as cows for dairy purposes, more deliberation is observed. In this case veterinarians do not advise slaughter, as they maintain that 20 or 25 per cent. of recoveries are of more value than 100 beasts slaughtered on being threatened by a general outbreak of the disease. But, on the other hand, if the case appears to be an isolated one, or on the actual appearance of the first symptoms, they do not hesitate to slaughter the animal at once, and to immediately isolate the meadows or stables that have become infected, not only as regards the cattle, but also the farm servants, butchers, and others who have in any way been in contact with the infected beasts. They next make arrangements to establish dung-heaps at a great distance from the stables. The most fatal weeks have been the last in August and the first in September; but since the 5th of November the disease has again increased in intensity, which has been attributed to the unfavourable and stormy weather, and especially to the heavy rains. ——.

To this we add the following letter to Dr. Hamilton about his former report on homœopathic treatment:

"Schiedam, Dec. 27.

"I beg to inform you that the numbers of the cattle treated by Messrs. Scutin and Gaudy, as you gave them in your letter of the 22d inst., are very nearly correct. There were put under their treatment, in the first instance, 63 beasts, declared in my presence by the veterinarians here to be attacked by this contagious disease, and afterwards, when these gentlemen were free from the above-mentioned control, 10 more, making in all 73 animals; of this number 53 were cured and 20 died.

"Messrs. Scutin and Gaudy treated all the cattle confided to them, except some which were in a desperate state, or which belonged to farmers destitute of the necessary means for their treatment. Their refusal in each case was entirely justifiable.

"P. J. VANDYK VAN MATENESSE."

Home Correspondence.

Palm Nut meal. I observed in a late number of the *Gazette*, an inquiry addressed to your subscribers, "Whether the reports of Professor Coleman and others, on the Palm Nut-meal, were to be depended on." So far as any report by Professor Coleman, or any analysis by Dr. Voelcker goes, there is no doubt they may depended on. I bear in mind having seen, heretofore in some publication, an analysis by Dr. Voelcker of this meal, which gives the oil at something over 26 per cent., and that Messrs. Smith & Co. guaranteed the article up to the Doctor's standard analysis. I found the meal I have had recently not so acceptable to sheep as that which I had some year or two ago, and I therefore sent it to the Professor of Chemistry at our College for analysis. He informed me he had recently had several samples to analyse, and he could tell me it contained, with slight variation, 20 per cent. of oil. I desired an analysis nevertheless of the last lot of meal I received, in order to see if it contained any new matter which might account for the sheep having refused it, even after having mixed some bran with it. Mr. Church reports my meal to contain 20.8 of oil, and to be a genuine article, free from any admixture. No doubt, in the process of manufacture for the main object, the extraction of oil, this has become more effective since Dr. Voelcker's analysis was made. As the difference of six per cent. makes a material difference, not only in the value but in the application of the article, I send this explanation in reply to the inquiry of "F. W. D." When we consider how much the profit or loss, in feeding animals, depends on the nice adaptation and distribution of the compounds used, I am surprised to find how few farmers avail themselves of chemical analysis of the food they purchase, which is now to be had at so small a cost. *Charles Lawrence, Cirencester.*

Chloride of Lime as a Disinfectant.—In your Journal of the 23d December, Mr. J. Lundy, of Leith, recommends Condy's Fluid in preference to chloride of lime, because, he says, chloride of lime is injurious to the mucous membranes. Now, as chloride of lime is the most generally useful and efficacious disinfectant, and is more highly and oftener recommended by professional men than any other, I think it would be a pity if farmers were afraid to use chloride of lime as a disinfectant, from what is here stated with respect to its being injurious to the mucous membranes. It is true that pure chlorine gas, or chlorine in a highly concentrated form, is very irritant and injurious to the lungs, but the same might be said of pure oxygen, as can be proved by the experiment of placing any small animal in a jar of oxygen gas. We must bear in mind that the chlorine given off by chloride of lime is immensely diluted with atmospheric air, and in that condition, instead of being injurious, is highly beneficial to any disease of the mucous membranes. I have myself cured many cases of diphtheria, when the diphtherous membrane was too far down the trachea to admit of its being sponged with muriatic acid, by causing the patient to inhale the steam of a solution of chloride of lime in hot water, and I have never once known it to have any injurious effect upon the lungs. We must also remember that in rinderpest nearly all the mucous membranes of the internal organs are diseased, and in a state of vascular congestion, so that the action of chlorine in a dilute form would be of great use, as it would help to arrest the disease. This is the reason why muriatic and nitro-muriatic acids have been found so efficacious. The dose which Mr. Lundy himself recommends, of 1½ oz. of sulphuric acid, would be far more injurious to the mucous membranes, in the mixture of which he has given the prescription, than the chlorine given off by using chloride of lime as a disinfectant. I should be very sorry to see Condy's Fluid adopted as a rule in preference to chloride of lime, as I have often tested one against another, especially in senile gangrene and cancerous ulcers, where I have found Condy's Fluid of little use. It is no doubt useful as an element of oxygen in the wards of sick rooms, or fever wards; but any one may try the experiment for himself of deodorising and disinfecting putrid meat, or the flesh of rinderpost cattle, by chloride of lime, and then by Condy's Fluid, and he will then soon find the difference between the strength of the two disinfectants. I agree with nearly all the rest of what Mr. Lundy advances with respect to gypsum or sulphate of lime. I only make these remarks, as I think it would be a very great pity if farmers were led to abandon the use of chloride of lime from fear of its being injurious to the mucous membranes, and I should recommend them to study instead what Professor Voelcker has advanced in his lecture on antiseptics and disinfectants, which appears in the same number of your Journal. *C. P. Clearer.* ——My attention has been recently directed to a doubt which exists in the minds of some farmers regarding the propriety of using chloride of lime for disinfecting manure, lest by doing so part of the ammonia contained in it should be expelled, and its quality be thereby deteriorated. As it is very desirable that no such fears should deter the farmer from using this valuable disinfectant, I think it right to explain the nature of its action. Without entering minutely into the chemistry of the question, I may state that chloride of lime does not expel ammonia from its compounds, as lime does, but the chloride contained in it decomposes that substance into nitrogen and hydrogen. This change occurs at once if chloride of lime be added to pure and concentrated ammoniacal compounds, but the case is very different when (as in a manure) they are mixed with a large quantity of decomposing animal and vegetable matters. The chloride of lime then reacts on and decomposes these substances in the first instance, and it is only after they have been destroyed that any excess of chloride which may happen to remain will attack the ammonia. As, however, the quantity of disinfectant is always small when compared with that of the manure, there is no likelihood of this ever occurring in practice, and I have therefore no hesitation in saying that it may always be used without apprehension. Even if a small quantity of ammonia were destroyed, the loss would be far more than counterbalanced by the advantage derived from this disinfectant, which I believe to surpass any other yet recommended. While writing these remarks I may be allowed to add that the propriety of using disinfectants and attending to the sanitary condition of his cattle sheds cannot be too strongly impressed on the farmer. I am very far from venturing to assert that by these means it is possible to secure immunity from disease, for when an epidemic has once taken root in a country, not even the most scrupulous precautions will do this; but they unquestionably reduce the chances of attack, and generally diminish its severity if it should come. *Thomas Anderson, 15, Shuttle Street, Glasgow, Dec. 22, 1865.*

Land Drainage and Floods.—It is not with the view of controverting a generally received opinion on the effect of land drainage on river floods, but to draw attention to a conclusion to which my own observation has led me, that I venture to assert the following propositions:—First, that land drainage promotes evaporation; secondly, that it diminishes floods, or to state it more comprehensively, that river floods are diminished by the increased evaporation due to land drainage. Flood-water is the surplus of rainfall which the earth will not absorb; the more absorption therefore, the less flood. Take such a season as that of the autumn of 1865; the river, the Upper Thames. Up to the end of August the rainfall in excess of the average; September, the driest ever known, consequently the whole or nearly the whole of the greatest rainfall for October, say 6 inches, was absorbed; in November, 2.70 in. for the month, or 1.50 in. from the 20th to the 25th, producing a slight flood; December, up to the 27th, .50, or half an inch of rainfall. My point is this: at the present time the drained lands have given off so much moisture that it will require at least 2 inches of rain to produce a flood worth notice, whereas nearly all that quantity, say half, if you please, would flow to rivers from undrained lands; it may be true that the flood, when it does come, is discharged more quickly, but I contend that the amount of flood-water has been reduced by drainage. Prophecies are dangerous, but I venture to predict that when the land drainage area of the Upper Thames watershed has reached its maximum, especially if the area of arable land is increased, the floods in the Thames valley will be considerably reduced. The effect on the perennial supply I have given in my evidence before the House of Commons on the Thames Navigation question. *James C. Clutterbuck, Dec. 28, 1865.*

Condy's Fluid and the Rinderpest.—I read a statement in an article in a late number of your Journal which greatly surprised me. Speaking of Condy's Fluid in connection with the rinderpest, the author says that it has been found good for nothing in many cases within his knowledge. Now the question of prevention or cure of this terrible plague is becoming daily so much more important, I think anything which holds out a hope of accomplishing either should not be hastily condemned; and of all the innumerable remedies yet suggested, a very large experience assures me, none is so likely to prove efficacious; but of course it must be fairly tried, and all the necessary accompaniments of cleanliness, &c., fully supplied. I can easily believe, that merely giving the animals a certain quantity to drink daily, taking no other precaution, will neither cure the disease nor prevent infection, but if at the same time the sheds are kept clean, and frequently purified with the fluid, I find infection can be totally prevented. I have had two striking examples under my notice lately. One is, that the disease broke out in a shed where this fluid was never tried, divided only by a thin partition from other sheds on either side, in which it is in constant use, and to neither has the infection spread. In the other case, four cows in a herd of 37 were attacked. After the disease had broken out, the proprietor determined to try Condy's Fluid as a preventive; not another animal has been affected since he began to use it some weeks ago. Our large district continues nearly as free from the plague as when I last addressed you; for we have never relaxed in our exertions to keep off infection. Every day's experience makes me the more willing to endorse Mr. Lundy's opinion that, "were it an universal custom to carefully disinfect and purify the sheds, and daily administer Condy's Fluid to the cows, the rinderpest would be swept from any locality in a very short time." I only wish I could persuade your readers to put our theory to the proof. *E. Alder, Sanitary Inspector, Trafalgar Cottage, Trafalgar Square, Dec. 29, 1865.* [Are Mr. Dancock's cattle, on which the fluid was tried, still safe?]

Societies.

VETERINARY ASSOCIATION AT DURHAM: *Dec. 20.—The Cattle Plague.*—We extract the following on the alternative of "kill or try to cure" from a paper on the subject read at this meeting by Mr. CHARLES HUNTING, veterinary surgeon, of South Hilton. After giving a history and description of the disease, he said:—Can you cure the disease to pay? is the all-important question to the owner: if you cannot, better not treat it at all. Supposing the disease attacked horses as it now does oxen, and the average recoveries amounted to 10 or 20 per cent. only, we should still be justified in persevering in the treatment of the malady, because the horse, when dead, would be of no value whatever: not so with the ox or cow—at least half the animals slaughtered are worth three-fourths of their net value in the market when alive and well; and when we remember that in all the bovine tribe, even if only half fat, it will not pay to treat a disease of a severe form unless you can save at least 80 per cent. of your cases, and this, too, in diseases not infectious, because it is found that the expense of treatment and attendance, with the certain deterioration of the animals by loss of flesh, and the risk of losing 20 per cent., is a remedy more expensive than the loss occasioned by sending the half-fat carcase into the dead-meat market when first attacked and when fit for human food. If this is the case with ordinary diseases of the ox tribe, how much more applicable would the rule be to the most contagious and infectious disease known in the animal kingdom! A veterinary surgeon in Newcastle, of 35 years' experience, wrote to one of the daily papers of that town stating his ability to cure this disease, and condemning the slaughtering process adopted. Of course there were many poor men who had the whole of their money invested in their cows. Amongst others there was Mr. ——, who had 11 beautiful cows in fine condition. Unfortunately for him the plague broke out in one, which was reported to the inspectors; they, seeing the admirable condition of the animals, recommended the poor fellow to kill the whole and send the 10, all of which were good and wholesome food, into the dead-meat market. The owner being anxious to save his cows if possible, applied to the veterinary surgeon who had publicly stated his power to cure the malady, and he commenced to treat them three weeks since, and here is the result: The first seven cases all died, three others were so hopelessly bad that the owner in disgust sent them to the manure-yard, and one had not contracted the disease. Can we have anything more illustrative of the absurdity of such a proceeding? and I hope, for the sake of our profession, it was nothing more. Here were nine fat cows, worth as food not less than 20*l.* each—180*l.* loss to the poor man, and not less than 585 stones of good beef lost to the public, besides the ten-fold risk of spreading the disease to other animals! I could give you six other cases which have come under my own observation, where similar thoughtlessness has been practised. If, by letting one ox live, there is a reasonable probability that two others will die, it is clear that it would be the height of folly to prolong the existence of the first for an hour. But rinderpest at present is far more contagious, fatal in this country than either typhus or typhoid fevers in man were ever known to be. Again, see the immense difference between the alvine and other secretions and excretions of the ox and those of man; and disinfection can be practised almost to perfection in the case of human patients, who are clothed and bedded; but even in the best arranged cowsheds or open fields this can only be done to a small extent. In proof of this, I may just mention that when I was in Newcastle I saw four carts, belonging to farmers a few miles out of town, loading manure from an infected byre, to take it undisinfected to their own farms; and one farmer had given his man instructions to put the entrails of an animal which had died of the disease into the bottom of the cart, so that the inspectors should not see it; and, further, these four carts had to pass along the main road to the moor, where, in the course of an hour or so, some hundreds of cows would have to pass to their pasture! The wonder to me is not that the disease is spreading, but that there is a byre in the town free from it; and my own impression is, that until far more stringent measures are adopted by the Government, the disease will continue to spread. Again, what would medical men think if their patients suffering from cholera, small-pox, typhus fever, and other contagious diseases, were compelled to attend public places of resort, travel in cabs, omnibuses, and railway carriages, mixing with thousands of healthy individuals. How would they expect to arrest the spread of such maladies? I presume it would be quite impossible. But if we attempt to treat the cattle plague, in spite of all such regulations as are now carried out, our patients with rinderpest will be compelled to similar acts by hundreds of men who are owners of cattle. I was much pleased to see the report of the Minister of the Interior to the King of Belgium, stating that rinderpest no longer existed in any part of that country, published in the *Times* of October 14th; the more so, because when Dr. Furstenberg, the Prussian Commissioner, was staying with me, he received an account of the outbreak of cattle plague in Belgium, carried there by a cow bought at the market of Enœna, in Holland, on the 11th of August. This animal was taken to Uccle, near Brussels, and placed with a herd of nine others. On the 20th she showed symptoms of rinderpest, and was destroyed at once, the others sharing the same fate. Two days afterwards it broke out at Markekerkham, in East Flanders, where a herd of seven were killed. Here, as at Uccle, the disease was traced to one of a herd of cattle bought in Holland. Thus the disease continued to spread from place to place, when the most stringent measures were enforced, and in less than two months not a case was known to exist in the whole country. I mention this instance because Dr. Furstenberg so specially drew my attention to it, stating—"You will see that the Belgians will stamp out the disease in their country in a few weeks, while you, with your half-and-half measures, and differing with each other as to whether it shall be treated or not, will lose more than the half of your noble breed of cattle, and then you will have to adopt the same means as they do before you can eradicate the plague from Britain." I should think there is no country in Europe so like our own in agriculture and manufactures as Belgium; but while they act upon the experience of other men, and drive this malignant disease out of their country in eight weeks, we, on the other hand, refuse to be guided by the opinions of numbers of men in every country in Europe, every one here doing as he thinks right in his own eyes; and, from bigotry on the one hand, and self-interest on the other, are spreading the disease to every part of the land. Why we Englishmen, who have never seen the disease before, should refuse to receive the opinion, founded on years of experience, of French, Austrians, Russians, and Prussians, I cannot understand, unless it is that our countrymen will not be dictated to. If those measures are successful in other countries, why would they not answer in ours? As, however, our countrymen will not submit to these stringent regulations, they must take the consequences. We, as a profession, have urged them strongly and persistently; and I believe I may state that nine out of ten amongst us have been of one opinion, and for expressing it freely we have met with not a little abuse. If we are ignorant, we are honest; and I am proud to see nine-tenths of the veterinary profession advocating with all their might a procedure which they believe to be for the best interests of their country, but diametrically opposed to their own pecuniary benefits. But we should remember all epizootic and epidemic diseases invariably assume a milder form as they progress, and therefore we have a right to expect that rinderpest will be no exception to this rule. Whether it is that the diseases become less virulent, or at the first outbreak all the weaker constitutions of the race are swept away, or that better sanitary or preventive measures are adopted, I will not stay to discuss. Cholera in the human subject, influenza fever in the horse, lung disease and the foot-and-mouth disease in the ox and sheep, are familiar illustrations of this fact. If we are to treat this disease, it should only be in those cases of lean stock which are not fit for the butcher; and in these good nursing will be of the first importance; clothing the surface of the body, pure air and excessive cleanliness, and disinfecting the excreta; small and frequent quantities of Linseed and hay teas mixed with good gruel, mild diuretics and diffusible stimulants should also be given. Amongst the latter class I have always found Ammon. Carb. and Sp. Ether Nit. to hold the first place in all diseases of a low type; and where the life of the animal is of more importance than the expense of treatment, good sherry in half-pint doses is invaluable.

Reviews.

On the Cattle Plague, or Contagious Typhus in Horned Cattle: its History, Origin, Description, and Treatment. By H. Bourguignon. J. Churchill & Sons.

This is the most elaborate and fullest treatise on its subject which has yet reached us. Originally written in French, it has been originally published in English. Whether owing to the style of the author or to that of the translator, it will appear to the ordinary reader a very inflated performance—turgid and technical where the simplest and most ordinary terms should alone have been used. Those, however, who are not repelled by the pretentious mannerisms of the author, will find him both intelligent and instructive on the subject of the cattle plague. Beginning with a sufficiently obvious truism, couched in magniloquent terms, he at length condescends to the items and particulars on which information is desired from him. "Nations," we are told, at starting, "during the successive phases of their evolution on the globe, in which they advance from a state of infancy and barbarism to one of virility and civilisation, from civilisation to decadence or senility, and from decadence to their final extinction, are liable to numberless calamities." But we very soon reach the details of History, Description, and Treatment, where the author is explicit enough on the particular calamity which has now overtaken us. Even here, however, the words used are often not adapted to the agricultural reader. What, for instance, are we to make of the following piece of descriptive writing:—

"The functional derangements, in truth, subordinate to and depending on the predispositions exhibited by the cattle, are far from being the same in all. In some, the nervous derangements predominate, in others it is those of the respiratory, and in others it is those of the digestive channels.

"As in this period of irritation the nervous centres are more particularly affected, the animal suffers cerebral and rickety pains, a constant cephalalgia, which provokes vague anxicty; he is sometimes cheerful, sometimes wild and furious; he clenches his teeth and yawns, the muscles of his face spasmodically contract, the spine feels very sensitive when pressed, a burning and insatiable thirst comes on, the breathing is hurried, and the intestinal evacuations are suspended.

"In this form the toxæmia appears to concentrate about the nervous centres—as is observed elsewhere at the outset of certain violent fevers, in the typhus and typhoid fever of man, for instance—and some of their number may perish the victims of these nervous disorders, and even fall as if struck with electricity. They die apparently from the result of the typhic poison; for at this second period, we do not trace in the nervous centres those injuries which might account for so sudden a death."

By-and-by, however, we come upon a chapter which is addressed especially to farmers and graziers, and the author then writes such good and lucid English that one regrets the high-flown style in which most of his work has been dressed.

Here, too, we come upon a passage showing that two months ago, when the author was engaged upon his work, the analogy of the small-pox, to which so much reference has lately been made, was present to his mind. He says here:—

"The cattle plague which has lately fallen upon horned beasts, is a plague, no doubt: but there are different species of plagues, and it is necessary that you should know that this disease is one arising from the absorption of seeds and germs with which the air is impregnated, and which is drawn by the animals into their bodies when breathing the air around them. When these germs, these infectious poisons, have penetrated into the lungs and blood of the animals, these seeds of infection remain there from eight to 12 days without producing any very perceptible effects; but after that time the tainted animal becomes dejected, loses his appetite, is seized with fever, laborious breathing, and diarrhœa, to which sum of disorders in the health of oxen, cows, &c., the name of typhus has been given; or, as this distemper is contagious in the highest degree, it has also been called the contagious typhus.

"You may compare this disease, in order to form a more precise idea of it, to the small-pox which sometimes afflicts your children, or to typhoid fever. These complaints, which are familiar to most of you, have some resemblance to the typhus of the ox. Only in the small-pox, which is caught by contagion, and which seldom attacks more than once, like typhus, the disease is localised on the skin; whilst in the cattle plague the internal organs are the principal seat of the evil.

"This comparison will show you at once that the cattle plague, or rather the cattle typhus, can only be cured when the disease has run its full course, as you have observed in a person tainted with small-pox; so that your task must be to help the sick animal to endure his complaint until the end, or until he is cured; and you must not attempt to check it by violent means, for if you did, you would hasten the death which you desire to prevent. You will likewise understand that if the disease—as is certainly the case—does not attack the same animal twice, it would be very beneficial to inoculate the animal whilst he is sound and healthy, whenever this scourge threatens—as in the present time—to attack all cattle. Perhaps you may be told that inoculation, which prevents small-pox in man, cannot be applicable to cattle; that animals inoculated with the virus of the typhus have all died of the consequences of the operation, and so on. To all these objections you will answer, with that downright good sense which belongs to your class, that Nature cannot have two weights and two measures; and that if the inoculation of the typhus kills animals, whilst the inoculation of the small-pox saves men, both maladies being governed by the same laws, it is the inexperience of physicians, and not the operation itself, which must be made to account for it.

"In a word, to sow virus is to reap it; but there are many ways of sowing it, and one man will reap a rich harvest, whilst another shall gather nothing but tares. Let those unbelievers say what they like, and take my word for it, that we shall one day cure typhus as frequently as we do small pox, by inoculating it, and when it appears in spite of that course, by treating it medicinally."

There is a great deal of detailed instruction given

as to the treatment of animals attacked—of animals which have been infected—and of animals still untainted by contact with the disease, for which we must refer our readers to the book itself.

We observe that "anti-contagious drinks are recommended; 2 drachms of chlorate of potash or of permanganate of potash dissolved in 8 ounces of warm water, and then mixed with a gallon of infusion of sage." On page 301 "arsenic acid" is recommended as a disinfectant of places and manures, which we presume to be a misprint or mistranslation, for certainly no such substance should be placed in the careless hands of farm servants.

The recommendations as to treatment are many of them already familiar to our readers; the use of liquid food alone is insisted on; and various medicines are named as suitable to the varying stages of the disease. Treatment however has hitherto been a failure. Prevention is better than cure. The former is happily possible, the latter hitherto unhappily has not been possible. On both Dr. Bourguignon is sufficiently emphatic and explicit; and we recommend his book to our readers.

The Poultry Yard.

THE Royal Agricultural Society of Great Britain considers poultry *infra dig.*; "one must draw a line somewhere." The Smithfield Club thrives and prospers; long may it do so; but it should admit poultry. Could its Secretary but know the amount of money turned in the Christmas week or in the whole year for poultry in London, we think he would leave a loop-hole at which the cocks and hens might creep in. All who come in contact with us remark what curious people we are. When the Indian mutiny broke out, there was a great talk of caste. Men who had never seen anyone darker than a haymaker or hop-picker, spoke learnedly about the difficulties of colour, caste, and class in India. The French think us first-rate customers for poultry and eggs, and laugh at us while they take our money. It seems to be our privilege to pay and look pleasant. The annual exhibition of dead poultry fatted for sale and table use has just been held in Paris, and we are enabled to append the following through the kindness of a juror. The exhibition was a second edition of that held with so much success last year, but the entries were better filled, the specimens more carefully chosen, and a marked progress distinguishable in all the classes. The first classes on the list are those for the breed of La Bresse, a fowl comparatively speaking unknown in this country, and one that would not answer to introduce here, as the points for which it is remarkable are possessed in great perfection by our own table fowls, the Dorkings. Twenty-nine lots of capons and 25 of poulardes fought for honours in this class. The size of the specimens was good, but the judges thought they could detect a cross of Brahma in most of them, and so they appended a note recording their impression. A sub-variety of the same breed, called La Bresse de Louhans, contributed about 30 lots of good birds, which met the approval of the judges.

The splendid breed of La Flèche, the bird *par excellence* of France, was well represented by 80 lots of splendid specimens. The best of the young cocks weighed, when plucked and dressed, upwards of 10 lb. per bird, and the pullets from 8 to 8¼ lb. These were the great centre of attraction, and we should hardly credit the prices made by the best specimens of this breed, well fed and well killed. The best chickens of the season have been known to realise from 50*s.* to 70*s.* per bird, that is when in perfection. At the show of which we now write, this breed took the Gold Medal of merit.

We have lately heard a good deal of the breed called "Houdan." Some birds represented as specimens of this breed imported into this country have lately had their portraits taken and presented to the public. The breed is sadly belied by them if they are faithfully represented. We do not think them a fowl suited for England. We know that they have been fairly tried here, with no favourable result. They are a very scarce bird even in their own country, and this fact may account for the low order of merit of those who lately had their portraits taken. This breed contributed only 32 lots of cocks and poulardes to the exhibition in Paris.

The Crèvecœur, the fowl of France, brings to one's recollection the "Ingoldsby Legends," where Hamo of that name skedaddled at the first threat of Ralph de Thurland, and also Walter Scott's inimitable "Quentin Durward." This bird has always been the Frenchman's beau ideal of a fowl. Gavarni, the king of caricaturists, is said to have taken his best conception of the devil from the head and neck of a good Crèvecœur cock. From the fact of this being the staple bird, and in every one's possession, the exhibition of it was not so large as of the scarcer varieties; the excuse was made which we constantly hear at home, viz., that every one has some like, and that it is not worth the trouble to send them.

The exhibition was crowded from the time of its opening to its close. Most of the specimens were sold at highly remunerative prices, and we do earnestly hope that its success may lead us to copy it.

Farm Memoranda.

A STAFFORDSHIRE DAIRY FARM.—I can best explain my views by describing somewhat in detail the system of management with which I am most familiar, taking the case of a farm of cold strong land, situated in the Midland Counties, containing 300 acres, let for about 30*s.* per acre, of which two-thirds are pasture and meadow, and the remainder arable. The land is not well adapted to sheep, and the pastures are not sufficiently rich to fatten cows or bullocks, without the aid of a considerable quantity of artificial food. I think I can show that by far the most profitable mode of occupying such a farm (provided that the ordinary requirements are supplied) will be by keeping a large dairy of cows, and endeavouring to make whole-milk cheese of first-rate quality. If the arable land be thoroughly drained, it will provide straw and roots for the winter's keep of the dairy cattle, and Clover, Italian Rye-grass, Vetches, and Cabbage, for their use in summer and autumn. Without such drainage cold clay-land cannot be cultivated in an efficient manner.

The 200 acres of turf-land may be divided as follows:—120 acres, in convenient enclosures, and well supplied with good water, shade, and shelter, as the regular summer pasture for the dairy cows; 30 acres as permanent meadow, to be manured every year, and mown for hay; the remaining 50 acres, least conveniently situated, and least adapted for dairying, will provide a summer's run for the yearling and two-year-old heifers and farm-horses, and for a moderate quantity of sheep. By the use of cake and crushed corn to the value of, say, 100*l.*, fifty dairy-cows would be well kept, besides rearing from 12 to 20 heifer calves every year.

I lay particular stress upon this point in consequence of the serious losses to which dairymen have been of late years subject from infectious disease—a consideration which has acquired additional force since the outbreak of the cattle murrain. The foot-and-mouth complaint, which is very prevalent amongst drift cattle every spring, and highly contagious, is a very serious complaint when it attacks cows in full milk; and should the owner be so fortunate as to escape the loss of any of the animals affected, it still entails a great diminution in the yield of milk, even if the animals are not lost. Again, from pleuro-pneumonia the dairy-farmer has much more to fear than the grazier, because his cattle are necessarily congregated together, and they cannot be so readily disposed of to the butcher. When this disease attacks a dairyman's herd, it is not uncommon for him to send all the apparently healthy animals for sale to a distant market, and thus the disease is spread.

My father and myself have for many years had upwards of 100 dairy cows, but by adopting the plan of rearing a sufficient number of heifer calves, and scarcely ever buying stock in the market, we have been most fortunate in escaping infectious disease. One or two partial attacks of the foot-and-mouth complaint have occasioned us slight losses, but from more serious disease we have altogether escaped. The spread of contagious disease is greatly due to the filthy state of the trucks used in the conveyance of cattle by railway. I regret that the Cattle Diseases Bill, introduced last session of Parliament, was not allowed to become law.

The greater portion of the cows calve in March and April. The best and earliest of the heifer-calves are reared; they will require their mothers' milk for two or three weeks at least, and may then be fed either with skim-milk and oatmeal, or sweet whey and wheaten or rice flour, with what hay or oilcake they will eat. Care should be taken to keep the calf houses clean and well ventilated. As soon as the weather becomes warm, the calves should be allowed to run in a sheltered paddock; at three months old the suckling may be discontinued, but they should still have an allowance of ½ lb. to 1 lb. of Linseed-cake per day. If they are kept healthy and growing from birth, as they may be by a judicious use of Linseed-cake, the best of them will be big enough to come into the dairy at two years and two months old. If kept uniformly well, they will then be as good as those a year older in ordinary condition, and will prove more profitable to the dairyman. A few of the calves at the commencement of the season, which are not wanted for rearing, may be fattened; but when cheese-making is in full operation, all the remainder of the calves will be sold as soon as dropped, at about 1*l.* each.

The cows, after they have calved, should have a daily allowance of 4 or 5 lb. of crushed corn or cake, with hay and roots or grains, until there is an abundant supply of Grass for them. They will then have the run of the 120 acres of pasture, but they should be divided into at least two herds. Dairy cows do much better in not very large herds; they tread the ground less, and the weaker ones are not so much knocked about. Should they require it, they will be supplied with mown Clover, Rape, and Vetches, or other green food, in the summer and autumn, until the middle of September, when the Cabbage will be ready for use.* This is a most valuable food for dairy cows, and by its aid a large quantity of cheese may be made in the last three months of the year, when otherwise the cows would be almost dry. The Cabbage grown from autumn-sown plants will generally be the best for early consumption in the months of September and October; after that time it will be over-ripe, and its quality will be deteriorated. Autumn-sown plants should be planted nearly a yard apart every way. Where Cabbage is spring-sown, those kinds should be selected which are of early maturity. The Swedenburgh Cabbage I consider the best for this purpose. The seed should be sown on a warm border early in March; 1 lb. of seed will produce plants enough to set out two acres. The plants should be planted (about 2 feet apart) in the latter end of May or beginning of June, damp weather being chosen for this purpose. If the winter be mild, Cabbage will keep till February or March, but exposure to severe frost damages its quality very much. Cabbage is a gross feeder, and will repay a dressing of 4 cwt. per acre of Peruvian guano, in addition to a fair coat of farm-yard manure. Where the land is perfectly sound, I prefer planting on the flat; the crop is less liable to suffer from drought.

Six shifts of 16 acres each, distributed as follows, will meet these requirements:—

		Acres.
(1.)	16 Wheat.	
(2.)	16 Cabbage.	
(3.)	16 Turnips, Swedes, and Mangel.	
(4.)	16 Oats or Wheat, with seeds.	
(5.)	8 Italian Rye-grass, mown or fed.	
	8 Red Clover, &c., twice mown.	
(6.)	16 Oats.	
(7.)	8 Oats and Vetches, for green fodder in July and August.	
(8.)	8 Rape and Vetches, for green fodder in August and September.	

The cows are allowed to go dry soon after Christmas, a rest from milking of two or three months being indispensable. They will then be fed principally on straw, with roots. Should the supply of roots be scanty, the deficiency may be supplied by the use of brewers' grains, cake, or corn, in addition, if required. I do not recommend cooked food for store cattle; it is unnatural, and weakens the digestive powers, so that the stock do not thrive so well afterwards when turned out to Grass. Where the supply of good straw and roots is abundant, the extra expense entailed in the chopping straw for dairy-stock is not always repaid. If, besides whole roots twice a day, plenty of straw be given them in the racks, they will pick out the best of the straw, and the stumps will be available for litter. In exceptional seasons like that of 1864, and when the utmost economy had to be exercised in the use of fodder, the benefit of chopping was undoubted.

The extra expense entailed by milking dairy cattle must not be overlooked. Five or six effective milkers will be required for 50 cows; and it is important that all should milk quickly and thoroughly well, otherwise the cows become dry much sooner, and great loss is occasioned. The master's superintendence is necessary to see that this is properly carried out. This expense cannot be put at less than 30*l.*, or 5*l.* for each effective milker. It is an operation that must be performed with regularity, and every other farm work must give place to it. The milking machines yet brought out, however ingenious, have at present, I regret to say, entirely failed to achieve the desirable result of lessening the labour of this process. When an equable temperature of from 60° to 70° is required in the dairy and store-room, this can best be maintained by the use of warm-water pipes placed round the walls, communicating with a boiler at the back of the kitchen fire. Where this cannot be conveniently arranged, a separate boiler may be set up for the purpose of heating the water. The first cost of the pipes is somewhat heavy; but when, as in many cases, the water can be heated without extra fires, the advantage is very great, the dust, trouble, and expenditure of fuel, from a stove, being avoided. These remarks, however, apply rather to making butter than cheese.

Skilled dairy servants readily and deservedly obtain high wages; their cost, including board, &c., on the farm in question, would not be less than 50*l.* per annum. This, with a charge of 30*l.* for milking, of 20*l.* for wear and tear of dairy utensils, heating apparatus, &c., would bring the extra expense attendant upon dairying on this farm to 100*l.* per year, or 2*l.* per cow. I have taken the average yield on such a farm at 4¼ cwt. per cow, or 16*l.* per head per annum, although where a very superior quality of cheese is made, an increased return would be obtained, with some aid furnished by the arable land, &c. The amount realised from cow stock alone on this farm would therefore be—

Produce of 50 cows, at 16*l.* each	£800	0	0
Sale of 35 young calves, at 1*l.* each	35	0	0
15 cows sold every year, at 11*l.* each ..	165	0	0
	£1000	0	0
Deduct extra expenses of dairying	100	0	0
	£900	0	0

Or 18*l.* per cow.

Mr. Carrington, in Journal Eng. Agri. Society.

* The danger of "hoove" from grazing Clover with dairy cows is so great, that it should be mown either for hay or for immediate consumption. It may be grazed by young stock if it stands for a second year; the Alsike is especially adapted.

Calendar of Operations.

JANUARY.—Horse labour is almost entirely confined to work with carts and waggons on roads in soft weather, when tiles, stones, lime, and grain may be carried, and during frost on fields to which manure will continue to be taken. All corn stubbles and Clover lea ought to have been ploughed by this time: if any remain, they should be finished as soon as possible. Old Grass lands which it is intended to break up in this way, may be ploughed this month. The work of digging, quarrying, hauling, and wheeling of marl, clay, or chalk on to the lands appropriate for it may be done any time during winter; of course the earlier in the season the better, as the frost will have the longer to act on them. Threshing proceeds during this month, the cattle and sheep requiring an abundant supply of litter. During wet weather the men may be employed in preparing compost manures for use in spring. Mixtures of bones and ashes may be made, and well soaked at intervals with liquid manure. Superphosphate of lime may be made by the action of sulphuric acid on bones. Salt and lime may be mixed—1 cwt. to 1 ton—and spread on any dry sheltered floor. The contents of liquid manure tanks may be emptied over heaps, under shelter, of turf ashes, burned clay, charcoal dust, charred peat, sawdust, spent bark from the tan-yard, or any other substance capable either of acting as a sponge on the liquid or its volatile parts, or of rotting the more rapidly for its saturation by a substance in the act of fermentation. Where the system of box-feeding is adopted, the urine of the animals is, no doubt, all absorbed by their litter, but even here the stable tank remains as a supply for all these purposes. In wet weather also, men may "lease" straw for use as thatch during next harvest; and they should have a day now and then for cleaning the harness.

Osiers may be planted in wet land, that has been dug over for the purpose. Select sorts suitable for the kind of work common with them in your own neighbourhood. Your sets should be 2 or 3 feet long, of three-year-old shoots; and they are to be fixed 1 foot deep in the land, 2 feet from one another, in rows 3 feet apart.

Grass Lands should be cleared of stock, top-dressing finished and brushed in, draining completed, and the land laid to rest.

Obstructions in water meadows from dead leaves and other extraneous matter, must be sought for and removed. As the sun will now have lost its power, and evaporation nearly ceased, the ground in ordinary seasons will have become saturated. The correctness of the levels may be safely tested, and where operations are not completed, memoranda should be made for future guidance. In case of severe frost, it will be much better to allow the water to flow unchanged, than run any risk from exposure to its effects; but should the weather continue mild, it will be desirable, where the whole surface cannot be irrigated at the same time, to change the courses twice a-week, choosing a mild morning. The rule is to let the water flow till a scum appears on the Grass.

Animals have now become more inured to wintry weather. Towards the commencement of the season the same diseases prevail as in the autumn, gradually disappearing, however, as the cold weather obtains. Horses, during the long continuance of wet weather, are extremely subject to swelled legs and cracked heels, produced by the action and reaction of wet and cold. Diseases of the skin, such as mange, are rife during the winter season. Mares in foal at this season of the year require attention. Their diet should be moderately good, with shelter at night, and ample means for exercise. If kept too low, and hardly worked, there is much danger of their casting their foals; and if too much confined and without exercise, parturition is attended with more difficulty and danger. The same observations apply to milch cows, and, in a less degree, even to sheep. It is during the winter season that breeding flocks are often visited by that severe scourge, abortion, or casting the lamb—a disease which may, in the greater number of instances, be traced to the practice of keeping the breeding ewes on Turnips during the fall of the year. In two years out of three this may, perhaps, be done with impunity, but the losses of the third are sufficient to overcome any profit that might have been derived from it, and are sufficient to condemn the practice altogether.

Notices to Correspondents.

A CHEMICAL ACT.—*Q. L.* It cannot be as nearly as possible 75 per cent. A cask will shrink in one direction about as much as it does in another. The diameter of a half-cask is about 60 inches.

CANDLE.—*Hereticus Novus Tyro.* It would be impossible to say without the data to be considered. The effect on the tallow-boxes and the atmosphere. What sort that will be overcome by Mr. Gaydin's artificial mother, which has been already described in the ordinary manner elsewhere. We should think that a heated flatiron would be better than a candle, but you must try the experiment.

RAPE CAKE.—*R. H.* It will if sown in July will be a quantity of food during October and November. But you must not expect a spring crop after the autumn one. It is cut or may be mown off and the land is then at once ploughed up for Barley, Oats, or spring Wheat.

Prize Cucumber Seeds.

SUTTON AND SONS can supply SEED of all the best kinds of CUCUMBERS, including Berkshire Challenge, Berkshire Champion, Mr. Hamilton's New Varieties, and many others.

For list of Cucumbers, of which see Messrs. SUTTON'S CATALOGUE for 1866, which will be forwarded gratis and post free on application.

SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

Dewar's Northumberland Champion Celery.

HENRY DEWAR AND SON beg respectfully to offer Seed of this excellent solid WHITE CELERY, acknowledged by all who have grown it to be the best variety in cultivation. Awarded a First-class Certificate at International Show, South Kensington, December 9, 1865. In sealed Packets 1s. each, post free 13 stamps, usual allowance to the Trade.

DEWAR'S IMPROVED SHORT-TOP RED BEET.—They also beg to offer Seed of this very superior Beet, awarded First-class Certificates by the Fruit Committee of the Royal Horticultural Society, November 7, 1865, and at the International Show, South Kensington, December 9, 1865. In sealed Packets 1s. each, post free 13 stamps. Usual allowance to the Trade.

Seed Establishment, 97, Grey Street, Newcastle-on-Tyne.

DIXON'S YORKSHIRE HERO PEA.—For Testimonials of this valuable New Pea, see *Gardeners' Chronicle* of November 18.

Price 2s. per quart. The Trade supplied.

E. P. DIXON & SON, Yorkshire Seed Establishment, 57, Queen Street, Hull

New Kidney Bean.—Dickson's Eclipse.

JAMES DICKSON AND SONS have great confidence in introducing and recommending this New and DISTINCT KIDNEY BEAN, as being unsurpassed in quality. Testimonials from well-known gardeners who have carefully tested its merits, fully explaining its superior qualities, forwarded by post upon application. It is offered in sealed pint packets at 2s. 6d

Seed Warehouse, 102, Eastgate Street, and the "Newton" Nurseries, Chester.

JAMES GARAWAY AND CO., Durdham Down Nurseries, Bristol, offer the following SEEDS, which they can guarantee to be of great excellence, and decided acquisitions.

Prices to the Trade on application.

BROCCOLI (Chilton Hardy Late White).—Pure white, very large, late, has been exhibited at the local shows, in first-rate condition, in the beginning of June. Retail price, 1s. 6d. and 2s. 6d. per packet

CELERY (Garaway's Superb Red and Burbank's Superb White).—Solid, crisp, and of fine flavour, has been grown for several years by the raiser, Mr. Burbank, and given very great satisfaction. Retail prices, 1s. per packet.

CUCUMBER (Pain's Ridge).—Very hardy, fine flavour, good size, and remarkably productive. First-class Certificate awarded by Fruit Committee of Royal Horticultural Society, August 8, 1865. Retail price, 1s. per packet.

LETTUCE (Chilton Hardy Green Cos).—As hardy as Hardy Hammersmith, large, and of good flavour. Retail price, 1s. per packet.

GARAWAY & CO.'S PRICED LIST of SEEDS for the ensuing seasons will shortly be ready, and will be forwarded post free on application

Erin's Queen Dwarf Ashleaf Potato.

WAITE, BURNELL, AND CO. have the pleasure of again introducing this really true and pure stock of this Ashleaf variety, which gave great satisfaction during the past season. It is very dwarf in the haulm, foliage of a dark green colour, very early, and invaluable for frames.

Price 15s. per bushel.

A liberal discount to the Trade.

Seed Warehouse, 181, High Holborn, London, W.C.

Seed Potatos.

H. AND F. SHARPE invite the attention of the Trade to the following varieties of SEED POTATOS, which they have grown from the finest selected stocks; they comprise all the sorts worthy of cultivation. The quality is excellent, being free from disease; and prices very moderate:—

Early Ashleaf Kidney	Early Oxford
Myatt's prolific Kidney	,, Forty-fold
Webb's Imperial Kidney	Dunmore's Earliest
Early King, very fine	Early Dalmahoy Round
,, Martin's Globe	,, Hockney
,, Golden Globe	,, British Queen
,, Foxe's Seedling	Fluke Kidney
,, Round Prame	,, Rushton Rocket

Seed Growing Establishment, Worcester, Limbs.

Myatt's Prolific Ashleaf Kidney Potato for Seed.

MR. J. MYATT, of Offenham, Evesham, has a fine sample of this excellent variety to offer at 20s. per cwt. This old variety EARLY RACKNEY, the ROUND ASHLEAF (a very good second early), and MONA'S PRIDE; the last-named variety had direct from the raiser, Mr. Partridge, Isle of Man, last season. Prices as per list, the three first varieties, quite true to seed, of 14 lb., Monas Pride. Rabbitances expected from unknown correspondents. Price to the Trade on application.

A few quarters of the ESSEX ROYAL PEA for Sale, a good sample

The Earliest Variety of the Ash-leaf Kidney Potato is Mona's Pride.

MR. MYATT has much pleasure in offering this first-class EARLY POTATO, the stock of which has been saved from sets kind y sent him by Mr. Rentledge, of the Isle of Man. In the *Gardeners' Chronicle* of August 5, 1865, it is described by a correspondent as the Earliest, and best of the Ash-leaf varieties; also at page 810, September 2, it is said by another correspondent, "All must give way to the superiority of Mona's Pride." Here, at Manor Farm, it is by several days the earliest.

To be sent out in Peck Bags of One Stone at 8s., delivered free to any Railway Station in London. The usual allowance to the Trade where not less than a sack of four bushels is ordered.

Terms cash from unknown correspondents, and no orders from such will be attended to unless accompanied by a remittance

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CORN, SEED, AND GENERAL MERCHANTS,

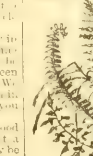
Address, 89, Seed Market, Mark Lane, E.C.; or Basingstoke.

Samples and Prices Post free on application. Prize Medals, 1851, for Wheat; 1862, for "Excellent Seed Corn and Seeds."

INTERNATIONAL HORTICULTURAL EXHIBITION and BOTANICAL CONGRESS.—Those who are preparing Plants for the above Exhibition should feed them liberally with STANDEN'S GARDENER'S and AMATEUR'S FRIEND. Sold by the leading Nurserymen and Seedsmen

REGATE SILVER SAND (best quality), 12s. per ton, at Swan Place, delivered five miles, or to any London wharf or railway station, 15s. per ton; 5 tons at one time, 12s. per ton; or on hire. KENTISH and HAMPSHIRE PEATS, YELLOW LOAM, LEAF MOULD, SHELL SHINGLE, and COCOA-FIBRE REFUSE.

J. KINNARD, Swan Place, Old Kent Road, London, S.E.



COCOA-NUT REFUSE delivered within 24 miles of Charing Cross, at 2s. per bag.

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BARSHAM'S BRUSHES and MATS are sold in every town

CAUTION.—Every Brush is stamped, J. BARSHAM'S Patent.

LAWES' WHEAT MANURE for AUTUMN SOWING. A supply of the above Manure is now ready for delivery, at J. B. LAWES' Factories, Deptford, and Barking Creek. Price 45 per ton. Two to three cwt. per acre to be harrowed into the land before the seed is sown. It can be obtained of Mr. LAWES, or through any of his appointed Agents; also

SUPERPHOSPHATE of LIME ..	.. £6 6 per ton.
MINERAL SUPERPHOSPHATE	.. 5 5 " "

Genuine PERUVIAN GUANO direct from the Importers, and all Chemical Manures of value.

AMERICAN and other CAKES at market prices.

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WHEAT MANURE, for Autumn Sowing.

DISSOLVED BONES, for Dressing Pasture Lands.

SUPERPHOSPHATES of LIME, &c.

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£7 a Ton free to Rail or Boat in Liverpool.

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In Bags containing 2 cwt. each, branded AMS L

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Thomson's Styptic for Preventing the Bleeding of Vines.

BALLANTYNE AND SON have been appointed Agents for the Sale of THOMSON'S STYPTIC, which is highly recommended as the most effectual remedy yet introduced, and all who have tried it testify to its worth.' In Bottles, price 3s., with full directions for use. The Trade supplied on liberal terms.

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THOMSON'S STYPTIC for PREVENTING the BLEEDING of VINES or PRUNING, is Manufactured and Sold by JOHN YOUNG & SON, Dalkeith, N.B., and can be had of all Nurserymen and Seedsmen, in Bottles, price 3s., with directions for application. None is genuine unless the Label on each Bottle bears the Signature of WILLIAM THOMSON.

GISHURST COMPOUND, whether used against Insects and Mildew, on Growing Plants, or as Winter Dressing on Trees at rest, should be dissolved 48 hours before Use. This gets rid of smell, and if the Solution be diluted, prevents any staining of foliage. A teacupful of from 11 to 20 to the gallon of water is recommended for glowing Plants; one from 4 to 6 oz. for Trees at Rest

Sold Retail by Nurserymen and Seedsmen, in boxes, 1s., 2s., and 10s. 6d. each.

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Red Spider — Magnified — PRICE'S PATENT CANDLE COMPANY (LIMITED)

Cattle Plague.

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THE DISINFECTING POWDER DESCRIBED IN THE REPORT IS

MCDOUGALL'S PATENT DISINFECTING POWDER. It is commended as the best means of Disinfecting Cattle Sheds, Farm Buildings, &c. Sold in tins, 1 cwt. each, at 10s. 6d.; or 2 cwt. per ton. Carriage paid on orders of 20s. and upwards

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Mr. Bowick, Author of the Prize Essay on the "Rearing of Calves," says:—"I have reared 26 calves this year, and by the use of the Gaseous Fluid I have not lost one."

Full Directions for use given with each article. Prepared by the original and only proprietors—DAY, SON, & HEWITT, 22, Dorset Street, Fleet Street.

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PROTECTION from COLD WINDS and MORNING FROSTS.

"FRIGI DOMO, a Canvas material of patent prepared Hair and Wool, a perfect non-conductor of Heat and Cold, keeping, wherever it is applied, a fixed temperature. It is adapted for all horticultural and floricultural purposes, for preserving Fruits and Flowers from the scorching rays of the sun, from the attacks of insects, and from incoming Heat. 1 inch and 2 inch respective lengths

Two yards wide	1s. 9d. per yard run
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An improved make, 2 yards wide ..	1 9d. per yard
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Also "Frigi Domo" Netting, 2 yards wide, 1s. 6d. per yard run

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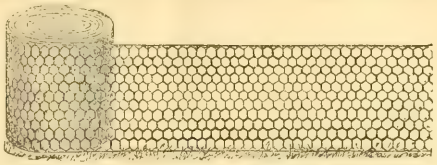

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2½ inch	Hares, Dogs, Poultry ..	3d.	4d.	3½d.	5d.	4½d.	6d.	5½d.	7d.
2 inch	Game or Poultry Netting	3½d.	4½d.	4d.	5½d.	5d.	6½d.	6½d.	8d.
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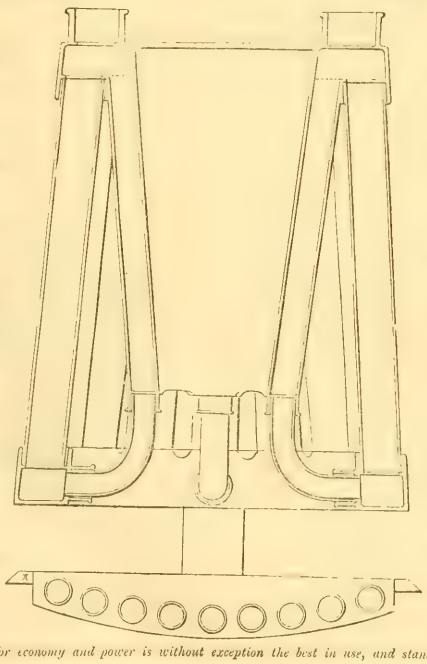

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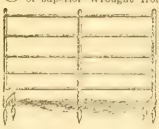

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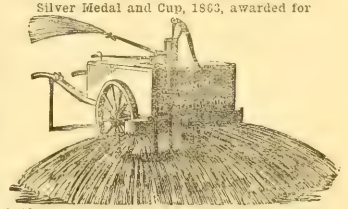

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The last great improvement in Washing Machines is in JAMES'S new Patent PRIZE WASHING, WRINGING, and MANGLING MACHINES, awarded several FIRST PRIZES. Will Wash 20 Shirts in 20 Minutes, with much less injury than with the hand. More than 200 Sold.

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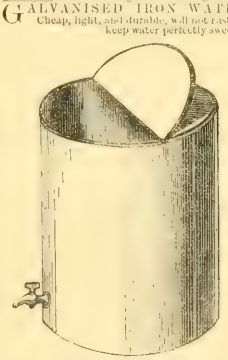
GALVANISED IRON WATER CISTERNS. Cheap, light, and durable, will not rust or corrode, and keep water perfectly sweet.



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With Lid and Brass Tap.

GALVANISED WIRE STRAND CABLE FENCING.
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HURDLES, HURDLES, HURDLES, 1s. 9d. to 3s. 9d. per yard.
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MOTLEY & GREEN, late H. J. MORTON & Co.
Illustrated Catalogue and Estimates free on application.
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S. & C. regret having to caution Gardeners and others, but are compelled to do so, in consequence of an imitation, of common quality, having been sold for the genuine one, and which has caused many complaints to be made to them of Knives which were not of their make, all of which are warranted both by sellers and makers.

S. & C.'s Pruning and Budding Knives are the best and the cheapest in the market.

Paxton Works, Sheffield. Established upwards of 125 years.

HOT-WATER APPARATUS, of every description, fixed complete in any part of the country, or the materials, viz., Boilers, Pipes, &c., delivered to any Station.
Estimates on application.
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Reference permitted to the Nobility and Gentry throughout Great Britain and Ireland.

Heating by Hot Water.

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Hot Water Pipes, from Stock, 1 yard long—2 inch, 1s. 3d.; 3 inch, 1s. 10d.; and 4 inch, 2s. 4d. Bends, from Stock, 1s. 6d., 2s. 3d., and 3s. each. Throttle Valves, 9d., 1s., and 1s. 6d. each. Other Connections at equally low prices, and all goods of first-class manufacture. Estimates given, and orders by post punctually attended to the same day. A discount to the Trade.

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INTERNATIONAL EXHIBITION, Class IX., No. 2119.

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NEW OVAL TUBULAR BOILER,

acknowledged by practical judges to be a great improvement on every form of Tubular Boiler yet introduced. It has proved itself superior to all other Boilers for quickness of action and economy of Fuel, doing its work with one-third less the amount required by any other.

Extract from Report in Gardeners' Chronicle *of International Exhibition, May 24, page 476.*

"The upright form of Boiler is usually made on a circular plan, but the oval form given to Mr Gray's variety of it is said to be preferable in consequence of its bringing the tubes in closer contact with the fire. The usual form of a furnace being a parallelogram rather than a square, it seems feasible that the Boilers on the oval plan should bring the tubes more completely within range of the burning fuel; and this being so, the change, though a slight one, is no doubt an improvement."

They are made of all sizes, which, with prices, may be had on application.

JAMES GRAY, HORTICULTURAL WORKS,
DANVERS STREET, PAULTON'S SQUARE, KING'S ROAD, CHELSEA, S.W.

NOTICE.

THOMAS GREEN & SON

BEG RESPECTFULLY TO

ANNOUNCE THAT THEY HAVE REMOVED THEIR LONDON BUSINESS

FROM 2, FARRINGDON ROAD, HOLBORN HILL, TO THEIR NEW EXTENSIVE PREMISES,

54 and 55, BLACKFRIARS ROAD, S.,

WHERE EVERY DESCRIPTION OF

AGRICULTURAL and HORTICULTURAL IMPLEMENTS and MACHINES

ARE KEPT IN STOCK READY FOR IMMEDIATE DELIVERY

SMITHFIELD IRON WORKS, LEEDS; 54 and 55, BLACKFRIARS ROAD, LONDON, S.;

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NEW TARIFF OF GLASS AND HORTICULTURAL GOODS.

HAND GLASSES.

THOMAS MILLINGTON,

GLASS AND COLOUR MERCHANT,

87, BISHOPSGATE STREET WITHOUT, LONDON, E.C.

PRESERVE JARS.

MILK PANS.

REDUCED TARIFF FOR SHEET GLASS AND HORTICULTURAL GOODS.

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THE SUCCESS AND GREAT EXTENT OF BUSINESS ORDERS WITH WHICH

HENRY ORMSON

FIRST CLASS PRIZE MEDAL
FOR ORMSON'S CONSERVATORY
At the International Exhibition.

Has been favoured by the Nobility, Gentry, &c., in all parts of the United Kingdom, for the last 20 years, have been the cause of some persons making use of his name as a subterfuge for obtaining Orders for themselves.

H. ORMSON trusts such pretensions will be treated with proper consideration, as he confidently assures his patrons, and others, that the mere putting forth of these pretensions is no guarantee whatever for Horticultural Buildings and Heating Apparatus being constructed in his superior style, so well known in all parts of the country for many years past.

H. ORMSON always has been, and still continues to be his own Manager, and carefully Superintends, personally, every Department of his Business. All Orders with which he may be favoured will at all times receive his most careful attention, and every HORTICULTURAL BUILDING and HEATING APPARATUS erected by him will be Designed and Constructed on the most approved and scientific principles; and from his extensive experience, and knowledge of horticultural science, will also be properly adapted to the successful cultivation of all descriptions of Exotic Plants and Fruits.

FIRST CLASS PRIZE MEDAL
FOR ORMSON'S PATENT JOINTLESS TUBULAR BOILER,
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Plans, Specifications, and Estimates on application.

HENRY ORMSON, F.S.A.,
HORTICULTURAL ARCHITECT, BUILDER, AND HOT-WATER APPARATUS MANUFACTURER,
STANLEY BRIDGE, KING'S ROAD, CHELSEA, LONDON, S.W.

Exhibition Prize Medal, 1862.

MUSGRAVE'S PATENT SLOW COMBUSTION STOVE.

This Stove is the nearest approach to Warming by Hot Water.

It will burn in Churches from Saturday till Sunday evening, without attention during the hours of worship. In Halls will burn day and night for weeks, with little care. Capable of Warming a large Apartment for 24 hours, at a cost of 2d.; and deserving of special attention, because of its safety, healthfulness, durability, and extreme simplicity.

It is also made for small Conservatories, with a Vase and Chamber.

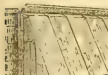
For particulars of the above, and of MUSGRAVE'S PATENT STABLE and COW-HOUSE FITTINGS, which attracted so much attention at the Exhibition, address

MUSGRAVE BROTHERS, Ann Street Iron Works, Belfast.

This Stove can be seen in operation at Messrs. Cox & Sox, 28, Southampton Street, Strand, W.C.

Under the Patronage of Her Majesty.

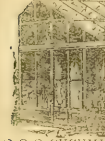
CLARK AND HOPE (LATE CLARK) 55, Lionel Street, Birmingham, MANUFACTURERS OF METALLIC AND WOODEN HOUSES, CONSERVATORIES, VERANDAHS, &c., COPPER AND WROUGHT IRON SASHES, SKYLIGHTS, &c., and HOT WATER APPARATUS for Horticultural and Domestic purposes.



C & H. beg to call attention to their NEW TREE COVER, or Continuous Glass Covering for Garden Walls; which is constructed of Cast and Wrought Iron, glazed with or without putty, and fitted together with bolts and nuts, constituting a Tenant's Fixture. It can be made 6, 7, or 8 feet wide, and 10, 12, or 14 feet high; the Lights being opened together, by means of simple and durable machinery, in lengths of about 50 feet; and the cost does not exceed that of a wooden structure.

Further particulars, with prices, forwarded upon application; and on receipt of the amount in postage stamps, a Book of Designs, plain, 1s. 6d., coloured 2s. 6d., for Horticultural Buildings, &c.

JAMES WATTS AND CO., HOTHOUSE BUILDERS and HOT-WATER APPARATUS MANUFACTURERS, near the Green Man, Old Kent Road, London, S.E.



200 CUCUMBER and MELON BOXES and LIGHTS, all from

500 to 500 LIGHTS for FITS of all SIZES kept in STOCK.

Glazed and Painted complete, ready for immediate use. Packed and sent to all parts of the Kingdom.

Public and Private Buildings, Warehouses, &c., Heated on the most approved scientific and economical principles.

References to the Nobility, Gentry, and Trade in most of the Counties in England.

Greenhouses—Heating Apparatus.

THE ONLY PRIZE MEDAL FOR GREENHOUSES HAS BEEN AWARDED TO T. H. P. DENNIS for IMPROVEMENTS in the CONSTRUCTION and APPLICATION of WROUGHT-IRON to HORTICULTURAL BUILDINGS.

DENNIS'S PATENT WROUGHT-IRON PRIZE MEDAL CONSERVATORIES are of the highest order.

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DENNIS'S PATENT WROUGHT-IRON PRIZE MEDAL ORCHID HOUSES and STOVES, with double-glazed roofs, are a complete arrangement.

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DENNIS'S PATENT WROUGHT-IRON PRIZE MEDAL CUCUMBER and MELON HOUSES are specially arranged and heated upon T. H. P. D's improved system.

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DENNIS'S PATENT PRIZE MEDAL FORCING HOUSES are eminently superior for all early work.

DENNIS'S PATENT WROUGHT-IRON PRIZE MEDAL STRAWBERRY HOUSES obtain a complete flood of air and light.

The above Patent Houses can be glazed with or without putty.

These Houses are now protected by three Royal Letters Patent, and from the complete adjustment of their constructional parts will vie most favourably with Wood-Structures in point of cost.

Designs and Estimates prepared for single or complete ranges of Houses in Wood or Iron.

Illustrated Catalogues on application to the Patentee,

T. H. P. DENNIS, Horticultural Builder and Hot-Water Engineer, Chelmsford.

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For samples and prices apply to

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BRADFORD'S NEW "VOWEL" WASHING MACHINES.

A remarkable success. Approved by Lonndresses. Awarded Seven Prize Medals this year (the only Medals at Dublin and Cologne International Exhibitions). The letters of unqualified approval received from purchasers daily (many with permission to publish) justify the Patentees in publicly soliciting a trial, which is allowed free of carriage or expense.

THOMAS BRADFORD & CO., 63, Fleet Street, London, E.C.; Cathedral Steps, Manchester; Dawson Street, Dublin. Catalogues post free.

AGRICULTURAL IMPLEMENTS.—Steam Engines, Threshing Machines, Pumps, Carts, Waggons, Ploughs, Harrows, Chaff Cutters, Cake Breakers, Turnip Cutters, Churns, Garden Tools, &c. Improved Wire Netting. Delivered carriage free.

Price Lists per post.

BURGESS & KEY, 95, Newgate Street, London, E.C.
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Oil Paint no longer Necessary.

HILL AND SMITH'S PATENT BLACK VARNISH for preserving Iron Work, Wood, or Stone. This Varnish is an excellent substitute for oil paint on all out-door work, and is fully two-thirds cheaper. It may be applied by an ordinary labourer, requires no mixing or thinning, and is used cold. It is used in the grounds at Windsor Castle, Kew Gardens, and at the seats of many hundreds of the nobility and gentry, from whom the most flattering testimonials have been received, which HILL & SMITH will forward on application.

From CHAS. E. B. SMEDLEY, Esq., *The Grange, near Boston*

"I have much pleasure in giving you a reply to your inquiries about the Black Varnish I have had from you for the last two years. It has answered my expectations fully, and as far as I am able to judge, it is the best material for preserving iron fencing, gates, and other wood work exposed to the air; and I can with safety recommend it as the best and cheapest article that is yet out. Wishing you every success."

Sold in casks of about 30 gallons each, at 1s. 6d. per gallon, at the Manufactory, or in 1s. 8d. per gallon paid to any Station in the kingdom.

Apply to HILL & SMITH, Brierly Hill Iron Works, near Dudley, and 22, Cannon Street West, E.C., from whom only it can be obtained

THE PERFECT SUBSTITUTE for SILVER.—The REAL NICKEL SILVER, introduced more than 30 years ago by WILLIAM S. BURTON, when PLATED by the patent process of Messrs. Elkington & Co., is beyond all comparison the very best article next to sterling silver that can be employed as such, either usefully or ornamentally, as by no possible test can it be distinguished from real silver.

A small useful set guaranteed of first quality for finish and durability, as follows:—

	Fiddle or Old-silver Pattern.			Bead Pattern.			Thread Pattern.			King's or Shell and Thread.		
	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.
12 Table Forks	1	12	0	1	18	0	2	10	0	2	16	0
12 Table Spoons	1	13	0	2	0	0	2	4	0	2	10	0
12 Dessert Forks	1	4	0	1	10	0	1	12	0	1	15	0
12 Dessert Spoons	1	4	0	1	10	0	1	12	0	1	15	0
12 Tea Spoons	0	16	0	0	19	0	1	2	0	1	5	0
6 Egg Spoons, gt. bowls	0	10	0	0	12	0	0	12	0	0	13	6
2 Sauce Ladles	0	6	0	0	8	0	0	8	0	0	9	0
1 Gravy Spoon	0	6	0	0	8	0	0	10	0	0	11	0
2 Salt Spoons, gt. bowls	0	3	4	0	4	0	0	4	0	0	4	6
1 Mustard Spoon, gt. bowl	0	1	8	0	2	0	0	2	0	0	2	3
1 Pair of Sugar Bows	0	2	6	0	3	6	0	3	6	0	4	0
1 Pair of Fish Carvers	1	4	0	1	10	0	1	10	0	1	10	0
1 Butter Knife	0	2	6	0	4	0	0	5	6	0	6	0
1 Soup Ladle	0	10	0	0	12	0	0	16	0	0	17	6
1 Sugar Sifter	0	3	0	0	4	6	0	4	6	0	5	0
Total	9	10	9	12	9	0	13	9	6	14	17	4

Any article to be had singly at the same prices. An oak chest to contain the above, and a relative number of knives, &c., 2l. 15s. Tea and coffee sets, dish covers and corner dishes, cruet and liqueur frames, &c., all proportionate prices. All kinds of replating done by the patent process.

CUTLERY, WARRANTED.—The most varied assortment of TABLE CUTLERY in the world, all warranted, is on Sale at WILLIAM S. BURTON'S, at prices that are remunerative only because of the largeness of the sales.

Ivory Handles.	Table Knives per Dozen.	Dessert Knives per Dozen.	Carvers per Pair.
	s. d.	s. d.	s. d.
31-inch ivory handles	12 6	9 6	4 6
34-inch fine ivory handles	15 0	11 0	5 0
3-inch very handsome handles	18 0	14 0	5 0
4-inch fine ivory handles	25 0	19 0	7 6
4-inch finest African ivory handles	33 0	26 0	11 6
Ditto, with silver ferules	36 0	30 0	12 6
Ditto, carved handles, silver ferules	50 0	43 0	17 6
Nickel electro silver handles, any pattern	25 0	19 0	7 6
Silver handles, of any pattern	84 0	54 0	21 0

Bone and Horn Handles—Knives and Forks per dozen.	s. d.	s. d.	s. d.
White bone handles	11 0	8 6	2 6
Ditto, balance handles	21 0	17 0	4 6
Black horn, rimmed shoulders	17 0	13 0	3 6
Ditto, very strong riveted handles	12 0	9 0	3 0

The largest stock in existence of Plated Dessert Knives and Forks, in cases and otherwise, and of the New Plated Fish Carvers

DISH COVERS and HOT-WATER DISHES, in every material, in great variety, and of the newest and most recherché patterns, and in CATALOGUE, WILLIAM S. BURTON has just published a set of six; elegant Modern Patterns, 35s. to 4l. 6s. the set; Britannia Metal, with or without Silver-plated Handles, 2l. 2s. to 2l. 8s.; the set of five; Electro Plated, 6l. to 12l. the set of four; Block Tin Hot-water Dishes, with Wells for Gravy, 12s. to 30s.; Britannia Metal, 22s. to 80s.; Electro Plated on Nickel, full size, 2l.

WILLIAM S. BURTON, GENERAL FURNISHING IRONMONGER by appointment to H.R.H. the Prince of Wales, sends a CATALOGUE gratis and post paid. It contains upwards of 600 Illustrations of his illimited Stock of Sterling Silver and Electro-Plate, Nickel Silver and Britannia Metal Goods, Dish Covers, Hot-water Dishes, Stoves, Fenders, Marble Chimney-pieces, Kitchen Ranges, Lamps, Gasehers, Tea-Trays, Urns and Kettles, Clocks, Table Cutlery, Baths, Toilet Ware, Turnery, Iron and Brass Bedsteads, Bedding, Bed Room Cabinet Furniture, &c., with Lists of Prices, and Plans of the 20 large Show Rooms, at 39, Oxford Street, W.; 1, 1a, 2, 3, and 4, Newman Street; 4, 5, and 6, Perry's Place, and 1, Newman Yard, London W.

FOWLER'S PATENT STEAM PLOUGH and CULTIVATOR may be seen at Work in every Agricultural County in England. For particulars apply to

JOHN FOWLER & Co., 28, Cornhill, London, E.C., and Steam Plough Works, Leeds.

GARDEN LABEL.—Neat, durable, and well-executed Label for all Garden purposes—Roses, Wall Trees, Collections of Stove and Greenhouse Plants. With ordinary care will last 10 years Specimen Label sent for three postage-stamps.

Address P. HAMMOND, Bishop's Castle Nursery, Salopshire.

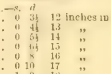
Glass for Garden Purposes.

JAMES PHILLIPS AND CO. beg to submit their prices as follows:—

PROPAGATING GLASSES.

	Each.—s.	d.		Each.—s.	d.
2 inches in diameter	.. 0	3½	12 inches in diameter	.. 1	9
3 ,, ,,	.. 0	4½	13 ,, ,,	.. 2	0
4 ,, ,,	.. 0	6	14 ,, ,,	.. 2	6
5 ,, ,,	.. 0	9½	15 ,, ,,	.. 3	0
6 ,, ,,	.. 0	8	16 ,, ,,	.. 3	6
7 ,, ,,	.. 0	9	17 ,, ,,	.. 4	0
8 ,, ,,	.. 1	0	18 ,, ,,	.. 5	0
9 ,, ,,	.. 1	2	19 ,, ,,	.. 6	0
10 ,, ,,	.. 1	4	20 ,, ,,	.. 7	0
11 ,, ,,	.. 1	6			

HAND GLASSES, WITH OPEN TOPS.



	Each.—s.	d.		Each.—s.	d.
12 inches	.. 6	6	18 inches	.. 9	6
14 ,, ...	.. 7	6	20 ,, ...	.. 10	6
16 ,, ...	.. 8	6	22 ,, ...	.. 11	6
			24 ,, ...	.. 12	6

Painted and Glazed with 16-oz. Sheet Glass.

London Agents for HARTLEY'S IMPROVED PATENT ROUGH PLATE.

LINSEED OIL, Genuine WHITE LEAD, Carson's PAINTS, PAINTS of various colours ground ready for use.

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POULTRY BREEDING in a COMMERCIAL POINT of VIEW. Price 2s. 6d. English and Foreign Poultry of the Choicest Breeds, Dorkings, Hedges, Improved Fencing, and all appliances for Natural and Artificial Hatching and Rearing, as supplied to the National Poultry Company. Can be had of

GEO. KENNEDY GILLIES, C.E., Belgrave House, Argyle Square, W.C.

SILVER PHEASANTS. Six or Seven Young Cocks to be Disposed of. Price moderate.

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WANTED, to be delivered in the course of the Winter at Wimbledon Park, about a mile from Wandsworth, S.W., about 150 CART-LOADS of STONES, BRICK RUBBISH, CLINKERS, or that suitable material for the foundation of Paths. Address, stating particulars and lowest price, to P. W., 18, Great Knight Rider Street, Doctors' Commons, E.C.

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WANTED to RENT, TWO ACRES of good LAND, suitable for a Coal Ground. Must be within an hour's journey of Covent Garden Market.

Address Mr CLARKE & SONS, Seedsmen, 20, King Street, Covent Garden, W.C.

TO BE LET, a Small NURSERY and SEED TRADE, with immediate Possession. There is about 4000 feet of Glass, the whole place well Stocked and doing a good Business.

For particulars apply to A. B., Post Office, Loughton, Essex.

To Nurserymen, Seedsmen, Gardeners, &c.

TO BE DISPOSED OF, the Residue of LEASE, the GREENHOUSES, Stock, Trade, Small SEED SHOP, PLANT, GOODWILL, &c., of the Dell Nursery, Rock Ferry, Cheshire. Established 1841. This compact Nursery, comprising about 4 acres, is well stocked with Evergreens and Deciduous Shrubs, Fruit, and Forest Trees; extensive collection of Roses, Bedding Plants, Greenhouse Plants, Ferns, &c., and being so close to Liverpool and the rising town of Birkenhead, affords an opportunity not usually offered. There is a convenient Residence, Stables, and all required Outbuildings on the premises.

Further particulars may be had on application to the EXECUTORS of the late J. KELLOCK, Rock Ferry, Cheshire.

Old-Established Nursery, near London, to be Disposed of.

MR. J. C. STEVENS has received instructions to offer for SALE by PRIVATE CONTRACT, the LEASE and GOODWILL of an OLD-ESTABLISHED NURSERY, within six miles of London. The Nursery, which is 9 Acres in extent, is principally stocked with the choicest Fruit Trees, for which it has for many years been celebrated. Also a good RETAIL SEED TRADE; and a Market Town, with Railway Station.

For further particulars apply to Mr J. C. STEVENS, Horticultural Auctioneer and Valuer, 38, King Street, Covent Garden, W.C.

Sales by Auction.

The Valuable Botanical Library of the late Dr. Lindley, Ph.D., F.R.S., F.L.S., &c.

MR. J. C. STEVENS begs to announce that he is favoured with instructions, by order of the Executors, to SELL by AUCTION, early in MARCH NEXT, the very VALUABLE BOTANICAL LIBRARY of the late DR. LINDLEY, PH.D., F.R.S., &c. The above Library contains a very complete series of nearly all the Botanical Works known, and the greater part elegantly bound and in perfect condition.

Catalogues are preparing, and in the Day of Sale announced in future advertisements.—38, King Street, Covent Garden.

Conifer Seeds and Lilium auratum Bulbs.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, January 11, at half-past 12 o'Clock precisely, a large quantity of SEED of CEDRUS DEODARA, most carefully harvested overland; 400 established LILIUM AURATUM BULBS, from Mr Catleugh; and several pounds of each Seed of PICEA NOBILIS, P. Nordmanniana, P. Webbiana, P. cephalonica, Abies Douglasii, A. Menziesii, Cupressus Lawsoniana, C. macrocarpa, C. Goveniana, and many other choice sorts, all gathered from trees in the South of England.

On view the Morning of Sale, and Catalogues had.

400 OLD-ESTABLISHED BULBS of LILIUM AURATUM.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, January 11, at half-past 12 o'Clock precisely, by order of Mr. CATLEUGH, of Feltham,

400 FINE BULBS OF THE TRUE LILIUM AURATUM.

On View the Morning of Sale, and Catalogues had.

N.B.—The above Sale will be a capital opportunity for intending Exhibitors to the International Horticultural Exhibition, of purchasing old-established Plants that will throw from 12 to 15 flowers each.

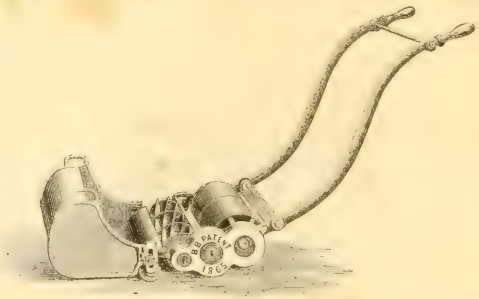
J. B. BROWN & CO.'S NEW PATENT B B LAWN MOWER.

MANUFACTURED BY

J. B. BROWN & CO.,

148, UPPER THAMES STREET,

LONDON, E.C.



GUARANTEED TO GIVE

PERFECT SATISFACTION,

AND IF NOT APPROVED OF

MAY BE AT ONCE RETURNED.

J. B. BROWN AND CO. having so very successfully introduced, at the Meeting of the Bath and West of England Society at Hereford in June 1865, the NEW PATENT B B LAWN MOWER, of their own manufacture, beg to mention that having supplied the large number of MACHINES ordered on that occasion, and up to the present time, with most unqualified satisfaction to every one, so far as they are aware, they are now actively preparing to execute further orders for the approaching season,—and, owing to the large number of such orders already received, they would very respectfully solicit all intending orders to be sent with as little delay as possible,—say to be executed at any time during the opening of the spring, or in the course of the summer, as may be desired.

The *Hereford Journal*, dated June 10, 1865, thus notices this new Machine:—"Messrs. BROWN & Co. are well known in connection with the best Lawn Mowing Machines—these very useful and now almost indispensable Machines, which save so much labour and at the same time so much improve the appearance of the lawn. Messrs. BROWN show a new Lawn Machine of their own manufacture, which attracted much attention on account of the compact arrangement of parts, its light and elegant appearance, and neat workmanship. It is worked by means of well-made geared or toothed wheels, which we believe to be more desirable than the use of chains, which are found to stretch and break so frequently, and cause much trouble. The working of this new Lawn Mower is light and silent, and we have no doubt it must become a great favourite."

The NEW B B PATENT LAWN MOWER is manufactured by MESSRS. BROWN AND CO. on their own premises in London, under their personal superintendence. It is worked by means of geared or toothed wheels, is quite noiseless, and is guaranteed to give perfect satisfaction in every respect.

PATENT B B HAND MACHINE.

PRICES—Including Carriage to any Railway Station or Shipping Port in England, with the necessary tools and Directions for use.

10-inch Machine	£3 10 0	*Easily Worked by a Boy.*
12-inch Machine	4 10 0	
14-inch Machine	5 10 0	
16-inch Machine	6 10 0	*Ditto by a Man.*
18-inch Machine	£7 10 0	*Easily Worked by a Man.*
20-inch Machine	8 0 0	*Ditto by Two Men.*
22-inch Machine	8 10 0	
24-inch Machine	9 0 0	

If with Brass-mounted Grass Box, 5*s.* extra.

PATENT B B HORSE MACHINE.

PRICES—Complete, without extras, including Carriage to any Railway Station or Shipping Port in England, with the necessary tools and Directions for use.

42-inch Machine	£28 10 0	*Drawn by a Horse.*
36-inch Machine	24 10 0	
30-inch Machine	21 10 0	*By a Horse or Strong Pony.*

PATENT B B PONY and DONKEY MACHINE.

PRICES—Complete, without extras, including Carriage to any Railway Station or Shipping Port in England, with the necessary tools and Directions for use.

30-inch Machine	£17 10 0	*Drawn by a Pony.*
28-inch Machine	16 10 0	
25-inch Machine	14 10 0	*Drawn by a Donkey.*

New Improved Horse, Pony, and Donkey Boots, wholly of Leather, as follows:—Horse Boots, 24*s.*; Pony Boots, 21*s.*; Donkey Boots, 16*s.* per set.

*** *Every Machine sent out is warranted to give ample satisfaction, and if not approved of may be exchanged for any other size of Machine, or for the Machine of any other Maker, or may be at once returned unconditionally.*

A Specimen of the best MOWING MACHINES which have been brought out for the Season will always be on view at J. B. BROWN & Co.'s Warehouse, 148, Upper Thames Street, E.C., quite close to their Offices, for the inspection of those who may wish to select for themselves; and Orders for the Machines of other Makers will always, as formerly, have careful and prompt attention.

☞ J. B. BROWN & Co. beg to make the announcement, so important to all who use MOWING MACHINES, that they now EXECUTE REPAIRS of all MACHINES in LONDON. All REPAIRS and ADJUSTMENTS of MACHINES promptly executed at moderate fixed rates.

The NEW PATENT B B LAWN MOWER has already been patronized by Her Majesty the QUEEN, for the Royal Gardens at Windsor Castle, Osborne, Kew, and Hampton Court; by His Royal Highness the PRINCE of WALES, for Sandringham; and by His Grace the Duke of SOMERSET, the Right Hon. the Earl of DERBY, the Right Hon. the Earl of CHARLEMONT, and numbers of the principal Nobility and chief Landed Proprietors in the Kingdom. Besides to Merchants, for export to the Continent, and to Egypt, India, Australia, Natal, and other countries, and to a large number of the most respectable Ironmongers, Nurserymen, and Seedsmen in various parts of England, Scotland, and Ireland, many of whom have applied for special agencies, and ordered Machines for next Spring delivery.

TESTIMONIALS.

From Mrs. PRICE, *Hagley Villa, Lugwardine, Hereford, August* 18, 1865.

"I have much pleasure in informing you that the Mowing Machine [a 14-inch B B] I ordered from you at the Bath and West of England Meeting, held in Hereford, has in every respect given the greatest satisfaction, and I am very much pleased with it."

From W. H. APPERLEY, Esq., *Withington, near Hereford, August* 14, 1865.

"The New B B Lawn Mower I purchased of you has now been frequently used by my Gardener, and he is perfectly satisfied with it. It does its work well. I shall feel pleasure in recommending your Machines."

From GEORGE MCILAR, Esq., *Mitcham Common, Surrey, September* 27, 1865.

"I am very pleased with the Lawn Mower I had from you [a 14-inch B B Machine]. It is certainly the most compact one I ever saw, and does its work well."

From A. LYON, Esq., *Napier House, Edmonton, October* 4, 1865.

"I have given the B B Mowing Machine [a 14-inch one] a good trial, and am quite satisfied with it. It works so easily that my daughters have on several occasions used it. I shall be glad to give you a testimonial at any time, as I consider it worth one. You can make what use you like of my name in furthering the sale of the Mower."

*** *Every Machine sent out is warranted to give ample satisfaction, and, if not approved of, may be exchanged for any other size of Machine, or for the Machine of any other Maker, or may be at once returned unconditionally.*

J. B. BROWN AND CO., OFFICES, 18, CANNON STREET, CITY, LONDON, E.C.

NEARLY OPPOSITE ST. SWITHIN'S LANE and "LONDON STONE," and near LONDON BRIDGE.

WAREHOUSE (where Machines are kept in Stock), 148, UPPER THAMES STREET, E.C.

OPPOSITE the CITY of LONDON BREWERY, and close to the LONDON BRIDGE STEAM BOAT PIERS.

Editorial Communications should be addressed to "The Editor." Advertisements and Business Letters to "The Publisher," at the Office, 41, Wellington Street, Covent Garden, London, W.C.
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THE GARDENERS' CHRONICLE
AND
AGRICULTURAL GAZETTE.

A Newspaper of Rural Economy and General News.

No. 2.—1866.] SATURDAY, JANUARY 13. {Price Fivepence, STAMPED EDITION, 6d.

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INTERNATIONAL HORTICULTURAL EXHIBITION and BOTANICAL CONGRESS.

Under the Patronage of Her Majesty THE QUEEN, and of their Royal Highnesses the PRINCE of WALES and the DUKE of CAMBRIDGE.

The EXHIBITION and CONGRESS will OPEN on MAY 22, and continue till May 25. Subscribers' names will be received, and Schedules and Prospectuses may be obtained on application to the Secretary, at the Offices, 1, William Street, Lowndes Square, London.

LEEDS HORTICULTURAL SOCIETY.—The FLORAL FETE and GALA for 1866 will be held on WEDNESDAY and THURSDAY, June 6 and 7.

JAMES BIRBECK, Secretary.

EIGHTH YEAR of the GRAND YORKSHIRE GALA, York, JUNE 13 and 14, 1866.—FLORAL FETE. Prizes £400. Schedules and Forms of Entry may be had on application to JOHN WILSON, Secretary.

Committee Room, 13, New Street, York.

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New and Genuine AGRICULTURAL, GARDEN, and FLOWER SEEDS. Special prices and advantageous offers on application.

Genuine Garden and Agricultural Seeds.

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THE LONDON SEED COMPANY, LIMITED. The GENERAL PRICE CURRENT of KITCHEN GARDEN, FLOWER, and FARM SEEDS is now ready, and will be forwarded gratis and post free to any address in the Kingdom.

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CARTER'S GUINEA BOX of SEEDS will produce choice Vegetables all the year round.

CARTER'S TWO-GUINEA BOX of SEEDS will produce choice Vegetables all the year round.

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237 AND 238, HIGH HOLBORN, JAMES CARTER & Co.

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PRICED DESCRIPTIVE CATALOGUE of GARDEN and FLOWER SEEDS on application to H. BROWN, 4, Commutation Row, Liverpool.

POYNTER'S ANGLICAN COLLECTIONS of SEEDS, prices 7s. 6d., 14s., 25s., 30s., 42s. each (carriage free Great Western Railway), are the simplest and best offered. R. H. POYNTER, Seed Merchant, Taunton.

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Now ready, 1865 and 1866.

PAUL and SON'S NEW ROSE CATALOGUE. See Note on Forcing Roses. Post free on application. "Old" Cheshunt Nurseries, N.

To the Trade.

STANDARD and DWARF STANDARD ROSES. Extra and at reasonable prices. PAUL & SON, "Old" Cheshunt Nurseries, N.

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Grape Vines—Fruit Trees.

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To the Trade.

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To the Trade.

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To the Trade.

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Double Italian Tuberoses.

BUTLER AND MCCULLOCH beg to offer fine imported Roots of the above at 3s. per dozen. BUTLER & MCCULLOCH, Covent Garden Market, W.C.

To the Trade.

DOUBLE ITALIAN TUBEROSES, fine large picked roots. JAMES CARTER & Co., 237 and 238, High Holborn, London, W.C.

GENUINE NEW GARDEN SEEDS. —PRICED DESCRIPTIVE CATALOGUE Post Free upon application. JAMES DICKSON & SONS, Seed Merchants, &c., 102, Eastgate St., Chester.

Rust's Thames Bank Peach.

OSBORN AND SONS have a few Maiden Plants left for Sale of the above-named new late Yellow-fleshed PEACH

Dr. Hogg, in the "Gardeners' Year Book for 1864" says.—"The flesh is tender, melting, and juicy." He further adds, "This is certainly the best of the Yellow-fleshed Peaches we know of."

Price 2s. 6d. each. An allowance to the Trade.

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Extra strong Fruiting Vines.

JAMES DICKSON AND SONS can still supply STOTT, Gros Colmar, and Pearson's Black CANES, to produce from 3 to 5 lbs. of Grapes this year. Price 7s. 6d. each and upwards. Also Canes for Planting out.

The "Newton" Nurseries, Chester.

H. S. WILLIAMS begs to direct special attention to the following, out of upwards of 1,000 which he now holds in fine stock. PRICED and DESCRIPTIVE LISTS can be had on application.

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Fern Gray Nursery, S.E.

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Application to the above can be made direct to Erfurt; or to JOHN A. SCRIMSHIRE, Seedsman, Cheltenham.

Chrysanthemums.—Notice.

IN ANSWER TO NUMEROUS ENQUIRIES.

ADAM FORSYTH begs to inform his Friends and the Public that he will be prepared to send out his large Collection of CHRYSANTHEMUMS early in the Spring 1866.

CATALOGUES (Priced) will be sent forward on the same.

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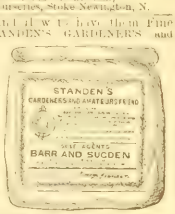
CHRYSANTHEMUMS.—To all who have them Free by Enclosing.—See STANDEN'S GARDENERS' and AMATEUR'S FRIEND.



STANDEN'S GARDENER'S and AMATEUR'S FRIEND, an Excellent Turfy Fertilizer, for Chrysanthemums and all kinds of Stove and Greenhouse Plants, Vines and other Fruit Trees in pots, &c.; also Vegetables, &c., in the open ground.

No. 1 FERTILIZER is the best adapted for Chrysanthemums and Hardy-wooded Plants of every description.

No. 2 FERTILIZER is recommended for Soft-wooded Plants, Bulbs, &c.

Sample Canisters, 1s. & 2s. 6d. Bags, 5s. 6d., 10s. 6d., and 21s. May be had of the leading Nurserymen and Seedsmen.

BARR & SUGDEN, Seed and Plant Merchants, 12, King Street Covent Garden, W.C.

A List of Agents will shortly be published.

Elvaston Nurseries. Important to Planters.

WILLIAM BARRON begs to offer the following at extremely low figures, to Noblemen, Gentlemen, and others engaged in Planting on a large scale:—

PINUS LARICIO (Austrian).—This highly ornamental tree surpasses the Larch, both as to rapidity of growth and quality of timber. It will thrive where the Larch will not. It is also used as spars and masts in the Dutch navy. 2-year seedlings

PINUS ROMANA.—2-years seedlings.

PINUS PALLASIANA.—2 years seedlings.

ABIES NORDMANNIANA.—Few people are aware of the value of the timber of this noble tree. 2ft. to 3ft.

PICEA NOBILIS (true).—Very fine. 6 to 9 inches.

BERBERIS DARWINII.—Too much cannot be said of this fine evergreen shrub. It is hardy, and the profusion of its orange-coloured blossoms, together with the quantity of berries which it bears (although thousands are very long), render it one of the most attractive and at the same time useful plants for lawn, as well as cover planting ever introduced. 1-year seedlings.

BERBERIS WALLICHIANA.—1-year seedlings.

Prices will be forwarded on application.

Elvaston Nurseries, Borrowash, near Derby.

WANTED, to be delivered free at Abbey Wood Station on the North Kent Railway, 150 COMMON ASH, and SWEET CHESTNUT SEEDLINGS. Transplanted, not less than 3 feet high. Also 1,000 transplanted QUICK THORNS.

Sealed tenders per lot to Supplies, not per 1000 for Thorns, to Mr. [illegible], Secretary's Office, Land Office, London, E.C.

Transplanted Larch and Quicks.

CHIVAS AND WALKER, the Original CHIVAS, of Chester, offer several Millions of TRANSPLANTED LARCH, from [illegible] feet high, strong, well-rooted, and [illegible] Also [illegible] PLANTS, 2 to 3 feet, [illegible] QUICKS, a large quantity of [illegible] Beech, Hedging, etc., English Oaks, Sycamore, Spanish Chestnut, Ash, Elm, Alder, Birch, and a great stock of other Forest Trees. [illegible] PLANTS, both Ornamental Trees and Shrubs, for the Standard Avenue, and extra strong Transplanted Evergreens in stock.

Terms, and full particulars of free delivery, see CATALOGUE, which will be forwarded on application.

GENUINE SEEDS.

JAMES VEITCH

BEGS TO ANNOUNCE THAT HIS

CATALOGUE OF KITCHEN GARDEN AND FLOWER SEEDS FOR 1866,

WITH LIST OF IMPLEMENTS AND OTHER GARDEN REQUISITES,

Is now Published, and will be forwarded Free on application.

J. V. devoting his personal attention to this department of his business, can warrant his Seeds TRUE to NAME, and of the most genuine description.

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THE ROYAL EXOTIC NURSERY, KING'S ROAD, CHELSEA, LONDON, S.W.

NEW VEGETABLE, FLOWER, and AGRICULTURAL SEEDS.

JOHN & CHARLES LEE,

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ARE PREPARED TO EXECUTE ORDERS FOR EVERY KIND OF

VEGETABLE, FLOWER, AND AGRICULTURAL SEEDS,

GROWTH OF 1865.

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OSBORN'S WHITE WINTER BROCCOLI ..	1	6	ROWDEN'S BROWN COS LETTUCE	1	6
NEW AMERICAN TOMATO	1	6	SCOTT'S SUPERB WHITE COS LETTUCE ..	1	0
This is very large, and less watery than the old Red.			BELLE BONNE SUMMER CABBAGE LETTUCE	1	0
			These three Lettuces are less liable to run than any we know.		

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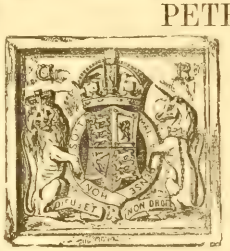

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Respectfully offer NEW SEED of this most beautiful species, saved from their own plants, at 1s. and 2s. 6d. per packet.

The Trade supplied by the 100, 1000, *or* 10,000 *Seeds. Prices on application.*

NEW PRIZE MELONS.

For descriptions of these first-class Fruits, see last Numbers of *Gardeners' Chronicle*.

THE NEW CLIANTHUS DAMPIERI,

In varieties of colour, as saved from the White and others, as exhibited by the Raiser.

2s. 6d. and 5s. per packet of 12 and 24 Seeds.

The present is the best time for sowing, to ensure bloom the first season.

E. G. HENDERSON AND SON, WELLINGTON NURSERY, ST. JOHN'S WOOD, N.W.

SUTTON'S RINGLEADER (or CARTER'S FIRST CROP) PEA.

THE EARLIEST IN CULTIVATION.

SEEDSMEN BY APPOINTMENT Sutton AND Sons

This PEA was introduced to the public last season simultaneously by Messrs. SUTTON AND SONS and Messrs. JAMES CARTER & Co., both parties being entirely ignorant of the fact that the stocks from which they had raised their supplies were obtained a few years since from the same locality, and in fact from the same person who originated it. Of all the kinds tried against RINGLEADER (or FIRST CROP) none have proved so early.

The price charged last season was the same by both vendors, viz., 2s. 6d. per quart, and the demand at that time being so great as to prevent our holding a sufficient quantity for seeding, the price cannot be reduced this season.

SEEDSMEN BY APPOINTMENT Sutton AND Sons

The following are Extracts from a few of the numerous Letters received relative to this unrivalled Early Pea:—

From Mr. WILLIAM DOWELL, *Gardener to* Sir George Chetwynd, *Grendon Hall, Atherstone, May* 24, 1865.

"Your 'Ringleader' is earlier than any Pea I have ever grown. I shall gather a dish to-morrow morning, which is by far the earliest Pea we have had."

From Mr. W. POVEY, *Gardener to* H. P. Best, Esq., *Donnington Grove, near Newbury, May* 24.

"I planted your 'Ringleader Pea' on the last day of February; on the same day I planted 'Daniel O'Rourke' and other early sorts. Your 'Ringleader' is uncommonly well podded, and the pods are filling fast. I have no doubt they will be cleared, and the ground planted, before I pick from any of the other early sorts."

From Mr. JAMES PEARSON, *Gardener to* H. Bentley, Esq., *Woodlesford, Leeds, May* 25.

"Your 'Ringleader Pea' is six days earlier than Dillstone's, and is the most promising Pea I have grown."

From Mr. H. HARRISON, *Dedham, May* 26.

"Your 'Ringleader Pea' has proved with me by far the earliest, and will be cleared off the ground before the others have done blossoming. I consider the 'Ringleader' the quickest Pea of any of the early sorts grown in this neighbourhood."

From the Rev. WILLIAM WOOD, *Dereswood Parsonage, Great Missenden, May* 27.

"I expect your 'Ringleader' Pea will be a fortnight earlier than 'Sangster's No. 1' sown on the same day; in fact, it is earlier than any Pea which my gardener has known. The garden lies high, and is exposed to the cold."

From Mr. BAILEY WARDS, *Gardener to* S. A. Sykes, Esq., *Bagged, Brough, May* 29.

"I have this year sown your 'Ringleader' Pea against your Early 'Champion,' which I have hitherto found the earliest in cultivation, and I am glad to tell you that it came into bloom ten days earlier. It has been covered with blossoms from top to bottom. I am sure it is a valuable addition to our early Peas."

From Mr. GEORGE SAYMOER, *Holme Park, Sonning, May* 29.

"I have great pleasure in reporting favourably of your new early Pea 'Ringleader.' It was sown the same day as five of the most popular early sorts. I gathered from it on the 26th of May, which is 14 days earlier than I shall of any of the other varieties. It is also very prolific; altogether with me it has proved an acquisition."

From WILLIAM THOMAS REW, Esq., *Coombefield, Taverton, May* 30.

"Your 'Ringleader' Pea has quite proved worthy of its name. I planted it side by side on the same day with Sangster's No. 1 (which has hitherto been my earliest), but now the 'Ringleader' has blossomed at least one week before the others, and from all appearances will be fit together quite a fortnight before them. My garden is in a very high and exposed situation, as well as rather late."

From JOHN FORD, Esq., *Merton Hall, Warwick, May* 31.

"My car ones sowed on the 14th of January, side by side, 'Sutton's Ringleader,' 'Sutton's Champion,' 'Early Essex Rival,' and 'Dillistone's Early Prolific' Peas. 'Sutton's Ringleader' was in bloom first, coming in three or four days, the others a week or so later."

From Messrs. DOBSON & SON, *Woodlands Nursery, Lesmouth.*

"We tried your 'Ringleader' Pea last season with 'Dillistone's,' and it was from a week to ten days earlier. It is certainly the earliest Pea that has come under our notice."

From the GARDENERS' CHRONICLE, *August* 12, 1865.

"PEAS.—On the 28th of March I sowed Sutton's 'Ringleader,' and had a splendid crop in less than eight weeks, which I allowed to ripen. I then sowed the ripe seed on July 20th, and have now a capital crop of Peas, the second crop having been six weeks in growing, and the two crops have not occupied in all more than 15. I begin to fear a frosty August, the pods in which will not have time well filled.—*Thomas Fielder, White House, Bedfield, Burks.*"

Retail Price, 2s. 6d. per quart.

PRICED LISTS of FLOWER ROOTS, GARDEN SEEDS, FARM SEEDS, &c., Gratis and Post Free.

SUTTON AND SONS, ROYAL BERKSHIRE SEED ESTABLISHMENT, READING.

German Flower Seeds, Fresh Imported.

SUTTON AND SONS have imported a superior assortment of NEW GERMAN FLOWER SEEDS, a PRICED LIST of which may be had post free. Reading.

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FINE GRASS LAWNS in FLOWER GARDENS, &c.

The great expense of cutting and carting Turves from a distance may be avoided, and a superior Turf produced in a few months by sowing

SUTTON'S LAWN GRASS SEEDS,

which consist solely of the finest and shortest-growing kinds, perfectly free from Moss and other weeds.

Price 18s. per bushel, or 1s. per pound. Carriage free.

SUTTON & SONS,
Seed Growers, Reading, Berks.

CARTER'S GARDENERS' VADE MECUM for 1866

now ready

LINCOLNSHIRE GEM PEAS (MARTIN & SON).—

See Testimonials. Superior to Dixon's Yorkshire Hero or any other Pea grown here.

Hull, 7, Market Place; and Cottingham. Established 1788.

Nuneham Park Onion.

WM. CUTBUSH AND SON beg to announce that in consequence of the extraordinary demand for this superb Onion, NO MORE SEED can be SUPPLIED this Season, except from those Seedsmen who have received a supply.

Highgate Nurseries, London, N.

Seed Business—Notice.

WILLIAM COKER having had the entire Management of the late Mr. VEITCH'S Seed Business at Exeter (for the last 18 years), begs to announce to the Nobility, Clergy, Gentry, his friends, and the public generally, that he has COMMENCED the SEED BUSINESS at Taunton, Somerset, and from his long experience and knowledge of the Trade, and with the full intention of supplying seeds of the very best quality, respectfully solicits a liberal share of their patronage.

N.B. CATALOGUES post free on application.

Seed Warehouse, No. 18, Fore Street, Taunton, Somerset.

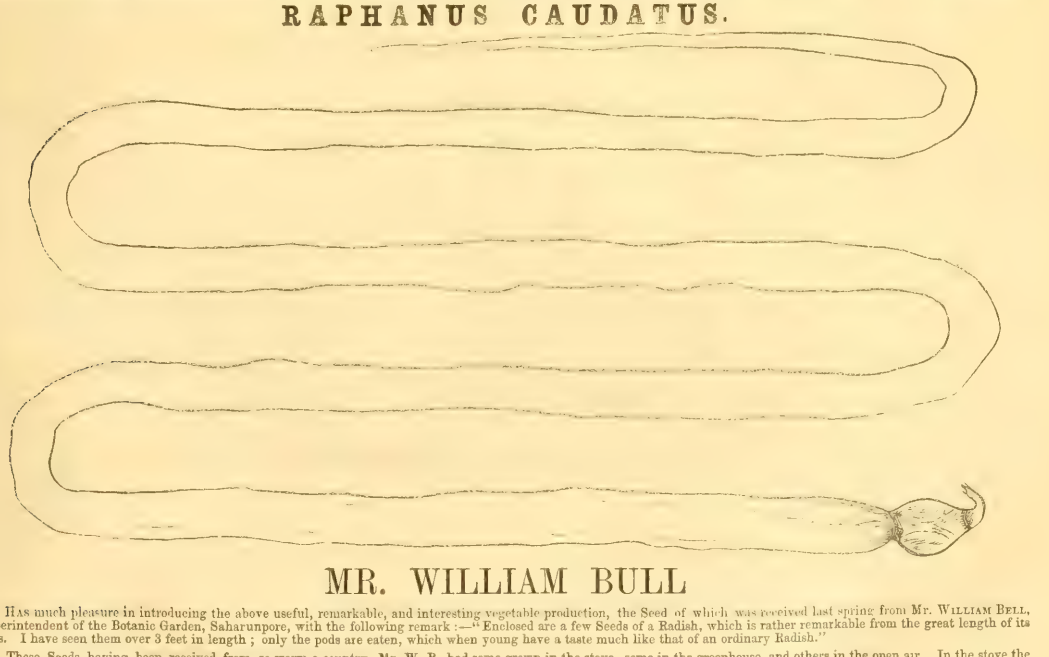
Northampton Nurseries.

JOHN PERKINS, SENIOR, begs to call the attention of Nurserymen, Gentlemen, and others engaged in planting, to his Stock of 2- and 3-years BLACK THORN for Cover Fences, of which he has upwards of Two Millions, the greater part of which extra large, and well rooted. LARCH FIR, 2 to 3 ft., 1,000 SPRUCE, and SCOTCH FIR, 2 to 3 ft. Also a general Stock of

Privet, 1 to 2 ft.	Beech, 1 to 4 ft.
Berberis, 1 to 4 ft.	Thorn Quicks, 4 to 5 ft., 5 to 6 ft.
Hollies, 1 to 2 ft.	Elms, English, 5 to 8 ft., 8 to 10 ft.
Green Box, 1 to 2 ft.	Maple, 6 to 8 ft.
Laurels, 2 to 3 ft.	Horse Chestnuts, 6 to 8 ft.
Portugal Laurels, 1½ to 2 ft.	Sycamores, 6 to 8 ft.
Evergreen Privet, 2 to 3 ft.	Cedrus Deodara, 4 to 6 ft., 6 to 8 ft.
Hydrangea, 2 to 3 ft.	

J. P.'s stock of all kinds of Fruit, Forest, Ornamental Trees, &c., is very extensive, and this season remarkably fine, and in excellent condition for removal, having been frequently transplanted. Price, &c., on application to 62, Market Square, Northampton.

RAPHANUS CAUDATUS.



MR. WILLIAM BULL

HAS much pleasure in introducing the above useful, remarkable, and interesting vegetable production, the Seed of which was received last spring from Mr. WILLIAM BELL, Superintendent of the Botanic Garden, Saharunpore, with the following remark:—"Enclosed are a few Seeds of a Radish, which is rather remarkable from the great length of its pods. I have seen them over 3 feet in length; only the pods are eaten, which when young have a taste much like that of an ordinary Radish."

These Seeds having been received from so warm a country, Mr. W. B. had some grown in the stove, some in the greenhouse, and others in the open air. In the stove the plants failed, in the greenhouse they did very well, but in the open air its cultivation was most successful. When sown, the Seed easily vegetates, and in about eight weeks the plants flower profusely, and then produce numerous siliquas (seed-pods), which elongate in the most rapid manner (sometimes as much as 3 inches in a night), until they get about 3 feet in length.

The Seed Pods vary in colour; on some plants they are purple, on others green, while others again are purplish green. When the Plants are tied upright they have a very singular appearance, for each plant produces from 15 to 20 pods, some hanging quite straight, others twisted or whorled into fantastic shapes. These pods being succulent and far superior in delicacy of flavour to the ordinary root Radishes, can be eaten in their young state in the same way, and applied to all similar purposes; for salading they are delicious, and for pickling invaluable, indeed it might be regarded as one of the most useful vegetables that have been introduced for many years.

Price, in Sealed Packets, 3 Seeds Half-a-Guinea; 7 Seeds, a Guinea.

ESTABLISHMENT for NEW and RARE PLANTS, KING'S ROAD, CHELSEA, S.W.

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WILL THIS WEEK BE SENT TO ALL OUR CUSTOMERS.

☞ *There will then be a few Copies left for General Distribution, which can be had Free and Post Paid by intending Purchasers.*

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OF

CHOICE SEEDS

FOR

FLOWER AND KITCHEN GARDENS,

BEING THE COMPENDIUM OF THEIR

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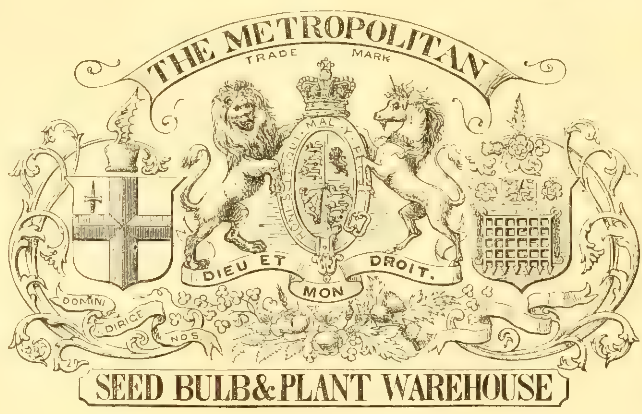

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ELEVEN PRIZES AT THE SOUTH KENSINGTON SHOW IN JULY LAST.

WILLIAM PAUL

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AND WILL BE FORWARDED ON APPLICATION FREE BY POST.

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Also, NATURAL GRASSES for LAWNS and MEADOWS, fine sorts of MANGEL WURZEL, TURNIP, and other AGRICULTURAL SEEDS.

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SUTTON AND SONS, ROYAL BERKSHIRE SEED ESTABLISHMENT, READING.

The Gardeners' Chronicle.

SATURDAY, JANUARY 13, 1866.

MEETINGS FOR THE ENSUING WEEK.

[illegible]

Few questions [illegible] plants have excited keener interest than those relating to the FERTILISATION OF PLANTS. The [illegible] curiosity and arouse the attention of the [illegible] from the admissions of all parties that the [illegible]

[illegible]

a careful hybridiser, and between them they have not only confirmed what has been done before, but they have, as it appears, successfully attacked one of those outlying batteries we spoke of just now. To drop the metaphor, we may state that the enormous elongation of the pollen tube, which takes place in many plants, has been a subject of marvel to many. It seemed difficult to conceive that this (in some cases) rapidly elongating tube could be a mere extension of the pollen grain—this was almost as difficult of belief as that 'Pharaoh's serpents' can emanate from the little cones of tinfoil in which they lie concealed till the vivifying flame is applied. But now we are told that the pollen tube is not one continuous tube, but that it is cellular; that it grows by addition of new cells, and hence it is propelled through the tissues of the style, even when its upper extremity is destroyed, at the rate of 1 inch in six hours (in Tigridia) on the average, though the rapidity of its growth, and consequently of impregnation, depend to some extent upon atmospheric influences. Thus, under the influence of direct heat and sunlight, together with a humid atmosphere, the growth was found to be at the rate of an inch in two hours. In its passage down the style the pollen tube is nourished by the juices of the style cells, and even by the cells of the ovule itself when it has reached that body. It pushes the embryo sac before it for a slight distance, or more properly speaking, it indents it without perforating it; but after a time the contents of the pollen tube pass (query by endosmosis?) into the embryo sac, and an embryo plant is soon after formed. We were beginning to fear that our race of botanical microscopists, if we may so call them, was dying out, but we rejoice to find some still at work. Truly there is work enough for them.

FEW of the many reports and notices that come under our observation are so full of present interest and future promise as the REPORTS OF THE VARIOUS COLONIAL BOTANISTS AND DIRECTORS OF BOTANIC GARDENS. We have briefly alluded in a recent Number to the report on the Garden at Calcutta, by Dr. ANDERSON, rendered peculiarly interesting from the record of the effects of the disastrous Cyclone. We have recorded the doings of the colonial botanists in Ceylon, at the Cape of Good Hope, at Brisbane, and other places. Even unhappy Jamaica furnished its quota of information, through Mr. WILSON; and indeed we may lay claim to the publication of that gentleman's prevision of the negro insurrection weeks before it actually happened. But with this tragedy we have nothing to do; ours is a brighter task—to congratulate the Directors of such institutions as those to which we have referred on their zeal and energy, and on the extremely valuable results that are likely to arise from their labours. They are the men who, figuratively speaking, are making two blades of Grass grow where none grew before—who are enriching our colonies with plantations of Cinchona, of Tea, of Cotton, of Indigo, and of whatever is likely to be of service, either in the amelioration of climate, the reclamation of waste lands, in the production of necessary articles for human consumption, or in furnishing materials for commerce. It is difficult to over-estimate the services these gentlemen render in their generation, or to appreciate the value of their labours for those that are to come. We have now before us the reports of Dr. FERDINAND MUELLER on the Melbourne Botanic Garden for 1865, and that of Dr. THWAITES on the establishment under his charge. Dr. MUELLER'S is not perhaps so interesting to us in the home country as some others that have reached us, and which owed their special interest to peculiar circumstances, but it bears impress of untiring labour and zeal. We read of thousands of trees added to the public walks, avenues, and roadsides of the colony; others planted in such numbers in the Garden itself that droughts will be materially lessened in consequence. Nearly 40,000 Stone Pines raised at one time, and 7000 Deodars raised at another, have been dispersed over the country from the Melbourne Garden. Alluding to the necessity of a laboratory in the Garden, where the mercantile value of many vegetable products might be determined, Dr. MUELLER calls attention to the little-known fact, that from the resin of the Grass Trees picric acid can be prepared, and which is now extensively used for dyeing purposes. "That unbounded treasures of our forests," writes Dr. MUELLER, "available by dry distillation of their woods, remain dormant, is but too apparent; and in the furtherance of native industry and in affording new means for the employment of the colonists, the special application of technological chemistry should be brought to bear on this branch of our resources." Dr. MUELLER'S report concludes with an account of the botanical publications in which he has described so many Australian forms, and with some notices of the enormous herbarium gathered together mainly by his earnest zeal. This herbarium is being transmitted, piece-meal as it were, to Kew, in order that it may be submitted to the investigation of Mr. BENTHAM, who is engaged on a flora of Australia. With the aid of two such botanists no part of the world will be so well known botanically as Australia.

Dr. THWAITES' report derives its main interest from the success with which the cultivation of the Cinchonas has been attended in that island. No less than 129,350 plants, either of C. succirubra or of C. officinalis, have been distributed, while applications have been received for more than three times that number. Several of the plants of C. officinalis have produced seeds, and one plant of C. succirubra is mentioned as coming into flower, "so that there appears to be every prospect," writes Dr. THWAITES, "of quinine becoming before very long one of the most important products of the island."

— WE are now able to state definitively, that the INTERNATIONAL HORTICULTURAL EXHIBITION of 1866 will take place on the site of the Great Exhibition of 1862, the sanction of Her Majesty's First Commissioner of Works having been obtained to apply the central portion of the space opposite the southern entrance to the Horticultural Garden, to this purpose. The building which it is proposed to erect, will cover an area of about three acres, which will be laid out in the form of an ornamental garden, the old-fashioned formal stages and tabling being entirely dispensed with. From this building there will be free access to and from the Horticultural Garden, which will be an agreeable promenading ground for the visitors.

We take an early opportunity of inviting the attention of those of our readers who grow plants for exhibition, to the circumstance, that at the SATURDAY SHOWS of the Royal Horticultural Society (which being found agreeable to the Fellows and beneficial to the exchequer of the Society, are to be continued), the awards no longer consist of Certificates only, but of MONEY PRIZES, according to a schedule which can be had on application to the Assistant Secretary, at the Gardens, South Kensington.

— We regret to have to announce the death, on the 5th inst., of Mr. HENRY SCOTT, who was for many years gardener to WYNN ELLIS, Esq., of Pinnsbourne Park, Hertford. We are informed that he has been a subscriber to the Gardeners' Royal Benevolent Institution since 1845, and that by his will he has left a legacy of 200*l.* to the Institution—a good example, certainly, and one that may be recommended for imitation to those whose circumstances permit them to do likewise.

EFFECTS OF THE TWO PAST SEASONS ON INSECT LIFE.

THE last two seasons have been so extremely exceptional in respect to the range of the temperature, the rainfall, and other peculiarities of the weather, that, as might have been predicted, some curious results in connection with insect life have been noticed. Of these the extraordinary quantity of specimens of the humming-bird hawk moth, and of the caterpillars and perfect insects of the death's-head moth, have attracted public attention almost all over the country. Wasps in the early part of the summer of 1864 were extremely numerous, and it was feared that no fruit would escape them in the autumn, but a disease set in by which the grubs in the cells of their underground nests died and became putrid, and in the autumn scarcely a wasp was to be seen. It was accordingly with great surprise that in the fine days of the spring of 1865, vast numbers of queen wasps were seen flying over the hedges, but many of these were probably unfertilised. It was probably owing to this want of impregnation that led to a large quantity of queen wasps congregating together in the window of Caldecote Church, Herts, in the middle of April, as recorded in "Notes and Queries," October 21, 1865. The foundations of many nests were however commenced, but the progeny, when produced, shared the fate of the previous year's brood, and again in the autumn we had scarcely any wasps in the greater part of the country, although they were numerous here and there. This destruction of the larvæ of the wasps seems to have been produced by a disease quite analogous to that by which so many bee-hives were destroyed in the two or three preceding seasons, and which was known under the name of "foul brood," and it can scarcely admit of a question, that it was, of its kind, an epidemic, just as the rinderpest and cholera have proved to be.

Aphides in the dry early part of the season of 1865 promised to be extremely numerous, but as the summer advanced, their numbers decreased, although the weather seemed most favourable for their production, and scarcely an aphis was to be found throughout the latter part of the summer on our Roses, &c. No honey dew was to be seen on the leaves of the trees. The honey bee soon found this out, and perhaps also from the nectar of flowers being developed in but small quantities, owing probably to the excessive dryness of the season, the bees took to the fruit, to which they did as much mischief as the wasps in ordinary seasons. It was probably also in consequence of the want of the ordinary supply of succulence in the young shoots of plants that the aphides had died off. But if wasps were scarce, earwigs abounded to an extraordinary extent, entering into houses and distributing themselves "up stairs and down stairs, and in my lady's chamber." I found them in great numbers about my bee-hives, and instances were recorded of their devouring the grubs of wasps. For several days they swarmed (being at the hive in the pupa state) on the stone steps of the south turret of the museum at Oxford, although there is no adjacent spot where it seemed likely that they could have been developed. They had also swarmed in the preceding year, and a correspondent of mine killed more than 7000 in that year, as many as 1460 in one day, and again, in 1865, not fewer than 2500 to the end of June, which latter must have been in the perfect state.

Another correspondent has remarked that the common daddy-long-legs, the grubs of which are so destructive to Grass in lawns, was not to be seen in the autumn in places where two years previously it had been almost a plague. So again the little Melolontha horticola, also a pest in lawns, was not observed in the early summer, where in former years it had been most abundant. On the other hand there was an unprecedented profusion of galls. Lastly, as a most unexampled instance of the peculiarity of the season, swallows were seen flying about in the neighbourhood of the Thames at Oatlands, as late as the 29th November last, there having been several days throughout the month in which there were two or three degrees of frost. Anxious to know whether any corresponding peculiarities in insect life had been observed on the Continent, I applied to my correspondent, M. Snellen van Vollenhoven, the distinguished entomologist of Leyden, whose reply I subjoin:—

"Here, too, Macroglossum stellatarum was abundant, flying in such vast numbers over the flowers of Echium vulgare in the sunshine that eight or ten at once could be caught in one swing of the net. Aglaia Tau, otherwise very rare, was abundant in April near Nymegen and Arnheim. The caterpillars of Charæas graminis have done an immense damage to the meadows in Groningen and Drenthe, and the males of Noctua populoris were to be found by hundreds in the houses of Velp in Guelders. Hepialus Humuli was also very abundant near the little lakes of Rotterdam, having fed, not on hops, for that plant is very scarce on that spot. Mr. P. Snellen has found near those waters a very interesting male specimen with female coloration on the upper side. Larvæ of Tenthredinidæ were not abundant this year, except the most common species; but I have found at Leyden in some numbers the rascal living in the shoots of Roses which you once sent me, and from which I could not rear the imago. I hope to have more success with it this spring. As to the empty body of the female sphinx Atropos, it is a fact discovered by Verloren 10 years ago, and published by him, but in Dutch. He observed that the abdomen was only empty in those specimens which came forth in the autumn, but that those of the following spring had swollen ovaries." *J. O. Westwood, Oxford, Jan. 1, 1866.*

P.S. I understand that the great flight of the white Ephemeræ on the Rhine took place this year six weeks before the usual period, namely, towards the end of July, the first week in September being the ordinary time of their appearance.

EXTRACTS FROM THE JOURNAL

OF MR. JOHN GOULD VEITCH,

DURING A TRIP TO THE AUSTRALIAN COLONIES AND THE SOUTH SEA ISLANDS.

(*Continued from page 7.*)

Sydney, November 12, 1864.—My first days in Australia were occupied in visiting its nurseries and chief places of horticultural note, and in making the acquaintance of botanical and other friends. It is only due to all to say that I was everywhere received with the greatest kindness, and that it would be impossible to meet with more genuine hospitality than I experienced in Sydney.

Horticulture in New South Wales is probably farther advanced than in either of its sister colonies. The climate is admirably adapted for out-of-door gardening, although not altogether without draw-

backs, in the shape of occasional hot and very dry seasons, and the frequent hot parching winds. The soil in and near Sydney is for the most part scanty and poor, so much so that in many places the ground has to be made before any success can be obtained. This is particularly the case in the Botanic Gardens, where an enormous amount of labour has been expended merely to quarry the rocks cropping out in all directions, and fill up the excavations with earth. As an instance of what is done in Sydney, and of how admirably adapted the climate is for gardening purposes, I need only mention that it is a common occurrence to find plants growing side by side, which in England we should class as stove, greenhouse, bedding, and hardy. Who would fancy that Ipomœa Horsfalliæ and Cupressus Lawsoniana, or a Clerodendron and a Rose would grow together in the same soil and situation; nevertheless such is the case. I have seen Ixoras, Clerodendrons, Thunbergia Harrisii, Ipomœa Horsfalliæ, Lapageria rosea, Araucaria excelsa, Roses, Magnolia grandiflora, Wellingtonia gigantea, Geraniums, Fuchsias, Verbenas, &c., all growing together. One is much struck with seeing a garden of this description for the first time, and unable for a time fully to realise the fact that such a state of things is possible. The climate of New South Wales is also very suitable for fruit growing. The greater part of our English fruits do well, in addition to which one finds every kind of Orange and Grape in great perfection; also Lemons, Olives, Medlars, Mulberries, Pine-apples, Bananas, Passion-fruit, Pomegranates, Guavas, Loquats, and the delicious Cherimoyer (Anona Cherimolia). The Mango has also ripened fruit, but the climate is too cold to do it justice.

There are few private gardens in Sydney where gardening is carried on with any spirit. Those of Mr. Thomas Mort, of Darling Point, the late Mr. William Macleay, of Elizabeth Bay, and Sir Daniel Cooper, of Rose Bay, formerly contained good collections of native and imported plants, but now they are no longer kept up. Mr. Young, of The Glebe, possesses by far the best collection of imported plants, consisting chiefly of New Caledonian Ferns and Palms, and imported Orchids, Caladiums, and fine-foliaged plants. Mr. Mort's collection of Orchids must at one time have been very complete and well cultivated. Sir Daniel Cooper, previous to his departure for England, spent many thousands of pounds in improving one of the finest sites that I have seen. Three large greenhouses were also erected, but now unhappily the latter are almost empty, and the garden is barely kept free from weeds. The late Mr. William Macleay, who, in addition to being passionately fond of flowers, was one of the very best botanists and naturalists in New South Wales, had gathered together a very large collection of plants, especially bulbous, from all parts of the world. The gardens and ornamental grounds at Elizabeth Bay contain many fine specimens. A large tree of Ficus elastica, with its trunk partially covered with Dendrobium speciosum and Platycerium alcicorne, and throwing out numerous roots in all directions, is a most striking object in these gardens.

This estate is upwards of 200 acres in extent, commanding an extensive water frontage and a most beautiful view of the harbour. Gleichenia flabellata and microphylla abound on the sea-side cliffs. It seems strange at first to find so few gardens and collections of plants kept in good order, but the price of labour and the difficulty of getting good gardeners, added to the fact that most people reside in the colonies simply long enough to realise a fortune, and then return to Europe to enjoy it, will in a great measure account for this.

The Botanic Garden of Sydney is certainly one of the finest features of the town. It covers some 30 acres of undulating ground, situated at the head of one of the beautiful bays of Port Jackson harbour, thus commanding a fine water frontage. The Botanic Garden was the first Australian ground I trod on, and struck me as an exceedingly fine and suitable spot. No situation could be better adapted for a public garden, being, with the exception of the part bordering on the sea, surrounded by the Government domain, within which stands the Governor's house.

Thus it is at once almost in the centre of the town, and yet perfectly secluded. This Government domain, comprising about 90 acres, together with the Botanic Garden, are under the directorship of Mr. Charles Moore. Great credit is due to that gentleman for the admirable order everywhere apparent, and for the ornamental arrangement and planting of the grounds, particularly as the means placed at his disposal are very limited. I have no hesitation in saying, that I have seen no botanic garden in Europe kept in better order. The garden has three entrances, the principal one being through an avenue of Acacias, Bamboos, and Pines, but by far the prettiest is one recently made, at which a most artistic arrangement of rockwork, planted with Yuccas, Dracænas, and other suitable plants, produces a pleasing effect. A small portion of the garden is set aside for the arrangement of the natural orders. Another small square is reserved for the birds and animals of the Acclimatisation Society, but the greater part is laid out in lawn, and ornamentally planted. Taking advantage of a small stream of water which runs through the grounds, a grove of Australian and New Zealand Tree Ferns has been planted, and are growing most luxuriantly.

In the centre of that portion of the garden more particularly devoted to flowering shrubs, bedding plants, and annuals, stands a splendid specimen of Araucaria excelsa. It is more than 100 feet in height, of great symmetry, and branched almost to the ground. Another plant worthy of especial note is Dammara Moorei; it is 50 feet in height.

The climate being so propitious, there is but little necessity for greenhouses. There are three to contain the newly introduced plants, and for purposes of propagation. In one of these a small collection of Orchids is growing most luxuriantly. Attached to the garden is a lecture-room, in which a series of popular lectures is annually delivered by Mr. Moore.

Annexed is a list of some of the most remarkable trees and shrubs in these Gardens:—

Livistonia umbraculifera, 15 feet by 15 feet
Cocos plumosa, 50 feet high
Corypha australis, 10 feet high
Caryota urens
Phœnix dactylifera
Seaforthia elegans
Areca sapida
Many fine specimens of Zamias, Macrozamias, Cycads, and Xanthorrhœas
Araucaria excelsa, several fine trees, 60 to 80 feet
Araucaria Cunninghami, 60 ft.
Podocarpus nerifolius, 33 feet
Salisburia adiantifolia
A magnificent clump of Dammaras, including Moorei, 50 feet; obtusa, 23 feet; orientalis, 30 feet; australis and Browni
Cupressus Lawsoniana, 12 feet
Taxodium sempervirens, 40 ft.
Wellingtonia gigantea, 10 feet
Also fine specimens of many of the Cypress and Juniper tribe
A splendid specimen of Jacaranda mimosæfolia, 30 feet high and loaded with bunches of the brightest blue flowers
Hymenospermum flavum, 40 feet by 20 feet
Aralia papyrifera, 15 feet
Musa Ensete, 25 feet
Dracæna australis, 30 feet
Delabechia rupestris, the Australian Bottle tree, 12 feet
Bauhinia purpurea, loaded with mauve-coloured flowers
Bauhinia Hookerii
Botryodendron latifolium, 14 feet by 14 feet
Stenocarpus Cunninghamii, 33 feet
Splendid trees of Grevillea robusta, Sterculias (the Flame trees of Australia), Erythrinas (the Coral trees), Ulmus chinensis, Castanospermum australe (the Moreton Bay Chestnut); several species of Ficus, &c., are scattered over the grounds
On many of the older trees, Platycériums and Dendrobes are growing and giving a most pleasing effect
Olives, of which there is a large collection, do well
All the Aloë tribe thrive and flower
Large bunches of Gardenias, Hibiscus, Deutzias, Camellias, Azaleas, Magnolias, Allamandas, &c., flower profusely

(To be continued.)

NEW AND SELECT PEARS.

No. 3. *Doyenné du Comice.*—This is one of our finest November Pears, often lasting well into December. When ripe its skin is of a yellowish green, with a

red cheek—a very handsome fruit. Its flesh is white, very juicy, fine grained, and perfectly melting, with a delicious and peculiar aroma. The tree forms itself naturally into a pyramid, grows freely on the Quince, and bears, not so abundantly as some, but well. It deserves extensive cultivation.

Home Correspondence.

Odontoglossum Alexandræ.—After so experienced an orchidologist as Professor Reichenbach has pronounced Odontoglossum Alexandræ and O. Bluntii to be distinct species, anything further that I can say on the subject will probably be considered of little value; but perhaps you will allow me to state that I am scarcely yet convinced of the distinctness of the two, especially as the differential characters of O. Alexandræ given by Professor Reichenbach (p. 8) agree better with the plant shown by Mr. Low at South Kensington as O. Bluntii, and *vice versâ*; but probably Professor R. is not responsible for the labelling of those two plants. What is a species and what a variety, is a question on which botanists very often differ; and where there is in a genus a group of varying forms running into each other so gradually as to make it impossible to draw a satisfactory line between them anywhere, it is perhaps a matter of little importance whether we call the two extremes of such a group species, and the intermediate forms hybrids, or whether we take an intermediate form and call it a species, and the others varieties. This latter was the view I took while collecting the many forms of these Odontoglots. Had I foreseen that any doubts could have arisen as to their specific unity, I would have taken the precaution to have dried a more complete series of the varieties, but at that time no doubt on the subject had arisen in my mind, as I had often seen among other plants variations quite as great, in what is usually considered a single species. Even among Orchids, the genus Odontoglossum is not singular for the variable nature of some of its species. In many other genera there are species which vary nearly if not quite as much as these Odontoglots. While in New Granada I saw in bloom many hundred plants of Epidendrum macrochilum, and I noticed that some of them varied much from others, both in the size and the amount of colour in their flowers. But a far more remarkable instance of variability exists in the case of a Cattleya which grows in many different localities in New Granada. The varieties of this are endless, and it would not be difficult to find plants with flowers as large again as those of other plants growing beside them. The forms of the flowers also differ much, and they are of every shade of colour between a dark lilac and a nearly pure white. I have seen half-a-dozen plants growing on one tree, no two of them being alike in any of these particulars; neither is the variation confined to the flowers, but extends also to the pseudobulbs and foliage. Now, are we to consider all these hybrids, or are they only seedling varieties originated by some cause which we do not understand, but which is analogous to that which gives us so many varieties (not hybrids) among cultivated plants? I believe the latter supposition to be the more correct of the two, especially as the varieties seem to produce perfect fruit in abundance, as also do the varieties of the Odontoglossums which are the subject of discussion. It certainly is not always necessary to call in hybridisation to account for varieties among species, as it is well known that many plants do produce them without this, and both in cultivation and in their natural habitats. Sometimes an external cause for such variations is discoverable; in other cases, as in these Odontoglossums and Cattleyas, where the varieties are growing side by side in apparently the same circumstances, the cause is not so easily detected. But if it be once admitted that species may and sometimes do vary in their natural habitats, in however slight a degree the variation may take place, the existence of an innumerable series of varieties can easily be accounted for; for it is a grand fact in horticulture, that when a species does begin to vary, there is no end to the varieties of that species which can be obtained by the process called cross-breeding, in contradistinction to hybridisation; and I think that no one who admits the possibility of two species interbreeding in a state of nature, will deny that cross-breeding is at least as likely to take place between two varieties of one species in the same state. *John Weir.*

Milium as Game Cover.—Some years ago, a Grass called Milium effusum was greatly praised, as producing a good cover for game when sown in woods. Any information which your correspondents can give on the subject will be very welcome. *H. J. Mundy, Gatehouse.*

Trieuetis hortæ.—I shall be glad to compare notes with some of your readers respecting this new Japanese plant. My own experience has led me to form an unfavourable opinion of its value. Its flowers are developed so late in the season, that the whole of the foliage, except that on the immediate summit of the stem, is completely withered by the time the first flowers are expanded, so that its aspect is melancholy enough. Its vaunted hardiness of constitution, on which great stress is laid in one catalogue that came under my notice, is but a poor compensation for so grave a defect. *W. J. T.*

Lathyrus mauritanicus.—Having noticed the above name in some of the new seed lists, perhaps you will allow me to state, that having cultivated the so-called novelty the past season, I found it to be nothing more than our old acquaintance L. tingitanus or Tangier Pea. The size, form, and colour of the seeds alone were sufficient to create an impression of the identity of the two plants, and actual trial amply

confirmed it. Good novelties, as many as you please, Messieurs les Grainiers, but don't palm off old friends in disguise upon us. *Diogene.*

The Year 1865 at Weybridge Heath, Surrey, 155 feet above mean sea level:—

Wind.		Weather.		Departure from Mean of last Ten Years. +, above, —, below.
Prevailing Winds.	On Days.			
N.	21	Mean height of barometer	inches 29.8683	inches .0005+
N.E.	40	Mean height of thermometer:		
E.	9	Highest in the sun	67°.5160	1°.5041+
S.E.	23	Highest in the shade	60°.9489	1°.3497+
S.	16	Lowest	40°.3558	.0199—
S.W.	72	Mean daily amount of ozone	2.2067	.8830—
W.	11	Mean temperature	50°.6457	.6491+
N.W.	29	Rainfall	inches 26.5410	inches 3.0965+
		Number of wet days	38	days 2.1000+
		Number of days on which rain, &c. fell	161	days 21.6000—
		Driest month, September. Wettest ditto, October.		
Highest Winds.		Range of barometer	inches 2.15	inches .3500+
		Range of thermometer	85.00	6.4000+
		Range of ozonometer	11.00	.0625—
January 14 (W.)		December 15. Barometer highest	inches 30.67	inches .0980+
February 18 (S.W. to N.W.)		January 14. Barometer lowest	inches 28.52	inches .2500—
March 20 (E.N.E.)				
May 30 (S.W.)		June 21. Thermometer highest:		
October 25 (W.)		In the sun	132.50	25.1500+
November 22 (S.W.)		In the shade	94.00	5.2000+
" 25 (S. to S.W.)				
December 29 and 31 (S.W.)		January 28. Thermometer lowest (in the night of)	9°.00	3.2000—
		February 18 and November 23. Greatest amount of ozone ..	11.00	.6250—
		Jan. 22, March 21, June 25, Sept. 7, Sept 28, Dec. 16. Least amount of ditto	0.00	.0625—

* The mean of last four years.

W. F. Harrison, Bartropps, Weybridge Heath, January 2.

American Blight.—In your answers to correspondents (p. 12) "J. G." and "M. Z." are recommended remedies for American blight and mussel scale on Apple trees. On our American and other Apple trees here, both large and small, we have found Gishurst Compound applied in full strength, by means of a brush wetted, then rubbed on the cake in the box, so as to produce a thick lather, and this painted over the blight, an effectual and lasting cure for American blight, mussel scale, and red spider. *G. W.*

Societies.

ZOOLOGICAL OF LONDON: *Dec.* 12.—Dr. J. E. Gray in the Chair. The Chairman communicated an extract from a letter received from Prof. Lilljeborg, containing some observations on the skeletons of the Cetaceans exhibited in the Jardin des Plantes, at Paris.—Mr. P. L. Sclater made some remarks in rectification of a previous paper upon the supposed occurrence of the common sea eagle (Haliaetus albicilla) in North America.—Mr. W. K. Parker read a paper upon some remains of fossil birds discovered in the Zebbug Cave, Malta, by Captain Spratt, R.N. The most remarkable of these appeared to belong to a new species of swan, nearly one-third larger than the common swan (Cygnus olor), which Mr. Parker proposed to call Cygnus Falconeri.—Dr. J. Murie read a note upon the abnormality in the form of a tail feather of a Scemmering's Pheasant in the Society's aviary.—Dr. Gray described three new species of dolphins, of which examples had recently been transmitted to the Free Museum at Liverpool by Captain Walker, of the ship Trenton, having been obtained during the voyage of that vessel from India to Liverpool.—A communication was read from Dr. L. Pfeiffer, containing descriptions of 13 new species of land shells, discovered in Formosa by Mr. R. Swinhoe, H.M. Consul in that island.—Mr. W. H. Flower communicated some notes from Dr. Hector, Director of the Geological Survey, New Zealand, upon the bones of various species of Dinornis which had been exhibited in the New Zealand Exhibition, recently held at Dunedin in 1865.—Mr. W. H. Flower also exhibited and made remarks on a specimen of the gular pouch of the great bustard (Otis tarda), which had been transmitted to the Museum of the Royal College of Surgeons by Dr. Cullen, of Kustendje.—Mr. A. Newton read a letter addressed to him by Mr. H. O. Clark, announcing the discovery of some remains of bones of the Dodo in Mauritius.

Notices of Books.

Les Plantes à Feuilles Ornementales en Pleine Terre: Botanique et Culture, par Comte Léonce de Lambertye. Ire partie: Solanum. Paris: Librairie Centrale d'Agriculture et de Jardinage, Rue des Écoles 82, près de la Musée de Cluny. Auguste Goin, éditeur, 8vo, pp. 72. (Hardy Foliage Plants; Botany and Cultivation of, &c., by Count Léonce de Lambertye.)

If one should ask what has become of horticultural Paris, you may safely answer, "Paris has become Solanaceous." Monsieur Barillet-Deschamps, who has been employed since 1855 in the public gardens and parks of the old metropolis of the Seine, and has succeeded in giving her a fresher appearance, has the merit of inaugurating a new system, the system of displaying masses, "des bataillons," of showy herbaceous plants, excelling in the beauty of their growth, or in the curious forms of their leaves. Thus he has given a new physiognomy to the landscape. Among all plants his favourites are the Cypripedia. But since the climate of Paris does not allow these to be planted in the squares, he makes use of the Solana. Hence the present Solanaceous state of Paris, which is admired by every one.

Monsieur le Comte Léonce de Lambertye is well known in the garden world as the King of the Strawberries, and in botanical circles as the able author of the "Catalogue raisonnée des Plantes vasculaires du Département de la Marne." The idea of writing on the modern ornamental plants was a very happy one. The First Part, just published, is devoted to the Solanums. It is dedicated to M. Barillet-Deschamps, "Jardinier en Chef de la ville de Paris, Chevalier de la Légion d'Honneur, créateur de la décoration des parcs par des plantes tropicales, par l'auteur de ce petit livre." Such a handsome tribute accorded by a man of the Count's position and reputation must, indeed, be most agreeable to M. Barillet. We hear that the Second Part of the work will treat of Cannas, and the third will consist of a "mélange d'espèces." In a preface the author tells us the history of his own love for Solanums. We are not astonished to learn that species coming from Erfurt were not well named. The author gives a description of 30 species, in preparing which he has availed himself of Monsieur Dunal's monograph in the "Prodromus." May we be allowed to express our hearty condolence with Monsieur le Comte for having had recourse to so unsatisfactory a work. He has however, suppressed many of Dunal's details, and modified and added to others, as we are glad to learn. He adds some remarks on the method of culture of the several species, the height of the plants, &c. The following species are, according to Monseigneur Lambertye, first-rate, viz., amazonicum, Ker; atropurpureum, Schrank; betaceum, Cav.; crinitum, Lam.; glutinosum, Dun.; hyporrhodium, A. Braun & Bouché; Karstenii, A. Braun & Bouché; laciniatum, Ait.; maroniense, Poit.; macranthum, Hort.; marginatum, L.; pyracanthos, Lam.; quitoense, Lam.; robustum, Wendl.; reclinatum, L'Hérit.; Sieglingii, Hort.; Warscewiczii, Hort. Weick. The second-rate Solana are these: auriculatum, Ait.; aculeatissimum, Jacq.; citrullifolium, A. Braun; elæagnifolium, Cav.; cuneodorsum, Cat. de la Ville de Paris; ferrugineum, Jacq.; glaucum, Dun.; giganteum, Jacq.; indicum, Nees; Jacquinii, W.; sisymbriifolium, Lam.; and tomentosum, L.

There are also representations of Solanum crinitum (given twice!), of robustum, and of Warscewiczii. We regret to add these are but coarsely executed. Then follows an analytical key, of which we fear practical gardeners will not make much use, and the arrangement being an arbitrary one, we believe it to be nearly superfluous. Of greater utility will be the "tableau comparatif de trente espèces de Solanum (Morelle), considérées au point de vue horticole." We should have liked to have furnished more details to our readers; but such a course would seem to be rather dangerous: "toute reproduction, même partielle, est interdite, cette ouvrage étant la propriété de l'éditeur."

Thus we must make an end of our report on a book that is certainly useful and interesting, and which is written by one of the best, most zealous, and most intelligent friends of horticulture.

BOOKS RECEIVED.—We have an assortment of periodicals on our table awaiting introduction to our readers. Taking them indiscriminately in the order in which they come, we—but, no, we must apologise to Mr. Sylvanus Urban, and at once give precedence to the *Gentleman's Magazine*, a new series of which, under new editorship, and published by Bradbury & Evans, has just commenced. The dear learned old gentleman appears in a new dress, and, to continue our simile, with a new coachman and a fresh pair of horses. He drives along the old roads, now and then diverging into by-lanes, stopping where an old church, a collection of pictures, a library of curious books, a Horse Chestnut with Mistleto growing on it, or other object of interest may attract his attention. He chats by the way on kings and statesmen, on the religion of the one and the genealogy of the other; on the Paston letters, and the Westminster Play. Homer and his translators occupy much of the old gentleman's thoughts; and having returned from his drive, he pays visits to Societies, looks in at the Royal, but feels more at ease at the Society of Antiquaries, and kindred meetings. As befits a man so well known and appreciated, he is up in the news of the day, even to the fluctuations of the barometer and the price of Stocks; while he is, as of yore, a chronicler of births, deaths, and marriages. Long may he prosper under present auspices.——*Fraser* smacks this month more of the long vacation than of Christmas bills: more of excursion trains and steamships than of Holly and Mistleto. Before he starts on his journey, however, he gives us his views on the state of political affairs, runs across St. George's Channel to see about Church temporalities in Ireland, from thence to the Queen of the West (Cincinnati). A little way further on we find him turning up at Lisbon, *en route* to Rio de Janeiro. He has something to say about "cholera in Malta," and as to "how we retook Dewangiri;" but we leave him at last sketching in the Eifel (and his sketches are very attractive), and recounting the history of sundry personages, to wit, Gilbert Rugge, and "the Beauclercs, father and son."——The *Technologist* for January comes in its usual brown cover, suggestive of a good serviceable working dress, and within it we find records of honest enterprising labour, in such departments as the manufacture of sugar, the cultivation of opium in France, recommended in these words—"Let each agriculturist devote a corner of his soul to this new tillage, which will be to him a lucrative and agreeable amusement." Besides these there are articles on vegetable food, on extract of beef, on vegetable albumen in place of glue, on paper making from Lucerne roots—the latter a hint for our agriculturists, &c.——In the current number of *Popular Science Review*, the Rev. Mr. Houghton descants on the turnip and its insect enemies. Baron Liebig tells us how to make coffee. Dr. Seemann explains Prof. Unger's views as to Australia and Europe having at one time formed but a single continent, this startling hypothesis being based upon the discovery in the Eocene beds of Europe of leaves of various species of Fagus, Exocarpus, Grevillea, and Banksia, apparently almost identical with the leaves of corresponding plants now growing in Australia. Dr. Richardson gives us a summary of what is known about ozone, and speculates on the formation at no very distant date of an ozone company, which is to bleach, deodorise, disinfect, preserve meat and vegetables, give sea air to every household, and to furnish an article as manageable as gas, and as cheap as water! Mr. Barrett contributes an account of the wonders and beauties of snow and ice. The Rev. G. Henslow speaks of the no less wonderful habits of climbing plants as studied by Mr. Darwin; while Mr. Sorby has yet more wonders in store in his article on the spectrum microscope, and from which we infer that the old adage, *nimium ne crede colori*, will not in future be so often quoted as it has been. Have any of our readers made any observations on the structure of plants by the spectroscope? If not, there is a fine field for them to work in.——*The Household* (Groombridge) is a new "magazine of domestic economy and home enjoyment." Its scope is fairly indicated by its title, and it seems to contain some useful hints. Our *maîtresse d'hôtel* rather demurs to the economy of some of the receipts; and our own doctor can only guess what is meant by "a four-ounce bottle of extract of lead," which is to be kept safe from "the reach of children and the displacement of servants." There are a few woodcuts, and the cost is but twopence.——*Odds and Ends* (Edmonston & Douglas). No. 9 of this little series has the following title, which gives a very good illustration of the author's style: "Wayside Thoughts of an Asophophilosopher—not Godless, but Godly; or a Triangular Treatise on Education," by D'Arcy W. Thomson. The author makes out a very good case for the Queen's Colleges in Ireland. The quaint illustration on the title page might have been drawn by Edward Forbes. No. 10 of the same series comprises a lecture of Mr. J. A. Froude's, on the "Influence of the Reformation on the Scottish Character." This statement is sufficient to show that the pamphlet is well worth reading.——*On the Commercial Use of Flowers and Plants*, by Eugene Rimmel, is a reprint of a lecture delivered at the Royal Horticultural Society, and treats mainly of perfumes, their mode of extraction, &c.

Florists' Flowers.

NOTWITHSTANDING the immense popularity of the new Lilium auratum from Japan, the several fine varieties of LILIUM LANCIFOLIUM will always be great favourites, and most justly so, and I would urge cultivators to direct attention to these kinds, and try to get improved form and deeper colours. The late Mr. Groom, of Clapham, had he lived longer, would have introduced some improved strains, for I quite recollect seeing in his nursery in bloom, just before his death, some fine high-coloured varieties of improved form, the petals being quite free from curves or curls on the margin, and being, moreover, broader than they are in the Lilium lancifolium generally. All, or most of his fine stock of Liliums were distributed at the sale which followed his death, and some of the best strains are no doubt about, but difficult to meet with. Our chief aim in preserving the characteristics of this fine species and its varieties should be to continue breeding by seed from the finest coloured varieties, with the view of getting richer-coloured kinds and better form. I cannot say how much is to be done by crossing with other species, but I hope to see some of our florists try their hands at improving the existing varieties of the grand old L. lancifolium.

Great attention is paid to the culture of this Lily in various parts of Yorkshire, and it is astonishing what very fine examples are to be met with repeatedly at very small country shows in the autumn. It is no unusual thing to meet with pots containing from five to eight roots, with from 15 to 20 superb blooms on each.

The plan generally adopted by good growers is to pot up the roots early in February, using pots about 11 or 12 inches in diameter for three or four fine roots, and larger sized pots for a larger number of roots, but I think it a mistake to grow so many roots in a pot when good blooming roots can be had. A good compost may be made up of fibrous sod, well-decayed leaf-mould, and well-rotted frame manure, all chopped and not sifted, and with some sharp sand run in with it, so as to make a good porous compost. A good-sized crock and about 1½ inch of rough crocks should be used, and over these a few lumps of fibrous sod should be placed. Many make a mistake in potting too near the top of the pot. I prefer filling the pot with soil to within 5 inches of the top, on which the bulbs should be placed and covered, leaving fully 2 inches of space below the top, for this reason: those who have given a moment's attention to the growth of the Lilium must have observed the quantity of young fleshy roots sent out from the base of the flower stem, and to the full development of these roots especial attention should be directed. As soon as the shoots are of a moderate height, and have become pretty firm, fill up the pot to the rim with similar compost to that used for potting, adding a little more manure. This will give them an efficient top-dressing, and the stem roots will speedily become matted into it, and the flowers will consequently become large and plentiful. The main point in the culture of the Lilium is to develope the stem roots, a point too often lost sight of.

After potting, they should be placed in a cool shed or frame, or under a stage where light is attainable; and as soon as the soil gets dry and cracks from the side of the pot, give sufficient water to moisten the soil without saturating it. Many allow the young growth to be started too early and become drawn, which should be avoided. The pots should rather be kept quite cool and exposed to the light, for the Lilium is a perfectly hardy plant, and should be grown hardy. The best plan is to treat it as an out-door plant as far as possible, by standing the pots out of doors after the winter is over, taking care to shelter them from spring frosts and blistering winds. Of course at the blooming time they should be under cover in bad weather. When they have done flowering, the pots can be placed on their sides, and as soon as frosty weather sets in, removed to a dry shed, and be kept quite dormant, dry, and undisturbed until potting-time. Everybody knows what a glorious plant it is for autumn decoration. *W. Dean, Shipley, Yorkshire.*

The Apiary.

WE resume the subject of our last week's remarks. DYSENTERY AMONG BEES has been supposed by some to be almost entirely confined to those kept in wooden hives; and some enthusiastic advocates of straw in preference to wood, hereby hang an argument in favour of their views. But this is a mistake; bees in straw hives are frequently attacked with this disease, and we have had communications from bee-keepers who have been so unfortunate as to lose during the last spring several hives from that cause. At the same time we think that bees are on the whole rather more liable to the disorder when located in wooden domiciles, particularly if they are not properly protected and attended to.

When dysentery does show itself among the inmates of a common straw hive, the means to be adopted for the purpose of effecting a cure are very limited, and uncertain in their results. When it is desired not to break up the stock, we should, choosing a very fine, warm day, drive all the bees out into an empty hive. Inspect and cut away all the dirtiest of the combs, and return the hive to its place. Knock out the bees on a cloth at some distance from the stand, and search for and secure the queen. She may, when found, be at once liberated among the combs. The bees that are able to fly after a little while take wing, and return to their own hives, delighted to find themselves all right with their own beloved monarch. Some apiarians recommend that the queens thus captured should be temporarily imprisoned in queen cages, which are secured between the combs, and from 12 to 24 hours be suffered to elapse before they are allowed their liberty. When the lives of valuable Italian queens are at stake, we should adopt this practice, but otherwise we prefer taking the risk, and hitherto have been free from any untoward event in consequence.

If the number of the bees which are able to return to their old quarters is very limited, and the weather become cold and ungenial, it is a good plan to confine the bees, and to remove the hive into a warm kitchen every night at dusk, restoring it to its stand early on the following morning. This may be continued for a week or two, or until the hive has received some accession of strength from the hatching out of young bees. With the common straw skeps, it is not easy to strengthen these weakened populations by uniting two or more together, in consequence of the probable loss of valuable brood which may take place. The plan we would recommend would be to purchase or to have constructed a frame hive. Having again driven out all the bees of the straw hive, proceed to transfer the largest combs into the box, in the way described at p. 391 of our last year's volume. The bees of a second hive may be driven out and united to the first, the combs being treated in the same way, or it may be better to transfer both these stocks into separate frame boxes; and when the combs have been securely fastened, and all artificial props and supports removed, the bees and combs may be united in the manner described last week. Should there be no other stock available for the purpose of strengthening the population, and the one which has been subjected to the summary treatment described above still continue very backward, it would be advisable, when the swarming season arrives, to add the bees of a second swarm. A hive thus treated stands every chance of turning out a first-rate stock the following summer.

Another plan which we have adopted with success is that of transposing hives. A strong stock is removed in the middle of a fine day, and the weak stock changes stands with it. This requires care in carrying through, and sometimes it will be necessary to re-transpose the hives, otherwise the strong stock becomes too much depopulated. We occasionally have found it preferable to effect the transposition an hour or two before dusk. When the bees are settled, shut in those of the strengthened stock, which remove into a dark place for twenty-four hours. Return the strong colony to its old stand at the same time. The other hive, on the following day at dusk, is also to be restored to its former position. There is less probability of the more populous hive becoming so denuded of bees as to be seriously injured. In the years 1860 and 1861 we transferred the bees and combs of several common hives into frame boxes. A few of these were very weak in bees, and we carried out this plan of transposition somewhat extensively, and succeeded, by the middle of the summer, in establishing a nice lot of populous and well-furnished hives, some of which we still retain in good condition.

Hives attacked by dysentery, will occasionally, after having suffered immensely from the loss of bees, wonderfully recover their strength. On the first occasion in which this disease made its appearance in our apiary, in 1846, the bees of our hive were so affected by it, that the dead and dying formed a large heap under the alighting board. They rolled out and tumbled over, literally in thousands, and the hive was given up as lost, but was suffered to remain on the stand, for the purpose, as it was only stocked the previous summer, of having a first swarm hived into it when the proper time should arrive. However, in a few days pollen was carried in, and by the end of May the stock had become so populous, that a large glass super was put on, and in due time filled.

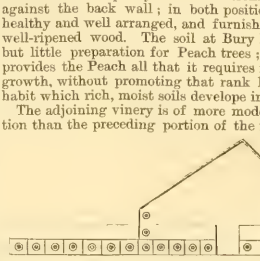
There is another form of dysentery on which we meant now to have said a few words, but space will not permit; and as it is a subject which well deserves a chapter to itself, we leave it for a future occasion.

A B. Query No. 1: The weights of all hives and their belongings should be known, so that it is easy to ascertain if the supply of food runs short in any hive in spring. With framed hives, we usually arrive at the state of the case by actual inspection of their interiors.—No. 2. Provided the milk pan, or any other cover, project, or come down sufficiently over the hive to throw off all wet, there is no necessity for any other covering, if the material of which the hive is constructed be not less than seven eighths of an inch in thickness. This we have proved in actual practice.—No. 3: Certainly. No other wrappings are necessary.—No. 4: Bees do dislike the smell of putty; therefore in fixing on the adapting boards for supers, on the crowns of common straw hives, the putty is placed in so large a circle, and in only just sufficient quantity, that when properly pressed down, the bees are not brought in contact with any of it. In a hive of a friend this last summer, where this precaution was neglected, the bees refused to ascend at all, notwithstanding that the super contained some very tempting pieces of comb.—No. 5. We never paint a hive in our apiary, having a very decided objection to the practice; the cases only are well painted every year or two. Before leaving off the practice, we never used to hesitate about giving the hives, while the bees were in them, a coat of paint on a summer evening, it was dry by the morning, and the bees none the worse.

Garden Memoranda.

BURY HILL, MANSFIELD, NOTTS, THE SEAT OF SIR EDWARD WALKER.—In addition to what was stated last week (see p. 10) in reference to this fine place, let us remark that the Peach trees in the house next entered are partly trained on trellis, and partly against the back wall; in both positions they are healthy and well arranged, and furnished with even well-ripened wood. The soil at Bury Hill requires but little preparation for Peach trees; it naturally provides the Peach all that it requires for a fruitful growth, without promoting that rank luxuriance of habit which rich, moist soils develope in fruit trees.

The adjoining vinery is of more modern construction than the preceding portion of the range, and is



what is called a half-span house; its dimensions are 50 feet by 19, and it is glazed with 21-oz. glass, 2-feet panes. It is chiefly devoted to Muscat vines, and the means of providing the requisite temperature for Muscats at an early season are amply secured, both within the house and beneath the borders, by hot-water pipes. The great success which has attended the cultivation of Muscat Grapes grown on heated borders is so marked and complete, that an account of the place would be imperfect without some particulars concerning them. Mr. Speed evidently recognizes the fact that the border is the foundation on which a Grape crop is raised; heat, training, or any in-door management, would be insufficient if the Vine-roots were left to the chances of our variable climate.

The border provided for the Vines in this house is formed on a chamber 3 feet in height. This chamber is heated with hot-water pipes, which are laid at equal distances throughout it. It is covered with stone slabs, which rest on intersecting brick walls; it extends both within and without the house. The outer extent is 50 feet by 36 feet; an arrangement exists by which access can be obtained to this chamber without disturbing the borders. The border which rests on this is 2 feet thick, and includes 6 inches of rubble, and it is formed of the natural soil of the district, with bones, burnt earth, and lime-scraps. This vinery was planted five years since (within the house) with Muscat of Alexandria, Bowood Muscat, Canon Hall Muscat in the front of the house; and Barbarossa, Hamburgh, Lady Downes', Muscat Hamburgh, and Champion Hamburgh within the back angle.

The success of this arrangement of heated borders, and of Mr. Speed's particular management, is amply demonstrated by the health and vigour of the Vines and the excellence of the fruit. The Vines fill the house, and are trained on the rod and spur system. The Muscat rods were restricted to 9 bunches, which averaged from 3 to 4 lb. The berries were large, equal, and tinged with a rich golden hue. In all our experience we never saw so fine a display of Muscat Grapes. The Hamburgh and Black sorts, at the back of the house, were remarkably fine, but we could only look and marvel at the wonderful Muscats. By the arrangement of planting the Grapes of opposite colours, each kind was benefited by the contrast presented. In this house Mr. Speed has several experiments in grafting in progress: one Muscat on Hamburgh, a Lady Downes' on Black Prince, three Lady Downes' on Black Hamburghs. We hope he will give the benefit of his experience when the results are developed.

We next enter a Pine stove, 75 feet by 19, filled with fruiting Pines. The front bed is 9 feet, the back 6, the centre walk 3 feet. This stove is heated with hot water, and the Pines are planted out in the beds or pits, and bottom heat is supplied by means of hot-water pipes beneath the pits. About 300 plants were in the stove at the time of our visit, and some of these were about maturing fine fruit, while others were showing fruit in various stages of growth. The Cayenne and Queen seem the sorts most in favour, although many varieties are cultivated. This house terminates the range. We next proceed to visit the kitchen and fruit gardens, which are only separated from the pleasure grounds by a shrubbery, the walk leading from the house conducting us in front of the outer south wall of the kitchen garden; a gay ribbon border, 160 yards in extent, runs by the side of the walk. The wall is covered with well-trained and healthy Peach

trees, affording an illustration of our opinion of the suitability of the light soil of the locality for Peach trees. There is no mildew to be seen, but as there is no stagnant water near, and the subsoil is dry, we are less surprised at the absence of so common a pest. The wall is coped with stone, which projects 8 inches. The soil being shallow and rather poor, Mr. Speed renews as much as possible of the old soil when the Peach trees exhibit failing vigour, and replaces it with new and sweet soil. If this practice were more commonly pursued, we should have fewer failures on our Peach walls. Fronting the south wall, and parallel with it, and at a distance of 25 yards, a second wall, 5 feet high, has recently been built. It is intended to make the space between the two walls into a garden for small fruits, Gooseberries, Currants, Strawberries, &c., and to cover the whole with wire netting. Sir Edward Walker has been induced to decide on this plan in consequence of the continued depredations of birds on his fruit, the blackbird being one of the most pertinacious robbers. Owing to the profusion of Bilberries at certain seasons in the neighbouring covers, this bird is more than usually numerous.

Pursuing the outer walk, and turning along the west end of the kitchen garden, we notice on the west wall some particularly healthy and well-trained Plum trees, and on the opposite side of the walk, two rows of pyramidal-trained Pears and Cherries, remarkable in their clean, sound, healthy wood. Entering that portion of the kitchen garden enclosed within the walls, a space two acres in extent, we pass along the main walk, which traverses the centre of the garden, each side of which is planted with pyramidal-trained Apple and Pear trees, which are clean, vigorous, and fruitful, proving that, with proper management, this apparently poor soil is capable of supporting all the ordinary orchard fruits. Strawberries are perhaps the exception, being more difficult to manage on this soil than the other garden fruits. Adjoining the kitchen garden is the Melon ground, in which are two span houses and pits. In one of the former we found late Melons and Cucumbers. Mr. S. cuts Melons as late as November. The second house is employed as a greenhouse. We saw a remarkably fine, well-grown collection of Indian Melons, happy in soil, climate, and treatment. The neighbouring moorland affords excellent peat for American plants. Pelargoniums, Heaths, Camellias, and Chrysanthemums, are all largely included in Mr. Speed's collection, and afford evidence of his cultural skill. The Mushroom house is situated at the back of the range, and is exceedingly well adapted for the purpose. The walls are thick, and the roof is secured from all fluctuations of weather by a double ceiling. For five successive years there has been no cessation in the supply of Mushrooms from this house.

Close by the Mushroom house we saw a drinking trough made from a single block of Mansfield stone, capable of containing 675 gallons. We have now reached the confines of the home grounds, and have only to notice a little judicious planting which has been made on the north and north-west sides of the house to ward off the sweeping winds to which its elevated position exposes it; and were it not for this, we should not admit the propriety of plantations so close to a residence which has the pre-eminent advantage of being exempt from the encircling woods and weedy ponds which make so many of our fine old mansions homes for the generation of consumption, fever, or rheumatism, rather than resorts giving health and longevity. *I.*

Miscellaneous.

Aroma of Coffee.— The berries of coffee, once roasted, lose every hour somewhat of their aroma, in consequence of the influence of the oxygen of the air, which, owing to the porosity of the roasted berries, can easily penetrate. This pernicious change may best be avoided by strewing over the berries, when the roasting is completed, and while the vessel in which it has been done is still hot, some powdered white or brown sugar (half-an-ounce to one pound of coffee is sufficient). The sugar melts immediately, and by well shaking or turning the roaster quickly, it spreads over all the berries, and gives each one a fine glaze, impervious to the atmosphere. They have then a shining appearance, as though covered with a varnish, and they in consequence lose their smell entirely, which, however, returns in a high degree as soon as they are ground. After this operation, they are to be shaken out rapidly from the roaster and spread on a cold plate of iron, so that they may cool as soon as possible. If the hot berries are allowed to remain heaped together, they begin to sweat, and when the quantity is large the heating process, by the influence of air, increases to such a degree that at last they take fire spontaneously. The roasted and glazed berries should be kept in a dry place, because the covering of sugar attracts moisture. *Baron Liebig, in Popular Science Review.*

To Preserve Salmon.—Let us suppose that instead of neglecting the fry in our river for the whole two years of their childhood, we had from the time they were a few weeks old, commenced netting the river with a small-meshed net, a net not more than an inch square in the mesh; suppose we had dragged it wherever a fish was likely to be, and killed everything which could not pass through this inch mesh; we could not possibly do any harm to the salmon fry, for they could at all times easily pass through; and everything which could not pass through, would, most certainly, not be a young salmon, and if not a salmon, would, as certainly, be a fish which preyed upon salmon fry, and ought to be kept out of every salmon river. This dragging of the river should never cease, in season or out of season, while there is a head of vermin to be caught. *Dickens's "All the Year Round."*

Calendar of Operations.

(*For the ensuing week.*)

WHILE the ground is covered with snow, as it is at present, little can be done out of doors. Embrace the opportunity, therefore, to forward any small operations which can be equally well done now as in finer weather. From this time until the end of February is the most trying period for tender plants, placed throughout the winter and spring in pits and frames. The great point is to take care that no injury comes to them; and that whatever plan of wintering them has been adopted, it be made to answer by strict attention and diligence in preventing the plants from suffering from frost or from damping off for want of air. Should frost continue for some time, so that no light or air can be admitted to pits containing such plants as Pelargoniums, Calceolarias, Petunias, &c., be cautious in uncovering after the frost goes, lest the too sudden exposure to the action of light should prove injurious to them. Remove the greater part of the covering first, leaving a little to shade the plants for a few hours, while air is admitted by tilting the sashes an inch or two at the back, which will enable them better to endure the sudden change from total darkness to a bright light. In giving water, much caution should be used not to cause more damp than is unavoidable inside the frame or pit, as the drier both it and the covering material is kept, the less will frost be attracted, and the healthier will the plants continue.

FLOWER GARDEN AND PLANT HOUSES.

Euphorbias, Poinsettias, and plants of that description which have done flowering, will now require less heat and moisture than they have been receiving, in order that they may be ripened gradually off, and have about three months' rest before they are again started into growth. It is not worth while to retain more of the old plants than will be required for large specimens, as young plants are easily propagated, and, if well grown, make nicer plants than the old ones, and, by discarding the latter, room is obtained for other things. Attend well to Tulips and other forced bulbs now in flower, in order that their beauty may be preserved as long as possible.

AURICULAS.—Continue to remove decayed foliage, but in doing this care must be taken not to injure the plants. Water sparingly, especially while the present hard weather lasts.

AZALEAS.—These must now be watered with care, giving at present only just sufficient to keep the plants from flagging. Remove decayed leaves, and any plants affected with thrips should be cleaned by fumigating them with tobacco-smoke three or four times, allowing an interval of a day or two to occur between each application.

CARNATIONS AND PICOTEES.—Soil for these should be frequently turned and exposed to frost. Keep the plants dry, and dead foliage removed.

CINERARIAS.— Plants intended for exhibition should now receive their final shift. Keep them near the glass, and give them plenty of room. Tie out the side shoots, so as to keep the plants dwarf and improve their shape. On no account let them get frost-bitten.

DAHLIAS.—Continue to examine the tubers in order to see that they are not rotting at the crown; if that appears to be the case, set them at work at once in gentle heat. Pot roots keep sound longer than those from the open ground, and if not required for cuttings, make excellent early strong plants by starting them in gentle heat about the beginning of April.

HOLLYHOCKS.—Roots of these potted from the open gardens in autumn, for cuttings, may be started in a little heat. When the shoots are about 3 inches in length cut them off, put them into thumb pots in light soil, and place them on a mild bottom heat.

FORCING GARDEN.

ASPARAGUS. If the last made first has done bearing, it might be again planted with fresh roots, renewing the heat by means of linings if necessary.

CUCUMBERS.—These must have careful attention. By a proper arrangement of the ventilators a small but constant circulation of air should be secured, and the portion of fresh air which is admitted from the outside should, if possible, be made to pass over the warm surface of the flues or pipes before it comes in contact with the plants. Upon a proper attention to this point the health of the foliage and the setting of the fruit very much depend. A high night temperature, and a scalding evaporation are very injurious.

PEACHES.—If the buds are swelling in the early house, maintain a temperature of about 50° by night, and sprinkle the trees occasionally with water of the same heat as that of the house.

PINES.—Maintain a healthy root-action, without exciting the top too much. A temperature of 60° with a bottom of about 80° will therefore be amply sufficient for the present. Let succession plants have all the light possible by uncovering them as early in the morning as the state of the weather will permit.

STRAWBERRIES.— Select some of the strongest, best-rooted plants, and after examining the drainage and ascertaining that it is in an efficient state, they should be top-dressed with a mixture of loam, well rotted dung, and fine charcoal, and plunged close to the glass.

VINES.—In the case of Vines started, keep up a moist atmosphere, and avoid sudden depressions of temperature.

HARDY FRUIT AND KITCHEN GARDEN.

Scions for grafting, of choice fruit trees should be secured. In selecting them, make choice only of those varieties which have been proved by experience to be well adapted to the locality. There are many varieties which do admirably in one county, but are worthless in another. In purchasing new kinds, the above reason makes it advisable not to procure too many plants of any one variety till its applicability to the soil and situation has been tested. By procuring root-pruned plants on Quince stocks this may be easily managed in a couple of seasons.

STATE OF THE WEATHER AT CHISWICK, NEAR LONDON,

For the Week ending Jan. 1st, 1866, as observed at the Horticultural Gardens.

Jan.	Barometer at 32° and Sea-level. Max.	Min.	Temperature of the Air. Max.	Min.	Mean.	Of the Earth 1 foot deep.	Of the Earth 2 feet deep.	Wind.	Rain in inches.
Thurs. 1	29.736	29.714	50	43	46.5	45	45	S.	0.0
Friday 5	29.912	29.902	48	36	42.0	46	46	W.	0.0
Satur. 6	29.906	29.888	48	32	40.0	46	46	W.	0.01
Sunday 7	29.923	29.895	45	28	36.5	45	45	S.W.	0.0
Mon. 8	29.767	29.745	50	35	42.5	45	45	S.W.	0.0
Tue. 9	29.749	29.969	48	32	40.5	44½	44½	S.W.	0.0
Wed. 10	29.949	29.947	41	27	34.5	44	44	W.	0.0
Average.	29.840	29.814	48.3	31.5	37.7	44.7	44.8		0.01

Jan. 1—Dreadfully tempestuous, with heavy rain; rather boisterous; fine.
" 2—Overcast; dull; fine.
" 3—Fine; very fine; slight shower at night.
" 4—Boisterous, with heavy rain; very fine.
" 5—Cloudy; cold; fine; slight shower at night.
" 6—Fine; cold; frosty; slight shower at night.
" 7—Fine; cold; frosty; slight shower at night.
" 8—Fine; cold; frosty; slight shower at night.
" 9—Fine; cold; frosty; slight shower at night.
" 10—Fine; cold; frosty; slight shower at night.
Mean temperature of the week 2 deg. above the average.

STATE OF THE WEATHER AT CHISWICK,

During the last Twenty-five Years, for the ensuing Week, ending Jan. 13, 1866.

Jan.	Mean Barometer at 32° and Sea-level.	Mean Temperature of the Air.	Mean Temperature of the Earth 1 foot deep.	Mean Temperature of the Earth 2 feet deep.	No. of Years Rain fell in the Week.	Greatest Quantity of Rain in the Week.	Prevailing Winds.						
							N.	N.E.	E.	S.E.	S.	S.W.	W.
Sunday 14	29.84	38.0	44.8	44.8	18	0.86 in.	1	1	0	1	2	10	1
Mon. 15	29.86	38.1	44.7	44.8	15	0.64	1	1	0	1	1	8	2
Tues. 16	29.86	38.1	44.6	44.8	14	0.91	1	1	0	1	1	9	2
Wed. 17	29.85	38.2	44.5	44.8	14	0.84	1	2	0	1	1	8	2
Thurs. 18	29.87	38.1	44.4	44.8	14	0.75	1	1	0	1	1	9	2
Friday 19	29.90	38.1	44.3	44.8	15	0.68	1	1	0	1	1	9	2
Satur. 20	29.85	38.0	44.2	44.8	14	0.83	1	1	0	1	1	9	2

The highest temperature during the above period was on the 19th, 1828—from observations taken between 1815 and 1865—therm. 62 deg. below zero.

Notices to Correspondents.

Communications intended for publication anonymously, or under initials, must be authenticated by the addition, in all cases, of the name and address of the writer, for the private inspection of the Editor. Anonymous communications will be treated as waste paper if this rule be not complied with.

Fig-trees in pots (*Subscriber, Cheltenham*). The figures are a misprint; the height of the pots on the system is 2 feet, as we learn on undoubted authority. Our informant adds, in reference to Pomona, "on the trellis marks." There are no such marks; what the 2 feet pots are below filled up, and the trellis-marks are, we do not publish. Yews and other hardy evergreens being introduced. The 'certain parties' 'Tourist' alludes to deserve great praise for the impetus given to good gardening there of late, but the task is Herculean, and will be a work of time.

Pezizas (*Ibid.*). Peziza is, we believe, Peziza bufonia, and not to this country. It is extremely rare on the Continent, and nothing is known of its esculent qualities. *M. J. B.*

Pears (*Ibid.*). *M. P.* We believe the specimen you call Pitmaston Pear to be those of the Bank Hall, illustrated in our vol. for 1854, p. 388. They are certainly not those of the Red Spider. *W.*

Labels (*T. Hancock*). The sample is distinctly written, and altogether of a useful character, well adapted for such things as Roses, fruit trees, &c. Zinc labels painted white, written on with pen and ink as these appear to be, and varnished with a hard clear varnish, are very legible and very durable.

Lobelia (*Ibid.*). We have no prices for the sale of any work on this subject, but we refer you to the Index to our volumes.

Orange-trees (*Ibid.*). We should recommend a trial of the remedy against scale on Orange trees mentioned in our last volume, at p. 1. The composition of petroleum oil with which the tree was washed over, the younger shoots lightly with a feather, and the bark of the larger shoots when affected, with a hard brush. The tree has since grown well, and was stated to be completely successful. It is quite worth trial in the case mentioned. So is Gishurst Compound.

Palms (*Contributor*). It is probable that the plants had been grown in a strong heat, and perhaps with bottom heat, in which case the tender hearts would have suffered from cold, either in the transit, or from being put into a lower temperature than that to which they had been accustomed. Some Palms succeed in this country in a low temperature, and this is the most likely cause we can suggest for your ill-luck. We should have preferred giving them from 10 to 20 degrees more heat, especially as the roots were disturbed. Was the soil used for potting cold or warmed?

Tennessee Yellow Wood (*Ibid.*). This is, we believe, the produce of Virgilia lutea, of which some account of a specimen which I bought this summer on the lawn of Colonel Webb, at Milford House, Godalming, will be found at p. 661 of our Volume for last year.

To the Trade and Others.

Seed Potatoes.

Seed Potatoes.

Grass Seeds for all Soils.

The Agricultural Gazette.

5. Then as to the hypothesis that the increased price of meat would compensate for the loss of stock, this might enable the farmers who suffered small losses more cheerfully to pay the rent-charges of the national loan; but this increase in the price of meat would be no advantage to those farmers who had lost all their stock, and would be a most inadequate compensation to those who had lost one-half or one-third of it.

The landlords would give the *most effectual help* on this plan by consenting to the insurance of their tenants' stock, with the security of a rent-charge on their farms for the repayment of the national loan. They would make, no doubt, liberal arrangements with incoming tenants as to this rent-charge, which would thus become a burden both on the rental and on the profits of the farm. The proprietor would remember that without this security he would have run the risk of an indefinite loss of rent, and the tenantry would acknowledge the great advantage to their class of this diffusion of the losses arising from a great national calamity.

It will be seen from the tabular returns in another column that the disease still spreads. In Cheshire alone there have already been nearly 10,000 cases, of which only 553 have recovered; and during the past week there were 2629 fresh instances in that county, and 1940 deaths. We do not suppose that there are many more than 100,000 cows in Cheshire, so that the prospects both of its landowners and its tenants are sufficiently gloomy. Surely it is plain that some such scheme as Sir J. KAY-SHUTTLEWORTH'S should be undertaken by the Government, by which other counties, not knowing how soon they may be called to suffer as severely, may at once combine to bear the common burden, share and share alike.

—— The letter of Mr. GLADSTONE referred to above by Sir J. KAY-SHUTTLEWORTH, is given in another page. The following is a second letter (to Mr. AYLIFF of Holbeach) of a later date, which has just appeared, relating to the proposal for insurance which was urged on Mr. WADDINGTON by the deputation of South Lincolnshire:—

"Hawarden, Chester, Jan. 3, 1866.

"Sir,—Mr. GURDON has forwarded to me a note of the statement he received yesterday from a deputation from South Lincolnshire, with respect to a plan of national cattle insurance.

"In the first place I need not assure you of my own strong anxiety on the subject as well as that of the Government. Personally I have every reason to be on the alert, for the disease prevails extensively in this parish, and is indeed on land belonging to me.

"I do not, however, see what cognisance the Treasury can, as a department, take of your plan, unless the question be whether the charge entailed by the ravages of this plague should be borne by the Consolidated Fund.

"I understand that the deputation disclaim and disapprove any such plan, and I certainly am of opinion that the funds of the country cannot be made responsible for losses incurred by the holders of one particular description of property.

"I shall, however, be most ready to enter upon the consideration of any plan, or any request, brought by the deputation before the Government, and I assume that they have had your application with regard to the general insurance of cattle before either the Lord President of the Council or the Secretary of State for the Home Department.

"For my own part, I shall be anxious to concur in what may appear to be best, after full consideration. But my present impression is are against the attempt to force the entire country, notwithstanding the diversity of circumstances, into uniformity of procedure. Quite apart from charge on the Exchequer, I am apprehensive also that any attempt to use the machinery of Government for the purpose of cattle in summer would of itself lead to delay in a case where all feel that promptitude is indispensable. On the other hand, I believe that in certain cases—one, at least, has been reported to me—the local organisation of counties has been employed for the purpose of pledging rateable property to bear the burden in equal proportions between landlord and tenant.

"Unless I am misinformed, the people of Aberdeenshire—landlords and tenants—have met together and agreed to treat the cost of this deplorable calamity by a charge upon the rateable property equally divided between the two classes, at the same time making their own internal arrangements for working their plan. It does not at first sight appear why a voluntary arrangement (*mutatis mutandis*) of this kind might not be adopted in English counties, and some legislation for separate counties would be much easier and quieter than a plan to operate uniformly and compulsorily for the country at large.

"I have the honour to be, Sir, your faithful servant,

"E. G. AYLIFF, Esq., &c. "W. E. GLADSTONE.

"P.S. The disease appears to have been stopped by rigid measures in Aberdeenshire after 272 cases."

—— THE following is so much of the Programme of the Agricultural Exhibition to be held at Vienna during the ensuing month of May, as relates to English exhibitors. The Exhibition will be opened on the 17th of May, and will close on the 31st.

The Exhibition is to include agricultural machines and implements manufactured either in Austria or abroad.

Application for permission to exhibit must be made not later than February 15th, 1866, on printed forms of application to be had gratis from the Committee of Exhibition, from Chambers of Commerce, Agricultural Societies, &c.* Two of these forms are to be filled in by intending exhibitors, and to be sent prepaid "To the Committee of the Agricultural Exhibition, Vienna," which, in case of permission to exhibit being given, will return one of them, properly signed, to the Exhibitor.

Articles will be admitted and given up again only on production of the signed form.

The following articles will be admissible, viz.: implements, tools, machines, and apparatus made either at home or abroad, and used for the cultivation and improvement of the soil; for sowing, rearing, and reaping plants or vegetables; for the transport or use of products of the soil; and generally all such as are used for agricultural purposes.

All articles intended for exhibition must arrive at the building between the 1st and 15th May, 1866, before which day their arrangement must be completed.

All machines requiring foundations, as well as those requiring water or shafting, must be in their places not later than May 5, 1866.

Machines, &c., placed under cover will be taxed at the rate of 6*s.* for each 38½ square feet of space, English measure (3 Austrian florins per square klafter). Exhibitors of machinery in motion will have to find their own fuel and attendance.

About experiments with their machines, Exhibitors will have to arrange with the Prize Jury. All such experiments to be made at their own expense.

The removal of all articles exhibited must be finished six days after close of the Exhibition.

* Or from Messrs. THOMSON & Co., International Agency, 16, Woburn Place, Russell Square, W.C.

THE CATTLE PLAGUE.

1. The following returns were issued yesterday:—These returns do not profess to give the total number of cases which have occurred in Great Britain, but only those which have been ascertained from the official information received at the office from inspectors, whether appointed by the Clerk of the Council, or by the local authorities. The divisions of England are those of the census. Columns 1 only record the cases reported as having commenced during the weeks indicated by the headings, "back" cases being added to columns 2.

Counties, Districts, &c.	1 Number Attacked from Commencement of Disease.	2 Total Reported Cases from Commencement of Disease.	Attacked.	Killed.	Died.	Recovered.	Remaining.
1. Metropolitan Police District	104	117	Week ending October 21.				
South Eastern Counties	1,254	1,262					
South Midland Counties	1,266	1,269					
Eastern Counties	1,266	1,269					
West Midland Counties	1,266	1,269					
North Midland Counties	1,266	1,269					
North Western Counties	1,266	1,269					
Northern Counties	1,266	1,269					
Yorkshire	1,266	1,269					
Monmouthshire and South Wales	1,266	1,269					
Scotland	1,266	1,269					
1. Metropolitan Police District	104	117	Week ending October 28.				
South Eastern Counties	1,254	1,262					
South Midland Counties	1,266	1,269					
Eastern Counties	1,266	1,269					
West Midland Counties	1,266	1,269					
North Midland Counties	1,266	1,269					
North Western Counties	1,266	1,269					
Northern Counties	1,266	1,269					
Yorkshire	1,266	1,269					
Monmouthshire and South Wales	1,266	1,269					
Scotland	1,266	1,269					
1. Metropolitan Police District	104	117	Week ending November 4.				
South Eastern Counties	1,254	1,262					
South Midland Counties	1,266	1,269					
Eastern Counties	1,266	1,269					
West Midland Counties	1,266	1,269					
North Midland Counties	1,266	1,269					
North Western Counties	1,266	1,269					
Northern Counties	1,266	1,269					
Yorkshire	1,266	1,269					
Monmouthshire and South Wales	1,266	1,269					
Scotland	1,266	1,269					
1. Metropolitan Police District	104	117	Week ending November 11.				
South Eastern Counties	1,254	1,262					
South Midland Counties	1,266	1,269					
Eastern Counties	1,266	1,269					
West Midland Counties	1,266	1,269					
North Midland Counties	1,266	1,269					
North Western Counties	1,266	1,269					
Northern Counties	1,266	1,269					
Yorkshire	1,266	1,269					
Monmouthshire and South Wales	1,266	1,269					
Scotland	1,266	1,269					
1. Metropolitan Police District	104	117	Week ending November 18.				
South Eastern Counties	1,254	1,262					
South Midland Counties	1,266	1,269					
Eastern Counties	1,266	1,269					
West Midland Counties	1,266	1,269					
North Midland Counties	1,266	1,269					
North Western Counties	1,266	1,269					
Northern Counties	1,266	1,269					
Yorkshire	1,266	1,269					
Monmouthshire and South Wales	1,266	1,269					
Scotland	1,266	1,269					
1. Metropolitan Police District	104	117	Week ending November 25.				
South Eastern Counties	1,254	1,262					
South Midland Counties	1,266	1,269					
Eastern Counties	1,266	1,269					
West Midland Counties	1,266	1,269					
North Midland Counties	1,266	1,269					
North Western Counties	1,266	1,269					
Northern Counties	1,266	1,269					
Yorkshire	1,266	1,269					
Monmouthshire and South Wales	1,266	1,269					
Scotland	1,266	1,269					
1. Metropolitan Police District	104	117	Week ending December 2.				
South Eastern Counties	1,254	1,262					
South Midland Counties	1,266	1,269					
Eastern Counties	1,266	1,269					
West Midland Counties	1,266	1,269					
North Midland Counties	1,266	1,269					
North Western Counties	1,266	1,269					
Northern Counties	1,266	1,269					
Yorkshire	1,266	1,269					
Monmouthshire and South Wales	1,266	1,269					
Scotland	1,266	1,269					
1. Metropolitan Police District	104	117	Week ending December 9.				
South Eastern Counties	1,254	1,262					
South Midland Counties	1,266	1,269					
Eastern Counties	1,266	1,269					
West Midland Counties	1,266	1,269					
North Midland Counties	1,266	1,269					
North Western Counties	1,266	1,269					
Northern Counties	1,266	1,269					
Yorkshire	1,266	1,269					
Monmouthshire and South Wales	1,266	1,269					
Scotland	1,266	1,269					
1. Metropolitan Police District	104	117	Week ending December 16.				
South Eastern Counties	1,254	1,262					
South Midland Counties	1,266	1,269					
Eastern Counties	1,266	1,269					
West Midland Counties	1,266	1,269					
North Midland Counties	1,266	1,269					
North Western Counties	1,266	1,269					
Northern Counties	1,266	1,269					
Yorkshire	1,266	1,269					
Monmouthshire and South Wales	1,266	1,269					
Scotland	1,266	1,269					
1. Metropolitan Police District	104	117	Week ending December 23.				
South Eastern Counties	1,254	1,262					
South Midland Counties	1,266	1,269					
Eastern Counties	1,266	1,269					
West Midland Counties	1,266	1,269					
North Midland Counties	1,266	1,269					
North Western Counties	1,266	1,269					
Northern Counties	1,266	1,269					
Yorkshire	1,266	1,269					
Monmouthshire and South Wales	1,266	1,269					
Scotland	1,266	1,269					
1. Metropolitan Police District	104	117	Week ending December 30.				
South Eastern Counties	1,254	1,262					
South Midland Counties	1,266	1,269					
Eastern Counties	1,266	1,269					
West Midland Counties	1,266	1,269					
North Midland Counties	1,266	1,269					
North Western Counties	1,266	1,269					
Northern Counties	1,266	1,269					
Yorkshire	1,266	1,269					
Monmouthshire and South Wales	1,266	1,269					
Scotland	1,266	1,269					
1. Metropolitan Police District	104	117	Week ending January 6.				
South Eastern Counties	1,254	1,262					
South Midland Counties	1,266	1,269					
Eastern Counties	1,266	1,269					
West Midland Counties	1,266	1,269					
North Midland Counties	1,266	1,269					
North Western Counties	1,266	1,269					
Northern Counties	1,266	1,269					
Yorkshire	1,266	1,269					
Monmouthshire and South Wales	1,266	1,269					
Scotland	1,266	1,269					

2. The following letter has been addressed by the Chancellor of the Exchequer to Sir T. D. Lloyd:—

"Hawarden, Chester, Dec. 26, 1865.

"Dear Sir,—The reasons which first offer themselves to my mind against any undertaking by Government to treat the insurance of cattle as a State concern, and to support it by a guarantee from the Exchequer, are of the following character:—

"1. The difficulty, and not the difficulty only, but the impossibility, of preventing carelessness, waste, and fraud of every kind, from the first moment it should become known that the ultimate responsibility (beyond a fixed limit, which would at once be found a very, very narrow one) lay with the public purse.

"2. The fact that in a number of cases particular districts and landlords have already made their own arrangements, which must have been acted upon. Were Government to move into the field, these good examples would be neutralised, and those who have met their own losses would be called as taxpayers to assist in meeting the losses of other people too.

"3. If it shall appear, as is probable, that it is to prevention rather than cure or compensation that we must chiefly look, under Providence, for the mitigation of the calamity, nothing could be so unfortunate as a measure like a State guarantee, which, by relaxing vigilance and the ingenuity of self-interest, would tend to take the minds of men off a subject obviously of the greatest moment, and, as clearly, not yet sounded to the bottom. This objection does not apply to plans of a voluntary nature, where every man would be checked by his neighbours, and each scheme would have its proper adjustments.

"4. If the cattle plague should not extend itself on a large scale, and so the losses of a severe character should be confined to a small fraction of the farming class, there seems an obvious improp.iety in relieving landlords, neighbours, and rateable property from the duty of assisting, so far as assistance is necessary, those on whom the blow has fallen. And the precedent would be an evil one.

"5. But if, on the other hand, the disease should extend very widely, the result must inevitably be felt in a much augmented price of meat. The consumer would then, probably, taking the country all over, pay the same or a larger aggregate amount of money for a greatly diminished quantity. All those who were not smitten in their own cattle would thus profit largely by the disease as producers, while as consumers they would only suffer in common with the community at large. How then, could the community be asked to pay twice, first for their meat in extra price, and, secondly, for the cattle lost; while landlords and cultivators of the soil would, probably, as a class, have their loss (as in a bad corn year) countervailed by a corresponding or greater benefit?

"I have thus stated freely what occurs to me, and perhaps, in prudence, here I ought to end, as my particular official duty ends with considering the merits of any call made on the Exchequer. But the nature of the appeal you make to me induces me to go somewhat further, and to state opinions which I hold with due submission to better judgments, and with all readiness to be corrected by events changing almost from day to day.

"The severity with which this calamity falls in particular cases is grievous. It may be met, in part at least, by associations for insurance, which will diminish the difficulty arising from uncertainty—first, by only dealing with a proportion of the loss; secondly, by widening their local area. Then there is a special claim, though one varying with circumstances, upon the landlord for help. Then there is the resource, should the evil greatly grow, of public subscription, in which I hope we should find classes that have received benefit in other great visitations willing to return it. There is, lastly, the resource of some legal charge upon rateable property of the description liable to suffer. But the particular application of these considerations must depend upon circumstances in great part as yet undeveloped.

"In the meantime I believe the first of all duties is to study in every way the subject of prevention. The public mind is now in a state to endure measures of restraint in larger measure than before the fact of serious and progressive increase was established. And the powers in the hands of local authorities are, I believe, as large as actual circumstances justify or as general opinion would sustain.

"So much for prevention by restraint upon traffic in beasts. But there are other measures of prevention, to be taken by each man for himself, which are of great moment, but which (as far as my information goes) would appear to have been likewise less, or less intelligently, considered. I hear from time to time of cases in which substances are introduced into yards and sheds and cowhouses for prevention, with no aim more distinct than that of creating a strong smell; whereas the two main objects to be taken into view I conceive must be these: to neutralise the poison, especially by the removal of all substances on which it would most easily lay hold; and to improve the air by substances which increase the life-sustaining element in it, and thus raising the tone of health so as to remove or diminish that predisposition in the animals on which so much depends, and which appears in cases of this description to be what is rudely called a low state or tone of body.

"I shall not attempt to enter upon questions of chemistry with which I am unacquainted; and I assume that the best which any man can do at the present moment is to state any facts within his knowledge which give a presumption of being possibly useful; certainty appearing for the present out of the question. At this place one medical man—a scientific, able, and cautious inquirer—has tentatively advised several of our farmers to adopt simple measures of precaution, which I may in a rough

[illegible] ing figures :—

	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
All Scotland	4909	1075	366

Thus in Cheshire the deaths are [illegible] per cent. of the cases; in Scotland, [illegible] per cent.; and in Cheshire the recoveries are [illegible] per cent. of the deaths; in Scotland [illegible] per cent.

"I beg you to excuse any error which may have crept into this letter, and I remain, Dear Sir, your very faithful servant, "W. E. GLADSTONE.

"Sir Thomas D. Lloyd, Bart., M.P.

"P.S.—In Cheshire allowance must be made for dairy stock; but the proportions elsewhere are [illegible]. The recoveries in all England are to the deaths as one to [illegible]; in [illegible], where the numbers attacked are larger than in any county except York, they are [illegible]."

[illegible] FROM MR. J. A. CLARKE.—In the thick of the fight with Death, or in hourly dread of the irresistible [illegible], it is not easy to take a calm view of the situation; but as yet I perceive no signs that the [illegible] is appreciating the gravity of the crisis and the magnitude of the curse that has fallen upon British cattle. Reading the orders of magistrates, the recommendations of doctors, the appeals of [illegible] [illegible] [illegible] — some for [illegible], some for [illegible], some for [illegible], some for allowing a [illegible] of so many hundred yards, some for staying the traffic in swine, some for [illegible] sheep to the [illegible], some for [illegible] dogs, some for [illegible], some [illegible], some directing attention to hygienic and medical preparatory treatment, some [illegible] hopes of wonderful discovery in prevention or cure,—reading these manifold regulations and suggestions, one would think that rinderpest was never heard of before, that the long experience of foreign countries is to go for nothing, while we commence an empirical dealing with the disease *de novo*, and that we have a likely expectation of quelling the plague by methods never yet successful on the [illegible], or by some specific that may chance to be lighted upon in England after eluding all the learning and practice of the Continent. Speculate if you please on the origin of the plague, deny that it spreads by contagion alone, because the channel of its importation to England is unknown, hope that the malady [illegible] [illegible] us that on the Continent outbreaks of rinderpest are always circumscribed by summary measures adopted against contagion, while extensions of the disease are traceable to breaches of the sanitary [illegible]. The most searching reports by the soundest authorities agree that the ordinary course of the plague is to ravage until it is stopped, not until it capriciously vanishes, like familiar forms of epizootic disease, without the intervention of man. Thus, in 1857, Professor Simonds was an eye-witness of the "stamping out" of the plague at a village in [illegible], a sanitary cordon having effectually confined the disease to the cattle on one farm, sparing all the other cattle in the village. The previous year the plague was also extirpated in Silesia; but, owing to imperfections and delays in giving effect to the sanitary laws, seven months were consumed in the process, so that many deaths occurred; though, as the report says, "the loss was a trifling one, compared with the thousands of animals which are sacrificed in other countries." Again, in 1855-6, the rinderpest was suppressed in the usual manner in the Austrian empire. The Government [illegible] possessed [illegible] cattle, and, before it was finally smothered, the disease had attacked [illegible] ing 56,700 cattle, of which nearly one-half perished. Yet the [illegible] [illegible] sets of buildings. Half-a-mile further off is a yard [illegible] three animals are just struck; half a mile from this [illegible] steads and those at present showing clean bills [illegible] reported in your paper of to-day. The farms whence [illegible] raving mad—these are already so frightfully numerous [illegible] ing the military or civilians in sanitary cordons could blockade "eleven thousand" *foci* of infection, intercept all transit of people, and certain descriptions of goods (except by submission to quarantine scrutiny and fumigation), permit no approach or retreat from the precincts of disease, and [illegible] even handing them their food at the end of a long [illegible] dogs, by birds, and vermin, and by other subtle agencies might probably be checked, or seldom found to work mischief, there remains carriage of the virus by the wind, against which a thickly-settled country [illegible] fact that in this neighbourhood the pestilence has travelled with the gale, a homestead, in several cases, [illegible] has not brought the pest as long as the wind blows contrary. Field grazing in the summer will, of course, present every facility for disseminating the disease; brooks and ditches will form no sanitary barrier between healthy and infected animals; and every hedge, bush, and tree-trunk may retain a store of the poison, past all power of applied disinfectants [illegible]

If, then, we are not prepared to enforce those severe measures of suppression which alone are found capable of "stamping out" the plague in other countries; if the most despotic arm could not [illegible] densely populated as this, with an ever-driving, hurrying traffic through its length and breadth; and if the very proximity of our farmsteads to one another threatens to render nugatory the only [illegible] that the calamity now growing upon us will soon be seen in all the proportions of a huge catastrophe. Our disunited, inefficient peddling with means of protection can but clog the sure march of the horrible poison, till those animals which possess no "predisposition" for its attack alone remain alive. To my mind, the future is not merely gloomy; it is appalling.

[illegible] famine of beef, of a [illegible] and butter for the cook [illegible] too early weaning of our infant [illegible] for the agricultural world is how [illegible] districts of Britain the tenant's horned stock [illegible] half the farmer's [illegible]

[illegible] that faded before honest inquiry; but I write seriously in presence of a malignant, all-embracing destroyer, that is still but sowing the seeds of [illegible] I express my belief that, with losses of breeding and [illegible] unable to meet their engagements; and that this year, 1866, if it does not bring the "woe" of our modern prophets, will at least lay an unexampled calamity upon British agriculture.

If our case does not merit national assistance, whether by an insurance including the entire herds of the country, or by loans repayable from the afflicted farms (with landlords and tenants as joint [illegible] against loss of credit by publicity), I do not think [illegible] his chance of gluts and drains of gold, the shipowner runs his risk of unwonted storms, the fisher trusts his luck to uncertain shoals, and the farmer averages his good and bad harvests, and calculates upon unusual mortality among his stock. But the rinderpest is [illegible] remoter danger than even a cutting-off of our cotton [illegible] tisement upon a nation, surely a right-hearted community will undertake that threatened ruin to individuals shall be commuted, if possible, into a lightly-borne burden upon many. *John Algernon Clarke*, [illegible]

[illegible] GOVERNMENT INSURANCE.—Amongst the earlier suggestions given to farmers by the Privy Council was the formation of Mutual Assurance Associations for the protection of individuals from the ruinous results of an attack of the plague. The advisers of this course did not inform the public nor themselves that such associations would, if formed, have been in most instances illegal, and would not have [illegible] pelling contributions from [illegible]. The principle of insurance, however, [illegible] [illegible] although there are many [illegible] many of them legally registered and backed by [illegible] stood the test of trial [illegible] very great objections: [illegible] [illegible] and litigation arising, so that we [illegible] Then with [illegible]

require 11*d.* in the pound on the amount insured, but in case of death from the plague only two-thirds of the loss is paid, and from this 10 per cent. is further deducted on account of there being no salvage. Now, this is tantamount to insuring the whole, and being compensated to the extent of one-half; thus, if 100*l.* worth of stock is insured, for which the annual premium is 4*l.* 11*s.* 8*d.*, should the stock be carried off by the plague the insured receives two-thirds, less 10 per cent., or 59*l.* 8*s.*; so that the premium is nearly 8 per cent. on the sum recovered, or, in other words, more than 40 per cent. remains uninsured.

Now it appears to us that the only sound and safe system is a Government Insurance, because here we have in addition to undeniable security all the advantages of the mutual and proprietary systems united, without the disadvantages of either. Like the former, no surplus profit is wanted, and therefore the terms can be liberal; and like the latter, the terms and duration for insurance can be fixed, so that every insurer will know beforehand what he may expect to pay or receive. We trust that the plan for securing the census of live stock, of which we have always been the steady advocate, will be successful, and will be speedily followed and further utilised by a Government scheme for cattle insurance.

The number of cattle in the country has been estimated, although probably it is under the mark, as 7,000,000, and their presumed value may be taken as 70,000,000*l.* We will suppose that one-half are insured at the premium of 4 per cent. per annum, yielding 1,400,000*l.*; and the other half at 2 per cent., bringing in 700,000*l.*, and making together 2,100,000*l.*, a sum adequate to the loss of 210,000 animals. The total deaths from the plague as afforded by the last return give the total number as about 42,000. If, with this to guide us, we take the twelvemonth's losses at 170,000*l.*, or in value 1,700,000*l.*, we have still the wide margin of 400,000*l.* in hand. It may be urged that some of these animals are insured already, and that others would not be insured at all. These suppositions do not affect our argument, as the risk would be in proportion to the number of animals insured. We would suggest the following mode of carrying out the scheme:—

(1.) Each owner of cattle should make his own return as to number and value, the accuracy of which should be testified by the inspector of the district. To guard against fraud, one-fifth of the risk should be taken by the owner, so that he should pay only four-fifths of the premium, and receive in case of loss four-fifths of the value of the animal.

(2.) The premium should be paid quarterly, and in advance, at the rate of 4 per cent. per annum for an infected, and 2 per cent. per annum for a non-infected district. It may be prudent to exact an additional pre-payment of one quarter in advance.

(3.) A petty sessional division should be considered as a district, and be regarded as healthy if no case of the plague has occurred therein within 28 days. Thus, those residing within it will not only be tempted to insure by the low premium offered, but will use every endeavour to preserve their district clean, and at the same time to promote Government objects by the encouragement of breeding. On the other hand, cattle owners in infected districts will surely require no inducement to protect themselves from losses by such a moderate premium as 4 per cent. for the three months. It may be urged that the scheme would involve a great amount of labour. However great this might be, it would be less than one-half that required by private companies, supposing it could be so done. There is at present a staff of inspectors, one or two boards of commissioners, actuaries at command, post-office facilities, and every other aid would quickly come for the asking. And with the public confidence such a scheme would produce, not only would the fatal disease be trod out with greater facility, but cattle breeders and graziers would be encouraged to look to the future and ward off that scarcity of animal food, which bids fair to become almost as great an evil as the rinderpest itself. *H. C. S.*

5. CATTLE PLAGUE AND SMALL-POX.—As every mite of information calculated to elucidate this painful subject is now of the greatest importance, perhaps you will permit me, through the medium of your valuable journal, to make known a fact which has recently come under my notice, for the benefit of those whom it may most concern.

A week ago, December 27, I had to pay a professional visit at the house of a London dairyman. Before leaving the house Mr. B. asked if I should like to see his stock of cows, and, without waiting for a reply, he led the way to his sheds—two. They were large roomy buildings, well ventilated, and scrupulously clean. There I found 27 beautiful cows in the most perfect health. Mr. B. has not had a single case of disease of any kind in his sheds, although a neighbour of his, having sheds within a cannon-shot of Mr. B.'s, lost 80 cows in a fortnight in October last. I made particular inquiry as to whether he had adopted any prophylactic measures, with a view to protect his stock from an attack of the cattle disease. He replied that for several years past he has been in the habit of vaccinating every fresh cow on entering his sheds—old or young—and that since his adoption of this simple prophylactic measure he has not lost a single cow from any cause whatever.

I think these facts sufficiently interesting and important to be made public, especially at a moment when it is suggested that the cattle disease is nothing more nor less than malignant small-pox. It is worthy of remark that my visit to Mr. B.'s shed was made two days before the publication of Dr. Murchison's valuable paper on this subject in the *Lancet*, and three days before it appeared in the *Times*. There are three points to which these facts point—viz., 1, the suggestion that the disease is small-pox; 2, that these 27 cows had all been vaccinated; 3, that the cattle disease has been observed in their immediate neighbourhood in its worst form without affecting them in the least degree. When these facts become known I am inclined to believe that stock owners will at once cause all their cattle to be vaccinated, without waiting for official instructions from the Cattle Plague Commissioners. It is more scientific to prevent than to cure, and infinitely cheaper. *Thomas Chambers, Senior Assistant-Surgeon to the London Surgical Home, 2a, Sutherland Street, Warwick Square, S.W., Jan. 4.*

6. LOCAL REPORTS.—*Bucclecote.*—At the Epiphany Quarter Sessions it was ordered "that it shall not be lawful for any person from the date of this Order until the 1st day of March next to bring or send any such animal as aforesaid from any other place in Great Britain into any place within this county of Bucks. Any person offending herein will for every such offence forfeit a sum not exceeding 5*l.*" The following resolutions were also adopted: "Provided always that nothing contained in these orders shall be held to prohibit any person from bringing or sending to any butcher within this jurisdiction any fat stock *bond fide* purchased by such butcher, and provided such fat stock be slaughtered within 48 hours of such bringing or sending."

Buckinghamshire.—The plague has at last broken out in nearly every part of this important agricultural county. The Duke of Buckingham has just contributed 100*l.* to be given every year for ten years, if required, to the funds of the Buckingham Cattle Insurance Society which, owing to the many calls, has resolved to admit no more members after the 6th inst. except at the discretion of the Committee. This Society has already 150 members and over 1000 head of cattle are insured. Upwards of 100 cows have either died from the disease or been killed by order of the Veterinary Surgeon Pagnel according to the return furnished to Mr. W. G. Duncan, one of the magistrates for that division.

Cirencester.—Up to the present time the cattle plague still continues to rage with great virulence in the neighbourhood of Bruton-street. On Monday evening a public meeting was held in Cirencester, which a large number of magistrates, Cotswold farmers, and others, attended, which was presided over by the Hon. W. H. Bathurst. The following resolution was unanimously passed:—"That, having regard to the fearful ravages of the cattle plague, and the ruin which it threatens a great portion of the agricultural interest of this district, this meeting is of opinion that Government should be urged to adopt the most speedy measures for facilitating national insurance against loss in respect of animals dying from or being killed in consequence of the plague."

Devonshire.—At the Epiphany meeting of the Quarter Sessions, it was ordered that from the 8th day of January inst. until the 1st of February next, no animals, as defined by that order, shall be brought or sent from any other part of Great Britain into any part of the county of Devon. It was further ordered that within this district no animal or carriage for cattle shall be removed thence to any other part of the county. A notice was directed to be issued prohibiting the movement of any cow, heifer, &c., from any part of their jurisdiction to any other part of their jurisdiction, except between the hours of 7 in the morning and 4 in the afternoon. This prohibition shall not prevent the movement of any cow, &c. (not otherwise prohibited), except along highways or over or along any unenclosed road. During a discussion which took place, a denial was given to a report made at the Sessions on Tuesday that cattle had been improperly buried at Ideford, one of the infected districts.

Essex.—At the County Quarter Session it was agreed that a general order should be issued that up to March 1, "No cow, heifer, bull, bullock, ox, or calf shall be brought from any other part of Great Britain beyond the county of Essex into that county; and further, that no such animal shall be driven or conveyed along any highway within the said county from any place within such county to any other place within the same, or from or to any part thereof, for any purpose whatever." After the resolution had been agreed to, added—"Provided, nevertheless, that this prohibition shall not extend to prevent persons living within such county as aforesaid having animals fitted for slaughter, and which have been *bond fide* in the possession of the owners thereof at least 28 days prior to sale for slaughtering, from taking from part of such county to the nearest railway station, or to any butcher for the purpose of sale and slaughter only, provided a certificate, signed by two justices of the peace acting for the said county act within the same division authorising such removal be first had and obtained for such purpose. And provided also that the *bond fide* property of the employer may be removed from one part of the occupation to another along a highway for any distance not exceeding 300 yards."

Isle of Ely.—At Sutton upwards of 50 losses have died during the week. At Wentworth, since the outbreak of the disease, the total loss has been about 470. At Chippenham Mr. Newman has lost 20 steers and heifers, three calves, and a milch cow.

Kent.—The Order in Council of the 16th of December last with respect to the cattle plague was discussed at the Justices of Kent at the Quarter Sessions. A series of resolutions were unanimously adopted:—1. That all orders heretofore issued by the justices of the several petty sessional divisions should be revoked. 2. That the chief constable of the county, and the superintendents and sergeants under him, be appointed, and be appointed inspectors for carrying out the regulations made under the Orders in Council, the inspectors already appointed by the justices in petty sessions to be re-appointed. 3. That from the 14th of January to the 1st of March no cow, heifer bull, bullock, ox, calf, sheep, goat, or swine, shall be removed to any market or fair, or parish, or place whatsoever, within the jurisdiction of the Court, for the purpose of exhibition or sale. 4. That for the same period no cow, heifer, bull, bullock, ox, or calf, shall be brought from any place without the jurisdiction to any place within the jurisdiction of the Court, nor be on, or pass over, along, or across any highway, or any public road within such jurisdiction, subject to the proviso in the Order of Council with regard to cattle travelling by railway. 5. That the authorities of corporate towns within the county be invited to co-operate with the justices. 6. That the Chairman be requested to apply to the Home Secretary for power to increase the police force to a proportionate number of men not exceeding 50. 7. That the attention of the Home Secretary be called to the inadequate provisions relating to sheep, swine, and other animals, and also to the transit of skins hoofs, heads, offal, and manure, with a expression of the opinion that the sale by auction of live cattle by railway ought as soon as possible to be stopped, and more stringent measures adopted with regard to the Metropolitan Market.

Lancashire.—The dreaded rinderpest has now made its appearance in the Wigan Union, in the township of Hindley, which was situated on the side of the district nearest to Leigh, where the plague has been raging fearfully for some time.

Leicestershire.—The cattle plague is rapidly increasing in this county. In the parish of Leire, near Lutterworth, the disease has broken out with great severity. At Melton Mowbray 33 have been killed or died from the plague; at Leire and the adjoining parish upwards of 40.

Lincolnshire.—The disease has made its appearance in the neighbourhood of Market Rasen. In the Trentside district the disease is still extending. At East Butterwick the losses amount to 70, at West Butterwick to three, and at Amcotts to 115. On Mr. Dodd's premises at Barholm a beast which showed symptoms of the disease was enveloped in a sheet plastered with mustard. The irritation caused by the mustard produced such violent colic in the animal's blood, and in less than an hour the animal took a hearty meal, which it had previously refused. The next day it was quite well. The disease has carried off the whole herd of Mr. Harris, of Irnham, with the exception of one cow. The villages round Harbling, and 2274 head of cattle, have been scheduled. The disease is still extending in the neighbourhood of Boston. Fresh cases of disease continue to prevail round Long Sutton. The deaths in the Spalding district during the week are returned at 63. Round Market Deeping the disease is making sad havoc.

Monmouthshire.—At the Epiphany Quarter Sessions it was eventually agreed that orders should be issued revoking all petty sessional orders and prohibiting the introduction of horned stock, sheep, and pigs into the county from any other county, the exhibiting of any horned stock at any fair or market within the county, and the driving of any such animals, and the conveyance by railway from place to place in the county of any cattle, sheep, or pigs.

Norfolk.—It was decided, on the motion of the Earl of Leicester, seconded by the Earl of Albemarle, that the Order in Council of December 16 should be put in force in the county. On Saturday the County Agricultural Association resolved to hold no exhibition of stock during 1866, by reason of the cattle plague.

Northamptonshire.—At the January Sessions the following order was made:—"That it is expedient from the 10th day of January inst. until the 1st day of March next ensuing, that no cow, heifer, bull, bullock, ox, or calf, and which are hereinafter designated as cattle, shall be removed from place to place within their jurisdiction except with the licence of two justices acting in and for the said county, and except such cattle be removed for immediate slaughter, or to the nearest railway station where cattle are received, to be sent to some market legally open for the sale of cattle; provided always that nothing contained in this order shall make it unlawful for any person to remove from his own cattle from one part of his farm in occupation to another, unless such cattle shall, in the course of such removal, be driven more than two yards upon any highway or public road."

Northumberland.—At the Quarter Sessions it was resolved to prohibit, from and after the 1st day of January, any cattle from any place within the jurisdiction of the Bench; also that a licence of two justices should be required before any cattle be removed from one place to another, and to the usual markets and fairs. On the motion of Earl Grey, it was further determined to send a copy of these resolutions to the Home Secretary, and at the same time to express the opinion of the magistrates that the present regulations are not sufficient to check the spread of the disease, the Bench believing that a uniform and stringent measure should be adopted throughout the country on the responsibility of the Government.

Oxfordshire.—The disease still extending over a radius of about eight miles round Oxford. With stirks and animals not in calf it assumes a less malignant form, and 40 or 50 per cent. of those attacked have in several instances recovered, but with this exception the plague is as virulent as ever. The number of cases in which the 7 days' grace has allowed a member of it has been attacked has been found here, as in other localities, materially to mitigate its severity when the infection subsequently manifested itself. At Waterheaton hour-and-thirty has had a full trial in the herd of Mr. Rowland, and only 17 cows have died out of 60.

Pembrokeshire.—At the Quarter Sessions for the county, the following resolution was agreed to unanimously:—"That, with a view to prevent the introduction of the cattle plague into the county of Pembroke it is expedient to put a stop to the removal of any cattle either by sea or land from without the county, into the jurisdiction of this Court until the 1st day of March (except cattle imported into the country and authorised to travel through by railway); and also that no cattle be carried by railway from any one place within the jurisdiction to any other place also within it, and that an order to that effect be made, and a notice published in the local papers, in pursuance of the powers given to the justices by the Order of Her Majesty's Privy Council of the 16th of December, 1865."

Suffolk.—The county magistrates adopted on Friday a series of resolutions to the effect that the whole county under the powers of the Order in Council of December 16.

Wiltshire.—At the meeting of magistrates for the purpose of considering the report of the Committee of Magistrates appointed at the Quarter Sessions, it was resolved that the Order in Council of December 16, made under the *bond fide* property of the employer, may be removed from one part of the occupation to another along a highway for any distance not exceeding 300 yards."

Isle of Wight.—At Sutton upwards of 50 losses have died during the week. At Wentworth, since the outbreak of the disease, the total loss has been about 470. At Chippenham Mr. Newman has lost 20 steers and heifers, three calves, and a milch cow.

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AGE AT WHICH SHEEP SHOULD BE SLAUGHTERED.

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But at the conference that the committee have a very important question to consider. At what period should sheep be slaughtered? Is it desirable that they should be fed to the utmost extent of their capacity, or should they be killed at a younger age? This question is one of great importance to the farmer, and it is one which has been much discussed. Some persons are of opinion that sheep should be fed to the utmost extent of their capacity, and that they should be killed at a young age. Others are of opinion that sheep should be fed to a moderate extent, and that they should be killed at a more advanced age. It is impossible to give a definite answer to this question, as the best age at which sheep should be killed depends upon a variety of circumstances. The breed of the sheep, the nature of the food, the climate, and the soil are all important factors. It is generally considered that sheep should be killed at a younger age when they are fed on rich pasture than when they are fed on poor pasture. It is also considered that sheep should be killed at a younger age when they are fed on turnips than when they are fed on hay. It is impossible to give a definite answer to this question, as the best age at which sheep should be killed depends upon a variety of circumstances. The breed of the sheep, the nature of the food, the climate, and the soil are all important factors. It is generally considered that sheep should be killed at a younger age when they are fed on rich pasture than when they are fed on poor pasture. It is also considered that sheep should be killed at a younger age when they are fed on turnips than when they are fed on hay.

[illegible]

Home Correspondence.

[illegible]

Farmers' Clubs.

[illegible]

way of passing laws upon the subject, but they could do something which might be useful to themselves in the event of an outbreak in that neighbourhood. It was well to be prepared for any contingency. One thing in the way of preparation had struck him very forcibly, and that was the question of Mutual Cattle Insurance Societies. He had had some experience in such Societies, for he had instituted one some seven or eight years ago, when the lung disease was raging in the south of Ireland. If anything was done, it would be desirable that they should have the Society on what Mr. Disraeli termed "true commercial principles." He did not wish the Club to take the matter up, for it should be done on a large scale. Mr. Grey next spoke of the precautions against the disease itself. With regard to the treatment of cattle, Mr. Stephenson, the inspector for Newcastle, had stated at a meeting in Newcastle that there were many cases in which the disease had been cured, and some of them had been bad cases, and that was owing to supporting the system of the animals—giving them large quantities of gruel, and attending to their general comfort by good nursing. There had been a good deal of notice taken of two systems of curing, which should be tried. One was the vapour bath, and the other the homœopathic system. Referring more particularly to Mr. Caird's opinion, Mr. Grey quoted the following extract from that gentleman's report to Government:—"But wherever the disease has shown itself in several herds in the same locality, remedial measures are adopted. Isolation of the individual, and medical treatment, according to the symptoms of each, accompanied with cleanliness and warmth, are the principles of treatment. No certain specific has been discovered, but a rational treatment, according to varying symptoms, is practised, with warm clothing and nourishing drinks to sustain the strength. The result of this treatment has been that 25 per cent. have recovered. The cows return to milking condition, and there has been no instance of an animal becoming a second time affected. The most successful treatment is said to be by homœopathy." After speaking of the Turkish bath as another valuable auxiliary, Mr. Grey concluded by expressing a hope that the bath and the homœopathic system might have a fair trial.

Mr. Scriven, a large farmer from the north of Ireland, spoke at some length of the benefits to be derived from the use of hot-air baths in the treatment of animals. He had built a bath on his farm, and on putting a cow, horse, or pig into it, the first action which would strike them was that it produced great action of the bowels, and that was very desirable. He never failed in curing inflammation or colic in horses by the use of the bath, and those horses very rarely had a second attack. All his horses had the lung disease, and they were put into the bath at a temperature of 180°, and he never lost one of them. The mode of heating he had adopted was by applying radiating heat, and the action was more rapid and more easily maintained than by the old process of making brick structures.

Miscellaneous.

Assurance against the Plague.—England, protected by the sea, and which has been spared for a century, was taken somewhat unawares, so that some uncertainty has been witnessed in the measures employed to arrest its course. In some districts, the parties interested have had the good sense to form assurance funds; and it is much to be regretted that the same plan has not been adopted for the metropolis. But we cannot help what has been done; let us, therefore, be reconciled with the past, and see what is best to be done in future for the interests of all. What is the present state of the matter? A certain number of districts, both in England and Scotland, are still exempt from the typhus; in others the disease is generally extending its ravages. Those districts which hitherto have been spared, should institute assurance funds, and take every precaution to secure themselves against this scourge, In France, in Belgium, even in Great Britain, some places managed, in 1750, to successfully protect themselves by prohibiting the importation of any foreign cattle or animal. These preventive measures may now be taken with some chance of success.

Notices to Correspondents.

Cattle Plague: *J. C. H.* The paper on Indemnity will appear next week.

Royal Agricultural College: *Young Farmer.* We understand that a student competing for the College diploma is required at the end of his first and second sessions to secure half marks in the several subjects in which he is examined, and two-thirds of the total, the subjects and the marks allotted to each being:—

Agriculture	..	600
Chemistry	..	600
Veterinary	..	300
Botany	..	300
Or Geology	..	300 (A)
Surveying	..	300
Drawing	..	100

After being at the College two more sessions he is examined in agriculture and chemistry, and in one of the four subjects marked (A), according to his choice. During the entire course (four sessions) the student is subjected to weekly examinations, and therefore has, at the least, 12 examinations in agriculture and chemistry, and six on the other subjects.

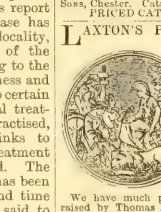
LINCOLNSHIRE GEM PEAS (Martin & Son).—See Testimonials. Superior to Dixon's Yorkshire Hero or any other Peas grown here.
Hull, 7, Market Place; and Cottingham. Established 1788.

THE EARLIEST and BEST OUT-DOOR GROWN PEA we have tasted this season—vide *Journal of Horticulture* of the 13th of June, 1865; it was also favourably noticed in the *Gardeners' Chronicle* of June 24, 1865.
The above Early Pea is now being sent out by Robert H. Pointer, at 1s. 6d. per quart. Height 3 feet. The kind was gathered from in good condition on Wednesday, the 30th of May, and was sent to the Editor as above on the 28th.
None genuine except from accredited Agents.
All over two quart packages free on Great Western Railway.
Robert H. Pointer, Seed Merchant, Taunton.

DICKSON'S "FIRST and BEST" EARLY PEA.
The Best Early Pea in Cultivation
This Pea has been tested against all the earliest varieties known, and is pronounced by most of the best practical Gardeners in the kingdom to be superior to any other Early Pea for earliness, productiveness, and general good qualities. Price per quart, 2s. 6d.
PRICED CATALOGUES of KITCHEN-GARDEN, FLOWER, and AGRICULTURAL SEEDS; also separate CATALOGUES of the Various Classes of Nursery Stock will be forwarded, post free, on application.
Francis & Arthur Dickson & Sons, The Old Established Seed Warehouse, 105, Eastgate Street, and Upton Nurseries, Chester.

The Earliest Pea known is
CARPENTER'S EXPRESS, gathered May 7th, the Earliest date on record. See Testimonials in *Gardeners' Chronicle* of September 2 and 9, October 16, and November 6. Price 5s. per quart. Trade prices on application.
True seed to be had only of Edward Carpenter, Seed Merchant and Grower, Brighton and Sussex Seed Warehouse, 96, St. James's Street, Brighton, Agent of Messrs. Wood & Son, Nurserymen, Maresfield; Messrs. Osborn & Sons, Nurserymen, Fulham, S.W.; Messrs. W. Bruce & Co., Seed Merchants, Glasgow; Messrs. F. & A. Dickson & Sons, Nurserymen, Chester; and of Messrs. Jas. Dickson & Sons, Chester. Catalogues on application.
PRICED CATALOGUES of DUTCH BULBS now ready.

LAXTON'S PROLIFIC EARLY LONG-POD PEA.



We have much pleasure in introducing this valuable variety, raised by Thomas Laxton, Esq., Stamford, to the notice of the Trade; most valuable trials were exhibited by him at Mark Lane in June last, averaging 11 and 12 Peas in a pod, and they were pronounced by several eminent members of the London Seed Trade to be an exceedingly fine variety. For a second early Pea, and a Pea for early sowing in autumn, there is no Pea of a similar class in cultivation to equal it, and we feel every confidence that it will be in general cultivation in a very few years. The Pea has the same habit and character as Dickson's Favourite and Auvergne, excepting that the pods are nearly double the size of these varieties.
In Sealed Quarts and Pints, 3s. 6d. per quart, 2s. per pint.
Price to the Trade on Application.

In addition to the list already advertised, the following Seedsmen have ordered supplies of this invaluable Pea:—

S. L. Ziemann, Quedlinburgh	White, R., Mr., Poole
F. G. Goodall, Mr., Sheffield	Whitehead, Mr., Chelsea
F. Farrell & Son, Messrs., Dublin	Williamson, G., Mr., Bristen, Thetford
Mitchinson, J., Mr., Truro	C. H. Dickson, Mr., Manchester
F. & A. Dickson, Messrs., Chester	Woods, J. & Son, Messrs., Woodbridge
Jno. Iredale, jun., Mr., Stainburn	Charwood & Co., Messrs.
Troughton, W., Mr., Preston	Brown, Hy., Mr., Stamford
Taylor, W., Mr., Ongar	
Hogg & Robertson, Messrs., Dublin	

James Carter & Co., Seedsmen, 237 and 238, High Holborn, W.C.

The Yorkshire Hero Pea.
E. P. DIXON and SON, Seed Merchants, 57, Queen Street, Hull, beg to intimate that they have this year harvested a fine lot of their YORKSHIRE HERO PEA, a variety exactly like it, which has always sustained the very high character given of it, being remarkably prolific, early, and of delicious flavour. This Pea is similar in appearance to Veitch's Perfection, but much dwarfer, about a foot in height, and far more prolific; upwards of 70 pods are frequently found upon a stem. It is also a Pea which withstands the mildew better than any other, and we have every confidence in saying that it is the best Pea for exhibition.
All who have grown the Yorkshire Hero Pea have pronounced it to be the best variety of its class, and one which will become a great favourite in every garden. Price 2s. per quart.

Testimonials.
From Mr. Thomas Gibb, *Gardener to the Right Honourable the Earl of Yarborough, Brocklesby Park Gardens*
"I grew the Yorkshire Pea the last season, and found it an abundant bearer and an excellent Pea of the Marrow sort. It resisted the hot weather of July, and remained quite green to the last, while other sorts at the same time were covered with mildew."
From Mr. William Brown, *Gardener to Sir T. A. Clifford Constable, Bart., Burton Constable Gardens.*
"I am highly pleased with your new Pea, 'The Yorkshire Hero,' and shall grow it in my kitchen-garden next year. I believe it to be the best Dwarf Pea grown, and much superior to Veitch's Perfection, as it is dwarfer, much earlier, and more prolific."
From Mr. James Robertson, *Gardener to the* Dowager Countess of Ripon, *Norton Field Gardens.*
"It gives me great pleasure to contribute my meed of praise to the very excellent Pea sent out by you last season, under the name of 'The Yorkshire Hero.' I sowed it in the months of March, May, and June, each of which sowings I found equally productive, indeed very prolific, and in point of flavour cannot be surpassed. Several gentlemen in this neighbourhood tasted, and spoke very highly of it, and I think it a remarkably distinct variety, and one that will become a general favourite."
From Mr. Walter Hardie, *Forester to the* Right Honourable the Earl of Yarborough, *Brocklesby Park Nursery.*
"Having given the Yorkshire Hero Pea a fair trial, I can bear testimony to its excellence in every respect, especially its delicious flavour and productiveness."
From Mr. George Fairbanks, *Gardener to* Joseph Robinson Pease, Esq., *Redcotwood House, near Hull.*
"I had some of the 'Yorkshire Hero' Peas from you the past season, and can truly say that it is a most excellent sort; being early, dwarf, of most delicious flavour, and an abundant bearer, it withstood the mildew better than any other Pea we had."
From Mr. W. Kemp, *late Gardener to* Sir Thomas Beckett, Bart., *Somerby Park.*
"The Yorkshire Hero Pea is a splendid variety of the Wrinkled Marrow, 2½ feet in height, very branching, and an abundant bearer, requires sowing very thin in good rich soil, and will produce from 50 to 70 well-filled pods of most delicious flavour, and very thin in the skin, full 10 days or a fortnight earlier than Veitch's Perfection, and superior in every respect; it is the best Pea I am acquainted with, and will become a general favourite in every garden, not requiring such an immense forest of sticks to support them as most sorts do. I may further mention that from the quart of seed I had from you I have saved 9 lbs of well-ripened Peas, which I can easily dispose of at 5s. per quart to those who saw them in bearing."
From R. R. Brown, Esq., *Brullington Quay.*
"I have great pleasure in subscribing my testimony in favour of the wonderfully productive qualities of your Yorkshire Hero Pea; they are very large, and at the same time delicious eating, and I can pronounce them, with the greatest degree of truth, to be the best dwarf Pea I have ever grown."
Price 2s. per quart. Price to the Trade on application.
E. P. Dixon & Son, The Yorkshire Seed Establishment, 57, Queen Street; also 76 and 77, High Street, Hull.

THE ESSEX RIVAL PEA.—This variety has proved to be the finest, best-flavoured, and most productive EARLY PEA in cultivation. See Testimonials in "Journal of Horticulture" of December 5, and in *Gardeners' Chronicle* of December 9. Price 1s. 6d. per quart.
To be obtained of the proprietor, Mr. Thomas Eley, Sible Hedingham, near Halstead, Essex. Also of the following appointed Agents:—
Messrs. Peter Lawson & Son, 28, King Street, Cheapside, London, E.C.
Mr. James Veitch, Royal Exotic Nursery, Chelsea.
Messrs. Cooper & Bolton, 152, Fleet Street, London, E.C.
" Fraser, Richardson, & Goad, 82, Bishopsgate Within, E.C.
" Richard Lowe & Co., Hagley Green, Wolverhampton, Staffordshire.
" J. Roberts & Son, Denbigh.
" Fisher, Holmes, & Co., Handsworth Nursery, Sheffield, Yorkshire.
" Saltmarsh & Son, Chelmsford, Essex.
" Sutton & Sons, Reading, Berkshire.
" Joseph Trimble & Sons, Penrith, Cumberland.
Mr. Christmas Quincy, Peterborough, Northamptonshire.
" B. C. Mackenzie, Ventnor, Isle of Wight.
" A. F. Godward, Southend, Essex.
" B. Cant, Sr., St. John's Nursery, Colchester, Essex.
" George Taber, Ravenhall, near Witham, Essex.
M. Paul Tollard, Nurseryman and Florist, 4, Place des Trois Maries, Paris, France (Sole Agent).
Mr. Eley has since he published some of the testimonials relative to the above Pea (which appeared in "The Journal of Horticulture" of December 5, and in *Gardeners' Chronicle* of December 9, 1865) received several other most satisfactory reports, among which are the following:—
In a letter received from the Rev. R. T. Wilson Taylor, St. Mewan Rectory, near St. Austell, Cornwall, bearing date December 21, 1865, who has previously borne testimony to the excellent qualities of the above Pea, adds—"Your system of Pea growing has answered well, and I for one thank you for valuable hints thereon. In regard to distance, I keep the rows at least 18 inches apart hence, I think, in a measure, the profusion of pods. Yours turned out and turned in uncommonly well, as it was one mass of bloom, and pods from top to bottom—the admirtion of all who saw it."
From Miss Willis, *of Hurst House, Prescot, Lancashire,*
"Miss Willis has great pleasure in adding her testimony to that of many others on the excellence of Mr. Eley's "Essex Rival" Pea, which she considers the best of the early sorts that she has ever tested. Miss Willis finds this admirable Pea is sold at the seed shops in Liverpool; she will therefore obtain it there this year, and is extremely sorry that from the circumstance of her having been from home she has been unable to give Mr. Eley her report earlier.—Hurst House, December 23, 1865."
"The Vicarage, Castle Hedingham, January 2, 1866.
"Dear Sir,—I must apologise for having been so long in giving you my report in favour of your early Pea, "Essex Rival." My gardener tells me there was a close race between your Pea and one supplied by Mr. Dibb bone, sown the same day, towards the end of 1864, Dibbstone being only one day in advance. I am sorry I cannot give any testimony as to the relative merits of either Pea on the table.—
I remain, dear sir, yours very truly, Henry Wilkinson."

GENUINE NURSERY STOCK, comprising:—

TRANSPLANTED FOREST TREES.		Pinus monticola, 4 to 6 feet	
		" muricata, 1½ to 2½ feet	
Alder, 2 to 3 feet		" pyrenaica, 1½ to 2½ feet	
Ash, 1½ to 2 feet		Picea Nordmannianna, 3 to 4 feet	
" 2 to 3 feet		" Pinsapo, 2 to 2½ feet	
Birch, 2 to 3 feet		Araucaria imbricata, 1½ to 2 feet	
" 3 to 4 feet		" " 2 to 2½ feet	
" 4 to 6 feet		" " 3 to 4 feet	
Chestnut (Spanish) 1½ to 2½ feet		" " 4 feet	
Fir (Larch), 1½ to 2 feet		" " 5 feet	
" 2½ to 3½ feet		" " 6 feet	
Hazel, 1½ to 2½ feet		Cedrus Deodara, 4 to 8 feet	
" 2 to 3 feet		" africanus, 3 to 6 feet	
Willows, 3 feet		" Libani, 3 to 6 feet	
" cuttastrong, 4 to 6 feet		Cryptomeria Lobbii, 4 to 5 feet	
CONIFERS AND HARDY EVERGREENS.		Cupressus Lawsoniana, 2 to 3 feet	
		" macrocarpa, 2 to 3 feet	
Arbutus, 1½ to 2 feet		" torulosa, 1½ to 2 feet	
Aucuba japonica, 1 to 2 feet		Juniperus chinensis, 1½ to 2 feet	
Berberis Aquifolium, 1 to 2 feet		" macrocarpa, 2 to 3 feet	
" japonica, 1 to 2 feet		" hibernica, 2½ to 3 feet	
Box (Tree) of sorts, 1 to 2 feet		" sabina (for covers) 2½ ft.	
Eugenia Ugni		Taxus (Yew, common), 2 to 3 ft.	
" ugnicula		" Irish, 2 to 6 feet	
Hollies (green), 2 to 3 feet		" " variegated, 1½ to 2 ft.	
" (variegated), 1½ to 2½ feet		Thuja aurea, 1, 2, and 2½ feet, fine	
Laurels (common), 2 to 3 feet		" Lobbii, 2½ to 3 feet	
Laurustinus, 1 foot		" " 4 to 5 feet	
Privet (Box-leaf), 1½ to 2 feet		" Warreana, 3 to 3½ feet	
Rhus Cotinus, 2 feet, fine stock		Thujopsis borealis, 1½ to 2 feet	
" macrocarpa, 1 to 1½ feet		Wellingtonia gigantea, 1 to 1½ ft.	

Specimen CONIFERS, in fine condition for removal, prices and size on application
Choice named Hardy RHODODENDRONS, SCARLET, WHITE, ROSE, and PURPLES, in every shade, fine bushy plants, 1½ to 3 feet, £7 10s. to £10 per 100.
RHODODENDRON PONTICUM, varieties of various sizes, from 30s. to 100s. per 100.
AZALEAS, named sorts, 40s to 60s per 100.
STANDARD and HALF-STANDARD ROSES, in choice varieties, straight stems, and good roots, 50s. to 100s. per 100.
STANDARD and DWARF APPLES, in 50 approved kinds, 60s. to 75s. per 100.
Plans and Estimates given for Laying out and Planting New Grounds
FOREST TREES supplied and planted by the Acre, and failures replaced.
A NEW DESCRIPTIVE and PRICED CATALOGUE of Japanese Novelties and General Nursery Stock may be had on application.
Maurice Young, Milford Nurseries, near Godalming, Surrey.

Special Offer to the Trade.
MARSH and PERKINS, 42, Drapery, Northampton, have great pleasure in offering the following, all stout, well-rooted stuff:—

APRICOTS, Dwarf-trained MOOR PARK,		2ls. per dozen	
APPLES,	"	12s. per dozen	
PEACHES,	"	21s. per dozen	
PEARS,	"	12s. to 15s. per dozen	
PLUMS,	"	12s. to 15s. per dozen	
CHERRIES,	"	12s. per dozen	
CURRANTS, RED and BLACK, 6s. per 100, 50s. per 1000			
ROSES, STANDARDS, 2 to 4 feet, 50s. per 100			
ARBOR-VITÆ, AMERICAN, 1 to 1½ feet, per 100			
"	"	1½ to 2 feet, 12s per 100	
"	"	CHINESE and TARTARIAN, twice bedded, 6 to 12 inches, 10s. per 1000	
"	"	CHINESE and TARTARIAN, twice bedded, 12 to 18 inches, 30s. per 1000	
BERBERIS AQUIFOLIUM, 6 to 12 inches, 30s. per 1000			
"	"	1-year Seedling and 2-years' Bedded, 20s. per 1000	
BOX, GREEN, 3-years' Cuttings, 50s. per 1000			
"		Transplants, 1 to 1½ feet, 50s. per 1000	
"		1 to 2 feet, 30s. per 100	
LIGUSTRUM OVALIFOLIUM, 3 to 4 feet, 4s. per 100			
PYRACANTHA, yellow berried, in pots, fine, 2 to 3 feet, 60s. per 100			
SWEET BRIAR, 1-year seedling, 2s. per 1000			
LARCH FIR, Bedded, 1 to 1½ foot, 6s. per 1000			
"	"	1½ to 2 feet, 9s. per 1000	
"	"	2 to 2½ feet, 15s. per 1000	[per 1000
"	"	twice Transplanted, very fine, 1½ to 2 feet, 10s	
"		Do., do., 2 to 3 feet, 15s. per 1000	
"		Do., do., 3 to 4 feet, 20s. per 1000	
SPRUCE FIR, Bedded, 6 to 12 inches, 6s. per 1000			
"		twice Transplanted, 9 to 12 inches, 12s. per 1000	
"		Do., do., 1 to 1½ foot, 15s. per 1000	
GORSE, 2-years' drifts, fine, 4s. per 1000			
PRIVET, Transplanted, 1 to 1½ foot, 10s. per 1000			
"		2-years', do., 10s. per 1000	
BLACKTHORN QUICK, 1-year, fine, 7s. per 1000			
"		2-years', do., 10s. per 1000	

A reference or remittance required from unknown correspondents.

CHARLWOOD AND SON, Seed and Florists' Flower Merchants, [illegible]

Excellent Nursery Stock at Moderate Prices.

WM. JACKSON AND SON, Nurserymen, Retford [illegible]

RICHARD SMITH, Nurseryman and Fruit Tree Worcester.

ROSES.—[illegible]

FORTY ACRES OF FRUIT TREES, [illegible]

EWARD FRANCIS PILCHER has for Transplanting, Standards or Dwarfs, [illegible]

APPLES, PEARS, PLUMS, CHERRIES, PEACHES, and NECTARINES, [illegible]

PYRAMID APPLES, PEARS, PLUMS, CHERRIES [illegible]

ORCHARD-HOUSE TREES, Trained to Pots—[illegible]

EVERGREENS for Ornamental Planting or Avenues, [illegible]

At 10s. per dozen.

Abies excelsa, 4 to 5 feet
" Menziesii, 4 to 5 feet
" Morinda, 12 to 15 feet
Araucaria imbricata, 4 to 5 feet
Cedrus Deodara, 4 to 5 feet
Cupressus macrocarpa, 4 to 5 feet
" Lawsoniana, 4 to 5 feet
Ilex Perry's Hedging, 4 to 5 feet
Juniperus recurva, 4 to 5 feet
Picea Nordmanniana, 4 to 5 feet
Pinus Cembra, 4 to 5 feet
" Pinaster, 4 to 5 feet
" Pinsapo, 4 to 5 feet
" Strobus, 4 to 5 feet
Retinospora ericoides, 4 to 5 feet
Thuja gigantea, 4 to 5 feet
Wellingtonia gigantea, 2 feet

At 15s. per dozen.

Abies Douglasii, 5 to 6 feet
" Menziesii, 5 to 6 feet
" Morinda, 5 to 6 feet
" Nordmanniana, 4 to 5 feet
Araucaria imbricata, 2½ to 3 feet
Cedrus Deodara, 5 to 6 feet
Cupressus Lawsoniana, 4 to 5 feet
" macrocarpa, 5 to 6 feet
Juniperus recurva, 5 to 6 feet
Picea Nordmanniana, 5 to 6 feet
Pinus Cembra, 5 to 6 feet
" Pinaster, 5 to 6 feet
" Pinsapo, 5 to 6 feet
" Strobus, 5 to 6 feet
Retinospora ericoides, 4 to 5 feet
Thuja gigantea, 4 to 5 feet
Wellingtonia gigantea, 4 feet

At 20s. per dozen.

Abies Douglasii, 7 to 8 feet
" Menziesii, 6 to 7 feet
" Morinda, 6 to 7 feet
" Nordmanniana, 5 to 6 feet
Araucaria imbricata, 3 to 4 feet
Cedrus Deodara, 6 to 7 feet
Cupressus Lawsoniana, 5 to 6 feet
" macrocarpa, 6 to 7 feet
Juniperus recurva, 6 to 7 feet
Picea Nordmanniana, 6 to 7 feet
Pinus Cembra, 6 to 7 feet
" Pinaster, 6 to 7 feet
" Pinsapo, 6 to 7 feet
" Strobus, 6 to 7 feet
Retinospora ericoides, 5 to 6 feet
Thuja gigantea, 5 to 6 feet
Wellingtonia gigantea, 5 to 6 feet

At 25s. per dozen.

Abies Douglasii, 8 to 9 feet
" Menziesii, 7 to 8 feet
" Morinda, 7 to 8 feet
" Nordmanniana, 6 to 7 feet
Araucaria imbricata, 4 to 5 feet
Cedrus Deodara, 7 to 8 feet
Cupressus Lawsoniana, 6 to 7 feet
" macrocarpa, 7 to 8 feet
Juniperus recurva, 7 to 8 feet
Picea Nordmanniana, 7 to 8 feet
Pinus Cembra, 7 to 8 feet
" Pinaster, 7 to 8 feet
" Pinsapo, 7 to 8 feet
" Strobus, 7 to 8 feet
Retinospora ericoides, 6 to 7 feet
Thuja gigantea, 6 to 7 feet
Wellingtonia gigantea, 6 to 7 feet

FLOWERING AND STANDARD ORNAMENTAL [illegible]

At 10s. per dozen.

Acer Monspessulanum, 3 to 4 feet
Acer Negundo variegatum, 3 to 4 feet
Acer Pseudo-platanus, 3 to 4 feet
Fraxinus Ornus, 3 to 4 feet
Laburnum vulgare, 6 to 7 feet
Populus alba, 6 to 7 feet

At 15s. per dozen.

Acer Monspessulanum, 4 to 5 feet
Acer Negundo variegatum, 4 to 5 feet
Acer Pseudo-platanus, 4 to 5 feet
Aesculus Hippocastanum, 4 to 5 feet
Alnus glutinosa, 4 to 5 feet
Betula alba, 4 to 5 feet
Carpinus Betulus, 4 to 5 feet
Castanea vesca, 4 to 5 feet
Cytisus, 3 to 4 feet
Elm, Chichester, 5 to 10 feet
Fraxinus excelsior, 11 to 12 feet
" Silver, 10 to 12 feet
Populus pyramidalis, 7 feet
Prunus Pissardi, 5 to 6 feet
Quercus Robur, 6 to 7 feet

At 20s. per dozen.

Acer Monspessulanum, 5 to 6 feet
Acer Negundo variegatum, 5 to 6 feet
Acer Pseudo-platanus, 5 to 6 feet
Aesculus Hippocastanum, 5 to 6 feet
Alnus glutinosa, 5 to 6 feet
Betula alba, 5 to 6 feet
Carpinus Betulus, 5 to 6 feet
Castanea vesca, 5 to 6 feet
Cytisus, 4 to 5 feet
Elm, Chichester, 6 to 7 feet
Fraxinus excelsior, 12 to 13 feet
" Silver, 11 to 12 feet
Populus pyramidalis, 8 feet
Prunus Pissardi, 6 to 7 feet
Quercus Robur, 7 to 8 feet

At 25s. per dozen.

Acer Monspessulanum, 6 to 7 feet
Acer Negundo variegatum, 6 to 7 feet
Acer Pseudo-platanus, 6 to 7 feet
Aesculus Hippocastanum, 6 to 7 feet
Alnus glutinosa, 6 to 7 feet
Betula alba, 6 to 7 feet
Carpinus Betulus, 6 to 7 feet
Castanea vesca, 6 to 7 feet
Cytisus, 5 to 6 feet
Elm, Chichester, 7 to 8 feet
Fraxinus excelsior, 13 to 14 feet
" Silver, 12 to 13 feet
Populus pyramidalis, 9 feet
Prunus Pissardi, 7 to 8 feet
Quercus Robur, 8 to 9 feet

RICHARD SMITH'S LIST of the EVERGREEN [illegible]

RICHARD SMITH'S FRUIT LIST [illegible]

Richard Smith, Nurseryman and Seed Merchant, Worcester.

Strong Common Laurels

WM. [illegible]

Larch, Scotch, Ash, &c.

MARTIN AND [illegible]

Extra fine 1-year Seedling Larch and Hazel

F. [illegible]

JOHN CARTER, Nursery, [illegible]

TO THE TRADE

FOREST TREES.—At the Nursery of the [illegible]

LARCH and RHODODENDRONS

LARCH, 3 to 4 ft., grown among plantin[illegible]
" 4 to 5 ft. " "
" 5 to 6 ft. " "
RHODODENDRON PONTICUM, strong and well-rooted, 1 to 2 ft.
" " " 2 to 3 ft.
" " " 3 to 4 ft.
HYBRIDS, Mixed, 1 to 2 ft.
" " 2 to 3 ft.
" " 3 to 4 ft.

The Trade supplied. April 1st.

JAMES SMITH, Darley Dale Nurseries, near Matlock.

To Clear Ground.

SPECIAL OFFER [illegible]

SPECIAL OFFER [illegible]

FOX or GAME COVERT [illegible]

Tansley Nurseries, near Matlock, Derbyshire

JOSEPH SMITH, SON, [illegible]

LOBELIA SNOWFLAKE

THE FOLLOWING ITEMS [illegible]

Hardy Climbers To the Trade

CLIMBING [illegible]

To the Trade

WILLIAMS [illegible]

THE [illegible] MAY BE [illegible]

LARGE MOSS HOUSE [illegible]

THE PATENT [illegible]

CHEAP [illegible]

INTERNATIONAL [illegible]

Thomson's Stypitic for Preventing the Bleeding of Vines.

BALLANTYNE AND [illegible]

To the Trade

TOBACCO [illegible]

GISBURN [illegible]

Caution to Gardeners.—When you ask for [illegible]

PATENT [illegible]

SHAW'S TIFFANY.
For samples and prices apply to
J. SHAW & Co., 29, Oxford Street, Manchester.

CLAYTON, SHUTTLEWORTH, AND CO., ENGINEERS, Manufacturers of PORTABLE and FIXED STEAM ENGINES, Machinery for Pumping, Hoisting, Grinding, Sawing, &c., Engines for Steam Cultivation, Self-Moving Engines for Common Roads and Agricultural Purposes generally.
Stamp End Works, Lincoln, and 78, Lombard Street, London; also at Lowestoft, No. 41, Landstrasse, Vienna; and Gogenuber dem Bahnhof, Pesth.
Descriptive, Illustrated, and Priced Catalogues, Free per Post.
Special Drawings when required.
[*The best Steam Threshing Machinery made.*]

W. S. UNDERHILL'S NEW PATENT IRON FENCE for GARDENS, LAWNS, &c.
Manufactory: Newport, Salop.
Warranted the strongest and most durable Fence ever offered at corresponding prices. It is easily repaired if broken from accidents, can be rolled up most compactly when not in use, is admirably adapted for exportation, and can be had of any height and mesh required, at prices from 4*d.* to 1*s.* 6*d.* per yard and upwards.
For further particulars apply at the Manufactory; or of the London Agent, Mr. R. WINDER, 18, Abingdon Street, Westminster, S.W.

THE IMPROVED LEATHER DRIVING STRAPS for MACHINERY are stronger for a given weight, more effective, more durable, and cost considerably less than any other kind of driving belt.
SPECIAL STRAPS FOR PORTABLE ENGINES.
PERSIAN'S Patent Strand and Hose Company
Manufactory: Arnall Works, Greenfield, near Manchester.
Warehouse: 81, Mark Lane, London, E.C.
Mr. H. FERRABEE, Agent.

TANNED GARDEN NETTING for preserving Seed Beds, Fruits, Strawberries, from Frost, Blight, Birds, &c., and as a Fence for Fowls &c. 1 yard wide, 3*d.*; 2 yards, 5*d.*; 3 yards, 4*d.*; and 4 yards, 6*d.* per yard run in any quantity, may be had at CRAY WILLCOX'S, 376, Strand, W.C.

VARNISHED FLOWER STICKS:—1 foot, 3*d.*; 1½, 4*d.*; 2, 5*d.*; 2½, 7*d.*; 3, 9*d.*; 4, 1*s.*; 5, 1*s.* 6*d.*; 6, 2*s.*; 7, 2*s.* 6*d.*; 8, 3*s.*; 9, 3*s.* 6*d.*; 10, 4*s.* 6*d.* per 100. DAHLIA-dog, 1*s.* 6*d.* per dozen; 7*s.* per 100. An allowance to Nurserymen.

Oil Paint no longer Necessary.

HILL AND SMITH'S PATENT BLACK VARNISH for preserving Iron Work, Wood, or Stone. This Varnish is an excellent substitute for oil paint on all out-door work, and is fully two-thirds cheaper. It may be applied by an ordinary labourer, requires no mixing or thinning, and is used cold. It is used in the grounds at Windsor Castle, Kew Gardens, and at the seats of many hundreds of the nobility and gentry, from whom the most flattering testimonials have been received, which HILL & SMITH will forward on application.

From RICHARD HEMMING, Esq., *Bordesley Park, Worcestershire.*
"Gentlemen,—I have great pleasure in stating that I highly approve of your Black Varnish, as a substitute for paint for farm buildings, barn doors, gates, and especially when the wood has been previously painted in the usual way a few years before; in this particular case it leaves a very nice glazed surface, than which nothing could be better. The same observation also applies to ironwork of every description, such as iron hurdles, &c. The Wrought-iron Harrow with apparatus for heating gas tar has been found most useful, and so great a convenience do I consider it that I shall beg you to send me one, as well as a Barrel of the Black Varnish, for the use of the property which I have in Warwickshire. Please to send the whole by the same conveyance as before."

Sold in casks of about 30 gallons each, at 1*s.* 6*d.* per gallon, at the Manufactory, or at 5*s.* per gallon at any Station in the Kingdom.

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GLASS for GARDEN PURPOSES.—A Box containing 411 pates of Sheet Glass, 7 inches by 5 inches, for 10*s.*, box included. Prices sent for any description of Glass on application to
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JAMES PHILLIPS AND CO. beg to submit their prices as follows:—
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As supplied by us to Mr. Rivers, to the Royal Horticultural Society, and to most of the Nobility, Clergy, and Gentlemen of the United Kingdom
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Squares 20 by 12, 20 by 13, 20 by 14, 20 by 15.	Per box of 100 feet.	
Fourth quality	14*s.* 6*d.*	21 oz.
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6 by 4	6 by 4½	7 by 5	7 by 5½	8 by 5½	8 by 6	8½ by 6	9 by 7	9 by 7½	10 by 7½	10 by 8	10½ by 8	11 by 8	11 by 8½	12 by 8½	12 by 9	12*s.* 6*d.*

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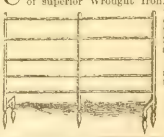

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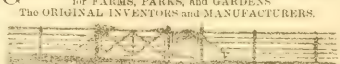

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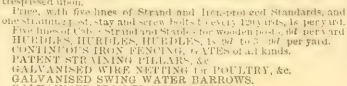

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2½ in.	Hares, Dogs, Poultry	0 3	0 4	0 3½	0 5	0 4½	0 6	0 8½ 0 7
2 in.	Game or Poultry Netting	0 3½	0 4½	0 4	0 5	0 5	0 6½	0 6½ 0 8
1½ in.	Small Rabbits, Hares, &c.	0 4	0 4½	0 4½	0 6	0 5½	0 7	0 7 0 9
1¼ in.	Smallest Rabbits	0 5	0 6	0 5½	0 7	0 7	0 9	0 9 0 11
1 in.	Pheasantries, &c.	0 6	0 11	0 8	1 1½	0 10	1 3	1 6 1 9 2 0
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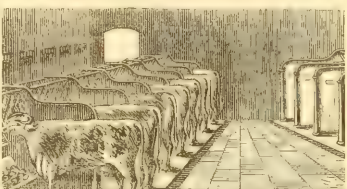

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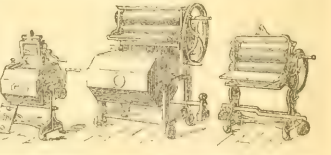

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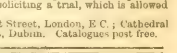

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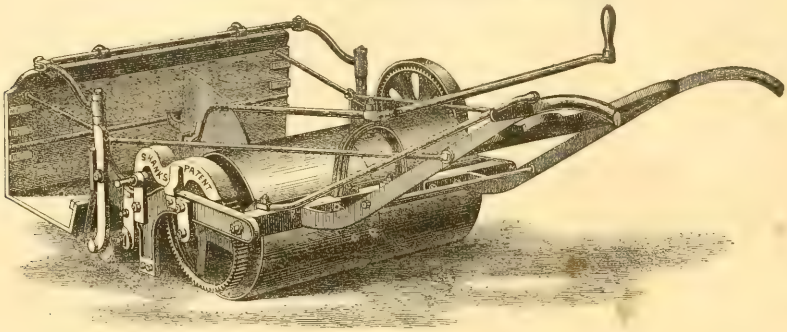

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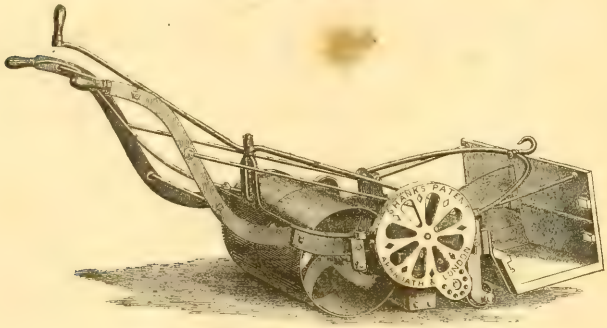

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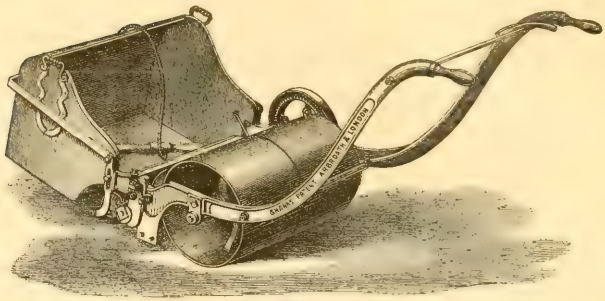

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AGRICULTURAL GAZETTE.

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No. 3.—1866.] SATURDAY, JANUARY 20. [Price Fivepence.

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CARTER'S ILLUSTRATED "GARDENER'S" and FARMERS' VADE MECUM, containing a most extensive List of Flower, Vegetable, and Farm Seeds; also a Calendar of Operations for Flower and Kitchen Gardens, together with copious remarks on Farm Management.

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DOYNTER'S RIBBON BORDER SEEDS having given such satisfaction during two years past, he has carefully improved the selection, and apportioned the quantities. Instructions with each Collection. Price 2s. 6d., post free, stamps. In ordering, state if for heavy or light soil.

ROBT. H. DOYNTER, Taunton.

VIOLETS, now in Full Bloom and in first-rate condition for planting out. A large stock of all kinds of Violet plants, in double the usual Crimea, Russian, Neapolitan, &c. The Giant, to name a finer coloured and more beautiful perfume than any of its kind, is in perfection. List of Prices on application.

JOHN SEDDON, Violet Grower, Thornton Heath, Surrey, S.

Select Catalogues of Seeds and Plants.

ROBERT PARKER begs to announce that his NEW REVISED and DESCRIPTIVE CATALOGUES, containing Select Lists of the best varieties of Vegetable, Agricultural, and Flower Seeds, New and Rare Plants, &c., are now published, and will be forwarded to applicants. All Seeds are warranted to be of the finest possible quality. Intending purchasers are requested to compare the prices with those of other houses.

Exotic Nursery, Tooting, Surrey, S.

To the Trade.

CUPRESSUS LAWSONIANA SEED (true), of exceedingly fine quality, and unsurpassed crop of present season. Price, postage paid, 5s. 2d. per oz.; 7s. 8d. per half lb.; 60s. per lb. nett. From unknown. Correspondents a remittance must accompany order.

WHOLESALE AGENTS of GENERAL NURSERY STOCK to be had on application to

THOS. CRIPPS, Nurseryman, Tunbridge Wells, Kent.

Choice Ranunculuses, Anemones, &c.

C. TYSO, FLORIST, Wallingford, Berks, offers from his unrivalled stock—

RANUNCULUSES, per doz., named sorts, 2s. 6d. to 5s.
ANEMONES, double, ditto 2s. 6d. to 3s. 6d.

SEED from finest Ranunculuses, per packet, 2s. 6d. and 5s.

The above can be sent by post, also CATALOGUE of FLORISTS' FLOWERS and SEEDS for one stamp; TREATISE on RANUNCULUS, seven stamps; ditto on ANEMONE, four stamps. Will be found useful by all cultivators.

Pinus Nordmanniana Seed.

CH. PLATZ AND SON, Erfurt, SEEDSMEN to the King of Prussia, have just received a large quantity of Pinus Nordmanniana Seed, best quality, direct from the Caucasus, which they offer to the Trade at 12s. per lb.

Application for the above can be made direct to Erfurt; or to JUNG & SCHNEIDER, Seedsmen, Cheltenham.

Hardy Climbers.—To the Trade.

CLEMATIS JACKMANNI, 2s. 6d. each; 24s. per doz.
" RUBROVIOLACEA, 2s. each; 18s. per doz.
" HENRYII, SPECIOSA, 2s. each; 18s. per doz.
" STANDISHII, 2s. each, 18s. per doz.
" SOPHIA FLORE PLENO, 2s. each; 18s. per doz.
" CŒRULEA-AZUREA-GRANDIFLORA, 5os. per 100.

Besides other good old varieties.

A CATALOGUE, including Description and Treatment of Clematises, will be forwarded free on application to

GEO. JACKMAN & SON, Woking Nursery, Surrey.

NEW PLANTS.

AUBRIETIA CAMPBELLI (effective spring flower).
FUCHSIA RANKNEY BEAUTY.
VERONICA FRUTICOSA GLAUCA.
CLIANTHUS DAMPIERI, in varieties (seed only).

Coloured Plates, post free on receipt of Stamps, of the following:—

AUBRIETIA CAMPBELLI, 7d.
CLIANTHUS DAMPIERI ALBIFLORA, 1s. 1d.

For the option of the above see E. G. HENDERSON & SON'S New AUTUMN CATALOGUE, forwarded post free.

Wellington Nursery, St. John's Wood, London, N.W.

Elvaston Nurseries.—Important to Planters.

WILLIAM BARRON begs to offer the following at extremely low figures, to Noblemen, Gentlemen, and others engaged in Planting on a large scale:—

PINUS LARICIO AUSTRIACA. This highly ornamental tree surpasses the Larch both in rapidity of growth and quality of timber. It will thrive where Scotch Pines will not. It is also used as spars and masts in French navy. Each seedlings.

PINUS LARICIO, 2 years' seedlings.
PINUS PALLASIANA, 2 years' seedlings.
ABIES MENZIES II.—Few people are aware of the value of the timber of this splendid tree. 2 to 3 feet.
PICEA NOBILIS, Nordm. Very fine. 6 to 9 inches.
BERBERIS DARWINII.—Too much cannot be said of this fine evergreen species. It is hardy, and the profusion of its orange-coloured blossoms, together with the quantity of berries which it bears (of which pheasants are very fond), render it one of the most attractive and desirable plants for lawn, as well as cover planting ever introduced. 1-year seedlings.
BERBERIS WALLICHIANA.—1-year seedlings.

Prices will be forwarded on application.
Elvaston Nurseries, Borrowash, near Derby.

MARECHAL NIEL ROSE.—Good plants of this scarce and most splendid of all the Yellow Roses can be secured for April next at 3s. 6d. each, by orders given at once. For pillar or climber it is unrivalled, making from 12 to 16 feet of wood in a season.

A. GODWIN & SON, Ashbourne, Derbyshire.

Roses.

WILLIAM BARRON begs to invite attention to his splendid Stock of STANDARD ROSES, which comprises all the leading sorts, including the best varieties of 1864. He is prepared to offer them at the following very moderate figure:—

Leaving the selection to W. B.—Per doz., 12s.; per 100, 75s.
Purchasers' selecting.—Per doz., not less than 6 varieties, 15s.; per 100, not less than 30 varieties, 100s.

Elvaston Nurseries, Borrowash, near Derby.

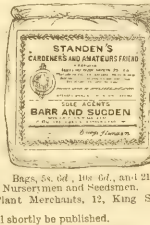
British Fern Catalogue.

ROBERT SIM can now send, post free for six postage stamps, Part I. (British Ferns and their varieties, 36 pages, including prices of Hardy Exotic Ferns) of his NEW and PRICED DESCRIPTIVE CATALOGUE of BRITISH and EXOTIC FERNS, No. 7.

*** Part II. (Exotic Ferns) will be issued as early as possible.

Foot's Cray Nursery, S.E.

CHRYSANTHEMUMS, and how to have them Fine for Exhibition.—Use STANDEN'S GARDENER'S and AMATEUR'S FRIEND.



STANDEN'S GARDENER'S and AMATEUR'S FRIEND, a highly concentrated Inodorous Fertiliser, for Chrysanthemums and all kinds of Stove and Greenhouse Plants, Vines and other Fruit Trees in pots, &c.; also Vegetables, &c., in the open ground.

No. 1 FERTILIZER is the best adapted for Chrysanthemums and Hardwooded Plants of every description.

No. 2 FERTILIZER is recommended for Soft-wooded Plants, Bulbs, &c.

Sample Canisters, 1s. & 2s. 6d. Bags, 5s. 6d., 10s. 6d., and 21s.

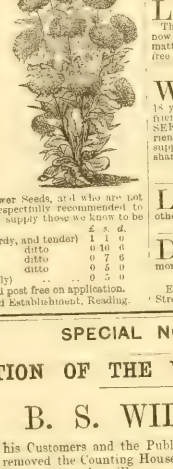
May be had of the leading Nurserymen and Seedsmen.

BARR & SUGDEN, Seed and Plant Merchants, 12, King Street Covent Garden, W.C.

A List of Agents will shortly be published.

SUTTON'S CHOICE COLLECTIONS of FLOWER SEEDS.

Free by Post or Rail.



		£	s.	d.
1. The best 100 sorts (hardy, half-hardy, and tender)		1	1	0
2. The best 50 sorts	ditto ditto	0	10	6
3. The best 36 sorts	ditto ditto	0	7	6
4. The best 24 sorts	ditto ditto	0	5	0
5. The best 24 sorts (hardy sorts only)	.. ..	0	7	0

These requiring showy kinds of Flower Seeds, and who are not well acquainted with the sorts, are respectfully recommended to leave the selection to us, and we will supply those we know to be really worthy of cultivation.

PRICED CATALOGUES gratis and post free on application.

SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

LONDON SEED COMPANY, LIMITED.
68, Welbeck Street, Cavendish Square, London, W.

LONDON SEED COMPANY, LIMITED.—CATALOGUES and PRICE CURRENTS are now ready. COMPLETE COLLECTIONS of GARDEN SEEDS for a whole year's supply, from 10s. 6d. upwards.

Offices, 68, Welbeck Street, Cavendish Square, London, W

Seeds for the Garden.

COMPLETE COLLECTIONS of GARDEN SEEDS for Large and Small Gardens, at 10s. 6d., 15s., 20s., 40s., and 60s. each. CATALOGUES can be had on application at the Offices of the London Seed Company, 68, Welbeck Street, Cavendish Square, W

SEEDS for the GARDEN.—All Orders amounting to 20s. and above will be sent Carriage Free to all parts of the United Kingdom by the London Seed Company, Limited.

CATALOGUES can be had on application at the Offices, 68, Welbeck Street, Cavendish Square, W.

LONDON SEED COMPANY, LIMITED.—This Company was formed by the Purchase of an Old-Established Business of 180 years standing. CATALOGUES can be had Gratis on application at the Offices of the Company,

68, Welbeck Street, Cavendish Square, London, W.

Camellias, Camellias, Camellias.

YOUELL AND CO. beg to offer fine plants of the above in bud, true to name; English worked, 36s. and 42s. per dozen.

SPARES.—Fine plants, well set for Buds, comprising the most showy kinds, 12s. and 18s. per doz. The usual allowance to the Trade.

Royal Nurseries, Great Yarmouth.

The Truly Magnificent

GLADIOLUS BRENCHLEYENSIS still stands unequalled in hardiness and unrivalled in colour, as the following reports from the *Gardeners' Chronicle* will fully testify:—

"The gorgeous appearance of which cannot be spoken of in terms of exaggeration. The tall robust habit and intensely bright scarlet flowers place it at the head of all the hardy flowers of the autumn."

"It has long held a prominent place amongst the varieties adapted for producing effect in the flower garden, on account of its bright orange-scarlet colour and its hardy constitution; and this character it still holds." "Notwithstanding the improvement which has latterly been going on in the Gladiolus in respect to size and form, none of the finer varieties of high colour are as yet sufficiently attainable to replace it; and when attainable it will remain to be ascertained whether they will prove to be equally useful. In the meantime Gladiolus Brenchleyensis may be set down as a thoroughly attractive decorative sort."

Some persons are forward how much this fine variety is esteemed and cultivated when Y. & Co. state that their stock last season covered three and a half acres, and afforded a most magnificent and gorgeous display to thousands of visitors. Nothing is so well adapted for planting in clumps, belts, or at the foot of standard Roses, the effect being most delightful. A continuation of bloom may be obtained from August to December by planting in succession from February to July.

No. 1 size bulbs, the very strongest, selected from our extensive stock, 3s. 6d. per dozen; 25s. per 100.
No. 2 size, strong flowering bulbs, 2s. per dozen; 20s. per 100.
Trade price on application.

YOUELL & Co., Royal Nurseries, Great Yarmouth.

LAMOUREUX, CLARK, AND CO., SEED MERCHANTS, Plymouth.

The SEED CATALOGUE and GARDEN DIRECTORY for 1866, now published, will give full particulars respecting prices and other matters in connection with the Business. Will be sent gratis and post free to any address in the kingdom.

Seed Business.—Notice.

WILLIAM COKER having had the entire Management of the late Mr. VITTY'S Seed Business at Exeter (for the last 18 years), begs to announce to the Nobility, Clergy, Gentry, his friends, and the public generally, that he has COMMENCED the SEED BUSINESS at Taunton, Somerset, and from his long experience and knowledge of the Trade, and with the full intention of supplying goods of the very best quality, respectfully solicits a liberal share of their patronage.

N.B. CATALOGUES post free on application.

Seed Warehouse, No. 18, Fore Street, Taunton, Somerset.

LINCOLNSHIRE GEM PEAS (MARTIN & SON).—Seed Testimonials. Superior to Dixon's Yorkshire Hero or any other Peas grown here.

Hull, 7, Market Place; and Cottingham. Established 1788.

DIXON'S YORKSHIRE HERO PEA is the best Dwarf Green Wrinkled Marrow in cultivation. See Testimonials in *Gardeners' Chronicle* of November 18.

Price 2s. per quart. Free to the Trade on application.

E. P. DIXON & SON, Yorkshire Seed Establishment, 57, Queen Street, Hull.

SPECIAL NOTICE.

COMPLETION OF THE VICTORIA NURSERY.

B. S. WILLIAMS

Begs respectfully to inform his Customers and the Public generally that his NEW VICTORIA NURSERY is now nearly completed. Having removed the Counting House, Seed Shop, Orchid Houses, Stoves, Greenhouses, and other Plant Houses from the Paradise Nursery, he will now make this his principal place of Business. In addition to the Houses removed, several New Plant Houses have been erected, including the

LARGE SHOW CONSERVATORY,

100 feet long, 40 feet wide, a light and elegant structure, well stocked with handsome specimens of PALMS, YUCCAS, CYCADS, TREE FERNS, ARAUCARIAS, CAMELLIAS, AZALEAS, &c.

A continuous SHOW of FLOWERING and ORNAMENTAL PLANTS will be maintained in this Conservatory during the Winter, Spring, and early Summer months, quite sufficient in itself to repay a visit at any time.

The SEED SHOP has been entirely remodelled and conveniently fitted up, and the Staff of Assistants increased, so that no unnecessary delay will take place in the execution of orders in this department.

VICTORIA and PARADISE NURSERIES, HOLLOWAY, LONDON, N.

GARDEN SEEDS.

OSBORN & SONS'

SELECT CATALOGUE OF THE ABOVE

May now be had on application, and they beg to call special attention to the following Select Articles:—

	Per packet.—s.	d.
OSBORN'S WHITE WINTER BROCCOLI	1	6
NEW AMERICAN TOMATO	1	6

This is very large, and less watery than the old Red.

	Per packet.—s.	d.
ROWDEN'S BROWN COS LETTUCE	1	6
SCOTT'S SUPERB WHITE COS LETTUCE ..	1	0
BELLE BONNE SUMMER CABBAGE LETTUCE	1	0

These three Lettuces are less liable to run than any we know.

FULHAM NURSERY, S.W.

Extra fine 1-year Seedling Larch and Hazel.

FRANCIS AND ARTHUR DICKSON AND SONS have several Millions of 1-year SEEDLING LARCH to Dispose of, of extra quality. Samples and prices forwarded free by post on application, stating probable quantity required. Also very fine 1-year SEEDLING HAZEL.
"Upton" Nurseries, Chester.

Important to Nurserymen.

LARGE QUANTITIES of 1-year THORN QUICK, 2, and up to 6 inches; 1-year BEECH, 6 to 9 inches, at £7 10s. per 100,000.
Application to be made to JOHN BLAKE & SONS, Dangan Nurseries, Summerhill, County Meath.
References or remittances from unknown Correspondents.

To Clear Ground.

SPECIAL OFFER.—20 per cent. off Catalogue prices.—HOLLY (GREEN), YEWS, DEODARS, ARBUTUS, LAURELS (Common), Laurels (Portugal), Cupressus Lawsoniana, Thuja Lobbii, Pinus insignis, P. excelsus, P. ponderosa, Taxodium, Hazel (a large breadth), Larch do., Spruce do., Austrian Pine do., Beech do. For sizes and prices, see CATALOGUES, sent on application to
J. SCOTT, Merriott, Somerset.

SPECIAL OFFER of FRUIT TREES.—25 per cent. off Catalogues.—Having a large and fine stock of the under-mentioned, they are offered at greatly reduced prices, to clear ground.—Peaches, Nectarines and Apricots (trained and untrained), Apples, Pears, Plums, and Cherries (trained and untrained).
DESCRIPTIVE CATALOGUES on application to
J. SCOTT, Merriott, Somerset.

FOX or GAME COVERT.—Gentlemen planting or refreshing their Preserves can be supplied with the under-mentioned favourite Plants:—ENGLISH GORSE or FURZE, 1-year, 4s. per 1000; 2-years, very strong, 10s. per 1000; ENGLISH BROOM, 2-years, very strong, 12s. per 1000; Evergreen Berberry, or Mahonia aquifolia, 1 to 2 feet, strong transplanted, 25s. per 100, or £10 per 1000. LISTS of all kinds of FOREST and FRUIT TREES, SHRUBS, and CONIFERS, sent on application.
W. MAULE & SONS, The Nurseries, Bristol.

LARCH and RHODODENDRONS.
Delivered at Matlock Station.

	Per 1000.—s.	d.
LARCH, 1½ to 2 ft., good stout plants	17	0
,, 20 to 30 in., ,, ,,	18	0
,, 2 to 3 ft., ,, ,,	22	0
,, 2½ to 3 feet	25	0
RHODODENDRON PONTICUM, bushy and well-rooted, 6 to 12 inches	105	0
,, ,, 9 to 15 in., 18s. per 100	170	0
,, ,, 1 to 1½ ft., 23s. per 100	220	0
,, ,, 1½ to 2 ft., 30s. per 100	290	0
,, HYBRIDUM, 15 to 20 in., 28s. 6d. per 100	270	0
,, ,, 1½ to 2 ft., 32s. 6d. per 100	320	0

The Trade supplied. Apply to
JAMES SMITH, Darley Dale Nurseries, near Matlock.

H. AND R. STIRZAKER offer 500,000 LARCH, 2 to 3 and 4 feet, 3 years transplanted, but lifted last spring and planted over again; there is no fear of loss attending planting these, being such fine rooted plants. Also 1,000,000 LARCH, 2 and 3 years transplanted, 2 to 3 and 4 feet. A very large stock of SCOTCH FIR, twice transplanted; SPRUCE, AUSTRIAN and WEYMOUTH PINE, sizes from 1 to 2½ feet; ALDER, BEECH, ELM, HAZEL, PRIVET EVERGREEN, SYCAMORE, THORNS, WILLOW BLACK HUNTINGDON, in sizes as required, from 1 to 4 feet; SILVER FIR, 12 to 15 inches; HORSE CHESTNUT, fine, and TURKEY OAK, in sizes from 2 to 6 feet; BEECH and ONTARIO POPLAR, 8 to 10 feet; YEW ENGLISH, and PORTUGAL LAUREL, the furnishing plants, moved last season, 2, 3, and 4 feet; ARBOR-VITÆ, AMERICAN, SIBERIAN, and CHINESE, fine, 3, 4, 5, 6, and 7 feet, quotations low. A considerable reduction to the Trade from our list issued.
Improved LEMON KIDNEY POTATO, the earliest and best variety, price per cwt. or ton.
Skerton Nurseries, Lancaster.

JOHN WATERER, The American Nursery, Bagshot, Surrey, respectfully recommends to the attention of planters the following desirable Plants, which are in the best possible condition for transplanting. Prices on application.
ARAUCARIA IMBRICATA, 2 to 3, 4, 5, 6, to 8 and 10 feet. The larger sizes are particularly well adapted for single specimens or for forming avenues.
CEDRUS DEODARA, 4 to 5, 6 to 7, and 8 to 10 feet. Very handsome bushy plants.
,, AFRICANA }
,, LIBANI (LEBANON) } 4 to 6, 7 and 8, to 10 feet.
THUJA AUREA, 2 to 3, and 4 feet. Large quantity of perfectly formed plants to match.
,, GIGANTEA, 4 to 5 to 6 and 8 to 10 feet. Very handsome seedlings.
,, OCCIDENTALIS, 4 to 5 feet. This forms a most excellent ornamental hedge.
,, WAREANA, 4 to 5 to 6 feet.
THUJOPSIS BOREALIS, 3 to 4, and 5 feet. Many hundreds of finely grown specimens, all seedlings.
,, DOLABRATA, 1 to 2 feet.
TAXUS (Yew), common green, all sizes and in large quantities, from 2 to 3, 4 to 5, to 7 and 8 feet.
,, HIBERNICA (Irish), 4 to 5 to 6 to 8 and 10 feet. All trained to one stem, very handsome symmetrical specimens.
WELLINGTONIA GIGANTEA, 2 to 3, 4 to 5 and 6 feet. Splendidly formed plants.
ABIES DOUGLASII, 4 to 5, 6 to 8 and 10 feet.
,, PINSAPO, 3 to 4, to 5 and 6 feet.
,, NOBILIS, 2 to 3 and 4 feet.
,, NORDMANNIANA, 2 to 3 to 4 to 6 feet.
,, AMABILIS, 1½ to 2 feet.
,, GRANDIS, 3 to 4 and 5 feet.
,, LASIOCARPA, 3 to 3, 4 to 5 and 6 feet. The five species last mentioned we believe to be of the largest size in the trade to be had as seedlings.
CUPRESSUS MACROCARPA, 3 to 4 and 5 feet.
,, LAWSONIANA, 3 to 4 to 5 to 6 and 8 feet.
,, LAWSONIANA AUREA VARIEGATA, 1 to 2 feet.
,, LAWSONIANA ARGENTEA, 1 to 1½ feet.
,, DISTICHA (Deciduous Cypress), 4 to 6 to 8 feet.
,, THUJOIDES VARIEGATA, 2 to 3 and 4 feet.
JUNIPERUS HIBERNICA, 3 to 4, 5, 6, to 8 feet.
,, JAPONICA, 3 to 4 and 5 feet.
,, CHINENSIS, 3 to 4 and 5 feet.
PINUS CEMBRA, 3 to 4 to 6 feet.
,, JEFFERYANA, 4 to 5 feet.
,, LAMBERTIANA, 3 to 4 to 6 feet.
,, INSIGNIS, 3 to 4 to 5 to 7 feet.
GREEN HOLLIES, large quantities, from 1 to 2, 3, 4 to 6 and 8 feet.
,, ,, in all the leading kinds, by name, 2 to 4 feet.
,, ,, best Gold and Waterer's variety, fine plants, 2 to 3 to 6 feet.
STANDARD RHODODENDRONS, from 2 to 3 and 4 feet stems, with handsome symmetrical heads, of all the leading varieties, such as are annually exhibited by us at the Royal Botanic Gardens, Regent's Park.
RHODODENDRONS, all the finest named Crimson, Scarlet, White, and other varieties, strong bushy plants, 1 to 2 to 3 and 4 feet.
ANDROMEDA FLORIBUNDA, very fine bushy plants, 1 to 2 to 3 and 4 feet.
RHODODENDRON PONTICUM, and Hybrid CATAWBIENSE, for undercover (hares and rabbits never injure them), strong bushy plants, fit for immediate planting, 21s. per 100; larger, 25s. to 30s. per 100.
RHODODENDRONS, Dwarf, in eight varieties, fine, for winter clumps, forcing large kinds.
BERBERIS AQUIFOLIUM, for undercover, 1 to 1½ foot.
J. W. has likewise a large stock of all the other leading kinds of Evergreens, such as Arbutus, Box, Phillyrea, Common and Portugal Laurels, &c., with strong transplanted Forest Trees of following kinds, samples of which will be forwarded.

ASH, 2 to 3 and 4 feet.	SPANISH CHESTNUT, 2 to 3 and 4 feet.
BIRCH, 2 to 3 and 4 feet.	LARCH FIRS, 2 to 3 and 4 feet.
HAZEL, 3 to 4 feet.	AUSTRIAN PINE, 2 to 3 feet.
WITHY, 3 to 5 feet.	SPRUCE FIRS, 2 to 3 and 4 feet.
ALDER, 2 to 3 and 4 feet.	

CATALOGUES containing faithful descriptions of all the Rhododendrons worthy of cultivation forwarded to all applicants.
The American Nursery, Bagshot, Surrey, near Sunningdale Station, South-Western Railway.

Northampton Nurseries.

JOHN PERKINS, SENIOR, begs to call the attention of Noblemen, Gentlemen, and others engaged in planting, to his large stock of 1, 2 and 3-years BLACK THORN for Cover Planting. Of this he has upwards of Two Millions, the greater part of which is extra fine; also 2,000,000 LARCH FIR, 3 to 4 feet; 1,000,000 SPRUCE and SCOTCH FIR, 2 to 3 feet. Also large quantities of

Pinus austriaca, 2 to 3 ft.	Beech, 3 to 4 ft.
Berberis Aquifolium, 1½ to 2 ft.	Turkey Oaks, 4 to 5 ft., 5 to 6 ft.
,, dulcis, 1½ to 2 ft.	Elms, English, 6 to 8 ft., 8 to 10 ft.
Green Box, 1 to 2 ft.	Maple, 6 to 8 ft.
Laurels, 2 to 3 ft.	Horse Chestnuts, 6 to 8 ft.
Portugal Laurels, 1½ to 2 ft.	Sycamores, 3 to 4 ft.
Evergreen Privet, 2 to 3 ft.	Cedrus Deodara, 4 to 6 ft., 6 to 8 ft.
Hornbeam, 3 to 4 ft.	

J. P.'s stock of all kinds of Fruit, Forest, Ornamental Trees, &c., is very extensive, and this season remarkably fine, and in excellent condition for removal, having been frequently transplanted. Price, &c., on application to 52, Market Square, Northampton.

To Land Owners and Planters.

FOR SALE, about 50,000 strong healthy LARCH, fit for Upland Planting, 7s. 6d. per 1000.
75,000 strong grown, 2 to 3 feet, good roots.
50,000 ditto 3 to 4 feet.
No charge for samples of 50 of either size.
TO THE TRADE.—150,000 SEEDLING THORNS, 2 years, strong, 2s. 6d. per 1000.
Address WILLIAM TRESEDER, Nurseryman, Cardiff.

RICHARD SMITH,
NURSERYMAN and SEED MERCHANT, Worcester.

ROSES.—12 of the very best Standard, Perpetual, and Moss Roses for 18s.; 50 for 63s.; 100 for £5.
12 ditto Dwarf do. do. for 12s.; 50 for 42s.; 100 for 75s.
12 ditto, New Sorts of 1865, for 24s.
Descriptive List on application.

FORTY ACRES of FRUIT TREES.—Apples, Pears, Plums, Cherries, Peaches, Nectarines, and Apricots in every form desired for Fruiting.

DWARF-TRAINED TREES, by the Thousand, Hundred, or Dozen.

APPLES, PEARS, PLUMS, CHERRIES, PEACHES, and NECTARINES.
Fine, flat, well-trained, of best quality, and true to name.

PYRAMID APPLES, PEARS, PLUMS, CHERRIES.
Beautiful Trees for Garden or Orchard Houses.

ORCHARD-HOUSE TREES, Fruiting in Pots.—Peaches, Nectarines, Apricots, Cherries, Plums, Pears, Apples, Vines, and Figs.

EVERGREENS for Ornamental Planting or Avenues, handsome, well grown, and transplanted within the last two years. For prices of smaller sizes and quantities, see Conifer List.

At 30s. per dozen:—

Abies alba, 5 to 7 feet	Juniperus thurifera, 3 to 4 feet
,, Douglasii, 3 to 4 feet	Laurel, Colchic, 5 to 6 feet
,, inverta, 1½ to 2 feet	,, Portugal, Pyramids, 3 to 4 ft.
,, orientalis, 1½ to 2 feet	Pinus cembra, 3 to 4 feet
Arbor-vitæ, American, 6 to 7 feet	,, excelsa, 5 feet
,, Siberian, 4 to 5 feet	Taxodium sempervirens, 7 to 8 ft.
Cedar, Red, 5 to 6 feet	Thuja Lobbii, 3 to 4 feet
Cryptomeria viridis, 4 to 5 feet	,, aurea, 1½ foot
Cupressus Lawsoniana, 3 to 4 feet	,, compacta, 1½ to 2 feet
,, fragrans, 3 feet	Thujopsis borealis, 3 feet
Irish Yew, 4 to 6 feet	Wellingtonia gigantea, 2 feet

At 42s. per dozen:

Abies Douglasii, 4 to 5 feet	Pinus excelsa, 6 feet
,, inverta, 2 to 2½ feet	,, Lambertiana, 3 to 4 feet
,, orientalis, 2 to 2½ feet	,, insignis, 3 to 4 feet
,, pyramidalis, 2 to 2½ feet	Thuja Lobbii, 4 to 5 feet
Araucaria imbricata, 2 to 2½ feet	,, compacta, 2 to 2½ feet
Arbor-vitæ, Siberian, 5 to 6 feet	,, aurea, 2 feet
,, American, 7 to 8 feet	Thujopsis borealis, 4 feet
Cedar, Red, 6 to 8 feet	Wellingtonia gigantea, 2½ feet
Cupressus Knightii, 6 to 7 feet	Yew, Irish, 5 to 5½ feet
,, Lawsoniana, 4 to 4½ ft.	Laurels, Pyramid, Portugal, 4 to 4½ feet
Juniperus thurifera, 4 to 5 feet	,, Colchic, 6 to 7 feet
Pinus Cembra, 4 to 5 feet	

At 60s. per dozen.—

Abies inverta, 2½ to 3 feet	Juniperus thurifera, 5 to 6 feet
,, Douglasii, 5 to 5½ feet	Laurels, Pyramid Portugal, 5 ft.
,, Menziesii, 5 to 6 feet	Pinus excelsa, 6 to 8 feet
,, orientalis, 2½ to 3 feet	,, Lambertiana, 5 to 6 feet
,, pyramidalis, 3 to 4 feet	,, Cembra, 5 to 6 feet
Araucaria imbricata, 2½ to 3 feet	Thuja japonica, 2½ to 3 feet
Arbor-vitæ, Siberian, 6 to 7 feet	,, aurea, 2½ feet
Cedrus Deodara, 6 feet	Taxodium sempervirens, 8 to 10 ft.
Cupressus Knightii, 7 to 8 feet	Wellingtonia gigantea, 3 feet
,, Lawsoniana, 6 feet	Yew, Irish, 6 feet

At 84s. per dozen:—

Abies Douglasii, 7 to 8 feet	Cedrus Deodara, 7 to 8 feet
,, inverta, 3 to 4 feet	Juniperus thurifera, 6 to 7 feet
,, Menziesii, 6 to 8 feet	Pinus excelsa, 8 to 10 feet
,, orientalis, 3 to 4 feet	Taxodium sempervirens, 10 to 12 ft.

Each:—

Abies Douglasii, 8 to 10 ft., 12s. 6d.	Picea nobilis, 2½ to 5 ft., 21s. to 63s.
,, ,, 10 to 12 feet, 15s.	,, Nordmanniana, 2½ to 4 feet, 10s. 6d. to 42s.
,, ,, 12 to 15 feet, 21s.	,, ,, 4 to 6 feet, 42s. to 84s.
,, inverta, 4 to 5 feet, 10s. 6d.	,, Pinsapo, 3 to 5 ft., 10s. 6d. to 42s.
,, ,, 6 feet, 21s.	Pinus excelsa, 10 to 12 feet, 10s. 6d.
Araucaria imbricata, 3 to 4 feet, 7s. 6d. to 21s.	,, ,, 12 to 15 feet, 15s.
,, ,, 4 to 8 ft., 21s. to 84s.	,, Lambertiana, 6 to 8 feet, 10s. 6d. to 21s.
Cedar of Lebanon, 8 to 10 feet, 21s.	Thuja incurvata, 8 to 9 ft., 10s. 6d.
Cedrus Deodara, 8 to 10 ft., 10s. 6d. to 21s.	Taxodium sempervirens, 12 to 15 feet, 10s. 6d. to 15s.
Picea nobilis, 2 to 2½ feet, 10s. 6d. [to 21s.	

American Arbor-vitæ, for Hedges, 3 to 4 feet, at 50s. per 100.
,, ,, ,, 4 to 5 feet, at 75s. ,,
,, ,, ,, 5 to 6 feet, at 100s. ,,

FLOWERING and STANDARD ORNAMENTAL TREES. At 12s. per dozen:—

Ash, Mountain, 7 to 9 feet	Chestnut, Spanish, 6 to 8 feet
Acacia, 7 to 9 feet	Hornbeam, 8 to 10 feet
Birch, Weeping, 8 to 10 feet	Poplar, Silver, 8 to 10 feet
Crab, Siberian, scarlet, 6 to 7 feet	,, Lombardy, 9 to 10 feet
,, yellow, 6 to 7 feet	Pyrus spectabilis, 6 to 7 feet

At 18s. per dozen:—

Almond, flowering, 7 to 8 feet	Chestnut, Spanish, 8 to 10 feet
Acacia, 8 to 10 feet	Cytisus, 3 to 4 feet
Ash, Mountain, 9 to 12 feet	Elm, Chichester, 8 to 10 feet
Acer Negundo, 6 to 8 feet	Poplar, Lombardy, 11 to 12 feet
Birch, 10 to 12 feet	,, Silver, 10 to 12 feet
Crab, Siberian, yellow, 7 to 8 feet	Pyrus spectabilis, 7 to 8 feet
,, scarlet, 7 to 8 feet	Thorn, double pink, 6 to 7 feet

At 30s. per dozen.—

Almond, flowering, 8 to 10 feet	Cytisus in variety, 4 to 5 feet
Acer Negundo variegata, 6 to 8 ft.	Poplar, Silver, 12 to 15 feet
Acacia, ball, 6 to 7 feet	Thorns, double pink, 8 to 10 feet
Chestnut, scarlet, 6 to 8 feet	Willow, American Weeping, 6 to 8 ft.

RICHARD SMITH'S LIST of all the EVERGREEN FIR TRIBE, suitable for Britain, giving size, price, popular and botanical names, derivations, description, form, colour, foliage, growth, timber, use in arts, native country and size there, situation, soil, and other information, with copious Index of their synonymes.
Enlarged Edition, free by post for 12 postage stamps.

RICHARD SMITH'S FRUIT LIST contains a sketch of the various forms of Trees, with Directions for Cultivation, Soil, Drainage, Manure, Pruning, Lifting, Cropping, Treatment under Glass; also their synonymes, quality, size, form, skin, colour, flesh, flavour, use, growth, duration, season, price, &c.
Free by post for one stamp.
RICHARD SMITH, Nurseryman and Seed Merchant, Worcester.

30,000 Common Laurels,

Fine bushy plants and well rooted, from 1 to 6 feet.
WM. WOOD AND SON having a large stock of the above, will be happy to give special quotations at reduced prices.
Address, Woodlands Nursery, Maresfield, near Uckfield, Sussex.

Larch, Scotch, Ash, &c.

MARTIN AND SON can supply splendid plants, viz., ASH, 2 to 3 feet; SCOTCH, 1 to 1½ and 2 to [illegible]; LARCH, 2 to 3 feet. Price on application at the
Hull Establishment, 7, Market Place.

CHAS. DALY AND SON will sell 2-years Transplanted THORNS, 7s. per 1000; 3-years ditto, 10s.; 4-years ditto, 12s. 6d. LARCH, 1 to 1½ foot, 7s. 6d.; ditto 3 years transplanted, 15s.; 1-year Seedling ditto, 1s. ALDER, 1 to 2 feet, 12s. 6d.; 1-year Seedling SCOTCH FIR, 1s.; 1-year ditto ALDER, 1s. 6d.; 2-years ditto ELM, 1s. 6d.; LAURELS, fine, 15s.; CHINESE ARBOR-VITÆ, 2 to 2½ feet high, 20s. per 100, fine; SILVER FIRS, fine, 4-years transplanted, 30s. per 1000.
ASH-LEAF SEED POTATOS, 1s. per stone; FORTY-FOLD ditto, 6d.; SKERRY BLUE ditto, ever free from disease, 6d.; REGENTS ditto, 6d. Coleraine, Ireland. Jan. 20.

Tansley Nurseries, near Matlock, Derbyshire.

JOSEPH SMITH, SEN., invites Planters and the Trade to inspect his Nursery of 80 Acres of high land. The soil is of a fibrous nature, and the plants take up with excellent roots, such as to ensure the best success in their removal. The Nursery contains many Hundred Thousands of RHODODENDRONS, COMMON and PORTUGAL LAURELS, BOX, BROOMS, BERBERIS, HOLLIES, PRIVETS, YEWS, &c. The FOREST TREES are very extensive. Of all the leading kinds there are 15 Acres of LARCHES, of different sizes, and all others in proportion. Prices moderate, which can be had on application as above.

To the Trade.

MORRISON BROTHERS, Aberdeen, have a large stock of the following to offer:
Transplanted LARCH, 2, to 3 feet, extra fine stuff, being thin in the lines, are branched to the ground, and will be offered at a very low figure.
Transplanted SILVERS, 1 to 9 and 9 to 15 inches, very stout stuff.
Transplanted SPRUCE, 9 to 15 and 15 to 24 inches, very stout stuff.
1 and 2-year Seedling CRABS; very fine in drills and extremely [illegible] in price.
1 and 2 year Seedling PEAR [illegible] in price.
1-year Seedling BEECH, SPANISH and HORSE CHESTNUT, HAZEL, MAPLE, ENGLISH OAK, SYCAMORE, all in drills and very fine.
1-year Seedling PINUS AUSTRIACA, LARICIO, MARITIMA.
All the above can still be offered in large quantities. Also a fine stock of SHRUBS and CONIFERS.
PRICED LISTS can be had on application.

FOREST TREES, &c.—At the Nursery of the late DAVID A. RAY, Park Attwood, Bewdley, Worcestershire.

		Per 1000.—s.	d.
500,000 LARCH, 2 feet		10	0
500,000 LARCH, 2 to 3 feet		12	0
200,000 PEAR STOCKS, 2 to 3 feet	15 to	30	0
100,000 SPANISH CHESTNUTS, 1 years seedling, 1 to 2 feet		10	0
500,000 SILVER FIR, 1-year Seedling, fine		4	0
500,000 SPRUCE, 1-year Seedling, fine		2	0
500,000 SYCAMORE, 1-year Seedling, fine		2	0
300,000 BEECH, 1-year Seedling, fine		2	0
20,000 WALNUTS, 1-year Seedling, fine		10	0
20,000 CUPRESSUS PYRAMIDALIS, 1-year Seedling, fine		20	0
20,000 CUPRESSUS SEMPERVIRENS, 1-year Seedling, fine		20	0
200 Bushels PITTED HAWS. Price on application.			

Apply, with reference, to JAMES RABONE, Steward, Park Attwood.

Excellent Nursery Stock at Moderate Prices.

WM. JACKSON AND CO., NURSERYMEN, Bedale, Yorkshire, have the following, to be delivered free at Leeming Lane Station, and packed in trucks:
500,000 good QUICKWOOD, 2, 3, and 4 years transplanted.
500,000 good SPRUCES, 1 to 1½, 1½ to 2, and 2 to 3 feet.
500,000 good LARCHES, 2 to 3 feet.
Prices on application.
100 best GIANT ASPARAGUS, 2 yrs., 2s. 6d.; 3 yrs., 3s. 6d.; 4 yrs., 5s.
100 fine SEA KALE plants, 2 yrs., 4s.; 3 yrs., 6s.; 4 yrs., 10s.
Cheaper per 1000, ordered now, sent in Spring.
FRUIT TREES.
Standard APPLE, PEAR, PLUM, and CHERRY TREES, 5 to 6 feet, strong good trees, 12s. per doz.
GOOSEBERRY and CURRANT TREES, the best kinds, 2s. per doz., 10s. per 100.
Best Black GRAPE VINES, in pots, 2s. 2s. per doz.

12 New Sweet-scented LABURNUMS, Standards, grafted, £2 2s.
12 New Weeping Gold-striped TREE BOX, strong, £1 10s.
12 TREE PÆONIES, in variety, strong plants, £1.
12 PÆONIA ALBIFLORA, handsome varieties, 9s.
12 Fine Scarlet and other Ghent AZALEAS, 2 feet, £1 5s.
12 HONEYSUCKLES, in best varieties, 6s.
12 finest old and Persian LILACS, strong, 9s.
12 Scarlet and White PYRUS JAPONICA, 9s.
12 RHODODENDRONS, splendid hardy hybrids, by name—Scarlet, Crimson, White, Salmon, Rose, about 1½ to 2 feet, neat dwarf growers and very free flowerers, good plants, £2 2s.
12 ANDROMEDA FLORIBUNDA, 1 to 2 feet, £1 5s.
12 SPIRÆAS, pretty varieties, strong, 9s.
100 STANDARD ROSES, superb varieties, £4.
100 DWARF ROSES, own roots, strong, £1 10s.
100 Williams' Double Yellow ROSE, 2 feet, strong, £2.
100 PYRACANTHA, 100 LIGUSTRUM, 100 MAHONIAS, £1.
100 fine LAURELS, 100 PORTUGAL LAURELS, strong, £1 10s.
100 RHODODENDRON CAMPANULATUM, 2 feet, strong, £5.
100 EVERGREEN and FLOWERING SHRUBS and TREES, £5.
100 HOLLIES, twice transplanted, strong, 10s.
100 ,, VARIEGATED, do., 15s.
100 handsome Black AMERICAN SPRUCE, 3 to 4 feet, £3 10s.
All the above are strong and well rooted. This Advertisement will not be repeated.

Special Offer to the Trade.

MARSH AND PERKINS, 42, Drapery, Northampton, have great pleasure in offering the following, all stout, well rooted stuff:—

APRICOTS, Dwarf-trained	MOOR PARK, 21s. per dozen	
APPLES,	,,	12s. per dozen
PEACHES,	,,	21s. per dozen
PEARS,	,,	12s. to 15s. per dozen
PLUMS,	,,	12s. to 15s. per dozen
CHERRIES,	,,	12s. per dozen

CURRANTS, RED and BLACK, 6s. per 100, 40s. per 1000.
ROSES, STANDARDS, 2 to 4 feet, 40s. per 100.
ARBOR-VITÆ, AMERICAN, 1 to 1½ foot, 6s. per 100.
,, ,, 1½ to 2 feet, 12s. per 100.
,, CHINESE and TARTARIAN, twice bedded, 6 to 12 inches, 20s. per 1000.
,, CHINESE and TARTARIAN, twice bedded, 12 to 18 inches, [illegible] per 1000.
BERBERIS AQUIFOLIUM, 6 to 12 inches, 50s. per 1000.
,, ,, [illegible] and 2 years' Bedded, [illegible] per 1000.
BOX, GREEN, 2-years Cuttings, 25s. per 1000.
,, Tree, [illegible], 60s. per 1000.
CUPRESSUS LAWSONIANA, 1 to 1½ foot, 40s. per 100.
HOLLY, COMMON, extra Transplanted, 12 to 18 inches, 12s. per 100.
,, ,, 1½ to 2 feet, 20s. per 100.
LIGUSTRUM OVALIFOLIUM, 3 to 4 feet, 4s. per 100.
PYRACANTHA, yellow berried, in pots, fine, 2 to 3 feet, 50s. per 100.
SWEET BRIAR, 1-year seedling, 4s. per 1000.
LARCH FIR, Bedded, 1 to 1½ foot, [illegible] per 1000.
,, ,, 1½ to 2 feet, 9s. per 1000.
,, ,, 2 to 2½ feet, 12s. per 1000.
,, ,, twice Transplanted, very fine, 1½ to 2 feet, 10s. per 1000.
Do., do., 2 to 3 feet, 15s. per 1000.
Do., do., 3 to 4 feet, 20s. per 1000.
SPRUCE FIR, Bedded, 6 to 12 inches, 6s. per 1000.
,, twice Transplanted, 9 to 12 inches, 12s. per 1000.
Do., do., 1 to 1½ foot, 16s. per 1000.
GORSE, 2-years' drills, fine, 4s. per 1000.
PRIVET, Transplanted, 1 to 1½ foot, 10s. per 1000.
,, 1½ to 2 feet, 15s. per 1000.
BLACKTHORN QUICK, 1-year, fine, 7s. per 1000.
,, 2-years, do., 10s. per 1000.
A reference or remittance required from unknown correspondents.

PLANTERS engaged in PLANTING for immediate effect, can be supplied with handsome CEDRUS DEODARA, from 8 to 10 and 20 feet high, well rooted, and safe to transplant. Prices sent on application.
WM. MACKE & SONS, The Nurseries, Bristol.

To the Trade.

W. CROWDER, NURSERYMAN, Horncastle, has to offer, Cheap, 100,000 BERBERIS AQUIFOLIUM, 1-year Seedling; CRAB STOCKS, 2-years transplanted, very fine; SPRUCE FIR, some transplanted, 6 to 9 inches, and QUICK, 2, 3, and 4-yrs transplanted. Prime Samples and prices on application.

JOHN GRIGOR AND CO., Nurseries, Forres, Scotland, have received the numerous Premiums awarded by the Highland and Agricultural Society for the extensive cultivation of the True Native HIGHLAND SCOTCH PINE, and beg to offer strong 1-year Seedlings. Also LARCH, Larch plants, grown from Seed collected in some of the best forests in the North of Scotland. Prices on application.

"Upton" Nurseries, Chester.

FRANCIS AND ARTHUR DICKSON AND SONS having an immense stock of the following, in very superior plants, are induced to offer them at exceedingly moderate prices, which will be forwarded on application, stating quantity required.

Transplanted COMMON ASH, 2 to 3 feet, and 4 to 5 feet, strong
" WYCH ELM, 2 to 3 feet, and 3 to 4 feet, strong
" HAZEL, 2 to 3 feet, and 3 to 4 feet, strong
" BLACKTHORN, 2 to 3 feet, very fine
" SPANISH CHESTNUT, 2 to 3 feet, and 3 to 4 feet, strong
" BEECH, 2 to 3 feet, fine
" HUNTINGDON WILLOW, 5 to 10 feet, strong
" BLACK WILLOW, 5 to 10 feet, and 10 to 15 feet, strong
" ITALIAN POPLAR, 10 to 15 feet, and 15 to 20 feet, strong
" PORTUGAL LAUREL, 2 to 3, 3 to 4, very heavy
" PINUS CEMBRA, 2 to 3, 3 to 4, very fine
" ARAUCARIA IMBRICATA, 2 to 3 feet, handsome
" PINUS INSIGNIS, 2 to 3 feet, 3 to 4 feet, and 4 to 5 feet, strong
" CANADIAN GOOSEBERRY, 2 to 3 years, true and clean
Dwarf-trained PEACHES and NECTARINES, established Trees
One-year Seedling LARCH, extra fine
One-year Seedling HAZEL, extra fine

Our PRICED DESCRIPTIVE CATALOGUE of GENERAL NURSERY STOCK will be forwarded free by post on application. The Trade supplied.

GENUINE NURSERY STOCK, comprising:—

TRANSPLANTED FOREST TREES.
Alder, 2 to 3 feet
Ash, 1½ to 2 feet
" 2 to 3 feet
Birch, 2 to 3 feet
" 3 to 4 feet
" 4 to 6 feet
Chestnut (Spanish) 1½ to 2 feet
Fir (Larch), 1½ to 2 feet
" 2 to 3 feet
Hazel, 1½ to 2½ feet
" 2 to 3 feet
Willows, 5 feet
" extra strong, 4 to 6 feet

CONIFERS AND HARDY EVERGREENS.
Arbutus, 1½ to 2 feet
Aucuba japonica, 1 to 2 feet
Berberis Darwinii, 1 to 2 feet
" japonica, 1 to 2 feet
Box (Tree) of sorts, 1 to 2 feet
Eugenia Ugni
" apiculata
Hollies (green), 2 to 3 feet
" (Variegated), 1½ to 2½ feet
Laurels (common), 2 to 3 feet
Laurustinus, 1 foot
Privet (Hedge), 12 to 2 feet
Pinus Cembra, 2 to 3 feet
" insignis, 1 to 1½ feet
Specimen CONIFERS, in fine condition for removal, prices and size on application.
Choice Named Hardy RHODODENDRONS, SCARLET, WHITE, ROSE, and PURPLES, in every shade, fine bushy plants, 1½ to 2 feet, £7 10s. to £10 per 100
RHODODENDRON PONTICUM, varieties of various sizes, from 30s. to 100s. per 100.
AZALEAS, named sorts, 40s. to 50s. per 100.
STANDARD and DWARF-STANDARD ROSES, in choice varieties, straight stems, and good roots, 50s. to 100s. per 100.
STANDARD and DWARF APPLES, in 50 approved kinds, 60s. to 75s. per 100.
Plans and Estimates given for Laying out and Planting New Grounds.
FOREST TREES supplied and planted by the Acre, and failures replaced.
A NEW DESCRIPTIVE and PRICED CATALOGUE of Japanese Novelties and General Nursery Stock may be had on application.
MATTHEW YOUNG, Milford Nurseries, near Godalming, Surrey

PLANTS monticola, 1 to 6 feet
" nobilis, 1 to 2½ feet
" pyrenaica, 1½ to 2½ feet
Picea Nordmanniana, 1 to 1½ feet
" Pinsapo, 2½ to 3½ feet
Araucaria dumicola, 1, to 2 feet
" " 2 to 2½ feet
" " 3 feet
" " 4 feet
" " 5 feet
" " 6 feet
" " 7 to 8 feet
Cedrus Deodara, 1 to 4 feet
" atrovirens, 3 to 6 feet
" Libani, 3 to 6 feet
Cryptomeria Lobbii, 4 to 5 feet
Cupressus Lawsoniana, 2 to 3 feet
" macrocarpa, 2 to 3 feet
" torulosa, 1½ to 2 feet
Juniperus chinensis, 1½ to 2 feet
" " 3 feet
" hibernica, 2½ to 3 feet
" virginiana (for covers) 2½ ft.
Taxus (Yew, common), 2 to 3 ft.
" Irish, 2 to 3 feet
" " variegated, 1½ to 2 ft.
Thuja aurea, 1, 2, and 2½ feet, fine
" Lobbii, 2½ to 3 feet
" " 4 to 5 feet
" Warreana, 1 to 2½ feet
Thujopsis borealis, 1½ to 2 feet
Wellingtonia gigantea, 1 to 1½ ft

Transplanted Larch and Quicks.

CHIVAS AND WEAVER (late GEORGE CHIVAS), Chester, offer several Millions of TRANSPLANTED LARCH, from 1½ to 4½ feet, very stout, grown in an exposed situation, specially fine plants, and at prices greatly in favour of the buyers. Also several Millions of TRANSPLANTED QUICKS, a large quantity of which are of great strength, strong English Orks (superior Sprigs), up to 2½ feet, together with a general stock of other Forest Trees, as well as a large stock of Evergreens and Ornamental Trees; many Thousand fine Standard Apples, and extra strong Transplanted Apple Stocks.

For prices and conditions of free delivery, see CATALOGUE, which will be forwarded on application.

WELL-RIPENED AND GENUINE SEEDS

FROM THE VALE OF TAUNTON DEAN.

Useful Price Lists on application.

ROBERT H. POYNTER, THE COUNTY SEED ESTABLISHMENT, TAUNTON.

GENUINE SEEDS, CARRIAGE FREE.

B. S. WILLIAMS,

VICTORIA and PARADISE NURSERIES, HOLLOWAY, LONDON, N.,

BEGS TO STATE THAT HIS

DESCRIPTIVE AND PRICED SEED CATALOGUE FOR 1866

CAN BE HAD POST FREE ON APPLICATION.

It contains all Novelties worthy of notice, with full description to each, and a few Hints for the guidance of Amateurs.

The LIST of KITCHEN GARDEN SEEDS comprises all that is essential in variety for the various requirements in family consumption. Those who prefer leaving the Selection of Vegetables to B. S. W. may rely upon receiving none but the most valuable and approved sorts. Collections are proportioned to suit Large and Small Gardens at the following prices:—

10s. 6d., 21s., 42s., 63s., 84s. each.

For Quantities, see Catalogue.

The following CHOICE and NEW VEGETABLE SEEDS are specially recommended:—

MALVERN HALL MELON, earliest variety in cultivation, 2s. p. pkt.
WILLIAMS' MATCHLESS RED CELERY, 1s. per packet
DIGSWELL PRIZE ENDIVE, 1s. per packet
The ALBERT SPROUTS, 1s. per packet
HILL'S INCOMPARABLE DWARF CABBAGE, 1s. per packet
HOLME PARK LETTUCE, 1s. 6d. per packet
NUNEHAM PARK ONION, 2s. 6d. per packet

The ORANGEFIELD DWARF PROLIFIC TOMATO, now offered for the first time, an Introduction of real worth; the fruit is large, very dwarf, and wonderfully prolific (stock limited), 2s. 6d. per packet
SHARMAN'S UNIVERSAL CUCUMBER, the best winter variety, fruit long and handsome, very prolific, 2s. 6d. per packet

DOUBLE TUBEROSES, very fine, 3s. per dozen
Choice GLADIOLI ROOTS, 6s., 8s., 12s., and 18s. per dozen

NOVELTIES FOR 1866.

E. G. HENDERSON & SON

RESPECTFULLY OFFER THEIR

NEW SEED CATALOGUE FOR THE PRESENT SEASON,

Containing full description of the following Novelties, with many others from the Continent.

Post Free on application.

VIOLA CORNUTA, in Seed and Plants.—One of the best known species, admirably adapted for chaste marginal effect to summer and autumn flower-beds.
TROPÆOLUM COMPACTUM COCCINEUM.—The finest scarlet-flowered bedding variety of the "Tom Thumb" section.
LYCHNIS GRANDIFLORA GIGANTEA.—A splendid scarlet-flowered variety for a bed or clump, or pot-plant.
HELIPTERUM AUREUM NANUM.—A lovely little yellow-flowered species, 6 inches high.
CELOSIA RACEMOSA ELEGANS.—The best of known kinds for pot-culture, in conservatory decoration, true from seed.
LOBELIA ERINUS, PRINCE ALBERT.—Fine habit, one of the finest in its section for bedding.
YELLOW PERFECTION WALLFLOWER.—A beautiful variety, true to its colour and habit. Received a Certificate from the Royal Horticultural Society.
CYCLAMEN.—From our unrivalled collection, in varied colours, separately or mixed.
PRIMULA SINENSIS FILICIFOLIA.—The beautiful Fern-like leaved variety, white and crimson, separately or mixed.
LILIUM AURATUM (Golden-rayed Japan Lily).—The most beautiful of its tribe. New Seed just gathered.

NEW PRIZE MELONS.

For descriptions of these first-class Fruits, see last Numbers of *Gardeners' Chronicle*.

THE NEW CLIANTHUS DAMPIERI,

In varieties of colour, as saved from the White and others, as exhibited by the Raiser. 2s. 6d. and 5s. per packet of 12 and 24 Seeds.

E. G. HENDERSON AND SON, WELLINGTON NURSERY, ST. JOHN'S WOOD, N.W.

THE MAGNIFICENT

JAPAN LILIES,

LILIUM LANCIFOLIUM ALBUM,
ROSEUM, and RUBRUM,

For planting in Rhododendron Beds, &c., 6s., 9s., and 12s. per doz.; 40s., 50s., 60s., 70s., and 80s. per 100.

BARR & SUGDEN.

THE METROPOLITAN SEED BULB & PLANT WAREHOUSE
12, KING STREET, COVENT GARDEN, W.C.

THE MAGNIFICENT

GOLDEN-RAYED LILY of JAPAN, LILIUM AURATUM.

Fine Established Bulbs of the above, which have been two seasons in this country, 5s. 6d., 7s. 6d., 10s. 6d., and 15s. Newly imported Bulbs much cheaper.

For Bedding out, Lilium lancifolium album, roseum, and rubrum, 6s., 9s., and 12s. per doz.

Orders amounting to 21s. sent Carriage Paid.

Carriage paid.

No. 1. COLLECTIONS of VEGETABLE SEEDS .. 10s. 6d.
No. 2. " " " " .. 15 6
No. 3. " " " " .. 21 0
No. 4. " " " " .. 30 0

NEW SEEDS.

Carriage paid.

No. 5. COLLECTIONS of VEGETABLE SEEDS .. 42s. 0d.
No. 6. " " " " .. 63 0
No. 7. " " " " .. 84 0
No. 8. " " " " .. 105 0

Rust's Thames Bank Peach.

O[illegible]

Lancashire Show Gooseberries and Currants

M[illegible]

F[illegible]

B. S. WILLIAMS begs to [illegible]

A[illegible]

M[illegible]

New Edition of

S[illegible]

S[illegible]

W[illegible]

Vegetable and Flower Seeds, &c.

D[illegible]

S[illegible]

D[illegible]

L[illegible]

T[illegible]

D[illegible]

The Earliest Pea Known is

C[illegible]

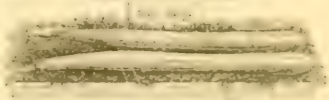
Seeds for the Season

C[illegible]

S[illegible]

T[illegible]

L[illegible]



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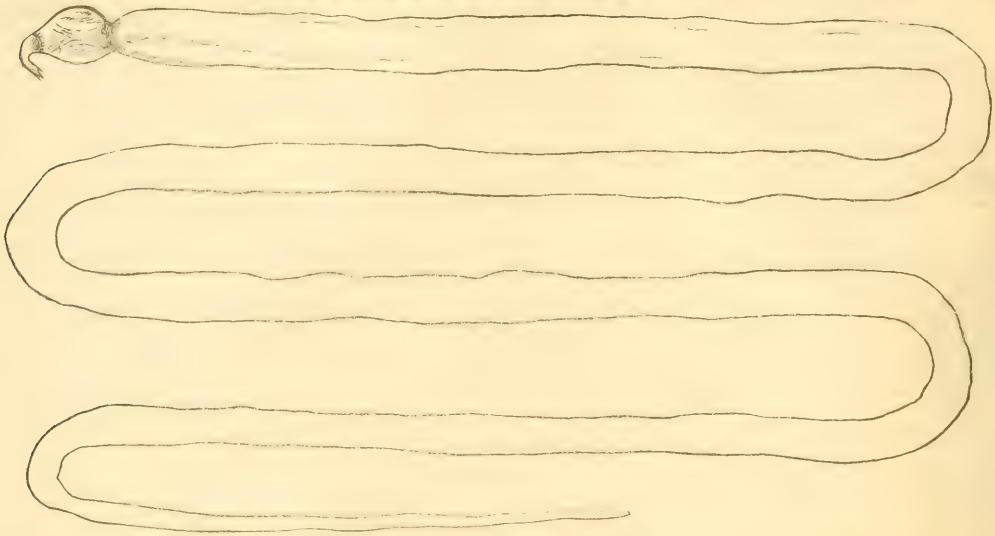
RAPHANUS CAUDATUS.



MR. WILLIAM BULL

HAS much pleasure in introducing the above useful, remarkable, and interesting vegetable production, the Seed of which was received last spring from Mr. WILLIAM BELL, Superintendent of the Botanic Garden, Saharunpore, with the following remark:—"Enclosed are a few Seeds of a Radish, which is rather remarkable from the great length of its pods. I have seen them as much as 3 feet in length; only the pods are eaten, which when young have a taste much like that of an ordinary Radish."

These Seeds having been received from so warm a country, Mr. W. B. had some grown in the stove, some in the greenhouse, and others in the open air. In the stove the plants failed, in the greenhouse they did very well, but in the open air its cultivation was most successful. When sown, the Seed easily vegetates, and in about eight weeks the plants flower profusely, and in three months numerous siliquas (seed-pods), which elongate in the most rapid manner (sometimes as much as 3 inches in a night), until they get about 3 feet in length.

The Seed Pods vary in colour; on some plants they are purple, on others green, while others again are purplish green. When the Plants are tied upright they have a very singular appearance, for each plant produces from 15 to 20 pods, some hanging quite straight, others twisted or whorled into fantastic shapes. These pods being succulent and far superior in delicacy of flavour to the ordinary root Radishes, can be eaten in their young state in the same way, and applied to all similar purposes; for salading they are delicious, and for pickling invaluable; indeed it might be regarded as one of the most useful vegetables that have been introduced for many years.

Price, in Sealed Packets, 3 Seeds Half-a-Guinea; 7 Seeds, a Guinea.

ESTABLISHMENT for NEW and RARE PLANTS, KING'S ROAD, CHELSEA, S.W.

SUTTON'S PERMANENT GRASS SEEDS FOR ALL SOILS.

SUTTON & SONS

HAVE ONE OF THE

LARGEST STOCKS IN EUROPE

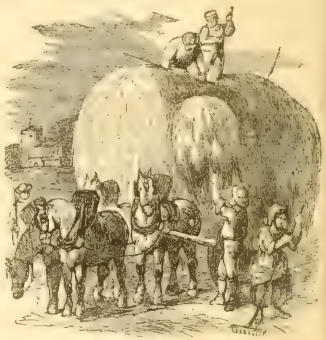
OF THE

PERMANENT NATURAL GRASS

AND

CLOVER SEEDS,

WHICH THEY MIX EXPRESSLY TO SUIT THE SOIL FOR WHICH THEY ARE REQUIRED.



SUTTON'S MIXTURES OF PERMANENT GRASS AND CLOVER SEEDS,

FOR LAYING DOWN LAND TO MEADOW OR PASTURE.

PRICES ACCORDING TO QUANTITIES REQUIRED AND PURPOSES FOR WHICH THE SEEDS ARE INTENDED.

In these Mixtures the large Seeds are supplied in one mixture, and the small in another, to be sown at two casts. The sorts contained in them are grown in different localities, and gathered separately by the hand expressly for this purpose, by which means all noxious weeds are excluded. They consist of the most nutritive kinds of FESCUES, POAS, SWEET VERNAL, PERENNIAL CLOVERS, LOLIUMS, &c., and each kind being kept separate, they are subsequently mixed in such sorts and proportions as are most suitable to the soil to be laid down. In this we use our discretion, in accordance with our many years' experience in all parts of the kingdom, as well as in foreign parts. We find our customers are generally pleased to leave this point to our professional judgment, *but we are equally happy to execute orders from prescriptions sent by the purchaser. In the latter case, however, it is desirable to inquire the cost*, as it may be greater than that of our own prescription; though we think our own cannot generally be surpassed, if it can be equalled. The quantity we usually supply is 2 bushels of large Seeds and 12 lb. of small Seeds per acre.

Those intending Laying down or Improving Pastures are recommended to communicate with us, stating the nature of the soil and the number of acres to be sown, when we shall be pleased to advise what kinds would be most suitable, and to quote lowest prices for the Seeds.

MR. MARTIN SUTTON'S ESSAY on PASTURES, from the "Journal of the Royal Agricultural Society of England," is supplied Gratis with every parcel of Grass Seeds.

All other kinds of FARM SEEDS, also GARDEN SEEDS, FLOWER SEEDS, &c., can be supplied, a PRICED LIST of which will be forwarded post free on application.

All Goods carriage free, excepting very small parcels; 5 per cent. allowed for cash payments.

A reference or remittance is requested from unknown Correspondents.

SUTTON AND SONS, ROYAL BERKSHIRE SEED ESTABLISHMENT, READING.

CARTER'S GARDENERS' VADE MECUM for 1866 now ready

Lobelia Snowflake.

Extract from GARDENERS' CHRONICLE :—

"Mr. Cox, Gardener to Lord Beauchamp, exhibited a beautiful White Lobelia called Snowflake, to which a First-class Certificate was awarded."—Floral Committee of the Royal Horticultural Society, July 25, 1865."

JOHN AND CHARLES LEE having acquired the stock of this desirable NEW BEDDING PLANT, their have much pleasure in offering SEED IN SEALED PACKETS. It is also well adapted for pot culture

As a BEDDING LOBELIA it stands unrivalled. The plant is of dwarf compact habit: the flowers are large and even, and of the purest white. The stock comes perfectly true from seed.

Price 2s. 6d. per packet. Price to the Trade on application.

New Vegetable, Flower, and Agricultural Seeds.

JOHN AND CHARLES LEE, SEEDSMEN to the QUEEN, are prepared to execute orders for every kind of VEGETABLE, FLOWER, and AGRICULTURAL SEEDS, growth of 1865

Their DESCRIPTIVE CATALOGUE is now ready, containing all the NEW and CHOICE VEGETABLE, FLOWER, and AGRICULTURAL SEEDS in cultivation, and will be forwarded free on application.

Royal Vineyard Nursery and Seed Establishment, Hammersmith, London, W.

New Seeds, Growth of 1865.

ROYAL BERKSHIRE SEED ESTABLISHMENT.

SUTTON AND SONS are now prepared to execute orders for all kinds of GARDEN SEEDS.

The prices are moderate and the quality fine, owing to their having been harvested well.

Royal Berkshire Seed Establishment, Reading.

The Gardeners' Chronicle.

SATURDAY, JANUARY 20, 1866.

MEETINGS FOR THE ENSUING WEEK.

MONDAY,	Jan. 22	Entomological Anniversary	7 P.M.
TUESDAY,	— 23	Royal Horticultural Floral and Fruit Committees at South Kensington	11 A.M.
		Ditto Scientific Discussion	1 P.M.
		Zoological	8½ P.M.
SATURDAY,	— 27	Royal Horticultural Weekly Show at South Kensington	2 P.M.

IT is with great regret that we have to announce the DEATH OF Dr. MONTAGNE, which took place on the 9th inst., for though he has for some time been quite incapacitated for any exertion, and had even almost lost the power of speech, his decease reminds us forcibly of the fact, that the scientific world has sustained a loss which is not likely to be repaired very speedily. Intimate as he was with almost every branch of Cryptogamic botany, his pen and pencil were ever ready to record the novelties which were pouring into Paris from every quarter, and his extensive correspondence and valuable herbarium gave a precision to his diagnoses which can scarcely be too highly appreciated. His friends, moreover, have lost a man of a most generous and genial spirit, and a most entertaining and instructive companion; his attainments were by no means confined to botany, for he was generally recognised as no mean scholar, while his taste and judgment were constantly referred to where it was requisite to have some definite decision as to the comparative merits of musical compositions. Few persons had seen more of life or had profited more by dearly-bought experience, and we can refer to our own personal intercourse with him, as well as to a very long correspondence, with unmixed pleasure.

The following brief account of his career is taken from M. HOEFER'S "Biographie Générale":—

"JEAN FRANCOIS CAMILLE MONTAGNE was born on the 17th of February, 1784, at Vaudoy (Seine et Marne). He was the son of a surgeon, who died while he was yet an infant, under such circumstances that, from want of sufficient means, he was almost self-educated. At the age of 14 he went into the navy, into which he entered at Toulon as a master's mate, and soon took part in the expedition into Egypt, where he was employed in the civil department, and ultimately as secretary to the military controller of the navy. In 1802 he returned to France with the army which had capitulated at Alexandria, and devoted himself to the study of medicine. He qualified as surgeon in 1804, and was attached to the military hospital at Boulogne, and from thence sent in 1806 to the army of Naples. In 1807 he was authorised by the EMPEROR to pass into the guard of King JOSEPH, and served in the regiment of Grenadiers, of which he became the following year, on the arrival of King MURAT, surgeon-major, being at the same time nominated a knight of the Royal Order of the Two Sicilies. In 1814 he was charged with the surgical service of the Royal Guard of MURAT, and in 1815 was designated, with the title of surgeon-in-chief, to superintend the medical service of his army. In consequence of a disastrous campaign, the French, in spite of the engagement entered into with the Austrians to respect their liberty, were all made prisoners of war and carried off into the fortress of Arad, in the depths of Hungary. In 1816 they were allowed to return to their country, where after a year's anxious delay he obtained his re-admission on half-pay as surgeon-major. After having practised medicine at Paris, and, in the intervals of leisure, devoted himself to the study of Greek, for which he had an original predilection, he was recalled to the service as surgeon-major in 1819. He then took part in the Spanish Campaign, and his conduct at the siege of Pampeluna gained for him the Cross of Honour. In 1830 he was made the head of the military hospital at Sedan. Two years later he obtained his discharge, and established himself at Paris. For a long time his taste had turned towards Botany, in which LAURENT DE JUSSIEU, DESFONTAINES, and CLAUDE RICHARD had been his masters. While in service he visited successively Lorraine, the Vosges, Spain, Brittany, the isles of Hyères, Lyons, the Pyrenees, and Ardennes, where he made large collections. But on his return to Paris he found the study of Cryptogamic plants, to which he was especially attached, almost abandoned in France, or at least so far neglected that travellers were obliged to send their Mosses, Fungi, Lichens, and Algæ to Sweden, Germany, and England, for determination. This was the case with GAUDICHAUD and AUGUSTE DE SAINT HILAIRE, both members of the Academy. Induced by a desire to be useful, M. MONTAGNE devoted himself with as much zeal as disinterestedness to a branch of botany which had fallen into abeyance, and for 20 years gave up 10 hours a-day to it. He introduced, described, and figured in great measure almost 2000 species, and to arrive at this result he entered into the most active correspondence with the principal botanists of Europe and America. This perseverance met at last with its due recompense; after having had seven votes in 1837 as candidate for the Institute, he was elected almost unanimously in 1853 as successor to ACHILLE RICHARD, and finally, on the 8th of April, 1858, received the cross of an officer of the Legion of Honour.

"His works are too numerous for detail here, but we refer those who wish for an epitome of his labours to his "Sylloge," published in 1853.

"Notwithstanding his very limited means before his admission into the Academy, he was distinguished for his kindness and hospitality to strangers, and for the total absence of anything like susceptibility or national jealousy, though his opinions as an old Napoleonist were naturally decided. Few persons were more generally respected or will leave behind them a character so perfectly free from any taint of morals or disposition, while he retained to extreme old age all the vigour of mind and intelligence which distinguished his riper years." *M. J. B.*

"THEY manage these things better in France." The following letter, from our valued correspondent Professor REICHENBACH, will form an apt commentary upon the above text.

Without endorsing all our friend's opinions, we nevertheless feel that in a matter of so much moment at the present time, it is very desirable that all the pros and cons should be fully considered. We shall have abundant opportunities for expressing our own opinions on the subject, and at present content ourselves with laying Professor REICHENBACH'S views before our readers:—

"There are two principles of arranging exhibitions of flowers, the continental and the old English fashion,—the two being very different.

"Continental shows have no doubt a very picturesque effect. To understand them well they must have been seen. You enter into a saloon, wherein there is accumulated such a crowd of flowers, and of shrubs, and of trees, that people ignorant of geographical botany would believe they were entering into some virgin forest, provided they were not struck at once by the numberless flowers of Azaleas and Camellias. These latter are quite necessary adjuncts, since the public is so accustomed to see the white and scarlet and purple masses of flowers, that it is scarcely possible to make any successful flower show when these are not in season. There is not the least attention paid to the geographical range of plants. But if the weather be very cold, as it had been at Amsterdam up to the time of the show, separate provision is made for stove plants. Tall shrubs are ranged against the walls, while the centre is occupied by small beds edged with turf, and enclosing masses of flowers and perhaps a fountain. Between the plants lurk some goddesses or busts of high personages. Sometimes, generally in smaller apartments, tables are found, on which are placed plants in pots of various kinds, but always arranged with an eye to picturesque effect.

"When the jurors enter upon their responsible task they have a difficulty in finding things for themselves if the space is large; hence they are obliged to secure the services of a guide, who not unfrequently has his coat adorned with a collection of ribbons, in sign of his dignity, thus reminding one of a Spanish banderillero. He conducts the jurors from one place to another, in order to see the combatants, taking one now upstairs in the gallery, now downstairs, and anon into another apartment. Sometimes also even he is not able to find a group that he wants to find, and then that lot is not judged. Thus it is often scarcely possible to compare in so hasty a manner and from memory the various lots. As soon as the prizes are awarded, the jurors have the grand satisfaction of having to meet the exhibitors. Before they had complained of the partiality of Monsieur l'Architecte, who arranged the plan of the exhibition, and who gave the designs for the whole —"*maintenant c'est votre tour.*" But generally they are good enough to attribute the misfortune of their lots not having received first prizes, to their having been so very ill-placed.

"Enters at length the public, bearing or not bearing catalogues, and with every wish to learn something. Sometimes there is also a band of music playing, which proves very attractive. People obtain in this way a very general impression, but a very agreeable one, a *fata morgana*, a dream out of an oriental tale, as of one of the Thousand-and-one Nights. How difficult the real study of the show is you can easily ascertain by observing those connoisseurs who are condemned to be reporters. It is extremely disagreeable to fill this office, and nearly impossible to give so full a report as is the custom in England, and there is scarcely any possibility of making safe comparisons. It would facilitate the labours of those desirous of making comparisons to frame a kind of map, with numbered spaces, and to give at the same time an alphabetical catalogue, with thousands of references, as in COLLINS'S map of London.

"The English plan is quite different. There it has never been an aim to produce general impressions on the ordinary visitor, or to intoxicate the senses of the spectator by the dazzling effects produced.

"The objects of competition in the same class stand side by side, so that English judges have the utmost facility for making the needful comparison. The public is in a position to compare, too, and in so far as they are capable of judging they act as a check upon the jurors themselves. We have never heard of any complaints made by exhibitors. All the classes being arranged near one another on the same level, or nearly so, it would be ridiculous to complain of groups having been ill-placed. English contributors themselves, with candid impartiality, often declare, before the jurors have given their verdict, that they shall and must be beaten. Decorations are scarcely used; and no doubt a gentleman who has been a continental exhibitor will feel much surprised when seeing so unadorned an assemblage. But is any ornament necessary? Are the best jewels not the best? Did not, at the last great London Exhibition in 1862, the grand Koh-i-Noor diamond quite hold its own, although it stood upon its humble stand instead of resting upon a large plate of gold? If you want to see general effects, go into the woods, go into the hothouses, go into the Kew winter garden and Palm-house.

"Spectators accustomed to English shows appear to delight in them. We have observed keenly observant connoisseurs, delighted amateurs, and even numbers of ladies, who, though of course occupied with studies of the dress of other ladies, yet still gave glances of admiration to all the vegetable beauties.

"Which kind of exhibition is preferable? To give an answer to this question, we must go to the point.—What is the object of these exhibitions? Is it for amusing and delighting people merely? Or is it to show the progress of gardening, to excite rivalry, to encourage meritorious amateurs and gardeners, to improve taste, to increase the love of flowers or the gallant sport of gardening?

"There can be no doubt as to the answer, and as soon as we feel we are convinced about it, we must consider that the English method of conducting exhibitions is, if not the most beautiful, yet certainly the wiser. We believe that the high development of gardening in England arises not only from the general wealth, but from an old taste well trained by seasonable English exhibitions. English amateurs have excellent opportunities of learning at their flower shows.

"If English exhibitions were arranged more artistically, and more attention paid to decorations, some people would praise it as an improvement; but we should say, never mix together decorations and objects of horticultural interest. Never make these themselves decorations. Never abandon your good old system for a foreign system, which itself demands improvement according to the English method."

—— MR. BULL, of Chelsea, has kindly forwarded a leaf and flower of a CAMELLIA, which he proposes to call C. japonica var. apuæformis, but which is commonly known as the Fish-tailed Camellia. He observes, "I believe it is the first time it has flowered in this country, and it is one of MR. FORTUNE'S recent introductions from Japan." This fish-tail variety is a very interesting plant. The elliptical leaves are divided at the apex into two or three acutely-pointed lobes, which in the sample before us

are of a golden yellow colour, while patches of the same colour exist in irregular blotches on other parts of the leaf. The flowers are single, pink, with the stamens arranged in three rows, the two outermost consolidated into a single mass below, while the third series are perfectly distinct both from each other and from the outer rows. The greatest interest, horticulturally speaking, however, resides in the curious and handsome leaves, which perhaps may be regarded as giving promise of a new race of golden-crested Camellias, if the variegation can be rendered permanent. M. MORREN's notion that there is something antagonistic between the production of double flowers and of variegated leaves seems borne out by this plant. We learn, however, that this golden-tipped state is at present merely accidental, such as often occurs, for example, on the old double striped Camellia. In Dr. SEEMANN's Journal of Botany for the present month a permanently variegated single-flowered Camellia is figured under the name of C. japonica var. variegata. This plant was also derived from Mr. BULL's nursery, having been introduced from China by Mr. FORTUNE. Both leaves and flowers are smaller than in the fish-tail variety, the form of the leaves being also quite different.

—— Professor MORREN, in the current Number of the "Belgique Horticole," gives a figure and description of DASYLIRION LONGIFOLIUM, together with some details concerning the rate of growth of the inflorescence, which may be interesting to many of our readers. The following is M. MORREN's summary:—The growth was more rapid in the earlier stages of development, and was generally somewhat greater during the day than at night. The rate of growth was nearly a metre and a half in 20 days, or about 7 centimetres a day.

—— Although 10 years have passed away since we had the pleasure of giving in the *Gardeners' Chronicle* a life-size figure of a flower of ANGRÆCUM SESQUIPEDALE, yet we fear that only a very small section of our readers has as yet ever seen the plant itself in bloom. This circumstance is not to be attributed to any shyness in flowering, for in all collections that are fortunate enough to possess the species, it blossoms profusely every year. No doubt its great rarity has had much to do with the result in question, yet there are other Orchids even rarer than itself —Disa grandiflora, for example, with whose faces the frequenters of our spring shows are abundantly familiar. But in the case of the Angræcum, which never flowers except in mid-winter, there are no great shows at which it could be seen by the public, nor, even if the shows themselves were held, would the possessors of so tender a plant be willing to expose it to the rigours of a London winter. Thus, what with the extreme scarcity of the plant, which is as difficult to import as it is hard to propagate, and what with the season of its blooming, it need not be matter of surprise that so few persons should ever have set eyes on one of the greatest marvels that even Orchids have to boast! Under these circumstances we have heard with much pleasure that a spike of this prodigy will be exhibited at the meeting of the Royal Horticultural Society on Tuesday next, and perhaps be balloted for afterwards.

—— We learn with great pleasure that the LORD MAYOR, Aldermen, and Court of Common Council unanimously voted on Thursday, that the GUILDHALL of the City of London should be placed at the disposal of the Executive Committee of the INTERNATIONAL HORTICULTURAL EXHIBITION for the purpose of the grand banquet being held there on Tuesday, the 22d of May. This is as it should be on the occasion of the visit to this country of so many distinguished horticultural and botanical foreigners.

—— We are informed that the HOLE TESTIMONIAL is making very satisfactory progress; and that the subscription list will soon be closed.

DOUBLE GLAZING.

I JOIN issue with your correspondent "A. R. E.," in "considering the further discussion of this matter entirely superfluous," as it is unquestionably one of the most important and generally interesting topics of the day; and in returning to the subject, I beg to assure your correspondent that I do so in perfect good humour, anxious in the first place to relieve his apprehensions concerning my misunderstanding or misconstruing the meaning of his article (see p. 962). I intended to give him full credit, not only for what he advanced, but for what he thought unnecessary to mention, in as far as regards "efficacious arrangements for ventilation;" and if I found it to be my duty in the interests of horticulture to take exception to the gist of his remarks, and to question the logic and force of his deductions in favour of his pet system, I cannot see that I founded my arguments on so unwarrantable a basis as "A. R. E." assumes to establish. Nay, more—when I make use of the very weapons with which that gentleman elects to strengthen his assertions, and vindicate his partiality as illustrating the exuberance which Orchids are able to attain under the beneficial and inappreciable influences of double roofs, and "entrench myself into a position" which, "in spite of every exertion," he is unable to rival or overreach—surely, to say the least of it, he must have been indulging his imagination when he credits me, in so doing, with "hyperbolic assertions."

I should have been quite contented to leave the solution of the subject to time, and maintained a conservative silence, satisfied with the result of my own practice, did I not know that hundreds of people of affluence, who I am proud to say are enlisted in and swell the ranks of horticulture, look to these pages for sound practical advice; and when letter after letter was pouring in, extolling the advantages of double roofs, surely it was time to step in, attempt to stem the tide, and call aloud *audi alteram partem*.

Properly constructed and adequately-heated houses, with single roofs, will, I am stubborn enough to maintain, always be sufficient to grow established Orchids, or any other plants requiring a high temperature, to a great degree of perfection in this country; and if I had not under my charge over two thousand established plants, from various parts of the world, growing in different temperatures under a variety of treatment, and not three per cent. of the number affected in health or appearance, either by spot or any other disease, I would not speak with such an amount of confidence, or combat the opinions of parties holding opposite views. It is not in a spirit of egotism that I am maintaining the ground by writing up the Meadow Bank collection, and singling out individual plants of a praiseworthy character, but rather with the view of placing an interdict upon an extravagant estimation and adulation of double roofs.

I cannot understand, because I have never seen (and I have not always remained at home), what collections "A. R. E." refers to, that are "more adorned with spot than with bloom." This much I may rejoin—that my note-book contains a formidable list of remarkable plants grown in the best collections of the country, under single roofs, which might well be dubbed "Orchidaceous prodigies," and which I should have been fairly entitled to claim in estimating results. Spot, unfortunately, does occur occasionally, even in the best-managed collections; and I presume double roofs have not the special virtue of completely warding off its inroads. Speaking from memory, I believe Mr. Berkeley found one or other of the forms of it in plants newly imported; so that it is a natural affection, which is likely to be aggravated even in the best planned artificial climate.

It is very considerate of "A. R. E.," in the profusion of his complimentary allusions, to attribute my success to anything and everything but single-glazed houses. Coming from him, who sees in double roofs the *sine qua non* of Orchid cultivation, it is a compliment indeed. It must be accepted, however, with considerable reservation. We have only about 50 hours of sunlight just now during the week against 80 in the great majority of the habitats of the plants which we are domesticating. The duration of the period of inflorescence, at this time, is materially shortened, and the constitution of the plant proportionately affected. The slightest darkness has a prejudicial effect, and that is one of the evils of double-glazing. I have never found any great difficulty in properly controlling ventilation under the most trying circumstances so as to promote the well-being of the plants, neither have I misunderstood or confounded in so doing "ventilation with radiation;" nor can I conceive, in properly planned houses, without this air-cushion between the two surfaces, a want of control in balancing the atmosphere. I have therefore no good reason to be enamoured of this novelty, and am bound to exercise a little caution in recommending the adoption of a system to my employer, in which I might miserably fail.

Some gentleman of large experience, with no little temerity, propounds, that to base your argument upon a successful issue is "absurd." This, to my mind, is simply a convenient deduction; it is not a very convincing one, having a tendency to depreciate the value of instruction imparted. If uniform success is not to be measured by results and their causes, then science becomes a dead letter, and language devoid of meaning. *James Anderson.*

INDIAN FRUITS.

IT may be interesting to your readers, or at least to as many of them as visited the late International Fruit Show at South Kensington, to know that the fine collection of Indian fruits sent from the Mysore Government Gardens at Bangalore, has found a fitting home in the Museum of the Royal Gardens at Kew. It is to be regretted that this collection, gathered and packed with so much care, should have been exhibited in the dirty tin cases in which it made its journey from India. Cleaned, and placed in colourless spirit in white glass jars, these fruits are now a valuable addition to the already rich stores of the Kew Museum. They are all in excellent condition; they were gathered between the months of June and October, 1865, and many of them are as fresh as when first picked. One of the best of all tropical fruits, the Mango, is represented by the Common or Wild Mango, and three varieties of inarched Mango, namely, the Malgova, Raspberry, and Chittoor Mangoes. It seems that inarching is the only way to propagate these good varieties. Mr. Black says that the varieties of this fruit in India are almost as numerous as those of Apples in England. There are also good examples of Jack-fruit (Artocarpus integrifolia), and Bread-fruit (A. incisa). Of this latter the variety sent is that which bears perfect seeds and a comparatively small portion of pulp. The roasted seeds are eaten, and taste like Spanish Chestnuts. The Papaw fruits (Carica Papaya) are the produce of a dwarf variety, which fruits when the plant is from 4 to 5 feet high. The Country Gooseberry (Averrhoa Carambola) is much eaten by the natives, and tastes very much like a green Gooseberry. The fleshy calyx of Hibiscus Sabdariffa, the Roselle, is also highly prized for making tarts and jellies. The sample of Vanilla, the first grown in Bangalore, is well worth notice; the fragrance is very powerful and agreeable, though of course the fruits are not so large as the Mexican. The Moreton Bay Chestnut (Castanospermum australe) appears to produce its fruit in as great perfection as in its native country; its introduction into India does not date back further than about 30 years, but there are now several fine trees in the Bangalore Gardens. Though in Australia the natives eat the large Chestnut-like seeds of this plant, in India they are seldom or never used. The entire collection numbers about 40 specimens; amongst them are Uvaria Narum, Limonia oligandra, Flacourtia inermis, Spondias mangifera, Emblica officinalis, &c.

It is satisfactory to know that the Royal Horticultural Society intend taking into consideration the subject of the best mode of exhibiting fruits, &c. Had the specimens in this collection been cleaned and placed in glass jars, previous to the exhibition, they would have attracted even more attention than they now do at Kew. It may be worth while to state, that Mr. Black, the Superintendent of the Bangalore Gardens, who gathered and packed the collection, was formerly Curator of the Herbarium at Kew, and it is gratifying to see that he has still an interest in the place of his early labours, a fact exemplified by his consignment of the collection in question to that establishment. *John R. Jackson.*

EXTRACTS FROM THE JOURNAL

OF MR. JOHN GOULD VEITCH,

DURING A TRIP TO THE AUSTRALIAN COLONIES AND THE SOUTH SEA ISLANDS.

(*Continued from page 31.*)

THE largest and most important nurseries of Sydney are those of Messrs. Baptist & Son, Shepherd & Co., and Guilfoyle & Son. I must acknowledge that these establishments somewhat disappointed me, probably from having previously heard so much of them. As a rule, there is a want of that order and arrangement in the Sydney nurseries which in England we consider so indispensable.

Messrs. Shepherd's was the first established. It contains a fine stock of all kinds of Araucarias, Dammaras, Palms, and Ferns, particularly of the rare Araucaria Rulei and the beautiful Dammara Moorei. There is also a good general assortment of evergreens in pots to suit the trade of the country. There is one greenhouse for propagation. The climate of Australia has rendered it necessary to grow all pot plants under a partial shade. A plan has been adopted throughout the country, of erecting large skeleton sheds or frames, surrounding and covering them with branches of Melaleuca, or some other suitable shrub. The Melaleuca being plentiful almost everywhere, is the cheapest material that can be used, having the advantages of admitting sufficient light and air, and not altogether excluding rain. I found all young nursery stock in pots grown in this way. Messrs. Shepherd have also a country establishment where they grow Roses, fruit trees, and ornamental trees and shrubs extensively.

The greater part of Messrs. Baptist's establishment is devoted to market gardening. From this a shop in the Sydney market is supplied. This nursery, situated at the foot of the Surrey Hills, was redeemed from a swamp, and has the very great advantage of being always damp. It is the largest in Sydney, and contains a good general stock, and many fine specimens. A row of Araucaria excelsa, now 60 feet in height, has been most effectively planted along the entire frontage. The collection of specimen Camellias is worthy of special note. Many of the bushes are from 12 to 15 feet high. They are annually loaded with flowers, which as a rule are larger than any I have seen in Europe. Messrs. Baptist have raised a number of seedlings, some of which quite equal those of Italy. The Camellia bids fair to become one of the commonest flowering shrubs of Australia. There are four greenhouses in this establishment; the largest of these, attached to the dwelling house, is filled with a collection of Ferns and fine-foliaged plants; the others are used for propa-

gating, and to contain the recent introductions from Europe and elsewhere. There is a large assortment of Coniferæ and Evergreen shrubs grown in pots under similar shaded frames to those before mentioned. Amongst the number I noticed Araucaria excelsa, Bidwillii, and Cunninghami, several species of Ficus, Camellias, Azalea indica, Aralia Sieboldii and papyrifera, Magnolia fuscata and grandiflora, Portugal Laurel, Pittosporums, Grevillea robusta, Berberis Darwinii and japonica, Evergreen Oaks, several Tecomas, &c.

Messrs. Baptist have gone to great expense in introducing plants from Europe. The greater portion of the latest English Gladioli, Dahlias, Gloxinias, Achimenes, Caladiums, Roses and fruit trees are established here. The Gladiolus is admirably suited to the country. The spikes of flowers far surpass anything that I have seen in England. The Rose also grows with great luxuriance. The individual flowers are quite as large as those of Europe, added to which they are produced more freely, and for a far longer season; indeed, there is scarcely a month in the year that a Rose-bud is not to be obtained.

Magnolia grandiflora has become one of the finest evergreen shrubs. A specimen in Messrs. Baptist's garden is 25 feet high, and annually loaded with fragrant flowers. A clump of New Zealand Flax (Phormium tenax) is met with in every nursery. The leaves furnish the material in common use for tying. A variegated variety of this is occasionally met with: its yellow striped foliage is of great beauty.

Messrs. Guilfoyle's nursery is at Double Bay, two miles out of Sydney. Mr. Guilfoyle, sen., was for a long time a foreman in Messrs. Knight & Perry's establishment at Chelsea; he then became Mr. Mort's gardener at Sydney, and is now at the head of, if not the largest, one of the best nurseries in the colony. The stock consists almost entirely of flowering and evergreen trees and shrubs, and Coniferæ. The collection of the latter is probably one of the most complete in the colony. There is also a large assortment of Camellias and Azaleas, both planted out and in pots. There is one greenhouse, and a large number of the usual covered sheds.

(To be continued.)

THE WEATHER OF 1865.

January.—The arrear of rain at the commencement of the year was 10¼ inches; but the arrear was reduced by the quantity which fell in January, that being 1.88 inch above the average. The mean temperature was nearly 2° below the average, owing to the coldness of the nights, for the average temperature of the days was fully maintained. The lowest during the month, 8°, occurred on the night of the 28th; but there was no continued severe frost. The barometer on the 31st was very low.

February.—The amount of rain was a little above the average, and with that which fell in January reduced the arrear of rainfall to 8½ inches by the end of the month. The mean temperature was about 2½° below the average. The lowest temperature occurred on the night of the 14th, when the thermometer fell to 7°, and this proved the lowest reached in the whole year. The winds were from N.E. seven days, and from the opposite quarter, S.W., also seven days.

March.—With two exceptions the nights in this month were invariably frosty, and the mean temperature was upwards of 4½° below the average. Owing to this vegetation was in a great measure safely retarded: the night of the 24th was the coldest, thermometer 18°, which was very trying to blossoms, even though not expanded. But northerly winds were prevalent in this month, and also in the whole year. The quantity of rain was below the average.

April.—The mean temperature was 1° below the average. This was owing to the great amount of sunshine; for although the days were very hot, yet the nights were colder than usual. The mean maximum temperature of the days was nearly 10° above the average; that of the nights 1° colder. On the 26th and 27th the thermometer in the shade indicated 80° and 82°. The last night of the month was the coldest, thermometer 23°.

TABLE SHOWING THE HEIGHT OF THE BAROMETER AND THERMOMETER, AND DEPTH OF RAIN AT CHISWICK, FOR EACH MONTH OF 1865, COMPARED WITH THE AVERAGE OF THIRTY-SIX YEARS.

1865.	BAROMETER. Mean.	Extreme Highest.	Extreme Lowest.	THERMOMETER. Mean Max.	Above (+) or below (—) the average.	Mean Min.	Above (+) or below (—) the average.	Mean.	Above (+) or below (—) the average.	Extreme Highest.	Extreme Lowest.	RAIN. Amount.	Above (+) or below (—) the average.
	Inches.	Inches.	Inches.	Degrees.	Degrees.	Degrees.	Degrees.	Degrees.	Degrees.	Degrees.	Degrees.	Inches.	Inches.
January	29.518	30.281	28.568	43.42	+ 0.61	27.45	—3.37	35.43	—1.48	52	8	3.50	+1.88
February	29.822	30.516	28.860	43.57	— 2.15	28.85	—2.83	36.21	—2.49	54	7	1.63	+0.17
March	29.844	30.248	29.176	44.90	— 5.87	30.09	—3.28	37.49	—4.58	57	18	0.95	—0.36
April	30.076	30.243	29.804	67.43	+ 9.99	35.16	—1.01	51.29	+4.48	82	23	0.35	—1.22
May	29.879	30.292	29.435	68.51	+ 3.89	39.90	—2.11	54.20	+0.89	82	29	3.19	+1.28
June	30.141	30.424	29.820	75.36	+ 3.38	42.60	—5.74	59.23	—1.08	89	30	1.84	—0.12
July	29.907	30.290	29.573	77.67	+ 3.07	47.32	—3.98	62.49	—0.46	87	38	2.37	—0.09
August	29.839	30.229	29.318	75.46	+ 2.03	45.31	—4.99	60.48	—1.49	82	35	5.64	+1.22
September	30.186	30.421	29.923	78.80	+11.13	44.46	—1.47	61.61	+4.81	88	32	0.58	—1.88
October	29.561	30.171	28.992	60.09	+ 0.77	39.19	—1.90	49.59	—0.57	72	23	6.23	+3.56
November	29.828	30.389	28.853	49.56	— 0.11	34.56	—0.65	42.06	—0.38	58	22	1.79	—0.56
December	30.141	30.744	29.109	47.64	+ 2.29	34.06	+0.76	40.85	+1.52	54	22	0.92	—0.55
	29.895	30.744	28.568	61.04	+ 2.43	37.45	—2.56	49.24	—0.07	89	7	26.92	+3.28

The Mean Pressure was .015 inch below the average.
The Mean Temperature .07 degree below the average.

The Mean Maximum Temperature 2.43 degrees above the average.

The Mean Minimum Temperature 2.56 degrees below the average.

Amount of Rain 3.28 inches above the average.

May.—Fully the mean temperature of the month was maintained, but still, owing to the solar radiation, for the nights were cold, they were nearly 3° below the average; the days, on the contrary, were considerably above it. On three nights, namely, the 6th, 12th, and 15th, the thermometer indicated respectively 2°, 4°, 3° below freezing. This checked the growth of fruit in a very young state, and consequently caused some of the Pears to be less melting than they otherwise would have been, grown under such abundance of sunshine during the summer. There was a plentiful supply of moisture, more than 1½ inch above the average having fallen.

June.—The mean temperature was 1° below, but the mean maximum was more than 3½° above the average. The nights were cold, for the mean minimum was 5½° lower than usual; on the 11th, 19th, and 30th, the thermometer indicated respectively 30°, 32°, and 30°. The high temperature of the days must have resulted from solar radiation, and not from warm south winds, for the winds were from the cold quarters, N.E. and N., for half the month. Frequently the thermometer was very high; on the 21st and 23d it was 89° in the shade. The amount of rain was little below the average, and the whole fell on the first and last three days of the month, leaving a long interval of hot dry weather, during which the crops became much in want of moisture, and their growth shorter than it otherwise would have been; but such as they did make was very substantial, owing to the great abundance of sunshine.

July.—In this month there fell nearly the average quantity of rain. The mean temperature was only a little below the average, but the general character of the season, warm days and cold nights, was still maintained. The mean of the days was 3° warmer, and that of the nights about 4° colder than usual. On 14 days the thermometer rose to between 80° and 90° in the shade. The highest point it reached in the month was on the 27th, 87°.

August.—Much rain fell, the amount being more than an inch above the usual quantity, and at one time fears were entertained for the harvest. The maximum temperature was 2° above the average; still the nights were comparatively cold, about 5° colder than they usually average in October. The highest in the shade was 82°, on the 27th.

September.—This was a very dry month; rain fell only on the 8th, 20th, and 21st, the whole amount being little more than half an inch, and the weather throughout was exceedingly favourable for completing the harvest operations. The winds were prevalent from N.E. and E. The nights were, as usual this season, below the average, but the mean temperature was nearly 5° above the average, owing to the very high day temperature, which was upwards of 11½° higher than usual. On 17 days the maximum was between 80° and 90° in the shade, with powerful sun-heat; on the 13th it was 88°.

October.—At the commencement of the year the arrear of rain was 10¼ inches, at the beginning of October it was reduced nearly an inch, and in the course of the month the unusually large amount of 6¼ inches fell, reducing the arrears to 3.12 inches. The barometer was generally very low. The mean temperature was about half a degree below the average. The mean maximum was fully maintained, notwithstanding the cloudy, wet weather, which obstructed the sun's rays; probably kept up from heat radiating from the previously much-heated earth. The wind was prevalent from N.E. and E., and doubtless, coming from these cold quarters, it acted as a condenser of the moisture of the warmer air coming from other quarters. The thermometer indicated 8° below freezing on the 20th, and 9° below on the 28th.

November.—A considerable quantity of rain fell in this month, but less by half an inch than usually falls in November. The average of maximum and minimum temperature was very little below their usual average. The extreme lowest was 22°. The amount of rain was fully ¼ an inch less than the usual quantity. The wind was from S. and S.W. for nearly half the month.

December.—The weather was very favourable for all out-door horticultural and other operations. There were no severe frosts, the lowest point indicated by the thermometer being 22°. The amount of rain was fully half an inch below the usual quantity; the wind was from S. and S.W. for more than half the days of the month. The year has been remarkable for very warm days and exceedingly hot sun and cold nights, and for the large quantity of rain which fell in the month of October. The arrear of rain at the commencement of 1865 was 10.25 inches; while at the beginning of 1866 it stood at 6.97.

Since writing the foregoing I have hastily read Mr. Symons' interesting remarks in a recent issue of the *Times*, and I send the following table of the rainfall during the last 40 years, a table which, independently of its value as embodying the results of so long a period of observation, is strikingly confirmatory of what Mr. Symons advances at the close of his observations. It will be seen, on reference to the last column of the table, that the average of the first two decades is nearly equal and rather more than 24 inches; that in the third decade it fell half an inch; and that in the fourth, which terminated with the past year, there was a further decrease of 1 inch. Whether we are entering upon a period of wet years, as Mr. Symons suggests, or whether the increase of dwelling-houses and the decrease of timber trees have anything to do with this diminution in the rainfall in the neighbourhood of London, I cannot pretend to say. I may add that the table gives the average rainfall for each month; but by putting the decimal point one place further to the right, it also exhibits the total amount of rain during each period of 10 years. *R. T.*

TABLE EXHIBITING THE AVERAGE AND TOTAL MONTHLY FALL OF RAIN AT CHISWICK FOR A PERIOD OF 40 YEARS (1826—1865.)

Years.	Jan.	Feb.	March.	April.	May.	June.	July.	August.	Sept.	Oct.	Nov.	Dec.	
1826—1835	1.302	1.539	1.310	1.869	1.864	1.873	2.590	2.518	3.077	2.371	1.969	1.786	24.039
1836—1845	1.927	1.691	1.422	1.068	1.829	1.908	2.131	2.312	2.433	2.708	3.147	1.378	24.064
1846—1855	1.843	1.408	1.300	1.722	1.864	1.859	2.933	2.416	1.857	3.237	1.825	1.375	23.573
1856—1865	1.566	.936	1.477	1.422	2.359	2.450	1.776	2.456	2.481	2.519	1.932	1.264	22.532
Average..	1.6595	1.3912	1.3772	1.5202	1.9790	2.0235	2.3623	2.4225	2.4620	2.7312	2.1932	1.4257	23.547

Home Correspondence.

Effects of the late Gale and Snow-storm.—The trees at Kew withstood nobly the terrific squalls and the weight of snow that accumulated on them, and though the grounds are everywhere strewed with their limbs, leaves, and branches, and some are sadly disfigured, no fine tree has been destroyed, and comparatively few permanently injured. As it is, however, they have suffered more than on any previous occasion within the recollection of those connected with the establishment. Before the snow had melted or fallen off, the appearance of many of the trees was most singular. The Birches literally drooped till their upper branches touched the ground. Of the evergreen Oaks and Cedars the largest limbs, ordinarily many feet above the ground, were pressed flat on it, so that one might step from the ground upon them. The Deodars, which it will be observed have passed through the ordeal absolutely unscathed, had their branches pressed close to their sides, and looked like ghostly extinguishers. Arbor-vitæs, Cypresses, Juniper and Irish Yews seemed in many cases torn asunder, or

split in twain by wedges of snow, or single branches had been pressed outwards and extended at right angles, like telegraph arms; whilst in some places the deciduous shrubs, as Lilacs, Snowberries, Gueldres Roses, &c., were literally pressed flat on the ground, as if a gigantic roller had passed over them. The chief damages sustained have been:—In the Botanic Gardens the great Araucaria has lost three principal limbs, and is much disfigured; the seven sisters (Elms) have lost several large branches, as have the fine Laricio at the entrance gates, and the old Cork tree. The skylight on the roof of Museum No. 1 was blown off, but no further damage done. In the Pleasure Grounds the fine evergreen Oak and Cedar near the flagstaff are terribly disfigured. The top of a Pine near the Arch is blown off; five Cedars near the Pagoda are seriously injured, and one almost destroyed. The grounds are everywhere strewed with large branches of Elms, Firs, Birches, Oaks, Limes, and Beeches, of which trees the two latter have suffered least. Four large branches are broken off the Cedar near the Brentford Ferry Gate. In the Queen's Cottage Garden a Horse Chestnut is blown down, and many other trees damaged. In the Palace Gardens, Arbutus, Arbor-vitæ, Lilacs, &c., are completely prostrated, and some literally squeezed flat on the ground. Three large limbs are broken off the fine Cedar, which is greatly disfigured. One large limb of the Morus alba, and the branches of various other trees, strew the ground. Very great as the damage has been, it is gratifying to be able to add, that, with the exception of one Evergreen Oak, the Araucaria, and the Cedars, our noblest trees have suffered comparatively little, and the young trees not at all. The Deodars, owing to the form of their branches and pendulous habit, have wholly escaped injury, and the condition of the houses shows that they are in a very satisfactory state of repair; the snow not having broken the lights, nor the gale removed any of the sashes. *Jos. D. Hooker, Director.*——It may interest some to know that a few of the fine old trees in the Fulham Palace Gardens have suffered much injury from the late snow-storm, which, together with the strong easterly wind that accompanied it, has done more mischief to our evergreen and deciduous trees than has happened to them during the last 30 years. Some of the oldest specimens, hitherto the pride of this place, that were probably planted by the famous gardener Mr. London about the time of or before the Revolution in 1686, are, I am sorry to say, a total wreck. The old Cork tree, supposed to have been planted by Bishop Compton 180 years ago, is much injured; the oldest Judas tree (Cercis Siliquastrum) in Britain is also damaged; but what I have most to deplore is, that our Quercus Ilex, a noble specimen, which is said to have been planted 180 or more years ago, has likewise fallen a victim to the weight of the snow and fury of the gale. Large branches of Cedar of Lebanon have also been broken off. In short, of the storm in question, I fear we shall have cause to have long remembrance. *D. Cunningham.*——The night of January 10, 1866, will never be forgotten by those who witnessed the tornado which for many hours raged in a most awful manner. During the night of the 9th we had tempestuous gales of wind and driving storms of hail, sleet, and rain. The 10th was mild and quiet as a May day, the sun shining all day, but not a bird was giving us a song, although on the previous day many song-thrushes and hedge-sparrows were singing, and the storm-cock was screeling in every direction. The barometer had been very low, but at 3 A.M. on the 11th it was lower than I ever saw it. The snow fell in balls and lumps such as I never before met with. About half-past 3 a square of glass was smashed in my bedroom by one of these balls, and in poured the snow and wind with the force and roar of a steam-engine; fortunately there are shutters to all our windows, which I soon closed. A large tree was blown down against the end of my cottage, just missing the gable and the room I am now writing in. Daylight showed us an awful wreck; it was still blowing and snowing; trees were falling in all directions, and the hurricane increasing, it became dangerous both in doors and out. Two trees came down close to my house; the head of one smashed in the window close to my desk, and had it not been for the strong window-shutters inside, it must have swept me into eternity; thank God, I am this time spared. The destruction of glass about the hot-houses, Pine-pits, &c. by the great snowballs is fearful. I can now see how they were formed; the trees were all cased on the hurricane side to a considerable thickness with the drifted snow; then by a severe twist it was rolled up, and away it went in great lumps of several pounds weight—woe to the glass or tender plants it came down upon. At 9 A.M. the tornado was raging more awfully than ever, the snow driving at the rate of from 60 to 70 miles an hour, in the straight bite of the wind from N.E. by N. to S. What an awful smash in every direction! Nothing has at all approached this gale in violence since the memorable hurricane of the 29th November, 1837, which was a south-wester with heavy rain; and we have not had such a snow-storm since the year 1814 to my knowledge. The number of trees uprooted is very large indeed. I ran my tape over a few as I passed:—Populus canadensis alba, girth 14 feet 6 inches, length of stock 49 feet, height of tree, 114 feet; a Beech, girth of stock 17 feet, length 26 feet, height 80 feet; another Beech, girth 17 feet, stock 30 feet, height 80 feet; an Elm, girth 15 feet, stock 30 feet, height 100 feet; old English Oak, girth 30 feet 6 inches, height 80 feet; these and others that have weathered many a storm are now levelled. The hurricane subsided at noon, after being at its second and greatest violence from 9 to half-past 10 A.M.; during these 80 or 90 minutes, it was truly awful, roaring, howling, cracking, and smashing in all directions. It would be of interest to know the time of its greatest violence in various localities; here, when at its height, the wind was straight south-east. It was followed by a calm sunny afternoon, and a clear steady frosty starlight night to midnight, the wind due north; the wind then backed to west, then cloudy with a shower, cleared and froze again; then a severe thunderstorm and quick successive lightning from north-east to south-east, which continued from half-past 1 A.M. till 5; then a pelting heavy shower. The thermometer at 6 indicated 38°, it was at 28° at 10 P.M., eight hours previous; between 6 and 7 A.M. it sunk again suddenly to 28°, and the ground became dangerously slippery through everything being covered with a sheet of clear ice. The 12th was a beautiful sunny clear day, the thermometer indicating from 38° to 44° all day. The variation of the thermometer and barometer has been something astonishing, also the wildness of the storm glass. I can hardly believe my own eyes, the face of the country is so altered, and the landscape so changed, new views and new scenes being opened up by sea and land. What a picture of destruction I have seen to-day in a large plantation of Scotch Fir, Spruce, Spanish Chestnut, Oak, &c., from 60 to 90 feet high; one part of it, several hundred yards in length and breadth, is levelled—nearly every tree, as if mown down, all lying one way—one on the other, but not quite extending through the plantation to the S.W. side. Here is a destruction of many hundreds of fine trees at one sweep, and I expect in less than two minutes. The leaves of Hollies, Laurels, Portugal Laurels, Evergreen Oaks, Ivy, Rhododendrons, and other tough-leaved evergreens, are torn into little pieces; cart-loads of them have been driven up like chaff. This will give some idea of the violence of the wind. But little damage has been done in the arboretum; the Coniferæ have stood the hurricane wonderfully well. *James Barnes, Bicton, Jan.* 12.——"Rusticus," in a letter to the *Times*, alluding to the extraordinary devastation which the late storm has committed among the Fir tribe, observes—"It is not only the possessor of a terraced garden, fashioned by a professor, and furnished with exotics by a nurseryman, who is the victim of this unexpected invasion. The hardiest of the Fir tribe—the Scotch Fir, which grows where nothing else will grow, and which braves the violence of any ordinary tempest in our temperate climate—has on this occasion succumbed to the fury of the elements. The oldest and finest have suffered most in the place where I reside, not 40 miles from town. Hundreds of fine trees, just arrived at the age when their form and beauty begin to develope themselves, have been either totally wrecked or sadly mangled; even Junipers and Hollies have not been spared, while Ilexes and Lucombe Oaks have fared equally ill. The Cryptomerias have suffered, though not so badly; only the Wellingtonias—perhaps from the circumstance of their being less exposed—have escaped without injury. Nothing like this has happened during the last 40 years. It is not the wind alone nor the snow alone that has done it, but the combined force of both; and what that force must have been may be ascertained by any one who will take the trouble to calculate the leverage which a gale of wind acting with a given number of pounds' pressure upon the square inch, would bring to bear upon a tree whose branches were laden with snow to the extent of perhaps three pounds weight to the square foot."——Many years have passed away since so much damage was done in a single day to trees and shrubs as that effected by the combined snow and wind on the 11th. The snow commenced falling at an early hour of the morning, and with daylight the wind began to rise, gradually increasing in strength till it blew a strong gale from the N.W. The temperature being low, the snow adhered to the branches, especially to all kinds of evergreens, and the force of the wind acting on this increased weight has grievously mutilated many of our most ornamental trees. The Cedar, the Spruce, and the Scotch Firs have suffered most, probably in consequence of their denser foliage retaining more snow; but other sorts of Fir, the Ilex, and even deciduous trees, are much broken, and many thrown down. It would seem that when one of the topmost branches gave way, its weight, resting upon the one beneath it, broke that off also, and in this manner as many as nine branches of a remarkably fine Douglas Fir growing in these grounds have been broken down. Some old and highly picturesque Scotch Firs, which have long been a principal ornament of one of the parks attached to this place, are now mere skeletons of what they were a week ago, several of them being so greatly disfigured that they will have to be cut down. Many promising young trees of the Spruce have lost two or three yards of their tops, and some old trees have been similarly beheaded. In short, the damage done is immense, and to an admirer of trees the sight is a lamentable one. *J. B. Whiting, The Deepdene, near Dorking.*

Japonicas.—Walking to-day down the centre aisle of Covent Garden Market, I noticed at one of the fruit stalls some strange-looking things under the above name. They were about the size and had much the look of shrivelled acorns. They had moreover a pleasant sub-acid toffy-like taste. What could they be? I fancied that they were the offspring of some species of Japanese Palm, but the woman at whose stall they were declared them to be the produce of a tree with large leaves and white flowers. Could they possibly be the dried fruit of Eriobotrya japonica? Perhaps Mr. Fortune may be able to solve the enigma. *J. B.*

Wages in Nurseries.—I have noticed several communications concerning the insufficiency of wages paid to working men in nurseries—12*s.* per week has been admitted to be too low a wage for gardeners working in nurseries. What then is a nursery labourer to do with 10*s.* per week, which is the wage paid in a large nursery in the county of Norfolk; and which amount is received only when the weather proves fine, and there is no loss of time. It is no wonder that nurseries are so thin of good persevering and industrious young men. The fact is, as soon as they get any insight into their work they leave for the gentleman's garden, where they get 3*s.* or 4*s.* per week more. Their places are thus filled by farm or other labourers who have no knowledge of the work they are set about, and the oversight of these becomes a wearisome task for a foreman or manager. I should like to know which is the cheapest, a farm labourer at 10*s.* or an experienced nursery labourer at 13*s.*, which I consider is equal to 15*s.* in a London nursery. Nurserymen, ask yourselves what are your men to do with 10*s.* or 11*s.* per week, taking into account the present high price of provisions? *A Nursery Labourer.*

Baree Sugar.—What is the botanical name of the plant from which Baree sugar is procured? *J. K. Moffat.*

Notices of Books.

The Treasury of Botany; a Popular Dictionary of the Vegetable Kingdom, &c. Edited by John Lindley, Ph.D., F.R.S., and Thomas Moore, F.L.S, assisted by numerous contributors. In Two Parts, pp. 1254. London: Longmans.

The appearance of this work is a cheering sign of the progress that Botany, in common with the other natural sciences, is making with the general public. A demand has arisen for a trustworthy book for general reference, a book which, without being shallow or puerile, shall, so far as is possible, be divested of dry technicalities and bald details. The present work is intended to, and we fully believe that it will to a very great extent, satisfy that demand. It comprises, under the form of a dictionary, a brief account of the principal families and genera of the vegetable kingdom. The leading structural peculiarities and points of distinction between these groups are given in as concise and simple language as is consistent with accuracy. Where any species possesses interest for its utility, its beauty, or the conformation of its parts, special notice is taken of it. In this way we find in the work before us not merely a series of descriptive articles relating to the types of vegetable structure, but also copious details on the uses of plants for medicinal, economic, or æsthetic purposes; with which is intermingled pleasantly enough much of what we may call plant lore, such as popular legends and traditions, and extracts from prose and poetical writers concerning plants. A full glossary and lists of popular names of plants, &c., are valuable features of the work. In truth there is comprised within the compass of these little volumes a vast amount of information which was previously inaccessible to the general reader, or to one not having access to a large botanical library.

In so comprehensive a work, the compilation of so many contributors, some errors of fact as well as errors of the press must have been overlooked, but few will be cynical enough to decry the book on that account, the more especially as the names of the contributors are a sufficient guarantee of the general accuracy of the articles written by them. The best authorities have been, we doubt not, consulted by the several writers, who have also added in many instances the results of their own personal observations. Increased confidence in the value of the book will be felt when it is seen that Mr. Berkeley is responsible for the cryptogamic articles, Prof. Baifour for most of those relating to the natural orders, Mr. Moore for the Ferns, his namesake of Glasnevin for the Grasses, Mr. R. Thompson for fruits, the late Mr. Alexander Smith for the economic plants, and Dr. Masters for those of medicinal interest;

Florists' Flowers.

The Apiary.

DYSENTERY AMONG BEES.—The weather which has prevailed during the last few weeks has been very favourable for the promotion of the ravages of dysentery. Practising upon the old rule of home-observed remarks, I was led to put a good deal of attention to my apiary to-day, the 15th of January. I found the bees flying out from all the hives, and I was not very sorry to see some few have cleansed of the disease in question. At last I came to a hive where I was very sorry to see some few have died and dying from this cause. Still they were not numerous, and the majority of the bees flying on and out seemed healthy, so that I trust to be spared from the ravages which have in some former years played sad havoc among my hives. It may be accidental, but the hive in which this has appeared has the cushions rather contracted, while some which have very little cushions have as yet shown no signs of dysentery. Should here fresh get in after the present change weather, it will, I fear, be found that the thinner will be more liable to catch it than the thicker ones. I would, therefore, advise those who have cushions to keep, and if any have unnecessarily abundant, that the season of confinement is the very proper one to remove some of it, a little under or possibly a full inch from the sides of compressed cushions on the front and back of hives should appear to be needed.

The wintering of bees has been very high during the last two or three months. Care must be taken that they do not suffer from want of food. Towards the end of this month there should be means taken to feed any hive being short of stores. I should recommend a mixture of two pounds of moist sugar to a pound of water, boiled at the time to the consistency of a syrup, using that three to be brought through the hive in consequence of the feeding. A small quantity should be put in a saucer or vessel, as the most easy of getting the food. This should be done only in mild days, when it can be carried out better as recommended until the middle of March. It assuredly has the effect of causing the bees to early breeding, as since I commenced feeding in consequence of a visit I have seen the effects exhibited in the increase of brood.

Garden Memoranda.

flowering plants and Ferns had a peculiar interest This walk leads to the Nursery, a piece of ground of considerable size, on an elevated site, with a free exposure to the south. This department, besides being employed for the rearing of small trees, contains some remarkable examples of Coniferæ. A pair of unrivalled specimens of Abies Albertiana, the seeds of which were sown in 1853, are each 24 feet in height, and the spread of their branches covers an area of 57 feet in circumference. Abies Douglasii variegata is also a beautiful plant, its golden foliage contrasting well with all around it. Pinus Banksiana is 18 feet 6 inches, and montana 20 feet in height, both remarkable specimens of these slow-growing trees. Pinus monticola is 22 feet 6 inches in height; Pinus ponderosa, 19 feet; and Picea Webbiana and Fischeri, 13 feet and 10 feet 6 inches respectively: a glorious example of Picea nobilis is 18 feet in height, with a growth this year of 3 feet. Of small plants growing onwards into trees, there are multitudes of the most interesting kinds, as well as many of a more rare and choice description, amongst which we noted Abies Hookeriana, Morinda, Menziesii, Douglasii, and Douglasii variegata; Picea Pichta, Lowiana (a fine robust species), Picea magnifica (very beautiful), and Picea robusta, very handsome and distinct. There were also Picea cephalonica, Pinsapo, grandis, Pichta, Vancouveri, Pindrow, Webbiana, Nordmanniana, cilicica, amabilis, &c. Of Pinus there were Lambertiana, Jeffreyii, Craigiana, excelsa, monticola, flexilis, &c. There were, moreover, vast numbers of beautiful Deodars, Wellingtonias, Albert Yew, Menziesii, Thuja, Lambert's, Lawson's, and the fragrant Cypress, together with many other sorts, all in admirable condition.

A little further onwards is the kitchen garden, which occupies an area of an acre or two, admirably cropped, and producing excellent vegetables, as well as good examples of Apple and other fruits; and, at the period of our visit, the borders were gay with beautiful flowers. There is an excellently-constructed half-span vinery, at one end of which were some admirably ripened Muscat Grapes of large size, and of that golden colour which is so much prized, but which is so seldom attained; they were in short the best we had seen for many a day. Associated with these was a Black Prince Vine, also producing an excellent crop of very handsome bunches—faultless both as regards colour and size; but strange as it may appear, the other Vines in the house, for some unexplained reason, refuse to grow; nor could Mr. Patterson, the enthusiastic and excellent gardener, assign any reason for so very exceptional an occurrence.

There is also a somewhat lofty span-roofed Conifer house, 30 feet in length, and 18 feet in width; the upper part of the roof on the south side is boarded, so as to afford shade to the trees underneath. The door is in the centre of the building, and there is a broad bench along the front and ends, on which square pans are thickly set, teeming with vast numbers of young seedling plants, among which were the following species, viz. Picea grandis, lasiocarpa, amabilis, Craigiana (new), Peuce, Apollinis; Abies Pattoniana, Hanburyana, Parryana, Engelmanni, Menziesii, Morinda; Pinus excelsa, Murrayana, insignis, monticola, Lambertiana, Fremontiana; Thuja Menziesii, Craigiana, dolabrata, and Doniana; Cupressus Lawsoniana, torulosa, fragrans, and macrocarpa; the Umbrella Pine; the Wellingtonia, Araucaria, &c. On the floor of this house were large specimens of Indian and Mexican Cypresses, the latter bearing cones. We had on a similar elevation on the chalk hills of one of the southern counties of England, raised and grown onwards into specimens fully 16 feet in height, some of these Mexican Cypresses, and they were the gems of a large collection, the admiration of all beholders, but the winter of 1860-61 brought them swift and sudden destruction.

Growing in the fine cultivated soil of the kitchen garden are a pair of very handsome specimens of Araucaria imbricata, 16 feet in height, and robust in character. A pair of very elegant Deodars enjoy the same liberal treatment, and are also very beautiful. Outside, but close to the garden in question, are also some admirable examples of evergreen trees; Picea grandis is more than 16 feet in height, and Picea Nordmanniana, 12 feet, both singularly beautiful. The broad-leaved variety of Douglas Fir is 27 feet in height, and its spreading branches display a breadth of deep dark green foliage, such as we have not seen elsewhere exhibited, except on the sloping sides of these granite formed Scottish mountains. Abies Morinda, Thujopsis borealis, the Weeping Juniper, and Taxodium sempervirens were also present, in the shape of some healthy and elegant trees.

This estate, which is of considerable extent, possesses, as has been already indicated, a considerable variation of surface. The soil on the more elevated portion is of a peaty character, whilst that on the lower range of the hills and in the valleys is of a light loamy nature, and plantations are formed all over it, both on ground that has been trenched and drained, as well as in the existing woods and wastes, without any previous preparation, nor are the plants under the latter conditions aided by the addition of peat soil, or stimulant of any kind whatever. The soil and climate appear especially suitable for the growth of Coniferous trees, the Picea section in particular grow at a rapid rate. The whole of the young stock will be planted out all over the estate in suitable situations, Mr. Patton's object being to fairly test the description of trees that are most suitable to the soil and climate of these northern elevated regions. With Coniferous trees Mr. Patton's name has long been intimately associated, and in hours snatched as it were from the duties of an arduous profession, he has watched and tended with no ordinary care the raising of a large and choice collection of them, from the sowing of the seeds to the development of their beautiful forms. In 12 short years the elegant Abies Albertiana has grown 24 feet from the time the seed was deposited in the ground. *D.*

Calendar of Operations.

(*For the ensuing week.*)

THE present is an excellent time for eradicating insects, especially those of the scale family, for the extermination of which vigorous efforts should now be directed. Where the young wood has become firm the best of all tools and materials for this purpose are the sponge and syringe, with hot water (heated to from 110° to 130°) and soft soap. Let every tie be unfastened, as these are their favourite hiding-places during winter; and where wire trellises are used, they should also be thoroughly washed with the hot water.

FLOWER GARDEN AND PLANT HOUSES.

During the present windy weather lawns should be carefully looked over daily and cleared of dead spray from trees, worm casts, &c. Walks should be freed from weeds, and neatly rolled—operations which in the majority of cases require attention rather than much additional labour. In plant houses the principal work will consist in keeping them and their inmates scrupulously clean. Conservatories and other show houses will soon be gay with forced plants, of which a supply must be kept up by means of successions introduced into heat as often as may be necessary.

AZALEAS.—A few of the most forward plants intended for blooming early may now be placed where they can have a temperature of from 50° to 55°. Water carefully when necessary, and in mild weather ventilate freely.

CAMELLIAS.—Some of these will now be in flower. Water must therefore be liberally supplied, and air given tolerably freely during fine weather.

CINERARIAS.—These require careful attention in the way of watering. Do not place them so close together as to touch one another, and be sure to keep them secure from frost.

CHINESE PRIMROSES.—Plants in bloom should be introduced into the greenhouse or conservatory, and others brought on to succeed them as their beauty fades. Do not let them suffer from want of water.

JASMINUM NUDIFLORUM.—The bright yellow Primrose-like blossoms of this hardy Jasmine have such a cheerful look at this time of the year, when flowers are scarce, that a few plants of it should always be kept in pots for decoration in-doors, where, intermixed with green-leaved plants, they have a fine effect.

PELARGONIUMS.—Specimens intended for flowering in May should be placed as near the glass as possible; let the temperature at night be about 50°. That for the later blooming plants should not be above 40°.

SOLANUM CAPSICASTRUM.—This, together with S. Pseudo-Capsicum and other sorts bearing small round bright-coloured fruit, are very useful at this season for purposes of decoration. See, therefore, that those in conspicuous situations do not suffer from want of water, especially if unavoidably placed in the neighbourhood of hot pipes.

VIOLETS.—Let pits, in which the Neapolitan is grown, have plenty of air while the weather is mild.

FORCING GARDEN.

During open weather like the present, fire heat should be used with as much moderation as possible. Keep an eye to the maintenance of constant successions of crops.

ASPARAGUS.—Make a bed to succeed that in use. On fine days draw off the lights to allow the heads to acquire their natural flavour and colour.

CUCUMBERS.—Keep down thrips and red spider on these, by maintaining a moist healthy atmosphere.

FIGS.—Trees in pots may now be started, beginning gradually at first and increasing both heat and moisture by slow degrees as the plants progress in growth.

MUSHROOMS.—Prepare horse-droppings for beds to succeed such as may soon become exhausted.

PEACHES.—Give abundance of air during the day, keeping gentle fires at the same time, so that during the present mild weather little fire-heat may be required at night.

PINES.—Plants intended for fruiting during the summer must now have careful attention. Let them have a steady earth temperature, and a top heat of about 65° at night.

VINES.—See that there is always a steady warmth in the covering on the outside borders of early houses. Attend to the stopping and tying-in of young shoots as they advance in growth. Let Hamburghs have a night temperature of about 65°. Muscats should be kept 5° or 6° higher.

HARDY FRUIT AND KITCHEN GARDEN.

While the weather keeps mild, new fruit trees may be planted. Where old trees, too, are not growing well, a portion of the soil may be carefully removed from their roots and replaced by better material. All unoccupied ground should be rough dug, trenched, or ridged, regulating these operations according to the nature of the soil and the character of the preceding and contemplated future crops. Keep frost, should it occur, out of fruit rooms, and remove all decayed fruit. Diligently proceed also with pruning, nailing, and training.

APPLES.—Let all trees infested with insects have a thorough cleaning and washing either with Gishurst Compound or with soap and hot water as mentioned above. Apples and Pears may even be syringed with water of the temperature of 160°.

BEANS.—If not already done, plant Early Mazagan in a warm situation.

LETTUCE.—Protect these in bad weather, but expose them freely on all other occasions. Sow for an early crop.

RHUBARB AND SEAKALE.—Continue to introduce into warmth successions of these, as plants in use become worn out.

STRAWBERRIES.—A few may now be pushed forward; but do not drive them too fast, or the blossoms are apt to become "blind." During mild weather those in frames for succession should have plenty of air in the daytime, but at night the lights should be put on in order to secure them against frost.

STATE OF THE WEATHER AT CHISWICK, NEAR LONDON.

For the Week ending Jan. 17, 1866, as observed at the Horticultural Gardens

Jan.	Moon's Age	Barometer.		Temperature.					Wind	Rain.
				Of the Air			Of the Earth 1 Foot deep	2 Feet deep		
		Max.	Min.	Max.	Min.	Mean				
		in.	in.	deg.	deg.	deg.	deg.	deg.		in.
Thurs.	11	29.981	28.792	44	17	35.5	42	43	S.W.	1.00
Fri.	12	29.992	29.662	34	7	23.0	41	43	N.W.	35
Satur.	13	29.716	28.882	41	35	38.0	40	42	S.	32
Sunday	14	29.845	29.716	46	32	39.0	42	43	S.W.	11
Mon.	15	29.961	29.812	41	36	38.0	41	42	S.W.	02
Tues.	16	29.931	29.670	50	42	46.0	44	43	S.	16
Wed.	17	30.174	30.116	52	44	48.0	44	44	S.W.	06
Average.		29.861	29.591	42.0	31.3	35.6	41	42.5		2.05

Jan. 11—Heavy fall of snow: lodging very heavily on trees and shrubs: frost at night.
— 12—Snow melted: fine: very fine: sharp frost at night
— 13—Thawing rapidly, with south wind: wet and stormy: overcast
— 14—Densely clouded, strong south wind: fine: boisterous.
— 15—Clear: very fine throughout.
— 16—Rain: fine: mild at night: rain
— 17—Dark and densely overcast: rain: overcast: warm at night

Mean temperature of the week 4 deg. above the average.

STATE OF THE WEATHER AT CHISWICK,

During the last 10 years for the ensuing Week, ending Jan. 27, 1866

Jan	Average Highest Temp.	Average Lowest Temp.	Mean Temp.	No. of Years in which it Rained	Greatest Quantity of Rain.	Prevailing Winds.						
						N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.
	deg.	deg.	deg.		in.							
Sunday..21	42.2	32.9	42.6	18	0.48 in.	1	5	5	1	1	12	2	2
Mon. ..22	44.1	32.3	37.2	16	0.57	3	3	1	5	2	10	0	1
Tues. ..23	43.0	31.0	37.0	18	0.27	2	3	2	3	8	14	4	4
Wed. ..24	42.7	30.7	36.7	18	0.63	1	3	5	2	1	6	9	3
Thurs. ..25	42.3	29.3	35.8	20	0.51	2	5	3	1	2	10	5	1
Friday ..26	41.7	30.5	36.1	19	0.50	1	6	3	1	2	10	5	1
Satur. ..27	41.6	28.8	35.2	18	0.67	3	3	4	1	3	9	5	2

The highest temperature during the above period occurred on the 25th 1846 and 27th, 1861—therm 56 deg.; and the lowest on the 25th and 27th, 1855—therm 15 deg

Notices to Correspondents.

BOOKS: *J. C.* Sowerby's British Wild Flowers.—*A Novice.* Kemp's "How to Lay Out a Garden" will be useful to you, you may also glean a good deal from such works as Downing's "Landscape Gardening" and Repton's "Landscape Gardening." A knowledge of plane geometry and perspective would be very useful in certain cases.—*W. R. P.* The books you name are similar, though different. For ourselves we should decidedly prefer Thompson's "Gardener's Assistant," which, besides being the work of a practical man, has the advantage of being the more recent of the two.—*Kent.* McIntosh's "Book of the Garden," or Thompson's "Gardener's Assistant," will either of them answer your purpose the latter is the more compendious.

BULBS: *Loudham.* Specimens often fail if placed in too much heat, which probably happened in your case. Peat soil is scarcely fit either for them or Hyacinths.

BURY HILL GARDENS. Our correspondent "I." points out, in the description of the gardens at Bury Hill, two errors which require correction. In the second line of the range of hothouses for "col. 5," he wishes to say: "to induce the extraordinary development which in Mr. Speed's hands the several varieties he has cultivated have obtained:" for 'hands' has been mis-printed 'worms.' Again, in p. 35, "Indian Melons" has been printed for "Indian Azaleas."

CUCUMBER BEETLE, *Lucidina.* We can only conclude from your statement either that the soil is in fault, or that there is something wrong about the bottom-heat, and without further particulars we cannot say which is most probable. Is the bottom-heat, of which you say you can get any amount, sufficiently under control, or is there sufficient moisture with it?

INSECTS: *J. A.* The minute eggs found at the base of the twigs of your Plum and Pear trees are those of the Bark mite, noticed in our last week's Notices to Correspondents.

LACE: *Silvertwould.* The History of Lace, by Mrs. Bury Palliser. Low & Marston.

MONSTERA. Received with thanks.

NAMES OF FRUITS: *B. A., East Sheen.* 1, Scarlet Nonpareil; 2, Sweeney Nonpareil Apples.—*D. & H.* Josephine de Malines Pear.—*Pomona.* 1, Flanders Pippin; 2, Brabant Bellefleur; 3, King of Pippins; 4, Court of Wick Apples.—*M. & P.* 1 (not known), 2, Tulip; 3, Rymer; 4, Tower of Glamis Apples.

NAMES OF PLANTS: *A. B.* Rivina humilis.—*E. Moses.* Chimomanthus fragrans grandiflorus.

PHASIANUS: *H. W. N.* Received with thanks.

Myatt's Prolific Ashleaf Kidney Potato for Seed.

MR. J. MYATT, of Offenham, Evesham, has a fine sample of this excellent variety to offer this season; also the old ASHLEAF KIDNEY, the ROUND ASHLEAF (a very good second early), and MONA'S PRIDE; the last-named variety having been raised from the mover. Mr. Rowbridge, Isle of Man, last season. Price 6s. per bushel, the three first-named varieties, and 5s. per peck of 14 lb.; Mona's Pride. Remittances expected from unknown correspondents. Price to the Trade on application.

A few quarters of the ESSEX RIVAL PEA for Sale, a good sample

The Earliest Variety of the Ash-leaf Kidney Potato is Mona's Pride.

MR. MYATT has much pleasure in offering this first-class EARLY POTATO, the stock of which has been saved from sets kindly sent him by Mr. Rowbridge, of the Isle of Man. In the *Gardeners' Chronicle* of August 26, page 795, it is described by a correspondent as the Earliest and best of the Ash leaf varieties; also at page 907, September 2, it is said by another correspondent, "All must give way to the superiority of Mona's Pride." Here, at Manor Farm, it has proved all that can be desired

To be sent out in Pack Bags of one Stone at 5s., delivered free to any Railway Station in London. The usual allowance to the Trade where not less than a sack of four bushels is ordered.

Terms cash from unknown correspondents, and no orders from such will be attended to unless accompanied by a remittance.

Manor Farm, Deptford.

SEED POTATOS from the North of Scotland.—The Subscriber having for a number of years paid much attention to the purity of his stocks of Potatos, now offers the following, grown in Inverness and Ross-shire, with full assurance of fairness:—

TAYLOR'S FORTY-FOLD	DALMAHOY EARLY.
WALKER'S EARLY REGENT.	FLOUR-BALL REGENT.
SKERRY BLUES.	

They will be sent out (packed in 2 cwt sacks) in Ton lots of single or assorted kinds, and delivered free at London, Newcastle, and Liverpool at very moderate rates. Orders will be meant on applying to

ALEX. SIMPSON, Seafield, Inverness.

Seed Potatos.

MARSH AND PERKINS, 42, Drapery, Northampton, beg to offer the following, all true to name:—

	Per Cwt		Per Cwt.
Webb's Imperial Kidney.	6s.	Soden's Early Oxford	5s.
Flukes, Kidney	6s.	Dalmahoy	5s.
Daintree's Prolific	5s.	Aylesbury White	5s.

ASPARAGUS ROOTS, 2 years old, 10s. per 1000.

Terms: Cash.

Hill's Incomparable Dwarf Cabbage.

E. P. FRANCIS AND CO. have again great pleasure in offering the above invaluable CABBAGE, it having fully sustained the character given of it, and is allowed to be the best Early Dwarf Variety ever offered. Price 1s. per packet.

The Nurseries, Hertford, Herts.

Their NEW SEED CATALOGUE is now ready, and will be forwarded gratis on application.

Surplus Stock.

NEW and GENUINE WHITE SPANISH ONION, 1, 6d. per lb.

NEW and GENUINE BROWN GLOBE ONION, 2s. per lb.

Terms Cash. A remittance must accompany all orders from unknown Correspondents.

FRED. GEO. SEE | Merchant and Grower, Bridgewater

TRUE WHITE SPANISH ONION SEED. £5 PRIZE. The Grapes from which this seed was grown obtained a First Prize of £5 for the best Grapes exhibited, also grown by the competitor on land within 10 miles of Banbury, in a sweepstakes, in September, 1865, when there were 25 entries, the 24 Onions weighing 20 lb. 14 oz. They were also exhibited on Mr. P. J. Perry's stand at Birmingham; and obtained a First Prize at every Horticultural Show where they were exhibited the same year. Only a few pounds for sale, 2s. 6d. per ounce, post free. May be had of the Grower.

J. A. TAPLIN, Printer and Bookseller, Banbury, Oxon.

Dewar's Northumberland Champion Celery.

HENRY DEWAR AND SON beg respectfully to offer Seed of this excellent solid WHITE CELERY, acknowledged by all to be the finest grown of its class. Awarded a First-class Certificate at International Show, South Kensington, December 9, 1865. In sealed Packets 1s. each, post free 13 stamps. Usual allowance to Trade.

DEWAR'S IMPROVED SHORT-TOP RED BEET.—They also beg to offer Seed of this very superior Beet, awarded First-class Certificates by the Royal Horticultural and Botanical Society, November 7, 1865, and at the International Show, South Kensington, December 9, 1865. In sealed Packets 1s. each, post free 13 stamps. Usual allowance to the Trade.

Seed Establishment, 57, Grey Street, Newcastle-on-Tyne.

SEED PEAS and BEANS.—A few Quarters of the following choice varieties, well harvested and warranted true to name, at the following low prices for cash:—

VEITCH'S PERFECTION, at 12s. 6d. per bushel
EUGENIE OR ALLIANCE, at 10s. per bushel
BLUE SCIMITAR, at 9s. per bushel
NEWINGTON'S WONDER LIDNEY BEAN, at 10s. per bushel
TAYLOR'S BROAD WINDSOR BEAN, at 6s. per bushel
Apply to ANDREW FETTES, High Street, Chatteris, Cambs.

RAYNBIRD, CALDECOTT, BAWTREE, DOWLING, AND COMPANY, Limited,
CORN, SEED, MALTING, AND OILCAKE MERCHANTS,
Address—Corn, Seed Market, Basingstoke.
Samples and Prices Post free on application. Prize Medals, 1851, for Wheat; 1862, for "Excellent Seed Corn and Seeds."

Improvement of Grass Lands.

SUTTON'S RENOVATING MIXTURE for IMPROVING OLD PASTURES should be sown early. Our Renovating Mixture consists of the finest Grass and perennial Clovers. If the seeds are sown early in the season, the improvement of the pasture will be very great, and at a small expense. Quantity of Seed required, 8 to 12 pounds per acre. Sow in February, March, and April.

From T. E. OSMOND, Esq., *Thorpe-le-Soken, February 27, 1865*

"Your Renovating Mixtures for old pastures have answered my purpose well."

From J. C. BLACKETT, Esq., *Thorpe Lee, Egham, September 30, 1865*

"Mr. Blackett will be obliged to Messrs. Sutton to send him Renovating Grass Seed, of the same quality as last year, which was excellent."

From Mr. GEORGE VENTER, *Gardener to* J. H. Buchan, Esq., *The Grove, Hanwell, February 28, 1865.*

"Your Renovating Mixture of Grass Seeds has given the greatest satisfaction. I had a very fine crop of hay last year."

From Mr. JOHN LOWSLEY, *Gardener to* Thomas Wright, Esq., *The Mynhyn, Tockwith, May 12, 1865.*

"The Seeds sown last year are doing exceedingly well"

SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

FINE GRASS LAWNS in FLOWER GARDENS, &c.—The great expense of cutting and carting Turves from a distance may be avoided, and a superior Turf produced in a few months by sowing SUTTON'S LAWN GRASS SEEDS, which consist solely of the finest and shortest-growing kinds, perfectly free from Moss and other weeds.

From Mr. JOHN JOHNSON, *Gardener, Muckeray Park, Scaudchand, April 20, 1865.*

"The Lawn Seed we got last year about this time is come up excellently."

From Mr. THOMAS POTTINGTON, *Gardener to* H. W. Vincent, Esq., *Bradwell Grove, Burford, January 19.*

"The Grass Seed you supplied me with last season grew remarkably well, though sown under unfavourable circumstances. I think every seed grew well."

From HARRY H. CALE, Esq., *Tuckborough, Market Harborough, May 13, 1865.*

"The Lawn Grass Seeds I had from you last year have made a very good turf already."

From Mr. J. NIGHTINGALE, Esq., *High Street, Kingston-on Thames, May 2, 1865.*

"I may add that the Grass Seeds you supplied last year, have notwithstanding the very unfavourable season, succeeded very well."

SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

Seeds for Exportation.

SUTTON AND SONS beg to inform those who may be about to send or take Seeds to the Colonies, that their NEW GRASSES and other kinds of FARM and GARDEN SEEDS are now ready for delivery, prices and particulars of which will be forwarded on application. The following are among Testimonials recently received as to the Superior Quality of their Seeds to those usually exported from this country, as well as to the very efficient manner in which these important packings is effected:—

From A. N. ELTA, Esq., *Queenstown, Cape of Good Hope.—July 9.*

"I may mention that the case referred to was in splendid order, looking as fresh after three months' sea and six weeks' land carriage as if only yesterday packed."

From Messrs. CROUCH, *Portland, Victoria.—September 16.*

"We may remark that Messrs Sutton's shipment of seeds have given the greatest satisfaction as far as they have been tried; the Grasses, Clovers, and Lucerne are up. We find the crop will be far too thick. If the vegetable seeds turn out as well, we may say that, without exception, they are the best lot of seeds ever received in this place from Europe"

From G. MORRISON, Esq., *Superintendent of the Government and Ouzh Agricultural and Horticultural Society's Gardens, Lucknow.—July 17.*

"I received some vegetable seeds, also some flower seeds from your firm some 18 months ago, and they turned out very fine"

From Sir R. MONTGOMERY, *Lieutenant-Governor, Punjaub, Indus. May 15.*

"I am happy to tell you that the seeds you sent last year answered very well. I carried off the first prize both for vegetables and flowers, as you will see by an extract from the *Lahore Chronicle*, which I enclose."

From the Rev. R. G. LAMB, *Green Point, Cape Town.—November 7.*

"Your seeds have answered right well; one panch of such as yours is worth a hundred of the stuff sold here, which generally goes to seed before coming to perfection."

From Mr. CHAS. HASELDEN, *Bowyer Farm, near Auckland, New Zealand.—October 6.*

"The Grass Seeds you sent me arrived in excellent condition, and already present a luxuriant appearance, with the promise of abundant feed early in the coming season"

Royal Berkshire Seed Establishment, Reading

Sutton's Grass Seeds for Cultivation with Sewage and other Liquid Manure.

MESSRS. SUTTON having for several years been engaged in supplying various GRASS SEEDS for experiments with Liquid Manure on the Bagshot Sands, the Aldershot Camp, and other poor soils, are now prepared to offer the sorts which have been found to thrive best under this treatment, and confidently recommend their cultivation as highly remunerative and profitable. The quantity required per Acre is Three Bushels, and the price 8s. per bushel.

GRASS SEEDS for various other soils, particulars of which will be forwarded on application.

SUTTON & SONS,
Royal Berkshire Seed Establishment,
Reading.

The Agricultural Gazette.

SATURDAY, JANUARY 20, 1866.

—— A CORRESPONDENCE is published just as we go to press, announcing that the Government is prepared to ask Parliamentary sanction to a Bill authorising the advance of money from the public funds by way of loan upon adequate security to county or other local associations, with a view to spread the charge in respect of losses from the cattle plague over a short term of years, in cases where the amount of such loss has been considerable.

—— WE are for the present content merely to direct the attention of our readers to the returns in another page of work done by steam power under FOWLER'S, HOWARD'S, SMITH'S, and other systems of steam cultivation, during 1865.

It is significant, probably, of the commonplace agricultural status which this latest application of steam power has at length achieved that to many hundreds of applications for information, these are all the returns that we have received. Mr. SMITH of Woolston, Messrs. HOWARD and Messrs. FOWLER were good enough to send our circular inquiry out to all their customers in Great Britain, and several hundred copies were thus distributed by each. It will be seen that little more than a dozen of each of these several classes of correspondents have returned a full reply, and the true inference probably is that almost all are now so entirely in the habitual use of steam power in place of horses for cultivation, that the subject has lost that novelty and that doubtful character which at first induced a careful record of experience. Leaving till another week the task of careful, and if possible accurate estimate of the work accomplished in the examples here collected, it must for the present suffice that we point out the extreme variety of experience which is thus recorded. Of every method of steam cultivation known, there are examples of great success and also examples of failure to be met with; and it cannot be too urgently impressed on intending steam cultivators that this alternative of success or failure depends even more upon themselves and on their management, than on the system they have adopted.

We add here a reference to a contrivance especially adapted to the "roundabout" plan of steam cultivation, to which in the course of this correspondence our attention has been called as diminishing the labour of the anchorman and so as cheapening the work. Mr. BULSTRODE'S patent "snatch-block sling"* is an ingenious device for making the shifting of the pulley from one anchor to another in a great measure automatic. The two anchors are connected by a rod, along which the pulley moves as soon as it is detached from the anchor towards which the grubber has been drawn. During the outward journey of the grubber from that anchor, the snatch-block being detached from the anchor, slides to its new position in front of the second anchor, to which it is then attached, while the one already used is being replaced. The operation of shifting anchors is thus not only facilitated but guided, for the length of the rod, being regulated by the width of the grubber that is in use, determines with accuracy the length of the successive steps by which the anchors are shifted along the headland. It appears to us a useful contrivance, deserving general adoption.

* Manufactured by Messrs. HOWARD, and exhibited last December at their stand in the Agricultural Hall.

—— THE coolness of temper, the calm unruffled philosophy of certain classes at the present crisis, may be edifying to students of national character, and illustrative of JOHN BULL'S easy shouldering of a burden. But, unless we are egregiously mistaken, the voice of complaint now heard fitfully in magisterial sessions, in public meetings, in petitions and deputations to the Government, will soon be found swelling to so loud and even passionate a cry, that the nation and the nation's rulers cannot disregard it. Scientific discussion upon the theory of the plague, polite bandying of arguments and even jokes by the respective advocates of the pole-axe and the ten-drop dose, suggestions of innumerable nostrums, recommendations of precautionary arrangements, expectations of some wonderful discovery in treatment, may fill columns of the daily and weekly press; but, surrounded by the dire spectacles of the calamity, it is not easy for the afflicted stock-owner to think over the state of affairs in cold blood, and deliberate with composure upon great general principles involved in measures of relief. Out of 45 well-bred cattle, perhaps, in your yards and houses, some have sickened and died in the course of a week, some have sunk from perfect healthiness into corrupt carcases within the space of eight hours, others have been shot raving mad, and you have, perhaps, one single beast remaining in a state of apparent recovery: this is the case on the next farm to that of the present writer. Or your whole herd of 32—all the neat stock you possessed—may have perished within a fortnight: this is the pitiful case of another neighbour. Or, if your homestead be as yet spared the fell strokes that are not decimating but sweeping off all the animals in your neighbour's herds, you are anxiously waiting your turn to suffer; and you watch with trembling anxiety for the veering of the wind that shall bring on its ghostly wings the poison that no man can intercept by disinfectants, and no medical specific can grapple with after the victims are struck. So swift, so subtle, is the influence generated in the horrible fetor of many a pest-house throughout your locality, that your most painful alarm seems reasonable; and you are giving up all hope for the prolonged safety of your breeding-stock, your choice and costly bulls, high-priced cows, and pet calves and young things—all that are left you, now that your half-fat oxen have been sent unripe to the slaughter-house, at a heavy sacrifice of market returns and manure. Smitten, we say, or in daily dread of the blow, you may view the crisis with something like dismay. But we doubt if even sufferers in our heavily-visited districts are yet sufficiently aware of the magnitude and gravity of the situation.

Do you expect that the cattle plague will commit a certain amount of havoc in Great Britain, falling with dreadful severity in some localities, and lightly affecting or altogether missing others, and then, after a while, either disappear as suddenly as it came, or linger with few and unimportant seizures that will be easily subdued? Do you suppose that "rinderpest" is either an unknown visitant, so mysterious and capricious that there is no saying what it may or may not do, or a disease that will spread rapidly at first, and after a little while die out, like cholera or certain other maladies that occasionally run their brief and fitful course? If so, you must be ignorant of the well-ascertained, much-studied, and long-known character of the foe that has fastened upon us. The history of rinderpest is in our hands; eastern Europe and Asia are familiar

with its nature and habits; and we have not to deal with something new, although with something that the present generation in England has never experienced before. The fact is, that the plague does not, and will not ravage until it stops; but it will ravage *until it is stopped*. The community of cattle in this kingdom is leavened with death; and that death will penetrate wherever there is material amenable to its influence, unless its working be counteracted or destroyed. That is, from the experience of other countries, the disease will spread until no cattle remain alive except the proportionately few that have not a "predisposition" to it, unless our active measures of safety, or our medicinal treatment, can combat, restrain, or cure. And it is this conviction that impels us to say that the presence and progress of this frightful murrain do warrant any extent of panic and consternation in the country, and will certainly justify the blackest prophetic warnings.

"What need for such an outcry?" has been the feeling of the public; "a very small percentage of animals has died yet. Appeal for Governmental assistance when you have something like a general 'agricultural distress.'" Thus, because the insidious character and tremendous power of the enemy are not really believed in, we are to rouse from our apathy only after we are in the toils of the deceiver, in the fangs of the ruthless adversary, and when the greatest of efforts may prove in vain to save us. But we have already waited, in our blindness, and our nerveless tampering with opportunity, until the disease has not only passed our defences but entrenched itself in innumerable centres—whence its network of contagion is swiftly extending in every conceivable disguise, and with a subtlety that securely eludes the touch of our preventive measures. The high hand of despotic authority, acting with prompt vigour at the first outbreak, might probably have "stamped out" the plague, as it has been "stamped out" in numberless cases in foreign countries—as the Aberdeenshire men believe that they have obliterated it; but we hold it to be doubtful whether any practicable measures can now cope with the virulence, secrecy, and rapidity of the deadly agent so thoroughly established in our midst. Still, heedless of having let slip the one opportunity of striking a fatal blow, we are following up our inappreciation of the danger by a miserable feeling of our way by slow degrees to that determined and wholesale action which alone is fitted to the emergency. For, long after all the world has forewarned us, we manage to find out that animals can convey the disease in apparently healthy bodies; so we have (not quite) stopped all passage of live stock out of infected areas and upon public ways. By-and-by we shall learn by experience (what we already know very well from the teaching of the soundest authorities) that all sorts of means of contagion have been overlooked, that the *excreta* of the victims have made premises, vehicles, roads, and fields, pestilent; and the plague will burst forth again and again with its wonted malignity, in spite of our plentiful use of all sorts of sweeteners that gloss over the surface of things, and make believe to disinfect while they do but deodorize. We shall be amused with impracticable schemes for burning every straw, scraping every square inch of the inside and outside of our buildings and fences, washing with some patent chemical into every minute crack that may hold some taint of the disease. Yet the plague will most likely reveal its deadly presence all the same, perhaps months after the date of its first desolation. In fact, our very ignorance of any feasible as well as certain means of purification, no less than our attitude of inaction and our weak comprehension of the extremity of our case, fills us with the gloomiest foreboding for the future.

Panic often works misery and loss; supine indifference may bring heavier disaster, but a reasonable fear moves men to their salvation; and we may be true friends to agriculture if we state our grounds for expecting a national calamity more grievous than anything commonly thought of as the ultimate infliction of the plague.

It is needless to recapitulate the strict and searching measures of quarantine which are put in force in foreign countries, and which for a great number of years have prevented the rinderpest from reaching western Europe. Everybody by this time should be familiar with the meaning of "sanitary cordons," and with such decisive measures as destroying and deeply burying every beast in an infected quarter, stopping even the traffic of foot passengers in or out of suspected neighbourhoods, shutting up schools and churches and places of public resort in order that people may not bear the plague about with them, diverting public roads so as to avoid the neighbourhood of infected sites, forbidding the carriage of woollen goods out of a diseased circle, and many other extremely careful precautions. Is our Government, we ask, prepared to institute and enforce indispensable sanitary regulations like these? Why, they have hesitated about stopping all traffic in live cattle (and hesitated, we are afraid, until the mischief is irreparable), because it would so interfere with trade!—What did they expect? A wholesale deadly agent like this plague operates on a scale that interferes with all trades and with the very life of a nation: and wiseacres in power could not imagine that far-reaching and bitterly oppressive measures might be wanted to grapple with it. A choice of evils is before us; and if we will endure no control and suffer no hardship by way of remedy, we must inevitably bow before the pestilence, and to its ravages no man can assign a probable limit. Suppose that the Government, moved by the universal dismay, determines to attack the disease in the only known manner—as it is attacked and beaten on the Continent; or suppose that, under the Governmental initiative, volunteer "committees of safety" in every petty-sessional division, or in every parish, begin to form and operate against the enemy: in what month of this year, we ask, would the system become fairly organised and up to its duty throughout the whole area of the kingdom? for isolated, partial, and ill-timed efforts cannot hope to succeed. Will the nation pay down the necessary two-thirds of the value of every beast summarily despatched for the general benefit? If so, it must be by virtue of an Act of Parliament; and by the time that our gentlemen senators have been called from enjoying themselves, and the Session has been opened in the middle of next month, and the amiable speeches have been made on the empty complimentary "Address," and preliminary business has been disposed of, and a Bill has been introduced, and its second and third readings have been delayed because of nights being filled up with debates on everything under the moon, and the Bill has fought its way through committee, and has there been handled in "another place," and most of its able provisions mutilated or cut out, and has been sent back to the Commons, and has at last received the finishing touch at the Palace—after all this, and much more, it will be May-day, or more likely Midsummer. Well, there will probably be 300,000 cattle dead before May-day or Midsummer, judging by the present increasing rate of mortality; and at two-thirds of the average value per head—say 8*l*., the fund wanted will be 2,400,000*l*. Of course, we shall not get a halfpenny. The British nation jauntily flung down its 20,000,000*l*. to reimburse the planters for certain black chattels that had been theirs by unrighteousness and iniquity; but it is too much to expect either a lavish or cautious expenditure of English money for the mere object of delivering ourselves from a curse that may destroy tens of millions of pounds worth of our own lawful property.

It is vain to hope for general imitation of the example of Aberdeen. Awake to the emergency at the earliest moment, the landowners and tenants have, so far, found a voluntary fund of 4000*l*. adequate to "stamp out" a few hundred cases and keep the disease from making head: but had a delay of months been permitted to occur, through unbelief or apathy, where would have been their prospect of success from cordons of sworn watchers, or how would that county of innumerable cattle have raised pecuniary indemnity for losses, say as numerous as those in Cheshire? But when deaths in one county are numbered by thousands, nay by tens of thousands; when the disease has fastened upon 164 places in one county, and appears in 30 additional townships within a week (as in Cheshire)—what possibility can there be of establishing quarantine circles in time to overtake the enemy?

It appears to us that all we can now hope to do by preventive measures is to retard the progress of the disease throughout the kingdom, to save the few districts which are not yet invaded, and to provide against relapses in districts where the plague has worn itself out by the destruction or the emigration of the cattle. Despair is never the right attitude of mind for an Englishman; and by all means let us press the Government and stimulate one another for the immediate adoption of the most strenuous measures of repression; but our chief solicitude must be to start means of relief for sufferers. What those means are to be will require the most earnest consideration; and when determined upon, can be secured only by a united voice and effort of the whole agricultural public. *I. A. C.*

"THERE is much to be said on both sides," is an old two-edged saw particularly applicable to the question of Birds in their relation to the farm: one observer, for example, testifying to having examined the contents of a rook's stomach, and found therein such an array of caterpillars and wireworms as to make him conclude these birds to be the farmer's best friend; while another may find the rooks "playing old gooseberry" with his newly-sown Oats, and can testify to the truth of his assertion by showing an example with a crop full of this grain.

The fact is that the food of birds differs greatly with the season, and our experience shows that to determine the amount of good or evil which any species of birds may do from a single observation, would be as fallacious as to conclude that an Englishman's food consisted only of "bifstick and rosbif." So fully have we become impressed with the importance of extended observation and repeated examination, in order to become thoroughly acquainted with the good or evil or good *and* ill of birds on the farm, that we have commenced the inquiry by the occasional sacrifice of every species of bird we can get on our own farm at different seasons of the year, and under all circumstances examining their stomachs, and so making out as detailed an account of the diet of birds as possible.

Now one object of writing these notes is the hope that some of your readers may be induced to assist us in this inquiry, to which end we ask for notes of the following facts:—

1. The name of the bird.
2. The place or farm where shot.
3. The date of the shooting or examination.
4. As detailed an account as can be made out of the contents of the stomach.
5. The name of the observer.
6. Remarks upon the farm, &c.

Any communication which may be made on this subject will be heartily welcomed, and in any use of them that may be made they will be most thankfully acknowledged.

THE CATTLE PLAGUE.

1. The following returns were issued yesterday:—These returns do not profess to give the total number of cases which have occurred in Great Britain, but only those which have been ascertained from the official information received at the office from inspectors, whether appointed by the Clerk of the Council, or by the local authorities. The divisions of England are those of the census. Columns 1 only record the cases reported as having commenced during the weeks indicated by the headings, "back" cases being added to columns 2.

Census Divisions.	1 Number Attacked. Week ending December 30.	Week ending January 6.	Week ending January 13.	2 Total Reported Cases from Commencement of Disease. Attacked.	Killed.	Died.	Recovered.	Remaining.
Metropolitan	31	67	38	7326	3126	3464	312	384
S. Eastern ..	64	107	50	4540	1474	2939	407	289
S. Midland ..	181	786	681	8397	1646	5495	547	709
Eastern	196	266	265	7155	2660	3457	465	573
S. Western ..	85	59	40	902	237	476	90	99
W. Midland ..	143	251	264	2489	459	1419	212	399
N. Midland ..	530	455	565	2631	490	2377	265	499
N. Western ..	1823	1964	2465	11,612	531	7699	778	2604
Yorkshire ..	1446	2028	1598	14,200	825	8893	1961	2611
Northern ..	213	175	216	2949	543	949	208	349
Mon. & Wales	206	310	661	3831	96	2822	357	556
Scotland ..	1977	2649	2510	27,895	3704	15,999	4409	4192
	9093	9120	9243	94,256	15,995	55,391	10,003	13,462

2. THE LAST ORDER IN COUNCIL, being the 8th, is only another step in the slow step by step progress in stamping out this fearful visitation and destruction of the people's food which alone our Government seem able to bring their dawdling minds to adopt. I contend it is wrong, radically wrong, in principle, as not being the very best method to fully attain the object desired; in fact, only a half measure. Within the distance from me of two miles the plague has broken out and carried off upwards of three-fourths of the farmers' cattle, surmised

to have been introduced by the farmer sending his cow less than a mile along the highway on its way to a neighbour's bull. On another farm, a mile or so off, the plague a few days afterwards also made its appearance; and on Sunday, the 17th ult., two or three men were obtained out of the village of Sadberge at the high remuneration of 1*l.* each a day to assist in slaughtering 16 beasts; and no one can realise the anxiety and alarm these men returning to their villages spread around, and I am informed the farmers will not in any way employ them. Since I applied to the Bench of Magistrates at Darlington to put in force the Order in Council of the 23d November, I have twice noticed on the highway running through my property here, that cattle had been driven, as there were not only their fresh footsteps upon the footpath, but recent dung—and as this highway crosses a railway, where 14 passenger trains stop per day, and a man attends all day to the gates, no cattle could pass between the hours of 6.15 A.M. and 9.15 P.M. without the station-master or the porter, &c., seeing; but upon my inquiring I learnt from them that since the stoppage of cattle being allowed to come into the Darlington district, none had passed during the daytime. Therefore night driving of cattle is clearly practised, and that to a considerable extent, as my brother and others have also noticed the same evidences on other portions of this highway. Now it really seems unfair that the Government will not afford protection against evil doers, endangering and destroying the property belonging to the peaceable industrious inhabitants who are engaged in the important duty of manufacturing food for the people, so that it is positively dangerous to travel, or ride or walk along the Queen's highway, or ride in a railway carriage, unless you rub against a man who has contagion upon him, which will be imparted to the stock-keeper's clothes by contact, and so convey innocently the morbific matter to his byres, conveying dire ruin to him and destruction of the country's beef. The plague has also appeared in Darlington, and the poor cowkeeper with only four cows is mystified, under all his anxious cares pursued to avoid all chances of conveying the contagion, how it has invaded his byre. Obviously all these and many more evils could be obviated by adopting the British course of forcing the enemy and penning it up in its den. If I raised a revolution among the people, all fiddle-faddle womanish feelings of constitutional principles would soon vanish, and the weakest Government this country could have would declare martial law. One mode is to imprison all dangerous characters, and as soon as the plague broke out on a farm I would have the police to take possession with an organised body of well-paid attendants, and so permit no chance of the plague radiating. I would pay out of a special fund, to be advanced by the State, one-half to two-thirds of the loss incurred by the stock-owner, so that as soon as the first symptom made its appearance this stock-owner would have the best incentive to place himself, household, and cattle in full charge of the police. And as to the repayment of the money, that is a subsequent matter for consideration; and if the State does not bear it, the district or county might repay it by a rate extending over a few years. This would effectually, by the all-powerful incentive of self-interest of the cattle proprietors and the control of the police, prevent night-travelling of infected cattle, and reckless and careless men from circulating the morbific matter over wide areas of the country. Care should be taken to prevent neighbours' dogs, &c., attracted by the scent of slaughtered animals, from prowling among the most infectious matter, and carrying it directly home to their master's stock, and also to prevent prying recklessness from coming to see. A poor country shoemaker, with his only cow, had an apprentice who must needs go and see a plague-stricken beast, and then returned and infected his master's cow, which died. The inconvenience now pressing upon all is much greater in amount than if all plague-stricken premises, with their human and animal occupants, were imprisoned and paid a portion of the loss, whilst the ratepayers paid the money; and as the principles upon which the Orders in Council were founded have proved to be total failures, the disease instead of diminishing, increasing — not only, remember, in numbers of cattle attacked, but in the spread of numbers of new centres—surely experience will dictate to the most self-willed and unthinking that something new is needed. I blame the Ministry for not calling Parliament together to legislate specially upon the question, but anything masterly and determined is obviously not to be expected upon a commercial and agricultural subject like this from our present men in power, and we should organise and act under some central head like the Royal Agricultural Society, London Farmers' Club, &c. *W. A. Wooler, Sadberge Hall, Dec.* 30.

3. RINDERPEST AND SMALL-POX.—As there seems to be a growing opinion that this desolating scourge has some affinity with small-pox, I may be allowed, perhaps, to state my experience in confirmation of this theory. I had a herd of 16 cows, 10 of which were vaccinated and 6 not. The vaccinated cows are all, up to this time, healthy and well, the unvaccinated are all dead. The vaccinated and unvaccinated were kept in separate shippons, but the shippons were within 20 yards of each other, and in the same yard. The six smitten cows were separated as soon as they showed the slightest symptoms of uneasiness, and placed in a kind of hospital, and treated variously, according to the directions of several eminent authorities, whose directions were scrupulously carried out. They all died, notwithstanding. The healthy cows were all vaccinated from matter procured from the Vaccine Hospital (not inoculated from the pus of the disease), and vaccinated on the upper part of the tail. I was induced to try vaccination from some letters which recently appeared in the *Times*, and I hope these letters may prompt experiments tending to dissipate the gloom which overshadows this country. Our farmers are at their wits' end, their stocks are being annihilated, and ruin stares them in the face. *Wilbraham Tollemache, High Sheriff of Cheshire, Dorfold Hall, Nantwich, Jan.* 6. (*Times.*)

4. SECOND LETTER FROM MR. TOLLEMACHE, *Jan.* 16.—My 10 cows are up to this present time quite healthy and well. I made no difference in their treatment either before or after the operation. No medicine was given, no change of diet. Some of the cows were in milk, some were dry before calving, and one calved six days after she was vaccinated. As the question of vaccination being a safeguard against rinderpest is of vital importance in this cheese-making county, I may state that, after the most diligent inquiries, I have not been able to hear of one fatal case in this neighbourhood where the operation had been successful. Many vaccinated cows have died, but not one, as far as I can hear, where the vaccine had taken.

I have lately been trying an experiment, which I am sure will possess deep interest with many of your readers. On Thursday morning last, the 11th, I had a 13 months old Alderney heifer, which had been most successfully vaccinated, turned into a kind of loose place, 9 feet square, in which was one calf very ill from unmistakable rinderpest, and another calf which had just died from the effects of it. The dead calf was removed in about half an hour after my calf was put into the place. The sick calf died the following day. Since then two more calves ill from rinderpest have been placed with my calf, and have since died from the disease. My calf is as healthy and sharp as ever she was, notwithstanding she has been kept for five days and five nights in a most fetid atmosphere, and coming in immediate contact with these four dying and dead calves!

Surely, Sir, there is a ray of light here; and may we not hope that the same merciful Providence "in whose hands is the breath of every living thing, and whose are the cattle upon a thousand hills," may vouchsafe to do for our cattle, and by the same agency, what He has done for mankind? *Wilbraham Tollemache, High Sheriff of Cheshire, Dorfold, Jan.* 16.

5. INDEMNITY FOR LOSSES.—In a recent *Gazette* there is an article by "W. C. S." upon "Indemnity for Losses" caused by the cattle plague, which though specious, I think shallow, and sanctioning methods which tend rather to extend than arrest the further spread of the disease.

"W. C. S." states that it would be a charity to indemnify some for their losses, though forming a dangerous precedent, ignoring his own previous sentence stating that 100 years ago the Government accompanied the order to slaughter with a promise to pay—whether a part or the whole of the value of the beasts he knew not—but that in other instances it would reward those who were most culpable, *i. e.* dealers or others who, I presume knowingly, bought beasts from infected herds and took or sold them into the country, frequently into parts hitherto untainted with the disease.

Now, if reasonable compensation had been allowed at first, few beasts from infected herds would have been exposed for sale (none if a heavy penalty against such exposure had been properly enforced), so that I for one fail to see how in any but isolated instances the dishonest or careless man would have been able to make a profit out of the Government indemnity.

It is certainly right that the farmer should take the chance of ordinary disease amongst his stock, such being indeed a good incentive for him to try and keep all as healthy as possible; but I venture to think that in the case of the rinderpest, a plague terribly contagious and almost unknown in this country, and moreover in all probability imported with beasts brought to England for the good of the community in general, not of the farmer, it wears a somewhat different aspect, so that I think "W. C. S." hardly puts the matter rightly when he goes on to state that the salvage price of the carcase alone, and that only of a very small portion of the beasts killed by "Order," could fairly be claimed.

The duty of a Government, as I take it, is to look after and secure as far as possible everything that will tend to the benefit and advantage of the people under its protection; and surely no one can deny that to stamp out the rinderpest, even by rigorous measures, would alike benefit farmer and consumer; indeed all save perhaps the butcher alone. Hence, when the disease first appeared, prompt measures and effectual should have been taken by it to get rid of the plague, failing which, surely those suffering heavy loss have some moral claim to compensation, not only as salvage upon the carcase of a small portion of those killed by order of the inspectors, but even upon those that have died of the disease also.

"W. C. S." seems to think it great injustice that the public should be called upon to pay for the benefit of the farmer, but can he point out why they should not pay for their own good? If they had been compelled to do so at first, how much would they not have been saved in the price of butcher's meat alone up to the present time, to say nothing of the future? For instance, take the number of beasts "W. C. S." himself quotes, 29,700, as having died, and 12,380 as having been killed; had a high average of 12*l.* each been paid as compensation for these 42,080 beasts, how much would that have been per head of the population of England and Scotland? Just 6*d.* each! not more than the advance upon two or three pounds of butcher's meat. If this be so now, what would it have been if Government had taken the bull by the horns at first, and killed and compensated for every infected herd?—certainly not one halfpenny per head.

"W. C. S." also, after showing to the best of his ability that farmers have no right to compensation, curiously enough argues that the cow-keepers of London have a moral claim to such from the Corporation of London, inasmuch as it was from the Islington Market that they got the disease; and mark this: because it was the unwillingness of the Government to interfere with this market that has deterred it from adopting more uniform and stringent measures throughout the country.

If the London cow-keepers have a claim, why not the farmers, for from whence, if not from Islington Market, did the disease come among their herds? And if Government was, as "W. C. S." says, loath to interfere with that market when it knew the disease was there, why should the Corporation of London, and not it, be morally responsible?

It seems to me that in showing the unwillingness of the Privy Council to interfere with the Islington Market—after such warnings, too, of the fearfully contagious character of the disease as were given by Professor Gamgee, and others—"W. C. S." has done much to defeat his former arguments for non-compensation; and to prove that the Government is really responsible for much of the after-spread of the disease.

But the great question now is, how to stay its further ravages, and I cannot help thinking that if at the expiration of the term of the present Order in Council, viz., March 1st, when we may hope that the plague will be somewhat more localised than at present, a further Order extending the time, so as still more to isolate the places infected, or a decree either then or after the further extension of time, condemning the whole of the tainted herds, with or without (though I contend that the former is the more just) a certain compensation to owners, were passed, and strict extermination of all fresh outbreaks carried out afterwards, the present year would see the last of this awful murrain; but if some such measures be not taken, no one can foretell either the havoc it will cause, or the years it may still remain in the country. *A Warwickshire Farmer.*

6. EFFECT OF THE EXISTING ORDERS IN COUNCIL.—The effect of the Orders is:—

1. That the justices are not authorised to prohibit or restrain the removal of sheep, lambs, goats, and swine from place to place within their jurisdiction, except to a market, fair, or place for exhibition or sale.

2. That sheep, lambs, goats, or swine cannot be brought from any place out of the county or jurisdiction, except in compliance with the Orders in Council and of the justices of the county, &c., into whose jurisdiction they are to be brought.

3. That cows, heifers, bulls, bullocks, oxen, and calves cannot be exhibited for sale or brought from any place out of the jurisdiction or removed from place to place within the jurisdiction, except in compliance with the orders of the justices.

4. As no two local authorities appear to have adopted precisely the same form of order, the notices must in each case be referred to to ascertain the conditions upon and subject to which animals may be removed, but keeping in mind that so much of any order or notice as purports to prohibit or restrict the removal of sheep, lambs, goats, or swine from place to place within the same jurisdiction, except to a market or fair, or place of exhibition for sale, is null and void. *F. J. Wise, in the Times.*

7. CHESHIRE.—The following is the number of cases reported to the 15th inst., viz.:—Died, 8949; killed, 258; under treatment, 3034; and recovered, 738—the total being 12,979. Since the 8th inst. the disease has appeared in 43 additional places, making a total of 261 townships infected with the plague. The increase during the past week has been 3556 attacked, or 508 per diem; and dead, killed, 2510, or 358 per diem.

REPORTS OF STEAM CULTIVATION, 1865.

FOWLER'S SYSTEM.

No.	Cost of Apparatus.	Soil.	Work done. Ploughed.	Dug.	Grubbed first time.	Grubbed second time.	Depth.	No. of days, including Removals.	No. of Removals.	Coals.	Oil.	Wages.	Repairs.	No.
	£ s. d.		Acres.	Acres.	Acres.	Acres.	Inches.			£ s. d.	£ s. d.	£ s. d.	£ s. d.	
1	955 18 9	Strong clay	101	41	1274	—	7 to 13	161	98	61 8 0	(?)	88 11 0	10 9 8	1
2	693 0 0	Light brash	—	—	102	13	5 or 6	11½	7	3 15 0	0 12 0	5 17 6	0 10 0	2
3	960 0 0	Stiffish clay	1396	—	1080	212	7 to 12	391	132	257 14 8	0 0 0	36 5 4	283 9 6	305 5 11	3
4	950 0 0	Two-thirds free, } one-third stiff }	57	21	—	—	7 to 12	10	2	15 11 8	2 0 6	28 0 0	20 0 0	4
			—	—	115	18	12 to 18	5½	1					
			—	—	115	18	7 to 12	24½	10					
5	950 0 0	Heavy	—	10	150	21	5 to 7	59	14	16 0 0	2 0 0	24 4 0	1 10 0	5
6	350 0 0	Very stiff	160	—	103	97	6 to 10	(?)	22	(?)	(?)	9s. a day	(?)	6
7	5	Heavy clay	125	—	—	—	10 to 12	24	8	(?)	(?)	17 5 0	1 15 0	7
8	825 0 0	Sand, loam, and clay	2	—	308	207	8 to 15	122	52	22 5 8	10 0 0	148 13 7	33 10 6	8
9	1000 0 0	Clay	135	35	105	—	12	22	10	6 12 0	1 2 0	20 7 0	(?)	9
10	997 0 0	Strong loam	335	—	221	—	10 to 12	80	15	44 0 0	4 13 0	60 15 0	31 7 0	10
11	950 0 0	Clay, loam, and sand	180	—	140	—	7 to 8	62	12	32 0 0	3 2 0	34 2 0	Trifling	11
12	849 0 0	Clay	—	855	—	—	8 to 10	116½	(?)	2 cwt. per acre	1s. per day	105 0 0	(?)	12
13	719 0 0	Light	284	—	764	102	7 to 8	145	53	(?)	9 4 0	47 2 6	34 10 0	13
14	(?)	(?)	—	384	246	246	12 to 18	(?)	(?)	(?)	(?)	9s. 2d. a day	(?)	14

HOWARD'S SYSTEM.

No.	Cost of Apparatus.	Soil.	Work done. Ploughed.	Dug.	Grubbed first time.	Grubbed second time.	Depth.	No. of days, including Removals.	No. of Removals.	Coals.	Oil.	Wages.	Repairs.	No.
	£ s. d.		Acres.	Acres.	Acres.	Acres.	Inches.			£ s. d.	£ s. d.	£ s. d.	£ s. d.	
1	737 0 0	Clay	40	—	71	65	8 to 10	42	12	17 10 0	2 10 0	44 2 0	4 10 0	1
2	565 0 0	Calc. clay	7	—	121	37	6 to 9	33	(?)	(?)	(?)	(?)	18 6 0	2
3	250 0 0	Heavy clay	—	—	66	61	6	22	4	6 0 0	(?)	17 10 0	(?)	3
4	625 0 0	Generally stiff loam	—	—	259	150	10	(?)	(?)	(?)	(?)	(?)	10 0 0	4
			43½	—	—	—	8	14	5	11 6 7	1 10 0	13 14 5	25 13 0	5
5	968 0 0	Heavy	—	—	239½	—	6 to 8	85½	22	48 19 11	9 4 1	66 15 3		
			—	—	—	96								
6	630 0 0	Various	57	—	85	129	5 to 20	70	11	26 0 0	6 0 0	55 0 0	25 0 0	6
7	—	Heavy clay	—	—	162	144	6	51	8	(?)	5 14 9	42 10 0	(?)	7
8	259 0 0	Various	48	—	102	180	6 to 12	40	16	18 0 0	1 16 0	40 0 0	(?)	8
9	180 0 0	Clay	—	—	168	120	5 to 10	43	10	33 15 0	2 10 2	38 14 0	10 0 0	9
10	(?)	Heavy	—	—	74	—	6 to 7	16	5	3 10 0	(?)	12 0 0	(?)	10
11	537 4 0	Clay	—	—	95	177	10	57	10	24 7 0	1 17 0	39 9 4	(?)	11
12	510 0 0	Very strong	—	—	85	16	8 to 10	18	7	8 0 0	1 7 0	11 5 0	(?)	12
13	290 0 0	Heavy	—	—	63	—	8	15	4	4 0 0	0 15 0	10 13 9	1 0 0	13
14	630 0 0	Strong clay	70	—	145	120	9	55	10	32 10 0	3 0 0	57 15 0	5 5 0	14
			70	—	—	—	6½	10½	5	8 10 0	1 5 0	13 18 2		
			—	—	5½	—	10	1½	1	0 10 0	0 1 6	0 17 3		
15	(?)	Loam	—	—	22	—	10	4½	1	2 0 0	0 0 6	3 3 0	(?)	15
			—	—	51	—	4	7	2	3 10 0	0 10 6	7 3 9		
			—	—	—	22	10	4½	—	2 0 0	0 0 6	3 3 0		

SMITH'S SYSTEM.

No.	Cost of Apparatus.	Soil.	Work done. Ploughed.	Dug.	Grubbed first time.	Grubbed second time.	Depth.	No. of Days, including Removals.	No. of Removals.	Coals.	Oil.	Wages.	Repairs.	No.
	£ s. d.		Acres.	Acres.	Acres.	Acres.	Inches.			£ s. d.	£ s. d.	£ s. d.	£ s. d.	
1	500 0 0	Mixed	—	—	63	—	8 to 12	9	7	4 13 3	0 7 0	5 12 0	0 9 0	1
2	200 0 0	Weld and chalk	—	—	60	20	3 to 9	—	2	—	—	—	—	2
3	400 0 0	Loam	—	—	148	148	7	34	3	13 12 0	1 5 6	21 0 0	1 0 0	3
4	575 15 0	Strong	44	—	193½	92½	7 to 10	50	13	10 12 6	3 13 6	39 3 4	14 4 4	4
5	510 0 0	Stone brash	—	—	45	35	5 to 7	9	3	3 0 0	0 10 0	9 0 0	2 2 0	5
6	400 0 0	Clay	—	—	100	100	6	15	2	4 0 0	0 7 0	13 15 0	2 11 0	6
7	180 0 0	Clay	—	—	210	131	5 to 9	55	13	17 11 6	2 15 0	37 0 0	5 0 0	7
8	500 0 0	Clay	—	—	220	—	4 to 10	26	—	—	—	26 0 0	—	8
9	250 0 0	Clay and chalk	—	—	327	67	6 to 7	36	14	24 10 0	3 12 6	50 14 3	—	9
10	120 0 0	Clay	26	—	87	40	6 to 7	24	8	11 0 0	0 18 0	21 17 0	2 0 0	10
11	220 0 0	Clay	223	—	130	93	7 to 10	54	10	9 0 0	1 4 0	36 11 0	4 10 0	11
12	550 0 0	Strong	32	—	132	124	6	42	11	18 18 0	2 5 0	31 4 6	15 0 0	12
13	463 0 0	Clay	—	—	123	—	6 to 9	20½	13	11 10 0	0 15 0	21 4 0	2 10 0	13
14	—	Clay	—	—	141	—	9 to 10	36	12	7 10 0	(?)	24 10 0	0 8 0	14
15	450 0 0	Clay and chalk.	—	—	94	52	7 to 12	20½	7	10 0 0	1 0 0	13 8 6	3 0 0	15
16	210 0 0	Heavy	—	—	32	32	8 to 10	12	2	3 0 0	0 9 0	9 6 0	0 0 0	16

NOTES ON STEAM CULTIVATION.

[The following notes relate to the returns on the accompanying Table, and are numbered accordingly.]

FOWLER'S SYSTEM.

1. The apparatus, costing 955*l.* 18*s.* 9*d.*, included one of Fowler's 14 horse power traction engines, with plough, cultivator, digger, anchor, and porters; 800 yards rope. I have done this work without either engine or rope giving way. I have also threshed 3005 qrs. corn, removing the engine for the same 78 miles, and using 7 cwt. of coal per day. Oil costs 5*s.* 6*d.* per gallon; coals per ton, delivered, 16*s.* 6*d.*—11 cwt. a day. The men and boys employed were engine man, 3*s.*; ploughman, 2*s.* 6*d.*; watercart-man, 2*s.*; anchor boy, 1*s.* 6*d.*; two porter boys, 2*s.*; rope is in good order—not broken. I am perfectly satisfied that steam cultivation is cheaper and far better than can be done by horses, as I am working my farm with 18 horses instead of 32. *William Parey, Garthorpe, Leicester.*

2. My power is an 8-horse-power single cylinder engine. Coals per ton, delivered, cost 13*s.* Engine-man, 3*s.*; ploughman, 2*s.* 6*d.*; two porter-boys, 2*s.*; anchor-boy, 1*s.* 6*d.*; watercart-boy, 1*s.* I do not see any wear of rope, but I have had my steam tackle but a short time. I think by breaking up some of the thin slate rock on my land it will prevent it burning, and by grubbing instead of ploughing I shall be able to grow better roots and corn, as the land will keep moister. *Thomas Porter, Bainton, Towcester, Gloucester.*

3. [This return evidently relates to the whole period during which the apparatus has been at work.] It included a 14 horse power locomotive engine, self-moving anchor, 4-furrow plough, 7-tine cultivator, of Fowler's manufacture; cost 960*l.* The price of coals per ton varies from 12*s.* 6*d.* to 18*s.* 6*d.* per ton, including 2*s.* 6*d.* per ton for delivery on the farm. Four men and two boys, including watercart-man, are employed. The total daily wages, including perquisites, are equivalent to an average of 14*s.* 6*d.* per day. The wear of rope during the first two years was very considerable, but it has lately been much less. The charge for repairs in the Table includes 1250 yards of new wire rope, and a recent complete repair of engine, including a new fire-box. Steam cultivation does the work better and cheaper than horses, and also does it at times when it is best to be done, but when horses are frequently otherwise engaged. On my farm I keep less horses by 14 or 15 than would be required if I had not the steam apparatus. *Governor Hudgkinson, M.P., Westhorpe Hall, near Newark, Notts.*

4. The apparatus included Fowler's 14-horse engine and apparatus. Two days lost in breakages on stones, and ropes broke eight times. Coals per ton delivered, cost 13*s.* per ton. Four men and two boys employed: daily wages, 14*s.* To 28*l.* for wages should be added 5*l.* for horse leading water 40 days. Steam cultivation is superior to all other systems upon well-drained land. Experience teaches that it is not advisable to purchase steam cultivating apparatus for farms having less than 500 acres of arable land. Steam ploughing companies should be encouraged for the improved culture of small farms. *Henry Hawking, Blindthorpe, Borough Bridge, York.*

5. One 14-horse engine, with disc anchor windlass, by Fowler. Coals per ton cost, delivered, 15*s.* The number of men and boys employed—two men at 3*s.* per day; one lad at 1*s.* 8*d.* per day; two boys at 7*d.* per day each; watercart-boy 10*d.* per day. Rope very little worn. The men (with the exception of one of Mr. Fowler's) being all new to their work, combined with some badly-shaped fields, the last fortnight being very wet, accounts for the small quantity done. It can be worked to the greatest advantage in square fields. *R. K. Holben, Barton, near Cambridge.*

6. 12-horse engine of Fowler made by Smith, of Coven, near Wolverhampton, with four-furrow plough, bought second-hand for 350*l.* No account kept of labour and expenses. The price of coals per ton delivered is 25*s.* Three men, two porter boys, and one watercart-boy at 9*d.* per day. My engine is one of the original lacing drums, and the wear of rope is considerably more than the clip drum, and I find it will answer well to have it altered. My land being a very stiff clay, was continually holding water on the surface: since I have broken through the pan with the grubber to the depth of 10 or 12 inches, which I have done several times, there is no water to be seen, and the quality of my Barley, which used to be of the worst description, is now some of the best in the market. The quality of my Wheat, too, is much better than it used to be. *J. A. Williams, Bayton, Wilts.*

7. Fowler's 14-horse plough. My farm is but about 250 acres arable, and no farms near so large, so that I have no one near to hire it, therefore keep it for my own use only. Coals per ton, delivered, cost 17*s.* Four men and one boy, also one boy at water-cart. Rope has had two years' wear, and now appears almost as good as ever. Steam cultivation far superior to horse cultivation, especially for market gardening, which is our principal work. *Henry Boston, Low Hall, Walthamstow, Essex.*

8. The wear and tear of our tackle had been less this year than any other we have had our tackle. Coals cost 11*s.* 8*d.* a ton; wages, 12*s.* 6*d.* a day. Steam cultivation is preferable to any other known. *Miller Tighe, Ensmeman for W. Lawson, Esq., Brayton, Carlisle.*

9. 12-horse engine. We plough 7 to 8 acres per day, 7 to 8 inches deep, and grub 12 acres per day. Coals cost 6*s.* per day; oil, 1*s.* per day. Wages: horse, 5*s.*; engineman, 3*s.*; ploughman, 2*s.* 6*d.*; anchorman, 2*s.* 6*d.*; three porters, 2*s.* 3*d.*; and sometimes four porters when over 300 yards of furrow: average about 23*s.* 6*d.* per day. Cost of repairs uncertain, as they are chiefly accidents, repaired by my farm blacksmith except when new materials are required. Coals per ton, 10*s.* delivered 3 miles off. Wear of rope depends very much on the number of porters and attention. This is the third season with mine, and it is still good and repaired occasionally. Steam cultivation very far superior in economy and efficiency to any horse work. *Robert Neilson, Halewood, Liverpool.*

10. Fowler's 14-horse apparatus: cost with water-cart and carriage, 997*l.* Coals per ton, delivered, cost 21*s.* Men and boys employed—Four men, 54*s.* per week; three boys, 18*s.* per week; and one horse at water-cart, 18*s.* Rope has been used 3½ years, and is now quite worn out; must be replaced in spring. The engine threshes all my corn, grinds and works the circular saw, and cuts chaff. *Thomas Taylor, Aston Rowant, Oxfordshire.*

11. Fowler's, with all implements attached: cost 95*l.* complete. Coals cost 18*s.* per ton, or 2*s.* per acre. Oil about 1*s.* per diem. Wages, 12*s.* per week. Repairs trifling. I believe it to be most advantageous for clay soils, with large fields—say not less than 20 acres each. This description of land has been found to lie much drier when ploughed by steam than by horses. *Col. the Hon. Octavius Duncombe, Waresley Park, St. Neots, Huntingdonshire.*

12. Fowler's 14-horse clip-drum engine and cultivator and anchor. Men and boys employed—Engineman, say at 22*s.* per week; ploughman, 18*s.* per week; anchorman—youth, 12*s.*; porter-boy, 10*s.*; ditto, 6*s.*; watercart-boy, 6*s.* Rope not much worn. All strong land ought to be cultivated by steam: I think it will answer well. As I only started in the latter end of last March, I have at present an objection to be quoted as an authority. We always worked as deep as we could, probably deeper than I have stated. The second time over takes as much doing as the first, so I have not divided them. —

13. Traction engine and Messrs. Fowler's windlass and moveable anchor and cultivator. Coals per ton, delivered, cost 16*s.* 6*d.* Men and boys employed—one man, 3*s.* 4*d.*; two boys, 2*s.*, or 1*s.* each; two boys, 2*s.* 2*d.*, or 7*d.* each to porter. The best steel rope wears longest, and is the cheapest in the end. Steam cultivation—the more I employ it the more I

can appreciate its services. *T. M. Richardson, Hibaldstow, Lincolnshire.*

14. Coals, 8s. per ton. *H. T. Morton, Berrington.*

HOWARD'S SYSTEM.

1. Ten-horse traction engine by Aveling & Porter; windlass and tackle by Howard, Bedford; cultivator by ditto, three-furrow plough by Fowler. Coals per ton, delivered, 27s. Men and boys employed—engine-driver, 3s. 6d. per day; two anchor-men, 2s. 6d. each per day; one steersman, 2s. 6d. per day; two boys, 1s. 6d. per day; waterman and horse, 4s. Wear of rope trifling. —— *Kent.*

2. Howard's engine, 10-horse power, cost 280l.; apparatus, 220l.; plough, 65l. Coals per ton, delivered, cost 17s. 6d. Five men and three boys employed; total wages per diem, 13s. 6d. Rope nearly as good as new. Work done—about 5 acres a day with the cultivator, three with the plough. Howard's plough is not a good implement; his cultivator is perfect. I like steam cultivation immensely, but consider Fowler's system very superior to the other. *Geo. Onslow Newton, Croxton Park, St. Neots.*

3. Howard's cultivator. Coals per ton, delivered, 18s. Five men and two boys employed—pay 3s. an acre first time; 2s. the second over. I find the rope wears better than that I had in 1859 with the apparatus, but now, with every attention, the expenses on the rope are heavy. On large heavy-land farms the steam cultivator can be used to advantage; but the master and men should be experienced, and the engine quite up to its work, the fields large, and not an hour lost while the land is dry and weather fine in autumn. Repairs not much, excepting wear of rope. *J. C. Robinson, Stevington, Bedfordshire.*

4. Howard's tackle, 10-horse engine, 625l. Coals per ton, delivered, 6s. per ton. Five men and two boys, and one boy driving water, say half time; average of men's wages, 12s. per week. Rope going now over three years, but beginning to wear. The cultivation by steam has given me the greatest satisfaction, every crop being sown in good time. *George Hope, Denton Grange, Preston.*

5. One Howard's 12-horse power traction engine, with double drum, 1600 yards rope and traction waggon, and 3-furrow plough, 5-tine cultivator, anchors, and snatch-block for the round-about system. Total cost, 968l. Coals per ton, delivered, average, 18s. Men and boys employed—engine-man, 3s. 4d. per day; one ploughman, 2s. 4d. per day; two anchor-men, 2s. each per day; four boys, including water-cart boy, respectively, 1s. 6d., 1s. 3d., 1s. 3d., 1s. 3d.—5s. 3d. per day. Wear of rope scarcely perceptible. I find that out of 10 farmers that I have steam-cultivated land for in this neighbourhood, there is not one but what wishes to have more done; therefore confirming my own opinion, that there are but very few farmers in this neighbourhood but what will gladly employ steam apparatus when reasonably obtainable, which I believe this apparatus to be. *Thomas Cubley, Toddington, near Winchcombe, Gloucestershire.*

6. Clayton & Co.'s 10-horse engine, 300l.; Howard's apparatus, with cultivator, 250l.; plough, 80l. Some of fen ploughing 20 inches deep. Coals, per ton, delivered, cost 14s. Engine-driver, 18s. a week; one windlass-man, 14s.; one ploughman, 14s.; two anchor-men, 12s. each; two porter boys, 6s. each; one water boy, 7s. I have done, since I purchased my tackle in June, 1864, about 800 acres, and consider the rope is about half worn out. Taking into consideration the efficiency of the work done, I consider it cheaper than horse power, and calculated very materially to assist the drainage of heavy land, and believe that this land, brought under it a few years, will produce more corn, &c., at less cost. *James Mortlock, Pidley House, near Huntingdon.*

7. Howard's system. Coals, per ton, cost 16s. Four men and four lads employed. Rope is the most expensive item. I estimate it at 1s. 6d. per acre. *Robert Barton, Wyton Farm, St. Ives, Huntingdonshire.*

8. Howard's apparatus; including drag harrows and extra snatch-blocks and anchors, but excluding the new rope (1400 yards). Repairs very trifling indeed. Coals, per ton, delivered, cost 18s. Engine-driver, 3s. 6d.; windlass-man, 3s.; ploughman, 3s.; two anchor-men, at 2s. 6d., 5s.; one or two porter-men, at 2s. 6d., say 3s. 6d., equal 18s., add watercart man, 1s., total 1l. March 1, 1864, put 700 yards new rope on each drum, retaining 300 yards old rope on each drum. Have therefore now 1000 yards on each drum in good average order. *W. Bulstrode, Mount Farm, Cookham.* [See leading article.]

9. Howard's 10-horse power, second-hand, 180l. Coals, per ton, delivered, 20s. Men and boys employed - five men and two boys, 12s. 11d. per day. I find steam cultivation profitable. My three years' experience tells me that a good staff of men, a long day and fine one, a large field, and heavy clays and strong loams, are required. Where land can be drained with two horses never attempt steam. I had 26 acres in a most wretched state, in high-backed lands, drained in old furrows 4 feet deep, and I put the tackle to work first week in April. Have just got sheep out of the field, after eating off a good crop of Turnips. Wind had not been fair, otherwise should have been fallowed all the summer. *D. Greig, Westoning, Woburn, Beds.*

10. Howard's cultivator. Coals per ton, delivered at 14s. 6d. Engineman, 3s.; four men at 2s. 6d.; two boys, 1s. per day. My rope has been in use since 1858, and broke three times this year. Would not be without the apparatus on any account. *Henry S. Trower, Castle Thorpe, Bucks.*

11. Coals per ton, cost 15s. Two men at 3s.; three men at 2s.; three boys at 8d. Rope very little worse for wear. The produce is more, and land worked at the right time. *John and Adam Bell, Sutton, Bellon, Grantham, Lincoln.*

12. Messrs. Howard's apparatus. Messrs. Clayton & Co.'s 8-horse engine. Total cost, with 1600 yards of rope, 510l. Repairs—whilst at work, nil. Whole apparatus overhauled before harvest at a cost of about 6l., including engine, which is also used for grinding, chaff cutting, and sawing. Coals per ton, delivered, 20s. Engine-driver, 3s. 6d. per day; four men, 2s. 6d. each per day; three boys at 8d. each per day—total, 12s. 6d. Rope in good repair. Having many porters in use the rope seldom touches the ground; I am very particular in this respect. Steam cultivation is not only a great saving of time and labour, but the work is done in better time, and with much better in consequence; indeed, I do not know how very strong land can be successfully cultivated without steam. *John Ford, Morton Hall, Warwick.*

13. Coals per ton, delivered, 16s. Three men at 2s. 3d.; two men at 3s.; two boys at 9d. The above is all the experience I have had; the apparatus being quite new, which I commenced to work on the 2nd October. Myself and men had all to learn in its management. I have no doubt I shall be able to perform more work in the same time when I commence again to work. I have not put down the horse leading water, nor other horses in removals; I should say 4l., in addition to the above, would include everything. I am fully convinced, so far as my experience goes, that steam cultivation will answer, and that considerable benefits will result to those who use it. *John Brown, South Dorrington, Lincoln.*

14. Coals per ton, delivered, 10s. Five men at 3s. per day; three boys for 5s. with beer. Rope been in wear three years, expect to wear one more year. Steam cultivation generally great saving in labour; consider the whole of the corn averages six bushels per acre more since steam cultivated. *Charles Mounstephen, Walton, Loughborough.*

15. Coals, 20s. a ton delivered. Five men and three boys, 3s. an acre ploughing, and 2s. 6d. an acre cultivating. My repairs were very trifling, but I made sundry alterations in consequence of having a new engine, which caused me to expend some pounds; this could not be put down as repairs, because indeed they were not so. I also had a new rope in the autumn of 1864, which stands its work well. My first rope was much injured the first year I had it by want of care on the part of my people. The cost of oil and coals may not be exact; as a rule, we consume ½ a ton per day of coals and about 1¼ pint of oil; but of course this quantity varies. I have destroyed by rats two bills or sacks of Swedes in my fallow alteration, and only know the amount paid in conjunction with other things. I know the blacksmith's bill did not amount to 5l. *J. Henderson, Shrubbery, Sandwich.*

SMITH'S SYSTEM.

1. Coals cost 16s. per ton delivered. Five men and three boys. Rope the same as when last reported in May 1863. The few acres worked yearly on this farm have not made a perceptible mark in them. *William Smith, Woolston, Bletchley Station, Bucks.*

2. Cost about 200l.,—only the apparatus, viz., windlass and rope. We would not cultivate on foggy mornings until the fog got away, which made it tedious. Coals about 19s. per ton at the farm. Two boys at 8d. per day; two anchor-men, one windlassman, one to oil, &c., and one to feed water, 2s. 3d. per day each. Rope very good; we have only had two flints; and on our first using the rope we got it between the cogs of the windlass. I like steam cultivation very much, in fact I could not farm without it in my present way of cropping. *John Wyatt Day, Wootton Glebe, Lincolnshire.*

3. Engine 220l. Cultivating apparatus made by Ashley, of Louth, after Smith's plan of Woolston, 180l. The soil is 400 acres of arable land altogether. Half of it warp land from the sea, the other half nice free working land, with a silt subsoil. Coals cost, delivered, 16s. per ton. Five men, two boys; four men at 2s., one at 2s. 6d., two boys at 8d. Rope could about 9d. an acre. I strongly recommend steam cultivation. *Henry Jno. Seels, The Hall, Wainfleet, Lincoln.*

4. The apparatus cost 579l. 15s., viz., Smith's apparatus, made by Ashley, of Louth, with Aveling & Porter's rope porters, worked by 8-horse power although a 10 patent engine. The engine of 12-horse power is new, has been used throughout the season, and is fitted with Allen's patent cylinder, which economises steam, consequently water and fuel, to the extent of one-half compared with our old one of 10-horse power. The soil varies from strong clay to thin chalky soil, covered with small flints, occasionally large flints and pebbles are met with, causing damage. In estimating the number of acres ploughed, hedges and ditches, marl pits, headlands and occupation roads are deducted. The price of coals per ton, delivered, is 17s. Five men and three boys, viz., engineman, 3s. 6d.; windlass-man, 2s. 6d.; two anchormen, each 2s. 6d.; 4s. 6d.; two porter boys, 1s. 8d.; water cart boy, 1s. Total: 15s. 8d. per day. We sometimes on the most hilly parts employ another boy to signal, which I have not included. The rope has been in use three seasons, and has been once broken, after cultivating 400 acres, and the rope used the three years have since cultivated 29 acres, making 688 acres. It was also last season used 15 days in drawing the mud from fish pond. Satisfied on the whole with steam cultivation. *W. Smyth, Elvington Hall, Lincolnshire.*

5. Coals delivered cost about 20s. per ton. Three men at 2s. per day, 6s.; two men at 3s. per day, 6s.; two boys at 1s. per day, 2s.; total, 14s. per day. First rope continually breaking; second rope, 500 yards, very good. Answers well, as the engine is used for threshing, grinding, chaff cutting, &c., as well. —— *Worcester.*

6. Coals per ton delivered cost about 16s. 6d. Six men at 2s. per day, and for overtime 4d. per day; one boy 1s. per day, with beer for the whole lot each day. I have the same rope still in use that I had with the tackle in 1859, but made longer; now I have 1400 yards on each drum, whereas I should not like to be without the cultivating tackle now, for it is so very useful after harvest; it gets all the weeds on the surface, where it is used twice over. *Robert Long, Upper Standen cum Beguildy.*

7. Coals delivered cost 14s. 6d. per ton. Engine and windlass-man 3s.; three labourers, 2s.; three boys at 8d.; one ditto at 1s. This is my second year of cultivating, and I consider that half of the cost of the rope belongs to this year, amounting to 2s. 6d. per acre. Steam cultivation has answered my expectations so far. Since I have had it, I have dispensed with four horses. *John J. Foster, Ludborough, near Louth, Lincolnshire.*

8. Coals per ton cost 17s. Six men and one boy are employed. The rope is the most expensive part to deal with. As far as my experience in steam grubbing goes, we cannot estimate the work compared with horse ploughing, or how much work it saves during the year. *William Crangfield, Buckden, Huntingdonshire.*

9. Coals cost 14s. at Grimsby, 7 miles off. Five men and two boys—cost 3s. per acre for 3 times, and 2s. 3d. per acre for 5 times. Repairs only a few shillings. The rope is wearing considerably. We had more things to learn by experience of steam cultivation, and so far am well satisfied with it, having cultivated altogether in that time about 665 acres. *John Sowerby, Jun., Bretsby, Grimsby, Lincolnshire.*

10. Smith's Woolston system, cost 220l., with 10-horse engine (Clayton & Shuttleworth). Heavy clay chalk subsoil, costing 25s. per acre to plough with horses. Coals per ton, delivered, cost 19s. Three anchor-men, 2s. 3d.; one ploughman, 2s. 6d.; one windlass-boy, 1s. 2d.; one porter-boy, 6d. per day. My rope was new October 12, 1863, and now I have just turned ends, and think it will last another season. Cost 95l. Wear of rope is the only drawback to steam cultivation, and I am going to Islington to see if I can find a better method of carrying the rope. I have been steam cultivating some years, and am thoroughly satisfied with the results as regards cheapness, letting alone the great benefit to heavy land in getting it in much harm. I find my land cleaner, and my corn to yield decidedly better, and my Turnips to be first-rate, and for clearing land nothing better, and then what an auxiliary in a wet season! *Aaron Fulcher, Fovant, near Salisbury, Wiltshire.* [Wages included at 2s. per day, and horse-keep for water-cart.]

11. The apparatus is Smith's, manufactured by Howard of Bedford; cost 220l. The soil is part deep soil, on gravel and clay, and also very heavy tenacious clay. The hire of engine at 14s. per day cost 28l. 16s. Coals per ton cost, delivered, 15s. Wages of engine-man, 3s. 6d.; 1 windlass-man, 2s. 6d.; 1 man on cultivator, 2s. 6d.; 2 anchor-men, 5s.; strong lads, rope porters, 4s.; boy and horse water-cart, 4s. per day = 1l. 1s. 6d. per day. Rope has been used two years; last year ploughed 300 acres, and appears nearly as good as new. It is so entirely superior to cultivation by horses, and not more than half the expense, that I wonder how anyone with 300 acres of strong clay land can do without it. All my ploughing was completed by October 7th this year. *John Kersley Fowler, Prehendal Farms, Aylesbury, Bucks.* [See memorandum in another column.]

12. The apparatus cost 350l. Smith's, with Fowler's 3-furrow plough. Coals per ton cost, delivered, 15s. Five men at 6d. each per acre for ploughing and grubbing first time, and 3d. per acre grubbing second time; boy at 1s. per day to fetch water; rope about 6d. per acre. Cheaper than horse power. I cannot trace a correct account further back than since harvest; the quantity and cost, &c., above, commenced August 29th, and finished October 16th, 1865. *Edward Pullen, Sutton Courtney, Berkshire.*

13. Smith's cultivating apparatus, complete: cost 463l. Coals cost, delivered, 18s. 6d. per ton. One engine-man, 3s. per day; one ploughman, 3s. do.; four labourers, each, 2s. 6d. do. I am not an occupier of land, but charge per acre from 9s. to 14s. *John Morris, Shenley, near Stony Stratford, Buckinghamshire.*

14. Coals per ton cost, delivered, 11s. to 13s. 6d. Six men, one lad, 13s. 6d. per day. Wear of rope very little in fine weather. For strong soils steam cultivation is invaluable. The quantity of work in this report is less than usual, but the ground was exceedingly hard. The quality of work done, first-rate. Two wheels of rope porter broken, 8s. No other repairs except blacksmith's work, of which no account has been kept. Cost per acre 2s. maximum, wear and tear and repairs. *Peter Stevenson, Reinden, Thirsk.*

15. Coals 6½ cwt. a day at 23s. a ton, five miles off. Wages 22d. per acre first time; 18d. the second time. (See Smith's apparatus memoranda in another column). *J. G. Wentworth, Broughton, Newtown.*

16. (See Smith's apparatus memoranda in next column.) *T. Dodwell, Holwell Bury Farm, Stafford.*

MEMORANDA ON STEAM CULTIVATION, 1865.

[We have received a large number of replies to a circular inquiry on this subject, and among them the following relating to the various systems which have been adopted; and as most of these cannot be tabulated, they are therefore given in the form of extracts or abridgments.]

1. FOWLER'S SYSTEM: *Northumberland.*—The soil is loam. I have this year "digged" 384 acres 12 inches deep, grubbed 246 acres a first time 18 inches deep, and 246 acres a second time 14 inches deep. The price of coals per ton delivered is 8s. per ton. Engine-man, 3s. per day; ploughman and anchor-man, 2s. 6d. per day each; three porter boys, 1s. each; one boy for driving water, 1s. 2d. per day. We have had the plough at work for two years and a half, and it has cost very little for rope. (No. 14, Fowler's Table.) *H. T. Morton, Berrington.* —— *Berkshire.*—All blank. Can neither sell engine nor plough. *E. W. M., C——.* —— *Somerset.*—The set of apparatus I had from Messrs. Fowler I sold to Mr. C. Bugg, of Milborn Wick, near Sherborne. He has not kept an account of his work; but he is in every way satisfied with the working of the set of tackle, and is a good practical farmer, renting nearly 1000 acres; his opinion of ploughing by steam is valuable; his engine is at work about two-thirds of the month generally. *Thomas Richards, Wincanton, Somerset.* —— *Bermingbrough.*—My steam plough (a second-hand one) was not in order when I got it, having been laid aside by the former owner; the ropes would not stand the heavy work, and moreover my men were so unused to such work, that our work was miserably slow and unsatisfactory from that cause; but what was done in the autumn of 1864 showed well this year as to the goodness of crop, part of a field being horse-ploughed, and part done by Fowler's steam plough. The latter was so superior as regards crop (Oats), that people on the road asked what was the difference of treatment in the land; whereas the field got nothing in the way of manure different, either the horse-ploughed or the steam-ploughed. The field was so hard that it broke the ropes and some part of the steam plough, so that we had to give it up. I have since had the apparatus refitted, and it is now at work on an old seed field, and doing good work. *P. Darnay.*

2. HOWARD'S SYSTEM: *St. Neot's.*—I have used Howard's cultivator with a 10-horse-power engine for three years. It is a great success; the crops are better; I have no bare fallow, and have reduced my cart-horses from 15 to 9. I should say that Fowler's direct system, with a Howard's cultivator, would be very nearly perfection. *Geo. O. Newton, Croxton Park.*——*Aylesbury.* — You will find on working my figures out that the work costs about 7s. 3d. per acre—but this does not include interest of capital, which at 220l., at 10 per cent. (5 per cent. interest, and 5 per cent. wear and tear), is 21l., equal to another 1s. 10d. per acre, or about 9s. altogether. You will also observe I put down the hire of engine, as I have at present not one of my own. This is 14s. per day, and is a heavy item. I had an accident with my rope, it got entangled close at the end, in the cogs of the drum, and it was nipped in two, but it was spliced in a very short time, and I believe is almost as good as at first; it is a famous steel rope, made by Messrs. Howard, and how it stood the smashing up of my strong clay last year and this also, I cannot understand; the land came up in great masses of 2 cwt. each, and all the horses in the county could not have moved it. Every one who has seen the work on my farm pronounces it perfect; the actual cost of the work, exclusive of removals, I consider was not more than 6s. 10d. per acre. *John K. Fowler, Prehendal Farm.*——*Winchcombe, Cheltenham.*—From a carefully kept account of work done and receipts and expenses of a set of apparatus belonging to the Right Hon. Lord Sudeley, which I manage for our own use and that of his lordship's tenants or neighbours, at a price per acre charged according to the work, you will no doubt perceive that the amount of work done this season is very small; that is owing to the lateness in the season that we received the engine, and other stoppages. The coal consumed also I consider is 10 per cent. more than we have used the last time of working, owing to a very frequent leakage of tube, which I have now repaired. I give totals of work done in season of 1864; that also was a short season, owing to lateness when purchased. Apparatus consisting

of Howard's 10-horse power engine and windlass, double snatch-block, &c., cost 622*l.*; worked 141½ days, ploughed 15 acres, cultivated 592 acres. Total 607 acres, at a cost, including coal, oil, labour, and repair, &c., of 1*l.* 9*s.* 7½*d.* (See No. 5, Howard's Table.) *Thomas Calsey.*—*Broomfield, Chelmsford.*—We have been so well satisfied with the effects of steam cultivation, in the increase of produce of various kinds, that after having kept an account against it for several years, we have not for the past year or two continued to do so; for being mixed up with accounts of threshing, draining, &c., we found it gave a great deal of extra trouble; but I may add that we are still quite satisfied with the results of steam cultivation. *Bott & Impey.*—*Tring.*—As to the general results of steam culture, I have no hesitation in saying we have great reason to be highly satisfied; and our experience has been acquired under as varied circumstances of soil and surface as the most sceptical could desire. *John Taylor.*

3. SMITH'S APPARATUS: *Burghclere, Newbury.*—The apparatus cost 450*l.*; viz:, 8-horse engine and Smith's grubber, made by Brown & May, of Devizes, with a very large tumbril, which winds the rope beautifully. Brown & May's engine is the most economical in fuel and water of any I have tried; 4 cwt. of coal for 10 hours' threshing with 6-horse power.—The soil is principally clay, some chalk hills, and some sand.—We have grubbed 93 acres the first time, and 52 acres the second time, generally 7 inches deep, but 14 acres 12 inches.—The number of days at work, including removals, was 20½, and the number of removals 7. Coals about 6¼ cwt. per day; Welsh steam coal cost 23*s.* per ton at Newbury, five miles distant, and one pint of best olive oil is used per day. The cost of wages is 22*d.* per acre first time; if done twice over, without removal, 18*d.* for the second time; men will earn 2*s.* each and upwards per day. The cost of repairs has been 3*l.* this year; but it will give more wear and tear to engine than threshing. Then the number of men and boys employed, and their wages, is as follows:—one engine-driver, 6*d.* per day more than others for general superintendence; one man at windlass; two anchor-men and one to steer cultivator; one porter boy, generally about 1*s.* per day; one boy to fetch water about half his time; being five men and two boys. The rope wears well, which may be partly accounted for by large diameter of windlass; we do not splice it now when broken, but merely tie a knot, which draws tight itself. Steam cultivation enables me to be always forward with work in field, also we are not obliged to be a hurry to push forward unless the land is in a fit state, and when it is, we can do a great deal in a little time. I bought the set of tackle in spring of 1862, and have done for myself and others upwards of 900 acres, including some done more than once over. I find the rope wears less on a clay land than any other soil, sand and gravel being the most injurious; the men also being more careful of the rope when at home. *John Godfrey Wentworth, Wing's Farm, Burghclere, Newbury, Hants.*—*Broadway.*—I can work for less than 2*l.* a-day, taking interest, wear and tear, and everything into consideration. We grub from 4 to 7 acres per day the first time over, according to the state of the land. With the present rope we have done over 500 acres, and I am sure it will do more than another 500 without any addition of new rope. *John Cornish King.* P.S. The wear and tear, excepting rope, is trifling.—*Shefford.*—We use Smith's windlass, cultivators, &c., which cost, exclusive of engine, about 200 guineas. It is a heavy soil. We cultivate principally in the autumn, and as this year was wet we did not do one half our usual quantity. We have no steam plough. Thirty-two acres were grubbed twice over about 8 inches deep; our usual depth is about 9 or 10 inches. The work occupied 12 days, including two removals. The cost of coals was about 5*s.* per day, of oil about 9*s.* in all, and of wages about 15*s.* 6*d.* per day. There has been no expense of repairs during the 12 days, as rope when broken was repaired by the men. Coals cost, delivered, 17*s.* 6*d.* per ton. Six men and one lad cost 15*s.* 6*d.* per day, exclusive of horse for getting water. The wear of rope is very considerable, although kept well up on the porters. We think steam cultivation a great benefit, as it enables us to to get over a great quantity of work just when it wants doing, and which could not be done by the horses used on the farm, or done so well. Our rope has broke (though a steel one) several times, taking the men about half an hour to repair each time, which is very hindering. We find also when we cultivate deep it is trying to the engine, which is only 8-horse power. *Thos. Bodwell, Hobwell Barn Farm, or Sheffard, Beds.*—*Parkhall, Berkshire.* The apparatus is as follows:—12-horse power patent double cylinder steam-engine, made by Messrs. Clayton, Shuttleworth & Co., Smith's patent steam windlass, steel wire rope, and Chandler's patent 3-furrow plough, porters, and anchors. The soil is a light sandy black loam; 40 acres were ploughed, 8 inches deep, in 15 days, including four removals, two from one field to another, two when in the fields. The cost of coals is 4*s.* per day, of oil 1*s.*, and of wages 4*s.* 6*d.* The rope is not much the worse: we have no stones. In my opinion steam is preferable to horses. We have fully 2 qrs. Oats more per acre from the steam plough than the horse plough. The only drawback is the high price of every thing connected with it. *John Elliot, Farbut Mains*—*Lincolnshire.*—I have not kept a particular account. It is Smith's apparatus with the turnbow, and it grubbed about 230 acres last year. I can say this, that I like it well. I consider when it is at work it is as good as 12 horses. I value its cost something like the following:—Five men, 2*s.* 3*d.* each; three boys, 9*d.* each; wear and tear of engine and apparatus, 25*s.*; half ton of coals, 8*s.*; total, 2*l.* 6*s.* 6*d.* per day. Twelve horses, 4*s.* each, 2*l.* 8*s.* per day. *Benjamin Musgrave, West Keal, near Spilsby.*—*Salisbury.*—My rope has been in use four years, and appears likely to do a great deal more work. I have, until now, used the cultivator only, but am now commencing ploughing. It would not be possible for me to give you the particular expenses of my steam cultivator, the same engine doing the threshing; but the more I see of it the more I am convinced of its advantages over horse power. When commencing (four years ago) I reduced my number of horses 25 per cent., and hope shortly to make a further reduction. *Harry Green, Salterton, Salisbury.*

4. SAVORY'S DOUBLE ENGINE. *Berwick.*—Savory's two 12-horse engines. Soil a strong loam. Number of acres ploughed this year, 54. Number of acres grubbed first time, 230. Number of acres grubbed a second time, 220; about 10 inches deep. Men and wages—Four men and two strong boys, 13*s.* per day. The chief wear is friction from the soil, more especially on stony soils. The crops are decidedly better. Have grown a splendid crop of Beans on poor land without manure, from two grubbings. *Benjamin Bomford, Patch Il. Shropshire.*—Unfavourable, owing to the frequent breakages. *P. W. Bowen, Shrawardine Castle.*

5. HOWARD'S APPARATUS WITH FOWLER'S PLOUGH; *Shoreham.*—I am quite satisfied with steam cultivation, but I cannot give you detailed information, as I get the work done as well and cheaply as I can, without keeping accounts, which would be of no use to me. *Thomas Howard, Kent.*—I am happy to inform you that I have used steam cultivation on my farm for the last two years, both ploughing and cultivating, and am perfectly satisfied with its operation. My engine is of 10-horse power traction, made by Aveling & Porter, of Rochester; the plough one of Fowler's, and the windlass, cultivator, anchors, and snatch-blocks, from Messrs. Howard, of Bedford. *Thos. Puddicombe, Esq., New Romney.*

6. SMITH'S GRUBBER AND HOWARD'S PLOUGH: *Royston.*—After five years' experience of steam cultivation on 750 acres of mixed soil, chalk, gravels, and clay, I am fully persuaded of the cheapness of steam culture, and of the benefit derived from it, more especially on poor stubborn clays. *John Smyth, Newsells Barn, Royston.*

7. SMITH'S AND FOWLER'S. *Peterborough.*—Smith's windlass, Fowler's plough, Hornsby's 8-horse power engine. The soil approaches clay; it is or was 3-horse land. Grubbing, first time, 8 acres per day, including moving, from 6 to 8 inches deep. Coals consumed amount to 1 cwt. per acre for the large grubber, and double that quantity, the first time, with small grubber. Oil, 1 pint per day; wages, 10*s.* per day for men and boys. Coals per ton, delivered, 15*s.* The first rope did about 1800 acres (expect to do more with the second, having had more experience in the using). I plough about 4 acres per day, and use 8 cwt. of coals. *Thomas Foster Edwards, Esq., Peterborough.*—*Hereford.*—I have not used my steam cultivator the last 12 months; have not had water near, the seasons being so very dry the last two years. *T. Hawkins.*

8. APPARATUS NOT KNOWN: *Suffolk.*—I have just commenced steam cultivation, and done 40 acres. As far as I can see, 3*s.* 9*d.* per acre will cover everything. My land is light. Steam cultivation must be right on occupations above 400 acres. *Edward Green, Bury St. Edmunds.*—*St. Neot's.*—I and my brother are in partnership in our machinery, and this year I did not have the cultivator until he had finished; consequently I have done but little, and of that can give no estimate. I consider steam cultivation far superior to horse, and with good fellows need not be attended with many breakages, but with careless men nothing is so ruinous. One thing I strongly recommend, *i.e.*, no partnership; for it might happen that one would receive great benefit, and the other none, as so much depends upon the weather. *Wm. Addington.*—*Shiffnal.*—I have not been able to see much advantage on our light lands in the use of steam cultivation, and consequently have nearly discontinued the use of it, except on a few acres of the foulest stubbles after harvest, and of which I have not kept any particulars. *Sam. Browne, Brockton.*

Home Correspondence.

Steam Cultivating, 1863 and 1864.—Sept. 9, 1863: began steam cultivating with tackle as purchased second-hand, viz., Clayton & Shuttleworth's 8-horse double cylinder engine and Smith's cultivators: cost 402*l.*, including two driving bands.

Days.	No. of Times.	Total.
1863.		
Sept. 9	A. R.	A. R.
4½	7 0	5	21 0
7	15 2	5	81 0
7½	18 2	5	101 2
4	9 1	2	18 2
Oct. 26			
1864.			
Mar. 28			
9½	6 10 0	2½	
7	6 10 0	3½	50 0
6	10 0	3	30 0
6	15 0	3	45 0
	6 7 0	4½	
25	7 7 0	3½	92 2
	11 6	4½	
	7 2	3	32 2
69½			351 0

Most of the land lies in five-bout lands (not being underdrained), which causes a loss of time, as the cultivator won't reach, and to do it I generally go three times on a land, as my object is to do good work more than quantity. Men's wages about 21*s.* per day; then horse for water-cart, 3*s.* I employ six men and a strong lad when I can get one; if not, seven men are employed. It is a very bad locality for labour.

Days.	No. of Times.	Total.
1864.		
Sept. 6	A. R.	A. R.
6	8 0	2	32 0
4	9 1	2	18 2
6	7 0	2	36 0
	6 2	2 6	
5	8 2	2 0	37 0
	6 0	2 4	
	16	4	33 0
8	18 2	2	37 0
8	20 0	1	20 0
Nov. 23			
1865.			
Mar. 2–4	1	1	16 2
	Done badly. I was ill, and could not		
2	8	4	16 2
	Done this piece with cultivator, but not well. Did not [illegible]		
	5 0	1	10 0
8	8 0	4	42 0
	4 2	4	
9	1	4	34 0
11	1 0	4	36 0
12	1	4	19 0
	4 2	4	
10	5 0	4	46 0
	4 2	4	
8	4 0	4	25 0
	4 0	4	
	4 0	4	
6	4	4	32 0
		2	
56	Up to July 27, 1865	400	2
1865.			
Sept. 16, 11	2 0	4	40 0
	and about 2 acres	1	2 0
11			42 0

Since which the land has been too wet. I have not been able to give the quantity of coal, as I have used coal for other purposes; oil the same. Cost of repairs is in the bills with other work, which would take a long time to get out. Rope nearly worn out; has got short. Repairing engine, 32*l.* *J. Moores.* [We have not our correspondent's address.]

Societies.

HIGHLAND AND AGRICULTURAL.—At the half-yearly general meeting of this Society, held this week, Mr. Hope, of Fenton Barns, referred to the experience of Aberdeen, where a voluntary rate of 1*d.* in the pound had furnished nearly twice the sum needed for the measures which had effectually stamped out the disease; so that for one month they had been free. He moved and carried resolutions urging Government to pass a Bill through Parliament which should create county Boards, having power to direct the destruction of infected animals, and to levy rates on landowners and on occupiers for the reimbursement of the stockmasters.

Reviews.

British Medical Journal, Jan. 6, 1866. T. Richards, 37, Great Queen Street, W.C.

Last week's number of the "Medical Journal" contained a very interesting account of Lancisi's work on the Cattle Plague—*De Bovillâ Peste*—written 150 years ago, which it describes as marvellously replete with wisdom and common sense and scientific knowledge.

We extract some of the passages taken from the original treatise, as well as others in which the treatise is described by the reviewer.

The cattle plague, we are told, "first appeared in Italy in 1709, in the district of the Po. It was brought there by an ox from Hungary. Thence the disease, as a neglected spark, spread like a conflа-

gration over Italy.' It did not, however, reach the Campagna (*Latium*) until the summer of 1713. Directly its presence there was announced, most stringent measures were taken to arrest its progress. All traffic in cattle was forbidden, and the severest punishment inflicted on those who disobeyed the order. Then arose the question, how to deal with the infected oxen; whether it would be best at once to destroy every animal within the city boundaries, whether diseased, or supposed to be diseased. 'I advised,' says Lancisi, 'that the animals should be killed; for I argued, that if they were left to a slow death, they would cause great expense in drugs, veterinaries, attendants, &c.; and especially that, by their presence, they would assist in the spread of the contagion. The Sacred College, however, determined that a milder course should be pursued, and remedies tried; and, indeed, were much moved to this by the fact that there were plenty of persons who asserted they had infallible cures for the disease.' 'But the truth is,' added the sagacious Lancisi, 'that in the cattle, as in the human plague, not every one who takes the disease dies of it. Some recover; and thanks to Nature, rather than to the remedies given them.'

"As Lancisi anticipated, these attempts to cure the disease led to its wider spreading. Edicts were issued forbidding the bringing of cattle from the Campagna into the city district of Rome, under penalty of death to a layman, and of the galleys for life to an ecclesiastic. Strictly forbidden also was the sale of the skin, horns, flesh, and fat of the animals; and their bodies were ordered to be buried in deep pits, and covered with quick-lime."

The symptoms of the disease, as described by Lancisi, are the very same which strike the observer now. Even the analogy to the small-pox had not escaped him. The following are his words:—

"'Do we not see that the skin is stripped of its hair by the disease, horripilation, tremor of the shoulders and of the buttocks, and that the skin is infected with spots and pustules (*cutem maculosam, pustulosam, scabiosam*)? Indeed, I should some have thought that the oxen were destroyed not by the plague, but by the pustules called small pox (*bubulos pestis, sed quasi pustulas, quas variolas vocant, obtinere*).'

"Having discussed the nature of the pestilence, Lancisi then asks, But what should we do for its cure?

"'My opinion is this: for the prevention of its contagion, which, *meherculeo!* I would say, is the most excellent and only mode of averting the disease), that we must endeavour to preserve the oxen from being infected, by giving them a proper diet; and that when they are infected, the only thing which can save them from death is still a proper diet. Hitherto the disease has eluded all the powers of pharmacy; and experience has shown, that nothing avails more than a sparing diet. Applications of vinegar, oil, &c., may be used to the tongue, palate, &c. But as to vomiting and violent remedies, they are always hurtful in contagious diseases; and the sentence of Hippocrates may be here well called to mind: 'So act that if you do no good, you at least may do no harm.' I think it is well posterity should know that, of all the many and powerful remedies used during the pestilence, none has been found which will bear the name of a proper or specific remedy.

"As for our experience at Rome, I must confess that we met with no remedy which could be called true, sure, or sound and specific. Many we found useless; many hurtful; and some few seemed useful."

We take further the following passage on prevention:—

"'The only sure remedy for warding off the pestilence is to prevent all intercourse of healthy with infected cattle and with other infected bodies.' It was observed, he says, that those who carefully obstructed every chink through which contagion might approach, preserved their cattle from the plague. Thus, while the plague was raging around, the cattle on the estates of the Colonna and of Prince Borghese, by the greatest care and watching to ward off every possible source of infection, remained unaffected.

"In his last chapter, an appendix, he sums up—

"'The steps which a wise Government should instruct us to take whenever (which may Heaven avert!) the pestilence again appear upon our borders. All roads and by-paths should be carefully guarded, so that no ox or cattle animal be allowed to enter the country. Any animal so entering, should be forthwith destroyed and buried. Should the pestilence, however, gain entrance, the separation of the sick from the healthy must be enforced by fences. Indeed, in my opinion, by far the safest course is instantly to destroy the animal, and with the poleaxe, so that no infected blood may escape on to the ground; for, in attempting to cure the diseased animal, the veterinary surgeon may convey the plague to healthy oxen. The healthy oxen removed from their former pastures, which must now be regarded as contaminated. The diseased oxen should be kept in stables, to which no one is admitted except the veterinary surgeon or the herdsman. The fountains and vessels used by the animals should be frequently cleaned with quick-lime. The clothes of the shepherds also should be fumigated. The dead carcases, from which not one hair is to be removed, are to be buried in deep pits; and any saliva or secretions which may drop from them on the road to the pit to be carefully removed. If any cows are infected, their milk is instantly to be thrown into a hole in the ground; and the severest punishment inflicted on those who disobey this order. The passage of all rustics and dogs from one district into another should be forbidden.

"'So far are the means, and the reasons for employing them, which I offer for the purpose both of avoiding and of suppressing the plague. But, in truth, when I reflect upon the difficulties, the expense, the dangers, and the labours, required in carrying them out, I confess that I know of no means by which the plague may be more easily, more surely, and more expeditiously removed, than by instantly knocking on the head every infected animal, and burying them deeply in the earth."

The following is the concluding remark of the reviewer:—

"In nine months, Rome and the Campagna was freed from the pestilence through the energetic proceedings prescribed for its suppression, whilst it raged in other parts of Italy for several years. 'Should this plague ever recur hereafter,' says Lancisi, 'posterity may study these pages with some satisfaction, and certainly with profit.'"

Calendar of Operations.

[The publication of this and other communications under this head has been unavoidably delayed till now.]

CHATTERIS, CAMBRIDGESHIRE: *January 4.*—The date, January 4, reminds us that we should now be in the midst of winter, with frost and snow around us, but the weather and the temperature would fain convince us that these cold dreary months were already passed, and spring was beginning to dawn upon us. Probably we shall ere long experience a change, and shall have enough of ice and cold. Hitherto we have had scarcely a frosty morning, certainly not one that would inspire any farm operations, and the ploughs have been enabled, without interruption, to prepare the soil for the spring crops. All field work is consequently very forward.

We have, as usual, used the steam cultivator, and we think with great advantage. We began just at the end of harvest, and "smashed up" about 120 acres, giving it the benefit of the fine, hot September weather; the result was a thorough aëration of the soil, and the destruction of all noxious vegetable life. We paid 2*s.* 6*d.* per acre for the manual labour, including everything but the cartage of coals, the removal of the apparatus from field to field, and the necessary preparations for re-commencing work. We did not keep an account of the consumption of coals and oil, and consequently cannot tell the precise cost per acre, exclusive of wear and tear of apparatus. We are so fully convinced of the benefits arising from steam cultivation, that we have ceased to keep minute details of cost, but rather seek to extend the application of the principle.

This is the bright side of the picture, but there is another which common honesty compels us to mention. We have had a bad harvest, and are surrounded on all sides with cattle plague in a most virulent form. The crop of Wheat is turning out no better than was reported at the time of, and just subsequent to, the harvest. About three quarters per acre appears the general yield on fen soils; some is less and some a trifle more, but we question if the average will at all exceed three quarters, and the quality is generally moderate. Oats, even where a bulky crop, are also yielding badly, and are from two to three quarters per acre less than was expected when the crop was harvested. Beans appear to be as near an average as anything. Added to the deficient harvest, and the heavy losses consequent thereupon, we have the rinderpest making fearful havoc amongst many herds throughout the fen country. We therefore commence the new year most inauspiciously.

We have an unusually heavy crop of roots this year. Kohl Rabi is very good, and Mangels are unprecedentedly large, but we shall have great difficulty in getting them consumed. We are fortunately almost without cattle, having only seven head. We sold out our Scots in June, which we bought in Scotland the September previous, and ere we bought again, the plague appeared, and as it now proves, we acted wisely in refraining from purchasing our usual winter's supply. We are using sheep and horses for treading the straw down, having 500 of the former and 50 of the latter. But how is our Grass land to be stocked in the spring? 370 of our sheep are fat, 130 are ewes; the latter consequently are all we shall have for eating the Grass. If all the Grass lands of England are to be largely stocked with sheep instead of bullocks, where are the sheep to come from? and what will be their price with such an increased demand? and where the profits? Pasture lands for the present must be greatly deteriorated in value. We tremble to look into the future, both as it regards the nation generally, and ourselves individually as farmers; but we must trust and seek the guidance of that Providence which has protected and guided us hitherto, and perhaps, when and where we least expect it, deliverance and help may come. The growing Wheats are looking well throughout the whole country, and are strong and vigorous, and will bear a little severe weather with less damage than is frequently the case, and will, we trust, go on favourably until ingathered. *A. S. R.*

Notices to Correspondents.

CHURNING: *P G M'D.* The night before churning, put the cream in a tin to stand in a furnace of warm water, which should gradually reach the boiling heat, until the cream is scalding hot, stirring it occasionally while it is heating. Then take the tin out of the water, pour the cream into another vessel, and let as much as possible of the steam from it escape. Stir it also once or twice while cooling; keep it in a warmer temperature than in the dairy until churned next morning. This removes all disagreeable taste from any kind of food taken by the cows, and was never known to fail in making good butter come in 20 or 30 minutes churning.

DUCKS: *Reading.* We hope shortly to have a report on this subject to publish.

BOOK: *G. B.* Mr. Geyelin's old tress, we believe, is "Poultry Farm, Bromley, Kent." Or you can apply to Mr. Baily.

VACCINATORS OF COWS: *Ibid.* 1. All the vaccine matter used in England is obtained from the human subject. The Italian lymph is human vaccine matter, passed through the system of the cow. Vaccine matter must be for the present obtained from private sources; the "National Vaccine Establishment" cannot more than supply its own demands. 2. The "pamphlet" is the first we have seen on the subject.

Cattle Plague.

PUBLIC NOTICE. REPORT of the ROYAL COMMISSION. *See "Sanitary Recommendations and General Precautions to Prevent the Spread of the Disorder."*

THE DISINFECTING POWDER PRESCRIBED IN THE REPORT IS

M'DOUGALL'S PATENT DISINFECTING POWDER.—It is commended as the best means of Disinfecting Cattle Sheds, Farm Buildings, &c. 8*d.* in bags, 1 cwt. each, at 10*s.* 6*d.*; or £10 per ton. Carriage paid on 4 ton and upwards.

For Washing the bodies of both Healthy and Sick Cattle the Commissioners strongly recommend M'DOUGALL'S PATENT DISINFECTING SOAP. Sold in tablet Canisters at 2*s.* 6*d.*; 10 lb., 5*s.*; 20 lb. kegs, 10*s.*; 50 lb., 25*s.* Directions for use in each package.

ALEXANDER M'DOUGALL, Manufacturing and Agricultural Chemist, London—11, Arthur Street West, London Bridge, E.C.:
Manchester—Riga Street, Shudehill:
Glasgow—F. H. McLeod, 18, Dundas Street:
Dublin—G. J. Alexander, 2, 5, and 4, Mary's Abbey.
Agents in most Towns throughout the Kingdom.

DAY, SON, AND HEWITT'S UNIVERSAL CHEMICAL EXTRACT, for bad cases in Drawing Lambs, and to stop Heaving and Straining. Mr. Woods, in his Lecture on "Breeding and Management of Sheep," says—"My shepherd declares it to be worth 5*l.* current a bottle." Price 2*s.* 6*d.* and 7*s.* per bottle.

Also, the original GASEOUS FLUID, for Debility and Rheumatism, in Ewes after Lambing; for Diarrhœa in Calves and Lambs, and for Colic and Gripes in Horses and Cattle. In feverish cases, and for cleansing in lax and Cows, a dose of the "Red French" should be given.

Mr. Barwick, Author of the Prize Essay on the "Rearing of Calves," says—"I have reared 20 calves this year, and by the use of the Gaseous Fluid I have not lost one."

Price 1*s.* 9*d.* per bottle; or one dozen in a wooden box, 20*s.*

Full Directions for use given with each Article. Prepared by the original and only proprietors—DAY, SON, & HEWITT, 22, Dorset Street, Baker Street, London, W.

FOWLER'S PATENT STEAM PLOUGH and CULTIVATOR may be seen at Work in every Agricultural County in England. For particulars apply to John Fowler & Co., 28, Cornhill, London, E.C.; and Steam Plough Works, Leeds.

AGRICULTURAL IMPLEMENTS.—Steam Engines, Threshing Machines, Pumps, Carts, Waggons, Ploughs, Harrows, Chaff Cutters, Cake Breakers, Turnip Cutters, Rollers, Garden Tools, &c. Improved Wire Netting. Delivered carriage free.
Price Lists per post.
BURGESS & KEY, 36, Newgate Street, London, E.C.
Works, Kingswood, Surrey.

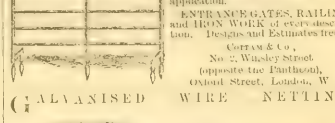
Iron Hurdles, Fencing, and Gates.

COTTAM'S HURDLES are made in the best manner of superior Wrought Iron SHEEP HURDLES, from 4*s.*; CATTLE HURDLES, from 4*s.* 6*d.* each; CONTINUOUS FENCING from 1*s.* per foot; FIELD GATES, from 25*s.* each. Illustrated Price List on application.

ENTRANCE GATES, RAILING, and IRON WORK of every description. Designs and Estimates free of

COTTAM & CO.,
No. 2, Wansley Street
(opposite the Pantheon),
Oxford Street, Paddington, W.

GALVANISED WIRE NETTING.



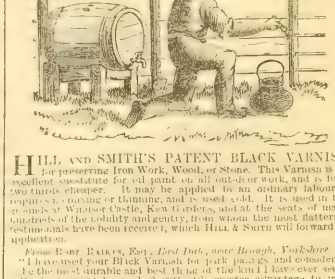
PRICES of NETTING, 24 inches high.

Size of Mesh.	Proof against	Light, per Yard.	Medium, per Yard.	Strong, per Yard.	Extra Strong, per Yard
2½ inch	Hares, Dogs, Poultry, &c.	4*d.*	5*d.*	6*d.*	7*d.*
2 inch	All kinds of Game	4½*d.*	6*d.*	6½*d.*	8*d.*
1½ inch	Small Rabbits, Hares, &c.	4½*d.*	6*d.*	7*d.*	9*d.*
1 inch	Ditto	5*d.*	7*d.*	9*d.*	11*d.*

100 Yards and upwards Carriage Free.

GALVANISED IRON WATER CISTERNS.
GALVANISED CABLE STEAD FENCING.
GALVANISED IRON PUMPS.
GALVANISED SWING WATER BARROWS.
GALVANISED IRON COOPS and BUILDINGS.
LAWN MOWERS, GARDEN ROLLERS.
ASPHALTE ROOFING FELT, 1*d.* per square foot
HURDLES, RURDLES, HURDLES, 3½ to 5*s.* 9*d.* per yard.
MOTLEY & GREEN, late H. J. MOTLEY & CO.
Illustrated Catalogues and Estimates free on application.
1 Great Grange Street, Leeds.

Oil Paint no longer Necessary.



HILL AND SMITH'S PATENT BLACK VARNISH for preserving Iron Work, Wood, or Stone. This Varnish is an excellent substitute for oil paint on all out-door work, and is fully two thirds cheaper. It may be applied to an ordinary labourer, requires no heating or thinning, and is used cold. It is used in the Conservatories at Windsor Castle, Kew Gardens, and at the seats of many hundreds of the nobility and gentry, from whom the most flattering testimonials have been received, which HILL & SMITH will forward on application.

From HENRY RAIKES, Esq., *Lost Dub, near Brough, Yorkshire.*
"I have used your Black Varnish for park palings, and consider it by far the most durable and best thing of the kind I have ever seen. This, it might be applied with still greater advantage to iron fencing instead of paint, and it is my intention so to employ it in future."

Sent in casks of about 20 gallons each, at 1*s.* 6*d.* per gallon, at the Manufactory, or 1*s.* 8*d.* per gallon paid to any Station in the kingdom.

Apply to HILL & SMITH, Brierley Hill Iron Works, near Dudley, and 22, Cannon Street West, E.C., from whom only it can be obtained.

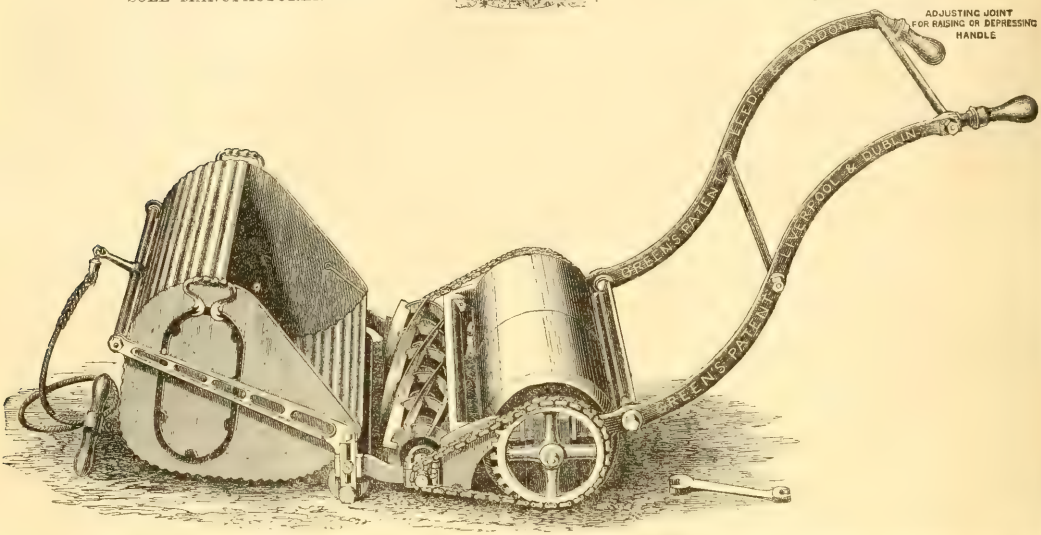
GREEN'S PATENT SILENS MESSOR,

OR

NOISELESS LAWN MOWING, ROLLING, and COLLECTING MACHINES.

BY SPECIAL APPOINTMENT,
SOLE MANUFACTURER

TO HER MOST GRACIOUS MAJESTY
THE QUEEN.



The above Machines have proved to be the best, and have carried off every Prize that has been given in all cases of competition, and in proof of them upwards of 30,000 have been sold since the year 1856.

They are the only Machines that have been in constant use at the Royal Horticultural Society's Gardens, South Kensington, since its opening, and at most of the principal places in the United Kingdom, where they have given entire satisfaction, being more durable, less liable to get out of order, and can be worked with greater ease than any other Lawn Mower extant; they are the only Machines that are fitted up with the Patent Self-sharpening Reversible Cylinder Cutters.

Every Machine is warranted to give entire satisfaction, and if not approved of, can be returned unconditionally.

Having above 3000 Machines in stock at our Leeds, London, and Dublin Establishments, we are in a position to execute orders on the day they are received.

PRICES OF HAND MACHINES.

To Cut 10 inches	..	..	..	£3	10	0	*Suitable for a Lady.*	To Cut 18 inches	..	..	..	£7	10	0	*Suitable for One Person.*
,, 12 ,,	..	..	..	4	10	0	,, ,,	,, 20 ,,	..	..	..	8	0	0	*Suitable for Two Persons.*
,, 14 ,,	..	..	..	5	10	0	*Suitable for One Person.*	,, 22 ,,	..	..	..	8	10	0	,, ,,
,, 16 ,,	..	..	..	6	10	0	,, ,,	,, 24 ,,	..	..	..	9	0	0	,, ,,

Packing Cases are charged at the following low rates, viz.: for the 10 and 12 inches Machine, 3*s.*; 14 and 16 inches, 4*s.*; 18 and 20 inches, 5*s.*; 22 and 24 inches, 6*s.* Parties providing themselves with Lawn Mowers are recommended to purchase the Cases in which to stow them away, when not in use, to prevent them from getting damaged; if returned, two-thirds will be allowed for them.

PRICES of HORSE, PONY, and DONKEY MACHINES, including Patent Self-delivery Box; Cross Stay complete; suitable for attaching to ordinary Chain Traces or Gig Harness.

To Cut 26 inches	..	..	..	£13	0	0	*Leather Boots for Donkey*, 18*s.*
,, 28 ,,	..	..	..	15	0	0	
,, 30 ,,	..	..	..	17	0	0	
To Cut 30 inches	..	..	..	£21	0	0	*Leather Boots for Pony*, 22*s.*
,, 36 ,,	..	..	..	24	0	0	
,, 42 ,,	..	..	..	27	0	0	*Leather Boots for Horse*, 26*s.*
,, 48 ,,	..	..	..	30	0	0	

The 26, 28, and 30 inches can easily be worked by a Donkey, or by Two Men, on an even Lawn, the 30 and 36 inches by a Pony, and 42 and 48 inches by a Carriage Horse; and, as the MACHINES make no noise in working, the most spirited animal can be employed without fear of its running away, or in any way damaging the MACHINE.

Both the HORSE, PONY, DONKEY, and HAND MACHINES possess (over all other Makers) the advantage of self-sharpening: the cutters being steel on each side, when they become dull or blunt by running one way round the cylinder, can be reversed again and again, bringing the opposite edge of the cutter against the bottom blade, when the MACHINE will cut equal to new. Arrangements are made that the cylinder can be reversed by any inexperienced person in two or three minutes.

The above MACHINES are made from the best materials, and of superior workmanship; are delivered Carriage Free to all the principal Railway Stations and Shipping Ports in England.

THOMAS GREEN AND SON, SMITHFIELD IRON WORKS, LEEDS;
54 and 55, BLACKFRIARS ROAD, LONDON, S.; and 19, EDEN QUAY, DUBLIN.

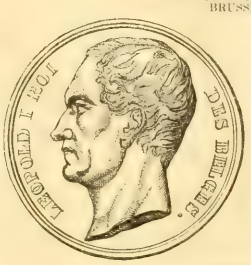
PRIZE MEDALS AWARDED TO
GREEN'S PATENT LAWN MOWERS.

LONDON, 1862.

SOCIÉTÉ ROYALE DE FLORE, BRUSSELS, 1862.

LONDON, 1862.

SOCIÉTÉ ROYALE LINNÉENNE.
1861, 1862, and 1863.

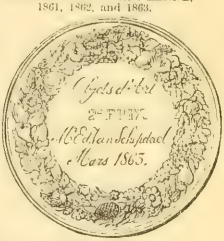


NAMUR, 1862.

SOCIÉTÉ ROYALE LINNÉENNE,
1861, 1862, and 1863.

LAEKEN, 1862.

GREEN'S
PATENT
LAWN MOWERS
have proved to be the best, and carried off every Prize that has been given in all cases of competition.



SOCIÉTÉ ROYALE DE FLORE, BRUSSELS, 1863.

GAND, 1862.

THOS. GREEN AND SON,
SMITHFIELD IRON WORKS,
LEEDS;
54 & 55, BLACKFRIARS ROAD,
LONDON, S.;
AND
19, EDEN QUAY, DUBLIN.

LIÉGE, 1861.

DUBLIN, 1865.

HAMBURG GRANDE EXPOSITION UNIVERSELLE
D'AGRICULTURE ET D'HORTICULTURE.

DUBLIN, 1865.

JAMES PHILLIPS AND CO.
beg to submit their prices as follows:—

GLASS for ORCHARD HOUSES,

As supplied by them to Mr. Rivers, to the Royal Horticultural Society, and to most of the Nobility, Clergy, and Gentlemen of the United Kingdom.

Each Box contains 100 feet. The prices only apply to the sizes stated.

Squares 20 by 12, 20 by 13, 20 by 14, 20 by 15	16 oz. to the Foot
Fourth quality	14s. 6d. per box 21 oz.
Third ditto	17s. " 25
Seconds	19s. " 25s.
English	19s. " 21s.

The above prices include the Boxes, which are not returnable.

SMALL SHEET SQUARES
In 100 feet Boxes.

6 by 4	6½ by 4½	7 by 5	7½ by 5½	12s. 6d.
8 by 6	8½ by 6½	9 by 7	9½ by 7½	13s. 6d.
		10 by 8	10½ by 8½	

Boxes 2s. each, returnable at full price.

HARTLEY'S PATENT ROUGH PLATE GLASS
Packed in Boxes of 50 feet each.

6 by 4 and 6½ by 4½	10s. 6d. per box
7 by 5 and 7½ by 5½	12s. "
8 by 6 and 8½ by 6½	13s. 6d. "
9 by 7 and 9½ by 7½ and 10 by 8	15s. "

Boxes 2s. each, returnable at full price.

London Agents for HARTLEY'S IMPROVED PATENT ROUGH PLATE.

LINSEED OIL, Genuine WHITE LEAD, CARSON'S PAINTS, PAINTS of various colours, ground ready for use.

180, Bishopsgate Street Without, London, E.C.

GRAY'S OVAL TUBULAR BOILER.

INTERNATIONAL EXHIBITION, CLASS IX., No. 2119.

Mr. GRAY begs to call the attention of the Nobility, Gentry, Nurserymen, Gardeners, &c., to his

NEW OVAL TUBULAR BOILER,

acknowledged by practical judges to be a great improvement on every form of Tubular Boiler yet introduced. It has proved itself superior to all other Boilers for quickness of action and economy of Fuel, doing its work with one-third less the amount required by any other.

Extract from Report in Gardeners' Chronicle *of International Exhibition, May 24, page 476.*

"The upright form of Boiler is usually made on a circular plan, but the oval form given to Mr. GRAY'S variety of it is said to be preferable in consequence of its bringing the tubes in closer contact with the fire. The usual form of a furnace being a parallelogram rather than a square, it seems feasible that the Boilers on the oval plan should bring the tubes more completely within range of the burning fuel; and this being so, the change, though a slight one, is no doubt an improvement."

They are made of all sizes, which, with prices, may be had on application.

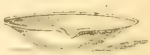
JAMES GRAY, HORTICULTURAL WORKS,
DANVERS STREET, PAULTON'S SQUARE, KING'S ROAD, CHELSEA, S.W.

NEW TARIFF OF GLASS AND HORTICULTURAL GOODS.

HAND GLASSES.

THOMAS MILLINGTON,
GLASS AND COLOUR MERCHANT,
87, BISHOPSGATE STREET WITHOUT, LONDON, E.C.

PRESERVE JARS.


MILK PANS.

REDUCED TARIFF FOR SHEET GLASS AND HORTICULTURAL GOODS.

WEEKS'S
IMPROVED PRINCIPLE of DOUBLE GLAZING.

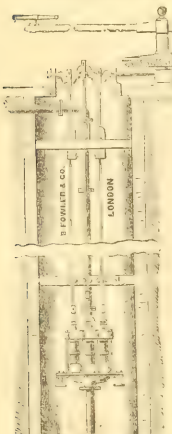
Among the numerous objections to the employment of Two Sets of Sashes for Double Glazing, it has been stated that they are *too expensive, and unsightly in appearance*: that the necessary increase in the size of the Rafter and the additional Scantlings for the extra Glass *cause dead loads*, that being Fixtures they are *inconvenient to remove* when required, and consequently *not easily repaired*; that they *neutralize that neat, light appearance* so sought for in Glass Structures.

To obviate these failings, J. WEEKS AND CO. have the pleasure to announce that by means of a *very simple contrivance, they are executing* DOUBLE GLAZING *upon a highly improved principle, which requires no additional Framework, no putty, is elastic and self-adjusting, neat, efficient, light in appearance, and very inexpensive.*

The whole of the Glass of an ordinary Roof can be fixed or removed by an intelligent labourer in about an hour. The entire cost of the Apparatus, fixed and Glazed complete, is only a fraction in addition to the expense of the Glass. *The Apparatus can be easily attached to existing Houses.*

In future Glass Roofs may at *the option and free of any additional expense to the purchaser*, be prepared on WEEKS'S IMPROVED DOUBLE-GLAZING PRINCIPLE.

J. WEEKS AND CO., HORTICULTURAL ENGINEERS, KING'S ROAD, CHELSEA, S.W.



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CLINTON & OWENS
(LATE BENJAMIN FOWLER & CO.)
MANUFACTURERS OF
PUMPS AND HYDRAULIC MACHINERY,
WHITEFRIARS STREET, FLEET STREET, LONDON, E.C.

28 A.

TYPE LANDSCAPE SKETCH shows an application of THE IMPROVED HYDRAULIC RAM. This is a simple Self-acting Machine, suited for raising a Supply of Water for Farm, Public and Private Establishments. Its adoption is not confined to Mansions only, but is suited for any situation where a Fall can be obtained from a Stream, Brook, or Spring.

Messrs. CLINTON & OWENS have Hydraulic Engineers in various parts of the country for raising from one to 100,000 more Gallons per day to elevations varying from 6 to 500 feet, and forming, through many intervening yards to several miles in length.

No. 27. IMPROVED TREBLE BARREL PUMPS with HORSE GEARING for Raising Water from DEEP WELLS for the supply of MANSIONS and PUBLIC BUILDINGS.

No. 28a. DOUBLE BARREL PUMPS for HAND-POWER for similar purposes.

Messrs. CLINTON & OWENS Manufacture and Erect every description of Engineers Work required in Public or Private Establishments such as Pumps of all Dimensions on the largest or smallest scale, Steam Engines, Water Wheels, Turbines, Warming and Drying Apparatus, Baths, Gas Works and Fittings. Estimates furnished from Plans or on inspection of position.

Price Lists of Pumps, &c. free on application.

THE LONDON MANURE COMPANY
(ESTABLISHED 1840),
Have now ready for delivery
WHEAT MANURE, for Autumn Sowing.
DISSOLVED BONES, for Dressing Pasture Lands.
SUPERPHOSPHATES of LIME, &c.
Genuine PERUVIAN GUANO and NITRATE of SODA, ex Dock
WARRANTED SULPHATE of AMMONIA, FISHERY SALT, &c.
Offices, 116, Fenchurch Street, E.C. EDWARD PERSER, Secretary.

LAWES' MANURES.
The Manures manufactured by J. B. LAWES for the present season of 1866 are now ready for delivery at his Factories, at the following prices, per ton:

	£	s.	d.
LAWES' PATENT TURNIP MANURE, and BONE SUPERPHOSPHATE of LIME	6	6	0
LAWES' SUPERPHOSPHATE of LIME from BURNT BONE or MINERAL PHOSPHATES	5	5	0
LAWES' WHEAT, BARLEY, GRASS, and MANGEL MANURES	8	0	0
CONCENTRATED CORN and GRASS MANURE	12	0	0

These Manures can be obtained of Mr. LAWES, or through the appointed Agents in all parts of the United Kingdom, at prices varying according to cost of carriage.
Get pure Peruvian Guano direct from the Importers. Nitrate of Soda, Sulphate of Ammonia, and other Chemical Manures
Also Bones and other Chemical Manures at Market prices.
Address, JOHN BENNET LAWES, 1, Adelaide Place, London Bridge, E.C.; and 22, Eden Quay, Dublin.

THE PATENT NITRO-PHOSPHATE or BLOOD MANURE COMPANY, LIMITED, Manufacturers of ADAMS'S PATENT BLOOD MANURE for CORN and ROOTS. ADAMS'S SUPERPHOSPHATE of LIME and DISSOLVED BONES
Chief Offices 109, Fenchurch Street, London, E.C.; Western Counties Branch: Queen Street, Exeter; Irish Branch: 80, Westmoreland Street, Dublin.
Works: Plaistow, Essex; and Ebford, Topsham, Devonshire
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Edward Bell, 48, Marine Parade, Brighton.
Richard Hunt, Stanstead Abbot, Herts.
Thomas Knight, Edmonton, Middlesex.
Robert Leeds, West Lexham, Norfolk.
George Savile, Ingthorpe, near Stamford.
Samuel Jonas, Chisleall Grange, Essex.
Charles Dorman, 25, Essex Street, Strand.
Thomas Webb, Hildersham, Cambridgeshire
Managing Director—JAMES ODAMS.
Bankers—Messrs. Barnetts Hoares & Co., Lombard Street.
Solicitors—Messrs. Kingsford & Dorman, 22, Essex Street, Strand.
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Secretary—C. T. MASADAM

This Company was originally formed by, and is under the Direction of Agriculturists, entirely to ensure that have justly earned for it another Title, viz. "THE TENANT FARMERS' MANURE COMPANY."
Its Members are Cultivators of upwards of 50,000 Acres of Land, which has been for years under their personal control with Manures of their own Manufacture. The Consumer, therefore, has the best Guarantee for the genuineness and efficacy of the Manures manufactured by this Company.
A Prospectus will be forwarded on application to the Secretary, or may be had of the local Agents.
C. T. MASADAM, Secretary
Chief Offices, 109, Fenchurch Street, London, E.C.

PALM-NUT MEAL, Manufactured by ALEXANDER M. SMITH & Co., Kent Street Mills, Liverpool.
£7 a Ton free to Rail or Boat in Liverpool.
£7 10s. delivered to Rail in Bristol.
£7 12s. delivered to Rail in London.
In Bags containing 2 cwt. each, branded
"This valuable Meal, containing above 20 per cent. of fatty matter, is recommended as economical food to mix with home-grown produce" (see Dr. Voelcker, R. A. S. E. Journal, Vol 1, 2d Series, page 170)
For further particulars and Analyses apply to Messrs. SMITH, or their Agents, Messrs. HUMPHRIES & Co., Bristol.
JOHN COLEMAN, 150, Leadenhall Street, E.C., London Agent.

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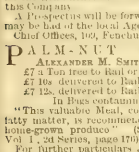

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SALE THIS DAY AT HALF-PAST TWELVE O'CLOCK.
Important Sale of Plants from Surrey.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on SATURDAY, January 20, at half-past 12 o'Clock precisely, without reserve, a large and choice COLLECTION of HARDY ORNAMENTAL TREES and SHRUBS, FRUIT TREES, &c., from one of the oldest established Nurseries in Surrey. Several hundred fine Bulbs of GLADIOLUS, RUSTIC GARDEN STAKES, GARDEN TOOLS, VASES, &c. 250 DWARF ROSES, CONIFERÆ, &c.
On view the Morning of Sale, and Catalogues had

2000 Lilium auratum Bulbs

Just arrived per Mail Steamer from Japan; and SIX CASES of Imported MONTBRETIAS, Mixed and Assorted.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY, January 22, at half-past 12 o'Clock precisely, 2000 fine BULBS of LILIUM AURATUM, just arrived per Mail steamer from Japan. And SIX CASES of Imported ODONTOGLOSSUMS, comprising probably many new varieties. In consequence of Clean Seed of PITCAIRNIA SPECIOSA, some fine Imported Plants of CATTLEYA LEOPOLDI, and some specimen Stove and Greenhouse Plants.
On view the Morning of Sale, and Catalogues had

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On view the Morning of Sale, and Catalogues had

Consignment of Plants from Wiltshire.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on SATURDAY, January 27, at half-past 12 o'Clock precisely, a first-class COLLECTION of PLANTS, consisting of Roses, Cut-flowering Shrubs, Picotees, Pinks, Auriculas, Iris, Holly, Wellingtonias, Azaleas, Rhododendrons, Weeping Standards, Specimen Box, Clematis, Spiræas, Deutzias, Yuccas, Mahonias, Laurels, &c. Also a first-rate assortment of Fruit Trees, &c.
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Cedrus Deodara Seed, just arrived per Mail Steamer.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY, January 29, at half-past 12 o'Clock precisely, several hundred pounds weight of clean Seed of CEDRUS DEODARA, just arrived per Mail Steamer.
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MR. J. C. STEVENS begs to announce that he is favoured with instructions, by order of the Executors, to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, on MONDAY, March 5, and following day, the very VALUABLE BOTANICAL LIBRARY of the late DR. LINDLEY, Ph.D., F.R.S., &c. The above Library contains a very complete series of nearly all the Botanical Works known, and the greater part originally formed and in perfect condition.
Catalogues are preparing, and the Day of Sale will be announced in future advertisements.—KING Street, Covent Garden.

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REDLANDS FARM ESTATE, about 4 miles from the Reading Stations of the Great Western, South-Eastern, and South-Western Railways.
MR. F. G. FULLER has received instructions from the Redlands Estate Company, Limited, to offer for Public Competition, at the George Hotel, Reading, on TUESDAY, Jan. 23, at Four o'clock precisely, in One Two, or Three Lots, a LEASE or LEASES of a portion of the REDLANDS FARM ESTATE, containing about 160 Acres, which is admirably adapted for Market Garden purposes, for a right of way being reserved to the Company to resume possession at any time during the tenancy of any portions of the Land which they may require for building purposes, and to such other conditions as shall be submitted at the Auction. The Lease will be granted for about seven years, and the Tenant will be compensated for any portion of the Land which the Company may require.
Further particulars can be obtained, and Plans of the Property seen, at the Offices of Messrs. T. & J. K. ROGERS, Solicitors, The Forbury; and of Mr. FULLER, Friar Street, Reading.

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ONCE BY HIS MAJESTY THE KING OF HOLLAND;

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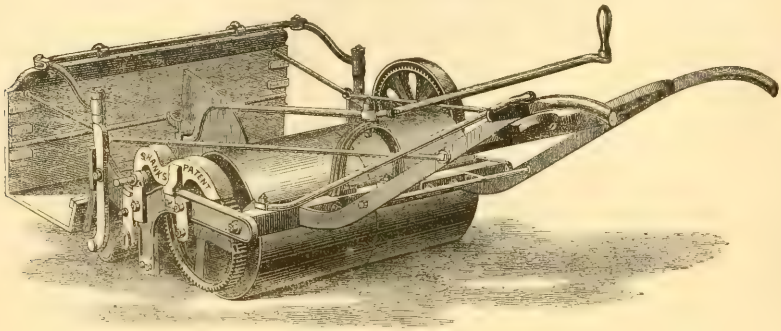

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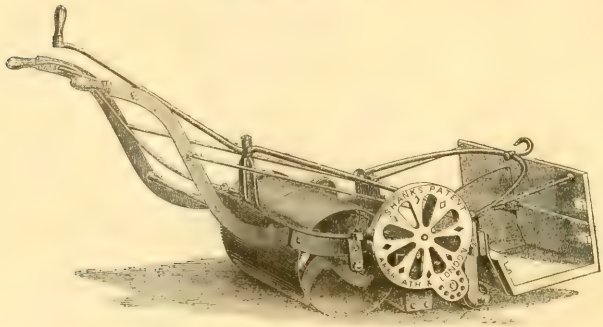

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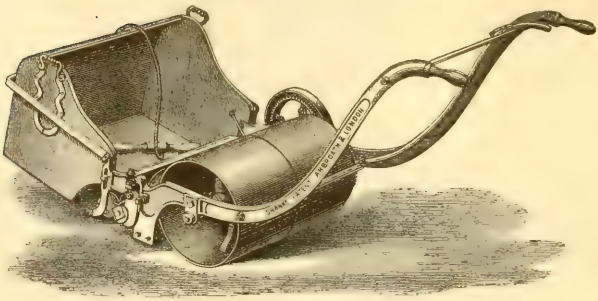

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THE GARDENERS' CHRONICLE

AND

AGRICULTURAL GAZETTE.

A Newspaper of Rural Economy and General News.

No. 4.—1866.] SATURDAY, JANUARY 27. {Price Fivepence. Stamped Edition, 6d.

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INTERNATIONAL HORTICULTURAL EXHIBITION and BOTANICAL CONGRESS.

Under the Patronage of Her Majesty The Queen, and of their Royal Highnesses the Prince of Wales and the Duke of Cambridge.

The EXHIBITION and CONGRESS will OPEN on MAY 22, and continue till May 25. Subscribers' names will be received, and Schedules and Prospectuses may be obtained on application to the Secretary, at the Offices, 1, William Street, Lowndes Square, London.

BRISTOL, CLIFTON, and WEST of ENGLAND HORTICULTURAL MEETINGS, 1866.

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Butler & McCulloch, Covent Garden Market, W.C.

Gladiolus Bowtiensis.

THOMAS BARNES offers the above in strong flowering bulbs, by the 100 and 1000. Prices, which are very low, may be had on application.

Dane Croft Nursery, Stowmarket.

Early Spring Flowers.

WEBB'S GIANT POLYANTHUS and GIANT COWSLIPS, and other varieties, largest stock in England. List and prices on application to Mr. Webb, Calcot Gardens, Reading.

H. AND F. SHARPE, Seed Growers and Merchants, Wisbech.

SPECIAL PRICED LIST of NEW SEEDS on application.

Nursery and Seed Establishment (Established 1787).

THOMAS KENNEDY and CO., Nurserymen, Seedsmen, and Florists, Dumfries, N.B.

DESCRIPTIVE PRICED CATALOGUES forwarded to any address on application.

JAMES FAIRHEAD and SON, Seed Growers and Merchants, 7, Borough Market, London, S.E.

New and Genuine AGRICULTURAL, GARDEN, and FLOWER SEEDS. Special prices and advantageous offers on application.

Genuine Garden and Agricultural Seeds.

JAMES CARTER and CO., Seed Farmers, Merchants, and Nurserymen. 237 and 238, High Holborn, London, W.C.

JOSEPH BAUMANN, Nurseryman, Ghent, Belgium, begs to offer 100 fine CAMELLIAS, with Flower Buds, £6; 100 Dutto, stronger plants, £8, £10.

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DAHLIAS, DAHLIAS, DAHLIAS.—Three Thousand Pot Roots, of the best sorts, including 1864, at 20s. per 100; 300 large Stools, 12s. per dozen. Ten per cent. allowed on all orders that contain cash. Post Office orders payable to

J. C. Fabian, Boston Spa, Yorkshire.

Broccoli All the Year Round.—See

SUTTON'S AMATEUR'S GUIDE (Illustrated). Price Sixpence post free; gratis to customers.

Sutton & Sons, Royal Berkshire Seed Establishment, Reading.

The Forwardest Field Pea is

SUTTON'S EARLY RACEHORSE. For price, depending on quantity required, apply to

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THE INVINCIBLE SCARLET SWEET PEA. The Trade can still be supplied. Price on application.

Stephen Brown, Seed Grower, Sudbury, Suffolk.

Potatos for Planting.

SUTTON'S DESCRIPTIVE LIST Free.

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Several Tons of Seed Potatos, Garden Varieties.

W. P. LAIRD and SINCLAIR, Nurserymen and Seedsmen, Dundee, N.B.

Special offer of above on application.

LINCOLNSHIRE GEM PEAS (Martin & Son).—See Testimonials. Superior to Dixon's Yorkshire Hero or any other Peas grown here.

Hull, 7, Market Place; and Cottingham. Established 1788.

PATERSON'S FAMED SEEDLING POTATOS. APPOINTED AGENTS in LONDON:

Hooper & Co., Covent Garden Market, London, W.C.

Particulars and Lists furnished.

MYATT'S PROLIFIC KIDNEY POTATO.—A few Tons of carefully selected Seed to be Sold Cheap.

Apply to Alfred Fryer, Nurseries, Chatteris, Cambridgeshire.

EARLY KIDNEY POTATOS.—Webb's Telegraph, first early, 20s. per bushel; Webb's President, second early, 16s. per bushel; Webb's Imperial Kidney (best Potato known for all purposes), 12s. per bushel.

Apply to Mr. Webb, Calcot Gardens, Reading.

ROYAL ASH-LEAF POTATO.—This is one of the earliest and the most productive of all the Ash-leaf Kidney Potatos. Price per ton of finely prepared seed given on application to Messrs. Thos. Rivers & Son, Nurserymen, Sawbridgeworth.

DAINTREE'S SEEDLING POTATO is the best early round white Potato in cultivation, and can be obtained at a moderate price on application.

Mr. S. A. Daintree, Pendragyron, St. Ives, Hunts.

SEED POTATOS.—Myatt's Prolific Kidney, Early Dalmahoy, Webb's Imperial Kidney, Daintree's Seedling, and all the best early and late varieties at low prices.

H. & F. Sharpe, Seed Growers and Merchants, Wisbech.

Scrymger's Brussels Sprouts.

SEED of the above excellent variety can be had true from the raiser, in packets at 1s.; post free 14 stamps.

Price to the Trade on application.

G. Scrymger, Sonning, near Reading.

To the Trade.

TO BE SOLD, Cheap, a large quantity of 1-year SEAKAIL PLANTS; also 2-year ASPARAGUS PLANTS.

Prices on application to

Carstairs & Sons, Warriston Nurseries, Edinburgh.

SANDRINGHAM NEW DWARF WHITE CELERY. Superior variety, fine flavour, very crisp and solid.

Peter Lawson & Son, 28, King Street, Cheapside, London, E.C.

WANTED, 30 Strong CUCUMBER PLANTS, of good Varieties. State lowest price to

G. Walkling, Seedsman and Florist, North Row, Lewisham, S.E.

FINEST LAWN MIXTURE.—Composed only of the best and cleanest Seeds of the most suitable dwarf Evergreen Grasses. 1s. per lb. Carriage free.

James Dickson & Sons, Seed Merchants, 102, Eastgate Street, Chester.

CARTER'S GARDENERS' VADE MECUM for 1866 now ready.

LONDON SEED COMPANY, LIMITED. 6, Wellbeck Street, Cavendish Square, London, W.

LONDON SEED COMPANY, LIMITED.—CATALOGUES and PRICE CURRENTS are now ready. COMPLETE COLLECTIONS of GARDEN SEEDS for a whole year's supply, from 5s. to 6*l.* 6*s.* upwards.
Offices, 6, Wellbeck Street, Cavendish Square, London, W.

Seeds for the Garden.

COMPLETE COLLECTIONS of GARDEN SEEDS for Cottage and Small Gardens, at 10s. 6*d.*, 15s., 20s., 30s., and 40s. each. CATALOGUES can be had on application at the Offices of the London Seed Company, 6, Wellbeck Street, Cavendish Square, W.

SEEDS for the GARDEN.—All Orders amounting to 20s. and above will be sent Carriage Free to all parts of the United Kingdom by the London Seed Company, Limited.
CATALOGUES can be had on application at the Offices, 6, Wellbeck Street, Cavendish Square, W.

LONDON SEED COMPANY, LIMITED.—This Company was formed by the Purchase of an Old-Established Business of seventy years' standing. CATALOGUES can be had Gratis on application at the Offices of the Company, 6, Wellbeck Street, Cavendish Square, London, W.

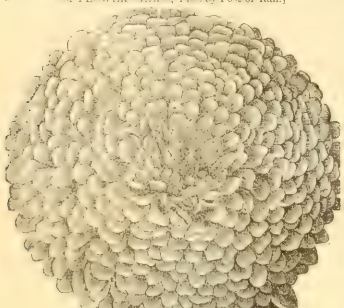
Botanic Nurseries, Biggleswade, Beds.

NEW PLANTS.—MIMULUS DUPLEX, 12 sorts, 20s. VARIEGATED VERBENA (POPULAR).—Scarlet Flowers, 12 for 5s.

ANEMONES.—Extra fine, 2-year, 3s. 6*d.* per 100.
EDWARD SHOWER.

SPLENDID FRESH-IMPORTED CALIFORNIAN SEEDS, warranted growth of 1865.
WELLINGTONIA GIGANTEA, 1000 seeds, 6s.; 5000 seeds, 25s.; 1 oz. (about 9000 seeds), 2*l.* 2*s.* 6*d.*; 1 oz., 5*l.* 5*s.*
PINUS LAMBERTIANA (true), 30s. per lb.; 15s. per 4 oz.; 8s. per oz.
All other seeds equally cheap. Larger quantities on application. Free by Parcels Post.
Thomas Lobb, Trans-Atlantic Nurseries, Fulham, S.W.

SUTTON'S CHOICE COLLECTIONS of FLOWER SEEDS, Free by Post or Rail.



To those requiring showy kinds of Flower Seeds, and who are not well acquainted with the sorts, we respectfully recommend to leave the matter to us, and we will supply those we know to be really worthy cultivation.

		£	s.	d.
1.	Hundred best sorts (hardy, half-hardy, and tender)	1	1	0
2.	Fifty best annuals ditto ditto	0	10	6
3.	The best 36 sorts ditto ditto	0	7	6
4.	The best 24 sorts ditto ditto	0	5	0
5.	Twenty-four fine showy sorts (climbers)	0	5	0

PRICED CATALOGUES gratis and post free on application.
Sutton & Sons, Royal Berkshire Seed Establishment, Reading.

CHRYSANTHEMUMS, and How to have them Fine for the Exhibition.—Use STANDEN'S GARDENER'S and AMATEUR'S FRIEND.

STANDEN'S GARDENER'S and AMATEUR'S FRIEND, a highly concentrated Bone-dust Fertiliser, for Chrysanthemums and all kinds of Show and Greenhouse Plants, Vines and other Fruit Trees in pots, &c.; also Vegetables, &c., in the open ground.

No. 1 FERTILIZER is the best adapted for Chrysanthemums and Hard-wooded Plants of every description.

No. 2 FERTILIZER is recommended for Soft-wooded Plants, Bulbs, &c.

Sample Canisters, 1*s.* & 2*s.* 6*d.* Bags, 5*s.*, 10*s.* 6*d.*, and 21*s.*
May be had of the leading Nurserymen and Seedsmen.
BARR & SUGDEN, Seed and Plant Merchants, 12, King Street Covent Garden, W.C.
A List of Agents will shortly be published.

Seeds of New and Beautiful Plants.

C. J. PARKER has much pleasure in again offering a Selection of his Choice New HYBRID FLOWERS, which have given such perfect satisfaction in past seasons, and he feels very confident that the Seeds of these will also effect and produce flowers far surpassing the best ever previously sent out.

	Per packet.	s.	d.
PELARGONIUMS. Very choice, from the beautiful collection of [illegible]			
TROPÆOLUM [illegible]		2	6
PELARGONIUMS. Selected with care from a choice [illegible]		1	0
MIMULUS. Some [illegible]		1	0
TROPÆOLUM and PETUNIA.			

These two [illegible] are excellent [illegible] you are excellent [illegible] Annual [illegible] the latter also many handsomely striped and [illegible] which, whether in pots or beds, must produce a satisfactory [illegible]

"You could have produced such flowers as were never seen in this country before."—*J. T., Vice-P. S. Aberdeen.*

C. J. PARKER, Forest Nursery, Leytonstone, E.

GRAPE VINES from Pots, of all the leading varieties. Prices on application. Exotic Nursery, Godalming, Surrey.

GARDEN SEEDS.

OSBORN & SONS'

SELECT CATALOGUE OF THE ABOVE

May now be had on application, and they beg to call special attention to the following Select Articles:—

	Per packet.	s.	d.
OSBORN'S WHITE WINTER BROCCOLI	..	1	6
NEW AMERICAN TOMATO	..	1	6

This is very large, and less watery than the old Red.

	Per packet.	s.	d.
ROWDEN'S BROWN COS LETTUCE	..	1	6
SCOTT'S SUPERB WHITE COS LETTUCE	..	1	0
BELLE BONNE SUMMER CABBAGE LETTUCE		1	0

These three Lettuces are less liable to run than any we know.

FULHAM NURSERY, S.W.

GARDEN SEEDS.

ELEVEN PRIZES AT THE SOUTH KENSINGTON SHOW IN JULY LAST.

WILLIAM PAUL

(SON and SUCCESSOR to the late A. PAUL), WALTHAM CROSS, LONDON, N.,

BEGS TO ANNOUNCE THAT HIS

NEW SEED CATALOGUE IS NOW READY,

AND WILL BE FORWARDED ON APPLICATION FREE BY POST.

It is well known that both Vegetables and Flowers vary much in quality from Seed, and to insure the best races all the critical and important crops are home saved, or saved expressly for him under his own supervision. In proof of the success of this course he may state that no less than Eleven Prizes were awarded to the productions of his Seeds at the Royal Horticultural Society's Show in July last.

Foreign and Colonial Orders carefully attended to, and packed by experienced packers.

NOVELTIES FOR 1866.

E. G. HENDERSON & SON

RESPECTFULLY OFFER THEIR

NEW SEED CATALOGUE FOR THE PRESENT SEASON,

Containing full descriptions of the following Novelties, with many others from the Continent.

Post Free on application.

VIOLA CORNUTA, in Seed and Plants.—One of the best known species, admirably adapted for chaste marginal effect to summer and autumn flower-beds.

TROPÆOLUM COMPACTUM COCCINEUM.—The finest scarlet-flowered bedding variety of the "Tom Thumb" section.

LYCHNIS GRANDIFLORA GIGANTEA.—A splendid scarlet-flowered variety for a bed or clump, or pot-plant.

HELIPTERUM AUREUM NANUM.—A lovely little yellow-flowered species, 6 inches high.

CELOSIA RACEMOSA ELEGANS.—The best of known kinds for pot-culture, in conservatory decoration, true from seed.

LOBELIA ERINUS, PRINCE ALBERT.—Fine habit, one of the finest in its section for bedding.

YELLOW PERFECTION WALLFLOWER.—A beautiful variety, true to its colour and habit. Received a Certificate from the Royal Horticultural Society.

CYCLAMEN. From our unrivalled collection, in varied colours, separately or mixed.

PRIMULA SINENSIS FILICIFOLIA.—The beautiful Fern-like leaved variety, white and crimson, separately or mixed.

LILIUM AURATUM (Golden-rayed Japan Lily).—The most beautiful of its tribe. New Seed just gathered.

NEW PRIZE MELONS.

For descriptions of these first-class Fruits, see last Numbers of *Gardeners' Chronicle.*

THE NEW CLIANTHUS DAMPIERI,

In varieties of colour, as saved from the White and others, as exhibited by the Raiser. 2*s.* 6*d.* and 5*s.* per packet of 12 and 24 Seeds.

RAPHANUS CAUDATUS.

The remarkable New Radish, with long eatable pods, 2*s.* 6*d.* each Seed.

DOUBLE-FLOWERED MIMULUS.

Seed Packets, 1*s.* 6*d.* and 2*s.* 6*d.* each.

E. G. HENDERSON AND SON, WELLINGTON NURSERY, ST. JOHN'S WOOD, N.W.

GENUINE SEEDS, CARRIAGE FREE.

B. S. WILLIAMS,

VICTORIA and PARADISE NURSERIES, HOLLOWAY, LONDON, N.,

BEGS TO STATE THAT HIS

DESCRIPTIVE AND PRICED SEED CATALOGUE FOR 1866

CAN BE HAD POST FREE ON APPLICATION.

It contains all Novelties worthy of notice, with full description to each, and a few Hints for the guidance of Amateurs.

The LIST of KITCHEN GARDEN SEEDS comprises all that is essential in variety for the various requirements in family consumption. Those who prefer leaving the Selection of Vegetables to B. S. W. may rely upon receiving none but the most valuable and approved sorts. Collections are proportioned to suit Large and Small Gardens at the following prices:—

10s. 6d., 21s., 42s., 63s., 84s. each.

For Quantities, see Catalogue.

The following CHOICE and NEW VEGETABLE SEEDS are specially recommended:—

MALVERN HALL MELON, earliest variety in cultivation, 2*s.* p. pkt.
WILLIAMS' MATCHLESS RED CELERY, 1*s.* per packet
DIGSWELL PRIZE ENDIVE, 1*s.* per packet
The ALBERT SPROUTS, 1*s.* per packet
HILL'S INCOMPARABLE DWARF CABBAGE, 1*s.* per packet
HOLME PARK LETTUCE, 1*s.* 6*d.* per packet
NUNEHAM PARK ONION, 2*s.* 6*d.* per packet
The ORANGEFIELD DWARF PROLIFIC TOMATO, now offered for the first time, as Introduction of real worth; the fruit is large, very dwarf, and wonderfully prolific (stock limited), 2*s.* 6*d.* per packet
SHARMAN'S UNIVERSAL CUCUMBER, the best winter variety [illegible] long and handsome, very prolific, 2*s.* 6*d.* per packet

DOUBLE TUBEROSES, very fine, 3*s.* per dozen. Choice GLADIOLI ROOTS, 6*s.*, 8*s.*, 12*s.*, and 18*s.* per dozen

AUCUBA JAPONICA, LOADED WITH BRIGHT RED BERRIES.

JOHN & CHARLES LEE,

SEEDSMEN TO THE QUEEN,

INVITE INSPECTION OF THEIR

LARGE STOCK OF MAGNIFICENT SCARLET-BERRIED AUCUBAS,

Which they believe to be unrivalled for extent, perfection of form, and colouring.

The BERRIED AUCUBAS are valuable for TABLE DECORATION, for which purpose they may be hired at 10*s.* 6*d.* per night.

PLANTS may be purchased at 3 guineas, 4 guineas, and 5 guineas each.

RIPE SEEDS, producing innumerable varieties, at 2*s.* each, or 18*s.* per dozen.

The Trade supplied on liberal terms.

ROYAL VINEYARD NURSERY and SEED ESTABLISHMENT, HAMMERSMITH, W.

PETER LAWSON & SON,

THE QUEEN'S SEEDSMEN,

LONDON and EDINBURGH.

FARM, VEGETABLE, and FLOWER SEEDS.

28, KING STREET, CHEAPSIDE, LONDON, E.C.

LEE'S COLLECTIONS of KITCHEN GARDEN SEEDS.

JOHN & CHARLES LEE,

SEEDSMEN TO THE QUEEN,

ARE NOW EXECUTING ORDERS FOR THEIR

COLLECTIONS OF KITCHEN GARDEN SEEDS, GROWTH OF 1865,

Which, having been selected with great care, will be found replete with every requisite for the supply of a Family for the year.

No. 1.	COMPLETE COLLECTION of the choicest kinds	..	£5	5	0
No. 2.	COMPLETE COLLECTION ,, ,, ,,	..	3	3	0
No. 3.	COMPLETE COLLECTION ,, ,, ,,	..	2	2	0
No. 4.	COMPLETE COLLECTION ,, ,, ,,	..	1	1	0

Their DESCRIPTIVE CATALOGUE of KITCHEN GARDEN, FLOWER, and AGRICULTURAL SEEDS for 1866, may be had Free by Post on application.

ROYAL VINEYARD NURSERY and SEED ESTABLISHMENT, HAMMERSMITH, W.

SUTTON'S

UNRIVALLED COLLECTIONS OF

GARDEN SEEDS for ONE YEAR'S SUPPLY,

CARRIAGE FREE.

SUTTON & SONS are now prepared to receive Orders for their unrivalled COLLECTIONS of GARDEN SEEDS, as under:—

A COMPLETE COLLECTION of KITCHEN GARDEN SEEDS for ONE WHOLE YEAR'S SUPPLY (with Instructions on Cultivation) £3 3 0

Ditto, in quantities proportionately reduced	..	..	..	..	..	..	..	..	..	..	..	2	2	0
Ditto	ditto	..	..	..	..	..	..	..	..	..	..	1	11	6
Ditto	ditto	..	..	..	..	..	..	..	..	..	..	1	1	0
Ditto	ditto	..	..	..	..	..	..	..	..	..	..	0	15	0
Ditto, for a SMALL GARDEN ..	..	..	..	..	..	..	..	..	..	..	..	0	10	6

Sent Carriage Free by Rail, and 5 per cent. discount allowed for cash payment. A remittance or reference requested from unknown Correspondents.

☞ *By ordering one of these Collections once a year much trouble and expense will be saved.*

Also, NATURAL GRASSES for LAWNS and MEADOWS, fine sorts of MANGEL WURZEL, TURNIP, and other AGRICULTURAL SEEDS.

SUTTON'S GENERAL ILLUSTRATED DESCRIPTIVE PRICED CATALOGUE and AMATEUR'S GUIDE is now ready, price 6*d.*, or gratis to Customers.

Remittances may be made by Cheques on Town or Country Bankers, or by Post Office Orders payable to SUTTON AND SONS, ROYAL BERKSHIRE SEED ESTABLISHMENT, READING.

To Clear Ground.

SPECIAL OFFER.—20 per cent. off Catalogue prices.—HOLLY (GREEN), YEWS, DEODARS, ARBUTUS, LAURELS (Common), Laurels (Portugal), Cupressus Lawsoniana, Thuja Lobbii, Pinus insignis, P. excelsa, P. pouderosa, Taxodium, Hazel (4 large breadth), Larch do., Spruce do., Austrian Pine do., Beech do. For sizes and prices, see CATALOGUES, sent on application to J. SCOTT, Merriott, Somerset.

SPECIAL OFFER of FRUIT TREES.—25 per cent. off Catalogues.—Having a large and fine stock of the undermentioned, they are offered at greatly reduced prices, to clear ground:—Peaches, Nectarines and Apricots (trained and untrained), Apples, Pears, Plums, and Cherries (trained and untrained). DESCRIPTIVE CATALOGUES on application to J. SCOTT, Merriott, Somerset.

FOX or GAME COVERT.—Gentlemen planting or refreshing their Preserves can be supplied with the undermentioned favourite Plants:—ENGLISH GORSE or FURZE, 1-year, 5*s.* per 1000; 2-years, very strong, 10*s.* per 1000; ENGLISH BROOM, 2-years, very strong, 12*s.* per 1000; Evergreen Berberry, or Mahonia aquifolia, 1 to 2 feet, strong transplanted, 25*s.* per 100, or £10 per 1000. LISTS of all kinds of FOREST and FRUIT TREES, SHRUBS, and CONIFERS, sent on application. W. MALET & SONS, The Nurseries, Bristol.

Tansley Nurseries, near Matlock, Derbyshire.

JOSEPH SMITH, SEN., invites Planters and the Trade to inspect his Nursery of 80 Acres of high land. The soil is of a fibrous nature, and the plants take up with excellent roots, as such as to ensure the best success in their removal. The Nursery contains many Hundred Thousands of RHODODENDRONS, COMMON and PORTUGAL LAURELS, BOX, BROOMS, BERBERIS, HOLLIES, PRIVETS, YEWS, &c. The FOREST TREES are very extensive, Of all the leading kinds there are 15 Acres of LARCHES, of different sizes, and all others in proportion. Prices moderate, which can be had on application as above.

LARCH and RHODODENDRONS.
Delivered at Matlock Station. Per 1000—*s. d.*

LARCH, 1½ to 2 ft., good stout plants	..	..	..	..	17	0
,, 20 to 30 in.,	,,	..	..	..	..	18	0
,, 2 to 3 ft.,	,,	..	..	..	..	22	0
,, 2½ to 3½ feet	,,	..	..	..	..	25	0
RHODODENDRON PONTICUM, bushy and well-rooted, 6 to 12 inches	..	..	..	..	105	0
,, ,, 9 to 15 in., 18*s.* per 100 ..	..	..	..	..	170	0
,, ,, 1 to 1½ ft., 23*s.* per 100 ..	..	..	..	..	220	0
,, 1½ to 2 ft., 30*s.* per 100 ..	..	..	..	..	290	0
,, HYBRIDUM, 15 to 20 in., 28*s.* 6*d.* per 100	..	..	..	..	270	0
,, 1½ to 2 ft., 52*s.* 6*d.* per 100	..	..	..	..	520	0

The Trade supplied. Apply to JAMES SMITH, Darley Dale Nurseries, near Matlock.

NEW FORAGE PLANTS.

NEW ZEALAND PRAIRIE GRASS | BROMUS SCHRADERI
NEW HARDY CLOVER | TRIFOLIUM STRIATUM

PETER LAWSON & SON, The Queen's Seedsmen, 28, King Street, Cheapside, London, E.C.

To the Trade.

MORRISON BROTHERS, Aberdeen, have a large stock of the following to offer:—

Transplanted LARCH, 2½ to 3½ feet, extra fine stuff, being thin in the lines, are branched to the ground, and will be offered at a very low figure

Transplanted SILVERS, 4 to 9 and 9 to 15 inches, very stout stuff.

Transplanted SPRUCE, 9 to 15 and 15 to 24 inches, very stout stuff.

1 and 2-year Seedling CRABS (Very fine in drills and extremely low in price.

1 and 2 year Seedling PEAR

1-year Seedling BEECH, SPANISH and HORSE CHESTNUT, HAZEL, MAPLE, ENGLISH OAK, SYCAMORE, all in drills and very fine

1-year Seedling PINUS AUSTRIACA, LARICIO, MARITIMA.

All the above can still be offered in large quantities. Also a fine stock of SHRUBS and CONIFERS.

PRICED LISTS may be had on application.

LINCOLNSHIRE GEM PEAS (MARTIN & SON).—See Testimonials. Superior to Dixon's Yorkshire Hero or any other Peas grown here

Hull, 7, Market Place; and Cottingham. Established 1788.

Dickson's "First and Best" Early Pea.

FRANCIS AND ARTHUR DICKSON AND SONS' "FIRST and BEST" EARLY PEA having given *universal* satisfaction, and being pronounced by competent judges (see Testimonials below), in accordance with the fact ascertained by themselves by repeated trials, to be the very best Early Pea ever offered for earliness, prolific nature, and persistent character, is now being sent out from a large bulk, which they have grown to meet the great demand, in *sealed and labelled* packages (none others genuine), at 2*s.* 6*d.* per quart.

TESTIMONIALS:—

From Mr J. H. MASON, *Stanwton Castle Gardens, Staffordshire.* See *Gardeners' Chronicle and Agricultural Gazette*, July 29, 1865, p. 700.

"Dickson's First and Best is decidedly the best Early Pea I have ever yet grown. It is a good cropper, with good-sized WELL-FILLED pods, and several gatherings can be obtained from it."

Further opinion of Mr. MASON, *Stanwton Castle Gardens.*

See *Gardeners' Chronicle and Agricultural Gazette*, July 29, 1865, p. 700.

"Dickson's First and Best Pea grows taller than these (Carter's First Crop and Sutton's Ringleader), is of more vigorous habit, and produces a larger quantity of pods, and while the average number of Peas in the two mentioned was from 4 to 5 in a pod, that of Dickson's was from 5 to 7. Dillistone's, Carter's, and Sutton's Peas yield their entire crop in about two pickings, while from Dickson's four good gatherings can be obtained. The last-named kind was remarkably true in character, whilst among sutton's and Carter's lots of stragglers reared their heads, and were, as 'rogues' in Peas generally are, later in blooming."

From Mr. J. C. MUSSELL, *Horley House, Croydon.* See *Gardeners' Chronicle and Agricultural Gazette*, June 10, 1865, p. 532.

"I have not seen any mention made in your columns of Dickson's First and Best Pea, a variety invaluable for its earliness.

From Mr WM LANDON, *Downton Castle Gardens, near Ludlow.* See *Gardeners' Chronicle and Agricultural Gazette*, July 22, 1865, p. 676.

"I sowed this season Dickson's First and Best, Dillistone's Early, and Sangster's No. 1, and I found the first to be fully nine days earlier than either of the others. Its quality is excellent, it is very hardy, a strong grower, and pods in abundance from top to bottom. I gathered a much larger crop from the First and Best than I did from either of the others, and in future I shall sow it only for my first crop."

From Mr. ALEXANDER DEAN, *Maybush, Southampton.*

See *Gardeners' Chronicle and Agricultural Gazette*, July 1, 1865, p. 602.

"It was also noticeable that in the heats Dickson's First and Best was entirely free from rogues, the other two had plenty among them."

From Mr J. VEITCH, *Exotic Nursery, Chelsea.*

See *Gardeners' Chronicle and Agricultural Gazette*, July 29, 1865, p. 700.

"I have been much interested in sending the opinions of those who tried the various new Peas sent out last Spring, and as I have made very careful trials of all, I give you the following as the result of my experience. (Here follow the names of all the new Early Peas, time when sowed, and dates of first gatherings.) Dickson's First and Best was very good and true, and in my opinion the best new Early Pea sent out this season."

From Mr JOHN MCHATTIE, *Sedbaum, Chester.*

See *Gardeners' Chronicle and Agricultural Gazette*, Aug. 19, 1865, p. 773.

"I have no hesitation in endorsing Mr. Veitch's opinion that it (Dickson's First and Best) is the best new Early Pea yet sent out."

Scores of letters equally commendatory of our "First and Best" Pea have been addressed to us from first-class Gardeners and others, but we think the extracts we have quoted from the *Gardeners' Chronicle* sufficient.

FRANCIS & ARTHUR DICKSON & SON'S DESCRIPTIVE and PRICED CATALOGUE of VEGETABLE and FLOWER SEEDS, with an ple Cultural Hints and much useful information, will be sent gratis and post free on application. Their seeds are all grown by themselves, or obtained from the best sources, and are the most select stocks in cultivation.

FRANCIS & ARTHUR DICKSON & SONS, The Old Established Seed Warehouse, 100, Eastgate Street, Chester.

* Seeds of £2 value (Grain excepted) delivered free to any Railway Station.

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JAPAN LILY,

LILIUM LANCIFOLIUM,

For planting in Rhododendron Beds, &c.,

6*s*., 9*s*., and 12*s*. per dozen;

40*s*., 50*s*., 60*s*., 70*s*., and 80*s*. per 100.

GLADIOLI.

2*s*. 6*d*., 3*s*. 6*d*., 4*s*. 6*d*., 6*s*., 9*s*., 12*s*., and 15*s*. per dozen;

12*s*. 6*d*., 15*s*., 21*s*., 30*s*., 40*s*., 50*s*., to 100*s*. per 100.

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SEED BULB & PLANT WAREHOUSE

THE MAGNIFICENT

GOLDEN-RAYED

LILY of JAPAN,

LILIUM AURATUM,

Warranted true.

Fine established Bulbs, in pots, which have been two seasons in this country,

5*s*. 6*d*., 7*s*. 6*d*., 10*s*. 6*d*., 12*s*. 6*d*., and 15*s*.

Orders amounting to 21s. sent Carriage Paid. Packets sent Post Paid.

A FEW SPECIALITIES for the KITCHEN GARDEN.

Section I.—Leguminous Plants.

PEAS.

ADVANCER, the earliest dwarf green wrinkled Marrow, fine flavour, and very productive, 1*s* 6*d*. per qt.

ALBERT EDWARD, a tall green Marrow, as early as the Emperor, very productive, 3*s*. 6*d*. per quart

YORKSHIRE HERO, an abundant cropping wrinkled Marrow, in the way of Veitch's Perfection, 2*s*. per quart

LAXTON'S PROLIFIC EARLY LONG-POD, a second early variety, in the style of Auvergne, but with pods twice the size, 2*s*. per pint

LITTLE GEM (McLEAN), GREEN WRINKLED MARROW, a first early variety, possessing the full sugary flavour of the late wrinkled Peas; a most valuable acquisition. Height, 1 foot; 1*s* per half pint, 3*s*. 6*d*. per quart

McLEAN'S PRINCE of WALES PEA, a dwarf wrinkled Marrow, first-class second early, height 3 feet, 2*s*. per quart

PRINCESS ROYAL, in the style of Bishop's Long Pod, but very superior, 1*s* 6*d*. per quart

CARTER'S FIRST CROP, SYN SUTTON'S RINGLEADER, not only the earliest, but the most prolific early Pea, in sealed packets, 2*s*. 6*d*. per quart

DICKSON'S FIRST and BEST, a rival to First Crop, in sealed packets, 2*s* 6*d* per quart

WONDERFUL, a first class wrinkled Marrow, extremely productive, 2*s* 6*d* per quart

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SPINACH BEET, gathered throughout the summer as a substitute for Spinach, 4*d*. per packet; 1*s* per oz.

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DALMENY SPROUTS, between the Cabbage and Brussels Sprouts; the growth resembles the latter; stems thickly set with sprouts, and terminated by a cabbage of medium size, 6*d*. per packet

SNOW'S WINTER WHITE BROCCOLI, a very valuable winter Broccoli, with fine heads, which may be cut during December, January, and February; Parker's select stock, 2*s*. 6*d*. per packet

OSBORN'S WINTER WHITE BROCCOLI, a fine early and mid-winter Broccoli, heads as white as a Cauliflower, hardy, and self-protecting; sown in March, can be cut in November, and by successional sowings may be had in use till April or May, 1*s*. per packet

THE HORTICULTURAL SUPERB LATE BROCCOLI; this variety was much approved of and recommended by the Fruit Commitee of the Royal Horticultural Society, 1*s*. per packet

TOM THUMB CABBAGE, a delicately-flavoured miniature, very early variety, 4*d*. per packet; 1*s*. p. oz.

COVENT GARDEN (IMPROVED EARLY LONDON) CAULIFLOWER, an exceedingly fine stock, very early, 1*s* per packet; 2*s* 6*d* per oz.

NEW ERFURT DWARF MAMMOTH CAULIFLOWER (Syns. Frogmore Early Forcing, Carter's Mammoth, &c.); it produces immense compact heads of superior quality, grows close to the ground, is valuable for small gardens, and for hot dry seasons; it is also the best for forcing, 1*s*. per packet

LENORMAND'S PARIS MARKET CAULIFLOWER, an exceedingly large-headed, fine early variety, largely grown for the Paris Market, 1*s*. per packet

SHEARER'S LATE WHITE BROCCOLI; heads large, compact, and pure white; ready in April and May; remarkable for its extreme hardiness and excellent quality, 1*s*. per packet

Section III.—Edible Rooted Plants.

COVENT GARDEN BEET, a handsome medium-sized variety, of a rich deep blood-red colour, boils tender, and is of very superior flavour, 4*d*. per packet; 1*s*. per ounce

FRENCH HORN CARROT (COVENT GARDEN VARIETY), a favourite little Carrot for soups, prized for its extreme earliness and superior flavour, the best variety for forcing, 4*d*. per packet; 6*d*. per ounce

AYTON CASTLE or HENRY'S PRIZE GIANT LEEK, a very large variety, much superior to the Musselburgh Leek, 6*d*. per packet

ONION.

DANVERS' NEW YELLOW, a large handsome fine keeping brown-skinned variety, which cannot be too highly recommended; it is an exceedingly heavy cropper; the specimens we exhibited received a First-Class Certificate at the International Fruit Show held in connection with the Royal Horticultural Gardens, 4*d* per packet; 1*s*. per oz.

ONION.

TREBONS, another very large brown-skinned variety, and an exceedingly heavy cropper. Nuneham Park Onion we believe to be a synonyme, or a selection from the Trebons, and not a hybrid between the White Spanish and the Tripoli, it is however an interesting subject for inquiry, 4*d* per packet; 1*s* per oz.

NUNEHAM PARK, a very large brown-skinned Onion, said to be a cross between the White Spanish and Flat Tripoli, in original packets, 2*s*. 6*d*

COVENT GARDEN, small silver-skinned pickling Onion, 6*d*.

Section IV.—Edible Fruited Plants.

BARR'S EMERALD GEM CUCUMBER (new); where a large supply of handsome medium-sized fine flavoured fruit is the thing sought, this variety will fully meet the requirement; it is exceedingly early, prolific, and withal a splendid sort for winter forcing, 1*s*. 6*d*. and 2*s*. 6*d*. per packet

BARR'S PEARL GEM CUCUMBER, fruit pearly cream, very handsome, and delicately flavoured, 1*s*. per packet

KEIGHLEY'S PROLIFIC CUCUMBER, an exceedingly free-bearing handsome hardy frame variety, from 16 to 18 inches long, 1*s*. 6*d*. per packet

BARR'S GOLDEN MONARCH MELON, a splendid new variety, received from Adelaide, Australia, where out of doors it attains the enormous weight of 10 lb Mr Cuthill, of Camberwell, exhibited a fruit at the Crystal Palace which weighed 6 lb. The rind is bright yellow, flesh creamy pink, melting and luscious; before the fruit is cut the aroma is delicious; we can strongly recommend this Melon to those who like a large sized handsome and full-flavoured fruit, 1*s*. 6*d*. and 2*s*. 6*d*. per packet

MALVERN HALL MELON, scarlet flesh nicely ribbed, and of moderate size, ripens early and sets freely; highly recommended, 2*s*. per packet

TOMATO DE LAYE, or Tree Tomato; an upright variety, with fine large red fruit, 6*d*. per packet

" GRENIER, a new upright-growing kind, said to be the finest variety in cultivation, 1*s*. per pkt

CUSTARD VEGETABLE MARROW, a fine variety, 6*d*. per packet

MOORE'S VEGETABLE CREAM, one of the best flavoured varieties, 6*d*. per packet

Section V.—Salad Plants.

COVENT GARDEN WHITE CELERY, dwarf close habit, very solid, crisp, juicy, and fine flavoured, 4*d*. per packet; 9*d* per ounce

" RED CELERY, dwarf compact habit, very hardy, crisp, and of a superior nutty flavour, 4*d*. per packet: 9*d*. per ounce

SANDRINGHAM NEW DWARF WHITE CELERY This excellent variety is almost exclusively grown in the gardens at Sandringham, for the Prince of Wales' table, 1*s*. per packet

WILLIAMS'S MATCHLESS RED CELERY, very crisp and fine flavoured, dwarf and hardy; in condition till the middle of April, 1*s*. per packet

COVENT GARDEN GIANT COS LETTUCE, the best White Cos Lettuce known, as regards size, crispness, and flavour; it is also less affected by hot weather than other varieties, 6*d*. and 1*s*. per packet; 2*s*. 6*d*. per ounce

COVENT GARDEN GIANT BROWN COS LETTUCE, black seeded; this is the best of its class, large, crisp, and fine flavoured, not readily running to seed; an excellent winter variety, 6*d*. and 1*s* per packet; 2*s* 6*d* per ounce

COVENT GARDEN GIANT GREEN COS LETTUCE, a very large crisp fine flavoured variety, not soon affected by hot weather; also very hardy, indeed the best winter Cos, 6*d* and 1*s*. per packet; 2*s* 6*d* per ounce

THE HOLM PARK SUMMER COS LETTUCE; Mr. David Thomson, of Archerfield Gardens, states this variety to be "the best hot weather Lettuce he ever grew." 1*s*. 6*d*. per packet

COVENT GARDEN SUMMER CABBAGE LETTUCE, the very best summer Cabbage Lettuce grown, 1*s*. per packet

STANSTEAD PARK ECLIPSE CABBAGE LETTUCE. We consider this the hardiest and best variety for winter, 6*d*. and 1*s* per packet; 2*s* 6*d* per ounce

NEW FRENCH BREAKFAST RADISH, an excellent oval variety for forcing, and very effective in a salad; the upper half bright scarlet, the lower half pure white, 6*d*. per ounce

DIGSWELL PRIZE ENDIVE, recommended as a hardy good-hearting variety, 1*s*. per peck

POTATOS.

WEBB'S TELEGRAPH PROLIFIC KIDNEY (new); this remarkably handsome prolific variety we consider the earliest in cultivation; last spring it was planted by Mr. Webb the first week in April, and a fine crop dug the last week in May. Perfectly free from disease, 5*s*. 6*d*. per peck

ENGLAND'S FAIR BEAUTY KIDNEY POTATO, a great cropper, very floury, and of superior flavour, 3*s*. 6*d*. per peck

COVENT GARDEN PROLIFIC ROUND POTATO, a first-class second early variety, an extremely heavy cropper, fine-flavoured, with a dwarf compact top, 3*s*. 6*d*. per peck

WEBB'S PRESIDENT KIDNEY (new), a first-class second early variety, exceedingly productive, handsome, and fine flavoured; perfectly free from disease, 4*s*. 6*d*. per peck

WHEELER'S MILKY WHITE, a seedling from the Fluke; a fine-flavoured second early variety, 4*s* per peck

BARR & SUGDEN'S COLLECTIONS of VEGETABLE SEEDS.

No. 1.	COMPLETE COLLECTION of VEGETABLE SEEDS for 1-year's Supply	10*s*. 6*d*.
No. 2.	" " " " " "	15 6
No. 3.	" " " " " "	21 0
No. 4.	" " " " " "	30 0
No. 5.	COMPLETE COLLECTION of VEGETABLE SEEDS for 1-year's Supply	42*s*. 0*d*.
No. 6.	" " " " " "	63 0
No. 7.	" " " " " "	84 0
No. 8.	" " " " " "	105 0

COLLECTIONS of FLOWER SEEDS, 2s. 6d., 3s. 6d., 5s. 6d., 7s. 6d., 10s. 6d., 15s. 6d., 21s., 30s., 42s., and 63s.

BARR AND SUGDEN, 12, KING STREET, COVENT GARDEN, LONDON, W.C.

Fruiting Vines.

E. G. HENDERSON AND SON offer the above, with splendid Canes of well-matured growth, with prominent eyes, sure to give a heavy crop of fruit, 10s. 6d. each.

LIST of SORTS sent on application.

Wellington Nursery, St. John's Wood, London, N.W.

Extra strong Fruiting Vines.

JAMES DICKSON AND SONS can still supply STOUT, CLOSE-JOINTED, PERFECTLY MATURED CANES, to produce from 4 to 8 lb. of Grapes this year. Price 7s. 6d. each and upwards. Also Canes for Planting out.

The "Newton" Nurseries, Chester.

Rust's Thames Bank Peach.

OSBORN AND SONS have a few Maiden Plants left for Sale of the above-named new late Yellow-fleshed PEACH. Dr. Hogg, in the "Gardeners' Year Book for 1864" says:—"The flesh is tender, melting, and juicy." He further adds, "This is certainly the best of the Yellow-fleshed Peaches we know."

Price 10s. 6d. each. An allowance to the Trade.

Fulham Nursery, S.W.

Lancashire Show Gooseberries and Currants.

M. A. LAKE, The Nurseries, Bridgewater, has to offer several thousand of the above, of the choicest kinds.

EVERGREEN HOLLIES, from 1 to 2 feet, and EVERGREEN PRIVET; also HORSE CHESTNUTS, ELMS, OAKS, SYCAMORE, MAPLE, and POPLARS, of the finest quality.

Prices moderate, which will be forwarded on application.

B. S. WILLIAMS begs to direct special attention to the undermentioned, of which he now holds a fine stock, PRICED and DESCRIPTIVE LISTS can be had on application.

VINES.—Strong Planting and Fruiting Canes of all the best varieties, including the new Grape ROYAL VINEYARD.

PINES.—Strong Fruiting and Succession plants, and suckers of all the leading kinds.

BECKS' NEW PELARGONIUMS.—For the present season, at the moderate price of 10s. 6d. each; also a large assortment of the best PELARGONIUMS and GERANIUMS, including BEATON'S best NOSEGAYS.

DUTCH BULBS.—Splendid roots of the strongest flowering HYACINTHS for glasses or pots, at 6s., 8s., 9s., 10s. and 12s. per dozen. POLYANTHUS NARCISSUS, CROCUS, Early TULIPS, and all other bulbs.

ENGLISH-GROWN SEEDLING GLADIOLI, 9s. and 12s. per dozen, ready next month. As the supply of these is limited, early orders are solicited.

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Extra large Peach and Nectarine Trees.

WANTED, a few Standard and Dwarf-trained PEACH and NECTARINE TREES, IN A BEARING STATE, for a house.

Any Nobleman or Gardener having a surplus of really well-trained healthy Trees, and willing to part with them, may hear of a customer by applying to

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MAGNIFICENT Dwarf-trained FRUIT TREES, PEACHES, NECTARINES, APRICOTS, PLUMS, and DUKE and MORELLO CHERRIES; extra fine Trained MAY DUKE and MORELLO CHERRIES; ROYAL GEORGE PEACHES. Prices very moderate.

STANDARD-TRAINED PEACHES.—WM. WOOD & SON have an enormous stock to offer of the above. They feel certain the Trees cannot be surpassed in quality.

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AUCKLAND PRIZE MELON.—The above splendid Green-fleshed Melon was awarded the 1st Prize at the Great Show, Chiswick, Auckland, 1864, and has since won all parts of England. It is green-fleshed, and the flesh is thick and the quality first-class. In sealed packets, containing 12 seeds, 2s. 6d. each. The Trade supplied.

H. MAY'S CATALOGUE of GARDEN SEEDS is now ready, and will be forwarded free on application.

Address, HENRY MAY, The Hope Nurseries, Bedale, Yorkshire.

New Edition of

SCOTT'S FRUIT TREE CATALOGUE of the finest Collection in England. The Catalogue is allowed to be the best published, and is full of information about the Cultivation of Fruits, over 1000 being described. Apply to

SCOTT, Merriott, Somerset.

SURPLUS STOCK of extra fine well-trained FRUIT TREES to be Sold Cheap, viz., Peaches, Nectarines, Apricots, Plums, and Cherries; also Standard wall-trained Peaches and Nectarines. The above are well worthy the notice of intending planters.

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Select Catalogues of Seeds and Plants.

ROBERT PARKER begs to announce that his NEW PRICED and DESCRIPTIVE CATALOGUES, containing Select Lists of the best varieties of Vegetable, Agricultural, and Flower Seeds, New and Rare Plants, &c., are now published, and will be forwarded to applicants. The Seeds are warranted to be of the finest possible quality. Intending purchasers are requested to compare the prices with those of other houses.

Exotic Nursery, Tooting, Surrey, S.

RAYNBIRD, CALDECOTT, BAWTREE, DOWLING, AND COMPANY, Limited,

CORN, SEED, MANURE, and OIL-CAKE MERCHANTS,

Address, 89, Seed Market, Mark Lane, E.C.; or Basingstoke.

Samples and Prices Post free on application. Prize Medals, 1851, for Wheat; 1862, for "Essential Seed Corns and Seeds."

LAMOUREUX, CLARK, AND CO., SEED MERCHANTS, Plymouth.

The SEED CATALOGUE and GARDEN DIRECTORY for 1866, now published, will give full particulars respecting prices and other matters in connection with the business. Will be sent gratis and post free to any address in the kingdom.

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WILLIAM BARRON begs to invite attention to his splendid Stock of STANDARD ROSES, which comprises all the leading sorts, including the best varieties of 1864. He is prepared to offer them at the following very moderate figures:—

Leaving the selection to W. B.—For dox., 12s.; per 100, 75s.

Purchasers' selection—Per doz., not less than 6 varieties, 15s.; per 100, not less than 30 varieties, 100s.

Elvaston Nurseries, Borrowash, near Derby.

Bedding Pansies, &c.

WILLIAM DEAN can supply for Spring decoration—

CLIVEDEN BLUE BEDDING PANSIES .. 6s. per doz.
" YELLOW BEDDING PANSIES .. 6s. "
" SHOW PANSIES, mixed .. .. 6s. "
AUBRIETIA PURPUREA .. .. 6s. "

Bradford Nursery, Shipley, Yorkshire.

Hardy Climbers.—To the Trade.

CLEMATIS JACKMANNI, 2s. 6d. each; 21s. per doz.
" RUBRO-VIOLACEA, 2s. each; 18s. per doz.
" HYBRIDA SPLENDIDA, 2s. each; 18s. per doz.
" STANDISHI, 2s. each; 18s. per doz.
" SOPHIA FLORE PLENO, 2s. each; 18s. per doz.
" CERULEA (AZUREA) GRANDIFLORA, 50s. per 100.

Besides other good old varieties.

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AUBRIETIA CAMPBELLI (effective spring flower).
FUCHSIA BANKS'S BEAUTY.
VERONICA FRUTICOSA GLAUCA.
CLIANTHUS DAMPIERI, in varieties (seed only).

Coloured Plates, post free on receipt of Stamps, of the following:—
AUBRIETIA CAMPBELLI, 7d.
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CARTER'S ILLUSTRATED GARDENERS' and FARMERS' VADE MECUM, containing a most extensive List of Flower, Vegetable, and Farm Seeds; also a Calendar of Operations for Flower and Kitchen Gardens, together with copious remarks on Farm Management.

JAMES CARTER & CO., 237 and 238, High Holborn, London, W.C.

LONDON SEED COMPANY, LIMITED.—Liberal Commissions will be allowed to all Agents appointed by the Company. For terms and particulars apply to Mr. ALFRED BERWIN, Manager, 68, Welbeck Street, Cavendish Square, London, W.

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THE GUINEA HAMPER of GARDEN SEEDS can be obtained from the LONDON SEED COMPANY, sufficient for a moderate sized Garden for the whole Year.

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GARDEN SEEDS all the YEAR ROUND.—Complete Collections for One Guinea and Half Guinea each.

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POYNTER'S ANGLICAN COLLECTIONS of SEEDS, price 7s. 6d., 14s., 25s., 30s., 42s. each (carriage free Great Western Railway), are the simplest and best offered.

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THE ANGLICAN COLLECTIONS of SEEDS contain sufficient KITCHEN GARDEN and FLOWER SEEDS for One Year's Supply. Only the most useful and best kinds included. Trade Mark, the Royal Oak. POYNTER, Taunton.

A RIBBON BORDER of FLOWERS (six colours) for the season, price 2s. 6d., post free. Trade Mark, the Royal Oak. POYNTER, Seed Merchant, Taunton.

POYNTER'S RIBBON BORDER SEEDS having given such satisfaction during two years past, he has carefully improved the selection, and apportioned the quantities. Instructions with each Collection. Price 2s. 6d., post free, stamps. In ordering, state if for bed or border.

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JOHN AND CHARLES LEE, SEEDSMEN to the QUEEN, are prepared to execute orders for every kind of VEGETABLE, FLOWER, and AGRICULTURAL SEEDS, growth of 1865.

Their DESCRIPTIVE CATALOGUE is now ready, containing all the NEW and CHOICE VEGETABLE, FLOWER, and AGRICULTURAL SEEDS in cultivation, and will be forwarded free on application.

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Hull, 7, Market Place; and Cottingham. Established 1785.

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JOHN WATERER begs to offer the following Six RHODODENDRONS, in good, strong, healthy plants, at 18s. the Set, the usual discount to the Trade:—

SIDNEY HERBERT	MRS. FITZGERALD
JOSEPH WHITWORTH	THE WARRIOR
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The American Nursery, Bagshot, Surrey.

New Rhododendrons.

JOHN WATERER is prepared to execute Orders for the following SIX RHODODENDRONS at the subjoined price. They are the finest kinds offered for many years, and are particularly recommended for the following qualities, viz., Hardiness, fine Foliage, Free Bloomers, and as being perfectly distinct from any other known kinds.

ALEXANDER ADIE.—Brilliant rosy scarlet.
SIR JAMES CLARK.—Dark shaded crimson.
SIR WILLIAM ARMSTRONG.—A very bright crimson.
THE DUCHESS OF SUTHERLAND.—Nearly white centre bordered with rose.
LADY EMILY PEEL.—A very bright rose, intensely marked with chocolate-coloured spots.
RAPHAEL.—Reddish crimson, and large bold flower.

The Set for 6l. 6s. Usual discount to the Trade.

The American Nursery, Bagshot, Surrey.

Hardy Scarlet Rhododendrons.

JOHN WATERER'S CATALOGUE of HARDY SCARLET and other CHOICE RHODODENDRONS as annually displayed in the Royal Botanic Gardens, Regent's Park, can now be had on application.

It contains full descriptions of all the varieties really worthy of cultivation, as well as a selection of HARDY CONIFERS, with heights and prices, with ORNAMENTAL EVERGREENS, FOREST TREES, &c.

The American Nursery, Bagshot, Surrey.

American Plants, New Hardy Rhododendrons.

WATERER AND GODFREY'S PRICED and DESCRIPTIVE CATALOGUE of AMERICAN PLANTS, as exhibited every year at the Royal Botanic Gardens, Regent's Park, on application. This Catalogue fairly describes the Rhododendrons most worth growing, as well as some new and very handsome kinds exclusively in their possession, and now for the first time offered.

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DOWNIE, LAIRD, AND LAING beg to intimate that their PRICED DESCRIPTIVE CATALOGUES of FLORIST FLOWERS, NEW PLANTS, GARDEN, FLOWER, and AGRICULTURAL SEEDS are now ready, and may be had free on application.

17, South Frederick Street, Edinburgh; and Stanstead Park, Forest Hill, London, S.E.

FINE GRASS LAWNS in FLOWER GARDENS, &c.—The great expense of cutting and carting Turves from a distance may be avoided, and a superior Turf produced in a few months by sowing SUTTON'S LAWN GRASS SEEDS, which consist solely of the finest and shortest-growing kinds, perfectly free from Moss and other weeds.

From Mr. JOHN JOHNSON, *Gardener, Mowbray Park, Sunderland, April* 26, 1865.

"The Lawn Seed we got last year about this time is come up excellently."

From Mr. THOMAS POLLINGTON, *Gardener to* H. W. Vincent, Esq., *Bradwell Grove, Burford, January* 19

"The Grass Seed you supplied me with last season grew remarkably well, though sown under trees. I think every seed grew."

From HENRY H. CAVE, Esq., *Desborough, Market Harborough, May* 13, 1865.

"The Lawn Grass Seeds I had from you last year have made a very good turf already."

From J. NIGHTINGALE, Esq., *High Street, Kingston-on Thames, May* 2, 1865.

"I may add that the Grass Seeds you supplied last year, have (notwithstanding the very unfavourable season) succeeded very well."

SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

New Seeds, Growth of 1865.

ROYAL BERKSHIRE SEED ESTABLISHMENT.

SUTTON AND SONS are now prepared to execute orders for all kinds of GARDEN SEEDS.

The prices are moderate and the quality fine, owing to their having been harvested well.

Royal Berkshire Seed Establishment, Reading.

Lobelia Snowflake.

Extract from GARDENERS' CHRONICLE:—

"MR. COX, Gardener to Lord Beauchamp, exhibited a beautiful White Lobelia called Snowflake, to which a First-class Certificate was awarded. Floral Committee of the Royal Horticultural Society, July 25, 1865."

JOHN AND CHARLES LEE having acquired the stock of this desirable NEW BEDDING PLANT, they have much pleasure in offering SEED in SEALED PACKETS. It is also well adapted for pot culture.

As a BEDDING LOBELIA it stands unrivalled. The plant is of dwarf compact habit: the flowers are large and even, and of the purest white. The stock comes perfectly true from seed.

Price 2s. 6d. per packet. Price to the Trade on application.

CARTER'S GARDENERS' VADE MECUM for 1866 now ready.

The Gardeners' Chronicle.

SATURDAY, JANUARY 27, 1866.

MEETINGS FOR THE ENSUING WEEK.

THURSDAY, Feb. 1—Linnean .. .. .. 8 P.M.
SATURDAY, " 3 { Royal Horticultural (Weekly Show), at South Kensington .. .. .. 2 P.M.

WHAT IS THE OBJECT OF A FLOWER SHOW? "Is it to amuse and delight people merely? or is it to show the progress of gardening, to excite rivalry, to encourage meritorious amateurs and gardeners, to improve taste, to increase the love of flowers, or the gallant sport of gardening?" So writes Professor REICHENBACH, who states his case clearly enough, and we think those who have this matter at heart owe their thanks to him and to the Royal Horticultural Society for affording an opportunity of discussing so important a matter. The Society combines within itself representatives of all classes of the flower-loving and flower-growing community. There are those who, like Professor REICHENBACH and Mr. WILSON SAUNDERS, incline to think the present system of arranging the plants, &c. at our flower shows, as on the whole the best—and this, we take it, is the opinion of the majority of the exhibitors themselves; and there are those who, like Mr. FOLLEN, think that some modification of the existing plan is desirable, and this we, imagine, would be the verdict of the greater number of the non-professional flower-loving public who come to see, and who, after all, are the persons to whose support both the Society itself and the professional exhibitors look for remuneration.

It is quite clear that every facility must be given to the judges and students who have to compare and inspect the objects exhibited with a critical eye. But is there no way of satisfying the requirements of those who come to study bald details, as well as of those who come to see results draped in the most attractive and enticing manner?

Should the answer to this question be given in the negative, it will not be saying much for the fertility of invention of those with whom the making the necessary arrangements depends. Want of time, lack of sufficient funds, and disinclination on the part of the exhibitors, form the three chief obstacles to any material deviation from the present mode of arranging our shows, and they are certainly formidable difficulties, but they are by no means insurmountable.

Want of time does not apply to those exhibitions which, like the recent fruit show held at South Kensington, are continued for several days, and by a little forethought need not form any very serious impediment even under ordinary circumstances. As to lack of funds it is reasonable to suppose that the more generally attractive the display is made, the more will the funds pour into the treasury, other things being equal.

Disinclination to alter established usage, which has, moreover, undeniable advantages, is the greatest difficulty to be contended with; but if it can be made apparent that public opinion is on one side, and the exhibitors on the other, no long time can elapse before the exhibitors will see that their interests are involved, and they will make such compromises as circumstances demand.

Flower shows, we take it, are not only intended as a means of affording opportunities to exhibitors to display their productions, or cultivators their skill, but they aim at pleasing and instructing the casual visitor. Like a sculpture gallery,

or a collection of pictures, they are intended not merely for the professional man, but to improve the taste of the masses, to extend knowledge, to foster and increase the love of flowers that is in a measure common to all humanity—in a word, to secure the appreciation of the beautiful and the good.

How is this result to be obtained without interfering injuriously with the interests of the exhibitors, and the functions of the jurors? This seems to us to be the really important question—how to reconcile the two interests? and we trust that the subject will not be allowed to drop before some practical suggestions have been thrown out by those competent to make them. For our own part we cannot help thinking that a little more care in breaking up masses of colour, a judicious intermixture of foliage plants among the flowers, a little more attention to secure a varied surface, to avoid harsh formal lines, and one uniform level, need by no means, if properly carried out, form any impediment to the proper and effective contrast of objects sent for competition, but would, on the contrary, often prove very advantageous in allowing the eye to discriminate between shades of colour, and niceties of form, which are now lost in the general blaze of bloom. How much the general beauty of the show would be enhanced by such a course is undeniable.

There is another point in the arrangement of our shows inseparably connected with that now attracting attention, and that is the lack of interest attaching to them. Given the time of year, and the visitor can tell beforehand pretty exactly what he will see, and how he will see it. What he will see is, of course, to a great extent necessarily invariable, but the manner in which he may see it, admits of much desirable change.

We must not pursue this subject further at this time, but we shall hope to have suggestions from all classes of flower lovers, which may tend to settle this vexed question to the general satisfaction of all parties.

THERE have been many speculations hazarded as to the means to be adopted to obtain DOUBLE-FLOWERED STOCKS, and though particular growers sometimes succeed in obtaining a good strain from which a fair percentage of double-flowered plants may be looked for with tolerable confidence, yet it must be confessed that there is very little really known about the matter, though much research and numerous experiments have been devoted to its elucidation. So that after all, the obtaining of a good crop of these double-blossomed plants, is more a matter of accident than of certainty. Any fresh information therefore which may tend to throw light on the subject, or confirm existing opinions, cannot but be acceptable to the cultivators of flowers.

We may briefly glance at the means which have been adopted to obtain this desideratum of plants bearing double instead of single flowers. There is first the crossing of single flowers with double ones, by placing a double-flowered plant in proximity to a single-flowered one; but this, it is obvious, could lead to no important results, since the double flowers, having scarcely any pollen, could barely influence the seed, which is borne only by the single-flowered plants. Another plan is the degustation of the buds, that is to say, the chewing of the well-formed buds; it is held that the single plants can be recognised by their sweeter taste and greater consistence; but there is at least the disadvantage attending this method, that the plants, single as well as double, must all be grown up to the period when these buds are tolerably well advanced. A third method which has been adopted is that of sowing the seeds at a particular lunar epoch, great confidence being placed in the practice of planting them during the last quarter of the moon, but such confidence is found to be misplaced. The plan of removing the stamens has had its supporters, but as this must be done at an early stage of development, and could only influence the result by diverting the vital force which would be expended in the maturation of the pollen, to the perfecting of the seeds, it is obvious that the plan is impracticable for all ordinary purposes, even if in any degree efficient, which from the plasticity of vegetable development, and the faculty of doubling which is inherent in the Stock family, is not at all improbable. Still another mark, the presence of a fifth petal in the single or seed-bearing flower, has been held to indicate the assurance of obtaining a crop of double-flowered plants from seeds saved from flowers possessing this peculiarity. To a certain extent, doubtless, this expectation would be realised, owing to the plasticity and inherent quality just alluded to, but the proportion would be too small for any useful practical purpose.

"The gardeners of Erfurt," observes M. CHATÉ, an intelligent young horticulturist of Paris, who has written a book* on the subject, in which he makes known a means of obtaining double-flowered Stocks founded on more than 50 years' practice in his family, "have for a long time to a certain extent monopolised the sale of seeds" of these plants; but the method which M. CHATÉ makes known, will, he says, place his brother gardeners in a position to obtain, from seeds of their own growth, flowers as beautiful as those of the German cultivators. To obtain these seeds, the Erfurt gardeners cultivate the flowers in pots, and place them on shelves in large greenhouses, giving them only sufficient water to prevent them from dying. So cultivated the plants become weakened, the pods shortened, and the seeds less numerous, and better ripened; and these seeds give from 60 to 70 per cent. of double flowers.

M. CHATÉ's method, which he calls the French one, gives still greater results, viz., 80 per cent. or more of double flowers, and these produced by very simple means. "When my seeds," he observes, "have been chosen with care, I plant them, in the month of April, in good dry mould in a position exposed to the morning sun, this position being the most favourable. At the time of flowering I nip off some of the flowering branches, and leave only 10 or 12 pods on the secondary branches, taking care to remove all the small weak branches which shoot at this time. I leave none but the principal and the secondary branches to bear the pods. All the sap is employed in nourishing these seeds thus borne, which give a result of 80 per cent. of double flowers. The pods under this management are thicker, and their maturation is more perfect. At the time of extracting the seeds the upper portion of the pod is separated and placed aside, because it has been ascertained that the plants coming from the seeds situated in this portion of the pod, give 80 per cent. of single flowers. They yield, however, greater variety than the others. The plan of suppressing that part of the pod which yields single flowers in the largest proportion, greatly facilitates the recognition of the single-flowered plants, because there remains to be eliminated from among the seedlings only from 10 to 15 per cent.

This separation of the single from the double-flowered plants, M. CHATÉ tells us is not so difficult as might be supposed. The single Stocks, he explains, have deep green leaves (glabrous in certain species), rounded at the top, the heart being in the form of a shuttlecock, and the plant stout and thickset in its general aspect, while the plants yielding double flowers have very long leaves of a light green colour, hairy, and curled at the edges, the heart consisting of whitish leaves, curved so that they enclose it completely. Such is the substance of M. CHATÉ's method of securing so large a proportion of double-flowered plants, and then of separating them from the remaining single ones—a method which commends itself to the good sense of the intelligent cultivator. The doctrine put forth by M. CHATÉ is not indeed in all respects new, but has received little practical attention, and comes as a singular confirmation of the practice of Mr. JAMES MUNRO, as described in the *Gardeners' Magazine* (xiv. 121). Mr. MUNRO states, that having a number of single scarlet Ten-week Stocks, he deprived them of all their flowers as soon as he found that five or six seed vessels were formed on each plant, by which means he compelled all the nutritive matter that would have been expended on the whole flower spike, and its numerous seed-vessels, to be concentrated in the small number which he left. The result was that from the seed thus saved he had more than 400 Double Stocks in one small bed.

WE regret to have to record the death of Mr. ALLAN A. BLACK, which took place on the 4th of December last. Mr. BLACK was for some years Curator of the Kew Herbarium, and those who had occasion to hold intercourse with him in that capacity will long remember his courtesy of manner and the skill with which his duties were performed. His knowledge of plants was something quite extraordinary, and rendered him a general referee in questions connected with the names of plants or the discrimination of species. Being affected with lung disease he was induced some two years since to proceed to the Botanic Garden of Bangalore, of which he was appointed Superintendent, in the hope that the warmer climate might benefit his failing health. Here he remained till about the beginning of November last, when he left for Rangoon on leave of absence. His brother, who resides at Rangoon, saw at once on his arrival that he had remained too long at his post, but the best medical advice was obtained, and he was recommended to go home in a sailing vessel, by way of China or Australia, some hope being held out that the voyage might arrest the progress of the disease. He was to remain a month at Rangoon, when his brother was to accompany him to Singapore or Penang, and see him on board a comfortable ship. In the meanwhile an opportunity presented itself for a trip to the Andaman Islands and back, by the Government steamer Dalhousie, of which they availed themselves. They left Rangoon on the 29th of November, and got on pretty well for a day or two, until the invalid was seized with a sudden difficulty of breathing, after which he became gradually weaker until the 4th ult., when he peaceably passed away. The Dalhousie being off the Cocos at the time, a grave was dug "on the top of Table Island, one of the group, in a most beautiful spot, surrounded by the richest vegetation that ever a botanist can conceive, and he was buried on the 5th of December as the sun went down, with the Union Jack for a pall, and four British seamen as bearers."

It will be seen (p. 79) that at the Royal Horticultural Society's meeting held on Tuesday last a LINDLEY MEDAL was awarded to Mr. BULL for a collection of fine-foliaged and other plants. This was the second medal of the kind that has been awarded. To Mr. VEITCH belongs the honour of having been the first to win it, with a beautiful collection of Orchids, including no fewer than 50 plants of Lycaste Skinneri in bloom.

We have to thank Mr. BULL for the information that the AUCUBA, which in the normal state bears four stamens only, produces at the same time blossoms in which the number of these organs is increased sometimes to five, sometimes to six.

New Plants.

324. PLEUROTHALLIS SAUNDERSIANA, *Rchb. fil.*

Rhizomate repente, scandente, caulibus secundum unam abbreviatis semiteretibus, canaliculatis, folio oblongo-lanceolato acutato apice emergente tridentato, thoracis vaginæ gemmis, non simul evolutis, perianthi sepalo summo oblongo acuto albido septem striis brunneis, interioribus celebre undique minute lacerato-ciliatis, petalis clandestinis ligulato-apicem versus serratis, labello oblongo utrinque humeroto oblongo, utrinque ante basin obtusangulo, celerum denticulato, lota superficie anteriori papillosa, columnæ gracili, androclinio utrinque angulato, postice medio denticulato.

Typ. — Similima Pleurothallidi papillosæ Lindl.!, (cujus Lindley non citisime conferta in herbario Lindleyano) kewensi exstat, a me scrupulosissime in herbario regio Monacensi investigati. Folii magnitudo, color, lamina longiores, sepala laterali semi bifida, petala ligulato-oblonga crenulata, labellum carinis gemmis altissimis, androclinii limbus totus serrulatus.

British hospitality is famous everywhere; it belongs not only to men, but to many other beings. And so Orchids are received and welcomed and beloved with quite an extraordinary *empressement*, at least such as are fashionable, viz., Vandas, Aerides, Cypripedia, Phalænopsids, Odontoglossa, and such showy plants as are likely to flower at exhibition time, and are good travellers, belonging to the genteel set of Orchids. But if such poor little creatures as Pleurothallids, Stelids, and small-flowered Epidendrums have crossed the sea, where are they received in old England? Where? "Help yourselves" is their general welcome.

Yet there are a very few refuges for such modest plants. There are a good many to be found at High Cross, Tottenham, at Mr. Day's. We have also seen two or three—perhaps even four?—at West Hill, at Mr. Rucker's; one Pleurothallis lodges, *on dit*, at Biddulph Grange, Congleton, at Mr. Bateman's.

But all these plants are overshadowed by Vandas and the other fashionable Orchids; and are banished to the corners of the stoves—tolerated, indeed, but not regarded as dear pets. There is only one gentleman who does them full justice, naming them *enfants chéris*, making careful portraits of every one for his home portfolio, and giving them the best central places in his splendid stoves, where they sit enthroned like little Dryads and Hamadryads, praising their generous landlord with a great profusion of flowers. This gentleman is W. Wilson Saunders, Esq., who, in his stoves, at Hillfield House, near Reigate (on the way from London to the Aldershot encampment), has a most formidable army of such soldiers; and to whose hospitality so many "Saundersian Orchids" are confided, which reach the British or Belgian shores, sent to him living in boxes, baskets, and—it is really true in the case of Notylia bicolor—in posted letters.

Thus we have regarded it our duty to act as an interpreter both of the thankful and confidential feelings of Pleurothalloids, and of our own, by making W. Wilson Saunders, Esq., the godfather of a lovely young anonymous Pleurothallis, coming, we believe (papers not seen) out of Mr. Low's Nursery, into which it was introduced from Brazil. *H. G. Rchb. fil.*

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* *Traité des Giroflées*, par E. CHATÉ. Paris.

NEW GARDEN BUILDINGS AT HAMILTON PALACE.

THE gardens and garden accommodation at Hamilton Palace were not, prior to 1862, at all on a scale commensurate with the princely domain of the Duke of Hamilton, and although additions of a somewhat comprehensive character had been talked of for years, nothing was done until after the appointment of Mr. Mitchell as gardener. After making a general survey and feeling his way, as we all have to do on entering on a new sphere of labours, he resolved to prepare a set of plans and submit them to the Duke's consideration. These plans were almost immediately approved, and instructions were given to proceed with the work, which was set about with an earnestness and an energy which did Mr. Mitchell credit. The arduous undertaking was barely accomplished when his Grace's untimely death took place, in consequence of which all operations except such as were absolutely necessary to complete works in progress, were suspended. In the short space of two years a garden of six and a-half acres had been formed out of a thick plantation overrun with tangled masses of underwood, and had been surrounded with a substantial brick wall 15 feet high; while the block of forcing houses and other accommodation represented in the annexed engraving had been completely finished. The expenditure consequent on operations of such magnitude must have been considerable; but the ranges of glass and their accessories are the most complete of their kind that ever came within my cognisance, and form a suitable adjunct to this extensive demesne, with its famous piles of architecture, its very extensive acreage, and its noble and ancient trees.

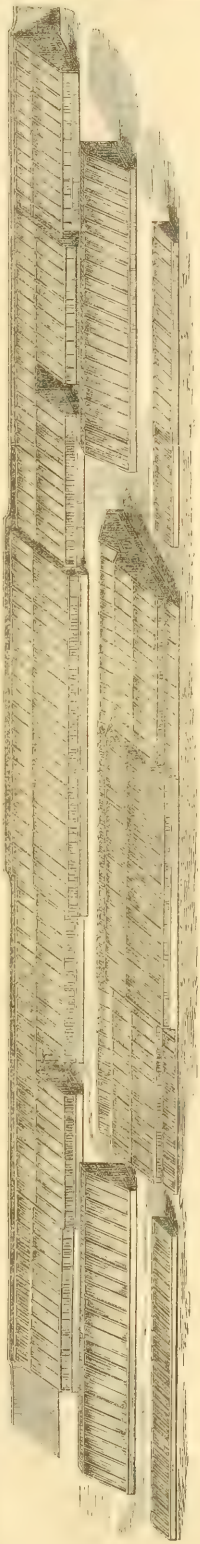
The greater part of the north wall is covered with the principal range. This consists of two large centre Vineries, each 50 by 18 feet; then two on either side, separated by corridors, 45 feet and 40 feet by 15 feet respectively, the corridors being about 8 feet square; and a Peach-house at either end 50 feet by 12 feet, making altogether a range of about 386 feet long. The natural position of the ground was admirably adapted for getting the front ranges in a proximate position without obstructing the action of the sun's rays either upon the main range of houses or the borders, the gradient being about 1 in 5. This afforded capital drainage, without necessitating a serious amount of labour, while the *coup-d'œil* from the lower part of the garden, and from other salient points, is rather enhanced than otherwise by the proximity. A retaining wall of about 10 feet above the ground line, marked *a a* on the plan, forms part of No. 2 range, which is exactly 43 feet from the inside of the north wall to which the No. 1 range is attached; 10 feet of this forms the walk that runs parallel with and joins the retaining wall, so that by this arrangement the Peach borders outside the house are 21 feet wide, and the large Vineries 15 feet outside, and *vice versâ* inside.

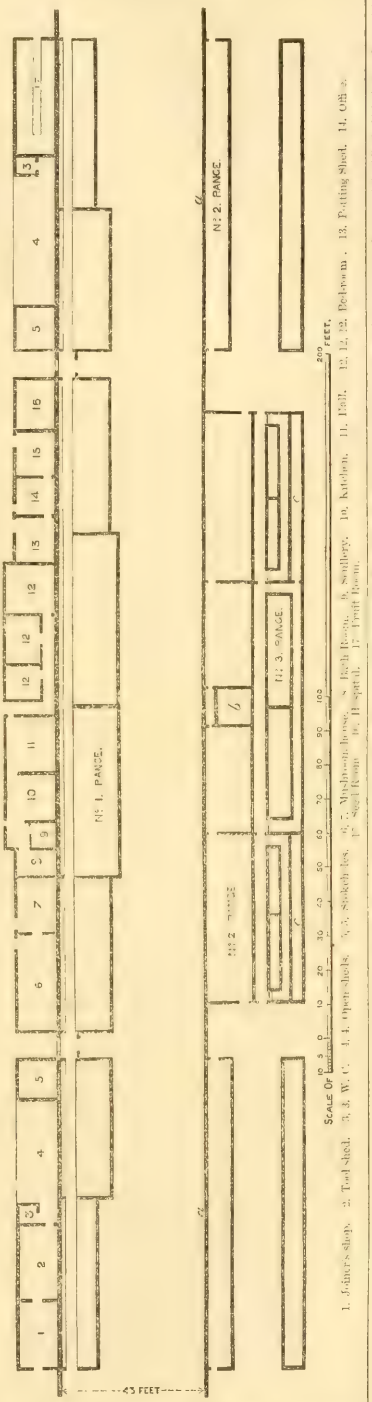
Opposite the corridors we descend corresponding flights of steps to the lower and front ranges, having the Peach cases, each 90 feet long, on the eastern and western extremity of No. 2 range. The central division, at the back of the Pine stoves, was intended for a series of offices, but Mr. Mitchell turned them, in my opinion, to better account by covering them, as indicated in the elevation sketch, with glass for plant cultivation, and admirable plant houses they certainly make. The two centre houses are filled with Ferns and foliage plants, the stoke-hole being walled off, as indicated at *b*, and completely screened from the promenader, while the house on either side is filled with a miscellaneous assortment of flowering plants.

No. 3 range was at one time wholly occupied with Pines, being specially fitted up to meet the wants of that class of fruit; but fully the one half is now occupied with plants. The pits in front of the Peach cases, and the smaller ones confronting the succession Pine stoves (Nos. 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16), are valuable auxiliaries for many purposes in such an establishment.

The heating of the whole affair is of the most complete and simple character, one of Gray's oval tubular boilers efficiently working the whole of Nos. 2 and 3 ranges with upwards of 5000 feet of 4-inch piping, admirably arranged so as to produce the minimum of friction, a matter of immense importance. Each set of pipes in each house is so regulated by Beck's patent valves (which Mr. Mitchell has found to be thoroughly efficient) that they can be worked independently, the mains being carried right along the passages in chambers, and the paths covered with ornamental cast-iron gratings thus allowing none of the heated air to be lost. A couple of boilers of lesser dimensions are attached to the upper range, which heat the outside border of the 45 feet Vineries as well. Ventilation is thorough and efficient, both at front and back, supplying a current of air of greater or less volume both in the houses and in the borders, and is made easy on what is called the "self-acting" principle. The houses were constructed, and the heating executed by Mr. Gray, of Chelsea, who, while having a good thing to begin with, has known how to carry it through with credit to himself, and satisfaction to Mr. Mitchell and his noble employers, as well as to all those who have had the pleasure of inspecting it.

The houses which form the limb of the span at the shady side of the north wall are as complete a set of offices as could well be conceived attached to any garden establishment. There has been much talk in days past about the want of proper bothy accommodation in the garden establishments of this country, and in many instances not without good reason, for men have often been domiciled in hovels, where the kitchen, besides being the only resort, formed also the dormitory for three and four individuals. Add to this a low ceiling, windows limited in size, insufficient drainage, and minimum ventilation, which nothing but a healthy occupation and a sound constitution could have successfully battled against, and the picture is not overdrawn. Times have changed, however, and as at Hamilton so in many places, bothy accommodation forms no inconsiderable item in the estimates; and the health and comfort of the young men are thereby effectively ministered to and promoted. Here, however, there are comforts which many head gardeners are denied, and which result from a well-planned arrangement at first, and from the number of young men which must be housed in an establishment of this extent. Besides having scullery and kitchen, there is a hall which can always be kept as orderly and clean as a parlour, free from the noise and dust of pots and pans, and well suited either for self or mutual improvement. Then there are suites of bed-rooms, properly and substantially fitted up so as to promote and preserve order, the luxury of a bath-room, with hot water from the kitchen, and cold water in pipes by gravitation, these being fitted up where required throughout the establishment. Not the least important is the spare bed-room, which does duty as a hospital when required, thereby not necessitating the instant removal of the patient in cases of infectious fevers, &c. Scrupulous cleanliness prevails in all the apartments, through the agency of the female engaged in domestic





duties. As was to be expected, more comfort prevails than in places where young men have done, or may still do, the "cooking" in turn. The other offices are all commodious, and fitted up to suit their several requirements.

The comprehensive character of the whole design, the substantiality and neatness which pervade its parts, and its general suitability in point of structural compass and arrangement, afford proofs of the judgment and practical ability of Mr. Mitchell, on whom the onerous task of general superintendence devolved. *J. A.*

EXTRACTS FROM THE JOURNAL

OF MR. JOHN GOULD VEITCH,

DURING A TRIP TO THE AUSTRALIAN COLONIES AND THE SOUTH SEA ISLANDS.

(*Continued from page 56.*)

Camden Park, the Seat of Sir William MacArthur, November 17, 1864.—Sir William MacArthur, who is now almost as well known in Europe as in Australia, is a most enthusiastic amateur in horticulture; he kindly took an especial interest in my visit to his country, and in many ways rendered my stay of increased interest. Camden Park is situated in the centre of an estate of 30,000 acres of fine arable and pasture land. It is 40 miles from Sydney, and is easily accessible by rail, the station of Menangle being within 4 miles of the house. The country between Sydney and Camden is devoid of any interest or beauty. It is one continuation of flat grassy surface, thinly covered with the usual Australian Melaleuca and Eucalyptus scrub. The white or light brown peeling bark, and brown foliage of the many species of Eucalyptus so peculiar to this country, and everywhere so common, gives the landscape a most desolate aspect. The first idea of a person coming from England is, that all the trees are dying, or that each specimen has been struck by lightning. The barren, desolate appearance this produces, deprives the country scenery of all beauty, or semblance of luxuriance. The Camden district suffers greatly from the heavy floods which are experienced more or less in all Australian low lands. The river here, which in summer is often almost dry, has been known to rise 56 feet. It can be easily imagined that such a mass of water would cause immense damage. The Wheat crops of New South Wales have of late years been almost totally destroyed with rust. The greater part of last season's crop on the Camden estate was scarcely worth cutting.

Camden House stands on an elevation of some 200 feet. The approach to it is poor, and not in keeping with the other portion of the grounds. The gardens are extensive and kept in good order. The collection of plants and fruits at Camden is by far the best that I have seen in the colony. No means have been spared to obtain the best varieties in each class. Even our most recent Strawberries are thriving here. The garden is divided into two parts, and is under the superintendence of two gardeners. That in immediate connection with the house is laid out in lawns and shrubberies, with an Orange grove, the picture of health and luxuriance, and two greenhouses for the purpose of propagation, attached. Here may be found many rare plants. All the Californian and Japanese Coniferæ are doing well. Lapageria rosea, Thunbergia Harrisii, Mandevilla suaveolens, Tecoma jasminoides, Wistaria sinensis, Bignonias, Tacsonias, Ipomœas, Passifloras, Sollyas, Clematis lanuginosa, Fortunii, and Standishii, and Lonicera aureo-reticulata are among the climbers. Bougainvillea spectabilis and splendens flower profusely against a north wall. There are few sights more beautiful than the side of a large house completely covered with these bright mauve-coloured and scarlet flowers. Beaumontia grandiflora, Duranta Baumgardii, Plumbago capensis, Tecoma velutina, Phygelius capensis, Heterocentrum roseum, Magnolia grandiflora, fuscata, pumila, glauca, conspicua and macrophylla, Cantua dependens, the pendulous Ulmus chinensis, the Sweet Bay, the Oleander, the Arbutus, and Lilac, Arundo Donax variegata, and several species of Ficus, are common in the shrubberies. There are also many varieties of Rhododendrons, and both Indian and Ghent Azaleas, but these require special treatment, and are mostly grown in pots. Roses are in great perfection. During the flowering season the ground is literally covered with the fallen flowers. Some of the seedlings raised at Camden are distinct and good. Soft-wooded plants are in abundance. The colours of Verbenas, Petunias, and Geraniums are brighter, I think, than in England. Fuchsias, Primulas, Cinerarias, and Calceolarias do not succeed so well. Phloxes, of which Sir William has introduced the best from France, are particularly suited to the climate. A few of the specimens of Coniferæ and of evergreen shrubs here are the largest in the colony. Thuja aurea is the largest I have seen; it measures 7 feet each way. Araucaria Bidwillii is undoubtedly the finest specimen in cultivation. It forms a beautiful pyramid of the darkest green glossy foliage, 40 feet high by 35 through. Cedrus Deodara, Pinus halepensis, Ficus indica, and Magnolia grandiflora are fine trees.

The lower garden is devoted chiefly to vegetables and fruit, but also contains a number of flowering shrubs, and a large collection of bulbs. There is almost every variety of obtainable fruit suitable to the climate. Gooseberries and Currants will not succeed, the heat being too great. Fruit is so plentiful that large herds of pigs are fed on it. Sir William has devoted special attention to bulbs. His collection contains numerous hybrids raised by himself, and the best imported varieties of Hyacinth, Tulip, Crocus, Anemone, Ranunculus, Alstrœmeria, Amaryllis, Gladiolus, Lily, Iris, &c.

Camden Park is celebrated for its wine. Extensive vineyards are under cultivation. The principal Grapes grown are those of Germany. The wine is made by men from the Rhenish wine districts.

Mr. Ferguson's Nursery is situated near the village of Camden. Mr. F. learnt his business at Chatsworth, and other large English gardens. He was then for several years in charge of Sir William MacArthur's establishment. This nursery is the most practical and best managed that I have seen in New South Wales. The stock comprises fruit trees of all descriptions, Roses, and ornamental trees and shrubs, with the usual variety of Araucarias and pot plants grown under shaded frames. The whole is very clean and healthy.

(*To be continued.*)

THE ROYAL HORTICULTURAL SOCIETY'S SCHEME FOR THE EDUCATION AND IMPROVEMENT OF GARDENERS.

THIS proposal merits more attention than it as yet appears to have received. I desire to thank the Society for entertaining the question. Some such service gardeners have long expected from it. Whether the present plan will satisfy the craft generally remains to be proved; but the Society is entitled to the gratitude of gardeners for directly aiming at their improvement. Hitherto it has been very generally asserted that the Horticultural Society has been much more anxious to advance gardening than gardeners. It has been held to care more for the products than the living agents employed in bringing them to perfection. Its energies have been expended rather in the improvement of dead matter than in the elevation of living minds. Doubtless there is a certain amount of truth in these charges. Until quite recently I am not aware that the Society has ever made the elevation of gardeners a direct, or indeed an object at all of its existence. To collect, to prove, to correctly name and describe, to grow well, and distribute among its members the most useful and ornamental plants of the world, and to encourage their perfect culture by the offer of liberal prizes at its splendid exhibitions, was the wide and useful sphere that it marked out for itself. And all must admit that it was and is eminently successful in accomplishing these objects. Even its apparent partial failure in some of them was the result of its eminent success. Its exhibitions for instance fell off, because the stimulus of its example reproduced similar displays in more easily accessible or more popular localities. The grand Chiswick fêtes are gone for ever, simply because no single Society can ever again command a monopoly of such shows. It is hardly possible to exaggerate the advantages that the Horticultural Society has conferred upon gardening. By collecting and introducing new plants it has widened the basis, and by its exhibitions it has elevated and improved the practice of horticulture. In fact, so obvious is all this, that few or none will be found to deny it.

What is disputed is the service, if any, that the Horticultural Society has rendered to gardeners. Upon this point the utmost diversity of opinion prevails. Amidst it all, however, one idea constantly crops out. It is, that the Society ought to have done, or to do something for them. Taking this, then, for granted, let me inquire what the Society has done; what it now proposes to do; and what more it ought to attempt for the elevation and improvement of gardeners? In answer to the first question, many say that the Society has done nothing. I cannot agree with them. Others assert that the Horticultural Society has necessarily done as much for gardeners as it has for gardening. They contend that it is impossible to improve any art without elevating in a proportionate ratio the practitioners of that art. It must be admitted that this philosophical statement of the case, is partially confirmed by experience. Nevertheless the real truth will be found about midway between those who affirm that the Society has done nothing, and those who assert that it has done everything for gardeners. Indirectly, at least, and also by direct precept and example, it has extended our knowledge, and improved our quality.

The Horticultural Society itself admits that it might have done more for gardeners in the past, by proposing to do more now. This brings us to our second question, which was to discuss the merit of its present plan for the improvement of gardeners. After the thorough notices and explanations you have given, I may presume that your readers are conversant with its details. Briefly, it may be described as a system for teaching, testing, and certifying gardeners. It aims at making, proving, and inducting into situations good, or at least clever men. This is an object worthy of the high position and large resources of the Horticultural Society. To form, cultivate, and bring to the highest possible perfection professional and manly character, is a higher, nobler work than any the Society has hitherto undertaken. And, as in gardening so much depends upon the talent and skill of the living agents employed, it is obvious that the improvement of the men, is the surest mode of advancing the science and perfecting the practice of horticulture. Hence the Horticultural Society is only doing its own proper work in initiating and sustaining a movement for the superior instruction of gardeners. Its present scheme, if successful, will introduce something like a competitive examination into the business; few if any gardeners will object to this. Doubtless the tendency of the present day is to carry examinatory trituration to absurd excesses. It is not very pleasant to have one's mental powers labelled and measured to a nicety. Few men would like to fill up their pedigree thus: intelligence, 39.009. Still, the plateau of success had better be reached through the gateway of cram, if it must be so, than through the backdoor of favouritism, as is too often the case at present. Besides, there need be little or no cramming in the case. The programme of the Society is reasonable, and within the power of any industrious young men of ordinary intellect to fill up. As much or more is already demanded of gardeners by nurserymen and private individuals. Now, if our capacities are to be gauged at all, it is better that they should be measured by a public society than by private persons. Certificates of proficiency would thus acquire more value, and there would be a better chance of even-handed justice. More than this, the Horticultural Society is, or ought to be, the best judge and highest authority in all such matters. If competitive examinations are to become general, that is the body that should be entrusted with their management. It may be held to be above the reach of personal favouritism, and its decisions would generally be accepted as impartial, weighty, and in a sense final. They would do much to place the best men in the best places; they might do more to thin our ranks of shallow pretenders. Its diplomas ought to become a passport to success in life.

Notwithstanding all this, there is great danger of the whole scheme proving a complete failure. The Society has done well as far as it has gone. No sensible gardener will object to its assumption of teaching, testing, and certifying functions. But many, most, will be tempted to ask—*cui bono?* At present I think it difficult to give an intelligible answer. Having gone so far, I think the Horticultural Society is bound to go further. And this brings me to my third query—what, if anything more does the Society propose to do for gardeners? As far as at present appears, nothing more is to be done. I wish to state most emphatically that we are entitled to something more. I thank the Society for its efforts to extend our knowledge, and raise the standard of our qualifications. The wider the former, and the higher the latter, the better. But the manufacturer who devotes his energies to the improvement of any article, generally makes it his interest or his duty to see that a fair equivalent for its value is obtained for it in the markets of the world. This rule eminently applies to the Horticultural Society in this matter. The rock on which its whole scheme is likely to be wrecked is simply this: its entire purport is directed to the extension of the knowledge of gardeners. Not one thought seems to have been given to the improvement of their material condition. Worse than that, the latter is to be sacrificed for the time being, for the sake of the former.

In theory this may be all well enough. There are those who contend that knowledge is the mighty lever that will and must lift men up to competence, if not to wealth. That it ought to do so none will deny; that it does do so in many pursuits can be readily proved; but that it does so in gardening, but very few gardeners will be bold enough to affirm. For years gardeners have been advancing in intelligence, growing rapidly in knowledge. It is daily becoming more difficult to be a gardener. The sphere of our duties is widened, our cares are multiplied, our anxieties increased. Of all this no good gardener complains. Our moderate, reasonable request is that compensation should bear some reasonable proportion to talent and responsibility. We go further, and require of those who demand more talent as a passport to success, that they will help us to secure something like value for our worth.

I am quite aware that it is but little the Horticultural or any other Society can do in this matter. Supply and demand must mainly determine the worth of a gardener's services, as it does that of all other commodities. But the element of quality also exerts a great influence in the assessment of value. And this fact seems to have been very much overlooked in our exchanges with our employers. Let me not be misunderstood. Our employers are particular enough about quality. A gardener's character in a good situation must be as perfect as that of a cabinet minister's. Those who certify to our worth are as particular as if we were to be prize subjects

at a great exhibition of all the virtues and all the talents. But, in determining the vital question of wage, all this quality appears to go for nothing—absolutely not a single fraction is given in exchange for it. One of the chief reasons for this state of things is that those who have been most zealous in improving the quality of gardeners, have done nothing to assist them to obtain more money for it.

In illustration of this, allow me briefly to record an episode in my own experience. Some 20 or more years ago, I entered one of the best London nurseries to wait for a head gardener's situation. The nurseryman was justly most scrupulously particular about character. In addition to the highest testimonials from our best places, each man had to write out his pedigree, from his birth to the day of entering the nursery; drawings, descriptions, &c., of the best houses for various purposes were required from us as tests of capacity. Prizes of books were offered as stimulants to talent. Our pedigrees, drawings, &c., were exhibited in the office to all noblemen and gentlemen in want of gardeners. There was much in all this to stimulate the ambition, and excite the hopes of the young and sanguine. I entered into it all with zest. The spring was severe. I was up many a night with the fires without any extra pay. I worked and studied hard, and kept myself on the usual 12*s.* a week. Present hardships were not felt, as I looked into and longed for the bright future. Honour, distinction, competence, fame beckoned me to embrace them through the magic influence of that office.

At last my time came. A baronet wanted a gardener. The place was offered to me. Young men of ardent temperament will know what that means. In my delirium of joy, however, I had prudence enough to ask about wages. My price fell upon me like a thunderbolt. I felt a sense of injustice and wrong that I have never experienced since. I remonstrated; but the nurseryman advised, almost commanded me to take it, and fearing the usual penalty of refusal—two years' retention in the nursery—I went. Need I add, that when I arrived there, I was requested to sleep with the footman. Who can blame that gentleman for measuring the social position and intellectual status of his young gardener by a money standard? Our wages were about the same; why should I have different treatment from the footman? I may mention in passing, that I staid, and left the place a respectable one for my successor.

But the point in the case is this: either that nurseryman did too much, or he did too little. If he was right in demanding such qualifications from his men, he was altogether wrong in sending them forth at footmen's wages. The merchant who prides himself on the sterling quality of his goods, will neither keep an inferior article, nor sell a good one at less than it is worth, to suit customers who value nothing but cheapness. Some such service as this the Horticultural Society can render to gardeners. Certifying to quality, it will acquire a moral right to say something authoritative about price. And it ought to say it. It can do more than this; gardeners will expect it to set the example of paying for quality in its servants. Amidst the multitude of places where a bare competence is possible, and the greater number of sheer blanks where no honest man can keep himself and family respectably, there ought to be some liberal prizes. Among the latter, the situations at the disposal of the Society should hold the first rank. On this account I much regret that the practical superintendence and scientific teaching proposed to be given at Chiswick are not combined in one person, and that a practical gardener. I believe the offer of a salary of 400*l.* or 500*l.* per annum would have produced several candidates well qualified to discharge both functions. Such an example would have had the best possible influence on the status and wages of gardeners. As it is, the two superintendents should have, say 250*l.* a year each. Such places can only be well filled by the best men, and who shall say that the above wage is more than they would be justly worth? The scheme does not give the wages of the teaching foremen. But such duties zealously performed should command a salary of 100*l.* a year. The wages offered to the students will limit their number and lower their quality. Considering that Chiswick provides neither lodging nor vegetables for the men, the wages are far too low. This is to be regretted, not only for the sake of the men, and as risking the failure of the entire plan, but also on account of the effect of the Society's example upon others. I know that the Society protests against its wages being quoted as a standard; but practically its example will be taken in favour of low wages, where its protests will be conveniently forgotten. The wages offered are also much lower than those given in private gardens. In these, lodgings, and very generally vegetables and milk, are found. Reducing the wages of the students by the value of these items will leave about 10*s.* per week. Few talented young men will care to leave private gardens, at wages of from 12*s.* to 18*s.* per week, with lodgings, &c., to come to London to pinch themselves upon 10*s.* nett. Before doing so they will ask themselves and each other the very pertinent question—*Cui bono?*

I confess to having serious doubts about the students being forthcoming at the price offered. This question of pay naturally introduces us to another—the age and future prospects of the students. Two or three years in other gardens, one entire year to have been spent in the same garden, with good character and the nomination of a Fellow of the Horticultural Society, are to be the qualifications for admission to Chiswick. The period of probation there need not exceed one and cannot extend beyond two years. What are the students supposed to be fit for at the expiration of these five years? Master foremen or journeymen? If the former, they must have learned fast and well to have acquired the necessary knowledge and experience in the very limited time allowed; and if the latter, where is the benefit of going to Chiswick to be certified as efficient foremen or journeymen?

I am not at all certain that the training at Chiswick would be accepted as a recommendation by practical gardeners. Some of them are already expressing their fears that the very name of "student" will spoil the young men. I have no such fears; still in most private places the first quality demanded of young men is an enormous capacity for getting through work. It is hardly to be expected that this would be fostered or strengthened at Chiswick. *D. T. Fish, Hardwicke Gardens, Bury St. Edmunds.*

(To be continued.)

Home Correspondence.

Exhibition Arrangements.—As one who attended the lecture at South Kensington on Tuesday last, perhaps you would allow me to notice a few of the most prominent points noticed. The lecturer pointed to the tables on either side of the room, one filled with miscellaneous foliage and a few flowers, the other with a beautiful bank of Orchids, and suggested that it would have been an improvement to intermix them. The difficulty in a mixed arrangement is, however, to get foliage that will harmonise with certain flowers; for example, if the Orchids had been mixed with the foliage plants in any way that I could think of, they could not have been made so effective as they were in a simple mass; and if the lecturer had noticed, he might have seen both before and after the meeting that the public crowded around the latter, while the former, which were perhaps of more real interest, were only noticed by the scientific gentlemen present. Again, if we take a mass of splendid Roses, such as we hope to see at the International next May, what intermixture of foliage could be made to improve them? There is improvement no doubt to be made, but it should be done with caution, and discussed in the spirit of the letter in last week's Paper. I should consider it one point of improvement if any arrangement could be made by which the pots could be plunged on the green banks, loose Grass being strewn over the rims. This Grass with damping would continue green for some days. I am aware of the difficulty of the angle required in placing different plants, but still a good-sized hole is easily covered, when the plant is placed. On wooden stages this could not be done so easily; but still these could be improved by having a loose board that could be moved up or let down in front of the pot, and foliage plants put inside to the height of the pot. Such plants as Azaleas might be arranged to greater advantage by adding a background of suitable foliage, which would exhibit to the visitors more distinctly the individual merits of the plants than when they are in masses, where the glowing colours are so crowded together as to detract from the full effect of what are frequently gems of high cultivation. This could be done, perhaps, best by allowing an exhibitor more space than he absolutely requires for his specimens, to be filled in as he might think proper, making the arrangement either a part of the competition or giving for it a separate prize. Growing Grass in boxes will not answer, nor is it necessary where turf and cut Grass can be got so easy; besides, as was observed, Lycopods are better, but neither of them will answer for showing fruit. Experience has long ago proved that fruit, such as Grapes, Peaches, Pines, Melons, &c., brought into contact with anything earthy, imbibes an earthy flavour immediately; even fruit packed in Moss not thoroughly dry is unfit to be eaten. Besides, a Peach placed on Grass, however short it might be cut, would simply look ridiculous. It must be so placed as to allow the curves of the fruit to stand clear, and no auxiliaries that I have seen tried are so efficient as the leaves of the Bay or Portugal Laurel, well washed. The great difficulty is how to arrange fruit on a table to be seen to most advantage. Exhibitors of fruit, like exhibitors of plants, do not like to have their own arrangement disturbed. A box of Grapes carefully tied down before starting is expected to be placed on the exhibition table as sent; hence the difficulties to both parties. No attempt to assimilate the size of the boxes or their shape has as yet been attempted by any schedule makers. There can be no doubt it would add greatly to the effect of our fruit shows if exhibitors would allow their Grapes to be cut from the packing box, and placed under certain conditions that would give more harmony; for example, a curved table, or curved wicker work painted green, in divisions, to be placed on a table, adding a division as necessary, proper flat spaces being provided for the various fruits up to the centre, which should be for Pine-apples. We are led by old and familiar association to couple basket-work and fruit so much together that perhaps the latter would be the best contrivance. But if Grapes are never seen under a good arrangement at our exhibitions, what shall we say about Pines? At no exhibition abroad can so many examples of this noble fruit be got together in such perfection as in England, and still we find them invariably placed in incongruous vessels of varying shapes, from that of a candlestick to a Hyacinth glass. I think this might be improved by cutting a portion of the footstalk and leaves with the fruit, and placing the stalk through a hole in the centre of the table, or in a stand. I am afraid of having already taken up too much of your valuable space; still, I cannot pass one other remark of the lecturer. He stated that white paper round or near flowers always enhanced their beauty. There is too much of "shop" in this remark. I appeal to any parties who are in the habit of making nosegays, whether there is not more beauty in a backing of foliage than any paper can impart. Even the lecturer himself, at an earlier stage, pointed out how beautifully Nature had arranged the green to blend with the colour. It is reversing the order of nature to put stiff white paper round a bunch of flowers, that would be so much improved by the leaves of Ferns and Acacias, or sprigs of Jasmines, Centaurea, &c. With respect to using such rubbish as brick-dust or broken bottles or chalk in arranging exhibitions, I can only say they would be more out of place there, than even in the garden. *F.*

The late Snow-storm.—The disastrous effects of the memorable snow-storm of the 11th inst. will long continue visible in parks and gardens in the south and south-west of England. Having made a careful survey of its ravages at this place, which is near the eastern edge of the Bagshot sand, at an elevation of about 150 feet above the sea, I have set down the names of some of our most ornamental trees and shrubs, principally Conifers, which have either escaped altogether, or been more or less injured, distinguishing the degrees of injury by the figures 0 to 9, and confining the list, for the present, to fine specimens, ranging from 12 to 25 feet in height. If other sufferers in different parts of the storm's path would furnish similar returns, much useful information might be gained, and possibly a table constructed, showing the different capacities of the members of this most ornamental class of evergreens to resist what may surely be considered to have been in the nature of a "proof charge" of snow:—Pinus Benthamiana, excelsa, Sabiniana, 0; Abies canadensis, Douglasii, nobilis, Nordmanniana, Pinsapo, 0; Araucaria imbricata, 0; Cedrus Deodara, 0; Taxodium sempervirens, 0; Thuja gigantea, 0; Pinus insignis, 1; Juniperus virginiana (Red Cedar), 1; Abies excelsa (common Spruce Fir), 2; Cryptomeria japonica, 2; Cupressus torulosa, 4; Pinus Pinaster, 6; Cupressus macrocarpa, 8; Scotch Fir, 9. *W. F. H., Bartropps, Weybridge, Surrey, Jan.* 18.

Scale on Orange Trees.—Your inquirer about scale on Orange trees should take a large garden watering pot, and mix in it a quantity of soft soap until it becomes a lather. The quantity is of no importance, so that it will pass through the syringe. The plant should then be laid on one side, so that the mixture may not run too much into the soil; or if in a heavy tub, the surface should be covered over with Moss, tying a portion round the bottom of the stem for the same purpose. The tree should then be well syringed while the mixture is warm; it should be left on the tree for half an hour or so, and then washed off with clean water. This will not only take away the scale, but also the black accumulation on the leaves that generally accompanies this pest. The plants should be at rest when this is done, not in a vigorous growing state. The same plan will be found to answer with Neriums, Acacias, Jasminums, Gardenias, Stephanotis, &c. *F.*

Indian Fruits.—Mr. Jackson should have been the last to have said anything about these fruits. On inquiry at the gardens of the Royal Horticultural Society, I find that Mr. Black's collection arrived from India on the evening preceding the Show; that the collection was consigned to Kew after the exhibition; that the authorities there were advised of their arrival next day, with a request that bottles and spirits might be sent, so that the fruits might be taken out of the tins, and placed in the bottles. Mr. Jackson came to Kensington next morning to see what was required; and on the following day sent up a man with bottles and spirits wholly inadequate in quantity, and many of them so small as to be quite unfit for the purpose for which they were intended, *F. R. H. S.*

Double-glazing.—Being pretty intimate with the results of this system as carried out at Rockville, I once or twice thought of saying a few words about it; but having visited Mr. Rucker's garden a few days since, and there seen the system in fair opera-

tion, I no longer hesitate. Within the past season Mr. Rucker has built a fine new span-roofed house, 56 feet long by 21 wide, with double roof, sides, and ends, and in this house the greater portion of his East Indian Orchids have been grown for the past four or five months. The result is already so satisfactory as to astonish Mr. Pilcher and his master, and make them ardent believers in the great advantages of double-glazing. The merest tyro can see the perfectly firm, free, and vigorous growth the plants have made since being placed under the double roof, and how much superior it is to any made when the plants were grown under a single one. With Mr. Pilcher's many years' experience of Orchid growing, and with numerous structures having single roofs now devoted to Orchids, so that he can readily compare the results of the two systems, he surely ought to be able to pronounce on its merits, and he does so emphatically by declaring that he would use a double roof, and no other, for any Orchid house, stove, or very early Vinery which he should for the future erect! Those who think a double-roofed Orchid house resembles a Wardian case should see this house at Mr. Rucker's. Ventilation? It has as much fresh air as any six Orchid-houses of my acquaintance! The centre bed has hot-water pipes in its chamber, which communicates with the external air by drains passing underneath the passages, and open up just outside the house, and these are never shut. The air is always flowing in; and then, getting heated beneath the bed, flows gently into the house through pigeon holes in the walls of the centre bed or pit. In addition to these are little slate shutters in the side walls, which are shut and opened according to the weather. They open a little below the pipes, just as such apertures are arranged in good Orchid houses now-a-days, only in general such houses are nearly dependent on these alone for their ventilation. Then there are sashes in the top, and of these every second one is left open night and day. The house has never been "shut" for a moment since it was made, but has always fresh air passing through it; so that instead of double roofing interfering with ventilation, it is the very system which above all others enables the gardener to ventilate thoroughly and continuously. "The men like to work in it," says Mr. Pilcher, who himself feels it a pleasure to breathe in it for any length of time. The splendid Vanda Lowii (10 feet high) which for a long time has been one of the lions of Mr. Rucker's Orchid collection, has made such a vigorous start since placed here that it will very soon be necessary to sink the pot beneath the floor or cut down the leading shoots. The Foxbrush Aerides, which so often gets the ends of its leaves hurt, is growing away since coming in here without even as much spot as would do for a microscopist. The many plants of Vanda cœrulea are in an equally satisfactory state. Galeandra Devoniana has made since its introduction to this house, shoots almost as big as those of Dendrobium Dalhousianum; and a similar improvement is visible in all the plants, which were considerably knocked about during the alterations in the summer. A total prevention of drip, that special annoyance of the Orchid grower, is one of the best features of this double roofing. In most of the other Orchid houses here, Mr. Pilcher often has to send round a boy with stick and sponge to prevent it falling in cold heavy drops on his plants, but not a drop ever can fall in the new house, and thus one pest is disposed of. Then again the constant circulation of fresh air has another important result—it enables Mr. Pilcher to syringe his plants as often as he wishes, and he does it many times oftener than he dare with a single roof, and with the best effects. This alone is no small boon to the grower of Vandas and Saccolabiums. As regards the "light" of the house it is perfectly satisfactory—it is in fact better lighted than any other house in Mr. Pilcher's charge. Some of the old Orchid houses, without glass at the sides, are dungeons compared to it. By having a house with well-lighted sides, the slight amount of sun obscured by the double roof may easily be compensated for. Besides, we should remember that though Orchids like "light," they cannot as a rule bear sun. Mr. Pilcher states that the improvement which has taken place in the plants during the past five months in this house is so great that, if sold now, the increase in their value within that time would more than pay for the erection of the house. I may add, that Mr. Penny, whom I met at Mr. Rucker's in quest of evidence as to double glazing, and who grows his Orchids as well as any other cultivator, was as fully impressed with the superiority of this house as Mr. Pilcher himself. Respecting Mr. Bewley's houses, when I described them a season or two past it was with a firm conviction that their contents were extraordinary for perfection of health, as compared with the best English "plant places;" but when it was all done I had a slight suspicion that further experience would reveal beauties of in-door gardening to me which would put those of Rockville into the shade. I have seen many places since, north and south, and have now a very decided opinion that the great Fernery and great stove at Rockville are the most instructive and beautiful plant-houses in the United Kingdom. The Orchids I will not say are better or so good as in other places, but stove plants, fine-leaved plants, Ferns, Palms, &c., display a cleanly vigour and beauty of growth which I have never elsewhere seen equalled. It is hardly fair to compare the best results of the system so long pursued in this country with those of the double-roofing plan, which will not have had a fair trial till it is in full operation with a dozen or two of our best Orchid growers. *W. R.*

Grape-growing at Bury Hill.—An interesting description is given by "I.," at p. 10, of the gardens at Bury Hill, in the neighbourhood of Mansfield, Notts. It is said that the world knows nothing of its greatest men, and the same may be also said of the people of the Midland districts, who know nothing of their greatest gardeners. As a resident in one of the Midland districts, I must confess that I and many others had never before heard of the extraordinary Grapes grown at Bury Hill, or been able to discover at which of our public or private exhibitions they have eclipsed all others that were ever seen for size and general excellence. However, I for one, as a Grape grower, beg to thank "I." for the information. There will be now no occasion for us to visit Messrs. Meredith, Hill, or other lion Grape-growers, as we have something worth seeing nearer home. As "I." does not think that the peculiar excellence of the Grapes grown at Bury Hill proceeds from anything in the soil or management, it must be from the pure air and freedom from the "miasmatic exhalations from the sheets of stagnant water called lakes." It is to be hoped that he himself resides in a hilly district, and that his health may not suffer from his peregrinations in the fine old places where lakes abound. *H.*

Societies.

ROYAL HORTICULTURAL.—*Jan.* 23.—Lord Henry G. Lennox, M.P., in the Chair. After the election of new members, and the chairmen of the Floral and Fruit Committees had announced the awards that had been made in their respective departments, the Rev. M. J. Berkeley offered a few observations on the different subjects exhibited. Concerning a new Calanthe from Mr. Williams, of Holloway, it was remarked that it only differed from the well-known C. vestita in having a less prominent rose-coloured spot in the centre of the flowers, which were otherwise pure white. An unnamed Odontoglossum, greenish yellow, spotted with brown, produced at the last meeting, was pronounced to be O. hystrix, one of Mr. Weir's discoveries at Bogota, and described by us at p. 1202 of our volume for 1864. Xanthosoma appendiculata, an Arad with a singular process on the under side of the leaves, was next adverted to. In this plant a portion of the midrib is reverted, so as to produce a small leafy lobe below, which gives the appearance of two leaves placed back to back. A similar anomalous kind of structure, it was observed, had been found in an Indian species of Fig. Concerning Dracæna fragrans, a plant of which was exhibited, Mr. Berkeley stated that, though comparatively unattractive in appearance, it was very fragrant, especially at night, a quality which rendered it well worthy of cultivation. Ficus Cooperi, a species from tropical Australia, next came under notice, as did also Palicourea discolor, a plant with long-shaped dark velvety leaves, relieved and set off to increased advantage by a bright silvery midrib. Pycnostachys urticæfolia, a plant closely related to the well-known genus Coleus, was stated to be worth attention on account of the bright blue colour of its blossoms. It possesses a somewhat straggling habit, a fault, however, which skilful cultivation will, doubtless, easily correct. Herrania palmata, an Australian plant, shown by Mr. Bull, was stated to belong to the Order Büttneriaceæ. Concerning fruits of Pyrus nepalensis, which were exhibited, Mr. Berkeley took the opportunity of remarking that at one time the genera Cydonia and Pyrus were considered distinct; but he observed that those botanists were doubtless right who unite the two. Attention was next directed to a handsome bush of the common Aucuba, covered with beautiful bright red fruit, from Mr. Bull, and small examples of male and female Aucubas from the same nurseryman were shown in flower. It was mentioned that since the introduction of the male Aucuba into this country, by means of which the common kind had become ornamented with berries, the commercial value of the last-named shrub had been very greatly increased, and that plants which might formerly have been bought for some 2*s.* 6*d.* each, could not now, when covered with fruit, be got for less than from 15 to 20 guineas apiece. Another plant, also from Mr. Bull, noticed by Mr. Berkeley, was a variety of Selaginella Martensii, charmingly variegated with white.

The Chairman stated that the best mode of arranging plants at floral exhibitions had lately occupied considerable attention; he had, therefore, much pleasure in introducing to the notice of the meeting Mr. J. Hungerford Pollen, who would make a few remarks on that subject.

Mr. Pollen commenced by reading the observations on defective arrangement in regard to flower-shows, published by us at p. 1201 of our last year's volume. He likewise alluded to Prof. Reichenbach's remarks on the subject, at p. 51 of our last week's issue, and also to the report made in the Journal of the Royal Horticultural Society by Dr. Masters, in reference to the great International Exhibition at Amsterdam. The Continental and English modes of arranging plants at exhibitions differ, as is well known, materially from one another. In this country certain classes and descriptions of plants are usually associated with others of a similar kind; on the Continent, on the contrary, materials from all parts of the exhibition are so grouped together as to produce the best possible effect, which is the chief thing aimed at. Mr. Pollen, however, saw no reason why the two methods of showing plants just alluded to, might not in some measure be united. By such a union, he thought, a good pictorial effect might be produced, without in any way interfering with the individuality of the different subjects exhibited. In order to see how fruits and flowers look best, reference, he said, must be made to nature, and what strikes one most there, is the enormous amount of light under which her productions are placed. That circumstance should lead us to consider what kind of buildings are best in which to exhibit plants, and in that point of view it would not be difficult to see that tents carried the day, inasmuch as they admitted light equally all round the objects exhibited, and that of a most agreeable kind. In buildings, on the contrary, only one side was shown well, while the other was in comparative darkness. With statuary and paintings the case was different, as for these light was wanted only on particular points. With respect to arrangement, instead of portions of the show being all foliage and others all flowers, he would mix the two together, and in illustration of the effect produced by a judicious combination of this kind, he pointed to the Rhododendron exhibition that was held in the Society's garden last year, under a tent, which in point of elegance of construction had not, he said, been equalled in this or any other country. The principles of arrangement to be kept in view were, 1, light; 2, background; 3, surface. Some plants, he said, appear to the best advantage when looked down upon; others when looked up to. Inequality of surface was, therefore, a necessary point in regard to effective arrangement. Flat tables covered with green baize were all very well, but for the best effects we must look to Nature herself. There plants are varied in appearance by admixture with Grass, irregularity of surface, and other conditions under which they are placed. Long or square boxes surfaced with turf, a continental practice, it was thought might be advantageously employed in different ways in this country to improve the general aspect of our exhibitions; it was also stated that white paper might be so used as to associate well with certain subjects of exhibition. Bouquets, for example, are always surrounded with it, and prints are generally mounted with a wide margin. In a monastery in the Apennines Mr. Pollen had met with a monk in the act of sketching out a pattern on a floor with chalk, which was afterwards embroidered with Box and wild flowers with excellent effect. Where flowers could not be obtained, gravels of different colours, used as Mr. Nesfield employs them, he thought might be substituted with advantage. These were matters of no great moment in themselves, but in connection with great plant displays they might not be unimportant. One other point worthy of attention was the best way in which to exhibit fruit, and here he could not help thinking that, as in the case of flowers, the Grass-covered boxes alluded to above might be employed with good effect, or very white china. Moss, he said, is sometimes used, but if not quite fresh and green, it has a bad appearance. These remarks were, however, only thrown out to provoke discussion. If, he said, all the world were judges, the present mode of arranging fruits and flowers at our great exhibitions would answer perfectly, but as he knew that large numbers attended these exhibitions, principally to derive hints as to tasteful arrangement to be afterwards employed in the improvement of their gardens at home, it became necessary that as much skill in the way of decoration as possible should be bestowed upon their arrangement.

The Chairman then invited members present to take part in the discussion.

The Rev. Dr. Rock agreed with Mr. Pollen as to the necessity of infusing a greater degree of taste into matters connected with our exhibitions, and adduced in illustration a road near Rome which he had seen covered with flowers. He also adverted to the Derbyshire village festival of well-dressing in favourable terms; it not only served, he said, to implant a love of flowers among young people, but by bringing them into connection with the neighbouring gentry who patronised the festival, it had also a civilising tendency which was not to be overlooked. Fruit ornamented with Lycopod or Lady Fern had, he thought, a better appearance than when merely placed by itself on a white table cloth.

Mr. Wilson Saunders said: The question is, for what purpose are exhibitions established? If they are merely to please the eye, then by all means let us make them artistic. Another object must, how-

ever, be kept in view, and that is, the different subjects must be so arranged, that their comparative merits can be properly recognised. To the fact of our exhibitions being those of merit, rather than of art, he thought the present high state of horticulture in this country is in a great measure to be attributed. He therefore concurred in Professor Reichenbach's view of arrangement. He hoped that attractions to the eye would not be overlooked, but the great point he considered was to make both fruit and floral displays as instructive as possible.

Jan. 23 (*Floral Committee*).—To a large assemblage of fine plants exhibited on this occasion by Mr. Bull, the new Lindley Medal was awarded. It consisted of Selaginella Martensii albo-variegata alluded to above; Podocarpus macrophyllus albo-variegatus, a plant with beautiful white-striped leaves; Dracænas of different kinds; a variegated-leaved Sedum; different varieties of Aucuba, most of them bearing fruit; Tree and other Ferns; Yuccas, including the handsome Y. quadricolor; Peperomia arifolia, with leaves shaded with silver; the handsome Lomaria gibba; the white variety of Dielytra spectabilis; the singular-looking climbing plant called Marcgraavia rotundifolia; Palms of different sorts, including the golden-coloured variety of Latania borbonica, Calamus dealbata, the silvery-leaved Palm of Madagascar; and Thrinax elegans, a beautiful dwarf-growing species of that noble class of plants. Associated with these were also Orange trees, Camellias in flower, the red-veined-leaved Gymnostachyum Verschaffeltii, Agave americana variegata, and a handsome long-leaved variety of that Aloe called A. longifolia; Pandanus ornatus, an extremely graceful little plant, for which a First-class Certificate was awarded; the fine Australian tree called Dammara Moorei; Schistocasia Portei, with deeply-cut Caladium-shaped leaves; Eranthemum sanguinolentum, with leaves veined with red; Herrania palmata, to which a First-class Certificate was awarded; different varieties of Rhodea, with handsome gold-striped leaves; the Xanthosoma appendiculata, mentioned above; Ficus Porteana, with ample glossy-green foliage; the Brazilian Chamaranthemum reticulatum; a variegated-leaved Achimenes; Sphærogyne cinnamomea, with large handsome leaves; the Australian Grass Tree (Xanthorrhœa hastilis); and luxuriant masses of the Irish Fern (Trichomanes speciosum), and of Hymenophyllum tunbridgense. A variegated variety of Lastrea Sieboldii was shown by Messrs. Henderson, of Pine-apple Place, and received a First-class Certificate. Dr. Pattison, of St. John's Wood, furnished examples of Angræcum sesquipedale, to which attention was directed in our columns last week; and an example of Barkeria Skinneri, one of the most useful of winter-blooming Orchids. J. Bateman, Esq., contributed cut flowers of the Angræcum just named, and other Orchids; also blooms of Thibaudia macrantha, and sprigs of T. bracteosa. Mr. Veitch again communicated a magnificent group of Lycaste Skinneri, intermixed with flowering plants of Barkeria Skinneri; Odontoglossum cordatum, Angræcum eburneum, Cattleya Warscewiczii delicata, C. bogotensis (both fine kinds), and Franciscea calycina. From Mr. Williams came the Calanthe mentioned above, to which a First-class Certificate was awarded; Angræcum eburneum superbum, and another variety of that species called virens. The Society's Garden contributed a well-flowered plant of the charming little Sophronitis grandiflora, Cattleya Warscewiczii delicata, Clivia nobilis, Saxifraga tricolor, a species with finely variegated leaves, a collection of yellow-leaved Pelargoniums, and other plants already noticed.

Jan. 23 (*Fruit Committee*).—To a medium-sized longish-shaped Seedling Pear, from Mr. Betteridge, of Steventon, a First-class Certificate was awarded on this occasion. Mr. Wilson showed examples of Uvedale's St. Germain from an orchard house, and of other Pears we noticed Beurré de Flandres, Susette de Bavay, and Eliza d'Heyst. From Mr. Tillery, of Welbeck, came the following Grapes in a good state of preservation, viz., Muscat of Alexandria, Welbeck Black Tripoli, West's St. Peter's, and Trebbiana. What appeared to be Black Monukka came from Mr. Culverwell, of Thorpe Perrow. Fruit of Musa Cavendishii was shown by Mr. Bateman, and that of Pyrus nepalensis by Mr. Page, of Southampton. Mr. Wilson, the Chairman of the Committee, mentioned having seen at Prof. Wheatstone's an electrical apparatus, which he thought might be useful in gardens, inasmuch as whenever a thermometer placed in any particular hothouse fell below 40°, or rose above 70°, it rang a bell at the gardener's bedside, and thus directed attention to the matter.

Notices of Books.

The figures in the *Botanical Magazine* for the present month represent the following plants:—*Rhododendron Hodgsoni*, "one of the noblest of the grand series of Rhododendrons that adorn the Eastern Himalayan mountains," one of the finest also in respect to foliage, the leaves being used as platters for butter, &c., by the mountaineers, while the large compact heads of bell-shaped flowers are of a pale-purple colour. It blossomed last April in the temperate house at Kew.—*Lælia grandis*, a very distinct species, with peculiar nankeen-coloured sepals and petals, and a white lip veined with purple; it was grown in 1850, but from that time seems to have disappeared till reintroduced from Bahia last year by Messrs. Low & Co. Dr. Hooker remarks that in habit and aspect it is undistinguishable from the Cattleyas, to which, but for its eight pollen masses, it would at once be referred. "And even the latter structural distinction," he adds, "cannot be implicitly relied upon, for I have examined specimens of so-called Lælias, in which all but two pair of pollen-masses were merely rudimentary. The circumstance of the two supposed genera breeding freely together, as has been proved by Mr. Dominy's experiments, is another fact pointing in the same direction."—*Begonia baccata*, a fine robust Begonia with baccate fruit, found by Mr. Mann in the Bight of Benin. The stem is tall and robust, the leaves large, broadly roundish-cordate, and the flowers large, white, and dipetalous.—*Sparaxis pulcherrima*, a most lovely Cape bulb, introduced by Messrs. Backhouse & Son, of York. It a good deal resembles S. pendula, but the whole plant is larger, the perianth bell-shaped, and the bracts dissimilar. The leaves are narrowly sword-shaped, and the flowering stems tall, with hair-like branches, bearing tufts of large drooping blood-purple flowers. "A more lovely and graceful plant" cannot well be imagined.—*Epidendrum myrianthum*, a very beautiful epiphyte, with tall leaf-stems, distichous leaves, and dense terminal panicles of rosy flowers. Mr. Bateman relates that a few of the specimens sent from Guatemala have lingered in this country, but, owing no doubt to their being kept too warm, could never be induced to flower. As one of these happened to be still alive at Knypersley, though its shoots were no thicker than a crowquill, he directed it to be put in a cool house, in which some of the old and feeble stems speedily blossomed, and new shoots, thrice the strength of the others, almost immediately presented themselves.

In the *Journal of Botany* Dr. Seemann figures *Camellia japonica variegata*, a prettily variegated form, introduced from China by Mr. Fortune, and now flowering with Mr. Bull. The blossoms are single, and of a pale rose colour. The most prominent papers are those relating to the Flora of the Shetland Isles, to the genus Brainea, and to the Cinchona Bark of Ootacamund.

The *Florist and Pomologist* has a figure of *Beurré d'Anjou Pear* very fairly executed by chromo-lithography. This Pear is said to be the Ne Plus Meuris of the French nurseries, under which name it was received by Mr. Rivers from Messrs. Jamin et Durand, of Bourg-la-Reine. It is described as a first-rate Pear of delicious flavour, growing vigorously on the Quince, and bearing well in the warmer parts of England, either as a pyramid, bush, or espalier. Among the more interesting papers are some remarks on Beaton's race of Pelargoniums, and on the Floral Decoration of dwellings.

The *Floral Magazine* gives representations of the following:—*Swainsona magnifica*, a handsome plant which looks very much like a fine specimen of S. Greyana; it was raised by Mr. Williams from Australian seeds.—*Clianthus Dampieri marginata*, the white-flowered red-margined sort recently adverted to.—A group of striped *Verbenas* named *Beautiful*, *Carnation*, and *Fascination*, from Mr. Bull's collection, showing an improved form as compared with the striped Continental sorts which have appeared during the last year or two.—*Primula cortusoides* "*amœna var. alba*," one of the handsome Japanese Primroses introduced by Mr. Veitch.

We see with pleasure the announcement of a Popular Re-issue, in cheap weekly numbers, of Charles Knight's *English Cyclopædia*. It is to commence with the division of "Arts and Sciences," and will be followed immediately by "Biography," "Geography," and "Natural History," all increased in value by means of Supplements now preparing. This capital opportunity for possessing such a valuable book is well alluded to in the Prospectus: "To the members of Mechanics' and Literary and Scientific Institutions, Working Men's Clubs, and other associations for the purchase and common use of otherwise inaccessible works of research and reference, this mode of re-issue seems particularly well adapted; whilst there are doubtless many individuals who, unable to pay large sums at once, would gladly avail themselves of the opportunity, by easy payments at short intervals, of possessing so useful and extensive a work as 'The English Cyclopædia.'"

BOOKS RECEIVED.—Messrs. Longman have recently published an abridgment, for the use of junior students, of *White and Riddle's* excellent *Latin-English Dictionary*. Special care seems to have been taken to explain the mode of formation and the etymological meaning of words, the student being much assisted in this department by the typographical arrangements made use of. Some of our readers who may recollect a discussion as to the propriety of applying the word *parvissimus* in lieu of *minimus* will be amused to find the former word printed in bold Egyptian type in the head-line of p. 441 of this volume. After that, let no man cavil!

Florists' Flowers.

THE GLADIOLUS.—A moderately attentive observer of affairs cannot fail to notice that there is much truth in the saying of Carlyle, "that mankind in general are largely imbued with bell-wedderism;" and it would appear that florists are much like other folk in this matter. Some few weeks ago "Rambler" was the bell-wedder as regards the Gladiolus, with his excellent paper on the general merits of this most beautiful flower, which paper so pleased me that I contrived to forget for the moment the bashfulness which is supposed to be indigenous in my countrymen, and away I jumped after "Rambler," and humbly laid at the feet of our high priest, the Editor, my experience as a grower of Gladioli, which dates back for some 10 or 12 years from the present time, when the splendid hybrids of the Gandavensis tribe were yet unknown. Then hot on my heels comes "W. E. G.," all the way from Cork, where, as he truly says, the good soil and humid atmosphere are very much in favour of Gladioli, and indeed most other florists' flowers as well. It would do the Rev. Mr. Radclyffe's heart good to see the splendid blooms of Cloth of Gold and other Tea Roses shown there by Mr. Wigmore, Mr. Martin, and others, and this with, as they have informed me, the smallest possible amount of care and attention. Like the statues of "gods and goddesses so fair," in the sweet groves of Blarney just near them, they bloom and flourish "all mother naked in the open air," and in many sheltered corners you can nearly have Roses all the year round.

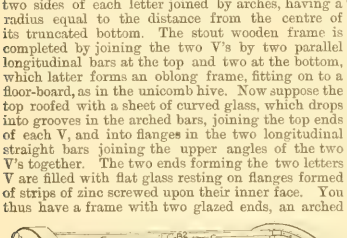
But to return to our wedders: I took the liberty of differing a little with "Rambler," and I venture to say that if he tries a few of the sorts I named, he will find them useful additions. I must take a similar liberty with "W. E. G.," whom I know to be a good grower and great admirer of the flower we are treating of, but I fear he is too hasty and sweeping in his judgments on new flowers. On several occasions he has mentioned to me his determination to give up certain sorts after their first season, just because they did not please from every point of view. Having met him on several occasions at the exhibitions at Dublin and Cork, of course our pets were carefully looked over at the exhibition tables; and while I admire his taste and judgment generally, I do think he leans too hardly on some of our favourites. Princesse Clotilde he spoke of discarding two years ago. This I cannot think of doing, as I consider the fair Princesse a noble flower for a stand of 24 or 36, for a back row, though a little coarse. Then Madame Rabourdin must go; really this must not be thought of for years to come. Madame is (I say it emphatically) one of the best light-ground Gladioli in existence, and during the past glorious season I have frequently compared her with the splendid novelty Madame Furtado, to see which I admired most, and I think it remained a vexed question at the end, after weeks and weeks, and with seven or eight spikes of each variety to appeal to. Then Lord Raglan must go, also Madame Binder, Madame Allester, Charles Smith, Stuart Low, Madame Pereire, Peter Lawson, &c. All those just named I shall retain for the present; Madame Binder, Stuart Low, and Peter Lawson, I was able to show in fine order at our last exhibition here on Sept. 1. The last-named is a little thin, and does not bear travelling well, but its colour is peculiar, and I think beautiful, being softly shaded with blush and pale mauve, the throat slightly dashed with straw. Madame Pereire was very fine on the same occasion in the stand of Messrs. Dixon & Sons, of Newtownards; it is a thick solid flower, and most peculiar in colour, dark plum and white shaded, and well worthy of being retained as a show flower, and for seeding and crossing. "W. E. G." praises John Waterer highly. The shades of its colour are rich and beautiful; I like it very well, but when I have gone to cut a spike of it for exhibition, its loose scraggy habit has always sent me away a little dissatisfied, and I do not think I ever showed it, though I cut 150 to 200 spikes annually for exhibition purposes.

"Rambler's" paper has proved to the general floral public that the Gladiolus is much admired, and generally well-grown in various places all over the three kingdoms. Those gentlemen who have kindly given observations as to their proceedings, all differ a little each from the other. Some like one flower, some another. This always has been the case, and doubtless ever will be so, as tastes will differ, and many little matters will tend to influence differently the views of different persons, but at the same time all may be good growers and fair judges. I had last summer the pleasure of a couple of friendly visits (and of course a gossip on floral affairs on each occasion) from my friend "D." of Deal. On the last occasion, about the first week of August, the Gladioli were just commencing to unfurl their lovely banners, and after a careful study of all my stock, he gave me the names of three of Standish's flowers, which he thought would improve my collection—they were Caroline, Lucy Neal, and,

I think, Mrs. Dombrain. Like "W. E. G.," I have great faith in Souchet's flowers; I take all his novelties every year, to the extent of about four bulbs of each sort, and I mean to continue to do so, as long as he sends out such splendid sorts as his batch of 1865. I have obtained all the novelties for 1866, just as "W. E. G." has done; but of course we cannot say a word about them until another year has passed away. In the meantime I hope to see in the *Gardeners' Chronicle* good papers on the Gladiolus from many others besides those who have as yet spoken. *J. F. L., Dublin, Jan.* 10.

The Apiary.

OBSERVATORY BEE-HIVES.—I have for some time past wished to possess a good observatory bee-hive, but thinking I saw a fundamental defect in the unicomb hive, in so far as it gives no protection from the changes of temperature, or any privacy to the bees, if I may use the term, and seeing an equally important defect (though in a different direction) in Huber's "leaf hive," I set to work to construct one on a new principle, which I believe will be found to overcome all the defects hitherto incidental to observatory hives. I propose to call my hive the "portfolio observatory hive." The accompanying woodcut will serve to explain its principle, but I may describe it as follows. For the fixed frame of the hive suppose two letters V, forming the two ends, but to make the illustration more perfect you must cut off the lower part of the letter, so forming a square instead of a pointed bottom. Suppose the two sides of each letter joined by arches, having a radius equal to the distance from the centre of its truncated bottom. The stout wooden frame is completed by joining the two V's by two parallel longitudinal bars at the top and two at the bottom, which latter forms an oblong frame, fitting on to a floor-board, as in the unicomb hive. Now suppose the top roofed with a sheet of curved glass, which drops into grooves in the arched bars, joining the top ends of each V, and into flanges in the two longitudinal straight bars joining the upper angles of the two V's together. The two ends forming the two letters V are filled with flat glass resting on flanges formed of strips of zinc screwed upon their inner face. You thus have a frame with two glazed ends, an arched



A. Fixed frame of hive.
B 1. One of the moveable frames, carrying combs, when opened for inspection.
B 2. One of the moveable frames in its closed or normal condition.
C. The frames holding the combs.
D. Glazed doors, by which the combs may be taken in and out.
E. Floor board.

glass roof, but open at the sides. To complete the hive, there are only wanting two glazed frames with sash-bars projecting inwards, upon each of which hang four frames of comb, or in fact two small unicomb hives, each with a glass side omitted. Now suppose these two frames, with their combs attached, introduced into the frame described above. They are of course made just to fit into each side. Upon the lower end of each side are screwed brass plates, shaped like the letter J, those on each side turned inwards so as to cover the centre point from which the radius of the arched roof was struck; at this centre point a pin is passed through the fixed frame at each end, and through corresponding holes in the two pairs of brass plates. The two sets of combs thus hinge on the same centres, opening and shutting like a portfolio set up on its back edge. In its normal or closed condition the hive presents two sets of four combs each, standing side by side at their proper distance from one another, thus giving protection from cold as well as the privacy bees delight in. Now, to inspect the inner surface of the combs (where breeding will of course go on), all I have to do is to remove the pins which keep the two frames in their perpendicular position, allow either of them to gently subside, till it rests on the longitudinal bar. If I also drop the other to the same position, I get a view (almost at right angles) of every part of the inner surface of the comb, and when the inspection is complete I have nothing to do but to raise the frames again to their perpendicular position, without the risk of crushing a single bee, as the two frames do not touch, except at two points, where studs are placed to keep them at their proper distance apart, when parallel with one another. There are, of course, minor details in carrying out the plan, which I need not enter into here. If this invention seems of sufficient interest to warrant the step, I shall be glad to send the portfolio hive to any place in London or elsewhere, where apiarians might have the means of inspecting it. I may remark that the same principle may easily be applied to three combs as well as two. I must apologise for this long letter, but before closing it would be glad to ask a question for practical guidance. I am about having a shed made to hold hives. How much space do you consider sufficient to allow in height between the shelves, to take a hive, and what supers may be required, in a good honey country? I may, before long, have something more to communicate on the subject of In-door Bee-keeping. *Arthur Maw, Benthall Hall, near Broseley, Staffordshire.* [There should be at least 2 feet 6 inches clear space between the shelves, or between the shelf and the roof. We prefer even more room for convenience of lifting off or putting on supers. Do you mean to have two rows of hives, one above the other? This is considered by most apiarians as decidedly bad, and we would not, on any account, have a shed so constructed. We shall be glad to hear from you again on the subject of "In-door Bee-keeping," a matter of much interest to us.]

THE LANGSTROTH FRAME HIVE.—The Rev. L. L. Langstroth, being desirous that English bee-keepers should have the opportunity of seeing specimens of his celebrated hive, has presented and forwarded to Mr. Alfred Neighbour, two of the most approved patterns for trial in his own apiary. Mr. Neighbour will be very happy to show them to any apiarian who may like to inspect them, at 149, Regent Street, where they will remain for the present.

Miscellaneous.

Mr. Gray, of Chelsea.—We have been requested to contradict a current report, to the effect that Mr. Gray, of Danvers Street, Chelsea, the well-known horticultural builder, a representation of whose range of houses erected at Hamilton Palace occupies a space in our present issue, had met with a fatal accident. Mr. Gray was thrown down by the starting of a horse with a cart-load of building materials, and has received some rather severe bruises, but is, we learn, satisfactorily recovering from the shock.

Calendar of Operations.

(For the ensuing week.)

SNOWDROPS being in flower in warm corners, and Pansies in full blossom in open beds, in some places, an observant eye must be kept on the ornamental department, in order to see that surrounding objects are in keeping with these early treasures. Seldom have we had so fine a season for outdoor improvements and alterations; but tender plants are in a very forward state, and must still be kept securely protected at night. Improve as much as possible outlines of every kind, and while the weather is favourable plant fresh masses or groups of shrubs where necessary, and introduce specimen plants only where fitting opportunities offer. Much mischief is done by planting single specimen trees in recesses; these should be carefully preserved, as a general rule, to give deep shadows, and to throw the prominent features into bold relief.

FLOWER GARDEN AND PLANT HOUSES.

Soils for flower beds may be prepared, and digging and trenching where necessary may now be pushed forward with advantage. The propagation of plants for massing must also receive attention. Stock in pits should be looked over, and any plants likely to prove short of the expected demand should be removed to where there is a gentle heat, to force them into growth for cuttings.

AURICULAS.—On all favourable occasions let these have as much air as possible.

BEDDING PLANTS.—These, if in pots, must also have air whenever the weather is mild, but means of protection at night must be at hand.

CARNATIONS AND PICOTEES.—Draw the lights off these in the day time when dry, but let them be put on again at night.

CINERARIAS.—Secure these from frost, from which they are very liable to suffer. Strong-growing plants may now require a shift, in order that their pots may be well filled with roots by flowering time. When fully established they may have an occasional watering with weak liquid manure.

FORCED FLOWERS.—These will at present consist chiefly of Tulips, Hyacinths, and other early blooming bulbs, of which successions, equal to the requirements of the establishment, must be at short intervals continually introduced into the forcing pit; as must also be Roses, Lilacs, Rhododendrons, and plants of that description. See that they have a healthy moist atmosphere, which must not, however, be over warm. A temperature of from 60° to 70° will be amply sufficient for the present.

PELARGONIUMS.—These will now be pushing slowly; therefore let them have as much air as possible, consistent with the proper temperature. Fancy varieties, as has been formerly stated, may be kept a little warmer than ordinary kinds.

PRIMULAS.—Water those in bloom with very weak liquid manure occasionally, and bring others forward for succession.

FORCING GARDEN.

High temperature must still be avoided, or unhealthy growth will be the result.

ASPARAGUS.—Prepare a new bed to succeed that now becoming exhausted. On fine days give as much air as possible, consistent with maintaining a proper amount of heat.

CARROTS.—Sow a little Dutch or Early Horn in a 2-light box on a gentle bottom heat.

CUCUMBERS.—Worn-out plants in houses may now be rooted up, the beds renewed, and their places filled with young plants.

PEACHES.—Admit air freely in the early house whenever the weather is mild, and keep the atmosphere moist, maintaining a steady night temperature of about 50°.

PINES.—If not already done, young plants growing in beds that have been some time planted will be benefited by having the soil loosened up as deeply as can be done without injuring the roots, giving it a liberal soaking of tepid water if it be found to be too dry. The water should be applied by means of a pot with a rose on it, and not so fast as to flood the surface, for if this is done the soil will be rendered almost as close as before forking up; indeed, careless watering is the great cause of the surface of the soil becoming close and hard, and should be carefully avoided. Endeavour to afford a nice bottom-heat, with a thoroughly moist atmosphere, and keep the plants growing as freely as may be consistent with preserving them dwarf and bushy. Have a constant eye to maintaining a succession of fruit, for securing a supply at the season when it may be most wanted, and let the treatment of the plants be regulated according to circumstances; this is a matter which demands considerable forethought, and which can be successfully managed only by careful observation and attention.

POTATOS.—If not already done, let some be planted in a frame on a gentle bottom-heat.

VINES.—Be satisfied with as low a temperature from fire-heat as may be considered safe, but shut up early, allowing the thermometer to rise considerably. This will to some extent economise fuel, and will be much more congenial than having recourse to much fire-heat.

HARDY FRUIT AND KITCHEN GARDEN.

Digging and trenching may now be carried on with activity, and, where necessary, drains may also still be put in. Wheeling should, if possible, be kept for hard weather.

APPLES.—Pruning and thinning of these must now be pushed forward with expedition. Where necessary, root-pruning may also be performed; but this kind of work is best done in the autumn.

CAULIFLOWERS.—Look carefully after those in frames and under hand-glasses.

LETTUCES.—Plants of these in frames will also now require attention. See that they are not suffering from undue confinement.

PEARS.—The observations made in reference to Apples also apply to these.

STATE OF THE WEATHER AT CHISWICK, NEAR LONDON, For the Week ending Jan. 21, 1866, as observed at the Horticultural Gardens

Jan.	Moon's Age	Barometer.		Temperature. Of the Air.			Of the Earth 1 foot deep	Of the Earth 2 feet deep	Wind	Rain.
		Max.	Min.	Max.	Min	Mean				
Thurs 18	7	29.111	29.016	51	43	47.0	44½	44	S.W.	.10
Friday 19	8	29.151	29.067	54	41	47.9	42½	43½	S.W.	.12
Satur. 20	9	29.530	29.624	52	30	41.0	43	45	S.W.	.02
Sunday 21	10	29.747	29.767	54	45	49.5	45	45	S.W.	.01
Mon. 22	11	29.787	29.705	52	37	44.5	43½	45	S.W.	.28
Tues. 23	..	30.110	30.034	50	25	37.5	46	45	N.W.	.00
Wed. 24	13	30.553	30.529	43	27	35.5	46	45	W.	.00
Average .		29.996	29.878	50.7	35.4	43.1	44.2	42.5		.53

Jan 18—Overcast throughout, with warm S. wind.
" 19—Clear, boisterous, strong S.W. wind
" 20—Partially overcast, boisterous with showers, fine
" 21—Densely clouded, cloudy, mild at night.
" 22—Boisterous, rain, fine
" 23—Cloudy, fine, very fine, slight frost.
" 24—Slight frost, exceedingly fine, sunny and clear, fine at night.

Mean temperature of the week, 6 deg. above the average.

STATE OF THE WEATHER AT CHISWICK,

During the last 40 years, for the ensuing Week, ending Feb. 3, 1866

Jan and Feb	Average Highest Temp.	Average Lowest Temp.	Mean Temp.	No of Years in which it Rained	Greatest Quantity of Rain	Prevailing Winds. N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.
Sunday 28	45.4	30.5	37.9	20	0.17 in	2	5	4	1	2	15	6	5
Mon. 29	46.4	31.2	38.8	17	0.23	3	5	5	2	2	13	6	7
Tues. 30	44.3	32.0	38.2	20	0.39	2	4	4	1	2	10	8	8
Wed. 31	44.4	32.2	38.3	18	0.30	3	6	3	2	0	10	4	8
Thurs. 1	44.7	31.3	38.5	12	0.52	3	5	6	1	2	11	5	6
Friday .. 2	44.2	31.4	37.8	11	0.25	3	6	3	2	3	11	6	3
Satur. .. 3	44.7	30.9	37.8	19	0.42	4	4	4	2	2	11	3	2

The highest temperature during the above period occurred on the 29th 1863, 1st, 1852, and 3d, 1850—therm. 57 deg., and the lowest on the 31st, 1857—therm. 6 deg.

Notices to Correspondents.

DISEASED ROOTS. *C. F.* The disease in the roots is quite new to us, and deserves a very minute inspection. We shall hope shortly to give some information respecting the structure, but it is very unlikely that we shall be able to point out the cause. *M. J. B.*

MUSHROOMS. *T. S.* Your Mushroom has a young reversed pileus growing out of the top of the Fungus. Such monsters are not uncommon in Mushroom beds, and are occasionally found in our woods and fields. *M. J. B.*

NAMES OF PLANTS. *Pat.* Small bits of Conifers are not satisfactory specimens for naming. Yours seem to be—1, Cupressus Lawsoniana; 2, Juniperus Sabina; 3, Cupressus Goveniana.

PHOTOGRAPHS. *T. Taylor.* Apply to Maull & Polyblank, Piccadilly.

DICKSON'S "FIRST and BEST" EARLY PEA.
THE BEST EARLY PEA IN CULTIVATION.
This Pea has been tested against all the earliest varieties known, and is pronounced by most of the best practical Gardeners in the kingdom to be superior to any other Early Pea for its earliness, productiveness, and general good qualities. Price per quart, 2s. 6d.
PRICED CATALOGUES of KITCHEN-GARDEN, FLOWER and AGRICULTURAL SEEDS; also separate CATALOGUES of the Various Classes of Nursery Stock will be forwarded, post free, on application.
FRANCIS & ARTHUR DICKSON & SONS, The Old Established Seed Warehouse, 106, Eastgate Street, and Upton Nurseries, Chester.

THE ESSEX RIVAL PEA.—This variety has proved to be the finest, best-flavoured, and most productive EARLY PEA in cultivation. See Testimonials in "Journal of Horticulture" of December 5, and in *Gardeners' Chronicle* of December 9. Price 3s. 6d. per quart.
To be obtained of the proprietor, Mr. THOMAS ELEY, Sible Hedingham, near Halstead, Essex. Also of the following appointed Agents :—
Messrs. Peter Lawson & Son, 28, King Street, Cheapside, London, E.C.
,, Cooper & Bolton, 152, Fleet Street, London, E.C.
,, Fraser, Richardson, & Goad, 32, Bishopsgate Within, E.C.
,, Richard Lowe & Co., 18, Bush Green, Wolverhampton, Staffordshire.
,, J. Roberts & Son, Denbigh.
,, Fisher, Holmes, & Co., Handsworth Nursery, Sheffield, Yorkshire.
,, Saltmarsh & Son, Chelmsford, Essex.
,, Sutton & Sons, Reading, Berkshire.
,, Joseph Tremble & Sons, Penrith, Cumberland.
,, Austin & M'Askill, Dundee, N.B.
,, J. & C. Lee, Royal Vineyard Nursery, Hammersmith, W.
Mr. James Veitch, Royal Exotic Nursery, Chelsea.
,, Christmas Quincy, Peterborough, Northamptonshire.
,, B. C. Mackenzie, Ventnor, Isle of Wight.
,, A. F. Godward, Southend, Essex.
,, R. Cant, St. John's Nurseries, Colchester, Essex.
,, George Taber, Rivenhall, near Witham, Essex.
M. Paul Tollard, Nurseryman and Florist, 4, Place des Trois Maries, Paris, France (Sole Agent).
Mr. Eley has since he published some of the testimonials relative to the above Pea (which appeared in "The Journal of Horticulture" of December 5, and in *Gardeners' Chronicle* of December 9, 1865) received several other most satisfactory reports, among which are the following :—
In a letter received from the Rev. R. T. WILSON TAYLOR, St. Mewan Rectory, near St. Austell, Cornwall, bearing date December 21, 1865, who has previously borne testimony to the excellent qualities of the above Pea, adds—"Your variety was the first we answered well, and I for one thank you for valuable hints thereon. In regard to distance, I keep the rows at least 10 feet apart; hence, I think, in a measure, the profusion of Peas which you turned out and turned in uncommonly well, as it was one mass of bloom, and pods from top to bottom—the admiration of all who saw it."
From MISS WILLS, *of Hurst House, Prescot, Lancashire*,
"Miss Wills has great pleasure in adding her testimony to that of many others on the excellence of Mr. ELEY'S "Essex Rival" Pea, which she considers the best of the early sorts that she has ever tested. Miss Wills finds this variety to be the best that can be had in shops in Liverpool; she will therefore obtain it there this year, and is extremely sorry that from the circumstance of her having been from home she has been unable to give Mr. ELEY her report earlier—Hurst House, December 23, 1865."
"The Vicarage, Castle Hedingham, January 2, 1866.
"Dear Sir,—I must apologise for having been so long in giving you my report in favour of your early Pea, "Essex Rival." My gardener tells me there was a close race between your Pea and one supplied by Mr. Dillistone, sown the same day, towards the end of 1864, Dillistone's being only one day in advance. I am sorry I cannot give my testimony as to the relative merits of either Pea on the table.—I remain, dear sir, yours very truly, HENRY WILKINSON."

The Essex Rival Pea.

MR. ELEY, the Proprietor of the above popular PEA, strongly recommends gentlemen who require a plentiful supply of good early Peas for table to make sowings for successive gatherings in the following order—viz., Early in October; ditto, ditto, in February; second ditto, the third week in February; Third ditto, the first week in March; Fourth ditto, the third week in March. Mr. ELEY begs to say that whoever follows out the plan as described in his remarks on Garden Pea Culture, and sows as above stated, may depend upon gathering Peas to his heart's content.
Sible Hedingham, January, 1866.

The Yorkshire Hero Pea.

E. P. DIXON AND SON, SEED MERCHANTS, No. 57, Queen Street, Hull, beg to intimate that they have this year tested a fine lot of THE YORKSHIRE HERO PEA, a variety sent out by them, which has always sustained the very high character given of it, being remarkably prolific, early, and of delicious flavour. This Pea is similar in appearance to Veitch's Perfection, but much dwarfer, about a fortnight earlier, and far more prolific, upwards of 70 pods are frequently found upon a stem. It is also a Pea which withstands the effects of mildew better than any other, and we have every confidence in saying that it is the best Pea extant.
All who have grown the Yorkshire Hero Pea have pronounced it to be the best variety of its class, and one which will become a great favourite in every garden. Price 2s. per quart.
TESTIMONIALS.
From Mr. THOMAS GIBB, *Gardener to the* Right Honourable the Earl of Yarborough, *Brocklesby Park Gardens*.
"I grew the Yorkshire Hero Pea last season, and found it an abundant bearer and an excellent Pea of the Marrow sort. It resisted the hot weather of July, and remained quite green to the last, while other sorts at the same time were covered with mildew."
From Mr. WILLIAM HOWE, *Gardener to* Sir T. A. Clifford Constable, Bart., *Burton Constable Gardens*.
"I am highly pleased with your new Pea, 'The Yorkshire Hero,' and shall give it my best recommendation. I believe it to be the best Dwarf Pea grown, and much superior to Veitch's Perfection, as it is dwarfer, much earlier, and more prolific."
From Mr. JAMES ROBERTSON, *Gardener to the* Dowager Countess of Ripon, *Studley Royal*.
"It gives me great pleasure to contribute my meed of praise to the very excellent Pea sent out by you last season, under the name of 'The Yorkshire Hero.' I sowed it in the months of March, May, and June, all of which sowings were equally productive, indeed very prolific, and in point of flavour cannot be surpassed. Several gentlemen in this neighbourhood tasted, and spoke very highly of it, and I think it is a remarkably distinct variety, and one that will become a general favourite."
From Mr. WALTER HARDIE, *Forester to the* Right Honourable the Earl of Yarborough, *Brocklesby Park Nursery*.
"Having grown the 'Yorkshire Hero' Pea, I can bear testimony to its excellence in every respect, especially its delicious flavour and productiveness."
From Mr. GEORGE FAIRBANKS, *Gardener to* Joseph Robinson Pease, Esq., *Hutton Hall*.
"I had some of the 'Yorkshire Hero' Peas from you the past season, and can truly say that it is a most excellent sort; dwarf, early, dwarf, of most delicious flavour, and an extraordinary bearer, it withstood the mildew better than any other Pea we had."
From Mr. W. KEMP, *late Gardener to* Sir Thomas Beckett, Bart., *Somerby Park*.
"The Yorkshire Hero Pea is a splendid variety of the Wrinkled Marrow, 2½ feet in height, very productive, and an abundant bearer, requires sowing very thin in good rich soil, and will produce from 50 to 70 well-filled pods of a most delicious flavour, and very thin in the skin, full 10 days or a fortnight earlier than Veitch's Perfection, and superior in every respect; it is the best Pea I am acquainted with, and will become a general favourite in every garden, not requiring such an immense forest of sticks to support them as most sorts do. I may further mention that from the quart of seed I had from you I have saved 6 packs of well-ripened Peas, which I can easily dispose of at 5s. per quart to those who saw them in bearing."
From R. R. BROWN, Esq., *Bridlington Quay*.
"I have great pleasure in subscribing my testimony in favour of the wonderfully productive qualities of your Yorkshire Hero Pea; they are very large, and at the same time delicious eating, and I can pronounce them, with the greatest degree of truth, to be the best dwarf Pea I have ever grown."
Price 2s. per quart. Price to the Trade on application.
E. P. DIXON & SON, The Yorkshire Seed Establishment, 57, Queen Street; also 79 and 77, High Street, Hull.

Seeds for the Season.

CHARLES TURNER'S DESCRIPTIVE CATALOGUE is now ready, containing the new varieties worthy of notice, with a careful selection of the older kinds.
In PEAS, for first crop, he strongly recommends LITTLE GEM, a green wrinkled Marrow of the finest flavour, and very prolific. This remarkable variety is only 1 foot high, and requires no stakes.
ADVANCER is recommended for second crop.
The finest Summer Pea is PREMIER. See description in Catalogue, which may be had on application.
BETTERIDGE'S SUPERB DOUBLE ASTERS, in 12 distinct varieties, 3s. 6d. the Collection. This seed is saved by the raiser, R. H. Betteridge, Esq.
GERMAN FLOWER SEEDS from the first sources.
The Royal Nurseries, Slough.

The Earliest Pea known is

CARPENTER'S EXPRESS, gathered May 7th, the Earliest date on record. See Testimonials in *Gardeners' Chronicle* of September 2 and 9, October 16, and November 6. Price 8s. per quart. Trade price on application.
True seed to be had only of EDWARD CARPENTER, Seed Merchant and Grower, Brighton and Sussex Seed Warehouse, 96, St. James's Street, Brighton; and of Messrs. Wood & Son, Nurserymen, Maresfield; Messrs. Osborn & Sons, Nurserymen, Fulham, S.W.; Messrs. W. Bryce & Co., Seed Merchants, Glasgow; Messrs. F. & A. Dickson & Sons, Nurserymen, Chester; and Messrs. Jas. Dickson & Sons, Chester. Catalogues on application.
PRICED CATALOGUES of DUTCH BULBS now ready.

THE EARLIEST and BEST OUT-DOOR GROWN PEA we have tasted this season—vide *Journal of Horticulture* of the 13th of June, 1865; it was also favourably noticed in the *Gardeners' Chronicle* of June 3, 1865.
The above Early Pea may be had only of ROBERT H. POYNTER, at 1s. 6d. per quart. Height 3 feet. The kind was gathered from in good condition as early as the 20th of May, and was sent to the Editor as above on the 26th.
None genuine except from accredited Agents.
All over two quart packages free on Great Western Railway.
ROBERT H. POYNTER, Seed Merchant, Taunton.

SEED PEAS and BEANS.—A few Quarters of the following sorts remain unsold, well harvested and warranted true to name, at the following low prices for cash :—
VEITCH'S PERFECTION, at 12s. 6d. per bushel.
EUGENIE or ALLIANCE, at 10s. 6d. per bushel.
BLUE SUCCESSION, at 8s. per bushel.
NEWINGTON'S WONDER KIDNEY BEAN, at 10s. per bushel.
TAYLOR'S BROAD WINDSOR BEAN, at 6s. per bushel.
Apply to ANDREW FULLER, High Street, Chatteris, Cambs.

To Market Gardeners and Others.

SUTTON AND SONS can supply the following Superior kinds of PEAS, in large quantities, at moderate prices, which may be had on application.

Daniel O'Rourke	McLean's Little Gem
Sangster's No. 1	King of the Marrows
Prizetaker Marrow	Payne's Conqueror
Veitch's Perfection	Ringwood Marrow
Sutton's New Long-podded Tom Thumb	McLean's Wonderful
Dillistone's Early	Fleck's Dwarf Victory
Woodford Marrow	Advancer
	Champion of England

SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

SUTTON'S RINGLEADER (or CARTER'S FIRST CROP) PEA.
THE EARLIEST AND BEST WRINKLED PEA.
This PEA was introduced to the public last season simultaneously by Messrs. SUTTON & SONS and Messrs. James Carter & Co., both parties being entirely ignorant of the fact that the stocks from which they had raised their supplies were obtained a few years since from the same locality, and in fact from the same person who originated it. Of all the kindred to RINGLEADER or FIRST CROP, they are the earliest.
The price charged last season was the same by both vendors, viz., 2s. 6d. per quart, and the demand being at that time far in excess of the supply, as to prevent our holding a sufficient quantity for seeding, the price cannot be reduced this season.
The following are Extracts from a few of the numerous Letters received relative to this unrivalled Early Pea :—
From Mr. WILLIAM DOWELL, *Gardener to* Sir George Chetwynd, *Grenden Hall, Atherstone, May 24, 1865.*
"Your 'Ringleader' is earlier than any Pea I have ever grown. I shall gather a dish to-morrow morning, which is by far the earliest Pea we have had."
From Mr. W. POWLY, *Gardener to* H. P. Best, Esq., *Donnington Grove, near Newbury, May 21.*
"I planted your 'Ringleader Pea' on the last day of February; on the same day I planted 'Daniel O'Rourke' and other early sorts. Your 'Ringleader' is uncommonly well podded, and the pods are filling fast. I do not like to be too sanguine, but should the ground planted, before I pick from any of the other early sorts."
From Mr. JAMES PEARSON, *Gardener to* H. Bentley, Esq., *Woodhouse, Leeds, May 25.*
"Your 'Ringleader Pea' is six days earlier than Dillistone's, and is the most promising Pea I have grown."
From Mr. H. HARRISON, *Dedham, May 26.*
"Your 'Ringleader Pea' has proved with me by far the earliest, and will be ready for gathering before the 20th of May, when done blossoming. I consider the 'Ringleader' the quickest Pea of any of the early sorts grown in this neighbourhood."
From the Rev. WILLIAM WOOD, *Prestwood Parsonage, Great Missenden, May 22.*
"I expect your 'Ringleader' Pea will be a fortnight earlier than 'Sangster's No. 1' sown on the same day; in fact, it is earlier than any Pea which my gardener has known. The garden lies high, and is exposed to the cold."
From Mr. BAILEY WADDS, *Gardener to* S. A. Sykes, Esq., *Raywell, Brough, May 29.*
"I have this year sown your 'Ringleader' Pea against your Early 'Champion,' which I have hitherto found the earliest in cultivation, and I am glad to tell you that it came into bloom ten days earlier. It has been covered with blossoms from top to bottom. I am sure it is a valuable addition to the Early Peas."
From Mr. GEORGE SCRYMGER, *Holme Park, Sonning, May 29.*
"I have great pleasure in reporting favourably of your new early Pea 'Ringleader.' It was sown the same day as five of the most popular early sorts, and is fully a fortnight before the 20th of May, which is 14 days earlier than I shall of any of the other varieties. It is also very prolific; altogether with me it has proved an acquisition."
From WILLIAM THOMAS REW, Esq., *Chamberhead, Tiverton, May 30.*
"Your 'Ringleader' Pea is fully a fortnight earlier than mine. I planted it side by side on the same day with Sangster's No. 1 (which has hitherto been my earliest), but now the 'Ringleader' has blossomed and podded before the other, and in fact all appearances will be fit to gather quite a fortnight before them. My garden is in a very high and exposed situation, as well as rather late."
From JOHN FORD, Esq., *Merton Hall, Warwick, May 31.*
"My garden was sowed on 23rd January, side by side, 'Sutton's Ringleader,' 'Sutton's Champion,' 'Early Essex Rival,' and 'Dillistone's Early Prolific' Peas. 'Sutton's Ringleader' was in bloom first, coming in the 3d of May, the others a week or so later."
From Messrs. DOBSON & SON, *Woodlands Nursery, Isleworth.*
"We tried your 'Ringleader' Pea last season with 'Dillistone's,' and it was from a week to 10 days earlier. It is certainly the earliest Pea that has come under our notice."
From the GARDENERS' CHRONICLE, *August 12, 1865.*
"*Peas.*—Mr. Sutton has sent us a second Pea, which he originated, and had a splendid crop in less than eight weeks, which I allowed to ripen. I then sowed the ripe seed on July 10th, and have now a capital crop of Peas, the second crop having been six weeks only in growing, and the two crops have been produced in less than 5 months. I beg to forward you a sample, the pods in which you will observe are well filled.—*Thomas Fielder, White Horse, Binfield, Berks.*"
Retail Price, 2s. 6d. per quart.
PRICED LISTS of FLOWER ROOTS, GARDEN SEEDS, FARM SEEDS, &c., Gratis and Post Free.
SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

Sutton's Grass Seeds for all Soils.

SUTTON AND SONS having received their supplies of New GRASS SEEDS in fine condition, are now prepared to quote prices for the same, which will principally depend on the purpose for which the seeds are intended, and the sorts and quantities required.
For particulars of Messrs. SUTTON'S Mixtures, see p. 4 of the *Gardeners' Chronicle* of Saturday, January 6; or in their SEED CATALOGUE, which will be forwarded gratis and post free on application.
SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

Improvement of Grass Lands.

SUTTON'S RENOVATING MIXTURE for IMPROVING OLD PASTURES should be sown early.—Our Renovating Mixture consists of the finest Grasses and perennial Clovers. If the seeds are sown early in the season, the improvement of the pasture will be very great, and at a small expense. Quantity of Seed required, 8 to 12 pounds per acre. Sow in February, March, and April.
From T. E. OSMOND, Esq., *Thorp-le-Soken, February 27, 1865.*
"Your Renovating Mixtures for old pastures have answered my purpose admirably."
From J. C. BLACKETT, Esq., *Thorpe Lee, Egham, September 30, 1865.*
"Mr. Blackett will be obliged to Messrs. Sutton to send him Renovating Grass Seed, of the same quality as last year, which was excellent."
From Mr. GEORGE VENNER, *Gardener to* J. H. Buchan, Esq., *The Grove, Hanwell, February 28, 1865.*
"Your Renovating Mixture for grass lands has given the greatest satisfaction. I had a very fine crop of hay."
From Mr. JOHN LONGHURST, *at* Thomas S. Wright, Esq., *The Myskyns, Ticehurst, May 12, 1865.*
"The Seeds sown last year are doing exceedingly well."
SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

Sutton's Grass Seeds for Cultivation with Sewage and other Liquid Manure.

MESSRS. SUTTON having for several years been engaged in supplying various GRASS SEEDS for experiments with Liquid Manure on the Bagshot Sands, the Aldershot Camp, and other poor soils, are now prepared to offer the sorts which have been found to thrive best under this treatment, and confidently recommend their cultivation as highly remunerative and profitable. The quantity required per Acre is Three Bushels, and the price 10s. per Bushel.
Also GRASS SEEDS for various other soils, particulars of which will be forwarded on application.
SUTTON & SONS,
Royal Berkshire Seed Establishment, Reading.

THE KELSO POULTRY and BIRD SHOW will take place on WEDNESDAY, 31st January.
Four Silver Cups and large Money Prizes.
Schedules on application to the Secretary, J. STEEL.

The Agricultural Gazette.

SATURDAY, JANUARY 27, 1866.

IT will be seen that the new cases of the Cattle Plague exceeded 10,000 last week; so that there is no result perceptible as yet of the measures which magistrates in Quarter Sessions have adopted for its restraint. On the other hand, all readers of the daily Papers (whose continual discussions of this subject prove that the calamity is admitted to be general and national quite as much as it is agricultural) have doubtless seen how generally prevalent is the idea that vaccination will prove a preventive more valuable, if it be further spread.
It is held to be established (!) that the cattle disease is no more and no less than small-pox—that in cattle the thickness of the hide prevents in most cases the eruptions from appearing externally, as in man; and as the virus cannot be thrown off in that way, the animal inevitably dies; and that the wonderful discovery of Dr. JENNER, in 1798, which has in great measure set us free from what was formerly the greatest scourge of all in this land to man, is similarly effective in the case of cattle as in man where it is properly administered, and where it takes, as it appears to do in the majority of cases.
And thereupon follows the desire that every means of publication—placards, papers, church doors, &c.—be employed to urge and to describe the process. We have in another column discussed at length the probabilities of this subject, for there is as yet no certainty whatever; but though sorry to discourage any effort to meet the plague which has the smallest support from analogy or fact, still more should we regret if any undue confidence in plans for treating the complaint should either check the energy with which all our plans for destroying it should be inspired, or discourage the promoters of the only way of rendering the existing burden tolerable.
The destruction of the poison, and the distribution of our losses by an insurance of all stock against the common risk, are the two great ends at which united effort should be aimed. The proceedings in Aberdeenshire, and those before the Highland and Agricultural Society last week—both reported elsewhere — furnish the proper models for our imitation; and Sir J. KAY-SHUTTLEWORTH'S scheme for an insurance as nearly national as possible is the only way of helping the agricultural interest to bear its burden without breaking under it.
Another Order in Council has been issued during the past week, including hides, hoofs,

dung, hay, straw, &c., among the subjects of control, so that the conveyance of any of these may be limited or forbidden, as the local authorities shall direct.

THE vaccination question is just now agitating the public mind almost as much as the "plague" itself; the fact is all the more remarkable as the idea is not new. When the disease first broke out in various parts of the country, nothing was more common than to hear the suggestion that vaccination might prove efficacious, and in natural association with this was the impression that the plague was merely "a kind of small-pox." Long before the actual characteristic eruption was noticed or thought much about, country people somehow got hold of the belief which has just received the sanction of high scientific authority.

It is not our province, nor would our readers patiently permit us, to enter upon an elaborate criticism of the small-pox theory; the whole question resolves itself into a matter of fact, so far as its practical results are concerned; but we may be allowed to remark that it is a somewhat singular circumstance, that the system of the ox is, at least in England, especially non-susceptible to the effects of small-pox virus. Inoculation with the lymph from the vesicle of human variola is proverbially inoperative, and during the first outbreak of small-pox in sheep, bovine animals were inoculated and exposed to the influence of the disease in every way without result. We are aware that a disease, said to be identical with small-pox, is rife among cattle in India, but our own experience is certainly opposed to the assumption that cattle in our country are obnoxious to the affection; nevertheless the evidence, it must be admitted, is only negative.

Whether or no the cattle plague is small-pox, or only an eruptive fever, possessing certain phases in common with it, one thing is certain, viz., that the notion is not a novel one. The earliest writers upon the cattle disease allude to the similarity of the two affections to each other; some appear to take the identity of the two diseases for granted, while others advance the idea as something too ridiculous to be discussed. Rightly or wrongly, however, the "small-pox theory" is in favour, and vaccination is expected to do great things.

In all cases where questions are to be set at rest by experiment, the great difficulty invariably lies in the tendency on the part of non-professional investigators to draw conclusions from negative evidence; for example, a certain number of animals are vaccinated, and escape the plague, although the neighbouring herds on both sides fall victims. This is a style of argument that may be urged in support, indeed has been urged in support, of a dozen different systems of treatment. One man will quote the use of tar water, another the employment of iron, another carbolic acid, another sulphite of soda, another inoculation with the matter of pleuro-pneumonia, and in every case the statements made may be exact and true, and in every case, being negative, they prove nothing. Again, among non-professional men there is a want of aptitude to distinguish between things that differ—a positive determination to adhere to a preconceived conclusion, in spite of all evidence to the contrary, as was exemplified by a letter published in the columns of the daily press last week, from a gentleman lately returned from Australia, where pleuro-pneumonia is raging, and where inoculation with the fluid from a consolidated lung is practised as a protective measure. The writer, confounding this disease with the cattle plague, wrote to Sir George Grey, recommending the system of inoculation, and describing the method of obtaining the fluid from a diseased lung. The communication was referred to the Veterinary Department, and a reply was sent correcting the mistake into which the writer had evidently fallen. Alluding to this reply, the gentleman from Australia merely says that he "received a letter from the Royal Veterinary College," which amounted to nothing; and adds, "Feeling assured that my views were correct on the subject, and that they may prove useful, I forward the letters containing them to you for publication." No agriculturist would peruse the letters in question without perceiving how entirely uninformed the author is upon the question he endeavours to elucidate, but to those who have most to do with the matter, there is nothing remarkable in the blending of strong convictions with profound ignorance.

Much care, much painstaking observation, and much scepticism in the reception of evidence, are to be desired in reference to the present experiments upon vaccination. The investigation has already advanced to some extent, and before long the question will be decided; but in the meantime marvellous accounts will reach us from all parts of the country, and will, it is to be feared, draw attention from the calmer, because more carefully weighed, statements of scientific experimenters.

Vaccination is easily performed, the original difficulty being to obtain a supply of lymph, which at first must be obtained from the human subject; as soon, however, as a sufficient number of cattle have been successfully vaccinated, the lymph from them becomes available, and supposing the system to become general, there can be no lack of material to continue it. The transmission of the cow-pox from man to the cow is not however by any means the invariable result of the operation, the punctures made commonly dry up and heal without the formation of any vesicles, but in successful cases the true vaccine vesicle will be developed about the 8th or 9th day, and the lymph may then be taken upon glasses or ivory points. The operation itself is simple enough: small punctures are to be made with a lancet in any part where the skin is thin and free from hair, and not exposed to injury from friction; the points are then to be introduced and allowed to remain for a few minutes. To insure the greatest chance of success, the assistance of a competent professional man should be sought, as no description can convey an idea of the necessary manipulations. After the operation the animal should be housed, in order that the body may not be exposed to adverse influences. Some persons object to use the milk from cows that have been subjected to vaccination; there does not seem to be the slightest evidence of injury having resulted from its consumption, nor, considering the very slight effects upon the constitution, could it be expected that the secretions should undergo any special modifications. Notwithstanding our fears that vaccination will eventually prove of little value, we cannot but concede that the ill success of all measures hitherto instituted, justifies the course that is now being adopted throughout the country.

—— QUERY FOR THE FUTURE OF STEAM PLOUGHING with very light tackle and engines. Are there no lands in England which, even after draining, are so tender, that experience has proved it is better to plough them very shallow to check growth of root weeds in autumn, and to leave all deep-tillage for spring? They lie so much drier when ploughed shallow, and if you roll immediately after ploughing in autumn they lie even much drier; and may be compared to a sponge bound round with twine to prevent absorption of water. This is a fact which must be remitted to experience for further proof. *B. M. F.*

HOW TO DEAL WITH THE RINDERPEST.

I AM not a farmer, nor do I know anything professionally of the disease which is now creating such havoc among our flocks, but, like many of the general public, I have taken some interest in the efforts made to arrest the progress of this dreadful plague. In no county in Great Britain has the enemy been met with greater energy and combated with greater success than in the county of Aberdeen. The story of the struggle made against the Rinderpest by the farmers of Aberdeenshire is worth recording, and we think a perusal of the record may afford some hints to the authorities of other counties. The county of Aberdeen is, as most of your readers are aware, the great cattle-rearing and cattle-feeding county of Scotland. It is almost a purely agricultural county, and the great object of the Aberdeenshire farmer is to raise and feed cattle for the London and other English markets. The fame they have acquired by their skill as fame not confined even to Great Britain—is pretty good evidence of their success.

Of course, when this great disaster to the farming interest began to threaten us, the shrewd farmers of this county were on the alert. Although they stood sorely in need of imported cattle to feed for the London market, they generally ceased to purchase from infected districts; but among farmers, as among other classes, there are always rash persons who will see no danger where their neighbours see utter ruin. Calves were accordingly brought, about four months ago, by a certain dealer, from an infected district in the south. These calves, as it proved afterwards, were infected by the disease, and being scattered over the county might have involved the whole district in the ruin which has overtaken so many other districts of the country but for the prompt measures taken. The most virulent attack of the disease displayed itself in the parish of Forgue, Aberdeenshire, a parish than which, from its central situation, the plague could have fixed on no better point as a "Head Centre" for directing its attacks against the flocks of the three great cattle-feeding counties in the north-east of Scotland—Aberdeen, Banff, and Moray.

What do the farmers of the district immediately do? A meeting is held forthwith at Huntly, in Strathbogie, the nearest market town, in which the farmers of several parishes resolve to pay the value of every animal upon the farm on which the disease has broken out, provided all that had been in contact with the diseased cattle are at once slaughtered and buried, skin and hides, four feet under ground. Fortunately, a shrewd Scotch veterinary surgeon, Mr. Stewart by name, who had been called by the farmer to see his cattle, knew the dangerous nature of the disease, and, skilful as he is known to be in the district, felt that this disease was beyond his skill, and advised the farmer accordingly. What was the result? Every head of cattle on this farm was forthwith slaughtered and buried. But to show the contagious nature of this deadly pest, the disease again broke out, about 10 days or a fortnight afterwards, in a byre containing a cow or two, belonging to a relative of the farmer whose cattle were first attacked. The same process was at once gone through. The axe and the knife, and four feet of earth for carcase, hide, and every appurtenance of the infected animals, settled the question for these cattle, and stamped the plague out in this very promising centre. In two or three other centres about the same time the disease made its appearance, although scarcely in so virulent a form, and was dealt with in the same manner. The county was now thoroughly roused. A meeting was held at Aberdeen, and resolutions were adopted to assess the county—of course, voluntarily—at the rate of 1*d.* per pound, to be paid in equal proportion by landlord and tenant, every tenant who paid his proportion having his cattle insured by the association, should they be attacked by the Rinderpest, but only on the condition that the members of the association should bind themselves to conform to certain very stringent rules. What was the result? In a very few weeks the Rinderpest was "stamped out" in Aberdeenshire.

But again the recklessness of two persons involved the county in peril.

A farmer in the Buchan district of Aberdeenshire purchased cattle from an infected district, which of course brought the dreaded disease again into the county, and in the district surrounding the farm the disease is not yet altogether "stamped out." But I have no doubt that it will be so, as a cordon of sworn watchers is drawn around the infected farm, and every beast attacked by the disease, as well as every beast that has been in contact with any one of the diseased cattle, is at once slaughtered and buried.

In the southern part of the county, too, a cattle-dealer lately imported from an infected district the fatal plague at two different points by sending cattle from Forfarshire and Kincardineshire to be fed on some Turnips, of which he had, to the misfortune of the neighbourhood, been the purchaser. The same policy of "stamping out" the plague was followed in this case, and with equally satisfactory results.

And what is the result of this great battle which the Aberdeenshire proprietors and farmers have, to their credit be it said, been fighting conjointly hand to hand against the Rinderpest?

The total sum raised by assessment of 1*d.* per 1*l.* on proprietor and occupant amounted to upwards of 4000*l.* The amount of claims for compensation amount to 2134*l.* 15*s.*, about 500*l.* of which was incurred before the association was in existence. After paying working and other expenses, the balance in hand is about 1500*l.*

And it may be pretty safely said that, for this cost and by the other active measures taken, the cattle plague has been effectually "stamped out" in the north-eastern counties of Scotland; where it would have gained the same hold, but for the precautionary measures taken, as in any other district in England or Scotland. *J. M., Strathbogie, Aberdeenshire, in the Times.*

SMITH v. FOWLER.

"Those who wish to benefit by steam must not depend upon Steam Ploughing Companies."—*Mr. Smith's letter, p. 106.*

SUCH is the opinion of a first-rate agriculturist, and one whose practical knowledge of steam cultivation is very considerable. In this opinion I fully concur; and having had some experience in working on my own farm, as well as having done a rather considerable amount of work for hire, I may be thought in some measure qualified to speak on the subject. I do so in the hope that it may contribute towards the solution of the question propounded by Mr. Toepffer—"Can the farmer obtain a greater advantage from purchasing or hiring?"

If land could not be cultivated without the aid of two powerful steam engines and apparatus costing something like 1400*l.*, I should say by hiring; but if I show, as I hope to do, that it may be managed

with a comparatively small outlay, in addition to the 8 or 10-horse engine which is to be found on most farms of any considerable acreage, I think it will be generally conceded that it is better to buy.

In dairy districts, such as the Whitchurch Company seem desirous of benefiting, where, to do 691 acres, it is necessary to go on to 48 farms, and it is not unusual to travel 10 or 15 miles to a job, I can hardly conceive the necessity for a steam plough at all.

The three chief advantages derivable from steam are—

1. The displacement of horses and their attendants.
2. The breaking up of a large quantity of ground in a short time and at the best season.
3. The gradual deepening of the staple and prevention of pugging by the horses' feet.

1. In a Grass country, such as described by Mr. T. R. Smith, where it can lead to no saving in the stable, and where horses can be kept chiefly on Grass at little expense, there is no economy in employing the steam plough. Moreover, where a man has but a small quantity of work to do, he can generally select a favourable season in which to do it. In such districts I care not whether the experiment of hiring out be tried by a company or individual, I cannot believe that it will ever pay. It has been the big jobs only from which I have found any profit accrue. The extra expense to the men, incident to travelling, and their lodging from home, must necessitate an increase of wage, while the loss of time consequent upon bad weather, breakages, &c., is a serious drawback, as they cannot be profitably employed in such intervals.

The owner of a set of tackle working on his own land is generally able to fill up the gaps caused by hindrances of any kind, without much loss or inconvenience to any of the parties.

The great disadvantage to the hirer is, however, the uncertainty about obtaining the implement; while he is waiting, time will not stand still, and before it reaches him bad weather may have set in, and if he then use it, it will do him but little good. Managers of steam-plough companies are naturally anxious to keep their staff employed, their chief concern being, whether the work do well or ill, to earn money; and a farmer hiring has not in this respect that control which he could exercise with his own hands and his own implement. In addition to this, as he cannot while dependent upon casual assistance, which may fail him, reduce his team, he loses one of the main advantages of the system.

2. On every well-cultivated farm where steam-power is used, all, or nearly all, is broken up within a couple of months after harvest, and nothing remains requiring that agency until the following year at the same period. Hence I think it can never pay any company to keep a staff of hands for such partial and fitful employment as steam cultivation.

A farmer employing his own tackle, worked by his own men, may sometimes, after having done his own work, be enabled to give a neighbour a lift with advantage to all parties. I know to my cost though that it is generally to the roughest and toughest jobs that the assistance of the steam-plough is sought.

3. In the discussion between Mr. Hutchinson and the Secretary of the Whitchurch Company, the former has been taunted a good deal about the matter of depth. No man in his senses would, even if clean, increase the depth of clay land (the proper province of the steam-plough) by ploughing it 12 or 14 inches deep, and if foul he would act still more unwisely, as he would make it tenfold more difficult to clean. Deep cultivating would do less harm, but even then it would be more judicious to clean the surface first. I have an opinion, however, about these great depths which I am almost afraid to express, as it will, I fear, bring a hornet's nest about my ears. I have on two or three occasions, for my root crops, cultivated to 12 or 14 inches, but have left strips across the field where it was worked only to 7 or 8 inches, as left by the implement after the first operation. I have been unable to perceive any difference in the value of these or of the succeeding crops. Hence I do not attach much value to such deep stirring. I do not by any means advocate shallow cultivation, but on clay land I would certainly recommend the depth increased gradually, bringing no more of the subsoil into admixture than atmospheric action would render workable and the manure enrich.

I have touched on those points only in which I think the general public are chiefly interested. I will not go into figures. Of what has been done by Mr. Hutchinson at Dunton Lodge I have heard a most favourable account from a very trustworthy source. I have no doubt that excellent work has been made by the Whitchurch Company, Mr. Nichols, and others, and I sincerely hope that the spirit of enterprise displayed may meet its reward.

One fact, however, is apparent in the correspondence—that steam cultivating is much more largely practised than steam ploughing. Despite the cold water thrown on the system in its early days, it has everywhere crept largely into favour, and is fast superseding the plough.

It is this fact which inclines me to believe that a simple implement like Smith's, which can be pulled out after harvest and hitched to the eight or 10-horse engine which is sufficient for the threshing and other purposes of the farm, will be the one ultimately adopted by the tenant farmers of England, and, so far as this country is concerned, be largely used when the ponderous engines and apparatus of Messrs. Fowler & Co., with their beautiful mechanical combinations and ingenious contrivances, and notwithstanding their extraordinary performances as described by Mr. T. R. Smith, shall have become matter for history. *F. W. Bignell, Loughton, Stony Stratford.*

THE CATTLE PLAGUE.

1. The following returns were issued yesterday:—These returns do not profess to give the total number of cases which have occurred in Great Britain, but only those which have been ascertained from the official information received at the office from inspectors, whether appointed by the Clerk of the Council, or by the local authorities. The divisions of England are those of the census. Columns 1 only record the cases reported as having commenced during the weeks indicated by the headings, "back" cases being added to columns 2.

Census Divisions.	1 Number Attacked. Week ending January 6.	Week ending January 13.	Week ending January 20.	2 Total Reported Cases from Commencement of Disease. Attacked.	Killed.	Died.	Recovered.	Remaining.
Metrop. ..	67	38	21	7118	3144	3378	348	593
S. Eastern.	107	39	33	4756	1477	2674	414	221
S. Midland.	756	684	869	9506	1769	6277	632	828
Eastern ..	260	265	315	7587	2808	3749	486	544
S. Western.	59	46	29	1944	256	1541	242	125
W. Midland	251	264	444	2998	473	1759	242	464
N. Midland	455	565	442	4169	522	2779	397	510
N. Western	1904	2465	3538	15,743	370	10,322	944	3907
Yorkshire .	2025	1508	1413	16,853	882	10,333	2556	3082
Northern .	175	216	290	2350	560	1163	244	383
Monmouth & Wales .	319	661	522	4437	97	3286	448	604
Scotland ..	2635	2510	1960	26,360	5787	17,043	3143	3996
	8240	7243	10,641	107,998	16,175	64,305	11,831	15,227

2. VACCINATION FOR CATTLE PLAGUE.—I am desired by the Cattle Plague Commissioners to request you to give insertion to the accompanying paper.

The efficacy of vaccination as a preventive of cattle plague is not yet proved, but is being made the subject of careful experiment by the Commissioners. With a view to the assistance of persons in various parts of the country who may wish to make the trial, they have further thought it well to issue some plain suggestions as to the performance of the operation and its results, which have been drawn up by a member of the Commission, Mr. Ceely. *Montague Bernard, Cattle Plague Commission, House of Commons (Principal Floor, Room 10), Westminster, S.W., Jan. 19:—*

"I.—*Mode of Performing the Operation.*

"The vaccination of the cow with the lymph naturally and casually developed on the species is, in general, a successful operation, but unfortunately such lymph is rarely procurable.

"The retro-vaccination of the cow with humanised lymph is a different affair, and to figure but moderate amount of success, when indiscriminately performed, needs more attention to many particulars than is generally supposed.

"In the first place it is necessary to shelter the animal from cold and wet.

"In the next place it is desirable to employ recent liquid lymph, conveyed in capillary tubes, or contained in well-developed vesicles on a child's arm.

"It is important also to select certain regions for the operation.

"Those regions are the most eligible which possess the thinnest skin, are void of hair, not likely to be subjected to friction, and yet afford facility of access in operating and inspecting.

"In the milch cow the back part of the udder, the thin lax skin on each side of the vulva, or in close proximity to its cutaneous margin, are the most eligible. In the bull cow and in the female calf the flanks and udder will be available, although the parts above mentioned are more convenient of access. In the male the perinæum and the scrotum afford the best sites. But in individuals difficult to manage, the inside of the ear, or some part of the neck, or behind the shoulder, denuded of hair, and possessing some of the above-named requisites, may be chosen.

"The modes of operating, like those on man, vary, each having its advocates and advantages:—

"First.—By incision.

"Secondly.—By puncture.

"Thirdly.—By scratching or abrading the cutaneous surface.

"1. Incision has advantages as regards celerity of execution and facility of introducing the infecting, as well as obstructing the resulting, lymph. It may be effected by a small scalpel or short bistoury, or still better, by the Danish vaccinator.

"The incision should be made from half to three-quarters of an inch in length into the skin, just deep enough to make the edges of the wound slightly to gape. Wait till the oozing of blood has ceased, then supply the lymph into and upon the edges of the incision. The Danish vaccinator resembles a small 'Valentine's knife,' or the steel pen usually found in a pocket case of mathematical instruments—only this has a cutting edge. The instrument being well charged by applying its point to the liquid lymph discharged from the capillary tube, or oozing from the punctured vesicle on the child's arm, is made to penetrate the skin to the requisite depth, not drawing much blood. The lymph by this means is deposited at the time of making the incision. With a little practice, half a dozen incisions are quickly made and charged.

"An instrument in general use in Denmark, procurable at a small expense in London.

"2. Puncture.—This is best suited to the practice of inserting the end of a doubly-charged vaccine point, which may be broken off from the shaft, and allowed to remain in the puncture for a quarter of an hour.

"3. Scratching.—This is tedious, but in thin skins is often advantageous for the application of lymph preserved in large or small ivory points. The lymph, previously moistened, is rubbed off the point into the scratched surface. From four to six clusters of scratches should be made. These, if executed by a large modification of Weir's vaccinator, are done with much more celerity than with a single pointed instrument.

"II.—*Results of the Operation.*

"About the fourth or fifth day after the operation a slight redness and elevation, with some hardness and heat, may be discerned. These phenomena gradually, but not uniformly, increase till the sixth or seventh day, when a small central crust fills the incision, and plugs the punctures.

"On the scratched surface the exuded and dry lymph occupies the furrows, or more or less overspreads the abraded surface.

"The vesicles now become more and more elevated and extended till the 10th or 11th day, when they flatten and rapidly decline, more or less covered with a thick blackish-brown crust.

"Unless the skin be thin and very fair, no areola is visible, but the margin of the vesicle is felt hard and tense. When the areola is visible on a fair skin it is often not more than three or four lines in width.

"Although the vesicle assumes the form usual in man, as determined by the mode of operating, its margin is, from the thickness of the skin of the animal, solid, and if punctured will yield only blood. Lymph can be procured rarely before the ninth or tenth day, and then only by removing carefully the central crust, and waiting patiently for its exudation through the original puncture.

"Vesicles raised by very slight punctures or superficial abrasions of the cutis resemble more closely those on man and yield lymph earlier, but they are liable to earlier rupture or abrasion, and yield but a scanty supply of turbid lymph.

"It not unfrequently happens that the stage of progressive population is indistinctly marked or apparently arrested, so as to lead to the apprehension of failure, when suddenly the characteristic form of the vesicle appears, and it advances to maturity.

"It is not rare, however, to find among several papulæ some of them arrested in their progress, and prove abortive. When this event befalls the major part or the whole of the punctures or incisions, a repetition of the operations in the same site may be needless or unsuccessful.

"During the progress of the disease scarcely any constitutional symptoms are observed; sometimes an acceleration of the pulse may be detected.

"The retro-vaccine lymph obtained from these operations, little as it is, should be used as far as possible for other vaccinations."

3. INDEMNITY FOR LOSSES *v.* GOVERNMENT INSURANCE.—"A Warwickshire Farmer" is pleased to criticise that portion of my article on the cattle plague which appeared in this Journal of the 13th ult., under the heading "Indemnity for Losses." I do not complain of his remarks, but I wish to explain some points, believing there is little real difference of opinion between the writer and the critic, who probably would have modified his expressions had he read the remainder of my article in your last week's Paper on "Government Insurance." My purpose was strongly to enforce the latter, believing it to be by far the most important, beneficial, and practical measure relating to the cattle plague yet suggested; that it would powerfully endorse all other measures for stamping out the disease; would save the owners of a large amount of cattle from ruin; and by a moderate premium only on all cattle, ranging from 2 to 4 per cent., would effect this vast amount of good with little, if any, expense to the country. All that is wanted from the Government is a general organisation and a national security. If the scheme is sound, it should be taken up "pure and simple," and pressed on the Government, with all the force of the agricultural interest. It should be divested as much as possible of extraneous complications, the most clogging of which would be the claim of indemnity for past losses. If the Treasury is besieged, it should not be as paupers petitioning for alms, but as a powerful and independent body demanding a fair consideration for its righteous claims. This is the more essential, as it is to be feared that with the loss of Lord Palmerston the Government has lost half its common sense and much of its moral courage. If it had come forward at first, armed as it was with the knowledge of the character of the disease, seizing and destroying every affected animal, and compensating the owners for a great portion of the value, such a measure, I agree with the "Warwickshire Farmer," would have been both wise and successful, and in acknowledging this I meet the question put me by my critic—can he point out why they (the public) should not pay for their own good? It is one thing to use stringent and costly measures to guard from future evil, or to accept a present loss in order to avoid a greater, and another to settle the claims of the owners of 70,000 dead animals, many of them perhaps as complicated as the issues of a Chancery suit. Government indemnity for losses must be fatal to Government insurance, for so long as the former is anticipated, the premiums of the latter will not be paid; but if, on the other hand, it was known that no compensation would be given unless the animals were insured, but the moment the premium of 2 or 3 per cent. were paid, four-fifths of the value would be reimbursed in case of loss, every owner of cattle would insure, and every one would be interested in stamping out the disease, so as to limit the period for which premiums would be demanded, as well as for the restoration of unrestricted trade.

In nearly all the propositions which I have seen put forth for indemnity for losses, it is claimed only

for those animals that have been killed, and not for those that have died from the disease, and for two-thirds the value only. The last return shows that the former number 15,400, two-thirds of the value of which would amount to 101,000*l*. Now the salvage indemnity I would allow for all losses, on the ground that the carcase is destroyed for the public benefit, and taking this at 5*os.* per head (which is scarcely too much if we consider how many valuable animals have succumbed), this would require a sum of 177,000*l*., the disposal of which would not only afford more substantial aid to the sufferers, but would be more fairly distributed. In addition to this, peculiar and pressing claims can also be supplemented by local assistance afforded in really deserving cases, and thus guarding against imposition. The expression of the opinion that the milkmen of London have a moral if not a legal claim for some compensation from the Corporation of London as owners of Islington Market, is not opposed to the opinion that a claim on the public would fall through. The former may be urged on the ground that the Corporation, in the first instance by misadventure, and afterwards by gross carelessness, propagated this pestilential disease, or otherwise spread poison whilst following their own gain. The Government could reply against a claim on the public purse, in addition to the plea that it is not answerable for thefts, crimes, or individual losses, that Parliament, even so late as last Session, refused to pass Bills to prevent the spread of cattle diseases, and that these Bills when introduced were very feebly supported by the Agricultural interest. Its members, too, may also reply with some ground when charged with want of energy If we were drowsy on the matter, what were your special guardians? Your great Agricultural Society, which you support with your thousands of pounds, was positively asleep; whilst your Central Farmers' Club, which talks so loudly at times, was equally in a state of hybernation.

The Government Loan scheme I do not think would be half so effectual as a Government Insurance. The latter is on the principle of the many assisting the few, or the strong supporting the weak; the former on the suffering supporting the sufferers, or the blind leading the blind. The former is simple, the latter complicated; and although the spreading of the repayment over 30 years would greatly relieve the present pressure, and although the annual payments might be borne by the present tenants, who sustain the loss, succeeding tenants would demur, and then it must come on the landlord. Probably the Loan might supplement the Insurance, or the two plans might be combined. *W. C. S.*

4. CONDY'S FLUID: *Battersea.*—Your impression of the 6th inst., containing a letter from the Rev. C. P. Cleaver on chloride of lime as a disinfectant, in which he discusses the merits of that substance as compared with those of Condy's Fluid in a way unnecessarily disadvantageous to the latter, having been brought to my notice, I beg to be allowed to make a few observations on the subject, with the view of pointing out some instances in which that gentleman has been betrayed into somewhat hasty assertions.

There cannot be two opinions as to the efficacy of chlorine, or rather of hypochlorous acid, the active principle of chloride of lime, as a disinfectant. It is a most powerful indirect oxidizing and hence disinfecting agent, but it evidently cannot be held to be superior to nascent oxygen (the active principle of Condy's Fluid), which in truth is the agent it works by, through withdrawal of hydrogen from oxyhydrogen compounds with which it comes in contact.

The disinfecting action of chlorine must therefore always be attended with the production of hydrochloric acid, which consequently may be considered the attendant refuse of the operation of chlorine. Mr. Cleaver seems to overlook this when he treats chlorine and hydrochloric acid as analogous in respect to their action on the human economy. His argument is this: hydrochloric acid (a fluid to be taken into the stomach by the œsophagus, and not into the lungs) has been found efficacious in rinderpest; chlorine is analogous to hydrochloric acid; therefore chlorine (a gas to be taken into the lungs by the air passages, but not into the stomach) must be of great use in arresting the disease. Now, I submit: 1st, that there is not much to show that hydrochloric acid is of use in rinderpest; 2d, that chlorine and hydrochloric acid have no analogy whatever in respect to their behaviour with organic bodies, because the chlorine, which exists as a component in the latter, is already neutralised by hydrogen; 3d, the effect of one substance taken into the stomach can throw little or no light on that of a different substance taken into the lungs.

But there is no need to speculate as to what might be expected to be the action of chlorine or hypochlorous acid when respired for any length of time. The results are well known to chemists. On this point Liebig says:—"Chlorine exerts such an injurious influence upon the lungs that it may be classed among the most poisonous bodies known, and should never be employed in places in which men breathe."—"Chemistry of Agriculture," translated by Playfair, 4th Edition (1847), p. 404. Dr. Leeson, in his Parliamentary Report on Disinfectants, remarks:—"Unfortunately chlorine is itself an offensive, irritating, and corrosive substance, which will account for its not having been more extensively employed." Few things concerning the action of chemical substances on the living frame are better known. It is this circumstance that chiefly enables other disinfectants to compete with chlorine, which but for it would probably be without rivals.

Mr. Cleaver observes, "It is true that pure chlorine gas, or chlorine in a highly concentrated form, is very irritant and injurious to the lungs, but the same might be said of pure oxygen, as can be proved by the experiment of placing any small animal in a jar of oxygen gas!" I do not see how it can be said of oxygen that it is irritant and injurious to the lungs, because animals require for respiration an admixture of oxygen and nitrogen, which is all that can be deduced from the experiment alluded to. There is no one gas, however inert and innoxious, capable of supporting the life of man and the higher animals. The irritant effects of chlorine are not proved by the fact that animals are killed by respiring that gas in the undiluted form, but by the circumstance that air contaminated with even a small proportion of chlorine, after being breathed some time, causes cough, and other uneasy symptoms.

It would be both an erroneous and dangerous conclusion to arrive at, that because steam impregnated with hypochlorous acid, as stated by Mr. Cleaver, can be inhaled by diphtheritic patients, with benefit to their complaint, an atmosphere equally charged with that substance is fit for continuous respiration. There is a vast difference between inhaling for a few minutes for remedial purposes, and ordinary breathing.

Mr. Cleaver says:—"The dose of 1½ oz. sulphuric acid which Mr. Lundy recommends would be far more injurious to the mucous membranes than the chlorine given off by chloride of lime, when used as a disinfectant." That gentleman has failed to notice that Mr. Lundy orders the acid to be given with Condy's Fluid, which contains much alkali, whereby it would be to a considerable extent neutralised. But even allowing that the dose in question did cause a certain amount of excitation in the œsophagus in the course of its passage for once, it by no means follows that the reiterated contact of chlorine with the air tubes will not give rise to irritation in them, which is what was to be proved.

Mr. Cleaver admits that "Condy's Fluid is useful as an element of oxygen in sick rooms and fever wards." Would it be unreasonable to think that on that account it might also be expected to prove useful among diseased cattle in pens and cow-houses? That gentleman has evidently been consulting some medical work in which Condy's Fluid was recommended for sick rooms in preference to chlorine, but has failed to perceive that one of the reasons for the preference was the absence of evolution of irritant gas from the former. Cows and bullocks, however, have lungs and air tubes as well as human beings; and since medical men avow their fear of chlorine, and try to avoid its effects on their patients, veterinarians and owners of cattle would do well to exercise the same caution.

In conclusion, I would add, that in the event of chlorine gas, under certain circumstances, being thought necessary, it can be evolved with more ease and certainty, and in greater purity than in any other manner, by acting on hydrochloric acid (muriatic acid or spirit of salt) with Condy's Fluid.

In the interest of the community, I think it important that a false impression should not prevail on a matter of such consequence, and shall therefore feel obliged by your insertion of this letter. *H. B. Condy.*

5. THE CATTLE PLAGUE AND SMALL-POX.—Dr. Watson, in his interesting letter published recently in *The Times*, has alluded to the supposed analogy, if not identity, existing between the cattle plague and small-pox as it affects man. The question is one of the most profound interest, and concerning which the public can hardly fail to desire information. Knowing no means by which that information can be so effectually conveyed to them as in the columns of *The Times*, I beg to send you an outline of the present state of our knowledge on the subject.

When the cattle plague came among us at the close of last summer, with a hope of gaining an insight into its nature, its phenomena were anxiously watched and compared by professional men with those presented by the diseases of man which seemed to resemble it. Thus it has been said to be identical with typhoid fever, typhus fever, influenza, scarlet fever, small-pox, &c. It is with the last named of these diseases alone that any real analogy has been traced. This analogy had not escaped the observation of the older writers on this plague. Fracastorius, Lancisi, Lanzoni, Ramazzini, and others in Italy recognised its eruptive character, and made frequent allusions to its resemblance to variola, while in this country Layard, who described both the epizootic of 1745 and that of 1769, fully recognised the latter as smallpox, and said that it resembled the disease of 1745. It is very remarkable that these facts should have been overlooked until some few weeks ago, when Mr. Ceely, of Aylesbury, who has contributed so eminently to our knowledge of the connection between small-pox and vaccine, being struck by the frequent reference which is made by the older writers to eruption on the skin in this disease, examined diseased animals, and found the observation entirely confirmed by the facts. A peculiar eruption, situated on the more delicately covered portion of the body, is scarcely, if ever, absent in cases which survive beyond the fifth or sixth day. The existence of this eruption has been since abundantly confirmed by the investigations of the medical committee of the Norfolk Cattle Plague Association, also by Drs. Murchison, Saunderson, and Bristowe, and Professor Varnell, of the Veterinary College, engaged in investigation on the subject for the Royal Commission, and by others. Thus the nature of the cattle plague, as being an eruptive specific fever, is clearly established. The next step is to determine with which of the eruptive diseases it is analogous or identical. This inquiry is more difficult than might at first appear. It must be conducted carefully, and its results must be waited for patiently. In the meanwhile an accidental circumstance seems to have supplied one important link in the inquiry, while other links have been afforded by comparing the phenomena of this disease with those of small-pox. Mr. Hancock, the Veterinary Inspector of the Uxbridge district, was accidentally pricked in the back of the hand while examining, on the 3d of December, the body of a bullock that had died of the cattle plague. In a few days the slight wound assumed characters which were recognised by Mr. Rayner, of Uxbridge, as those of vaccine, and the patient suffered all the constitutional symptoms incidental to vaccination. He was also seen by Professor Spooner, Dr. Quain, Dr. Murchison, and Mr. Ceely, all of whom were impressed with the resemblance of the results of this infection to those of vaccination. The case gave fresh impulse to inquiry, and Dr. Murchison a few days subsequently published in the "Lancet" a series of observations showing in how many respects the cattle plague resembles small-pox. It belongs to the strictly professional journals to take cognisance of the professional portion of this subject. It is sufficient to say here that the cattle plague and small-pox resemble each other in the fact that both are eruptive fevers; that both are highly contagious, and can be communicated by inoculation; that they very rarely occur a second time in the same individual; and that the symptoms, the progress, and morbid appearances in both are very similar. Still further evidence of the close relationship between those diseases might be adduced. Arguments against such a view have also been brought forward, but unquestionably the weight of evidence is at this moment in favour of the identity of cattle plague with variola.

If the fact can be established, its importance will be unmeasurable. Vaccination or inoculation with small-pox will be the safeguard of our threatened herds. Even before this scientific inquiry assumed its present form, there were not wanting those who on seeing certain animals holding, as it were, a charmed life in the midst of surrounding pestilence, attributed this immunity to these animals having previously had cowpox. The subject is being fully investigated under the auspices of the Royal Commission, and by a number of independent inquirers. If these investigations supply us with a power of controlling this direful pestilence, one can scarcely estimate their value.

On the other hand, we should be prepared for a different result; we may have to learn no more than that the disease is not small-pox. Under such circumstances may I offer words of caution to those who possess cattle? If inoculation or vaccination should prove useless (and even while the question be undecided), hesitate not to follow the advice already given. Stop all traffic, isolate all animals, disinfect all infected sites, and in a given, and that a short period, the disease must cease. *Q., in the Times.*

6. THE VETERINARY PRACTITIONER SPREADS THE DISEASE.—The representations of Mr. Clarke are almost too appalling to contemplate, and if substantiated by a searching investigation, as they assuredly ought to be, the Royal Commissioners may be released from their most unpleasant duties, and Science may cease her labours. Man's efforts to stay the plague will prove of no avail. Our learned bodies have frankly confessed their utter ignorance of either the cause or cure of the disease, and I would seriously urge that for a while we dispense altogether with scientific interference, from the conviction that common sense has been confounded by the visionary dogmas and technical verbiage of the schools, and trust to the observations and experience of those men whose interests are so deeply involved; and when facts have accumulated, science may then have something more substantial than their fancies to work with.

I would put a question of some general interest,

and request it may be replied to. I have some pretty and excellent little Jersey cows, and I will suppose one or two of them to be attacked with a slight common cold; in my anxiety at this time, I shall wish to call in our best cow-leech, who perhaps will take me in his rounds, and soon after visiting a the number of animals unmistakeably affected with the rinderpest, which he may have been handling, drenching, or, may be, subjecting a fatal case to a *post mortem* inspection. Now, if Mr. Clarke is correct, I might as well introduce a diseased animal into my cowhouse as the doctor, for the one must as readily and as assuredly communicate the disease to my animals as the other.

I have presented my case to the learned ones, but have received no reply. I expressed my opinion that if the disease could be conveyed from farm to farm by a dog, if it could be carried by a straw, and without one or other having been in actual contact with the disease, how much more readily must the cow-leech convey it; and, if Mr. Clarke's statements are really to be relied on, I have no hesitation in declaring it to be my firm belief that the cow-leech is the main disseminator of the disease throughout every district. I therefore put my question—how am I to act, should my cows be somewhat indisposed?

We know that medical men may carry death into houses, if precautionary measures are not observed. I know that in one instance 14 cases of puerperal peritonitis occurred in succession to one practitioner who had neglected to destroy the clothes he wore in the first case—no further deaths occurred on following my suggestion—and this rinderpest appears from report to be far more communicable than puerperal fever or other known disease. I should feel much disposed to advocate the erection of large marquees in the most central position in every district, to which all infected animals were immediately taken; and especially if the disease bears any relation to small-pox (which I doubt), since the cool treatment in my hands has always proved the most beneficial; indeed every farmer would do well to place his diseased stock under tents rather than in sheds, and when the sun is bright to let them have the benefit of it, since there is more in sunbeams than many dream of.

I may here suggest a *post mortem* examination of the base of the brain, where the pith or spinal chord, or marrow, as it is commonly called, comes off from the brain, and the spinal chord itself in its upper half-length by removing the bony parts which cover it; and should it be found very highly-coloured from the smaller blood-vessels being gorged or filled with blood (provided the animals examined had died in the earliest stages of the disease naturally and had not been drained of blood by the butcher's knife), it would lead to the supposition that the disease had first fallen on these the most important parts of the body, and direct a mode of treatment which I have seen most wonderfully efficacious, though not in the rinderpest; this was a free bleeding from the arteries in the tail, taken at about the fourth joint from the rump. The situation of the artery where it may be easiest operated upon can readily be ascertained by the examination of the tail of a deceased animal.

I must not intrude further on your valuable space. You will perceive I have addressed myself to farmers in plain and unmistakable phraseology, that they may think over the matter. I urge the tent especially on their consideration; for if I had been wounded in battle, or reduced by fever, I would far rather be treated under canvas than in a house or hospital, and I believe the army medical staff hold to the same opinions. At all events it would free their sheds and cow-houses from diseased animals. High malignant fevers towards their termination fatally show vesicular, pustular, and petechial marks oftentimes, and I suspect these marks arise from high action and the circulation of semi-putrid fluids in the minute vessels of the skin, and that it is not small-pox under any form that now affects the cattle. *T. T.*—P.S. Very unlike it in the sheep.

LAND DRAINAGE AND FLOODS.

I DESIRE to follow the example of the Rev. J. C. Clutterbuck, and place before your readers, in as few words as possible, the conclusions to which my observations have brought me on the two questions to which that gentleman referred in his communication of the 28th ult. I allude to the effect of drainage on river floods and in promoting evaporation.

As one object of under-drainage is to render the soil free to absorb the rain by discharging, through pipes laid beneath the surface, the excess after the retentive capacity of the soil has been replenished, there can be no doubt that if the drainage of the country consisted simply of under-drainage, floods would be diminished by the quantity of water expended in satisfying the soil after evaporation had reduced the water retained by it. But drainage has a second and equally important object, which, in fact, most people make the primary consideration, *i. e.*, the discharge of the "excess" when it leaves the outlets as rapidly as possible by the improvement of outfalls, which conduces to the more rapid concentration of surface waters from all lands, drained and undrained, as well as the water of under-drainage. This practically more than compensates for any detention of that proportion of the rainfall which passes through the soil. If we could insist upon all lands when drained being laid flat, without furrows, and cultivated deeply, so as to break the crest of the soil and let all the rainfall pass through the land, instead of over the surface (which it now does to a great extent, in spite of under-drainage, particularly in sloping surfaces), we should increase absorption; but it is very doubtful whether the discharged water would not then collect as rapidly from the under-drains as from the surface, for when the subject is closely and carefully investigated it will be found that the "excess" which is discharged out of land by under-drains—after the retentive properties of the soil are satisfied—is a very large proportion of the rain that falls on the surface at those times when great downfalls take place, which are the times when floods occur. I believe that if the quantity which then flows off the surface of drained lands with sloping surfaces be added to that which is discharged out of the land by the under-drains, the sum will frequently more than equal that which is discharged from similar land undrained. But this does not reach the principal effect produced by under-drainage upon our rivers, and which helps very materially to raise floods in the valleys. We find, if we have a wet autumn and a wet winter succeeding each other, the under-drains do not cease running at all till April or May, when possibly there will not be any overflow from undrained lands. The quantity of water thus discharged in the aggregate from the under-drains is immense, and the rivers gain a great accession by it, which conduces to their overflow directly any sudden downfall of rain occurs.

Agreeing with Mr. Clutterbuck in the abstract view, that under-drainage, *per se*, may diminish floods, I am sorry to take exception to his view that it increases evaporation from the surface, if by the term "promotes evaporation" he means to convey that conclusion. No one will deny that the effect of the aeration of soils, which results from under-drainage, is their disintegration, and that this effect will "promote" capillary attraction and evaporation if there exists in the bed of the soil a stratum of water from whence to draw a supply; but it equally facilitates the percolation of water by gravity to the drains, and it is impossible, therefore, to believe that the same supply exists in drained land which has discharged by its under drains some hundred tons of water per acre (even without rain on the surface) as there exists in undrained land from which there has been no discharge at all. This condition of thing may be seen in the spring months of March, April, and May, when there is not unfrequently more water discharged from the under-drains of clay lands than falls upon the surface in the shape of rain,—if, as I have just said, the previous months of November, December, January, and February have been wet.

If this be so—and it is capable of proof—how can it be said that under-drainage increases evaporation, for whatever water the under-drains discharge and the rivers gain, the air must lose.

I will not lay stress on my belief that a proper depth of drains has the radical effect of weakening the powers of capillary attraction, and thereby of reducing evaporation, but I have no doubt that practical examination will contradict the purely theoretical views prevailing with many of us.

All these results, however, bearing most importantly upon our water supply, require careful investigation, and hence it is that I am so urgent for a careful inquiry by Government into the whole matter. *J. Bailey Denton, 22, Whitehall Place.*

Home Correspondence.

The Repeal of the Malt Tax.—A period of 20 years having elapsed since the doctrine of Free-trade became established, and nearly every tax in relation thereto having been altered in deference to that principle, it is most extraordinary, but none the less true, that the Malt-tax still stands intact, in all its huge proportions. And when it is remembered that all the leading statesmen at the time of the repeal of the Corn-laws condemned the tax, and stated that as a measure of justice to the agricultural interest the Malt-tax should be repealed, it seems almost incredible that so long a time has passed away and nothing done. The Malt-tax in its present proportions is a disgrace to the whole agricultural community of this country, inasmuch as it is a heavy burthen imposed in the bygone days of Protection, so-called, and likely to be borne, unless the agitation for the repeal be persevered in. And therefore it is the duty of every farmer to aid and assist by every means in his power, and persistently refuse to vote for any candidate for representation in the House of Commons who is not distinctly pledged to obtain by all loyal and constitutional means the repeal of the Malt-duties. Let us see how it operates in the simple matter of private brewing. A sack of Barley of good quality may be purchased for 18*s.*, its manufacture into malt may cost 2*s.* 6*d.*, 4 lb. of Hops at 1*s.* 6*d.* per lb., 6*s.* more, and man's time 2*s.* 6*d.*; total expense of brewing one sack of malt, 29*s.* This will make a hogshead of excellent ale equal to Bass's, and the cost will be a trifle over 6*d.* per gallon without the interference of the obnoxious Malt duty. This at once advances the price of malt to 36*s.* per sack, and the price of beer from private brewing to 10*d.* per gallon, constituting a tax of 75 per cent., and 100 per cent. upon the beer-consuming public. The working out and operation of the Malt-tax tends to create a monopoly to the maltster, the brewer, and the publican; a policy condemned as unjust and injurious when the clamour was raised against the Corn-laws, as it was contended it was not right or just the bread of the people should be taxed in order to grant a monopoly to the corn grower, or the so-called Protective duty. And if this was right with respect to bread, why should it not be made to apply to beer, the drink of the labouring classes?—this is an anomaly the farmer cannot understand. And this is not all: by the injurious working of the Malt-tax, the trade for the disposal of a most important portion of his produce is curtailed. The experience of the past harvest to the farmers in the south of England will illustrate my meaning, when the rainy character of the harvest weather has stained and damaged so much Barley; it may be malted, it is true, subject to a deal of interference and dictation in the mixing, for cattle feeding; but the maltster cannot use it; he very naturally and very properly says, "this Barley is of too inferior a quality to suit my purpose, because I shall have to pay a heavy duty." Shut out then from the maltster, and cut off from the feeding or giving to stock by silly restrictions, it is easy to perceive that the price of inferior Barley is materially affected and thrown back upon the farmers' hands, in many respects an inconvenience and a loss. Surely the time has arrived, and the necessity exists for reform in the excessive tax, and let us hope that ingenious sophism will not prevail in the face of stubborn facts, and that another Session may not pass away without some important reduction being made, if not the whole repeal; and if it be true that five or six millions may be saved in the Army Estimates, there is the sum, or if that be too much at once, say one-half the duty remitted to begin with, and the remainder at a more convenient season. *W. S. G.*

Societies.

HIGHLAND AND AGRICULTURAL OF SCOTLAND: *Jan.* 17.—At the half-yearly general meeting of the Society, the Earl of Haddington was called to the chair. He proposed a vote of thanks to the retiring President, the Duke of Argyll, which was carried by acclamation.

Sir GEORGE CLERK then proposed as his successor his Grace the Duke of Buccleuch, who was unanimously elected.

After the election of Vice-Presidents and Directors, reference was made to Mr. Hall Maxwell's resignation of the office of Secretary, and it was resolved that, as a suitable and permanent memorial of the general approval by the Society of Mr. Hall Maxwell's services, he should be requested to consent to have his portrait executed at the Society's expense by an eminent artist, and that the picture, when completed, should be hung in the Society's hall.

Forty new Members were then elected.

THE CATTLE PLAGUE.

Mr. CAMPBELL SWINTON moved the following resolution:

I. That the Society having had under consideration a letter addressed to the President by the Secretary of the Board of Trade, in reference to the steps taken by that department for obtaining returned the number of live stock in the country, it was resolved that it is the interest and the duty of owners of stock to respond to the call made by Government by furnishing the Board of Trade with immediate and accurate information.

II. That the Society considers a vigorous and uniform action on the part of all local authorities in the application of the Orders in Council to be of primary importance, and it would urge on the attention of such authorities the propriety of providing for a general suspension of the movement of stock during a limited period, and in such as practicable and consistent with the requirements of the public.

III. That the Society represent to the Secretary of State for the Home Department the great importance of promptitude on his part in giving effect to No. 17 of Order in Council of 26th November last, by superseding any local authority complained of, and found to be neutralising the efforts of neighbouring authorities through neglect of proper precautions, and by himself applying and enforcing the Orders in Council within the district of such authority. And further, that if within the district of such authority. And further, that if said Order of 23d November be in any respect incomplete, immediate steps should be taken to supplement it, so as to empower the Home Secretary to take the place of any local authority declining or neglecting properly to enforce the Orders in Council.

IV. That the Society represent to her Majesty's Government that it would be desirable, were they prepared, as soon as Parliament shall meet, to propose a measure by which the compulsory slaughter of diseased or suspected animals might be secured by some provision being made for the partial compensation of the sufferers.

Mr. HOPE, FENTON BARNS, said—It is with no small reluctance that I rise to propose additional resolutions to those which have been brought forward unanimously by the directors. The unparalleled circumstances under which we are placed must be my apology; and certainly this cattle plague is a quite unprecedented calamity to agriculturists and the nation. We have had numerous Orders in Council regarding it, and regulations of every sort and kind by the magistrates of counties and of towns, some of these regulations being judicious and beneficial so far as they went, while others were only calculated to distract and annoy the unfortunate owners

of stock. Magistrates generally have carried out the Orders in Council as far as the public opinion in their district would admit. But men's opinions are changing, and are still rapidly changing, in proportion as the disastrous results of the plague become apparent. Rules have been welcomed which were first described as a violation of natural rights. Many who at first insisted on holding fairs and markets as usual, and who hardly delayed the movement of cattle on the breast of earth, are now ready to agree to any rules that can be laid down. I have even heard men deplore the absence of a despotism. Notwithstanding all that has been done, the plague marches steadily forward with a constantly accelerated speed. No one pretends to say that the present is the latest stage of the evil, unless it be in such districts as Forfar or Fife, where little food is now left for the disease to prey on. But I am wrong; there is one district in Scotland where the plague has been met in a very different form from all others. In the county of Aberdeen, the most important cattle district in Scotland—at least it must count in at present upwards of 150,000 cattle—the clean bred Ayr Romans saw from the first that the fell destroyer was not to be made twith. On of its earliest judgments was unanimously adopted, and has been gripped by the throat and choked to death. So far as most times has this been done, and now the county has been clean for nearly one month. I say, all honour to Mr. M'Combie and his friends for the lesson they have taught us. By a voluntary rate of 1*d.* per pound, paid by both landlords and tenants, they have got 2500*l.* for the destruction of 1400 head, and have still some 1600*l.* on hand. I am aware that this slaughtering of all diseased animals, and of those that have been in contact with them, is still objected to by some for whom I have the highest respect. But I would remind them that this disease is not only more contagious than any other, but that few animals that have recovered have mostly done so when left alone. At the same time, it is admitted that it is much more infectious than any disease known to affect man or the domestic animals. Even when every precaution is taken, the virus is carried by the wind. What I propose is this, that this Society should memorialise Government to prepare a Bill and to urge it through Parliament, immediately on its assembling—a Bill appealing to central board, with branches in every county, to which cities and towns to destroy at once all animals within their jurisdiction labouring under the plague, and to have the same buried in their shires. Also, to enforce at the same time the slaughter of all animals that have been in contact with those diseased, and the compensation of landlords and tenants for food. Of course, the owners of such stock slaughtered in a manner compulsory must receive remuneration. I think three-fourths of its value would be ample compensation. You will observe that this is not a Cattle Insurance Bill, but something very different. It is a Bill to stamp out the disease, if it is one of which I think the Government may be fairly called on to bear a proportion of the expense. It is as Mr. Gladstone has stated strong. I may say much would like to see why the Government should decline to ask Parliament for money in compensation, and Mr. Disraeli and his party, who, I believe, are on this side of the House, are equally against payment for compensation. But I am not aware that the plan I have indicated has ever been proposed, to or considered by the gentlemen named. I am confident, if it was adopted, it would extirpate the plague in a single month. In many counties it would be cheaper, at a moderate rate, to pay the whole value of the animals, the average loss on the feeding herds seized, which were at once killed and sold, does not amount to one-fourth of their value, though in one or two herds of lean and young cattle which were treated for recovery, fully one-third of the value of the Bonifaces and Shorthorns was lost. A slight duty, though, this measure themselves, and I would advise them to press it. Government should refuse all pecuniary assistance; but I think Government might be fairly called on to supplement local efforts without imposing on counties or towns a rate of more than 1*d.* and I would ask again a portion of the stock of the country, but it would at once check the sending to it over of half fed cattle, the sale of which, at present to the amount weekly must ultimately place butcher-meat out of the reach of even middle families. The feeding of stock has been the shoddy trade of Europe for years past; now, if the supply of stock fails them as it must do, unless an efficient remedy is at once adopted, it will be ruination to tenants, diminished rent roll to landlords, and, if not starving to the public, it will be the means of raising prices by competition. Mr. Hope concluded by moving —

1st, That experience has proved that the only effectual method of extirpating the cattle plague is by slaughtering at once all affected animals, and cattle in immediate contact with them.

2d, That this Society memorialise Government to prepare a Bill, and to urge the same through Parliament immediately on its assembling, in which Bill shall be enacted a central board of Commissioners, who shall authorise an inquiry, as they shall see fit, into the outbreak of the plague in any part of the kingdom, consisting of Commissioners of Supply and one or more elected tenant farmers from each parish in counties, and of the Magistrates of towns or burghs —which county or town boards shall, when required, order the destruction of all cattle labouring within their districts, and shall also have full power to levy a rate according to the valuation-roll of such county or town one-half to be paid by owners and the other half by the occupiers for the indemnification of the owners of such cattle so destroyed not for the public good, to the extent of two-thirds of the value; but for other remedial measures which may be adopted by the inspectors of districts, and to authorise the payment by Government of one-third part of all monies so upheld—the value of the animals so slaughtered to be determined by competent persons appointed by said county or town boards.

3d, That, as every day's delay increases the difficulty and expense of dealing with the plague, it is earnestly recommended to all local authorities and the owners of stock, to adopt voluntarily and immediately the policy indicated in the two previous resolutions, so far as the same may be practicable under circumstances.

Mr. ROBERT RUSSELL, Pilmuir, in seconding Mr. Hope's resolution, said:—It appears to me that the idea of asking Government to insure animals against rinderpest without slaughtering them was to prevent the distribution of the disease. It is much the same as if you were to ask Government to insure the buildings of a street with the flames raging at one end, and no proper steps were to be taken to extinguish them. To insure the loss over a series of years and obtain a loan does not much matter. This, as Mr. Gladstone points out, would only be throwing the whole burden on the landlords, for tenants who have suffered loss could not be expected to contribute towards refunding any such loan. I think it has been most unfortunate that Mr. Gladstone has been approached by those who advocate any system of assurance without being prepared to take those extreme measures which can alone arrest the career of this fearful malady. But surely the plan proposed by Mr. Hope to deal with the evil is not liable to any of those objections which do apply to the insurance scheme. If Government, landlords and tenants would now contribute a share, each and all would be interested in seeing that no abuse occurred in the application of the funds, or carelessness in preventing the spread of the malady. It is not so much to recompense farmers for losses as for extirpating the disease that we ask the aid of Government in this matter. The direct loss to farmers from the mere loss of cattle is small in comparison to those which follow in the wake. Free-trade we now all subscribe to, but free-trade in rinderpest among our herds is utterly abominable. Foreign countries must be both wondering and rejoicing at our sapiuence in the matter, for this quality to all appearance will give us a great measure into their own hands at no distant date the trade of Europe in our cattle, population with beef. In the meantime, therefore, I cannot see my way to any other course than that embraced in Mr. Hope's motion and with these few remarks I beg to give it my cordial support.

The meeting agreed unanimously to adopt the first three resolutions proposed by Mr. Swinton, and not to adopt Mr. Hope's resolutions as an amendment on the fourth resolution proposed by Mr. Swinton.

Sir JAMES FERGUSSON, Bart., M.P., said he ventured to think that the proposal of Mr. Hope, in one particular, might be amended. He referred to the proposal that there should be a rate on the whole lands and heritages of a county to give compensation. The rate ought to be on agricultural subjects alone, and it ought not to be supplemented by grants from the public purse, unless the cattle plague extended to a much greater extent than, please God, he hoped it would reach.

Mr. HOPE preferred to have it an open question how the rate should be levied, and he would word the resolution in this way—"and shall also have full power to levy a rate to be paid by owners and occupiers for the indemnification of the owners, such rate not to exceed 1*d.* per pound," the omit asking the money from Government; but he supposed Sir James would agree to leave that in the resolutions, though he thought they would not get the money.

Mr. SHIELDS, of Kippendavie said the returns showed that 80,000 head of cattle had been attacked in the country, and of that number 60,000 had either died or been killed. Therefore, to carry out Mr. Hope's proposal to stamp out the disease, it required only the sacrifice of 120,000 head of cattle. The whole sum required from Government would be 400,000*l.*; and he was quite sure that if they could get rid of the disease at the cost of that money, they would never get rid of it cheaper. Every week's delay would increase the expense of getting rid of it. At present all their stock were in byres, but when the rest of May came, and people put the animals to grass, the restrictions on the removal of cattle would be impossible. The stock must go to the fields, and they did not know what kind of disease was on the other side of the hedge. He cordially supported Mr Hope's proposal.

Mr. HOPE's resolutions were carried, amidst the applause of the meeting.

PRESENTATION TO MR. HALL MAXWELL.

At the close of the meeting of the Highland Society, the Duke of Buccleuch invited the members to remain, as there was the presentation to Mr. Hall Maxwell of a testimonial from members of the Society expressive of their appreciation of his services.

Sir ALEXANDER GIBSON MAITLAND, convener of the Testimonial Committee, said he was extremely glad to say that the efforts of the committee had been extremely successful. They had had 820 subscribers, whose contributions amounted to 1650*l.*; and as almost all these subscriptions had passed through his hands, he was happy to say that they came from all parts of the country.

The gift consisted of a purse of 1000 sovereigns, and a handsome silver epergne and salver, [illegible]

The Duke of BUCCLEUCH said—Mr Hall Maxwell, it is my duty, and a gratification to me, to present to you these testimonials, [illegible] your private character in [illegible] of the country in which you have resided, and in the discharge of the various public duties which you have performed. [illegible] which we have discussed this day, and we have had the benefit of his experience. His Grace then made the presentation, and read the inscription on the epergne, which was as follows:—

"Presented, with the Articles of Plate, and a Purse of One Thousand Sovereigns, to John Hall Maxwell, of Dargavel, [illegible] by the Members of the Highland and Agricultural Society [illegible] in grateful appreciation of the zeal, energy, ability, and [illegible] discharged by the Chairman of the [illegible] during the years [illegible]."

Mr Hall Maxwell, who was received with loud applause, said Mr. Lord Duke and Gentlemen, I must say that I am a little at a loss to express the words to express the gratification and pride with which I accept this token of your approbation. A gift so munificent—a testimonial so overpowering—could not fail to [illegible] but there are considerations connected with this presentation which invest it, in my eyes, with a value far surpassing even that of its intrinsic worth. This volume, which your Grace has presented to me, is a truly valuable gift, recording as it does that the compliment I am now receiving is not due to the partiality of a few friends, but [illegible] Sir Alex. Maitland, is the spontaneous and voluntary offering of many hundred members of the Society, connected with and [illegible] Volume I find that which in itself is no mean testimonial—one indeed, of which any man might be justly proud—I allude to that long array of names [illegible] gentlemen who [illegible] at the head the list of subscribers—and than whom there are none in Scotland more distinguished, whether in respect to social position or agricultural pre-eminence. There is one further feature in to-day's proceedings which to me is in the highest degree gratifying. I believe there is no Scotchman who would not attach additional value to a testimonial presented by the noble Duke now in the chair, and in my case this feeling is all the more powerful when I recal the kindness and support which for so many years have been vouchsafed to me by his Grace. When in any difficulty, when in any need of wise counsel and advice, I have never hesitated in applying to him, and I [illegible] would [illegible] would be tedious, how valuable it would prove, in the estimation of his colleagues in the [illegible] Duke of Buccleuch's name [illegible] election [illegible] to [illegible] and, without exception, [illegible] I [illegible] and [illegible] I [illegible] [illegible] patronage [illegible] duty, I would not [illegible] on this occasion, not stamped with the seal of his approval the honour which has been conferred on me.

The meeting then separated.

The Poultry Yard.

The Poultry Year of 1865. The year that has just closed has been one of progress as regards poultry in every respect. In the first place, the general supply to our markets has been steady and uniform, and the quality superior on the average to that of previous years. The Exhibitions, both in connection with the agricultural societies and also those held independently, have been on the whole highly successful, both in attendance of visitors and number of entries. We have to chronicle the improvement of many of the breeds already in favour, and the introduction of new ones as candidates for public favour.

There has been a healthy demand for really good birds of all the principal breeds, and the prices at which many pens have been claimed at the principal shows, must have been highly satisfactory to the vendors, and given them great inducements to breed carefully for the coming season. Among the fowls, the Dorkings still hold their pre-eminence, and fully justify it by the great improvement perceptible in them. One might now scan the classes at many a show without finding any of those wretchedly bad specimens that were a few years since so common. Birds that two or three years since would have carried off many a prize, are now obliged to be contented with the barren honour of a commendation. The cock birds show increased size and breadth, as do also the pullets, and give us hopes that these valuable birds may be still further developed as food producers. And although insufficient attention is still paid to the subject, they are, we are very glad, so being introduced into many farm-yards where they will have every chance given them of becoming a recognised and profitable portion of the stock.

The Cochin Chinas have always, and are likely to have, their numerous supporters, in spite of all new comers. Their docility, and their great value as winter layers and early setters, will always find them many friends. The Buff and Partridge-coloured birds exhibited during the past season have been of great merit, and also of great size. The white variety of this breed does not find many admirers. The Spanish fowls, the birds of the fancier before Cochins were known or Dorkings cared for, have had to meet dangerous rivals in the newly-introduced breed of La Flèche; the latter is, however, still considered as on its probation. The quality of the Spanish as a class has improved, but the birds that are now considered the best hardly come up to those of a few years since.

The Brahma Poutras have advanced rapidly in public favour, and now form one of the most important classes. Decried as mongrels, and accused of having boundless appetites, besides having the misfortune of being introduced to the public just as it was awakening from the Cochin mania, the Brahmas have had an uphill task, and have proved themselves well worthy of the support accorded them by a few breeders and amateurs who have believed in them throughout. We believe these birds will become general favourites in all districts where it is said poultry does not thrive. They are very hardy, very easily reared, excellent layers, and one recommendation of them in any farmer's eyes is the fact that they are excellent foragers, and will, where there is any chance of so doing, spend the greater part of their day in food hunting, and so lighten the quantity of direct consumption. The dark Pencilled variety has hitherto been the favourite, but the light-coloured birds are now gaining many admirers, and their numbers increase at each show of any importance. The only difference between them and the Pencilled birds is that of colour.

The Hamburghs, both Pencilled and Spangled, keep fully up to their numerical strength, but the Pencilled birds have not improved in quality the last year or so. The Spangles are improved in strength of constitution, and are excellent layers. The Polanders and Malays are, as they have been, very much neglected by the generality of breeders, and it is a rare thing to find a new name on either list. The Game fowls, with their many classes and shades of colour, stand very high both in quality and numbers. We would recommend them to any one who has an off-hand farm or cattle yard, and who requires fowls that will shift for themselves and do with little looking after. Among the show birds of this breed the weight has been much reduced the last year or so, and birds that would have been called small by the old "Cockers" are now quite up to the average.

The Bantams have prospered and gained many friends, and we may expect great progress to be made during the coming season.

In Geese, the imported Toulouse birds have done much good. They are of great size, and lay very many more eggs than the English varieties; their young attain in ordinary growth a much greater weight without fattening than the others. They are of excellent quality, and stand a fair chance of being generally adopted by the principal breeders. A very great man once said that "he is a benefactor to his country who makes two ears of Wheat grow where previously there was but one." Surely he deserves equally well of his country who produces Fowls, Geese, Ducks, and Turkeys of double the size of the former mongrel denizens of our farmyards. A farmer in Scotland, somewhere near Brechin, introduced these Geese there some years since, and bred them very successfully, and so notorious did his breed become for weight and excellence, that on the market days there were no geese sold until it was known whether he had any

there, so anxious was every one to get these large ones. Turkeys and Ducks we must leave for another number.

Calendar of Operations.

MERSE OF BERWICKSHIRE: *January* 6.—This remarkably mild season has been favourable to the due economy of a small crop of Turnips, but there has scarcely been a frosty day for carting out muck. Where straw, Turnips, and cattle are scarce, the dungheap will not be large. A considerable breadth of Wheat was sown about the middle of November and December, in capital order, for the rainfall of the two months little exceeds 4 inches. Turnip storing is well forward, and we can now realise the fact that the best fields are about half a crop. Contrary to expectation, Swedes have made little if any growth since the October rains, and other kinds are going "like snow off a dyke." Ewes have made their meat at Grass hitherto, with little or no help, and late-sown Turnips will stand the winter better than larger bulbs. Lambs in many flocks were poisoned by foul Grass and autumn dews, and by the succulence of Turnip-tops. Cake and sliced Turnips have stayed the mortality, which has much exceeded the usual limits, and we may profitably note that mismanagement is the worst sheep plague.

A lot of 14 cattle from the south brought the cattle plague into this district, and after being confined to that one farm and the adjoining village for many weeks, and all but exterminating the herd of 60, it has latterly spread to the N.E. with great rapidity. The practice now is to send off all sound cattle to market (by the nearest railway station) whenever one takes ill; and if this had been permitted under the earlier Orders in Council, in the case of our first unfortunate neighbour, the plague might have been extinguished. As it was, the disease was kept festering, and the whole place, contaminated by so many burials, became a hotbed of corruption.

Beyond the district referred to, there are two authenticated cases, and it is remarkable that all the diseased farms are embraced in the sites of two of the great "meres," which in former times covered so much of the country. If cattle, for the public good (as is imagined), are to be destroyed for fear of infection while yet healthy, then justice demands that the nation pay for them full value. The offer of a percentage virtually concedes the justice of the demand. As for the compulsory slaughter of all fat cattle at home, it is simple confiscation; for the butcher who comes to slaughter two or three weekly is, next to the inspector, most likely to bring the plague to those that remain. All the means and appliances of a country district are utterly inadequate to the proper and speedy disposal of a large lot of carcases; and when spring comes, the beef must be given away, for Swedes will not last for ever. *J. T.*

Miscellaneous.

Mr. Gamgee and the Cattle Plague.—The disease spreads more rapidly, and destroys much faster, than such means of cure as are known can follow; and therefore it is of more profit to kill than to try to cure. This is the simple and serviceable ground which has been all along held by Professor Gamgee, and to this the farmers are rapidly coming. There is in Scotland at least a conviction that had Professor Gamgee's energetic counsels been taken at first, we should not have been in these alarming circumstances. It has been the fate of Mr. Gamgee to see a little too clearly, and to speak a little too soon, for the class in whose interests he labours. He declared the disease imported; after much controversy that is admitted on all hands. He urged the suspension or rigid supervision of the import of foreign cattle; the commissioners and the farmers have practically recommended the stoppage of the entrance of live cattle from abroad. He strenuously prescribed isolation and slaughter as the sole effectual cure; and for the "killing cure" many of the farmers are now only too willing. He has long, almost if not quite alone, insisted on the necessity and advantage of a National Cattle Insurance Association, as a safeguard against the ravages of this and other epidemics; and the most influential meeting of agriculturists that has been held on the subject of the plague has taken up the idea, and resolved in favour of just such a system of insurance. It is something for any man to have been right, and to have pointed the way in a time of emergency and tumult of opinion, to have silenced and convinced opponents, and to have led those who have laughed at him. This Professor Gamgee has done, and it is but just that the credit he deserves should be given to him. *Medical Journal.*

Notices to Correspondents.

LIMEKILNS: *Subscriber.* We do not suppose that the neighbourhood of Limekilns will have an injurious effect on a field of Potatos.

RINDERPEST: *Cor.* We see it published that Holland has had the disease in 1713-19, in 1744-56, and 1768-86. We are not aware in what degree that country is dependent upon Eastern Europe for its breeding stock.

Prize Cucumber Seeds.

SUTTON AND SONS can supply SEED of all the best kinds of CUCUMBERS, including Berkshire Challenge, Berkshire Champion, Mr Hamilton's New Varieties, and many others.

For List and Prices of which see Messrs. SUTTON'S CATALOGUE for 1866, which will be forwarded gratis and post free on application.

SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

To the Seed Trade.

FRAME CUCUMBERS, all English-saved; true and select.

Carter's Champion	Hamilton's Market Favourite
Cuthill's Black Spine	Highland Mary
Dickson's Newton Hero	Swadling's Berkshire Challenge
Dr. Livingstone	Telegraph

BROCCOLI, Pure and Genuine Stock

Early Purple Cape	Elliston's Mammoth
Snow, true Winter	Ward's Superb Late White
Osborne's Winter White	Dixon's Champion of England
Knight's Protecting	Carter's Champion

INVINCIBLE SCARLET SWEET PEA.

Trade prices on application

STEPHEN BROWN, Seed Grower, Sudbury, Suffolk.

New and Choice Seeds.

LEE'S IMPERIAL DWARF CAULIFLOWER is the earliest and best in cultivation. Price 1s. 6d. per packet.

LEE'S HAMMERSMITH CUCUMBER is the best for winter and general use. Price 1s. 6d. per packet.

LEE'S EXCELSIOR GREEN-FLESH MELON; the finest green-flesh Melon in cultivation. Price 1s. 6d. per packet.

JOHN & CHARLES LEE, Seed Merchants and Nurserymen, Hammersmith, London, W.

JAMES GARAWAY AND CO., Durdham Down Nurseries, Bristol, offer the following SEEDS, which they can guarantee to be of great excellence, and decided acquisitions.

Prices to the Trade on application.

BROCCOLI (Garaway's Late White).—Pure white, very large, late, has been exhibited at the local shows, in first-rate condition, in the beginning of June. Retail price, 1s. 6d. and 2s. 6d. per packet.

CELERY (Burbank's Superb Red and Burbank's Superb White).—Solid, crisp, and of fine flavour, has been grown for several years by the raiser, Mr Burbank, and given very great satisfaction. Retail price, 1s. per packet.

CUCUMBER (Pain's Ridge).—Very hardy, fine flavour, good size, and remarkably productive. First-class Certificate awarded by Fruit Committee of Royal Horticultural Society, August 8, 1865. Retail price, 1s. per packet.

LETTUCE (Catton Hardy Green Cos).—As hardy as Hardy Hammersmith, large, and of good flavour. Retail price, 1s. per pkt.

JAMES GARAWAY & Co.'s PRICED LIST of SEEDS for the ensuing seasons will shortly be ready, and will be forwarded post free on application.

Dewar's Northumberland Champion Celery.

HENRY DEWAR AND SON beg respectfully to offer Seed of this excellent solid WHITE CELERY, acknowledged by all who have grown it to be the best variety in cultivation. Awarded a First-class Certificate at International Show, South Kensington, December 9, 1865. In sealed Packets 1s. each, post free 13 stamps, usual allowance to the Trade.

DEWAR'S IMPROVED SHORT-TOP RED BEET.—They also beg to offer Seed of this very superior Beet, awarded First-class Certificates by the Fruit Committee of the Royal Horticultural Society, November 7, 1865, and at the International Show, South Kensington, December 9, 1865. In sealed Packets 1s. each, post free 13 stamps. Usual allowance to the Trade.

Seed Establishment, 97, Grey Street, Newcastle-on-Tyne.

NEW and SELECT VEGETABLE SEEDS.

BROCCOLI, OSBORNE'S NEW WINTER WHITE, 1s. per packet
,, CARTER'S NEW SUMMER LATE, 2s. 6d. per packet
BEET, SUDBURY SELECT CRIMSON, very dwarf and dark, 1s. 6d. per ounce
CAULIFLOWER, HAAGE'S DWARF EARLIEST, the first of all Cauliflowers, very hardy, and immense heads, 1s. 6d. per pkt
,, SUDBURY LARGE IMPROVED, very fine, 6d. per packet
CABBAGE, OLIVER'S NEW MONARCH, 1s. per oz
CELERY, DIXON'S MAMMOTH, 1s. per packet
CUCUMBER, PAIN'S NEW RIDGE, 1s. per packet
,, DONALD BEATON'S RIDGE, 1s. per packet
,, SUDBURY NEW LONG WHITE SPINE, splendid frame, 2s. 6d. per packet
,, Several first class frame varieties, 1s. to 1s. 6d. per pkt
LETTUCE, GIANT BATH COS, fine, large, and hardy, 1s. 6d. per oz
,, CLIFTON NEW HARDY GREEN COS, 1s. per packet
,, LONGSTANDER, remarkable for duration, crisp and excellent, 1s. per packet
,, SUDBURY LARGE WHITE COS, 1s. 6d. per ounce
ONION, NUNEHAM PARK, 2s. 6d. per packet
MELON, PRINCESS ALICE, weight 9 to 11 lb., and excellent, 1s. 6d. per packet
PEA, THE RINGLEADER (or First Crop), 2s. 6d. per quart
,, McLEAN'S LITTLE GEM, 3s. 6d. per quart
,, McLEAN'S EPICUREAN, 2s. 6d. per quart
,, LAXTON'S PROLIFIC LONGPOD, 2s. 6d. per quart
,, SUDBURY A 1, WRINKLED, very early, 1s. per quart
RADISH, NEW OVAL SCARLET WHITE-TIPPED, 6d. per pkt
And many other New and Select Seeds.

CATALOGUE for 1866 (CULTURAL and DESCRIPTIVE) free on application.

STEPHEN BROWN, Seed Grower, Sudbury, Suffolk.

IVERY'S NONSUCH LETTUCE, the best Summer variety ever offered, 1s. per packet, sealed with initials W. I. The following have already been supplied this season with the true stock:—

Barr & Sugden, Messrs., Covent Garden	Hayward, Mr. J. S., Worcester
Bugden, Mr. T., King Wm. St	Hurst & Son, Messrs., Leadenhall Street
Barnes, Mr. W., Camberwell	Ivery & Son, Messrs., Dorking
Cooper & Bolton, Messrs., Fleet Street	Low & Co., Messrs., Clapton
Clarke, Mr. S. H., Edgware Rd.	Lee, Messrs. J. & C., Hammersmith
Clare, Mr. J., Cheltenham	Maller, Mr., Lewisham
Cottrell, Mr. J. H., Birmingham	Masters, Mr. W., Canterbury
Clarke, Mr., Cheltenham	Maule & Sons, Messrs., Bristol
Davis, Mr. G., Liverpool	Ormroyd, Mr. J. H., Shrewsbury
Dickson, Mr. Chas. H., Market Place, Manchester	Paul & Son, Cheshunt
Denyer, Mr. W., Gracechurch St.	Ponsford, Mr. S., Brixton
Dickson, Messrs. James & Sons, Chester	Paul, Mr. W., Waltham Cross
Dickson, Messrs. F. & A. & Son, Chester	Rutley & Silverlock, Messrs., Strand
Fisher, Holmes, & Co., Messrs., Sheffield	Veitch, Mr. J., Exotic Nursery, Chelsea
Flanagan & Son, Messrs., Cheapside	Wood, Mr. A., Worcester
Henderson, Mr. H., Birkenhead,	Whalley, Mr. T., Liverpool
Hodson, Mr. J. T., Birmingham	Watkinson, Mr. H., Manchester
	Wheeler & Son, Messrs., Gloster
	Yates, Mr. S., Mill Gate, Manchester

N.B.—CATALOGUES of CHOICEST SEEDS can be had post free on application. The Trade supplied with superior MUSHROOM SPAWN.

WM. IVERY, Hanover Nursery, Peckham, S.E.

Seed Potatos.

MARSH AND PERKINS, 12, Drapery, Northampton, beg to offer the following, all true to name.—

	Per Cwt.		Per Cwt.
Webb's Imperial Kidney,	6s.	Soden's Early Oxford	5s.
Flukes, Kidney	5s.	Dalmahoy	5s.
Dauntree's Prolific	5s.	Aylesbury White	5s.

ASPARAGUS ROOTS, 2 years old, 10s. per 1000.

Terms: Cash.

Myatt's Prolific Ashleaf Kidney Potato for Seed.

MR. J. MYATT, of Offenham, Evesham, has a fine sample of this excellent variety to offer this season; also the old ASHLEAF KIDNEY, the ROUND ASHLEAF (a very good second early), and MONA'S PRIDE; the last-named variety had direct from the raiser, Mr. Routledge, Isle of Man, last season. Price 6s. per bushel, the three first-named varieties, and 5s. per peck of 14 lb., Mona's Pride. Remittances expected from unknown correspondents. Price to the Trade on application.

A few quarters of the ESSEX RIVAL PEA for Sale, a good sample.

SEED POTATOS from the North of Scotland.—The Subscriber having for a number of years paid much attention to the purity of his stocks of Potatos, now offers the following, grown in Inverness and Ross-shire, without any appearance of disease.—

TAYLOR'S FORTY-FOLD	DALMAHOY EARLY.
WALKER'S EARLY REGENT	FLOUR-BALL REGENT.
SKERRY BLUES.	ROCKS.

They will be sent out (packed in 2 cwt. sacks) in Ton lots of single or assorted kinds, and delivered free at London, Newcastle, and Liverpool at very moderate rates, which will be learnt on applying to ALEX. SIMPSON, Seafield, Inverness.

Henry's Prize Hybrid Leek, Genuine.

DOWNIE, LAIRD, AND LAING are now sending out the above in packets at 1s. each. This is unquestionably the largest Leek in cultivation, growing 16 inches in length of blanch, and 10 inches in circumference. Was awarded the First Prize at the Edinburgh and other leading Shows.

17, South Frederick Street, Edinburgh; and Stanstead Park, Forest Hill, London, S.E.

TRUE WHITE SPANISH ONION SEED. £5 PRIZE.—The Onions from which this seed was grown obtained a First Prize of £5 "for the best 24 White Spanish Onions, grown by the competitor on land within 10 miles of Banbury," in a sweepstakes, in September, 1864, when there were 55 entries, the 24 Onions weighing 19 lb. 14 oz. They were also exhibited on Mr. P. J. Perry's stand at Birmingham; and obtained a First Prize at every Horticultural Show where they were exhibited the same year. Only a few pounds for sale, 2s. 6d. per ounce, post free. May be had of the Grower,

J. A. TARVER, Printer and Bookseller, Banbury, Oxon.

Elvaston Nurseries.—Important to Planters.

WILLIAM BARRON begs to offer the following at extremely low figures, to Noblemen, Gentlemen, and others engaged in Planting on a large scale:—

PINUS LARICIO (true).—This highly ornamental tree surpasses the Larch, both as to rapidity of growth and quality of timber. It will thrive where the Larch will not. It is also used as spars and masts in the French navy. 2 year seedlings.

PINUS ROMANA.—2-years seedlings.

PINUS PALLASIANA.—2 years seedlings.

ABIES MENZIESII.—Few people are aware of the value of the timber of this beautiful tree. 2½ to 3 ft.

PICEA NOBILIS (true).—Very fine. 6 to 9 inches.

BERBERIS DARWINII.—Too much cannot be said of this fine evergreen species. It is hardy, and the profusion of its orange-coloured blossoms, together with the quantity of berries which it bears (of which pheasants are very fond), render it one of the most attractive and desirable plants for lawn, as well as cover planting ever introduced. 1 year seedlings.

BERBERIS WALLICHIANA.—1-year seedlings.

Prices will be forwarded on application.

Elvaston Nurseries, Borrowash, near Derby.

New Seeds for Exportation, carefully packed.

SUTTON AND SONS beg to inform those who may be about to send or take Seeds to the Colonies, that their NEW GRASSES and other kinds of FARM and GARDEN SEEDS are now ready for delivery, prices and particulars of which will be forwarded on application. The following are among Testimonials recently received as to the Superior Quality of their Seeds to those usually exported from this country, as well as to the very efficient manner in which their export packing is effected.—

From A. N. ELLA, Esq., *Queenstown, Cape of Good Hope.—July* 9.
"I may mention that the case referred to was in splendid order, looking as fresh after three months' sea and six weeks' land carriage as if only yesterday packed."

From Messrs. CROUCH, *Portland, Victoria.—September* 16.
"We may remark that Messrs Sutton's shipment of seeds have given the greatest satisfaction as far as they have been tried; the Grasses, Clovers, and Lucerne are up. We find the crop will be far too thick. If the vegetable seeds turn out as well, we may say that, without exception, they are the best lot of seeds ever received in this place from Europe."

From G. MORRISON, Esq., *Superintendent of the Government and Oudh Agricultural and Horticultural Society's Gardens, Lucknow.—July* 17.
"I received some vegetable seeds, also some flower seeds from your firm some 18 months ago, and they turned out first-rate."

From Sir R. MONTGOMERY, *Lieutenant-Governor, Punjaub, India.—May* 16.
"I am happy to tell you that the seeds you sent last year answered very well. I carried off the first prize both for vegetables and flowers, as you will see by an extract from the *Lahore Chronicle*, which I enclose."

From the Rev. R. G. LAMB, *Green Point, Cape Town.—November* 7.
"Your seeds have answered right well; one pinch of such as yours is worth a handful of the stuff sold here, which generally goes to seed before coming to perfection."

From Mr. CHAS. HASELDEN, *Boyce Farm, near Auckland, New Zealand.—October* 6.
"The Grass Seeds you sent me arrived in excellent condition, and already present a luxuriant appearance, with the promise of abundant feed early in the coming season."

Royal Berkshire Seed Establishment, Reading.

To the Trade.

THOMAS WARNER begs to remind his friends in the Trade, that in addition to his general NURSERY STOCK, he has the following in immense quantities, all finely grown, well rooted, and vigorous, and at moderate prices, as seen in his "Trade List" for the present season.

FRUIT TREES.

Apricots, Dwarf Maiden Moor Park; Cherries, Dwarf Maiden, on common and Mahaleb Stocks; Currants, Houghton Castle or Victoria; Nectarines and Peaches, Dwarf-trained (of these it may be said, that for symmetry and vigour such are seldom seen, each tree having from five to nine shoots.)

ORNAMENTAL TREES AND SHRUBS.

Abies alba, 1 to 3 ft.; Arbor-vitæ, American, 1 to 3 ft.; A. Siberian, 1½ to 3 ft.; Aucuba japonica, 9 in. to 2 ft.; Berberis, Red-fruited, 1½ to 3 ft.; Box, Tree, Common (gold-edged), 1 to 2 ft.; Cedrus atlantica, 1 to 2½ ft.; Chestnut, Scarlet-flowered, 4 to 8 ft.; Cytisus, Purple, Yellow, and White flowered. Standards Elm, Chichester, 5 to 8 ft.; English, 1 to 5 ft.; Exeter, 6 to 8 ft.; Giant, 5 to 8 ft.; New Silver-striped, 4 to 6 ft.; Purple-leaved, 6 to 8 ft.; Siberian, 5 to 9 ft.; Weeping, Scampston's, with fine heads, on stout stems, 8 to 10 ft.; Wheatley, 5 to 8 ft.; Holly, 1-year Seedling; Pinus austriaca, 1 to 2 ft.; Savin, 1 to 2 ft.; Sycamores, Purple and Variegated-leaved, 4 to 6 ft.; Symphoria glomerata variegata; Weigela amabilis and rosea; Willow, Weeping (common), 5 to 7 ft.; Yew, English, 1-year Seedling, 2-years Bedded do., 1 to 3 ft. (transplanted Spring 1864); Yew, Irish, 1 to 4 ft., pruned to single stems; Vinca elegantissima, in pots.

FOREST TREES.

Fir, Spruce, 9 in. to 2 ft.; Poplar, Bermuda, or Ontario, 5 to 6 ft.; Black Italian, 3 to 6 ft.; Snowberry, 3 to 4 ft.; Sycamore, 2 to 3 ft.; Thorns, Black, 1½ to 4 ft.

GIANT ASPARAGUS, 1 and 2-years.

From unknown correspondents a satisfactory reference or cash payment is required, to prevent delay.

The Nurseries, Leicester Abbey.

J. C. WHEELER & SON, SEED GROWERS, GLOUCESTER.

THE NEW POTATO, MILKY WHITE.

4s. per Peck; or 4s. 6d. per Peck, including bag.

We have the pleasure of inviting attention to this most excellent Second Early variety. In introducing it last year we pronounced it to be "the FINEST POTATO ever raised, perfectly White, Mealy, and of excellent Flavour." Its merits have been tested in different parts of the country, and the result has been most gratifying. We have received many Letters fully confirming the good opinion we entertained of it.

The following are a few Extracts :—

Cardiff — "Having been induced to give your Milky White and Gloucestershire Kidney a trial, I am well satisfied with the result. I would particularly recommend the Milky White to the notice of Potato growers and consumers, as being an excellent cropper and possessing fine flavour, and cooks dry and floury. *I don't think it possible to have a better second early.*"—GEORGE ROBINSON, *Caston, Cardiff.*

Chipping Sodbury — "Last season was a very bad one with us for every kind of Potato; but of the sorts grown by me, your Milky Whites were decidedly the best."—W. J. CURTLETON, *Cromhall Rectory, Chipping Sodbury.*

Kidderminster — "Your Milky White Potato is excellent, a great cropper, very mealy, and delicately flavoured, early, and remarkably free from disease. It was about the only Potato in my garden that was entirely free from it. It appears likely to turn out a good Keeper, as well as being fit for the table early in the season."—WILLIAM ROBBS, M.D., F.R.C.S., *Kidderminster.*

Devon — "The Milky White Potatoes were much approved, and turned out a large crop of excellent quality. They were often cooked by way of a treat."—THOMAS PHILEMAN, *Broadhaymett.*

Ellington — "The Milky White produced a capital crop, and of very superior quality. They were generally noticed when upon the table."—W. LADDS, *Ellington.*

London — "Mr. Langdale begs to say he is perfectly satisfied with the Milky White, but the season on his light soil was too hot to give them a fair chance."—*Nos. 6, Fitzhugh Road, Hampstead.*

Tenby — "The Milky Whites are, in my opinion, quite equal to your description. They are a good cropper, and are in colour and flavour superior to any I have ever grown."—THOMAS BIGGS, *Glendowen, Tenby.*

Pembroke — "Your Milky White turned out excellent, both in crop and quality. I intend to grow it largely next season."—GEO. SCOTLER, *Gardener to* Earl Cawdor, *Stackpole Court, Pembroke.*

Dorset — "I found the Milky White Potato first-rate in every way in crop, and for table, and I intend to grow it regularly."—P. H. BOWER, *Parkstone Rectory, Dorset.*

Gloucester — "The peck of Milky White Potatoes were planted on a border how under trees, and produced the enormous weight of 71 lbs.—such a crop I have never before seen. There were very few small ones. They are very white, mealy, and of excellent flavour."—R. GREEN, *Gardener to* Lady Crosmie, *Witcombe Park, Gloucester.*

Cowbridge — "I found the Milky White very good, indeed excellent. Mr Gardener speaks well of the Gloucestershire Kidney."—M. ENTWISTLE, *Llanblethian, Cowbridge.*

Tadcaster — "I can fairly describe your Milky White to be a most productive and early Potato and an abundant cropper, of excellent flavour, mealy, and white when boiled."—E. CLEETON, *Gardener to* Sir W. Milner, Bart., *Nunnington, Tadcaster.*

Cardiff — "I had one peck of the Milky White, which produced 120 lb., fit for table, of fine size and quality, boiled very mealy and quite free from disease, besides small for the pigs."—THOMAS CHALMAN, *Gardener to* William Lewis, Esq., *The Heath, Cardiff.*

Pembroke — "Your Milky White is everything that can be desired. It is purely white, a good cropper, and peculiarly free from disease, scarcely a tuber having been affected by the prevailing blight of this season."—HENRY HUDSON, *The Elms, Pershore.*

Lancaster — "The Milky White proved better than I expected. Their flavour is excellent."—JOHN EDWARDS, *Dalton-in-Furness, Lancaster.*

Ross — "The Milky White is one of the finest I have had the pleasure of eating."—Mrs. JONES, *Hilston Lodge, Ross.*

Huntingdon — "I grew about 20 different sorts of Potatoes last year, and I have no hesitation in pronouncing the Milky White the best in flavour and appearance."—J. H. WILKINSON, *Godmanchester, Huntingdon.*

King's Lynn — "I have much pleasure in bearing testimony to the excellence of the Potatoes with which you supplied me last season. The Milky White, especially, were unsurpassed by any Potato I ever had on my table."—EDWARD SHARMAN SPURGIN, *Tuckwell Rectory, King's Lynn.*

Acton Burnell — "I found the Milky White to be of first-rate quality for a gentleman's table, and a good cropper."—Mr. JOHN EDWARDS, *Gardener to* Sir F. C. Smythe, Bart., *Acton Burnell.*

Andover Road — "I found your Milky White a very good sort; they boil very white and floury. Unfortunately, I lost a great part of them from the disease. They yielded, however, very well."—W. H. STANTON, *Hockton Rectory, Andover Road.*

London — "The Milky White boiled well, and are first-class in every respect."—WM. BARTLEMAN, Messrs. Peter Lawson & Son, *London.*

London — "Your Milky White Potato is superb."—Messrs. BARR & SUGDEN, *Covent Garden.*

Llandilo — "Your Milky White turned out exceedingly good. The produce was well flavoured, and free from disease."—R. B. WILLIAMS, *Llandilo.*

Cotteril — "I have much pleasure in informing you that the produce of the seed (Milky White) you sent was excellent."—GEORGE MORANT, *Cotteril.*

Salisbury — "I have the pleasure to say that the Milky White gave very great satisfaction, and I consider them to be an excellent variety."—R. GRAVES WALKER, *Salisbury.*

Owing to the large demand for this variety, we regret to state that we cannot spare any more to the Trade this season, but we shall be pleased to book Orders for next year.

THE FOLLOWING FIRMS HAVE ALREADY ORDERED :—

Messrs. JAMES CARTER & Co., 237, High Holborn, London, W.C.
Mr. JAMES VEITCH, King's Road, Chelsea, S.W.
Messrs. BARR & SUGDEN, 12, King Street, Covent Garden, W.C.
Messrs. PAUL & SON, Cheshunt, Herts, N.
Messrs. JACOB WRENCH & SONS, London Bridge
Messrs. JAMES GARAWAY & Co., Bristol.

In consequence of the limited supply of this new Potato Milky White, early Orders are necessary.

This Advertisement will not be repeated.

OUR LITTLE BOOK OR SELECT SEED LIST FOR 1866

Is now ready, and will be forwarded on application.

It contains a choice selection of all the most desirable varieties of VEGETABLE and FLOWER SEEDS, and SEED POTATOS.

J. C. WHEELER AND SON, SEED GROWERS, GLOUCESTER.

PLANTERS engaged in PLANTING for immediate effect, can be supplied with handsome CEDRUS DEODARA, from 8 to 10 and 20 feet high, well rooted, and safe to transplant.
Prices sent on application.
WM. MAULE & SONS, The Nurseries, Bristol.

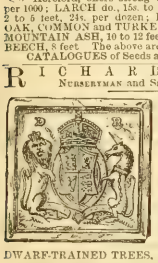
WM. VIRGO AND SON having a surplus stock of the undermentioned FRUIT, FOREST, and other TREES, can offer them at very reduced prices, viz. :—

Standard and Dwarf Apples	Alder, 2 to 3 feet
Standard and Dwarf Pears	Larch Fr., 2 to 3 feet.
Standard and Dwarf Trained Cherries (very fine)	Spruce Fir, 1½ inches, 2 and 3 feet
Hazel, 2 to 3 feet	Berberis Aquifolium, 1 foot
Birch, 2 to 3 and 4 feet	,, dulcis, 2 feet
Spanish Chestnut, 2 to 3 feet	Portugal Laurel, 2 feet
Withy, 3 to 4 and 5 feet	Common Laurel, 2 to 3 feet
	Privet, 18 inches to 2 feet

Also a large quantity of Trees fit for beltng.
Prices of the above can be had on application at the Nursery, Wonersh, near Guildford, Surrey.

GEORGE DAVISON, NURSERYMAN AND SEEDSMAN, Hereford, offers strong Transplanted QUICK, 4 years, at 20s. per 1000; LARCH do., 15s. to 20s. per 1000; fine CONIFERS, from 2 to 5 feet, 24s. per dozen; HORSE CHESTNUTS, 9 to 10 feet; OAK, COMMON and TURKEY, 1 to 2 feet; MAPLE, 2 to 12 feet; MOUNTAIN ASH, 10 to 12 feet; BIRCH, do.; HORNBEAM, do.; BEECH, 4 feet. The above are well suited for Avenues.
CATALOGUES of Seeds and Nursery Stock on application.

RICHARD SMITH,
NURSERYMAN AND SEED MERCHANT, Worcester.



ROSES.—12 of the very best Standard, Perpetual, and Moss Roses for 12s.; 50 for 63s.; 100 for £12. 12 ditto Dwarf do. do. for 12s.; 50 for 42s.; 100 for 75s.
12 ditto, New Sorts of 1865, for 24s.
Descriptive List on application.

FORTY ACRES of FRUIT TREES.—Apples, Pears, Plums, Cherries, Peaches, Nectarines, and Apricots in every form desired for Fruiting.

DWARF-TRAINED TREES, by the Thousand, Hundred, or Dozen.
APPLES, PEARS, PLUMS, CHERRIES, PEACHES, and NECTARINES.
Fine, flat, well-trained, of best quality, and true to name.

PYRAMID APPLES, PEARS, PLUMS, CHERRIES.
Beautiful Trees for Garden or Orchard Houses.

ORCHARD-HOUSE TREES, Fruiting in Pots.—Peaches, Nectarines, Apricots, Cherries, Plums, Pears, Apples, Vines, and Figs.

EVERGREENS for Ornamental Planting or Avenues, handsome, well grown, and transplanted within the last two years. For prices of smaller sizes and quantities, see Conifer List.

At 30s. per dozen :—

Abies alba, 5 to 7 feet	Juniperus thuritera, 3 to 4 feet
,, Douglasii, 3 to 4 feet	Laurel, Colchic, 3 to 6 feet
,, inverta, 1½ to 2 feet	,, Portugal, Pyramids, 3 to 4 ft.
,, orientalis, 1½ to 2 feet	Pinus excelsa, 3 to 4 feet
Arbor-vitæ, American, 6 to 7 feet	,, excelsa, 5 feet
,, Siberian, 4 to 5 feet	Taxodium sempervirens, 7 to 8 ft.
Cedar, Red, 5 to 6 feet	Thuja Lobbii, 3 to 4 feet
Cryptomeria virdis, 4 to 5 feet	,, aurea, 1½ feet
Cupressus Lawsoniana, 3 to 4 feet	,, compacta, 1½ to 2 feet
,, fragrans, 3 feet	Thujopsis borealis, 3 feet
Irish Yew, 4 to 5 feet	Wellingtonia gigantea, 2 feet

At 42s. per dozen :—

Abies Douglasii, 4 to 5 feet	Pinus excelsa, 6 feet
,, inverta, 2 to 2½ feet	,, Lambertiana, 3 to 4 feet
,, orientalis, 2 to 2½ feet	,, Lobbii, 3 to 4 feet
,, pyramidalis, 2 to 2½ feet	Thuja Lobbii, 4 to 5 feet
Araucaria imbricata, 2 to 2½ feet	,, compacta, 2 to 2½ feet
Arbor-vitæ, Siberian, 5 to 6 feet	,, aurea, 2½ feet
,, American, 7 to 8 feet	Thujopsis borealis, 4 feet
Cedar, Red, 6 to 8 feet	Wellingtonia gigantea, 2½ feet
Cupressus Knightii, 6 to 7 feet	Yew, Irish, 5 to 6 feet
,, Lawsoniana, 4 to 4½ ft.	Laurels, Pyramidal, Portugal, 4 to 4½ feet
Juniperus thuritera, 4 to 5 feet	,, Colchic, 6 to 7 feet
Pinus Cembra, 4 to 5 feet	

At 60s. per dozen :—

Abies inverta, 2½ to 3 feet	Juniperus thurifera, 5 to 6 feet
,, Douglasii, 5 to 5½ feet	Laurels, Pyramid Portugal, 5 ft.
,, Menziesii, 5 to 6 feet	Pinus excelsa, 6 to 8 feet
,, orientalis, 3½ to 3 feet	,, Lambertiana, 6 to 6 feet
,, pyramidalis, 3 to 4 feet	,, Cembra, 5 to 6 feet
Araucaria imbricata, 2½ to 3 feet	Thuja japonica, 2½ to 3 feet
Arbor-vitæ, Siberian, 6 to 7 feet	,, aurea, 3 feet
Cedrus Deodara, 6 feet	Taxodium sempervirens, 8 to 10 ft.
Cupressus Knightii, 7 to 8 feet	Wellingtonia gigantea, 3 feet
,, Lawsoniana, 5 feet	Yew, Irish, 6 feet

At 84s. per dozen :—

Abies Douglasii, 7 to 8 feet	Cedrus Deodara, 7 to 8 feet
,, inverta, 3 to 4 feet	Juniperus thurifera, 6 to 7 feet
,, Menziesii, 6 to 8 feet	Pinus excelsa, 8 to 10 feet
,, orientalis, 3 to 4 feet	Taxodium sempervirens, 10 to 12ft.

Each :—

Abies Douglasii, 8 to 10 ft., 12s. 6d.	Picea nobilis, 2½ to 5 ft., 2½. to 63s.
,, ,, 10 to 12 feet, 15s.	,, Nordmanniana, 2½ to 4 feet, 5s. to 42s.
,, ,, 12 to 15 feet, 21s.	,, ,, 3 to 6ft. 6d. to 42s.
,, inverta, 4 to 5 feet, 10s. 6d.	,, ,, 4 to 6 feet, 42s. to 84s.
,, ,, 6 feet, 21s.	,, Pinsapo, 3 to 5 ft., 10s. 6d. to 42s.
Araucaria imbricata, 3 to 4 feet, 5s. 6d. to 7s.	Pinus excelsa, 10 to 12 feet, 10s. 6d.
Cedar of Lebanon, 8 to 10 feet, 21s.	,, ,, 12 to 15 feet, 15s.
,, ,, 4 to 8 ft., 21s. to 84s.	,, Lambertiana, 6 to 8 feet, 10s. 6d. to 21s.
Cedrus Deodara, 8 to 10 ft., 10s. 6d. to 21s.	Thuja incurvata, 10 to 12 feet, 10s. 6d.
Picea nobilis, 2 to 2½ feet, 10s. 6d.	Taxodium sempervirens, 12 to 15 feet, 10s. 6d. to 15s.
American Arbor-vitæ, for Hedges, 3 to 4 feet, at 30s. per 100.	
,, ,, ,, 4 to 5 feet, at 75s.	
,, ,, ,, 5 to 6 feet, at 100s.	

FLOWERING and STANDARD ORNAMENTAL TREES. At 12s. per dozen :—

Ash, Mountain, 7 to 9 feet	Chestnut, Spanish, 6 to 8 feet
Acacia, 7 to 9 feet	Hornbeam, 8 to 10 feet
Birch, Weeping, 8 to 10 feet	Poplar, Silver, 10 feet
Crab, Siberian, scarlet, 6 to 7 feet	,, Lombardy, 9 to 10 feet
,, yellow, 6 to 7 feet	Pyrus spectabilis, 6 to 7 feet

At 18s. per dozen :—

Almond, flowering, 7 to 8 feet	Chestnut, Spanish, 8 to 10 feet
Acacia, 8 to 10 feet	Cytisus, 3 to 4 feet.
Ash, Mountain, 9 to 12 feet	Elm, Chichester, 8 to 10 feet
Acer Negundo, 6 to 8 feet	Poplar, Lombardy, 11 to 12 feet
Birch, 10 to 12 feet	,, Silver, 10 to 12 feet
Crab, Siberian, yellow, 7 to 8 feet	Pyrus spectabilis, 7 to 8 feet
,, scarlet, 7 to 8 feet	Thorn, double pink, 6 to 7 feet

At 30s. per dozen :—

Almond, flowering, 8 to 10 feet	Ulmus in variety, 4 to 5 feet
Acer Negundo variegata, 6 to 8 ft.	Poplar, Silver, 12 to 15 feet
Acacia, bail, 6 to 7 feet	Thorns, double pink, 8 to 10 feet
Chestnut, scarlet, 6 to 8 feet	Willow, Ameri. Weeping, 6 to 8 ft.

RICHARD SMITH'S LIST of all the EVERGREEN FIR TRIBE, suitable for Britain, giving size, price, popular and botanical names, derivations, description, form, colour, foliage, growth, timber, use in arts, native country and size there, situation, soil, and other information, with copious Index of their synonymes.
Enlarged Edition, free by post for 12 postage stamps.

RICHARD SMITH'S FRUIT LIST contains a sketch of the various forms of Trees, with Directions for Cultivation, Soil, Drainage, Manure, Pruning, Lifting, Cropping, Treatment under Glass; also their synonymes, quality, size, form, skin, colour, flesh, flavour, use, growth, duration, season, price, &c.
Free by post for one stamp.
RICHARD SMITH, Nurseryman and Seed Merchant, Worcester.

30,000 Common Laurels,
Fine bushy plants and well rooted, from 1 to 6 feet.
WM. WOOD AND SON having a large stock of the above, will be happy to give special quotations at reduced prices.
Address, Woodlands Nursery, Maresfield, near Uckfield, Sussex.

Transplanted Larch and Quicks.
CHIVAS AND WEAVER (late GEORGE CHIVAS), of Chester, offer several Millions of TRANSPLANTED LARCH, from 1½ to 4½ feet, very stout, grown in an exposed situation; specially fine plants, and at prices greatly in favour of the buyers. Also several Millions of TRANSPLANTED QUICKS, a large quantity of which are of great strength. Also 1,000,000 LARCH, 2 and 3 years transplanted, 2 to 3 and 4 feet. A very large stock of SCOTCH FIR, twice transplanted; SPRUCE, AUSTRIAN and WEYMOUTH PINE, from 1½ to 4½ feet; SILVER, BEECH, ELM, HAZEL, PRIVET EVERGREEN, SYCAMORE, THORNS, WILLOW BLACK HUNTINGDON, in sizes as required, from 1 to 4 feet; SILVER FIR, 1 to 1½ inches; HORSE CHESTNUT, fine, and TURKEY OAK, in sizes from 2 to 6 feet; BEECH and ONTARIO POPLAR, 5 to 10 feet; YEW ENGLISH, and PORTUGAL LAUREL, fine bushy plants, moved last season, 2 to 4 feet; ARBOR VITÆ, AMERICAN, SIBERIAN, and CHINESE, fine, 3, 4, 5, 6, and 7 feet, quotations low. A considerable reduction to the Trade from our list issued.
Improved LEMON KIDNEY POTATO, the earliest and best variety, price per cwt. or ton.
Skerton Nurseries, Lancaster.

FOREST TREES, &c.—At the Nursery of the late DAVID A. REID, Park Attwood, Bewdley, Worcestershire.

	Per 1000.—s. d.
500,000 LARCH, 2 feet	10 0
500,000 LARCH, 2 to 3 feet	12 0
200,000 PEAR STOCKS, 2 to 5 feet .. .. 15s. to	50 0
100,000 SPANISH CHESTNUTS, 1-year Seedling, 1 to 2 feet..	10 0
500,000 SILVER FIR, 1-year Seedling, fine	2 0
500,000 SPRUCE, 1-year Seedling, fine	2 0
200,000 SYCAMORE, 1-year Seedling, fine	2 0
400,000 BERBERIS, 1-year Seedling, fine	2 0
20,000 WALNUTS, 1-year Seedling, fine	10 0
20,000 CUPRESSUS PYRAMIDALIS, 1-year Seedling, fine..	20 0
20,000 CUPRESSUS SEMPERVIRENS, 1-year Seedling, fine	20 0
300 Bushels PITTED HAWS	10 0

Apply, with reference, to JAMES RIDDELL, Steward, Park Attwood.

Special Offer to the Trade.
MARSH AND PERKINS, 42, Drapery, Northampton, have great pleasure in offering the following, all stout, well-rooted stuff.—

APRICOTS, Dwarf-trained	MOOR PARK, 21s. per dozen
APPLES, ,,	12s. per dozen
PEACHES, ,,	12s. per dozen
PEARS, ,,	12s. to 15s. per dozen
PLUMS, ,,	12s. to 15s. per dozen
CHERRIES, ,,	12s. per dozen
CURRANTS, RED and BLACK, 6s. per 100, 50s. per 1000	
ROSES, STANDARDS, 2 to 4 feet, 60s. per 100	
ARBOR-VITÆ, AMERICAN, 1 to 1½ feet, 6s. per 100	
,, ,, 1½ to 2 feet, 12s. per 100	
,, CHINESE and TARTARIAN, twice bedded, 6 to 12 inches, 20s. per 1000	
,, CHINESE and TARTARIAN, twice bedded, 12 to 18 inches, 30s. per 1000	
BERBERIS AQUIFOLIUM, 6 to 12 inches, 20s. per 1000	
,, 1-year cutting and 2-years' Bedded, 20s. per 1000	
BOX, GREEN, 3-years' Cuttings, 20s. per 1000	
,, Transplanted, 1 to 1½ feet, 30s. per 1000	
HOLLY, COMMON, extra Transplanted, 12 to 18 inches, 12s. per 100	
LIGUSTRUM OVALIFOLIUM, 3 to 4 feet, 1s. per 100	
PYRACANTHA, yellow berried, in pots, fine, 2 to 3 feet, 50s. per 100	
SWEET BRIAR, Seedling, 2s. per 100	
LARCH FIR, Bedded, 1 to 1½ feet, 6s. per 1000	
,, ,, 1½ to 2 feet, 9s. per 1000	
,, ,, 2 to 2½ feet, 12s. per 1000 [per 100	
,, ,, twice Transplanted, very fine, 1½ to 2 feet, 10s.	
,, Do., do., 2 to 3 feet, 15s. per 1000	
,, Do., do., 3 to 4 feet, 20s. per 1000	
SPRUCE FIR, Bedded, 6 to 12 inches, 6s. per 1000	
,, twice Transplanted, 9 to 12 inches, 12s. per 1000	
,, Do., do., 1 to 1½ feet, 16s. per 1000	
GORSE, 2-years' seedlings, fine, 4s. per 1000	
PRIVET, Transplanted, 1 to 1½ feet, 10s. per 1000	
,, 1½ to 2 feet, 15s. per 1000	
BLACKTHORN QUICK, 1-year, fine, 2s. per 1000	
,, 2-years', do., do., per 1000	

A reference or remittance required from unknown correspondents.

GENUINE NURSERY STOCK, comprising :—

TRANSPLANTED FOREST TREES.
Alder, 2 to 3 feet
Ash, 1½ to 2 feet
,, 2½ to 3 feet
Birch, 2 to 3 feet
,, 3 to 4 feet
,, 4 to 6 feet
Chestnut (Sweet), 1½ to 2½ feet
Fir (Larch), 1½ to 2 feet
,, 2 to 2½ feet
Hazel, 1½ feet
,, 2 to 3 feet
Willows, 3 feet
,, extra strong, 4 to 6 feet

CONIFERS AND HARDY EVERGREENS.
Arbutus, 1½ to 2 feet
Aucuba japonica, 1 to 2 feet
Berberis Darwinii, 1 to 2 feet
,, stenophylla, 1½ to 2 feet
Box (Tree) of sorts, 1 to 2 feet
Eugenia Ugni
,, myrtifolia
Hollies (green), 2 to 3 feet
,, (variegated), 1½ to 2½ feet
Laurels (common), 2 to 3 feet
Laurustinus, 1 foot
Privet (Box-leaf), 1½ to 2 feet
Pinus Cembra, 2 to 3 feet
,, monticola, 1 to 1½ feet
Specimen CONIFERS, in fine condition for removal, prices and size on application.
Choice named Hardy RHODODENDRONS, SCARLET, WHITE, ROSE, and PURPLES, in every shade, fine bushy plants, 1½ to 3 feet, £7 10s. to £10 per 100
RHODODENDRON PONTICUM, varieties of various sizes, from 30s. to 100s. per 100.
AZALEAS, named sorts, 40s. to 50s. per 100.
STANDARD and HALF-STANDARD ROSES, in choice varieties, straight stems, and good roots, 60s. per 100.
STANDARD and DWARF APPLES, in 50 approved kinds, 50s. to 75s. per 100.
Plans and Estimates given for Laying out and Planting New Grounds.
FOREST TREES supplied and planted by the Acre, and failures replaced.
A NEW DESCRIPTIVE and PRICED CATALOGUE of Japanese Novelties and General Nursery Stock may be had on application.
MAURICE YOUNG, Milford Nurseries, near Godalming, Surrey.

Pinus monticola, 4 to 6 feet
,, muricata, 1½ to 2½ feet
,, serotina, 1½ to 2½ feet
Picea Nordmanniana, 3 to 4 feet
,, Pinsapo, 2 to 2½ feet
Araucaria imbricata, 1½ to 2 feet
,, ,, 2 to 2½ feet
,, ,, 3 feet
,, ,, 4 feet
,, ,, 5 feet
,, ,, 6 feet
,, ,, 7 to 8 feet
Cedrus Deodara, 4 to 8 feet
,, africanus, 3 to 5 feet
,, Libani, 4 to 6 feet
Cryptomeria Lobbii, 4 to 6 feet
Cupressus Lawsoniana, 2 to 3 feet
,, macrocarpa, 2 to 3 feet
,, torulosa, 1½ to 2 feet
Juniperus chinensis, 1½ to 2 feet
,, ,, 3 feet
,, hibernica, 2½ to 3 feet
,, sabina (for covers) 2½ ft.
Taxus (Yew, common), 2 to 3 ft.
,, Irish, 2 to 6 feet
,, variegated, 1½ to 2 ft.
Thuja aurea, 1, 2, and 2½ feet, fine
,, Lobbii, 2½ to 3 feet
,, ,, 4 to 5 feet
,, Wareana, 3 to 3½ feet
Thujopsis borealis, 1½ to 2½ feet
Wellingtonia gigantea, 1 to 1½ ft.

Spring Planting.
PETER LAWSON AND SON are prepared to execute orders for every description of NURSERY STOCK suitable for FOREST and ORNAMENTAL PLANTATIONS.
To prevent disappointment, it is recommended that requirements for SPRING PLANTING should be ordered as soon as possible, and the plants may be reserved in the Nurseries until required. If large quantities of LARCH, SCOTCH FIR, CORSICAN PINE, and other leading TREES are wanted, PETER LAWSON & SON will be glad to submit special offers when desired.
Edinburgh and London, January, 1866.

Extra fine 1-year Seedling Larch and Hazel.
FRANCIS AND ARTHUR DICKSON AND SONS have several Millions of 1-year SEEDLING LARCH to Dispose of, of extra quality. Samples and prices forwarded free by post on application, stating probable quantity required. Also very fine 1-year SEEDLING HAZEL
"Upton" Nurseries, Chester.

To Land Owners and Planters.
FOR SALE, about 50,000 strong healthy LARCH, fit for Upland Planting, 7s. 6d. per 1000.
75,000 strong grown, 2 to 3 feet, good roots, 50,000 ditto 3 to 4 feet.
No charge for samples of 50 of either size.
TO THE TRADE.—150,000 SEEDLING THORNS, 2 years, strong, 2s. 6d. per 1000.
Address WILLIAM TRESEDER, Nurseryman, Cardiff.

Upper Kendalstown Nurseries, Delgany, Co. Wicklow.
M. P. PENNICK begs to announce that he has a fine stock of the following:—CRYPTOMERIA JAPONICA, 2½ to 3 feet high; CEDAR of LEBANON, 2 to 3 feet; UPRIGHT or IRISH YEWS, 1 to 7 feet; SWEET BAYS, 2 to 2½ feet; CHINESE ARBOR-VITÆ, do. The above are generally handsome, healthy, and well rooted. Prices moderate, on application.

Special Offer.
JOHN KEARSLEY AND SONS, NURSERYMEN, Leeds, beg to offer the following. They are all fine stuff, and on Land which must be cleared.

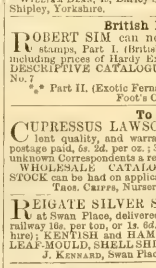
Per 100.—s. d.	Per 100.—s. d.
3000 Standard Pears .. 50 0	3000 Scotsie, 2 years 4 0
500 Dwarf ditto 40 0	500 Ontario Poplars, 10 feet 7 0
4000 Red Grape Currants.. 4 0	8000 Lombardy ditto, 10 feet 7 0
2000 Black Naples ditto .. 4 0	2000 pairs choice Carnations
10,000 Grand Asparagus, 2 yrs. 3 0	and Picotees, in bloom, in
500 Standard Scarlet Crabs 42 0	pots, per 100 pairs .. 50 0

Scotch Laurels and Gorse &c.
G. FROST offers 1-year English GORSE or FURZE, very fine, at 2s. per 1000; 2-years, 3s. 6d.; transplanted, 1 to 1½ feet, 7s. 6d.; 1½ to 2 feet, 12s. 6d. LAURELS, fine transplanted, and very bushy, 1 to 2 feet, 10s. per 100; 2 to 3 feet, 15s. per 100; 3 to 3½ feet, 15s. per 100, 140s. per 1000; 2 to 3 feet, splendid stuff, 20s. per 100, 180s. per 1000. English OAK, transplanted, 1 to 1½ feet, 14s. per 1000. SYCAMORE, transplanted, 10 to 16 inches, 10s. per 1000. Also a large quantity of 2-years transplanted SCOTCH, very fine stuff: 1-year BEECH, OAK, and APPLES.
Nurseries, Bampton, Devon.

To the Trade—Offer of 1-year Beech.
G. FROST, having a large stock of the above, will Sell 100,000 for £6 10s., 500,000 for £12 10s. These low prices are for cash only.
WANTED, APPLE STOCKS, must be of very clean healthy growth, and as thick as the fore-finger.
Nurseries, Bampton, Devon.

JOHN GRIGOR AND CO., Nurseries, Forres, Scotland, have received the numerous Premiums awarded by the Highland and Agricultural Society for the Cultivation of the True Native HIGHLAND SCOTCH PINE, and beg to offer strong 1-year Seedlings: also LARCH, hardy plants, grown from Seed collected in some of the best forests in the North of Scotland. Prices on application.

TO GENTLEMEN PLANTING.
EUROPEAN LARCH, transplanted, extra, for rough ground, 15s. per 1000.
,, ,, ,, medium 10s. ,,
,, ,, ,, high 7s. ,,
SCOTCH, 2 and 3 years, 15s. per 1000.
PORTUGAL LAURELS, fine, 2 to 3 feet, 12s. per 100.
ASHLEAF KIDNEY, 30s per bushel. This Potato is well-known by Messrs. Fisher, Nurserymen, Annan; we have received many orders through them and others in the trade.
Our country Nursery grows very superior plants of the Fir tribe—adjoining Lowther Castle extensive obtainers, where some of the finest timber in England is standing, all from our Establishment. William Stephens, Esq., has the care of these fine forests, and will inform any gentleman the description of our soil and quality of our nursery stock.
JOHN and THOMAS DICKSON & SONS, Penrith.

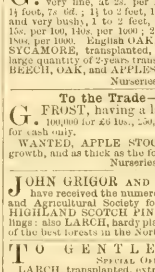


KITCHEN GARDEN, FLOWER, and AGRICULTURAL SEEDS.—The inhabitants of Leeds, Bradford, Huddersfield, Wakefield, Halifax, and adjacent towns and districts, can procure from the undersigned, FIRST-CLASS SEEDS, without sending so far away for them. WARRANTED EQUAL IN QUALITY TO THOSE SOLD BY ANY HOUSE IN THE KINGDOM.
A DESCRIPTIVE CATALOGUE, containing many Novelties, can be had on application.
WILLIAM DEAN, 49, Darley Street, Bradford; and Bradford Nursery, Shipley, Yorkshire.

British Fern Catalogue.
ROBERT SIM can now send, post free for six postage stamps, Part I. (British Ferns and their varieties, 36 pages, including prices of Hardy Exotic Ferns of his NEW and PRICED DESCRIPTIVE CATALOGUE of BRITISH and EXOTIC FERNS, No. 7
*** Part II. (Exotic Ferns) will be issued as early as possible.
Foot's Cray Nursery, S.E.

To the Trade.
CUPRESSUS LAWSONIANA SEED (true), of excellent quality, and warranted crop of present season. Price, postage paid, 6s. 2d. per oz.; 32s. per half lb.; 60s. per lb. nett. From unknown Correspondents a remittance must accompany order.
WHOLESALE CATALOGUE of GENERAL NURSERY STOCK can be had on application to
Thos. CRIPPS, Nurseryman, Tunbridge Wells, Kent.

REIGATE SILVER SAND (best quality), 12s. per ton, at Swan Place, delivered five miles, or to any London wharf or railway 16s. per ton, or 1s. 6d. per bushel bag, at coast prices or on rail; KENTISH and HAMPSHIRE PEATS, YELLOW LOAM, LEAF-MOULD, SHELL SHINGLE, and COCOA-FIBRE REFUSE.
J. KENNARD, Swan Place, Old Kent Road, London, S.E.



COCOA-NUT REFUSE delivered within 24 miles of Charing Cross, at 5s. per load.
For particulars, and how to use it, see long Advertisement in *Gardeners' Chronicle* of the 21st March, 1863; or apply to the PATENT COCOA FIBRE COMPANY, Kingston-upon-Thames.
Postage Stamps or Post-office Orders payable to J. BARSHAM & Co.

BARSHAM'S BRUSHES and MATS are sold in every town.

CAUTION.—Every Brush is stamped, J. BARSHAM'S Patent.

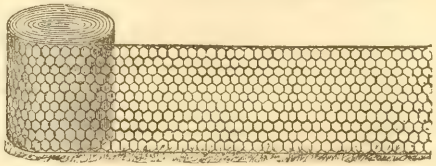
Thomson's Styptic for Preventing the Bleeding of Vines.
BALLANTYNE AND SON have been appointed Agents for the Sale of THOMSON'S STYPTIC, which is highly recommended as being the most effectual remedy yet introduced, and all who have used it testify to its worth. In Bottles, price 5s., with full directions for use. The Trade supplied on liberal terms.
The Nursery and Seed Establishment, Dalkeith.

J. B. BROWN & CO.'S

NEW IMPROVED PREMIUM WIRE NETTING.

REDUCED PRICES, FEBRUARY 1866.

GREAT IMPROVEMENT IN GALVANISING,



WITH REDUCED PRICE, AND GALVANISED AFTER MADE.

PRICES PER LINEAL YARD, 24 INCHES HIGH.

Size of Mesh.	Mostly used for	Light.		Medium.		Strong.		Extra Strong.	
		Japanned.	Galvanised.	Japanned.	Galvanised.	Japanned.	Galvanised.	Japanned.	Galvanised.
2¼ inch	Dogs or Poultry	2½d.	3¾d.	3¾d.	4½d.	4d.	5½d.	5d.	6¾d.
2 inch	Poultry	2¾d.	3¾d.	3¾d.	4½d.	4½d.	5¾d.	5¾d.	7d.
1½ inch	Small Rabbits, Hares, &c.	3½d.	4½d.	4½d.	5½d.	5d.	6¾d.	6¾d.	8d.
1¼ inch	Smallest Rabbits	4½d.	5½d.	5½d.	6¾d.	6¾d.	8d.	8d.	10d.
1 inch	Pheasantries, &c.	8d.	10d.	9½d.	1s. 0¼d.	1s. 1¼d.	1s. 4d.	1s. 7d.	1s. 10d.
¾ inch	Aviaries, &c.	11d.	1s. 1¼d.	1s. 1¼d.	1s. 4d.	1s. 4d.	1s. 7d.	..	..

Quantities of 100 yards or upwards delivered Free at all the principal Railway Stations and Shipping Ports in England; and 200 yards or upwards delivered Free to most parts of Scotland and Ireland.

Every description of Netting warranted to give satisfaction, and if not approved will be exchanged, or may be returned unconditionally.

IRON HURDLES, CONTINUOUS BAR FENCING, IRON and WIRE FENCING, FENCING WIRE, FIELD and ENTRANCE GATES, LAWN MOWING MACHINES, GARDEN ENGINES, GARDEN ROLLERS, GARDEN SEATS and CHAIRS, CAST-IRON VASES, and every description of HORTICULTURAL and AGRICULTURAL MACHINES, TOOLS and APPLIANCES.

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NEARLY OPPOSITE ST. SWITHIN'S LANE and "LONDON STONE," and near LONDON BRIDGE.

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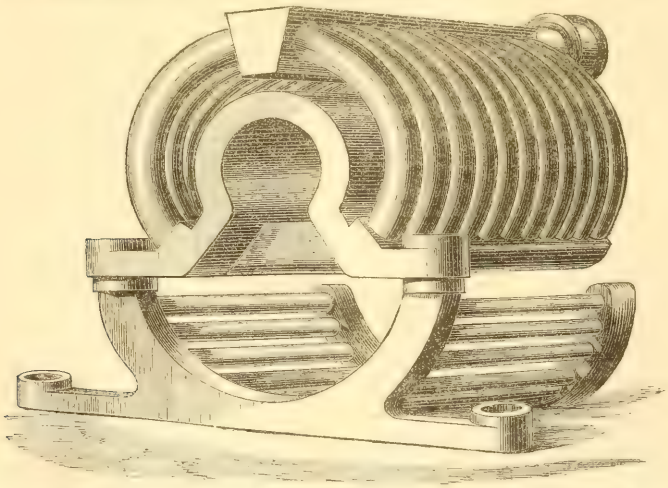
OPPOSITE the CITY of LONDON BREWERY, and close to the LONDON BRIDGE STEAM BOAT PIERS.

BY ROYAL LETTERS PATENT.

CUMMING & EDMONDS'

CAST-IRON TUBULAR ARCHED SADDLE BOILER,

FOR HEATING CONSERVATORIES, HOTHOUSES, CHURCHES, MANSIONS, &c., BY HOT WATER.



A BOILER of great power, economy, and quick action, combining all the advantages of the SADDLE and UPRIGHT TUBULAR; nearly every portion being subject to the close and direct radiating action of the fire. It is particularly adapted for living in low, swampy localities, for which purpose it will be found invaluable, and capable of being set in ONE-THIRD LESS DEPTH than the Upright Tubular, or any other Boiler, either of wrought or cast-iron, of equal capacity.

A WRITTEN GUARANTEE GIVEN WITH EACH BOILER.

Prices and further particulars may be obtained of the Inventors and Patentees.

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CONSERVATORY ARCHITECTS, HORTICULTURAL BUILDERS, AND HOT-WATER APPARATUS MANUFACTURERS,

STAMFORD BRIDGE, FULHAM ROAD, LONDON, S.W.

Established 1812.

PROCTOR and RYLAND'S prepared BONE MANURES, for Turnips, Swedes, Wheat, Barley, Oats, Potatoes, &c.; and their BONE SUPERPHOSPHATE of LIME, are the best prepared and cheapest Manures offered to the public.
Offices: Corn Exchange Buildings, Carr's Lane, Birmingham.
Works: Birmingham, Warwick, Bristol, and Chester.

LAWES' MANURES.

The Manures manufactured by J. B. LAWES for the present season of 1866 are now ready for delivery at his Factories, at the following prices, per ton:—

	£	s.	d.
LAWES' PATENT TURNIP MANURE, and BONE SUPERPHOSPHATE OF LIME	6	6	0
LAWES' SUPERPHOSPHATE OF LIME from BURNT BONE or MINERAL PHOSPHATES	5	5	0
LAWES' WHEAT, BARLEY, GRASS, and MANGEL MANURES	5	0	0
CONCENTRATED COIN and GRASS MANURE	12	0	0

These Manures can be obtained of Mr. LAWES, or through the appointed Agents in all parts of the United Kingdom, at prices varying according to the cost of carriage.
Genuine Peruvian Guano direct from the Importers. Nitrate of Soda, Sulphate of Ammonia, and other Chemical Manures.
American and other Cakes at market prices.
Address, JOHN BENNET LAWES, 1, Adelaide Place, London Bridge, E.C.; and 22, Eden Quay, Dublin.

THE PATENT NITRO-PHOSPHATE or BLOOD MANURE COMPANY, LIMITED, Manufacturers of ODAMS'S PATENT BLOOD MANURE, GUANO and BONES. ODAMS'S SUPERPHOSPHATE of LIME and DISSOLVED BONES.
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This Company was originally formed by and is under the Direction of Agriculturists, or at most those that have lately carried on another Trade, viz.—THE PEASANT'S FRIEND COMPANY.
Its Members are Cultivators of upwards of 50,000 Acres of Land, which has been for years under management with Manures of their own Manufacture. The Company, therefore, has the best Guarantee for the genuineness and efficacy of the Manures manufactured by this Company.
A Prospectus will be forwarded on application to the Secretary, or may be had of the local Agents.
T. P. MUNDAY, Secretary.
Chief Offices, 109, Fenchurch Street, London, E.C.

THE LONDON MANURE COMPANY
(ESTABLISHED 1840),
Have now ready for delivery
WHEAT, BARLEY, and Autumnal Sowing,
DISSOLVED BONES, for Dressing Pasture Lands.
SUPERPHOSPHATES of LIME, &c.
Genuine PERUVIAN GUANO, NITRATE of SODA, ex Dock Warehouse, SULPHATE of AMMONIA, FISHERY SALT, &c.
Offices, 116, Fenchurch Street, E.C. EDWARD PURSER, Secretary.

INTERNATIONAL HORTICULTURAL EXHIBITION and BOTANICAL CONGRESS.—Those who are preparing Plants for the above Exhibition should feed them liberally with STANDEN'S GARDENERS' and LADY AMATEURS FRIEND. Sold by the leading Nurserymen and Seedsmen.

Red Spider

GISHURST COMPOUND, whether used against Insects and Mildew, on Growing Plants, or as Winter Dressing on Trees at rest, should be dissolved 48 hours before use. This gets rid of Smell, and if the Solution be decanted, prevents any staining of Linen. A strength of from 1 in 100 to 1 in 150 of water is recommended for growing Plants; one from 4 to 16 oz. for Trees at rest.
Sold, too, the original GASEOUS FLUID, for Debility and Exhaustion in Ewes after Lambing, for Diarrhœa in Calves and Lambs, and for Colic and Gripes in Horses and Cattle in feverish cases, and for cleansing in Ewes and Cows, a dose of the "Red Drench" should be given.
Mr. BOWICK, Author of the Prize Essay on the "Rearing of Calves," says:—"I have reared 26 calves this year, and by the use of the GISCOMB FLUID I have not lost one."
Price 1s. 6d. per bottle, or one dozen in a wooden box, 20s.
Full Directions for use given with each article. Prepared by the original and only proprietors—DAY, SON, & HEWITT, 24, Dorset Street, Baker Street, London, W.

Magnified.

Cattle Plague.

PUBLIC NOTICE—REPORT of the ROYAL COMMISSION.
See "Sanitary Recommendations and General Precautions to Prevent the Spread of Cattle Disease."

THE DISINFECTING POWDER DESCRIBED IN THE REPORT IS
McDOUGALL'S PATENT DISINFECTING POWDER. It is commended as the best means of Disinfecting Cattle Sheds, Farm Buildings, &c. Sold in bags, 1 cwt. each, at 30s. 6d.; 2 cwt. do., 60s.; Package put on Rail, 5s. extra and upwards.
For Washing the bodies of both Healthy and Sick Cattle the Commissioners strongly recommend McDOUGALL'S PATENT DISINFECTING SOAP. Sold in 5lb. Canisters at 2s. 6d.; 10lb., 4s.; 20lb. kegs, 8s.; 50lb., 28s. Directions for use in each package.
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HENRY APPLEBY, Foreman to Messrs. Ivery & Son, Dorking, Surrey.

FOWLER'S PATENT STEAM PLOUGH and CULTIVATOR may be seen at Work in every Agricultural County in England. For particulars apply to
JOHN FOWLER & Co., 28, Cornhill, London, E.C.; and Steam Plough Works, Leeds.

MUSGRAVE'S PATENT IRON COW STALLS and PIGGERIES, with fresh Air Inlets, as used in the Government Model Farms.

MUSGRAVES PATENT STABLE and HARNESS FITTINGS, adopted by His Royal Highness the Prince of Wales for Sandringham.
MUSGRAVES PATENT SLOW-COMBUSTION STOVES, employed by the Ecclesiastical Commissioners.
THE PATENT IRON COW STALLS and AIR INLETS are perfect in their arrangements for Feeding and Ventilation; every part being of iron they are indestructible, inexpensive, very compact, cleanly, and healthful for the animal. Should sickness occur, if the iron walls be painted and the walls washed with lime, they can neither harbour nor communicate contagion. This system in fact is found to be the only true Safeguard against the Spread of Epidemic.
Priced Engravings of all these Inventions sent post free on application to MUSGRAVE BROTHERS, Ann Street Iron Works, Belfast.

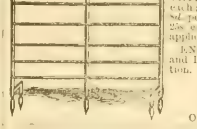
Oil Paint no longer Necessary.

HILL and SMITH'S PATENT BLACK VARNISH for preserving Iron Work, Wood, or Stone. This Varnish is an excellent substitute for oil paint on all exterior work, and is fully two-thirds cheaper. It may be applied by ordinary labourer, requires no mixing or thinning, and is used cold. It is used in the grounds of Windsor Castle, Kew Gardens, and at the seats of many hundreds of the nobility and gentry, to whom the most flattering testimonials have been received, which HILL & SMITH will forward on application.

From MAJOR RI BELL, *Sandton, Northumberland*
"I have much pleasure in stating I have known your Black Varnish to be used for some time by friends of mine, and they all speak highly of it, which has induced me to get the quantity I have from you. That I have used looks remarkably well."
Sold in casks of about 30 gallons each, at 1s. 6d. per gallon, at the Manufactory, or 1s. 8d. per gallon put to any Station in the kingdom.
Apply to HILL & SMITH, Brierly Hill Iron Works, near Dudley, and 22, Cannon Street West, E.C. from whom only it can be obtained.

Iron Hurdles, Fencing, and Gates.

COTTAM'S HURDLES are made in the best manner of superior Wrought Iron.



SHEEP HURDLES, from 4s.; CATTLE HURDLES, from 4s. 8d. each; CONTINUOUS FENCE, from 8d. per foot; FIELD GATES, from 25s. each. Illustrated Price List on application.
ENTRANCE GATES, RAILING, and IRON WORK of every description. Designs and Estimates free of
COTTAM & Co.,
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GALVANISED IRON WATER CISTERNS.
Cheap, light, and durable, will not rust or corrode, and keep water perfectly sweet.

To hold	Each.
50 gallons,	18s. 6d.
70 gallons,	22s. 6d.
80 gallons,	31s. 0d.
100 gallons,	36s. 0d.
130 gallons,	39s. 0d.
140 gallons,	42s. 0d.
200 gallons,	60s. 0d.
250 gallons,	72s. 0d.

With Lid and Brass Tap.

GALVANISED WIRE STRAND CABLE FENCING.
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IMPROVED GALVANISED WIRE NETTING.
HURDLES, HURDLES, HURDLES, 1s. 9d. to 3s. 9d. per yard.
PATENT STRAINING PILLARS, &c.
GALVANISED IRON PUMPS.
GALVANISED SWING WATER BARROWS.
LAWN MOWERS, GARDEN ROLLERS.
ASPHALTE ROOFING FELT, 1d. per square foot.
MOLLEY & GREEN, late H. J. MORTON & Co.
Illustrated Catalogues and Estimates free on application.
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D. FERGUSON, LANDSCAPE GARDENER, CONTRACTING PLANTER, and VALUER of NURSERY STOCK, &c.
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Garden Architect, Improver of Land Planting, &c.
MR. NEWTON, 20, Eastbourne Terrace, London, W., attends to advise or carry out Alterations. References given to important Works completed in many parts of England and Ireland. Workmen and Plans provided for the Continent and America.

GARDEN BORDER EDGING TILES, in great variety of patterns and material, the plainer sorts being especially suited for KITCHEN GARDENS, as they harbour no slugs and Insects, take up little room, and once put down incur no further labour and expense, as do "grown" Edgings, consequently being much cheaper.

GARDEN VASES, FOUNTAINS, &c., in Artificial Stone, of great durability, and in great variety of design.
F. & G. ROSHER, Manufacturers, Upper Ground Street, Blackfriars, S.; Queen's Road West, Chelsea, S.W.; Kingsland Road, Kingsland, N.E.
Sole London Agents for FOXLEY'S PATENT GARDEN WALL BRICKS. Illustrated Price Lists free by post. The Trade supplied.

ORNAMENTAL PAVING TILES for Conservatories, Halls, Corridors, Balconies, &c., as cheap and durable as Stone, in blue, red, and buff colours, and capable of forming a variety of Designs.
Also TESSELATED PAVEMENTS of more enriched designs than the above.
WHITE GLAZED TILES, for Lining Walls of Dairies, Larders, Kitchen Ranges, Baths, &c. Grounds and other Stable Paving Bricks of great durability, Dutch and Adamantine Clinkers, Wall Copings, Red and Stoneware Drain Pipes, Slates, Cements, &c.
To be obtained of F. & G. ROSHER, at their Premises as above.

SILVER SAND (REIGATE, best quality), at the above addresses—1s. per Ton, or 1s. 3d. per Bushel; 2s. per Ton extra for delivery within three miles, and to any London Railway or Wharf. Quantities of 5 Tons, 9s. per Ton delivered.
FLINTS, BRICK BURRS or CLINKERS, for Rockeries or Grotto Work.
F. & G. ROSHER.—Addresses see above.
N.B. Orders promptly executed by Railway

Weymouth and Portland.

TO BE DISPOSED OF, a First-class NURSERY, SEED, FLORAL, FRUIT, and GREENGROCERY BUSINESS. Established seven years. No other Nursery or Floral Business in either place. Satisfactory reasons for selling, and good references, &c.
Address ALPHA, Weymouth, Dorset.

Nursery for Private Sale.

TO BE DISPOSED OF, an Old-established NURSERY at the Westend of London, doing a first-class ready-money Business, and parted with solely on account of ill health. Established 12 years. Rent nominal. Price £1,000. Stock, Sound and Clean.
For further particulars and Cards to view apply to Mr. J. C. STEVENS, Horticultural Auctioneer and Valuer, 38, King Street, Covent Garden, London, W.C.

Sales by Auction.

SALE THIS DAY AT HALF-PAST TWELVE PRECISELY.

Consignment of Plants from Wiltshire.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on SATURDAY, January 27, at half-past 12 o'Clock precisely, a first-class COLLECTION of PLANTS, consisting of Roses, Cotoneasters, Biotas, Ficeas, Vines, Arbutuses, Ivies, Holly, Wellingtonias, Azaleas, Rhododendrons, Weigelas, Deutzias, Calycanthus, Figs, Clematis, Spireas, Escallonias, Yuccas, Mahonias, Laurels, &c. Also a first-rate consignment of FRUIT TREES.
On view the Morning of Sale, and Catalogues had.

Cedrus Deodara Seed, just arrived per Mail Steamer.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY, January 29, at half-past 12 o'Clock precisely, several hundred pounds weight of clean Seed of CEDRUS DEODARA, just arrived per Mail Steamer.
On view the Morning of Sale, and Catalogues had.

Seeds.

MR. J. C. STEVENS will include in his SALE, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY, January 29, at half-past 12 o'Clock precisely, a large quantity of clean SEED of WELLINGTONIA GIGANTEA, ABIES NOBILIS, A. MENZIESII, A. MORINDA, A. PICEA GRANDIS, P. NORDMANNIANA, PINUS JEFFREYI, P. MONTICOLA, P. INSIGNIS, P. PONDEROSA, &c
On view the Morning of Sale, and Catalogues had.

Consignment of First-class Hardy Trees and Shrubs

The Property of an Old-established Nurseryman in Surrey.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY, January 30, at half-past 12 o'Clock precisely, without the Reserve, a first-class consignment of HARDY TREES and SHRUBS from one of the most established Nurseries in Surrey, consisting of Variegated Hollies, Common and Portugal Laurels, Standard and Dwarf Roses, Conifers, Quicks, Box, Weigelas, Yuccas, Clematis, Privet, Spireas, Berberis, Arundo Donax, and Sedum Roots, Raspberry Canes, &c.; also an importation from the South of France, consisting of Standard, Dwarf, and Pyramid Fruit Trees, Lilacs, and other trees and shrubs.
On view the Morning of Sale, and Catalogues had.

Standard and Dwarf Roses, Fruit Trees, Bulbs, Shrubs, &c.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, January 31, at half-past 12 o'Clock precisely, 1200 fine named Standard, Half Standard, and Dwarf ROSES, GLADIOLI BULBS, in splendid named Standard, Dwarf, Pyramid, and Trained FRUIT TREES; and a great variety of Hardy and Ornamental Trees and Shrubs.
On view the Morning of Sale, and Catalogues had.

Consignment of Greenhouse and Hardy Plants from Ghent.

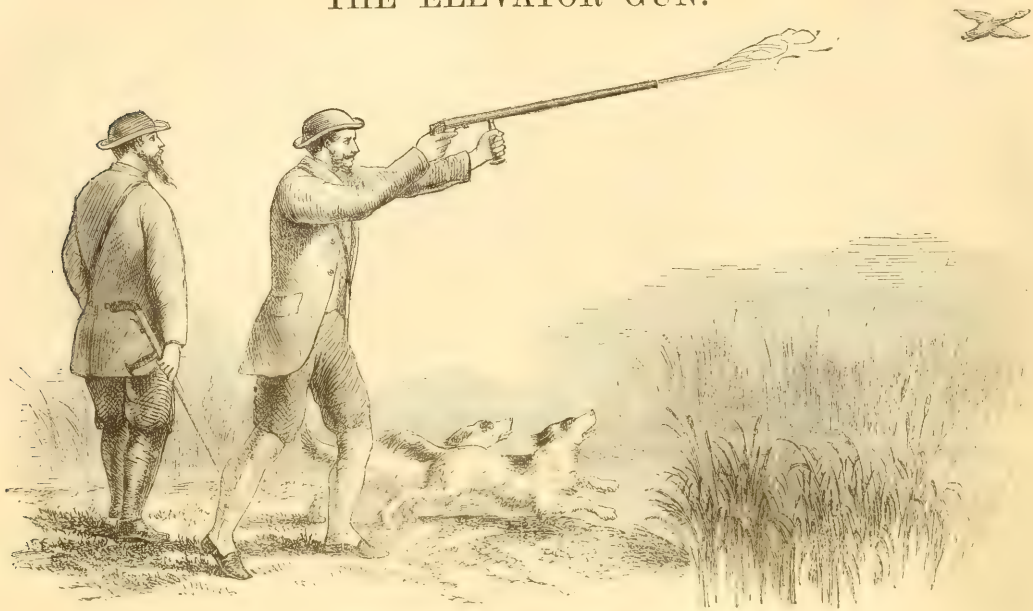
MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on SATURDAY, February 3, at half-past 12 o'Clock precisely, a splendid Collection of Double CAMELLIAS, INDIAN AZALEAS, RHODODENDRONS, WELLINGTONIAS, STANDARD ROSES, DWARF AZALEAS, in first-class named FRUIT TREES, and a variety of Hardy Trees and Shrubs.
On view the Morning of Sale, and Catalogues had.

Unreserved Sale of Nursery Stock.

DONNINGTON ROAD, NEWBURY, BERKS.

MR. C. W. DOE is instructed to SELL by AUCTION, on TUESDAY and WEDNESDAY, February 6 and 7, at 11 o'clock each day, without the Slightest Reserve, the Whole of the valuable NURSERY STOCK, Household Furniture, and Effects, the property of Mr. W. H. DAVIS, Nurseryman and Florist, under Deed of Assignment for the benefit of Creditors. The Nursery Stock, which will be sold at the Donnington Nursery on Tuesday, the 6th, at 11 o'clock, comprises 3000 Standard Roses, of the choicest varieties; 2000 Dwarf Roses, 2000 Laurels, 5000 Manetti Stocks, Home-made Cuttings, 3000 fruit Stocks, 500 Privet, Currant Trees, Sea Kale plants, and other general Nursery Stock.
May be viewed the day previous and Morning of Sale; Catalogues may be had of the Auctioneer Newbury.

THE ELEVATOR GUN.



SECURED BY ROYAL LETTERS PATENT.

DESIGNED for TRAVELLERS, EMIGRANTS, ORNITHOLOGISTS, SPORTSMEN, &c.

INVALUABLE FOR HOUSEHOLD DEFENCE.

BRIEF DIRECTIONS FOR PURCHASERS.

The use of this Gun is so easily acquired that a child may shoot with it, if strict attention be given to the following Directions:—

Stand with the head erect, exactly as in archery. Screw the Elevator well up, and grasp it firmly round the lower part with the left hand; then hold the Gun with both arms extended as in the figure. In taking sight, be sure *to look along the whole length of the Gun.**

* If the shooter looks *down* upon the barrel instead of looking *along* it, the shot will pass over the mark aimed at.

In firing for the first time, not more than half the usual sporting charge should be put into the gun, say one drachm of powder and half an ounce of shot. At each successive shot the charge may be increased, so long as it is found that the recoil is under control. An ounce of shot and two and a half drachms of powder may, after a little practice, be fired with perfect safety.

GENERAL ADVANTAGES

Presented by the ELEVATOR GUN over the shoulder fowling-piece:—It is less costly, far more portable, more easily cleaned; has nothing about it liable to break by an ordinary fall; is less liable by bursting or accidental discharge to injure the shooter or his companions; offers complete security against the loss of an eye by the escape of the percussion cap.

SHOOTING ADVANTAGES.

Greater effectiveness in thick cover, as it comes up quicker, and commands shots in positions not available with a gun resting against the shoulder.

Especially adapted for shooting in boats and for Ornithologists. As a household protective weapon, it makes the loud report of a gun, while, like a pistol, it can be kept loaded under lock and key in a bedroom drawer, or in its case.

Price ... ... £7 7s.

Complete with Case of best Oak, Lined, and fitted with Flask, Shot Pouch, Cleaning Rod, with suitable Apparatus, Nipple and Turn-screw, Oil Bottle and Picker, Folding Rod and Sheath, Rod Holder, Punch, Cloth Cover for Case, &c.

Without Case and Fittings, £4 4s.

THE PUBLIC GENERALLY ARE INVITED TO CALL AND EXAMINE THE MERITS OF THIS INVENTION.

For Testimonials see *Gardeners' Chronicle* of December 30.

CHARLES POMEROY BUTTON, 142 and 143, CHEAPSIDE, LONDON, E.C.

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THE GARDENERS' CHRONICLE

AND

AGRICULTURAL GAZETTE.

A Newspaper of Rural Economy and General News.

No. 5.—1866.] SATURDAY, FEBRUARY 3. {Price Fivepence. STAMPED EDITION, *6d.*

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ROYAL HORTICULTURAL SOCIETY, SOUTH KENSINGTON.
The ANNUAL GENERAL MEETING will be held on TUESDAY, the 13th inst., at 3 o'Clock.

INTERNATIONAL HORTICULTURAL EXHIBITION and BOTANICAL CONGRESS.
Under the Patronage of Her Majesty THE QUEEN, and of their Royal Highnesses the PRINCE of WALES and the DUKE of CAMBRIDGE.
The EXHIBITION and CONGRESS will OPEN on MAY 22, and continue till May 25. Subscribers' names will be received, and Schedules and Prospectuses may be obtained on application to the Secretary, at the Offices, 1, William Street, Lowndes Square, London.

JAMES FAIRHEAD AND SON, SEED GROWERS and MERCHANTS, 7, Borough Market, London, S.E.
New and Genuine AGRICULTURAL, GARDEN, and FLOWER SEEDS. Special prices and advantageous offers on application.

H. AND F. SHARPE, SEED GROWERS and MERCHANTS, Wisbech.
SPECIAL PRICED LIST of NEW SEEDS on application.

F. K. BURRIDGE, SEED FARMER and NURSERYMAN, Lexden Road, Colchester.
Special Prices of FLOWER SEEDS on application.

ISAAC MATTHEWS, Milton and Wetley Moor Nurseries, begs to offer to the Trade 20,000 RHODODENDRONS, 1½ to 2 feet, bushy. Price on application, delivered at Stoke Station.

Hoyle's and Foster's New Pelargoniums.
CHARLES TURNER has fine plants of the above, which he strongly recommends. All the best old kinds at moderate prices. CATALOGUE on application.
The Royal Nurseries, Slough.

HOOPER AND CO., SEED and PLANT MERCHANTS, Covent Garden Market, London, W.C.
SPRING CATALOGUE (New Illustrated Edition), just published, forwarded for six stamps, or gratis to all customers.

BUTLER AND MCCULLOCH'S SPRING CATALOGUE of SEEDS will be ready in a few days, sent free and post paid on application.
BUTLER & MCCULLOCH, Covent Garden Market, W.C.

PETER S. ROBERTSON AND CO.'S PRICED DESCRIPTIVE CATALOGUE of GENUINE GARDEN and FLOWER SEEDS, and NOVELTIES for 1866, post free on application.
Trinity Nursery, and 33, St. Andrew Square, Edinburgh.

Excellence and Economy.
H. BROWN'S PRICED DESCRIPTIVE CATALOGUE of SEEDS, &c., for 1866, will be sent free by post on application.
4, Commutation Row, Liverpool.

Genuine Garden Seeds.
WM. CUTBUSH AND SON'S DESCRIPTIVE PRICED CATALOGUE of SEEDS, which contains everything New and Old worth growing, can be had post free on application.
Highgate, London, N.

Garden Seeds, Carriage free.
WM. PAUL'S SELECT LIST contains many articles worthy the attention of Exhibitors and others who wish to have FIRST-CLASS VEGETABLES and FLOWERS in their seasons.
PAUL'S Nurseries, Waltham Cross, N.

MAURICE YOUNG'S DESCRIPTIVE LIST of Conifers, New and Rare Hardy Plants, Ornamental Trees and Shrubs, Rhododendrons, Japanese Novelties, Forest Trees, and Roses, forwarded on application.
Milford Nurseries, near Godalming, Surrey.

To the Trade.
LILIUM AURATUM.
BARR & SUGDEN, Seed, Bulb, and Plant Merchants, 12, King Street, Covent Garden, W.C.

J. IVERY AND SON beg to announce that their DESCRIPTIVE PRICED CATALOGUES of AZALEA INDICA, HARDY BRITISH FERNS, ROSES, CONIFERÆ, GRAPE VINES, and SEEDS, may be had on application at their Dorking Nursery.

Early Spring Flowers.
WEBB'S GIANT POLYANTHUS and GIANT COWSLIPS, and other varieties, largest stock in England. List and prices on application to Mr. WEBB, Calcot Gardens, Reading.

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R. M. STARK begs to offer, at moderate prices, several RARE and interesting PLANTS recently collected by himself in North America. PRICED LISTS on application.
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GLADIOLI, GLADIOLI, GLADIOLI.—Collections, including all the finest varieties in cultivation, from 10s. 6d. to 63s.
All orders amounting to 21s. and upwards carriage paid.
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Seeds—Gladioli.
PAUL AND SON'S LISTS of the above are now ready, containing a careful selection of Novelties. Enlarged List of Fine-foliaged Plant Seeds, and original notes on Gladiolus Culture.
"Old" Cheshunt Nurseries, N.

PAUL'S CELEBRATED HOLLYHOCK SEED. Collections of 12 choice varieties, 5s.; of
PAUL & SON, "Old" Cheshunt Nurseries, Cheshunt, N. Also of Messrs. WRENCH & SON, HURST & SON, JAMES VEITCH, and FISHER, HOLMES & CO.

New Roses of 1866.
JOHN FRASER, of the Lea Bridge Road Nurseries, Leyton, Essex, N.E., will forward on application a LIST of all the best varieties of NEW ROSES for 1866.
The plants are strong, healthy, and are now ready for sending out. Early orders are respectfully solicited.

New Roses of 1866.
PAUL AND SON'S LIST is now ready. Their plants are already strong, but will not be fit to travel till early March.
The "Old" Cheshunt Nurseries, N.

WM. WOOD AND SON have a magnificent stock of Specimen TEA-SCENTED ROSES, extra fine well-grown Plants, established in 6-inch pots, to offer, suitable for Greenhouse culture or for Exhibition, at 24s. to 30s. per dozen.
Woodlands Nursery, Maresfield, near Uckfield, Sussex.

To the Trade.
STANDARD and DWARF STANDARD ROSES.
Extra and at reasonable prices.
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New Roses for 1866.
10,000 strong healthy well-grown Plants of all the New Roses.
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WM. WOOD AND SON have to offer an extraordinary stock of the best NEW ROSES of the present season, in fine healthy plants.

PINES.—Strong Fruiting, Succession, and Suckers, of all the leading kinds, can be had of
B. S. WILLIAMS, Victoria and Paradise Nurseries, Holloway, London.

Surplus Stock of Strong Grape Vines in Pots
WM. WOOD AND SON have an extra fine Stock of the above to offer cheap.
Woodlands Nursery, Maresfield, near Uckfield, Sussex.

HAMPTON COURT BLACK HAMBURGH VINE.—Strong plants from Eyes of this excellent Grape, 5s. each; 60s. per dozen.
T. JACKSON & SON, Nursery, Kingston, S.W.

Grape Vines.
S. GLENDINNING AND SONS have a splendid lot of extra fine Fruiting Canes.
PRICED LIST may be had on application.
Chiswick Nursery, London, W.

Grape Vines.
WM. CUTBUSH AND SON have a fine stock of extra strong planting VINES, also a few fruiting size left.
CATALOGUES and price on application.
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FIGS in POTS, for Forcing or Pot Culture.—A few of the leading kinds, fine bushes, 5s. to 7s. 6d. each. Carriage paid to London
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To the Trade.
RASPBERRIES.
CARTER'S PROLIFIC, 15,000 to 20,000. Can be had of RICHARD CARTER, Market Gardener, Seven Oaks, Kent.
4 to 6 ft., £4 per 1000; 3 to 4 ft., £3; under 3 ft., £2.

WEBB'S PRIZE COB FILBERTS, and other Prize Nuts and Filberts. Trees of these splendid Nuts to be had of Mr. WEBB, Calcot Gardens, Reading. Catalogues on application.

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S. GLENDINNING AND SONS invite attention to their superb stock of healthy well-grown FRUIT TREES.
PRICE LIST on application.
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MANGOSTEEN TREES.—For Sale, Six Mangosteen Trees, just arrived, in fine condition, from Karang, in Java. Price Ten Guineas each.
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Excellent Nursery Stock at Moderate Prices.
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PETER S. ROBERTSON AND CO.'S CATALOGUE of FOREST and ORNAMENTAL TREES and SHRUBS post free on application.
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LARGE ENGLISH and IRISH YEWS.—Handsome single-stemmed ENGLISH and IRISH YEWS, 7, 8, and 9 feet high. Price according to size and number required on application to
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Cheap Larch.
FIELD BROTHERS, Boughton Nursery, Chester, have a quantity of extra fine LARCH, 2½ to 3 feet, and 3 to 4 feet, very stout and well rooted. Samples and prices on application.

FOR SALE, a quantity of 1-year Seedling 1-year Transplanted LARCH; and 2-year Seeding 1-year Transplanted LARCH in fine condition. Apply to
MUNRO BROTHERS, The Nurseries, Inverness, N.B.

Sub-tropical and other Foliage Plants.
DOWNIE, LAIRD, AND LAING are now sending out Seeds of the above. PRICED LISTS on application, with Cultural hints.
Stanstead Park, Forest Hill, S.E.; and Edinburgh.

Ivies, Ivies, Ivies.
IRISH IVIES, in any quantity, from 3 to 7 feet high, well established in Pots.
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Broccoli All the Year Round.—See SUTTON'S AMATEUR'S GUIDE (ILLUSTRATED). Price Sixpence post free; gratis to customers.
SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

Scarlet Geraniums.
MARSH AND PERKINS, 42, Drapery, Northampton, have pleasure in offering Strong Autumn-struck PLANTS of the above from Store Pots, 12s. per 100; 100s. per 1000.
N.B. The usual discount to the Trade. Terms: Cash.

Garden and Flower Seeds.
RETAIL PRICE LIST and CATALOGUE free by post. Seeds of best quality considerably under the usual retail prices.
J. H. COTTRELL, 15, Bull Ring, Birmingham. (Established 1850.)

GENUINE NEW GARDEN SEEDS.—PRICED DESCRIPTIVE CATALOGUE Post Free upon application.
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TWENTY THOUSAND DOUBLE SCARLET INTERMEDIATE STOCKS, in 60's, fit for Potting into 48's or Bedding out. Price £11 per 1000.
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SEED of the above excellent variety can be had true from the raiser, in packets at 1s.; post free 14 stamps.
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To the Trade.
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PEAS.—Four Quarters of SANGSTER'S No. 1 PEA, warranted true, grown from best Seed, bought of Messrs. Hurst, Leadenhall Street. Price 8s. per bushel, by the quarter.
Apply to the Bailiff, JOHN GROVES, Shellingford, Faringdon.
Prepayment from unknown correspondents

DIXON'S YORKSHIRE HERO PEA.—All who have grown this Pea pronounce it to be "the best" extant. See Testimonials in *Gardeners' Chronicle* of November 18.
Price 2s. per quart. Price to the Trade on application.
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Potatos for Planting.
SUTTON'S DESCRIPTIVE LIST of POTATOS.
SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

MYATT'S PROLIFIC KIDNEY POTATO.—A few Tons of carefully selected Seed to be Sold Cheap.
Apply to ALFRED FRYER, Nurseries, Chatteris, Cambridgeshire.

HAND R. STIRZAKER offer the Improved LEMON KIDNEY POTATO, the earliest and best variety grown; also DALMAHOY and FLUKES, per cwt. or ton.
Ackerton Nurseries, Lancaster.

DALMAHOY POTATOS for SEED.—For Sale, about 200 Bolls, warranted true. Price on application to
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EARLY KIDNEY POTATOS.—Webb's Telegraph, 1st first early, 20s. per bushel; Webb's President, second early, 16s. per bushel; Webb's Imperial Kidney (best Potato known for all purposes), 12s. per bushel.
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ROYAL ASH-LEAF POTATO.—This is one of the earliest and the most productive of all the Ash-leaf Kidney Potatos. Price per ton of finely-grassed seeds given on application to Messrs. THOS. RIVERS & SON, Nurseries, Sawbridgeworth.

DAINTREE'S SEEDLING POTATO is the best early round white Potato in cultivation, and can be obtained at a moderate price on application.
R. S. A. DAINTREE, Godmanchester, St. Ives, Hunts.

SEED POTATOS.—A quantity of pure RED REGENT SEED POTATOS to be Sold at a low price.
Address B. J., *Gardeners' Chronicle* Office, W.C.

SEED POTATOS.—Myatt's Prolific Kidney, Early Dalmahoy, Webb's Imperial Kidney, Daintree's Seedling, and all the best early and late varieties at low prices.
H. & F. SHARPE, Seed Growers and Merchants, Wisbech.

SEED POTATOS.—Twenty Varieties, including some of PATERSON'S SEEDLINGS, to be Sold Cheap.
Price on application to
HY. MINCHIN, The Nurseries, Hook Norton, Oxon.

MR. MYATT, of Manor Farm, Deptford, having SOLD all his available Stock of MONA'S PRIDE POTATO, takes this opportunity of informing those patrons who are still making numerous applicat ons.
Price per ton of MYATT'S PROLIFIC ASHLEAF on application.

GREEN ROUND TURNIP SEED (Surplus Stock).
For price, sample, &c., apply to
FREDK. GEE, Seed Merchant and Grower, Biggleswade, Beds.

FEATHER GRASS Wanted, in any quantity. Samples and price to
HOOPER & CO., Centre Avenue, Covent Garden Market, London, W.C.

FINEST LAWN MIXTURE.—Composed only of the best and cleanest Seeds of the most suitable dwarf Evergreen Grasses. 1s. per lb. Carriage free.
JAMES DICKSON & SONS, Seed Merchants, 102, Eastgate Street, Chester.

Vines.

B. S. WILLIAMS begs to announce that he still holds a fine Stock of the above Planting and Fruiting Canes of all the best kinds, including the NEW GRAPE ROYAL VINEYARD.

Victoria & Paradise Nurseries, Holloway, London

Extra strong Fruiting Vines.

JAMES DICKSON AND SONS can still supply STOUT, CLEAN-GROWN, and PERFECTLY RIPENED CANES, to produce from 1 to 5 lb of Grapes this year Price 5s. 6d. each and upwards Also Canes for Planting out.

The "Newton" Nurseries, Chester.

Fruiting Vines.

E. G. HENDERSON AND SON offer the above, with splendid Canes of well-matured growth, with prominent eyes, sure to give a heavy crop, 10s. 6d. each.

LIST of SORTS sent on application.

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Extra extra strong Fruiting Vines.

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Prices and all particulars on application.

Sample plants sent if desired.

Rust's Thames Bank Peach.

OSBORN AND SONS have a few Maiden Plants left for Sale of the above-named new late Yellow-fleshed PEACH.

Dr. Hogg, in the "Gardeners' Year Book" for 1864 says:—"The flesh is tender, melting, and juicy." He further adds, "This is certainly the best of the Yellow-fleshed Peaches we know."

Price 10s. 6d. each. An illustration sent to the Trade.

Fulham Nursery, S.W.

MAGNIFICENT Dwarf-trained FRUIT TREES, PEACHES, NECTARINES, APRICOTS, PLUMS, and CHERRIES; extra fine Trained MAY DUKE and MORELLO CHERRIES; ROYAL GEORGE PEACHES. Prices very moderate.

SEVERAL DWARF-TRAINED PEARS. Wood & Son have an enormous stock to offer of the above. They feel certain the Trees cannot be surpassed in quality.

Woodlands Nursery, Maresfield, near Uckfield, Sussex

W. VIRGO AND SON having a surplus stock of the undermentioned FRUIT, FOREST, and other TREES, can offer them at a very reduced price, viz.:

Standard and Dwarf Apples	Alder, 2 to 3 feet
Standard and Dwarf Pears	Larch E r, 2 to 3 feet
Standard and Dwarf Trained Cherries (very fine)	Spruce Fir, 2 inches, 2 and 3 feet
Hazel, 2 to 3 feet	Berberis Aquifolium, 1 to 2 feet
Birch, 2 to 3 and 4 feet	,, dulcis, 2 feet
Spanish Chestnut, 2 to 3 feet	Portugal Laurel, 2 feet
Withy, 3 to 4 and 5 feet	Common Laurel, 2 to 3 feet
	Privet, 18 inches to 2 feet

Also a large quantity of Trees fit for belting.

Prices of the above and other Trees on application at the Nursery, Wonersh, near Guildford, Surrey.

E. PIERCE, Yeovil Nursery, Somerset, begs to offer a large stock of the under-named Trees.

PIERCE'S NEW CRICKET NECTARINE, in Pots, set in Bloom Buds, 84s. per dozen.

ORCHARD TREES, PEACH and NECTARINE, in Pots, set in Bloom Buds, 48s. per dozen

CEDAR of LEBANON, well-headed, 7 to 9 feet, 84s per dozen

RED CEDAR, 3 to 4 feet, 60s. per 100

GREEN HOLLY, three times Transplanted, 2 feet, 60s. per 100

PORTUGAL LAUREL, 2 to 3 feet, 60s. per 100

ARBOR-VITÆ (CHINESE) 2 to 4 feet, 60s. per 100

,, (AMERICAN) 3 to 4 feet, 60s per 100

BERBERIS AQUIFOLIUM, Transplanted, 20s. per 100

PINUS AUSTRIACA, Transplanted, in lots, to 2 feet, 170s. per 1000

LARCH FIR, 21s., 25s., and 30s. per 1000

New Edition of

SCOTT'S FRUIT TREE CATALOGUE of the finest Collection in England. The Catalogue is allowed to be the best published, and is full of information about the Cultivation of Fruits, over 1000 being described. Apply to

J. SCOTT, Merriott, Somerset.

SURPLUS STOCK of extra fine well-trained FRUIT TREES to be sold Cheap, viz., Peaches, Nectarines, Apricots, Plums, and Cherries; also Standard and Trained Pears and Nectarines The above are well worthy the notice of intending planters

Address, Wm Wood & Son, Woodlands Nursery, Maresfield, Uckfield, Sussex

SPECIAL OFFER of FRUIT TREES.—25 per cent, off Catalogues.—Having a large and fine stock of the undermentioned, they are offered at greatly reduced prices, to clear ground—Peaches, Nectarines, Apricots (trained and untrained), Apples, Pears, Plums, and Cherries (trained and untrained).

DESCRIPTIVE CATALOGUES on application to

J. SCOTT, Merriott, Somerset.

To Clear Ground.

SPECIAL OFFER.—20 per cent. off Catalogue prices.—HOLLY (GREEN), EVERGREEN SHRUBS, LACEPODS (Common), Laurels (Portugal), Cupressus Lawsoniana, Thuja Lobbii, Pinus insignis, P. excelsus, P. ponderosa, Taxodium, Hazel (a large breadth), larch &c. Spruce Firs, Arbor-vitæ Fine do., Beech do. For sizes and prices, see CATALOGUES, sent on application to

J. SCOTT, Merriott, Somerset.

To the Trade—Offer of 1-year Beech.

GROST, having a large stock of the above, will Sell 100,000 for £6 10s., 250,000 for £12 10s. These low prices are for cash only.

WANTED, APPLE STOCKS—Must be of very clean healthy growth, and as thick as the forefinger.

Nurseries, Bampton, Devon.

Scotch Laurels and Gorse, &c.

GROST offers 1-year English GORSE or FURZE, 4s. per lb., or, 3s. off 1 cwt.; 1-year transplanted, 1 to 1½ feet, 7s. 6d.; 1½ to 2 feet, 12s. 6d. LAURELS, fine fresh-cut and very bushy, 1 to 2 feet, 8s. per 100, 70s. per 1000, 14 to 2½ feet, 15s. per 100, 140s. per 1000; 2 to 3 feet, extra stout stuff, 20s. per 100, 180s. per 1000. English OAK, transplanted, 9 to 11 feet, 14s. per 100; SYCAMORE, transplanted, 10 to 16 inches, 10s. per 1000. Also a large quantity of 2-years transplanted SCOTCH, very fine stuff: 1-year BEECH, OAK, and ASH.

Nurseries, Bampton, Devon.

English Oak, Ash, Horse Chestnut, &c.

J. WOOLLETT offers the following cheap, the Trees of extra strong quality for Planting.—About 1500 Horse Chestnut, 3 year's seedling, 6s. per 1000; 2000 Horse Chestnut, 1 to 2 feet, 1750 Strong Beeches, 1 to 2 feet, 10s. per 100; 500 strong Ehelish Oaks, 7 to 9 feet, 1000 Common Ash, 5 to 6 feet, 20s. per 100; English Elm, 1 to 2 feet, 15s. per 100, 200 Sycamore, 6 to 7 feet; strong Irish Yews, 4 to 6 feet, and other Nursery Stock.

Nurseries, Caterham, Surrey.

FOREST TREES, &c.—At the Nursery of the late DAVID A. REID, Park Attwood, Bewdley, Worcestershire.

	Per 1000.—s. d.
500,000 LARCH, 2 feet	10 0
500,000 LARCH, 3 to 5 feet	12 6
200,000 PEAR STOCKS, 2 to 3 feet	15s to 50 0
100,000 SPANISH CHESTNUTS, 1-year Seedling, 1 to 2 feet	10 0
500,000 SILVER FIR, 1-year seedling, fine	4 0
500,000 SPRUCE, 1-year Seedling, fine	2 0
500,000 SYCAMORE, 1-year Seedling, fine	2 0
200,000 BEECH, 1-year Seedling, fine	2 0
20,000 WALNUTS, 1-year seedling, fine	2 0
20,000 CUPRESSUS PYRAMIDALIS, 1-year Seedling, fine	20 0
20,000 CUPRESSUS SEMPERVIRENS, 1-year Seedling, fine	20 0
200 Bushels PITTED HAWS.	

Apply, with reference to JAMES RIDDELL, Steward, Park Attwood.

30,000 Common Laurels,

Fine bushy plants and well rooted, from 1 to 6 feet.

WM. WOOD AND SON having a large stock of the above, will be happy to give special quotations at reduced prices

Address, Woodlands Nursery, Maresfield, near Uckfield, Sussex.

PLANTERS engaged in PLANTING for immediate effect, can be supplied with handsome CEDRUS DEODARA, from 3 to 10 and 20 feet high, well rooted, and safe to transplant.

Price Sheet on application.

WM MACLE & SONS, The Nurseries, Bristol

FOX or GAME COVERT.—Gentlemen planting or replenishing their Preserves can be supplied with the undermentioned favourite Plants:—ENGLISH GORSE or FURZE 1-year, 5s. per 1000; 2-years, very stout, 9s. per 1000. ENGLISH BROOM, 2-years, very strong, 12s. per 1000. Evergreen Berberry, or Mahonia aquifolia, 1 to 2 feet, strong transplanted, 25s. per 100, or £10 per 1000

LISTS of all kinds of FOREST and FRUIT TREES, SHRUBS, and CONIFERS, sent on application.

W. MACLE & SONS, The Nurseries, Bristol.

RICHARD SMITH,
NURSERYMAN and SEED MERCHANT, Worcester.

ROSES.—12 of the very best Standard, Perpetual, and Moss Roses for 5s.; 25 for 9s.; 100 for 25.

12 ditto Dwarf do. do. for 12s.; 25 for 18s.; 100 for 56s.

12 ditto, New Sorts of 1865, for 24s.

Descriptive List on application.

FORTY ACRES of FRUIT TREES.—Apples, Pears, Plums, Cherries, Peaches, Nectarines, and Apricots in every form desired for Fruiting.

DWARF-TRAINED TREES, by the Thousand, Hundred, or Dozen.

APPLES, PEARS, PLUMS, CHERRIES, PEACHES, and NECTARINES

Fine, flat, well-trained, of best quality, and true to name.

PYRAMID APPLES, PEARS, PLUMS, CHERRIES. Beautiful Trees for Garden or Orchard Houses.

ORCHARD-HOUSE TREES, Fruiting in Pots.—Peaches, Nectarines, Apricots, Cherries, Plums, Pears, Apples, Vines, and Figs.

EVERGREENS for Ornamental Planting or Avenues, handsome, well grown, and transplanted within the last two years. For prices of smaller sizes and quantities, see Conifer List.

At 30s. per dozen:—

Abies alba, 5 to 7 feet	Juniperus thurifera, 3 to 4 feet
,, Douglasi, 3 to 4 feet	,, Laurel, Colchic, 3 to 6 feet
,, inverta, 1½ to 2 feet	,, Portugal, Pyramids, 3 to 4 ft
,, orientalis, 1½ to 2 feet	Pinus cembra, 3 to 4 feet
Arbor-vitæ, American, 5 to 7 feet	,, excelsa, 5 feet
,, Siberian, 4 to 5 feet	Taxodium sempervirens, 7 to 8 ft.
Cedar, Red, 5 to 6 feet	Thuja Lobbii, 3 to 4 feet
Cryptomeria virida, 4 to 5 feet	,, gigantea, 4 feet
Cupressus Lawsoniana, 3 to 4 feet	,, compacta, 1½ to 2 feet
,, fragrans, 3 feet	Thujopsis borealis, 3 feet
Irish Yew, 4 to 5 feet	Wellingtonia gigantea, 2 feet

At 42s. per dozen:—

Abies Douglasi, 4 to 5 feet	Pinus excelsa, 6 feet
,, inverta, 2 to 2½ feet	,, Lambertiana, 3 to 4 feet
,, orientalis, 2 to 2½ feet	,, insignis, 3 to 4 feet
,, pyramidalis, 4 to 5 feet	Thuja Lobbii, 4 to 5 feet
Araucaria imbricata, 2 to 2½ feet	,, compacta, 2 to 2½ feet
Arbor-vitæ, Siberian, 5 to 6 feet	,, aurea, 2 feet
,, American, 7 to 8 feet	Thuja gigantea, 4 feet
Cedar, Red, 6 to 8 feet	Wellingtonia gigantea, 2½ feet
Cupressus Knightii, 6 to 7 feet	Yew, Irish, 6 to 6½ feet
,, Lawsoniana, 4 to 4½ ft.	Laurels, Pyramid, Portugal, 4 to 4½ feet
Juniperus thurifera, 4 to 6 feet	,, Colchic, 6 to 7 feet
Pinus Cembra, 4 to 5 feet	

At 60s. per dozen:—

Abies inverta, 2½ to 3 feet	Juniperus thurifera, 5 to 6 feet
,, Douglasi, 5 to 6 feet	Laurels, Pyramid Portugal, 5 ft.
,, Menziesii, 5 to 6 feet	Pinus excelsa, 6 to 8 feet
,, orientalis, 2½ to 3 feet	,, Lambertiana, 4 to 6 feet
,, pyramidalis, 5 to 6 feet	,, insignis, 4 to 6 feet
Araucaria imbricata, 2½ to 3 feet	Thuja japonica, 2½ to 3 feet
Arbor-vitæ, Siberian, 6 to 7 feet	,, aurea, 2½ feet
Cedrus Deodara, 4 to 5 feet	Taxodium sempervirens, 8 to 10 ft.
Cupressus Knightii, 7 to 8 feet	Wellingtonia gigantea, 3 feet
,, Lawsoniana, 6 feet	Yew, Irish, 6 feet

At 84s. per dozen:—

Abies Douglasi, 7 to 8 feet	Cedrus Deodara, 7 to 8 feet
,, nivea, 4 to 4 feet	Cupressus thuriifera, 6 to 7 feet
,, Menziesii, 6 to 8 feet	Pinus excelsa, 8 to 10 feet
,, orientalis, 3 to 4 feet	Taxodium sempervirens, 10 to 12ft.

Each

Abies Douglasii, 8 to 10 ft., 12s. 6d.	Picea nobilis, 2½ to 3 ft., 21s. to 63s.
,, ,, 10 to 12 feet, 15s.	,, Nordmanniana, 2½ to 4 feet, 10s. 6d. to 42s.
,, ,, 12 to 15 feet, 21s.	,, ,, 4 to 6 feet, 63s. to 105s.
,, inverta, 4 to 5 feet, 10s. 6d.	,, Pinsapo, 3 to 5 ft., 10s. 6d. to 42s.
,, ,, 6 feet, 21s.	Pinus excelsa, 10 to 12 feet, 10s. 6d.
Araucaria imbricata, 3 to 4 feet, 10s. 6d.	,, ,, 12 to 15 feet, 21s.
,, ,, 4 to 5 feet, 21s.	,, Lambertiana, 6 to 8 feet, 10s. 6d. to 21s.
,, ,, 10 to 12 feet, 84s.	Pinus ponderosa, 3 to 4 feet, 10s. 6d. to 21s.
Cedar of Lebanon, 8 to 10 feet, 21s.	Taxodium sempervirens, 12 to 15 feet, 10s. 6d.
Cedrus Deodara, 5 to 6 ft., 10s. 6d. to 21s.	Thuja aurea nana, 3 to 4 ft., 10s. 6d.
,, ,, 8 to 10 feet, 42s.	Taxodium sempervirens, 12 to 15 feet, 10s. 6d. to 21s.
Picea nobilis, 2 to 2½ feet, 10s. 6d.	Thuja occidentalis, 5 to 6 feet, 10s. 6d.
,, ,, 3 to 4 feet, 21s.	,, ,, 6 to 8 feet, 21s.

American Arbor-vitæ, for Hedges, 3 to 4 feet, at 50s. per 100.

,, ,, 4 to 5 feet, 84s. ,,	,, ,, 5 to 6 feet, at 100s. ,,

FLOWERING and STANDARD ORNAMENTAL TREES. At 42s. per dozen:—

Ash, Mountain, 7 to 9 feet	Chestnut, Spanish, 6 to 8 feet
Acacia, 7 to 9 feet	Hornbeam, 8 to 10 feet
Cratægus oxyacantha, 6 to 7 feet	Poplar, Silver, 8 to 10 feet
Cedar, Siberian, scarlet, 6 to 7 feet	,, Lombardy, 9 to 10 feet
,, ,, yellow, 6 to 7 feet	Pyrus sorbifolia, 6 to 7 feet

At 18s. per dozen:—

Almond, flowering, 7 to 8 feet	Chestnut, Spanish, 8 to 10 feet
Ash, Weeping, 6 to 7 feet	Alder, 6 to 8 feet
Ash, Mountain, 8 to 12 feet	Elm, Chichester, 8 to 10 feet
Acer Negundo, 6 to 8 feet	Poplar, Lombardy, 11 to 12 feet
Birch, 10 to 12 feet	,, Silver, 10 to 12 feet
Cedar, Siberian, yellow, 7 to 8 feet	Pyrus sorbifolia, 8 to 9 feet
,, ,, scarlet, 7 to 8 feet	Thorn, double pink, 6 to 7 feet

At 30s. per dozen:—

Almond, flowering, 8 to 10 feet	Cytisus in variety, 4 to 5 feet
Acer Negundo variegata, 5 to 6 ft	Laburnum, 12 to 15 feet
Acacia, Lall, 6 to 7 feet	Thorns, double pink, 8 to 10 feet
Chestnut, scarlet, 6 to 8 feet	Willow, Ameri. Weeping, 6 to 8 ft.

RICHARD SMITH'S LIST of all the EVERGREEN FIR TRIBE, suitable for Britain, giving size, price, popular and botanical names, derivations, description, form, colour, foliage, growth, timber, use in arts, native country and one there, situation, soil, and other information, with copious Index of their synonymes.

Enlarged Edition, free by post for 12 postage stamps.

RICHARD SMITH'S FRUIT LIST contains a sketch of the various forms of Trees, with Directions for Cultivation, Soil, Drainage, Manure, Pruning, Lifting, Cropping, Treatment under Glass; also their synonymes, quality, size, form, skin, colour, flesh, flavour, use, growth, duration, season, price, &c.

Free by post for one stamp.

ORCHARD-HOUSE TREES, Fruiting in Pots—PEACHES, NECTARINES, APRICOTS, CHERRIES, PLUMS, PEARS, APPLES, VINES, and FIGS.

RICHARD SMITH, Nurseryman and Seed Merchant, Worcester.

Spring Planting.

PETER LAWSON AND SON are prepared to execute orders for every description of NURSERY STOCK suitable for FOREST and ORNAMENTAL PLANTATIONS.

To prevent disappointment, it is recommended that requirements for SPRING PLANTING should be ordered as soon as possible, and the plants may be reserved in the Nurseries until required. For large quantities of LARCH, SCOTCH FIR, CORSICAN PINE, and other leading TREES are wanted, PETER LAWSON & SON will be glad to submit special offers when desired.

Edinburgh and London, January, 1866

SPLENDID FRESH-IMPORTED CALIFORNIAN SEEDS, Season of 1865

WELLINGTONIA GIGANTEA, 1000 seeds, 6s.; 5000 seeds, 25s.; 1 oz. (about 6000 seeds), 27s. 6d.; 4 oz., 5l.

PINUS LAMBERTIANA (True), 50s. per lb.; 10s. per 4 oz.; or 2s. per oz.

All of first-rate quality. Larger quantities on application. Free in London or Leith. Terms Cash.

PETER SMITH & Co., Seed Merchants, Hamburgh.

GEORGE DAVISON, NURSERYMAN and SEEDSMAN, Hereford, offers strong Transplanted QUICKS, 1 years, at 20s. per 1000; LARCH do., 2s. per 100; fine Stock of CONIFERS, from 2 to 5 feet, 24s. per dozen. HORSE CHESTNUTS, 9 to 10 feet, OAK, COMMON and TURKEY, 9 to 12 feet; MAPLE, 10 to 12 feet; MANNA ASH, 10 to 12 feet; HICKORY, 10 to 12 feet; BUTTERNUT, do.; BEECH, 5 feet The above are well suited for Avenues

CATALOGUES of Seeds and Nursery Stock on application.

To the Trade.

MORRISON BROTHERS, Aberdeen, have a large stock of the following to offer:—

Transplanted LARCH, 2½ to 3½ feet, extra fine stuff, being thin in the rows, are branched to the ground, and will be offered at a very low figure.

Transplanted SILVERS, 4 to 9 and 9 to 15 inches, very stout stuff.

Transplanted SPRUCE, 9 to 15 and 15 to 24 inches, very stout stuff.

1 and 2-year Seedling BEECH, 1 year in lines, very stout stuff.

1 and 2-year Seedling CRABS; Very fine in drills and extremely

1 and 2 year Seedling PEAR; 1 year in pence

1-year Seedling BERCIS, SPANISH and HORSE CHESTNUT, HAZEL, MAPLE, ENGLISH OAK, SYCAMORE, all in drills and very fine.

1-year Seedling PINUS AUSTRIACA, LARICIO, MARITIMA

All the above can still be had in large quantities Also a fine stock of SHRUBS and CONIFERS.

PRICED LISTS may be had on application

LARCH and RHODODENDRONS.

	Delivered at Matlock Station.	Per 1000.—s. d.
LARCH, 1½ to 2 ft., good stout plants		17 0
,, 2 to 3 ft.		22 0
,, 3 to 4 ft.		30 0
,, 4 to 5 ft.		45 0
RHODODENDRON PONTICUM, bushy and well-rooted, 6 to 12 inches		10s 0
,, 9 to 15 in., 1s. per 100		170 0
,, 12 to 18 in., 1s. 6d. per 100		220 0
,, 18 to 2 ft., 30s. per 100		280 0
HYBRIDUM, 1s to 2s per 100		370 0
,, 2 to 3 ft., 3s. 6d. per 100		350 0

The Trade supplied. Apply to

JAMES SMITH, Darley Dale Nurseries, near Matlock.

GENUINE NURSERY STOCK, comprising:—

TRANSPLANTED FOREST TREES.	
Alder, 2 to 3 feet	Plane, Maidenhead, 4 to 5 feet
Ash, 1½ to 2 feet	,, Oriental, 4 to 5 feet
,, 2 to 3 feet	,, Pinsapo, 2 to 2½ feet
Birch, 2½ to 3 feet	Araucaria imbricata, 1½ to 2 feet
,, 3 to 4 feet	,, 2 to 2½ feet
,, 4 to 6 feet	,, 3 feet
Chestnut (Spanish), 1½ to 2½ feet	,, 4 feet
Fir (Larch), 1½ to 2 feet	,, 5 feet
,, 2 to 2½ feet	,, 6 feet
Hazel, 1½ to 2½ feet	,, 7 to 8 feet
,, 2 to 3 feet	Cedrus Deodara, 1½ to 2 feet
Willows, 3 feet	,, africanus, 3 to 5 feet
,, extra strong, 4 to 6 feet	,, Libani, 1½ to 2 feet
	Cryptomeria, 6 to 8 in., 4 to 5 feet
CONIFERS AND HARDY EVERGREENS.	Cupressus Lawsoniana, 2 to 3 feet
	,, macrocarpa, 2 to 3 feet
Arbutus, 1½ to 2 feet	,, pendula, 1½ to 2 feet
Aucuba japonica, 1 to 2 feet	Juniperus chinensis, 1½ to 2 feet
Berberis Darwinii, 1 to 2 feet	,, 3 feet
,, dulcis, 2 feet	,, hibernica, 2½ to 3 feet
Box (Tree) of sorts, 1 to 2 feet	,, sabina (for covert) 2½ ft.
Eucalyptus Gunnii	Taxus (Yew, common), 2 to 3 ft.
,, pulverulenta	,, hibernica, 2½ to 3 feet
Hollies (green), 2 to 3 feet	,, variegated, 1½ to 2 ft.
,, (variegated), 1½ to 2½ feet	Thuja aurea, 1, 2, and 3½ feet, fine
Laurels (common), 2 to 3 feet	,, Lobbii, 2 to 3 feet
Laurustinus, 1 foot	,, 3 to 4 feet
Privet (Box-leaf), 1½ to 2 feet	,, Wareana, 6 to 8 feet
Pinus Cembra, 2 to 3 feet	Thujopsis borealis, 1½ to 2 feet
,, insignis, 1 to 1½ feet	,, borealis argentea, 1½ to 2 ft.

Specimen CONIFERS, in fine condition for removal, prices and size on application.

Choice named Hardy RHODODENDRONS, SCARLET, WHITE, and DOUBLE PURPLES, in every shade, fine bushy plants, 1½ to 3 feet, 3l. 10s. to 4l. 10s per 100.

RHODODENDRON PONTICUM, varieties of various sizes, from 30s. to 100s. per 100.

AZALEAS, named sorts, 40s. to 60s. per 100.

STANDARD and HALF-STANDARD ROSES, in above varieties, fine straight stems, 24s. per dozen.

STANDARD and DWARF APPLES, in the approved kinds, 60s. to 72s. per 100.

Plans and Estimates given for Laying out and Planting New Grounds

FOREST TREES supplied and planted by the Acre, and failures replaced.

A NEW DESCRIPTIVE and PRICED CATALOGUE of Japanese Novelties and General Nursery Stock may be had on application.

MATRICE YOUNG, Milford Nurseries, near Godalming, Surrey.

To the Trade.

THOMAS WARNER begs to remind his friends in the Trade, that in addition to his general NURSERY STOCK, he has the following in immense quantities, all finely grown, well rooted, and transplanted, at moderate prices, as seen in the "Trade List" for the present season:—

FRUIT TREES.

Apricots, Dwarf Maiden Moor Park; Cherries, Dwarf Maiden, on common and Mahaleb Stocks, Houghton Castle or Victoria; Nectarines and Peaches, Dwarf-trained (of those it may be said, that for symmetry and vigour such are seldom seen, each tree having from four to nine shoots).

ORNAMENTAL TREES AND SHRUBS.

Abies alba, 1 to 3 ft.; Arbor-vitæ, American, 1 to 3 ft.; A. Siberian, 1½ to 3 ft.; Aucuba japonica, one to 2½; Berberis, Real-fruited, mahonia, Darwinii, Common (evergreen), 1 to 2 ft., Cedrus atlantica, 1 to 2½ ft., Chestnut, Scarlet-flowered, 11 to 3 ft.; Cytisus, Purple, Yellow, and White-flowered. Standards—Elm, Chichester, 6 to 8 ft.; English, 4 to 5 ft.; Exeter, 6 to 8 ft.; Giant, 5 to 8 ft.; new Silver-striped, 1 to 6 ft.; Purple-leaved, 6 to 8 ft.; Siberian, 3 to 9 ft.; Weeping, Scampston, 5 to 6 ft., on stout stems, 5 to 10 ft.; Chester, 5 to 6 ft.; Bolle, 5 feet; Huntingdon, Dutch, 5 to 6 ft.; Kentish, 5 to 6 ft.; Spanish, 5 to 6 ft.; Laburnum, 4 to 5 ft.; Lime, 5 to 6 ft.; Sycamore, Purple and Variegated-leaved, 4 to 6 ft.; Symphoria glomerata variegata, Weigelia amabilis and rosea, Willow, Weeping (common), 4 to 5 ft.; New English, 4 year Seedlings, 1 to 2 ft., 1 to 3 ft. (transplanted Spring 1864); Few, Irish, 1 to 4 ft., pruned to single stems; Vinca elegantissima, in pots.

FOREST TREES.

Fir, Spruce, 9 in. to 2 ft.; Poplar, Bermuda, or ontario, 5 to 6 ft.; Black Italian, 3 to 6 ft.; Strawberry, 3 to 4 ft.; Sycamore, 2 to 3 ft.; Thorns, Black, 1½ to 4 ft.

GIANT ASPARAGUS, 1 and 2 years

From unknown correspondents a satisfactory reference or cash payment is required, to prevent delay.

The Nurseries, Leicester Abbey

Tansley Nurseries, near Matlock, Derbyshire.

JOSEPH SMITH, SEN., invites Planters and the Trade to inspect his Nursery of 80 Acres of high land. The soil is of a fibrous nature, and the plants take up with excellent roots, such as to ensure the best success in their removal. The Nursery contains many Hundred Thousands of RHODODENDRONS, COMMON and PORTUGAL LAURELS, BOX, BROOMS, BERBERIS, HOLLIES, PRIVETS, YEWS, &c. The FOREST TREES are very extensive. Of all the leading kinds there are 15 Acres of LARCHES, of different sizes, and all others in proportion. Prices moderate, which can be had on application as above.

Upper Kendalstown Nurseries, Delgany, Co. Wicklow.

M. P. PENNICK begs to announce that he has a fine stock of the following:—

CRYPTOMERIA JAPONICA, 2½ to 3½ feet high
CEDAR of LEBANON, 1½ foot
UPRIGHT or IRISH YEWS, 1 to 7 feet
SWEET BAYS, 2 to 2½ feet
CHINESE ARBOR-VITÆ, 2 to 2½ feet.

The above are generally handsome, healthy, and well rooted. Prices moderate, on application.

H. AND R. STIRZAKER offer 500,000 LARCH, 2 to 3 feet, 3 years out, but planted over again last spring; there is no fear of loss in planting, these having such good roots. 1,000,000 also 2 years transplanted, 2 to 3 feet; SCOTCH, SPRUCE, and SILVER FIR, extra transplanted, from 1 to 2½ feet; AUSTRIAN and WEYMOUTH PINES, 10 to 20; ALDER, BEECH, ELM, PRIVET EVERGREEN, SYCAMORE; WILLOW, HUNTINGDON; OAK, ENGLISH and TURKEY; CHESTNUT, HORSE, various sizes, from 1½ to 6 feet; YEW, ENGLISH and IRISH, fine furnished plants, moved last season, from 2 to 6 feet; PORTUGAL LAUREL, fine plants, 2 to 5 feet. The above can be offered in great quantities at most reasonable prices.

Skerton Nurseries, Lancaster.

To Noblemen and Gentlemen about to be engaged in Planting.

DICKSONS AND CO., NURSERYMEN, SEEDSMEN, and FLORISTS, Waterloo Place, Edinburgh, have this season a large and very healthy stock of Seedling and Transplanted LARCH (native and Tyrolese), True Native Highland SCOTCH FIR, Spruce, Oak, Plane or Sycamore, Spanish Chestnut, Alder, Ash, Elm, Thorn Quick, Beech, Evergreen Privet, Poplar, Willow, &c., as well as all other kinds of Forest and Ornamental Trees and Shrubs, Fruit Trees, Roses, Greenhouse and Stove Plants, Herbaceous and Alpine Plants, Ferns, &c.

Their Forest Trees, which are grown on exposed ground, are this season finely ripened, and can be sent with perfect safety to any part of the kingdom.

Samples and prices will be sent free on application.

LARCH THINNINGS.—Wanted, a quantity of the above, suitable for Fencing; also SPRUCE. To be delivered at the nearest Station on the London and South-Western Railway.

Particulars of size and price to be sent to WILLIAM THOMPSON, Esq., Weymouth, Dorset.

SUTTON'S CHOICE COLLECTIONS of FLOWER SEEDS, Free by Post or Rail.

Those requiring showy kinds of Flower Seeds, and who are not well acquainted with the sorts, are respectfully recommended to leave the selection to us, and we will supply those we know to be really worthy of cultivation

		£	s.	d.
1.	The best 100 sorts (hardy, half-hardy, and tender)	1	1	0
2.	The best 50 sorts ditto ditto	0	10	6
3.	The best 36 sorts ditto ditto	0	7	6
4.	The best 24 sorts ditto ditto	0	5	0
5.	The best 24 sorts (hardy sorts only)	0	5	0

PRICED CATALOGUES gratis and post free on application.

SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

Lobelia Snowflake.

Extract from GARDENERS' CHRONICLE :—

"Mr. COX, Gardener to Lord Beauchamp, exhibited a beautiful White Lobelia called Snowflake, to which a First-class Certificate was awarded." Floral Committee of the Royal Horticultural society, July 25, 1865."

JOHN AND CHARLES LEE having acquired the stock of this desirable NEW BEDDING PLANT, they have much pleasure in offering SEED in SEALED PACKETS. It is also well adapted for pot culture

As a BEDDING LOBELIA it stands unrivalled. The plant is of dwarf compact habit: the flowers are large and even, and of the purest white. The stock comes perfectly true from seed.

Price 2s. 6d. per packet. Price to the Trade on application.

Genuine New Garden Seeds.—Carriage Free.

J. SCOTT having received his NEW SEEDS for this season, begs to intimate that he is prepared to execute all orders for the same on very liberal terms.

A PRICED LIST free on application. The stock includes all the new Seeds worth cultivation.

FLOWER SEEDS of extra extra fine quality.—Calceolaria, Cineraria, Primula fimbriata, Double Zinnias, imported Asters, Stocks, &c. LIST sent free on application.

J. SCOTT, Mermaid and Level, Somerset.

Transplanted Larch and Quicks.

CHIVAS AND WEAVER (late GEORGE CHIVAS), Chester, offer several Millions of TRANSPLANTED LARCH, from 1½ to 4½ feet, very stout, grown in an exposed situation; specially fine plants, and at prices greatly in favour of the buyers. Also several Millions of TRANSPLANTED QUICKS, a large quantity of which are of great strength; strong English Oaks superior Spruce, up to 2½ feet, together with a general stock of other Forest Trees, as well as a large stock of Evergreens and Ornamental Trees; many Thousand fine Standard Apples, and extra strong Transplanted Apple Stocks.

For prices and conditions of free delivery, see CATALOGUE, which will be forwarded on application

TO GENTLEMEN and NURSERYMEN.—5,000 very strong LARCH, 4 to 5 feet; 2,000 very bushy SPRUCE, 2½ feet. Prices and Samples on application to

Y. STRACHAN, Nurseryman and Seedsman, 4, High Street, Wrexham North Wales, and Railway Station Nursery.

SPRING FLOWERS, ARRANGED IN APPROXIMATE ORDER OF BLOOMING.

HEPATICA ANGULOSA.—First-class Certificate, Royal Horticultural Society. 3s. 6d. each

„ DOUBLE BLUE.—Healthy young plants, 9s. per dozen

SCILLA SIBIRICA (Siberian Squill).—Spikes of brilliant porcelain-blue bells. 4s. per dozen; 6d. each

„ BIFOLIA ("Spring Squill").—Heads of vivid blue "stars." 6s. per dozen

CYCLAMEN COUM.—Rosy crimson, plain leaf; blooming plants, 1s. 6d. to 2s. 6d. each

„ V. VERNUM. Rosy crimson, variegated leaf; blooming plants, 1s. 6d. to 2s. 6d. each

SISYRINCHIUM GRANDIFLORUM.—Large and elegant purple bells, from dwarf rush-like tufts. 1s. each; 9s. per dozen

OMPHALODES VERNA.—Deep brilliant blue flowers, like a Forget-me-Not, but twice the size; root creeping, perennial. 9s. per dozen

MYOSOTIS MONTANA (Spring Forget-me-Not).—This is frequently in bloom long before many other species show bud. It is the largest-flowered species in cultivation. 6s. per dozen

LEUCOJUM VERNUM (Spring Snowflake), 3 to 6 inches high.—Flowers large snow-white, tipped with bright green, very fragrant 4s. per dozen; 6d. each

SAXIFRAGA OPPOSITIFOLIA (Purple Mountain Saxifrage).—Mossy foliage, covered with sheets of handsome purplish rose flowers. 6s. per dozen

„ OPPOSITIFOLIA MAJOR.—Flowers twice the size, but more scattered and rosy pink. 12s. per dozen

ANEMONE HORTENSIS (STELLATA).—Quite different from "the common Garden Anemone." Two varieties, ruby and purplish rose. Each variety, 6s. per dozen

„ FULGENS.—Brilliant scarlet. First-class Certificate Royal Horticultural Society. 1s. each; 9s. per dozen

„ APENNINA (Blue Wood Anemone).—Large, sky-blue, varying purplish and white; 1s. per 6, 6s. to 12s. per dozen

„ VERNALIS. Rare; flowers very large, white, blush-purple-tinted externally; calyx shaggy; 3 to 6 inches. 1s. 6d. each, 15s. per dozen

ARABIS ALBIDA GRANDIFLORA VARIEGATA.—Flowers larger than A. albida, leaves finely marked 9d.

TRITELEIA BICOLOR.—Large, fragrant Crocus-like flowers, with yellow centres; leaves rushy, 6 inches; forms dense tufts. 1s. per dozen, 4s. per 100

PRIMULA MOOREANA.—Fine heads of soft lilac; very distinct. 1s. each, 6s. per dozen

BULBOCODIUM VERNUM.—Rosy-purple; dwarf Colchicum-like flowers. 1s. per dozen

ANDROSACE CARNEA.—A primulaceous plant, with dense clusters of bright pink, yellow-eyed flowers. 1s. 6d. to 3s. 6d.

All the preceding are usually in bloom with the Snowdrop.

ANDROSACE CILIATA.—A charming plant, with bright pink or rose-crimson flowers; moist, cool; sunny. 1s. to 3s. 6d.

ADONIS VERNALIS.—Deep brilliant yellow Anemone-like flowers; 3 inches across, from dwarf tufts; strong. 9s. per dozen

PRIMULA PURPUREA.—Very rare Himalayan species; larger and finer than P. denticulata. 2s. 6d. each; extra, 6s. to 7s. 6d.

NARCISSUS CONSPICUUS (Corbularia Bulbocodium) "The Hooped Petticoat Narcissus."—Large spreading brilliant yellow tube; very distinct. 1s. each, 10s. 6d. per dozen [9d.

DRABA BRYOIDES. Pale yellow; rosettes larger than D. aizoides.

NARCISSUS JUNCIFOLIUS.—Charming dwarf rush-like leaves; deliciously fragrant yellow flowers, 1 to 3 on slender stalks, 4 to 6 inches high, forming dense tufts, hardy. First-class Certificate Royal Horticultural Society. 9d. each, 7s. 6d. per dozen, 50s. per 100

GENTIANA VERNA, 1s. 6d., 15s. per dozen

„ BAVARICA, 3s. 6d. to 5s. each

SOLDANELLA ALPINA.—Deeply fringed drooping purple bells; Alps. 9d. to 1s.

PHLOX VERNA.—Large rosy crimson dwarf-creeping species. 9d. each, 6s. per dozen

FRITILLARIA MELEAGRIS ALBA (White Fritillary).—Large and lovely pendent white bells. 1s.

PRIMULA VISCOSA (Pyrenean).—Fine cushions of rosy pink. 1s. 6d. each; 10s. 6d. to 15s. per dozen

„ INTEGRIFOLIA (Pyrenees).—Rose-coloured. 1s. each; 10s. 6d. per dozen

„ NIVALIS.—Beautiful clusters of pure white, strong. 1s. 6d. to 2s. 6d.

ANEMONE PALMATA (Cyclamen-leaved Anemone).—Deep golden yellow, very distinct and fine. 1s. 6d.

AUBRIETIA GRANDIFLORA.—Larger than A. deltoidea. 6s. to 9s. per dozen

„ GRÆCA.—First-class Certificate Royal Horticultural Society. The finest species we have yet seen. 1s. each; 10s. 6d. p. doz.

SANGUINARIA CANADENSIS.—Pure white starry flowers, 2 inches across. 1s. each; 10s. 6d. per dozen

SILENE ACAULIS (Stemless Alpine Campion) —Dense, bright green, perennial cushions, covered with pink or rose flowers. 6s. to 9s. per dozen

SCILLA AMŒNA.—Spikes of deep blue. Follows S. bifona and sibirica. 5s. per dozen

HYACINTHUS AMETHYSTINUS.—Pretty dwarf tufts of porcelain blue. Follows the Scillas. 6s. per dozen; 42s. per 100

GENTIANA ALPINA.—Very rare and beautiful species, from the Pyrenees. Flowers smaller than the garden "Gentianella," and darker blue. 1s. 6d.

ANEMONE PULSATILLA (Pasque flower).—Strong, 1s.; 10s. 6d. per dozen

DOUBLE DARK CRIMSON VELVET PRIMROSE.—Not common. 18s. per dozen

A SUPPLEMENT to our GENERAL DESCRIPTIVE CATALOGUE of ALPINE PLANTS and HARDY PERENNIALS of last Spring is now in the Press, and will shortly be issued. It contains many novelties and rarities.

JAS. BACKHOUSE & SON, York Nurseries

GENUINE SEEDS, CARRIAGE FREE.

B. S. WILLIAMS,

VICTORIA and PARADISE NURSERIES, HOLLOWAY, LONDON, N.,

BEGS TO STATE THAT HIS

DESCRIPTIVE AND PRICED SEED CATALOGUE FOR 1866

CAN BE HAD POST FREE ON APPLICATION.

It contains all Novelties worthy of notice, with full description to each, and a few Hints for the guidance of Amateurs.

The LIST of KITCHEN GARDEN SEEDS comprises all that is essential in variety for the various requirements in family consumption. Those who prefer leaving the Selection of Vegetables to B. S. W. may rely upon receiving none but the most valuable and approved sorts. Collections are proportioned to suit Large and Small Gardens at the following prices:—

10s. 6d., 21s., 42s., 63s., 84s. each.

For Quantities, see Catalogue.

The following CHOICE and NEW VEGETABLE SEEDS are specially recommended:—

MALVERN HALL MELON, earliest variety in cultivation, 2s. p. pkt.
WILLIAMS' MATCHLESS RED CELERY, 1s. per packet
DIGSWELL PRIZE ENDIVE, 1s. per packet
The ALBERT SPROUTS, 1s. per packet
HILL'S INCOMPARABLE DWARF CABBAGE, 1s. per packet
HOLME PARK LETTUCE, 1s. 6d. per packet
NUNEHAM PARK ONION, 2s. 6d. per packet

The ORANGEFIELD DWARF PROLIFIC TOMATO, now offered for the first time, an Introduction of real worth: the fruit is large, very dwarf, and wonderfully prolific (stock limited), 2s. 6d. per packet

SHARMAN'S UNIVERSAL CUCUMBER, the best Winter variety; fruit long and handsome, very prolific, 2s. 6d. per packet

DOUBLE TUBEROSES, very fine, 3s. per dozen. Choice GLADIOLI ROOTS, 6s., 8s., 12s., and 18s. per dozen

NOVELTIES FOR 1866.

E. G. HENDERSON & SON

RESPECTFULLY OFFER THEIR

NEW SEED CATALOGUE FOR THE PRESENT SEASON,

Containing full descriptions of the following Novelties, with many others from the Continent.

Post Free on application.

VIOLA CORNUTA, in Seed and Plants.—One of the best known species, admirably adapted for chaste marginal effect to summer and autumn flower-beds.

TROPÆOLUM COMPACTUM COCCINEUM.—The finest scarlet-flowered bedding variety of the "Tom Thumb" section.

LYCHNIS GRANDIFLORA GIGANTEA.—A splendid scarlet-flowered variety for a bed or clump, or pot-plant.

HELIPTERUM AUREUM NANUM.—A lovely little yellow-flowered species, 6 inches high.

CELOSIA RACEMOSA ELEGANS.—The best of known kinds for pot-culture, in conservatory decoration, true from seed.

LOBELIA ERINUS, PRINCE ALBERT.—Fine habit, one of the finest in its section for bedding.

YELLOW PERFECTION WALLFLOWER.—A beautiful variety, true to its colour and habit. Received a Certificate from the Royal Horticultural Society.

CYCLAMEN.—From our unrivalled collection, in varied colours, separately or mixed.

PRIMULA SINENSIS FILICIFOLIA.—The beautiful Fern-like leaved variety, white and crimson, separately or mixed.

LILIUM AURATUM (Golden-rayed Japan Lily).—The most beautiful of its tribe. New Seed just gathered.

NEW PRIZE MELONS.

For descriptions of these first-class Fruits, see last Numbers of *Gardeners' Chronicle*.

THE NEW CLIANTHUS DAMPIERI,

In varieties of colour, as saved from the White and others, as exhibited by the Raiser. *2s. 6d.* and *5s.* per packet of 12 and 24 Seeds.

RAPHANUS CAUDATUS.

The remarkable New Radish, with long eatable pods, *2s. 6d.* each Seed.

DOUBLE-FLOWERED MIMULUS.

Seed Packets, *1s. 6d.* and *2s. 6d.* each.

E. G. HENDERSON AND SON, WELLINGTON NURSERY, ST. JOHN'S WOOD, N.W.

THE MAGNIFICENT

JAPAN LILIES,

LILIUM LANCIFOLIUM ALBUM, ROSEUM, and RUBRUM,

For planting in Rhododendron Beds, &c., 6s., 9s., and 12s. per doz.; 40s., 50s., 60s., 70s., and 80s. per 100.

BARR & SUGDEN.

THE METROPOLITAN

SEED BULB & PLANT WAREHOUSE

12, KING STREET, COVENT GARDEN, W.C.

THE MAGNIFICENT

GOLDEN-RAYED LILY of JAPAN,

LILIUM AURATUM.

Fine Established Bulbs of the above, which have been two seasons in this country, 5s. 6d., 7s. 6d., 10s. 6d., and 15s. Newly imported Bulbs much cheaper.

For Bedding out, Lilium lancifolium album, roseum, and rubrum, 6s., 9s., and 12s. per doz.

Orders amounting to 21s. sent Carriage Paid.

For SPECIALITIES in VEGETABLE SEEDS, see our large Advertisement, p. 72.

NEW SEEDS.

		Carriage paid.
No. 1.	COMPLETE COLLECTIONS of VEGETABLE SEEDS, for One Year's Supply	10s. 6d.
No. 2.	Ditto ditto ditto	15 6
No. 3.	Ditto ditto ditto	21 0
No. 4.	Ditto ditto ditto	30 0
No. 5.	Ditto ditto ditto	42 0
No. 6.	Ditto ditto ditto	63 0
No. 7.	Ditto ditto ditto	84 0
No. 8.	Ditto ditto ditto	105 0

		Carriage paid.
No. 1.	COLLECTION of FLOWER SEEDS	3s. 6d.
No. 2.	Ditto ditto	5 6
No. 3.	Ditto ditto	7 6
No. 4.	Ditto ditto	10 6
No. 5.	Ditto ditto	15 0
No. 6.	Ditto ditto	21 0
No. 7.	Ditto ditto	30 0
No. 8.	Ditto ditto	42 0
No. 9.	Ditto ditto	63 0

There are still on hand a few Copies of our DESCRIPTIVE PRICED LIST of SEEDS for the FLOWER and KITCHEN GARDEN, and which can be had by intending purchasers Free and Post Paid.

BARR AND SUGDEN, 12, KING STREET, COVENT GARDEN, W.C.

J. C. WHEELER & SON, SEED GROWERS, GLOUCESTER.

Price per Peck, 3s.; including bag, 3s. 6d.

Price per Bushel, 10s. 6d.; including bag, 11s. 3d.

GLOUCESTERSHIRE KIDNEY.

VERY EARLY, PROLIFIC CROPPER, FINE FLAVOUR, GOOD SIZE, MOST PROFITABLE.

We beg attention to the following Extracts from Letters lately received :—

Hereford. "The Gloucestershire Kidneys I had from you were not only excellent in flavour but were also abundant croppers, and my Gardener considers they are the best early variety grown."—CHARLES ANTHONY, *Munsion House, Hereford.*

Birmingham. "I can speak in the highest terms of the Gloucestershire Kidney. The lot I had from you were divided between two other gentlemen and myself, and in all cases I find that good crops of *most excellent* and large Potatos were obtained. The Gloucestershire Kidneys were so much better in quality to other sorts as to be noticed by all my family when they first came on table, and before they knew of any change of sort."—J. EDGAR MARTINEAU, *Solihull, Birmingham.*

Neath. "I much prefer the Gloucestershire Kidney to the Ashleaf, for although I planted the former some two or three weeks after the latter, they were fit for the table quite as soon, with at least *double the crop*, and I may add, that the Flukes were superior to any I have ever seen, both for *quantity* and *quality*."—HENRY ALLEN, *Neath Abbey, Neath.*

Newtown. "I can with pleasure speak in high terms of the Gloucestershire Kidney. It is very early, a good cropper, very short in the haulm, and also very dry and mealy. I had very few diseased."—E. M. ROWLAND, *Homestay, Newtown.*

Kidwelly. "The Gloucestershire Kidney I had from you was a handsome specimen; it produced a most excellent crop. They eat now as well as any late Potato grown."—T. C. ARMSTRONG, *Pinged House, Kidwelly.*

Burford. "Your Gloucestershire Kidney turned out remarkably fine, large, and well flavoured."—H. RICE, *Rectory, Great Rissington, Burford, Glos.*

Dover. "The Gloucestershire Kidneys you sent me were satisfactory in every respect."—T. C. JAMES, *2, Claremont Villas, Folkestone Road, Dover.*

Lampeter. "The Gloucestershire Kidney is an excellent variety, being very early, and a first-rate cropper. They give every satisfaction."—DAVID KNEATH, *Gardener to* Jno. Johns, Esq., *Dolancothy.*

Kington. "I am much pleased with the Potatos. The Gloucestershire Kidney I consider to be one of the best, being early, a heavy cropper, and of first-rate quality. The Milky White I think equally high of, and am happy to say I have them all perfectly free from disease."—THOMAS TURNER, *Kington, Herefordshire.*

Honiton. "I have great pleasure in adding my high approval of your Gloucestershire Kidney and Milky White, which I have proved excellent."—F. E. WOODCOCK, *Northleigh Rectory, Honiton.*

Neath. "I think the Gloucestershire Kidney equal, if not superior, to any I ever had before."—RICHARD PHILLIPPS, *Eaglesbush, Neath.*

Cheltenham. "The Gloucestershire Kidney turned out very well; indeed the crop from them was abundant and of excellent quality."—A. WILSON, *St. Ann's, Cheltenham.*

Marlborough. "I have much pleasure in telling you I had an excellent crop of your Gloucestershire Kidneys. They are remarkably fine, and very good on the table."—WILLIAM SPEARING, *Kennet, Marlborough.*

MANY OTHER TESTIMONIALS EQUALLY FAVOURABLE MAY BE SEEN IN OUR

LITTLE BOOK OR SELECT SEED LIST FOR 1866.

THE FOLLOWING FIRMS HAVE OBTAINED A SUPPLY THIS SEASON :—

Messrs. JAMES CARTER & Co., High Holborn.
Messrs. JACOB WRENCH & SONS, London Bridge.
Messrs. COOPER & BOLTON, 152, Fleet Street.
Messrs. SUTTON & SONS, Reading.
Messrs. FISHER, HOLMES, & Co., Sheffield.
Mr. A. DANCER, Fulham.

J. C. WHEELER AND SON, SEED GROWERS, GLOUCESTER.

AUCUBA JAPONICA, LOADED WITH BRIGHT RED BERRIES.

JOHN & CHARLES LEE,

SEEDSMEN TO THE QUEEN,

INVITE INSPECTION OF THEIR

LARGE STOCK OF MAGNIFICENT SCARLET-BERRIED AUCUBAS,

Which they believe to be unrivalled for extent, perfection of form, and colouring.

The BERRIED AUCUBAS are valuable for TABLE DECORATION, for which purpose they may be hired at 10*s.* 6*d.* per night.

PLANTS may be purchased at 3 guineas, 4 guineas, and 5 guineas each.

RIPE SEEDS, producing innumerable varieties, at 2*s.* each, or 18*s.* per dozen.

The Trade supplied on liberal terms.

ROYAL VINEYARD NURSERY and SEED ESTABLISHMENT, HAMMERSMITH, W.

LEE'S COLLECTIONS of KITCHEN GARDEN SEEDS.

JOHN & CHARLES LEE,

SEEDSMEN TO THE QUEEN,

ARE NOW EXECUTING ORDERS FOR THEIR

COLLECTIONS OF KITCHEN GARDEN SEEDS, GROWTH OF 1865,

Which, having been selected with great care, will be found replete with every requisite for the supply of a Family for the year.

No. 1.	COMPLETE COLLECTION of the choicest kinds	..	£5	5	0
No. 2.	COMPLETE COLLECTION ,, ,, ,,	..	3	3	0
No. 3.	COMPLETE COLLECTION ,, ,, ,,	..	2	2	0
No. 4.	COMPLETE COLLECTION ,, ,, ,,	..	1	1	0

Their DESCRIPTIVE CATALOGUE of KITCHEN GARDEN, FLOWER, and AGRICULTURAL SEEDS for 1866, may be had Free by Post on application.

ROYAL VINEYARD NURSERY and SEED ESTABLISHMENT, HAMMERSMITH, W.

GARDEN SEEDS.

OSBORN & SONS'

SELECT CATALOGUE OF THE ABOVE

May now be had on application, and they beg to call special attention to the following Select Articles:—

	Per packet.—s.	d.		Per packet.—s.	d.
OSBORN'S WHITE WINTER BROCCOLI	.. 1	6	ROWDEN'S BROWN COS LETTUCE	.. 1	6
NEW AMERICAN TOMATO	.. 1	6	SCOTT'S SUPERB WHITE COS LETTUCE	.. 1	0
This is very large, and less watery than the old Red.			BELLE BONNE SUMMER CABBAGE LETTUCE	1	0
			These three Lettuces are less liable to run than any we know.		

FULHAM NURSERY, S.W.

SUTTON'S

UNRIVALLED COLLECTIONS OF

GARDEN SEEDS for ONE YEAR'S SUPPLY,

CARRIAGE FREE.

SUTTON & SONS are now prepared to receive Orders for their unrivalled COLLECTIONS of GARDEN SEEDS, as under:—

A COMPLETE COLLECTION of KITCHEN GARDEN SEEDS for ONE WHOLE YEAR'S SUPPLY (with Instructions on Cultivation) £3 3 0

Ditto, in quantities proportionately reduced	..	..	2	2	0
Ditto ditto	..	..	1	11	6
Ditto ditto	..	..	1	1	0
Ditto ditto	..	..	0	15	0
Ditto, for a SMALL GARDEN ..	..	..	0	10	6

Sent Carriage Free by Rail, and 5 per cent. discount allowed for cash payment. A remittance or reference requested from unknown Correspondents.

☞ *By ordering one of these Collections once a year much trouble and expense will be saved.*

Also, NATURAL GRASSES for LAWNS and MEADOWS, fine sorts of MANGEL WURZEL, TURNIP, and other AGRICULTURAL SEEDS.

SUTTON'S GENERAL ILLUSTRATED DESCRIPTIVE PRICED CATALOGUE and AMATEUR'S GUIDE is now ready, price 6*d.*, or gratis to Customers.

Remittances may be made by Cheques on Town or Country Bankers, or by Post Office Orders payable to

SUTTON AND SONS, ROYAL BERKSHIRE SEED ESTABLISHMENT, READING.

New Vegetable, Flower, and Agricultural Seeds.

JOHN AND CHARLES LEE, SEEDSMEN to the QUEEN, are prepared to execute orders for every kind of VEGETABLE, FLOWER, and AGRICULTURAL SEEDS, growth of 1865.

Their DESCRIPTIVE CATALOGUE is now ready, containing all the NEW and CHOICE VEGETABLE, FLOWER, and AGRICULTURAL SEEDS in cultivation, and will be forwarded free on application.

Royal Vineyard Nursery and Seed Establishment, Hammersmith, London, W.

Seeds of the finest quality for the Garden and Farm.

ARCHIBALD HENDERSON, late Superintendent to the Horticultural Society of London, and of His Grace the Duke of Sutherland's Gardens, Trentham, Staffordshire, begs to announce that his DESCRIPTIVE CATALOGUE of SEEDS and useful GARDEN CALENDAR is now published, and will be forwarded post free on application.

A. H. has selected the leading varieties only in each Class, his past practical experience having enabled him to do so.

Sion Nursery, Thornton Heath, Surrey, S.

SPECIAL OFFER for CASH.

*SUTTON'S RINGLEADER, or CARTER'S FIRST CROP PEAS, 2*s.* 6*d.* per quart.
*CARPENTER'S EXPRESS ditto, 1*s.* 6*d.* per quart, 30*s.* per bush.
*ESSEX RIVAL ditto, 1*s.* per quart, 24*s.* per bushel.
DICKSON'S EARLY FAVOURITE, 9*d.* per quart.
DILLISTONE'S FIRST EARLY, 1*s.* per quart.
SANGSTER'S No. 1, 9*d.* per quart.
VEITCH'S PERFECTION, 1*s.* per quart.
HAIR'S DWARF MAMMOTH, 1*s.* per quart.
CHAMPION of ENGLAND, 9*d.* per quart,
BRITISH QUEEN, 1*s.* per quart.
NE PLUS ULTRA, 1*s.* per quart.

CARROT SEED.

†ALTRINGHAM, 1*s.* per lb., 12*s.* per stone of 14 lb.
†JAMES' INTERMEDIATE, 1*s.* per lb., 12*s.* per stone.
LONG ORANGE, 1*s.* per lb.

MANGEL WURZEL, &c

†ENGLEFIELD YELLOW GLOBE, 8*d.* per lb., 56*s.* per cwt.
†YELLOW GLOBE, 6*d.* per lb., 40*s.* per cwt.
LONG RED, ditto YELLOW, and RED GLOBE, 6*d.* per lb.

GREEN KOHL RABI, 3*s.* per lb.
DRUMHEAD CABBAGE SEED, 2*s.* per lb.
ROBERTSON'S OX ditto, 2*s.* 6*d.* per lb.
ENFIELD MARKET CABBAGE, 3*s.* per lb.

POTATOS.

*MONA'S PRIDE ASH-LEAF, 5*s.* per peck of 14 lbs.
*RIVERS' ROYAL ASH-LEAF, 2*s.* per peck, 13*s.* per cwt., 25*s* per sack (of 2 cwt.)
LEMON KIDNEYS, 1*s.* 6*d.* per peck, 11*s* per cwt., 21*s.* per sack
ASH TOPS (old sorts), 1*s.* per peck, 7*s.* 6*d.* per cwt, 14*s.* per sack
EARLY HANDSWORTHS, 2*s.* per peck
*DAINTREE'S SEEDLING, 1*s* per peck, 7*s.* per cwt., 13*s.* per sack
SPENCER'S KING, 1*s.* per peck, 5*s.* 6*d.* per cwt., 10*s.* per sack.
*WEBB'S IMPERIAL, 1*s* 2*d.* per peck, 8*s.* per cwt., 15*s.* per sack.
EARLY SHAWS, 9*d.* per peck, 5*s* per cwt. 9*s.* per sack.
SKERRY BLUES, 9*d.* per peck, 5*s.* 6*d.* per cwt., 10*s.* per sack.
EARLY FORTYFOLD (Shallow-eyed), 9*d.* per peck, 5*s.* 6*d.* per cwt., 10*s.* per sack.
*PRINCE of WALES, 1*s.* 6*d.* per peck, 11*s.* per cwt., 21*s.* per sack.
*MYATT'S PROLIFIC, 1*s.* per peck, 7*s.* 6*d.* per cwt., 14*s.* per sack.
PLUMS, 8*d.* per peck, 4*s.* 6*d.* per cwt., 8*s.* per sack.
DRUMHEAD CABBAGE PLANTS, 2*s.* 6*d.* per 1000, 22*s.* 6*d.* per 10,000
Strong two years' ASPARAGUS PLANTS, 2*s.* per 100, 15*s.* per 1000.
WHITE SPANISH ONION SEED, 2*d.* per oz., 2*s.* per lb.
*RUNEHAM PARK ONION, 2*s.* 6*d.* per packet.
Russian Mats, 1*s.* 2*d.* each, 12*s* per dozen.
New 4-lb. Sacks, 1*s.* 6*d.* each; 2-bushel Bags, 1*s.* 2*d.*; 1-bushel ditto, 10*d.*; pecks, 5*d.*

*** Remittances to accompany Orders.

CHRISTMAS QUARMAN, Seed Grower and Seedsman, Peterborough.

* Stocks from the parties sending them out.

† Samples sent on application where large quantities are required.

Dickson's "First and Best" Early Pea.

FRANCIS AND ARTHUR DICKSON AND SONS' "FIRST AND BEST" EARLY PEA having given *universal* satisfaction, and being pronounced by competent judges (see Testimonials below), in accordance with the fact ascertained by themselves by REPEATED trials, to be the VERY BEST Early Pea ever offered for earliness, prolific nature, and persistent character, is now being sent out from a large bulk, which they have grown to meet the great demand, in *sealed* and *labelled* packages (none others genuine), at 2*s.* 6*d.* per quart.

TESTIMONIALS:—

From Mr. J. H. MASON, *Stourton Castle Gardens, Staffordshire.* See *Gardeners' Chronicle and Agricultural Gazette*, July 29, 1865, p. 700

"Dickson's First and Best is decidedly the best Early Pea I have ever yet grown. It is a good cropper, with good-sized WELL-FILLED pods, and several gatherings can be obtained from it."

Further opinions of Mr. MASON, *Stourton Castle Gardens.*
See *Gardeners' Chronicle and Agricultural Gazette*, July 29, 1865, p. 700.

"Dickson's First and Best Pea grows taller than these (Carter's First Crop and Sutton's Ringleader), is of more vigorous habit, and produces a larger quantity of pods, and while the average number of Peas in the two mentioned was from 4 to 5 in a pod, that of Dickson's was from 5 to 7. Dillistone's, Carter's, and Sutton's Peas yield their entire crop in about two pickings, while from Dickson's four good gatherings can be obtained. The last-named kind was remarkably true in character, whilst among Sutton's and Carter's lots of stragglers sported their heads, and were, as 'rogues' in Peas generally are, later in blooming."

From Mr. J. C. MUSSELL, *Horley House, Croydon.* See *Gardeners' Chronicle and Agricultural Gazette*, June 10, 1865, p. 532

"I have not seen any mention made in your columns of Dickson's First and Best Pea, a variety invaluable for its earliness.

From Mr. WM. LANDON, *Downton Castle Gardens, near Ludlow.*
See *Gardeners' Chronicle and Agricultural Gazette*, July 22, 1865, p. 676.

"I have this season tried Dickson's First and Best, Dillistone's Early, and Sangster's No. 1, and I found the first to be fully nine days earlier than either of the others. Its quality is excellent, it is very hardy, a strong grower, and pods in abundance from top to bottom. I gathered a much larger crop from the First and Best than I did from either of the others, and in future I shall sow it only for my first crop."

From Mr. ALEXANDER DEAN, *Maybush, Southampton.*
See *Gardeners' Chronicle and Agricultural Gazette*, July 1, 1865, p. 603

"It was also noticeable that when Dickson's First and Best was entirely free from rogues, the other two had plenty among them."

From Mr. J. VEITCH, *Exotic Nursery, Chelsea.*
See *Gardeners' Chronicle and Agricultural Gazette*, July 29, 1865, p. 700.

"I have been much interested in reading the opinions of those who have tried the various new Peas sent out last Spring, and as I have made very careful trials of all, I give you the following as the result of my experience. (Here follow the names of all the new Peas, those when sowed, and dates of first gatherings.) Dickson's First and Best was very good and true, and in my opinion i the *best* new Early Pea sent out this season."

From Mr JOHN MCHATTIE, *Seedsman, Chester.*
See *Gardeners' Chronicle and Agricultural Gazette*, Aug. 19, 1865, p. 773.

"I have no hesitation in endorsing Mr Veitch's opinion that it (Dickson's First and Best) is the best new Early Pea yet sent out."

Scores of letters equally commendatory of our "First and Best" Pea have been addressed to us from first-class Gardeners and others, but we think the extracts we have quoted from the *Gardeners' Chronicle* sufficient

FRANCIS & ARTHUR DICKSON & SONS' DESCRIPTIVE and PRICED CATALOGUE of VEGETABLE and FLOWER SEEDS, with ample Cultural Hints and much useful information, will be sent gratis and post free on application. Their Seeds are all grown by themselves, or obtained from the best sources, and are the most select stocks in cultivation.

FRANCIS & ARTHUR DICKSON & SONS, The Old Established Seed Warehouse, 106, Eastgate Street, Chester.

*** Seeds of £2 value (Grain excepted) delivered free to any Railway Station.

SUTTON'S PRESENT PRICES OF NEW FARM SEEDS.

PRICE 1s. per Pound.

Cheaper by the Cwt.

SUTTON'S SELECTED YELLOW GLOBE MANGEL

From the Hon. A. L. Melville, *Branston Hall, Lincoln*
Mr. Sutton, Dec. 30, 1865.

"The Yellow Globe Mangel you sent me has proved the best I have ever grown."

From Mr. J. Hudson, *Preston, Rugby*

"I have taken the Prize offered by the Rugby and Dunchurch Association for the clearest and best crop of Mangel Wurzel Five Years in succession; the crop was grown from the seed of Yellow Globe supplied by you."

PRICE 1s. 6d. per Pound.

Cheaper by the Cwt.

NEW YELLOW INTERMEDIATE MANGEL

From Messrs. J. & T. Hepburn & Sons, *Southwark, S.E.*
November 15, 1865.

"We forwarded yesterday from our Farm at Dartford, for exhibition at your Show, 9 Yellow Intermediate Mangels, taken from a piece of 5½ acres, which produced 75 tons per acre—the rows 2 feet 6 inches apart, and the plants 18 inches in the rows."

SUTTON & SONS, SEED GROWERS, READING, BERKS,

HAVE NOW THE PLEASURE OF HANDING THEIR

LIST OF THE LEADING KINDS OF FARM SEEDS, WITH PRESENT PRICES,

WHICH ARE OFFERED WITH GREAT CONFIDENCE, AS BEING GENUINE NEW SEEDS, WHICH HAVE BEEN PROVED TO GERMINATE WELL.

FOR LARGE QUANTITIES, SPECIAL CONTRACTS MAY BE MADE.

Sutton's best Mixtures of Permanent Grass and Clover Seeds,

For Laying Down Land to Meadow or Pasture.

For LOAMY SOILS (MEDIUM to STIFF) ... for STIFF HEAVY SOILS
For LIGHT BLOWING SANDS ... for CHALKY SOILS

Consisting of 2 bushels of light seeds, and 12lbs. of Clovers and other small seeds per acre ... 2 0 0

Natural Grasses contained in Messrs. Sutton's Mixtures,

and which may be purchased separately at Catalogue prices.

ACHILLEA MILLEFOLIUM, Yarrow
ALOPECURUS PRATENSIS—Meadow Foxtail
ANTHOXANTHUM ODORATUM—Sweet Vernal
CYNOSURUS CRISTATUS—Crested Dogstail
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FESTUCA DURIUSCULA—Hard Fescue
" PRATENSIS—Meadow Fescue
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KING of SWEDES.—Very large, 10d. per lb.
HARDY WHITE SWEDE.—Choice stock, excellent for late feed, 1s. 2d. per lb.
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" NEW PURPLE-TOP BULLOCK'S HEART TURNIP.—Fine yellow flesh, equal to a Swede, 1s. 6d. per lb.
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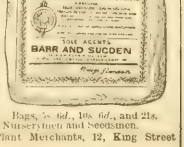

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The Gardeners' Chronicle.

SATURDAY, FEBRUARY 3, 1866.

MEETINGS FOR THE ENSUING WEEK.

MONDAY, Feb. 5—Entomological, 7 P.M.
SATURDAY, " 10—Royal Botanical (Weekly Show), at 1 P.M. South Kensington .. .. .. 2 P.M.

RESUMING the subject of CLIMATE in relation to the CULTIVATION OF FRUIT, we have now to direct attention to the variations arising from the hypsometrical position of places. Elevation above the level of the sea is one of the main elements affecting temperature, and therefore climate. It is well-known that as we ascend a high mountain, the warmth of the atmosphere decreases till we reach the line of perpetual snow, which line is, generally speaking, lower or higher, in proportion as the distance from the equator augments or diminishes. Many common facts attest the same law. An observer, living six miles inland, we will say, and at an elevation of 500 feet above the sea, sets out, after a sudden fall of snow, to walk towards the shore: at home he leaves everything enveloped in a sheet of white perhaps 6 inches thick; as he descends, the fleecy covering becomes gradually thinner; and at the sea side he finds that the snow had melted as it fell. Or suppose that, on a winter afternoon, with signs of incipient frost, he walks in a reverse direction: at first the ground is wet and sloppy; as he ascends it becomes drier; at the altitude of 300 feet, perhaps, the earth begins to feel firm and crisp under his foot; and when he reaches home, hard frost has set in. It is true that, in this case, his observations are not simultaneous; the frost at the end of his journey has the advantage in point of the time occupied; but could he, at the middle of his walk, survey the whole line, he would find only the faint commencement of polarisation at the lower extremity, while at the upper end cakes of ice of some thickness had been actually formed. In another form the effects of elevation are familiar to gardeners. They are in the habit of remarking that a given place, near the sea, is 10 days or a fortnight earlier in its climate than another place at a higher level—meaning that vegetation at the former place is generally about that interval in advance of the latter. This is obviously an important advantage, as, independently of the higher temperatures probably occurring at the lower place, it may add a whole month to the effective season, and may have a material influence in maturing late fruits, as, for example, the Beurré Rance Pear.

The effect of elevation on Temperature was too obvious to escape the attention of meteorologists. They have endeavoured to arrive at definite conclusions concerning it by means of general reasoning, by experiment, and by lengthened observations in a great variety of circumstances. As a good example of the elementary treatment of the subject, we may cite the late Professor LESLIE'S investigations, in the article on Climate in the later editions of the "Encyclopædia Britannica." It is there shown that the decrease of temperature in ascending heights is dependent on two physical principles, viz., the decrease of density in the atmosphere, and a corresponding increase in the capacity for heat in the attenuated air. LESLIE shows that, beginning at the level of the sea, there is a decrease of 1° of Fahrenheit in the temperature, for every 300 feet of ascent. The spaces, however, corresponding to the decrement of one degree become less as we ascend to considerable heights. Thus at the elevation of one mile, the fall of 1° corresponds to an ascent of 295 feet; at an elevation of two miles to 277 feet; and at three miles to 223 feet. These results are reached partly by experiments with the air pump, and partly from a consideration of the properties of the logarithmic curve to which the densities of the air conform themselves. It is affirmed that the results correspond very well with observation; but this assertion must be regarded as doubtful, when we compare the very discordant figures given by different observers. HUMBOLDT assigns 299 feet for 1° Fahrenheit in Central Europe, and 341 feet as deduced from his observations in the Cordilleras. BOUSSINGAULT for the latter region gives the mean result of 319 feet. Mrs. SOMERVILLE, in her instructive work on Physical Geography, states it at 334 feet; Sir JOHN F. HERSCHEL at 350 feet; and Dr. BALFOUR at from 300 to 400 feet. From this diversity it is manifest that these figures are little more than rough guesses. Moreover, it is not certain whether in these statements the numbers represent the spaces commencing at the level of the sea, or whether they are presented as a sort of average applicable to all elevations within human reach. Neither does it appear that the eminent physicists we have named take into account the horary variations of the spaces which were indicated by the observations of SAUSSURE on the Col du Géant, and KAEMTZ on the Righi. The whole subject requires a more exact investigation on the part of meteorologists than, so far as we are aware, it has yet undergone.

In reference to this much needed investigation, another remark may be permitted us. All winter temperatures may, or rather ought to be, omitted. When vegetation is entirely stagnant, the effect of these temperatures is only *nil*. A great deal of trouble has been taken to ascertain the mean temperature of the whole year. We do not say that these mean results are in all respects useless; but it might be easily shown that they exercised a deceptive influence on particular speculations. In relation to the culture of fruit, the means should be taken only in those months during which the plants or trees are in active growth. Indeed, it might be more interesting and useful to know the average maxima of temperature than the average means. Of course it would also be useful to ascertain the average or even the absolute minima; for these might determine whether the plant in question could live in the given climate at all, and in that case the winter temperatures must necessarily be included.

As few gardens in Britain are more than 1000 feet above the level of the sea, the assumption of a rise of 300 feet for a decrease of one degree of Fahrenheit is probably sufficient for all practical purposes. In truth it must be admitted that, however much it may be desirable for the sake of exact science that we should have precise knowledge as to the relations of altitude and temperature, that knowledge is not extremely important in a practical point of view. Temperature is not the only element affecting vegetation. Its influences are not a little modified by a variety of circumstances, which, in some cases, may be so considerable as to mask, if not altogether to nullify, the effects of elevation. The peculiar soil; the comparative dryness or humidity of the district; the direction and force of the winds at the seasons of blossoming, growth

and ripening of the fruits; the surface over which the prevalent winds of summer blow; the nature of the country to the windward of the particular garden, that is, whether it is cultivated, moorish, wooded, mountainous, or otherwise; the kind and efficiency of shelter; and the amount of sunny or cloudy weather—all have most sensible effects on the growth and ripening of fruits. And, as HUMBOLDT has well remarked, though even he has hardly been able to obtain for his suggestion the attention due to it, there is "the difference between direct and diffused light, or that which prevails when the sky is clear and when it is overcast by mist or cloud." "I have long," he adds, "endeavoured to direct the attention of physicists and other physiologists to this difference, and to the unmeasured heat which is locally developed in the living vegetable cell by the action of direct light." ("Cosmos," vol. i., p. 330, Bohn's edition.)

We might here state a number of illustrative facts, but as these refer to climate both in its latitudinal and altitudinal relations, we shall reserve them for another occasion. Meanwhile we recur to the conclusion arrived at in a former article, viz., that plants themselves—flowers or fruit trees—should be adopted as living instruments wherewith to ascertain the value of climates. Plants represent the whole combined agencies or influences at work in Nature, while the thermometer yields indications of temperature only. We observe that the Curator of the Edinburgh Botanic Garden is in the habit of reporting to the Botanical Society the blooming of a variety of winter and spring flowers. That affords the means of comparing one year with another relatively to the garden in which the observations are made; it would be most interesting to compare different places in distant localities, particularly as to the effects of differences in altitude. Might we take the liberty of recommending this subject to the Fruit Committee of the Royal Horticultural Society? The writer of these remarks has made more than one attempt in this field of statistical inquiry, but with indifferent success, partly owing perhaps to his own want of skill in framing his questions, and partly to the almost invariable tendency in gardeners to give the best account possible each of his own particular garden. We could give amusing instances of this proclivity, which would go to show that our venerable critic, Mr. MATHEW, is by no means alone in shedding a *couleur de rose* on his own successes. The Scottish Meteorological Society has been working in this direction, and it is understood has experienced similar difficulties. M. ALPHONSE DECANDOLLE recommends the marking of the flowering rather than the ripening of fruits and seeds of plants, the latter being indefinite and liable to be mistaken, though in his own researches he has often skilfully employed both. But even in regard to flowering we must be sure that it is fairly due to the natural process of the season. It is vain to ask questions about the blossoming of Peas and Beans, unless we are sure that in the instances compared they were sown on the same day. Even perennial plants may be injuriously affected by a previous severe winter. For example, while the Solfaterre, or the Gloire de Dijon Rose, in a genial season, may bloom in the beginning or middle of May, if they have suffered from frost they may not show their blossoms before the middle or end of June. But the appearance of the first dozen of flowers of the same variety of Crocus, or still more the first dozen of blooms of the Gooseberry, or of standard Apple or Cherry trees, or of an Apricot or Peach tree on a wall with a southern aspect, might be determined within a day or two. Of course the more numerous and diversified the subjects of observation, the more completely would the sources of error be eliminated. Such data would enable us to tell with precision how much earlier one place is than another; and if the ripening of fruits could be strictly ascertained, as surely in some cases they might, a flood of light would be shed on a variety of subjects connected with climate, which at present are extremely obscure.

We may add that the above inquiries have been suggested to us by some of the beautiful maps published by the Board of Ordnance. The Scotch maps on the 6-inch scale exhibit contour lines of the country, by which the elevation of gardens can be known within the limit of 50 feet. We suppose a similar advantage is enjoyed in other parts of the country. As an inquiry embracing the whole of Britain would be too complicated and laborious, groups of counties might be selected—such as Kent, Surrey, and Sussex — Middlesex, Hertford, and Essex — Gloucester, Monmouth, Hereford, and Worcester —or whatever other combinations men possessed of adequate local knowledge might recommend. It can hardly be doubted that a staff of trustworthy observers could be secured in each of these groups. And it is as little to be doubted, that if they went at their work with a will, we should learn a great deal more on these subjects than we yet know.

—— How is it that so little attention is paid to those very beautiful winter and spring-flowering plants the HELLEBORES? The common Christmas Rose is a great favourite, but there are others almost if not quite as beautiful, such as H. atro-rubens, with large violet-coloured flowers; and H. purpurascens, with smaller blooms of a darker purple hue. H. olympicus and H. argutifolius too, are worth a place in any garden. Nor are our English H. viridis and its near ally H. Bocconi at all to be despised in a horticultural point of view. It is quite time that some of these beautiful hardy perennials should be found elsewhere than in Botanic gardens proper. They are of easy culture, and by crossing and selection, numerous fine varieties might doubtless be obtained. Have any of our correspondents ever met with a double Christmas Rose?

New Plants.

325. AERIDES THIBAUTIANUM, *Rchb. fil.*

Foliis Aeridis quinquevulneri, racemo pendulo multifloro, sepalis oblongis, petalis cuneato-obovatis, labelli lamina tripartita, partitionibus lateralibus falcatis, partitione media ligulata acuta calle bidentato in basi, calcari conico curvo lamine subequali, calle sub pede e lumine tumido tabulari emarginato ostium calcaris claudente.

The christening of a new Aerides marks a red-letter day in our horticultural calendars. Here is a new one with all the habit of Aerides quinquevulnerum, in a collection of which it arrived. The flowers remind one of the Foxbrush variety, but the colours are much softer, and they are arranged in a pendulous raceme, like the flowers of A. quinquevulnerum and its allies. The deep amethyst colour is very striking, and the sugary exudation as rich as in any of the species. We believe it is of Polynesian origin. It comes from the rich collection of Messrs. Thibaut and Keteleer, to the first of which gentlemen it is inscribed. *H. G. Rchb. fil.*

THE ROYAL HORTICULTURAL SOCIETY'S SCHEME FOR THE EDUCATION AND IMPROVEMENT OF GARDENERS.

(Concluded from p. 77).

BUT apart from all this, it seems desirable that if the Horticultural Society is to give certificates at all, it should certify finished, and not half-made gardeners. It will be more than useless for it to work up cheap raw material to a certain point, and then send it to be perfected elsewhere. Such a system will rob its diplomas of any value, and hinder them from acquiring the slightest weight or authority. To ensure success, it seems to me that the teaching should begin at the point at which it is now proposed to leave off. No gardener who has been less than five or six years at the business should be eligible for admission to Chiswick as a student. The time for study there ought also to be extended. As these changes would secure more skilful men, they would be entitled to higher wages. Eighteen shillings or one pound per week would bring to Chiswick the best young men in the market, and none other ought to receive the patronage and support of the Horticultural Society. Instead of the parsimonious economy that distinguishes the present scheme, which seems based upon the principle of making the students pay for their advantages by giving them less for their labour than it is fairly worth, I would reward them for learning by the solid advantage of good wages. The tangible present good would draw the best men to Chiswick, and their prospective advantages would stimulate them to the utmost in the pursuit of knowledge. Our young men of the present time are daily demanding to live more in the real present, than in the far-off uncertain future. They lack the stern self-denial and plodding difficulty-mastering industry that characterised so many of their elders. Such being the fact, it is neither wisdom nor common sense to propound any scheme for their improvement that tries them on its very threshold with two years of hard pinching, if not semi-starvation. They won't pass in, and so the scheme will end. For in the true words of an asopho-philosopher, "The genius of modern times is realistic; is appreciative of creature comforts; careless of the past, distrustful of the future; nailed by the ear to the counter and the money-box; earthy; unspiritual; possessed of a mean devil; the servant of arithmetic and £ *s. d.*"

But by increasing the age, pay, and time, men will not only be found, but other advantages gained. The students will then leave Chiswick to fill head gardeners' situations, and reap the assistance of the high example and moral support of the Horticultural Society in obtaining the utmost value for their duly certificated talents. Goods warranted genuine by the highest authority ought to command a higher price than those that are not. If not, where is the benefit of the warranty? Further, as already hinted, the party certifying merit, should go further and see to it that merit has its due reward. No mere scheme for the education of gardeners will succeed unless this is seen to be its legitimate end. For the great want of gardeners at the present day is not more intelligence, but better pay for the time, knowledge, and skill that they have already wasted in their business. No sensible gardener opposes the demand for higher qualifications if these are needed; but side by side with that demand we place the natural, necessary, and just request for better remuneration. Neither are those our friends, but foes, who would move heaven and earth to increase our wisdom, but have never yet lifted a finger to add to our wealth.

The highest authority has said that man does not live by bread alone; and it is equally obvious that man cannot live without it. Knowledge does make a man wiser, happier, better; but it will not—at least garden lore does not—feed, clothe, or educate our families. For these purposes vulgar money is needed, and all that gardeners ask for is a fair day's wage for a full, thorough, and generous day's work. One of your correspondents has lately asked that the gardener's day of work should be lengthened; he prescribes candle-light as a remedy for low wages. The writer cannot know much about gardening. What with fires and temperature to see after in all weathers, we have to burn too much candle already. The fact is, the gardener's day in large situations never ends. Lengthen our day indeed! Why, our working hours are all day, if not of bodily toil, at least of mental anxiety, which is much more wearying both to body and mind. A heavy load of worrying care which we cannot safely relinquish for a moment, meets us at the entrance upon every situation, and clings to us firmly through our whole tenure of office. A merchant closes his office, a tradesman his warehouse, a shopkeeper his shop, or a mechanic throws down his tools, and bids adieu to work until the morning. The head gardener retires to his home, but he cannot relinquish the cares of his business. Again and again throughout the evening and in the cold dreary night, his work may, and often does, call him forth, and prove to him that his day of work is as interminable as the circling seasons themselves. Gardeners make no complaint of this. Their long hours arise from the very nature of their business. Life is ever liable to injury and the inroads of death, and they who are held responsible for its well-being must be distinguished, not less for unwearying watchfulness than skilful intelligence.

Notwithstanding the length of gardeners' hours and the number of their cares, they are worse paid than almost any other class. The carpenter working 10 hours with his plane, the bricklayer with his trowel, the mason with his mallet, will nett as much wage as many head-gardeners. It is also a fact that while the wages of most classes are advancing, those of gardeners are stationary or retrograding. And this while their work, and the number and magnitude of their anxieties, have been doubled within a few years, and the prices of many things—butchers' meat, for instance, have risen to impossible-to-be-bought prices. Matters have reached such a crisis that something must speedily be done. Honest men cannot keep themselves and their families respectably on their present wages. Gardeners have whispered this among themselves long enough. The time has now come for speaking the truth right out, fearlessly, but respectfully. The Horticultural Society's education scheme furnishes the suitable occasion. I have tried for weeks to discuss that scheme apart from the wages question, and found that I could not. *Cui bono?* rung in my ears all the while. Knowledge, more knowledge, asked the scheme; wages, higher wages for it, demanded justice and common sense. Neither is the wages question simply a gardener's one. It affects the interests of our employers even more than it does ours. Many of the more fortunate among us can weather through to the end. But unless gardeners' wages are raised, the quantity of gardeners must decline. Like the Church, the spade is losing its popularity among young men. Talent is better paid in other channels. A sense of justice has induced me to turn many young men aside to other pursuits, who were crowding into our ranks. Other gardeners are doubtless doing the same. The weighty words of the late Sir Joseph Paxton are full of the worst portent for the future of gardening: "Scarcely any gardeners' sons follow their fathers' business." We have not far to search for the reason. Sir Joseph stated in the same letter that there were not more than a hundred places in England where the gardener's salary exceeded 100*l.* From 65*l.* to 100*l.* may be given as the average wage. Gardeners having learned by experience where the shoe pinches, are naturally desirous that their sons should not be crippled like themselves. Hence the advice to their boys—"better emigrate, or puddle iron at five guineas a week (!) or be butchers,

or even chimney sweeps, than gardeners." And so the tide of the best material is diverted away to other pursuits, and the *morale* of the great army of cultivators is weakened and demoralised.

It is high time that the process of deterioration was arrested. This is a matter demanding the urgent attention of the Royal Horticultural Society. Its new scheme for the Education of Gardeners, improved and extended as I have ventured to indicate, provide it with the necessary machinery for enlarging the knowledge, elevating the *status*, and improving the material condition of gardeners. If it confine its attention to the first of these objects only, it will fail; but let it resolve to embrace all three, and to accomplish all three, and neither men nor money will be wanting to ensure its triumphant success. The Horticultural Society may thus earn the lasting gratitude of all gardeners, and it would also find that in helping them to reach a higher position and secure better wages, it had been adopting the surest means of advancing the science and practice of gardening, and promoting the highest interests of its moneyed patrons and members. *D. T. Fish, Hardwicke Gardens, Bury St. Edmunds.*

EXTRACTS FROM THE JOURNAL

OF MR. JOHN GOULD VEITCH,

DURING A TRIP TO THE AUSTRALIAN COLONIES AND THE SOUTH SEA ISLANDS.

(*Continued from page 76.*)

Paramatta, N. S. W., November 19, 1864.—The town of Paramatta is 14 miles from Sydney, situated on the bank of a river, or rather an arm of the sea, which is navigable for small steamers. I visited this town for the double purpose of inspecting the Orange plantations for which the district is famous, and to see the largest plant of Bougainvillea spectabilis in the colony. The latter of itself was well worth the visit. The plant covers the side of a very large dwelling-house, the residence of Mr. James Byrnes. It was one complete mass of bloom, and surpassed in effect anything that I had previously conceived. It is found that even in Australia this plant requires the very hottest aspect to bloom it.

The Nursery of Mr. Purchase is at Paramatta. It has not been long established, but there are already some 20 acres under cultivation, and kept as clean as it is possible for a nursery to be. Young Orange and other fruit trees form the chief portion of the stock. The soil is good, and well adapted to their growth. Mr. Purchase is now devoting his attention to the cultivation of a general assortment of plants, and is introducing many from England. This establishment bids fair to become one of the first in New South Wales.

The trip by water from Sydney to Paramatta on a fine day is very interesting. The scenery is pretty, although there is always the want of fine luxuriant vegetation. There are several small towns and gentlemen's seats on both banks, but gardening is a very difficult and expensive hobby. The ground is so rocky and poor that scarcely anything will grow. Mr. Wright, of Hunter's Hill, has spent a fortune in blasting the rock and making a garden, and even now with only partial success. The Rev. Mr. Turner's garden at Ryde contains a good collection of plants, amongst which is a cone-bearing Araucaria Bidwillii, but here likewise the shallow poor soil is a great drawback. Orange plantations are established on a large scale throughout the district lying between Sydney and Paramatta, and in past years have proved most lucrative. Recently a great proportion of the trees have become sickly and attacked with white scale, in some cases destroying the entire plantation. I attribute the cause of this in a great measure to the want of proper drainage, and to the fact that little or no care is taken in planting and attending to the young trees.

In many cases maiden ground is not even trenched, but a hole dug into which an Orange tree is planted, and expected in due time to produce a crop of fruit. The Orange thrives best near the sea-coast, and in a sheltered situation with an eastern aspect. The trees are planted about 24 feet apart, and generally commence bearing about the fourth or fifth year. A sandy loam is the best soil, and bone-dust the most suitable manure. A fine healthy Orange plantation, with its dark glossy green foliage and bright golden fruit, is a beautiful sight. Some trees in Mr. Pye's Orangery of Paramatta measure over 30 feet high, and are loaded with fruit, yielding annually upwards of 250 dozen each. Trees of the Mandarin Orange measure from 15 to 18 feet in height, and yield even a larger crop. The favourite varieties are the Navel, St. Michael's, Malta Blood-red, and Mandarin. The first of these is the finest fruit, and fetches the highest price, being free from seeds. Lemon trees are also largely planted. I heard of one Orangery producing 60,000 dozen fruit in a season.

Sydney, November 28, 1864.—Under the guidance of Mr. Edward Hill, a gentlemen possessing a thorough knowledge of the Natural History of the colony, I paid a visit to Botany Bay. It is seven miles distant from Sydney. The intermediate swampy plains contain a vast variety of native plants, and in order to obtain a better idea of the district, we avoided the beaten track and rode through the bush. The characteristic vegetation is low scrub, with only occasional clumps of trees, formed of several species of Eucalyptus. The Australian forests are very rich in these Eucalypti or Gum trees, so called from a red gum exuding from the trunk of almost every species. The commonest varieties are the Peppermint, the Lemon-scented, the Blue, the Spotted, and the Yellow Gum trees; also two varieties known by colonists as the Stringy and Iron-bark trees. Blandfordia nobilis is plentiful in the swamps near Botany Bay. The flowers, produced on stems from 18 to 24 inches long, vary from bright orange-scarlet to pale yellow. Two species of Xanthorrhœa and Macrozamia spiralis are scattered over the whole district. The stems of some of the former measure quite 5 feet in height.

Gomphocarpus fruticosus, known as the Wild Cotton, is a perfect weed. I noticed amongst the bush plants Pimeleas, Melaleucas, Diosmas, Boronias, Gompholobiums, and Epacris. After visiting the spots where Capt. Cook and La Perouse first landed, and where the latter repaired his vessel, we returned by way of Ranwick, the Epsom Downs of New South Wales. Formerly there were upwards of 300 aborigines inhabiting this district, now it is a rare occurrence to see one. Those few who now occasionally visit the neighbourhood of Sydney do so with the object of obtaining the means to buy rum, of which they are passionately fond.

Brisbane, Queensland, December 8, 1864.—During my stay in Sydney, H.M.S. "Salamander" left for a cruise on the east coast. This opportunity I took advantage of, and by means of an Admiralty letter, kindly procured for me by Mr. George Skinner before I left England, obtained a passage without difficulty. Having come from Sydney by a coasting steamer, and spent a few days in Brisbane, I embarked, taking four Wardian cases with me to contain my collections, and we sailed for Somerset, Cape York, the most northern point of the Australian continent.

On Board H.M.S. Salamander, December 11, 1864.—On our way to the northward we landed on a small coral bank or island named Bell Cay. Guano was reported to exist here, but we found scarcely any trace of it, although there were thousands of gulls and terns. It was the breeding season, and every available spot not immersed at high water was covered with eggs or recently hatched birds. On our disturbing the old ones they flew over our heads, making a most deafening noise. A little Grass and a dwarf species of Bamboo were the only signs of vegetation.

On Board H.M.S. Salamander, Dec. 15, 1864.—We are now sailing within the famous barrier reef, a coral formation extending at unequal distances along the whole of the north-east coast of Australia, and so continuous that there are but very few passages for vessels of any size. Within this reef, which thus forms a natural breakwater, there are numerous islands, and ample room for vessels to sail along the coast. Having Government despatches to deliver, we called at Rockingham Bay. The town of Cardwell here is the most northern European settlement, with the exception of the newly formed one at Somerset.

This is by far the most picturesque and luxuriant portion of the east coast of Australia. The dividing range of mountains, from 3000 to 4000 feet, is in the immediate background, and a little farther to the northward it forms the coast line itself. Being only four hours on shore, I had but little opportunity of acquiring any knowledge of the vegetation. Dendrobium undulatum is plentiful on the rocks and trees. Its yellow and brown flowers render it the most showy of all the Australian species.

A new and unnamed species of Platycerium is common on trees. Two Palms, probably an Areca and a Pinanga, the indigenous Musa Banksii, and several Ferns, grow on the banks of a stream to the north of the settlement. Mr. Dalachy, who is now in this district forming collections for the Melbourne gardens, informed me that he had found some 30 Ferns and five or six Dendrobiums on the mountain ranges. The natives of this part are troublesome, so much so that none of them are allowed to enter the settlement, and all Europeans carry arms in the bush.

On Board H.M.S. Salamander, December 21, 1864.—Landed in Cairncross Islands, 60 miles to the southward of Cape York. On getting out of the boats, two natives, neither of whom had a vestige of clothing on, and who had evidently come across from the mainland to catch turtle, came towards us, waving a green branch as a signal of peace. They took to their canoe and made off immediately however on hearing the report of a gun. At this season the island abounds with Torres Straits pigeons, which afforded us good shooting. The island is of coral formation, with but little soil. Pancratium amboynense grows plentifully in the sand above high-water mark. The trees belong to the genera Eucalyptus, Casuarina, Erythrina, and Ficus.

(*To be continued.*)

TRADE MEMORANDUM.

A PERSON has lately visited a nursery in the neighbourhood of Penge, and represented himself to be a "son of Mr. John Waterer, of Bagshot," and to be carrying on business at Shepherd's Bush and Stoke Newington; he endeavoured to obtain goods, and offered Rhododendrons in exchange, the latter to be sent from his father's nursery at Bagshot. As a caution to the Trade I beg to say that I have no son in business at any place whatever, except at Bagshot, and that the person just alluded to is decidedly an impostor. *John Waterer, Bagshot.*

Home Correspondence.

Arrangements of Shows.—This important question has been present to my mind for several years, and I have often tried to impress upon the managers of our shows the necessity of changing their arrangements in order to satisfy the various tastes which now exist. Formerly we were content with a formal disposition without variation; in fact a graceful plant was then rarely seen, for most of the specimens were trained to sticks or trellises, every leaf and flower being placed as though clipped to make a flat surface. I do not condemn such plants, for many of our finest things are best grown in this manner, such as the Stephanotis, Allamanda, Dipladenia, &c., and they are indispensable for their colours and forms. Still, in our London exhibitions there has not been the slightest improvement during the last 10 years, but we are rather going back. One never sees anything fresh, except it be a few small new plants. The same plants are shown year after year; or, if not the same plants, the same kinds. They consist, it is true, of very fine sorts of Erica, Azalea, Ixora, Epacris, Vinca, Dipladenia, &c., and no one can deny that they are grand objects, and cannot be dispensed with; but we much want variety and change. The exhibitors are not at all to blame; it is the fault of those who arrange the schedules. The same prizes are offered, and the exhibitors bring the same plants. They of course will not make any alteration while they find the same plants will do year after year: indeed it is to their interest to keep to these old favourites. But if we desire to keep up the credit of our shows, each exhibitor must be ready to do all in his power to that end. The more we study the wants and wishes of the lovers of flowers, the more admirers we shall gain; but if there is not some visible alteration made in these matters, flower shows will go down altogether. The arrangements of our shows may be altered without adding much to the expense, and even a slight increase would be counterbalanced by the attraction of more visitors, who will then take a more lively intcrest in them. The change would infuse a kind of new life into them; and is to be accomplished by introducing a greater variety of objects, and making new dispositions. The latter can easily be done without breaking up the collections, which I believe would be objected to by the exhibitors, and justly so, as their plants would be more liable to injury. I can see my way very clear to meet the wants of our shows without interfering with exhibitors, and with very little trouble, by introducing a few fresh classes; such as mixed collections of flowering and foliage plants; Tree Ferns in threes or sixes; the same with Dracænas, Yuccas, Conifers, Rhopalas, Palms, Aralias, or such plants that will form graceful features amongst the flowers. The managers always know what plants are coming several days before, so that the space could be judiciously allotted to the different plants. In this way the show might be rendered very attractive and interesting. It is thought by some that the judges would have a more difficult task, and to some extent this might be true; but this would easily be met by providing a few more judges. I cannot see any difficulty if the things are placed as they should be; for example, if prizes are offered for collections of Azaleas to amateurs and nurserymen, the two sets being put apart would offer no obstacle in judging. Thus by arranging different classes by themselves, and by placing foliage plants at the back of the flowers, and Tree Ferns in a prominent position, where they would have a striking effect without hiding the flowers, the formality which we hear complained of in the masses of gay flowers, would be done away with. If prizes are offered there will be no lack of foliage plants. These, when well grown, are always attractive, and when well packed are easily carried, besides forming at home some of the best subjects for conservatory decoration. I once heard an exhibitor say, "They should not be encouraged at our shows, for they are as easy to grow as a Cabbage." Now, I would say, so much the better, as we are likely to get more cultivators, and the more persons we get to grow them, the greater variety we shall secure; while the greater the number of fresh exhibitors the more energetic will the old ones become, and thus a permanent good will be secured. *B. S. W.*

Grape Growing at Bury Hill.—Your correspondent "H.," commenting (p. 78) on my report of the Bury Hill Garden, assumes that the reputation I have assigned to Sir E. Walker's place as famous for Grape growing is incorrect, because he had not heard of it. It occurs to me that his argument goes more to prove himself unknown than anything else. I am quite sure that many gentlemen and gardeners in the North Midland district can bear testimony to the excellence of the Grapes grown at Bury Hill, and

can confirm the accuracy of my description of them. I do not understand why other than the excellent Grape growers "H." has named should not exist, or why they should be neglected, even if the merits of another good Grape grower should come to be recognised; "H." surely cannot suppose that everything that is good in fruit must needs appear at a show—many gentlemen object to the exhibition of their fruit. The most frequent exhibitor is not always the best cultivator. But letting the fact go for what it is worth, I believe that Mr. Speed has been a successful exhibitor at the London as well as at country shows. "H." says "I." "does not think that the peculiar excellence of the Grapes grown at Bury Hill proceeds from anything in the soil or management." Now, in my description of the place, I distinctly recognise the value of the soil for ordinary Grape culture, and attribute to Mr. Speed's good management the great results obtained. "H." has therefore perverted my remarks, in order, I presume, to give him an opportunity of ironically adverting to my statement respecting the value of pure air. Having seen in the course of my peregrinations, many instances where the great mistake of forming artificial sheets of water has been perpetrated—in some instances when the fashion was in vogue a century ago, in others without the excuse of fashion, or any other—I was rejoiced to find an estate entirely free from even an attempt at an ornamental pond, and I recorded my impressions to that effect. I am glad to say that my health is unaffected by contact with the injurious influences of stagnant and weedy wastes of water, artificially treated. I wish I could gather from "H."'s communication a similar assurance. *I.*

Stocks.—I studied the Garden Stock and the generation thereof for a series of years, and I must confess that in the end I found myself as much in the dark as ever, as to the means of inducing doubleness in the flower. I tried all the stock receipts: growing in pots and out of pots, in all temperatures, soils, and circumstances, saved seed from polypetalous flowers, crossed and re-crossed, and carried out every book-suggestion that ever was printed. A generation or two in very highly manured soil will always bring a redundancy of petals, but polypetalous plants were not better breeders of doubles than any other. Really double specimens never produce pollen. I think individuals may be more inclined to breed doubles than others, but I don't know. Old seed is no better than fresh. I have grown plants from seven-year-old seed. Singleness may be noted in the young bud at a very early stage from the great development of the anthers. I always grew my plants to one stem, and only allowed a pod or two to ripen. I have had as good a crop of doubles from out-door ripened seed, as from pots under glass. *R. T. C.*

Mildness of the Weather in North Notts.—The weather here during January has been like that of spring, and vegetation is rapidly progressing. I have never before gathered in the open air in January so many flowers of Violets, Chimonanthus fragrans, and Tussilago fragrans as I have done this year. This last plant is not grown so much as it deserves to be, for a bunch of its flowers gives out in winter a perfume like that of Hawthorn. It will grow in any out-of-the-way place in shrubberies, and requires the protection of a few straw-hurdles in severe weather; it is not suitable for borders amongst other plants, for it soon spreads all over them, like other Tussilagos. I have it confined in a corner, where gravel walks keep it in check, and I have been able to gather large bunches of its flowers during these last six weeks. Apricots and Peaches on walls will soon be in flower unless they receive a check. In the orchards the catkins on Filberts and Nuts are fully expanded, and Gooseberries and Currants are swelling their buds fast. In the shrubberies Roses are showing leaf, and Skimmia japonica and the new Aucubas are in full flower. Very little snow fell here when the great fall in the south occurred, and the rainfall up to this date (the 27th ult.) has been under an inch. The thermometer has ranged unusually high for January, the mean temperature being 7° above the average; highest, 50°, on the 14th, and lowest, 24°, on the morning of the 12th. The fluctuations in the barometer have been very great, caused by the many gales and hurricanes which have characterised the month. I am afraid, however, we shall yet suffer severely (unless frost or colder weather comes soon), by a cold protracted spring. *William Tillery.*

Black-hearted Pine-apples.—I have a Smooth-leaved Cayenne Pine-apple which has become bad in the centre. Can any of your correspondents say what the cause of this evil is? The fruit in question swelled satisfactorily, and looked as sound as a Pine could look, but when cut the heart was discoloured. I may mention that our soil is of a very light sandy nature, and that I gave the plant a little weak manure water when it was swelling its fruit. These are the only two matters that I can think of, as at all likely to affect the fruits. *D. W.*

Japonicas.—Your correspondent "J. B." asks if I can give any information about what is sold under the above name in Covent Garden Market. Before I had an opportunity of seeing the article in question it was impossible for me to give him any information about it. I have heard sundry old ladies call Camellias "Japonicas," but as your correspondent's question referred to a fruit and not a flower, the Camellia was out of the question. Then it occurred to me that I had seen the fruit of the Loquat exposed for sale under that name, but from the description your correspondent gave it could not be Eriobotrya japonica. Besides, *entre nous*, I thought I recognised the style of your correspondent, his initials helping me to this recognition, and had therefore little doubt as to his being well acquainted with the fruit of the Loquat. The two Japonicas were, therefore, put on one side. Having occasion to visit Covent Garden the other day I readily found the fruit alluded to, and I have great pleasure in giving your correspondent the information he requires. The tree which produces the so-called Japonicas is the Zizyphus sinensis, and belongs to the natural order Rhamnaceæ. It is abundant in the southern and central provinces of the Chinese Empire. Its fruit is oblong in form, and when ripe is about the size of a small Plum. It ripens in the autumn, and is exposed for sale in the shops and markets at this period of the year, and large quantities of it are preserved for winter use, like those which are now sold in Covent Garden. A much finer species or variety of this plant is cultivated in the northern provinces of China, the fruit of which is highly esteemed by both natives and foreigners. It is brought south annually by the junks, and forms an important article of trade. In appearance, and particularly in taste, it resembles the fruit of the Date Palm, to which, of course, it has no botanical affinity. Indeed, the name by which it is known amongst the foreign community is the "Chinese Date." If it could be brought home in good condition it would no doubt be highly esteemed in this country, and would form a nice addition to our preserved dessert fruits. On one occasion I happened to leave China for Calcutta at the season when the fruits in question came south, and I took a basketful of them to present to the late Dr. Falconer, by whom they were much liked. They reached India in good condition, and I do not see any reason why they would not come home to England in as good preservation as the inferior sort now sold in Covent Garden. The description of the "Japonicas" alluded to by your correspondent, having "large white flowers," is of course not correct. The flowers of Zizyphus sinensis are small, and greenish in colour, like those of most of the plants in the natural order to which it belongs. *Robert Fortune.*

Indian Fruits.—Your correspondent "F.R.H.S." has not given an accurate version of the question at issue regarding the Bangalore fruits sent for the exhibition which opened on the 9th December. The first announcement of their arrival at South Kensington was made to Dr. Hooker on the 13th, with a request that jars should be sent, not for their exhibition, as your correspondent implies, but for their preservation and transport to Kew. According to Dr. Hooker's instructions, I went without delay on the 14th to South Kensington, and found that no attempt had been made to exhibit the fruits properly, none having even been removed from their tins, except a few, of which the spirit had leaked away, and which were exposed on plates without spirit. After ascertaining the amount of jars and spirit required to transport the damaged specimens to Kew, I sent them on the Friday, the day before the close of the exhibition. *John R. Jackson.*

The late Mr. Alian A. Black.—The following notice of the life of the late Curator of the Kew Herbarium, whose death was adverted to last week, will be read with interest by many who retain a vivid recollection of the valuable aid he gave to all inquirers for information at that establishment. [EDS.]—Mr. Black was born in 1832, we believe at Forres, in Morayshire, and was from his youth attached to horticulture and botany. He served his apprenticeship under Messrs. Henderson, of Dunkeld, where he displayed so much knowledge and enthusiasm in botanical pursuits as led to his being recommended to the notice of the late Sir Wm. Hooker, who selected him for the office of curator of his herbarium in the year 1853, and by whom he was held in the highest regard and esteem during the remainder of his life. Mr. Black retained the office until 1864, when, owing to the failure of his health, he was obliged to seek a warmer climate. The post of Superintendent of the Bangalore Gardens falling vacant at that time, he was recommended by Sir William to fill it; he was appointed immediately on his arrival in India, and fulfilled the duties most ably, until a few weeks before his death. Though his health at first improved, his disease (pulmonary consumption) was not conquered; and he suffered so much during last summer and autumn, that at the urgent desire of his friends he was induced to obtain two months' leave of absence, and to undertake a sea voyage, in the forlorn hope of warding off its consequences. With this object he embarked for Rangoon in November last, on a visit to a brother who was resident there; he landed in a most precarious state, and acting under medical advice, he went to sea again, accompanied this time by his brother, on a trip to the Andaman Islands. Four days after embarking, his disease terminated fatally, and he was buried on the 5th of December on Table Island, one of the Cocos group, immediately north of the Andamans, in the midst of a tropical vegetation of the utmost luxuriance and beauty. Mr. Black's decease will be greatly regretted by a very large circle both of British and foreign botanists, by all of whom he was most highly valued, not only for the many services he rendered to them, but for the simplicity of his manners, his amiable disposition, and his truly estimable character. His modesty prevented his ever becoming an author, but many botanical works owe much of their value to his industry and knowledge; and at Sir Wm. Hooker's request he drew up a catalogue of the Flora of Japan, which appeared under his own name in "Hodgson's Japan," and of which many copies were distributed by his patron in a separate form. *J. D. Hooker.*

Foreign Correspondence.

NEW ZEALAND AND AUSTRALIA.—The following extracts from private letters, both written in the same month, one from Australia the other from New Zealand, will be read with interest by many intending emigrants, as well as by those who take an interest in climate and colonial affairs generally:—

Revell St., Hokitika, New Zealand, Nov. 2, 1865.—I am on the gold fields of West Canterbury, which are going ahead as fast as they possibly can. The surrounding country is magnificent. The township of Hokitika is built along the sea beach for a distance of nearly two miles in length. Last night we had one of the heaviest falls of rain which have ever been known here, followed by one of the greatest floods that have ever before been witnessed on the west coast. Large trees, 90 and 100 feet in length and a yard and a half in diameter, were swept bodily down by the force of the current. This is an awful place for rain, nevertheless the amount of business transacted is something astonishing. Imagine a town consisting of at least 10,000 inhabitants having been built up in a substantial way in less than a year. What would people in England say to that? Diggers here think nothing of earning from 45*l.* to 60*l.* per week per man. In fact, the diggings here are supposed to be the best that have ever broken out. The other day three men came into town with 112 lb. weight of gold, the produce of three months' labour. It realised 6787*l.* 0*s.* 4*d.*

Queanbeyan, Australia, Nov. 20, 1865.—When I last wrote I was unable to give a very flourishing account of the state of this country, and since then things have not improved. A period of dry weather has set in, so severe that we are being literally starved. Cattle are dying in thousands; the crops in this and the surrounding districts are all burned up. Not a "cock" of hay has been made in the district. Everything is at famine prices, and though one may succeed in getting a bit of beef, it is either diseased or so starved that there is not a particle of fat to be found in it. As regards sheep, one has to pay for bones, not for meat. Eggs and butter are unknown, and as to fruit and vegetables we once knew what they were, but at present we have none. My garden is in a ruinous condition, although watered every evening. The sun sets at night as red as scarlet; next morning breaks upon us with a cloudless sky and a stiff hot wind, with dust blowing all day until about 4 o'clock, when the sea breeze cools the air for three or four hours. A dull calm succeeds, accompanied by a suffocating heat, which, owing to the coolness an hour before, is even less endurable than it otherwise would be. Even trees are dying, and now and then we receive a visit from birds strange to this quarter. Only the other day I saw six emus—first two and then four together. I heard, too, that one of these birds had been killed within a few miles of the town. Their feathers are not unlike dried Grass, the rustle of which they resemble when shaken. A rich quartz gold reef has been accidentally discovered within 12 miles of Queanbeyan. Already claims are marked out. It may therefore be imagined that with a large influx of population, matters as regards both animal and vegetable food are becoming worse. As to Grass, were you to travel 20 miles, an armful of it could not be gathered together.

Societies.

HAMILTON PALACE YOUNG MEN'S CLUB.—The following paper, by Mr. James Anderson, of Meadow Bank, entitled "Seasonable Hints to Young Gardeners," was read on the evening of the 25th ult. at the weekly meeting of the Club:—

I have been requested by your esteemed President, Mr. Mitchell, to prepare a short paper bearing more directly upon the advantages to be derived from well-spent evenings in the bothy. I have done this with great pleasure, in the belief that no subject can be approached of greater importance, either for the interests of gardening, or for the intellectual advancement of gardeners. The interests of the one I need scarcely

tell you are intimately bound up and interwoven with the interests of the other; and the moment we as horticulturists become apathetic, and relax our efforts (which in individuals may not go for much, but in the aggregate represent an immense power), our cause becomes depreciated. And how in these days of progress is the cause of horticulture to be sustained and elevated? The answer is simple and obvious. It must be by the exertions of the very class of men I am now addressing, the rising generation of gardeners. On every end rly get every young man to feel the weight of it, and act accordingly, the annals of horticultural progress, notwithstanding the brilliant position it can justly claim in these days, would, from such combined action, shine forth with increasing lustre. By this you may readily infer that, in my estimation, horticulture viewed in either its theoretical or practical bearings is not quite at so advanced a stage as it might be at the present day; and the impeding cause is the want of regularly organised social science tuition—for yours and all kindred ones are fully entitled so to be called—and a generally defective remuneration throughout the profession.

No one can exaggerate the importance of education; for if it has not always fixed a man's relative position socially, it has implanted within him a power and a confidence in cases of exigency or emergency, which his less favoured fellows are bound to recognise and respect. The greatest ancient philosopher, and the wisest man that ever lived, exhorted his children "with all their getting to get understanding." Weekly meetings, such as yours, where each prepares an essay on some subject or other, will awaken within you a spirit of study and an emulation to excel, and will rouse up the latent fire of your intellect, which but for the tax upon its energies might have lain dormant for ever. You will investigate causes and take cognizance of effects in your everyday practice. Anything anomalous in the growth or flowering of a plant, even the simplest vegetable in the garden to the plant aristocracy in the houses, will be sure to receive more than a passing glance or notice at your hands. The more you learn, the less you will take for granted in the whole circle of the study; and when once that idea is inculcated in the garden student, half the battle of tuition is overcome. Ten to one but ever after, painstaking zeal and assiduity and tolerably accurate conclusions, will be the characteristics of that individual. He will think for himself, and act for himself, and when in doubt or difficulty will admit his want of knowledge and apply for information. The self-pretentious fellow will strut about with amazing temerity, and according to his own showing will know far more about things in general, and that under notice in particular, than his master, while really he knows nothing, and must be classed among those individuals of whom it may be said, in the words of the Scotch proverb, "what they want in education they've got in impudence."

It is, moreover, of the highest importance that you should make yourselves acquainted with the multifarious details connected with the practical part of the profession. Never leave no stone unturned to procure situations where advanced gardening is carried on, and move from place to place until you have obtained a familiarity with all those subjects which a first-class gardener is expected to master. If you have done your duty and been faithful, interesting yourselves in the operations which you have been called upon to discharge, your master will pride himself in promoting your advancement by every means in his power. Such men, in fact, are bound ultimately to succeed. The moon succeeds, therefore, there is of learning something more than the mere act of profession. Art, at best, I may tell you, is only empirical; for its tendency is rather to surprise and astonish by results, than to disclose processes. The fashion has been in days past, if a man had a peculiar knack in the cultivation of any plant, or was more successful than his neighbour in his fruit culture, nay even in vegetable culture, to involve the method in as mysterious a form as possible, and endeavour to keep his compeers in total darkness as to how such success was attained. Science has quite an opposite tendency. Its whole delight, and the basis of its claims are inquiry and investigation. It accepts nothing without the severest scrutiny—its whole aim being to rid itself of vague technicalities, and to illuminate all obscurities. A well-regulated mind is always a methodical one. Mental culture is far heavier tax upon the physical system than continual labour. Hence it is that I, which some of you, I daresay, are tempted to consider a species of "hard labour."

The great Dr. Lindley, whose loss we have had so recently to deplore (who had beyond a shadow of doubt a more intimate and accurate knowledge of the theory and practice of horticulture than any other man, dead or living, and who fell a martyr to head work), has left behind him the results of a lifelong experience and study in the many high-class works that have emanated from his pen; but his *magnum opus*, so far as the practical gardener is concerned, is his "Theory and Practice of Horticulture," which every gardener ought to prize as a legacy, and treasure as a *vade mecum*. I may also tell you that no man living has done more to popularise the science of botany.

Much that I have said just now is put by way of an urgent appeal to commit you to a certain course of thought and action by day, to prepare the way for well-spent evenings in the bothy; because the garden is really the class-room from which you receive the practical part of your instruction, and which is constantly furnishing food for you to theorise on and digest.

It is of the very utmost importance that you should have well-stored minds, and a portion of your spare time ought, therefore, to be set apart for reading; and let me exhort you by all the earnestness and all the unction that I can bring to bear upon you, not to rest satisfied until you have thoroughly interpreted the meaning of what you read. There is a real gratification in mastering a subject, which, at first, may appear insurmountable to the intellect; and this brings to my recollection the beautiful passage in which Herschel with reference to reading. He says, "If I were to prescribe a habit which should stand me in stead under every variety of circumstances, and be a source of happiness and cheerfulness to me throughout life, and a shield against its ills, however things might go amiss, and the world frown upon me, it would be a taste for reading. I speak of it, of course, only as a worldly advantage, and not in the slightest degree as superseding, or derogating from the higher office and surer and stronger panoply of religious principles—but as a taste, an instrument, and a source of pleasurable gratification. Give a man this taste and the means of gratifying it, and you can hardly fail of making a happy man, unless indeed you put into his hands a most perverse selection of books. You place him in contact with the best society in every period of history, with the wisest, the noblest, the tenderest, the bravest, and the purest characters that have adorned humanity. You make him a denizen of all nations, a contemporary of all ages. The world has been created for him. It is morally impossible but that the manners should take a tinge of good breeding and civilisation, from having constantly before one's eyes the way in which the best bred and the best informed men have talked and conducted themselves in their intercourse with each other. There is a gentle but perfectly irresistible coercion in a habit of reading, well directed, over the whole tenor of a man's character and conduct, which is not the less effectual because it works insensibly—in short, it civilises the conduct of men." How much more so is it in your case, who have to come in contact with the *élite* of society, both learned and aristocratic, to maintain your self-respect, to keep up the dignity of the profession, and to elevate your social status. I say, in the words of the celebrated Lord Bacon, be "full men." Your club of itself is an evidence that you are alive to the necessities and exigencies of the time; and what with the capital training each one is engaged in out of doors, and your almost unexampled social comforts, I anticipate that your hearts are in the work of progress.

With reference to remuneration, there have always been, and always will be, conflicting opinions. There can never be an uniformity of wages to journeymen gardeners; and the reason why is to my mind, clear, cogent, and unanswerable. It is simply this—that gardens, as scales of instruction, differ as much as the rural school does from the college. The fees exacted in the one are out of all proportion to the fees exacted in the other, owing to the amount and kind of instruction imparted; and so in a different way, from the very same cause, will this always more or less occur in the gardens throughout the country. I want young men such as yourselves to look forward to a higher aim altogether, and estimate the amount of instruction you are receiving as a portion of your reward. In my opinion, it is far more easy to define the difficult problems of Euclid than it is to define what, in the present day, really constitutes a gardener. But let us examine one or two examples as we see them in the advertising columns of the gardening press. Here immediately, a single, middle-aged man, as Gardener, and to assist in managing a few cows. There are two Vineries, Cucumber and Mushroom houses, and a small flower garden. None but experienced and industrious men need apply." What man of experience would accept such a situation? Again: "Wanted, a steady, married man as Groom and Gardener, and to make himself generally useful." This is one of those places, I doubt not, where the pigs sty would be governor-general of the pigs. Such are but very moderate samples compared to what sometimes appear in the *Times*. The most impudent that ever came under my observation is one which appeared a few weeks ago, to which I solicit your attention:—"The advertiser finding the Gardener lately engaged insufficient for the work, he is now open to fresh offers. The place is single-handed, and requires a strong and very active man, who has a thorough practical knowledge of stove and greenhouse plants, of which a few good things are grown; and must be able to keep the flower and kitchen garden in good order; and the gardener will be expected to devote his whole time to his work, and not go off at day-labourers' hours. Testimonials for character and ability will be received and read from all parties. Wages 52*l.* per annum, paid weekly; and 5*l.* for cottage, or lodgings, paid the quarterly instalments, and not weekly." This is a rare specimen of English grammar, perfectly in keeping with the audacious demand that a gardener "should not go off at day-labourers' hours," and yet be a gardener at the handsome remuneration of 1*l.* per week! I might argue that there ought to be some line of demarcation drawn between this class and the real professional, for by such innovations our calling is open to the contemptuous sneers of a foppish class; still there are many worthy men in attendance whose standard of morals, and of intellectual and professional worth, more than counterbalances such drawbacks.

The case is quite different with such young men as yourselves. You and others, in a similar sphere, are, so to speak, colleges of learning, and you may be thankful, indeed, if your remuneration covers current expenses. The value of the instruction you are receiving completely counterbalances a low rate of wages. Your ambition must prompt you to aim at a higher standard of usefulness, and to strain every nerve to fit yourselves for the higher prizes of the profession. I need scarcely remind you that you are better off in a monetary point of view than those of the professions that require skilled labour, whose students have to undergo a long probationary period, with "small innings" indeed. The prizes of our calling are far fewer than they ought to be, and I look upon the kind of superintendence demanded; but the evil is fast curing. The aristocracy and gentlemen are beginning to see that the highest paid official is the most efficient and cheapest in the long run. The press is earnest in supporting the good cause. Gardeners are now making themselves felt in the position of being useful members of society and becoming self-conducted. We were not by the education they received at the day-school altogether; although in Scotland, at that time, was far better provided for in the way of schools than England for the sons and daughters of the respectable working classes. It was from severe mental application, and industrious evenings at home. That was the mainspring of their success. It enabled them to rise, head and shoulders, above their fellows in similar circumstances,—at least such of them as were content to remain passive and indifferent concerning their intellectual status. Many head gardeners of eminence are but self-taught; but if you ask them, they will tell you the difficulties and obstacles they had to encounter in the process of self-education, and not one of them but will exhort you to diligent application in youth. Many men of humble birth had not the opportunity of acquiring information in the manner I have accurately in the days of their youth, and were turned out upon the world entirely upon their own resources, in many instances ere they had reached their teens. Such of them as had a spirit of indomitable perseverance, and "a friend in need" influential enough to push them forward, were lifted from the ruck, and, in all probability, achieved a position in the world which nobody was more astonished at than themselves. But what I am constrained to admire most, looking back now to the character and conduct of these men, was their almost unexampled self-abnegation. There are, I daresay, their 30*s.* per week, which was about the average received by journeymen 20 years ago, plodding on, and almost denying themselves the necessaries of life, seeking for knowledge by well-spent evenings in the bothy, and doling out their little mite partly to secure books, and partly husbanding it to carry them from one establishment to another with the view of promoting their ultimate advancement. Such instances were by no means rare.

Let me not be misunderstood now in my concluding remarks. Education and practical ability must henceforward go hand in hand. There is no such want, now-a-days, either of schools for children or education for adults. Moreover, the fees exacted are within the province of every industrious working man, and all are morally bound to give their children a education suitable to their means. Let no one prosecute this, or any other calling, who is not earnest in the work, and bent on promoting it by every means in his power. I say, finally, to all—if you are anxious to better your position, amalgamate into clubs of this kind, read diligently and studiously, store up well-defined principles in your mind, and, above all, do your duty in the garden, for in thus doing, you will, however slowly and imperceptibly, elevate the status of gardening, and by this you and your successors will eventually profit.

Notices of Books.

Report of the Proceedings of the British Association at the Birmingham Meeting, 1865. 8vo, pp. 402. London: Hardwicke.

The title of this volume is sufficiently explanatory of its contents. The inaugural address of Professor Phillips is given at length, as well as those of the presidents of the various sections. The abstracts of the papers read, and of the discussions consequent thereupon, will render this volume an interesting memorial to those who attended the meeting in question.

We regret that our botanists and physiologists do not appear to better advantage at these meetings—as to horticultural science, we doubt if it were ever heard of on these occasions. Why not?

CATALOGUES RECEIVED.—*W. Paul's (Waltham Cross) Select List of Seeds*, is, as it professes to be, a select list, and that of really good things. Among the specialities we notice a fine crimson Beet and the superb dwarf Hertfordshire Cauliflower. — *C. Turner's (Slough) Catalogue of Seeds* is also a very select list, including, among other good things, the Premier Pea, said to be of great excellence.—*W. Cuthush & Son's (Highgate) Catalogue of Select Seeds* is another good abbreviated list.—*Hooper & Co.'s General Spring Catalogue* for 1866 is one of the more comprehensive lists, and has several illustrations interspersed, including some half-dozen forms of the China Aster.

The Apiary.

DISEASES OF BEES.—We have previously published some observations respecting that form of disease ordinarily known as Dysentery (see pp. 10 and 33), and at the conclusion of the last paper signified our intention of describing another disease or a different form of the same malady, which has attracted the attention of many apiarians. Whether this last is a disease in itself, or dysentery in an aggravated form, or in an advanced stage, is a matter open to some doubt and discussion. There are points of difference between it and dysentery, as ordinarily seen, which are worthy of notice.

In the year 1862 Mr. Woodbury lost several hives, and was much annoyed during the summer by a malady which he considered to be DROPSY, and all who had an opportunity of witnessing the ravages which it caused, arrived at the same conclusion. We will first see what true dysentery is, according to Dzierzon's view, and then note the points in which the malady, which is the subject of the present paper, differs from his description:—

"Dysentery," according to Dzierzon, "is a disease which frequently occurs towards the end of winter. It consists in the inability of bees to retain their fæces beyond a certain time and measure; but it is not a proper disease, because the evil is at an end as soon as they are able to empty themselves. The causes of dysentery are as follows:—Long and severe winters, unwholesome honey, or honey carried in or given too late in the season, and which, therefore, mostly remains unsealed; coldness of the hives and combs, frequent disturbances, superabundant moisture or extreme drought, premature breeding, or, in short, any circumstance which causes an unwonted consumption of food, and by which bees are deprived of the opportunity of voiding in the open air the fæces which then accumulate so rapidly. But, as under these circumstances the bodies of many become so swollen that they are unable to fly, and can at most drag themselves to the entrance of the hive, the evil ultimately degenerates into a disease of which numbers perish, both inside and outside the hive. Nay, the malady sometimes appears to become actually contagious, since it has been found that when a stock which had been reduced by dysentery was strengthened by the addition of healthy bees, the mortality continued until it became as weak as it was before. The queen alone is exempt from this disease," and "remains in good health even after the majority of her workers have succumbed to the malady." Dzierzon seems to slightly contradict himself. He says that dysentery is not a proper disease, and then goes on to prove that it is a disease which appears to become actually contagious. From our own experience we are inclined to take the latter view of its nature.

Dysentery usually gradually disappears after a short period of genial weather, and, as Dzierzon states, the queens are seldom if ever attacked by it. But as respects the malady, which, for want of a better term, we must consider as dropsy, a remarkable difference was observable on these two points. Some of Mr. Woodbury's hives continued to be decimated by it far on into the summer; as, in his own words, "it was most pitiable to see, all through the spring and during the finest summer weather, the ground in front of the hives perpetually covered with hundreds of disabled and dying bees, which crawled about in all directions, setting up at intervals a feeble vibration of their wings, as if in faint imitation of the hovering crowd of joyous labourers overhead, in whose delightful toil they were never again to participate."

Then, again, the queens were also attacked by the malady, which rendered them incapable of oviposition, their abdomens becoming immensely distended. In one instance a young unimpregnated Ligurian queen was so attacked, and lingered on in the hive four months, most probably without ever having been able to take a matrimonial flight. From one of his breeding queens, which fell a victim to this malady, nearly a teaspoonful of fluid gushed out on the abdomen being opened.

It is possible that this peculiar malady is dysentery in an aggravated form, and not dropsy, or allied to it; but to ourselves, who had abundant opportunity of observing its ravages, it appears to be a distinct disease, which fortunately, however, is very rare in its visitations. The abdomens of the bees thus attacked are filled almost to bursting with a thin light-brown-coloured watery fluid, having a peculiarly disagreeable odour. The discharge emitted from bees suffering from dysentery is of a much darker colour, and much less watery in its nature. In dysentery, even after the hive has become almost depopulated, the disease will frequently disappear and the hive regain its strength; but in hives affected by dropsy very strong remedial measures are requisite to establish a cure.

From a lady correspondent we have had appeals for advice under circumstances which bear a very strong resemblance to those which we have related. For two years, a disease, which from her description must be considered as precisely analogous to that which attacked Mr. Woodbury's hives in 1862, has devastated her apiary, and has defied all her efforts to eradicate it. From another correspondent we have, within the last week, had a similar appeal. In this case also it seems probable that dropsy, and not dysentery, as imagined by the writer, is the cause of the great mortality which has taken place. The earnest attention of bee-keepers is called to the existence of a malady heretofore undescribed, we believe, in any bee-books, and we shall be glad of the opinions and experience of apiarians on the subject.

Florists' Flowers.

THE AURICULA.—I have now been a grower of this beautiful and fascinating flower for the long period of 44 years, and have tried every sort of compost for my plants, being extremely anxious to excel in their cultivation. The result has been many failures, and with them convincing proof that the more simple the ingredients used in the making up the compost, the greater is the chance of success. I have used the following compost for many years, and I have never failed with it to produce sound healthy plants, while I have not seen the disease called rot among my plants since I commenced to use it. It consists of one half cow-dung, rotted to black mould, the other moiety being equal parts of leaf-mould and rich loam, with a sufficiency of silver sand to keep the whole porous and open. Should any oxide be in the loam, some finely sifted newly slackened lime is added. Mix the whole intimately, and keep it under cover ready for use. For top-dressing I use equal parts of decayed sheep droppings, rotted under cover, and the ordinary compost, with enough of silver sand to make it porous. In order to communicate information to young growers, perhaps the best mode of proceeding will be to begin with January, and take the other months in succession.

The plants during January are dormant, and all the attention they require is to give them plenty of air during mild weather. Keep them free from decaying leaves, and give merely water sufficient to prevent the leaves from becoming flaccid. During severe frost, shut all the ventilators close.

During the first mild weather in February top-dress, and set the plants to work. Do this by removing the surface soil to the depth of rather more than half an inch, and fill up with the prepared soil to within half an inch of the lower leaves. Care must be taken not to break or disturb any of the fibres, and while the neck of the plant is bare, rub away all the eyes or embryo offsets; only where increase is wanted, one or two of the strongest may be left on. Strong blooms cannot be expected from plants that are allowed to break into unregulated increase. Many of our fine show varieties are so prone to break into increase that blooming plants are not to be expected except this treatment is resorted to. When the plants are top-dressed, water with rain-water, and continue to do so when they require it. If, during the previous season, the plants were affected with green-fly, let them now be examined, and all the larvæ brushed away from the leaves; also let the stages be thoroughly cleaned. Doing this effectually may be the means of keeping away the fly for a whole season.

Close attention will have to be given during the month of March. Keep cold winds from the plants, but give all the air possible during mild weather. Water regularly, and so soon as the trusses show clear of the foliage, cover during the night. An old carpet next the glass and a mat over it will ensure the pips from damage by frost. Remove the covering early in the morning. Towards the end of the month the trusses will be sufficiently advanced to show where thinning of the pips is necessary. Plants intended for exhibition require to have the small interior pips cut out with a pair of sharp-pointed scissors. Do this carefully, so that none of the pips intended for showing overlap each other.

Every attention must be given during April so as to have fine blooms. Continue to protect from frost. Never allow the plants to flag for want of water. Give plenty of air to prevent the stems becoming drawn. Turn the pots occasionally. Attend to the thinning of the crowded pips. Keep the plants free from decayed leaves, and attend to general cleanliness. Whenever the pips begin to show colour, shade while the sun is strong; thin white cotton cloth fixed over the sashes suits well for this purpose. Varieties that are likely to be too early in bloom for the day of showing may be retarded by removal into the shade.

So soon as the bloom is general, remove the plants where they will only get the early morning sun. After the bloom is past in May, when seed is not wanted, pinch off the stem below the truss; the plants will still be growing. Attend to the regular watering of them and keeping them clean. Look for green-fly, and never allow them to effect a lodgment on the plants. Whenever the surface soil becomes hard or covered with green slime, stir it or remove it, and replace it with some new soil. Look well after a small black caterpillar that lodges in the centre of the plant, and if not detected in time will eat out all the interior leaves, and reduce the largest plant to a naked stump. *George Lightbody, Falkirk, June 9, 1866.* (*To be continued.*)

Calendar of Operations.

(*For the ensuing week.*)

DURING the present somewhat changeable weather considerable attention will be required in the way of maintaining proper temperatures. Spare no labour to keep up a gay appearance in the Conservatory and other show houses. Cut and train Climbers, and let everything be kept scrupulously neat and clean. See particularly that Orange trees, Oleanders, and plants of that description are clear of insects before they begin growing, as young wood and foliage are difficult to keep clean without injury.

FLOWER GARDEN AND PLANT HOUSES.

Look over beds of Crocuses and other bulbs to see that they are not thrown out of the ground or suffering from the depredations of mice. Also inspect half-hardy plants in pits, in order to see whether or not they are suffering from damp.

AURICULAS.—Let these still have as much air as possible while the weather is mild. In other matters relating to their culture be guided entirely by Mr. Lightbody's instructions printed in another column.

ROSES.—Another batch of these may now be placed in heat to succeed those coming into bloom. Keep down fly by frequent fumigations.

TULIPS.—Place in heat potfuls of bulbs to succeed those now in bloom, and see that the latter are not allowed to droop from want of water.

FORCING GARDEN.

ASPARAGUS.—On fine days give a little air to that in pits to keep the heads from becoming too much drawn.

CHERRIES.—Syringe occasionally trees put in to force, and keep all floors and other evaporating surfaces moist.

CUCUMBERS.—Where necessary fill pits and frames with young plants.

PEACHES.—Admit air freely while the weather is mild, and keep the atmosphere moist, maintaining a steady night temperature of about 50°. Very early houses in which the fruit is set should be afforded a nice growing temperature, syringing liberally to prevent red spider, and keeping the borders in a healthy state as to moisture in order to secure a vigorous root action.

PINES.—Young plants in beds that have been some time planted will be benefited by having the soil loosened as deeply as can be done without injuring the roots, giving it a liberal soaking of tepid water if it be found to be too dry. Endeavour to afford a nice regular bottom-heat, with a thoroughly moist atmosphere, and keep the plants growing as freely as may be consistent with preserving them dwarf and bushy. Have a constant eye to maintaining a succession of fruit, or securing a supply at the season when it may be most wanted, and let the treatment of the plants be regulated according to circumstances; this is a matter which demands considerable forethought, and which can be successfully managed only by careful observation and attention.

STRAWBERRIES.—Put sufficient of these for a good supply into a Peach-house or Vinery, and place them on a shelf near the glass where they will have plenty of light. A fresh lot of plants should be afterwards placed under cover every fortnight or so. Let the temperature be low at first, and even afterwards force gently and give all the air possible, or the flowers will be apt to become "blind."

VINES.—Be satisfied with as low a temperature from fire-heat as may be considered safe, but shut up early. This will to some little extent economise fuel, and will be more congenial than strong fire-heat. Except where Vines are in flower keep the atmosphere moist, but the foliage should always be allowed to become perfectly dry in the course of the day.

HARDY FRUIT AND KITCHEN GARDEN.

Digging and trenching may still be carried on with activity. Reserve all wheeling if possible for hard weather. Prepare ground for fruit trees, the planting of which could not be effected in autumn, by thoroughly draining borders in which they are to be placed, and forming in them a substratum through which roots will not easily penetrate. In the absence of paving stones, tiles, &c., a good substitute may be formed of coarse gravel and finely sifted quicklime in the proportion of six of the former to one of the latter, mixed well together with a sufficiency of water, and laid down to the depth of 4 or 5 inches. From 15 to 18 inches depth of soil will be enough for Peaches, Nectarines, and Apricots; even less than this will do if the borders are mulched and cropping dispensed with.

APPLES AND PEARS.—Pruning and thinning of these should now receive attention.

BEANS.—Broad Windsor and Johnstone's Wonderful may be planted as soon as the ground is in a fit state for their reception.

PEAS.—Make a sowing of these also as soon as the ground is fit to receive the seed.

RADISHES.—Let a sowing be made on a warm border.

STATE OF THE WEATHER AT CHISWICK, NEAR LONDON.

For the Week ending Jan. 31, 1866, as observed at the Horticultural Gardens.

Jan.	Moon's Age	Barometer at 32° Max	Barometer at 32° Min	Barometer at 32° Mean	Temperature of the Air Max	Temperature of the Air Min	Temperature of the Air Mean	Temperature of the Earth 1 Foot deep	Temperature of the Earth 2 feet deep	Wind	Rain
Tues.	30	30.07	29.98	30.02	44	37	40.5	44.1	44.3	S.W.	0.00
Wed.	31	30.03	29.87	29.95	46	37	41.5	44.1	44.3	S.W.	0.00
Thurs.	1	30.05	29.91	29.98	48	36	42.0	44.1	44.3	S.W.	0.00
Friday	2	30.07	29.96	30.01	47	36	41.5	44.1	44.3	S.W.	0.06
Sat.	3	30.06	29.92	29.99	46	37	41.5	44.1	44.3	S.W.	0.00
Sunday	4	30.06	29.92	29.99	47	37	42.0	44.1	44.3	S.W.	0.06
Mon.	5	30.06	29.92	29.99	47	37	42.0	44.1	44.3	S.W.	0.00
Tues.	6	30.06	29.92	29.99	47	37	42.0	44.1	44.3	S.W.	0.00
Wed.	7	30.06	29.92	29.99	47	37	42.0	44.1	44.3	S.W.	0.00
Thurs.	8	30.06	29.92	29.99	47	37	42.0	44.1	44.3	S.W.	0.00
Friday	9	30.06	29.92	29.99	47	37	42.0	44.1	44.3	S.W.	0.00
Sat.	10	30.06	29.92	29.99	47	37	42.0	44.1	44.3	S.W.	0.00
Sunday	11	30.06	29.92	29.99	47	37	42.0	44.1	44.3	S.W.	0.00
Mon.	12	30.06	29.92	29.99	47	37	42.0	44.1	44.3	S.W.	0.00
Tues.	13	30.06	29.92	29.99	47	37	42.0	44.1	44.3	S.W.	0.00
Wed.	14	30.06	29.92	29.99	47	37	42.0	44.1	44.3	S.W.	0.00
Thurs.	15	30.06	29.92	29.99	47	37	42.0	44.1	44.3	S.W.	0.00
Friday	16	30.06	29.92	29.99	47	37	42.0	44.1	44.3	S.W.	0.00
Sat.	17	30.06	29.92	29.99	47	37	42.0	44.1	44.3	S.W.	0.00
Sunday	18	30.06	29.92	29.99	47	37	42.0	44.1	44.3	S.W.	0.00
Mon.	19	30.06	29.92	29.99	47	37	42.0	44.1	44.3	S.W.	0.00
Tues.	20	30.06	29.92	29.99	47	37	42.0	44.1	44.3	S.W.	0.00
Wed.	21	30.06	29.92	29.99	47	37	42.0	44.1	44.3	S.W.	0.00
Thurs.	22	30.06	29.92	29.99	47	37	42.0	44.1	44.3	S.W.	0.00
Friday	23	30.06	29.92	29.99	47	37	42.0	44.1	44.3	S.W.	0.00
Sat.	24	30.06	29.92	29.99	47	37	42.0	44.1	44.3	S.W.	0.00
Sunday	25	30.06	29.92	29.99	47	37	42.0	44.1	44.3	S.W.	0.00
Mon.	26	30.06	29.92	29.99	47	37	42.0	44.1	44.3	S.W.	0.00
Tues.	27	30.06	29.92	29.99	47	37	42.0	44.1	44.3	S.W.	0.00
Wed.	28	30.06	29.92	29.99	47	37	42.0	44.1	44.3	S.W.	0.00
Thurs.	29	30.06	29.92	29.99	47	37	42.0	44.1	44.3	S.W.	0.00
Friday	30	30.06	29.92	29.99	47	37	42.0	44.1	44.3	S.W.	0.00
Sat.	31	30.06	29.92	29.99	47	37	42.0	44.1	44.3	S.W.	0.00
Average		30.05	29.91	29.98	46.4	36.7	41.7	44.1	44.3		0.15

Jan. 31. Hoar, overcast at night
— 29. Rain throughout, overcast at night
— 30. Overcast and fully overcast, warm S.W. wind at night
— 28. Dense vapour, clear, frosty, calm
— 24. Rain, fine, misty at night
— 5. Rain early, and wet, mild, overcast, densely overcast at night
— 11. Rain, cloudy, clouded; slight showers; mild

Mean temperature of the week, 1.5 deg. above the average.

STATE OF THE WEATHER AT CHISWICK.

During the last 10 years, for the seven Weeks ending Feb. 10, 1866

Feb.	Average Temperature of the Week	Average Temperature of the Week corrected by Table	Average Amount of Rain in the Week	Average Number of Days in the Week on which Rain fell	No. of Years in which it Rained	Greatest Quantity of Rain in the Week	Prevailing Winds.						
							N.	N.E.	E.	S.E.	S.	S.W.	W.
Sunday	1	41.7	32.8	38.7	1.8	0.31 in.	2	3	1	1	7	12	3
Mon.	2	42.1	33.2	39.1	1.8	0.39	1	3	1	2	3	15	2
Tues.	3	42.3	33.4	39.3	1.8	0.39	1	3	1	2	3	15	2
Wed.	4	42.4	33.5	39.4	2.1	0.52	1	3	1	1	5	11	3
Thurs.	5	42.5	33.6	39.5	2.1	0.52	1	3	1	1	5	11	3
Friday	6	42.6	33.7	39.6	2.1	0.52	1	3	1	1	5	11	3
Sat.	7	42.7	33.8	39.7	2.1	0.52	1	3	1	1	5	11	3

The highest temperature during the above period occurred on the 5th, 1861—the 6th, 60 deg., and the lowest on the 9th, 1859—thermometer 9 deg.

Notices to Correspondents.

*** The Editors have to beg the indulgence of numerous correspondents for the delay which has taken place in the publication of some of their communications. It is most flattering and encouraging to the Editors themselves to have so many valuable communications addressed to them. The communications they have in hand shall be published as rapidly as the space at their disposal will permit; meanwhile they most sincerely thank those who have so promptly and cheerfully added them in their endeavours to maintain the *Gardeners' Chronicle* in the position of the leading horticultural publication.

BOOK ON BEES (*Amateur*).—You will probably get the information you seek in Glennie's "Handbook of the Flower Garden," or Mrs. London's "Lady's Companion to the Flower Garden," of which latter a new edition, lately issued by Mr. Edmonds, has lately been published.

CATTLE IN GARDENS (*A. K.*).—Writing on the part of the young gardeners at Kenwood, enables us to warn others against the George Nelson, a gardener, representing himself to be a Yorkshireman, who on the 19th ult. concealed himself in the bothy at Kenwood, and, as it would seem, stole and carried away some clothing, but was let off, when discovered, through his representations not having been known. He is described as about 30 years of age, dark and thick-set, with bushy whiskers and dark eyes, and about 5 feet 7 inches high.

DISEASE, INSECT DESTRUCTIVE; *R. M.*—You will find many useful hints on the subject in our columns, especially at p. 541, 1864, and at p. 676 of our Volume for 1865, and much further information in Mr. March's "Flower and Fruit Recreations," published some few years or four years since, and noticed by us at the time; see p. 1199, 1862.

GRAFTING VINES (*C. F.*).—You may graft the Black Hamburgh on your Sweetwater without fear of converting it into a White Grape, or without any of the other fanciful results of the practice you have mentioned. Try it.

MARKET GARDENERS' ASSOCIATION.—The International Show, limited to the growers of Great Britain, such as will be established members of the Society of Chiswick. Will not have any; Messrs. Myers of Beaufort Market, Piccadilly, Messrs. of Lutton Town, &c.—Go to Mr. Langdale, Secretary to the Market Gardeners' Association, Tavistock Green.

NAMES OF PLANTS (*J. H.*).—Adiantum pedatum and Lomaria Australis.—(*A. M.*).—Apply to any nurseryman and you will get it from any one who grows bedding plants for sale.—(*Mrs. Cineraria maritima.* The Cotyledons is less white and more finely cut.—(*Young Gardener*).—*Begonia parviflora*. 3, Cyas. 4, Vittata. 4, Selaginella Martensii, others indeterminable.

PEARS (*Devon*).—We should recommend you to plant Williams' Bon Chrétien, Comte de Lamy, Winter Nelis, and Joséphine de Malines, all of which are of first-rate excellence, and will suit you, to season.

VINES, GRAFTING OR INARCHING (*Jesse*).—Grafting is performed as ordinary whip-grafting, and seldom fails if done when the Vine has broken into leaf.

COMMUNICATIONS RECEIVED.—Professor Balfour (with thanks)—R. T. Pince (thanks)—D. T. Fish—J. Anderson—J. F. McElroy—W. Dean.

LINCOLNSHIRE GEM PEAS (MARTIN & SON).—See Testimonials. Superior to Dixon's Yorkshire Hero or any other Peas grown here.
Hull, 7, Market Place; and Cottingham. Established 1788.

THE EARLIEST and BEST OUT-DOOR GROWN PEA we have tasted this season—vide *Journal of Horticulture* of the 13th of June, 1865; it was also favourably noticed in the *Gardeners' Chronicle* of June 3, 1865.
The above Early Pea is now being sent out by ROBERT H. POYNTER, at 1s. 6d. per quart. Height 3 feet. The kind was gathered from in good condition as early as the 24th of May, and was sent to the Editor as above on the 25th.
None genuine except from accredited Agents.
All over two quart packages free on Great Western Railway.
ROBERT H. POYNTER, Seed Merchant, Taunton.

THE ESSEX RIVAL PEA.—This variety has proved to be the finest, best-flavoured, and most productive EARLY PEA in cultivation. See Testimonials in "Journal of Horticulture" of December 5, and in *Gardeners' Chronicle* of December 9. Price 1s. 6d. per quart.
To be obtained of the Proprietor, Mr. THOMAS ELEY, Sible Hedingham, near Halstead, Essex. Also of the following appointed Agents:—
Messrs. Peter Lawson & Son, 28, King Street, Cheapside, London, E.C.
„ Cooper & Bolton, 152, Fleet Street, London, E.C.
„ Fraser, Richardson, & Goad, 82, Bishopsgate Within, E.C.
„ Richard Lowe & Co., High Green, Wolverhampton, Staffordshire.
„ J. Roberts & Son, Denbigh.
„ Fisher, Holmes, & Co., Handsworth Nursery, Sheffield, Yorkshire.
„ Saltmarsh & Son, Chelmsford, Essex.
„ Sutton & Sons, Reading, Berkshire.
„ Joseph Tremble & Sons, Penrith, Cumberland.
„ Austin & McAslan, Glasgow.
„ J. & C. Lee, Royal Vineyard Nursery, Hammersmith, W.
Mr. James Veitch, Royal Exotic Nursery, Chelsea.
„ Christmas Quincy, Peterborough, Northamptonshire.
„ B. C. Mackenzie, Ventnor, Isle of Wight.
„ A. F. Godward, Southend, Essex.
„ B. Cant, St. John's Nursery, Colchester, Essex.
„ George Taber, Rivenhall, near Witham, Essex.
M. Paul Tollard, Nurseryman and Florist, 20, Quai de la Megisserie, Paris (Sole Agent).
Mr. ELEY has since he published some of the testimonials relative to the above Pea (which appeared in "The Journal of Horticulture" of December 5, and in *Gardeners' Chronicle* of December 9, 1865) received several other most satisfactory reports, among which are the following:—
"Treburyse, January 25, 1866.
"Sir,—I consider your Pea Essex Rival deserves all the eulogiums given in its favour. I was the only one in this district who grew it last season; not so this year. I intend to sow double the quantity I did last year; it is a most excellent variety.—Yours truly,
"Mr. Thos. Eley, Sible Hedingham. "A. MILNE."
Mr. ELEY, the proprietor of the above popular Pea, strongly recommends gentlemen who require a plentiful supply of good early Peas for table to make sowings for successive gatherings in the following order—viz., First Sowing, the first week in February; Second ditto, the third week in February; Third ditto, the first week in March; Fourth ditto, the third week in March. Mr. ELEY begs to say that whoever follows out the plan as described in his remarks on Garden Pea Culture, and sows as above stated, may depend upon gathering Peas to his heart's content.
Sible Hedingham, January, 1866.

SUTTON'S RINGLEADER (or CARTER'S FIRST CROP) PEA.
THE EARLIEST IN CULTIVATION.
This PEA was introduced to the public last season simultaneously by Messrs. SUTTON & SONS and Messrs. James Carter & Co., both parties being entirely ignorant of the fact that the stocks from which they had raised their supplies were obtained a few years since from the same locality, and in fact from the same person who originated it. Of all the kinds tried against RINGLEADER (or FIRST CROP) none have proved so early.
The price charged last season was the same by both vendors, viz., 2s. 6d. per quart, and the demand at that time being so great as to prevent our holding a sufficient quantity for seeding, the price cannot be reduced this season.
The following are Extracts from a few of the numerous Letters received relative to this unrivalled Early Pea:—
From Mr. WILLIAM DOWELL, *Gardener to* Sir George Chetwynd, *Grendon Hall, Atherstone, May* 24, 1865.
"Your 'Ringleader' is earlier than any Pea I have ever grown. I shall gather a dish to-morrow morning, which is by far the earliest Pea we have had."
From Mr. W. POVEY, *Gardener to* H. P. Best, Esq., *Donnington Grove, near Newbury, May* 24.
"I planted your 'Ringleader Pea' on the last day of February; on the same day I planted 'Daniel O'Rourke' and other early sorts. Your 'Ringleader' is uncommonly well podded, and the pods are filling fast. I have no doubt they will be cleared, and the ground planted, before I pick from any of the other early sorts."
From Mr. JAMES PEARSON, *Gardener to* H. Bentley, Esq., *Woodlesford, Leeds, May* 25.
"Your 'Ringleader Pea' is six days earlier than Dillistone's, and is the most promising Pea I have grown."
From Mr. H. HARRISON, *Dedham, May* 26.
"Your 'Ringleader Pea' has proved with me by far the earliest, and will be cleared off the ground before the others have done blossoming. I consider the 'Ringleader' the quickest Pea of any of the early sorts grown in this neighbourhood."
From the Rev. WILLIAM WOOD, *Prestwood Parsonage, Great Missenden, May* 27.
"I expect your 'Ringleader' Pea will be a fortnight earlier than 'Sangster's No. 1' sown on the same day; in fact, it is earlier than any Pea which my gardener has known. The garden lies high, and is exposed to the cold."
From Mr. BAILEY WARDS, *Gardener to* S. A. Sykes, Esq., *Raywell, Brough, May* 29.
"I have this year sown your 'Ringleader' Pea against your Early 'Champion,' which I have hitherto found the earliest in cultivation, and I am glad to tell you that it came into bloom ten days earlier. It has been covered with blossoms from top to bottom. I am sure it is a valuable addition to our early Peas."
From Mr. GEORGE SCRYMGER, *Holme Park, Sonning, May* 29.
"I have great pleasure in reporting favourably of your new early Pea 'Ringleader.' It was sown the same day as five of the most popular early sorts. I gathered from it on the 26th of May, which is 14 days earlier than I shall of any of the other varieties. It is also very prolific; altogether with me it has proved an acquisition."
From WILLIAM THOMAS REW, Esq., *Coombershead, Tiverton, May* 30.
"Your 'Ringleader' Pea has quite proved worthy of its name. I planted it side by side on the same day with Sangster's No. 1 (which has hitherto been my earliest), but now the 'Ringleader' has blossomed at least one week before the others, and from all appearances will be fit to gather quite a fortnight before them. My garden is in a very high and exposed situation, as well as rather late."
From JOHN FORD, Esq., *Merton Hall, Warwick, May* 31.
"My gardener sowed on the 14th of January, side by side, 'Sutton's Ringleader,' 'Sutton's Champion,' 'Early Essex Rival,' and 'Dillistone's Early Prolific' Peas. 'Sutton's Ringleader' was in bloom first, coming in the 5th of May, the others a week or so later."
From Messrs. DOBSON & SON, *Woodlands Nursery, Isleworth*.
"We tried your 'Ringleader' Pea last season with 'Dillistone's,' and it was from a week to 10 days earlier. It is certainly the earliest Pea that has come under our notice."
From the GARDENERS' CHRONICLE, *August* 12, 1865.
"*Peas.*—On the 28th of March I sowed Sutton's 'Ringleader,' and had a splendid crop in less than eight weeks, which I allowed to ripen. I then sowed the ripe seed on July 10th, and have now a capital crop of Peas, the second crop having been six weeks only in growing, and the two crops have been produced in less than 5 months. I beg to forward you a sample, the pods in which you will observe are well filled.—*Thomas Fielder, White Horse, Binfield, Berks.*"
Retail Price, 2s. 6d. per quart.
PRICED LISTS of FLOWER ROOTS, GARDEN SEEDS, FARM SEEDS, &c., Gratis and Post Free.
SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

DIXON'S YORKSHIRE HERO PEA is the best Dwarf Green Wrinkled Marrow in cultivation. See Testimonials in *Gardeners' Chronicle* of November 18.
Price 2s. per quart. Price to the Trade on application.
E. P. DIXON & SON, Yorkshire Seed Establishment, 57, Queen Street, Hull.

The Earliest Pea known is
CARPENTER'S EXPRESS, gathered May 7th, the Earliest date on record. See Testimonials in *Gardeners' Chronicle* of September 2 and 9, October 16, and November 6. Price 5s. per quart. Trade price on application.
True seed to be had only of EDWARD CARPENTER, Seed Merchant and Grower, Brighton and Sussex Seed Warehouse, 96, St. James's Street, Brighton; and of Messrs. WOOD & Son, Nurserymen, Maresfield; Messrs. OSBORN & SONS, Nurserymen, Fulham, S.W.; Messrs. W. BRYCE & Co., Seed Merchants, Glasgow; Messrs. F. & A. DICKSON & SONS, Nurserymen, Chester; and Messrs. JAS. DICKSON & SONS, Chester. Catalogues on application.
PRICED CATALOGUES of DUTCH BULBS now ready.

Seeds for the Season.
CHARLES TURNER'S DESCRIPTIVE CATALOGUE is now ready, containing the new varieties worthy of notice, with a careful selection of the older kinds.
In PEAS, for first crop, C. TURNER strongly recommends LITTLE GEM, a green wrinkled Marrow of the finest flavour, and very prolific. This remarkable variety is only 1 foot high, and requires no stakes.
ADVANCER is recommended for a second crop.
The finest Summer Pea is PREMIER. See description in Catalogue, which may be had on application.
BETTERIDGE'S SUPERB QUILLED ASTERS, in 12 distinct varieties, 3s. 6d. the Collection. This seed is saved by the raiser, R. H. Betteridge, Esq.
GERMAN FLOWER SEEDS from the first sources.
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„ LONGSTANDER, remarkable for duration, crisp and excellent, 1s. per packet
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ONION, NUNEHAM PARK, 2s. 6d. per packet
MELON, PRINCESS ALICE, weight 9 to 11 lb., and excellent, 1s. 6d. per packet
PEA, THE RINGLEADER (or First Crop), 2s. 6d. per quart
„ McLEAN'S LITTLE GEM, 3s. 6d. per quart
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RADISH, NEW OVAL SCARLET WHITE-TIPPED, 6d. per pkt
And many other New and Select Seeds.
CATALOGUE for 1866 (CULTURAL and DESCRIPTIVE) free on application.
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SUTTON AND SONS can supply the following Superior kinds of PEAS, in large quantities, at moderate prices, which may be had on application.

Daniel O'Rourke	King of the Marrows
Sangster's No. 1	Payne's Conqueror
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Mona's Pride	Queen of Flukes	Lemon Kidney
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Prince of Wales	Dawe's Matchless, or Webb's Imperial	Myatt's Ashleaf
Red Regent		Erin's Queen
Hudson's Nonsuch	Hudson's May	Skerry Blue
Wheeler's Gloucestershire Kidney	Wheeler's Milky White	Early Ashleaf
		Early Walnut-leaf
Daintree's Seedling	Early Oxford	Improved Early Shaws
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Wellington		Fortyfold & Lapstone.

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Victoria	Napoleon	Paterson's Regent
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FLUKE KIDNEYS	£4	„
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	Per Cwt.		Per Cwt.
Webb's Imperial Kidney	6s.	Soden's Early Oxford	5s.
Flukes, Kidney	5s.	Dalmahoy	5s.
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MR. J. MYATT, of Offenham, Evesham, has a fine sample of this excellent variety to offer this season; also the old ASHLEAF KIDNEY, the ROUND ASHLEAF (a very good second early), and MONA'S PRIDE; the last-named variety had direct from the raiser, Mr. Routledge, Isle of Man, last season. Price 6s. per bushel, the three first-named varieties, and 5s. per peck of 14 lb., Mona's Pride. Remittances expected from unknown correspondents. Price to the Trade on application.
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BLACK TARTARIAN OATS may be had very pure for Seed, the produce of both strong clay and peaty soil, from W. DRUMMOND & SONS, Seedsmen, Stirling, N.B.
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HENRY DEWAR AND SON beg respectfully to offer Seed of this excellent solid WHITE CELERY, acknowledged by all who have grown it to be the best variety in cultivation. Awarded a First-class Certificate at International Show, South Kensington, December 9, 1865. In sealed Packets 1s. each, post free 13 stamps, usual allowance to the Trade.
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New Clover Seeds, free from Dodder & other Weeds.
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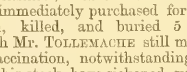

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The Agricultural Gazette.

SATURDAY, FEBRUARY 3, 1866.

MEETINGS FOR THE ENSUING WEEK.

MONDAY,	Feb.	5	Public Meeting on Malt Tax (Free Trade Hall) [illegible] 1 P.M.; London Farmers' Club [illegible] P.M.; Mr. Alderman Mechi on the Future of Tillage
TUESDAY,	—	6	Preliminary Meeting for the Formation of Central Chamber of Agriculture (St. James's Hall)
WEDNESDAY,	—	7	Agricultural Society of England. Noon
THURSDAY,	—	8	Conference of Representatives of Local Agricultural Societies on the Cattle Plague (St. James's Hall)

—— THE 300 deaths per diem from the Cattle Plague in Cheshire have doubled in a fortnight. Upwards of 5000 fresh cases and 4270 deaths took place last week.—The disease has reappeared in Aberdeenshire; and the whole stock of the farm was immediately purchased for the county association, killed, and buried 5 feet deep. —Although Mr. TOLLEMACHE still maintains his faith in vaccination, notwithstanding that some at least of his stock have sickened, yet its powers as a preventive have already been disproved. One of the recent cases in the North is indeed stated to have been just recovering from cow-pox of the natural kind when she was attacked by rinderpest. And Dr. MURCHISON writes as follows to the *Times*:—

"The points of resemblance between cattle plague and small-pox are so striking that certain observers were led to hope that vaccination might protect cattle from the prevailing disease. The experiment, I believe, has now been fairly and fully tried; and, although the first accounts appeared favourable, there is sufficient evidence that vaccination confers no permanent protection from the plague. It is well that this fact should be generally known by publication in the *Times*. Rigid isolation and the suspension of all movement of living cattle must still be the preventive measures on which we mainly rely."

We are thus thrown back, as Dr. MURCHISON declares, on that policy of isolation and the "pole-axe" which was our only hope at first, and is (at so much greater cost) our only hope at last. The Aberdeenshire plan is being advocated almost everywhere, and a voluntary rating of agricultural rentals to enable it, ought, in the absence of Government interference and assistance, to be universally adopted. At the recent Gloucester meeting, where resolutions to this effect were passed, a tenant farmer proposed, amidst cheers and laughter, that any one refusing his quota under such an arrangement should be "branded with a X upon the hind quarters." And so he ought to be!—a little ridicule sometimes goes a long way, and we daresay the proposal helped the unanimity of the Gloucester gentlemen; who however, will not be able to laugh even at so good a joke as this, if the fate of the corresponding dairy county in the North should overtake them.

—— The Order in Council with reference to the Cattle Plague in Ireland, which was issued last Saturday, requires that on the occurrence of cattle plague on any farm the LORD-LIEUTENANT shall be informed by telegraph, and shall thereupon immediately despatch an inspector with the ordnance map in his hand, upon which he shall there and then draw a line of isolation around the infected farm or district, which line is to be *kept* by the county constabulary, and no domestic animal is to be allowed to cross it until 28 days after the disappearance of the disease. Why has not a measure of this kind long since been adopted here?

It is now or never as to any hope of remedy. In 10 weeks' time our cattle will be sent afield; and no such chance of effective isolation will exist as remains while they are for the most part housed. The disease must then be left to die out of itself, as it has done at Edinburgh, and left the cowkeepers with just one-fifth the stock they had six months ago!

—— A correspondence has appeared during the past week on the condition of the Dorsetshire agricultural labourer. To this, under the present pressure of a more important subject, we must hereafter direct attention. Lord SHAFTESBURY points out the many perquisites and payments in kind which go to swell the weekly wage, and draws so much more satisfactory a picture of the condition of the labourer in that county than has hitherto been imagined, that "S. G. O.," another well-known Dorsetshire philanthropist, declares that so great was his astonishment on reading it, "you might have knocked him down with a feather." The fact we presume to be that all beyond the money payment depends so much on the will of the master, both as to quantity and quality, that there is room for the utmost difference, both of opinion and of experience, on the condition of the servant under such a system.

THE tabular returns of the progress of the Plague do not impress every one with their full significance. A hundred and seven thousand head of cattle attacked are but 1½ per cent. of the estimated horned stock of the kingdom; so, on the principle of trifling with sparks in warehouses and being careless of trickling runnels through embankments, we are invited to refrain from fuss and agitation till we are able to total up our losses by millions. However, if the optimists will but look at the figures, remembering the character of the enemy that is upon us, they, too, may grow serious with misgiving and alarm. A fluctuating influence from week to week must be recorded of a disease that "incubates" before declaring itself in symptoms, that is irregular in the duration and intensity of its attacks, and is disseminated with varying rates of speed—sometimes marching slowly and steadily and planting its centres for coming outbreaks, sometimes hastily careering through a district or pouncing upon outlying spots, without apparent order in its course; but a tolerably uniform rate of increase is at once observable when we group the weekly numbers into monthly periods. Arranged thus, the statistics up to January 6th are remarkable, and full of dreadful warning:—

Census Divisions.	Number attacked. During the Four Weeks ending Nov. 4.	During the Four Weeks ending Dec. 2.	During the Four Weeks ending Jan. 6.
1. Metropolitan Police District ..	478	467	227
2. South-eastern Counties	570	722	332
3. South Midland Counties ..	743	1740	3298
4. Eastern Counties	856	743	1089
5. South-western Counties ..	42	151	315
6. West Midland Counties ..	206	293	664
7. North Midland Counties ..	128	467	1600
8. North-western Counties ..	253	1355	5739
9. Yorkshire	494	3154	5888
10. Northern Counties	222	390	615
11. Monmouthshire and Wales ..	174	642	1217
12. Scotland	3758	5684	8049
Totals	7934	15,363	29,123

The totals are in geometrical progression, doubling every month. At least for a round statement, this is sufficiently near the truth. And in the summation of this very easy series, at what result do we arrive? Why, that if the plague should continue to extend in the same regular ratio of increase which has existed throughout these three months, we shall have had a million cases by the month of June, two million cases by the end of another month, one-half the neat stock of the country attacked before July is out, and the whole of the supposed seven or eight millions caught by the pestilence before we have harvested the crops now growing. Of course, one uniform rate of extension is not likely to prevail throughout the whole term of this visitation; by the time that half, or some other large proportion of the cattle were carried off, and herds had thus become more thinly distributed, we should expect a less rapid multiplication of cases; though we are not sufficiently versed in the history of contagion to say whether the increase of contaminated area would not hasten the doom of the diminishing area of health. Then we do not suppose that every individual animal of the bovine race would fall before the pestilence, even if no measure whatever were put in force against infection; but, from the example of other countries, it is clear that such a wholesale extermination may be wrought as to leave but few beasts alive.

That our arithmetic is really not wild and unwarranted, appears from the progress of the disease in some of the large census divisions—comparing the number for the four weeks ending January 6, with those for the four weeks previous. In the Metropolitan Police District there is a decrease, explained by the annihilation or selling-off of dairy stock; and in the South-eastern Counties the plague has advanced less quickly than elsewhere. In the South Midland Counties we see an increase of 90 per cent.; in the Eastern Counties an increase of 46 per cent.; and in the South-western Counties the cases are more than doubled in number. The West Midland Counties show an increase of 122 per cent.; the North Midland Counties exceed this rate, showing an increase of 315 per cent., while the North-western Counties present the *maximum* increase of 323 per cent. In Yorkshire the increase is 86 per cent.; in the Northern Counties it is 57 per cent.; in Monmouthshire and Wales it is 89 per cent.; and in Scotland it is 41 per cent. You can hope, if you please, that the lower rates of extension may prevail; but have you a shadow of proof that the highest rates are not just as likely to predominate? Probability will be always on the side of the general totals: and these, as the table shows, are about doubling themselves monthly. Still, for anything we can tell, future totals for the whole country may more than triple themselves monthly, as the numbers already do in the North Midland and North-western counties.

Perhaps some jugglery of the statistician may lurk in our lumping together of weekly returns? Certainly not. Take the last week of the 12, namely, that ending January 6th, and while you find (we are referring to the published tables) the fitful character of the disease exhibited in a decrease of cases in the third, fifth, seventh, and tenth districts, you see that the attacks in the first district are more than doubled in one week; in the second district is an increase of two-thirds; in the fourth district an increase of one-third; in the sixth district an increase of three-fourths; in the eighth district a small increase; in the ninth district an increase of two-fifths; in the eleventh district an increase of one-half; and in the twelfth district an increase of one-third. The total number of attacks amounts to 9120, against 7693 in the week ending Dec. 30, presenting a general increase of about one-fifth. At this rate the total for Great Britain is shown to be nearly doubling itself per month, just as in our tabular comparison of four weekly periods. In the second district the increase is equivalent to more than doubling, and in the sixth district to trebling the number of attacks per month. The succeeding week (ending Jan. 13) produced a more favourable return. Decrease was perceptible in the first, second, third, fifth, ninth and twelfth census divisions; while the general total showed only a small increase of cases. But the next week (ending Jan. 20) again revealed the progressive as well as persistent march of the murderous disease. Decrease appears in five out of the twelve districts, but the total for the kingdom jumps at once from 9243 to 10,041. In the Eastern Counties we have an increase of more than one-half; in the South-western Counties a doubling of the number of attacks; in the West Midland Counties an increase of three-fifths; and in the North-western Counties an increase of more than one half. Remember, that is within a single week; the rates of increase for a month far exceeding those of our figured synopsis.

The official returns cannot be gainsaid; and that our apprehensions deduced from them are not over-strained will strike anybody who is familiar with an afflicted locality. We can speak of one district in an Eastern County where the pest has completely cleared out several large homesteads, and it still seems as if few yards there will escape. Between Wednesday week and the Wednesday before, an Inspector was called to 14 fresh farms; on the Friday and Saturday following, to six more farms; and on the Sunday and Monday to a yet larger number of farms—not to single "cases," but to farmyards at which the plague had arrived for the first time. And all these premises lie within an average distance of about six miles from the inspector's residence. We are not aware, however, that the plague is spreading more swiftly or falling with deadlier destruction, in this than in very many districts of the kingdom. It is the stealthy, persistent progress of the enemy, not merely the large number of victims already sacrificed, at which all stock owners are aghast. Hence the justifiable importunity of the Long Sutton deputation some weeks ago, for an immediate assembling of Parliament. Hence, the incessant appearing of letters in the daily journals praying for prompt action on the part of the Government. Hence, the innumerable meetings, speeches, and petitions, that are reported in all the organs of public opinion; and hence, too, the public meeting in town, in the ensuing week, called by the forward and far-seeing Northamptonshire Agricultural Society.

But where is the great agricultural organisation of Hanover Square, that, with its names of weight and influence, and its abundant funds (spared this year by the postponement of its Country Show), might long ere now have enlightened its thousands of members concerning the true character of the rinderpest, and have brought an almost irresistible pressure to bear upon a tardy Government? If the Plague has desolated other countries, if it is now with frightful rapidity stretching its ghastly arms over all our cattle, and if the Royal Agricultural Society really knows the history of the foe (and the evidence exists in plenty of printed volumes and reports), where is that Society at the present moment? Is it taking its stand as the head and representative of English husbandmen, charging the Government with unfaithfulness to its duty (for the Government took our defence out of our own hands, and assumed the office of saving our herds)? Is it demanding, in the name of equity and justice, full compensation for the slaughtered hecatombs that the Government might have shielded from harm? Is it even taking part in any universal mustering of volunteer forces that may achieve self-help, should continued apathy and disgraceful neglect of duty be all that our rulers will grant us? No: all we can say is, that the Society is delicately picking its way among political interests for fear of soiling or rumpling the spotless propriety of its "Charter." *I. A. C.*

THE CATTLE PLAGUE.

1. The following returns were issued yesterday:—These returns do not profess to give the total number of cases which have occurred in Great Britain, but only those which have been ascertained from the official information received at the office from inspectors, whether appointed by the Clerk of the Council, or by the local authorities. The divisions of England are those of the census. Columns 1 only record the cases reported as having commenced during the weeks indicated by the headings, "back" cases being added to columns 2.

Census Divisions.	1 Number Attacked. Week ending January 20.	Week ending January 27.	2 Total Reported Cases from Commencement of Disease. Attacked.	Killed.	Died.	Recovered.	Unaccounted for.
Metrop.	21	26	7474	3149	3408	315	602
S. Eastern. ..	33	35	4845	1494	2732	422	1197
S. Midland. ..	860	580	10,217	1850	6892	741	734
Eastern Co. ..	315	157	7837	2868	3904	508	557
S. Western. ..	82	58	1157	293	614	132	118
W. Midland ..	444	1723	4838	524	3227	515	572
N. Midland ..	442	715	4084	600	3399	400	685
N. Western ..	3738	3510	19,396	595	13,332	1298	4171
Yorkshire	1314	2034	19,331	924	11,863	3031	3510
Northern Co.,	290	116	2431	593	1256	258	374
Monmouthsh. & Wales ..	542	626	5225	101	4022	621	481
Scotland ..	1960	2156	32,755	3771	19,121	5888	3975
	10,041	11,745	120,740	16,742	73,750	14,162	16,086

2. COMPENSATION—INSURANCE—OR RELIEF.—We showed in our last Number that the Government

ought not in policy—could not in justice—relieve out of the taxation the sufferers by the cattle plague. The poorer taxpayers are often just as miserable, are in a hundred cases more miserable, than those sufferers. They ought not to be compelled to give out of their little to help others who already have more. And if the English Government once begin to tax one class of capitalists to make up the losses incurred by other capitalists, it will have little else to do. Each year some class will have a case as strong as the farmers this year. The cattle plague was new and unexpected, but the cotton famine was just as new and unexpected, and no one even dreamed of proposing that the millowners should be compensated when it came. In a varying and miscellaneous world a certain quantity of astounding change is sure to come, and ought to be expected. If the national treasury were to be opened to compensate all sufferers by singular calamities, it would be infinite, and it must be fed by unlimited taxation.

We showed, too, what is more important, that the plan suggested by Sir James Shuttleworth, and partly countenanced by Lord Russell and Mr. Gladstone, of a State loan on "ample security" to help these sufferers, was on a great scale impossible, and on a small scale nugatory. The mass of the sufferers —all the worst sufferers—have no security to offer. The poor farmer had his stock before the plague, and had little else—nothing else fit for a security for a national loan. No such loan ought to be made except upon security which will ensure its repayment; if there be any doubt or risk in the matter, the operation is a disguised gift, not a true loan. The land of England, it is true, is an excellent security—the best security, take it all in all, which the money world have ever known. But, then, the land does not belong to these sufferers. England is not a country in the main farmed by its landowners. Neither its cattle nor its crops as a rule belong to the owners of the soil. The landowners have good security to offer to the State, but they are not the real sufferers here. Their incomes may fall off, it is true, upon this sudden calamity, but so have the incomes of underwriters upon these sudden gales. We would as soon lend to relieve the distress of Lloyd's as the distress of the landowners.

As a measure of general relief, the lending scheme will break down on the threshold. The landowner will not become security for the farmer. He will not say to the Government, "You lend me money upon my land, and I will lend it to the farmer, and he shall buy cattle with it." And if he did say so, how could it be proved that he spoke truly? Who is to prove to the Government, for 20 years to come, that the cattle bought with the Government money still belongs to farmer A, who on the 1st of January, 1866, owned 50 head of good cattle, and before the 1st of February lost all of them by the rinderpest.

The relief loan was useful in Lancashire, just because that loan was not what this one must be. The Lancashire loan was not a compensation to capitalists. It was a loan for utilising men. Certain labourers were out of work and we had to keep them; the only alternative was, will you keep them in idleness, or keep them at work? We chose to keep them at work. And as a result we have good drainage and good pavement in some great northern towns where there were very bad pavements and dangerous drainage before. The loss in Lancashire was not "spread over a course of years." The loss of the Lancashire capitalist was not helped at all; the loss of the Lancashire labourer was helped at once. The only thing "spread over years" is the payment by the improved towns for their improvements.

We also observed that insurance as a matter of business would not effect what we wish. An insurance company looking to profit—looking even to protect itself from loss—must fix certain rates of premium grounded upon tables and digested experience. But here there is no experience. There are no tables. There can be none. The peculiarity of the calamity—the special ground upon which our aid is asked—is its novelty. It is so new and strange that the sufferers could not be expected to foresee it, and therefore we ought to aid them. But exactly on this account an insurance office as a business cannot aid them. It cannot calculate by anticipation how far so new an evil will spread, and till it can calculate it cannot insure.

The existing companies for cattle insurance have mostly other defects. Not only are the premiums settled at a venture, and therefore their solvency uncertain; but their area is small, and their fate dependent on the caprice of local infection. One union may escape and its insurance office flourish; another be infected and its insurance office ruined. In that case those who do not want relief will have made profit, and those who do want relief—those whose cattle die—will have suffered an added evil. They will have paid premiums to a bankrupt society.

We suggested that there should be a great Relief Association for all England, which should attempt to mitigate this evil. It should have a large paid-up capital, and a still larger unpaid-up capital. They should charge premiums, avowedly without data, because no data exist, and should be ready to pay out of their capital if those premiums prove insufficient. It is in fact a national subscription to aid the sufferers by a national calamity: the novel nature of the calamity making the risk incalculable, the benevolent part of the public agree to take that risk and subscribe much money to make their promise good.

Two preservative conditions are needed to make the plan work well:—

1st. No one should be allowed to insure more than two-thirds of the value of his cattle. The association is only intended to alleviate suffering; it is not intended to extinguish suffering. It does not profess to make those who lose their cattle as well off as if there had been no plague, but only to make them less ill off than they would have been if nothing had been done.

The prohibition of full insurance, too, at once cuts off the most potent temptation to fraud. Mr. Chadwick has lately contended in a very elaborate essay, that it ought not to be allowed in marine insurance or in fire insurance; he estimates so highly the frauds it causes. But, at all events, in a national charity of this sort we ought to take the most effectual means that such charity shall not be abused. If no one can insure up to the value of his property, no one can gain by voluntary losses, and accordingly there will not be such losses.

2d. Those who insure largely ought to subscribe and to take shares in the Relief Association in some proportion to that insurance. A rich owner of cattle who proposes to benefit largely by a company mainly got up for his poorer neighbours should help that company much, or he should not be allowed to avail himself of it.

If the cattle disease continues and spreads, some association of this sort must be formed. It would be premature to begin to agitate in public on its behalf as yet. But on that account quiet and grave thinkers should familiarise their minds with the considerations it involves, mature their opinions upon it, and be ready to regulate opinion upon it when the time for action comes. *Economist.*

3. VACCINATION (*a*).—You were good enough on the 16th inst. to insert a letter from me, in which I mentioned an experiment that I was making with an Alderney calf.

I am sorry to say that this morning the calf succumbed to the disease, after being ill eight days. The poison generated in her system, from her having been so long in close contact with animals suffering from malignant rinderpest, seems to have overpowered the influence of the vaccination.

I have also one vaccinated cow ill from the disease, and another cow, also vaccinated, that I have great misgivings about.

As I do not consider the death of the calf to be a fair test of the vaccination theory, I purpose tomorrow to inoculate a cow (that has been successfully vaccinated) with the tears running from the eyes of a diseased beast. I also purpose subjecting another cow, which has been vaccinated, and which (after vaccination) took cowpock, to precisely the same experiment. If either of these cows are proof against rinderpest, we shall gain much insight into the nature of the disease, and the best mode of dealing with it.

The most eminent authorities seem satisfied that rinderpest is bovine small-pox; we are not, therefore, groping in the dark, but feeling our way with the view of discovering some antidote or palliative against this desolating scourge. *Wilbraham Tollemache, Dorfold, Jan. 25, in the Times.*

—— (*b*).—Mr. Tollemache, in your paper to-day, says, "The most eminent authorities seem satisfied that rinderpest is bovine small-pox." Mr. Tollemache has no authority for saying this. It would be much nearer the truth if he had said that cattle plague in many respects resembles small-pox, and belongs to the same class of diseases; but that it is not bovine small-pox, and cannot be kept off by vaccination or by inoculation, but only by insulation. *H. Bence Jones, 31, Brook Street, Jan. 27, in the Times.*

4. THE CATTLE STATION AT HOLYHEAD: *Llanfairyngharnwy, Holyhead, Jan.* 26.—To show the utter carelessness of railway authorities, I beg to enclose an extract from a report made to me (as an individual magistrate only) of the state of the railway company's cattle station at Holyhead. Though "unauthorised," it is an astounding document. Owing to a mistake, it will be a week before we have an "authorised" inspector to look after these matters; and it will then be a question whether he can prevent the arrival of non-disinfected trucks. Though we may look with hope to the effects of vaccination, I have been amusing myself with devising means for arresting infection in cattle trains while travelling, and send you a sketch of it. *Jas. Williams.* [A travelling cleansing apparatus in every truck.]

Copy of Report on Cattle Station at Holyhead.

"Holyhead, Jan. 24, 1866.

"Rev. Sir,—To day I inspected the railway cattle trucks, and found a great number of them in a dirty state, not being cleaned before sending down here, and heaps of dung thrown out from the waggons left on the sidings and trodden about. I think there is more danger from this than anything else, as the men from the railway may carry it about with their feet into other fields in the neighbourhood in going about. So they may take the distemper with them in that way, and we shall not be safe as long as they send the dirty trucks down here, and leave the dung about on the sidings and trodden under foot. That is the very dung that comes from England. The number of dirty trucks was 33. I send the No. of each.

"To the Rev. Chancellor Williams."

5. FEEDING IN PITS.—The *Times* inserted a few days ago a short paragraph, copied from a local paper, relative to a plan which I had introduced for placing cattle in detached underground stalls, and which might be easily adopted on farms where the subsoil is porous, or where there is a sufficient fall for draining to a depth of 6 feet.

As the plan is approved and thought feasible by many practical farmers in the district, I am desirous of giving a fuller and more correct description of the manner in which it can be effected, and the result hitherto gained, than would appear from the article first quoted by you.

Holes are sunk about 40 yards apart, from 5 feet to 6 feet deep, 13 feet long, and 9 feet wide at the top, decreasing towards the bottom to 7 feet, that the falling in of the sides may as far as possible be prevented. A narrow incline leads down to the opening which forms the entrance. Across the top are placed light poles, covered with brushwood, the whole surmounted by a thatched roof. A manger, with two upright poles for tying up the animals, completes the stall, the entrance being closed by bundles of straw.

It appears advisable to confine two cows in each stall, as they thrive better in company.

The disease having broken out at Lineal, a village near Ellesmere, I prevailed upon my friend Mr. Jarvis, a farmer there, to adopt my plan, and three weeks ago he placed 14 cows in seven underground stalls. The disease is now prevailing in every farmstead in the village with the exception of Mr. Jarvis's, while in buildings adjoining his 16 out of 20 cows have died.

The cows thus detached are healthy and contented, and are fast improving in condition. The ventilation is perfect, the hot air escaping through the roof, and leaving the stalls dry and warm without being hot, while the temperature can easily be raised or depressed by altering the position of the straw at the entrance. Strict attention is, of course, paid to cleanliness. The fodder is carted to the field once a day, and very little extra trouble is incurred by the aged attendant, who cheerfully carries out his duties, and prides himself in the success of the experiment. In answer to any doubt that may be urged as to damp or other objections to the underground system, I would instance the case of horses in coalpits, where, at a depth of 200 feet or 300 feet, they are kept in excellent condition on less food than is consumed in stables above ground.

The chief advantage of the system appears to be this, that in cowhouses or sheds as they are commonly constructed, where a number of cattle are kept in close proximity, although an animal on the first appearance of the disease may be at once removed, yet the tainted stall still remains to probably infect the rest, while by adopting this plan the diseased animal can be at once killed, and, by deepening the stall, forthwith buried without bringing the carcase above-ground, and the stall filled in and closed, the partner of the affected animal having been removed to an empty stall, to be kept in strict surveillance. The cost per head will be from 2*s.* to 2*s. 6d.* for labour, of course exclusive of poles and straw, which can hereafter be turned to account. *John Rattle, English Frankton, near Ellesmere, Salop, Jan.* 27.

6. HOW ARE CATTLE PLAGUE DIFFICULTIES TO BE OVERCOME OR MITIGATED?—I ask this question as a breeder and grazier, because this will presently be the question of all questions to be decided by breeders and graziers, both of cattle and sheep. The cattle plague has already devastated some districts, and its ravages are daily spreading, and with accelerated force. In the immediate district from where I write it has made fearful havoc. Many foldyards of cattle are entirely carried off. The losses have been exceedingly painful and heavy—I say painful—yes, it is painful, and truly distressing to see 30 or 40 newly-made graves with their mounds over so many cattle; and it is so. My very next neighbour has that number; another adjoining has 12 in one row; another has 21 (he lost nine head yesterday, Sunday); another has 31, and others in similar proportions. Every remedy has been tried, and every precaution has been taken, but in vain. It still increases, and with every change of wind fresh outbreaks occur in the direction of the current of air. This I unhesitatingly assert to be the fact, besides all the conceivable and inconceivable means by which it is otherwise propagated. Its terrific attacks and dire results are truly appalling. The calamity is no doubt a national one. Cattle owners are of course the first sufferers, but the British public will soon be compelled to own how deeply it affects them, although they have as yet scarcely felt the loss, or considered themselves implicated. The panic amongst cattle owners has been so great that many thousands of cattle have been sent to market, having no pretensions to rank as fatted animals, but they keep down the price of beef notwithstanding. When these unripe animals, in the usual

course of fatting, would have found their way to market, their places will be vacant. It is then that the scarcity will come. It is then that the public will miss their supply of beef. It is then their eyes will be opened to view this visitation as a national calamity, and they will then be ready to deal with it as such. I wish such a revelation had come upon this British public much earlier; we should not now have been in our present trying and most unsatisfactory position. More stringent measures would have been adopted had the public been up to the measure of their difficulties. Now, when too late, this unstable public can acquiesce in any measure, however harsh and tyrannical it may be, if its tendency is to stay the plague. It might have been stayed; it cannot now, except by Divine interposition. No human effort can arrest its course, no human skill can effect a cure. What, then, is to be done for future guidance and to mitigate these woeful evils? Our first appeal is generally to the Government. Well, what can the Government do? Suppose Government does undertake a "National Cattle Insurance" under guarantee. It must be based upon some equitable data—fair commercial principles. Government never undertakes to compensate individual losses, however multiplied. Suppose the Government Actuary attempts to fix the rate of premiums upon insurance; he tries to ascertain the number and value of the cattle in the kingdom, then the average number of deaths. He estimates the cattle to be from six to seven millions; the value from 60 to 70 millions sterling; the losses to be about 10,000 per week in deaths and slaughters, as the most probable number, *i. e.* about 12 per cent.; then he adds agencies and office costs—about another 8 per cent; total, 20 per cent. Now, what is the premium at 20 per cent. of insurance upon an ox of the value of 20*l.*? Why, just 4*l.*! and so on in proportion for every head of cattle. Of what real value, then, will this vaunted "National Cattle Insurance" be to suffering cattle-owners if they are to pay such high premiums? And there is no help for it, unless Government make great sacrifices on their behalf. What independent company would insure for less rates? I am afraid the guardians of the public purse would not allow Mr. Gladstone to bestow favour or run risks with it. Well, say others, if Government can't insure our cattle to our advantage, they must lend us money to cover our losses. Suppose Government does undertake this, and becomes willing to advance loans to sufferers—Government will require fair adequate security. How is this to be guaranteed? Will neighbour join with neighbour in joint security? Will individuals give their own bonds, under bills of sale, or otherwise? Will Government stipulate that her Majesty, in case of failure, shall always be first paid? Will Government, under any circumstances, accept personal securities? I think not. What then is to be done? Will counties accept loans to lend to sufferers on security of county rates? Will Poor Law Unions accept such loans upon union ratings? Will landlords accept such loans upon their estates to lend to suffering tenants? These questions require a satisfactory solution. Who can give it? Suppose it is given—what is the position of the unfortunate borrower? Is he to proclaim his poverty to all the world? He, poor man, is afraid to disclose his circumstances to his best friends. What if everybody knows his need? Why, he is in hourly fear that one or other of his creditors will fall upon him and ruin him. To make this advance of loans gratefully acceptable and permanently useful to sufferers, it is imperative that such should be privately and secretly accomplished, under the direction of some trustworthy and competent officer. My own opinion is that Government ought to run some risk, as the calamity is so great. It ought to suffice that each applicant for a loan should have it granted, upon producing a certificate of the loss sustained and his competency to repay, signed by two well-known and respected householders of his parish. The loan of course to extend over a course of years, and to bear a low rate of interest. In this way many poor drooping cattle-owners may be enabled to recover their position, and a vast load of sorrow and care be mitigated in the hearts of many worthy men. I hope this one salutary aid at least will be afforded to our deeply distressed sufferers from this dreadful scourge. I will, in a future paper, give my views of some of the means by which the effects of this pest may be mitigated or overcome by proceedings in business, as farmers and graziers. *O. F.*

7. LOCAL REPORTS.—*Cambridgeshire and the Isle of Ely.*—The disease is rapidly increasing at Littleport. Mr. J. L. Little has buried 59, besides slaughtering several others. Mr. Shrewsbury has lost 19 out of a yard of 20. Mr. Cropley, 24 dead. Mr. Pike, 20 dead, 11 recovered. Mr. Cockle, 21 dead. Mr. T. Wallis, 6 dead. Mr. E. Wallis, 1 dead. Mr. Hopkins, 15 dead, 6 recovered. Mr Wilkins, 15 dead, 3 recovered. Mr. Gleaves, 16 dead. Mr. Chambers, 15 dead. Vaccination and inoculation are being tried to a large extent.

Cornwall.—In Truro eight more deaths occurred in the course of the week, making the total 397. A fresh outbreak occurred on Tuesday in the parish of St. Minver, on the homestead of Mr. Wills. On the following morning several farmers of the parish met, and determined to stamp out, if possible, the disease from so dangerous a locality. Accordingly, Mr. Wills was offered two-thirds the value of four bullocks if he would immediately slaughter them; he refused to do so unless paid in full, and the farmers, considering that they had done their best, gave the matter up, since which time one death has been reported. At the weekly meeting of the Bodmin Cattle Plague Association, Mr. Trevethan, an extensive farmer, read a letter from a friend of his, who had recently had 13 cattle attacked, and who had found the following treatment very successful:—Half pint of salt, 1 ounce of nitre, 60 drops of muriatic acid, 60 drops of tincture of steel, tablespoonful of sulphur, and some linseed tea, 4 times a day; this prescription to be adopted at the early stage of the disease. The number of animals attacked in the county up to the 20th of January was 896; of these 733 had died, 22 had been killed, and 90 had recovered—the rest under being now under treatment.

Cumberland.—The inspectors for the Carlisle district received notice of several fresh outbreaks on Thursday on the north side of Carlisle. At Brampton an effort is being made to "stamp out," upon the Aberdeenshire plan, the cases that appeared there on Monday, as reported in the *Times*. At a large meeting of farmers of the district it was resolved to make a rate of 3*d.* in the pound, on the rental of the parishes, on the landlord, and 1*d.* on the tenant, to be collected by the overseers of the respective parishes in Brampton Union. 46 gentlemen put down their names to a guarantee fund till the rate should be collected, and arrangements were made for buying up the infected stock at Swaledale originally costing 5*l.* of which 13 still remain healthy. The whole stock, both diseased and healthy, would be shot on Friday and buried in a deep trench. The weekly returns of the inspectors in the infected districts of Cumberland, corrected up to Thursday night, show that since the outbreak of the plague, as counted by the 3rd September, 1375 cattle have been affected with the disease, and only 178 of them have recovered; 675 have died, 260 have been destroyed, and 262 are now ill. At the adjourned Court of Quarter Sessions at Carlisle, Sir Robert Brisco, of Crofton Hall, moved that the Orders in Council for the suspension of fairs should be revoked, and that the Orders in Council be in force in their fullest extent, and that no cattle, sheep, or pigs, be removed from farm to farm, or from place to place within the county, the only exceptions being in the case of farm sales on the change of tenancy, which had already been actually paid down until one week after Wednesday next; and that under the certificate of two justices in petty sessions sheep may be moved from place to place for the purpose of being put upon Turnips. After some discussion on points of detail, the motion was agreed to unanimously. All cattle in the county, in the case of farms on which there is no water. On these cattle will be allowed to be taken to the nearest watering place on a certificate of two justices. Mr. Dacre, of Kirklinton Hall, drew the attention of the Court to the "stamping out" system, lately adopted in Aberdeenshire with success, and advocated its adoption in Cumberland. He knew they had no power to enforce a rate, but a recommendation from this Court would bind the county together as the individual action of no single ward could. He moved, "That for the purpose of suppressing the cattle plague in Cumberland, it would be expedient to have a voluntary assessment of 1*d.* in the pound—one half payable by the owner and one half by the occupier, that it be forthwith levied throughout the county and be collected by the overseers of the poor in the ensuing week, and be then paid to the treasurers of the respective Unions, and that it be a recommendation from this Court to a Cumberland Cattle Plague Association, with branch associations in all the wards of the county, and committees in every parish of the wards, be formed for the purpose of ascertaining the rate and carrying out the object thereof." Mr. Hewett, of Salkeld Castle, seconded the motion, which was supported by Sir Robert Brisco, who, however, suggested that the rate be only 3*d.* in the first instance, and that the landlords pay two-thirds and the tenant one-third. Mr. Dacre consented to alter his motion in accordance with this suggestion. Mr. W. Hodgson, M.P., gave the plan his cordial support, as of opinion the evil could only be overcome by a voluntary rate. After some further discussion, Mr. Dacre's proposition, as amended, was agreed to, and the Court adjourned.

Lancashire.—At a public meeting held at Mold on the 26th ult., it was resolved, "That this meeting, having fully considered the plans submitted to it, with a view to remedying the losses sustained by owners of stock in consequence of the Cattle Plague, wishes still to express its conviction that a scheme of national insurance would afford a better mode of dealing with the evil, and begs to submit most respectfully to her Majesty's Government the propriety of their considering their present intention upon this subject." There have been 1000 deaths from rinderpest in Flintshire.

Gloucestershire.—A very large meeting of landlords and tenant farmers was held on Saturday afternoon. Mr. Holland, M.P., described the system of "stamping out" adopted in Aberdeenshire, which was the only really effectual one, for the veterinary professors had hitherto failed to find a cure. As yet, the plague had only made its appearance in 11 places in the county, and it appeared to be on the decrease. Still there was the possibility of its spreading, which rendered it the duty of all to put it down. When the powers of stamping out commenced in Aberdeenshire the disease existed in 24 places, but although it broke out seven times after all the cattle infected were killed it was effectually eradicated. Sir G. Jenkinson proposed "That the following opinions of the Royal College of Physicians and Veterinary Surgeons on the best means to be adopted to stamp out, or prevent, the spread of the cattle plague, which subsided in its virulence a short time ago in North Lancashire, has broken out again more seriously than ever. Mr. James Melling, one of the tenants of Colonel Wilson Patten, M.P., has so far been the greatest sufferer. Mr. Melling has altogether blown up 53 and buried 59 head of stock, and if the disease is not speedily stopped, the consequences must be most serious. Several of his animals have been vaccinated for the purpose of preventing contagion. Within a mile of Mr. Melling's farm about 1000 head of cattle are kept.

Lincolnshire (South).—Near Bolton an outbreak has taken place among the herd of Mr. Halliday, 23 in number. A herd of 22 a short distance away has also been attacked. Within a fortnight the herd of Mrs. Bromilow, of Lostock Hall, numbered 58 valuable cattle. There are now but three left. In the Bolton district the plague is raging. In the Leigh district during the past week the deaths have been 50 in number. The neighbourhood of St. Helen's is suffering fearfully.

Lincolnshire.—The Stamford district is at present free from the disease. In the neighbourhood of Bourn the malady has made sad havoc. In the Long Sutton district the disease, as has been already shown in the *Times*, prevails with great virulence.

Northumberland.—On Saturday last a meeting was held in the Exchange Hall, Nottingham. Mr. Charles Paget, Mayor of Nottingham, proposed the first resolution, as follows:—"That we believe the measures taken in Aberdeenshire to cope with the cattle plague have been successful; and this meeting is desirous that similar means should be adopted in Nottinghamshire." Mr. Huskisson, of Epperstone, seconded the resolution. Whether 2*d.* or 3*d.* would be required, the money would be applied in the best manner possible, and from all he knew the tenant-farmers would be most anxious to unite and to give every effort to promote the object of the meeting. Mr. E. P. Burrell proposed the second resolution. He said that the only efficient remedy yet discovered was to stamp out the disease by killing the animal as soon as the first symptom appeared. He proposed that a committee be appointed in order with other committees in different parts of the county to effect this object.

Nottinghamshire (North).—A very influential meeting was held at the Town Hall, Retford, on Saturday, for the purpose of adopting some more effective measures for arresting the cattle plague. The principal features of the association now proposed to be established are:—That all cattle-owners and tenants should be members thereof, and should pay 1*d.* in the pound on the agricultural rental of their estates and farms, and that no member should be liable for any amount beyond the sum subscribed by him. An association is being formed in the county of Nottingham upon the same principles as the association which had been formed in Aberdeenshire.

Shropshire.—In the Whitchurch Petty Sessional Division the total number of cattle attacked by the plague from its first appearance there, at the end of November, till the present time, was 538. Of these, 405 had died, and only 49 recovered, leaving 84 still under treatment. Besides these, 51 head of cattle have been slaughtered in the division as belonging to suspected herds, but which had not shown any symptoms of the disease.

Staffordshire (North).—The cattle disease continues to spread. Near Leek the plague is increasing in virulence, and here it has been very recently introduced. Fearful accounts continue to arrive from the Staffordshire borders of Cheshire, and it is stated that in a radius of five miles from Market Drayton not less than 1500 head of cattle have been swept away by the plague.

Windsor, Jan. 27.—At a meeting held at the Town Hall, Major-General the Hon. A. Hood in the chair, in order to complete the arrangements for the formation of the Windsor Mutual Association for the Insurance of Cattle, the chairman read the committee's report, and observed that the rate of insurance to be paid by the stockowner was intended to be 15 per cent. on the value of the stock insured, of which 5*l.* per cent. the insurer would be required to pay at once, and that no animal should be valued at more than 25*l.* The landowners, residents, and others in the proposed district were earnestly solicited to subscribe to a guarantee fund, to meet such losses as might arise from the cattle plague; and their attendance that day was requested, whereupon, what had been filled up and returned to the hon. secretary of the association it appeared. Those who signified their intention to subscribe to the fund were requested to pay 10 per cent. on the amount guaranteed, and such further calls as might be necessary, but not until the fund should be found to be insufficient to meet them. He (the chairman) stated that the committee had ascertained that there were 3000 horned cattle in less than half of the parishes proposed to be included in their district. He regretted that they had not yet received all the returns, but they had ascertained that upon 2000 cattle a fund would be required to insure. He was pleased to say that the guarantee fund already amounted to about 2500*l.*, and there was every likelihood of a much larger sum being received, and then the association would be founded upon a substantial basis. The opinion of counsel had been taken as to what the rules for the future association should be framed in accordance with the provisions of the Limited Liability Act of 1862, and it had been ascertained that it was not necessary, as the association would be formed for purposes of indemnity and not for gain. The adoption of the rules was then proposed and seconded. Major-General Hood had great pleasure in informing the meeting that the Queen had graciously consented to give a guarantee to the amount of 500*l.*, dependent on the rules, when submitted, being approved by her Majesty; and if it were known that it was her Majesty's wish to be a subscriber, it would immediately that the association should be established, her Majesty would give her support. The chairman also read out the list of subscribers to the guarantee fund, which was headed by her Majesty with 500*l.* The announcement was received with great pleasure. The reading of the rules was then read, the same mark of approval, the list including General Wood, 500*l.*; M. Van de Weyer (the Belgian Minister), 500*l.*; the High Sheriff of Bucks, 500*l.*; Mr. E. J. Coleman, 500*l.*; the Countess de Morella, 100*l.*; Mr. R. B. Harvey, M.P., 100*l.*; Mr. R. Benyon, 100*l.*; Colonel Bulkeley, 100*l.*; the Provost of Eton College, 100*l.*; Colonel H. Vyse, 100*l.*, &c. The adoption of the rules was ultimately proposed by Mr. Coleman, seconded by Mr. Vallance, and unanimously carried. Mr. R. B. Harvey, in the course of some observations, said he felt surprised that the formation of the committee had attracted so little attention among the agriculturists.

Yorkshire.—The reports as to the cattle disease in this county vary most remarkably. In some places it rages with an even greater virulence than ever, but in other portions of the county the disease appears almost to have spent itself. In the Ripon district only two or three deaths from rinderpest during the past week, which is a smaller number than in any week since the outbreak. At Escrick, near York, the seat of Lord Wenlock, it has been deemed prudent to kill no less than 32 beasts belonging to his lordship, and his brother (the Hon. F. Wenlock), who is a tenant on the estate. S. W. Riding. In the Ainsty 60 deaths are reported, and at the village of Rufforth not a single animal remains. The practice of vaccination has become very general.

Yorkshire (North and East Ridings).—At a meeting held at Malton for the purpose of closing the capital account of the insurance association formed there, the cattle now insured represent a value of 40,000*l.* The society has not had to encounter very serious losses, although in the districts the disease has been very severely felt. It was found requisite, however, to make a first call on the members, but only to the extent of 2½ per cent., representing about 1000*l.*

Yorkshire (South west Riding).—The number of cattle attacked in some parts of this division is exceedingly large. Vaccination has been tried in many instances and failed, and the highest veterinary science has failed to check the spread of the disease. Since our last report for the petty sessional division of Strafforth and Tickhill, 120 additional cases of the disease have transpired. It has extended already to 17 townships, and still spreads. In Upper Osgoldcross 220 have died within a short time.

Home Correspondence.

Drainage and Floods.—When two persons are equally anxious to arrive at the truth, the friendly discussion of a point on which they are at issue will probably tend to realise the object they have in view. I still venture to contend that drainage does "promote," by which I mean increase, evaporation, though I do not think with Mr. Denton, that the disintegration of soils promotes or increases capillary attraction; indeed, I believe that an unbroken clay favours capillary attraction more than a well stirred and deeply cultivated soil; nor do I believe that "a proper depth of drains has the radical effect of weakening the powers of capillary attraction," though the power will always suffice to feed the evaporation from the surface. The force and power of capillary attraction is in the inverse ratio of the diameter of channels in which the liquid rises. The first action of water rising in a loose soil is to draw the particles together, and to produce the condition most favourable for the action of the force of capillary attraction. A simple experiment with finely powdered clay in a glass tube will show this. Evaporation in a saturated soil is almost confined to the surface. As the water is taken up by the air it is replaced by the action of capillary attraction, and a stream, so to speak, is kept up so long as there is any water to rise; but this will be far short of absolute dryness, for I find by experiment that a dry substance placed on the same substance fully saturated by capillary attraction will absorb or abstract from the saturated substance (say chalk) only a certain per centage of the moisture; when that is accomplished immediately below the surface the partial drying of the substance will extend downwards with a rapidity in proportion to the amount of moisture which the surface may give off. I believe that a drained soil is in a condition to effect this more rapidly than an undrained soil in the winter, consequently that it will take more rainfall to replace the water so evaporated in the winter, and hence the probable diminution of flood-water from drained lands. *J. C. Clutterbuck.*

The Query for the Future of Steam Ploughing.—I will endeavour to answer this "query" with my light tackle and engines. "Are there no lands in England which, even after draining, are so tender, that experience has proved it is better to plough them very shallow to check growth of root weeds in autumn, and to leave all deep tillage for spring?" What kind of lands these can be I cannot quite understand. They cannot mean our heavy clays, for after draining they are never tender; they may be sticky in wet weather, and that's all. The most tender lands after draining (that I know of) are a mixed gravel and clay. If those are the lands pointed at, the main question to be considered is, What are the "root weeds" generally grown upon them? Upon such lands Twitch, Thistles of various kinds, and Coltsfoot are root weeds that grow very freely; besides these there are other weeds that are a great pest on such lands—Water-grass, Crow-foot, and various others that grow very freely. Now the next question is—what are we going to prepare such land for that is full of such filth? The query asked shows that it is for spring planting, then one would fancy for roots, for I cannot understand how such filthy stuff could be got in a fit state for planting any kind of corn in the spring. What good would it do to shallow-plough in the autumn such land full of such filth? Shallow ploughing would cut the root weeds in two and turn it with the vegetable top and some root filth under. How rolling can dry these lands I cannot understand, for in my opinion the best way to dry any land is to drain it well and break the under hard horse-trodden crust to give a free passage to the water to go to the drains. Now I have some land, on what is called my light soil, that well represents this class of land. It has been well drained, and under horse culture it used to grow very freely all the weeds named above, and used to need a good deal of ploughing and knocking about to keep it moderately clean. Now since I have adopted the cultivating plan of shaking and destroying these weeds upon the surface without cutting them, it has enabled me as nearly as possible to eradicate them. The only weed on such land that I ever want buried is Chickweed, a mere vegetable substance, which if turned under will perish. That weed interferes a little now and then after roots for Barley. Whenever it appears I always have a ready means of destroying it. A cultivating in the keen winds of March with a frosty day or so afterwards, a drilling and a harrowing, will destroy a precious lot of it. I cannot give any particular rule for burying or destroying it. It depends so much upon circumstances. Chickweed is now the only weed that I have to contend with, and I have always found a ready means of destroying it. Moderate hoeing is sufficient for all other annual weeds. The "root weeds" inquired about are easily destroyed upon the cultivating plan, but not so whenever the plough is used, for that implement cuts them into short lengths, and renders a complete eradication of them quite impossible. If I have not pointed at the right class of land, and "B. M. F." will better inform me, I will do my best for him. *William Smith, Woolston, Bletchley Station, Bucks, Jan.* 29. P.S. I must thank F. W. Bignell for his summing up in your Court.

Septennial Averages: Tithe Commutation.—As many of your readers may feel anxious to know the result of the corn averages for the seven years to Christmas, 1865, published by authority in the *London Gazette* of this evening, viz.:—

Wheat	.. ..	5*s.* 11½*d.* per imperial bushel.
Barley	.. ..	4*s.* 2½*d.* ..
Oats	.. ..	2*s.* 9¾*d.* ..

I beg to state, for their information, that the value of each 100*l.* of tithe rent-charge, will, for the year 1866, amount to 97*l.* 7*s.* 9¼*d.* It appears from the following statement, from my "Annual Tithe Commutation Tables," that the lowest average value of 100*l.* of tithe rent-charge during the 30 years which have elapsed since the passing of the Tithe Commutation Act was in the year 1855, viz., 89*l.* 15*s.* 8¾*d.*, and that from that time up to the year 1861, the average gradually increased 22*l.* 7*s.* 8*d.*, or about 3¾ per cent. per annum, up to 112*l.* 3*s.* 4¾*d.*, or the highest value during the whole period. From 1861 the septennial average value has been gradually receding in a similar ratio.

For the Year	£	*s.*	*d.*	For the Year	£	*s.*	*d.*
1837	98	14	9¾	1854	90	19	5
1838	97	7	11	1855	89	15	8¾
1839	95	7	9	1856	94	18	1¾
1840	98	15	6¾	1857	99	15	7¾
1841	102	12	5¼	1858	105	16	3¾
1842	105	8	2¾	1859	108	19	6¼
1843	105	12	2¼	1860	110	17	8¾
1844	104	3	5¼	1861	112	3	4¾
1845	103	17	11¾	1862	109	13	6
1846	102	17	8¾	1863	107	5	2
1847	99	18	10½	1864	103	3	10¾
1848	102	1	0	1865	98	15	10¼
1849	100	3	7¾	1866	97	7	9¼
1850	98	16	10				
1851	96	11	4¾		30)3026	9	4¼
1852	93	16	11¼	General average			
1853	91	13	7¾	for 30 years ..	£100	17	7¾

Charles M. Willich, Late Actuary University Life Assurance Society, 2, Montpelier Square, Rutland Gate, S.W., Jan. 9, 1866.

The Repeal of the Malt Tax.—As the season for the assembling of Parliament approaches, it is necessary that the farmers of England should bestir themselves, and re-open the agitation for the repeal of the Malt Tax, never to relax in their exertions until brought to a successful issue. When it is seen and understood they are in earnest, and determined to do their duty, other classes will join. A great amount of apathy or want of union on the part of the farmers themselves; a variety of conflicting interests, and a disinclination on the part of the public to deal with the question, believing the Government could not bear the loss of revenue, and that it would be simply a shifting of the public burthen of taxation, has hitherto prevailed. Now the field is fair and open, a favourable opportunity presents itself. Almost, or indeed every other tax having been modified or repealed, it only remains for the farmers to do their duty, and the obnoxious Malt Tax will belong to things of the past. Why should the agricultural community submit longer in silence or in ignorance, and be taxed to the extent of five guineas per acre in the conversion or manufacture of a most important portion of their produce; and the farm labourer, the mechanic, the tradesman, and all other classes to pay in consequence a double price for every draught of beer? There is no mistake about it—the broad fact remains the same, that were it not for the excise duties on malt, pale ale (equal to Bass's) might be brewed for so low a sum as 4*d.* or 6*d.* per gallon. It was only a few weeks ago that the butchers of the metropolis attempted to raise the price of beef in anticipation of the effect of the dreadful cattle murrain, but as soon as the public press took up the matter, and represented that there was no occasion for such advance in price, the supply of beef having increased, the movement was frustrated, and succumbed to the pressure of public opinion. Such, however, is the persistence with which men of all shades and opinions will cling to old prejudices and ideas, that the *Times* newspaper sticks to the Malt-tax as the last relic of Protection, and endeavours to show that the movement for the repeal is mixed up with something of a landlord's question, and says just nothing about being indirectly a tax upon meat, by shutting out from consumption in its most approved state for feeding a most important portion of the farmer's produce. And even Mr. Gladstone states that the existence of the Malt-tax does not debar a man from obtaining immoderate quantities of beer. Of course it does not; people are not made sober by Act of Parliament, any more than the abolition of the Malt-tax would serve as pretext and afford a premium for the indulgence of intemperate habits. Where, it may be asked, does the man first imbibe the fatal draught which leads on to another, and ultimately to intoxication, and in the end to become a disreputable member of society? I know where it does too frequently in the rural districts, and that is in the village public-house, which operates as a kind of decoy for the farm labourer to drink and guzzle instead of sharing the same with his family at home. What the farmer wishes and asks for is simply justice, and that the principle of Free-trade, so loudly extolled as being enacted for the benefit of all classes, should be carried out in its entirety. In the pursuit of his calling he has to contend with Nature in all her fitful and varying moods. He cultivates the soil to the best of his ability and judgment, but is still entirely at the mercy of the elements, and his crops will vary, good or bad, according to their influence. The season may be wetter than usual, or it may be dry, and 4 or 5 inches of rain are as likely to fall in harvest as at any other time, and, notwithstanding all his energy and forethought, most seriously damage his crops. He does not incur bad debts in an ordinary sense, but his expenses are certain, and mostly paid before the crop is gathered. His cattle, too, may fail from disease, and his losses at times from that cause may be very great. And there is the competition for farms induced by an increase of wealth and increasing population, which will keep his profits down to the lowest margin. All this must be accepted, and reckoned on as ordinary risks and casualties belonging to the business, but this odious Malt-tax is quite another matter, over which he has not the slightest control, and he is in the unenviable position of having incurred all the expense, the risk, and uncertainty of the crop, and then cannot do what he likes with his own. *W. S. G.*

Farmers' Clubs.

CENTRAL.—The following subjects have been selected for discussion in 1866:—

		Proposed by
Feb. 5.—	British Tillage, Present and Future	Mr. J. J. MECHI, Tiptree Hall, Kelvedon.
Mar. 5.—	The Cattle Plague, and the Government Measures	Mr. H. CORBET, Salisbury Sq., London.
April 2.—	Agricultural Shows, and their Influence on Agricultural Progress	Mr. A. CROSSKILL, Beverley.
May 7.—	On Increasing the Supply of Animal Food	Mr. R. SMITH, Emmett's Grange, S. Molton.
Nov. 5.—	The Present Aspect of Steam Cultivation	Mr. J. A. CLARKE, Long Sutton.
Dec. —	The Best Mode and Period of Applying Manures	Prof. VOELCKER, Salisbury Sq., London.

*** The discussions will commence at half-past 5 o'clock P.M. There are no meetings in January, June, July, August, September, or October.

Reviews.

The Illustrated Farmer and Gardener's Almanack. "The Farmer" Offices, 150, Fleet Street, London; and 26, Cockburn Street, Edinburgh.

One hundred and forty-eight closely printed quarto pages, each of them 13 inches long and 10 inches wide, the whole weighing just under 16 ounces, and illustrated with 160 wood engravings—for one shilling! On the cover is an engraving from a photograph of one of Lord Polworth's Border Leicesters—a long and straight-backed sheep, not so deep, however, in the carcase, nor so short in the leg as a first-class Leicester shearhog ought to be. But excepting this, and a number of diagrams and sections illustrative of farm buildings, the engravings, most of them of first-rate quality, relate rather to horticultural and arboricultural subjects—stove and tender plants, Orchids, fruits, leaves and fruit of Quercus, studies of the bark of trees, &c. It is, indeed, perhaps unfortunate for the agricultural portion of the work that it is burdened with so much in which only the gardener is interested. And it might be added that the converse of this statement is also true, were it not that the Almanack apparently does not aim at such completeness for the gardener as it reaches for the farmer. In justification of the second part of its title, however, there is a lengthy calendar of garden work, and an extensive list of new plants and flowers, in which introduced species, garden varieties, and varieties of florists' flowers, having been first separated into hardy and tender, are thrown together in an alphabetical series. The whole is illustrated by woodcuts which have appeared in the *Farmer* newspaper.

The agricultural portion of the publication includes an account of the weather and harvest of 1865—a chapter on the live stock market, almost exclusively Scottish—paragraphs on the wool trade and the corn trade, and on the health of stock, with, of course, reference to the cattle plague. There are also descriptions of the leading agricultural shows of the year, taken from the *Journal of Agriculture;* and accounts of occurrences of general interest, *e. g.*, Agricultural Statistics, Agricultural Education, the Sewage Question, the Malt-tax, the Law of Hypothec, the Game-laws, Chambers of Agriculture, Secretaryship of the Highland Society, and the Michaelmas Corn Averages. Then comes the Calendar of Operations, which we regard as comparatively deficient (4½ pages) as to general farm practice; but very full and explicit (5 pages) as to poultry keeping.

The principal feature of the work, advertised as being in express contrast to the style of previous publications of the same class, is the collection of data, tables, and memoranda for every-day use by the farmer in the prosecution of his business. They occupy 26 pages. The compiler of the material here brought together might have packed it closer. There is a great deal of unnecessary verbiage. Surely he needed not to have explained that a scale of 6 inches

to the foot is "half-size," nor need he have illustrated the fact at length as follows :—

"Thus, if a scale of 6 inches to the foot is used in making a drawing—the various parts are just one-half their full size, and the scale is known as 'half size.' If 4 inches to the foot, the parts of the drawing are one-third their full size, and the scale is known as a scale of 'one-third;' if 3 inches to the foot the scale is 'one-quarter;' 2 inches to the foot is a 'sixth;' an inch and a half to the foot is a 'scale of an eighth;' an inch to the foot a scale of 'one-twelfth'—the words 'of full size being in all cases understood. Scales of proportions other than those are specially constructed. Thus," &c. &c.

The following note too, in which 50 words are made to do the work of 10, appears calculated not so much for the farmer as for his children :—

"*Note.*—An error is often made, which should be guarded against, in supposing the terms 'square inches' and 'inches square' to be synonymous, denoting, in fact, the same thing; but there is a great difference between them—'twelve square inches' is only the twelfth part of a square foot, but 'twelve inches square' is 144 square inches."

The data under this division, useful in farm-work, cover a very small portion of the ground to which they refer, and they are not always accurate. We should be sorry to tie the Editor to his own calculation that clay soil can be excavated, filled and spread for 2½*d.* to 3*d.* per cubic yard. As to the various data relating to manures, they are given in all sorts of terms—composition is described in ounces per ton, lbs. per ton, figures per cent., so that the relation among them is not readable; the paragraph professing to give the constituents of sea-weed is not intelligible; the quantity of urine voided in a day by different animals is mere guess work—certainly the feeding bullock does not void 10 gallons nor the sheep 3 gallons daily; what is the 'night soil,' of which 18 cubic feet will weigh a ton?—there is none known to us which weighs twice as much as water; what, too, is the "dung with the manure retained," which weighs a ton per cubic yard?—Go on to Section 4 (Data and Calculations relating to Farm Crops). The following is the 5th paragraph :—

"5. *Average Weight per Acre of the Root and Herb Crops.*—Turnips, 20 to 30 tons; Carrots, 25 tons; Potatos, 6 to 12 tons; Hay, 1 to 1½ ton; Clover hay, 2 tons."

Turnips do not average 20 to 30 tons, nor Carrots 25 tons (!) per acre, nor Potatos 6 to 12 tons, in this country; even 15, 10, and 6 would have been above the truth for the whole island.—Look now at Section 5:—In the 1st paragraph we have the weight of feeding constituents in 100 lb. of various cattle foods; and we are told that Wheat straw contains 79 lb. of "real food," 18 of water, and 3 of ash; Linseed-cake contains 75½ lb. of "real food," 17 of water, and 7½ of ash. It is plain that Wheat straw is worth a good deal more than oilcake! The whole paragraph will mislead any one who reads it, unless he already knows a good deal more than the writer tells him. Under Section 6, relating to the feeding of stock, we learn that Professor Tanner estimates that it takes a consumption of 150 lb. of Mangels or Swedes to produce 1 lb. of meat. This result of one particular season's feeding over a flock of sheep was ascertained and published long before Professor Tanner was a student at the Royal Agricultural College. To this it is added that 8 lb. of Beans will produce 1 lb. of meat. But, stated as a general truth, all this is directly contradicted by the very next paragraph, where we read as follows :—

"To produce 1 lb. of flesh in fatting stock, it is calculated that it takes the consumption of either 100 lb. of Turnips, 50 lb. of Potatos, 25 lb. of milk, 9 lb. of Oatmeal, 7 lb. of Barley meal, 7½ lb. of bread, the same quantity of flour, 3½ lb. of Peas, or nearly 4 lb. of Beans."

Some of these items may be correct—those relating to Barley, bread, and flour will be generally found to be about the truth—but the others are outrageous. Turnips may be worth 6*s.* or 7*s.* per ton to feed, not 12*s.* or 13*s.* as this table makes them, with mutton at 7*d.* a pound. Beans cannot be meat makers at the rate of 1 lb. for both 4 lb. and 8 lb. of them as food. Milk is worth twice or thrice as much as this table pronounces it to be for feeding veal.

It is plain that whether as regards the terseness, the consistency, or the accuracy of the pages, hitherto the editorship has been at fault. The remainder of this, the characteristic section of the Almanack, is however a great deal better; and in particular, the section on the weight and measurement of cattle is very good. The paragraph on the weights of sheep of different breeds is however untrustworthy: and there is a paragraph on the amount of air required for the ventilation of houses, which may mislead. We are told that a cow should have 1400 cubic feet of space allotted to her. This is 10 feet by 10 feet, and 14 feet high—or, taking the width of stall at 4 feet, 4 by 25 and 14 feet high. It is, we venture to say, largely in excess of the space in any cowhouse in the kingdom. On referring to our notes of the magnificent and Royal cowhouse at Frogmore, we find that the width allowed per cow is 4 feet, and including the wide central promenade and the ample space behind the two rows of cows, the width of the building is 38 feet; the average height is less than 16 feet, giving about 1200 cubic feet per cow, which is much in excess of what is necessary.

The information about the engineering and architecture of the farm is elaborate and good and full.

A large number of facts and data for calculation are here collected on the value of timber, strength of material of various dimensions, efficiency of fuel; and we come then to a second division containing a great deal of useful information on the construction of farm buildings, with recipes for mortars, concretes, paints, &c., with amply illustrated instructions for guiding the designs of all sorts of farm erections. The authorship of this part of the work is indicated by a sufficient number of references to various published works, from which extracts are made; and we need not say that Mr. R. Scott Burn's name is a sufficient guarantee for its excellence and trustworthiness.

The 3d Division contains a variety of household and useful recipes collected from various sources: "A Practical Work"—"An American Authoress"—"A Recent Work"—"*The Gardeners' Chronicle*"—"An American Publication," &c.

The "Farmers' Almanack" closes with the list of fairs, which, in our experience of such publications, is their least satisfactory part. But previously to this there is here a list of new agricultural plants. It is chiefly confined to an elaborate account, we had almost said advertisement, of the new Bromus (Schrader's Brome Grass), in which Messrs. Lawson seem to put much greater faith than we can place. It will yet be found, we believe, that our estimate of the value of this Grass, given nearly two years ago in these columns, is a truer one than M. Lavallette's. It is not likely successfully to rival the Italian Rye-grass as a producer of excellent succulent food for horses or for cows.

Farm Memoranda.

BAYSHAM COURT, NEAR ROSS.—Mr. Buckham, of Bayshâm Court, gives the following account of his farm in the recently published volume of the Journal of the West of England Agricultural Society :—

Upon these soils and also upon the driest of the gravelly loams the following four-course system has been generally adopted, viz., roots, Barley, or other corn, Clover, and Wheat; artificial manure being applied for roots and fold-yard manure for Wheat. Sheep-farming is carried to great perfection upon these soils, large quantities of oilcake and corn being consumed with the roots; and if more attention were paid to the making of good fold-yard manure and to the improvement of permanent pastures, the cultivation and general farming of the district would bear comparison with that of any other district in the kingdom. This being the district in which I farm, I may state that I have been induced to discontinue the four-course rotation, partly owing to failures with the Clover plant and an increasing tendency to disease in the Turnip and Swede crops, and partly because of the inferior quality of Barley which followed the use of cake and corn with the sheep when folded to eat off the Turnips; the land having been thereby rendered too high in condition for that crop, produced a large bulk of straw which was early laid, and thus the yield of corn was small and of secondary quality. Under these circumstances I resolved to try the following five-course rotation, viz., roots, Wheat or other corn, Barley, Clover, Wheat. But farming is not like most other occupations: it requires years of close observation to enable any one to speak with confidence of the result of such experiments; therefore at the end of four years I will not do more than state, that although I was told at the commencement by some experienced friends, whose judgment I think highly of, that "I should not be enabled to keep the land clean," my experience is not in accordance with that opinion; and as I keep as many sheep as I formerly did, and have actually more cattle, I see no reason for discontinuing the practice.

My method of cultivation is to clean the Wheat-stubbles in the autumn as far as practicable, and to cart the stubbles to the fold-yard, as I never burn anything that can be in any way judiciously converted into manure. As soon as this operation is ended, I manure the fallow from the foldyard, ploughing it in a fair furrow deep with a pair of horses. In the month of October or early in November I plant a portion of this land with Wheeler's Improved Early Cabbage, or some other good sort; one-fourth is set apart for Vetches, Rye, or winter Oats, which are drilled to secure a succession of crops in the spring: the other portion of the fallow is cross-ploughed as early as possible in the winter, with four horses working two abreast; the surface soil is thereby inverted, and about 4 inches of subsoil is brought up, the layer of manure being between the two; this has the effect of keeping the subsoil light and exposing it to the beneficial influence of atmospheric changes. After breaking down the fallow and thoroughly cleansing it, I give it, where requisite, another light ploughing at such times as I require to plant. About the middle of May an eighth part of the area is planted with Mangel Wurzel; in the middle of June one-half is planted with Swedes," and as soon as the ground under Cabbages, Rye, and Vetches is cleared, it is well harrowed, cleansed, and once ploughed for common Turnips. I drill all my roots upon the flat, using from 1½ cwt. to 3 cwt. of superphosphate of lime or dissolved bones mixed with ashes: not that I attach importance to ashes as a fertiliser, but because they facilitate an equal distribution of the manure employed. The Mangel Wurzel, together with one-third of the earliest of the Turnips and one-third of the Swedes, are carted off for the cattle; the remaining roots are cut and eaten in troughs by the sheep, which are regularly folded—the wethers and other fatting sheep having a liberal allowance of Linseed-cake and corn reduced to meal, mixed with cut hay. The store sheep follow in the folds used by the fatting sheep, and thus the whole of the land derives an equal benefit from the enriched food given to the fatting animals. As the land is cleared it is ploughed lightly for Wheat or other corn: immediately after harvest it is scarified, cleansed, and sown with Mustard for autumn feed, or Rape for spring feed; and after it has again been cleared it is lightly ploughed for Barley and seeded down for the next year's Clover, which is manured as early as possible in the following year from the foldyard.* As I fatten all the sheep and cattle I rear, a large quantity of good manure is made: this I use twice in the rotation, exclusively for green crops, acting on the principle that a more equal distribution in smaller quantities is preferable to the application of an excessive dressing once in four years only. I use lime, usually mixed with soil, once in the rotation: I have this year used it, mixed with salt, as a top-dressing for the growing Wheat. My pastures are manured from a compost heap, made with road-scrapings, sidings, fold-yard manure, lime, and salt; and so marked has been the effect of this application, that the whole nature of the herbage appears to have changed.

I use Burgess & Key's side-delivery reaping-machine for Wheat. For Grass I employ Burgess & Key's mower; Howard's tedding machine teds and turns it; Fry's American gatherer rows it in, and Kell's horse-rake follows the waggon: thus all the manual labour for my hay-making, beyond that of driving the horses, consists in placing the hay on waggons. I mow a limited quantity only, as I find cut straw and pulped roots enable me to keep more stock than I otherwise could. My practice is to cut straw and mix it with pulped Turnips or Swedes a day before it is used, in order that a slight fermentation may take place, and the straw be rendered more digestible. Two feeds of this mixture, and a supply of long straw at night, constitute my feed for the store cattle until February, when to the straw-chaff I add a small quantity of hay, which is increased as spring advances. Owing to the disastrous drought of the year 1864, and the scarcity of roots and hay, I was not enabled to pursue my usual system during the past winter, yet I have made more than my average quantity of beef, and I have never seen animals more healthy or thriving. The food consisted of one part of cut hay, two of Wheat or Barley-straw, wetted with Linseed-tea, seasoned with salt, and mixed while boiling hot with meal, in the proportions of one of Wheat or Indian Corn, one of Oats, and two of Barley: the composition being allowed to remain some 12 or 14 hours before use, and each animal receiving from 3 lb. to 5 lb. of Linseed-cake every morning before any other food. It should be observed, however, that when I had any Oat-straw in cut no hay was added, and that this mixture with Linseed-cake was given to fatting cattle only. Breeding and store cattle had no hay at all, but simply cut straw damped with Linseed-tea, and a small portion of bran and meal added to the heap. Two feeds of this kind of food, and a liberal allowance of straw at night, formed the winter dietary of my store stock, and thus, in an inexpensive manner, I have been enabled to keep them in a healthy thriving state, and to make an unusually large quantity of beef in one of the most trying seasons I have ever known.

* The middle of June may to some appear late for this work, but my experience is that Swedes planted at this time are less liable to mildew than when planted earlier. *T. D.*

Miscellaneous.

Professor John Gamgee.—While we have been discussing and thinking "how to do it," France, listening to her men of science, has kept her herds clear of the murderous cattle plague. More than this, M. Bouley, the veterinary surgeon, who has played such a conspicuous part as adviser of the Government in this matter, has been made an officer of the Legion of Honour for his intelligence and zeal. It is only justice to our own scientific countryman to say, that all that M. Bouley has said and done, and advised his Government to do, in averting the plague, has been long ago, over and over again, said and done and advised by Mr. Gamgee. *Medical Journal.*

Effect of Lime on the Third Crop.—Mr. Kidner of Durston, near Taunton, called my attention during the summer to the Barley crop standing in one of

During the extreme drought of the past September, I resolved to apply my fold-yard manure upon the growing flowers, but not having sufficient to dress the whole, an excellent opportunity was afforded of judging of its effects. All the land was previously in equally good condition, and the soil of the unmanured part is naturally the best, yet its present appearance is that of being very far inferior. In fact, I never remember to have seen so beneficial a result so quickly follow the application of manure to any crop. *T. D.*

his arable fields, one half of which field obviously bore a much more abundant crop both of grain and straw than the other. He informed me that he had dressed the half of the field, on which the more abundant crop stood, with lime in the autumn of 1861, at the rate of about 20 hogsheads or 4 one-horse cart-loads per acre. The field was first (after such dressing) sown with Wheat, but no result appeared therefrom either in straw or grain beyond what stood on the unlimed portion of the field. In the next year (1863) the whole field was cropped with roots, and well manured with farmyard dung and about 3 cwt. of superphosphate per acre. Again there was no difference between the crops on the limed and on the unlimed portions of the field. The crops were good in both, and as good in the one as in the other. These roots were all drawn off the land, and were succeeded this year (1864) by a crop of Barley; but now the superiority of the crop on the limed portion of the field was unmistakeable. I asked Mr. Kidner to measure a part of the limed and also of the unlimed portions of the field, to harvest and thresh the produce of each separately, and to give me the result. This he has kindly done, and here it is. Two perches of the lime-dressed portion of the field gave of grain 3¾ pecks, which weighed 48 lb., and of straw 70 lb. Two perches of the unlimed portion gave of grain 2 pecks and 1 quart, which weighed 28 lb., and of straw 55 lb. Mr. Kidner states that the two plots were only a few yards apart, and that as near as he could judge, they fairly represented their respective portions of the field. *G. S. Poole, in the Journal of the Bath and West of England Agricultural Society, Vol.* 12.

Calendar of Operations.

WEST SUSSEX: *January.*—This perhaps is the dullest time of the year on the farm. We have had no frost, but a good deal of rain and wind, and the land is very wet. We have not been able to plough for some time, but there is not much to do in that way. Work is well forward, and dung carting, threshing, &c., is the chief employment at present.

The cattle disease had disappeared from our district after having done a deal of mischief, but it has again broken out near Arundel, and we are in continual fear of its coming among us again; and the mistaken idea that it may exist in the air, and that animals may take it without being in contact with diseased ones, tends very much to increase the danger, as many think under these circumstances they need not take so great care. And the general wish among stock-keepers is that all traffic for a time may be stopped, and above all that the Government take the matter in their own hands, and make an order that shall be universal; for though one county may stop traffic, another does not, and the inconvenience to trade is nearly as great, and will be much more prolonged, than it would be if the rule were the same in every county.

The lambing season has begun, but it is later than last year, the weather being comparatively warm; there are not many accidents yet, and the Swedes have kept better than we expected, so that the supply of food is not likely to fall short. Mangel does not keep so well as usual, which is perhaps because their skins burst during the summer, and never healed up as they usually do, and perhaps we shall have to use them earlier than we could wish. Hay will be more abundant than we expected, and is now lower in price. Wheat comes to market pretty freely, and the quality is good and the yield much better than was expected. There is great difference in the samples of Barley, and Oats were never worse, so far as our experience goes. The young Wheat looks well on the ground, not too forward, and very even. There are no labourers out of work, except it be those who never do care to keep steady, and they are not so many now as they were a few years ago. And the time is near when agricultural hands will be scarce, and it will be well to have homes provided for all that are required on the farm, for in no other way will good men be kept. The days for men to walk two or three miles every day to work on a farm, are nearly over. *G. S.*

Notices to Correspondents.

CATTLE PLAGUE: *A Cask.*—Can any of your Correspondents inform me at what distance from a plague animal you are liable to catch the plague, or carry it to another animal in your clothes, &c.; and how long will your clothes retain the poison, and what is the best plan to destroy the poison in your clothes, so that you would not give it to another animal? Will horses and hounds carry the plague from place to place by hunting across the country where the plague is?" [Next week.]

DISINFECTANTS: *A C.* Condy's fluid and chlorine gas are both disinfectants, and not mere deodorizers.

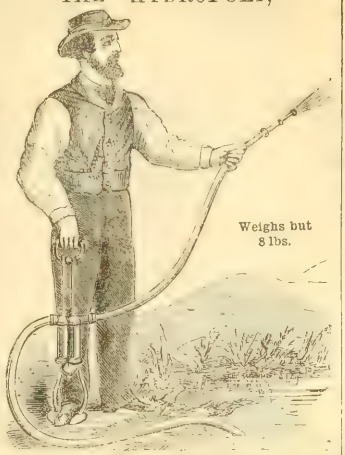
PERUVIAN GUANO: *B B C.* Apply 3 cwt. per acre, broadcast, previously mixed in a cartload of earth, over every acre of grass land in wet weather next month. Or 1 cwt. each of Peruvian guano, superphosphate, and nitrate of soda, would probably be more efficient.

POULTRY: *Subscriber.* Apply to Mr. Baily, 113, Mount Street, Grosvenor Square; or perhaps some of our readers will tell us for you "where the best dark-pencilled Brahma Pootras are to be obtained?"

RATS AND MICE: *Correspondent.* The pamphlet is by Mr. C. Belcher, of Faringdon, Berks, to whom you might apply. The publisher's name given is on the title-page.

SPANISH BREED. *H. Chomeley.* Your question was mislaid. Keep a pure-brod Spanish cock.

THE HYDROPULT,



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CAUTION.

IMPORTANT TO THE PUBLIC. The extensive sale of the Hydropult has evoked the applause of the cultivated fraternity, but in reality unprincipled Manufacturers, who are now pelting on the Public worthless imitations of the Hydropult, and thereby their connections are dubbed in place and devices on exhibition, and for sale, in many of the Principal Ironmongery and Seed Establishments throughout the city and jo ining. These devices resemble in many respects the Hydropult in appearance, and are calculated to deceive the unsuspecting. The Inventor therefore issues this Caution, and respectfully intimates that parties wishing to purchase the Hydropult should examine the machine offered for sale, and see if it has attached thereto a label with the following words:—"The Hydropult, Voss's Patent, manufactured only by GRIFFITHS & BROWETT, Birmingham. CHARLES POMEROY BUTTON, Proprietor, 142 and 143, Cheapside, London." Unless this label is attached, the Machine is not the Hydropult.

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The novelty and utility of this Invention consists in a Revolving Cover, so constructed that by turning the Knob on either side of the Basin, it can be covered or uncovered instantly; the air disappearing into a receptacle or false bottom. Does not only having the lid ready for instant use, but obviating the necessity of its removal from the table. The Sugar Basin can be used for a Butter Dish.

Price, in white metal, electro-plated, £2 2s.

CHARLES POMEROY BUTTON,
142 and 143, Cheapside, London, E.C.

Prize Cucumber Seeds.

SUTTON AND SONS can supply SEED of all the best kinds of CUCUMBERS, including Berkshire Challenge, Berkshire Champion, Mr. Hamilton's New Varieties, and many others.

For List and Prices of which see Messrs. SUTTON'S CATALOGUE for 1866, which will be forwarded gratis and post free on application.

SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

To the Seed Trade.

FRAME CUCUMBERS, all English-saved; true and select.

Cutter's Champion	Hamilton's Market Favourite
Cuthill's Black Spine	Highland Mary
Dickson's Newton Hero	Swadling's Berkshire Challenge
Dr. Livingstone	Telegraph

BROCCOLI, Pure and Genuine Stock.

Early Purple Cape	Elliston's Mammoth
Snow, true Winter	Ward's Superb Late White
Osborne's Winter White	Dixon's Champion of England
Knight's Protecting	Cutter's Champion

INVINCIBLE SCARLET SWEET PEA.

Trade prices on application.

STEPHEN BROWN, Seed Grower, Sudbury, Suffolk.

Myton Hall Cucumber.

F. G. GODWIN, with peculiar pleasure and increased confidence, again offers this excellent CUCUMBER, which should be grown by all Cucumber growers. Reports from all sides agree that it is unequalled. See Testimonial Sheet (post free on application), from which the following are Extracts:—

From F. MONTAGUE, Esq., *Somerset, Coleraine.*

"Myton Hall Cucumber is a first-rate exhibition variety, both for length, shape, productiveness, and a crisp slicer."

From S. J. CARTER RACKHAM, Esq., *The Grove, Catton, Norfolk.*

"I have grown numbers of varieties, and look upon Myton Hall as A 1."

From the Rev. T. O'GRADY, *Hogaston Vicarage, Ashbourne.*

"In every way, with every confidence, recommend it to your customers as "the best out."

In sealed packets, 2s. 6d. each. Prices to the Trade on application.

A DESCRIPTIVE PRICED CATALOGUE of Choice VEGETABLE SEEDS post free on application.

3 and 4, Norfolk Market, Sheffield.

CUCUMBERS and MELONS.

The following fine Varieties, packed Seed, can be supplied true at 1 per packet

CUCUMBERS.

BLACK SPINE.

Sir C. Campbell	Gen. Canrobert
Victory of Ratu	Captivation
Rifleman	Mill's Jewess
Manchester Prize	Cuthill's Black Spine
Allen's Victory	Champion of England
Trollope's King	Ipswich Standard
Ayres' Pi fille	Tiley's Improved

Can Cottam, the finest Black Spine grown, 2s. 6d. per packet.

WHITE SPINE.

Cordeau's White Spine	Manchester Prize
Conqueror of the West	Hunter's Prolific

Incomparable.

SMOOTH.

Lord Kenyon's Favourite | Syon House | Phenomenon

MELONS.

GREEN FLESH.

Gen. Havelock	Golden Drop
Monro's Green Gage	Green Gage
Golden Perfection	Bromham Hall
Golden Earl	Blackall
Green's	Bailey's Bowood
M'Ewen's Arundel Hybrid	Beechwood.

SCARLET-FLESH.

Pine-apple	M'Ewen's Arundel Hybrid
Scarlet King	Scarlet Gem

Windsor Prize.

LIGHT-FLESH.

Monro's Crystal Palace Hero	Incomparable
Frogmore Trentham Hybrid	Egyptian Improved.

LOBELIA BLUE KING.—A splendid new distinct variety, 1s. per pkt.

TILEY'S EMPEROR RED CELERY.—The finest flavoured grown, 1s. per pkt

TILEY'S IMPROVED SOLID WHITE CELERY, 1s. per pkt.

AURICULA-LOWERED SWEET WILLIAM.—Saved from the finest picture flowers, 1s. per pkt.

HOLLYHOCK SEED, from named varieties, 1s. per pkt.

TRUE COLD BATH COS LETTUCE.—This variety has not yet been surpassed, 1s. per pkt

FINE MIXED PANSY, from named flowers, 1s. per pkt.

EDWARD TILEY, Nurseryman, Seedsman, and Florist, 14, Abbey Church Bar, Bath.

A remittance must accompany all orders in penny postage stamps, or post office order.

New and Choice Seeds.

LEE'S IMPERIAL DWARF CAULIFLOWER is the earliest and best in cultivation. Price 1s. 6d. per packet.

LEES HAMMERSMITH CUCUMBER is the best for winter and general use. Price 1s. 6d. per packet & 3s.

LEE'S EXCELSIOR GREEN FLESH MELON: the finest green-flesh Melon in cultivation. Price 1s. 6d. per packet.

JOHN & CHARLES LEE, Seed Merchants and Nurserymen, Hammersmith, London, W

JAMES GARAWAY AND CO., Durdham Down Nurseries, Bristol, offer the following SEEDS, which they can guarantee to be of great excellence, and decided acquisitions.

Prices to the Trade on application.

BROCCOLI (Garaway's Late White).—Pure white, very large, late, has been exhibited at the local shows, in first-rate condition, in the beginning of June. Retail price, 1s. 6d. and 2s. 6d. per packet.

CELERY (Burbank's Superb Red and Burbank's Superb White).—Solid, crisp, and of fine flavour, has been grown for several years by the raiser, Mr. Burbank, and given very great satisfaction. Retail prices, 1s. per packet.

CUCUMBER (Rann's Ridge).—Very hardy, fine flavour, good size, and remarkably productive. First-class Certificate awarded by Fruit Committee of Royal Horticultural Society, August 8, 1865 Retail price, 1s. per packet.

LETTUCE (Clifton Hardy Green Cos).—As hardy as Hardy Hammersmith, large, and of good flavour. Retail price, 1s. per pkt.

JAMES GARAWAY & Co.'s PRICED LIST of SEEDS for the ensuing season will shortly be ready, and will be forwarded post free on application.

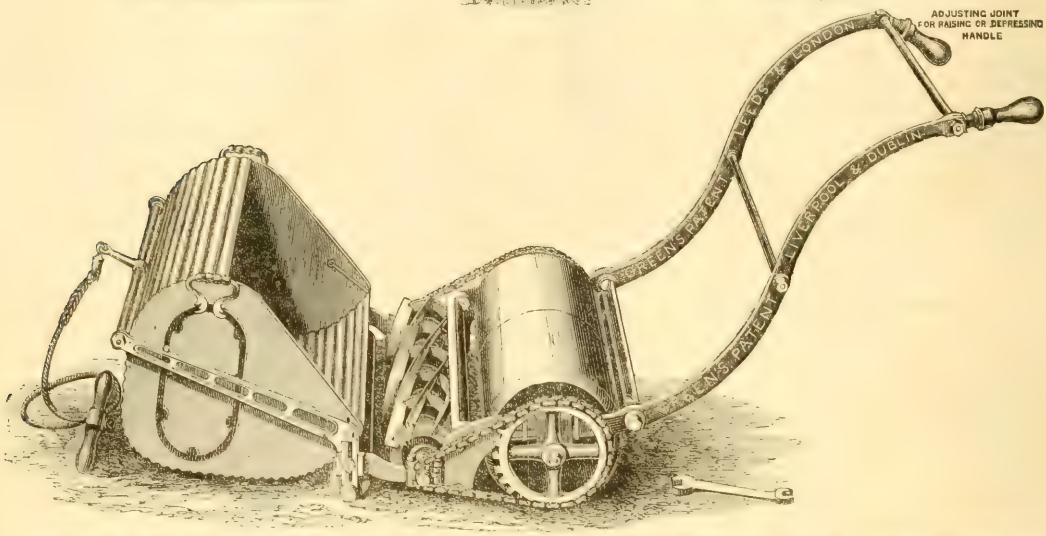
GREEN'S PATENT SILENS MESSOR,

OR

NOISELESS LAWN MOWING, ROLLING, and COLLECTING MACHINES.

BY SPECIAL APPOINTMENT,
SOLE MANUFACTURER

TO HER MOST GRACIOUS MAJESTY
THE QUEEN.



The above Machines have proved to be the best, and have carried off every Prize that has been given in all cases of competition, and the number of them supplied already 39,000 have been sold since the year 1856.

They are the only Machines that have been in constant use at the Royal Horticultural Society's Gardens, South Kensington, since its opening, and at most of the principal places in the United Kingdom, where they have given entire satisfaction, being more durable, less liable to get out of order, and can be worked with greater ease than any other Lawn Mower extant; they are the only Machines that are fitted up with the Patent Self-sharpening Reversible Cylinder Cutters.

Every Machine is warranted to give entire satisfaction, and if not approved of, can be returned unconditionally.

Having above 3000 Machines in stock at our Leeds, London, and Dublin Establishments, we are in a position to execute orders on the day they are received.

PRICES OF HAND MACHINES.

To Cut 10 inches	..	..	..	£3	10	0	*Suitable for a Lady.*	To Cut 18 inches	..	..	..	£7	10	0	*Suitable for One Person.*
,, 12 ,,	..	..	..	4	10	0	,, ,,	,, 20 ,,	..	..	..	8	0	0	*Suitable for Two Persons.*
,, 14 ,,	..	..	..	5	10	0	*Suitable for One Person.*	,, 22 ,,	..	..	..	8	10	0	,, ,,
,, 16 ,,	..	..	..	6	10	0	,, ,,	,, 24 ,,	..	..	..	9	0	0	,, ,,

Packing Cases are charged at the following low rates, viz.: for the 10 and 12 inches Machine, 3*s.*; 14 and 16 inches, 4*s.*; 18 and 20 inches, 5*s.*; 22 and 24 inches, 6*s.* Parties providing themselves with Lawn Mowers are recommended to purchase the Cases in which to store them away, when not in use, to prevent them from getting damaged; if returned, two-thirds will be allowed for them.

PRICES of HORSE, PONY, and DONKEY MACHINES, including Patent Self-delivery Box; Cross Stay complete; suitable for attaching to ordinary Chain Traces or Gig Harness.

To Cut 26 inches	..	..	..	£13	0	0	*Leather Boots for Donkey*, 18*s.*	To Cut 30 inches	..	..	..	£21	0	0	*Leather Boots for Pony*, 22*s.*
,, 28 ,,	..	..	..	15	0	0		,, 36 ,,	..	..	..	24	0	0	
,, 30 ,,	..	..	..	17	0	0		,, 42 ,,	..	..	..	27	0	0	*Leather Boots for Horse*, 26*s.*
								,, 48 ,,	..	..	..	30	0	0	

The 26, 28, and 30 inches can easily be worked by a Donkey, or by Two Men, on an even Lawn, the 30 and 36 inches by a Pony, and 42 and 48 inches by a Carriage Horse; and, as the MACHINES make no noise in working, the most spirited animal can be employed without fear of its running away, or in any way damaging the MACHINE.

Both the HORSE, PONY, DONKEY, and HAND MACHINES possess (over all other Makers) the advantage of self-sharpening: the cutters being steel on each side, when they become dull or blunt by running one way round the cylinder, can be reversed again and again, bringing the opposite edge of the cutter against the bottom blade, when the MACHINE will cut equal to new. Arrangements are made that the cylinder can be reversed by any inexperienced person in two or three minutes.

The above MACHINES are made from the best materials, and of superior workmanship; are delivered Carriage Free to all the principal Railway Stations and Shipping Ports in England.

THOMAS GREEN AND SON, SMITHFIELD IRON WORKS, LEEDS;
54 and 55, BLACKFRIARS ROAD, LONDON, S.; and 19, EDEN QUAY, DUBLIN.

PRIZE MEDALS AWARDED TO
GREEN'S PATENT LAWN MOWERS.

LONDON, 1862.

SOCIÉTÉ ROYALE DE FLORE, BRUSSELS, 1862.

LONDON, 1862.

SOCIÉTÉ ROYALE LINNÉENNE, 1861, 1862, and 1863.

NAMUR, 1862.

SOCIÉTÉ ROYALE LINNÉENNE, 1861, 1862, and 1863.

LAEKEN, 1862.

GREEN'S
PATENT
LAWN MOWERS
have proved to be the best, and carried off every Prize that has been given in all cases of competition.

THOS. GREEN AND SON,
SMITHFIELD IRON WORKS,
LEEDS;
54 & 55, BLACKFRIARS ROAD,
LONDON, S.;
AND
19, EDEN QUAY, DUBLIN.

SOCIÉTÉ ROYALE DE FLORE, BRUSSELS, 1863.

GAND, 1862.

LIÉGE, 1861.

DUBLIN, 1865.

HAMBURG GRANDE EXPOSITION UNIVERSELLE D'AGRICULTURE ET D'HORTICULTURE.

DUBLIN, 1865.

SHANKS' PATENT LAWN MOWERS FOR 1866.

PATRONIZED ON FIVE SEPARATE OCCASIONS DURING THE SEASON OF 1864 BY

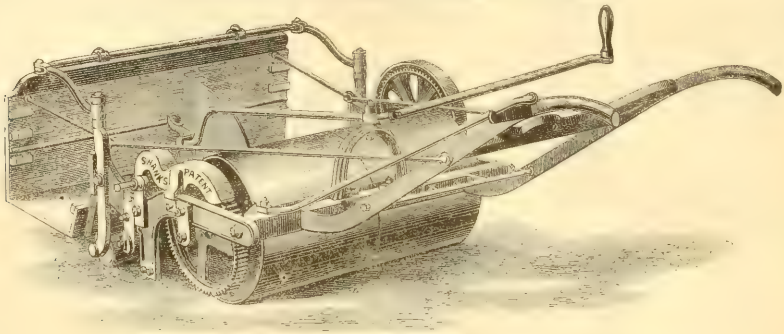
HER MAJESTY THE QUEEN,

AND ONCE BY HIS MAJESTY THE KING OF SAXONY;

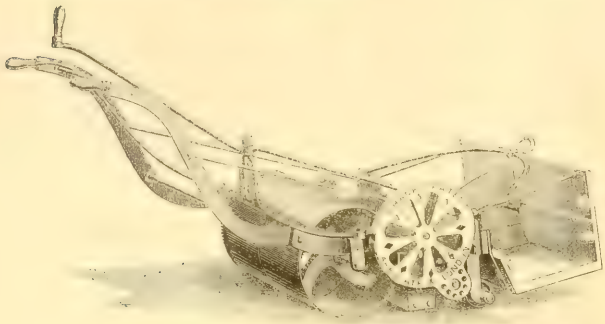
AGAIN ON FOUR SEPARATE OCCASIONS DURING THE SEASON OF 1865 BY HER MAJESTY THE QUEEN:

ONCE BY HIS MAJESTY THE KING OF HOLLAND;

AND ONCE BY HIS MAJESTY THE KING OF PRUSSIA.

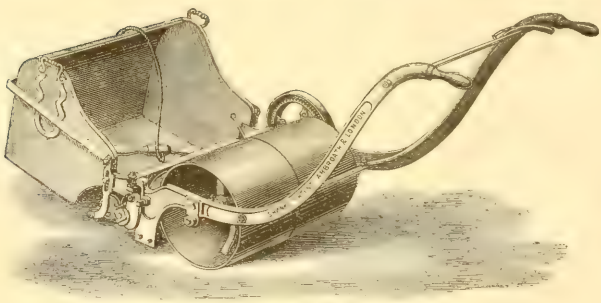


HORSE POWER MACHINE



PONY AND DONKEY MACHINE

EVERY MACHINE WARRANTED.



IF NOT APPROVED OF, CAN BE AT ONCE RETURNED

HAND MACHINE

ALEX. SHANKS AND SON, in presenting their LAWN MOWERS for the approaching Season, are gratified to be able to state that the demand for their celebrated Machines is rapidly increasing.

A. S. AND SON, in introducing Improvements into their Machines, have been careful that no Improvement be introduced which has merely novelty to recommend it, but that the advantages in point of durability and simplicity of construction, which have always been a peculiarity of their Machines, should still remain.

A. S. AND SON can confidently assure their numerous Friends and Customers and the Public generally that their endeavour will always be to supply a Machine, first-class in every way, one which cannot be surpassed if even equalled, whether for simplicity of construction, ease in working, or durability. None but the best materials and skilled workmen are employed in the manufacture of their Machines.

Illustrated Circulars, with full particulars, sent free on application.

ALEXANDER SHANKS AND SON, DENS IRON WORKS, ARBROATH, N.B.

LONDON OFFICE and SHOW ROOMS, 27, LEADENHALL STREET, E.C.

N.B.—A. S. AND SON *keep a Stock of Lawn Mowers at 27, Leadenhall Street, London, from which Orders can be at once executed. They also have at their London Warehouse a staff of experienced Workmen thoroughly acquainted with all the details of these Machines, so that they are enabled to repair Lawn Mowers in London as well as at the Manufactory.*

Henry's Prize Hybrid Leek, Genuine.

DOWNIE, LAIRD, and LAING are now sending out the above in packets at 1s. each. This is unquestionably the largest Leek in cultivation, growing 10 inches in length of blanch, and 10 inches in circumference. Was awarded the First Prize at the Edinburgh and other leading Shows.

17, South Frederick Street, Edinburgh; and Stanstead Park, Forest Hill, London, S.E.

AYTON CASTLE GIANT SCOTCH LEEK.—This A splendid LEEK, which for size, flavour, and hardiness has no equal, can be had as usual, pure and genuine, free per post, in packets, at 1s. each. A liberal allowance to the Trade when not less than 12 packets are taken.

Robert Mackenzie, Nurseryman and Seedsman, 12, Melbourne Place, Edinburgh.

Surplus Stock.

NEW and GENUINE WHITE SPANISH ONION, 1s. 6d. per lb.

NEW and GENUINE BROWN GLOBE ONION, 2s. per lb.

Terms Cash. A remittance must accompany all orders from unknown Correspondents.

Frdk. Gil, Seed Merchant and Grower, Biggleswade.

To Farmers, Gardeners, and the Trade.

EXCELLENT Strong CABBAGE PLANTS of Early and York, Early Nonpareil, Battersea, Drumhead, &c., may still be had at 2s. 6d. per 1000. A remittance must accompany all orders.

Frdk. Gil, Seed Merchant and Grower, Biggleswade.

To Market Gardeners and Seedsmen.

TO BE DISPOSED OF, a quantity of JENKINS'S superior RED CELERY SEED, at 4s. per pound, in quantity; a single pound 5s. Apply to

H. Jenkins, 5, Princes Street, Rotherhithe, S.E.

SILVER SAND.—Wanted, an Agent in Town to undertake the SALE of very pure WHITE SILICIOUS SAND. Address B J., *Gardeners' Chronicle* Office, W.C.

COCOA-NUT REFUSE delivered within 2½ miles of Charing Cross, at 2s. per bag.

For particulars, and how to use it, see long Advertisement in *Gardeners' Chronicle* of the 24th March, 1865; or apply to the Patent Cocoa Fibre Company, Kingston-upon-Thames.

Postage Stamps or Post-office Orders payable to J. Barsham & Co.

Barsham's BRUSHES and MATS are sold in every town.

Caution.—Every Brush is stamped, J. Barsham's Patent.

INTERNATIONAL HORTICULTURAL EXHIBITION and BOTANICAL CONGRESS.—Those who are preparing Plants for the above Exhibition should feed them liberally with STANDEN'S GARDENER'S and AMATEUR'S FRIEND. Sold by the leading Nurserymen and Seedsmen.

To the Trade.

STRONG TOBACCO PAPER, 80s. per cwt. H. Brown, 4, Commutation Row, Liverpool.

TOBACCO TISSUE for FUMIGATING.—Manufactured under Letters Patent from Tobacco rolled into sheets, which allows of consumption, combustion, and regulation of blowing, at the same time giving off a very powerful narcotic effect, and is entirely free from any chemical admixture, which is so destructive to tender plants. It will be found more economical and very superior to the article generally used.

Samples will be forwarded on application to Messrs. Roberts & Sons, Tobacco Manufacturers, 31, St. John Street, Clerkenwell, E.C.

THOMSON'S STYPTIC for PREVENTING the BLEEDING of VINES in PRUNING, is Manufactured and Sold by John Yeoell & Son, Dukinfield, N.B., and Trade and all Nurserymen and Seedsmen, in Bottles, price 2s., with directions for application. None is genuine unless the Label on each Bottle bears the Signature of William Thomson.

GISHURST COMPOUND, whether used against Insects and Mildew, on Growing Plants, or as Winter Dressing for Trees, at 4s., should be dissolved 48 hours before use. This gets rid of smell, and if the solution be decanted, prevents any staining of foliage. A strength of from 4 to 2 oz. to the gallon of water is recommended for growing Plants; one from 4 to 16 oz. for Trees at rest.

Sold Retail by Nurserymen and Seedsmen, in boxes, 1s., 3s., and 10s. 6d. each.

Wholesale by PRICE'S PATENT CANDLE COMPANY (Limited).

Cattle Plague.

PUBLIC NOTICE—REPORT of the ROYAL COMMISSION. *See "Sanitary Recommendations and General Precautions to Prevent the Spread of the Disorder."*

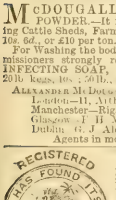
The Disinfecting Powder mentioned in the Report is

McDOUGALL'S PATENT DISINFECTING POWDER.—It is commended as the best means of Disinfecting Cattle Sheds, Farm Buildings, &c. Sold in bags, 1 cwt. each, at 10s. 6d., or £10 per ton. Carriage paid on 4 ton and upwards.

For Washing the bodies of both Healthy and Sick Cattle the Commissioners strongly recommend McDOUGALL'S PATENT DISINFECTING SOAP. Sold in 6lb. Canisters at 2s. 6d.; 10lb., 6s.; 20lb. kegs, 10s.; 50lb., 20s. Directions for use in each package.

Alexander McDougall, Manufacturing and Agricultural Chemist, London—11, Arthur Street West, London Bridge, E.C.; Manchester—Riga Street, Salford; Glasgow—1 & 11 McLeod, 18, Dixon Street; Dublin—G. J. Alexander, 2, 3, and 4, Mary's Abbey.

Agents in most Towns throughout the Kingdom.



for bad cases in Drawing Lambs, and to stop Heaving and Straining. Mr. Woods, in his Lecture on "Breeding and Management of Sheep," says:—"My shepherd declares it to be worth a guinea a bottle." Price 2s. 6d. and 7s. per bottle.

DAY, SON, AND HEWITT'S original GASEOUS FLUID, for Debility and Exhaustion in Ewes after Lambing, for Diarrhœa in Calves and Lambs, and for Colic and Gripes in Horses and Cattle. In feverish cases, and for cleansing in Ewes and Cows, a dose of the "Red Drench" should be given.

Mr Bowick, Author of the Prize Essay on the "Rearing of Calves," says:—"I have reared 28 calves this year, and by the use of the Gaseous Fluid I have not lost one."

Price 1s. 6d. per bottle; or one dozen in a wooden box, 20s.

Full Directions for use given with each article. Prepared by the Original and only proprietors—Day, Son, & Hewitt, 22, Dorset Street, Baker Street, London, W.

THE LONDON MANURE COMPANY
(Established 1840),
Have now ready for delivery in dry fine condition,
CORN MANURE, for Spring Use
DISSOLVED BONES, for Spring Pasture Lands
SUPERPHOSPHATES of LIME
PREPARED GUANO
MANGEL and TURNIP MANURES
Also Genuine PERUVIAN GUANO, and NITRATE of SODA, ex Dock Warehouse; SULPHATE of AMMONIA, FISHERY SALT, &c.
Offices, 116, Fenchurch Street, E.C. E. Purser, Secretary.

LAWES' MANURES.
The Manures manufactured by J. B. Lawes for the present season of 1866 are now ready for delivery at his Factories, at the following prices, per ton:—

	£	s.	d.
LAWES' PATENT TURNIP MANURE, and BONE SUPERPHOSPHATE of LIME	6	6	0
LAWES' SUPERPHOSPHATE of LIME from BURNT BONE or MINERAL PHOSPHATES	5	5	0
LAWES' WHEAT, BARLEY, GRASS, and MANGEL MANURES	5	0	0
CONCENTRATED CORN and GRASS MANURE	4	0	0

These Manures can be obtained of Mr. Lawes, or through the appointed Agents in all parts of the United Kingdom, at prices varying according to cost of carriage.

Genuine Peruvian Guano direct from the Importers. Nitrate of Soda, Sulphate of Ammonia, and other Chemical Manures.

American and other Cakes at market prices.

Address, J. B. Lawes, Esq., Adelaide Place, London Bridge, E.C.; and 22, Eden Quay, Dublin.

THE PATENT NITRO-PHOSPHATE or BLOOD MANURE COMPANY, Limited, Manufacturers of ODAMS'S PATENT BLOOD MANURE for CORN and ROOTS ODAMS'S SUPERPHOSPHATE of LIME and DISSOLVED BONES.

Chief Offices—109, Fenchurch Street, London, E.C.; Western Counties Branch: Queen Street, Exeter; Irish Branch: 40, Westmoreland Street, Dublin.

Works—Hadlow, Essex; and Elford, Tamworth, Devonshire.

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Robert Postle, Fen Lexham, Norfolk.
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Samuel Jonas, Chrishall Grange, Essex.
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Managing Director—James Odams.
Bankers—Messrs. Barnetts Hoares & Co., Lombard Street.
Solicitors—Messrs. Kingsford & Co., 23, Essex Street, Strand.
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This Company was originally formed by, and is under the Direction of Agriculturists, circumstances that have greatly enriched the Institution Title, viz.:—"THE TENANT FARMERS' MANURE COMPANY."

Its Members are Cultivators of upwards of 50,000 Acres of Land, which has been greatly improved by the use of the Manures of their own Manufacture. The Consumer, therefore, has the best Guarantee for the genuineness and efficacy of the Manures manufactured by this Company.

A Prospectus will be forwarded on application to the Secretary, or may be had of the local Agents. C. T. Macadam, Secretary.

Chief Offices, 109, Fenchurch Street, London, E.C.

PALMENTIER MEAL, Manufactured by Alexander & Smith & Co., Mount Street Mills, Liverpool.

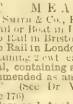
£7 a Ton free to Rail or Boat in Liverpool.
£7 free delivered to Rail in Bristol.
£7 12s. delivered to Rail in London.

AMS L

In Bags containing 2 cwt. each, branded "This valuable Meal, containing above 20 per cent. of fatty matter, is recommended as an economical food to mix with home-grown produce (see Dr. Voelcker, R. A. S. E. Journal, Vol. 1, 2d Series, page 176)

For further particulars and Analysis apply to Messrs. Smith, or their Agents, Messrs. Hoares & Co., Bristol.

John Coleman, 150, Leadenhall Street, E.C., London Agent.



GARDEN BORDER EDGING TILES, in great variety of patterns and material, the planer sorts being especially suited for KITCHEN GARDENS, as they harbour no Slugs and Insects, take up little room, and once put down need no further labour and expense, as do "grown" Edgings, consequently being much cheaper.

GALLERIES, VASES, FOUNTAINS, &c., in Artificial Stone, of great durability, and in great variety of design.

F. & G. Rosher, Manufacturers, Upper Ground Street, Blackfriars, S.; Queen's Road West, Chelsea, S.W.; Kingsland Road, Kingsland, N.E.

Sole London Agents for FOXLEY'S PATENT GARDEN WALL BRICKS. Illustrated Price Lists free by post. The Trade supplied.

ORNAMENTAL PAVING TILES for Conservatories, Halls, Corridors, Balconies, &c., as cheap and durable as Stone, in blue, red, and buff colours, and capable of forming a variety of devices.

Also TESSELATED PAVEMENTS of more enriched designs than the above.

WHITE GLAZED TILES, for Lining Walls of Dairies, Larders, Kitchen Ranges, Baths, &c., Grooved and other Stable Paving Bricks of great durability, Dutch and Adamantine Clinkers, Wall Copings, Red and Stoneware Drain Pipes, Slates, Cements, &c.

To be obtained of F. & G. Rosher, at their Premises as above.

SILVER SAND (REIGATE, best quality), at the above addresses—14s. per Ton, or 1s. 3d. per Bushel; 2s. per Ton extra for delivery within three miles, and to any London Railway or Wharf. Quantities of 4 Tons, 1s. per Ton less.

FLINTS, BRICK BURRS or CLINKERS, for Rockeries or Grotto Work.

F. & G. Rosher.—Addresses see above.

N.B. Orders promptly executed by Railway

SMITH, BECK, AND BECK'S GREENHOUSE and HOTBED THERMOMETERS.—These Instruments are of the very best construction, and at moderate prices.

31, Cornhill, E.C.

ET. ARCHER'S "FRIGI DOMO."—Patronised by her Majesty the Queen, the Duke of Northumberland for Syon House; by command of the Duke of Devonshire for Chiswick Garden, Professor Lindley for the Horticultural Society, Sir Joseph Paxton for the Crystal Palace, Royal Zoological Society, &c.

PROTECTION from COLD WINDS and MORNING FROSTS. "FRIGI DOMO," a Canvas made of jacket prepared Hair and Wool, a perfect non-conductor of Heat and Cold, keeping, wherever it is applied, a fixed temperature. It is adapted for all horticultural and Medicinal purposes, for Protecting Plants and Flowers from the scorching rays of the sun, from wind, from attacks of insects, and from morning frosts To be had in any required lengths

Two yards wide	1s. 9d	per yard run.
Four yards wide	3s. 6d.	per yard.
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"It is much cheaper than Mats as a covering."

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S. & C. regret having to caution Gardeners and others, but are compelled to do so, in consequence of an imitation, of common quality, having been sold for the genuine one, and which has caused many complaints to be made to them of Knives which were not to their make, all of which are warranted both by sellers and makers.

S. & C.'s Pruning and Budding Knives are the best and the cheapest in the market.

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Marquees and Tents for all purposes, New and Second-hand.

Rick Cloths, New and Second-hand, with Poles, &c., complete.

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PORTABLE HOUSE in WOOD and IRON, for all Climates. Also COTTAGES, SHEDS, BARNS, CHAPELS, SCHOOL-ROOMS, &c.; also POULTRY HOUSES. Drawings of each sent, and Prices.

R. Richardson, 90, Euston Road, London. Established 1830.

WOOL NET, for preserving Blossom, 2 yards wide, 10d.; TANNED GARDEN NET, 6s. 3d. per 100 yards; NEW TWINE NET, 1s. 6d. per 100 yards; ditto half-inch mesh, 20s. per 100 yards; SHEEP NETS, FLY NETS, NETS for Pheasantries, Fishing, &c.

N.B. GARDEN TARPAULINGS, 32s. per dozen, 8 feet by 4 feet.

R. Richardson, 90, Euston Road, London, N.W.

D. FERGUSON, Landscape Gardener, Contracting Planter, and Dealer in Nursery Stock, &c.
Whitton Nursery, Hounslow, W.

Garden Architect, Improver of Land Planting, &c.

MR. NEWTON, 30, Eastbourne Terrace, London, W., attends to advise or carry out Alterations. References given to important Works completed in many parts of England and Ireland.

Workmen and Plans provided for the Continent and America.

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TO BE DISPOSED OF, an OLD-ESTABLISHED NURSERY, in the West-end of London, doing a First-class ready-money business, established upwards of 12 years, and parted with solely on account of ill-health. Rent nominal. Price, to include House, Stock, &c., £1200.

For further particulars and cards to view, apply to Mr. J. C. Stevens, Horticultural Auctioneer, &c., 38, King St., Covent Garden

Notice.

TO BE DISPOSED OF, a SEEDSMAN'S BUSINESS in a Town in Scotland, which has been established for many years.—Apply by letter to

Z. A., *Gardeners' Chronicle* Office, W.C.

Weymouth and Portland.

TO BE DISPOSED OF, a First-class NURSERY, SEED, FLORAL, FRUIT, and GREENGROCERY BUSINESS. Established seven years No other Nursery or Floral Business in either place. Terms moderate. Good references, &c.

Address Alpha, Weymouth, Dorset.

Kendal.

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Apply to Mr. R. Knowles, East Plain Farm, Flockborough, Newton-in-Cartmel.

Sales by Auction.

Consignment of Plants from Belgium.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, February 7, at half-past 12 o'Clock precisely, a fine collection of CAMELLIAS, AZALEAS, RHODODENDRONS, &c., from Ghent; 1000 Pyramid PEARS in Pots, and 1000 Pyramid PEAR Trees, &c., from France; 1000 Standard and Dwarf ROSES, comprising many new varieties; and a great assortment of Hardy Trees and Shrubs.

On view the Morning of Sale, and Catalogues had.

Importation of Bulbs from Holland.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on SATURDAY, February 10, at half-past 12 o'Clock precisely, a large Collection of GLADIOLI, ANEMONES, and RANUNCULUSES for Spring Planting, and an Assortment of HARDY TREES and SHRUBS from Surrey.

On view the Morning of Sale, and Catalogues had.

Adams's Nursery, Acton Lane, Turnham Green.

Important Sale of Fruit Trees and Hand Stuff.

MR. J. C. STEVENS begs to announce that he has been favoured with instructions from the Proprietor, who is retiring from the business, to SELL by AUCTION, on the Premises, Acton Lane, Turnham Green, on WEDNESDAY and THURSDAY, February 21, and following days, at half-past 12 o'Clock precisely each day, without reserve, upwards of 10,000 Dwarf-trained, Standard, Pyramid, and Dwarf PLUMS, PEARS, APRICOTS, CHERRIES, NECTARINES, PLUMS, PEACHES, and WALNUT TREES, comprising all the leading varieties. Also an assortment of Hardy Trees and Shrubs, consisting of Variegated and Green Hollies, Variegated Portugal Laurels, Box, Privet, Evergreen Oaks, Laurustinus, &c.

On view the Week prior and Mornings of Sale. Catalogues had on the premises, and of Mr. J. C. Stevens, 38, King Street, Covent Garden, London, W.C.

Annual Sale of very handsome English-grown Camellias, &c.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, at 38 and 39, Gracechurch Street, City, E.C., on WEDNESDAY, February 21, at 1 o'Clock precisely, about 200 Choice DOUBLE CAMELLIAS and AZALEA INDICA, from 1 to 1½ feet, beautifully furnished with bloom buds; a superior assortment of 300 handsome STANDARD and DWARF ROSES; selected AMERICAN PLANTS, fine bulbs of LILIUM LANCIFOLIUM of sorts, GLADIOLUS, &c.

On view the Morning of Sale Catalogues may be had at the Rooms as above, and of the Auctioneers and Valuers, Leytonstone.

Unreserved Sale of Nursery Stock.

Donnington Road, Newbury, Berks.

MR. C. W. DOE is instructed to SELL by AUCTION, on TUESDAY and WEDNESDAY, February 6 and 7, at 12 o'Clock each day, without the slightest reserve, the whole of the valuable NURSERY STOCK, Household Furniture, and Effects, the property of Mr. W. H. Davis, Nurseryman and Florist, under Deed of Assignment for the benefit of Creditors. The Nursery Stock, which will be sold in lots of convenient quantities, consists of 3000 Fruit Trees, 1000 Standard Roses, of the choicest varieties, 1000 Dwarf Roses, 3000 Standards, 800 Maiden Apples, 1000 Cuttings, 3000 Fruit Stocks 2500 Privet, Currant Trees, Sea Kale plants, and other general Nursery Stock.

May be viewed the day previous and Morning of Sale. Catalogues may be had of the Auctioneer Newbury.

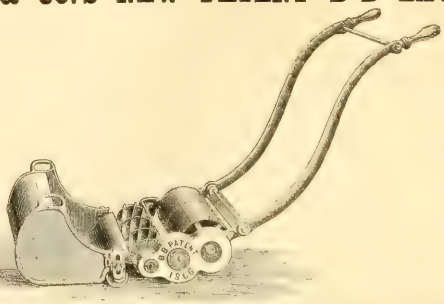
J. B. BROWN & CO.'S NEW PATENT B B LAWN MOWER.

MANUFACTURED BY

J. B. BROWN & CO.,

148, UPPER THAMES STREET,

LONDON, E.C.



GUARANTEED TO GIVE

PERFECT SATISFACTION,

AND IF NOT APPROVED OF

MAY BE AT ONCE RETURNED.

J. B. BROWN AND CO. having so very successfully introduced, at the Meeting of the Bath and West of England Society at Hereford in June 1865, the NEW PATENT B B LAWN MOWER, of their own manufacture, beg to mention that having supplied the large number of MACHINES ordered on that occasion, and up to the present time, with most unqualified satisfaction to every one, so far as they are aware, they are now actively preparing to execute further orders for the approaching season,—and, owing to the large number of such orders already received, they would very respectfully solicit all intending orders to be sent with as little delay as possible,—say to be executed at any time during the opening of the Spring, or in the course of the Summer, as may be desired.

The *Hereford Journal*, dated June 10, 1865, thus notices this new Machine:—"Messrs. BROWN & Co. are well known in connection with the best Lawn Mowing Machines—these very useful and now almost indispensable Machines, which save so much labour and at the same time so much improve the appearance of the lawn. Messrs. BROWN show a new Lawn Machine of their own manufacture, which attracted much attention on account of the compact arrangement of parts, its light and elegant appearance, and neat workmanship. It is worked by means of well-made geared or toothed wheels, which we believe to be more desirable than the use of chains, which are found to stretch and break so frequently, and cause much trouble. The working of this new Lawn Mower is light and silent, and we have no doubt it must become a great favourite."

The NEW B B PATENT LAWN MOWER is manufactured by MESSRS. BROWN AND CO. on their own Premises in London, under their personal superintendence. It is worked by means of geared or toothed wheels, is quite noiseless, and is guaranteed to give perfect satisfaction in every respect.

PATENT B B HAND MACHINE.

PRICES—Including Carriage to any Railway Station or Shipping Port in England, with the necessary tools and Directions for use.

10-inch Machine	£3 10 0	*Easily Worked by a Boy.*
12-inch Machine	4 10 0	
14-inch Machine	5 10 0	
16-inch Machine	6 10 0	*Ditto by a Man.*
18-inch Machine	£7 10 0	*Easily Worked by a Man.*
20-inch Machine	8 0 0	
22-inch Machine	8 10 0	*Ditto by Two Men.*
24-inch Machine	9 0 0	

If with Brass-mounted Grass Box, 5*s.* extra.

PATENT B B HORSE MACHINE.

PRICES—Complete, without extras, including Carriage to any Railway Station or Shipping Port in England, with the necessary tools and Directions for use.

42-inch Machine	£28 10 0	*Drawn by a Horse.*
36-inch Machine	24 10 0	
30-inch Machine	21 10 0	*By a Horse or Strong Pony.*

PATENT B B PONY and DONKEY MACHINE.

PRICES—Complete, without extras, including Carriage to any Railway Station or Shipping Port in England, with the necessary tools and Directions for use.

30-inch Machine	£17 10 0	*Drawn by a Pony.*
28-inch Machine	16 10 0	
25-inch Machine	14 10 0	*Drawn by a Donkey.*

New Improved Horse, Pony, and Donkey Boots, wholly of Leather, as follows:—Horse Boots, 24*s.*; Pony Boots, 21*s.*; Donkey Boots, 16*s.* per set.

*** *Every Machine sent out is warranted to give ample satisfaction, and if not approved of may be exchanged for any other size of Machine, or for the Machine of any other Maker, or may be at once returned unconditionally.*

A Specimen of the best MOWING MACHINES which have been brought out for the Season will always be on view at J. B. BROWN & Co.'s Warehouse, 148, Upper Thames Street, E.C., quite close to their Offices, for the inspection of those who may wish to select for themselves; and Orders for the Machines of other Makers will always, as formerly, have careful and prompt attention.

☞ J. B. BROWN & Co. beg to make the announcement, so important to all who use MOWING MACHINES, that they now EXECUTE REPAIRS of all MACHINES in LONDON. All REPAIRS and ADJUSTMENTS of MACHINES promptly executed at moderate fixed rates.

The NEW PATENT B B LAWN MOWER has already been patronized by Her Majesty the QUEEN, for the Royal Gardens at Windsor Castle, Osborne, Kew, and Hampton Court; by His Royal Highness the PRINCE of WALES, for Sandringham; and by His Grace the Duke of SOMERSET, the Right Hon. the Earl of DERBY, the Right Hon. the Earl of CHARLEMONT, and numbers of the principal Nobility and chief Landed Proprietors in the Kingdom. Besides to Merchants, for export to the Continent, and to Egypt, India, Australia, Natal, and other countries, and to a large number of the most respectable Ironmongers, Nurserymen, and Seedsmen in various parts of England, Scotland, and Ireland, many of whom have applied for special agencies, and ordered Machines for next Spring delivery.

TESTIMONIALS.

From Mrs. PRICE, *Hagley Villa, Lugwardine, Hereford, August* 18, 1865.

"I have much pleasure in informing you that the Mowing Machine [a 14-inch B B] I ordered from you at the Bath and West of England Meeting, held in Hereford, has in every respect given the greatest satisfaction, and I am very much pleased with it."

From W. H. APPERLEY, Esq., *Withington, near Hereford, August* 11, 1865.

"The New B B Lawn Mower I purchased of you has now been frequently used by my Gardener, and he is perfectly satisfied with it. It does its work well. I shall feel pleasure in recommending your Machines."

From GEORGE MCRAE, Esq., *Mickam Common, Surrey, September* 27, 1865.

"I am very pleased with the Lawn Mower I had from you [a 14-inch B B Machine]. It is certainly the most compact one I ever saw, and does its work well."

From A. LYON, Esq., *Napier House, Edmonton, October* 4, 1865.

"I have given the B B Mowing Machine [a 14-inch one] a good trial, and am quite satisfied with it. It works so easily that my daughters have on several occasions used it. I shall be glad to give you a testimonial at any time, as I consider it worth one. You can make what use you like of my name in furthering the sale of the Mower."

*** *Every Machine sent out is warranted to give ample satisfaction, and, if not approved of, may be exchanged for any other size of Machine, or for the Machine of any other Maker, or may be at once returned unconditionally.*

J. B. BROWN AND CO. OFFICES, 18, CANNON STREET, CITY, LONDON, E.C.

NEARLY OPPOSITE ST. SWITHIN'S LANE and "LONDON STONE," and near LONDON BRIDGE.

WAREHOUSE (where Machines are kept in Stock), 148, UPPER THAMES STREET, E.C.

OPPOSITE the CITY of LONDON BREWERY, and close to the LONDON BRIDGE STEAM BOAT PIERS.

Editorial Communications should be addressed to "The Editor," Advertisements and Business Letters to "The Publisher," at the Office, 41, Wellington Street, Covent Garden, London, W.C.
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THE GARDENERS' CHRONICLE
AND
AGRICULTURAL GAZETTE.

A Newspaper of Rural Economy and General News.

No. 6.—1866.] SATURDAY, FEBRUARY 10. {Price Fivepence. Stamped Edition, 6d.

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ERRATUM.—In Mr. CHRISTMAS QUINCE'S Advertisement, inserted on Feb. 3, p. iv, the line "This Advertisement will not be repeated," was by mistake omitted.

ROYAL BOTANIC SOCIETY, Regent's Park.—EXHIBITIONS of SPRING FLOWERS, SATURDAYS, March 17, April 7 and 21. Tickets 2s. 6d. each.
GENERAL EXHIBITIONS, WEDNESDAYS, May 9, June 6, July 4. Tickets 4s. each. Tickets are now being issued, and to be obtained at the Gardens only by Vouchers from Fellows of the Society.

INTERNATIONAL HORTICULTURAL EXHIBITION and BOTANICAL CONGRESS.
Under the Patronage of Her Majesty THE QUEEN, and of their Royal Highnesses the PRINCE OF WALES and the DUKE OF CAMBRIDGE.
The EXHIBITION and CONGRESS will OPEN on MAY 22, and continue till May 25. Subscribers' names will be received, and Schedules and Prospectuses may be obtained on application to the Secretary, at the Offices, 1, William Street, Lowndes Square, London.

CRYSTAL PALACE FLOWER SHOWS.—The FIRST GREAT FLOWER SHOW of the season is fixed for SATURDAY, May 12; and the ROSE SHOW for SATURDAY, June 23.

BUTLER and McCULLOCH'S SPRING CATALOGUE of SEEDS will be ready in a few days, sent free and post paid on application.
BUTLER & McCULLOCH, Covent Garden Market, W.C.

Seeds.
S. GLENDINNING and SONS' PRICED LIST of KITCHEN GARDEN, AGRICULTURAL, and FLOWER SEEDS, is now published, and may be had free on application.
Chiswick Nursery, London, W.

PETER S. ROBERTSON AND CO.'S PRICED DESCRIPTIVE CATALOGUE of GENUINE GARDEN and FLOWER SEEDS, and NOVELTIES for 1866, post free on application.
Trinity Nursery, and 33, St. Andrew Square, Edinburgh.

Excellence and Economy.
H. BROWN'S PRICED DESCRIPTIVE CATALOGUE of SEEDS, &c., for 1866, will be sent free by post on application.
4, Commutation Row, Liverpool.

Genuine Garden Seeds.
WM. CUTBUSH AND SON'S DESCRIPTIVE PRICED CATALOGUE of SEEDS, which contains everything New and Old worth growing, can be had post free on application.
Highgate, London, N.

Garden Seeds, Carriage free.
WM. PAUL'S SELECT LIST contains many articles worthy the attention of Exhibitors and others who wish to have FIRST-CLASS VEGETABLES and FLOWERS in their seasons.
PAUL'S Nurseries, Waltham Cross, N.

MAURICE YOUNG'S DESCRIPTIVE LIST of Conifers, New and Rare Hardy Plants, Ornamental Trees and Shrubs, Rhododendrons, Japanese Novelties, Forest Trees, and Roses, forwarded on application.
Milford Nurseries, near Godalming, Surrey.

GENUINE NEW GARDEN SEEDS.—PRICED DESCRIPTIVE CATALOGUE post free upon application.
JAMES DICKSON & SONS, Seed Merchants, &c., 102, Eastgate St., Chester.

DAHLIAS, DAHLIAS, DAHLIAS.—Three Thousand Pot Roots, of the best sorts, including 1864, at 20s. per 100; 300 large Stools, 12s. per dozen. Ten per cent. allowed on all orders that contain cash. Post Office orders payable to
J. C. PADMAN, Boston Spa, Yorkshire.

Hoyle's and Foster's New Pelargoniums.
CHARLES TURNER has fine plants of the above, which he strongly recommends. All the best old kinds at moderate prices. CATALOGUE on application.
The Royal Nurseries, Slough.

To the Trade.
LILIUM AURATUM.
BARR & SUGDEN, Seed, Bulb, and Plant Merchants, 12, King Street, Covent Garden, W.C.

To the Trade.
CARNATIONS and PICOTEES, good named sorts, 50s. per 100 pairs. Fancy sorts, Selfs, Pinks, &c.
STAFFORD'S Nurseries, Hyde, near Manchester.

Early Spring Flowers.
WEBB'S GIANT POLYANTHUS and GIANT COWSLIPS, and other varieties, largest stock in England. List and prices on application to Mr. Webb, Calcot Gardens, Reading.

Scarlet Geraniums.
MARSH and PERKINS, 42, Drapery, Northampton, have pleasure in offering Strong Autumn-struck PLANTS of the above from Store Pots, 12s. per 100; 100s. per 1000.
N.B. The usual discount to the Trade. Terms: Cash.

VERBENAS and PETUNIAS, with plenty of Cuttings.—The Verbenas in colours of white, scarlet, rose, and crimson, 3s. per dozen. Terms cash.
PHILIP LADDS, Florist, Bexley Heath, Kent, S.E.

Surplus Stock of Strong Grape Vines in Pots
To be Sold Cheap.
WM. WOOD and SON have an extra fine Stock of the above to offer cheap.
Woodlands Nursery, Maresfield, near Uckfield, Sussex.

Grape Vines.
WM. CUTBUSH and SON have a fine stock of extra strong planting VINES, also a few fruiting size left.
CATALOGUES and price on application.
Highgate Nurseries, London, N.

VINES.—A DESCRIPTIVE CATALOGUE of GRAPES. By THOS. RIVERS. Free per post.
Nurseries, Sawbridgeworth.

PINES.—Strong Fruiting, Succession, and Suckers, of all the leading kinds, can be had of
B. S. WILLIAMS, Victoria and Paradise Nurseries, Holloway, London

FIGS in POTS, for Forcing or Pot Culture.—A few of the leading kinds, fine bushes, 5s. to 7s. 6d. each. Carriage paid to London.
THOS. RIVERS & SON, Nurseries, Sawbridgeworth.

FASTOLF RASPBERRY CANES, stout and well rooted, 1s. 6d. per dozen; 8s. per 100. Cash or stamps.
ROBERT H. PUNTER, Seedsman, Taunton.

CASTLE KENNEDY FIG.—Plants of the above may now be had at 10s. 6d. and 21s. each; the usual discount to the Trade.
PETER LAWSON & SON, Edinburgh and London.

WEBB'S PRIZE COS FILBERTS, and other Prize Nuts and Filberts. Trees of these splendid Nuts to be had of Mr. WEBB, Calcot Gardens, Reading. Catalogues on application.

Fruit Trees.
S. GLENDINNING and SONS invite attention to their superb stock of healthy well-grown FRUIT TREES.
PRICE LIST on application.
Chiswick Nursery, London, W.

Excellent Nursery Stock at Moderate Prices.
WM. JACKSON and CO., NURSERYMEN, Bedale, Yorkshire, beg to refer to their Advertisement at page 47 of the *Gardeners' Chronicle and Agricultural Gazette*, January 20, 1866.

PETER S. ROBERTSON and CO.'S CATALOGUE of FOREST and ORNAMENTAL TREES and SHRUBS post free on application.
Trinity Nursery, and 33, St. Andrew Square, Edinburgh.

Garden and Flower Seeds.
RETAIL PRICE LIST and CATALOGUE free by post. Seeds of best quality considerably under the usual retail prices.
J. H. COTTRELL, 15, Bull Ring, Birmingham. (Established 1856.)

PLANTERS engaged in PLANTING for immediate effect, can be supplied with handsome CEDRUS DEODARA, from 8 to 10 and 20 feet high, well rooted, and safe to transplant.
Prices sent on application.
WM. MAGLE & SONS, The Nurseries, Bristol.

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DOWNIE, LAIRD, AND LAING are now sending out Seeds of the above. PRICED LISTS on application, with Cultural hints.
Stanstead Park, Forest Hill, S.E.; and Edinburgh.

Acorns.
ACORNS, sound and good, and 1-year ENGLISH OAK, at low prices.
WM. DILLISTONE, Munro Nursery, Sible Hedingham, Essex.

LARCH.—Fine stout Trees, 8 to 10 feet, in the finest condition for removal.
Apply to STEPHEN BROWN, Nursery, Sudbury, Suffolk.

TRANSPLANTED LARCH FIR, extra fine, 3 to 4 ft., 20s. per 1000.
FREDK. PERKINS, Bedford Road Nurseries, Northampton.

FOR SALE, a quantity of 1-year Seedling 1-year Transplanted LARCH; and 2-year Seedling 1-year Transplanted LARCH in fine condition, 15s. per 1000. Also a small quantity of CHOICE SEED, at 2s. 6d. per packet of 50 Seeds.
MUNRO BROTHERS, The Nurseries, Inverness, N.B.

SAMUEL FINNEY AND CO. have a large stock of strong well-rooted 3-years transplanted THORNS, from 15 to 24 inches high, which they can offer to the Trade at very low prices.
Early applications are requested.
Gateshead Nursery.

H. AND F. SHARPE, SEED GROWERS AND MERCHANTS, Wisbech.
SPECIAL PRICED LIST of NEW SEEDS on application.

JAMES FAIRHEAD AND SON, SEED GROWERS and MERCHANTS, 7, Borough Market, London, S.E.
New and Genuine AGRICULTURAL, GARDEN, and FLOWER SEEDS. Special prices and advantageous offers on application.

Dahlias, Pot Roots and Seed.
GEO. RAWLINGS can supply WILLIE AUSTIN, ANNIE KEYNES, PRINCESS, and other first-class varieties at 6s. per dozen. Mr. Willie, 10s. per 100. Also a small quantity of CHOICE SEED, at 2s. 6d. per packet of 50 Seeds.
Waterloo Road, Romford, E

Seeds—Gladioli.
PAUL AND SON'S LISTS of the above are now ready, containing a careful selection of Novelties. Enlarged List of Fine-foliaged Plant Seeds, and original notes on Gladiolus Culture.
"Old" Cheshunt Nurseries, N.

New Roses of 1866.
PAUL AND SON'S LIST is now ready. Their plants are already strong, but will not be fit to travel till early March.
The "Old" Cheshunt Nurseries, N.

To the Trade.
STANDARD and DWARF STANDARD ROSES.
Extra and at reasonable prices.
PAUL & SON, "Old" Cheshunt Nurseries, N.

New Roses for 1866.
NOT TO BE UNDERSOLD BY ANY RESPECTABLE HOUSE IN THE TRADE.
WM. WOOD AND SON have all the NEW ROSES to offer, at the lowest advertised prices. Address
Woodlands Nursery, Maresfield, near Uckfield, Sussex.

SURPLUS STOCK of SPECIMEN TEA-SCENTED ROSES in 6-inch pots, for Exhibition or for Forcing. Splendid plants, from 24s. to 30s. per dozen.
Address, WM. WOOD & SON, Woodlands Nursery, Maresfield, near Uckfield, Sussex.

SUTTON'S PERMANENT GRASS SEEDS
For ALL SOILS.

The Cultivation of Bromus Schraderi.
SUTTON and SONS can supply genuine Seed of the above New FORAGE GRASS, in packets, for trial, at 1s. each, or in larger quantities at 5s. per lb.; with instructions on cultivation.
SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

JIVERY AND SON beg to announce that their DESCRIPTIVE PRICED CATALOGUES of AZALEA INDICA, HARDY BRITISH FERNS, ROSES, CONIFERÆ, GRAPE VINES, and SEEDS, may be had on application at their Dorking Nursery.

CAMBRIAN COLLECTIONS of GARDEN SEEDS for 10s. 6d., 21s., 31s. 6d., and 42s., sufficient for One Year's Supply for Large and Small Gardens. Basket included.
CATALOGUES of SEEDS and NURSERY STOCK on application.
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ASPARAGUS, 1, 2, and 3-years, fine, at low prices.
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PINES, ASPARAGUS, and SEA KAIL.—For Sale, a quantity of very fine QUEEN PINE plants, in all sizes, from a stock that never had Scale. Also ASPARAGUS and SEA KAIL, from 1 to 3 years old. Apply to
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To the Trade.
TO BE SOLD, Cheap, a large quantity of 1-year SEA KAIL PLANTS; also 2-year ASPARAGUS PLANTS.
Prices on application to
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SANDRINGHAM NEW DWARF WHITE CELERY. Superior variety, fine flavour, very crisp and solid.
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THE LONGSTANDER LETTUCE.—Most remarkable for duration without running, crisp and excellent. Packets 1s. each.
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Scrymger's Brussels Sprouts.
SEED of the above excellent variety can be had true from the Raiser, in packets at 1s., post free 14 stamps.
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To Farmers, Gardeners, and the Trade.
EXCELLENT Strong CABBAGE PLANTS of Early York, Early Nonpareil, Battham, Drumhead, &c., may still be had at 2s. 6d. per 1000. A remittance must accompany all orders.
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The Forwardest Field Pea is
SUTTON'S EARLY RACEHORSE.
For price, depending on quantity required, apply to
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PEAS.—Four Quarters of SANGSTER'S No. 1 PEA, warranted true, grown from best Seed, bought of Messrs. Hurst, Londonhall Street. Price 8s. per bushel, by the quarter.
Apply to the Bailiff, John Reeves, Shellingford, Faringdon.
Prepayment from unknown correspondents.

THE SKERRY BLUE POTATO.—This Potato is one of the best and most productive in cultivation, and is very free from disease. Price 6s. per bushel; cheaper by the sack or ton.
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Paterson's Seedling Potatos.
SUTTON AND SONS having been appointed AGENTS for the above, can supply them in quantity, at moderate prices, which may be had on application.
SUTTON & SONS, Seed Merchants, Reading.

THE "KING" of POTATOS.—This may be fairly described as the finest Potato in cultivation. It is quite distinct from any other variety, with a clear yellow skin. Price 3s. per peck; cheaper by the bushel or sack.
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200 SACKS SPENCER'S KING of POTATOS, at 5s. per bushel, one of the largest, finest, and most productive of Kidney Potatos ever introduced; it withstands the disease better than other Potato.
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WHEATH begs to offer a good sample of ALMA KIDNEY POTATO for Sale at 3s. 6d. per bushel. A reduction made if taken in quantity.
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SEED POTATOS.—A quantity of pure RED REGENT SEED POTATOS to be sold at 5s. per bushel.
Address P. J., *Gardeners' Chronicle* Office, W.C.

EARLY KIDNEY POTATOS.—Webb's Telegraph, first early, 20s. per bushel; Webb's President, second early, 16s. per bushel; Webb's Imperial Kidney (best Potato known for all purposes), 12s. per bushel.
Apply to Mr. WEBB, Calcot Gardens, Reading.

ROYAL ASH-LEAF POTATO.—This is one of the earliest and the most productive of all the Ash-leaf Kidney Potatos. Price per ton of finely prepared seed given on application to Messrs. THOS. RIVERS & SON, Sawbridgeworth.

SEED POTATOS.—Myatt's Prolific Kidney, Early Dalmahoy, Webb's Imperial Kidney, Daintree's Seedling, and all the best early and late varieties at low prices.
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DAINTREE'S SEEDLING POTATO is the best early round white Potato in cultivation, and can be obtained at a moderate price on application.
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MYATT'S PROLIFIC KIDNEY POTATO.—A few Tons of carefully selected Seed to be Sold Cheap.
Apply to ALFRED FRYER, Nurseries, Chatteris, Cambridgeshire.

MR. MYATT, of Manor Farm, Deptford, having SOLD all his available Stock of MONA'S PRIDE POTATO, takes this opportunity of informing those patrons who are still making numerous applications.
Price per ton of MYATT'S PROLIFIC ASHLEAF on application.

New Roses for 1866.

10,000 strong healthy well-grown Plants of all the New Roses.

Woodlands Nursery, Maresfield, near Uckfield, Sussex.

WM. WOOD AND SON have to offer an extraordinary stock of the best NEW ROSES of the present season, in fine healthy plants.

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JOHN FRASER, of Lea Bridge Road Nurseries, Leyton, Essex, N.E., will forward on application a LIST of all the best varieties of NEW ROSES for 1866.

The plants are strong, healthy, and are now ready for sending out. Early orders are respectfully solicited.

Roses.

H. LANE AND SON have to offer a large stock of strong and healthy STANDARD and DWARF ROSES, in great variety, consisting of all the popular and well-known sorts in cultivation.

CATALOGUES may be obtained post free at the Nurseries, Great Berkhamstead, Herts.

North of England Rose Nursery.

J. HARRISON begs to inform his friends and the Trade that he has still on hand a Stock of nearly 20,000 of the best DWARF and HARDY PERPETUAL ROSES, worked on the Manetta Stock, also several Thousands upon their own roots, exceedingly fine healthy plants; all having been removed in November last, are in the finest condition for planting. The NEW ROSES of the present season are also nearly ready for transit. Several thousands of Manetta, Autumn potted, and how fit for working, 25s. per 100.

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NEW CATALOGUE, with Woodcut of NOISEAU GERANIUM LE GRAND, containing Select and Descriptive Lists of Show, Spotted, Fancy, Zonale, and Variegated Geraniums; Bijouxs, Verbenas, Pyrethrums, Dahlias, Chrysanthemums, Bedding Plants, &c., now ready and will be sent free on receipt of stamp.

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WM. DRUMMOND AND SONS, SEEDSMEN and NURSERYMEN, Stirling, will be glad to forward their CHOICE DESCRIPTIVE CATALOGUE of VEGETABLE and FLOWER SEEDS, to any address, post free on application.

*** Seeds carriage paid in town.

New Descriptive Catalogue of Vegetable and Flower Seeds, &c., for 1866.

ROBERT T. MACKINTOSH, NURSERYMAN and SEEDSMAN, 12, Multrees Walk, Edinburgh, begs respectfully to intimate that the above LIST, embracing several New and Interesting Novelties, may now be had post free on application.

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DOWNIE, LAIRD, AND LAING beg to intimate that their NEW DESCRIPTIVE CATALOGUES of FLORIST FLOWERS, NEW PLANTS, GARDEN, FLOWER, and AGRICULTURAL SEEDS are now ready, and may be had free on application.

16, 18, and 20, Frederick Street, Edinburgh; and Stamford Park, Forest Hill, Sydenham, S.E.

Genuine Garden and Agricultural Seeds.

PAUL TOLLARD, SEED GROWER and MERCHANT, 29, Quai de la Megisserie 29, et Boulevard, Place des Trois Maries 4, à Paris. SPECIAL PRICED LIST of NEW SEEDS, in English weights and measures, on application.

LAMOUREUX, CLARK, AND CO., SEED MERCHANTS, PLYMOUTH.

The SEED CATALOGUE and GARDEN DIRECTORY for 1866, now published, will be sent forward its respective prices and other particulars upon application. Purchasers who be send gratis and post free to any address in the kingdom.

Genuine New Garden Seeds.—Carriage Free.

J. SCOTT having received his NEW SEEDS for this season, begs to intimate that he is prepared to execute all orders for the same on the most favourable terms.

A PRICED LIST free on application. The stock includes all the new Seeds of worth mention.

FLOWER SEEDS, in extra extra fine quality.—Calceolaria, Cineraria, Primula fimbriata, Double Zinnias, imported Asters, Stocks, &c. LIST sent free on application.

J. SCOTT, Merriott Nurseries, Merriott, Somerset.

Hardy Scarlet Rhododendrons.

JOHN WATERER'S COLLECTION of HARDY SCARLET and other CHOICE RHODODENDRONS as annually displayed in the Royal Botanic Gardens, Regent's Park, can now be had on application.

It contains full descriptions of all the varieties really worthy of cultivation, as well as a selection of HARDY CONIFERS, with heights and prices, with ORNAMENTAL EVERGREENS, FOREST TREES, &c.

The American Nursery, Bagshot, Surrey.

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WATERER AND GODFREY'S PRICED and DESCRIPTIVE CATALOGUE of AMERICAN PLANTS, as exhibited in the Royal Botanic Gardens, Regent's Park, free on application. This Catalogue fairly describes the Rhododendrons most worth growing as well as some new and very handsome kinds excessively in their infancy, now for the first time offered.

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Choice Hybrid Rhododendrons.—Special Offer.

ISAAC DAVIES being about to REMOVE, offers SEEDLINGS of the above from 9 to 12 inches high, which have been entirely crossed the present season from the very best crimson and purple first blooming varieties. Price, if ordered this month, 30s. per 100.

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CLEMATIS JACKMANNI, 2s. 6d. each, 21s. per doz.

" AUREO-VITTATA, 2s. each; 18s. per doz.

" HYBRIDA SPLENDIDA, 2s. each; 18s. per doz.

" STANDISHI, 2s. each; 18s. per doz.

" SOPHIA HOPE, 2s. each; 18s. per doz.

" CŒRULEA (AZUREA) GRANDIFLORA, 30s. per 100.

Besides their good old varieties.

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Very fine plants in bloom may now be had from Mr. JOHN GRAHAM, Cranford, near Hounslow. 50 per 100; 1s. per dozen prepaid, package included.

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ROBERT SIM can now send, post free for six postage stamps, Part 1. British Ferns and their varieties, 32 pages, including those of Hardy Exotic Ferns of his NEW and PRICED DESCRIPTIVE CATALOGUE of BRITISH and EXOTIC FERNS, No. 7.

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To the Trade.

CUPRESSUS LAWSONIANA SEED (true), of excellent quality, and warranted crop of present season. Price, postage paid, 50 packet; 2s. per half-lb.; 3s. per lb. nett. From unknown, or from society or institution must accompany order.

WILLIAM LEE, Nurseryman, &c., of GENERAL NURSERY STOCK can be had on application to

THOS. CRIPPS, Nurseryman, Pembridge Wells, Kent.

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ROBERT PARKER begs to announce that his NEW PRICED and DESCRIPTIVE CATALOGUES, containing Select Lists of the best varieties of Vegetable, Agricultural, and Flower Seeds, New and Rare Plants, &c., are now published, and will be forwarded to applicants. All Seeds are warranted to be of the finest possible quality. Intending purchasers are requested to compare the prices with those of other houses.

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SUTTON'S CHOICE COLLECTIONS of FLOWER SEEDS.

SUTTON AND SONS forward

Flower Seeds

Free by Post or Rail.

Those requiring showy kinds of Flower Seeds, and who are not well acquainted with the sorts, are respectfully recommended to have the collection (1), and we will supply those we know to be really worthy of cultivation.

	£	s.	d.
1 The best 100 sorts (hardy, half-hardy, and tender)	1	1	0
2 The best 50 sorts ditto ditto	0	10	6
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5 The best 24 sorts (hardy sorts only)	0	5	0

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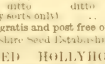
PAUL & SON, "Old Cheshunt Nurseries," Cheshunt, N. Also at Messrs. WILLIAM & SON, HURST & SON, JAMES VEITCH, AND FISHER, HOLMES & CO.

Lobelia Snowflake.



Extract from GARDENERS' CHRONICLE :—

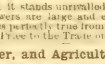
"MR COX, Gardener to Lord Beauchamp, exhibited a beautiful White Lobelia called Snowflake, to which a First-class Certificate was awarded. Floral Committee of the Royal Horticultural Society, July 25, 1865."

JOHN AND CHARLES LEE having acquired the stock of the desirable NEW BEDDING PLANT, they have much pleasure in offering SEED in SEALED PACKETS. It is also well adapted for pot culture.

As a BEDDING LOBELIA it stands unrivalled. The plant is of dwart compact habit, the flowers are large and even, and of the purest white. The stock comes perfectly true from seed.

Price 2s. 6d. per packet. Free to the Trade on application.

New Vegetable, Flower, and Agricultural Seeds.



JOHN AND CHARLES LEE, SEEDSMEN to the QUEEN, are prepared to execute orders for every kind of VEGETABLE, FLOWER, and AGRICULTURAL SEEDS, growth of 1865.

Their DESCRIPTIVE CATALOGUE is now ready, containing all the NEW and CHOICE VEGETABLE, FLOWER, and AGRICULTURAL SEEDS in cultivation, and will be forwarded free on application.

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CHRYSANTHEMUMS, and How to have them Fine and Exhibition Size STANDEN'S GARDENER'S and AMATEUR'S FRIEND.

STANDEN'S GARDENER'S and AMATEUR'S FRIEND, a highly concentrated Mineral Superphosphate Fertiliser, for Chrysanthemums and all kinds of Stove and Greenhouse Plants, Vines and other Fruit Trees in pots, &c.; also Vegetables, &c., in the open ground.

No. 1 FERTILIZER is the best adapted for Chrysanthemums and Hard-wooded Plants of every description.

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Sample Canisters, 1s. & 2s. 6d. Bags, 5s. 6d., 10s. 6d., and 21s.

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A List of Agents will shortly be published.

CHOICE SPRING FLOWERS, &c., now ready in Spring Plants.

	Per doz.	s.	d.
HEPATICAS, double red and single blue		4	0
VIOLETS, double, in four sorts	4s. to	6	0
" single, in six sorts	3s., 4s., and	6	0
" new single striped	1s. 6d. each	12	0
" new double striped, Reine des Violettes, 2s. 6d. each,		24	0
" new double red	1s. 6d. each	12	0
PRIMROSES, double, in four varieties		6	0
CHRISTMAS ROSE, scarlet	2s. each	18	0
" white		3	0
POLYANTHUS, finest laced varieties		3	0
PAMPAS GRASS, fine plants	40s. per 100	6	0
DAISIES, new and choice kinds		3	0
ROCK CISTUS, in 20 fine kinds		6	0
OLD CRIMSON CHINA ROSE		9	0
AURICULAS, finest Alpines		6	0
" Pernasined		3	0
ROCKETS, double white and yellow		6	0
LAVENDER, fine plants		4	0
CLOVES, old crimson and others	3s. to	6	0
PINKS, fine named sorts		4	0
SWEET WILLIAM, Auricula-eyed, &c.		3	0
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Also the following in Stock Plants :—

FUCHSIAS, new, of 1866		6	0
GERANIUMS, new, of 1865	9s. to	12	0
PETUNIAS, new, of 1865		6	0
CHRYSANTHEMUMS		6	0
TROPÆOLUMS and LOBELIAS, new		6	0
ANTIRRHINUMS and PENTSTEMONS, new		9	0
PHLOX, new		9	0
CINERARIAS, new		12	0

100 CHOICE HARDY HERBACEOUS PLANTS, in 50 fine named varieties, for 25s.

ROSES.

24 Finest STANDARD and DWARF ROSES, 24 distinct varieties, 21s

24 ditto ditto ditto on their own roots, in pots, 21s.

CATALOGUES free on application; also, TRADE CATALOGUE of NURSERY STOCK.

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Established Upwards of a Century.

BUTLER AND MCCULLOCH'S Complete COLLECTIONS of VEGETABLE SEEDS for ONE YEAR'S SUPPLY, all of the Growth of 1865.

No. 1.	No. 2.	No. 3.	No. 4.	No. 5.
£3 3s.	£2 2s.	£1 10s.	£1 1s.	10s. 6d.

All orders amounting to £1s. and upwards sent carriage paid.

DESCRIPTIVE PRICED CATALOGUES sent free and post paid upon application.

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LONDON SEED COMPANY, LIMITED. 68, Welbeck Street, Cavendish Square, London, W.

LONDON SEED COMPANY, LIMITED.—CATALOGUES and PRICE CURRENTS are now ready. COMPLETE COLLECTIONS of GARDEN SEEDS for a whole year's supply, from 10s. 6d. upwards.

Offices, 68, Welbeck Street, Cavendish Square, London, W.

Seeds for the Garden.

COMPLETE COLLECTIONS of GARDEN SEEDS for Large and Small Gardens, at 10s. 6d., 15s., 20s., 40s., and 60s. each. CATALOGUES can be had on application at the Offices of the London Seed Company, 68, Welbeck Street, Cavendish Square, W.

SEEDS for the GARDEN.—All Orders amounting to 20s. and above will be sent Carriage Free to all parts of the United Kingdom by the London Seed Company, Limited.

CATALOGUES can be had on application at the Offices, 68, Welbeck Street, Cavendish Square, W.

LONDON SEED COMPANY, LIMITED.—This Company was formed by the Purchase of an Old-Established Business of 80 years standing. CATALOGUES can be had Gratis on application at the Offices of the Company,

68, Welbeck Street, Cavendish Square, London, W.

Scarlet Geraniums.

WITTY AND SON have to offer strong Autumn-struck Plants of the above, from store pots, at 10s. per 100, or £4 per 1000. Terms cash with reference from unknown correspondents.

The Nurseries, Cottingham, near Hull.

Unbloomed Seedling Calceolarias.

MR. HENRY MAJOR, Knosthorpe, near Leeds, is now prepared to offer nice young Plants of the above, in parcels of 20, at 6s. per parcel; or three for 15s.; post free. They are the production of last year's first-class collection. CALCEOLARIA SEED, 2s. 6d. per packet, or three for 5s. Postage stamps or Post-office order in payment.

Seeds of the finest quality for the Garden and Farm.

ARCHIBALD HENDERSON, late Superintendent to the Horticultural Society of London, and of His Grace the Duke of Sutherland's Gardens, Trentham, Staffordshire, begs to announce that his DESCRIPTIVE CATALOGUE of SEEDS and useful GARDEN CALENDAR is now published, and will be forwarded post free on application.

A. H. has selected the leading varieties only in each Class, his past practical experience having enabled him to do so.

Store Nursery, Thornton Heath, Surrey, &c.

NEW PLANTS.

AUBRIETIA CAMPBELLI (effective spring flower).

FUCHSIA HARRISONS BEAUTY.

VERONICA FRUTICOSA GLAUCA.

CLIANTHUS DAMPIERI, in varieties (seed only).

Coloured Plates, post free on receipt of Stamps, of the following :—

AUBRIETIA CAMPBELLI, 1s. 6d.

CLIANTHUS DAMPIERI ALBIFLORA, 1s. 1d.

For description of the above see E. G. HENDERSON & Son's NEW AUTUMN CATALOGUE, forwarded post free.

Wellington Nursery, St. John's Wood, London, N.W.

Seeds of New and Beautiful Plants.

C. J. BARKER has much pleasure in again offering SEEDS of his Choice New HYBRID FLOWERS, which have given such perfect satisfaction in past seasons, and he feels very confident that the Seeds he now offers will produce flowers far surpassing any that he has previously sent out.

	Per packet.—s.	d.
PETUNIAS—Very choice, from the beautiful collection of double and single flowers exhibited at the Royal Horticultural Society's Meetings	2	6
TROPÆOLUM - Perpetual-flowering, from our well-known collection of choice hybrid varieties	1	0
PELARGONIUMS (Zonals)—Saved with care from a choice collection of finest new kinds, including Mr. Bull's, and the late Mr. Beaton's best flowers	1	0
MIMULUS—From a select collection of beautiful new hybrid varieties of large and small flowers	1	0

TROPÆOLUM and PETUNIA.

"The blooms of both of these submitted to me by you are excellent in shape, size, and substance, and charming in variety of colour. Among the first are some beautiful orange yellow, spotted with rich maroon. And among the latter are many handsomely striped and double kinds, which must, if seed pots or pans, must produce a satisfactory effect."—*Gardener's Chronicle, Sept. 30, 1865.*

"Your seeds have produced such flowers as were never seen in this country before."—*Letter from C. S., Ampthill.*

C. J. B. has also for sale a choice collection of fine Fruiting GARDEN CROSS from Eyes, of all the leading varieties Prices on application. Exotic Nursery, Godalming, Surrey.

TAGETES SIGNATA PUMILA.—Magnificent Bedding Annual, 1 foot high, of dense compact growth; foliage graceful and Fern-like, of a bright green colour; the plant is covered with rich golden blossoms, and continues vigorously to flower till cut down by frost, maintaining till the last its beautifully neat habit

"It bids fair to supersede the Yellow Calceolaria as a Bedding Plant."—*See Gardener's Chronicle, Sept. 30, 1865.*

ASTERS and STOCKS for EXHIBITION, &c.

Truffaut's Peony-flowered Aster, 20 varieties, 3s. 6d.; mixed packets, 3d. and 6d.

Victoria Aster, new, rosy carmine, per packet, 6d.; smaller packet, 3d.

Rose Aster, new, mixed, per packet, 6d.

Dwarf Chrysanthemum Aster, 12 varieties, 2s.; mixed packets, 3d. and 6d.

Dwarf German Ten-week Stock, 24 varieties, 4s.; mixed packets, 6d. and 6d.

Large-flowering Dwarf ditto, 20 varieties, 3s. 6d.; mixed packets, 3d. and 6d.

The quality of the above Asters and Stocks as exhibition flowers is well known; these from seeds supplied by me having taken prizes at many shows during the past season.

Many other varieties of Asters and Stocks, see Catalogue.

NEW MELON "PARAGON."—Deep green flesh, fine oval form, thin rind, remarkably handsome, constantly recommended, fine and of delicious flavour, a first-class variety. Per packet, 1s. 6d.

Any of the above free by post.

PRICED DESCRIPTIVE CATALOGUE free on application.

JAMES TYNAN, Seed Warehouse, 68, Great George Street, Liverpool.

FOREST TREES, &c.—At the Nursery of the late DAVID A. RAID, Park Attwood, Bewdley, Worcestershire.

	Per 1000.—s.	d.
500,000 LARCH, 2 feet	10	0
300,000 LARCH, 2 to 3 feet	20	0
200,000 FEAR STOCKS, 2 to 5 feet	15s. to 50	0
100,000 SPANISH CHESTNUTS, 1-year Seedling, 1 to 2 feet	10	0
500,000 SILVER FIR, 4-year Seedling, fine	4	0
500,000 SPRUCE, 4-year Seedling, fine	2	0
500,000 SYCAMORE, 1-year Seedling, fine	2	0
300,000 BEECH, 1-year Seedling, fine	2	0
10,000 WALNUTS, 3 to 5 feet, fine	10	0
20,000 CUPRESSUS PYRAMIDALIS, 1-year Seedling, fine	20	0
20,000 CUPRESSUS SEMPERVIRENS, 1-year Seedling, fine	20	0

200 Bushels PITTED HAWS Price on application.

Apply, with reference to JAMES RIDDELL, Steward, Park Attwood.

TO BE SOLD, for want of room, FOUR fine Specimens of the AMERICAN ALOE, about 4 feet high from top of box, and 5 feet through, supposed to be 80 years of age, clean and healthy, and likely to bloom in a few years. Growing in strong slate boxes, with oak frames. Size of boxes, 2 ft. 8 in. by 2 ft.

Apply to J. MYATT, Gardener to R. T. Adderley, Esq., Barlaston Hall, Stone, Staffordshire.

GARDEN SEEDS.

OSBORN & SONS'

SELECT CATALOGUE OF THE ABOVE

May now be had on application, and they beg to call special attention to the following Select Articles:—

	Per packet.—s. d.		Per packet.—s. d.
OSBORN'S WHITE WINTER BROCCOLI ..	1 6	ROWDEN'S BROWN COS LETTUCE	1 6
NEW AMERICAN TOMATO	1 6	SCOTT'S SUPERB WHITE COS LETTUCE ..	1 0
		BELLE BONNE SUMMER CABBAGE LETTUCE	1 0

This is very large, and less watery than the old Red. These three Lettuces are less liable to run than any we know

FULHAM NURSERY, S.W.

GARDEN SEEDS.

ELEVEN PRIZES AT THE SOUTH KENSINGTON SHOW IN JULY LAST.

WILLIAM PAUL

(SON and SUCCESSOR to the late A. PAUL), WALTHAM CROSS, LONDON, N.,

BEGS TO ANNOUNCE THAT HIS

NEW SEED CATALOGUE IS NOW READY,

AND WILL BE FORWARDED ON APPLICATION FREE BY POST.

It is well known that both Vegetables and Flowers vary much in quality from Seed, and to insure the best races all the critical and important crops are home saved, or saved expressly for him under his own supervision. In proof of the success of this course he may state that no less than Eleven Prizes were awarded to the productions of his Seeds at the Royal Horticultural Society's Show in July last.

Foreign and Colonial Orders carefully attended to, and packed by experienced packers.

GENUINE SEEDS, CARRIAGE FREE.

B. S. WILLIAMS,

VICTORIA and PARADISE NURSERIES, HOLLOWAY, LONDON, N.,

BEGS TO STATE THAT HIS

DESCRIPTIVE AND PRICED SEED CATALOGUE FOR 1866

CAN BE HAD POST FREE ON APPLICATION.

It contains all Novelties worthy of notice, with full description to each, and a few Hints for the guidance of Amateurs.

The LIST of KITCHEN GARDEN SEEDS comprises all that is essential in variety for the various requirements in family consumption. Those who prefer leaving the Selection of Vegetables to B. S. W. may rely upon receiving none but the most valuable and approved sorts. Collections are proportioned to suit Large and Small Gardens at the following prices:—

10s. 6d., 21s., 42s., 63s., 84s. each.

For Quantities, see Catalogue.

The following CHOICE and NEW VEGETABLE SEEDS are specially recommended:—

MALVERN HALL MELON, earliest variety in cultivation, 2s. p. pkt.	The ORANGEFIELD DWARF PROLIFIC TOMATO, now offered for the first time, an introduction of real worth; the fruit is large, very dwarf, and wonderfully prolific (stock limited), 2s. 6d. per packet
WILLIAMS' MATCHLESS RED CELERY, 1s. per packet	
DIGSWELL PRIZE ENDIVE, 1s. per packet	
The ALBERT SPROUTS, 1s. per packet	
HILL'S INCOMPARABLE DWARF CABBAGE, 1s. per packet	
HOLME PARK LETTUCE, 1s. 6d. per packet	SHARMAN'S UNIVERSAL CUCUMBER, the best Winter variety; fruit long and handsome, very prolific, 2s. 6d. per packet
NUNEHAM PARK ONION, 2s. 6d. per packet	

DOUBLE TUBEROSES, very fine, 3s. per dozen. Choice GLADIOLI ROOTS, 6s., 8s., 12s., and 18s. per dozen.

NOVELTIES FOR 1866.

E. G. HENDERSON & SON

RESPECTFULLY OFFER THEIR

NEW SEED CATALOGUE FOR THE PRESENT SEASON,

Containing full descriptions of the following Novelties, with many others from the Continent.

Post Free on application.

VIOLA CORNUTA, in Seed and Plants.—One of the best known species, admirably adapted for chaste marginal effect to summer and autumn flower-beds

TROPÆOLUM COMPACTUM COCCINEUM.—The finest scarlet-flowered bedding variety of the "Tom Thumb" section.

LYCHNIS GRANDIFLORA GIGANTEA.—A splendid scarlet-flowered variety for a bed or clump, or pot-plant.

HELIPTERUM AUREUM NANUM.—A lovely little yellow-flowered species, 6 inches high.

CELOSIA RACEMOSA ELEGANS.—The best of known kinds for pot-culture, in conservatory decoration, true from seed.

LOBELIA ERINUS, PRINCE ALBERT.—Fine habit, one of the finest in its section for bedding.

YELLOW PERFECTION WALLFLOWER.—A beautiful variety, true to its colour and habit. Received a Certificate from the Royal Horticultural Society.

CYCLAMEN.—From our unrivalled collection, in varied colours, separately or mixed.

PRIMULA SINENSIS FILICIFOLIA.—The beautiful Fern-like leaved variety, white and crimson, separately or mixed.

LILIUM AURATUM (Golden-rayed Japan Lily).—The most beautiful of its tribe. New Seed just gathered

NEW PRIZE MELONS.

For descriptions of these first-class Fruits, see last Numbers of *Gardeners' Chronicle*.

THE NEW CLIANTHUS DAMPIERI,

In varieties of colour, as saved from the White and others, as exhibited by the Raiser.
2s. 6d. and 5s. per packet of 12 and 24 Seeds.

RAPHANUS CAUDATUS.

The remarkable New Radish, with long eatable pods. 2s. 6d. each Seed

DOUBLE-FLOWERED MIMULUS.

Seed Packets, 1s. 6d. and 2s. 6d. each.

E. G. HENDERSON AND SON, WELLINGTON NURSERY, ST. JOHN'S WOOD, N.W.

Extra strong Fruiting Vines.

JAMES DICKSON AND SONS can still supply STOUT, CROSS-JOINTED, and PERFECTLY RIPENED CANES, to produce from 4 to 5 lb. of Grapes this year. Price 7s. 6d. each and upwards. Also Canes for Planting out.

The "Newton" Nurseries, Chester.

Fruiting Vines.

E. G. HENDERSON AND SON offer the above, with splendid Canes of well-matured growth, with prominent eyes, sure to give a heavy crop of fruit, 10s. 6d. each.

LIST of SORTS sent on application.

Wellington Nursery, St. John's Wood, London, N.W.

Extra extra strong Fruiting Vines.

FRANCIS AND ARTHUR DICKSON AND SONS,

The "Upton" Nurseries, Chester, beg to direct attention to their very large stock of the above, which includes the largest and best varieties in cultivation. They have been pronounced to be "magnificent stuff" by all who have seen them, and they believe a finer lot of Vines were never grown. Inspection invited.

Prices and all particulars on application.

Sample plants sent if desired.

Vines.

B. S. WILLIAMS begs to announce that he still holds a fine Stock of the above. Planting and Fruiting Canes of all the best kinds, including the NEW GRAPE ROYAL VINEYARD

Victoria & Paradise Nurseries, Holloway, London.

Rust's Thames Bank Peach.

OSBORN AND SONS have a few Maiden Plants left for Sale of the above-named new late Yellow-fleshed PEACH

Dr Hogg, in the "Gardeners' Year Book for 1864" says:—"The flesh is tender, melting, and juicy." He further adds, "This is certainly the best of the Yellow-fleshed Peaches we know."

Price 1s. 6d. each An allowance to the Trade.

Fulham Nursery, S.W.

SURPLUS STOCK of extra fine well-trained FRUIT TREES to be Sold Cheap, viz., Peaches, Nectarines, Apricots, Plums, and Cherries; also Standard wall-trained Peaches and Nectarines. The above are well worthy the notice of intending planters.

Address, Wm Wood & Son, Woodlands Nursery, Maresfield, Uckfield, Sussex.

New Edition of

SCOTT'S FRUIT TREE CATALOGUE of the finest Collection in England. The Catalogue is allowed to be the best published, and is full of information about the Cultivation of Fruits, over 1000 being described. Apply to

J. Scott, Merriott, Somerset.

SPECIAL OFFER of FRUIT TREES.—25 per cent. off Catalogues.—Having a large and fine stock of the undermentioned, they are offered at greatly reduced prices, to clear ground:—Peaches, Nectarines and Apricots (trained and untrained), Apples, Pears, Plums, and Cherries (trained and untrained).

DESCRIPTIVE CATALOGUES on application to

J. Scott, Merriott, Somerset.

To Clear Ground.

SPECIAL OFFER.—20 per cent. off Catalogue prices.—HOLLY (GREEN), YEWS, DEODARS, ARBUTUS, LAURELS (Common), Laurels (Portugal), Cupressus Lawsoniana, Thuja Lobbii, Pinus insignis, P. excelsa, P. pendula, Taxodium, Hazel (a large breadth), Larch do., Spruce do., Austrian Pine do., Beech do. For sizes and prices, see CATALOGUES, sent on application to

J. Scott, Merriott, Somerset.

Fruit Trees in Pots.

H. LANE AND SON have to offer a fine, healthy, well-grown stock of FRUIT TREES in Pots, beautifully set with bloom buds, comprising the leading varieties of the following:—APPLES, APRICOTS, PLUMS, PEARS, PEACHES, NECTARINES, FIGS, and VINES.

CATALOGUES and prices upon application

The Nurseries, Great Berkhampstead, Herts.

WM. VIRGO AND SON having a surplus stock of the undermentioned FRUIT, FOREST, and other TREES, can offer them at a very reduced price, viz.:—

Standard and Dwarf Apples	Alder, 2 to 3 feet
Standard and Dwarf Pears	Larch Fir, 2 to 3 feet
Standard and Dwarf Trained Cherries (very fine)	Spruce Fir, 18 inches, 2 and 3 feet
Hazel, 2 to 3 feet	Berberis Aquifolium, 1 foot
Birch, 2 to 3 and 4 feet	,, dulcis, 2 feet
Beech, 2 to 3 and 4 feet	Portugal Laurel, 2 feet
Spanish Chestnut, 2 to 3 feet	Common Laurel, 2 to 3 feet
Withy, 3 to 4 and 5 feet	Privet, 18 inches to 2 feet

Also a large quantity of Trees fit for belting.

Prices of the above can be had on application at the Nursery,

Winscsh, near Guildford, Surrey.

Upper Kendalstown Nurseries, Delgany, Co. Wicklow.

M. P. PENNICK begs to announce that he has a fine stock of the following:—

CRYPTOMERIA JAPONICA, 2½ to 3½ feet high	
CEDAR of LEBANON, 1½ feet	
UPRIGHT or IRISH YEWS, 1 to 7 feet	
SWEET BAYS, 2 to 2½ feet	
CHINESE ARBOR-VITÆ, 2 to 2½ feet	

The above are generally handsome, healthy, and well rooted.

Prices moderate, on application.

GENUINE NURSERY STOCK, comprising:—

TRANSPLANTED FOREST TREES.	
Alder, 2 to 3 feet	
Ash, 1½ to 2 feet	
,, 2 to 3 feet	
Birch, 2 to 3 feet	
,, 3 to 4 feet	
,, 4 to 5 feet	
Chestnut (Spanish) 1½ to 2½ feet	
Fir (Larch), 1½ to 2 feet	
,, 2½ to 3 feet	
Hazel, 1½ to 2½ feet	
,, 2 to 3 feet	
Willow, 2 feet	
,, extra strong, 4 to 6 feet	
CONIFERS AND HARDY EVERGREENS.	
Arbutus, 1½ to 2 feet	
Aucuba japonica, 1 to 2 feet	
Berberis Bealii, 1 to 2 feet	
,, japonica, 1 to 2 feet	
Box (Tree) of sorts, 1 to 2 feet	
Bugle, 6 in.	
,, ajuga	
Hollies (green), 2 to 3 feet	
,, (variegated), 1½ to 2½ feet	
Laurels (common), 2 to 3 feet	
Laurustinus, 1 foot	
Privet (flowering), 1½ to 2 feet	
Pinus Cembra, 2 to 3 feet	
,, macrocarpa, 1 to 1½ feet	

Pinus monticola, 4 to 6 feet	
,, muricata, 1½ to 2½ feet	
,, peruviana, 1½ to 2½ feet	
Picea Nordmanniana, 3 to 4 feet	
,, Pinsapo, 2 to 2½ feet	
Araucaria imbricata, 1½ to 2 feet	
,, ,, 2 to 2½ feet	
,, ,, 3 feet	
,, ,, 4 feet	
,, ,, 5 feet	
,, ,, 6 feet	
,, ,, 7 to 8 feet	
Cedrus Deodara, 1 to 2 feet	
,, africana, 3 to 5 feet	
,, Libani, 3 to 6 feet	
Cryptomeria Lobbii, 4 to 5 feet	
Cupressus Lawsoniana, 2 to 3 feet	
,, macrocarpa, 2 to 3 feet	
,, torulosa, 1½ to 2 feet	
Juniperus chinensis, 1½ to 2 feet	
,, ,, 3 feet	
,, ,, 4 feet	
,, ,, 5 feet	
,, ,, 6 feet	
Taxus (Yew, common), 2 to 3 ft.	
,, Irish, 2 to 6 feet	
,, variegated, 1½ to 2 ft.	
Thuja aurea, 1, 2, and 2½ feet, fine	
,, Lobbii, 2½ to 3 feet	
,, ,, 4 to 5 feet	
,, Warreana, 3 to 3½ feet	
Thujopsis borealis, 1½ to 2½ feet	
Wellingtonia gigantea, 1 to 1½ ft.	

Specimen CONIFERS, in fine condition for removal, prices and size on application.

Choice named Hardy RHODODENDRONS, SCARLET, WHITE, ROSE, and PURPLES, in every shade, fine bushy plants, 1½ to 3 feet, 4/ in. to £10 per 100

RHODODENDRON PONTICUM, varieties of various sizes, from 30s. to 100s. per 100.

AZALEAS, native & sorts, 40s. to 80s. per 100.

STANDARD and HALF-STANDARD ROSES, in choice varieties, straight stems, and good roots, 60s. to 100s. per 100.

STANDARD and DWARF APPLES, in 50 approved kinds, 50s. to 75s. per 100.

Plans and Estimates given for Laying out and Planting New Grounds.

FOREST TREES supplied and planted by the Acre, and failures replaced.

A NEW DESCRIPTIVE and PRICED CATALOGUE of Japanese Novelties and General Nursery Stock may be had on application.

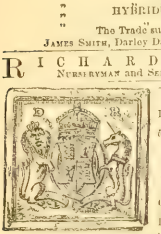
MAURICE YOUNG, Milford Nurseries, near Godalming, Surrey.

30,000 Common Laurels,
Fine bushy plants and well rooted, from 1 to 4 feet.

WM. WOOD AND SON having a large stock of the above, will be happy to give special quotations at reduced prices.
Address, Woodlands Nursery, Maresfield, near Uckfield, Sussex.

LARCH and RHODODENDRONS.
Delivered at Matlock Station. Per 1000—s. d.
LARCH, 1½ to 2 ft., good stout plants 17 0
" 20 to 30 in., " " 18 0
" 2 to 2½ ft., " " 22 0
" 2½ to 3½ feet " " 25 0
RHODODENDRON PONTICUM, bushy and well-rooted, 6 to 12 inches .. 105 0
" " 9 to 15 in., 1s. per 100 .. .. 170 0
" " 1 to 1½ ft., 2s. per 100 .. .. 220 0
" " 1½ to 2 ft., 3os. per 100 .. .. 280 0
" HYBRIDUM, 15 to 20 in., 25s. 6d. per 100 270 0
" " 1½ to 2 ft., 32s. 6d. per 100 320 0
The Trade supplied. Apply to
JAMES SMITH, Darley Dale Nurseries, near Matlock.

RICHARD SMITH,
NURSERYMAN and SEED MERCHANT, Worcester.



ROSES.—12 of the very best Standard, Perpetual, and Moss Roses for 18s.; 25 for 42s.; 100 for £5. 12 ditto Dwarf do. do. for 12s.; 50 for 42s.; 100 for 75s.
12 ditto, New Roses of 1865, for 24s.
Descriptive List on application.

FORTY ACRES of FRUIT TREES, Apples, Pears, Plums, Cherries, Peaches, Nectarines, and Apricots in every form desired for Pinetums.

DWARF-TRAINED TREES, by the Thousand, Hundred, or Dozen.
APPLES, PEARS, PLUMS, CHERRIES, PEACHES, and NECTARINES
Fine, flat, well-trained, of best quality, and true to name.

PYRAMID APPLES, PEARS, PLUMS, CHERRIES.
Beautiful Trees for Garden or Orchard Houses.

ORCHARD-HOUSE TREES, Fruiting in Pots.—Peaches, Nectarines, Apricots, Cherries, Plums, Pears, Apples, Vines, and Figs.

EVERGREENS for Ornamental Planting or Avenues, handsome, well-grown, and transplanted within the last two years. For prices of smaller sizes and quantities, see Cheaper List.

At 36s. per dozen :—
Abies alba, 5 to 7 feet
" Douglasii, 3 to 4 feet
" inverta, 4 to 5 feet
" orientalis, 2 to 2½ feet
Arbor-vitæ, American, 6 to 7 feet
" Siberian, 4 to 5 feet
Cedar, Red, 5 to 6 feet
Cryptomeria viridis, 4 to 5 feet
Cupressus Lawsoniana, 3 to 4 feet
" fragrans, 3 feet
Irish Yew, 4 to 5 feet
Juniperus thuridera, 3 to 4 feet
" Kutchensis, 3 to 4 feet
" pendula, 3 to 4 feet
" pyramidalis, 4 to 5 feet
" recurva, 3 to 4 feet
" Recurva, Pyramids, 4 to 5 feet
Pinus excelsa, 3 to 4 feet
" excelsa, 5 feet
Taxodium sempervirens, 7 to 8 ft.
Thuia Lobbii, 4 feet
" aurea, 3 feet
" compacta, 1½ to 2 feet
Thujopsis borealis, 3 feet
Wellingtonia gigantea, 2 feet

At 42s. per dozen :—
Abies Douglasii, 4 to 5 feet
" inverta, 2 to 3 feet
" orientalis, 2 to 3 feet
" pyramidalis, 2 to 3 feet
Araucaria imbricata, 2 to 2½ feet
Arbor-vitæ, Siberian, 5 to 6 feet
" American, 7 to 8 feet
Cedar, Red, 6 to 8 feet
Cupressus Knightii, 6 to 7 feet
" Lawsoniana, 1 to 1½ ft.
Juniperus thuridera, 4 to 5 feet
Pinus Cembra, 4 to 5 feet
Pinus excelsa, 6 feet
" Lambertiana, 3 to 4 feet
" Insignis, 3 to 4 feet
Thuia Lobbii, 4 to 5 feet
" compacta, 2 to 2½ feet
" aurea, 2 feet
Thujopsis borealis, 4 feet
Wellingtonia gigantea, 2 feet
Yew, Irish, 5 to 6 feet
Laurels, Portugal, 4 to 5 feet
" Colchic, 6 to 7 feet

At 60s. per dozen :—
Abies inverta, 2½ to 3 feet
" Douglasii, 3 to 4 feet
" Menziesii, 3 to 4 feet
" orientalis, 2½ to 3 feet
" pyramidalis, 3 to 4 feet
Araucaria imbricata, 2½ to 3 feet
Arbor-vitæ, Siberian, 6 to 7 feet
Cedrus Deodara, 6 feet
Cupressus Knightii, 7 to 8 feet
" Lawsoniana, 5 feet
Juniperus thuriferæ, 5 to 6 feet
" Laurels, Pyramid Portugal, 6 ft.
Pinus excelsa, 6 to 8 feet
" Lambertiana, 5 to 6 feet
" Cembra, 5 to 6 feet
Thuja japonica, 2½ to 3 feet
" aurea, 2½ feet
Taxodium sempervirens, 8 to 10 ft.
Wellingtonia gigantea, 3 feet
Yew, Irish, 6 feet

At 84s. per dozen :—
Abies Douglasii, 7 to 8 feet
" inverta, 3 to 4 feet
" Menziesii, 6 to 8 feet
" orientalis, 3 to 4 feet
Cedrus Deodara, 7 to 8 feet
Juniperus thuridera, 6 to 7 feet
Pinus excelsa, 8 to 10 feet
Taxodium sempervirens, 10 to 12ft.

Each :—
Abies Douglasii, 8 to 10 ft., 12s. 6d.
" " 10 to 12 feet, 18s.
" " 12 to 15 feet, 21s.
" inverta, 4 to 5 feet, 10s. 6d.
" " 6 feet, 21s.
Araucaria imbricata, 3 to 4 feet, 7s. 6d. to 21s.
" " 4 to 5 ft., 21s. to 42s.
Cedar of Lebanon, 8 to 10 feet, 21s.
Cedrus Deodara, 8 to 10 ft., 10s. 6d. to 21s.
Picea nobilis, 2 to 2½ feet, 10s. 6d. to 15 feet, 10s. 6d. to 21s.
Picea nobilis, 2½ to 3 feet, 21s. to 63s.
" Nordmanniana, 2½ to 4 feet, 10s. 6d. to 42s.
" " 4 to 6 feet, 42s. to 84s.
" Pinsapo, 2½ to 3½ ft., 10s. 6d. to 42s.
Pinus excelsa, 10s. 6d. to 21s.
" 12 to 15 feet, 10s. 6d.
" Lambertiana, 6 to 8 feet, 10s. 6d. to 21s.
Thuja gigantea, 5 to 6 feet, 10s. 6d.
" aurea, 3 to 4 feet, 10s. 6d.
Taxodium sempervirens, 12 to 15 feet, 10s. 6d. to 21s.
American Arbor-vitæ, for Hedges, 2½ to 4 feet, 42s. per 100.
" " " 4 to 5 feet, at 63s. "
" " " 5 to 6 feet, at 84s. "

FLOWERING and STANDARD ORNAMENTAL TREES. At 12s. per dozen :—
Ash, Mountain, 7 to 9 feet
Acacia, 7 to 9 feet
Birch, Weeping, 8 to 10 feet
Crab, Siberian, scarlet, 6 to 7 feet
" yellow, 6 to 7 feet
Chestnut, Spanish, 6 to 8 feet
Hornbeam, 7 to 8 feet
Poplar, Silver, 8 to 10 feet
" Lombardy, 9 to 10 feet
Pyrus spectabilis, 6 to 7 feet

At 18s. per dozen :—
Almond, flowering, 7 to 8 feet
Acacia, 8 to 10 feet
Ash, Mountain, 9 to 12 feet
Acer Negundo, 6 to 8 feet
Birch, 10 to 12 feet
Crab, Siberian, yellow, 7 to 8 feet
" scarlet, 7 to 8 feet
Chestnut, Spanish, 8 to 10 feet
Cytisus, 5 to 4 feet
Elm, Chichester, 8 to 10 feet
Poplar, Lombardy, 11 to 12 feet
" Silver, 8 to 12 feet
Prunus spectabilis, 7 to 8 feet
Thorn, double pink, 6 to 7 feet

At 30s. per dozen :—
Almond, flowering, 8 to 10 feet
Acer Negundo variegata, 6 to 8 ft.
Acacia, ball, 6 to 7 feet
Chestnut, scarlet, 6 to 8 feet
Cytisus in variety, 4 to 5 feet
Poplar, Silver, 12 to 15 feet
Thorns, double pink, 8 to 10 feet
Willow, Americ. Weeping, 6 to 8 ft.

RICHARD SMITH'S LIST of all the EVERGREEN FIR TRIBE, suitable for Britain, giving size, price, popular and botanical names, derivations, description, form, colour, foliage, growth, timber, use in arts, native country and soil, where, situation, soil, and other information, with copious Index of their synonymes.
Enlarged Edition, free by post for 12 postage stamps.

RICHARD SMITH'S FRUIT LIST contains a sketch of the various forms of Trees, with Directions for Cultivation, Soil, Drainage, Manure, Pruning, Lifting, Cropping, Treatment under Glass; also their synonymes, quality, size, form, skin, colour, flesh, flavour, use, growth, duration, season, price, &c.
Free by post for one stamp.

ORCHARD-HOUSE TREES, Fruiting in Pots—PEACHES, NECTARINES, APRICOTS, CHERRIES, PLUMS, PEARS, APPLES, VINES, and FIGS.
RICHARD SMITH, Nurseryman and Seed Merchant, Worcester

A RIBBON BORDER, Six Colours, Post Free, 2s. 6d. Stamps.
The selection of the above is unique, equalling Bedding Plants, at one-thirtieth the cost.

Poynter's 25s. Anglican Collections of Garden and Flower Seeds for One Year's Supply
Contains one of the above, and is altogether the best and cheapest offered. Carriage free.
☞ Useful PRICE LISTS gratis.

ROBERT H. POYNTER, SEED MERCHANT, TAUNTON.

PETER LAWSON & SON,

THE QUEEN'S SEEDSMEN,

LONDON and EDINBURGH.

FARM, VEGETABLE, and FLOWER SEEDS.

28, KING STREET, CHEAPSIDE, LONDON, E.C.

SUTTON'S

UNRIVALLED COLLECTIONS OF

GARDEN SEEDS for ONE YEAR'S SUPPLY,

CARRIAGE FREE.

SUTTON & SONS are now prepared to receive Orders for their unrivalled COLLECTIONS of GARDEN SEEDS, as under :—

A COMPLETE COLLECTION of KITCHEN GARDEN SEEDS for ONE WHOLE YEAR'S SUPPLY (with Instructions on Cultivation)	£3	3	0
Ditto, in quantities proportionately reduced	2	2	0
Ditto ditto	1	11	6
Ditto ditto	1	1	0
Ditto ditto	0	15	0
Ditto, for a SMALL GARDEN	0	10	6

Sent Carriage Free by Rail, and 5 per cent. discount allowed for cash payment. A remittance or reference requested from unknown Correspondents.

☞ *By ordering one of these Collections once a year much trouble and expense will be saved.*

Also, NATURAL GRASSES for LAWNS and MEADOWS, fine sorts of MANGEL WURZEL, TURNIP, and other AGRICULTURAL SEEDS.

SUTTON'S GENERAL ILLUSTRATED DESCRIPTIVE PRICED CATALOGUE and AMATEUR'S GUIDE is now ready, price 6*d.*, or gratis to Customers.

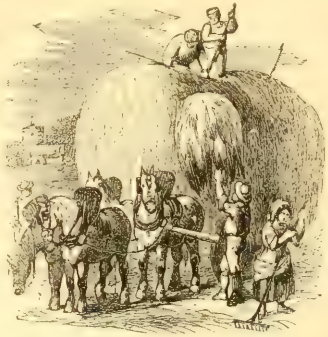
Remittances may be made by Cheques on Town or Country Bankers, or by Post Office Orders payable to
SUTTON AND SONS, ROYAL BERKSHIRE SEED ESTABLISHMENT, READING.

SUTTON'S

GRASS SEEDS FOR ALL SOILS.

Messrs. SUTTON'S GRASS SEEDS being Mixed expressly to suit the Soils for which they are required, Persons ordering have only to state the Nature of the Soil, and Acreage to be laid down, when suitable Seeds will be supplied.

SUTTON'S
GRASS and CLOVER SEEDS
FOR
PERMANENT PASTURES,
RECLAIMED MARSHES,
GOOD BLACK PEATY SOIL,
CHALKY UPLANDS,
SHEEP DOWNS,
WATER MEADOWS,
CHURCHYARDS,
CRICKET GROUNDS,
CULTIVATION with LIQUID MANURE



SUTTON'S
GRASS and CLOVER SEEDS
FOR
PERMANENT PASTURES,
PARK LANDS,
for 3 or 4 YEARS' PASTURE
HAY or SOILING,
2 YEARS' DITTO,
1 YEAR'S CROP of HAY,
FINE GARDEN LAWNS,
NEW PARK LAWNS,
BOWLING GREENS,
ORCHARDS,
RENOVATING OLD PASTURES.

Messrs. SUTTON beg to announce that their GRASS and CLOVER SEEDS, which have hitherto given such great satisfaction, are now ready for sending out. The Seeds this year have been harvested in the best possible condition, and Messrs. SUTTON respectfully request early orders, which shall meet with their best personal attention.
List of Prices of Turnip, Mangel, and other Farm Seeds, with any information required, will be sent on application.

MR. MARTIN SUTTON'S "ESSAY on PASTURES," 6*d.* post free, or Gratis to Customers.

SUTTON AND SONS, ROYAL BERKSHIRE SEED ESTABLISHMENT, READING.

Spring Planting.

PETER LAWSON AND SON are prepared to execute orders for every description of NURSERY STOCK suitable for FOREST and ORNAMENTAL PLANTATIONS.

To prevent disappointment, it is recommended that requirements for SPRING PLANTING should be ordered as soon as possible, and the plants may be reserved in the Nurseries until required. If large quantities of LARCH, SCOTCH FIR, CORSICAN PINE, and other leading TREES are required, PETER LAWSON & SON will be glad to submit special offers when desired.

Edinburgh and London.

GEORGE DAVISON, NURSERYMAN and SEEDSMAN, Hereford, offers strong Transplanted QUICK, 1 years, at 20s. per 1000; LARCH do., 15s to 20s per 1000; fine CONIFERS, from 2 to 5 feet, 24s. per dozen; HORSE CHESTNUTS, 9 to 10 feet; OAK, COMMON and TURKEY, 9 to 12 feet; MAPLE, 10 to 12 feet; MOUNTAIN ASH, 10 to 12 feet; BIRCH, do.; HORNBEAM, do.; BEECH, 8 feet. The above are well suited for Avenues.

CATALOGUES of Seeds and Nursery Stock on application.

Tansley Nurseries, near Matlock, Derbyshire.

JOSEPH SMITH, SEN., invites Planters and the Trade to inspect his Nursery of 80 acres of high land. The soil is of a fibrous nature, and the plants take up with excellent roots, such as to ensure the best success in their removal. The Nursery contains many Hundred Thousands of RHODODENDRONS, COMMON and PORTUGAL LAURELS, BOX, BROOMS, BERBERIS, HOLLIES, PRIVETS, YEWS, &c. The FOREST TREES are very extensive, Of all the leading kinds there are 15 Acres of LARCHES, of different sizes, and others in proportion. Prices moderate, which can be had on application as above.

To Noblemen and Gentlemen about to be engaged in Planting.

DICKSONS AND CO., NURSERYMEN, SEEDSMEN, and FLORISTS, Waterloo Place, Edinburgh, have this season a large and very healthy stock of Seedling and Transplanted LARCH (native and Tyrolese), True Native Highland SCOTCH FIR, Spruce, Oak, Plane or Sycamore, Spanish Chestnut, Alder, Ash, Elm, Thorn Quick, Beech, Evergreen Privet, Poplar, Willow, &c., as well as all other kinds of Forest and Ornamental Trees and Shrubs, Fruit Trees, Roses, Greenhouse and Stove Plants, Herbaceous and Alpine Plants, Ferns, &c.

Their Forest Trees, which are grown on exposed ground, are this season finely ripened, and can be sent with perfect safety to any part of the kingdom.

Samples and prices will be sent free on application.

Nursery Stock.

JOHN HARRISON, Darlington, has a large stock of 2, 3, and 4 feet Transplanted LARCH, NATIVE HIGHLAND SCOTCH FIR, BLACK AUSTRIAN PINE, SILVER FIR, and other Forest and Ornamental Trees and Shrubs, Cedrus Deodara from 3 to 15 feet, Abies Douglasii 6 to 8 feet, Pinus excelsa 3 to 15 feet, Araucaria imbricata 2 to 6 feet. All removed last spring, and grown on exposed, strong soil. Prices exceedingly low, on application Several thousands of fine trained FRUIT TREES and Pyramidal Pears, Plums, Apples, Cherries, &c.

JOHN MACFARLANE, NURSERYMAN and SEEDSMAN, Alnwick, Northumberland, has about 150,000 splendid LARCH FIR, from 3 to 5 feet, at 12s. 6d. per 1000; Common HOLLY, 11 to 2 feet, bushy, 16s. per 100; Common YEW, 2½ to 3 feet, bushy, 30s. per 100. The above prices are to the Trade only.

Delivered free on Rail.

Evergreen Hedges.

THUJA PLICATA or WAREANA (the Siberian Arbor-vitæ).—Average height 2 feet, 10s. per 100, 80s. per 1000, Ditto 1 foot, 5s. per 100, 40s. per 1000. This species forms the most compact and beautiful of all evergreen hedges.

Carriage paid to London.

THOS. RIVERS & SON, Nurseries, Sawbridgeworth.

Strong Thorns, Oaks, Native Scotch, Larch, & Spruce.

CHIVAS AND WEAVER, Chester, are still holders of extra strong TRANSPLANTED QUICKS, ENGLISH OAKS, extra fine, 2½ to 4½ feet; NATIVE SCOTCH, very fine, 1½ to 3 feet; LARCH, very stout, 1½ to 3½ feet; and SPRUCE, 1 to 2½ feet. Also strong Transplanted APPLE STOCKS, ready for Grafting.

Prices of the whole of the above, which are greatly reduced, will be forwarded on application.

FOX or GAME COVERT.—Gentlemen planting or refreshing their Preserves can be supplied with the undermentioned favourite Plants:—ENGLISH GORSE or FURZE, 1-year, 5s. per 1000; 2-years, very strong, 20s. per 1000. Evergreen Berberry, or Mahonia aquifolia, 1 to 2 feet, strong transplanted, 25s. per 100, or £10 per 1000.

LISTS of all kinds of FOREST and FRUIT TREES, SHRUBS, and CONIFERS, sent on application.

W. MALLE & SONS, The Nurseries, Bristol.

SPLENDID FRESH-IMPORTED CALIFORNIAN SEEDS, warranted growth of 1865.

WELLINGTONIA GIGANTEA, 1000 seeds, 6s.; 5000 seeds, 25s.; 1 oz. (about 9000 seeds), 5s. 6d.; 4 oz., 84s.

PINUS LAMBERTIANA (True), 50s. per lb.; 15s. per 4 oz.; or 6s. per oz.

All of first-rate quality. Larger quantities on application. Free in London or Leith. Terms cash. The above can also be obtained on the same terms of MR. W. G. TENNANT, Leith.

PETER SMITH & Co., Seed Merchants, Hamburgh.

SIBERIAN TREES for LAWNS.—The following 3 species of CARAGANA, &c., are grafted on straight stems of Caragana arborescens, about 5 feet in height; they bloom freely in Spring, and are most ornamental:—

	Each—s. d.
CARAGANA ARENARIA	2 6
,, CHAMLAGU	2 6
,, FRUTESCENS (Weeping)	2 6
,, JUBATA (rare)	3 6
CALOPHACA WOLGARICA	2 6
HALIMODENDRON ARGENTEUM	3 6
CARAGANA ARBORESCENS, 6 to 8 feet ..	1 6

Carriage paid to London.

THOS. RIVERS & SON, Nurseries, Sawbridgeworth.

Leaf-mould and Leaves.

TENDERS are requested for the PURCHASE of 500 LOADS of good LEAF-MOULD, also a large quantity of LEAVES, lying in the Royal Gardens, Kew.

Tenders may be sent for large or small quantities.

Royal Gardens, Kew, Feb. 8, 1866. JOHN SMITH, Curator.

EDWARD SHENTON, Botanic Nurseries, Biggleswade, Beds

Bull's new MIMULUS DUPLEX. 12 sorts, 12s. to 18s. per doz.

New variegated VERBENA (POPULAR), a splendid flower, 12s. to 18s. per doz.

ASPARAGUS, 3-year, 3s. 6d. per 100

RED and GREEN CABBAGE plants, 3s. 6d. per 1000 GREEN: RED, 6s. per 1000.

H. AND R. STIRZAKER offer 500,000 LARCH, 2 to 3 feet, 3 years out, but planted over again last spring; there is no fear of loss in planting, these having such good roots, 1,000,000, also 2 years transplanted, 2 to 3 feet; SCOTCH, SPRUCE, and SILVER FIR, extra transplanted, from 1 to 3 feet; AUSTRIAN and WEYMOUTH PINES, 10 to 20; ALDER, BEECH, ELM, PRIVET EVERGREEN, SYCAMORE, WILLOW, DUNP, ENGLISH OAK, ENGLISH and TURKEY CHESTNUT, HORSE, various sizes, from 1½ to 6 feet; YEW, ENGLISH and IRISH, 6 to 9 furnished plants, moved last season, from 2 to 6 feet; PORTUGAL LAURELS, fine plants, 4 feet. The above can be offered in great quantities at most reasonable prices.

Skerton Nurseries, Lancaster.

Surplus Stock.

NEW and GENUINE WHITE SPANISH ONION, 1s. 6d. per lb.

NEW and GENUINE BROWN GLOBE ONION, 2s. per lb.

Terms Cash. A remittance must accompany all orders from unknown Correspondents.

Penns. 6d.; Seed Merchant and Grower, Bugbrooke.

IVERY'S NONSUCH LETTUCE.—The best Summer variety ever offered, 1s per packet, sealed with initials "W. I." See List of Trade purchasers in *Gardeners' Chronicle*, Jan. 27

N.B. CATALOGUES of choicest Seeds can be had post free on application.

The Trade supplied with superior MUSHROOM SPAWN.

WILLIAM IVERY, Hanover Nursery, Peckham, S.E.

Dickson's "First and Best" Early Pea.

FRANCIS AND ARTHUR DICKSON AND SONS' FIRST and BEST EARLY PEA having proved most satisfactory, and being pronounced by competent judges (see Testimonials below), in accordance with the fact ascertained by themselves by many years trial, to be the best new Early Pea (before it for earliness, prolific nature, and persistent character, is now being sent out from a large bulk, which they have grown to meet the great demand, in *sealed* and *labelled* packages (none others genuine) at 2s. 6d. per quart.

TESTIMONIALS:—

From Mr. J. H. MASON, *Staverton Castle Gardens, Staffordshire*. See *Gardeners' Chronicle and Agricultural Gazette*, July 29, 1865, p. 706.

"Dickson's First and Best as decidedly the best Early Pea I have ever yet grown. It is a good cropper, with good-sized WELL-FILLED pods, and several gatherings can be obtained from it."

Further opinions of Mr. MASON, *Staverton Castle Gardens*. See *Gardeners' Chronicle and Agricultural Gazette*, July 29, 1865, p. 700.

"Dickson's First and Best Pea grows taller than these (Carter's First Crop and Sutton's Emperor), is of more vigorous habit, and produces a larger quantity of pods, and while the average number of Peas in the two mentioned was from 4 to 5 in a pod, that of Dickson's was from 5 to 7. Carter's, and Sutton's, and Sutton's Peas yield their entire crop in about two pickings, while from Dickson's four good gatherings can be obtained. The last named kind was remarkable, even in character, with it among Sutton's and Carter's lot of straglers reared their heads, and were, as 'rogues' in Peas generally are, later in maturity."

From Mr. J. C. MESSELL, *Hanley House, Croydon*. See *Gardeners' Chronicle and Agricultural Gazette*, June 10, 1865, p. 532.

"I have not seen any variety to surpass in productiveness of Dickson's First and Best Pea, a variety invaluable for its earliness.

From Mr. WM. LANDON, *Downton Castle Gardens, near Ludlow*. See *Gardeners' Chronicle and Agricultural Gazette*, July 22, 1865, p. 676.

"I consider Messrs. Dickson's First and Best, Dillistone's Early, and Sunster's No. 1, and I found the first to be fully twice as early as either of the others. Its quality is excellent, it is very hardy, of strong growth, and pods in abundance from top to bottom. I gathered a much larger crop from the First and Best than I did from either of the others, and in future I shall sow it only for my first crop."

From Mr. ALEXANDER DEAN, *Maidwell, Southampton*. See *Gardeners' Chronicle and Agricultural Gazette*, July 1, 1865, p. 603

"I sowed the Messrs. Dickson's First and Best, Dillistone's early, and Sunster's No. 1, and I found the first to be fully twice as early as either of the others. Its quality is excellent, it is very hardy, of strong growth, and pods in abundance from top to bottom. I gathered a much larger crop from the First and Best than I did from either of the others, and in future I shall sow it only for my first crop."

From Mr. J. VARTEN, *Foster Nursery, Chelsea*.

See *Gardeners' Chronicle and Agricultural Gazette*, July 29, 1865, p. 700.

"I have much pleasure in stating that the opinion I have also expressed of Dickson's First and Best Pea, after the trials I have made very carefully trials of all, I have put the following as the result of my experience: Here I place the names of all the new Early Peas, time when sowed, and dates of first gathering:—Dickson's First and Best was very good and true, and in my opinion I the *best* new Early Pea sent out this season."

From Mr. JAMES MCHATTIE, *Seedsman, Chester*.

See *Gardeners' Chronicle and Agricultural Gazette*, Aug. 19, 1865, p. 773.

"I have no hesitation in endorsing Mr Veitch's opinion that it (Dickson's First and Best) is the best new Early Pea yet sent out."

Several letters equally complimentary to our "First and Best" Pea have been addressed to us from first-class Gardeners and others, but we think the extracts we have quoted from the *Gardeners' Chronicle* sufficient.

FRANCIS & ARTHUR DICKSON & SONS' DESCRIPTIVE and PRICED CATALOGUE of VEGETABLE and FLOWER SEEDS, with ample Cultural Hints, and much useful information, will be sent gratis and post free on application. Their Seeds are all grown by themselves, or obtained from the best sources, and are the most select stocks in cultivation.

FRANCIS & ARTHUR DICKSON & SONS, The Old Established Seed Warehouse, 100, Eastgate Street, Chester.

*** Seeds of £2 value (Grain excepted) delivered free to any Railway Station.

GENUINE SEEDS.

JAMES VEITCH

BEGS TO ANNOUNCE THAT HIS

CATALOGUE OF KITCHEN GARDEN AND FLOWER SEEDS FOR 1866,

WITH LIST OF IMPLEMENTS AND OTHER GARDEN REQUISITES,

Is now Published, and will be forwarded Free on application.

J. V. devoting his personal attention to this department of his business, can warrant his Seeds TRUE to NAME, and of the most genuine description.

The CATALOGUE will be found to contain all NEW VEGETABLE and FLOWER SEEDS of merit, in addition to those kinds in general cultivation.

THE ROYAL EXOTIC NURSERY, KING'S ROAD, CHELSEA, LONDON, S.W.

THE MAGNIFICENT

JAPAN LILIES,

LILIUM LANCIFOLIUM ALBUM, ROSEUM, and RUBRUM,

For planting in Rhododendron Beds, Conservatories, &c., 6s., 9s., and 12s. per doz.; 40s., 50s., 60s., 70s., and 80s. per 100.

Splendid named GLADIOLI for exhibition, &c., per dozen, 3s. 6d., 5s. 6d., 7s. 6d., 10s. 6d., 12s., 15s., 18s., 24s., and 30s.

MIXED GLADIOLI, for large effective masses, per 100, 10s. 6d., 15s., and 21s.

STANDEN'S GARDENER'S and AMATEUR'S FRIEND MANURE. A compound of the richest fertilising phosphates known.

BARR & SUGDEN.

THE METROPOLITAN.

SEED BULB & PLANT WAREHOUSE

12, KING STREET, COVENT GARDEN, W.C.

Orders amounting to 21s. sent Carriage Paid.

THE MAGNIFICENT

GOLDEN-RAYED LILY of JAPAN, LILIUM AURATUM,

5s. 6d., 7s. 6d., and 10s. 6d.

Those who are preparing Plants to exhibit at the International Botanical and Horticultural Congress should have SUNDRIES, GARDENERS' and AMATEUR'S FRIEND MANURE. A compound of the richest fertilising phosphates known.

No. 1, for Hard-wooded Stove and Greenhouse Plants, Fruit Trees, Roses, Vegetables and Lawns. Sample canisters, 1s. and 2s. 6d.; and bags, 5s. 6d., 10s. 6d., and 21s.

No. 2, for Soft-wooded Plants. Sample canisters, 1s. and 2s. 6d.; and bags, 5s. 6d., 10s. 6d., and 21s.

The Manure is laid on the surface dry, and watered in.

For SPECIALITIES in VEGETABLE SEEDS, see our large Advertisement, p. 72.

				Carriage paid. NEW SEEDS.	*Carriage paid.*
No. 1.	COMPLETE COLLECTIONS of VEGETABLE SEEDS, for One Year's Supply ..		.. ..	10s. 6d.	No. 1. COLLECTION of FLOWER SEEDS .. .. 3s. 6d.
No. 2.	Ditto	ditto	ditto	15 6	No. 2. Ditto ditto ditto 5 6
No. 3.	Ditto	ditto	ditto	21 0	No. 3. Ditto ditto ditto 7 6
No. 4.	Ditto	ditto	ditto	30 0	No. 4. Ditto ditto ditto 10 6
No. 5.	Ditto	ditto	ditto	42 0	No. 5. Ditto ditto ditto 15 0
No. 6.	Ditto	ditto	ditto	63 0	No. 6. Ditto ditto ditto 21 0
No. 7.	Ditto	ditto	ditto	84 0	No. 7. Ditto ditto ditto 30 0
No. 8.	Ditto	ditto	ditto	105 0	No. 8. Ditto ditto ditto 42 0
					No. 9. Ditto ditto ditto 63 0

There are still on hand a few Copies of our DESCRIPTIVE PRICED LIST of SEEDS for the FLOWER and KITCHEN GARDEN, and which can be had by intending purchasers Free and Post Paid.

BARR AND SUGDEN, 12, KING STREET, COVENT GARDEN, W.C.

GEORGE SMITH

BEGS TO CALL ATTENTION TO HIS FIRST-CLASS

SEEDLING NOSEGAY and ZONALE GERANIUMS, also SEEDLING FUCHSIAS,

WHICH HE ESPECIALLY RECOMMENDS, BELIEVING THEY WILL GIVE THE HIGHEST SATISFACTION TO ALL CULTIVATORS, VIZ. :—

NOSEGAY GERANIUM, LE GRAND (G. Smith).

Flower of immense size, colour of brilliant crimson scarlet, the centre shaded with purple, new in colour, fine habit; its enormous trusses resemble in size the flowers of the Hydrangea, stout stem, neat foliage. The plant continues blooming from the first week in May until November, being without doubt the finest Nosegay Geranium ever offered. Awarded a First-class Certificate at the Royal Horticultural Society; First-class Certificate from the Royal Botanic Society, Regent's Park; also a First-class Certificate from the United Horticultural Society.

Plants 7s. 6d. each.

Where 6 are ordered, 7 will be sent, and where 12 are ordered, 15 will be forwarded. Usual Discount to the Trade.

OPINIONS OF THE PRESS.

Report from the Horticultural Proceedings," June 27, 1865.

"LE GRAND (Nosegay) a beautiful kind, with globular crimson scarlet flowers, of large size and great substance."

From the "Gardeners' Weekly Magazine," July, 1865

"LE GRAND, an immense telling variety."

From the *Gardeners' Chronicle*, October 28, 1865

"I would advise cultivators to procure as early as possible when sent out, Le Grand (Smith's), a fine crimson purple Nosegay, bearing immense trusses; a fine pot variety."

From the "Florist," Nov. 1, 1865

"One of the 'gems' submitted to the Floral Committee was a Nosegay Pelargonium named Le Grand, from the veteran Mr George Smith, of Tollington Nursery, Hornsey Road. The flowers are bright orange scarlet shaded with purple, remarkably stout and well formed for a flower of this section, a large and very striking truss, the habit dwarf and full."

From the "Gardeners' Weekly Magazine," Dec. 23, 1865.

"If anyone wants the utmost perfection attainable in a variety having neither broad petals nor an unbroken circle, let him take Mr. GEORGE SMITH's Le Grand, which is one of the very best things ever offered from the repository for floral treasures at Tollington Nursery."

NOSEGAY GERANIUM, "LE GRAND." From a Woodcut by Mr. DAMMAN, in the "Gardeners' Weekly Magazine."

OPINIONS OF THE PRESS.

The "Gardeners' Weekly Magazine" for November 18, 1865, gives a woodcut, together with the following extract:—"I was wanting a model for a truss, and I hesitated between Cybister and Lady Rokeby, for those two gave the finest individual trusses of any in my lot during the past season. When I had made several measurements and sketches, the matter was settled by Le Grand, which loomed on the horizon like the rising sun, and put the stars and planets, which till then were so bright, into a mere haze of greyness in the presence of this advancing glory. I was so anxious to establish a model for judging trusses that I got Mr. Damman to make a finished drawing of Le Grand, which is a Seedling of GEORGE SMITH's, of Tollington Nursery. It was shown at Regent's Park in July, and of course took the highest honours that could be awarded it, and it will, I suppose, be sent out in the Spring of 1866. I call attention to this in the present connection, because while it is a true Nosegay, as may be seen at a glance, it presents us with the finest truss that has ever yet been seen on a Nosegay, or any other Geranium. The form of the truss is that of an umbrella, 9 inches over, as symmetrical as a geometric drawing, and so solid to the centre that you cannot see the flowers on the other side, which is a point of some importance. If you can see through a truss you must inevitably see all the shrivelled scraps of dead petals that collect in the centre, but if it is well faced up through an excess of pips, it continually covers its own nakedness until sheer age brings its glory to an end. Then the sun sets, and the stars appear again; but while Le Grand shines, very few of the present Nosegays will be visible in its vicinity. As to its general character beyond the points here noticed, you will find them enumerated in reports of Royal Botanic and United Horticultural Shows, for I did not fail to place on record its several claims to the respect of cultivators."

New Zonale Geraniums.

CHIEFTAIN (G. Smith).—Awarded a First-class Certificate by the Royal Horticultural Society.
G. S. recommends the following as one of the most brilliant and beautiful Zonales yet introduced. 5s.
Report from *Proceedings of Royal Horticultural Society*.—"CHIEFTAIN, a Zonale variety, with bright orange scarlet flowers, large, and of excellent form, the leaves darkly zoned; a very effective flower."

CHRISTABEL (G. Smith).—Flowers large and of fine substance, well defined, colour pure white, with deep rosy pink centre; a most pleasing and desirable variety. 5s.
The following five varieties were raised by Mr. D. Wetson, and two all flowers of great merit; they have much received First-class Certificates for their general fine qualities:—

EXHIBITOR.—Dark rosy salmon, of good form and habit, very free. Awarded a First-class Certificate by the Royal Botanic Society. 5s.

GLADIATEUR.—Rich rosy salmon, large trusses; one of the finest of its class, extra. Awarded a First-class Certificate by the Royal Botanic Society. 7s. 6d.

GREAT EASTERN.—Colour orange scarlet, truss large and compact, excellent habit. Awarded a First-class Certificate by the Royal Botanic Society. 5s.

SIR R. PEEL. A free habited Zonale variety, having the leaves marked with a faint green zone; fine trusses of bright scarlet, large and well formed; one of the finest free flowering varieties yet offered. Received a First-class Certificate from the Royal Horticultural Society, also a First-class Certificate from the Royal Botanic Society. 7s. 6d.

PINK PERFECTION.—Silvery pink, the upper petals white, very fine and free. Received a First-class Certificate from the Royal Botanic Society. 5s.

New Fuchsias.

DREADNOUGHT (G. Smith).—Sepals broad, waxy, and nicely reflexed, corolla rich violet, very large and compact, good habit, and fine foliage. A free blooming variety, the finest of the double kinds. 10s. 6d.

QUEEN of WHITES (G. Smith).—Tube and sepals coral red, the latter broad and well reflexed; corolla pure white, large and full, of fine compact habit, and a desirable variety. 10s. 6d.

G. S. will be prepared to send out after the 24th of April, in good Plants, the following NOSEGAY and ZONALE GERANIUMS and SEEDLING FUCHSIAS.

Early Orders are respectfully solicited.

TOLLINGTON NURSERY, HORNSEY ROAD, ISLINGTON, LONDON, N.

Choice Ranunculus Seed.

C. TYSO, FLORIST, Wallingford, succeeded last season in saving some unusually fine SEED from RANUNCULUSES of the finest quality. The present is the season for sowing. Packets, 2s. 6d. and 5s. each, with directions, post free. Also, PRICED CATALOGUE for one stamp.

To the Trade—Golden Chain Geranium.

HUSSEY AND SON can supply fine Autumn-struck Plants of the above, from store pots, at 14s. per 100. Also DAPHNE CNEORUM, fine plants, well set with flower buds, 6s. per dozen, 40s. per 100.

Mile End Nursery, Eaton, Norwich.

GLADIOLI, GLADIOLI, GLADIOLI.—Collections, including all the finest varieties in cultivation, from 10s. 6d. to 63s.

All orders amounting to 21s. and upwards carriage paid.

BUTLER & MCCULLOCH, Covent Garden Market, W.C.

Gladiolus Bowiensis.

THOMAS BARNES offers the above in strong flowering bulbs, by the 100 and 1000. Prices, which are very low, may be had on application.

Dane Croft Nursery, Stowmarket.

Amaranthus cruentus grandiflorus.

SUTTON AND SONS confidently recommend the above as one of the most showy hardy Annuals. The flower is a rich crimson, and it has a most elegant and graceful appearance.

Height 4 feet. Price 6*d.* per packet, post free.

SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

The Gardeners' Chronicle.

SATURDAY, FEBRUARY 10, 1866.

MEETINGS FOR THE ENSUING WEEK.

TUESDAY,	Feb. 13	{Royal Horticultural (Anniversary), at South Kensington .. .. Zoological	3 P.M. 8½ P.M.
WEDNESDAY,	— 14	Microscopical (Anniversary)	8 P.M.
THURSDAY,	— 15	Linnean	8 P.M.
SATURDAY,	— 17	Royal Horticultural (Weekly Show), at South Kensington	2 P.M.

WHEN our foreign friends visit us next May, as we hope they will do in great numbers, we doubt not that we shall be able to show them some "products of horticulture" of which we need not be ashamed: but while we have little fear for the credit of British horticulture as manifested by its results, we confess to an uneasy feeling when we contrast their scientific INSTITUTIONS for INSTRUCTING GARDENERS in the theory as well as the practice of their art, with anything we do in this way. Where are our schools for instructing the young gardener in the elements of Botany, of Vegetable Physiology, of Physics, and other sciences connected with his pursuit? Where can he learn the principles involved in the pruning of fruit trees, in the forcing of flowers, in the production of hybrids, or in the numerous operations he is called on daily to practise? To these questions we cannot at present give a satisfactory reply. We know of course that the young gardener may often derive the most valuable information from his superior, that he has often access to books, and that in some few instances lectures are given on matters interesting to him, but still we have nothing like the organised courses of instruction which the French and Belgian gardeners have. And why not? If a man set up as an architect, a civil engineer, or a doctor, with only the practical information he had derived from the master to whom he had been articled, should we not estimate such a man at a very low rate?

It is time we did something to remedy this state of things, and we therefore look forward with much interest to the Education scheme of the Royal Horticultural Society. Very varied opinions exist as to this proposal, as may be seen by referring to our own columns. Some seem afraid that the scheme will tend to develop a kid-glove fraternity of "students" rather than a race of intelligent gardeners—men well grounded in the principles of their art, and able to apply them practically. Others think the Society should not only put men in the way of advancing themselves by affording them a sound education, but should offer a larger amount of pecuniary remuneration to their pupils for their labour, and should secure better pay for them when they go into the world. If the Society were like a rich Paterfamilias, who could afford not only to educate his sons, but to buy them fat livings, lucrative partnerships, and such like, this would be all very well, but we rather look upon the Society as exercising in this matter the functions of a College. No one would expect a College to educate and examine its pupils, and feed and clothe them at the same time, at its own cost; and if it gave anything beyond educational advantages to its inmates, it would be simply in the form of exhibitions or scholarships to the most deserving of its alumni, certainly not to all. Again, no one would expect the Universities when they sent out a man with the honours of a double-first or of a senior wrangler, to dictate to the employers of so distinguished a scholar the rate of payment to be awarded to him. The curate gets his scanty stipend, the barrister his slowly won fee, the physician his honorarium, without any direct reference to the status he may have held at college. That gardeners in the best sense of the term, not mere garden labourers, are underpaid, is undeniable. It is equally undeniable that their attainments, and the multifarious requirements expected from them, are such as to entitle them to a higher rate of payment, to a better class of residence, and to a higher position altogether than they generally get; but this is a matter towards the rectification of which the Horticultural Society can do comparatively little. The personal qualifications of the individual, duly attested by competent authority, will in this as in most other cases be the best security for his attaining his proper position among his fellows, and his fitting social rank.

NOW that the GROWTH OF PLANTS IN LIVING ROOMS is so common an occurrence, and one attended by so much pure delight, the following communication with which we have been favoured by Sir WALTER TREVELYAN, will be read with interest.

DECANDOLLE held that the small proportion of noxious ingredients that exists in so many articles of vegetable food was by no means to be considered as an unmixed evil—that it might indeed serve as a condiment and facilitate the digestion of the more important substances; so perchance a small amount of carbonic acid gas may be beneficial in the way mentioned by Sir WALTER:—

"Some time ago, thinking that carbonic acid gas might be an active agent in the promotion of sleep, I looked into various authors on the subject, but could not find any allusion to what may perhaps prove an important fact.

"The sedative nature of this gas, as shown in producing drowsiness, has been more or less felt or observed by most persons, when it has been generated by the human lungs in crowded or ill-ventilated rooms.

"With a majority of animals in a state of Nature, sleep comes on about the time when the development of carbonic acid gas from growing vegetation commences, at or soon after sunset; and it relaxes its hold about sunrise, when it ceases, and that of the stimulant, oxygen, succeeds, and rouses into action their nervous and muscular system.

"This applies principally to herbivorous quadrupeds and birds. Those carnivora which are constituted to roam at night in search of prey, resort during the day to deep and narrow caverns, in the recesses of which the air must soon be vitiated by their respiration, and thus be adapted to promote their sleep.

"So that, instead of being a gas which should always be avoided, carbonic acid, however deleterious in large quantities, may serve an important and beneficial purpose in the life of man, as of terrestrial animals in general.

"The presence of vegetation in or near our sleeping apartments, which has generally been deprecated, may be favourable to the promotion of healthy sleep, and only require to be avoided as deleterious, when connected with imperfect ventilation, a damp atmosphere, or with exhalations arising from organic decay and the consequent evolution of sulphuretted or phosphuretted hydrogen.

"That a mixture of the air with carbonic acid gas may be essential for healthy sleep, might indeed almost be inferred, from the fact that most animals, including man, when instinctively composing themselves for sleep, do so, not only in a position that gives the greatest ease and relaxation to the muscles, but at the same time they place the head so as to favour the accumulation of that gas about it, and consequently its inhalation.

"The head of man, when at rest, generally lies low, on a soft and depressed pillow, those of most quadrupeds couched between their paws, and those of birds nestled among the feathers of their backs or wings; so that, in all these cases, besides the normal nocturnal dilution of the air with carbonic acid gas, that part of it which is breathed becomes necessarily, at every inspiration, still further mixed with a portion of what has been already discharged from the lungs, much of which, from the low and confined position of the mouth and nostrils, must be inhaled again; whereas from the generally erect, or more elevated position of the head during waking hours, and from the great specific gravity of the carbonic acid gas expired, very little of it can mix with the fresh air that is then inspired."

—— WE have to announce the death of the DIRECTOR-GENERAL of the Royal Gardens at Potsdam, near Berlin, Dr. PETER JOSEPH LENNÉ, which took place on the morning of the 23d ult. Germany loses in him one of her best landscape gardeners, in the estimation of some superior even to Prince PÜCKLER. He was born at Bonn in 1789, and in 1814 obtained employment at the Court in Vienna. In 1816 he was called to Potsdam to lay out a garden for Prince HARDENBERG, which he did with so much taste that it soon throught him into public notice, and procured for him permanent Government employment. The capital of Prussia, and the Royal residences in the neighbourhood, situated as they all are in a sandy uninteresting district, owe much of their present cheerful aspect to the skill which LENNÉ brought to bear upon them: though it should not be overlooked that it was not LENNÉ, but the late FRED. OTTO (father of the Curator of the Hamburgh Gardens), who planted the first square in Berlin. We hold a landscape gardener immeasurably superior to a landscape painter. The difficulties of throwing a landscape on canvas are mere child's play in comparison with those of converting an unattractive wilderness into a cheerful landscape. The painter can judge at once of the effect of his groupings and colouring, and alter when he has committed a mistake; but the landscape gardener has no such advantage. His paintbox is the arboretum and fruticetum; and soil, situation, and circumstances of every description have to be taken into consideration before he can touch it. The habit of growth of every plant employed must ever be before his mind, and the question of expense never be lost sight of, for his flights of fancy, unlike those of the painter, cannot be gratified merely by adding a few more inches of canvas or a little more paint. When at last the great transformation scene commences, he has to make up his mind to bear patiently the criticism of those too ignorant to realise the effects at which he aims. But all his anxiety, plodding, and patience, are amply repaid when at last the creations of a true landscape gardener become sufficiently tangible to be capable of appreciation by the general public. LENNÉ, in his green old age, reaped the full benefit of all this; the Government and people heaped honours and distinctions upon him. In 1848 a marble bust of him was placed in the Royal Gardens of Sans Souci, and one of the streets of Berlin is named after him. Amongst ourselves his memory is preserved by a pretty genus of Leguminosæ, of which one species, Lennea rubinioides, is an inmate of gardens.

—— Alluding to the scarcity of FORCED FLOWERS IN PARIS at this season, owing to the dry summer of 1865, "L'Horticulteur Français" says that flowers have met with serious rivals in the form of sugar-plums and Turnips! "In the practised hands of the market denizens the homely Turnip is transformed into charming-looking flowers. OVID did not foresee this metamorphosis, and ALFRED DE MUSSET scarcely thought that

'De presser tendrement un navet sur son cœur'

would cease to be bitterly ironical. Factitious Camellias are made so successfully in this way, that even bachelors in science might easily be deceived. The Beet-root also becomes transformed into Camellia Donckelaari and C. reticulata, and the variegated Beet produces charming flowers of Camellia pomponia variegata. These Turnip and Beet flowers are tied on the ends of the branches of young Oleanders and Portugal Laurels, which resemble the Camellia pretty accurately when seen at a distance."

—— The Vienna papers speak in terms of high praise about a BOUQUET which the Empress of AUSTRIA had in her hands a few evenings ago, and in which every petal of the Camellias had a diamond attached to it in imitation of a dewdrop. The effect is said to have been very striking, and it is hinted that bouquets of this description will now come into fashion!

—— M. LIERVAL, in the current number of the "Horticulteur Français," describes the following method of raising CUTTINGS of PELARGONIUMS in spring, so as to obviate the necessity of keeping so many stock plants through the winter. A shelf is placed in the front of the greenhouse over the hot-water pipes, so that the temperature attains to 10° or 12° Centigrade (50°—54° F.); on this shelf a layer of Moss is spread to a depth of 5 or 6 centimetres (about 2 inches); this is again covered by a layer of light soil of about 1 centimetre in thickness. In the beginning of February the stock plants are allowed to grow, and as soon as the buds are developed, they are removed with a small portion of the branch attached to them. The cuttings thus made are placed in the heated soil, which is kept constantly moist. After five or six days the roots are formed, when the cuttings are put into small pots and placed on a hot-bed, in frames, as close to the glass as possible. Eight or ten days afterwards fresh roots are formed, the cuttings are repotted, and put back in the frame. When necessary the tops are pinched off, so as to obtain closely branched plants.

—— The Council of the ROYAL HORTICULTURAL SOCIETY have given notice that they will propose to the Fellows the following changes in their body, at the ensuing Anniversary meeting, which is to take place on Tuesday next, the 13th inst. JOHN J. BLANDY, Esq., JOHN KELK, Esq., and Major TREVOR CLARK to retire, in favour of the Viscount SANDON, the Right Hon. W. COWPER, M.P., and SIGISMUND RUCKER, Esq., proposed as new members; GEORGE F. WILSON, Esq., to replace Mr. KELK as Treasurer;

and Lieut.-Col. SCOTT, R.E., to replace Mr. WILSON SAUNDERS as Secretary. We trust the latter change may not involve the loss to the Society of the active services of Mr. SAUNDERS, which have always been of the greatest advantage to the cause of Horticulture, of which he is a most liberal patron.

—— The *Revue Horticole*, in noticing the remarks of Prof. REICHENBACH on the ARRANGEMENT OF FLOWER SHOWS, published by us at p. 51, considers that although the Professor may have exaggerated the inconvenience of the continental method, there is yet much justice in his remarks. The object of a flower show, says our French contemporary, is to recompense the labours of horticulturists, and it should be so arranged as to display fully the degree of perfection to which they have attained, and this aim should not be sacrificed for the sake of pleasing the public taste.

—— We believe the Superintendent of the CHISWICK GARDEN of the Royal Horticultural Society is now prepared to receive applications from candidates for admission to the garden as Students. The conditions to be complied with are these :—The student is to obtain the written recommendation of a Fellow ; he must be at least 20 years of age ; have good health ; and have been three years in good gardens, of which one whole year must have been spent in one garden ; he must bear a good character ; and write a good hand, spell well, and have a fair knowledge of arithmetic. The wages, as at present fixed by the Council, are 12*s.* per week, which they intend to supplement by giving rewards for meritorious practical work.

—— In a paper recently read before the French Academy of Sciences, by M. THEM. LESTIBOUDOIS on the SPINES AND THORNS OF PLANTS, the writer endeavoured to show that Thorns are of two kinds, viz., those continuous with the deeper tissues of the plant, and those which are merely superficial. The former he divided into epidermic, epidermidic, parenchymatic, and liberian. The second group, which especially formed the subject of the paper, may, he stated, be produced in the following manner :—By a single formation, commencing with the bark which bears them ; by a single formation, subsequent to the development of the bark which supports them ; or by successive formations, in which case they may remain aculeiform, or may become tubercular, or even confounded with the bark on which they rest.

EXTRACTS FROM THE JOURNAL
OF MR. JOHN GOULD VEITCH,
DURING A TRIP TO THE AUSTRALIAN COLONIES AND THE SOUTH SEA ISLANDS.

(*Continued from page* 101.)

Somerset, Cape York, January 1, 1865.—This settlement was first formed in July last. The present European population consists of five gentlemen and two ladies, with a guard of 18 marines. In course of time it will probably become of importance in connection with steam and telegraphic communication with India, China, and the numerous intermediate islands. The aborigines are a miserable race, without any kind of habitation, living on fish, fruit, and roots, and devoid of all clothing. They appear to be more warlike than the tribes of the south. Their weapons are spears 6 to 8 feet long, which they throw a long distance with great accuracy. A short time previous to our arrival two marines were dangerously wounded. During my stay they were peaceful, and several of them regularly accompanied me into the bush, and brought me plants and seeds in exchange for tobacco, of which they are passionately fond. They swallow the smoke out of a long piece of Bamboo, and to judge from their distorted faces, give themselves great pain. In the absence of tobacco they smoke the dry bark of the Melaleuca.

Large ant-hills are a peculiar characteristic of the open sandy plains of the northern part of Australia. Some measure as much as 18 feet by 8, forming perfect pyramids of honeycombed red sandy soil. We remained here three weeks, during which time I collected sufficient plants from the mainland, and the neighbouring Island of Albany, to fill my cases, but on the whole the vegetation disappointed me. Although within the tropics it is scarcely what may be termed semi-tropical, and is entirely devoid of the usual tropical verdure and luxuriance. Eucalypti and Melaleucas form the principal part of the forests here, as they do in New South Wales, and there are but few of the Orchids, Ferns, and Palms one looks for in such latitudes. The low hills are composed of loose, disintegrated ironstone, with but a mere scattering of soil. The mean temperature during our stay was 82°. The cause of the barren vegetation I attribute to the dryness of the atmosphere, and to the fact that there is but a short rainy season, and that the dews are very light. The principal portion of my collection consisted of five Palms, probably new (in addition to which Caryota urens is very common), four Dendrobiums, a Nepenthes, three species of Pandanus, a Curcuma, a Crinum, two Ipomœas, and some few flowering plants and Ferns. A Nutmeg almost as large as that of the islands of Malacca Straits, but with less flavour, is common, and a fruit known by the native name of Nonda (a species of Eugenia), is most refreshing, and well suited to the climate. The district is rich in birds and insects. Many of the former are identical with species already found in New Guinea. One of the most peculiar is the Megapodius, a bird little larger than a fowl. It builds its nest on the ground, forming it of decayed leaves and rubbish. The nest is a large mound, often 10 and 12 feet in diameter. The eggs, which are of a light pink colour and quite as large as those of our turkey, are buried in this heap of decayed vegetable matter, and hatched by the natural heat.

H.M.S. Salamander, Jan. 19, 1865.—On our return trip we landed at Raine Island, on the outer edge of the Barrier Reef. A beacon has been erected on this island for the guidance of ships passing through the barrier. This is another small coral bank, with no soil, and scarcely any vegetation. It seems to rise perpendicularly out of the sea. Within half a mile from the shore we found 180 fathoms of water. It is swarming with sea birds, so tame that one could easily knock them down with a stick.

The hawk's-bill turtle is also plentiful. We counted 40 large ones from the ship's deck as they lay basking in the sun. The heat was most oppressive, the island being devoid of the slightest shade. On leaving Raine Island, and steering to the westward, so as to get within the Barrier Reef again, we had the misfortune to run our ship on to a small sunken coral reef. Happily it was calm, and having lightened the vessel we floated off again the same day. The sea amongst these coral reefs is peculiarly clear. We could distinctly see small objects at a great depth. The young bright-coloured growing coral looked very pretty under the vessel's bottom.

H.M.S. Salamander, January 28, 1865.—Landed on the Frankland Isles. These are amongst the largest and most luxuriant of the islands within the Barrier Reef. It is the only locality on the east coast of Australia where the Cocoa-nut Palm is known to exist. The islands are of coral formation, and uninhabited. The vegetation greatly resembles that of the mainland.

Brisbane, Feb. 8, 1865.—My trip in H.M.S. Salamander having come to a close, I spent a few days in despatching my collections to Europe, and in seeing the chief places in Queensland, previous to finally returning to Sydney.

Brisbane is in no respect to be compared to Sydney. As a commercial town it is making rapid strides, and seems destined to become one of the chief cities of Australia. One misses, however, the beautiful harbour of Port Jackson. The site of the town is wanting in picturesque scenery. The surrounding country is devoid of any striking features, and is covered with the same brown-looking Australian vegetation. The river Brisbane, on the banks of which the town is built, is narrow, with only sufficient water for small vessels. Cultivation is already extensively carried on for many miles along both banks. Banana groves, Pine-apple plantations, and Vineyards occupy a large extent of ground. Araucaria Bidwillii and Cunninghami are natives of Queensland ; the former is known by the native name of Bunya Bunya. The Araucaria forests are situated 80 or 90 miles inland from Brisbane. The aborigines set a high value on these trees, as they make a kind of bread from the seed. Araucaria Bidwillii is one of the very finest of the Australian trees, although Mr. Hill informs me that A. Cunninghami is more valuable as a timber tree. Queensland being a young colony, horticulture has not made much advance. The climate is warmer than that of New South Wales, and more regular throughout the year, consequently one finds a different style of vegetation. Tropical and semi-tropical plants, which in Sydney exist, but do not thrive, are quite at home in Brisbane ; and, on the other hand, numbers of our European deciduous trees and fruits find Queensland too hot for them.

(*To be continued.*)

TREES AND PLANTING.

IT must be many years since we experienced such a succession of violent storms as we have lately had. The high wind and rain were trying enough, but the heavy wet snow on the morning of the 11th ult., that clung to every branch, did more damage than all the rest. I fear many will have to grieve with us the loss or disfigurement of fine specimens. Although the large Elms and Oaks have lost many fine branches, it is among evergreen Oaks, Cork trees, Yews, and Pines that we find the most damage done. Of the first-named, in some instances, the tops are stripped clean down ; in others, one side of the tree is stripped of branches, from one having given way at the top and bearing all the others down with it. Many Yews have been turned up by the roots, while others on banks have slipped down one above another from top to bottom. With Pinus it is different ; one or two are blown down on one side, and require props ; while others are carried a distance from the spot where they were growing, but still adhere to the place by an uncoiled root. Upon lifting the roots of one Pinus insignis, it was found that the tree had been planted out of a pot without disturbing the ball—not even the drainage had been removed. It is to this that I wish to invite attention.

There is not so much objection to plants reared in pots as many persons make out, unless they are stunted and pot-bound. There will always be some of the better varieties kept on this system, but their success as trees that will hold their own against such gales as have passed over our woods of late, depends very much upon the planter. A plant put in immediately out of a pot without preparation, will never become a tree ; but instead of this, suppose, when the hill is ready, that the roots are threaded out singly, and when the tree is placed on the hill they are each laid out straight from the collar, and pegged firmly to the soil ; and suppose also that before covering them up we put in three good stiff stakes to keep the tree firm, in case that driving them afterwards might injure some of the roots : the result would be very different. At one time I went so far as to put some roots down a centre hole, to form a tap root, but four years ago the high wind in November brought down many fine trees of Pinus Strobus, which were found to be completely decayed in the centre. The tap root had gone down into a stratum of iron-coloured gravel, and had evidently gone first, while the outside roots were still fresh and growing. The whole plantation where this stratum of gravel occurred, was in the same condition. I therefore discontinued the practice of making a tap root.

To return to the planting. Many nursery soils are very light, and we frequently find that on attempting to get a good plant up with a ball, one half of the soil breaks away, and takes the roots with it ; or even if the soil has by chance been retained at the lifting, it has quite left the roots before the tree reaches its destination. In such soils a greater care for the roots and less for a ball, will be more in favour of the after success of the plant. It will be found also in planting that instead of one tier of roots from the collar, as in pot plants, trees from the open ground will have two or three tiers, and care must be taken in planting accordingly. Besides, being frequently top-heavy, they want more pinning, a most essential point to every newly-planted shrub or tree.

Where the plant is got with a ball, by far the best method is to place this upon a hill or mound, and fill or make up the ground to its roots. In making these hills, which, unless the ground is very indifferent, need not be large, great care should be taken to mix in plenty of sandy material. I have frequently known a Pinus to be pronounced tender from its having been planted upon a heap of beautiful rich loam, the consequence of which has been that the frost has come upon it while making a second and unmatured and therefore tender growth. If we consider that the habitats of most of these trees are the barren, dry sides of hills, this result of planting in rich soil will be easily understood.

Putting in a choice plant, out of a pot, without any care bestowed upon its roots, is very much like the practice we so frequently see followed in making young plantations. One person with a tool less than the common-sized spade cuts out a neat square the size of the tool ; another, perhaps a boy, lays the roots of the plant in the hole, holding up the top ; the square piece taken out is then placed back over the roots, and one stamp from the tool man, and another from the plant-carrier on the opposite side, completes the operation. In such planting the tree is left to struggle against difficulties it never overcomes. The late Commons Enclosure Act brought a great deal of this planting into operation. One instance I may notice as explaining the difference in practice. A large common near here was divided, and plantations were made by two different persons, almost within sight of each other. The one piece of ground was open-drained and broken up—trenching was out of the question, from the barren nature of the place ; still the plants succeeded, and now form a good shelter, which they were intended for ; and besides, the Larch are now being thinned out for fencing and ornamental purposes. In the other piece the trees were put in without any preparation ; they are mostly dead, and what few remain are likely soon to perish. *Hortus.*

ROYAL GARDENS, KEW.

THE following extracts are taken from the Report of the Director, dated January 1, 1866 :—

The number of visitors to the Royal Gardens during the past year has been 55,934 in excess of that of 1864 ; the distribution being the following :—

Total number on Sundays	269,040
Total number on week days	269,201
Total	529,241

After alluding to the loss sustained by the death of Sir W. J. Hooker, the Report goes on to say that the office of Assistant Director has been suppressed, as the duties hitherto attached thereto can be more efficiently and economically performed by raising the position of the Curator, and that of the Keeper of the Herbarium and Library ; and by transferring to the latter department the supervision of the Museums, and the naming of the collections in these, and in the Arboretum, plant-houses, and gardens generally.

In the Botanic Gardens it is stated that a great

and indeed rapid improvement is already visible, partly in consequence of changes in the staff of foremen and advanced gardeners, but mainly owing to the horticultural skill of the present Curator, especially in the Orchid and Fern collections, the Palm-house, and in the most valuable and striking of all the collections, the Cacti and other succulents.

More, however, remains to be done, especially in introducing types of the vegetation of Australia and South Africa, the old plants of which are worn out; in procuring more Palms, Orchids, and Tree Ferns; in raising a stock of useful plants for exchange, and in improving the lawns, flower-beds, and shrubberies, by introducing many new and uncommon ornamental plants.

The labelling of the plants, both common and rare, requires immediate attention. Their present unsatisfactory condition in this respect is due partly to the fact that the repotting of so vast a collection (containing, perhaps, 20,000 plants) involves the loss of some labels, and the displacement of many more; and very much to the want for many months of a good foreman for the lawns, arboretum, and shrubberies, the labels of the plants in this department being particularly liable to be removed by mowers, and by the public in traversing the grounds.

A very important step taken this year has been the conversion of the old Victoria House (No. 6) into an "Economic plant-house," to be devoted henceforth to the display of a selected set of tropical plants, whose products are useful for food, or as drugs, or in the arts. The house itself being small, the specimens will be so also, and all will thus be brought within a moderate space. This will save the necessity on the part of visitors of searching through the large collections in the Palm-house, &c., for what they most wish to find readily.

It is reported that space is much wanted for the cultivation of more water-plants; and the Director strongly recommends the heating of a small tank in the open air for this purpose, in which even tropical Water-lilies may be made to flower freely.

In the Palm-house the whole collection has been repotted and re-arranged, and the house itself has been thoroughly set to rights in respect of order, cleanliness, and the cultivation of the plants, which are for the most part in excellent condition. Certain tropical plants that produce a striking effect from the size and vivid green of their foliage, have been introduced into the beds between the Palm stems.

A small collection of Japan plants has been got together, and placed in a conspicuous position, in a frame near the Heath-house (No. 14).

The collection of Cacti, Aloes, succulents, and bulbs, in No. 7, has been for the most part repotted and very greatly improved; and has also been materially increased, chiefly through the liberality of Mr. W. Wilson Saunders, whose almost annual contributions are both the most valuable and most numerous that this establishment has received since its foundation.

From India and the Colonies most satisfactory accounts continue to be received of the progress of Botany and Horticulture under the various colonial botanists, and heads of botanic gardens, who have for the most part been sent out from Kew by the late Director, and who receive liberal encouragement from the Governors and other authorities. As we have from time to time called attention to the labors of the various colonial botanists, we need not reprint that portion of the Report referring to the doings of those gentlemen.

Ascension Island.—Captain Barnard's excellent report gives a satisfactory account of the progress of the imported vegetation in this once sterile island. It now possesses thickets of upwards of 40 kinds of trees, besides numerous shrubs and fruit trees, of which, however, only the Guava ripens. These already afford timber for fencing cattle yards.

The most important plants distributed from the Royal Gardens have been Cinchona seeds and plants to various colonies, &c., and the Ipecacuanha to Trinidad, Ceylon, and Calcutta.

A most important introduction has been the Calumba root from the Mauritius, a plant which it is proposed to cultivate in Ceylon and the West Indies, some eminent druggists having reported that the supply from East Africa is both scanty and bad; and that, owing to the condition of labour, &c, on the African coast, there is no prospect of an improvement.

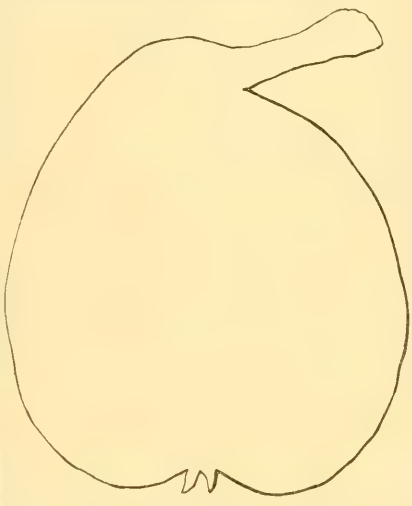
Various applications for seeds of the best kinds of Tobacco have been received, especially from Western Australia, and an ample supply of fresh seed of the best Shiraz Tobacco has been distributed to 30 or 40 colonies, &c.

In the Museums are a curious collection of vegetable products used for food, and taken from the pre-historic pile-dwellings recently explored in the Swiss lakes; and living specimens, received in too injured a state to survive, of Welwitschia mirabilis.

In regard to the Herbarium the Director says:—"I have to announce the acquisition by this department of two of the most important private collections that existed anywhere in Europe; viz., Dr. Lindley's collection of Orchids, by purchase; and the late Dr. Burchell's South African and South American herbarium, by gift from his sister (who is also since deceased). Dr. Lindley's collection of Orchids is the key to the nomenclature of this vast and important family of plants; it was commenced when the first importation of them took place, and has been kept up by purchase and contribution from every quarter for nearly half a century, and will always be the standard of reference. It contains upwards of 3000 specimens, in perfect condition, fastened upon cartridge paper, and copiously illustrated with sketches and dissections by Dr. Lindley's own hand and from other sources."

NEW AND SELECT PEARS.

No. 4. *Madame Millet.*—A Pear of the first size, often very large. Its skin is generally nearly covered with russet, with blotches of yellow peeping out when fully ripe. Its flesh is remarkably free from any grit, quite melting and full of juice, with a most agreeable flavour for the late season in which it ripens. It grows pretty well on the Quince, but the tree soon exhausts itself by over-bearing; it is therefore better cultivated on the Pear stock or



double-grafted on the Quince. It requires a warm soil and site; a south aspect on a wall would probably bring it to a perfect state of ripeness. Its season is April to the beginning of May. It well deserves careful cultivation.

Home Correspondence.

The Horticultural Society's Scheme of Education.—The promoters of this scheme must expect a diversity of opinion, from which, and through the exchange of ideas, the value of their object will be the better educed. Whatever prejudice we may foster in opposition to the proposed scheme, yet, if candid, we must admit it is a step in the right direction, and those who may offer themselves as candidates for the ordeal must be indifferent to the ridicule which is the result of an infringement on a long-established custom, not forgetting that the path they have chosen has for its motto, "Upwards and onwards." To those who may apply for admission to the Garden the £ *s. d.* question should be a secondary consideration; while under sufferance the future should be considered in all its advantageous bearings. There is a class of men ever ready to echo the words of Pope, "A little learning is a dangerous thing." To that I add—when men are anxious for the welfare of their fellow-men no further than as it affects their own mercenary interests. To say that the possession of, or a thirst for educational acquirements in connection with gardening, will incapacitate a man for manual labour, is, to say the least, an error. There may be exceptional cases, but they belong entirely to extreme enthusiasts. We can blame no man for aspiring to a foremost place in the ranks of his profession—and this educational movement will so far qualify him, instead of subjecting him to the caprice of individual influence, for on the decided merit of his attainments alone may his future course be shaped. Many an ardent cultivator has been doomed to exercise his innate talents in a contracted sphere, because his position in the eyes of the gardening world was considered a disqualification for further advancement; or, on the other hand (admitting that there is a power in circumstances), he was devoid of patronage. Now the proposed horticultural examination will place the obscure young gardener, however humble, if he seeks to avail himself of its benefits, publicly on a par, in point of capacity, with those who have hitherto been favoured by reason of influential circumstances. There is one objection which I fear may prove a barrier to the realisation of the latter remark, and that is, that candidates for admission to the Garden are presumed to have been hitherto employed in some good private gardening establishment. It is to be hoped that there will be a discretionary clause entrusted to the dispenser of this rule. To those who believe in the doctrine of every-day experience as being the most suitable for fitting a man to discharge the duties confided to him, I would say, will the additional information that may be acquired through the proposed channel make him a worse member of society? I anticipate the reply—No! Well, then, it must do one thing of two. If it does not make him worse he will be decidedly the better, and if so, then he will be a more useful man, and the application required for the accomplishment of his purpose will have caused him to exercise a greater amount of thought than he would by the ordinary efforts usually required, thus giving him a systematic mode of combatting difficulties. Whatever may be the cost to those young gardeners who may embark in this course of training, there is one cheering reflection—that they will find the knowledge practically available in every part of the globe. Besides, the employment of their leisure time in the preparation for the examination, will bear sweet reflection in after-life, especially when the vigour of manhood is on the decline, compared with the manner in which many fritter away their spare moments in the buoyancy of manhood by idle and sensual indulgences. For myself I have ever striven to urge the young gardener to keep pace with the progress of other trades and arts in the thirst they have and do continue to evince for general information. May the Horticultural scheme for rewarding the truly meritorious receive that public encouragement it deserves. *John F. McElroy, Stamford Hill, N.*

Double Stock Seed.—In curing consumption, repletion and depletion, hot climates and cold climates have been successively recommended. So, I suppose, nothing is really known about it. A similar uncertainty seems to prevail as to obtaining double seeds. Of the plans described in p. 74 of your Paper, the Erfurt one is avowedly a system of depletion, while those of M. Chaté and Mr. Monro, by concentrating the vigour of the plant upon a few seeds, may be considered as examples of repletion. I will now give you another prescription, which was communicated to me by an old gardener as the result of his own experience, but I have not proved it myself, and therefore cannot vouch for its success. Sow the seed not earlier than May. Keep the plants over two winters in pots, and save seed of the second, *i.e.* the last summer. I presume that during the first summer the plants are not allowed to mature seed, but as my informant has long since gone to his rest, I cannot now obtain any further particulars. *S. B.*

Arranging Plants for Exhibition.—Without wishing to enter into any controversy upon the subject which has recently occupied the attention of the Royal Horticultural Society, you will perhaps permit me to offer a few remarks upon the present suggestions, and the bygones of former years. Somewhere about 20 years ago, at the time the Chiswick exhibitions were quite at low water mark, owing principally to the desertion of the "Kentish brigade," Barnes, Hunt, May, Pawley, &c., I was personally solicited by the Council of the Society to give them my ideas of what would form an attractive schedule for the following season, and of what would conduce most to the effectiveness of the exhibitions. This I did in a manner which led to a thorough reconstruction of the Society's schedule, and the result was a May Exhibition which has never been excelled. At the time in question the propriety of holding a two days' exhibition had been mooted, and I sounded the Kentish men upon the subject. The difficulty was the expense; for as most of the exhibitors had to pay the hire of the vans and horses employed, it became a matter of £ *s. d.* with them that the extra day's costs should be guaranteed. This was an impassable barrier, and hence the project was abandoned. I recollect, however, perfectly well, I suggested that the plants and fruits should be staged on the first day for competition, as is the present fashion; but on the second day, for the purpose of presenting an entirely new feature, they should be arranged for effect, and that plants from the Society's collection—Musas, Ficus, Coniferæ, &c.—should be introduced for the sake of contrast, and to break up that blaze of bloom which to me was always perfectly bewildering. My scheme was approved, and I received through the late Dr. Lindley the thanks of the Council for it, but it was never carried out. At that time "foliage plants," with the exception of a few Ferns, were not in

fashion, but now they form a grand feature—perhaps the most attractive of our exhibitions, and offer splendid material for artistic groupings. If the Council of the Royal Horticultural Society still think of carrying out this scheme, I should recommend them to stick to the old plan, cultural merit, the exhibitor's ambition, the first day, and then, artistic effect, the second. In this way the same plants would offer two perfectly distinct exhibitions, and would satisfy the cultivator as well as the art student. In the "Gardener's Magazine of Botany," conducted conjointly by Mr. Moore and myself, will be found some hints upon this subject, illustrated by artistic groupings from the pencil of Mr. H. Noel Humphreys. They might supply a hint at the present time, and I mention them on that account. With reference to fruit, Grapes, I think, should always be suspended in groups of three bunches; whilst small fruits, Peaches, Nectarines, &c., never look so well as when placed upon growing pans of Lycopods or Selaginellas. Cut leaves of all kinds flag and look poor, but the Lycopods continue fresh and green, and afford a cool resting place for the fruit. The Society might provide the Lycopod baskets or pans, or, if it was grown in flat baskets in leaf-mould, they would not be difficult for exhibitors to carry about, while their production, as the Lycopod will grow in any warm moist shady place, would not be attended with either much trouble or expense. I offer these remarks for "auld lang syne," for, though I have but little to do with gardening now as a profession, my old love still prompts me to take an interest in its progress. *W. P. Ayres.*

Early Pea Growing.—Having been the means of introducing the Essex Rival Early Pea, and had some considerable experience in the general cultivation of this plant, I have thought it would not be presumptuous on my part, nor uninteresting to the public, were I to make known a system of Pea-growing which I have for many years adopted with success. First, the ground, if not already prepared, should be well manured, and dug or forked along where the row of Peas is to be sown; as soon as sufficient ground is ready to receive the first row, set the line, and with a Bean hoe, 6 or 7 inches wide, draw a trench of that width, and 2½ inches deep, then press the foot (not too heavily) along the trench, so as to form a square solid bottom; this practice is very desirable, as by means thereof the roots take firm hold of the ground, which strengthens and invigorates the plant. The trench will then be 3 inches deep. Now sow the seed (which should be, if sown in the autumn, of a hardy kind,) along the trench as evenly as possible; but however careful the sower may be, the Peas will lay somewhat uneven, being thicker in some places than at others; they may however be easily separated and placed equally by the hand—every Pea then has its own allotted space to grow in. Never sow Peas too thickly, particularly in the spring. About 1¼ inch from Pea to Pea if sown in the autumn, and 1½ inch if sown in the spring, throughout the whole width of the row, is, I consider, a fair thickness for early Peas. Marrow varieties require 2 inches. Many good varieties of Peas have been condemned through being too thickly sown. Cover them up with about an inch thick of sifted mould made from burnt weeds or other vegetable matter; rake over the natural soil, and the row is finished. Then prepare for the next row. By this means you do not tread backwards and forwards on the sown ground. When the Peas are well up, draw the mould to them on each side, so as to form a kind of bank, which I have found a far better protection against sharp wind with frost, than cinder ashes. When sufficiently high, mould them up and stick them. Let the rows point from north to south, so that the sun may shine on both sides. The situation should be (if sown in autumn) sheltered from north and east. I am no advocate for sowing early Peas on a warm south border, but prefer the open ground where sheltered. Early and Marrow spring-sown Peas may be treated the same way, with the exception of not being planted so deep in the trench. A yard from row to row for early, and a yard and a-half for tall Marrow kinds, is the distance I always allow. It is a good plan to soak the Peas in water 24 hours before planting, particularly in the spring. November, February, and March are the three best months to sow for early gatherings. To keep Peas pure with regard to stock is also very essential. This may be done by examining the rows after podding off, and taking from them any other varieties (termed rogues) that have by chance got amongst them; sporters also, by which I mean such as appear considerably above the usual height of the variety sown, should be drawn from the rows. *Thos. Eley.*

Darlingtonia californica.—As several correspondents have wished to know a little more of the way in which the Darlingtonia was raised at Dangstein, I subjoin the following particulars, kindly supplied by Mr. Vair. The seeds were sown on the 8th Jan., 1864, in a shallow pan well drained and filled with light sandy peat, kept covered with a bell-glass and placed in a moist stove with a temperature of from 60° to 65° by night, rising now and then considerably higher during the day. The young plants made their appearance in about 10 weeks from the time of sowing. When large enough to handle they were pricked off singly in small pots, and kept in the same house during the summer. In the autumn they were moved to a cooler house—from 50° by night to 60°, 65°, or 70° by day, falling, however, in very cold weather to 40° at night. During all this time they were kept under bell-glasses, usually tilted up at the sides. In the early part of the year they were taken back to the house in which they now grow. *W. R.*

Early Vine Borders.—A few useful hints may perhaps be found in the following mode of constructing an early Vinery border, the dimensions of which are 26 feet long and 20 feet broad, thus allowing the outside border to be 6 feet broad, the inside one 9 feet, a path 3 feet, and a back border of 2 feet. Supposing the natural position of the ground to be level, the soil should be taken out to the depth of 3 feet at the front and 2 feet at the back, leaving the bottom of the border to slope regularly to the front, where there should be a main drain running parallel with the front wall; and of whatever thickness the foundation walls may be, of course there will be so much more of soil in length and breadth to be taken out. This being done, and the foundations of the house got nicely up, proceed to cover the border with a 6-inch layer of stones, none of them larger than the fist, but smaller if possible. Get some fresh lime and still smaller stones, mixing them together into a mortar. Take this mixture and go over the border several times until you have filled up every crevice amongst the stones, and I will be bound to say, when this becomes perfectly dry, that no Vine roots will go through it. The next thing to be considered is an important one, namely, the mode of heating the border; and, as hot-water apparatus have become fashionable, and justly so, in every kind of horticultural buildings, as well as the habitations of man, I give them the preference—hot-water having many advantages over the older systems, such as heated air, smoky flues, or fermenting materials. It is more equal in its influence, and less dangerous in its application than any other method at the present time. The boiler and pipes should be supplied by a respectable firm, and set by competent workmen. One flow and return for the outside border, and one flow and return for the inside, will be quite sufficient for bottom-heat. Let the pipes be 6 inches in diameter, and laid about the thickness of a brick from the concrete, keeping the flow always on the higher ground. The apparatus being fixed, should be thoroughly tried before covering the pipes. All being found to act well, proceed to cover the spaces between the pipes with a layer of slabby stones, rounding the layer nicely over the pipes. Cover the whole with sods, to prevent the soil from sifting down into the drainage. The soil should be composed of a friable loam, not chopped too small. A good quantity of bones or oyster shells well broken, with plenty of lime scraps and charcoal; and if all these are got in in good condition, the Vines will find no fault with their food. In filling the borders, three or four upright pipes of the same diameter as those employed for bottom-heat, and just long enough to overtop the surface of the border by 2 inches, should be placed at equal distances along the flow pipe. These upright pipes are of great service, as by each having a mouthpiece or plug, you can confine the heat or let it escape into the house; and they are also of great advantage in letting water down round the pipes without drenching the whole border. *Brassica.*

Linum flavum.—I am thinking of planting two beds of Linum flavum. Will some one kindly say what success I may expect with them here in north Yorkshire? The plant does well with me in the greenhouse, and if it does one-half as well outside, it will make a good yellow bed. Any information respecting it as a bedding plant will be thankfully received. *Pat.*

Thomson's Styptic.—I obtained a supply of the Styptic recently introduced by Mr. W. Thomson, The Gardens, Dalkeith, to prevent the bleeding of Vines, and I have been trying it on plants which were pushing into growth, and which under ordinary circumstances would have bled freely on being pruned. The styptic is a dark thick liquid, with a furniture-polish kind of smell, and if applied to the part pruned, it immediately becomes a firm, glutinous substance, and, so far as I have found, effectually stops bleeding. I have just cut back about 300 young plants, some of them pushing freely, and have pruned some older plants in a moderately warm house, and in no instance was there the slightest trace of bleeding a few hours after pruning, although some evidently would have bled if the styptic had not been applied. The little experience I have of it induces me to believe it will be most useful in cases where Vines bleed after pruning, and as a 3*s.* bottle is ample for a very large Vinery, it is within the reach of all. *William Dean, Shipley, Yorkshire.*

Preservation of Grapes during Winter.—It may be useful to know of a method of keeping Grapes during winter where houses are not entirely devoted to Grape growing, for in that case the fruit is often consumed much sooner than it otherwise would be if it could be allowed to hang longer on the Vines. The method in question consists in removing from the Vine the Grapes and shoot on which they are growing, cutting the latter off as in pruning, viz., 6 or 8 inches below the bunch or further from it, according to the variety, leaving the part above the bunch untouched. Get a quantity of bottles of any shape or size, provided the shoot will fit into them; fill the bottles with water, to every pint of which add a tablespoonful of powdered charcoal. Place the lower end of the shoot into the bottle containing this mixture, and make all fast, in order, as much as possible, to prevent evaporation. The bottles thus furnished may be kept in any kind of room that is not too hot or damp, a fruit room being the proper place for them. To the wall nail two strips of wood on which to support the bottles, one being placed close to the wall, the other 4 or 5 inches from it in an upward direction, so that the water in the bottles may not run out, or the Grapes rest against anything. Thus placed, the bunches will require to be looked over occasionally, cutting out any decaying berries that may appear on them. And I may now state what should have been mentioned before—that they must not be over-ripe; on the contrary, they should be cut at least a week before they are ripe; and if the process of bottling in charcoal water has been carefully done, the result will not disappoint those who make the trial, Grapes having been known to keep good in this way for four or five months together. *D.*

Evergreen Baskets.—Permit me to recommend the employment of evergreen baskets for the decoration of drawing and dining-room tables in winter. When tastefully filled they are very beautiful, and the eye never tires of the pleasant rest afforded by their varying tints of green and glaucous leafage. These baskets should be open, and made of opaque pale glass or white porcelain, with a plain handle overarching the middle. They should be sufficiently deep to hold an inch or two of water, and large and broad enough to permit effective arrangement of the twigs in them. From 12 to 15 inches in length, from 6 to 8 inches in breadth, and from 2 to 3 inches in depth, would be ample size. With regard to the disposal of the material in them, differences of opinion will exist. As a general rule, however, the broader-leaved kinds of shrubs and trees should be so disposed as to form a sort of under-work, though here and there a sprig of Bay or Holly might be placed obliquely or erect, while the central portion might be filled with Firs, Cypresses, and Junipers, not forgetting Pines, both of the rigid and more flaccid-leaved sorts. Such evergreen baskets will retain all or nearly all their beauty for at least ten days or a fortnight, only needing now and then a little water. The main drawback is dust, which deadens the lustre of some of the broad-leaved forms employed. Flowers might be intermixed with the Evergreens perhaps, but I prefer leaves alone. Laurel (Prunus Cerasus and lusitanica), Bay Laurel, Holly (and variegated Holly sparingly), Arbutus, Olea, Phillyrea, Abies Pinsapo, Pinus sylvestris and excelsa, Juniperus excelsa and communis, Cupressus and Thuja, Cedar of Lebanon and Deodar, Holm Oak, all form material suitable for the ornamentation of baskets of this kind. *John R. Jackson.*

Grape-growing at Bury Hill, Mansfield.—In your impression (see p. 78), I see a paragraph, signed "H.," criticising the remarks of "I." upon the Grape growing at Bury Hill. I fail to discover the object of the writer, unless it be to snarl at a successful neighbour, and as I have not seen the remarks of "I.," I am not aware what he may have said respecting the Grapes. If, however, he said anything less than that they were, and are, superlatively excellent, he has stated that which is untrue. Being in the neighbourhood of Mansfield, I called at Bury Hill a week back, and was delighted to find not only first-class Grape growing, but the "merit mark" of good cultivation in every department of the garden carried out by an old friend, Mr. Speed, whom I had not seen for nearly 20 years, and whom I little expected to find in Nottinghamshire. Mr. Speed need fear nothing, for his Grapes at the present time will bear comparison with those produced by the best growers in England; he has not only quality but he has also quantity, and all in excellent condition—the Blacks, black as Sloes and plump as Cherries, and the Muscats and Charlesworth Tokay, with that peculiar amber tint about them which shows that the last touches of a master cultivator have been skilfully laid on. Of the kinds still hanging I noticed Black Barbarossa, some bunches not less than 7 lb. weight. Lady Downes' Seedling, plump and excellent, and some very handsome 5-lb. bunches of the Trebbiana. In another house I noticed finely swelled fruit of the Canon Hall Muscat, and also the Charlesworth Tokay and Muscat of Alexandria. At the present time Mr. Speed has from 200 to 300 bunches of excellent Grapes still hanging on his Vines. What the Midland gardeners may do in Grape growing in the height of the season I know not; all I can say is, and I speak from the evidence of my own senses, that Mr. Speed has a superb lot of excellent fruit, and such as in a 40 years' experience I have rarely seen equalled, and never excelled, in the end of January. It should

never be forgotten that Grape growing for exhibition, and Grape growing for the daily supply of a gentleman's table, are two very different occupations. "Give merit to whom merit is due" is my motto, and despite the innuendos of "H.," there is much merit in the Grapes and the gardening generally at Bury Hill. Whilst writing the above, your Paper containing the memoranda of "I.," has been put into my hands. His remarks upon the geology of the locality, as well as upon the gardening at Bury Hill, are just and to the point. I scarcely understand his special reference to the absence of "lakes and weedy ponds," as being an element of success in Grape growing. As a set-off, I might instance the valley of the Thames, from Frogmore to Gravesend, as being a first-class Grape-growing district, while the valley of the Mersey, both on the Garston and Cheshire sides, has played its part, as Sam Slick would say, "in licking all creation." Go again to Brighton, and if you like, step to the sea-board of North Wales, and between Chester and Holyhead you will find Grapes as good as any in the world. Near Bangor, at the residence of John Platt, Esq., M.P., Llanfairfechan, are to be seen some Vines bearing their second crop, which Mr. Meredith will guarantee me in saying are not second to any Vines of the same age in Great Britain. These Vines are growing within an eighth of a mile of the sea, and hence do not lack a moist atmosphere. Indeed, I have for so many years noticed, if not the superiority, the ease with which Grapes may be grown wherever the tide serves, and the sea breeze permeates, that I have arrived at the conclusion, that a moist atmosphere, with "a taste of the briny," is an element of success if not a desideratum in Grape growing; and I think Mr. Meredith will bear me out in this assumption. *W. P. Ayres, Mansfield.*

Partial Change of Sex in Unisexual Flowers.—Will any of your botanical readers have the kindness to inform me, whether in those monœcious or dioecious plants, in which the flowers are widely different, it has ever been observed that half the flower, or only a segment of it, has been of one sex and the other half or segment of the opposite sex; in the same manner as so frequently occurs with insects? *Charles Darwin.* [We have seen Willow flowers with one stamen, and one stalked carpel. There is also the case of Glochidion, in which three of the cells of a six-celled ovary were developed in the form of anthers. See Lindley, "Elements of Botany," p. 81. Similar changes have been met with in other Euphorbiaceæ. EDS.]

Bitten Pine Cone.—In the Pine woods near Bournemouth, where vast quantities of the Pinaster, the Scotch Pine, and the Stone Pine are growing luxuriantly, numerous cones may be found on the ground with all their scales apparently bitten off nearly to the base in a very regular manner, so that merely the bases of the scales are left, each with a jagged edge surrounding the axis of the cone. The seeds have quite disappeared. Can any of your correspondents furnish information as to whether squirrel, rabbit, or other animal has produced this singular appearance, or whether it be due to some other cause. *S. L.*

Societies.

ROYAL HORTICULTURAL: *Feb.* 3 (*Weekly Show*).—Messrs. Cutbush, of Highgate, furnished on this occasion a charming exhibition of forced flowers, to which a 1st prize was awarded. It consisted of four pots of Polygonatum vulgare, or common Solomon's Seal forced, as a centre piece, surrounded by plants of Rhododendron Cunninghami, Dielytra spectabilis, a red Azalea, Vallota purpurea, two pans of Crocus versicolor, two pots of Vermilion Brilliant Tulips, one of Tournesol Tulips, and one of each of the Hyacinths La Tour d'Auvergne, Vainqueur, and Amy. Mr. Bartlett, of Shaftesbury Road, Hammersmith, again contributed a nice collection of 25 Hyacinths well bloomed, and some Polyanthus Narcissus, for which he received a 2d prize. Messrs. Lucking received a first-class Certificate for a pretty exhibition of forced flowers.

ENTOMOLOGICAL: *Jan.* 1.—F. Pascoe, Esq., President, F.L.S., in the chair. Mr. S. Stevens exhibited an extensive series of insects, chiefly Coleopterous and Lepidopterous, collected with great care in the Himalayas, and most beautifully preserved; amongst many rare species were Buprestis Buquetii, Dynastes Hardwickii, Papilio Menereus, and many other fine Papilionidæ, which had been reared from the larva state. A paper by W. C. Hewitson, Esq., was read, containing descriptions of 25 new species of butterflies belonging to the family Hesperidæ. The President also contributed a paper containing descriptions of the Longicorn Coleoptera collected at Santa Marta, in Venezuela, by the late Mr. Bouchard, 53 species in number, of which about 20 were previously undescribed. Professor Westwood read a communication which he had received from Mr. Snellen van Vollenhoven, of Leyden, giving an account of various peculiarities observed during the past year in the production of insects of various kinds in Holland. Mr. McLachlan read some further notes on the occurrence of Trichopterous insects in the Ice Caverns in Switzerland. In one on the road to Chamouni the insects were found in the most remote portions of the caves. Mr. Bates gave some account of the proceedings of Mr. Bartlett on the shores of the Ucayli, on the eastern slope of the Andes. He had been successful in obtaining several hundred mammalia, birds, &c., as well as large collections of insects, which might shortly be expected to arrive in England.

Notices of Books.

BOOKS RECEIVED.—*Great North Atlantic Telegraph Route.* An anonymous pamphlet (copyright) devoted to the promotion of a scheme for laying down telegraph wires "through Scotland, Shetland, and the Faröe Islands to Iceland, and the western shores of Greenland, across Davis Straits to the coast of Labrador or Belle Isle, and to communicate through Canada with the vast telegraphic system of the United States and the continent of America."——*Tijdschrift door het Antwerpsch Kruidkundig genootschap uitgegeven over-land en tuinbouwkunde en verdere natuurwetenschappen.* We regret that we can do no more than announce the appearance of this new horticultural publication (in monthly numbers), owing to our ignorance of the Flemish language.——The *Quarterly Review*, No. 237, contains a summary of our knowledge of African travel, with special reference to Dr. Livingstone's discoveries already noticed by us, p. 1158 (1865). Tennyson's "Enoch Arden" is made the basis of an article on the Laureate's poems in general, which, says the reviewer, are "based upon true sympathy with the noblest, the gentlest, and most beautiful tendencies of modern life, and never with any of its flashy impulses." A Review of Mr. Palgrave's "Narrative of his Journeyings in Arabia" furnishes occasion to the writer to recall the modest and meritorious services of Lieutenant Wellsted, too much overlooked now-a-days. There are other articles to which we have not space to refer, but which will well repay perusal.——Messrs. Bradbury & Evans have issued the first number of the re-issue of *Knight's English Cyclopædia*, to which we referred at p. 79. The value of this Cyclopædia has been so generally acknowledged that this re-issue will prove very acceptable to a large class of readers.

Florists' Flowers.

THE AURICULA.—(*Concluded from page* 104.)—The Auricula makes no growth in June and July. During these months all that the plants need is to keep them in the shade as much as possible. Attend to watering, and the removal of decayed stems and dead leaves, and practise general cleanliness. Towards the end of July commence to repot the plants. Growers ought to study the habits of the different varieties they cultivate: those that make small plants should be put in pots of a suitable size; plants of robust habit in pots rather larger. Strong blooms cannot be expected when plants are overpotted. The largest plant ought not to be in a pot more than 6 inches across, and there are only a few varieties that a pot of this size will suit. My practice is rather to underpot than be guilty of the other extreme.

My favourite pot is one with a hollow bottom. For drainage I use oyster shells, when I can get them. I place one, convex side up, over the drainage hole, and over it some vegetable fibre to prevent the drainage becoming choked. Fill the pot about half full with the compost previously mentioned. Turn the plant carefully out of the pot; examine the tap root, and with a sharp knife cut back to the sound part, should there be any portion of it in a state of decay. Reduce the ball, disturbing the fibres as little as possible. Slip any offsets that may be on the plant. Dress all the wounds with the powder of wood charcoal, which is a first-rate styptic. Replace the plant in the pot, and fill to within half an inch of the rim of the pot, and the same distance from the lower leaves. Pot moderately tight, and give a supply of water. Remember always to have some of the fibres in contact with the side of the pot. While repotting, clean the plants from any green-fly that may be on them. The offsets may be potted either singly in small pots, or two or three round the edge of a 4½ or 5-inch pot; I prefer the latter plan, as it saves labour afterwards. Use always clean pots. Repotting should be finished by the end of the first week in August. In this month they will begin to make their autumn growth, consequently they will require to be regularly supplied with water, and have abundance of air given.

Of late years autumn blooms have been very prevalent. Plants that throw up trusses at this season are generally spoiled for blooming well in the spring. All that can be done in this case is to break over the head of the stem, and watch to pluck the stem away so soon as partially decayed. When the decaying portion of the flower-stem is allowed to remain too long at this particular season, rot is almost sure to be the result.

In October the plants will be approaching their period of rest. The supply of water will require to be diminished, and the plants divested of decayed leaves.

During November and December the plants are dormant, and all the attention then needed is to give plenty of air during mild weather, to remove decayed leaves, and give only as much water as will prevent the leaves becoming flaccid; shut all close during frost.

General Observations.—In past times I used to practise the old system of exposing the plants to the weather as soon as the bloom was over; but in consequence of continual losses among my own stock, and seeing many extensive and valuable collections lost by rot, occasioned by exposure to heavy rains, I gave this up. For many years past I have kept my plants under glass, taking care to give abundance of air by tilting the sashes and having proper ventilators. Since I have followed this practice I have always had my plants in the finest health. In very hot weather the plants are refreshed by watering the foliage through a very fine rose, which causes the water to fall like dew.

Growers cannot be too particular to prevent the lodgment of water in the centre of the plants. Nothing will induce rot sooner than water allowed to remain for some time in the centre of a plant. Should rot at any time appear, it is easily detected. For example, when a plant begins to look sickly and lean over to one side, then it is the neck of the plant that is affected. The remedy is to remove all the soil from the diseased part, and with a sharp knife cut away the whole of the part affected, till the sound part is reached; then dress the wound with wood charcoal, and expose the part to sun and air till the wound is thoroughly dried.

Another and the most fatal symptom of rot, is when a plant shows the interior leaves upright and apparently growing, but the exterior leaves quite flaccid, and lying on the surface soil. Then rot has made progress from the end of the tap-root upwards. The only successful remedy for this that I have been able to discover is to shake the plant free from the soil, cut away all the diseased part, wash it with clear water, and when dried in the sun, dress the cut part with charcoal, and repot in loam and leaf-mould. I have, by this treatment, saved plants that had not above one half inch of sound stem left. When there are no fibres left, a little silver sand placed around the neck will cause new ones to start. Diseased plants should be removed from among those in health, as they are liable to communicate the infection.

Rot in Auriculas has a peculiar smell, and any grower who has once experienced it will remember it again.

Stimulants ought never to be tried with these plants. I have known of collections being destroyed by the use of liquid manure, which is sure to bring rot upon the plants. Simple and plain food is the best for keeping them in health, although it will require more time to grow them up to full-sized plants.

My stages are mounted on stone blocks, a foot off the ground, and the pots stand upon shelves. This space is never closed, so that there is at all times a free circulation of air under the plants. I have never found this injurious, but the reverse.

In conclusion, I will reiterate my advice to practise rigid cleanliness. *George Lightbody, Falkirk, Jan.* 9, 1866.

The Apiary.

DYSENTERY.—Having perused with much interest the papers which have appeared on the foregoing subject, I am induced to send you an account of the disease, which has played sad havoc in my own apiary, and to request the favour of your advice as to what I can do to effect a present cure, and if possible to prevent its recurrence. I am very fond of bees, but I am not clever enough to perform all the operations, which, to more experienced apiarians, are doubtless very easy. Perhaps as "A Lady" I may claim some excuse for any deficiency in the above respect.

Last winter and in the succeeding spring I lost five hives from dysentery or dropsy, or some similar complaint. I did all that could be done in the way of changing the floor-boards, but without avail. The hives which perished were of the following kinds. Two moveable frame wooden boxes of Tegetmeier's; one in a Neighbour's straw cottage hive; one in the Lady's Observatory glass hive, also of Neighbour's construction; and one in a common straw hive. This last had the disease worst of all; the smell from it was most abominable. On examination after the death of the bees, I found plenty of honey in the combs; some was good, but a great deal of it was as thin as water. The good honey-comb was melted down for feeding bees; the rest of the contents was burnt. I have often wondered if it was foul brood which caused the detestable smell; there was some brood, but I am not experienced enough to be able to say what sort of state it was in.

Of the remaining hives, in some the combs were mouldy, and in others watery. All were more or less provided with honey.

I must now relate the state of my apiary at this time, as the malady has reappeared, and I am anxious to know if any steps can be taken to eradicate it before it may make much progress. One hive has already perished from this horrid disease. Three others are now affected by it, one to a very great extent. There is a large quantity of honey in this hive, a good deal of which is unsealed. The floor-board becomes in a most filthy condition in two days. Ought I to continue to change the floor-board every two or three days? Since the disease appeared, I removed the hive into a room at the top of the house, but without doing any good. The combs are not at all mouldy, and on removing the top board I find it to be quite dry, and no bad smell to arise. The bees are very weak and hang only from the middle comb. The hive is one of Tegetmeier's bar-frame boxes with four glass sides, fitted with wooden shutters outside.

Of the others affected, one is a wooden frame hive, and the other is a square Woodbury straw hive. The first of these two is very strong in bees even now, and is well supplied with honey. The other is also well populated, but is very deficient in stores of food. I have put on a bottle-feeder, but the bees refuse to take down any food. I had previously supplied them with barley-sugar, but they would not touch it at all. I can do nothing more, and fear, even if the disease does not kill them, that they will perish for want of food. All these were swarms of the past summer. It seems strange that dysentery should prove so fatal among stocks so newly established. I must not forget to say that all these affected hives were fed in the autumn.

In conclusion, I may state that my district is not considered a good one for bees; but this last summer was so extremely fine, that I was induced to expect great things from them. I was, however, miserably disappointed. Being absent in Switzerland for two months, my bees were left in charge of a servant, who was, I am sure, very attentive to them, but on my return in August I found that there was very little honey collected in the supers, and that there had been very few swarms, or at least very few secured. What honey-comb there was in the supers was so mixed with brood that I could make but little use of it. The supers were left too long upon the hives, as I had the greatest difficulty in expelling the bees. I trust your patience will not be exhausted, and that you will be able to assist me with your advice, as I am almost disheartened from the bad success I have met with, and with the prospect of future losses from the same causes. *A Lady.*

[In reply to our fair correspondent, we can only refer her to the directions which have appeared in previous articles on this subject. The disease from which her bees suffer seems to be of a virulent character, and not to yield easily to the ordinary curative measures. "A Lady" seems to have done almost all that can be done, and we hardly know how to advise her, further than to persevere in the remedial means she has hitherto adopted. It is evident that dysentery attacks bees in wooden boxes and in straw hives indiscriminately. Whether one hive was affected by "foul brood," it would be impossible to say without an inspection, or further description of the state in which it was found.

The stock, which is now so weak in bees, will, even if the disease should disappear, be hardly worth preserving; it would be better to unite to it the bees of the one that is so deficient in stores, than to endeavour to save it as it is. Food in any sort of feeder will not be looked at so early in the season by bees when so very few in numbers. A strong stock would probably make some use of it, if the temperature be sufficiently high.

During "A Lady's" absence in Switzerland, some of her hives most probably threw off swarms which were lost. She was also unfortunate in having so much brood in the supers. In our own apiary last summer not a single instance of this sort occurred in a large number of supers which were filled. If supers are left on too late in the autumn it is frequently a very difficult matter to expel the bees from them. To summarily drive them out is the best way. The quicker this is done, and the sooner the bees are restored to their parent stock, the better, as, unless the weather is very mild, many will perish, as much from listlessness, as from actual exposure to cold.]

Miscellaneous.

The late Mr. Joshua Major.—It is with regret we have to record the death of Mr. Joshua Major, Landscape Gardener, Knowsthorpe, near Leeds, a gentleman who held a prominent position in his profession, and was the author of several works. In 1829 he published "A Treatise on Insects most prevalent on Fruit Trees;" in 1852, "The Theory and Practice of Landscape Gardening;" and in 1861 (with the assistance of his son, who succeeds him), "The Ladies' Assistant in the Formation of their Flower Gardens." In days gone by, he was also a frequent contributor to Loudon's "Gardeners' Magazine. As regards works of philanthropy, it may be mentioned that he assisted in forming the first Sunday school in the town of Leeds, and that in all religious and charitable institutions he took an active interest. He was a man of cheerful disposition, of simple tastes and habits, and was held in high esteem by his workmen. As an evidence of this, six of them served him 50, 42, 40, 32, 29, and 20 years respectively. After upwards of half a century earnestly devoted to his profession, he died on the 26th ult., at the advanced age of 79 years.

Calendar of Operations.

(*For the ensuing week.*)

MANY in-door plants will soon require attention in the way of potting; everything therefore necessary for the proper carrying out of that operation may now be put in readiness. Continue to keep insects strictly in check, and bestow constant care upon the timely performance of routine work.

FLOWER GARDEN AND PLANT HOUSES.

As regards the conservatory and other show-houses, the obtaining Spring bulbs, Chinese Primulas, and other plants in flower from forcing pits or other houses, and the removing such as have done blooming to other quarters, will now be the kind of work requiring most attention. A temperature of 45° at night, and from 50° to 55° during the day time, is at this time of the year sufficient in conservatories, even in houses in which plants are in flower.

CARNATIONS AND PICOTEES.—Planting time with respect to these is approaching; therefore bestow great attention on the proper preparation of soil for them, as upon that much of the after success depends.

ORCHIDS.—Re-pot such kinds as require that attention. Many sorts on blocks will have received little water since last autumn, and may be very dry. Occasionally, therefore, soak the blocks for a few minutes in tepid water; and baskets, if dry, will also be benefited by being subjected to the same process. Syringing may soon be resorted to early in the afternoons of fine days, and other conditions favourable to growth may more generally be put in force than would have been prudent during duller weather.

PANSIES.—Where plants have been kept in pots during winter they may be planted out with their balls entire on richly prepared soil as soon as the weather has become favourable for that purpose.

PINKS.—These ought to be carefully gone over, slightly forking up the surface soil and applying a top-dressing of light rich fresh mould to the depth of say half-an-inch all over the bed.

FORCING GARDEN.

CUCUMBERS.—Follow up former directions, regularly stopping and often sprinkling lightly with water round the frame.

FIGS.—As soon as the young shoots are four or five joints long, commence stopping them by squeezing them flat between the finger and thumb; this is one of the principal secrets of success in Fig management. Ensure a steady degree of moisture at the roots. Figs are very impatient of drought—a very short period of neglect in this respect may prove fatal to the crop.

KIDNEY BEANS.—Give weak liquid manure to these, and make sowings for succession as required.

PEACHES.—Suffer no gross shoots to push above five or six eyes without stopping; this will do more to equalise the sap than any mode of winter pruning. If the trees are properly attended to in these respects there will be little left for the knife. When the fruit is as large as a marble, commence thinning, removing only a few at a time. Give air freely when the weather is favourable, and syringe liberally in the afternoon.

PINES.—Do not allow the bottom-heat to rise too suddenly; when much new tan has been added in consequence of recent shiftings or removals, this may readily take place. Constant attention to the trial sticks is therefore now necessary, in order to ensure success. For general purposes 80° or 85° will be sufficient. Let atmospheric moisture be in proportion to the natural increase of heat and light, and give air freely early in the day on all favourable occasions, shutting in a good amount of sun-heat whenever a chance of doing so occurs.

VINES.—Attend regularly to the disbudding or stopping of superfluous wood. Take good care of bunches that require shoulder tying. A brisk heat may be permitted on bright afternoons; but be moderate at night; let 65° at that period be the maximum. Keep up a liberal amount of moisture independent of the syringe. As soon as succession houses are closed for forcing, be careful to secure a thoroughly moist state of the atmosphere by frequently sprinkling the floors and every available surface, but where it can be done, a regular moist state of the atmosphere is most effectually secured by means of a slight bed of fermenting materials in the house, which will also afford a little warmth, and the moisture from this is much more congenial to vegetation than anything that can be effected by the most careful use of either syringe or evaporating pans.

HARDY FRUIT AND KITCHEN GARDEN.

As the period for sowing seeds of some crops will soon be at hand, see that everything is in readiness for that purpose; never sow, however, until the ground is sufficiently dry to bear treading on without disadvantage, and otherwise in proper condition to receive the seed. Much mischief is committed by inattention to these particulars.

BEANS.—Sow Early Mazagan whenever the ground will permit.

CARROTS.—Sow also Early Horn on a warm border.

WALL TREES.—All pruning and nailing must soon be brought to a close.

STATE OF THE WEATHER AT CHISWICK, NEAR LONDON, for the Week ending Feb. 7, 1866, as observed at the Horticultural Gardens.

Feb.	Mean Height of the Barometer	Temperature: Of the Air Max.	Of the Air Min.	Of the Air Mean	On the Earth 1 foot deep	On the Earth 2 feet deep	Wind	Rain in inches
Thurs.	1	29·904	29·641	55	43	44·0	45	44	S.W.	37
Friday	2	29·737	29·381	50	42	44·0	44	45	W.	06
Satur.	3	29·747	29·477	50	32	41·0	43	45	S.W.	53
Sunday	4	29·816	29·651	47	35	41·0	43	45	S.W.	05
Mon	5	29·888	29·750	50	43	46·5	46	45	W.	02
Tues.	6	29·881	29·661	52	43	47·5	48	45	S.W.	02
Wed	7	29·744	29·481	51	39	45·0	45	45	W.	10
Means		29·814	29·579	51·0	39·0	45·0	45·6	45·0		1·15

Feb. 1—Rain heavy at night
" 2—Heavy rain, heavy gales; rain at night
" 3—Rain; boisterous all day; heavy rain
" 4—Cloudy; very fine; very boisterous, with thunder, lightning, and heavy rain at night
" 5—Clear; very boisterous; very fine evening
" 6—Rain; boisterous; very boisterous at night
" 7—Rain; cloudy and boisterous, with rain; very fine at night.

Mean temperature of the week 2 deg. above the average.

STATE OF THE WEATHER AT CHISWICK,

During the last 14 years, for the ensuing Week, ending Feb. 17, 1866

Feb.	Mean Temperature of the Air	Mean Temperature of the Soil 1 foot deep	Mean Temperature of the Soil 2 feet deep	Mean Daily Range of Temperature	Mean Amount of Rain in the Week	Number of Years in which it Rained	Greatest Quantity of Rain.	Preceding Winds. N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.
Sunday, 11	44·1	40·7	40·8	17	0·61 in.	9	2	2	—	—	—	1	2	7
Mon.	44·1	40·7	40·8	17	0·61 in.	9	2	2	—	—	—	1	2	7
Tues.	44·1	40·7	40·8	17	0·61 in.	9	2	2	—	—	—	1	2	7
Wed.	44·1	40·7	40·8	17	0·61 in.	9	2	2	—	—	—	1	2	7
Thurs.	44·1	40·7	40·8	17	0·61 in.	9	2	2	—	—	—	1	2	7
Friday	44·1	40·7	40·8	17	0·61 in.	9	2	2	—	—	—	1	2	7
Satur.	44·1	40·7	40·8	17	0·61 in.	9	2	2	—	—	—	1	2	7

The highest temperature during the above period occurred on the 14th; 1865—68·5 and the lowest on the 15th, 1860—16·0

Notices to Correspondents.

[illegible] Hardy Annuals.—These should now be [illegible] The Adonises should be planted in [illegible] soil, and the others thinly scattered [illegible] where they are to remain. When [illegible] the seedlings should be carefully watched [illegible] and the slugs destroyed. Where these plants [illegible] and it is desired to have them [illegible] they should be sown in small pots.

[illegible] Dr. Mason has not as yet published [illegible] received, according to M. de la Bretonnerie in [illegible] Journal, from Bergamo in Italy, in the Venetian territory.

[illegible] Ferns.—The Bracken is a difficult [illegible] to get up the rhizomes uninjured; but [illegible] are easily secured, and damaged in removal. [illegible] your compost heap when composed of [illegible] leaves, covered with young [illegible] fronds of the Pteris? Take up the rhizomes in sods as large [illegible] and secure the plants and a light sandy soil. You may make [illegible] examination so as [illegible] with the position of the rhizomes before digging out the sods.

[illegible] Sow now in pots, which should be placed [illegible] Sow thinly, and cover with [illegible] Keep the soil [illegible] When the seedlings are up and [illegible] pots, pulling them out [illegible] ones as they [illegible] Keep the soil [illegible] with [illegible] [illegible] soil. [illegible] of [illegible] kept up with [illegible] and the plants [illegible] or [illegible] [illegible] They may be grown should be half good strong loam and half rich rotten dung [illegible] To grow Cucumbers well they must have a tolerably brisk bottom heat, plenty of air, room and water, [illegible] Yellow [illegible] rally [illegible] make pretty [illegible] [illegible] with [illegible] that will [illegible] credit.

[illegible] Peas.—These [illegible] of producing these [illegible] have been practised with success. Cut [illegible] inches in length, each [illegible] a well-known [illegible] Sow [illegible] a shallow drill, lengthwise in each [illegible] Place them [illegible] or in a pit with a little heat, and then sow your Peas. Two ordinary lights will hold about 50 yards. Now is a good time for sowing, and plant out under a south wall on the first favourable opportunity in March.

[illegible] Currants.—Never allow the branches of these to get too much crowded, or to interfere with one another. The shoots which spring up in the [illegible] each year, as well-known plant in our [illegible] If P. L. Rendle [illegible] so far as the very imperfect specimens will enable us to ascertain.

Royal Horticultural Society.—Education Scheme: The following corrections are required in Mr. Fish's remarks on the subject of [illegible] in the Hall, for knowledge and skill "wasted," read "invested;" line 38, for "working" [illegible] read "wearing;" and in same column, for "wearing," read "wearing;" in same col., 20 lines from bottom, for unless gardeners' wages are raised, the "quantity," &c., read "quality."

Woodlice.—If flower pots [illegible] their sides, half [illegible] with a boiled Potato, covered with dry Moss, make good traps for them; they may also be killed by [illegible] round the sides of beds in frames in which they are [illegible] some. In applying the latter remedy, care must, however, be taken not to injure the roots of whatever may be growing in the bed.

COMMUNICATIONS RECEIVED.—C. Lawrence (next week).—A. Murray.—K. E. W. should send his name.—J. Fleming (thanks).

FINEST LAWN MIXTURE.—Composed only of the best and cleanest Seeds of the most suitable dwarf Evergreen Grasses. 1s. per lb. Carriage free.
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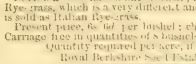

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The Agricultural Gazette.

SATURDAY, FEBRUARY 10, 1866.

—— At a very crowded and important conference of Agricultural Societies in St. James's Hall on Thursday, resolutions were passed that all live traffic of cattle by highway or railway from place to place within Great Britain ought to be suppressed—that foreign cattle if imported living should be slaughtered immediately upon landing—that all diseased and infected cattle should be slaughtered—that partial remuneration should be provided by Act of Parliament—and that the disinfection of infected places and things should be enforced by law.

The meeting was not called for the purpose of placing certain views before the country so much as for a conference on the subject by which the views of agriculturists were to be elicited, and the unanimity which prevailed is the more significant of the intense feeling of the necessity of Government interference which now prevails in the agricultural world. Any difference of opinion which the proposal of resolutions elicited, tended to the assertion of greater stringency of rule. Exceptions were urged, not without force, but no exception was allowed—neither that of hitherto untainted counties, nor that of cattle going direct to the shambles, nor that of the bull required in herds where none is kept. An absolute cessation of live cattle traffic, combined with the adoption of the Aberdeenshire plan of "stamping out" the disease—and this, enabled by means to be provided by Act of Parliament—such are the items of the course which is now unanimously recommended.

A short report of the meeting is given in another column, and we add to what appears there that Mr. GOODLET, the President of the Edinburgh Chamber of Agriculture, pointed out the necessity of farmers keeping their live stock in small well-separated lots, or (where they are valuable pedigree stock), in absolute individual separation and seclusion, lest some rule of slaughtering infected animals being adopted, a whole herd should come to be sacrificed in place of the single animal or the two or three to which alone under considerate management this rule would apply.

"You may prove anything by figures," is a taunt vulgarly cast in the teeth of the hard-headed clear-eyed calculator of statistics; but it is forgotten how many discursive generalisers attempt to prove their conclusions without the indispensable basis of "facts"—so troublesome to collect, and so difficult to deal with when you have got them. For the assistance, then, of voluble speakers and facile writers on the absorbing topic of the day, it may be well to follow up our figures already given to illustrate the rapid extension of the plague.

The grand total of "cases" in Great Britain is about doubling every four weeks; but certain sanguine expectations are being founded upon the circumstance that several counties present a weekly "decrease." Take the English provinces, for example:—

IN TWENTY-TWO COUNTIES OF ENGLAND.

Total Number Attacked, down to January 20.	Attacks during the Week ending January 20.	Increase for the Week ending January 20, as compared with the corresponding Week of last Month.
52,683	7145	3742

IN THIRTEEN COUNTIES OF ENGLAND.

Total Number Attacked, down to January 20.	Attacked during the Week ending January 20.	Decrease for the Week ending January 20, as compared with the corresponding Week of last Month.
19,490	393	330

Now, if decrease were observable in those counties which contain the great majority of cases, and increase appeared only in those counties where the attacks have been comparatively few, there might be some ray of encouragement from this aspect of the question. But the actual state of affairs is quite the reverse. In that portion of the kingdom which suffers only 393 attacks in a week, there has been a decrease, compared with the number of attacks a month since; but in that area of the country which has witnessed 7145 attacks in a week, there is an increase of 3742. There is nothing in these figures to warrant the notion that the disease is anywhere weakening in its force; for, if we were fully acquainted with the infinite variety of conditions, such as situation, precautionary management, and severity of repressive measures, in all the centres where the plague has fallen, it is very probable that sufficient explanation of decrease and increase would be at once apparent. Some districts have farms of immense size, with buildings widely separated; others consist of smaller holdings, so closely packed together that a cluster of tenantry consider themselves "in the same boat" with any one of their number that may get the contagion on his premises. And, of course, the amount of ignorance as to the dangerousness of attacked animals, and the degree of vigilance exercised, differ immensely in different neighbourhoods.

Then, again, it is a cause of congratulation with some that the "recovery rate" is steadily improving. The tabular form of conveying information is most ready and striking to the eye, and here are the figures that are supposed to be so cheering:—

Down to	Total Number of Attacks.	Total Number of Recoveries.	Percentage of the Attacked which have Recovered.
October 28 ..	1,766	818	4.8
November 18 ..	27,139	1775	6.47
December 9 ..	47,199	3531	7.48
December 16 ..	54,284	4686	8.7
December 30 ..	73,519	7045	9.57
January 6 ..	87,957	8868	10.07
January 13 ..	94,276	10043	10.6
January 20 ..	107,668	11,831	11.04
January 27 ..	109,734	11872	11.72

Latterly, the reported recoveries are still more numerous, as for instance:—

WEEKLY CASE IN GREAT BRITAIN.

Week ending.	Number Attacked during the week.	Recovered during the Week.	Percentage of Recoveries during the Week.
January 6th ..	7,166	1171	16.19
January 13th ..	9,243	1450	15.9
January 20th ..	10,041	1662	16.55

That is, of every six animals attacked, one is officially reported to get over the complaint. Now, in the first place, we doubt even the approximate correctness of these percentages. We believe that great numbers of beasts of all sorts,

oxen, bulls, incalvers, and young growing stores, have been slaughtered (the process is still going on) upon the earliest intimation of refusing their food, and so have not been reported as having been "attacked" by the disease. The weekly returns of the Privy Council Veterinary Department professedly give the numbers "slaughtered healthy;" but, seeing that the inspectors go only to farmers who send for them, and are busy with galloping after actually bad cases, there seems to us no likelihood of their ascertaining how many carcases are taken to towns and to railway stations after being killed "to save their lives." What the figures really prove is this, that the farmers in the plague districts are being more on the alert than they were when the disease was a novelty, and (now that the winter treading of manure is mostly accomplished) and killing off without hesitation or hopeful indecision animals that are plague-struck but not so far gone as to present positive and unmistakable plague symptoms. A few months ago, such animals, a little off their keep, a little dull, perhaps, and so on, would have been left to develop themselves into decided plague patients, in the hope that mere cold or some trivial complaint might be the matter; whereas now, there is smart action with all doubtful cases, quick sending for the butcher, and a transformation of the barn into a house of blood, flesh, and fat.

In the second place, if be a fact that of the number of animals which either have exhibited plague symptoms, or would have done so if not at once butchered, an increasing percentage has been restored to health again, all we can say is, *Do not let this delude you.* One of the greatest preachers we ever listened to, produced a profound impression upon his audience by setting forth the wretchedness of a man that has no hope. But the excitement grew more intense when he proceeded to portray a condition more desperate and more terrible than that—the case of a man with a false hope. Be not deceived, we say; our sanguine spirits who look cheerfully at the Plague "recoveries" are in this darkest and most irretrievable position—lulled to fatal inaction by the gloss of a false hope. For if the per centage of recoveries has increased, though we do not admit that it has, if all *bonâ fide* cases of "attack" had been ascertained and stated, yet this is all past, and though interesting as a matter of history, you can see, by looking at the figures, that the recoveries are not increasing now, and they have not increased during the last few weeks. After all, we are stated to have arrived merely at a normal proportion of recoveries, somewhat more favourable than that realised in some other countries. As for a gradual wearing out of the disease, or conquering it by treatment, the prospect remains as hopeless as before, and we grieve to see people buoying themselves up with anticipations that can lead only to evil. The mischief of the reports of amelioration lies in this—that on the chance of getting one animal out of six or seven cured, stockowners will leave all their attacked animals alive to multiply the germs of contagion on a tremendous scale, while all the time it is known that our sole means of quelling the malady and preventing its spread to the entire horned stock of the kingdom is the immediate destruction of infected beasts before they are bad enough to be dangerous to others. Don't talk about a small proportion getting better; and, if you cannot stop the advertising of cattle-plague medicines (for this trade is not here punishable by law, as in Prussia), dcall that you can to discourage trials of remedies, and enlighten your neighbours upon the subtle and mighty power of the infection. But it is a crying shame that Government has not, long ere this, put an end to the manufacture of the plague virus by summarily destroying everywhere (of course with partial compensation) animals taken with the disease. *J. A. C.*

AGRICULTURAL LABOUR IN DURHAM.

We are wondering what is the end and aim of the life of that great man who penned the leader in the *Daily Telegraph* of the 2d inst. upon the present state of the English Agricultural Labourer. In his parallel between the life of a colt and a "male English peasant child," we are willing to allow that there is a degree of truth in the comparison. "Both live in much the same way at first: both are turned out and taken up about the same time; just when the lad has had a lesson or two in the Catechism the colt gets broken and trained; and brute and boy go to work together. At daybreak they shamble to the field together; they munch their meals under the hedge; go at it again, break off again, and then shamble home." "Both creatures," when they arrive at home, "eat and drink, and then go to sleep." Of course they do; why should they not—both are animals, both work, both rest, and both enjoy their victuals.

But, Mr. Editor, the learned gentleman ought in fairness to the plough-boy to have included himself in the simile he has drawn. He, sir, is also an animal in a similar sense, and so is every child of Adam, and the main object of work has always been to fill the belly.

The Cockney realisation of the state of our ploughman is only worth quoting to show to all the absurdity of his position:—"They go to church on Sunday, 'tis true, and wear a white smock, and hear with a dim incredulity that it covers the 'image of God;' but in the religion, the intellect, or the vital movements of the day, their fellow-brutes the horses share almost as much when you tie their tails up for the holiday with a bit of smart riband. Such is the result of 3½*d.* per day and feudalism."

As for our ploughmen troubling themselves about "the intellectual movements of the day," we cannot but think that an honest man who has to find bread for a wife and family by manual labour has quite enough to sharpen his wits without dabbling in such matters. But with regard to religion we have yet to learn that riches are the best path to its attainment; but it is perhaps easier for the camel to go through the needle's eye than we thought.

I do not know Dorsetshire, but the champion of the country labourer includes all the counties of England in his sweeping condemnation. Now, Mr. Editor, as a Durham man I feel bound utterly to deny all this inflated nonsense. The ignorance of the subject which your contemporary exhibits in every passage of his effusion cannot be better exemplified than by his having selected Durham as one of the four counties he has specially held up to scorn. The Durham countryman oppressed! The farmer who tries it once won't try it again, I reckon. No, Sir, if the Durham farmer is conscious of one thing more than another, it is that the men are becoming over-masterful.

Let us look at the facts of the case: a good man cannot be obtained under 2*s.* 6*d.* per day, in ordinary times; under 2*s.* 8*d.* to 3*s.* in busier seasons; and under 3*s.* 6*d.* to 4*s.* in harvest. Hinds (married ploughmen) receive 13*s.*, 14*s.*, and 15*s.* per week, cottage free, coals carted, often 2 bush. of Wheat at Christmas, and Potatos according to stipulation. Then we have the case of the unmarried men and lads. These almost invariably go to place as soon as they are able to hold the plough (and often sooner). This means that they are hired to a farmer for a definite time, at a fixed wage, varying from 5*l.* to 20*l.* per annum, according to age and ability, and that they live in the same house with the farmer, sit in his kitchen, and, generally speaking, live as well as the farmer himself. They grow up rosy, fat, active, not over civil, and become shrewd, clever workmen.

I am out of patience with the maudlin humbug which deplores the condition of such a people, and characterises them as "a class for the express purposes of ploughing, harrowing, and horse-rolling; a class with big muscles and little brain-pans—with lean shanks and thick loins—with hearts as feeble as water and hands as hard as flints: a class whose *raison d'être* is to make Turnips grow, and to touch the hat when the landlord passes." Hat touching is not fashionable in Durham county.

More true to life is the reflection of a late authoress that she never more fully realised the strength of Homer's description of the Greek and Trojan heroes than when she met the Achilles, the Hector, and the Ajax of real life under the rough exterior of the stalwart and brave English peasant.

As for the statement already quoted, that if facts were better known, the Durham, Dorset, Kent, and Cumberland farmers would voluntarily raise their wages, or else be compelled to do so, it is simply idiotic, for no such thing would happen. As well might our philanthropic writer at once begin to buy Wheat at 60*s.* per qr. when he became conscious of a fact, which, alas, has been somewhat generally realised in Durham, that selling Wheat at 38*s.* per qr. was a decided loss to the grower. If, as this gushing, but false friend of the labourer suggests, an "honest schedule of a large arable estate, showing truly the share of the labourer in the crops he raises," were examined, it would show too plainly that the labourer is better paid than the farmer; for while the former is receiving on an average 15*s.* per week, the latter, after expending skill and capital, is barely receiving the interest of his money.

Finally, I should like to ask this Cockney friend of Durham countrymen on what data he founds the following remarkable statement—that the most liberal arithmetic can only compute the daily earnings of an ordinary family at 3½*d.* per head per day. What arithmetical process has our philanthropist adopted?

I am aware that the agricultural population is not so highly paid as their city brethren, especially when we consider the intelligence, the activity, the far-sightedness, and the length of time necessary to constitute a really good ploughman. But, so far as my own county is concerned, however far the agricultural population may be from what they ought to be, it is not to be remedied by any amount of the silly sentimentality of the *Daily Telegraph*; and the wage they are receiving is as much and more than their masters can afford them. *J. W.*

THE CATTLE PLAGUE.

1. The following returns were issued yesterday:—These returns do not profess to give the total number of cases which have occurred in Great Britain, but only those which have been ascertained from information received at the office from inspectors. Columns 1 only record the cases reported as having commenced during the weeks indicated by the headings; "back" cases being added to columns 2.

Census Divisions.	1 Number Attacked. Week ending January 27.	1 Number Attacked. Week ending February 3.	2 Total Reported Cases from Commencement of Disease. Attacked.	Killed.	Died.	Recovered.	Unaccounted for.
Metrop.	26	26	7510	3170	3429	320	591
S. Eastern ..	35	38	4888	1507	2729	430	222
S. Midland. ..	580	689	11,224	1964	7391	894	785
Eastern Co. ..	157	201	8057	2805	4021	594	526
S. Western. ..	58	44	1217	311	645	152	179
W. Midland ..	1723	1965	5109	548	3407	527	618
N. Midland ..	715	725	5785	702	3876	467	740
N. Western ..	3510	3221	23,193	644	13,841	1692	5106
Yorkshire	2044	1426	21,270	348	13,155	3407	3760
Northern Co. ..	116	120	891	631	1533	262	392
Monmouthsh. & Wales	626	769	5844	102	4499	747	516
Scotland ..	2156	1875	55,189	3449	29,657	6384	3999
	11,745	9,153	182,183	17,368	81,386	16,055	17,374

Note.—29 inspectors have not reported this week in time for this return. Among these were some who returned 2941 cases last week, and in the apprehension of the disease is probable more due to them neglect than to any real diminution of attacks.

2. Conference of Agricultural Societies, *Feb.* 8.—A conference of the representatives from the agricultural societies of Great Britain and others was held this morning at St. James's Hall. The Earl of Lichfield presided.

Mr. Pell moved—"That the renewal of all live cattle from one place in Great Britain to another over highways, except in uninfected counties, and that the removal of all live cattle by railways throughout Great Britain ought to be prohibited for a limited period." He sought not to see that upon the first proposition hung all subsequent action, and he trusted that they would lay aside party differences and unite in supporting the Government in its endeavours to stay the fearful plague. He entirely agreed with the doctrine laid down 150 years ago, that, to what they called a living evil, they all have to refer upon the pole-axe as the most trustworthy remedy. The present system of treating the disease had brought about twelvefold increase in the course of three months, and, despite all the ability, he believed that if the system were not changed, we should be better off at the end of 12 months. In the report of the Royal Commission, Mr. Lowe had recommended a general prohibition, and had suggested that to allow any exception would be to open the way to abuse. With that opinion he entirely concurred.

Colonel Hayward (Leicester) seconded the motion, commenting upon the confusion which prevailed at the present time with respect to orders issued by county magistrates, and the impossibility of arresting the plague while such a want of uniformity existed. The only proper course to pursue was to establish one central authority, from which all orders should issue, and when issued peremptorily obeyed.

Mr. Marshall, of Ely, thought that Mr. Pell's speech and motion were not harmonious, inasmuch as the motion itself made an exception. He proposed that the words, "except in uninfected counties," should be left out of the resolution for fixing the removal of cattle.

This suggestion was received with loud cheers, and immediately adopted by the mover of the motion.

Mr. Snow (Edinburgh) proposed an exception to the original motion in favour of healthy fat cattle, because he did not see how otherwise a sufficient supply of meat could be obtained for large towns.

Mr. Duncan (Glasgow) supported the amendment.

Sir James Fergusson, M.P., was about to address the meeting, but

The noble Chairman called attention to the advice he gave at the opening, namely, that members of either Houses of Parliament should abstain from speaking at the meeting, because they had an opportunity of doing so elsewhere.

Sir James thereupon sat down.

Sir W. Heathcote, M.P., inquired what was the definition of the word "highway?"

The reply from the Chairman was to the effect that it included all highways, and not simply those which technically came under the Highway Act.

Mr. Brandreth (Herefordshire) thought that the carrying out of the resolution would leave all their cows barren next year.

The original motion was put to the meeting, and carried almost unanimously.

Mr. Smythies (Chairman of the Central Farmers' Club) moved the second resolution—"That all imported live cattle be prohibited moving inland." He contended that as there was no difficulty in supplying the markets with fish, there could be none in supplying dead meat.

Mr. Jassby (Herefordshire) declared it wholly unnecessary to raise any objections, considering the vast railway system now in full operation.

Mr. Goodlet (Scottish Farmers' Club) then moved, "That the immediate destruction of all plague-stricken animals, and those in direct contact with them, and the complete isolation and careful watching and control of all animals that have been within the influence of contagion, ought, by Act of Parliament, to be provided for." He said that Scottish farmers were at one time as much inclined to try remedial measures as their brethren in England, but they had at last come to the conclusion that no stop could be put to the plague until some such resolution as he had read to the meeting was carried out.

Mr T. B RYDE (Liverpool) assured the meeting that the resolution was one which entirely accorded with the opinions of the Lancashire and Cheshire farmers.

Professor GAMGEE said There appeared some vagueness in the phrase "animals that have been within the influence of contagion," and to remove any difficulty which might possibly arise in that cause, he should call their attention to the test which the thermometer supplied as to what animals were or were not infected. He had, by the use of that instrument, detected the presence of the disease where no one believed it existed, and if used it would protect a large quantity of stock. People widely differed as to what was meant by being "within the influence of contagion," and therefore he suggested some such definite proposition as they would be enabled to make by watching the indication of the thermometer as a guide to the presence of animal heat.

The CHAIRMAN suggested that the definition should be left to Government, as the meeting had been called for suggestive and not for legislative purposes.

Professor GAMGEE agreed, and the resolution was carried in its original form.

The following resolutions were put and carried :—

"That the partial remuneration of the owners of animals affected by these measures be provided by Act of Parliament."

"That the disinfecting of all infected premises, market places, railway cattle-trucks, and cattle-pens, be enforced by Act of Parliament."

"That the petition approved by this meeting as appended be circulated by members of the Conference, and, when signed presented to both Houses of Parliament."

"That the thanks of this meeting be given to the Earl of Lichfield for his kindness in taking the chair."

It was afterwards moved and carried, "That a deputation, consisting of the Chairman, the movers and seconders of resolutions at this meeting, wait upon Sir George Grey, Bart., at a quarter before 2 o'clock to-morrow (February 9), to represent to him the views of the meeting, and to urge the Government to take the steps necessary for giving immediate effect to the same."

The usual vote of thanks to the Chairman closed the proceedings.

3. THE DEBATE ON TUESDAY.—The discussion naturally divides itself into two parts—the retrospective and the prospective. The House has to consider not only who is to blame for the past, but what is to be done for the future. It says much for its practical spirit and sterling good sense that the discussion was carried on more with a view to the latter than the former object. The Government, as it seems to us, profited much, and might have profited more, by the extremity of the peril and the gigantic scale of the misfortune. Attention was so fixed on the possible remedy that at first, at least, it was little directed to the cause of the evil. The Government did not escape some severe reflections, but the whole stress of the first three hours of the debate consisted of suggestions for future amendment. The sum of these suggestions may be stated in very few words. It consisted, in the first place, of urgent demands that the Government should do what has so often been advocated in these columns—that it should take the matter into its own hands, and supersede at a single blow the inconsistent, perplexing, and inadequate operation of local authorities. The second demand was, in various forms, the establishment by Act of Parliament, and therefore in a compulsory form, of a plan somewhat similar to that which has met with a chequered, but, upon the whole, a considerable success, in the county of Aberdeen. The speeches in which this was advocated showed a very considerable knowledge of the subject, and were delivered with an earnestness which evidently came from deep conviction ; and so the debate proceeded until it came to the turn of the Government to give an explanation of its intentions on the subject. It then appeared that on the first branch of the demand the Government had not the least intention of giving way, and that whatever be the causes which induced the Home Secretary to leave everything to local authorities—whether a dislike of responsibility or a prejudice in favour of local self-government—he is not prepared to yield to remonstrance. Such an opinion entertained by so high an authority as Sir George Grey is entitled to the utmost respect, and yet we are very unwilling to believe that his views on this subject are fixed and irrevocable. Every day as it passes increases our knowledge of the discrepancies, anomalies, and inconveniences which surround the local system. Every day teaches us more forcibly the extreme peril in which we stand, and paints the future that awaits us in blacker colours. To-day takes what has been spared yesterday, and the remainder is swept off by the rapacity of to-morrow. We can hardly believe that measures imperatively required for the safety of the whole country will be permitted much longer to be regulated by the caprice or interest of local bodies, many of which look to nothing beyond their own interest, and that interest regarded from the narrowest and most short-sighted point of view. . .

Parliament seems to have very wisely deferred any further consideration of the conduct of the Government until they see the measure that is to be produced next Monday. Should that measure be unsatisfactory, it is very unlikely that a question exciting such deep and universal interest will be allowed to rest there. Even should the proposed measure be satisfactory, it is very doubtful whether it will be accepted as a settlement, unless coupled with some assurance that it is the intention of Government to reconsider its present unsatisfactory policy of leaving everything to local bodies, and to apply a general remedy to an evil that presses uniformly upon all. We hope that the interval for deliberation which is afforded by the announced transition of debate to other topics will be wisely employed by Ministers, and that they will not provoke a too curious retrospect into past errors by a refusal to grapple with a most formidable and imminent danger. *Times.*

4. VACCINATION.—You were good enough to insert a letter of mine, in which I mentioned an experiment I was about to make of inoculating two cows with diluted Rinderpest virus. These cows had been successfully vaccinated, and I expected that by inoculating them with diluted Rinderpest virus—one drop of virus to eight drops of warm milk—they would either have resisted inoculation or else have taken the disease in a mild form.

I have, I am sorry to say, been disappointed in both these expectations, as the two cows died yesterday evening.

The remainder of my vaccinated cows, seven in number, are all well up to this present time ; and as long as they continue so, my faith in the protective influence of vaccination will remain unshaken, provided it be done in time, when no disease is lurking in the system, and when the operator is an experienced person.

The same men who nursed the sick and dying cows tended the others without changing their clothes, or taking any precaution whatever.

Is it not, therefore, presumable that the present immunity of my cows from the disease is owing to the protective agency of successful vaccination ? *Wilbraham Tollemache, Dorfold Hall, Nantwich, Feb. 6, in the Times.*

5. ABERDEENSHIRE PRACTICE.—The uncertainty that most well-informed persons have felt throughout regarding the efficacy of vaccination as a prophylactic in cases of rinderpest being now succeeded by a conviction that it is practically useless, we are at last left with no specious theory, none worth losing a winter's day to speculate on, to stay the sharp military practice really needed in the face of this fearful scourge.

If Parliament falls short of appreciating the absolute necessity of such practice, if its time and energies are to be wasted during the precious days of this month in party discussions and unavailing reproaches, if the country is to continue boggling with Orders in Council, and legislation is to pass utterly from St. Stephen's to the Courts of Quarter Sessions—then I say let the landowners, let the bankers, let the numerous interests closely identified with agriculture look to it. The grazing lands will not be stocked by prudent men. The proverb—"This year to mow, next year to owe," will be exemplified. Graziers will pause before they embark their capital in the mad speculation of purchasing store cattle out of yards and districts whose return of fresh rinderpest cases last week numbered over 11,700, and this, too, with our stock to a very great extent isolated in their winter quarters.

There are those who, having exhausted every conceivable form of quackery, fall back on "God's Providence"—a vague expression, implying that the disease must have its course ; who shall deny it ?

But it seems to me that we have a remedy, and in Aberdeenshire an example of its working. Are we, or are we not, to take advantage of it ? That is the question. All the machinery is at hand for raising funds by way of county rating. Owners seem universally ready and anxious to apply it. Tenants are willing that Parliament should define in what proportions the tax should be levied on themselves and their landlords. By common consent it is admitted that now only is the time left us for action, that if the country generally will not during the next 10 weeks submit to the inconvenience of depending upon home-killed meat, she will, when summer comes, have to remove all restrictions on trade in cattle, and with infected railway trucks, steam-boats, highways, market-places, open fields, and enclosures, let the plague run its natural course till its virus is exhausted, and England is left to raise again her splendid herds of cattle on such stock as, proving unsusceptible of the disorder, may, after 10 or 12 years of ordeal, by some inscrutable law of Nature, be spared to us.

It is, indeed, a melancholy reflection that a great nation, so apt to acquire and establish, should show such want of decision to save—that our wealth of herds should for half a year have been left so defenceless, that common sense should be so paralysed, that history should serve its purpose so ill, and that the free and jealous spirit of the people should have debarred us from employing those almost military measures by which other countries have freed themselves from a curse that with us is every day becoming more and more intolerable. I believe that in this county all that could have been done with the means at hand has been done, but we can only just hold the enemy at bay. As a rule, our farm premises are excellent, our herdsmen experienced, our landowners resident, practical, and united, and in constant personal communication with their tenantry. No time has been wasted here in whining for national charity ; the shoulder has indeed been put to the wheel ; we have insurance societies, guarantee funds, an excellent police, local orders innumerable. But in our heart of hearts, if there is no panic, there is no confidence and there is fear. We know that as matters stand we are very helpless, very dependent on chance ; one tainted hide, one spatter of poisonous manure, the footfall of one prying intruder, the Sunday or evening interchange of plighted vows between Damon of the hill and Phillis of the valley, and the omnipotence of folly acting in a thousand divers ways lay our cattle open to destruction. We still, however, hope, as the result of the London conference advertised in *The Times*, to press upon Government and the Legislature the necessity of immediate action, and to urge on them at the eleventh hour with one great simultaneous effort to suspend the whole course of live cattle traffic for a limited period, and during that period unsparingly to kill and disinfect at every centre of disease.

With our railroads, telegraphs, and penny post, it is not to be expected for one moment that the regular supply of animal food to the great towns will be jeopardised ; some vested interests will for a time suffer under restraint, but they are secondary interests after all, and must retire for a while before those which are of the first importance.

Let the inconvenience, however, be what it may, let the first cost be what it may, let the difficulties be what they may in providing for the immediate extirpation of the plague, we can compass them, and no thinking man can find it in his mouth to say that the result sought is not worthy of the self-sacrifice and denial demanded, or that we may not reasonably promise ourselves reward in future plenty and national triumph. *Albert Pell, Haselbeech, Northampton, Feb. 3.*

6. INSURANCE.—The official returns of last week show that nearly 12,000 cattle had been attacked by the rinderpest. Supposing 3000 of these recover, there remain 9000, which, at an average value of 8*l.* each, amounts to 72,000*l.*, which Great Britain is losing weekly by this plague.

Six weeks at this rate amounts to 432,000*l.*—a sum which your correspondent, Mr. Bignell, calculates is sufficient to pay for buying up and slaughtering all the cattle in the country that are at present affected.

Not only has this system been effectually carried out in Aberdeenshire, but in Prussia since the time of Frederick the Great, in 1765, laws have been enacted that have repeatedly stamped out the disease, which had been introduced from the frontier districts of Russia and Austria.

Eighty years ago a similar system was adopted in Banffshire, where the plague had been introduced by a Dutch ship ; every head of cattle in the small town of Portsoy was slaughtered and buried, and so the plague was stayed. The loss of 700*l.* was paid by Government.

In this city the mayor of last year at an early period prevented fairs or markets being held. Some cattle arrived by train from London ; they were watched by a policeman till they were slaughtered. Others were sent from a distant part of the county, and they were at once returned to the place from which they came. At York, Malton, Hull, Peterborough, and other places in our neighbourhood, open markets have been the means of widely disseminating the plague.

We have a mutual insurance company for this union and petty sessional division, and have not as yet had a single claim. The union comprises 100 parishes, and we have 4700 cattle insured. Excluding the city parishes, our union rating is above 200,000*l.* A rate of 2*d.* in the pound to be paid by the tenant, and a second 2*d.* by the landlord, would produce 3200*l.* With such a sum as this we should be ready to buy up any infected cattle immediately the disease appeared, and to have them slaughtered and buried. At present we should not know what to do with one-fourth of the money, as the disease has only appeared in one parish, bordering on another union ; but the disease is now creeping round us on several sides, and immediate action seems necessary. This rate of 2*d.* in the pound would, on a rental of 300*l.*, only amount to 50*s.*, which I am sure both landlord and tenants in this district would gladly pay. All that appears to me to be necessary is an Act of Parliament authorising the Government to grant a loan to the required amount, to be repaid by the necessary call on the union rating.

As chairman of the insurance company, and also of the union, I have been in communication with so many large farmers on this subject that I feel I can express their opinion that a very prompt and decisive measure of this nature is necessary. *A. Leslie Melville, Branston Hall, Lincoln, Feb. 5.*

7. INSURANCE CLUBS.—As everything relating to the cattle plague is at present read with avidity, I am induced to send you the Rules of a Mutual Cattle Assurance Society which I have formed among the Duke of Devonshire's Lancashire tenants. It has been established about a fortnight, and it has been so well taken up by the tenants generally that other farmers have called upon their landlords to ask the Duke to allow them to join the Society on the same

terms. This I am happy to say his Grace has consented to. I received 1300*l.* the first day it was established. I have been solicited by many persons to publish the Rules. I think you will find them plain and simple.

We have no paid staff. Everyone at the end of the year will get two-thirds of his losses if there is money enough; if not they will all get in proportion.

We have had many attempts to form a Mutual Assurance Society, but all fell to the ground for want of confidence. You will perceive by this plan we require no inspection till the disease actually breaks out on a farm. *Geo. Drewry, Walker.*

Rules of the Duke of Devonshire's Mutual Assurance Society against Rinderpest.

(1.) Each tenant to pay 10 per cent. upon his rental.

(2.) The landlord to pay the same amount.

(3.) Any tenant renting land under any other landlord, or occupying land of his own, must pay 20 per cent. upon the annual value of such land.

(4.) The money to be placed in the Lancaster Bank jointly in the names of His Grace the Duke of Devonshire and George Drewry, Esq.

(5.) The affairs of the society to be conducted by a committee of management, consisting of a chairman and nine committeemen—not to be chosen from Furness and Kirkby, and three from Cartmel.

(6.) The association to insure against rinderpest and pleuropneumonia; but nothing will be paid for losses by pleuropneumonia until the rinderpest has attacked the stock of the insurer.

(7.) No payment will be made for losses till the 2nd of February, 1867, when each member will receive two-thirds of the value of such losses, provided there is a sufficient paid up capital in the bank; but if the losses exceed the paid up capital, each tenant will receive in proportion to the losses he or she has sustained.

(8.) No payment will be made for any cattle that have not been in the hands of the insurer 28 days; and during that period shall have been free from disease, unless they have been purchased from a member of this society.

(9.) Any person purchasing or importing cattle from an infected or prohibited district, will forfeit all claims to the fund.

(10.) When any member's stock is attacked the committee to be called in to value the whole of the stock on the farm, and if they decide that any of the animals shall be killed, this must be done immediately; and those which are diseased must be buried, with the skin on, to the satisfaction of the committee.

(11.) No animal to be valued at a higher price than 25*l.*, or pay all claims made for any animal under the age of 10 weeks.

(12.) Each member to pay his own veterinary surgeon.

(13.) On the 22nd of February, 1867, the society will be dissolved, and each member will be at liberty to withdraw from it, receiving his or her share of any surplus that may remain.

(14.) Any member not giving notice of the disease being in his or her stock, or refusing to comply with the foregoing rules, or the orders of the committee, shall forfeit all claims upon the funds.

(15.) No cattle dealer admitted.

(16.) No one admitted after February 8th, 1866.

THE DORSETSHIRE LABOURERS.

So much has been urged against the condition of the Dorsetshire labourer that I feel it to be a duty to make an effort towards rectifying some errors and misconceptions in reference to our people.

The statement I make is founded on an inquiry into the condition of the labourers on 18 farms, extending over very nearly 10,000 acres, all lying together, and in a part of the county where there is but little pasture for cattle, and of which the soil, though good, is not remarkable for fertility.

It will be seen that our system of payment is a low weekly wage, supplemented and eked out at various times by perquisites and allowances in coin or material, or opportunities of piece-work (such work being always paid for in cash), so as to form a considerable aggregate at the end of the year. A casual inquirer is misled by this arrangement, for a question as to the amount of wage is always answered by a statement of the weekly receipts, without any mention of the other particulars, which, however open to objection, show, at any rate, the amount of the expenditure of the employer on the labourer.

I am very far indeed from approving this system, and I should be happy to see it altered. It is, I am satisfied, financially injurious to both parties. But there is reason to believe that the labourers themselves would be more opposed than the farmers to any abatement of their perquisites in exchange for a higher payment in money.

It must also be mentioned, as no unimportant part of the consideration, that the hours of labour in these parts are not so many as in several other counties. As a general rule, and with very few exceptions, no labourer, from the middle of September to the middle of July in the following year, commences work until 7 o'clock, nor continues it beyond 5, with half an hour off for breakfast and an hour for dinner, giving, therefore, to his employer, instead of 10, only 8½ hours a day. From the middle of July to the middle of September he comes earlier to his work, and stays at it longer; but then he is paid, for every hour beyond the 8½ hours given in general, extra wages for his extra work.

This is a practice very dear to our people; and, in proof of it, I may state that when one of my principal tenants, Mr. Symes, a man of great intelligence and liberality, offered to increase the weekly wage in return for an increased amount of daily labour, he was met by an immediate and hopeless refusal.

Allow me to give, by way of examples, the cases of four able-bodied labourers—the first single; the second married, with no children old enough to be employed; the third with one child engaged in labour; the fourth with four sons at weekly wages.

The first, the single man, receives 9*s.* a week, but his perquisites in money raise him to 11*s.* a week, and his allowance in Potato-ground and other things to 1*s.* 6*d.* a week more, making a total of 12*s.* 6*d.* a week.

The second is married, with three children, but none of them capable of work, a condition of things involving, in the early years of wedded life, a heavy pressure on the income of the family. He is engaged at 9*s* a week, but his perquisites in money raise him to 13*s.* 6*d.* a week, and his allowances to 1*s.* 6*d.* more, making in all a receipt of 15*s.* a week.

The third, married, with eight children at home, two of them engaged in work, receives 9*s.* a week; his allowances in money for piece-work raise him to 1*s.* 6*d.* more, and his other perquisites to an additional shilling, making in all 11*s.* 6*d.* His two children earn respectively 7*s.* and 3*s.* a-week, which, added to his wages, gives to the whole family 1*l.* 1*s.* 6*d.* a-week.

The fourth, married, with four sons at work, receives 10*s.* 6*d.* a week; his piece-work in money is equal to 1*s.* 6*d.* a week, the remaining allowances to another shilling, thus making for himself 13*s.* a week. The wages earned by the four lads, with their money allowances, amount to 24*s.* 9*d.* weekly, making an aggregate of 1*l.* 17*s.* 9*d.* for the family.

I have myself carefully examined these men, who are ordinary labourers, and neither carters nor shepherds, and they admit the accuracy of the calculation. The result is that among 185 able-bodied labourers, married and single, to none of whom is a higher weekly wage paid than 10*s.* 6*d.*, the average value of their earnings is 14*s.* 6½*d.* a week, with a shorter period of labour by one hour and a half daily during 10 months of the year than is required in the wealthier provinces of England.

But this is not the full statement of their financial position. The peasantry pay a weekly rent of 1*s.* for their cottages, which are, many of them, quite new, each having a front and back kitchen on the ground-floor, three bedrooms upstairs, and every form of outhouse and other conveniences essential to the comfort of domestic life.

To each cottage, at a rental of 40*s.* and upwards, a garden is attached, the produce of which is estimated by themselves at 4*d.* weekly, reducing thus the rent by one-third of the amount named above.

Again, the allotment system prevails here to a great extent. A very large proportion of the labourers, 350 in number, hold allotments, and derive from them a considerable increase of income. I have before me statements from themselves, to show that, after paying the rent and all other outgoings, they have a residue which, spread over the year, would give them an additional 1*s.* 6*d.* or 2*s.* a week.

The cases I have quoted must, with the exception of the single man, be raised in weekly receipts by the saving on the gardens, and the profits of the allotments, to at least 2*s.* more. I need hardly say that the wages of labour are calculated here, as elsewhere, by the demand and supply, and the ability of the man to perform the work required of him. The number of his children is a strong ground for aid and compassion, but it cannot be regarded as a title to additional remuneration for mere labour.

In addition to the advantages stated above, we have an ample provision of penny clubs, clothing clubs, and fuel clubs, from which the contributors receive more than 25 per cent. over and above their deposits.

I am satisfied that I have rather understated than overstated the case of the labourer. The papers and documents on which it is founded are open to any one, and a walk through the district would furnish abundant evidence of the accuracy of what I say.

I have no doubt that a similar statement could be made by almost every landowner in this county. *Lord Shaftesbury, in the Times.*

[The following, by "S. G. O.," appeared in the *Times* of the following day in answer to the above letter by Lord Shaftesbury:—]

The Lord-Lieutenant for the county of Dorset has come forth in your columns, under a sense of duty, to rectify some errors and misconceptions as to wages, &c., of Dorset labourers.

He gives the public a picture of a bucolic Utopia—tenants of great intelligence and liberality; cottages of admirable construction; labourers working only from 7 o'clock to 5 for 10 months of the year, and the other months, when working more hours, receiving extra pay; their wages low, it is true, in their weekly character, but eked out by allowances and perquisites to a figure representing a very substantial value. One hundred and eighty-five able-bodied labourers, married and single, none receiving on the average less per week than 10*s.* 6*d.*, the real value of their earnings 14*s.* 6½*d.* per week, "with a shorter period of labour by one hour and a half daily, during 10 months of the year, than is required in the wealthier provinces of England." Every cottage has a garden, if the rental is 40*s.* or upwards, the produce of which is worth 4*d.* a week. A great many labourers have allotments, giving them an additional 1*s.* 6*d.* or 2*s.* a week. Penny clubs, clothing clubs, fuel clubs, added to the above, as sources of income and advantage, leave the case of these happy St. Giles's labourers rather understated than overstated.

When I read this letter of Lord Shaftesbury's I confess to a degree of astonishment I did not think in my old age I was capable of. When I came to the concluding words, I own to something of that old-womanish feeling which is expressed in the words "you might have knocked me down with a feather." "I have no doubt," says Lord Shaftesbury, "that a similar statement could be made by almost every landowner in the county."

I can quite understand a Dorsetshire landowner writing in defence of his county, and endeavouring to prove some false statements have been made about wages, some imputations affixed to the character of Dorset, which are just as applicable to other counties. But Lord Shaftesbury goes far ahead of this. He is not content with showing we are not worse than others; he must needs argue that we are as good, if not better, than the best of other counties.

I altogether deny that any such statement as that Lord Shaftesbury has put forth with regard to the labourers on the 18 farms, if true on them, could be proved to be true on almost all the estates of the county. I know that it cannot. I quite believe on several estates the tenantry are as highly respectable and intelligent. On a very few estates the cottages, with the gardens and the allotments, may be on as good a scale, although it is not in my experience that on any one estate it is so throughout. It is in my knowledge that on some estates the cottage accommodation is still shamefully bad. While on some few there is great amendment, at the present rate of progress it must be many years before the state of things can exist which Lord Shaftesbury says now exists almost everywhere.

I cannot for one moment believe that on any other estate in the county the labourers for 10 months in the year only go to work at 7, and leave off at 5, especially when in those months are included the hay harvest; nor do I believe that anywhere else, in the other two months, when the men work more than eight hours and a-half they are paid extra wages.

As to perquisites, I never put the smallest faith in any statements from any quarter about them. I know nothing so liable to abuse in the mouth of master and man as the statement of the value of perquisites. It is for this reason the most intelligent of the rising race of tenantry are anxious to do away with them. As to piece or tut work, there is nothing more fallacious than the arguments founded on it as a favour to the man. If he is a thatcher or hedger, he has a skill other labourers have not. It commands its price. The work of these men must be done at certain seasons. It is their interest, and that of their employers, to get it quickly done. It is therefore made a matter of contract for their mutual advantage. If working extra hours, using their own peculiar tools, and employing their own special skill, they take such a contract, I hold it to be mere folly to call it in the nature of an allowance or perquisite to them. Again, with regard to Turnip hoeing, harvest work, and other piece-work, the men contract to do so much of it at a certain price. It is true they earn large wages for the time; but, as they give more hours to a day, they, in reality, work some eight days to one Sabbath; measuring the money earned by these days will bring their real wages back to the original scale, and we must bear in mind that at piece-work the men lose by wet days. They have also by this strain on their powers of endurance taxed them to the fullest, and not only caused more wear and tear of clothing, but needed a greater expenditure for food.

That where there are families many of whom can go out to work a large apparent amount of earnings is brought home is quite true, but against it must be set the food, clothing, shoes, &c., of the extra young power—a power which in earning ever consumes nearly all it can obtain.

It is in my opinion puerile in the extreme to bring acts of charity into the scale of wages; to calculate the value of the headland given for Potatos, or the Furze carted as an eking out of wages. I am quite sure the present race of tenant-farmers would be ashamed to do so; at least they ought to be.

I have yet to learn that allotments, penny clubs, and clothing clubs do not exist in the counties where higher wages are paid. It is altogether wrong to throw such matters into the scale as so much proof of low wage thus eked out.

If the letter of Lord Shaftesbury falls into the hands of labourers who can read, it will certainly cause them no little amusement; they are well aware of how the case of the masters can be made out, but I doubt whether they ever saw it so made out before. He invites any who are incredulous to walk over the estate and go through his collection of figures, &c. I wish he would go through personally the length and breadth of the county, and study to arrive at the real truth; he would return to St. Giles's a more sad, if not a wiser man.

I can quite forgive him endeavouring to wipe off

some of the mud through which Dorset has of late been dragged, but I deeply regret he should have put forth a statement as true of a whole county which, in some particulars, I deny to be true of any part.

Matters are mending. Wages must rise, for there is a call for labour elsewhere which will soon lower our supply of able men to a degree which will make it a matter of necessity to pay them and lodge them better. There must be more cottages built, for the farms cannot be worked without them. Agitation has done its work. It forced into light the foul abuses of old days. Modern farming, in the persons of the modern tenantry, can now fight its own battle. I rely no longer on sentiment or philanthropy; I am content to abide the action of what I see around me. The ruin of the landlord and the tenant are alike involved in the question how far land can be cultivated to a profit by a population giving only weak, discontented labour in return for low wage, eked out by perquisites, housed insufficiently, often tired with travel before they commence their first hour's work.

As for the Utopia of Lord Shaftesbury, I am altogether incredulous that it represents the real condition of any one county in England; I should, indeed, rejoice if it was anything like a true picture of one-tenth of Dorsetshire. *S. G. O., Jan.* 29.

STEAM PLOUGH COMPANIES.

I CANNOT allow the letter of Mr. Bignell to pass unnoticed, wherein he expresses a wish to contribute something towards the question propounded by Mr. Toepffer, viz., Can the farmer obtain a greater advantage from purchasing or from hiring? He therein quotes the words of Mr. Savidge: "Those who wish to benefit by steam must not depend upon steam ploughing companies." But why should one individual opinion, which is moreover substantiated by no proofs or even arguments, be held up, in a question so highly important to the agricultural community, as a bugbear to deter others from carrying out a legitimate and most feasible means of making steam cultivation more general. I entirely differ from the opinions expressed by Mr. Savidge and Mr. Bignell. I am certain that in this county, viz., Lincolnshire, many farmers have adopted steam cultivation, who could never have been persuaded to purchase a small set of tackle, and having *once* derived benefit from it, are now holding out every encouragement to the North Lincolnshire Steam Cultivating Company to increase their machinery. I then ask Mr. Savidge: "Why do they do this?" Simply because they find it cheaper to hire than to purchase; they thereby obtain the advantages of experienced men, fully competent to work the machinery, and a large amount of work is done for them in a short time, and in a most satisfactory manner. I could even name a gentleman farmer who allowed his small engine and cultivator to remain idle in his stack-yard, and employed the double set of engines to work for hire on his farm. Is not that evidence strong enough to outweigh the opinion of Mr. Savidge or Mr. Bignell?

Mr. Bignell must not suppose that he is justified in condemning cultivating companies generally, because the Whitchurch Company had to travel 15 miles of road in order to obtain about 10 or 12 acres of work. In this county, for instance, many farmers have 150 acres worked upon one holding in a season, thereby employing the engines for at least 10 days, and few require their services for less than 60 or 80 acres. No sane man would attempt to form a company without some sufficient guarantee of success, and farmers in grazing districts cannot afford remunerating prices to a steam ploughing company.

Mr. Bignell steers clear of figures, but I am not in the least afraid of proving every assertion by that important test. He considers 1400*l.* a very great outlay for a pair of engines. But two engines can be employed for 200 days in the year, and earn on an average 4*l.* per day; that will produce a sum of 800*l.* The expenses of labour, when deducted from that sum, leave 600*l.* to pay the interest of capital, wear and tear of machinery, and a very comfortable dividend. I have seen serious losses arise from attempting to work with too little power. When the land is very hard and dry, a small engine must be strained, or else very inferior work done.

Mr. Bignell acknowledges that *big* jobs pay! If they pay on machinery of a small scale, surely they will pay better on a large scale. A small set of tackle is a certain improvement over horse power, but a large powerful engine is an equal improvement over a small one. As regards the uncertainty of hiring the implement, all companies must arrange that the supply is equal to the demand. And then—where the uncertainty?

Mr. Bignell states that there are only two months in the year for steam cultivation. But in the county of Lincolnshire, where the farmers are large occupiers, where the fields average from 25 to 30 acres each, where Turnip husbandry is the mainstay of all other crops, not only the two months in the autumn are fully engaging the services of the steam cultivator, but also the whole of the spring and summer months employment is obtained at a most satisfactory remuneration. Further, Mr. B. complains that rough and tough jobs are given him. I do not dispute it, for any sort of a job is rough and tough for a weak horse or a small engine, but I have never yet seen the large engines experience either the one or the other, inasmuch as they are well above their work, and fully qualified to smash up the most obdurate and stubborn soils.

At the close of his letter Mr. B. condescends to assert that the beautiful and mechanical combinations and ingenious contrivances of Messrs. Fowler & Co. will become matters of history. Yes, sir, history will no doubt hand down to posterity the name of John Fowler. History will show how his genius successfully triumphed over the insinuations and attacks of prejudice and ignorance, and how his rivals succumbed to the common sense of the English farmer, when the name of the flail, the horse plough, and the boasting cultivator will be buried in oblivion. *T. M. Richardson, Hibaldstow Grange, Lincolnshire.*

Home Correspondence.

Drainage and Floods.—What I feared when I found myself in opposition to my friend, Mr. Clutterbuck, on the two main points upon which we have given our opinions, has come to pass. We are now at direct issue upon a point which explains our differences and renders them irreconcileable. From the terms of Mr. Clutterbuck's last communication he appears to think that "an unbroken clay" is the common condition of a drained clay soil, while I believe that there does not exist, even in the stiffest soil when once it is drained, "an unbroken clay," and that the facility with which water permeates the subsoil, under the influence of gravitation downwards, and attraction upwards, is due to the comminution which results from aeration, and which it is the object of drainage to effect. By under-drainage we gradually get rid of wide cracks and substitute a pulverised or disintegrated condition of soil, whereby the minute particles, which were hitherto held together, become separated, though the interstitial spaces are still so close that capillary attraction has full play, within certain limits, while gravitation still retains its natural force. I have explained this to the best of my ability in a paper you published many months ago, and which Mr. Constable, the Principal of Cirencester College, republished among other lectures given before the students there. As my time is fully occupied in matters I must attend to, I hope neither Mr. Clutterbuck nor any of your readers will consider me uncourteous if I refer them to that paper for a more detailed statement of my views. It is called "The Theory of Underdrainage, as accepted by a practical man." I know of nothing to make me alter what is there expressed. I will only add that I was brought to the conclusion that "a proper depth of underdrainage has the effect of weakening the power of capillary attraction," not altogether by scientific reasoning, but by observing that at seasons when evaporation is very active there has been a continuous, copious discharge from under-drains, without any sufficient fall of rain on the surface to account for it. This was exemplified in the Hinxworth records during the month of February, 1857; but I have been more thoroughly convinced that this is a common result from under-drainage by subsequent observations which have had reference to works of longer existence. At Hinxworth the discharge from the clay soils in February was double the rainfall of that month, although the number of days on which rain fell was only six, and the quantity but one-fifth of an inch. This fact, together with the phenomenon that under-drains have been known, and are now frequently observed, to discharge water after they have ceased to run, without any rainfall at all, must, I think, satisfy all practical men that the existence of drains at proper depths forces the soil to give up and discharge that which in an undrained soil would rise by attraction to the surface and be evaporated into the air, and this is really the point we want to get at. The question of the relation of capillary attraction to evaporation is too abstruse and refined for public discussion. It is, nevertheless, one which has much, very much, to do with our water economy, and therefore it should be understood by all who are interested and concerned in the object. *J. Bailey Denton*, 22, *Whitehall Place, Westminster.* P. S. The word "crest" in my last communication is a misprint. It should be "crust."

Foreign Correspondence.

EEL RIVER, CALIFORNIA: *August*, 1865.—The crops reared here surpass anything I ever heard of. Oats and Potatos are the favourite crops. Many of the settlers who raised Potatos and Oats last year, realised quite a pile. Oats sold for 2¼ cents, and Potatos for 4 cents per lb. in San Francisco (wholesale prices). Oats are not considered a good crop unless they yield from 125 to 130 bushels to the acre. Potatos range in weight from 2 to 6 lb. (each?), so you may fancy that it is first-rate soil. The brush (?) land is infinitely superior to the prairies. There is also any quantity of Redwood, Spruce, and Pine. Redwood is a splendid splitting timber, easily worked up into posts and rails for fencing. It makes first-class shingles, and is nearly as durable as Oak. The forests of Redwood here are inexhaustible; the trees ranging from 5 to 30 feet in diameter, and from 200 to 300 feet in height. There is a hollow tree not far from here that has several times afforded shelter for half a dozen men, and a good stable for their horses. You may think I am "drawing the long bow," for I did not believe there was such timber in existence until I had ocular demonstration of the fact. Apples and Pears do well here. Peaches and Grapes do not come to perfection in consequence of the heavy fogs. I think Hops would succeed in the southern part of California. Up to the present time none have been raised in this State. All the Hops used here are imported, and consequently command a high price. I should be thankful for any information on the cultivation of Hops, as I would like to put in a crop. Vetches are also a crop that our agriculturists know nothing of. The cattle here are good stock, bred from imported stock that were driven across the plains. Good milch cows are worth from 20 to 25 dollars each; but you can buy large bands of two and three-year-old steers and heifers in the mountains for 10 dollars a head (fat), but of course not very gentle.

Oxen broken to work are worth from 100 to 125 dollars per yoke. The horses they use here for agricultural purposes are about the same stamp, perhaps a trifle heavier than the roadsters in the old country; but the heavy teaming in the mountains is done principally by mules. A good pair of mules, 16 hands high, are worth from 500 to 600 dollars. The native Cal or Spanish horses are chiefly used under the saddle. They are infinitely better for driving stock, inasmuch as they turn much quicker than emigrant horses, and are altogether better adapted for running over the mountains after cattle. They are not by any means safe in harness, and very difficult to break, being always a little wild; but they are as tough as raw hide, and will do more travelling under the saddle than any two emigrant horses you can find. But their disposition depends very much on how they are used. I have a Spanish mare, which I ride constantly now: I had her from a stock man a few months ago, then she was as wild as any prairie steed. I have used her kindly, and she has become so gentle that she will follow me about like a dog.

The petroleum excitement still rages here—mining districts being laid off in every direction. Up to the present time only one company has struck it. I was out lately prospecting for three days down the coast, and in my travels paid a visit to Cape Mendocino, the most western point of the United States. We went on to the rocks at low tide, and had some good sport shooting sea-lions. There is the heaviest surf on the coast I ever saw—huge breakers running, even in the calmest weather. It is fearful work; you must, if your horse is used to the breakers, travel in the surf, at the imminent risk of being taken out to sea—to say nothing of having your boots filled with sea-water every two minutes; or else travel in sand up to your horse's belly, where you can only make about a mile an hour; but I am quite used to this sort of travelling, and don't stick at trifles. Many of the boys at home would make much better men if they were packed off here for a few years. You have no idea how soon affectation and petty pride disappears. R. confesses to its having done him a power of good; and I must say it has taken a deal of the nonsense out of me. The native Americans are a much better educated class of men than emigrants. All the Scandinavians I have come across are smart, intelligent men, and first-rate linguists. *G. N. Tooley.*

Societies.

ROYAL AGRICULTURAL OF ENGLAND.

MONTHLY COUNCIL: *Wednesday, February* 7.—Present, Lord Tredegar, President, in the chair. Earl Cathcart, the Earl of Powis, Lord Berners, Lord Walsingham, Major-General the Hon. A. N. Hood, the Hon. A. H. Vernon, Sir J. V. B. Johnstone, Bart., M.P.; Sir Massey Lopez, Bart., M.P.; Mr. Acland, M.P.; Mr. Amos, Mr. Barnett, Colonel Challoner, Mr. Clayden, Mr. Clive, M.P.; Mr. Dent, M.P.; Mr. Druce, Mr. Brandreth Gibbs, Mr. Holland, M.P.; Mr. Hudson, Mr. Jonas, Colonel Kingscote, M.P.; Mr. Lawes, Mr. Lawrence, Mr. Pain, Mr. Rigden, Mr. Randell, Mr. Shuttleworth, Mr. R. Smith, Mr. Thompson, Mr. Torr, Mr. Wells, Mr. Jacob Wilson, Mr. Frere, and Dr. Voelcker.

The following New Members were elected:—

Allcock, Charles, Bulwell, Nottingham
Bagshaw, John, Belstead, Ipswich
Boby, George, St. Andrew's Castle, Bury St. Edmunds
Bobbero, John, Rattlesden, Woolpit
Bottom, Charles, Newmarket
Druce, S. Benjamin L., New University Club, St. James's Street, London, S.W.
Fox, William, Ardbury, Newbury
Frewer, Alfred, Debenham, Ipswich
Gayford, George, The Lodge, Barrow, Bury St. Edmunds
Henley, Henry Cornish, Leigh House, Chard, Somerset
Hubberstey, Henry L., South Collingham, Newark, Notts

Hervey, Lord Augustus H. C., Ickworth, Bury St. Edmunds
Jonas, William, Heydon, Royston
Marks, Thomas Henry, Tiptree House, Kelvedon
Peter, John Luke, Redruth
Stone, Edward Baldock, Chipchase Mill, Wark, Northumberland
Taber, John, Herne Hill, Dulwich, S.
Woodgate, John, Brentleigh, Bildeston, Suffolk

FINANCES.—Major-General the Hon. A. N. Hood, Chairman of the Finance Committee, presented the Report, from which it appeared that the Secretary's receipts during the past two months had been examined by the Committee and by Messrs. Quilter, Ball, & Co., the Society's accountants, and were found correct. The balance in the hands of the bankers on January 31 was 1309*l*. 12*s*. 4*d*. The balance sheet for the quarter ended December 31, 1865, and the statement of subscriptions and arrears, were laid upon the table; the amount of arrears then due being 984*l*. One hundred and eighty members have given notice during the past year of their withdrawal from the Society.

JOURNAL.—Mr. Thompson, Chairman, announced the recommendation of the Committee that the following subjects be announced for discussion at Weekly Councils, viz.:—Wednesday, Feb. 21, Professor Simonds to open a discussion on the Cattle Plague; Wednesday, March 14, Expected Report of Royal Commission on Cattle Plague to be considered in its practical bearings.

Application having been made for permission for the dynamometric apparatus of the Society to be used for testing some cotton gins for a department of Government, any injury to be made good, the same was granted.

A series of resolutions prepared by the Cattle Plague Committee having been adopted by the Council, it was resolved that any Members of Council who can attend do form a deputation to urge upon the Government the adoption of the views embodied in the resolutions. The First Lord of the Treasury will receive the deputation at 2 o'clock on Monday in Downing Street.

Mr. Barnett read letters from which the following are extracts:—

1. "I have been a martyr to the rinderpest, and it occurred to me that I ought to find out the nature of the complaint, and, if possible, to ascertain the antidote, which I believe to be hyposulphite of soda, so I set to work upon the remnant of my well bred animals, all of which I have saved; those which were not treated with hyposulphite have all died. The same result has occurred to several cowkeepers in my neighbourhood, but when the treatment has not been used, the cows have nearly all been cleared out. Rely on it that if you will use the prescription you will save your stock, if not already affected with the complaint, but until the system becomes charged with hyposulphite 10 days they are not safe against the infection. Five lb. of hyposulphite of soda to 100 gallons of water to be given as the constant drink. The soda will cost wholesale 22*s*. per cwt.

"My plan has been to dissolve 5 lb. in a pail by pouring on it 5 quarts of boiling water, then apportioning it in the ratio of 1 lb. to 20 gallons; and when the animals have taken the hypo in this way for 10 days or a fortnight I believe their systems will be fortified against the disease; but go on with it afterwards. I have given it for three months, and all the stock I have given it to are quite healthy; but when it was not administered to them I lost all my stock."

2. "I am very glad to hear you are trying the hyposulphite of soda; that and the bisulphate will act, I believe, as nearly as possible in the same way. We find sulphuric acid so very easily given—no trouble of dissolving. If it has a tendency to make the animals costive, give a laxative. Many, if not all the people have been told of these sulphuric preparations, but I believe they do not persevere with them; if they are to do good the system must be thoroughly charged. I can show you eight steers and heifers that have had the plague, but the symptoms were so slight the owners do not even know they had had it. I wormed it out of the feeder. These animals, fairly full of sulphuric acid, were not off their feed, though they had the running at the nose and eyes, and had the spots on the nose, which I saw myself. There were 11 in this lot, the two first taken had no sulphuric acid—they died, the next taken were getting a trifle better, when the acid was commenced to be used, and they are quite well. There are two calves in this place to which a cow in the last stage of the disease had access, and gave her breath; these calves are full of the acid, and now, five weeks since the cow's visit, are perfectly well. If you will but persevere with the hypo sulphite, bi sulphate, or sulphuric acid, I have little fear of your suffering from cattle plague."

The latter extract refers to the fens of Cambridgeshire.

The Council resolved that during the months of February, March, and April, an adjourned Council be held at 11 o'clock, to consider questions connected with the Cattle Plague.

The following notice had been received from the Board of Trade with reference to the returns of Live Stock to be made by all Occupiers on the 5th March.

"RETURNS OF LIVE STOCK.

"The Board of Trade desire to give Notice that it is not practicable to complete the arrangements for obtaining these Returns upon an earlier day than the 5th March next.

"The Schedule will be issued by the Board of Trade, stamped in two places for free transmission by post, and will be sent to all Occupiers (not only to Occupiers of and above 5 acres as previously notified) before the 5th of March, and upon that day the Number of Live Stock is to be entered in the Schedules by Occupiers.

"The Board of Trade would feel particularly obliged to the Magistrates, Clergy, Poor Law Guardians, and other Country Gentlemen of influence, if they would be good enough to explain to Farmers, likely to require guidance in filling up the Return, the importance of writing in the Schedule the Number of each kind of Live Stock, in Figures, upon the line ruled for that purpose, and in the separate Columns headed with the names of the Stock.

"A Copy of the following directions will be sent to each Occupier with the Schedule:—

"*In the Column for 'Cows.'*—The Total Number of Cows of all ages should be entered in the Column under the head of 'Milk Cows.'"

"*In the Columns for 'Other Cattle.'*—The Number of Cattle, other than Cows (not including Horses), should be entered in the two Columns under the Head of "Other Cattle," according to the specified Age—Of and Above Two Years or Under Two Years, but without stating whether they are Bulls, Oxen, Heifers, Calves, &c.

"*In the Columns for 'Sheep.'*—The Number of Sheep should be entered in the two Columns under the head of "Sheep," according to the specified Age—Of One Year Old and Above, or Under One Year Old, but without stating whether they are Ewes, Wethers, Rams, &c.

"*In the Column for 'Pigs.'*—The Total Number of Pigs of all kinds and of all ages, should be entered in the Column under the head of "Pigs."

"*** It will save trouble if Occupiers who, upon the 5th of March next, do not possess Stock of any kind, will write the word 'None' across the Schedule, and return it by Post as requested.

"*Whitehall, January*, 1866."

[Letters were read from Mr. Rothschild, Austrian Consul-General, and Mr. Westenholtz, Danish Consul-General, relating to Agricultural Meetings in Vienna and Aarhems (Jutland) in May and June respectively—to which meetings we shall refer next week.]

Farmers' Clubs.

LONDON: *Feb. 4.—British Tillage: Present and Future.*—At the first meeting of the winter session of this Club Mr. Alderman MECHI read a paper, from which we make the following extracts:—

If in the progress of this discourse I feel compelled to cast some censure on British tillage, I trust that all good farmers will consider that I treat of British tillage as a whole, comprising the tilled portion of those 57 millions of available acres which are estimated as the agricultural area of the United Kingdom, and that I especially exempt from reproof all good cultivators, of whom I know so many. I have, during the last 30 years, closely observed—

The General Depth of our Cultivation, and found that about 4 to 5 inches is the full average depth. I do not mean when broken-up, but as taken on the solid or land side of the plough. I have often discussed this question with my hospitable farming friends over a glass of their good port, and when they indignantly repudiated the depth of 5 inches, I quietly pocketed an empty wine glass, and on reaching the newly ploughed ground, with the plough still in its work, placed the glass against the solid or land side, and generally found its mouth considerably above the land (ordinary wine glasses rarely exceed 5 inches). I might have won many wagers on this matter. When I hear of 9 to 12 inches' depth by horse power I am naturally sceptical until convinced by actual admeasurement. I have on more than one occasion found the depth of cultivation only 2½ inches. I believe we never shall have very deep cultivation, until we substitute steam for horse power; for ploughmen, as a rule, are so fond of seeing fat and sleek horses, and are altogether so careful of them, and of their own shoulders too, that they have a great aversion to deep cultivation, especially in hard or tenacious soils. It is amusing, or annoying, to see how they "ease off" the difficult places, by raising the point of the plough or throwing it a little sideways, leaving an uneven and ill ploughed floor. Now, when we consider that one inch of soil per acre is fully 100 tons per acre, we can estimate the importance of ample depth. I always, in preparation for root crops, trench plough with a plough without the breast, drawn by four horses, following in the track of the first plough, drawn by two or three horses. This breaks up the subsoil, and partially mixes it with the surface soil and manure, without bringing it to the surface. Before doing this the field is well scarified, harrowed, and any twitch removed immediately after harvest, and then heavily manured. The manure thus falls in among, and gets partially mixed with the poor subsoil. When ploughing the land after the removal of the root crops, my ploughmen complain of having no bottom for the plough to slide on; they miss the (to them) comfortable hard floor on which the plough used to slide. Sometimes after wet weather our rank clay or "loam," as the natives call it, throws out the plough, unless a boy or a heavy weight is placed upon it. A Scotch farmer said to my bailiff the other day, "We have no such land as this in all Scotland." It certainly is like pitch, putty, or bird lime in winter, and although when wet as slippery as butter, often like cast-iron in summer; and yet by drainage, good manuring, and deep cultivation, it produces large crops of Wheat, Beans, and Mangels. But I may be asked, "Would you bring to the surface by deep ploughing the rank and bad subsoil?" My reply would depend upon the nature of the subsoil. If that subsoil is a rank, unaerated, and undrained clay, or otherwise unfitted to receive the young plant, it would, as in my case, be ruinous to bury the top soil and cover it with the villanous subsoil. But why is it villanous? and how can it be amended? I will answer that question presently. If a subsoil is of such a quality that, on placing some in flower pots, plants will flourish in it, you need not fear to bring it to the surface. I proceed now to consider—

What our Depth of Cultivation ought to be, and what it Probably will be.—But let me not be misunderstood, and do not suppose that I am advocating deep cultivation for all soils; on the contrary, we know that on light sandy loose and non adhesive soils, compression rather than cultivation may be necessary; but I allude more particularly to our dense clays and hard-bottomed soils of every description. I know some very good farmers who do not even exempt hard chalks although there is a difference of opinion upon that point. But, before very deep cultivation dare become general, those unfortunate twenty millions of undrained acres, which, according to the estimate of our dependable friend Bailey Denton, still require tapping, at a probable cost of 100,000,000*l*., or 5*l*. per acre, must undergo that necessary operation. It would never do to break up the undrained soil below the ordinary furrow. It might fairly be presumed that no one now doubted the value of drainage on stiff clays, but I am sorry to say that some even of my neighbours still say that 4 feet drainage 23 feet apart in stiff clays is of no use; it being too deep! and too far apart! Some, however, have recanted their errors, and have benefited proportionally. I hope more will follow them. It would be beside our present question to give the thousand-and-one obvious reasons in favour of the percolation of water and air through soils and subsoils by artificial drainage, or to suggest the necessity or propriety of economising our drainage water for the purpose of spring and summer irrigation. I may, however, be permitted to say that a gentleman near Faringdon is making 50 acres of tanks, or reservoirs, for the purpose of irrigating his Grass land with his drainage water.

Why is our Subsoil Villanous? and why is our Surface Soil, whether Cultivated or not, always more or less Productive?—I wish I could induce many of my brother farmers to keep company with Baron Liebig in these long winter evenings. It is so pleasant and so instructive to follow that wonderful and powerful mind in its researches into Nature's mysteries, and thus to understand and appreciate the all-wise, but hitherto mysterious arrangements for the provision of food for man and beast. The surface of the earth almost everywhere, except in pure sands, is covered with forests or other vegetation, without the aid of manure or cultivation. We may strip off and carry away all the cultivated or top soil, and leave bare the poor subsoil. Yet, after awhile, this again becomes covered with vegetation. This actually takes place on our poor Heath, whose surface has, time out of mind, been dug off and carried away. The elements of air, acting on the inorganics of the soil, produce this result. The growing of a crop fertilises the soil; it is only the removal of that crop that impoverishes it. Well, then, if the presence of air is needful to fertilise our soil, its absence in the subsoil explains its poverty; but there are also other reasons. The four or five inches of cultivated soil have the power to arrest and fix for the use of plants the most valuable elements of the manure—viz., potash, ammonia, and phosphate of lime, so that the subsoil never gets any, at all events a very small proportion. By cutting a vertical section, we see the poor and pale subsoil under the few inches of dark and cultivated surface. It is this poverty of the subsoil that militates so much against the development of those deep-rooted plants which cannot thrive unless they find in the subsoil (their feeding ground) the necessary elements for their formation. Here let me pay a tribute of justice to that clear-headed agriculturist, whose sagacity in the field is a practical and concurrent illustration of Liebig's theories in the cabinet. The Rev. Samuel Smith, of Lois Weedon, has taught us a great practical lesson. He turns back the surface soil, thereby doubling its quantity, and leaves the subsoil exposed for a year to the atmospheric influences. Into that subsoil he incorporates the manure, knowing full well that it could never reach that subsoil through the surface soil. In consequence of this aeration and amelioration, the subsoil becomes attractive to the roots of the adjoining and following crops, giving surprising and most profitable results. His subsoil soon loses its poverty, and becomes rich in fertility, while that of his neighbours remains unaltered. I once deeply trenched a field on the great ridge, and buried pig manure, in the bad subsoil, in the furrows. The surface soil had been manured prior to the trenching. The result was 43½ tons of Mangel per acre, and good crops ever since. It is to deep cultivation and deep manuring that I owe my great crops. All my heavy land (1865 crop) has yielded 7 quarters per acre (one field 7 qrs. 5 bush.) of fine Wheat, and I get 5 qrs. per acre off my poor light land. The disbelief of the profitableness of deep tillage is too general not to be surprising. I think, however, that this prejudice is slowly but gradually giving way after drainage and the steam plough. Often, when I have been told that "deep cultivation will not do on this soil," I have archly asked, "Have you no cottage gardens in this vicinity?" and I too frequently see a marked and peculiar change of countenance come upon my respondent, as if it had never struck him before "that it won't pay to cultivate a garden so shallow as a field." We ought to consider

How Deep the Roots of Plants go in Search of Food, and then we shall no longer be surprised at the gradual failure of our Turnip and Clover crops, which find an empty cupboard in the unmanured and exhausted subsoil. Baron Liebig sagaciously observed that all the attempts of Messrs. Lawes & Gilbert to grow Clover continuously, by heavily dressing the surface soil with various manures, failed, because these manures never reached the subsoil or feeding ground of the Clover roots, the top soil having arrested and fixed or appropriated those manures, which really ought to have been buried and intermixed with the poor subsoil. In a rich old garden, where the subsoil had been long and well fertilised, the same gentlemen could grow red Clover annually. It is very probable that only enough of the manure we apply to the surface reaches the subsoil in eight or twelve years, so as to enable us to take a red Clover crop once in that period. The young Clover plant thrives well until in the spring its roots descend to the subsoil, and then it perishes for want of proper nutriment. When the Clover crop was first introduced into this country and Germany, Clover could be frequently grown, but it appears now to have exhausted the small store of its elementary constituents which existed in the subsoil. It is not unreasonable to attribute to the same cause the frequent failure of our deep-rooted Turnip crops. Many of us are not aware to what depth the roots of annual plants will penetrate where there is a free passage for the roots and for air and water. In a clay pit belonging to my neighbour, Mr. Dixon, of Rivenhall, which had been somewhat undermined for brick earth, a mass of earth 20 feet thick fell over loosely, and was afterwards sown with Parsnips. My friend, observing a fine one, desired his man to pull it up, which he did, and the vertical root measured 15 feet 6 inches, but it was evidently longer, for it had broken off and left a piece of its root still deeper in the soil. Lucerne has been known to go very much deeper than this Parsnip. The imperfect development of some of our cereal crops arises from an ill conditioned subsoil. Wheat roots occupy the subsoil to the depth of 4 or 5 feet, therefore the condition of that subsoil as to manure and drainage must materially affect the crop, as we see by the yellowness or "going off" of many Wheat crops in May, when the roots attempt to search for food in the unaërated and unmanured subsoil. It was not known until discovered by Way, and confirmed by Liebig and others, that a few inches in depth of surface soil has the power to fix or retain all, or nearly all, the food of plants which our manure contains, such as potass, phosphate of lime, and ammonia, thus preventing its passage into the poor subsoil.

We must look to Steam power for Deeper Tillage.—Although deep tillage by either hand or horse labour will pay, still both must succumb, in matter of economy, to untiring and all-powerful Steam. The question of tilling the land at the right time would be, in itself, a sufficient reason for using steam-power. In a long summer's day how vexing it is to see our sufficiently-worked horses return home at one o'clock in the day, having ploughed their acre; while, by the use of untiring steam, from five to eight additional hours would have become available! It is precisely during the dry weather that steam is most useful, both as regards facility of locomotion, condition of soil, and destruction of weeds. We can thus deal readily with those tenacious but fertile clays which are almost impracticable during the wet and winter months. The time is coming when suitable roads and properly squared fields will be considered indispensable for the most economic application of steam to tillage, and this will also bring with it a much more ready and economical system of exchanging, purchasing, or selling land. In an economic and business point of view, our ill-shaped and over wooded fields, ill-placed homesteads and muddy lanes, are a commercial disgrace, for farming should be treated as a business. In the most successful practical instances of the use of steam-ploughs the fields are large and rectilinear, the fences low and few, and the roads hard and well kept. In some cases the machinery is let out, at a moderate price, to the tenantry, when not required on the home farm. Having used a fixed steam engine for 18 years on my own farm, for threshing, grinding, crushing, pumping sewage and water, chaff cutting, root pulping and root-cutting, sack elevating, and cake breaking, I can vouch for its efficacy as an item in farm profit, where much stock is kept: I could not produce so profitable a result without it. Even its waste steam is used for boiling water, cooking chaff, &c. My engine, although 18 years old, is likely to last for many years longer: my boiler I have just exchanged for a larger one; I am sorry that, it being fixed, I cannot use it for tillage; but with 56 head of cattle and 230 sheep, the engine is almost always in request, especially for occasional sewage irrigation. Every labourer on my farm is convinced that, even if horses could have done the

work of my engine, it would have been at double cost. I have received the following truthful letter from a distinguished member of our Club, whom I now see present:—"I think there is a point or two you might take up in your paper with advantage. Many people who go into steam cultivation expect results from it which they have no right to expect. The mere fact of drawing an implement through the soil by steam, in lieu of horse-power, cannot render the soil richer; 'tis only by increasing the depth of the tillage that steam power is so beneficial. Again, it is not one deep stirring that will render the land permanently more productive; that will be followed up year after year. I know people possessing steam-cultivating apparatus who have done their land little or no good. To get over a great acreage is their sole study, and this, of course, at a sacrifice of depth. One of the fields of mine you went over when at — eight years ago, had only a staple soil of some 5 inches—at all below wheat-plough depth, with a constant drier stirring and exposure, I have from 12 to 14 inches of 'staple,'—good, dark-coloured soil. If you can spare a day to run down before reading your paper, I shall be glad to see you. I am confident that in 20 years' time no cultivator—at all events of strong land—will be without his own steam-cultivating apparatus, where the occupation is over 300 acres. I have not much faith in companies or letting out, farmers used to hire their drills since I can remember."

How much Plants are improved in appearance after either Hoeing or Horse-hoeing, independent of the Removal of Weeds.—The cause is thus explained by Baron Liebig, whose powerful mind deduces some new theory from almost every experiment. He says:—"The outermost crust of the earth is destined for the development of organic life, and its broken particles are endowed, by the wisest arrangement, with the power of collecting and retaining all the elements of food which are essential for the purpose."

How significant are these words—"broken particles!" and how regretful it is that our "outermost crust" is only about 5 inches thick, and too often "unbroken," or imperfectly broken! I wish that you would read in his books his beautiful description of how the "outermost crust" not only collects and retains all the food-elements that we put into it, as manure, but also how the "broken particles" collect from the air, during hot dry weather, moisture (with carbonic acid and ammonia), and how this absorbed moisture warms and fertilises the soil and moderates the cooling of the ground from radiation. How important then it must be to thicken this "outermost crust" by steam tillage, and increase its quantity of "broken particles," that is, the food-collecting, from the deeper-lying moist strata that constant distillation of water which is taking place towards the dry surface, accompanied by a corresponding evolution of heat in the upper strata on its absorption of the vapour."

Tillage Anomalies.—I have many times seen, in certain counties, four horses at length drawing a plough, attended by a driver and ploughman. I should not, perhaps, object to this, provided they stepped together, and ploughed twice as deep as a pair of horses. I am sorry, however, to say, that I have often found that a pair of horses could do the whole work, shallow work, and that a useless expense had been incurred especially on light soils. The high ridges and deep furrows of the serpentine lands of the Midland Counties testify to a peculiar system of ploughing, or gathering towards a centre, which might have originated in the necessity to form a drain before under-drainage was practised, the serpentine form being chosen to prevent the too rapid rush of the flood water. The result is, too often, a crop ripe on the top of the ridge, while in the furrows it is green, or unripe, and weedy. Under-drainage is gradually abolishing this unprofitable system of tillage.

In Conclusion.—We, as agriculturists, have now to compete with the whole world in the production of food. If that competition is to be as successful in corn and meat as in cotton, it must be by the same means that the manufacturer employs—Steam. It is quite as much a landlord's as a tenant's question, for their interests are identical. The less remunerative the practice of farming becomes, the lower will the rents be. No sensible men will continue to invest their capital in the land of another without a profit. Had it not been for Jethro Tull, his sagacious and perceptive mind all but divined the mysteries of chemistry, which then, as applied to agriculture, were undiscovered. Happily, since that useful man's time, Davy, Liebig, and other sages have shown us how to improve the land, and shown to us the why and wherefore of agricultural fertilisation. Let us pay heed to their advisings, and no longer treat agriculture as an empirical art, but render farming more intelligent and more profitable. There is something to be learned from the story of the old man who, on his dying bed, told his sons to seek in his field for money which he had somewhere buried there. The soil and subsoil were carefully and deeply examined. They did not find the actual money; but they found ample money's worth in the greatly increased produce of the following, and better tillage. I think you will agree with me that we are approaching gradually, but surely, to a state of things which I ventured to predict at the conclusion of a lecture which I read at the Chelmsford Literary Institute in 1852; and as it harmonises perfectly with your present views, I have, with your permission, repeat it: "I see in perspective a railway activity pervading British agriculture. The time is coming when farms will be squared, trees removed, and game murdered, when tramways will intersect estates, and one horse will do the work of four. I see the sewage of our towns will ebb back to its original source; when the waters of our rivers and drains will be applied to the irrigation of our fields; when our millers will use steam power, and water; when our farmers and their children will be better educated, and occupy a higher social scale; when our labourers will be better housed, taught, and fed. Then will the blundering rudeness and clumsiness of ignorance be exchanged for the watchfulness and thought of an enlightened intelligence; then will the fractional calculations of profit outweigh the fears of cost; then will antiquated territorial legalities be superseded by personal responsibility, identity, and possession. I see all this in perspective. It is a mere question of time. I see mighty engines in railway-spanned fields, tearing up furrows a yard deep, making the land look like a sea; I see those hungry earthy masses saturated, and immediately fertilised, with the sewage of our towns. I see ample evaporation and facile percolation. Tottering and dilapidated farmeries will give way to permanent and convenient homesteads; the pinching economy of a penurious and pernicious system will be exchanged for liberal views and large operations; capital will develop its giant strength, unfettered by seigneurial restrictions; agriculture, commerce, and manufactures will unite, by the ties of a great common interest and common intelligence, for the good of our people and for the honour of this great nation."

Miscellaneous.

Pig Breeding.—Mr. William Joyce, of Abbey Farm, Waterford, a successful breeder and exhibitor of Berkshire pigs, writes as follows in the *Farmers' Gazette*:—"There is no animal that will put on the same amount of flesh in a given time, with the same amount of food, as the highly bred pig. The Berkshire pig is a particularly thrifty, strong, hardy animal, and can bear any sort of weather; he does not want a sunshade in summer to keep him from the sun, or a greatcoat in winter to keep him warm; and another great advantage is that no pig will feed on the Grass like him. My breeding sows nearly live on the Grass all the summer; even up to this time (November) they get only one feed of pulped roots in the day, besides what they get on the Grass fields. I never cook any roots (except Potatos); but give everything in a raw state to cows, horses, and pigs. I have at present over 50 pigs, and every one that is able to eat gets pulped Turnips; I find they do well on it, and the saving in labour and fuel is something considerable. People who come to see my pigs are greatly surprised to see them eating raw Turnips, and to see them in such condition. I do not feed my Mangels, if I can avoid it, till some time after Christmas. The way I use my pulped food for the pigs is by putting the pulp into a large cask, and pouring over it a few bucketfuls of boiling porridge made from Indian meal, leaving it a few hours to cool, and then it is fit for use. I have been a breeder of Berkshire pigs for nearly 50 years, and have had some considerable experience with respect to the early and precocious habits of highly bred and highly fed pigs from their birth. The sows come ripe for taking the boar between four and five months of age, and I have known them to have done so; but the result is bad, destroying the young animal's constitution so much that it scarcely ever recovers sufficiently to make the valuable animal she would have been if she had been kept from the boar until she had been nine or ten months old, which is the right age, in my opinion, to peel sows. Young boars should not be used until after they are seven months old, and then but little for two or three months; if not over-fed they would then be valuable for breeding purposes for several years. With respect to having had three litters begotten and born in one year, I never had from the same sow. I certainly shall not try it, as I consider it would be a very bad practice if it could be done, which I very much doubt. Two litters in the year are quite sufficient for any sow to rear. This is what I always endeavour to do with my sows. All my show sows, although in their high condition, produce me two litters in the year. The country farmers who bring their poor, starved sows to the boar (and I never refuse my best pig to any one of them) are astonished to see sows in such high condition as mine are, rearing their ten or twelve young ones. They say they could not believe any sow could breed in such high condition, but this is a very great mistake. Depend upon it, the stronger you have your sow the better she can rear her young, and so much better the young will be. Any sows that I keep for my own use I feed well, but not so highly as for show purposes; although I do not think high feeding at all interferes with their breeding, and I will state one or two cases which came directly under my hands. In 1857 I bought from Mr. Hewer one of his three prize sows, then eight months old, and shown at the Royal Show at Salisbury. She had been very highly fed. I left her with Mr. Hewer to have her put to his best pig; she was sent home in about a month—this was in September. She produced me 12 young pigs in January following, and was a regular breeder after. Another case in point is my sow Alexandra, which was bred by Mr. Sadler, had been as highly fed as any animal could be all her life, and had been kept for a show sow up to the time I bought her at Worcester, where she took the first prize. She was then two years old, and had never been put to the boar. I showed at the Royal Show at Kilkenny, and there the judges disqualified her for being so fat; they said it was impossible for her to breed—this was about three weeks after I bought her. I put her to the boar just after the show; she proved in young, and on the 1st of January following she produced me a litter of nine, and has had two litters each year since that time. I think that is quite sufficient to prove that high feeding does not injure their breeding properties."

Notices to Correspondents.

CORSE WOODS *R M*. If your purpose is to get the land into regular arable cultivation afterwards, you may sow well trench at once; because it will have to be done hereafter if it be not done now. Thus, if you merely wish to get a rough crop to stand for game this year, sufficient cultivation for the purpose may be given to the surface with a heavy hoe to fit it for the Buckwheat or the Barley you intend to sow.

OATS AND BARLEY: *H T*. If 8 quarters of Oats and 5 of Barley be equally good crops, then if the Barley is well harvested it will generally be worth more money than the Oats. Barley-straw generally has some dried Clover among it. By itself, however, Oat-straw is sweeter and better food than Barley.

POOR WASTE LAND: *A*. You had better pare and burn rather than plough in order to get a crop of Turnips or Rape to feed off for a grain crop next year. It will cost you probably 90s. an acre to pare, burn, and spread the ashes. You must then plough shallow, burrying the ashes; cross plough deeper; sow some superphosphate or guano broadcast; and harrow it in and drill the seed on the flat. After the Turnips are eaten off plough shallow or scarify before sowing the Wheat.

SODA ASH: *Hyles*. It is carbonate of soda uncrystallised and impure. One cwt. per acre is a sufficient dressing, and it is more likely to be of service if added to farm manure, and applied for green crops or for Beans.

Seeds for the Season.

CHARLES TURNER'S DESCRIPTIVE CATALOGUE is now ready, containing the new varieties worthy of notice, with a careful selection of the older kinds.

IN PEAS, for first crop, C. TURNER strongly recommends LITTLE GEM, a green wrinkled Marrow of the finest flavour, and very prolific. This remarkable variety is only 1 foot high, and requires no stakes.

ADVANCER is recommended for a second crop.

The finest Summer Pea is PREMIER. See description in Catalogue, which may be had on application.

BETTERIDGE'S SUPERB QUILLED ASTERS, in 12 distinct varieties, 3s. 6d. the Collection. This seed is saved by the raiser, R. H. Betteridge, Esq.

GERMAN FLOWER SEEDS from the first sources.

The Royal Nurseries, Slough.

SUTTON'S RINGLEADER PEA

(*or* CARTER'S FIRST CROP).

THE EARLIEST IN CULTIVATION.

SUTTON & SONS have still a limited supply of the above excellent Pea, which has proved itself to be the first forwardest, if not yet introduced. Price 2s. 6d. per quart.

PRICED LISTS of FLOWER ROOTS GARDEN SEEDS, FARM SEEDS, &c., Gratis and Post Free.

SUTTON & SONS,
Royal Berkshire Seed Establishment,
Reading.

THE ESSEX RIVAL PEA.

THE ESSEX RIVAL PEA.—This variety has proved to be the finest, best-flavoured, and most productive EARLY PEA in cultivation. See Testimonials in "Journal of Horticulture" of December 5, and in *Gardeners' Chronicle* of December 9. Price 1s. 6d. per quart.

To be obtained of the Proprietor, Mr. THOMAS ELEY, Sible Hedingham, near Halstead, Essex. Also of the following appointed Agents:—

Messrs. Peter Lawson & Son, 28, King Street, Cheapside, London, E.C.
" Cooper & Bolton, 152, Fleet Street, London, E.C.
" Fromow, Richardson, & Ogden, Bishopsgate Within, E.C.
" Richard Lowe & Co., High Green, Wolverhampton, Staffordshire.
" J. Roberts & Son, Denbigh. (shire.
" Fraser, Holmes, & Co., Handsworth Nursery, Sheffield, Yorks-
" Saltmarsh & Son, Chelmsford, Essex.
" Sutton & Sons, Reading, Berkshire.
" Joseph Harrison & Son, Penrith, Cumberland.
" Austin & McAslan, Glasgow.
" J. & C. Lee, Royal Vineyard Nursery, Hammersmith, W.
Mr. James Veitch, Royal Exotic Nursery, Chelsea.
" Charles Quinn, Peterborough, Northamptonshire.
" R. C. Mackenzie, Ventnor, Isle of Wight.
" A. F. Godward, Southend, Essex.
" R. Cox, St. John's Street, Colchester, Essex.
" George Tabor, Ravenball, near Witham, Essex.
M. Paul B. Bard, Nurseryman and Florist, 29, Quai de la Megisserie, Paris (Seine).

MR. ELEY has since published some of the testimonials relative to the above Pea, which appeared in "The Journal of Horticulture" of December 5, and in *Gardeners' Chronicle* of December 9, 1865; two of the most influential of the most satisfactory reports, among which are the following:—

"Prebursye, January 23, 1866.

"SIR,—I consider your Pea Essex Rival decidedly the best of all the collections given in its favour. I was the only one in this district who grew it last season, but so this year. I intend to sow double the quantity I did then; it is a real good early variety.—Yours truly,

"Mr. Thos. Eley, Sible Hedingham." "A. MILNE."

MR. ELEY, the proprietor of the above popular Pea, strongly recommends gentlemen who require a plentiful supply of good early Peas for table to make successive sowings in the following order:—First sowing, the first week in February; Second ditto, the third week in February; Third ditto, the first week in March; Fourth ditto, the third week in March; and so on, to say that the above is the plan as described in his remarks on Garden Pea Culture, and sows as above stated, may depend upon gathering Peas to his meat's content.

Sible Hedingham, January, 1866.

The Yorkshire Hero Pea.

E. P. DIXON AND SON, SEED MERCHANTS, 76 and 77, High Street, Hull, are fortunate that they have this year harvested a fine lot of their YORKSHIRE HERO PEA, a variety sent out by them, which has always sustained the very high character given of it, being remarkably dwarf, very prolific, early, and of delicious flavour. This Pea is similar in appearance to Veitch's Perfection, but much dwarfer, about a fortnight earlier, and far more prolific: in warm's of 70 pods are frequently found upon a stem. It is also a robust grower, withstands the mildew better than any other, and we have every confidence in saying that it is the best Pea extant.

All who have grown the Yorkshire Hero Pea have pronounced it to be the best variety of its colour, and no doubt will become a great favourite in every garden. Price 2s. per quart.

TESTIMONIALS.

From MR. THOMAS GIBB, *Gardener to the* Right Honorable the Earl of Harborough, *Hothfield Park, Ashford*.

"I grew the Yorkshire Hero Pea the last season, and found it an abundant bearer and an excellent Pea of the Marrow sort. It resisted the hot weather of July, and remained quite green to the last, while other sorts did the contrary. I shall grow it again this year."

From MR. WILLIAM BROWN, *Gardener to* Sir T. A. Clifford Constable, Bart., *Burton Constable Gardens*.

"I am highly pleased with your new Pea, the Yorkshire Hero, and shall give it my best recommendation. I believe it to be the best Dwarf Pea grown, and much superior to Veitch's Perfection, as it is dwarfer, much earlier, and more prolific."

From MR. JAMES ROBERTSON, *Gardener to the* Dowager Countess of Ripon, *Newton Hall Gardens*.

"It gives me great pleasure to contribute my meed of praise to the very excellent Pea sent out by you in the season under the name of Yorkshire Hero. I sowed it in the months of March, May, and June, each of which sowings were equally productive, indeed very prolific, and in point of flavour cannot be surpassed. Several gentlemen in this neighbourhood have grown it very highly of it, and I think it a remarkably distinct variety, and one that will become a general favourite."

From MR. WALTER HARDIE, *Gardener to* the Right Honorable the Earl of Dartmouth, *Sandwell Park Nursery*.

"Having grown the 'Yorkshire Hero' Pea, I can bear testimony to its excellence in every respect, especially its delicious flavour and productiveness."

From MR. GEORGE FAIRBANKS, *Gardener to* Joseph Robinson Pease, Esq., *Hesselwood House, near Hull*.

"I had some of the 'Yorkshire Hero' Peas from you the past season, and can truly say they are the finest-flavoured sort; being early, dwarf, of most delicious flavour, and an extraordinary bearer, it withstood the mildew better than any other Pea we had."

From MR. W. KEMP, *late Gardener to* Sir Thomas Beckett, Bart., *Kirkby Hall*.

"The Yorkshire Hero Pea is a splendid variety of the Wrinkled Marrow, 2½ feet in height, very branching, and an abundant bearer, requires sowing very thin in good rich soil, and will produce from 30 to 70 well-filled pods of a most delicious flavour, and very thin in the skin, full 10 days or a fortnight earlier than Veitch's Perfection, and superior in every respect; I think the best Pea I am acquainted with, and will become a general favourite in every garden, not requiring such an immense forest of sticks to support them as most sorts do. I may further mention that from half a pint of seed I had from you I have saved 6 pints of well-ripened Peas, which I can easily dispose of at 5s. per quart to those who saw them in bearing."

From R. R. BROWN, Esq., *Bridlington Quay*.

"I have great pleasure in subscribing my 8 guineas in favour of the wonderfully productive qualities of your Yorkshire Hero Pea; they are very large, and at the same time delicious eating, and I can pronounce them, with the greatest degree of truth, to be the best dwarf Pea I have ever grown."

Price 2s. per quart. Price to the Trade on application.

E. P. DIXON & SON, The Yorkshire Seed Establishment, 67, Queen Street; also 76 and 77, High Street, Hull.

INVINCIBLE SCARLET SWEET PEA, very fragrant, strikingly brilliant, and extremely dustanel in colour.—A First-class Certificate from the Royal Horticultural Society; also a Certificate at the Crystal Palace Show in September. Packets 6d., 1s., and 2s. 6d. each; packets of 100 seeds 5s. 6d. Supplied by the principal Seedsmen throughout the Kingdom; Also of Messrs. Krelage, of Haarlem; Vilmorin & Co., Paris; Benary and Haage & Schmidt, of Erfurt, Prussia; and Smith & Co., Hamburgh; also of the Raiser.

STEPHEN BROWN, Seed Grower, Sudbury, Suffolk.
Price to the Trade on application.

SEED PEAS and BEANS. — A few Quarters of the following choice varieties, well harvested and warranted true to name, at the following low prices for cash:—

VEITCH'S PERFECTION, at 12s. 6d. per bushel.
EUGENIE, or ALLANCE, at 9s. 6d. per bushel.
BLUE SCIMITAR, at 9s. per bushel.
NEWINGTON'S WONDER KIDNEY BEAN, at 10s. per bushel
TAYLOR'S BROAD WINDSOR BEAN, at 6s. per bushel
Apply to ANDREW FULLER, High Street, Chatteris, Cambs.

HAAGE'S DWARF EARLIEST CAULIFLOWER.—Very dwarf, the earliest, hardiest, and finest of Cauliflowers. Packets 1s. 6d. each.
SEED CATALOGUES, containing the finest New Vegetables, free by post.
STEPHEN BROWN, Seed Grower, Sudbury, Suffolk.

Dewar's Northumberland Champion Celery.

HENRY DEWAR AND SON beg respectfully to offer Seed of this excellent solid WHITE CELERY, acknowledged by all who have grown it to be the finest variety in cultivation. Awarded a First-class Certificate at International Show, South Kensington, December 9, 1865. In sealed Packets 1s. each, post free 13 stamps, usual allowance to the Trade.
DEWAR'S IMPROVED SHORT-TOP RED BEET. They also beg to offer Seed of this very superior Root, awarded First-class Certificates by the Fruit Committee of the Royal Horticultural Society, November 7, 1865, and at the International Show, South Kensington, December 9, 1865. In sealed Packets 1s. each, post free 13 stamps. Usual allowance to the Trade.
Seed Establishment, 79, Grey Street, Newcastle-on-Tyne.

Paterson's Famed Seedling Potatos.

MESSRS. W. PATERSON AND SON beg to inform the Seed Trade that Messrs. BECK, HENDERSON, & CHILD, 221 & 222, Upper Thames Street, are appointed WHOLESALE AGENTS in LONDON.
1, Union Street, Dundee.

SEED POTATOS.—Dawes' Matchless Kidney, the best Second Early, have cropped, 87 per ton; 4s. per bushel. Early Oxfords, 4 per ton; Fluke Kidneys, £4 per ton; Early Shaws, £5 per ton, cash. In new sacks, 1s. 6d. each, delivered to any Railway Station in London free. Apply to
JONES & GEO. BRUCE, Covent Garden Market, London, W.C.

Seed Potatos.

MARSH and PERKINS, 42, Drapery, Northampton, beg to offer the following, all true to name:—

	Per Cwt.		Per Cwt.
Webb's Imperial Kidney	6s.	Soden's Early Oxford	5s.
Flukes, Kidney	5s.	Dalmahoy	5s.
Dauntree's Prolific	5s.	Aylesbury White	5s.

ASPARAGUS ROOTS, 2 years old, 10s. per 1000.
Terms: Cash.

Myatt's Prolific Ashleaf Kidney Potato for Seed.

MR. J. MYATT, of Offenham, Evesham, has a fine sample of this excellent variety to offer this season; also the old ASHLEAF KIDNEY, the ROUND ASHLEAF (a very good second early), and MONA'S PRIDE, the best-cropping variety bred direct from the raiser, Mr. Routledge, Isle of Man, last season. Price 6s. per bushel, the three first-named varieties, and 10s. per peck of 14 lbs. of Mona's Pride. Testimonials can be supplied from unbiased correspondents. Price to the Trade on application.
A few quarters of the ESSEX RIVAL PEA for Sale, a good sample.

Seeds, Seed Potatos, &c.

DALMAHOY, PINK-EYES, and RED-BOG SEED POTATOS, all of early and superior sorts. Also CABBAGE SEEDS, of first-rate quality, 2s. 6d. per lb.
BEET SEED (LANG'S), from picked, dark-coloured roots, all under wholesale prices.
CABBAGE PLANTS, in fine condition, from 1s. 6d. to 2s. 6d. for 1200 Plants. Supplied on application to the Grower,
Mr. J. B. TAYLOR, Seton W. Mains, Prestonpans, Ta. Lothian.
N.B.—Carriage per steamer is both cheap and quick.

A Boon to the World.

PRINCE of WALES KIDNEY POTATO.—A new Seedling, remarkably handsome, fine eating, and the most prolific in the world. Testimonials—

From the late Professor LINDLEY (Editor of the *Gardener's Chronicle*).
"I have also carefully tried the Seedling Potatos examined. The crops is very extraordinary, and the Potatos themselves are very handsome, and quite ripe."

From SHIRLEY HIBBERD, Esq. (Editor of the *Gardener's Weekly Magazine*).
"The Seedling Potato (Prince of Wales). I have found to be wonderfully productive, excellent flavour, handsome, and much as late as the world ought to have the whole year."

To be had of Mr. JAMES TURNER, Royal Exotic Nursery, King's Road, Chelsea, S.W., and through every Nurseryman and Seedsman in Great Britain. Price, 12s. per bushel.
N.B. They may be planted up to the end of May.

To Market Gardeners and Others.

SUTTON AND SONS can supply the following Superior kinds of PEAS, in large quantities, at moderate prices, which may be had on application.

Monarch of the Marrows	Queen of Dwarfs	Lemon Kidney
Prince Consort	Ringleader	King of Dwarfs
Ringwood Marrow	Duke of Edinburgh	Matt's Ashleaf
Dwarf Victory	Prince of Wales	Prince Queen
Advancer	Rival Favourite	Skerry Blue
Champion of England	Hundredfold	Early Ashleaf
Tall Marrow	Dwarf Blue Imperial	Early Manuel-leaf
Fortyfold & Laystone	Early Oxford	Improved Early
	Dalmahoy	Shaws
	Walker's Improved	Fluke-ball
	Regent	Fortyfold & Laystone

PATERSON'S SEEDLING POTATOS.

Victoria	Napoleon	Paterson's Regent
Seedling Rock	Forfarshire Red	Paterson's Blue.
Irish Blue	Scotch Blue	

SUTTON'S DESCRIPTIVE LIST of POTATOS may be had gratis and post free.
SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

HAND'S NEW LATE KIDNEY POTATO FREEDOM, 10s. per seed bushel. A remittance to accompany all orders.

Testimonial from WM. BULL, *Knole Hall Gardens, Staplordshire*
"SIR,—I beg to say the seed you sent me for trial has proved very satisfactory, and as a late variety I consider it very valuable."
"We, the undersigned, being members of the Newcastle-under-Lyme Horticultural Society, have much pleasure in bearing testimony to the excellence of HAND'S Seedling Potato Freedom.

W. H. DUTTON,	G. JENKINSON, Nurseryman,
W. BARROW, Gardener,	D. DILWORTH, Hon. Sec."

AGENTS:—
Messrs. Hurst & Co., Leadenhall Street, London, E.C.
Messrs. Burgess & Kent, Nurserymen, Penkhull.
Mr. Jenkinson, Nurseryman, Newcastle, Staffordshire.
WM. HAND, 9, Marsh Street, Newcastle, Staffordshire.

JAMES GARAWAY and CO., Durdham Down Nurseries, Bristol, offer the following SEEDS, which they can guarantee to be of great excellence, and decided acquisitions.
Prices to the Trade on application.

BROCCOLI (Garaway's Late White).—Pure white, very large, late, has been exhibited at the local shows, in first-rate condition, in the beginning of June. Retail price, 1s. 6d. and 2s. 6d. per packet.
CELERY (Durdham's Superb Red and Burbank's Superb White).—Solid, crisp, and of fine flavour, has been grown for several years by the raiser, Mr. Burbank, and given very great satisfaction. Retail price, 1s. per packet.
CUCUMBER (Pain's Ridge). Very hardy, fine flavour, good size, and remarkably productive. First-class Certificate awarded by Fruit Committee of Royal Horticultural Society, August 8, 1865. Retail price, 6s. per packet.
LETTUCE (Clifton Hardy Green Cos).—As hardy as Hardy Hammersmith, large, and of good flavour. Retail price, 1s. per pkt.
JAMES GARAWAY & CO.'S PRICED LIST of SEEDS for the ensuing season will shortly be ready, and will be forwarded post free on application.

LAWES' MANURES.
The Manures manufactured by J. B. LAWES for the present season of 1866 are now ready for delivery at his Factories, at the following prices, per ton:—

	£	s.	d.
LAWES' PATENT TURNIP MANURE, and BONE SUPERPHOSPHATE of LIME	6	6	0
LAWES' SUPERPHOSPHATE of LIME from BURNT BONE or MINERAL PHOSPHATES	5	5	0
LAWES' WHEAT, BARLEY, GRASS, and MANGEL MANURES	5	0	0
CONCENTRATED CORN and GRASS MANURE	12	0	0

These Manures can be obtained of Mr. LAWES, or through the appointed Agents in all parts of the United Kingdom, at prices varying according to cost of carriage.
Genuine Peruvian Guano direct from the Importers. Nitrate of Soda, Sulphate of Ammonia, and other Chemical Manures.
American and other Oil-cakes.
Address, JOHN BENNET LAWES, 1, Adelaide Place, London Bridge, E.C.; and 22, Eden Quay, Dublin.

THE PATENT NITRO-PHOSPHATE or BLOOD MANURE COMPANY, LIMITED, Manufacturers of ODAMS'S PATENT BLOOD MANURE (LOOSE) and ROOTS. ODAMS'S SUPERPHOSPHATE of LIME and DISSOLVED BONES.
Chief Offices—189, Tottenham Street, London, W.C.; Western Counties Branch, Queen Street, Exeter; Irish Branch, 19, Westmoreland Street, Dublin.
Works—Plaistow, Essex, and Elford, Teesdale, Devonshire.

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The Company are prepared to contract for the supply for the Directors of Agricultural Societies of their manufactures for the Ensuing Year.
Address—"THE LEVANT FIXED MANURE COMPANY."
Mr. Mechi, in a descriptive circular, says of our Manure in Land, which has been a long time in use, "The Levant Manure has had four times the effect of the Peruvian, the Indian, &c., has had four times the effect of the Peruvian, and is three years in advance of Nitrate of Soda, in this Country."
A Pamphlet will be forwarded on application. The Terms, Secretary may be had of the Local Agents.
Chief Office, 149, Fenchurch Street, London, E.C.

THE LONDON MANURE COMPANY
(ESTABLISHED 1840),
Have now ready for delivery in any line condition,
COLZA, GIANT RAPE, for Spring Use.
DISSOLVED BONES, for Driving and Pasture Lands
SUPERPHOSPHATES of LIME
PREPARED SUPER-PHOSPHATE
MANGEL and other PATO MANURES
Also Genuine PERUVIAN GUANO, and NITRATE of SODA on Dock Warehouse.—SULPHATE of AMMONIA, FISHERS SALT &c. E. PURSER, Secretary.
Offices, 116, Fenchurch Street, E.C.

Established 1812.
PROCTOR and RYLAND'S
PREPARED BONE MANURES
Are the best prepared and cheapest Manures offered to the Public.
Offices, Corn Exchange Buildings, Corn Lane, Birmingham.
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SILVER SAND.—Wanted, an Agent in Town to undertake the SALE of very pure WHITE SILICIOUS SAND. Address R. J., *Gardeners' Chronicle* Office, W.C.

COCOA-NUT REFUSE delivered within 20 miles of Charing Cross, at 2s. per bag.
For particulars, and how to use it, see long Advertisement in *Gardeners' Chronicle* of the 21st March, 1863, or apply to the PATENT COCOA FIBRE COMPANY, Kingston-upon-Thames.
Postage Stamps or Post-office Orders payable to J. BARSHAM & CO.
BARSHAM'S BRUSHES and MATS are sold in every town.
CAUTION.—Every Brush is stamped, J. BARSHAM'S Patent.

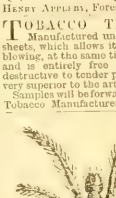
INTERNATIONAL HORTICULTURAL EXHIBITION and BOTANICAL CONGRESS.—Those who are preparing Plants for the above Exhibition should feed them liberally with STANDEN'S GARDENER'S and AMATEUR'S FRIEND. Sold by the leading Nurserymen and Seedsmen.

To the Trade.

STRONG TOBACCO PAPER, 80s. per cwt.
H. BROWN, 4, Commutation Row, Liverpool.

GENUINE TOBACCO PAPER, in 4-lb. packets.
Price on application to
HENRY APPLEBY, Forncett St. Mary's, Norfolk, Seed & Sou, Dorking, Surrey.

TOBACCO TISSUE for FUMIGATING.—Manufactured under Letters Patent from Tobacco rolled into sheets, which allows it to consume slowly without the assistance of blowing, at the same time giving off a very powerful narcotic effect, and is entirely free from any chemical admixture, which is so destructive to tender plants. It will be found more economical and very superior to the article generally used.
Samples will be forwarded on application to Messrs. ROBERTS & SONS, Tobacco Manufacturers, 5A, St. John Street, Clerkenwell, E.C.



Red Spider

Mangfied.

GISHURST COMPOUND, whether used against Insects and Mildew, on Growing Plants, or as Winter Dressing. Trees at rest, should be dissolved 48 hours before use. This gets rid of Moss, and if the Solution be decanted, prevents any staining of foliage. A strength of from 1 to 2 oz. to the gallon of water is recommended for growing Plants; one from 4 to 16 oz. for Trees at rest.
Sold Retail by Nurserymen and Seedsmen, in boxes, 1s., 3s., and 10s. 6d. each.

Wholesale by
PRICE'S PATENT
CANDLE COMPANY
(LIMITED).

Cattle Plague.

PUBLIC NOTICE.—REPORT of the ROYAL COMMISSION.
See "Sanitary Recommendations and General Precautions to Prevent the Spread of the Disease."

THE DISINFECTING POWDER described in the REPORT is
MCDOUGALL'S PATENT DISINFECTING POWDER.—It is commended as the best means of Disinfecting Cattle Sheds, Farm Buildings, &c. Sold in bags, 1 cwt. each, at 1s. 6d. or 2 lbs. in Packets Carriage paid on receipt of 30 stamps, upwards.
For Washing the bodies of both Healthy and Sick Cattle the Consumption is strongly recommended. MCDOUGALL'S DISINFECTING SOAP. Sold in Tablets at 2s. 6d.; 10 lb., 6s.; 20 lb. Rolls, 10s.; 30 lb., 25s. Directions for use in each package.
ALEXANDER MCDOUGALL, Manufacturing and Analytical Chemist,
Lancaster-11, Arthur Street West, London Bridge, E.C.;
Manchester—Regis Street, Shudehill;
Glasgow—F. H. McLeod, 18, Dixon Street;
Dublin—G. J. Alexander, 2, 3, and 4, Mary's Abbey.
Agents in most Towns throughout the Kingdom.

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Also, the original GASEOUS FLUID, for Debility and Exhaustion in Ewes after Lambing, for Diarrhœa in Calves and Lambs, and for Cough and Grease in Horses and Cattle. In feverish cases, and for cleansing in Ewes and Cows, a dose of the "Red Drench" should be given.
Mr. Bowick, Author of the Prize Essay on the "Rearing of Calves," says:—"I have reared 26 calves this year, and by the use of the Gaseous Fluid I have lost not one."
Price 10s. per bottle, or one dozen in a wooden box, 20s.
Prize Essay per return, with each article. Prepared by the Original Inventors—DAY, SON & HEWITT, 24, Dorset Street, Baker Street, W.

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AGRICULTURAL IMPLEMENTS.—Steam Engines, Chaff Cutting Machines, Ploughs, Carts, Waggons, Ploughs, Harrows, Land Rollers, Cake Breakers, Turnip Cutters, Churns, Garden Tools, &c. Improved Wire Nettings. Delivered carriage free. Price Lists per post.
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THE IMPROVED LEATHER DRIVING STRAPS for MACHINERY are stronger, more durable, drive better, and cost less than other kinds of Driving Belts. SPECIAL STRAPS for PORTABLE ENGINES. Price Lists free by post.
JOHNSON'S Patent Strap and Hose Company.
Manufactory—Armitt Works, Greenfield, near Manchester.
Warehouse—81, Mark Lane, London, E.C.
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CLAYTON, SHUTTLEWORTH, AND CO., ENGINEERS, Manufacturers of PORTABLE and FIXED STEAM ENGINES, Machinery for Pumping, Hoisting, Grinding, Sawing, &c., Engines for Steam Cultivation, Self-Moving Engines for Cutting on Roads and Agricultural Purposes generally.
Steam Yard Works, Lincoln, and 5, Lombard Street, London; also at LOWESMOOR, No. 41, Landstrasse, Vienna; and Gegenuber dem Bahnhof, Pesth.
Descriptive, Illustrated, and Priced Catalogues, Free per Post.
Special Drawings when required.
[The best Steam Threshing Machinery made.]

EARTH CLOSETS AND COMMODES.
(Moule's Patent.)

THE EARTH CLOSET is intended to remedy the evils arising from the common Cesspool; or as a substitute for Water when the Drainage is defective, or the supply insufficient; and as a means for preventing any offensive Smell in Bedrooms, Hospital-wards, &c.

It is founded upon the well-known power of earth as a deodoriser. The EARTH CLOSET practically applies this power: a given quantity of earth mechanically fulfilling the object, destroying all smell, and entirely preventing noxious vapours and other discomforts; the product being a valuable Manure.

The principle of THE EARTH CLOSET consists in an Apparatus for Measuring and Delivering the requisite quantity of Earth, and in a reservoir for containing it. The quantity of Earth required for each use of the Closet is not more than 2 lb., whilst its supply and removal are as easy as the supply of coal and the removal of ashes.

On view at MESSRS. WHITE AND CO.'S, 29, BEDFORD STREET, COVENT GARDEN, W.C.
Where Prospectuses and every information may be had on application.

SAMUELSON & CO.'S

LAWN MOWING AND ROLLING MACHINES.

EVERY MACHINE WARRANTED.

PRICES.

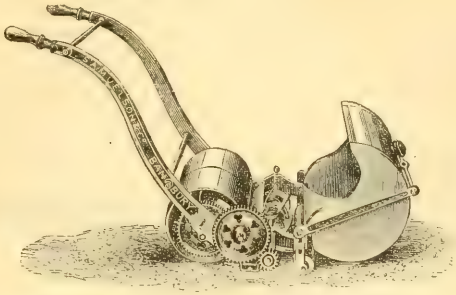
Delivered Free to any Railway Station in Great Britain.

Cutting 12 inches wide, suitable for a Boy £4 10 0

Cutting 14 inches wide, suitable for a Boy 5 5 0

Cutting 16 inches wide, suitable for a Man 6 0 0

Cutting 19 inches wide, suitable for a Man and Boy 6 10 0



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Delivered Free to any Railway Station in Great Britain.

Cutting 22 inches wide, suitable for Two Men £7 10 0

Cutting 25 inches wide, suitable for Pony Power 11 0 0

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Great Improvements have been made in these Machines during the last few years, in regard to all those small but important points of superiority which the practical working of a Lawn Mower suggests; while for elegance of appearance, lightness of draft, and efficiency in working they cannot be excelled. They possess the following advantages:—

1st, Motion is given to the Cutting Apparatus by toothed gearing, which experience has proved to be by far the best method of driving.

2d, The whole of the Driving Wheels are on one side of the Machine, a point of great importance in preventing damage to Shrubs and Flowers, when mowing round the edges of beds.

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Illustrated Price Lists, with selections from several thousand Testimonials, free by post on application.

SAMUELSON AND CO., BRITANNIA WORKS, BANBURY.

LONDON OFFICES: 18, CANNON STREET, E.C. WAREHOUSE (where Stock is kept) 10, LAURENCE POUNTNEY LANE, E.C.
AND OF ALL SEEDSMEN AND IRONMONGERS.

GREEN'S PATENT SILENS MESSOR,

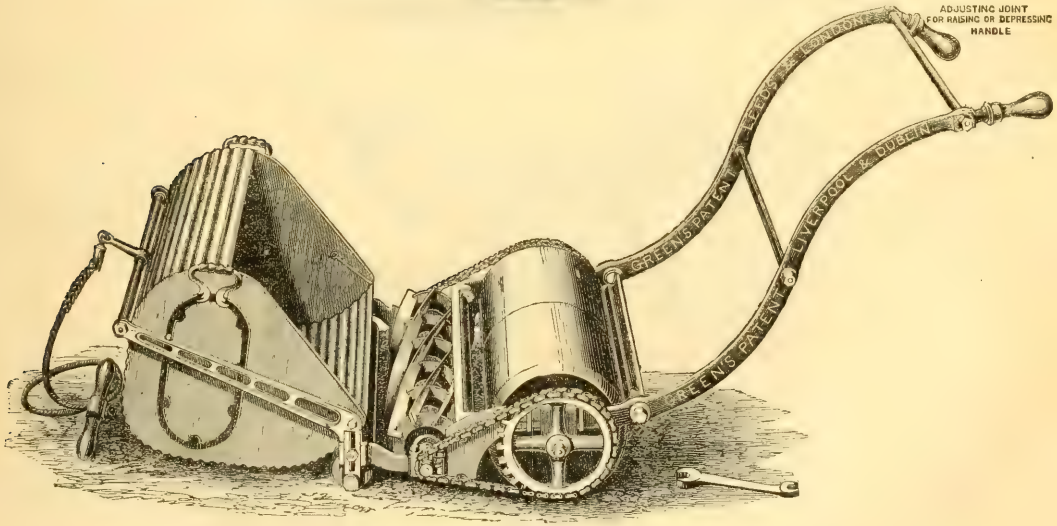
OR

NOISELESS LAWN MOWING, ROLLING, and COLLECTING MACHINES.

FITTED WITH PATENT SELF-SHARPENING CYLINDER CUTTERS.

BY SPECIAL APPOINTMENT,
SOLE MANUFACTURER

TO HER MOST GRACIOUS MAJESTY
THE QUEEN.



Every Machine is warranted to give entire satisfaction, and if not approved of, can be returned unconditionally.

Having above 3000 Machines in stock at our Leeds, London, and Dublin Establishments, we are in a position to execute orders on the day they are received.

Illustrated Price Lists and Sheet of Prize Medals awarded to GREEN'S PATENT LAWN MOWERS, *free on application.*

T. G. AND SON having taken very extensive Premises in London, they are in a position to do all kinds of Repairs there, as well as at their Leeds and Dublin Establishments.

THOMAS GREEN AND SON, SMITHFIELD IRON WORKS, LEEDS;
54 and 55, BLACKFRIARS ROAD, LONDON, S.; and 19, EDEN QUAY, DUBLIN.

SHANKS' PATENT LAWN MOWERS FOR 1866.

PATRONIZED ON FIVE SEPARATE OCCASIONS DURING THE SEASON OF 1864 BY

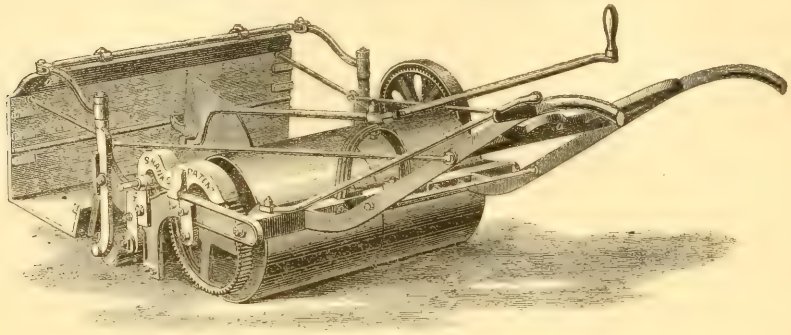
HER MAJESTY THE QUEEN,

AND ONCE BY HIS MAJESTY THE KING OF SAXONY;

AGAIN ON FOUR SEPARATE OCCASIONS DURING THE SEASON OF 1865 BY HER MAJESTY THE QUEEN;

ONCE BY HIS MAJESTY THE KING OF HOLLAND;

AND ONCE BY HIS MAJESTY THE KING OF PRUSSIA.



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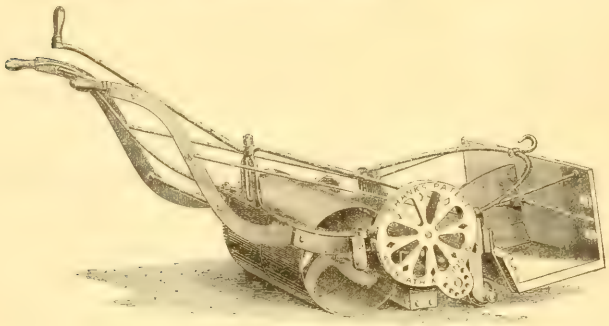
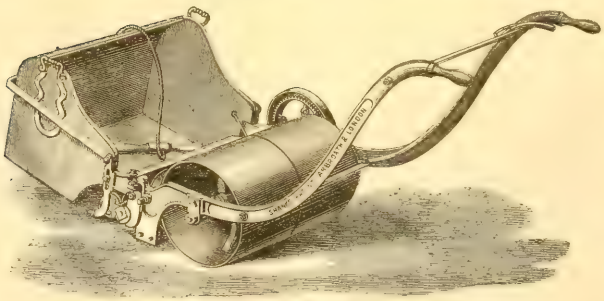


PONY AND DONKEY MACHINE.



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EVERY MACHINE WARRANTED.

IF NOT APPROVED OF, CAN BE AT ONCE RETURNED.

ALEX. SHANKS AND SON, in presenting their LAWN MOWERS for the approaching Season, are gratified to be able to state that the demand for their celebrated Machines is rapidly increasing.

A. S. AND SON, in introducing Improvements into their Machines, have been careful that no Improvement be introduced which has merely novelty to recommend it, but that the advantages in point of durability and simplicity of construction, which have always been a peculiarity of their Machines, should still remain.

A. S. AND SON can confidently assure their numerous Friends and Customers and the Public generally that their endeavour will always be to supply a Machine, first-class in every way, one which cannot be surpassed if even equalled, whether for simplicity of construction, ease in working, or durability. None but the best materials and skilled workmen are employed in the manufacture of their Machines.

Illustrated Circulars, with full particulars, sent free on application.

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N.B.—A. S. AND SON *keep a Stock of Lawn Mowers at 27, Leadenhall Street, London, from which Orders can be at once executed. They also have at their London Warehouse a staff of experienced Workmen thoroughly acquainted with all the details of these Machines, so that they are enabled to repair Lawn Mowers in London as well as at the Manufactory.*

JAMES PHILLIPS AND CO beg to submit their prices as follows:—

GLASS for ORCHARD HOUSES,

As supplied by them to Mr. Rivers, to the Royal Horticultural Society, and to most of the Nobility, Clergy, and Gentlemen of the United Kingdom.

Each Box contains 100 feet. The prices only apply to the sizes stated. Squares 20 by 12, 20 by 13, 20 by 14, 20 by 15.

	16 oz. of the foot.	21 oz.
Fourth quality	14s. 6d.	17s.
Third ditto	17s.	21s.
Seconds	19s.	23s.
English	19s.	24s.

The above prices include the Boxes, which are not returnable.

SMALL SHEET SQUARES.

In two feet Boxes			
6 by 4	6½ by 4½	7 by 5 .. 7½ by 5½	12s. 6d.
8 by 6	8½ by 6½	9 by 7 .. 9½ by 7½ ..	15s. 6d.
		10 by 8 .. 10½ by 8½ ..	15s. 6d.

Boxes 2s. each, returnable at full price.

HARTLEY'S PATENT ROUGH PLATE GLASS.

Packed in Boxes of 50 feet each.

6 by 4 and 6½ by 4½	10s. 6d. per box
7 by 5 and 7½ by 5½	12s. ..
8 by 6 and 8½ by 6½	12s. 6d. ..
9 by 7 and 9½ by 7½ and to 10 by 8 ..	15s ..

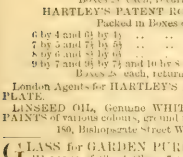
Boxes 2s. each, returnable at full price.

London Agents for HARTLEY'S IMPROVED PATENT ROUGH PLATE.

LINSEED OIL, Genuine WHITE LEAD, Carson's PAINTS, PAINTS of various colours, ground ready for use.

180, Bishopsgate Street Without, London, E.C.

GLASS for GARDEN PURPOSES.—A Box containing 311 panes of Sheet Glass, 7 inches by 5 inches, for 10s., box included. Prices sent for any description of glass on application to Rose P. Parr, Glass Merchant, 31, Hoxton Hill, London, E.C.



SWING WATER BARROW.—This is the best and cheapest article yet introduced to use in Gardens, Farm Yards, &c. The Water may be sprinkled out, or the Tub tilted and poured out, or by merely raising the Handle it can be placed on the ground, and the Frame detached. To hold about 30 or 36 gallons, price 42s. Carriage paid to any station on Great Eastern Line

POWERFUL GARDEN ENGINE, suitable for the above, price 45s

IMPROVED WATER and LIQUID MANURE CARTS.

Catalogues on application.

Manufactured by W. S. Bacon, Rose Lane Iron Works, Norwich

Future Safety from Rinderpest.

MUSGRAVE'S PATENT IRON COW STALLS, with fresh Air Inlets, as used in the Government Model Farms.

MUSGRAVE'S PATENT STABLE FITTINGS and LOOSE BOXES Adopted by H.R.H. the Prince of Wales, for Sandringham

MUSGRAVES' PATENT HARNESS BRACKETS, IRON PIGGERIES, and DOG KENNELS.

MUSGRAVES' PATENT SLOW-COMBUSTION STOVE, Employed by the Ecclesiastical Commissioners.

The PATENT IRON COW STALLS and AIR INLETS are perfect in their arrangements for Feeding and Ventilation, every part being of iron they are indestructible, inexpensive, very compact, cleanly, and healthful for the animal. Should disease occur, the Stalls, Iron work be painted and the walls washed with lime, they can neither harbour nor communicate contagion. This system in fact is to and to be the only true Sanitary and economical plan for the Cow House.

Priced Engravings of all these Inventions will be sent free on application to Musgrave Brothers, Ann Street Iron Works, Belfast.

Caution to Gardeners.—When you ask for SAYNOR AND COOKE'S WARRANTED PRIZE PRUNING and BUDDING KNIVES, see that you get them. Observe the mark SAYNOR, also the corporate mark Certain Warranted, without which none are genuine.

S. & C. regret having to caution Gardeners and others, but are compelled to do so, in consequence of an imitation, of common quality, having been sold for the genuine one, and which has caused many complaints to be made to them of Knives which were not of their make, all of which are warranted both by sellers and makers.

S. & C.'s Pruning and Budding Knives are the best and the cheapest in the market.

Paxton Works, Sheffield. Established upwards of 125 years.

Oil Paint no longer Necessary.

HILL AND SMITH'S PATENT BLACK VARNISH for preserving Iron Work, Wood, or Stone. This Varnish is an excellent substitute for oil paint on all out-door work, and is fully two-thirds cheaper. It may be applied by an ordinary labourer, requires no mixing or thinning, and is used cold. It is used in the grounds at Windsor Castle, Kew Gardens, and at the seats of many hundreds of the nobility and gentry, from whom the most flattering testimonials have been received, which HILL & SMITH will forward on application.

From J. A. Taylor, Esq., *Stensham Court.*

"In answer to your enquiries, I beg to inform you I find your Black Varnish an excellent substitute for oil paint upon iron and wood out of doors, and have found the iron Barrow with apparatus essential in applying the Varnish to lines of fencing. I can strongly recommend the Black Varnish for all out-door work as superior to anything I have yet used for the purpose, and it can be applied with great economy by careful labourers."

Sold in casks of about 30 gallons each, at 1s. 6d. per gallon, at the Manufactory, or 1s. 8d. per gallon paid to any Station in the kingdom.

Apply to HILL & SMITH, Brierly Hill Iron Works, near Dudley, and 22, Cannon Street West, E.C., from whom only it can be obtained.

TANNED GARDEN NETTING for preserving Seed Beds, Fruits, Strawberries, from Frost, Blight, Birds, &c., and as a Fence for Fowls, &c. 1 yard wide, 1½d.; 2 yards, 3d.; 3 yards, 4½d.; and 4 yards, 6d. per yard run in any quantity, may be had at Cross Weiland's, 376, Strand, W.C.

VARNISHED GARDEN STICKS.—1 foot, 3d.; 1½, 4½d.; 2, 6d.; 2½, 7½d.; 3, 9d.; 4, 1s. 6d. per dozen. DALLIS, per dozen.—3 ft., 1s. 6d.; 4, 2s. 3d.; 5, 3s.; 6, 3s. 6d. An allowance to Nurserymen.

NETTING for FRUIT TREES, SEED BEDS, RIPE STRAWBERRIES, &c.—TANNED NETTING, for protecting the above from Frost, Blight, Birds, &c., 2 yards wide, 3d. per yard, or 100 yards 25s.; 3 yards wide, 4½d. per yard, or 50 yards 20s. NEW TANNED NETTING, suited for any of the above purposes, or as a Fence for Fowls, 2 yards wide, 6d. per yard; 4 yards wide, 1s. per yard; 1-inch mesh, 4 yards wide, 1s. 6d. per yard.

Can be had in any quantity of EATON & DELLER, 6 and 7, Crooked Lane, London Bridge, E.C.

WOOL NET to preserve Blossom, 2 yards wide, 10d. per yard; NEW TWINE NET, 1½d. per yard; TANNED NETS, 4s. per 100 yards; all kinds of GARDEN NETS, RABBIT NETS, SHEEP NETS, and all TWINE NETTING.

Waterproof Capes, 5 feet deep, 4s. each. Driving Aprons, 7s.; Police Capes, 24s. per dozen; Boys' Capes, Waterproof, 8s. per dozen; Rabbit-proof galvanised Wire Netting, 36 inches wide per yard, all widths.

R. Richardson, 99, Euston Road, London, N.E.

W. S. UNDERHILL'S NEW PATENT IRON FENCE for GARDENS, LAWNS, &c.

Manufactory: Newport, Salop.

Warranted the strongest and most durable fence ever offered at corresponding prices. It is easily repaired if broken from accidents, can be rolled up most compactly when not in use, is admirably adapted for exportation, and can be had of any height and mesh required, at prices from 4d. to 1s. 6d. per yard and upwards.

For further particulars apply at the Manufactory; or of the London Agent, Mr. R. Winder, 18, Abingdon Street, Westminster, S.W.

Iron Hurdles, Fencing, and Gates.

COTTAM'S HURDLES are made in the best manner of superior Wrought Iron. SHEEP HURDLES, from 4s.; CATTLE HURDLES, from 4s 11d each; CONTINUOUS FENCE, from 8d per foot; FIELD GATES, from 24s each. Illustrated Price List on application.

ENTRANCE GATES, RAILING, and IRON WORK of every description. Designs and Estimates free of

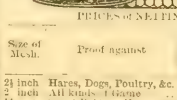
Cottam & Co.,

No 2, Wansley Street

(opposite the Pantheon),

Oxford Street, London, W.

GALVANISED WIRE NETTING.



PRICES of NETTING, 24 inches high.

Size of Mesh.	Proof against	Light, per Yard.	Medium, per Yard.	Strong, per Yard.	Extra strong per Yard.
24 inch	Hares, Dogs, Poultry, &c.	4d.	5d.	6d.	7d.
2 inch	All kinds of Game ..	4½d.	5d.	6½d.	8d.
1½ inch	Small Rabbits, Hares, &c.	4½d.	7d.	7d.	9d.
1 inch	Ditto Ditto ..	6d.	7d	9d.	11d.

100 Yards and upwards Carriage Free.

GALVANISED IRON WATER CISTERNS.

GALVANISED CABLE STRAND FENCING.

GALVANISED IRON PUMPS.

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GALVANISED IRON ROOFS and BUILDINGS.

LAWN MOWERS. GARDEN ROLLERS.

ASPHALTE ROOFING FELT, 1d. per square foot.

HURDLES, HURDLES, HURDLES, 1s. 9d. to 2s. 9d. per yard.

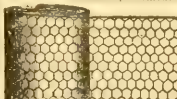
Morton & Green, Bate & Co., Morfoot & Co.

Illustrated Catalogues and Estimates free on application.

12, Great George Street, Leeds.

NEW IMPROVED PREMIUM WIRE NETTING

Great Improvement with Reduced Price.



PRICES PER LINEAL YARD 24 INCHES HIGH.

Size of Mesh.	Mostly used for	Light		Medium		Strong.		Extra Strong.	
		Jap	Gal	Jap	Gal	Jap	Gal	Jap	Gal
		s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
2½ in.	Hares, Dogs, Poultry	0	2½	0	3½	0	4½	0	5½
2 in.	Game or Poultry Netting	0	3½	0	3½	0	4½	0	5½
1½ in.	Small Rabbits, Hares, &c.	0	3½	0	4½	0	5½	0	6½
1¼ in.	Smallest Rabbits	0	4½	0	5½	0	6½	0	8
1 in.	Pheasantries, &c.	0	8	0	10	0	11½	1	1
½ in.	Aviaries, &c.	0	11½	1	1	1	2½	1	4

Quantities of 10 yards or upwards delivered free to nearly all the principal Railway Stations and Shipping Ports in England; and 200 yards or upwards delivered free to most parts of Scotland and Ireland.

*** Every description of Netting warranted to give satisfaction, and if not approved will be exchanged, or may be returned unconditionally.

IRON HURDLES, CONTINUOUS BAR FENCING, IRON and WIRE FENCING, FENCING WIRE, FIELD and ENTRANCE GATES, GARDEN ENGINES, GARDEN ROLLERS, GARDEN SEATS and CHAIRS, CAST IRON VASES, and every description of HORTICULTURAL and AGRICULTURAL MACHINES, TOOLS and appliances. Lists Free on application. Every article guaranteed to be satisfactory.

J. B. Brown & Co., Office 18, Cannon Street, City, London, E.C. nearly opposite St. Swithin's Lane and "London Stone," and near London Bridge.

Warehouse (where Netting is kept in stock), 143, Upper Thames Street, E.C.; opposite the City of London Brewery, and close to the London Bridge Steam Boat Piers.

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TO BE DISPOSED OF, by Private Contract, in consequence of the death of one of the Firm, the STOCK, GOODWILL, &c., of a well-established NURSERY BUSINESS, with a thriving connexion of a first-class standing, in one of the most important and fashionable Sea-coast Towns of England. It consists of about 6 Acres of Land in a high state of Cultivation, three Greenhouses, three Propagating Houses, and Frames, well stocked with Saleable Stuff, Camellias, Epacris, Ericas, Azaleas, New Holland Plants, Ferns, Bedding Stuff, &c. The Nursery comprises a superior collection of Variations of Box, Yews, Hollies, and an extensive and unrivalled Stock of Gladioli, for which this Nursery has a first-class reputation. Also Fruit Trees, Roses, Evergreens, Deciduous Shrubs, Asparagus, &c., and the leading Conifers. The Nursery also comprises the unique Sheds, Stock, &c., and is within a few minutes' walk of two Railway Stations and Steamboats, affording easy communication to all parts of England and the Continent. The Stock to be taken by Valuation, or as agreed, and any *bona fide* communication will meet with attention. Immediate possession could be given.

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MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, February 14, at half-past 12 o'Clock precisely, without reserve, an assortment of CONIFERS, TRITOMAS, VINCAS, CLEMATIS, BERBERIS, LAURELS, RASPBERRY CANES, Currant Trees, Rhubarb Roots, Gladioli, Laburnums, Aucubas, Fruit Trees, Standard Roses, Honeysuckles, Pinks, Carnations, Vines, Asparagus Roots, &c.

On view the Morning of Sale, and Catalogues had.

Consignment of Plants from an Old-established Nursery.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on SATURDAY, February 17, at half-past 12 o'Clock precisely, fine STANDARD and DWARF ROSES, Flowering Shrubs and Evergreens, Vines, Figs, Fruit Trees, Azaleas, Rhododendrons, Andromedas, Hardy Ericas, Kalmias, Mahonias, Laurels, Hollies, Climbing Shrubs, Conifers, Deciduous Trees, &c. Also a consignment of Fruit Trees and Ornamental Shrubs from France, and an importation of Gladioli, Anemones, and Ranunculuses from Holland for Spring planting.

On view the Morning of Sale, and Catalogues had.

Annual Sale of very handsome English-grown Camellias, &c.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, at 48 and 49, Gracechurch Street, City, E.C., on WEDNESDAY, February 21, at 1 o'Clock precisely, about 300 Choice DOUBLE CAMELLIAS and AZALEA INDICA, from 1 to 5 feet, beautifully furnished with bloom buds; a superb assortment of 500 handsome STANDARD and DWARF ROSES; selected AMERICA PLANTS, fine bulbs of LILIUM LANCIFOLIUM of sorts, GLADIOLUS, &c.

On view the Morning of Sale. Catalogues may be had at the Rooms as above, and of the Auctioneers and Valuers, Leytonstone.

THE HYDROPULT.

EXTRACTS FROM THE PRESS.

Editorial, written by ROBERT HOGG, LL.D., F.L.S.

THE HYDROPULT.—The great secret of successful in-door gardening consists in the free and judicious use of the Syringe. A Greenhouse or Conservatory that does not enjoy this luxury, becomes a miserable lazar-house of vegetable incurables. Vermin and filth hold unbounded sway, and people become disgusted with their own want of success. Well do we recollect the former days of plant-culture, the days of "collections," when the use of the Syringe was yet limited or unknown. What a time for red spider, scale, and green fly! What fumigations and consumption of tobacco and tobacco paper, washings with tobacco water, and all sorts of remedies were resorted to! We regard the introduction of the free use of the Syringe as one of the events in modern gardening. To this is due the success of Orchard-house management, Vine Management, and Plant Management, but the old Syringe with its slow suck and squirt, is now as much out of date in modern gardening, as an old stage waggon in modern locomotion. Many are the improvements and complications of the old simple Syringe. We have tried several of them, but for ease in working and efficiency in result, we have not yet met with anything to equal the Hydropult, sent us by Mr. BUTTON. It is powerful in operation, and so easy and comfortable to work, that one never gets fatigued. With such an instrument, plants may be kept in perfect health, and quite free from insects and dirt. We first tried it on a few Geraniums in our Conservatory, which were smothered with green fly during our temporary absence of 10 days, but on our return, a stout discharge from the Hydropult sent them clean off across some unknown bourne, whence they have never yet returned.—*The Florist and Pomologist.*

Editorial, written by SHIRLEY HIBBERD, Esq., F.R.H.S.

THE HYDROPULT.—This is an invention introduced in a most spirited manner by Mr. C. P. BUTTON. It is at once a Fire Engine and a Garden Engine, is always ready for use at a moment's notice, is neat and portable, weighing only 8 lb., and can be worked by a boy of moderate strength for some hours in succession without fatigue. The mechanical power employed being economised by combining the action of the hand and the resistance to the foot, between which the instrument is placed and used as a Double-action Pump. From the sole to the handle the Hydropult measures 24 inches. The two Brass Cylinders measure 12 inches in length, and 3½ inches in breadth. At the top of these cylinders India-rubber tubing is attached, on one side to feed, on the other to discharge the water. It will perhaps surprise the reader to be told that this little contrivance, which is pretty as a toy, and can be carried under the arm as easily as a trumpet, will throw from 7 to 8 gallons of water per minute a distance of 50 feet. But it will do it, as we know from having tried it, finding the experiment an agreeable exercise, and of special service in washing down a stuccoed wall, which it accomplished quite as well as if we had sent for the parish engine. Gardeners will not need to be told the value of a Portable Force Pump of this simple kind. It can be used to produce a powerful stream to extinguish a Fire, or a gentle shower to Syringe a whole houseful of Plants, without the necessity of moving a single step from the position most convenient for a supply of water. Wherever a Pump or Syringe is needed, the Hydropult can be brought into use, to remove Water from a Cellar or a Boat, to Cleanse a Cistern, Wash a Pavement, or Drench the Foliage of Trees loaded with Soot, or annihilate at one fell swoop the whole Insect population of a Plantation of Roses. But we will not enlarge upon its merits, they are obvious, and having a Hydropult in use we can say that it will soon pay for its cost in a Garden, besides being always at hand in case of an emergency of any kind which may require an immediate removal or discharge of water.—*Gardeners' Weekly Magazine.*

Editorial, written by Rev. H. H. DOMBRAIN, A.B.

THE HYDROPULT. — When we formerly noticed this instrument, we did so from merely seeing it at the Proprietor's; since then, we have had an opportunity of testing it personally, and can bear testimony to the excellence of the invention. The force with which it throws a stream of water is almost incredible; while, for syringing a Greenhouse, a gentle shower, as fine as that from a Hand Syringe, with considerably more effect, can be easily given. We have a gardener, quite of the old-fashioned school, who does not generally fall in love with new-fangled notions, but he is perfectly enchanted with the saving of labour and time that the Hydropult will be to him.—*Floral Magazine.*

THE HYDROPULT.—We strongly recommend this to the attention of our readers, for—which is not always in our power to say—it fully comes up to this statement of its Proprietor:—"It is a Fire-Annihilator and Garden Engine, simple, effective, and convenient. It weighs but 8 lb. and will throw 7 or 8 gallons of water per minute to a distance of 50 feet when worked by the power of one man." It throws the water either in one stream, or dispersed in the form of the finest shower of rain, by means of a sprinkler which is screwed on beneath the pistons, and which can be fixed when needed on the end of the jet. Wherever a man with a bucket can pass, there can the Hydropult be brought into operation, so that narrow walks, and other places inaccessible with a Garden Barrow Engine, are no impediments to the approach of this very simple and very effective contrivance. — *Journal of Horticulture and Cottage Gardener.*

THE HYDROPULT.—The Hydropult is a Hand-Engine for throwing water, of singular simplicity and power, and we are much mistaken if it does not speedily supersede all the complicated and expensive Garden Engines, Gutta Percha Tubing, and such appliances. Any description of the little instrument would fail to give our readers an idea of its simplicity. It weighs only 8 lb , can be worked by a lad, and throws a strong jet of water 40 or 50 feet with the greatest ease. It is extensively used as a Hand Fire-Engine, and it is on record that many disastrous conflagrations have been prevented by its agency; and we strongly recommend its use to all owners of manufactories, and to those householders who are not within easy hail of the ordinary Fire Engines. But though this is its primary use, it is admirably adapted for garden purposes. We have practically tested its efficacy in this way, and a more easy and effectual mode of irrigation cannot be conceived. It is equally useful for washing windows, carriages, and all such purposes.—*Birmingham Journal.*

THE HYDROPULT.—Under this title a contrivance for throwing water by hand power has recently been patented. The Machine is certainly the most compact and efficacious Force-Pump of its size that we have ever seen. Its form is simply that of a double cylinder, beneath which is fixed a pedal, or stirrup, for steadying the apparatus, which is worked easily with short vertical strokes, by a wooden handle. The hose branches forth from the top of either tube, and thus we have an engine as portable as could well be devised, while at the same time its force has been found adequate to extinguish fires. When it is considered that the length of the stroke is only from 5 to 8 inches, and the whole Machine is not more than 8 lb. in weight, it is surprising to be told that public buildings have been saved from destruction by its agency. Yet such we find to be an officially certified fact.—*Daily Telegraph.*

THE HYDROPULT. — It is admirably adapted for sprinkling gardens, trees, graperies, washing windows, carriages, and for household purposes: its simplicity and portability being its strong recommendation.—*Illustrated News of the World.*

THE HYDROPULT.—The slightest examination convinced us that a more useful—we might say necessary—apparatus could not possibly be found in dwelling-houses, offices, and shops. It weighs only a few pounds, and consists of two tubes of about 2 feet long. It will throw water 50 feet high at least, will serve to wash windows, and in the event of fire, would certainly extinguish it in any dwelling-house while it was confined to a single apartment; for by its means water can be projected into the place without opening doors or windows. In fact, it can be poured in volumes through the key-hole; and where a close room is on fire, it is not at all necessary that the water should touch the fire. It will be quite enough if it is converted into steam, for steam is the great enemy of fire. We are satisfied that all house-keepers ought to have one, and we are equally satisfied that if they once see it they will order it.—*Liverpool Daily Post.*

THE HYDROPULT.—A vast number of the fires which daily devastate the metropolis and provinces might be effectually prevented, and a large amount of human life preserved, by the timely use of a portable but effective machine for extinguishing the flames while in the first stage of progress. The most effective, compact, and economical contrivance that we have yet seen, and the most multiform in its uses that has ever been introduced to the public, is that known as the Hydropult, or Portable Fire Annihilator and Garden Engine. In a word, it is available for every possible purpose, as a Hydrant or Force Pump; it is always ready, constantly available, and so easily worked, that the most inexperienced can efficiently use it at a moment's notice. We have before us the unvarnished and straightforward testimony of the managers of the principal fire insurance companies, proprietors, and superintendents of works and public institutions throughout the United Kingdom, relative to its utility, efficacy, and universal adaptability. Our provincial and metropolitan contemporaries, who have, with ourselves, witnessed the admirable results of the experiments made with the Hydropult in the various uses above enumerated, also unite in according the invention (or rather the inventor) the utmost praise, and thoroughly and unequivocally endorsing the truth of his assertions respecting it. We can only say, that no public establishment or private house should be without one of these useful machines.—*The Commercial Daily List.*

THE PATENT HYDROPULT OR PORTABLE FIRE AND GARDEN ENGINE. — This ingenious but simple contrivance, though so insignificant and valueless in appearance, is, notwithstanding, one of the most powerful, unique, and useful illustrations of the practical application of scientific principles to common things. Though scarcely 2 feet in length, and weighing but 8 lb., it is superior in its use to the ordinary garden engine, or that revered piece of antiquity, the parish engine, and its attendant magnate the beadle, in all the splendour of his three-cornered hat, and gold-bedizened coat. It can be entrusted to the most inexperienced youth, who can use it with ease, and bring it into action at once, without the possibility of disappointment or failure. The great feature in this invention is its simplicity. It consists of two parallel metal cylinders and boxes fitted with valves so arranged that whether you push the piston down or pull it upwards, it expels the water through the india-rubber pipe at the rate of *eight gallons per minute* (the velocity being always proportionate to the force applied by the hand). For performing any purpose to which a Hydrant or Force Pump is applicable, it is invaluable and trustworthy. We commend it to the notice of the proprietors of warehouses and other buildings, public and private, in the metropolis and provinces. The Hydropult possesses the advantages of economy, utility, and applicability to a variety of purposes.—*The Mechanics' Magazine.*

The above Extracts are selected from some hundreds which this invaluable instrument has received.

TRADE MARK—

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CHARLES POMEROY BUTTON, 142 and 143, CHEAPSIDE, LONDON, E.C.

Editorial Communications should be addressed to "The Editor." Advertisements and Business Letters to "The Publisher," at the Office, 41, Wellington Street, Covent Garden, London, W.C.
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THE GARDENERS' CHRONICLE

AND

AGRICULTURAL GAZETTE.

A Newspaper of Rural Economy and General News.

No. 7.—1866.] SATURDAY, FEBRUARY 17. {Price Fivepence. STAMPED EDITION, 6d.

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ROYAL HORTICULTURAL SOCIETY, SOUTH KENSINGTON.
A MEETING of the FRUIT and FLORAL COMMITTEES will take place on TUESDAY NEXT, the 20th inst., at 11 o'Clock.

ROYAL BOTANIC SOCIETY, Regent's Park.—EXHIBITIONS of SPRING FLOWERS, SATURDAYS, March 17, April 7 and 21. Tickets 2s. 6d. each.
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HORTICULTURAL SOCIETY of LIVERPOOL.—The FOURTH EXHIBITION of HYACINTHS and SPRING FLOWERS will be held in St. George's Hall, Liverpool, on WEDNESDAY, March 14. Entries close March 10.
For Schedules, &c., apply to ROBERT W. KER, Hon. Sec., 4, Basnett Street.

HORTICULTURAL SOCIETY of LIVERPOOL.—The FIRST EXHIBITION of ROSES, ORCHIDS, FERNS, &c., will be held in St. George's Hall, on TUESDAY and WEDNESDAY, July 3 and 4, when most liberal Prizes will be awarded.
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Extra strong Fruiting Vines.

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Standard and Dwarf Apples	Alder, 2 to 3 feet
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Also a large quantity of Trees fit for belting.

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Sealed packets: Quarts, 3s. 6d.; Pints, 2s. each.

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GENTLEMEN ABOUT TO REQUIRE AGRICULTURAL SEEDS

MAY FIND IT ADVANTAGEOUS TO REFER TO OUR

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Which will be forwarded Post Free on application.

Over a long series of Years the Laying Down of Land to Grass has occupied much of our attention, and we are enabled to furnish Assortments of trustworthy Seeds, moderately charged, to suit every description of Soil. Full particulars as to these, as well as to our improved varieties of Swede and Yellow Turnip, &c., will be found in Catalogue.

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GENUINE SEEDS, CARRIAGE FREE.

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BEGS TO OFFER THE

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The Prices of which are quoted as low as possible for the finest samples that could be procured.

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FRENCH BEANS and SCARLET RUNNER, 1s per quart			RADISH, TURNIP, or WOOD'S EARLY FRAME, 2s. 6d per qt		
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Amaranthus cruentus grandiflorus.

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To the Trade.

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CLIANTHUS DAMPIERI, in varieties (seed only).

Coloured Plates, post free on receipt of Stamps, of the following:—

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FLOWER SEEDS of extra extra fine quality.—Calceolaria, Cineraria, Primula fimbriata, Double Zinnias, imported Asters, Stocks, &c.

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A Circular with fuller descriptions free by post.

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SUTTON AND SONS forward

Flower Seeds

Free by Post or Rail.

Those requiring showy kinds of Flower Seeds, and who are not well acquainted with the sorts, are respectfully recommended to leave the selection to us, and we will supply those we know to be really worthy of cultivation.

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1. The best 100 sorts (hardy, half-hardy, and tender)		1	1	0
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3. The best 36 sorts	ditto ditto	0	7	6
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Extract from GARDENERS' CHRONICLE:—

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JOHN AND CHARLES LEE having acquired the stock of this desirable NEW BEDDING PLANT, they have much pleasure in offering SEED in SEALED PACKETS. It is also well adapted for pot culture

As a BEDDING LOBELIA it stands unrivalled. The plant is of dwarf compact habit; the flowers are large and even, and of the purest white. The stock comes perfectly true from seed.

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TESTIMONIALS:—

From Mr. J. H. MASON, *Stourton Castle Gardens, Staffordshire.* See *Gardeners' Chronicle and Agricultural Gazette*, July 29, 1865, p. 700

"Dickson's First and Best is decidedly the best Early Pea I have ever yet grown. It is a good cropper, with good-sized WELL-FILLED pods, and certain gatherings can be obtained from the vine.

Further opinions of Mr MASON, *Stourton Castle Gardens.*

See *Gardeners' Chronicle and Agricultural Gazette*, July 29, 1865, p. 700.

"Dickson's First and Best Pea grows taller than these (Carter's First Crop and Sutton's Supreme), is of more vigorous habit, and produces a larger quantity of pods, and while the average number of Peas in the two mentioned was from 4 to 5 in a pod, that of Dickson's was from 5 to 7. Dickson's First and Best and Carter's lots of stragglers reared their heads, and were, as 'rogues' in Peas generally are, later in blooming."

From Mr J. C. MCNEILL, *Horley House, Croydon.* See *Gardeners' Chronicle and Agricultural Gazette*, June 10, 1865, p. 539.

"I have not seen any mention made in your columns of Dickson's First and Best Pea, a variety invaluable for its earliness.

From Mr WM. LANDON, *Downton Castle Gardens, near Ludlow.* See *Gardeners' Chronicle and Agricultural Gazette*, July 22, 1865, p. 676.

"I sowed this season Dickson's First and Best, Dillistone's Early, and Sangster's No. 1, and I found the first to be fully nine days earlier than either of the others. Its quality is exceedingly fine, is very hardy, a strong grower, and pods in abundance from top to bottom. I gathered a much larger crop from the First and Best than I did from either of the others, and in future I shall sow it only for my first crop."

From Mr. ALEXANDER DEAN, *Maybush, Southampton.*

See *Gardeners' Chronicle and Agricultural Gazette*, July 1, 1865, p. 603

"I also sowed Dickson's First and Best, and found that Best was entirely free from rogues, the other two had plenty among them."

From Mr. J. VEITCH, *Exotic Nursery, Chelsea.*

See *Gardeners' Chronicle and Agricultural Gazette*, July 29, 1865, p. 700.

"I have been much interested in reading the opinions of those who have tried the various new Peas sent out last Spring, and as I have made very careful trials of all, I give you the following as the result of my experience (Dickson's First and Best) as the new Early Pea, (nine when sowed, and dates of first gatherings.) Dickson's First and Best was very good and true, and in my opinion I the *best* new Early Pea sent out this season."

From Mr. JOHN MCHATTIE, *Seedsman, Chester.*

See *Gardeners' Chronicle and Agricultural Gazette*, Aug. 19, 1865, p. 773.

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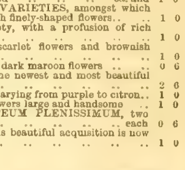

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This is very large, and less watery than the old Red.		These three Lettuces are less liable to run than any we know.	

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A well-executed Coloured Plate of the white, margined with scarlet, post free at 1s. 6d.

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A beautifully Coloured Illustrated Plate at 7d. post free.

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JOHN FRASER, of the Lea Bridge Road Nurseries, Leyton, Essex, N.E., will forward on application a LIST of all the best varieties of NEW ROSES for 1866.
The plants are strong, healthy, and are now ready for sending out. Early orders are respectfully solicited.

New Roses for 1866.

10,000 strong healthy well-grown Plants of all the New Roses.
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WM. WOOD AND SON have to offer an extraordinary stock of the best NEW ROSES of the present season, in fine healthy plants.

New Roses.

JOHN KEYNES, in offering the above, begs to state that they are in the finest possible condition, having all been REPOTTED, and now well established, ready for immediate removal. Price 36s. per dozen. The usual allowance to the Trade.
Salisbury.—February 17.

NEW ROSES of 1865.—Owing to the annual introduction of so many inferior, and, in fact, worthless varieties of New Roses, JOHN CRANSTON has this season carefully selected 23 varieties out of 40 or 50 sorts offered by the French raisers. These he can confidently recommend, and he believes his selection contains all that are worthy of note.
A List, with prices, sent on application. The plants are strong, and will be fit to send out in March.
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DOBSON AND SONS' PRIZE CINERARIA, 1s., 2s. 6d., 5s.
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The above are extra choice quality.
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Lists of Prices of all sorts of VIOLET PLANTS, and Sample Blooms of the above new Sort, sent on receipt of stamp for postage.
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THE CZAR, a New Russian VIOLET, raised by F. J. GRAHAM, Esq., obtained two First-class Certificates for its magnificent flowers and foliage in 1865. It blooms from October till May.
Very fine plants in bloom may now be had from Mr. JOHN GRAHAM, Cranford, near Hounslow, 6d. per 100; 13s. per dozen prepaid, package included.

Superb Double Hollyhocks.

THE FINEST COLLECTION EVER OFFERED TO THE PUBLIC.
W. CHATER has a large Stock of fine healthy Plants now ready, which he can supply on liberal terms.
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New Descriptive Catalogue of Vegetable and Flower Seeds, &c., for 1866.

ROBERT T. MACKINTOSH, NURSERYMAN and SEEDSMAN, 12, Melbourne Place, Edinburgh, begs respectfully to intimate that the above LIST, embracing several New and interesting Novelties, may now be had post free on application.

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MR. HENRY MAJOR, Knosthorpe, near Leeds, is now prepared to offer nice young Plants of the above, in parcels of 20, at 6s. per parcel; or three for 15s.; post free. These are the production of his unrivalled collection. CALCEOLARIA SEED, 2s. 6d. per packet, or three for 5s. Postage stamps or Post-office order in payment.

Choice Ranunculus Seed.

C. TYSO, FLORIST, Wallingford, succeeded last season in saving some unusually fine SEED from RANUNCULUSES of the finest quality. The present is the season for sowing. Packets, 2s. 6d. and 5s. each, with directions, post free. Also, PRICED CATALOGUE for one stamp.

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MARSH AND PERKINS, 42, Drapery, Northampton, have pleasure in offering Strong Autumn-struck PLANTS of the above from Store Pots, 12s. per 100; 100s. per 1000.
N.B. The usual discount to the Trade. Terms: Cash.

Scarlet Geraniums.

WITTY AND SON have to offer strong Autumn-struck Plants of the above, from store pots, at 10s. per 100, or £4 per 1000. Terms cash, or reference from unknown correspondents.
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Gladiolus Bowiensis.

THOMAS BARNES offers the above in strong Flowering Bulbs, by the 100 and 1000. Prices, which are very low, may be had on application.
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GLADIOLI, GLADIOLI, GLADIOLI.—Collections, including all the finest varieties in cultivation, from 10s. 6d. to 63s.
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The Gardeners' Chronicle.

SATURDAY, FEBRUARY 17, 1866.

MEETINGS FOR THE ENSUING WEEK.

TUESDAY,	Feb 20	Royal Horticultural Floral and Fruit Committees at South Kensington	11 A.M.
		Linnean Society	8 P.M.
SATURDAY,	" 24	Royal Horticultural (Weekly Show) at South Kensington	2 P.M.

THE objects of cultivation, both in the garden and farm, suffer so much from VEGETABLE PARASITES, that it is highly necessary for the cultivator to have some correct notions as to their habit and structure. We have therefore from time to time taken the opportunity of acquainting our readers with any fresh information that has been obtained on the subject. We have often pointed out the fact of the same species having different modes of fructification and appearing under different forms, and recent observations show that, like tapeworms and some other parasitic animals, there are parasitic fungi which, in one stage of growth, flourish on plants of a totally different order from that on which they attain their most perfect development.

The case which has been followed out most fully is the more interesting because it throws light upon a question which has been warmly discussed for nearly a century, and which has for the most part been regarded by those who had the most intimate acquaintance with these parasites as unfounded. The expert of former days, however, must be content to bow with deference to facts, which we now bring forward, if he is not prepared at once to admit that the case is decided.

The question is that of the influence of the Berberry in producing mildew in Wheat, which has often been discussed in these columns, and it is now more than 20 years since we noticed a commission which was instituted by the Agricultural Society at Lille for examining the subject, and which came to the conclusion that it really had some influence. There is generally some degree of truth in such wide-spread persuasions as those which are current on the subject, but so long as these were supported merely by an imperfect series of observations, they could not be received, even in the character of probabilities, especially when all that was known of the parasites which affected the plants in question seemed to contradict mere practical observers. Now, however, DE BARY,* who is confessedly an excellent observer, has taken up the subject in earnest, though he has not arrived at present at a complete demonstration, we can no longer refuse to listen patiently, however our preconceived notions may militate against a matter which at the first glance seems visionary.

It must be premised that DE BARY believes that cereals are affected by more than one species of mildew. The question is, however, confined to the connection of the Æcidium with Puccinia graminis, which is generally allowed to be the plant to which the disease called mildew is due. It is with that alone then that we are interested so far as this question is concerned, though it will be well to state what DE BARY says respecting other forms of mildew, because it may afford an answer to some objections which may be made as to the prevalence of mildew where the Berberry is scarcely to be found.

Two kinds of fruit occur constantly in mildew —the one transitory, consisting of unicellular sessile spores, the other lasting through the winter and not germinating till the following spring, and which are stipitate and uniseptate. The only two species with which we are at present concerned are Puccinia graminis and Puccinia straminis; the prominent distinctions of which are as follows:—In Puccinia graminis both the kinds of spores occur in the same heap or sorus. The orange-coloured sessile spores are oblong, with four perforations from whence they germinate; whereas in P. straminis they are nearly globose, and seated in distinct sori, while the spores are six in number. The winter spores of P. graminis are more obtuse, with the two cells nearly equal, while in P. straminis they vary much, being often pointed and oblique, often abruptly truncate, and the lower division frequently longer than the upper; besides which their peduncle is much shorter, while the margin of the sori bears prismatic paraphyses of a light brown tint, and some are scattered over the disc. Occasionally there are three joints. It is worthy of remark, moreover, that the rust-form of Puccinia graminis appears much later than that of P. straminis. The former appears in early spring, while the latter is essentially a production of summer, and therefore is more rapid in its development.

Now, the unicellular spores of Puccinia graminis germinate readily when scattered over the mother plant, and their germinating threads penetrate its stomates or air-holes, produce a mycelium in the parenchym, and ultimately give rise to new sori, which have all the characters of rust. The winter spores, on the contrary, when placed on the mother plant, germinate exactly as they would do on glass; they bear a number of secondary spores on their germinating threads, which in their turn germinate, but the threads wither without penetrating the tissues, either through the stomates, or immediately through the cuticle. This seems to suggest that they require some other matrix, and the supposed influence of the Berberry induced DE BARY to see if they would behave differently on its leaves. Germinating spores were therefore applied, and though their threads withered on the plant from which they were derived, they penetrated the cuticle, and in a short time gave rise to those peculiar little cysts with minute gelatinous spores, called spermogonia, which always accompany the well-known parasite of the Berberry, Æcidium Berberidis.

These experiments were made with leaves separated from the parent plant, but as, after a short time, they always became discoloured and mouldy, it was necessary to have recourse to some other method. Accordingly young seedlings were chosen from a nursery, of such a size that they could be kept conveniently in small pots and covered for a time with a bell-glass. The leaves were treated as before with germinating winter spores, and not only were the little cysts above mentioned produced, but the true Æcidium appeared.

Comparative experiments were made in the first instance with cut leaves to which no spores were applied, and in the others with young plants, and not a single pustule appeared, which was especially necessary because some of the plants in the nursery from whence those selected for experiment were taken, had old pustules on them. Not a plant, however, out of these produced any fresh pustules, so that it seemed almost certain that the Æcidium must have arisen from the winter spores of the Puccinia.

Unfortunately the converse experiment of producing the Puccinia from the spores of the Æcidium has not at present succeeded, but as experiments of this kind with other species have demonstrated the complete cycle of growth, there seems the greatest reason for believing that DE BARY is correct in his notion of the intimate connection between the Berberry and Puccinia graminis.

It is highly desirable that similar experiments should be made with Puccinia straminis, but if it should be found that its resting spores will not develope a mycelium in the leaf of the Berberry, while it is certain that it is of very frequent occurrence on Wheat, we shall at once have an explanation of the very different conclusions to which observers have arrived. The Berberry may have no influence in the production of P. straminis, though, if DE BARY's observations are confirmed, it is clear that it has a very important connection with P. graminis. *M. J. B.*

* See Monatsbericht der Kön. Preuss. Ac., Jan. 1865.

OUR neighbours on the other side of the Straits of Dover—we beg pardon—the Pas de Calais, have been occupied lately in discussing the advisability of applying LATIN NAMES to the many VARIETIES AND RACES OF VEGETABLES grown in the kitchen garden. How, asks M. BOSSIN, can a Frenchman procure from a seedsman of London, St. Petersburg, Madrid, or Philadelphia, seeds of "Chou de Bruxelles?" Ten chances to one if the dealers in those capitals would understand what was meant; but by writing for seeds of Brassica multiplicata, or polycephala, no difficulty would be met with! So, in writing for Triple Curled Parsley one should, on this plan, ask for seeds of Petroselinum sativum crispum!

M. BOSSIN and those who think with him are quite serious in this matter, or we should be disposed to smile at the proposal, and to wonder what in the world our gardeners would make of Lactuca romana, longa, rubicosa, hyemalis! But in truth, if the florists employ Latin names for their varieties, as they do, for instance, in the case of the Camellias, Camellia alba semiduplex, pæoniflora, papaveracea, &c., it is hard to see why the kitchen gardener should be debarred from the use of similar grandiloquent expressions. Some would say that only the aristocrats in the drawing-room should be endowed with classic names, and that the humbler kitchen inmates should have more homely appellations—would object in fact to the performance of the farce of "High Life Below Stairs." But we cannot in common justice see why cultivated varieties of flowers should be honoured and kitchen plants not awarded a similar distinction. "None of your airs, Miss BRENCHLEYENSIS," might fairly say Master SPINACH, "if you are a Gladiolus, I am an Atriplex—Atriplex rubra if you please, and I refer you to M. BOSSIN for a copy of my baptismal register." While tall Miss BEET (Beta rubra longior) might fairly assert her claims to equality with Camellia japonica. In truth, however desirable it may be to secure uniformity in the nomenclature of garden varieties, we do hope it will not be attempted through the medium of the Latin language, both for the sake of the general public, and for the sake of scientific botanists, already heavily encumbered with a daily increasing load of synonyms. If Latin be used, the name of the species should be given in all cases to avoid the possibility of confounding a species with a variety; thus we would, if Latin must be used, write Camellia *japonica* pæoniflora, and so on. One great objection to this plan is the length and unwieldiness of such designations, of which we have given sufficient examples, and so we are disposed to side with M. HERINCQ, and to say that science (and therefore scientific nomenclature) should remain pure and neutral in all that regards commercial speculation or traffic. When once a plant passes from the hands of the botanists into those of the merchant, it becomes often difficult, sometimes impossible, to follow it throughout all the modifications to which it may be subjected by honest industry and skill on the one side, or by quackery on the other. Let the botanist who discovers or first describes a plant give it a name according to the rules laid down for that purpose; but when it comes to a question of garden varieties, then let those be named by the gardener in accordance with his rules. If he have no code of nomenclature, let one be framed, but always in such a manner as to prevent the possibility of a misunderstanding, and as far as practicable the commission of a fraud by the unprincipled dealers.

—— ATTENTION was called last year to the fact that many seeds of CUCURBITA MAXIMA, the Winter Squash of the Americans, had been sold as those of the Cattle Melon. We believe that the real Cattle Melons are all varieties of Cucurbita Pepo (or Summer Squash). Several are cultivated in the United States for stock, and in some parts of Europe (as for example in Hungary) they are grown with great advantage for pigs. In France the variety most esteemed is the Touraine Gourd, of which we possess a good quantity of seed, a sample of which will be at the service of any one who sends a properly directed and stamped envelope, enclosed in one addressed to the Rev. M. J. B., King's Cliffe. It is not certain that it will succeed in this country in average seasons, but last year it produced very fine specimens, filled with excellent seed, which is very peculiar, and different from that of any other variety with which we are acquainted. Should there be more applications for seed than can be supplied, they will be reserved for the following year. It is at least desirable that our readers should have the true plant for trial, instead of a more tender and less eligible species. *M. J. B.*

—— Crocuses seem peculiarly subject to a malformation, whereby some of the segments of the flower become adherent one to another. The union takes place along the centre line only, the sides remaining free, just as if two sheets of note paper were folded in halves and pasted together along the central fold. Sometimes one of the stamens is also joined to one of the segments of the flower in this way, and then we get three organs placed one in front of another, and partly adherent in the way just mentioned. This peculiarity is not, so far as we know, noticed in any of the standard works on malformations, but it is nevertheless of common occurrence. We do not at present see how this condition is brought about. Can any of our correspondents help us?

—— M. DUCHARTRE has recently laid before the French Academy his views on the INFLUENCE OF LIGHT UPON THE TWINING PARTS OF PLANTS. Recording his own experiments and those of other observers, M. DUCHARTRE concludes that there are two groups of twining plants:—(1) Species, such as Dioscorea Batatas and Mandevilla suaveolens, which have the power of attaching themselves to surrounding objects only under the influence of light; and (2) Species, such as Ipomœa purpurea and Phaseolus, which exhibit this power equally well either in light or in darkness.

—— Dr. HENRY TRIMEN and Mr. W. THISELTON DYER are collecting materials for a FLORA of the county of MIDDLESEX, on the plan of the Cambridgeshire and Essex Floras. They will feel indebted to botanists who will send them local lists, notes of localities, or information of any kind connected with the subject; in the case of rare, critical, or doubtful species, the loan of specimens will be very acceptable. Dr. TRIMEN's address is 71, Guildford Street, Russell Square, London, W.C.; Mr. THISELTON DYER'S, Christ Church, Oxford.

FIG TREES FOR SMALL GARDENS.

A FEW years ago I happened to be in central Germany towards the end of the month of June. As a rule this part of Germany offers but few subjects of interest to the horticulturist, but chancing one day to visit one of the old Schloss gardens, I was much interested by observing some half standard and bush Fig trees growing in the open borders of the kitchen garden, covered with young Figs. Knowing that the Fig tree could not endure the severe winters of that part of the country, the thermometer often

falling to 20° or even 30° below zero of Fahrenheit, my curiosity was excited. On inquiry I found that these trees—they had compact bushy heads, and stems as thick as a man's leg—were annually taken up in October and placed in a dark frost-proof place, some at the back of an Orangery, and others, as I understood, in a dry cellar. The gardener said that some earth generally adhered to their fibrous roots, and that in spite of this annual removal they ripened a good crop of Figs in August and September. On inquiry as to the time they were removed to their summer quarters in the kitchen garden, I learnt that it was in most seasons early in May, and that they were planted in some rich compost, and well soaked with water for a week or two, if the weather happened to be dry. I did not think of trying this mode of Fig culture till the summer of 1860, when some fine young trees were prepared, but owing to forgetfulness they were not removed to safe winter quarters, so that in spite of being carefully protected with dry straw round their stems, they were all killed by that memorable Christmas Day frost.

It was not till the autumn of 1864 that the German method of growing Figs again occurred to me. Early in November of that year I had a number of young trees with stems from 2 to 3 feet in height, placed thickly in an orchard house, "laid in," as they call it, *i. e.*, their roots placed in a trench, and their stems inclined so that a mat could be placed over them to prevent any possible injury to their fruit buds. They remained in the house till early in April, which last spring was like a warm May. They were planted out in a sheltered sunny place, and to my great satisfaction, ripened a nice crop of fruit in August and September. The trees are again in their winter quarters, and I hope to see them do the same this year.

There is no doubt but that this easy method of growing Figs may be carried out to a great extent in the neighbourhood of London, and in the north and east of England, in all inland districts where Fig trees are so often injured by the frosts of winter, for even when trained to walls, unless well protected, their fruit buds containing the first crop are often killed. There is also much trouble with wall Fig trees in many soils, owing to their rampant growth and consequent barrenness. With the fig trees I have described there is but little vigorous growth, owing to their annual removal, but even if inclined to grow too freely, their regular summer treatment will prevent their becoming unruly. This consists in taking out the terminal bud of every shoot as soon as it has made five full-sized leaves. By this simple mode of pruning, the trees soon form compact heads, and become marvellously fruitful. I ought to add that a dry cellar or a frost-proof shed, with some earth in which to place the roots of the trees, will answer the purpose of an orchard-house; in such places they will not require being covered with mats. The first sort that ripened with me last year was the Brown Ischia—this was dead ripe in August; the Brunswick, a late Fig, ripened in September. The earliest sorts, and those best adapted to this open-air Fig culture, are the Brown Ischia, Brown Turkey, Early Violet, White Marseilles—a variety of high excellence, and Angelique.

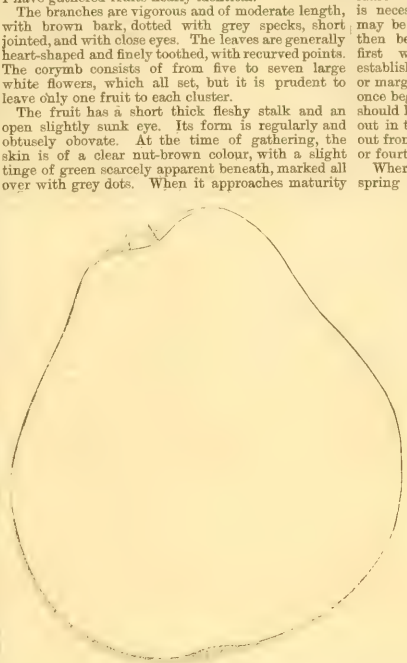
I have been tempted to describe this mode of Fig culture, because it may be practised in our very small suburban gardens, or even in city gardens, for the Fig tree does not refuse to flourish in a smoky atmosphere. I think also it is the duty of every man experienced in fruit culture to make known to the inexperienced any simple mode of carrying it out. I can well call to mind my youthful days, when I used to walk in the fruit gardens of our wealthy people, look at large Fig trees and large Peach trees trained to high walls, and think that such things were not for *the* people, and that no other modes of culture ever could exist. I have therefore long ceased to wonder that our great gardeners, of whom England may justly be proud, are apt generally to look to the spread of fruit culture, not perhaps with contempt, but with a feeling that the routine way—the way they have always seen and practised, is enough for all lovers of fruit and fruit trees. If it had been my fate to have had the charge of a large and well-appointed garden, I have a full conviction that I should have looked at my Pineries, Peacheries, and wall trees—all perfect of their kind—and should never have thought of Fig trees for small gardens, which may, however, prove interesting to a certain class of your readers, for wherever there is room for a Gooseberry bush, a Fig tree may be grown. *Thos. Rivers.*

BEURRÉ DE JONGHE PEAR.

THIS variety was obtained in the gardens of M. Gambier, of Rhode-St.-Genèse, not far from Brussels. I saw it in fruit for the first time in 1852, at Uccle, another country seat belonging to M. Gambier. The seedling had been planted there two years before, and growing in a strong compact dry soil, it bore only small fruit, somewhat resembling a Bergamot in form. The quality having been ascertained to be good, and the tree one of great fertility and of a hardy constitution, I judged it to be prudent to submit this new variety to an attentive study in my experimental garden. It was accordingly grafted on some strong tall free stocks, and also on the Quince. The variety succeeded best on the Quince, the fruit being in that case better developed, and of larger size. It is from this source that I have increased it. The figure represents a fruit gathered from a tree which had been worked on a Quince four years previously, and was growing in the open air in the nursery. From one of the grafts on the tall stems, after six years' cultivation, I have gathered fruits nearly identical.

The branches are vigorous and of moderate length, with brown bark, dotted with grey specks, short jointed, and with close eyes. The leaves are generally heart-shaped and finely toothed, with recurved points. The corymb consists of from five to seven large white flowers, which all set, but it is prudent to leave only one fruit to each cluster.

The fruit has a short thick fleshy stalk and an open slightly sunk eye. Its form is regularly and obtusely obovate. At the time of gathering, the skin is of a clear nut-brown colour, with a slight tinge of green scarcely apparent beneath, marked all over with grey dots. When it approaches maturity



in December or January it becomes yellow. The flesh is of a pinkish white; the juice abundant, of a sweet vinous flavour, and leaving on the palate an agreeable after-taste, such as can only be met with among Pears of the first rank.

Neither the tree nor the fruit, resemble those of any other kind known among cultivators. *J. de Jonghe.*

VIOLA CORNUTA.

I SEND you a few particulars about the origin and cultivation of this valuable addition to our bedding plants. Three years ago I saw it at the Messrs. E. G. Henderson's nursery, growing in pots amongst their collection of hardy herbaceous plants; and being at the time rather favourably impressed with its appearance, I purchased a plant of it, with other choice Alpine and hardy plants. It was put out in the herbaceous beds at Oulton Park during the following season, and I noticed that the plant was continually in bloom from April till late in October. This led me to use it as a bedding plant, and the result has been highly satisfactory during the past summer. I consider it one of the most beautiful shades of colour we have for giving relief to and toning down the strong glowing colours produced by a large proportion of the plants used for bedding purposes.

Viola cornuta was introduced to the Royal Gardens at Kew by Dr. Ortega in 1776 from Spain; and a very correct figure of it is given in Curtis's "Botanical Magazine," vol. 21, plate 791. It is strange that the plant should have remained so long in our gardens (nearly 90 years) without its peculiar merits having been noticed by some one, especially as it is a shade of colour that has been so long wanted in the flower garden; but

> There it was content to bloom,
> In modest tints arrayed,

and the plant would no doubt have perished long since from neglect, and would have been totally lost to our gardens, but for its extreme hardiness.

It thrives in any common garden soil without any care, and when once the plant has become established there is some difficulty in getting rid of it, as the smallest bit of the root if left in the soil will grow, and soon produce a plant. It flowers more profusely in a dry soil, but thrives better and produces larger and better developed flowers in a moist soil, and partially shaded situation. It seeds very freely, and may be propagated either from seeds or cuttings. The present is a good time to sow the seeds or to propagate by cuttings. The seeds should be sown in shallow pans, and placed in a cold pit or frame. The cuttings should also be pricked out in a cold pit or frame, where they will soon emit roots; and when they are fairly rooted they should be again replanted into a cold pit in some good soil, where they will grow very rapidly, and by the end of March have made good plants. By that time, if it is necessary to have a large stock of them, they may be divided into a large number; they should then be planted out into nursery beds. By the first week in May they will be again well established, and may be planted permanently as beds or margins, as occasion may require. They will at once begin flowering very freely. The small plants should have similar treatment previous to planting out in their final quarters, but must not be pricked out from the seed pans till they have made the third or fourth pair of leaves.

Where the plant is intended to be used for early spring decoration (which is now becoming very popular), cuttings should be taken early in August or September, and the plants placed in their final quarters about the end of October.

I intend to carry out a course of experiments, if I am spared, in the coming spring, by crossing the flowers of V. cornuta with Mr. Tyerman's varieties of V. montana, as well as with many of the other Violas and Pansies, to see if I can produce the various colours of the latter along with the habit and constitution of Viola cornuta. If I can succeed in doing this, I shall be the means of introducing a class of plants to our gardens that will not easily be surpassed for the many good qualities which make the genus Viola so much appreciated. There have already been obtained some greatly improved forms of Violas. What is wanted now is the beautiful odour of the common Violet, combined with a good habit, and a profuse production of bloom all through the summer months, these again combined with the different tints of colour to be found in the Pansy.

I have not yet tried the plant in heat, but intend doing so this spring, and have little doubt but that it will strike as readily as a Lobelia or a Verbena, after the plant has been growing freely in a gentle heat for a few weeks. If so, those who do not possess the plant, may, by purchasing a few roots of it now, by bedding-out time raise some thousands from them. *J. Wills, Hunstrogle, Burnley, Lancashire, Feb. 6, 1866.*

EXTRACTS FROM THE JOURNAL
OF MR. JOHN GOULD VEITCH,
DURING A TRIP TO THE AUSTRALIAN COLONIES AND THE SOUTH SEA ISLANDS.

(*Continued from page* 124.)

BRISBANE boasts of a beautiful botanical garden, prettily situated on the banks of the river. This establishment is under the directorship of Mr. Walter Hill, well known in England from having of late years introduced many of the finest of the North Australian plants. Mr. Hill also fills the office of Surveyor of Government Agricultural Reserves. This takes him to all parts of the colony, and affords him opportunities of inspecting its botany. I was fortunate in finding Mr. Hill at home on my arrival in Brisbane, and he at once placed the whole of his establishment at my disposition, and showed me great kindness.

The Botanic Gardens are about 30 acres in extent, and occupy the side of a low hill sloping down to the river. The Governor's house and domain are at the immediate back. The private garden attached to Government House is small, and contains nothing worthy of note. A fine broad walk extends along the river frontage of the public grounds. Here an avenue of Araucaria Bidwillii has been planted; the trees are now 25 feet high, beautifully symmetrical, and thriving well. Some future day this avenue will be one of the most striking features of the town. A portion of the grounds is devoted to a Pinetum, and a very fair collection of Coniferæ has been already planted. Most of this tribe of plants do well, particularly the Pines, Junipers, Arbor-vitæs, and Cypresses; but the heat is too great for such as the Wellingtonia and Cedrus Deodara.

A circular Rose Garden is a very pleasing picture. I was much surprised to find Roses doing so well in such a hot climate. One of the prettiest features of the garden is a fine clump of Bamboos 60 feet in height. Taking advantage of the shade this clump affords, the centre is planted with a collection of Aloes, Yuccas, Palms, Dracænas, Beaucarneas, Tree Ferns, Gleichenias, Dendrobium speciosum and Hillii, Sansevieras, Zamias, Macrozamias, Cycas, &c A stream of water has also been introduced. The

shade and moisture thus obtained, where otherwise there would be little of either, gives the whole an appearance of great luxuriance.

Two ponds contain the indigenous Water Lilies of the colony, viz., the pink Lotus, Nelumbium Kennedyi, and the blue Nymphæa gigantea. Both these bloom profusely, and produce flowers of immense size. Mr. Hill is devoting especial attention to the trial of plants likely to become of commercial value to the colony. There are large patches of Tea, Coffee, South Sea Island Cotton, Indigo, Senna, Ginger, Arrowroot, Cinnamon, &c., all of which seem to be well suited to the climate. There is but one small greenhouse, used to contain and propagate recent introductions. The constant heat renders more unnecessary. Here, as in Sydney, the greater portion of the grounds are laid down in lawn, upon which are ornamental clumps of trees and flowering shrubs. I particularly noticed a fine specimen of Stenocarpus Cunninghamii, loaded with bunches of its yellow and scarlet flowers; Barklya syringæfolia, quite covered with long racemes of bright yellow flowers; this would in all probability prove a most ornamental plant for greenhouse and conservatory cultivation in England, as it flowers naturally in a dwarf state, and few plants create more effect; a beautiful species of Sagus from Cape York, probably one of the finest of the Australian Palms; Dendrobium Hillii, a species in the way of D. speciosum, but quite distinct in habit, and producing larger and finer spikes of bloom; Grevillea Macleayi, a very ornamental shrub, resembling G. Drummondi; several distinct varieties of Gleichenias, and Tree Ferns; and lastly a new Sciadophyllum from Cape York, which is one of the most ornamental of the Aralia tribe that I have seen, its foliage being of a light glossy-green colour, somewhat resembling Aralia pulchra, but much larger than the leaves of that species, and having a most graceful pendulous habit, giving the plant an effect at once distinct and peculiar to itself. Altogether I was agreeably surprised to find a public garden so far advanced, and so large a collection of plants in the comparatively young colony of Queensland.

The grounds are annually increased in extent, as far as the means at Mr. Hill's disposal will allow. The whole establishment is one of the most practically managed public gardens that I have seen, reflecting great credit on its Director.

There is no nursery in Brisbane worthy of remark. Almost all horticultural produce comes from Sydney. I visited the private garden of Mr. R. R. McKenzie, situated on the banks of the river, about two miles out of the town. This garden is in Queensland what Camden Park is in New South Wales. Some 10 acres are filled with a good collection of ornamental plants and fruits, to which additions are continually being made from England. As is almost universally the case in Australia, the ground not actually planted is rough and in bad order. The price of labour chiefly accounts for this. Excepting the Botanic Gardens, Mr. McKenzie has the largest collection of plants in Queensland. I was more surprised than ever to see the great variety: some from cold countries, and others from the hottest part of the tropics—Palms, Roses, Begonias, Fuchsias, Hydrangeas, Azaleas, Guavas, Oranges, Indian shrubs and climbers, Californian Conifers, Japanese Camellias, and other shrubs, all thriving together.

Tecoma velutina, a plant originally introduced from England, has become one of the most common and showy of garden shrubs. It is well suited to the climate, and produces its immense bunches of bright yellow flowers in great abundance. Coniferæ thrive here remarkably well notwithstanding the heat, particularly such as Cupressus macrocarpa, Lambertiana, pendula, and Knightiana, Thuyas, and the indigenous Araucarias, &c. The Pampas Grass becomes a perfect weed, and blooms to great perfection. Fruit is chiefly confined to Bananas, Plantains, Pine-apples, Cherimoyers, Loquats, the Passion fruit, Grapes, Oranges, and Peaches. Mr. McKenzie's present gardener, Mr. Last, has been but a few months in the colony. He came from London in hopes of bettering his position, but like thousands before him, he finds that Australian life is a rough one, with many drawbacks.

Rockhampton, Feb. 25, 1865.—This, the second place of importance in Queensland, is situated on the banks of the river Fitzroy, forming the great water outlet for the northern grazing lands. The town is rapidly becoming one of importance, although at present one meets with the stumps of trees in the streets, and most of the houses are built of wood. The heat is very great throughout the year, and often rises to 110° in the shade during the summer months. The atmosphere is said to be more oppressive here than at any other of the Australian settlements. This arises from the town being built on a low swamp, nearly 30 miles from the sea-coast, and entirely shut in by a range of mountains.

The scenery of the district is most unpicturesque, and the vegetation devoid of all luxuriance, for notwithstanding the great heat, the extreme dryness of the atmosphere gives the whole country a parched up appearance. Some lagoons in the vicinity are covered with Nymphæa gigantea. Dendrobium undulatum grows on rocks on the sea-coast, and Musa Banksii and the famous Leichardt tree are found in the mountains. The woods and scrub country consist of scarcely anything but the same brown dingy Gum-trees one meets with everywhere.

Port Denison, March 8, 1865.—This is amongst the youngest of the Australian settlements. It is situated on the sea-coast, with a beautiful harbour—second to none north of Sydney. The present population is 800. The greatest drawback to the place is the want of fresh water; none is found within two or three miles of the town. The surrounding country is barren, but fine grazing land exists in the interior. Having attained my object in procuring a supply of the Orchids of the district, I remained here but two days. On returning to Brisbane we passed through the Whit-Sunday passage, close to the mainland. Both the Whit-Sunday Islands and the mainland rise to an elevation of 1500 to 1800 feet, and are for the most part covered with vegetation to the summits. The scenery is very pretty, and somewhat reminded me of Japan. No Europeans are as yet living in this district. We saw several of the naked, miserable, Australian aborigines on the beach as we steamed past. They have the reputation of being particularly savage.

(To be continued.)

THE LATE SIR W. HOOKER.

In the "Archives des Sciences de la Bibliothèque Universelle de Genève." for January, 1866, is a notice of the life and writings of the late Sir William Hooker, from the pen of Professor A. DeCandolle, the President of the forthcoming Botanical Congress, and which has also been issued separately. We regret that our space will not allow us to publish the article *in extenso*, but we extract the following as likely to be of interest to many of our readers:—

Sir William Hooker, says M. DeCandolle, belonged to the active or working-class of Botanists rather than to the reflective or philosophical class. The latter publish comparatively little, but from their caution and exactitude every line which they write has to be well considered by the reader. To this class belong Cæsalpinus, Micheli, the three Jussieus, St. Hilaire, and specially Robert Brown, while in vegetable chemistry, Théodore de Saussure is a good representative of the class.

Among "active" botanists are enumerated as types—Bauhin, Tournefort, Ray, Linnæus, De Lamarck, De Candolle, Lindley, and Humboldt. These are the men who are daily increasing our stores of knowledge, who astonish us by the abundance of their work and the variety of their researches and their ideas. When a happy thought strikes them, they turn it to practical use immediately. "If," says M. De Candolle, "the mode of indicating species by the use of two names had been proposed in a memoir by some philosopher as a desirable thing for botanists, nobody would then have paid the least attention to the suggestion, but Linnæus speedily put the plan into execution, and its value was immediately appreciated."

Linnæus, Augustin Pyramus De Candolle, and Sir William Hooker are considered the three most prolific botanical authors; Ray, Lindley, and Von Martius being but little less so.

Hooker attained his eightieth year, and continued his labours as an author for 55 years, viz., from 1811, the date of his first publication, to 1865. Linnæus lived to the age of 72, and his published labours extended 4 years beyond. De Candolle lived 63 years, and his authorship was spread over 44. The longest career among the more distinguished botanists was that of Link, who died at the age of 85, after having been engaged in authorship for at least 59 years. In contrasting the two classes of botanists, M. DeCandolle sees no reason to elevate one at the expense of the other. Nothing is more admirable than perspicacity united to reflection, than genius guided and controlled by common sense, and breadth of generalisation combined with the faculty of paying scrupulous attention to details. Of such traits were Robert Brown natural, in the highest amongst botanists. But there is another way of estimating the position of scientific men, and that is by considering the results of their labours and the duration of their influence.

"The greatest men," said Napoleon, "are those whose works survive longest." Applying this principle to botanists, it will be seen that those *savans* who have collected a great deal, or have described and published much, not only exercise a great influence over their contemporaries, but also leave a long-enduring mark behind them. The more numerous their descriptions of heretofore unknown plants, the more numerous the plates they publish, the more will their survivors be compelled to consult their works. M. De Candolle goes on to compare the researches of the physiologists with those of the descriptive botanists. He shows that in physiology there are but few absolutely new ideas. The observations of Brown or Mirbel, for instance, had been in a measure anticipated by Grew—not so with a new plant. A botanist who describes and figures a hitherto unknown plant adds a new fact to the science—one which possibly has little importance, or, on the other hand, it may be of great value in resolving questions of affinity or of morphology. Had it not been for the labours of such indefatigable descriptive botanists as Hooker, De Candolle, Kunth, Lindley, Blume, von Martius, and others, systematic botany must have become a chaos. Augustin Pyramus De Candolle described and published during his life upwards of 6000 new species—almost as many as had been discovered from the time of the Greeks to that of Linnæus. Hooker probably described as many; moreover, he published more than 4000 botanical plates. Reichenbach the elder has published nearly the same number, but in this case the plants represented are for the most part European, and comparatively well known.

Jacquin published nearly 3,000 beautiful plates; Sibthorp, 943; Von Martius had issued in 1856 nearly 1100, and adds annually to the number; Dr. Wight brought out 2313 plates devoted to the illustration of Indian plants. From this it may be seen how Sir William excelled his fellow-labourers. Due praise is given to Hooker for his advice for his accuracy in allocating species into their proper genera, few botanists having been less often at fault than the late distinguished Director of Kew Gardens.

In alluding to cultivated plants, and the difficulties that beset the botanist who has to name them, M. De Candolle makes the following remarks, which will find an echo among all those who are called on to determine the identification of garden plants. "Every director of a botanic garden knows in what state plants are that flower for the first time. He knows that the description must be quickly drawn up, in order that the plant may be handed over to the artist. The plant must however be examined without ripe fruit, with no power of comparing several specimens, and with a sense that the characters of the plant may be altered by cultivation. Sometimes the question hinges upon an isolated or doubtful member of a large genus that has not been recently worked up. In spite of all this the plant must be named and published. Very excusable are faults made under such circumstances, very praiseworthy those who commit them but rarely."

The details of Sir William's life having been already published in our own columns, we need not reproduce them here, nor is it essential to dwell in greater detail upon the discriminating and well bestowed eulogy that the Geneva Professor has pronounced over our distinguished countryman.

Home Correspondence.

Nottingham Crocus.—The meadows near Nottingham, extending for a great distance beside the "silvery Trent," are now (7th Feb.) covered with tens of thousands of lovely Crocus blooms in full beauty; the greater part are blue and light lilac. The effect when the sun shines is very beautiful, the fine green tint of the Grass, and the short sturdy foliage of the Crocus, with the numerous blooms raised about 3 inches from the ground, and their pure white stems, cause them to have an exceedingly pleasing appearance. Numbers of children may be seen each day gathering quantities of these beautiful harbingers of returning spring. I also find here and there amongst them some wild Aconites. The single blooms of the Crocus are quite as fine as our garden varieties. I enclose a few. *Trent.* [The flowers sent are those of Crocus vernus, and are very fine. Will our correspondent kindly forward us a few more flowers with the leaves, and also a specimen of the "Aconite."]

Large Silver Fir.—You will oblige me by giving me the name of the enclosed specimens. Do they belong to the true Silver Fir, Picea pectinata, or to the Balm of Gilead Fir? Some very fine trees of this kind have fallen here lately, measuring from 120 to 150 feet in length, and from 8 to 12 feet round the butt. One of the twigs sent is from an old tree, the other from a seedling derived from the old one. *S. Evans, Arbury.* [We submitted the specimens enclosed to Mr. Andrew Murray, an authority in such matters, who has favoured us with the following reply. EDS.] "Your correspondent should have been relieved from all doubt on the subject by the size of the trees. There is no Silver Fir but Picea pectinata of anything like 120 feet in height in Britain—a photograph should be taken of them. The Balm of Gilead Firs do not reach more than 40 to 50 feet in height, even in their native country, and I do not know a single Balm of Gilead in Britain of 60 years of age. They generally die when about 30 or 40 years old. The peculiar short foliage, which has no doubt suggested the comparison, is the natural result of want of vigour in the tree, here probably due to its age. When the Scots Fir is going backwards, the leaves which are produced are shorter and more stunted in appearance than in more vigorous and healthy individuals, and a forester in going through a wood selects for cutting down those which show this sign of ceasing to do well. Commonly it is due to the roots having got into a cold, damp, undrained subsoil, but the same effect will be produced by age, &c."

Grape Growing at Sir Edward Walker's, Bury Hill, Mansfield.—I am very happy in being able to endorse the statements made by Mr. Ayres as to the practical way in which Mr. Speed deals with the cultivation of the Vine. Any one may, in looking over the garden, soon discover for themselves that he is the right man in the right place. No one can look upon the Vines at Sir Edward Walker's without admiring them and their wonderful productions, brought about of course through the liberality of the owner and the skilful management of his gardener. I have also great pleasure in bearing testimony to the great productions of some young Vines at Llanfairfechan, the residence of John Platt, Esq., M.P. I have some reason to believe that an alkaline atmosphere is beneficial to vegetation, as I have often observed that plants grown near the sea, more especially if they are sheltered from the severe gales, are never so much cut up by frost as where they are grown inland. I am of opinion the salt spray is continually charging the soil with a liberal amount of soda; the latter acts powerfully on the silica in the soils, which is rendered soluble by rain-water, and enters the roots of the plant as a solution of silicate of soda, either separately in the latter state, or in combination with other constituents. *Joseph Meredith, The Vineyard, Garston, near Liverpool.*——I now wish that I had never doubted "I.'s" description of Bury Hill and its Grapes. In fact I have been pondering whether I ought not to add at the end of this paragraph a P. to the H., as the initials of "Humble Pie," the eating of which I hope will make amends for all the ironical allusions with which I am charged. There is only one consolation left, and that is, that "I." and Mr. W. P. Ayres clash in their opinions respecting the best localities for Grape growing, the one preferring the dry air of hilly districts, and the other that of moist valleys near the sea. There is, therefore, a chance of some of us

"Midland gardeners," who are situated near "weedy ponds, miscalled lakes," succeeding, without the taste of "the briny," in growing Grapes equal to those at Bury Hill. As regards "L.'s" inquiry after my health, I am glad to say that I am very well at present; but some of the weedy lakes, as well as the fields adjacent, are in flood, and it is impossible to say how soon one's bronchial tubes may be affected. *H.*

Bitten Pine Cones.—In reply to your Bournemouth correspondent "S. L.," I beg to say that the bitten Pinaster cones are the work of squirrels, and not rabbits; the latter, however hungry, never attempt to gnaw Pine cones. If "S. L.," on a fine spring morning, will go into the woods where these gnawed Pine cones are found, he will soon hear the little carpenter at work up amongst the branches overhead; he will hear a peculiar cracking sound, sharp and distinct, and occurring about once a minute, and each crack will be followed by the fall of a cone scale to the ground, which will at once point out to him the exact position of the squirrel. They are very shy of observation, but with a little care and patience their timidity is soon set at rest, and it is well worth taking some trouble to observe the neatness, strength, and rapidity with which they bite off the tough cone scales, and crack the little seeds, two of which lie behind each scale. With all the appliances of knives, pincers, or other tools, it is difficult indeed to cut up a Pine cone so neatly and rapidly as a squirrel does with his teeth, sitting too upon next to nothing, in the fork of a slender branch which seems hardly strong enough to support his weight. *E. Solly.*—In the neighbourhood of the "Clee Hills," in Shropshire, I heard, some few years ago, a strange account of the Scotch Firs and other Pines in a plantation being bitten in the bark and cones. On visiting this plantation, the only thing I could think of to solve the mystery was that the Pine marten cats must have been the cause of the mischief. This animal is now very rare in England; but in the Fir woods in the north it is still known to be very destructive to the young trees by peeling them and eating the seeds in the cones. In severe winters squirrels, where numerous, are very destructive to young Conifers, by eating the terminal buds of Pinsapo, Webbiana, cephalonica, and other rigid-growing sorts. *W. Tillery.*

Black-hearted Pine-apples. — Both varieties of Cayenne on being cut open are very apt to prove black in the centre, an evil caused by the dark days of winter. At that season there is not sufficient sun to bring them to perfection. In winter Cayenne Pines are looked upon with suspicion in Covent Garden Market for the reason just mentioned. They fetch 2*s.* 6*d.* less per pound than that Prince of Pines the Black Jamaica. *R. Gilbert, Shalimar, Acton.*

Trees at Bicton.—In the interesting account of Bicton, at p. 1183 of your last year's volume, reference is made to a Pinus macrocarpa, 70 feet high, with a diameter of 6 feet 6 inches, and to an Araucaria Cunninghamii nearly 30 feet high. As I have nowhere seen the Moreton Bay Pine succeed out of doors, I shall be glad to have the correctness of this report confirmed as regards the above-named trees. Many of your readers, like myself, look to Bicton as furnishing a criterion of what trees may be successfully planted in the British climate, and on this account it is important that there should be no misprint. *Charles M'Donald, Woodstock Park, Instiogue.* [The diameter measurement is a mistake or misprint—the tree is 7½ feet round at 4 feet from the ground, and as high as was stated. The Araucaria was under the mark; there are two specimens of it. From making its wood at the wrong time it looks disfigured by brown leaves for a considerable portion of the year, but this does not prevent its growing, and that too to a goodly size, its stem being between 3 and 4 feet in circumference. Still it would not be wise to try it out except in the mildest and most favoured spots in the south of England or Ireland, and then only where well sheltered. There is another specimen in the arboretum which has yet to be described. *W. R.*]

Flies and Wasps.—In the interesting account of the influence of the seasons of 1864-5 on insect life in one of your recent Numbers, the scarcity of aphides during the season is remarked and commented on. It may, perhaps, interest your entomological readers to know that this immunity from one of our insect plagues did not prevail all over the country during the last year. In the north Midland district we had the infliction of a perfect plague of flies (a small winged aphis), towards the latter end of September, and they were only effectually dispersed by the cold winds and rains of the following month. Unusually hot weather is the immediate cause of the increase in these migratory aphides, and as the exceptionally hot and dry weather of September prevailed throughout the country, I am surprised that the appearance of aphides was not general. About Belvoir, from the 23d to the 25th, the air was filled with swarms of aphides drifting apparently from east to west. Myriads alighted on the leaves of plants, and in a few days produced their young, so that Roses, Peach-trees, Verbenas, and other favourite plants were quickly covered. Turnips suffered a severe check from this great irruption of insects. Here, as in other places, wasps were numerous in the spring of 1865, and their numbers gave rise to serious apprehensions, which fortunately proved unfounded. I attributed the destruction of the broods to the heavy rainfall of July and August—over 6¾ inches fell during those months. In rainy districts north of the Trent few wasps are found, and I have noticed that in exceptionally wet seasons we are not troubled by them. The hot September weather revived a certain number of wasps, and I think about 50 nests were destroyed within a mile of the gardens here late in the autumn. We were led to pursue them more closely in consequence of their pertinacious attacks on our hothouse Grapes. They left other fruit for a time to bees, which, as your correspondent justly remarks, were very troublesome, and ravenously attacked our sweetest and best Grapes, requiring, as I judged, a great supply of nutritious and saccharine matter in a short space of time. I remarked the small size of the wasps in the autumn. *William Ingram, Belvoir.*

Myrtle Berries.—We were so much struck by the abundance and size of the berries on a Myrtle last year, that I think a specimen of them may be worth your notice. The tree on which they grew is a very old one, planted in a border and covering a considerable extent of wall, under glass, but without any artificial heat. It flowers well every year, and occasionally bears a few small berries. In 1864 it flowered earlier than usual, to which circumstance and the extraordinary heat of the sun in September, may perhaps be attributed its having produced fruit in such perfection and abundance. Mr. Bain, of the Dublin Botanical Gardens, seemed to look upon its fruiting at all as a very rare occurrence; and our tree is still so covered with the berries that they might be gathered by bushels. *C. La Touche, Bellevue, Delgany, Wicklow, Ireland.* [To the fine season we have experienced, may, no doubt, be attributed the size and abundance of these Myrtle berries—the production of berries by the common broad-leaved Myrtle being however not rare, even in the open air, against a wall, in the climate of London. The more favoured situation under glass of the plant referred to would conduce to the high state of perfection they have attained.]

Rainfall in 1865, *at Belvoir Castle, Grantham.*—

Top of Rain Gauge { Above ground .. .. .. 1 ft / Above sea-level .. .. 237 ft.

Month.	Total Depth.	Greatest Fall in 24 hours. Depth.	Date.	Days on which .01 or more fell.
	Inches.			
January	2.59	0.85	27th.	14
February	1.66	0.45	17th.	13
March	1.31	0.24	1st.	15
April	0.67	0.33	19th.	6
May	3.34	0.53	12th.	12
June	1.41	0.85	2nd.	6
July	3.60	1.15	7th.	13
August	3.54	1.02	25th.	16
September	0.21	0.18	21st.	2
October	4.78	1.27	10th.	17
November ..	2.38	0.57	20th.	16
December	0.93	0.17	3rd.	11
Total ..	25.22			140

W. Ingram.

Maréchal Niel Rose.—Some time ago one of your correspondents stated that he believed all the leading nurserymen had their stock true. I had a plant last year from one of the first houses, and when a pale yellow Rose with darker centre showed itself, so different from the true bloom which I had seen at the Palace show, I sent one of my blooms to the grower, thinking that a wrong plant had been sent by mistake. But he, poor man, really knew no better, and wrote to say that it was all right. I purpose, therefore, when the season comes round again, to send you a bloom with the name of the nurseryman, and in the meantime recommend your readers to exercise caution in purchasing this beautiful and valuable novelty. *S. B.*

Silkworms on the Oak.—I am reminded by an article in the *Times* of the 17th ultimo, of Japan silkworms which feed on the Oak, and not on the Mulberry, produce cocoons twice the size of those of the Mulberry-fed worms, and require only some 60 or 70 days of our summer—say June, July, and a few days of August, and a little low coppice of Oak brushwood to pasture on in our southern and western counties—say the land of the nightingale, south of the Trent. This little matter may assume dimensions some short time hence that may astonish the readers of your Paper, and therefore the sooner the subject is ventilated the better, as there is plenty of time before June to get eggs from France for experiment. *A. F.*

Drying Apples.—I should feel much indebted to any of your correspondents who would furnish me with the best recipe for drying Apples. Formerly they were part of our winter stores in this country, and hence we find Norfolk Beaufins (Biffins), as the name still given to the dried Apples in the shops. Some of your Norwich correspondents might be able to throw some light on this important subject. The preservation for general use of a highly perishable article is a great boon to society. How should we fare in the matter of fish if we could not "kipper" salmon or cure herrings? *A. F.*

Gardeners' Education.—I think it was Archimedes who said, "Find me a fulcrum, and I'll raise our globe;" and another great philosopher has somewhere observed that he could die happy if he could only by some lucky geometrical twist solve the problem of "squaring the circle." As these two great men passed away, the one without his fulcrum, and the other without his "twist," I may venture to say the same of the Horticultural Society and her half-sister the Society of Arts; their day and generation will pass away before either can find a twist or a fulcrum to raise the social position of gardeners. Let me plainly tell the Horticultural Society that its scientific nostrums can never raise the social status of the gardener. Your able correspondent, Mr. Fish, is, indeed, of another opinion, but here I think he is "out of water," and I will briefly state my reasons. In the first place, not one in 20 of employers, either noblemen or gentlemen, cares one iota whether his gardener has a scientific knowledge or a liberal education or not; all he requires is a good, rough, plain matter-of-fact practical gardener, who can supply his own and his servants' table well with garden produce; and the greater portion of employers ("deny it who can") simply look upon a gardener as a necessary evil. Another cause which prevents the gardener from rising in position is that he is at the mercy and caprice of his employer, and liable to be sent to the "right about" for even a scanty supply of Parsley, and to be branded to boot. Another species of degradation to which gardeners are subject is the manner in which they are addressed in writing by their employers. It matters not what their intellectual acquirements are, the epistle will be headed Brown, Smith, Robinson, or whatever else their names may be, and will end with a curt "yours," although the same persons will write with a "dear sir" to old Snookes, the farmer. From the way in which society is constituted, gardening as a profession can never stand higher than it does, which is as a kind of out-door flunkeyism. All the education in the world will never alter it. As for myself, if I had as many sons as Jacob the Patriarch, not one of them should be a gardener with my consent. *John Bristol.* [Our correspondent takes a very gloomy view of the matter. For ourselves we are more hopeful.]

Establishing a Rookery.—Permit me to ask for information relative to the establishment of a rookery. For two seasons we have tried the rearing of young rooks, but they do not appear to thrive under domestic treatment, and our experiment has been a failure. This year we have obtained some of last year's nests, and placed them in the trees, in the hope of enticing them to take up their quarters with us, but of this we are not very sanguine. The trees in which we wish to establish our rookery are upwards of 50 feet high, and although there are not many of equal size in the immediate neighbourhood, in a short time there will be a large breadth of them. *J. D.* [At p. 150 of our volume for 1851 a rookery is stated to have been established as follows:—A magpie came in the spring and built its nest in a clump of trees. When she had laid her eggs, half-a-dozen rooks' eggs were obtained from a neighbouring rookery, and placed with those of the magpie. From these were reared four rooks, which lived comfortably with the young magpies through the autumn and winter, but in the following spring a battle took place between the parties; the rooks, however, gained the day, drove away the magpies, and established a large colony.]

Gardeners' Royal Benevolent Institution.—During the past year or two I have had an idea that much good might very easily be done for this Institution by every nurseryman, seedsman, florist, market gardener, head gardener, &c., having placed on his counter, or desk, a cash-box with the following, or some similar inscription on it, viz.:—

IN AID OF
THE GARDENERS' BENEVOLENT INSTITUTION.
Small Contributions thankfully received.

This, I think, if generally adopted, would produce annually a good sum. The boxes might be of uniform character, provided by the Institution, or parties in favour of the plan might easily have one prepared for themselves. *James Miller, The Nurseries, Newbury.*

Societies.

ROYAL HORTICULTURAL: *Feb. 10 (Saturday Show).*—The most interesting plants shown on this occasion came from Messrs. Cutbush & Son of Highgate, and three extra prizes were awarded to them. First, stood a brilliant group of 18 forced bulbs, consisting of Hyacinths and Tulips, charmingly bloomed, and supplemented by good potfulls of Crocuses, one of which, named Albion, was a superb sort, a dark striped purple, of immense size, almost as big as a Tulip. Another miscellaneous group contained several plants of the graceful Polygonatum officinale, which was however rather too profusely introduced for effect. A third group consisted of a dozen little flowery bushes of Prunus sinensis flore-pleno, one of the most charming and chaste of dwarf flowering shrubs for forcing into early bloom. An interesting group of Double and other Chinese Primulas was sent in by Messrs. F. & A. Smith.

Amongst them were incarnata, a deep rosy blush, intermediate in tint between the double red and pale blush kinds; Queen of England, a very large-flowered double French-white; Kermesina splendens plena, a lively carmine-tinted rose, also double; and Fairy, a dwarf-growing double blush. The prizes for six Miscellaneous plants were awarded respectively to Mr. Young, gr. to R. Barclay, Esq., and to Mr. Bartlett, the latter of whom had in addition a large group of forced bulbs.

Feb. 13 (*Anniversary*).—The Duke of Buccleuch, K.G., in the chair.

The minutes of the last meeting having been read and confirmed, Mr. Fortune and Mr. Booth were appointed scrutineers, and the ballot for members of Council and officers was proceeded with, and resulted in the election of the Duke of Buccleuch as President; G. F. Wilson, F.R.S., Treasurer; Lieut.-Col. Scott, R.E., Secretary; Geo. F. Wilson, Esq., Lieut.-Col. Scott, and Henry Cole, Esq., C.B., Expenses Committeemen; and James Nicholson, Esq., Jonathan Clarke, Esq., and Robert Hudson, Esq., Auditors. The Viscount Sandon, the Right Hon. W. Cowper, M.P., and Sigismund Rucker, F.L.S., were elected Members of Council in the place of the following vacating Members—viz., J. J. Blandy, Esq., John Kelk, Esq., M.P., and Major Trevor Clarke.

Mr. WILSON SAUNDERS then read the Annual Report, as follows: –

1. In accordance with the announcement made at the last annual meeting of the Society, the accounts annexed are laid before the Fellows this year, so as to show in a simple form the financial results of the year's working. A full statement of the Society's accounts has also been printed, as directed by the Charter, and copies can be had on application at the offices at South Kensington.

2. The Council have the satisfaction of announcing to the Society that the number of its Fellows continues to increase, and that the amount of their subscriptions, which form the least fluctuating of its sources of income, has risen in a higher ratio than the increase in the members. The number of Fellows on the books on the 1st of January, 1866, is nine more than it was on the 1st of January of last year; but the subscriptions for 1865 exceed those of 1864 by 138*l.* 18*s.* 1*d.* This comparatively greater augmentation in the amount is owing in part to the transfer of Fellowships to the annual class, whereby important privileges which a subscriber of four guineas now enjoys from both his tickets being transferable.

3. It is with great sorrow that the Council refer to the heavy losses by death which the Society has lately suffered. It has rarely, if ever, happened in the experience of the Society that three men of eminent horticultural attainments have passed away in one year, and whatever the extension of the love of gardening—however illustrious the men enrolled in the ranks of horticulture, the decease of three such names as Dr. Lindley, William Hooker, and Sir Joseph Paxton will be regarded as a serious calamity. The Council propose to show how much the labours of these distinguished men were appreciated in this Society by endeavouring to obtain the co-operation of Government, and of all persons pursuing the science collateral with agriculture, in obtaining a life-sized group of them. They have also voted that a memorial be instituted, in the form of a medal, in honour of Dr. Lindley's exertions in carrying out the objects of the Society, to be awarded only at the Fruit and Floral meetings which he so long and so ably supported.

4. The balance of the receipts from the public throughout the year, and the expenditure for bands, and for prizes, &c. at exhibitions, is more favourable to the Society than in 1864; and the result of the year's working tends to show that the more and fewer the exhibitions, the more conducive to horticultural progress, so also are they less likely to occasion pecuniary losses than the large exhibitions of past years. The Council continue, therefore, to be of opinion that the Society should hold one great general exhibition only in each year; and the best time for that exhibition they consider to be the end of May or the beginning of June.

5. The income arising from letting portions of the arcades to exhibitors of horticultural implements and ornaments is fast increasing, and the amount given in the general balance accompanying this Report, it is expected, will nearly doubled in the next financial statement. The Council have received about as much as that the opportunity of comparing the manufactures of various firms, afforded by these exhibitions, is very generally appreciated by Fellows who have desired to make purchases for their gardens. This arrangement, therefore, works well both for the Society and for the exhibitors. The rentals from these letting-stalls, it will be remembered, originally form part of the income of the Society, but were presented to it by Messrs. Commissioners of the Prince Consort's Memorial in 1862, and of the anniversaries of the Prince Consort's birthday in the last two years. This increasing popularity of the Gardens with the Fellows as well as with the public augurs well for the future of the Society.

6. In their annual report in February, 1864, the Council announced to the Fellows their intention to set apart portions of the Garden at South Kensington to be planted by nurserymen and florists of eminence, desirous of exhibiting the plants specially cultivated by them. The experiment Rhododendron exhibitions of Messrs. Waterer & Co. and, in the Great Tent, and the brilliant display of Tulips by Messrs. Henderson, last year, have fully justified the anticipations formed of the interest which would be thus given to the gardens; and to this interest the exhibition of spring flowers by Mr. William Paul – the commencement, probably, of a series of similar exhibitions –formed a most important addition. That the nurserymen making these exhibitions desire to repeat and improve on the

the Council consider to be the best criterion by which to judge of their appreciation by the Fellows.

7. The Fruit and Floral Committees have never been more constant in their work than in the past year. The average attendance of the members has been 9 and 10, and the number of meetings 16 and 13 respectively; and the subjects brought before them for adjudication have been of unusual interest and importance. The Committees have also carried out at Chiswick some useful trials on bedding and other plants, and a valuable series of experiments on Peas. Reports on these subjects will be found in the last number of the proceedings for the year 1865.

10. The Fruit and Floral Meetings for the Fellows, which have followed the Committee Meetings, have created a very general interest amongst those specially devoted to horticulture. They are a revival of the old Regent Street Meetings, with which, in the designs of their originators, they claim, and in the actual numbers of visitors present, they do not compare unworthily: but, considering the excellence and rarity of the objects exhibited, they have not created that interest among the Fellows generally which might have been expected. The average attendance at the meetings in the month of May was 560, and of this number a portion only entered the Exhibition-room. There is evidence, however, tending to show that the small attendance on these occasions has been due rather to ignorance as to the nature of these meetings than to indifference to the objects which they have in view. The Council are therefore of opinion that the Tuesday meetings better known to the Fellows will be hereafter mentioned.

11. The very large attendances at the Saturday shows and promenades, as compared with the attendances at promenades in former years, give evidence of the attraction of exhibitions of flowers chiefly to the attraction of such assemblies for the whole body of the Fellows. In the month of May in 1864 the average attendance of visitors on a promenade day was under 400. In 1865, the addition of a small flower show to the promenade raised the average attendance to 2000, the same period of the year, of whom three fourths were Fellows and their friends.

12. The produce of Chiswick has not yielded so good a return as was expected. This was due to two causes: the Strawberry crop entirely failed; and, although the wall-fruit crop was good and plentiful, the general abundance of fruit during the past season greatly reduced the prices obtained. The Fellows have, as usual, been the chief purchasers of the more expensive fruits, and the Saturday shows have been instrumental in enabling Fellows to purchase fruit which would otherwise have been sent to market. Further arrangements are being made for the coming season, by which Fellows, to whom it is inconvenient to go to Chiswick, will be enabled to purchase more freely of the produce of pot-plants, fruit and flowers grown there.

13. The number of visitors to the Chiswick Gardens by Fellows during the past year was 1003, and 3672 persons were admitted by Fellows' orders. Different members of the Society have received two packets of cuttings principally of fruit trees; and the number of plants, cuttings, and bulbs distributed, during the year, has been 6265; packets of flower and vegetable seeds to the number of 376,884 have also been distributed among the Fellows.

14. The Fellows will have remarked with pleasure that progress is being made towards the completion of the structures of the garden in the Kensington Gardens. A considerable portion of the spandrils of the arches of the Upper Arcades have been filled with terra-cotta bas-reliefs, and a contract has been accepted for the completion, before the out-door season commences, of the frieze ornamental work of the same arcades. This decoration, it will be remembered, formed a portion of the work undertaken at the commencement of last year by H.M.'s Commissioners for the Exhibition of 1851.

15. In their arrangements for the coming season the Council have endeavoured to work out the idea of making out-door fêtes of art. The Gardens of the Society have been the same from which the other nations of Europe have chiefly derived their knowledge of the practice of sound gardening; and there is everything to encourage it in the endeavour to retain and increase the prestige it has already gained. The love of gardening is a standing test of civilization, and the public appreciation of good fruit and vegetables is certainly not exceeded abroad; and the wealthy are yearly more lavish in their pleasure grounds and gardens. Horticulturists meanwhile are seeking to utilise, for the advantage of their own special studies, the appliances which horticulturists possess for aiding them in their work; and horticulturists are beginning to feel how much assistance they might receive from the physiological botanist. At the International Exhibition, which will be the concern of the Council, partly take place this year in the Gardens of the Royal Horticultural Society, it is proposed that a Botanical Congress shall be held, and many botanists of eminence are likely to visit the country on the occasion.

16. By the appointment of the Rev. M. J. Berkeley to advise the Society on the botanical questions that arise, botany has been introduced which will take place hereafter in its proper relation to the general study of the vegetable kingdom; and by uniting with him two practical horticulturist—the one an eminent authority in pomology, and the other in nomenclature—the Council hope that the labours of the Fruit and Floral Committees will be rendered more practical and conclusive. Mr. Berkeley, Doctor Hogg, and Mr. Moore will supervise the operations and conduct the experiments at Chiswick; they will watch and report on them to the public through the medium of the fruit and floral meetings, and the shows of the Society; and the Journal, edited by Mr. Berkley, will, as well as the Proceedings, be issued gratis to the Fellows. It will also be the duty of Dr. Hogg and Mr. Moore (the botanical examination to be conducted by the Examiners under the Society of Arts) to examine candidates for the Society's certificates and diplomas, both in theoretical and practical gardening; and to advise on the mode of instruction of the young gardeners at Chiswick. Chiswick will thus afford to young men desirous of taking a high position in their profession the advantages of a training in a garden where systematic course of experiment is being carried out.

17. By these arrangements the Council hope to effect two important objects. First, to spread a knowledge of what is being done at Chiswick; and by horticulturists generally—the best system may be worked out by which the held of labour may be partitioned among horticulturists, and experiments be suggested to them. Secondly, to procure the instruction, at Chiswick, of the rising generation of gardeners in those processes and methods which are likely to lead to successful results. In some such manner only can we hope to bring together a sufficient number of facts for arriving at safe generalisations on the effects of particular modes of treatment on vegetable life.

18. The charge for admission to the public has been made half-a-crown for all Tuesdays during the London season; and with the view of making the fruit and floral meetings, which are held on the first and third Tuesday of the month, better known to the Fellows, and as popular as they deserve to be, the second promenade in the week during the summer months will be held on the Tuesday. This promenade will commence at 4 o'clock, so as not to interfere with the fruit and floral meetings, which take place at 3. The Fellows will retain the privilege of admitting two friends, and of using their orders on this day.

19. It can hardly have escaped the attention of the Fellows that the number of the Society's contributions on the Saturday has been gradually increasing, and the prizes offered for this year's weekly shows will act as a further stimulus to induce exhibitors to send such plants, flowers, and fruit as they may happen to have in perfection at the end of the week. The Council desire to recall to the Society that, in instituting these weekly shows, it was specially desired to give to Fellows the opportunity of bringing to notice such beautiful objects as would otherwise escape exhibition.

20. Wishing well to the International Exhibition before alluded to, the Council have concluded arrangements with the Committee of Management of the International Exhibition and Botanical Congress which will doubtless prove satisfactory to the Fellows. Fellows and debenture holders of the Society are to have free admission to the whole show—both to the portion which is within and that which is without the grounds of the Society—on the second day of the exhibition; and such portions of the show as may be exhibited in the garden will be open to Fellows and debenture holders at all times, excepting when the plants and fruits are being arranged and judged. The Committee of Management of the International Exhibition have further undertaken to pay the Society the sum of 300*l.* in lieu of the receipts at the doors for the week in which the exhibition takes place.

21. It is with pleasure that the Council announce to the Fellows that the spacious hall for all kinds of meetings connected with the promotion of arts and sciences is about to be erected, under the patronage of the Queen and the presidency of the Prince of Wales, on the vacant site between the Conservatory and Hyde Park. It will be an amphitheatre like the Colosseum at Rome, capable of seating 6000 persons with great comfort, and affording ample and suitable space for flower shows and horticultural gatherings. This hall will in many ways promote the interests of the Society's Gardens, and the Council have felt it their duty to afford temporary accommodation for the offices connected with it. A copy of the prospectus of the Central Hall will be given to any Fellow of the Society who applies for one at these offices.

22. The Council report with gratification that their appeal for subscriptions for the late foreign collector of the Society, Mr. Weir, who was disabled in its service, has been liberally responded to by many of the Fellows; but the sum received is as yet too small for the purchase of an annuity adequate for his maintenance, and the list still remains open. The Council do not propose that a successor to the unlucky collector shall undertake the Society's seeds responsibility; but two gentlemen, travelling on their own account—the one in Eastern Africa, the other in the Brazils—have received commissions on the part of the Society, and the Council will take every other available opportunity of fulfilling the wishes and interesting plant-loving Fellows. A collection of plants made at Esperança, in the province of Bahia, Brazil, has just been received from Mr. E. Reed, and they will be carefully cultivated at Chiswick for distribution among the Fellows.

23. It is with satisfaction that the Council call the attention of the Fellows to the list of prizes offered by members of their own body, and by other members of the Society, for special productions. These prizes are to be awarded at the show on the 14th June next. Some of them are to encourage the growth of tropical fruits, a subject of great interest to horticulturists, and hitherto attended with many difficulties. These difficulties will doubtless be surmounted, and the Council will be glad to aid the endeavours now being made to overcome them in every way in their power. As a further inducement to experiment, it is now announced through the Council, by a Member of Council, to offer a prize of 10 guineas for the best Essay on the Growth of Tropical Fruits, which may be sent to the Council during the present year.

Sir A. WAUGH, in moving the adoption of the Report, said that all must have observed with pleasure the improvement which had taken place in the Garden. He also wished to express the gratification that was felt at the extension of the privileges. The Fellows he was sure would sympathise with the Council in their expression of regret at the loss of three eminent botanists, viz., Dr. Lindley, Sir W. Hooker, and Sir Joseph Paxton. He also begged to advert to the 16th paragraph of the Report, in which they observed with satisfaction that it was the intention of the Council to carry out experimental improvements in horticulture, by which no doubt that science would be advanced.

Mr. G. E. BLENKINS seconded the motion, and expressed his satisfaction at the increasing prosperity and success of the Society.

Mr. GRENVILLE stated, in reference to the Great International Exhibition to be held in May next, that he under-stood Fellows would only be admitted on one day. He hoped that no exhibition would ever take place in the grounds to which Fellows would not be admitted.

Mr. HENRY COLE explained that the exhibition in question was not to be held in the grounds of the Society, but on that on which the Exhibition building of 1862 stood; but even if it were held in the Society's grounds, he thought that members would see that the arrangements were still such as would give them greater advantages than if there were no exhibition at all. Of course this great international display must be paid for. The promoters must look to that, and they came and said that they would be glad of all the accommodation the Society could give them; they offered 300*l.* for anything they might get through the Society's assistance, and they agreed to give the Fellows the first public view—which took place on the second day—of the exhibition. The first day was to be limited to the admission of those who were going to pay for the exhibition, which was to be an enormous one. He hoped that it would be thought that the Council had done what was for the best. Such portions of the Show as were within the Gardens would be open to Fellows at all times.

Mr. GRENVILLE was satisfied with the answer he had received. The International Show was an extraordinary occasion, but he hoped it might not be thought to form a precedent for the holding of any exhibition in the Gardens to which the Fellows were not to be admitted.

The report on the valuation of the Society's stock showed that that at Kensington was set down at 22027*l.* 15*s.*, 37887*l.* 11*s.* 6*d.*, and that at Chiswick at 2202*l.* 15*s.*, making a total of 59861*l.* 6*s.* 6*d.*

In reply to a question whether the system of

45,521	in	1863
150,609	in	1864
231,599	in	1865.

on these entrances, during the latter halves of 1864 and 1865 (before July 1st, the books were not so kept as to admit of comparison in this respect), 60,705 and 83,530 respectively have been Fellows and their friends. The numbers are exclusive of the exceptional occasions of the uncovering of the Prince Consort's Memorial in 1863, and of the anniversaries of the Prince Consort's birthday in the last two years. This increasing popularity of the Gardens with the Fellows as well as with the public augurs well for the future of the Society.

admitting the public five days a week during autumn at a reduced price had been successful, and to what extent the public had availed itself of the privilege, Lord H. G. LENNOX, M.P., said the experiment had been a financial success. He added that the result of admitting the public for threepence had not caused any damage whatever to be done to the Gardens.

Mr. COLE explained that the public were only admitted at a cheap rate when London was, as it were, out of town, namely, in August and September.

Colonel CHALLONER thought that the threepenny admission lowered the character of the Society, and he knew that many ladies were disgusted, having paid their 40*l.* or four guineas per annum, at the gardens being thrown open for threepence. They would rather have certain days free to the public.

Mr. E. A. BOWRING reminded the meeting that the land which the Commissioners gave up to the Society, and for which it has paid very little rent, was the produce of the shillings of the people; it was therefore a question whether the general public should not have some privilege with respect to the Gardens He did not know what was the best shape for that privilege to take, but he agreed with Colonel Challoner that the better plan would be to throw the Gardens open at certain times free.

Lord H. G. LENNOX said he was happy to tell Colonel Challoner that the matter had been under the consideration of the Council, and they felt that the Gardens must be made available for the use of artizans when the Fellows were for the most part out of London; the Council were therefore anxious to hear whether the Fellows thought they had better continue the present system of threepenny admissions, or whether the Gardens should be open in the autumn free on one day in the week.

After some conversation it was suggested that the Gardens should be thrown open on Mondays in August and September free. The matter was ultimately left in the hands of the Council.

Mr. RICHARDSON called attention to the privileges of two-guinea and four-guinea subscribers; he argued that these were not sufficiently defined, and that the two-guinea subscribers had not, as they were supposed to have, half the privileges of the four-guinea members. It was also urged that the tickets of the two-guinea subscribers ought to be made transferable.

Mr. COLE said he should like, as well as any one, to make two guineas do the work of four; but they must not offer an inducement to their four-guinea members to become two-guinea subscribers.

A FELLOW suggested that it was important that the Society should have lectures on the science of Botany. He did not think this would involve any expense, as plenty of gentlemen of experience and information on the subject of botanical science, would, he thought, be prepared to give lectures free.

The CHAIRMAN having nominated as Vice-Presidents, the Earl Grosvenor, M.P., Lord H. G. Lennox, M.P., W. Wilson Saunders, Esq., and James Bateman, Esq., the proceedings were terminated by a vote of thanks to his Grace and the members of Council.

Notices of Books.

Outlines of Elementary Botany. By Alexander Silver, M.A., C.M., M.D. 32mo. pp. 380. London: Renshaw.

This is a little volume intended expressly for the use of medical students, and as an introduction to the more bulky, and consequently to the pupil, appalling tomes of Balfour, Bentley, and others. It contains a carefully prepared digest of the main principles of Botanical Science, and is arranged in such a way that it will be very useful to the medical student, who is expected "to get up" botany and many other things besides, in three months! There is one rather important omission in these days of schedules—and that consists in the absence of any directions to the pupil how to describe a plant concisely and accurately, so that he omit nothing of importance, insert nothing superfluous, and give due prominence to certain points over others. This plan is not only one of the best ways of teaching botany, but it is also an excellent preparation for the study of medicine. In a future edition Dr. Silver will do well to insert a chapter on this subject, even if he have to occupy space now filled by a condensed account of the natural orders, many of which might with great advantage be omitted from a work of this character.

CATALOGUES RECEIVED.—*Hooper & Co.'s* (*Covent Garden*) *General Spring Catalogue* is one of the encyclopædic lists. There is no end of "Hooper's Incomparables" amongst the new vegetables. The Incomparable Pea should be a prodigy indeed.—*Charlwood & Cummins'* (*Covent Garden*) *List of Seeds* is chiefly distinguished by its list of the seeds of trees and shrubs.—*William Thompson's* (*Ipswich*) *Descriptive Catalogue* is, as usual, arranged according to natural orders, with a special list of novelties, in which Waitzia grandiflora, a fine new Everlasting, is offered for the first time.—*Flintham & Sons'* (*Rotherham*) *Catalogue of Flower Seeds* has appended to it the "Useful Garden Almanac."—*R. H. Poynter's* (*Taunton*) *Retail List of English and Foreign Seeds.*—*Chivas & Weaver's* (*Chester*) *Catalogue of Seeds.*—*F. & A. Dickson & Sons'* (*Chester*) *Catalogue of Seeds* is a good and ample list, embracing much information on cultivation.—*James Dickson & Sons'* (*Chester*) *Vegetable and Flower Seeds.*—*H. Brown's* (*Liverpool*) *Priced Descriptive List* is principally devoted to seeds.—*R. H. Vertegan's* (*Edgbaston*) *Catalogue* embraces fruit trees, Roses, and plants generally.—*W. Drummond & Sons'* (*Stirling*) *Descriptive Catalogue* is a neat select list, and is accompanied by a useful pamphlet entitled "Directions for Sowing and Cultivating Vegetable Seeds," &c.—*Smith & Simons'* (*Glasgow*) *Cultural Guide and Descriptive Seed Catalogue* gives, as it professes, a good deal of information on cultivation, and the lists are judiciously shortened.—*Downie Laird & Laing's* (*London and Edinburgh*) *Seed Catalogue* has a separate list of Ornamental-foliage plants.—*T. Kennedy & Co.'s* (*Dumfries*) *Select Vegetable and Flower Seeds* is well-arranged and useful.—*T. McKenzie & Sons'* (*Cork and Dublin*) *Vegetable, Farm, and Flower Seeds* is a remarkably neat compendious list, with useful information embodied, and devotes considerable space to horticultural implements and farm seeds.—*Haage & Schmidt's* (*Erfurt*) *Tariff of Seeds and Plants* is a most comprehensive list of some 150 pages crowded with names, in small close type, the seeds alone with running numbers reaching nearly to 10,000.—*Vilmorin-Andrieux & Cie.* (*Paris*) *Catalogue des Graines d'Arbres et d'Arbustes* is an extensive list of the seeds of trees and shrubs.—*G. Smith's* (*Hornsey Road*) *Descriptive Catalogue of Florists' Flowers* is an excellent list of Pelargoniums, Fuchsias, Verbenas, and similar plants. Mr. Smith offers Le Grand Pelargonium, one of the finest of the Nosegays.—*Drummond Brothers'* (*Edinburgh*) *Garden Seed List* offers a good selection of vegetables and flowers. Messrs. Drummond announce that, having carefully considered the principle of the "percentage" system, and finding it much objected to by influential employers, they have resolved in future not to give percentages to *employés*, being convinced that the abolition of the system would be the better for all parties.—*P. S. Robertson & Co.'s* (*Edinburgh*) *Catalogue of Garden and Flower Seeds, and Catalogue of Forest Trees, &c.*, the first a select list of seeds, the second a rather full list of trees and shrubs, especially rich in Conifers.—*E. P. Dixon & Son's* (*Hull*) *Catalogue of Seeds* is a neat and compendious assortment for farm and garden, accompanied by the "Useful Garden Almanack."—*Joseph Baumann's* (*Gand*) *Prix Courant pour* 1866-67 is especially rich in Rhododendrons, Azaleas, and Camellias.—*Dreyhorn & Aitken's* (*Kilmarnock*) *Catalogue of Seeds* and *Catalogue of Nursery Stock* consists of a brief useful list of the former, and a well-varied assortment of the latter.

Florists' Flowers.

THE PROPAGATION OF THE HOLLYHOCK.—The present time being the best for striking Hollyhock cuttings, I am induced to make a few remarks on the propagation of that flower, which may be useful to some amateurs, and to such gardeners as may not be very conversant with the Hollyhock, but are about to take up its cultivation. I am often amused when noticing Hollyhocks in other gardens, and inquiring from the gardeners their system of propagating, at receiving such answers as these—"Oh, I never have any difficulty;" "Nothing can be easier;" "My cuttings always strike." But on further inquiry I generally find that this easy kind of propagating is confined to the summer months, July and August, when cuttings and eyes, placed in any corner of the garden and kept from the blazing sun, will strike with great ease and certainty.

But propagating in the winter and spring months is quite *une autre chose*, as the cuttings are then very difficult indeed to manage. Do what you will, take all possible care, and you will find from one-half to three-quarters of your stock damp off. Of course I am now speaking of propagating on manure-beds, which system I have found so unsatisfactory that I have just had a small propagating house erected, to be heated with hot water, which I hope will render me independent of the weather. Hollyhocks, when striking, require a certain amount of air, and should the season be such as we have had now for several months—frequent rains, and everything saturated with wet,—it being impossible to open the frames, damp (the Hollyhock's most deadly enemy when striking) settles on the plants, the gardener daily sees his cuttings going to the bad—the best and choicest varieties of course leading the way. But here I will make what I consider a valuable suggestion to such as use manure-beds, viz., to have a wood bottom to the frame; this prevents the reeking heat from rising into the frame, and the plants, which are potted singly and plunged in sawdust, keep comparatively dry; and in moderately fine weather, with constant supervision and care, many will be found to strike which otherwise would not.

But the system which I now prefer, and which I find the most certain and successful, is grafting, which is a very simple process; a piece of Hollyhock root about 1¼ inch long, and the same thickness as the cutting, must be spliced to it with matting or budding cotton. The greatest care and nicety are required in fitting the two parts together; and as on account of the glutinous nature of the sap they are very apt to slip, a small pin will be found most useful in keeping them in position till well tied. The cutting is then potted into a nice light compost, a third being silver sand, and plunged in sawdust in a close frame without bottom-heat, which ought to be kept in a greenhouse if possible. In a fortnight or so, when many of the outer leaves of the cuttings will easily come away, the plants can be plunged (again in sawdust) in the hot frame, and in a month or so most will be rooted. They are then to be taken out and again placed in a close frame without bottom-heat, and kept there shaded till such time as they can bear greenhouse temperature without flagging, when they can be potted and treated on the usual system—only care must be taken in cutting off the matting when potting the plants. I consider that by grafting the chances of successful propagating are much increased, and time saved as well, as the cuttings root much sooner than when non-grafted.

I am quite aware a prejudice exists against grafted plants, of which at one time I partook, but experience now leads me to believe there is really no ultimate difference whatever between grafted and ungrafted plants; but this, of course, on the understanding that the grafting be well and neatly done. Last season at least three-quarters of our plants were grafted, and neither myself nor gardener could detect any difference between the two kinds; for all grew and bloomed equally well, so much so, indeed, that for the future the greater part of our plants will be so propagated. And now it may not unnaturally be asked, "But why all this trouble? If plants strike so easily in summer, why not propagate your stock then?" Yes; for early plants—plants that will bloom from the end of July to the middle of August, and then be over and gone—summer is the proper time to strike cuttings; but to have blooms, and especially spikes fit for exhibition for the end of August or beginning of September, when most of the horticultural societies hold their meetings, cuttings must be struck in early spring. And here I may mention, that under all circumstances I much prefer spring-struck plants, as I have especially noticed now for some years that such plants usually give finer spikes and blooms than those struck the preceding summer. And, what I consider a further advantage, as a rule they are decidedly more constant, for some varieties which are worthless from summer-struck plants are very fine from spring ones. As an instance, I may specify the well-known variety Lady King, the best so far of its colour, and which in the one case is always inconstant and bad, and in the other very fine both as to spike and bloom. *Edw. Hawke, Willingham Rectory.*

The Apiary.

BEE-KEEPING IN SUSSEX.—Having been much interested in the success of your department devoted to Apiarian subjects, I have from time to time thought whether I could in any way contribute to help on the good work. A bee-keeper of only a very few years' standing, I have as yet been but a learner, nevertheless it has occurred to me that a short account of my apiarian doings for the year 1865 might not be altogether uninstructive. At the same time I may confess to having an ulterior object in view: as perhaps my paper may lead to my obtaining some valuable hints for the better future management of these little favourites.

In the spring I started with the following stocks, eight in number:—Two cottage hives (Neighbour's improved), two common straw hives, two Stewarton box hives, one flat-topped straw hive, one Woodbury bar-and-frame straw hive.

May 16. I provided with supers Nos. 2 and 3, common straw hives. From No. 2 the super, with 35 lb. of honey, was removed on July 21.

May 21. No. 3 threw off a natural swarm, notwithstanding that the bees had taken well to the super from the time it was added. The swarm was domiciled in a Woodbury hive, and at the close of the season weighed 22 lb. nett. The work in the super was discontinued, and no honey was stored in it.

May 20. No. 1. I forced a swarm from this hive, placing it in a Woodbury bar-and-frame hive. Obtained no honey from either the stock or the swarm.

May 22. No. 8, a Woodbury hive, was furnished with a super, which was taken off on July 21, weighing 32 lb. of pure honey.

May 22. No. 5, a Neighbour's cottage hive, was driven, and the swarm hived in a Woodbury bar-and-frame. No honey was yielded by either stock or swarm.

May 22. No. 4, a Neighbour's cottage hive, was supered. Requiring some honey for a friend, the super was removed on the 10th of June, with 9 lb. of honey. A second super was then put on, but nothing was done in it beyond a small quantity of comb. I ought to have said that this stock threw off a swarm six days before the glass super mentioned above was removed.

From one of the Stewarton's I obtained two boxes of honey of 9 lb. and 4 lb. respectively, and from the

other, one box of 12 lb. weight. At the close of the year my apiary consisted of 12 hives, four Woodbury wooden hives having been added to the previous list. It will be seen that the heaviest super was obtained from a common straw hive, and the next in weight from the bar-and-frame hive. It is probable that I should have had much more honey from the Neighbour's hive, if the super had not been prematurely removed, and the hive had not thrown off a swarm.

Besides the swarms, my harvest amounted to about 100 lb. of good honey comb. With this I should have been well satisfied, if I could have disposed of it to some advantage. But on application to some of the London houses I found that honey was rather a drug in the market, consequently I was obliged to give away the whole of the honey harvest among my friends, instead of being able to put the proceeds in the account against the expenses of my apiary. I hope in future to remove all my supers in July, as my experience (so far as it goes) is decidedly in favour of early removal. I am convinced that cottagers would be gainers by taking up their hives in July, instead of delaying the execution of their bees until late in the autumn.

In the autumn, apprehending a severe winter, I stuffed a quantity of dry hay between the hives and their outer cases. I also laid some of this non-conducting material on the top of each hive. This has made them very warm and snug. The advantage of the plan remains to be proved. Is it considered to be good practice? We know that the warmer bees are kept, the less they will consume, and that damp is a greater enemy to bees than cold. The above plan will, I think, secure both increased warmth and dryness.

I am sorry to say that in my bar-and-frame hives the combs have been in nearly every instance built across, instead of in a line with the bars. This unfortunately prevents my having any control over the interior. I should much like to unite the bees and combs of one of my stocks to a Woodbury hive, but the condition of the combs in the latter prevents my doing so. What can I do to remedy the existing state of affairs? *A Sussex Clergyman.*

[We will reply to your queries next week.]

FEEDING BEES.—The "London Review" says:—"A novel method of feeding bees during winter has been suggested by Signor Masso. Bees, it seems, are exceedingly fond of Rape oil-cake; a fact which the Italian observer discovered by finding that certain sacks in which this substance was contained had been penetrated by these insects. Signor Masso, therefore, put some of the oil-cake on plates near the hives, and found that the bees flocked to them in immense numbers, rolling up the particles into balls, and carrying them away to their cells, and that they continued this habit until the reappearance of flowers in the spring. He states that his swarms have never been in a more prosperous condition than after having been fed in this way." We have no faith in the correctness of these assertions. In the first place it is quite impossible that the bees could have eaten holes in the sacks. Nor does it seem at all more likely that they should roll up the particles into balls, and convey them into their hives.

Calendar of Operations.

(*For the ensuing week.*)

As the season is at hand when planting must to some extent demand attention, a few words on the subject now may possibly be useful. To dig a hole and thrust the roots of a plant into it, and afterwards to tread down the loose soil thrown over them, is with some the whole theory and practice of planting. The results of this careless performance of the operation may be seen in many quarters where better things might be looked for. Under such circumstances plants necessarily die to a greater or less extent, while others maintain a slow and sickly growth. Soils of course have considerable influence; but skilful planting has much more. Two persons for example may purchase two collections of Rose trees, of precisely the same varieties, age, and general character; the soil and aspect may also be the same, and yet the results may be widely different. In the one case growth may be rapid, the foliage healthy, and the blooms abundant, while in the other the very reverse of this may be the fact. On examination the cause of this marked difference will be found to be the different modes of planting pursued. It will be seen that the plants that had thriven badly had been hurriedly put into small pits or holes, through the hard sides of which the roots could not pass, while those which grew satisfactorily had been put into ground trenched and otherwise well prepared for the reception of its occupants. See, therefore, that all ground intended to be planted is properly prepared before that operation is attempted, a recommendation equally applicable to beds in the flower garden, as to ordinary shrubbery borders.

FLOWER GARDEN AND PLANT HOUSES.

The winter, with one or two exceptions, has as yet been so favourable for indoor plants generally that comparatively little fuel will have been required in conservatories or greenhouses; a slight increase of warmth may soon, however, be indulged in for a couple of hours or so on sunny afternoons; but let the temperature sink at night again to 45° or 50°.

AURICULAS.—There has of late been sufficient moisture in the atmosphere for these plants, but as the days lengthen, more water will be required. Keep them cool in order that the plants may push gradually and not be brought prematurely into bloom. Top dress and keep them clear of insects and dead foliage.

CARNATIONS AND PICOTEES.—Owing to the mildness of the season, some of these are starting into growth; be, however, sparing with water for a time. Let frames in which they are kept be open as much as possible. As the time for potting, and the preparation of the soil, is at hand, care should be taken not to let the latter get too wet. Early potting is desirable, but planting in beds must be deferred until next month.

CINERARIAS.—Plants for flowering late may now be re-potted and stopped. Tie out the side shoots of such as are approaching the blooming season, and by means of frequent fumigations endeavour to keep them free from green fly.

DAHLIAS.—Cuttings of these will now or soon require to be struck freely, but roots placed in the forcing house should not be pushed so rapidly as to exhaust them too much, as next month is the best time for obtaining healthy plants without much forcing. Pot roots should certainly not be started for some time yet.

FUCHSIAS.—Push forward autumn-struck plants; let them have sufficient pot room, and a moist growing moderately warm atmosphere. Pinch in the young shoots as often as they require it. Old plants may now be shaken out and re-potted, and put in cuttings for blooming late in the autumn.

PANSIES.—Re-pot such as are intended to bloom in pots.

PELARGONIUMS.—These will now be beginning to grow, and in watering them take care that the soil is well soaked down to the bottom of the pot. Tie out the side shoots as they lengthen, and stop young plants from which late bloom is expected.

VERBENAS.—Cuttings of these put in now will be found to make good plants, either for pot culture or bedding purposes.

FORCING GARDEN.

The keeping up of regular supplies of Seakale, Asparagus, and Rhubarb will now require considerable attention. Owing to the changeable character of the weather, night coverings will have to be resorted to, especially in the case of pits, in which an even growing temperature must be maintained. This will diminish the amount of fire-heat employed, which should be no more than is absolutely necessary. Keep at all times plenty of leaves and dung well blended, and in a state of high fermentation, ready for new beds, linings, &c.; a portion should be mixed once a week at this period.

MELONS.—Make a sowing of these, and when up let the young plants be placed in a light part of any warm frame; 70° of heat, and abundance of atmospheric moisture night and day, are indispensable.

PEAS AND BEANS.—A sowing of these will require to be made as soon as the ground is sufficiently dry for the purpose.

PINES.—Proceed steadily; if pits are at liberty, and provided with permanent bottom-heat of say 80°, it would be a good plan to shift a small portion of the plants into large pots in the expectation of their producing early fruit. Where a constant succession is required, let the final removal into the fruiting pots take place successively. Young stock which has thoroughly filled the pots might also have a liberal shift, provided pit-room is at hand.

POTATOS.—Some Ash-leaved Kidneys may now be planted in frames and pits, in which there is a gentle bottom heat.

VINES.—Proceed as before recommended; lessen the atmospheric moisture when the Vines are in blossom, and dispense altogether with syringing for a while; allow plenty of day heat with a brisk circulation of air.

HARDY FRUIT AND KITCHEN GARDEN.

Nailing must now be pushed forward with vigour. Before planting fruit trees remember to drain thoroughly, and let the ground be otherwise prepared as directed above. Nowhere is this advice more necessary than in the orchard.

CAULIFLOWERS.—Get hand-glasses ready for such plants as are to be turned out of pots; enrich the stations for them, adding fresh loam also if at hand. Turn out four strong plants—one under each angle of the glass; the soil should be well soaked with liquid manure previously to their being planted.

HORSE-RADISH.—If not already done, this may now be planted: dibble in the sets or crowns in light rich soil from a foot to 15 inches deep.

ONIONS.—As soon as the ground is dry enough for the purpose, sow the White Spanish on well-manured deeply dug ground in an open quarter of the garden. Sow in drills about ¾ of an inch deep, and 10 or 11 inches apart, covering the seed with the back of a rake. Then, if the ground is tolerably dry, tread firmly, and beat all level with the back of a spade.

RHUBARB.—Get both this and Sea Kail for next year's forcing planted immediately on rich ground, trenched; throw a hillock of old tan, ashes, or sand round each crown to coax it on through the vicissitudes of the weather during this month and next.

STATE OF THE WEATHER AT CHISWICK, NEAR LONDON, For the Week ending Feb. 14, 1866, as observed at the Horticultural Gardens

Feb.	Month's Age.	Barometer.		Temperature.					Wind	Rain.
				Of the Air.			On the Earth			
		Max.	Min	Max.	Min	Mean	1 foot deep	2 feet deep		
Thurs.	8	29·90	29·81	52	36	44·3	48	49	W.	·14
Friday	9	29·92	29·92	52	39	45·5	47	48	S.	·48
Satur.	10	29·94	29·86	49	38	43·5	48	48	S.W.	·06
Sunday	11	29·92	29·76	47	37	42·1	47	48	S.W.	·00
Mon	12	29·90	29·84	42	24	33·0	46	48	W.	·00
Tues.	13	29·79	29·62	44	22	33·0	46	47	W.	·00
Wed	14	29·87	29·81	46	24	35·0	43	44	W.	·18
Average		29·91	29·80	47·5	31·4	39·4	46·5	47·5		1·36

Feb. 8—Clear and cold, overcast, rain at night
" 9—Rain, stormy and wet, heavy rain
" 10—Clear, with bright sunshine, fine, rain.
" 11—Heavy rain, very boisterous with constant rain
" 12—Fine, cloudy, fine, but frosty at night
" 13—Fine, with clouds, clear, frosty.
" 14 Frosty, rain, overcast, wet and cold, frosty
Mean temperature of the week 2 deg. above the average.

STATE OF THE WEATHER AT CHISWICK,

During the last 40 years, for the ensuing Week, ending Feb. 24, 1866

Feb	Average Temperature of the Week.	Average Amount of Rain in the Week.	Mean Amount.	No. of Years in which Rain fell.	Greatest Quantity of Rain fell.	Prevailing Winds.						
						N.	N.E.	E.	S.E.	S.	S.W.	W.
Sunday 18	40·1	3·09	38·6	17	0·30 in.	5	4	4	2	5	9	7
Mon ..19	44·7	0·09	37·8	15	0·90	6	5	5	6	11	0	2
Tue ..20	47·1	0·12	37·8	20	0·91	7	2	5	4	6	5	5
Wed ..21	46·4	0·21	38·2	19	0·59	1	8	4	6	1	10	6
Thurs ..22	46·1	0·18	39·1	18	0·29	1	8	7	4	1	13	6
Friday ..23	47·0	0·14	39·1	18	0·44	1	8	5	3	1	11	7
Satur ..24	46·7	0·14	39·6	19	0·60	2	6	6	3	7	8	4

The highest temperature during the above period occurred on the 21st, 1865—Thermometer 58 deg., and the lowest on the 24th, 1860—Thermometer 18 deg.

Notices to Correspondents.

* * Persons wishing to send the GARDENERS' CHRONICLE by post should order the Stamped Edition.

BOOKS. *John Legg.* Kemp's "How to Lay Out a Garden" is published by Messrs. Bradbury & Evans, Whitefriars.—*Rose.* The "Treasury of Botany."—*J. W.* M'Intosh's "Orchard and Fruit Garden," Hibberson's "Miniature Fruit Garden," Du Breuil's "Fruit Trees," and Hogg's "Fruit Manual."

CAMPANULA PYRAMIDALIS. *Q. S.* You may increase this either by means of seeds, or cuttings taken from the old roots. For cuttings employ leaf-mould and sandy peat. When strong enough pot them off into 3-inch pots, shifting them into larger ones as they appear to require it. When somewhat well rooted in growth give them a rich loamy soil, mixed with a little bone-dust, and water at intervals with liquid manure. Treated in this way they will be found to grow freely, and flower profusely.

CONIFERÆ. *W. Graham's* "Pinetum."

GLAZING. *J. C. W.* Hartley's rough plate glass does not require the addition of any shading. It has, therefore, an advantage during summer, which, however, is not so positive during winter, while in the latter season it would cut off, as a general rule the most beneficial. There is, therefore, a balance of advantages to be struck between rough plate and good plain sheet glass. The former obviates shading in summer but to some extent intercepts light in winter; the latter involves some shading in the case of most plants, but decidedly admits the maximum of light in winter. In your case the roof might, we think, be advantageously glazed with the first, and the sides with the last.

GRAPE GROWING IN BRAY HILL. We have received numerous letters testifying to the excellence of the Grapes grown at this establishment, and not one in derogation. Mr. Speed may long conduct his future exhibitions.

HOLLOWAY GOLD FIELDS, *&c.* We have received from a correspondent an extract from a letter written from Auckland, and which gives quite a different version of the gold fields from that printed by us at p. 102. Our account was written by an eye-witness, a gentleman in whose veracity there can be no question, and is agreed with information derived from other sources. Not intending emigrant should set out before making the fullest possible inquiries. We print only such statements as we have reason to believe are correct, but we never take the responsibility of advising emigrants as to what colony they should select. They must exercise their own discretion, and should always bear in mind that there are two sides to every question.

LANDSCAPE GARDENING. *Novice.* There is no royal road to the acquisition of a knowledge of this art. It must be patiently studied and worked through like every other. You should thoroughly study Repton, Gilpin, and Mason, and after these Brydale Price; and you should take every opportunity of examining good examples of laying-out ground is, comparing what you see with what you read. Of course it is necessary to acquire also a knowledge of the working details, which you would best attain by getting employment under some one in good practice.

NAMES OF PLANTS. *W. T. K.* Cattleya mascula.—*A Young Gardener.* We cannot undertake to name Mosses, especially when not in fruit.—*Rosa.* A variety of Helleborus niger.—*Lord E.* Dendrobium moniliforme.

ORCHARDS. *Subscriber, Bilbo.* The Thorns round the stem of the tree. If the bark is wholly removed around the stem the tree will probably die. We should prefer the Thorns to the tar.

PELARGONIUMS. *B. Cowell.* M. Duval, the raiser of so many show Pelargoniums.—*Hollingbourne.* Mr. Beachman, and gardener to an amateur residing near St. Cloud.

POINCIANA PULCHERRIMA. *H.* This may be raised from eyes (like Vines) taken from the hard ripened wood of last year. When struck, pot into sandy loam and leaf mould, keeping the young plants in a Cucumber frame, then in a low stove, and as near the glass as possible. In July and August they will succeed very well in a greenhouse if kept near the glass. In September they should be placed in a stove, watering them freely when in flower. Old cut-down plants seldom or ever have the floral leaves so large or fine as young stock raised from eyes or cuttings.

ROSES: *Beta.* Pruning of these may now be proceeded with, leaving, however, the more tender kinds untouched until all danger of injury from frost is over.

WEEDINGSPOON. *Hollingbourne.* Your seedling plants may remain in the cold Vinery with plenty of air till March, as you propose, but we would not advise you to keep them there after heat is applied. They are very hardy, and merely require shelter from severe cold during their infancy. You had better, therefore, transfer them to a cold airy pit or frame, and plant them out (uncoiling the roots) in favourable weather during the months of April or May.

COMMUNICATIONS RECEIVED.—Prof. A. De Candolle.—M. Chatin.—Dr. Hasskarl.—Don Pedro should furnish us with his name and address.—J. Barnes (thanks, they will be acceptable).—J. Fleming. *W. P. A.*

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NEW FORAGE PLANTS.
NEW ZEALAND PRAIRIE GRASS (Bromus Schraderi)
MALDEN'S NEW CLOVER (Trifolium striatum).
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Improvement of Grass Lands.

SUTTON'S RENOVATING MIXTURE SHOULD NOW BE SOWN.
This Mixture consists of the finest Grasses and perennial Clovers, and if sown early in the season the improvement in the pasture will be very great, and at small expense. Quantity of Seed required per acre, 8 to 12 pounds. Price 10*d.* per lb.

From T. E. OSMOND, Esq., *Thurgleeskeen, February* 27, 1865.
"Your Renovating Mixtures for old pastures have answered my purpose well."

From J. C. BLACKETT, Esq., *Thorpe Lee, Egham, September* 30, 1865.
"Mr Blackett will be obliged to Messrs. Sutton to send him Renovating Grass Seed of the same quantity as last year, which was excellent."

From W. HARPER, Esq., *Agricultural Colony, Whatwick, Jan.* 4, 1866.
"You will be glad to hear that your Renovating Mixture for our Home Meadow answered remarkably well. It is now the greenest and freshest pasture held in the neighbourhood."
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Early Sheep Feed.

SUTTON'S IMPROVED ITALIAN RYE-GRASS.—This "Improved" Italian Rye-grass is recommended in preference to every other variety, producing three or four heavy crops in one summer, and being almost if not strictly perennial.
At a Meeting of the Royal Agricultural Society on March 16, in a Lecture delivered by Alfred Hughes, Esq., of Thornesa, Isle of Wight, as reported in *Bell's Messenger*, and the *Mark Lane Express*, Mr Hughes said:—
"I always conceive a portion of Oat land to lay down with SUTTON'S Improved Italian Rye-grass, the most reliable plant I have come across for some years for Ewes and Lambs in the Spring. When I left you (April 1865) in the Spring, one field after another harvested with guano, and that in the autumn, when my Sheep fed it off, it was up to their knees, and that I fed it off again this spring with Ewes and Lambs. I think you will agree that I had a crop of very great value. The Italian Rye-grass which is sold by SUTTON, of Reading, is a most astonishing variety, and I, indeed, I never saw anything to equal it in the course of all my experience."
SUTTON & SONS have a fine stock at present of their Improved Italian Rye-grass, which is a very different and superior article to much that is sold as Italian Rye-grass.
Present price, 6*s.* 6*d.* per bushel; cheaper in quantities over 5 qrs. Carriage free in quantities of 5 bushels and upwards.
Quantity required per acre, 4 to 5 bushels.
Royal Berkshire Seed Establishment, Reading.

PRESENT PRICES of CLOVER SEEDS, Cheaper by the cwt. Samples and lowest price per cwt. forwarded on application.
BROAD LEAD, Best, 10*d.* per lb.; Second Quality cheaper.
YELLOW or TREFOIL, Best, 8*d.* per lb.; Second Quality cheaper.
WHITE DUTCH, Best, 1*s.* per lb.; Second Quality cheaper.
ALSIKE CLOVER, 2*s.* to 2*s.* 6*d.* per lb.
PERENNIAL WHITE, 1*s.* 6*d.* per lb.
COW GRASS, 1*s.* to 1*s.* 2*d.* per lb.
FINE MIXED CLOVERS, 1*s.* per lb.
PRICED LISTS of GRASS and CLOVER SEEDS, Gratis and post-free.
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TO MARKET GARDENERS.—SEEDS, Surplus Stock.—Scarlet, Purple, and White Ten-Week Stock; Scarlet Intermediate Stock; Mixed German Stock; White Cos Lettuce, also Cauliflower and Lettuce Plants
W. MASON, Lower Road, Deptford, S.E.

New and Choice Seeds.

LEE'S IMPERIAL DWARF CAULIFLOWER is the earliest and best in cultivation. Price 1*s.* 6*d.* per packet.
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HAAGE'S DWARF EARLIEST CAULIFLOWER.—Very dwarf, the earliest, hardiest, and finest of Cauliflowers. Packets 6*d.* each.
SEED CATALOGUES, containing the finest New Vegetables, free by post.
STEPHEN BROWN, Seed Grower, Sudbury, Suffolk.

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FRAME CUCUMBERS, all English-saved; true and select.

Carter's Champion	Hamilton's Market Favourite
Cutbill's Black Spine	Highland Mary
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BROCCOLI, Pure and Genuine Stock.

Early Purple Cape	Ellitson's Mammoth
Snow, true Winter	Walcheren Early Late White
Osborne's Winter White	Dixon's Champion of England
Knight's Protecting	Carter's Champion

INVINCIBLE SCARLET SWEET PEA.
Trade prices on application.
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NEW and SELECT VEGETABLE SEEDS.
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BEET, SUDBURY SELECT CRIMSON, very dwarf and dark, 1*s.* 6*d.* per ounce
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" SUDBURY LARGE IMPROVED, very fine, 6*d.* per packet
CABBAGE, OLIVER'S NEW MONARCH, 1*s.* per oz.
CELERY, DIXON'S MAMMOTH, 1*s.* per packet
CUCUMBER, PAIN'S NEW RIDGE, 1*s.* per packet
" DONALD BEAUTY RIDGE, 1*s.* per packet
" SUDBURY NEW LONG WHITE SPINE, splendid frame, 2*s.* 6*d.* per packet
Several first class frame varieties, 1*s.* to 1*s.* 6*d.* per pkt
LETTUCE, GIANT BATH COS, fine, large, and hardy, 1*s.* 6*d.* per oz.
" CLIFTON NEW HARDY GREEN COS, 1*s.* per packet
" LONGSTANDER, remarkable for duration, crisp and excellent, 1*s.* per packet
SUDBURY LARGE WHITE COS, 1*s.* 6*d.* per ounce
ONION, NUNEHAM PARK, 2*s.* 6*d.* per packet
MELON, PRINCESS ALICE, weight 9 to 11 lb., and excellent, 1*s.* 6*d.* per packet
PEA, THE KINGLEADER (or First Crop), 2*s.* 6*d.* per quart
" McLEAN'S LITTLE GEM, 3*s.* 6*d.* per quart
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RADISH, NEW OVAL SCARLET WHITE-TIPPED, 6*d.* per pkt
And many other New and Select Seeds.
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Sutton's Prize Mangel Wurzel,
TURNIP, IMPROVED KOHL RABI, &c., &c.

For PRICES, see
SUTTON'S NEW FARM SEED LIST, which may be had gratis and post free on application to
SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

SUTTON'S YELLOW GLOBE, Price 1*s.* per lb.
Lowest price per cwt. on application.
SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

MANGEL WURZEL SEED from large Bulbs. Cheaper by the cwt.

	Per lb.—*s.*	*d.*
Good YELLOW GLOBE	0	9
" ORANGE GLOBE	0	9
" RED GLOBE	0	9
" LONG RED	0	9
" LONG YELLOW	0	9

SUTTON'S
Selected Mangel Seed
from Selected Roots.

	Per lb.—*s.*	*d.*
SUTTON'S Selected YELLOW GLOBE	1	0
Do. do ORANGE GLOBE	1	0
FISHER HOBBS' ORANGE GLOBE	1	0
STRATTON'S RED GLOBE	1	0
SUTTON'S SILVER BALL LONG RED	1	0
SUTTON'S Selected LONG YELLOW	1	0
New YELLOW INTERMEDIATE	1	6
Do. RED do.	1	6
NORBITON GIANT LONG RED	1	6
BERKSHIRE PRIZE, or SUFFOLK CHAMPION, New	2	6

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The Agricultural Gazette.

SATURDAY, FEBRUARY 17, 1866.

MEETING FOR THE ENSUING WEEK.
WEDNESDAY, Feb. 21 { Agricultural Society of England—Noon / Cattle Plague Report

It will be seen from the reports in our Newspaper that the deputations from last week's Conference of Agricultural Societies to Secretary Sir GEORGE GREY, and from the Council of the Royal Agricultural Society of England to the PREMIER, together with the many other evidences of public opinion which during the past few days have arisen, have at length forced the inaction of Government; so that a measure, even larger and more satisfactory than had been anticipated, has been introduced into Parliament by the HOME SECRETARY, having for its object most of the ends agreed upon in the public meetings of agricultural Societies last week, namely: the compulsory slaughter of all infected cattle with compensation, the absolute or qualified prohibition of the removal of cattle, the isolation of suspected animals, the disinfection of suspected premises, and regulations as to cattle brought into the country by sea. The Bill lays down certain general rules applicable to the whole country, from which no local authority shall be able to depart; it makes use of the local authorities in carrying out these rules, and it gives them, however, a large discretion in matters on which they are supposed to be best qualified to judge. With regard to the slaughter of cattle, the Bill makes it imperative on the local authorities to order the slaughter of all infected animals; gives them a discretion to order the slaughter of animals which had been exposed to contagion; and allows them to grant compensation in the first class to the amount of two-thirds, and in the second class to the amount of three-fourths of the value of the animals, the maximum not to exceed 20*l.* and 25*l.* in each case respectively. On the subject of the removal of cattle, the Bill lays down restrictions applicable to the whole of the country, leaving it open to the local authorities to apply them. For a limited period the removal of cattle by night will be entirely prohibited, and there will be a general prohibition to move cattle at other times except by licences given by the local authorities under certain conditions. Instead of a penalty of 20*l.*, the driver will be liable to arrest, and the magistrates will then be empowered to direct the slaughter of the cattle without compensation. The local authorities will be empowered to declare a district infected, and upon notice being issued to that effect, no further removals in that district will be permitted under any circumstances. The public sale of lean and store cattle will be prohibited for a limited period, and no market for fat cattle will be allowed except with the licence of the local authorities. No beast once brought to market shall be removed before being slaughtered, and in small boroughs the concurrent licence of the county magistrates will be necessary to holding a fair or market. The Bill further provides that foreign cattle shall not be removed from the port of entry before slaughter—with the exception of cattle from Ireland, if these are immediately sent forward from the port without passing into a market where they might meet with infected cattle. On the question of compensation, which is to be retrospective, it is proposed that two-thirds of it shall be provided from the county rate, the remaining third by a cattle-rate not exceeding 5*s.* per head, power being given to borrow money from the Public Works Commissioners on security of the rates, and a discretion being also vested in the magistrates to remit the whole or part of the rate in cases where farmers have suffered severe losses. Moreover, the Bill allows tenants to deduct from the landlord's rent half the rate levied for compensation purposes.

Another Bill has been introduced by Mr. HUNT, one of the members for Northamptonshire, which differs from the former principally in the greater stringency of the rule forbidding all live cattle traffic, to which the Conference were almost unanimous that there should be no exception. Whichever Bill may pass, care should be taken to forbid the carriage of infected manure, which is especially likely to do mischief. And any alterations in the Government Bill should go to increase the stringency of its provisions, both in this particular and in others. For example, all live cattle traffic by railway should be absolutely suspended for a time; and now that public opinion is thoroughly convinced, the regulations for local traffic should be enacted, and not merely suggested for local adoption. [It will be seen from the Parliamentary report in another page that on Thursday night Mr. HUNT carried by a large majority an amendment of the Government measure, to the effect that all live cattle traffic—with certain exceptions to be enumerated—shall be absolutely forbidden for a limited time: so that the measure, as it will be ultimately carried, bids fair to be quite as stringent as the meeting at St. James's Hall desired.]

The second report of the Cattle Plague Commissioners was published on Thursday. It will be made the subject of discussion before the Royal Agricultural Society next Wednesday; and for the present we give the mere conclusions which are arrived at in it.

The number of reported cases from the commencement is declared to have nearly doubled itself at intervals of four weeks.

Of the total number of cattle on farms, in sheds or other places, where the disease has been officially reported to exist (after deducting those slaughtered healthy), there were attacked in every 100:—

Up to November	4	..	44	Up to December	27 .. 51
"	11	..	44	"	29 .. 51
"	18	..	44	Up to January	6 .. 51
"	25	..	44	"	13 .. 52
Up to December	2	..	44	"	20 .. 53
"	9	..	50	"	27 .. 54
"	16	..	51		

Of the total number of cattle known to have been attacked by the disease there were in every 100:—

	Killed.	Died.	Recovered.	Unaccounted for.
Up to Nov. 4	6	43	5	15
" 11	14	43	5	15
" 18	32	46	6	14
" 25	29	48	7	16
Up to Dec. 2	27	50	7	15
" 9	24	51	7	15
" 16	22	53	8	15
" 23	20	54	9	17
" 30	18	56	9	17
Up to Jan. 6	17	57	10	14
" 13	16	58	10	14
" 20	15	59	11	14
" 27	13	61	11	14

Taking actual numbers instead of percentages, there were, out of the 120,740 cases of diseases reported up to the 27th of January:—

Killed diseased.	Died.	Recovered.	Unaccounted for
16,742	73,750	14,162	16,086

All breeds of cattle appear to be subject to the

disease, but the more highly bred the animal, the sooner, generally speaking, it succumbs. English stock, compared with foreign breeds, seem to have less power of resistance.—Reference is made to the successive Orders in Council.—Under the powers thus created, orders of Quarter Sessions have been made in every county of England and Wales, prohibiting or restricting generally the movement of cattle into and within the several areas of jurisdiction. These orders, however, exhibit many varieties of detail.—The opinions expressed by the Commissioners in the first report (Mr. McLEAN still dissenting) remain unshaken, and have been materially strengthened and confirmed by the deplorable experience of the last three months.—Investigations as to the nature of the disease have been pursued under scientific superintendence, reports of which will soon be published. There are, however, some points of more or less practical moment at once adverted to:—Vaccination is not a protection against cattle plague. There is no evidence that it fortifies the system against this new assailant in any degree.—The possibility of mitigating the virulence of the disease by inoculation with the matter of the disease has engaged attention. Such inoculation has been tried repeatedly, and on a considerable scale, by the Russian Government, and the effect of a long series of transmissions has been carefully noted and recorded; but the experiment has not been very successful, and it has for the present been abandoned.—The only means of combating the disease which remain consist in the stoppage of the movement of stock and of things likely to be vehicles of infection, in the isolation and slaughter of infected cattle, and in the use of disinfectants.—The subtle poison of this disease has now diffused itself through the country, and our principal danger is at home, and not in importations from abroad. But the question what permanent regulations must be made to prevent the re-importation of it hereafter from infected countries is one which must be considered sooner or later.

THE FUTURE OF BRITISH TILLAGE, to which Mr. Alderman MECHI directed the attention of the London Farmers' Club last week, is, like every other agricultural topic, sure to be materially affected by the ravages of rinderpest. With the destruction of so large a part of our stock must go to some extent the cultivation of our food for stock. A recurrence to bare fallow for lack of mouths to eat our fallow crops must tend, unless extra effort be made some other way, to the return of the same half crops which such cultivation used to yield.

Failing the natural supply of manure, however, artificial fertilisers must be more largely used; and failing green-crop cultivation, all such means of tillage, as by their greater efficiency get much accomplished in a little time, must be resorted to. Steam cultivation on our clay soils, which, under thorough tillage, seem to yield never-ending stores of food for plants, will under a scarcity of stock (so especially needed on the lighter lands) increase more than ever the superiority which a properly worked stiff soil possesses. Under thorough drainage and perfect tillage a fair calcareous clay is practically inexhaustible. Lois Weedon cultivation is a sufficient proof of this; and there is hardly a steam-cultivated clay-land farm in the country that is not more or less a sufficient illustration of it too. The Council of the Farmers' Club did well, therefore, even when our stock is being destroyed by the cattle plague, to divert the attention of their members from it for a while to the subject of land tillage. And Mr. Alderman MECHI was a very good exponent of it to put forward on the occasion. His continual discussions of it have made him in great measure its acknowledged representative — his wine-glass illustration of the depth to which the tillage of the soil generally goes, has been often enough and everywhere insisted on—and his experience on the intractable soil of Tiptree Heath ought to have made him familiar with the subject.

We entirely agree with him in his criticism of the loose reports one reads and hears of the depth to which tillage goes; but we share his incredulity rather with regard to reports of the extraordinary than of the ordinary experience on this subject. It is not so much the common tillage of a neighbourhood as that accomplished by steam-power, that is, as we believe, so greatly exaggerated. One sees almost everywhere in reports of steam cultivation depths of 12 to 18 inches quoted. We once saw in Staffordshire a tool with a couple of teeth which went below the soil, and even below the thin coating of gravel on which it rested, into the greasy, red, clayey subsoil, and brought up some of that rich marl to the surface from a depth of 15 inches. And probably ploughs have been yoked on to the steam horse in the fen districts which have turned up the soil and subsoil to a depth of 15 or 16 inches in all. But such instances are quite as exceptional in the experience of steam cultivators as in that of ordinary farmers. We admit without hesitation that the application of steam power to tillage in any district does deepen cultivation there. Ropes break and tools come to grief owing to land-fast stones, and subsoil difficulties, which the common horse-drawn plough had glided over without touching them. It must, however, be confessed —and we have seen steam cultivation in most of the southern and midland counties of England—that we have never yet seen 12-inch work over a whole farm, either by steam plough or steam cultivator, anywhere. The latter implement, driven rapidly, is indeed extremely deceptive as to the work accomplished by it; and in many a case where the heaps of moved earth thrown up looked as if the land had been stirred a foot or more, we have found that the average depth was not really more than half so great. The deepest tillage known to us which anywhere obtains over a considerable district is the autumn or winter ploughing of the stubbles for the succeeding green crop in the Lothians. We see that Mr. SADLER, of Ferrygate, in the report of a Turnip crop recently published, declares that the soil was stirred 16 to 18 inches deep with FOWLER'S cultivator. We should like to know how that was ascertained. Willing to concede almost anything to the agricultural authority on which the statement is made, we should otherwise feel the greatest doubt of its accuracy. At any rate so extraordinary an achievement as the tillage of land to a depth of 16 to 18 inches at one operation deserves the fullest detail both of description and of attestation, and we cannot be satisfied with its bare announcement among a number of items in the history of a competing crop.

Our readers may have seen, too, in the reports of Steam Cultivation given at page 60 a few weeks ago, that depths of 12 to 18 inches are claimed as having been achieved by FOWLER'S cultivator. We can only repeat our belief that the real depth attained is almost always overrated, and that a foot is very rarely reached.

Another point on which Mr. MECHI very properly insists, is the need of thorough reduction of the soil to its ultimate particles. But this, too, is an assertion which needs to be intelligently received. There are very few farmers whose experience would not tell them that to reduce their soil to powder by artificial means would be the last way to ensure good tilth.

The fact that fertility depends upon full access being obtained to every part of the soil, both by rain-water and by the roots of plants, is indeed perhaps already sufficiently understood. It is taught us by the advantages of the water-drill, by the need of thoroughly comminuting and pulverising our manures, and by every history of extraordinary fertility; and we may fairly infer that the unit of fertility is the composition and the accessibility of the individual soil particle—but it must not be supposed that therefore the artificial multiplication of particles within the soil is the true way to increase fertility. A powder thus produced will run together, compact and impenetrable, with the first soaking rain. The true fertilising tillage implement is the weather. It is to give full efficiency to this that we tear up our soils, and occasionally, when the time is short, smash them with the roller and clod-crusher. In general the most economical and perfect tillage agency is the deepest and roughest tearing up of the entire soil before winter, after drainage. The lumps thus thrown up are reduced by rain and frost to the finest particles, comprising a very much larger number in a given weight of them, than if by rasp or roller they were ground to powder by horse-power or by steam.

THAT the disease now so well known as Rinderpest is infectious no one entertains the slightest doubt, but considerable latitude of opinion seems to be allowed in the matter of degree. How far may the virus be carried? whether by the atmosphere, or by the clothes of an attendant, or by the wool of a sheep, or the hair of a dog? The popular faith in the activity of an infecting agency is boundless. No story is too marvellous to be received; witness the account of the strange tenacity with which an infectious malady clung to a fated dwelling in Italy. The historian, for whose accuracy we do not vouch, gravely relates how after one family died the house was subjected to the most efficient disinfection, the walls new papered or painted and almost rebuilt; and how, notwithstanding, the next inhabitants suffered the fate of the former; how in despair the combined intelligence of the village sought a solution of the mystery in vain, until an individual, wise above his fellows, discovered that notwithstanding all the means employed, a fatal omission had occurred—"they had forgotten to change the bell ropes!" Not less wonderful are the accounts we hear of the conveyance of scarlet fever or smallpox in some garment a hundred miles or so from the sufferer, to fresh victims, and the sting of all these tales is found in the fact that while science may laugh it is powerless to disprove, and in many cases these far-fetched arguments are the only ones at hand to account for the facts, so that it becomes a serious question how far infection may be carried, and by what vehicles?

In reference to the cattle plague the question has occurred over and over again, how far must healthy animals be removed from diseased ones to be safe. No one would hesitate to separate the infected members of a herd and place them miles away, if there were always conveniences for such complete isolation, but the question of distance is important to the owners of premises of limited extent, and hence the urgency of the inquiry.

To answer such a question satisfactorily, an appeal must be made to experience; no theoretical reasoning can be advanced with authority, in the absence of positive evidence, but unfortunately positive evidence is exceedingly difficult to obtain; so many circumstances are to be taken into the account that it is often impossible to decide whether an animal has been infected in consequence of its proximity to a diseased beast, or from the influence of other causes which may have been in operation, irrespective of distance.

New outbreaks of disease have occurred during the last few months, apparently proceeding from a certain centre without direct contact with infected animals, and in those instances the healthy stock have been placed at various distances, from 20 yards to a mile or more apart from places where the disease was known to exist. In other cases certain healthy cows have remained unaffected up to the present time, with the plague raging all round them; and, what is still more remarkable, in the same shed where animals are standing side by side, the infection is commonly not communicated from one to the other according to rotation, but will seemingly pass by a dozen, and fix upon an individual at the other end of the shed, and then appear at the opposite side, or even in another shed 20 yards off in the same premises. In short, isolation and distance are not convertible terms. One animal may be so placed that it shall be perfectly isolated at a distance of 40 yards, while another removed a mile away shall be in constant and dangerous communication with a diseased subject.

From observation we do not gather that so much depends upon distance as upon a rigid adoption of all measures calculated to keep healthy animals from all chance of contact with an infected medium, whether air, or water, or food, or litter, or the dress of the man who attends the diseased beasts. A certain intervening space is necessary for purifying the atmosphere, but experience has not absolutely decided how *short* a distance is safe, other things being equal; certainly animals have escaped while standing not more than 40 yards from cases of disease. But it would not be desirable in the present state of our knowledge to fix a minimum; it is, however, on the other hand safe to assert, that no distance will afford immunity, if even indirect communication is permitted.

The important point is to determine—what is really isolation? and while the answer is not difficult, it involves a practice that is. All communication between the diseased and healthy must be completely cut off. The building containing the animals must be so placed that direct currents of air cannot pass from the hospital to the sanitarium, in such a way as to impinge upon the animals; and for the purpose of neutralising as far as possible the infecting particles in the air, disinfectants should be used freely in both places, and all the secretions and excretions thrown off from the diseased should be rendered harmless by immediate combination with chloride of lime, chloride of zinc, or carbolic acid, and removed at once to a secure receptacle.

The attendant upon the sick should never approach the healthy, unless he goes through the ceremony of wearing a waterproof dress while engaged in his duties, and removes it before entering the healthy shed, taking especial care to

change his boots: but a more simple plan would be to place the healthy stock under the charge of another man, whose proceedings should be carefully watched, in order that he may not visit any infected locality.

Clothing, excepting waterproof material, cannot be disinfected without being injured, but the India-rubber coat, leggings, and boots may be immersed in a solution of chloride of lime without detriment. Short of these precautions, which we admit can hardly be carried out completely, we do not believe in "isolation." The mere separation of sick animals from healthy ones is a waste of time and trouble, unless round each a line is drawn across which nothing shall pass from one to the other.

BRAVO, THORLEY! The time has now arrived when he must enter the lists, "throw down the gauntlet," and challenge all comers in the declaration that he can do more for us in the cattle disease than any other man in the world.

"Why stand by and see your cattle die, when the remedy lies in a four-ounce penny package of THORLEY'S nourishing, tonic, stimulating food?" "After all the scientific twaddle and blundering, nay diabolical treatment practised by the veterinarians of this country, it will be proved beyond doubt that the only man who can cope with the cattle plague is—JOSEPH THORLEY."

We publish, thus, his advertisement for him gratis, and we do him the additional service to omit his prefatory token or trademark—the British lion, tongue projecting, holding a trefoil in his paw, and evidently laughing at the brazen face which calls him as attesting witness to the truth of such a wonderful assertion!

STEAM PLOUGH COMPANIES.

WILL you kindly afford me space to say a few words in reply to the letter of Mr. Richardson. If he will take the trouble again to look at my former communication, he will find it therein stated that if land could not be properly cultivated without employing apparatus costing 1400*l.*, it would be cheaper to hire than to buy. According to his account the fens of Lincolnshire cannot be properly cultivated with more inexpensive tackle. He may be right, perhaps, as regards his own county, and, if such be the case, there is, so far, no point at issue betwixt us. I should advise hiring by all means.

I have, however, good reasons for believing that even in that county, the smaller tackle has done, and still is doing good service, notwithstanding his assertion that a nameless gentleman preferred for some special reason, which does not appear, to give his patronage to the double engine system.

The great error, however, into which the writer falls is in fancying Lincolnshire all England—in other words that the farmers had all fen land and large farms consisting of large enclosures. I will for his information tell him that the contrary is the case, and that a very large proportion of the soil of this country, if ploughed 12 or 15 inches deep, would be seriously damaged for years, if not permanently injured.

After reverting to the Whitchurch Company, which had to travel 15 miles of road to obtain 10 or 12 acres of work, Mr. R. says that "no sane man would attempt to form a company without a sufficient guarantee of success." Why, the very example alluded to confutes his words. And if at all well read in the history of steam ploughing, he must know that various companies have come to grief or paid no dividend. Will he assert that the promoters were all insane? If not, what becomes of his argument?

Mr. Richardson finds fault with me for not using figures. I refrained from doing so for a twofold reason. First, there are few people who care to wade through them; secondly, the carefully tabulated statements embracing returns from different sources which have lately been published in this Paper contain more information than can possibly be furnished by any one individual. As Mr. Richardson himself, though, boastfully proffers to prove everything by these means, I will take him at his word, and ask him for full particulars as to when and where the double engine tackle has done 200 days' work in one year, and earned on an average 4*d.* per day.

I will still further gratify him, as he is so fond of figures, by drawing his attention to the following calculation, which is based on the tabulated statement to which I just now referred:—

	Repairs.	Wages.	Coals.	Oil.	Total Cost per Acre.
	s. d.	*s. d.*	*s. d.*	*s. d.*	*s. d.*
Fowler	1 4	2 8	1 7	0 2	5 6
Howard	0 11	3 0	1 10½	0 3½	6 4
Smith	0 5½	2 2	1 0	0 1½	3 9

If Mr. R. wants more figure work, he will do well to analyse the statements themselves, and he will find that not only was the cost less, but the acreage per day was in favour of the little tackle. He would also learn other particulars which would enlighten him on many points. As a comparative test these returns are especially valuable, coming as they do from about an equal number of clients of the respective systems, and being disinterested parties the figures are above suspicion.

Mr. R. says, "To obviate the uncertainty of obtaining the use of the implements, all companies must arrange that the supply is equal to the demand." That is all very well, but unless they could regulate the demand, which is quite impossible, spare tackle must be kept, which can be called into requisition whenever necessary from a flush of work. He seems to ignore the fact that this would involve extra capital, which would bear interest whether at work or not, and the retention of extra hands with partial employment.

In conclusion I would say that steam plough companies, like other public undertakings, are fair subjects for criticism, and different men will hold different opinions. Hence I do not see that Mr. Richardson is justified in charging all who will not see through his glass with "insinuations and attacks of prejudice and ignorance, &c."

So far as I am concerned, I have no interest beyond that which is common to the agricultural world generally in either invention, as I care not a straw whether I ever do another acre of work except for myself. On their respective merits they will stand or fall; but at the same time I consider that every farmer ought to consider himself under a deep debt of obligation to Messrs. Smith, Fowler, Howard and others who have contributed by their skill and ingenuity, their money and their time, towards the solution of the great agricultural problem of the day. It will however be a long time before their united efforts succeed in burying the horse plough in that oblivion to which Mr. Richardson has consigned even its name with one dash of his pen. *F. W. Bignell, Loughton, Stony Stratford.*

THE CATTLE PLAGUE.

1. The following returns were issued yesterday:—These returns do not profess to give the total number of cases which have occurred in Great Britain, but only those which have been ascertained from information received at the office from inspectors. Columns 1 only record the cases reported as having commenced during the weeks indicated by the headings; "back" cases being added to columns 2.

Cattle Diseases.	1 Number Attacked. Week ending February 3.	1 Number Attacked. Week ending February 10.	2 Total Reported Cases from Commencement of Disease. Attacked.	Killed.	Died.	Recovered.	Unascertained.
Metrop.	36	28	7887	3177	3444	723	591
S. Eastern. ..	38	24	4924	1442	2947	459	229
S. Midland. ..	680	485	12,474	2094	8255	980	845
Eastern Co. ..	291	284	8479	3044	4241	628	516
S. Western. ..	18	10	1141	434	684	16	129
W. Midland ..	1065	690	6442	687	5086	666	703
N. Midland ..	728	679	6569	896	4449	514	710
N. Western ..	3321	1842	20,611	482	21,619	2066	6133
Yorkshire ..	1426	1145	24,917	972	14,423	888	3734
Northern Co. ..	320	179	2886	688	1814	467	419
Monmouthsh. & Wales ..	346	448	6355	162	4991	778	478
Scotland	1857	1944	37,747	4144	22,222	7412	3969
	9143	11,000	148,023	18,247	92,853	18,506	19,621

Many hundred inspectors again failed to send returns this week.

2. DISINFECTION.—I will enumerate under separate headings the points which ought to be attended to:—

1. The restriction of the movement of other animals than cattle, such as dogs, which may carry the disease.
2. The cleansing and disinfecting of all things connected with the transit of meat.
3. The cleansing and disinfecting of all sheds and other places where cattle have been kept.
4. The burial of manure, offal, and fodder that have, even remotely been in contact with diseased animals.
5. The cleansing, and so far as possible, the keeping away from cows, oxen and sheep, of the other animals of the farm yard, such as horses and pigs, which may have been in contact with diseased animals. For instance, a horse has been employed to bring to the place of burial the carcase of a diseased animal, and may in so doing have come in contact with some infected matter that has proceeded from that animal.
6. The constant disinfection of all articles of clothing belonging to those persons who are occupied in treating medically, or watching over, diseased animals.

In a few words, a Dutch cleanliness (nothing less will do) should be maintained with regard to all persons and things that come in contact with live or dead cattle.

This cannot be effected by Act of Parliament.

There is a desire expressed for a day of humiliation and fasting. I would not say a disrespectful word of such a natural and pious desire. But those persons who have to do with cattle will find a ready means of showing their piety and their charity to their neighbours in making it a duty so to cleanse and purify everything connected with their business that upon them may not rest the responsibility of any fresh outbreak of the disease. Dr. Lyon Playfair says:—

"Observe what will be the consequence of a single case of neglect in destroying the seeds of contagion after death has reaped its harvest. We have seen that in all probability the disorder was introduced into this country by a single infected beast. Now if, on the liberation of cattle in the single farm—nay, even a single cowshed—remain imported without disinfection, the country has been called upon for a great sacrifice in vain for the foul place will become the new centre from which contagion will radiate. It was in fact in in such infected localities that the disease sprang up so continually, after being subdued, during the last century."

In fine, there are but three main branches of remedy to meet this great evil, the cattle plague. These are judicious slaughtering, careful isolation, and thorough cleansing and disinfection. *A Victim.*

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3. TREATMENT.—Lord Leigh thus speaks of Mr. Worms' management of his stock:—"The rinderpest broke out on my farm with such violence on Friday last that on the following Saturday and Monday I destroyed 22 valuable animals with the hopes of stamping out this frightful disease. This I contemplated doing according as it should show itself among my stock, but seeing a paragraph in the *Times* of last Monday, to the effect that Mr. Worms had treated some animals on a farm at Datchet with perfect success, I telegraphed to that gentleman, and requested him to do me the favour of trying his system with my stock. Mr. Worms (The Lodge, Egham, Surrey) came here, and selected for treatment 24 which were infected with the disease, some in their first stage, and others still further gone. One cow I had actually ordered to be destroyed. Mr. Worms had his medicine administered to all of them, and at this moment (24 hours since they were treated) they are all well, and take their food as usual."

[The following is a letter from Mr. Worms.]

"When an animal is suspected of having the rinderpest, or a necessity presents itself at the present time, its mouth should be opened and its teeth cleaned by a person with a keen sense of smell. The taint of the breath is the most important point in the diagnosis, as indicating a certainty the presence of the first stage of the disease. As soon as this test has been applied, the animal should at once be separated from those still healthy, and the following medicine should be administered:—A pound of small red pickling onions and a pound of Garlic, peel them, put them together into a mortar and reduce them to a fine pulp; to this pulp add a pound of ground ginger, and mix thoroughly. Take three-quarters of a pound of asafœtida, pour sufficient water over it to cover it, then allow it to boil till the sediment remains, carefully removing all hard pieces; pour this decoction of asafœtida over the pulp of onions, garlic, and ginger, and stir the whole mass thoroughly; add to this eight quarts of Rice water, and allow it to cool. This is sufficient for 14 full grown animals.

"Dose.—To a full grown animal, 1½ old pint; to a heifer, seven eighths of a pint; and to a calf, five eighths of a pint.

"The medicine should be given the moment the animal's breath is the least tainted, and should only be repeated once in 24 hours in very bad cases. Should the animal's bowels be constipated, 2 lbs. of Epsom salts, and the stomach swollen, administer two full grown animal's pints of gruel, to a calf a quarter of fresh unsalted lard, made into bolusses. If the mouth be sore, wash the gums with a pulp made of the rind of Seville Oranges, boiled. Diet.—Two hours after the medicine has been administered the animal should be fed with Rice gruel, and during two days three times a day, with nothing else than Rice gruel and a little sweet hay. The animals must be kept warm and the stall thoroughly disinfected and ventilated. This is the whole of my treatment."

[The treatment practised by Mr. Worms, and which proved so successful with Lord Leigh's herd at Stoneleigh, has since been tried by Mr. Worms upon some infected animals in the herd of Baron M. de Rothschild at Mentmore. When Mr. Worms arrived, the animal first attacked had already exhibited all the symptoms of the disease for upwards of 48 hours, and Mr. Worms pronounced the case to be hopeless. He, however, administered his specific, and though there is some fear that the animal may still die from exhaustion, the disease itself appears to have been conquered. In the other two cases the treatment was so successful that both animals were believed to be out of danger.]

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4. LIME WATER AS A REMEDY.—Mr. John Maddocks, farmer, of Whitby, near Ellesmere Port, Cheshire, recently lost seventeen fine cows by the rinderpest. On Saturday week five of his young stock were attacked by the plague, and to save the trouble of driving them any distance for the purpose of being slaughtered, he turned them into his orchard. Here water was offered them, but they all refused it. Shortly after this the whole of the five animals were noticed drinking some apparently stagnant water in an old pit which had been used for slacking lime. Soon afterwards they began rapidly to recover, and Mr. Horne, veterinary surgeon of Little Sutton, pronounced them out of danger. Mr. Horne was so much astonished at the rapid and unexpected recovery of the cattle, that he went to the pit mentioned and took away two bottles of the water for the purpose of analysis.

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5. BISULPHITE OF SODA AS A REMEDY.—*a.* On the breaking out of the disease in London, I purchased of a London dealer nine calves. In a few days after these calves arrived the rinderpest broke out among them, and subsequently among the cows also; all were seized, most died, and the rest were shot; all buried, and the strictest quarantine enforced. Some five days after I was informed that two cows at the Home Farm were similarly taken, where there were some 200 head of cattle. I

immediately went up to London and got bisulphite of soda and gave it to the cows, which in two days were "all right" again. Bisulphite of soda was also given to the other stock, and we have had since no fresh case of rinderpest. I would observe that if bisulphite of soda is given, I would advise doses of one, two, or three ounces, once, twice, or three times a-day. *b.* Mr. Smith, the Rector of Dry Drayton, near Cambridge, on the 5th of January last writes me thus:—"On the 25th of November there were 11 heifers and steers in one yard. One showed evident signs of the plague, and two others had a suspicious appearance: these three had each sulphur and nitre given them; two died on the 7th of December, the other one got better. This one on the 7th as well as the eight that were removed had bisulphite of soda given them, and on the 9th they had sulphuric acid given them. At this time nearly all the eight showed signs of the plague. They have all had two teaspoonfuls of sulphuric acid in three-quarters of a pint of water morning and evening every day; they are now quite well, but there is a slight eruption in the necks of all of them, I believe, and the spots on the noses of some of them may still be seen, but they are dried up. This seems a clear case of the disease being stopped by the acid in its early stage. The animals are some two, some three years old." And on January 29, Mr. Smith writes:—"Some publicity ought to be given to the experience we have had, as for some five weeks we have not had one fresh case, and I believe every head of cow stock in the parish has more or less sulphuric acid given to it." In the same letter Mr. Smith states that Mr. Sparrow, of Cambridge, is trying sulphuric acid in the shape of hyposulphite, I think, of soda. He uses this in preference to the bisulphite as cheaper. He has a herd under his charge in a severely infected district, surrounded, I believe, by dying animals, and has hitherto preserved this island, as it were, of healthy stock. From the little experience I have had, I am convinced that as in foreign countries, if the total isolation of all diseased cattle is strictly enforced at the same time, this sulphuric acid is a specific if at once used without waiting for an outbreak of the plague. And if two teaspoonfuls every morning and evening in three-quarters of a pint of water be administered to those cattle that are at present healthy, we shall soon, I believe, find that that awfully infectious disease, the rinderpest, has been "stamped out" of England. *T. Lyon Theobald, Bayward's Park, Horsham, February 3.*

G COMMON SALT AS A REMEDY.—Farmers have generally been in favour of the "stamping out" on the same plan as in Aberdeenshire, but within the last week a change of opinion has taken place, in consequence of the successful treatment of the cattle disease by Mr. Alexander. Mr. Garland, of Cairnton, has followed the same treatment; he has a stock of 75, 40 of which were attacked, and only one died. In my parish, of which I am convener of the Plague Committee, I find one herd all recovering from similar treatment, while, at another farm, where no salt had been given, but as much straw and Turnips laid before the beasts as they could eat, all had died. As far as our experience has gone, all who have used salt for some time and liberally have had no losses. I have been using it for three months, and have had only one case. I killed the beast because I was in front of "the advance," but I believe it would have recovered. *J. Dyce Nicol.*

Lyne of Meldrum, Inverurie, N.B., Feb. 9.

About three months ago I commenced steeping each sack of the Turnip seed in the whole of my cattle-drink, a quarter and less than a pint per day to each beast. The effect of the salt on the constitution of the animals is very apparent, preventing the lodgment of deleterious substances in the stomach, and preparing the whole system to throw off any disease with which they may be seized. The appearance of the animals when taken ill showed unmistakable signs of rinderpest—watery eyes, contracted nostrils, ears hanging back, the mouth discharging frothy saliva, and the nostrils yellow matter. As soon as these symptoms appeared, the affected were removed from the rest of the herd, kept as warm as possible, scrubbing the skin twice or three times a-day with a currycomb; if bowels costive, half to whole bottle of Linseed oil; if laxative, flour gruel with laudanum; remove all food from them, give cold water frequently, but don't let it stand before them; if the bowels continue costive, give oatmeal gruel mixed with treacle and salt and tar, but don't force it down the throats: if laxative give flour gruel with beaten eggs. When the disease is taking the turn and the beast shows a desire to eat, give in a small quantity of sliced Turnips and mouthful of hay or straw. I have had two cases of rinderpest, and they are now all well. The last beast attacked was a cow; she showed symptoms on Saturday last; her milk left her at once; she was sick for a day or two, but yesterday morning ulcers were thick on her udder, and, but for those she seems well. I have no doubt the disease could be mastered if the animals were properly cared for both before and after they are seized."

CHLORIDE OF LIME AND CONDY'S FLUID.

ALLOW me to reply to some of Mr. Condy's remarks in your Journal of the 27th ult. He there states:—"There cannot be two opinions on the efficacy of chlorine, or rather hypochlorous acid, the active principle of chloride of lime, as a disinfectant. It is a most powerful indirect oxidising and hence disinfecting agent, but it evidently cannot be held superior to nascent oxygen (the active principle of Condy's fluid), which in truth is the agent through which it works, by the withdrawal of hydrogen from oxyhydrogen compounds with which it comes in contact." Now it seems a very new theory in chemistry to say that the efficacy of chlorine as a disinfectant is due to its being an indirect oxidiser: in other words, that it acts indirectly by oxygen, which is a less powerful gas than chlorine itself.

No doubt the bleaching power of chloride of lime is due to the affinity of chlorine for hydrogen, as most of the vegetable colouring matters contain hydrogen, and are decomposed by chlorine, and in the same way free chlorine, acting upon the aqueous vapour of the air, would form hydrochloric acid, and liberate oxygen in the form of ozone. I do not however agree with Mr. Condy in thinking that hypochlorous acid (Cl O) is the active principle of chloride of lime. Bleaching powder is made by passing chlorine gas over layers of quick lime; the result is (Ca O Cl) chloride of lime. I know there are some persons who think that a double decomposition is formed (Ca Cl), chloride of calcium, and (Ca O, Cl O) hypochlorite of lime. But if this were the case the bleaching powder would be deliquescent, as chloride of calcium is a deliquescent salt, and soluble in alcohol, but bleaching powder is not deliquescent, and contains but a small proportion of salt soluble in alcohol (at least when it is properly made), and therefore I consider the gas given off by chloride of lime is chlorine and not hypochlorous acid, and as chlorine has but a slight affinity for oxygen, it does readily pass into hypochlorous acid by contact with the air.

Mr. Condy states that hydrochloric acid is the attendant refuse of the operation of chlorine, and adds, that "chlorine and hydrochloric acid have no analogy whatever in respect to their behaviour with organic bodies, because the chlorine which exists as a component in the latter is already neutralised by hydrogen." Now, as hydrochloric acid is a most powerful acid, it is a very strange thing to say that it (chlorine) is neutralised by its combination with hydrogen—as well say it is neutralised by its combination with oxygen, when it becomes hypochlorous acid. The attendant refuse (as Mr. Condy calls it) will be found just as powerful a disinfectant, and if anything a more irritant gas than it was before; besides, hydrochloric acid in contact with most organic and inorganic substances, readily enters into combination, and forms compounds with chlorine in them, showing that the chlorine is by no means neutralised, but it is still ready to act as powerfully as before. Neither is it correct to say that chlorine merely acts as a disinfectant by entering into combination with hydrogen; it has a powerful affinity for many noxious gases, and is capable of decomposing most gases that result from the decay of animal or vegetable matter.

Again, Mr. Condy finds fault with me for suggesting, that as hydrochloric acid taken into the stomach has been found beneficial in some cases in rinderpest, so chlorine breathed into the lungs may also be of use; he considers, in short, that there is no apparent analogy. In answer to this, I contend that the efficacy of hydrochloric acid as a medicine is due to the chlorine, and that the chlorine acts by entering directly into combination with the salts of the blood. In the same way chlorine, breathed in small quantities in the atmospheric air, enters into immediate contact with the blood in the lungs; and just as the oxygen we breathe oxidises the blood in the lungs, so also I consider that chlorine may act directly upon the salts of the blood when breathed, as hydrochloric acid taken into the stomach acts upon the mucous membranes, and also on the blood by the lacteal ducts.

I know Mr. Condy can bring forward plenty of authorities for stating that chlorine is a very irritant poison to the lungs, but what I maintain, both by theory and practice, is, that if the chlorine is sufficiently diluted with air, it does no injury to the lungs, and it is easily seen by the uneasy sensation it gives to the lungs when there is too much used; if there is no inclination to cough, no injury is done. I have used chloride of lime very freely in a great many cases; in one winter in upwards of 60 cases of scarlet fever, and never once knew any unpleasant or injurious effects, and quite lately in two cases of bad cancer, and one of senile gangrene, in more than usual strength, and found it was of great benefit both to the invalid and also to the attendants; in the latter case Condy's fluid had been tried as a dressing to the wound (it was a case of senile gangrene of the foot), and was found quite ineffectual in allaying the unpleasant smell, or in arresting the progress of the disease, which chloride of lime did. I cannot help feeling that too much stress is laid at present upon the action of ozone as a disinfectant. No doubt it is a very powerful oxidising agent, but at the same time it is a very unstable gas, and soon passes into oxygen; and when we consider that oxygen forms a fifth part of the air we breathe, it will require an immense amount of oxygen to be generated by any disinfectant to make an appreciable difference in the atmosphere. It has been stated that in some cases by Schönbein's test ozone has been found on the windward side of a drain but not on the other, and this has been brought forward to prove that ozone has acted as a disinfectant; but as the effluvium from the drain has generally in all these cases been found on the leeward side, it only goes, in my mind, to prove that the gases from the drain have decomposed the ozone—not that the ozone has disinfected the gas. I will not, however, trespass longer on your space. I only wished in my former letter to refute the idea of chlorine being so injurious to the lungs, that it must not be used as a disinfectant in cowhouses, and I brought forward instances where chlorine had been breathed directly into the lungs by inhalation with steam impregnated with chlorine. Mr. Condy seems to think this no proof, because he says it is the constant breathing of chlorine which does the harm, but in the cases I quoted the hot water contained a solution of one part of concentrated liquid chloride of lime to nine parts of water, and consequently the aqueous vapour arising was very strongly impregnated with chlorine; but when used as a disinfectant the air does not contain more than a trace, not perhaps 1 part in 10,000, and a few handfuls of bleaching powder scattered on the floor of cowhouses can do no injury to the lungs. Ammonia, which is the product of every enclosed cowhouse, is in a concentrated form quite as irritant and injurious a gas to the lungs as chlorine, but when sufficiently diluted is only a stimulant. Lime takes up about half its weight of chlorine. So that, as the specific gravity of chlorine is 2.47, 1 lb. of commercial chloride of lime contains at the most about 1¼ cubic feet of chlorine gas. Now every cowhouse ought to contain at least from 400 to 500 cubic feet for each beast; and as all the chlorine is not given off at once, but gradually, it can easily be seen how much diluted the chlorine must be in a large shed, where only 3 or 4 ounces are used in a day, especially as every shed ought to be well ventilated, and should allow for the passage of free currents of air; and I can only add again, I have never known any injury done by the proper use of chloride of lime as a disinfectant, and have almost always found it beneficial in a sick room by helping to purify the air. Apologising for trespassing so much on your space. *C. P. Cleaver, Appleton-le-Street, Malton.*

Home Correspondence.

Mr. Joyce's Berkshire Pigs.—In your Paper of Saturday is an interesting paper by Mr. William Joyce, of Waterford, on the Berkshire pig. In all that he writes of the Berkshire pig I agree, except in the important statement—"high feeding does not at all interfere with their breeding"—an opinion which he illustrates by the following narrative. "Another case in point is my sow Alexandra, which was bred by Mr. Sadler, had been as highly fed as any animal could be all her life, and had been kept for a show sow up to the time I bought her at Worcester, where she took the 1st prize. She was then two years old, and had never been put to the boar." Now, Sir, the theory is wrong, and I should think that the alleged fact on which it is based is wrong too, inasmuch as the sow "Alexandra" was shown as in farrow; she had, it is true, the 1st prize allotted to her at Worcester, but in consequence of her not proving to be in pig, the 1st prize was paid to me, as the exhibitor of the sow "Lady Bowly," No. 1062 in the Catalogue. The interests of truth, no less than of science, demand this explanation. It is greatly to be deplored that the Royal Agricultural Society does not give greater publicity to the circumstance, when animals to which prizes have been awarded have been disqualified through not fulfilling the conditions of competition. In this particular case, in the Prize List of the Society, published long after the Show, the sow "Alexandra" is described as the prize-taker, although in fact the prize was given to the sow exhibited by yours respectfully, *John Hitchman, Wickhewer, Derby.*

Drainage and Floods.—If I thought that the differences between Mr. Denton and myself were irreconcilable, I should cease the discussion. I will merely say in explanation, that by "unbroken clays" I mean those not stirred, as pastures, drained or undrained; and I still venture to maintain that such clays least interfere with the upward stream (so to speak) of capillary attraction. Though I said in broken ground, drained or undrained, the capillary attraction would be sufficient to feed the evaporation, I think this may be seen even in drained unbroken pastures by the cracks in a dry summer. I also maintain that the tilth of broken ground when drained gives off more moisture by evaporation in the winter than undrained ground, because its condition promotes evaporation, and so it takes up more water, and reduces floods. *J. C. Clutterbuck, Jan. 12.*

Foreign Correspondence.

NEAR STUTTGART: *Dec. 23.—The Beet-root Sugar Manufactory at S., and its Agriculture.* [Some details on the agriculture of this establishment were given in last year's volume, p. 1164.] —The work at this factory is done by labourers, some of whom have been employed there from its original establishment. They earn from 10s.

to 30*s.* a week. Messrs. R. established, five or six years ago, a savings bank at their offices, where each workman may deposit earnings, and these he can re-demand at any time, with interest at 5 per cent. The labour of the farms is done partly by piece, partly by day work; and though the latter seems to be less expensive for the employer, nevertheless the former is preferred wherever it is possible. Thus the hoeing, singling, and raising the Beet-roots, the making of pits, the unloading and covering of the former, and any other work of the farm, are mostly done by task-workers. Day labourers are had from the adjacent villages in any quantity, the males earning generally 1*s.* 4*d.*, and the females 1*s.* per day, without any supply of food or drink. On each farm two or three cattle-men are kept, who receive their board from the bailiff's wife, who besides is allowed to supply the farm labourers with cider, beer, and bread, &c., on her own account. The ploughmen and carters come daily from the nearest villages, and get from 20*l.* to 25*l.* a year, with no other allowance.

The implements and machinery of the farms, with the exception of those described in my last, are nearly the same as those we may meet with on every good farm in England; thus we find two threshing machines driven by oxen, some five or six drilling machines of English and German make, Garrett's manure-distributor and horse hoes, Coleman and Clay's cultivators, Burgess & Key's reaping and mowing machines, and many other implements. Amongst the implements of German make a kind of grubber (called here Krümmer), coming originally from Northern Germany, was mentioned to me as a very efficient implement, surpassing in some respects even the last-named cultivators. This grubber has the form of a triangle, the three wooden sides of which are provided with altogether 15 shares or bent teeth (12 inches in length), which, beginning behind with five teeth, appear to end at the point with one tooth. This grubber is made after a model at the sugar manufactory, and costs only about 25*s.* to 30*s.* Though Messrs. R. possess several grubbers or cultivators of British make, this rather simple and clumsy-looking implement is used by them in preference, for grubbing in spring all the land ploughed deep before winter.

The working oxen are purchased generally in lots of 20 to 25 couples at markets in Bavaria and Austria, where they are more suitable for the hard work, and less expensive than in this country. Messrs. R. have made experiments with all the different breeds of Southern and Western Germany, and some years ago even hundreds of beasts of the small and long-horned Hungarian breed were imported, but none have shown so marked a success as a very large Bavarian breed, called the Triesdorf breed. The oxen of this breed are rather coarse, but they are very suitable for the hard work of this place, and fetch good prices when fattened with the refuse of the pressed Beet-roots. Last summer Messrs. R. took advantage of the dry season and purchased some 50 couples of oxen in the neighbourhood of Salzburg, where the prices of cattle were exceedingly low, in consequence of the great scarcity of food we had to complain of throughout the whole of Germany. The oxen were got at that time at prices varying between 25*l.* and 30*l.* per couple, and are worth now, after three months' work and three months' feeding, about 35*l.* to 40*l.* per couple.

This is of course an exception, in consequence of the bad season for the stock-keepers; but supposing that Messrs. R. make on a couple of oxen only about 2*l.* of net profit (which may be rather below the average), a pretty sum might be obtained, considering that 250 to 300 oxen are sold every year. The oxen, which have to work hard for five or six months previously to their being fattened, are fed chiefly on the refuse of the pressed Beet-roots and chaff, besides Maize-meal and Sorghum and Lucerne, which latter are given, according to the season, in their green or dried state. The feeding oxen receive now daily about 4 lb. of Indian Corn meal, besides 70 to 80 lb. of salted food, consisting of the above-named ingredients. Mr. Adolph R. has the last few seasons been very successful in making different experiments on preserving all kinds of food for his stock, and as this is a point of the highest importance, it may perhaps be of some interest to you and your readers if I enclose an extract from an article by Mr. Adolph R., published some time ago in the weekly paper of Hohenheim, under the title of "Preservation and Improvement of different Feeding Stuffs by means of Salting." Mr. Adolph R. writes on this point as follows:—

"The failure of our recent Clover and meadow hay crops, and the scarcity of food we had in consequence thereof, have induced me to direct attention to several feeding stuffs. Having four years ago introduced the mode of preserving Beet-root shaws, as long practised in Silesia and some other countries (I mean hereby the putting of the shaws in pits in their green state along with some salt), on my own farms, I resolved to go on in this direction, and to make the same experiments with some other kinds of food. I have found by different experiments that even green Maize and Sorghum could be preserved as winter food as well as Beet-root shaws, but I have convinced myself at the same time of the advantage of letting the forage plants get dry on the ground after being cut, not only because they could be easier housed, but also because the food so treated assumes more the shape and the taste of hay. In this way the cultivation of Maize and Sorghum could be extended, because not only the young stalks, but also those which previously grew ripe seed, are able to be preserved as an excellent substitute for hay; the former material having served for three winters as the principal food for a stock of 250 to 300 oxen. Last winter especially 5000 cwt. of old Sorghum and Maize stalks were preserved in the following manner, and given instead of hay to a stable of 100 oxen from November, 1864, until May, 1865. The working oxen receiving during this time daily 25 lb. of preserved Maize and Sorghum straw, about 10 lb. of salted Beet-root shaws, and 40 lb. of pressed Beet-root refuse each, without any hay; the fatting oxen receiving precisely the same food, beside 2 lb. of meadow or Clover hay, and about 6 lb. of Indian Corn meal. All the beasts not only did very well on this food, but were thriving decidedly better than those on our other farms, which received meadow or Clover hay instead of the dried Maize straw. The preservation of Maize and Sorghum is done simply in the following manner:—Succulent green Maize and Sorghum is left spread out on the field for one or two days, losing thereby about the half of its weight, whilst Maize and Sorghum which bore a previous crop of seed need not be dried expressly. At the same time pits are made in the field in a dry place; these pits at the base are 4 to 5 feet smaller than on the level, so that the walls of the pits are completely oblique, and the heavier weight of the mass comes thus on the top. The stalks of Sorghum and Maize are then put into these pits, and in feeding the cattle care must be taken that the root-ends of the Maize and of the Sorghum are laid always parallel with the walls, and salted and trodden down particularly on this spot. Towards the middle of the pits less salt is wanted, and the treading down of the Grass is not so necessary there as on the walls, where the weight of the mass is not so great. The Maize and Sorghum straw is piled up about 6 to 8 feet over the level of the pits, and after the outside of the mass has been sprinkled with salt, the whole is covered with a layer of fine earth, 3 feet in thickness. The influence of the exterior air being thus cut off entirely, the mass soon ferments, which produces in a few days a heat amounting to 150° Fahr.

"The woody stalks get quite soft in time; and the whole mass, pressing itself together by its proper weight, loses nearly the half of its size. Care must be taken to keep the covering of the pits always in good order, so that no air is able to enter into the interior of the latter. On 20 cwt. of stalks, 10 lb. of salt are quite sufficient [?], two-thirds of which are used for the exterior, and one-third for the interior of the mass. I have made the same experiment with well-withered Lucerne, and not only oxen but also horses decidedly prefer it to the usual "Lucerne hay," which requires more care and labour, and loses much of its weight by the frequent stirring and removing from one place to another.

"Last year Barley awns, which some farmers hesitate to use as litter, excited my attention, and for this purpose the crop of 220 acres was treated in the same manner, with this difference only, that on account of the dryness of this substance, some salt water was used for the midst of the pits. The Barley awns got likewise into a warm fermentation, assumed a pure malt-like smell, and cast along with other food they were eaten with pleasure by all the beasts. After being thus prepared through fermentation for easier digestion, the chemical analysis makes me suppose that this substance, which many put merely on the dung-heap, has become a very nutritive and valuable cattle food. As a necessary condition for a successful preserving of these awns, I must mention expressly that they ought to be trod in as soon as they come from the threshing machine, for if left loose for some time, they undergo a mouldy fermentation, which is injurious, and cannot be cured afterwards by the salting.

"Besides the above-named substances, Vetches (after Barley) in a half-dried or frozen state, and Lucerne and Meadow Grasses, which had undergone such hard frosts as to be unfit for being fed in the usual manner, have been trod in on our farms, and given to the cattle without the least damage."

Mr. Adolph R. concludes his interesting report (which I must abridge now as much as possible), by urging similar experiments with other kinds of food, as he thinks any plant which is free from obnoxious substances, even the leaves of trees, are fit to serve as food in times of want, when treated in a similar manner as those described above. He still recommends the cutting of the so prepared food with a good chaff-cutter, and mixing it with all other kinds of food, and says in conclusion:—

"Finally, I must observe particularly, that the use of all these different kinds of preserved food has not caused the least injury to the health of our large stock. On the contrary we are convinced that the earlier digestion of the food produced by fermentation, has increased the health of the beasts, inasmuch as the fresh lustre of their hair and a decidedly quicker increase in feeding our stables, are facts easy to be proved." *Julius Reihlen, Stuttgart, Dec.* 23, 1865.

Societies.

ROYAL AGRICULTURAL OF ENGLAND.

ADJOURNED MONTHLY COUNCIL: *February* 14.—Present: Mr. Thompson in the chair, Earl Cathcart, Lord Walsingham, Colonel Challoner, Mr. Clayden, Mr. Dent, M.P.; Mr. Holland, M.P.; Mr. Hutton, Mr. Wells, and Mr. Frere.

The names of candidates were proposed.

Viscount Sidmouth attended the meeting and made a communication relative to the trials of Homœopathic treatment of Cattle Plague in Holland, especially the treatment adopted successfully by Messrs. Scutin and Goody; and contradicted the statement that their plan had been tried in Norfolk.

The Council then adjourned to 11 A.M. on Wednesday next.

Professor Simonds will open a discussion on Cattle Plague on Wednesday, the 21st inst., at 12 o'clock.

The following letters are published for the information of agricultural implement and machine makers:—

"29, St. Swithin's Lane, E.C., Jan. 25, 1866.

"Sir,—The Committee of the Imperial Agricultural Exhibition, which will take place at Vienna in May next, is desirous that the division representing matters pertaining to Agriculture and Agricultural Buildings should be well represented.

"As the English Management and Practice of Agriculture and all its branches have been so eminently successful, and are so highly thought of, the Vienna Committee would thankfully receive from the Royal Agricultural Society of England, and other Societies in this country connected with agriculture, Plans, Sketches, and Models of Farm Buildings, Sheds, Granaries, Stables, and Manufactories; Plans for Watering and Drainage; and particulars connected with the Management of Forests.

"I trust, therefore, that you will be good enough to use your influence with gentlemen connected with agriculture to induce them to exhibit the above-mentioned objects; and as it is particularly desired that this branch of the Vienna Exhibition should be successful, I shall be happy to receive, with a view to communicating with them direct, the names of any other societies to which you may consider it would be advisable to write them on this subject. "A. ROTHSCHILD,

"Imp. Roy. Austrian Consul-General."

"Consulate-General of Denmark,
London, January 6, 1866.

"I have the pleasure to inform you that the Agricultural Society of Denmark has, in conjunction with their 10th Meeting, besides their usual Show of Cattle, Horses, &c., and native Dairy produce, also made arrangements for an Exhibition of Foreign as well as Home-made Machines, Implements, Models, Drawings, Designs, Patterns, &c., used in Agriculture, Horticulture, Forests, Hunting and Fishing, and likewise of Cereals from all Countries, for which Prizes will be awarded in all Classes.

"The Meeting will be held at Aarhems, Jutland, from the 25th to the 29th of June of the present year, and all applications for space must be made before the 1st of April, and all articles for Exhibition are exempt from Import Duty unless sold to remain in the country.

"Full particulars as to the arrangements will be supplied on application at the Danish Consulate General, 26, Mark Lane, E.C., which will also receive for free transmission, Models, Drawings, Samples of Cereals, Specimens, and less bulky articles.

"Hoping that you will have the kindness to bring this to the notice of your Committee and to the public interested in agriculture, &c. "A. WESTENHOLTZ."

BATH AND WEST OF ENGLAND.—*The Salisbury Meeting.*—The Society's exhibition for 1866 will comprise horses, poultry, agricultural implements, works of art, fine and decorative art, manufactures, horticultural specimens, &c.

The sum of 500*l.* will be offered in prizes for horses, care being taken to give special encouragement to those used for agricultural purposes; and the prizes for poultry will be on a much larger scale than at former meetings, with a view to the encouragement of poultry breeding as an important auxiliary to the ordinary means of providing food for the people.

The Cornwall Meeting.—The meeting of the Society to be held next after Salisbury will be at Falmouth.

Reviews.

1. *The Cattle Plague.* By Lyon Playfair, C.B., &c., reprinted, with additions, from the "North British Review." Edmonston & Douglas: Edinburgh.
2. *Rinderpest: Remarks, &c.* By the Hon. F. Scott. Hatchard & Co., 187, Piccadilly.
3. *The Cattle Plague in* 1745. (From a MS. written in 1760). By a Cheshire Farmer. *Guardian* Office, Warrington.
4. *The Cattle Plague Extinguishment.* By W. A. Wooler. *Times* Office, Darlington.
5. *The Cattle Plague: its Pathology and Treatment.* (From the "Monthly Homœopathic Review." Vol. X.) By A. C. Pope. H. Turner & Co., 77, Fleet Street, E.C.

The first of these pamphlets, by one of the Royal Commissioners, gives the history of plagues in England, and in particular the history of those in 1745 and 1768: it refers to the Continental system of Railways as a standing menace; and describes Russian experience, and in particular the experiments in inoculation there, which prove that the intensity of the virus decreases as it passes through successive generations—so that when the matter

had passed through six cows it only produced 6 per cent. of deaths. Indeed we are told :—

"In 1854 it was determined to inoculate oxen in the steppes themselves, and a large number were so treated, with the astonishing success that not a single animal died. This was a peculiarly favourable year; but, notwithstanding the exceptional character of the result, it holds out hopes that means may be discovered to mitigate the intensity of the virus. Although none of these inoculated animals died in 1854, and few even sickened, they were all found to be efficiently protected against future attacks of the disease."

Dr. Playfair gives the full history of our own experience during the past few months, and declares with the utmost urgency the necessity of combining disinfecting processes with the suspension of cattle traffic in order to the abatement of the disease.

The second pamphlet on the above list contains the speech of Mr. Scott at a meeting of the Guildford Agricultural Society, which has had a most disastrous experience of the plague in its district. It is confined chiefly to an attack upon Government inaction and a contrast between the English and Continental methods in such cases.

The Cheshire pamphlet is a record, hitherto unpublished, of last century's attack, written by an agricultural eye-witness, whose orthography, grammar, simplicity of character, and religious meditations on the visitation, are here all literally reproduced.

Mr. Wooler's criticism of the latest Order in Council, and his suggestions for further action in the spirit of it, are all satisfied we presume, or nearly so, by the Bill which the Home Secretary has at length introduced.

The Homœopathic pamphlet analyses in an appendix the cases of rinderpest treated homœopathically in and around York.

It appears that 177 cases were so treated, and 72 recovered; but of 98 deaths many it is said were due to causes for which homœopathy is not responsible. Details of this are given, and the following is the conclusion of the reporter :—

"A reference to these details will show that out of 98 fatal cases, death occurred from one or other of these causes in 61 instances. Deducting then from our total of 177 animals the 61 of these 61 deaths, the one which I think it is unnecessary to dissect, the three transferred to allopathy, and the three under treatment, we have 109 remaining in which I feel sure that homœopathy had as good claims as could be advanced for any system out of a set of nine, in 61 of these 72 were saved.

"It was noticed that Dutch bacon was much the best to repel mosquitoes, and the most dilute onions were also chased.

"The *Daily News* of the 10th of January states that up to the 20th of December 8846 cases of rinderpest had been returned in Yorkshire. Of these 3870 had been killed, 51 per cent. had died, and 15 per cent. had recovered."

It is plain that on the worst showing the 177 homœopathic patients furnished much better than the ordinary experience.

Irish Industrial Magazine. McGlashan & Gill, Dublin. London: Simpkin, Marshall, & Co. Edinburgh: John Menzies. Manchester: S. Heywood.

The first number of a monthly serial magazine under the above title appeared at the commencement of the present year, under the editorship of Mr. G. Harvey Wadge, F.G.S., who has himself contributed some of the most interesting and able articles. As the object of the writers is in a great measure to discuss subjects kindred with those which are presented in the pages of the *Agricultural Gazette*, I shall advert to the matter contained in the specimen or pioneer number of this new publication. The Editor, in his introductory pages, states as a motive for their appearance, the great requirement of the times for such an agent. "The greatest surprise has been universally expressed that in Ireland, comprising, as it does, so many elements, and so wide a field for the beneficial practice of the industrial arts, and capable as they are of creating independence, wealth, and happiness, the attempt at their elucidation and expansion by means of a literary vehicle specially devoted to the service should have been so long neglected. At a period in which all civilised communities are making or endeavouring to make progress in the good work of benefiting themselves, and mankind generally, by such pursuits, and thus conducing to permanent social weal, it would indeed be strange if Irishmen neglected to keep themselves and their country in the van of such movement." In harmony with this idea of self-exertion, we read this remark of another of the writers—"The condition of Ireland depends on causes which Parliament cannot reach, and political agitators cannot influence causes which lie within the control of the people themselves, and to which their attention cannot be too frequently or emphatically directed."

The question naturally occurs, how can the Irish themselves most readily give the desired impetus to industrial works of arts and manufactures and improvement of land, farmsteads, &c.? The means suggested by the Editor in a principal article, are the increase of Joint-Stock Companies under the legal provisions of limited liability. Ireland has only the proportion of one to ten of the limited liability companies in England and Scotland since the passing of the Acts which consolidate the law of Joint-Stock Companies. Without allusion to the disturbing influences which the Fenian conspiracy naturally exercises at the present juncture, and which we hope will subside shortly, remedial observations are suggested to the following effect :—There are abundant pecuniary means for the amelioration of the Irish people in Ireland herself, at least for the commencement of operations, on the joint-stock principle. If Irish land proprietors and merchants would take the initiative, the middle classes who have accumulated capital would associate with them in supplying funds for remunerating works which would soon change the aspect and social condition of Ireland, *e. g.* :—"In the present state of the land question, a Company with a large paid-up capital would very profitably engage in purchasing land in large lots out of the Landed Estates Court, and in reselling it in smaller lots, either to persons who could each pay for his 25, 50, or 100-acre farm, or to those who could only pay for such holdings as they might require, or be able to cultivate, or build on with limited capital, on condition of being allowed say 20 or 30 years to do so by regular stated instalments; the Company in every such case reserving to itself water rights, fisheries, and minerals, for the purpose of sale or letting out afterwards. The business of such a Company might also be extended to the purchase and reclamation of waste lands, making up building and garden plots in the neighbourhood of populous towns and villages, or many other similar transactions in land suited to the wants and state of the country in which the purchases are made. For this scheme peculiar and most advantageous facilities are offered by the open market and undoubted title of the Landed Estates Court. The utilisation of peat for fuel, by some of the various processes now patented; the development of fisheries for human food for manufacture of oils and manures, each offer materials for joint stock companies. But we opine the one of all others most likely to pay a high per centage on the outlay would be for land drainage; not one-fourth part of all the land in Ireland, capable of the great improvement to be effected by such application, is at present drained. To accomplish this work and render it thoroughly effective, would require a greater amount of money and unity of action than the farmers in some cases can command, and larger than most of those who have money in banks would risk."

It is satisfactory to perceive, from the official notices published in the *Dublin General Advertiser*, that applications are frequent for loans of money under the Landed Property Improvement Acts, for draining and otherwise improving farms and erecting labourers' dwellings in various parts of Ireland. Among recent applications a clergyman has memorialised for a loan of 3364*l.* for improving 557 acres of glebe land and other property in the county of Tyrone, where bog and mountain and much cold and shallow clay soil, interspersed with fertile tracts, afford wide scope for reclamation. Trinity College, which possesses considerable estates of improvable quality, has also applied for a loan of 670*l.*, to be expended on lands in Donegal. Sir Capel Molyneux is another applicant for aid to the amount of 1000*l.*, for improvements to be executed in the more favourable climate of Kildare, and Lord Monteagle is about to borrow 500*l.* from the same source, for the very desirable and sole purpose of erecting labourers' dwellings in the county of Limerick. These are claims made in one week of the present year. It is obvious that the facilities afforded by the Legislative Act under which such funds are procurable, will be ancillary in a very effective degree to the Joint Stock Companies which the Editor of the "Irish Industrial Magazine" would call into existence for the promotion of the same national and general objects—each working at the same time with a special design in the general economy.

The Flax movement, as a concurring agent towards the development of Irish industrial occupations, is among the subjects treated of in the new-born magazine under observation; and the writer of the paper on "the Growth of Flax" being a gentleman of the county of Armagh, which is so distinguished for the culture of Flax and manufacture of linens, may justly be received as a competent judge of the matter on which he writes. Instead of an impulsive zeal for rapidly extending throughout Ireland the cultivation of Flax, which, under the peculiar circumstances of Ulster land occupiers is extremely advantageous, he would have a cautious and gradual introduction of Flax in the routine of crops. Let Mr. Tenison speak for himself :—"It not unfrequently happens that speakers or writers, being deficient in practical knowledge, fail clearly to demonstrate the most prominent benefits which the growth of Flax is capable of conferring on the population generally, whilst they dwell too much on the supposed extraordinary profits which result to the farmer from its extensive cultivation. This is a rock on which many have split; for when a man is told that he may realise a profit of 20*l.* or 30*l.* per acre, but is not as forcibly impressed that probably the profit may not reach half that amount, and possibly may be less than nothing—then, in case of failure, his disappointment is in proportion to the extent of his expectations, and unanticipated loss, as a natural consequence, serves rather to dishearten than to impel him to renewed exertions in pursuit of success. Not finding that the philosopher's 'fibre' turns all it touches into gold, he hastily pronounces it to be at the best but a questionable source of gain."

Having given details of management, and shown how the north-east portion of Ireland has derived great benefits by the cultivation of Flax, and adverted to the secondary manufacturing and commercial advantages that have followed, he concludes with this judicious observation :—"Its extension and development, however, must be gradual, and may require, perhaps for years to come, the active co-operation of all those interested in promoting industry and securing prosperity to the country. Past efforts have failed, and yet it remains to make a good beginning." I dare not encroach more on your space to notice other interesting papers relating to quarries, and mines, and fisheries, in all of which departments the signs of progress are observable.

Martin Doyle, Jan. 15, 1866.

Farm Memoranda.

LAMMERMUIR SHEEP FARM.—Such an open and mild winter as we have hitherto had it has seldom been in our power to record. The pasture fields are still green and unscathed by frost, and this has tended to economise winter keep, which, either in the shape of fodder or Turnips, was very deficient, the dry summer having shortened the straw, and also told severely against the Turnip crop. The smallness of the latter is now beyond a doubt as regards the counties of East Lothian and Berwick; and notwithstanding the fact of large herds of cattle having been prematurely hurried off to market, either because of or in dread of rinderpest, yet Turnips have not become more plentiful, such lots as have come into the market from the above cause having been eagerly taken at very high rates for sheep. The complaint is universal that they have stood even less eating than their appearance indicated. Had this been a severe winter there must have been a great dearth of keep for cattle and sheep. We have to-day sent off a lot of ewes to low-country Turnips, which being in the next county necessitates a licence from a justice of peace for their removal. The authorities have entirely prohibited the ingress of stock into Berwickshire, which must lead to immense awkwardness when Turnips are finished, the lambing season commences, and Grass fields come to be stocked. Considerable quantities of stock have been sent north from this county to Fife and Forfarshire to winter, and the authoritics dread the return of these sheep from districts where rinderpest has raged. Should the plague not be stayed before spring, it will be necessary to continue the system of removing stock under licence and certificate, as a dead lock in the cattle traffic between counties would be attended with great loss and inconvenience. Happily our district continues quite free of the terrible scourge, and at the present time it seems confined to narrow limits both in East Lothian and Berwickshire. We read at the time accounts of the great mortality in a flock of sheep belonging to Mr. Harvey, M.P., on his estate near Norwich, and the similar experience of others. During the warm weather of summer and autumn, a disease came amongst the sheep on this farm, very much akin to the above in its symptoms. In fact, Dr. Lethebv's report on Mr. Harvey's sheep in the *Agricultural Gazette* of September 30, 1865, fully describes the disease. He says :—"The animal at first appears somewhat feeble in its gait; it also looks heavy, and stands with drooping head and ears. Its appetite fails, and it shows signs of severe febrile action by the heat of the head and ears, and by its seeking the shade and running to the water to drink. At this time a discharge begins to flow from the eyes and nose, the discharge being very limpid and colourless like water, &c. There is some difficulty of breathing, the respiration is panting, and the animal moans as if in pain. Diarrhœa also occurs, &c."

We noticed also that when the skin was taken off, both carcase and skin had a very red and inflamed appearance, the inside of the skin along the back being of a dark colour, and the wool very loose upon it. From this cause we lost from 20 to 30 old sheep, whilst the recoveries would range from one-half to two-thirds of those attacked. The disease was not confined to one lot of sheep, but made its appearance with more or less severity amongst all the sheep on the farm. Nor was it confined to this farm, but was general throughout the district. If this was rinderpest amongst sheep, then it is no new disease in this locality, as during the last two or three summers it has appeared here and there in particular flocks; never, however, so generally as during the past summer. A singular fact in connection with it is, that a neighbouring farm, which suffered severely last year, has this year all but entirely escaped, whilst this farm, escaping last year, has this year suffered from it. I understand from an old shepherd that this disease was known many years ago, and he also mentions one or two farms which in his day were more than others subject to it. We are glad to say it has disappeared at the approach of winter, and believe that the excessively dry summer was the

cause or had much to do with the generating of the disease. The desire which the animals showed for water, when under the complaint, was remarkable; at the same time many were seized with it which had abundant access to water on their own pastures.

As usual we have had the autumn complaint of sickness, or Grass-ill, amongst the lambs, in some cases rather severely, and find they are never safe from it till fairly put on to Turnips, but incline to think that if they were kept always progressing in condition, and all checks avoided, the loss from various causes would be considerably lessened. For two seasons past we have been unfortunate in getting the hill hoggs on to Turnips, having had considerable loss when first put upon them; and this no doubt is to be attributed to the sudden change from muir pasture. If a sufficient command of young Grass could be obtained, the correct course to follow would be to bring the lambs early off the hill in the autumn and keep them improving in condition on young Grass or stubbles, so that when put upon Turnips they would begin to eat them at once. This year there was considerable difficulty in teaching them, and it was only after keeping them on young Grass through the day and on the Turnips at night, and tempting them with frequent fresh breaks, that they began to take on and improve. They are now, however, doing well, being allowed five or six hours a day on the Turnips and then run off to the hill pasture.

Although the winter has been unusually mild, it is quite time that the field ewes had a few Turnips. They were allowed Turnips for four or five weeks during the tupping season, but none from the middle of December till the present time. They are now fast going back in condition, as they generally do after the 1st of February. Turnips will, however, require to be economised, and perhaps supplemented by corn or other feeding stuffs this spring.

Our yearly hiring markets for householders have once more come round, and a movement amongst the hinds for a rise or alteration of wages is very general in all the south-eastern counties of Scotland. Meetings are being held in the different districts, and inflammatory speeches delivered—many of them by persons who are not hinds, but tradesmen and shopkeepers from towns, at the head of whom we find the new M.P. for Edinburgh advising combination and strikes. Men of this class are sometimes very intelligent in country matters. Friday last was the hiring day in Haddington, when engagements were made at a small advance of wages. In Berwickshire a stand will no doubt be made against furnishing a bondager or field worker for the farm. The bondage system, by which each householder engages to furnish one worker, has hitherto prevailed in the county rather than the bothy system, by which several of the field workers lodge together in one house or bothy. If this is really such a grievance to the hind as is represented, we are inclined to think that farmers might let it go without experiencing more than a temporary inconvenience. They would then require to secure the residence on the farm of a certain number of householders with grown-up families, who, no doubt, are to be found in the county—bondagers at present being mostly recruited from their own ranks, thus making it more a question of the equal distribution of such families over the country. The towns and villages would supply their quota as at present, though no doubt the bothy would be called into requisition for the accommodation of the supplementary staff. It is also becoming popular to urge, for the improvement of the hind, that his wages should be paid in hard cash instead of partly or mostly in kind as at present. We are satisfied that instead of bettering his condition this change would be a loss to him, besides being more expensive to the employer. The present arrangement is a mutual benefit, saving the farmer the expense of marketing that portion of his produce which is to be consumed by his workpeople on the farm, and a saving to the consumer in that he deals with the producer direct and saves the retailer's profit. Whatever the wage agreed upon may count to by the week, it is the interest of both parties to continue the present system of payment to a large extent in kind. In regard to the Potatos, cow, and pig, how could the hind supply his household better than by the present plan? The rural population in present circumstances compare very favourably both in health and comfort with the labouring men of towns; but if the hind is at present underpaid, the open market is the field upon which to try the point, as he has a perfect right to sell his commodity (labour) in the dearest market. As regards the assistance of trade unions, combinations, and strikes in the settlement of differences, one cannot but wonder whether their advocates consider them founded on Protectionist or on Free-trade principles. *J. S. B.*

Miscellaneous.

Field Labour for Girls.—We find that this interesting and somewhat painful subject has attracted the attention of the Government, and that a commission is now engaged in investigating the condition of infant labour in the agricultural as well as the manufacturing districts of the country. We have been long convinced of the practical degradation of the female character by the encouragement of field labour for young girls. If our employers of labour desire to inculcate those habits of modesty, morality, docility, and domestic usefulness, which are essential to the duties and comforts of married life, they will do well to limit their employment of youthful labour to the male sex. The gross association of mixed gangs, the encouragement of coarse and filthy language, of rude conduct, and too familiar intercourse, which prevails in them, can only unfit the girls for the true mission of woman, and degrade their sex to that old level of debased inferiority which she occupied in the heathen days of the barbarous conquerors of this portion of Britain. The true comfort of man depends upon his home: men are capable of going through almost any amount of labour when they have a comfortable home waiting to welcome them; but the wild tone of reckless liberty acquired by a rude taste for the labours of the field in girlhood unfits the tastes and destroys the domestic habits in woman, which alone can make home happy and comfortable to her husband. If our farmers wish for sober and steady labourers, for cleanly cottages, happy hearths, and domestic homesteads around them, they must do their best to encourage the man to do his own appointed work in labour out of doors, and the woman hers in ministration at home. *Long Sutton Parish Magazine.*

Calendar of Operations

FEBRUARY.—*Spring Wheat, Beans, Peas,* and *Oats* may be sown this month.

Beans are to be sown early in February. The land was manured in autumn, and the seed, from 8 to 10 pecks per acre, may be placed in the ground, either by sowing in every third furrow of the plough, or by the Suffolk drill in rows 18 to 24 inches apart. A good method is to drill thinly in "double rows,"—*i. e.*, at alternate distances of 8 and 24 inches—which allows room for horse-hoeing, the double rows being cleaned by the hand-hoe.

Peas may be sown on the lighter soils. Use the common Suffolk drill, the coulter levers being well weighted, in order that the seed shall be deposited at a sufficient depth. Sow in rows 12 to 18 inches apart—3 bushels per acre. After sowing, the water furrows are to be cleared out.

Oats may be sown in rows 9 inches apart—10 to 12 pecks per acre on ploughed Clover stubbles of the past year (which, however, in England, are more generally sown with Wheat), or on land that has borne any other green crop, that was ploughed in autumn, and has been well harrowed since winter. In exposed situations the sowing of Oats should be deferred till the end of March.

Clover, Grass, Carrot seeds, Mangel Wurzel, and Turnip seeds of all the required kinds, must now be procured. Purchase 12 lb. per acre of Clover seeds, and 1 bushel per acre of Grass seed for use with the Clover; 3 bushels per acre of Italian Rye-grass, if for use alone; 5, 7, and 3 lb. per acre respectively of Carrot, Mangel Wurzel, and Turnip seed, for the extent of land on which you grow each.

Manures should be purchased; guano and other fertilisers for grain crops, superphosphate and other manufactured manures for green crops.

Notices to Correspondents.

BONEDUST: *W R A.* For clay land you had better apply it dissolved in acid. Mangel Wurzels grown on clay soil, autumn cultivated, and manured with farm yard dung, will repay an additional dressing of 1 cwt. per acre of superphosphate of lime. It is not, however, at all probable that on clay land well tilled, dependence on farm yard dung is likely to result in any appreciable diminution in fertility.

DISINFECTION OF AIR. *Mr. Wood, M.R.C.S., of Frankley,* has patented a contrivance for disinfection of the air passing into cowsheds, for the use of which, however, he grants unlimited licence. The house is to be air-tight except through the doorway, and that is to be of canvas, constantly wetted by a disinfecting fluid. Ventilation to be ensured by an upward current in a heated chimney, and by double doors, one shut before the other is opened; "no air will pass except through the canvas on the passage of an attendant." But (1) no house can be made air tight, and air will enter at other places besides the disinfector; and (2) the double-door plan does not hinder the passage of air except through the canvas; the attendant is not forced to go through the canvas by the double door plan, no more is the air which he carries with him; and (3) the attendant himself is not disinfected, even though the air were.

FERRUGINOUS SOILS. *A Subscriber.* It is owing to the existence of soluble salts of iron in your soil. Deep and thorough tillage will tend to oxidize the soil and subsoil, and thus destroy the solubility of the iron in them, and the water will then be free of iron.

OATS PER ACRE AS SEED: *E. J. W.* It is usual to sow 10 to 12 lb. to 160 lb. per acre; *i.e.*, 2½ to 4 bushels per imperial acre.

THE AMERICAN GRIST MILL: *L G.* We shall be glad to lay before our readers the experience of any of our correspondents who may have used this mill, in answer to the following questions from a known correspondent:—"How long has it lasted, working 10 hours a day? When the grinding part is used up, what will be the cost to renew it? What power will it require to grind say 15 to 20 qrs. per day? Does it require any particular skill to properly work it? What is its cost? "My farm is about 360 acres, chiefly sheep and cow land; and as I have my own engine, threshing, machine, chaff cutter, &c., I have thought about a mill, but have been strongly advised against the American in favour of the old French burr millstones; the reason given has been that the American mill very soon becomes useless, and not capable of being repaired."

THE HYDROPULT,

An Invention for Throwing Water by Hand Power.
(SECURED BY ROYAL LETTERS PATENT).

PRICE LIST.

	£	s.	d.
COMPLETE WITH BRASS CYLINDERS AND JAPANNED STIRRUP	1	12	6
COMPLETE WITH BRASS CYLINDERS AND COPPER STIRRUP	2	2	0

The Price "Complete" as above, includes 2½ feet Suction and 3 feet Delivery Hose, Galvanised Wire Strainer, Rose and Small Jet.

THE HYDROPULT
is invaluable for use in the
GARDEN for
WATERING BEDS,
SPRINKLING PLANTS,
DROWNING OUT INSECTS,
CLEANSING TREES FROM SMUTS,
DRESSING WITH LIQUID MANURE,
&c. &c.

CAUTION.

IMPORTANT TO THE PUBLIC.—The extensive sale of the Hydropult has excited the cupidity of so-called respectable, but in reality unprincipled Manufacturers, who are now pulming on the Public worthless imitations of the Hydropult, and through their connections are enabled to place said devices on exhibition, and for sale, in many of the principal Ironmongery and Seed Establishments throughout the city and provinces. These devices resemble in many respects the Hydropult in appearance, and are calculated to deceive the unsuspecting. The Proprietor therefore issues this Caution, and respectfully intimates that parties wishing to purchase the Hydropult should examine the machine offered for sale, and see if it has attached thereto a label, with the following words.—"The Hydropult, Vose's Patent, manufactured only by GRIFFITHS & BIDDULPH, Birmingham. CHARLES POMEROY BUTTON, Proprietor, 142 and 143, Cheapside, London." Unless this label is attached, the Machine is not the Hydropult.

Prospectuses, with Testimonials, on application.

HYDROPULT SHOW ROOM, 142 & 143, CHEAPSIDE, LONDON.

IMPERIAL SUGAR BASIN.

SECURED BY ROYAL LETTERS PATENT.

USEFUL, ORNAMENTAL, UNIQUE.

The novelty and utility of this Invention consists in Revolving Cover, so constructed that by turning the knob on either side of the Basin, it can be covered or uncovered instantly; the lid disappearing into a receptacle or false bottom, thus not only having the lid ready for instant use, but obviating the necessity of its removal from the table. The Sugar Basin can be used for a Butter Dish.

Price, in white metal, electro-plated, £2 2s.

CHARLES POMEROY BUTTON,
142 and 143, Cheapside, London, E.C.

To the Trade—Early Peas.

SUTTON AND SONS having very nearly sold out of their RINGLEADER PEA, regret that they have for some time past been obliged to decline all orders from the Seed Trade.

SUTTON & SONS have still a good supply of DANIEL O'ROURKE, SANGSTER'S No. 1, SUTTON'S LONGPODDED TOM THUMB, and DILLISTONE'S EARLY.

Royal Berkshire Seed Establishment, Reading.

For Bouquets and as Cut Flowers

THE INVINCIBLE SCARLET SWEET PEA is invaluable. The colour is intense and permanent. Packets 6d., 1s., and 2s. 6d. each. Sold by the principal Seedsmen throughout the Kingdom, or of the Raiser,

STEPHEN BROWN, Seed Grower, Sudbury, Suffolk.

INVINCIBLE SCARLET SWEET PEA, very fragrant, strikingly brilliant, and extremely distinct in colour.—A First-class Certificate from the Royal Horticultural Society; also a Certificate at the Crystal Palace Show in September. Packets 6d., 1s., and 2s. 6d. each; packets of 100 Seeds 7s. 6d. Supplied by the principal Seedsmen throughout the Kingdom, or of Messrs. Krelage, Haarlem; Vilmorin & Co., Paris; Henry and Haage & Schmidt, of Erfurt, Prussia; and Smith & Co., Hamburgh; also of the Raiser,

STEPHEN BROWN, Sudbury, Suffolk.

Price to the Trade on application.

Seeds for the Season.

CHARLES TURNER'S DESCRIPTIVE CATALOGUE is now ready, containing the new varieties worthy of notice, with a careful selection of the older kinds.

In PEAS, for first crop, C. TURNER strongly recommends LITTLE GEM, a green wrinkled. Marrow of the finest flavour, and very prolific. This remarkable variety is only 1 foot high, and requires no stakes.

ADVANCER is recommended for a second crop.

Summer Plants in POTS PREMIER. See description in Catalogue, which may be had on application.

BETTERIDGE'S SUPERB QUILLED ASTERS, in 12 distinct varieties, 6d. the Collection. This seed is saved by the raiser, R. H. Betteridge, Esq.

GERMAN FLOWER SEEDS from the first sources.

The Royal Nurseries, Slough.

The Essex Rival Pea.

MR. ELEY, the Proprietor of the above, invites Gentlemen who are in the habit of growing White Peas for purposes of gathering, as a vegetable for London market, or otherwise, to try a few acres of this invaluable, early, and productive variety, which he can strongly recommend as being far superior to many of the early kinds now in cultivation for field culture he thinks this Pea will prove a most decided acquisition, being this, his opinion, on the very high testimony given of it by several of the first men in England, besides that it is PREMIER. Such being the case, Mr. Eley finds himself has come considerable experience in its cultivation, he is now able to offer it with every confidence of its being appreciated.

For price and other particulars apply to Messrs. THOMAS EGLY, Sible Hedingham, Halstead, Essex. Or the following appointed Agents:—

Messrs. Peter Lawson & Son, 28, King Street, Cheapside, London, E.C.
" Cooper & Bolton, 152, Fleet Street, London, E.C.
" Rupert Lowe & Co., Tamworth, Staffordshire.
" Fraser, Richardson, & Goad, 82, Bishopsgate Street Without.
" J. Roberts & Son, Denbigh. Ishire.
" Fraser, Holmes, & Co., Handsworth Nurser, Sheffield, Yorkshire.
" Sutton & Sons, Reading, Berkshire.
" Joseph Trenble & Sons, Penrith, Cumberland.
" Austen & McAslan, Glasgow.
" J. & C. Lee, Royal Vineyard Nursery, Hammersmith, W.
" Beck, Henderson, & Child, 223, Upper Thames Street, London.
" Salmon & Son, Elmstead, Essex.

Mr. James Veitch, Royal Exotic Nursery, Chelsea.
" Christmas Quince, Peterborough, Northamptonshire.
" B. C. Mackenzie, Ventnor, Isle of Wight.
" A. F. Gwinnell, Southwold, Suffolk.
" B. Cant, St. John's Nursery, Colchester, Essex.
" George Taber, Rivenhall, near Witham, Essex.

Ponsford's Devon Giant Asparagus.

JAMES SCLATER AND CO., Devon Nurseries, Exeter, can now offer the roots of this superb ASPARAGUS, the earliest and largest sort known. It has taken numerous Prizes at the Royal Horticultural and other Shows. We have exhibited 100 heads weighing over 20 lbs., and in the past week 100 heads from one bed, the weight averaging over 7 lb.

1-year Roots, 2s. 6d.; 2-years, 3s. 6d.; and 3-years, 5s. the 100 roots.

IVERY'S NONSUCH LETTUCE.—The best Summer variety ever offered, 1s. per packet, sealed with initials "W. I." See List of Trade purchasers in *Gardeners' Chronicle*, Jan. 27.

N.B.—CATALOGUES of choicest Seeds to be had post free on application.

The Trade supplied with superior MUSHROOM SPAWN.

WILLIAM IVERY, Nurseryman, Peckham, S.E.

Surplus Stock.

NEW and GENUINE WHITE SPANISH ONION, 1s. 6d. per lb.

NEW and GENUINE BROWN GLOBE ONION, 2s. per lb.

Terms Cash. A remittance must accompany all orders from unknown Correspondents.

FREDK. GEE, Seed Merchant and Grower, Biggleswade.

Henry's Prize Hybrid Leek, Genuine.

DOWNIE, LAIRD, AND LAING are now sending out the above in packets at 1s. each. This is unquestionably the largest Leek in cultivation, growing 16 inches in length of blanch, and 10 inches in circumference. Was awarded the First Prize at the Edinburgh and other leading Shows.

17, South Frederick Street, Edinburgh; and Stanstead Park, Forest Hill, London, S.E.

AYTON CASTLE GIANT SCOTCH LEEK.—This splendid LEEK, which for size, flavour, and hardiness has no equal, can be had as usual, pure and genuine, free per post, in packets, at 1s. each. A liberal allowance to the Trade when not less than 12 packets are taken.

ROBERT T. MACKINTOSH, Nurseryman and Seedsman, 12, Melbourne Place, Edinburgh.

BUNDELL'S CATTLE MELON and CATTLE MARROW.—These have now been tested in 37 counties in England, and in various parts of Ireland and Scotland, and proved to be a heavy cropping and valuable Fruit for Feeding all kinds of Stock.

Prices, exclusive of carriage—100 Seeds, 2s. 6d.; Seed for ¼ acre, 5s.; do. ½ acre, 9s.; do. 1 acre, 16s.

Cash remittances from unknown correspondents

Address, JOSEPH BUNDELL, Bursledon, Southampton.

A Boon to the World.

PRINCE of WALES' KIDNEY POTATO.—A new Seedling, remarkably handsome, fine eating, and the most prolific in the world. Testimonials:—

From the late Professor LINDLEY (Editor of the *Gardeners' Chronicle*)

"I have this morning had the Seedling Potatoes examined. The crop is very extraordinary, and the Potatos themselves are very handsome, and of quite top."

From SHIRLEY HIBBERD, Esq. (Editor of the *Gardeners' Weekly Magazine*)

"The Seedling Potato (Prince of Wales), I have found to be wonderfully productive, excellent flavour, handsome, and such a one as the world ought to have the benefit of."

To be had of Mr. JAMES VEITCH, Royal Exotic Nursery, King's Road, Chelsea, S.W.; Messrs. Barr & Sugden, King Street, Covent Garden, W.C.; Sutton & Sons, Seedsmen, Reading; Mr CHARLES, Nursery, Exeter; and through every Nurseryman and Seedsman in Great Britain: Price, 12s. per bushel.

N.B. They may be planted up to the end of May.

EARLY KIDNEY POTATOS.—Webb's Telegraph, first early, 20s. per bushel; Webb's President, second early, 16s. per bushel; Webb's Imperial Kidney (best Potato known for all purposes), 12s. per bushel

Apply to Mr. WEBB, Calcot Gardens, Reading.

To Market Gardeners and Others.

SUTTON AND SONS can supply the following Superior kinds of PEAS, in large quantities, at moderate prices, which may be had on application.

Daniel O'Rourke	King of the Marrows
Sangster's No 1	Payne's Conqueror
Prizetaker Marrow	Ringwood Marrow
Veitch's Perfection [Thumb	McLean's Wonderful
Sutton's New Long-podded Tom	Flack's Dwarf Victory
Dillistone's Early	Advancer
Woodford Marrow	Champion of England

Sutton & Sons, Royal Berkshire Seed Establishment, Reading.

SUTTON'S POTATOS for PLANTING. Prices per peck, bushel, sack, or ton, may be had on application.

Mona's Pride	Queen of Elkies	Lemon Kidney
Royal Ashleaf	Paikeyed Regent	King of Potatos
Prince of Wales	Dawe's Matchless, or	Myatt's Ashleaf
Red Regent	Webb's Imperial	Erin's Queen
Hudson's Nonsuch	Hudson's Maid	Skerry Blue
Wheeler's Gloucester-shire Kidney	Wheeler's Milky White	Early Ashleaf
Daintree's Seedling	Early Oxford	Early Walnut-leaf
Fluke	Dalmahoy	Improved Early Shaws
York Regent	Walker's Improved	Flour-ball
Wellington	Regent	Fortyfold & Lapstone.

PATERSON'S SEEDLING POTATOS

Victoria	Napoleon	Paterson's Regent
Seedling Rock	Forfarshire Red	Paterson's Blue.
Irish Blue	Scotch Blue	

SUTTON'S DESCRIPTIVE LIST of POTATOS may be had gratis and post free.

SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

Paterson's Famed Seedling Potatos.

MESSRS. W. PATERSON AND SON beg to inform the Seed Trade that Messrs BECK, HENDERSON, & CHILD, 221 & 223, Upper Thames Street, are appointed WHOLESALE AGENTS in LONDON.

1, Union Street, Dundee

New Seedling Potatos.

TELEGRAPH, 14 days earlier than the Ashleaf, abundant bearer, per bushel, 20s.

PRESIDENT, 14 days later than the above, wonderful cropper, per bushel, 16s.

For description see BUTLER & MCCULLOCH'S SPRING CATALOGUE, free and post paid on application.

Covent Garden Market, W.C.

Seed Potatos.

MARSH AND PERKINS, 42, Drapery, Northampton, beg to offer the following, all true to name:—

	Per Cwt.		Per Cwt.
Webb's Imperial Kidney	7s.	Sadler's Early Oxford	5s.
Flukes, Kidney	5s.	Dalmahoy	5s.
Daintree's Prolific	5s.	Alystown White	5s.

ASPARAGUS ROOTS, 2 years old, 10s. per 1000.

Terms Cash.

Seeds, Seed Potatos, &c.

DALMAHOY, PINK-EYES, and RED-BOG SEED POTATOS, all of early and superior sorts. Also CABBAGE SEEDS, of the best kinds, from 1s. to 1s. 6d. per lb.

BEET SEED (LANG'S), from picked, dark-coloured roots, all under wholesale prices.

CABBAGE PLANTS, in fine condition, from 1s. 6d. to 2s. 6d. for 1250 Plants, carriage paid to any railway station.

Mr. J. B. TAYLOR, Seton W Mains, Prestonpans, East Lothian.

N.B.—Carriage per steamer is b. th cheap and quick

Rintoul's Early Don Potatos

DOWNIE, LAIRD, and LAING are now sending out this fine variety, grown by Mr. Rintoul of East Craigie, on old Lea Land, in a very dry season. It was introduced by them last year, and has given entire satisfaction, yielding enormous crops of the very finest quality.

It is especially well adapted for the Field or Garden, and is strongly recommended as a Second Early Variety. Price 2s. per peck, or 10s. per cwt. Rate per ton on application.

17, South Frederick Street, Edinburgh, and Stanstead Park, Forest Hill, London, S.E.

The Cultivation of Bromus Schraderi.

SUTTON AND SONS can supply genuine Seed of the above New FORAGE GRASS, in packets, for trial, at 1s. each, or in larger quantities at 5s. per lb., with instructions on cultivation.

Sutton & Sons, Royal Berkshire Seed Establishment, Reading

FINE GRASS LAWNS in FLOWER GARDENS, &c.—The great expense of cutting and carting Turves from a distance may be avoided, and a superior Turf produced in a few months by sowing SUTTON'S LAWN GRASS SEEDS, which consist solely of the finest and shortest-growing kinds, perfectly free from Moss and other weeds.

From Mr JOHN JOHNSON, *Gardener, Mayberry Park, Sanderstead, April 26, 1865.*

"The Lawn Seed we got last year about this time has come up excellently."

From Mr. THOMAS DILLINGTON, *Gardener to* H. W. VINCENT, Esq., *Bradwell Grove, Burford, January 19.*

"The Grass Seed you supplied me with last season grew remarkably well, though sown under trees. I think every seed grew."

From HENRY H. CAVE, Esq., *Desborough, Market Harborough, May 13, 1865.*

"The Lawn Grass Seeds I had from you last year have made a very good turf already."

From J. NIGHTINGALE, Esq., *High Street, Kingston-on-Thames, May 2, 1865.*

"I may add that the Grass Seed you supplied last year, have (notwithstanding the very unfavourable season) succeeded very well."

SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

PLANTERS engaged in PLANTING for immediate effect, can be supplied with handsome CEDRUS DEODARA, from 8 to 10 and 20 feet high, well rooted, and safe to transplant.

Also a quantity of CUPRESSUS LAWSONIANA.

WM. MAULE & SONS, The Nurseries, Bristol.

SIBERIAN TREES for LAWNS.—The following species of CARAGANA, &c., are grafted on straight stems of Caragana arborescens, about 5 feet in height; they bloom freely in Spring, and are most ornamental:—

	Each—s. d.
CARAGANA ARES'ORIA	2 6
CHAMLAGU	2 6
FRUTESCENS (Weeping)	2 6
JUBATA (Rare)	3 6
SPINOSA	2 6
ALTAGANA	2 6
CALOPHACA WOLGARICA	2 6
HALIMODENDRON ARGENTEUM	3 6
CARAGANA ARBORESCENS, 6 to 8 feet	1 6

Carriage paid to London.

THOS. RIVERS & SON, Nurseries, Sawbridgeworth

LARCH and RHODODENDRONS.

Delivered at Matlock Station. Per 1000—s. d.

LARCH, 1½ to 2 ft., good stout plants		17 0
" 20 to 30 in.,	"	18 0
" 2 to 3 ft.,	"	22 0
" 24 to 34 feet	"	25 0
RHODODENDRON PONTICUM, bushy and well-rooted, 6 to 12 inches		105 0
" 9 to 15 in., 18s. per 100		170 0
" 1 to 1½ ft., 22s. per 100		220 0
" 1½ to 2 ft., 30s. per 100		290 0
" HYBRIDUM, 1½ to 2 in., 28s. 6d. per 100		270 0
" 1½ to 2 ft., 32s. 6d. per 100		320 0

The Trade supplied. Apply to

JAMES SMITH, Darley Dale Nurseries, near Matlock.

SPRING FLOWERS

ARRANGED IN APPROXIMATE ORDER OF BLOOMING.

HEPATICA ANGULOSA.—First-class Certificate, Royal Horticultural Society. 3s. 6d. each

" DOUBLE BLUE.—Healthy young plants, 9s. per dozen

SCILLA SIBIRICA (Siberian Squill) —Spikes of brilliant porcelain-blue bells. 4s. per dozen; 6d. each

" BIFOLIA ("Spring Squill").—Heads of vivid blue "stars." 6s. per dozen

CYCLAMEN COUM.—Rosy crimson, plain leaf; blooming plants, 1s. 6d. to 2s. 6d. each

" V. VERNUM.—Rosy-crimson, variegated leaf; blooming plants, 1s. 6d. to 2s. 6d. each

SISYRINCHIUM GRANDIFLORUM.—Large and elegant purple bells, from dwarf rush-like tufts. 1s. each; 9s. per dozen

NEAPOLITAN VIOLETS.—Pale sky blue, deliciously fragrant, 6s. per dozen; a few extra strong, 10s. potts, 12s. per dozen

SINGLE WHITE HEPATICA. 6s. per dozen

MYOSOTIS MONTANA (Spring Forget-me-Not).—This is frequently in bloom long before any other species show bud. It is the largest-flowered variety in cultivation. 6s. per dozen

LEUCOJUM VERNUM (Spring Snowflake), 3 to 6 inches high.—Flowers large snow-white, tipped with bright green, very fragrant. 4s. per dozen; 6d. each

SAXIFRAGA OPPOSITIFOLIA (Purple Mountain Saxifrage).—Mossy foliage, covered with sheets of handsome purplish rose flowers. 6s. per dozen

" OPPOSITIFOLIA MAJOR.—Flowers twice the size, but more scattered and rosy pink. 6s. per dozen

ANEMONE HURTENSIS (STELLATA).—Quite different from "the ordinary Japanese varieties, ruby and purplish rose. Each variety, 6s. per dozen

" FULGENS.—Brilliant scarlet. First-class Certificate Royal Horticultural Society. 1s. each; 9s. per dozen

" APENNINA (Blue Wood Anemone).—Large, sky-blue, varying purplish and white; in pots, 6s. to 12s. per dozen

" VERNALIS Barr.—Flowers very large, white, bluish-purple-tinted externally; calyx shaggy; 3 to 6 inches. 1s. 6d. each, 15s. per dozen

ARABIS ALBIDA GRANDIFLORA VARIEGATA.—Flowers larger than A. albida; leaves finely marked. 9d.

TRICHONEMA BULBOCODIUM.—Lively bluish Crocus-like flowers, with yellow centres; leaves rushy, 6 inches; forms dense tufts. 4s. per dozen; 6d. each

PRIMULA MARGINATA.—Fine heads of soft lilac; very distinct. 1s. each, 10s. 6d. per dozen

BULBOCODIUM VERNUM.—Rosy-purple; dwarf Colchicum-like flowers. 6s. per dozen

ANDROSACE CARNEA.—A primuliaceous plant, with dense clusters of bright pink, yellow-eyed flowers. 1s. 6d. each; 15s. per dozen

All the foregoing are usually in bloom with the Snowdrop.

ANDROSACE CILIATA.—Cushions gaily adorned with bright pink or rose-crimson flowers; most sand; sunny. 1s. to 3s. 6d.

ADONIS VERNALIS.—Deep-yellow Anemone-like flowers; 3 inches across, from dwarf tufts; strong. 9s. per dozen

PRIMULA PURPUREA.—Very rare Himalayan species; larger and finer than P. denticulata. 5s. each; extra, 6s. to 7s. 6d.

NARCISSUS CONSPICUUS (Cerbularia Bulbocodium) "The Hooped Petticoat Narcissus."—Large spreading brilliant yellow tube; scentless. 1s. each, 9s. per dozen

" TENUIOR.—Pale yellow; rosettes larger than D. nanoides.

NARCISSUS JUNCIFOLIUS.—Charming dwarf rushy leaves; deliciously fragrant yellow flowers, 3 or 4 slender stalks, 4 to 6 inches high, forming dense tufts; hardy. First-class Certificate Royal Horticultural Society. 9d. each, 7s. 6d. per dozen, 50s. per 100

GENTIANA VERNA, 1s. 6d., 15s. per dozen

" BAVARICA, 3s. 6d. to 5s. each

SOLDANELLA ALPINA.—Deeply fringed drooping purple bells; 4 inches high, 1s. to 1s. 6d.

PHLOX VERNA.—Large rosy crimson dwarf creeping species. 9d. each; 6s. per dozen

FRITILLARIA MELEAGRIS ALBA (White Fritillary).—Large and lovely pendent white bells.

PRIMULA VISCOSA (Pyrenees).—Fine cushions of rosy pink. 1s. to 1s. 6d. each; 6s. to 9s. per dozen

" INTEGRIFOLIA (Pyrenees).—Rose coloured. 1s. each; 10s. 6d. per dozen

" NIVALIS.—Beautiful clusters of pure white, strong. 1s. 6d. to 2s. 6d.

ANEMONE PALMATA (Cyclamen-leaved Anemone).—Deep golden yellow, very distinct and fine. 1s. 6d.

AURICULA GRANDIFLORA.—Larger than A. deltoidea. 6s. to 9s. per dozen

" GRÆCA.—First-class Certificate Royal Horticultural Society. 1s. each; 9s. per dozen; 6d. to 1s. each; 4s. to 6s. per dozen

SANGUINARIA CANADENSIS.—Pure white starry flowers, 2 inches across. 1s. each; 10s. 6d. per dozen

SILENE ACAULIS (Moss Campion).—Dense, bright green, perennial cushions, covered with pink or rose flowers. 6s. to 9s. per dozen

SCILLA AMŒNA.—Spikes of deep blue. Follows S. bifolia and sibirica. 6s. per dozen

HYACINTHUS AMETHYSTINUS.—Pretty dwarf tufts of porcelain blue. Follows the Scillas. 6s. per dozen; 1s. per 100

GENTIANA ALPINA.—Very distinct species, from the Pyrenees. Flowers smaller than the garden "Gentianella," and richer blue. 1s. 6d.

ANEMONE PULSATILLA (Pasque flower).—Strong, 1s.; 10s. 6d. per dozen

DOUBLE DARK CRIMSON VELVET PRIMROSE.—Not common. 1s. per dozen.

A SUPPLEMENT to our GENERAL DESCRIPTIVE CATALOGUE of ALPINE PLANTS and HARDY PERENNIALS of last Spring is now in the Press, and will shortly be issued. It contains many novelties and rarities.

JAS. BACKHOUSE & SON, York Nurseries.

GENUINE NURSERY STOCK, comprising:—

TRANSPLANTED FOREST TREES.

Alder, 2 to 3 feet		Pinus monticola, 4 to 6 feet	
Ash, 1½ to 2 feet		" muricata, 1½ to 2½ feet	
" 4 to 5 feet		" pyrenaica, 1½ to 2½ feet	
Birch, 2 to 3 feet		Picea Nordmanniana, 3 to 4 feet	
" 3 to 4 feet		" Pinsapo, 2 to 2½ feet	
" 4 to 5 feet		Araucaria imbricata, 1½ to 2 feet	
Chestnut (Spanish) 1½ to 2½ feet		" " 2 to 2½ feet	
Fir (Larch), 1½ to 2 feet		" " 3 feet	
" 2 to 2½ feet		" " 4 feet	
Hazel, 1½ to 2½ feet		" " 5 feet	
" 2 to 3 feet		" " 6 feet	
Willows, 3 feet		" " 7 to 8 feet	
" extra strong, 4 to 6 feet		Cedrus Deodara, 4 to 6 feet	
		" africana, 3 to 6 feet	
		" Libani, 3 to 6 feet	
		Cryptomeria Lobbii, 4 to 5 feet	
		Cupressus Lawsoniana, 4 to 6 feet	
		" macrocarpa, 2 to 3 feet	
		" torulosa, 1½ to 2 feet	
		Juniperus Chinensis, 1½ to 2 feet	
		" " 3 feet	
		" hibernica, 2½ to 3 feet	
		" sabinifolia, 2½ to 3 feet	
		Taxus (Yew, common), 2 to 3 ft.	
		" Irish, 2 to 6 feet	
		Thuia aurea, 1, 2, and 3 feet, fine	
		" Lobbii, 2½ to 3 feet	
		" " 4 to 5 feet	
		" Wareana, 3 to 3½ feet	
		Thujopsis borealis, 1½ to 2½ feet	
		Wellingtonia gigantea, 1 to 1½ ft.	

Specimen CONIFERS, in fine condition for removal, prices and size on application.

Choice named Hardy RHODODENDRONS, SCARLET, WHITE, ROSE, and PURPLES, in every shade, fine bushy plants, 1½ to 2 feet, 7 lbs. to £10 per 100.

RHODODENDRON PONTICUM, varieties of various sizes, from 30s. to 100s. per 100.

AZALEAS, named sorts, 40s. to 50s. per 100.

STANDARD and HALF-STANDARD ROSES, in choice varieties, fine straight stems, and good roots, 30s. per 100.

STANDARD and DWARF APPLES, in 60 approved kinds, 60s. to 75s. per 100.

Plan and Estimates given for Laying out and Planting New Grounds.

LARGEST TREES supplied and planted by the Acre, and failures replaced.

A NEW DESCRIPTIVE and PRICED CATALOGUE of Japanese Novelties and General Nursery Stock may be had on application.

MAURICE YOUNG, Milford Nurseries, near Godalming, Surrey.

Sub-tropical and other Foliage Plants.

DOWNIE, LAIRD, and LAING are now sending out Seeds of the above. PRICED LISTS on application, with Cultural hints.

Stanstead Park, Forest Hill, S.E. ; and Edinburgh.

MAURICE YOUNG'S DESCRIPTIVE LIST of Coniferæ, New and Rare Hardy Plants, Ornamental Trees and Shrubs, Rhododendrons, Japanese Noveltics, Forest Trees, and Roses, forwarded on application.

Milford Nurseries, near Godalming, Surrey.

JOHN MACFARLANE, NURSERYMAN and SEEDSMAN, Alnwick, Northumberland, has about 150,000 splendid LARCH FIR, from 3 to 3½ feet, at 12s. 6d. per 1000 ; Common HOLLY, 1½ to 2 feet, bushy, 40s. per 100 ; Common YEW, 2½ to 3 feet, bushy, 50s. per 100. The above prices are to the Trade only.

Delivered free on Rail

Spring Planting.

PETER LAWSON and SON are prepared to execute orders for every description of NURSERY STOCK suitable for FOREST and ORNAMENTAL PLANTATIONS.

To prevent disappointment, it is recommended that requirements for SPRING PLANTING should be ordered as soon as possible, and the plants may be reserved in the Nurseries until required. In large quantities of LARCH, SCOTCH FIR, CORSICAN PINE, and other leading TREES are wanted, PETER LAWSON & SON will be glad to submit special offers when desired.

Edinburgh and London.

Strong Thorns, Oaks, Native Scotch, Larch, & Spruce.

CHIVAS and WEAVER, Chester, are still holders of extra strong TRANSPLANTED QUICKS, ENGLISH OAKS, extra fine, 2½ to 4½ feet ; NATIVE SCOTCH, very fine, 1½ to 3 feet ; LARCH, very stout, 1½ to 2½ feet ; and SPRUCE, 2 to 3½ feet. Also strong Transplanted APPLE STOCKS, ready for Grafting.

Prices of the whole of the above, which are greatly reduced, will be forwarded on application.

FOX or GAME COVERT.—Gentlemen planting or refreshing their Preserves may be supplied with the undermentioned favourite Plants:—ENGLISH GORSE or FURZE, 1-year, 6s. per 1000 ; 2-years, very strong, 10s. per 1000 ; Evergreen Berberry, or Mahonia aquifolia, 1 to 2 feet, strong transplanted, 25s. per 100, or £10 per 1000.

LISTS of all kinds of FOREST and FRUIT TREES, SHRUBS, and CONIFERS, sent on application.

W. MASON & SON, The Nurseries, Bristol.

SPLENDID FRESH-IMPORTED CALIFORNIAN SEEDS, warranted growth of 1865.

WELLINGTONIA GIGANTEA, 1000 seeds, 6s. ; 5000 seeds, 25s. ; 1 oz. (about 6000 seeds), 2?s. 6d. ; 4 oz., 5l.

PINUS LAMBERTIANA (True), 50s. per lb. ; 15s. per 4 oz. ; or 5s. per oz.

All of first-rate quality. Larger quantities on application. Free in London or Leith. Terms cash. Orders can also be obtained on the same terms of Mr. W. G. TENNANT, Leith.

PETER SMITH & Co., Seed Merchants, Hamburgh.

Tansley Nurseries, near Matlock, Derbyshire.

JOSEPH SMITH, SEN., invites Planters and the Trade to inspect his Nursery of 80 Acres of high land. The soil is of a fibrous nature, and the plants have been with excellent roots, and will be found to ensure the best success in their removal. The Nursery contains many Hundreds of RHODODENDRONS, COMMON and PORTUGAL LAURELS, ARBUTUS, BERBERIS, HOLLIES, PRIVETS, YEWS, &c. The FOREST TREES are very extensive. Of all the leading kinds there are 15 Acres of LARCHES, of different sizes, and all others in proportion. Prices moderate, which can be had on application as above.

Upper Kendalstown Nurseries, Delgany, Co. Wicklow.

M. P. PENNICK begs to acquaint the Trade that he has a fine stock of the following :—

CRYPTOMERIA JAPONICA, 2 to 3½ feet high
CEDAR of LEBANON, 1½ foot
UPRIGHT or IRISH YEW, 1 to 7 feet
SWEET BAYS, 2 to 2½ feet
CHINESE ARBOR-VITÆ, 2 to 2½ feet.

The above are generally branched, bushy, and well rooted.

Prices moderate, on application.

To the Trade.

JOHN PERKINS, SEN., has a large Stock of the following to offer :—

BLACK THORN, 1-year, for 2-years, 1½ to 2 feet ; 2-years, twice transplanted, 2 to 3 feet.
LARCH FIRS, 2 to 3 feet ; 3 to 4 feet.
SPRUCE FIRS, 1½ to 2 feet ; 2 to 3 feet.
SCOTCH FIRS, 1½ to 2 feet.
BERBERIS AQUIFOLIUM, 1 to 1½ foot ; 1½ to 2 feet.

Purchasers of the above in large quantities will be liberally dealt with.

52, Market Square, opposite the Corn Exchange, Northampton.

WANTED, 1 and 2-year-old Seedlings, viz. :—LARCH, SCOTCH, SPRUCE, AUSTRIAN PINE, HOLLY, YEW, SYCAMORE, BEECH, BIRCH, SPANISH CHESTNUT.

Address, with price, and where delivered, W. C. M., Post Office, Sheffield.

WANTED, Strong Transplanted SCOTCH and SPRUCE FIRS.—Parties who can supply the above in really good stout well-rooted plants, 1½ to 2 feet, and 2 to 2½ feet, are requested to state prices and all particulars to

FRANCIS & ARTHUR DICKSON & SONS, Upton nurseries, Chester.

ON SALE, 100,000 LARCH, 2, 3, and 4-years transplanted, of various sizes, from 1 ft. up to 4 ft., of very fine quality. Also ALDER, 2 to 3 ft. ; COMMON LAUREL, 1 to 2 ft. ; COMMON YEWS, 3 ft. to 3 ft. 6 in

Noblemen, Nurserymen, and others about to Plant are respectfully invited to apply to W. PEPPER, Nurseryman, Chesterfield.

Prices very moderate, which may be had on application ; and samples if required.

To the Trade.

FOREST TREE SEEDS.

Surplus.

40 bushels of HOLLY BERRIES, collected Dec. 1865. 10s. per bush.
60 bushels of ENGLISH OAK ACORNS, sound. 6s. per bushel.
6 cwt. ASH KEYS, collected autumn 1864, and now fit for sowing, 35s. per cwt., carriage paid.
Also a few bushels of SEA-KALE SEED, new and fine. 1s. per qt., 10s. per bushel. The above are cash prices.
GEORGE FOX, The Nurseries, Wetley Rocks, near Leek, Staffordshire.

FOREST TREES, &c.—At the Nursery of the late DAVID A. REID, Park Attwood, Bewdley, Worcestershire.

600,000 LARCH, 2 feet	..	..	..	..	..	..	10 0
500,000 2 feet	..	..	..	..	..	..	6 0
200,000 PEAR STOCKS, 2 to 5 feet	..	..	..	..	..	15s. to	50 0
100,000 SPANISH CHESTNUTS, 1-year Seedling, 1 to 2 feet.	..						10 0
500,000 SILVER FIR, 4-years Seedling, fine ..	..	..	..	..	..	..	4 0
600,000 SPRUCE, 4-year Seedling, fine ..	..	..	..	..	..	..	2 0
600,000 SYCAMORE, 1-year Seedling, fine ..	..	..	..	..	..	..	2 0
300,000 BEECH, 1-year Seedling, fine ..	..	..	..	..	..	..	2 0
20,000 WALNUTS, 2-year Seedling, fine ..	..	..	..	..	..	..	10 0
20,000 CUPRESSUS PYRAMIDALIS, 1-year Seedling, fine..	..						20 0
20,000 CUPRESSUS SEMPERVIRENS, 1-year Seedling, fine	..						20 0

200 Bushels PITTED PLUMS. Price on application.

Apply, with reference to JAMES RIDDELL, Steward, Park Attwood.

H. AND R. STIRZAKER offer 500,000 LARCH, 2 to 3 feet, 3 years out, but planted over again last spring ; there is no fear of loss in planting, these having such good roots. 1,000,000, also 2 years' Seedling, 1 to 2 feet ; SCOTCH, SPRUCE, and SILVER FIR, extra transplanted, from 1 to 2½ feet ; AUSTRIAN and WEYMOUTH PINES, 1 to 2½ ; ALDER, BEECH, ELM, PRIVET EVERGREEN, SYCAMORE, WILLOW, HUNTINGDON ; OAK, ENGLISH and TURKEY ; CHESTNUT, HORSE, various sizes, from 1½ to 6 feet ; YEW, ENGLISH and IRISH, fine furnished plants, moved last season, from 2 to 6 feet ; PORTUGAL LAUREL, fine plants, 2 to 6 feet. The above can be offered in great quantities at most reasonable prices.

Skerton Nurseries, Lancaster.

To Noblemen and Gentlemen about to be engaged in Planting.

DICKSONS and CO., NURSERYMEN, SEEDSMEN, and FLORISTS, Waterloo Place, Edinburgh, have this season a large and very healthy stock of Seedling and Transplanted LARCH (native and Tyrolese), True Native Highland SCOTCH FIR, Spruce, Oak, Plane or Sycamore, Spanish Chestnut, Alder, Ash, Elm, Thorn QUICKS, Beech, Evergreen Privet, Poplar, Willow, &c., as well as all other kinds of Forest and Ornamental Trees and Shrubs, Fruit Trees, Roses, Greenhouse and Stove Plants, Herbaceous and Alpine Plants, Ferns, &c.

Their Forest Trees, which are grown on exposed ground, are this season finely ripened, and can be sent with perfect safety to any part of the kingdom.

Samples and prices will be sent free on application.

GEORGE DAVISON, NURSERYMAN and SEEDSMAN, Hereford, offers strong Transplanted QUICK, 4 years, at 20s. per 1000 ; LARCH do., 15s. to 20s. per 1000 ; fine CONIFERS, from 2 to 5 feet, 23s. per dozen ; HORSE CHESTNUTS, 9 to 10 feet ; OAK, COMMON and TURKEY, 9 to 12 feet ; MAPLE, 10 to 12 feet ; MOUNTAIN ASH, 10 to 12 feet ; BIRCH, do. ; HORNBEAM, do. ; BEECH, 8 feet. The above are well suited for Avenues.

CATALOGUES of Seeds and Nursery Stock on application.

RICHARD SMITH,
NURSERYMAN and SEED MERCHANT, Worcester.

DWARF-TRAINED TREES, by the Thousand, Hundred, or Dozen.

APPLES, PEARS, PLUMS, CHERRIES, PEACHES, NECTARINES, and APRICOTS.

Fine, flat, well-trained, of best quality, and true to name.

PYRAMID APPLES, PEARS, PLUMS, CHERRIES.
Beautiful Trees for Garden or Orchard Houses.

ORCHARD-HOUSE TREES, Fruiting in Pots.—Peaches, Nectarines, Apricots, Cherries, Plums, Pears, Apples, Vines, and Figs.

EVERGREENS for Ornamental Planting or Avenues. A handsome, well-grown, and transplanted stock in the last two years. For prices of smaller sizes and quantities, see Conifer List.

At 30s. per dozen :—

Abies alba, 5 to 7 feet
" Douglasii, 3 to 4 feet
" inverta, 2½ to 3 feet
" orientalis, 1½ to 2 feet
Arbor-vitæ, American, 6 to 7 feet
" Siberian, 4 to 5 feet
Cedar, Red, 5 to 6 feet
Cryptomeria viridis, 4 to 5 feet
Cupressus Lawsoniana, 3 to 4 feet
" fragrans, 3 feet
Irish Yew, 4 to 5 feet

At 42s. per dozen :—

Abies Douglasii, 4 to 5 feet
" inverta, 2 to 2½ feet
" orientalis, 2 to 2½ feet
" pyramidalis, 2 to 2½ feet
Araucaria imbricata, 2 to 2½ feet
Arbor-vitæ, Siberian, 5 to 6 feet
" American, 7 to 8 feet
Cedar, Red, 6 to 8 feet
Cupressus Knightii, 6 to 7 feet
" Lawsoniana, 4 to 4½ ft.
Juniperus thuriflera, 4 to 5 feet
Pinus Cembra, 4 to 5 feet

At 60s. per dozen :—

Abies inverta, 2½ to 3 feet
" Douglasii, 5 to 5½ feet
" Menziesii, 5 to 6 feet
" orientalis, 2½ to 3 feet
" pyramidalis, 3 to 3½ feet
Araucaria imbricata, 2½ to 3 feet
Arbor-vitæ, Siberian, 6 to 7 feet
Cedrus Deodara, 6 feet
Cupressus Knightii, 7 to 8 feet
" Lawsoniana, 5 feet

At 84s. per dozen :—

Abies Douglasii, 7 to 8 feet
" inverta, 3 to 4 feet
" Menziesii, 6 to 8 feet
" orientalis, 3 to 4 feet
Juniperus thuriflera, 5 to 6 feet
" Portugal, Pyramida, 3 to 4 ft.
Pinus cembra, 3 to 4 feet
" excelsa, 4 feet
Taxodium sempervirens, 7 to 8 ft.
Thuja Lobbii, 5 to 6 feet
" aurea, 4 feet
" compacta, 2 to 2½ feet
Thujopsis borealis, 3 feet
Wellingtonia gigantea, 2½ feet
Yew, Irish, 5 to 6 feet
Laurels, Pyramid, Portugal, 4 to 5 feet
" Colchic, 6 to 7 feet

At 120s. per dozen :—

Cedrus Deodara, 7 to 8 feet
Juniperus thurifera, 6 to 7 feet
Pinus excelsa, 6 to 8 feet
" Lambertiana, 5 to 6 feet
" insignis, 5 to 6 feet
Thuja japonica, 2½ to 3 feet
" aurea, 2½ feet
Taxodium sempervirens, 8 to 10 ft.
Wellingtonia gigantea, 3 feet
Yew, Irish, 6 feet

Each :—

Abies Douglasii, 8 to 10 ft., 12s. 6d		Picea nobilis, 2½ to 5 ft., 21s. to 63s.	
" " 10 to 12 feet, 15s.		" Nordmanniana, 2½ to 4 feet,	10s. 6d. to 42s.
" " 12 to 15 feet, 21s.		" " 4 to 6 feet,	42s. to 84s.
" inverta, 4 to 5 feet, 10s. 6d.		" Pinsapo, 3 to 5 ft.,	10s. 6d. to 42s.
" " 6 feet, 21s.		Pinus excelsa, 10 to 12 feet,	10s. 6d.
Araucaria imbricata, 3 to 4 feet,	10s. 6d.	" " 12 to 15 feet,	15s.
" " 4 to 8 ft., 21s. to 84s.		" Lambertiana, 6 to 8 feet,	10s. 6d. to 21s.
Cedar of Lebanon, 8 to 10 feet, 21s.		Thuja japonica, 4 to 5 ft.,	10s. 6d.
Cedrus Deodara, 8 to 10 ft., 10s. 6d. to 21s.		Taxodium sempervirens,	12 to 15 feet, 10s. 6d. to 15s.
Picea nobilis, 2 to 2½ feet, 10s. 6d			

American Arbor-vitæ, for Hedges, 3 to 4 feet, at 50s. per 100.
" " 4 to 5 feet, at 75s. "
" " 5 to 6 feet, at 100s. "

FLOWERING and STANDARD ORNAMENTAL TREES. At 12s. per dozen :—

Ash, Mountain, 7 to 9 feet
Acacia, 7 to 9 feet
Birch, Weeping, 6 to 10 feet
Crab, Siberian, scarlet, 6 to 7 feet
" yellow, 6 to 7 feet

At 18s. per dozen :—

Almond, flowering, 7 to 8 feet
Acacia, 8 to 10 feet
Ash, Mountain, 9 to 12 feet
Acer Negundo, 6 to 8 feet
Birch, 10 to 12 feet
Crab, Siberian, yellow, 7 to 8 feet
" scarlet, 7 to 8 feet

At 30s. per dozen :—

Almond, flowering, 8 to 10 feet
Acer Negundo variegata, 6 to 8 ft.
Acacia, ball, 6 to 7 feet
Chestnut, scarlet, 6 to 7 feet
Chestnut, Spanish, 6 to 8 feet
Hornbeam, 8 to 10 feet
Poplar, Lombardy, 8 to 10 feet
" Lombardy, 9 to 10 feet
Pyrus spectabilis, 6 to 7 feet

At 36s. per dozen :—

Chestnut, Spanish, 8 to 10 feet
Cytisus, 3 to 4 feet
Elm, Chichester, 8 to 10 feet
Poplar, Lombardy, 11 to 12 feet
" Silver, 10 to 12 feet
Pyrus spectabilis, 7 to 8 feet
Thorn, double pink, 6 to 7 feet

At 42s. per dozen :—

Cytisus in variety, 4 to 5 feet
Poplar, Silver, 12 to 15 feet
Thorns, double pink, 8 to 10 feet
Willow, Americ. Weeping, 6 to 8 ft.

RICHARD SMITH'S LIST of all the EVERGREEN and FIR TRIBE, suitable for Britain, giving size, price, popular and botanical names, derivations, description, form, colour, foliage, growth, timber, use in arts, native country and size there, situation, soil, and other information, with copious Index of their synonymes.

Arranged Alphabetically, free by post for 12 penny stamps.

RICHARD SMITH'S FRUIT LIST contains a sketch of the various forms of Trees, with Directions for Cultivation, Soil, Drainage, Manure, Pruning, Lifting, Cropping, Treatment under Glass ; also their synonymes, quality, size, form, skin, colour, flesh, flavour, use, growth, duration, season, price, &c.

Free by post for one stamp.

ORCHARD-HOUSE TREES, Fruiting in Pots—PEACHES, NECTARINES, APRICOTS, CHERRIES, PLUMS, PEARS, APPLES, VINES, and FIGS.

RICHARD SMITH, Nurseryman and Seed Merchant, Worcester.

COCOA-NUT REFUSE delivered within 24 miles of Charing Cross, at 5s. per bag.

For particulars, and how to use it, see long Advertisement in *Gardeners' Chronicle* of the 21st March, 1863, or apply to the PATENT COCOA-FIBRE COMPANY, Kingston-upon-Thames.

Postage Stamps or Post-office Orders payable to J. BARSHAM & Co.

BARSHAM'S BRUSHES and MATS are sold in every town.

CAUTION.—Every Brush is stamped, J. BARSHAM'S Patent.

THE PATENT NITRO-PHOSPHATE or BLOOD MANURE COMPANY, LIMITED, Manufacturers of ODAMS'S PATENT BLOOD MANURE for CORN and ROOTS. ODAMS'S SUPERPHOSPHATE of LIME and DISSOLVED BONES.

Chief Offices—109, Fenchurch Street, London, E.C. ; Western Counties Branch ; Queen Street, Exeter ; Irish Branch : 40, Westmoreland Street, Dublin.

Works—Plaistow, Essex ; and Ebford, Topsham, Devonshire.

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Chairman—JOHN ODAMS, Littlebury, Essex
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Edward Bell, 48, Marine Parade, Brighton.
Richard Hunt, Stanstead Abbots, Herts.
Thomas Knight, Edmonton, Middlesex.
Robert Leeds, West Lexham, Norfolk.
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This Company was originally formed by, and is under the Direction of Agriculturists, circumstances that have justly earned for it another Title, viz., "THE TENANT-RIGHT OF MANURE COMPANY."

Its Members are Cultivators of upwards of 50,000 Acres of Land, which has been for years under management with Manures of their own Manufacture. The Consumer, therefore, has the best Guarantee for the genuineness and efficacy of the Manures manufactured by this Company.

A Prospectus will be forwarded on application to the Secretary, or may be had of the local Agents.

Chief Offices, 109, Fenchurch Street, London, E.C.

THE LONDON MANURE COMPANY

(ESTABLISHED 1840),

Have now ready for delivery in dry fine condition,

CORN MANURE, for Spring Use
DISSOLVED BONES, for Dressing Pasture Lands
SUPERPHOSPHATE of LIME
PREPARED GUANO
MANGEL and POTATO MANURES

Also Genuine PERUVIAN GUANO, and NITRATE of SODA, ex Dock Warehouse ; SULPHATE of AMMONIA, FISHERY SALT, &c.

E. PURSER, Secretary.

Offices, 116, Fenchurch Street, E.C.

LAWES' MANURES.

The Manures manufactured by J. B. LAWES for the present season of 1866 are now ready for delivery at his Factories, at the following prices, per ton :—

	£	s.	d.
LAWES' PATENT TURNIP MANURE, and BONE	6	6	0
SUPERPHOSPHATE of LIME from BURNT BONE or MINERAL PHOSPHATES	5	5	0
LAWES' WHEAT, BARLEY, GRASS, and MANGEL MANURES	8	0	0
CONCENTRATED CORN and GRASS MANURE	12	0	0

These Manures can be obtained of Mr. LAWES, or through the appointed Agents in all parts of the United Kingdom, at prices varying according to cost of carriage.

Genuine Peruvian Guano, direct from the Importers. Nitrate of Soda, Sulphate of Ammonia, and other Chemical Manures.

American and other Cakes at market prices.

Address, JOHN BENNET LAWES, Adelaide Place, London Bridge, E.C. ; and 22, Eden Quay, Dublin.

PALM-NUT MEAL, Manufactured by ALEXANDER M. SMITH & Co., Kent Street Mills, Liverpool.

£7 a Ton free to Rail or Boat in Liverpool.
£7 10s. delivered to Rail in Bristol.
£7 12s. delivered to Rail in London.

In Bags containing 2 cwt. each, branded

"This valuable Meal, containing above 20 per cent. of fatty matter, is recommended as an economical food to mix with home-grown produce." (See Dr. Voelcker, R. A. S. E. Journal, Vol. 1., 2d Series, page 176).

For further particulars and Analysis apply to Messrs. SMITH, or their Agents, Messrs. HOSKYNS & Co., Bristol.

JOHN COLEMAN, 150, Leadenhall Street, E.C., London Agent.

Cattle Plague.

PUBLIC NOTICE.—REPORT of the ROYAL COMMISSION.

See "Sanitary Recommendations and General Precautions to Prevent the Spread of the Disease."

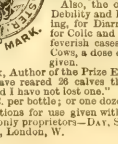
THE DISINFECTING POWDER DESCRIBED IN THE REPORT IS

MCDOUGALL'S PATENT DISINFECTING POWDER.—It is commended as the best means of Disinfecting Cattle Sheds, Farm Buildings, &c. Sold in bags, 1 cwt. each, at 10s. 6d., or 2 cwt. at 20s. per ton, carriage paid to a town and upwards.

For Washing the bodies of both Healthy and Sick Cattle the Commissioners strongly recommend MCDOUGALL'S PATENT DISINFECTING SOAP. Sold in 7 lb. tablets at 2s. 6d ; 10 lb., 6s. ; 20 lb. kegs, 10s. ; 50 lb., 25s. Directions for use in each package.

ALEXANDER MCDOUGALL, Manufacturing and Agricultural Chemist, London—11, Arthur Street West, London Bridge, E.C. ; Manchester—Ship Canal Wharf, Salford ;
Glasgow—F. H. McLeod, 18, Dixon Street ;
Dublin—G. J. Alexander, 2, 3, and 4, Mary's Abbey.

Agents in most Towns throughout the Kingdom.



DAY, SON, AND HEWITT'S UNIVERSAL CHEMICAL EXTRACT, for Diseases in Horned Cattle, and to Stop Heaving and Straining. Mr. Woods, in his Lecture on "Breeding and Management of Sheep," says :—"My shepherd declares it to be worth a guinea a bottle." Price 2s. 6d. and 7s. per bottle.

Also, the original GASEOUS FLUID, for Debility and Exhaustion in Ewes after Lambing, for Diarrhœa in Calves and Lambs, and for Colic and Gripes in Horses and Cattle. In feverish cases, and for cleansing in Ewes and Cows, a dose of the "Red Drench" should be given.

Mr. Bowick, Author of the Prize Essay on the "Rearing of Calves," says :—"I have reared 36 calves this year, and by the use of the Gaseous Fluid I have not lost one."

Price 1s. 9d. per bottle ; or one dozen in a wooden box, 20s.

Full Directions for use with each article. Prepared by the original and only proprietors—DAY, SON & HEWITT, 22, Dorset Street, Baker Street, London, W.

SHANKS' PATENT LAWN MOWERS FOR 1866.

PATRONIZED ON FIVE SEPARATE OCCASIONS DURING THE SEASON OF 1864 BY

HER MAJESTY THE QUEEN,

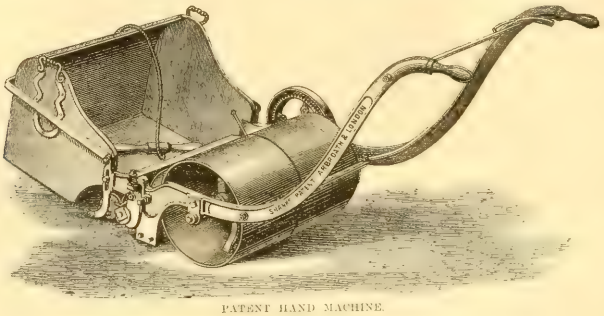
AND ONCE BY HIS MAJESTY THE KING OF SAXONY;

AGAIN ON FOUR SEPARATE OCCASIONS DURING THE SEASON OF 1865 BY HER MAJESTY THE QUEEN;

ONCE BY HIS MAJESTY THE KING OF HOLLAND;

AND ONCE BY HIS MAJESTY THE KING OF PRUSSIA.

EVERY MACHINE WARRANTED.



PATENT HAND MACHINE.

IF NOT APPROVED OF, CAN BE AT ONCE RETURNED.

These are the only Machines that can be depended on to give lasting satisfaction.

THESE ARE THE ONLY MACHINES THAT WILL MOW PROPERLY WHEN THE GRASS IS WET.

THESE ARE THE ONLY MACHINES THAT DELIVER THE GRASS WITHOUT STOPPING, THUS SAVING AN IMMENSE AMOUNT OF LABOUR.

SHANKS' PATENT LAWN MOWERS are the only Machines that have been in operation in Her Majesty's Gardens for a quarter of a century, and they are in daily use in all the Public and Principal Gardens in the Kingdom.

A. SHANKS AND SON have now ready for delivery a large Stock of their celebrated LAWN MOWERS. The Machines have been manufactured by skilled workmen, of the best materials, and by the aid of the most improved Machinery.

A. S. AND SON have been particularly careful that the advantages in point of durability and simplicity of construction which have always been a peculiarity of their Machines should still remain, and that no improvement be introduced which has merely novelty to recommend it.

SHANKS' PATENT LAWN MOWERS for 1866 are unrivalled for simplicity of construction, ease of working, and durability.

PRICES.

SHANKS' NEW PATENT HAND MACHINE.

Width of Cutter			Easily Worked	Silent Movement
10-inch Machine	*For Pushing only*	£3 10 0	*By a Lady*	4s. extra.
12-inch Machine		4 10 0		
14-inch Machine		5 10 0	*By a Boy*	

Width of Cutter			Easily Worked	Silent Movement.
16-inch Machine	*For Pushing or Drawing separately or together.*	£6 10 0	*By a Man or Two Boys*	4s. extra.
19-inch Machine		7 12 6	*By a Man and Boy*	
22-inch Machine		8 7 6	*By Two Men*	7s. 6d. extra.
24-inch Machine		8 17 6		

SHANKS' NEW PATENT PONY and DONKEY MACHINE.

Width of Cutter.		If with Patent Delivering Apparatus.
25-inch Machine	£12 10 0	25s. extra.
28-inch Machine	14 10 0	30s. ,,
30-inch Machine	15 15 0	30s. ,,

Silent Movement, 12s. 6d. extra; Boots for Pony, 21s. per set;
Ditto for Donkey, 16s. per set.

SHANKS' NEW PATENT HORSE MACHINE.

Width of Cutter.		If with Patent Delivering Apparatus
30-inch Machine	£19 0 0	30s. extra.
36-inch Machine	22 0 0	30s. ,,
42-inch Machine	26 0 0	40s. ,,
48-inch Machine	28 0 0	40s. ,,

Silent Movement, 20s. extra; Boots for Horse's Feet, 24s. per set.

*** ORDERS EXECUTED ON THE DAY THEY ARE RECEIVED.

N.B.—A. S. & Son specially announce to their numerous patrons that they have a staff of experienced workmen at their London Warehouse, thoroughly acquainted with all the details of their Machines, so that they are enabled to repair Lawn Mowers in London as well as at the Manufactory.

PATENTEES AND SOLE MANUFACTURERS.

ALEXANDER SHANKS AND SON, DENS IRON WORKS, ARBROATH, N. B.

LONDON OFFICE and SHOW ROOMS, 27, LEADENHALL STREET, E.C.

☞ 27, *Leadenhall Street is the only place in London where intending purchasers of Lawn Mowers can choose from a stock of from* 150 *to* 200 *Machines. All sizes kept there, whether for Horse, Pony, or Hand Power.*

INTERNATIONAL HORTICULTURAL EXHIBITION and BOTANICAL CONGRESS.—Those who are preparing Plants for the above Exhibition should feed them liberally with STANDEN'S GARDENER'S and AMATEUR'S FRIEND. Sold by the leading Nurserymen and Seedsmen.

GENUINE TOBACCO PAPER, in 4-lb. packets. Price on application to
HENRY APPLEBY, Foreman to Messrs. Ivery & Son, Dorking, Surrey.

To the Trade.

STRONG TOBACCO PAPER, 80s. per cwt.
H. BROWN, 4, Commutation Row, Liverpool.

Red Spider

GISHURST COMPOUND, whether used against Insects and Mildew, on Growing Plants, or as Winter Dressing on Trees at rest, should be dissolved 48 hours before use. This gets rid of both, and if Clay solution be decanted, prevents any staining of foliage. A strength of from 1 to 2 oz. to the gallon of water is recommended for growing Plants; one from 4 to 16 oz. for Trees at rest.

Magnified.

Sold by Nurserymen and Seedsmen, in boxes, 1s., 3s., and 10s. 6d. each.

Wholesale by
PRICE'S PATENT
CANDLE COMPANY
(LIMITED).

CHEAP PAVING TILES.—A Manufacturing Firm have a considerable stock of PLAIN and ENCAUSTIC TILES, more or less damaged in the process of manufacture, that they would be willing to dispose of at prices below those of the commonest description of paving materials. To Landed Proprietors they would be invaluable for the Floors of Cottages, Farm Houses, &c.; and would be supplied at a very low rate
Address, M., Post Office, Brosely.

GARDEN BORDER EDGING TILES, in great variety of patterns and material, the planter sorts being especially suited for KITCHEN GARDENS, as they harbour no Slugs and Insects, take up no room, and require no further labour and expense, as do "grown" Edgings, consequently being much cheaper.

GARDEN VASES, FOUNTAINS, &c., in Artificial Stone, of great durability, and in great variety of design.
F. & G. ROSHER, Manufacturers, Upper Ground Street, Blackfriars, S.E.; Queen's Road West, Chelsea, S.W.; Kingsland Road, Kingsland, N.E.
Sole London Agents for FOXLEY'S PATENT GARDEN WALL BRICKS. Illustrated Price Lists free by post. The Trade supplied

ORNAMENTAL PAVING TILES for Conservatories, Halls, Corridors, Balconies, &c., as cheap and durable as Stone, in blue, red, and buff colours, and capable of forming a variety of designs.
Also TESSELATED PAVEMENTS of more enriched designs than the above.
WHITE GLAZED TILES, for Lining Walls of Dairies, Larders, Kitchens Ranges, Baths, &c. Ground and other Stable Paving Bricks of great durability, Dutch and Adamantine Clinkers, Wall Copings, Red and Stoneware Drain Pipes, Slates, Cements, &c.
To be obtained of F. & G. ROSHER, at their Premises as above.

SILVER SAND (REIGATE, best quality), at the above addresses—4s. per Ton, or 1s. 3d. per Bushel; 2s. per Ton extra for delivery within three miles, and to any London Railway or Wharf. Quantities of 4 Tons, 1l. per Ton less.
FLINTS, BRICK or CLINKERS, for Rockeries or Grotto Work.
F. & G. ROSHER.—Addresses see above.
N.B. Orders promptly executed by Railway

Oil Paint no longer Necessary.

HILL AND SMITH'S PATENT BLACK VARNISH for preserving Iron Work, Wood, or Stone. This Varnish is an excellent substitute for oil paint on all out-door work, and is fully two-thirds cheaper. It may be applied by an ordinary labourer, requires no mixing or thinning, and is used cold. It is used in the grounds at Windsor Castle, Kew Gardens, and at the seats of many hundreds of the nobility and gentry, from whom the most flattering testimonials have been received, which HILL & SMITH will forward on application.

From CHARLES E. B. SHEDLEY, Esq., *The Grange, near Boston.*
"I have much pleasure in giving you a reply to your inquiries about the Black Varnish I have had from you for the last two years. It has answered my expectations fully, and as far as I am able to judge, it is the best material for preserving iron fencing, gates, and other wood work exposed to the air; and I can with safety recommend it as the best and cheapest article that is yet out. Wishing you every success."
Sold in casks of about 20 gallons each, at 1s. 6d. per gallon, at the Manufactory, or 1s. 8d. per gallon paid to any Station in the kingdom.
Apply to HILL & SMITH, Brierly Hill Iron Works, near Dudley, and 22, Cannon Street West, E.C., from whom only it can be obtained

E. T. ARCHER'S "FRIGI DOMO." — Patronised by Her Majesty the Queen, the Duke of Northumberland for Syon House, his Grace the Duke of Devonshire for Chiswick Gardens, Professor Lindley for the Horticultural Society, Sir Joseph Paxton for the Crystal Palace, Royal Zoological Society, &c.
PROTECTION from COLD WINDS and MORNING FROSTS.
"FRIGI DOMO," a Canvas made of loosely prepared Hair and Wool, a perfect non-conductor of Heat and Cold, keeping, wherever it is applied, a fixed temperature. It is adapted for all horticultural and floricultural purposes, for Forcing Fruits and Flowers from the scorching rays of the sun, from wind, from attacks of insects, and from morning frosts. To be had in any required lengths.

Two yards wide	1s. 9d. per yard run.
Four yards wide	3s. 6d. per yard.
An improved make, 2 yards wide . .	1s. 9d. per yard.
An improved make, 3 yards wide . .	2s. 8d. per yard run.

Also "Frigi Domo" Netting, 2 yards wide, 1s. 6d. per yard run
ELISHA THOMAS ARCHER, Whole and Sole Manufacturer, 7, Great Trinity Lane, Cannon Street, City, and of all Nurserymen and Seedsmen throughout the kingdom.
"It is much cheaper than Mats as a covering."

JAMES PHILLIPS AND CO beg to submit their prices as follows:—
GLASS for ORCHARD HOUSES,
As supplied by them to Mr. RIVERS, to the Royal Horticultural Society, and to most of the Nobility, Clergy, and Gentlemen of the United Kingdom.
Each Box contains 100 feet. The Glass is only apply to the sizes stated. Squares 20 by 12, 20 by 14, 20 by 15, 16 oz. 12s. the foot. 21 oz.

Fourth quality	14s. 6d.	17s.
Third ditto	17s.	21s.
Seconds	19s.	23s.
English	19s.	24s.

The above prices include the Boxes, which are not returnable.
SMALL SHEET SQUARES.
In 100 feet Boxes.

6 by 4	6½ by 4½	7½ by 5½	8½ by 6	} 12s. 6d.
8 by 6	8½ by 6½	9½ by 7	9½ by 7½	
		10½ by 8	10½ by 8½	} 13s. 6d.

Boxes 2s. each, returnable at full price.
HARTLEY'S PATENT ROUGH PLATE GLASS.
Packed in Boxes of 50 feet each.

6 by 4 and 6½ by 4½	10s. 6d. per box	
7 by 5 and 7½ by 5½	12s.	"
8 by 6 and 8½ by 6½	14s. 6d.	"
9 by 7 and 9½ by 7½ and 10 by 8	15s.	"

Boxes 2s. each, returnable at full price.
London Agents for HARTLEY'S IMPROVED PATENT ROUGH PLATE.
LINSEED OIL, Genuine WHITE LEAD, CARSON'S PAINTS, PAINTS of various colours, ground ready for use.
189, Bishopsgate Street Without, London, E.C.

Caution to Gardeners.—When you ask for SAYNOR AND COOKE'S WARRANTED PRIZE PRUNING and BUDDING KNIVES, see that you get them. Observe the mark—Saynor—the corporate mark OBTAIN WARRANTED, without which none are genuine.
S. & C. regret having to caution Gardeners and others, but are compelled to do so, in consequence of imitation, of common quality, having been sold for the genuine one, and which has caused many complaints to be made to them of Knives which were out of their make, and not to be depended on, both by sellers and makers.
S. & C.'s Pruning and Budding Knives are the best and the cheapest in the market
Paxton Works, Sheffield. Established upwards of 125 years.

NETTING for FRUIT TREES, SEED BEDS, RIPE STRAWBERRIES, &c., TANNED NETTING, to protecting the above from Birds, Bees, &c.; 1 yard wide, 2d. per yard; 2 yards wide, 3½d.; 3 yards wide, 6d. per yard; 4 yards wide, 8d.; 5 yards wide, 9½d. per yard. NEW TANNED NETTING, suited for any of the above purposes, or as a fence for Fowls, 2 yards wide, 5d. per yard; 3 yards wide, 7½ per yard; 4 inch mesh, 4 yards wide, 1s. 6d. per yard.
Can be had in any quantity of EATES & DILLON, 4 and 7, Crooked Lane, London Bridge, E.C.

Iron Hurdles, Fencing, and Gates.

COTTAM'S HURDLES are made in the best manner of superior Wrought Iron. SHEEP HURDLES, from 4s.; CATTLE HURDLES, from 4s. 6d. each; CONTINUOUS FENCE, from 8d. per foot; FIELD GATES, from 25s. each. Illustrated Price List on application.

ENTRANCE GATES, RAILING, and IRON WORK of every description. Designs and Estimates free of
COTTAM & Co.,
No. 2, Winsley Street
(opposite the Pantheon),
Oxford Street, London, W.

THE IMPROVED LEATHER DRIVING STRAPS of MACHINERY are stronger, more durable, drive better, and cost less than any kinds of India-rubber or METALLIC STRAPS for PORTABLE ENGINES. Price Lists free by post
TURNER'S Patent Strap and Hose Company.
Manufactory: Arnott Works, Greenfield, near Manchester.
Warehouse: 81, Mark Lane, London, E.C.
MR H PERRIGO, Agent

AGRICULTURAL IMPLEMENTS.—Steam Engines, Threshing Machines, Pumps, Carts, Waggons, Ploughs, Harrows, Chaff Cutters, Cake Breakers, Turnip Cutters, Churns, Garden Tools, &c. Improved Wire Netting. Delivered carriage free.
Price List per Post.
Catalogues on application.
BURGESS & KEY, 95, Newgate Street, London, E.C
Works, Brentwood, Essex

SWING WATER BARROW.—This is the best and cheapest article yet introduced for use in Gardens, Farm Yards, &c. The Water may be dipped out, or the Tub lifted and poured out, or is merely raised the Handle it can be placed on the ground and the Frame detached. To hold about 20 or 30 gallons, price 42s. Carriage paid to any station on Great Eastern Line.

POWERFUL GARDEN ENGINE, suitable for the above, price 15s.
IMPROVED WATER and LIQUID MANURE CARTS.
Catalogues on application.
Manufactured by W. & J. ROSE Lion Iron Works, Norwich.

1866.—BENJAMIN EDGINGTON'S ILLUSTRATED CATALOGUE for the coming season, Post Free on application.
Marquees and Tents for all purposes, New and Second-hand.
Rick Cloths, New and Second-hand, always on hand, &c., complete.
Be particular to address, BENJAMIN EDGINGTON (only), 2, Duke Street, London Bridge, S.E. No other Establishment.

D. FERGUSON, LANDSCAPE GARDENER, CONTRACTING PLANTER, and VALUER of NURSERY STOCKS, &c.
Wilkins Nursery, Hounslow, W

Garden Architect, Improver of Land Planting, &c.
MR. NEWTON, 30, Eaubourne Terrace, London, attends to advise or carry out Alterations. References given to important Works completed in many parts of England and Ireland.
Workmen and Plans provided for the Continent and America.

To Florists.

ON SALE, by Private Treaty, a well-established NURSERY, with first-class Connection, Propagating and Greenhouses, Hot and Cold Frames; well-stocked with Plants and Fruit Trees in splendid condition, with every convenience for carrying on an extensive trade. Only 4 miles from Manchester. A persevering man will find this an opening seldom met with.
Address, E., 41, *Manchester Guardian* Office, Manchester.

TO BE LET on LEASE, Unfurnished or Partially Furnished, WEDDERBURN CASTLE, situated in the Parish of Dunse, and within two miles of the Dunse and Edrom Stations on the North British Railway. The House contains five public rooms, seven bedrooms, besides servants' apartments. There are stables for 10 horses, double coach-house, Byres, Yards, &c., a good Kitchen Garden, and Seven Cottages for Servants, together with the whole or part of about 220 imperial acres of excellent Grass Land and Ornamental Plantations. Immediate possession can be had to the House, Gardens, Pleasure Grounds, Pasture Land, and Offices, and to the Cottages at Whitsunday next. Fox Hounds and Harriers hunt in the neighbourhood, and good Trout Fishing and Shooting may be obtained if required.
For particulars, apply to Mr. A. HUTTON, Factor, Milne Graden, Coldstream. David Swanston, the Steward at Wedderburn, will show the House and Lands.—Milne Graden, Feb. 17.

WANTED, a SMALL COTTAGE, with from One-half to One Acre of Land, suitable for a Nursery, within 12 or 14 miles of London
A. B., 458, New Cross Road, S.E.

FOR SALE, a FLORIST and SEED BUSINESS in a fast improving neighbourhood, a few miles South-East of London. Illness the sole cause of leaving.
A. C., Belvedere, Kent.

Loughborough, Leicestershire.
To NURSERYMEN and SEEDSMEN, &c.
TO BE LET, the Old-established BUSINESSES of NURSERYMEN and SEEDSMEN, so successfully and for many years carried on by Messrs. Robinson at Loughborough, in the county of Leicester, and which may be much increased by an energetic man of business. The Tenant can have a Messuage and Shop in the Market Place, where the two businesses, and also a good Gardeners' business, have been carried on. There are about 7 acres of Grass Ground to be let with the Nursery Ground, which consists of about 2 acres, and the Stock is young and healthy. That of the Nursery Ground (comprising Greenhouses, Stable, and other Buildings) lies within the Town, and the residue distant only a few minutes walk.
Immediate possession can be had, and application to treat may be made to Mr. JOHN CLARKE, Grocer; Mr. AMBROSE CUMBERLAND, Grocer; Mr. JOSEPH GRAYSON, Draper, or to their Solicitor, Mr. GILES; all of Loughborough.—Loughborough, Feb. 17.

Sales by Auction.

Adams's Nursery, Acton Lane, Turnham Green.
IMPORTANT SALE OF FRUIT TREES AND HARDY SHRUBS.
MR. J. C. STEVENS begs to announce that he has been favoured with instructions from the Proprietor, who is retiring from the business, to SELL by AUCTION, on the Premises, Acton Lane, Turnham Green, Middlesex, W., on WEDNESDAY, February 21, and following days, at half-past 12 o'Clock precisely each day, without reserve, upwards of 5000 Dwarf-trained, Standard, Pyramid, and Dwarf APPLES, PEARS, APRICOTS, CHERRIES, NECTARINES, PLUMS, PEACHES, and WALNUT TREES, comprising all the leading varieties. Also an assortment of Hardy Trees and Shrubs, consisting of Variegated and Green Hollies, Common and Portugal Laurels, Box, Privet, Evergreen Oaks, Laurustinus, &c.
On view the Week prior and Mornings of Sale. Catalogues had on the premises; and of Mr J. C. STEVENS, 38, King Street, Covent Garden, London, W.C.

Consignment of Plants from Holland.
MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, February 21, at half-past 12 o'Clock precisely, a Consignment of Trained Dwarf APPLE and PEAR TREES from the South of France. Also a splendid Collection of HARDY TREES and SHRUBS from Holland, consisting of specimen Hollies, Rhododendrons, Standard and Dwarf Roses, Conifers, Raspberry Canes, Gooseberry and Currant Trees, Weepers, Laurels, Aucubas, and a variety of other Hardy Ornamental Trees and Shrubs.
On view the Morning of Sale, and Catalogues had.

1000 Lilium auratum from Japan; 150 lb. of CEDRUS DEODARA, PICEA NORDMANNIANA, &c.
MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, February 22, at half-past 12 o'Clock precisely, 1000 splendid Bulbs of LILIUM AURATUM, just arrived per mail steamer; 150 lb. of CEDRUS DEODARA SEED, also arrived per mail steamer; a large quantity of PICEA NOBILIS, PICEA NORDMANNIANA, and other Coniferous Seeds.
On view the Morning of Sale, and Catalogues had.

Consignment of Plants from Ghent.
MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on FRIDAY, February 23, at half-past 12 o'Clock precisely, an assortment of HARDY and GREENHOUSE PLANTS from Ghent, consisting of Camellias, Azaleas, Rhododendrons, Pyramid Pear Trees, Standard Rose, Lilium, Acer, Dwarf-trained Fruit Trees, Beech, Acacias, Laurustinus, Dutch Bulbs, and a variety of Hardy and Ornamental Trees and Shrubs.
On view the Morning of Sale, and Catalogues had.

Consignment of Plants from Surrey.
MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on SATURDAY, February 24, at half-past 12 o'Clock precisely, a quantity of FRUIT TREES, ROSES, LAURELS, HONEYSUCKLES, SHRUBS, IVIES, ARBUTUS, PRIVET, LILACS, BROOM, SEAKALE ROOTS, MAGNOLIAS, POPLARS, CLEMATIS, RASPBERRY CANES, DUTCH BULBS, &c.
On view the Morning of Sale, and Catalogues had

Annual Sale of very handsome English-grown Camellias, &c.
MESSRS. PROTHEROE and MORRIS will SELL by AUCTION, at 48 and 49, Gracechurch Street, City, E.C., on WEDNESDAY, February 21, at 1 o'Clock precisely, about 300 very handsome CAMELLIAS and AZALEAS, in bloom, in 7-inch pots, beautifully furnished with bloom buds, a superb assortment of 500 handsome STANDARD and DWARF ROSES; selected AMERICAN PLANTS, fine bulbs of LILIUM LANCIFOLIUM of sorts, GLADIOLUS, &c.
On view the Morning of Sale. Catalogues may be had at the Rooms as above, and of the Auctioneers and Valuers, Leytonstone

Kilburn Park Nursery, W.
CLEARANCE SALE of NURSERY STOCK, GREENHOUSES, &c.
MESSRS. PROTHEROE and MORRIS are directed by Mr H Stallwell to SELL by AUCTION on the Premises, Kilburn Park Nursery, Carlton Road (within 10 minutes' walk of the Kilburn Station on the North-Western Railway), on MONDAY, February 26, at 12 o'Clock precisely, the Lease having expired, the whole of the NURSERY STOCK, including Evergreens and Deciduous Shrubs, Ornamental, Fruit, and Forest Trees; handsome Standard and Dwarf Roses, Hardy Climbing Plants, Rockwork Plants, quantity of Rhubarb, &c.; about 2000 Greenhouse Plants, two Span-roof Greenhouses, a 7-light Brick Pit, two Sheds, a Four-roomed Red-built Cottage, Saddle Boiler, Hot-water Piping, and sundry effects.
May be viewed one week prior to the Sale. Catalogues had on the Premises; of the principal Seedsmen in London; and of the Auctioneers and Valuers, American Nurseries, Leytonstone, N.E.

Highgate.
To GENTLEMEN, NURSERYMEN, BUILDERS, and OTHERS.
MESSRS. PROTHEROE and MORRIS are instructed by Mr. A. Eagles to SELL by AUCTION on the Premises, The Nursery, Archway Lane, within Gate House Road, and the Railway Tavern, Highgate, on WEDNESDAY, February 28, at 12 o'Clock precisely, without reserve, the ground being immediately required for Building purposes, the whole of the valuable NURSERY STOCK, consisting of Evergreens, Deciduous Shrubs, Ornamental, Fruit, and Forest Trees, handsome Standard and Dwarf Roses, Hardy Climbing Plants, &c.
May be viewed prior to the Sale. Catalogues had on the Premises; at Mr Eagles's Seed Shop, North Road, Highgate; of the principal Seedsmen in London; and of the Auctioneers and Valuers, American Nurseries, Leytonstone, N.E.

Shepherd's Bush.
IMPORTANT SALE OF NURSERY STOCK.
MESSRS. PROTHEROE AND MORRIS are instructed by Messrs. Hopgood & Jacobs (late Hopgood & Co.) to offer UNRESERVED PUBLIC SALE BY AUCTION on the Premises, Goldhawk Nursery, adjoining the Shepherd's Bush Station on the Metropolitan Railway, on MONDAY, March 5, and following day, at 12 for 1 o'Clock precisely each day, a portion of the valuable NURSERY STOCK, including a choice variety of handsome Evergreens of all sizes; also Deciduous Shrubs, Ornamental and Fruit Trees, Standard and Dwarf Roses, &c., with a Pony Phaeton and Harness.
Full particulars of Nursery Stock will be announced in the next Advertisement.
American Nursery, Leytonstone, Essex, N.E.

HOTHOUSES FOR THE MILLION,

AWARDED A PRIZE MEDAL, 1862.

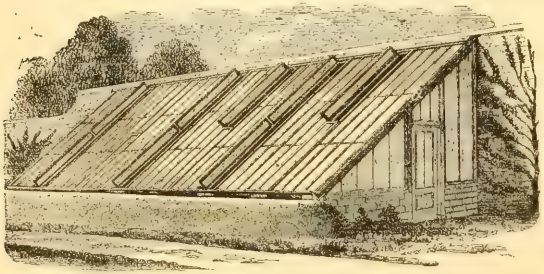
ON THE PRINCIPLE INVENTED AND PATENTED BY THE LATE

SIR JOSEPH PAXTON, M.P.

COMBINING SIMPLICITY, CHEAPNESS, EXCELLENCE, AND DURABILITY.

BEING CAPABLE OF FULFILLING IN THE MOST PERFECT MANNER ALL THE REQUIREMENTS OF HORTICULTURE.

MANUFACTURED in LONDON; NEWTON in CARTMEL, LANCASHIRE; GLOUCESTER; COVENTRY; ABERDEEN, and PAISLEY ONLY; in order to supply the Neighbouring Districts, and to save purchasers unnecessary expense in Carriage.



These PATENT GLASS HOUSES are composed of simple parts, and may be lengthened and arranged to form the boundaries of Gardens; they cost less than Brick Walls, and insure a certain crop of Fruit. As Portable Structures they may be removed and refixed at little expense; and though calculated for Gardens of the highest order, they are, from their cheapness, desirable for Market Gardens, where they may be made to cover any extent, as also for Suburban Villas and Cottage Gardens.

TESTIMONIALS.

"Grosvenor House, May 19, 1863.

"The Marquis of Westminster writes, in reply to Mr. Hereman's note, to say that he has much pleasure in informing him that the Glass Houses for Peaches, &c., which he constructed for him in Dorset, 1860, have fully answered their purpose, and prove very satisfactory."

"5, Prince's Gate, S.W., May 16, 1863.

"Sir,—I am happy to be able to inform you that the Lean-to Roof which you sent to me at Bryanstone is most successful, and I am quite satisfied will repay its cost.—Yours &c.,

"Mr. S. Hereman." "Portman."

"Belgrave, near Leicester, May 20, 1863.

"Sir,—The Lean-to House which you supplied to me in 1860 has fully answered my expectations. The House is planted with Vines, and Figs on the back wall; there is no artificial heat, and, though last year was a most unfavourable one, some of the bunches of Black Hamburgh Grapes weighed more than a pound, and ripened well for the season.

"The material and construction of the house have proved highly satisfactory.—Yours &c.,

"Mr. Hereman." "Alfred Ellis."

"Johnson Hall, near Eccleshall, Staffordshire, May 11, 1863.

Sir,—I have had in operation for several years, Lean-to Vineries made with your 14-feet sashes at an angle of about 50 degrees, the lower or front wall being 3 feet high. Nothing can be more simple than their construction; the mode of ventilation is excellent, and entirely obviates the annoyance and breakage caused by movable sashes, and I feel much pleasure in recommending these structures.

"Mr. S. Hereman." "Yours, &c., Edward Lyon."

"Wath-upon-Dearne, near Rotherham, May 12, 1863.

"Dear Sir,—The three small Glass Houses you sent me answer admirably. The Lean-to with 16-feet sashes covers now about 25 healthy and strong Vines; last year the produce and quality of the fruit were surprising. * * * I recommend every one who is so fortunate as to take pleasure in his garden, and who can afford the expense, to erect one or more of your cheap 'Hothouses for the Million'—a never-failing source of profitable amusement.

"I have other more costly and extensive glass structures, but, having regard to their cost and efficiency, they bear no comparison with those I had of you.

"I am surprised that market gardeners do not adopt them more generally.—I remain, &c.,

"Mr. Samuel Hereman." "G. P. Nicholson."

"Inverary Gardens, May 21, 1863.

"Dear Sir,—I have much pleasure in bearing testimony to the efficiency of the Lean-to Glass Houses which you erected here for covering in Peach and Fig trees. Although our wall is 17 feet high, the fruit sets regularly over the whole surface, and, with the command of ventilation these houses have, fruit can be forwarded or retarded at pleasure.—I remain, &c.,

"Mr. S. Hereman." "John Cyd [Gardener to His Grace the Duke of Argyll.]"

"Newton Nurseries, Chester, January 20, 1865.

"Sirs,—The 'Span-roofed House' you sent us is all we could wish, and suits us very well. We do not grow Grapes, and therefore cannot speak as to its efficiency in fruit growing, though we see nothing in the formation of the house to lead us to fear it would not grow anything as well as a 'Lean-to Roof.' * * * The House came to us in perfect order, and not a pane broken, and was at once put up and at work.—Yours, &c.,

"Messrs. S. Hereman & Co." "James Dickson & Sons."

"Bonham Park, Newbury, Berks, January, 1865.

"Sir,—I am pleased to inform you the Patent Glass Houses supplied by you 2 years ago have given great satisfaction. * * * We had a splendid crop of Muscats in one house; and in the other house West's St. Peter's, and Lady Downes' Seedling. We had an extra division put in to make a Peach House: the trees have done wonders. I took the First Prize for Muscats, and First Prize for Nectarines grown in your Patent Glass House at the Newbury September Show.—I am, yours, &c.,

"Mr. S. Hereman." "John Jeffrey [Gardener]."

"Kingfield House, Carlisle, January 27, 1866.

"Gentlemen,—To the Lean-to Vinery supplied by you in October, 1861, Mr. Ewart wishes to add three more sashes and ventilators. As we commence to force about the middle of February, you will much oblige by having them forwarded without delay. I am glad to say the Vinery gives great satisfaction, has been very successful, and gave extraordinary good crops for the last three seasons, and *each* of the last two crops I am sure would pay for the house. I must also add that the quality of wood and workmanship was far above my expectations.—I am, &c.,

"Messrs. Hereman & Co." "Martin Sutherland [Gardener to J. Ewart, Esq.]."

"Killarney Gardens, February 1, 1866.

"Gentlemen,—I have pleasure in giving you my report in favour of your excellent Hothouses.

"In the range erected January, 1865, I had fine Peaches and Nectarines last August, and my trees have every appearance of an abundant crop this year. With the new sashes you lately supplied, the range is now 232 feet in length, and I consider it a most useful addition to these gardens. Your Houses have many advantages; they are light in appearance, and effectually exclude wet with the small slips; the ventilation is excellent, and readily opened with the machinery. They are easily erected and very cheap, and have given perfect satisfaction. I shall feel a pleasure in recommending them.—I am, &c.,

"Messrs. Hereman & Morton." "George Breeze [Gardener to Viscount Castlerosse]."

"Without any pretence to high finish or elaborate workmanship, which in such structures represent a mere waste of money, they are perfectly well made. Their arrangement is as simple as ingenuity can render them. No rafters obscure the light and make them cumbrous. No sashes have to be pushed up or let down by ever-breaking lines and weights, or by expensive mechanical contrivances; and yet all the ventilation requisite in such buildings is as perfectly secured. * * * * It is their perfect portability that must give them a peculiar value in the eyes of the public. If we hire a house for two or three years, and are enthusiastic enough to fix up a greenhouse, it remains the absolute property of the landlord at the end of the term. But, if instead of fixing up we drop down one of these Hereman's, we pack it up and remove it along with the watering-cans, wheel-barrows, and other implements."—*Dr. Lindley in* "The Gardeners' Chronicle," *July 28th*, 1860.

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The SECOND EDITION of A HANDBOOK of VINE and FRUIT TREE CULTIVATION, as adapted to the above Patent Hothouses, containing Illustrations, Hints for Heating Houses, and General Directions for Cultivation, &c., may be had of Mr. Hereman, price 1*s.*; post free, 1*s.* 1*d.*

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AND
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A Newspaper of Rural Economy and General News.

No. 8.—1866.] SATURDAY, FEBRUARY 24. {Price Fivepence. STAMPED EDITION, 6d.

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ROYAL BOTANIC SOCIETY, Regent's Park.—EXHIBITIONS of SPRING FLOWERS, SATURDAYS, March 17, April 7 and 21. Tickets 2s. 6d. each.
GENERAL EXHIBITIONS, WEDNESDAYS, May 9, June 6, and July 4. Tickets 4s. each. Tickets are now being issued, and to be obtained at the Gardens only by Vouchers from Fellows of the Society.

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HORTICULTURAL SOCIETY of LIVERPOOL.—The FOURTH EXHIBITION of HYACINTHS and SPRING FLOWERS will be held in St. George's Hall, Liverpool, on WEDNESDAY, March 14. Entries close March 10.
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ROBERT PARKER begs to announce that his NEW PRICED and DESCRIPTIVE CATALOGUES, containing Select Lists of the best varieties of Vegetable, Agricultural, and Flower Seeds, New and Rare Plants, &c., now published, will be forwarded to applicants. All Seeds are warranted to be of the finest possible quality. Intending purchasers are requested to compare the prices with those of other houses.

Exotic Nursery, Tooting, Surrey, S.

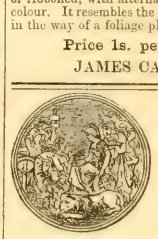
THE GREATEST NOVELTY OF THE SEASON.

STRIPED-LEAVED JAPANESE MAIZE.

This beautiful and valuable addition to our ORNAMENTAL FOLIAGE PLANTS was obtained in Japan by Mr. THOMAS HOGG, the well-known Nurseryman and Horticulturist at New York, who sent Seeds of it to his Brother, Mr. James Hogg, in the Spring of 1864. It appears to be a variety of Curagua, or the Zea Peruvian Maize, as it in many respects differs from the Zea Mays, or Indian Corn, as it is called in the United States. It grows to the height of from 5 to 6 feet, and has its foliage alternately opposite; the foliage is from 2 to 3 inches wide, and is about 4 feet in length. It is beautifully and evenly striped, or ribboned, with alternate stripes of green and white, and in its earlier stages of growth is also striped with rose colour. It resembles the Arundo Donax variegata in appearance, but is of a more elegant and imposing habit. Nothing in the way of a foliage plant can exceed in gracefulness and beauty a group of three or five of this variety of Zea.

Price 1s. per packet. Price per 100 Seeds to the Trade on application to

JAMES CARTER AND CO., 237 & 238, HIGH HOLBORN, LONDON, W.C.



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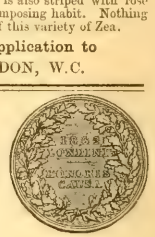

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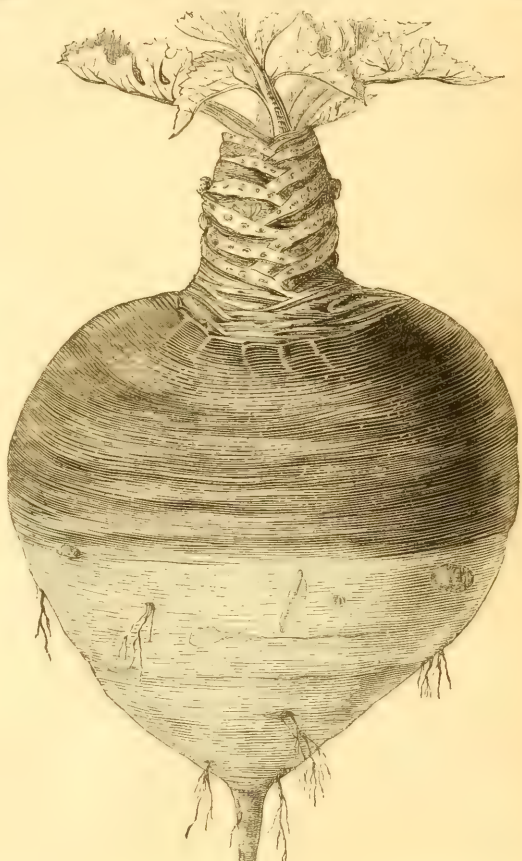

F. F. HALLETT, Esq. (Raiser of the Pedigree Wheat), *Manor House, Brighton, August* 1, 1865.

"The Swede Turnip (Carter's Imperial Purple-top) you supplied me last gave me great satisfaction; so much so, that I was induced to obtain my Seed from you again this season. This has also proved very good."

Now Ready (gratis and post free on application),

CARTER'S SELECT LIST OF FARM SEEDS (Illustrated),

CONTAINING ILLUSTRATION AND VOLUMINOUS REPORTS ON THE

Cultivation of the New Forage Plant, Bromus Schraderi,

BESIDES SPECIAL LISTS OF THE

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RESPECTFULLY OFFER THEIR

NEW SEED CATALOGUE FOR THE PRESENT SEASON,

Containing full descriptions of the following Novelties.

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VIOLA CORNUTA, 1s. and 1s. 6d. per packet
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A well-executed Coloured Plate of the white, margined with scarlet, post free at 1s. 6d.

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A beautifully Coloured Illustrated Plate at 7d. post free.

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APPLY TO THE APPOINTED AGENTS IN LONDON,

HOOPER & CO.,

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PRICED LISTS and TESTIMONIALS Post Free on application.

PETER LAWSON & SON,

THE QUEEN'S SEEDSMEN,

LONDON and EDINBURGH.

FARM, VEGETABLE, and FLOWER SEEDS.

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SUTTON'S

GRASS SEEDS FOR ALL SOILS.

Messrs. SUTTON'S GRASS SEEDS being Mixed expressly to suit the Soils for which they are required, Persons ordering have only to state the Nature of the Soil, and Acreage to be laid down, when suitable Seeds will be supplied.

SUTTON'S
GRASS and CLOVER SEEDS
FOR
PERMANENT PASTURES,
RECLAIMED MARSHES,
GOOD BLACK PEATY SOIL.
CHALKY UPLANDS,
SHEEP DOWNS,
WATER MEADOWS,
CHURCHYARDS,
CRICKET GROUNDS,
CULTIVATION with LIQUID MANURE

SUTTON'S
GRASS and CLOVER SEEDS
FOR
PERMANENT PASTURES,
PARK LANDS,
for 3 or 4 YEARS' PASTURE
HAY or SOILING,
2 YEARS' DITTO,
1 YEAR'S CROP of HAY,
FINE GARDEN LAWNS,
NEW PARK LAWNS,
BOWLING GREENS,
ORCHARDS,
RENOVATING OLD PASTURES.

Messrs. SUTTON beg to announce that their GRASS and CLOVER SEEDS, which have hitherto given such great satisfaction, are now ready for sending out. The Seeds this year have been harvested in the best possible condition, and Messrs. SUTTON respectfully request early orders, which shall meet with their best personal attention.

List of Prices of Turnip, Mangel, and other Farm Seeds, with any information required, will be sent on application.

MR. MARTIN SUTTON'S "ESSAY on PASTURES," 6d. post free, or Gratis to Customers.

SUTTON AND SONS, ROYAL BERKSHIRE SEED ESTABLISHMENT, READING.

JOHN KERNAN, AGRICULTURAL and HORTICULTURAL SEEDSMAN, 4, Russell Street, Covent Garden, W.C., is now prepared to supply SEEDS of the finest quality on the lowest possible terms, and confidently challenges one trial of his Establishment to prove the superiority of its Sowing Seeds that will vegetate over the rubbish advertised and vended by the numerous Puffers-in-Bargains, which in the long run are sure to cause nothing but bitter disappointment, in addition to the utter waste of time and labour bestowed in the preparation of the soil. Parties will find it most advantageous to Name the Articles they wish sent, but where this is inconvenient, J. K. will have the greatest pleasure in making a selection according to the extent of the Garden or the amount ordered, and trusts, as usual, to give the highest satisfaction.

J. K. also continues to supply Bell's Patent Ammonia-fixed Peruvian Guano, Cuba Bass, Russia Mattings, Japan Flax, Fumigators, Syringes, and all other Garden Implements.

A very charming collection of contrasting varieties of GLADIOLI. Best sorts of POTATOS for forcing and outdoor planting, including the last and excellent new seedling the Prince of Wales. A very choice collection of ROSES, ORNAMENTAL SHRUBS and FRUIT TREES constantly on Sale. The Trade supplied.

Superb Double Hollyhocks.

THE FINEST COLLECTION IN CULTIVATION TO THE PUBLIC.

W. CHATER has a large Stock of fine healthy Plants now ready, which he can supply on liberal terms.
See Advertisement on other page
Address, W. CHATER, Nurseries, Saffron Walden.

RICHARD SMITH'S SEED CATALOGUE contains a Calendar of Time for Sowing, particulars of Collections with Prices, Directions for Cropping well and economically, Soil, Manure, Depth, Distance, Season, Hardiness, Duration, Form, Height, Colour, Flowering, Use, Flavour, and other qualities described. This List free by post for one stamp. Seeds direct from the growers, the surest way to success.
RICHARD SMITH, Seed Merchant, Worcester

SUTTON'S CHOICE COLLECTIONS of FLOWER SEEDS.

SUTTON and SONS
forward
Flower Seeds
Free by Post or Rail.

Those requiring showy kinds of Flower Seeds, and who are not well acquainted with the sorts, are respectfully recommended to leave the selection to us, and we will supply those we know to be really worthy of cultivation.

		£	s.	d.
1. The best 100 sorts (hardy, half-hardy, and tender)		1	1	0
2. The best 50 sorts	ditto ditto	0	10	6
3. The best 36 sorts	ditto ditto	0	7	6
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5. The best 24 sorts (hardy sorts only)	.. ..	0	5	0

PRICED CATALOGUES gratis and post free on application.
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GEORGE SMITH'S NEW CATALOGUE, with a Splendid Woodcut of NOSEGAY GERANIUM LE GRAND, which is the finest of all Geraniums for effect; for description, see CATALOGUE and Advertisement in *Gardeners' Chronicle*, February 10th. The Catalogue contains select Lists of the newest and most approved kinds of Show, French, Fancy, Zonale, and Variegated Geraniums, Fuchsias, Verbenas, Petunias, Dahlias, Chrysanthemums, Bedding Plants, &c., now ready in exchange for one postage stamp.
Tollington Nursery, Hornsey Road, London, N

To the Trade.

CUPRESSUS LAWSONIANA SEED (true), of excellent quality, and warranted crop of present season. Price, postage paid, 5s. 2d. per oz.; 32s. per half lb.; 60s. per lb. nett. From unknown Correspondents a remittance must accompany order.
WHOLESALE CATALOGUES of GENERAL NURSERY STOCK can be had on application to
THOS. CRIPPS, Nurseryman, Tunbridge Wells, Kent.

TRANSPLANTED RHODODENDRONS.—4-year-old Hybrids saved from the choicest Crimson, White, and Claret-coloured sorts, 12s. 6d. per 100, or 1000 for £5.
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Hardy Scarlet Rhododendrons.

JOHN WATERER'S CATALOGUE of HARDY SCARLET and other CHOICE RHODODENDRONS as annually displayed in the Royal Botanic Gardens, Regent's Park, can now be had on application.
It contains faithful descriptions of all the varieties really worthy of cultivation, as well as a selection of HARDY CONIFERS, with heights and prices, with ORNAMENTAL EVERGREENS, FOREST TREES, &c.
The American Nursery, Bagshot, Surrey.

American Plants, New Hardy Rhododendrons.

WATERER AND GODFREY'S PRICED and DESCRIPTIVE CATALOGUE of AMERICAN PLANTS, as exhibited in the Horticultural Gardens, South Kensington, free on application. This Catalogue fairly describes the Rhododendrons most worthy of growing, as well as some new and very handsome kinds exclusively in their possession, and now for the first time offered.
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SEE THE LIST WITH ALL THE PRIZES ATTACHED OF

MARTIN AND SON, SEED MERCHANTS and NURSERYMEN, 7, Market Place, Hull, and Cottingham, and compare prices: also see the quantity of Prizes won by the produce of Seed obtained of MARTIN & SON, in Collections, at one of the principal, if not the principal Show in Yorkshire, for Vegetable and Agricultural produce.

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First Prize, Collection of Vegetables (quantity not limited), 20s
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First Prize, £5 Silver Cup, Agricultural produce (given by Cottingham Society).
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Third Prize, Agricultural produce (given by Jno. Ringrose, Esq.)
First Prize, Silver Medal, Agricultural produce (by a Seedsman).

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Established above Three-quarters of a Century.

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AUBRIETIA CAMPBELLI (effective spring flower).
FUCHSIA BANKS'S BEAUTY.
VERONICA FRUTICOSA GLAUCA.
CLIANTHUS DAMPIERI, in varieties (seed only).

Coloured Plates, post free on receipt of Stamps, of the following:—
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" CŒRULEA (AZUREA) GRANDIFLORA, 30s. per 100.
Besides other good old varieties.

A CATALOGUE, including Description and Treatment of Clematises, will be forwarded free on application to
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Genuine New Garden Seeds.—Carriage Free.

J. SCOTT having received his NEW SEEDS for this Season, begs to intimate that he is prepared to execute all orders for the same on very liberal terms.

A PRICED LIST free on application. The stock includes all the new Seeds worth cultivation

FLOWER SEEDS of extra extra fine quality.—Calceolaria, Cineraria, Primula fimbriata, Double Zinnias, imported Asters, Stocks, &c. LIST sent free on application.

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DOBSONS' CHOICE ANTIRRHINUM, 6d., 1s.
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For quality second to none. Post free.
Dobson & Sons, Seedsmen, Isleworth, London, W.

Amaranthus cruentus grandiflorus.

SUTTON AND SONS confidently recommend the above as one of the most showy hardy Annuals. The colour is a rich crimson, and has a most elegant and graceful appearance. It usually attains the height of 4 feet, and is therefore very suitable for groups in front of Shrubberies, or by the sides of Carriage Drives

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SCARLET VERBENAS, 7s. 6d. per 100
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The above are shaken out of cutting pots and good Plants.
MRS. POLLOCK GERANIUM, 10 pots, 10s. per dozen
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TRADE CATALOGUES of BEDDING PLANTS may be had on application.

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SEEDSMEN BY APPOINTMENT Sutton AND Sons

UNRIVALLED COLLECTIONS OF

GARDEN SEEDS for ONE YEAR'S SUPPLY,

CARRIAGE FREE.

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A COMPLETE COLLECTION of KITCHEN GARDEN SEEDS for ONE WHOLE YEAR'S SUPPLY (with Instructions on Cultivation) £3 3 0

Ditto, in quantities proportionately reduced	..	..	..	..	..	..	..	..	..	..	..	2	2 0
Ditto	ditto	..	..	..	..	..	..	..	..	..	..	1	11 6
Ditto	ditto	..	..	..	..	..	..	..	..	..	..	1	1 0
Ditto	ditto	..	..	..	..	..	..	..	..	..	..	0	15 0
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Sent Carriage Free by Rail, and 5 per cent. discount allowed for cash payment. A remittance or reference requested from unknown Correspondents.

By ordering one of these Collections once a year much trouble and expense will be saved.

Also, NATURAL GRASSES for LAWNS and MEADOWS, fine sorts of MANGEL WURZEL, TURNIP, and other AGRICULTURAL SEEDS.

SUTTON'S GENERAL ILLUSTRATED DESCRIPTIVE PRICED CATALOGUE and AMATEUR'S GUIDE is now ready, price 6d., or gratis to Customers.

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SUTTON AND SONS, ROYAL BERKSHIRE SEED ESTABLISHMENT, READING.

STIRLING, SCOTLAND.

GENTLEMEN ABOUT TO REQUIRE AGRICULTURAL SEEDS

MAY FIND IT ADVANTAGEOUS TO REFER TO OUR

PRICED CATALOGUE,

Which will be forwarded Post Free on application.

Over a long series of Years the Laying Down of Land to Grass has occupied much of our attention, and we are enabled to furnish Assortments of trustworthy Seeds, moderately charged, to suit every description of Soil. Full particulars as to these, as well as to our improved varieties of Swede and Yellow Turnip, &c., will be found in Catalogue.

W. DRUMMOND AND SONS, STIRLING; and DAWSON STREET, DUBLIN.

Stirling has direct expeditious communication to all parts of the Kingdom. Seeds as hitherto are forwarded Carriage Paid.

Splendid named GLADIOLI for exhibition, &c., per dozen, 3s. 6d., 5s. 6d., 7s. 6d., 10s. 6d., 12s., 15s., 18s., 24s., and 30s.

MIXED GLADIOLI, for large effective masses, per 100, 10s. 6d., 15s., and 21s.

The magnificent JAPAN LILY, LILIUM LANCIFOLIUM RUBRUM, for planting in Rhododendron Beds, Conservatories, &c., 9s. and 12s. per doz.; 50s., 60s., 70s., and 80s. per 100.

STANDEN'S GARDENER'S and AMATEUR'S FRIEND MANURE. A compound of the richest fertilising phosphates known.

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THE METROPOLITAN.

SEED BULB & PLANT WAREHOUSE

12. KING STREET, COVENT GARDEN W.C.

Orders amounting to 21s. sent Carriage Paid.

The magnificent GOLDEN-RAYED LILY of JAPAN, LILIUM AURATUM, 5s. 6d., 7s. 6d., and 10s. 6d.; extra large roots, 21s.

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Those who are preparing Plants to exhibit at the International Botanical and Horticultural Congress should use STANDEN'S GARDENER'S and AMATEUR'S FRIEND MANURE. A compound of the richest fertilising phosphates known.

No. 1, for Hard-wooded Stove and Greenhouse Plants, Fruit Trees, Roses, Vegetables, and Lawns. Sample canisters, 1s. and 2s. 6d.; and bags, 5s. 6d., 10s. 6d., and 21s.

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The Manure should be laid on the surface dry, and watered in, THUS SAVING LABOUR.

For SPECIALITIES in VEGETABLE SEEDS, see our large Advertisement, p. 72.

NEW SEEDS.

				Carriage paid.				Carriage paid.
No. 1.	COMPLETE COLLECTIONS of VEGETABLE SEEDS, for One Year's Supply ..			10s. 6d.	No. 1.	COLLECTION of FLOWER SEEDS		3s. 6d.
No. 2.	Ditto	ditto	ditto	15 6	No. 2.	Ditto	ditto	5 6
No. 3.	Ditto	ditto	ditto	21 0	No. 3.	Ditto	ditto	7 6
No. 4.	Ditto	ditto	ditto	30 0	No. 4.	Ditto	ditto	10 6
No. 5.	Ditto	ditto	ditto	42 0	No. 5.	Ditto	ditto	15 0
No. 6.	Ditto	ditto	ditto	63 0	No. 6.	Ditto	ditto	21 0
No. 7.	Ditto	ditto	ditto	84 0	No. 7.	Ditto	ditto	30 0
No. 8.	Ditto	ditto	ditto	105 0	No. 8.	Ditto	ditto	42 0
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Those who intend to Exhibit Plants at the above grand gathering, should use STANDEN'S GARDENER'S and AMATEUR'S FRIEND MANURE; it promotes a healthy vigorous growth in plants, increases the size, and enriches the colour of the flowers, and greatly improves the foliage. Price given above. This manure should be laid on the surface dry, and watered in, thus saving much labour.

The above valuable Manure can be procured from any respectable Nurserymen or Seedsmen.

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" JAMES CARTER & Co., High Holborn
" DOWNIE, LAIRD, & LAING, Forest Hill and Edinburgh
" HOOPER & Co., Covent Garden
Mr. B. S. WILLIAMS, Paradise Nursery, Holloway

For London:—
Mr GIBBS, Covent Garden
" KENNEDY, Covent Garden
" GAINES, Covent Garden
" BUCK, Covent Garden
" WILLIAM CUTBUSH, Barnet
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For the Provinces:—
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" C. PETTON, Birmingham
" S. MAY, Leeds
" F. G. GODWIN, Sheffield
" W. DILLISTONE, Hedingham, Essex
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*** *Additional names of Agents will be given from time to time.*

We have just received an additional supply of NUNEHAM PARK ONION, in original packets, and can now oblige any of our friends who are anxious to grow it. The price is however 3s. 6d. per packet.

TREBONS.—A very large brown-skinned Onion, an exceedingly heavy cropper. "Nuneham Park Onion" we believe to be a synonyme, or a selection from the Trebons, and not a hybrid between the White Spanish and Flat Tripoli; it is, however, an interesting subject for inquiry. Per packet, 4d.

BARR AND SUGDEN, SEED, PLANT, and BULB MERCHANTS, 12, KING STREET, COVENT GARDEN.

A RIBBON BORDER, Six Colours, Post Free, 2s. 6d. Stamps.

The selection of the above is unique, equalling Bedding Plants, at one-thirtieth the cost.

Poynter's 25s. Anglican Collections of Garden and Flower Seeds for One Year's Supply,

Contains one of the above, and is altogether the best and cheapest offered. Carriage free.

☞ Useful PRICE LISTS gratis.

ROBERT H. POYNTER, SEED MERCHANT, TAUNTON.

GARDEN SEEDS.

OSBORN & SONS'

SELECT CATALOGUE OF THE ABOVE

May now be had on application, and they beg to call special attention to the following Select Articles:—

	Per packet.—s. d.
OSBORN'S WHITE WINTER BROCCOLI .. 1 6	
NEW AMERICAN TOMATO 1 6	
This is very large, and less watery than the old Red.	

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ROWDEN'S BROWN COS LETTUCE .. 1 6	
SCOTT'S SUPERB WHITE COS LETTUCE .. 1 0	
BELLE BONNE SUMMER CABBAGE LETTUCE 1 0	
These three Lettuces are less liable to run than any we know.	

FULHAM NURSERY, S.W.

GARDEN SEEDS.

ELEVEN PRIZES AT THE SOUTH KENSINGTON SHOW IN JULY LAST.

WILLIAM PAUL

(SON AND SUCCESSOR to the late A. PAUL), WALTHAM CROSS, LONDON, N.,

BEGS TO ANNOUNCE THAT HIS

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160. Bissaps major, new 1 0	
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169. Cedronella cana, new 1 6	
172. Chiora grandiflora, new 1 6	
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176. Clarkia integripetala alba Tom Thumb, new, ... 1 0	
180. ,, pulchella, Dwarf White, new 1 0	
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199. Helipterum Sanfordii 0 6	
198. Hendersonia ,, banum atro-sanguineum 0 6	
200. Hovea Celsi 1 6	
201. Lilium giganteum 1 0	
204. Lobelia erinus speciosa 0 6	
205. ,, fulgens nana ultora 0 6	
206. ,, Paxtoniana 0 6	
207. ,, Snowflake, new 2 6	
208. Matthiola bicornis, new 1 0	
211. Mimulus tigrodioides 0 6	
212. Momordica balsamina leucantha .. 1 0	
213. Nasturtium King of Tom Thumbs 1 0	
214. ,, King Theodore, new .. 1 0	
215. Nicotiana atropurpurea grandiflora, new 1 0	
216. Nolana lanceolata 1 0	
219. Ornithogalum thyrsoides album .. 1 0	
220. Oxalis corniculata rubra 1 0	
221. Palafoxia Hookeriana, new 1 0	
222. Pansy, saved from prize flowers .. 1 0	
224. Pectis angustifolia, new 1 0	
226. Petunia, four-coloured flowers .. 0 6	
228. Phalacrea coelestina Tom Thumb 1 0	
230. Phlox Drummondi Twilight .. 1 0	
231. Picotee, choice collection 2 6	
233. Portulaca grandiflora flore pleno.. 2 6	
244. Primula filicifolia, Red 3 6	
,, filicifolia, White 3 6	
246. Rhodanthe atrosanguineum 0 6	
250. Silene pendula ruberrima 1 6	
251. Solanum Princess Beatrice.. .. 1 0	
252. Stock, Scarlet Brompton 1 0	
253. ,, Purple Queen 0 6	
254. Sweet William, Hunt's Superb .. 0 6	
256. Sweet Pea, The New Invincible Scarlet 1 0	
257. Tropæolum elegans nanum, new .. 1 0	
261. Veronica glauca 0 6	
259. Verbena, extra choice 0 6	
262. Vinca rosea nova species 1 0	
263. Waitzia aurea 0 6	
264. ,, corymbosa 0 6	
265. ,, grandiflora 1 0	

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The SEED CATALOGUE and GARDEN DIRECTORY for 1866, now published, will give full particulars respecting prices and other matters in connection with the Business. Will be sent gratis and post free to any address in the kingdom.

NEW ROSES of 1865.—Owing to the annual introduction of so many inferior, and, in fact, worthless varieties of New Roses, JOHN CRANSTON has this season carefully selected 23 varieties out of 40 or 50 sorts offered by the French raisers These he can confidently recommend, and he believes his selection contains all that are worthy of note.

A List, with prices, sent on application. The plants are strong, and will be fit to send out in March.

Nurseries, King's Acre, near Hereford.

SEED POTATOS, New Sorts.

WHEELER'S MILKY WHITE, 4s. per peck.

GLOUCESTERSHIRE KIDNEY, 2s. per peck.

MONA'S PRIDE, true, 2s. per peck.

"Better than this, though a trifle later—better in fact than any Potato coming in at the mid-season, is Wheeler's Milky White. I had a splendid crop of this last year, not one of them was touched by the disease. The growth is very short and compact; tubers are nearly all one size, neither large nor small; it has as fine a flavour as any Potato grown, and is not coarse and mealy as Pocock or Flourball, and these two cannot be surpassed in colour and texture. I shall run no risk in dealing boldly with this fine Potato, and I shall therefore put it in an emphatic form that Wheeler's Milky White is the best of all Potatos, and those who do not grow it may consider themselves rather behind the age."—*From an editorial article on Potatos in the* GARDENERS' MAGAZINE, *January 27, 1866.*

J. C. WHEELER & SON, Seed Growers, Gloucester.

The Gardeners' Chronicle.

SATURDAY, FEBRUARY 24, 1866.

MEETINGS FOR THE ENSUING WEEK.

TUESDAY, March 1—Linnean .. .. .. 8 P.M.

SATURDAY, — 3 { Royal Horticultural (Weekly Show, at South Kensington .. .. .. 2 P.M.

IF we might venture to found an opinion on the number and nature of the inquiries that reach us with respect to the DUTIES OF JUDGES at provincial exhibitions, we could only conclude that these duties are very little understood in many cases, either by those who nominate to the office, or those by whom it is filled. Thus, we have, from time to time, censors inquiring what are the powers conferred on them by their appointment; we have exhibitors putting forward statements of grievances of all possible kinds in respect to the awards; and we have even managers and committeemen now and then seeking to know if they are not competent to revise the judgment of the judges they themselves have appointed. Such being the case, it may be useful just now, to look a little into this question of judges' powers and judges' duties.

As to his powers and his position, then, it must be evident that a judge at a Horticultural Exhibition is an officer appointed specially by the Executive to decide the question of merit between the different exhibitors who are competitors. The judges therefore undoubtedly have power, when the productions of the several competitors are handed over to them by the officials for adjudication, to determine absolutely the relative merit of the different competing exhibitions, according to the existing law.

Now the law in this matter, so far as it is written, is to be found in the regulations published, in each case, by the Executive, and these it is the duty of the judges to administer with equity. On any points in these regulations which may appear doubtful, the officials may properly advise the judges, upon application being made to them; but in no other way should the judges be interfered with by the managerial staff. The decisions therefore we hold to rest absolutely with the judges, and hence the paramount necessity of appointing only such persons as are not only well informed as to the matters they are called upon to decide, but also men of the highest moral character, who both know how to be rigorously just, and have at the same time the moral courage to act up to that knowledge. But the appointment once made, the managers, under whatever name they may appear, have no further voice in the matter

of awards; they are morally bound by the decisions of the men of their own appointment, and the most unwise thing they can do is to attempt to alter any of the decisions at which the judges have arrived, either to meet their own views, or those of remonstrant disappointed exhibitors.

There can, then, be no doubt that from the time when the judges commence their duties, by having the question of adjudication officially handed over to them, until they make a return of their awards, the question of relative merit is entirely in their hands. And here we may incidentally mention a reprehensible practice which is common at country shows. We allude to the circumstance of certain members of the Committee, well-meaning men no doubt, anxious to see all things right, following the judges as if the latter were in custody or under surveillance, and by their officious interference or remarks, really to some extent influencing the awards. Now, the only communication which should be held with the judges on the part of the officials, is to point out, by means of an attendant (and one is quite sufficient), the position of competing objects, so that time may not be lost in seeking for them. No suggestion that this or that collection, or this or that specimen are most meritorious, or that they belong to some liberal supporter of the show, should be offered, as it sometimes is, but the judges should be left free and unbiassed by even the whisper of an outside opinion. In other words, the judges alone should be adjudicators.

As one instance of the imperfect manner in which the true position of a judge is appreciated, even by persons well informed in other respects, we may quote the following inquiry which has recently been addressed to us, omitting names:—

"Will you be kind enough to state if the judges at a horticultural exhibition, having awarded a first prize to twelve large-flowered Chrysanthemums, and afterwards (before finishing their labours) detected a Pompon in the collection, would be justified in correcting their error and disqualifying the collection; and if, after such disqualification, they would be justified in giving the disqualified collection a special extra prize. Please state the general discretionary powers left to the judges. At the —— Chrysanthemum Show, the judges committed the error above referred to. A few minutes afterwards, observing the mistake, they disqualified the collection, and gave it a special extra prize. The exhibitor of the disqualified collection claimed the first prize, because a first prize card was on his collection for some ten minutes. The judges maintain that although they did not notice the Pompon at first, they had the power of correcting or amending their awards after they saw an error, more especially as the correction was made before they had finished their labours." *C*

Now, as we have already said, we hold that from the time the judges are instructed to commence their labours until they have completed them, the awards are in their hands. Hence, as it seems to us, there can be no question whatever that the judges had a most perfect right to rectify an error of their own, discovered too before their labours were concluded. The right to do this must be coincident with the right to make an award at all, while the latter must rest on the appointment to their office by the Executive. But the difficulty mentioned in our correspondent's letter appears in this case, as it would in most others, to have arisen from some statement that must have gone forth from an officious looker-on to the effect that a "1st prize card" had been for some 10 minutes or so put down to this afterwards disqualified collection. The mischief, therefore, must have been done by persons with prying eyes, who either had morally no right to be present, or being present, had no right to interfere with the duties of the judges —for the latter, as our correspondent expressly says, had not completed their task before the card was changed. This is one chief reason why none but judges, and the really necessary attendant, should be admitted while the adjudication is in progress. It may often happen that in the case of nicely balanced competition the judges may form an opinion—may even go so far as to make an award in favour of one collection, and then, keeping the question before the mind's eye while proceeding with other duties, they may return to a fresh scrutiny with more matured views, and reverse the decision formerly arrived at. This they are perfectly competent to do, notwithstanding that a casual looker-on might think otherwise. It is from such facts as these, that we deduce the rule that officious personages such as we have alluded to, who have no duties to perform, and who are themselves incompetent to judge, should never obtrude their presence while the judges are performing their sufficiently onerous task; unless, indeed, if they must gratify their curiosity, and can command the *entrée*, they can, for the time, act as though they were not present. If such persons aspire to pass a judicial opinion, they should assume the office and share in the responsibilities of a judge.

We have no evidence to determine whether the special extra prize referred to in our correspondent's letter ought to have been given or not in this case; but unquestionably the judges had the power to recommend it to the Committee. This is the point where the action of the Executive properly intervenes. Whatever prizes are publicly offered, the judges, by virtue of the appointment to their office, have power to deal with, subject to law, the special law being the published regulations under which the competition takes place; but in the case of extra prizes, the judges, not being administrators of the funds, have not the right to award unconditionally, but only provisionally. In other words their duty as regards extra prizes consists in making a recommendation to the Executive, which recommendation should, as far as possible, be met. The probability is that in the instance which "C." refers to, the plants really deserved some mark of approbation on account of their superior cultivation, inasmuch as the first prize had been put down for them; and the mistake which, when discovered, was such as to disqualify them from the regular competition, being one which even the judges themselves at first overlooked, it may charitably be concluded that it was a pardonable one on the part of the exhibitor. If this were so, it was quite a proper course for the judges to recommend an extra prize. So much for judges' powers.

To glance for a moment very briefly at the duties of judges, we remark that they should individually feel it a moral obligation not to undertake to adjudicate on subjects which they do not sufficiently understand; they should examine with painstaking earnestness the subjects brought before them, thoroughly weighing both their merits and demerits; and they should award the prizes according to their honest conviction of the merits of the objects shown, without fear or favour. They can never hope to please all parties, but if they act up to the spirit of these rules, they will at least have the satisfaction which follows the doing of that which is right, and their integrity of purpose will command the respect even of those who may not agree in their conclusions.

THE REPORT of the ROYAL HORTICULTURAL SOCIETY, as given in our columns last week, is sure to excite the attention of horticulturists of all classes. Not only in this country but also abroad are the proceedings of the Society attentively watched. It has a very difficult task before it. It has to conciliate the horticulturists, and to do all in its power to advance horticulture; at the same time it has to cater for the public, for those who have a real earnest feeling for the "theory and practice," and for those who care only for pleasure or fashion. If it offend the one party it runs the risk of losing not only its *prestige* as a scientific Society, but also its stock in trade; if it run counter to the other party, subscriptions fall off, and poverty stares it in the face. No wonder then, that the Society finds it difficult to please all parties. Some persons feel grateful to it for its efforts towards improving the education of gardeners, others are of opinion that it does not do what it might to amend their position. There are those who fear that the interests of horticulture proper are to be sacrificed to those of fashion, and would gladly see a larger infusion of practical horticulturists into the governing body; while others look to the Tuesday meetings, and the experiments at Chiswick to be carried on under the supervision of Messrs. BERKELEY, MOORE, and HOGG, as hopeful and encouraging signs of progress.

To some of these topics we have already alluded, and shall do so again from time to time. Other matters are, so to speak, of a purely personal nature—matters in which the Society alone is concerned—internal affairs, in which the doctrine of non-intervention applies in all strictness, and upon which therefore we have no right to express an opinion. But there is one topic, in which not only Fellows of the Society, but also all those who are in any way connected with horticulture are concerned—the case of Mr. WEIR. We need not reiterate the melancholy story of his labours; unfortunately it is no new tale. We have heard it before. Our gardens have been enriched, our stores of gratification have been enlarged, in many cases our pockets have been filled through the exertions of earnest zealous men like Mr. WEIR—earnest zealous men who have broken down under their labours, as he has—earnest men who have given their strength, their health, and even their life, to serve the cause of Horticulture. In such a state of things, however true the assertion may be, the statement that the Society has no funds at its disposal to bestow upon one who has lost his health, and with his health his all, in its service, is one which cannot be read without pain. No blame can be imputed to the Society for this, and we do not allude to the matter with any such object. We are rather inclined to give it credit for doing all that, as a Society, it could do under the circumstances in which it is placed; but we do think it right to urge upon those individual Fellows who have not yet responded to the call, the propriety of so doing at once, in order that the list may be closed, and that, so far as is possible, Mr. WEIR's misfortunes may be alleviated by the right principle and kindly feelings of those whom he has striven to serve.

—— DR. REGEL, the Vice-President of the Horticultural Society of Russia, has issued a circular stating that it is the intention of the Society to form a great EXHIBITION OF PRODUCTS OF HORTICULTURE, as well as of objects of art and industry relating thereto, at St. Petersburg at Whitsuntide, 1868. The Exhibition will be held under the patronage of his Imperial Highness the Grand Duke NICHOLAS, and in connection with it will be held a congress of botanists, horticulturists, and amateurs. In his circular DR. REGEL requests information and suggestions, first as to the best mode of transmitting articles for exhibition, and as to the best means for facilitating the journey of the exhibitors and the members of the jury; and secondly, as to what objects should be especially exhibited. Intending exhibitors or visitors should communicate with DR. REGEL without delay.

—— M. NAUDIN, in a recent Number of the "Revue Horticole," while referring to MR. DARWIN'S paper ON CLIMBING PLANTS in terms of approbation, proposes to call the faculty by which plants climb "Clematism." Of this clematism he distinguishes four varieties by rolling or entwining, by clasping, by entanglement or intertwining (*enchevêtrement*), and by juxtaposition.

—— We learn that DR. SEEMANN has been compelled to resign the Secretaryship of the forthcoming BOTANICAL CONGRESS to be held in connection with the International Horticultural Exhibition, in consequence of having to proceed immediately on an unavoidable mission to Central America; and that DR. MASTERS has been appointed to the office thus rendered vacant. Several important papers are, we understand, already promised.

—— We are happy to be able to announce the safe return to this country of MR. J. G. VEITCH, the record of whose journeyings, as given in our columns, has attracted so much attention.

—— MR. W. B. HEMSLEY, Assistant in the Herbarium, Kew, is engaged in collecting materials for a FLORA OF SUSSEX, and solicits the co-operation of resident botanists and others interested in the issue of such a work. Local lists, especially of the extreme west and north-west; also information relating to critical species and specimens of the same would be of great service. It is intended to include lists at least of the lower Cryptogamia. Names of intending subscribers will be received, as the success of the undertaking depends upon the support of a certain number. Communications may be addressed to the Herbarium, Royal Gardens, Kew, W.

New Plants.

326. TACSONIA VAN-VOLXEMII, *Funck, Journ. d'Hort. Pratiq.* v. (1861), with figure. *Lemaire, L'Illustr. Hort.* t. 381.

This splendid creeper, a native of Antioquia, a province of New Grenada, where it is moreover cultivated in gardens under the name of Courouba, was introduced to Europe a few years since by M. Van Volxem, a Belgian traveller, but has remained till now but little known. We are indebted to Mr. Pince, of the Exeter Nursery, for beautiful flowering specimens, from which the annexed figure was prepared by Mr. Fitch.

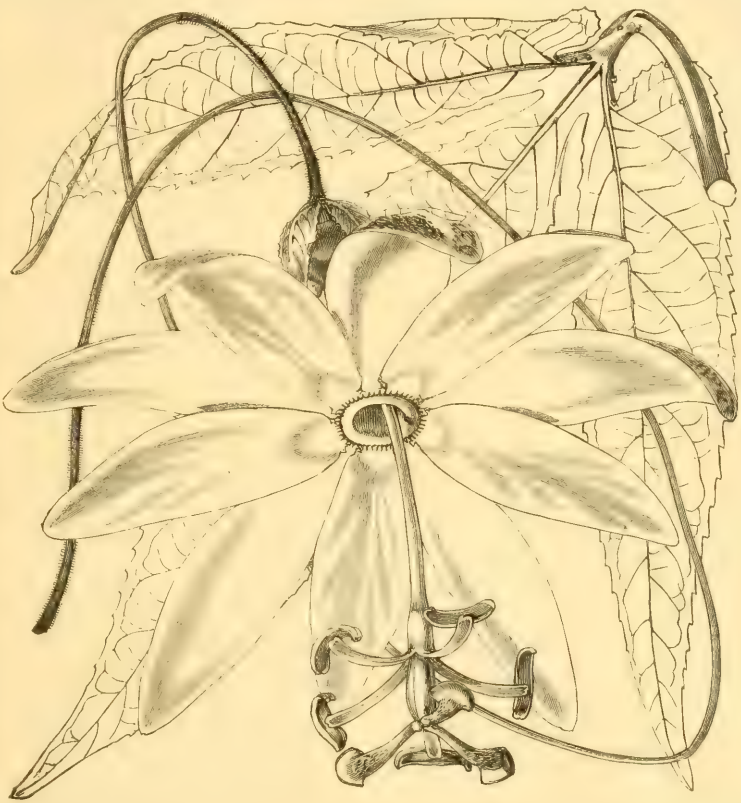
It is a free-growing creeper, furnished with opaque rugose leaves, dark green above, glaucescent beneath, and tripartitely divided nearly to the cordate base, the segments being 6 inches long or more, lanceolate acuminate, and serrated; their stalks are pubescent, and furnished with several small glands. The flowers are nearly 6 inches in expansion, of a deep rich carmine crimson, the tube slender, about an inch long, with an involucre of (two in the specimen examined) small ovate downy bracts, though described as "involucro nullo." There are five sepals and five petals nearly equal in size, the sepals being somewhat keeled and mottled with green at the back. The

mouth of the tube is white, surrounded by a black-purple ring, which bears very short ciliæ of the same dark colour; and beyond this the stamens and pistils protrude about 2½ inches.

According to M. Van Volxem, the thermometer often descends, in the country of which this plant is a native, below 0° R. (32° F.) a circumstance which indicates that in the north of Europe the shelter of a greenhouse or cold house would suffice for it, while in the warmer parts of Europe it would succeed in the open air. Mr. Pince has favoured us with the following valuable notes on the cultivation of the plant, which quite accord with these statements of the discoverer.

"Tacsonia Van-Volxemii is undoubtedly one of the finest conservatory climbers ever introduced, second only to the justly and universally admired Lapageria rosea. The healthiness, vigour, and rapidity of its growth combine to make it highly desirable for producing immediate effect in conservatory decoration. The flowers, which are of a rich rosy crimson colour (fully 5 inches in diameter) are freely produced from the axil of each leaf, and are gracefully suspended on long, slender foot-stalks, a foot in length, so peculiarly slender and thread-like, that the flowers hang, as it were, clear and detached from the foliage, and have the appearance of brilliantly-coloured parachutes suspended in the air. Our plant was put into our show house (the temperature of which is only that of an average conservatory, air being freely admitted, and the thermometer frequently falling as low as 38° to 40° in winter) in the middle of April last, and it has covered the ornamental rafter which spans the house, has been clothed with flowers all through the summer, and now, at the end of January, is still adorned with them. The foliage is also remarkably good, and free from that coarseness which detracts much from other Tacsonias.

"Our plant, which is now 20 feet long, with numerous branches, is growing in a mixture of rough peat, loam, and coarse sand, with abundance of drainage, and plenty of pieces of broken brickbats, crocks, sandstone, and old lime rubble, mixed in with the soil. Occasional syringing and copious supplies of water to the roots during summer and autumn, promote luxuriant growth. It may be requisite now and then to cut back vigorous shoots, which have flowered, in order to bring up fresh flowering stems. From the pendent position of the flowers, it is obvious that this beautiful climber can be seen to better advantage trained to a rafter or the roof of the conservatory, than if put against a wall. I have alluded to its comparative hardiness, in support of which, and in addition to the general lowness of the temperature of our show house, I may say, in conclusion, that we had a plant of it growing luxuriantly on an eastern wall out of doors, all last summer and autumn. *Robt. T. Pince, Exeter Nursery, Exeter, Jan.* 31, 1866."



THEORY AND PRACTICE OF VENTILATION.

No. V.

That the air has weight can be proved by actual demonstration. If a copper flask, of the capacity of 100 cubic inches, furnished with a stop-cock, be nicely balanced and accurately counterpoised with weights, and the air then exhausted or drawn out of it by an exhausting syringe or air-pump, it will be found to have lost in weight about 31 grains. On opening the stop-cock the air will be heard to rush in, and the balance will be once more restored. This experiment can be reversed by condensing more air into the flask than it would naturally contain. Every stroke of the condensing syringe renders the flask heavier. The common child's amusement of lifting a stone with a piece of wet leather attached to a string—the every-day fact that fluid running from a barrel requires an air-hole to make it flow—the operation of cupping, &c., all illustrate the pressure or weight of the atmosphere. Perhaps it is impossible to make this so clear in any other manner as it is shown by the Magdeburg experiment. In 1654 Otto Güricke (one of the inventors of the air-pump) had the honour of exhibiting this experiment on a grand scale before the princes of the empire and the foreign ministers assembled at the Diet of Ratisbon. The force of two teams, consisting of a dozen horses pulling in different directions, was found insufficient to separate two large hemispheres held together only and wholly by the pressure of the air on their external surface. On a small scale this experiment is performed in the following manner. Two hollow hemispheres, with perfectly smooth edges, are placed in contact. The lower one is furnished with a short tube opening into it, which can be opened or shut at pleasure with a stop-cock. The end of this tube is screwed into an exhausting syringe, the air from the hollow sphere withdrawn, and the stop-cock turned to prevent the air entering. A handle can then be screwed to the tube, and two persons drawing in opposite directions, will be unable to separate the hemispheres. On turning the stopcock the air rushes in, and thus the hemispheres fall asunder at once. The force that bound them together was the simple pressure of the atmosphere. If the sphere is 6 inches in diameter, a section through its centre will be about 29 square inches, and if the vacuum is perfect, a weight of 420 lb. will be necessary to separate the hemispheres. This gives a weight of about 14½ lb. on every square inch of surface. From this to 15 lb. is proved by a variety of experiments to be the weight of the atmosphere on each square inch at the level of the sea. In other words, a column of atmospheric air one inch square and 45 miles high weighs 15 lb. The barometer affords another striking illustration of the weight of the atmosphere. Many young gardeners know nothing of the fact that the column of mercury 30 inches high in the barometer tube is counterpoised or borne up by the weight of the atmosphere, and that the air is as heavy as a layer 30 inches thick of mercury would be. The water in a common pump also rises solely by the force of atmospheric pressure. As water cannot be so raised to a greater height than between 32 and 33 feet, the atmosphere weighs as much as an ocean of water of that depth rolling over the world. The gross weight of the atmosphere is almost incomprehensible. It is supposed to amount to five thousand billions of tons, a sum-total easily expressed, but impossible to understand. Enormous as this weight is, yet it is not only sustained without inconvenience, but it is essential to the maintenance of all vegetable and animal life. Man lives and moves and has his being, subject to a pressure of atmospheric air amounting to 15 tons. The amount even varies in different states of the atmosphere as much as 2500 lb. without much inconvenience. Plants of course sustain a proportionate amount of pressure according to their size. But this pressure is not a load to be borne up, but a support afforded. We live at the bottom of the aerial ocean, and are buoyed up and supported by it at all points, just as the denizens of the deep sea are held up and not crushed down by the density of its waters. The air obeys the laws of other fluids, and presses equally in all directions. Its vertical is not greater than its horizontal or upward pressure; it binds round and compacts together the living tissues of plants and animals. Without its bracing power all these would be ruptured and destroyed by the specific gravity of their fluids. Every living thing is also freely permeated by air. In the hardest woods, and even the bones of animals, air is found. The external pressure is essential to counteract the elasticity of this internal air. If either the outside or inside air were removed, destruction and death would ensue. But the external weight and internal elasticity of the air are so beautifully balanced that the thinnest membrane is preserved in safety, and enormous as is the gross pressure of the atmosphere, it never falls upon the most delicate vegetable or animal life as a weight to be borne up. Having weight, of course the air is material, as any one may prove for himself by filling an air bag or bladder with air, and trying to force its two sides together.

Another physical property of the air is inertia. Like other dead matter it remains at rest, unless compelled to move by superior force. Provided its density, elasticity, and temperature remained the same, perpetual calm would reign for ever throughout the great ocean of air. To secure this calm it is only necessary that the surface of the earth should become colder than the air, and that the air should be warmed directly by the sun's rays from above. Every stratum of air would then partake of the heat elasticity and density adapted to its position, and motion become impossible.

Impenetrability is another quality of the atmosphere—not in the sense that it cannot be passed through, but that two bodies cannot occupy the same place at the same time. This is an obvious truth, as far as liquids and solids are concerned. If we lie down in a bath full of water, a quantity of water will overflow equal to the bulk of the body submerged. The same thing happens in an empty bath, as it is termed, that is, a bath full of air. When we enter a room a quantity of air exactly proportioned to our bulk escapes by the door, windows, or other openings. The impenetrability of air may be made visible by the simple experiment of inverting a bottle in water. Keep its edge horizontal, to prevent the air escaping, and it will be found that to whatever depth the bottle is plunged, the water will not fill it entirely. At a depth of 34 feet it will be half-full of water; at 100 feet it will be three-fourths full; at 1000 it will be filled within a thirtieth, but even this small space holds all the air that originally filled the bottle, and in drawing it up to the surface it will expand to its original bulk and force out all the water. The air has only been squeezed into a smaller

space, but none of it lost or displaced. This experiment also illustrates the compressibility of the air. Air has been compressed into more than one-thousandth part of its usual bulk, so as to become denser than water; but however much its volume has been diminished, none of its quantity has been lost.

Density is the result of compression—solids and gases are more susceptible of changes of density than liquids. The hammering of metals and pressing together of air or gas results in a change of their density. The particles composing them are more closely impacted together, consequently a greater amount of matter is contained in a given space, and the density of bodies thus becomes an index to their weight. For the sake of comparing the weight of one body or substance with another, its density is spoken of as its specific—that is, its peculiar gravity. Pure water at a temperature of 60° is adopted as the standard of comparison, and by this standard the relative weights of all solids and liquids are tested. To get at the exact specific gravity of solids, advantage is taken of the fact that these when plunged in water displace a bulk of that liquid exactly equal to their own. The solid weighs so much less in proportion to the amount of water it displaces. Therefore the difference between its weight in air and its weight in water must give the weight of an equal bulk of water. The rule, therefore, is to weigh the solid first in air and afterwards in water, and having found the deficiency of the latter weight, to divide it by the former, and the quotient will be the required specific gravity. For taking the specific gravities of fluids an instrument called an hydrometer is used.

Elasticity is another great characteristic of the atmosphere. So much is this the case that the air is generally taken as a type of what are termed elastic fluids. Daniell characterises the atmosphere as a terrestrial sphere of matter in an elastic fluid state. Perhaps no truer definition of the air has ever been given. A hogshead of air can be compressed into a cubic inch, and it will immediately fill the hogshead again on the pressure being removed. In fact there seems no limit to the elasticity or expansive power of the atmosphere. It has been calculated that if one cubic inch of such air as we breathe were removed 500 miles above the earth, it would enlarge itself to such an extent as to fill a hollow sphere one thousand eight hundred millions of miles in diameter. Air has, by improved air-pumps, been rarified or thinned one million times, and yet it has baffled the power of men to create a perfect vacuum; the air left has possessed elastic force enough to occupy the entire space. The less the pressure the greater the expansion, and *vice versâ*. The elasticity of the air is restrained and kept within proper limits by pressure, and it is only necessary to remove either the pressure or elasticity to discover the destructive energy with which the other would work. If the neck of a glass bottle is screwed into an exhausting syringe, and the internal air removed, it will be crushed into fragments by the external pressure of the atmosphere. So, on the contrary, if a similar vessel be carefully closed at the neck, and placed under the receiver of an air-pump, it will be blown to atoms by the elastic force of the air it contained. The same thing would happen to a fruit or living plant placed in the same position. Their safety depends upon the elastic force of the air they contain neutralising the power of the external pressure of the atmosphere, and also in the latter restraining the energy of the former.

From various experiments it appears that the elastic force of air varies exactly in proportion to its density. The more it is squeezed the stronger is its disposition to expand, and *vice versâ*. This important law, called after its discoverer the law of Mariotte, applies to air under all ordinary pressures, and indeed to all other gaseous bodies as well. At very high pressure the density of air becomes greater than its elasticity. But the above law holds true up to a condensation of 50 or 60 times, provided always, however, that the temperature continues the same. *D. T. Fish.*

EXTRACTS FROM THE JOURNAL OF MR. JOHN GOULD VEITCH, DURING A TRIP TO THE AUSTRALIAN COLONIES AND THE SOUTH SEA ISLANDS.

(*Continued from page* 148.)

Sydney, N. S. W., June 4, 1865.—On my return from my trip to the north of Australia, I was informed that Commodore Sir William Wiseman proposed visiting the various groups of the Polynesian and Melanesian Islands within the limits of his station, extending to the 10th degree of south latitude, and the 160th of west longitude. It was my intention to have finally quitted Australia about this time, but such an opportunity offered too many advantages to be thrown away, and I could not resist the temptation of seeing so interesting a part of the world, and one likely so richly to repay me.

Mr. Charles Moore, of the Sydney Botanic Gardens, visited some of the same islands in H.M.S. Havanna, and strongly advised me not to lose the present opportunity. Dr. Seemann and others have also published the most favourable accounts of their luxuriance, and as I shall probably be one of the first persons who will have devoted his time to the collection of living plants for introduction to Europe, I must acknowledge that I look forward to my excursion with mingled feelings of expectation and satisfaction, such as, perhaps, are only known to those who have experienced the infinite pleasure of lighting for the first time upon some fine plant previously unknown to English gardens.

With these feelings I applied to the Commodore for a passage, which was immediately most kindly granted me, with a promise to afford me every assistance in his power. The ward room officers kindly made me an honorary member of their mess, and did everything in their power to render me comfortable.

Eight Wardian cases filled with soil in readiness to receive my anticipated collections; a number of articles, such as hatchets, knives, fish-hooks, red cloth, &c., to barter with the natives, and my personal baggage having been put on board, I embarked at noon this day (June 4), on board H.M.S. Curaçoa, the flag-ship of the station.

At 3 P.M. we steamed out of Sydney harbour, the band playing on the upper deck, and every one being in high spirits. Our vessel is a fine 23-gun frigate, with a complement of 350 men. In addition to myself I found four other civilians on board, viz., a photographer, a conchologist, a taxidermist, and a private gentleman accompanying the commodore. We numbered 14 in the ward-room—a most agreeable, jovial party.

It is proposed to occupy four months in making this trip, and during that time to visit the following islands, or groups of islands, in the order mentioned: Norfolk Island, Savage Island, the Friendly Islands, the Navigator's, the Feejees, the New Hebrides, the Solomon group, and New Caledonia.

On leaving Sydney our course was steered direct for Norfolk Island. The wind being fair our screw was hoisted, and we proceeded under sail. On the 6th inst., two days after leaving Sydney, we sighted Lord Howe's Island, and at noon on the same day passed between that and a small pyramidal rock named Ball's Pyramid. Both these islands are barren and very bold, the former only being inhabited; its greatest elevation is 2834 feet.

At 8 A.M. on the morning of the 9th, Norfolk Island was reported in sight, and at noon we anchored in Sydney Bay. A strong south-east breeze springing up, we were compelled almost immediately to weigh anchor again and steam round to the other side of the island. On the following morning we were again driven to sea, and this time unable to approach the land for two days. The fact that there is no good harbour or safe anchorage at Norfolk Island must always be a great drawback to it. The surf is often so heavy as to prevent a boat approaching or leaving the land for days together.

The morning of the 13th was fine, and the sea comparatively smooth. The commodore and most of the officers landed at once; myself and others also took advantage of the first boat. The first desire of every one was to see the far-famed Pitcairn Islanders, who are now the inhabitants of the island. Our curiosity being satisfied in this respect, each followed his own peculiar pursuit, and we explored as much of the country as our limited time would permit of. Our conchologist gathered six species of land shells; nine kinds of parrots and other birds were shot and skinned. I proceeded to ascend Mount Pitt, the most elevated point on the island, 1039 feet. It is thickly wooded to the summit, the most striking plants being a Palm, Areca sp., the native Tree Fern (Alsophila sp.), Dracæna australis, and numerous dwarf Ferns, one of the most plentiful of which is Darea diversifolia. Norfolk Island is one of the most picturesque and fertile islands that it has fallen to my lot to visit. The vegetation does not possess the rich luxuriance of the tropics, but the beautiful green appearance everywhere met with, is particularly striking after the dingy brown bush of Australia. The soil is universally good (very much resembling the loam of Devonshire), fine Grass is most abundant, and the famous Norfolk Island Pine (Araucaria excelsa) being thickly scattered over every part of the island, the country greatly resembles a well-wooded English gentleman's park. Araucaria excelsa, in its island home, is a splendid tree; many specimens standing singly are furnished to the ground, forming the most perfect pyramids that can be conceived. The average height of this tree would seem to be about 100 feet, but one fine old specimen measured 36 feet in circumference at the base, and must have been considerably over 150 feet high. Unfortunately the cones were not ripe, although there was a plentiful supply on the trees, an occurrence which takes place but once in three years.

This being the winter season (corresponding with December in England) there were but few plants in flower, nor is the island at any time so remarkable for the abundance and variety of its flowers, as for the luxuriant verdure of the whole country. One is amply repaid for a visit to this place if it is only to obtain a sight of the masses of beautiful, symmetrical Araucarias.

Phillip Island, of small extent and uninhabited, is only six miles distant. The vegetation is most scanty, but it abounds with rabbits. A good shot can kill hundreds in a short time.

Before bidding adieu to this interesting spot, one word about the Pitcairners, who have now resided here since 1856, may not be out of place. Their houses are the buildings formerly occupied by our convicts. Every one welcomed us with the greatest kindness and hospitality; the chief desire seemed to be to anticipate our wants and render our visit an agreeable one. Board and lodging were offered to as many as liked to land. The greatest harmony appears to exist amongst these people, but they struck me as being somewhat wanting in energy. I fear also that their migration to Norfolk Island, and consequent more frequent intercourse with strangers, is tending to break down the simple and peculiarly open manners, which at Pitcairn Island were so characteristic of them. Some Americans and others have already established themselves on the island, and are living amongst them. The entire population now numbers 300; besides which 38 have returned to the old island of Pitcairn. The striking feature of our visit was a ball given by the officers of H.M.'s Curaçoa. The delight of the people on hearing the band was immense, it being only the second time that they had heard such music. Dancing commenced at 8 P.M., and was kept up to 2 A.M. Every man, woman, and child attended. A more jovial party I never saw. Many of the young ladies, who were dressed in strict accordance with the latest fashions, even including crinolines, danced very nicely, although they had certainly not learnt the latest European steps. Their zeal however overcame all difficulties, and they fairly tired out her Majesty's officers, which is saying a good deal. The visit of H.M.S. Curaçoa will long be remembered by the inhabitants of Norfolk Island.

June 13.—At 5 P.M. we bade adieu to Norfolk Island, shaping our course for Savage Island, in west longitude 169° 50′, and south latitude, 19° 10′.

June 23.—Passed Sunday Island, in latitude 29° 15′, and longitude 178° 11′. It is mountainous and thickly covered with luxuriant vegetation. The highest peak is 1627 feet. There is said to be a fresh water lake on the top of the mountain, the basin being the crater of an extinct volcano. An American family named Halsted are the only inhabitants.

June 29. *Savage Island.*—A low flat island of upheaved coral about 33 miles in circumference. There being no anchorage, our stay here was only eight hours. Numbers of the natives in canoes came off several miles to the ship, bringing pigs, vegetables, and curiosities to barter with the sailors. The inhabitants, 5000 in number, are one of the numerous light-coloured Polynesian races. They live in well-built houses, and have all nominally embraced Christianity. The Rev. Mr. Lawe and his wife are the only Europeans on the island.

(*To be Continued.*)

THE CHISWICK TRIAL OF PEAS.

IN consequence of the number of varieties of Peas that have been introduced since the last trial made in the summer of 1860, the Fruit Committee determined to procure all the varieties that were offered for sale, and subject them to careful comparison in the garden at Chiswick. They were all obtained from their original sources, so that no doubt might arise as to the seed being true; and they were all sown on the same day, on the same piece of ground, and all under perfectly similar circumstances. Along with these new varieties were sown all the older sorts which had previously been proved in the garden, for the purpose of comparison, and to see wherein and how far these professedly new varieties differed from the others. That there should be no doubt as to the characters that each possessed, the most careful observations were made in every stage of their growth, from the time they first appeared above ground till their perfect maturity; and as soon as the first blossoms appeared on the earliest varieties, the whole collection was subjected to daily observation.

The variety that has been considered the earliest for several years past is known by the name of Dillistone's Early, which is a carefully-selected stock of a very old early Pea known as the Early Kent, or Early May, and which was grown many years ago in the parish of Higham, near Gravesend, for the supply of the London markets, in days before the railways had reached Cornwall, or the Peninsular steamers had touched the port of Lisbon. This Pea was always the first in the London market, where it appeared in ordinary seasons in the last week of May, and in those that were usually early about the 24th of the same month. When the late Prince Consort arrived in this country, the Early Kent was dignified by a loyal seedsman with the name of Prince Albert, and sold at a price which under its own proper designation it could not command; and is has from time to time made its appearance under many different names, each name professing to represent a Pea that was some days earlier than any existing variety. If such had really been the case, at that rate of progression we should ere this have a

Pea that ripened at the beginning instead of the end of May; but, notwithstanding all the representations that have been made, the season of the old Early Kent is still the season of Early Peas. Taking, then, the Dillistone's Early, a Selected Early Kent, as the standard of earliness, all the other early varieties were compared and tested by it.

The whole collection was sown on April 3, and Dillistone's Early bloomed on May 18, and on June 5 the crop was ready to gather.

Carter's First Crop was so similar to true Dillistone's that it could not be distinguished from it. It bloomed on May 18, and was ready for use on June 5.

Dickson's First and Best Early proved to be a very true stock of Dillistone's Early. It bloomed on May 20, and was ready for use June 5.

Sutton's Ringleader.—This is also a very pure stock of Dillistone's Early, and passed through its various stages of growth on the same dates as the preceding.

Minier's Early Frame proved to be a pure stock of Sangster's No. 1.

Carpenter's Express was a spurious stock of Sangster's No. 1.

Essex Rival could not be distinguished from the ordinary Early Frame.

Sutton's Longpodded Tom Thumb bears so close a resemblance to Beck's Gem, that it could not be distinguished from it.

Princess Royal is a very excellent Pea in the way of the old Dwarf Marrow, upon which it is a great improvement. It bloomed on May 27, and was fit for use on June 12.

Fortyfold.—This is a green Wrinkled Marrow, of a branching habit of growth, four feet high. The pods are somewhat of the shape of the Blue Scimitar, of good size, and contain from 8 to 9 Peas in each. It is a very distinct variety, and of first-rate quality. The blooms appeared on June 3, and the whole was ready for use on June 24.

Premier is a good white wrinkled Marrow, in the way of Maclean's Prolific, from which it does not materially differ.

Blue Excelsior is a very distinct variety. The plant is 4 to 5 feet high, of a vigorous habit of growth, and somewhat branching, producing an abundance of very large pods, similar to those of the Victoria Marrow, containing 9 or 10 large Peas; but it differs altogether from the Victoria Marrow in having the seed smooth and blue, like that of the Blue Prussian. It was in bloom on June 1st, and in use on the 25th.

Carter's Surprise proved to be identical with Flack's Imperial.

May's Prolific proved to be identical with British Queen.

Turner's Wonderful, Carter's Prince of Wales, Carter's Princess of Wales, and Yorkshire Hero, are all identical with Maclean's Favourite.

Dickson's New Paragon is identical with Veitch's Perfection.

It is a circumstance worth noting, as exhibiting the difference between the season of 1860 and that of 1865, that Dillistone's Early, in the former year sown on February 19th, came into use on June 22d; whereas this year it was not sown till April 3d, and was ready for use on June 5th. From the time of blooming till the crop was ready to gather, in the former year, occupied 34 days; and this year, 1865, was only 18 days. All the other varieties exhibited similar results, in the same ratio. *Robert Hogg, in Proceedings of Royal Horticultural Society.*

Home Correspondence.

Black-hearted Pine-apples.—Your correspondent Mr. Gilbert states (see p. 149) that both varieties of the Cayenne Pine-apple are apt to be black-hearted in winter. I agree with him that the Prickly-leaved Cayenne has that very serious fault, and on that account I have discontinued growing it, as I found that it was not only apt to become black in the centre, but that under the most careful management it frequently rotted at the base before it ripened at the top. As regards the true Smooth-leaved Cayenne I never found it to exhibit signs of the fault in question, and I ripen quantities of it all through the winter months. I have kept it at times from four to six weeks after being quite ripe, and yet it has cut up quite fresh. In fact I have never been able to keep any variety of Pine-apple so long as the true Smooth-leaved Cayenne. There is a spurious variety in cultivation, of which this black centre fault is a peculiar characteristic, and though externally very much like the true variety, it is altogether inferior. I could name several Pine growers whose experience of these three varieties is the same as my own. The true variety is a noble and useful fruit, far surpassing the Jamaica in appearance; and though the latter is the most brisk in flavour, the Cayenne is the more juicy of the two, and some prefer it to the Jamaica. They are both splendid Pines, but I find the Smooth Cayenne keeps the longest after being ripe. *D. Thomson, Archerfield.*

Populus canadensis.—I have seldom heard of a finer specimen of Poplar than that said to have been blown down at Bicton during the awful hurricane of the morning of the 11th ult. In your impression of the 20th ult., p. 54, the dimensions of this Poplar are given as: Girth, 14½ feet; length of stock, 49 feet; height of tree, 114 feet.! The name given to the tree is Populus canadensis alba, but from this I fail to ascertain the species. I am not aware of any Poplar of that name. The Canadian Poplar is P. monilifera; P. canescens is the Grey Poplar. These are two of our largest Poplars. Perhaps the term canescens should have been inserted for canadensis? *J. G.* [For the following reply to these remarks we are indebted to Mr. Barnes, who says:—"The mistake is mine, owing to my having written the account of the never-to-be-forgotten tornado in a hurry. The right name is P. alba canescens, and the tree was acknowledged to be a most wonderful one. It grew on good soil, that formerly had been a kitchen garden, now for many years turfed, and with a number of well-made American plant beds dotted about it. A beautifully clear stream of water, about 6 feet wide, and averaging 4 or 5 inches in depth at all seasons, with the bottom paved with pebbles, ran through this ground. Under this stream the roots spread in all directions, as well as under the turf into all the American beds. The ground being drained, too, its roots very frequently choked up the drains. Where its large limbs branched off there was quite a hollow sort of platform, where a pair of Egyptian geese have made a nest every season for several years past. There they hatched their young, and conveyed them safely to the ponds of water above this garden. The pair of geese in question now have their nest on the top of a wall covered with Ivy. I have also known wild ducks to breed in the crutches of this noble tree."]

Linum flavum.—Your correspondent "Pat" says (see p. 126) that he is thinking of planting two beds of Linum flavum. This will be an excellent mode of securing fine plants for potting up next autumn for the decoration of the greenhouse in March and April. But if "Pat" expects a display of bloom throughout the summer as the result of turning out his plants, he will be disappointed. It is not the habit of this Linum to throw up more than a few occasional blossoms, after say the middle of May, until which time from the middle of March, well-grown plants of it are a galaxy of beauty. *William Chitty, Stamford Hill.*

Rainfall in Warwickshire in 1865:—

	Inches.		Inches.
January	2	Brought forward ..	8¼
February	2¼	July	4¾
March	⅝	August	3
April	⅜	September	0
May	1	October	4
June	2	November	2⅜
		December	½
Carried forward ..	8¼		23

G. Craddock, Gardener to the Lord Willoughby de Broke, Compton Verney.

International Exhibition Schedule.—If there is one prize meaner than another in this schedule it is the prize offered for 50 Orchids. I trust I may not be accused of making this statement from motives of gain in respect to £ *s. d.* I happen, unfortunately for myself, to be one of those ambitious individuals whose pride it is to be in the first rank at an exhibition, regardless of that kind of gain, and I do not scruple to say that I am anxious to be in the front rank at our forthcoming great International display. But can a 1st prize of 30*l.*, a 2d of 15*l.*, and a 3d of 10*l.* for 50 Orchids, worth from 500*l.* to 700*l.*, partake of an International character? Can this paltry prize be any inducement to the great growers of this country, or to those on the Continent, to exhibit for the great prize of the day, and on an occasion like that in question, when we are all anxious to obtain the greatest prize for honour's sake. I can assure those unacquainted with expenses of transmission of plants to shows that the 1st prize would not cover expenses for 100 miles, while exhibitors who may be unfortunate enough to be placed 2d and 3d would be minus to a considerable amount; without taking into consideration the losses sustained by injury to our plants, and neglect of business at home at a season when the head of a garden establishment is most wanted. It is really too bad to make us labour for honour, and pay for it as well. The committee should reconsider this matter, otherwise exhibitions in the class just indicated, which should be most attractive, will be limited to a single entry. If the prizes offered in this class had been on a scale sufficient to pay expenses, I could have shown 50 plants worthy of a place in the exhibition; but, under existing circumstances, I must refrain from doing so, and leave the honours of the day to not the best collection in Europe. *Robert Bullen, Leicester.*

Osier Twigs.—I am surprised that these are not used in English gardens as fruit-tree ties. In France they are very generally used for that purpose, for which they are very durable. Although exposed to the weather for four or five years, I have seen them present a very sound appearance. They are flexible as string, harbour no insects, and they allow the branches to expand freely, as such ligatures should never be tied too tightly. The French have a custom of building mutton knuckle bones into their walls; Osiers are attached to these, and in this way the mortar is not disturbed. The Osier, however, ties well to a nail. I know of nothing in the way of ties so cheap as Osiers, which if kept in a cellar may be had in stock for a long time. In France one large bundle costs about 4*s.* 6*d. A. B., Rouen, Feb.* 16. [Osier twigs are not unfrequently used in this country for keeping strong and refractory branches in their places on walls, but for small shoots they do not answer so well as cloth shreds.]

Seedless Berberry.—I have to apologise to "Diss" for not sooner answering his inquiry as regards Berberry preserve. It is made exactly in the same manner as other preserves, except that it requires a small cupfull of water to about a quart of fruit. It also takes a plentiful supply of sugar, and a good deal of boiling. Another correspondent says, he "cannot make it set." This is either for want of more sugar or more boiling. It does set beautifully, and makes a most delicious preserve. Loudon says that "the delicious Confiture d'Epine vinette is made from the seedless Berberry at Rouen." Our forefathers appear to have duly appreciated this fruit, as we find fine trees in almost all very old gardens. I have to thank several correspondents for information in answer to my inquiries about the seedless Berberry, for several branches loaded with fruit; and more even than this, I have had some beautiful plants sent me, which I shall watch with much interest. I suspect that most of the old trees in very old gardens in England and Scotland are of this variety. I have had it sent from Gloucestershire and Yorkshire, but Westmoreland and Dorset seem the great places for it. In both these counties it seems to grow wild in the coppices and hedge-rows, as well as being in gardens. Mr. Robert Craig, gardener, Levens Hall, Westmoreland, informs me that there are many plants of it in the woods there, many of them fine old trees. Mr. Craig has also cleared away what was before a puzzle to me, namely, how a seedless plant could get established in woods and hedge-rows. He tells me that on examining a quantity of the berries, he found that some few had seeds in them; one every now and then. This will account for their dispersion. The common Berberry makes an excellent preserve, but the seedless variety a much better one. I strongly recommend all who have fruit to try it next season. Mr. Craig also informs me that the seedless variety grows in Scotland, probably abundantly. It is, he believes, in the gardens at Falkland Palace, Lachore in Fifeshire, and at West Blair in Kinross-shire. In Switzerland, where the Berberry abounds, I do not remember meeting any seedless ones. *W. B. E.*

Viola cornuta.—Mr. Wills (see p. 147) has made some remarks respecting this Viola which I can fully endorse, having tens of thousands, indeed, I may say cart-loads of it at Osberton. Here it is used in lieu of Box edgings on rockeries, and, indeed, it is planted here and there all over the pleasure grounds; during summer it is also extensively used in the flower garden. It is a singular circumstance that like the Black Alicante Grape, this Viola, after lying in obscurity for many years, should in so short a time of its getting into good hands have reached so high a point of excellence. This Viola and the Iresine Herbstii, of which we have some thousands, are general favourites at Osberton. *Edwd. Bennett.*

——Allow me to assure Mr. Wills that this valuable herbaceous plant can be increased by means of cuttings placed in heat as easily as Lobelia speciosa or Purple King Verbena. Last autumn a friend of mine supplied me with four plants of it. I had them potted and placed in a cold frame. Receiving, as I did, with them a very flattering account of their beauty and of their usefulness for edging purposes on terrace beds, I attended particularly to them, and when we commenced propagating Verbenas, &c., in January we tried this Viola, as I have said, in heat, and with perfect success. Our stock is now being hardened off preparatory to the treatment Mr. Wills recommends for its future well-being. I have also a seed pan of this Viola in heat, which promises to be equally successful. The seedlings are now showing themselves in abundance. *James Dermott, Deanbies, Darking.*

Aucuba Berries.—It may interest some to know that we have this week picked 240 ripe berries from a plant of the common Aucuba japonica, growing in the open air. It was fertilised last spring, and has had no protection whatever. The thermometer with us has fallen to 25° this winter. *James Garaway & Co., Bristol.*

Squirrels and Pine Cones.—I observe at p. 127 of your valuable Journal, a notice of some depredations made on the cones of the Pinaster, Stone Pine, and Scotch Fir. A little observation would have shown "S. L." that the little busy squirrel was the rogue which committed the depredations, but not at this season of the year. It was during the summer and early autumn, when the cones were fully grown, and their seeds soft and full of flavour, like a new Filbert. I have for years watched their astonishing activity and perseverance on large trees close to my cottage, as well as in the large Pine plantations here about the arboretum. It is wonderful to see their activity; they run to the summit of a fruitful branch, full of seedy cones, pluck one off, scamper

back to a suitable crutched branch, or limb of the tree, sit upon their hind legs, and with both front paws hold the cone to their mouth, turning it round at railway speed, grinding off the outer scales, which fall away like chaff, while the sweet seeds are as quickly swallowed. They commence at the base of the cone, or near to it, where the perfect seeds are formed, and leave off where the seeds are not worth looking for. This will easily be seen by any observer who watches their active movements. The core of the cone they let fall, and the reason why is seen by cutting open a whole cone, which is a more difficult matter to us than to them. Within a hundred feet of my desk, and about 70 or 80 feet high, on an old branch of a large Pinus sylvestris hanging over my windows and the road, I have seen the rogues—several of them on the same tree—choose their position, gather the cones in haste, turn them round, and in less than half a minute divest them of every perfect seed. But this is not the worst of their depredations, for if they have not plenty of cones to grind, they commence eating off the two and three-year-old bark from the leaders of thrifty young growing plantation trees, and do incalculable mischief. For the last seven or eight weeks we have been more than ever subject to their devastations, especially since those tremendous hurricanes, for when cones and perfect seed run short, these rascals work at the leading shoots of the Pinus family—bark them all round from 3 to 8 inches down clean, sufficiently I suppose to satisfy their hunger, All the trees thus practised on lose their leaders, which are broken off by the stormy winds of winter. There is no more growth, and what has been made in previous years is stunted, so that the trees become worthless scrubs. Such trees are too plentiful in this locality. Another fact worthy of notice is that squirrels do not injure the cones of the Abies, Picea, or Cedrus to any extent, on account of the quantity of turpentine which sticks to their jaws and paws. Again another fact is that nothing offers to touch the cones of the Araucaria imbricata while they are on the tree, but a host of depredators are on the watch as soon as the seed falls off ripe. There are squirrels, mice, woodpeckers in variety, titmice in variety, and hosts of others who seem to smell and hunt them out, and shell out every perfect seed as soon as the wind shakes them down. Those who have not seen it can have no idea how they are watched for, and how soon they are gobbled up by one thing or another, either by night or by day. This, I must say, is not much to be wondered at, for the fresh kernels of a nicely ripened Araucaria imbricata are of a very prime flavour indeed, either fresh from the tree or roasted. No wonder the South Americans feast on them, and our birds and bipeds look out so sharply for them. *James Barnes, Bolton Gardens, Bull ugh Salterton, February* 12.

Societies.

ROYAL HORTICULTURAL: *Feb.* 17 (*Weekly Show*).—Messrs. Cutbush furnished on this occasion a beautiful show of forced flowers, consisting of Solomon's Seal, Magnolia Soulangeana, Berberis japonica, Azaleas, Rhododendrons, Dielytra, and the double-blossomed variety of Prunus sinensis. For these a 1st prize was awarded. The same exhibitors also sent a collection of forced Hyacinths, Tulips, and Polyanthus Narcissus, to which a 2d prize was awarded. They likewise exhibited 12 Hyacinths, which received a 3d prize; and a collection of Crocus, which was awarded a First-class Certificate. Mr. Robinson, gr. to R. Benyon, Esq., Reading, sent 11 beautifully-grown plants in pots of Otaheite Oranges, laden with fruit. Although the largest of the plants was not 18 inches high, some of them bore as many as 14 large full-sized Oranges. For these an extra 1st prize was awarded. Mrs. Hooke, Munster Road, Fulham, sent four pots of well-grown and beautifully-flowered Cyclamens, to which a First-class Certificate was awarded. Mr. Bartlett, of Hammersmith, again exhibited forced bulbs, to which a First-class Certificate was awarded. Mr. Young, gardener to Mrs. Barclay, Highgate, sent a collection of Dracænas, which received a First-class Certificate. Mr. Earley, gr. to F. Pryor, Esq., contributed a pot of the lovely little Scilla bifolia, and a good specimen of Franciscea eximia, which received a First-class Certificate. He also exhibited a collection of vegetables, which received the 1st prize. Mr. Beasley, gr. to Mr. T. Wood, Twyford Abbey, Acton, received a 2d prize for a smaller collection; and Mr. Earley a 3d prize for six dishes of Apples. Messrs. Lucking received a First-class Certificate for forced flowers.

Feb. 20.—Lord Henry G. Lennox, M.P., in the chair. After the election of 30 new members, and the announcement of the awards in their respective departments by the Chairmen of the Floral and Fruit Committees, the Rev. M. J. Berkeley made a few remarks on the different subjects exhibited, adverting first to a handsome form of Cattleya Trianæi, of which varieties varying from pure white to deep lilac, with a rich crimson-tipped lip, may not unfrequently be found. Plants of the common Hyacinth (Hyacinthus orientalis) and of Narcissus Tazetta, imported from Persia, were next alluded to as illustrations of the source from which the charming examples of these flowers now found in gardens have sprung. The extremely beautiful rich crimson and yellow-flowered Libonia floribunda next came under notice. It comes from South Brazil, and in this country will probably be found to succeed best in warm greenhouses, to which, owing to the profuse manner in which its showy blossoms are produced, and the small amount of pot-room it requires, it will be a real acquisition. A cut specimen of Wellingtonia from Orton Longville, the seat of the Marquis of Huntley, near Peterborough, furnished with male catkins, was then shown to the meeting by Mr. Berkeley, who stated that although the Wellingtonia had borne cones in England, he had not heard of its having produced male catkins before, and that now when it had begun to do so there might be some hope of getting it to bear seed in this country. The tree from which the specimen in question was cut forms part of an avenue of Wellingtonias at Orton Longville, upwards of 2000 yards in length. Attention was next directed to a Cucurbit from Mr. Berkeley's garden in Northamptonshire. It was stated to be a form of C. maxima from Valparaiso, and to excel in good qualities the well-known C. ovifera. Among garden seeds now being distributed by the Society, were stated to be packets of the Portmanteau Gourd, a distinct large kind; allusion was also made to the Musk Gourd, which was said to be too tender for our climate. A mould (Botrytis profusa) covering decayed Dahlia stalks, next came under observation, as did also a parasitic Fungus which infests the surface of Pear leaves. The latter, it was stated, had been proved by the Danish Professor Œrsted to be a stage of another Fungus which grows on the Savin (Juniperus Sabina); the popular notion therefore that there is some connection between the Wheat mildew and that of the Berberry may not be without good foundation.

Mr. Wilson Saunders favoured the meeting with a few observations on a little group of what are called by some "miseries of Orchids," which he showed—minute flowering species interesting chiefly to botanists. Among them were what was supposed to be a species of Leochilus, of little beauty, but having a scent like that of Heliotrope, especially when the sun shines on the flowers; Epidendrum Hormidium, the blossoms of which smelt like fresh-gathered Primroses; Pelexia triloba, remarkable for the beauty of its structure; an Eria from Assam; and others of a similar description, most of which were fastened to thin slabs of wood or cork, on which Mr. Saunders has found them to succeed best. They were stated to require a continuous supply of moisture, which is obtained not only from the air of the house in which they are kept, but also by wetting both sides of the wood on which they grow, with a syringe. Tillandsia bulbosa, attached to a block, was also adverted to by Mr. Saunders, who has found it to succeed better in that way than when grown in soil in pots. The Moss-like T. usneoides, he said, would also have an interesting appearance in stoves, treated in a similar manner, were it possible to import it alive—a difficult task. Along with these was a little creeping Peperomia, which had inadvertently turned up among some Orchids from Mr. Weir, and which, owing to its pendulous habit, had, when hung up, a singular appearance. Though a mere stove weed, it may doubtless be used with advantage in the ornamentation of hanging baskets, and for other purposes of decoration in which pendulous forms of vegetation are desirable.

A ballot then took place for cuttings of fruit trees.

Feb. 20 (*Floral Committee*).—Mr. Wilson Saunders received a special Certificate for his collection of Orchids and other plants, just adverted to. Mr. Young reproduced his collection of Dracænas alluded to above, along with which was a specimen of Bryophyllum calycinum, or Life plant. Messrs. Cutbush also reproduced the beautiful collection of Hyacinths, Tulips, Crocuses, and other forced plants, shown by them on Saturday last at the Weekly Show, and for which a Special Certificate was on this occasion awarded. A similar distinction was conferred on a fine group of Violets from Mr. Graham, of Cranford, consisting of his Czar, and a seedling from it in all respects inferior to its parent. From Mr. Bull came three Camellias. Mr. Watson, St. Alban's, sent plants of the red and white-berried Cyathodes oxycedrus, and Messrs. Waterer & Godfrey, of Woking, a charming little bush, loaded with fruit, of the green-leaved variety of Aucuba japonica. Peperomia arifolia came from Mr. Lucking. The Society's Garden furnished the beautiful variety of Cattleya Trianæi, named above, to which a First-class Certificate was awarded; various Dracænas; and the free-flowering Libonia floribunda alluded to by Mr. Berkeley.

Feb. 20 (*Fruit Committee*).—A fine display of fruit, considering the season, was produced on this occasion. To Mr. Hill, gr. to R. Sneyd, Esq., Keele Hall, was awarded a First-class Certificate for Madras Citrons, both in their natural state and preserved. For the latter purpose green fruit was considered to be better than that which is fully ripe. The same exhibitor had examples of Lady Downes' Seedling Grape, and also specimens of the Golden variety of it, still plump and sound. Mr. Rivers received a similar award for a collection of American Apples, with clean bright-coloured skins, the result of the warm summer of last year. They were stated to have been grown on dwarf bushes grafted on the English Paradise stock. Mr. Ford, gr. to W. E. Hubbard, Esq., Horsham, also received a First-class Certificate for a collection of Apples in an excellent state of preservation; among them were Court Pendu Plat, Scarlet Nonpareil, Blenheim Orange, Adam's Pearmain, Golden Harvey, Pearson's Plate, Bess Poole, King of the Pippins, Elstead Pippin, Norfolk Beefing, and several others, together with some kitchen and dessert Pears, Limes, and Oranges. Mr. Lynn, gr. to Lord Boston, furnished handsome examples of Hedsor Winter Prolific Cucumber, a free-bearing sort, apparently very useful for early forcing, and 15 dishes of Apples, among which were beautiful fruit of Bess Poole, Scarlet Nonpareil, and Pearmain, Cockle Pippin, Lewis's Incomparable, Herefordshire Pearmain, Sturmer Pippin, Cox's Orange Pippin, Court Pendu Plat, Wellington, Lemon Pippin, and French Crab, for which a Special Certificate was awarded. The same exhibitor had also Black Hamburgh Grapes, ripened last September, still in good condition. Seedling Apples were shown by Mr. Watson and Mr. Ford; but in both cases they were past their best, and were requested to be shown again.

LINNEAN: *Jan.* 18.—George Bentham, Esq., President, in the chair.—The Rev. C. Clarke; D. G. Elliot, Esq.; H. G. Knaggs, M.D.; W. J. MacLeay, Esq.; and C. A. Wilson, Esq., were elected Fellows. Dr. St. Brody exhibited a packet of Introduced Plants collected by himself during the past year, chiefly in the neighbourhood of Gloucester, and a few of which he believed to be new to Britain. The following papers were read:—1. *Flora of Banda*, by M. P. Edgeworth, Esq. This paper consisted of a list of the plants collected in the district of Banda, by the author, during a residence of two years in 1847-9, and was originally published in 1850 in the Journal of the Asiatic Society; the specimens having subsequently been collated with others in the Herbarium at Kew, which had rendered many rectifications of names necessary, it was now laid before the Linnean Society.——2. *On some New British Polyœnia*, by E. Ray Lankester, Esq., communicated by J. G. Jeffreys, Esq.——There were also read two letters communicated by Dr. Hooker, the one addressed to him by C. J. Meller, Esq., dated Bourbon, Dec. 3, 1865, and containing some notes on the botany of Bourbon and Madagascar; the other from S. Ward, Esq., dated Government House, Seychelles, Dec. 5, 1865, and giving some further information respecting the Coco de Mer, Lodoicea sechellarum.

Feb. 1.—George Bentham, Esq., President, in the chair. C. E. Broome, Esq., was elected a Fellow. The following paper was read: *On some Points in the Anatomy of the Echeneïs Hystrix*, by St. George Mivart, Esq.

ZOOLOGICAL OF LONDON: *Jan.* 9.—A. Newton, Esq., F.L.S., in the Chair. A letter was read from Sir C. W. Dilke, Bart., announcing the occurrence of a gyr falcon (Falco gyrfalco) in the Holt Forest, near Farnham.——Professor Owen read a memoir on the Osteology of the Dodo (Didus ineptus, Linn.). The materials upon which Professor Owen's researches were based consisted of about 100 different bones belonging to various parts of the skeleton, which had been recently discovered by Mr. G. Clark, of Mahéberg, Mauritius, in an alluvial deposit in that island. After an exhaustive examination of these remains, which embraced nearly every part of the skeleton, Professor Owen came to the conclusion that previous authorities had been correct in referring the Dodo to the columbine order, the variations presented, though considerable, being mainly such as might be referable to the adaptation of the Dodo to a terrestrial life and different food and habits.——A paper was read by Dr. J. E. Gray, containing "Descriptions of two new forms of Gorgonioid Corals from Japan and the Cape of Good Hope."

Notices of Books.

The Food, Use, and Beauty of British Birds. By Charles Ottley Groom Napier. Pp. 83. London: Groombridge.

This little book may be recommended to the notice of our horticultural and agricultural readers, both much concerned in the depredations committed by birds. It consists of a catalogue of all the commoner birds of our island, with indications of their localities, utility, beauty, rarity, &c. But the most important feature of the whole is a detailed account of the food obtained by these feathered bipeds at different seasons, an account drawn up after an inspection of the contents of the stomach. The poor birds are thus often caught *flagrante delicto*, but we are glad to find that on the whole our author inclines to the

opinion that the harm they do is more than compensated for by the benefits they render.

We rejoice to find our pets the blue tit and the great tit, for instance, which generally are in bad repute, thus mentioned:—"In January the stomach (of the great tit, Parus major) contains birds (*sic*) and insects. In February and March seed, insects, and parts of small birds. In April insects and their larvæ, often extracted from under the buds of trees; but actual buds are very rarely found in its stomach. Now, a bud that has been ruined by a dipterous, coleopterous or lepidopterous larva never can expand into a perfect leaf, the sooner it is plucked off the better, the sooner will the tree produce other buds, and the sooner the larva is extracted the better, and the eggs that produce them, deposited as they so frequently are in or about the buds. The bird removes the insects or their eggs, and often the ground is strewn with buds, out of which the tit has extracted the worm. This often leads, on the part of a superficial observer, to a false conclusion, and consequent persecution of the tit. These remarks apply with even greater force to the blue tit, Parus cæruleus."

J. Taylor & Son's Northamptonshire Handbook and Illustrated Almanack and Diary. 8vo. Pp. 224. With a County Map and several Woodcuts.

This is quite a model of a county almanack, containing as it does an excellent map, with every kind of information which can be desired by the various classes of which the population is composed. The merchant, sportsman, churchman, nonconformist, with a host of others, will find exactly what he wants in his own department, besides a mass of entertaining and instructive information. One distinguishing feature is a record of remarkable fires which have occurred in Northamptonshire, and we hope that the Editor, following the line which was traced out by the lamented Rector of Theddingworth, Mr. James, in his instructive article in the "Quarterly Review," on the more striking features of interest in the county, will furnish us in future years with much analogous matter. The account especially of the Great Fire of Northampton in 1675 will be read with general interest. Doubtless many other records of similar calamities exist, which have not fallen under the Editor's notice. There is a tradition, for example, of two great fires which took place at King's Cliffe, the one in the reign of Edward III., the other at the beginning of that of James I. The palace at Cliffe fell a sacrifice to the first, and was never rebuilt. No traces now remain of the superstructure, though in that part of the churchyard on which a portion of the palace stood, the sexton often comes upon the foundations. The dam of the King's enormous fish-pond still remains nearly perfect. In Rymer's "Fœdera" we meet with occasional notices of the King's sojourn at the palace, as, for example, on August 8, 1330; but the neighbouring Castle of Rockingham seems to have been a favoured resort. The latter fire destroyed the greater part of the town, and all the older houses in the parish are of the beginning of the 16th century.

James I., in his progress from Scotland to London in 1603, spent some time at Sir Anthony Mildmay's, in the adjacent village of Apethorpe; but we have no record of his visiting the site of his palace, which had already passed into the hands of the Lord Treasurer Burleigh. There is still in the library at Apethorpe a copy of the sermon which was preached before him by a Mr. Evans, which is remarkable at once for its cleverness, quaintness, and the boldness with which he spoke to the King's Courtiers. It was on this occasion that James I. met with Villiers, Duke of Buckingham. The ancient family of Lynn resided in the neighbouring village of Southwick, and young Villiers came to Apethorpe with his tutor, Anthony Cade, who had married into the Lynn family, where he was introduced to the King. There is still extant a painting of the favourite when *in statu pupillari*, with an excellent likeness of him in maturer years by Cornelius Jansen. We could point out a great many more matters of interest from the same collection, but we have already trespassed too much in a direction which is remote from any horticultural interest.

Books Received.—*Land and Water.* A new candidate for public favour, which might fairly have been called Water and Land. At any rate, one great object of the paper is to promote the improvement of our British river and sea fisheries. It is understood that the management of the newspaper is in great measure in the hands of Mr. Frank Buckland, from whose versatile and lively pen the reader may look for amusement as well as instruction. Sports of all kinds form the staple of the paper, but, as we have indicated, there is an infusion of the useful with the sweet. The gardening column is edited by Mr. G. M. F. Glenny, Jun.—The *Technologist* for February contains among other articles notices of the manufacture of sugar in Mauritius, on Papermaking materials in Russia, in which country it appears that Flax is largely grown, but only on virgin soil and for its seed chiefly, and it does not seem probable that it would pay to export the fibre to this country for paper making. — *Fraser's Magazine* contains articles on the schools and dwellings of the indigent class, and on the insurrection in Jamaica, by a resident, who justifies in general terms the proceedings of Governor Eyre. Mr. G. O. Trevelyan contributes a lively dramatic sketch entitled The Dawk Bungalow, or "is his appointment pucka?" &c.

Florists' Flowers.

The Gladiolus.—As my friend, "J. F. L.," has alluded to me in his excellent article (p. 79) on this our favourite autumn flower, I cannot let the discussion as to varieties pass by without a word of notice on my part, and especially as to those raised by Mr. Standish, of Bagshot, of whom our neighbours across the water are somewhat jealous; in fact, one grower, M. E——, told me that Mr. S. bought Souchet's refuse! and was not a little staggered when I told him I had seen them from the time the seed was fertilised until the roots bloomed, and that I considered some of his sorts quite equal to the very best of Souchet's. But Mr. Standish has not done himself justice; he felt that he had a good strain, and so, as soon as he had obtained a few roots of each sort, he put them into his catalogue. Had he waited, increased his stock of particular varieties, and weeded some out, he would have done himself more honour.

I consider that of those that I have seen, and which are for sale, the very best are:—

Eleanor Norman.	Lucy Neal.
Sir James Clark.	The Ensign.
Mrs. Dombrain.	Norma.
Miss Howell.	Mrs. Curling.
J. W. Lane.	Dr. Hogg (too small).
Samuel Weymouth.	Caroline.
Susan Ingram.	Carminata.

My opinion of the foreign varieties coincides with that of "J. F. L." John Waterer I do not like for the reason that he condemns it, and I should certainly not think as yet of descending to Peter Lawson, Stuart Low, Madame Pereire, and others that he names. I wish more encouragement was given to the Gladiolus at our autumn shows; it is evidently as worthy of as good a prize as the Dahlia—not so many classes, but as valuable prizes. *D., Deal.*

The Apiary.

Bee-Keeping in Sussex.—We are much obliged to "A Sussex Clergyman" (see p. 151), for the succinct account of his apiarian doings for the year 1865. His success certainly was not very brilliant, but we know of many bee-keepers who, last year, with apiaries of equal or superior pretensions, failed in realising even his results.

He was not fortunate in obtaining honey from his swarms, whether natural or artificial, or from the stocks which gave off the swarms. From one of our hives which threw off a very fine swarm we obtained, in addition, a super of 55 lb., while from one of our swarms we realised a super of 25 lb. Several other of our swarming stocks gave a small quantity of honey, and the majority of the swarms stored far more than 22 lb., the amount of the contents of our correspondent's swarm at the end of the season. These results are not in any way attributable to better management, but to our district being somewhat more favourable, at least during the early part of the season.

Supers should be removed as soon as they are completely filled. Not only does the honey find a readier sale, but it usually commands a higher price. And the sooner it can be taken from the bees, the better will be the colour and purity of the combs. With regard to the best time for cottagers to break up their hives, much must depend on the locality. Where Heather abounds, it would be folly to destroy the bees in July, and in no district should we advise so early a general breaking up. There is an enormous quantity of brood in the cells all through that month; as this is gradually hatched out, should the secretion of honey be moderately plentiful, the cells are filled with honey. If the stocks are taken up in July, a vast amount of brood is sacrificed, with less honey stored. If this most valuable brood is saved by the more advanced apiarian, and used for the strengthening of other colonies, then there is less objection to so early an appropriation of the honey harvest. But as we cannot expect cottagers to take even so small an amount of trouble as that of preserving and giving to other stocks the brood which may be found in the doomed hives, we had better let them follow out their own old course of routine.

We have not been in the habit of adopting any means of defending hives from the influence of cold, by any extra wrappings or protection beyond what is afforded by loose outside cases of half-inch wood. Many of our hives have not even this last covering, but are quite exposed, with the exception of roofs to throw off the rain. Since, however, so much has been said about dysentery, and the evil effects of condensed moisture within the boxes, it has been recommended by the Rev. L. L. Langstroth and others, to remove the top boards, and substitute layers of some woollen material, or loose covers of straw. The plan seems likely to prove beneficial, and we have partly adopted it this spring. We shall be glad to hear whether our correspondent's bees winter better for this extra padding of hay, with an account of the state of his boxes some time in March, as to whether they are much affected or otherwise with dampness of the interior, and mouldiness of the combs. It remains to be proved whether the stuffing of hay will not itself become damp and musty, and add to the evil instead of lessening it.

Our correspondent is also unfortunate in having the combs in his frame hives built across the bars. He cannot have used sufficient guide combs; but, in any case, this is the first time we have heard of the ribbed Woodbury bars proving a total failure. As almost the entire benefit which accrues from the use of frame-hives consists in every comb being easily manipulated, we should not rest satisfied with our correspondent's present state of affairs, but at whatever cost of trouble, and at whatever risk of injury to the stocks in question, we should dislodge the bees, carefully cut out the combs, and fix them straight in frames for the bees to secure and properly fill up. Our correspondent cannot do better than follow the directions which were given in answer to a previous query on the same subject, which will be found at p. 703 of our last year's volume. Proceed first with the rectification of the combs of the frame hive, prior to attempting the union of the bees and brood combs of the stock which it is desired to break up. About the end of March or beginning of April, provided the weather be sufficiently mild and favourable, will be the best time for the joint operations.

Garden Memoranda.

Kinfauns Castle, Perthshire.—This, the principal seat of the Right Honourable Lord Gray, is situated on the south-east side of the city of Perth, from which it is distant little more than three miles. The Castle, a noble structure, is built of pale-coloured enduring sandstone, in the Gothic style, from designs furnished by Sir Robert Smirke. It is placed on an eminence which projects boldly from the south side of the Sidlaw Hills, a range which stretches along the north side of the river Tay, from the adjoining county of Forfar, increasing in altitude and sylvan grandeur as it approaches the termination at Perth, which is its western limit. The portion of it which lies westward of the Castle is known as the Hill of Kinnoul—one of the most interesting and beautiful of the Scottish mountains. Along the summit of the whole ridge is presented a broken range of perpendicular grey rocks, many of which are more than 300 feet in depth, and amongst their debris agates and pebbles of good quality may be found.

The principal approach from the Perth and Dundee road enters the domain by a neat lodge and gate, and winds up a somewhat steep ascent, admirably bordered on either hand by venerable masses of stately trees. The grand terrace in front of the Castle is elevated far above the receding ground below; it is merely laid out in Grass, the well-shaven surface of which is in excellent keeping with the broad, well-kept rectangular walks with which it is skirted. The scenery from this spot is exceedingly diversified and beautiful, backed up as it is on all sides by hills and mountains of considerable altitude. On the left a densely Pine-clothed conical hill protrudes its unique form into the plain, its top being surmounted by an observatory and flag-staff. In the foreground beneath, the Tay suddenly alters its course southwards, and soon after joins the Fargand the Earn—rivers which issue from a valley beyond the mountain on the right; these united waters being stemmed in their onward course by the mountains of Fifeshire in the distance, present the appearance of a broad, sinuous, irregularly-margined lake, studded with well-clothed islands.

The pleasure ground is situated on the western side of the Castle, on an irregular acclivity extending onwards to the summit of the highest peak of the range of mountains adverted to above. Gilpin and other artists were consulted in the laying out of these grounds, which are of considerable extent, and through which walks are judiciously led so as to display their many treasures, as well as the magnificent scenery of the adjacent country. Immediately opposite the western front of the Castle, a tiny cascade pours its murmuring waters into a chasm of some little depth. On the southern side are many venerable forms of Oak, Plane, Beech, and other round-headed trees, which are over-topped by exalted Poplars, Elms, Silver and Spruce Firs—of the latter a noble finely clothed specimen measures 90 feet in height. Associated with these are nice trees of Purple Beech, white Poplar, and Weeping Ash; and a grotesque form of gnarled Elm has a singular effect, as has also a curious example of Horse Chestnut. On the turf, distributed about in masses, are Rhododendrons, Portugal Laurels, Yews and Hollies, amongst which are good examples of Tulip trees, Fern-leaved Beech, Turkey Oak, and others; with which are associated Thujas,

Chinese Junipers, Mount Atlas Cedar, Arbor-vitæ, the broad-leaved variety of the Douglas Fir, and other evergreen trees. A good-sized specimen of the Deciduous Cypress had at the time of my visit just began to assume its scarlet autumn livery—a lovely object. Rhus Cotinus, too, was very interesting. Seats, both covered and open, are placed at convenient distances along the sides of the southern walks, so as to command views of the delightful country beyond.

The kitchen garden, with its accompanying orchard slip, contains an area of something like 8 acres. Its site at no very remote period had formed the bed of a river; the soil therefore is of a rich alluvial character; and although the drains are frequently filled by the action of high tides and occasional floods, it is notwithstanding admirably adapted both for the production of fruit and vegetables. It enjoys, too, an admirable situation, with a full exposure to the sun, and is screened from the wind in all directions, lying, as it does, at the bottom of the hill in front of the Castle, from which it is hidden by the stately trees in which this noble building is embosomed, and through which it is approached by a broad walk from the left-hand side of the carriage drive, leading to its main entrance at the western side, immediately in front of the gardener's house, a commodious two-storied erection. Here there is a flower garden laid out in beds, which in summer are well filled with gay plants, amongst which golden-foliaged Pelargoniums and the graceful Humea elegans produce a fine effect. Associated with these are masses of Rhododendrons, Portugal Laurel, Hollies, &c.; and there are also scattered about good examples of Araucaria imbricata, Wellingtonia gigantea, Cedrus Deodara, Cupressus Lawsoniana, Variegated and Weeping Elm, Purple Beech, Variegated Holly, Garrya elliptica, Pampas Grass, and other specimens of interest. A rockery immediately in front of the windows is sparsely covered with Ferns, intermixed with various minute forms of native plants. The boundary walls are covered with Magnolia, Pyracantha, Calycanthus, Ceanothus, &c., amongst which Clematis, Roses, and plants of that kind flower abundantly. From this point a broad walk extends to the extreme end of the principal portion of the garden, which is a lengthened parallelogram, and contains an area of some 2½ acres, enclosed by lofty brick walls. In the centre of the southern side of the north wall the hothouses are placed. They are in two ranges, each 100 feet in length and 19 feet in width, with a lofty detached greenhouse in the centre. The adjoining ranges consist of several divisions, heated by smoke flues, and filled with Grapes, Peaches, and Nectarines. The main walk in front of the houses is bordered with a broad band of Cerastium tomentosum, whose silvery foliage has a fine effect, and contrasts nicely not only with the Box edging in front, but with the lines of glowing colour behind it, with which the borders in summer are ribboned. Immediately in front of the greenhouse, at the junction of the centre walk with the main walk, there is a circular basin, the borders on the outside of which are filled with select specimens of herbaceous plants and Roses, intermingled with varieties of Gladiolus. The other walks are lined on either side with dwarf standard Apple trees, amongst which we observed Cornish Gilliflower, Dutch Mignonne, Gogar Pippin, Ribston Pippin, Early Margaret, Newton Pippin, Irish Peach, Paradise, Ravelstone, several varieties of Pearmains, and other table Apples; of kitchen fruit there were Dumelow's Seedling, Royal Russet, Bedfordshire Foundling, Reinette du Canada, Hawthornden, Tower of Glamis, Alfriston, Yorkshire Greening, King of the Pippins, Keswick Codlin, Brabant Bellefleur, Waltham Abbey Seedling, Gravenstein, &c. In the orchard are grown on standards a considerable collection of Apples and Pears, amongst which there were good examples of Golden Pippin, Oslin, and Ribston Pippin. Of Pears, we noted Comte de Lamy, Hacon's Incomparable, Seckel, Marie Louise, Citron des Carmes, Moorfowl Egg, as well as Beurrés and Bergamots of sorts; there were also many of the older kinds of Scotch Pears, such as Black Achan, Kilwinning, Crawford, Green Yair, &c. Growing on walls were good examples of Jargonelle, Passe Colmar, Comte de Lamy, Easter, Brown, and the Diel Beurrés, Doyenné Gris, Duchesse d'Angoulême, Crassane, and the Pound Pear. The smaller fruits, such as Gooseberries, Currants, Raspberries, and Strawberries are well grown, and produce magnificent specimen fruits of their respective kinds. Vegetables, too, were of the very best description. Behind the hothouses on the northern wall is a long range of sheds, in which the stoke holes, fruit rooms, Mushroom-house, &c., are situated; there is also a considerable portion of ground beyond this point, on the slope of the hill, enclosed by a lofty brick-flued wall, to which however artificial heat has not been applied in recent years. These walls have also the advantage of a broad projecting coping board. They are all finely covered with healthy well-trained trees, both of Pears, Plums, Cherries, Peaches, Nectarines, and Apricots. At the north-east corner of the garden, on the slope of the hill, are several ranges of pits in which Pines were formerly grown, but which are now principally used for growing plants into specimens for the greenhouse, and storing bedding plants in winter. Here also are other pits and frames for the production of Cucumbers, Melons, and other forced articles required for the consumption of a large family.

These gardens were formed by the late Mr. Campbell about the year 1817, a man not only eminent as a cultivator, but who had also directed his attention successfully to the raising of new fruits and flowers. He continued to superintend their management until 1827, when he was succeeded by the late Mr. Robertson—a name well known both to Scottish botanists and horticulturists. They are now under the care of Mr. McDonald, a most enthusiastic and skilful cultivator. *D.*

Calendar of Operations.

(For the ensuing week.)

THE strong gales lately experienced have everywhere been very destructive to aged timber trees, in some instances blowing them down altogether, in others inflicting on them partial injury. In both cases, therefore, see that the damage done is repaired with as little delay as possible. Roll walks and clear lawns from dead spray, so as to have them in proper order for the scythe or machine.

FLOWER GARDEN AND PLANT HOUSES.

Many plants, as for instance Phloxes, Asters, &c., throw up too many flowering shoots; where such is the case, thin them out as soon as that operation can be done, so as to obtain not only fine heads of bloom but increased strength in the remaining shoots, to enable them to stand with less assistance from stakes. Secure all newly-planted trees against wind, and mulch well over the roots.

AURICULAS. Protect young growths of these from frost, and as the season advances water more frequently, as well as more liberally; weak liquid manure once a week will strengthen the trusses; give plenty of air, and fumigate occasionally to keep down green-fly.

AZALEAS.—Give young growing plants of these liberal shifts; a good fibrous peat with a little white sand suits them admirably, but for stronger kinds a small portion of loam may be used with advantage. When potted the plants should be put into a nice moist growing atmosphere, and they should have a temperature of from 55° to 60° at night, and from 65° to 70° during the day time; give air freely in fine weather, and attend regularly to the stopping, thinning, and training of the shoots.

BEDDING PLANTS.—Push on propagation of all kinds, in order to have thoroughly established and well hardened plants by May. Pot off autumn-struck cuttings at present in store pans.

CALCEOLARIAS. — Any herbaceous sorts struck during the winter should be repotted into 4-inch pots to succeed the first plants.

CARNATIONS AND PICOTEES.—Strong varieties may now or very soon be put into larger pots. If there is any green fly on the plants, give them a good smoking with tobacco or tobacco-paper before taking them from the pit. The latter end of next month will be soon enough for planting out in borders.

CINERARIAS.—Such plants as are intended for exhibition should now have their small leaves and superfluous shoots removed, to admit light and air; tie out as thinly as possible, and keep them as near the glass as may be convenient; fumigate, so as to have them thoroughly clean before coming into flower, and sulphur such as may be affected with mildew.

TULIPS.—Protect the best bed when necessary, but do not keep it so close as to excite weakly growth.

FORCING GARDEN.

CUCUMBERS.—Maintain for these a steady heat of 65° or 70° at night. Give air on every favourable opportunity.

FIGS.—Keep the shoots thin, and persevere in the use of the syringe to keep down red spider. Give air freely on bright days, shutting early in the afternoon after syringing the house.

PEACHES.—Proceed gradually with the disbudding of the trees in the early house, and where the fruit is very thick a portion should be removed as soon as fairly set.

PINES. — Look over young stock, occasionally examining and repotting such as is found to be in want of more pot room. The temperature may be slightly advanced as the amount of light increases. Aim at securing strong dwarf plants, with a free habit of growth; and if this is obtained, it is immaterial whether the night temperature is 60° or 70°.

STRAWBERRIES.—Continue to bring on succession plants very gradually, and afford those in bloom a rather dry atmosphere, and a free circulation of air, as they set badly in a moist close atmosphere. Plants swelling their fruit must be liberally supplied with clear manure water; and if fine large fruit is expected, thinning must be resorted to immediately the berries are fairly set.

VINES.—See that Vines starting into growth are tied up in their places before the shoots get so long as to be liable to be broken off in the operation. Syringe frequently until the leaves begin to unfold; but use the syringe sparingly after that time. Where the buds do not promise to break regularly, bend the Vines so as to place those that are backward in the most likely position to catch the sap, and this should be done directly any indications of their not breaking regularly are observed. If any of the bunches in houses where stoning has been finished, look as if they would be improved by a few more berries being cut out, let this be done at once.

HARDY FRUIT AND KITCHEN GARDEN.

All pruning and nailing must be brought to a close. Make timely preparations for protecting wall trees. Be sure that everything is in readiness for that purpose, so that the material to be used can be put up in a short time when it is needed.

CARROTS.—The Early Horn should be got in about this time, to succeed those sown on heat.

CAULIFLOWERS.—When large enough, and the weather has become warmer, these should be carefully pricked out, either in gentle heat, or on a warm sheltered border; if the latter, they will require protection until well rooted.

TURNIPS.—Sow Early White Dutch on a gentle bottom-heat, and also a supply for succession in a warm border.

STATE OF THE WEATHER AT CHISWICK, NEAR LONDON.

For the Week ending Feb. 21, 1866, as observed at the Horticultural Gardens.

Feb.	Above Average	Barometer: Max	Barometer: Min	Of the Air: Max	Of the Air: Min	Of the Air: Mean	Of the Earth: 1 foot deep	Of the Earth: 2 feet deep	Wind	Rain
Thurs. 15	0	29.457	29.332	49	35	42	43	43	W.	35
Friday 16	1	29.501	29.420	50	35	42.5	43	44	S.W.	24
Satur. 17	2	29.561	29.420	50	37	43.5	43	43.5	N.	12
Sunday 18	3	29.567	29.401	41	30	36.5	43	42	N.	06
Mon. 19	4	29.596	29.389	42	30	36.0	42	42	N.W.	00
Tues. 20	5	29.601	29.390	43	30	36.5	42	42	S.E.	00
Wed. 21	6	29.488	29.179	45	25	35.0	41	42	S.E.	00
Average .		29.567	29.388	44.9	29.4	36.9	42.5	42.6		0.71

Feb. 15—Hoar-frosty rime at night.
" 16. 12am. constant rain with S.W. wind.
" 17. 1am. clouds very dense, shape best at night.
" 18. Hoary rime; hoar-frosty.
" 19. 11 am. cold and fine; very cold. frosty.
" 20. Frosty rime; hoar-frost; very cold at night.
" 21. 4 pm. mainly overcast; cloudy fine; light frost.
Mean temperature of the week 11 degs. below the average.

STATE OF THE WEATHER AT CHISWICK.

During the last 10 years for the ensuing Week, ending March 3, 1866.

Feb. and March	Average Temperature of the Week	Highest Temperature of the Week	Lowest Temperature of the Week	Mean Temperature of the Week	No. of Years on which the Rain is Reckoned	Greatest Quantity of Rain	Average Amount of Cloud at 9 A.M.	Average Amount of Cloud at 3 P.M.	Average Amount of Cloud at 9 P.M.	Prevalent Winds
Sunday 25	42.4	52	29.9	39	10	0.92 in.	5	6	6	S.
Mon. 26	42.4	53.1	30.2	41.6	21	0.48	4	7	5	S.
Tues. 27	42.5	53.6	30.4	41.9	14	0.46	4	5	4	S.W.
Wed. 28	42.6	54.1	31.1	42.6	14	0.81	4	5	5	S.W.
Thurs. 1	42.7	54.8	30.6	42.7	15	0.45	5	7	5	S.W.
Friday 2	42.8	54.8	30.8	42.1	13	0.22	5	7	6	S.W.
Satur. 3	42.9	55.0	31.0	43.0	12	0.48	5	6	5	S.W.

The highest temperature during the above period occurred on the 3d 1865—therm. 62 degs., and the lowest on the 3d 1862—therm. 14 degs.

Notices to Correspondents.

CINERARIA: *C. H.* Varieties with a yellow disk are not used with, in cultivation because they are liked for it being laid by the fancy that the disk should be dark. They occur naturally in every batch of seedlings. Yours will not be likely to meet with much favour amongst growers: Gay as it undoubtedly is, it too much recalls a single-flowered purple Jacobæa.

DEALERS: *Old Subscriber.* The rule referred to as adopted by the Royal Caledonian Horticultural Society, namely, that dealers shall not be allowed to compete with gardeners and amateurs in certain classes, must refer to persons regularly engaged in trade. It is no doubt true as you say that the gardeners of some noble dukes and others in the country are in the habit of supplying plants, fruits, and cut flowers to shop-keepers, regular accounts being rendered and discharged for the same; and it is also true that in certain sense this constitutes dealing. Such persons, however, we imagine, are not contemplated by the rule in question, but only those ostensibly trading as nurserymen, florists, fruiterers, &c. If you think any misgivings would be obviated by a hint for a definition from the officials, who will no doubt attend to any reasonable inquiry. We must decline giving a legal opinion on the question you propose; for that you had better consult your solicitor.

FIGS (*to the Rev. Sidney Jones*). The edible portion of the Fig consists of the upper portion of the branch, which becomes succulent; the true flowers are in the interior, and when mature form the so-called seeds. These latter will, if fertilised, produce seedlings.

ISLEWORTH EXHIBITION: *J. Mc I.* Neither vegetables grown on a south border, and merely protected by some of the many kinds of covering used for sheltering purposes, nor Cauliflowers grown under handlights, could be considered as forced. To be so forced they must be grown throughout by the aid of artificial heat, under glass.

NAME OF FRUIT: *T. D. H.* Dumelow's Seedling Apple.

NAMES OF PLANTS: *J. Matthews.* 1. Lonicera fragrantissima. — *W. H. P.* Sedum acre.

PEARS: *J. S. M.* Uncertain. Hardy is a very excellent Pear, and will bear well either in the shape of standards or on walls. We know of no nurseryman who will supply "pieces of flowers to young gardeners in order that they may get to know their names."

PIT MANAGEMENT: *Master Gardener.* Collect your vegetable refuse into a heap, for which, if you can afford it, we would recommend a covering open at the sides and ends, to throw off heavy washing rains and excessive sun heat. If the mass be kept in a heat, not wet or dry, it will be a most fit for use.

SOAPSUDS: *Cottager.* These are said to prevent clubbing in Cabbages, on which they have also a good effect in the way of mildew.

TEA LEAVES: *Subscriber.* The spots on your Tea leaves arise partly from a minute fungus which is still in every early stage of growth and without fructification, and partly from the leaves being chilled or scorched by traps of moisture, more probably the former. *M. J. B.*

COMMUNICATIONS RECEIVED.—Mr. Sheldon.—Mr. Ash.—Mr. Kyelage.—Hexham.—Dr. Ford Macdiet, Melbourne.—E. Wareham.—Dr. Regel.—F. Matthew.—P. L. Simmonds.—J. Anderson.—Prof. Balfour.—Mr. Walton, Shrewsbury.

Notice.

PURCHASERS of LARGE QUANTITIES of FARM or GARDEN SEEDS will be supplied liberally by SUTTON & SONS. For prices apply stating quantity required to SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

GRASS SEEDS for Laying Land Down to Permanent Meadow and Pasture, allowing 2 bushel of Large Seeds, and 12 lbs Small Seeds to each acre. Price 30s. per acre.
MIXTURES for IMPROVING OLD PASTURES, 1s per lb
MIXTURES for LAWNS, 1s. per lb.
PRICE LISTS free.
GEORGE GIBBS & Co., Seedsmen 25 and 26, Down Street, Piccadilly, W.

Brighton and Sussex Seed Warehouse.

EDWARD CARPENTER'S MIXTURES of PERMANENT GRASS and CLOVER SEEDS.—Best quality, 28s. per acre; 6 bushels Small Seeds, and 12 lb. Clovers and small seeds per acre. See testimonials in Catalogue
EDWARD CARPENTER'S RENOVATING MIXTURES for Improving Old Pastures.
PRICED CATALOGUES of KITCHEN GARDEN, FLOWER, and FARM SEEDS now ready.
EDWARD CARPENTER, Seed Merchant and Grower, 96, St. James's Street, Brighton.

FINE GRASS LAWNS in FLOWER GARDENS, &c. —The great expense of cutting and carting Turves from a distance may be avoided, and a superior Turf produced in a few months by sowing SUTTON'S LAWN GRASS SEEDS, which consist solely of the finest and shortest-growing kinds, perfectly free from Moss and other weeds.

From Mr. JOHN JOHNSON, *Gardener, Mowbray Park, Sunderland, April* 26, 1865.
"The Lawn Seed we got last year about this time has come up excellently."

From Mr. THOMAS POTTINGTON, *Gardener to* H. W. VINCENT, Esq., *Bardwell Grove, Bayford, January* 19
"The Grass Seed you supplied last year with last season grew remarkably well, the grass even under trees. I think every seed grew."

From HENRY H. CAVE, Esq., *Desborough, Market Harborough, May* 13, 1865.
"The Lawn Grass Seeds I had from you last year have made a very good turf already."

From J. NIGHTINGALE, Esq., *High Street, Kingston on Thames, May* 2, 1866.
"I have said that the Grass Seeds you supplied last year, have most wonderfully answered the very unfavourable season, exceeded very well."
SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

Improvement of Grass Lands.

SUTTON'S RENOVATING MIXTURE SHOULD NOW BE SOWN.

This Mixture consists of the finest Grasses and perennial Clovers, and if sown early in the month in the manure in the pasture will be very great, and at small expense (quantity of Seed required per acre, 56 to 112 pounds. Price 16d. per lb

From T. E. OSMOND, Esq., *Thorpe-le-soken, February* 27, 1865
"I find Renovating Mixtures for old pastures have answered my purpose well."

From C. BRACKETT, Esq., *Thorpe Lee, Egham, September* 29, 1864.
"Mr. Blackett will be obliged to Messrs. Sutton to send him Renovating Mixture for 1 acre the same as supplied last year. It was excellent."

From W. HARRIS, Esq., *Ashton-upon-Mersey, Wilmslow, June* 1, 1865
"You will be glad to hear that your Renovating Mixture for our Bowes Meadow answered remarkably well. It is now the greenest and longest grass I have in the meadow."
PRICED LISTS gratis and post free. All goods carriage free, except in small parcels
SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

Very Early Sheep Feed.

SUTTON'S IMPROVED ITALIAN RYE-GRASS.—This "Improved" Italian Rye-grass is recommended in preference to every other variety, producing heavier crops for heavy crops in one summer, and being almost if not strictly perennial.
At a Meeting of the Royal Agricultural Society, on March 16, in a Lecture delivered by Alfred Hughes, Esq., of Thorness, Isle of Wight, Mr. Hughes said,—
"I always reserve a portion of Oat land to lay down with SUTTON'S Improved Italian Rye-grass, for which purpose I have grown it for nurses for some years for Ewes and Lambs in the Spring. When I tell you that I put it in in the spring, and dressed it after harvest with guano, and fed it in the autumn with Ewes and Lambs, and that it grew to their knees, and that I fed it off again this spring with Ewes and Lambs, I think you will agree that this is a crop of very great value. The Italian Rye grass which I sold by SUTTON, of Reading, is a most astonishing grass plant indeed, I never saw anything to equal it in the course of all my experience."
SUTTON & SONS have a finer stock at present of their Improved Italian Rye-grass which is a very different and superior article to much that is sold as Italian Rye-grass
Present price, 6s. 6d. per bushel; cheaper in quantities over 5 qrs. Carriage free in quantities of 8 bushels and upwards.
Quantity required per acre, 2 bushels, or, when alone, 3 bushels.
Royal Berkshire Seed Establishment, Reading.

PRESENT PRICES of CLOVER SEEDS. Cheaper by the cwt. Samples and lowest price per cwt. forwarded on application
BROAD RED, Best, 1s. per lb.; Second Quality cheaper
YELLOW TREFOIL, Best, 6d. per lb.; Second Quality cheaper.
WHITE DUTCH, Best, 1s. per lb.; Second Quality cheaper.
ALSIKE CLOVER, 2s. per lb.
PERENNIAL WHITE, 1s. 4d. per lb.
COW GRASS, 1s. to 1s. 2d. per lb.
PINK MEDIO CLOVERS, 8d. per lb.
PRICED LISTS of FARM SEEDS, Gratis and post-free.
SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

SUTTON'S MIXTURES of CLOVERS and RYE-GRASS.—To be sown with Corn for a crop of Clover, &c., which will produce good feed during the Autumn, and in the following year.
CLOVER and ITALIAN RYE-GRASS MIXTURE (Messrs. SUTTON'S Mixture), for one Year's Crop on Hay, at 16s. per acre.
CLOVERS and COMMON RYE-GRASS (Messrs. SUTTON'S Mixture), for one Year's Crop on Hay, at 12s. per acre.
CLOVER SEEDS WITHOUT RYE-GRASS (Messrs. SUTTON'S Mixture), at 12s. 6d. per acre.

In the Mixtures of Clovers and Rye-Grass described above, we generally add 3 lb of Trefoil, and occasionally Red and Alsike; and one pack of Rye-Grass per Acre; but if more Rye-Grass should be desired, it can be supplied without altering the price, by omitting a pound of Clovers. One bushel of Corn and 1 cwt. of Clover is required to sow with the Rye Grass, it is only necessary to name the sort in giving the order, and the proper quantity will be sent.
A Farmer who requires to sow Spring Corn for One Year's Clover Ley will save themselves trouble, and insure a proper mixture for their soil, by ordering the above-named Mixtures for the number of acres to be sown.
GRASS and CLOVER SEEDS, for Two Years' Lay.—This Mixture contains a large proportion of Perennial Clovers, and under favourable circumstances will often stand for three years
The following sorts are included, and thoroughly answer well:—

Broad Red Clover	Round Cocksfoot
Perennial do. (Cow Grass)	Sheep's Fescue
White do.	Timothy
Alsike Clover	Pacey's Perennial Rye-Grass
Yellow Trefoil	Sutton's do. "
Meadow Foxtail	Italian Rye-Grass "

The quantity required per acre is one bushel, weighing about 25 lb. Price 20s. per acre
GRASS and CLOVER SEEDS, for Three or Four Years' Lay.—The sorts recommended in the preceding mixture are similar to the preceding, but the quantities of Permanent Grass Seeds are increased to insure the continuance of the pasture for three or four years. The quantity required per acre is two bushels. Price 23s. per acre.
The Mixtures are highly profitable, producing enormous crops of Grass or Hay, but must not be expected to form Permanent Pastures.
From C. F. THOMPSON, Esq., *Talgarth Hall, Maisgwilith.*
"I had a most famous hay crop on a 10 acre field from the "seeds" for three years you sent me last season. I have never, since I commenced farming, had such a heavy crop."
PRICED LISTS of other FARM SEEDS gratis and post free.
All goods carriage free; 5 per cent. discount allowed for cash payment
SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

Sutton's Prize Mangel Wurzel.
TURNIP, IMPROVED KOHL RABI, &c., &c.

For PRICES, see
SUTTON'S NEW FARM SEED LIST, which may be had gratis and post free on application to
SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

AGRICULTURAL HALL COMPANY (LIMITED). FIFTH ORDINARY GENERAL MEETING
NOTICE is hereby given that the FIFTH ORDINARY GENERAL MEETING of the SHAREHOLDERS of this Company will be held at the Offices of the Company, Basford Street, Liverpool Road, Islington, N., on TUESDAY, March 6, at 3 o'clock P.M., precisely, to receive, consider, and if thought advisable to confirm, the REPORT of the DIRECTORS and the AUDITORS respectively, with the Accounts of the Company, to declare a Dividend, and for the General Business of the Company. The Transfer Books of the Company will be closed at 4 P.M. on Wednesday, February 21, and until after March 7.
By Order of the Board, S. SIDNELL, Secretary.
Offices of the Board, Basford Street,
Liverpool Road, N., Feb. 23.

IPSWICH POULTRY SOCIETY.—The FIRST EXHIBITION of the above Society will be held at Ipswich on the 6th and 7th of November, 1866, under very distinguished patronage, when handsome Silver Cups and valuable money Prizes will be offered for the principal classes of Poultry, Pigeons, and Cage Birds. Full particulars will be duly announced.
W. B. JEFFRIES, }
G. W. BALES, } Hon. Secs.
Henley Road, Ipswich.

The Agricultural Gazette.

SATURDAY, FEBRUARY 24, 1866.

—— THE CATTLE DISEASE PREVENTION ACT passed through the Lords without amendment, and received the Royal assent on Tuesday last. It is given almost in its entirety in another page. Mr. HUNT'S Bill has been winning its way through the Commons during the past week, receiving many alterations and amendments during its passage. In its present form it enacts that until the 25th of March next no person shall be allowed to move any live cattle along any public road: but there are many exceptions allowed. For examples, (1) traffic in districts declared untainted by the Lords of the Privy Council; (2) traffic from one field to another in the same tenancy, even to two miles asunder; (3) cattle (under a licence) for immediate slaughter; (4) cows under a breeding licence; and others. London, Leith, and Bristol are exceptions to the rule requiring all imported stock to be slaughtered within 500 yards of their landing.

—— A recent Order in Council has placed a cordon around the parish of Long Buckley, in Northamptonshire, so far as sheep and lambs are concerned, owing to the sudden appearance of the sheep pox, which is attributed to importation from abroad.

—— A discussion, intended to elicit and place on record the present state of our knowledge and experience on the subject of the Cattle Plague, took place on Wednesday before the Royal Agricultural Society. And to no one of course could the opening of such a discussion have been so properly committed as to the lecturer on this occasion, Prof. SIMONDS, who has all along been in the fore-front of whatever fight has been waged with the calamity. It appeared, indeed, grotesquely enough, that the Charter of the body before whom he lectured, forbade any allusion to the measures which had been taken, or were to be taken by Government and Parliament—the only Power, as is now universally acknowledged, capable of employing anything like an adequate repressive agency; and on one or two occasions, moreover, the Professor, very unnecessarily as it appeared to us, took occasion to apologise for breaking the bounds of that reticence which appears to be the first duty of a public servant! Hampered, however, though both lecturer and audience were, the one by his sense of duty to the veterinarian department of the Privy Council, the other by a charter forbidding reference to Parliamentary proceedings—the address and the discussion cannot be considered thrown away. For by both it was made plain enough that in isolation and prevention is our only hope of dealing with the plague. The last new remedy, Mr. WORMS' onion diet, notwithstanding the frequent testimony which is still borne to its value in the columns of the *Times*, was shown to have been really ineffective in some of the best attested examples of its successful agency.

We have no room for a detailed report of the proceedings, and must therefore be satisfied with the following abridged account of them. Professor SIMONDS commenced by referring to past attacks, which he showed to have been preceded by the existence of disease on the Continent, and to have been imported thence. As to the character of the plague, it was neither typhoid as the French considered it, nor variolous as many high English authorities had believed, but a distinct and special malady. Even however if it had been allied to small-pox, our experience of the relations of sheep-pox and cow-pox shows that we should not even then have had reason to expect with any confidence that vaccination would have been preventive. That idea has indeed at length been finally abandoned. As to our means of dealing with the disease: the only source of danger is direct or indirect contact or connection with diseased or infected animals. Labourers, travellers, dogs, cats, pigeons, any moving thing, even the wind when the disease extensively prevails, may carry particles of the morbific matter, and if any of that lodges in a healthy animal, it is certain to become diseased. It is not an epizootic, but a purely contagious malady, as shown by a map dotted in every locality where the plague exists or has existed, on which it appears that large blank spaces exist close by the disease, into which it has not yet been carried. It must be here observed that imperfect burial of diseased animals has often led to the infection being carried.

As to preventive measures, they depend on absolute isolation of healthy stock, and on the greatest care being taken to disinfect infected places. No good is done by the use of disinfectants in healthy places; but it is a matter of the very greatest importance—and Professor SIMONDS was especially emphatic here—that wherever the disease has existed, every person, thing, and place should be thoroughly disinfected—sheds, utensils, recovered animals, clothes, yards, manure, must be carefully disinfected, or the plague will come again.

As to cure, it was hopeless and impossible. The plan of fortifying the system was of course of service, but if the poison be once introduced it is certain to develop. There is no known way of either destroying the morbific matter or hindering its development in the system when once it has obtained a lodgment. Sulphuric acid, sulphates, sulphites, hypo-sulphites, iron and its sulphates, common salt, sulphur, had all been tried, and, notwithstanding the number of alleged cures, they had all proved ineffectual wherever the experiment had been fairly tried on animals known to be diseased.

The history of Mr. WORMS's remedy was given. Its alleged efficacy in the herd at Datchet, which wore declared to be cured, though every one of them is since dead; its trial at Stoneleigh and subsequently at Mentmore, on Baron ROTHSCHILD's herd, were described. The 10 infected cows at Mentmore, which were declared to be recovering under the influence of this remedy, had in fact never had the disease at all; and, indeed, one of them, which had it recovered would thereafter have been proof against it, has since taken it and died. Of five others which have since taken the disease, the latest intelligence was that one was dead and two were dying. No hope of cure in fact exists. The vital power becomes almost at once so weakened that the remedies which usually act by calling on one and another of the organs of the body for the purpose of eliminating the poison find no response; there is no natural ability in the first place, and thus no artificial excitement of it is possible. With some reference to the serviceableness of careful nursing—so that none of the natural power of resistance which remains be wasted—the lecturer concluded.

The discussion which ensued referred, among other things, to the alleged usefulness of washing the nostrils and mouths of healthy stock with some antiseptic fluid, which was denied on the ground that if particles were brought by air they would be at once received into the lungs. Camphor was suggested, but camphor is not an antiseptic, though useful in preventing decay by hindering the approach of insects.

Dr. CRISP asserted the communicableness of the disease to sheep and other ruminants, and it was declared that 23 flocks, containing 3948 sheep, had been attacked by it in different parts of the country, of which 2265 had died. He also condemned strongly the continuance of hunting. As to the possibility of cure, especially by Onions and Shallots, "and such tomfoolery," how could it be supposed that a disease affecting 100 feet or more in length of the whole surface of the alimentary canal could be thus effectually combated.

Mr. READ, M.P., declared his own experience to be in accordance with this. Cattle in which the disease had been detected in the very earliest stages had been carefully isolated, nursed, kept

from solid food—receiving only liquid drinks—but had nevertheless all died.

Lord CATHCART spoke at length of the valuable services rendered by Professor SIMONDS and the veterinary inspectors throughout the country. He referred to the indications afforded by the thermometer of the earliest attacks of the disease; also to the evils of imperfect burial, especially near wells—to the lack of statistical information as a great grievance—to the usefulness of carbolic acid as a disinfectant—to the national and not merely the agricultural importance of the subject, especially as regards the supply of milk—and to the need of energetic action in *the present time* as the alone period during which any effort is likely to be effectual.

Let us add a word on the great importance of dividing and sub-dividing the stock upon a farm as much as possible. This was referred to by Mr. GOODLET before the meeting in St. James's Hall. And it cannot be too strongly urged on stock-owners that valuable animals be kept individually apart, and all others in lots as small as possible. If one fall down, the whole will otherwise come under the provisions of the new Act; and, anyhow, unless the stock be thus subdivided, the plague once entering will sweep the whole away.

WE beg our readers to compare the letters on the wages of Agricultural Labourers lately published in our columns with the discussion on the same subject before the East Lothian Agricultural Society, reported in our Paper to-day. In the one, Lord SHAFTESBURY praises the condition of the Dorsetshire labourer, who is paid to a large extent in "kind;" and "S. G. O." condemns that system of payment as not only liable to abuse, but altogether delusive. In the other, we have Mr. HOPE and Mr. SKIRVING defending the system as carried out in East Lothian, while Mr. DOUGLAS speaks doubtfully of it, and Mr. SADLER altogether disapproves of it. It is plain that among farmers, as among landowners, there is great difference of opinion on the subject. Mr. SCOTT SKIRVING attributes the condition of the East Lothian labourer, and not only his condition but his character, very much to the prevalence of this system of payment in kind, by which frugal and prudent habits are fostered; so that, as he says, he has not a ploughman in his service but he would trust as an ordinary friend. Nevertheless he is convinced that were they all to be paid in money, "even 15*s.* a week and 2*s.* extra," these men so worthy of his trust would all in two years' time be as other labourers receiving as much money—their children shoeless, and their wives in rags! —Mr. HOPE, of Fenton Barns, agreed with Mr. SKIRVING as to the tendency of payments in kind, for instance in cow's keep, as adding so much to the wholesome food of the family, and contributing so much to their responsibility and therefore to their trustworthiness. He did not, however, amuse his audience with any such inconsistency of illustration as had been given by the preceding speaker.—Mr. DOUGLAS declared that the East Lothian hinds, whose character as a consequence of this mode of payment had been praised, were listless and indifferent, striving after no improvement in their work from youth till age, and receiving, according to one common formula, a wage without regard to differences of ability, the more clever of their number continually left for other services.—And Mr. SADLER did not think the system of payments in kind worked well. Although the other was more costly to the master, yet he found that hinds preferred the money payment, except when their families were large; and he urged that if the wives were industrious in looking after their cows, they would also be industrious and frugal in the management of their cash.

It appears to us that to insist on payments in kind is to give a paternal character to the relation of masters and servants which is not only unwarrantable, but mischievous; for under it the latter will be always children, more or less untrustworthy, dependent, and unsteadfast, with little energy or self-reliance. Let the men be paid, as Mr. SADLER recommends, in the manner they prefer. The amount of wage is indeed beyond their determination. It is determined by the competition of man with man for employment, and of master with master for labourers. But anything which tends to a more public and a freer labour market tends also to the fairer and more accurate settlement of this point. Money wages, in which the whole indebtedness of the master (as an employer of labour) is discharged by a single weekly or occasional payment, are unquestionably more likely to represent aright the current value of agricultural labour than a system of free cottages, various perquisites—as corn and beer and coals, &c.,—with a small annual money payment, can ever be. The administration of the family means, provided thus, may indeed tend to the shrewd frugality and skilful management of the housewife, but the system also tends to the stagnation in every way of the character and condition of her husband. He is tied to his cottage, his master, and his parish all his life; and if saved perhaps from such falls and troubles as a freer man runs risk of, he is also hindered from the other's chances of bettering his condition.

If it be solely as to the real interest of the labourer that the discussion is conducted, what weaker advocacy of such a system can be imagined than that of Mr. SKIRVING, who declares that while the domestic comforts it ensures are great, the character which it fosters and creates is not worth two years' purchase? No doubt he is right enough in thinking that men brought up in such a way should never leave go leading strings, but surely no severer condemnation can be passed by any one upon the system which he desired to advocate.

If we had our way, there should be nothing whatever in the circumstances of master and of servant in agriculture which should arbitrarily tie the one to the other against the will of either. The personal relationship should bear its proper fruit. Hard masters should feel the difficulties which they entailed upon themselves, and bad servants should be paid accordingly. Let them enter into just such agreements with each other as the law allows and as they severally please; but there should be nothing in the artificial circumstances of the relationship thus created coercive of either beyond the simple terms of the bargain. It is more probable that the parties to a bargain of this kind would severally obtain their due, than where the idea is that the one has to protect the other against his improvidence and restlessness. We may depend upon it that the natural self-interest of our men, and their natural domestic interests, are a safer guide for them than the average interest of their masters for them will ever be. Nothing is more untrustworthy or delusive, as a general rule, than the provision which one to a bargain insists upon in the interest of the other!

Character of course will bear its proper fruit more promptly and decisively under a thoroughly independent system than when the outward circumstances are made in some measure independent of it; but that is rather one of its advantages than otherwise; for character is the result of education in the first place; but thereafter of the corrective discipline which it brings upon itself—and no artificial hindrance to the full development of such a discipline should be created.

We are persuaded that these considerations may be fairly urged in the discussion of the important question raised by Lord SHAFTESBURY and "S. G. O.," and Mr. SCOTT SKIRVING and the other members of the East Lothian Club. The most lasting and most cordial relationship of master with servants we have ever known—the one which during more than half a century had retained the largest number of old servants, and sent out, as well-instructed labourers of good character, the largest number of their sons and daughters, was in the case of one who, though paying upwards of 1000*l.* a year as rent, had but a single cottage on his farm by which a labourer could in any degree artificially be tied to him. And not only was there not a single artificial tie in the way even of annual agreement, or of those annual terms of payment which belong to Dorsetshire and East Lothian, but every man paid weekly knew that he was free at any time to leave his master's service.

Let it never be forgotten that there is a personal relationship, both unavoidable and rightful, of a most important and fruitful kind between master and servant, independently of that which concerns the mere exchange of services for wages; but certainly it is not that of the father and his family. The duties and relationship of "neighbour" were thoroughly appreciated in the case referred to—and all the wholesome tendencies on either side to true Christian manhood which are sure to be developed wherever the equal duties of that relationship are mutually acknowledged, were admirably realised. Let a man treat his servants first simply as men who offer services for their market value, and secondly as "neighbours," knowing that the Christian rule affecting that relationship applies to them and to himself with equal force. Let him pay the labourer for work just according to the value of it; and this cannot be done by a common formula of perquisites and allowances applied to all alike; indeed, it can only be carried out efficiently when labour is properly superintended and paid for by the piece. And let him also honestly, unreservedly, and always regard his labourer as his "neighbour;" the other will very soon come to do the same by him. This is the true and needed supplement of that sheer justice which the former half of the understanding provides. And it is founded on unquestionable Christian duty, and on no such untruth first, and merely pretty sentiment afterwards, as is the mischievous figment of paternal relationship by which the wholesome Christian rule is first displaced, and then comes to be forgotten. And, moreover, it is only thus that a premium will arise upon everything that is desirable in either the master or his men, or such characteristics as strength, and skill, and industry, trustworthiness, considerateness, and kindliness will be severally promoted by receiving their appropriate reward.

THE CATTLE PLAGUE.

1. The following returns were issued yesterday:—

These returns do not profess to give the total number of cases which have occurred in Great Britain, but only those which have been ascertained from information received at the office from inspectors. Columns 1 only record the cases reported as having commenced during the weeks indicated by the headings; "back" cases being added to columns 2.

Cattle Plague Divisions.	1 Number Attacked. Week ending February 3.	1 Number Attacked. Week ending February 10.	2 Total Reported Cases from Commencement of Disease. Attacked.	Killed.	Died.	Recovered.	Uncertain for.
Metrop. ..	20	16	7353	3186	3453	327	387
S. Eastern .	24	20	4950	1521	2767	442	220
S. Midland .	68	61	12,874	2242	8896	1169	827
Eastern Co.	284	182	8613	3072	4374	646	521
S. Western .	60	56	1349	376	715	170	100
W. Midland .	690	1431	7956	739	5663	823	956
N. Midland .	679	548	7549	1078	5021	627	823
N. Western .	4042	4656	38,505	714	27,603	2750	7438
Yorkshire .	1455	1856	25,915	1049	16,325	4445	4105
NorthernCo.	379	604	4166	806	2109	666	591
Monmouth. & Wales .	448	595	6787	102	5363	871	451
Scotland ..	1914	2225	40,602	4472	24,017	8269	3944
	11,590	13,004	166,379	19,227	105,467	21,092	20,563

2. THE CATTLE DISEASE PREVENTION ACT.—The following is a somewhat condensed summary of the Act which received the Royal Assent on Feb. 20:—

Clause 2. This Act shall not apply to Ireland. 3. "Cattle" shall mean bull, cow, ox, heifer, or calf: "Animal" shall mean cattle, as above defined, sheep, goats, and swine. 5. The Commissioners of Supply in every county in Scotland shall nominate not less than four or more than fifteen of their number to act on the County Board for the purposes of this Act, and the Lord-Lieutenant shall forthwith nominate an equal number of persons being agricultural tenants of 100*l.* a year or upwards, within such county, to act on the County Board; and the persons so nominated, with the Lord-Lieutenant, the Convener, and the Sheriff of the county, shall constitute the local authority. 6. Power is given to the county magistrates to assemble in adjourned Sessions, and (8) to form committees of its own members and others.

9. Every local authority shall appoint such number of inspectors and other officers as it shall think necessary for carrying into effect the provisions of this Act within its district.

10. Any inspector or other officer authorised to carry into effect the provisions of this Act may, at all times, enter any field, stable, cow-shed, or other premises within his district where he has reasonable grounds for supposing that cattle affected by the cattle plague are to be found, for the purpose of carrying into effect the provisions of this Act; and if any person refuses admission to or obstructs or impedes or aids in obstructing or impeding any such inspector or other officer, he shall for each offence be liable to a penalty not exceeding 20*l.*, provided always, that such inspector shall, if required, state in writing the grounds on which he has entered such premises for the purpose aforesaid.

PART I.—TEMPORARY PROVISIONS.

11. Part I. of this Act shall continue in force till the 15th day of April, 1866, and no longer, unless continued or renewed by order of her Majesty in Council.

12. *Slaughter of Diseased Animals.*—Every local authority shall cause all animals affected with the cattle plague within its district to be slaughtered, and shall, by way of compensation for every animal so slaughtered, pay to the owner the real such sum not exceeding 20*l.*, and not exceeding one-half of the value of the animal immediately before it was affected with the cattle plague, as to such local authority may seem fit.

13. Every local authority shall cause every animal that has died of cattle plague, or has been slaughtered in consequence of being affected with cattle plague within its district, to be buried as soon as possible in its skin in some proper place, and to be covered with a sufficient quantity of quicklime or other disinfectant, and with not less than 6 feet of earth.

14. Every local authority shall, within its district, cause the yard, shed, stable, field, or other premises in which any animal affected with cattle plague has been kept while affected by the disease, or has died or been slaughtered, to be thoroughly cleansed and disinfected, and all hay, straw, litter, dung, or other articles that have been used in or about any such animal to be burnt or otherwise destroyed, and no fresh animal shall be admitted into any yard, shed, stable, field, or other premises in which any animal affected with cattle plague has been kept while affected by the disease, or has died or been slaughtered, until the expiration of 10 days after the cleansing and disinfecting of such premises in pursuance of this Act, and every local authority shall direct the disinfecting the clothes of, and the use of due precautions by inspectors, cattle overseers, and others in contact with animals affected by the cattle plague, with a view to prevent the spreading of contagion.

15. A local authority may, if it thinks fit, cause to be slaughtered any animal that has been in the same shed or stable, or in the same herd or flock, or in contact with any animal affected with cattle plague within the meaning of this Act, the owner of any animal so slaughtered may either dispose of the carcase on his own account, with a licence from some officer appointed in that behalf by a local authority, or may require the local authority to dispose of the same, in which case such local authority shall pay to the owner thereof by way of compensation, such sum, not exceeding 25*l.*, as may equal three-fourths of the value of the animal slaughtered: Provided always, that the Lords of Her Majesty's Most Honourable Privy Council, or any two or more of them, may reserve any animal not to be slaughtered as aforesaid) for the purpose of experimental treatment.

16. The local authority may require the value of any animal slaughtered under this Act to be ascertained by officers of the local authority or by arbitration, and generally may impose conditions as to evidence of the slaughter and value of the animals slaughtered: Provided that no compensation shall in any case be paid in respect of any animal found affected with cattle plague in a market or on a highway, or in respect of any animal which has been moved or otherwise dealt with in contravention of this Act, or any order of a local authority made in pursuance thereof.

17. *Movement of Cattle.*—All cattle brought by sea from any place in Great Britain or from any place out of the United Kingdom into any town or place in Great Britain shall be marked by clipping the hair off the end of the tail, and no such cattle shall be removed alive from such town or place except by sea. No cattle shall be moved on any railway before the 25th day of March, 1866.

PART II.—*Expenses.*

18. All expenses incurred by a local authority in pursuance of this Act, including any compensation payable by it in respect of animals slaughtered in pursuance of this Act, shall be defrayed out of the local rate as defined by this Act, or out of a separate rate to be levied in all respects in the same manner as the local rate, and included under the term "local rate." Any person who is not the owner of the premises in respect of which he is rated, under this Section, to the local rate may deduct from the growing rent due to the owner of such premises one-half of the rate payable by him for the purposes of this Act, and every such deduction allow such deduction accordingly. "Owner" for the purposes of this Section shall mean the person for the time being entitled to receive the rack-rent of the premises in respect of which the rate is made on his own account, or who would be entitled to receive the same if such premises were let at a rack-rent, including under the term "rack-rent" any rent which is not less than two-thirds of the net annual value of the premises out of which the rent issues. Every local authority shall have power, notwithstanding any limit in any Act of Parliament, to levy a local rate to the amount required for the purposes of this Act, but every rate or increase of rate levied under this section shall in all precepts for the levy thereof be described as a separate rate or separate item of rate, and when collected from the individual ratepayers it shall be collected as a separate rate or specified as a separate item of rate.

19. Where, before the passing of this Act, any person has suffered so great a loss of cattle by cattle plague as to entitle him in the opinion of the local authority to a remission in whole or in part of any voluntary rate which such person has been raised by a voluntary rate for the purpose of paying for cattle slaughtered with a view of preventing the spread of the cattle plague, the local authority may, with the consent of the managers of such voluntary rate after satisfying itself that the rate or such portion of the rate as has been expended has been duly expended for the purpose aforesaid, and having received from such managers the balance of such rate, if any, apply it to the purposes of this Act, and when such loss has been proved to the satisfaction of such local authority to have been paid by any person to such voluntary rate, and to have been duly accounted for, shall be deducted from any rate payable by such person under the provisions of this Act.

20. Any cattle or other animal slaughtered under the provisions of this Act, the owner of such animal shall not be entitled to recover in respect of the insurance of such animal any sum which, together with the payment he receives for such animal under the provisions of this Act, shall exceed the sum which he would otherwise have been entitled to receive in respect of such insurance.

21. The local authority in counties in Scotland shall from time to time give notice to the Commissioners of Supply of the sums necessary to be provided under the provisions of this Act in respect of the local rate, and the amount so intimated shall be assessed and collected by the Commissioners of Supply.

22. Whenever the rate levied or to be levied for the purposes of this Act exceeds the sum of 6*d.* in the pound, a local authority may borrow, on the credit of the local rate, mortgaging it for any period not exceeding seven years, and where the rate levied shall exceed 9*d.* in the pound, the Lords of the Treasury may extend the term to any term not exceeding 14 years.

23. Powers are to be given by local authority to Privy Council: and (26) power is given to purchase land for burial of diseased animals.

27. *Legal Proceedings and Saving Clauses.*—Penalty for disobedience not exceeding 20*l.*, and where any such offence in committed with respect to more than four animals, a penalty not exceeding 5*l.* for each animal may be imposed instead of the penalty of 20*l.*

Clauses 28 to 33 refer to recovery of penalties, prosecution of appeals, &c.

34. This Act shall continue in force until the first day of June, 1867, and until the end of the then session of Parliament, and no longer, except in so far as respects the power of levying rates for paying any sums borrowed under the provisions of this Act: provided that it shall be lawful for Her Majesty in Council at any time to suspend the operation of this Act as respects the slaughter of cattle.

3. HOW ARE CATTLE PLAGUE DIFFICULTIES TO BE OVERCOME OR MITIGATED?—In a short paper I sent you upon the above subject, and which you inserted in the *Agricultural Gazette* of February 3, I promised "to give my views of some of the means by which the effects of this pest may be mitigated or overcome by proceedings in business as breeders and graziers." In so doing I have set myself a difficult and unsatisfactory task, because I in truth believe that the difficulties cannot be overcome, and but very slightly mitigated. However, "we must make the best of it," "do the best we can." In the first place, it would be unwise of the graziers to purchase cattle for grazing purposes. The diffusion of so much information through the *Agricultural Gazette* and other papers of the fatal nature and incurability of the disease must have left everyone without excuse as to the hazardous character of cattle grazing. It even appears to be more virulent in its attacks of cattle in the fields than in sheltered yards. Summer grazing affords no immunity from its attacks—it would rather aid its more speedy and sure attacks, in consequence of one animal so constantly grazing after another upon the same spot of ground, and partaking of the same herbage. Of course in this way the saliva and other excretions from infected animals more readily infect others. There is also this well-ascertained fact, that infected atoms or particles are carried upon "the wings of the wind," and as these atoms would more readily alight upon, or rather be inhaled by, cattle dispersed over the length and breadth of a field, the chances of their becoming infected in the field are greater than in fold yards. Should circumstances make it expedient to attempt cattle grazing, the grazier should if possible isolate the herd, *i.e.*, he should graze them in fields separated as far as possible from other cattle, and these fields should be exclusively depastured by cattle, and on no account allow cattle to be distributed about the farm as usual. They must be kept together as a means of protection. Of course, the more widely they are dispersed over the farm, the greater is the probability of imbibing floating particles of infection. Cattle grazing, too, must be at a discount, owing to a capricious public becoming inimical to beef as food. Ordinary grazing must be discontinued for this further reason: cattle may infect sheep. It is proved that sheep do imbibe the disease from cattle, although in a modified degree. It is folly, therefore, to permit them to graze together, seeing that a nibble at the same blade of Grass may cause the lodgment of the disease. Cattle, then, must be confined to their own pastures, and these pastures should be as far apart from each other as the respective farms will permit. This order will not overcome the difficulty, but it may in some degree mitigate it. The grazier's chief dependence for the summer grazing must be in sheep. For this purpose importations on a large scale should be encouraged. Our stock of sheep will not suffice. Five sheep will be required to supply the place of every head of cattle lost through cattle plague. I estimate that before the 1st of May our loss of cattle will exceed a quarter of a million. We shall therefore require an importation of sheep to the number of 1,250,000 to make up the deficiency arising from actual losses. But these losses do not include the immense number sacrificed before fatting, and fully equal in amount to them. This would swell the number required to 2,500,000 sheep. Of course this number cannot be forthcoming. What then is to be done? Of course import all we can, and that quickly, or they will have no time to rest, and thus become prepared for summer grazing. Prussia, Holstein, Germany, Holland, Belgium, and Spain could each spare considerable numbers. But the thing wants setting about. Spring is at hand, and no time to lose. Importers of sheep should at once commence this additional business—I doubt not a most profitable one, because the demand will be excessive. The price of good Prussian and German sheep, at two years old, is from 16*s.* to 18*s.* each, leaving a large margin for profit and costs of importing. It is true they are restless animals, and of roving habits, in an open country, but in surrounding hedge-row fields they may be kept to their pastures. It may be said they are not comparable with home-bred sheep, and are unprofitable graziers. It may be so in some respects, but they would supplement our own flocks satisfactorily, and eke out our supplies of grazing animals. It is to very little purpose to lay in our Grass fields for meadows; they will not be much in request. Where will cattle be found to consume it? It would be far better to convert some of the old meadow lands into tillage. It would be more profitable in every respect, and the present season would present many reasons for adopting this course. On my own farm is a field which for many years was meadow; it produced this very summer a greater weight of food in the Mangel crop than as meadow hay and Grass it had produced for a period of some 15 or 20 years collectively. Cultivated Grasses are far more productive than the natural herbage, and the root crop is better still. The better the land, I would further say, the better worth ploughing up. The crops of seeds, corn, roots, and vegetables such land will produce is astonishing under the best management. The profit in grazing such lands cannot compare with it, taking it in a broad sense. The employment it gives, the return it yields, are both alike beneficial to a country. The conversion of inferior Grass land to tillage is almost indispensable at a time like the present. There is no telling how long the disease may remain with us. It would be decidedly wrong to persist in providing expensive stock for such lands. It will be a puzzling case for graziers how to keep their pastures in a profitable condition, considering that sheep only are to be the sole stock upon them. I would suggest that early and continuous heavy stocking should be pursued. This will keep all the herbage under as sheep pasturage. Sheep will not profitably graze upon coarse pasturage. As the pastures fail, corn and cake must be resorted to, or roots and early Cabbage, &c. If such a course appears undesirable, the rough pasturage must be kept down with the scythe. This course of grazing is so unusual that it will be attended with difficulties, but they must be dealt with as the best judgment of the grazier dictates from time to time.

4. MR. WORMS' REMEDY (*a*).—The following is a report by Professor Simonds on Baron Rothschild's cattle, alleged to be cured:—

"February 15, 1866.

"I yesterday went down to Mentmore, the seat of Baron Rothschild, for the purpose of investigating the treatment of animals affected with cattle plague, as adopted by Mr. Worms. I found on the premises 118 head of cow stock divided into several lots, but occupying yards sufficiently contiguous to each other as to afford great facilities for the spread of any infectious disease. Until Friday last, February 9, the whole of the animals had continued in perfect health; but on this day a bullock, one of a lot of 24, gave indications of illness. The veterinary surgeon, Mr. Lepper, of Aylesbury, who was called to the case, recognised some of the earlier symptoms of cattle plague, and as such the animal was placed as soon as possible under the care of Mr. Worms. Notwithstanding all the attention which it received, it died on the fourth day of the attack. On Saturday, the 10th inst., two other heifers were also said to be attacked with the plague, and consequently were placed aside by themselves. On Monday one, Tuesday four, and Wednesday (the day of my visit) three more of the herd were removed as being likewise the subjects of the plague. The ten animals were also placed under the care of Mr Worms, who has since superintended all the details of their treatment and general management. The early cases were reported to me as having been cured, and the others as going on most satisfactorily. I required but little knowledge of the diseases of cattle to at once see that none of the ten animals had been or were the subjects of any serious disease; and, after giving to each of them a careful examination, I failed to detect the slightest symptom of cattle plague in any one of them. Whether plague will, under the peculiar circumstances of the case, be developed in the herd remains to be seen; but should the opinion of Mr. Lepper be correct as to the cause of the death of the first animal, only a few days can pass without determining the point. "JAMES B. SIMONDS."

"The Clerk of the Council."

[Further reference to this case will be found in a leading article.]

The following letter from Mr. Worms has appeared:—

(*b.*) "Finding from the experience I have recently had respecting my treatment of the rinderpest in this country that, owing probably to the difference in beef, the greater richness of food, and the dissimilarity of climate, the animal can bear a much stronger dose of my medicine here than in Ceylon, I beg to make the following alteration in the quantities prescribed, and shall feel obliged by your giving publicity to it:—

"Increase the quantity of onions and of garlic each from one pound, as previously stated, to two pounds; the ginger from one pound to one pound and a half; and the asafœtida from three quarters of a pound to one pound and a quarter.

"Should the animal suffer from scouring, administer the following mixture, carefully grown animals:—One dessert-spoonful of laudanum, and one wineglassful of thin gruel stirred in about a pint of thick rice gruel. *Montana Worms, 27, Park Crescent, Feb. 19.*"

5. HYPOSULPHITE OF SODA.—My herd, before the introduction of the plague, consisted of high-bred Short-horns and ordinary farm stock. The disease first manifested itself among the latter, having been conveyed, it is supposed, on the clothes of a man who had been in contact with infected animals on another farm where all the cows had died. My herdsman then had directions furnished to him; but he treated only a portion of the high-bred animals with hyposulphite. These, although no provision for isolation was attempted, escaped contagion, while the remaining portion of the well-bred and the ordinary stock, which had not been subjected to the treatment, all died.

The specific is simply hyposulphite of soda, 5 lb. dissolved in 100 gallons of water, which, thus impregnated, should be given as the ordinary drink of the cattle so long as danger of infection remains. There is no risk of injury attending the use of it according to this prescription, and I believe it may be given to calves in their milk. *J. T. Noakes, Brockley Hall, Lewisham, Feb. 20.*

6. CHESHIRE COW-HOUSES.—I beg leave to call the attention of your readers to what one of the guardians of this Union, Mr. Boote, said at the Board meeting, Saturday, Feb. 3, 1866. I extract it from the *Nantwich Guardian* of the next issue, Feb. 10:—

Mr. Boote said he wished, with the permission of the chairman, to state the result of an investigation on his part with reference to the cattle plague. He found that Thomas Davenport had saved two cows out of three, which were all he had; Joseph Moss saved the only two he had, and which had the disease; Thomas Trickett saved the only two he had, and Joseph Turner two. On the other hand, the large stocks in the neighbourhood were dying off, and the inference he deduced from it was that where a large number of cows were massed together the disease was far more fatal than where only one or two were kept.

The cow-houses in Cheshire are hothouses for the rinderpest. The cows stand in rows across long buildings—several rows, all under one roof. The cows breathe in one another's faces and over the fodder in the bin. Their breath at night when all

are shut up steams the stores of hay and straw in the long loft over this long range of rows. No medicine and no veterinary skill or assiduity can have a fair trial under such circumstances. *Edward Dunsmuir, Burthamley Rectory, Craven, Feb.* 17.

7. SECOND REPORT OF THE COMMISSIONERS APPOINTED TO INQUIRE INTO THE ORIGIN AND NATURE, ETC., OF THE CATTLE PLAGUE:—

TO THE QUEEN'S MOST EXCELLENT MAJESTY.

Since our first Report was submitted to your Majesty the disease has continued to spread, the ratio of its advance fluctuating much in different places, but presenting something like uniformity on the whole. The total number of reported cases from the commencement was,—

October 7	11,300	December 30	73,340
November 4	29,897	January 27	120,740*
December 2	59,744		

It has thus nearly doubled itself at intervals of four weeks.

These figures, however, formidable as they are, by no means represent the real amount of loss and suffering inflicted by a calamity which ravages some districts while it spares others. A pressure, which would be less if distributed over a large area, is ruinous and crushing when those on whom it rests are comparatively few. Cheshire, for instance, which depends in great measure upon its dairy stock, has had, up to the 27th January, 17,971 cases of disease; Forfarshire, 10,099; Lanarkshire, 4371; Cambridgeshire, 4364; Lincolnshire, 4080; Norfolk, 4063; Yorkshire, 10,331; and the records of particular villages and farms where the disease has raged would tell a still more distressing tale.

The great breeding districts of the United Kingdom, into which in ordinary times cattle are but rarely and casually imported—Ireland, the North and West Highlands of Scotland, including the counties of Caithness, Ross, and Sutherland, and the whole of Wales except Denbighshire and Flintshire—have hitherto enjoyed an entire immunity. The disease has for the most part established itself, by direct importation from London or from Holland, at various centres on the eastern side of the island, and thence has travelled towards the west or south-west, traversing alike low and elevated lands, and not apparently influenced by varieties of soil. It has moved irregularly, leaping not unfrequently from one point to another at a considerable distance, but seems generally to have followed the course of highways and ordinary lines of cattle traffic. A careful observer,† who has attentively watched its progress through his own district, states that, whilst it often passes one stock and attacks another at a greater distance from a centre, it invariably returns as it were to the first point. "The passing," he says, "is only apparent: it is owing to one stock being more predisposed to the disease than the other; that is, the one attacked has less power of resistance to the poison than the one that apparently escaped it." The means by which it has transported itself to new centres can in a great number of instances be traced with certainty, but they often elude detection.

In the contagiousness and the mortality of the disease there has been no abatement, as the subjoined tables, compiled from the weekly returns published by the Veterinary Department of the Privy Council Office, will show.

Of the total number of cattle on farms, in sheds or other places, where the disease has been officially reported to exist (after deducting those slaughtered healthy), there were attacked in every 100:—‡

Up to November	4 ..	44	Up to December	23 ..	51
,,	11 ..	44	,,	30 ..	51
,,	18 ..	44	Up to January	6 ..	52
,,	25 ..	44	,,	13 ..	52
Up to December	2 ..	44	,,	20 ..	53
,,	9 ..	50	,,	27 ..	54
,,	16 ..	51			

Of the total number of cattle known to have been attacked by the disease, there were in every 100:—§

	Killed.	Died.	Recovered.	Unaccounted for.
Up to Nov. 4	36	43	5	15
,, 11	34	44	5	17
,, 18	32	46	6	14
,, 25	26	48	7	15
Up to Dec. 2	27	50	7	15
,, 9	24	51	8	17
,, 16	22	53	8	15
,, 23	20	54	9	15
,, 30	18	56	9	17
Up to Jan. 6	17	57	10	14
,, 13	16	58	10	14
,, 20	15	59	11	14
,, 27	13	61	11	15

Taking actual numbers instead of per-centages, there were, out of the 120,740 cases of disease reported up to the 27th January—

Killed diseased.	Died.	Recovered.	Unaccounted for.
16,742	73,750	14,162	16,086

From the above figures it will have been observed that as the number of diseased animals killed has diminished, the percentage of attacks among the animals exposed to infection has increased, whilst the percentage of deaths from disease among the animals attacked has risen still more steadily, and in a greater proportion. Were slaughtering entirely abandoned, the recoveries would probably not exceed 15 per cent.

All breeds of cattle appear to be subject to the disease; but the more highly bred the animal, the sooner, generally speaking, it succumbs. English stock, compared with foreign breeds, seem to have less power of resistance. Of the Dutch it has been observed in this country, that although not perhaps less liable to be attacked than other varieties, they survive the first attack longer, and more of them recover. Animals in good condition, says another observer, resist the longest; but, if they become diseased, the disease runs its course in them more rapidly.

Of the influences of weather and temperature nothing definite can be said. The long drought of the summer has been followed by copious and almost incessant rains, with continued south-westerly gales. The disease increased in intensity with the advance of winter, and it has travelled generally in a direction contrary to that of the prevailing winds. It is proper to add that the year has been peculiarly favourable to the spread of zymotic diseases generally, and to the rapid decomposition of organic matter.

We have endeavoured, but without success, to obtain specific information as to the introduction of the disease into this country. Inquiry has been made, with this object, of the several persons through whose hands the cargo of bullocks imported from Ireland in May passed after their arrival at Hull. This cargo, it will be remembered, was divided on landing into two portions: part were disposed of through salesmen in different towns in the North of England, and the rest sent to London and sold to butchers in small lots, a lot of 20 being bought and sent to Gosport by a Government contractor. Questions have been addressed to all these persons, and from their answers we have no reason to doubt that all the animals were bought and slaughtered, so far as the purchasers could judge, in a perfectly healthy state. With respect to the diffusion of the disease in the Russian Empire itself (setting aside the steppe provinces in Europe and Asia), we have no satisfactory evidence. In the Baltic provinces it does not seem to have shown itself last year. There were many scattered outbreaks (which indeed are frequent) in Central and Western Russia; and it raged with considerable violence between January and May in the Government of Kowno, which is very near to the port of Memel, and between January and July in that of Volhynia, which borders on the Gallician frontier, and from whence cattle may be easily driven to the eastern terminus of the Vienna and Lemberg Railway. A subsequent outbreak occurred in Kowno in November, and led to the immediate enforcement by the Prussian authorities of the stringent regulations which the law of Prussia orders to be applied to the frontier of an infected district. The theory that the disease originated in the London cow-sheds is inconsistent, not only with the statements contained in our First Report, but with that which we have since received. The careful observations made by Dr. Ballard, Medical Officer of Health for St. Mary's, Islington, confirmed by those of the Medical Officers for Marylebone and St. Pancras, and the experience of other practitioners distressingly conversant with the disease, in theory, and point distinctly to contagion as the means by which the Plague was originated and propagated in London.

II.—OUTBREAK IN HOLLAND.

We adverted in our First Report to the outbreak of the plague in Holland. Weekly returns of its progress in the province of South Holland, to which until recently it was practically confined by strict measures of police strengthened by a military and naval cordon, have been published by the Dutch Government, and, in addition to the information thus supplied here by the Veterinary Department of the Privy Council. From these returns it appears that the total number of cases, which was 4084 on the 7th October and 6744 on the 4th November (the attacks having diminished in the intervening weeks), rose to 10,000 on the 2nd December, to 15,000 on the 30th December to 21,437, nearly doubling itself in each month. The increase is attributed to the removal of the cattle from the pastures to their stalls, the close contact causing the infection to run its course more rapidly. During the last three weeks there has again been a gradual increase. With respect to the latest outbreak, Mr. Ward, Secretary to our Majesty's Legation at the Hague, in his Report on this subject, dated January 10, 1866, "the last return presents an unfavourable appearance, out of seven places in which the breaking out of the Plague is reported for the first time, it is doubtful if the origin of it cannot be traced to any contagious medium, contrary to the opinion of high authorities upon the subject, that every case would be found so traceable. Again, though in the original focus of the disease a diminution is announced for the first time since the commencement of it, yet the only place where it has increased is that which, assumed a more aggravated character. The area over which it has spread is also increasing. Returns have been made for the province of Utrecht, in which a few isolated cases in the early part of the season had been followed by an entire cessation of the scourge, showing, for the week ending December 23rd, 341 new cases, 165 deaths, 2 slaughtered, and 146 recovered; making a total of 1104 cases, 504 deaths, 27 slaughtered, 316 recovered, and 367 still under treatment. The provinces of North Brabant and North Holland have also been invaded, according to the latest accounts, though no official returns of the extent of the visitation have yet been made." The rate of mortality in Holland, we must add, is considerably lower, as Mr. Ward observes, than in this country. The latest returns issued since the date of Mr. Ward's Report, 29,041 cases, the total number in South Holland, 7410 were slaughtered, 8966 died, and 9896 (or about 34 per cent.) recovered; and these proportions have not very materially varied since the commencement; whilst in Utrecht, where the number slaughtered has been inconsiderable, 1504 cases, 1056 deaths, 1 slaughtered, and 447 recovered.

The Dutch Government appears to have placed its chief reliance on the maintenance of the cordon drawn round the most infected province, which permits no egress, nor, except under most stringent restrictions, any ingress of cattle. A further exception, however, is made in favour of through traffic, and the Dutch-Rhenish Railway, which conveys weekly large quantities of cattle for exportation to England, passes through the heart of the enclosed district. The enforcement of other internal regulations has been left to the local authorities, except that the Government has interfered to prevent the local authorities of the commune had refused to do this. Some difficulty seems also to have been experienced in inducing the people to submit to restraint. We are told that "in the province of Utrecht the action of the authorities is resisted by force, and has to be supported by military detachments, in the same manner as which the troops are beaten off by large bands of peasants, and have to take the cow-sheds by regular siege."†

The Cattle Plague in Belgium has been made the subject of a careful and interesting report by Mr. Barron, your Majesty's Secretary at the Embassy at Brussels. The energetic measures adopted by the Belgian Government have been completely successful. The total number of cases in that country has not exceeded 366, of which 17 died and all the rest were slaughtered. "The localities," says Mr. Barron, "where it was at first mistaken or concealed are those which have had to struggle the longest to dislodge it. On one farm at Leffinghe the whole herd of 40 were killed between November 23rd and December 8th. Three weeks after, on December 30th, the same disease broke out among the sheep, and the entire flock were sacrificed. Pleuro-pneumonia was suspected. The carcases of the latter, being perfectly sound, were sent for sale to England." One case lately occurred at Antwerp on a milkman's premises, and was traced to a smuggled cow. The market was at once closed, and all egress of cattle from the town prohibited until further orders. The ravages, however, which the Plague continues to make in South Holland, and its threatened advance into North Brabant, naturally excite great apprehension in Belgium; and a short Bill has just been introduced by the Government, which, if passed, will vest in the Executive powers virtually unlimited over both internal traffic and foreign commerce.‡

Nor has the disease been suffered to gain a footing in France. An animal bought at Malines immediately before the promulgation of the decree of the 5th September had been the means of introducing it, but it was promptly suppressed, at a total cost, says the Minister of the Interior, in an official report to the Emperor, of not more than 43 head. It reappeared in November, in the Jardin d'Acclimatation of the Bois de Boulogne, having been carried thither by two gazelles brought from India, which had been for three or four days in London. From them it rapidly spread to yaks, zebus, goats, and fallow deer, and the sacrifice of about 35 of these animals was necessary to arrest its progress.

III.—ORDERS IN COUNCIL.

As the disease has extended itself in this country, several Orders in Council have been issued. The general result of these orders has been (1) to circumscribe the powers of the inspectors; (2) to enlarge those of the local authorities; (5) to replace the latter by new local authorities, with a new sphere of jurisdiction. The inspectors were deprived of the power to slaughter, except in cases where the owner had disobeyed the inspector's order for the separation of sick animals from sound; the local authorities were armed with power to prohibit animals from being brought within their jurisdiction, except under such conditions as they might think fit to impose, and the Secretary of State was empowered to close a fair or market in any district where the local authority had refused to do so, on a complaint from the local authority of a neighbouring district. Finally, for the Justices of Peace in each petty sessional division, Orders of Council were substituted the Justices in Session for the county in general or Quarter Sessions assembled; the area of jurisdiction being enlarged accordingly, and the power of restraining traffic so extended as to restrain the movement of cattle within each area as well as ingress into it, but not more transit or passage by road.

Under the powers thus created, Orders of Quarter Sessions have been made in every county of England and Wales prohibiting or restricting generally the movement of cattle into and within the several areas of jurisdiction. These Orders, however, exhibit many varieties of detail. By some animals may be moved, or driven from one part of a farm to another, if a public road intervenes. Movement on farms is permitted by others, sometimes with permission granted by a justice or justices, provided the extent of highway traversed do not exceed a space varying from 100 yards to half a mile. Under the restrictions of the farm from disease for a given but not uniform period must be proved before the highway is crossed at all. In most counties cattle may be moved for slaughter or for breeding purposes under licence, which may be granted, in some by one justice, in others by two, and the nature of the declaration on which the licence is founded, the signatures by which that declaration is to be attested, the time for which the licence is to hold good, the facts to be proved, there is remarkable diversity. The period must have been on the farm, generally speaking, for a period varying from 14 to 30 days; the farm must have been free from disease for a period varying from 14 days to two months; and in some cases no disease must have occurred within a certain distance, varying from a quarter of a mile to five miles, of the farm itself or of the route to be travelled. In two or three instances it is further required that the beast should not have been brought into contact with newly purchased stock, or exposed in a market within a given period. In the majority, all removals between sunset and sunrise are forbidden. Some Orders include cattle, sheep, and swine; some cattle and sheep; some horned cattle only. These examples by no means exhaust all the diversities discoverable in this mass of local regulations—diversities doubtless justified here and there by the varying circumstances of different counties, but evidently arising in very great measure from want of concert, and probably destined, if they are maintained, to beget considerable dissatisfaction and inconvenience.

IV.—MEDICAL INVESTIGATION.

In our First Report we humbly submitted to your Majesty the conclusions at which we had arrived respecting the general character of the disease, and the measures which should be adopted with a view to arrest its progress. We agreed (Mr. M'Clean dissenting) in the opinion that the only reasonable hope of effecting this object lay in imposing, for a limited period, restrictions of a very stringent kind on the movement of cattle, and that these restrictions should be uniform, and should be carried into effect at a time when the disease had not spread to an unmanageable extent, and when they would be attended with fewer difficulties and with far less of loss and inconvenience than must necessarily surround them towards the approach of spring. We differed in some degree as to the amount of stringency which we might reasonably venture to recommend. We think it right to say (Mr. M'Clean still dissenting) that the opinions in which we then concurred not only remain unshaken, but have been materially strengthened and confirmed by the deplorable experience of the last three months.

After laying before your Majesty our recommendations on this head we proceeded so far to pursue the investigation which we had already begun into the nature of the disease, with a view to ascertain how far it could be combated by curative or preventive treatment. This investigation included a thorough and minute observation of the symptoms and progress of the disease, and careful inquiries into its general and chemical pathology and morbid anatomy, a microscopical examination of the tissues and fluids of the bodies of diseased animals, a trial of various methods of treatment, experiments on disinfection and ventilation. It was further desirable to ascertain by actual experiment how far the disease was communicable.

These inquiries were committed, under the general superintendence of the medical and scientific members of the Commission, to the following gentlemen:—

1. Nature, Propagation, Progress, and Symptoms of the Disease; J. B. Sanderson, Esq., M.D.
2. General Pathology of the Disease, and its Relation to Human Diseases; C. Murchison, Esq., M.D.
3. Chemical Pathology of the Disease; W. Marcet, Esq., M.D.
4. Morbid Anatomy of the Disease; J. S. Bristowe, Esq., M.D.
5. Microscopical Researches on the Disease; Lionel S. Beale, Esq., M.D.

* These returns do not profess to give the total number of cases which have occurred in Great Britain, but only those which have been ascertained from the official information received from inspectors.

† Dr. Moffat, of Hawarden, Flintshire.

‡ Decimals are omitted.

§ Decimals are omitted. The sum of the figures, therefore, in each horizontal line will not be exactly 100.

* No cattle, however, were imported into the United Kingdom in 1865 from any Prussian port.

† Under an order in the *Nederlandsche Staats Courant* for 30th November, 1865, no animal is to be introduced without (1) evident need, (2) a licence granted by the burgomaster of the place of departure, (3) one by the burgomaster of the place of despatch, who must have satisfied himself by (4) a declaration of some competent person (*bevoegd deskundige*) that the beast is sound and from an uninfected place; and the licence must also be (5) approved by the Royal Commissary for South Holland. The animal must (6) be accompanied by a person appointed by the burgomaster, and (7) given in charge, on arrival, to one or more appointed persons, and (8) slaughtered within a short fixed period.

‡ Mr. Barron's Report. This is confirmed by the last Report of the Minister of the Interior.

The whole Bill is as follows:—

"Art. 1. Le Gouvernement est autorisé à prescrire par arrêté royal les mesures que la crainte de l'invasion ou l'existence de maladies épizootiques, peut rendre nécessaires, tant dans l'intérieur du pays que sur les frontières, en ce qui concerne les relations de commerce avec l'étranger.

"Art. 2. Un règlement déterminera les conditions et le taux des indemnités qui pourraient être accordées aux détenteurs d'animaux malades ou suspects dont l'abatage serait ordonné.

"Art. 3. Les infractions aux dispositions prises en vertu de l'Article 1. seront punies d'un emprisonnement de trois mois à deux ans et d'une amende de cent francs à mille francs, soit cumulativement, soit séparément.

"Art. 4. S'il existe des circonstances atténuantes, les peines d'emprisonnement et d'amende pourront être réduites à celles de police."

6. Treatment of the Disease: George Varnell, Esq., M.R.C.V.S., and William Pritchard, Esq., M.R.C.V.S.

7. Disinfection and Ventilation: R. Angus Smith, Esq., Ph.D.

On several of these heads no definite conclusions could be formed without long and laborious inquiry. On most of them we have already received reports, and all the reports will very soon be completed. We shall then lose no time in laying them before your Majesty, together with a brief general account of the results reached by the different lines of investigation. This will form our third and last Report.

An experimental investigation of the nature and treatment of the disease was commenced at an early period by several gentlemen of high professional and scientific eminence at Edinburgh, and a valuable Report by them has been already published. These gentlemen are continuing their researches, and have undertaken to place in our hands a further report upon the subject.

A large mass of statistical information respecting the progress of the disease has been collected by the Veterinary Department of the Privy Council Office; and the Department has also obtained, by printed forms very extensively circulated, information respecting the various modes of treatment which have been practised in different parts of the country, and their respective results. A comprehensive digest of the information so procured under both heads is being prepared under the direction of the Secretary of the Department, and we hope to be enabled to append this digest, with some illustrative maps, to our Third Report.

Some further evidence, oral and documentary, respecting the progress of the disease, the condition and inspection of cow-sheds and slaughter-houses in the metropolis, the precautions enforced and accommodation provided at the various landing-places for foreign cattle, and the provision made for the proper transport of live stock on the railways of the United Kingdom, is appended to this Report.

V.—PREVENTION AND CURE.

We shall abstain in our present Report from entering into the results of the scientific inquiries to which we have referred. There are, however, some points of more or less practical moment, to which in closing our inquiry we think it right to advert.

All endeavours to discover a method of treatment on which some reliance could be placed have entirely failed. Innumerable suggestions of this kind have been made or communicated to us, to none of which any substantial value could be assigned, and the knowledge and ingenuity of practitioners in every part of the United Kingdom have been exerted for this object for a year. The experience of the Dutch physicians unhappily to coincide on this point with our own.

Vaccination is not a protection against Cattle Plague. Careful experiments, conducted at our desire by the most experienced operators, have shown that cattle vaccinated may take the disease, and in which cow-pox has been fully developed, may, within a few days after exposure to the infection of Cattle Plague, contract that disease and die of it. We have at present no evidence that vaccination fortifies the system against this new malady in any degree, however slight, however, in no way been made on so great a scale (upwards of 27,000 having been vaccinated in Cheshire alone), and under such a variety of circumstances, that, should the statement require any material qualification, the public will soon have full information on the subject.

The possibility of mitigating the virulence of the disease by inoculation with the matter of the disease is a subject of much interest, and has engaged our attention. Such inoculation has been tried repeatedly, and on a considerable scale, by the Russian Government, and the effect of a long series of trials has been carefully noted and recorded; but the experiment has not been very successful, and it has for the present been abandoned. The Dutch Government, though much pressed to introduce it in South Holland, has refrained from doing so for fear of its consequences. (Rapport aan den Koning, 5 Maart, 1866.) Whether a system of inoculation may yet be found which will effect the desired object is a question which can only be solved by various and repeated trials. Further information on the subject will be given in our Third Report. It is obviously unadvisable that any experiments of this kind should be tried, except in the isolation and slaughter of infected cattle, and in the use of disinfectants.

The careful and thorough use of disinfectants, which attack and neutralise the poison either when floating in the air or when adhering to solid or liquid substances, cannot be urged too strongly. In every locality the measures should be taken to circulate information as to the best disinfectants, and to ensure their being used. Some ready and effectual compounds for disinfecting the air, for cow-houses, waggons, ships, and moveable articles, especially of metal, and for fresh hides, horns, and hoofs, are described in a note*; but we hope to supply more detailed information on this subject in our Third Report.

But it is still necessary, and it will not cease to be necessary, to insist on the measures on which so much stress has already been laid—and of the importance of which the country is now fully aware—on the restriction of movement, and on isolation. Recent experience appears to indicate further the expediency of slaughtering infected cattle, provided this can be done without injustice to the owners. By what means this can be best accomplished,—whether by voluntary associations, such as that in Aberdeenshire,—or by what other means it may wisely be done by the Legislature or the Executive to promote and encourage such associations, or to assist in other ways the desired object, are questions on which this Commission possesses no special information, and which will soon no doubt be discussed in Parliament.

We have one thing to add. The subtle poison of this disease has now diffused itself through the country, and our principal danger is at home, and not in importations from abroad. But the question, what permanent regulations must be made to prevent the re-importation of it hereafter from infected countries, is one which must be considered sooner or later.

The importation of foreign cattle is large, and largely increasing. It is found profitable to bring them from countries where this disease is a frequent guest, and in the near neighbourhood of which it commonly dwells. Hungarian bullocks fetch in the English market a price sufficient to repay the importer. The time required for transit is not well ascertained, nor is it very important to ascertain it, for it is always liable to be shortened by improved arrangements; and an animal which has travelled in a drove, truck, or ship-load, may well be diseased on its arrival here without having been so when it started on its journey. As to the countries from which cattle come, there can often be no certain knowledge they are sent, for the most part, to England by foreign dealers resident in German towns, are consigned to salesmen here, and sell on commission. Hamburg and Rotterdam, from which the chief importations come, are the terminal stations of the great network of German lines, branches of which run into Hungary, Poland, and Gallicia, and will soon be pushed up to the Bessarabian frontier. The Dutch ports alone have sent us not less than 40,000 cattle and 2,000 sheep in a year. Cattle which have stood in the markets of Magdeburg or Berlin have undoubtedly undergone inspection, and, if brought from an infected district, quarantine. But we think it useless to trust to any inspection or other precautionary measures which foreign Governments may be induced to apply to cattle leaving their own ports or frontiers, or in the course of through traffic. Such precautions may be desirable, but no real reliance can be placed on them. We must be prepared to meet the danger when it reaches our own shores. We receive during several months in the year from 3000 to 10,000 animals a week, which are landed at few ports, and are dispersed all over the country. More than half of the entire number landed at London, upwards of six-sevenths at the three ports of London, Harwich, and Hull. Against the peril which must lurk in these great importations mere inspection will always be a very imperfect defence, even if conducted with greater local facilities and under more careful supervision than seems to have been the case hitherto. There is in fact but one class of precautions likely to be effectual—viz., to restrict importation absolutely, except in case of stress of weather, to a certain number of ports, where proper accommodation could be provided; to cause all fat cattle to be slaughtered at the ports, and all store cattle to undergo a period of quarantine. Hides and skins from any part of the Continent, not dried as well as salted, ought to be disinfected at the port of importation.

The evidence which we have received on some other points on slaughter houses and cowsheds in the Metropolitan District, on the substitution of dead meat markets for live cattle markets, on the inland conveyance of cattle by railway, and on the cleansing and regulation of sea-going cattle boats—we lay before your Majesty without further recommendation on them. The present calamity has shown how defective are our general precautions—if any precautions can be said to exist—for the detection and prevention of contagious cattle diseases, and we trust that it will give an impulse to improvement in these respects, and that the subject will be reconsidered hereafter. It lies, however, beyond the scope of our Commission, and we content ourselves with directing attention to it (Signed) SPENCER, CRANBORNE, ROBERT LOWE, LYON PLAYFAIR, CLARE SEWELL READ, HENRY BRADSHAW JONES, RICHARD QUAIN, JOHN PAGE, THOS. WORTHAM, ROBERT CECIL, CHARLES SPOONER.—(Subject to views appended to first Report) J. R. M'CLEAN.

5th February, 1866. MONTAGUE BERNARD.

* The experiments of Dr. Angus Smith show that the best disinfectants are carbolic acid (or M'Dougall's powder) and chloride of lime. Both of these should be freely used in all sheds, and for waggons and trucks, not only in infected districts, but throughout the country; the walls, floors, and roofs being all well washed. Some of the carbolic acid passes into the air, which it purifies. Hides should have common salt spread over them for 12 hours, and afterwards be washed in a solution of carbolic acid and water (two ounces of acid to the gallon), or be laid in a solution of chloride of lime (4 lb. to a gallon of water) for ten minutes. Manure should be burnt, or if this be impracticable, should be disinfected with carbolic acid, and deeply buried. For washing purposes, Dr. Angus Smith recommends M'Dougall's disinfecting soap, which contains crude carbolic acid.

STEAM PLOUGH COMPANIES.

"T. M. RICHARDSON" is a bird of passage; he is now of "Hibaldstow Grange, Lincolnshire;" on Dec. 1, 1865 (according to John Fowler & Co.'s "Facts of Interest to the Farmers"), he was of Kirton-in-Lindsay. It is necessary that I should thus trace him out, because I shall hereafter want to refer to him at the latter place.

Mr. Richardson now stands forth as a champion to meet Mr. Savidge and Mr. Bignell. These two gentlemen may or may not meet him—I cannot say—but be that as it may, as I have John Fowler & Co.'s "Facts, &c.," at hand, with some good stuff in it to handle that will be generally useful to the public, I will have a go in. He finds fault because Mr. Savidge did not back his opinion by "proof or even arguments," and he then "entirely differs from the opinions expressed by Mr. Savidge and Mr. Bignell." He then swaggers a bit about the North Lincolnshire Steam Ploughing Company, which, according to Mr. Toepffer's showing, is only going to do something. He then asks Mr. Savidge a question and answers it himself—not by "proofs" mind you, but by mere assertion, except when he tells us about "a gentleman farmer who allowed his small engine and cultivator to remain idle in the stack-yard, and employed the double set of engines to work for hire on his farm;" and then he asks whether "that is not evidence strong enough to outweigh the opinion of Mr. Savidge and Mr. Bignell."

Let us try its weight. It is mere talk, except the few words about "a gentleman farmer," and he is kept in the dark. Who can he be? At page 57 of "Facts of Interest to the Farmers," by John Fowler & Co., I read thus:—

"*Mr. T. M. Richardson, Kirton-in-Lindsay, December* 1, 1865.—During the present controversy respecting steam cultivation with different sets of tackle in various counties, I think the experience I have had in Lincolnshire during three years with a traction-engine and double tackle, fitted with chip-drum and a self-moving anchor, may not be altogether uninteresting. The cost in the first instance was—

Engine	£420
Windlass anchor, 800 yards steel rope, 20 rope porters, and cultivator	290
Total cost	£710

In the year 1862 I cultivated upwards of 1400 acres, and used about 39 tons of coal "(a little over ½ cwt. per acre, a tough job this, Mr. Editor), "or an average of 6*d*. per acre, as the coal cost 10*s*. per ton at the station, and the quantity used was about 1 cwt. per acre.

This must be a mistake, for 39 tons are equal to 780 cwt., or about ½ cwt. per acre, which will bring his cost for coal to about 3*d*. per acre. Cheap work this, Sir!

"For instance, on the farm of Joseph Kirkham, Esq., of Audleby, I did 18 acres within 12 hours, using only 8 cwt. of coal on the day's work."

This is good evidence in support of the 3*d*. per acre, yet beats it, for it is only a trifle over 2½*d*. per acre.

"The total average quantity of work, however, during that season was only 12 acres per day. I travelled over 300 miles of road during that season. The engine of course conveyed the windlass and the rope cart, the farmers removed by horses the anchor and cultivator, and also attended the engine with a water cart. I charged 7*s*. 6*d*. per acre, and had the men boarded at the farmer's expense by their foreman, and the farmer supplied the boys to remove the porter in the field when working."

If this made a good job of it for Mr. Richardson, it must have been a dear job to the farmer. Let us try it both ways: 12 acres a day, at 7*s*. 6*d*. per acre = £4 10*s*. As the men were fed by the farmer, such a sum ought to have paid the contracting man well.

Now let us try the cost to the farmer:—

	£	s.	d.
12 acres a day, at 7*s*. 6*d*. per acre	4	10	0
Horses at removals and water	0	5	0
Porter boys	0	3	6
Feed for men	0	6	0
Coal	0	4	0
	£5	9	6

or 9*s*. per acre. Therefore the farmers paid 8*s*. 10*d*. for burning three-pennyworth of coal. The consumption of coal shows that the farmers must have paid a high price for light jobs.

"In 1863 I cultivated with the same engine and tackle upwards of 1300 acres. I ploughed 227 acres, and worked with the digging breasts, 106 acres: total 1633 acres. The working days were about 184. The average was less than in 1862, because the ploughing and digging took more time. In 1864 I did 1322 acres of cultivating, and about 300 acres of ploughing and digging. In 1865 I have done somewhat less, as I have joined a company with the double engine set, and they are working my district, consequently my engine is now more employed in threshing, grinding, and making Linseed and corn cake, as I have erected hydraulic presses on my own farmstead."

These are strange facts. A man doing 12 acres a day, getting 7*s*. 6*d*. an acre, with his men fed, yet drops such a lucrative job to join a company in his own district; in fact joins Mr. Toepffer, and packs his tackle off in his own farmstead. Is this the man that we were told about at starting that let his tackle stand "idle in the stack-yard?" If so, I have brought the gentleman from darkness into light; be this as it may, I will follow "T. M. Richardson" through his second paragraph. He will have it that Mr. Bignell must not condemn steam ploughing companies, which have made such a bad job of it, in consequence of their "10 or 12 acre" jobs, for in his county "many farmers have 150 acres worked upon one holding in a season, thereby employing the engine for at least 10 days, and few require their services for less than 60 or 80 acres." Let us test this. He has not given details, but another Lincolnshire man has done so:—Messrs. Smith and Lingford, of North Thoresby, Louth, at page 46 in John Fowler & Co.'s "Facts, &c." They did 1223 acres on 36 holdings in 173½ days, or an average of 34 acres per holding. This fact tells its own tale.

I will now go on to the third paragraph. We are told that Mr. Bignell steered clear of figures, but that Mr. Richardson is not the least afraid of proving every assertion by that important test. The proof is against him in the last paragraph, and it is a query to me if he fares much better in this. He says Mr. Bignell "considers 1400*l*. a very great outlay for a pair of engines. But two engines can be employed 200 days in a year, and earn on an average 4*l*. per day." He shows that he got himself, in 1863, 184 days; Messrs. Lingford show that they got, in 1865, 173½ days. I have looked through all the other contracting men's evidence without being able to find one who got anything like 200 days' work in a season. Then his calculations or rather statements following are all worthless; he may have seen losses with working too little power, perhaps with the tackle lying in the stack-yard.

In his fourth paragraph he will have it that big tackle is better than little tackle, following the lead with Mr. Toepffer, with his "donkey and horse," or rather "tortoise and hare." See p. 28 of "Facts of Interest," &c., where Mr. Toepffer says:—"In such a position does the small tackle of Mr. Smith's stand with respect to Mr. Fowler's double 14-horse power engine set." The evidence is exactly that; look when I may, your own tabulated report is strong evidence in support of it. Those tables show that Fowler's average day's work with locomotive engine tackle is 6¼ acres, whereas mine is shown to be 7¼ acres. Here are some other plain facts, worked out from those same tables:—

REPAIRS.

	Clients.	Acres.	Cost.	Av. p. acre
Fowler ..	9	6281	438*l*. 18*s*. 1*d*.	1*s*. 4*d*.
Smith ..	13	2571½	57*l*. 5*s*. 4*d*.	0*s*. 5¼*d*.

WAGES.

	Clients.	Acres.	Cost.	Av. p. acre.
Fowler ..	12	5754	953*l*. 7*s*. 1*d*.	2*s*. 5*d*.
Smith ..	15	3178	348*l*. 6*s*. 1*d*.	2*s*. 2*d*.

COAL.

	Clients.	Acres.	Cost.	Av. p. acre.
Fowler ..	11	5604	449*l*. 7*s*. 6*d*.	1*s*. 7*d*.
Smith ..	14	2958	149*l*. 5*s*. 3*d*.	1*s*. 0*d*.

OIL.

	Clients.	Acres.	Cost.	Av. p. acre.
Fowler ..	9	7409	68*l*. 19*s*. 6*d*.	0*s*. 2*d*.
Smith ..	13	2851	19*l*. 0*s*. 0*d*.	0*s*. 1½*d*.

TOTAL COST PER ACRE.

	Repairs.	Wages.	Coal.	Oil.	Total.
Fowler ..	1*s*. 4*d*.	2*s*. 5*d*.	1*s*. 7*d*.	2*d*.	5*s*. 6*d*.
Smith ..	0*s*. 5¼*d*.	2*s*. 2*d*.	1*s*. 0*d*.	1½*d*.	3*s*. 9*d*.

These are all "facts of importance to the farmers,"

and all are on the side of the tortoise, or rather Smith's tackle. Mr. Richardson will begin to see that his fast runner may be outrun by the steady runner.

Now let us follow him to his fifth paragraph, about "time in the year for steam cultivation." Messrs. Smith and Lingford's evidence upon this point is the best we have; they show what they did in every month in 1865:—

	A.	lo.	F.
March	4	1	30
April	242	3	12
May	21	3	00
June	14	3	24
July	29	3	0
August	107	1	1
September	208	1	8
October	132	0	32
Total	1253	0	35

They say that "it may be seen that the quantity of work done in each month varies very much, which is accounted for partly by the wet weather, and by the want of work at certain seasons." This tells us plainly what work can be got in a Turnip-growing district, where only one set is kept. How Mr. Richardson can make his "summer months' remuneration" is best known to himself; neither he nor any one else disputes with me upon the point of winter work or rather idleness.

Mr. Richardson in his last paragraph tells us that "History will show how John Fowler's genius successfully triumphed over insinuations and attacks of prejudice and ignorance." What insinuations have we had? Mr. Bignell spoke plainly. I have always been a plain open-speaking man, frequently too plain for the ploughing and locomotive party. You have done a good deal to show up facts, but I have never read an insinuation that you have penned. If there has been any of that sort of stuff about, it has been from the other side—I shall not trouble myself to look after it. I have attacked the whole party, and shall continue to do so, so long as they attack my right. "And how his rivals succumbed to the common sense of the English farmer." Have they? Who were his rivals? He had none. It was he who rivalled me. After I had fairly started, he with the Royals at his back tried to trip my heels up. The farmers of England know full well that he never did that, and plain facts now tell their own tale that Smith's once despised cultivator has nearly buried the old roll-over plough for steam purposes "in oblivion," and the evidence now is getting very heavy against the locomotive engine and contracting system. Mr. Richardson's own evidence is dead against it. He made the farmers pay 8*s.* 10*d.* an acre for burning three pennyworth of coal—cost in all 9*s.* an acre. Three pennyworth of coal could not have done more good to the land than the cost of the feed of Mr. R.'s highly fed men by the steward, with the pay of the boys for porter and water, &c.—to drop altogether Mr. R.'s 7*s.* 6*d.* an acre.

I have gone through Mr. Richardson's letter, and have touched upon every point worth notice. I could go much deeper into the contracting system. There is plenty of evidence in John Fowler & Co.'s little book—"Facts of Interest to the Farmers," but as I shall very shortly be out with my own revision of it, showing up all matters of interest, especially the contracting system, I will not now trespass further upon your much crowded space beyond just saying that the cost to a private worker is 3*s.* 9*d.* an acre, exclusive of interest of money and wear and tear, against Mr. R.'s 9*s.* an acre on light Turnip soils. *William Smith, Woodstan, Bletchley Station, Bucks. Feb.* 12, 1866.

Home Correspondence.

The Dangers of an abundant Mangel Crop.—Experience has taught me the necessity for being very careful as to the safe and proper supply of Mangel to my live stock, having regard to their age, sex, and condition. I know that much illness and many losses have occurred this season by the too free use of Mangel. The crop is so abundant in our southern and eastern counties that it has led to a too lavish and injurious use. My veterinary tells me of no end of cases which he traces to this cause. I am at present feeding horses, cattle, and sheep with it, but have to watch closely how much they can bear with safety. We never give it alone, but always with dry and varied food, especially hay or straw chaff, bran, malt combs, cake, corn, or meal. To breeding animals we never give any until some time after parturition. We have to administer it very cautiously to lambs. In the spring it is less dangerous than in autumn. I have good reason to believe that it is the large quantity of common salt in it that causes the mischief; it irritates and inflames the neck of the bladder, especially where sheep are confined. The analysis of the ashes shows that common salt (chloride of sodium) forms 24½ per cent. of the ash of the bulb, and 37¾ per cent. of the ash of the leaf of the Yellow Globe, while the Long Red only contains 14 per cent. in the bulb and 30 per cent. in the leaf. We can therefore easily understand why the latter is to be preferred for early feeding, and may be much more safely given to cows or young stock. Both Long Red and Globe contain in their ashes about 10 per cent. of potash and soda. Swede Turnips, which contain only 6½ per cent. of salt in their ash, and 14 per cent in the leaf, may be given in almost unlimited quantity without evil result, and are much preferable for cows and breeding animals. Carrots also contain but 8 per cent. of salt. Mangels contain more soda than either Carrot or Swede, and less lime. Mangel is the most nutritive root, but less of it can be safely consumed either than Swede or Carrot. Mangel carefully given to our farm horses does wonders for their condition—of course mixed with plenty of chaff, and their corn ground into meal; but horsemen must not be allowed to give unlimited quantities, which they are too ready to do. Sheep, deprived of exercise, suffer more from Mangel than when roaming at large. *J. A. Meehi, Feb.*, 1866.

Disinfectants.—On farms where the cattle plague has broken out, it is of the utmost importance to bear in mind that the excrements of the diseased animals are a most fruitful source of infection. All the manure that can possibly have become contaminated with the excrements of the diseased animals should be at once carted into a field and made into a clamp, 2 to 3 cwt. of freshly burnt and freshly slaked lime being well mixed with each ton or cartload of dung. The whole should then be covered with earth to the thickness of at least 1 foot, both at the top and sides. This covering will serve to prevent the loss of the ammonia given off from the dung by the action of the lime upon it. It is, however, not sufficient to remove and disinfect the dung produced by the diseased animals. The yards, stalls or sheds, carts and implements, must all be thoroughly cleansed and disinfected. The yards should be scraped clean, spread over with quick lime, and then, after some days, this should be removed and a solution of chloride of lime sprinkled over the ground. The stalls or sheds should be treated in the same way, with the additional precaution that any paving should be removed, well cleansed with a solution of soda, rinsed with a solution of chloride of lime, and, after the use of lime and chloride of lime to the ground, re-laid. All wood-work and iron-work should also be well washed with soda, and then rinsed with a solution of chloride of lime; and the walls and ceilings should be first well washed with the chloride of lime solution, and then twice lime-washed. The carts and implements should also be scoured with soda, and then washed with chloride of lime. For these purposes the soda solution may be made by dissolving from 2 to 3 lb of common soda in a pail of water, and the chloride of lime solution by mixing 1 lb. of chloride of lime with every gallon of water required. There are many other deodorisers and disinfectants, but chloride of lime is, I think, the most effective, and it is at the same time perhaps the most easily obtained, and the most convenient in use. The general practice seems to be to bury the entire bodies of animals that have died, or been slaughtered under the influence of the disease, and this is certainly the most effective means of preventing mischief, provided the process be properly conducted; that is, if the animal be buried sufficiently deeply, and with a sufficient coating of quick lime over it. But such a proceeding is attended with great loss, and is, I am inclined to think, not necessary if proper precautions be taken. If the hide be well salted on the inside, and well washed with a solution of chloride of lime on the outside, it might then be sent to the tanner; the inside and all other easily separable fat might be well washed with chloride of lime, and then sent to the tallow-melter; the remainder of the animal should, however, be buried, with quick lime, some feet below the surface of the soil. *J. B. Lawes.*

The Cattle Plague.—I remember reading and hearing, at the time when cholera was amongst us, that there had been few or no instances of any one being affected by it who lived in the immediate neighbourhood of a lime-kiln. If such was the case, might not the same hold good with regard to the cattle plague? Has the influence of smoking lime, as a remedial agent in an infected district or locality, been tried? Of course it is not everybody who lives in the neighbourhood of a lime-kiln, but it would not be very difficult for any one to lay down in his fields, or in the precincts of his homestead, such a supply of lime as might be available to disinfect the air by being kept constantly burning. The influence of lime might not be efficacious in checking the spread of the disease by contagion, but as a purifier and disinfectant of the air there is little doubt of its efficacy. *D. K.*

Societies.

ROYAL AGRICULTURAL OF ENGLAND.

ADJOURNED MONTHLY COUNCIL: *Wednesday, Feb.* 21.—Present: The Duke of Marlborough in the Chair; Earl Cathcart, Lord Berners, Lord Feversham, Lord Walsingham, Major-General the Hon. A. N Hood, Sir J. V. B. Johnstone, Bart., M.P., Sir A. K. Macdonald, Bart., Mr. Acland, M.P., Col. Challoner, Mr. Dent, M.P., Mr. Druce, Mr. Holland, M.P., Col Kingscote, M.P., Mr. Frere, Professor Simonds, and Dr. Voelcker.

AGRICULTURAL EDUCATION.—Mr. Holland, M.P., Chairman, reported the following to be the distribution of prizes which they recommended in connection with the recent Cambridge local examinations:—

Seniors:—

I.	£	*s.*	*d.*
3 in Cambridge, 1st Class, 5*l.* each	15	0	0
5 in Cambridge, 2d Class, 2*l.* each	10	0	0
The 2*l.* prizes to be given in books.	£25	0	0

Juniors:—

1 in Cambridge, 1st Class	10	0	0
2 best in Cambridge, 2d Class, 5*l.* each	10	0	0
5*l.* in Books among the remaining four in the Cambridge 2d Class	5	0	0
	£25	0	0

Seniors:—

II.	£	*s.*	*d.*
2 Candidates distinguished in Cambridge Pure Mathematical Class List, 4*l.* each	8	0	0
2 Candidates distinguished in Cambridge Applied Mathematical Class List, 4*l.* each	8	0	0
2 Candidates distinguished in Cambridge Chemistry Class List, 4*l.* each	8	0	0
1 Candidate distinguished in Cambridge Botany Class List	3	0	0
2*l.* in Books to three next best in Pure Mathematical Class List	3	0	0
	£30	0	0

Juniors:—

	£	*s.*	*d.*	£	*s.*	*d.*
4*l.* each to distinguished candidates in Mechanics, Pure Mathematics, and Botany Class lists	12	0	0			
8*l.* in Books to the next highest candidates in Pure Mathematics	8	0	0			
				20	0	0

III.

Mechanics applied to Agriculture.

2 best, 5*l.* each	10	0	0			
2 next best, 1*l.* each in books	2	0	0			
				12	0	0

Chemistry applied to Agriculture.

3 best, 5*l.* each	15	0	0			
2 next best, 1*l.* 10*s.* each	3	0	0			
				18	0	0
				£50	0	0

This Report was adopted.

Farmers' Clubs.

EAST LOTHIAN.—At the last monthly meeting of this Club, Mr. Scott Skirving of Campton in the Chair, the following was stated to be the result of the competition for Messrs. Cunningham's prize of 10*l.* for the best 10 acres of Swedish Turnips, grown in the county:—

	Per Scotch acre: tons	cwt.	qrs.	lb.
1. Mr Sadler	27	0	0	0
2. Mr Hope	24	0	1	12
3. Mr Shirreff, Edmondstone	22	3	2	8
4. Mr Ellis, Abbeymains	19	15	0	0
5. Mr Durie, Ramornie	19	12	0	6

The following are the reports by the various competitors:—

MR. SADLER'S.

The crop was grown upon a medium light loam after a crop of Wheat, which succeeded a very heavy crop of Potatoes after lea pasture, for which the ground was stirred by Reeder's deep subsoil to a depth of from 12 to 14 inches. The Wheat stubble for the Swedes was deeply steam ploughed last autumn, and, with the exception of a harrowing in spring, received no other work, but was at once drilled up into 26-inch ridges, receiving per Scotch acre, 18 cartloads of short decayed bullock manure, along with 5 cwt. of Mr. Cunningham's Turnip Manure, consisting of Peruvian guano, Bolivian guano, dissolved bones, and potash. Just before the leaves began to meet in the drill, a top-dressing was applied at the rate of 14 cwt. per acre, which consisted of a mixture of guanos and bones, and some of the London concentrated manures added.

The variety of Swede, East Lothian Improved; seed supplied by Mr. Dods, Haddington.

MR. HOPE'S.

On a heavy loam on a retentive clay subsoil; sown May 1st, and finished May 3rd. The field had been worked the previous autumn by the steam cultivator (east and west), and again immediately before sowing (north and south). The drills were drawn off east and west, and 15 bushels of dung, and west, of Peruvian guano per Scotch acre, or 12 bushels dung and 1 cwt. Peruvian guano per imperial acre put in them at the time of sowing. The early part of May was very cold and windy, and there were several heavy showers, followed by hot weather in the middle of the month. A crust was thus formed on the surface of the ground which retarded the coming away of the plants. The braird was late, tardy, and partial, and towards the end of May the plants were attacked and very much injured by the fly. The field was thinned from the 10th to 16th June, the drill grubber preceding the workers. The previous crops were Barley, after yellow Turnips, after Oats, after one year's Grass.

MR. SHIRREFF'S.

Previous Rotation.—Grass, Oats, Potatoes, Barley, Swedes.

Mode of Cultivation.—Stubble twice grubbed in autumn. Manured on the flat in December with well-made farm yard manure, which had been "sweetened" during summer, at the rate of 25 cartts per acre. The carts would average about 14 cwt. each. The manure was ploughed in with a 10-inch furrow. In the end of April the land was three times grubbed, harrowed, and rolled, and allowed to lie about a fortnight before being drilled up for sowing. Began to sow on the 15th May, and finished on the 17th. 3 cwt. Peruvian guano, 1 cwt. Ichaboe, and 2 cwt. of ground bones were given per acre in the drill. A portion of ten acres were top-dressed in July with coprolites, the whole quantity applied being only 1 cwt. on one or two spots where the plants were inferior. The last sown part of the field was also top-dressed (about four acres) with 1 cwt. Peruvian and 1 cwt. bone-ash superphosphate, at the rate of 2 cwt. per acre. The Swedes all singled by the 25th of June.

MR. ELLIS'S.

1865. Potatoes; 1864, Wheat; 1863, Turnips. I applied 30 tons of Edinburgh Police manure on the stubble, and in the drill I gave them 1 cwt. discoloured Peruvian guano, 2 cwt. Bolivian guano, 2 cwt. bones,—5 cwt. per Scotch acre. They were sown May 22.

MR. DURIE'S.

Previous Cropping.—Potatoes; Wheat, Turnips, manured with 30 cartts farmyard manure per acre, and ploughed in December

—land ploughed again in April; reduced in middle of May; but from wet weather occurring the seed was not sown until 6th June. Manure applied at the time of sowing—3 cwt. guano, and 3 cwt. dissolved bones. 34 lb. seed spread per Scotch acre. The seed brairded partially, but the plants very vigorous, and though attacked by the fly there were about two thirds of regular plants. The crop was thinned about the second week of July. Immediately after hoeing, 2½ cwt. guano per acre was applied broadcast; and after hoeing the soil was lightly turned up.

The soil is fair Turnip land, resting on greenstone rock, which here and there is visible above the surface.

MR. SCOTT SKIRVING referred to Lord Elcho's recent speech as evidently a piece of chaff and fun from beginning to end. Lord Elcho was reported to have said, that under certain circumstances the whole existing tenantry might be easily done away with, and that the proprietors of the soil might cultivate the land in Scotland. He thought some of them might recollect the speech of a clever man who said he could easily cultivate the whole county of East-Lothian and preach every Sunday besides, but with this important reservation, "provided somebody supplies me with the capital." In order to cap this joke, there was another plan, that the hinds of East-Lothian were all to be partners in the grand concern of cultivating it. But how could the partnership go on, if the head partner were losing money and none of the rest had any capital to put in? That brought him to the proposal of the hinds in the neighbouring county that they should have 15*s.* per week in money and certain other perquisites, equal to about 2*s.* more. He had deliberately come to the conclusion that the men were making a dreadful mistake, and a mistake that would be much more dreadful if they succeeded, because if they were in an evil hour to be paid this 15*s.* weekly, with 2*s.* extra, he maintained that in about two years they would sink to the level of other labourers getting that amount of money. Their wives would be going in ragged petticoats and their sons without shoes to their feet, because the money given in a fortnight would go in a fortnight, and there would be nothing for clothing or schooling, or the comforts they now enjoyed. He maintained, in looking at the hinds of the Lothians generally, and at East Lothian in particular, that they were immeasurably better off than the labouring agricultural classes of Europe; and the reason they were so much better was, he believed, mainly owing to the payment in kind, which fostered frugal and prudent habits. Lately, in Cheshire, he saw a farmer whose men were hired at weekly wages, and who could not trust them with 4*d.* to pay a toll, for they would go round five miles and come home and tell him they had paid it—therefore, he had to make a bargain with the toll-man; and these men and their wives, the farmer said, were always in poverty. Now, he was proud to say there was not a ploughman he had that he would not trust just as much as he would trust an ordinary friend. He thought the reason East Lothian hinds were so comfortable and respectable, and better dressed on Sundays and at funerals than any labouring people, was that they were paid in kind, and had their cows, and produce, and pigs; and he trusted he might never live to see the day when these things were done away with. Mr. Skirving next proceeded to speak on the subject of the cattle disease, and referred to fox-hunting. Their cattle were put into courts, and it was difficult to see how fox hounds, sweeping over a country, could get among diseased cattle. He thought that if other dogs were allowed to range the country in freedom, the disciplined fox hounds could do no harm. He should have thought that the case of a man who went from one farm to another with dogs catching rats would be much more dangerous than fox-hunting.

MR. DOUGLAS, Athelstaneford, said he had been in this room at all those annual meetings for the last 25 years, and he had never heard a better speech, taken all in all, than that delivered by Lord Elcho on the late occasion. He had made a most liberal explanation with regard to game. He said the best way of settling the question was that the hares should be conceded to the tenant. In some instances Lord Elcho had been misrepresented. He had only said that if it was necessary—if the proprietors could get no security for their land—no person could find fault with them for farming it themselves; but, he added, "God forbid that." Mr. Douglas went on to speak of the proposal to give the ploughmen a share in the proceeds of the farms, and referred, as an illustration, to the practice in some shops in Edinburgh of giving the shopmen a percentage on the sales they made. This, he said, had the effect of making them zealous in calling attention to the goods they sold. Lord Elcho might have been looking at the thing in that light. The gentlemen there knew perfectly well that the hinds, as a fact, had very little interest in their work. It would be found that a hind would go on from youth to old age, and never make any improvement in his work. He knew this for a fact, that they paid the same wage to the men, all and sundry. It was true that there were leading men who were raised to be grieves, and who were paid 1*s.* or 1*s.* 6*d.* a week more wages; but it was a fact that men who could perform all they did in a satisfactory way, not merely as to quantity but as to quality, got no more wages than a man of a very inferior class, and it was this which drove so many of them into other employments. Now, he believed that Lord Elcho had his eye upon that. He (Mr. Douglas) suggested that they should have a standard wage, and if a man did his work faithfully and well, let his salary be increased by 2*l.* a year after two years' service. As a practical man, he felt it to be the case that good hands should be rewarded for their industry. If they failed to do that, they would be left with what might be called the rubbish, and the farming operations would be very imperfectly performed.

MR. HOPE, Fenton Barns, said: It was a very difficult thing to attempt to fix wages one way or another, for they all knew that these things depended upon supply and demand. He thought Mr. Skirving was quite right, that the way in which the hinds were paid in this county contributed to their responsibility and trustworthiness. He considered it a matter of the deepest importance, for it required in the hinds' wives an amount of forethought in disposing of the grain and of the produce of their cows, that had a beneficial effect on their families, besides having a supply of milk for their children, which he thought was of the greatest possible consequence, as they could easily tell, from the colour of the faces of the children, whether their parents had cows. He had once or twice assisted men to purchase cows, and they had always paid the money back in a short time, and thriven afterwards. Whatever might be the result of the agitation for an increase of wages, the hinds should insist that so much of their wages, at all events, should be paid so as to enable them to keep a cow.

MR. SADLER, Ferrygate, referring to the argument for paying in kind, said that if a hind's wife was industrious in looking after the produce of the cows, she would be equally industrious in managing her cash. He generally paid the wage in the shape the hinds desired it, but he did not find, except the family was large, that a corn wage was much asked for. He did not think that the system of paying in kind worked satisfactorily; and, calculating the 12*s.* a week they received, with the free house, Potato and garden ground, the meat in harvest, and occasional gains, he found the wage was as good as 18*s.* 6*d.* a week.

Reviews.

On the Management of Farm Stock in Health and Disease, and more especially of Dairy Cows: to which are added some Practical Suggestions for the Prevention and Treatment of Rinderpest, or Steppe Murrain, &c. By a Scottish Tenant Farmer. W. Blackwood & Sons, Edinburgh and London.

This is a very instructive pamphlet by an extremely successful and observant farmer. He has, since 1851, milked 70 to 100 cows every year, and has had only three cases of death and only two of actual disease in his herd during the whole of that time. One death was from hoven, and another from accidental injury; the third was after calving. The two cases of disease were respectively milk fever and a solitary case of foot-and-mouth murrain. This is probably an unparalleled experience, and the history of the management to which the writer very fairly attributes it cannot but be interesting. We strongly recommend our readers to procure the pamphlet, in which it is very explicitly and simply described. Reference is made to the construction of byres and to the management of the cattle at different seasons of the year as to housing; and full detail is given of the winter and summer feeding. The attendance on the cows as to sufficiency of careful attention and supervision, and as to management in disease and illness, is described, and a full account is given of the special measures of prevention which have been adopted in regard to Rinderpest. There are also references to the management of sheep and horses as regards health.

The following is a useful extract on the preventive measures which the author has adopted hitherto with success:—

"Perfect isolation of cattle from all contact with any person, animal, or article of clothing, fodder, or utensils from an infected locality, is the only chance of escaping the contagion of the disease. Whether or not it is also epidemic seems not yet to be fully determined. Certainly, when there are many cases in a place, the air seems to become impregnated with it. But however much this may or may not be the case, one thing is quite certain, that even the killing of the cattle will be of no use whatever in what is called 'stamping out' the disease, unless the most stringent measures are taken also to disinfect the whole interior of the byres, walls, roofs, floors, gutters, between the pavements; in short, every nook and cranny. Nothing is so effectual for this as fresh quicklime, repeatedly and plentifully applied again and again. All straw and manure and refuse must be burnt with tar and brushwood, which will destroy all bad air; and the drains and gutters should be well flushed with Condy's Red Disinfecting Fluid and water. If the dead cattle are dragged along to be buried, all the road they are taken should be quicklimed, and they should be covered with quicklime when deeply buried. The persons employed in contact with them should thoroughly wash themselves with Condy's fluid and water (one-third Condy to two-parts of water), and all their clothes be burnt. Their shoes should be well cleaned with Condy's fluid; and all utensils, troughs, pails, wheelbarrows, grapes, shovels—every article, in short, that has been near the sick animals, must be disinfected likewise. It is useless otherwise to kill the animals; the infection will be left for the next comers, and all that is done in the slaughtering will be lost. You may as well 'stamp out' the flames on a burning moor, and expect any sparks you leave behind not to be fanned into a flame by the first breath of wind. So much for preventive measures against the spread of the disease. Where it has not already appeared, the best way to ward it off is to bestow unremitting attention on the general health of the cattle; to give them plenty of fresh air, guarding against extremes of temperature, plenty of fresh water, and careful good feeding, with 3 or 4 oz. of common salt each, and 1 lb. or 2 lb. of oilcake per day in their food, keeping them very clean, and removing the manure twice daily, using plenty of quicklime and whitewash, and disinfecting fluid (Condy's red), about the byres, drains, &c. If the cattle are in very poor condition, they will more likely succumb to the rinderpost, which is of a low typhoid type. If they are well kept and in good condition, they have a better chance of recovery. They have no chance at all if either left shivering out in cold fields, or shut up in dirty, ill-aired, and close byres, or alternately driven from one to the other."

On the cure of the disease it is, we believe, useless to speak, but we extract so much of what is said on the subject as belongs to the domain of nursing:—

"Be watchful for the very first symptoms—dulness or sickness, or loathing of food, and staring of the coat especially, and disorder of the bowels. If such should appear, at once remove the animal into a comfortable loose box, or make a temporary one with hurdles, in which it can move about with ease. If possible, bed it with sawdust, to avoid all risk of it eating its litter. The sawdust also soaks up all secretions, and prevents risk of future infection, as it is easily removed and buried. Take away all fodder, Turnips, and solid food, as in rinderpest no solid food whatever must be given till convalescence is re-established. Salt, also, which is one of the best preservatives of health and preventives of disease, must in this disease be left off at once, as its action is too irritating on the mucous membrane, the fourth stomach being the chief seat of the complaint."

The Home and Foreign Agricultural Miscellany. Vols. III. & IV. A. Fullarton & Co.

Two additional volumes of this series, the one on the Diseases of Cattle, and the other on the Fattening of Cattle, made their appearance most seasonably at a time when both cattle disease and cattle feeding were busy. The former of these volumes, written by Professor C. J. Murray, M.R.C.V.S., has, however, been published some months, and thus the reader will find nothing of the prevailing epizootic in its pages. But the process of digestion and nutrition, and all the common maladies are described, and this is all that the farmer ordinarily requires to know. The subjects are sufficiently well illustrated by wood engravings. The fourth volume, on the Fattening of Cattle, is written by Mr. R. O. Pringle, who is already well known by his agricultural writings; and especially by his publications on this particular subject.

The following passages relate principally to the advantages of cooking food for feeding beasts:—

"Referring to Colonel M'Douall's system of feeding, Mr. M'Culloch, of Auchness, who is agent or factor on the Logan estate, says:—'The two facts of greatest practical value brought out by those experiments, are the superiority of cooked over uncooked food, as an auxiliary to roots. By merely boiling the same quantity of Bean meal (4 lb.) instead of giving it raw, an equal result is produced by 71 cwt. of Mangels as by 84 cwt.; and with Swedes the cooking of the auxiliary Bean meal makes a saving over the raw meal of 27 cwt. of Swedes; or, to put the value of the cooked food in another light, it appears that an ox fed on Turnips alone consumed daily 150 lb. of Swedes, while one with 4 lb. raw Bean meal consumed daily 130 lb. Swedes, and another with 4 lb. Bean meal cooked, consumed daily 100 lb. Swedes, the 4 lb. raw Bean meal being an equivalent to 20 lb. of Turnips; whilst by merely cooking it, it became equal to 50 lb. of Turnips.'"

"A Kentish feeder, who has used Rapecake with success, began by using it crushed, mixed with shells of Oats, chopped straw, and a sprinkling of Bean meal. This mess was moistened with cold water, and well mixed. He found some difficulty in getting the cattle to take to it at first, but although the system answered fairly, yet he has latterly had recourse to steaming, with more satisfactory results. He now uses a portion of Bean straw, rough seeds, and chopped straw, together with 4 lb. of Rapecake and 2 lb. of bran. The whole is previously mixed, and then steamed together. The Bean straw and bran give a relish to the mess, and the cattle devour

it greedily. The daily allowance of food for each beast by this system consists of –

Chopped Oat straw, shells of Oats, and Bean straw, 16 lb.	}	22 lb.
Rapecake, 4 lb.		
Bean, 2 lb.		

The above are all blended together previous to being steamed.

Swedes, 6-3 lbs., or Mangels, 5-4 lb., given in a raw or natural state	6-4
Dried chopped straw in addition	2
	8-4

"Upon this fare he calculates, on heifers weighing from 7 cwt. to 9 cwt. each, an average gain, through a lengthened course, of not less than 14 lb. per week each; and on cattle of a larger size, say from 10 cwt. to 12 cwt. each, a gain of from 14 lb. to 18 lb. per week each. He further finds that when the cattle are bought in fresh condition, it requires 16 weeks, or, when lean, 20 to 24 weeks to make them fit for market."

"Mr. Ogden, Berry Hill, Northumberland, gives each of his fattening cattle '2 lb. of oilcake, 2 lb. of Bean meal, 4 lb. of cut straw, and 1½ oz. of salt daily. In preparing this mixture, to serve 24 cattle for 24 hours, 48 lb. of oilcake, 48 lb. of Bean meal, 96 lb. of cut straw, and 30 oz. of salt, are, in the first place, well mixed together in a trough; 36 gallons of boiling water are then added, after which the whole mass is well turned and incorporated together and pressed down, and in an hour or two is quite ready for the cattle.' This is prepared every forenoon, and keeps quite sweet for 36 hours. A daily feed of this mixture effects a great saving of Turnips, the cattle consuming '1 cwt. of Turnips less per day than when fed on Turnips alone.'"

"Mr. Coleman, Park Farm, Woburn, considers that by adopting the following plan he is enabled to keep one-third more stock than on the dry, or Norfolk system. He says, 'The corn or meal I use is ground and then boiled; the chaff is placed in layers of about six inches in thickness, in large cisterns; upon this chaff a thin coating of pulped or cut roots is spread, and upon the roots a portion of the boiling mucilage is poured, to which, after being slightly mixed, is added more chaff, roots, and mucilage, until the cistern is quite full. It is then left for 24 hours, in which time fermentation takes place; and with three parts of straw and one of inferior hay, 1 lb. of Linseed meal, half a bushel of roots per head per diem, I have had 80 head of store cattle all winter, that have kept in good condition, thriven, and done well. With fatting cattle the proportion of hay is greater, and I generally commence with 4 lb. of meal or cake, and gradually increase to 8 lb., which quantity I rarely, if ever, exceed. My mixture usually consists of 1 lb. of Linseed to 4 lb. of Barley, Lentils, or other corn meal; it boils down and makes a much better mucilage. Upon 120 acres of roots, 100 of upland hay, and 80 of pasture hay, I never had less than 250 head of cattle all winter; 80 fat ones sold at Christmas, and I shall get rid of 80 more before this month is up; 80 store cattle, &c., and over 1000 sheep. I hesitate not to say, had it not been for the consumption of straw I could not have kept more than half the number.'"

We readily adopt the words of the editor, and add that we trust our readers will pay particular attention to the last sentence. Straw is greatly wasted about many farms, and at the same time we shall probably find the stock on such places in anything but good condition, or in a thriving state. In like manner, we have but too often seen hay disgracefully wasted in feeding stock, even when it was extremely scarce, and we look upon the economical, but at the same time the right use of these materials as one of the best evidences of an advanced style of farm management.

Miscellaneous.

Homœopathy and the Cattle Plague.—We extract the following from a report published just as we go to press. The full report will be given next week:—"The result of our experience shows that the disease is to a certain extent amenable to treatment. The progress of our trials is marked by an increasing measure of success, partly due, no doubt, to greater skill in treatment, but possibly also to the disease itself having assumed a less fatal character. In Norfolk the result of our first trial in November and December was 6 recoveries in 45 cases treated, which was considerably better than the average of that county at the time. In York, up to the 26th of January, we had 72 recoveries in 177 cases treated; being over 40 per cent. of cures, while the average of the county at the same time was 17½. In Cheshire, where the disease has been so fatal, up to the 17th of February we had 32 recoveries in 107 cases treated; being 30 per cent. of cures, while the average of that county was below seven. The general result shows the following comparative figures:—

	Percentage of Recoveries by Homœopathy	Average Recoveries of the same County
Norfolk	13	7
York	41	17½
Cheshire	30	7

While we are therefore justified in believing that the work of the Association so far has not been in vain, we feel it right to add that this disease is of so complex a character, and its symptoms so varying, that very few ordinary stock-owners are capable of dealing successfully with it."

Calendar of Operations.

FEBRUARY: *The Lambing Season.*—This period to the flockmaster is the most important and most interesting of the year. To the shepherd it is one of anxiety. For the time being he is the most important man upon the farm; the ewes must be attended to; every preparation must be made to insure the success of the lambing season. All other farm business is as nothing, compared with the requirements of the shepherd and his ewe flock. This is commendable. Depend upon it, when the shepherd manifests such unusual care, the season, so far as he is concerned, will be a successful one. To insure this he must be ever watchful, not only that no ewe shall be without his aid when requisite, but that the whole flock shall be free from alarm or disturbance of any kind, and that all their wants are promptly supplied, and that with regularity. I name this because so much in reality depends upon the flock being kept in a quiet, docile state. It is always detrimental when the ewes are wild and lambs timid. How much better when all seem to feel the kindness of the shepherd! It is essential to success that ample provision should be made for warmth and shelter; for this purpose a convenient paddock—"the lambing paddock"—should be provided. It should be well sheltered by thickly cut hedges surrounding it, and a considerable number of temporary lambing pens or sheds should be made, some well covered over, others with open tops. Straw-wattled sheep trays or hurdles are best for the purpose; these are for the recently lambed ewes in cold weather or dark nights. They effectually protect many a weakly lamb. The lambing paddock should only be used for night convenience. The ewes are best in the fields in the day; besides, their absence permits the purifying of the paddock, so that decaying vegetables, litter, excretions, &c., are thereby in a great measure rendered inoperative. These matters all being necessary, and being all duly attended to, we come to the lambing time. Their "times being up," they must be collected together as conveniently as possible. The shepherd's whole time should be given to them, and he should not be absent from them for more than two hours at a time—indeed he must be considered as always present, although leaving a patient for a short time. It is surprising how soon a lamb is lost in cold weather. During the pains of parturition the shepherd's eye should be noticing the progress of the case. If it is a protracted one, he must render aid, otherwise the ewe might be left to nature. In giving aid he should gently lay the ewe upon her side, then insert his finger into the uterus to ascertain that the presentation is right, *i. e.* the fore feet lying just under the nose, and both nearly protruding. If so, he must draw the feet forward with one hand, whilst he softly enlarges the uterus with the other. A rather strong pull will then generally bring forth the lamb. If the presentation is wrong, *i. e.* the hind quarter forward, or only one leg forward, or the head and no legs, &c., then he must gently and very gradually insert his hand into the uterus and womb, judiciously touching the lamb's back, and if possible turn it. If a leg can be got at, put the noose of a strong cord upon it, and then try for the other for the same purpose: next try to lay the head beside them; he may then commence pulling the cords cautiously. If the lamb can be thus got away it is well, but if not it must be pulled away piecemeal, but as gently as possible. In all cases of protracted labour a small tablespoonful of laudanum should be given, to lay the ewe quiet, and keep her from paining till the parts in some measure resume their right position, otherwise by continuous paining the womb is often enfeebled. Gruels, and sweet spirits of nitre, should be given in such cases. The lamb should be suckled as soon as convenient, but not till the ewe is somewhat rested. Should fever ensue, a warm airy place should be appropriated to her, and the best nursing accorded her. Bran, Oats, cut hay, and a few pulped roots should constitute her food. The udder of every ewe should be cleared of all wool likely to interfere with the teats. It is highly dangerous for the lamb to suck wool into its stomach. *O. F.*

Notices to Correspondents.

Gas Water (Constant Reader).—We have received the following letter:—"Here in the London Docks, there is a considerable quantity of ammoniacal water, and I suppose I could apply it to old Grass land which has been entirely neglected for years. I wish to know—1, At what strength the water should be distributed from the liquid-manure cart; 2, In what quantity; 3, At what season. 4, Which is a simple test of the strength or value of the gas liquor in question?" [Gas water generally requires about 7 ounces of sulphuric acid to the gallon to neutralize its ammonia.—Ed.] "Does per acre should be a fair dressing; but you had better dilute it with at least as much water before applying it. Apply in wet weather during the season of growth to Grass, or to corn crops if the grassy growth of these requires to be promoted.—We have to apologise for the delay of this answer.]

New Farm Seeds.

LONDON SEED COMPANY, LIMITED.
Choice stocks of all kinds of FARM SEEDS now ready.
The FARM PRICE CURRENT can be had on application to Mr. ALFRED BROWN, Manager, 68, Welbeck Street, Cavendish Square, W.

LARGE PURCHASERS of SEEDS for the FARM will be supplied at the Lowest Prices
For terms and particulars apply to the London Seed Company, Limited, 68, Welbeck Street, Cavendish Square, W.

Seeds Carriage Free.

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THE LONDON SEED COMPANY, LIMITED, have some choice stocks of MANGEL WURZEL at the lowest prices. Purchasers of large quantities will be liberally dealt with
68, Welbeck Street, Cavendish Square, W.

Agricultural Seeds.

GEORGE GIBBS AND CO., SEEDSMEN, beg to inform the public that their CATALOGUE of PRICES is now published, and will be forwarded free on application.
25 and 26, Dean Street, Piccadilly, London, W.

Seed Corn from the Chalk.

ALL THE MOST APPROVED VARIETIES SUPPLIED BY
RAYNBIRD, CALDECOTT, BAWTREE, DOWLING, AND COMPANY, LIMITED.
Address, Seed Warehouse: or, 98, Seed Market, Mark Lane, London, E.C.
Samples and Prices forwarded free on application.

RAYNBIRD, CALDECOTT, BAWTREE, DOWLING, AND COMPANY, Limited,
CORN, SEED, MANURE, AND OILCAKE MERCHANTS,
Address, 98, Seed Market, Mark Lane, E.C.; or Hainge Stone,
Shipping Agent, Dock, free on application. Prize Medals, 1851, for Wheat, 1862, for "Excellent Seed Corn and Seeds."

SUTTON'S POTATOS for PLANTING.
Prices per peck, bushel, sack, or ton, may be had on application.

Read Ashleaf	Wellington	King of Potatos
Rivers' Royal Ashleaf	Wellington Improved	Myatt's Ashleaf
Prince of Wales	Parkeof Regent	Myatt's Prolific
Red Regent	Dawes' Matchless, or	Early Oueen
Hudson's Nonsuch	Webb's Imperial	Skerry Blue
Wheeler's Gloucester-shire Kidney	Hopkins' Early Oxford	Early Ashleaf
Dalstree's Seedling	Dalmahoy	Early Walnut-leaf
Fluke	Walker's Improved	Improved Early Shaws
York Regent	Regent	Flour-ball
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PATERSON'S SEEDLING POTATOS

Victoria	Nutshell	Paterson's Regent
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SUTTON'S DESCRIPTIVE LIST of POTATOS may be had gratis and post free.
SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

Seed Potatos.

HENRY MINCHIN, The Nurseries, Hook Norton, Oxon, begs to offer the following, all true to name. Terms cash

	Per cwt.		Per cwt.
	s. d.		*s. d.*
Ashleaf Kidney	9 0	King of Potatos	6 0
Walnut-leaf	9 0	Apostles Seedling	5 0
Royal Ashleaf	10 0	Pink Fluke	5 0
Gloucestershire Kidney	9 0	Prince of Wales	10 0

And several other kinds, including PATERSON'S SEEDLINGS, equally cheap.

New Seedling Potatos.

TELEGRAPH, 14 days earlier than the Ashleaf, abundant bearer, per bushel, 5s.
PRESIDENT, 14 days later than the above, wonderful cropper, per bushel, 5s.
For description see BUTLER & MCCULLOCH'S SPRING CATALOGUE, free and by post on application
Covent Garden Market, W.C.

Rintoul's Early Don Potatos.

DOWNIE, LAIRD, AND LAING are now sending out the true variety, as raised by Mr. Rintoul at East Craigie, on old Lea Land, expressly for Seed. It was introduced by them last year, and has given entire satisfaction, yielding enormous crops of the very finest quality.
It is pre-eminently adapted for the Field or Garden, and is strongly recommended as a Second Early Variety. Price 2s. per peck, or 10s. per peck. Rintoul's true and genuine Seedling Potatos examined. The crop is very abundant, and the Potatos themselves are very handsome, and quite clean.
17, South Frederick Street, Edinburgh, and Stanstead Park, Forest Hill, London, S.E.

A Boon to the World.

PRINCE of WALES' KIDNEY POTATO.—
A new Seedling, remarkably handsome, fine eating, and the best cropping kidney we have had. Recommended by *The Gardeners' Chronicle* Professor LINDLEY (Editor of the *Gardeners' Chronicle*). "I have tasted, and had it Seedling Potatos examined. The crop is very abundant, and the Potatos themselves are very handsome, and quite clean."
From SAMUEL HOLROYD, Esq. (Editor of the *Gardeners' Chronicle Magazine*).
"The Seedling Potatos sent me last, I have found to be remarkably prolific—handsome, good flavour, handsome, and such a one as the world ought to be glad to get."
Sold by Mr. JAMES VEITCH, Royal Exotic Nursery, King's Road, Chelsea, W.; Messrs. CARTER & SUTTON, King Street, Covent Garden, W.C.; SUTTON & SONS, Seedsmen, Reading; Mr. CHARMES, Nursery, Jarvis, and Messrs. CUTBUSH, Nurserymen and Seedsmen, Highgate Hill, London. 12 per bushel.
N.B. These may be had fit for the end of May.

To Market Gardeners and Others.

CABBAGE PLANTS, EASTHAM, ENFIELD, and DRUMHEAD, 2s. per 1000. The stock time and can be warranted.
RED CABBAGE PLANTS, extra fine, 4s. per 1000.
ONION WHITE SPANISH, 1s. 3d. per lb.
VEGETABLE MARROW GLOBE, 28. per cwt.
EARLY SHAW POTATOS, per cwt., warranted true.
Terms cash.
RICHARD WALKER, seed Merchant and Grower, Biggleswade, Bedfordshire.

NEW and SELECT VEGETABLE SEEDS.
BROCCOLI, OSBORNE'S NEW WINTER WHITE, 1s. per packet
CARTER'S NEW SUMMER, LATE, 2s. 6d. per packet
BEET, SUTTON'S SELECT CRIMSON, very dwarf and dark, 1s. 6d. per ounce
CAULIFLOWER, HAAGE'S DWARF EARLIEST, the first of all Cauliflowers, 1s. per packet; extra stock, 2s. 6d. per packet
" SUTTON'S EARLY LARGE IMPROVED, very fine, 6d. per packet
CABBAGE, OLIVER'S NEW MONARCH, 1s. per oz.
CELERY, DIXON'S MAMMOTH, 1s. per packet.
CUCUMBER, PAINE'S NEW RIDGE, 1s. per packet
" DONALD BEARDS RIDGE, 1s. per packet
" SUTTON'S NEW LONG WHITE SPINE, splendid frame, 2s. 6d. per packet
Several first-class frame varieties, 1s. to 1s. 6d. per pkt.
LETTUCE, GIANT BATH COS, fine large, and hearts, 1s. 6d. per oz.
" CLIFTON'S EARLY GREEN COS, 1s. per packet
" LONGSTANDER, remarkable for durability, crisp and excellent, 1s. per packet
" SUTTON'S LARGE WHITE COS, 1s. per packet
ONION, NUNEHAM PARK, 2s. 6d. per packet
MELON, PRINCESS ALICE, weight 9 to 11 lbs., and excellent, 1s. 6d. per packet.
PEA, THE RINGLEADER (or First Crop), 2s. 6d. per pint
" M. LEAN'S LITTLE GEM, 2s. 6d. per pint
" M. LEAN'S EPICURE, 2s. 6d. per pint
" LAXTON'S PROLIFIC LONG POD, 2s. 6d. per quart
" SUTBURY ALL WRINKLED, very early, 4s. per quart
RADISH, NEW OVAL SCARLET WHITE-TIPPED, 6d. per pkt
And many other fine and select Seeds.
CATALOGUE for 1866 (CULTURAL and DESCRIPTIVE) free on application.
SOUTHEY BROWN, Seed Grower, Sudbury Suffolk.

Peas.

To Market Gardeners and Others.

SUTTON AND SONS can supply the following kinds of PEAS, good HAND-PICKED SAMPLES, in large quantities, at moderate prices, which may be had on application :—

Champion of England	Daniel O'Rourke
Ringleader Marrow	Prizetaker Marrow
Woodford's Green Marrow	Black's Dwarf Victory
Advance	McLean's Wonderful

King of the Marrow.

SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

To the Trade—Early Peas.

SUTTON AND SONS having very nearly sold out of their RINGLEADER PEA, regret that they have for some time past been obliged to decline all orders from the Seed Trade.

SUTTON & SONS have still a good supply of DANIEL O'ROURKE, SANGSTER'S No. 1, SUTTON'S LONGPODDED TOM THUMB, and DILLISTONE'S EARLY.

Royal Berkshire Seed Establishment, Reading.

INVINCIBLE SCARLET SWEET PEA, very fragrant, strikingly brilliant, and extremely distinct in colour. A First-class Certificate from the Royal Horticultural Society : also a Certificate at the Crystal Palace Show in September. Packets 6*d*., 1*s*., and 2*s*. 6*d*. each ; packets of two Seeds 2*s*. 6*d*. Supplied by the principal Seedsmen throughout the Kingdom; also of Messrs. Krelage, of Haarlem ; Vilmorin & Co., Paris ; Benary and Haage & Schmidt, of Erfurt, Prussia ; and Smith & Co., Hamburgh ; also of the Raiser, Strupp, & Wehrhahn, Erfurt.

Price to the Trade on application.

New Dwarf Marrow Pea, Lincolnshire Gem,

2s. 6d. per quart, sealed

MARTIN AND SON have a few quarters left of this magnificent Pea ; it is perfectly true to name, and wonderfully prolific ; has been well tried in this neighbourhood by the side of Dixon's Yorkshire Hero, Veitch's, and others, and pronounced to be the earliest, and double the crop of the former. See Testimonials in *Gardeners' Chronicle*.

Address 7, Market Place, Hull ; or Cottingham. Established 78 years ago

The Essex Rival Pea.

MR. ELEY, the Proprietor of the above, invites Gentlemen who are desirous of growing White Peas for purposes of gathering, as a vegetable for London market, or otherwise, to try a few acres of this invaluable, early, and productive variety, which he can strongly recommend as being superior to many of the early kinds now in use. For field culture he thinks this Pea will prove a most decided acquisition, basing this, his opinion, on the very high testimony given of it by several of the first men in England as judges of Peas, as well as by a good many farmers. Having himself had some considerable experience in its cultivat on, he is now able to offer it with every confidence of its being appreciated

For full proof of the above, see Testimonials from Baron Sible Hedingham, Halstead, Essex. Or the following appointed Agents :—

Messrs. Peter Lawson & Son, 28, King Street, Cheapside, London, E.C.
" Cooper & Bolton, 152, Fleet Street, London, E.C.
" Richard Lowe & Co., High Green Nursery, Wolverhampton, Staffordshire.
" Fraser, Richardson, & Goad, 82, Bishopsgate Street Without.
" J. Roberts & Son, Denbigh. [shire.
" Fisher, Holmes, & Co., Sandsworth Nursery, Sheffield, Yorks-
" Sutton & Sons, Reading, Berkshire.
" Joseph Tremble & Sons, Penrith, Cumberland.
" Austin & Mcadam, Glasgow.
" J. & C. Lee, Royal Vineyard Nursery, Hammersmith, W.
" Beck, Henderson, & Child, 122, Upper Thames Street, London.
" Salmon & Son, Chelmsford, Essex.

Mr. James Veitch, Royal Exotic Nursery, Chelsea.
" Charles Quincy, Peterborough, North mptonshire.
" R. C. Mackenzie, Ventnor, Isle of Wight.
" A. F. Barron, Petersfield, Hants.
" B. Cant, St. John's Nursery, Colchester, Essex.
" George Tabor, Ravenhall, near Witham, Essex.

M. Paul Nicolas, Horticultural Establishment, 29, Quai de la Mégisserie, Paris, sole agent.

Dickson's "First and Best" Early Pea.

FRANCIS AND ARTHUR DICKSON AND SONS' "FIRST AND BEST" EARLY PEA having given *universal* satisfaction, being proved beyond doubt by numerous Judges' Testimonials below), in accordance with the fact ascertained by themselves by REPEATED trials, to be the VERY BEST Early Pea ever offered for dwarf habit, prolific habit, and persistent character, is now being sent out from a large stock, much the finest they have had on the great demand, in *sealed* and *labelled* packages (none others genuine) at 2*s*. 6*d*. per quart.

TESTIMONIALS :—

From Mr J. H. MASON, *Stourton Castle Gardens, Staffordshire. See Gardeners' Chronicle and Agricultural Gazette*, July 29, 1865, p. 700 :

"Dickson's First and Best Pea is decidedly the best early Pea I have ever yet grown. It is a good cropper, with good sized WELL-FILLED pods, and several gatherings can be obtained from it."

To further opinions of Mr MASON, *Stourton Castle Gardens. See Gardeners' Chronicle and Agricultural Gazette*, July 29, 1865, p. 760.

"Dickson's First and Best Pea grows taller than these (Carter's First Crop and Sutton's Ringleader), of more vigorous habit, and produces a larger quantity of pods, and what the average length of Peas in the two mentioned was from 4 to 5 in a pod, that of Dickson's was from 5 to 7. Dillistone's, Carter's, and Sutton's Peas yield their entire crop in about three gatherings, while in Dickson's four good gatherings can be obtained. The last-named kind was remarkably true in character, whilst among Sutton's and Carter's lots of straggling rogues of their kinds, and were, as "rogues" in Peas generally are, later in blooming."

From Mr J. C. MUSSELL, *Horsley House, Croydon. See Gardeners' Chronicle and Agricultural Gazette*, June 10, 1865, p. 522.

"I have not seen any mention made in the minute of Dickson's First and Best Pea, a variety invaluable for its earliness.

From Mr WM. LAUDER, *Dunmore Castle Gardens, near Ladbar. See Gardeners' Chronicle and Agricultural Gazette*, July 15, 1865, p. 692.

"I sowed this season Dickson's First and Best, Dillistone's Early, and Sangster's No. 1, and I found the first to be fully one day earlier than either of the others. Besides being the earliest, it is very hardy, a strong grower, and pods in abundance from top to bottom. I gathered a much larger crop from the First and Best than I did from either of the others, and in future I shall sow it only for my first crop."

From Mr. ALEXANDER DEAN, *Maybank, Southampton*.

See Gardeners' Chronicle and Agricultural Gazette, July 1, 1865, p. 603

"It was also noticeable that the Peas sent by Dickson's First and Best was entirely free from rogues, the other two had plenty among them."

From Mr. J. VEITCH, *Exotic Nursery, Chelsea*.

See Gardeners' Chronicle and Agricultural Gazette, July 29, 1865, p. 700.

"I have been much interested in reading the opinions of those who have tried the various new Peas sent out last Spring, and as I have made very careful trials of all, I give you the following as the result of my experience (Here follow the names of all the new Early Peas, time when sowed, and dates of first gatherings.) Dickson's First and Best was very good and true, and in my opinion the *best* new Early Pea for all main seasons."

From Mr JOHN MCHATTIE, *Sedbusia, Chester*.

See Gardeners' Chronicle and Agricultural Gazette, Aug. 19, 1865, p. 773.

"I have no hesitation in endorsing Mr. Veitch's opinion that it (Dickson's First and Best) is the best new Early Pea yet sent out."

Scores of letters equally commendatory of our "First and Best" Pea have been addressed to us from first-class Gardeners and others, but we think the extracts we have quoted from the above *Gardeners' Chronicle* sufficient.

FRANCIS & ARTHUR DICKSON & SONS' DESCRIPTIVE and PRICED CATALOGUE of VEGETABLE and FLOWER SEEDS, with ample Cultural Hints and much useful information, will be sent gratis and post free on application. Their Seeds are all grown by themselves, or obtained from the best sources, and are the most select stocks in cultivation.

FRANCIS & ARTHUR DICKSON & SONS, The Old Established Seed Warehouse, 106, Eastgate Street, Chester.

*** Seeds of £2 value (Grain excepted) delivered free to any Railway Station.

Surplus Stock.

NEW and GENUINE WHITE SPANISH ONION, 1*s*. 6*d*. per lb.

NEW and GENUINE BROWN GLOBE ONION, 2*s*. per lb.

Terms Cash. A remittance must accompany all orders from unknown Correspondents.

FOR THE, Grit, Seed Merchant and Grower, Biggleswade.

IVERY'S NONSUCH LETTUCE.—The best Summer variety ever offered, is per packet, sealed with my initials—W. I." See List of Trade purchasers in *Gardeners' Chronicle*, Jan. 27.

N.B.—CATALOGUES of choicest Seeds can be had post free on application.

The Trade supplied with superior MUSHROOM SPAWN.

WILLIAM IVERY, Hanover Nursery, Peckham, S.E.

HAAGE'S DWARF EARLIEST CAULIFLOWER.—Very dwarf, the earliest, hardiest, and finest of Cauliflowers. Packets 1*s*. 6*d*. each.

SEED CATALOGUES, containing the finest New Vegetables, free by post.

STEPHEN BROWN, Seed Grower, Sudbury, Suffolk.

Henry's Prize Hybrid Leek, Genuine.

DOWNIE, LAIRD, AND LAING are now sending out the above in packets at 1*s*. each. This is unquestionably the largest Leek in cultivation, growing 16 inches in length of blanch, and 10 inches in circumference. Was awarded the First Prize at the Edinburgh and other leading Shows.

17, South Frederick Street, Edinburgh ; and Stanstead Park, Forest Hill, London, S.E.

AYTON CASTLE GIANT SCOTCH LEEK.—This splendid LEEK, which for size, thickness, and hardiness has no equal, can be had as usual, pure and genuine, free per post, in packets, 1*s*. each. A liberal allowance to the Trade when not less than 12 packets are taken

ROBERT MACKINTOSH, Nurseryman and Seedsman, 12, Melbourne Place, Edinburgh.

NEW RHUBARB, PRINCE OF WALES.—This Rhubarb is remarkably early, and very superior for flavour and colour. Strong roots from four to six crowns, 12*s*. per dozen ; second size, 9*s*. per doz. single crowns, 6*s*. per doz. ; ditto ditto, per 100, 25*s*.

W. WHITEHOUSE, Nurseryman, Harborne, near Birmingham.

Scrymger's Brussels Sprouts.

SEED of the above excellent variety can be had true from the Raiser, in packets at 1*s*. ; post free 14 stamps.

Early Peas, Beans, and other Seeds in great variety.

G. SCRYMGER, Seedsman, &c., near Reading.

To the Seed Trade.

FRAME CUCUMBERS, all English-saved ; true and select

Carter's Champion	Hamilton's Market Favourite
Cattell's Black Spine	Halstead Mary
Dickson's Norton Red	Sweet 24's Berkshire Challenge
Ivery's Nonsuch	Telegraph

BROCCOLI, Pure and Genuine Stock

Early Purple Cape	Elvaston Mammoth
Snow, true Walcher	Ward's Superb Late White
Osborne's White	Dwarf Champion of England
Knight's Protecting	Carter's Champion

INVINCIBLE SCARLET SWEET PEA.

Trade prices on application.

STEPHEN BROWN, Seed Grower, Sudbury, Suffolk.

EDWARD TAYLOR, NURSERYMAN, Malton, Yorkshire, having large stocks of the following, offers them at the low prices affixed :—

Large GIANT ASPARAGUS ROOTS, 1*s*. per 100, 9*s*. per 1000
2-years GIANT ASPARAGUS ROOTS, 1*s*. 6*d*. per 100, 12*s*. 6*d*. per 1000
3-years GIANT ASPARAGUS ROOTS, 2*s*. per 100, 15*s*. per 1000
GLADIOLUS BRENCHLEYENSIS, 12*s*. 6*d*. per 100
GLADIOLUS, in 25 choice named varieties, 3*s*. per 100
SEA KALE, 1-year, 6*d*. per 100 ; 2-years, 1*s*. per 100
STANDARD and HALF-STANDARD ROSES, 6*s*. per 100
Double-trained MORELLO CHERRIES, 15*s*. per dozen
Double-trained APRICOTS, 18*s*. per dozen
Dwarf-trained PEACHES and NECTARINES, fine, 24*s*. per dozen
Dwarf MOOR PARK APRICOTS, 1-year, cut back, fine, 10*s*. per doz
Double-trained PLUMS, 18*s*. per dozen
DEAL WOOD LABELS, 3½ inch, 2*s*. per 1000 ; 4½ inch, 3*s*. per 1000 ; 6 inch, 4*s*. per 1000
ENGLISH OAK, 1-year Seedling, 2*s*. per 1000
HERBACEOUS CALCEOLARIAS, from very choice hybridised seed, in single pots, 15*s*. per 100, 2*s*. 6*d*. per dozen

CATALOGUES gratis on application

SUTTON'S YELLOW GLOBE, Price 1*s*. per lb.

Lowest price per cwt. on application.

SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

TAGETES SIGNATA PUMILA. — Magnificent Bedding Annual, 1 foot high, of dense compact growth ; foliage graceful and fern-like, of a bright green colour ; the plant is covered with rich orange blossoms, and flowers vigorously from June till cut down by frost, maintaining till the last its beautifully neat habit.

"It bids fair to supersede the Yellow Calceolaria as a Bedding Plant."—*See Gardeners' Chronicle*, 1865, p. 961. 6*d*. per packet.

ASTERS and STOCKS for EXHIBITION, &c.

Truffaut's Peony-flowered Aster, 20 varieties, 3*s*. 6*d*. ; mixed packets, 3*d*. and 6*d*.

Victoria Aster, new, rose carmine, per packet, 6*d*. ; smaller packet, 3*d*

Rose Aster, new, mixed, per packet, 6*d*.

Dwarf Chrysanthemum Aster, 12 varieties, 2*s*. ; mixed packets, 3*d*. and 6*d*.

Double Dwarf German Ten-week Stock, 24 varieties, 4*s*. ; mixed packets, 3*d*. and 6*d*.

Large-flowering Double Dwarf ditto, 20 varieties, 3*s*. 6*d*. ; mixed packets, 3*d*. and 6*d*.

The quality of the above Asters and Stocks as exhibition flowers is well known ; those from seeds supplied by me having taken prizes at many Shows during the past season.

Many other varieties of Asters and Stocks, see Catalogue

NEW MELON "PARAGON."—Deep green flesh, fine oval form, thin rind, very prolific, nearly white, beautifully netted, tender and of delicious flavour, in Gardeners' Varieties. Per packet, 1*s*. 6*d*.

Any of the above free by post

PRICED DESCRIPTIVE CATALOGUE post free on application.

JAMES TYNAN, Seed Warehouse, 6*a*, Great George Street, Liverpool.

MANGEL WURZEL SEED from large Bulbs. *Cheaper by the cwt.*

	Per lb.	*s. d.*
Good YELLOW GLOBE..	0	9
" ORANGE GLOBE ..	0	9
" RED GLOBE ..	0	9
" LONG RED ..	0	9
" LONG YELLOW ..	0	9

SUTTON'S

Selected Mangel Seed

from Selected Roots.

Cheaper by the cwt

	Per lb.	*s. d.*
SUTTON'S Selected YELLOW GLOBE	1	0
Do. do. ORANGE GLOBE	1	0
FISHER'S GLOBES ORANGE GLOBE ..	1	0
STRATTON'S RED GLOBE	1	0
SUTTON'S ELVETHAM LONG RED ..	1	0
SUTTON'S Selected LONG YELLOW ..	1	0
New YELLOW INTERMEDIATE.. ..	1	6
Do. RED do. ..	1	0
NORFOLK GIANT LONG RED	1	0
BERKSHIRE PRIZE, or SUFFOLK CHAMPION, new	2	6

SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

Paul's Nurseries, Waltham Cross, N.

BEATON'S GERANIUMS. The following BEDDING GERANIUMS were sent out from these Nurseries last year, and have now been thoroughly tested, and acknowledged to be of MATCHLESS BEAUTY. Many of them have received First-class Certificates from the Royal Horticultural and Royal Botanic Societies of London, and those marked thus ** have been awarded the highest marks of merit in the Royal Horticultural Society's Trial Ground at Chiswick.

New READY AUTUMNSTREK PLANTS.

ALEXANDRA (magenta), 2*s*. 6*d*. each ; 24*s*. per dozen
** AMY HOGG (orient pink rich rose), 2*s*. each ; 18*s*. per dozen
BEATON'S INDIAN YELLOW (orange-scarlet suffused with yellow), 1*s*. 6*d*. each. 15*s*. per dozen
BLACK DWARF (dark crimson), 1*s*. 6*d*. each ; 12*s*. per dozen
DONALD BEATON (clear orange-scarlet), 1*s*. 6*d*. each ; 15*s*. per dozen
** DUCHESS (soft rosy lake), 2*s*. each ; 18*s*. per dozen
FULGENS (pink scarlet), 2*s*. 6*d*. each
GLOWWORM (magenta and crimson flushed with scarlet), 2*s*. 6*d*. each ; 24*s*. per dozen
MAGENTA QUEEN (magenta), 3*s*. 6*d*. each
ORANGE NOSEGAY (bright orange), 1*s*. 6*d*. each ; 15*s*. per doz.
PILLAR of BEAUTY (brick-red), 2*s*. 6*d*. each
PRINCESS LICHTENSTEIN (salmon-pink), 2*s*. each ; 18*s*. per doz.
SALAMANDER (brilliant scarlet, large white eye), 2*s*. each ; 18*s*. per dozen
SCARLET GEM (bright orange-scarlet), 1*s*. 6*d*. each ; 15*s*. per doz.
MRS. WM. PAUL (delicate rose pink), 2*s*. 6*d*. each ; 24*s*. per doz.
WALTHAM SEEDLING (dark crimson), 2*s*. each ; 18*s*. per doz.

A Circular with fuller descriptions free by post

The usual discount to the Trade.

IMPORTANT.—All letters should be addressed WILLIAM PAUL (the Christian name in full), Waltham Cross, N.

JOSEPH BAUMANN, Nurseryman, Ghent, Belgium, begs to offer the new STRAWBERRY DR. NICAISE, the largest and one of the best sorts of all Strawberries. 6 plants, 4*s*. ; 12 plants, 6*s*. ; 100 plants, 25*s*.

100 fine CAMELLIAS, with flower buds, £6.

100 fine CAMELLIAS, with flower buds, stronger plants, £8 and £10.

100 Single RHODODENDRONS, with flower buds, named, strong plants, £12 and £16.

100 VIBURNUM MACROCEPHALUM, with flower buds, £4 and £6.

Seeds of New and Beautiful Plants.

C. BARKER has much pleasure in again offering SEEDS of his Choice New HYBRID FLOWERS, which have given seven perfect satisfaction in past seasons, and he feels very confident that the seeds he has now offered will possess flowers surpassing any that he has previously sent out.

Per packet. *s. d.*

PETUNIAS.—Very choice, from the beautiful collection of double and sing e flowers exhibited at the Royal Horticultural Society's Gardens 2 6

TROPŒOLUM. Perpetual-flowering, from our well-known collection of choice hybrid varieties 1 0

PELARGONIUMS (ZONAL).—Saved with care from a choice collection of first-class varieties, including Mr. Bull's, and the late Mr. Beaton's best flowers 1 0

MIMULUS.—From a select collection of beautiful new hybrid varieties of large and small flowers 1 0

DOUBLE WHITE PETUNIA.

*** The blooms of both of these submitted to us by you are excellent in shape, size, and substance, and charmingly varied in colour. Among the first are some beautiful orange yellow, spotted with rich maroon ; and among the latter are many handsomely striped and double kinds, which, whether in pots or beds, must produce a satisfactory effect."—*Gardeners' Chronicle, Sept. 30, 1865.*

"Your seeds have produced such flowers as were never seen in this country before."—*Journal de Trévoux, France.*

C. J. B has also to offer cheap, a large collection of fine Fruiting GRAPE VINES from Eyes, of all the leading varieties. Prices on application. Exotic Nursery, Godalming, Surrey.

CHOICE SPRING FLOWERS, &c., now ready in Strong Plants

	Per doz.	*s. d.*
HEPATICAS, double red and single blue	...	4 0
VIOLETS, double, in four sorts	...	4*s*. to 6 0
... single, in four sorts	...	4 0
... new single striped	1*s*. 6*d*. each	12 0
... new double striped, Remotes Violettes, 2*s*. 6*d*. each		24 0
... new Neapolitan	1*s*. 6*d*. each	12 0
PRIMROSES, double, in four varieties		6 0
CHRISTMAS ROSE, scarlet	2*s*. each	18 0
... white	...	9 0
POLYANTHUS, finest laced varieties	...	3 0
PAMPAS GRASS, fine plants	40*s*. per 100	6 0
CANDYTUFT, new and choice kinds	...	6 0
ROCK CISTUS, in 20 fine kinds	...	6 0
OLD CRIMSON CHINA ROSE	...	9 0
AURICULAS, finest Alpines	...	6 0
... Pennyroyal	...	6 0
ROCKETS, double white and yellow	...	6 0
LAVENDER, fine plants	...	3 0
CLOVE PINK, crimson and others	7*s*. to 12*s*.	6 0
PINKS, fine named sorts	...	4 0
SWEET WILLIAM, Auriculaeyed, &c.	...	3 0
WALLFLOWER, double yellow and dark	...	4 0

Also the following in Stock Plants :—

FUCHSIAS, new, of 1865	...	6 0
GERANIUMS, new, of 1865	9*s*. to 12	0
PELARGONIUMS, new, of 1865	...	6 0
CHRYSANTHEMUMS	...	6 0
TROPŒOLUMS and LOBELIAS, new	...	6 0
ANTIRRHINUMS and PENTSTEMONS, new	...	6 0
PHLOX, new	...	9 0
CINERARIAS, new	...	12 0

100 CHOICE HARDY HERBACEOUS PLANTS, in 50 fine named varieties, for 25*s*.

24 Finest STANDARD and DWARF ROSES, 24 distinct varieties, 21*s*.

24 ditto ditto on their own roots, in pots, 21*s*.

CATALOGUES free on application ; also, TRADE CATALOGUE of NURSERY STOCK.

Post-office Orders on Castle Hedingham.

WM. DILLISTONE, Munro Nursery, Sible Hedingham, Essex.

Seeds of the finest quality for the Garden and Farm.

ARCHIBALD HENDERSON, late Superintendent to the Horticultural Society of London, and of His Grace the Duke of Sutherland's Gardens, Trentham, Staffordshire, begs to announce that his DESCRIPTIVE CATALOGUE of SEEDS and useful GARDEN CALENDAR is now published, and will be forwarded post free on application

A H has selected the leading varieties only in each Class, his past practical experience having enabled him to do so.

SEED NURSERY, Thornton Heath, Surrey, S.

FORTY THOUSAND COMMON LAURELS, 1 to 6 ft.

10,000 LAURUSTINUS, 1 to 3 feet.
10,000 BAYS, 1 to 4 feet.
10,000 GREEN TREE BOX, 1 to 3 feet.
5,000 COMMON YEWS, 1 to 4 feet.
2,000 yards of Quick, 3 years old.

The whole of the above are fine bushy plants, and well rooted.

R. GADD & SON having a large stock of the above, are in a position to offer them at remarkably low prices. Special quotations on application.

The Nurseries, Salvington, near Worthing, Sussex.

To the Trade.

JOHN PERKINS, SEN., has a large Stock of the following to offer :—

BLACK THORN, 1-year, 1 foot ; 2-years, 1½ to 2 feet ; 3-years, twice transplanted, 2 to 3 feet.
LARCH FIRS, 2 to 3 feet ; 3 to 4 feet.
SPRUCE FIRS, 1½ to 2 feet ; 2 to 3 feet.
SCOTCH FIRS, 1½ to 2 feet.
BERBERIS ASPERIFOLIA, 1 to 1½ feet ; 1½ to 2 feet.

Purchasers of the above in large quantities will be liberally dealt with.

62, Market Square, opposite the Corn Exchange, Northampton.

New Edition of

SCOTT'S FRUIT TREE CATALOGUE of the finest Collection in England. The Catalogue is allowed to be the best published, and is full of information about the Cultivation of Fruits, over 1000 being described. Apply to
J. Scott, Merriott, Somerset.

SPECIAL OFFER of FRUIT TREES.—25 per cent. off Catalogues.—Having a large and fine stock of the undermentioned, they are offered at greatly reduced prices, to clear ground:—Peaches, Nectarines and Apricots (trained and untrained), Apples, Pears, Plums, and Cherries (trained and untrained).
DESCRIPTIVE CATALOGUES on application to
J. Scott, Merriott, Somerset.

To the Trade.

H. LANE AND SON have to offer a large and fine stock of strong and well-grown TREES of the following:—Maiden Nectarines, Peaches, Pears, Plums, Cherries and Apples; Pyramid Apples, Pears, Plums, and Cherries; Bush Apples and Pears; Standard Apples, Cherries, and Pears; Dwarf-trained Apples and Pears of the leading kinds; Grape Vines in variety; Sea Kail very strong.
Also a large quantity of extra fine fruit-bearing ORCHARD-HOUSE TREES, with well-ripened wood and bloom buds, grown under glass, and well-established in Pots, comprising the approved sorts of Peaches, Nectarines, Apricots, Pears, Plums, Apples, Cherries, Figs, &c.
Also a splendid collection of STANDARD and DWARF ROSES of most of the popular sorts in large quantity.
CATALOGUES of the above can be had upon application at
The Nurseries, Great Berkhampstead, Herts.

FOREST TREES, &c.—At the Nursery of the late DAVID A. REID, Park Attwood, Bewdley, Worcestershire.

	Per 1000 s. d.
500,000 LARCH, 2 feet	10 0
500,000 LARCH, 2 to 3 feet	12 6
200,000 PEAR STOCKS, 1 year	15s. to 50 0
100,000 SPANISH CHESTNUTS, 1 year Seedling, 1 to 2 feet	10 0
500,000 SILVER FIR, 1 year Seedling, fine	4 0
500,000 SPRUCE, 1 year Seedling, fine	2 0
500,000 SYCAMORE, 1 year Seedling, fine	2 0
500,000 LARCH, 1 year Seedling, fine	2 0
20,000 WALNUTS, 1 year Seedlings, fine	10 0
20,000 CUPRESSUS PYRAMIDALIS, 1 year Seedling, finest	20 0
20,000 CUPRESSUS SEMPERVIRENS, 1 year Seedling, fine	20 0

100 Bushels PITTED HAWS. Price on application.
Apply, with reference to JAMES RIDDELL, Steward, Park Attwood.

To Noblemen and Gentlemen about to be engaged in Planting.

DICKSONS AND CO., NURSERYMEN, SEEDSMEN, and Florists, Waterloo Place, Edinburgh, have this season a large and very healthy stock of Seedlings and Transplanted LARCH (native and Tyrolese), True Native Highland SCOTCH FIR, Spruce, Oak, Plane or Sycamore, Spanish, Horse, and Sweet Chestnut, Thorn Quick, Beech, Evergreen Privet, Poplar, Willow, &c., as well as all other kinds of Forest and Ornamental Trees and Shrubs. Fruit Trees, Roses, Greenhouse and Stove Plants, Herbaceous and Alpine Plants, Bulbs, &c.
Their Forest Trees, which are grown on exposed ground, are this season finely ripened, and can be sent with perfect safety to any part of the kingdom.
Samples and prices will be sent free on application.

SIBERIAN TREES for LAWNS.—The following species of CARAGANA, &c., are grafted on straight stems of Caragana arborescens, about 3 feet in height, they bloom freely in Spring, and are most elegant objects:—

	Each s. d.
CARAGANA ARENARIA	2 6
" CHAMLAGU	2 6
" FRUTESCENS (Weeping)	3 6
" JUBATA (Lalo)	2 6
" SPINOSA	2 6
" ALTAGANA	2 6
CALOPHACA WOLGARICA	2 6
HALIMODENDRON ARGENTEUM	3 6
CARAGANA ARBORESCENS, 6 to 8 feet	1 6

Carriage Paid to London.
Thos. Rivers & Son, Nurseries, Sawbridgeworth.

LARCH and RHODODENDRONS.
Delivered at Matlock Station.

	Per 1000 s. d.
10,000 2 to 2½, good stout plants	12 0
" 2½ to 3 ft.	22 0
" 2 to 3 ft.	22 0
" 3½ to 4 feet	25 0

RHODODENDRON PONTICUM, bushy and well rooted, 6 to 12 inches 16s. 0 0
" " 9 to 15 in., 1s. per 1 to 1 " 120 0 0
" " 1 to 1½ ft., 2s. per 100 " 220 0 0
" " 1½ to 2 ft., 3s. per 100 " 280 0 0
" HYBRIDUM, 1½ to 2 ft., 2s. 6d. per 100 270 0 0
" " 1½ to 2 ft., 2s. 6d. per 100 320 0 0
The Trade supplied.
JAMES SMITH, Darley Dale Nurseries, near Matlock.

CHARLES CLARKE, Windmill Hill Nursery, Gravesend, Kent, has on his stock of large EVERGREENS, as LAUREL, YEWS of various kinds, PHILLYREAS, &c., also Standard and Dwarf-trained FRUIT TREES, the latter not to be surpassed, specimen FOREST TREES, standard, pyramidal, and bush, SWEET CHESTNUTS; large Green and Variegated HOLLIES, extra strong ASPARAGUS 1 and 2 years; Chicory, New GOLDEN BORIACH, very superior; and his 2,000 of CURLED VARIEGATED KALE SEED, a splendid variety, a packet free for 7 stamps.

GENUINE NURSERY STOCK, comprising:—

TRANSPLANTED FOREST TREES.

Alder, 2 to 3 feet
" 3 to 4 feet
" 4 to 5 feet
Birch, 2 to 3 feet
" 3 to 4 feet
" 4 to 6 feet
Chestnut (Spanish) 1½ to 2½ feet
Fir (Larch), 1½ to 2 feet
" 2 to 2½ feet
Hazel, 1½ to 2½ feet
" 2 to 3 feet
Willows, 3 feet
" extra strong, 4 to 8 feet

CONIFERS AND HARDY EVERGREENS.

Arbutus, 1½ to 2 feet
Aucuba japonica, 1 to 2 feet
Berberis Aquifolium, 1 to 2 feet
" japonica, 1 to 2 feet
Box (Tree) of sorts, 1 to 2 feet
Deodar Cedar
" specimens
Hollies (various), 2 to 3 feet
" (variegated), 1½ to 2½ feet
Laurels (common), 2 to 3 feet
Laurustinus, 1 foot
Privet (Evergreen), 1½ to 2 feet
Pinus Cembra, 2 to 3 feet
" insignis strong, 1½ to 2 feet

Specimen CONIFERS, in fine condition for removal, prices and size on application.
Choice trained Hardy RHODODENDRONS, SCARLET, WHITE, ROSE, and PURPLES, in every shade, fine bushy plants, 1½ to 3 feet, £7 10s. to £10 per 100.
RHODODENDRON PONTICUM, varieties of various sizes, from 2s. to 100s. per 100.
AZALEAS, named sorts, 4os. to 75s. per 100.
STANDARD and HALF-STANDARD ROSES, in choice varieties, strong stocks and well budded, 25s. to 100s. per 100.
STANDARD and DWARF APPLES, in 30 approved kinds, 60s. to 75s. per 100.
Plans and Estimates given for Laying out and Planting New Grounds.
FOREST TREES supplied and planted by the Acre, and failures replaced.
A NEW DESCRIPTIVE and PRICED CATALOGUE of Japanese Novelties and General Nursery Stock may be had on application.
MAURICE YOUNG, Milford Nurseries, near Godalming, Surrey.

30,000 Common Laurels,
Fine bushy plants and well rooted, from 1 to 3 feet.
WM. WOOD AND SON having a large stock of the above, will be happy to give special quotations at reduced prices.
Address, Woodlands Nursery, Maresfield, near Uckfield, Sussex.

Sub-tropical and other Foliage Plants.
DOWNIE, LAIRD, and LAING are now sending out Seed of the above. PRICED LISTS on application, with Cultural hints.
Stanstead Park, Forest Hill, S.E.; and Edinburgh.

MAURICE YOUNG'S DESCRIPTIVE LIST of Conifers, New and Rare Hardy Plants, Ornamental Trees and Shrubs, Rhododendrons, Japanese Novelties, Forest Trees, and Roses, forwarded on application
Milford Nurseries, near Godalming, Surrey.

WM. JOS. WATSON, NURSERYMAN and SEEDSMAN, Town Hall Buildings, Newcastle-on-Tyne, begs to offer New Seed of WELLINGTONIA GIGANTEA, PICEA GRANDIS, ABIES DOUGLASII, and ABIES MENZIESII, at 2s. 6d. and 5s. per packet. Also CEDRUS DEODARA, at 1s. and 2s. 6d. p packet.

Evergreen Hedges.
THUJA PLICATA or WAREANA (the Siberian Arbor-vitæ). -Average height 2 feet, 10s. per 100, 80s. per 1000. Extra 1 foot, 5s. per 100, 40s. per 1000. These plants forms the most compact and beautiful of all evergreen hedges.
Carriage paid to London
Thos. Rivers & Son, Nurserymen, Sawbridgeworth.

To clear ground.
SPECIAL OFFER.—20 per cent. off Catalogue prices.—HOLLY (GREEN), YEWS, DEODARS, ARBUTUS, LAURELS (Common), Laurels (Portugal), Cupressus Lawsoniana, Thuja Lobbii, Pinus insignis, P excelsa, P. pendulus, Taxodium, Hazel (a large breadth), Beech, 2 to 3 feet, 20s. per 100, Autumn Fine do., Beech do. For sizes and prices, see CATALOGUES, sent on application to
J. Scott, Merriott, Somerset.

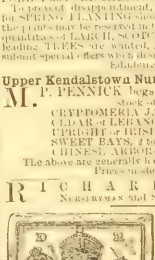
FOX or GAME COVERT.—Gentlemen planting or refreshing their Preserves can be supplied with the undermentioned at the following prices:—ENGLISH QUICK, 2-year, 1 year, 9s. per 1000; 2-years, very strong, 10s. per 1000; Evergreen Berberis, or Mahonia aquifolia, 1 to 2 feet, strong transplanted, 25s. per 100, or £10 per 1000.
LISTS of all kinds of FORES T and FRUIT TREES, SHRUBS, and CONIFERS, sent on application.
W. MILES & SON, The Nurseries, Bristol.

Tansley Nurseries, near Matlock, Derbyshire.
JOSEPH SMITH invites Planters and the Trade to inspect his Nursery of 50 Acres of high land. The soil is of a fibrous nature, and the plants take up with excellent roots, such as to ensure the best success in their removal. The Nursery contains over 2½ millions of transplanted EVERGREENS, of which MAHON and PORTUGAL LAURELS, BOX, BROOMS, BERBERIS, HOLLIES, PRIVETS, YEWS, &c. The FOREST TREES are very extensive, over 3½ millions of LARCHES, and 1½ million SILVERS, of different sizes, and of others in proportion. Prices moderate, which can be had on application as above.

Spring Planting.
PETER LAWSON AND SON are prepared to execute orders for every description of VERY STOCK suitable for FORESTS and ORNAMENTAL PLANTATIONS.
To prevent disappointment, it is recommended that requirements for SPRING PLANTING should be entered as soon as possible, and the plants will be reserved in the Nursery until ordered. A large quantities of LARCH, SCOTCH FIR, CORSICAN PINE, and other leading TREES are wanted. PETER LAWSON & SON will be glad to submit special offers when they can be made.
Edinburgh and London.

Upper Kendalstown Nurseries, Delgany, Co. Wicklow.
M. P. PENNICK begs to announce that he has a fine stock of the following:—
CRYPTOMERIA JAPONICA, 2½ to 3½ feet high
CEDAR of LEBANON, 14 feet
UPRIGHT or IRISH YEWS, 1 to 7 feet
SWEET BAYS, 2 feet each
CHINESE ARBOR VITÆ, 2 to 2½ feet
The above are generally handsome, healthy, and well rooted.
Prices moderate, on application

RICHARD SMITH,
NURSERYMAN and SEED MERCHANT, Worcester.



ROSES.—12 of the very best Standard Perpetual and Moss Roses (or 30 Roses) 100 for £5.
12 ditto Dwarf do. do. for 12s.; 50 do. 12s.; 100 for 20s.
12 Best New Sorts of 1865, for 21s.
Descriptive List on application.

EVERGREENS for Ornamental Planting or Avenues, handsome, well grown, and transplanted within the last two years.
For prices of single plants or large quantities, see Conifer List.
At 42s. per dozen:—

Abies alba, 5 to 7 feet
" Douglasii, 4 to 5 feet
" inverta, 4 to 5 feet
" orientalis, 3 to 4 feet
Arbor-vitæ, American, 6 to 7 feet
" Siberian, 4 to 5 feet
Cedar, Red, 5 to 6 feet
Cryptomeria viridis, 4 to 5 feet
Cupressus Lawsoniana, 3 to 4 feet
" fragrans, 3 feet
Irish Yew, 4 to 5 feet

At 42s. per dozen:—

Abies Douglasii, 4 to 5 feet
" inverta, 2 to 2½ feet
" orientalis, 2 to 3 feet
" pyramidalis, 2 to 2½ feet
Araucaria imbricata, 2 to 2½ feet
Arbor-vitæ, American, 3 to 4 ft.
Cedar, Red, 6 to 8 feet
Cupressus Knightii, 6 to 7 feet
" Lawsoniana, 3 to 4 ft.
Juniperus thurifera, 4 to 5 feet
Pinus Cembra, 4 to 5 feet

At 60s. per dozen:—

Abies inverta, 2½ to 3 feet
" Douglasii, 3 to 4 feet
" Menziesii, 5 to 6 feet
" orientalis, 2½ to 3 feet
" pyramidalis, 3 to 4 feet
Araucaria imbricata, 2½ to 3 feet
Cedrus Deodara, 6 feet
Cupressus Knightii, 5 to 6 feet
" Lawsoniana, 5 feet

At 84s. per dozen:—

Abies Douglasii, 7 to 8 feet
" nobilis, 4 to 5 feet
" Menziesii, 6 to 8 feet

Each—

Abies Douglasii, 8 to 10 ft., 12s. 6d.
" inverta, 4 to 5 feet, 5s. 6d.
" 6 feet, 21s.
Araucaria imbricata, 3 to 4 feet, 7s. 6d.
" 4 to 5 ft., 21s.
" 10 to 12 ft., 63s.
Cedar of Lebanon, 8 to 10 feet, 21s.
Cedrus Deodara, 7 to 10 ft., 10s. 6d. to 21s.
" " " 10s. 6d.
American Arbor-vitæ, for Hedges, 3 to 4 feet, at 50s. per 100.
" " " 4 to 5 feet, at 75s. "
" " " 5 to 6 feet, at 100s. "
Juniperus thurifera, 3 to 4 feet
Laurel, Colchic, 6 to 6 feet
" Portugal, Pyramids, 5 feet
Pinus Cembra, 3 to 4 feet
" excelsa, 3 feet
Taxodium sempervirens, 7 to 8 ft.
Thuja Lobbii, 3 to 4 feet
" aurea, 1½ feet
" compacta, 1½ to 2 feet
Thujopsis borealis, 3 feet
Wellingtonia gigantea, 2 feet

At 120s. per dozen:—

Juniperus thurifera, 5 to 6 feet
Pinus excelsa, 6 to 9 feet
" Lambertiana, 6 to 8 feet
" nobilis, 5 to 6 feet
Thuja japonica, 2½ to 3 feet
" aurea, 2½ feet
Wellingtonia gigantea, 3 feet
Yew, Irish, 6 feet

At 180s. per dozen:—

Abies orientalis, 3 to 4 feet
Cedrus Deodara, 7 to 8 feet
Juniperus chinensis, 6 to 7 feet

Each—

Picea nobilis, 2 to 2½ feet, 10s. 6d.
" " 2½ to 3 ft., 21s.
Picea nobilis, 2½ to 3 ft., 21s. to 63s.
" Nordmanniana, 2½ to 4 feet, 21s. to 42s.
" " 4 to 6 feet, 42s. to 63s.
" Pinsapo, 3 to 5 ft., 10s. 6d. to 42s.
" Pumilio, 1½ to 2 ft., 10s. 6d. to 21s.
" " 2 to 3 ft., 21s. to 42s.

RICHARD SMITH, Nurseryman and Seed Merchant, Worcester.

Strong Thorns, Oaks, Native Scotch, Larch, & Spruce.
CHIVAS AND WEAVER, Chester, are still holders of extra strong TRANSPLANTED QUICKS, ENGLISH OAKS, extra fine, 2½ to 4½ feet; NATIVE SCOTCH, very fine, 1½ to 3 feet; LARCH, very stout, 1½ to 4½ feet; and SPRUCE, 1 to 2½ feet. Also strong Transplanted APPLE STOCKS, ready for Grafting.
Prices of the whole of the above, which are greatly reduced, will be forwarded on application.

COCOA-NUT REFUSE delivered within 24 miles of Canning Town, 4s. 2s. per bag.
For particulars, and how to use it, see long Advertisement in *Gardeners' Chronicle* of the 21st March, 1863; or apply to the PATENT COCOA FIBRE COMPANY, Kingston-upon-Thames.
Postage Stamps or Post-office Orders payable to J. BARSHAM & Co.
BARSHAM'S BRUSHES and MATS are sold in every town.
CAUTION.—Every Brush is stamped, J. BARSHAM'S Patent.

THE LONDON MANURE COMPANY
(ESTABLISHED 1860),
Have now ready for delivery in dry fine condition,
CORN MANURE, for Spring Use
DISSOLVED BONES, forming Pasture Lands
SUPERPHOSPHATES OF LIME
PREPARED GUANO
MANGEL and POTATO MANURES
Also Genuine PERUVIAN GUANO, and NITRATE of SODA, ex Dock Warehouse; SULPHATE of AMMONIA, FISHERY SALT, &c. E. PURSER, Secretary.
Offices, 116, Fenchurch Street, E.C.

LAWES' MANURES.
The Manures manufactured by J. B. Lawes for the present season of 1866 are now ready for delivery at his Factories, at the following prices, per ton:—

	£ s. d.
LAWES' PATENT TURNIP MANURE, and BONE SUPERPHOSPHATE of LIME	6 6 0
LAWES' SUPERPHOSPHATE of LIME from BURNT BONE, or MINERAL PHOSPHATES	5 5 0
LAWES' WHEAT, BARLEY, GRASS, and MANGEL MANURES	8 0 0
CONCENTRATED CORN and GRASS MANURE	12 0 0

These Manures can be obtained of Mr Lawes, or through the appointed Agents in all parts of the United Kingdom, at prices varying according to rail carriage.
Genuine Peruvian Guano direct from the Importers. Nitrate of Soda, Sulphate of Ammonia, and other Chemical Manures.
Analysis and other Offices at market prices.
Address, JOHN BENNET LAWES, 1, Adelaide Place, London Bridge, E.C.; and 42, Mincing Lane, Baltic Chambers, London.

Established 1812.
PROCTOR and RYLAND'S
PREPARED BONE MANURES
for
TURNIPS, GRASS, WHEAT, BARLEY, OATS, POTATOS, &c.;
and the
BONE SUPERPHOSPHATE of LIME
are the best prepared Land Manures offered to the Public.
Offices—Corn Exchange Buildings, Corn Lane, Barnsley.
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THE PATENT NITRO-PHOSPHATE or BLOOD MANURE COMPANY, LIMITED, Manufacturers of ODAMSEND PATENT BLOOD and HORN and ROOTS, ODAMSS SUPERPHOSPHATE of LIME and DISSOLVED BONES.
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This Company was originally formed by, and is under the Direction of Agriculturists, circumstances that have greatly earned for it another Title, viz. THE FARMERS' FRIEND COMPANY.
Its Members are Cultivators of upwards of 50,000 Acres of Land, which has been for years under management with Manures of their own Manufacture. The Consumer, therefore, has the full Guarantee for the genuineness and efficacy of the Manures manufactured by this Company.
A Prospectus will be forwarded on application to the Secretary, or may be had of the local Agents.
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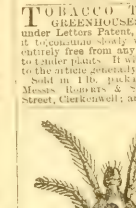
To the Trade.
STRONG TOBACCO PAPER, 80s. per cwt.
H. Brown, 4, Commutation Row, Liverpool.

GENUINE EXTRA STRONG TOBACCO PAPER, in 2 and 4lb. packages, double the strength of that usually sold. 1s. per lb. Price to the Trade on application
SAMUEL MACKAY, 21, Nile Street, Leeds.

TOBACCO TISSUE for FUMIGATING GREENHOUSES.—An entirely new article manufactured under Letters Patent, from Tobacco rolled into sheets, which allows it to consume slowly without the assistance of blowing, and is entirely free from any chemical admixture, which is so destructive to tender plants. It will be found more economical and very superior to the article generally used.
Sold in 1lb. packages and upwards, price 3s. 6d. per lb., by Messrs. ROBERTS & SONS, Tobacco Manufacturers, 54, St. John Street, Clerkenwell; and by all Seedsmen and Nurserymen.



GISHURST COMPOUND, whether used against Insects and Mildew, on Growing Plants, or as Winter Dressing on trees at rest, should be diluted 40 hours before use. This gets rid of smell, and if the Solution be decanted, prevents any staining of foliage. A strength of from 1 to 2 oz. to the gallon of water proves quite sufficient for growing Plants; one from 4 to 16 oz. for Trees at rest.
Sold Retail by Nurserymen and Seedsmen, in boxes, 1s., 2s., and 10s. 6d. each.

Wholesale by
PRICE'S PATENT
CANDLE COMPANY
(LIMITED).

INTERNATIONAL HORTICULTURAL EXHIBITION and BOTANICAL CONGRESS.—Those who are preparing Plants for the above Exhibition should feed them liberally with STANDEN'S GARDENER'S and AMATEUR'S FRIEND. Sold by the leading Nurserymen and Seedsmen.

DAY, SON, AND HEWITT'S UNIVERSAL CHEMICAL EXTRACT, for black cases in Sheep, Lambs, and to stop Heaving and Straining. Mr. Woods, in his Lecture on "Breeding and Management of Sheep," says:—"My shepherd declares it to be worth a guinea a bottle." Price 2s. 6d. and 7s. per bottle.

Also, the original GASEOUS FLUID, for Debility in Exhaustion in Ewes after Lambing, for Diarrhœa in Calves and Lambs, and for Colic and Gripes in Horses and Cattle. In Powerful weakness, and for cleaning in Ewes and Cows, a dose of the "Red Drench" should be given

Mr. Bowick, Author of the Prize Essay on the "Rearing of Calves," 1858:—"I have reared 20 calves this year, and by the use of the Gaseous Fluid I have not lost one."

Price 1s. 9d. per bottle; or one dozen in a wooden box, 20s.

Full Directions for use given with each article. Prepared by the original and only proprietors—DAY, SON & HEWITT, 22, Dorset Street, Baker Street, London, W.

Cattle Plague.

PUBLIC NOTICE.—REPORT of the ROYAL COMMISSION.
See "Sanitary Recommendations and General Precautions to Prevent the Spread of the Disorder."

THE DISINFECTING POWDER recommended in the REPORT is

MCDOUGALL'S PATENT DISINFECTING POWDER.—It is commended as the best means of Disinfecting Cattle Sheds, Farm Buildings, &c. Sold in bags, 1 cwt. each, at 10s. 6d., or £10 per ton. Carriage paid to all parts of England.

For Washing the bodies of both Healthy and Sick Cattle the Commissioners strongly recommend McDOUGALL'S PATENT DISINFECTING SOAP. Sold in 5lb. Canisters at 2s. 6d.; 10lb., 4s.; 20lb. kegs, 7s.; 56lb., 15s. Directions for use in each package.

ALEXANDER McDOUGALL, Manufacturing and Agricultural Chemist, London—11, Arthur Street West, London Bridge, E.C.;
Manchester—Regent Street, Shudehill;
Glasgow—F. H. McLeod, 18, Dixon Street;
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Agents in most Towns throughout the Kingdom.

SWING WATER BARROW.—This is the best and cheapest article yet introduced for use in Gardens, Farm Yards, &c. The Water may be dipped out of the Tub fitted and poured out, or by merely raising the Handle it may be forced on the ground, and the Frame ditched. To hold about 20 or 30 gallons, price 12s. Carriage paid to any station on Great Eastern Line

POWERFUL GARDEN ENGINE, suitable for the above, price 15s.
IMPROVED WOOD VIEWS of LIQUID MANURE CARTS.
Catalogues on application.
Manufactured by W. S. BOULTON, Rose Lane Iron Works, Norwich.

Oil Paint no longer Necessary.

HILL AND SMITH'S PATENT BLACK VARNISH for preserving Iron Work, Wood, or Stone. This Varnish is an excellent substitute for oil paint on all out-door work, and is fully two-thirds cheaper. It may be applied by an ordinary labourer, requires no mixing or thinning, and is used cold. It is used in the grounds at Windsor Castle, Kew Gardens, and at the seats of many hundreds of the nobility and gentry, from whom the most flattering testimonials have been received, which HILL & SMITH will forward on application.

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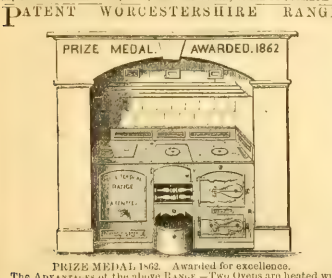
"Gentlemen,—I have great pleasure in stating, that I highly approve of your Black Varnish, as a substitute for paint for farm buildings, barn doors, gates, and especially when the wood has been previously painted in the usual way a few years before; in this particular case it leaves a very nice glazed surface, than which nothing could be better. The same observation also applies to ironwork of every description, such as iron hurdles, &c. The Wrought-iron Barrow with apparatus for heating gas tar has been found most useful, and so great a convenience do I consider it that I shall beg you to send me another, as well as a cask of the Black Varnish, for the use of the property which I have in Warwickshire. Please to send the whole by the same conveyance as before."

Sold in casks of about 30 gallons each, at 1s. 6d. per gallon, at the Manufactory, or 1s. 8d. per gallon paid to any station in the Kingdom.

Apply to HILL & SMITH, Brierly Hill Iron Works, near Dudley, and 22, Cannon Street West, E.C., from whom only it can be obtained.

PATENT WORCESTERSHIRE RANGE.



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The ADVANTAGES of the above RANGE.—Two Ovens are heated with the same amount of Coal as one of any other.
CONVENIENCE of COOKING. Great saving of Fuel and Labour, Universal Adaptability, Cleanliness, Comfort, Durability, and for simple arrangement is not surpassed.
Warranted to CURE a SMOKY CHIMNEY.
Inventors and Manufacturers, JONES & ROWE, Worcester.
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D. FERGUSON, LANDSCAPE GARDENER, CONTRACTING PLANTER, and VALUER of NURSERY STOCK, &c.
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MR. NEWTON, 30, Eastbourne Terrace, London, W., attends by appointment in any part of England and Ireland. References given to important Works completed in many parts of England and Ireland
Workmen and Plans provided in the Continent and America.

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HAYTHORN'S HEXAGON and CHISWICK GARDEN NETS will protect Bloom from Frosts, Hail, and Rain, and the Fruit from Wasps, Flies, Birds, &c. Patterns, prices, and testimonials free by post.
Direct MR. HAYTHORN, Nottingham.

Preserve your Trees from Frost.

BENJAMIN EDGINGTON, 2, Duke Street, Southwark, has a large Stock of NEW and REPAIRED TANNED NETTING, COTTON HUNTING, HALLS' COTTON NETTING, FRIGI DOMO, &c. Samples free by post. Maggots, Tents, and Temporary Rooms on Hire, Lined, Boarded, Lighted, and furnished with Wardrobes, &c.
Address, BENJAMIN EDGINGTON only, 2, Duke Street, London Bridge, S. No other Establishment.

NETTING for FRUIT TREES, SEED BEDS, RIPE CHERRY BEDS, &c. TANNED NETTING, for protecting the above from Frost, Birds, Birds, &c., 2 yards wide, 3d. per yard, or 100 yards 20s.; 1 yards wide, 6d. per yard, or 50 yards 20s. NEW TANNED NETTING, suited for any of the above purposes, or as a fence for Poultry, 2 yards wide, 9d. per yard; 4 yards wide, 1s. per yard; 3-inch mesh, 1 yards wide, 1s. 6d. per yard.
Can be had in any quantity of EATON & BUTLER, 6 and 7, Crooked Lane, London Bridge, E.C.

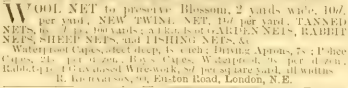
TANNED GARDEN NETTING for preserving Seed Beds, Fruits, Strawberries, from Frost, Birds, Birds, &c., and as a fence for Fowls &c. 1 yard wide, 1½d.; 2 yards, 3d.; 4 yards, 6d.; and 4 yards, 6d. per yard run in any quantity, may be had at

VARNISHED FLOWER STICKS.—1 foot, 3d.; 1½, 4d.; 2, 5d.; 2½, 7d.; 3, 10d.; 4, 1s. 6d. per dozen. DAHLIA do., per dozen 1s.; 1s. 6d., 4, 2s., 5, 3s., 6, 4s. 6d. An allowance to Nurserymen.

WOOL NET to preserve Blossom, 2 yards wide, 10d. per yard; NEW TWINE NET, 1 yard wide, 1d. per yard. TANNED NETS, 3 yards, 100 yards; 4 yards, 150 yards. GARDEN NETS, RABBIT NETS, SHEEP NETS, and FISHING NETS, &c.
Waterproof Capes, sheet shape, 3s.; each; Driving Aprons, 7s.; Pilot Coats, 24s.; per dozen. Hats, 4s. 6d. each; Leggings, 3s. per dozen. Rabbit Nets, 1½ inch mesh Wire work, 3d. per square yard, all widths.
R. HUTCHINSON, 99, Euston Road, London, N.E.

W. S. UNDERHILL'S NEW PATENT IRON FENCE for GARDENS, LAWNS, &c.
Manufactory—Newport, Salop.
Warranted the strongest and most durable Fence ever offered at corresponding prices. It is easily repaired if broken, from accident, and can be put up nearly level on hilly ground, is admirably adapted for equitation, and can be had of any height and mesh required, at prices from 6d. to 1s. 6d. per yard and upwards.
For further particulars apply to the Manufactory, or of the London Agent, Mr. R. WINDER, 18, Abingdon Street, Westminster, S.W.

GALVANISED WIRE CABLE STRAND FENCING, for FARMS, PARKS, and GARDENS
The ORIGINAL INVENTORS and MANUFACTURERS.



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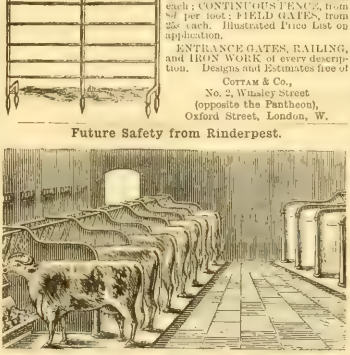

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TO BE LET on LEASE, an OLD and WELL-ESTABLISHED NURSERY, 22 acres, well stocked with three Greenhouses and Propagating House, &c., with every convenience for carrying on the Nursery and Seed Business. There is a comfortable Seven-roomed Dwelling House in good repair on the premises. For further particulars apply to
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TO BE LET, with Immediate Possession, the BUSINESS of a NURSERYMAN and FLORIST, situated in an improving part of the Town of Brighton, consisting of Dwelling-house, and other conveniences for carrying on an extensive Trade. The whole plant in excellent working condition. Eleven years of lease unexpired, and a further Term of 21 secured. The whole can be taken at a valuation or at a fixed amount.
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Principals only may apply by Letter to FLORA, care of Messrs. Cowdell & Grundy, Solicitors, 21, Abchurch Lane, London, E.C.

Sales by Auction.

Kilburn Park Nursery, W.

CLEARANCE SALE of NURSERY STOCK, GREENHOUSES, &c.
MESSRS. PROTHEROE AND MORRIS are directed by Mr. H. Stallwell to SELL by AUCTION on the Premises, Kilburn Park Nursery, (adjoining Kilburn Station, 5 minutes' walk from Kilburn Arch on the North West Line), on MONDAY, February 26, at 12 o'Clock precisely, the Lease having expired, the whole of the NURSERY STOCK, including 8½ thousand Deodoras Strobus, Ornamental, Hard, and Soft Trees; handsome Standard and Dwarf Roses, 100 choice Hollyhocks, Herbaceous Plants, quantity of Rhubarb, &c.; about 2000 Greenhouse Plants, two Span-roof Greenhouses, a 7-light Brick Pit, two Sheds, a Four-roomed Brick-built Cottage, Saddle Boiler, Hot-water Piping, and sundry effects.
May be viewed one week prior to the Sale. Catalogues had on the Premises, of the principal Seedsmen in London; and of the Auctioneers and Valuers, American Nurseries, Leytonstone, N.E.

Highgate.

TO GENTLEMEN, NURSERYMEN, BUILDERS, AND OTHERS.
MESSRS. PROTHEROE AND MORRIS are instructed by Mr. A. Eagle to SELL by AUCTION on the Premises, The Nursery, Wood Lane, within three quarters of a mile of the Archway Tavern, Highgate, on WEDNESDAY, February 28, at 12 o'clock precisely, without reserve, the genuine Stock, intended to be cleared for Building purposes, the whole of the valuable NURSERY STOCK, consisting of Evergreens, Deciduous Shrubs, Ornamental, Fruit, and Forest Trees, handsome Standard and Dwarf Roses, Hardy Climbing Plants, &c.
May be viewed prior to the Sale. Catalogues had on the Premises; at Mr. Eagle's Seed Shop, North Road, Highgate; of the principal Seedsmen in London; and of the Auctioneers and Valuers, American Nurseries, Leytonstone, N.E.

Sale of very handsome English-grown Camellias, &c.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, at 67 and 68, Gracechurch Street, City, E.C., on FRIDAY, March 2, at 12 o'clock precisely, about 300 Choice DOUBLE CAMELLIAS and AZALEA INDICA, from 1 to 3 feet, beautifully furnished with bloom buds; a superb assortment of fine handsome STANDARD and DWARF ROSES; selected AMERICAN PLANTS; one bale of LILIUM LANCIFOLIUM of sorts, GLADIOLUS, &c.
On view the Morning of Sale. Catalogues may be had at the Rooms as above, and of the Auctioneers and Valuers, Leytonstone.

Shepherd's Bush.

IMPORTANT SALE of NURSERY STOCK.
MESSRS. PROTHEROE AND MORRIS are instructed by Messrs. Hopgood & Jacobs (late Hopgood & Co.) to offer for UNRESERVED SALE by AUCTION, on the Premises, Railway Nursery, Shepherd's Bush, adjoining the Goods Depot of the Metropolitan Railway, on MONDAY, March 5, and following day, at 12 for 1 o'Clock precisely each day, a portion of the valuable NURSERY STOCK, including about 10,000 Evergreens, Standard and Dwarf Roses, Deciduous Shrubs, Ornamental and Fruit Trees, Standard and Dwarf Roses, &c., with a Pony Phaeton and Harness.
Full particulars of Nursery Stock will be announced in the next Advertisement.
American Nursery, Leytonstone, Essex, N.E.

SALE THIS DAY, AT HALF-PAST TWELVE PRECISELY.

Consignment of Plants from Surrey.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on SATURDAY, February 24, at half-past 12 o'Clock precisely, a quantity of FRUIT TREES, ROSES, HARDY BEDDING-SPECIES, SPIRÆEAS, IVIES, ARBUTUS, CONIFERS, LILACS, BROOM, SEAKALE ROOTS, MAGNOLIAS, POPLARS, CLEMATIS, RASPBERRY CANES, BUTCHER'S BROOM, &c.
On view the Morning of Sale, and Catalogues had

Consignment of Plants from Jersey, Scotland, Kent, Somersetshire, and Surrey.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, February 28, at half-past 12 o'Clock precisely, a quantity of VINES, STANDARD and DWARF ROSES, CONIFERS, Standard and Dwarf Fruit Trees, Berberis, Honeysuckles, Ericas, and a variety of Hardy and Ornamental Trees and Shrubs.
On view the Morning of Sale, and Catalogues had.

Consignment of Plants from Ghent.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, March 1, at half-past 12 o'Clock precisely, 400 fine CAMELLIAS, 300 INDIAN AZALEAS, 400 RHODODENDRONS, 100 Hardy Azaleas, 300 Latania borbonica, 200 Lasiteros, Standard and Dwarf Roses, Standard and Trained Fruit Trees, and a variety of Hardy Trees and Shrubs.
On view the Morning of Sale, and Catalogues had.

To Noblemen, Gentlemen, and Parties Planting.

C. GILLARD begs to make known that he is instructed to offer by PUBLIC AUCTION, on Tuesday, February 27, a valuable Consignment of some 200 Lots of splendidly grown ORNAMENTAL SHRUBS, EVERGREENS, Standard, Dwarf, and Climbing Roses; Perennial and Bush Fruit Trees, all the leading kinds; also Orchard-house Trees, Larch, Fir, Quicks, Privets, and Holly for hedges
Catalogues may be obtained 14 days prior from the AUCTIONEER, Lichfield; and Mr. H. GILLARD, Auctioneer, Stafford.

SHANKS' PATENT LAWN MOWERS FOR 1866.

PATRONIZED ON FIVE SEPARATE OCCASIONS DURING THE SEASON OF 1864 BY

HER MAJESTY THE QUEEN,

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ONCE BY HIS MAJESTY THE KING OF HOLLAND;

AND ONCE BY HIS MAJESTY THE KING OF PRUSSIA.

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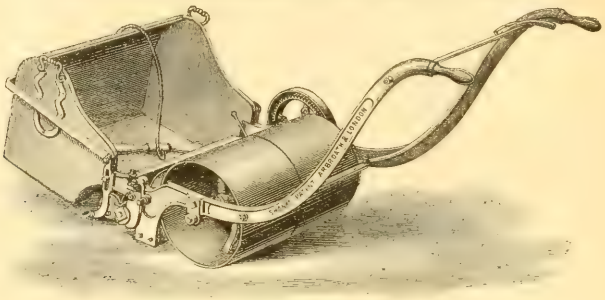

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These are the only Machines that can be depended on to give lasting satisfaction.

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N.B.—*A. S. & Son specially announce to their numerous patrons that they have a staff of experienced workmen at their London Warehouse, thoroughly acquainted with all the details of their Machines, so that they are enabled to repair Lawn Mowers in London as well as at the Manufactory.*

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Editorial Communications should be addressed to "The Editor," Advertisements and Business Letters to "The Publisher," at the Office, 41, Wellington Street, Covent Garden, London, W.C.
Printed by WILLIAM BRADBURY, of 13, Upper Woburn Place, in the Parish of St Pancras, in the Co. of Middlesex, and FREDERICK MULLETT EVANS, of No 11, Bouverie Street, in the Precinct of Whitefriars, City of London, Printers, at their Office, Lombard Street, Precinct of Whitefriars, City of London, and Published by them at the Office, No 41, Wellington Street, Parish of St. Paul's, Covent Garden, in the said Co.—SATURDAY, February 24, 1866.

THE GARDENERS' CHRONICLE
AND
AGRICULTURAL GAZETTE.

A Newspaper of Rural Economy and General News.

No. 9.—1866.] SATURDAY, MARCH 3. {Price Fivepence. {Stamped Edition, 6d.

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ROYAL BOTANIC SOCIETY, Regent's Park.—EXHIBITIONS of SPRING FLOWERS, SATURDAYS, March 17, April 7 and 21. Tickets 2s. 6d. each.
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Under the Patronage of HER MAJESTY THE QUEEN, and of their Royal Highnesses the PRINCE OF WALES and the DUKE OF CAMBRIDGE.
The EXHIBITION and CONGRESS will OPEN on MAY 22, and continue till May 25. Subscribers' names will be received, and Schedules and Prospectuses may be obtained on application to the Secretary, at the Offices, 1, William Street, Lowndes Square, London.

HORTICULTURAL SOCIETY of LIVERPOOL.—The FOURTH EXHIBITION of HYACINTHS and SPRING FLOWERS will be held in St. George's Hall, Liverpool, on WEDNESDAY, March 14. Entries close March 10.
For Schedules, &c., apply to ROBERT W. KER, Hon. Sec., 4, Basnett Street.

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PINUS PINASTER, or MARITIMA.—A most desirable Pine for planting near the Coast, as it grows very freely when exposed to the sea breezes. Transplanted, 10s. 6d. and 15s. per 1000.
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Red	White Dutch	Yellow
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FINEST LAWN MIXTURE.—Composed only of the best and cleanest Seeds of the most suitable dwarf Evergreen Grasses. 1s. per lb. Carriage free.
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TRANSPLANTED RHODODENDRONS.—4-year-old Hybrids saved from the choicest Crimson, White, and Claret-coloured sorts, 12s. 6d. per 100, or 100 for £5
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ASPARAGUS, 1, 2, and 3-years, fine, at low prices.
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GIANT ASPARAGUS.—Extra fine 2-yrs., 2s. per 100; extra fine 3-yrs., 3s. per 100.
Price to the Trade on application.
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GRAYSON'S GIANT ASPARAGUS.
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Scrymger's Brussels Sprouts.

SEED of the above excellent variety can be had true from the Raiser, in packets at 1s.; post free 14 stamps.
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CABBAGE PLANTS.
Strong DRUMHEADS for Cattle. 3s. 4d. per 1000
THOMAS WELLAND, Surrey Gardens, near Godalming, Surrey.

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THE BEST FOUR KINDS of PEAS.

Sutton's Longpodded Tom Thumb, 2s. 6d. per quart	McLean's Advancer, 1s. 6d. per quart
Turner's Little Gem, 3s. 6d. per qt	Dwarf Defiance, 2s. 6d. per quart.

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THE KING of POTATOS, one of the finest Potatos in cultivation, quite distinct, and free from disease, price 5s. per bushel of 56 lb. Also PATERSON'S VICTORIAS, Seed direct from Mr. Paterson, price 7s. per 56lb
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Apply to Mr. WEBB, Calcot Gardens, Reading.

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DOWNIE, LAIRD, and LAING, 17, Frederick Street, Edinburgh, and Stanstead Park, Forest Hill, London, S.E., hold a fine Stock of all the leading varieties of the above.
Prices on application.

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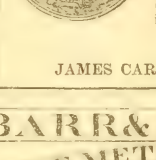

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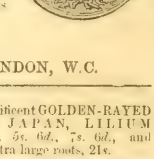

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No. 2.	Ditto	ditto	ditto	..	..	15	6	No. 2.	Ditto	ditto	..	..	..	..	5	6
No. 3.	Ditto	ditto	ditto	..	..	21	0	No. 3.	Ditto	ditto	..	..	..	..	7	6
No. 4.	Ditto	ditto	ditto	..	..	30	0	No. 4.	Ditto	ditto	..	..	..	..	10	6
No. 5.	Ditto	ditto	ditto	..	..	42	0	No. 5.	Ditto	ditto	..	..	..	..	15	0
No. 6.	Ditto	ditto	ditto	..	..	63	0	No. 6.	Ditto	ditto	..	..	..	..	21	0
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Mr CHARLES TURNER, Slough
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☞ We have just received an additional supply of NUNEHAM PARK ONION, in original packets, and can now oblige any of our friends who are anxious to grow it. The price is however 3s. 6d. per packet.

TREBONS.—A very large brown-skinned Onion, an exceedingly heavy cropper. "Nuneham Park Onion" we believe to be a synonyme, or a selection from the Trebons, and not a hybrid between the White Spanish and Flat Tripoli; it is, however, an interesting subject for inquiry. Per packet, 4d.

BARR AND SUGDEN, SEED, PLANT, and BULB MERCHANTS, 12, KING STREET, COVENT GARDEN.

Paul's Nurseries, Waltham Cross, N.

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PRINCESS LICHTENSTEIN (Wm. Paul).—Flowers white, globular, large and full, perfect in form in their young state, a good hardy Rose, flowering abundantly. Price 3s. 6d.

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All the really good French Novelties, 3s. 6d. each; the older kinds, by name, 12s. to 18s. per dozen; 75s. to 100s. per 100.

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The following new Zonale and Hybrid Nosegay Geraniums have been selected from several thousand Seedlings raised from the stock of the late Mr. Donald Beaton, and have been severally subjected to bedding. to be in advance of or distinct from all pre-existing kinds. Orders received now, the plants delivered in rotation, as far as the stock will allow, in May next.

GROUP 1.—BEDDING VARIETIES.

*** Any 12 varieties from this and the two following Groups may be selected by the purchaser for £2 2s.

BANNERET.—Flowers crimson, scarlet, and purple shaded, very bright and beautiful; a hybrid nosegay. Price 3s 6d. each.

FAIRY QUEEN.—Rose-pink, large smooth flower, very distinct and effective. Price 3s 6d each.

MINSTREL, a peculiar and pleasing shade of salmon, something in the way of Lord Palmerston, but brighter in colour and broader in the petals.

MONTE ROSA, dark rosy-purple, pleasing colour, large truss, very fine. Price 5s. each.

NIMROD, orange-scarlet, white eye, large flower and truss, foliage and habit fine. Price 3s. 6d each.

PHŒNIX, in the way of "Stella" in habit and general character, the colour fabulously rich and fine. Price 5s each.

PRINCE OF ORANGE, orange-scarlet, very bright, great substance, good habit, prodigious bloomer. Price 3s. 6d each.

PEACH NOSEGAY.—Flowers peach colour, very free bloomer, spotted trass, plain leaf, first-rate and distinct Price 5s.

REBECCA.—Cherry colour, fine truss, dwarf compact habit, very profuse, the finest bedding Geranium yet raised. Price 5s each.

ST GEORGE.—Dark chestnut, shaded with blackish crimson, quite unique, very free and effective, an entirely new colour fine for Hedgemaking. Price 5s each.

SALMON NOSEGAY.—Flowers pure salmon, large truss, good Price 3s. 6d each

SHRUBLAND.—Flowers true orange, very bright, fine large truss, a splendid variety for massing. Price 5s. each.

WOOD NYMPH.—Salmon pink, large and fine. Price 3s. 6d. each.

GROUP 2.—VARIETIES ESPECIALLY RECOMMENDED FOR GROWING IN POTS OR VASES.

BRIDE.—Flowers white, with large crimson eye, of fine shape and substance; a first-class variety for pot culture. Price 5s each.

CARDINAL.—Flowers dark orange scarlet. For shape, substance, colour and habit, this is in advance of any scarlet variety raised. Price 10s. 6d each.

CELESTIAL.—Flowers rosy lake, with fiery spot on upper petals, their centres bluish purple, resembling the "Cactus speciosissimus," large white eye, new in colour, and very beautiful. Price 5s. each.

LORD CHANCELLOR.—Salmon pink, white eye, perfect shape, very free, fine habit. Price 3s. 6d. each.

POET LAUREATE.—Rosy purple, top petals orange scarlet, yellowish eye, perfect shape. Price 3s 6d each.

TIARA.—Flowers scarlet crimson suffused with purple, good truss, very free, fine habit; quite distinct from any yet raised, and very lovely. Price 5s. each.

GROUP 3.—MINIATURE OR POMPON VARIETIES.

DIAMOND.—Fine scarlet purple centre, white eye, flowers profusely, habit good, distinct. Price 3s 6d. each.

DRYAD.—Beautifully rosy pink, fine shape and truss. Price 3s. 6d each.

NAIAD.—Flowers purple, scarlet top; pleasing and distinct. Price 3s. 6d. each.

WALTHAM LILAC.—Flowers true lilac, very profuse; a new and desirable colour, excellent for massing. Price 5s. each.

ZEPHYR.—Flowers light purple top, petals rose colour; stands the rain and sun well, very dwarf and free. Price 3s. 6d. each.

GROUP 4.—BEDDING VARIETIES SENT FROM THESE NURSERIES LAST YEAR.

Many of them have received First-class Certificates from the Royal Horticultural and Royal Botanic Societies of London, and those marked thus *** have been awarded Prizes as marks of merit in the Royal Horticultural Society's Trial Ground at Chiswick.

NOW READY, AUTUMN-STRUCK PLANTS.

*** ALEXANDRA.—Magenta. Price 2s. 6d. each; 24s. per dozen.

*** AMY HOGG.—Bright purplish rose. Price 2s. each; 18s. per doz.

*** BEATON'S INDIAN YELLOW.—Orange scarlet suffused with yellow. Price 1s. 6d. each; 15s. per dozen.

BLACK DWARF.—Dark crimson. Price 1s. 6d. each; 12s. per dozen.

DONALD BEATON.—Clear orange scarlet. Price 1s. 6d. each; 15s. per dozen.

*** DUCHESS.—Soft rosy lake. Price 2s each; 18s. per dozen.

FULGORA.—Vivid scarlet. Price 2s. 6d. each.

*** GLOWWORM.—Magenta flower finished with scarlet. Price 2s. 6d. each; 24s. per dozen.

MAGENTA QUEEN.—Magenta. Price 3s. 6d. each.

ORANGE NOSEGAY.—Bright orange. Price 1s. 6d. each; 15s. per dozen.

PILLAR OF BEAUTY.—Brick red. Price 2s. 6d. each.

PRINCESS LICHTENSTEIN.—Salmon pink. Price 2s. each; 18s. per dozen.

SALAMANDER.—Brilliant scarlet, large white eye. Price 2s. each; 18s. per dozen.

SCARLET GEM.—Bright orange scarlet. Price 1s 6d. each; 15s per dozen

MRS. WILLIAM PAUL.—Delicate rose pink. Price 2s. 6d. each, 24s. per dozen.

WALTHAM SEEDLING.—Dark crimson. Price 2s. each, 18s. per dozen.

The above set of 16 varieties, one plant of each, 24s.

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Free by Post or Rail.

Those requiring showy kinds of Flower Seeds, and who are not well acquainted with the sorts, are respectfully recommended to leave the selection to us, and we will supply those we know to be really worthy of cultivation.

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1. The best 100 sorts (hardy, half-hardy, and tender)	1	1	0
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Superb Double Hollyhocks.

WILLIAM CHATER begs to remind the Admirers of this beautiful flower that now is the best time for planting it ont to insure fine spikes and blooms this season.

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Seedlings from best named varieties, 4s. per doz, or from 20s to 30s. per 100

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In Collections of 12 separate named varieties, extra fine, 10s.:

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12 named varieties, all good show flowers, 7s. 6d.

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CHOICE SPRING FLOWERS, &c., now ready in Strong Plants

	Per doz.	s.	d.
HEPATICAS, double red an l single blue		4	0
VIOLETS, double, in four sorts	1s to	6	
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PRIMROSES, double, in six colours		6	
CHRISTMAS ROSE, scarlet	2 each	18	
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POLYANTHUS, finest named varieties		6	0
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DAISIES, all new and choice kinds		6	0
ROCK CRESS, in three colours		6	0
OLD CRIMSON CHINA ROSE		6	0
AURICULAS, finest Alpines		6	0
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100 CHOICE HARDY HERBACEOUS PLANTS, in 50 fine named varieties, for 25s.

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24 Finest STANDARD and DWARF ROSES, 24 distinct varieties, 21s.
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TAGETES SIGNATA PUMILA.—Magnificent Bedding Annual, 1 foot high, of dense compact growth, foliage graceful and Fern-like, of a bright green colour; the plant is covered with rich orange-coloured flowers vigorously from June till cut down by frost, maintaining till the last its beautifully neat habit.

"It bids fair to supersede the Yellow Calceolaria as a Bedding Plant."—See *Gardeners' Chronicle*, 1865, p. 984. 6d. per packet.

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Truffaut's Peony-flowered Aster, 20 varieties, 3s. 6d.; mixed packets, 3d. and 6d.

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The quality of the above Asters and Stocks as exhibition flowers is well known; those from seeds supplied by me having taken prizes at many shows during the past season.

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To be sold cheap.—Important to Planters.

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PINUS LARICIO (true).—This highly ornamental tree surpasses the Larch, both in rapidity of growth and quality of timber. It will thrive where the Larch will not. It is also used as spars and masts in the French navy. 2-year seedlings, 10s. per 1000.

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Spring, 1866.

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The above are shaken out of cutting pots and good Plants.

MRS. POLLOCK GERANIUM, in pots, 10s. per dozen.

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Extract from GARDENERS' CHRONICLE:—

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As a BEDDING LOBELIA it stands unrivalled. The plant is of dwarf compact habit; the flowers are large and even, and of the purest white. The stock comes perfectly true from seed.

Price 2s. 6d. per packet. Price to the Trade on application.

New White Lobelia.

MARTIN AND SON have great pleasure in offering the above NEW WHITE BEDDING PLANT, which will be found one of the very best White flowering plants for edging. It forms a compact bush, and one dense mass of bloom all the summer. It is the most distinct and the most beautiful of all White edging plants. The pinned Nurserymen and Gardeners will bear testimony to this lovely gem. It was raised by Mr. Usher, the eminent Calceolaria grower, at the gardens of Major Peel, of West Ella. Price 2s. 6d. each, 12s. per dozen, or 75s. per hundred.

Address to the Hull Establishment, No. 7, Market Place; or their Nursery Grounds at Cottingham. Established 1785.

To the Trade.

CUPRESSUS LAWSONIANA SEED (true), of excellent quality, and warranted free of presently-known Pests, postage paid, 5s. 2d. per oz.; per half-lb. 6os per lb nett. From unknown Correspondents a remittance must accompany order.

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	Per 1000.	s.	d.
500,000 LARCH, 2 feet		10	0
500,000 LARCH, 2 to 3 feet		12	0
200,000 PEAR STOCKS, 2 to 5 feet	15s. to	60	0
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500,000 SILVER FIR, 1-year Seedling, fine		4	0
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20,000 WALNUTS, 1-year Seedling, fine		10	0
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100 Bushels PITTED HAWS. Price on application.

Apply, with reference to JAMES RIDDELL, Steward, Park Attwood,

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B. S. WILLIAMS begs to announce that he still holds a fine Stock of the above. Planting and Fruiting Canes of all the best kinds, including the NEW GRAPE ROYAL VINEYARD.

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Prices and all particulars on application.

Sample plants sent if desired.

Extra strong Fruiting Vines.

JAMES DICKSON AND SONS can still supply STOUT, CLEAN-JOINTED, well-ripened VINES, which, under good management, are sure to produce a good crop of fruit this season. The collection embraces all the most approved kinds. Prices, 5s., 7s. 6d., and 10s. 6d. Also, for planting out, healthy clean plants, at 5s. each. All in pots, and well rooted.

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To the Trade.

EXTRA fine Dwarf-trained APRICOTS, PEACHES, PEARS, PLUMS, and CHERRIES.

Extra fine STANDARD PEARS, CHERRIES, PLUMS, &c.

GRAPE VINES, ORCHARD HOUSE TREES, Fruiting or otherwise. List of sorts on application.

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To the Trade—Overstock, very Cheap.

STANDARD-TRAINED ROYAL GEORGE PEACH, DWARF-TRAINED ROYAL GEORGE and other sorts.

CHERRIES, dwarf trained, in great variety, as May Duke, Waterloo, Werder's Early Black, Bigarreau, Adam's Crown, Belle d'Orleans, Knight's Early Black, &c.

PLUMS, dwarf trained, in great variety, as Coe's Emperor, Bryanstone, Green Gage, Drap d'Or, St. Martin's, Quetsche, Angeline Burdett, Orleans, &c.

CHERRIES, standards, in variety, as May Duke, Elton, Bowyer's Early Black, Black Heart, Bigarreau, Waterloo, &c.

PEARS, pyramids on Quince Stocks, Beurré d'Aremberg, Marechal de la Cour, Bergamotte d'Espéren, and White Doyenné.

MAIDEN PEACHES, NECTARINES, and APRICOTS; STANDARD and DWARF ROSES.

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Strong GOOSEBERRIES, Scarlet CURRANTS, 21s. per 100.

ASPARAGUS, 2 years, 5s. per 100; 3 years, 6s.; 1 year, 4s. per 100.

Roots, late Geo. Cornwell, & Co., Kingsthorpe Red Lion, Rugby, Northampton.

THE LADY, a SEEDLING STRAWBERRY, raised by Mr. USSHERWOOD, who was the originator of Sir Harry.

Plants are now ready to be sent out in lots of good sizes, from 20.

All applications must be accompanied by a post-office order, or Birmingham postage stamps, or cash, to receive attention.

Previously The Lady Strawberry Plant:—100, 2s.; 75, £1 5s.; 50, £1 0s.; 25, 15s.; 12, 8s.

Plants in Pots, not less than 50, at 2s. each, package included.

The above scale of prices will be slightly changed in August, 1866.

Mr. USSHERWOOD'S "Treatise on the Cultivation of Strawberries," either in English, French, or German, may be had through the post, price 1s. Address,

Mr. RICHARD USSHERWOOD, Sir Harry's Road, Edgbaston, Birmingham.

W. VIRGO AND SON having a surplus stock of the undermentioned FRUIT, FOREST, and other TREES, can offer them at a very reduced price, viz.:—

Standard and Dwarf Apples	Abies, 2 to 3 feet
Standard and Dwarf Pears	Larch Firs, 2 to 3 feet
Standard and Dwarf Trained Cherries (very fine)	Spruce Firs, 18 inches, 2 and 3 feet
Hazel, 2 to 3 feet	Berberis Aquifolium, 1 foot
Birch, 2 to 3 and 4 feet	Hollies, 2 feet
Spanish Chestnut, 2 to 3 feet	Portugal Laurel, 2 feet
Withy, 3 to 4 and 5 feet	Common Laurel, 2 to 3 feet
	Privet, 18 inches to 2 feet

Also a large quantity of Trees fit for hedging.

Prices of the above can be had on application at the Nursery, Weybridge, near Guildford, Surrey.

New Edition of

SCOTT'S FRUIT TREE CATALOGUE of the finest Collection in England. The Old Sorts are allowed to be the best published, and is full of information about the Cultivation of Fruits, over 1000 being described. Apply to

J. SCOTT, Merriott, Somerset.

SPECIAL OFFER of FRUIT TREES—25 per cent. off Catalogues.—Having a large and fine Stock of the undermentioned, they are offered at greatly reduced prices, to clear ground:—Peaches, Nectarines and Apricots (trained and untrained), Apples, Pears, Plums, and Cherries (trained and untrained).

DESCRIPTIVE CATALOGUES on application to

J. SCOTT, Merriott, Somerset.

LARGE ORANGE TREES, SPECIMEN STOVE PLANTS, and ORCHIDS.—Consisting of 37 very fine Trees, all planted out, in good health, and well established. The property of a Gentleman giving up growing them. To be Sold by private treaty, in One Lot, price £120. 26 of them are 10ft. to 10ft. 6in. high, 4, 9ft. to 9ft. 6in., 6, 8ft. to 8ft. 6in., and 1, 6ft. 6in., all clean-limbed, shapely trees, with good heads; 1 variegated do., 3 ft. stem, fine; 1 Tangierine, 5 ft. by 3 ft. 6in.; 1 Myrtle-leaved 11ft. by 4ft.; 14 others, various sizes, with 2 Lemons, 1 Shaddock, and 1 Citron.

The STOVE PLANTS consist of Allamandas, Stephanotis, Ixoras, Rondeletia speciosa major, Passifloras, Clerodendron, Mandevilla, Abocasia metallica, Dracænas, Maurandas, and other miscellaneous plants, in all about 175, with 30 Ferns and 60 Orchids, as follows, viz.: 2 Stanhopeas, 13 Dendrobiums, in pots and baskets, of sorts; 8 Cattleya Mossiæ, Forbesii, and Schilleri; 9 Phaius, 7 Zygopetalon Mackayi, 2 Lælia purpurata, 10 Oncidium varicosum, 2 Lycaste Skinneri, 1 Maxillaria, 3 Aerides, 1 Vanda Teres, 2 Oncidiums, 2 Peristeria elata, 1 Renanthera coccinea. Price for the lot, which can be seen within 2 miles of the Ipswich Station, £96, or in separate lots on application to James Gilbert, Florist, &c., St. Margaret's, Ipswich.

JOSEPH BAUMANN, Nurseryman, Ghent, Belgium, begs to offer the new STRAWBERRY DR. NICAISE, the largest and one of the best sorts of all strawberries. 6 plants, 4s.; 12 plants, 7s.; 100 plants, £2.

100 fine CAMELLIAS, with flower buds, £6

100 fine CAMELLIAS, with flower buds, stronger plants, £8 and £10.

100 Scarlet RHODODENDRONS, with flower buds, named, strong plants, £12 and £16

100 VIBURNUM MACROCEPHALUM, with flower buds, £4 and £6.

Large Specimen Limes.

FOR SALE, the Property of a Gentleman (being obliged to remove them, and having no use for the same), 17 SPECIMEN LIMES, 16 to 18 feet high, and 10 to 12 feet through the heads. All young, very handsome stuff. May be selected at 10s. 6d. each, or taking the whole, £6 10s. May be seen on application to

H. MCMILLAN, Nursery and Seed Establishment, St. James's Road, Eden Street, Kingston-on-Thames, S.W.

SPECIAL OFFER FOR CASH ONLY.

EXTRA FINE TRANSPLANTED LARCH,

2 to 3 feet, 15s. per 1000; 3 to 4 feet, 21s. per 1000.

Samples if required.

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BEG TO ANNOUNCE THE DISTRIBUTION FOR THE FIRST TIME OF THEIR

NEW and WONDERFUL PEA,

THE ALEXANDRA.

It is the only true rival to their long-celebrated "Incomparable" Pea. Is enormous in size, prodigious in cropping, and unsurpassed in flavour and sweetness.

Sealed packets: Quarts, 3s. 6d.; Pints, 2s. each.

HOOPER AND CO., SEED MERCHANTS, COVENT GARDEN MARKET, LONDON, W.C.

STIRLING, SCOTLAND.

GENTLEMEN ABOUT TO REQUIRE AGRICULTURAL SEEDS

MAY FIND IT ADVANTAGEOUS TO REFER TO OUR

PRICED CATALOGUE,

Which will be forwarded Post Free on application.

Over a long series of Years the Laying Down of Land to Grass has occupied much of our attention, and we are enabled to furnish Assortments of trustworthy Seeds, moderately charged, to suit every description of Soil. Full particulars as to these, as well as to our Improved varieties of Swede and Yellow Turnip, &c., will be found in Catalogue.

W. DRUMMOND AND SONS, STIRLING; and DAWSON STREET, DUBLIN.

Stirling has direct expeditious communication to all parts of the Kingdom. Seeds as hitherto are forwarded Carriage Paid.

Thomas Gibbs & Co

ROYAL AGRICULTURAL SOCIETY OF ENGLAND — THOS. GIBBS & Co. Corner of HALF-MOON St PICCADILLY, London. — APPOINTED Apr. 3. 1844 — THE SEEDSMEN

CORNER of STREET.

Trade Mark.

GRASS SEEDS,
AGRICULTURAL SEEDS,

KITCHEN GARDEN SEEDS,
FLOWER SEEDS.

Catalogues forwarded post free to any address on application.

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GRASS SEEDS FOR ALL SOILS.

Messrs. SUTTON'S GRASS SEEDS being Mixed expressly to suit the Soils for which they are required, Persons ordering have only to state the Nature of the Soil, and Acreage to be laid down, when suitable Seeds will be supplied.

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GRASS and CLOVER
SEEDS
FOR
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RECLAIMED MARSHES,
GOOD BLACK PEATY SOIL,
CHALKY UPLANDS,
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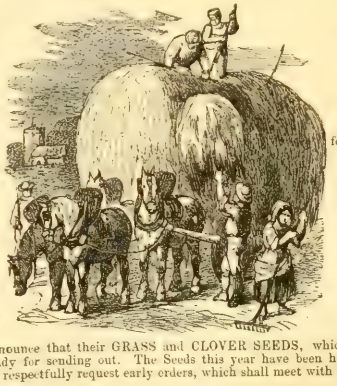
WATER MEADOWS,
CHURCHYARDS,
CRICKET GROUNDS,
CULTIVATION with LIQUID MANURE



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1 YEAR'S CROP of HAY,
FINE GARDEN LAWNS,
NEW PARK LAWNS,
BOWLING GREENS,
ORCHARDS,
RENOVATING OLD PASTURES.

Messrs. SUTTON beg to announce that their GRASS and CLOVER SEEDS, which have hitherto given such great satisfaction, are now ready for sending out. The Seeds this year have been harvested in the best possible condition, and Messrs. SUTTON respectfully request early orders, which shall meet with their best personal attention.

List of Prices of Turnip, Mangel, and other Farm Seeds, with any information required, will be sent on application.

MR. MARTIN SUTTON'S "ESSAY on PASTURES," 6d. post free, or Gratis to Customers.

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GARDEN SEEDS.

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SELECT CATALOGUE OF THE ABOVE

May now be had on application, and they beg to call special attention to the following Select Articles:—

	Per packet.—s. d.		Per packet.—s. d.
OSBORN'S WHITE WINTER BROCCOLI	.. 1 6	ROWDEN'S BROWN COS LETTUCE	.. 1 6
NEW AMERICAN TOMATO	.. 1 6	SCOTT'S SUPERB WHITE COS LETTUCE	.. 1 0
		BELLE BONNE SUMMER CABBAGE LETTUCE	1 0

This is very large, and less watery than the old Red. These three Lettuces are less liable to run than any we know.

FULHAM NURSERY, S.W.

NOVELTIES FOR 1866.

E. G. HENDERSON & SON

RESPECTFULLY OFFER THEIR

NEW SEED CATALOGUE FOR THE PRESENT SEASON,

Containing full descriptions of the following Novelties.

Post Free on application.

VIOLA CORNUTA, 1s. and 1s. 6d. per packet.
LYCHNIS GRANDIFLORA GIGANTEA, 1s. and 1s. 6d. per pkt.
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LOBELIA ERINUS PRINCE ALBERT, 6d. and 1s. per packet
" SNOWFLAKE, 2s. 6d. per packet
YELLOW PERFECTION WALLFLOWER, 1s. and 2s. 6d. per pkt
PRIMULA FILICIFOLIA, white and red, 2s. 6d. per packet
LILIUM AURATUM, 1s. and 2s. 6d. per packet
SANVITALIA PROCUMBENS FLORE PLENO, 1s. & 2s. 6d. p. pkt.
BLOOD-RED TEN-WEEK STOCK, 1s. and 2s. 6d. per packet
SILENE PENDULA RUBERRIMA, 1s. per packet
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DICTAMNUS FRAXINELLA GRANDIFLORA, 1s. per packet
PETUNIA MULTIFLORA, bedding, 1s. per packet
IRIS PUMILA, in 20 varieties, 1s per packet
CYCLAMEN ATKINSI, in varieties, 1s. per packet
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SCHIZANTHUS RETUSUS NANA, 1s per packet
VISCARIA OCULATA ROSEA FLORE PLENO, 1s and 2s. 6d per pkt
MIMULUS PARDINUS FLORE PLENO, 1s 6d and 2s. 6d per pkt
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SONCHUS MACRANTHA, 2s 6d per packet
DAHLIA IMPERIALIS, 2s. 6d per packet
CELOSIA NANA AURANTIACA, 1s. 6d. and 2s. 6d. per packet
MATTHIOLA BICORNIS, 1s. per packet

NEW PRIZE MELONS, WILLS' OULTON PARK HYBRID, scarlet-fleshed, 2s. 6d. and 5s. per packet.
WILLS' GREEN PINE-APPLE GEM, green-fleshed, 2s. 6d. and 5s. per packet.

RAPHANUS CAUDATUS, a remarkable new long-podded Radish, 2s. 6d. each seed.
CLIANTHUS DAMPIERI HYBRIDUS, 2s. 6d. and 5s.
A well-executed Coloured Plate of the white, margined with scarlet, post free at 1s. 6d.
AUBRIETIA CAMPBELLII, hardy ornamental Spring-flowering plant, 5s., 2s. 6d., and 1s. 6d. per tuft.
A beautifully Coloured Illustrated Plate at 7d. post free.

E. G. HENDERSON AND SON, WELLINGTON NURSERY, ST. JOHN'S WOOD, N.W.

SPECIALITIES, NOVELTIES, and CHOICE FLOWER SEEDS,

POST FREE.

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VICTORIA and PARADISE NURSERIES, HOLLOWAY, LONDON, N,

HAS MUCH PLEASURE IN SUBMITTING THE

FOLLOWING LIST OF NEW AND CHOICE SEEDS,

WHICH ARE SPECIALLY RECOMMENDED FOR THEIR BEAUTY AND SUPERIOR QUALITIES.

For full description see NEW CATALOGUE, post free to all applicants.

In ordering Flower Seeds it will be quite sufficient to send the Number attached only.

PRIMULA (Williams's Superb Strain).—Red, White, or Mixed seed. 2s. 6d., 3s. 6d., and 5s. per packet.
The strain here offered is undoubtedly the finest in cultivation, taking prizes wherever shown, and giving universal satisfaction

CINERARIA (Weatherill's Extra Choice Strain).—Very superior both in habit of growth and size and colour of the flowers. This is the most popular strain in the market. It having purchased at a great expense the entire stock of Seed, none is genuine unless the packet bears his name and address.
3s. 6d. and 5s. per packet

CALCEOLARIA (James' Strain).—The colours are exceedingly rich, profusely spotted or varied. For forming into specimen plants for exhibition, this is the best variety, and invariably receives the chief prizes at the Metropolitan Flower Shows.
3s. 6d. per packet.

CYCLAMEN PERSICUM.—The produce of the finest collection in the country. This is highly recommended, not only on account of the beauty of the flowers, but also for the peculiar marbling of the leaves. At the Spring Show of the Royal Horticultural Society last year they formed quite an attraction. Several Certificates have been awarded to this collection.
1s. and 2s. 6d. per packet.

	Per packet.—s. d.		Per packet.—s. d.		Per packet.—s. d.
149. Actinella grandiflora, new	.. 1 0	193. Gloxinia, erect-flowering	.. 1 0	222. Pansy, saved from prize flowers	.. 1 0
150. Agrostemma coeli-rosea	.. 1 0	194. " drooping	.. 1 0	224. Pectis angustifolia, new	.. 1 0
151. Anturrhinum Crimson Tom Thumb	1 0	195. Godetia Lindleyana flore pleno	0 6	226. Petunia, four named flowers	0 6
152. Artemisia annua	.. 1 0	196. " rubicunda splendens	.. 0 6	228. Phalacrea coelestina Tom Thumb	1 0
154. Aster Victoria	.. 1 0	197. Helipterum Sanfordii	.. 0 6	230. Phlox Drummondii Twilight	.. 1 0
157. " White Chrysanthemum	.. 0 6	198. Helichrysum banum atro-sanguineum	.. 0 6	231. Picotee, choice collection	.. 1 0
158. Auricula, superb collection	.. 1 0			233. Portulaca grandiflora flore pleno	2 6
159. Balsam, very fine	.. 1 0	200. Howea Celsi	.. 1 6	244. Primula filicifolia, Red	.. 3 6
160. Besnya major, new	.. 1 0	202. Lilium giganteum	.. 1 0	245 " filicifolia, White	.. 3 6
167. Callirhoe involucrata	.. 1 0	204. Lobelia erinus speciosa	.. 0 6	246. Rhodanthe stenosiphoneum	.. 0 6
168. Carnation, saved from selected plants	.. 1 0	205. " fulgens multiflora	.. 0 6	250. Silene pendula rubernima	.. 1 0
		206. " Paxtonnana	.. 0 6	251 Solanum Princess Beatrice	.. 1 0
169. Cedro'ella cana, new	.. 1 6	207. " Snowflake, new	.. 2 6	252 Stock, Scarlet Brompton	.. 1 0
172. Chlora grandiflora, new	.. 1 6	208. Matthiola bicornis, new	.. 1 0	253. " Purple Queen	.. 0 6
173. Chrysanthemum tricolor Dunnettii	1 0	211. Mimulus tigrid oides	.. 0 6	254. Sweet William, Hunt's Superb	.. 0 6
178. Clarkia integrifolia alba Tom Thumb, new	.. 1 0	212. Momordica balsamina leucantha	1 0	256 Sweet Pea, The New Invincible Scarlet	.. 1 0
180. " pulchella, Dwarf White, new	1 0	213 Nasturtium King of Tom Thumbs	1 0	257. Tropæolum elegans nanum, new	.. 1 0
182. Clianthus Dampieri	.. 2 6	214. " King Theodore, new	.. 1 0	261. Veronica glauca	.. 0 6
184. Convolvulus mauritanicus	.. 1 0	215. Nicotiana atropurpurea grandiflora, new	.. 1 0	259. Verbena, extra choice	.. 1 0
185. Cosmidium Engelmanni	.. 1 0	216 Nolana lanceolata	.. 1 0	262. Vinca rosea nova species	.. 1 0
190. Ferulanadia emmens	.. 1 0	219. Ornithogalum thyrsoides album	1 0	263. Waitzia aurea	.. 0 6
191. Geranium zonale	.. 1 0	220. Oxalis corniculata rubra	.. 1 0	264. " corymbosa	.. 0 6
192. Gladiolus, seed from finest vars.	0 6	221 Palafoxia Hookeriana, new	.. 1 0	265. " grandiflora	.. 1 0

KITCHEN GARDEN SEEDS Carriage Free.

Complete Collections to suit Gardens of various sizes at the following prices—

10s. 6d., 21s., 42s., 63s., and 84s. each.

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New Roses for 1866.

10,000 strong healthy well-grown Plants of all the New Roses.
Woodlands Nursery, Maresfield, near Uckfield, Sussex.

WM. WOOD AND SON have to offer an extraordinary stock of the best NEW ROSES of the present season, in fine healthy plants.

New Roses.

JOHN KEYNES, in offering the above, begs to state that they are in the finest possible condition, having all been REPOTTED, and now well established, ready for immediate removal. Price 36s. per dozen. The usual allowance to the Trade.
Salisbury.—February 24.

New Roses of 1866.

JOHN FRASER, of the Lea Bridge Road Nurseries, Leyton, Essex, N.E., will forward on application a LIST of all the best varieties of NEW ROSES for 1866
The plants are strong, healthy, and are now ready for sending out. Early orders are respectfully solicited.

NEW ROSES of 1865.—Owing to the annual introduction of so many inferior, and, in fact, worthless varieties of New Roses, JOHN CRANSTON has this season carefully selected 23 varieties out of 40 or 50 sorts offered by the French raisers These he can confidently recommend, and he believes his selection contains all that are worthy of note.
A List, with prices, sent on application. The plants are strong, and will be fit to send out in March.
Nurseries, King's Acre, near Hereford.

Roses, Roses, Roses, at reduced Prices.

TWO THOUSAND ROSES (DWARFS), consisting of a great number of the best varieties, including Rubens Radcliffe, Alfred de Rougement, Comtesse Cecile de Chabrillant, Docteur Andry, Jules Margottin, Gloire de Dijon, Duchesse de Morny, Madame A Verschaffelt, George Prince, Madame Victor Verdier, Madame Derreuis Dunville, George Paul, Madame William Paul, Souvenir de William Wood, Maurice Bernadin, Reine des Anges, Persian Yellow, and many others, in fine plants, can still be obtained at greatly reduced prices of
EUGÈNE VERDIER, Fils Aîné, Horticulturist, 3, Rue Dunois, Paris.

Early Spring Flowers.

WEBB'S GIANT POLYANTHUS and GIANT COWSLIPS, and other varieties, largest stock in England. List and prices on application to Mr. WEBB, Calcot Gardens, Reading.

Newly Imported

LILIUM AURATUM,
3s. 6d., 5s. 6d., 7s. 6d., 10s. 6d., and 12s. 6d. each.
BARR & SUGDEN, Seed, Bulb, and Plant Merchants,
12, King Street, Covent Garden, W.C

To the Trade.

CALCEOLARIAS.—Aurea floribunda, Prince of Orange, and Kayi, very strong and well-rooted Plants, 4s per 100, 35s. per 1000. Ready for potting. Carriage free within 10 miles.
THOMAS S. WARE, Hall Farm Nurseries, Tottenham, Middlesex, N.

To the Trade.—Golden Chain Geraniums.

HUSSEY AND SON beg to offer fine Autumn-struck Plants of the above from store pots, at 14s. per 100; Also DWARF ROSES, all the leading Hybrid Perpetuals, on Manetti Stocks, 40s. per 100
Mile End Nursery, Eaton, Norwich.

To the Trade.

TOM THUMB GERANIUMS, in 48-pots, 8 to 10 inches over 5s. per doz.; 35s. per 100
Also CHRISTINA, STELLA, MADAME VAUCHER, and OAK-LEAF GERANIUMS, 3s. per doz. Delivered free within 10 miles.
THOMAS S. WARE, Hall Farm Nursery, Tottenham, Middlesex, N.; adjoining the Railway Station.

LAMOUREUX, CLARK, AND CO., SEED MERCHANTS, Plymouth.
The SEED CATALOGUE and GARDEN DIRECTORY for 1866, now published, will give full particulars respecting prices and other matters in connection with the Business. Will be sent gratis and post free to any address in the kingdom

Genuine Garden and Agricultural Seeds.

PAUL TOLLARD, SEED GROWER AND MERCHANT, 20, Quai de la Megisserie 20, et devant 4, Place des Trois Maries 4, à Paris. SPECIAL PRICED LIST of NEW SEEDS, in English weights and money, on application.

New Descriptive Catalogue of Vegetable and Flower Seeds, &c., for 1866.

ROBERT T. MACKINTOSH, NURSERYMAN and SEEDSMAN, 12, Melbourne Place, Edinburgh, begs respectfully to intimate that the above LIST, containing several New and interesting Novelties, may now be had post free on application.

Genuine Garden and Farm Seeds to be had at

THOMAS KENNEDY AND CO.'S
Nursery and Seed Establishment, Dumfries, N.B.
And delivered free of carriage as formerly.
PRICED CATALOGUES furnished on application.

Notice.

PURCHASERS of LARGE QUANTITIES of FARM or GARDEN SEEDS will be supplied liberally by SUTTON & SONS. For prices apply (stating quantity required) to
SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

The Gardeners' Chronicle.

SATURDAY, MARCH 3, 1866.

MEETINGS FOR THE ENSUING WEEK.

MONDAY, March 5—Entomological .. 7 P.M
TUESDAY, — 6 { Royal Horticultural, Floral and Fruit Committees), at South Kensington .. 11 A.M / Dublin Society, Discussion .. 3 P.M
SATURDAY, — 10 { Royal Horticultural (Weekly Show), at South Kensington .. .. .. 2 P.M

THERE are some few plants that may be termed citizens of the world. Go where we will we meet with them. The common WATER-CRESS is one of these cosmopolitan plants, not quite so widely diffused as some others, but still to be found almost everywhere throughout Europe, in Southern Asia, in America, in Brazil, in Chili, in India. A pretty wide range that, and we might extend the list of countries wherein collectors have rejoiced to light upon so familiar a denizen of our home ditches. But our object is not so much to illustrate a fact in botanical geography, as to justify that craving for salad and green food which is of so general an occurrence among us, especially in Spring time. M. CHATIN, in a communication laid before the Botanical Congress at Amsterdam last year, and more fully in a recently published little volume, gives us good reasons for our longings, at least in the matter of Water-cress.* In this humble weed we have a veritable medicine chest, whose contents have

* Le Cresson, par Ad. Chatin, &c. Paris, Bailliere, pp. 126.

the additional merit of being palatable. See the composition of the plants as analysed by M. CHATIN. Here is the sapid oil which all the Crucifers have in greater or less degree, but mingled in this case with sulphur and nitrogen, such as one meets with in the Onions. So far then we have a combination of the ingredients of the notoriously wholesome Crucifers, with the equally health-giving properties of the Allium tribe. Next a bitter extract—not so bitter as to be unpleasant, but only sufficient to act as a gentle, pleasant tonic. Then, in notable quantities, are iron and iodine—no more nauseous draughts of chalybeate waters—no more inky mouthfuls of the syrup of iodide of iron! Have we not in the Water-cress the iodide of iron already prepared for us in an agreeable form in Nature's laboratory? No wonder, then, that by natural intuition we have found out that the Water-cress is an excellent anti-scorbutic. We thank M. CHATIN heartily for supporting by scientific demonstration the conclusions at which we had arrived by inclination and experience. Oddly enough, M. CHATIN'S attention was first drawn to the subject by a quotation in the "Vegetable Kingdom," wherein the presence of iodine in Water-cress is alluded to. This furnished the germ of the work before us, wherein in addition to the chemical details to which we have alluded, the reader will find a sketch of the botanical history of the plant, much information as to the best methods of culture to be adopted so as to secure the most savoury product, and many other particulars that cannot fail to interest not only those who have a "running brook," not too deep or muddy, but sufficiently charged with iron and its constant companion iodine, in which the plant may be made to flourish, but also those less fortunate individuals who have to depend upon London *gamins* of either sex for a supply of "*Ove-eses.*" The commercial importance of the culture cannot be slight, inasmuch as it is calculated that the average daily supply to Paris of Water-cress amounts to 2000 dozen bunches, filling eight to ten small carts, and representing a money-value of 4000 francs, or 160*l.* sterling!

WE may leave to architects and the cultivators of the fine arts, the duty of criticising the doings and intentions of the Metropolitan Board of Works as regards the buildings to be erected on the THAMES EMBANKMENT, but as cultivators of the soil we claim the right to be heard on the question of planting it with TREES. The subject was indeed referred to in our columns some time ago, but we revert to it now, as the time is approaching for giving permanent shape to this great undertaking.

The space which is to be reclaimed and utilised from the foreshore of the Thames, is, if we rightly understand the plan proposed, to be devoted in part to roads and in part to buildings—to the former as a means of relieving the overcrowding of the existing streets, and to the latter we presume as a profitable investment, inasmuch as they will add but little to the beauty and utility of the reclaimed space, which, on the principle of "nothing like leather," we maintain might be more tastefully, if not more profitably, occupied as gardens.

With the question of terraces and crescents, however, we have no wish to become involved; but we enter a determined protest against buildings of any sort being allowed to press too closely upon the river frontage, north or south of the waterway; and we call most earnestly and emphatically on all who have any voice or influence in the matter, whether in or out of Parliament, whether on or off the Board, to secure above all things spacious thoroughfares, such as may be planted with trees to form a northern and a southern boulevard. Thus we may at least secure to our metropolis one feature of which an Englishman may be proud. No considerations of cost must be suffered to intervene to prevent the working out of this feature, for that would be to rob London of a great present opportunity of effecting something worth the name towards its internal improvement.

The question presses for immediate solution, and its importance in a sanitary point of view can scarcely be overrated. It is neither more nor less than that of securing in our overgrown metropolis a grand outlet for stagnant air as well as stagnant traffic. It is to give London an imposing feature, for which it would not be easy to find a parallel elsewhere, and that by means of rearing a stately avenue on either bank of its noble but sadly desecrated river, and by forming in connection therewith spacious thoroughfares in which the pent-up population may freely breathe and as freely move. Such an opportunity does not often occur, and must not now be lost, either by indifference or oversight, or by what is worse, the parsimonious scruples or the wilful neglect of those whose special duty it is to watch over and regulate works of this kind. What we want, and that which we claim on behalf of our enormous town population, is that the river frontage or quay wall shall be left entirely free; that adjoining it, for a width of from 80 feet to 100 feet, or more if it can be secured, shall be constructed a roadway, with the necessary footways on either side, the road itself forming one avenue if the narrower width only can be spared, but parted in two if the greater width can be secured; that on each margin of the road, as well as down the centre if it is divided, there shall be placed a line of properly selected trees, carefully planted with due regard to their ultimate prosperity; that open spaces shall be kept here and there for Grass and trees; and finally, that these lines of roadway and these avenues of trees shall exhibit as little deviation from a straight line, at least from bridge to bridge, as the nature of the case will permit. Above all, let us have our avenue of trees. They will add a graceful feature of ornament to the river's banks, and while they beautify the scene they will at the same time serve to purify the atmosphere, and to impart an agreeable shade, which will be gratefully appreciated by every passer by.

—— THE Third Part of the SELECTA FUNGORUM CARPOLOGIA of the Messrs. TULASNE, and which we fear will be the last, has just been published. It comprises notices of the bright-coloured fleshy Sphæriæ belonging to the tribe of Nectriæ, together with the Phacidiei and Pezizæ, which constitute the most noble tribes of the Ascomycetous Fungi. We purpose on a future occasion to give a detailed account of the volume. We had hoped that these admirable mycologists would have taken up the inubils, which are so important in a horticultural and economical point of view, and we still trust that their attention will not be drawn off to other matters. Meanwhile we recommend all who are interested in a complete solution of many of the difficulties which attend the study of the lower Fungi, or who think it a duty to encourage labours involving so much time and expense, to secure a copy of the work, of which only a limited number is printed. A reference to our Journal of February 22, 1862, will show what are its especial claims. *M. J. B.*

—— M. CAMILLE PERSONNAT, of the Sericiculture School, 19, Bretagne Street, Laval (Mayenne), states in a letter to the *Times*, in reference to the OAK SILKWORM, that there are three species of silk-producing insects known to feed on the Oak. First, the Bombyx Yama-mai of Japan, where it was always exclusively cultivated. This is the most valuable for its produce, and is the sort which has been acclimatised in Europe; the cocoons are of a beautiful yellow-greenish colour, and the silk is as fine as that of the Mulberry-worm. Secondly, the B. Pernyi, of the north of China, which produces the gridelin cocoon and silk. Thirdly, the B. Mylitta of the hills of the East Indies, which produces a large cocoon and grey silk, which silk, like that of the Pernyi, is greatly inferior to the Yama-mai silk. M. PERSONNAT is about to publish a Guide ("Le Ver à Soie du Chêne, Bombyx Yama-mai"), which is to treat of the history, rearing, habits, and products of this insect, the demand for eggs of which, he states, has been so great that he has but few left to dispose of. In a letter of subsequent date relating to these silkworms, Lady DOROTHY NEVILL, of Dangstein, writes: "I have cultivated them for two years with the greatest care, and from my observations I fear that they will never stand our changeable climate. I reared them successfully, both under glass and in the open air, till the fourth change of skin, when they all died of a malady called 'pebrine,' induced by a few days of rainy and cold weather in the month of June. The Ailantus worm, on the contrary, is perfectly hardy, fearing no rain or wind, or even a slight frost. Its only enemies are in infancy the ants; in old age the tomtits. I rear many thousands every year without the slightest difficulty, and I shall be glad to give any person the benefit of my experience. To show they are gaining much in the public estimation since I introduced them into England three years ago, I have sold and given away 70,000 eggs annually, besides sending cocoons to all parts of the world; and more than that, I have a gown made from the silk. I intend trying the Oak-worms again this year, and hope to have more success."

—— We are informed that a Society has been formed under the title of the West Middlesex Gardeners' Mutual Protection Society, and consisting of working gardeners only. The main objects of the Society are to endeavour to secure to journeymen gardeners a rate of wages not less than 3*s.* 6*d.* a day of 10 hours in summer, and from daylight to dark in winter. The Society's affairs are conducted by a committee who meet weekly at the Workman's Hall, Portland Road, Notting Hill, where a register is kept of gardeners out of employ, and where further information may be obtained from the Secretary.

—— The absence of winter weather till recently seems to have been no less marked across the Channel than with ourselves. At Cannes it appears that the ORANGE TREES are in blossom as in the month of May, and supply the distillers and perfumers with flowers; while the grounds planted with Rose trees present a magnificent sight, the trees being covered with Rosebuds.

—— Mr. JAMES BRITTEN is collecting materials for a FLORA of BUCKINGHAMSHIRE, and would be glad of any assistance in the way of local lists, notes, &c., of plants from any part of the county. The value of such communications would be much enhanced if accompanied by illustrative specimens. Further information will be given on application. "The smallest contributions thankfully received." Address, Mr. JAMES BRITTEN, High Wycombe, Bucks.

—— We are glad to be able to announce that the meetings of the BOTANICAL CONGRESS which is to take place in connection with the International Horticultural Exhibition, will be held in the Raphael Cartoon room of the Kensington Museum, by permission of the Lords of the Committee of Council on Education. We hear also that several papers are already promised, and that the meeting is likely to be a successful one.

NEW EARLY PEAS.

I HAVE read with much pleasure, as every gardener, and every lover of his garden, ought to do, the very useful Report on the varieties of Peas grown in the Royal Horticultural Society's garden at Chiswick. I must confess, however, that the pleasure I derived was tinctured with a little vexation, for I had been victimised to a small extent in buying Peas at 2*s.* 6*d.* a quart, which I could have bought under their old names at 1*s.* I sincerely hope and trust that the above-mentioned Report will be useful in dispelling the illusions of testimonials from individuals. No private note or letter should ever be published by men of business as a testimonial—no dependence will, I think, in future be placed on these effusions; there is no doubt of the sincerity of the writers, but a strong one as to their judgment. In proof of this I must quote a few words from the Report, and then give the information I have gathered from it.

"The variety that has been considered the earliest for several years past is known by the name of Dillistone's Early, which is a carefully-selected stock of a very old early Pea, known as the Early Kent or Early May," and I may add the *alias* of Single-blossomed Early Frame. In good common-sense times two sorts of Early Peas were grown and sold, the Single-blossomed Early Frame for the first crop, and the Double-blossomed Early Frame for the second—there has been no change in the sorts, but a marvellous one in names.

It seems that a few years since the late Mr. Dillistone, then occupying a small nursery in Suffolk, selected from the Single-blossomed Frame a pure stock, which he named Dillistone's Early. According to the Report this is the sort which now bears the names of Ringleader, First Crop, and First and Best, so named by three seedsmen who added their names to these quasi new early sorts of Peas. This would have been of little consequence if the old price had been adhered to, but to be made to pay 2*s.* 6*d.* a quart for merely a good stock of an old sort generally sold at 1*s.* a quart, is not quite as it should be.

How much more business-like it would have been if the first selection had been named "Dillistone's Selected Frame," and then, when other growers had purified the stock by selection—a very commonplace affair—they might have placed the sort in their catalogues as "A.'s Selected Early Frame," "B.'s Selected Early Frame," and so on. If the sort proved good and pure, the firm sending it out would have soon gained a reputation for it, and a large sale would have followed. In all matters pertaining to gardening the exact truth should be adhered to. Besides the three sorts of Peas I have named, I find some others in the Report which have been heavily testimonialised, yet have proved merely old sorts under new names. Let us hope that after this *exposé*, testimonials, unless from a public body, will go out of fashion.

It must not for a moment be thought that I have any inimical feeling towards those enterprising firms who furnish us with Guides, Vade Mecums, and Illustrated Catalogues, got up at a heavy expense; in my opinion they have done much good, for they have made thousands take a warm interest in their kitchen gardens, who at one time never looked into them, and never expected anything more from them than a Cabbage and a Potato. It is only to be regretted that their zeal has carried them too far, for in reading their eloquent descriptions of a Pea or a Potato, that little ugly word "puff" will come to mind. I hope and trust the

day will come when, instead of 50 sorts of Broccoli, 30 sorts of Cabbage, and 50 sorts of Peas, we shall have some 10 or 12 of the really useful sorts of each, truthfully described, and, above all, let us humbly pray for the omission of testimonials. *F.R.H.S.*

EXTRACTS FROM THE JOURNAL

OF MR. JOHN GOULD VEITCH,

DURING A TRIP TO THE AUSTRALIAN COLONIES AND THE SOUTH SEA ISLANDS.

(*Continued from page 172.*)

June 30. Savage Island.—In addition to what was stated about this island in my last, I ought to say that we were received here with great civility, but could obtain nothing without an equivalent in the shape of fish-hooks, Jews' harps, coloured prints, &c. I was not even allowed to take up some Palms without paying for them. The island is thickly covered with luxuriant vegetation, but no large timber trees.

Ferns are plentiful, but I only saw some six or eight kinds. A fine species of Livistonia, with immense foliage, particularly struck me. The principal crops are Yams, Cocoa Nuts, Arrowroot, Sugar Cane, Caladium esculentum (Taro of the natives, from which a kind of bread is made), and Broussonetia papyrifera. The latter is grown for the sake of its fibre for making cloth and mats. There appear to be no wild animals or venomous reptiles. The mean temperature during the year of 1864 was 80°.

July 9. The Samoan or Navigator Islands.—Two days after leaving Savage Island we sighted Tutuila, one of the Samoan group. As we proceeded to the northward the heat became very great, and during rainy days was most oppressive. On the 1st of July we anchored in the harbour of Pango-pango, said to be the best in the group. It is probably an extinct crater, and is a very beautiful spot. Entirely land-locked, the hills rise abruptly on all sides to a height of nearly 2000 feet, being covered with luxuriant vegetation to the summits. Patches of cultivation occasionally appear some little way up amidst the otherwise dense forest, whilst small villages and Cocoa-nut plantations are scattered along the beach. Immediately on anchoring we were surrounded by scores of natives in outriggered canoes, bringing off curiosities and articles of food to barter with us. Missionaries have resided on the Samoan Islands since 1830, and almost all Samoans are nominally Christians. At all events they have given up their heathenish practices, and respect life and property. They are a remarkably fine race of people, with a bright copper-coloured complexion. The men are quite as tall and well-built as those of any European race. Their only dress is a covering for their loins of native cloth, made from the bark of the Paper Mulberry. Some of them are tattooed about the body, and both men and women bedaub their hair with lime. The women as a rule are pleasing in appearance. They are now all dressed in frocks of European cloth. The whole population received us with open arms, inviting us to their houses, and offering everything they possessed in the shape of eatables. The houses consist of enormous round, pointed, thatched roofs, standing on poles 3 to 4 feet in length. The sides are quite open, to allow plenty of ventilation. The floors are neatly matted over, and everything looks wonderfully clean. Each district contains a building kept expressly as a church, and every seaside village of importance has a large boat-house, in which the large double war-canoe is kept. Some of these are capable of carrying 200 men. Elephantiasis disfigures numbers of the people. It is a disease very prevalent amongst the Polynesians, causing the legs and feet to swell to a disgusting size. There is said to be no cure for it. Maunga, the chief of Pango-pango, dined with the Commodore, after which an exchange of presents took place, and a war dance was performed by upwards of 100 men and women for our especial edification. It was a strange sight. The men oiled their bodies and decorated themselves with wreaths of scarlet Hibiscus flowers. The only music was a Bamboo drum, in addition to which all clapped their hands, and repeated some native words in a low drawling tone of voice. The dancing consisted of throwing the body into various positions and in jumping about. The noise was terrific, so that we were all glad when it was over. Our stay at Tutuila was only three days. Under the guidance of a native I spent each day in the woods. The vegetation is very luxuriant, and the forests are so thick as to be almost impenetrable, were it not for the native tracks. This island produces some 150 Ferns, including several arborescent species, and some beautiful Trichomanes and Hymenophyllums. There are upwards of 90 Mosses. The Cocoa-nut is the only Palm. Cocoa-nut oil is the great article of trade and barter.

Dracæna terminalis, ferrea, and several other species are common. Some are cultivated. A spirit is distilled from the stems, and the dried leaves are used for clothing. Orchids are very scanty and not at all showy. Fruit abounds throughout the whole Samoan group. Bananas, Oranges, Lemons, Limes, the Papaw Apple (Carica Papaya), the Malay Apple (Eugenia malaccensis), &c., are very common. The chief vegetables are those on which almost all the Polynesian and Melanesian races live, viz, Yams, and Taro or Arums. The former grow to an immense size. Three presented as a Royal gift to the Commodore, measured over 4 feet long by 18 inches in circumference. There are endless varieties of Arums (Colocasia antiquorum var. esculentum). Every available damp and swampy spot is converted into a Taro plantation. In addition to this the corms of Alocasia indica are eaten. This plant attains an enormous size, often over 12 feet high. During my rambles I came upon the village of Fang-a-saa on the opposite side of the island. I was entertained here with a genuine Polynesian dinner, consisting of a pig, Yams, and Taro, cooked in an oven of heated stones, and the great Polynesian beverage Kava. This is the grog of the country, made of the root of Piper methysticum, prepared as follows. It is chewed by young girls until quite masticated, when it is placed in a polished bowl and mixed with water; after being well mixed and strained through a bunch of fibre it is ready to drink. The preparation and appearance is anything but inviting, and the taste can be compared to nothing better than strong soapy water. It is an act of etiquette to offer every stranger this beverage. The natives are passionately fond of it, and become quite intoxicated on it. The kava bowls are beautifully polished, and looked upon as the most valuable piece of family furniture. They are generally made of Calophyllum Inophyllum.

From Tutuila we went to the island of Upolu, another of the Samoan group, and anchored in the harbour of Apia. The appearance, habits, and customs of the natives are much the same as those of Tutuila. If possible, they are still more cleanly. The people are quite peaceable, but they are certainly not improved by their intercourse with Europeans, of whom there is a considerable number at Apia, including an English consul. Nominally the whole population are Christians. Their spears and clubs are now looked upon as curiosities more than weapons.

Upolu is a beautiful island. The mountains rise to an elevation of nearly 4000 feet, gradually sloping down to the sea-coast. Nearly the whole population live on the sea-coast, in an almost continuous line of villages. The vegetation is most luxuriant. The soil is fertile, and capable of producing almost any tropical crop. Cocoa-nut oil is at present the chief article of trade, but Coffee and Cotton are now being largely planted, and are thriving well. Beautiful arrowroot is made from the root of Tacca pinnatifida. The climate, although hot, is said to be healthy. The mean temperature during our stay was 78°. The inland scenery is very pretty. On ascending the mountains the trees are loaded with Ferns and Mosses in great variety. The timber of the country is small.

At some 14 miles from Apia there is a large lake formed in the crater of an extinct volcano, at an elevation of 3500 feet. On its banks I found two new Palms, while on the low lands the beautiful Fan Palm, Pritchardia pacifica, is often met with. Fourteen species and varieties of Dracænas are common, some cultivated and others wild. Two or three species of Pandaneæ are also met with. Parasites are very numerous. Ferns, Lycopodium Phlegmaria and dichotoma, Dendrobes, Bolbophyllums, Cœlogynes, Calanthes, and Bletia Tankervillia abound. The flowers of the Orchids as a rule are not showy.

(*To be Continued.*)

THE LATE RAINFALL.

THE quantity of rain which has fallen during the last 20 weeks is so unusually large that some notice of it will doubtless prove interesting. With only one exception more has fallen in the above period than in any consecutive 20 weeks for at least the last 25 years, and that was in 1852. The respective amounts which fell in the two periods are here given in a contrasted form :—

Wet Period of 20 Weeks in 1852.		Wet Period Oct. 1, 1865, to Feb. 17, 1866.	
Days.	Amount of Rain.	Days.	Amount of Rain.
	Inches.		Inches.
Aug. 31	3.71	Oct. 31	6.25
Sept. 30	3.54	Nov. 30	1.70
Oct. 31	3.87	Dec. 31	0.92
Nov. 30	6.29	Jan. 31	3.58
To Dec. 18	1.40	To Feb. 17	3.10
1852—140	18.81	140	15.55
1865 6—140	15.55		

Difference 3.26 less in 1865-6, than in 1852, in similar periods of 20 consecutive weeks.

It must be observed that the 1852 period includes the warm months of August and September—two hot months, when consequently a large amount of moisture must have been carried off by evaporation, whereas much of the recent fall of rain took place in the winter months, after a great portion of the large amount which fell in August had been absorbed by the previously very dry soil, and was retained to saturate the latter—which is the case to a greater extent than has been known for many years. The springs have not been so high since the wet period with which we have compared the present, 1852.

There is an open well at Chiswick which serves as a gauge for indicating the level of the water in the gravelly substratum. That level is now 2 feet 10 inches below the brick-in-cement coping, or surface of the ground. At the present time it is yet 4 inches lower than it was in 1852. Since the latter date the springs have been much lower, as appears by the following measurements of the same well :—

Depth from the surface of the ground to that of the water in the well :—

	ft.	in.		ft.	in.
1859	8	9	1861	5	5
1860	9	3	1862	7	3
1860, Feb. 1 ..	5	7	1863	7	10
,, Oct. 17	8	11	1864	8	3
,, Dec. 31	1	4	1865	8	0
			1866, Feb. 17 ..	2	10

Whilst the springs were from 7 to 9 feet below the surface of the ground, and wells had to be deepened about London and elsewhere, many persons were of opinion that the water would never rise so high as formerly; but the present instance proves the contrary. It was a good time to sink wells, in 1859, when the springs were at their lowest; because if they were sunk so deep as to afford then a plentiful supply, there is a great probability that it will not at any time fail. But, on the contrary, those dry seasons were not the best for making stockholes and setting boilers for hothouse heating; for some that would have had their fire-places perfectly dry 9 feet below the surface, can now have no fire, but instead, 6 feet of water. It might prove very useful to those interested in horticulture, as well as agriculture, to mark the height to which the sub-soil water rises at the present time; for although it may gradually subside, it may rise again, when severe frost may supervene, and with more disastrous consequences to valuable plants. There is no excuse for not building new houses sufficiently high from the water; and those that are built should have flat instead of tall adaptations of boilers, so that the stockholes need not be so deep; and after all the flat may prove the better in other respects.

The arrear of rain at the commencement of 1865 was 10¼ inches: at that of 1866 it was reduced to 6.97 inches; and we have had in January of the present year 3.58 inches; and in the first three weeks of February, 3.22 inches; being together 6.80 inches, which is 4.06 inches above the average for the period since January 1; and by this the arrear of rain is now reduced to somewhat less than 3 inches. *R. T.*

CULTURE OF THE WHITE SPANISH ONION.

THE writer of the following short article on the cultivation of the true White Spanish Onion, has been very successful in growing this most useful bulb for the last seven or eight years. Cultivating mostly for horticultural shows, he has, however, perhaps bestowed more labour on it than an ordinary amateur gardener would consider necessary for "home" use. He has always found that the best situation for an Onion-bed is the most open space in the garden; and he has repeatedly, for five years in succession, grown Onions on the same piece of ground, plenty of air and sun being extremely necessary, as the plant is very susceptible of blight, mildew, &c., at particular periods of the season.

Having selected the spot of ground, let it be well double-dug and trenched as roughly as possible in the autumn; in doing this be careful to remove all large stones, &c., that may be brought to the surface in throwing up what is called "hungry soil." At about Christmas time, when a moderate amount of frost has set in, begin to manure the ground with the following proportions of rotten dung, viz.: three-sixths pig, one-sixth cow, one-sixth horse manure, and one-sixth road dirt, adding to the whole about 20lb. of common salt, and mixing all well together; spread this compost about five or six inches thick on the ground. On cold stiff soil the road dirt and salt may be dispensed with, and the same quantity of rotten horse manure used instead. Let this lie till some time about the end of January, at which time well dig the ground again, and a second time pick out all large stones, removing those on the surface carefully with a rake.

In about a fortnight afterwards, say about the middle of February—the seed should be sown, selecting the latter part of the first fine day for the operation, when the ground is pretty dry. In choosing seed, be careful to procure the true White Spanish.

For finally preparing the ground, give it a thin layer of a mixture of burnt garden ashes, a few pounds of Peruvian guano, and some rotten manure, the whole having previously passed through a sieve. Rake the ground evenly all over. Draw drill lines from end to end about three quarters of an inch deep, and 10 or 11 inches apart, and thinly deposit the seed. Cover over with the back of a rake, and let it remain about eight days. Then on a fine afternoon, when the ground is pretty dry, well tread the bed all over, and, with the back of a spade, beat it evenly. Some time towards the end of April, when the Onion is 4 or 5 inches high, go carefully over the bed with a small flat trowel in one hand and press down, close to the Onion, all holes that may have

been made by worms. In about 10 days' time begin to single out the Onions to about an inch or so apart; in doing this, however, be careful not to disturb those which are to stand. Use a knife for this purpose, and do not raise the earth, but cut the roots off close to the bulb. In this way the fibres of those intended to stand are not broken.

From this time, for a month or so, hand-weed and gradually again thin the bed, till the Onions stand 7, 8, or 10 inches apart. Then give it another layer of about half an inch of burnt ashes, a few pounds of guano, and dry sifted rotten manure evenly all over the bed, close to the Onions.

Towards Midsummer, when the plants have begun to throw out good-sized bulbs, if the weather should continue dry, watering will be necessary. This should be done in the evening, with a very fine rose on the watering-pot, giving the bed a thorough soaking. The rose for this purpose should be made of copper, as when of this material the holes may be drilled to any size. From this time great care should be taken in moving over the bed not to bruise the tops of the plants. When they have attained a good size—say about July—liquid manure may be beneficially used on the bed previously to watering it; in this operation, however, be careful not to let the liquid touch the bulb; on the contrary, pour it between the rows with a small watering-pot without a rose. Occasionally, as the bed becomes somewhat hard on the surface from watering, slightly stir and level the soil with a trowel or small hand-hoe. Continue to water and to apply liquid manure till the crop is ripe and fit to be harvested in September. *An Amateur Gardener in the Midland Counties.*

GARDENERS AND THE ROYAL HORTICULTURAL SOCIETY.

SUPPOSING the new plans for instructing, certifying, and elevating gardeners to be liberally and successfully carried out, is there anything further that the Horticultural Society can do for them? I think there is. However successful the scheme may prove, it can only directly benefit the rising race of gardeners. Indirectly indeed it may and ought to better the condition of all. But the bulk of the profession can neither go to Chiswick to be instructed, nor obtain its diplomas as vouchers for their talents. But there are other modes by which the Society may effectually and substantially benefit all gardeners, while at the same time it would extend its own influence, and augment its prosperity.

The new examination in Floriculture and Horticulture, inaugurated by the Society of Arts, at the instance, I believe, of the Horticultural Society, is one of these modes. In so far as this extends the teaching and examining, it will also widen the area of the certifying system, with its concomitant advantages. Therefore, I trust the Society will make special efforts next year to increase the number of prizes in each of these classes from three to 20 or 30. The amount of the prizes might also be augmented.

I see by the Report of the Education Committee of the Royal Agricultural Society for 1865, that 300*l.* were appropriated by that Society as prizes for successful examinations in such branches of science as are applicable to the study of practical agriculture. The examinations are held in connection with the two Universities, and the subjects are Mathematics, Mechanics, Chemistry, Zoology, Botany, and Geology. The elder scholars from public schools have access to these examinations by filling up the necessary forms, and passing through some preliminary stages, and some are open to any young men under 25 years of age, recommended by a member of the Society, and intending to make agriculture his profession. Surely we ought to have something analogous to this, if less ambitious and expensive, in connection with the Royal Horticultural Society. It would cover a different and much larger area than the Chiswick scheme, and would be almost as efficient in teaching the ground-work of our business.

Then the Agricultural Society has its great Prize Essay department. This year I find prizes are offered of 50*l.* each on the Farming of Leicestershire and Warwickshire; on Town Dairies, 25*l.*; Mountain Breeds of Sheep, [illegible]; the Leaves of Plants with Reference to their Power of Resisting Drought, 20*l.*; the Improvement of Waste Land, 15*l.*; the Use to a Farmer of a Magnifying Glass, 1[illegible]*l.*; any other subject, 10*l.* Here, then, is another sum of 200*l.* expended on the encouragement and development of agricultural talent. Surely the demand for a higher gardening literature and the interests of horticulturists alike invite the Royal Horticultural Society to occupy the Prize Essay field. There is no lack of subjects, nor of men eminently qualified to treat them; and the scheme might be rendered by the publication of Essays almost, if not quite, self-supporting, or even a source of profit. At the present time nothing could be more useful than exhaustive Essays on such themes as these—the Influence of Situation on the Production of Perfect Grapes under Glass in Great Britain and Ireland; the Relative Importance of Form and Colour in the Grouping of Flower Gardens; Repose; its Place and Power in Gardening; the Cause and Cure of Low Wages among Gardeners, &c. There are other lessons, too, which the Horticultural might learn from the Agricultural Society. The question arises whether it might not effect more good by holding an occasional Show in the provinces than by expending all its energies on Chiswick and the development of promenade gardening at Kensington. Certainly it ought to wield a national, and not simply or chiefly a local, albeit a metropolitan influence; and I believe its own prosperity and the interests of gardening would be promoted by its occasional migration into new ground, on the principle of the Royal and other Agricultural Societies. In addition to all these stimulants which the Agricultural Society gives to agriculture, there are its splendid prizes at its exhibitions, and the distinguished patronage and support it affords to the College at Cirencester. It has been too much the custom to boast of gardening being the pioneer of farming progress. But it seems now as if the latter had stolen a march upon the former, in so far at least as rewarding merit and encouraging the acquisition of knowledge is concerned. Most of what the Agricultural Society has done for the science and practice it represents is surely within the reach of the Horticultural Society to perform, and I trust it will at once proceed to render analogous services to horticulture. The prize essay system would not only test, prove, and display ability, but it would do more, and better, it would reward it. And this not only by a money payment but by the social and material elevation that high intellectual work will generally achieve for the workers. Whatever may be thought of this elevation in itself, it will prove invaluable in assisting gardeners to a more independent position; next to, or even before, an augmentation of means this is our greatest necessity. At present gardeners are wholly in the power of their employers and nurserymen. I have no wish to control the just rights or legitimate influence of either. Personally I have nothing to say against, and much in favour of both. But absolute power is a dangerous possession, and, as human nature goes, is always abused. No men or class of men can submit to it without degrading or losing their manhood. The sickening subserviency that we occasionally meet with among gardeners, that fires our indignation while it excites our pity, arises from their utter helplessness. Gardeners are too often handed back and forward between nurserymen and employers almost automatically; they have scarcely a voice in the matter. If they object to terms, or stipulate about wages, so fearful is the nurseryman of losing a customer in the employer, that another man is pushed forward for the place. The present mode of filling gardeners' situations not only saps our independence, but eats into the very core of our self-respect. Our highest interests and our very manhood are frittered away by those who may not care for either, and ought never to have been entrusted with the keeping of both.

It is hardly possible to exaggerate the magnitude and intensity of this evil, nor to measure the full force of its deteriorating influence on the character and position of gardeners. In romance we often meet with poverty and powerlessness associated with independence. And to the honour of gardeners be it stated, that among them, though poor, there are many who will bow to no patron's insolence, nor cringe to vulgar wealth. Still it must be admitted, that our position is not favourable to true independence of character. An empty sack can hardly be expected to stand upright, it can only be kept erect by being filled or held up; in the latter case it must be entirely at the mercy of those who hold it—if they relax their grasp, down it must fall. Gardeners are too much like the empty or half-filled sack—they have not been filled up with good wages, and have thus been compelled to be held up mainly by nurserymen and employers. The result might have been anticipated: between them we have been kept pretty close to the ground, and that too not more perhaps from their faults than our own faults and misfortunes. In many respects both their interests are different from ours, and it is impossible to censure them severely for preferring their own interests to those of others. Our greatest folly consists in allowing ourselves to continue so entirely at their disposal. It is much easier, however, to put one's finger upon this evil than to discover a remedy for it. From the very nature of our business our tenure of office is precarious. Our business is a luxury, it is therefore the first to succumb to tightness or embarrassment in domestic exchequers. It touches on the domain of high art, and for this reason, success or failure in it cannot be judged by arithmetical or other vulgar rules. Such vital questions to gardeners are often determined by mere matters of opinion and of taste, and nothing can be more unstable or capricious than these. We have also to do battle with all the forces of nature, and the tempers and whims of men. It, therefore, can be no matter of astonishment that the best men sometimes fail, and that ordinary men may often do so. Hence it comes that change of situation becomes a far too common event in the life of gardeners. These are the crises of their being; their character must be flawless, or ruin stares them in the face. This fact places them in the absolute power of employers. Doubtless the majority of them make a point of giving their gardeners a fair and honest character, but there are many exceptions, and what becomes of them? They generally appeal to nurserymen. Now, however anxious these may be, and many of them are anxious to serve gardeners, they have neither the time nor qualifications requisite for such functions as the utter helplessness of gardeners out of place now demand of them. Besides, naturally they will lean to employers. Their wealth supports them. They are proud of their patronage, and court their favour. It is no heavy censure to add that the interests of gardeners are often freely sacrificed to the acquisition of a new or the retention of an old customer. And the evil does not end here: our excessively dependent position demoralises large classes of gardeners—they are ready to crawl in the dust to please their employers, and almost to eat it to conciliate nurserymen. Such slavish fear and toadying servility among us tends to drag down the whole profession.

Now it is just at this point that the Royal Horticultural Society might come to our help as a friend in need, and, therefore, a friend indeed. It might constitute for us a sort of court of final appeal in disputed cases, and provide a Central Registration Office. Already the Society has its special committees for special purposes—its Floral and Fruit divisions for instance. I propose that it should add one more—"the Gardeners' Committee," the chairman of which and one half of the members to be practical gardeners, living by their business. To this committee would be committed the settlement of disputes, and the consideration of all questions affecting the interests and status of gardeners. It would also exercise a general control over the Registration Office. If it be objected that such arrangements would make the Royal Horticultural too much of a Gardeners' Society, I reply that its chief fault and source of weakness is, and has been, that it has partaken so little of this character. A real horticultural society strenuously engaged in improving horticulture, and all but ignoring or neglecting the improvement of practical horticulturists, is an anomaly that ought no longer to exist. The great, perhaps the only fault of the Society now is, that practical men are either overshadowed or silenced at its Councils by mere wealth or position. And yet all experience proves that the surest and most certain mode of improving any art or practice is to raise the practical men engaged in the same. If they are ignorant, dispirited, depressed, they will degrade their business to their own level. If their condition is raised, the profession will rise with them. This is emphatically the case with gardening and gardeners. Much has been well said of the evils to our business springing from the unnatural divorce between science and practice; doubtless they have been many and great; but gardening has been retarded, degraded—I had almost said disgraced, most of all by the attempts to bring it to perfection, while the living men upon whom all ultimately depends, have been left deep down in the dark valley of anxiety and suffering, engaged in a hand-to-hand struggle with adverse circumstances for bread. It seems necessary to repeat even now that gardeners are not only a branch but the very root and stem, as it were, of horticulture. Surely those who enrobe that science in beauty and usefulness by the work of their brains and of their hands, are as worthy of the support of the Society formed for its promotion as the men of science who inform us how it is done, or the men of wealth who find the money to enable us to do it. I do not say that the two last have received too much support from the Royal Horticultural Society; but I do affirm that gardeners have received too little, and ask for the future that we be recognised not as weak feeble outsiders, entitled to a little sympathy or help, but as men forming the vertebræ of horticulture. Constitution, stamina, and substance are some of the points that the Society recognises and rewards in the plants brought under its notice. We only ask that it make some efforts to develope analogous qualities in gardeners. It has now a rare opportunity of giving practical men their true position, and proving to all that it recognises them as a vital part of horticulture—entitled to as much or more encouragement than any other branch of this wide science. Without stooping any lower itself, it may raise gardeners to its own level. By little or no expenditure of means it may add very much to our wealth. And without sacrificing an atom of its dignity, it may give us the full measure of independence we claim.

Some may fear that such a court of final appeal as I have hinted at would increase the number of disputed cases among gardeners. I believe it would have an opposite tendency. One-sided referees are sure to be surrounded by crowds of partisans. But once establish an impartial tribunal, and each party will be careful not to worry it with vexatious trifles. The mere knowledge that such appeals were possible would check disputes on both sides, and the preventive power of such a court would be infinitely more useful than its semi-judicial decisions.

To the Gardeners' Committee would be committed the general management of the Central Registration Office. Here books would be kept for entering the names of all applicants for gardeners, and all gardeners applying for situations; every gardener who satisfied the committee as to character and ability to have his name entered and the wages he required stated. Here also might be registered certificates of talent and testimonials to character. Drawings, essays, letters, &c., of the applicants could be exhibited as proofs of qualifications. All grades of gardeners, from 30*s.* per week to 4*l.* and upwards, to receive the moral support of the Society in obtaining situations. I fix the above minimum advisedly to give character and weight to the Central Registration Office. It should send out no gardener under 75*l.* per annum. Possibly in a few years its minimum would rise to 100*l.* a year. No gardener who knows his business and means to live honestly by it, and has any common sense as well, will accept less than 75*l.* per annum. Those who choose to do so, and those who believe that cheap goods can possess sterling quality, notwithstanding all experience to the contrary, can find places and men to their tastes through other media. The Central Office must alike scorn to fill head gardeners' places with mere labourers or men calling themselves gardeners, ignorant and worthless as they are cheap. To succeed in its high objects it must ignore shoddy, whether it presents itself in the guise of gardeners with equivocal characters, or so-called great because rich men who have yet to learn the first lesson of true nobility—that of discovering, encouraging, assessing and paying at its proper worth, character and talent. Let it be boldly announced that none but good men are enrolled, and that they can only be had at a fair honest price, and none but the right stamp of applicants will apply. The cream of gardeners and the truly noble among employers would thus be brought together, and the result would prove satisfactory to both. Another great desideratum would be obtained through the Registration Office being affiliated with the Royal Horticultural Society; its high position and full information would enable it to convey useful knowledge to gardeners concerning their prospective employers and their situations. At present we have no adequate means of acquiring such information. We are compelled to leap in the dark, from one situation to another. And yet there are places, not a few, to accept of which is certain loss of character—it may be complete ruin. We have no wish to inquire too narrowly into the character of our employers. But certain facts (such as the following) should be accessible to us. Extent and character of kitchen and flower garden and pleasure ground, number of feet of glass, amount of labour allowed, distance from a market town, character of population, manufacturing or otherwise, and how often has the gardener been changed within a period of 10 or 20 years, and for what reasons? The Gardeners' Committee could have no great difficulty in collecting and registering such facts. There is nothing inquisitorial about them, and they would prove invaluable to gardeners. By such means testimonials would become to some extent reciprocal, as they ought to be; now they are all on one side, and that of course the weakest. In one word, the Committee might perform most of the useful functions of a Trade Protection Society. On the one hand it would protect employers from worthless gardeners, on the other shield good gardeners from ruinous engagements. It would also relieve nurserymen from much invidious and harassing work. Thus the three great classes directly interested in the matter would all be benefited, and the Horticultural Society become a grand centre of life giving power throughout the gardening world. Gardeners, finding it meant to treat them as an important part of the science it represents, would hasten to enrol themselves members; and the additional services it would render its patrons through its registration and other schemes would extend its influence, and increase its prosperity.

No one objects to its assuming much more than it has yet done the character of a college, but that can be no valid reason why it should not undertake other work as well—else it might as well leave off collecting, growing, and exhibiting fruit or flowers; and even its teaching will fail unless it can be made obvious, which it is not at present, that gardening is worth learning. Neither do we object to some sacrifices being made to acquire knowledge. Success is seldom secured, and can never be sufficiently enjoyed, unless it has been reached through self-denial. But the pathway to success need not designedly be made rougher and harder than it is. And the prize before us must be seen to be possible and worth contending for, else none will strive for it but the crude enthusiast, or the common herd of the ignorant and the foolish. It therefore follows that the elevation of gardening, that is the raising of its honours and the increase of its rewards as much or more than its productive success, is necessary as affording motive power for the superior instruction of gardeners. Only by such means can young men of the right calibre be obtained, and enabled to do their best in the pursuit of knowledge. They should see from the satisfactory position of those who have already attained this knowledge that it will bring its own sufficient reward. I hardly know where to tell them to look for proof of this at present. It is the interest and duty of the Horticultural Society to convince young men that the art of horticulture is worth learning, by helping those engaged in it by every means in its power to a more comfortable competence and a sturdier, manlier, and therefore more respectful independence. Will it do so? I trust it will. It has the power. We will not accept the plea of poverty. It spent last year 16,000*l.* for its own special purposes. Is it too much to ask that a thirtieth part of that sum, say 500*l.* a-year, be devoted to the furtherance of the most important object of its existence, the improvement and education of gardeners? By carrying out such or similar plans to those I have ventured to indicate, the Royal Horticultural Society may become the very heart and soul of British gardening, and acquire a power, wield an influence, command a success, and do an amount of good, compared with which all its previous achievements will sink into insignificance.

But if it refuse to render us this service, it must needs suffer in consequence. Our interests and duty are alike plain. We must endeavour to open a Central Registration Office in London, and to work out our own salvation from a state of servility and bondage that is insulting to our talents, and degrading to our manhood. Such an office could be supported by moderate fees and subscriptions from gardeners and their employers. The latter would have as much or more interest in its success as the former. It would constitute a neutral, fair, honest, meeting medium, between masters who wanted men, and men who wanted situations, form a centre and bond of union among gardeners, and enable us to secure the respect of others by showing to them that we knew how to respect ourselves, and had learned to stand alone. *D. T. Fish, Hardwicke Gardens, Bury St. Edmunds.*

P.S. While urging the Royal Horticultural Society to render these additional services to gardeners, I wish to reiterate my grateful approval of all which it has done and is doing for them. At a meeting of the committee of the Bury and West

Suffolk Horticultural Society, held on the 24th ult., a proposal from the Royal Horticultural Society was read, offering some of the privileges of membership to the President, and through him to the members, on payment of the moderate subscription of two guineas, again privileges of course being offered for larger subscriptions. I had great pleasure in moving the affiliation of our Society with the Royal; and the feeling of the meeting was one of unanimity and gratitude for the advantages offered. Such services as these will not be lost upon gardeners, and will help to strengthen the Horticultural Society, by rallying more horticulturists around it.

Home Correspondence.

Establishing a Rookery (see p. 149.)—The plan you recommend in reference to this subject is good. As magpies' nests at present are, however, few and far between, I will mention another way by which the same result may be arrived at. Exchange the eggs found in a jay's nest for a similar number of rooks' eggs. In doing this great care must, however, be observed to elude the extreme watchfulness of the jays (which seldom go far from their nests), for so jealous are they that even the too near approach of an intruder will induce them to desert, a fact which will amount to a certainty if they find the intruder up the tree in which the nests are placed. If, however, the exchange is safely effected, the jays become the best of all foster parents. Another plan is to substitute rooks' eggs for those of all jackdaws to be found in the surrounding neighbourhood. It is not as a rule necessary that the birds should be hatched upon the very trees on which it is desired to form the rookery; but one point is essential, and that is, all the lower branches, or any small spray which exists upon the bole of the trees, should be cleared away. Rooks do not object to underwood or brushwood; but a clean bole and lofty limbs are necessary in the establishment of a fresh rookery. Placing a rook's egg in the nests of long-tailed tomtits found in the neighbourhood also might be tried; as these birds kindly bring up so strange a progeny as a young cuckoo, I see no reason why they may not hatch and extend their care with equally good results to the less strange though darker-fledged young rook. *William Earley.*

The Chiswick Trial of Peas (see p. 172).—We are surprised to see the report of the "trials" of Peas at Chiswick re-published in your columns. When that report appeared in July last, it was declared by numerous correspondents, including some of the principal gardeners and seedsmen in the kingdom, to be quite contrary to their own experiments. We have in our possession upwards of 100 letters to the same effect, all declaring Sutton's Ringleader (or Carter's First Crop) to be the most forward Pea in cultivation. It is also some indication of the estimation in which the several kinds are held by the public, that, notwithstanding what has been represented in favour of Dillistone's, we have completely sold out our stock of Ringleader, and are obliged almost daily to refuse orders from the trade, while Dillistone's, which has been offered in the same list, remains still on hand. *Sutton & Sons, Reading.*

——I am pleased with the account of the trial of Peas at Chiswick, for it is of the utmost importance to have trustworthy information on the subject. I believe that really distinct Peas are much fewer in number than many imagine. If however we are to believe the testimonials from gardeners, of which we see too many now-a-days, we ought to have good Marrow Peas in April instead of June. Speaking from my own experience, after trying many new named sorts, I find none to answer so well as Sangster's No. 1 for a first crop, sowing at the same time Dickson's Favourite for a second crop; and for the remaining crops I find none to surpass Veitch's Perfection and British Queen. On these I depend for a supply of good Peas, and it is generally forthcoming. *J. C. Nicholson, Thirkleby Park, Yorkshire.*

Oakgalls and Titmice.—The Oakgalls have become very prevalent here, and have done great damage to the trees. For some time past I had observed in the part of our arboretum devoted to the Quercus family, groups of the blue-headed titmouse, daily increasing in numbers till an immense flock was gathered together, and latterly they have been joined by great numbers of the small black-headed Titmouse, a circumstance which induced me to watch them, and I observed they were busy boring their tiny beaks into the Oak-galls and extracting from them the insect which they contained. I could not help saying—"Well done, you little rogues; although you are tartars for gouging out the late crops of Peas, you are now set to work in earnest to gain a reputation!" I have known for years that titmice did to some extent extract insects from these destructive Oak-galls, but I never before saw such immense numbers of them at work in one locality. At first the Oak-gall insects in question only attacked young hedgerow copse and sapling Oaks, but during the last few years they have attached themselves to trees of all sizes and ages; even the little short scrubby young shoots of old pollards have suffered from their depredations, bidding fair to deprive us of the father of the forest, the hardy Oak of old England. *James Barnes, Bicton.*

Orchidaceous Exaggerations.—"Is not the woodcut of Palumbina, published in the *Chronicle*, p. 793, exaggerated?" I was asked this question by an artist, a friend of mine, and in reference to it, I should like to make a few remarks; but before I go to the question itself, I wish to tell your readers something they may not be aware of. For a long time well-meaning, old-fashioned botanists on the Continent believed that our deeply-lamented Doctor invented the Orchids that he described, and they suggested to their English friends that they should have a look at his fingers! Lindley was greatly amused at this story, and repeated it to me one day as one of his most funny remembrances. Now as to colours, I believe it is very often difficult to decide whether they are exaggerated or not, for each species of Orchid seems to have variations in colour, and it is the great aim of collectors now-a-days to select the best, and to give or to sell the inferior varieties to collectors of smaller means or less intelligence. There is, for instance, a bad variety of Cattleya amethystoglossa, which has flowered several times in England, and which is much inferior to Cattleya Forbesii; then compare this with another variety, having a dozen or twenty flowers in a large raceme, each flower being a fine rich brown with a dark amethyst-coloured lip. Or consider Mr. Stuart Low's new lemon-coloured variety with a white lip, which promises to be a fine thing. Even on the same plant the colours of the flowers may vary from causes that we do not perfectly understand. Thus, I know that the same plant of Stanhopea tigrina had in one year nearly black flowers, and in another year flowers almost entirely yellow, the dark spots being very few in number. Much may indeed depend upon light and temperature. Thus I remember that Lælia anceps, autumnalis, and furfuracea changed their colours totally when subjected to cooler treatment and brighter light. There are, moreover, some cultivators who have special skill in producing brightly coloured flowers. Twenty years ago M. Kramer, an excellent gardener in this neighbourhood, was generally believed to possess some mysterious means of producing brightly coloured flowers, and it is only now that true justice is done him, and it is known that his secret consists in understanding better how to manage his plants than other people do. It is also very difficult to judge of the luxuriance of the inflorescence. When we on the Continent were not initiated into the mysteries of Orchid growing, we looked on the representations of Chysis aurea and Oncidium Lanceanum, in the "Botanical Register," as highly exaggerated; but now we rather sneer at them as poor specimens. Those who have not seen the giant flowers of Miltonia spectabilis Moreliana as Mr. Rucker is wont to grow them, would believe a representation of them to be overdrawn. Phalænopsis Lowii, even, was regarded as a plant producing but few flowers on the spike, and when three flowers were produced, it was considered to be a sign of vigorous growth. Mr. Fitch showed me one day not long ago a splendid drawing of this plant, bearing a panicle with 15 flowers! He enjoyed my surprise, for no doubt I looked both bewildered and incredulous; and then he opened another portfolio and brought out the dried plant, destined for the Kew herbarium, where it may now be seen. The dried specimen has 14 flowers, and the addition of another blossom was rendered almost absolutely necessary on æsthetic grounds. We have a series of varieties of Phalænopsis Schilleriana, the best of which bear flowers which are more than twice as large as were the first that we so much admired, and what is the more astonishing, the large-flowered varieties produce more numerous blossoms; for in general, as is well known, there is a sort of antagonism between the size and the number of the flowers. Odontoglossum radiatum, on which I shall have something to say by and by, varies extremely in its flowers. The second and third flowers of this plant sent me by Mr. Stuart Low, were only half the size of the first, so that I felt quite ashamed at the idea that some collector would think the representation in the *Gardeners' Chronicle* exaggerated; and so with Palumbina. The first flowers that were produced were as large as those represented in the *Gardeners' Chronicle*, but when the plant produces many spikes of blossoms, then the flowers are small, as shown in the "Botanical Magazine." I have in my herbarium both large and small-flowered varieties. I have thus explained how one ought to be cautious in accusing others of exaggeration, so long as one has not seen the specimens. I do not mean to say that there have not been errors of this kind. In auction rooms drawings are shown as accurate copies of the original plant, but which are as much like it as the fine representations outside a menagerie are to the miserable beasts inside! In this way, I believe that the representation of Zygopetalum aromaticum in my "Xenia Orchidacea" is much too highly coloured; it was copied from a sketch made by a friend in the place where it grows. Flowers that I procured subsequently were much paler, being of a dirty lilac hue, instead of that unrivalled azure blue which reminded one of an Italian sky. Yet I cannot say that this azure blue colour does not exist in the wild plant, though I am very suspicious as to this point. I remember having seen somewhere a drawing of Disa grandiflora with a branched inflorescence. Now, if such a thing had really happened, which I scarcely believe, it should not have been represented, unless, indeed, as an anomaly. There is also a drawing of Galeandra Baueri, with a spike as fine as that of Saccolabium Blumei, and bearing as many trumpet-shaped lips as would have supplied the necessary musical instruments to a large army of Tritons. *H. G. Reichb. fil.*

Owl's light on the Weather.—During these last two moons I had, both in the evenings and early mornings, missed the hearty, jovial voice and notes of the owl, until one morning, which became clear and starry after the night's storm, a fine fellow began bawling out over my head, in some lofty trees, Tu-whoo, tu-whitt, tu-whitt, tu-whoo-whoo-whoo. "Ah, you merry rascal," said I, "I am delighted to hear your jovial voice once more. Are we to have a fine day?" Tu-whoo, tu-whoo, tu-whitt, whoo-whoo. Last evening again the owls were answering each other. We had a fine day yesterday, a fine starlight night, and a frost at the moon's rising this morning, the 13th. *James Barnes, Bicton.*

Foreign Correspondence.

The Winter in the United States.—The thermometer in Philadelphia has marked a lower degree of temperature than has ever been recorded before, going down on the night of January 13 to 13° below zero. Vegetation, however, has not suffered as much as it often does when the thermometer falls but to about its usual point of zero. We have, however, pretty much settled down to the conclusion that it is not so much the absolute degree of low temperature that injures plants, as it is the capacity of the plant to retain its heat and moisture, which capacity varies with the plant's individual health, or with the circumstances under which it is exposed to the cold. If, for instance, trees that will usually withstand severe cold happen to be exposed to a severe drought in summer, their vitality seems so much weakened that they succumb to severe cold sooner than when they have had a better summer chance. So also evergreens in the shade suffer much less than others in exposed ground, while deciduous trees well ripened in the sun, stand in the fall a greater degree of cold than those of the same species which may have matured in a shaded place.

It is remarkable that no matter how severe the winters may be, our hardy trees continue to store up moisture all through the winter season. The roots seem to have the power of pushing through the frozen earth, thawing their way by means of their own natural heat, and absorbing into the plant's system the moisture they thaw out in their progress through the frozen ground. As the spring months approach, the plant's tissue seems ready to burst with sap, for the slightest scratch will make streams of moisture trickle down the green bark. Towards the month of March, it is no uncommon sight to see icicles a foot long, hanging from the points of branches that have been pruned or accidentally broken off.

The heat of the plant is of course maintained by this circulation of moisture through the plant's system; and we suppose that when from any cause the plant cannot transmit moisture through its system fast enough to supply the waste, it perishes.

The amount of moisture which must pass through our American trees in a severe frosty winter's day must be enormous. If we cut off a branch, and expose it to such trying weather, it becomes drier than a similar branch in summer would do in the same time.

There are, of course, two ways in which plants are destroyed by frost: one in which the vessels are burst by the expansion of the sap, as in a Geranium or similar succulent plant; the other when the plant cannot maintain sufficient heat and moisture for the great demand on it, when the lamp of life—the vital force—dies out. In fact a plant killed here by a severe winter has all the appearance in spring of one killed by a hot and dry summer. We may regard it as really the same cause.

I think these observations are confined to Americans—at least I have never noticed them referred to in any English work. On the contrary, I believe with you it is regarded as a fact, that plants are almost entirely at rest in the winter season, just as much so as hybernating animals. Dr. Lindley takes this view in his "Theory of Horticulture," although he grants that the roots of plants grow all winter except when encased in frost.

At one time the "Theory of Horticulture" was the guide of practical men in America as well as in England, and on the theory of Dr. Lindley, as above referred to, it was argued that fall must be much the best time for transplanting trees, so as to get the benefit of the newly starting fibres; but it was found in practice that the evaporation of moisture in winter from the transplanted tree was so great as to overbear any such advantage.

The effect of heat in plants in winter is beautifully illustrated in our severe climate in the case of Hyacinths or other Dutch bulbs, which, although severe frost may set in immediately after planting, and they be kept frozen in till April, will on examination be found to have thawed themselves through to near the surface. *T. M., Germantown, near Philadelphia.*

Societies.

ROYAL HORTICULTURAL: *Feb.* 24 (*Weekly Show*). Tastefully made up basketfuls of spring-flowering plants were shown on this occasion by Messrs. Lucking, of Notting Hill, who had also other exhibitions equally interesting. Mrs. Hooke, of Fulham, furnished some pretty Hyacinths and Chinese Primroses; and blooms of Anna Boleyn Pink in good condition came from the Rev. G. Cheere, of Papworth. From Mr. Young, gr. to R. Barclay, Esq., Highgate, came Greenhouse Plants and Camellia blooms, and from Mr. Bartlett, of Hammersmith, a collection of forced bulbs. Messrs. Cutbush again contributed a charming group of forced shrubs and bulbous plants, descriptions of which have been given in former reports. Mr. Lynn reproduced his 15 dishes of Apples shown at the last fortnightly meeting.

BOTANICAL OF EDINBURGH: *Jan.* 11.—Dr. Greville, President, in the chair. The following communications were read:—I. *Notes on Orchella Weed and on a New Species from Angola, West Africa.* By Dr. Lauder Lindsay.—II. *On the Parts involved in the Process of Defoliation.* By Mr. W. R. M'Nab. The author showed that the process of defoliation was to be studied only by an examination of the development of the leaf. From off the plant appears a small mamilla or cushion, which the author called the phylloblast. This at a certain stage became differentiated into two parts, one near the axis—a stationary part—the other a rapidly-developing part attached to the axis, not directly, but through the lower part. The stationary lower part he called the hypophyll; the other, the epiphyll. The hypophyll developed the stipules from any part of its surface. The epiphyll developed the parts of the leaf proper—lamina and petiole. The stipules are thus not properly appendages of the petiole, but belong to a morphologically distinct part. In the leaves of deciduous plants (those with free lateral stipules being most typical, and in which the process is best seen) the leaf falls off so as to leave the stipules and hypophyll entire, as in Cytisus Laburnum, Liriodendron tulipifera, &c., the cicatrix being formed by the hypophyll. The author then maintains that the separation takes place between one part of the leaf and another—between hypophyll and epiphyll, and not between axis and leaf, as has generally been supposed to be the case.—III. *On Cinchona Cultivation in Ceylon.* By Mr. Clements Markham. Communicated by Dr. Greville. Mr. Markham has been deputed by the Government to visit the planters along the western coast of India, and try to induce them to cultivate the Cinchona tree, in order that a new source of supply of quinine may be obtained. He has been visiting and reporting on the Hakgalla Cinchona Plantation, in Ceylon. He says that the site at Hakgalla is well chosen, as closely resembling the habitat of the plants in South America, and he bears testimony to the skill and success with which Dr. Thwaites, assisted by Mr. MacNicol, has conducted the task of cultivating and propagating the quinine-yielding plants. Of the many thousands planted out on a bare slope at Rothschild, exposed to the full influence of light and wind, he also speaks in the highest terms as robust and flourishing. He states that the Cinchonidæ in India are pretty certain greatly to excel the parent plants in South America in the yield of valuable alkaloids. So striking is the improvement, indeed, that what are reckoned inferior species in the country to which they are indigenous, vie in their products with the most valuable. It has been proved that not only do the young prunings yield large quantities of quinine, but that by encouraging the growth of Moss and Lichens on the stems, the quantity of alkaloids is increased; and more than this, that if the wounds are at once covered over by Moss, strips of bark, rich in the most valuable of febrifuges, can be repeatedly taken from the same trees without injury to their vitality. Every encouraging element, as far as cultivation is concerned, is therefore present; and to complete the inducements to the Ceylon planters to engage in the pursuit, there will be a market close to their doors. The Government of India, the largest consumers of quinine in the world, are about to establish a manufactory for obtaining the sulphate from the bark, in the Madras Presidency. The red bark of India and Ceylon will fetch as high a price as the Calisaya of Bolivia, the most valuable of all the barks (4*s.* per lb.). If the price went down to one fourth of this sum, we have little doubt the cultivation would pay. The bark could either go to India, or it would be taken at a cheap rate to England as filling-up cargo. Not half a dozen years have elapsed since the first plants were introduced into India, and now they are to be found, to the number of at least a million and a half, scattered over the hill ranges of Ceylon and India, from Hagkalla to the Himalayas—flourishing everywhere, except in hill hollows, where actual frosts prove fatal to them. The Indian Government consider that the progress in the operations has been very satisfactory, and they congratulate Mr. M'Ivor on the important success that has attended his labours in this national undertaking. The oldest plants which were planted out in August, 1862, are now from 8 to 12 feet in height, and from 7 to 13 inches in girth at 6 inches from the ground, well furnished with lateral branches, and present a most robust and healthy appearance. In the oldest plantations the branches of the plants 10 and 12 feet apart are now touching each other, and the bark has much increased in thickness. The characteristic markings of the finest Peruvian bark are becoming more and more apparent, Lichens and Mosses being fully developed. The plants are flowering freely, and perfect seeds have already been obtained; in short, there is no room to doubt that the Cinchona can be grown on the Neilgherries in great perfection.—IV. *Notice of Plants collected during a Tour in Ireland in* 1865. By Mr. F. Naylor.—V. *Report on the Flowering of Plants in the Open Air at the Royal Botanic Garden.* By Mr. M'Nab stated that perhaps during no previous season were we ever permitted to give such a list of plants as were seen in flower in the open air on the 10th of January this year—amounting to no less than 51 species. The cause is to be ascribed to the extreme mildness of the weather during the past three months. From the beginning of October up to this date, only on 18 mornings did the thermometer fall below the freezing point—the lowest being on the 6th, 7th, and 13th of November—each morning indicating 24°. On 15th December it stood at 26°; on 23d October and 14th November at 27°; on 26th October, 29th October, 5th November, and 11th December at 28°; on 16th November, 29°. On the other six mornings it ranged between 30° and the freezing point. Many of the summer bedding-out plants, in the open air, were up to the preceding day in a free-growing state—such as Scarlet Geraniums, Verbenas, Calceolarias, &c. Roses, although producing flowers more or less throughout the winter, had in numerous instances young shoots averaging from 1 to 4 inches in length. The Jasminum nudiflorum was scarcely ever known to have flowered so profusely as it has done this winter. The Chinese Chrysanthemums on open walls have this autumn flowered themselves out, instead of being injured or killed as they generally are while in bloom. Wallflowers and Intermediate Stocks have been particularly full of bloom up to this time, all produced from autumn-made growths. Besides annuals, which of late have been growing freely and flowering profusely, some perennial herbaceous plants have made remarkable shoots, the most conspicuous being the Helleborus fœtidus, where the new-made flowering tops have already pushed 10 inches and are in bloom. Of the other plants which have grown freely are the Prickly Carduus (Cynara Cardunculus) and the Cow Parsnip (Heracleum giganteum); on both these plants the leaves have grown from 10 to 12 inches. Numerous plants have made new growths varying from 4 to 6 and 8 inches, such as the Fennel, Evergreen Bugloss, Woad, Comfrey, Oriental Poppy, Alpine Dock, and the Common Day Lily. Grasses and Sedges have been advancing; of these the Tall Fescue Grass has made leaves 8 inches in length. Amongst British weeds numerous examples were in flower, such as the Daisy, Dandelion, Groundsel, Sorrel, Clover, and Chickweed. The thermometer on the 11th fell to 20°, being 12° below the freezing point; and many of the plants which were in flower the previous day received a check.

ZOOLOGICAL OF LONDON: *Jan.* 23.—Dr. J. E. Gray in the Chair. Mr. Sclater exhibited an egg of the one-caruncled Cassowary (Casuarius uni-appendiculatus) laid in the Gardens of the Zoological Society, Amsterdam.—Dr. J. Murie read some notes on the Markhore (Capra megaceros), chiefly based upon a specimen of this animal which had recently died in the Society's Gardens. Dr. Murie also gave some account of the morbid appearances he had observed in a Chimpanzee which had lately died in the menagerie.—Mr. A. D. Bartlett, Superintendent of the Society's Gardens, read some notes upon the nesting-habits and eggs of certain of the rarer species of birds that had bred in the Society's Aviaries during the past summer. Amongst those to which particular attention was called were the Sun Bittern (Eurypyga helias), Nicobar Pigeon (Calœnas nicobarica), the Scarlet Ibis (Ibis rubra), and the Guira Cuckoo (Ptiloleptis guira).—Several other communications were read, including a revision of the genera of Pteropine Bats, by Dr. J. E. Gray.

Feb. 13.—J. Gould, Esq., F.R.S., in the Chair. Mr. Sclater made some remarks on several new and interesting additions lately made to the Society's menagerie, amongst which was particularly noticed an eared seal (Otaria), from Cape Horn, probably referable to the species called by Dr. Gray Arctocephalus Hookeri. Mr. Sclater also exhibited part of a collection of mammals and birds sent home from the vicinity of Nagasaki, Japan, by Mr. H. Whitely, and called attention to several rare species represented in it.—The Rev. H. B. Tristram communicated a "Report on the Mammals of Palestine," being a catalogue of 80 species, specimens of which had been obtained by him during his expedition to that country in 1864.—Mr. W. H. Flower read the first part of a memoir upon the osteology of the Sperm Whale (Physeter). Mr. Flower's observations were based principally upon a nearly perfect skeleton of this animal lately received by the Royal College of Surgeons from the coast of Tasmania, and upon a skeleton recently obtained by the British Museum from the North Coast of Scotland. Other specimens in various European collections had also been consulted when available. In the present communication Mr. Flower confined his remarks to the vertebral column of this huge animal, which was described in detail.—One or two other communications were also read.

Notices of Books.

Synopsis of Conifers, their Characteristic Distinctions, with Indications as to their Cultivation and Duration in Germany. By Dr. J. B. Henkel and W. Hochstetter. Stuttgart, 1865. 8vo. Pp. xxviii. and 446.

The object of this book is to afford German cultivators of the important and interesting tribe of Conifers the same advantage which our countrymen possess in the works of Gordon and others devoted to the plants of this natural order. Even to those who do not understand German, it may be useful from the very copious synonyms, though unfortunately all the characters, both of genera and species, are given in German only. The work commences with some general observations on the order, a sketch of the geographical distribution of genera and species, in which allusion is made to Dr. Hooker's indication of the specific identity of Cedrus Deodara and atlantica with C. Libani, though they are kept distinct in the text. This is followed by a systematic review of the 40 genera which are admitted by the authors, who happily are contented to adopt those already proposed without recording any ill-digested divisions of their own. A description of species follows, with short general remarks under each. Pinus Peuce, Griseb., we observe is still kept distinct, without any suspicion as to its identity with Pinus excelsa. Indeed it is placed in the section Cembra, and not in that of Strobus, which is the more remarkable, as the authors were in possession both of the winged seeds and cones.

The nature of the work does not give much room for making extracts. We give as a specimen from the systematic part, the following notice of Salisburia adiantifolia (Ginkgo), which seldom, if ever, bears fruit in this country. Indeed we believe that female plants are comparatively rare, and even the male plants very seldom produce catkins:—

"Two remarkable examples of the Ginkgo, a male and a female, exist in the Imperial Botanic Garden at Vienna, which flowered and bore fruit in the year 1846. It is curious that the older examples which are found in Europe are all males, and that the first female plants were raised in the Montpellier Botanic Gardens from seed about 1788. In 1853 a plant at Harbke, near Ballenstedt, bore fruit for the first time, as also, in the same year, one in the Jardin des Plantes at Paris. There are beautiful specimens in Naples, which bear every year a great quantity of good seed, whence it would seem that the climate there is peculiarly favourable to the setting of the fruit. The seeds have a pleasant flavour, and are eaten, besides which they furnish an excellent oil."

The number of species, independent of varieties, described in the volume is 343, but doubtless many of these must ultimately be reduced.

At the end of the description of the species in each division of the order, directions are given for the cultivation. Many Conifers, however, which bear the winter well in England will not succeed in Germany, and of those which can resist the winter cold, many put forth their young shoots so vigorously in the spring that the later frosts, though far less severe, do them great injury. Though fine specimens of Araucaria imbricata exist in Germany, from 40 to 50 feet high, they require protection in winter, and attempts at acclimatisation have hitherto failed.

We may remark, while on this subject, that clay seems especially injurious to this Conifer. Plants often succeed admirably for some years, and then the leaves gradually turn partly or altogether brown, till it is quite clear that no further healthy growth can be expected. We believe that in the majority of cases of this kind it will be found that there is a substratum of clay, and when this lies at a considerable depth, the sudden change to an unhealthy condition may create some surprise. If we are right in this view, it may answer, where the clay is not superficial, to take some measures to make the roots run laterally without penetrating into the deep-seated poison. Clay seems to be just as uncongenial to the Araucariæ as lime is to Rhododendra.

BOOKS RECEIVED.—*Science Gossip* maintains its value as a guide for amateurs, and is the best work of its class published since Loudon's "Magazine of Natural History," which latter, however, cost almost as many shillings as this does pence.—*The River Plate as a Field for Emigration* (Bates, Hardy,

* Synopsis der Nadelholzer deren charakteristischen Merkmale nebst Anderungen über ihre Cultur und Ausdauer in Deutschland's Klima. Von Dr. J. B. Henkel und W. Hochstetter.

& Co.) is a pamphlet containing an account of the climate, products, commerce, and political institutions of the Argentine Republic prepared for the perusal of intending emigrants, for whom there seems to be an ample field and fair prospects.

CATALOGUES RECEIVED.—*Thomas Gibbs & Co.'s (Piccadilly) Catalogue of Seeds* is chiefly occupied by a select list of vegetables, amongst which prominence is given to Gibbs' Defiance Pea, a tall sort for general crop.—*S. Glendinning & Sons' (Chiswick) Catalogue of Seeds* is another selected list of the better sorts of vegetables and flowers.—*Roughead & Park's (Haddington) Descriptive List of Seeds* gives the quantities required, and other useful memoranda.—*A. Henderson's (Thornton Heath) Seed Catalogue* opens with the apt remark—"it is useless to expect *first-rate* kitchen-garden crops without a liberal application of manure;" the list is a selected one, and is accompanied by the 'Useful Garden Almanack.'—*W. Bull's Retail List of New Plants*, besides new varieties of Pelargoniums, Verbenas, Fuchsias, &c., offers the new Lobelias we alluded to last year, a selection of twelve sorts of varied colours, of which those with pink, carmine, and ruby blossoms will be great acquisitions. We trust they may revive the taste for these fine hardy perennials.—*John Salter's Descriptive Catalogue of Chrysanthemums, &c.*, is of course indispensable for the buyers of new Chrysanthemums and variegated plants, and contains many other choice selections, as, for example, Pyrethrums, Irises, Pæonies, Phloxes, &c.—*James Smith's (Darley Dale) Wholesale Catalogue of Trees and Shrubs* indicates a varied collection, grown in large quantities for wholesale trade.—*Downie Laird & Laing's (Edinburgh and London) Descriptive Catalogue of Florists' Flowers* is very complete in the department to which it is devoted. New Pansies, Hollyhocks, Pentstemons, Pelargoniums, &c., as well as good selections of old sorts, are offered.—*W. Hooper's (Wandsworth) Descriptive Catalogue* is confined to a selection of the best vegetables and flowers.

Florists' Flowers.

THE result of the trial of BEDDING PELARGONIUMS at Chiswick during 1865, though for various reasons not at all complete as regards the newest varieties, may be taken as a guide to the merits of certain of the standard sorts in the climate of London. We therefore print the substance of the brief report which has recently appeared in the Society's Proceedings:—

Of the plain green-leaved varieties with scarlet flowers, the following, which had received marks indicating the highest degree of merit, were confirmed in the position which had been previously accorded to them, viz., Eleanor, Faust, Punch, and Trentham Scarlet. Red Dragon, a variety with very deep-scarlet flowers, remarkable for their rich velvety surface, was allotted the same number of marks. Achilles was confirmed in a somewhat lower rank.

Of cerise or rosy-scarlet plain-leaved sorts, Lady Middleton was still awarded the highest; and Viceroy the second place.

Of rose-pinks with plain leaves, Christine and Rose Queen were adjudged to stand in the first rank.

The zonate-leaved series with scarlet flowers yielded the following, still adjudged to be of the first quality:—Adonis, Attraction, Clipper, Garibaldi (North), Martin Gireau, Victor Emmanuel, Vivid, and Volcano. A grade lower were placed—Comet, Commissioner, Cottage Maid, Emperor of the French, Harry Hieover, Persian, and Rev. Joshua Dix.

The zonate-leaved rosy-scarlet or cerise-flowered series afforded of first-class sorts the following:—Hector, Herald of Spring, Mons. Martin, Roi d'Italie, and Umpire; to which list of first-class sorts was added Provost. Those of the next grade of merit were Bonnie Dundee, Cecilia, Comte de Morny, Effective, François Chardine, Giralda, and Pink Pearl.

In the zonate group with salmon or flesh-coloured flowers, the previous award of a first-class position was confirmed in the case of St. Fiacre; and to the same category were added Fanty and Raymond. In this series Prince of Hesse was kept in the second rank.

In the zonate group with white flowers, none of the other sorts were found to be superior to Madame Vaucher. That called White Perfection, which was highly approved last year, was from accidental causes not grown this season.

Of the zonate oculate series, those with white or whitish flowers and a salmon-coloured eye, the sorts preferred as most meritorious were—Eugénie Mezard and François Desbois. Some of the more recent varieties of this group, however, possessed great promise.

The zonate series with rose-pink flowers was represented among the first-class sorts by Rose Rendatler, Eve, &c.; and amongst the second-class sorts by Amy and Minnie. Some very fine varieties in this group were however discovered amongst the newer kinds.

Of the marbled-leaved zonate sorts, the highest position was still held by Sheen Rival.

The Nosegay series, in so far as the older varieties were concerned, presented nothing superior to Cybister and Stella; while in the secondary group the only one which was again approved was Magenta.

The Silver variegated-leaved series presented several sorts to which the highest position was again accorded. Thus in the group with zonate and white-margined leaves, Argus, Countess of Warwick, and Picturatum were retained, and Silver Chain raised to the first class. Julia was retained in the second class.

Of those with white-margined leaves, not zonate, the highest position was allotted to Alma, Bijou, Jane, and Queen of Queens, Mrs. Lenox being also raised to the same rank; and of those with creamy-margined leaves, Flower of Spring stood as a first-class sort, Venus was raised to the same position, and Meteor was retained in the second rank.

The Golden variegated-leaved series is less extensive than the Silver. In the zonate and marginate group the first rank was confirmed in the case of Mrs. Pollock and Sunset. In the marginate not zonate set, Cloth of Gold, Golden Chain, and Golden Fleece were severally placed as first-class sorts. Golden Harkaway was kept in the second class. In the group with the leaves wholly yellow, General Longstreet was raised to the first rank.

Amongst the new sorts which were sufficiently advanced to admit of their merits being determined, the following were allotted a first-rank position, namely:—

Alexandra. — A darkly-zonate leaved Hybrid Nosegay, of free habit, and effective in colour, having a deeper tint of rose than Amy Hogg. The flowers are crimson in the upper part, and deep magenta below, producing a pleasing play of colour.

Amy Hogg.—A vigorous-growing Hybrid Nosegay, with slightly-zonate leaves, and very large trusses of flowers standing up above them, the flowers uniformly of a bright purplish rose colour.

Beaton's Indian Yellow. — A free-growing Hybrid Nosegay, with zonate leaves, the flowers of a novel orange-scarlet tint, and having a glow of yellow when newly opened. A very effective variety.

Beauté des Surèsnes. — A beautiful zoned-leaved sort, with large and finely-shaped rosy-pink flowers.

Beauty of Oulton.—A very finely marked and effective variety, with leaves of a tolerably even roundish outline, and of a yellow-green colour, marked with a very distinct zone of rich chocolate brown. It was quite an acquisition.

Duchess.—A free-flowering and dwarfish variety, producing large globular trusses of soft rosy-lake flowers of good form. It is one of the Hybrid Nosegay race.

Forester.—A compact-habited and very telling sort, with green rounded leaves marked with a very dark broad zone, and rosy flowers of excellent shape.

Gaiety.—A handsome-leaved sort with golden-tinted leaves marked with a bronze-coloured vandyked zone; flowers scarlet.

Glowworm.—A Hybrid Nosegay of novel and pleasing character and compact habit, the upper part of the flowers being of a glowing scarlet, the lower magenta flushed with crimson, the trusses erect and abundant.

Little Treasure.—Of very dwarf habit, with small zonate leaves, and very bright scarlet flowers. An effective dwarf variety.

Luna.—A very rich and effective sort, with yellow leaves marked with a bright chocolate brown zone; the flowers scarlet.

Madame W. Pfitzer.—A very superior variety of the oculate series, with zoned leaves, and well-formed flowers, white with a deep red eye. A plant undistinguishable from this was received from Messrs. F. & A. Smith under the name of Rosebud.

Mons. Barré.—A dark-zoned round-leaved sort, with salmon-coloured flowers paler at the edges, the flowers thrown well up.

Mons. G. Natchet.—A dwarf vigorous-habited variety, with darkly zonate leaves, and ample trusses of finely-shaped bright scarlet flowers. It is also a good pot plant.

Pink Beauty.—This has zonate leaves, and very much resembles Beauté des Surèsnes.

Woodwardiana. — A showy variety, with the leaves marked with a faint vandyked zone, the flowers salmony carmine, of fine shape.

GLADIOLI.—Much has appeared lately in newspapers touching French beef and mutton, and, I believe, with considerable benefit to the pockets of consumers. I wish to say that other French commodities deserve direct importation for a like reason. Several letters have been printed in your late issues about Gladioli. The Gladiolus is one of my favourite flowers, and I am going to speak of the price, which, no doubt, deters many from growing it, just as the price prevented the consumption of English beef and mutton, but for which a remedy was found by sending for them to France.

I have just had, from one of the first nurserymen in Paris, 30 varieties of Gladioli, in all 160 bulbs, which have cost me, delivered at my house, 4*l.* 0*s.* 9*d.* I have taken the catalogues of two of the leading London seedsmen, and one of an eminent nurseryman a short distance out of town. If I had purchased the bulbs of the London seedsmen, I find the following would have been the result. One would have supplied 25 of the kinds (the number of bulbs of each variety agreeing with the number of each I actually bought) for 7*l.* 3*s.*; the other would have supplied the entire order for 9*l.* 12*s.* 10*d.*; while the nurseryman would have supplied also the entire order for 8*l.* 4*s.* 8*d.*

Now all these tradesmen are "honourable men," with whom I have long dealt; and I have not a word to say against them as individuals, but much against a system which demands such exorbitant profits—I can call it nothing less—for, as dealers, they can purchase cheaper than I can. It is quite true they must "get a living;" so must I, on a fixed income; but I confess I find it helps me considerably even to buy Gladioli in Paris at less than half the price I am asked in London, and I have only to add that I recommend my brother floriculturists in like circumstances to "go and do likewise."
Gandavensis.

The Apiary.

BEE CULTURE.—In the opening chapter of "The American Bee Journal," (a monthly periodical published in the year 1861, and discontinued in consequence of the lamentable civil war), a volume of which has been kindly sent to me by the Rev. L. L. Langstroth, occur the following remarks:—

"Bee culture need no longer be a precarious and empirical pursuit. Discoveries and improvements, comparatively recent, have so elucidated its principles, that its processes can be more definitely regulated than those of almost any other branch of rural economy. Without being divested in the least of that attractiveness which, from the earliest periods of history, drew to it the attention alike of the humble cottager and the inquiring student—making it a subject of unflagging interest and unfailing enjoyment—it now claims additional regard from the fact that it can be so conducted as to become a source of certain and amply remunerating profit. It may be viewed, first, as a science, having for its object the attainment of a correct knowledge of all that pertains to the life, habits, and instincts of the honey-bee; and, secondly, as a practical art, which regards all the attainments thus made and to be made, as the only reliable foundation of successful management."

I do not perfectly agree with all that is stated in the paragraph just quoted; but in the main the remarks are so good and so much to the point, and illustrate the objects which I have in view in this and succeeding papers on the same subject so well, that I have been induced to place the quotation in its present prominent position, and take it as the text for consideration.

"*Bee culture need no longer be a precarious and empirical pursuit.*"—I fear that the culture of bees as a source of profit will ever be of a precarious character. So much depends on circumstances over which the most careful and talented bee-master can have no control, that, regarded as a branch of rural economy, its results must ever be precarious and uncertain. That it need no longer be an empirical pursuit is very true, for of late years so much light has been thrown upon matters connected with the physiology, instincts and internal economy of bees, which had previously been involved in great doubt and mystery, that the scientifically practical apiarian has now certain rules to guide him in his manipulations, which must, barring unforeseen accidents or influencing circumstances, lead to the results which he desires to accomplish.

"*Its processes can be more definitely regulated than those of almost any other branch of rural economy.*"—This is true as respects the practical bee-master who endeavours to make himself thoroughly acquainted with all the laws which govern bees and their instincts, and, guided by his knowledge, lays down a well-defined course of action, modified only to suit unlooked-for exigencies which may arise from time to time.

The attractiveness of the pursuit.—There can be no question on this point, whether considered as a subject for close and intricate investigation by many of the most scientific men of every age, or as a pursuit for the attainment of practical results, either as a source of considerable revenue, as in the most favoured honey-producing countries, or with the object of obtaining small supplies of honey for domestic use, if weather and seasons prove propitious, in the less favoured districts; bee-keeping has ever been, and still continues to be, regarded as a pursuit or occupation of an engrossingly attractive nature. All or most of us can bear witness to the enthusiasm with which we have entered into the subject at one time or other of our career as apiarians. With some the or other of our career as apiarians. With some the fit has been of an evanescent, or of an intermittent fit has been of an evanescent, or of an intermittent type; with others of us it has proved of a persistent and permanent character, most difficult to cure, if not quite incurable.

"*Bee culture can be so conducted as to become a source of certain and amply remunerating profit.*"—This is true as regards its pursuit in some countries, but I fear there is too much uncertainty of climatic influences as respects our British Isles, to warrant our endorsing this statement in its integrity. There are frequently seasons in which, so far from any profit being realised from bee-keeping, expenses preponderate, and loss and ruin of valuable colonies and swarms go far to damp the ardour and energies of the most

enthusiastic among our fraternity. Nevertheless it is no less true that he who brings to bear the knowledge he has gained in his scientific and practical experience will, in a majority of cases, be enabled to weather the storm, and take advantage in due time of that "tide in the affairs of" bees "which leads to fortune," that is, an abundant honey harvest and prolific swarms. The same writer in the article quoted attributes the "cause of the depressed condition of bee culture in general," not to any want of attention to the subject, but says that it is rather "to be found in an inadequate knowledge of, and erroneous opinions concerning, the physiology and habits of the insect, in the defective or ill-adapted construction of the hives," "and in an injudicious mode of treatment." "Despite the most assiduous observation and study, the interior of the hive and the domestic economy of the colony remained till recently, and still remain for the masses, a mystery." All this is undoubtedly most true, and it is my object, as I am sure it is that of all other writers in the columns of the *Gardeners' Chronicle*, to disseminate any knowledge we may have gained from our own observations, or from the experience and researches of others; to inculcate improvements in hives and other apiarian appurtenances, and in the manner of performing manipulations, so as to render bee-culture a safer and a more generally successful pursuit than it has usually been found, or considered to be capable of being made in this country.

Bee culture as a science.—As a subject for scientific research and observation, there can be no doubt that the honey-bee takes a very high rank. Many illustrious men, whose names need not be here particularised, have devoted years of their lives to the study. It is remarkable that more light seems to have been thrown on points which had hitherto been involved in doubt and mystery, within a very few years, than had been discovered within the lapse of centuries. To men, therefore, of scientific tendencies, who may care little or nothing for the practical results which may be realised from bee-culture, this pursuit can be confidently recommended as one of absorbing and never-failing interest. Even if no new discoveries fall to the lot of the observer, there is an ample field of interest to be reaped from the investigation of the truths and problems already promulgated, and in subjecting them to the test of practical experiment.

Bee culture as a practical art.—By the labours of scientific investigators, so much that was mysterious has been made clear, that he who follows the pursuit with a view only to practical and substantial results, may, by making himself well acquainted with all that is now known respecting the physiology, habits, and peculiarities of bee-economy, follow out the attainment of his particular objects with increased facilities, and with infinitely greater probabilities of success. With the American writer, in the concluding words of the quotation given at the head of this paper, I am quite inclined to agree that the scientific "attainments thus made and to be made" must be regarded "as the only reliable foundation of successful management." By a favourable combination of circumstances, the most unenlightened bee-keeper may occasionally obtain a rich harvest from his bees, but to establish and retain an apiary constantly in the best possible condition for taking advantage of propitious honey seasons, and for carrying it through unfavourable periods with the least possible amount of loss, it will be found that a thorough scientific acquaintance with bees, and their habits and requirements, combined with a promptness and decisiveness in action for the purpose of counteracting the vicissitudes and accidents which may from time to time occur, is highly necessary and important. Without some of this knowledge, or, having it, without the proper application of it to practical purposes, the bee-keeper who steps at all out of the old beaten track, must inevitably sooner or later meet with great disappointments. *S. Bevan Fox.*

Subscriber (*Bath*). It will be very hurtful to your bees to move the hive to any other part of your garden. May be done if necessary at once, and the hive will be materially benefited. Your best plan would be to send the hive away the middle of April, and shift from whence it may be brought back in the middle of June weeks, and place it in any position you choose, without risk of losing a bee. *S. B. F.*

Miscellaneous.

Mr. Osborn.—We regret to have to record the death of Mr. Robert Osborn, of the firm of Osborn & Sons, nurserymen, of Fulham, which took place on the 23d ult. after a prolonged illness. Mr. Osborn, who was in his 84th year, enjoyed the respect and esteem of all who had the pleasure to know him, or to be in any way connected with the establishment with which he had so long been identified, though for the last few years he has not taken an active part in its management. We cannot withhold the following testimony to Mr. Osborn's worth sent to us by a lady residing in the country:—"I have often thought your notices of the death of upright gardeners calculated to do great good. I trust and hope you will not pass by good, kind, upright Mr. Osborn, of Fulham. He served me 18 years, having been much esteemed by my late brother-in-law, Mr. Leveson Gower, and plants were received by me even last week. He was a perfect gentleman in mind and manner, indeed, in the highest sense of that word. His character was an uncommon one. With great cleverness, there was a beautiful simplicity of character, a tender heart, great benevolence, and a deep sympathy for the sorrows of all, high and low. Many and rapidly succeeding losses were allotted to me six years ago, and few things soothed me more than to go to Fulham, and sit with that kind and sympathising man; and I feel I have lost a friend. He also wrote extremely well, so that letters he wrote me when my sorrows fell thickly would have astonished many, showing, as they did, deep religion (without quotations or texts,) deep feeling, and a trust that all, however painful, was ordered by a wise, kind, and unerring Hand; though we poor mortals only saw the dark cloud, and not its silvery lining."

Calendar of Operations.

(*For the ensuing week.*)

As soon as the present somewhat winterly weather shall have broken up, and the ground become fit to receive seed, a collection of the best hardy annuals should be sown; they are of most service before Verbenas, Pelargoniums, and other bedding plants come to perfection, and therefore must be got in in good time. Where a frame or pit, however, is at liberty, we would recommend their being sown in small pots in loamy soil, and not turned out until they are slightly pot-bound; the flower then gains the predominance, and the great proportion of this above the leaf constitutes the chief beauty of most annuals.

FLOWER GARDEN AND PLANT HOUSES.

FUCHSIAS.—Where fine specimens of these are required, a moist atmosphere, with a slight amount of shading, when there is bright sunshine, will cause the shy sorts to make wood by retarding the flowering principle. Those wintered in outhouses or cellars, if not already done, should now be brought forth and potted, if possible, to give them a start for the decoration of lawns or the flower-garden.

HYACINTHS.—These should not have too much heat; they lose much of their effect when the bells are too far asunder through too much excitement in proportion to light.

NEW HOLLAND PLANTS.—Now is a good time to shift such as require more pot room.

ORCHIDS.—These will be pushing vigorously, and many on blocks and baskets will require careful attention in the way of watering, which should be done on sunny mornings early, and air given for a couple of hours, in order to prevent moisture from lodging amongst the buds and tender shoots.

FORCING GARDEN.

CUCUMBERS.—Make it a point to turn one or more of the linings frequently until May. See that they are in good condition as regards moisture, and take care that no burning extends into the bed.

FIGS.—Provide against red spider by copious syringings.

KIDNEY BEANS.—Secure abundance of atmospheric moisture to these, and water them continually with clear weak manure water.

PEACHES.—Trees on which fruit is beginning to swell will now begin to enjoy a little liquid manure; guano water, clear and weak, will be found of great service. Gross shoots need scarcely be feared with this application, provided all luxuriant wood is stopped as soon as it is 5 or 6 inches long.

PINES.—It should be at all times understood that a sudden check of any kind whatever is at variance with the whole economy of Pine growing. In shifting in spring this frequently happens if the plants are allowed to stand unplunged in a temperature of 50°, whilst the tan bed from which they were taken has probably been at 85°. So great a discrepancy is found to be followed by pernicious effects. Attend well to atmospheric moisture; rest assured that as far as the Pine alone is concerned it is not easy to overdo it at this period. Shut in sun heat whenever it can be done.

VINES.—Look well to the bottom-heat outside. Endeavour to keep your fermenting material to 80°, or even 90° if possible. When material of this kind is suffered to become inactive at this period, it is worse than useless. Early Grapes now stoning should be run over once more with the scissors; let the shoulders be well set out. Keep up an agreeably warm atmosphere on all ordinary occasions, but allow the heat to rise to 85° or 90° early in the afternoon of bright days, which we may now expect soon to get, and let it sink to 65° at night.

HARDY FRUIT AND KITCHEN GARDEN.

Protect fruit blossom when it appears by all possible means. Straw-ropes, mats, canvas, bunting, nets, Fir boughs, and fronds of Fern, should all, or any of them, be in requisition.

BROCCOLI.—As soon as the ground is in a proper state to receive the seed, sow a little of the Purple Sprouting sort.

HERBS.—Sweet Marjoram and Basil may now be sown in heat.

LETTUCES.—Let these be planted out on the first fine day.

POTATOS.—Plant early sorts as soon now as possible.

PEAS AND BEANS.—Make sowings of these if not already done.

TOMATOS.—These may now be sown, and raised in a Cucumber frame.

TURNIPS.—If not yet done, lose no time in getting in a little seed of the White Dutch on a warm border.

STATE OF THE WEATHER AT CHISWICK, NEAR LONDON, For the Week ending Feb. 28, 1866 as observed at the Horticultural Gardens.

Feb.	Month's Age	Barometer.		Temperature of the Air.			Of the Earth 1 foot deep	Of the Earth 2 feet deep	Wind	Rain.
		Max	Min.	Max.	Min	Mean				
Thurs 22		30·100	29·992	52	29	39·0	41	41½	S.W	02
Frida 23	8	29·933	29·677	53	27	40·0	42½	41½	S.W	01
Satur 24	9	29·921	29·271	49	26	37·0	42	42	W	00
Sunday 25	10	29·581	29·018	47	29	38·3	42	41½	S.W	08
Mon 26	11	29·200	28·877	49	30	39·5	42½	42	S	01
Tues. 27	12	29·111	29·082	58	27	42·5	42½	42	N.E	00
Wed 28	13	29·357	29·152	37	17	27·0	41	41½	N.E	00
Average		29·660	29·422	49	27·5	38·7	41·9	41·7		

Feb 22—Overcast, slight rain, overcast, slight frost.
" 23—Overcast, clouds and boisterous, fine at night.
" 24—Very coarse, cloudy and boisterous, overcast.
" 25—Rain, showery, overcast, cloudy.
" 26—Uniformly overcast, heavy clouds, rain at night, snow.
" 27—Very severe, overcast and cold, fine, slight frost.
" 28—Densely clouded, lowering, sharp frost at night.
Mean temperature of the week 1 deg. below the average.

STATE OF THE WEATHER AT CHISWICK,

During the last 30 years for the ensuing Week, ending March 10, 1866

March.	Average Temp. from 30 years	Average Temp. in 1865	Mean Temp	No. of Years in which it Rained	Greatest Quantity of Rain	Prevailing Winds.						
						N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.
Sunday 4	40·8	34·1	40·5	11	0·40 in	2	7	3	4	5	10	6	3
Mon ..5	41·0	39·8	40·7	16	0·47	4	6	8	3	4	9	3	4
Tues ..6	41·1	37·8	40·7	16	0·26	4	6	8	3	4	9	3	4
Wed ..7	40·5	42·6	41·6	16	0·22	4	6	4	1	5	12	3	3
Thurs ..8	40·5	33·7	41·6	15	0·18	4	5	2	2	5	6	4	7
Friday ..9	40·6	39·4	39·2	15	0·17	4	5	2	2	5	6	4	7
Satur ..10	40·8	35·7	40·7	16	0·69	4	4	4	3	8	11	4	7

The highest temperature during the above period occurred on the 4th, 1856—therm. 59 deg., and the lowest on the 10th, 1847—therm 7 deg.

Notices to Correspondents.

ALLOCASIAS—*C. Imperial Subscriber.* The only one which is hardy in England is A. indica.

CHURCH OF SCOTLAND: In an article relating to this subject (see p. 160) occurs a passage which Mr. Matthew chooses to consider mean imputation on his sincerity. This gentleman also imputes motives to what nobody can imagine but darkness has suggested as to throw disparagement upon Scotland? Fortunately for us we are guiltless of any desire to defame either Mr. Matthew or his native country. Moreover, we have no wish to plunge into controversy, or to weary our readers with the publication of letters couched in anything but courteous phrase.—*Ed.*

DOUBLE GLASS—*Constant Subscriber.* Practically the enclosed space has to be regulated by the depth of the rafter, and in order to avoid shade it is not advisable to make that deep. We should therefore prefer that there was only room for a moderate resisting for the divisional agent; if increasing the space be your object, the thickness of say 6 inches. Can any one report as to any experiments on this point? or as to any benefit resulting from increasing the space to 8 or 10 inches? Should be glad to publish correspondents' suggestions.

GRAFTING WAX—*X. Y. Z.* We do not know how that used successfully in France is made; but one consisting of equal parts of beeswax, resin, and tallow, if properly made, will be found pliable and good.

GRAND DUKE—*Mrs. Mee.* You should apply to the author whose name you mention in your letter. We cannot undertake to answer for him. We see no reason to re-open the general question, though we have not the least objection to state that your "Bible book most useful."

NAMES OF PLANTS—*C. S., Shirley Hall.* Common Pear.—*T. Taylor, Bedford.* No. 1, Veronica Pear; 2 and 3, immature and indeterminable.

NAMES OF PLANTS—*Local & Student.* Synonyms pendibus.—*S. L.* 1, Aponogeton ensifolium; 2, Illicium anisatum.—*T. C.* Send the specimens in flower, before pronouncing opinion. 2, consisting of a twig of a Pine, without any information as to flower, cone, or native country (which, if correctly given, saves a world of trouble to the examiner), is most probably Pinus ponderosa, from California; 3, Picea Pindrow, from the Himalayas.—*A Tyro.* Before we pronounce opinion on which we should wish to have any information you can give as to its native country, &c.

POTATO ONION—*B.* There are several ways of growing this useful kind of Onion. The two following have been practised with success:—The first is to manure and well dig the ground, forming it into beds 4 feet wide. On each of these plant, about the end of this month, three rows, placing the roots 10 inches apart, and inserting the bulb about half its depth in drills drawn on the bed lengthwise. As they grow, earth them up like Potatos; small bulbs become large, and produce offsets; the middle-sized and large ones, large clusters. Under this kind of treatment, 60 bulbs planted out in spring are reported to have produced 360 in the following July. The second method is, when the Onions have ripened, but not before, to take them full size, and when they begin to get a little brown at the top, to clear away all the soil from the bulb out to the ring from which the roots proceed, thus forming round each bulb a basin, which catches the rain and water given in the watering-pot. The old bulbs then increase and begin to form new ones, and if kept properly moist, and the ground good, the clusters will be large and numerous, and bulbs grown thus above ground are said to be sounder than those grown below, and to keep better.

REGAL HORTICULTURAL SOCIETY EXAMINATIONS SCHEME.—*C. S.* The "richest fruit a Lily" means that you must get a recommendation from some one who is a Member (or Fellow) of the society, which should not in any case be a difficult matter. It is not necessary to obtain admission to have been educated in a "School of Art," or to have a "thorough" knowledge of botany; but of course some knowledge of botany will be necessary before passing the examination. There is no restriction as to nationality.

SPIRAEA BRACHYBOTRYS—*H. Anderson.* The leaves of your seedling are very distinctly marked with longitudinal stripes of creamy white, and no doubt the plant is a very ornamental one of its class. It is quite distinct from anything we have previously seen.

TAX—*E. B.* Your request shall be attended to.

ERRATUM: In last week's Number under the head of Florists' Flowers, six lines from the bottom, for "descending to," read "discarding."

Seeds for the Farm.

A DESCRIPTIVE PRICE CURRENT is just published, 40 pages, large octavo.

Copies can be had on application to Mr. ALFRED BREWIS, London Seed Company, Limited, 68, Welbeck Street, Cavendish Square, W.

THE LONDON SEED COMPANY, LIMITED, was established by the purchase of one of the Oldest Established Firms in the Kingdom, of 80 years standing.

LARGE PURCHASERS of FARM SEEDS are supplied on the most favourable terms.

Apply for the PRICE CURRENT, just published by the London Seed Company, Limited, 68, Welbeck Street, Cavendish Square, London, W.

All Seeds Carriage Free by the

LONDON SEED COMPANY, LIMITED.

68, Welbeck Street, Cavendish Square, London, W.

See the PRICE CURRENT and FARM DIRECTORY just published, and which can be had on application gratis and post free.

Seeds for the Garden.

COLLECTIONS of GARDEN SEEDS, enough to Supply a Garden all the year round, 10s. 6d., 20s., 40s., and 60s. each.

For particulars apply to the London Seed Company, Limited, 68, Welbeck Street, Cavendish Square, W.

Seed Corn from the Chalk.

ALL THE MOST APPROVED VARIETIES SUPPLIED BY

RAYNBIRD, CALDECOTT, BAWTREE, DOWLING, AND COMPANY, LIMITED.

Address, Basingstoke; or 89, Seed Market, Mark Lane, London, E.C.

*** Samples and prices on application.

RAYNBIRD, CALDECOTT, BAWTREE, DOWLING, AND COMPANY, Limited,

CORN, SEED, MALTSTER, and OIL-CAKE MERCHANTS,

Address, 89, Seed Market, Mark Lane, E.C.; or Basingstoke.

Samples and Price Post free on application. Prize Medals, 1851, for Wheat; 1862, for "Excellent Seed Corn and Seeds."

GRASS SEEDS for Laying Land Down to Permanent Meadow and Pasture, allowing 2 bushel of Large Seeds, and 12 lbs. Small Seeds to each acre. Price 30s. per acre.

MIXTURES for IMPROVING OLD PASTURES, 1s. per lb.

MIXTURES for LAWNS, 1s. 6d. per lb.

PRICE LISTS free.

GEORGE GIBBS & CO., Seedsmen, 25 and 26, Down Street, Piccadilly, W.

Brighton and Sussex Seed Warehouse.

EDWARD CARPENTER'S MIXTURES of PERMANENT GRASS and CLOVER SEEDS.—Best quality, 36s. per acre (2 bushels), and 12 lb. Clovers and small grasses per acre).—See testimonials in Catalogue.

EDWARD CARPENTER'S RENOVATING MIXTURES for Improving Old Pastures.

PRICED CATALOGUES of KITCHEN GARDEN, FLOWER, and FARM SEEDS now ready.

EDWARD CARPENTER, Seed Merchant and Grower, 96, St. James's Street, Brighton.

Very Early Sheep Feed.

SUTTON'S IMPROVED ITALIAN RYE-GRASS.—This "Improved" Italian Rye-grass is recommended in preference to every other variety, producing three or four heavy crops in one summer, and being almost as early as Common Rye-grass.

At a Meeting of the Royal Agricultural Society, on March 16, in a Lecture delivered by **Alfred Hughes**, Esq., of Thorness, Isle of Wight, Mr. Hughes said—

"I have sown a portion of Oat land to lay down with Sutton's Improved Italian Rye-grass, the most reliable plant I have come across for some years for Ewes and Lambs in the Spring. When I fell you I got it in the spring, and the seed was ripe it rather harvest with guano, and that in the autumn, when my sheep fed it off, it was up to their knees, and that I fed it off again this spring with Ewes and Lambs. Mr. Hudson will attest that from my own land."

The Italian Rye grass with cut is sold by SUTTON, of Reading, is a most astonishing vigorous plant; indeed, I never saw anything to equal it in the courses I all my experience."

Several years have elapsed since the present of their Improved Italian Rye grass, which is a very different and superior article to much that is sold as Italian Rye-grass.

Present price, 6d. per bushel; cheaper in quantities over 5 qrs. Carriage free in quantities of 5 bushels and upwards.

Quantity required per acre, if sown alone, 3 bushels.

Royal Berkshire Seed Establishment, Reading.

Improvement of Grass Lands.

SUTTON'S RENOVATING MIXTURE SHOULD BE SOWN.

This Mixture consists of the finest Grasses and perennial Clovers, and if sown early in the season the improvement in the pasture will be very great, and at small expense. Quantity of Seed required per acre, 12 to 12 pounds. Price 10d. per lb.

From T. E. OSMOND, Esq., *Thorpe-le-Soken, February* 27, 1865.

"Your Renovating Mixtures for old pastures have answered my purpose well."

From J. BLACKETT, Esq., *Thorpe Lee, Egham, September* 30, 1865.

"Mr. Blackett will be obliged to Messrs. Sutton to send him fifteen bushels of the Renovating Grass Seed, of the same quality as last year, which was excellent."

From W. HARPER, Esq., *Agricultural College, Whitby, June* 1, 1865.

"You will be glad to hear that your Renovating Mixture for our Home Meadow answered remarkably well. It is now the greenest and freshest piece of land in the neighbourhood."

PRICED LISTS grants and post free. All goods carriage free, except in very small parcels.

SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

SUTTON'S MIXTURES of CLOVERS and RYE-GRASS.—To be sown with Corn for a crop of Clover, &c., which will produce good feed during the Autumn, and in the following year.

CLOVERS and ITALIAN RYE-GRASS (Messrs. SUTTON'S Mixture), for One Year's Clover Hay, 45s. per acre.

CLOVERS and COMMON RYE GRASS (Messrs. SUTTON'S Mixture), for One Year's Clover Hay, at 34s. per acre.

CLOVER and RYE-GRASS MIXTURE for PERMANENT PASTURE (Messrs. SUTTON'S Mixture), at 12s. 6d. per acre

In the Mixtures of Clovers and Rye-Grass described above, we generally give 14 lb. of Clovers (principally Red and Alsike) and one peck of Rye-Grass per acre. But where more Rye-Grass should be desired, it can be supplied without altering the price, by omitting a pound or two of Clovers. If but one kind of Clover is required to sow with the Grasses, it will be sufficient to name the sort in giving the order, and the proper quantity will be sent.

*** Those who require Seed to sow with Corn for One Year's Clover Hay, and save themselves the trouble of purchasing the mixture for their soil, by ordering the above-named Mixtures for the number of acres to be sown.

GRASS and CLOVER SEEDS, for Two Years' Lay.—This Mixture contains a large proportion of Perennial Clovers, and under favourable circumstances will often stand for three years

The following are included, and invariably answer well:—

Broad Red Clover	Round-headed Cocksfoot
Perennial do. (Cow Grass)	Sheep's Fescue
White Clover	Timothy
Alsike Clover	Levis's Perennial Rye-Grass
Yellow Trefoil	Sutton's do.
Meadow Foxtail	Italian Rye-Grass "

The quantity required per acre is one bushel, weighing about 25 lb. Price 30s. per acre.

GRASS and CLOVER SEEDS, for Three or Four Years' Lay.—The sorts contained in this Mixture are somewhat similar to the preceding, but the quantities of Permanent Grass Seeds are increased to insure the continuance of the pasture for three or four years. The quantity required per acre is two bushels. Price 24s. per acre.

The Mixtures are chiefly for grinding, producing famous crops of Grass or Hay, but must not be expected to form Permanent Pastures.

From C. F. THRUSTON, Esq., *Tolgarth Hall, Machynlleth.*

"I had a most famous hay crop on a 10-acre field from the seeds for three years you sent me last season. I have never, since I commenced farming, had such a heavy crop."

PRICED LISTS of other FARM SEEDS gratis and post free.

All goods carriage free; 5 per cent. discount allowed for cash payment.

SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

Sutton's Prize Mangel Wurzel,

TURNIP, IMPROVED KOHL RABI, &c., &c.

For PRICES, see

SUTTON'S NEW FARM SEED LIST, which may be had gratis and post free on application to

SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

SUTTON'S YELLOW GLOBE, Price 1s. per lb.

Lowest price per cwt. on application.

SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

MANGEL WURZEL SEED from large Bulbs.

Cheaper by the cwt.

	Per lb.—s. d.
Good YELLOW GLOBE..	0 9
" ORANGE GLOBE..	0 9
" RED GLOBE	0 9
" LONG RED ..	0 9
" LONG YELLOW ..	0 9

SUTTON'S

Selected Mangel Seed

from Selected Roots.

Cheaper by the cwt.

	Per lb.—s. d.
SUTTON'S Selected YELLOW GLOBE	1 0
Do. do. ORANGE GLOBE	1 0
FISHER & HOBBS' ORANGE GLOBE	1 0
STRATTON'S RED GLOBE	1 0
SUTTON'S ELVETHAM LONG RED	1 0
SUTTON'S Selected LONG YELLOW	1 0
New YELLOW INTERMEDIATE..	1 6
Do. RED do.	1 0
NORBITON GIANT LONG RED	1 6
BERKSHIRE PRIZE, or SUFFOLK CHAMPION, New	2 6

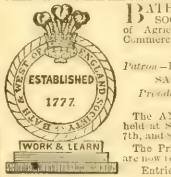
Agricultural Seeds.

GEORGE GIBBS AND CO., SEEDSMEN, beg to inform the public that their CATALOGUE of PRICES is now published, and will be forwarded free on application.

25 and 26, Down Street, Piccadilly, London, W.

NEW FARM SEEDS of best selected quality. PRICED DESCRIPTIVE LIST post free upon application.

JAMES DICKSON & SONS, Seed Merchants, &c., 102, Eastgate Street, Chester.



BATH and WEST of ENGLAND SOCIETY, for the Encouragement of Agriculture, Arts, Manufactures, and Commerce.

Established 1777

Patron—H.R.H. The Prince of WALES, K.G.

SALISBURY MEETING, 1866

President—The Right Hon. the EARL of ILCHESTER.

The ANNUAL MEETING, 1866, will be held at SALISBURY, on the 4th, 5th, 6th, 7th, and 8th of JUNE NEXT.

The Prize Sheets and Regulation Papers are now ready.

Entries will close on the 14th of April.

Application to be made for HORSES, POULTRY, IMPLEMENTS, and HORTICULTURE, to the Secretary, Bath.

For ARTS, MANUFACTURES, and LACE, to R. R. M. DAW, Exeter.

By Order of the Council,

JOSIAH GODWIN, Secretary,

4, Terrace Walk, Bath.

17th February, 1866.

The Agricultural Gazette.

SATURDAY, MARCH 3, 1866.

—— THE Cattle Plague Bill introduced by Mr. HUNT, Mr. HOLLAND, and others, which has passed through the House of Commons, is given in another page in the condition in which it at present stands. It was the subject of a conversation on Thursday evening in the House of Lords; but no chance appears to exist of any such quick movement for it through the Upper House as was given to it through the Commons. It is now before a Committee of the Lords, whence, judging from the objections of the Government, the Duke of BUCCLEUCH, and other Peers, it will issue with considerable alterations and additions.

—— The returns for the past week from the Government Inspectors, which are published in another page, report a considerable diminution, nearly 1500, in the number of cases of the Cattle Plague. But we fear this is again a merely apparent not an actual advantage. Some hundreds of these officers have failed to send in their returns in time; and among these are some who had reported upwards of 2000 cases last week. The utmost therefore that can be said is that the *progress* (meaning, thereby, the new cases) of the disease is at present nearly stationary. The Plague is still extending, but not at present at a greatly increasing rate.

ARE our readers aware that THE EDUCATIONAL EXAMINATIONS of the English Agricultural Society are about to become a political agencury of the most important kind? The member for Hull has lately introduced a Bill by which the franchise is to be conferred on any one who can pass a certain school test. Whether the Bill will ever be enacted remains to be seen; we know, however, that Mr. ACLAND, who is one of the most active members of the Agricultural Society's Education Committee, has declared his approval of the so-called "fancy" franchise which is to be won in this way. But the point which throws most light on the attitude of the Agricultural Society is Mr. HARRY CHESTER'S testimony in the matter. If there be one more than another to whom application might the most safely and confidently be made for trustworthy information on the educational methods, machinery, or status of this country, it is Mr. HARRY CHESTER. His official connection with the subject has, we believe, been almost life-long, and his warm interest in it lets no opportunity for its promotion pass him. The whole energetic agency of the Society of Arts in connection with general education has been organised by him and carried to its present very successful issue. And in him, as well as Mr. ACLAND, the Bill of Mr. CLAY, in which, no doubt, he sees another furtherance and stimulant of the education of the working class, finds an energetic advocate.

Now what chief purpose, according to this great authority on educational subjects, is the Royal Agricultural Society of England, which has been lately exhibiting its anxiety on this subject, the most likely to serve? Here is a warmly interested student of every movement, whether national or class, professional or general, for the promotion of education. The recent activity of the Agricultural Society has not escaped him; he has been a friendly observer of all that under Mr. ACLAND'S guidance has during the last few years been done by the Council of the Society in discharge of the educational duty imposed by its Charter. And what does this experienced and impartial educational authority see in this movement of the National Agricultural Society? Whither does he see the movement tending?

In his recently published letter on the proposed Educational Franchise, and on the existing machinery for superintending the test through which it is to be achieved, he points out that there are difficulties in the way of the cooperation of the Society of Arts. Its examinations are hardly the thing which the promoters of the Bill require. But here is an agency wide as the agriculture of the country, having a certain charge, you may say, of every portion of its surface, and desirous, of course, to make its influence felt wherever there is an acre to be tilled or a cottage to be tenanted. It is but lately, moreover, that the English Agricultural Society has felt or expressed its anxiety for the education of its great constituency; and new brooms are proverbially efficient—and wielded, as in this case they are, with all the impulsive energy of youth, we cannot doubt that the ground will be well covered, swept, and worked. In short, Mr. HARRY CHESTER thinks the educational examinations of the Royal Agricultural Society, with one or two other agencies he names, are the very machinery which the new Franchise Bill requires for its successful operation.

Is not this a pleasant surprise for the members of the Royal Agricultural Society? Let them not think that the suggestion thus referred to is the utterance of a mere reckless impulse. We repeat that Mr. CHESTER has spent a long life in the promotion of education; and his writings on the subject are to be received as the well weighed utterances of experienced and judicial impartiality. He has been for many a long year an undoubted power and authority in this country on all questions connected with this subject. We hope then that at the next meeting of the Agricultural Society's Education Committee some member will call attention to the light in which their past proceedings thus appear to such a spectator. Surely it will occur to some of them to inquire how it is that one of the most intelligent of those who have been watching them has come to imagine that the educational agency they have organised will be available for the purpose of this Franchise Bill.

But indeed there is no difficulty at all in accounting for the blunder.—The fact is, the train has left the line, and is careering without guidance; and thus any one upon a hobby is at liberty to believe that it is coming his way.

Perhaps Mr. HARRY CHESTER'S idea of the educational and political serviceableness of Mr. ACLAND and his friends upon the Council of the Agricultural Society may do what nothing hitherto has yet accomplished, and awaken the authorities to the real nature of the sole purpose for which this great professional Society was established.

Our readers no doubt saw last week the latest report of its Education Committee.—What on earth has the Agricultural Society of England to do with prizes for proficiency in "Pure

Mathematics!" We do not doubt at all that such an intellectual training as the mastery of Euclid gives is of the greatest service to a young man, whether he is to be a farmer or not. But so also, and even more indeed, will such a moral training as is indicated by the urgent, cordial, and thorough inculcation of, say the Church Catechism, be of the utmost service to him in the agricultural, or any other future open to him. Will any one move the Educational Committee in Hanover Square to offer prizes which shall energise and guide the efforts of teachers everywhere on *this* important point?—There is not a single argument for interference in the one case, which does not apply with even greater force to interference in the other.

Surely the right way to hasten and achieve the progress which we all desire is for every agency and man to do his duty in that station which properly belongs to him. Parents more and more are realising the true interests of their children, and thus the better education of every succeeding generation comes to be recorded. Country gentlemen and others are more and more exerting themselves for the real welfare in this way of their neighbours of every rank of life. Our great educational establishments are extending their operations and holding out those offers of help which lie within their proper office to present. Let agricultural societies then follow the general example and stick to their proper business. Will the real interests of farmers' sons during those years when their general education is proceeding be any the less cared for because these few "one," "two," and "five pound" prizes offered by this "professional" Society for general educational status and for mathematical proficiency have been withdrawn? It is simply ludicrous to imagine it. There is no want anywhere of interest in general education; and it is this alone that these prizes might possibly help somewhat to excite. The interest is all alive already; the real country difficulty is want of schools, and that is one which even Mr. ACLAND will hardly ask the Society to spend its funds in meeting. No one need fear that were the Agricultural Society at once to withdraw from the field of general education, where it has no business whatever to be, the smallest mischief would be done.

We strongly recommend that no time be lost in getting the "engine" once more safely on the "line" which has been expressly laid down for it. Let the driver be discharged; and let the voice of the guard, who we see still stands at his post, notwithstanding that the train has long been out of his control, be once more heard.

Mr. HOLLAND has, no doubt, retained his formal presidency of the Committee for the sake of that small modicum of encouragement to *professional* education which alone has hitherto been sanctioned. The offer of those two small prizes for Chemistry and Mechanics applied to Agriculture, which are the only points of the whole scheme consistent with the Charter of the Society, and which he obtained as a sort of concession, we presume, to that "vulgar prejudice" which considers agricultural education to be merely the means of making better farmers of us, he no doubt believes to be the thin edge of the wedge by which this so-called vulgar prejudice may be introduced, and perhaps come, ultimately, to be received as the sound and orthodox belief. And notwithstanding therefore that the programme published last week must run almost entirely counter to his views, we see that it was presented by him to the Council.

What is thought of the whole scheme as it at present stands is well stated in the following letter, received since the above was written, from one of the most intelligent and influential of the many agriculturists who have been watching with curiosity and interest the proceedings of the Society on this subject.

"AGRICULTURAL EDUCATION.

"*Munificence of the Council of the Royal Agricultural Society of England.*

"Sir,—In the course of last year I recollect to have seen many articles of yours, and contributions from numerous correspondents in reference to the long neglect of the Society of the injunction in their Charter to provide for the education of those who depended on agriculture for their support. It having been understood that the Council took the matter in hand, the discussion ceased, and I had for some time looked with some interest for the result. I saw this recorded in print recently, and it immediately recalled to my mind an example in the Latin Grammar: 'Parturiunt montes, nascetur ridiculus mus,' which I may translate for the benefit of embryo agriculturists thus: the Council, after much labour, brought forth 30*l.*, to rouse the energies of the farming youth of Great Britain to compete for the following prizes for the best informed in the sciences of Mechanics and Chemistry as applied to Agriculture, viz.:—

Mechanics—2	prizes of	15	0s. each.
,, 2	,,	1	0 each.
Chemistry—3	,,	5	0 each.
,, 2	,,	1	10 each.
		£30	0

I am rather surprised to find there were any competitors, but it further appears that there were actually nine. *Argus.*"

THE Reports of the Harvest of 1865 which have appeared during the past two weeks in the *Mark Lane Express* present even a worse account of it than our own reports during its in-gathering. On August 12 last year we had declared the Wheat on the lighter soils and loams to be generally inferior; Barley on the lighter and thinner soils to be much below an average, and though much the best crop of the year, upon the whole it, too, was generally inferior. The Oat crop, excepting the few instances where winter-sown, was the poorest crop we had had for many years, and Beans and Peas were generally below their usual yield. The tabular statement of returns on which this character was based was as follows:—

NUMBER OF RETURNS.

	Under Average.	Average.	Over Average.	Total.
Wheat	76	90	29	195
Barley	40	112	28	180
Oats	154	27	2	183
Beans	64	53	4	121
Peas	37	67	6	110

Our contemporary, now, after a large proportion of the crop has been threshed, publishes about 600 reports from correspondents in different parts of the country, the percentages of which, under the heads of average and over average, and under average respectively, are in the following table compared with the percentages indicated by our own reports quoted above.

		Percentage of Reports.	
		February, 1866. *Mark Lane Express.*	August, 1865. *Agricultural Gazette.*
Wheat.	Over average ..	10	15
	Average	43	46
	Under average ..	47	39
Barley.	Over average ..	9	16
	Average	52	62
	Under average ..	39	22
Oats.	Over average ..	4	1
	Average	20	15
	Under average ..	76	84
Beans.	Over average ..	5	3
	Average	37	44
	Under average ..	58	53
Peas.	Over average ..	11	6
	Average	49	61
	Under average ..	40	33

In every case but Oats it appears from the above figures that the threshing-out has revealed a poorer crop than was anticipated in the very poor accounts that were received at harvest time.

—— WE are extremely glad to hear that Mr. RICHARD GARRETT, J.P., of Leiston Hall, near Saxmundham, whose name is known to agriculturists all over the world, and whose personal benevolence and philanthropy have been long exhibited in Suffolk and elsewhere, has been advanced to the Deputy-Lieutenancy of his native county—a distinction conferred by the LORD-LIEUTENANT in recognition of "great and valuable services."

THE CAMPAGNA OF ROME.

To an agricultural visitor to Rome, the immense plain of the Campagna (through which, come from what quarter he may, he must approach it) offers at once so interesting a subject, that it is much to be wondered at if he do not find it creeping into his thoughts—with a good many 'notes of interrogation' hanging about it—during as many spare hours as his residence inside the walls of the Eternal City may allow, let his other engagements be what they may. The Campagna is so totally unlike anything seen before, in Italy, or in Switzerland, or in France, that its appearance, seen *viâ* those countries, is more striking than it would be, could you come plump upon it, fresh from English or Scotch scenery

Those who, never having been at Rome, hear the Campagna spoken of, usually form a false idea, or no idea at all, of its enormous extent. It stretches like a great amphitheatre, bigger than most of the English counties, ninety miles long by five-and-twenty wide, from the Circean promontory on the south up to the Sabine Apennines which enclose it on the north-east; Rome itself lying about the middle of it.

There is not a morsel of it that I have seen, which gives the idea of bad land: on the contrary, it has some of the best-marked signs of richness; to be noticed presently. Yet there is a peculiar wild and deserted look which puzzles the eye not a little, so near to one of the great capitals of the world, and would puzzle it more, the more it looked, were it not for the explanation whispered in that mysterious and fatal word Mal-aria!

What is the Malaria of Rome? Treatises have been written upon it: all sorts of learned conjectures spent upon it: but as for any practical result, they might as well have never been penned or printed. This *earth-plague*, which is quiescent in the winter months, comes on with the advance of spring, hovers upon the soil during the summer months, and like a Plague indeed, has littered the lovely plain with the bones of deceased palace-villas including some of the most noble and costly dwellings that have ever been piled upon the earth by human wealth, and taste, and luxury. Witness the architectural remains fancifully called "Roma Vecchia," where you may wander for hours among massive foundations, and spacious arches enclosing squares and spanning broad passages, once belonging to a stupendous Villa or cluster of Villas, now broken down in shapeless confusion, and run over by immense flocks of sheep guarded by the Campagna shepherds with their picturesque skin dresses and long pole-lances, and their fierce aggressive dogs.

What is the pest whose fatal breath has occasioned this change, in the lapse of centuries? To attempt an answer to this, we must first talk over the geological nature of the district. For let the walls of Rome be as old and their foundations as deep as they may, *this* is older and deeper still; aye, in truth by as much as might make Romulus and *Pio Nono* shake hands *across* their six-and-twenty centuries, like mere cotemporaries!

I believe I shall not be far wrong in describing the whole Campagna and many of its boundary hills* as the extended scene of a long extinct volcanic action. All bear the marks of igneous origin. The volcanic craters have long disappeared; but most of the stone of which Rome was built, the picturesque honeycombed *Travertine* (of the Coliseum), the grey hard *Peperino*, used for window-sills and staircases, and the black *Tufo* whose ten-feet Cyclopean blocks are still seen in the walls of Servius Tullius, are all volcanic; the sand which was, and still is used in the mortar, the rich chocolate-coloured *Pozzolano*, is volcanic; the very Lime, from the calcareous and partially dolomitized rock of Monticelli, even the clay-pits of Formello, are referable to the same cause, viz. the upheaving of an extensive district by subaqueous volcanic forces.

A soil so composed, and powerfully impregnated with the carbonic gases developed and evolved by igneous action, would be innocent, and healthy to animal life, under two separate conditions; one that it should not have been disturbed at all by cultivation, the other that it should be cultivated actively, thoroughly, and to its utmost capacity of production.

In the early ages of Rome, when almost literally "every rood of ground maintained its man;" for each citizen of whatsoever grade, was limited to *two jugera*, or acres, which he worked like a garden, in the immediate vicinity of the city, the miasmata would be absorbed by the abundant vegetable growth of spring and summer; while the surrounding plain being undisturbed, each would fulfil the conditions of innocuousness: and as numbers increased (and the walls of Rome are said to have once embraced a population of four millions!), still the active hand of labour, and demand for food, kept pace with the *other* no less imperative demand, viz. that the injurious exhalation of the soil, the volcanic breath of Mother Earth, should be absorbed as fast as it was evolved, by that part of Creation destined to feed upon it—an abundant Vegetable produce. So long as this state of things continued, all would go well. But no sooner did population begin to diminish, or even that existing grow slack in labour, finding their granaries in distant and tributary Provinces of the Empire, than the whole conditions would be changed. The soil once disturbed and long accustomed to active production, its *natural skin* (so to speak) broken up, would now, under the evaporative influence of summer heat, after the winter frosts and spring rains, begin to exhale spontaneously the mephitic gases for which no adequate absorbent existed in the scanty pasturage of hundreds of thousands of acres abandoned by the spade and plough to take what poor covering they might, and now and then disturbed at distant intervals, as occasion might require or caprice might operate.

Such, however, is exactly what *has* occurred, and

* The mass of Monte Cavo (*Mons Albanus*), which closes the mountain-line to the south, is clearly volcanic, and unconnected with the Apennines. Hannibal had pitched his camp in the dejected bed of an *extinct crater* when he was threatening to set fire to Rome!

continues to the present day. Everywhere the ancient footmarks of the plough are visible; now and then a sort of interjectional culture bursts out, and is dropped again, as the stupidest of Governments may for a spasmodic period favour or prohibit the importation of corn and other cereals, and native idleness shrinks from the task of anything approaching to a regular course of cropping. Everywhere the large but ill-bred leggy flocks are seen slowly moved across the landscape, picking off the nascent herbage, leaving the surface bare and sprinkled with their dung, a system which while it helps to enrich a soil naturally fertile, actually increases the evil both by removing the natural clothing too soon, and supplying to the aftergrowth a ready element which lessens its natural demand upon the soil.

It sounds strange when a good thing becomes literally a source of evil. It seems so contrary to one's habitual experience, that I can hardly without a feeling of reluctance broach what to those who have not personally witnessed it, must seem like a bold theory, at issue with some of our best experience, —that the droppings of cattle should add to the unwholesome condition of the soil. But during repeated, and not unobservant rides and walks in the Campagna, the view that I have taken has forced itself upon me by evidences that I cannot fully describe in detail, but which have to my mind been quite irresistible. In an English meadow, or upland, or on a stubble, or Turnip crop, or wherever in fact a flock of sheep has been folded, it is readily sensible to the smell, but it is a wholesome natural odour such as always occurs when the absorbents of the soil are doing their duty. Here it is quite the reverse; a heavy suffocating loaded atmosphere positively makes you shrink from the spot with a sort of loathing not unlike what is felt in a field of Potatos where the disease has thoroughly got possession. This cannot be right. It is as if the earth rejected its natural food, was sick with innate repletion, for want of its *natural exercise*. Oh! for a good broad-leaved crop of Clover, followed by rattling Wheat *immediately*, and then an early autumn "smashing up" and a hearty winter covering of Swedes and Mangel, to take up and convert into wholesome *solids*, both for man and beast, this drugged miasmatous condition of the soil, and make the air as pure as the breath of morning, or the sunshine that sparkles through it; for such I feel convinced it would do, and that if this could be extended throughout the broad Campagna, we might soon cease to hear of the Malaria of Rome. *Tulpa.*

(To be Continued.)

THE CATTLE PLAGUE.

1. The following returns were issued yesterday:—

These returns do not profess to give the total number of cases which have occurred in Great Britain, but only those which have been ascertained from information received at the office from inspectors. Columns 1 only record the cases reported as having commenced during the weeks indicated by the headings; "back" cases being added to columns 2.

Cattle Divisions.	1 Number Attacked.		2 Total Reported Cases from Commencement of Disease.				
	Week ending February 17.	Week ending February 24.	Attacked.	Killed.	Died.	Recovered.	Unaccounted for.
Merrop. ..	16	12	7589	3193	3361	534	501
S. Eastern .	20	16	3866	1387	2575	442	242
S. Midland .	619	711	14,658	2380	9190	1247	851
Eastern Co.	182	262	8879	3168	4540	663	508
S. Western .	20	18	1400	369	728	146	146
W. Midland	1441	293	7365	893	5293	855	1012
N. Midland.	918	820	8802	1415	5549	780	868
N. Western .	4636	3093	42,849	1205	31,304	3522	6818
Yorkshire .	1809	1309	27,456	1524	17,313	5069	3550
Northern .	691	777	10[illegible]	366	2390	759	573
Monmouth. & Wales .	335	268	7656	107	5[illegible]	970	906
Scotland ..	2237	1843	42,774	4177	25,116	9013	4110
	13,001	10,467	177,689	20,365	113,217	23,769	19,765

2. DISINFECTION.—The following recommendations have been drawn up by the Royal Commission on the Cattle Plague, and circulated to the local authorities throughout the country:—

"Directions.

"Recommendations on this subject may conveniently be ranged under the following heads:—

"1. The cleansing of sheds, infected or otherwise: of markets, slaughter-houses, lairs, &c.

"2. The cleansing of waggons, trucks, &c.

"3. The disposal of manure or litter.

"4. The disposal of carcasses of infected animals.

"5. The disposal of blood, offal, and hides of apparently healthy cattle which have been killed after being in contact with infected cattle.

"6. Precautions to be taken by butchers, inspectors, and others, who visit farms for the purpose of seeing or killing diseased beasts.

"7. Further disinfecting measures which may be useful in infected or endangered farms.

"1. *The Cleansing of sheds, infected or otherwise; of Markets, Slaughter-houses, Lairs, &c.*—Wash the woodwork of the sheds everywhere with boiling water, containing in each gallon a wineglassful of carbolic acid. Then lime wash the walls and roof of the shed with good, freshly-burnt lime, adding to each pailful of whitewash one pint of carbolic acid. Sprinkle the floors, after well cleaning, with water, with undiluted carbolic acid. Lastly, close all the doors and openings, and burn sulphur in the shed, taking care that neither men nor cattle remain in the shed while the burning is going on. Allow the shed to remain closed for at least two hours, then open doors and windows. About 1 lb. of sulphur is sufficient for a four lb. stall shed. The sulphur should be burnt in the centre of the shed, so as to get the fumes diffused everywhere. It may be placed on a shovel of burning coals. This process should not only be used in sheds where infected cattle have been kept, but also where there is any reason to apprehend the presence of infectious matter on the premises. When disease is in the neighbourhood it may be usefully employed once a fortnight. In cleansing sheds from which the cattle cannot be removed, sulphur must not be used. In such a case follow the above instructions, omitting only the fumigation with sulphur. All markets, slaughter-houses, lairs, and places where cattle have been customarily collected, should be carefully and thoroughly disinfected in the above manner before they are used again, the manure, blood, and offal being treated as directed in sections 3 and 4.

"2. *The Cleansing of Waggons, Trucks, &c.*—Well scrape the boards of the truck or waggon, and burn the scrapings. Then wash everywhere with boiling water, adding some washing soda. Then wash again with chloride of lime or carbolic solution.

"3. *Disposal of Manure or Litter.*—The most effectual way of disposing of manure or litter is to burn or bury it, but neither plan can be adopted it must be ploughed in. Before burying or ploughing it in, water it well every day for a few weeks with the carbolic solution by means of a watering-pot or hose. When the disinfectant has well penetrated, remove the heap to some convenient field, and there undertake deep ploughing, deeply in; care being taken that the whole of it is buried. If there is no arable land available, place the manure, after the above treatment with carbolic acid, in a heap in a field, and consolidate by the passage of carts over it. After a final watering with carbolic acid, cover it with at least 6 inches of earth. If the heap has to be packed over, previous to being applied to the land, water it once more with carbolic acid, and cover it again with earth. Carefully cleanse and disinfect by sponging with the carbolic solution all carts and tools used in moving the manure, and the boots of the men, as well as the feet and legs of the horses. After the manure has been removed from the premises, thoroughly disinfect the yards by the method given in section 1. Add carbolic acid to the liquid manure in tanks, in the proportion of one pint daily to every hundred gallons.

"4. *Disposal of Carcasses of Animals.*—Bury the carcase 6 feet deep; cover it well with good quicklime, mixed with carbolic acid in the proportion of half a gallon to each hundredweight.†

"5. *The Disposal of Blood, Offal, and Hides of apparently Healthy Cattle which have been Killed after having been in contact with Infected Cattle.*—Carefully collect all blood and offal mix with a little carbolic acid, and bury as directed in 4. Hides must be disinfected either by washing in a solution of carbolic acid, or by soaking in a solution of chloride of lime. It is considered advisable by importers of hides to first remove the moisture by covering them for 12 hours with common salt before they are soaked in the above solutions.

"6. *Precautions to be taken by Butchers, Inspectors, and others, who visit Farms for the purpose of seeing or killing Diseased Beasts.*—The greatest care as to cleanliness is necessary in the case of butchers and others who go to farms to kill or see infected animals. They should never go near healthy beasts in their infected clothes. They should wash carefully, and dip their boots in the carbolic solution, and should thoroughly brush their clothes, sprinkle or sponge them with the same solution, and expose them to the air. In addition to these precautions, inspectors will follow the directions already issued for disinfecting the instruments which they use with, or near to diseased animals must also use similar precautions. All cloths and baskets used for meat should be steamed or plunged into boiling water after being used.

"7. *Further Disinfecting Measures which may be useful in Infected or Endangered Farms.*—Wash the cattle all over with a solution of the carbolic acid, at the rate of half a pint to half a gallon of warm water. This should not only be done when cattle have been near infected stock, but also when disease is in the neighbourhood. In the latter case it may advantageously be done once a week. Take a paint brush, with bristles about three inches long, and having dipped it into the undiluted carbolic acid, well sprinkle the liquid over the floors of the cattle-sheds, the lower parts of the walls, and the droppings of the animals every day. Be very particular to have the farm buildings always smelling of carbolic acid, especially those sheds containing cattle. Needful care must be taken to prevent the cattle licking the carbolic acid, as it is likely to do good rather than harm. All clothing, baskets, cloths, tools, and utensils of any description may readily be disinfected by exposing them to the action of burning sulphur in a close shed while undergoing fumigation as directed in section 1. Against especially the former the following safeguards are of little use when cleanliness is not observed. The former must never be considered a substitute for the latter."

3. MR. WORMS' TREATMENT.—The following is a tabular statement of the progress of the cattle plague at Mentmore up to Feb. 22, authenticated by Professor Simonds, who says that from the manner the cattle have been herded together other cases may be daily looked for, which will afford a still larger field for Mr. Worms' operations.

Result of Inspection of Mentmore Herd of Short-horn Cattle, Feb. 22.

Three Inspections.

No. 1, attacked, February 9; died, February 12.—This animal was first seen by Mr. Lepper, veterinary surgeon, Aylesbury. She was placed under Mr. Worms' care the day succeeding the attack.

Nos. 2 and 3, alleged attack, February 10; attacked, February 19.—These animals were subjected to Mr. Worms' treatment on February 10. These were seen by me on Feb. 14

* Wherever carbolic acid is mentioned it must be understood that either this or crosylic acid may be used indiscriminately. These two agents are derived from coal tar, and have the greatest similarity to each other. Of the two, carbolic acid is better known, and is in general easier obtained; but crosylic acid appears to possess slightly more antiseptic properties, and is at present cheaper. The common kinds of commercial "carbolic acid" consist, almost entirely, of crosylic acid. If carbolic or crasylic acid cannot be obtained, chloride of lime must be used, in the proportion of one pound to a pailful of water. Where chloride of lime is used, neither carbolic acid nor fumigation with sulphur can be employed with advantage; and the formal disinfectant, although very valuable where the two latter cannot be used, is decidedly inferior to the combination of carbolic acid and sulphurous fumigation.

† Owing to its anti-epizootic influence, the addition of carbolic acid to the lime is strongly urged in all cases where it is suspected that putrefaction has commenced.

and 17, and found to be unaffected with cattle plague. They are reported as cases.

No. 4, alleged attack, February 12. Nos. 5, 6, and 7, February 13. Nos. 10 and 11, February 17.—These animals were first seen by me on February 14, and again on the 17th, and found to be free from cattle plague. They still continue well. Were treated by Mr. Worms, and reported to me as cases of cure and convalescence.

Nos. 12 and 13, alleged attack, February 15.—Neither of these animals are suffering from cattle plague. Seen first by me February 17, and reported as convalescent.

No. 14, alleged attack, February 16, attacked, February 20.—Is rapidly sinking from the disease, was under Mr. Worms' care from February 16.

No. 15, alleged attack, February 17.—This animal still continues to be free from any symptoms of cattle plague.

No. 16, attacked, February 16; died, February 19.

Nos. 17 and 18, attacked, February 16; died, February 21.

Nos. 19 and 20, attacked, February 17.—Neither of these are severe cases.

No. 21, attacked, February 20.—This animal is rapidly sinking.

No. 22, attacked, February 20.—Sinking, but not so rapidly as No. 21.

No. 23, attacked, February 20.—Not a severe case at present.

No. 24, attacked, February 20.—Gradually sinking.

No. 25, attacked, February 21; died, February 22.

Summary of the Foregoing Accounts.

11 are unaffected.
6 are not severe cases of plague.
5 have died.
4 are sinking, under the attack.

Total .. 25 *James B. Simonds.*

[Without attributing the result here to Mr. Worms' treatment, for which undue credit appears to have been given by its promoters in this case, it yet appears that over 14 cases the Meatmore experience of the disease, according to Professor Simonds, is 5 deaths, 4 sinking, and 5 recovering.]

—— As an instance of the disfavour with which Mr. Worms' treatment has been received in this neighbourhood, I may mention that when my correspondent, Mr. Simpson, was first told the nature of it, he exclaimed, "Of all the things that have been tried, this is the most ridiculous." Since I adopted Mr. Worms' treatment I have had attacked 19 cows, 1 bull, 7 calves, 9 two-year-olds, and 17 yearlings; total, 53. Of these, two cows were shot when hopelessly ill; one calf and three yearlings died; the 47 remaining are all doing well, and some are all but recovered. Eleven new cases have to-day been placed under the same treatment, making in all 64.

At first we were not able to discover the disorder in its very earliest stage; our ingredients were of inferior quality, and the doses given not sufficiently large; and to these causes may fairly be attributed a portion at least of the deaths that have occurred.

The most serious drawback to the "Worms' treatment" is the difficulty in procuring the necessary ingredients; but with them in hand, and sharp discovery of the first symptoms, I believe the battle is already half won. Delay but a day too long, and this treatment loses its wonderful efficacy. *T. Gladstone, Basque, Laurencekirk, N.B., Feb. 24.*

"Fettercairn, Feb. 24.

"Sir Thomas.—The appearance of your cows to-day, and, indeed, your whole stock (considering that five days ago they were attacked with rinderpest of a very virulent type, as exhibited in the animals that have died both at Crichieburn and the dairy, and also the bad case that appeared some time ago at the barns), all going to prove that the days of the outbreak is by no means ended once, makes me now sanguine that a very useful and safe remedy has been found for this fearful disease that has indeed so long hovered over all the land, and more especially in your immediate neighbourhood. It is with great pleasure, therefore, that I bear testimony to the very wonderful effect Mr. Worms' prescription has had in arresting the disease in your very valuable herds.

"I confess that I had no faith in this remedy until I had witnessed its very good effects in four cases. I will be very glad, if the ingredients prescribed by Mr. Worms can be procured, to give it a fair trial, for everything that I have used hitherto has disappointed me completely. It is, in my opinion, highly proper, both for the satisfaction of Mr. Worms and the many valuable animals that may be saved by the early use of the prescription, to report at once the satisfactory effect it has had upon your herds; for had something not influenced the progress of the disease in your cows (especially) it is certain that many of them ere now would have been in a very different way." ANDREW SIMPSON, M.R.C.V.S.,

Sir T. Gladstone, Esq., Veterinary Inspector."

4. HOMŒOPATHIC TREATMENT.—The following is the recently published report of the Association for the trial of preventive and curative treatment in the cattle plague by the homœopathic method:—

This Association was formed in November last for the trial of principles of treatment for the prevention and cure of cattle plague. It has now been three months in active operation having had extensive experiments carried out, under the direct superintendence of the Association, in Norfolk, Yorkshire, and in many other localities, numerous trials in various portions of the country through persons in communication with the Association, but acting on their own responsibility. The general result has been a conviction that, while very much may be done by isolation to prevent the spread of the disease, and considerable success has followed the practice of remedial treatment when assisted by careful nursing and proper diet, yet the degree of constant watchfulness needed for the due administration of homœopathic remedies is so great that much success by this system can be managed formidable a disease can hardly be expected from any others than skilful veterinary practitioners or persons conversant with the system and method of practice.

The result of our experience shows that the disease is to a certain extent amenable to treatment. The progress of our trials would have been encouraging, however, of success, partly due, no doubt, to greater skill in treatment, but possibly also to the disease itself having assumed a less fatal character. In Norfolk the result of our first trial in November and December was 6 recoveries in 45 cases treated, which was considered by better than the average of that county at the time. In York up to the 26th January, we had 72 recoveries in 177 cases treated, being over 40 per cent. of cures, while the average of the county at the same time was 17½. In Cheshire,

where the disease has been so fatal, up to the 17th February, with 1,417 cases in 107 cases to a halt, being 30 per cent of the cases, while the average of that county was only 7. The latest returns we have is to the 14th Feb. by Mr. Hope of York, a farmer, who has during the last three months placed himself at the study and special treatment of the disease, with the most perfect success, and expresses much personally with a confidence of an eminent homœopathic practitioner of that city, treated 140 cases. He writes on the 14th inst.

"I am happy to inform you that homœopathy has held the honour of closing the city of York of the plague, for the last five cows were cured by me in 14 days, from the 28th January to the 9th February. I will just add that they belonged to a poor man, who, if his cow had been slaughtered as under the Act, would, with his family have been ruined. During the last 14 days I have been meeting farmers, belonging to various parts of York, in all of which the plague had ceased, and I am glad to say that I received a letter from all that they had lost their cattle long before they got it again, and, before the Bill can become law, they will be all well, to the great joy of the farmers."

The general result of the whole of our cases shows the following comparative figures:

	Percentage of Recoveries by Homœopathy.	Average Recoveries of the same County.
North Wales	14	7
York	45	12½
Cheshire	50	7

While we are therefore justified in believing that the work of the Association so far has not been in vain, we feel it right to add that this disease is of so complex a character, and its symptoms so varying, that very few ordinary stockowners are capable of dealing successfully with it. The greatest watchfulness and skill are requisite in carrying out the homœopathic treatment, each symptom as it manifests itself requiring specific attention, and thus calling for a greater extent of competent medical assistance than can be obtained.

The Legislature having now ordered the slaughter of infected and suspected animals, the efforts of the Association must necessarily be suspended until the results are seen. If the progress of the disease should thereby be arrested, every one will feel thankful. But should that, unfortunately, not be the result, it will then be still more necessary that renewed efforts should be put forth. The experience already gained by the Association will enable them to renew their action with the very great advantage of a more hopeful co-operation on the part of the owners of stock than they have generally met with.

The Association have to acknowledge the readiness with which her Majesty's Treasury placed temporarily at their disposal the offices which they have occupied, thus enabling them to apply the whole amount of their subscribed funds to the trials which they instituted and to the actual work of the Association.

The Balance-sheet of Receipts and Expenditure is enclosed.

MARTIN HORTON, Chairman.

6, Adelphi Terrace, E.C., 21st February, 1866.

5. THE CATTLE PLAGUE BILL.—The following is a condensed summary of Mr. Hunt's Bill in the condition in which it has been sent up to the House of Lords:—

2. The Act to extend to England and Scotland

3. An animal shall be deemed diseased if not affected with the cattle plague, and has not within 30 days been in contact with any animal so affected, and has not within 30 days been in or on any building or yard or field where any animal so affected has been kept.

4. From the 1st day of March until the 24th day of March, 1866, and thenceforth until the operation of this enactment is determined by an Order of the Lords of her Majesty's Privy Council, it shall not be lawful for any person (except as in this Act expressly authorised) to move or cause to be moved any live beast on any public highway, or on any canal, navigation, or river: provided, nevertheless, that nothing in this Act contained shall prevent the removal of live beasts within any district which the Lords of her Majesty's Privy Council shall, by Order in Council, declare to be free from cattle plague, such district having well-defined boundaries.

Licences.

5. Where separate lands are in the occupation of the same person, any live beasts, if sound, may, for the purpose of being taken from one of those buildings, yards, or lands to another, be at any time moved on any public highway, for any distance not exceeding 20 miles, and with a licence for any longer distance, provided that such distance shall not exceed two miles.

7. Any live beast, if sound, may be at any time moved, with a licence, on any public highway for any distance not exceeding 20 miles, for the purpose of immediate slaughter at a slaughter house.

8. Any live beast may, in Scotland be moved, with a licence, under such conditions as the local authority may prescribe, on any public highway, for the purpose of immediate slaughter.

10. In order to allow for the breeding of stock, a cow or heifer, if sound, may be moved with a breeding licence on any public highway for any distance not exceeding six miles to and from any place where a bull is kept. A bull, if sound, may be moved with a breeding licence on any public highway, for any distance not exceeding six miles.

11. Any calf, if sound, not being more than 21 days old, may be moved, with a licence, on any public highway in a cart or other vehicle for any distance not exceeding 20 miles.

12. Any live beast (milch cows excepted) may, if sound, be moved on any public highway within the limits of the metropolis or any borough, as defined by "The Cattle Diseases Prevention Act, 1866," subject to the provisions of Clause 17 of that Act; and beasts landed at the port of London may be moved by the officers of the Privy Council to the public slaughter-houses in Eden-street, and at the port of Bristol to the slaughter-houses in Eden-street, or to any hay or yard adjoining such slaughter-house, within the jurisdiction of the Merchants Corporation of Bristol: Provided also, that nothing herein contained shall interfere with the moving of sound beasts on the deck of Liverpool to the Stanley Market, and beasts on the deck of Liverpool to the Stanley Market, and beasts on the deck of Liverpool to the Stanley Market, and beasts from the landing-place on the river to the said market, and thence to the place where they are to be slaughtered, and back from the market to the landing-place, all such beasts being moved with a licence from the local authority.

13. Provides for the obtaining a licence.

Penalties, Powers, Rights, &c., &c.

14. Penalty on cattle owner moving contrary to the Act, not exceeding 20*l.*, or being such owner, to be committed with respect to more than four animals, a penalty not exceeding 5*l.* for each animal may be imposed instead of the penalty of 20*l.*

15. Where any person is charged before a justice of the peace with having moved a live beast on a public highway, it shall be presumed that it has been so moved in contravention of this Act until the contrary is shown.

16. Any constable or other peace officer may stop and detain any live beast being moved in his view or over any public highway which he has good cause to suspect is being so moved in contravention of this Act, and may without warrant apprehend the driver or person in charge of the beast, unless such driver or person shall produce a licence authorising him to move such beast, and such driver or person shall be taken as soon as may be before a justice to be examined and dealt with according to law; but any beast or person detained or apprehended under this enactment shall not be detained by any constable or other peace officer of his own authority longer than is necessary for obtaining the order of a justice in the matter, and in no case for more than 48 hours at the utmost; and the constable or other peace officer detaining any beast shall cause it to be supplied with sufficient food and water during its detention.

17. Where any live beast is detained under this Act, two justices may, if it appears to them that the beast was when stopped being moved in contravention of this Act, order it to be slaughtered, and its carcase to be sold, buried, or otherwise disposed of as they may think fit. The proceeds of any such sale shall be paid under the order of two justices of the peace to the treasurer of the county or borough, and shall be placed in a county to the credit of the county rate, and in a borough to the credit of the borough fund.

18 to 23 relate to restriction on movement of hides and skins.

24. No offal or dung of beasts, and no hay, straw, fodder, or litter, shall be moved on any railway, canal, navigation, river, or highway from any building or yard where any beast affected with the cattle plague has been kept, unless an inspector of the offal, dung, hay, straw, fodder, or litter has been effectually disinfected under the superintendence of the inspector, and he has so certified.

25. Penalty on owner of such offal, not exceeding 20*l.*, and a further penalty not exceeding 10*l.* for every half ton in weight of such offal or other thing after the first half ton.

26. Penalty on driver, company, &c., not exceeding 20*l.*

Miscellaneous.

28. Disinfection of cattle pens and trucks of railway companies.—Penalty for using pen or truck not disinfected, not exceeding 5*l.*

29. Local authority may order that dogs be not allowed to go at large, not under the control of their owner, or his or her servant or servants, and may authorise any constable or peace officer for the purpose to destroy any dog going at large in contravention of the order.

30. Exhumation of buried animals prohibited.

31. Hours for use of licences as to highways.—From the beginning of one hour before sunrise to the end of one hour after sunset. Such licence available only for four days, including the day of the granting thereof. Licence shall specify the route to be taken and the name of the driver or other person who is to have charge of the beast, animal, or thing to which the licence relates.

33. Penalty for refusal to produce licence not to exceed 10*l.*

34. Penalty for false declaration not to exceed 50*l.*, or in the discretion of the justices, imprisonment for any term not exceeding two months, with or without hard labour.

35. Any penalty recovered under this Act in a county shall be applied as follows; viz., one-half thereof shall be paid to the informer, and the other half thereof shall be paid to the treasurer of the county, and shall be by him placed to the credit of the county rate.

39. Where any person, having any beast in his possession, or keeping within the district of any local authority wherein the cattle plague exists, otherwise than on the entrance to any building or land in or on which the beast is kept, a notice forbidding persons to enter upon that building or land without his permission, if any person not having a right of entry or way enters the same in contravention of the notice, he shall for every such offence be liable to a penalty not exceeding 5*l.*

40. Live beasts brought by sea from one part to another part of any district, which the Privy Council shall, by order, declare to be free from cattle plague, may, if sound, be moved within the limits of such district; but any beast so moved shall not apply to any such district until it has been for 30 days in such district, and shall not be moved out of such district into such district without 30 days of such first mentioned movement.

41. Diseased beasts not to be turned out on commons.

6. HUNTING AND CATTLE PLAGUE. — Good public service has been done by the insertion in *The Times* of Monday of an article from the *Field*, bearing this title.

The discussion of this not unimportant question in so logical and dispassionate a manner by one who does not allow his attachment to the sport either to warp his judgment or contract his views is clearly entitled to the gravest consideration.

The article would have been exhaustive, and its writer would have left nothing wanting to lead his readers to a just appreciation of the merits of the subject in all its bearings, had it not been for his omission of one fact, which is an important link in the chain of logical sequence.

He seems to reason on the assumption that the passage of hounds across different districts is the chief danger to be apprehended from the continuance of fox hunting under present circumstances.

Now, leaving out of view altogether, for argument's sake, the question of the possibility of hounds carrying the plague poison between their claws, or of horses conveying it within the interstices of their hoofs, ranging such notions in the category of groundless suppositions—vulgar errors, if you like (although our worthy representative, Mr. Hunt, well knows that they are supported by high scientific authority), there is another danger too palpable to be overlooked, and of such frequent occurrence as to be inseparable from the sport; and that is the wandering and indiscriminate mingling of cattle of different farms from fences broken down and gates left open.

The present excellent master of the Pytchley, some few weeks ago, cautioned his brother sportsmen very strongly against the dangers to which I have alluded, but, alas! without much visible good effect. The business which belonged to everybody, found nobody to perform it. Hunting goes on, gates are still left unfastened, and cattle still stray. The occupier of the Little Oxendon estate, in this locality, lately told me that, on the occasion of the splendid run of the Pytchley on the 7th inst., the whole hunt crossed his farm, leaving all the gates open across a line two miles long. The result was the intermingling of his sheep; and, but for one of his labourers closing the road-side gates in time, his cattle (and there are a considerable number still lying in the sound pastures of this district), would have strayed along the highway.

Things of this sort, which, at other times, can be borne as merely trifling inconveniences, incidental to the pleasure of one's neighbours (borne too, out of regard to the interests involved in the support of hunting, in neighbourhoods like this), lie open to serious questioning, when, as now, they are carried on in direct opposition to the principles of present restrictive measures, and in the face of a great national calamity. *William Law, Marston Trussell Rectory, Feb. 27, in the Times.*

7. COMPENSATION.—The ultimate success of any measure depends mainly on promising an amount of compensation sufficient to induce stock owners to report disease. The proportion of one-half provided in the Bill is quite insufficient for this purpose, and this I shall endeavour to show, both from general considerations and our experience. It has been stated as a reason for reducing the compensation to one-half, that on an average the value saved does not come up to that proportion when the disease is allowed to run its course.

Admitting this fact, we nevertheless deny that it constitutes a good reason for reducing the compensation.

In reality, it is not with averages we have to deal, but with individual cases, and that before the loss has been sustained. A farmer will not readily reconcile himself to the average loss, and this feeling is strengthened by the occasional occurrence of cases where the loss does not exceed, I am assured, 10 per cent.

Again, most animals will be far advanced in disease—indeed, quite unfit for human food—if the carcase does not fetch half the sound value. It is thus evident that it would be for the farmer's interest to slaughter a diseased animal, and quietly dispose of the carcase, without reporting the existence of disease, and thereby placing his whole herd at the disposal of the local authority.

We can state from our experience that compensation to the extent of one-half the sound value will yield less to the owner than would be realised from the disposal of the carcases.

From the published Report of this Association it may be seen that up to the end of December there were slaughtered and sold (being fit for human food) 205 animals, either slightly affected or which had been in contact with the affected, valued sound, at 339*l.* 13*s.* The net proceeds amounted to 225*l.* 2*s.* 10*d.*, exactly two-thirds of the sound value.

It is, therefore, clear that the offer of one-half is no inducement to farmers to report disease.

I have reason to believe that this Bill has been pushed through Parliament with the laudable desire to provide for and to inaugurate a prompt, vigorous, and united effort over the whole kingdom for the extirpation of the plague, and I state, from our experience, that nothing would have contributed more to its success than to enlist the active co-operation of every individual farmer by offering such ample compensation as to leave him in no doubt what was his best policy.

This is the principal aim of this Association, which provides compensation to the extent of three-fourths of the loss caused by the slaughter of animals, which, be it noted, differs very materially from three-fourths of the value, thus:—An animal valued at 16*l.* is slaughtered, and being considered fit for human food, is sold. Suppose the proceeds amount to 12*l.*, leaving a loss of 4*l.*, the association pays three-fourths of this sum—viz., 3*l.* If the compensation were three-fourths of the value, the compensation would be *nil*, because the animal has realised that amount. This brings out a radical difference between the Bill and the policy found successful here, for under the provisions of the Bill nothing will be gained by promptness or care on the part of the sufferer, as in any case he will receive half compensation, and by no means can he secure more. As regards the principal provisions in the Bill, I anticipate that very embarrassing questions will arise, and I apprehend that in several counties the feeling against the slaughter of convalescent animals will be so strong as to render the Act so far inoperative.

An animal in the convalescent stage is worth more even than a sound one in the proximity of disease, and to submit to the slaughter of such animals, possibly now their only dependence, will be more, I fear, than a farmer's patience can endure.

Section 13 provides that all diseased animals shall be buried. Must this be done even if the animal is so slightly affected that the disease has only been discovered on a *post mortem* examination?

If so, the waste of human food will be enormous, and the farmers will in the majority of cases have to be content with less in compensation than the carcase would have realised.

The effect of this is very obvious. As regards the total stoppage of the movement of cattle, we have come to the conclusion in this county that such is unnecessary.

We have isolated the county by prohibiting the ingress of cattle, stopped all fairs and markets, and

provided that when disease breaks out, this fact, *per se*, makes it illegal to move any animal within the distance of one mile of the place where the disease exists from the time of the outbreak till 30 days after the last case.

According to this provision the infected district extends with the disease, and always a mile beyond. Police-constables watch these infected districts day and night (without this the prohibition would be worthless), and all points of ingress from the south are similarly watched. Our experience indicates that these are all the restrictions really of much service in preventing the spread of disease.

The country generally may receive the Bill without expressing much dissatisfaction, because farmers require to feel the operation of the Act before understanding its provisions, but our experience in this county enables us to anticipate with considerable certainty what will be the result. *James W. Barclay, Aberdeenshire Rinderpest Association, Aberdeen, Feb.* 21.

8. SALT.—It is literally the case that the death and decomposition of the animal begin when the prominent symptoms of the plague show themselves, and then all hope of saving them is at an end. How to prevent these fearful signs of a fatal termination showing themselves is the grand desideratum. Surely the simplicity of so common a remedy as rock salt should not prevail against its universal employment by cattle keepers, if it is, as it is believed to be, a constituent all-important to the preservation of life in animals as it is to man. Computing the number of horned cattle in England at 6,000,000, to give each animal 1 lb. of salt, as suggested by Mr. Alexander, of Haulkerton, Laurencekirk, N.B., would require no less a quantity than 2000 tons of salt and upwards daily. Surely the consumption of this quantity of salt, or anything like it, transferred into the blood of these cattle, at present in so weak and unnatural a state for want of it, would in the course of a few weeks, by the accession of an adequate proportion of saline matter to their blood, so strengthen them and improve their habit that they would be fortified against falling under the ravages of the plague; for rock salt placed before the cattle, so that they may at all times obey the instincts of their nature in licking it, is undoubtedly an excellent preventive measure, and worthy of universal notice and adoption. *John Hitchman, Leamington, Feb.* 24.

9. THE CALF TRADE.—I fear that the permission of traffic in suckling calves will too effectually prevent the "stamping out" of the rinderpest. It is well known in Essex that nearly every case of an infected herd arose in the first instance from the purchase of an apparently healthy suckling calf. I know of many such instances in my own neighbourhood, although, fortunately, I have at present escaped, having declined to purchase my usual supply of calves.

I believe the fact to be that if, immediately preceding parturition, the cow receives the germ of the rinderpest, the calf is also infected, and although for three to ten days after its birth it may appear vigorous and healthy, it then succumbs, and infects the stock with which it is mixed. Having had the experience of some 30 calves annually, either reared or bred here, I have observed the same result with ordinary fever, or other complaints of the cow. *J. J. Mechi, Tiptree Hall, Kelvedon, Essex, Feb.* 22.

Of course, calf-dealers will now ply their trade vigorously, bringing from one county to another calves from every herd.

THE ABERDEENSHIRE EXPERIENCE.

[The following is an abridgment of a letter which has been published by the Secretary of the Aberdeenshire Rinderpest Association.]

UP to January the disease had been brought into the county to seven different places, in every case by cattle, and, spreading from these centres, had attacked in all 40 different herds; 93 animals had died of the disease; 369 animals, either diseased or in contact with disease, had been slaughtered; and the total loss in the county amounted to 3875*l.*

The disease was extirpated in the end of December, and the county remained free of disease up to the 19th of January, on which day it appeared simultaneously at two new centres; on the 23d at a third, and on the 1st of February at a fourth, each at least seven miles distant from any of the others, and from any previous seat of disease. I shall detail the proceedings in each of these cases to illustrate our mode of action, but I will first state briefly the principal restrictions on cattle traffic in this county.

1. All fairs and markets have been prohibited since September.

2. Since the 1st of December no cattle or sheep (one lot of the latter only excepted) have been admitted into the county, and watchers have been stationed day and night at all accessible points along the southern boundary of the county to make the prohibition effective.

3. All movement of cattle, sheep, or other articles named in the Orders in Council within one mile of any diseased animal has been prohibited.

There are various other minor restrictions, but these are the principal ones relied on.

Case 1.—On the 24th of January disease was reported at Banchory. A cow had been observed to be unwell. On the 24th she was killed, when the inspector, on a *post mortem* examination, discovered the disease to be rinderpest. Another cow slightly affected and seven fat beasts apparently unaffected were immediately slaughtered. This clearing out the shed in which the disease had appeared. The remaining stock, which consisted of 13 animals, in two other sheds, being apparently unaffected, were allowed to stand over; but on the 28th disease appeared in one of the sheds, and the six animals there were then slaughtered. In the third shed an animal appeared to be slightly affected on the 3d of February, and was, along with four others, at once slaughtered, leaving two cows, which up to February 14 remain unaffected.

This farm is at least seven miles distant from any previous seat of disease, the farmer had not taken in any new cattle for some months, and his beasts had not for a considerable time been off his own premises.

No medium is known by which the disease could have been conveyed. The owner is a member of this association, and will be indemnified to the extent of three-fourths of his loss, which is also the case in Cases 3 and 4.

Case 2.—On the 27th of January disease was discovered at Pitmillan, parish of Foveran, at least 20 miles distant from any previous case.

On inquiry it was ascertained that a cow had been taken ill on the 19th of January, and that the local practitioner, after some days' treatment, recommended that she should be killed, which was done, but he did not make a *post mortem* examination. On the 27th several animals became affected, and the parish committee, having heard of the disease, called in the county inspector, who found about a dozen animals more or less affected with cattle plague. The owner was not a member of this association, and it devolved on the parish committee to make the best bargain they could with him for his permission to have the stock slaughtered, the disease being so far spread that there was no hope of saving any part. Ultimately the owner agreed to give the beasts at half their value previous to attack, and the parish committee caused the whole to be slaughtered and buried the same day (January 27).

The origin of the disease is unknown. The farmer had not received any new stock for a considerable time. It was reported that at Christmas he had received from Aberdeen a piece of beef sewed up in a dirty pack-sheet, which had previously done similar service probably to London; that the milk-maid had used it unwashed as an apron, and so, had the sheeting been in contact with diseased beef, contagion might have been communicated, in milking or otherwise, to the cow. I am, however, by no means satisfied of the accuracy of this report.

Case 3.—On the 1st of February disease was reported at Tullynessle, parish of Leochel-Cushnie, about six miles from any previous case. A cow had been observed unwell on the 23d of January, but being in prime condition was immediately slaughtered. On the 27th a second cow took ill, and was treated by a local practitioner. On the 29th she had become so ill that she was slaughtered and buried. The veterinary surgeon, after examining the lungs, but without looking at the stomach, declared the disease to be pleuro-pneumonia. On the 31st more animals took unwell, and the farmer getting alarmed the county inspector was summoned, who found the animals labouring under cattle plague.

The shed contained 37 animals, 7 being in three sheds partially separated, and 10 in an open court. Two of the sheds, in each of which some of the animals showed symptoms, were cleared out, the good meat being sent to market, and the rest buried. The stock in the third shed and open court are left to save, but on the 3d February disease appeared in the third shed, and all the animals in it were slaughtered, along with one yearling in the open court, which also showed symptoms. Up to this date the remaining nine in the court-yard continue in good health.

In this case also the origin of the disease cannot be traced. The farmer had taken in no new stock for two month, excepting a two-year-old from a neighbour who had bred it, and whose stock continues healthy. No butcher had been in his byres, and his cattleman had not been any distance from home for some time.

Case 4.—On the 9th February disease was reported at Oldfold, parish of Fetercairn, about 12 miles distant from any other cases. Here a cow took ill on the 1st of February, and was treated by a local farrier, but died on the 8th. He reported the case as one of cattle plague, without examining the stomach. On the 8th and 10th several other animals took ill, and the farmer reported to the parish committee. The county inspector, on the 11th, found the whole of the animals in the same shed, 16 in number, more or less affected, and in consequence the whole had to be killed. Four yearlings, which had been in another shed, we hope may escape.

In this case the farmer has added none to his stock since October, and his cows had not been out of the shed for some time. The whole of their food was the produce of the farm, and no stranger had been among the cattle. The servants are all members of the family, and had not been 10 miles distant for a considerable period.

Case 5.—This case is at Knock, parish of Strahan, county of Kincardine. Disease appeared on the 23d January. The farmer attempted to cure, and on the 12th Feb. 10 animals had died, six appeared to be recovering, and five were ill. The whole stock at the place had been affected. Knock lies at the head of a sequestered glen, on the north side of Cairloch, and is six miles distant from Case 1, the nearest seat of disease, and about 10 miles north west from the parish of Fetercairn, where disease exists at perhaps 50 or 60 adjacent farms.

The farmer had not added to his stock since August last, and had no idea how the disease could have reached his farm.

From the preceding narrative it is evident that the weakest point in our organisation lies in the incapacity of many of the veterinary surgeons or farriers. Had the disease been reported in three of these cases when the first animal took ill, I have no doubt the greater part of the herds would have been saved by prompt action. It is encouraging, however, that the disease has not spread from either of these four centres so far as yet discovered. I need hardly observe that in each case the whole premises, dung-hills, &c., were carefully disinfected.

Such are the chief features of the new outbreaks which have so much alarmed us—not so much on account of the immediate result as the inexplicable nature of the attacks. In each of the seven previous cases in which disease was brought into the county we clearly established the fact that it had been brought by cattle; but in only one of the five cases stated above has any means, rising even to bare probability, been discovered.

Generalising the facts of these five cases, it appears:—

(1.) That during an interval of 22 days from the 28th of December to the 19th of January, there was no visible disease in the county.

(2.) That disease broke out simultaneously at two places 20 miles apart, and four days later disease appeared simultaneously at other two places each seven miles apart, and each seven miles distant from any previous seat of disease.

(3.) That no cattle or sheep (one lot of the latter only excepted) have been admitted into the county from the south since the beginning of December.

(4.) That no cattle had been received on any of the farms for months previous to the outbreak (except in the case of Mindurno, where one animal was received from a neighbour whose stock is still free from disease).

(5.) That no food other than the produce of the farm (oil-cake alone excepted) had been used in any of these cases. In all the cases the animals first attacked were cows which had not received any oilcake.

(6.) That there is no ground for suspicion that the disease had been brought by persons or articles of any description, except in the case of the pack sheeting at Pitmillan.

Without asserting that it is altogether impossible that disease could have been brought to all these places by persons, animals, or articles, the amount of negative evidence is so strong that we are certainly justified in looking for some other means by which the disease may have been communicated. Referring to a map of the counties of Aberdeen and Kincardine, it will be seen that the five new centres of disease lie nearly in a straight line from south-west to north-east, and, further, that if this line is continued south-westwards it passes through the parish of Fettercairn (distant on the map some 10 miles from the nearest of the five cases and 40 from the most distant). Since the 1st of January about 60 farms in the parish of Fettercairn and immediate neighbourhood have been attacked by the disease, and as the farmers have attempted to cure, that district necessarily became a complete hotbed of rinderpest. Can there be any connexion between this hotbed of disease and these five outbreaks occurring at intervals in nearly a straight line running N.E. from it? [Then follows a meteorological history of the period, and the writer continues.]

If we are justified in tracing this outbreak to the infected centre of Fettercairn, we cannot resist the conclusions that we have in our midst a disease so virulent that the germs retain their vitality after being carried by the wind 30 or 40 miles, and so penetrating that it finds its way, unaided save by the wind, to the most secluded hamlets, and into the very sheds where our animals are housed; and it must be clearly evident that if we allow it to increase in any locality unchecked, we have no means of preventing its communication to an indefinite extent in every direction. We are more than ever convinced that the only way in which we can cope with this gigantic evil is to "stamp it out," wherever it occurs and at any cost. Were this done, were all infected places isolated, all affected animals killed at once, and all tainted articles disinfected, we might then allow a moderate degree of liberty in regard to the movement of cattle; and thus, while doing all that can be done to obliterate infectious centres, relieve the agricultural interest of the country from some degree of that restriction which will, if continued, be felt by-and-by to a ruinous extent. As soon as our cattle are put out to graze we may expect the disease to increase a hundredfold if infected districts are allowed to harbour the plague, and to become a constant source of pestilence to every farm and every animal for many miles around. *James W. Barclay, Hon. Sec. Aberdeen Association, Feb.* 14.

THE LONDON COWHOUSES.

[MR. Painter's evidence before the Commission.]

THE state of the London dairies themselves is not such as to encourage the propagation of disease. Forty or fifty per cent. of them are well managed and kept clean, and well ventilated and drained. There are exceptions which are grossly mismanaged. The usual mode of treating a cowshed in London with regard to replenishing the stock is, that as soon as a cow gets down to about 5 quarts of milk a day, the dairyman looks at her, and considers what she is worth the most for; and, as they do not usually breed in London, she is sent to the butcher generally when the quantity of milk gets down to 5 quarts

a day. Cows are replaced twice and three times in the year. A person who keeps 50 cows would have to buy quite 100 usually in the year. The average time that a cow remains is not more than six months—hardly that. The moment she gets down to this low supply of milk she is sent into the market to be sold to the butchers, and very often the pleuro-pneumonia takes them off long before that. The London dairies are never free from the pleuro-pneumonia for many weeks together. I think this is the result of the unnatural feeding. It comes from the artificial and heavy feeding upon brewers' grains in a great measure, that system being resorted to for forcing the milk to the greatest extent; and from the constant purchasing of animals in the market, which introduces infection.

The usual mode of feeding the animals in the London dairies is with brewers' grains in summer and winter too. We give them about a bushel and a quarter, or from that to a bushel and half to each cow, and about 15 lb. of hay, and about 30 lb. of Mangel Wurzel, and 4 lb. of meal (Pea-meal principally), in addition to that feed in the winter. In the summer, Grass instead of hay and Mangel Wurzel. This mode of feeding, though it damages the constitution of a cow, is in order to force the greatest quantity of milk which the dairyman can get. The gain more than covers all the loss; at least it is supposed so. In our suburban district (Hendon) we give them more air, and feed them more on Grass in the fields. We do not feed them so heavily upon grains and artificial food as they do in London. We give them much more natural food. We turn them out from about July to October. Some follow that practice, and some do not. The cows always lose condition by being turned out; that is invariably the case. They lose milk too to the extent of a quart a day, unless the pasture is very good indeed.

Question.—It has been suggested by some writers in the papers that it would be desirable to do away with the dairies in London; what is your opinion upon that point? Would it be a desirable thing for the health of the cattle?

Certainly the London atmosphere cannot be a very wholesome one for the cattle to breathe; in a great many parts of London at any rate. The trade could be carried on without having the dairies in London itself. The deficiency of milk is wonderfully kept up now by what comes from the country. Milk is brought by train, and London seems to suffer very little as regards the quantity of milk since the cattle plague has been in existence. I consider that the milk we have at Hendon is better than the milk that is produced actually in the cowsheds in London. The practice in a cowshed in London, when a dairyman finds that some of his animals have fallen sick with any disease, is to send them direct to the market to be slaughtered for what they are worth, if the cowkeepers are once satisfied that it is the pleuro-pneumonia. If it is the foot-and-mouth complaint they would keep them to go through it. And hundreds and thousands of animals with incipient cattle plague upon them have been sent out to the markets in this way. I have witnessed them myself in the Metropolitan Market with the plague upon them, some in its first stages, and some in the more advanced stages. If the animal is too much diseased to pass the inspector in the market, he condemns it, and it is sent to the slaughter-house; there it is slaughtered, and the meat inspector then inspects it, and if it is considered unfit for human food it is condemned, and sent to the knackers. If it is considered fit for human food, it is passed, and goes to Newgate.

Q.—I think I understood you that in the London dairies they get a larger quantity of milk, but the quality is not so good as that obtained in the rural districts. In what respect is the quality different?

I think the difference is on account of the extra feeding. The quantity of the milk is forced by grains and mangel-wurzel, and distillers' wash, to such an extent in London that the milk becomes much thinner.

Q.—You do not think that there is more cream in the milk produced in the London dairies than in what comes from the country?

The only reason why the milk-sellers sometimes say that there is more cream in the London milk is because it is set for cream much earlier than it can be when it has to travel. When milk comes up from the country there is the friction of travelling, and it gets cold. In my opinion, the milk coming from the country, from Aylesbury, for instance, and from Swindon, is much better than what the Londoners ever had before. As to carrying the milk in that way in summer there would be some difficulty in keeping it sweet unless the trains were put on differently to what they are now. If the railway companies would accommodate the farmers it could be done. The average quantity of milk that a good cow is supposed to yield per day varies according to the different stages after calving. I can state the average of Lord Granville's 130 cows. We consider that about 11 quarts is a good average; that would be partly for cows in milk six months, and some three months, and some one month. Our best cows average from 18 to 20 quarts a day, and now and then they come up to 25 quarts, but that is quite an exception. [Mr. Panter then repeated his evidence as to the attack of the plague in Lord Granville's herd.]

None of the 13 cows had been turned out at all before the time when they were taken ill on the 8th of August, but as soon as the plague attacked them they were turned into a large open space where there was plenty of good Grass and water. They had not therefore been at all near the fields where Mr Missenden's cattle were, but had been kept closely tied up, and supplied with the West Middlesex water from the Thames, brought down in pipes for a distance of five or six miles. With regard to the ventilation in the best shed, Dr. Lankester came down and measured it recently. I think he said it was 1200 cubic feet to each cow. We have ventilation along the roof, and at each end. There are four windows, not opposite to each other, but placed across in a triangular manner. It is a shed about 100 feet long, with six double doors. We always leave the top door open when the state of the atmosphere will allow of it. The air in the shed is thus pure—is open to the field, and on high ground. The cows stand head to head, with a four-foot pathway between them. The breath of the cows strikes you as being hot in walking down; otherwise, except when the weather is extremely hot, there is a very nice air in warm weather. The ridge ventilation continued right along, one ridge tile being raised above the others, and that was the shed where the first cow was attacked, viz. our best ventilated shed, holding 50 cows. No one going into that shed had been near to the Dutch cows that had been ill. The Dutch cows were a mile away. We took the greatest trouble to avoid any infection. I believe there was no kind of connection which might have taken place between those cows and those in our shed. I believe that this disease was a spontanous outbreak in our own shed. I have been nine weeks occupied with it, and have had very great anxiety and trouble during those nine weeks, and I never could arrive at any other conclusion. It could have had nothing to do with the ventilation, because I believe the shed is perfect as far as it could be made so, and we had been using disinfectants, such as chloride of lime, ever since I had first heard of the disease in London. We have always used quicklime to absorb the moisture and ammonia. When Professor Brown and Professor Simonds came to Golders Green, they were nowhere near the sound cows at all. When we use disinfectants we apply it to the carcase of the cow, to the floor, and even to the mangers. The cows were not absolutely washed; they were sprinkled. We wash them now with Burnett's disinfecting fluid, and with Condy's fluid, and with chloride of lime as well. It is the new stock that I am speaking of. The 16th of August was the time when we bought the first 12, but two of those 12 were attacked, not at our Golders Green Farm but at another farm. Since then there has been no attack at all. But I have no belief that those disinfectants have proved of considerable service, because I tried them a long time before this disease broke out in the first instance. I believe it is spontaneous in its origin, but most contagious on the same premises. I may mention the case of another cowkeeper who has actually issued circulars to his customers to say that by cleanliness [illegible] his cows a few days ago. I do not know that that will not be the case with Colonel Talbot's next week.* I believe in contagion. I am bound to do so after what I have heard and experienced. But [illegible] have been mixed with diseased cows and with infected herds.

* It did prove to be the case.

Home Correspondence.

Steam Cultivation.—I can speak with the greatest satisfaction of the results obtained by the use of the steam cultivator. These are of a permanent character. Where the ditches on a farm have been properly attended to, and are sufficiently deep, steam cultivation will render underdraining unnecessary. In some of my sandy and gravelly land, at a depth varying from 6 to 14 inches below the surface, there is a hard pan or bind perfectly impervious to water. Where this pan exists, which it does to a great extent on soils of this kind, in dry weather the land becomes so parched that vegetation is withered, while in wet weather the land is unapproachable both to horses for the purpose of tillage, and to sheep for feeding off Turnips. Underdraining is of no avail unless the drains almost touch one another. But where this pan or bind has been broken through by subsoiling, the land appears to change its very nature. The ordinary operations of tillage need no longer be set aside, and horses and sheep go on it without difficulty. If this pan is more than 6 or 7 inches in depth, it can only be effectually broken by the aid of steam, and it is desirable to go over the field twice, the "lifters" of course being taken off the shares, and the second operation being considerably deeper than the first. This deep subsoiling cannot be done satisfactorily with horses, for the deeper the subsoil plough has to go, the greater is the number of horses required, the trample and tread of which alone must create another bind in the place of the one to be removed. In my case this simple but permanent operation with the steam cultivator has, I am convinced, added considerably to the actual value of the freehold, so that the cost, whether it be a few shillings more or less per acre, is not worth considering. I believe that on most arable lands, even where there is no natural bind, the tread of the horses and the sole of the plough form in the course of time an artificial bind, which becomes as impervious as the natural pan. I may, I think, assume that a farmer who occupies as little even as 300 acres, the greater part of which is arable, can scarcely get on with satisfaction to himself unless he has a portable steam-engine. It is almost indispensable, not only for threshing, but for cutting hay and straw into chaff, and for cracking and grinding his inferior corn for cattle, sheep, and pigs. I know he may hire for threshing; but this is often attended with serious inconvenience. He cannot obtain the engine at the time he wants it, and, when he does, is obliged to thresh out a great deal more than he otherwise would, and a great sacrifice of straw is the general result; while for the other purposes I have referred to, hiring is out of the question. The scarcity of food last winter taught us, at all events, that we could economise to a great extent, and that we had in former years wasted enormous quantities of food. We then found that straw cut into chaff and mixed with pulped Mangels or Turnips makes excellent food. I can only speak from experience. I tried to do all this work with horses, but I utterly failed, and then had recourse to steam with great success. Having gone so far I soon discovered that, with an additional outlay of about 200*l.*, I could also cultivate with steam. I accordingly purchased Howard's tackle, and have indeed every reason to rejoice that I did so. Now, what I want the farmers to see is, that for all ordinary purposes a steam-engine is a real necessity; that if they will only take care to have one somewhat larger than is required for threshing, they can, with an additional outlay of 200*l.* or 250*l.*, cultivate also with steam, and that this additional expenditure is a mere trifle compared with the advantages obtained. To go on plodding with the plough and horses in these days reminds one of some prejudiced men of former days, who were so attached to things as they were, that they would not travel by rail if they could only find a stage coach! Steam cultivation will do for agriculture what the railroads have done for internal communication throughout the length and breadth of the land. I will undertake to say that the advantages of steam cultivation are so great that they only require to be known and its use must become general. *J. Locke King.*

Tobacco-growing in Ireland.—About 40 years ago the cultivation of Tobacco had been successfully carried on in the south-eastern portion of Ireland, especially about Enniscorthy, in the county of Wexford. Its mode of culture, and preparation for sale to the tobacconist, and its money returns, were so very great that many feared it would supersede Potato culture by absorbing all the small farmers' farm-yard manure, artificial manures being then little heard of, and the culture of green crops for stock-feeding very little practised but by a few of the aristocracy, who about that time, or a little before, had Swedish Turnips and Mangel Wurzel introduced for the first time. The Government of the day, who were anything but free-traders, seeing the effect of Tobacco-culture in Ireland as calculated to lessen the revenue, the Irish Tobacco bidding fairly to supersede the use of the foreign growth, introduced a Bill into Parliament which enacted that home-grown Tobacco in Ireland should bear as heavy a duty as that imported, regardless, I believe, of the difference in quality. This put an almost complete check to this species of Irish industry. Indeed, there has been none grown since, except by stealth, and at the grower's risk of being seized by "the gauger." When allowed to be grown freely, and wherever since grown "under the rose," its acreable sales amounted, according to quality, to between 60*l.* and 150*l.*; the produce being from 1200 to 2500 lb. per acre. Since free trade began to act, as many believed, and still believe, so detrimental to the interest of the corn-growing farmers, an Irish M.P. now and then suggested in Parliament the justice of allowing their constituents to grow Tobacco, subject to what is, I believe, called an *ad valorem* duty. But "the united wisdom," taken as a whole, but laughed at the idea of growing Tobacco to perfection in Ireland. Indeed, I well remember some discussions on the subject in the *Gardeners' Chronicle*, when the great Dr. Lindley himself pooh-poohed it; and except by stealth, as already said, the "weed" ceased to exist in the Emerald Isle, notwithstanding the great demand for it by all classes, and the vast pecuniary returns it would be sure to bring in to the working farmers. Much as I had thought of its great profits from my early experience in its culture and preparation, I was by no means prepared to expect what I had seen at the Christmas show of the Royal Dublin Society. A gentleman farmer from the neighbourhood of New Ross in the county of Wexford, exhibited there some of the finest specimens of Tobacco, grown on his own farm, ever before seen in Dublin, whether of native or foreign growth. The acreable produce he assured all who questioned him on the matter was 8000 lb.; and I heard a Tobacco manufacturer say that such Tobacco to him for his various purposes in trade would be worth at least 4*s.* per lb., and turning in to the grower 1600*l.* per acre. Now, if even one-half that sum could be obtained, would it not be worth the notice of the Chancellor of the Exchequer to devise some regulation in trade by which the growth of this plant would be encouraged as a source of profit to the grower, and a fertile but not as now an oppressive source of revenue to the nation? I think it would be to the interest of the nation that such laws in its regard should be enacted to encourage this species of Irish industry. A question now suggests itself, how could such excise laws be enforced without either involving a great expense in collecting the revenue, or allowing the laws to be evaded. I think it could be readily done in something like the following manner. Let a reasonable duty be fixed upon each acre or

part of an acre so cropped, rendering it compulsory on the intended grower to pay that acreable duty, and take out a licence before he could plant the crop. By such restrictions no one would be fool enough to undertake Tobacco growing without adequate capital and skill to grow and prepare the crop in the most profitable manner. I throw out these crude hints with the view of calling public attention to this important matter, and eliciting the views of your common-sense readers at both sides of the Channel, for, as we are supposed to be a united people, all members of the same body politic, whatever seriously affects the interests of so large a portion of the empire as Ireland is, must affect the whole community in an indirect if not in a direct manner. At your side the Channel your people are crying out for a repeal of the malt duty and tax upon Hops. Both of those questions affect us also, but far less under existing circumstances than a repeal, or at least an equitable modification of the duty on Irish-grown Tobacco, would affect you. *Nicotine, Dublin.*

Societies.

SCOTTISH CHAMBER OF AGRICULTURE: *Feb.* 14.—This was a meeting to hear the report of the deputation appointed to attend the Conference of agriculturists held in London, and to accompany the deputation from that body to Sir George Grey. Mr. Goodlet, of Bolshan, President of the Chamber, and Mr. Milne, Niddry Mains, were the deputation; and Mr. Snow, Chairman of the Edinburgh Fleshers' Association, who attended the Conference as representing the interests of the fleshers of Edinburgh and Glasgow, was also present at the meeting.

The CHAIRMAN gave a detailed account of the proceedings of the deputation in London. With regard to the Conference, he said that he found the English agriculturists quite unanimous in favour of the total stoppage of the transit of cattle through the country for a limited period. They stated what seemed to him good grounds for the entire stoppage of traffic—narrating many instances of infection having been conveyed by railway trucks, and in other ways, where the utmost possible precautions had been used, and arguing that, owing to the system of cross roads, it was impossible to eradicate the disease so long as there was any transit of cattle along them—and he confessed he had been brought very much to their way of thinking. However, as the Chamber of Agriculture had declared, and it was the feeling of the Scotch farmers, that it was perfectly safe to allow fat cattle to be removed from farms to the market to be sold for slaughter, he had, along with Mr. Milne, supported an amendment to that effect made by Mr. Snow, against the motion declaring the entire prohibition of all transit of cattle necessary. The other resolutions proposed at the meeting were adopted without much difficulty. He had with much pleasure moved the third resolution, which was to the effect that all plague-stricken animals, and all cattle which had been in direct contact with them, should be slaughtered—the latter clause of the motion referring to animals in direct contact with those which had been seized having been added by the English agriculturists, on the strong recommendation of the Scotch deputation. He saw from Sir George Grey's statement, in introducing the Government Bill, that he did not adopt this resolution in its full extent, but had simply ordered the destruction of all plague-stricken animals, leaving it in the power of local authorities to say whether the Order should apply to animals which had been in direct contact with those which had been seized. He regretted this very much, and he thought the Club might consider the propriety of making a representation to Government on the subject. The deputation had strongly urged, wherever they had the opportunity, that local authorities under the Bill should embrace a large number of practical men—say that they should be composed one-half of county gentlemen and one-half of farmers.

Mr. HOPE, Fenton Barns, said it appeared that the only difference between the proposals of the Chamber of Agriculture and the resolutions adopted by the Conference and embodied in Sir George Grey's Bill, was in regard to the slaughter of fat cattle—the Chamber of Agriculture holding that they should be sent to the butcher, and the Conference declaring that the butcher should go to them. Though there was a great deal in what the Chairman had reported regarding the position of English agriculturists and feeders of stock, he was still of opinion that in Scotland at least it would be much better to allow the cattle to be sent to the killing places or slaughter-houses in the county towns or the metropolis, or anywhere else. He thought the sending out of butchers to the farmers to kill the stock there was almost certain to spread the disease. In England, in consequence of the greater number of railways, and the practice of sending stock by these railways, the chances of danger from allowing the transit of cattle might be very great. Still, considering that it was proposed to stamp out the plague by at once killing all animals that were really ill, it appeared to him that there was very little danger in that respect. There was another point in the Bill which was of still greater importance. The Government did not propose to destroy animals which had been in actual contact with diseased animals. As long as matters remained in that position, he was quite sure the disease would not be stamped out.

Mr. MELVIN, Bonnington, said he thought the Club should press upon Government the propriety of killing all cattle that had been in immediate contact with diseased animals. With regard to the proposals to stop entirely the transit of cattle, he knew no more effectual way to spread the disease than by sending out butchers from Edinburgh and Glasgow from farm to farm to slaughter cattle, as would under such a prohibition require to be done. That had always been his opinion, and he stated it at the general meeting of the Club in December last. He thought the safest, as well as the most convenient way, was to send healthy cattle to the markets for immediate slaughter.

Mr. SWAN said he hoped the Farmers' Club would do all in their power to press upon Government to allow healthy cattle to be sent to the markets for slaughter.

Mr. DAVIDSON said the Club must give a decided expression to its view that all cattle which had come in direct contact with diseased stock should be slaughtered as well as the animals actually seized. If disease broke out in a stock of cattle, say of 100, he found from inquiry that not more than three or four of the number would escape the disease. One by one they died, and were buried, and while they lingered there was no chance whatever of getting rid of the disease. Probably out of a stock of 100, 95 would die in the course of a month, and be entirely lost; whereas, if all the animals which had been in direct contact with the diseased cattle were slaughtered on the first appearance of the disease, 80 per cent. of them might be available for human food. With regard to the question of assessment for compensation, he thought the rate to be proposed should be a general and not a county rate.

A long conversation followed, in which the feeling of the meeting was unanimously expressed in favour of a peremptory order for the slaughter of all cattle having been in direct contact with diseased animals —meaning thereby all cattle which had been confined in the same inclosure. Some difference of opinion was expressed upon the question as to the entire stoppage of transit — the majority of those present being apparently in favour of the sending of fat cattle to the markets and killing-places for immediate slaughter. The Chairman, however, said, that being decidedly of opinion that all transit of cattle should be stopped for a limited period, he would, if the matter were to go to the vote, be compelled to move to that effect; and on his representation it was agreed not to come to any deliverance upon the matter. It was then remitted to the Parliamentary Bills Committee to prepare a memorial embodying the views of the General Committee on the Government Bill; and it was also left to the committee to consider whether a general meeting of the Club should not be held on an early day to consider the whole subject.

Reviews.

The Cattle Plague, with Official Reports, &c. By John Gamgee, Principal of the Albert Veterinary College, &c. R. Hardwicke, 192, Piccadilly.

[First Notice.]

Professor Gamgee has long been distinguished by his efforts to raise the general body of his profession not only in public estimation, but intrinsically, by an education fitting them for the great and useful field they occupy. He has also for many years been impressed, much more deeply than the generality of those who are interested in the subject, with the great losses actually incurred by stock-owners, and the greatly increased risks they run owing to an imperfect knowledge and an imperfect appreciation of the diseases of our live stock. Perhaps he has all along exhibited a confidence on these subjects, which though events have proved it true and just, was nevertheless beyond what the facts of the case, as known either to himself or any other authority, ever warranted at the time. And his reputation as an authority and prophet no doubt suffered at the time, from his failure to substantiate and prove the case of cow-keepers and other stock owners as it was presented by himself at the time of the fruitless attempt to pass a Cattle Diseases Bill some years ago.

His arguments and assertions, especially in reference to some of the less fatal diseases to which cattle are liable, broke down in the Committee of the House of Commons before which that Bill was examined. And his warnings on the subject of rinderpest and other diseases have thus been less heeded than they would have been, had they been founded less on the large and somewhat uncertain surface of what he *believed*, and, as it turns out, believed correctly, than on the smaller foundation it might be, but an unassailable one of actual fact and experience, to which he could have called attention without risk of being successfully opposed. Nevertheless, as events have turned out, we may say that the impressions formed by Professor Gamgee, and so confidently uttered years ago, have all been realised; all his warnings have been justified; and had he possessed the power of carrying out the measures which for years he has been advocating, English agriculture would have never suffered the tremendous losses she is now experiencing.

No one, therefore, has a better right to claim a hearing upon Rinderpest from English agriculturists than the author of this portly volume which he has now issued on the subject. It contains an elaborate discussion of the whole history, symptoms, *post-mortem* appearance, nature, and treatment of the Cattle Plague; with the fullest possible details on the subject of prevention. It gives a full account of all that Government has done, and of the experience of every country on the subject; and it publishes official reports of the International Congresses of Veterinarians held in 1863 and 1865 at Hamburg and Vienna respectively. Of course so large a work hurriedly prepared exhibits signs of hasty editorship. The reports of the International Congresses are verbatim! and ought to have been condensed one half. The republication of all past Orders in Council merely adds to the weight and bulk and cost of an unwieldy book. And even the detailed account of the several counties appears to us to be unnecessarily long. The first part of the book is however quite what we want — an exhaustive treatise of the nature of the calamity, and of all that can bear on the work of reducing or dismissing the heavy burden which now lies on English agriculturists. We shall refer at length next week to the contents of this part of the volume; meanwhile we add the following extract from the Preface of the author:—

"A work on the Cattle Plague does not demand, under existing circumstances, an elaborate explanation of the reasons which have prompted its preparation. This is the time for collecting all serviceable material bearing on the subject, in such a form as to render it available to members of Parliament, magistrates, professional men, stockowners, and others. I have undertaken the task from a desire to prove of service—a desire which has haunted me since first indicating the existence of the Cattle Plague on reaching London last July. A month had then been lost in warning the country of the great calamity which had befallen it—a calamity at that time possible and readily and cheaply averted. Not only was it then impossible to entertain any doubts as to the consequences of past negligence, but no sooner had I determined to draw as faithful a picture as I possibly could of the disease—of its nature and prevention—than I found myself attacked on all sides, and by few, very few, impotent supporters, and was doomed to listen to people decrying veterinarians, when all that was needed to save the country was to adopt the course taken by the French and Belgian Governments, of acting on the counsel we could proffer on such an occasion. It must always be a satisfaction to every profession to know that in the British outbreak of Russian murrain of 1865-66, the advice given by its members was sound and rational, however much it may have been despised and openly denounced.

"The points on which I have especially insisted, were, with not a few opponents, were, at first, the foreign origin of the malady, the impossibility of its spontaneous development in the United Kingdom, the inefficiency of any remedy or class of remedies, the folly of establishing cattle hospitals or sanatoria, the huge phalanx of evils legalised and created by the trade in live stock, the stoppage of all movement where the disease appeared, and prohibiting importation from Holland, or establishing foreign stock markets and slaughter-houses. I have already had a system of rate-aid insurance or one of indemnity; of slaughter of the sick and infected animals. I was not in favour of the recommendation of the majority of the Cattle Plague Commissioners, inasmuch as stopping the entire traffic of the country without 'stamping out' the disease could not serve our purpose. A recommendation that Parliament should be at once summoned, that inspectors should continue the practice of slaughtering, backed with funds to indemnify owners—all in addition to stopping the traffic—would, in my opinion, have been more rational and less embarrassing to Government than the suggestion which could not be, as indeed it was not, carried into effect during the recess. Had it been acted on, what would the Government have not done had it been armed with power by such Bills as those defeated in 1864? I can bear witness to the fact that the mere suggestion of coercive measures, even up to the time of the Commissioners' Report appearing in print, met with such resolute opposition—and opposition well exemplified by Mr M'Clean's statement, which uttered the sentiments of the bulk of the British people even so late as the end of last October. I have attended meetings, in January of the present year, at which some speakers advocated only a warning the non-interference system; and physicians of great eminence and influence have spoken to me of the folly of advocating measures which were incompatible with the existence of any but a purely paternal Government. There is a re-action. People are panic-stricken. Last autumn, and far on into the winter, we could not move them. They are now ready for anything. I must not omit to mention that I opposed the vaccination movement, as indeed I have opposed everything which has had a tendency to retard the development of public opinion in favour of the system of isolating and 'stamping out' the disease.

"I have special reasons to be grateful to the French Government for the confidence reposed in me. Early in September experiments were commenced by Mr. Behic's orders in the New Veterinary College. The first experiments and chemical investigations first attempted by my brother, Dr. Arthur Gamgee, in conjunction with Professor Chauveau. At the present moment, experiments in behalf of the French Government are being actively prosecuted in the Albert Veterinary College, and these opportunities have enabled me to prepare a work which contains the results of original research as well as those of my readings and of no small an amount of experience in travels and practice.

"The Report of the French Minister of Agriculture was based on information re-published by my countrymen. Times have changed in not many weeks. It is now acknowledged that I was in the right, but this is very slender consolation for one who would have wished to act rather than speak.

"This volume might have been compressed into smaller bulk had I omitted the statistical tables up to the close of the year—the latest I could publish *en extenso* without delaying the book; but as those tables demonstrate better than words can describe the early rise and progress of the plague, I trust they may not be considered out of place. It may also be thought that I have dealt at too great length with the medical

treatment of the disease, but what has been said on the subject I have felt it my duty to say in deference to public opinion in this country. The question has not been set aside. Had I consulted my own desires alone, I should have dismissed the subject in one short sentence, by pronouncing the uselessness, and deprecating the adoption, of curative treatment. We should never treat cases of plague in Great Britain. They may do what they choose in Russia; but here it is our duty to prevent or exterminate the disease, and not play with it by using drugs. While writing and seeing this work through the press I have been denied the great privilege of sufficient time to do it ample justice. Had I had more leisure I might have said better and more briefly what I have felt it my duty to say—well or ill, at least promptly and honestly.

"The publication, for the first time in this country, of the official reports of the International Veterinary Congresses is, in my opinion, most important and appropriate now. The discussions which took place both in Hamburg and Vienna referred so much to the rinderpest, and were conducted by men so able from every part of Europe, that they can only enhance, and enhance largely, the value of this work. They refer, in part, to other diseases, but as they have not been, and are not likely to be, published in any other form here, I have determined on giving them *in extenso*. At no time could the information embodied in both reports be more acceptable to Englishmen than at the present crisis."

Calendar of Operations.

MARCH.—Hoe young Wheat when the land is dry, either by hand or by horse-hoe; and this may be preceded or followed by the roller.

March is the principal seed time for Oats.

Barley may be sown, three bushels per acre, towards the end of the month, on the gravelly and sandy classes of soils, when the land is dry. Both Oats and Barley are the better for washing before being sown: 2 oz. of blue vitriol (sulphate of copper) dissolved in 1 gallon of water will suffice for 4 bushels. This tends to prevent smut.

Grass and Clover Seeds should be sown towards the end of the month, with either Wheat, Oats, or Barley. The broadcast sowing machine will sow any quantity from 8 to 18 lb. of the mixed Clover seeds, and at a second time from 2 to 4 pecks of Grass-seed per acre. The land is then to be harrowed, or bush-harrowed, across the drills of corn, if these are up, and rolled.

Potatos should be planted either on manure in the drills, in rows 24 to 30 inches apart, or they may be dibbled by a foot dibble where the land is very soft, which will cost about 4*s*. per acre, or they may be planted by spade at a cost of 9*s*. to 12*s*. per acre. In this case the manure is spread broadcast, the first trench made by the spade across the ridge, the sets then planted by a child, the second trench then made, the earth taken out of it being used to fill the first, the manure, however, lying on the surface between the two, being first cleaned off it on to the top of the first row of sets. In light shallow soils it is a good plan to plough in the sets and the manure every third furrow. The dung is laid in heaps, 5 or 6 yards apart, in parallel rows, at about the same interval, in the direction in which the field is to be ploughed. When the ploughs are started, four people have an equal portion of the field allotted to them, and plant the sets in every third furrow; an equal number of people carry the manure from the heaps, and spread it above the sets, finishing three acres a-day.

Carrots.—The land for this crop having been deeply ploughed and manured in the autumn, may receive a scarifying and harrowing towards the end of this month. On light soils a good preparation for Carrots is a clean crop of Turnips fed off on the land.

Parsnips may be sown in the beginning of this month, on deeply and cleanly tilled and well-manured land of the stiffer class of soils. Sow 3 lb. per acre, in shallow drills, 18 inches apart.

Spring Vetches may be sown this month.

Peas should be sown during March.

Sow *Cabbage* for transplanting in the field in May.

Flax.—Land may be scarified and well cleaned now for this crop. It should be of a loamy character, rather adhesive than otherwise. It may be manured with well-rotted dung now, but should have been manured in autumn. Rape cake is a good manure for it, sown broadcast now.

Clover Fields should be cleared of all large stones, and rolled.

Land intended for Mangel Wurzel should have received its final ploughing in autumn, but if on dry land and in dry weather it may be deeply cross ploughed now if it still requires it; but if the ground be clayey or wet, the ploughing, if needed, should be confined to the splitting of the ridges, taking care to keep open furrows. Dig out patches of root-weeds from those fields which are to bear fallow crops. The flowers of the Coltsfoot must be pulled.

Manure Heaps in the fields must be turned for use on the Mangel Wurzel crop. The whole mass may be well broken for from ¾*d*. to 1*d*. per cubic yard.

Fences.—All planting should be finished this month if possible. Finish laying old hedges as early in the month as possible; likewise the digging around and cleaning young hedges.

Grass Lands.—The ewes as they lamb may be thinly distributed over the sheep pastures; but if Clover could be provided it would be better. The early growth of the Grasses should not be checked.

Water Meadows.—A good crop of Grass may now be expected, and nothing produces so much milk, in either ewes or cows: hay or other dry food should be allowed, or the Grass may produce diarrhœa.

Cattle boxes and yards will require cleaning out towards the end of this month, and the heaps in the fields to which their contents are taken should not now be carted over. The carts are to be backed up against the heaps, and should be tipped up so as to throw the manure to a sufficient height. Fermentation will thus be favoured; and the man at the heap must level it, and at the same time cover it with earth. Cows should receive nourishing food for two or three weeks before calving. Immediately after calving, the cow should be offered a drink of lukewarm water, with two or three handfuls of Oatmeal diffused through it. A mash of boiled Barley and Linseed (from two to three pounds will be sufficient), given at night and morning, will assist materially in opening the digestive system, and preventing fever. In the course of a few days the animals may be safely fed with ordinary food, taking care that the Turnips are never frosted or wet. Give the calf, if it is to be brought up by hand, a pint and a-half of its mother's milk three times a day to begin with, gradually increasing the quantity to a quart, and then to two quarts twice a day, until the animal is a month old, when the quantity of milk should be increased to from four to six quarts daily; and afterwards artificial food, such as Linseed meal boiled to a jelly, Bean meal, Barley flour, or Oatmeal, may be given with the milk, and hay be placed in a rack before it.

Fat Sheep may be shorn before being sent to market. The folding over Turnip lands should be completed by the end of March. Swedish Turnips being finished, the Mangel Wurzel comes into use. The passage from the one kind of food to the other must be effected during the course of a week or two, commencing with a sprinkling of the one kind, and ending with a sprinkling of the other. When any of the ewes are scant of milk, that of the farrow cow forms the best substitute, as having a larger proportion of curd than that from a newly-calved cow, and so more nearly resembling ewes' milk. If Turnips are scarce and Grass backward, ewes will require chaff of Clover hay and meal to keep them in full milk. The young lambs should be castrated, flock-marked, and have their tails taken off, when two or three weeks old, choosing a moist warm day for the purpose.

Pigs.—The earlier litters may be expected towards March. The sow must be confined to the sty some weeks before she brings forth, and she must be fed with abundance of nourishing and watery food. There can be nothing better for her than boiled Carrots and Parsnips, mingled with 2 or 3 lb. of Barley meal daily.

Dairy Farm.—Those calves which are not required for weaning or fattening, are sold at a very early age to the butcher, and cheese-making commences. During this month the complement of the dairy should be made up by a judicious purchase of incalvers. If heifers already predominate, it may be well to buy older cows; if, on the contrary, the present stock be aged, heifers should be selected. During this month the cheese-pan is placed in a warm situation, and the temperature of the milk should be about 84° Fahr. The temperature of the cheese-room should also be raised to 60° Fahr.; its air should be moist, and though well ventilated there should be no draught through it.

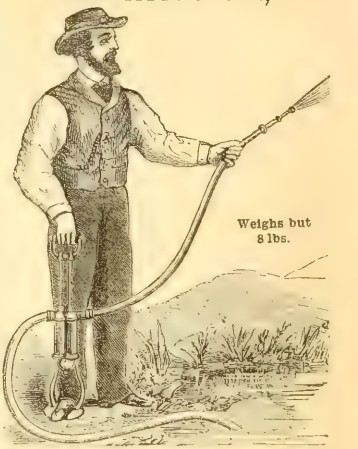
Notices to Correspondents.

BEANS: *William Holmes.* Mix 2 cwt. each of guano and superphosphate, and apply them broadcast on the ground before the drill.

PEAT: *Woolhampton Farm.* Probably "Martin Doyle," whose address we shall be happy to give you, is the best authority you can consult, and he has the advantage of knowing not only theoretically but practically the value of peat ashes.

SORTS OF FOWLS: *J. S.* The following memoranda from Mr. Baily's Trade List will answer your questions:—*"Grey, Silver Grey, Spangled, and White Dorkings.*—Excellent farm yard fowls. Good layers and sitters. Very good mothers. Not calculated for fattening. Unequalled as a table or market fowl. Very large. *Bedfordshire Pouters.*—An invaluable fowl. Excellent layer, perfect sitter, and mother; so hardy it may be latched and reared in any weather. Two varieties; one pencilled, the other white with black tail, and pencilled hackle. These birds bear any confinement. As winter layers the Bedford Pouters excel all other birds. *Spanish.*—Very handsome birds. Lay large eggs that any other breed in great numbers. Thrive in any locality, however confined. Do not get fat, but are esteemed for any description of table. Seem to require a very limited space; capital layers, very hardy, seldom or never out of condition. Good sitters. Chickens very easily reared. Pullets hatched in spring are good winter layers. *Cochin-China.*—Handsome birds, and fine layers, producing an unusual number of very large eggs during the autumn when most birds are deep in moult. They are excellent table birds, do not sit, and thrive well in stable yards, small home-steads, and confined places. *La Flèche.*—The largest fowl known in France, a very handsome upstanding bird of jet black plumage, the comb is in the form of two upright horns. A delicate table fowl of great size; an excellent layer. Thrives well on a good run, or fancy yard. Well suited for a hedge-gate. *Geese.*—Hardy and useful birds. Good layers, good mothers, excellent for the table. Will do well in confinement. Suited to every soil and climate. Varieties: Black and Brown-breasted Reds, Duck-wings, Black, White and Piles. *Hamburgs.*—Very handsome birds, unusually good layers, bear moderate confinement well. Do not sit, are attractive objects on ornamental sites. *Polands.*—Remarkably handsome birds, very good layers, but non-sitters. Fit for the paddock and cottage ornée, but not for confinement. Varieties: Golden and Silver Spangled, and Black with white top-knots. *Houdans.*—A recent introduction from France, where they are considered a very good table fowl. They are large, of a speckled colour, with top-knots. *Malay.*—Hardy and prolific birds, will do well where all others fail; good layers, and well adapted for towns."

THE HYDROPULT,



An Invention for Throwing Water by Hand Power.

(SECURED BY ROYAL LETTERS PATENT).

PRICE LIST.

	£	*s.*	*d.*
COMPLETE WITH BRASS CYLINDERS AND JAPANNED STIRRUP	1	12	6
COMPLETE WITH BRASS CYLINDERS AND COPPER STIRRUP	2	2	0

The Price "Complete" as above, includes 24 foot Suction and 3 feet Delivery Hose, Galvanised Wire Strainer, Rose and Small Jet.

THE HYDROPULT

is invaluable for use in the

GARDEN for

WATERING BEDS,
SPRINKLING PLANTS,
DROWNING OUT INSECTS,
CLEANSING TREES FROM SMUTS,
DRESSING WITH LIQUID MANURE,
&c. &c.

CAUTION.

IMPORTANT TO THE PUBLIC.—The extensive sale of the Hydropult has excited the cupidity of so-called respectable, but in reality unprincipled Manufacturers, who are now palming on the Public worthless imitations of the Hydropult, and through their connections are enabled to place said devices on exhibition, and for sale, in many of the principal Ironmongery and Seed Establishments throughout the city and provinces. These devices resemble in many respects the Hydropult in appearance, and are calculated to deceive the unsuspecting. The Proprietor therefore issues this Caution, and respectfully intimates that parties wishing to purchase the Hydropult should examine the machine offered for sale, and see if it has attached thereto a label, with the following words:—"The Hydropult, Vose's Patent, manufactured only by GRIFFITHS & BROWETT, Birmingham. CHARLES POMEROY BUTTON, Proprietor, 142 and 143, Cheapside, London." Unless this label is attached, the Machine is not the Hydropult.

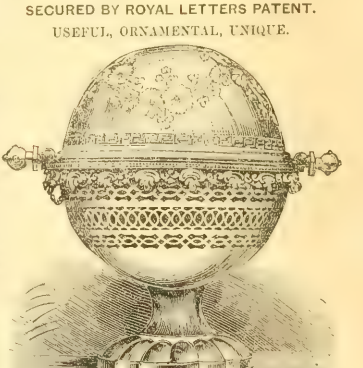
Prospectuses, with Testimonials, on application.

HYDROPULT SHOW ROOM, 142 & 143, CHEAPSIDE, LONDON.

IMPERIAL SUGAR BASIN.

SECURED BY ROYAL LETTERS PATENT.

USEFUL, ORNAMENTAL, UNIQUE.



The novelty and utility of this Invention consists in a Revolving Cover, so constructed that by turning the knob on either side of the Basin, it can be covered or uncovered instantly; the lid on opening into a receptacle or false bottom, thus not only having the lid ready for instant use, but obviating the necessity of its removal from the table. The Sugar Basin can be used for a Butter Dish.

Price, in white metal, electro-plated, £2 2*s*.

CHARLES POMEROY BUTTON,
142 and 143, Cheapside, London, E.C.

FINE GRASS LAWNS in FLOWER GARDENS, &c.—The great expense of cutting and carting Turves from a distance may be avoided, and a superior Turf produced in a few months by sowing SUTTON'S LAWN GRASS SEEDS, which consist solely of the finest and shortest-growing kinds, perfectly free from Moss and other weeds.

From Mr. JOHN JOHNSON, *Gardener, Mowbray Park, Sunderland, April* 26, 1865.

"The Lawn Seed we got last year about this time has come up excellently."

From Mr. THOMAS POLLINGTON, *Gardener to* H. W. Vincent, Esq., *Bradwell Grove, Burford, January* 19.

"The Grass Seed you supplied us with last season grew remarkably well, though sown under trees. I think every seed grew."

From HENRY H. CAVE, Esq., *Desborough, Market Harborough, May* 13, 1865.

"The Lawn Grass Seeds I had from you last year have made a very good turf already."

From J. NIGHTINGALE, Esq., *Hyde Street, Kingston-on-Thames, May* 2, 1865.

"I may add that the Grass Seeds you supplied last year, have (notwithstanding the very unfavourable season) succeeded very well."

SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

The Cultivation of Bromus Schraderi.

SUTTON AND SONS can supply genuine Seed of the above New FORAGE GRASS, in packets, for trial, at 1s. each, or in larger quantities at 5s. per lb., with instructions on cultivation.

SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

NATURAL GRASSES: their Names and Derivations; Quality, Produce, Elevation, Situation, Soil, Use, Peculiarity, Season, Growth, Increase, Time of Flowering, Price, &c.

Free for one postage stamp.

RICHARD SMITH, Seed Merchant, Worcester.

DAVISON'S MIXTURES of GRASS SEED, 10s. 6d. per bushel; per acre, 32s.—Italian Rye-grass, best, 5s. per bushel, 14 lb.; Pacey's Perennial, 6s. 6d.; Devon Evergreen, 6s.; Red Clover, best, 9d. per lb.; White Dutch, best, 10d. per lb.; Trefoil, best, 6½d. per lb.; Swedish, the best known, 8d. to 10d. per lb.; Mangel Wurzel, 9d. to 1s. per lb. PRICED LISTS free. Hereford.

To Agriculturists.

JOHN MALDEN, AGRICULTURAL SEEDSMAN, Biggleswade, begs to intimate to his Agricultural Friends that he has a NEW and PURE INTRODUCTION for next year, viz., MALDEN'S CLOVER, or TRIFOLIUM STRIATUM; a soft knotted Trefoil.

This Clover has been examined by W. Baxter Smith, Esq., and several other eminent botanists of the day, and they have passed upon it the highest encomiums.

The Seed has been introduced at Mark Lane and several country markets, as, at present, it has not been established either in the seed trade or not, English or Foreign) that has any knowledge of the Seed. Its history is short—some six years ago, a friend of mine (Mr. George Winter, of Biggleswade) received per Biggleswade) selected it from a crop of Clover, supposed to have been sown with Foreign seed. When he first selected the seed he could not get more than half-a-pint; with this small quantity he gave the growth of a piland that will prove a boon to the agricultural world. I last year had rather more than One Ton of this seed, which I sold to my friends at a low price, my object being to give it a fair trial, and in every case where I have made inquiry I have found the result has been most satisfactory—there being an excellent plant. One of the peculiarities of this plant is, as far as I have been enabled to discover, it will grow where Clover will not; that is to say, on lands which are Clover sick. Respecting its quality, and the quantity of the crop it will produce, I can say without hesitation, that the 16-acre field under the crop that produced the seed which I now offer for sale gave me Three Tons of HAY PER ACRE, and I believe the quality to be superior either to Clover or Trefoil.

The price of the Seed this season is 2s. per lb., and can be had only direct from my Establishment at Biggleswade, or of the following Agents:—

Messrs. Peter Lawson & Son, Seedsmen to the Queen, Edinburgh and London.

Messrs. Sutton & Sons, Royal Seed Establishment, Reading, Berkshire.

Messrs. Hurst & Son, Seedsmen, 6, Leadenhall Street, London, E.C.

Mr. J. Scruby, Merchant, &c., Epping, Essex

To prevent disappointment, early orders are respectfully invited.

The following was inserted in the GARDENERS' CHRONICLE, *June*, 1865, *by* WM. BAXTER SMITH, Esq.

"A NEW CLOVER.—I herewith send you a specimen of a new Clover which I saw yesterday growing on a farm near Biggleswade, and which appears to be worthy of notice. Mr. Malden, of Biggleswade, directed my attention to it, and he intends to introduce it next year to the Public. Its history is this:—Some years ago, a neighbour of Mr. Malden's among some lucerne received a sample of which he had come from France; and as it appeared to be a new variety he saved a little of the seed, and has grown it yearly since that time until the present, growing on a 16-acre field last summer. It is a native of Chile thing, that although there is hardly a good field of Clover in the neighbourhood, this field carries an uncommonly heavy crop; and although the Clover was cut quite as early as Red Clover, still all kinds of stock eat it with avidity, and thrive upon it. I suppose it is difficult to say what has caused the numerous failures in the Clover plant this season, whether it is frost, or the fault being Clover sick or what else; but if this new Clover can withstand all such evil influences, it may become of great value to farmers. So far as botanical knowledge enables me to determine, the plant is Trifolium striatum, Smith. The seed used on this field was Scotland, and grows on dry pastures and fields The 16-acre field at Biggleswade was sown with it in spring, 1864, on Michaelmas Wheat; and Mr. Malden will be glad to show it to any one who wishes to see it. The farmers in the neighbourhood are already anxious to procure seed for next year, when the Clover is sure to have a fair trial. Meanwhile I thought it might interest your readers to bring it under their notice."—*W. m. Baxter Smith, 28, King Street, Cheapside, London, E.C.*

HAAGE'S DWARF EARLIEST CAULIFLOWER.—Very dwarf, the earliest, hardiest, and finest of Cauliflowers. Packets 1s. 6d. each.

SEED CATALOGUES, containing the finest New Vegetables, free by post.

STEPHEN BROWN, Seed Grower, Sudbury, Suffolk.

AYTON CASTLE GIANT SCOTCH LEEK.—This splendid LEEK, which for size, flavour, and hardiness has no equal, can be had as usual, pure and genuine, free per post, in packets, at 1s. each. A liberal allowance to the Trade when not less than 12 packets are taken.

ROBERT P. MACKINTOSH, Nurseryman and Seedsman, 12, Melbourne Place, Edinburgh.

Henry's Prize Hybrid Leek, Genuine.

DOWNIE, LAIRD, AND LAING are now sending out the above in packets at 1s. each. This is unquestionably the largest Leek in cultivation, growing 16 inches in length of blanch, and 10 inches in circumference. Was awarded the First Prize at the Edinburgh and other leading Shows.

17, South Frederick Street, Edinburgh; and Stanstead Park, Forest Hill, London, S.E.

To the Seed Trade.

FRAME CUCUMBERS, all English-saved; true and select.

Carter's Champion	Hamilton's Market Favourite
Cuthill's Black Spine	Highland Mary
Dickson's Newton Hero	Sewdling's Berkshire Challenge
Dr. Livingstone	Telegraph

BROCCOLI, Pure and Genuine Stock.

Early Purple Cape	Elliston's Mammoth
Snow, true Winter	Ward's Superb Late White
Osborn's Winter White	Dixon's Champion of England
Knight's Protecting	Carter's Champion

INVINCIBLE SCARLET SWEET PEA.

Trade prices on application.

STEPHEN BROWN, Seed Grower, Sudbury, Suffolk.

INVINCIBLE SCARLET SWEET PEA, very fragrant, strikingly brilliant, and extremely distinct in colour.—A First-class Certificate from the Royal Horticultural Society; also a Certificate at the Crystal Palace Show in September. Packets 6*d*., 1s., and 2s. 6*d*. each; packets of 100 seeds 21s. Supplied by the principal Seedsmen throughout the kingdom: also of Messrs. Krelage, of Haarlem; Vilmorin & Co., Paris; Benary and Haage & Schmidt, of Erfurt, Prussia; and Smith & Co., Hamburgh; also of the Raiser.

STEPHEN BROWN, Sudbury, Suffolk.

Price to the Trade on application.

New Dwarf Marrow Pea, Lincolnshire Gem,

MARTIN AND SON have at hand 5 quarts yet left of this magnificent Pea; it is early, well-flavoured, and immensely prolific; it has been well tried in this neighbourhood by the side of Dixon's Yorkshire Hero, Veitch's, and others, and pronounced to be the earliest, and double the crop of the former. See Testimonials in *Gardeners' Chronicle*.

Address 7, Market Place, Hull; or Cottingham. Established 75 years ago.

To the Trade—Early Peas.

SUTTON AND SONS having very nearly sold out of their RINGLEADER PEA, regret that they have for some time past been obliged to decline all orders from the Seed Trade.

SUTTON & SONS have still a good supply of DANIEL O'ROURKE, SANGSTER'S No. 1, SUTTON'S LONGPODDED TOM THUMB, and DILLISTONE'S EARLY.

Royal Berkshire Seed Establishment, Reading.

Peas.

TO MARKET GARDENERS AND OTHERS.

SUTTON AND SONS can supply the following kinds of PEAS, GOOD HAND-PICKED SAMPLES, in large quantities, at moderate prices, which may be had on application:—

Champion of England	Daniel O'Rourke
Ringwood Marrow	Prizetaker Marrow
Wood's Green Marrow	Black's Dwarf Victory
Advance	King of the Marrow

SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

For Bouquets and as Cut Flowers

THE INVINCIBLE SCARLET SWEET PEA is invaluable. Its colour is intense and permanent. Packets 6*d*., 1s., and 2s. 6*d*. each. Sold by the principal Seedsmen throughout the kingdom, or of the Raiser,

STEPHEN BROWN, Seed Grower, Sudbury, Suffolk.

Dickson's "First and Best" Early Pea.

FRANCIS AND ARTHUR DICKSON AND SONS' "FIRST AND BEST" EARLY PEA having given universal satisfaction, and being pronounced by competent judges (see Testimonials below), in accordance with the fact ascertained by themselves by REPEATED trials, to be the VERY BEST Early Pea ever offered for earliness, prolific nature, and persistent character, is now being sent out from a large bulk, which they have grown to meet the great demand, in *sealed* and *labelled* packages (none others genuine) at 2s. 6*d*. per quart.

TESTIMONIALS:—

From Mr J. H. MASON, *Stourton Castle Gardens, Staffordshire.* See *Gardeners' Chronicle and Agricultural Gazette*, July 29, 1865, p. 709:—

"Dickson's First and Best is undoubtedly the best Early Pea I have ever yet grown. It is a good cropper, with good-sized WELL-FILLED pods, and several gatherings can be obtained from it."

Further opinions of Mr. MASON, *Stourton Castle Gardens.*

See *Gardeners' Chronicle and Agricultural Gazette*, July 29, 1865, p. 709.

"Dickson's First and Best Pea grows taller than these (Carter's First Crop and Sutton's Ringleader), is of more vigorous habit, and produces a much longer succession of pods, and a greater number of Peas in the two mentioned was from 4 to 5 in a pod, that of Dickson's was from 5 to 7. Dillistone's, Carter's, and Sutton's Peas yield their entire crops in three pickings, while from Dickson's four good gatherings can be obtained. The last-named kind was remarkably true in character, whilst among Sutton's and Carter's lots of stragglers reared their heads, and were, as 'rogues' in Peas generally are, later in blooming."

From Mr J. C MUNDELL, *Horley House, Croydon.* See *Gardeners' Chronicle and Agricultural Gazette*, June 10, 1865, p. 532.

"I have not seen any mention made in your columns of Dickson's First and Best Pea, a variety introduced last year.

From Mr WM. LANDON, *Dunraton Castle Gardens, near Ludlow.* See *Gardeners' Chronicle and Agricultural Gazette*, July 22, 1865, p. 676.

"I sowed this season Dickson's First and Best, Dillistone's Early, and Sangster's No. 1, and I found that they all ripened days earlier than either of the others. Its quality is excellent, it is very hardy, a strong grower, and pods in abundance from top to bottom. I gathered a mess from it on the 16th of June, which is a week before any of the others, and in future I shall sow it only for my first crop."

From Mr. ALEXANDER DEAN, *Maybush, Southampton.* See *Gardeners' Chronicle and Agricultural Gazette*, July 1, 1865, p. 603.

"It was also noticeable that whereas Dickson's First and Best was entirely free from rogues, the other two had plenty among them."

From Mr. J. VEITCH, *Exotic Nursery, Chelsea.* See *Gardeners' Chronicle and Agricultural Gazette*, July 22, 1865, p. 706.

"I have been much interested in reading the opinions of those who have tried the various new Peas sent out last Spring, and as I have made very careful trials of the Peas, I will add my opinion to the result of my experience (Here follow the names of all the new Early Peas, time when sowed, and dates of first gatherings.) Dickson's First and Best is the earliest variety, and in my opinion *the best* new Early Pea sent out this season."

From Mr. JOHN MCHATTIE, *Seedsman, Chester.*

See *Gardeners' Chronicle and Agricultural Gazette*, Aug. 19, 1865, p. 773.

"I have no hesitating in endorsing Mr. Veitch's opinion that it (Dickson's First and Best) is the best new Early Pea yet sent out."

Scores of letters equally commendatory of our "First and Best" Pea have been addressed to us from first-class Gardeners and others, but we think the extracts we have quoted from the *Gardeners' Chronicle* sufficient.

FRANCIS & ARTHUR DICKSON & SONS' DESCRIPTIVE and PRICED CATALOGUE of VEGETABLE and FLOWER SEEDS, with ample Cultural Hints and much useful information, will be sent gratis and post free on application. Their Seeds are all grown by themselves, or obtained from the best sources, and are the most select stocks in cultivation.

FRANCIS & ARTHUR DICKSON & SONS, The Old Established Seed Warehouse, 106, Eastgate Street, Chester.

*** Seeds of £2 value (Grain excepted) delivered free to any Railway Station.

Choice Seeds, Post Free.

CATTELL'S ECLIPSE BROCCOLI.—The following notice of the above is taken from the *Gardeners' Chronicle*, June 3, 1865:—"The specimens of your Eclipse Broccoli were very fine; the heads large and compact, the texture delicate, and the flavour excellent. These qualities, together with the late season at which it comes into use, between the ordinary late Broccoli and Cauliflower, and its extreme hardiness, combine to make it a very useful variety." 1s. 6*d*. per packet post free.

CATTELL'S DWARF PURPLE-TOP BEET, 1s. per ounce.

SILVER CURLED BEET, 6*d*. per packet.

VARIEGATED GARNISHING RAIL, 1s. per packet.

CATTELL'S RELIANCE CABBAGE, 1s. per ounce.

CATTELL'S GLADIATEUR CUCUMBER, 1s. 6*d*. per packet.

KIRKLEES HALL DEFIANCE CUCUMBER, 1s. 6*d*. per packet.

KENT FLAG LEEK, 1s. per ounce.

CATTELL'S EXQUISITE PARSLEY, 6*d*. per packet.

CUSTARD MARROW (true), 6*d*. per packet.

CALCEOLARIA, splendid Mixed, 1s. and 2s. 6*d*. per packet.

SWEET PEAS, SCARLET INVINCIBLE, 6*d*., 1s., and 2s. 6*d*. pckt.

JOHN CATTELL, Westerham, Kent.

SEED POTATOS. New Sorts.

WHEELER'S MILKY WHITE, 3s. per peck.

GLOUCESTERSHIRE KIDNEY, 2s. per peck.

MONA'S PRIDE, fine, 6s. per peck.

"Better than this, though a trifle later—better in fact than any Potato coming in at the mid-season, is Wheeler's Milky White. I had a splendid crop of this last year; not one of them was touched by the disease. The growth is very short and compact; tubers are nearly all one size, neither large nor small; it has as fine a flavour as any Potato grown, and is as white and mealy as Flukes or Flourball, and these two cannot be surpassed for quality and flavour. I shall run no risk in dealing boldly with this fine Potato, and I shall therefore put it in an emphatic form that Wheeler's Milky White is the best of all Potatos, and those who do not grow it may consider themselves rather behind the age."—*From an editorial article on Potatos in the* GARDENERS' MAGAZINE, *January* 27, 1866.

J. C. WHEELER & SON, Seed Growers, Gloucester.

SEED POTATOS.—Early Ashleaf or Evesham Leader; Myatt's Early Prolific Kidney; Skerry Blue, hardy, productive, of good quality, and keeps free from disease. Prices on application to RANKLIN, CALDECOTT, BAWTREE, DOWLING, & Co., Limited, Basingstoke; or Seed Market, Mark Lane, London, E.C.

SUTTON'S POTATOS FOR PLANTING. Prices per peck, bushel, sack, or ton, may be had on application.

Royal Ashleaf	Wellington	King of Potatos
Prince of Wales	Pink-eyed Regent	Myatt's Ashleaf
Red Regent	Dawe's Matchless	Fox's Queen
Hudson's Nonsuch	Webb's Imperial	Skerry Blue
Wheeler's Gloucester	Hudson's May	Early Ashleaf
Prince Regent	Early Oxford	Early Walnut-leaf
Dauntless Seedling	Dalmahoy	Improved Early Shaws
Fluke	Walker's Improved	Flour-ball
York Regent	Regent	Lapstone

PATERSON'S SEEDLING POTATOS

Victoria	Napoleon	Paterson's Regent
Seedling Rock	Forfarshire Red	Paterson's Blue.
Irish Blue	Scotch Blue	

SUTTON'S DESCRIPTIVE LIST of POTATOS may be had gratis and post free.

SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

Seed Potatos.

HENRY MINCHIN, The Nurseries, Hook Norton, Oxon, begs to offer the following, all true to name. Terms cash.

	Per cwt.—*s. d.*		Per cwt.—*s. d.*
Ashleaf Kidney	9 0	King of Potatos	5 0
Walnut Leaf	9 0	Webb's Imperial	5 6
Royal Ashleaf (Raven's)	10 0	Pink Fluke	5 0
Yellow-skinned Kidney	9 0	Prince of Wales	10 9

And several other kinds, including PATERSON'S SEEDLINGS, equally cheap.

New Seedling Potatos.

TELEGRAPH, 14 days earlier than the Ashleaf, abundant bearer, per bushel, 20s.

PEERLESS, 14 days later than the above, wonderful cropper, per bushel, 16s.

For description see BUTLER & MCCULLOCH'S SPRING CATALOGUE, free and post paid on application.

Covent Garden Market, W.C.

Rintoul's Early Don Potatos.

DOWNIE, LAIRD, AND LAING are now sending out this fine variety, grown by Mr. Rintoul of East Craigie, on old Lea Land, expressly for Seed. It was introduced by them last year, and gave the most entire satisfaction, yielding enormous crops of the very finest quality.

It is equally well adapted for the Field or Garden, and is strongly recommended as a Second Early Variety. Price 2s. per peck, or 10s. per cwt. Rate per ton on application.

17, South Frederick Street, Edinburgh, and Stanstead Park, Forest Hill, London, S.E.

First Prize Potato (Extraordinary).

PRINCE OF WALES' KIDNEY POTATO. This new variety, which obtained the First Prize at the Royal Horticultural Society's International Root Show, Dec. 7, 1864, is the handsomest and finest eating, as well as the most prolific Potato in the world, *among yielded* kinds. It comes in directly after the Ashleaf, and retains its exquisite flavour all through the summer.

TESTIMONIALS.

From the late Professor LINDLEY (Editor of the *Gardeners' Chronicle*).

"I have this morning had the Seedling Potatos examined. The crop is very extraordinary, and the Potatos themselves are very handsome, and quite good."

From SHIRLEY HIBBERD, Esq. (Editor of the *Gardeners' Weekly Magazine*).

"The Seedling Potato (Prince of Wales), I have found to be wonderfully productive, handsome, and such a one as the world ought to have the benefit of."

To be had of Mr. James Veitch, Royal Exotic Nursery, King's Road, Chelsea, S.W.; Messrs. Barr & Sugden, King Street, Covent Garden, W.C.; and Alexander Dean, Maybush, Avery Row, London; Sutton & Sons, Seedsmen, Reading; Mr. Charnes, Nursery, Exeter; and through every Nurseryman and Seedsman in Great Britain.

N.B. They may be planted up to the end of May.

BLUNDELL'S CATTLE MELON and CATTLE MARROW.—These have now been tested in 37 counties in England, and in various parts of Ireland and Scotland, and proved to be a heavy cropping and valuable Fruit for Feeding all kinds of stock.

Prices, exclusive of carriage—100 Seeds, 2s. 6*d*.; Seed for 1 acre, 5s.; do. ½ acre, 3s.; do. 1 acre, 10s.

Cash must accompany all orders from unknown correspondents.

Address, JOSEPH BLUNDELL, Bursledon, Southampton

To Market Gardeners and Others.

CABBAGE PLANTS, EASTHAM, ENFIELD, and DRUMHEAD, 2s. per 1000. The stock true and can be warranted.

RED CABBAGE PLANTS, extra fine, 6s. per 1000.

ONION, WHITE SPANISH, 1s. 3*d*. per lb

WURZEL, YELLOW GLOBE, 2s. per cwt.

EARLY SHAW POTATOS, 6s. per cwt., warranted true.

Terms cash

RICHARD WALKER, Seed Merchant and Grower, Biggleswade, Bedfordshire.

Important to Farmers, Gardeners, and the Trade.

EXCELLENT CABBAGE PLANTS may now be had at 2s. per 1000, or cheaper if very large quantities are taken, of the following unexcelled varieties:—York, Early Nonpareil, Eastham, Drumhead or Ox. Red, excellent, 6s. per 1000. Packed carefully in bags

N.B. Customers are requested to send their own Bags; if not, they can be supplied and charged only at cost price, and the full amount charged will be refunded if returned at once in good condition, and advised per post.

Special quotations given for Var.'s Seeds, Seed Potatos, &c., on offer. A remittance or reference must accompany all orders from unknown correspondents.

FRED. GEE, Seed Merchant and Grower, Biggleswade, Bedfordshire.

Notice.

ROBINSON'S CHAMPION PRIZETAKER DRUMHEAD OX CABBAGE SEED.—I have observed that many Seedsmen are offering the above Cabbage; I therefore deem it necessary to annex a List of those who have had the Seed direct from me, and of whom it may be obtained true.

SAMUEL ROBINSON,

Feb. 21, 1866. Shaw House, Melbourne, near Derby.

Beck, Henderson, & Child, Upper Thames Street, London	S. Clark, Connaught Terrace
Cooper & Bolton, Fleet Street	Sutton & Sons, Reading
G. Gibbs & Co., Down Street, Piccadilly	J. Dickson & Sons, Chester
	F. Warwick, Sleaford.

The First and Second Prizes at Birmingham were again taken by this fine stock grown by Mr. Lythall, of Spittal Farm, Banbury; also the First Prize at the Great Sparkenhoe Show at Loughborough, awarded to Mr. G. Eaton, of Castle Donington, and to other parties at local Exhibitions, all raised from Plants purchased from Mr. Robinson.

NEW and SELECT VEGETABLE SEEDS.

BROCCOLI, OSBORN'S NEW WINTER WHITE, 1s. per packet
" CARTER'S NEW SUMMER LATE, 2s 6d per packet
BEET, SUDBURY SELECT CRIMSON, very dwarf and dark, 1s 6d per ounce
CAULIFLOWER, HAAGES DWARF EARLIEST, the first of all Cauliflowers, very hardy, and immense heads, 1s 6d per pkt
" SUDBURY LARGE IMPROVED, very fine, 6d. per packet
CABBAGE, OLIVER'S NEW MONARCH, 1s per oz.
CELERY, DINNEN'S GIANT SMOOTH, 1s. per packet
CUCUMBER, PAIN'S NEW RIDGE, 1s per packet
" DONALD BEATON'S RIDGE, 1s per packet
" SUDBURY LONG WHITE SPINE, splendid frame, 2s 6d per packet
Several first-class frame varieties, 1s. to 1s 6d per pkt.
LETTUCE, GIANT BATH COS, fine and hearty, 1s 6d per oz.
" CLIFTON NEW HARDY GREEN COS, 1s per packet
" LONGSTANDER, remarkable for duration, crisp and excellent, 1s per packet
" SUDBURY LARGE WHITE COS, 1s 6d per ounce
MELON, PRINCESS ALICE, weigh 9 to 11 lb., and excellent, 1s 6d per packet.
PEA, THE RINGLEADER (or First Crop), 2s 6d per quart
" M. LEAN'S LITTLE GEM, 2s 6d per quart
" M. LEAN'S EPICUREAN, 2s 6d per quart
" LAXTON'S PROLIFIC LONGPOD, 3s 6d per quart
" SUDBURY A 1, WRINKLED, very early, 4s per quart
RADISH, NEW OVAL SCARLET WHITE-TIPPED, 6d. per pkt
" And many other New and Select Sorts.
CATALOGUE for 1866 (CULTURAL and DESCRIPTIVE) free on application.

STEPHEN BROWN, Seed Grower, Sudbury, Suffolk.

Garden and Flower Seeds.

VEGETABLE SEEDS in COLLECTIONS, 10s., £1, £2, £3, £4, £5. The best FLOWER SEEDS, all kinds, 1s. 6d., 2s. 6d., 3s. 6d., and 5s. per dozen packets. The choicest imported seeds, sorted collections, and novelties.
DESCRIPTIVE PRICED CATALOGUES free on application.
W. HOOPER, Seedsman, &c., Wandsworth, S.W.

SUTTON'S UNRIVALLED COLLECTIONS of GARDEN SEEDS for ONE YEAR'S OUTLAY, carriage free.

SUTTON & SONS are now prepared to receive Orders for their unrivalled COLLECTIONS of GARDEN SEEDS, as under:—

	£	s.	d.
A Complete Collection of Kitchen Garden Seeds (Wye Valley Supply (with instructions on cultivation)	3	3	0
Ditto, in quantities proportionately reduced	2	2	0
Ditto ditto ditto	1	11	6
Ditto ditto ditto	1	1	0
Ditto ditto ditto	0	16	0
Ditto, for a Small Garden	0	10	6

Seed carriage free by rail, and 5 per cent discount allowed for cash payment. A remittance or reference requested from unknown Correspondents.

£5 By ordering one of these Collections once a year much trouble and expense will be saved.

Also, NATURAL GRASSES for Lawns and Meadows, fine sorts of MANGEL WURZEL, TURNIP, and other Agricultural Seeds.

SUTTON'S GENERAL ILLUSTRATED DESCRIPTIVE PRICED CATALOGUE and AMATEUR'S GUIDE is now ready, price 6d., or gratis to customers.

Remittances may be made by cheques on town or country bankers, or by post-office orders payable to

SUTTON & SONS, Royal Berkshire Seed Establishment, Reading

Kitchen Garden and Agricultural Seeds.

SEE THE LIST WITH ALL THE PRICES ATTACHED OF

MARTIN and SON, SEED MERCHANTS and NURSERYMEN, 7, Market Place, Hull, and Cottingham, and compare prices: also see the quantity of Prizes won by the produce of Seed obtained of Martin & Son, in Collections, at one of the principal, if not the principal Show in Yorkshire, for Vegetable and Agricultural produce.

1865.

First Prize, Collection of Vegetables (quantity not limited), 20s.
Second Prize, do. do. do. do. 10s.
Third Prize do. do. do. do.
First Prize do. do. (limited), 20s.

1864 AND 1863

First Prize, £5 Silver Cup, Collection of Vegetables (Subscribed for by the principal Seedsmen of Hull and neighbourhood).
First Prize, £5 Silver Cup, Agricultural produce. } (given by
Second Prize, £2, Agricultural produce. } J. Martin & Son
First Prize, £5 Silver Cup, Agricultural produce (given by Cottingham Society)
First Prize, £5 Silver Cup, Agricultural produce (given by Jno. Ringrose, Esq.)
Second Prize, £2, Agricultural produce (given by Jno. Ringrose, Esq.
Third Prize, Agricultural produce, (given by Jno. Ringrose, Esq.)
First Prize, Silver Medal, Agricultural produce (by a Seedsman).

1863 AND 1861.

No Prizes for Collections given

MARTIN & SON, Seed Merchants and Nurserymen, 7, Market Place, Hull; and Cottingham.
Established above Three-quarters of a Century.

SIBERIAN TREES for LAWNS.—The following species of CARAGANA, &c., are grafted on straight stems of Caragana arborea, about 3 feet in height; they bloom freely in Spring, and are most ornamental:—

	Each	s.	d.
CARAGANA ARENARIA		2	6
" CHAMLAGU		2	6
" FRUTESCENS (Weeping)		2	6
" JUBATA (rare)		3	6
" SPINOSA		2	6
" ALTAGANA		2	6
CALOPHACA WOLGARICA		2	6
HALIMODENDRON ARGENTEUM		3	6
CARAGANA ARBORESCENS, 3 to 4 feet		1	6

Carriage paid to London.
THOS. RIVERS & SON, Nurseries, Sawbridgeworth

LARCH and RHODODENDRONS, Delivered at Matlock Station. Per 1000—s. d.

LARCH, 1½ to 2 ft., good stout plants	12	0
" 20 to 30 in., " "	18	0
" 2 to 3 ft., " "	22	0
" 3 to 4 feet " "	25	0
RHODODENDRON PONTICUM, bushy and well-rooted, 6 to 12 inches	105	0
" " 0 to 15 in., 18s. per 100	170	0
" " 1 to 1½ ft., 23s. per 100	220	0
" " 1½ to 2 ft., 30s. per 100	290	0
" HYBRIDUM, 15 to 18 in., 28s 6d. per 100	270	0
" " 1½ to 2 ft., 32s. 6d. per 100	320	0

The Trade supplied. Apply to

JAMES SMITH, Darley Dale Nurseries, near Matlock

To the Trade.

JOHN PERKINS, SEN., has a large Stock of the following to offer:—

BLACK THORN, 1-year, 1- 2-years, 1½ to 2 feet; 3-years, 1½ to 2 feet, transplanted, 2 to 3 feet.
LARCH FIRS, 2 to 3 feet; 3 to 4 feet.
SPRUCE FIRS, 1½ to 2 feet; 2 to 3 feet.
SCOTCH FIRS, 1½ to 2 feet.
BERBERIS AQUIFOLIUM, 1 to 1½ feet; 1½ to 2 feet.

Purchasers of the above in large quantities will be liberally dealt with.

52, Market Square, opposite the Corn Exchange, Northampton.

SPLENDID FRESH-IMPORTED CALIFORNIAN SEEDS, warranted growth of 1865.
WELLINGTONIA GIGANTEA, 1000 seeds, 6s.; 5000 seeds, 25s.; 1 oz. (about 9000 seeds), 7s 6d; 4 oz., 24s.
PINUS LAMBERTIANA (True), 6s. per lb.; 15s. per 4 oz.; or 8s. per oz.
All of first-rate quality. Larger quantities on application. Free in London or Leith. Terms cash. The above can also be obtained on the same terms of Mr. W. G. TENANT, Leith.
PETER SMITH & CO., Seed Merchants, Hamburgh.

30,000 Common Laurels,

Fine bushy plants and well rooted, from 1 to 3 feet.

WM. WOOD and SON having a large stock of the above, will be happy to give special quotations at reduced prices.
Address, Woodlands Nursery, Maresfield, near Uckfield, Sussex.

Moor Edge Nursery, Tansley, near Matlock, Derbyshire.

JOSEPH SMITH, JUN., has to offer in quantities, reasonable, Transplanted LARCH, POPLARS, PRIVET, ALDER, LAURELS, ARBOR-VITÆ, RHODODENDRONS for grafting and other sizes, &c., seedlings:—

ELM, 1 year	BERBERIS AQUIFOLIUM, 1 year
SPRUCE, 2 and 3 years	RHODODENDRONS, 3 yrs., &c.
OAK, 1 year	

Price on application

FORTY THOUSAND COMMON LAURELS, 1 to 6 ft.
10,000 LAURUSTINUS, 1 to 3 feet.
10,000 BAYS, Sweet, 1 to 4 feet.
10,000 GREEN TREE BOX, 1 to 3 feet.
1,000 COMMON YEWS, 10 to 4 feet.
2,000 yards extra fine BOX EDGING.

The whole of the above are fine bushy plants, and well rooted.
R. GAND & SON having a large stock of the above, are in a position to offer them at remarkably low prices. Special quotations on application

The Nurseries, Salvington, near Worthing, Sussex.

RICHARD SMITH, NURSERYMAN and SEED MERCHANT, Worcester.

For prices of smaller sizes and quantities, see Conifer List.

At 30s per dozen:—

Abies alba, 5 to 7 feet	
" Douglasii, 3 to 4 feet	
" inverta, 1½ to 2 feet	
" orientalis, 2 to 2½ feet	
Arbor-vitæ, American, 6 to 7 feet	
" Siberian, 4 to 5 feet	
Cedrus Deodara, 4 to 5 feet	
Cryptomeria japonica, 4 to 5 feet	
Cupressus Lawsoniana, 3 to 4 feet	
" fragrans, 3 feet	
Irish Yew, 4 to 5 feet	

At 42s. per dozen:—

Abies Douglasii, 4 to 6 feet	
" inverta, 2 to 2½ feet	
" orientalis, 2½ to 3 feet	
" pyramidalis, 2 to 2½ feet	
Araucaria imbricata, 2 to 2½ feet	
Arbor-vitæ, American, 7 to 8 feet	
Cedar, Red, 6 to 8 feet	
Cupressus Knightii, 6 to 7 feet	
" Lawsoniana, 4 to 4½ ft.	
Juniperus thurifera, 4 to 5 feet	
Pinus Cembra, 4 to 5 feet	

At 60s per dozen:—

Abies inverta, 2½ to 3 feet	
" orientalis, 2½ to 3½ feet	
" Menziesii, 5 to 6 feet	
" orientalis, 2½ to 3 feet	
" pyramidalis, 3 to 4 feet	
Araucaria imbricata, 2½ to 3 feet	
Cedrus Deodara, 6 feet	
Cupressus Knightii, 7 to 8 feet	
" Lawsoniana, 5 feet	

At 84s. per dozen:—

Abies Douglasii, 8 to 9 feet	
" inverta, 3 to 4 feet	
" Menziesii, 6 to 7 feet	
Araucaria imbricata, 3 to 4 feet	
Cedrus Deodara, 7 to 8 feet	
Juniperus thurifera, 6 to 7 feet	

Each:—

Abies Douglasii, 8 to 10 ft., 12s 6d	
" inverta, 4 to 5 feet, 10s 6d.	
" " 6 to 8 ft., 21s to 63s	
Araucaria imbricata, 3 to 4 feet, 7s 6d to 21s	
" " 4 to 6 ft., 21s to 63s	
Cedar of Lebanon, 8 to 10 feet, 21s	
Cedrus Deodara, 8 to 10 ft., 10s 6d to 21s	
American Arbor-vitæ, for Hedges, 3 to 4 feet, at 50s per 100.	
" " " 4 to 5 feet, at 75s "	
" " " 5 to 6 feet, at 100s "	

RICHARD SMITH, Nurseryman and Seed Merchant, Worcester

GENUINE NURSERY STOCK, comprising:—

TRANSPLANTED FOREST TREES.

Alder, 2 to 3 feet
Ash, 1½ to 2 feet
" 2 to 3 feet
Birch, 2 to 3 feet
" 3 to 4 feet
" 4½ feet
Chestnut (spanish) 1½ to 2½ feet
Fir (Larch), 1½ to 2 feet
" 2 to 2½ feet
Hazel, 1½ to 2½ feet
" 2 to 3 feet
Willows, 3 feet
" " extra strong, 4 to 6 feet

CONIFERS AND HARDY EVERGREENS.

Arbutus, 1½ to 2 feet
Aucuba japonica, 1 to 2 feet
Berberis Darwinii, 1 to 2 feet
" japonica, 1 to 2 feet
Box (Tree) of sorts, 1 to 2 feet
Eugenia Ugni
" apiculata
Hollies (green), 2 to 3 feet
" (variegated), 1½ to 2½ feet
Laurels (common), 2 to 3 feet
Laurustinus, 1 feet
Privet (Hedge), 1½ to 2 feet
Pinus Cembra, 2 to 3 feet
" macrocarpa, 1 to 1½ feet

Specimen CONIFERS, in fine condition for removal, prices and size on application.
Choice named Hardy RHODODENDRONS, SCARLET, WHITE, ROSE, and PURPLES, in every shade, fine bushy plants, 1½ to 3 feet, £7 per 100 to £20 per 100.
RHODODENDRON PONTICUM, varieties of various sizes, from 30s. to 100s. per 100
AZALEAS, handsome sorts, 40s to 80s per 100.
STANDARD and HALF-STANDARD ROSES, in choice varieties, straight stems, and good roots, 50s. to 100s. per 100.
STANDARD and DWARF APPLES, in 50 approved kinds, 40s. to 70s. per 100.
Plan and Estimates given for Laying out and Planting New Grounds.
FOREST TREES supplied and planted by the Acre, and failures replaced.
A NEW DESCRIPTIVE and PRICED CATALOGUE of Japanese Novelties and General Nursery Stock may be had on application.

MAURICE YOUNG, Milford Nurseries, near Godalming, Surrey.

Spring Planting.

PETER LAWSON and SON are prepared to execute orders for every description of NURSERY STOCK suitable for FOREST and ORNAMENTAL PLANTATIONS.
To prevent disappointment, it is recommended that requirements for SPRING PLANTING should be ordered as soon as possible, and the plants may be reserved in the Nurseries until required. If large quantities of LARCH, SCOTCH FIR, CORSICAN PINE, and other leading TREES are wanted, PETER LAWSON & SON will be glad to submit special offers when desired.
Edinburgh and London.

MAURICE YOUNG'S DESCRIPTIVE LIST of Conifers, New and Rare Hardy Plants, Ornamental Trees and Shrubs, Rhododendrons, Japanese Novelties, Forest Trees, and Roses, forwarded on application.
Milford Nurseries, near Godalming, Surrey.

Evergreen Hedges.

THUJA PLICATA or WARLANA (the Siberian Arbor-vitæ).—Average height 2 feet, 10s per 100, 80s. per 1000. Ditto 1 foot, 5s. per 100, 40s. per 1000. This species forms the most compact and beautiful of all evergreen hedges.
Carriage paid to London.
THOS. RIVERS & SON, Nurseries, Sawbridgeworth.

To Clear Ground.

SPECIAL OFFER.—20 per cent. off Catalogue prices.—HOLLY (GREEN), YEWS, DEODARS, ARBUTUS, LAURELS (common), Laurels (Portugal), Cupressus Lawsoniana, Thuja Lobbii, Pinus insignis, P. excelsa, P. Benthamiana, Taxodium, Hazel (a large breadth), Larch 6s., Spruce do., Austrian Pine do., Beech do. For sizes and prices, see CATALOGUES, sent on application to
J. SCOTT, Merriott, Somerset.

FOX or GAME COVERT.—Gentlemen planting or refreshing their Preserves can be supplied with the undermentioned favourite Plants:—ENGLISH GORSE or FURZE, 1-year, 6s. per 1000; 2-years, very strong, 10s. per 1000; Evergreen Berberry, or Mahonia Aquifolia, 1 to 2 feet, strong transplanted, 25s. per 100, or £10 per 1000
LISTS of all kinds of FOREST and FRUIT TREES, SHRUBS, and CONIFERS, sent on application.
W. MATTOCK & SONS, The Nurseries, Bristol.

Strong Thorns, Oaks, Native Scotch, Larch, & Spruce.

CHIVAS and WEAVER, Chester, are still holders of extra strong TRANSPLANTED QUICKS, ENGLISH OAKS, extra fine, 2½ to 4 feet; NATIVE SCOTCH, very fine, 1½ to 3 feet; LARCH, very good, 1½ to 2½ feet; and SPRUCE, 1 to 2½ feet. Also strong Transplanted APPLE STOCKS, ready for Grafting.
Prices of the whole of the above, which are greatly reduced, will be forwarded on application.

Botanic Nurseries, Biggleswade, Beds.

EDWARD SHERWOOD begs to offer to the Trade and others, NEW PLANTS—ACCURAS, male and female, large plants in great variety; MIMULUS DUPLEX; Double Scarlet GERANIUMS, ALBERTINA PURPUREA VARIEGATA, Variegated SEEDLING ZONALS, Scarlet HORSE CHESTNUTS, SENSATION, New FUCHSIAS, PELARGONIUMS, ZONALE GERANIUMS of 1866; ASPARAGUS, 3 years old, ex ex. fine, 8s per 100

CHARLES CLARKE, Windmill Hill Nursery, Gravesend, Kent, has in fine stock and large EVERGREENS, as LAURELS, YEWS extra fine, PHILLYREAS, &c.; also Standard and Dwarf-trained FRUIT TREES, the latter not to be surpassed; Specimen FOREST TREES, various, in quantities; Scarlet HORSE CHESTNUTS; large trees of ENGLISH HOLLIES; extra strong ASPARAGUS for forcing; Clarke's New GOLDEN BULLACE, very superior; and his now celebrated VEGETABLED KALE SEED, a splendid variety for spring use, 1s per packet for 7 stamps.

Upper Kendalstown Nurseries, Delgany, Co. Wicklow.

M. P. PENNICK begs to announce that he has a fine stock of the following:—
CRYPTOMERIA JAPONICA, 2½ to 3½ feet high
CEDAR of LEBANON, 4 to 5 feet
FILLIGH or IRISH YEWS, 1 to 7 feet
SWEET BAYS, 2 to 2½ feet
CHINESE ARBOR-VITÆ, 2 to 2½ feet
The above are generally handsome, healthy, and well rooted
Prices moderate, on application

Tansley Nurseries, near Matlock, Derbyshire.

JOSEPH SMITH, SEN., invites Planters and the Trade to inspect his Nursery of 80 Acres of high land. The soil is of a fibrous nature, and the plants have proved to be excellent roots, such as to ensure the best success in their removal. The Nursery contains many Hundred Thousands of RHODODENDRONS, COMMON and PORTUGAL LAURELS, BOX, BERBERIS, HOLLIES, EVERGREENS, YEWS, &c. The FOREST TREES are very extensive, Of all the leading kinds there are 15 Acres of LARCHES, of different sizes, and all others in proportion. Prices moderate, which can be had on application as above.

To the Trade.

H. LANE AND SON have to offer a large and fine stock of strong and well-grown TREES of the following:—Maiden Nectarines, Peaches, Pears, Plums, Cherries and Apples; Pyramid Apples, Pears, Plums, and Cherries; Standards for Planting; Standard Apples, Cherries, and Pears; Dwarf-trained Apples and Pears of the leading kinds; Grape Vines in variety; Sea Kail very strong.
Also a large quantity of extra fine fruit-bearing ORCHARD-HOUSE TREES, with well-ripened wood and bloom buds, grown under glass, and well set with blossom in Pots, comprising the approved sorts of Peaches, Nectarines, Apricots, Pears, Plums, Cherries, Figs, &c.
Also a splendid collection of STANDARD and DWARF ROSES of most of the popular sorts in large quantity
CATALOGUES forwarded on the Trade paid upon application at
The Nurseries, Great Berkhampstead, Herts.

To Noblemen and Gentlemen about to be engaged in Planting.

DICKSONS AND CO., NURSERYMEN, SEEDSMEN, and FLORISTS, Waterloo Nurseries, Chester, have this season a large and very healthy stock of Seedling and Transplanted LARCH (native and Tyrolese), True Native Highland SCOTCH FIR, Spruce, Oak, Plane or Sycamore, Spanish Chestnut, Alder, Ash, Elm, Thorn Quick, Beech, Evergreen Privet, Poplar, Willow, &c., as well as all other kinds of Forest and Ornamental Trees and Shrubs, Fruit Trees, Roses, Greenhouse and Stove Plants, Herbaceous and Alpine Plants, Ferns, &c.
Their Forest Trees, which are grown on exposed ground, are this season finely ripened, and can be sent with perfect safety to any part of the kingdom.
Samples and prices will be sent free on application.

COCOA-NUT REFUSE delivered within 2½ miles of Charing Cross, at 2s per bag

For particulars, and how to use it, see Advertisement in *Gardeners' Chronicle* of the 21st March, 1863; or apply to the PATENT COCOA FIBRE COMPANY, Kingston-upon-Thames.

Postage Stamps or Post-office Orders payable to J. BARSHAM & Co.

BARSHAM'S BRUSHES and MATS are sold in every town.

CAUTION.—Every Brush is stamped, J. BARSHAM'S Patent.

GRANT'S PATENT PORTABLE RAILWAY affords the cheapest and most satisfactory means of clearing Root Crops on stiff land, and of running out Farm-yard Manure, either with or without a frost. It also supersedes Planks and Barrows for earth moving, at an immense saving of expense, especially where the earth moving, at an immense saving of expense, especially where the runs are long. It is also cheaper than Carting for similar purposes, besides avoiding injury to roads or land and vexatious delays from wet weather.
For particulars and Price List apply to Mr. J. GRANT, Portable Railway Works, Love Lane, Bankside, Southwark, London S.E.

LAWES' MANURES.

The Manures manufactured by J. B. LAWES for the present season of 1866 are now ready for delivery at his Factories, at the following prices, per ton :—

	£ s. d.
LAWES' PATENT TURNIP MANURE, and BONE SUPERPHOSPHATE of LIME	6 6 0
LAWES' SUPERPHOSPHATE of LIME from BURNT BONE or MINERAL PHOSPHATES	5 5 0
LAWES' WHEAT, BARLEY, GRASS, and MANGEL MANURES	5 0 0
CONCENTRATED CORN and GRASS MANURE	12 0 0

These Manures can be obtained of Mr. LAWES, or through the appointed Agents in all parts of the United Kingdom, at prices varying according to cost of carriage.

Genuine Peruvian Guano direct from the Importers. Nitrate of Soda, Sulphate of Ammonia, and other Chemical Manures.

American and other Cakes at market prices.

Address, Joint-Stock Office, 1, Adelaide Place, London Bridge, E.C. ; and 23, Eden Quay, Dublin.

THE LONDON MANURE COMPANY
(ESTABLISHED 1840),

Have now ready for delivery in dry fine condition,
CORN MANURE, for Spring Use
DISSOLVED BONES, for Dressing Pasture Lands
SUPERPHOSPHATES of LIME
PREPARED GUANO
MANGEL and POTATO MANURES
Also Genuine PERUVIAN GUANO, and NITRATE of SODA, ex Dock Warehouse; SULPHATE of AMMONIA, FISHERY SALT, &c. E. PURSER, Secretary.
Offices, 116, Fenchurch Street, E.C.

Grass Land.

SOMBRERO ISLAND PHOSPHATIC GUANO applied at this season of the year has been found more beneficial for Grass than any other Manure. For particulars apply to W. PEARSON, 148, Fenchurch Street, London. Sole Agent for the Sombrero Island

THE PATENT NITRO-PHOSPHATE or BLOOD MANURE COMPANY, LIMITED, Manufacturers of ODAMSS'S PATENT BLOOD MANURE for CORN and ROOTS. ODAMSS'S SUPERPHOSPHATE of LIME and DISSOLVED BONES.

Chief Offices—109, Fenchurch Street, London, E.C. Western Counties Branch : Queen Street, Exeter Irish Branch : 40, Westmoreland Street, Dublin.

Directors.

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Robert Leeds, West Lexham, Norfolk.
George Savile, Ingthorpe, near Stamford.
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Auditors—J. Carter Jones, Cambridge.
Secretary—C. E. MADAMAN.

This Company was originally formed by, and is under the Direction of Agriculturists, circumstances that have mainly entailed for it another Title, viz. "THE TENANT FARMERS' MANURE COMPANY."

Its Members are Cultivators of upwards of 20,000 Acres of Land, which has been for years under management with Manures of their own Manufacture. The Consumer, therefore, has the best Guarantee for the genuineness and efficacy of the Manures manufactured by this Company.

A Prospectus will be forwarded on application to the Secretary, or may be had of the local Agents. C. E. MADAMAN, Secretary.
Chief Offices, 109, Fenchurch Street, London, E.C.

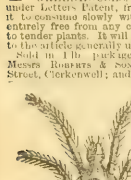
PALM-NUT MEAL, Manufactured by ALEXANDER M. SMITH & Co., Kent Street Mills, Liverpool
£7 a-Ton free to Rail or Boat in Liverpool.
£7 10s. delivered to Rail in Bristol.
£7 12s. delivered to Rail in London.
In Bags containing 2 cwt. each, branded AMS L
"This valuable Meal, containing above 26 per cent of fatty matter, is recommended as an economical food to mix with homegrown produce (see Dr. Voelcker, R. A. S. E. Journal, Vol. 1, 2d Series, page 176).
For further particulars and Analysis apply to Messrs. SMITH, or their Agents, Messrs. HUMPHRIES & Co., Bristol.
JOHN COLEMAN, 159, Leadenhall Street, E.C., London Agent.

INTERNATIONAL HORTICULTURAL EXHIBITION and BOTANICAL CONGRESS.—Those who are preparing Plants for the above Exhibition should bind them liberally with STANDEN'S GARDENERS' and AMATEURS' TRIEND. Sold by the leading Nurserymen and Seedsmen

APPLEBY'S GENUINE TOBACCO PAPER, in 4-lb. packets.—Testimonials too numerous for insertion. Price on application to
HENRY APPLEBY, Foreman to Messrs. IVERY & SON, Dorking, Surrey.

GENUINE EXTRA STRONG TOBACCO PAPER, in 2and 4-lb. packages, double the strength of that usually sold 1s. per lb Price List and quotation
SAMUEL MAY, Seedsman, 180, Vicar Lane, Leeds

ROLL TOBACCO CLOTH.—The cheapest and best Article for Smoking Greenhouses and destroying the Fly ; equal to Tobacco in strength, 1s. 6d. per lb., over 10 lb., 1s. 1d.
JOSEPH BIRCH & Co., Manufacturers of Blowing, and is entirely free from any chemical admixture, which is so destructive to tender plants. It will be found more economical and very superior to the unrefined generally sold.
Sold in 1lb. packages and upwards, price 3s. 6d. per lb ; by Messrs ROBERTS & SONS, Tobacco Manufacturers, 54, St. John Street, Clerkenwell; and by all Seedsmen and Nurserymen.



GISBURNE'S FUMIGATING COMPOUND, whether used against Insects and Mildew, on Growing Plants, or as Winter Dressing on Trees at rest, should be dissolved 48 hours before use. This gets rid of smell, and if the Solution be decanted, prevents any staining of foliage. A strength of from 1 to 2 oz. to the gallon of water is recommended for growing Plants; one from 4 to 16 oz. for Trees at rest.

Sold Retail by Nurserymen and Seedsmen, in boxes, 1s., 3s., and 10s. 6d. each.

Wholesale by PRICE'S PATENT CANDLE COMPANY (LIMITED).

Plagues of the Garden.

SIMPLE AND SAFE REMEDY.—By using the APHIS WASH, These Pests of the Garden, together with Scale, Caterpillars, Slugs, Earwigs, &c., are immediately destroyed Leaves no stain, but strengthens the Trees or Plants.
See *Gardeners' Chronicle*, August 19, 1865; and "Gardeners' Magazine," July 1, 1865.
Sold by Chemists and others, in 1s. bottles, and 2s. 6d. a gallon, with full directions for use.
Wholesale at the City Soap Works, Milton Street, London, E.C.

CATTLE PLAGUE.—The Cattle Plague Commissioners having specially recommended CARBOLIC ACID as a Disinfectant and Preventive for this class of disease Farmers and others are hereby informed that they may be supplied with this Acid by
F. C. CALVERT & Co., 7, Bond Street, Manchester.

Cattle Plague.

PUBLIC NOTICE.—REPORT of the ROYAL COMMISSION.
See "Sanitary Recommendations and General Precautions to Prevent the Spread of the Disorder."

THE DISINFECTING POWDER DESCRIBED IN THE REPORT IS
McDOUGALL'S PATENT DISINFECTING POWDER.—It is commended as the best means of Disinfecting Cattle Sheds, Farm Buildings, &c. Sold in bags, 1 cwt. each, at 10s. 6d., or £10 per ton. Carriage paid on 4-ton and upwards
For Washing the Inside of both Heritable and Sick Cattle the Commissioners strongly recommend McDOUGALL'S PATENT DISINFECTING SOAP. Sold in 5lb. Canisters at 2s. 6d ; 10lb., 4s. ; 20lb. kegs, 10s. ; 50lb., £2.
Directions for use in each package.
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Manchester—Regent Street, Shudehill ;
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Dublin—G. J. Alexander, 2, 3, and 4, Mary's Abbey.
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Price 1s. 6d. per bottle ; or one dozen in a wooden box, 20s.
Full Directions for use given with each article. Prepared by the original and only proprietors—DAY, SON & HEWITT, 22, Dorset Street, Baker Street, London, W.

Glass for Garden Purposes.

JAMES PHILLIPS AND CO. beg to submit their prices as follows :—

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2 inches in diameter	.. 0	4½	12 inches in diameter	.. 2	0
3 " "	.. 0	4½	13 " "	.. 2	6
4 " "	.. 0	5½	14 " "	.. 3	0
5 " "	.. 0	6½	15 " "	.. 3	6
6 " "	.. 0	8	16 " "	.. 4	0
7 " "	.. 0	10	17 " "	.. 4	6
8 " "	.. 1	0	18 " "	.. 5	0
9 " "	.. 1	2	19 " "	.. 6	0
10 " "	.. 1	4	20 " "	.. 7	0
11 " "	.. 1	6			

HAND GLASSES, WITH OPEN TOPS.

	Each.—s.	d.		Each.—s.	d.
12 inches	 6	6	18 inches	 9	6
14 "	 7	6	20 "	 10	6
16 "	 8	6	24 "	 12	6

Painted and Glazed with 16-oz. Sheet Glass.
London Agents for HARTLEY'S IMPROVED PATENT ROUGH PLATE.
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SWING WATER BARROW.—This is the best and cheapest article yet introduced for use in Gardens, Farm Yards, &c. The Water may be dipped out, or the Tub filled and poured out, or by merely raising the Handle it can be placed on the ground, and the Frame detached. To hold about 20 or 26 gallons, price 12s. Carriage paid to any station on Great Eastern Line

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IMPROVED WATER and LIQUID MANURE CARTS.
Catalogues on application.
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Sole London Agents for FOXLEY'S PATENT GARDEN WALL BRICKS. Illustrated Price Lists free by post. The Trade supplied.

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Also TESSELATED PAVEMENTS of more enriched designs than the above.
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PRICES of NETTING, 24 INCHES HIGH.

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2 inch	All kinds of Game	4½d.	6d.	6½d.	8d.
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1 inch	Ditto. Ditto	6d.	7d.	9d.	11d.

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LAWN MOWERS, GARDEN ROLLERS.
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The last great improvement in Washing Machines is in JAMES'S new Patent PRIZE WASHING, WRINGING, and MANGLING MACHINES, awarded several FIRST PRIZES. Will Wash 20 Shirts in 20 Minutes, with much less injury than with the hand. More than 3 000 sold.
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Apply to A. B., Mr C. Hunt, Post Office, Loughton, Essex

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MESSRS. PROTHEROE AND MORRIS are instructed by Messrs. Hopgood & Jacobsdate Hopgood & Co.) to offer for UNRESERVED SALE by AUCTION, on the Premises, Exotic Nursery, adjoining the Shepherd's Bush Station on the Metropolitan Railway, on MONDAY, March 5, and following day, at 12 for 1 o'Clock precisely each day, a portion of the valuable NURSERY STOCK, including a choice variety of handsome Evergreens of all sizes ; also Deciduous Shrubs, Ornamental and Fruit Trees, Standard and Dwarf Roses, &c., with a Pony Phaeton and Harness.
Full particulars of Nursery Stock will be announced in the next Advertisement
American Nursery, Leytonstone, Essex, N.E.

Sale of very handsome English-grown Camellias, &c.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, at 38 and 39, Gracechurch Street, City, E.C., on FRIDAY, March 9, at 1 o'Clock precisely, about 300 Choice DOUBLE CAMELLIAS and AZALEA INDICA, from 1 to 6 feet, beautifully furnished with bloom buds ; a superb assortment of 300 handsome STANDARD and DWARF ROSES ; selected AMERICAN PLANTS, fine bulbs of LILIUM LANCIFOLUM of sorts, GLADIOLUS, &c.
On view the Morning of Sale. Catalogues may be had at the Rooms as above, and of the Auctioneers and Valuers, Leytonstone.

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OR

NOISELESS LAWN MOWING, ROLLING, and COLLECTING MACHINES.

FITTED WITH PATENT SELF-SHARPENING CYLINDER CUTTERS.

BY SPECIAL APPOINTMENT,
SOLE MANUFACTURER

TO HER MOST GRACIOUS MAJESTY
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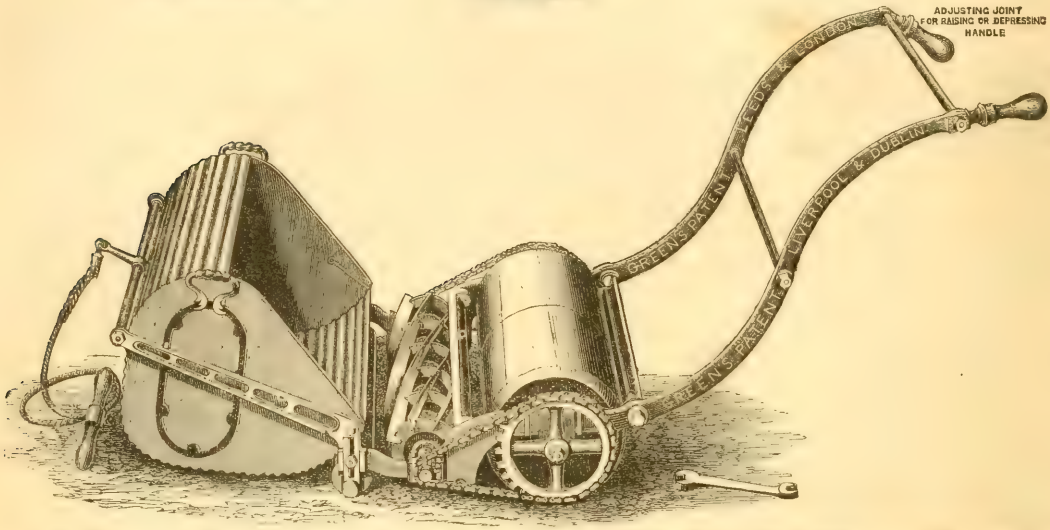

The above MACHINES have proved to be the best, and have carried off every Prize that has been given in all cases of competition, and in proof of their superiority above 30,000 have been sold since the year 1856.

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They are the most effective MACHINES for Mowing and Delivering the Grass, whether wet or dry.

They do not require two-thirds the labour to work them of any other Lawn Mowers extant.

They are the only MACHINES that are fitted up with the Patent Self-sharpening Cylinder Cutters. When the Cutters become blunt by running one way round, they can be reversed again and again, thereby saving the expense of regrinding.

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To Cut	10	inches	..	..	..	£3	10	0	*Suitable for a Lady.*	To Cut	18	inches	..	..	..	£7	10	0	*Suitable for One Person.*
,,	12	,, ..	..	..	..	4	10	0	,, ,,	,,	20	,, ..	..	..	..	8	0	0	*Suitable for Two Persons.*
,,	14	,, ..	..	..	..	5	10	0	*Suitable for One Person.*	,,	22	,, ..	..	..	..	8	10	0	,, ,,
,,	16	,, ..	..	..	..	6	10	0	,, ,,	,,	24	,, ..	..	..	..	9	0	0	,, ,,

T. Green & Son beg to call special attention to their Horse, Pony, and Donkey Machines, which have undergone very considerable Improvements for the present season.

PRICES of HORSE, PONY, and DONKEY MACHINES, including Patent Self-delivery Box; Cross Stay complete; suitable for attaching to ordinary Chain Traces or Gig Harness.

To Cut	26	inches	..	..	..	£13	0	0	*Leather Boots for Donkey*, 18*s*.
,,	28	,, ..	..	..	..	15	0	0	
,,	30	,, ..	..	..	..	17	0	0	
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,,	48	,, ..	..	..	..	30	0	0	

The 26 and 28 inches can easily be worked by a Donkey, or by Two Men, on an even Lawn, the 30 and 36 inches by a Pony, and 42 and 48 inches by a Carriage Horse; and, as the Machines make no noise in working, the most spirited animal can be employed without fear of its running away, or in any way damaging the Machine.

The above MACHINES are made from the best materials, and of superior workmanship; are delivered Carriage Free to all the principal Railway Stations and Shipping Ports in England.

Every Machine is warranted to give entire satisfaction, and if not approved of, can be returned unconditionally.

Having above 3000 Machines in stock at our Leeds, London, and Dublin Establishments, we are in a position to execute orders on the day they are received.

Illustrated Price Lists and Sheet of Prize Medals awarded to GREEN'S PATENT LAWN MOWERS, *free on application.*

T. G. AND SON having taken very extensive Premises in London, they are in a position to do all kinds of Repairs there, as well as at their Leeds and Dublin Establishments.

THOMAS GREEN AND SON, SMITHFIELD IRON WORKS, LEEDS;
54 and 55, BLACKFRIARS ROAD, LONDON, S.; and 19, EDEN QUAY, DUBLIN.

Editorial Communications should be addressed to "The Editor." Advertisements and Business Letters to "The Publisher," at the Office, 41, Wellington Street, Covent Garden, London, W.C.
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THE GARDENERS' CHRONICLE
AND
AGRICULTURAL GAZETTE.

A Newspaper of Rural Economy and General News.

No. 10.—1866.] SATURDAY, MARCH 10. {Price Fivepence, Stamped Edition, 6d

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☞ *Persons wishing to send the* GARDENERS' CHRONICLE *by Post should order the Stamped Edition.*

ROYAL HORTICULTURAL SOCIETY.—FIRST SPRING SHOW, on THURSDAY, MARCH 15. Band at Three. Tickets purchased (prior to the day) by Fellows, 2*s.* 6*d* ; public, 3*s.* 6*d* ; or on the day, 5*s.*

ROYAL HORTICULTURAL SOCIETY.—The EXHIBITIONS will be held on THURSDAYS, viz.—SPRING FLOWERS, March 15 and April 12; SUMMER EXHIBITIONS, May 3 and June 14; and the ROSE SHOW, June 28. Schedules may be had on application.

Spring Flowers, Primroses, Hyacinths, &c.

ROYAL BOTANIC SOCIETY'S FIRST SPRING EXHIBITION this Season, SATURDAY NEXT, March 17, at 2 o'Clock. The Band will play from half-past 2 to half-past 5. Tickets 2*s.* 6*d.* each. Tickets not used at the Spring Exhibition will be admitted to the American Exhibition in June.

INTERNATIONAL HORTICULTURAL EXHIBITION and BOTANICAL CONGRESS.
Under the Patronage of Her Majesty THE QUEEN, and of their Royal Highnesses the PRINCE of WALES and the DUKE of CAMBRIDGE.
The EXHIBITION and CONGRESS will OPEN on MAY 22, and continue till May 25. Subscribers' names will be received, and Schedules and Prospectuses may be obtained on application to the Secretary, at the Offices, 1, William Street, Lowndes Square, London.

CRYSTAL PALACE.—GREAT FLOWER SHOW, on SATURDAY, May 12. Schedule of Prizes now ready, and may be had on application to I. WILKINSON, Superintendent.

CRYSTAL PALACE.—WILLIAM CUTBUSH & SON'S (Highgate) GRAND EXHIBITION of HYACINTHS, TULIPS, and other SPRING FLOWERS, will be held in the Western Nave of the Palace, from SATURDAY, March the 17th, to the 31st, both days inclusive.

WM. CUTBUSH AND SON'S GRAND EXHIBITION of HYACINTHS, &c.
WM. CUTBUSH & SON beg to announce that they have made arrangements with the Directors for a GRAND EXHIBITION of HYACINTHS, TULIPS, and other SPRING FLOWERS, at the CRYSTAL PALACE, from SATURDAY the 17th to the 31st March (both days inclusive).
Highgate Nurseries, London, N.

New Flower Seeds—Novelties for 1866,
WITH INSTRUCTIONS ON CULTIVATION.—See
SUTTON'S AMATEUR'S GUIDE (ILLUSTRATED), page 34. Price Sixpence post free, or gratis to Customers.
Royal Berkshire Seed Establishment, Reading.

H. AND F. SHARPE, SEED GROWERS and MERCHANTS, Wisbech.
SPECIAL PRICED LIST of NEW SEEDS on application.

JAMES FAIRHEAD AND SON, SEED GROWERS and MERCHANTS, 7, Borough Market, London, S.E.
New and Genuine AGRICULTURAL, GARDEN, and FLOWER SEEDS. Special prices and advantageous offers on application.

F. K. BURRIDGE, SEED FARMER and NURSERYMAN, Lexden Road, Colchester.
Special Low Prices of FLOWER SEEDS on application.

Genuine Garden Seeds.

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PETER S. ROBERTSON AND CO.'S PRICED DESCRIPTIVE CATALOGUE of GENUINE GARDEN and FLOWER SEEDS, and NOVELTIES for 1866, post free on application.
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Seeds.

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Fruit Trees.

S. GLENDINNING AND SONS invite attention to their superb stock of healthy well-grown FRUIT TREES.
PRICE LIST on application.
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To the Trade.

SPLENDID Transplanted LARCH, 2½ to 3 feet, Price low
JOHN CRANSTON, Nurseries, King's Acre, near Hereford.

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List, with sizes and prices, on application to EDWIN COOLING, Derby.

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VERBENAS, FUCHSIAS, PETUNIAS, ROSES, &c., New and Old, of only those that are worth growing. Nice Plants now ready for potting, which contains everything. DESCRIPTIVE CATALOGUES free.
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WANTED, a large quantity of Seedling ARAUCARIA IMBRICATA and CEDRUS DEODARA Send price per 1000 to THOS THORNTON, Heatherside, Frimley, Surrey.

GLADIOLI.—Splendid sorts for Exhibition, or growing in Masses, &c., 2*s.* 6*d.*, 3*s.* 6*d.*, 4*s.* 6*d.*, 5*s.* 6*d.*, 7*s.* 6*d.*, 9*s.*, 12*s.*, 15*s.*, to 30*s.* per dozen; 10*s.* 6*d.*, 15*s.*, 20*s.*, 30*s.*, to 200*s.* per 100.
BARR & SUGDEN, 12, King Street, Covent Garden, W.C.

GLADIOLUS, the finest cultivated, new and older varieties.
CATALOGUES, CULTURAL and DESCRIPTIVE, sent free.
STEPHEN BROWN, Nursery, Sudbury, Suffolk.

GLADIOLI, GLADIOLI, GLADIOLI.—Collections, including all the finest varieties in cultivation, from 10*s.* 6*d.* to 63*s.*
All orders amounting to 21*s.* and upwards carriage paid.
BUTLER & MCCULLOCH, Covent Garden Market, W.C.

CHARLES SHARPE AND CO., SEED MERCHANTS, Sleaford, can supply, in large quantities,
VEITCH'S PERFECTION PEAS
CHAMPION OF ENGLAND PEAS
NE PLUS ULTRA PEA
WOODFORD'S GREEN MARROW PEAS

CHARLES SHARPE AND CO., SEED GROWERS, Sleaford, have good stocks of GARDEN and AGRICULTURAL SEEDS of their own growing. Prices and samples on application.

English-grown Clover Seeds.

CHARLES SHARPE AND CO. will be glad to enclose samples and quote prices on application.

New English Rape Seed.

CHARLES SHARPE AND CO. have on hand fresh threshed parcels of the above.
Samples and prices on application.

SUTTON'S PERMANENT GRASS SEEDS For ALL SOILS.

DICKINSON'S ITALIAN RYE-GRASS SEED, grown by him and sold to Agriculturists this season for present payment at 44*s* per qr., 5 qrs at 40*s*
New Park, Lymington, Hants.

GIANT ASPARAGUS.—Extra fine 2-yrs., 2*s.* per 100; extra fine 3-years, 3*s.* per 100.
Price to the Trade on application.
JOHN CRANSTON, Nurseries, King's Acre, near Hereford.

GRAYSON'S GIANT ASPARAGUS.
Fine strong 2-year roots, 30*s* per 1000, 3*s.* 6*d* per 100
Fine strong 2-year roots, 2½ per 1000, 2*s* 6*d* per 100.
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ASPARAGUS ROOTS, strong, 2 years old, at 10*s.* per 1000. On application to
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Terms cash.

Miltrack Mushroom Spawn.

SUTTON AND SONS can supply the above, good and fresh, at 6*s.* per bushel.
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THE LONGSTANDER LETTUCE.—Most remarkable for duration without running, crisp and excellent. Packets 1*s.* each.
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SANDRINGHAM NEW DWARF WHITE CELERY.
Superior variety, fine flavour, very crisp and solid.
PETER LAWSON & SON, 28, King Street, Cheapside, London, E.C.

White Belgian Carrot.

SUTTON AND SONS can supply fine New Seed of the above at a very moderate price, according to quantity required
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Splendid Sea Kail for Forcing.

WILLIAM BARNES has a few hundreds of the above to offer for present forcing. * They are all fine, strong, sound, selected crowns, and will produce an excellent crop.
Price upon application to Wm. BARNES, Camden Nursery, Camberwell

Scrymger's Brussels Sprouts.

SEED of the above excellent variety can be had true from the Raised, in packets at 1*s.*; post free 14 stamps.
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The Forwardest Field Pea is

SUTTON'S EARLY RACEHORSE.
For price, depending on quantity required, apply to
SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

Paterson's Seedling Potatos.

SUTTON AND SONS having been appointed AGENTS for the above, can supply them in quantity, at moderate prices, which may be had on application.
SUTTON & SONS, Seed Merchants, Reading.

THE SKERRY BLUE POTATO.—This Potato is one of the best and most productive in cultivation, and is very free from disease. Price per sack or ton on application.
SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

True Ashleaf Potatos.

SUTTON AND SONS can supply the above, very true, in quantity. Price per sack or ton may be had on application to SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

ROYAL ASH-LEAF POTATO.—This is one of the earliest and the most productive of all the Ash-leaf Kidney Potatos. Price per ton of finely prepared Seed given on application to Messrs THOS. RIVERS & SON, Nurseries, Sawbridgeworth.

DAINTREE'S SEEDLING POTATO is the best early round white Potato in cultivation, and can be obtained at a moderate price on application.
Mr. S. A. DAINTREE, Fendrayton, St. Ives, Hunts.

MYATT'S PROLIFIC KIDNEY POTATOS.—A few Tons very good, and warranted true. Price 8*s.* per bushel at Bottesford Station.
Apply to Mr. S. WILDERS, Barkestone, Bottesford, Nottingham.

PINK-EYED FLUKE POTATOS for SEED.—Excellent for the table, an abundant cropper on strong soils, and free from disease, at 4*s.* per bushel of 80 lb. Apply to
WM. GROSVENOR, Prospect Nursery, near Cheadle, Staffordshire.

SEED POTATOS.—Myatt's Prolific Kidney, Early Dalmahoy, Webb's Imperial Kidney, Daintree's Seedling, and all the best early and late varieties at low prices.
H. & F. SHARPE, Seed Growers and Merchants, Wisbech.

SEED POTATOS.—SKERRY BLUE, 4*s.* 6*d.* per bushel; MYATT'S PROLIFIC ASHLEAF, 4*s.* per bushel; SEEDLING ROCK, 4*s.* 6*d.* per bushel. These three kinds are the most hardy, free from disease, and abundant croppers known.
GEORGE DAVISON, Hereford.

To the Trade.

SEED POTATOS.—Myatt's Improved Ashleaf, Royal Ashleaf, Prince of Wales, Daintree's Seedling.
Prices on application to JOHN PERKINS, Sen., 52, Market Square, Northampton.

EARLY KIDNEY POTATOS.—Webb's Telegraph, first early, 20*s.* per bushel; Webb's President, second early, 16*s.* per bushel; Webb's Imperial Kidney (best Potato known for all purposes), 12*s.* per bushel.
Apply to Mr. WEBB, Calcot Gardens, Reading.

THE KING of POTATOS, one of the finest Potatos in cultivation, quite distinct, and free from disease, price 5*s.* per bushel of 56 lb. Also PATERSON'S VICTORIAS, Seed direct from Mr. Paterson, price 7*s.* 6*d.* for 56 lb.
Apply to Mr. PEARCE, Measham, Ashby-de-la-Zouch.

SEED POTATOS.—Early Ashleaf or Evesham Leader; Myatt's Early Prolific Kidney; Skerry Blue, hardy, productive, of good quality, and keeps free from disease. Prices on application to RAYNBIRD, CALDECOTT, BAWTREE, DOWLING, & Co., Limited, Basingstoke; or Seed Market, Mark Lane, London, E.C.

TRUE WHITE SWEDE SEED.—Any person having the above for Sale, pure, crop 1865, is requested to send sample and state price and quantity to
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Hardy Scarlet Rhododendrons.

JOHN WATERER'S CATALOGUE of HARDY SCARLET and other CHOICE RHODODENDRONS as annually displayed in the Royal Botanic Gardens, Regent's Park, can now be had on application.

It contains faithful descriptions of all the varieties really worthy of cultivation, as well as a selection of HARDY CONIFERS, with heights and prices, with ORNAMENTAL EVERGREENS, FOREST TREES, &c.

The American Nursery, Bagshot, Surrey.

American Plants, New Hardy Rhododendrons.

WATERER AND GODFREY'S PRICED and DESCRIPTIVE CATALOGUE of AMERICAN PLANTS, as cultivated in the Horticultural Gardens, South Kensington, free on application. The Trade only have the Rhododendrons they meet with classed as well as some new and very handsome kinds exclusively in their possession, and how to the first time offered.

Knaphill Nursery, Woking, Surrey.

Hardy Scarlet and other Choice Named Rhododendrons.

W. H. ROGERS, Red Lodge Nursery, Southampton, has a splendid assortment of the above, strong bushy plants, £10 per 100; or selected, 2s. per dozen.

A DETAILED CATALOGUE may be had on application, and also of a very fine General Stock, extending over 30 acres.

Superb Double Hollyhocks.

WILLIAM CHATER begs to remind the Admirers of this beautiful flower that now is the best time for planting it out in open fine situations, where it flowers most grandly.

DESCRIPTIVE CATALOGUES, with instructions for its Cultivation, also Lists of Plants per dozen, 100, or 1000, may be had on application.

Seedlings, from best named varieties, 1s. per doz., or from 2s. to 5s. per 100.

Blooming plants, with or without name, very fine, 6s. per doz., and from 30s. to 40s. per 100.

Seed saved from the finest named varieties, very choice, 1s. 6d. and 2s. per packet.

In 6 distinct and superior named varieties, extra fine, 12s.; 6 extra fine, extra.

12 named varieties, all superb flowers, 7s. 6d.

6 " " " 4s.

WILLIAM CHATER, Nurseries, Saffron Walden, Essex.

Nulli Secundus.

DOBSONS' SUPERIOR SELECTED SEEDS.

DOBSONS PRIZE BALSAM, 1s. 2s.

DOBSONS PRIZE HOLLYHOCKS, 1s., 2s. 6d., 5s.

DOBSONS PRIZE CALCEOLARIA, 1s. 6d., 2s. 6d., 5s.

DOBSONS PRIZE PRIMULA, 1s., 2s. 6d., 5s.

DOBSONS SPLENDID CINERARIA, 1s. 6d., 2s.

DOBSONS INTERMEDIATE STOCK, 1s., 2s.

DOBSONS PRIZE PELARGONIUM, 2s. 6d., 5s.

DOBSONS SUPERB SWEET WILLIAM, 6d., 1s.

Dobson & Sons, Seed Growers, Chiswick, London, W.

Novelties for 1866.

ENGLISH and CONTINENTAL FLOWER SEEDS, per packet. Free by post.

386 ANTIRRHINUM COELI-ROSEA FL. PLENO.—Fine densely double flowers, 2s.

387 BEGONIA MAJOR. A fine annual; large white umbels of flowers, fine effect for a pot, 1s.

388 CALCEOLARIA, CARNATION. A very pretty plant, with long spikes of very pure purple flowers and free of dwarf habit; quite hardy in all seasons, and in the month first sown it will bloom out of doors, 1s.

389 CLEOME PURPUREA. ARBOREA LACA.—Striking plants, and fine for cutting, 1s. 6d.

390 CENTAUREA BABYLONICA.—From Palestine, fine perennial growth; 7 to 8 feet, very ornamental foliage, with silvery tint. Profuse flowerer, one of the finest, 1s.

391 CHLORIS DISTICHOPHYLA.—A charming Grass from South America, handsome broad dark leaves, very neat for bouquets, 6d.

392 CLARKIA ELEGANS PURPUREA ALBA PLENA.—Double white, beautiful, 1s.

393 LOBELIA ERINUS PRINCESS ALEXANDRA.—Same habit as Lobelia ramosa, but of a beautiful pure white flowers, 1s.

394 MALVA CALIFORNICA. About 2 feet in height, with fine red flowers, similar to the Mexican grandiflora, yet much larger and more vigorous, 1s.

395 MATTHIOLA BICORNIS.—An evening-scented Stock of unrivalled fragrance, from the mountains of Greece

396 MONACHATHON TOSPUM.—A handsome Grass, neat habit of growth, rose coloured flowers, 1s.

397 NICOTIANA ATROPURPUREA GRANDIFLORA. Fine large flowers, grows 3 feet, with numerous dark red blossoms, easy to grow and very effective, 1s.

398 OENOTHERA DRUMMONDII NANA ALBA.—Pearl white, fine, 1s.

399 PHACOPSIS HOOKERIANA.—A great improvement on the old Pabularia texana, much dwarfer, and more branching in habit; flowers more or less throughout the summer months. Has received a Certificate from the Horticultural Society, 1s.

400 PETUNIA ANGUSTIFOLIA ALBICANS only 6 inches, each plant forming a dense spreading tuft of from 6 to 12 inches across; remarkable for its strong turpid-like appearance; flowers pure white and possessed of a Certificate from the Royal Horticultural Society, 1s.

401 PHLOX DRUMMONDII COUNTESS.—Very fine purple, with white eye, 1s.

402 PHLOX DRUMMONDII SCARLET PERFECTION.—Flowers fine and extra rich in colour, 1s.

403 PORTULACA GRANDIFLORA PLENO.—Beautiful, four colours, double, separate, 2s. 6d.

404 SALVIA COCCINEA PUMILA.—Very fine annual, continually in flower from June to October, most suitable for bedding; fine red; beautiful for pots or borders, 1s.

405 SALVIA GRACILIFLORA.—Most resembling the salvia Ramelana in habit, but having long flowers of delicate rosy lilac, 1s.

406 SCHIZANTHUS RETUSUS NANUS.—Very close, compact, dwarf habit; flowers more densely set than the old variety, and of a brighter red, 1s.

407 SILENE PENDULA RUBERRIMA. Flowers of a bright carminate rose, the branches are of a brownish red. Particularly striking, 1s.

408 SOLANUM ROBUSTUM.—Stated to be the finest of all the Solanums, 1s.

409 STIPA THOUARSII.—Beautiful sky-blue; charming as a bedding plant, 6d.

410 STIPA ELEGANTISSIMA.—An extremely elegant Australian Grass, 14 feet high, with silvery-haired feathered flower stalks in June and July, 3 ft. 6 in. apart, but quite distinct. Flowers the first year, 1s.

411 STOCK, new Largest-flowering Ten-week.—Deep orange, 1s.

412 " " " Crimson, 1s.

413 " " new Largest-flowering Pyramidal dark " 1s.

414 " " " primrose yellow, 1s.

The above Stocks are all very fine.

415 STOCK, ANDERSON'S NEW ROSE, INTERMEDIATE.—A very fine and compact free flowering variety from Scotland flowers three times the size of Intermediate, 1s.

416 STOCK, NEW EARLY LARGE-FLOWERING BROMPTON.—Sown with Intermediate flowers same time, in 8 varieties, separate, 2s.

417 TROPÆOLUM KING THEODORE.—A Tom Thumb variety, in leaves as intense black, 1s.

418 TROPÆOLUM ZANDERI NIGRUM.—A dark maroon coloured variety, and the finest blooming large and fine, 1s.

419 WAITZIA ACUMINATA ALBO PURPUREA.—Numerous cymbiform flower heads of various shades of amaranth purple, each zone on the reflexed ray white, 1s.

420 WAITZIA ACUMINATA CITRINA.—Same habit as the last-named, in several shades of yellow, 1s.

421 WAITZIA GRANDIFLORA.—The finest of all the yellow Everlastings. Received a first-class Certificate from the Royal Horticultural Society, and a coloured figure appeared in the *Botanical Magazine* for March, 1865, 1s.

422 XERANTHEMUM ANNUUM, New Double White.—As double as the purple, of a silvery white, 6d.

423 ZINNIA ELEGANS, New Double Violet.—Very fine, 1s.

424 to 428. Choice Annuals, novelties for 1866, selection left to S. B. & Co. 10s.

429 " " Perennials, " " 10s.

Fine Selections of Novelties of last season and best older Varieties, see Catalogue.

CATALOGUES free on application.

STEPHEN BROWN, Seed Grower, Sudbury, Suffolk.

SUTTON'S CHOICE COLLECTIONS of FLOWER SEEDS.

SUTTON AND SONS

forward

Flower Seeds

Free by Post or Rail.

These requiring showy kinds of Flower Seeds, and who are not well acquainted with the sorts, are respectfully recommended to leave the selection to us, and we will supply those we know to be really worthy of cultivation.

	£	s.	d.
1. The best 100 sorts (hardy, half-hardy, and tender)	1	1	0
2. The best 50 sorts ditto ditto	0	10	6
3. The best 25 sorts ditto ditto	0	7	6
4. The best 12 sorts ditto ditto	0	5	0
5. The best 24 sorts (hardy sorts only)	0	5	0

PRICED CATALOGUES gratis and post free on application.

SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

New White Lobelia.

MARTIN AND SON have great pleasure in offering the above NEW WHITE LOBELIA, which will be found one of the very best White flowering plants for edging. It forms a compact bush, and one dense mass of bloom all the summer. It is the most distinct and the most beautiful of all White edging plants. The principal Nurserymen and Gardeners will bear testimony to this lovely gem. It was raised by Mr. Usher, the eminent Calceolaria grower, at the Gardens of Major Sykes, of West Ella. Price 2s. 6d. each, 18s. per dozen, or £5 per hundred.

Address to the Hull Establishment, No 7, Market Place; or their Nursery Grounds at Cottingham. Established 1788.

Lobelia Snowflake.

Extract from GARDENERS' CHRONICLE :—

"Mr. Cox, Gardener to Lord Beauchamp, exhibited a beautiful White Lobelia called Snowflake, to which a First-class Certificate was awarded. Floral Committee of the Royal Horticultural Society, July 25, 1865."

JOHN and CHARLES LEE having acquired the stock of this desirable NEW BEDDING PLANT, they have much pleasure in offering SEED in SEALED PACKETS. It is also well adapted for pot culture.

As a BEDDING LOBELIA it stands unrivalled. The plant is of dwarf compact habit; the flowers are large and even, and of the purest white. The stock comes perfectly true from seed.

Price 2s. 6d. per packet. Price to the Trade on application.

LEE'S CAMELLIA-FLOWERED BALSAMS, in collections of nine fine distinct colours, 2s. 6d. A Stand of this beautiful strain of Balsams was awarded a First-class Certificate at the Royal Horticultural Society's Meeting, on August 15, 1865.

JOHN & CHARLES LEE, Royal Vineyard Nursery and Seed Establishment, Hammersmith, London, W.

Aucuba japonica, loaded with Bright Red Berries.

JOHN and CHARLES LEE, SEEDSMEN to the QUEEN, invite inspection of their large Stock of magnificent SCARLET-BERRIED AUCUBAS, which they believe to be unrivalled for size, perfection of form, and colouring. The Berried Aucubas are valuable for Table Decoration, for which purpose they may be hired at 10s. 6d. per night.

Plants in pots, 12s., 18s., 24s., and £5 5s. each; and Ripe Seeds, 1s. packet, including innumerable varieties, at 2s. each, or 18s. per dozen. The Trade supplied on liberal terms.

Royal Vineyard Nursery and Seed Establishment, Hammersmith, London, W.

NEW PLANTS.

AUBRIETIA CAMPBELLI (effective spring flower).

FUCHSIA BANKS'S BEAUTY.

VERONICA PERFECTA CAUCA.

CLIANTHUS DAMPIERI, in varieties (seed only).

Coloured Plates, post free on receipt of Stamps, of the following:—

AUBRIETIA CAMPBELLI, 7d.

CLIANTHUS DAMPIERI ALBIFLORA, 1s. 1d.

For description of the above see E. G. HENDERSON & Son's New AUTUMN CATALOGUE, forwarded post free.

Wellington Nursery, St. John's Wood, London, N.W.

Hardy Climbers.—To the Trade.

CLEMATIS JACKMANNI, 2s. 6d. each; 21s. per doz.

" HENDERSONII, 2s. each; 18s. per doz.

" HYBRIDA SPLENDIDA, 2s. each; 18s. per doz.

" STANDISHII, 2s. each; 18s. per doz.

" SOPHIA DOPPEL PLENO, 2s. each; 18s. per doz

" CERULEA (AZUREA) GRANDIFLORA, 30s. per 100.

Besides other good old varieties.

A CATALOGUE, containing Descriptions and Treatment of Clematises, will be forwarded free on application to

GEO. JACKMAN & SON, Woking Nursery, Surrey.

WM. JOS. WATSON, NURSERYMAN and SEEDSMAN, from Hall Buildings, Newcastle-on-Tyne, begs to offer New Seed of WELLINGTONIA GIGANTEA, PICEA GRANDIS, ABIES DOUGLASII, and ABIES MENZIESII, at 2s. 6d. and 5s. per packet. Also CEDRUS DEODARA, at 1s. and 2s. 6d. per packet.

CHEAP PELARGONIUMS, &c.

PELARGONIUMS.—Show, Spotted, and Fancy. Fine named Exhibition kinds, strong healthy plants, in 44-inch pots, summer-struck, 6s. per dozen.

DIPLADENIA AMABILIS.—This is a plant of great value for home decoration or exhibition. It is of good habit, and produces freely deep rosy-crimson flowers of large size and exquisite beauty. It gained general admiration wherever exhibited last year. 3s. 6d. and 5s. each. Price per dozen to the Trade on application.

TACSONIA VAN VOLXEMII.—See *Gardeners' Chronicle*, Feb. 24, 1866. Fine plants, 1s. 6d. each.

PANDANUS UTILIS.—Strong plants, 2s. 6d. each.

A remittance or reference is requested from unknown correspondents. A SUPPLEMENT to our DESCRIPTIVE HERBACEOUS and ALPINE CATALOGUE of 1865 is now ready, and will be forwarded upon application.

JAMES BACKHOUSE & SON, York Nurseries.

The Admiration of the World.

DOBSON'S UNEQUALLED CALCEOLARIAS are known and grown all over the world, and may be depended upon as superior to any other strain offered or sent out during the last 20 years. About 200 of the leading Firms in the United Kingdom and abroad get their supplies from us.

Sealed packets, 1s. 6d., 2s. 6d., 3s. 6d. and 5s. post free.

Dobson & Sons, Woodlands Nursery, Isleworth, London, W.

THE CZAR, a New Russian VIOLET, raised by F. J. GRAHAM, Esq., obtained two First-class Certificates in 1865 for its magnificent flowers and foliage; and a Special Certificate in the present year. Its flowers attain 1¾ inch in depth, and continue from October till May.

"Not only is the plant remarkable for its extreme luxuriance, but the smell surpasses that of any other Violet I ever met with."—*Report of Rev. M. J. Berkeley*

Very fine plants in bloom may now be had from Mr. JOHN GRAHAM, Cranford, near Hounslow, £5 per 100; 13s. per dozen prepaid, package included.

TO BE SOLD, for Cash, 2500 DAHLIAS, best out, in 100 roots, containing the leading kinds of 1864, 2s. 3d. per dozen, 12s. 6d. per 100; also 300 Old Stools, in excellent health, 4s. 6d. per dozen, or 25s. per 100.

CATALOGUE of the above, containing Hollyhocks and Bedding Plants, on application, containing stamped envelope.

J. C. FARMAN, Boston Spa, near Tadcaster.

To be sold cheap.—Important to Planters.

WILLIAM BARRON begs to offer the following at extremely low figures, to Noblemen, Gentlemen, and others engaged in Planting on a large scale:—

LARIX EUROPÆA (true).—This highly ornamental tree surpasses the Larch, both as to rapidity of growth and quality of timber. It will thrive where the Larch will not. It is also used as spars and masts in the French navy. Very strong plants, per 1000.

PINUS ROMANA.—2-year seedlings, 10s. per 100.

PINUS PALLASIANA.—2-year seedlings, 10s. per 100.

ABIES NEPHRENSIS.—Few people are aware of the value of the timber of this beautiful tree 2 to 3 ft., 20s. per 100.

PICEA NOBILIS (true).—Very fine. 6 to 9 inches, 10s. per doz.

BERBERIS DARWINII.—Too much cannot be said of this fine evergreen species. It is flowering, and the profusion of its orange-coloured blossoms, together with the quantity of berries which it bears (of which pheasants are very fond), render it one of the most attractive and desirable plants for lawn as well as cover planting ever introduced. 1-year seedlings, 20s. per 1000.

BERBERIS WALLICHIANA.—1 year seedlings, 15s. per 100.

Elvaston Nurseries, Borrowash, near Derby.

Scarlet Geraniums (Beaton's Race).

WM. PAUL (Son and Successor to the late A. PAUL), Waltham Cross, has now in flower a fine collection of the NEW and HYBRID NOSEGAY GERANIUMS, which have been selected from several Thousand Seedlings raised from the stock of the late Mr. Donald Beaton. Every one now offered is believed to be in advance of or distinct from all previously existing. Those marked now, the plants delivered in rotation, as far as the stock will allow, in May next.

GROUP 1.—BEDDING VARIETIES.

*** Any 12 varieties from this and the two following Groups may be selected for 22s.

BANNERET.—Flowers crimson, scarlet, and purple shaded, very bright and beautiful; a hybrid nosegay. Price 3s. 6d. each.

FAY QUEEN.—Rosy pink; a large smooth flower, very distinct and effective. Price 3s. 6d. each.

MINSTREL, a peculiar and pleasing shade of salmon, something in the way of Lord Palmerston, but brighter in colour and broader in the petals.

MONTE ROSA, dark rosy-purple, pleasing colour, large truss, very free. Price 2s. each.

NIMROD, orange-scarlet, white eye, large flower and truss, foliage and habit fine. Price 3s. 6d. each.

PHŒNIX, in the way of "Stella" in habit and general character, the colour Indian-red, very effective. Price 2s. each.

PRINCE OF ORANGE, orange-scarlet, very bright; great substance, good habit, prodigious bloomer. Price 3s. 6d. each.

PEARL NOSEGAY.—Flower with pure white colour, very free bloomer, spendid truss, plain leaf, first-rate and distinct. Price 5s.

REBECCA.—Cherry colour, fine truss, dwarf compact habit, very profuse, the finest bedding Geranium yet raised. Price 5s. each.

ST. GEORGE.—Dark chestnut, shaded with blackish crimson, quite unique, very free and effective, an entirely new colour among Nosegays. Price 5s. each.

SALMON NOSEGAY.—Flowers pure salmon, large truss, good. Price 3s. 6d. each

SIR J. PAXTON.—Flowers true orange, very bright, fine large truss, a splendid variety for massing. Price 5s. each.

WOOD NYMPH.—Salmon pink, large and fine. Price 3s. 6d. each.

GROUP 2.—VARIETIES ESPECIALLY RECOMMENDED FOR GROWING IN POTS OR VASES.

BRIDE.—Flowers white, with large crimson eye, of fine shape and substance; a first-class variety for pot culture. Price 3s. 6d. each.

CARDINAL.—Flowers dark orange scarlet. For shape, substance, colour, and habit, this is in advance of any scarlet variety yet raised. Price 5s. each.

CELESTIAL.—Flowers rosy lake, with fiery spot on upper petals, light centres; habit upright, resembling the Cactus speciosissimum; large white eye, now in colour, and very beautiful. Price 5s. each.

LORD CHANCELLOR.—Salmon pink, white eye, perfect shape, very free, fine habit. Price 3s. 6d. each.

POET LAUREATE.—Rosy purple, top petals orange scarlet, yellowish eye, perfect shape. Price 3s. 6d. each.

TIARA.—Flowers bright scarlet, shaded with purple, good truss, very free, fine habit; quite distinct from any yet raised, and very lovely. Price 5s. each.

GROUP 3.—MINIATURE OR POMPON VARIETIES.

DIAMOND.—Fine scarlet. purple centre, white eye, flowers profusely, habit good, distinct. Price 3s. 6d. each.

DRYAD.—Beautifully rosy pink, fine shape and truss. Price 3s. 6d. each.

NAIAD.—Flowers purple, scarlet top; pleasing and distinct. Price 3s. 6d. each.

WALTHAM LILAC.—Flowers true lilac, very profuse; a new and desirable colour, excellent for massing. Price 5s. each.

ZEPHYR.—Flowers light purple top, petals rose colour; stands the rain and sun well, very dwarf and free. Price 3s. 6d. each.

GROUP 4.—BEDDING VARIETIES SENT FROM THESE NURSERIES LAST YEAR.

Many of them have received First-class Certificates from the Royal Horticultural and Royal Botanic Societies of London, and those marked with *** have been awarded special marks of merit in the Royal Horticultural Society's Trial Ground at Chiswick.

NOW READY, AUTUMN-STRUCK PLANTS.

*** ALEXANDRA.—Magenta. Price 2s. 6d. each; 24s per dozen.

*** AMY ROBSART.—Bright crimson flower. Price 2s. each; 18s. per doz.

*** BEATON'S INDIAN YELLOW.—Orange scarlet suffused with yellow. Price 1s. 6d. each; 15s per dozen.

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From Dr. ROBERT HOGG, *of the Journal of Horticulture*

"I was particularly struck with the brilliant colour and telling effect of your Crimson King Verbena, when I saw it for the first time on entering the Kitchen Garden at Archerfield, forming a line in the ribbon border on each side of the main walk. But when I entered the Flower Garden at Dirleton Castle, remarkable for its breadth and variety of colour, in the distance my eye rested on two brilliant masses standing boldly out from all the others, which I did not fail to see was produced by the same Verbena. I was particularly struck with its compact body of colour; and on placing it in proximity with Beston's Stella Geranium, its depth was such as to give Stella an orange hue. You have great merit in having raised so valuable a decorative plant."

From Mr. TOWARD, *Osborne House, Isle of Wight.*

"Your Verbena Crimson King is one of the best varieties I have seen; its brilliancy of colour, profusion of bloom, and upright habit of growth will place it in the front rank."

From Mr JOHN CLARK, *Gardener to* Earl de Grey and Ripon, *Studley Royal, Ripon.*

"I was particularly struck with your seedling Verbena Crimson King. It will, indeed, be a valuable acquisition to all who require dense masses of colour. I cannot give you a better testimony of my appreciation of it than by saying that immediately on my return to Edinburgh I ordered 100 plants to be secured for me as soon as it is sent out."

From Mr. JOHN ROBSON, *Gardener to* Viscount Holmesdale, *Linton Park, Kent.*

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From Mr THOMAS LEES, *Gardener to the* Earl of Haddington, *Tyninghame*

"I have great pleasure in bearing the highest testimony to your Verbena Crimson King, having had opportunities of seeing it bedded along with other Verbenas in the Gardens at Archerfield both last year and this. Both in and after dashing rains it did all times was preeminent. Colour rich crimson, borne in great profusion. Habit of plant same as the well-known Purple King."

From Mr. H. ROSE, *Gardener to the* Earl of Roxburgh, *Floors Castle, Kelso*

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From Mr. J. BISSET, *Gardener to the* Earl of Sefton, *Croxteth Park*

"Crimson King Verbena, which I saw at Archerfield in great perfection, is of a most brilliant colour, much wanted in Verbenas. Habit good, being very erect and a great bloomer. I had great pleasure in giving an order for a quantity of this plant."

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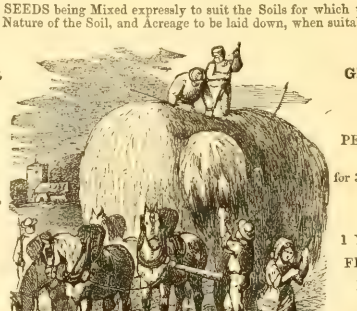

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ORCHARDS,
RENOVATING OLD PASTURES.

Messrs. SUTTON beg to announce that their GRASS and CLOVER SEEDS, which have hitherto given such great satisfaction, are now ready for sending out. The Seeds this year have been harvested in the best possible condition, and Messrs. SUTTON respectfully request early orders, which shall meet with their best personal attention.

List of Prices of Turnip, Mangel, and other Farm Seeds, with any information required, will be sent on application.

MR. MARTIN SUTTON'S "ESSAY on PASTURES," 6d. post free, or Gratis to Customers.

SUTTON AND SONS, ROYAL BERKSHIRE SEED ESTABLISHMENT, READING.

Early Spring Flowers.

WEBB'S GIANT POLYANTHUS and GIANT COWSLIPS, and other varieties, largest stock in England. List and prices on application to Mr. WEBB, Calcot Gardens, Reading.

ORCHIDS for Cool Houses.—Six beautiful Varieties of this charming tribe, including a splendid variety of CATTLEYA MOSSIÆ SUPERBA, and Six choice FERNS. Package free for 20s., or Three Orchids and Three Ferns, 10s. 6d W. B. JEFFRIES, Nurseryman, Ipswich.

ASTER, GERMAN ASTER, the finest Strain in the kingdom.—Was awarded the First Prize at the Brighton and Sussex Horticultural Show (open to all England), in 1864 and 1865, and wherever exhibited in 1865. Packets, 1s. 6d. each. J. JENNINGS, Seed Establishment, New Street, Shipston-on-Stour.

CAMBRIAN COLLECTIONS of GARDEN SEEDS for 10s. 6d., 21s., 31s. 6d., and 42s., sufficient for One Year's Supply for Large and Small Gardens. Basket included. CATALOGUES of SEEDS and NURSERY STOCK on application. GEORGE DAVISON, Hereford.

New Edition of

SCOTT'S FRUIT TREE CATALOGUE of the finest Collection in England. The Catalogue is allowed to be the best published, and is full of information about the Cultivation of Fruits, over 1000 being described. Apply to J. SCOTT, Merriott, Somerset.

SPECIAL OFFER of FRUIT TREES.—25 per cent. off Catalogues.—Having a large and fine stock of the undermentioned, they are offered at greatly reduced prices, to clear ground:—Peaches, Nectarines and Apricots (trained and untrained), Apples, Pears, Plums, and Cherries (trained and untrained). DESCRIPTIVE CATALOGUES on application to J. SCOTT, Merriott, Somerset.

W. VIRGO AND SON having a surplus stock of the undermentioned FRUIT, FOREST, and other TREES, can offer them at a very reduced price, viz. :—

Standard and Dwarf Apples	Alder, 2 to 3 feet
Standard and Dwarf Pears	Larch Fir, 2 to 3 feet
Standard and Dwarf Trained Cherries (very fine)	Spruce Fir, 18 inches, 2 and 3 feet
Hazel, 2 to 3 feet	Berberis Aquifolium, 1 foot
Birch, 2 to 3 and 4 feet	,, dulcis, 2 feet
Spanish Chestnut, 2 to 3 feet	Portugal Laurel, 2 feet
Withy, 3 to 4 and 5 feet	Common Laurel, 2 to 3 feet
	Privet, 18 inches to 2 feet

Also a large quantity of Trees fit for belting. Prices of the above can be had on application at the Nursery, Wonersh, near Guildford, Surrey.

Amaranthus cruentus grandiflorus.

SUTTON AND SONS confidently recommend the above as one of the most showy hardy Annuals. The colour is a rich crimson, and has a most elegant and graceful appearance. It usually attains the height of 4 feet, and is therefore very suitable for groups in front of Shrubberies, or by the sides of Carriage Drives. Price 6d. per packet, post free.

SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

LAMOUREUX, CLARK, AND CO., SEED MERCHANTS, Plymouth. The SEED CATALOGUE and GARDEN DIRECTORY for 1866, now published, will give full particulars respecting prices and other matters in connection with the Business. Will be sent gratis and post free to any address in the kingdom.

Spring, 1866.

WILLIAM BARRON begs to announce that his NEW DESCRIPTIVE CATALOGUE of CONIFERÆ and other ORNAMENTAL PLANTS, RHODODENDRONS, ROSES, FRUIT TREES, &c. for Spring 1866, may be had post free upon application. Elvaston Nurseries, Borrowash, near Derby.

CHOICE VARIEGATED PELARGONIUMS.

Mrs. Pollock	Golden Vase	Rainbow
Sunset	Snowflake	Burning Bush
Yellow Belt	Picturata	Princess Alexandra
Golden Tom Thumb	Argus	Fontainebleau

The above 12 choice varieties, suitable for exhibition, for 21s., basket and packing included.
Address, ALFRED FAYER, Nurseries, Chatteris, Cambridgeshire. Remittances required from unknown correspondents.

To the Trade.

CUPRESSUS LAWSONIANA SEED (true), of excellent quality, and warranted crop of present season. Price, postage paid, 5s. 2d. per oz.; 32s. per half lb.; 60s. per lb. nett. From unknown Correspondents a remittance must accompany order. WHOLESALE CATALOGUES of GENERAL NURSERY STOCK can be had on application to THOS. CRIPPS, Nurseryman, Tunbridge Wells, Kent.

British Fern Catalogue.

ROBERT SIM can now send, post free for six postage stamps, Part I. (British Ferns and their varieties, 36 pages, including prices of Hardy Exotic Ferns) of his NEW and PRICED DESCRIPTIVE CATALOGUE of BRITISH and EXOTIC FERNS, No. 7.

*** Part II. (Exotic Ferns) will be issued as early as possible. Foot's Cray Nursery, S.E.

GARDEN SEEDS.

ELEVEN PRIZES AT THE SOUTH KENSINGTON SHOW IN JULY LAST.

WILLIAM PAUL

(SON and SUCCESSOR to the late A. PAUL), WALTHAM CROSS, LONDON, N.,

BEGS TO ANNOUNCE THAT HIS

NEW SEED CATALOGUE IS NOW READY,

AND WILL BE FORWARDED ON APPLICATION FREE BY POST.

It is well known that both Vegetables and Flowers vary much in quality from Seed, and to insure the best racesf all the critical and important crops are home saved, or saved expressly for him under his own supervision. In proos of the success of this course he may state that no less than Eleven Prizes were awarded to the productions of hi Seeds at the Royal Horticultural Society's Show in July last.

Foreign and Colonial Orders carefully attended to, and packed by experienced packers.

GARDEN SEEDS.

OSBORN & SONS'

SELECT CATALOGUE OF THE ABOVE

May now be had on application, and they beg to call special attention to the following Select Articles :—

	Per packet.—s. d.		Per packet.—s. d.
OSBORN'S WHITE WINTER BROCCOLI	.. 1 6	ROWDEN'S BROWN COS LETTUCE	.. 1 6
NEW AMERICAN TOMATO	.. .. .. 1 6	SCOTT'S SUPERB WHITE COS LETTUCE	.. 1 0
		BELLE BONNE SUMMER CABBAGE LETTUCE	1 0
This is very large, and less watery than the old Rod.		These three Lettuces are less liable to run than any we know.	

FULHAM NURSERY, S.W.

A RIBBON BORDER, Six Colours, Post Free, 2s. 6d. Stamps.

The selection of the above is unique, equalling Bedding Plants, at one-thirtieth the cost.

Poynter's 25s. Anglican Collections of Garden and Flower Seeds for One Year's Supply

Contains one of the above, and is altogether the best and cheapest offered. Carriage free.

☞ Useful PRICE LISTS gratis.

ROBERT H. POYNTER, SEED MERCHANT, TAUNTON.

STIRLING, SCOTLAND.

GENTLEMEN ABOUT TO REQUIRE AGRICULTURAL SEEDS

MAY FIND IT ADVANTAGEOUS TO REFER TO OUR

PRICED CATALOGUE,

Which will be forwarded Post Free on application.

Over a long series of Years the Laying Down of Land to Grass has occupied much of our attention, and we are enabled to furnish Assortments of trustworthy Seeds, moderately charged, to suit every description of Soil. Full particulars as to these, as well as to our improved varieties of Swede and Yellow Turnip, &c., will be found in Catalogue.

W. DRUMMOND AND SONS, STIRLING ; and DAWSON STREET, DUBLIN.

Stirling has direct expeditious communication to all parts of the Kingdom. Seeds as hitherto are forwarded Carriage Paid.

New Roses.

JOHN KEYNES, in offering the above, begs to state that they are in the finest possible condition, having all been REPOTTED, and now well established, ready for immediate removal. Price 36s. per dozen. The usual allowance to the Trade. Salisbury.—March 10.

New Roses of 1866.

JOHN FRASER, of the Lea Bridge Road Nurseries, Leyton, Essex, N.E., will forward on application a LIST of all the best varieties of NEW ROSES for 1866. The plants are strong, healthy, and are now ready for sending out. Early orders are respectfully solicited.

New Roses for 1866.

10,000 strong healthy well-grown Plants of all the New Roses. Woodlands Nursery, Maresfield, near Uckfield, Sussex.

WM. WOOD AND SON have to offer an extraordinary stock of the best NEW ROSES of the present season, in fine healthy plants.

NEW ROSES of 1865.—Owing to the annual introduction of so many inferior, and, in fact, worthless varieties of New Roses, JOHN CRANSTON has this season carefully selected 23 varieties out of 40 or 50 sorts offered by the French raisers These he can confidently recommend, and he believes his selection contains all that are worthy of note.

A List, with prices, sent on application. The plants are strong, and will be fit to send out in March

Nurseries, King's Acre, near Hereford.

Roses, Roses.

ONE THOUSAND DWARF ROSES of all the leading kinds to be disposed of at a very low price. The plants are good and true to name. No reasonable offer will be refused. Letters post paid, addressed to A. Z., Post Office, Haverhill, Suffolk, will receive immediate reply

J. IVERY AND SON beg to announce that their DESCRIPTIVE PRICED CATALOGUES of AZALEA INDICA, HARDY BRITISH FERNS, ROSES, CONIFERÆ, GRAPE VINES, and SEEDS, may be had on application at their Dorking Nursery.

Superb Hollyhocks.

WILLIAM PERRY has to offer a healthy stock and fine plants of the above, which can be supplied on liberal terms. Price per 100 on application. A List of sorts post free. Messrs. RIVERS' Nurseries, Sawbridgeworth, Herts.

Superb Double Hollyhocks.

THE FINEST COLLECTION EVER OFFERED TO THE PUBLIC.

W. CHATER has a large Stock of fine healthy Plants now ready, which he can supply on liberal terms. See Advertisement on other page Address, W. CHATER, Nurseries, Saffron Walden.

New Descriptive Catalogue of Vegetable and Flower Seeds, &c., for 1866.

ROBERT T. MACKINTOSH, NURSERYMAN and SEEDSMAN, 12, Melbourne Place, Edinburgh, begs respectfully to intimate that the above LIST, embracing several New and interesting Novelties, may now be had post free on application.

Genuine Garden and Farm Seeds to be had at THOMAS KENNEDY & CO.'S

Nursery and Seed Establishment, Dumfries, N.B. And delivered free of carriage as formerly. PRICED CATALOGUES furnished on application.

AMBROISE VERSCHAFFELT, NURSERYMAN, Ghent, Belgium, begs to announce that his NEW CATALOGUE, No. 76, has just appeared, and can be had at his Agents, Messrs. R. SILBERRAD & SON, 5, Harp Lane, Great Tower Street, London, E.C.

Genuine Garden and Agricultural Seeds.

PAUL TOLLARD, SEED GROWER and MERCHANT, 20, Quai de la Mégisserie 20, et devant 4, Place des Trois Maries 4, à Paris. SPECIAL PRICED LIST of NEW SEEDS, in English weights and money, on application.

NEW and CHOICE SEEDS.—Bull's Verbena, Bull's Tropæolum, Cyclamen persicum grandiflorum, Giant 10-week Stock, Perfection Aster, Lilium auratum, Intermediate Stock, James' Prize Calceolaria, Barr's Select Stained Grass, each 6d. per pkt. BARR & SUDDEN, 12, King Street, Covent Garden, W.C.

Notice.

PURCHASERS of LARGE QUANTITIES of FARM or GARDEN SEEDS will be supplied liberally by SUTTON & SONS For prices apply (stating quantity required) to SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

COMPLIMENTARY FLORAL FETE at Nottingham, AUGUST 27 & 28, in honour of the British Association Meeting. *President*—DR. J. D. HOOKER, F.R.S., &c.

About £250 in Prizes for Stove, Greenhouse, and Ornamental-foliaged Plants, Orchids and Ferns. Upwards of £70 in Fruit Prizes. Nearly £30 in Cut Flower Prizes and Special Certificates of Merit. A Catalogue of the Award of Prizes will be printed. Exhibitors to declare before July 1.

Schedules may be had of the Exhibition Secretary, E. J. LOWE, Esq., of Hucknall House, near Nottingham

HORTICULTURAL SOCIETY of LIVERPOOL.—The FOURTH EXHIBITION of HYACINTHS and SPRING FLOWERS will be held in St. George's Hall, Liverpool, on WEDNESDAY, March 14. Entries close March 10.

For Schedules, &c., apply to ROBERT W. KER, Hon. Sec., 4, Basnett Street.

HORTICULTURAL SOCIETY of LIVERPOOL.—The FIRST EXHIBITION of ROSES, ORCHIDS, FERNS, &c., will be held in St. George's Hall, on TUESDAY and WEDNESDAY, July 3 and 4, when useful Liberal Prizes will be awarded. Schedules now ready, post free, from ROBERT W. KER, Hon. Sec. 4, Basnett Street.

The Gardeners' Chronicle.

SATURDAY, MARCH 10, 1866.

MEETINGS FOR THE ENSUING WEEK

TUESDAY,	March 13	Zoological	8½ P.M.
WEDNESDAY,	,, 14	Microscopical	8 P.M.
THURSDAY,	,, 15	Royal Horticultural (First Spring Show) at South Kensington	2 P.M.
		Linnean	8 P.M.
SATURDAY,	,, 17	Royal Horticultural (Weekly Show), at South Kensington	2 P.M.
		Royal Botanic (First Spring Show	2 P.M.

A PAPER was published by Dr. LIONEL S. BEALE in the "Medical Times and Gazette" for January 20, 1866, on certain ENTOZOOID ORGANISMS which occur very constantly in the voluntary muscular tissue of beasts affected with the Rinderpest, and in that of the heart. Dr. BEALE does not assert that these bodies are really animals, but contents himself with giving their history—for they have been observed for some years in various animals in an unhealthy or in an apparently healthy condition, and with describing their minute structure. Dr. COBBOLD, who has devoted so much time and labour to the study of the creatures inhabiting the intestines of animals, is decidedly of opinion that the organisms of which we have just spoken are not animals, but

s inclined to refer them to the vegetable kingdom, in the belief that they are sacs of Psorospermiæ, if these bodies are really Algæ as ROBIN supposes. No true Alga, however, has ever been found in the tissues of animals, all the supposed species which have been described, including fish mildew, and its allies, being decidedly referrible to Fungi.

We have already adverted to a notion which was put forth last autumn, of a possible connection between the cattle plague and the red rust which was so prevalent. Last autumn was however by no means exceptional, for we have frequently seen the Grass as yellow with the rust-spots, and have heard conjectures as to the possibility of its causing cancer and other complaints to which stock of various kinds are subject. There is not, however, a particle of evidence to show that any of the truly parasitic leaf Fungi are capable of establishing themselves in animal tissues. An anonymous correspondent in the same number of the "Medical Times," who styles himself a provincial physician, while hinting at the possible connection between rust and rinderpest, says distinctly that though the spores could be readily enough traced in the mucus of the air passages of the dead animals, nothing further confirmatory of the notion could be elicited, or in other words, there was no evidence of these bodies having germinated and penetrated the subjacent tissues.

There are, however, Fungi which luxuriate in animal tissues, though they are not always confined to them. The Fungi which attack the caterpillars of Hepialus virescens in New Zealand, and those of various moths and insects in other parts of the world, not excepting our own island, belonging to the curious tribe of Sphæriaceæ, are a notable example of Fungi addicted to the animal kingdom, specimens of which often brought home from our southern colonies as curiosities. It is pretty certain that many of these attack the larvæ while living. But it is more especially different kinds of moulds which commit cruel ravages on living animals. The disease which is the scourge of silkworms arises from the attack of a very beautiful mould, Botryosporium Bassianum, which is probably identical with B. diffusum, a species extremely common on decayed stems of herbaceous plants, and there are several Fungi of the same group which seem very indifferent as to their place of growth, and flourish on living animal tissues quite as readily as on decayed vegetables. We must not omit, moreover, the Fungi to which some cutaneous diseases in man are due, or the fish moulds which are the pests of the aquarium. Now it is very possible that the spores of any of these might be taken either into the lungs with the air we breathe, into the stomach with the water, or into the pores of the skin, and at length establish themselves in various parts of the body. The common occurrence of moulds in the urine, Sarcina in the stomach, and Penicillium in the air passages, supplies instances familiar to every one who has paid the slightest attention to the subject. It is not therefore impossible that the organisms in question may really be a condition of some Fungus, though from the numerous instances in which they have been found, where the rinderpest was not in question, there is no reason to believe that they are the cause of the disease, though they may be a consequence, from the diseased tissues affording a peculiarly favourable nidus for the development of the mould.

The ciliated surface, were it really shown that the processes are vibratile as those on the organs of some Algæ, would be opposed to this notion, but they may be only of the same nature as those which occur on the spores of some Truffles and other Fungi. The walls of the sac should be tested to determine whether they are composed of cellulose, though this would not be absolutely decisive, as cellulose occurs in some undoubted animals, as for example in Ascidia. Dr. BEALE has tried to obtain a further development, and it is very desirable that further attempts should be made in this direction, those specimens being chosen in which the bodies lie freely amongst the muscular fibres. It is curious, however, that at present, so far as the rinderpest is concerned, it is only in the striated fibres of the voluntary muscles and in those of the heart, which are similar in structure, that they have at present occurred, and not in the involuntary non-striated muscular tissue, whose position and structure would seem better calculated for their development. The matter is, however, in every point of view worthy of deep investigation, and it is quite as interesting to the botanist as to the zoologist, and demands the attention of all who regard either animal or vegetable pathology. *M. J. B.*

THE causes of the ASCENT OF THE SAP have long been a subject of controversy, and it can by no means be stated that we have even now arrived at any perfectly satisfactory conclusions in the matter. Endosmose, capillarity, and the profuse evaporation which takes place from the leaves, have all been considered as potent agents in producing the upward flow, but even those who have the most insisted on the power of these agencies have admitted that they were not sufficient to explain all the phenomena.

Professor UNGER and M. BOEHM, in a paper in the Transactions of the Imperial Academy of Vienna, conclude that the rise of the sap is brought about by atmospheric pressure on the elastic walls of the cells. Air enters into the plant, and is distributed throughout its structure by means of the vessels, the air so introduced compressing the cells, and thus pushing their liquid contents upwards.

Quite recently, too, Mr. HERBERT SPENCER has brought before the Linnean Society his views on the ascent of the sap and the formation of wood in plants. Mr. SPENCER'S paper excited so much attention, and gave rise to so animated a discussion, that we feel pleased to lay before our readers a brief abstract of the inferences drawn from his observations and experiments, and which has been kindly furnished to us by Mr. SPENCER himself:—

"The leading idea in my paper is that the oscillating movements of the stems, branches, twigs, and petioles of plants are largely, if not indeed mainly, instrumental, both in producing circulation, and in causing the deposit of woody matter. When any part of a plant is bent by the wind, the tissues on its convex surface are subject to longitudinal tension, and these extended outer layers compress the layers beneath them. Such of the vessels or canals in these subjacent layers as contain sap, must have some of this sap expelled. Part of it will be squeezed through the more or less porous walls of the canals into the surrounding tissue, thus supplying it with assimilable materials; while part of it, and probably the larger part, will be thrust along the canals longitudinally upwards and downwards. When the branch or twig or leafstalk recoils, these vessels, relieved from pressure, expand to their original diameters. As they expand, the sap rushes back into them from above and below. In whichever of these directions least has been expelled by the compression, from that direction most must return during the dilatation; seeing that the force which more efficiently resisted the thrusting back of the sap is the same force which urges it into the expanded vessels again, when they are relieved from pressure. At the next bend of the part a further portion of sap will be squeezed out, and a further portion thrust forwards along the vessels. This rude pumping process thus serves for propelling the sap to heights which it could not reach by capillary action; at the same time that it incidentally serves to feed the parts in which it takes place. It strengthens them, too, just in proportion to the stress to be borne; since the more severe and the more repeated the strains, the greater must be the exudation of sap from the vessels or ducts into the surrounding tissue, and the greater the thickening of this tissue, by secondary deposits. A further part of my argument is that by this same action the movement of the sap is determined either upwards or downwards according to the conditions. While the leaves are active and evaporation is going on from them, these oscillations of the branches and petioles urge forward the sap into them; because so long as the vessels of the leaves are being emptied, the sap in the compressed vessels of the oscillating parts will meet with less resistance in the direction of the leaves than in the opposite direction. But when evaporation ceases at night, this will no longer be the case. The sap drawn to the oscillating parts to supply the place of the exuded sap, must come from the directions of least resistance. A slight breeze will bring it back from the leaves into the gently-swaying twigs, a stronger breeze into the bending branches, a gale into the strained stem and roots—roots in which longitudinal tension produces, in another way, the same effects that transverse tension does in the branches.

Mr. SPENCER further supported his views by drawings and descriptions of certain organs which terminate the vascular system in many leaves—organs specially adapted by their structures and positions for absorbing the elaborated sap that has to be drawn back from the leaves for the nutrition of the supporting parts. These structures, to which, as it appears, no one has previously called attention, consist of masses of irregular and imperfectly-formed fibrous cells. Mr. SPENCER also showed specimens of some very singular and beautiful structures of a similar nature in the common Turnip, which have been equally overlooked by microscopists, although they may even be seen by the naked eye. Great credit is due to Mr. SPENCER for his ability and his powers of observation, and it is earnestly to be hoped that he will pursue his investigations in this very important subject. We propose on some other occasion to recur to a matter so interesting to all scientific horticulturists; till then we defer further comment on Mr. SPENCER'S views.

—— WE are authorised to state that the Council of the Royal Horticultural Society, having received an application from Mr. WILLIAM EARLEY of Digswell, to the effect that the JOURNAL OF THE SOCIETY should be supplied to Gardeners at a cheaper rate than to the Public, have determined that any *bonâ fide* gardener sending to the Assistant-Secretary, Royal Horticultural Society, South Kensington, the sum of 4*s.* 4*d.* in postage stamps, being one-half the charge to the public, will be supplied with the Journal in question, quarterly, for 12 months.

—— The Committee of the Botanical Congress to be held in May next, in connection with the International Horticultural Exhibition, and under the presidency of Professor A. DE CANDOLLE, now comprises the names of JAMES BATEMAN, Professor BABINGTON, W. BAXTER, J. J. BENNETT, Rev. M. J. BERKELEY, Professor BENTLEY, W. CARRUTHERS, Professor DAUBENY, CHARLES DARWIN, Dr. HOGG, W. MASTERS, J. MCNAB, A. G. MORE, Dr. MOORE, T. MOORE, J. MIERS, W. PAUL, Dr. PRIOR, J. G. VEITCH, Dr. WELWITSCH, Dr. WIGHT, JAMES YATES, and others. Several papers have already been announced, and it is expected that a large number of foreign botanists and horticulturists will be present. Gentlemen intending to take part in the Congress should apply to Dr. MAXWELL MASTERS, the Honorary Secretary, at the Office of the Exhibition, 1, William Street, Lowndes Square, S.W.

—— M. CHATIN has found in certain anthers some new organs which he calls PLACENTOÏDS. He describes the cavity of the anther as being often divided by a number of partitions which exactly correspond to the placentæ of the ovary, and it is to these divisions that he has given the name of Placentoïds. "If anyone makes a transverse section of the ovary of a Solanum and of one of its anthers, he will find in each of the chambers of the latter, as in each ovarian cavity, a fleshy projection, which approaches the centre of the chamber of the anther, and of the cavity of the ovary." M. CHATIN defines this partition or septum to be the layer of tissue which divides each of the chambers of the anther into two distinct thecæ. It may present, he observes, any of the three following conditions:—It may be formed of a tissue in direct continuity with that of the connective; it may be entirely constituted of the valve of the anther chamber reflected upon the connective; or it may be of a mixed origin. It may have three different forms of structure: thus, it may be solely composed of fibre-cells; it may have no fibre-cells entering into its structure; or it may be composed of fibrous tissue, properly so called.

—— We observe that the Royal Horticultural Society is seeking to identify itself more strictly with practical horticulture by entering into union with the various HORTICULTURAL SOCIETIES throughout the country. We do not anticipate any great results from this affiliation, yet as there is reason to believe that it arises from a conviction that it is the duty and interest of the Society to evince more of a fostering care than it has manifested of late years, for the plain, practical, plodding horticulturists scattered over the country, we look upon the movement with satisfaction. Some of the more important privileges accorded to Provincial Horticultural and Floral Societies which enter into union, are thus stated in a paper which has recently been circulated. Each Society is to have a copy of the Proceedings and Journal of the Royal Horticultural Society, which publications will be open to the more important notices or papers the Society in union may wish to have published. Each Society is to have a transferable ticket for the use of its members, conferring on the bearer the right of free admission to the Gardens, and other privileges. Each Society is to participate in the ballot for plants, and in the distribution of seeds, and is also to obtain such cuttings of fruits, &c., as can be spared from Chiswick Garden.

New Plants.

327. EPIDENDRUM DICHROMUM, *Lindl.*
var. STRIATUM.

Under this name we allude to a most lovely variety of a well-known old plant, lately re-introduced by Mr. S. Low. The new variety has both sepals and petals white, and all the veins covered with radiating deep purple lines. A full inflorescence of such flowers must produce quite a new Orchidaceous

effect. We obtained it from T. Dawson, Esq., of Meadow Bank, where it had been grown by Mr. Anderson.

328. Spiranthes margaritifera, *Lind. & R. fil.*

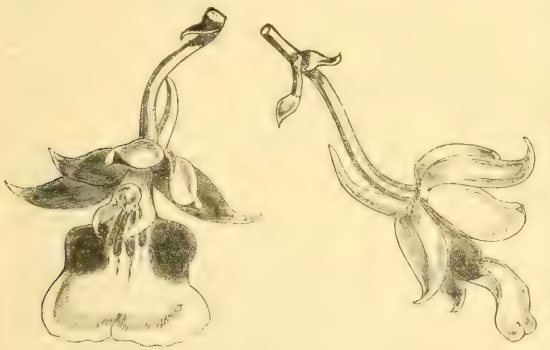
Foliis rosulatis late cuneato-oblongis acutis, maculis albis nitidis pictis, pedunculo elongato squamis densiusculis apice acuminato setaceis elongatis imbricantibus, spica elongata, rhachi minute glanduloso, bracteis lanceolato setaceis flores excedentibus, sepalo summo ligulato acuto, sepalis lateralibus æqualibus basi in strumam obtusam extrusis, petalis subæqualibus, labello oblongo-panduruto acuto, callis geminis retrorsis, rostello retuso utrinque extus acuto, medio in processum lineari lanceum extenso, ovario ac sepalis extus glandulipilibus.

The leaves of this species, introduced by M. Linden, we believe from Southern Brazil, are large, oblong, acute, dark green, spotted with pretty white spots. The flowers are, however, valueless in point of beauty.

329. Trichocentrum albopurpureum, *Lind. & Rchb. fil.*

Sepalis petalisque cuneato ligulatis acutis, labello basi columnæ adnato, unguedilatato, lamina panduratoemarginata bilobaearinis quaternis linearibus a basi unguis in basin laminæ, externis tribolatis, columna brevi per totum limbum liberum alata, ala superne libera lancea, inferne obtusangula, calcari ovarii pedicellati dimidium æquante.

It does not often happen that the best species are the last to be discovered. All the Trichocentra introduced till now have proved to be very insignificant things, but the fine shining foliage of this promised something better. The flowers are nearly as large as those of Epidendrum atropurpureum (macrochilum). The sepals and petals are cinnamon, bordered with yellow outside. The lip is white, bearing on each side a large purplish-blue blotch; while the keels on the claw of the lip are of the same colour. There are two varieties, one with a narrow, the other with a very broad lip, which is no doubt far superior. It is



a very free and constant flowerer; and was introduced, we believe from Rio Negro, by M. Linden. We saw it also in flower at Hillfield House, Reigate, at Mr. Saunders', and it has flowered at Biddulph Grange, with Mr. Bateman. *H. G. Rchb. fil.*

ORCHIDS AND THEIR CULTIVATION.—No. XI.

(*Continued from p.* 1155, 1865.)

In the genus Odontoglossum are species that will resist with impunity more cold than any other exotic Orchids in cultivation, while other species coming from the very same locality would perish under similar circumstances. All, however, are alike impatient of heat, aggravated, as is often the case, by a parched atmosphere, and the chances are that the health and vitality of such plants are more liable to be affected in a high temperature than in a low one. The difficulty for the beginner is in the knowing what extremes to avoid, so as to steer safely a middle course. Probably the most powerful of all arguments that I can adduce is supplied by the average monthly minima for a whole year. Observe, this is for the cultivation of established Odontoglots; for I find imported plants, as a rule, grow and thrive more satisfactorily in an atmosphere about 5° higher, at least until after their first pseudobulbs have been matured. The following are the average monthly minima of our Odontoglossum house for 1864:—

January ..	49°.64	May	52°.23	September ..	55°.70
February ..	50°.13	June.. ..	54°.70	October ..	50°.70
March ..	48°.70	July	56°.30	November ..	50°.66
April ..	54°.13	August ..	53°.43	December ..	51°.73

The variations occurring during the months are more the result of a corresponding decrease in outdoor temperature than due to fluctuations of artificial heat. The maxima vary from 5° to 20° more, according to sunshine; but I need scarcely state that the minimum is of infinitely more importance for the amateur to study; for plants, like animals, to be in a thriving condition, must have diurnal repose.

The following are the names of those that have been for some years under this treatment:—

O. bictoniense.—A tolerably hardy variety from Guatemala, having plump ovate bulbs, producing often a flower raceme on each side of the pseudobulb from 2½ to 3 feet long, with numerous flowers varying in size, and occasionally coming abortive; ground colour olive green, sometimes pale yellow, and barred and blotched with brown; labellum in some sorts nearly white, in others shaded with purple; a free-growing profuse flowering variety, although one of the least effective of the tribe. Season of blooming from November to April.

O. Cervantesii.—A very distinct and charming species from Mexico, with roundish pseudobulbs about an inch and a-half in diameter, producing a short raceme from the matured growth of from five to eight flowers, of a pinkish white, with very prominent crimson lines arranged in concentric circles round the base, and covering nearly one-half of the radius of the flower; labellum large, white, and of semicircular outline. This is a slow-growing species, and requires more than ordinary care. Time of flowering, March to May.

O. Ehrenbergii.—This is also a Mexican species, and so closely allied to Cervantesii as to be unworthy of distinction. It only differs from the latter in being a little less in point of size, and not having so many concentric rings of crimson, and that, too, of a fainter tint. In all other respects, as to pseudobulbs, growth and period of flowering, it is precisely similar.

O. membranaceum.—This is also a variety of Cervantesii which some growers are apt to confound, more, probably, owing to the difference of colour that pervades the pseudobulbs than anything else. In some they are quite green, and in other varieties there is a deep shading of brown, suffused or clouded with the green, but when such dissimilar bulbs are in flower the difference, if any, is only infinitesimal.

O. citrosmum (Mexico).—This is one of the most elegant and one of the most distinct of this highly interesting group. It is easily cultivated, having very large broadly-ovate plump pseudobulbs, bearing smooth elliptical leaves. It is one of the sorts that are exceedingly impatient of drought, both in the atmosphere and at the root. I do not know a plant, unless it be Cœlogyne cristata, whose pseudobulbs would form so admirable a hygroscope as this. They shrivel at the very appearance of drought, and become lusty and plump if generously dealt with. A little horse-droppings in the compost will add much to its luxuriance. When well grown they will produce drooping panicles with from 20 to 30 flowers, 2½ inches across, of white and rose nicely suffused, with numerous irregular deep rose spots at the base; labellum expanding to a broadly semicircular emarginate extremity, lower portion shaded rose, upper part shaded yellow with brown spots. Time of flowering, May, and will last from four to five weeks with care. I observe Mr. Bateman has named this pendulum, which name is certainly far more characteristic of the species.

O. citrosmum roseum.—In every respect similar to the preceding, but having a much more highly-coloured rosy labellum.

O. cordatum (Mexico).—This makes one of the prettiest specimen plants among the group, having fine light green foliage, numerous and highly ornamental flowers, arranged in compact racemes. It never exceeds 18 inches in height, and yet will produce from 12 to 16 flowers on each spike. It is of the easiest possible culture. I cannot conceive why this should be such a scarce plant. The flowers are of a pale olive-green, richly shaded with a glossy tint of Indian red; labellum panduriform, white with blotches of Indian red. Time of flowering, May and June, and when in good health will last eight weeks. This and Pescatorei are much the hardiest of the whole race, not even excepting grande.

O. falcipetalum (Merida).—Well-grown bulbs of this should be plump and ovate, measuring about 3½ by 2½ inches, with long ensiform leaves. This variety is evidently allied to the families of Oncidium and Cyrtochilum, blooming on a panicle quite 3 feet long, and producing from 30 to 50 flowers, which are cinnamon colour, slightly margined with ochre; labellum widening out to a roundish cordate form, pure white when first expanded, but changing to a pale dirty yellow, which destroys the effect of the inflorescence when fully expanded; duration of blooming eight weeks, generally from December to February.

O. grande (Guatemala).—This is much the freest-growing of all the tribe, and comprises much variety in the shades of its ground colour, from pale lemon to a bright and deep yellow, with flowers occasionally 7 by 6 inches. By liberal culture I have known single bulbs produce 21 of these flowers from three racemes, and in one instance two flowering bulbs on the same plant produced 39 flowers, all in bloom at one time! The normal characteristic of the inflorescence of this species is the production of simple racemes, but I have had, only in one instance however, a panicle with 16 flowers. If amateurs and gardeners would grow this in the compost I have already described, and in a house as near the minimum temperature above noticed as practicable, the results I predict would be equally satisfactory. The pseudobulbs, instead of being ovate as one sometimes sees them, should be nearly circular in outline, and the leaves broad elliptical, of a dark green hue, which at once shows a consolidation of tissue that will resist partial check with impunity. The inferior sepals are generally turned a little outwards, and the dorsal are bent forward, the ground colour being adorned with bright and intermediate shades of brown in the form of blotches and "barrings." Extremity of labellum of circular outline, generally white tinted with pale lemon, and also adorned with spots and blotches of brown up to the calli, which are of a high shade of yellow, and form very good representations of the head of a polled ox. Individual flowers will remain good four weeks. Period of flowering, September and October.

O. Insleayii (Mexico).—Pseudobulbs and leaves very much like those of grande. Sepals and petals nearly uniform, with a creamy white ground colour, dashed with blotches of sienna. Labellum orange shaded with yellow, and blotched and spotted with Indian red and brown. When in good health this produces racemes of from 12 to 16 flowers of a highly ornamental character, the colours being more telling than grande. Period of blooming, December and January, and it will last from four to six weeks in flower.

O. Karwinskii (Mexico).—This is clearly a variety of what is generally sold for Reichenheimii, and although I have seen both sorts in flower at the same time, I have not been able to distinguish any but the most infinitesimal difference, and that only in point of colour—a distinction which is more or less prominent and characteristic of seedlings of imported species. This is a very handsome-growing plant, with immense oblong pseudobulbs, and leaves of a beautiful dark green. It is often seen in a half-starved sickly state for want of proper nutriment to the roots and moisture to the atmosphere in which it is growing. It is capable of producing panicles with 60 flowers, and when in that condition it is one that deservedly stands in the front rank. The flowers are of a creamy yellow, with deep blotches and "barrings" of burnt carmine, tipped with lilac, presenting a varnish-like appearance; labellum twice the breadth of petals, and curving outwards as the flower gets older; the upper portion a deep shade of lavender, and the lower a much lighter shade of same colour, the two colours being separated, as if a straight line had been drawn across the centre of labellum. If much exposed to sunlight during the period of inflorescence the flowers are apt to become pale in colour, but with attention this variety will remain in perfect condition for five weeks. Period of flowering, April and May, but can be retarded to June.

O. luteo (Guatemala).—The general habit of the plant, if we take the pseudobulbs and foliage, is so similar to Oncidium leucochilum as scarcely to be distinguishable by even the practical Orchid grower. The flower, however, and the inflorescence generally, is entirely dissimilar. The sepals and petals are of an olive-green ground, with burnt umber spots and blotches, and the labellum white, with light-brown spotting—a very chaste and desirable variety. Duration, four to six weeks. Period of flowering, April and May. Of easy culture.

O. nævium (Ocãna).—This is one of the most distinct and highly ornamental among the group. It has been under cultivation for a length of time, yet very few perfectly well-managed plants of it are to be seen. It is undoubtedly a somewhat difficult plant to manage, because in the first place it would literally die by inches if exposed to the same cold that Pescatorei and cordatum would with impunity resist. How often in summer do we see its bulbs shrivelled up like the skin of the hands of an aged person, and the spring growths actually starving for want of sustenance! The very stomachs of the pseudobulbs and leaves are calling aloud for water, and perishing for the want of it. Once I was under the impression that I never could get the bulbs of this species fat, plump and fleshy, as they ought to be, although other sorts under my care were progressing quite satisfactorily. It was not until I saw a plant that Mr. Penny, of the Regent's Park, exhibited last year in the centre of London, the very pink of perfection as to culture and condition of inflorescence, that I suspected where my practice was deficient. He had his plant growing on the liberal shift system, and instead of being raised up so many inches from the rim of the pot, the bases of the bulbs were all but level, which was proof positive in my estimation that mine and others in the elevated state were starved. On my return home I had mine repotted and more liberally dealt with, both as to moisture in the atmosphere and at the root, and by

the end of the season not only the young growths but the back bulbs had as plump and shining a coat on them as the more rapid growing of the tribe. It is astonishing the quantity of moisture Odontoglots in general can consume during the growing season. The bulbs have generally numerous eyes, which, when in good condition, start away readily, the racemes proceeding from these growths in the course of development, each having from 8 to 12 flowers. Sepals and petals nearly uniform, narrow and pointed, each about 2 inches long, with a pure white colour adorned with rich dense irregular spots of burnt carmine, and the surface somewhat undulating; labellum nearly as long, and only differing in form from being a little wider at the base, of the same colours, with a rich lemon blotch on the calli under the column. Period of blooming, May and June, and can with care be kept for 9 weeks. *J. Anderson, Meadow Bank.*

REPORT ON THE GLASNEVIN BOTANIC GARDEN.

FROM the Report of the Director, Dr. Moore, for 1865 we learn that the number of visitors shows a considerable increase on any former year, which may have resulted from the International Exhibition having attracted so many strangers to Dublin. The total number is 270,547, distributed as follows:—On Sundays, 212,330; on week days, 58,217. Supplies of plants and flowers for teaching purposes were furnished to Mr. G. B. Bradshaw, who lectured at the Royal Dublin Society, and Museum of Irish Industry, Stephen's Green, in place of Dr. Harvey; to the Professors of Botany at the College of Surgeons, and at Carmichael's School of Medicine; and to the Botanical Lecturers at the Queen's College, Galway. Plants and flowers were sent, as usual, on two days in each week, for the use of pupils at the School of Art, Royal Dublin Society.

The Victoria House is reported to have been partly reconstructed by the Board of Works, a new iron roof having been put on it, by which the fall of condensed vapour from the roof, by which the large leaves of this plant were injured, has been prevented. From the 25th July to the middle of October it was constantly adorned with a succession of flowers, the admiration of many thousands of visitors.

The botanical arrangements of hardy herbaceous plants suffered a good deal during the hot dry weather last summer.

The Arboretum has had a considerable number of additions made to it, and some of the Himalayan and other Conifers have fruited for the first time in this garden. Pinus Smithiana, Pinus excelsa, and Pinus tuberculata have all had cones on them during the past summer. Some of the rarer and newly-introduced kinds from Japan have been proved to be hardy in this climate through ordinary winters. Retinispora obtusa, Retinispora pisifera, Retinispora glauca, Thujopsis dolabrata, and Pinus firma have stood without protection of any kind, free from hurt, during the winter of 1865, when the thermometer fell as low as it usually falls in ordinary winters. Those highly ornamental plants may, therefore, be considered sufficiently hardy for the climate of Ireland.

In the Experimental Ground, the most important trial is one suggested by L. Waldron, Esq., which if acted on may be of some value to small holders of land. It is what farmers would term a stolen crop of Kohl Rabi from among a crop of Mangel Wurzel. According to Mr. Waldron's plan, the seed of the former is sown on a slight hotbed early in spring, and from thence planted out on what may be termed a stock bed, to strengthen the plants for final transplanting, after the Mangel is sown, the first week in May. A sprinkling of guano or bone manure is then slightly forked into the furrows between the drills of Mangel, and the strong plants of Kohl Rabi planted thereon. They make vigorous growth; and by the end of July, when the leaves of the Mangel begin to spread over the furrows, the Kohl Rabi is about two-thirds grown, and may either be fed off at once, or lifted, and again planted in ground where an early crop of Potatos have been dug out, and there allowed to ripen to full size. The latter plan was resorted to in this case, and a fair crop of Kohl Rabi produced.

A considerable number of Donations to the Garden and Museum are also reported.

OUR SMALL FRUITS.

CURRANTS.—When one reads the names of varieties of Currants, some 30 odd in number, in the fruit catalogues of our continental neighbours, one is surprised to find so few in our English gardens; two or three sorts of red and one white, universally known as the White Dutch, being all that are in general cultivation. We need not regret this to any extent, for it must be confessed that the greater number of varieties enumerated and described are unworthy of cultivation, and many of them differ in name only. Taking it all in all, our Red Dutch Currant, so largely grown by the market gardeners in Kent and in the neighbourhood of London, is one of the best kinds known; its bunches are rather short, its berries large, and of a very deep crimson; it has the reputation of being richer in flavour and less acid than others. Still all the Red Currants are very sour. Knight's Sweet Red has not the sharp acidity of the others, but its acidity seems only a little blunted.

One of the largest of the Red Currants is the Cherry La Cerise of the French; this has short bunches and deep crimson berries of an enormous size. From this kind several seedlings have been raised in France by M. Bertin, of Versailles; one of these, La Versaillaise, is a magnificent-looking variety. Its berries are not quite so deep in colour as those of its parent, but are quite as large, and its bunches very long, so that a tree of it covered with fruit is most ornamental. Its fruit is like that of all of the Cherry Currant race, very acid. An interesting variety, also raised from the same race by M. Bertin, is La Hâtive; this is a most profuse bearer, its berries are nearly as large as La Versaillaise; it commences to colour before any other sort, even earlier than Knight's Early Red, and ripens so as to be fit for tarts eight or ten days before the Red Dutch; it is therefore well adapted for growing for market. La Fertile, another of M. Bertin's seedlings, gives large berries and bunches, but it is not more fertile than La Versaillaise. All the varieties known as Red Grape, Imperiale Rouge, Long-bunched Red, Fertile d'Angers, and Fertile de Pullnau, are inferior to La Versaillaise in the size of their bunches and berries, and are all remarkable for their extreme acidity. Knight's Large Red is inferior in size to the Cherry Currant race, and not remarkable for any superiority over the Red Dutch. Next to the Red Dutch in general usefulness is the Raby Castle, known also as Victoria and Houghton Castle. This is a late sort, and gives large long bunches with berries inferior only in size to the Cherry Currant; it hangs long on the tree, and is a valuable sort.

We have perhaps, no fruit in our gardens that has undergone, or is so little susceptible of change as the White Currant. There are several nominal varieties, such as White Grape, Imperiale Blanche, Imperiale Jaune, Goudouin Blanc, and Blanche Transparente, but they all resolve themselves into our White Dutch, differing sometimes, as in the White Grape, in the colour of their berries, but so slightly as scarcely to be recognisable. The true White Dutch is therefore the only variety worthy of cultivation; it is probably the kind received many years ago from Holland, supplanting our common White Currant, which produces small berries, and is now nearly or quite obsolete.

I have been able to illustrate the fixedness of this variety by raising a few hundreds from seed of the White Dutch, selecting the finest berries; and although they have all borne fruit for a few years, no variation can be found worthy of notice. Some give very small berries, others short bunches and large berries; a few among them give red fruit, and one or two I have sometimes thought to be earlier, others rather sweeter than the sort they were raised from; but in the end one has settled down to the conclusion that no change worthy of notice has taken place. I must confess that to me this seems a remarkable fact, for one would have thought that a fruit so long domesticated would have sported like other garden fruits.

Of other kinds of Currants there is not much to be said. The Striped Fruited Red Currant, which was distributed by the Horticultural Society some 30 years since, is called in France Gloire de Sablons; its berries are small, very acid, and striped with yellowish white and red. The Goudouin is a very late Red Currant of a most vigorous habit, so that it would make a good stock on which to graft half-standard Currants of choice varieties, a very nice mode of culture; its fruit are of a deep red, and so sour that they make one shudder on eating them. The Champagne or Couleur de Chair Currant, which gives berries of a pale pink, almost rivals the Goudouin in acidity.

There are but two kinds of Black Currants worthy of culture—Ogden's Black, which is a hardy sort and well adapted for the north of England, and the Black Naples, which is superior in size and flavour, but the tree is more tender, and does not succeed so well in a cool moist climate. *R.*

EXTRACTS FROM THE JOURNAL OF MR. JOHN GOULD VEITCH, DURING A TRIP TO THE AUSTRALIAN COLONIES AND THE SOUTH SEA ISLANDS.

(Continued from page 197.)

July 22, 1865. The Tongan, or Friendly Islands.—Three days' sail took us to the Tongan group, first discovered and named the Friendly by Captain Cook. Judging from our experience they still deserve the same name.

The Tonguese are a fine race, very similar in appearance to the Samoans. They dress much better. The men shave less, and both sexes bedaub their hair with lime. They are decidedly far ahead of any of the South Pacific races, having had the advantage of missionary instruction longer than any others. They are more industrious, and far more enterprising, and are acknowledged to be the best warriors of Polynesia. The whole group acknowledges the authority of King George, whose laws are strictly enforced. There are Wesleyan missionaries in all the principal islands. All the Tonguese are nominally Christians. Cannibalism formerly existed among them, but has long ceased. It is wonderful to see the effect of mission work amongst these islands. The houses of Tonga are better built than those of Samoa. Each is neatly fenced in, and has a small garden in front. The churches are beautiful buildings. Every one seems to take a pride in decorating and keeping up his church. No labour or expense is spared.

Cultivation is probably higher than in any other of the Polynesian groups. The islands are admirably adapted to it, being very level, and having an abundance of rich soil. Each man on becoming of age is allotted 1000 square fathoms of land, which the law compels him to clear and cultivate within three years, or the whole is confiscated. Good roads, 15 to 20 feet wide, have been made on each island, and are kept as clean as a garden walk in England. The climate is well suited to Europeans. The mean temperature for 1864 was 84°.

We landed on two islands of this group, viz., Vavau and Tongataboo (or Sacred Tonga), the residence of King George. Vavau is 35 miles in circumference, of nearly one uniform height, the highest point only 400 feet above the level of the sea. The harbour of Port Refuge, in which we anchored, is very pretty, and perfectly land-locked. The cliffs are barren and abrupt, but the level land has the appearance of one vast garden. On first landing one is struck by the unceasing sound of the mallet used to beat out the Tapa or native cloth. It is made from the bark of the Paper Mulberry, which after soaking for a time in fresh water, is beaten out into long strips, and then pasted together. Tonguese women seem to do little else but make and paint Tapa. Being so low, the vegetation of the Tongan Islands is not varied. The timber is small. I saw but few pretty flowering shrubs. A Mussænda and two Gardenias were new to me. Several varieties of the Chinese Hibiscus are common, and their flowers are used by the natives to decorate their hair. There are no Orchids, and scarcely any Ferns. Croton variegatum is a common shrub on the western side of the island. I noticed some five or six species of Pandanus; these are commonly planted in lines along the roadsides. The leaves are used for making mats. Every garden contains a Croton or two, and a clump of the Lemon Grass for scenting the Cocoa-nut oil. The crops are much the same as those of Samoa. Sugar-cane, Yams, a dozen varieties of Colocasia antiquorum (with white, pink, red, and purplish stems), Piper methysticum, and Broussonetia papyrifera, form the chief. Fruit consists chiefly of Pine-apples, Bananas, and all kinds of the Orange tribe, including large Shaddocks or Pomelloes.

Tongataboo is even flatter than Vavau. The highest point is only 60 feet. The town of Nukualofa, off which we anchored, is the residence of King George. He is a fine man, 6 ft. 2 in. high, and well built. He is very diffident, and seldom speaks. He copies Europeans in everything; he dresses like an Englishman, and lives in a house brought from, and furnished in Sydney. His Majesty also possesses a horse and carriage, but which is of little use, as he is afraid to ride in it. King George called on the Commodore, in the full-dress uniform of an English civil officer, and on leaving the ship was saluted with 21 guns. Nukualofa is quite a large town. The greatest neatness is apparent everywhere. Being so level the inland scenery is not striking. Several species of large-growing Ficus are common. One tree measured 90 feet in circumference. Casuarinas (the Cypress of the tropics) are commonly planted round the graves of any man of importance. The graves of ordinary people are ornamented with different kinds of Dracænas and young plants of Pritchardia pacifica. Tongataboo is the most highly cultivated island of Polynesia. There are said to be eight or ten varieties of the Bread-fruit (Artocarpus incisa) in common use. The ornamental pinnatifid foliage of these trees, mixed with that of the Cocoa-nut Palm, give quite a character to the scenery.

Coffee, Arrow-root, and Tapioca are common. Many English vegetables have also been introduced by the missionaries. Peas, Cabbages, Lettuces, Carrots, and Onions are doing well. It was a great treat to get a salad of fresh Lettuce. Maize has also been introduced and become an important crop. The coral reefs abound with beautiful Seaweeds. Pearls are also common, but of so bad a colour as to be of little value. Kava (Piper methysticum) is more commonly drunk here than at any of the islands we have visited. Scarcely a garden is without a shrub or two of it.

(To be Continued.)

Home Correspondence.

The Society of Arts' Examination for Gardeners.—The truism that we live in an age of progress is probably as correct when applied to the science of gardening as it is to any other profession in existence. Could our methodical, and to our view somewhat old-fashioned progenitors of 30 years since, once more revisit this earth, they would be considerably

astounded at the great changes and improvements that have taken place in the practice of gardening and its productions during that period. That such should be the case we may rightly assume to be an inevitable law of Nature. And we may also regard it with the more satisfaction, as the progression thus displayed affords ample evidence of the permanence and stability of the profession and occupation with which we as gardeners are associated. Yet nevertheless, in spite of all this, we are compelled to admit that there is much room for improvement, not only in practical knowledge, but also as regards the social position and intellectual attainments of those who are its professors. Now it must be generally acknowledged that the social *status* of gardeners is not a high one, at least not such as will induce them in youth to look forward to it with any large amount of enthusiastic aspirations. It is true that as a class gardeners are not much troubled with sensations such as these—there are, however, exceptions. Now, the question might fairly be asked, why gardeners themselves should remain stationary while all that concerns their practice is necessarily progressive? And to this, among other reasons, it may be answered that they are chiefly occupied in administering to the luxuries of man, and that that value is not attached to their labour that would be given to that of those who administer to his necessities; but even this may be declared to be a small reason—still it is of some importance. A greater reason is to be found in the excessive competition with which gardeners have to contend at all points, in their endeavours to promote their social position financially. Now, the chief cause of this great competition seems to me to be this, that gardening in its lowest grades holds out to large numbers not previously graduated to the profession, but who have acquired a little rudimentary knowledge of some of its minor operations, what appears to them to be a ready and easy means of obtaining a livelihood; these generally are men not much above the condition of an agricultural labourer in education or intellectual attainments, and who do not scruple to offer their services to those gentlemen who now and then appear in print under the heading of "Wanted, a Gardener," at a lesser rate of wages than a man of higher abilities would take. The advertiser, too often seduced by the prospect of getting a good article at a cheap rate, closes with the offer, to the severe injury of the better man. Who is there among the readers of this who does not know many such men as those just adverted to? In fact they form a large proportion of the fraternity; and it is not at all unfair to assume that the position which these men occupy has an exceedingly injurious effect upon that of the properly educated practical gardener. Then, again, as to character, who does not acknowledge that as regards success a good character is absolutely essential; and I may safely assert that, taking society generally as our guide, we shall find as near an approach to perfection as possible in this respect in the intelligent educated and practical gardener. Now to the mechanic or artisan or their employers moral character may be of small moment, compared with its importance to the gardener, and the latter will often find in making an engagement that more inquiries are made respecting character than capacity. Now what is the influence upon the character of the profession generally that is likely to be exerted by having within its ranks a body of such badly educated men as those already alluded to? Why, necessarily one of a very depreciatory nature. Who has not heard of numerous instances where men have been summarily discharged from their situations for drunkenness, peculation, and numerous other misdemeanours, of which few intelligent men would be guilty; and does not this tend to reduce the character of the profession in public estimation, and especially in that of those whose good favour and esteem we so earnestly desire to possess, the gentlemen of England? Then, again, are not the ramifications of our trade and commerce as a nation so great that young men of good capacity and intelligence can invariably command a better market for their labour than gardening offers; or, supposing a young man to be desirous of entering the profession, and making it a permanent means of livelihood, what prospect of domestic happiness does it hold out to him in the future, when he sees before him continuously in print the stereotyped phrase, "must have no incumbrance?" Employers of any other body of intelligent workmen do not venture to impose upon them any such restriction. Now, these are but a few among the deterrent causes that help to keep gardeners as a body so low in the social scale. One might fill a book if he would examine and note thoroughly all the causes that operate to this purpose, but on this subject I have said enough, and would merely suggest that the Royal Horticultural Society might well employ a small portion of its ample funds in offering a prize for the best essay on the subject of the "Present Social and Intellectual Condition of Gardeners, and the means to be used to Raise it," and should restrict competition for the same to *bonâ fide* members of the profession. Now the subject heading of this paper is a topic upon which I have not yet touched, but, as a postscript is said to contain the most important news in a letter, so I trust that the postscript of this will be found to do the same. The proposed examination by the Society of Arts of gardeners in the subjects advertised in their Journal, and already published and commented upon in your Paper, affords an opportunity to them not only publicly to distinguish themselves, but also to aid in raising the profession to a higher status in the social scale than it has hitherto occupied. It is sincerely to be hoped that, for many reasons, numbers will avail themselves of the chance thus afforded, and direct and lasting benefits to the competitors must ensue. It would be unjust to the Society of Arts to assume that the possession of one of its certificates would have no material value, for in the first place, to merit their acceptance a considerable degree of study on practical subjects is necessary, and the advantages to be derived from that alone would be great. But such certificates might also fairly claim to represent a certain market value, because the possessors may well expect to be more eagerly sought after by employers than those who are without them. It may be asserted that the certificates will not have that interest and value that they would possess were they presented by a purely horticultural body, but this under present circumstances can scarcely be held to be valid. But the statement of this objection may lead to the consideration by wiser heads than mine as to the desirability of establishing a kind of Horticultural University or College, on the principle of the royal medical colleges, with its degrees, diplomas, and examinations, and which should devote its special attention to the promotion and the improvement,—morally, socially, and mentally, of the gardening profession in the United Kingdom. *A. D., Maybush.*

Establishing a Rookery (see p. 197).—Your correspondent can have little knowledge of the formation of the long-tailed tit's nest (Parus caudatus), or he would not advise a rook's egg to be placed in it for the purpose of being hatched. The nest itself is ill-adapted for the rearing of a rook; it is of beautiful construction, resembling a ball; if built in a tree the materials used for it are generally Lichens, similar to those growing on the tree itself, detection being thus in some measure avoided; if in a thick bush, and near the ground, it is composed of Moss and Lichen beautifully interwoven together. I have been a collector of British birds' eggs for 15 years, and I never found a nest more than 9 feet from the ground. The entrance for the bird is seldom more than an inch in diameter; the inside is lined, or rather filled with feathers, so much so that it is known here by the sobriquet of feather poke. The eggs are little larger than a Marrow Pea, and the bird about half the weight of a rook's egg. I question if even the cuckoo has been known to deposit her egg in a long-tailed tit's nest. I think it however possible that a blackbird or thrush might hatch and bring up a pair of rooks, as the food of all three in spring is similar. The rook does not always choose tall trees with clean stems to build on, as your correspondent describes; here rooks build in Spruce Firs, feathered to the ground; and within four miles of this place, the rooks have formed a colony of their own in young trees between 20 and 30 feet in height. We have two rookeries here about a quarter of a mile distant from each other, and war between the two parties is carried on to a considerable extent during the building season. Two years ago a pair of rooks took possession of a large tree about midway between the two rookeries, and after battling for three days, they remained masters of the tree; they then set to work in good earnest, and completed a nest in two days, while undisturbed. This, however, was only a calm before a tempest, as, when it was completed, about 20 of the black gang came and took the tree by storm, after a strong resistance, and levelled the nest to the ground in less than one hour, not even leaving a single stick to show where it had been. *William Culverwell, Thorpe Perrow.* —— In forming a new rookery take a quantity of young birds before they can fly and bring them up among poultry, or by themselves, close to the trees it is intended they shall hereafter occupy. They will soon be perfectly tame, but, in order that they should not be decoyed away by old birds, let them be pinioned; as they get old enough they will take to the trees. Take care that they never have to wander away in search of food, and the operation is effected. *Jasper Standstill.*

International Exhibition Schedule (see p. 173).—Happening to be a grower and also an exhibitor of Orchids, as well as of Stove and Greenhouse Plants, I beg to ask Mr. Bullen which of the following two individuals will receive the best award for cultural skill, and incur the greatest expenses in exhibiting —the man who is first with 50 Orchids, and receives 30*l.*; or he who is first with 16 Stove and Greenhouse Plants, and receives 25*l.*? There can be no doubt about the matter, as the 16 plants will require double the van room compared with that necessary for the Orchids. I admire Mr. Bullen's spirit in aspiring to be at the top of the tree in regard to Orchids, and he may achieve the position he aims at by taking up plants that will insure his being first in the class of 20, as that is looked upon by all growers with whom I have met as the premier Orchid class. The class for 50 plants I have always understood was made in order to increase the display of Orchids, and the plants of which it is to consist are not expected to be so large or important as those in the other classes, and an exhibitor may show them all of one variety if he chooses. The class of 50 I admit is the greatest mistake in the schedule, in which otherwise there is little to find fault with, and this I believe is the opinion of most exhibitors. The rule hitherto observed in London of giving equal prizes in the first classes of Stove and Greenhouse Plants and Orchids has given general satisfaction, and is not open to the imputation of favouring one class of plant growers at the expense of another; the schedule in question bears that interpretation, and although late to make any alteration, I think the Committee would do well to equalise the prizes in the classes just named. Such an alteration would undoubtedly remove a feeling which is calculated to do harm to the exhibition. Taking the schedule, however, all in all, I maintain that the prizes are sufficiently liberal. The expenses of exhibiting are heavy, much more so than the generality of Committees can comprehend; but to exaggerate this matter is not the way to remedy the evil. As to the Orchids under Mr. Bullen's charge being the best in Europe, I am not in a position to judge, having only seen a few of them at exhibitions; but, if such is the case, Mr. Bullen must have always left his best plants at home. Some of your correspondents have found fault with the Schedule for leaving it optional as to the number of plants of a genus that may be admitted in the Class of 16 Stove and Greenhouse Plants. I consider it, however, the best thing that could have been done; as the restriction hitherto exercised has very much lowered the standard of the plants in the long classes, by compelling exhibitors to show indifferent specimens in order to conform to the rule. At an exhibition of this kind, when the capabilities of the gardeners of the kingdom are at stake, I submit that instead of grumbling, it would be better for each individual to put his shoulder to the wheel, and do all that can be done in order to insure the success of the exhibition. *Thos. Baines, Summerfield, Bordon, Cheshire.* [Hear! hear!]

The Woodpecker.—Did you ever see or measure the length of the large woodpecker's tongue? Some years since, on going through a plantation, after much thunder and lightning, I saw at the base of a large wild Cherry tree one of those beautiful birds, dead; to all appearance it had been killed by lightning. Observing a long curious dark something protruding from its mouth, I asked myself what could it be? Has the bird swallowed some reptile, and got choked? Oh, no; on examination I found that it was its tongue which protruded. It was of a dark, leathery, glutinous, sticky character, and measured 7¼ inches —a length at which I was quite astonished. These birds are very numerous here, and I have many times since observed them making use of their long tongues at the great ant-hills, or running up and around the trees, sticking in their claws, and resting on their stiff, short, stubby tails against the butt of the tree, tapping, and with railway speed popping their long tongues into the crevices or fissures of the bark, and gobbling up the insects adhering to their long glutinous tongues. *James Barnes.*

The Chiswick Trial of Peas (see p. 172).—We observe that you reprint the report on this trial, wherein it is stated that Carter's First Crop and Sutton's Ringleader Pea is similar to Dillistone's Early. We wish most positively to state that Carter's First Crop or Sutton's Ringleader is not the same as Dillistone's Early, and it is in our opinion a very much earlier variety. A large proportion of our customers has expressed the utmost satisfaction with First Crop or Ringleader Pea as supplied by us last season. *James Carter & Co., High Holborn.*——Your correspondent "F.R.H.S." (see p. 194) has arrived at a decidedly wrong conclusion as to the origin of the Pea known as Dillistone's First Early. The nursery of the late Mr. Dillistone (the raiser of the Pea) being in Essex, and not in Suffolk, as stated by "F.R.H.S.," is one proof that he has not an intimate knowledge of its origin. I happen to know something of the Pea in question, having been well acquainted with the late Mr. Dillistone for nearly 30 years, and at the time when he became possessed of the stock I was in his employ. He informed me that he selected it from a row of Peas growing in a cottage garden in Cambridgeshire, his attention having been drawn to one single haulm amongst the rest which was fast podding off, while the others were only just coming into bloom; he requested the cottager to reserve him the pods, which was done, and these Mr. Dillistone carefully increased as fast as possible. His trials of all the early Peas of those days were numerous; for several years afterwards, too, his experiments with Peas were kept up, and he always found his own stock from six to ten days earlier than that of any other person. The row of Peas from which the First Early was selected was then known as Bryant's or Bradman's Wonder, which was quite different from the Frames, as I have since proved. Some few years ago the Royal Horticultural Society reported this Pea to be the earliest variety known, and it was figured and represented as

such in "Hogg's Gardeners' Year Book." My trials of this Pea (which have not been few) differ greatly from the report given in your columns a fortnight back, and agree very fully with the report given by the Society some years ago. Where Dillistone's has been kept true, it still in my opinion remains unrivalled as an early variety. *V. D.*—We were the first to discover and to make known that Carter's First Crop Pea was identical with Sutton's Ringleader, and the prices of these are the same; but your correspondent, "F.R.H.S." is in error when he believes that it is only an improved variety of Dillistone's, or Early Frame. If the report from which he quotes were correct (which, however, we most emphatically deny), the numerous gardeners who have furnished you with reports the very opposite of that of the Royal Horticultural Society, must be very incompetent for the position which they hold; and the seedsmen who are selling under the new name at high prices must be open to the imputation of dishonesty. A "good name," or the "confidence of their customers," is the seedsmen's best capital to trade with, and it is not probable that they would sacrifice that by offering an article which they did not really know to be what they represented it to be, even if they were as dishonest as some of your correspondents seem to believe. In a few weeks the "gathering" season will again prove that Ringleader is the earliest Pea, and presuming that "F.R.H.S." will then regret that he ever assisted in circulating the report above alluded to, we trust that he will do us the justice to publish the result of his own trials. *Sutton & Sons, Reading.*—The readers of the *Gardeners' Chronicle* will naturally give implicit credit to a Report from the Royal Horticultural Society, but it is almost too much to expect those who weigh probabilities to believe even that report when it is directly opposed to the recorded experiments of not seedsmen or interested parties only, but also of numerous practical gardeners well known in the horticultural world. Although that Report was accepted by the Fruit Committee, I happen to know that it was protested against at the time by at least one of those present. Under such circumstances its publication appears to me an act of injustice towards the several seedsmen who have staked their reputation as honest tradesmen upon their Peas being new varieties, and also towards the wholesale London seedsmen who have committed themselves to the error or fraud by becoming agents for the sale of the said Peas. Surely this cannot be the object of the Committee. *Another F.R.H.S.*—[Fraud is an ugly word—surely any discrepancies may be accounted for without suggesting fraud or foul play.]

Vegetable Mould—Angle of Repose.—Can any of your correspondents inform me at what slope I may safely leave a flower border, nine feet wide, which I wish for some reason to expose as much to the sun as possible, without risk of its slipping, or being washed into gullies by the rain, or otherwise defaced? I know that on railway embankments a slope of 1 to 1 must be turfed, and that it will not do to trust to the roots of sown grasses to hold the earth together at that angle; and flatter slopes, if dug periodically, would probably be washed down in time, though they stand well enough during the growth of the seeds which are ultimately to clothe them with verdure. If none can tell me from successful experience, perhaps some one by failure may be enabled to kindly tell me what slope is too steep. *Diss.*

Cinchona cultivation in India.—By recent letters from Darjeeling I am informed that the success of Dr. Anderson's operations in that part of the Himalaya quite equals that in the Neilgherries. From a return of the operations on the Neilgherries, giving the state of the Cinchona plantations up to the 31st October last, I find that the increase by propagation for the month is 78,715, or the amazing number of 37,501 above the average of the previous six months. The total number of plants is 853,350, of which number no fewer than 244,871 are planted out. Looking at the general list of the numbers of each species of this valuable tree, I find that the plant which gives the red-bark, valued at from 2*s.* 6*d.* to 8*s.* 9*d*, per lb. in the London market, figures for 249,054 of the total; whilst that which gives the select crown bark, valued in London at from 2*s.* 10*d.* to 7*s.* per lb., figures for 559,081. *A. Campbell.* [This note has been kindly forwarded to us by the President of the Linnean Society.]

Churchyards.—Can any correspondent, clergyman, or churchwarden tell me what width, from the walls of the church, ought by rule, custom, or canon ecclesiastical to be kept free from graves? *Diss.*

The Evergreen Plane.—In Captain Spratt's "Travels and Researches in Crete," mention is made (vol. 2, pp. 46 and 91) of an Evergreen Plane tree growing at Lutraki. This kind of Plane is mentioned by Pliny and others as growing on the banks of the Lethæus, but it is asserted to degenerate and to lose its leaves like other Planes if removed from its original site. This seems, however, to be incorrect, for the species or variety still exists near the village of Lutraki, and two trees were pointed out to Captain Spratt as being the true kind. "In these no difference could be perceived from those Plane trees that dropped their leaves, except having an apparently thicker and less flexible leaf." If such an evergreen tree is to be found in Crete it must be something very remarkable, and worth importing. It is just possible that some of your readers can give some information on the subject. *T. R.*

Societies.

ROYAL HORTICULTURAL: *March 3* (*Weekly Show*).—Among subjects of exhibition on this occasion was a fine display of forced shrubs, bulbs, and other plants, from Messrs. Cutbush, of Highgate, from whom also came good potfulls of Lily of the Valley. Oncidium sphacelatum majus was shown in nice condition by Mr. Young, gr. to R. Barclay, Esq., and Mrs. Hooke and Messrs. Lucking furnished as usual their weekly contributions.

March 6.—W. Wilson Saunders, Esq., in the Chair. After the election of 13 new members, and the usual announcement of awards by the Chairmen of the Floral and Fruit Committees, the Rev. M. J. Berkeley made a few remarks on the different subjects exhibited, adverting first to the delicate little trailing Peperomia, which was shown at the last meeting by Mr. Saunders, and which was now stated, on the authority of M. Casimir De Candolle, who has paid much attention to the genus, to be P. nummularicefolia. Attention was next directed to an example of Coburgia miniata, shown by Major Trevor Clarke, from whom a letter was read concerning its cultivation. It was stated that the habit of this plant was to produce a profusion of offsets, which should be removed as soon as they appeared; that it should be constantly kept in very small pots, so as to be partially root-bound, and that the bulb should stand about three parts out of the mould in which it is potted. In other respects it was stated to succeed under the treatment usually given to Hippeastrums. Lælia furfuracea, a plant of which with one flower on it was exhibited, was then alluded to; it was stated to have been figured in Curtis' "Botanical Magazine" in 1842, and to be botanically distinct from L. autumnalis, to which it has considerable general resemblance. A new yellow and brown-flowered Odontoglossum, introduced by Mr. Weir, next came under notice, as did also cut blooms of the beautiful Rhododendron Aucklandii, and others of a pink Rhododendron, the result of a cross between the orange-blossomed R. javanicum and the white-flowered R. jasminiflorum. This exactly resembled Messrs. Veitch's Princess Helena, which had, we believe, a similar parentage. Attention was then directed to a handsome little bush of the fragrant Illicium religiosum, which it was mentioned might perhaps prove hardy on the south coast, where Pittosporum Tobira stands unhurt all the year round, and forms large bushes, while in more northern situations it requires the protection of a greenhouse. Examples of a Bougainvillea called splendens, from Mr. Daniels, Swyncombe, were shown, and pronounced to be distinct not only in colour, which is a lively purplish mauve, but in their mode of flowering, from all others at present in cultivation. In a letter from Mr. Daniels which was read, this new variety was stated to have commenced flowering with the year, to be in good bloom now, and Mr. Daniels said that he did not know how long it might continue in that condition. He stated, moreover, that Bougainvilleas might now be had in beauty all the year round, B. spectabilis coming into flower in April and lasting till July, and B. glabra lasting from July till January. Flowering branches of Nuttallia cerasiformis, cut from a bush growing in the shrubberies of the Society's Garden at Chiswick, were next brought under notice. In habit this Nuttallia somewhat resembles a Ribes, and though its numerous clusters of drooping greenish flowers are not particularly attractive, they are nevertheless sufficiently so to render this perfectly hardy shrub more appreciated than it appears to be. It has, therefore, been ordered that plants of it be propagated for distribution. It was stated to be bisexual; the specimens shown belonged to the male kind, which has 10 stamens placed in two rows, five being attached to the calyx, while the other five are attached to the flower-tube. The female has five pistils, producing from two to four coriaceous fruits, of the form of a cherry, each containing one seed. A beautiful cut specimen of Rhododendron argenteum was shown from Mr. Allis, Gunton Park, Norwich.

Attention was then directed to certain Entozoöid organisms found in living animals, and to their supposed connection with Rinderpest, a full account of which will be found in another column.

In reference to Coburgia miniata, alluded to above, Mr. Saunders stated that he grew his plants of it somewhat differently from Major Clarke. He gave his plants more pot room than the Major, which secured him two or three flower spikes instead of one, and when they were at rest he took care that the soil never got so dry as to desiccate the roots. When dormant his plants were kept, he said, in an ordinary greenhouse, but just when they showed signs of pushing they were placed in heat and grown on rapidly. In that way little difficulty was experienced in getting them to flower satisfactorily. With regard to Illicium religiosum, Mr. Saunder said that the Japanese constantly grow it round their temples, and that they entertain a feeling for it analogous to that which we have for the Yew. Its flowers, he added, are as sweet as those of a Rose, and he concluded by recommending that it should be cultivated more extensively than it at present is.

March 6 (*Floral Committee*).—Messrs. E. G. Henderson contributed a beautiful group of Cyclamens, consisting of varieties of persicum and Coum, associated with which was the charming little kind called Atkinsii. It may be observed, in reference to this fine collection, that those belonging to the persicum breed had their bulbs all above ground, while those of the other section had them buried in the soil, a point worth attention in the cultivation of these charming spring flowers. In one of the varieties in this collection there seemed to be a disposition to become double. Mr. Brown, Elmdon Hall, Birmingham, received a First-class Certificate for the blooms of Rhododendron Aucklandii alluded to above. The plant from which they were cut, four feet high, was stated to have 15 heads of flowers on it. Pelargonium Pink Stella came from Messrs. E. G. Henderson; and a charming exhibition of Camellia blooms was furnished by Mr. Pilcher, gr. to S. Rucker, Esq. The latter, though stated to have been cut from quite small plants, were nevertheless as fine as could possibly have been obtained from larger trees. The same exhibitor had also beautiful blooms of Lycaste Skinneri. From W. Wentworth Buller, Esq., Strete Raleigh, Exeter, came cut flowers of Rhododendron Jenkinsii, white tinged with blush; the pink hybrid Rhododendron alluded to above; Lælia furfuracea, a plant seldom seen in flower; a beautiful yellow and brown blossomed Odontoglossum; and Phalænopsis grandiflora. Messrs. Lee contributed a group of Aucubas, all finely in fruit. A blush spotted Rhododendron, named Duchess of Sutherland, came from Mr. Elliott, Lilleshall, Salop. To Mr. Daniels was awarded a First-class Certificate for his new Bougainvillea splendens. A Guatemala Lycaste, said to be a variety of L. Deppei, and the Illicium already mentioned came from Mr. Veitch. In an interesting collection of cut Orchid blooms from Mr. Sherratt, gr. to J. Bateman, Esq., was a magnificent spike of Phalænopsis Schilleriana, richly ornamented with pale rosy tinted blossoms. The Rev. G. Cheere had two beautifully bloomed plants of Anna Boleyn Pink, brought forward in heat. Blooms of Amaryllis were shown by Messrs. Garaway & Co., of Bristol. From the garden of the Society came a fine plant of Dendrobium speciosum in flower; an Odontoglossum from Mr. Weir; a Cattleya; Oncidium Cavendishii; the double white Prunus sinensis, an excellent shrub for forcing; P. triloba, equally valuable for the same purpose, producing long slender shoots loaded with peach-coloured flowers, each as large as a two-shilling piece; and P. sinensis, pretty, but greatly inferior to triloba.

March 6 (*Fruit Committee*).—Some excellent Apple jelly, made from Grange's Apple, was shown at this meeting by Mr. Fleming, Cliveden. From Mr. Christie, Avington, near Winchester, came a seedling Apple, somewhat like Court of Wick, which was requested to be shown again. Specimens of an Apple, resembling Northern Greening, were furnished by the Rev. M. J. Berkeley, and a yellow unnamed Apple was shown by Mr. Dixon, of King's Cliffe. Examples of a late keeping Grape came from Mr. Turberville, Pilton, near Barnstaple.

Notices of Books.

Peking and the Pekingese. By D. F. Rennie, M.D. 2 vols. small 8vo. London: Murray.

These volumes not only contain an interesting account of the events which occurred during the first year's residence of her Majesty's Embassy under Sir F. Bruce at Peking, but, being written in form of a diary, have the advantage of bringing the reader into daily contact with the Pekingese, and thus of giving an insight into their habits and peculiarities. As a sketch of London and the Londoners by a foreigner would give strangers very little notion of the inhabitants of Scotland, Wales, or even some of our counties, so the description contained in these volumes only holds good for Peking and its neighbourhood, the customs and dialect being in many respects totally different further south.

At the beginning of the first volume we find a description of one of their modes of ploughing, which, as the author justly observes, is very elementary. "Three men are harnessed abreast, traction being applied by flat pieces of wood across their chests secured by ropes to the plough, while a fourth is harnessed between a pair of shafts, and a fifth guides the plough by a vertical handle. In the construction of this implement in the north of China the coulter is about five feet ahead of the share, and seems to rip the ground open with facility. The share consists of a broad arrow-shaped piece of iron fitted on to the end of a wooden shaft having a curved plate of metal on one side. This form of plough turns over a large and regular furrow; and certainly, whether from superiority in form of plough, or the loose nature of the soil, the

process of ploughing appeared to be more speedily performed than is usually seen elsewhere, even in countries where the soil is much less tenacious than on the banks of the Peiho."

Further on is the account of a flower show, "which, for arrangement, would have done credit to any European country. The flowers and shrubs, in pots of various colours and qualities, were neatly arranged and disposed round the courtyards of the temple, which See-on-tee states are lent for the purpose of exhibiting specimens brought in from the nurseries outside the walls of the city. As an illustration of the flowers and what they cost, Colonel Neale bought two red Pomegranates, one white one about 3 feet high, four Geraniums, four Roses, and four Passion-flowers, all in pots, and when necessary nicely-trained on Millet-stalk frames; for the whole he paid 73,000 paper cash, equal to about 20*s.* sterling. In addition to the flowers mentioned I noticed Nasturtium, China Asters, Stocks, Pinks and Cactus."

Their manner of moving trees is also worthy of note, the mould being retained in contact with the roots by means of matting tightly tied round with straw rope. In planting, the matting is not removed, nor are the ropes cut, but allowed gradually to decay; in this way more moisture is retained about the roots, and the ultimate decay of the matting, &c., supplies extra nutriment.

If Dr. Rennie is correct, the Chinese were the first to publish a daily paper, the *Peking Gazette*, which now appears in three editions, and is the semi-official organ, dating as far back as the Lung dynasty, A.D. 1336. Scattered through the book are numerous instances of the difference of Chinese customs from ours. We put our hats in mourning, the Chinese their shoes; whilst white is their funereal colour. As another example, the physicians in attendance on the late Emperor were on his death deprived of their "buttons," or marks of rank, by way of punishment.

Towards the end of the volume a Cedar is mentioned at the Temple of Gilotung, said to be a thousand years old, which shook from trunk upwards when a particular branch was shaken. A tablet erected near it contains a sonnet "on the moving tree" by the Emperor Keen Lung.

Amongst the various places of interest in the neighbourhood of Peking visited by Dr. Rennie are the Great Wall and the Ming tombs, with their gigantic figures of men and animals, each carved out of a single block of stone.

Through the whole work Dr. Rennie speaks in the most favourable terms of the Chinese, and the anecdotes which he tells are for the most part to their advantage. It is remarkable that he should have been so impressed, for at that time Europeans were looked upon as barbarians and fan-qui, or foreign devils; besides, only a few months before the English and French forces had sacked and destroyed the Imperial Palace, which act must have left a very unfriendly feeling towards foreigners. The book is illustrated by maps and engravings.

Florists' Flowers.

Is the Rose a Florists' Flower?—This apparently simple question was asked some time ago by a correspondent, who seemed afraid his favourite flower would lose caste should it be so classified. His ideas of a florist seemed to be somewhat confused, and his imaginative powers even pictured Flora's Queen debased by the odour of "beer and bacey." On consideration the word "florist" seems to be a vague and indefinite term, and about as easily defined as, let us say, a Fancy Dahlia. The word "horticulture," if I understand that term correctly, embraces everything appertaining to the gardening world, which may be subdivided into three classes, viz. the cultivation of fruits, the cultivation of vegetables, and the cultivation of flowers—which last is floriculture. The question is, what are florists' flowers? Does not the word "florist" appear to be a short way of rendering "floriculture?" Or was it originally applied by botanists to those cultivators who hybridised and raised seedlings from imported species, and placed the whole botanical world in confusion by the multiplicity of their varieties; or to those only who cultivated the seedling varieties raised by others, and formed societies and held exhibitions at stated times to test the merits of these productions, both as to their approximation to the standard of excellence, and their superior cultivation. In either case it would be a misnomer.

It would be well if such an indefinite designation as the words "Florists' flowers" were erased from the gardening dictionary, as from time to time various flowers will have to be added on account of their being cultivated for exhibition purposes. The Rose, especially, has within the last few years become one of our most popular flowers at exhibitions, its delicious fragrance alone assisting to make it an especial favourite. The exquisite formation of the petals, as well as the beautiful manner in which they are moulded together to constitute the blossom, place it without an equal in the floral world. Many of the readers of these remarks will remember the time when Tuscany was a favourite from its beautiful colour, and George the Fourth was considered a gem. Year after year has since brought us splendid additions, thanks to the skill of the hybridiser. What a commotion delicate and chaste Devoniensis caused when first exhibited, and who would pass Maréchal Neil without an exclamation of pleasure?

The Rose, from taking so prominent a position at our exhibitions, whether of spring, summer, or autumn, must be considered, equally with the Carnation, Pink, Picotee, Pansy, Auricula, or Dahlia, a florists' flower, but where the distinction ends as to what is a florists' flower I am at a loss to say, and must therefore consider it a contraction of the idea conveyed by the word "floriculture." Perhaps some of your numerous learned readers may be enabled to enlighten us as to the original derivation of the term.

Your correspondent lays some stress upon the fact of so-called florists being liable to visit public-houses and smoke tobacco. As to the latter practice, which is now so universal from the peer to the peasant, we must suppose it is had recourse to from a wish to be fashionable; but if the writer only knew what difficulty there is in obtaining accommodation for meetings of florists in any place other than public-houses, he would, I feel sure, instead of holding it forth as a reproach, assist to remedy the evil. Of the numerous Societies in the United Kingdom, but more especially in the metropolis and its vicinity, how few are enabled to obtain a suitable place for their meetings or their exhibitions! I am speaking now of the smaller Societies, composed of gardeners and amateurs who live within an easy distance of each other, and associate together for mutual improvement, and hold occasionally an exhibition of their productions. The majority of these cannot find any place of meeting except at the large room of a public-house, or of an hotel, if a more aristocratic name is desired. Most probably the proprietor himself cultivates some particular flower with which he is enamoured, and charges nothing for the use of the room, willingly assisting his brother gardeners. This I know in many instances to be the reason why these meetings are held at a public-house, although the members of the Society may be fully aware their interest suffers by the connection.

One of the oldest Metropolitan Societies at present is placed in this unenviable position, I mean the Stoke Newington Chrysanthemum Society. For some years past this has been holding its own, but cannot expand and keep pace with the times, being unable to obtain a place for its exhibitions sufficiently commodious or adapted for the purpose.

I do not think florists as a body are more given to frequent public-houses than other men. The day is gone by to which your correspondent alludes. Now he need not fear to meet the most humble cultivator, for he will find under what may probably appear a rough exterior, a heart second to none in kindly feeling, and a readiness to impart, in plain, unvarnished language, what knowledge may be possessed to any who may ask in a proper manner, as well as a willingness to assist a brother in distress; while he is respectful to all. If every Englishman were as good a citizen as the florist, peace and good-will to all men would be more widely disseminated. *William Heale.* [Clergymen can do something to remedy the difficulty Mr. Heale alludes to, by allowing the use of school-rooms over which they have control, for meetings of this kind. We know of instances where this is or has been done, with very great advantage to the Societies, and without detriment to any one.]

The Apiary.

Bee Culture.—*Hives and Boxes.*—Perhaps no department of practical bee-keeping has been the subject of greater diversity of opinion than that of the description of hive best adapted for obtaining the largest supplies of honey with the least possible trouble and risk to the owner. The numberless real or fancied inventions which have been brought out for effecting these objects, all of which are fondly imagined by their originators to possess every merit that can possibly be desired, and have been advocated by them through the medium of pamphlets, books, and advertisements without end, are almost calculated to stagger the enthusiasm of any intending scholar in the art and mysteries of the apiarian pursuit. Such a tyro may well be puzzled to know between so many plans, each one, in the eyes of its promoter, the very best that has ever been invented, what form of hive he is to choose for his own apiary. The probabilities are that between so many stools he falls to the ground. He greedily devours all the various bee-books he can lay hold of, all of them loudly proclaiming the advantage of their authors' various pet theories; and he carefully weighs in his own mind the merits of the hive recommended by each in succession.

For a time, accordingly as he is influenced by the plausibilities of each separate description, that hive, and that alone, is the one for him. This decision remains unaltered only until he becomes possessed of another bee-book, or he comes under the influence of advice from some apiarian of real or supposed better experience. The chances are that, after all, the beginner starts with some form of hive totally unsuitable for his wants and circumstances, or ill-adapted for the requirements of the bees. Or he is induced to run the round of all the plans with which he has been enamoured; and this he will usually find almost equally fatal to success. It is undoubtedly very pleasant and interesting to experiment with a variety of bee-domiciles; nevertheless, it is an expensive process, not only as regards the first cost, but as each hive becomes untenanted, either from actual unfitness or from accidental causes, it is frequently thrown aside, never to be again used for the same purpose. A new hive is substituted, probably only to be discarded in its turn. Or, lastly, by repeated failure, the once enthusiastic amateur becomes thoroughly disgusted, and gives up bee-keeping altogether.

How is it that there is so much diversity of opinion as to the best form of hive, or so many theories afloat as to the correct modes of management? The truth is that bees can to a greater or lesser extent accommodate themselves to, and will occasionally do well in, almost any receptacle intended for their use. So greatly do the bees possess the power of adaptation to circumstances, that hardly any shape of domicile can be devised which they will at all times refuse to work in, or which will come absolutely amiss to them, provided the interior dimensions approach pretty nearly to their requirements. Hence it is that so many hives are invented, each supposed to possess some peculiar quality in promoting the storing of honey, or in affording unusual facilities for manipulation and observation, and the easy appropriation of surplus stores. *S. Bevan Fox.*

Oilcake as Food for Bees.—A reference to your Paper of Dec. 26, 1857, will show that Signor Masso's bees are not the first that have evinced a fondness for oilcake. At Mandelieu, near Cannes, the bees frequented the pits in which sesamum cake was soaked previous to using it for manuring the land for Potatos. There is probably some inaccuracy in the minor details as given in the London Review. *C.*

Miscellaneous.

The late Royal Visit to Belvoir.—By way of the Lower Lodge, says the *Leicester Journal* of March 2, the illustrious guests entered the Broad Walk, which partly encircles the Castle, and from which the public is excluded. Proceeding to the south slope, where excavations had been made for two trees, the Princess of Wales proceeded to plant one and the Prince another, in commemoration of their first visit to Belvoir. The Princess good humouredly threw down her muff upon the grassy slope, and very effectively completed her task. His Royal Highness then took spade in hand, and filled with earth the cavity in which a tree had been placed, shovelling in the soil in a regular workmanlike manner. The trees selected by Mr. Ingram, the Duke's gardener, and approved of by his Grace, were two healthy well-rooted examples of Cupressus Lawsoniana, a Cypress that has the great recommendation of being perfectly hardy, and constitutionally suited to our variable climate, besides being unsurpassed for elegance and beauty, its Fern-like foliage giving it a peculiar and characteristic grace. On its native hills in Columbia it attains a height of 50 feet. After the interesting ceremony alluded to, their Royal Highnesses walked through a portion of the Castle gardens, in reference to which we may venture to make some few remarks. It may hardly be in accordance with correct taste to bring in juxtaposition with the battlemented walls and frowning cannon of a Norman keep, a modern garden with its gay parterres and flowers. Grassy slopes surround the Castle of Belvoir, and although the gardens are near, they are still effectually hidden by evergreen trees and shrubs, such as Cedars of Lebanon, evergreen Oaks, variegated Hollies and Laurels. Entrance to the garden is gained by passing along a walk arched over with Laurel; emerging from this we find an open space, partly embowered by lofty trees, but with a southern exposure, and embellished by beds and borders on Grass, but accessible by walks, which, with elegant curves, embrace all the garden. The larger borders are filled with dwarf evergreens, shrubs, herbaceous plants, and bulbs, intended for effect in winter and spring; amongst others we noticed Rhododendron dauricum atrovirens, Andromeda floribunda, Skimmia japonica, Berberis japonica, Forsythia viridissima, all of which were in bloom or about to bloom. The flower beds, instead of presenting the bare and cheerless aspect common to ordinary gardens at this season (February), are filled with early flowering Alpine and hardy plants. The first bed contains the Cliveden Blue Pansy, edged with Saxifraga; next occur four beds arranged ribbon fashion, with a centre of yellow Wallflowers, followed by rows to suit the square character of the beds, of Erica carnea, white Arabis, lilac Aubrietia, and Crocus. On another Grass plot there were six beds with a central bed of stonework, containing, in separate divisions, Russian Violet covered with a profusion of bloom, variegated Arabis, white Arabis, lilac Aubrietia. Erica carnea in full bloom, Doronicum and Wallflower,

Primroses and Giant Oxlips. Other beds are disposed about the Grass and are filled with shrubs, and Crimson Kale giving colour and effect to this gay and pretty spring garden. An opening in the trees exposes to view a steep grassy slope, about which are statues of heathen divinities; at the foot of the slope there is an arrangement of beds of elegant design and occupying a considerable extent of ground. These beds are most effectively filled up with dwarf shrubs and bulbs. Red Kale is interspersed amongst the shrubs and Pines, and gives an effect only exceeded by the brightest flowers. A magnificent example of Silver Fir towers up from the lower part of the garden, and forms a striking feature in the view. Leaving this garden and proceeding along the Duke's Walk, through the woods which encircle Blackberry Hill, we reach, after a stroll of about a quarter of a mile, the Duchess's Garden, an open space in a sheltered inward curve of that hill, facing the south. In this favoured spot we hear the wind roar over the tree tops, but scarcely a breath disturbs the plants luxuriating on the steep slope and terraced beds of the garden. A noble specimen of Araucaria, 35 feet in height, and an equally remarkable Araucaria Cunninghami, stand on each side of a flight of stone steps leading to the lower part of the grounds, and specimens of Hemlock Spruce, Pine, Cedar, and Cypress are distributed amongst the upper banks of the garden. One great Portugal Laurel, said to be the largest in England, immediately fronts a summer-house, which commands a view of the garden. Near the entrance is a large bed, containing many hundreds of Violets, blooming profusely, and succeeding this is a bed of Hyacinths in full bloom. The next bed contains Primroses in bloom and Aubrietia; Crocus and Forget-me-not intermixed, successive beds of Wallflower, Arabis, and Aubrietia follow. Below the walk are beds containing Doronicum, Heath, Aubrietia, Arabis, Wallflower, Violet, Red Kale, Primroses, Oxlip, Scilla trifolia, &c., and on the terrace beds are Heaths, Pulmonaria, Violet, Gentiana, Crocus, and Myosotis. On one of the steep slopes of the garden rock work has been formed; ascending it by rough stone steps, a magnificent view of the Devan Hill and river is obtained. Altogether there are few more beautiful spots to be found than this so happily selected by the accomplished Duchess for her favourite retreat.

Question to a Working Gardener.—"Of all your trees, which yields most fruit?" Says he, "Sir, the best fruits come from my Indus-tree." *Punch.*

Calendar of Operations.

(*For the ensuing week.*)

EUPHORBIA jacquiniflora stands at the head of a small group of tender plants, having such a tendency to become naked at the bottom, that it is no easy matter to form them into handsome bushy specimens. The more one prunes them the more straggling they become. They are more easily managed as standards, and as such they are very useful in the conservatory when in flower. In large conservatories, indeed, a few standard specimens are indispensable. But the difficulty lies in converting these stragglers into bushes. Let us take E. jacquiniflora, which has now done flowering. Do not prune it nor shift it at present, but keep it nearly dry until all the shoots have grown a few inches long; then give it a good watering to encourage its growth, and prevent it from making use of this stimulus by laying it down on its side. The increased flow of the sap, instead of following the horizontal direction towards the head of the plant, will, by following its natural tendency to ascend, cause the plant to break out into shoots at the base of the stem. Turn over the plant every two or three days to prevent its growing one-sided, and to get the shoots to break equally around the base of the stem, and supply it liberally with water every time it is turned. When these young shoots at the bottom are a few inches long, the plant may be set in its natural position. These shoots will afterwards act in the capacity of suckers, in clothing the head, and by preventing the plant from growing so freely they will enable the head to be arranged into a better form. When the growing season is nearly over, the bottom shoots may be stopped at different heights, and by keeping the plants rather under-potted, and pruning very sparingly, only pinching out the tops of the stronger shoots as they advance in growth, a fine bushy specimen, without the assistance of stakes or trellis-work, may be obtained.

FLOWER GARDEN AND PLANT HOUSES.

The arrangement of flower beds for the forthcoming season, if not already done, must at once be decided upon, and gardeners, who may not be thoroughly acquainted with the taste of their employers in this matter, should provide a plan, coloured as it may be intended to plant the beds, making whatever alterations may be suggested, until the arrangement is as satisfactory as the stock of plants will admit of making it. This done, it will be possible to concentrate attention upon the propagation of the stock which will be wanted, and to avoid occupying room with useless things.

AZALEAS.—Continue to give young growing plants of these liberal shifts; a good fibrous peat with a little white sand suits them admirably, but for stronger kinds a small portion of loam may be used with advantage. When potted, the plants should be put into a nice moist growing atmosphere, and they should have a temperature of from 55° to 60° at night, and from 65° to 70° during the day time; give air freely in fine weather, and attend regularly to the stopping, thinning, and training of the shoots.

BEDDING PLANTS.—Push on propagation of all kinds, in order to have thoroughly established and well hardened plants by May. Pot off autumn-struck cuttings at present in store pans.

CARNATIONS AND PICOTEES.—Strong varieties may now be put into larger pots. If there is any green fly on the plants, give them a good smoking with tobacco or tobacco-paper before taking them from the pit.

CINERARIAS.—Such plants as are intended for exhibition should now have their small leaves and superfluous shoots removed, to admit light and air; tie out as thinly as possible, and keep them as near the glass as may be convenient; fumigate, so as to have them thoroughly clean before coming into flower, and sulphur such as may be affected with mildew.

FORCING GARDEN.

CHERRIES.—These will now require a steady moist atmosphere. Stone-fruit, whether forced or grown in the natural way, suffers more from sudden changes than other kinds.

FIGS.—This is the safest time to begin forcing these, and they will do in any of the houses where forcing has lately commenced. Early ones will now be swelling their fruit, and will require a constant supply of moisture.

MELONS AND CUCUMBERS.—Those who are beginning to grow these will now have few difficulties to contend with. It is best to commence with Cucumbers, and to raise the Melons in the Cucumber-frame. This is the common practice; but those who care nothing for Melons unless grown by sun-heat with as little forcing as possible, will not sow till the beginning or middle of next month.

PEACHES.—Keep up a steady moist atmosphere, and when there is an hour to spare, look over the disbudded shoots to see whether the buds have been properly removed. When they are rubbed off with the finger, they often break again from the bottom. If the house is near 55° in the morning it is sufficient.

PINES.—After shifting and arranging the stock, a slight syringing to clean off any dust from the leaves is a usual and useful practice. Such of the young stock as has been disbudded must be shaded a few hours in the middle of sunny days, and be kept rather close and moist. Advantage may soon be taken of sun-heat to close the houses early in the afternoon, so as to shut in as much heat as possible.

VINES.—Abundance of moisture will now be required in all stages of growth, except where the Vines are just in flower. The usual routine of thinning and tying up the shoots is all that is necessary at present. All the houses had better be shut up early in the afternoon; sun-heat is far more congenial to vegetation than fire-heat.

HARDY FRUIT AND KITCHEN GARDEN.

The Kitchen-garden will present a lively scene for the next six weeks. Beginners often commit mistakes at this time by being in too great a hurry; the work is either not half done, or if it is, ten to one if the soil is in a fit state to receive seed. If the successional crops are got in at the first opportunity, the permanent ones will not suffer much for a week or so either way; and if pains are taken to do the work in a proper manner, it may save time afterwards and also disappointment.

ARTICHOKES.—It is a good plan to plant out every year about this time a few rows of suckers; these will come in after the permanent beds have done bearing. An equal quantity of the older stools may then be destroyed annually; plant them in single rows.

ASPARAGUS.—Where this is regularly forced, a few rows must be sown annually to keep up the supply. Any time this month will do for this sowing.

HORSE RADISH.—This should be treated exactly like the Artichoke, by planting a few rows annually and trenching up the oldest, picking up every morsel of the roots.

ORCHARD.—The chief business here will now be providing coverings for Peach and Apricot trees; and any of these, which are not yet nailed, must be finished forthwith. Whatever covering is used, it should be made to lift up in the daytime. More harm is often done by close-fixed protections than by omitting to cover at all.

PEAS AND BEANS.—It is a good plan to sow early and late sorts at the same time, to prolong the succession; but rather sow often than a large breadth at one time; say every other week till the end of April. The forced ones should be planted out as soon as all danger from frost is over.

RHUBARB.—This should be planted without loss of time, where new plantations are wanted, or any new sort is to be tried.

SEA-KALE.—Either sow a few rows or plant cuttings from the crowns.

STATE OF THE WEATHER AT CHISWICK, NEAR LONDON, For the Week ending March 7, 1866, as observed at the Horticultural Gardens

March.	Moon's Age.	Barometer.		Temperature of the Air			Temperature of the Earth 1 foot deep	Temperature of the Earth 2 feet deep	Wind	Rain.
		Max	Min.	Max.	Min.	Mean				
Thurs.	1	29·691	29·462	46	22	34·0	41	40	E	0·0
Friday	2	29·666	29·593	41	19	30·0	41	40	N.E	0·0
Satur.	3	29·860	29·599	42	23	32·5	40·4	40	N.	0·0
Sunday	4	29·742	29·542	42	26	34·0	40	40	E.	0·0
Mon.	5	29·749	29·629	41	25	33·0	41	40	E.	0·0
Tues.	6	29·957	29·715	44	23	33·5	40	40	S.W.	0·10
Wed	7	29·961	29·178	45	25	35·0	39·5	39·8	N.	0·2
Average		29·800	29·459	42·1	24·5	32·8	40·4	40·0		0·12

March 1. Frosty and foggy; hazy and cold; densely overcast; frosty
— 2.—Frosty, clear and fine; sharp frost at night
— 3.—Clear and frosty; overcast; cloudy; frosty
— 4.—Hazy, fine, dull; fine, fine; slight frost;
— 5.—Cloudy; fine; overcast; slight frost.
— 6.—Fine, rain, fine, frosty
— 7.—Hoar frost, showers, dusky clouds, fine at night.

Mean temperature of the week, 8° 10th deg. below the average.

STATE OF THE WEATHER AT CHISWICK.

During the last 40 years, for the ensuing Week, ending March 17, 1866

March.	Average Highest Temp.	Average Lowest Temp.	Mean Temp.	No. of Years in which it Rained	Greatest Fall of Rain	Prevailing Winds						
						N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.
Sunday, 11	49·4	32·2	40·8	17	0·43 in.	2	5	3	5	3	11	1	3
Mon.	50·1	32·1	41·1	19	0·57	3	3	3	5	3	12	1	2
Tues.	50·8	33·3	42·5	14	0·36	3	2	0	3	3	11	1	5
Wed.	51·1	33·2	42·1	14	0·50	2	3	1	4	3	6	3	6
Thurs.	51·2	30·8	41·0	19	0·67	3	9	1	1	1	7	2	4
Friday	51·3	34·3	42·8	13	0·93	—	11	8	—	2	11	2	3
Satur.	51·3	33·3	42·3	13	0·58	1	5	8	—	1	10	2	3

The highest temperature during the above period occurred on the 12th, 1811, and 16th, 1828—therm 67 deg.; and the lowest on the 17th, 1846—therm 17 deg.

Notices to Correspondents.

AZALEAS: *Pale Pet.* Make your cuttings of the half-ripened wood, cut off horizontally just below a joint. For their reception use pots or pans filled about half way up with broken potsherds, over which a small quantity of Moss or other rough material should be placed to prevent the fine mould from mixing with the drainage. Then fill up to within ½ an inch or so of the rim with a mixture of about two-thirds peat and one-third sand. After pressing this down lightly with the bottom of a small pot or circular board, cover with silver sand, and water in with a fine rose watering pot to settle it, insert the cuttings. When that operation is accomplished, cover them with a hand-glass, and plunge the pots in a bed with a slight bottom-heat. When rooted they will require a little air, which may be given by tilting the glasses on the single side. Pot off into a mixture of peat and sand as soon as they are sufficiently large for that purpose.

FIGS: *W.* The following is stated to be an excellent way of obtaining young fruitful Fig trees. Take a Potato, and with a bill-hook, sawing cut through it in the middle. Then fasten round the stem of the intended cutting. Then select a good fruitful branch with two or three shoots on it, fasten the Potato round the stem where it is desired roots should be formed, and cover it with moss. The moisture thus afforded, it is said, soon causes it to emit roots, when it may be removed from the parent tree and potted.

GRAPES: *A. K.* Your paper on this subject was published last week (see p. 199).

GRAPE-HOUSE: *Hy.* The patties might be closed in with glazed sashes made to fit the openings. The sashes should have wooden bars. The kind of plants to be grown would depend entirely on aspect, and the heat to be obtained from the adjoining hothouse. If there is heat enough, and not too much sun—or should it be a sunny aspect, if shading can be applied—so that the heat is not 90 or more in bright weather, either Orchids or Ferns might be grown; the latter the more easily of the two. The "Indoor Gardener," by Miss Maling, will give you a good deal of useful information on the subject.

HOT-WATER PIPES: *T. S.* One objection to zinc pipes, such as you propose to use, is their want of durability, and another is that, being thin, though they heat quickly, they cool as rapidly, when the influence of the fire ceases. In all other respects they will answer the purpose you have in view.

JUDGES' REPORTS AT LOCAL SHOWS: *Lex.* Had the the Judges in the case referred to, not having completed their labours, had the undoubted right to amend their award. Had they concluded and presented their report, it would still have been competent for them, in conjunction with the Committee, to have corrected it, if manifestly unjust. This case shows very forcibly how necessary are punctuality and close adherence to the regulations. Had the plants been staged in proper time—and it was some one's duty to see they were so, the mistake would in all probability never have occurred.

NAMES OF PLANTS: *G. R. A. Gordon. Park.* Rhododendron argenteum, see Hooker's Sikkim Rhods., tab. 9. It first bloomed at Kew in 1858.—*M. B. Yorkshire.* A fine variety of Cattleya Trianæ. Signor Trianæ, the discoverer of, and a botanist to whom we are indebted for our specimen, is of opinion that it is not really distinct as a species, but merely a variety of C. Mossiæ.—*T. L.* Quite withered up and indeterminable.—*Algæ.* We cannot undertake to name Mosses, which have little or nothing to do with horticulture.—*H. R.* 1, Epidendrum radicans; 2, Rose; 3, a form of Asplenium flaccidum; 4, Platyloma rotundifolium; 3, Polystichum capense; 4, Pleopeltis nuda; 5, Doodia caudata; 6, Asplenium dubiflorum.—*X Z.* Nuttallia cerasiformis.—*J. B.* Prunus triloba, one of the most beautiful of the early flowering trees.

ORCHIDS: *J. D.* There is no specific difference between Cattleya Trianæ, C. Mossiæ, and C. labiata. You will find the whole question fully discussed in the "Botanical Magazine," under the figure of *C. quadricolor*, which was published last year. We have never seen a flower, nor are we acquainted with any figure of Cœlogyne Rhodeana. What is your authority for the name?

PASSIFLORA LAURIFOLIA: *G. S. C.* The plant known in gardens as Passiflora laurifolia, which we have not seen for many years, is, I believe, very similar to *P. kermesina*, but bore flowers of a dull pale purple. The foliage was darker than in *kermesina*, which is probably the bright crimson sort you have in view. The fragments of flowers you enclosed appear to be smaller and paler than those of Loudon, but both size and colour may have been influenced by the season in which they have been produced.

TRUFFLES: *J. S.* will feel obliged by any of our correspondents who have been successful with these giving him information as to the best mode of growing them, together with the name of that variety which may have proved most suitable to our climate. We may add that a long paper on the subject will be found at p. 987 of our Volume for last year.

COMMUNICATIONS RECEIVED: Dr. Thwaites, Dendrobiums, with thanks.—J. H., a local gardener.—J. B.—Z. Z., and A Subscriber, next week.

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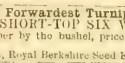

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Patron—H.R.H. The PRINCE OF WALES, K.G
SALISBURY MEETING, 1866
President—The Right Hon. the EARL of PORTSMOUTH

THE ANNUAL MEETING, 1866, will be held at SALISBURY, on the 4th, 5th, 6th, 7th, and 8th of JUNE NEXT.

The Prize Sheets and Regulation Papers are now ready.

Entries will close on the 14th of April.

Applications for the Guide for HORSES, POULTRY, IMPLEMENTS, and HORTICULTURE, to the Secretary, Bath.

For ARTS, MANUFACTURES, and LACE, to R. R. M. DAW, Exeter.

By Order of the Council,
JOSIAH GOODWIN, Secretary.
4, Terrace Walk, Bath
17th February, 1866.

The Agricultural Gazette.

SATURDAY, MARCH 10, 1866.

THE Cattle Plague Bill passed through the Lords on Thursday evening. Attempts were made to relax the severity of the Government Act just passed, by clauses permitting the Privy Council at once to discontinue compulsory slaughter wherever they may think fit; and giving local authorities discretion in reference to the slaughter of convalescent cattle. Both of these attempts failed by large majorities against them. Lord LICHFIELD's clause also was carried, absolutely forbidding fairs and markets for a lengthened period, and providing for the transfer of healthy stock in uninfected districts under a uniform system of licences. The remaining clauses, together with the preamble and title of the Bill, were then agreed to, and, the Standing Orders having been suspended, the report, with the amendments, was brought up and agreed to, and the Bill was read a third time and passed.

WELL, we have got one Act of Parliament: * in some particulars, a good Act; in some of its provisions, very bad. "Whereas it is expedient," —exactly: that is what we urged upon our knees, months and months ago. The preamble is right enough, but the date is sadly wrong—"20th February, 1866." Why, on the 17th of February, the Plague had established itself in 18,734 distinct and separate centres of infection. In these were 320,780 cattle, of which 35,448 were butchered at a grievous sacrifice to escape the heavier risk of attack. More than half the original head of stock, namely 166,379, had been stricken by the disease; with only 21,092 cases of recovery. The losses, however, really amounted to more; because many of the inspectors had been unable to overtake the labour of making returns. While Parliament was having its fortnight of talk about the ruin, more than 30,000 cattle were attacked. But legislators must not be hurried; and of course the agricultural interest will not be so impolite as to grumble—though, by and by, when our cities begin to feel the want of beef, and "the little ones" are pining for milk, we may hear something of popular discontent. Simple-minded Mr. BABINGTON (in the debate on the Address) averred that the Government "shrank from no responsibility; and even with such centralised action as one honourable member seemed to desire, it was difficult to discover what more could have been accomplished by the Government." "What more?"—why, the stamping out of the Plague could have been accomplished if our Government had displayed an intelligence and a zeal equal to those of the Belgian Government. "The country was not prepared for such a stringent measure," said Sir GEORGE GREY in the same debate; nor was the country, he might have added, so well instructed in the history of foreign stock diseases as to be aware that an invincible and incurable plague had fastened upon our cattle.

* The following remarks relate to the Cattle Disease Prevention Act, not to the Cattle Plague Bill, named in the preceding paragraph.

When Sir GEORGE GREY receives information of a projected landing of foreign armies upon our shores, will he wait till public opinion is well-awakened and "prepared for stringent measures," before he places our persons and property under military control, and numbers and marks our farm-horses and vehicles for Government use at a moment's notice?

Earl RUSSELL, too, has been equally delicate about stretching the safeguards of "our glorious constitution," which, we suppose, is the perfection of systematic government over everything but the pursuits of the cow-leech. On the 19th of January, the Lancashire deputation implored his Lordship to issue a general order peremptorily stopping all traffic in live stock; and in doing so, they expressed their misgiving that the time was now too far gone to achieve more than a retardation of the progress of the malady. They requested his Lordship to bear in mind that, "from probably one or a few importations, this disease had in seven months destroyed over 100,000 head of neat stock, worth one million of money." What was the reply? Why, Earl RUSSELL admitted that the disease was spreading into various counties by means of purchased cattle, and said that "his own observation of the number of cattle which he had constantly encountered passing over Hammersmith Bridge, entirely proved the difficulty of stopping such movement on roads without new powers from Parliament, and an increase of the police." Why, then, had not Parliament been asked for those indispensable powers and this requisite increase of police? His Lordship said that "the Government could not, however, without deliberation determine to apply for an increase of their powers of restraint, or for authority to require peremptorily an increase of the police force." That is the exact truth: our herds have perished simply because the British Government could not move without a fatal waste of opportunities in "deliberation." And his Lordship added, "But the matter was one worthy of consideration." We should have said that it was worthy of having been not merely considered but put into actual practice months before the day when the PREMIER uttered these words. It is indeed astounding that the agriculturists of this kingdom can sit tamely under the infliction of tremendous losses, now known by everybody to have been let loose upon us by the childish inactivity of our rulers. Is there no possibility of redress for those individuals who have suffered severely or been completely ruined, owing to the failure of public servants in their duty?

But we have now to say a word or two on the Government measure as amended by Parliament. General congratulation has greeted the birth of this "little stranger" that is to be another infant HERCULES capable of strangling the two serpents of home-generated and imported contagion. No cattle landed at any port "shall be removed alive from such town or place except by sea." This is one great defence (until the 15th of April) against repeated invasions of the plague from abroad; though a great deal more than the mere stopping-out of living animals requires to be done before full security is obtained. In dealing with the contagion at home, of course it is desirable that "no cattle shall be moved on any railway before the 25th day of March;" but as Sir GEORGE JENKINSON says in a letter to a contemporary, "I ask you to realise the effect of a tenant coming out of Cheshire with all his stock, by train or otherwise, into any other county now quite or almost free from disease." The main point with us must be the extinction of the contagion wherever it may appear, seeing that to stop the production of seed is much more likely to be efficacious against dissemination than the attempt at impeding the conveyance of that seed. The Aberdeen regulations make it illegal to move cattle from within a distance of one mile of the place where disease exists till 30 days after the last "case;" so that an infected district extends with the disease, reaching always one mile beyond. This is wise; but after all the more stoppage of animal traffic can but hinder the progress of the infection—it does but exchange conveyance by cattle for conveyance by the butcher, as well as by all sorts of subtle and unforeseen agents. Well, how does the Act set about the really decisive remedy?—what likelihood is there that the "slaughter" clause will accomplish the end so long aimed at fruitlessly by all the Orders in Council and all the efforts of the county magistrates? "Every local

authority shall cause all animals affected with the cattle plague within its district to be slaughtered." This reminds one of the notice—"All persons trespassing on these grounds will be prosecuted;" yes, if you can catch them; the word "found" being omitted. The clause in the Act should have read—"all animals *found* affected, &c." But the Act expects to find "all animals affected," for it offers a reward by way of inducement to farmers to give information. One bullock in JOHN SMITH'S yard of 40 has evidently "got it" (that is the prevalent phrase)—will he at once communicate with the district inspector? If he does, that animal will be killed and liberally paid for; and should the "local authority" think well to slaughter the whole yard full of bullocks as a preventive measure in favour of the public, JOHN SMITH will receive compensation to the full value; so that it is worth his while to co-operate with the magistracy in stifling infection in its earliest germs. But we have mistaken: the Act is not so wise as to pay a compensation that might encourage information: it does not even leave the duty of giving notice a matter of indifference to JOHN SMITH; on the contrary, it makes concealment JOHN SMITH'S pecuniary advantage. The local authority shall pay to the owner of a slaughtered affected animal a sum "not exceeding one-half the value of the animal immediately before it was affected;" and when beasts herded with an affected animal are killed, either the owner may dispose of the carcases, or he may receive as compensation three-fourths of the value of the beasts that are slaughtered. Consequently, JOHN SMITH says, "That cow or that steer is off its keep; it waters at the eye; here are the marks in the mouth—I am sure it's the plague. Fetch old JOE SPRITCHELL, clean the barn floor and tie-beams, and let's go into the beef trade." For the carcase is good sound meat, and unless a miserably poor half-grown beast, it fetches home from market at least two-thirds of the living healthy value, and of his fatting or fresh meated animals, JOHN SMITH makes the full value; at least that is what may be expected, with the live-cattle trade stopped, and all beef butchered where fed. JOHN SMITH'S infected bullocks will never be heard of, and his premises will not be disinfected, nor his hay, straw, litter, &c., destroyed by order of an inspector, who never knew that they required any attention. *J. A. C.*

WHERE ARE THE WEATHER PROPHETS who predicted that the winter of 1865-6 was to be the hardest on record? It is just possible, however, that the present state of the atmosphere, which drives all sensible beings into as snug retreats as they can find, may tempt forth these hardier creatures with a little chirp of triumph. "Now, at last," they are beginning to say, "our prognostications are about to be fulfilled." But softly, sirs, winterly weather in spring is not Winter, and the months which by common consent are allotted to Winter are gone and past. When we have spring weather in winter there is generally exacted from us that unpleasant compensation—the tyranny of the average,—which makes us submit to winter weather in spring.

But leaving the prophets, it may be interesting to take a retrospect of what has been in many ways a remarkable season. The dry hot weather of September, followed by a bright and sunny commencement of October, carried the summer to an unusually late period of the year. Then at last came the long-expected rain, in abundance on 17 of the 21 last days of October, copiously in November, and in some localities in December also, and again a large fall in January, and on the first 17 days of February: making a total of more than 19 inches in 130 days. This fall, though excessive in a high degree, and occasioning much inconvenience, ought, nevertheless, to be highly welcome. It has replenished fully the subterranean stores, and completed the saturation of the ground, which there was good reason to suppose never took place the previous winter after the severe drought of 1864. The Thames, which, with the exception of a short spasmodic flood in March, 1865, had been for two years extremely low, was kept in flood for many weeks; its highest taking place immediately after the rapid thaw of the snow which fell in January. During the height of summer the river depended entirely for its supply on the partial but heavy rains which fell in June on the hills about its source. It is to be hoped that the lessons of the two last seasons will not be lost on our agricultural friends. It may be that the fears expressed by many during the drought, that our climate had undergone an alteration in the matter of rain, were groundless; they seem so to most persons after the dripping five months we have just passed through; but the necessity of storing our water remains in many positions in full force, and if not painfully needed during the few wet seasons that probably are coming, a supply of pure rain water for the use of men and cattle can never be without its value either to the house or farm.

The season has also been remarkable for its mildness—there was no frost in October, and from that time till the end of the year no night in which 6° of frost were attained, and only 10 nights on which any frost occurred, and then extremely slight. There was one night of hard frost in January, when the ground was covered with snow, but even then not amounting to 10° of frost; and the only severe frost occurred in the last days of February, which were marked by several frosts, the coldest night of all, with 14° of frost, being on the last night of the month. The common spring flowers were in bloom a month earlier than usual. Many of the common birds paired before the end of January, and the cock chaffinch having forsaken his bachelor companions, was singing sweetly to his mate on the 7th of February, about two months earlier than last year. But this mildness was not produced by the direct influence of the sun, for the weather was extremely dark and dull; the sun power fell from over 9° in October to less than 5° in November, and only 3° in December and January.

Again, the season has been remarkable for its tempestuous character. Two severe storms were experienced in October, one prolonged tempest in November. December was remarkably still, but the year ended with a violent tempest, which was renewed with great severity twice within the first fortnight of the year; and February was marked with a tempest of unusual violence. As may be supposed, the oscillations of the barometer have been frequent and violent.

Such has been the Winter of 1865. If it has falsified predictions, can we, now that it has passed, see the causes of its remarkable character? What no doubt weighed with the weather-mongers was the notion of great heat to be compensated by great cold. But the inference ought to have pointed to the compensation from the law of averages being brought about in some other way, and probably being to be deferred and spread over a longer period than the ensuing winter. When a room has had a fire all day, we expect it to be warmer all night in consequence, though the fire has gone out; and so a warm summer may be reasonably expected to be followed by a warm winter, *unless* some disturbing cause occurs. This year, had snow fallen early in the autumn, we should probably have had a colder winter; but the heat stored up in the earth during the long dry summer was not consumed in the melting of early snows, and therefore when the nights were open and frosty the frosts have not been severe. The only severe frost in January occurred when the earth was covered up with snow.

There has been another cause which might have been predicted as likely to lead to a mild winter. The vapour which forms our supply of rain is drawn from the ocean in far distant climes. The clouds, after long delay, at last began to gather over our northern hemisphere, and discharge their welcome contents on the parched lands. They come from warmer regions, and encountering the cold of our northern latitudes, their vapour is condensed into rain; the act of condensation eliminates a supply of heat, and the more vapour, therefore, the greater supply of heat; and whilst the clouds shut in the earth there can be no great cold. Then the rarefaction formed by a copious descent of rain, is now known to be a fruitful cause of hurricanes. Some of the most destructive storms on record have been successfully traced to this cause—not indeed as giving them birth, but as exaggerating their force and lending them all their destructive violence. And thus, by gradually accumulated facts, we are acquiring slowly the power of reading the phenomena after their occurrence, and to a certain degree therefore of predicting hypothetically and with more or less of probability, and in very general terms, the experience of the future as to weather.

Whether we shall ever be able to advance beyond this remains to be seen perhaps by the next generation. At present no true meteorologist will venture beyond the most modest presage. *Iris.*

THE ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

[The following is the leading article of last Monday's *Mark Lane Express.*]

THERE is no question but that the national Agricultural Society is at this moment in an anomalous and altogether unsatisfactory position. Prevented by a bye-law from taking any active part over the one great difficulty now occupying the attention of the country, the Direction would seem to have determined upon doing nothing whatever. For a long twelvemonths, at any rate, the Society is to snore away its existence in the Valley of the Sleepy Hollow, as possibly to waken up again like the hero of the fable, enfeebled, unknown, and out of date. Mr. Holland may, to be sure, be permitted to put his hobby into a gentle trot, and to amuse himself, as he did a week or so since, by reporting that premiums of 10*l.* or 15*l.* each would be given to Cambridge first-class men, or 1*l.* worth of books each to the next best in pure mathematics. The Society may even spend something like 150*l.* in this way, while the idea is even contemplated of sending a few Commissioners out to report upon the progress of steam cultivation, and so fill up a few sheets of the next numbers but one or two of the Journal. But what are such trifles as these to an institution with an income of 5000*l.* or 6000*l.* a year at its command, and the interests of as many members in its keeping? Let us take it to be admitted that the farmer is in such a strait as has never been known since the formation of the Royal Agricultural Society. The probability is that he will be prevented for some considerable period from making the most of his business, and that, more particularly in the use of his stock either on or off the land, he will find his hands tied, and his energies wofully cramped. The natural conclusion to which one would arrive here is as to how he may employ himself in other ways, and how the Royal Society may essay to help him. What, in a word, is the backbone of this Society? Not its "Journal;" for one smiles involuntarily at the notion of a work so little appreciated doing much good. Its open meetings then? Scarcely; there are few who would have the hardihood to maintain as much as that. The deliberations of the Monthly Council more probably? Yes; for here, unquestionably, the strength of the Society does centre, so far at least as these conferences tend to one certain object, and that, of course, is the great annual Show. But in 1866 the Council will have nothing to deliberate about, for we are to have no Show. Let us allow that it would be impolitic and dangerous to move valuable cattle about during the ensuing summer, as sheep might carry contagion, and even pigs be fairly subject to some suspicion. But is there nothing with which we might carry out an agricultural exhibition beyond cattle, sheep, and pigs? It would be unfair to attempt to anticipate the point of the paper which Mr. Alfred Crosskill is engaged to read at the Farmers' Club in April, on "Agricultural Shows, and their Influence on Agricultural Progress;" but it is well known that this gentleman, with many others in the same "Trade," as it is termed, have hitherto been more or less hostile to the "Royal" anniversaries, mainly on the ground that the trials were absurdly short and hazardous. There was no time permitted for arriving at anything like a proper test, while the attention of the great body of the public was almost altogether drawn off to the stock section of the Show. Here then, in 1866, was an admirable opportunity afforded for doing the implement makers more justice. With so much money saved from other objects, the triennial or quadrennial system need not be adhered to, but the prize-list extended in a variety of ways, and the sets of judges proportionately increased. Under such circumstances a week or a fortnight at Bury might turn out the most intellectual holiday the agriculturist has ever enjoyed, as at the same time by no means the less profitable. We may go, however, yet further, and emphasise such an occasion by still retaining perhaps the most popular feature of the prize-sheet. We refer, of course, to the entries of horses. We have yet to learn the actual objection to such a proposal. There is to be a Horse Show in London in May: and, although the Royal Agricultural Society may not hold one at Bury St. Edmunds in July, the Suffolk Agricultural Society will. And where is the difference? Or can a national body afford to do nothing, and allow a merely local organ to be doing something in its stead? We think not.

With, as must be assumed, the wisdom of the Kingdom gathered together in its Council-chamber, the conduct of the Royal Agricultural Society should be the example to all similar associations. But has its decision over this very important point, as it may turn out in its own fortunes, been everywhere received as final? Certainly not. Says the Council in Hanover Square, it will be better not to hold any Show whatever in 1866; and it determines accord-

ingly to hold none, without ever taking the opinion of the general body of the members upon so vital a question. And all other such Institutions at once follow this lead, and agree to go to sleep for twelve months. We have already instanced Suffolk to the contrary, as that whether "the Royal" visits it or not, Bury St. Edmund's will have a Show in '66. But there are other Societies of far more calibre than the Suffolk that equally object to closing their doors; and prominent amongst these is the Bath and West of England, quite a Royal in its way, with a large extent of territory, and a "Journal" at least equal in merit to its Metropolitan contemporary. A reference to the report of the proceedings of the Bath Society, given in another page, assures us that the Council are going on in 1866 in this wise: "The horse prize-sheet for the Salisbury meeting was finally settled and improved. The horses for agricultural purposes were divided into two classes—those for heavy draught, and those for general farm-work; and in each class prizes of 50*l.* and 25*l.* respectively will be awarded to the best entire horse, above two years old; and prizes of 20*l.* and 10*l.* to the best entire colt foaled in 1864. Prizes varying from 15*l.* to 5*l.* will also be awarded to mares and fillies. In the hunter classes prizes of 50*l.* and 20*l.* will be given to the best entire horse; 30*l.* and 20*l.* to the best mare or gelding foaled in 1862; and prizes varying from 15*l.* to 5*l.* for mares, fillies, or geldings. Prizes are also offered for hacks and ponies." But the Salisbury show will not depend upon horses alone, but will comprise poultry, agricultural implements, works of art, manufactures, horticultural specimens, and so on. Let us dwell for a moment over the first-cited of these other sections of the exhibition—poultry, as a substitute, we will say, for meat; for it may or is coming to this. Could there be anything more popular to take up in a grand way, at such a time, than the different breeds of poultry, their improvement and extension? The better class of customers have long been getting shy of beef, while the small-pox is breaking out again in sheep, and we hear the most terrible reports of the maladies consequent on the consumption of pork. In plain truth, if the Royal Agricultural Society has a duty to perform just at present, it is to encourage the breeding of poultry. We care not whether the show be held at Bury or at Battersea; but, unless the business is to subside into a fine fat sinecure, something must be done in '66.

From the west we will steer our course due north, where at York the All-Yorkshire Society actually calculates upon holding a more successful meeting than usual. The classes for sheep and pigs are still retained on the list, while the premiums for horses of all descriptions are extended, as the hunters will be supplemented by a show of hounds. And why should not the Royal Agricultural Society for once in the way get up a show of hounds, ridiculous perhaps as the notion of such a thing may sound to a few old women, but to nobody else? The motto of the Council for this year, above all others, should be, "Let us do something to bring the people together," instead of being satisfied with doing nothing. Let them draw the implement-makers out. Feed us on ducks and chickens, if you cannot on mutton and beef; and put us in the way of breeding horses and ponies, if for the time we dare not do too much with the Shorthorns and Herefords. These are all matters of more or less importance to the farmer; and if the Royal Agricultural Society will not help him here, there are other Societies that will. With all entries to close on the 1st of May, it is not yet too late to recover from a false step that is sure to be felt hereafter.

THE CATTLE PLAGUE.

1. The following returns were issued on Friday of last week. The returns for March 3d have not yet appeared.

These returns do not profess to give the total number of cases which have occurred in Great Britain, but only those which have been ascertained from information received at the office from inspectors.

Census Divisions.	1 Number Attacked.		2 Total Reported Cases from Commencement of Disease.				
	Week ending February 24.	Week ending February 24.	Attacked.	Killed.	Died.	Recovered.	Unascertained fate.
Metrop. ..	16	12	7369	3103	3464	333	579
S. Eastern .	26	16	4966	1557	2775	442	242
S. Midland .	619	711	13,658	2480	9199	1257	851
Eastern Co.	182	262	8829	3168	4516	663	548
S. Western .	26	48	1399	369	728	186	116
W. Midland .	1430	294	7962	893	5293	856	1012
N. Midland .	918	830	8092	1415	5330	789	869
N. Western .	4636	3868	12,840	1295	31,304	3522	6848
Yorkshire .	1896	1369	27,316	1324	17,815	5009	3980
Northern Co.	6911	777	4688	998	2390	759	573
Monmouth. & Wales ..	395	268	7066	103	3595	970	568
Scotland ..	2225	1845	42,714	4475	28,116	9013	4110
	13,001	10,167	177,689	20,938	143,217	23,769	19,765

2. IMPORTANT DECISION UNDER THE NEW ACT.—At the Horncastle Petty Sessions on Saturday last before the Revs. Thomas Livesey and Thomas Pickford, Mr. James Banks Stanhope, M.P., was charged, on the information of Superintendent Thoresby, of the Lindsey constabulary, stationed at Horncastle, that he, on the 29th day of January last, did unlawfully remove two cows and 16 bullocks from Revesby to Tattershall along a public highway, such cattle not being fat cattle removed for the purpose of slaughter with the licence of a justice of the peace, nor cattle removed from one part of a farm to another part of the same farm, with the licence of a justice. The spacious Court House was crowded during the whole proceedings, which lasted upwards of six hours, and great excitement as to the result was shown not only at Horncastle, but also in Lincoln and the districts around each town.

From the evidence adduced it appeared that on Saturday, the 27th day of January, Mr. Banks Stanhope sat on the Horncastle bench, officiating in his capacity as a magistrate. With him on that occasion on the bench, besides others, was Mr. Moses Elmhirst, of West Ashby. The magistrates sat till late on that day. Mr. Betts, a tenant of Mr. Stanhope's, residing about from 700 to 900 yards from Revesby Abbey, Mr. Stanhope's residence, had some beasts taken ill on the Saturday, and he called upon the veterinary surgeon at Horncastle, and got some "drinks" for them, as he supposed that the animals were suffering from eating too much chaff; but the inspector told Mr. Betts that if the beasts were suffering from the cattle plague he might as well throw his medicines into the canal as administer them, as they would do no good. On the Sunday Mr. Betts found his beasts no better, and administered a drink. In casually passing Mr. Bell's, Mr. Stanhope's bailiff, he called in and found that one of his animals was "off its peck." After this, Mr. Bell and Mr. Betts went up to the Abbey and saw Mr. Stanhope, and they recommended that the beasts should be sent off at once for slaughter, "because," as Mr. Betts said, "they would get no fatter, and would not pay for keeping." Mr. Betts suggested that they should be sent to Boston, for London; and Mr. Bell suggested the Manchester market. Mr. Stanhope at first declined to send them away; but ultimately he despatched the following letter to Mr. Elmhirst:—

"Revesby Abbey, Sunday, Jan. 28.

"Dear Elmhirst,—Mr. Bell has become rather frightened at the plague being in March beck (ten miles from my farm) and has beasts being nearly fat, he wishes to send them direct to Tattershall (Boston eventually). Can you obtain a license to send to London to-day, and sold and killed there to-morrow morning. There are 107 cleanly Short horn steers, two cows, and seven Scotch steers. Mr. Bell sends a note to the nearest inspector to give a warranty of their health, with which it will be understood that your order is not to be used if there is want of intimate to the removal of my animals across the road 'with the inspector's permission.'

"Moses Elmhirst, Esq. "J. BANKS STANHOPE."

Upon the receipt of this letter a licence was issued for the transit of Mr. Stanhope's cattle, and the inspector, by the aid of two candles, examined Mr. Stanhope's beasts on Sunday night, and certified that they were healthy. A messenger had been despatched to Mr. Wood, of the Great Northern Boston station, asking for cattle trucks to be attached to the mail train on Sunday night. That gentleman at first refused, but consented in consequence of an impression made on his mind that the cattle plague was in the neighbourhood, and that it was important to get them away. A message was also sent to Tattershall. On the Monday, at 7 in the morning, the beasts were all removed to Tattershall and sent to Manchester. On the Monday the inspector called and saw Mr. Betts' beasts, and pronounced them to be suffering from the plague, and some were shot the same afternoon. Some days after the plague broke out on Mr. Stanhope's own premises. By the 3d clause of the Quarter Sessions Order of the 16th of January it was necessary for every applicant to give evidence that the cattle plague did not exist within one mile of his premises before he could remove them. The magistrates held that Mr. Stanhope's letter did not show that it was not within that distance, and fined him 20*l.* and costs.

3. MR. WORMS' TREATMENT.—On Tuesday evening Earl Granville read the following letter from Professor Simonds with respect to the condition and treatment of Baron Rothschild's cattle at Mentmore, and to the failure of Mr. Worms' remedy:—

"Veterinary Department of the Privy Council Office, Princes Street, March 3, 1866.

"Sir,—I have the honour to report that, acting on your instructions, I have to-day visited Mentmore for the fourth time, for the purpose of ascertaining the progress of the cattle plague in Baron Rothschild's herd, and the results of the treatment adopted by Mr. Worms. Since my last visit, Feb. 22, the disease has made rapid progress, and I regret to add that the fatality has kept pace with its advance. It appears that in consequence of the deaths which had occurred up to the 22d of February, and the number of animals which were then sinking more or less rapidly from the disease, it was determined to give trial to Mr. Worms's remedy as a prophylactic as well as a curative agent, and accordingly, all the remaining animals of the original 119 were dosed on successive days with the mixture. With a view also to limit the number of cases, the unaffected animals were taken out of the straw yards and placed in small lots in nine different yards, distant from each other, and temporarily fitted up on the south side of one of the plantations. The location of these yards and the manner of their construction were well suited for the required purposes. Before describing the state of things as now existing, it will be necessary briefly to refer to my former reports of the 15th, 19th and 22d of February, in which the particulars were given of the first 25 animals which had been removed from the herd and put under Mr. Worms's treatment. In the first of the above reports I stated that 10 animals, which, at the time of my examination, gave no evidence of disease, were being treated by Mr. Worms, and that one—the original animal attacked—had succumbed to the malady. In my second report I stated that four other unaffected animals had also been taken out of the herd for treatment, with five more which were the subjects of the cattle plague. In the third report I stated that in the interval three of the animals which were unaffected at my first and second visits had become attacked with plague, and in addition to these other cases had also occurred. Numbering these attacked in the last named report, and which is here repeated: Feb. 19, 1866.—Unaffected 11; affected, but not severely, 5; died, 5; dying, 4—25. On my visit to-day I found that the whole of the 11 animals mentioned to me as remaining and which had been treated by Mr. Worms as having been unaffected, had been attacked and that nine of them had died. Under the peculiar circumstances of the case it may be as well to add the result of the treatment of the 25 animals as distinguished from the rest of the herd. Nos. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 21, 22, 23, 24, and 25 have died in numbers 2, 8, 9, 11, and 19 are convalescent. Passing from these cases, I have now to describe the general state of the remaining portion of the herd, the disease, as previously stated, having made fearful havoc among the animals since the 22d of February. In the sheds were five heifers, rapidly sinking from the disease. In contiguous yards were lying 13 cows and heifers which had been shot, some on the previous evening, and the remainder on this morning, all having been severely affected as to be beyond all hope of recovery. A bull and a heifer were about to share the same fate just as I arrived on the premises, but were allowed to live until my inspection was completed. I may here remark that none of these animals were destroyed by the orders of the local authority. In No. 1 enclosure I counted 24 cows, dead or in the dying, all the remainder (twelve) more or less affected. In the eight other yards were cows, heifers, all of which were affected. Several were lying and three were dead. The general state of these animals was such that in a few days scarcely one of them may be expected to be alive; and no progress has been the mortality, and so rapid the progress of the disease, that I was informed by the bailiff that all treatment had been abandoned for some few days, and the animals left to their fate. Graves were being prepared as quickly as possible, and all the requirements of the law were being carried out. The slaughtering of these animals (I was told by will, it is to be hoped, but likely to be serious loss among the dairy cows on the estate. On February the 24th the malady unfortunately made its appearance among them, and on my inspection I found that two had died, six been slaughtered, and two others were dying. Two bulls and seven calves were also rapidly sinking. The entire stock in the dairy farm consists of 29 cows, 24 calves, and 4 bulls, all of them being animals of first value. In concluding this report I cannot refrain from expressing my sincere regret that another supposed remedy for this arresting cattle plague by medical treatment should have proved abortive.—I have the honour to be, Sir, your obedient servant, "JAS. B. SIMONDS."

"The Clerk of the Council."

—— The following letter from Mr. Worms, with regard to the above report from Professor Simonds, appeared in Thursday's *Times*. He says:—It is due to myself to correct a paragraph in Professor Simonds' letter to the Privy Council in your impression of to-day. He says,—

"The general state of the animals was such that in a few days scarcely one may be expected to be alive, and so great has been the mortality and so rapid the progress of the disease, that I was informed by the bailiff that all treatment had been abandoned for some few days, and the animals left to their fate."

He implies by this that, the treatment being unavailing, the animals were left to die; such, however, was not the case. Baron Meyer de Rothschild had, and still has, perfect faith in my system, and when the Act passed on the 25th of February, ordering the slaughter of all infected animals and of those which had been in the immediate vicinity of such, Baron Rothschild wrote to the Privy Council requesting that a few days might be granted, in order to give a fair chance to cattle under treatment. He received an answer from Lord Granville to the effect that the operation of the Act could not be suspended, and that it must be put in force at once. This was accordingly done, and the animals forthwith slaughtered. Therefore it was that, to use Professor Simonds' pathetic words:—

"Graves were being prepared as rapidly as possible, and all the requirements of the law were being properly carried out."

The Professor would have the world believe that of the herd of 119 head the majority died, whereas, in fact, a very small proportion died, and the remainder were slaughtered in conformity with the Act. I received (previous to the Act being law) numerous letters from all parts of the country testifying to the success of my system. Since then, however, many are deterred from attempting cure, and all from communicating the results, for fear of drawing down upon the devoted heads of their cattle the dread pole-axe of the law. I do not profess to have found the *elixir vitæ*; but, notwithstanding the 'sincere regret' of Professor Simonds 'that another supposed means of arresting cattle plague by medical treatment should have proved abortive,' and despite the learned dissertation in Professor Gamgee's interesting book, in which he proves the rinderpest to be incurable, I still venture to hold my opinion, based upon 25 years' practical experience, that if my system be fairly tried, it will prove as efficacious here as it did in Ceylon. I have given it to the country, and I can but express my deep regret that the stringency of the new Act prevents it being thoroughly tested, and that prejudice should be allowed to weigh down the scale against a remedy which, though emanating from an unprofessional, has still been productive of good results. *Maurice Worms*, 27, *Park Crescent, March 7.*

4. DISINFECTION.—Although the Legislature have passed the Cattle Diseases Prevention Act, by which it is provided that all persons who come in contact with diseased animals should disinfect themselves, and adopt all due precautions against spreading the disease, and the Royal Commissioners have framed and issued to the local authorities instructions for disinfection, one of which is that persons who have been at farms where infected animals are should wash and dip their boots in carbolic solution, and thoroughly brush and sponge their clothes with the same solution before going near healthy beasts, we have still in this county a most dangerous and certain daily communication kept up between the diseased and healthy animals by the county police visiting from farm to farm, collecting statistics of the number of diseased animals, without taking any of those precautions.

I cannot better illustrate the great danger of this, not only to this county, but to the nation at large, than by quoting Professor Simonds' words at a late dinner of the Royal Agricultural Society :—

"It is a matter of the very greatest importance that wherever the disease has existed, every person, thing, and place should be thoroughly disinfected, recovered animals, clothes, yards, manure must be carefully disinfected, or the plague will come again."

He also observed that the plague was purely a contagious malady, which could only be contracted by direct or indirect contact. Labourers, travellers, dogs, cats, pigeons, even the wind where the disease prevailed extensively, might carry particles of the morbific matter, which, lodged in a healthy animal, is sure to produce disease.

It has been asserted that one reason why the disease has visited Cheshire with such virulence is that the shippons or cowhouses are so badly constructed as to be no better than hothouses for the rinderpest. Now, some of those visited by the plague are of the most modern and approved architectural construction, and at all times kept most scrupulously clean ; they are also in a great measure from the size of the farm isolated, and as the animals have now been kept confined to the buildings for a considerable time, it is impossible for them to have come in contact with diseased animals. How, then, could the infection have been carried ? The answer is, probably, if not certainly, by the daily police visitor.

In 1749 the parish of Knutsford, in this county, was visited by the distemper ; four or five herds were seized ; killing the diseased, and isolation of the healthy was practised, and the parish got rid of it in about six weeks with a small loss. At that time there was no facility for spreading the contagion in the way I mention.

While the practice is continued we must not wonder if the disease is still carried from farm to farm with almost telegraphic rapidity and certainty, and all idea of stamping it out must be abandoned. We cannot now prevent, however much we may regret, the deplorable consequences which may have attended this injudicious regulation in spreading disease by which the inhabitants of Cheshire have lost upwards of 40,000 beasts, and consequently much poverty and hardship have been entailed on the poorer class of tax-payers in the county ; but surely the experiment ought to be made of preventing the police from practising this farm to farm visitation, which can only have originated in gross ignorance, or most culpable disregard of consequences.

In my humble opinion the statistics might be obtained simply and certainly by furnishing the veterinary inspectors with proper printed forms, to be filled up each night, and forwarded to the clerk of the peace in the morning. Allow the clerk of the peace 200*l.* per annum pay for two clerks to put the statistics together, and all would be done without the danger of making the policeman the death bringer to the farmer's door. *J. H. Smith, Ordsall, near Birkenhead, March 6.*

5. ANOTHER VIEW OF THE CATTLE PLAGUE.—I believe that one of the greatest obstacles to progress in the science of medicine arises out of a disposition on the part of its disciples to eradicate disease by means of *local* treatment, such treatment being liable to endless interference and difficulty on account of the numerous differences of organisation, breed, feeding, &c., of the several animals diseased.

Without pretending to much wisdom in medical matters, allow me to remark that there must be a *cause* for everything, and that the interests of medicine would be better served by a more diligent investigation into the primary causes of disease than by wasting so much time in battling with its results, and in fruitless endeavours to cleanse the waters from a tainted fountain-head.

As a mere suggestion in this direction, having observed that mucus arising from the cattle disease has been chemically tested, and I suppose its component parts discovered, without any advantage to cure, I would recommend that the blood of a healthy animal should next be taken, and the component parts incidental to a healthy state of the animal duly registered ; and next, that blood from a diseased animal be also examined, so that the variations arising between the two from the undue absence or presence of any substance may lead to a general and rational means of treatment. Mr. Worms's remedy, which has been partly successful, is composed mainly of ingredients which eminently influence the blood. Iodine, sulphur, &c., are also administered to the human patient with a similar object, and, so far as I can see, it is only rational to expect that in the blood is the real source of disease to the flesh ; and therefore, that he who shall attain to the greatest knowledge of the substance of the blood, and how to treat it, will be the most likely person to earn the distinguished honour of staying the cattle plague. *G. H.*

6. IN SOUTH LANCASHIRE the plague spreads rapidly around Bolton and Leigh, and fresh outbreaks are reported every day. In Westhoughton, a township lying between Bolton and Wigan, Superintendent Scott visited a farm on Thursday where the disease had not made its appearance more than a week. He found that one cow was being dragged dead into a field, two were nearly in the last stage, a bull was lying dead in the corner of the shippon, a fat calf, for which the owner had been offered 5*l.* a day or two previously, was dead on the barn floor, and the remainder of the stock of 17 were beyond recovery. It is not to be wondered, therefore, that the disease is spreading in this township as well as in many of the adjacent hamlets. In the neighbourhood of Leigh the attacks increased considerably in the last week, rising from 29 to 37, and the deaths also increased from 14 to 22. The experiment tried by Mr. Diggle, of West Leigh, of isolating his cattle by sending them down his coalpits, has hitherto proved perfectly successful. In all 26 animals are now provided for in his mines, where they appear quite healthy. The mines are well-ventilated, and a temperature of 57° is maintained in the four sheds which have been prepared. The disease makes no rapid strides around Wigan, but the report for the past week shows that there was no foundation for the hope that it was dying out. In the Wigan Union its chief seat is Hindley, where several farmers have lost the whole of their valuable stocks, in spite of every precaution and the trial of the popular remedy. During the week also it has made its appearance at Golborne, and there has been an outbreak at Latham, near Ormskirk, one of the principal agricultural centres in the county. The Manchester and Liverpool Agricultural Society, at a special meeting on Monday, did not come to a conclusion as to whether a show should be held this year, but postponed a decision for a couple of months.

SHEEP BREEDING.

[The following paper was lately read by Mr William Davidson, Beechfield, at a meeting of the Athy Farmers' Club, Kildare.]

I DO not intend to make any statement that I could never realise myself, nor, perhaps, any other person. This is too often the case with essays or papers written on agricultural subjects. I hope this Club will continue its useful course, by "keeping all humbug from its doors." By the word "humbug," in connection with farming, I mean all that farming which does not pay. The paper I have prepared to read to-night is only a written account of the system of breeding and feeding sheep carried on by me at Blandsfort ; and I by no means bring it before you considering it a perfect system.

Breeds of Sheep.—The different breeds of sheep found in Great Britain and Ireland are so numerous, that to discuss the merits of each separately would take too much time for one paper ; I therefore compress the numerous distinct breeds into two classes —the pure-bred and the cross-bred flocks. With regard to the former, it is necessary that some of each distinct breed should be kept pure for the purpose of crossing ; for it is by judicious crossing that the supply of sheep is to be produced to meet the increasing demand for mutton. The devastation now going on amongst the black cattle of England and Scotland by the cattle plague must increase the demand for sheep stock ; but, independent of the loss of cattle, sheep always were, and will be, the most profitable stock of the farm. Mutton is always worth more per pound than beef, and when we clip our flocks at May the wool pays for most of their year's keep, and the stock is still on the ground. A pure-bred flock for ram-breeding purposes must be kept at greater expense and requires more judgment to carry it out successfully than the breeding of cross-bred sheep for the butcher, and should only be attempted by those who have both means and knowledge to do it right, as nothing is so injurious to the flocks of the country as filling the markets with cross-bred sires, or sheep that are bred upon wrong principles. It is an acknowledged fact in breeding that like begets like, but this only holds good with regard to pure-bred stocks. I have seen very good-looking and well-shaped half-bred rams, but when these rams were put to ewes there was not 10 per cent. of their lambs like themselves, but were a mixture of all kinds. As an instance of this, some of the best hill-breeders in Scotland got an idea that they could keep their half-bred stock (bred betwixt the border Leicester ram and the Cheviot ewe) up to the same type by putting the half-bred ram to the half-bred ewe ; and so sure were they of the success of the plan that I saw, some five years since, half-bred rams selling at the Kelso ram sale as high as 10*l.* each. But they soon found that this was working on a wrong principle, the produce being inferior to the half-bred sire and dam, and they had again to resort to the use of the pure-bred sire. Hence the necessity of keeping some of the most useful breeds pure. But for general purposes crossing is the best, as they not only produce the most and the best mutton, being better mixed, but they produce it at less cost. In Scotland the system followed is putting the Border Leicester ram to the Cheviot and Black-faced ewe on the hill-pastures, the produce being sold to the tillage farmers to fatten-off on Turnips at one year old. The half-bred Cheviot ewe is put again to the pure-bred Leicester ram, produces what is called then the three-parts-bred, and no more useful or profitable sheep than this cross is to be found ; but that is far enough to go with the cross. The half-bred from the blackfaced ewe does not improve anything by a second cross, and is seldom tried. The hill pastures of Scotland have been so much improved of late that the half-bred Cheviot ewe is now kept where formerly there was nothing but the blackfaced sheep kept. It is for this hill crossing that there is such demand for the pure-bred Leicester at the Great Kelso Ram Sale. It is to be regretted that the mountains of Ireland are not improved, and made capable of producing a greater number of sheep stock in the country. The class of ewes found in Ireland are of a very useful kind for crossing, to produce plenty of mutton, and therefore breeders in this country don't require to go to any place to get a stock of ewes to commence on ; the only thing required is to select rams that will cross well with them. In general, the ewes here are bad sucklers, and hard to feed. Being much crossed of late years with large soft sheep from England, they are not so hardy as they were 15 years ago ; and the breeders in the west of Ireland know this to be the case, from what they saw, to their great loss, three years since. I have heard several of the large breeders say that any sheep that were got by these sheep were the first to take the rot. Sheep adapted to the dry climate in England cannot stand the soaking wet weather we have here ; sometimes, for weeks together, the wool is never dry on their backs. But, notwithstanding all these drawbacks, I consider there is as much money to be made out of the Irish ewe by skilful crossing as can be made from any other sheep. The requisite qualities required in a ram to improve these sheep and produce a profitable feeding stock are—early maturity, robust constitution, and covered with moderately close wool, to turn the constant rains of winter.

Management of the Flocks.—Having pointed out the rams that should be provided to cross with, I will proceed with the management of the flock. The time most breeders put the ewes and rams together is about the 1st of October ; some put them early in September. Where the farm is dry, well-sheltered, and situated in a good climate, such early lambs may do well, but on most farms it is better to defer it to the 1st of October, and even to the middle of the month. Lambs yeaned in February require well-sheltered fields and plenty of nourishing food provided for them, or they will get stunted, and never afterwards gain strength and constitution, no matter how well kept they may be ; they may live and grow somewhat through the summer, but unless great care is taken of them through the winter many of them will drop off, as they will not have constitutions to stand the change of food ; many of them will not take to eating Turnips till so weak that they cannot stand them. This is often the reason of so many deaths among lambs put on Turnips, when it is not the Turnips that are at fault, but the state in which the lambs are brought to the Turnip brake.

The most important point of sheep-breeding is the selection of the ewes to the various rams provided for them ; and the careless manner in which they are matched is visible in looking over the various flocks brought out to the fairs. The great aim of a breeder should be to produce his flock with certain qualities that he considers suitable to the climate and country in which his farm is situated. This can only be done by a careful matching of the rams and ewes—by putting a ewe that is deficient in some points to a ram that is good on those very points of which there is a want in the ewe. One of the first things that a breeder should aim at in his flock should be to procure a family likeness throughout the whole flock. How seldom do we find this likeness in flocks when the ewes and rams are put together by random, as it were. To select 300 ewes to put to five different rams is a day's work for any breeder. The first thing to be done is to take the rams, put a different mark on each, then examine their different points thoroughly—not by a mere look of the eye, as judging a sheep by the eye, except when newly clipped, is like buying a book by the look of the cover. Catch hold of them ; stick your fingers into them ; stamp on your mind the good and bad points of each, as no breeder need expect to get rams that are perfection, as the judge will always find some faults even in his own favourite. After having gone over each, and thoroughly

fixed the good and bad points of each on the mind, then catch each ewe separately, handle her minutely in every point as to her wool, quality, bone, constitution, &c.; then put her to the tup that is best in the points of which she is deficient, putting the same mark on her as on the ram chosen for her. It must not be done hurriedly, as on the proper selection of the ewe depends the future type of the flock, and no part of the management of the sheep flock tries the skill and judgment of the flockmaster so much as this. A wrong step taken at this point may cast a slur on the flock for years. I often observe where there is a certain number of ewes and rams to be used, that an equal number of ewes is put to each ram. That I could never do, as I sometimes will have to put near 100 ewes to one ram, and perhaps could not get 20 ewes to answer another ram; and sometimes I will have some ewes that neither of the rams would cross well, when I would try and procure a suitable ram for them or use a ram lamb that answered them. Perhaps some will say this is too particular, but the result will be a flock of well-matched lambs. I have several times seen a flock of rams together so like each other, that I have heard gentlemen say you would think one ewe had bred them all. After the proper selection has been made, then the skill of the shepherd is required to see that each ram is working. Sometimes a ram will jump on the ewes and not serve them, and continue to do this throughout the season and never serve one of them, and this is a great disappointment to the breeder, if not detected in time; but a shepherd that understands his business will at once detect a ram of this kind, as the ewe will stick to him much longer than if she had been served. For the first fortnight the ram should be marked blue, the second fortnight red, and then black. By this a ewe will be seen if she is running on the ram by the red on the blue, or the black on the red. When any of them comes round again and served a second time she should be changed to another ram, as a ewe seldom holds to the same ram if she comes round again after a second service. After the ewes are all gone over, a ram lamb should be run among them to stint any that may come round after the other rams; by this there will seldom be any barren ewes, though some of them may be late; any lamb that is dropped before the 20th of April is soon enough, and will often beat the March lambs. The ewes should be kept on fresh Grass or Clover foggage for a short time before being put to the ram and when with him, to make them come in regular, and not cause a long straggled lambing season. Some Rape and white Turnips are valuable at this season to make them twin well. About the 1st of October the sheep should be all poured or dipped, to prevent scab and vermin. I prefer making my own mixture for this purpose to using the ready made dips, which I consider dry the wool too much, and the yolk of the wool being destroyed, the constitution is also weakened, and the fleece does not turn the rain so well. The mixture I use is tobacco water, soft soap, sulphur, and castor oil, well mixed together. With a pint of this to each sheep I put a wine-glassful of spirits of tar. I would use Long's wash in preference to any, if it was not so expensive.

Winter Feeding of Ewes.—The proper feeding of ewes while in lamb is a very important matter, and often they are very badly treated. Some think anything good enough for them; others have an idea that they should be kept thin at the lambing season; but it cannot be expected that a starved dam can bring forth or bear a healthy offspring. Many breeders have an objection to giving them Turnips, but I consider that a certain quantity of Turnips or Cabbage are necessary: it is the careless way in which they are often given that does the harm, giving none at one time and too much at another time. I generally give (considering the Grass to be rough) about one good cartload of Cabbage to every 200 sheep daily from 1st November to 1st January; from that till lambing time, about a load to every 100; they should also have some fresh Oaten straw or hay to pick at; of the former they will eat a great deal if taught to it on the Turnip ground when they were lambs. Swede Turnips should never be used for them if Aberdeens or Cabbage can be had. In my experience I have never found sheep to be injured by Turnips when in lamb. About the 1st of February they should get ½ lb. of Oats or cake daily, and it should be kept to them for some time after lambing. This will keep the ewes in strong condition, also the fleece firmer on, and improve its bulk, and the lambs will come stronger and hardier, care being taken to provide plenty of troughs to prevent any crushing when getting the grain; the troughs should be low, or a middle rail on them, to prevent leaping over them; the shepherd should also keep them back till all the Oats are spread, or they will jam on top of each other. These seem trifling matters, but by neglecting them many ewes are made to slip their lambs. The flock should be examined frequently, and if any of the ewes are found getting low in condition on the treatment that the flock is getting, they should be removed to the brake with the ewe hoggs, or put in some place by themselves, being well marked, so as to be culled out the next season, as they might improve through the summer, and be kept on for breeding again, at the risk of producing a delicacy of constitution amongst the flock.

(To be Continued.)

Home Correspondence.

Wet Seasons, washed Farmyards, and dear Straw.—Said a neighbour to me, "How very dear straw is." "Yes," I replied, "how can it be otherwise when waggon load after waggon load is carted into the open farmyard in the vain hope of making a dry bed for the stock. Besides, the great rainfall of August spoiled or injured much of the straw in sheaf." It is certainly a melancholy reflection that over the extensive area of farmyards in the United Kingdom the soluble and therefore most valuable portions of the manure are being washed down the brooks, and thus lost to the British farmer. Not so the sheep-fold, for the earth has the power to abstract and retain the valuable portions of the manure. Surely, covered farm-yards are a great practical economy, not only as regards the straw and manure, but especially as relates to the comfort and well-doing of the animal. Those farmers who could make no manure because there was little rain, will have it now to their heart's content. Let it not be forgotten that covered yards render dung heaps and turnings over unnecessary. *J. J. Mechi.*

Gas Water.—I have generally used gas water by spreading over the dung clamp without mixing any ingredient therewith. Permit me to ask and oblige me by saying if the use of sulphuric acid is necessary when thus applied. *W. Newman, Market Gardener, Burnham, Essex.*

Increase of Milk in Cows.—By following Mr. Horsfall's directions in his article in the Royal Agricultural Journal—steaming chaff, that is chaff proper, with cut hay, Bean, Barley, Oat, and Wheat-straw, with the addition of about 3 lb. of Rape-cake per cow and a little malt dust, the milk has increased beyond all expectation. At a time when milk is so valuable, the hint may be worth giving. *J. C. C., February 27.*

Mangels in Essex.—Farmers hardly know what to do with the immense crop of Mangel in Essex—being afraid and indeed unable at present to get lean flock cattle. I hear of its being offered at from 5*s.* to 7*s.* per ton, the usual price being 14*s.* to 16*s.* *J. J. M.*

Societies.

ROYAL AGRICULTURAL OF ENGLAND.

MONTHLY COUNCIL: *Wednesday, March 7.*—Present, Lord Tredegar, President, in the chair; the Earl of Shrewsbury, the Earl of Powis, Lord Chesham, Lord Walsingham, Major-General the Hon. A. N. Hood, the Hon. A. H. Vernon, Sir Massey Lopes, Bart., M.P.; Mr. Acland, Mr. Barthropp, Mr. Bowley, Mr. Cantrell, Mr. Clayden, Mr. Dent, M.P.; Mr. Druce, Mr. Brandreth Gibbs, Mr. Holland, M.P.; Mr. Hutton, Colonel Kingscote, M.P.; Mr. Lawes, Mr. Randell, Mr. Rigden, Mr. R. Smith, Mr. Thompson, Mr. Torr, Mr. Jacob Wilson, Mr. Wallis, Mr. Frere, and Dr. Voelcker.

The following new Members were elected:—

Adkins, Henry, Edgbaston, Birmingham
Allen, George, the Manor Farm, Old Windsor
Attenborough, Richard, Whitley Grove, Reading
Bolitho, Richard Foster, Ponsandunn, Penzance
Boulter, Thomas, Shenstone House, Stone, Kidderminster
Burt, Henry Charles, Witchampton Paper Mills, Wimborne
Chetwynd, The Hon. Charles Cornwallis, Worthing
Cragie, P. G., Brawith Hall, by Thirsk
Dicken, Thomas, jun., Colton Hall, Rugeley
Evans, W. Herbert, Forde Abbey, Chard
Fretwell, Charles Henry, Arrasdale, Lawrie Park, Sydenham
Fussell, Rev. John T. Richardson, Ansdell Castle, Tenby
Godard, R. H., Tibberton, Droitwich
Hanbury, Barnard B., Riversdale House, Grantchester, Cambridge
Highfield, George, Blencogo House, Wigton
Houlder, Edwin, Fernwood, Sutton, Surrey
Kingston, Samuel, Spalding
Murton, Thomas, Kenninghall, Thetford
Neville, John, jun., Mathou Lodge Farm, Great Malvern
Reek, Edward, Horse and Dale Farm, Nuttall, Nottingham
Ridley, Thomas, Park End, Hexham
Skrine, Henry Duncan, Warleigh Manor, near Bath
Snowball, Francis John, Seaton Burn House, Cramlington, Northumberland
Treyte, Charles A. W., Huntsham Court, Bampton, Oxon
Voss, William James, West Buckinside, Corfe Castle
Washbrough, William Dowell, Stockham, Wantage
Witts, F. R. V., Upper Slaughter, Moreton-in-Marsh, Gloucester

FINANCES.—Major-General the Hon. A. N. Hood, Chairman of the Committee, presented the Report, from which it appeared that the Secretary's receipts during the past month had been examined by the Committee, and by Messrs. Quilter, Ball, & Co., the Society's accountants, and were found correct. The balance in the hands of the bankers on February 28 was 1521*l.* 1*s.* 8*d.*

JOURNAL.—Mr. Thompson, M.P., Chairman, reported the following arrangements for discussions at the Weekly Council Meetings:—Wednesday, March 21. "To consider the present aspect of the Cattle Plague, and the practical working of the Cattle Diseases Prevention Act, 1866." Wednesday, April 18. "On the conditions to be observed in carrying out Agricultural Experiments in the Field," to be opened by Dr. Voelcker.

CHEMICAL.—Mr. Dent, M.P., reported that Professor Voelcker had called the attention of the Committee to the fact that sulphurous acid is probably the simplest and readiest disinfectant that can be used in purifying the sheds where cattle plague has existed. He recommends that 1 lb. of sulphur should be spread upon a shovelfull of hot coals for any shed which would contain from 18 to 20 animals. The *empty* shed should be closed as securely as possible, and the sulphur having been spread upon the hot coals, the empty building may be left closed up for from 12 to 24 hours.

The use of diluted carbolic acid, in the Professor's opinion, will tend rather to preserve than to destroy organic substances.

He also strongly advises the immediate mixture of manure in which any infection may be supposed to exist, with earth; if it cannot be immediately ploughed into the soil, he advises compost heaps to be made of alternate layers of earth and manure, and the heap finally covered up with a thick coating of soil or quick lime.

The Professor called the attention of the Committee to the value of the Seed of the Lupine, grown on sandy soils, as a food for cattle. The flavour is bitter, but they are a good tonic, and act actively in cases of diarrhœa in sheep. The annexed is the analysis:—

Moisture	12.68
Oil	5.66
*Albuminous compounds (flesh-forming matters)	29.69
Gum, mucilage, bitter principle, and digestible fibre	36.49
Woody fibre (cellulose)	12.98
Mineral matters (ash)	2.50
	100.00

[* Containing nitrogen, 4.75.]

The Professor contributed a paper on "The Absorbing Properties of Salts of Soda, and the Functions of Salt in Agriculture." In the forthcoming Journal there will be papers on "The Composition of Mangels," and on "Disinfectants, with some Experiments on Carbolic Acid" (these experiments on carbolic acid will be carried further).

The Committee recommend that the Council grant of 200*l.* for 1865-6 be now paid to the Chemical Professor for the above-mentioned papers, and for the experiments now being carried on.

EDUCATION.—Mr. Holland, M.P., Chairman of the Committee, stated their recommendation that a formal letter be addressed to the delegates of the Oxford Local Examinations, requesting them to permit candidates for special prizes offered by the Society to be examined at the same time and place as the candidates for the University certificates; also that they will permit the papers set for these prizes by examiners (selected by the Society) to be printed and circulated with their other papers; and further, with a view to meet the additional expense incurred, they will accept a reduced fee, not exceeding half the usual fee required by the University. This report was adopted.

The results of the examination having been received from the Cambridge authorities, the Committee met on February the 21st, and, after a long discussion on the merits of the different candidates, agreed on a list of prizes, which was submitted to the adjourned Council held that same day, the Duke of Marlborough in the Chair, and was at once approved and adopted.

The names of the several candidates had not been put before the Committee when they drew up their list and made their Report. That list in a somewhat modified form, in consequence of the insertion of the names of the candidates, is as follows:—

LIST I.—*Prizes to Candidates who obtain Certificates, regard being had to their place in the General Class List.*

SENIORS.

Three in Cambridge, First Class.—J. Lake, Alfred Ho. Sc., Bow, Middlesex, 5*l.*; A. Pollard, Liverpool Institute, 5*l.*; A. Shuker, Brewood Gr. Sc., near Stafford, 5*l.*

Five in Cambridge, Second Class.—J. B. Allanson, Mansion Ho. Sc., Exeter, 2*l.*; T. W. Browne, Brewood Gr. Sc., 2*l.*; S. Churchward, Prim. Methodist Coll., York, 2*l.*; C. J. Langley, Abington Ho. Sc., Northampton, 2*l.*; W. Waterhouse, Gr. Sc., Lancaster, 2*l.*

JUNIORS.

One in Cambridge, First Class.—†E. A. Shafer, Clewer Ho. Sc., Windsor, 10*l.*

Six in Cambridge, Second Class.—R. J. Leeson, Bracondall, Norwich, 5*l.*; G. H. Stuart, Gr. Sc., March, Cambridge, 5*l.*; J. Adams, Mansion Ho. Sc., Exeter, 1*l.* 10*s.*; E. Ashton, Gr. Sc., Moulton, 1*l.* 10*s.*; E. King, Abington Ho. Sc., Northampton, 1*l.* 10*s.*; A. J. Whitton, Abington Ho. Sc., Northampton, 1*l.*

LIST II.—*Prizes given to Candidates who, having passed the Preliminary Examination, are distinguished in any of the Subjects mentioned in the foregoing Prize List.*

SENIORS.

*S. Churchward, Prim. Methodist Coll., York, for Pure Mathematics, 4*l.*
C. J. Langley, Abington Ho. School, for Pure Mathematics, 4*l.*
S. Churchward, for Mixed Mathematics, 4*l.*
*C. J. Langley, for Mixed Mathematics, 4*l.*
F. B. Kingdon, R. A. Coll., Cirencester, for Chemistry, 4*l.*
*A. Pollard, Liverpool Institute, for Chemistry, 4*l.*
F. B. Kingdon, for Botany, 3*l.*
H. T. Bovey, Montvidere Ho. Sc., Torquay, for Pure Mathematics, 1*l.*
T. Pitt, Montvidere Ho. Sc., Torquay, for Pure Mathematics, 1*l.*
A. Pollard, Liverpool Institute, for Pure Mathematics, 1*l.*

JUNIORS.

*G. H. Stuart, Gr. Sc., March, for Pure Mathematics, 4*l.*
*T. Hill, Gr. Sc., Wolverhampton, for Mechanics, 4*l.*
*G. A. Schafer, Clewer Ho. School, for Botany, 4*l.*

† Highly distinguished.
* Those candidates to whose names the asterisk is prefixed, appear in the special Cambridge list of distinguished candidates.

B. Conker, Mansion Ho. Sc., Exeter, for Pure Mathematics, 1*l*.
W. Cotton, Cowley Sc., near Oxford, for Pure Mathematics, 1*l*
T. Hill, Gr. Sc., Wolverhampton, for Pure Mathematics, 1*l*.
E. A. Schafer, Clewer Ho. Sc., Windsor, for Pure Mathematics, 1*l*.
W. H. Warren, Scholastic Institution, Plymouth, for Pure Mathematics, 1*l*.
W. S. Waymouth, Montvidere Ho. Sc., for Pure Mathematics 1.
A. J. Whitton, Abington Ho. Sc., for Pure Mathematics, 1*l*.

LIST III.

Mechanics applied to Agriculture.—A. J. Hill, R. Agr. Coll., Cirencester, 5*l*.; J. S. Krauss, ditto, 3*l*.; J. Ruffle, ditto, 1*l*.; J. S. Waldon, Devon County School, 1*l*.

Chemistry applied to Agriculture.—J. S. Krauss, R. Agr. Coll., Cirencester, 5*l*.; H. Rivington, ditto, 3*l*.; J. Ruffle, ditto, 2*l*.; J. A. B. Finza, ditto, 1*l*.; H. M. Taylor, ditto, 1*l*.

In all these lists, where prizes of the same value are given to more than one candidate for the same subject, the candidates' names are arranged in alphabetical order, and where the value of a prize does not exceed 2*l*., the prize is to be given in books.

[We are forced to postpone till next week the remainder of this report, which concludes as follows:]

On the whole, the examination may be reported to have been a successful one, both as regards the number of candidates, and the way in which the candidates have acquitted themselves.

SHOWYARD CONTRACT.—Mr. Randell, Chairman of the Committee, stated that the Secretary had been directed to forward the draft contract, as prepared by Mr. Hunt, to Mr. Pollard, and if approved by him, the Secretary to enter into such contract on behalf of the Society for the year 1867.

The adjournment of the Council, which has taken place in the last month, will be continued every Wednesday at 11 A.M., especially to consider the subject of the Cattle Plague.

Farmers' Clubs.

LONDON: *March 5.—The Cattle Plague and the Government Measures.*—Mr. CORBET, the Secretary of the Club, read the following elaborate paper on this subject:—It may be as well to say, in the outset, that this Club has not yet obtained the privilege of a charter—a fact which can scarcely fail to be a source of considerable satisfaction to the members. Were it otherwise—had we arrived at that dignity, the question for consideration this evening could hardly have been placed upon the card in the way in which it now stands; for, so far as I can interpret its uses for agricultural purposes, the chief aim of a charter is to stay the farmers from striking home. I had, only the other day, the honour of attending a meeting called by an influential society, to discuss the serious difficulty against which the country is contending, and where the gentleman who opened the proceedings stated that the charter would not permit of his referring to anything before Parliament—an admonition that sounded exceedingly "genteel," and at the same time egregiously absurd. The idea of a number of influential agriculturists gathering together to talk over the cattle plague, without, however, venturing to touch upon the means employed to subdue it, is so sorry a joke that I do not believe after-ages will ever credit its occurrence. Fortunately, the Farmers' Club is not compelled to take such a course. On the contrary, the direct and sole business of this meeting will be to refer to what is passing in Parliament—to consider what the Government has done; what it should have done, and when it should have done this; as, further, what it has still to do. In taking up these several points, it will be only fair to remember the condition we were in when the plague made its appearance here last summer. No one seemed to know anything about it, as people only come gradually to realise the terrible effects of such visitations. By the end of July—just about a month after the attention of the veterinary profession had been called to the outbreak—the Home Office was enabled to issue nothing more definite than a caution, commencing in this wise: "Whereas a contagious or infectious disorder, of which the nature is at present uncertain, has lately appeared"—and it was only by degrees, as the disease spread, and the cattle fell before it, that the profession and the public came almost simultaneously to see that the plague-spot was upon us. We have since had the symptoms and the consequences elaborately set forth; but these, I am inclined to think, were derived mainly from cases as they occurred, and that any previous study of the malady was, in this country at any rate, very slight and exceptional.

THE ROYAL COMMISSION.

As matters continued to get worse, and such assistance as the Government could command proved of no avail whatever, it was determined, by the beginning of October, to call evidence before a Royal Commission, appointed to inquire into the origin and nature of the cattle plague.

Nobody can quarrel with the constitution of that Commission nor the manner in which the duties adapted to it were performed. The best evidence obtainable was taken, and persons engaged in any pursuit of all touching upon the question were, in turn, under examination. Medical men, veterinary surgeons, practical farmers, salesmen, cattle dealers, butchers, cattle inspectors, and railway traffic managers were all invited to give their opinions and the results of their experience. After sitting almost day after day for some weeks, the Commissioners had, by the end of the same month, October, sent in their Report—a very elaborate one, but the point of which is embodied in the following recommendation: "For the reasons stated above, we feel ourselves compelled to recommend to your Majesty that such measures shall be taken as may be requisite to invest, with as little delay as possible, some high officer of your Majesty's Government with the power of suspending, for a limited time, the movement of cattle from one place in Great Britain to another, for extending or shortening such period and for renewing the prohibition as often as circumstances shall render necessary." The grave question that arises here is—Why was this recommendation not at once carried out? The answer of the Government was, or would have been, that the country, even if its execution were practicable, was not ripe for the enforcement of such a measure; and I cannot but think that such a reason was then well warranted. Even the partial or local orders at that time occasionally adopted were often held to be intolerable, and it has happened that I myself received a number of letters from farmers and others, complaining of the restrictions which they were subjected, or the penalties for which they might become liable. "The liberty of the subject was already in danger"—"the rights of an Englishman were being entrenched upon," and so forth. But the Government had still greater cause for hesitating over the adoption of this recommendation. The Commissioners themselves were not unanimous upon the point, and four of them appended a protest, or, as they termed it, a Separate Report, to this effect: "We are unable to join the other members of the Commission in recommending the total stoppage of all movement of cattle in Great Britain. It is true that, if such a measure were carried out, it would be more effectual than any other in extirpating the disease; but we do not believe it to be practicable. It would involve an interference with the course of trade at variance with our national habits; and it would demand sacrifices from large numbers of people who are removed from all connection with the cattle trade, and therefore not see the necessity for so stringent a measure. The sudden transformation of the enormous cattle trade by which the large towns are supplied, into a dead-meat trade, would involve difficulties and dangers of the most formidable kind. The forcible, and, to many persons, unintelligible interference with a considerable proportion of the meat consumed in the large towns, would also be seriously interfered with. The price of meat would in consequence rise, materially and suddenly. These difficulties would lead to the evasion of the prohibition; and if it is largely evaded, as we think probable, it will be worse than useless. We prefer, therefore, the measures of a less stringent character which are recommended as an alternative in the above report. They demand no greater sacrifice than will readily be made to arrest the progress of so serious an evil, and therefore we believe that they are likely to be thoroughly carried out." If anything would induce a Government to pause, it would be so material a qualification as we have here, over-riding, as it were, the original Report. "We do not believe such measures to be practicable"—"to interfere with the course of trade"—"demand sacrifices from large numbers of people"—"involve difficulties and dangers of the most formidable kind." Surely a Government whose business it is to legislate for a people, and not for a class, were justified in deliberating over such a caution as this! The only question, indeed, would be the position and precedents of the four gentlemen whose signatures the paper bore. Possibly political economists and ideal philosophers with the most expanded views on the wealth of nations and the wants of the people. By no manner of means. Two of the most practical men in the country interpreted the terms of the whole body of Commissioners in the second separate Report. One of these was Lord Spencer, who as chairman conducted the inquiry so ably, and a name long familiar to and respected by agriculturists, further pointed as his Lordship's authority was by his filling at that very time the office of President to the Smithfield Club. Her other was Mr. Sewell Read. Was Mr. Sewell Read a gentleman whose judgment and abilities are best spoken to in the fact that his brother tenant-farmers have returned him to Parliament as one of the representatives of one of the best cultivated counties in the kingdom—Norfolk, to wit? Or was he one of Her Majesty's Ministers in November last, I confess that I should have been very loth to act upon the recommendation of even a majority over what may be considered to some extent an agricultural question when it was opposed by Lord Spencer and Mr. Sewell Read engaged on the other side. Nothing more, then, came from the labours of the Commission than the incessant issue of Orders on Orders, the enforcement of which was purely optional; while these were continued until magistrates and their clerks farmers and graziers must have got sick of seeing them. Orders without end, and amendments thereto, could have been of John Doe and Richard Roe. One hardly overpraised the late Mr. Cobbett when, without calling in question his principles, he said of his early days:

> "When words of learned length and thund'ring sound
> Amazed the gazing rustics ranged around;
> And still the wonder grew, that one small head
> Could carry all he knew."

That Government could not carry all the knew."

The majority, however, of the Commissioners were quickly destined to receive assistance from the same quarter where they had encountered such formidable opposition—that is from the practical or agricultural element.

THE ACTION OF THE FARMERS' CLUB.

The result of our meeting here in November, when Mr. Charles Howard so kindly and at so short a notice consented to change the subject of his discourse, was the preparation and presentation of a Memorial from the Club, at the Privy Council Office—not only the first interview on the subject which took place with the Government, but one that has given the tone to the prayers of all subsequent deputations.

It is satisfactory to say, further, that Mr. Sewell Read not merely lent us his valuable aid in drawing up our Memorial, but that also as an honourable member of the House of Commons he introduced it to Lord Spencer, and that it was that paper which led to the stoppage of all traffic in cattle, saving only in the case of fat stock as sent to market, to be there immediately branded and slaughtered; while foreign cattle were to be killed at the port of disembarkation literally on the quay on which they were landed. Cattle markets, dishonest, cattle kept off common during the time of prohibition, and so on. This sounds somewhat different to Mr. Read's previous dread of a dead-meat market; his belief that the stoppage of traffic would be impracticable; and his being unprepared so short a time previously to find that "the rights of Englishmen"—Pleuro-pneumonia may be permitted to pass from the farm of the seller to that of the buyer, provided that a veterinary certificate from a Justice of the Peace, acting in the district where the sale takes place, showing that there are five miles or more between the two farms, be first obtained for each animal, and the like of these. We may thus fairly conclude that Mr. Sewell Read, from the fact of his acting with us, had qualified the qualification he had signed as a Commissioner, not come round to think with the majority. Then, the Royal Agricultural Society—although it is difficult to understand how the charter could ever have been induced to sanction so terrible an infringement of its rights—followed our lead, and memorialised for the stoppage of fairs and markets—the branding and slaughter of stock where sold—the slaughter of foreign stock at the port of disembarkation—the institution of a cordon sanitaire, and the prevention of so on. The Smithfield Club at once adopted these views as their own, as the recent Conference of all counties at St. James's Hall did more than confirm the necessity for decisive measures and unity of action. The resolutions carried here went for a general prohibition against the removal of cattle, either English or foreign, by road or rail—the immediate destruction of plague-stricken animals, and the partial remuneration of their owners—with the disinfection of plague-stricken premises, market places, cattle trucks, and pens. The effect of this meeting was far more palpable than any that had previously been held, as was demonstrated indeed in the House of Lords on the very next day, when Lord Spencer, the chairman of the Commission, asked the Government "seriously to consider the proposals of so large and influential a meeting as that held on the previous day; although he had had considerable difficulty in bringing himself to see the necessity of such stringent measures; but when he saw an influential meeting, representing all the counties in England, agreeing upon the question, he was willing to waive his own opinion, and consent with the rest to the course proposed." We have thus the two leading parties to the protest against the temporary stoppage of all traffic in cattle withdrawing from any further opposition, and so defying the Government in the course which it should adopt. Its own Commissioners, as the seriousness of the case increased, said "Stop the traffic;" the agriculturists of the country without exception, for we cannot take Scotland in here, said "Stop the traffic;" and the veterinarians, as I will shortly show, differed from the first, said "We can do nothing—we never shall be able to do anything; use the pole-axe, and stop the traffic." Surely the Government had now something to go on—some grand, simple, straightforward Act to issue, in obedience to the wishes of the country, and the terrible prospects before the Heifers, of the country, at this juncture that the difficulties of the Administration began to develope itself. The extent or the consequences of the evil appear never to have been thoroughly realised at head-quarters; and the Ministry went on, with the help of Mr. Helps, and with the pitiful policy of carefully shifting all responsibility from themselves to the shoulders of the local authorities, to throw over which was the duty of a Government to take a lead, and to map out a line of its own, it was over this great difficulty of ensuring food for the people, and maintaining the health of the country. But, as it now appears, our rulers have from the first systematically refused to accept the position; and I readily believe that they met Parliament in February with as little definite purpose of their own, as little determined upon any means for effectually resisting the evil, as they had resolved upon when they received the Farmers' Club in November.

LEGISLATION.

It was clearly not to be a Party Question—in other words, the Party in power, who could employ the agency of the whole kingdom, who could command the most reliable returns, and obtain the best advice as to the course of action to be pursued, had no such course of action to recommend. There is a want of dignity, and, if I may so phrase it, a want of self-possession in the attitude the Government has taken over this question.

When, fairly driven into speaking, the Privy Council brought in a Bill, it—the same time suffered a number of the opposition to bring in another Bill as a rider or rather as a corrective of its own. As if the hapless magistrates, their clerks, their inspectors, and the farmers had been favoured with a direct vote from Heaven, or Helps, and his colleagues, without having to study two enormously complicated measures instead of one plain, bold, and statesmanlike act of legislation. The Government Bill has, to be sure, been so lopped and topped that the last trunk scarcely remains, and even its own father would now not recognise it—although I doubt if such a child would have any father who could not seek safe lee for it. 'Tis the rather an unfortunate foundling dropped with a runaway knock at the door of a large house in Westminster, with a bit of paper pinned on its very long clothes, praying the finder to have mercy on the orphan, and get it christened kindly. But of these measures with their "Provisos" and "Ifs" of such outcasts—is cuffed and abused by everybody who chooses, with no one to take its part, unless some whimsical old bachelor adopts it for a day or two, and disowns it again by the end of the week. Mr. Bright, Mr. Hunt, and Mr. Lowe are welcome in turn to do what they please with it. If the Government showing no front until it comes to a vital principle, when they suffer a thorough defeat. I refer of course to Mr. Hunt's amendment, prohibiting for a period the movement of all cattle by railway—a condition that had the Ministry read the signs of the times as they should have done, they would themselves have been the first to propose, continually advised as they have been of late in the necessity for such an enactment. This important feature of the case having been so closely considered on every occasion upon which the question has been brought forward, and being now upon its trial, I shall not say another upon it here than to express my fears that the experiment has only been made a little too late in the day. A month or two since, the stoppage of traffic might reasonably have been attempted without any association with those rigorous measures now running in couples with the order just sanctioned.

COMPENSATION.

And this brings me to the matter of compensation, of which it may be remembered no mention was made in our memorial: and I am rather glad it was not, for I neither like the word nor the notion.

I should have preferred to see the sufferers recompensed by some system of mutual insurance, which no doubt they would still have endeavoured to maintain had their losses been confined to cattle that had actually died from the disease. But we have got far beyond this, and the case becomes materially altered when the Government orders a man's premises and order the slaughter of every animal he thinks is affected, or that he thinks may become affected. I confess that I regard the two companion clauses, conveying such powers, with some alarm, not only as regards the amount of compensation to be assessed, for as the rule by which the pole-axe principle is to be carried out. Who are the local authorities to whom such powers are to be deputed? The veterinary surgeons, of course. And are these gentlemen as a rule to be trusted? I very much doubt it. There are unquestionably here able and honourable instances of veterinarians who have pronounced animals to have the disease when they have not had it, and who, on the other hand, have passed beasts as sound upon which the worst symptoms were almost immediately developed. As I have already stated, one of the chiefs of the Veterinary College had entered nearly a month's opportunity for studying the complaint, the Government had so little confidence in such authority, or the College men themselves knew so little about it, as to allow of the disease being spoken of in the *Gazette* as "one of which the nature is at present uncertain." Still, that was some time since, and the point is rather. Do we know much more for certain even now? A very modern instance tends to a contrary conclusion. It was only during last month that Mr. George Lopper, V.S., of Aylesbury, declared that he had adopted Mr. Worms' treatment with signal success, only losing one animal out of 13 attacked in Baron N. Rothschild's herd;

and that he had been equally fortunate in applying the same remedy on other farms. This statement naturally created some sensation, and Professor Simonds, with great alarm hastened down to Mentmore to "judge for himself, as on his return he wrote officially in this wise:—"The only cases were reported to me as having been cured, and the others as going on most satisfactorily. It required but little knowledge of the diseases of cattle to determine that in most of ten instances the cattle were the subjects of any serious disease; and, after giving to each of them a careful examination, I failed to detect the slightest symptom of cattle plague in any one of them." Now who, in the face of such a report as this, can dare to carry out the policy recommended? Had the cattle not been killed within, say, two or three weeks since in operation, undoubtedly 10 valuable cows would have been slaughtered, that, according to Professor Simonds, never had exhibited "the slightest symptoms of cattle plague." Is not this enough to create such confusion and alarm in the country? Let us take a little further into the case, and into the position and antecedents of Mr. Lepper. Some hedge-side farrier, perhaps, who had been just smuggled through the College, and who has little knowledge or experience I can correct such a supposition, on no remedy learned, evident. Mr. George Lepper has a very extensive practice in Buckinghamshire, which he works in co-operation with his father, Mr. Henry Lepper, who attended my father's stud—brood mares, young things, and horses in work—for many years, and who, I have no hesitation in saying, is one of the best and soundest men in his profession. I shall not, however, be so harsh as to say that we may look for this, for Mr. Lepper is still, as he long has been, one of the Examiners at the Veterinary College, and he and his son are, of course, joint Inspectors for the Aylesbury district. The latter, a man now of mature age, must then at least have been well schooled, and, if we are to judge from the report quoted, he does not know the real symptoms of cattle plague, how are we to trust the hundreds of others who have authority to stamp out our stock as well as the diseased; for it would really seem they are quite as likely to do one as the other. Compensation can never meet such wholesale slaughter as may be the consequence, and I question very seriously if the country will long submit to so dangerous or so ruinous a power as this may become in unskilful hands. Forewarned by previous divisions, Sir George Grey readily withdrew his proposition for a Cattle Rate, and he acted to the country's benefit; but even that, which is right enough, as food supervision would best promise to check claims made through utter carelessness, absolute panic, or inadequate examination. Whether half the value (limited) of a diseased animal or three-fourths the value (limited) of a suspected one will be sufficient to counteract effect the object I will not say, though in the former case I think it is. But whether or not it is very certain that it will be long before the agricultural interest hears the last of this Compensation Act, which is pronounced to be altogether without precedent? When the agricultural operatives in Lancashire, there was a cotton famine in Lancashire, on a cry for Calcutta, did the sufferers come to the country for a rate of recompense? Perhaps not. But suppose, beyond his own actual losses from accidental causes, a cotton-spinner had been robbed or plundered of his stock of cotton, or had to destroy, for the good of his country, would there have been no claims for compensation in such cases? I rather think there would, and with all the eloquence of Mr. Bright to back them. However, it is curious to notice how one matter will lead on to another, and if these cattle plague cases multiply, it will at any rate give us another Reform Bill. The *Economist*, a journal of character, and whose former editor did much in other matters Government, says seriously, "The agricultural interest, on both sides of the House, is so strong, and so closely united on objects of this nature, that the House of Commons which is not even a decently impartial tribunal in matters closely affecting it. So many of the smaller boroughs are really commanded by the landed proprietors of the neighbourhood, and Liberal county members go so completely with the county gentlemen, that the only question on which it is even barely possible to stir up enough dust to persuade them that they are not abandoning their principles, that the plainest economical sense and wisdom has not a chance." And again: "A very large proportion of the House is connected closely with the landed interest, and a large proportion—a large majority—is under what we may call the social influence of the landed gentry." And so on, until we arrive at the gratifying conclusion that the agricultural interest can do anything it likes, if it so chooses, and that we need, according to the working of the old-fashioned economics, to check the prejudices of the landed and capitalist classes, that we need the landed and capitalist classes to check the prejudices of the working classes." I only hope the landed classes will not forget to use their power when two or three other questions may come on, as, indeed, another page—the *Spectator*—gives us the broad conclusion as to the "commanding position" of the country gentlemen in the House, openly declares that, "if the squires were half as eager for the repeal of the malt tax as they were for the preservation of their rents, that impost would scarcely last another session. With such a leader as Mr. Lowe in the House, we may repeal that tax, but place its equivalent on cotton goods, abolish the succession duty upon land, or, in the national interest, decree a minimum price for Wheat." It is only to be regretted that we did not know our own power before this, or that our rulers had not been brought to feel it more practically from Reform Bill, with the great object of swamping the overwhelming influence of the Country Party, was on the eve of being launched. The pole axe, with the consequent compensation is its appendix, has been advocated from the first by the veterinary profession, and, as I must repeat, the serious question is how far this body is calculated to carry out its own remedy.

THE VETERINARY PROFESSION.

I cannot, indeed, help thinking that in what the Government has still to do over the cattle plague will be the organisation of an inquiry into the present state of veterinary science, and how far the study of the diseases of cattle is carried.

Is the country satisfied with the obstando attitude which the profession has assumed over this matter? I think not. Are we for ever to rest content with the self-satisfied dictum of one learned gentleman, that "Nothing was of no use?" I hope not. Are we, as we are actually directed, never to try the use of a supposed remedy, lest we spread the disease amongst our stock—never, in fact, to shut the stable door until the steed is stolen? What, in plain truth, is the position of the veterinarian at this moment, but one directly opposed, not merely to any remedy, but to all alleviative treatment or precautionary measures, for immediately that cases are found, the veterinarian's vocation is gone. I have endeavoured to avoid, as far as possible, anything like the indulgence in personalities, and I accordingly quote the following criticism on Mr. Worms' remedy, as tested in Buckinghamshire, and to which I have already referred, to endorse on another branch of the subject:—"We may," says the writer in the *Pall Mall Gazette*, "be doing Professor Simonds injustice, but certainly his report on the results of the treatment of Baron Rothschild's cows according to Mr. Worms' system reads, so to say, *hostile*. There is the injured air about him of an orthodox practitioner when his patient—his property, as Molière said—is unwarrantably cured by an interloper. He seems to say that such cows as neglected their bounden duty to die had really been seeking for an excuse for being ill in this easy manner, and more especially by experience than that, because an illness is cured by prompt treatment, it might not with a little neglect have become incurable:—that because, for instance, a dramatic attack, at a time when cholera is about, yields to a little laudanum, sudfeidly, or even promptly, that diarrhœa was not potentially cholera and deadly? It seems to us that the essence of Mr. Worms' treatment is that it be early. Just so with cholera in India. It has been called 'that strange disease which begins with death;' but this is very erroneous. Unmanageable it is, no doubt, later and even middle stages, but disease is not incurable in its first symptoms. Decidedly curable are in large proportion to seizures in the case of cholera than in that of diseases which bear a comparatively good reputation. Almost every Anglo-Indian has saved numerous lives by the prompt exhibition of some stimulant or sedative: only the cures are all of cases "taken in the bud." Asafœtida, by the way, is a favourite remedy with the natives in that country. Another point. Professor Simonds only last week published a table, showing the periodical visitations of the cattle-plague to our shores. It has come at intervals of forty, fifty, or a hundred years; but I do not think that the Professor wished to deduce any calculation from the figures, or for that matter, put forward. If the return of the plague may be reported and I hope do the veterinarians the justice to say that they have from the first consistently maintained that it was, though they have never been able to offer an atom of evidence in proof of this—if the cattle plague was imported, are we not, with our increased facilities of communication, as likely to have it again here in the course of four or five years as in forty or fifty? Or take the other and more absurd hypothesis, as it is considered, viz., that the disease springs up, not exactly spontaneously, but that it is generated by foul air, ill-drainage, overcrowding, and the results from long hunger and want of nourishment. Mr. Simonds said, himself, when under examination before the Commission: "Whenever cattle come out of the steppes to the Crimea or Bessarabia, the disease very likely breaks out on the road, and they spread it as they go along." Now, the natural facilities of communication with the steppe cattle, but it has never been known, to be spontaneous with any other cattle." And on the question being put—"Is it your opinion that the journey aggravates the disease?" he answered: "There is no doubt about it. One of the professors of the Imperial Veterinary College went very extensively, and went into the steppes themselves and Bessarabia, where he got all the information, and I quote from his book." One naturally pauses here to consider why, if the disease breaks out spontaneously in the country, it should not in another? Surely we ought to have some knowledge on such a steppe cattle, but it has never been known, to be spontaneous with any other cattle." And on the question being put—"Is it your opinion that the journey aggravates the disease?" he answered: "There is no doubt about it. One of the professors of the Imperial Veterinary College went very extensively, and went into the steppes themselves and Bessarabia, where he got all the information, and I quote from his book." One naturally pauses here to consider why, if the disease breaks out spontaneously in the country, it should not in another? Surely we ought to have some knowledge on such a something prospective. However, that is not the point to which I was coming. We will say that the plague is imported, or aggravated, or generated on the journey just as you please, and that a supply of foreign stock is necessary as food for the people.

WHAT IS TO BE DONE?

What, then, will the Government have to do—I mean when the "Ides of March" are over, and these temporary measures are exhausted?

Surely nothing less than to establish permanent slaughter-houses at the ports of disembarkation, and to kill the beasts immediately on their arrival. Why should animals so well put up as fish for London, and so entirely dependable as commodity as fish for London, or the needs of cities, if we get our Cauliflowers from Cornwall and our prime joints from Aberdeen, we may easily make a carcase trade from Hull, Harwich, Blackwall, &c., &c. We are told we will revolutionise the trade by so doing. And that I really think would be about the best thing that could happen. The luckless animal would have his miseries considerably shortened, the consumer would get his meat in a much more healthy condition, and we might in some degree stand against the tyranny of the butcher, who has done a deal to turn all sympathy from the farmers, under the idea that they shared in the extortionate charges he has been making under the cloak of the cattle plague. Why for his sake the Government might have sanctioned a day of fasting, in addition to the Fast Day for which has been put up. With this you are of course familiar; but there is another of a more practical purport, as given in the new number of the "Cornhill Magazine, and which may not have yet come to hand. The writer says: "Let the Queen's Ministers, let the Houses, ought God for what we should stand the most grievously in need of ultimately, we should have prayed Him to infuse a spirit of courage into the Queen's Ministers, so that they should not continue to believe as if the penalty for failure would be the loss of their places, instead of the loss of their place or a fall of sixpence in the funds. Let the Commissioners so that they might neither infect nor slay more than should be necessary to earn their salaries and extras, and lastly to send a spirit of patience into all men who should be required to have dealings with the above-mentioned persons, in whatever capacity. Of course, there are many subjects connected with this I might take up, but I should occupy too much of your time in so doing, and my object is rather to open the proceedings than to monopolise the evening. I have not, for instance, referred to Mr. Hunt's Bill, which is mainly a plan for the compensation of those, our contributors have refused to entertain, whilst others appear to be yet more ill-advised; as, for one, the permission to move calves. There really seems no great more city for this in the way of business, while a more important consideration is the fact that calves have been largely instrumental in spreading the disease in any other description of stock. Everybody would be naturally inclined to make some stipulation or exception to suit his own convenience, and I am inclined to think that Mr. Hunt must have been oppressed in this way by a multitude of councillors. But if we go to any such action, we must be prepared individually to suffer something to ensure this, as I have heard of the case of a gentleman who one day attended on a deputation with the object of stopping all traffic in stock, and who, when he went home on the next, was served with summons for breaking the bridge already in question by his visit. The Government must have clearly had ge a difficulties to deal with; but they do not appear to have become alive to the magnitude of the evil so soon as the outside world, which has of late continually published that it makes would abandon a system of tinkering and pottering for some good and comprehensive act of statesmanlike policy. The Cattle disease may not be a Party Question, as it certainly is not a Class Question, but it *must* be a Government Question; that is to say, if the welfare of the people be amongst the charges intrusted to our Ministers.

The contagion has spread too far already for any one to imagine that its effects will be confined to the farmers and graziers and it may be not unchallenged as those will be looking in vain for their rents, but to descend to far more essential ones, all the citizens for their sustenance. In a timely appeal to a country like this the consequences will be felt in an incalculable and keenly than on the broad plains or wild wastes of the Continent. Not merely will agriculture languish, but commerce lose its confidence, and panic stalk side by side with the plague throughout the land. At such a crisis even something like despotism may, as we have seen, have its uses. When the gentleman in classic story asked the Augur if he could cut through a whetstone, he was boldly bade do it, and so much to his astonishment, he cut through accordingly. May the Government, as much to its astonishment perhaps, find the advantage of cutting boldly at the millstone at present around its neck! I will now leave the matter in the hands of the meeting; only adding, that if in putting this before you I have not done so as thoroughly as you could have wished, I trust you will be prepared to make some allowance when I tell you that for the last two or three days I have been engaged in comparing sundry Orders in Council with sundry Bills brought in, and sundry Acts as amended therefrom. I have endeavoured to arrive at the sense of these by the study of a number of speeches as delivered night after night in her Majesty's two Houses of Parliament. I may thus unwittingly have acquired something of a forensic form of speech, which, however intelligible to the Members of Parliament for whom it may not be so readily appreciated by a more general audience.

Reviews.

The Cattle Plague, with Official Reports, &c. By John Gamgee, Principal of the Albert Veterinary College, &c. R. Hardwicke, 192, Piccadilly.

[Second Notice.]

Professor Gamgee lays great stress upon the thermometer as affording the earliest indication of the disease. In a recently published letter he says—"I would undertake to teach any intelligent farm manager, and much more easily any veterinarian, the undoubted and the earliest symptoms of rinderpest in half an hour."

The clue to which he here refers, is the increased temperature of the body, easily detected by the thermometer, which precedes by several days any other symptom of disturbed health. A cow, he says, which was inoculated with the disease on the evening of the 1st of December, indicated a rise of temperature amounting to 2° as early as the morning of the 4th. On the 5th there was a charact ristic redness of the mucous membranes, and the temperature had risen more; on the 6th small elevations appeared; and not only was the appetite good even so late as the 7th, but no signs of disease had appeared, with the exception of those mentioned. It was not till the 7th that there was any indication of diminished milk secretion, amounting even then only to two pints in twenty-four hours, as compared with the amount on the 4th. This diminution would readily have been overlooked in any dairy, or, at all events, it would not have been taken as an indication of Rinderpest. On the 8th December the temperature of this cow had risen to 107°.3 Fahr., and still the animal stood ruminating. It was then, and not before, that evidence of running from the eyes was obtained. Four days after the period at which this cow could thus have been sworn to having the Rinderpest, there might have been a difference of opinion between Professor Simonds and either Mr. Worms or Mr. Lepper, unless the indications carefully noted, thermometer in hand, had been taken in connection with the appearance of the mucous membranes.

Great weight is laid upon the importance of this indication in the work before us. And probably the most important chapter in the book is that which describes the researches of Professor Gamgee and his brother Dr. Arthur Gamgee on this subject. The chief disparagement of this method of recognising the disease no doubt lies in the fact that it is rather a method of detecting only *a* disease. Many other disturbances of health are preceded or accompanied in their earliest stages by an exaltation of temperature. And as an indiscriminate dealing with disease of any kind, under the impression that it is necessarily rinderpest, is one great portion of the Plague that is upon us, we fear that entire faith in the thermometric test will not avail us much. Nevertheless, when the disease is all around us, and when there is great risk and probability of infection, the earliest indication of the herd being anyhow attacked, may perhaps be safely acted on as proof that the dreaded evil has arrived, and we therefore extract the following passage on the subject from Professor Gamgee's book:—

I inoculated two yearling heifers in Edinburgh in the month of December. These were the subjects of careful study by my brother, Dr. Arthur Gamgee; and his observations, made before and after the communication of the disease, led him to suggest the importance of examining with the greatest care changes in the temperature of the body, from the earliest moment of an attack to the period of convalescence or death. I have since then instituted careful thermometric observations, with a view to detect at the earliest possible moment what animals have been affected in a herd.

A clinical thermometer indicates an elevation of temperature in the earliest stage of the disease, varying from 1 to 4° Fahr. The elevation precedes the acceleration of the pulse and every other symptom. I have usually inserted the bulb, and kept two inches of the stem of the thermometer, within the vagina or rectum, and kept it in a couple of minutes, using the precaution of dipping the instrument in water at 100° Fahr. between each observation, so as to prevent discrepancies. When one of Casella's registering thermometers is used, the warm water into which the instrument is dipped should not exceed 90° Fahr., and I commonly add a little Condy's fluid to

the water, so as to disinfect the instrument. The normal temperature varies from 100° to 101°, and may rise to 102°. It is not uncommon to find it in healthy animals varying one or two degs. at different periods of the day, so that reliable observations can only be made on a number of cattle at the same time, obeying in all the same conditions as to the instrument used, the part in which the observation is made, whether it be the rectum or vagina, and the length of time the instrument is inserted, &c. Sometimes, when animals are excited on a hot day, and are hurried into a shed from a field, the thermometer may rise one or two-tenths more than usual; but if a whole stock be examined, any animals suffering, however slightly, from the disease, indicate an elevation amounting even to 5° or 6°. Such an exaltation of temperature is generally incompatible with health, and the only exception yet known to this rule is that observed during oestrum or sexual excitement; the temperature then rises 3° or 4°, and the same may be seen just after parturition. It is probably preferable to introduce the thermometer into the rectum, as animals are restive when the bulb is inserted in the vagina. To indicate the nature of observations in herds in which the plague has appeared, it may be well to furnish some examples. On a farm where the disease had just broken out I took the temperature of 18 animals which looked in blooming health in the field, not one showing any sign of dullness, loss of appetite, or other disturbance, and the result was as follows:—

No. 1. temp. in vagina	102.2	No. 10. temp. in vagina		101
2. ,,	101.2	11. ,,		102.1
3. ,,	101.1	12. ,,		100.4
4. ,,	101.1	13. ,,		105.2
5. ,,	101.2	14. ,,		100.2
6. ,,	100.2	15. ,,		101.1
7. ,,	100.4	16. ,,		105.3
8. ,,	101.1	17. ,,		101
9. ,,	100.2	18. ,,		102.3

Having carefully taken the temperatures, I proceeded to examine the animals, and could detect slight deviations in the breathing, and colour of the vaginal mucous membranes, in Nos. 1, 11, 13, 16, and 18. The two cows which gave the most decided indications of a fever heat had a glairy discharge from the nose, and a slight blush on the mucous membrane of the mouth; but although all these animals were being watched night and day by men of ordinary intelligence, who manifested a great desire to serve their master, no suspicion had been entertained as to their condition."

Professor Gamgee then proceeds to give the results of his examination of a herd at Corehouse, near Lanark, in November last. Forty-two cows, still apparently healthy, indicated temperatures varying from 104° to 107°, and of these only five remained alive five days afterwards, so rapid was the subsequent progress of the plague.

"These cases prove —

"1st. That the temperature is much exalted when the pulse indicates slight or no variation from the normal standard.

"2d. That there are variations in the frequency of the pulse and the temperature during the course of the disease.

"3d. A sudden lowering of temperature usually, if not always, precedes death. In the cases quoted above, where the temperature last taken is marked as high as 105° and 104°, death did not take place until 10 or 12 hours after the last observation.

"4th. With the lowering of temperature before death there is a greatly increased frequency of pulse, varying from 120 beats per minute to such a rate as to render observations almost impossible.

"When animals recover, the temperature decreases gradually till it reaches its normal standard. There is an absence of very marked and sudden change. The transition from sickness to convalescence occurs steadily and with regularity."

To some other points elaborately discussed in Professor Gamgee's book, we shall refer next week.

Miscellaneous.

Steam Cultivating Companies.—From the *Hereford Times* we learn that a meeting of the Herefordshire Steam Cultivation Co. (Limited), was held on the 1st inst. at Hereford, A. R. Boughton Knight, Esq., Chairman, presiding. A dividend of 5 per cent. for the six months was declared, and a good balance carried forward as a reserve fund, amounting together to more than 20 per cent. per annum. The Report speaks hopefully of the undertaking. The steam cultivating machinery possessed by the Company is two pairs of Howard's new self-propelling engines on the transverse boiler principle, of which the Report speaks in the highest terms. The engines during the winter appear to be profitably occupied in working a draining-plough on meadow land.

The Cattle Plague and the Recovery Rate.—The recovery rate for Great Britain stood, Feb. 3, at 12.146 per cent., Feb. 10 at 12.364 per cent., and Feb. 17 at 12.680 per cent.,—*i. e.*, one of every eight beasts attacked now recovers. This may seem but poor comfort; but that the recovery rate is sensibly advancing is seen in the fact that in the third week of November it stood for the whole of Great Britain at 6.478 per cent., in the third week of December at 9.125 per cent., in the third week of January at 11.047 per cent., and in the third week of February at 12.680. Should the amelioration continue at the same rate, the recoveries will amount in June to one in five.

Calendar of Operations.

WEST SUSSEX FARM, *February* 20.—After a very wet time we have now got a sharp frost, which will do the land a deal of good; it has got very close on the surface, and had dry weather set in without frost, the shell on the surface would have made it very unhealthy. As it is, the Wheat on low-lying land does not look over-well, and in some rather wet land much of the plant has rotted, but still bright weather and a few frosts will work a very favourable change. The roots have stood the winter well, but are running to tops; there is such a full supply of food for sheep that all lean stock is dear. Couples in the end of January sold for 67*s.* to 70*s.* and there is no doubt they must be kept for nothing so far as roots and hay are concerned. The success in lambing has not been general; there have not been many losses, but a larger number of ewes are barren; dealers say they have never known so many. We are still without the cattle plague, and it is to be hoped that the expected preventive measures about to pass will keep it from us. We think it is best that the local authorities should carry out the law, but not that they should have much discretion in making it. For this, we can now see, has been the cause of the sad losses that have been sustained. We now and then hear of cases breaking out among sheep, but they never turn out to be the cattle plague. In this locality a farmer lost a great many sheep after being dipped, and there were various reports respecting the cause; some that they had fed where the liquid had run off them, and others declared it to be cattle plague; but it appears rather to have been that they were too warm at the time of dipping, and the pores being open, the poison was absorbed into the body, and thus slowly killed them, as they kept on dying for several weeks. *G. S.*

Notices to Correspondents.

IMPORTATIONS DURING 1864 AND 1865:

I.—*Articles free of Duty.*

Articles.	Importations. 1864.	1865.
Animals, Living number		
Oxen, Bulls, and Cows ..	179,597	227,528
Calves	62,226	55,743
Sheep and Lambs	496,243	914,170
Swine and Hogs	88,362	132,943
Bones (burnt or not, or as animal charcoal) .. .. .. tons	68,870	74,307
Flax .. .. cwt.	1,842,947	1,913,132
Guano, from .. .. .. tons		
West Coast of Africa ..	2,067	4,274
United States	4,448	1,082
Peru	113,086	210,734
Bolivia	496	7,468
British and West India Islands ..	3,208	5,257
Other countries	7,963	8,528
Hemp .. .. cwt.	1,010,688	1,065,705
Hops .. .. cwt.	98,656	82,419
Oil-seed cakes.. .. .. tons	105,570	109,941
Potatoes .. .. cwt.	742,404	806,753
Provisions— .. .. .. cwt.		
Bacon and Hams ..	1,069,480	713,346
Beef, salt	302,860	228,396
Pork, salt	189,411	183,455
Butter	1,054,617	1,083,717
Cheese	884,844	853,277
Eggs .. .. number	357,298,240	364,013,040
Lard .. .. cwt.	247,253	76,956
Pyrites .. .. tons	159,829	194,829
Quicksilver .. .. .. lb.	1,764,400	1,781,825
Rags and other materials for making Paper .. .. tons	67,810	71,142
Saltpetre .. .. cwt.	313,453	311,390
Cubic Nitre..	670,148	1,020,394
Seeds—		
Cotton .. .. .. tons	84,642	114,851
Clover .. .. .. cwt.	226,378	214,674
Flaxseed and Linseed .. .. qrs.	1,434,973	1,414,414
Rape	235,578	206,111
Wool, Sheep and Lambs .. From		
Europe .. .. .. lb.	42,047,440	34,620,134
British Possessions in Sth. Africa	19,880,865	29,220,323
British India	20,425,355	17,165,617
Australia	99,067,400	109,734,261
Other Countries	22,418,259	18,713,914
Alpaca and the Llama Tribe ..	2,664,927	2,793,498
Woollen Rags, torn up to be used as Wool	22,182,880	20,857,424
Woollen and Worsted Yarn ..	4,664,647	4,492,699
Yeast, dried .. .. .. cwt.	117,304	114,063

II.—*Articles subject to Duty.*

Articles.	Importations. 1864.	1865.
Corn*—Wheat, from Russia .. cwt.	5,119,234	8,093,870
Prussia	4,295,428	5,105,044
Denmark	729,28	641,253
Schleswig, Holstein, and Lauenburg	272,296	254,159
Mecklenburg	660,701	647,685
Hanse Towns	494,407	486,060
France	587,165	2,252,873
Turkey and Wallachia and Moldavia	473,127	574,187
Egypt	366,868	16,063
United States	7,895,015	1,177,618
British North America	1,225,513	406,760
Other Countries	428,864	1,114,480
Total	23,196,713	20,962,963
Barley	4,025,362	7,818,404
Oats	5,562,959	7,714,239
Peas	1,114,083	780,145
Beans	999,270	958,062
Indian Corn, or Maize	6,285,948	7,696,033
Wheat meal and Flour, from Hanse Towns .. .. .. cwt.	339,770	247,796
France	1,813,854	3,044,823
United States	1,745,933	256,769
British North America	485,099	177,273
Other Countries	136,735	177,750
Total	4,512,391	5,904,471

SOOT: *R F C.* Thirty to forty bushels per acre are a good dressing. But you must have 2 or 3 cwt of guano, and a half dressing of dung besides, to get a good crop of Mangels.—THALEGE: *S B.* The word depends for its meaning on the custom of the country, and the best plan for you to adopt is to engage the services of a man who is accustomed to valuations between outgoing and incoming tenants in your part of the country. The principle on which they proceed will be to value you *out* as you were valued *in*, except in so far as that has been overruled by a special agreement subsequently made.

* Grain (Malt excepted) is now charged with duty by weight instead of measure.

FINE GRASS LAWNS in FLOWER GARDENS, &c.—The great expense of cutting and carting Turves from a distance may be avoided, and a superior Turf produced in a few months by sowing SUTTON'S LAWN GRASS SEEDS, which consist solely of the finest and shortest-growing kinds, perfectly free from Moss and other weeds.

From Mr. JOHN JOHNSON, *Gardener, Moorway Park, Sunderland, April 26, 1865.*

"The Lawn Seed we got last year about this time has come up excellently."

From Mr. THOMAS POLLINGTON, *Gardener to* H. W. Vincent, Esq., *Brodsworth Gardens, Doncaster, January 19.*

"The Grass Seed you supplied me with last season grew remarkably well, though sown under trees. I think every seed grew."

From HENRY H. CAVE, Esq., *Desborough, Market Harborough, May 13, 1865.*

"The Lawn Grass Seeds I had from you last year have made a very good turf already."

From J. NIGHTINGALE, Esq., *High Street, Kingston-on Thames, June 8, 1865.*

"I may add that the Grass Seeds you supplied last year, have (notwithstanding the very unfavourable season) succeeded very well."

SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

Very Early Sheep Feed.

SUTTON'S IMPROVED ITALIAN RYE-GRASS.—This "Improved" Italian Rye-grass is recommended in preference to every other variety, producing three or four heavy crops in one summer, and being almost if not strictly perennial.

At a Meeting of the Royal Agricultural Society, on March 16, in a Lecture delivered by Alfred Hughes, Esq., of Thornesa, Isle of Wight, Mr. Hughes said—

"I always reserve a portion of Oat land to lay down with SUTTON'S Improved Italian Rye-grass, the most reliable plant I have come across for some years for Ewes and Lambs in the Spring. When I tell you that I put it in the spring, and obtained a full harvest with guano, and that in the autumn, when my Sheep fed it off, it was up to their knees, and that I fed it off again this spring with Ewes and Lambs, I think you will agree with me that this is a crop of very great value. The Italian Rye grass which is sold by SUTTON, of Reading, is a most astonishing vigorous plant; indeed, I never saw anything to equal it in the course of all my experience."

SUTTON & SONS have a fine stock at present of their Improved Italian Rye-grass, which is very different and superior article to much that is sold as Italian Rye-grass.

Present price, 6*s.* 6*d.* per bushel; cheaper in quantities over 5 qrs. Carriage free in quantities of 5 bushels and upwards

Quantity required per acre, if sown alone, 3 bushels..

Royal Berkshire Seed Establishment, Reading.

THE ALSIKE CLOVER for CLOVER-SICK LANDS.—This excellent Clover will thrive in almost any soil. It produces two good cuttings in the year, and makes superior Clover hay. It may be sown alone (14 lbs. per acre), or in conjunction with other seeds, either for alternate husbandry or for Permanent Pasture. If sown with Italian Rye-grass, it is ready for mowing three times in the year. It is included in all of SUTTON'S Mixtures, and they strongly recommend it as a more general cultivation. Price may be had on application (depending on quantity required).

Royal Berkshire Seed Establishment, Reading.

SUTTON'S MIXTURES of CLOVERS and RYE-GRASS.—To be sown with Corn for a crop of Clover, &c., which will produce good feed during the Autumn, and in the following year.

CLOVER and ITALIAN RYE-GRASS (described as SUTTON'S Mixture), for One Year's Clover Hay, at 1l*s.* per acre.

CLOVERS and COMMON RYE-GRASS (Messrs. SUTTON'S Mixture), for One Year's Clover Hay, at 14*s.* per acre.

CLOVER SEEDS WITHOUT RYE-GRASS (Messrs. SUTTON'S Mixture), at 12*s.* 6*d.* per acre.

In the Mixtures of Clovers and Rye-Grass described above, we generally use a third of Cluster (generally Red and Alsike) and one peck of Rye-Grass per Acre; but if more Rye-Grass should be desired, it can be supplied without altering the price, by omitting a pound or two of Clovers. Those who prefer a Red Clover to grow with the Rye-Grass, it is only necessary to name the sort in giving the order, and the proper quantity will be sent.

*** Those who require Seeds to sow with Corn for One Year's Clover Hay will save themselves trouble, and insure a proper mixture for their soil, by ordering the above-named Mixtures for the number of acres to be sown.

GRASS and CLOVER SEEDS, for Two Years' Lay.—This Mixture contains a large proportion of Perennial Clovers, and under favourable circumstances will often stand for three years.

The following sorts are included, and invariably answer well:—

Broad Red Clover	Roundel Cocksfoot
Perennial do. (Cow Grass)	Sheep's Fescue
White Clover	Timothy
Alsike Clover	Pacey's Perennial Rye-Grass
Yellow Trefoil	Sutton's do. "
Meadow Foxtail	Italian Rye-Grass

The quantity required per acre is one bushel, weighing about 25lb. Price 20*s.* per acre.

GRASS and CLOVER SEEDS, for Three or Four Years' Lay.—The sorts contained in this Mixture are somewhat similar to the preceding, but the quantities of Permanent Grass Seeds are increased to insure the maintenance of the herbage for three or four years. The quantity required per acre is two bushels. Price 24*s.* per acre.

These Mixtures are highly profitable, producing enormous crops of Grass or Hay, but must not be expected to form Permanent Pastures.

From C. F. THEOBOLD, Esq., *Talgarth Hall, Machynlleth.*

"I had a most famous hay crop on a 10-acre field from the 'seeds' for three years 'you sent me last season. I have never, since I commenced farming, had such a heavy crop."

PRICES and TERMS of other FARM SEEDS gratis and post free.

All goods carriage free; 5 per cent. discount allowed for cash payment.

SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

Seeds for Exportation.

SUTTON AND SONS beg to inform those who may be about to send or take Seeds to the Colonies, that their NEW CATALOGUES and CIRCULARS of FARM and GARDEN SEEDS are now ready for delivery, prices and particulars of which will be forwarded on application. The following are among the Seeds recently received as to the Superior Quality of their Seeds to those usually exported from this country, as well as to the very efficient manner in which their export packing is effected:—

From A. N. ELLA, Esq., *Queenstown, Cape of Good Hope.—July 9.*

"I may mention that the case referred to was in splendid order, looking as fresh after three months' sea and six weeks' land carriage as if only yesterday packed."

From MESSRS. CROCKER, *Portland, Victoria.—September 16.*

"We may remark that the various SUTTON'S shipment of seeds have given the greatest satisfaction as far as they have been tried; the Grasses, Clovers, and Lucerne are up. We find the crop will be far too thick. If the vegetable seeds turn out as well, we may say that, without exception, they are the best lot of seeds ever received in this place from Europe."

From G. MORRISON, Esq., *Superintendent of the Government and (with Agricultural and Horticultural Society's Gardens, Lucknow.—July 17*

"I received some vegetable seeds, also some flower seeds from your firm some 18 months ago, and they turned out first rate."

From Sir R. MONTGOMERY, *Lieutenant-Governor, Punjaub, India.—May 15.*

"I am happy to tell you that the seeds you sent last year answered very well. I carried off the first prize both for vegetables and flowers, as you will see by an extract from the *Lahore Chronicle*, which I enclose."

From the Rev. R. G. LAMB, *Great Pond, Cape Town.—November 1.*

"Your seeds have answered right well; one pinch of such as yours is worth a handful of the stuff sold here, which generally goes to seed before coming to perfection."

From Mr CHAS HASELDEN, *Boyce Farm, near Auckland, New Zealand.—October 6.*

"The Grass Seeds you sent me arrived in excellent condition, and already present a luxuriant appearance, with the promise of abundant feed early in the coming season."

Royal Berkshire Seed Establishment, Reading.

GOOD CLOVER SEEDS at MARKET PRICES.
Red | White Dutch | Yellow
Alsike | Cow Grass | White Suckling.
For samples and lowest prices, apply (stating quantity required) to SUTTON & SONS, Seed Merchants, Reading.

Seed Corn from the Chalk.
ALL THE MOST APPROVED VARIETIES SUPPLIED BY
RAYNBIRD, CALDECOTT, BAWTREE, ROWLING, AND COMPANY, LIMITED.
Address, Basingstoke; or 89, Seed Market, Mark Lane, London, E.C.
*** Samples and prices on application.

RAYNBIRD, CALDECOTT, BAWTREE, DOWLING, AND COMPANY, Limited,
CORN, SEED, MANURE, AND OILCAKE MERCHANTS,
Address, 89, Seed Market, Mark Lane, E.C.; or Basingstoke.
Samples and Prices Post free on application. Prize Medals, 1851, for Wheat; 1862, for "Excellent Seed Corn and Seeds."

New Agricultural Seeds.
J. F. PIKE can supply the undermentioned for cash.
BROAD RED CLOVER, first quality, 75s. cwt., 8d. lb.
second quality, 65s. cwt., 7½d. lb.
YELLOW TREFOIL, first quality, 32s. cwt., 4d. lb.
WHITE DUTCH, first quality, 84s. cwt., 10d. lb.
MARL or COW-GRASS, first quality, 80s. cwt., 9d. lb.
PERENNIAL RYE-GRASS, first quality, 44s. quarter;
second quality, 36s. quarter.
ITALIAN RYE-GRASS, foreign, 28s. cwt., 4s. 6d. bush.
YELLOW GLOBE MANGEL, 45s. cwt., 6d. lb.
SPRING TARES, 54s. qr.
Seed and Corn Establishment, 52, Walcot Street, Bath.

Kitchen Garden and Agricultural Seeds.
SEE THE LIST WITH ALL THE PRICES ATTACHED OF
MARTIN and SON, SEED MERCHANTS and NURSERYMEN, 7, Market Place, Hull, and Cottingham, and compare prices: also see the quantity of Prizes won by the produce of Seed obtained of MARTIN & SON, in Collections, at one of the principal, if not the principal Show in Yorkshire, for Vegetable and Agricultural produce.

1865.
First Prize, Collection of Vegetables (quantity not limited), 20s.
Second Prize do. do. do. do, 10s.
Third Prize do. do. do. do.
First Prize do. do. (limited), 20s.

1861 AND 1862.
First Prize, £5 Silver Cup, Collection of Vegetables (Subscribed for by the principal Seedsmen of Hull and neighbourhood).
First Prize, £5 Silver Cup, Agricultural produce. } Given by
Second Prize, £2, Agricultural produce. } Martin & Son.
First Prize, £5 Silver Cup, Agricultural produce (given by Cottingham).
First Prize, £5 Silver Cup, Agricultural produce (given by Jno. Ringrose, Esq.)
Second Prize, £2, Agricultural produce (given by Jno. Ringrose, Esq.
Third Prize, Agricultural produce (given by Jno. Ringrose, Esq.)
First Prize, Silver Medal, Agricultural produce (by a Seedsman).

1862 AND 1861.
No Prizes for Collections given.
MARTIN & SON, Seed Merchants and Nurserymen, 7, Market Place, Hull; and Cottingham.
Established above Three-quarters of a Century.

To Agriculturists.
JOHN MALDEN, AGRICULTURAL SEEDSMAN, Biggleswade, begs to intimate to his Agricultural Friends that he has a LAW YIELDED CLOVER, to introduce this season, under the name of MALDEN'S CLOVER, or TRIFOLIUM STRIATUM; a soft knotted Trefoil.
This Clover has been examined by W. Baxter Smith, Esq., and several other eminent Botanists of the day, and they have passed upon it the highest encomiums.
The Seed has been introduced at Mark Lane and several country markets, and, as yet, there has not been a gentleman (either in the seed trade or not, English or Foreign) that has any knowledge of the Seed. Its history is short:—some six years ago, a friend of mine (Mr. George Winters, of Strathern Farm, near Biggleswade) selected it from a crop of Clover, supposed to have been sown with Foreign seed. When he first selected the seed he could not get more than half-a-pint; from this small quantity began the growth of a plant that will prove a boon to the agricultural world. I last year had rather more than One Ton of this seed, which I sold to my friends at a low price, just to test it being a true trial, and in every case where I have made inquiry I have found the trial has been most satisfactory—there being an excellent plant. One of the peculiarities of this plant is, as far as I have been enabled to observe, it will grow where Clover will not; that is to say, on lands which are Clover sick. Respecting its quality, and the quantity of the crop it will produce, I can say without hesitation, that the 16-acre field under the crop that produced the seed which I now offer, would have cut THREE TONS OF HAY PER ACRE, and I believe the quality to be superior either to Clover or Trefoil.
The price of the Seed this season is 2s. per lb., and can be had only direct from my Establishment at Biggleswade, or of the following Agents:—
Messrs. Peter Lawson & Son, Seedsmen to the Queen, Edinburgh and London.
Messrs. Sutton & Sons, Royal Seed Establishment, Reading, Berkshire
Messrs. Hurst & Son, Seedsmen, 6, Leadenhall Street, London, E.C.
Mr. J. Gourlay, Merchant, &c., Epping, Essex.
To prevent disappointment, early orders are respectfully invited.

The following was inserted in the GARDENERS' CHRONICLE, *June*, 1865,
by WM. BAXTER SMITH, ESQ.
"A NEW CLOVER.—I herewith send you a specimen of a new Clover which I saw yesterday growing on a farm near Biggleswade, and which appears to be worthy of notice. Mr. MALDEN, of Biggleswade, directed my attention to it, and he intends to introduce it next year to the Public. Its history is this:—Some years ago, a neighbour of Mr. MALDEN found it among some Red Clover, the seeds of which had come from France; and as it appeared to be a new variety he saved a little of the seed, and has grown it yearly since that time until the present, having now a 16-acre field entirely under it. It is a remarkable thing, that although there is hardly a good field of Clover in the neighbourhood, this field carries an uncommonly heavy crop; and although the Clover does not appear so succulent as Red Clover, still all kinds of stock eat it with avidity, and thrive upon it. I propose it is difficult to say what has caused the numerous failures in the Clover plant this season, whether it is frost, or the land being Clover sick, or what else; but if this new Clover can withstand all such evil influences, it may become of great value to farmers. So far as botanical knowledge enables me to determine, the plant is Trifolium striatum, being a native of England and Scotland, and grows on dry pastures and fields. The largest field in Bigglesw de was sown with it in spring, 1864, on Michaelmas Wheat; and Mr. MALDEN will be glad to show it to any one who wishes to see it. The farmers in the neighbourhood are already anxious to procure seed for next year, when the Clover is sure to have a fair trial. Meanwhile I thought it might interest your readers to bring it under their notice."—*Wm. Baxter Smith, 28, King Street, Cheapside, London, E.C.*

Choice Seeds, Post Free.
CATTELL'S ECLIPSE BROCCOLI.—The following notice of the above is taken from the *Gardeners' Chronicle*, June 9, 1866:—"The specimens of your Eclipse Broccoli were very fine; the heads large and compact, the texture delicate, and the flavour excellent. These qualities, together with the late season at which it comes into use, will render the ordinary late Broccoli and Cauliflower, and its extreme hardiness, combine to make it a very useful variety." 1s. 6d. per ½ ounce packet.
CATTELL'S DWARF PURPLE-TOP BEET, 1s. per ounce.
SILVER CURLED BEET, 6d. per packet.
VARIEGATED GARNISHING KAIL, 1s. per packet.
CATTELL'S RELIANCE CABBAGE, 1s. per ounce.
CATTELL'S GLADIATEUR CUCUMBER, 1s. 6d. per packet.
KIRKLEES HALL DEFIANCE CUCUMBER, 1s. 6d. per packet.
KENT FLAG LEEK, 1s. per ounce.
CATTELL'S EXQUISITE PARSLEY, 6d. per packet.
CUSTARD MARROW (true), 6d. per packet.
CALCEOLARIA, splendid Mixed, 1s. and 2s. 6d. per packet.
SWEET PEAS, SCARLET INVINCIBLE, 6d., 1s., and 2s. 6d. pckt.
JOHN CATTELL, Westerham, Kent.

To the Trade.—Nuneham Park Onion.
WM. CUTBUSH AND SON, in reply to numerous inquiries, beg to state that they have not been able to supply any Seed of this superb new Onion since the 20th of January, and those Seedsmen whose names are published in the *Gardeners' Chronicle* of January 6th, are those only who have received a supply from ourselves, who hold the entire stock.
Highgate Nurseries, N.

AYTON CASTLE GIANT SCOTCH LEEK.—This splendid LEEK, which for size, flavour, and hardiness has no equal, can be had as usual, pure and genuine, free per post, in packets, at 1s. each. A liberal allowance to the Trade when not less than 12 packets are taken.
ROBERT T. MACKINTOSH, Nurseryman and Seedsman, 12, Melbourne Place, Edinburgh.

Henry's Prize Hybrid Leek, Genuine.
DOWNIE, LAIRD, AND LAING are now sending out the above in packets at 1s. each. This is unquestionably the largest Leek in cultivation, growing 16 inches in length of blanch, and 10 inches in circumference. Was awarded the First Prize at the Edinburgh and other leading Shows.
17, South Frederick Street, Edinburgh; and Stanstead Park, Forest Hill, London, S.E.

Turnip, Swede, and Mangel Wurzel Seed.
ALFRED LEGERTON, SEED MERCHANT, 5, Aldgate, London, E., will be happy to make special prices of the above to the Trade upon application. Samples and stocks first-class.

MANGEL WURZEL SEED from large Bulbs. *Cheaper by the cwt.*

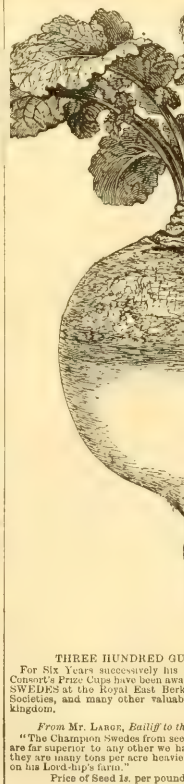
	Per lb.	s.	d.
Good YELLOW GLOBE	..	0	9
,, ORANGE GLOBE	..	0	9
,, RED GLOBE	..	0	9
,, LONG RED	..	0	9
,, LONG YELLOW	..	0	9

SUTTON'S
Selected Mangel Seed
from Selected Roots.
Cheaper by the cwt.

	Per lb.	s.	d.
SUTTON'S Selected YELLOW GLOBE		1	0
Do. do. ORANGE GLOBE		1	0
FISHER HOBBS' ORANGE GLOBE	..	1	0
STRATTON'S RED GLOBE		1	0
SUTTON'S ELVETHAM LONG RED	..	1	0
SUTTON'S Selected LONG YELLOW	..	1	0
New YELLOW INTERMEDIATE	..	1	6
Do. RED do.	..	1	0
NORBITON GIANT LONG RED	..	1	6
BERKSHIRE PRIZE, or SUFFOLK CHAMPION, New	..	2	6

Lowest price per cwt. on application.
SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

SUTTON'S CHAMPION SWEDE.
PERFECTLY HARDY, VERY PRODUCTIVE, STORES EXCEEDINGLY WELL, AND RARELY, IF EVER, SUFFERS FROM MILDEW.



SUTTON'S YELLOW GLOBE, Price 1s. per lb.

THREE HUNDRED GUINEAS IN 12 PRIZES.
For Six Years successively his late Royal Highness the Prince Consort's *Prize* Cups have been awarded to SUTTON'S CHAMPION SWEDES at the Royal East Berks and South Berks Agricultural Societies, and many other valuable Prizes in various parts of the kingdom.

From Mr. LARGE, *Bailiff to the* Right Hon. Lord BERNERS.
"The Champion Swedes from seed Lord Berners purchased of you are far superior to any other we have grown. I can confidently say they are many tons per acre heavier than any other Swedes growing on his Lord-hip's farm."
Price of Seed 1s. per pound, or cheaper by the bushel.
SUTTON'S NEW FARM LIST gratis and post free.
SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

HAAGE'S DWARF EARLIEST CAULIFLOWER.—Very dwarf, the earliest, hardiest, and finest of Cauliflowers. Packets 1s. 6d. each.
SEED CATALOGUES, containing the finest New Vegetables, free by post.
STEPHEN BROWN, Seed Grower, Sudbury, Suffolk.

GIANT ASPARAGUS, fine selected Roots for early cropping, 2s. 6d. per 100. This delicious Vegetable does not require half the expense usually incurred in planting it. For instructions, see RICHARD SMITH'S SEED LIST for 1866.
Strong Transplanted SEA KALE, 2s. per dozen.
RICHARD SMITH, Nurseryman, Worcester.

THE BEST FOUR KINDS of PEAS:
Sutton's Longpodded Tom Thumb, 2s. 6d. per quart | McLEAN'S Advancer, 1s. 6d. per quart
Turner's Little Gem, 3s. 6d. per qt. | Epicurean, 2s. 6d. per quart.
May be had of
SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

To the Trade—Early Peas.
SUTTON AND SONS having very nearly sold out of their RINGLEADER PEA, regret that they have for some time past been obliged to decline all orders from the Seed Trade.

SUTTON & SONS have still a good supply of DANIEL O'ROURKE, SANGSTER'S No. 1 SUTTON'S LONGPODDED TOM THUMB and DILLISTONE'S EARLY.
Royal Berkshire Seed Establishment, Reading.

The Earliest Pea in Cultivation.
LAST SEASON (1864-65) WE OFFERED A NEW EARLY PEA,
SUTTON'S RINGLEADER, which we had ascertained to be forwarder than any other that had come under our notice. Our system of proving new varieties in our Trial Grounds being well known to be careful and certain, orders were freely sent to us from the Wholesale London Seed Merchants, and from numerous practical and eminent gardeners throughout the country, who, after growing it in competition with the other early sorts, have this season ordered Ringleader still more extensively. The same Wholesale Seed Merchants have again voluntarily become Agents for the sale of Ringleader, as the forwardest or First Crop Pea.
In our Trial Grounds are added every year all the alleged new kinds of earliness, and Ringleader proved last season quite to be forwarder than any other, with the exception of Carter's First Crop, which was discovered to be identical with Sutton's Ringleader, and was immediately announced by us as such; it being quite accidental that the two Firms had originally obtained their stocks from the same source.
During the podding season of 1865, many of our customers sent to the *Gardeners' Chronicle*, and also to us, confirming our statement most fully: but subsequently a report appeared of the Trials at the Royal Horticultural Society's Gardens, stating that certain other kinds were identical with Sutton's Ringleader and Carter's First Crop. This latter statement must have been made from erroneous or insufficient trials, *and we most confidently deny its correctness, our Ringleader is the First Crop Pea as perfectly distinct and original.* It is not too late now to test the Early Peas this season, and although we have lately been obliged to decline orders for Ringleader in consequence of having sold nearly out, we have a few left, and shall be happy to supply them in quantities not exceeding one Quart to any gardener or gentleman who may wish to try them.
SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

For Bouquets and as Cut Flowers
THE INVINCIBLE SCARLET SWEET PEA is invaluable. The colour is intense and permanent. Packets 6d., 1s., and 2s. 6d. each. Sold by the principal Seedsmen throughout the kingdom, or of the Raiser,
STEPHEN BROWN, Seed Grower, Sudbury, Suffolk.

INVINCIBLE SCARLET SWEET PEA, very fragrant, strikingly brilliant, and extremely distinct in colour.—A First-class Certificate from the Royal Horticultural Society; also a Certificate at the Crystal Palace Show in September. Packets 6d., 1s., and 2s. 6d. each; packets of 100 Seeds 7s. 6d. Supplied by the principal Seedsmen throughout the kingdom: also of Messrs. Krelage, of Haarlem; Vilmorin & Co., Paris; Benary and Haage & Schmidt, of Erfurt, Prussia; and Smith & Co., Hamburgh; also of the Raiser,
STEPHEN BROWN, Sudbury, Suffolk.
Price to the Trade on application.

New Dwarf Marrow Pea, Lincolnshire Gem,
3s. 6d. per quart, sealed.
MARTIN AND SON have a few Quarts yet left of this magnificent Pea; it is early, well-flavoured, and immensely prolific; it has been well tried in this neighbourhood by the side of Dickie's Yorkshire Hero, Veitch's, and others, and pronounced to be the earliest, and double the crop of the former. See Testimonials in *Gardeners' Chronicle*.
Address, 7, Market Place, Hull; or Cottingham. Established 78 years ago.

CABBAGE SEED.—The Subscriber has now for Sale, carefully grown by himself, about 10 cwt. of his own well-known, variety of Late DRUMHEAD CABBAGE SEED, crop 1864. Also about one ton of the same variety, crop 1865. Price of the former, £4 per cwt.; of the latter £5 5s. per cwt., Bags included, put on the rail at Edinburgh or free on board steamer at Leith or Granton. Cash or a reference to respectable parties in Edinburgh or Leith required. Address,
JOHN GIBSON, Woolmet, Dalkeith, N.B.

To Market Gardeners and Others.
CABBAGE PLANTS, EASTHAM, ENFIELD, and DRUMHEAD, 1s. 9d. per 1000. The stock true and can be warranted
RED CABBAGE PLANTS, extra fine, 5s. per 1000.
ONION, WHITE SPANISH, 1s. 3d. per lb.
WURZEL, YELLOW GLOBE, 2s. per cwt.
EARLY SHAW POTATOES, 6s. per cwt., warranted true.
Terms cash.
RICHARD WALKER, Seed Merchant and Grower, Biggleswade, Bedfordshire.

Important to Farmers, Gardeners, and the Trade.
EXCELLENT CABBAGE PLANTS may now be had at 2s. per 1000, or cheaper if very large quantities are taken, of the following unequalled varieties, viz.:—Early York, Early Nonpareil, Eastham, Drumhead or Ox. Red, excellent, 6s. per 1000 Packed carefully in bags.
N.B. Customers are requested to send their own Bags; if not, they can be supplied and charged only at cost price, and the full amount charged will be refunded if returned at once in good condition, and advised of per post.
Special quotations given for Var.'s Seeds, Seed Potatos, &c., on offer. A remittance or reference must accompany all orders from unknown correspondents.
FREDK. GEE, Seed Merchant and Grower, Biggleswade, Bedfordshire.

Notice.
ROBINSON'S CHAMPION PRIZETAKER DRUMHEAD OX CABBAGE SEED.—I have observed that many Seedsmen are offering the above Cabbage; I therefore deem it necessary to annex a List of Crops who have had the Seed direct from me, and of whom it may be obtained true.
SAMUEL ROBINSON,
Feb. 21, 1866. Shaw House, Melbourne, near Derby.

Beck, Henderson, & Child, Upper Thames Street, London	S. Clark, Connaught Terrace Sutton & Sons, Reading
Cooper & Bolton, Fleet Street	J. Dickson & Sons, Cheater
G. Gibbs & Co., Down Street, Piccadilly	F. Warwick, Sleaford.

The First and Second Prizes at Birmingham were again taken by this fine stock grown by Mr. Lythall, of Spittal Farm, Banbury; also the First Prize at the Great Sparkenhoe Show at Loughborough, awarded to Mr. G. Eaton, of Castle Donington, and to other parties at local Exhibitions, all raised from Plants purchased from Mr. Robinson.

New Seedling Potatos.

TELEGRAPH, 14 days earlier than the Ashleaf, abundant bearer, per bushel, 20s.

PRESIDENT, 14 days later than the above, wonderful cropper, per bushel, 16s.

For description see BUTLER & M'CULLOCH'S SPRING CATALOGUE, free and post paid on application

Covent Garden Market, W.C.

WHITE ROCK and SKERRY BLUE POTATOS.—The Subscribers have a large lot of the above valuable White Potatos, grown especially for Seed in the Counties of Longford and Antrim. They offer for sale, per ton or cwt. Further reduction of price if having a change of seed will find these worthy of their attention.

HOOD & ROBERTSON, Seed Merchants, 22, Mary Street, Dublin.

SEED POTATOS.—The Subscriber has for Sale, grown for seed purposes, carefully selected, and true to sort,—

WALKER'S EVERGREEN PEERLESS, per cwt. 20s; per ton £18

EARLY TALMADOY, the largest cropper of all early Potatos, and of fine eating quality, present price £9 per ton

DAINTREE'S EARLY, present price, £9 per ton

All the above are from a change of seed, and are true to name.

Put free on the rail at Edinburgh or on board steamer at Leith or Granton. Cash or reference to respectable parties in Edinburgh or Leith required. Apply to

JOHN GIBSON, Woolmet, Dalkeith, N.B.

SUTTON'S POTATOS for PLANTING.

Prices per peck, bushel, cwt., or ton, may be had on application.

Royal Ashleaf	Wellington	King of Potatoes
Prince of Wales	Purkwood Regent	Myatt's Ashleaf
Red Regent	Dawn of Plenty	Fenn's Onion
Hudson's Nonsuch	Webb's Imperial	Skerry Blue
Wheeler's Gloucester-shire Kidney	Hurst's May	Early Ashleaf
Dawbur's Seedling	Early Oxford	Early Shaw-leaf
Finke	Walker's Improved	Improved EarlyShaws
York Regent	Regent	Flour-ball
		Lapstone

PATERSON'S SEEDLING POTATOS.

Victoria	Napoleon	Paterson's Regent
Seedling Rock	Perfection Red	Paterson's Blue
Irish Blue	Scotch Blue	

SUTTON'S DESCRIPTIVE LIST of POTATOS may be had gratis and post free.

SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

First Prize Potato (Extraordinary).

PRINCE of WALES' KIDNEY POTATO.—This new variety, which obtained the First Prize at the Royal Horticultural Society's International Food Show, Dec. 7, 1865, is the handsomest and the richest flavoured of the finest Potatos in the world, *having gotched 6 bushels per rood*. It comes in directly after the Ashleaf, and retains its exquisite flavour all through the summer.

TESTIMONIALS.

From the Hon. Professor LINDLEY (Editor of the *Gardeners' Chronicle*)

"I have this morning had the Seedling Potatos examined. The crop is very extraordinary, and the Potatos themselves are very handsome, and quite ripe."

From SIDNEY HIGGINS, Esq. (Editor of the *Gardeners' Weekly Magazine*)

"The Seedling Potato (Prince of Wales), I have found to be wonderfully productive, excellent flavour, handsome, and such a one as the world at large has the benefit of."

To be had of Mr. James Veitch, Royal Exotic Nursery, King's Road, Chelsea, S.W.; Messrs. Barr & Sugden, King Street, Covent Garden, W.C.; Abraham Dixon & Co., 10, St. Mary Axe, London; Sutt. & Sons, Seedsmen, Reading; Mr. Cartmell, Nursery, Exeter, and through every Nurseryman and Seedsman in Great Britain

Price, 12s. per bushel

N.B. They may be planted up to the end of May

SEED POTATOS, New Sorts.

WHEELER'S MILKY WHITE, 4s. per peck.

GLOUCESTERSHIRE BEAUTY, 3s. per peck.

MONA'S PRIDE, 2s. per peck.

"Better than this, though a trifle later—better in fact than any Potato coming in at the mid-season, is Wheeler's Milky White. I had a splendid crop of this kind in my garden, and have watched the disease. The growth is very short and compact; tubers as to size all one size, neither large nor small; it has as fine a flavour as any Potato grown, and is not at all waxy like Fluke or Flourball, and these kinds cannot be surpassed in colour and texture. I shall run no risk in dealing boldly with this fine Potato, and I shall therefore put it in an emphatic form that Wheeler's Milky White is the best of all Potatos. Should these words arouse it may consider themselves rather behind the age."—*From an untoward article on Potatos in the* GARDENERS' MAGAZINE, *January 27, 1866.*

J. C. WHEELER & SON, Seed Growers, Gloucester.

Choice Seeds.

BACKHOUSE'S WINTER WHITE PROTECTING BROCCOLI.—Highly recommended for its earliness, hardiness, whiteness, size, and delicate flavour. 2s. per packet.

MATTHIOLA INCORNATA.—A delicately sweet Night-scented Stock. Highly Ornamental. 1s. per packet.

MALCOLMIA INCRASSATA.—A new species of Virgin Stock, with larger flowers and more vigorous habit, and lasting longer in bloom. 1s. 6d. per packet.

VERONICA GLAUCA.—A hardy Annual, producing tufts of the most lively blue flowers. 6d. per packet.

INVINCIBLE SCARLET STOCK.—6d. and 1s. per packet.

Per cwt. or lb. to the Trade on application.

FRENCH KIDNEY POTATO.—The earliest and most prolific Ashleaf Potato we have seen. Quality excellent. 2s. 6d. per peck.

JAS. BACKHOUSE & SON, York Nurseries.

To the Seed Trade.

JOHN MALDEN hereby intimates that he has from 30 to 50 Tons of his far-famed YELLOW GLOBE MANGEL WURZEL SEED to offer. All Net crop 1865. First-class quality, and the stock undeniable; being the same that he has supplied his customers with for the past 20 years. He has also from 10 to 12 Tons of FISHER HOBBS' STOCK to dispose of. This also is good quality and his own growing. Buyers in quantities, say from 2 to 5 tons, liberally treated with. Sample and price apply to

JOHN MALDEN, Agricultural Seedsman, Biggleswade, Beds.

To Noblemen and Gentlemen about to be engaged in Planting.

DICKSONS AND CO., NURSERYMEN, SEEDSMEN, and FLORISTS, Waterloo Place, Edinburgh, have this season a large and very healthy stock of Seedling and Transplanted TREES, with good native and Transplanted Trees, Native Highland SCOTCH FIR, Spruce, Oak, Plane or Sycamore, Spanish Chestnut, Alder, Ash, Elm, Thorn Quick, Beech, Evergreen Privet, Poplar, Willow, and Larch, with other kinds of Forest Trees, Ornamental Trees and Shrubs, Fruit Trees, Roses, Greenhouse and Stove Plants, Herbaceous and Alpine Plants, Ferns, &c.

Their Forest Trees, which are grown on exposed ground, are thus season more hardened, and can be sent with perfect safety to any part of the kingdom.

Samples and prices will be sent free on application.

LARGE ORANGE TREES, SPECIMEN STOVE and PLANTS, and ORCHIDS, consisting of very fine Trees, all grafted, of sorts, sizes, and shapes, to please, with safety. The property of a Gentleman giving up and growing them. To be Sold by private treaty, at Orchid Hall, price £250. 2 of them are 10 ft. high by 6 ft.; 4, 8 ft. by 5 ft.; 5, 6 ft. by 4 ft.; 20 others, with good heads, 3 to 4 ft. variegated do., 3 ft. stem, fine; 1 Tangerine, 5 ft. by 3 ft.; 1 Myrtle-leaved, 11 ft. by 4 ft.; 14 others, various sizes, with 2 Lemons, 1 Shaddock, and 1 Citron.

The STOVE PLANTS consist of Allamandas, Stephanotis, Ixoras, Rondeletia speciosa major, Passifloras, Clerodendron, Mandevilla, Alocasia metallica, Dracænas, and Marantas, and other miscellaneous plants, in all about 150, with 30 Ferns and 60 Orchids, as follows, viz.: 2 Stanhopeas, 13 Dendrobiums, in pots and baskets, of sorts; 8 Cattleya Mossiæ, Forbesii, and Skinneri; 9 Phalæ, 7 Zygopetalon Mackayi, 2 Lælia superbiens, 1 Gongora maculata, 2 Lycaste Skinneri, 1 Neottia, 3 Acrides, 1 Vanda Teres, 2 Oncidiums, 2 Peristeria aurea, 1 Renanthera coccinea. Price for the Lot, £250, to be taken within 2 miles of the Ipswich Station, £60, or further particulars obtained on application to JAMES GILBERT, Florist, &c., St. Margaret's, Ipswich.

To Clear Ground.

SPECIAL OFFER.—20 per cent. off Catalogue prices.—HOLLY (GREEN), YEWS, DEODARS, ARBUTUS, LAURELS (Common), Laurels (Portugal), Cupressus Lawsoniana, Thuja Lobbii, Pinus insignis, *P. excelsus*, *P. ponderosa*, Taxodium, Hazel in large breadths, Lime dto., Spruce do., Austrian Pine do., Beech do. For sizes and prices, see CATALOGUES, sent on application to

J. SCOTT, Merriott, Somerset.

Forest Trees, Stove and Greenhouse Plants.

By Special Appointment to the Queen.

B. WHITHAM'S, The Nurseries, Reddish, near Stockport

LARCH, very strong, 1½ to 2 feet, 12s. per 1000

SCOTCH " 12 to 18 inches, 12s. per 1000

SPRUCE " 12 to 18 inches, 25s. per 1000

FIRES, in variety, extra strong, 12s. per 100

RASPBERRIES, WHITE ANTWERP, good Canes, 5s. per 100

APPLES, fine bushy Standards and Dwarfs, 30s. per 100

STOVE and GREENHOUSE PLANTS, very strong, at 18s. per dozen

HOYA BELLA	BRESSLIA CHRYSOPHYLLA
" VARIEGATA	ESCHYNANTHUS LONGIFOLIA
" CARNOSA	ARAUCARIA EXCELSA
RHYNCHOSPERMUM JASMINOIDES	DAVALLIA PEDATA PHYLLA
	ALLAMANDA NERIIFOLIA

CHOROZEMAS, best varieties, 12s. per dozen

ACACIA LOPHANTHA, fine, 12s. per dozen

CYTISUS FRAGRANS, fine, 6s. per dozen

EUGENIA UGNI, 12s. to 18s. per dozen

DOSMANTHUS GRACILIS, 18s. to 24s. per dozen

An allowance to the Trade.

GENUINE NURSERY STOCK, comprising:—

TRANSPLANTED FOREST TREES.	
Alder, 2 to 3 feet	Pinus monticola, 4 to 6 feet
Ash, 1½ to 2 feet	" muricata, 1½ to 2½ feet
" 2 to 3 feet	" pyrenaica, 1½ to 2½ feet
Birch, 2 to 3 feet	Picea Nordmanniana, 5 to 4 feet
" 3 to 4 feet	" pungens, 2 to 2½ feet
" 4 to 5 feet	Abies pectinata, 1½ to 2 feet
Chestnut (Spanish) 1½ to 2½ feet	" " 2 feet
Fir (Larch), 1½ to 2 feet	" " 2½ to 3 feet
" 2 to 2½ feet	" " 3 feet
Hazel, 1½ to 2 feet	" " 4 feet
" 2 to 3 feet	" " 5 feet
Willows, 3 feet	" " 6 feet
" cuttings, 1 to 2 feet	Cedrus Deodara, 1 to 2 feet

CONIFERS AND HARDY ORNAMENTALS.	
Arbutus, 1½ to 2 feet	" " 3 feet
Aucuba japonica, 1 to 2 feet	" " 4 feet
Berberis Darwini, 1 foot	" " 5 feet
" aquifolia, 1 to 2 feet	" " 6 feet
Box Trees of sorts, 1 to 2 feet	" " 7 feet
Eugenia Ugni, 1 foot	Cupressus Lawsoniana, 2 to 3 feet
Hollies of sorts, 2 to 3 feet	" " 3 to 4 feet
" variegated, 1½ to 2½ feet	" " 4 to 5 feet
Laurels (common), 2 to 3 feet	" " 5 to 6 feet
" 3 to 4 feet	" " 6 to 7 feet
Laurustinus, 1 foot	" " 7 to 8 feet
Privet (Box-leaf), 1½ to 2 feet	Cryptomeria Japonica, 1 to 2 feet
Palm Cabbage, 1 to 1½ feet	Cupressus Lawsoniana, 2 to 3 feet
" intermedia, 1 to 1½ foot	" " 3 to 4 feet
Specimen CONIFERS, in fine condition for removal, prices and size on application	Juniperus chinensis, 1½ to 2 feet
Choice Named Hardy RHODODENDRONS, SCARLET, WHITE, ROSE, and PURPLES, in every shape, fine bushy plants, 1½ to 3 feet, 12 to 24 sorts	" " 2 feet
RHODODENDRON PONTICUM, varieties of various sizes, from 9s. to 100s. per dozen	" hibernica, 2½ to 3 feet
AZALEAS, named sorts, 9s. to 36s. per doz	" sabina (for covers) 2½ ft.
STANDARD and DWARF ROSES, in choice varieties, straight stems, and good heads, 30s. to 42s. per doz	Taxus (Yew, common), 1 to 2 feet
STANDARD and DWARF APPLES, three and four years old heads, 30s. to 36s. per doz	" Irish, 2½ to 3 feet
Plans and Estimates given for Laying out and Planting New Parks and FOREST GLADES supplied and planted by the Acre, and failures replaced	" variegated, 1½ to 2 ft.
	Thuja aurea, 1, 2, and 3 feet, fine
	" Lobbii, 2 to 3 feet
	" " 3 to 4 feet
	" " 4 to 5 feet
	" Wareana, 3½ to 4 feet
	Thuiopsis borealis, 1½ to 2 feet
	Wellingtonia gigantea, 1 to 1½ ft.

A NEW DESCRIPTIVE and PRICED CATALOGUE of Japanese Novelties and General Nursery Stock may be had on application.

MAURICE YOUNG, Milford Nurseries, near Godalming, Surrey.

RICHARD SMITH,

NURSERYMAN and SEED MERCHANT, Worcester.

ROSES.—12 of the very best Standard Perpetual and Moss Roses for 12s.; sent carriage free.

12 ditto Dwarf do. do. for 12s. 50 for 42s.; 100 for 75.

12 ditto, New Sorts of 1865, for 24s.

Descriptive List on application.

EVERGREENS for Ornamental Planting or Avenues, handsome, well grown, and transplanted within the last two years.

For prices of smaller sizes and quantities, see CHEAP LIST.

At 30s. per dozen :—

Abies alba, 5 to 7 feet	Juniperus thurifera, 3 to 4 feet
" Douglasii, 3 to 4 feet	" Lawsoni, 5 to 6 feet
" inverta, 3 to 4 feet	" Portugal, Pyramids .. feet
" orientalis, 1½ to 2 feet	Pinus Cembra, 3 to 4 feet
Arbor-vitæ, American, 6 to 7 feet	" excelsa, 5 feet
" Siberian, 3 to 5 feet	Taxodium sempervirens, 7 to 8 ft.
Cedar, Red, 5 to 6 feet	Thuja Lobbii, 3 to 4 feet
Cryptomeria virdis, 4 to 5 feet	" aurea, 4 to 5 feet
Cupressus Lawsoniana, 2 to 4 feet	" compacta, 1½ to 2 feet
" fragrans, 3 feet	Thuiopsis borealis, 3 feet
Irish Yew, 4 to 5 feet	Wellingtonia gigantea, .. feet

At 42s. per dozen :—

Abies Douglasii, 4 to 5 feet	Picea excelsa, 6 feet
" nobilis, 2 to 2½ feet	" Lambertiana, 3 to 4 feet
" orientalis, 2 to 2½ feet	" insignis, 3 to 4 feet
" pectinatella, 2 to 2½ feet	Thuja Lobbii, 6 to 7 feet
Arbor-vitæ, Chinensis, 2 to 2½ feet	" compacta, 2 to 2½ feet
" Tartarica, 4 to 4½ ft.	" aurea, 5 feet
Cedar, Red, 6 to 8 feet	Thuiopsis borealis, 4 feet
Cupressus Knightii, 6 to 7 feet	Wellingtonia gigantea, 3 feet
" Lawsoniana, 5 feet	Laurels, Colchic, 6 to 7 feet
Juniperus Chinensis, 4 to 5 feet	
Pinus Cembra, 4 to 5 feet	

At 60s. per dozen :—

Abies nobilis, 3 to 3½ feet	Juniperus thurifera, 5 to 6 feet
" Douglasii, 5 to 6 feet	Pinus excelsa, 6 to 8 feet
" Menziesii, 5 to 6 feet	" Lambertiana, 5 to 6 feet
" orientalis, 3 to 4 feet	" Cembra, 5 feet
" pectinatella, 3 to 3½ feet	Thuja japonica, 2½ to 3 feet
Arbor-vitæ, Chinensis, 3 to 3½ feet	" nutkaensis, 5 feet
Cedrus Deodara, 4 feet	Wellingtonia gigantea, 4 feet
Cupressus Knightii, 7 to 8 feet	Yew, Irish, 6 feet
" Lawsoniana, 5 feet	

At 84s. per dozen :—

Abies Douglasii, 7 to 8 feet	Cedrus Deodara, 7 to 8 feet
" inverta, 7 to 8 feet	Juniperus thurifera, 8 to 9 feet
" Menziesii, 6 to 8 feet	

Each :—

Abies Douglasii, 8 to 10 ft., 12s. 6d.	Picea nobilis, 2 to 2½ feet, 10s. 6d. to 21s.
" inverta, 4 to 5 feet, 10s. 6d.	Picea nobilis, 2½ to 3 ft., 21s. to 63s.
" 6 feet, 21s.	" Nordmanniana, 2½ to 4 feet, 7s. 6d. to 21s.
Araucaria Imbricata, 3 to 4 feet, 7s. 6d. to 21s.	" " 4 to 6 feet, 42s. to 84s.
" " 4 to 5 ft., 21s. to 63s.	" Pinsapo, 3 to 5 ft., 10s. 6d. to 42s.
Cedar of Lebanon, 8 to 10 feet, 21s.	" Lambertiana, 6 to 8 feet, 10s. 6d. to 21s.
Cedrus Deodara, 8 to 10 ft., 10s. 6d. to 21s.	

American Arbor-vitæ, for Hedges, 3 to 4 feet, 42s. per 100.

" " 4 to 5 feet, at 75s. "

" " 5 to 6 feet, at 100s. "

RICHARD SMITH, Nurseryman and Seed Merchant, Worcester.

Primula, Calceolaria, &c.

WM. CUTBUSH AND SON are now sending out SEED of their superb PRIMULA SINENSIS FIMBRIATA, which has for many years given great satisfaction.

The *Gardeners' Chronicle* of the 6th of January, in Notices to Correspondents, says:—"The blooms sent are remarkably fine, richly coloured, full, and densely fringed; they are evidently the produce of a capital strain."

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Sealed packets, 6d. and 1s. 6d. each

CALCEOLARIA (DWARF). This is the finest necbace in variety extant. Per packet 2s. 6d. an 1 5s. 6d. each.

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Upper Kendalstown Nurseries Delgany, Co. Wicklow.

M. P. PENNICK begs to announce that he has a fine stock of the following:—

CRYPTOMERIA JAPONICA, 2½ to 3½ feet high

CEDAR of LEBANON, 1½ feet

LIGHT or IRISH YEWS, 1 to 7 feet

SWEET BAYS, 2 to 2½ feet

CHINESE ARBOR-VITÆ, 2 to 2½ feet

The above are generally handsome, healthy, and well rooted.

Prices moderate, on application.

SPLENDID FRESH-IMPORTED CALIFORNIAN SEEDS, warranted growth of 1865.

WELLINGTONIA GIGANTEA, 1s. 6d. per 1000 seeds, 2s. 6d.; 5000 seeds, 25s.; 1 oz. (about 1600 seeds), 5s. 6d.; 4 oz., 18s.

PINUS LAMBERTIANA (True), 30s. per lb.; 15s. per 4 oz.; or 5s. per oz.

All of first-rate quality. Larger quantities on application. Free in London or Leith. Terms cash. The above can also be obtained on the same terms of Mr. WM. DICKSON, Leith.

PETER SMITH & CO., Seed Merchants, Hamburgh.

Spring Planting.

PETER LAWSON AND SON are prepared to execute orders for every description of NURSERY STOCK suitable for FOREST and ORNAMENTAL PLANTING.

As the present is the best time, it is recommended that requirements for SPRING PLANTING should be ordered as soon as possible, and the plantations surveyed by the Nurserymen intended to be employed.

If large quantities of LARCH, SCOTCH, AUSTRIAN PINE, and other Conifer TREES are wanted, PETER LAWSON & SON will be glad to submit special offers when desired.

Edinburgh and Carmichael London.

MAURICE YOUNG'S DESCRIPTIVE LIST of Coniferæ, New and Rare Hardy Plants, Ornamental Trees and Shrubs, Rhododendrons, Japanese Novelties, Forest Trees, and Roses, forwarded on application.

Milford Nurseries, near Godalming, Surrey.

FOREST TREES, &c.—At the Nursery of the late DAVID A. REID, Park Attwood, Bewdley, Worcestershire.

	Per 1000 —£. d.
3000 to LARCH, 2 to 2 feet	10 0
1000 PEAR STOCKS, 2 to 5 feet	12s to 20 0
1000 SPANISH CHESTNUTS, 1-year Seedling, 1 to 2 feet..	10 0
3000 to SILVER FIR, 1-year Seedling, fine	4 0
1000 to ASH, 1-year Seedling, fine	2 0
500 to SYCAMORE, 1-year Seedling, fine	4 0
3000 to BEECH, 1-year Seedling, fine	4 0
2000 to WALNUTS, 1-year Seedling, fine	10 0

100 Bushels PITTED HAWS. Price on application

Apply, with reference, to JAMES RIDDELL, Steward, Park Attwood.

FORTY THOUSAND COMMON LAURELS, 1 to 6 ft.

1000 LAURUSTINUS, 1 to 4 feet.

1000 HOLLY, 2 to 3 feet.

1000 GREEN TREE BOX, 1 to 3 feet.

500 COMMON YEWS, 1 to 4 feet.

500 SPANISH CHESTNUT.

The whole of the above are fine bushy plants, and well rooted.

R. GAINES & SON having a large stock of the above, are in a position to offer them at remarkably low prices. Special quotations on application.

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SOMBRERO ISLAND PHOSPHATIC GUANO applied at this season of the year has been found more beneficial for Grass than any other Manure. Applications apply to W. PIKE & SON, 148, Fenchurch Street, London. Sole Agent for the Sombrero Island.

Established 1812.

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FOR

TURNIPS, GRASS, WHEAT, BARLEY, OATS, POTATOS, &c.; and their

BONE SUPERPHOSPHATE of LIME

are the best prepared and cheapest Manures offered to the Public.

Offices—Corn Exchange Buildings, Carr's Lane, Birmingham.

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The Manures manufactured by J. B. LAWES for the present season of 1866 are now ready for delivery at his Factories, at the following prices:—

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LAWES' PATENT TURNIP MANURE, and BONE SUPERPHOSPHATE of LIME	6 0 0
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CONCENTRATED CORN and GRASS MANURE ..	12 0 0

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Genuine Peruvian Guano direct from the Importers. Nitrate of Soda, Sulphate of Ammonia, and all Chemical Manures.

Amended analyses of all market places.

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Chief Offices, 109, Fenchurch Street, London, E.C.

THE LONDON MANURE COMPANY
(ESTABLISHED 1840),
Have now ready for delivery in dry fine condition,
CORN MANURE, for Spring Use
DISSOLVED BONES, for Dressing Pasture Lands
SUPERPHOSPHATES of LIME
PREPARED GUANO
MANGEL and POTATO MANURES
Also Genuine PERUVIAN GUANO, and NITRATE of SODA, ex Dock Warehouse; SULPHATE of AMMONIA, FISHERY SALTS, &c.
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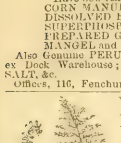

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For particulars, and how to use it, see long Advertisement in *Gardeners' Chronicle* of the 21st March, 1863; or apply to the PATENT COCOA FIBRE COMPANY, Kingston-upon-Thames.
Postage Stamps or Post-office Orders payable to J. BARSHAM & Co.
BARSHAM'S BRUSHES and MATS are sold in every town.
CAUTION. — Every Brush is stamped, J. BARSHAM'S Patent.

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HENRY APPLEBY, Foreman to Messrs. IVERY & SON, Dorking, Surrey.

ROLL TOBACCO CLOTH. — The cheapest and best article for Smoking Greenhouses and destroying the Fly; equal to Tobacco in strength, 1s. 4d. per lb.; over 10 lbs., 1s. 3d.
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Post Office Orders payable Fleet Street.

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TOBACCO TISSUE for FUMIGATING GREENHOUSES. — An entirely new article manufactured under Letters Patent, from Tobacco rolled into sheets, which allows it to consume slowly without the assistance of a match, and is entirely free from any chemical admixture, which is so destructive to tender plants. It will be found more economical and very superior to the article generally used.
Sold in 1 lb. packages and upwards, price 3s. 6d. per lb., by Messrs. ROGERS & SONS, Tobacco Manufacturers, 51, St. John Street, Clerkenwell; and by all Seedsmen and Nurserymen.

Plagues of the Garden.
SIMPLE AND SURE REMEDY. — By using the
APHIS WASH, these Pests of the Garden, together with Scale, Caterpillars, Slugs, Earwigs, &c., are immediately destroyed. Leaves no stain, but strengthens the Trees or Plants.
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Sold by Chemists and others, in 1s. bottles, and 2s. 6d. a gallon, with full directions for use.
Wholesale at the City Soap Works, Milton Street, London, E.C.

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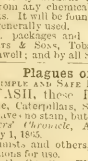

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GISHURST COMPOUND, whether used against Insects and Mildew, on Growing Plants, or as Winter Dressing on the Trees at rest, should be dissolved 48 hours before use. This gets rid of mould, and the Soot, which must be decanted, prevents any staining of foliage. A strength of from 1 to 3 oz. to the gallon of water is recommended for growing Plants; one from 4 to 16 oz. for Trees at rest.
Sold Retail by Nurserymen and Seedsmen, in boxes, 1s., 3s., and 10s. 6d. each.
Wholesale by
PRICE'S PATENT
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CLIFF'S ANTISEPTIC FLUID.
Manufactured by F. C. CALVERT & Co., Manchester.
A Valuable Sheep Dip, a certain cure for Scab, and a powerful Antiseptic in case of Infectious Diseases. For further particulars apply to RODT. COLEMAN & SON, 150, Leadenhall Street, E.C.

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Also, the original GASEOUS FLUID, for Debility and Exhaustion in Ewes after Lambing, for Diarrhœa in Calves and Lambs, and for Colic and Gripes in Horses and Cattle. In feverish cases, and for scouring in Ewes and Cows, a dose of the "Red Drench" should be given.
Mr. Bowick, Author of the Prize Essay on the "Rearing of Calves," says :—"I have reared 26 calves this year, and by the use of the Gaseous Fluid I have not lost one."
Price 1s. 9d. per bottle; or one dozen in a wooden box, 20s.
Full Directions for use given with each article. Prepared by the original and only proprietors—DAY, SON & HEWITT, 22, Dorset Street, Baker Street, London, W.

E. T. ARCHER'S "FRIGI DOMO." — Patronised by her Majesty the Queen, the Duke of Northumberland for Syon House, his Grace the Duke of Devonshire for Chiswick Gardens, Professor Lindley for the Horticultural Society, Sir Joseph Paxton for the Crystal Palace, Royal Zoological Society, &c.
PROTECTION from COLD WINDS and MORNING FROSTS. "FRIGI DOMO," a Canvas made of patent prepared Hair and Wool, a perfect non-conductor of Heat and Cold, keeping, wherever it is applied, a fixed temperature. It is adapted for all horticultural and floricultural purposes, for preserving Fruits and Flowers from the scorching rays of the sun, from wind, from attacks of insects, and from morning frosts. To be had in any required lengths.

Two yards wide	1s. 6d. per yard run.
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An improved make, 2 yards wide ..	1s. 9d. per yard.
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Also "Frigi Domo" Netting, 2 yards wide, 1s. 6d. per yard run
ELISHA THOMAS ARCHER, Whole and Sole Manufacturer, 7, Great Trinity Lane, Cannon Street, City, and of all Nurserymen and Seedsmen throughout the kingdom.
"It is much cheaper than Mats as a covering."

CHEAP PAVING TILES. — A Manufacturing Firm have a considerable stock of PLAIN and ENCAUSTIC TILES, more or less damaged in the process of manufacturing, that they would be willing to dispose of at prices below those of the commonest description of paving materials. To Landed Proprietors they would be invaluable for the Floors of Cottages, Farm Houses, &c.; and would be supplied at a very low rate.
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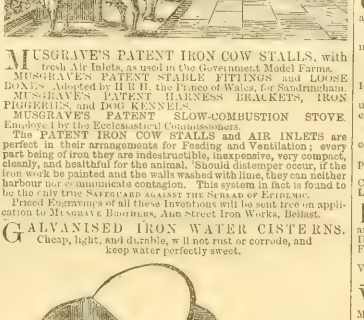
POWERFUL GARDEN ENGINE, suitable for the above, price 45s.
IMPROVED WATER and LIQUID MANURE CARTS.
Catalogues on application.
Manufactured by W. S. BOULTON, Rose Lane Iron Works, Norwich.

Future Safety from Rinderpest.



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MUSGRAVE'S PATENT STABLE FITTINGS and LOOSE BOXES. Adopted by H.R.H. the Prince of Wales, for Sandringham.
MUSGRAVE'S PATENT HARNESS BRACKETS, IRON PIGGERIES, and DOG KENNELS.
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Employed by the Ecclesiastical Commissioners.
The PATENT IRON COW STALLS and AIR INLETS are perfect in their arrangements for Feeding and Ventilation; every part being of iron they are indestructible, inexpensive, very compact, cleanly, and healthful for the animal. Should distemper occur, if the iron work be painted and the walls washed with lime, they can neither harbour nor communicate contagion. This system in fact is found to be the only true SAFEGUARD AGAINST THE SCOURGE OF EPIDEMIC.
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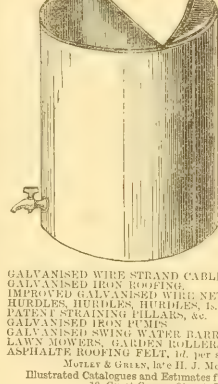

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On view the Morning of Sale, and Catalogues had.

Imported Orchids from Mexico and New Grenada.
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On view the Morning of Sale, and Catalogues had.

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MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, at 67 and 68, Gracechurch Street, City, E.C., on WEDNESDAY, March 14, at 1 o'Clock precisely, about 300 Choice DOUBLE CAMELLIAS and AZALEA INDICA, from 1 to 6 feet, beautifully furnished with bloom buds; a superb assortment of fine handsome STANDARD and DWARF ROSES; selected FRUIT TREES, AMERICAN PLANTS, fine bulbs of LILIUM LANCIFOLIUM of sorts, GLADIOLUS, &c
On view the Morning of Sale. Catalogues may be had at the Rooms as above, and of the Auctioneers and Valuers, Leytonstone.

Hampstead Road.
IMPORTANT SALE OF NURSERY STOCK.
MESSRS. PROTHEROE AND MORRIS have received instructions from the Executors of the late Mr. James Pearson, deceased, to SELL by AUCTION, without reserve, on the Premises, Eschol Nursery, Hampstead Road, opposite the Chalk Farm Station on the North London Railway, on MONDAY, March 26, and following day, at 11 o'Clock each day, the whole of the Valuable NURSERY STOCK, including Thousands of fine Bushy Aucubas, from 1 to 4 feet; Arbor-vitæ, 1 to 8 feet; Green Hollies, Ranunculus, Box, Phaseolus, Bays, Berberis, Yews, Araucaria imbricata, Weymouth Pine, Laurels, a quantity of strong Irish Yews in pots; large Lilacs, Ribes, Spiræa, and other Deciduous Shrubs, Chestnuts, Planes, Thorns, Laburnum, Birch, Beech, Sycamore, Weeping Willows, Ash, fine Standard and Dwarf Roses, Dwarf-trained and Standard Fruit Trees, &c.; with the first portion of the Greenhouse Plants, consisting of Double Camellias, Azalea indica, &c.
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N.B. The valuable Lease, 45 years unexpired upon about 3 Acres of Land. Also the choice Greenhouse Plants, extensive erections of Greenhouses, Sheds, and other Buildings; ranges of Pits, and numerous effects, will be offered about the middle of April next.

GREEN'S PATENT SILENS MESSOR,

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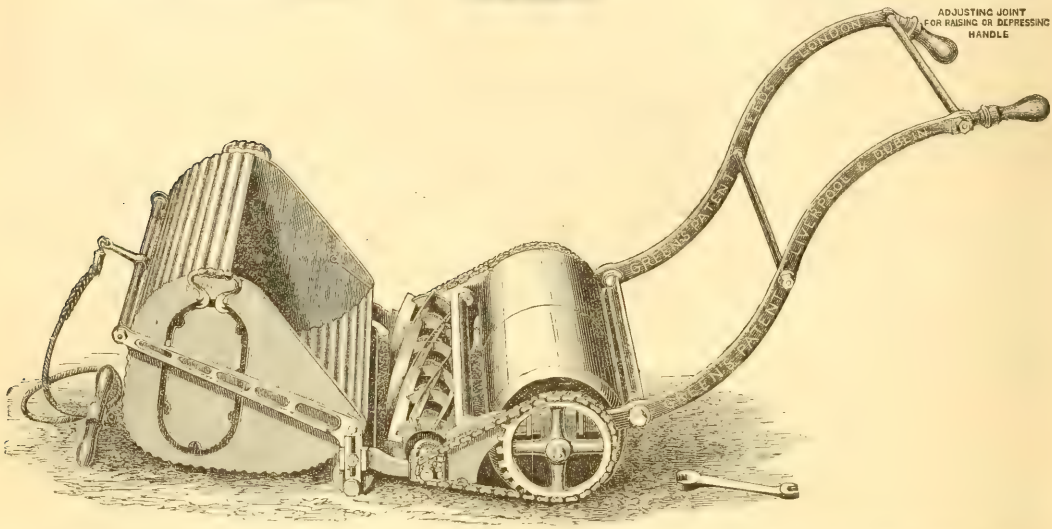
NOISELESS LAWN MOWING, ROLLING, and COLLECTING MACHINES.

FITTED WITH PATENT SELF-SHARPENING CYLINDER CUTTERS.

BY SPECIAL APPOINTMENT, SOLE MANUFACTURER TO HER MOST GRACIOUS MAJESTY THE QUEEN.



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,, 16 ,,	..	..	..	6	10	0	,, ,,	,, 24 ,,	..	..	..	9	0	0	,, ,,

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54 and 55, BLACKFRIARS ROAD, LONDON, S.; and 19, EDEN QUAY, DUBLIN.

Editorial Communications should be addressed to "The Editor," Advertisements and Business Letters to "The Publisher," at the Office, 41, Wellington Street, Covent Garden, London, W.C.
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THE GARDENERS' CHRONICLE
AND
AGRICULTURAL GAZETTE.

A Newspaper of Rural Economy and General News.

No. 11.—1866.] SATURDAY, MARCH 17. {Price Fivepence. STAMPED EDITION, 6d.

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ROYAL HORTICULTURAL SOCIETY, SOUTH KENSINGTON.
A MEETING of the FRUIT and FLORAL COMMITTEES will be held on TUESDAY NEXT, March 20, at 11 o'Clock.

ROYAL HORTICULTURAL SOCIETY.—Mr. WILLIAM PAUL'S EXHIBITION of SPRING FLOWERS will be held at South Kensington, from MARCH 21 to APRIL 3. Admission: Tuesdays and Saturdays (Hand at 3), 2s. 6d.; Mondays, 6d; other days, 1s.

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The NEXT EXHIBITION of SPRING FLOWERS, April 7.

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The EXHIBITION and CONGRESS will OPEN on MAY 22, and continue till May 25. Subscribers' names will be received, and Schedules and Prospectuses may be obtained on application to the Secretary, at the Offices, 1, Wilmington Street, Bowndes Square, London.

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FINEST LAWN MIXTURE.—Composed only of the best and cleanest Seeds of the most suitable dwarf Evergreen Grasses. 1s. per lb. Carriage free.
JAMES DICKSON & SONS, Seed Merchants, 102, Eastgate Street, Chester

NEW FARM SEEDS of best selected quality. PRICED DESCRIPTIVE LIST post free upon application.
JAMES DICKSON & SONS, Seed Merchants, &c., 102, Eastgate Street, Chester.

ISAAC MATTHEWS, Milton and Wetley Moor Nurseries, begs to offer to the Trade 20,000 RHODODENDRONS, 1½ to 2 feet, bushy. Price on application, delivered at Stoke Station

To the Trade.
ASPARAGUS ROOTS, strong, 2 years old, at 10s. per 1000. On application to
MARSH & PARKINS, 42, Drapery, Northampton.
Terms cash.

GIANT ASPARAGUS.—Extra fine 2-yrs., 2s. per 100, extra fine 3-years, 3s. per 100.
Price to the Trade on application.
JOHN CRANSTON, Nurseries, King's Acre, near Hereford.

GRAYSON'S GIANT ASPARAGUS.
Fine strong 3-year roots, 30s per 1000, 3s. 6d. per 100
Fine strong 2-year roots, 21s. per 1000, 2s. 6d. per 100.
STEPHEN BROWN, Nurseryman, Sudbury, Suffolk.

THE LONGSTANDER LETTUCE.—Most remarkable for duration without running, crisp and excellent. Packets 1s. each.
STEPHEN BROWN, Seed Grower, Sudbury, Suffolk.

Scrymger's Brussels Sprouts.
SEED of the above excellent variety can be had true from the Raiser, in packets at 1s.; post free 14 stamps.
Price to the Trade on application.
G. SCRYMGER, Nonsuch, near Reading.

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FOR SALE, CAULIFLOWER, CABBAGE, and LETTUCE PLANTS; also 1, 2, and 3-year old ASPARAGUS. Price on application to
JOHN COOPER, Gardener and Florist, Fulham Fields, S.W.

H. AND R. STIRZAKER have a few Tons of EARLY IMPROVED LEMON and MYATT'S ASHLEAF KIDNEY POTATO; also DALMAHOY ROUND, which they offer very cheap, to clear out. Skerton Nurseries, Lancaster.

Paterson's Seedling Potatos.
SUTTON AND SONS having been appointed AGENTS for the above, can supply them in quantity, at moderate prices, which may be had on application
SUTTON & SONS, Seed Merchants, Reading.

THE SKERRY BLUE POTATO.—This Potato is one of the best and most productive in cultivation, and is very free from disease. Price per sack of 2 cwt. on application.
SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

ROYAL ASH-LEAF POTATO.—This is one of the earliest and the most productive of all the 'Ash-leaf Kidney Potatos. Price per ton of finely prepared Seed given on application to
Messrs. THOS. RIVERS & SON, Nurserymen, Sawbridgeworth.

DAINTREE'S SEEDLING POTATO is the best early round white Potato in cultivation, and can be obtained at a moderate price on application.
Mr. S. A. DAINTREE, Fendrayton, St. Ives, Hunts.

PINK-EYED FLUKE POTATOS for SEED.—Excellent for the table, an abundant cropper on strong soils and free from disease, at 2s. per bushel of 80 lb. Apply to
WM. GROSVENOR, Prospect Nursery, near Leek, Staffordshire.

SEED POTATOS.—Myatt's Prolific Kidney, Early Dalmahoy, Webb's Imperial Kidney, Daintree's Seedling, and all the best early and late varieties at low prices.
H. & F. SHARPE, Seed Growers and Merchants, Wisbech.

SEED POTATOS.—SKERRY BLUE, 4s. 6d. per bushel; MYATT'S PROLIFIC ASHLEAF, 6s. per bushel SEEDLING ROCK, 4s. 6d. per bushel. These three kinds are the most hardy, free from disease, and abundant croppers known.
GEORGE DAVIDSON, Hereford.

To the Trade.
SEED POTATOS.—Myatt's Improved Ashleaf, Royal Ashleaf, Prince of Wales, Daintree's Seedling.
Prices on application to JOHN PERKINS, Sen., 62, Market Square Northampton.

EARLY KIDNEY POTATOS.—Webb's Telegraph, the first early, 20s. per bushel; Webb's President, second early, 16s. per bushel; Webb's Imperial Kidney (best Potato known for all purposes), 12s. per bushel.
Apply to Mr. WEBB, Calcot Gardens, Reading.

THE KING of POTATOS, one of the finest Potatos in cultivation, quite distinct, and free from disease, price 5s. per bushel of 56 lb. Also PATERSON'S VICTORIAS, Seed direct from Mr. Paterson, price 7s. 6d. for 56 lb.
Apply to Mr. PEARCE, Markham, Ashby-de-la-Zouch.

SEED POTATOS.—Early Ashleaf or Evesham Leader; Myatt's Early Prolific Kidney; Skerry Blue, hardy, productive, of good quality, and keeps free from disease. Prices on application to RAYNSBIRD, CALDECOTT, BAWTREE, DOWLING, & Co., Limited, Basingstoke; or Seed Market, Mark Lane, London, E.C.

NEW SEA KALE SEED for Sale.
Apply to G. BAGLEY, West Drayton, Middlesex.

Turnip, Swede, and Mangel Wurzel Seed.
ALFRED LEGERTON, SEED MERCHANT, 5, Aldgate, London, E., will be happy to make special prices of the above to the Trade upon application. Samples and stocks first-class.

New Catalogues.

DOWNIE, LAIRD, AND LAING beg to intimate that their PRICED DESCRIPTIVE CATALOGUES OF FLORIST FLOWERS, NEW PLANTS, GARDEN, FLOWER, and AGRICULTURAL SEEDS are now ready, and may be had free on application. 37, South Frederick Street, Edinburgh; and Stateshall Park, Forest Hill, London, S.E.

Select Catalogues of Seeds and Plants.

ROBERT PARKER begs to announce that his NEW PRICED and DESCRIPTIVE CATALOGUES, containing Select Lists of the best varieties of Vegetable, Agricultural, and Flower Seeds, New and Rare Plants, &c., is now published, and will be forwarded to applicants. All Seeds are warranted to be of the finest possible quality. Intending purchasers are requested to compare the prices with those of other houses.
Exotic Nursery, Tooting, Surrey, S.

GEORGE SMITH'S NEW CATALOGUE, with a Splendid Wood-cut of NOSEGAY GERANIUM LE GRAND, which is the finest of all Geraniums for effect; for description, see CATALOGUE of Novelties, Gratis, in the *Gardeners' Chronicle*, February 10th. The Catalogue contains select Lists of the newest and best Decorative kinds: Show, Fancy, Zonale, and Variegated Geraniums, Petunias, Verbenas, Pelargoniums, Dahlias, Chrysanthemums, Bedding Plants, &c., now ready in exchange for one postage stamp.
Adelaide Nurseries, Horsham Road, London, N.

LAMOUREUX, CLARK, AND CO., Seed Merchants, Plymouth.
The SEED CATALOGUE and GARDENING DIRECTORY for 1866, now published, will give full particulars respecting prices and other matters in connection with the Business. Will be sent gratis and post free to all who write for it.

MAURICE YOUNG'S DESCRIPTIVE LIST of Conifers, New and Rare Hardy Plants, Ornamental Trees and Shrubs, Rhododendrons, Japanese Novelties, Forest Trees, and Roses, forwarded for application.
Milford Nurseries, near Godalming, Surrey.

To the Trade.

CUPRESSUS LAWSONIANA SEED (true), of excellent quality, and with a full crop of present season. Price, per lb., 2s. 6d.; per oz., 2s.; per half lb., 6s.; per lb. nett. From stock which was originally sent direct from the country of origin.
WHOLESALE CATALOGUES of GENERAL NURSERY STOCK on the list being sent to
THOS. CRIPPS, Nurseryman, Tunbridge Wells, Kent.

VIOLETS.—Now in Full Bloom and in first-rate condition for planting out, a large stock of all sorts of Violet Plants. The GIANT, bearing a fine bloom and a more beautiful perfume than any other kind, now in perfection.
Lists of Prices and Sample Bloom of the above new Sort sent on receipt of Stamped Envelope.
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THE CZAR, a New Russian VIOLET, raised by H. J. Graham, Esq., obtained two First-class Certificates in two days, for its brilliant flowers and foliage; and a Special Certificate in the present year. Its flowers attain 1½ inch in depth, and continue in bloom October to May.
"One of the most remarkable for its extreme luxuriance, and the finest variety I ever met with."—*Journal of Horticulture*, March 6, 1866, p. 181.
Will be sent out in March, and may be had in Mr. JOHN GRAHAM, Chelsea, near Hammersmith, 2s. per 100; 15s. per dozen prepaid, packed in basket.

TO BE SOLD, for Cash, 2500 DAHLIAS, best out, in 250 best sorts, containing the leading kinds of 1864, 2s. 6d. per dozen, 12s. 6d. per 100. Also 200 Old Seeds, in excellent health, 1s. 6d. per dozen, or 10s. per 100.
CATALOGUE of the above, containing Hollyhocks and Bedding Plants, on application, containing stamped envelope.
J. C. FADMAN, Boston Spa, near Tadcaster.

SUTTON'S CHOICE COLLECTIONS of FLOWER SEEDS.

SUTTON AND SONS forward Flower Seeds Free by Post or Rail.

These comprise showy kinds of Flower Seeds, and who are not well acquainted with the sorts, are respectfully recommended to leave the selection to us, and we will supply those we know to be really worthy of cultivation.

			£	s.	d.
1.	The best 12 sorts (hardy, half-hardy, and tender)		1	0	
2.	The best 50 sorts	ditto	ditto	0	10	6
3.	The best 50 sorts	ditto	ditto	0	7	6
4.	The best 24 sorts	ditto	ditto	0	5	0
5.	The best 24 sorts (hardy sorts only)			0	3	0

PRICED CATALOGUES gratis and post free on application.
SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

Primula, Calceolaria, &c.

WM. CUTBUSH AND SON are now sending out SEED of their splendid PRIMULA SINENSIS FIMBRIATA, which has for many years given great satisfaction.
The *Gardeners' Chronicle* of the 6th of January, in Notices to Correspondents, says:—"The blooms sent are remarkably fine, full, compact, full, and densely fringed: they are evidently the produce of superb stock."
The *Journal of Horticulture* of the 23rd of January, says that—"The finest and richest coloured Chinese Primulas we have yet seen in bloom, we raised by Messrs. Cutbush & Son."
Sealed packets 2s. 6d. and 5s. 6d. each.
CALCEOLARIA (Perfection). This is the finest herbaceous variety extant. Per packet 2s. 6d. and 5s. 6d. each.
CALCEOLARIA, in choicest named varieties. Per packet 2s. 6d. and 3s. 6d. each.
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Superb Double Hollyhocks.

WILLIAM CHATER begs to remind the Admirers of this handsome flower that now is the best time for planting to ensure fine spikes and blooms this season.
DESCRIPTIVE CATALOGUES, with instructions for its Cultivation; also perennial Plants per dozen, 100, or 1000, may be had on application.
Seedlings from best named varieties, 1s. per doz., or from 20s. to 30s. per 100.
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Seed saved from the finest named varieties, very choice mixed 2s. 6d. and 5s. per packet.
In Collections of 12 separate named varieties, extra fine, 10s.; 6 varieties, extra, 5s.
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6 do. do. do. do. 4s.
WILLIAM CHATER, Nurseries, Saffron Walden, Essex.

A RIBBON BORDER, Six Colours, Post Free, 2s. 6d. Stamps.

The selection of the above is unique, equalling Bedding Plants, at one-thirtieth the cost.

Poynter's 25s. Anglican Collections of Garden and Flower Seeds for One Year's Supply

Contains one of the above, and is altogether the best and cheapest offered. Carriage free.

☞ Useful PRICE LISTS gratis.

ROBERT H. POYNTER, SEED MERCHANT, TAUNTON.

ROSES, NEW ROSES, HOLLYHOCKS, and GLADIOLI.

PAUL & SON,

OLD CHESHUNT NURSERY, CHESHUNT, N.,

Would solicit before final close of Planting Season, orders for the following. Prices, their selection of varieties:—

STANDARD ROSES, 3l. to 4l. per 100; 18s. per doz.; £6 to £7 10s. per 100.
DWARF STANDARDS, 12s. per doz.; £4 to £5 per 100.
HOLLYHOCKS, set of 7 new varieties, 42s.; 7s. 6d. each; including GEO. EYLES and JOHN LAING. First-class Certificate Royal Horticultural Society. Good Border Flowers, 12s. per doz.; Good Exhibition Flowers, 18s. per doz.
GLADIOLI, all the newest varieties at lowest advertised prices; older sorts, 6s. to 12s. per doz.; newer sorts, 18s. to 30s.
NEW ROSES of 1866, some thousands of strong plants now ready, 3s. 6d. to 5s. each; 42s. per doz.

Largest usual discount to the Trade.

☞ PAUL & SON believe their choice of Sorts to include every good variety. Their Lists for the past two years are proofs of their judgment and a guarantee of the care taken by them in a selection so difficult.

Their New H.P. ROSE, PRINCESS MARY of CAMBRIDGE, will be ready with the others, 7s. 6d. each.

PRICED LISTS of the above, FRUITS, SEEDS, &c., now ready.

CHESHUNT.—March 17.

Thomas Gibbons & Co

THOS. GIBBS & Co. Corner of HALF-MOON St PICCADILLY, London.

ROYAL HORTICULTURAL SOCIETY FOR ENGLAND. APPOINTED A.D. 1804. THE SEEDSMEN.

CORNER of STREET.

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GRASS SEEDS, AGRICULTURAL SEEDS,

KITCHEN GARDEN SEEDS, FLOWER SEEDS.

Catalogues forwarded post free to any address on application.

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LONDON SEED COMPANY, LIMITED,

TO

LARGE PURCHASERS OF FARM SEEDS.

The Directors beg to call particular attention to the following LIST of SEEDS, which can be had at the annexed prices, delivered Carriage Free, agreeably to the Carriage Arrangements specified in the FARM SEED PRICE CURRENT, just published.

	Bushel.	Half Bushel.	Peck.	Gallon.
LONDON PURPLE-TOP SWEDE TURNIP ..	£1 14 0	£0 17 6	£0 9 6	£0 5 0
PLYMOUTH " " ..	1 14 0	0 17 6	0 9 6	0 5 0
SKIRVING'S " " ..	1 11 0	0 16 0	0 8 6	0 4 6
WHITE GLOBE, GREEN, and RED ditto ..	1 11 0	0 16 0	0 8 6	0 4
SCOTCH PURPLE and GREEN-TOP ..	1 10 0	0 16 0	0 9 0	0 4 6
GREY STONE	1 17 0	0 19 0	0 10 0	0 5 0
	Cwt.	Half Cwt.	Quarter Cwt.	14 lb.
LONG RED MANGEL..	2 14 0	1 8 0	0 15 0	0 8 0
LONG YELLOW MANGEL	3 3 0	1 12 6	0 17 0	0 8 6
YELLOW GLOBE MANGEL	2 10 0	1 7 6	0 15 0	0 8 0
RED GLOBE MANGEL	2 14 0	1 8 0	0 15 0	0 8 0
FISHER HOBBS'S ORANGE GLOBE ..	2 14 0	1 8 0	0 15 0	0 8 0
DRUMHEAD CABBAGE	10 0 0	5 10 0	3 0 0	1 12 6
ALTRINGHAM CARROT	5 0 0	2 15 0	1 10 0	0 17 6
WHITE BELGIAN CARROT..	3 15 0	2 0 0	1 2 6	0 12 6
YELLOW BELGIAN CARROT	5 0 0	2 15 0	1 10 0	0 17 6
LARGE CATTLE PARSNIP	4 4 0	2 5 0	1 5 0	0 13 6
ITALIAN RYE-GRASS	5s. per bushel, or 38s. per quarter.			
PERENNIAL RYE-GRASS	5s. " 38s. "			
MIXED GRASSES, for PERMANENT PASTURE	12s. " 90s. "			
WEST of ENGLAND COW CLOVER	75s. to 90s. per cwt.			
WHITE DUTCH ditto	70s. to 84s. "			
TREFOIL	35s. to 40s. "			

This Company was formed by the purchase of the Business of one of the Oldest Established Firms in the Kingdom, of more than Eighty Years' standing.

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MR. ALFRED BREWIN, MANAGER, LONDON SEED COMPANY,
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Extra strong Fruiting Vines.

GEORGE CLARKE has a very large stock of stout, close-jointed, well-ripened VINES, which, under good management, are sure to produce a good crop of fruit this season. The collection embraces all the most approved kinds. Prices, 5s., 7s. 6d., and 10s. Also, for planting out, healthy clean plants, 3s. 6d. each. All from eyes, and well rooted.

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Vines.

B. S. WILLIAMS begs to announce that he still holds a fine stock of the above. Planting and Fruiting Canes of all the best kinds, including the NEW GRAPE ROYAL VINEYARD.

Victoria & Paradise Nurseries, Holloway, London.

Fruiting Vines.

E. G. HENDERSON AND SON offer the above, with splendid Canes of well-matured growth, with prominent eyes, sure to give a heavy crop of fruit, 10s. 6d. each.

LIST of SORTS sent on application.

Wellington Nursery, St. John's Wood, London, N.W.

To the Trade.

EXTRA fine Dwarf-trained APRICOTS, PEACHES, PEARS, PLUMS, and CHERRIES.

Extra fine STANDARD PEARS, CHERRIES, PLUMS, &c.

GRAPE VINES, ORCHARD HOUSE TREES, Fruiting or otherwise List of sorts on application

James Cranston, Nurseries, King's Acre, near Hereford.

W. VIRGO AND SON having a surplus stock of the undermentioned FRUIT, FOREST, and other TREES, can offer them at a very reduced price, viz.:—

Standard and Dwarf Apples	Alder, 2 to 3 feet
Standard and Dwarf Pears	Larch Fir, 2 to 3 feet
Standard and Dwarf Trained Cherries (very fine)	Spruce Fir, 18 inches, 2 and 3 feet
Hazel, 2 to 4 feet	Berberis Aquifolium, 1 foot
Birch, 2 to 3 and 4 feet	dulcis, 2 feet
Spanish Chestnut, 2 to 3 feet	Portugal Laurel, 2 feet
Withy, 3 to 4 and 5 feet	Common Laurel, 2 to 3 feet
	Privet, 18 inches to 2 feet

Also a large quantity of Trees fit for belting.

Prices of the above can be had on application at the Nursery, Wonersh, near Guildford, Surrey.

To the Trade.—Overstock, very Cheap.

STANDARD-TRAINED ROYAL GEORGE PEACH,
DWARF-TRAINED ROYAL GEORGE and other sorts
CHERRIES, dwarf trained, in great variety, as May Duke, Waterloo, Werder's Early Black, Bigarreau, Adam's Crown, Belle d'Orleans, Knight's Early Black, &c
PLUMS, dwarf trained, in great variety, as Cox's Emperor, Bryanstone, Green Gage, Drap d'Or, St. Martin's, Quetsche, Angeline Burdette, Prince's, &c.
CHERRIES, standards, in variety, as May Duke, Elton, Bowyer's Early Heart, Black Heart, Belle d'Orleans, Florence, &c.
PEARS, pyramids on Quince, Louise Bonne, Glou Morceau, Marechal de la Cour, Beurre de Capiaumont, and White Doyenne
MAIDEN PEACHES, NECTARINES, and APRICOTS; STANDARD and DWARF ROSES.
Richard Smith, Nurseryman, Worcester.

THE LADY, a SEEDLING STRAWBERRY, raised by Mr. Underhill, who was the originator of Sir Harry.

Plants are now ready to be sent out in lots of not less than 20.

All applications must be accompanied by a postoffice order, on Birmingham, postage stamps, or cash, to receive attention.

Price of The Lady Strawberry Plant:—10s. 6d.; 7s. 6d.; 5s.; 4s.; 3s.; 2s. 6d.; 2s.; £1 10s.

Plants in Pots, not less than 10, at 2s. each, package included.

The above scale of prices will be slightly reduced in August, 1866.

Mr. Underhill's "Treatise on the Cultivation of Strawberries," either in English, French, or German, may be had through the post, price 1s. Address,

Mr. Richard Underhill, Sir Harry's Road, Edgbaston, Birmingham

SPECIAL OFFER of FRUIT TREES.—25 per cent. off Catalogues.—Having a large and fine stock of the undermentioned, they are offered at greatly reduced prices, to clear ground:—Peaches, Nectarines and Apricots (trained and untrained), Apples, Pears, Plums, and Cherries (trained and untrained).

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RICHARD SMITH'S SEED CATALOGUE contains a Calendar of Time for Sowing, particulars of Collections with Prices, how to obtain a cropping well and economically, Soil, Manure, Depth, Distance, Season, Hardiness, Duration, Form, Height, Colour, Storing, Use, Flavour, and other qualities described. This List free by post for one stamp. Seeds direct from the growers, the surest way to success.

Richard Smith, Seed Merchant, Worcester.

HOOPER & CO.

BEG TO ANNOUNCE THE DISTRIBUTION FOR THE FIRST TIME OF THEIR

NEW and WONDERFUL PEA,

THE ALEXANDRA.

It is the only true rival to their long-celebrated "Incomparable" Pea. Is enormous in size, prodigious in cropping, and unsurpassed in flavour and sweetness.

Sealed packets: Quarts, 3s. 6d.; Pints, 2s. each.

HOOPER AND CO., SEED MERCHANTS, COVENT GARDEN MARKET, LONDON, W.C.

CARTER'S

PERMANENT GRASS SEEDS,

Per acre, 26s., 30s., and 36s.

CARTER'S PRIZE MANGEL SEED, 1s. per lb.

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CARTER'S FARM SEED LIST, Gratis and Post Free on application.

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GRASS SEEDS FOR ALL SOILS.

Messrs. SUTTON'S GRASS SEEDS being Mixed expressly to suit the Soils for which they are required, Persons ordering have only to state the Nature of the Soil, and Acreage to be laid down, when suitable Seeds will be supplied.

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GRASS and CLOVER SEEDS

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PERMANENT PASTURES,
RECLAIMED MARSHES,
GOOD BLACK PEATY SOIL,
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CHURCHYARDS,
CRICKET GROUNDS,
CULTIVATION with LIQUID MANURE

SUTTON'S

GRASS and CLOVER SEEDS

FOR

PERMANENT PASTURES,
PARK LANDS,
for 3 or 4 YEARS' PASTURE
HAY or SOILING,
2 YEARS' DITTO,
1 YEAR'S CROP of HAY,
FINE GARDEN LAWNS,
NEW PARK LAWNS,
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ORCHARDS,
RENOVATING OLD PASTURES.

Messrs. SUTTON beg to announce that their GRASS and CLOVER SEEDS, which have hitherto given such great satisfaction, are now ready for sending out. The Seeds this year have been harvested in the best possible condition, and Messrs. SUTTON respectfully request early orders, which shall meet with their best personal attention.

List of Prices of Turnip, Mangel, and other Farm Seeds, with any information required, will be sent on application.

MR. MARTIN SUTTON'S "ESSAY on PASTURES," 6d. post free, or Gratis to Customers.

SUTTON AND SONS, ROYAL BERKSHIRE SEED ESTABLISHMENT, READING.

British Fern Catalogue.

ROBERT SIM can now send, post free for six postage stamps, Part I. (British Ferns and their varieties, 36 pages, including prices of Hardy Exotic Ferns) of his NEW and PRICED DESCRIPTIVE CATALOGUE of BRITISH and EXOTIC FERNS, No. 7.

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Foots Cray Nurseries, S.E.

Hardy Scarlet and other Choice Named Rhododendrons.

W. H. ROGERS, Red Lodge Nursery, Southampton, can offer a splendid stock of the above, strong bushy plants, £10 per 100, as selected, 30s. per dozen.

A DETAILED CATALOGUE may be had on application, and also of a very fine General Stock, extending over 60 acres.

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WATERER AND CORNER'S PRICED and DESCRIPTIVE CATALOGUE of AMERICAN PLANTS, as exhibited in the Horticultural Gardens, South Kensington, free on application. This Catalogue fairly describes the Rhododendrons most worthy of growing, as well as Andromeda and very many kinds exclusively in their possession, and now for the first time offered.

Knap Hill Nursery, Woking, Surrey.

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It contains faithful descriptions of all the varieties really worthy of cultivation, as well as a selection of the best of HARDY CONIFERS, with heights and prices, with ORNAMENTAL EVERGREENS, FOREST TREES, &c.

The American Nursery, Bagshot, Surrey.

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GERANIUMS, NOSEGAY (Beaton's), AMY HOGG, INDIAN YELLOW, and GLOWWORM, 1s. 6d. each, 12s. per doz.; STELLA, 6s. per doz.; 40s. per 100.

GERANIUMS, ZONALE, BEAUTÉ DE SURESNES, 2s. each, 21s. per doz.; MADAME WERLE, 1s. 6d. each, 15s. per doz.; HIGHGATE RIVAL, 1s. 6d. each, 15s. per doz.

VIOLA MONTAL, fine, from Mr. Tyerman's stock, 1s. each, 9s. per doz., 60s. per 100

VINES, BLACK JAMAICA, strong succession and Fruiting, fine clean plants, from 3s. 6d. to 15s. each

VINE SUCKERS, strong, 12s. to 18s. per doz.

T. J. Boom offers the above in strong stock plants. Price to the Trade on application

Rainhill Nursery, Prescot, Lancashire

Scarlet Geraniums (Beaton's Race).

WM. PAUL (Son and Successor to the late A. Paul), has to offer the following new ZONALE and HYBRID NOSEGAY GERANIUMS, which have been selected from several Thousand Seedlings raised from the stock of the late Mr. Donald Beaton. Every one now offered is believed to be in advance of or distinct from all pre-existing kinds. Orders received now, the plants delivered in rotation, as far as the stock will allow, in May next

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*** Any 12 varieties from this and the two following Groups may be selected by the purchaser for £2 2s.

BANNERET.—Flowers crimson, scarlet, dark, purple shaded, very bright and beautiful; a hybrid nosegay. Price 3s. 6d. each.

FAIRY QUEEN.—Rose purple; a large smooth flower, very distinct and effective. Price 3s. 6d. each.

MINSTREL.—A peculiar and pleasing shade of salmon, something in the way of Lord Palmerston, but brighter in colour and broader in the petals.

MONTE ROSA, dark rosy purple, pleasing colour, large truss, very fine Price 3s. each

NIMROD, orange-scarlet, white eye, large flower and truss, foliage and habit fine Price 3s. 6d. each.

PHŒNIX, in the way of "Stella" in habit and general character, the colour I should term salmon scarlet Price 3s. each

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PEACH NOSEGAY. Flowers deep bright peach colour, very free bloomer, spotted upper petals, plant dwarf, robust and distinct. Price 5s.

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ST. GEORGE. Dark chestnut, shaded with blackish crimson, quite unique, very free and effective, an entirely new colour among Pelargoniums. Price 5s. each

SALMON NOSEGAY.—Flowers pure salmon, large truss, good. Price 3s. 6d. each

SIR J. PAXTON.—Flowers true orange, very bright, fine large truss, a splendid variety for massing. Price 3s. each.

WOOD NYMPH.—Salmon pink, large and fine. Price 3s. 6d. each

GROUP 2.—VARIETIES ESPECIALLY RECOMMENDED FOR GROWING IN POTS OR VASES.

BRIDE.—Flowers white, with pale crimson eye, of fine shape and substance; a first class variety for pot culture. Price 3s. 6d. each

CARDINAL.—Flowers dark orange scarlet. For shape, substance, colour and habit, this is in advance of any scarlet variety yet raised. Price 5s. each.

CELESTIAL.—Flowers rosy pink, with very spot on upper petals, then centres blush purple, resembling the "Cactus speciosissimus," large white eye, new in colour, and very beautiful. Price 5s. each.

LORD CHANCELLOR.—Salmon pink, white eye, perfect shape, very free, fine habit. Price 3s. 6d. each.

POET LAUREATE.—Rosy purple, top petals orange scarlet, yellowish eye, perfect shape Price 3s. 6d. each.

TIARA.—Flowers scarlet crimson suffused with purple, good truss, very free, fine habit; quite distinct from any yet raised, and very lovely. Price 5s. each.

GROUP 3.—MINIATURE OR POMPON VARIETIES.

DIAMOND.—Fine scarlet purple centre, white eye, flowers profusely, habit good, distinct. Price 3s. 6d. each.

DRYAD.—Beautifully rosy pink, fine shape and truss. Price 3s. 6d. each.

NAIAD.—Flowers purple, scarlet top; pleasing and distinct. Price 3s. 6d. each.

WALTHAM LILAC.—Flowers true lilac, very profuse; a new and desirable colour, excellent for massing. Price 3s. each.

ZEPHYR.—Flowers light purple top, plain rose colour; stands the rain and sun well, very dwarf and free. Price 3s. 6d. each.

GROUP 4.—BEDDING VARIETIES SENT FROM THESE NURSERIES LAST YEAR.

Many of them have received First-class Certificates from the Royal Horticultural and Royal Botanic Societies of London, and those marked thus *** have been awarded the highest marks of merit in the Royal Horticultural Society's Trial Ground at Chiswick.

NOW READY, AUTUMN-RAISED PLANTS.

*** ALEXANDRA.—Magenta. Price 2s. 6d. each; 24s. per dozen.

*** AMY HOGG.—Bright purplish rose. Price 2s. each; 18s. per doz.

*** BEATON'S INDIAN YELLOW.—Orange scarlet suffused with yellow. Price 1s. 6d. each; 15s. per dozen.

BLACK DWARF.—Dark crimson. Price 1s. 6d. each; 12s. per dozen.

DONALD BEATON.—Clear orange scarlet. Price 1s. 6d. each; 15s. per dozen.

*** DUCHESS.—Soft rosy lake. Price 2s. each; 18s. per dozen.

FULGENS.—Vivid scarlet. Price 2s. 6d. each.

*** GLOWWORM.—Magenta crimson flushed with scarlet. Price 2s. 6d. each; 24s. per dozen.

MAGENTA QUEEN.—Magenta. Price 3s. 6d. each.

ORANGE NOSEGAY.—Bright orange. Price 1s. 6d. each; 15s. per dozen.

PILLAR OF BEAUTY.—Brick red. Price 2s. 6d. each.

PRINCESS LICHTENSTEIN.—Salmon pink. Price 2s. each; 18s. per dozen.

SALAMANDER.—Brilliant scarlet, large white eye. Price 2s. each; 18s. per dozen.

SCARLET GEM.—Bright orange scarlet. Price 1s. 6d. each; 15s. per dozen.

MRS. WILLIAM PAUL.—Delicate rose pink. Price 2s. 6d. each, 24s. per dozen.

WALTHAM SEEDLING.—Dark crimson. Price 2s. each, 18s. per dozen.

The above set of 16 varieties, one plant of each, 24s.

SPRING CATALOGUE, with full descriptions of these and other plants, free by post. The usual discount to the Trade.

IMPORTANT.—All letters should be addressed WILLIAM PAUL (the Christian name in full), Waltham Cross, London, N.

NEW ZONALE PELARGONIUM, WILTSHIRE LASS.

DOWNIE, LAIRD, & LAING

Have much pleasure in introducing this splendid Novelty, which was pronounced by the Members of the Floral Committee of the Royal Horticultural Society, and also by the Judges of the Royal Botanic Gardens, Regent's Park, as the finest PINK PELARGONIUM ever exhibited, and was awarded a First-class Certificate on each occasion.

The following description is from the Journal of the Horticultural Society of London :—"One of the finest of the pink-flowered Bedding varieties yet seen, remarkable, not so much for size of flower as for size and completeness of truss; the leaves were marked with a pale zone; the flowers were rosy-pink; the base of the upper petals white, and the trusses are remarkably large and dense, having the valuable property of retaining their blossoms for a long time in the truss."

The following NURSERYMEN have already ordered it, and will be able to supply it on and after the 17th of May next, at *5s.* each :—

Messrs. Backhouse & Son, York
" Barr & Sugden, Covent Garden, W.C.
" Carter & Co., High Holborn
" Cutbush & Son, Highgate, N.
" F. & A. Dickson & Son, Chester
" J. Dickson & Son, Chester
" Dickson & Turnbull, Perth
" J. Dobson & Son, Isleworth, W.
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Messrs. Ivery & Son, Dorking
" J. & C. Lee, Hammersmith, W.
" Hugh Low & Co., Clapton, N.E.
" Osborn & Sons, Fulham, S.W.
" F. & A. Smith, Dulwich, S.
" Youell & Co., Great Yarmouth
Mr. W. Barnes, Camberwell, S.
" W. Bull, King's Road, Chelsea
" Clark, Brixton, S.
" W. Dillistone, Sible Hedingham, Essex, N.E.

Mr. J. Fraser, Leyton, Essex, N.E.
" W. Ivery, Rye Lane, Peckham, S.
" J. Keynes, Salisbury
" J. McKonald, Chichester
" W. Masters, Canterbury
" Munroe, Potter's Bar, N.
" P. J. Perry, Banbury
" C. Ramsay, Ball's Bridge, Dublin
" G. Smith, Hornsey Road, N.
" R. Smith, Worcester
" B. S. Williams, Holloway, N.

As our stock is limited, early Orders are respectfully solicited, which will be executed in strict rotation as received.

WE HAVE MUCH PLEASURE IN CALLING

SPECIAL ATTENTION TO THE FOLLOWING NOVELTIES FOR 1866.

Antirrhinums.

	s.	d.
ANNIE, greyish white, heavily mottled with dark rose, fine	5	0
BIJOU, large yellow, densely mottled with rose, very fine	5	0
CARIB, bright rosy scarlet, striped with white	5	0
DEVISE, dark crimson, fine spike		
HARLEQUIN, French white mottled and striped with rose, very fine	5	0
LEOPARD, light bronze yellow, mottled and striped with rosy crimson, extra fine	5	0
MAJIE, deep yellow, mottled and striped with light crimson, fine	5	0
NINA, white, mottled with bright rose, a pretty variety	5	0
STAR, orange, striped with dark crimson, fine	5	0
STELLA, deep bronzy yellow, mottled with rosy crimson, very fine	5	0

Fuchsias.

SIR COUTTS T. LINDSAY (D., L., & L.), tube and sepals shining carmine, well reflexed, corolla deep bluish purple, immense bloomer, habit good, extra fine, the most compact double Fuchsia extant 3 6

Zonale Pelargoniums.

COUNTESS of BREADALBANE (D., L., & L.), rosy crimson, truss large and well elevated above the foliage, of the true Nosegay type, a beautiful and effective variety.

Plants in May, 1866, *5s.* each.

MRS. MARSHALL (D., L., & L.), French white, with a carmine centre, extra fine form 7 6
MRS. E. O. DOUGLAS (D., L., & L.), soft light rosy scarlet, very fine and effective 5 0
MRS. SINCLAIR (D., L., & L.), Nosegay, shining scarlet, fine compact dwarf habit 5 0
MRS. DOUGLAS (D., L., & L.), rosy scarlet, fine white eye . . 5 0
MRS. ANDERSON (D., L., & L.), vivid scarlet, fine 5 0
MRS. PURVIS (D., L., & L.), bright rosy scarlet, fine white eye, and compact habit 5 0
MISS J. W. ANDERSON (D., L., & L.), light rosy carmine, pure white eye, extra fine 5 0

Hollyhocks.

CHARLES EYRE (D., L., & L.), dark crimson, a smooth well-filled flower of the finest quality, and grand spike. First-class Certificate of the Royal Horticultural Society of London 10 6
CONSUL BEDA, brilliant crimson, of the finest form and quality, forms a grand spike 10 6

Hollyhocks.

	s.	d.
EARL of BREADALBANE, vivid scarlet flower, large, and of the finest form, splendid spike	10	6
EMPRESS of INDIA, glossy crimson maroon, smooth, fine colour	5	0
MRS. BRUCE B. TODD, rosy carmine, smooth, perfect form, and a grand spike. Certificate at Royal Horticultural Society of London	10	6
MRS. DOWNIE (D., L., & L.), delicate soft salmon rose, perfect form, smooth and well filled, forms a grand spike for exhibition	15	0
MRS. ELLIOTT, white, beautifully shaded with lilac, extra fine	10	6
MRS. MENZIES, soft fawn shaded with pink, fine form and great substance, magnificent spike	10	6
MAGNET, glowing red, perfect form, smooth and well-filled forms, a grand spike	10	6
ROBERT PATERSON, bright rosy crimson, fine form and quality, grand spike for exhibition	15	0
THE PRINCE, deep buff flowers, very large and of the finest form, extra fine show flower	10	6
WILLIAM YOUNG, light rosy red flowers of the finest form and quality, forms a grand spike	15	0

Show Pansies.

ARAB (HAMPTON'S), beautiful dark self, first-rate show flower . 2 6
JOHN INGLIS, bright golden yellow, deep purple belting, blotch dense, flowers of the finest form and quality, first-rate show flower 5 0
J. B. DOWNIE, bright yellow and bronze belting, very smooth and fine show flower 5 0
LINA, fine golden yellow, belted with deep purple, blotch dense, extra fine show flower 5 0
NORMA, bright yellow, light purple belting, blotch dense, and well defined, extra fine form 5 0
YELLOW QUEEN, deep yellow self, of fine form and quality, quite distinct 5 0

Fancy Pansies.

CAFFRA, shaded rouge violet, plum blotch, margined with sulphur 5 0
FIGARO, deep violet purple side, and lower petals edged with white 5 0
LADY MONTGOMERY, cream white belted, with violet round each petal, dense dark blotch, fine form, a most beautiful and distinct variety 7 6

Fancy Pansies.

	s.	d.
MAGNIFICENT, creamy white, pencilled with blue on the top petals, immense dark blue blotch marg ined with white	5	0
ORIANA, French white, shaded with rose, large purple blotch	5	0
SENSATION, white and purple, fine form, and very distinct	5	0

Phloxes—suffruticosa.

DR. BREMNER, dark rosy purple, fine light crimson eye, distinct and fine 5 0
GEO. WYNESS, light rosy purple, flowers large and of fine form, dwarf habit 5 0
JOHN FINLAYSON, white shaded rose, fine rosy crimson eye, distinct and fine 5 0
LADY SINCLAIR, pure white, very fine form, pretty rosy pink eye, a beautiful and distinct variety 5 0
LADY ROSS, light outside, heavily shaded rose, deep rosy crimson eye, beautiful spike for exhibition 5 0
MRS. DR. ELLIS, fine shaded white, distinct rosy crimson eye, very fine 5 0
MRS. LAING, light rosy lilac, large crimson eye, fine exhibition variety 5 0

Pentstemons.

HON. MRS. DALRYMPLE, light rose, pure white throat, tube short, finely reflexed, a beautiful an d distinct variety . . 7 6
JOHN BISTER, light mauve throat, pure white, striped with light purple, grand spike 5 0
JOHN FINLAY, light rose, throat pure white, laced with deep rose, distinct and fine 5 0
JOHN POW, bright red throat, and tube pure white, heavily striped with crimson, extra fine 5 0
MISS HARRIET, brilliant carmine throat, white striped and mottled with rosy crimson, extra fine variety 5 0
MRS. M. BINNING, throat pure white, outside shaded with light rose, a new type of flower 7 6
MRS. BREMNER, cream white, edged round the mouth with light rose, a large and fine variety 5 0
ROBERT PARKER, light rosy crimson throat, heavily marked with dark crimson, very fine 5 0
SHIRLEY HIBBERD, light rosy salmon, throat pure white, striped with crimson, extra fine 5 0
WM. MARTIN, throat dark blue and white, tube heavily striped with crimson, fine bold spike 5 0

SUB-TROPICAL AND OTHER FOLIAGED PLANTS.

We have again this year the pleasure of offering SEEDS of the following highly ORNAMENTAL-FOLIAGED PLANTS, which gave so much satisfaction last summer, and are now extensively and effectively used in the arrangement of the Sub-tropical Garden in Battersea Park, the Champs d'Elysées, and other public gardens in Paris, where they have been universally admired, and are destined at no distant date to form quite a new feature in the decoration of the Flower Garden and Pleasure Grounds during the Summer months.

Full particulars as to their Culture, &c., will be found in our Catalogue, which can be had on application.

	Per packet.—*s.*	*d.*
ACANTHUS LATIFOLIUS, beautiful laciniated prickly foliage	1	6
ARALIA JAPONICA, very effective, fine	1	6
" SPINOSA, very effective, fine	1	6
BANISTERIA CHRYSOPHYLLA	1	0
BOCCONIA CORDATA ROTUNDIFOLIA, superb glaucous foliage, rosy white flowers	1	0
" JAPONICA, a very handsome species from Japan	1	6
BRYONOPSIS ERYTHROCARPA, splendid climber, beautiful scarlet fruit, marbled with white	1	6
CANNA ANNEI, superb green foliage	0	6
" COCCINEA VERA, large dark leaves, scarlet flowers	0	6
" DISCOLOR FLORIBUNDA, magnificent maroon tinted foliage	1	0
" GIGANTEA, splendid variety with scarlet flowers	0	6
" HOOKERI, distinct and very fine	1	0
" INDICA SUPERBA, very large leaves, with scarlet flowers	1	6
" LIMBATA MAJOR, splendid variety	1	6
" MUSÆFOLIA HYBRIDA, superb variety	0	6
" PERUVIANA, gigantic leaves, very ornamental and fine	0	6
" WARSCIEWCZII ZEBRINA, a beautiful variety with fine shaded foliage	0	6
And many other superb varieties.		
CASSIA CORYMBOSA FLORIBUNDA, an elegant shrub with golden yellow flowers	0	6
CENTAUREA GYMNOCARPA, graceful silvery foliage, very ornamental	1	0
CINERARIA PLATANIFOLIA, a very ornamental species	1	0
DATURA ARBOREA VIOLACEA PLENISSIMA, very dark, with purple centre, fine	1	0

	Per packet.—*s.*	*d.*
EUCALYPTUS GLOBOSA, a very ornamental evergreen, of rapid growth, with beautiful silvery blue foliage, very effective	1	6
FERDINANDIA EMINENS, a noble foliaged plant, and very effective	1	6
FERULA GLAUCA, a noble foliaged plant, with Fern-like leaves	1	6
GREVILLEA ROBUSTA, a highly ornamental foliaged plant with beautiful laciniated foliage	1	6
LAPPA EDULIS, leaves of immense size	1	0
NICOTIANA ALATA GRANDIFLORA PURPUREA, a very distinct novelty, splendid foliage, and fine effect	1	6
" SANGUINEA, scarlet, a very fine novelty	0	6
PLUMBAGO CAPENSIS CERULEA, fast-growing, beautiful light blue flowers	1	0
POLYMNIA CANADENSIS	1	0
" GRANDIS, a noble foliaged plant, splendid effect on lawns	1	6
" UVEDALIA, a very fine new species	1	6
PRIONIUM PALMITA, the rare silver Grass-tree, in appearance much like a Pandanus	1	6
RICINUS ALBIDUS MAGNIFICUS, light green, with dark spiny fruit	0	6
" BRASILIENSIS, large ornamental foliage with dark thorny fruit	0	6
" LIVIDUS, dusky green fruit with red stems, fine	0	6
" NIGER, black fruit, yellow spine	0	6
" ROSEUS SUPERBUS, fruit rose, changing to blood-red	0	6
" SANGUINEUS TRICOLOR, stems red, fruit red spotted	0	6
" SULPHUREUS, yellow fruit, very handsome foliage, fine	1	0

	Per packet.—*s.*	*d.*
RICINUS VARIABILIS SPLENDENS, stems rich vermilion, fruit bronzy green, very fine	1	0
" VIRIDIS, green fruit, red stems	0	6
And many other superb varieties.		
SOLANUM AMAZONICUM ATROPURPUREUM, a noble variety, black stems, covered with large spines, very distinct and fine	1	0
" AURICULATUM, leaves very large, of vigorous growth, distinct and fine	1	0
" GLAUCOPHYLLUM, splendid foliage, new and very fine	1	0
" GLUTINOSUM, magnificent variety with downy stems, white flowers, and scarlet fruit the size of a small apple, very fine	1	0
" LACINIATUM ELEGANS, a beautiful cut-leaved variety, very distinct	0	6
" MACRANTHUM, a vigorous-growing and distinct variety	0	6
" MARGINATUM, very large-leaved and fine variety for effect	1	0
" MARGINATUM, leaves large, of a beautiful glaucous hue, one of the finest	1	0
" PYRACANTHUM, leaves long and narrow, with spines beautifully set on the surface, fine	1	6
" ROBUSTUM, a noble leaved variety, grand effect	1	0
" VERBASCIFOLIUM, large oval silvery foliage, fine habit, new	1	6
And many other beautiful varieties.		
WIGANDIA CARACASANA, a noble plant of tropical appearance, splendid effect in beds or singly on lawns	1	0
" URENS, similar in appearance to the above, but of a paler green		

THE FOLLOWING CHOICE FLOWER SEEDS

Are of the best quality and of the finest strains, and may be had post free at the undermentioned prices.

	Per Packet.—*s.*	*d.*
ANTIRRHINUM, finest mixed, from our unrivalled collection . . . . . 6*d.* and	1	0
ASTERS, CHRYSANTHEMUM-FLOWERED, very dwarf, in eight distinct colours	3	0
" FRENCH PŒONY, PYRAMIDAL, in 6 and 12 distinct colours . . . . . 2*s.* and	4	0
" QUILLED GLOBE, in 12 distinct colours . . 3*s.*, *4s.*, and	6	0
BALSAM, in 6 distinct and splendid colours	3	0
" finest mixed, from extra large double flowers . . 6*d.* and	1	0
CALCEOLARIA, extra fine, mixed, and unsurpassed in quality . . . . . 1*s.* and	2	6
CARNATION and PICOTEE, in 12 superb varieties	3	0
" " perpetual flowering, in 12 superb varieties	3	0
CELOSIA NANA AURANTIACA PYRAMIDALIS, a new dwarf variety, with feathery orange blossoms, very beautiful	3	6

	Per Packet.—*s.*	*d.*
CINERARIA, finest mixed, unsurpassed in quality . . 1*s.* and	2	6
HOLLYHOCK, superb double, in 12 distinct colours, warranted from prize varieties 5 0		
" finest prize varieties, mixed . . . . 1*s.*, 1*s.* 6*d.*, and	2	6
LOBELIA, in 6 most beautiful varieties	2	0
MARIGOLD, FRENCH, dwarf, spotted, extra fine	0	6
" AFRICAN, orange and lemon	0	6
MIMULUS, extra fine mixed	1	0
PANSY, finest Prize varieties, mixed . . . . 6*d.*, 1*s.*, and	2	6
" FANCY " " " . . . . 6*d.*, 1*s.*, and	2	6
PETUNIA, extra fine, mixed	0	6
PHLOX DRUMMONDII, in 12 beautiful varieties	1	0
" finest mixed . . . . 6*d.* and	1	0
PRIMULA SINENSIS FIMBRIATA ALBA, ROSEA, and RUBRA, in most superb strain . . . . 1*s.* and	2	6
Do. do. do., COCCINEA AURANTIACA, gorgeous colour, new and very fine	2	6

	Per Packet.—*s.*	*d.*
PRIMULA SINENSIS FIMBRIATA FILICIFOLIA (Fern-leaved), a very distinct and beautiful variety	2	6
Do. do. do. KERMESINA SPLENDENS, very fine . . 1*s.* and	2	6
Do. do. do. STRIATAFLORA, flowers beautifully striped, new	2	6
SWEET SCABIOUS, large-flowered, in 6 six distinct colours	2	0
STOCK, GERMAN DWARF TEN-WEEK, in 6 distinct colours . . . . . 2*s.* and	4	0
Do. do. do. finest mixed . . . . . 6*d.* and	1	0
Do. LARGE-FLOWERING TEN-WEEK, in 6 (and 12 distinct colours, extra fine . . . . . 2*s.* and	4	0
Do. EMPEROR, finest mixed . . . . . 6*d.* and	1	0
Do. SCARLET (D. L. & L.'s) INTERMEDIATE, decidedly the best Scarlet in cultivation . . . . 1*s.* and	2	6
Do. PURPLE INTERMEDIATE . . . . 1*s.* and	2	6
Do. WHITE . . . . . 1*s.* and	2	6
WALLFLOWER, GERMAN, double, in five beautiful colours	2	0
ZINNIA ELEGANS, in 6 distinct and beautiful colours	2	0

*** *For Novelties in Flower Seeds see Catalogue.*

STANSTEAD PARK, FOREST HILL, LONDON, S.E.; and EDINBURGH.

New Roses of 1866.

JOHN FRASER, of the Lea Bridge Road Nurseries, Leyton, Essex, N.E., will forward on application a LIST of all the best varieties of NEW ROSES for 1866.

The plants are strong, healthy, and are now ready for sending out. Early orders are respectfully solicited.

New Roses for 1866.

10,000 strong healthy well-grown Plants of all the New Roses.

Woodlands Nursery, Maresfield, near Uckfield, Sussex.

WM. WOOD AND SON have to offer an extraordinary stock of the best NEW ROSES of the present season, in fine healthy plants.

New Roses.

JOHN KEYNES, in offering the above, begs to state that they are in the finest possible condition, having all been REPOTTED, and now well established, ready for immediate removal. Price 36s. per dozen. The usual allowance to the Trade.

Salisbury.—March 17.

HYBRID PERPETUAL ROSES. — First-rate sorts, strong on their own roots, in three sizes; also a fine lot of strong MANETTI STOCKS. Prices, which are low, may be had on application.

JAMES CRAWFORD, High Beech, Essex.

NEW ROSES of 1866.—Owing to the annual introduction of so many inferior, and, in fact, worthless varieties of New Roses, JOHN CRANSTON has this season carefully selected 23 varieties out of 40 or 50 sorts offered by the French raisers These he can confidently recommend, and he believes his selection contains all that are worthy of note.

A List, with prices, sent on application. The plants are strong, and will be fit to send out in March.

Nurseries, King's Acre, near Hereford.

NEW ENGLISH ROSE: H.P. KING'S ACRE (CRANSTON). Fine dwarf plants for bedding of this superb Rose, at 24s. per dozen. Every one should possess a bed of this beautiful variety. See article on Roses in *Journal of Horticulture*, No. 256, page 139.

JOHN CRANSTON, King's Acre Nurseries, near Hereford.

Roses, Roses, Roses, at reduced Prices.

TWO THOUSAND ROSES (DWARFS), consisting of a great number of the best varieties, including Rushton Raddyffe, Alfred de Rougemont, Baronne Cecile de Chabrillant, Docteur Andry, Jules Margottin, Gloire de Dijon, Duchesse de Morny, Madame A. Verschaffelt, George Prince, Madame Victor Verdier, Madame Derreux, Prince Camille, George Paul, Madame William Paul, Souvenir de William Wood, Maurice Bernardin, Sœur des Anges, Persian Yellow, and many others, in fine plants, can still be obtained at greatly reduced prices.

EUGÈNE VERDIER, Fils Aîné, Horticulturist, 3, Rue Dunois, Paris.

Paul's Nurseries, Waltham Cross, N.

NEW ROSES AND ENGLISH SEEDLINGS.

WM. PAUL (Son and Successor to the late A. PAUL) has to offer in May next the following first-class NEW HYBRID PERPETUAL ROSES:—

BLACK PRINCE, H.P. (WM. PAUL).—Flowers dark crimson, shaded with black, cupped, large and full. This Rose may be called a very dark Gloire de Santenay, which it resembles in most respects, but is very distinct in colour. Price 5*s.* each.

DR. LINDLEY, H.P. (WM. PAUL).—Flowers crimson, with black centres, very large and full. Growth robust, foliage splendid. One of the finest English Roses yet raised. Price 7*s.* 6*d.*

GLOBOSA, H.P. (WM. PAUL).—Flowers clear dark bright crimson, colour intense and uniform throughout. This flower is quite unique in character, the petals closing at the top, so as to form a complete crimson globe. Certificate from the Royal Horticultural Society. Price 5*s.*

LADY SUFFIELD, H.P. (WM. PAUL).—Flowers purplish crimson, colour uniform throughout, the purple tint predominating; large, full, and of fine form. Price 5*s.*

The following, which are already out, can be supplied in strong healthy plants :—

ELIZABETH VIGNERON (WM. PAUL).—Flowers rosy pink, very large and full, cupped in the way of Lælia, but fuller, fresher and brighter in colour; constitution hardy, growth vigorous; blooms continuously; one of the best of last year's novelties. Price 3*s.* 6*d.*

MADAME EMILE BOYAU (WM. PAUL).—Flowers soft rosy fleshcolour, changing to blush, sufficiently large, perfect in form, constitution hardy, growth moderate; very constant, distinct, and good. Price 3*s.* 6*d.*

PRINCE DE JOINVILLE (WM. PAUL).—A fine large showy Rose, something in the way of, but of a lighter colour, than Princess of Wales; vigorous and hardy. Price 2*s.* 6*d.*

PRINCESS LICHTENSTEIN (WM. PAUL).—Flowers white, globular, large and full, perfect in form in their young state, a good hardy Rose, flowering abundantly. Price 2*s.* 6*d.*

GLORY OF WALTHAM (WM. PAUL).—Flowers crimson, in the way of Red Rover, but much double, a batch of extraordinary vigour; one of the best of climbing or pillar Roses. Price 3*s.* 6*d.*

All the really good French Novelties, 3*s.* 6*d.* each; the older kinds, by name, 12*s.* to 18*s.* per dozen; 7*s.* to 10*s.* per 100.

New Chrysanthemums and Pyrethrums.

JOHN SALTER'S DESCRIPTIVE CATALOGUE of NEW CHRYSANTHEMUMS and PYRETHRUMS for 1866 is now ready, and will be sent free on receipt of two stamps.

Versailles Nursery, William Street, Vale Place, Hammersmith, W.

Chrysanthemums.

FIRST PRIZES STOKE NEWINGTON AND GUILDHALL, 1865.

ADAM FORSYTH begs to inform the Public that he is now sending out his NEW COLLECTION of CHRYSANTHEMUMS, at 6*s.* per dozen, including Attraction, Eve, Golden Ball, Golden Dr. Brock, Hercules, King of Denmark, Lady Carey, Mr. Bruneau, Mr. Wyatt, Princess, Pink Pearl, Prince of Wales, Sam Weller, Venus, Virgin Queen, &c.

CATALOGUES for one stamp.

Brunswick Nursery, Stoke Newington, N.

J. IVERY AND SON beg to announce that their DESCRIPTIVE PRICED CATALOGUES of AZALEA INDICA, HARDY BRITISH FERNS, ROSES, CONIFERÆ, GRAPE VINES, and SEEDS, may be had on application at their Dorking Nursery.

Genuine Garden and Agricultural Seeds.

PAUL TOLLARD, SEED GROWER and MERCHANT, 26, Rue Mignon, entre 35 et 36 devant, 4, Place des Trois Maries 4, à Paris. SPECIAL PRICED LIST of NEW SEEDS, in English weights and money, on application.

ASTER, GERMAN ASTER, the finest Strain in the kingdom—Was awarded the First Prize at the Brighton and Sussex Horticultural Society's Fête, England, in 1864 and 1865, and wherever exhibited in 1865 Packets, 1*s.* 6*d.* each.

J. JENNINGS, Seed Establishment, New Street, Shipston-on-Stour.

ASTER SEED.—The finest German Quilled, saved by Mr. Besley, the winner of the First Prize at the Crystal Palace and Bath Shows. The Flowers obtaining the First Prize at Reading were grown from Mr. Besley's seed. In packets, free per post, 12 stamps.

T. SMITH, Seedsman, Long Wittenham, Abingdon, Berks.

Superb Hollyhocks.

WILLIAM PERRY has to offer a healthy stock and fine plants of the above, which can be supplied on liberal terms. Price per 100 on application. A List of sorts post free.

Messrs. RIVERS' Nurseries, Sawbridgeworth, Herts.

Superb Double Hollyhocks.

THE FINEST COLLECTION EVER OFFERED TO THE PUBLIC.

W. CHATER has a large Stock of fine healthy Plants now ready, which he can supply on liberal terms.

See Advertisement on other page.

Address, W. CHATER, Nurseries, Saffron Walden.

Pelargonium Mrs. Pollock.

ALFRED FRYER offers healthy well-grown Plants of this beautiful Bedding PELARGONIUM at 12*s.*, 16*s.*, and 18*s.* per dozen for cash. All the plants are well established in 60-pots, and were struck in open borders last autumn.

Remittances requested from unknown correspondents.

Address, ALFRED FRYER, Nurseries, Chatteris Cambridgeshire.

Fine Grass Seeds for Cricket Grounds, BOWLING GREENS, or CROQUET GROUNDS.

SUTTON and SONS can supply suitable kinds of the finest-growing GRASSES and CLOVERS for the above purposes, at 1*s.* 3*d.* per lb., 24*s.* per bushel.

SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

New Lucerne Seed (Luzerne de Provence).

SUTTON and SONS have just imported a very fine parcel of NEW LUCERNE SEED, which they can offer at 1*s.* per lb., or cheaper quantities (about 20 lbs. per acre in drills.)

Royal Berks Seed Establishment, Reading.

COCKSFOOT GRASS (DACTYLIS GLOMERATA).—This highly nutritive Grass is included in all Messrs. SUTTON'S MEADOW MIXTURES, or may be purchased separately at a very moderate price, which may be had on application to

SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

SWEET-SCENTED VERNAL GRASS (ANTHOXANTHUM ODORATUM).—This very excellent Grass, so desirable in Pastures, is included in all Messrs. SUTTON'S MIXTURES, or may be purchased separately at a moderate price, on application to

SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

Newly Imported

LILIUM AURATUM, 3*s.* 6*d.*, 5*s.* 6*d.*, 7*s.* 6*d.*, 10*s.* 6*d.*, and 12*s.* 6*d.* each.

BARR & SCDDEN, Seed, Bulb, and Plant Merchants, 12, Long Acre, Covent Garden, W.C.

BUTLER and McCULLOCH'S Collections of Choice FLOWER SEEDS forwarded Post free.

NEW ANNUALS, 5*s.* and 10*s.* 6*d.*

HARDY DO., 2*s.* 6*d.*, 5*s.*, 10*s.*, 20*s.*

HALF HARDY DO., 4*s.*, 7*s.* 6*d.*, 15*s.*, 30*s.*

For details of above Collections, see B. & McC.'s SPRING CATALOGUE, sent free and post paid, upon application.

Covent Garden Market, W.C.

CHOICE VARIEGATED PELARGONIUMS.

Mrs. Pollock	Golden Vase	Rainbow
Sunset	Snowflake	Burning Bush
Yellow Belt	Victoria	Princess Alexandra
Golden Tom Thumb	Argus	Fontainebleau Beauté

The above 12 choice varieties, suitable for exhibition, for 21*s.*, basket and packing included.

Address, ALFRED FRYER, Nurseries, Chatteris, Cambridgeshire.

Remittances required from unknown correspondents.

To the Trade only.

JOHN KEARSLEY and SONS, NURSERYMEN, Leeds, offer as below, all very fine healthy stuff :—

Choice named CARNATIONS and PICOTEES, per 100 pairs, 50*s.*; do. Mixed, 25*s.*

DAHLIAS, choice varieties, pot roots, 15*s.* per 100.

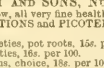
FANSIES, choice varieties, 16*s.* per 100.

PHLOXES, Herbaceous, choice, 18*s.* per 100.

RASPBERRIES, FALSTOLF, fine, 6*s.*

Dwarf-trained APRICOTS, 21*s.* per dozen.

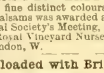
" PEACHES, 24*s.* per dozen.



LEE'S CAMELLIA-FLOWERED BALSAMS, in collections of nine fine distinct colours, 2*s.* 6*d.* A Stand of this beautiful strain of Balsams was awarded a First-class Certificate at the Royal Horticultural Society's Meeting, on August 1, 1865.

JOHN & CHARLES LEE, Royal Vineyard Nursery and Seed Establishment, Hammersmith, London, W.

Aucuba japonica, loaded with Bright Red Berries.

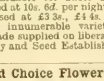


JOHN and CHARLES LEE, SEEDSMEN to the QUEEN, invite inspection of their large Stock of magnificent SCARLET-BERRIED AUCUBAS, which they believe to be unrivalled for extent, perfection of form, and colouring. The Berried Aucubas are most valuable for Table Decoration, for which purpose they may be hired at 10*s.* 6*d.* per night.

Plants may be purchased at £3 3*s.*, £4 4*s.* and £5 5*s.* each; and Ripe Seeds, producing handsome varieties, at 2*s.* each, or 18*s.* per dozen. The Trade supplied on liberal terms.

Royal Vineyard Nursery and Seed Establishment, Hammersmith, London, W.

New and Choice Flower Seeds.



JOHN and CHARLES LEE, SEEDSMEN to the QUEEN, offer the following choice FLOWER SEEDS (free by post) at the following prices per packet:—

Aurecula, choice mixed	1	0*d.*	Lobelia Snowflake . .	. .	2*s.* 6*d.*
Clianthus Dampieri	2	6	Polyanthus, choice mixed	1	0
Calceolaria, choice mixed	2	6	Primula fimbriata, mixed	2	6
Cineraria from seed flow.	1	0	Salvia patens . .	1	0
Gloxinia, choice mixed . .	1	0	Salvia argentea . .	1	0
Heartsease, choice mixed	1	0	Waltzia acuminata . .	1	0
Hollyhock, Lee's Superb . .	2	6	Zinnia elegans, double . .	1	0

Royal Vineyard Nursery and Seed Establishment, Hammersmith, London, W.

The Admiration of the World.

DOBSON'S UNEQUALLED CALCEOLARIAS are known and grown all over the world, and may be depended upon as superior to any other strain offered or sent out during the last 20 years. About 200 of the leading Firms in the United Kingdom and abroad get their supplies from us

Sealed packets, 1*s.* 6*d.*, 2*s.* 6*d.*, 3*s.* 6*d.* and 5*s.* post free.

Dobson & Sons, Woodlands Nursery, Isleworth, London, W.

NEW PLANTS.

AUBRIETIA CAMPBELLI (effective spring flower).
FUCHSIA BANKS'S BEAUTY.
VERONICA FOSTERI LAUCA.
CLIANTHUS DAMPIERI, in varieties (seed only).

Coloured Plates, post free on receipt of Stamps, of the following:—
AUBRIETIA CAMPBELLI, 7*d.*
CLIANTHUS DAMPIERI ALBIFLORA, 1*s.* 1*d.*

For description of the above see E. G. HENDERSON & Son's New AUTUMN CATALOGUE, forwarded post free.

Wellington Nursery, St. John's Wood, London, N.W.

TUNBRIDGE WELLS HORTICULTURAL SOCIETY.—The Committee beg to announce that the ANNUAL GRAND FLOWER SHOWand MUSICAL PROMENADE will take place on FRIDAY, June 29, in the Picturesque Grounds and Field adjoining the Royal Sussex Hotel.

Schedules of Prizes, Open to All England, also of Cottagers' Garden Prizes, and for Garden Productions, and every information connected with the Society, may be obtained of the Secretary, Mr. E. F. LOOT, 8, Parade, Tunbridge Wells.

LEEDS HORTICULTURAL SOCIETY.—THIRD ANNUAL GREAT FLORAL FETE and GRAND GALA, on WEDNESDAY and THURSDAY, June 6 and 7. Prizes £400.

AUTUMN EXHIBITION of FRUIT and CUT FLOWERS, on September 7 and 8, 1866. Prizes, ONE HUNDRED GUINEAS.

The North-Eastern, Great Northern, Lancashire and Yorkshire, Midland, and London and North-Western Railway Companies will convey Plants, Flowers, and Fruits at ordinary rates to the Show, and return them free if they remain the property of the Exhibitor.

The Committee undertake to receive boxes of Fruit and Cut Flowers for Exhibition. All Fruit and Cut Flowers so sent will be carefully unpacked and exhibited, and the following morning returned to Exhibitors, or as specially directed. Schedules and forms of entry will be forwarded on application.

JAMES BIRBECK, Secretary, Shakespere Street, Burmantoft, Leeds.

ROYAL HORTICULTURAL SOCIETY. SOUTH KENSINGTON.

SHOW of CAMELLIAS, HYACINTHS, and SPRING FLOWERS. THURSDAY, March 15, 1866.

AWARDS OF THE JUDGES.

CLASS 1.—18 HYACINTHS, distinct. (Nurserymen.)
1st, Mr. Wm. Paul, Paul's Nurseries, Waltham Cross, N., £1 10*s.*
2d, Messrs. W. Cutbush & Son, The Nurseries, Highgate, N., £1.
3d, Mr. T. Kirtland, Albion Nursery, Stoke Newington, N., 10*s.*

CLASS 2.—12 HYACINTHS, 6 kinds. (Amateurs.)
1st, Mr. Wm. Young, Gr. to R. Barclay, Esq., Highgate, N., £2.
2d, Mr. Wm. Barnett, 2, Shaftesbury Road, Hammersmith, W., £1.

CLASS 3.—6 HYACINTHS, distinct. (Open.)
1st, Mr. Wm. Paul, £1.
2d, Messrs. W. Cutbush & Son, 15*s.*
Equal 3d, Mr. T. Kirtland, 15*s.*
3d, Mr. Wm. Young, 10*s.*

CLASS 4.—6 HYACINTHS, distinct, grown in Windows, in Pots or Glasses. (Amateurs.)
1st, Mr. Wm. Bartlett, £1.
2d, Mrs. L. Young, Highgate Road, Kentish Town, 15*s.*
3d, Mr. J. Beach, Gr. to W. Rogers, Esq., Red Hill, 10*s.*

CLASS 5.—6 HYACINTHS, new kinds of 1865-6. (Open.)
1st, Mr. Wm. Paul, £1.
2d, Messrs. W. Cutbush & Son, 15*s.*

CLASS 6.—6 NARCISSI, distinct. (Open.)
1st, Mr. Wm. Paul, £1.
2d, Mr. Geo. Macintosh, Hammersmith, W., 15*s.*
3d, Messrs. W. Cutbush & Son, 10*s.*
Equal 3d, Mr. Wm. Young, 10*s.*

CLASS 7.—12 POTS of TULIPS, 6 kinds. (Nurserymen.)
1st, Mr. Wm. Paul, £1 10*s.*
2d, Messrs. Wm. Cutbush & Son, £1.

CLASS 8.—12 POTS of TULIPS, 4 kinds. (Amateurs.)
1st, Mr. Wm. Young, £1 10*s.* | 2d, Mr. Wm. Bartlett, £1

CLASS 9.—CROCUSES, Collection of. (Nurserymen.)
1st, Mr. Wm. Paul, 15*s.* | 2d, Mr. Geo. Macintosh, 10*s.*

CLASS 10.—CROCUSES, 12 Pots of. (Amateurs.)
1st, Mr. Wm. Young, 15*s.*
2d, Mr. Wm. Bartlett, 10*s.*

CLASS 11.—6 FORCED HARDY SHRUBS. (Open.)
1st, Messrs. Wm. Cutbush & Son, £3.
2d, Mr. Wm. Young, £2.

CLASS 12.—6 POTS of LILIES of the VALLEY. (Open.)
1st, Mr. Wm. Paul, £1.
2d, Mr. Wm. Bartlett, 15*s.*
3d, Messrs. W. Cutbush & Son, 10*s.*

CLASS 13.—6 CHINESE PRIMULAS, various colours. (Open.)
1st, Mr. T. Todman, Gr. to R. Hudson, Esq., Clapham Common, 15*s.*
2d, Mr. E. Fountain, Gr. to Miss Wood, Ealing, 10*s.*

CLASS 14.—3 CHINESE PRIMULAS. (Open.)
1st, Mr. Thos. Todman, 10*s.*

CLASS 15.—12 CAMELLIAS, Cut Blooms, distinct. (Open.)
1st, Messrs. J. & C. Lee, Royal Vineyard Nursery, Hammersmith, £1.

CLASS 16.—6 CAMELLIAS in FLOWER, distinct. (Open.)
1st, Messrs. J. & C. Lee, £3.

CLASS 18.—4 CAMELLIAS in FLOWER, distinct. (Nurserymen.)
1st, Mr. Wm. Bull, F.L.S., King's Road, Chelsea, S.W., £2.

CLASS 19.—CAMELLIA, single specimen. (Open.)
1st, Messrs. J. & C. Lee, £1.

CLASS 20.—3 GREENHOUSE ACACIAS, distinct.
1st, Messrs. W. Cutbush & Son, £1 10*s.*
2d, Mr. Wm. Young, £1.

CLASS 21.—3 EPACRISES, distinct.
1st, Messrs. J. & C. Lee, £1 10*s.*
2d, Messrs. Wm. Cutbush, £1.
3d, Mr. Wm. Young, 10*s.*
3d, Messrs. Cutbush & Son, 10*s.*

CLASS 22.—6 RHODODENDRONS, 4 kinds. (Open.)
1st, Mr. W. Paul, £2.

CLASS 23.—RHODODENDRON, single specimen. (Open.)
1st, Mr. W. Paul, £1.
2d, Mr. Wm. Young, 15*s.*
3d, Messrs. Cutbush & Son, 10*s.*

CLASS 24.—MISCELLANEOUS COLLECTION of PLANTS in FLOWER.
1st, Mr. W. Bull, F.L.S., for Collection of New and Rare Plants and Orange trees, £1 10*s.*
Equal 1st, Messrs. J. & C. Lee, for Miscellaneous Collection of Plants in flower, £1 10*s.*
2d, Mr. Beasley, Gr. to Mrs. Wood, Twyford Abbey, Acton, for do. £1
3d, Mr. William Bartlett, for ditto, 10*s.*
Extra, Mr. Wm. Paul, for a Collection of Hyacinths, £1 10*s.*
Extra, Mr. W. Paul, for a Collection of Tulips, £1 10*s.*
Extra, Mr. Wm. Paul, for a Collection of Roses in pots, £1 10*s.*
Extra, Messrs. Paul & Son, for a Collection of Roses in pots, £1 10*s.*
Extra, Mr. Wm. Paul, for a Collection of Cut Roses, £1.
Extra, Mr. William Bartlett, for a Collection of Hyacinths, 10*s.*
Extra, Mr. William Bartlett, for Collection of Tulips, 10*s.*
Extra, Mr. William Bartlett, for Collection of Todea pellucida, 10*s.*
Extra, Mr. William Bartlett, for a Collection of Narcissi, 7*s.* 6*d.*
Extra, Mr. William Young, for a Collection of Hyacinths and Tulips, 7*s.* 6*d.*
Extra, Mr. J. Graham, for 12 pots of The Czar Violet, 7*s.* 6*d.*
Extra, Mrs. Mitchell, for Wax Flowers, 10*s.*

The Gardeners' Chronicle.

SATURDAY, MARCH 17, 1866.

MEETINGS FOR THE ENSUING WEEK.

TUESDAY, March 20	Royal Horticultural Floral and Fruit Committees, at South Kensington	11 A.M.
	Ditto (Scientific Discussion)	3 P.M.
SATURDAY, " 24	Royal Horticultural Weekly Show, at South Kensington	12 P.M.

How very odd and how often inappropriate are the expressions commonly made use of in all branches of Natural History! The remark applies as well to many of the more technical and so-called "scientific terms," as to the phrases of the unlearned. Take, for instance, what gardeners call "sports." These productions, alike interesting to the botanist and the horticulturist, have really some reason to complain of the names imposed upon them. Perhaps it is well that plants in general cannot give utterance to their well-founded complaints, or what a chorus of groans should we hear! To return to our "sports," — the term seems pretty clearly to be a free translation of *lusus naturæ*, the expression made use of by mediæval naturalists to denote the strange forms which met their eyes, or very often were only seen by the eye of imagination in fine frenzy rolling. Just fancy, what a fancy though! Nature *sporting*. Nature — the orderly, the methodical, the careful. We might as well talk of MINERVA playing at blind man's buff, as of Nature sporting. Depend upon it if she does sport, there is an object in it. There is method in

her madness; and such an object, such a method, hardly consorts with the term sport. Now, if we look to the philosopher—he who is supposed to be best acquainted with Nature's secrets, what does he tell us about these "sports?" Why, he makes matters worse by talking of monstrosities, malformations, and the like. Better hint at a little sportiveness on Nature's part, than say she is guilty of doing her work badly—of deliberately and of malice prepense producing misshapen deformities.

But after all they are deformities—something out of the common way—sometimes so prodigiously so as to merit LINNÆUS' designation of Peloria — something beyond expression marvellous! Even LINNÆUS, Nature's high priest at the time in which he lived,—even he did not see fully that there was no *lusus*, no sport, no malformation—but, like a learned man as he was, he was humble in Nature's presence, and like another DOMINIE SAMPSON he cried "Prodigious!" There was something rather ponderous about LINNÉ's imagination—it had little of the airy quality which imagination in general has—he was more philosopher than poet, but in this instance it served him in good turn; marvellous is a far better, nay, even a more poetical term, than sportive or monstrous. These sports with which we began this article are more marvellous than sportive or monstrous—marvellous because when rightly investigated they show that order reigns supreme in the midst of the most apparent disorder—marvellous in that they supply the clue to much that would otherwise be mysterious, marvellous in that they furnish us with the means of procuring the largest and most symmetrical forms, the deepest and purest colours, the most intense perfumes, the most succulent of vegetable food. All this they have done—how much more they might do if prompted by the careful experimenter and investigator, remains to be seen. We shall from time to time allude to some of the more interesting of these deviations from the common order of things, and shall feel obliged if our correspondents will forward us any specimens they may observe of these unusual formations.

MR. WILSON SAUNDERS hit upon a very important point in the culture of BULBOUS PLANTS when he remarked the other day, at South Kensington, in reference to Coburghias, that they belonged to a series which have the habit of forming fleshy persistent roots, and that these roots should never be injured by excessive desiccation during the necessary resting season. To many persons, no doubt, a bulb would appear to be a bulb, and nothing more, and such a distinction would not be suspected. If indeed the cultivator had advanced so far in the principles of plant-growing as to know, and acted on the knowledge, that the success of bulb-growing in great measure depends on the thorough development and maturation of the leaves, and if beyond this he had varied the temperature according to the wants, real or supposed, of the species under treatment, the chances are that this would be regarded by such an one, and probably even by a still more numerous class, as the most perfect treatment that could be adopted, especially if, in addition, the bulbs were thoroughly dried during the resting period. The remark to which we have alluded points, however, to something more, and which is so important in many cases, that we desire to direct towards it especial attention, the more so as it has received very little attention in books.

"The whole art of cultivating bulbs well," observes a trustworthy author (MCINTOSH), "depends on the attention paid to two particular points, viz., the season when they are put into, and the length of time that they remain in a state of rest, and the perfection to which their foliage is brought during the season of growth." Capital advice this, as far as it goes, and it goes far enough in the case of many common bulbs; but it is advice which needs to be supplemented in the case of those bulbs which possess persistent roots, and it is just this supplemental information to which Mr. SAUNDERS' well-timed hint directs our attention.

For cultural purposes, then, and especially as regards the nature of the rest which it is important to secure in almost every case, all true bulbous plants may be divided into two classes—those in which the bulb produces only thin fibrous roots, which perish entirely, and are renewed annually, and those which are provided with roots of a more succulent and durable nature. The first group is well represented by the familiar Hyacinth and Tulip; while, as an illustration of the second, the plant which drew forth the remark we have quoted, and others of the same family, may be cited.

So far as regards the treatment of the deciduous-rooted section of bulbs, there is no doubt that the leading features of their treatment should be such as to secure the following results:—Full leaf development, perfect and natural leaf maturation, a gradual but thorough ripening off, and just that amount of desiccation which will prevent decay, and at the same time keep the bulbs, whether of imbricated or tunicated structure, from losing their plumpness—the degree of desiccation that can be endured being, it is to be observed, very different in the two classes of bulbs.

In the case of the persistent-rooted section of bulbs, that is to say, those which are provided with fleshy or succulent roots, a greater or smaller number of which endure, if they are not destroyed by adverse conditions, the treatment must be different. The presence of these perennial roots indicates that the bulbs which produce them require a more continuous course of feeding, and less of that absolute rest which is advantageous in the other case. The functions of these roots is perhaps to continue to supply the bulbs with aliment for a longer period than is found necessary for the deciduous-rooted series; perhaps also, if indeed the action is not nearly or quite continuous, to renew the supply more speedily than in the other case; but probably to serve as supplementary reservoirs of food provided during the time of active growth. Whichever of these may be the most exact inference as to their action, the necessity for their preservation is obvious, for if they are lost or destroyed, the bulb is put to the necessity of exhausting itself to a greater or less degree to replace them. Their preservation does not offer any obstacle to the providing of a due period of rest with its necessary desiccation, but the degree of dryness induced must be moderated with judgment, and never carried so far as to dry up these reservoirs of nutrition.

These considerations lead inevitably to the conclusion that in the case of persistent-rooted bulbs the soil should not be reduced, at least for anything beyond a very short period, to that condition which in gardening language would be described as perfectly dry, but should be kept in that dryish but intermediate condition, which while it secured to the bulb-coats the firmness indicative of a complete and thorough ripening, would retain the succulency and merely suspend the action of these enduring roots. It may further be concluded with equal certainty that the less such bulbs are exposed by removing them permanently from the soil, the better for their future well-being. In all other respects, especially in that securing perfect leaf-development, they would come under the general *régime*.

There are, we think, to be detected, signs that bulbous plants are coming again into popular favour. They certainly comprise some of the most gorgeous of flowering plants, and deserve more public favour, than of late years they have received; and we trust that some at least of those who may be induced to turn their attention to their cultivation, may profit by the hint MR. SAUNDERS has so judiciously thrown out, and which we have taken as our text on the present occasion.

—— EVERYONE has heard of the AMHERSTIA NOBILIS, to obtain which was one of the main objects of Mr. GIBSON'S mission to India in the service of the late Duke of DEVONSHIRE. Few, however, have been fortunate enough to see its glorious blossoms, some of which taken from the plant that is now flowering at Chatsworth—will, we believe, be exhibited at South Kensington at the meeting to be held there on Tuesday next. This is an opportunity that should not be thrown away by such of our readers as may chance to be in town.

—— Amongst the SPECIAL SPRING SHOWS which are to take place this season we have to record that Mr. W. PAUL'S Show of Forced Roses, Bulbs, and other Spring Flowers, in the Garden of the Royal Horticultural Society at South Kensington, similar to that of last year, is to open on the 21st of March, and to continue till the 31st of April. Messrs. CUTBUSH & SON announce that they will this year hold their Annual Show of Hyacinths and Spring Flowers at the Crystal Palace. This Show opens to-day, and closes on the 31st inst.

THE LATE DR. SCHOTT.

THE following extracts from a sketch of the life of the late Dr. Schott (whose death was recorded in this Journal for 1865, p. 232) by the well-known Austrian botanist, Dr. Fenzl, will perhaps interest some of our readers.

Henry W. Schott was born in Brunn, Moravia, the 7th of January, 1794. As a boy of seven he accompanied his father to Vienna, where the latter, an excellent plant-grower, had been appointed Curator of the University Garden. At that time the two Jacquins stood at the head of botanical science in the Austrian capital, and they soon became fond of the promising youth. But illness, brought on by bodily and mental exertion, seemed likely to put a stop to the boy's further career, when the far-famed Humboldt, who had just returned from his travels, happening to be in Vienna, approached his sick-bed and spoke to him in such encouraging and kind terms that from that time he began to recover, as he said himself, many years after, in the dedication of his "Genera Aroidearum." After having received a sound education, he entered on his apprenticeship as gardener under his father's severe discipline.

In constant communication with several of the leading botanists and horticulturists, and making the best use of the instructions of the two Barons de Jacquin, Schott soon acquired such a knowledge of his profession as to justify his advancement. This was soon followed by his being appointed head-gardener of the lovely Belvedere Garden; and here we find him engaged on a monograph of the difficult genus Silene, an essay which he was unhappily prevented from finishing.

His long-cherished wishes, to explore some parts of Tropical America, were to be realised quite unexpectedly. A scientific expedition to the Brazilian Empire was proposed and sanctioned at the marriage celebration of the Grand Duchess Leopoldine of Austria with the Crown Prince of Portugal. Schott, by the recommendation of his influential friends, was attached as collector to the party, consisting of Dr. Mikan, botanist; John Natterer, zoologist; and Dr. Pohl, mineralogist. Besides these gentlemen two artists were to accompany the mission, which was also increased by Dr. Martius and Dr. von Spix, on the part of the Bavarian Government, and by Dr. Raddi, a naturalist from Tuscany. They had a somewhat stormy passage, which in some respects was fortunate for Dr. Schott, as they were obliged to put in at Gibraltar and Funchal, where he had opportunities of studying their then little known Floras.

They at length arrived safely and cast anchor before Rio Janeiro, November 5, 1817. Here several parties were formed, and Schott, with Prof. Mikan and the artist Buchberger, began to explore the vicinity of Rio and to form a garden for acclimatisation, to harden and prepare plants and animals for their final transport to Vienna. Notwithstanding many obstacles, the collections soon became very numerous, and our young traveller succeeded equally well in procuring many valuable notes on economical and medical plants, and on Brazilian agriculture.

After Mikan's return to Europe the entire management devolved on Schott, but he nevertheless contrived to make two journeys to the interior, enriching materially his various collections and MSS. Four years were thus spent, when the day of his return to Europe approached, and passing through Portugal, France, and England, he arrived in Austria, where he received a hearty welcome. In recognition of his many services he was shortly afterwards appointed Assistant-Director of the Imperial Gardens, in which position he rendered himself so useful that his promotion as Director-General of all the Imperial Gardens and Menageries took place in 1845. New glass houses were constructed, according to his own plans; and as he had always been fond of alpine plants, he succeeded in bringing together a splendid collection, which even now is one of the richest and best cultivated on the Continent.

He did not however confine himself to practical gardening, as his numerous works testify, and, indeed, he might rank amongst the first of Austrian botanists. In 1832 he published, in conjunction with Dr. Endlicher, the "Meletemata Botanica," a botanical rarity in libraries, as there were only 50 copies printed for private distribution. His ideas and arrangement of the Balanophoreæ, a family then but imperfectly known, were published in this work, and were exposed with so much accuracy and acuteness, that they met with the highest approbation. The "Fragmenta Botanica" and "Genera Filicum" appeared two years later, and although both of them did great credit to the author, the latter, containing four fascicles, was never finished, as Schott's too great susceptibility was raised by a somewhat severe critique, and by the appearance of Presl's "Pteridographiæ." From this period his whole time was devoted to the study of Aroids, a great many of which he had carefully examined in a living state during his Brazilian travels. His wide-spread connections enabled him to collect, during 40 years' labour, such rich materials, that there were but few of the described species that did not fall under his examination. He laid out 16,000 florins of his private fortune to have a series of drawings made by experienced artists, under his supervision, containing 3282 folio plates—certainly of first-rate excellence.

Provided with these materials, and having besides several houses filled with living plants, growing almost as luxuriantly as in their own

countries, Schott's publications followed one another very rapidly. First, his "Aroideæ," two parts, with 20 plates; then, in 1858, his "Genera Aroidearum," one volume, 8vo, not to mention here the various communications on the same subject to several periodicals; but the "Prodromus Systematis Aroidearum, Vindob. 1860," was his masterpiece, and formed a worthy climax to his extensive studies on this family. Aroids, however, did not absorb all his time, as he also made known his interesting observations on the genera Aquilegia, Sempervivum, and Primula, and only a year before his death he published, in company with Nymann and Kotschy, the "Analecta Botanica."

Well-deserved honours were bestowed on him; he was elected member of several scientific societies; received the Doctor's degree from the University at Jena, and was made a Knight of the Franz Joseph Order and the Mexican Guadaloupe Order. It was only shortly before his death, which took place the 5th of March, 1865, after much suffering, that he completed, to his own great satisfaction, the description and determination of the Aroids collected by Dr. Welwitsch in Lower Guinea, a list of which is given in Seemann's "Journal of Botany."

The Austrian Empire loses in him one of its most faithful servants, and science a zealous and well-gifted disciple. In the interest of both it is to be hoped that such a man will succeed him in the Directorship, as will be able to cultivate and advance Schott's well-crowned pursuits in horticulture and botany.

LANDSCAPE GARDENING.

GARDENING, as an art and adjunct to buildings, dates from a very remote period of man's history. In the early stages it seemed sufficient if gardens were so constructed that they showed themselves works of Art, in contradistinction to the wildness of Nature by which they were surrounded. Hence, formal distances between trees of the same kind, and straight lines from which they spring, were adopted, because no such arrangement occurred in Nature, and consequently such plantations were at once recognised as man's art. In process of time, when cultivation became more general, when forests were cleared away, and the face of the country became bare, a want was felt that the continuance of straight lines could not supply; and hence of necessity some attempts were made at the massing and grouping of trees.

We have only just become acquainted with the gardening of Japan. The Japanese could have had no hints from our civilisation in gardening; yet we find straight lines of trees occur for miles along their roads, and generally of the same kind of tree; but we also find that in the gardens surrounding their temples certain Conifers are introduced, as it were to support and combine with their buildings. Nor is this all, for the small gardens in and about their towns are so arranged as to make the greatest variety in the least space. To effect this, recourse is had to different levels—the introduction of water and bridges to span tiny streams, and more remarkable still, groups of artificial rocks, with winding-paths, and a whole race of plants suitable for such decoration is assembled, many of them till lately unknown even to our gardening world.

Here then we see gardening in a phase wholly unconnected with our own, and yet, strange to say, marking periods through which we have passed. With us, as society advanced, obliterating in its progress many of the primitive beauties of nature, so as to secure the growth of corn or for pasturage, the building of villages, &c., it became a want that such features as had been destroyed in the forests should be reproduced in miniature on the landed estates of the wealthy, and in a minor degree on the few perches, the half or quarter acre, or perchance the one or two acres around the suburban villas. Here then a new art sprung up which was destined to comprise as much of beauty and variety in a small space as possible. For this purpose a study of the material by which landscape painters compose their exquisite compositions became necessary, for the same laws govern the formation of an artistic garden, and the bringing out of a landscape on canvas.

In the past age such men as Brown and Repton practised their art, and have left proof of their skill. These were mostly on a grand scale; but the wants of society required the same principles applied to the smaller divisions of land. Cities and towns, too, had their squares planted and turfed, but even here there seemed room for improvement.

Many have been the works published upon the general art of laying-out grounds, and the celebrated Loudon furnished some plans for arranging small plots of land. But there seems room for something besides, and this brings me to the consideration of Mr. Newton's recent edition* of Siebeck's Garden Plans, in which 24 coloured plates, having the German, the French, and the English scales of measure appended, are given, and gardens varying from a ¼ of an acre to an area of 4 acres in extent are mapped out. The work is professedly published to assist practical gardeners, architects, builders, and amateurs; but most wisely does the author enjoin "that the plans should not be copied in their entirety;" on the contrary, he says, "let them be modified to suit the circumstances to which they have to be applied." The propriety of this is apparent from the confession of a landscape gardener of many years' practice, and who declared that he never made two plans alike—because the conditions of the surface or the views were different. But there is one characteristic—Style, in which a garden artist cannot get away from himself; there will be always something, as it were, to show his handwriting. This remark applies to the designs in the work in question. As a whole the designs seem to be of similar character, although not exactly *fac similes* of each other.

There is however one feature that separates them from most of the English plans, which is the introduction of so many single trees in the open spaces, and of kinds we in England do not so employ; for instance, when Lombardy Poplars are introduced, they are not placed so that the whole trunk may be seen springing from the lawn, but are so situated amongst round headed trees that their tops alone are actually made use of to break up the too great uniformity of those of circular form. Again, the free use of Copper Beech as a single tree would afford a speckiness that would be unpleasing to an educated eye. Again, many trees of low growth are placed to stand singly on the Grass. How are such to be protected from stock? for in an extent of 4 acres it is usually a condition that the open spaces of Grass may be fed off by sheep. English gardeners generally contrive to group such small and yet characteristic trees, and then fence them in till they have acquired a size to take care of themselves.

Some of the later plans show how Vineyards can be associated with landscape gardening; to us, with our English ideas, no proper union can be formed between trees and shrubs arranged for effect and lines of Grape Vines. As well might we try to associate our lines of Currants and Filberts in the landscape, or dwarf orchards of Apple and Pear, &c. Whoever has seen a Hop garden in beauty just before gathering the Hops, would admit the intense beauty of these bines and their luxuriant bunches of fruit. At that time he would say that a corner or patch of them would not disfigure any landscape. But what would he say when they are cut down, and the bare earth alone was visible? All attempt to associate regular rows, whether of trees or Vines, with the constituents of a good landscape, must end in failure.

The writer, as will be seen by the statement above adverted to, does not however put these plans to be rigidly copied, but merely to become helps to those who may need general ideas; in this I perfectly agree with him, and dull indeed must he be that could not take a few useful hints from these four-and-twenty plates. On the whole it is a useful work for those who know how to take—and what to leave. *M. S.*

* Picturesque Garden Plans, by R. Siebeck; adapted to English gardens by Joseph Newton. London: Hardwicke.

EXTRACTS FROM THE JOURNAL OF MR. JOHN GOULD VEITCH, DURING A TRIP TO THE AUSTRALIAN COLONIES AND THE SOUTH SEA ISLANDS.

(Continued from page 220.)

August 3, 1865. *The Fiji or Feejee Islands.* (Between 16° and 20° South latitude, and 180° West and 177° East longitude.)—This group consists of about 100 islands, the two largest of which—Viti Levu and Vanua Levu—are between 3000 and 4000 square miles in extent. All are volcanic and mountainous. The highest peaks rise to an elevation of 4000 feet. The Feejees form the connecting link between Polynesia and Melanesia. One loses here the light coppered complexion, and meets with the black. A Feejean is very black. The language is decidedly Polynesian.

The inhabitants of these Islands were at one time as savage and barbarous as any people in the world—the worst of cannibals. They not only killed and ate their enemies taken in battle, but slaughtered inoffensive men and women to furnish human flesh for their feasts. Now happily these fearful vices are ceasing. The Wesleyan missionaries are gradually Christianising the whole group. The men are very tall, intelligent, energetic, and warlike. The women are not so good looking as those of the Friendly and Navigator Islands. The national dress is a simple loin cloth of Tapa (Broussonetia papyrifera) cloth. They wear few ornaments, but on grand occasions chiefs wear a pair of the rare orange cowrie shells suspended from their neck. The houses are large and well built, but very dirty, caused by the cooking fires being inside, without any sort of chimney to carry off the smoke. Feejeean arms are superior to any in Polynesia. The clubs and spears are beautifully carved and polished. The climate is tropical, the mean temperature averaging 80°. The whole group is extremely fertile and teeming with rich vegetation. Europeans are established on many of the islands, and are successfully planting coffee and cotton. The flora is varied and rich. During my short stay I met with three Palms, including Pritchardia pacifica and Kentia exorrhiza; some arborescent Ferns, Gleichenia dichotoma, Angiopteris evecta, Ophioglossum pendulum, Schizæa dichotoma, Acrostichum auritum, four Trichomanes, Oleandra neriiformis, and several epiphytical Lycopodiums. Sandal-wood (Santalum Freycinetianum) is indigenous, but has become very scarce. Amongst other plants I noticed Poinciana pulcherrima, Acalypha virgata, several Dracænas, Panax fruticosum, Dacrydium alatum, Casuarina equisetifolia, Dammara vitiensis, two species of Podocarpus, two Cassias, Parinarium laurinum, two or three Erythrinas, Elæocarpus, Crotons, Ipomœas, Euphorbias, Acacias, &c. Timber is excellent, and in some parts very large, so much so that the Tonguese visit this group to build their large canoes. As throughout Polynesia, the Yam (Dioscorea), Taro (Alocasia), Banana, Plantain, Bread-fruit (Artocarpus incisa) and Cocoa-nut are common articles of food; the Yam is the principal. There is no grain crop. There are at least 10 varieties of the Bread-fruit in cultivation. The foliage of few trees adds so much to the beauty of country scenery as the large pinnatifid dark glossy-green leaves of the Artocarpus. Kava (Piper methysticum) is largely grown. The root is chewed as in Tonga and Samoa. The beverage is a great favourite. Oranges are plentiful. The Malay Apple (Eugenia malaccensis) is a common tree, as also the Chestnut of Feejee (Inocarpus edulis). The fruit of a large number of indigenous trees is eaten by the natives. Did space permit, I could write volumes about the many novelties one sees when visiting such an interesting group of islands. To my regret we stayed but a few days amongst them, and called at three islands only—Ovalau, Kadavu, and Bau.

Ovalau is a small island, of importance only as the residence of the British Consul, and head-quarters of Europeans in Feejee.

Kadavu is the most southern of the group. It is said to be one of the richest and most highly cultivated. We remained here but four hours.

Bau is the capital of Feejee, and residence of King Thakambau. This small island, scarcely a mile in circumference, is close to the mainland of Viti Levu, and was selected for the Royal residence on account of the security its isolated position afforded. The whole island is covered with houses. The principal features of the place are the king's palace and the *Burí*, or strangers' house, in which all visitors live free. It is an enormous place, over 100 feet long by 40 feet wide, capable of accommodating hundreds of people. It is the hotel of Bau. At the western end of this formerly existed the royal ovens for cooking human beings. Nothing now remains to mark the spot but a large tree, on which a notch was cut to record the death of each victim. It made one shudder to look at the place. Every house of importance is surrounded by a small garden neatly fenced in, and containing a few red-leaved Dracænas, Pandanus, an Hibiscus or two, an Erythrina, and generally a Kava bush (Piper methysticum). Thakambau may be said to be the King of the Cannibal Islands one has so often heard of in childhood. He is a man of immense size, with a firm and most intelligent countenance, and looks fit to be a King. His dress when visiting our ship was a kind of petticoat of native Tapa cloth, and a white linen shirt. The Queen is even proportionately larger than he is, but very clumsy; she weighs over 13 stone.

The King was for many years a rabid cannibal, but has been a Christian since 1854. He still keeps up an army to punish rebellious subjects, but is otherwise peaceable, and favours the views of the missionaries.

(To be continued.)

Home Correspondence.

Tacsonia Van-Volxemii.—I have been very much interested with Mr. Robert Pince's favourable report on this beautiful climber (see p. 171). It is stated by him to thrive exceedingly well at the Exeter Nursery, in a conservatory in which in winter the thermometer ranges from 38° to 40°. I fear, however, that many may be misled in attempting to grow it successfully in cooler climates than that of Devonshire under such circumstances. Having cultivated it for these two years past with the greatest of care, I may perhaps be allowed to say a few words respecting it. My experience convinces me that to plant it as a greenhouse or a cool conservatory climber 160 miles east of Exeter would end in disappointment; a similar distance northwards might be equally unfavourable to its success. In 1864 I purchased a fine healthy plant of it, and planted it in what I considered to be a good situation, against the back wall of a greenhouse, in well-prepared compost. The plant failed to make much progress, and continued, as the season advanced, to look more and more out of its proper element. I had great fears of losing it. It was allowed to remain where it was planted during the winter season without receiving any moisture. In April, 1865, I took another step with it, which has proved to be one in the right direction. I had a large slate box placed in a glass-covered vestibule to receive a young plant of Citron, intending that

it should cover a portion of the back wall on trellis work. It struck me that if I was to have the box divided by a slate partition, and prepare compost suitable for this Tacsonia, I might succeed, and overcome my previous disappointment; accordingly I carried out my intentions, and in the course of 11 months the plant covered a space against the south wall 12 feet by 12 feet, making at the same time considerable progress along the wire, under the roof—carrying fine healthy foliage. Its beautiful flowers are now the admiration of every one, and it promises to supply us with a good succession of them through the coming season. The temperature in which it has flourished so well with us during the past winter, has ranged from 50° to 55° by night, and on sunny days 10° higher. It enjoys a liberal supply of water. *James Drewett, Denbies, Dorking.*

Early Peas.—I have just read in the Proceedings of the Royal Horticultural Society for December, 1865, the "Report on the Varieties of Peas grown at the Gardens at Chiswick, 1865," and cannot help expressing my opinion that it is truthful, does credit to the writer of it, and equal credit to the Society for establishing so efficient a tribunal. The history and origin of our too numerous sorts of early Peas is very interesting,and doubtless quite correct. It is naively remarked of new early Peas, that as each name professed to represent a Pea, that was some days earlier than any existing variety, we should ere this have a Pea that ripened at the beginning instead of the end of May. This Report seems to have created a ferment among some of our seedsmen—I think, without any reasonable basis. The experiment it seems was most carefully carried out, but those who think it was not, have forgotten to urge one simple fact—the time of sowing was a mistake; every gardener knows that early Peas, sown at the commencement of warm weather, are driven along by the heat, and "come in" nearly altogether. The Peas reported on were sown April 3. Now it will be in the recollection of all that our summer commenced last year the first week in April, and bright sunny warm weather continued all through that and the following month; it is therefore just possible that if the early Peas had been sown at the proper season, say in January or early in February, some difference would have been found in their podding and season for gathering. This suggestion may to a certain extent reconcile the contradictory reports on early Peas we have lately read. A good observer and selector of variations in our garden and field crops is often of great use to society,—valuable sorts of Wheat, Barley, and Oats have thus been brought into cultivation. Constant annual attention is however required, or they soon degenerate; "rogueing," as the Pea-growers call the taking out all those that depart from the true character of the sort, is an operation never to be dispensed with, or an untrue sort with its true name is produced. My Dillistone's Early last year were so degenerate that more than half were rogues, and were a third crop instead of a "First Crop." It seems to me that two sorts of early Peas only are necessary, and they might be named by each seedsman as No. 1 and No. 2, without that long array of names we are now afflicted with; so that in writing an order for those essentials in every garden—Peas for a first and second crop, we should be able to say, "Please to send me Messrs. Smith & Co.'s No. 1 and No. 2 Peas for first and second crops." Other kinds are a mere matter of fancy. If Messrs. Jones & Co.'s Nos. 1 and 2 were found better than those of Messrs. Smith & Co., the fact might be noticed when proved, and a reputation for the best kinds formed. This is merely a suggestion, but it may be worthy of attention; at any rate let us endeavour to escape from our long lists of names—some 20 or more—of Peas for first and second crops. *T. R.*

Arrangement of Plants at Exhibitions.—The remarks made on this subject (see p. 73) have not as yet induced exhibitors and others to take much public interest in the matter. The excellent views of Professor Reichenbach, so forcibly stated (see p. 51), have doubtless had some effect in silencing the advocates of the system of arranging plants simply for effect, to the exclusion of all other considerations. Your correspondent "B. S. W." suggests that each class of blooming plants should be separated by Ferns or other fine-foliaged plants. This is what ought to be done, but by no means let any attempt be made to separate the competing collections in each class. I have often seen this tried, and it has always given the greatest dissatisfaction to exhibitors; it is impossible, too, for the judges to do justice to competing collections anything near equal in point of merit when they are placed far apart. "B. S. W." suggests also the arranging of what are called foliage plants at the back of those in bloom. That has likewise often been attempted, and generally to the mutual dissatisfaction of the exhibitors of both. Where, for example, is the exhibitor of a clean collection of hard-wooded plants who would tamely submit to have them overhung by foliaged plants—say Palms or Tree Ferns, on which the mealy bug often stands to the leaves in the proportion of a hundred to one. Such matters as these may appear to the casual observer to be of little moment, but they are of vital importance to exhibitors. Where at all practicable, I should say use Grass-covered earth-banks in preference to wooden stages. In either case do away as much as possible with straight lines and even surfaces; and where, as at the forthcoming International Exhibition, there is plenty of space, make the hollows and projections on as large a scale as possible. Those at Regent's Park I have always considered too small and too numerous, though they are far in advance of anything of the kind we have elsewhere in this country. If anything is required to be placed behind or amongst the collections of blooming plants at the International display in May next, the Committee might provide a number of Irish Yews, Cupressus Lawsoniana, and other things of similar habit, 7 or 8 feet in height. These the exhibitors could arrange amongst their collections so as to improve the general effect, without the obvious objection of one exhibitor's plants being mixed up with those of another. *T. Baines, Summerfield, Bowdon, Cheshire.* [Very good. There is no necessity for breaking up individual collections, nor even for separating collections shown in the same class, but where different classes are devoted to the same kind of plants these may be placed apart as required. The whole thing could be arranged without difficulty if exhibitors would only take a little pains to make their entries exact, and would not fail to bring the collections entered. We trust every one will be willing to avoid causing this difficulty at the coming International Show. The suggestion to provide background plants is good, and has not been overlooked. We trust it may be found practicable.]

Orchidaceous Exaggerations.—From the letter of Prof. Reichenbach under this heading at p. 197, I anticipated some severe remarks on botanical artists generally, but I was thankful to find, owing, perhaps, to the fortunate circumstance of his having himself been unjustly taxed with the crime of exaggeration, he has been very mild in his strictures, and rather seems to think Nature is the chief delinquent. I humbly think he is right. During the many years I have been occupied with the plates for the "Botanical Magazine," I have often had occasion to regret that the character of that work rendered it desirable that new plants should be figured as early as possible; for although I have generally had the assistance of dried specimens, I have frequently found that the plants have subsequently produced flowers which eclipsed the first both in size and colour. I have found however some slight consolation in the thought that my drawings were interesting as proofs of the effect of good cultivation, or extremes of variation. The freaks of Orchids are sometimes very serious—with a single spike of protean flowers they have unsettled several well-defined genera, to the great consternation of botanists. After that, such trifling vagaries as the branching of a spike which should be simple, or the exhibition of a deeper blush than usual, need not be marvelled at by those who behold them, or be doubted by those who have not seen them. Scientific men are justly more prone to doubt than to belief, and it is difficult to say whether their incredulity concerning things abnormal is flattering to Nature or themselves; but it is hardly fair to express disbelief in an abnormal fact in a drawing merely because it is opposed to their theories. I have been informed that branching spikes of Disa grandiflora are not uncommon; and in a drawing I made for Mr. Robert Warner's Orchid work, I ventured to introduce a stem with two flowers on, and had my veracity doubted. I think it a pity that such abnormal spikes should not be preserved or forwarded to botanists for their enlightenment; it would be but a courteous acknowledgment of their services, and relieve artists from many derogatory insinuations. As for artistic exaggerations, the Royal Academy and other exhibitions are the places where these are to be found in perfection. Where else can be seen red Geranium flowers as large as Hollyhocks, Roses like Red Cabbages, and fruit of such Brobdignagian dimensions! I have often admired the boldness of the artists who dare outdo even the figures in floral works, wherein the magnifying tendency is sometimes slightly apparent. But let not the botanical artist give his fancy scope; let him represent what is, what ought to be, or what ought not to be,—and he is in danger of the judgment. *W. H. F.*

Adiantum Farleyense.—Understanding that lovers of Ferns are so much pleased with this Adiantum, as I thought they would be, from the first sight of it, allow me to offer for their information a few words as to its introduction into our gardens. It was received with many other plants by my employer from the West Indies. Seeing the bad condition of the plants on their arrival, we resolved to give air gradually without disturbing the case which they were in, until we should be able to see what plants were alive and what were dead. In a short time this then little Fern sprang up through the sawdust, and all the plants that have been exhibited were from time to time taken from it, and given to their respective owners by my employer, Thomas Daniel, Esq. Being so much cut about, our plant has borne but little seed. *Samuel Bray, Gardener, Stoodleigh, near Tiverton, Devon.*

Blandfordias.—As with by far too many of our most interesting and beautiful bulbous plants, how seldom do we meet with living representatives of this pretty genus, the species of which have graceful Grass-like foliage, and stiff, bold, erect flower stalks, bearing many pendent Lily-like flowers which last a long time in beauty. They require merely protection from actual frost, and enjoy a uniform though not over plenteous supply of water and abundance of air. The most pleasing amongst the six or seven kinds with which I am acquainted are flammea, grandiflora, and nobilis. August is perhaps the best month to pot them in, and as regards soil they like an admixture of two parts peat, one yellow loam, and a small dash of silver sand. After being potted keep the surface of the soil free from Moss, and the pots clean. Particularly see that the bulbs are potted firmly, and do not bury them too deeply. *William Earley, Digswell.*

Judges' Powers at Exhibitions.—In reference to your remarks on this subject at p. 169, I beg to correct several errors made by your correspondent. I was the exhibitor of the 12 plants disqualified; the prize card was placed to my collection for more than an hour, and the public had been admitted for 20 minutes of that time before the attention of the judges was called to it by one of the other exhibitors in the same class. The result was that I was disqualified for showing a sort named Waterloo, which in Mr. Fould's catalogue of 1864 is classed with the large-flowering varieties as a hybrid. On such points I would ask what a gardener has to guide him but a respectable catalogue. In this case I protested that the judges had no right to alter their decision after the public had been admitted. They distinctly stated, moreover, that they did not know positively whether it was a Pompon or not, and consented that a special committee meeting should settle the matter. This is the first time within my knowledge that a case of this kind respecting hybrid Chrysanthemums has arisen, and as a Chrysanthemum grower I would suggest that if a catalogue is not a sufficient authority by which to place them, the sooner we discard them, or provide for them a separate class, the better, otherwise they will be a perpetual source of annoyance to exhibitors. *William Jones, Gr., J. Bent, Esq., Monument Lane, Birmingham.* [We do not happen to know the variety called Waterloo, but if it be one of those which are assumed to be hybrids because they are intermediate in character between the large-flowered and the Pompon sorts, it could not strictly rank with the former. As to judges at flower shows, we can have no doubt that they, acting in concert with the committee, are entitled to correct a manifest error if done before the show closes, especially when their attention is directly called to it. Such is the practice at the metropolitan exhibitions. Of course it is not done without giving dissatisfaction; and on the whole we believe it to be much better for all parties when the exhibitors defer to the conclusions of the judges.]

Fig Trees for Small Gardens.—Mr. Rivers (see p. 146) describes a mode of open-air Fig culture which is practised by our friends over the water, and likewise by himself. The plan is doubtless productive of good results; but why take the trouble of annually taking up the trees and wintering them in a dry cellar or orchard-house as a preventive against frost? Certain kinds of Fig will endure the winter equally well as the Rose or Portugal Laurel, a fact apparent here in East Suffolk, where the Brown Ischia, and a green Fig unknown to me, but which is termed the Green Imperial, are planted in the open garden, fully exposed to the east, west, and north winds, and have endured the winters for upwards of 20 years; my employers, indeed, told me the other day, while speaking of the Fig, that one of the trees in question, a standard, had been planted not less than 100 years, and yet these trees ripen annually a crop of large and truly excellent fruit in the months of August and September. Last year, too, owing to the extreme mildness of the autumn, a large proportion of the second crop came to maturity in November. Although one of the trees just named only receives the rays of the sun about two hours each day, yet it bears an abundant crop. I, however, do not mean to assert that all Figs are hardy, and it is but fair to state that the Brown Ischia only ripened one crop with us last autumn. The trees are, however, in a northern aspect. There is, moreover, another circumstance to be considered, viz., that the temperature in this district is 2° or 3° warmer than that of an inland locality, as may be inferred from the fact that while thousands of Roses, Portugal Laurels, and various Coniferæ perished on that memorable Christmas eve, 1860, they endured the severity of the weather here without receiving the slightest possible injury, as did also the Fig. This fact therefore tends to show that as the Fig endured that winter in this district with perfect safety, it would in any inland situation withstand an ordinary winter. I have seen Mr. E. Bennett, Osberton Hall, Nottinghamshire, deal practically with the Brown Ischia Fig on the open wall, but he always affords it the protection of mats in winter. Should Mr. Rivers visit this neighbourhood in the course of the summer, I shall feel much

pleasure in pointing out to him the trees just mentioned. I may add that they are pruned every three or four years, and will again this year shortly undergo that operation. *Thos. Simpson, Gr. to the Rev. Thomas Mills, Stutton, Ipswich.*

Gardeners' Wages in Nurseries.—Various communications on this subject appeared in your columns a short time back. Allow me further to state that it is no new thing for 15*s.* per week to be paid to gardeners in one of the principal metropolitan nurseries, where many men are employed. The wages paid to gardeners by the firm of Messrs. Rollisson & Sons, Tooting, for the last 25 years has not been less than 15*s.* per week. If the gentlemen who have made a public announcement of their generosity had years back followed the example of the above-named firm, it certainly would have been very beneficial to the gardening community. *H. S. Arboriculor.*—Common observation shows that plants in general have the power of conforming to conditions the most opposite and varied as regards the nature of their places of growth; examples of the same species may be seen luxuriating in rich soil, and also equally at home in positions apparently almost deficient of one or more of the elements essential to plant life. For more than 30 years a remarkable instance of the latter has been under my notice in the shape of a plant of Arbor-vitæ (Thuja orientalis) growing on the south side of a wall in the Royal Botanic Garden at Kew. When first observed it was about 2 inches in height, and appeared to be the result of a seed which had germinated in a crevice of the brickwork, about 14 inches below the top of a wall 7½ feet high, and where it received the full force of the summer sun during the greater part of the day. Notwithstanding this, however, the little plant continued to increase in size, and in a few years became a neat little compact bush as high as the top of the wall; shortly after this an open trellis arbour was placed against the wall, which partially hid the plant from view. On occasional inspection, however, I found it always in full vigour, and increasing in size; a few years ago, when about 10 feet in height, it was as good looking a plant as others of the same kind of equal size that were growing in good soil. It now measures 14 feet in height, and at 4 feet from the base the diameter of the branches is 8¼ feet, the circumference of the stem 6 inches above the base being 15 inches. The coping of the wall is raised about 6 inches on each side of the stem, and other two lines of bricks are raised about 3 inches for a distance of about ¼ feet on each side of the stem. Though the wall is only 14 inches thick, the north side is not disturbed in the least, and no vestige of root can be detected on either side. The situation is pretty well sheltered by buildings, but age is now beginning to show itself in the plant, the north-east side of which has become thin and open. It is not uncommon to see Yew, Elder, and other bird-feeding trees growing on walls. The present case is therefore only remarkable as regards the height at which the Arbor-vitæ in question has arrived, and as respects its good health and symmetrical form. *J. Su., Kew, March* 13.

Establishing a Rookery.—I am obliged to your correspondent for calling my attention to a late paper of mine upon this subject. I had allowed my thoughts to run upon a name localised here, instead of the certainly more proper one of Pied Wagtail (Motacilla Yarrellii of Gould), which is the general foster-parent of the cuckoo, though occasionally the hedge-sparrow assumes the, to it, almost overpowering responsibility. The long-tailed tit, as described by your correspondent, certainly builds its artistic abode upon lighter twigs, in a less likely position than most other birds for the purpose indicated. I am glad to record the fact that these useful little fellows have become more numerous amongst us here of late years, regularly visiting our standard fruit trees actively in search of food. In some instances rooks build upon unusually low trees, an example of which, if I remember rightly, is to be seen around the abode of that able agricultural experimentalist, Mr. Lawes. I have also seen other examples both in England and Wales. With some little experience, however, both with rookeries and heronries, I have found this the exception rather than the rule, the rookeries so situated having been in most instances originally fixed upon thinly tenanted and isolated parts of the country, where at that period few strangers were known to trespass. I trust the love of home is sufficiently prominent in your correspondent to enable him to judge why, in after days, they choose, even amidst much adversity, the same old spot. The case is different where a gentleman is desirous to found a rookery, it may be near his mansion, or in some more or less tenanted or disturbed locality. Take for instance the very many rookeries that are near, even in the parks of large towns, where lofty trees exist, clean and free in the bole. I instance Baldock; and I say without risk of contradiction that nothing would induce them to take to the place, or even to retain the same for any length of time, were the trees there substituted by those named by your correspondent. All suggestions are good, though I have myself tried both blackbirds' and thrushes' nests in this way, and I found that they quickly deserted the nest when the eggs had been changed. I presume that the disparity in the size of the eggs was too great. Besides, they are extremely wary birds. The suggestion given by your able correspondent, wrongly surnamed Standstill, is the best I have yet seen, if the many natural difficulties can be overcome. *William Earley.*

Social Position of Gardeners and the Proposed Scheme for Improvement.—I have read with interest the communications of your correspondents on this subject, and it is with regret that I have to record my conviction that none of the schemes yet in force the public with in any appreciable degree the condition of gardeners. The whole evil in my opinion lies in a nutshell, and that is, that though well-bred, intelligent gardeners are not sufficiently paid, a fact which is now lodged on all sides; and as your correspondent Mr. Fish has fully and fearlessly exposed many of the causes which produce this result, I am saved the necessity of demonstrating its truth. I would only allude to a few points of the evil, and really this can be effected in such a very simple way that I almost blush to mention it. One or two letters in your columns produced instantaneously an increase of a few shillings a week to gardeners working in nurseries. Nursery men on one after another came forward and volunteered an advance. Now, why can no gentlemen come forward in the same way, and volunteer an advance to their head gardeners? By their doing so the most crushing evil which oppresses gardeners would be removed. Mr Fish (see p. 196) enumerates many of the causes why gardeners do not succeed, and would add to them the following, which is one of them. Indeed, I look upon the education cry as nothing else than an *ignis fatuus* to divert the discussion from the real question at issue, viz., wages. It is a mistake to talk about the law of supply and demand regulating wages. Farmers and merchants can do with their goods what they like, a man can do with his wife and children—stow them away in some barn or warehouse out of the way till they are wanted. In a country like this, where the supply of labour is always in excess of the demand, the only effect the "law" in question could have would be to keep down wages. First the view of effecting what the "law" was calculated to prevent, many departments of labour have united, and for their protection have formed societies which are disgraceful and intolerant despotisms. Mr. Fish hints, as a *dernier ressort*, the propriety of establishing such an association for gardeners. This I consider to be the weak point of his otherwise excellent letter. Worthless and helpless as our condition is, I consider that the establishment of one of these sugar-coated curses called "protection societies" would only multiply our miseries. With the prize essay scheme of Mr. Fish I quite agree, though I do not think it would much benefit those who "only" fill the office of class. Any assistance from nurserymen is out of the question—they have not the power to do anything in the matter. The "committee" or court of appeal suggested by Mr. Fish is a very plausible idea, but reminds me of the old story of one man who, when his head was in the mouth of a lion, could make him drink. Imagine this committee to have the following case before it —A gardener had say 70*l.* a year, and wanted an advance to 80 guineas, the gentleman has agreed to give 75*l.* The gardener holds out, and submits the matter to the committee, which, after hearing both sides, says "split the difference," and awards 80*l.* as the gardener's salary. The gentleman says —"Very well. I can only afford 75*l.* for a head gardener, and must try and get a man who will take that sum;" and there, so far as the decision of the committee is concerned, the matter rests, or has to rest. I would therefore suggest that the power to compel gentlemen to pay what *it* pleases for a gardener. Well, then, it may be asked,—What can be done? In the first place I would recommend noblemen and gentlemen seriously to think the matter over whether it is not their duty voluntarily to increase the salaries of not only their gardeners but their gamekeepers and foresters. The case of house servants is not quite so urgent, as the present high price of provisions does not so much affect them; and really, when one considers the very small sum, comparatively speaking, that would suffice for this, it would be divided amongst the servants past names, and what pleasure it would be to men who have, say a pound or 25*s.* a week, one really wonders why conscientious gentlemen do not at once grant it. So much for what employers can and ought to do. In the second place I would suggest that the Horticultural Society and the *Gardeners' Journal* take up the matter in earnest, and advocate the claims of gardeners to a higher remuneration, in a manner in which they have hitherto not done. Make the business, in a pecuniary point of view, worth following, and no fears but the profession would result. It will not do to say that because gardening is a luxury, gentlemen cannot afford to pay more than they do for it. Why, they don't object to pay full price for their cigars, wines, carpets, paintings, &c.—these are all luxuries. If they want ornamental dairies or dog-kennels they do not object to pay full price for them; then why should they not do the same for their gardening by pay suitable wages to their gardeners? As I have said before, a very little to a gentleman is a great deal to a gardener. The matter of 10*l.* advance on all salaries under 100*l.* a year, and 20*l.* on those above 100*l.*, would be a very satisfactory solution of the present melancholy state of affairs. To some how glowing and disconcerting, it must be admitted that there is much truth in the remarks of "John Bristol" on this subject (see p. 149). There is no denying the fact that the social position of gardeners is no better generally than that pointed out by him; and it is equally true that the only means by which we can estimate our worth only by the results of our practice, there is very little hope of an improvement of our social position. These facts indicate the existence of an evil which the removal of the much talked-of ignorance of gardeners would never successfully obviate. Admitting that the Royal Horticultural Society aims at raising the taste of employers as an indirect result of its Education scheme, it aims at nothing, and failure and disappointment will be the end of its efforts. What good does the squire's gardener derive from all the grass schools he may have capacity for, if the squire himself does not listen appreciatively when he "holds forth," and will not grant him the means of making ocular demonstration thereof in his practice? Very few employers care to inquire into cause and effect in the operations of gardening. They generally rather guess at the cause from the nature of the effect; it is the easiest method of arriving at a conclusion, but very rarely is it correct, and it is seldom just to the gardener when thus arrived at. My opinion is that this is the greatest and most prolific source of all the evils the gardener has to endure—pecuniary and general, for if employers made a tithe of the exertion to comprehend intelligently the difficulties of their gardeners' positions, their anxieties and vexations, that they expend on sport, they would reward our successes better, and be more tolerant of our failures. But are we so very ignorant as to require a special effort of our deities? Has hitherto somewhat lukewarm mother, the Horticultural Society, to dispel our mental darkness? It certainly has been argued on all hands for years past, that the education of gardeners is very deficient, and more recently it has been put forth that an improved education is the panacea for all the evils, social and professional, of poor horticulturists. Why all this noise about the ignorance of gardeners? Has gardening been stationary or retrograde? No: it has progressed more [illegible] the last 10 or 15 years than ever it has done in the same period before. It is not, therefore, favourable evidence of the liberal appreciation of the practitioners of the art that it has progressed in their hands, and been lifted up by them to a point of excellence never anticipated even by their more recently departed predecessors. Well, professionally at any rate, the standard of the present day is equally well educated as the predecessor of 20 or 30 years ago, and to sensitive and intelligent minds it would be cruelty to assert that it is generally superior to the gardener of the times just alluded to. But in all this I regret to be misunderstood. I am a strenuous advocate of, as ought to be, the Royal Horticultural Society for its well-intended endeavours to raise gardeners to their proper social level, but I maintain that this will never be accomplished by education on the plan adopted in the new scheme. Mr. Fish has very ably pointed out the deficiencies in the scheme, and also the remedy. What we want is an increase of money; without this, vulgar and unsentimental though it may appear, I say it always will be. Until *better* (at they will ever remain the socially mean creatures they are till the end of time. *W. S., Kensington-lane.*—To whatever extent the Royal Horticultural Society may admit or carry out Mr. Fish's suggestions, he has not compiled a plan worth a shilling to a hungry-looking gardener. Perhaps the world is not greater than the magnitude of the case demands, but particularly as the Society has taken upon itself to guide the rising generation of gardeners, intellectually and professionally. My present object is not to interfere with or to criticise anything Mr. Fish has said, or any other correspondent may show us what way gardeners can materially assist the efforts of the Society. The light, then, under which I have long viewed this question deepens the conviction that a great deal more is required of those who train apprentices than for mere sort of teaching them to become expert workmen. From the beginning to the end of the engagement the head gardener should unceasingly subject them to a course of scientific instruction, and see that nothing is passed over without being thoroughly understood. Forcing too much matter upon the mind at one time begets confusion, and simple elements must always be brought before the pupil; for, assuredly, if omission exists here, whatever is propounded afterwards will only be seen through a hazy atmosphere. We must never forget, however tardily admitted, that the most complex problems in gardening will be solved just in the proportion to our first principles are. As the work of teaching progresses, the relation between science and practice should be explained—not, certainly, by guessing at conclusions, but by deducting them from acknowledged physiological facts. Whether the instruction is given weekly or fortnightly, let what has been gone before the pupil, for, assuredly, if omission exists here, whatever is propounded afterwards will only be seen through a hazy atmosphere. We must never forget, however tardily admitted, that the most complex problems in gardening will be solved just in the proportion to our first principles are. As the work of teaching progresses, the relation between science and practice should be explained—not, certainly, by guessing at conclusions, but by deducting them from acknowledged physiological facts. Whether the instruction is given weekly or fortnightly, let what has been gone before the pupil's subject of monthly examinations, which will greatly impress the matter on the pupil's mind, and show the teacher the actual rate of progress. Were this course adopted generally, I feel certain that it would soon promote among the majority of gardeners a love for study, beget a higher standard of intellect, and so prepare young men to meet the Society's examinations with more confidence. But it is not to be supposed that gardeners are to give up their time, and the information that has been acquired at considerable expense to individuals, simply without remuneration; by no means; but the pupil pay for it, and he will place more value on it. All will not excel alike in their studies; the mental faculty varies, its power takes different directions. Some persons possess a strong retentive memory without much originality, others are consequently incapable of achieving much. The—are the persons who make showy characters, standing as it were constantly on other men's shoulders; they can never leave a beaten track without first consulting an endless number of opinions. Again, there are others who possess, it maybe, a tenacious memory with originality, but exceedingly timid, strong reflection, and give characters of this cast but a knowledge of principles, however obscure, and they will by the mere force of thought cut through adamant. *A. Cowell, Tooting.*

Societies.

ROYAL HORTICULTURAL *Meeting* (*Wednesday Show*).—Prizes were offered on this occasion for the best collection of Cut-blossomed Japanese Plants in Flower, and the 1st was taken by Mr. Peasley, jr., to Mrs. Wood, Twyford Abbey, Acton; Mr. Young, jr., to E. Barclay, Esq., Highgate, was 2d, with another collection, and Mr. Bartlett, Hammersmith, also showed in the same class. Mr. Young, jr., also showed collections of Polyanthus Narcissus, Hyacinths, Tulips, Crocus, and Lily of the Valley. Mr. Bartlett showed Primula sinensis alba plena, and Ferns. Messrs. Cutbush had forced flowering, as had also Messrs. Osborn. A Queen Pine-apple came from Mr. Ward, Sydenham Road, and we also noticed a dish of Cucumbers from St. Germain Pears.

Hyacinth (*Floral Square Show*).—This was held in the Eastern Conservatory Arcade, which was well filled with exhibitions of gay spring-flowering plants, tastefully separated here and there from each other by means of groups of evergreen shrubs and stationary, which when viewed as a whole had a highly interesting effect.

Collections of 18 Hyacinths were contributed by Mr. W. Paul, Mr. Cutbush, and Mr. Kirtland. Among *blues* in the group from Mr. Paul were Marie, King of the Blues, double specimens, with perhaps the best pyramid of any Hyacinth in the Show; Charles Dickens, Grand Lilas, Garrick, Laurens Koster, and Van Speyk. Among *whites* were Alba maxima and Mont Blanc. *Yellows* were confined to Ida, of which we noticed good examples. Feruk Khan and General Havelock were conspicuous among *nearly black* or very *dark* sorts. Among *reds* were Solfaterre, Garibaldi, Von Schiller, Koh-i-Noor, and Macaulay, the last in charming condition, its colours having been beautifully brought out. *Blush* kinds were confined to Lord Wellington, Gigantea, and one or two others. The collection from Mr. Cutbush's 18 kinds we noticed, among *blues*, Marie, Bleu Aimable, Baron Von Tuyll, Grand Lilas, Charles Dickens, and Laurens Koster. *Whites* comprised Mont Blanc and La Vestale. Among *reds* were Florence Nightingale, Solfaterre, Havelock, Von Schiller, Macaulay, Prince of Orange, Chedide, and General Canrobert. *Blacks* were confined to Robert Fortune, and *yellows* to Ida, while *delicate blush* found a representative in Grandeur à Merveille. Mr. Kirtland had Gigantea, Blush, Sultan's Favourite, striped pink; Mimosa, deep white; Blue Jacket, white and blue; and Albo maxima and Orondates, pale blue.

Amateurs, who showed 12 Hyacinths, were Mr. Young, jr., to R. Barclay, Esq., Highgate, and Mr. Bartlett, Hammersmith. Among the kinds were Nimrod, Charles Dickens, Grand Lilas, Sultan's Favourite, Von Schiller, Duchess of Richmond, Mimosa, Baron Von Tuyll, and Queen of the Netherlands.

Six Hyacinths were contributed by Mr. W. Paul, Mr. Cutbush, Mr. Kirtland, and Mr. Young. From Mr. Paul came beautiful examples of Alba maxima, Macaulay, King of the Blues, Lilas, Koh-i-Noor, and Prince of Orange. Mr. Cutbush had Gigantea, Von Schiller, General Havelock, Ida, Macaulay, and Mont Blanc. From Mr. Kirtland came Mont Blanc, Von Schiller, Orondates, Grandeur à Merveille, Charles Dickens, and La Dame du Lac. Mr. Young furnished, among others, Von Schiller, Charles Dickens, and Queen of the Netherlands.

Hyacinths in glasses, intended for window or room decoration, came from two exhibitors, viz., Mrs. Young and Mr. Beach, and were tolerably good examples of that mode of

cultivation. A third exhibition in small pots, also shown in this [illegible], came from Mr. Bartlett.

New Hyacinths came from Mr. W. Paul and Mr. Cutbush. The former had Princess Mary of Cambridge, [illegible] a novelty in the way of Grand Lilas, on which it [illegible] improvement; Sir Henry Havelock, perhaps [illegible] missing sort, possessing [illegible] desirable [illegible] Arnold's Prinzen, something like the last, but of a different tint; Vunxbaak, glowing scarlet crimson, a real acquisition; Adeline Patti, in the way of Robert Fortune [illegible] kind of Paradise, scarcely distinguishable from [illegible] seer, rosy crimson. From Mr. Cutbush came Auriculas Oog, purplish violet, with a white eye; Orion, a good companion to the last, but deeper in colour, and with the [illegible] bells much larger and smoother, altogether a fine kind; Arnold's Prinzen, already alluded to; Hogarth, something after the [illegible] but larger in the pip; Mr. [illegible], white, and Grand Vainqueur, striped pink. From Mr. Young came Mary, a beautiful white, with a compact well-built spike; Annie Lisle, in the way of Howard, but not so deep in colour; [illegible] in the way of Grand Lilas; and Sir E. Landseer, [illegible] making a second flower thus named among this year's new varieties.

A magnificent collection of Hyacinths, consisting of upwards of 100 pots, [illegible] from Mr. W. Paul, of very [illegible] black, kinds; among these were General Havelock, Von Humboldt, and [illegible], Lord Palmerston, [illegible] with white eye, and bright blue metallic-coloured tubes, was [illegible] Solfaterre, [illegible] buff striped with red, [illegible] of the best yellows; Macaulay, a magnificent [illegible] certainly [illegible] striped reds. [illegible] and Koh-i-noor, [illegible] the blues occupies the first rank among dark blue kinds, while among whites we [illegible] de Stael, Mont Blanc, Snowball, Mirandoline. Bright reds comprised Garibaldi, Vunxbaak, Howard, and perhaps Reine des Jacinthes. Among [illegible] blues consisted of Couronne de Celle, Grand Lilas, Bloksberg, Van Speyk, [illegible] Philippe, and Lord Cowley. Among darker blues may be named Charles Dickens; and in no collection should Ornement de la Nature, a delicate pink, be overlooked, although not so new as some of the other sorts which we have named.

Narcissi were shown by Messrs. Paul, Macintosh, Cutbush, and Young. Among these Newton, golden yellow; Gloriosa, white, with yellow cup; Bazelman Major, similar to the last in colour, but larger, were very fine. Among others were Grand Soleil d'Or, golden, [illegible] good kinds.

Tulips, in collections of 12, came from Mr. W. Paul, Mr. Cutbush, Mr. Bartlett, and Mr. Young. Conspicuous among them were Keizer Kroon, yellow and red; yellow and white Pottebakker; Proserpine, violet-shaded rose, large and fine Couleur Cardinal, rich deep red; Cramoisie Superbe, crimson; Vermillon Brillante; Globe de Rigaud, white streaked purple; Cramoisie Royale, rose and white; Duchesse de Parme, [illegible] red and yellow; and Duc d'Aremberg, brownish-red and yellow; together with red and yellow Tournesol, the most showy of double Tulips. Mr. William Paul had, moreover, a large collection of these showy flowers, which received, as they well deserved, general admiration.

Crocuses were numerous, and consisted of [illegible] ties. In Mr. Wm. Paul's [illegible] Prince of Wales, [illegible] blue; Queen Victoria, white; Cloth of Gold, [illegible] Ricardo, beautiful purple; Mammoth, white [illegible] striped. Mr. Macintosh, Mr. Young, and Mr. Bartlett, had also charming groups of these favourite flowers.

Forced shrubs came from Mr. Cutbush and Mr. Young. Among these were well-bloomed examples of Deutzia gracilis, Gueldres Rose, Rhododendron Cunninghami and others; pink and crimson double-flowered Peaches; Andromeda buxifolia, with multitudes of little spikelets of snowy-white blossoms; Syringas, and Forsythia viridissima.

Acacias suitable for pot culture [illegible] A. grandiflora magnifica, with little spikes an inch long, studded with pale yellow flowers; Drummondii, somewhat similar in its mode of flowering; and eriocarpa, the last loaded with little globular balls of rich yellow blossoms. Of nitida, a kind resembling the last, there were also examples. These came from Mr. Cutbush and Mr. Young.

Camellias were contributed by Messrs. Lee, Bull, and Young. Among them were old Double White; tricolor, a striped semi-double sort; Duc de Litta, small striped red; Princesse Marie, somewhat similar in colour; Valtevaredo and [illegible] Nova, both rose; [illegible] red; Adelaide d'Orleans, Mathotiana, Saccoi Nova, Sarah Frost, and Henrique.

Of Rhododendrons, Mr. W. Paul had well-bloomed examples of [illegible], lilac, with [illegible] pink; and Sir I. Newton. Mr. Young also showed in this class.

Among Epacrises, the best came from Messrs. Lee, who had Eclipse, Salmonea, and Ornata. Mr. Cutbush and Mr. Young furnished Miniata splendens, Walkerii rose, [illegible] Copelandi, red.

Roses, considering the season, were beautiful. Among those from Mr. Wm. Paul were Dr. Lindley, Souvenir d'un Ami, Madame de St. Joseph, Alba rosea, one of the very best kinds for early forcing; Rubens, Comte de Paris, Madame Falcot, President, Celine Forestier, Anna Alexieff, Mrs. Bosanquet, and Madame Damazin. From Messrs. Paul & Son came Maurice Bernardin, President, Alba rosea, Louise de Savoy, fine yellow; Princess Mary of Cambridge, Charles Lefebvre, François Lacharme, Devoniensis, Prince Camille de Rohan, very dark; Madame de St. Joseph, and Souvenir d'un Ami, all in excellent condition.

Miscellaneous groups of plants were contributed by Messrs. Lee, Bull, Beasley, and Bartlett. From the first of these came 10 pretty little bushes of the common Aucuba in fruit; various Epacrises, among which the best were Hyacinthiflora, bright rose; Sunset, deep crimson; Queen Victoria, white; and Salmonea, pink; one or two Dendrobiums and Vandas; a fine plant of the salmon-flowered Ixora Griffithii; three standard Azaleas, and a well-flowered bush of Genetyllis fuchsioides. Mr. Bull had a charming sky-blue-flowered Ipomœa, from South America; Peperomia arifolia; the green-leaved female Aucuba in flower, and other kinds of Aucuba in fruit; the handsome Yucca quadricolor; the white variegated variety of Selaginella Martensii; Smilax macrophylla maculata, with leaves veined with silvery markings, varieties of Dracæna ferrea; the handsome Lomaria gibba; Schistocasia Portei, with deeply divided Caladium-like foliage; different forms of Azalea punctulata; Imantophyllum miniatum, finely in flower; a dozen very handsome little standard Orange trees bearing fruit; the graceful shining green-leaved little Pandanus crenatus, the silver-striped Bertolonia margaritacea, a yellow variegated variety of [illegible], Begonia [illegible] violascens, with handsome variously coloured leaves; and other interesting plants. From Mr. Beasley came a well-grown and flowered example of an [illegible] white Azalea, Cyclamens, and Camellias. Of Mr. Bartlett's plants notice has already been taken in our reports of the Saturday Shows. Fine potfuls of Lily of the Valley came from Messrs. Paul, Bartlett, Cutbush, and Macintosh; and Chinese Primulas from Mr. [illegible] and others. Mr. [illegible] had 12 potfuls of his large-blossomed variety of Russian Violet called The Czar; and from Mrs. Mitchell, 5, Anglesey Terrace, Battersea, came some well-executed examples of wax flowers. Among them were representations of Camellias, Roses, Pelargoniums, Rhododendrons, and Orchids. From Mr. Bartlett came a case of Ferns, in which were some good examples of that favourite class of plants. Fruit consisted of some beautifully-kept Apples from Ettington Park, Stratford-on-Avon. Among them were Reinette du Canada, Hanwell Souring, Yorkshire Greening, Wellington, Sturmer Pippin, and one or two fine kinds unnamed. They were stated to have been grown on the white lias clay of South Warwickshire, and to have been kept on Poplar wood shelves, in a dark dry room, having a uniform temperature of about 40°.

A list of the prizes awarded on this occasion will be found in our advertising columns.

ROYAL CALEDONIAN HORTICULTURAL. The first Exhibition of the two amalgamated Societies—the Caledonian and Edinburgh Horticultural—took place in the Music Hall, Edinburgh, last Wednesday. As a Spring Show of Hyacinths, Azaleas, Camellias, &c., it was fully equal to any of its predecessors. There were not probably so many entries as we have seen on some former occasions, but the quality and general good condition of the various articles which were staged, notwithstanding a thermometer indicating in the morning 20°, was almost unexceptionable. Hyacinths especially were remarkable, whether in point of cultivation or get-up, the spike being of handsome form, with finely developed pips, and the foliage dwarf and lusty. Messrs. Carstairs & Sons, and Messrs. Downie, Laird & Laing were the only exhibitors among nurserymen, and were placed in the order they are named. The following sorts formed the 1st prize group:—Rouge Pyramide, Macaulay, Victoria Alexandrina, Howard, Von Schiller, Koh-i-Noor, as reds; in blues, there were General Havelock, Mimosa, Maria, Grand Lilas, Charles Dickens, Garrick, and Prince Albert: while in white and blush there were Alba superbisima, Emmeline, Lord Wellington, Grandeur à Merveille; and in yellows, Ida—Prince Albert in the one case and Koh-i-Noor in the other, were singled out as the best single and best double sorts in the Hall. In the 2d prize lot, differing from the above, were Solfaterre, a very highly coloured red; Feruk Khan; La Tour d'Auvergne, still a good white; Leonidas, blue; Princess Charlotte, red; Mont Blanc; Duc de Malakoff, a good buff; Lina and Cavaignac, both good reds.

In the Gardeners' Section Mr. Cowe, gr. to Capt. Hope, Luffness, had the following very fine:—Howard, Havelock, Dickens, Grand Lilas, Seraphine (a good blush), Cavaignac, Grandeur à Merveille, [illegible], Alba superbissima, Lina, Lord Wellington, and Von Schiller. There was a very spirited competition for the classes of nine and six, Mr. James Henderson, Millbank, having a very true lot, comprising Baron Tuyll, Mont Blanc, Grandeur à Merveille, Dickens, Grand Lilas, Von Schiller, Macaulay, Lord Wellington, and Susanna Maria. The above sorts comprise the cream of all the sorts exhibited. There was only a limited competition for sorts shown in glasses, and seemingly the best adapted for this treatment were Dickens, Victoria, Baron Tuyll, Lord Wellington, Von Schiller, and Grand Vedette. Mr. Vair, Edgar Bank; Miss Nelson, Abden House; and Mrs. Nelson, Salisbury Green, had each nice assortments.

Messrs. Cunningham, Fraser, & Co. had a very interesting collection of spring-flowering bulbs, among which we noted Scilla sibirica, bifolia, and alba, the pretty and interesting [illegible], the pink and the white varieties of Dog's-tooth Violet, Erythronium [illegible] pallida, and alba. This firm had also several good bloomed plants of Rhododendrons, the best of which were Her Majesty, a pure white, with a yellow blotch; Venus; Atro-roseum, a good dark; Blatteum, dark purple; and Lady of the Lake, a chaste lilac. Dickson [illegible] lot, including Dalhousie. Mr. Lees, Tynninghame, had a plant of his seedling Countess of Haddington, with not less than 60 trusses, some of them a little injured in transit. Mr. Paterson, Millbank, had a densely-bloomed ciliatum, 3 feet across.

Azaleas were largely exhibited both by nurserymen and gardeners, the latter having the largest and finest-bloomed plants — Messrs. MacGuigan, Woolmet; Paterson, Millbank; and Cowe, Luffness, being the most successful. Criterion, Iveryana, Roi Leopold, Pelargoniflora, Beauty of Europe, and Alba cincta were the more prominent varieties. Heaths were well-grown and bloomed, especially the highly-coloured Melanthera, from Mr. Fowler, Mavisbank; and the Sindryana, from Mr. Lockhart, Arniston.

In Miscellaneous Greenhouse Plants there was a magnificent Pultenæa subumbellata, and a good white Azalea called Magnificent, from Mr. Lockhart. Acacia eriocarpa, from Mr. Paterson, was an excellent managed plant, and proves itself to be one of the very best of this highly ornamental genus. Tremandra ericæfolia was also very well managed. Mr. Thomson, Dalkeith, was first with foliage plants, comprising an extra fine plant of Pandanus elegantissimus, a good Aralia, Alocasia metallica, and Sanseviera guineensis.

There was a spirited competition for cut blooms of Camellias, the best of which were Madame Lebois, a good red; Countess of Orkney, one of the sporting whites with carnation stripe; Storyii, Napoleon III., Elata, Duchess of Buccleuch, Saccoi Nova, Jenny Lind, Queen Victoria, Imbricata (still first-rate,) Mathotiana, Fimbriata, Lady Belhaven, Augustina superba, and Marchioness of Exeter. Carstairs & Sons, Mr. Henderson, and Mr. Adie, Rockville, were the most successful. Cinerarias were well grown and bloomed, the best coming from Mr. M'Farlane, Mordun, who had The Wrestler, Amulet, and Duke of Cambridge.

In Ferns the most prominent batch came from Messrs. Downie & Co. and Mr. Henderson, among which were Asplenium lucidum, Dicksonia Culcita, Didymochlæna truncatula, Onychium lucidum, Asplenium viviparum, and Lomaria gibba.

Messrs. Carstairs & Son had a table filled with a miscellaneous assortment, containing bulbs of sorts, Camellias, Azaleas, Lily of the Valley, &c. Mr. Handasyde, Musselburgh, had twelve pots of Saxifraga oppositifolia, a charming trailing species, densely shaded with highly ornamental purple flowers, along with numerous pots of the equally valuable decorative Iris reticulata. Mr. R. McIntosh had a few Ferns and a finely-bloomed plant of Echeveria metallica, with its soft glaucous leaves and rosy flowers on a panicle. Mr. Methven, Leith Walk, had some Hyacinths. Messrs. Peter Lawson & Sons had an assortment of choice foliaged plants, Orchids, and the decorative Clianthus Dampieri, in nice bloom.

Among Fruit were two good Pines from Messrs. Paterson and Thomson. The latter gentleman had also a very good bunch of Lady Downes' Grape, and so had also Mr. Rose, Floors Castle. Mr. Thomson exhibited his Golden Lady Downes' in smallish bunches, but having fine plump berries in good condition, with the unmistakable flavour of the black variety. Apples were shown in very excellent order, both from Messrs. Rose, and Lees of Tynninghame. The former had Blenheim, Wellington, and King of Pippins; and the latter had Yorkshire Greening, Ganges, and Tower of Glammis. Mr. Rose contributed three dishes of the following Pears, also in fine condition:—St. Germain, Chaumontelle, and Beurré Rance. Mr. Anderson, Oxenford Castle, had very good Keens' Seedling Strawberries, and so had Mr. Thomson.

Vegetables were well represented by Mr. Thomson, who had a most creditable collection, comprising Rhubarb, Broccoli, Brussels Sprouts, Seakale, Potatoes, Mushrooms, French Beans, and Asparagus. The [illegible] as is usual about Edinburgh, were of Brobdignagian dimensions, and the Rhubarb scarcely less so, while other samples were briskly competed for, and generally well shown.

The Hall was completely filled during the day with the *élite* of Edinburgh and its vicinity, and the arrangements were generally satisfactory.

Notices of Books.

The numbers of the *Botanical Magazine* for the months of February and March give us figures of the following plants:—*Chameranthemum Beyrichii variegatum*, one of the dwarf variegated Acanthads introduced by Mr. Weir to the garden of the Royal Horticultural Society. It has largish oval leaves marked with a broad irregularly margined greyish band along the centre, and in the dwarf state are rather pretty, but the white flowers add but little to its interest.—*Luisia Psyche*, a curious Burmese Orchid, with thick terete leaves, and yellowish-green flowers having a beautifully marked lip; it has been already noticed fully in our previous volume at p. 842.—*Thibaudia cordifolia*, a handsome Vacciniaceous shrub, shown recently at South Kensington by Mr. Bateman as T. ocanensis; it has neat ovate-oblong leaves, and crowded racemose heads of tubular flowers, which are bright red tipped with white.—*Bauhinia tomentosa glabra*, a rather interesting Benguela shrub, requiring stove treatment, and having two-lobed leaves, and yellow flowers with a purple spot at the base of the standard.—*Eulophia euglossa*, a Calabar Orchid of little garden interest, its flowers, which grow on a tall upright stem, being rather small, green, with a white painted lip.—*Tillandsia xiphioides*, a species of dwarf habit, with large white deliciously-scented flowers, introduced more than 50 years ago, and figured in an early volume of the *Botanical Register*.—*Habranthus fulgens*, a very ornamental plant recently imported from Chili by Messrs. Backhouse & Son, of York. The spreading orange-scarlet perianth, with a yellowish central star, give it much the aspect of a small Hippeastrum, the scape moreover growing about a foot and a half high, and supporting an umbel of six or eight flowers. It is said to be nearly hardy.—*Dendrobium dixanthum*, a pretty Moulmein species described in our last year's volume by Prof. Reichenbach, and named from the two tints of yellow (primrose and orange) in the flowers, which however better specimens show to be borne, not singly as originally described, but in short racemes of from two to five. The leaves are grassy and very sharp-pointed.—*Gladiolus Papilio*, a beautiful South African species, of which Dr. Hooker remarks that amongst the species of this family which abound in the Cape Colony, the present appears to be the most beautiful, though not the most gorgeous, that has hitherto been made known; nothing can well exceed the delicacy of the pale purple of the upper petals, or the vividness of the deep purple and golden-yellow markings of the lower ones. It was flowered from bulbs imported by Mr. Wilson Saunders. The flowers are almost bell-shaped, with nearly equal broadly obovate obtuse lobes. The rich purple marking of the two lower inner segments, the yellow belt, and the delicate purple well-defined border, give them a very beautiful appearance.—*Peristrophe lanceolaria*, a Moulmein Acanthad, resembling the old Justicia speciosa, and as useful in an ornamental point of view, producing its pale purple two-lipped flowers for a considerable period in winter.—*Batemannia grandiflora*, a handsome New Grenada Orchid, with ovate two-leaved pseudobulbs, and short basilar racemes of from two to five large flowers, which are olive striped with reddish-brown, the lip being beautifully fringed, white with purple stripes, and orange-coloured calli at the base. It is the plant called Galeottia grandiflora by Richard, and has been associated with Batemannia by Prof. Reichenbach, agreeing well with that genus, except in the number of pollen-masses, which is four instead of two.

The corresponding numbers of the *Floral Magazine* contain representations of the following:—The old blotched-leaved *Aucuba japonica* in the berry-bearing state, but not very happily rendered.—*Verbena Really Blue*, an absurd name for what seems to be a pretty blue-lilac variety of this useful flower.—*Chrysanthemums Iona* and *John Salter*, two of Mr. Salter's novelties; the first being of a palish yellow colour, the last orange backed with Indian red, and both being of first-class quality.—*Calanthe Veitchii*, now well known as one of the best of winter-blooming Orchids.—*Sphacele cærulea*, a plant with Nettle-like leaves, and spikes of whorled oddly-shaped grayish-blue labiate flowers.—*Nerine Fothergillii*, one of the most desirable of autumn-flowering bulbs.—*Maranta rosea-picta*, with dark-green leaves having a rosy midrib and bands—a plant we shall hope to learn more about at the International Show in May. A group of *Pompon Chrysanthemums*—*Fairy Nymph*, *Rose d'Amour*, and *Torfrida*, respectively producing white, rosy-tipped, and amber-coloured flower-heads.

The figure in the February number of *Journal of Botany* represents *Inula salicina*, a species recently found in the neighbourhood of Lough Derg, in Ireland. Among the papers occur some remarks on Anadyomene, by Dr. J. E. Gray, in which a new genus, Grayemma, proposed in compliment to Mrs. Gray,

is founded on the A. Menziesii of the Gulf of Mexico. This *Grayemma Menziesii* is figured in the March number of the same work.

The plate in the *Florist and Pomologist* for February is devoted to the *Early Albert Peach*, one of Mr. Rivers's novelties, described as a first-rate early melting Peach, ripening in the beginning of August. In that for March two of Mr. Bull's new *Lobelias—Peach-blossom* and *Distinction* are represented, not very successfully, by chromo-lithography. There is the usual variety of papers.

The *Scottish Gardener* now appears in an improved form under the management of Mr. W. Thomson, of Dalkeith, and is filled, as might be expected, with good practical articles.

The *West of Scotland Horticultural Magazine* lends itself, we are sorry to see, to the circulation of some absurd charges against the Royal Horticultural Society's Committees, quoted from a work in which they would have but little influence. Such a course cannot add to its reputation.

The *Technologist* for March includes the continuation of the article on the Culture of Opium in France; also a letter on the dyes used in Kashmir. The blue dyes are obtained from lapis lazuli and indigo, the yellow ones from the flowers of Butea frondosa, black from the rind of the Pomegranate fruit, with iron; a non-durable red is procured from Cæsalpinia Sappan; drab is stated to be obtained from Walnut skins without any mordaunt or preparation.

Fraser is much occupied with Jamaica, but does not neglect home affairs, for we have articles on progress, especially in matters theological in Scotland, and on the past, as depicted in the Domesday of Hampshire. A sketch of the life of Admiral Smyth, and a notice of Mr. Jeffreys' "British Conchology" will also be found.

The *Journal of the Scottish Meteorological Society* for the last quarter of 1865 is full of facts and figures of the greatest importance. The records furnished by the thermometer, barometer, &c., are here compared with those furnished by the living instruments, such as plants and animals. The advantages of such a course of proceeding are obvious.

BOOKS RECEIVED.—A thick part (Part VIII.) of *Brande's Dictionary* is this month published, and compensates in its size for sundry arrears. Having so frequently spoken in terms of commendation of this useful work, we need only now say that with this part is concluded the second volume of the re-issue.

Florists' Flowers.

IS THE ROSE A FLORISTS' FLOWER?—When I read some time ago (see p. 942, 1865) an article on this subject, my surprise was great. The Rose is a florists' flower, and something more, for it is "the" flower of the nation. A universal includes a particular. The difficulty appears to be to define what, under the "statute of limitations," is a florists' flower. The term seems to me, like the mouths of the Danube, lost in marshes. I, for one, cannot define a florists' flower. The term appears to be what stenographers call "an arbitrary." Mr. Heale (see p. 223) asks for enlightenment as to the original derivation of the term. If by that he means the Latin derivation, it is of course derived from *flos*, a flower, the genitive case of which is *floris*. That I apprehend is not, however, his meaning. I presume he means the origin of the term "florists' flower." Perhaps the originators could not strictly define it. If they attempted it, they would probably end their days in Hanwell! With florist and floriculture, we begin with a difficulty as regards quantity. The "o" in florist is long, and the "o" in floriculture and florid are short. The terms are both anglicised Latin, and show the uncertainty of arguing from the Latin quantity to the English. Still, as "two wrongs don't make a right," so two difficulties don't clear up a difficulty. I see in your columns of last week that Carnations, Pinks, Picotees, Pansies, Auriculas, and Dahlias, are accredited florists' flowers: from which I hazard a guess, that the originators of the term, whether nurserymen or amateurs or both, meant a flower admirably suited for exhibition, with fine outline, and symmetrical disposition of circular or well defined petals. If this be so, then surely the Rose, which has also a fine scent, while a Dahlia has none, is a florists' flower; and "the exquisite formation of the petals, as well as the beautiful manner in which they are moulded together to constitute the bloom, place it without an equal in the floral world!"

A "Herbalist's herb" is not more difficult of definition, nor more absurd, than is the term "florists' flower!" *W. F. Radclyffe, Tarrant Rushton.*

The Apiary.

INDOOR BEE-KEEPING.—As you expressed a wish for a further report of my experience on indoor bee-keeping, I may state that the seven hives which I have kept constantly in this house, are, so far, in excellent condition, and I can see no sign of disease in any of them. Of these seven hives, two are common wooden boxes, with bars; one is a Woodbury straw bar-and-frame; one Neighbour's "Ladies' Observatory Hive;" one square hive, with the sides all of glass; and two old-fashioned straw hives. The glass hives seem to have lost more bees than the others, through their being enticed out by sunshiny, cold days, but they are all remarkably strong for the time of year.

It is necessary to remark that none of my hives are on the ground floor, or in a room where a fire is ever made, and I think it probable that the injury you referred to as being caused by a draught of cold air entering the hive from without, may be attributed to the ascending column of warm air, which has a greater tendency to draw cold air into the lower rooms of a house, than into the upper; just as in a room artificially warmed, there is an inward draught at the lower part of the door, and an outward one at the upper part; and I attribute to this principle of pneumatics the fact that two hives which I have kept in an attic, at the top of the house, have fared better than the others. The only objection I can see to indoor bee-keeping is the difficulty of executing the necessary manipulations without letting the bees loose into the house. I do not think this can be entirely obviated, and it has induced me to move most of my hives into a shed.

As the time is now approaching when bees will be commencing their season of activity, it has struck me that it would be very useful to the less experienced amongst apiarians, if you would give some general instructions for the spring management of stocks. I refer particularly to the means to be employed for securing the best conditioned supers of honey. I have been struck by the fact that some bee-keepers seem always able to secure fully stored supers in excellent condition, whilst others (though obtaining an abundant quantity) can hardly ever boast of a quality approaching perfection. If, as is most probable, success depends on keeping down the temperature of the super, by means of ventilation, what is the best means of accomplishing this important point? Whilst referring to supers, I may give a short description of one I have constructed, with the object of being able to modify its size to suit the varying capacity of the bees, and the season to fill it. It is often the case that in a poor season a super of only partly filled combs is produced, and when we consider the immense proportion of honey used in making this empty comb, the advantage of being able to enlarge the super gradually, in proportion to the capacity of the bees, is evident. I accomplish this by making my super expand on the principle of the telescope. Within the ordinary box is another of half-inch wood, attached by angle-plates to the lower board, and rather shallower than it. When the combs have been carried down to the depth of the outer box, and more space is needed, all I have to do is to slide it upwards, and secure it in its expanded form with set screws, at any point I may desire. To prevent the two boxes being cemented together by the combs I have attached end pieces to the bars, thus making them into frames with three sides; and it will at once be seen that the combs can be extended downwards below the side pieces when the super is expanded, and when finished the comb will be in a much better condition for purposes of package and carriage than if it were cut from the side of the hive. The space between the ends of the frames and the sides of the outer box, represented by the thickness of the half-inch sliding part, provides an excellent passage-way for the bees, as in the Woodbury hive. You have already given excellent instructions for artificial swarming, but I think it would be very valuable to the less experienced apiarian if you would describe in detail the indications by which it may be known that the exact time has arrived for performing this interesting process. How to recognise the presence of "royal brood," and a description of the best kind of shed, or other covering for hives, would be useful. *Arthur Maw, Benthall Hall, Shropshire.*

Garden Memoranda.

OXTON HALL, SOUTHWELL, THE RESIDENCE OF HENRY SHERBROOKE, ESQ.—Near the confines of bold Robin Hood's tilting ground, Sherwood Forest, five miles from Southwell, nine from Nottingham, and five from the Loudham station of the Nottingham and Lincoln Railway, about the centre of an amphitheatre of nicely wooded hills, stretching almost to the horizon, is situated the village of Oxton, near the centre of which stands the residence of the gentleman just named, an old family mansion, long celebrated as being not the least hospitable in a very hospitable county.

The mansion is plain but substantial, and, like most houses of the same period, replete with every domestic comfort. A few years back some considerable additions were made to it, among which a spacious bay window from the drawing-room was not the least remarkable, inasmuch as it commands a view of a very spacious and beautiful terrace walk, to which allusion will be made hereafter. The drawing-room on the south side opens into a neat and well-arranged conservatory, with basin and fountain, the quiet murmur of which must, in the summer time, be very grateful and refreshing, whilst the view from this point across the pleasure-ground is very interesting. The conservatory is well stocked with the usual climbing plants; and as the upper part, in consequence of the want of ventilation, is rather warm, some of the more tender of the Passifloras and Tacsonias flower in it in great profusion. At the time of my visit (February 14) Habrothamnus Abeli, an improved variety of H. fasciculatus, with rich orange-scarlet flowers, was blooming in great profusion, whilst other plants were just starting into growth. Among these Fuchsias of the best kinds are trained over arches, and that magnificent old Rose, Devoniensis, grows and blooms with remarkable vigour, many of the flowers when fully expanded being from four to six inches in diameter. The house was gay with forced flowers, consisting of Roses, Lilacs, Laburnums, Azaleas, &c., with a good sprinkling of Camellias, Epacris, and Heaths, and, for the sake of contrast, a few good specimens of Ferns; whilst the more humble denizens of such places at this season—Violets, Mignonette, Primulas, and Cinerarias—yielded their grateful fragrance to the atmosphere.

Before leaving the mansion, I may as well remark that the entrance front faces the west, and looks over a very splendidly-wooded lawn, or rather park, principally stocked with sheep, but to which the villagers, during the season, are allowed, at a moderate charge, to send their cows to graze—an old English custom, now, I am sorry to say, more honoured in the breach than the observance. The east or drawing-room front has an extensive and well-wooded view, which will be much improved when some judiciously-placed belts and plantations develope their full character. There is in this part of Nottinghamshire a great want of evergreen forest trees, and consequently in winter and spring the aspect is cold and comparatively cheerless—a prospect which an extensive but judicious introduction of evergreen Coniferæ, instead of the everlasting Larch, would soon remedy. While on the subject, let me ask when is Cupressus sempervirens to take its proper place in our forest planting? I have long been convinced that when its merits shall have become known and appreciated, it will supersede the Larch as a rapidly-growing timber tree, inasmuch as in favourable, if not in all situations, it will make timber quite as fast, while at the same time when cut down it will throw up from the old stool, and make underwood, stakes, rails, Hop-poles, &c., quite as fast as the Ash, Oak, or Spanish Chestnut. It grows rapidly in this part of Notts—so much so, that I think it would form capital rails or Hop-poles in from seven to ten years. For mature growth the timber is of first-rate quality—scarcely inferior to Pitch Pine.

The trees seen from the pleasure grounds consist principally of Oak, common and Wych Elm, the latter beautifully pendulous, Beech and Ash, whilst on the brink of the lake, immediately in front of the house, stands an unusually splendid specimen of Purple Beech, flanked by an equally large plant of Variegated Sycamore, presenting by their leafage in the proper season a striking and peculiar contrast. As two trees never group well, we can only regret that a third of sufficient size is not near enough to form what artists term a harmonious whole. The lake is of considerable size, and is formed upon two levels, the difference in elevation being taken advantage of to form "a fall," which is seen from the conservatory and the principal parts of the pleasure grounds. Close to this fall is a rustic bridge, forming a communication to the fruit and kitchen garden, near which are several very nice specimens of Beech and other weeping trees. The meadow land in front of the house was always park-like, and has been recently rendered more so by the removal of hedge-rows and by the substitution of "sunk" fences for the old division of the pastures. Much of the land is of excellent quality, and some that is not so at the present time, affords sufficient evidence, by its large Oaks and Elms, that the proper material is there, if Nature's journeyman—the cultivator—would only exert his magic power, and by proper management, manuring, and, in some cases, draining, command the products of enlightened cultivation to stand forth, and contribute their quota to the public weal. At present much of the old pasture is mossy and hide-bound. To borrow a simile from the late Douglas Jerrold, we should not rest satisfied until, by tickling it with the plough and cultivator, we had made it smile with three or four harvests of corn and green crops, and then lay it down again to Grass. Lacking general cultivation, two or three good dressings of lime and ashes would do much to destroy the Moss, and convert it into a manurial form, and that, supplemented by dressings of bone-dust, would soon convert those hill sides into excellent sheep pasture, and increase the value to double the present amount of rent.

Stepping now within the boundary of the pleasure ground fence, the terrace walk before referred to is 220 yards long, and from 18 to 20 feet wide. It is formed upon two levels, accessible by a flight of handsome steps, and there is a massive architectural

seat at each end, formed of wood, that being much warmer, though less appropriate, than stone. The seat at the north end of the walk is backed and canopied by shrubs and trees, that at the south end by Yews, Rhododendrons, and Roses, and a Rose arcade with pillars and arches runs east and west from the seat. This walk is to be covered in by additional arches, and will then form a cool and delightful summer promenade. Flanking the terrace walk, upon the upper level, is a broad margin of turf from 20 to 30 feet wide, and upon this, and parallel with the walk, is a series of raised circular beds for flowers. The alternate beds are edged with Irish Ivy kept trimmed in, and the other beds are formed in terraces or rustic baskets of Larch poles, the centre bed being about 2 feet above the level of the turf. As the Larch stumps are rather apt to decay, Mr. Barton proposes to replace them with 1½ or 2-inch drain tiles; and as he has tried the experiment in another part of the garden, he finds them both durable and appropriate. As however the colour is somewhat objectionable, he proposed to get the tiles for the purpose glazed dark brown, or failing that he will colour them with Roman cement — and either plan will be a great improvement upon the rustic material at present in use. Near the north end of the walk, in an open space, is a large raised four-lobed or "Shamrock-bed," with a raised circular centre. The sides, about eighteen inches in height, are clothed with Ivy, and from the size of the bed, when covered with gay Calceolarias, Scarlet Geraniums, &c., it must look very gay. Near this bed are some promising young plants of Coniferæ, and two handsome plants, each about ten feet high, of the Golden Yew.

Flanking the bay window of the drawing-room on each side is a group of four circles chained together by a silver band of Cerastium tomentosum. The circles, which may be said to be struck from the four angles of a diamond, are edged with Cerastium about one foot wide, and there is a band of the same width running through the Grass, so as to link the beds together. There is also a bed in the centre of the diamond, and thus each set forms a group of five, a centre and four sides, each tied with a band of silver. This is a neat, simple, but tasteful arrangement, and when filled with well-selected flowers must look very chaste. Opposite the conservatory is a geometrical flower garden on Grass, a modification of what is known to gardeners as the old Dropmore garden. Here, from the proximity of large trees, the ground in the summer time dries so rapidly that Mr. Barton is sinking the beds below the level of the Grass; this will enable him to give copious waterings in the summer, and will also prevent the natural rainfall from running away in waste as it would from a convex surface.

On the lower ground there is another large circular bed, with raised Ivy-covered sides, with a central Ivy-covered basket and handle. This bed is 45 feet in diameter, and the lower or outer part was last year divided into triangles and diamonds, each being margined with Sea Ragwort and Cineraria maritima. The centres being filled with the gayest colours, properly relieved and contrasted, must have a very imposing appearance. To fill these beds and baskets throughout the season some seventeen to twenty thousand plants are required, and of course involve an amount of work and forethought at this season not to be lightly passed over. *H. P. A.*

Miscellaneous.

The late Mr. Thos. Winter. It is with regret we have to record the death, from disease of the heart, of Mr. Thos. Winter, of Cincinnati, Ohio, America, one of its eldest and most respected citizens. Mr. Winter had for some time past retired from the active business of life, and devoted himself to such pursuits as charmed his cultivated mind. Foremost amongst these was that of an amateur horticulturist, and he devoted considerable time, attention, and means to the cultivation of rare plants. Of late years he has contributed a number of valuable articles to the local literature of his adopted country. Under the pseudonym of "Habranthus," he wrote a series of papers entitled "Our Native Flowers," all of which were received and read with great interest by the public of Cincinnati. Mr. Winter was a native of Portsea, Hants, England, and left this country about 1825.

A Wonderful Tree.—In the Birch wood of Culloden is a remarkable Larch tree, well worthy of note. Somewhere about 30 years ago, a little giant of the forest was blown down in a storm, and fell right across a deep gully or ravine, which it completely spanned; and the top branches took root on the other side. From the parent stem no fewer than 15 trees grow up perpendicularly, all in a row; and there they still flourish in all their splendour, while the parent stem evinces no token of decay. Several of the trees are not less than 30 feet high. Is not this forest curiosity worthy of a visit by naturalists? *Farmer.*

Explosion of Pods with an Audible Report. Some time since I received some pods of a leguminous plant, found in abundance about the Mackenzie River, Rockhampton, Queensland, known by the popular name of the "Mackenzie or Rockhampton Bean," and which has been found as good a vegetable as the Scarlet Runner. It is found growing abundantly on the sandy banks of the creeks, as well as in the scrubs on the summit of the Granite ranges. I placed the ripe pods on the chimney-piece, and one evening, just after a fire had been lighted, I was startled by a loud noise, exactly as if one of the glass shades had been suddenly cracked; on examination I found the noise was occasioned by the explosion of the pods, the seeds being scattered with great force over the room. No doubt the warmth of the fire condensed the air contained in the pods, and caused the explosion. *G. Bennett, M.D., Sydney, in Seemann's Journal of Botany.*

Blight. To the unobserving, the apparently sudden appearance of myriads of insects is unaccountable; hence people sometimes call in the direct agency of the east wind, and attribute to that much-abused quarter the power to engender, by some mysterious influence, whole hosts of countless myriads of flies. This is termed a blight—a term which expresses in vague language nothing clearly intelligible, so far as relates to the direct cause of the mischief that ensues. Now, the Haltica nemorum is probably known to, and seen by, farmers only at the time when the Turnips are putting forth their smooth leaves. He has not noticed them at other seasons of the year, and wonders where in the world they could all have come from so suddenly, with destruction on their wings. But the naturalist notices them even as late as November, sitting with hind legs bent under their bodies ready for a spring, upon the leaves of the plants. He notices, too, the various holes made in the fully-developed leaf, and witnesses the little enemy busy at work, in the very act of making them. *Popular Science Review.*

Calendar of Operations.

(*For the ensuing week.*)

THE weather has been so exceedingly precarious of late that it is doubtful whether many of the operations that have from time to time been recommended to be done have yet been performed; look back therefore and bring up all arrears as expeditiously as possible. Should worms become troublesome, which they often do on lawns in spring, they may be kept in check by watering the turf occasionally with lime-water, or they may be brought to the surface and then removed by hand by watering with a weak solution of corrosive sublimate. Attend to sweeping up all dead spray or other refuse both on walks and Grass, and to everything else which will tend to promote neatness and good keeping. Let all fresh turfing be completed forthwith, and if not already done, cut in all coarse evergreens or shrubs before the buds get too much advanced.

FLOWER GARDEN AND PLANT HOUSES.

Climbers in Conservatories and other show houses will now want attention. Prune off superfluous shoots, stop or pinch the points of over-luxuriant leaders to induce a flowering habit in such kinds as produce blossoms from the axils of their leaves, and keep them neatly tied and trained.

ANNUALS.—If not already done, make a sowing of tender sorts. Pot off Balsams, Cockscombs, &c.; such things succeed best in a frame placed on gently fermenting materials, close to the glass, and well matted up at night.

BEDDING PLANTS.—Continue potting off stock for out-door decoration; also making cuttings of Verbenas, Fuchsias, Petunias, Pelargoniums, &c.; they may all be wanted. Shade newly-potted plants, and remember that in making cuttings the leaf should not be first allowed to flag, and then an attempt made to restore it by abundance of water, but the foliage should never if possible be allowed to drop.

DAHLIAS.—Re-pot the most forward cuttings; and put in others. It is very desirable to have extra strong plants for mixed borders and the shrubbery. These can be obtained by dividing and potting the old roots, after sufficient cuttings have been taken from them.

ORCHIDS.—Those growing in stoves must soon receive a slight shade for two or three hours on bright days, more especially those which have been disturbed at the root; these, if convenient, should be removed to a house or pit by themselves, as established plants which have remained undisturbed will enjoy more sunshine.

TULIPS.—Keep the foliage dry so long as we are in danger of frosts. If a watering is necessary, either from a continuance of dry weather or from the soil being light, it can be done between the rows, without watering the plants overhead. Protect from hail on all occasions, and rain also, while the weather is cold.

FORCING GARDEN.

CHERRIES.—These should have free syringings, with abundance of air. The syringing, however, must cease the moment any change of colour in the fruit is perceived.

FIGS.—Continue to stop; give manure water very freely.

PEACHES.—Persist in stopping at all times every gross shoot on all the upper parts of the tree—allowing such, however, to ramble when they grow towards the extremities of the lower parts; this is the best way of equalising the sap. Syringe freely—especially in the afternoon—and at that period endeavour to create atmospheric moisture for the night, by sprinkling all available surfaces, except flues or pipes. Trees of these and of Nectarines in pots now in full bloom must have as much air as the state of the weather will permit.

PINES.—Little new can be added at present. Give air freely to growing successions in dung-pits; induce them to grow more in bulk than in length.

STRAWBERRIES.—Keep up successions; do not suffer those on which fruit is swelling to get dry; use plenty of liquid manure as before advised, clear and weak.

VINES.—Endeavour to avoid the consequences of indulging in too much atmospheric moisture in the daytime. Many berries are doubtless injured by a surplus of atmospheric moisture in an undue endeavour to accelerate forcing by shutting up unreasonably early.

HARDY FRUIT AND KITCHEN GARDEN.

Protect blossoms, and endeavour to eradicate insects by all possible means. See that all winter and early spring work amongst fruit trees is forthwith brought to a close. The period has now arrived for committing to the earth the seeds of most kinds of kitchen garden crops, for the reception of which the soil is in most places at present in good condition.

CABBAGES.—Earth up plantations of the largest plants, and keep them free from weeds. Sow also seeds of two or more sorts which will succeed each other.

CARROTS.—Look sharply after crops of Early Horn, to prevent slugs from eating them. Nothing is better, perhaps, than cinder-ashes riddled extremely fine, and the mere dust taken out; these sown thickly over the ground present such a rough surface, that snails and slugs dislike to venture on them.

STATE OF THE WEATHER AT CHISWICK, NEAR LONDON,

For the Week ending March 14, 1866, as observed at the Horticultural Gardens.

March		Moon's Age	Barometer Max.	Barometer Min.	Temperature of the Air Max.	Min.	Mean	Of the Earth 1 foot deep.	2 feet deep	Wind.	Rain.
Thurs.	8	21	30.111	29.977	46	32	39.0	40	39½	E.	.03
Friday	9	[illegible]	29.973	[illegible]	46	29	37.5	41	40	N.E.	.00
Satur.	10	23	30.297	[illegible]	44	30	37.0	41	40	N.E.	.00
Sunday	11	24	[illegible]	30.154	45	36	40.5	41	40½	S.W.	.00
Mon.	12	25	29.978	[illegible]	49	28	38.5	41	40½	W.	.00
Tues.	13	26	29.528	29.511	46	15	30.5	42	41	N.	.00
Wed.	14	27	29.616	29.425	45	18	31.5	42	41	N.	.00
Average			[illegible]	29.795	45.8	26.8	36.3	41.1	40.3		.03

March 8—Cloudy, dusky clouds, showers, fine.
— 9—Fine but cold and windy, densely clouded, slight frost.
— 10—Fine, clouds and cold, overcast.
— 11—Overcast, cloudy, fine at night.
— 12—Fine, uniformly overcast, densely clouded, fine, slight frost.
— 13—Fine, cloudy, sharp frost at night.
— 14—Frosty, very fine with bright sun, frosty.
Mean temperature of the week, [illegible] deg. below the average.

STATE OF THE WEATHER AT CHISWICK,

During the last 40 years, for the ensuing Week, ending March 24, 1866.

March.		Average Highest Temp.	Average Lowest Temp.	Mean Temp.	No. of Years in which it Rained.	Greatest Quantity of Rain.	Prevailing Winds. N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.
Sunday	18	52.2	[illegible]	41.7	11	0.24 in.	3	8	4	2	2	6	12	[illegible]
Mon.	19	51.5	33.3	42.[illegible]	13	0.63	5	5	4	4	2	10	7	3
Tues.	20	51.6	33.9	42.7	15	1.11	3	5	1	2	[illegible]	11	6	6
Wed.	21	[illegible]	32.6	41.7	17	0.24	9	9	1	3	4	2	7	2
Thurs.	22	[illegible]	[illegible]	42.4	18	0.44	8	[illegible]	4	2	1	8	5	5
Friday	23	50.6	[illegible]	41.8	16	0.60	7	8	1	2	1	12	5	4
Satur.	24	[illegible]	[illegible]	[illegible]	14	0.13	5	6	4	1	4	7	8	6

The highest temperature during the above period occurred on the 19th and 24th, 1856 and 24th, 18[illegible]—therm. 69 deg.; and the lowest on the 20th, 18[illegible]—therm. 16 deg.

Notices to Correspondents.

BOOKS: *A Constant S.* Thompson's "Gardeners' Assistant."

CAUTION: *Messrs. E. A[illegible], Newark Nursery, Sheffield,* desire to caution the trade and others with reference to one Winsor, *alias* [illegible], professing to come from the neighbourhood of Chippenham.

FUNGI: *[illegible].* Didymium cyanescens, Fries. *M J B.*

GARDENERS AND NURSERYMEN: *Head Gardener.* We do not think any advantage likely to result from printing your letter.

LEGAL QUERIES: *A Subscriber* asks, "Does any law exist between landlord and tenant as to the removal of trees planted by a tenant where no agreement has been made between them previously to the tenant's leaving, or is it not usual for the landlord to pay the price of trees and shrubs at the time when planted?" To this we reply that the landlord has them without paying for them, except when the tenant is a nurseryman and the things planted are part of his stock in trade.—*Z Z* says:—1. "Has a gardener, upon leaving his situation, a right to claim and take with him any new varieties of plants or seedlings raised by him whilst in that situation?" To this we answer, No, except by agreement.—2. "Has he also a *right* to claim the profits arising from the sale of such seedlings, either during the time of his remaining in the situation or at any subsequent time?" Our reply again is No.

NAMES OF PLANTS: *J C N.* Berberis japonica, a fine hardy shrub for shady situations. The smaller plant was too much crushed for recognition.—*W G S.* 1, Pilea serpyllifolia; 2, Adiantum Capillus-Veneris, apparently; 3, Pteris hastata; 4, Platycerium alcicorne.

S[illegible]: *[illegible].* Next week.

TREES NOT EATEN BY RABBITS: *A Country Rector* would be obliged by any of our correspondents furnishing him with a list of hardy trees and shrubs that are not habitually eaten by rabbits; or by a reference to some work in which such information is given.

W[illegible]: *D M.* We are afraid the proposed plan would not answer. It would be too cumbrous in the working, unless some considerable improvements are made.

COMMUNICATIONS RECEIVED: Prof. Asa Gray.—1. Missing numbers forwarded; 2, Yes.—Dr. Regel.—J. Brown (received too late for this week).

J. C. WHEELER AND SON, SEED GROWERS' Gloucester.

WHEELER'S ILLUSTRATED BOOK on GRASSES, New Edition, now ready.

CONTENTS.

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I. CHALK.—York, Norfolk, Suffolk, Herts, Sussex, Berks, Wilts, Hants, Dorset
II UPPER and LOWER GREEN SAND.—York, Norfolk, Cambridge, Bedford, Buckingham, Berks, Wilts, Dorset, Surrey, Kent, Sussex
III. LONDON CLAY.—Sussex, Essex, Surrey, Berks, Hants, Dorset, Kent
IV. CORN BRASH, and GREAT and INFERIOR OOLITE.—North Riding of York, Lincoln, Rutland, Gloucester, Northampton, Oxford, Berks, Wilts, Dorset
V. OXFORD CLAY.—Oxford, York, Lincoln, Huntingdon, Bedford, Bucks, Berks, Gloucester, Wilts, Dorset
VI. UPPER and LOWER LIAS and MARLSTONE.—Gloucester, Leicester, Lincoln, Northampton, Oxford, Rutland, Somerset, Warwick, Worcester, York
VII. NEW RED SANDSTONE and KEUPER MARL.—York, Nottingham, Stafford, Leicester, Derby, Warwick, Worcester, Cheshire, Flint, Gloucester, Devon, Somerset
VIII. CARBONIFEROUS LIMESTONE and SHALE.—York, Northumberland, Westmoreland, Derby, Monmouth, Somerset, Cornwall, Gloucester
IX. OLD RED SANDSTONE.—Devon, Cornwall, Hereford, Monmouth, Brecon, Carmarthen, Pembroke, Somerset, Salop
X. UPPER SILURIAN.—Hereford, Lancaster, Radnor, Denbigh, Salop, Carmarthen
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GRASSES for the UPPER and LOWER LIAS. Light land, 33s. 3d.; Medium, 34s. 8d.; Heavy, 37s. per acre

GRASSES for the NEW RED SANDSTONE. Light land, 34s. 6d.; Medium, 36s. 10d.; Heavy, 38s. 1d. per acre

GRASSES for LIMESTONE. Light land, 30s.; Medium, 34s.; Heavy, 36s. per acre.

GRASSES for the OLD RED SANDSTONE. Light land, 34s. 2d.; Medium, 36s. 6d.; Heavy, 41s. 4d. per acre

GRASSES for the UPPER SILURIAN. Light land, 34s. 2d.; Medium, 37s. 3d.; Heavy, 38s. 1d. per acre.

GRASSES for the LOWER SILURIAN. Light land, 28s.; Medium, 34s. 11d.; Heavy, 36s. 8d. per acre.

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HORSE SHOW.—AGRICULTURAL HALL, LONDON, MAY 29.—To Carriage Makers, Saddlers, &c.—On this occasion the Arcade will be the only Entrance to the Show, and will be LET for the EXHIBITION and SALE of the Superior Classes of GOODS as during the Smithfield Club Week. Horticultural and Agricultural Implement Makers, Seedsmen, Nurserymen, Gardeners, and Manufacturers of Ornamental and Useful Articles for domestic purposes, may hire Space in the Galleries. Terms, conditions, and plans may be obtained on application at the Offices, Buford Street, Liverpool Road, N. By Order,
S. SIDNEY, Secretary and Manager.

The Agricultural Gazette.

SATURDAY, MARCH 17, 1866.

—— On Wednesday evening the Lords' amendments to the Cattle Plague Bill were considered in the Commons, and it was at length resolved to abandon the measure, the Government undertaking, by Orders in Council applicable to the whole country, to provide for the isolation of infected localities, the protection of healthy districts, the regulation of fairs and markets, the cleansing of railway trucks, and other matters of that kind. And thus the point on which the Commissioners insisted many months ago, and which has been urged by Agricultural Societies and Farmers' Clubs all the winter, is at length conceded. As MR. C. S. READ stated in the debate—The course the Government now proposed to adopt was exactly that recommended in the Report of the Royal Commission in November last; and had Government then thought proper to adopt it, the cattle plague would by this time have been extinguished. He impressed upon Government the importance of immediate action, the present legislation being far from satisfactory, as it permitted the traffic to go on, markets to be held, and did not compel the cleansing of railway trucks. The history of the cattle plague showed that whatever interests might be represented in the Government, but little weight was given to the farming interest.

IT is not long since it was generally conceived that the scientific farmer was necessarily given to wild experimenting, and his experiments were looked upon as sure to end in ruin. In our day however we look upon the man who acts upon scientific principles as the one who experiments least, while he who is ignorant of the laws affecting vegetable growth is in every new position in which he is placed of necessity an experimenter. And to the intelligent observer every result may have the teaching of an experiment, while actual experiments carried on without order or method, or without a due appreciation of the results, are in themselves not only useless, but too often expensive, and such may be any experiment commenced and carried on in ignorance.

As an example of the way in which the commonest farm proceedings may afford the teachings of experiment, we would direct attention to the results of a last year's Barley sowing, now that this important part of farm-work is in progress.

Our farm, situate on a rich sandy loam, favours the growth of good malting Barley, but as a rule the quality will depend very considerably on the fact of the seed being sown moderately early, hence much that is sown after roots is inferior in quality and quantity by reason of its lateness, while much that is made to succeed Wheat—a not uncommon custom—is superior both in quantity and quality, because the land has perhaps been cultivated in the winter, and so has been got ready in time.

The following Table, then, it is hoped, will show some not uninteresting results, which may prove the position with which we commenced this notice, and it may be remarked that though the Table itself consists of extracts from our farm-book, it may be taken as no bad specimen of undesigned experimental teaching.

RESULTS OF BARLEY CROP FOR 1865.

Number of Field.	When Sown.	Acres.	When Harvested.	Quarters per Acre.	Price per Quarter.	Remarks.
					s. d.	
Number 6	Mar. 16	40	Aug. 4	40	39 0	After Wheat.
" 5	" 28	25	" 12	40	39 0	After Swedes and Mangels, in alternate ridges of eight row each.
Section 1	Apr. 3	12	" 25	32	34 0	After Turnips.
" 2	" 12	16	" 26	28	32 0	After Swedes.
" 3	" 13	1	Sept. 12	26	32 0	After Turnips.
" 4	May 2	4	Oct 12	22	30 0	After Swedes.

Now, this Table shows us that even after Wheat the Barley was the best crop, and commanded the best price; this result was, we think, the effect of winter cultivation.

In field 5 we have an equal crop, and equal in quality, though a little later sown; but then its succeeding upon a root crop may be considered as affording an advantage in the matter of soil and condition. It may indeed be said that much of the variation noted has resulted from a difference of soil, and this is doubtless true to a considerable extent. But then field 2 is not so very different in this respect; it is a field of over 50 acres, and cropped in sections for the convenience of the work, and yet the results seem to diminish in value in proportion to the lateness of sowing.

Again, seasons may have a great influence in modifying results of this kind; still, with all these considerations, we are inclined to the belief that, as a rule, having work forward, and the being moderately in advance with all farming operations, will ensure better crops, with the expenditure of less seed than will result from the best management combined with tardiness.

It is not only in quantity but in quality, and consequent value, that the difference is marked and this in the case of Barley-sowing seems to point to the futility of sowing Barley after very late fed-off roots, according to the common practice of feeding on the ground, as our experience leads us to conclude that it would even be better for the succeeding Barley crop to remove all the roots from the soil in order to sow early than to run this operation too late by feeding where they grow, as by delay we have frequently seen the Barley crop worse than useless.

We conclude this notice with the hope that all farmers may be induced to make notes of their various operations, and from this sample we have shown that so doing may partake of the nature and possess the value of some of the most teaching experiments. *B.*

ON FLAX.

BEFORE entering upon the subject it may be useful to state that the acre in England differs from the acre in Scotland, and both differ from the Irish acre. The difference is as follows:—

30¼ square yards make 1 square pole, 40 poles 1 rood, and 4 roods 1 acre English; thus $5\frac{1}{2} \times 5\frac{1}{2} = 30\frac{1}{4}$ $\times 40 \times 4 = 160$ poles or 4840 square yards.

36 square yards make 1 pole, 40 poles 1 rood, 4 roods 1 acre Scotch; thus, $6 \times 6 = 36 \times 40 \times 4 = 5760$ square yards.

49 square yards make 1 pole, 40 poles 1 rood, 4 roods 1 acre Irish; thus, $7 \times 7 = 49 \times 40 \times 4 = 7840$ square yards.

The quantity of Flax seed for the Irish acre is about 3 bushels, or say 12 pecks, or 96 quarts; for the Scotch acre 80 quarts; and for the English acre 59 quarts and half a pint, but the whole will be better understood by the rule of thumb in round numbers given in pecks:—Irish acre 12 pecks, Scotch acre 10 pecks, English acre 7½ pecks.

I need scarcely remark, that the utmost accuracy is necessary in the quantity of seed sowed, as the crop will be worthless if sowed either too thick or too thin. Wheat stoles and fills the ground, but in Flax there is no such good luck in store, and whilst we find seven good stalks of Wheat rise from one seed, each Flax seed yields but one stalk. Again, it must be clearly understood that, although most crops do best and are more easily kept clean when sowed in drills, this will not do for Flax. Flax, properly speaking, is grown for its woody fibre and not for either its seed or its fodder; and although it requires to be weeded, still it must be sowed thickly, and sowed broadcast, and by far the handsomest way of growing Flax is to plough or prepare the land in

beds or narrow ridges, each bed 6 feet wide, with 9 inches of an alley between; this alley allows room for the feet of the weeding party without treading upon the crop, and as there ought to be no seeds on this alley of 9 inches, there will therefore be just one-eighth more seed upon the beds than if the seed were scattered on the whole surface, as is done with Oats, broadcast. The Flax should be sowed about Lady Day (25th March), the last fortnight in March and first fortnight in April, being its prime seed month, and the ground should be prepared as follows. If the field has been a pasture field it will be in very good condition for Flax, that is to say any well-drained field that has produced a profitable crop of Grass will require no dressing or manuring for Flax, and if it is ploughed, rolled, and harrowed, so as to be brought to a good tilth, and any large stones picked off that would interfere with the roller, that is to say, stones larger than one's clenched fist that the roller would not bury (these are mechanical difficulties); but it must not be thought that stones are injurious to Flax, for very stony ground produces good Flax, and there is no need for the cost of their removal, provided we can get a smooth surface after the roller, so that the weeding can be neatly done.

Suppose then that the field or plot of ground is got ready, and the seed sowed broadcast all over, without any distinction of beds or alleys. Select the line running from north to south, if convenient for the paths or alleys, and set out the beds 6 feet 9 inches, that is 6 feet for the bed and 9 inches for the alley, and let the poles be put in perfectly straight and at the regular distances, so that without any line several workmen can commence with spades 9 inches wide to make the alleys, and fling the earth out of the alleys neatly all over the beds right and left, making the alleys not over 2 inches deep, and let the beds be neatly levelled with a wooden or iron-toothed rake, raking all offal into the alleys. The whole will now be in beds, and should be rolled across the alleys immediately—all the rubbish that has been talked or written for the last 100 years about rolling Flax after it has been six weeks sowed notwithstanding. I am not following anybody's dictum, but there is an "antique tome," 100 years old, now lying before me, that counsels bruising the young plant by horses' feet and heavy rollers. I may mention here that my father told me when Turnips were introduced, the worthy cultivators "tumbled on them to make them knot the better." Any one tumbling upon a farmer's young Turnips now-a-days would come in for the horsewhip, and any one who has gone through the best practice in the London nurseries of growing seedlings, as I have done, will have no hesitation in putting any one right in the way of rearing plants in seed beds; and as I have for years past made notes on the best forms of Flax beds or ridges in the Province of Ulster (north of Ireland), I mean to give this as a better form of growing the plant than any plan at present in use, for the finest sample of an Ulster Flax ridge that I have ever seen would not compare with a nurseryman's seed bed of Scotch Fir. So we may as well copy from the best examples as blunder on with the rule of thumb, and I may as well state here that the tools in Ireland are everywhere deficient, for the long-handled shovel, and the narrow blade by way of spade, cannot accomplish impossibilities. The men could do the work well enough, but not without proper tools, and one very important part of the business must not be kept out of sight, and that is that a good labourer with a proper spade would earn 2*s.* 6*d.* a day, whereas a labourer with the narrow blade and 6-feet handle would be only worth about 10*d.*, which is the wage paid in some parts. I have seen a gang of men digging Potatos near Waterford, and I have no hesitation in stating, that with such tools as they had they could not earn 1*s.* per day, and they were all fine fellows. But it is not only in Waterford, or in any other county in Ireland, Scotland, or England, that the agricultural labourer is behind the spirit of the age we live in, for gardening has verily gone out into the field, and we see the chemist and the mechanic consulted as to what is to be done with a Grass field—that most vulgar of all patients.

Whoever, therefore, attempts to grow Flax must make up his mind to the use of much more manual labour on his farm than he has required for most other crops. It is, moreover, an exhausting crop, and filthy beyond measure, having, when properly steeped or retted, a most unbearable stench, and requiring great watchfulness and nicety in all its manipulations.

The Flax would of course yield plants of ripe seed if left long enough in the ground, but this would spoil the fibre; and as a great number of people try to save the seed and the Flax too, it may be as well to state this matter plainly. Most people, like the prophet, would fain take the bribe and retain their honest character, and I have seen people pulling green Flax and scutching off the green seed-pods to save the seed after a fashion, that is to say, they saved half-ripened or green seed, which might be of service for feeding purposes, but inasmuch as it was of service there the Flax had lost value, as will be seen from the following. When the sugar in corn has been converted into starch in the grain, the straw is completely altered, and becomes, as it were, the draff of its former malt; so the fatty matter in the Flax seed cannot be secreted there without robbing what botanists would call the woody fibre of its suppleness. A judge of Flax could tell the silky feel of fine Flax in the dark; a botanist going into a raff yard could tell that the spars had been trees thickly standing on the ground, and had got elongated or drawn up to an unnatural length, very different in character and properties from the normal form of the tree. Now this is just what is wanted in Flax growing. It must not lodge or fall down, and must still be long thin plants thickly standing on the ground; and as soon as you can find a shred of fibre that will tear from the boll or seed-pod down to the root without breaking, the Flax must be pulled green, for if ripened more than half way up it is too much ripened, and the yellow leaves half stalk high help to mark the pulling time. In pulling avoid all weeds and lay the Flax even, and bind it in sheaves of 6 inches diameter. Pits perfectly isolated from running water should be got ready; they should be shallow, not over 4 feet deep, and the water should not be hard water, that is to say water containing lime, but soft water, such as rain or bog water. The fermentation will soon set in, and it should be encouraged by treading the Flax, to disturb and mix the lower stratum of water with the upper to make the retting process even. From 10 to 20 days is the usual time for retting, and when a wisp is taken out and dried, it settles the time for taking it out. Deep water has to be avoided, and any stream running into the pit is injurious. A long narrow pit, say not over 15 feet wide, will do very well, and they are seldom made more than 10 feet wide; and in order to add to the convenience of working, cross dykes in the pit at 20 or 30 feet apart, enable a person to have the water at different levels, which in falling ground is a great saving of labour. Sticks and stones are best to keep the Flax down under water, but sods will do very well. Pits 20 feet long, 10 feet wide, and 3 feet deep will answer any reasonable purpose in retting Flax, and the water in which Flax has been retted, should be put into the water-cart and carefully spread over the land; it is simply manure-water, and should not be wasted. I must here state a great botanical distinction between the ordinary cultivation of corn and the cultivation of Flax. All the natural order of Grasses (Gramineæ) have their hard side out, and are technically called Endogens, whereas the Flax is an Exogen, and has the soft side out, and, unless for this essential difference, the treatment suitable for corn should do for Flax, and any one might say "Do not they both grow alike in the same field?" When corn is sown in autumn or in spring, the rough clods help to shelter the brairding corn, and when spring has well set in, the roller does the corn good service, for if it is bruised, or even eaten off by sheep to the stumps, there is no harm done. The collar of the corn plant has its latent buds, that will put forth stolons, and from each grain several stalks may arise, and the hard side being out, the plant suffers little from any reasonable amount of crushing its foliage, so long as the underground crown is safe. Now if this treatment be tried with Flax, and the young plants are rolled and bruised, it is simply doing the crop an injury. I have been at pains to combat this theory, and should be sorry to see any one wilfully bruising even one plant in a hundred where there is no occasion, for Providence has wrapped up the Flax plant neatly in the form of a seed, and in that state you may carry it easily from place to place, change it from clay soil to bog mould, and *vice versâ*, sow it, trample on it, roll it, with no danger to its health; but when the infant plant is tender, and every part soft in texture, why should it be mauled and trod upon under any pretence whatever? When the Flax has been taken out of the steep it is taken to Grass land to bleach, and is there evenly and thinly spread out, and usually takes a week on one side, and requires to be turned over so as to get a week on the other. From the time that the Flax is bleached and tied up and harvested, up to the time that it is issued out to the world in the forms of table linen and body linen, we have nothing to do; in a work of this nature the manufacturer, shrewd and practical, settles all the rest readily; the enormous amount of money that one acre of well-grown Flax will fetch would not be credited, and no one will be louder in denouncing Flax culture and crying down its profits than the parties who have neither the skill, the will, nor the means to cultivate it profitably. Artificial manure will easily amend the character of the soil exhausted by Flax, and the farmers who require covenants in their leases to prevent them from ruining the farms they are about to leave, are getting few in number, for high cultivation will pay where low cultivation fails. Foreign seed is cried up, and native seed cried down; but in this, as in most other cases, there is a good deal to be said on both sides. What most concerns the practical man is to know on what qualities of soil the seed has been grown upon, for the change of seed is no vulgar notion, but one well established in every department of cultivation. Wheat, Oats, Barley, and even sets of Potatos succeed best when changed from decidedly different soils, and from various Flax growers I have asked on the subject of changing seed, it is clear that in foreign seeds you are left to the mercy of the foreigner, as you can very rarely learn the character of the land he has grown the seed on; hence, if a person saves seed on clay soil in Ireland, he will be safer with good seed thus grown than with foreign seed, provided he is to sow it on black earth. Clay and sand are excellent additions to bog soil for Flax, and plenty of bog earth and sand will greatly improve clay soil, and all the forms of soda and common salt come in well for manure to this plant. The Flax is by no means a gross feeding plant, and requires good ventilation. High hedges, woods, and moist valleys are not congenial to the growth of good Flax. We find it as a weed in the open cornfield; it is a native of our own country, and the natural habitat of any plant gives us a clue to the cultivation of it for profit. In bleaching or grassing Flax, windy situations should be avoided, as the fibre, when spun, must be all one way, hence, if the Flax get scattered by the wind on the Grass, it will be of little value to the manufacturer; but this, like many other items of practice, must be left to the good sense of the parties. I recollect the Flax mills in Aberdeenshire, and we grew the Flax that our shirts were made of. *Alex. Forsyth.*

THE CATTLE PLAGUE.

1. The following returns were issued last Saturday: These returns do not profess to give the total number of cases which have occurred in Great Britain, but only those which have been ascertained from information received at the office from inspectors. Columns 1 only record the cases reported as having commenced during the weeks indicated by the headings; "back" cases being added to columns 2.

Census Divisions.	1 Number Attacked.		2 Total Reported Cases from Commencement of Disease.				
	Week ending February 24.	Week ending March 3.	Attacked.	Killed.	Died.	Recovered.	Unaccounted for.
Mecrop. ..	12	12	7012	3241	3485	335	583
S. Eastern .	16	24	4989	1558	2779	442	210
S. Midland .	711	573	14,512	2795	9697	1422	598
Eastern Co. .	241	241	9258	3936	4656	684	552
S. Western .	48	41	1446	410	757	198	81
W. Midland .	293	1067	9119	1403	5905	1079	732
N. Midland .	840	1032	9843	2456	5857	937	693
N. Western .	3038	1544	45,200	2197	32,529	4243	6231
Yorkshire .	1409	1109	28,856	2004	17,044	5542	3266
Northern Co.	377	697	5484	1944	2469	944	127
Monmouth. & Wales .	268	113	7188	126	5797	999	266
Scotland ..	1843	804	43,752	4687	25,879	9363	3823
	10,167	7,240	187,650	26,135	117,664	26,106	17,154

Note A.—The operation of the "Cattle Diseases Prevention Act," 1866, is indicated by the return this week, showing 5197 cattle as "killed," compared with 1711 last week, and 980 the previous week.

Note B.—16 Inspectors have not reported this week in time for this return. These Inspectors returned 1281 cases last week.

2. Withdrawal of the Cattle Plague Bill.—[The following is an abridged report of the speech of Mr. Baring, the Under-Secretary for the Home Department, on Wednesday evening last.]

The difficulty in which they were now placed arose thus: the hon. gentleman, from the first taking what he properly called an anomalous course, produced a Bill when the Government introduced their measure. That Bill, by consent of the Government, was read a second time, and committed without discussion; and when the Government, in a division upon an amendment moved by the hon. gentleman, were, as he described, without any party motive, placed in a large minority, he proposed that all those portions of the Government measure which related to the movement of cattle should be abandoned, and that the Government should allow his Bill to be proceeded with. The whole principle and main object of that Bill was to provide by legislative enactment the precise rules and regulations under which cattle should or should not be moved throughout Great Britain up to the 25th of March, and the particular point to which he directed the attention of the House and desired the decision of Parliament was under what regulations cattle should be moved after the 25th of March. That Bill had up to the present time undergone probably greater vicissitudes than any other measure ever introduced into that House. As sent up to the other House it consisted of 54 clauses and one schedule; 24 were struck out and 11 were introduced in the other House. All the clauses relating to the movement of cattle were left out. It had been his duty to examine the Bill carefully to see whether it would be possible by introducing amendments to make the Bill a useful measure. He did not dispute that there were some useful clauses in it, and he had gone the length of putting his amendments in print. The hon. gentleman was aware that it was not competent for them in dealing with a Bill they had received from the

other House amended, to make any alteration except by disagreeing or amending the Lords' amendments or making consequential amendments on those amendments. Well, the result of his most careful consideration of the Bill as brought down to them was, that even supposing what was exceedingly improbable, that every amendment the Government proposed was accepted by the House—supposing what was still more unlikely, that the other House would be prepared to accept all the amendments approved by them, if the Bill passed in the shape in which he proposed to amend it, they would have had a piece of legislation so complicated and so difficult to understand that it would not have been right to recommend its adoption by the House. Their legislation relative to the cattle plague must be understood by all classes of the community, and he thought it was perfectly impossible to amend this Bill so as to render it intelligible. The Government were prepared to take on themselves the responsibility of dealing with this question in such a manner as they should think right, and which he would proceed shortly to explain. In the first place he had to state that the Government were prepared to strengthen the establishment of the Privy Council as had been suggested. The House and the country would feel with him the obligations they were under to Mr. Helps and the gentlemen in his department for their diligence and devotion to business in carrying on the vast correspondence connected with this subject, in addition to performing their ordinary business. It must therefore be understood that any changes which it might be contemplated to make in that department were owing to the necessity of extending its operations, and not to the conduct of those employed in it. On the subject of the cattle plague, if, as might be hoped under Providence would be the case, the adoption of the principle of slaughter for the period agreed upon by Parliament had the effect of limiting the area of the disorder within a much smaller space than that over which it was spread at present, the Government felt that it would be competent for the Privy Council, assisted by the local authorities, to isolate infected districts, and at the same time to guard uninfected districts from the disease. The next point on which the Government must take action was with regard to fairs and markets. The course which he would indicate, without pledging himself that the Government would adopt it, in reference to this subject, was almost identical with that proposed in the clauses of the Bill, viz., that by an Order in Council all fairs for the sale of store cattle should be prohibited for a limited time, and that no markets should be held without the license of the Privy Council, and that, when held, no cattle should leave the market alive; and that they should only be permitted to take place in those parishes that should offer the guarantee mentioned by the hon. member for West Norfolk. The fourth and last point he had to mention was that Government believed it to be absolutely essential that some general regulations with regard to the removal of hides, dung, and other refuse, should be made by an Order in Council, applicable to the whole country, except those districts which the Privy Council might wish to place under protective regulations, for the purpose of preserving them from the cattle plague. The Orders in Council on this point also would be in accordance with the clauses in the Bill of his hon. friend the member for Northamptonshire.

Mr. HUNT was desirous of knowing how Government intended to deal with that subject. Did they intend to delegate their authority on this point to the local authorities?

Mr. T. G. BARING said the proposal which he would indicate as the one likely to be carried out by Government was that, while the principle of slaughter would be carried out in infected districts, every precaution would be taken to protect uninfected districts, such as Wales and Scotland. With regard to the West of England, some form of licence might be devised which would enable beasts to be moved from one part of the district to another. He might add, that he hoped it would be possible to effect the desired object of extinguishing the cattle plague by means of Orders in Council; but if, upon further consideration, Government found that such orders failed to effect their purpose, it would be their duty to apply to the House for fuller powers. With regard to the very important subject of the cleansing of railway trucks, as the matter had up to the present time been under the consideration of Parliament, Government, out of respect to the House, had refrained from taking any action for the purpose of compelling the railway companies to perform that duty; but in the event of the Bill being abandoned, Orders in Council would immediately be issued requiring railway companies to cleanse all trucks which had been used for the conveyance of cattle. In the event of Government having to introduce a new Bill, they would adopt many of the clauses contained in the present Bill, such as the power given to magistrates to stop animals and certain penalty clauses. On all other points Government would deal with the cattle plague more satisfactorily by Orders in Council than by an Act of Parliament. In the first place, because the latter could not be made sufficiently elastic to meet the requirements of the case; and secondly, because by means of an Order in Council the whole of the regulations might be drawn up in one short code, instead of being scattered among the numerous clauses of two Acts of Parliament, coupled with a third, of a temporary nature, the expiration of which would disturb all the existing regulations.

Mr. HUNT was rejoiced to hear from the Under-secretary for the Home Department that the Government intended to relieve both himself and the House from very great difficulty by accepting all responsibility in this matter, but he could not agree with the concluding observation of the hon. gentleman that his efforts had been unattended with success, as all he desired was that Government should take upon themselves the responsibility they had hitherto declined. The hon. gentleman had referred to those clauses in the Cattle Diseases Act which the Government were eventually compelled to withdraw, though they had proposed to deal with the question in the principle on which the Government now intended to act. Whereas, in truth, the effect of those clauses was merely to throw upon the local authorities the powers and responsibility which it was the duty of the Government to accept. He believed it was solely owing to his efforts, backed up as he was by those interested in the question, that they had heard the announcement to which the hon. had just alluded from the Under-Secretary. They now heard for the first time that it was the intention of Government to issue uniform Orders in Council with reference to the movement of cattle and the stopping of fairs and markets, and he need scarcely say how much pleasure such an announcement had given him.

3. DR. WILKINSON'S REMEDIES.—*As a Preventive Measure.*—Dissolve hyposulphite of soda, in the proportion of ½ oz. to each gallon of pure spring water, and supply the animal with an abundant quantity of this solution to drink. (This solution improves the condition of cattle subjected to its use, and in milch cows improves the supply of milk.) Apply tar to the nose of the animal every night.

Impregnate the air of the cattle-house or shed twice daily with the vapour of creosote, or of carbolic acid (by placing a teaspoonful of either substance upon a brick made hot in a fire), in order that the animals may thoroughly inhale the fumes. Continue this treatment daily.

As a Curative Measure.—When any animals are affected with the disease, carefully separate them from the healthy ones and place them in a cattle house or enclosed shed; supply them with pure spring water, in which hyposulphite of soda is dissolved, in the proportion of 1 oz. to each gallon.

Impregnate the air of the cattle house or shed four or five times daily with the vapour of creosote, or of carbolic acid (by placing a teaspoonful of either substance upon a brick made hot in a fire) in order that the animals may thoroughly inhale the fumes.

If any animal refuses drink, it should be drenched with water containing a proportionate quantity of the hyposulphite, viz., a solution consisting of 2 oz. of hyposulphite in a pint of water three times a day.

If it takes food readily, mix ½ oz. oxide of iron with each feed, and let the food be as nutritious as possible.

If it refuses its usual food, it should be fed four times a day, each feed consisting of half a pound of Pea, Bean, or Lentil meal, mixed with one quart of water, to which one fluid drachm of tincture of sesquichloride of iron is added: and, if necessary, a stimulant consisting of whiskey or brandy.

If restlessness or diarrhœa come on, give a dose of opium at night.

Of the latter remedies the veterinary surgeon ought to be the best judge.

Take care that the cattle house be kept scrupulously clean, and that it is well washed down with chloride of lime and water at least once a day. *Sydenham.*

4. COW KEEPERS' PROTECTION ASSOCIATION.—At the meeting held last Tuesday, a discussion took place on the disinfecting of sheds, in the course of which several of the members spoke very highly of the utility and value of Condy's Fluid as a disinfectant.

Mr. STRUTTON said that he had thoroughly disinfected his shed by means of about a wine-glass of Condy's Fluid to a pail of limewash. He considered it to be one of the best disinfectants of the many recommended.

Mr. FREEMAN said that he could by his own experience confirm all that had been said by Mr. Strutton as to the value of that article. He had, during the last week, cleaned out a drain in his cow-house which smelt very bad. He used a small quantity of the fluid in a few pails of water to flush the drain, and in a few moments there was not the slightest offensive smell discernible. In the same way, when the dung-pit is emptied, a small portion of the fluid is used, and there is not any offensive smell. He considered it most valuable in all cases of foul drains, or places where dogs or other animals were kept, as it was both cheap and good.

Mr. ALDER, sanitary inspector, stated that he never saw any disinfectant act so thoroughly (and he had seen and heard of many) as Condy's Fluid. He thought it right to bear his testimony at the present time to the value of that article, as he had so often tested its merits; for instance, in the case of the cows of Mr. Smith, of Turk's Row, when they were in the last stage of the cattle plague, and when, as they were all aware, there was excessive purging, and a most offensive smell, he had used a wine-glassful of the fluid to a pail of water, and almost immediately the air of the shed became perfectly pure, and free from any of the smells so injurious to the animals and their attendants. *West Middlesex Advertiser.*

HOP GROWING.

As a Hop grower to the small extent of four acres, my attention was attracted by an article containing an account of a new method of training, which appeared in the "Journal d'Agriculture Pratique" of 5th February, 1866. The article, a translation of which is subjoined, is not entirely confined to an account of the training, or even of the cultivation of Hops, but it may be worth reading by those who take an interest in the progress which our enterprising neighbours are making, not only in Hop growing and in agriculture generally, but in the consumption of beer!

In horticultural manipulations, such as the cultivation, pruning and training of fruit trees, the French have taken the lead; and if English horticulturists have overtaken them, it has been by industriously following in their footsteps.

This ingenious method of training Hops has not, I think, been tried in England, and may be worth notice. *H. Evershed, Hadstead.*

ON HOP GROWING, AND A NEW METHOD OF TRAINING ON LONG SUPPORTS.

[A Paper read to the Imperial and Central Agricultural Society of France," by M. Gustave Heuze. Translated from the Journal d'Agriculture Pratique.]

The Imperial and Central Society of Agriculture will, I am sure, approve my laying before it an account of the cultivation of the Hop in the ancient province of Alsace: remembering, with what satisfaction they awarded a gold medal in 1846 to M. Derendinger, formerly of the Grand Duchy of Baden, who in 1810 introduced Hop growing in the neighbourhood of Haguenau. Some writers, forgetting this fact, so creditable to the country, have stated of late years that M. Derendinger had the good fortune to receive from the Government that succeeded that of 1830, a medal in recognition of his services in Alsace. They were not aware that it was this Society which awarded him that recompense at a formal meeting held both April, 1846, and presided over by M. Gumin-Grinaine, the Minister of Agriculture and Commerce.

Some persons denied that the merit of having first introduced Hop-growing into Alsace belonged to M. Derendinger. If it is true that Dr. Weinum planted some Hops in a garden in the town of Haguenau at the beginning of this century, a work on the Lower Rhine, published in 1809, proves that the farming of Alsace did not include Hop growing, and it shows that 800*l.* worth of Hops were imported from Germany every year. In 1895, when the brewery established at Haguenau by M. Derendinger was in full work, the price of Hops, which could only be had by importing them, was as much as 24*l.* per cwt.

In referring to the services rendered by M. Derendinger to his adopted country, I cannot pass over the name of M. Lezay Marnezia, Prefect of the Lower Rhine, to whom French agriculture is indebted for some of the best statistical accounts of the agriculture of each province, published at the period of the First Empire. The history of Alsace informs us that this worthy magistrate, recognising how advantageous the cultivation of Hops would be to the department of the Lower Rhine, encouraged the first attempts which M. Derendinger, by ordering the Administration of Forests to supply him with the necessary poles.

The cultivation of Hops has increased every year since that time, not only in the district of Haguenau, but also in several other parts of the department of the Lower Rhine, especially at Bischwiller, Brumath, Wissembourg, Wasselonne, and Benfeld.

According to the statistics, the cultivation of Hops in this department in 1840 extended over 500 acres, and produced an average of 1500 cwt. Here, then, is a result which, at that time, seemed large, seems insignificant when compared with the growth of Hops in the same department in 1856, when the Hop grounds covered 1150 acres, or four times the extent of ground they occupied fifteen years previously.

The considerable extension of the growth of the Vine that has taken place in France during the last 10 years leads us to suppose that the Hop grounds would not have been extended unless they had been profitable. Facts observed for several years in the department of the Lower Rhine enable us to say that the cultivation of Hops and the brewing of beer have increased in proportion to their importance, exactly in accordance with the remarkable progress which takes place in France every year in the cultivation of the Vine and the making of wine. Accordingly the latest statistics show that in the department of the Lower Rhine 1435 acres were occupied by Hop-gardens in 1862, and 1700 acres planted during the last eight years is estimated at 500 acres.

From these facts it is evident that the cultivation of this plant progresses most satisfactorily in Alsace.

Among the causes that have chiefly led to the extension of Hop-planting in the Lower Rhine may be pointed out, in the first place, the adoption of better methods of cultivation, and improvements in the processes of picking and drying. At Haguenau, especially, the growers have succeeded in producing Hops that in flavour and condition rival those imported from Bavaria.

In the second place, we may recall the considerable increase in the importation of Hops. In 1845, 14,420 cwt. were imported into France; in 1853, 31,120 cwt.

These figures cause us to know why the growers of Alsace have been induced to increase the extent of their Hop gardens.

It may also be observed, that for many years Hops have maintained the high price of 80 to 100 per cwt.

The statistics leave no doubt that it is a mistake to attribute to exportation alone the gradual increase in the extent of the Hop gardens of the Lower Rhine. In 1845 exports had reached 1700 cwt., and they did not exceed 7100 cwt. in 1856.

For 10 years the Hop growers of Alsace have found a good market for their surplus, and this is owing—1st, to their determination to rival foreign growers in supplying the French market with Hops of good quality; 2d, to the fact that people in our days drink more beer than they did formerly; and 3d, that they become more and more particular as to the quality of this beverage.

In 1823 the consumption of beer in France for each inhabitant was 8 quarts; in 1846, nearly 14 quarts; and in 1857 it had reached nearly 17½ quarts. The statistics of the cities of Paris and Strasburg supply evidence of the increase in the consumption of beer during the last 30 years. The quantity drunk in Paris, in 1858, had risen to 6,000,000 gallons, representing about 6000 cwt. of hops. In 1864 it had reached

7,486,776 gallons. In 1854 it had not exceeded 1,000,000 gallons.

The details furnished by the administration of indirect taxes are still more explicit than the preceding figures. They enable us to state that the quantity of beer brewed in France in 1853 was 77,792,000 gallons; in 1854 it was 10,000,000 gallons; and in 1856, 141,878,000 gallons.

To complete this account we must state the increase that has taken place in the exportation of beer brewed in France. In 1840 we exported to the value of 8,200*l.*, and in 1858 to the value of 34,500*l.*

We remarked that the improvement in brewing had greatly contributed to the increased cultivation of the Hop. For a long period, both in France and Germany, beer was made without Hops, for which were substituted coriander, wormwood, and the bark and leaves of the box tree, &c.; but the bad quality of beer made with these substitutes, the demand on the part of consumers, and the increased price of beer, have compelled brewers to use the Hop only, which alone keeps beer sound and wholesome, a property it derives from the tannic acid contained in it.

The Hop contains four principal substances—1st, a volatile oil; 2d, a bitter principle; 3d, a gummy substance; 4th, a resinous substance.

Wimmer found the following substances in 100 parts of Hops:—

	Bracts.	Lupulin.	Total.
Volatile oil	—	0·12	0·12
Bitter principle	4·70	3·00	7·70
Gummy matter	5·80	1·30	7·10
Resinous matter	2·00	2·00	4·00
Tannic acid	1·00	0·70	2·40

It appears by these facts, mentioned in the "Records of Pharmacy," Book 23, that resinous matter is contained both in the bracts and in the yellow powder. It is insoluble in water, but we learn from the researches of M. Vlaanderen that it is dissolved by the alcohol produced during the fermentation of beer.

The essential oil is combined with the resin, but it volatilises and disappears completely after long exposure to the air, and this is why old Hops have but little smell. But when affected by damp they have a strong odour like that of valerianic acid.

In what degree does beer derive its qualities from the peculiar substances contained in the Hop? Is it the bitter extract of the Hop, or the tannic acid it contains that gives beer its keeping qualities? These are questions worthy of the consideration of chemists. According to Professor Mulder, of the University of Utrecht, the Hop owes its keeping qualities as much to its tannic acid, which renders insoluble a certain quantity of the albumen contained in the wort, as to its resin and essential oil, which remain unchanged by the tannic acid.

However diverse opinions may be as to the action of the Hop in beer, facts abundantly prove that the best beer for keeping is that which is bright, and which is kept in cellars very cool, not to say cold. At Munich the temperature of the beer cellars is always kept at 32° F. by means of ice.

The more strongly beer is hopped with a Hop of the first quality and aroma, the longer it will keep, and of course the more bitter it will be. The quantity that ought to be used varies from 2 to 4 per cent. of the malt, according to quality, bitterness, strength of the beer to be brewed, and the time it is to be kept.

The light beers, little hopped, are pectoral and more emollient than the strong beer of Strasburg or Paris. This is why M. Michel Levi remarked in 1861, that according to his own experience, good light beer of Paris produced remarkable effects in certain chronic inflammations of the lungs and the region of the stomach.

It is unnecessary to pursue further these general considerations. They seem sufficient to account for the excitement which exists at present in Alsace in favour of the Hop, and the new process of cultivation which is taking the place of the old method, and which consists in supporting the bine of the plant by means of poles, with iron wires running horizontally; or by a particular method to which the attention of the Society was called by two years' experience of Lehmann, one of its most intelligent and zealous correspondents.

(To be continued.)

SHEEP BREEDING.

(Continued from page 229.)

[The following is the continuation of a paper lately read by Mr. William Davidson, Blandsfort, at a meeting of the Athy Farmers' Club, Kildare.]

The Lambing Season.—When they commence to yean the services of a careful and skilful shepherd are valuable; but the employer should bear in mind that it is a very fatiguing season on the man who attends to his business well; and he should be encouraged and made as comfortable as possible, allowing him the necessary help required at this important period, as any person over-wrought will lack energy.

There should also be sheds provided for weak lambs on severe nights. The shepherd should always have a fire ready to warm any that require it; I have often seen lambs that came very weak greatly restored by giving a little whisky in some warm milk: there should also be a number of small sheds or boxes, about 6 feet square, to put the ewe and her lambs in as they drop, till the lambs take to their mothers, as some young ewes are troublesome, and will often leave them altogether, and when two or three pairs of twins come together the lambs sometimes get mixed, and the dams confused, so that they often refuse even their own lambs.

In most cases I find shepherds err in being in too much haste in giving assistance to the ewe when she gets sick to lamb. They should always be left some time to themselves, and in most cases they will yean without any assistance; but should they be too long they must be examined to see if all is right. Frequently, when twins or three lambs are in a ewe, a foot of each lamb will come together, and many ewes are lost by the herd not being careful in seeing that this is not the case before he gives too much assistance. The shepherd should always have some Linseed oil and opium ready to give the ewe in bad cases of lambing, to keep down inflammation, and should also pour a little into the womb, holding up the sheep by the hind legs. A mixture of Linseed oil and Day & Hewitt's extract is a very useful thing to wash the womb with after a severe case of lambing. According as the lambs get strong they should be removed to fresh pasture, and if keep is not plentiful they must be supplied with roots, and a mash of bran and crushed Oats. I find nothing better for milk than the bran and Oat mash.

The lambs should be all ear-marked as they drop, so as to know the ram and ewe from which they were bred. This precaution is seldom taken, and very often the sheep that bred the best stock are the first culled out. A great many lambs are lost some seasons by what is called Grass-ill. Just about the time they begin to ruminate, they lose the power of their legs, and sometimes die in ten minutes. When Grass is good and milk plenty, this disease is most frequent. When keep is scarce or twins in a ewe, they seldom take it. I sometimes use Linseed and soda as a preventive. When a lamb dies, a twin should be put upon the dam, and not have any ewe idle. This is easily done by sewing the skin of the dead one on the twin, and she will at once take to it, if the twin has been starved for some time, so that it will press her for support. Lambs intended for stores should be castrated when a fortnight old. The tails should not be cut for some time after, as by performing both operations at one time, as some people do, the lamb is too much weakened by loss of blood.

Management of Lambs.—If the object of the breeder is to supply fat lambs for killing, he must provide plenty of keep for them from lambing till sold. This system should not be tried except by those who have fattening land, as a large good store lamb will not bring near so much for killing as one half its size if fat; but it is very profitable to breed fat lambs on ground that answers it, as the ewe if well kept will sell at a profit on the inlaying price, and is off the ground early in the season. I have seen cast Black-faced and Cheviot ewes bought in Scotland do well for this purpose; these sheep, bought in at present prices, at from 1*l.* to 30*s.* each, bring the very best of butcher's lambs, and three of these can be kept in place of two large ewes; but these sheep seldom do well in Ireland, which is neither the fault of the country nor the sheep, but of the herds, who don't like the extra trouble they give them, and they take every opportunity that they can get to run them down and get rid of them. They are very subject to foot lameness when brought to the low land, nature having provided them with a very thick sole to stand the tear and wear of the mountain, but which destroys them on soft ground. Inflammation sets in under this thick sole and consequently is very severe. This can be partly prevented by the free use of the knife; but as I said before, the herds neglect them in order to get rid of them, and get again the heavy sheep that give them no trouble. Foot-rot is the cause of great annoyance and loss to some breeders, especially when Grass is kept rough for cattle. In foot-rot the loose parts of the horn of the hoof should be all pared off, and the foot dressed with blue-stone and pig's lard. If all the feet are bad, the sheep should be bled and get a few drenches of common salt; if the sole has to be removed, the foot ought to be dipped in a pot of hot pitch, which forms a sole, when cold for some days.

If the lambs are intended to be reared as stores to be fed to mutton a year old (the age all sheep should be fattened), they must get some cake and corn when a month old, so as to teach the lambs to eat it out of the troughs. Very little may be given them at first, only what will teach them to eat it, and when they begin to like it, hurdles should be put round the troughs that will let the lambs under, but keep back the ewes. By this means a very small quantity will do the lambs; but the ewes would use more than would pay, as cake is like doctor's medicine—sometimes useful when used in moderation, but too expensive to use extensively; besides, they don't require it. The ewes and lambs should be moved regularly, so as to keep the pastures fresh and clean. Lambs never thrive on foul pastures. A few Vetches should be kept supplied to them in racks so as to accustom them to the kind of feeding. If on well-sheltered lands, the ewes may be shorn at 1st of May; if cold land, the end of May is soon enough. If ewes get cold after clipping, they lose their milk, and the lamb gets stunted, and does not recover it for a long time again. About a fortnight after shearing, the lambs ought to be dipped, to kill all the ticks on them; the ewes need not, as by this time they will be all on to the lambs from the bare pelt of the ewe, and be killed then.

Lambs should be weaned in the end of June or 1st of July, as I always find them do better after weaning when they come to this age; but a piece of nice pasture must be prepared for them; when weaned, they don't do well on land on which they have been grazing all summer; there should always be a brake sown down with Grass Clover and Rye, without a corn crop, for the weaning of them. That, along with the foggage after the hay or the soiling crop, will keep them till the stubble comes in, and the pasture freshens. Cake and corn should be supplied to them at this time, as much as they will eat; for this is the time to make the constitution of the lamb. After forcing and feeding, if neglected now, no after care will bring it up to what it should be.

Summer Management of the Flock.—The ewes should be milked twice after the lambs are taken off; they should be kept on bare pasture till dry of their milk, then be removed to the brake of Italian Rye-grass, Vetches, and Rape, which should be ready for them in this hurdle, and the crops cut and put in racks for them. Some people allow them to eat the crop growing, through the hurdles, but the plan is wasteful, and sometimes scours the sheep. On this they should be kept till the lambs go on the stubble, and leave them the pastures, which will have got rough and fresh. The folding brake of Vetches for this purpose should be on the heavy land of the farm, if there be any on it, as the sheep will do well on it during summer, when they could not be put on the same land during winter. By this means heavy clay land that has been well drained can be manured at little expense, and if a little cake is used, it will tell well on the future crops, and make the ewes twin well. By this way of feeding for two months, the pasture will get rough and will stand well to the ewes in the early part of winter, and save winter feeding. As soon as the corn is off the land the lambs should be put on the stubble, as there is no more healthy feeding for them than picking up the stray heads of grain and sweet Grass among the stubble. It will stop all dysentery and revive the constitutionally weak lambs. Besides the Grasses and Clover sown for the future Grass crop, there should be some Grass seeds sown amongst the corn crop on the land intended for the green crops the following season. This gives a large run of this fine untainted feeding, and can be all eaten off in time to plough for the Turnips. This can be done at very little extra expense by the farmer growing his own Grass seeds, and to do this he need not spoil his hay, as for his own use he need not let the seed be too ripe.

I consider this plan preferable to ploughing after harvest, and sowing Rye and Rape, which, except in a very mild winter, seldom do much good, and it is much more expensive. Theorists and flourishing agriculturists on paper make a great noise about what they call "stolen crops." They might as well call them "pickpocket crops" at once; for, with some exceptions, they are nothing more than the name of a crop, and the Turnip crop is kept late by them, leaving it often little worth, so that one good Turnip crop would be worth a dozen crops of such rubbish.

* The yellow powder in the Hop.

Home Correspondence.

The Campagna of Rome.—I much admire a letter in your number of March 3, signed "Tapa,"—as well the elegance and richness of the language, or rather the mental richness, as the utilitarian purpose—to correct the unwholesomeness of the surroundings of cities of ancient times. If this gentleman should wish it, I would desire to have his correspondence regarding this subject, in which two heads might be more successful than one. It is a subject to which I have given some attention. The deltas of rivers and the bottoms in forests often partake of the same malaria. In dry warm weather this malaria has proved so deadly near where I have resided, on the alluvion of the Elbe river, that of the people who came down from the poorer higher country to assist at harvest, one-half of them have left their flesh and bones behind, still further to accumulate the phosphates, nitrates, sulphates, and carbonic mixtures of the overfed mould—overfed in regard to man but not to the bovine genus. *Patrick Matthew, Gourdie Hall, Errol, N.B.*

Paper Pipes.—A few years ago I laid down a few lengths to convey water, relying upon the statements put forth. In my case (stiff clay) they have been an entire failure, having collapsed and become as soft as pap. Have any of your correspondents had experience of it in light soils? *J. J. Mechi, March* 13.

Societies.

ROYAL AGRICULTURAL OF ENGLAND.

The following is the report of the Education Committee omitted last week. It relates to the list of prizemen already published (see p. 229):—

It will be seen from the foregoing list of the names of successful candidates, that the same candidate in more than one instance obtains more than one prize; in fact Scholar amongst the juniors, and Charnelwaid, Langley, and Pollard amongst the senior, obtained three prizes each. Of the 54 prizemen, it will be interesting to know that two are both sons of farmers and declare their intention of being farmers themselves. 24 are sons of farmers or others connected with the cultivation of the soil, seven intend to be farmers in after life, and nine to be agricultural engineers.

On Prize List I. it may be remarked that out of the whole number (75) of the seniors who entered themselves for it, 11 "obtained honours," three in Class I., five in Class II., three in Class III. Eight passed, eight failed.

Of the whole number (83) juniors, 75 entered for Prize List I., and of these 13 "obtained honours;" one in Class I., six in Class II., six in Class III. Fifty-two passed, nine failed, one was absent ill.

It would therefore appear that although the seniors have relatively a greater number of "Honoursmen" (viz., 11 out of 27,) than the juniors (13 out of 75), the juniors have, on the whole, done the better of the two, for they have but nine failures out of 75 candidates, whereas the seniors have eight out of 27.

On Prize List II., out of the whole number (27) seniors, 24 entered for Pure Mathematics, of whom two are distinguished

in the Cambridge "Pure Mathematics" Class List; three failed.

Twelve entered for Applied Mathematics, of whom two are distinguished in the Cambridge "Applied Mathematics" Class List; five failed.

Two entered for Chemistry, and both are distinguished in the Cambridge "Chemistry" Class List.

Two entered for Zoology; one failed; one did not do sufficiently well to obtain a prize.

One entered for Botany, and is distinguished in the Cambridge "Botany" Class List.

One entered for Geology, but did not do sufficiently well to obtain a prize.

Of the whole number of juniors (83), 60 entered for Pure Mathematics, of whom one appears in the Cambridge "Pure Mathematics" Class List; 21 failed; one was absent ill; 37 passed.

Fifteen entered for Mechanics, of whom one appears in the Cambridge "Mechanics" Class List; six failed; four did not go in; four passed.

Four entered for Chemistry, of whom one (the best) did not pass the preliminary examination; one failed; one did not go in; one passed, but did not do sufficiently well to obtain a prize.

None entered for Zoology.

One entered for Botany, and was distinguished in the Cambridge "Botany" Class List.

From these figures it will be seen that by far the greater number of senior and junior candidates entered themselves for Pure Mathematics, and that although there are but three of them whose names appear in the Cambridge "Pure Mathematics" Class Lists, yet so many have done their work so equally and well that the Committee have given a larger share of prizes to the candidates in this subject than to those in any other. In Applied Mathematics, five failures out of 12 candidates seems a large number, and the same may be said of the six failures out of the 13 candidates who went in for Mechanics. It will be noticed that both the agricultural senior candidates who entered for Chemistry are distinguished, but that out of the four juniors entered for the same subject not one is distinguished, and the best of them failed to satisfy the examiners in the preliminary examination. Both the senior and junior candidates entered for Botany are distinguished, the senior standing by himself in the Cambridge Senior "Botany" Class List.

In Prize List III. of the candidates who entered in Mechanics applied to Agriculture, it may be stated that they all did better in Mr. Besant's paper than in Mr. Amos's, that is in the paper containing questions of a general rather than of an agricultural tendency. On the examination in Chemistry applied to Agriculture, the examiners report (*inter alia*) is, that the answers were on the whole very creditable.

Of the 120 candidates one was rejected for copying.

The following letters are published for the information of intending exhibitors at Vienna:—

"Vienna, January 2, 1866.

"The Imperial Agricultural Society will hold in the month of May next, in Vienna, an Agricultural and Forest Exhibition, under the Presidency of H.I.H. Archduke Charles Louis, which, as regards agricultural and forest implements and machinery, will be of an international character.

"For machinery and implements every description of home and foreign manufacture, Silver and Bronze Medals, especially stamped for this Exhibition, have been offered for competition, which will be placed at the disposal of the judges in sufficient quantity.

"Prizes in Money for smaller home producers alone have been offered for competition by the Ministry of Commerce.

"The Committee of Judges for Machinery will be increased by foreign members in proportion to the share taken by the several countries.

"The commencement of the Exhibition will take place in the week during which the German Agriculturists and Foresters hold their meeting.

"The Committee which has been entrusted with the management of this Exhibition has placed itself in communication with all foreign Agricultural Societies, and also through the Imperial Ministry of Commerce with the Austrian Consulates, in order to insure the largest possible participation from abroad.

"The Central Committee, therefore, entertains the well-founded hope that the Exhibition will not only exhibit the Agricultural and Forest productions of Austria, but also will be plentifully supplied with Agricultural and Forest Machinery and Implements from abroad.

"With this hope the Central Committee has sought the intervention of the Imperial Government, so that the Governments of those countries from which machinery may be expected, may be invited to send Reporters.

"I enclose two copies of the Exhibition Programme, and I beg the Imperial Mission to make an application, in the sense above-mentioned, to the Government to which it is accredited.

(Signed) "MENSENBURG."

"To the Austrian Agents Abroad."

"Vienna, Feb. 24, 1866.

"My Lord,—With reference to my Despatches No. 24 and 25 of this series, dated the 22d inst., respecting the facilities which the Austrian Government intend granting to expositors at the Agricultural Exhibition, to be held at Vienna on the 17th of May next, I have the honour to call your lordship's special attention to the paragraphs marked with red pencil on page of the programme which was inclosed in my Despatch No. 24, by which it is provided that all goods intended for the Exhibition shall be sent to the Chief Custom House in Vienna, at which the amount of duty to which they are liable in case of sale in Austria shall be assessed; such duty, however, not to be exacted if the goods are re-exported.

"With regard to the facilities of transport, the following arrangements have been made. The Austrian Lloyd will convey gratis by its steamers goods going to or coming from the Exhibition. The Danube Company will remit half its usual rate of freight.

"The Austrian Railways have hitherto agreed, some to reduce their tariff by half, others to charge one kreuzer per centner (say one mile) for the conveyance of goods to and from the Exhibition; but the Government hope to induce all the Austrian Railway Companies to adopt a uniform rate of charge, by which the facilities now promised to Exhibitors may be still more increased. "I have, &c.,

(Signed) "BLOOMFIELD."

"The Earl of Clarendon."

The following has also been received from Earl Clarendon:—

"Foreign Office, March 2, 1866.

"Sir,—I am directed by the Earl of Clarendon to state to you, for the information of the Royal Agricultural Society, that her Majesty's Ambassador at St. Petersburgh has reported to his lordship a communication from the Russian Government to the effect that the Administration of the Imperial Studs have decided upon holding at Moscow, from the 13th to the 27th of September next, the first general show of horses foaled in Russia.

"The Russian Government at the same time expressed the hope that publicity may be given to the intended Show, in order that it may be attended by those persons in England who take an interest in breeding horses.—I am, Sir, your most obedient humble servant, "JAMES MURRAY."

"The Secretary to the Royal Agricultural Society."

Farmers' Clubs.

SMITHFIELD: *Council Meeting.*—At the late meeting of the Council, his Grace the Duke of Richmond, President, in the chair, Messrs. Thos. Twitchell and Charles Howard were elected Stewards of Live Stock, in place of Messrs. Rigden and Keary, who retire by rotation.

Messrs. O. Wallis and Robt. Overman were re-elected Stewards of Implements, &c.

The Stewards reported to the Council in reference to the protests against certain animals at the late Show, and it was directed that the prizes be now paid in accordance with the judges' award.

It was decided that in consequence of the alteration of the date of the last Show and the regulations that the Council found it necessary to enforce in reference to the Cattle Plague, the fines for non-exhibition of animals be remitted under the above special circumstances.

The provisional Prize Sheet for the present year was arranged, and the following alterations made:—

The Division for Irish Cattle to have added the words, "and Improved Irish."

The Class for 1-year old Wethers of the Shropshire breed to be assimilated to the corresponding Class for Southdowns, and the Class for 2-year old Shropshire Sheep to be renewed as in 1864, viz., 1st Prize, 15*l.*; 2d, 5*l.*

The condition disqualifying spayed Heifers competing in the Short-horn, Hereford, Devon, and Sussex Classes to be struck out.

The Butchers' Cups to be discontinued.

Verbal alterations in the Rules were agreed to.

The Implement Committee was re-appointed.

Mrs. Thomas Gibbs, of Down Street, Piccadilly, was elected a Member of the Club.

LONDON: *The Cattle Plague.*—The following is an abridgment of the discussion which followed Mr. Corbet's paper last week:—

Mr. CONGREVE (Peter Hall, Coventry) said he should not have presumed to introduce himself on the notice of the meeting thus early, were it not that he was a grazier, and, as such, naturally affected by the Government measures. Mr. Corbet had given them a summary of those measures extending up to the 25th of March, and he (Mr. Congreve) should be glad if, in the course of the discussion, something were elicited to guide graziers as to what was to be done after that period. It was well known that after the 25th of March the graziers were buyers of stock. The land of England was of no use to graziers unless they could stock it; and he did not see how that was to be done unless the cattle from the road, river, or rail was stopped. A few days were allowed for change of tenancies, but no provision was made for enabling a grazier in the midland counties, after that period, to obtain stock from other counties. He hoped, then, that when the 25th of March arrived the Order in Council for slaughter of all to order; for it was impossible that the food of the people could be produced unless graziers could buy the raw material to make it with. He believed there was some idea of allowing seven days for that purpose at the beginning of April; but that would be very little use to the Leicestershire graziers. The land could not possibly be stocked in so short a time. Even if they could buy beasts, and move them, they could not feed them: while the Grass was growing, the cattle would starve. Mr. Corbet referred to compensation. Now he (Mr. Congreve) thought that the term "compensation" was a positive insult to them. Which would be the best if farmers were compensated to the extent of the value of their stock, that would lead to imposition, and men would give their cattle the disease for the purpose of getting the money. That illustrates the old saying, that a man should know something about a subject before he talks about it. He thought he knew a man or merchant cattle grazing than he (Mr. Congreve) knew about cotton spinning. Why, did the hon. member suppose that if he came into his yard and paid him every farthing that his animals had cost, together with the expense of keeping them till now, he would be satisfied? Mr. Corbet alluded to the opinion that under present circumstances, instead of the ox being brought to the butcher, the butcher should be brought to the ox. That was a very serious question for graziers who supplied the London market from the beginning of June till Christmas. Let any one present, who had had experience with regard to killing stock at home and sending it to market as dead meat, tell the Club what he had made per stone on the average during 20 weeks of the summer months. When he was in the Metropolitan Market that morning, he was advised by butchers, if he killed his beasts there, to leave them, and not send them to London dead, where it would sell for nothing. There was another important question connected with the matter, namely, offal; what was to become, in retired places, of the head, pluck, &c.? There was no demand for such things within seven miles of his farm; and he might add that there was no convenience for slaughtering.

Mr. C. S. READ, M.P., hardly knew what to say about the Government Bill. He did hope and believe on the first night of the Session that Parliament had aroused itself to the importance of this great calamity. But as soon as it had passed one good resolution, every interest immediately set to work to see how it was possible for that interest to escape with the least possible inconvenience and loss; and all the loss and all the inconvenience which fell upon the country and upon farmers especially, would, in his opinion, be almost thrown away, as long as the Government, acting on the solicitations of the metropolitan members, allowed foreign stock to congregate in the Metropolitan Market. It was, of course, necessary to disinfect the railway trucks and the cattle pens: but, above all, it was necessary to disinfect that great pest-house—the Metropolitan Market and the layers around it. How short-sighted was the policy of the metropolitan members, seeing that a very large proportion of their constituency would be deprived of milk if the cattle plague were to go on, and that the cow-keepers of London would be the first sufferers. Parliament had been charged with legislating in a panic; but surely it had rather legislated to stop a panic. All present had no doubt been in the Metropolitan Market since the plague commenced, and had they not seen there on a market day hundreds of store cattle that had no business to be there, having either been sent from infected farms or through needless panic? He was informed that since the cattle plague broke out upwards of 60,000 store cattle had been sold in the Metropolitan Market, and these had been supplemented by a vast number of lean carcases sent up to Newgate Market. The compensation clause which the Government had introduced was, he thought, a very good provision. As to the amount, he would not say one word except this—that in reading an article in the *Economist* he found it remarked that one-half was a great deal too much, as only one animal in 10 survived, and yet added that the salvage of many plague-stricken beasts would be worth almost as much as the living animals would have been. He did not hesitate to say that in Norfolk two-thirds would not be too much to award as compensation. On the part of farmers, he would say it was no fault of theirs that they had the cattle plague. They did not ask for free imports of cattle; and they never simply demanded means of protection. As regarded the compulsory insurance which the Government had thought proper to give them, they had in Norfolk tried to effect the same object on the voluntary system. They had succeeded in alleviating the distress of their fellow-sufferers; but they were not able to check the pest, simply because they had not had that assistance and that co-operation which, in his opinion, the Imperial Government ought to have given them. There was one thing which had, perhaps, struck the great majority of those who had thought on this subject—namely, that for agriculture there was no administrative department of the Government; whereas the Board of Trade had its departments for Railways, for Commerce, and for Manufactures, there was no section specially devoted to Agriculture; and he believed that until there was such a department, agriculture would never receive that assistance from the Government which it ought to receive. He could not but regard this cattle plague as an unmitigated evil. He wished he knew a little more of political economy, for it must be a very pleasant study. How was it possible that any loss to a large class of the community could result in any benefit to that class? Why, there must be an end of such an argument. Supposing all the cattle were to die, they could not all be gainers. The theory set up was that if half the cattle died, the owners of the other half would be recouped by the advanced price. But that was surely theoretical nonsense. If the farmers of England alone supplied the public then they might be some truth in it, but as they were exposed to foreign competition, the parties who were the real gainers were the owners of foreign stock and the producers of foreign cheese. He had read an article in the *Economist* that morning which said the price of an article advanced considerably more than the loss; and the writer illustrated his argument by saying that if the crop of Wheat in England were deficient to the extent of one-fifth, the consequence would be an increase of the price by two-fifths. They all knew how that had been illustrated practically this year. This visitation had been compared in Parliament to the cotton famine. He was not going to compare the losses of the manufacturers with those of the farmers, because he was well aware that a manufacturer made more money in one year than a farmer made in his whole life; but he would remark that what the manufacturers suffered from during the cotton famine was not the loss of the raw material but the want of it, while farmers were suffering both from the loss of their cattle and from the want of cattle. At the chief cattle station in Norfolk they had been five-and-twenty thousand more cattle during the cattle plague than they were, so to speak, suffering the losses of the Americans, and also those of the Manchester people. Moreover, this disease must entirely derange their system of agriculture. This was an evil which could not, perhaps, be fully appreciated yet; but all could know that if they had no stock they could have no manure, and if they made no manure they could grow precious little corn.

Mr. CHARLES HOWARD (Biddenham, Bedfordshire) said:—It would be remembered that when, a very few months ago, he (Mr. Howard) was there, and he thought, as he had intended justice to a body of men whom he considered to have been severely and unfairly handled, he incurred the censure of some of his friends. How did the case stand now? Notwithstanding all the medical talent that had been brought to bear on the cattle plague, notwithstanding all the nostrums that had been put forth in various quarters, the position of the veterinary authorities remained the same as it was at first. He contended that had their advice been taken from the first, the nation would now be placed in a very different position from that it was. He would say no more on that point, because he thought that must be evident to every unbiassed mind. He must take exception to what fell from Mr. Dumbrell respecting the compensation clause. He thought the Government view was a right one. There were in some counties many men who would not join a mutual insurance association; therefore the support of such an association, intended to meet the wants of the county, would fall upon a few; and the Government were right in making a county rate, and throwing the burden over the whole neighbourhood in which the plague existed. With mutual association the liberal man would pay, and the parsimonious one go free.

Mr. FRERE (Cambridge) would ask them to compare the steps taken in Parliament with those taken in Aberdeenshire. As to the question of compensation, was it likely that the "canny Scot" had lost his canniness when he thought it wise to give three-fourths of the value of cattle under animals to be killed that ought not to be killed; and on that ground alone compensation ought to be given, whatever might be said to the contrary by political economists who drew their conclusions from one or two facts, instead of taking a comprehensive view of the matter. It had been urged as a reproach against veterinary practitioners, that they had great difficulty in detecting this mysterious disease in its early stages. He believed there were many cases of fever that attacked mankind, of which the ablest medical men were unable to predict what the issue would be, postulating for some days, what its ultimate development would be. He cordially concurred with Mr. Read, that it was very desirable that there should be some members in Parliament who could rise and speak with knowledge and authority on details connected with the interests of agriculture.

Mr. OWEN (Berks) was disappointed that the discussion had not turned more on what fell from Mr. Congreve with regard to the stocking of the land. He was in hopes that it would be shown what plan of operation might be adopted by the local authorities of different districts. He considered that slaughtering at home anything but beneficial to the grazier or farmer. It was, he believed, impossible to carry out generally a system of isolation; unless they had an opportunity of moving their stock they might as well give up their farms. As regarded the removal of cattle in healthy districts, he might observe that there had been no disease within 20 miles of his farm in Berkshire, and yet for the last 11 weeks he had been debarred from moving a single head of cattle. He had that day seen 2000 foreign beasts in the London market, and yet, having plenty of cattle himself, he was not allowed to move them. Now that was the world to compete with, he wanted to see British farmers placed, as they ought to be, on an equality with foreigners, or the foreigner to have no undue advantage.

The CHAIRMAN then summed up the discussion. He said: One of the most important measures was that mentioned by Mr. Congreve, with regard to the moving of cattle. He was sorry that Mr. Congreve himself did not make any suggestion as to the best mode or time of supplying graziers, but he only suggested that somebody else should do it. He was quite sure that no one in the room was more competent to give an opinion on that important question than Mr. Congreve; and he agreed with him that it would be impossible to supply the country with meat, unless the graziers in the midland counties could stock their farms. He quite agreed with Mr. Congreve that a little longer than the 25th of March should be allowed for that purpose; and he should be glad if he would state what he thought the period should be.

Mr. Congreve said he would suggest from the 1st of April to the 15th of May.

Mr. C. Howard: Say to the 1st of June. You have stocked too early lately.

Sir George Jenkinson observed that the Government Bill only extended to the 15th of April.

The Chairman continued: Mr. Congreve's opinion on that point was very important. He thought it more than probable that the Government would wish to continue their measure beyond the 15th of April, and if the case is so, speaking through Mr. Congreve, as a lander—and no one can better do it—I suggest them—said that such a period should be mentioned. I was necessary for stocking, that would be done, here, great inducements. A great deal had been said about compensation. The likes of farmings had been made up. As long as I could more or less was all my desire for in the best state of the animals were paid them they would still be encouraged by being enable to stock the lands again for months, perhaps years. Some gentlemen came to think, and he was sorry to find that opinion on the land, that there would be some difficulty in supplying beef for the London market. It was said that stall-feeding should be the pet. The price was very high, more cattle would be fed, but I cannot but think that many persons thought beasts that would be fed well. A Yorkshire gentleman told the pets would be low.

Easter Ross: *Feb. 26.—Damage caused by Rooks.*—The Chairman (Mr. D. Munro) said that he had to bring before the notice of the meeting another calamity, scarcely less serious than the cattle disease itself, which the farmers of this quarter were suffering from. He had to tell them they were soon to be eaten up by the rooks. He was at this moment getting his Wheat fields destroyed, and so were many of his neighbours, and the matter would only get worse while that rookery at Balnagown was continued. He particularised severe losses he had on several occasions to Wheat fields, and declared that he would have to give up the sowing of winter Wheat altogether. He knew of a farmer in the district who had already come to that determination, having almost entirely lost a whole field. He lately, for the last time, put himself in communication with Sir Charles Ross on the subject, and would just read the correspondence:—

"Allan, 18th Dec., 1865.

"Dear Sir Charles,—I wrote to you last spring, as Vice-Presses of the Easter Ross Farmers' Club, requesting you to have the goodness to endeavour to get the rooks killed in part of the country, but I have not the pleasure to receive from you any reply to my letter.

"I have, in this, the honour of troubling you again, and I hope that you will be able to give me a favourable answer to the request, for in fact we are not getting any thing like a diminution in the number; for this year we have found more of our fields to be in the power of the enemy, and are obliged to put more men about them to keep off the rooks from the crops. Here the case is very injurious, as we are in spring sown with the seed of pleasant fields, and I guess you will say a thousand guineas will tell you. If you look at the Report stated by the farmers at Easter Ross Farmers' to the extent of above twenty acres of corn land complained of the great evil. I hope you will find that I have endeavoured the

"Yours, &c.,

"To Sir Charles Ross Bart. Ross-shire.

"Sir C. A. W. Ross, Bart., of Balnagown.

The following was the reply he received:—

"Believe, Portsoil, 21st Dec., 1865.

"My Dear Sir,—Your letter of 18th inst., addressed to Sir Charles Ross Bart. of Balnagown has been handed to me. In reply Sir Charles requests me to say that he will, a pleasure in allowing you and other Ballymore's round in May next year. I to such shot rooks. Some [illegible] fairly kill them at any other season than during the [illegible] beginning to fly about the trees.—Yours very truly,

"To David Munro, Esq., of Allan, Dornoch."

They were allowed to kill them in June—that was, when the birds had flown away. He then wrote the following:

"Allan, 1st Jan., 1866.

"My Dear Sir,—I am in receipt of your favour of the 21st Sir Charles Ross's note to me, and I am sorry to find that the only meaning it bears is that the rooks are to be allowed to keep on to the harvest, when they will have nothing to do with us, and then to be shot when they have nothing to eat. I am sorry to find that Sir Charles has such a feeling for the rooks, and that when they are destroying the property of others, he will not allow them to be killed. The injury that is done in this district is quite incalculable. I have known whole fields of corn taken by rooks, and if in such a case the owner of the rooks would not kill them, who would? I have known whole fields of corn taken by rooks, and if in such a case the owner of the rooks would not kill them, who would? I have known whole fields of corn taken by rooks, and if in such a case the owner of the rooks would not kill them, who would?

"Please inform Sir Charles Ross that I shall always send a copy of this correspondence to the Farmers' Club, and then he [illegible] opportunity of [illegible] the [illegible] of the Rooks Question, which I [illegible] I shall [illegible] that it can be known over the whole of Scotland [illegible] ridiculously, and I question he [illegible] on this [illegible] heartless and perhaps by these means he [illegible] that he cannot with impunity injure others, and that favourite amusement [illegible] [illegible] [illegible] [illegible] by this letter before Sir Charles Ross—I remain, yours very truly,

"To Mr. Forsyth, Esq., Factor for Balnagown."

He would now read them a note he had on the subject from one of the oldest and most extensive corn farmers they had in the country—he meant Mr. Middleton, Davidson, who, it was known to them, had, along with his family, something like 20,000*l.* invested in corn farming in their district. Mr. Middleton said:—"You are aware I was always an advocate for putting down rooks, and have always thought them a heavier burden to the tenantry of the country than the poor's rates, heavy as they are." There was Mr. Middleton's experience, and it was his own, and that of many others. He would now read to them the petition that was referred to:—

"We, the undersigned, owners and farmers of land in Easter Ross, hereby certify that the injury we sustain by the excessive numbers of rooks in this district is very great indeed. We do not complain of a moderate number of these birds but of their excessive numbers, by which they very nature appears to become altered and they become devourers of corn, young Potatoes, &c., more than grub and worm feeders. We respectfully call the attention of the gentlemen in this district, who are owners of rookeries, to the very great injury which the rooks inflict on their neighbours' crops, and we do so in hopes that a knowledge of this may induce them to reduce the number of these birds—the annoyance by which is generally complained of.—D. Munro, of Allan, farming 450 acres; Andrew Munro, of Rockfield, 500 do.; Douglas Ross, Tarbagie, 100 do.; John Forsythe, Arabella, 300 do.; John Douglas, for Shandwick, 200 do.; J. Young, Tain, 400 do.; Donaldson Middleton, for Boarn, 500 do.; John Fraser, Ravelrig, 150 do.; James Duff, Balnabruach, 60 do.; W. P. Duff, Meikleton, 180 do.; George Douglas, Tain, for Rarichie, 300 do.; Alex M'Leay, Hilton, 300 do.; George Middleton, Culliss, 300 do.; David Ross, Castlecraig, 1100 do.; James Anderson, Meikle Tarlogie, 600 do.; Ken. Murray, Lochslin, Lochs.; Andw. Chisholm, Bardull, 150 do.; James Clark, Ardjalky, 250 do.; M. P. Sutherland, Wester Gaines, 240 do.; P. P. Sellar, Harpsdell, 400 do.; Gerard Graham, Balnagall, 250 do.; J. Young, for Cadboll and Invergordon farms, 3000 do.—the whole amounting to 10,057 acres.

Whether they thought it right to lift their voice, and continue to use their efforts, against the grievance, he did not know. For his own part, he came to appear almost foolish in speaking so much on it; but he keenly felt it an intolerable and provoking hardship, and he should do that to the end of his life.

Mr. Murray concurred in all that had been said. That groan from Cromarty about the poor rates from Mr. Middleton was expressive, but he believed a great many of them could say that the rooks took more from them than the poor rates. The herding by boys is of little use. There is my young friend, Mr. Wilkinson, who occupies the farm adjoining me—I saw the other day in Balnagown three boys on one part of the Wheat field, and the crows quite busy on the other. The boys would run here and there among the crows, and the crows would just crowd into [illegible] with the boys coming in quadrille style.

Mr. Forsyth said he must ask leave to say that the Chairman, he thought, was too severe on Sir Charles's reply. He was sorry if his own note was not plain enough, but Sir Charles, he felt sure, would have given the [illegible] chance, had there was no doubt that killing the young birds at the nesting and branching time was the most effectual way [illegible]

Accordingly, a deputation was appointed to confer with Sir Charles Ross, consisting of Mr. Munro of Rockfield, Mr. Ross of Cadboll, Mr. M'Millan, Invergordon, Mr. Middleton, Culliss, and Mr. Donald Ralston, Factor, Tain.

Reviews.

1. Peasant Proprietary. How can it be Formed in Ireland? By Joseph Tilbe.

Such is the heading of an article published in the March number of the new and very promising "Irish Industrial Magazine."

Having been during half a century an anxious observer of the social condition of the Irish peasantry, and in an humble degree a contributor to the literature which has had for its object the amelioration of their circumstances, it affords me pleasure at this time to notice a subject with which my wishes and aims are accordant.

The suggestions proposed in the essay now before me are at first view of a startling character. In my little book addressed to the small farmers of Ireland, of which the first edition was issued 40 years ago, I had not imagined that any plan of the nature of that recommended by Mr. Fisher, would be brought to public consideration. I merely advocated the expediency of improving the condition of the class of occupiers of from 1 to 5 acres, who were then nearly five times more numerous than they now are, and of those somewhat higher in grade of possession, by introducing among them a good economy of their holdings and a skilful and judicious application of their own labour, aided by the co-operation of their landlords. While I saw the ill effects of the execrable forty-shilling freehold system, which so long left pernicious traces on the land, I deprecated the injustice of evicting compulsorily any families whose "fault" was poverty, induced by former and perhaps long-continued mismanagement on the part of landlords. I wished to improve the condition of the petty occupiers, through their own well-directed efforts, while I fully appreciated the desirableness of a gradual consolidation of very small holdings by equitable arrangements among the parties interested. Much of progressive enlargement of holdings has resulted from the voluntary emigration of tenants (who have bettered their own condition by leaving their patches of land, and allowing greater facilities for employment and support to those who have remained in the country). The diminution of the population was also I fear fully, and in a most unwished for manner accomplished by famine and fever.

We have now to consider the present state of the peasant population under different circumstances.

The numerous class of hybrids, between that of little farmers occupying a few acres and the landless labourer, being so much reduced, and the temptations to emigration so increasingly alluring, some arrangement by which the deportation of the bone and sinew of the country and strong disaffection to Government authority might be abated, is obviously a matter of great moment. Legislation on the vexed question of dealings between landlords and their tenants will probably ensue within a short period, and the improvement of land will naturally follow. Without presuming to touch upon the details of this delicate and difficult subject, I shall without any other preliminary remark, proceed to the examination of Mr. Fisher's plan, which does not interfere with any landlord's right or tenant's expectation. It appears to me as an experimental field which criticism may discuss without party bias or obstruction from selfish interest.

Inverting the order of Mr. Fisher's essay, I take first from the concluding portion the following quotation from the Report of the Devon Commission in 1844. "There is a large number of persons in Ireland possessing a small amount of capital, which they would gladly employ in the purchase and cultivation of land; and a still larger number holding land for uncertain or limited terms, at a rent, who would most cheerfully embrace the opportunity of becoming proprietors. The gradual introduction of such a class of men would be a great improvement in the social condition of Ireland. The prospect of gaining admission into this class would often stimulate a renting farmer to increased exertion and persevering industry." In 1848 Sir Matthew Barrington and others endeavoured to form a Farmers' Estate Company, and applied to Parliament for the necessary power. A private committee, of which the Right Hon. W. E. Gladstone was chairman, reported in favour of the Bill, and it became law; it enabled the Company to purchase land and sell it in lots, of not less than 20 Irish acres; it also enabled the Company to raise capital by the issue of debentures. The scheme failed for two reasons, viz., the resettling of the cleared estates after purchase, and the difficulty of making the debentures valid security on the lands. It is true that the latter difficulty has been removed by legislation in 1864, but the other, and it is a great obstruction, would remain.

Now Mr. Fisher proposes a mode by which this difficulty disappears altogether, viz., the association of a company for the purchase of estates, and the reselling them in small lots. "Had efforts been made when the Incumbered Estates Court was formed to create a Peasant Proprietary, much might have been accomplished. To have carried out this idea the lots should have been much smaller, every farm should have been a lot in itself, and some aid should have been offered to those in possession who intended to purchase. A large portion of the land sold in the court was incumbered in anticipation; the amount of mortgages on the present proprietors is nearly as large as it was upon those who have been sold out. Had the farmers purchased, they could have borrowed money upon the land. This opportunity was lost. Had it been availed of we might now have a large number of peasant proprietors, whose presence would have materially advanced the condition of Ireland." "The object," he continues, "is well deserving of consideration. We want to improve the condition of the people; we desire to make them contented and prosperous. Laborious industry and self-denial are practised by those who see a prospect of ultimate benefit. He who by his savings can purchase an estate, however small, and by right of that estate is entitled to the privileges of a freeholder, has many motives to improve. It appears that there are upwards of two million proprietors in Prussia, and that further subdivision is encouraged there by the Government issue of land debentures guaranteed by the State, and that there is a simple mode of transmitting land by registration of ownership. Though Mr. Fisher contemplates with pleasure, as every philanthropist will, the prosperity of Belgium, and other tranquil and orderly countries, where there is a peasant proprietary, affording conclusive testimony of the importance of having a 'stake in the hedge'—he does not lead me to infer that he approves of the *morcellement* system in France, which in my judgment is most pernicious in its general bearings on the agricultural progress of that country. There the land necessitates the division of land property in families, so as to render the accumulation of capital by any heads of families rarely practicable, and the infinite subdivision of farms certain. No man of experience would maintain that it would be desirable to allot farms under say 15 statute acres—while the circumstances of the country would render it very beneficial to have numerous farms from 15 to 50 acres.

The late Mr. Blacker, no mean authority on the subject of small farmers, thus expressed his convictions, after much experience: "I am fully persuaded that the small farmer who holds his own plough or digs his own ground, if he follows a proper rotation of crops, and feeds his cattle in the house, can undersell the large farmer, or, in other words, can pay a rent which the other cannot afford; and this will not appear extraordinary to any one who reflects that the British farmer of 700 to 800 acres is a kind of man approaching to what is known in Ireland by the name of a "gentleman farmer." He must have his horse to ride and his gig, and an overseer; add to this, he must appear himself, and have his family also to appear, in a superior rank; and his farm must not only enable him to pay his rent and yield him the support he requires, but it must also be chargeable with the interest of the large capital necessary to its cultivation. Besides, there is the great expense of carting out manure to a great distance, and carting home the crop. A single horse will consume the produce of more land than would feed a small farmer, his wife, and two children;

and what is more than all, the large farmer says to his labourers, "go to your work," but when the small farmer has occasion to hire them he says "come." The inference is obvious. Assuming Mr. Fisher's proposition to be carried into effect, it would be necessary I think to introduce a clause in the sale prohibiting the future subdivision of a small farm, else the evils arising from a multiplicity of minute holdings would soon reappear. Many of the farmers of Ireland have large sums saved up, and would be rejoiced to purchase lands, on ready or part payment, and the Company proposed might, without much difficulty, and under Government protection, advance purchase money where required. Such a scheme would to some extent confer a great measure of joy and comfort, and promote the moral and social condition of numerous farmers now contending against heavy disadvantages; and other reformatory movements affecting land questions would operate by assisting movements towards promoting the progression of Ireland and elevating the minds of the peasantry, and affording them substantial reasons for remaining contentedly in their country. *Martin Doyle.*

Farm Memoranda.

MANX AGRICULTURE.—The following are replies to questions addressed by the writer of a paper on this subject in the "Quarterly Journal of Agriculture" to a resident in the island:—

"1. There is great diversity in the size of the holdings. The major portion of the soil is owned by small proprietors, possessing from 10 to 50 acres, and farming it themselves in the indifferent fashion usual among landowners of this class. There are also farms ranging from 50 to 200 acres, but rarely more. Perhaps the average may be considered about 40 or 50 acres.

"2. The tenure is that termed 'customary estate of inheritance,' nearly analogous to copyhold in England, and its historical origin and former character is involved in considerable obscurity, and was the source of frequent disputes between the lords of the isle and the inhabitants—the former insisting upon tenancy at will, the latter claiming rights of an hereditary character in their holdings. The 'Act of Settlement' passed in 1703 finally disposed of this question, confirmed the rights claimed by the inhabitants in their holdings, and determined the amount of rents and fines exigible by the lords. The proceedings recently taken under the Commission for disafforesting the common lands in the island have tended to throw some light upon the history of landed property here; but the subject requires too diffuse a treatment to be further dwelt upon in such a communication as the present.

"3. Rents are generally much higher here than in England, and the universal desire for the possession or occupancy of land causes extravagant and unremunerative prices to be given both as purchase-money and rent. In the vicinity of the towns from 3*l.* to 5*l.* per acre is obtained; in the country from 25*s.* to 2*l.*—sometimes more. I consider that, *cæteris paribus*, 25 per cent. more is given here than in England.

"4. The farmsteads are generally inferior and badly arranged, as few of the proprietors have hitherto had the means or intelligence requisite for better exertions. There is, however, considerable improvement now discernible.

"5. The labourers' cottages are generally of a very inferior type, much resembling the Irish cabin—built of sods, and divided into two apartments. A movement for ameliorating this state of things has, however, commenced. I am just about erecting several cottages of an improved character upon my estate.

"6. Wages are generally 9*s.* per week in the country for able-bodied labourers, and in the vicinity of the towns 11*s.* or 12*s.*, generally paid in cash. Some farmers still adhere to the old custom of feeding their men in the farmhouse, with a proportionate reduction of wages.

"7. The means available for the education of this class have hitherto been of a very meagre kind, many of the parochial schools being ill fitted to give the most elementary instruction. Much, however, has been done of late years to raise the educational standard. Many good schools have been erected with Government assistance, and have been mentioned in the reports of the inspectors in terms of the highest praise. In my own parish (Insby), one, I trust, will shortly be built, to be placed under Government inspection.

"8. The machinery of the steadings is generally of an old-fashioned and inefficient kind, especially the threshing-machines. I have lately purchased an 8-horse portable engine and threshing-machine from Clayton & Shuttleworth, of their latest and most improved make. They are, I believe, the only machines of the kind in the island, and excite much attention by the excellence and rapidity of their work.

"Reaping-machines (generally Dray's) are now universally employed where the nature of the ground will admit. Corn-drills are employed by the best farmers. Grubbers are very common. Ploughs are almost invariably swing.

"9. Drainage to a considerable extent has been effected of late years—sometimes with open cuts, and also with pipes and tiles, though sods and stones are sometimes employed. It is, however, as yet lamentably defective and partial. There is in this district a very large extent of peaty undrained land—most of it formerly entirely submerged, forming lakes of considerable extent. At some remote period it was the site of a Bark forest, as innumerable trunks and roots of Ash and Fir are found imbedded in the peat. Drains have been cut, which are, however, of little use, as the outfall at the sea is obstructed by mills, the demolition of which would render fertile and productive many thousands of acres now sterile and saturated.

"10 and 11.—About 22,000 acres of land in the island is "intack," or land formerly included in the 'Lord's Forest,' over which the inhabitants had rights of common, in satisfaction of which the Disafforestation Commission have lately awarded them a moiety of the 'Forest.'

"As in almost all cases these 'intacks' are of ancient date, and have been long cultivated, it is impossible to ascertain what method of reclamation was pursued in these instances. Some of them, however, as well as lands of different tenure, have been recently reclaimed. On the hills and on the mossy soils where these lands are generally situate, lime is applied, and two cereal crops, generally Oats, taken off, followed by the rotation usual in the district. In the case of light sandy soils, of which we have much, marl is applied, and Wheat or Barley sown.

"12. The fences are generally bad, and often tortuous to an extraordinary degree—the boundaries of estates being generally incomprehensibly crooked and winding. In this district sods are for the most part employed, and generally sown with Gorse, which grows with great vigour, and, when taken care of and regularly cut, forms an excellent fence. The requisite care, however, is seldom taken, and as the hedges are formed of soft materials, and the cattle are somewhat nomadic in their habits, there is much left to be desired in this department of farm management. Quick fences are coming into use where the soil is favourable. On very dry sandy soils Gorse is to be preferred.

"13. The rotation practised in this district is the five-course—viz., a cereal crop, green crop, cereal crop, two years Grass. Some superior land is subjected to severe treatment, but this is exceptional.

"14. The yield of grain crops is very varied, ranging from 16 to 36 bushels. The average may, I think, be placed at 20 bushels. Turnips, for which the soil is well suited, range from 12 to 25 tons per acre. Mangel is here grown to some extent, but our summer heat is scarcely great enough to develop this root. Potatos are largely grown. Both peat and light sandy soils are found extremely well adapted to the growth of this tuber, and in favourable seasons very heavy crops are raised.

"15. White Wheats are mostly grown in this district, and are of very fine quality, generally obtaining a higher quotation than any English Wheat. Red Wheat is also grown to some extent, and on the poorer soils a coarse variety, termed here 'Manx Wheat,' but I do not know the sort to which it may be analogous in England. In Barleys, Chevalier is the most in repute. Scotch Oats are chiefly grown by the more intelligent farmers, though the majority of smaller cultivators sow some nameless variety.

"In regard to culture, there is not much to be said. A general fault is lateness in preparing the land for seed; thus Wheat is seldom sown before December, even in land broken up from Grass—often much later. The best farmers here employ the drill, but the practice of horse-hoeing growing crops has not yet been introduced.

"16. Land for green crops is prepared as in England by ploughing and grubbing, and the soil is invariably thrown up in ridges, upon which Turnips or Mangels are sown. With Potatos the reverse process is followed, the sets being placed in the trenches and the intervening ridges split by the plough. Swedes are generally grown on the dry soils, and Yellow Turnips on the wet soils.

"17. With regard to manures and their application, there is no peculiarity of practice worthy of note. Of late years artificial fertilisers—viz., guano, superphosphate, and bones—have been largely employed. It is found that the light soils prevalent in this district are more benefited by frequent light manurings than by occasional heavy ones.

"There is great general want of skill and care in the making and preservation of manure. The liquid is generally allowed to escape, and the straw and dung exposed for months to the action of the elements. Seaweed is sometimes obtained.

"Lime, which is plentifully obtained from the limestone strata found in the southern part of the island, is much employed, and is invaluable for the peaty and hilly soils.

"18. In the management of meadows there is little to commend. Most of them are situate in the mossy undrained district before mentioned, and are in miserable condition, saturated with water during a great part of the year, and producing a coarse rushy hay, being generally mown in August and September, and pastured during winter and spring. There are also some meadows of superior quality, and under more intelligent management, which receive occasional dressings of lime or bones; but hardly any from which cattle can be fed off fat.

"19. It is only within the last few years that much attention has been paid to the quality of the stock bred. Now, however, chiefly by the exhibitions of the recently established Agricultural Society, a desire has been awakened to possess animals of improved quality. The Short-horn is chiefly in request, and at the two last shows many animals of merit were exhibited. There is not, however, any herd of established reputation in the island, and good animals are as yet confined to a few of the more enterprising proprietors and farmers. The cattle generally met with are coarse and difficult to fatten, though the cows are not unfrequently excellent milkers.

"20. The island possesses an aboriginal breed of small sheep like the Welsh, very hardy, and when fat they produce delicious mutton, though their small size renders them unprofitable except upon the poorest and most exposed pastures. Leicesters, pure or crossed, are most generally bred. Cheviots are also a good deal used, and lately Shropshire Downs have been imported in some numbers. Cotswold rams have also been used of late for crossing with Leicester ewes, and with good results.

"21. Most of the best horses used for agricultural purposes are of Clydesdale origin, though there is great room for improvement in this description of stock, as well as in those for saddle and carriage purposes.

"23. There is little to be said with regard to dairy management. Upon a few farms, a herd is kept for dairy purposes, but as there is no great extent of permanent pasture, and general cultivation is practised, the system is necessarily imperfect.

"24. There is not much absolute destitution in the island. In the country the poor are dependent on private benevolence. In the towns, where there is naturally more poverty, charitable associations exist, there being as yet no poor-law here."

Miscellaneous.

The Growth of the Cattle Plague in Cheshire.—The growth of the cattle plague in Cheshire has been very remarkable. The annexed table shows the number of animals attacked in the county from October 14, 1865, to February 10, 1866, as well as the number which have either died or been slaughtered:—

Week ending	Attacked.	Died.	Slaughtered.
October 21	7	4	1
28	6	—	—
November 4	17	3	1
11	6	20	3
18	103	16	14
25	136	60	24
December 2	224	209	70
9	330	95	31
16	536	234	75
23	903	616	275
30	1,730	1,201	90
January 6	1,995	765	43
13	2,017	1,451	165
20	1,[illegible]	2,201	19
27	1,[illegible]	2,[illegible]	16
February 3	3,[illegible]	2,[illegible]	3
10	1671	3,[illegible]	11
17	1,[illegible]	3311	

The deaths in the county had attained to Feb. 17 the frightful total of 25,974, the number killed being only 295. In Norfolk, on the other hand, where 2050 beasts had died to Feb. 17, 2038 had been slaughtered, and the attacks, which amounted to 111 in the week ending Oct. 21, did not exceed 149 in the week ending Feb. 17, while the largest total attained in any one week has been 306. This result is all the more striking, as when Norfolk was suffering severely from the disease, Cheshire was comparatively free from it. The Cheshire farmers have been somewhat more successful than the Norfolk farmers and graziers in the matter of cures, and hence they have probably been induced to spare the pole-axe. Annexed are the recoveries noted in Cheshire week by week:—Week ending Oct. 21, *nil*; Oct. 28, 2; Nov. 4, *nil*; Nov. 11, 9; Nov. 18, 2; Nov. 25, 8; Dec. 2, 18; Dec. 9, 53; Dec. 16, 46; Dec. 23, 59; Dec. 30, 119; Jan. 6, 104; Jan. 13, 157; Jan. 20, 116; Jan. 27, 351; Feb. 3, 268; Feb. 10, 324; Feb. 17, 554. A number of the animals attacked appear to be unaccounted for by the returns.

Drainage Works at South Norwood.—The area of South Norwood, for which these works are in operation, must be some miles in extent, and contains 4000 or 5000 inhabitants. Thirty-five acres are used to disinfect the sewage, at a place called Blind Corner, which might be appropriate enough in times past for its bleakness and sterility, but must surely now become celebrated as a brilliant oasis in the neighbourhood, and an illuminator to similarly ill-favoured districts at a distance. The composition of the soil of the country is heavy clay, 30*s.* per acre, although favourably situated as "accommodation land," near so flourishing a community. It is nearly on a dead level, at the foot of

the Sydenham and Norwood hills, but care has been taken to place the tanks, into which the sewage first arrives upon the Sewage Works Estate, sufficiently elevated that its passage onward to the land is but a natural fall. The crop now raised is Italian Rye-grass. Its seventh cutting in the 12 months was being carried off when I was present. I took up a handful, and have brought home a specimen. It is from 3 to 13 inches in height, or a full average of 6 inches, leaving a long swathe on the ground. It grows thick, and is sown on the natural turf, which it soon displaces, as the time and condition of the soil permits the seed to be sown. This crop appears likely to last for a week or two's consumption, at the rate they were cutting it. Another plot of the land will then be equally fit for the scythe, and the main crop for hay in June or thereabouts will very likely rise to the 5 feet of stature which it did last year on land similarly treated by Mr. Marriage at the other Croydon Sewage Works, and where the manager of these works was previously engaged for two or three years. The rent of these 35 acres, taken by a butcher of the neighbourhood, is for three years, the first year 100*l.*, second year 200*l.*, third year 300*l.*; the first when the system was only commenced, the second not completed, and third scarcely in full operation. He is now entering the second year, and appears well satisfied with his bargain. The absorption of manure by vegetation removes the only doubt of the continuous use of the same land for disinfecting purposes for an indefinite period of time. *James Cadbury, in the Banbury Guardian.*

In-and-in Breeding.—The Hamilton breed of cattle, which the Earl of Tankerville believes to have degenerated from its original character, has, on the contrary, says Dr. Knox, "maintained its weight and good qualities under the most disadvantageous circumstances. This was first pointed out to me by a most experienced judge of stock, Mr. Plummer, of Dalkeith. His judicious remark was, that 'the Hamilton breed of cattle, comparatively neglected, and suffered to breed as it were in-and-in, by being confined to a single stock, is yet equal in every respect to the best specimens of the West Highland breed, in the improvement of which great and constant efforts have been made, and are making, both by individuals and societies; the one receiving as it were the fostering care of a nation, the other protected merely by a single high-spirited individual, the Duke of Hamilton.' This circumstance," continues the learned Doctor, "proves also the probable groundlessness of the fears of most breeders, in respect to breeding in-and-in, when the stock is a good or original one." Professor Low, of Edinburgh, in his work on "Domestic Cattle, &c.," in the single sentence he has devoted to this part of the subject, thus alludes to the wild animals of the ox tribe: "The wild white forest breed, derived from a race which formerly inhabited, in a state of liberty, the woods of the country. Remains of this remarkable race have been preserved for ages in the parks of opulent individuals, where the animals, herding and breeding exclusively with one another, retain their wild condition." *The Plough.* [We see it is announced that the rinderpest has attacked this herd.]

A Flock of Sheep Poisoned.—Mrs. Deacon, of Mapledon, has recently lost no fewer than 18 sheep through their eating a poisonous shrub. It appears that a short time ago the gates leading into the pleasure grounds were left open, and 38 sheep which were grazing in a field near strayed into the grounds, and while there they ate ravenously of Andromeda floribunda, a most poisonous shrub from North America. Mr. Hewitt, the bailiff, at once treated the sheep, 37 of whom showed symptoms of poison, and then called in Dr. Gregory, and under their united treatment 19 of them recovered. *South-Eastern Gazette.*

Calendar of Operations.

MARCH.—*Morse of Berwickshire.*—After a remarkably mild and wet February, during which the rain-gauge recorded 3 inches, we are enjoying a fortnight of something like winter. Repeated falls of snow to the aggregate depth of a foot, with thaw and frost to match, are sufficiently trying to those who, having few Turnips, were hoping for Grass and living on "artificials." Lambing has commenced with a fair show of twins, and ewes are generally healthy where not tampered with. Along with Turnips, we tried ½ lb. of a cake made of Linseed and Cotton seed; but in three or four days six ewes took ill and three died, and we have no more cases since reverting to pure Linseed cake. Buyers from the north have been inquiring for ewes and ewe hoggs, and we may expect a run on that description of stock, unless it be true that they are liable to cattle plague. Several of our neighbours sent lean hoggs to Forfarshire to eat Turnips at a low price, and one of the lots is suffering under a fatal disease, which is said by authority to be the plague. Certainly 3½*d.* a week was tempting, when Turnips could not be got here for three times the price; and we hope for some other explanation of the deaths, when we see it stated that sand was found in the stomachs. Feeding hoggs have not had a good time of it owing to the soft weather, but they are healthy and ready to make the most of the good time coming. The big look of 11*d.* a lb. tempts holders to sell rough, though it is no more than was got last summer, when clipped hoggs brought 9*d.* Besides, on all hoggs killed just now, the country will lose the improvement on young Grass, where as much mutton is made in a week as in a month on March Swedes. [Further report declares the disease is not rinderpest.]

The cattle plague is all but extinct in the county, and so, it seems, we must be tied up to be "neighbourlike." This vaunted "dead-meat" business seems to work badly. Meat comes to market the worse for railway travelling, not to mention that the freight of a carcase is double that of the live animal. A very green correspondent of a London paper ventured to prophesy that when once the country had a fair trial of carcase transit, it would never return to the antiquated system of live carriage! Certain it is, "the country" cannot mean those who buy and sell cattle. Another ingenious man said (was it not in the House of Commons?) that farmers had no claim for compensation for compulsory slaughter, because they were gainers by the rise in price; when the fact is, it has been lower all the season than last year, and will rise when there are few fat cattle left. Farmers would have no claim if left free to fight their own battles, unfettered by Order and Bill Plagues.

It is now several years since the most efficient and inexpensive collection of agricultural statistics, by the Secretary of the Highland Society, was abruptly stopped by a petty squabble with the Audit Office. Every parish in Scotland had its members of committee, working gratuitously, and never dreaming of anything else. Once a year these members for a district were convened to give in their estimates of produce, and on these occasions they dined at the expense of the country. For this reckless outlay the Secretary and his district enumerators were called upon to produce vouchers, which they properly declined; officialism triumphed, and the collection of statistics was knocked on the head. The numerical returns were sent by each occupier direct to the Secretary, and the particulars were known to him alone; but when each local officer "of the Inland Revenue" sends his schedule, it is only in consideration of the special circumstances of the country that one is induced to comply.

Of corn, once so important, little need be said. The acreage was of limited extent, and it is mostly disposed of. Barley has got exceeding scarce, and won't be plentiful next year; for a large portion of Turnip-land is under Wheat, and of that, "least said soonest mended," until spring come. Clovers look rather poor, and ewes must desire growing weather.

Potatos are little grown now, and quite unsaleable; but they will help to eke out the Swedes for the feeding the cattle that still remain in the western half of the county. *J. T.*

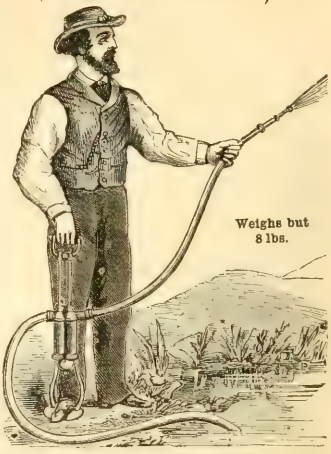
Notices to Correspondents.

POULTRY. *Old Subscriber* says. Tell your correspondent "J. S." the best sort of a bird, if not required for exhibition, but for his own use, is a half-bred twixt the Golden Spangled Hamburgh and the Grey Dorking (not White). A few Game hens will be required for sitting.—*G. E. O.* From your description, we should imagine your bird died from the rupture of a blood-vessel in the head. It is not an uncommon occurrence with cock birds; but it more frequently happens in the Game breed. Cock birds are at liberty in the day time. It is of course possible that a blow from a stone may have caused death in this instance, but the cut or bruise would have been visible. The proper dose of castor oil for an adult fowl is a table-spoonful; it may be increased one half in case of urgency.

RABBITS. *R. P.* The Belgian hare rabbit is very hardy, prolific, and easily kept. It attains a good size, and is good for table.

RULES OF A LABOURERS' BENEFIT SOCIETY. *Co.* The following rules are in operation, and may suit you.—I. That a society be now established under the designation of a "Society for Aiding the Labouring Classes in —— and its neighbourhood."—II. That the principles on which such society shall be formed shall be the following: 1. That of encouraging and promoting the exercise of foresight, prudence, and frugality in the working classes, towards the maintenance of themselves and their families in comfort and respectability. 2. That of avoiding any interruption of the relations and responsibilities which mutually belong to, or exist between, the owners and occupiers of property and the working classes.—III. That in accordance with these principles, the objects of the society be: 1. To obtain allotments of land in such townships in the neighbourhood as it may be practicable, to be let to the working classes of industrious habits, and to be cultivated solely by the spade. 2. To endeavour to increase the amount of employment in the district, by circulating practical information with reference to spade husbandry and other manual methods of cultivating the soil. 3. And to encourage amongst the poor, by other means, habits of self-support, or dependence on their own exertions.—IV. That local committees be formed in any townships where it may be practicable, or where no allotments of land are already granted to the poor, consisting of the clergyman and two or more members. That the business of such local committees shall be: 1. To endeavour to obtain, from the resident or other landed proprietors, a grant of land for the purpose of allotments; but that unless requested to take the management of such allotments by the landed proprietor, they do in no case take such management upon them without the consent of the general committee. 2. That such local committees shall be the medium of circulating information with reference to spade husbandry, or other similar means of increasing employment in the district. That the committee of management may, where any landed proprietors decline to grant any land for allotments, or object to do so on account of the trouble occasioned thereby, take any land in such townships as may seem to them desirable, and re-let the same to the labouring classes, under the superintendence of the local committees.

THE HYDROPULT,



An Invention for Throwing Water by Hand Power.
(SECURED BY ROYAL LETTERS PATENT).

PRICE LIST.

	£	s.	d.
COMPLETE WITH BRASS CYLINDERS AND JAPANNED STIRRUP	1	12	6
COMPLETE WITH BRASS CYLINDERS AND COPPER STIRRUP	2	2	0

The Price "Complete" as above, includes 2½ feet Suction and 3 feet Delivery Hose, Galvanised Wire Strainer, Rose and Small Jet.

THE HYDROPULT
is invaluable for use in the
GARDEN for
WATERING BEDS,
SPRINKLING PLANTS,
DROWNING OUT INSECTS,
CLEANSING TREES FROM SMUTS,
DRESSING WITH LIQUID MANURE,
&c. &c.

CAUTION.

IMPORTANT TO THE PUBLIC.—The extensive sale of the Hydropult has excited the cupidity of so-called respectable, but in reality unprincipled Manufacturers, who are now palming on the Public worthless imitations of the Hydropult, and through their connections are enabled to place said devices on exhibition, and for sale, in many of the principal Ironmongery and Seed Establishments throughout the city and provinces. These devices resemble in many respects the Hydropult in appearance, and are calculated to deceive the unsuspecting. The Proprietor therefore issues this Caution, and respectfully intimates that parties wishing to purchase the Hydropult should examine the machine offered for sale, and see it it has attached thereto a label, with the following words:—"The Hydropult, Vose's Patent, manufactured only by GRIFFITHS & BROWETT, Birmingham. CHARLES POMEROY BUTTON, Proprietor, 142 and 143, Cheapside, London." Unless this label is attached, the Machine is not the Hydropult.

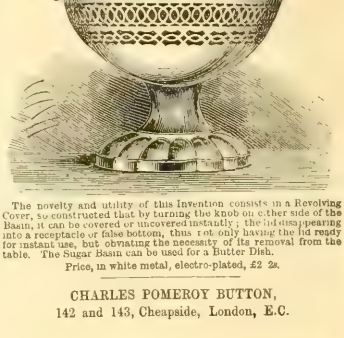
Prospectuses, with Testimonials, on application.

HYDROPULT SHOW ROOM, 142 & 143, CHEAPSIDE, LONDON.

IMPERIAL SUGAR BASIN.

SECURED BY ROYAL LETTERS PATENT.

USEFUL, ORNAMENTAL, UNIQUE.



The novelty and utility of this Invention consists in a Revolving Cover, so constructed that by turning the knob on either side of the Basin, it can be covered or uncovered instantly; the lid disappearing into a receptacle or false bottom, thus not only having the lid ready for instant use, but obviating the necessity of its removal from the table. The Sugar Basin can be used for a Butter Dish.

Price, in white metal, electro-plated, £2 2s.

CHARLES POMEROY BUTTON,
142 and 143, Cheapside, London, E.C.

GOOD CLOVER SEEDS at MARKET PRICES.

Red	White Dutch	Yellow
Alsike	Cow Grass	White Suckling

For samples and lowest prices, apply (stating quantity required) o
SUTTON & SONS, Seed Merchants, Reading.

FINE GRASS LAWNS in FLOWER GARDENS, &c.—The great expense of cutting and carting Turves from a distance may be avoided, and a superior Turf produced in a few months by sowing SUTTON'S LAWN GRASS SEEDS, which consist solely of the finest and shortest-growing kinds, perfectly free from Moss and other weeds.

From MR. JOHN JOHNSON, *Gardener, Mowbray Park, Sunderland, April* 26, 1865.

"The Lawn Seed we got last year about this time has come up excellently."

From Mr. THOMAS POLLINGTON, *Gardener to* H. W. Vincent, Esq., *Bradwell Grove, Burford, January* 19.

"The Grass Seed you supplied me with last season grew remarkably well, though sown under trees. I think every seed grew."

From HENRY H. CAVE, Esq., *Desborough, Market Harborough, May* 13, 1865.

"The Lawn Grass Seeds I had from you last year have made a very good turf already."

From J. NIGHTINGALE, Esq., *High Street, Kingston-on Thames, May* 2, 1865.

"I may add that the Grass Seeds you supplied last year, have (notwithstanding the very unfavourable season) succeeded very well."
SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

Very Early Sheep Feed.

SUTTON'S IMPROVED ITALIAN RYE-GRASS.—This "Improved" Italian Rye-grass is recommended in preference to every other variety, producing three or four heavy crops in one summer, and being almost if not strictly perennial.

At a Meeting of the Royal Agricultural Society, on March 16, in a Lecture delivered by Alfred Hughes, Esq., of Thorness, Isle of Wight, Mr. Hughes said:—

"I always reserve a portion of Oat land to lay down with SUTTON'S Improved Italian Rye-grass, the most reliable plant I have come across for some years for Ewes and Lambs in the Spring. When I tell you that I put it in in the spring, and dressed it after harvest with guano, and that in the autumn, when my Sheep fed it off, it was up to their knees, and that I fed it off again this spring with Ewes and Lambs, I think you will agree that this is a crop of very great value. The Italian Rye grass which is sold by SUTTON, of Reading, is a most astonishing vigorous plant; indeed, I never saw anything to equal it in the course of all my experience."

SUTTON & SONS have a fine stock at present of their Improved Italian Rye-grass, which is a very different and superior article to much that is sold as Italian Rye-grass.

Present price, 6s. 6d. per bushel; cheaper in quantities over 5 qrs. Carriage free in quantities of 8 bushels and upwards.

Quantity required per acre, if sown, 3 bushels.
Royal Berkshire Seed Establishment, Reading.

SUTTON'S MIXTURES of CLOVERS and RYE-GRASS.—To be sown with Corn for a crop of Clover, &c., which will produce good feed during the Autumn, and in the following year.

CLOVERS and ITALIAN RYE-GRASS (Messrs. SUTTON'S Mixture), for One Year's Clover Hay, at 14s. per acre.

CLOVERS and COMMON RYE-GRASS (Messrs. SUTTON'S Mixture), for One Year's Clover Hay, at 14s. per acre.

CLOVER SEEDS WITHOUT RYE-GRASS (Messrs. SUTTON'S Mixture), at 12s. 6d. per acre.

In the Mixtures of Clovers and Rye-Grass described above, we generally give 14 lb. of Clovers (principally Red and Alsike) and one peck of Rye-Grass per Acre; but if more Rye-Grass should be desired, it can be supplied at 6d. per bushel, allowing the 56 lbs. for omitting a pound or two of Clovers. If but one kind of Clover is required to sow with the Rye-Grass, it is only necessary to name the sort in giving the order, and the proper quantity will be sent.

*** Those who require Seeds to sow with Corn for One Year's Clover Lay will save themselves trouble, and insure a proper mixture for their soil, by ordering the above-named Mixtures for the number of acres to be sown.

GRASS and CLOVER SEEDS, for Two Years' Lay.—This Mixture contains a large proportion of Perennial Clovers, and under favourable circumstances will often stand for three years.

The following sorts are included, and invariably answer well:—

Broad Red Clover	Round Cocksfoot
Perennial do. (Cow Grass)	Sheep's Fescue
White Clover	Timothy
Alsike Clover	Pacey's Perennial Rye-Grass
Yellow Trefoil	Sutton's do. "
Meadow Foxtail	Italian Rye-Grass

The quantity required per acre is one bushel, weighing about 25 lb. Price 20s. per acre.

GRASS and CLOVER SEEDS, for Three or Four Years' Lay.—The sorts contained in this Mixture are somewhat similar to the preceding, but the quantities of Permanent Grass Seeds are increased to insure the continuance of the pasture for three or four years. The quantity required per acre is two bushels. Price 24s. per acre.

These Mixtures are highly profitable, producing enormous crops of Grass or Hay, but must not be expected to form Permanent Pastures.

From C. F. THRUSTON, Esq., *Talgarth Hall, Machynlleth.*

"I had a most famous hay crop on a 10-acre field from the 'seeds for three years' you sent me last season. I have never, since I commenced farming, had such a heavy crop."

PRICED LISTS of other FARM SEEDS gratis and post free.

All goods carriage free; 5 per cent. discount allowed for cash payment.
SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

Improvement of Grass Lands.

SUTTON'S RENOVATING MIXTURE SHOULD NOW BE SOWN.

This Mixture consists of the finest Grasses and perennial Clovers, and if sown early in the season the improvement in the pasture will be very great, and at small expense. Quantity of Seed required per acre, 8 to 12 pounds. Price 10d. per lb.

From T. E. OSMOND, Esq., *Thorp-le-Soken, February* 27, 1865.

"Your Renovating Mixtures for old pastures have answered my purpose well."

From J. C BLACKETT, Esq., *Thorpe Lee, Egham, September* 30, 1865.

"Mr. Blackett will be obliged to Messrs. Sutton to send him Renovating Grass Seed, of the same quality as last year, which was excellent."

From W. HARPER, Esq., *Agricultural Colony, Whitwick, Jan.* 4, 1866.

"You will be glad to hear that your Renovating Mixture for our Home Meadow answered remarkably well. It is now the greenest and freshest 10-acre field in the neighbourhood."

PRICED LISTS gratis and post free. All goods carriage free, except very small parcels.
SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

PERMANENT PASTURE.—The Grasses, Clovers, and other plants best adapted to form natural Permanent Pasture are, in our opinion, those varieties which are found indigenous to the locality.

By careful examination we find the Grasses, Clovers, and other plants varying on each geological formation in a very remarkable degree. Thus, the Herbage of the South Downs, so well adapted for Short-woolled Sheep, differs entirely from the Herbage on the Cotswold Oolitic series, the home of our fine Long-woolled Sheep; whilst the Herbage in the fine Pastures on the Old Red Sandstone of Herefordshire, where the beautiful Hereford Herds are seen in such great perfection, differs also materially from that in the fine Grazing pastures on the Kimmeridge Clay (Vale of Aylesbury, &c.).

Undoubtedly the Farmer's study should be to have his land in a high state of cultivation before attempting to lay it down to Permanent Pasture, and the choice of a suitable mixture for our Home Meadow answered remarkably well. It is now the greenest and freshest 10-acre field in the neighbourhood."

This subject is fully treated in our NEW ILLUSTRATED BOOK on GRASSES, and a Table is given for each geological formation. We shall feel pleasure in sending a copy gratis to any gentleman interested in the important subject of Laying-down land to Permanent Pasture, or of Renovating Old Pasture with the most suitable Grasses and Clovers.

J. C WHEELER & SON, Seedsmen to the Gloucestershire Agricultural Society, Gloucester.

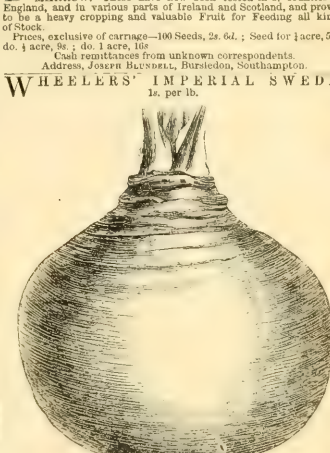
RAYNBIRD, CALDECOTT, BAWTREE, DOWLING, AND COMPANY, Limited,
CORN, SEED, MANURE, AND OILCAKE MERCHANTS,
Address, 89, Seed Market, Mark Lane, E.C.; or Basingstoke.
Samples and Prices Post free on application. Prize Medals, 1851, for Wheat; 1862, for "Excellent Seed Corn and Seeds."

BLUNDELL'S CATTLE MELON and CATTLE MARROW.—These have now been tested in 37 counties in England, and in various parts of Ireland and Scotland, and proved to be a heavy cropping and valuable Fruit for Feeding all kinds of Stock.

Prices, exclusive of carriage—100 Seeds, 2s. 6d.; Seed for ¼ acre, 5s.; do. ½ acre, 9s.; do. 1 acre, 18s.

Cash remittances from unknown correspondents.
Address, JOSEPH BLUNDELL, Bursledon, Southampton.

WHEELERS' IMPERIAL SWEDE. 1s. per lb.



J. C. WHEELER & SON, Seed Growers, Gloucester.
Seedsmen to the Gloucestershire Agricultural Society.

SUTTON'S CHAMPION SWEDE. PERFECTLY HARDY, VERY PRODUCTIVE, STORES EXCEEDINGLY WELL, AND RARELY, IF EVER, SUFFERS FROM MILDEW.

THREE HUNDRED GUINEAS IN 12 PRIZES.

For Six Years successively his late Royal Highness the Prince Consort's Prize Cups have been awarded to SUTTON'S CHAMPION SWEDES at the Royal East Berks and South Berks Agricultural Societies, and many other valuable Prizes in various parts of the Kingdom.

From Mr. LARGE, *Bailiff to the* Right Hon. Lord BERNERS.

"The Champion Swedes from seed Lord Berners purchased of you are far superior to any other we have grown. I can confidently say they are many tons per acre heavier than any other Swedes growing on his Lordship's farm."

Price of Seed 1s. per pound, or cheaper by the bushel.
SUTTON'S NEW FARM LIST gratis and post free.
SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

SUTTON'S YELLOW GLOBE, Price 1s. per lb.

MANGEL WURZEL SEED from large Bulbs. *Cheaper by the cwt.*

	Per lb.	s.	d.
Good YELLOW GLOBE..	0	9	
" ORANGE GLOBE..	0	9	
" RED GLOBE ..	0	9	
" LONG RED ..	0	9	
" LONG YELLOW ..	0	9	

SUTTON'S

Selected Mangel Seed

from Selected Roots.
Cheaper by the cwt.

	Per lb.	s.	d.
SUTTON'S Selected YELLOW GLOBE	1	0	
Do. do. ORANGE GLOBE	1	0	
FISHER HOBBS' ORANGE GLOBE ..	1	0	
SUTTON'S RED GLOBE	1	0	
SUTTON'S ELVETHAM LONG RED	1	0	
SUTTON'S Selected LONG YELLOW ..	1	0	
New YELLOW INTERMEDIATE..	1	0	
Do. RED do..	1	0	
NORBITON GIANT LONG RED	1	0	
BERKSHIRE PRIZE, or SUFFOLK CHAMPION, New	2	0	

Lowest price per cwt. on application.
SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

To the Seed Trade.

JOHN MALDEN hereby intimates that he has from 40 to 50 Tons of his far-famed YELLOW GLOBE MANGEL WURZEL SEED to offer. All Net crop 1865. First-class quality, and the stock undeniable; being the same that he has supplied his customers with for the past 20 years. He has also from 10 to 12 Tons of FISHER HOBBS' STOCK to dispose of. This also is good quality and his own growing. Buyers in quantities, say from 2 to 5 tons, liberally treated with. For sample and price apply to JOHN MALDEN, Agricultural Seedsman, Bugbrooke, Beds.

DAVISON'S MIXTURES of GRASS SEED, 10s. 6d. per bushel; per acre, 32s.—Italian Rye-grass, best, 5s. per bushel, 14 lb.; Pacey's Perennial, 6s. 6d.; Devon Evergreen, 6s.; Red Clover, best, 9½d. per lb.; White Dutch, best, 10d. per lb.; Trefoil, best, 5½d. per lb.; Sweds, all the best kinds, 9d. to 10d. per lb.; Mangel Wurzel, 9d. to 1s. per lb. PRICED LISTS free. Hereford.

GRASS SEEDS for Laying Land Down to Permanent Meadow and Pasture, allowing 2 bushel of Large Seeds, and 12 lbs. Small Seeds to each acre. Price 36s. per acre.

MIXTURES for IMPROVING OLD PASTURES, 1s. per lb.

MIXTURES for LAWNS, 1s. 6d. per lb.

PRICE LISTS free.
GEORGE GIBBS & Co., Seedsmen, 25 and 26, Down Street, Piccadilly, W.

Brighton and Sussex Seed Warehouse.

EDWARD CARPENTER'S MIXTURES of PERMANENT GRASS and CLOVER SEEDS.—Best quality, 36s. per acre (2 bushels light seeds, and 12 lb. Clovers and small seeds per acre).—See testimonials in Catalogue.

EDWARD CARPENTER'S RENOVATING MIXTURES for Improving Old Pastures.

PRICED CATALOGUES of KITCHEN GARDEN, FLOWER, and FARM SEEDS now ready.

EDWARD CARPENTER, Seed Merchant and Grower, 96, St. James's Street, Brighton.

The Cultivation of Bromus Schraderi.

SUTTON AND SONS can supply genuine Seed of the above NEW FORAGE GRASS, in packets, for trial, at 1s. each, or in larger quantities at 5s. per lb., with instructions on cultivation.
SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

THE ALSIKE CLOVER for CLOVER-SICK LANDS.—This excellent Clover will thrive in almost any soil. It produces two good cuttings in the year, and makes superior Clover hay. It may be sown alone (14 lb. per acre), or in conjunction with other seeds, either for alternate husbandry or for Permanent Pasture. If sown with Italian Rye-grass, it is ready for mowing three times in the year. It is included in all Messrs. SUTTON'S Mixtures, and they strongly recommend it to more general cultivation. Price may be had on application (depending on quantity required).
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Weight 56 lb. per bushel.

This has been "bred" in the same manner as the "Pedigree Wheat," viz.: by repeated annual selection, re-starting in each year from a single grain upon a poor soil (resting immediately upon the chalk of the South Downs), which upon neighbouring farms produces Barley weighing but 51 lb., and fit only for grinding.

SEED REQUIRED:—			
If drilled in March	1	bushel on 3 acres.	
" April	1	"	2 "

Price Two Guineas a Bushel (including bag), delivered in bags sewed up and sealed, at the Brighton Railway Station, upon receipt of Cheque or Post Office Order, without which it will not in any case be sent to unknown correspondents. Less than a bushel will not be supplied.

Apply to FREDERIC F. HALLETT, Esq., F.L.S., The Manor House, Brighton, Sussex.

Choice Seeds, Post Free.

CATTELL'S ECLIPSE BROCCOLI.—The following notice of the above is taken from the *Gardeners' Chronicle*, June 3, 1865:—"The specimens of Super Eclipse Broccoli were very fine; the heads large and compact, the texture delicate, and the flavour excellent. These qualities, together with the late season at which it comes into use, between the ordinary late Broccoli and Cauliflower, and its extreme hardiness, combine to make it a very useful variety." 1s. 6d. per ¼ ounce packet.

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CATTELL'S EXQUISITE PARSLEY, 6d. per packet.
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CALCEOLARIA, splendid Mixed, 1s., and 2s. 6d. per packet.
SWEET PEAS, SCARLET INVINCIBLE, 6d., 1s., and 2s. 6d. pckt.
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New Seedling Potatoes.

TELEGRAPH, 14 days earlier than the Ashleaf, abundant bearer, per bushel, 20s.

PRESIDENT, 14 days later than the above, wonderful cropper, per bushel, 10s.

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SEED POTATOS.—Five to Ten Tons of MYATT'S PROLIFIC EARLY ASHLEAF KIDNEY. True, £5 10s. per ton, 6s. per cwt., in New Sacks at 1s. 6d. each.

Apply, with reference or remittance, to J. BROOKS, Park Attwell, Bewdley.

WHITE ROCK and SKERRY BLUE POTATOS.—The Subscribers have a large lot of the above valuable Winter Potatos, grown specially on seed ground, in the Counties of Louth and Galway. Price for either sorts 5s. per cwt., or £1 10s. per ton. Parties desirous of having a change of seed will find these worthy of their attention.

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SEED POTATOES, free from Disease.

DALMAHOY, 3s. 6d. per bushel of 56 lb.
EARLY OXFORD, 4s. 6d. per bushel of 56 lb.
EARLY SHAW, 3s. 6d. per bushel of 56 lb.
FLOUR-BALL, 3s. 6d. per bushel of 56 lb.
FLUKE KIDNEY, 3s. 6d. per bushel of 56 lb.
WALKER'S IMPERIAL REGENT, 4s. 6d. per bushel of 56 lb.
YORK REGENT, 4s. 6d. per bushel of 56 lb.
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First Prize Potato (Extraordinary).

PRINCE of WALES' KIDNEY POTATO.—This new variety, which obtained the First Prize at the Royal Horticultural Society's International Root Show, Dec. 7, 1864, is the handsomest and most eating, as well as the most prolific Potato in the world, *having yielded 6 bushels per rod*. It comes in directly after the Ashleaf, and retains its exquisite flavour all through the summer.

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"I have this morning had the Seedling Potato examined. The crop is very extraordinary, and the Potatos themselves are very handsome, and quite true."

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"The Seedling Potato (Prince of Wales), I have found to be wonderfully productive, excellent in flavour, handsome, and such a one as the world ought to have the benefit of."

Declared by Mr James Veitch, Royal Exotic Nursery, King's Road, Chelsea, S.W.; Messrs Barr & Sugden, King Street, Covent Garden, W.C.; Alexander Grieve & Co., 19, St. Mary Axe, London; Sutton & Sons, Reading; Rollison, Mr. Charnock's Nursery, Exeter; and all Growers by Newspaper, to be perfectly distinct from Dalmahoy.

Price 15s. per bushel.

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RED CABBAGE PLANTS, extra fine, 2s. 6d. per 100
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EARLY SHAW POTATOS, 4s. per cwt., without Dirt.
Price 7s. cash

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VEGETABLE SEEDS in COLLECTIONS, 10s., £1, £2, £3, £4, £5. The best FLOWER SEEDS, all kinds, 1s. 6d., 2s. 6d., 5s. 6d., and 5s. per dozen packets. The choicest and most valuable selected collections, 10s. 6d. to £5.

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THE METROPOLITAN,
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Orders amounting to 21s. sent Carriage Paid.

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The magnificent JAPAN LILY, LILIUM LANCIFOLIUM RUBRUM, for planting in Rhododendron Beds, Conservatories, &c., 9s. and 12s. per doz.; 50s., 60s., 70s., and 80s. per 100.

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The magnificent GOLDEN-RAYED LILY of JAPAN, LILIUM MURATUM, 5s. 6d., 7s. 6d., and 10s. 6d.; extra large roots, 21s.

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The Manure is laid on the surface dry, and watered in. A GREAT SAVING OF LABOUR IS THUS EFFECTED.

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No. 3.	Ditto	ditto	ditto	..	21 0	No. 3.	Ditto ditto	7 6
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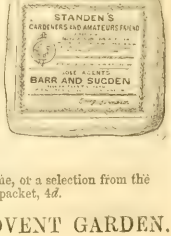

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JOHN KEYNES (Keynsii)—Bright scarlet, with white eye. The most beautiful scarlet bedder in the world, and was awarded a First-class Certificate at the Horticultural Meeting without a dissentient voice; unequalled in truss, size, and colour. Price 5s.

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These six Verbenas have been very carefully selected by J. Keynes himself, having seen them growing, and he has no doubt they will prove very distinct, either as bedding or pot. Fine Plants ready May 1

The set of six will be sent to the Trade.

Plates of these fine Verbenas will be forwarded on receipt of 14 stamps.

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SPECIAL OFFER.—20 per cent. off Catalogue prices.—HOLLY (GREEN), YEWS, DEODARIS, ARBUTUS, LAURELS (Common and Portugal), Cupressus Lawsoniana, Thuya Lobbii, Pinus insignis, P. excelsus, P. ponderosa, Taxodium, Hazel (a large breadth), Larch &c., Spruce &c., Austrian Pine &c., Beech &c. For sizes and prices, see CLEARANCE LISTS, sent on application to

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FOX or GAME COVERT.—Gentlemen planting or refreshing their Preserves can be supplied with the undermentioned favourite Plants.—ENGLISH GORSE or FURZE, 1-year, 5s. per 1000; 2-years, very strong, 10s. per 1000; Evergreen Berberry, or Mahonia aquifolia, 1 to 2 feet, strong transplanted, 25s. per 100, or £10 per 1000

LISTS of all kinds of FOREST and FRUIT TREES, SHRUBS, and CONIFERS, sent free on application to

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Surplus Stock for Underwood and Coverts, &c.

STRONG HAZEL, 2, 3, and 4 feet; BLACK THORNS, 2, 3, and 4 feet; WYCH ELM, 2 and 3 feet, BERBERIS AQUIFOLIUM, 1 and 2 feet; PORTUGAL LAUREL, 2 and 3 feet; Transplanted LARCH, 2 to 3 feet, very strong transplanted and full of roots. Very low prices on application to

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WANTED, a quantity of Small Seedling WELLINGTONIA, CUPRESSUS LAWSONIANA, ARAUCARIA IMBRICATA, and other rare CONIFERÆ.

Send Lists stating price and quantity to

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TRANSPLANTED—viz., 2-years Larch, 2-years Scotch Fir, Silver Fir, 9 to 15 inches; 3-years Hollies, Irish Yews, of sizes, Irish Junipers, of sizes, &c. Early POTATOES to feed.

R. P. LAING & SON, Arbroath, Forfarshire, Dundee, N.B.

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JOSEPH SMITH, Jun., has to offer in quantities, reasonable, Transplanted LARCH, POPLARS, PRIVET, ALDER, LAURELS, ARBOR-VITÆ, RHODODENDRONS for grafting and other sizes, &c., seedlings.

ELM, 1 year	BERBERIS AQUIFOLIUM,
SPRUCE, 2 and 3 years	1 year
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Price on application.

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PETER LAWSON AND SON are prepared to execute orders for every description of FOREST STOCK suitable for FOREST and ORNAMENTAL PLANTATIONS.

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To Noblemen and Gentlemen about to be engaged in Planting.

DICKSONS AND CO., NURSERYMEN, SEEDSMEN, and FLORISTS, Waterloo Place, Edinburgh, have this season a large and very healthy stock of transplanted LARCH (true Highland and Tyrolese), True Native Highland SCOTCH FIR, Spruce, Oak, Plane or Sycamore, Spanish Chestnut, Alder, Ash, Elm, Thorn Quick, Beech, Evergreen Privet, Willow, &c., as well as all the other kinds of Forest and Ornamental Trees and Shrubs, Fruit Trees, Roses, Greenhouse and Stove Plants, Herbaceous and Alpine Plants, &c., &c.

Their Forest Trees, which are grown on exposed ground, are this season finely ripened, and can be sent with perfect safety to any part of the kingdom.

Samples and prices will be sent free on application.

Strong Thorns, Oaks, Native Scotch, Larch, & Spruce.

CHIVAS AND WEAVER, Chester, are still holders of extra strong TRANSPLANTED QUICKS, ENGLISH OAKS, extra fine, 2½ to 3½ feet; NATIVE SCOTCH, very fine, 1½ to 3 feet; LARCH, very stout, 1½ to 3 feet; and SPRUCE, 1 to 2½ feet. Also strong Transplanted APPLE STOCKS, ready for Grafting.

Prices of the whole of the above, which are greatly reduced, will be forwarded on application.

LARCH and RHODODENDRONS.

Delivered at Matlock Station. Per 1000 s. d.

LARCH, 1½ to 2 ft., good stout plants 15 0

" 20 to 30 in. 18 0

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RHODODENDRON PONTICUM, bushy and well-rooted, 6 to 12 inches 16s 0

" 9 to 15in., 18s. per 100 ... ... 120 0

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" HYBRIDUM, 15 to 20 in., 20s. 6d. per 100 270 0

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The Trade supplied. Apply to

JAMES SMITH, Derby Dale Nurseries, near Matlock.

Forest Trees, Stove and Greenhouse Plants.

A SURPLUS STOCK AT

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LARCH, very strong, 1½ to 2 feet, 12s. per 1000

SCOTCH ... 12 to 18 inches, 12s. per 1000

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RASPBERRIES, WHITE ANTWERP, good Canes, 5s. per 100

APPLES, fine bushy Stand sorts and Dwarfs, 50s. per 100

STOVE and GREENHOUSE PLANTS, very strong, at 18s. per dozen.

HOYA BELLA	JERSEYANTHUS POLYPHYLLA
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An allowance to the Trade

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CLEMATIS JACKMANNI, 2s. 6d. each; 21s. per doz.

" RUBRO VIOLACEA, 2s. each; 18s. per doz.

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" FORTUNEI, LOBB'S, 2s. each; 18s. per doz.

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Besides other good old varieties.

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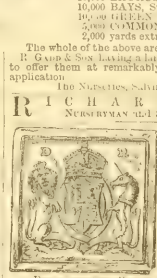

For prices of smaller sizes and quantities, see Conifer List.

At 30s. per dozen:—

Abies alba, 3 to 7 feet

" Douglasii, 3 to 4 feet

" lasiocarpa, 1½ to 2½ feet

" orientalis, 2 to 3 feet

Arbor-vitæ, American, 6 to 7 feet

" Siberian, 1 to 1½ feet

Cedar, Red, 3 to 6 feet

Cryptomeria elegans, 4 to 6 feet

Cupressus Lawsoniana, 1 to 1½ feet

" fragrans, 3 feet

Irish Yew, 1 to 6 feet

Juniperus thurifera, 3 to 4 feet

" Lambertiana, 3 to 4 feet

" recurva, 3 feet

Taxodium sempervirens, 7 to 8 ft.

Thuya Lobbii, 3 to 4 feet

" Menziesii, 3 feet

" compacta, 1½ to 2 feet

Thujopsis borealis, 3 feet

Wellingtonia gigantea, 2 feet

At 12s. per dozen:—

Abies Douglasii, 4 to 6 feet

" inverta, 2 to 2½ feet

" orientalis, 2 to 2½ feet

" pumilio, 1½ to 2 feet

Araucaria imbricata, 2 to 2½ feet

Arbor-vitæ, American, 7 to 8 feet

Cedar, Red, 6 to 7 feet

Cupressus Knightii, 6 to 7 feet

" Lawsoniana, 4 to 4½ ft.

Juniperus thurifera, 1 to 1½ feet

Pinus Cembra, 4 to 5 feet

Pinus excelsa, 6 feet

" Lambertiana, 3 to 4 feet

" insignis, 2 to 4 feet

Thuya Lobbii, 4 to 6 feet

" compacta, 2 to 2½ feet

" aurea, 2 feet

Thujopsis borealis, 4 feet

Wellingtonia gigantea, 2½ feet

Yew, Irish, 5 to 6 feet

Laurels, Colchic, 6 to 7 feet

At 60s. per dozen:—

Abies inverta, 2½ to 3 feet

" Douglasii, 3 to 4 feet

" Menziesii, 3 to 4 feet

" orientalis, 2½ to 3 feet

" pumilio, 2 to 2½ feet

Araucaria imbricata, 2½ to 3 feet

Cedrus Deodara, 6 feet

Cupressus Knightii, 7 to 8 feet

" Lawsoniana, 5 feet

Juniperus thurifera, 3 to 6 feet

" Lambertiana, 3 to 4 feet

" recurva, 3 to 4 feet

Thuya gigantea, 2½ to 3 feet

" Lobbii, 6 feet

Wellingtonia gigantea, 3 feet

Yew, Irish, 6 feet

Each:—

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Dorking, Cochin-China, Brahma, Game, Spanish, Polish, Hamburgh, Bantam, Aylesbury, Rouen, and Muscovy Ducks, Toulouse Geese, Guinea Fowls, Pea Fowls, and Turkeys.

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POULTRY: Houdan, La Flèche, Crèvecœurs, &c.—Appropriately mixed ground Grains for Chickens, Laying and Fattening Stock. Desiccated Minced American Beef; Portable Double Poultry Houses, with Patent Chicken-proof Hurdle Fencing, 40 ins. high. Sheep Troughs, Poultry Appliances

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The Mode of Manufacture is well known, and the Works are in good condition, and in the occupation of Mr. E. T. Kensington, who is about to retire from business. The Machinery, which has recently been erected, to be taken off or at a valuation. Also a number of pairs of Millstones, Smutting and Flour Machines, Oilcake and Bean Crushers, Bone Mill, powerful Rollers, and other requisites for carrying on an extensive business, and is driven by eleven Water-power.

For viewing the same, and further particulars, apply to the Executors, JAMES PEARSON, Esq., Kingstone; or Mr. S. H. COLLISS, Snaith, Bunnisel—March 1.

Sales by Auction.

Sale of very handsome English-grown Camellias, &c.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, at 3 minutes' Greenhurch Street, City, E.C., on WEDNESDAY, March 21, at 12 o'clock precisely, about 1000 CHOICE DOUBLE CAMELLIAS and AZALEAS INDICA, from the Rose, be entirely imported with bloom buds; a small assortment of Specimen-grown STANDARD and DWARF ROSES; 1000 FRUIT TREES, CONIFERÆ, and other Shrubs, AMERICAN PLANTS, the Bulbs of LILIUM LANCIFOLIUM of sorts, GLADIOLUS, &c. POT ROSES, in bloom.

May be viewed the Morning of Sale. Catalogues may be had at the Rooms as above, and of the Auctioneers and Valuers, Leytonstone.

Hampstead Road.

IMPORTANT SALE OF NURSERY STOCK.

MESSRS. PROTHEROE AND MORRIS have received instructions from the Executors of the late Mr. James Pearson, deceased, to SELL by AUCTION, without reserve, the Premises, Euston Nursery, Hampstead Road, opposite the Chalk Farm Station on the South London Railway, on MONDAY, March 26, at 11 o'clock, the whole of the Valuable NURSERY STOCK, including Thousands of fine Bushy Ancubas, from 1 to 1 feet; Aucuba vitæ, 1 to 5 feet; Green Hollies, Evergreens, Firs, Plants in Bays, Berberis, Yews, Aranearia imbricata, Westmoreland Rose, Japonica, a quantity of fine Irish Yews in pots; large Lilacs, Rhus Spruce, and other Deciduous Shrubs, Chestnuts, Plane, Thorns, Laburnums, larch, Beech, Sycamore, Weeping Ash, Ivy, Irish Yew, Standard and Dwarf Roses, Dwarf trained and Standard Fruit Trees, &c.

May be viewed one week prior to the sale. Catalogues may be obtained, when admittable to purchasers on the Premises, at the principal Seed-shops in London; and of the Auctioneers and Valuers, American Nurseries, Leytonstone, Essex, N.E.

N.B. The valuable Lease, 45 years unexpired upon about 3 Acres of Land, also the choice Glass and other Plants, extensive erections of Greenhouses, Sheds, and other Buildings; ranges of Pits, and numerous effects, will be offered shortly.

Important Sale of Hardy and Ornamental Plants

AT THE ROYAL NURSERIES, GREAT YARMOUTH, NORFOLK.

MR. J. C. STEVENS, HORTICULTURAL AUCTIONEER and VALUER, 38, King Street, Covent Garden, W.C., begs to announce that he has been favoured with instructions from Messrs. Lucas & Co., who have declined business, to SELL by AUCTION on the Premises, the Royal Nurseries, Great Yarmouth, on MONDAY, March 26, and three following days, at 12 o'Clock precisely, the last portion of their STOCK of HARDY PLANTS of this celebrated Nursery, which has been established upwards of half a century, consisting of splendid specimens of Weeping Trees, Ornamental Trees, Aucubas, Abies, Cupressus, Yews, Thujas, Arbor-vitæs, choice variegated and green Hollies, common and Portugal laurels, Aucubas, Tritomas, Tree Box in variegated, green, and golden, Standard and Dwarf Roses, standard, dwarf, and trained Fruit Trees, Irish Junipers, Azaleas, Calmias, Euonymus, Berberis, Clematis, Cotoneaster, Thorns, Deutzias, Irises, Lonicera, Pyracanthus, Ribes, Skimmias, Lilacs, Fuchsia, Weigelia, Tamarix, Vines, Raspberry Canes, Gooseberry and Currant bushes, Peonies, Hepatricas, Iris, Phlox, Violets, Primroses, Pyrethrums, Asparagus, Seakale, Rhubarb Roots, &c.

On view the week prior to the Sale, and Catalogues had on the Premises, and of Mr. J. C. Stevens, Auctioneer and Valuer, 38, King Street, Covent Garden, London, W.C. Frequent Trains from all parts of the Kingdom.

N.B. The Second Portion, consisting of upwards of 50,000 BULBS of the choicest GLADIOLI, for which this Nursery has been so justly celebrated for so many years, will be Sold in London in the course of the month of April. The Several Varieties of Flowering and Thornless Quinces, Standard and Dwarf Tree Carnations, Picotees, and Pinks, and Alpine Auriculas, choice English-grown Camellias, Azaleas, Epacris, Heaths, Liliums, and other Greenhouse Plants, will be sold in London in the course of the spring. There will also be frequent Sales of all the choicest varieties of BEDDING PLANTS at the Auction Rooms, King Street, Covent Garden, London, W.C., and Descriptive Priced Catalogues of the LEASE and GOODWILL of this desirable Nursery, which has been established so many years, together with the remaining Stock of Hardy Plants and their Fixtures, Implements, Plants in Pots, Greenhouses, Pits, Frames, Engraving Houses, Garden Implements, Horse, Carts, &c., &c., will be Sold during the month of May, unless previously Disposed of by Private Contract. Due notice of the days of Sale and further particulars will be given in future Advertisements.

Lennox Nursery, Southsea.

MR. G. M. BECK will SELL by AUCTION, at No. 9, Queen Street, Portsea, on THURSDAY, March 22, at 7 o'Clock precisely, the Leasehold Premises, known and as LENNOX NURSERY, Mannion Road, Southsea, having a frontage of 36 feet and 200 feet, and comprising Dwelling-house, Shop, productive Garden, 6 Greenhouses, and Stable.

May be viewed on application to the Auctioneer. Particulars and Condit. ions of Sale may be had of Messrs. CRANKE & CO., Seedsmen, 29, King Street, Covent Garden, London, W.C.; J. J. WARD, Esq., Solicitor, Landport Road, Southsea; BENJAMIN BOSLEY, Esq., 15, Mannion Street, Portsea; S. J. DEBENHAM, Esq., 43, Doughty Street, Finsbury, London; and of the Auctioneer, Mr G. M. BECK, 9, Queen Street, Portsea.

SHANKS' PATENT LAWN MOWERS FOR 1866.

PATRONIZED ON FIVE SEPARATE OCCASIONS DURING THE SEASON OF 1864 BY

HER MAJESTY THE QUEEN,

AND ONCE BY HIS MAJESTY THE KING OF SAXONY;

AGAIN ON FOUR SEPARATE OCCASIONS DURING THE SEASON OF 1865 BY HER MAJESTY THE QUEEN;

ONCE BY HIS MAJESTY THE KING OF HOLLAND;

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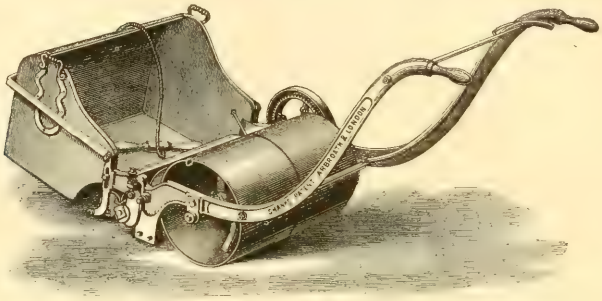

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Ditto for Donkey, 16*s.* per set.

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N.B.—*A. S. & Son specially announce to their numerous patrons that they have a staff of experienced workmen at their London Warehouse, thoroughly acquainted with all the details of their Machines, so that they are enabled to repair Lawn Mowers in London as well as at the Manufactory.*

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Editorial Communications should be addressed to "The Editor." Advertisements and Business Letters to "The Publisher," at the Office, 41, Wellington Street, Covent Garden, London, W.C.
Printed by WILLIAM BRADBURY, of 13, Upper Woburn Place, in the Parish of St Pancras, in the Co. of Middlesex, and FREDERICK MULLETT EVANS, of No. 11, Bouverie Street, in the Precinct of Whitefriars, City of London, Printers, at their Office, Lombard Street, Precinct of Whitefriars, City of London, and Published by them at the Office, No. 41, Wellington Street, Parish of St. Paul's, Covent Garden, in the said Co.—SATURDAY, March 17, 1866.

THE GARDENERS' CHRONICLE

AND

AGRICULTURAL GAZETTE.

A Newspaper of Rural Economy and General News.

No. 12.—1866.] SATURDAY, MARCH 24. {Price Fivepence, Stamped Edition, 6d.

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Persons wishing to send the GARDENERS' CHRONICLE *by Post should order the Stamped Edition.*

ROYAL HORTICULTURAL SOCIETY.—Mr. WILLIAM PAUL'S EXHIBITION of SPRING FLOWERS will be held at South Kensington, from MARCH 21 to APRIL 3 Admission: Tuesdays and Saturdays (Band at 3), 2s. 6d.; Mondays, 6d.; other days, 1s.

ROYAL BOTANIC SOCIETY'S GARDENS, Regent's Park.—EXHIBITIONS of PLANTS, FLOWERS, and FRUIT, WEDNESDAYS, May 9, June 6, and July 4. Tickets, 1s. each, to be obtained at the Gardens only by Vouchers from Fellows of the Society. JOHN WATERER'S AMERICAN PLANTS will be Exhibited in June.
The NEXT EXHIBITION of SPRING FLOWERS, SATURDAY, April 7. Tickets 2s. 6d. each.

INTERNATIONAL HORTICULTURAL EXHIBITION and BOTANICAL CONGRESS
Under the Patronage of Her Majesty THE QUEEN, and of their Royal Highnesses the PRINCE OF WALES and the DUKE OF CAMBRIDGE.
The EXHIBITION and CONGRESS will OPEN on MAY 22, and continue till May 25. Subscribers' names will be received, and Schedules and Prospectuses may be obtained on application to the Secretary, at the Offices, 1, William Street, Lowndes Square, London.

New Roses of 1866.
REVISED DESCRIPTIVE LIST NOW READY.
PAUL AND SON, Old Cheshunt Nurseries, N., have Now Ready fine Plants of all the Varieties in their List. The Trade and Amateurs should consult this.

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H. LANE & SON, Nurseries, Berkhampstead.

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THOMAS KENNEDY AND CO.'S Nursery and Seed Establishment, Dumfries, N.B.
And delivered free of carriage as formerly.
PRICED CATALOGUES furnished on application.

AMBROISE VERSCHAFFELT, NURSERYMAN, Ghent, Belgium, begs to announce that his NEW CATALOGUE, No. 78, has just appeared, and can be had at his Agents, Messrs. R. SILBERRAD & SON, 5, Harp Lane, Great Tower Street, London, E.C.

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GLADIOLUS, the finest cultivated, new and older varieties.
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FINE DWARF MAIDEN PEACHES and NECTARINES, very cheap, of all leading kinds, true to name and well rooted. LISTS on application
GRAY & SON, Nurserymen, Chertsey, Surrey.

Fruiting Trees in Pots.
PEACHES, NECTARINES, &c., may be had by the Thousand, at
H. LANE & SON'S Nurseries, Berkhampstead, Herts.

FRUIT STOCKS.—Extra strong clean MUSSEL PLUM STOCKS, fit for this year's working; a few thousands to spare. Sample and price
Apply to CHARLES NOBLE, Bagshot.

CASTLE KENNEDY FIG.—Plants of the above may now be had at 10s. 6d. and 21s. each; the usual discount to the Trade. PETER LAWSON & SON, Edinburgh and London.

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WANTED, 24 BROWN TURKEY, 25 WHITE MARSEILLES, 25 SIRGENTON.
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WEBB'S PRIZE COB FILBERTS, and other Prize Nuts and Filberts. Trees of these splendid Nuts to be had of Mr. WEBB, Calcot Gardens, Reading. Catalogues on application.

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S. GLENDINNING AND SONS invite attention to their superb stock of Orchard and Garden FRUIT TREES.
PRICE LIST on application.
Chiswick Nursery, London, W.

CARTER'S GARDENERS' VADE MECUM for 1866 now ready.

Early Spring Flowers.
WEBB'S GIANT POLYANTHUS and GIANT COWSLIPS, and other choice, largest stock in England. List and prices on application to Mr. WEBB, Calcot Gardens, Reading.

TRANSPLANTED RHODODENDRONS.—4-year-old Hybrids saved from the choicest Crimson, White, and Claret-coloured sorts, 12s. 6d. per 100, or 1000 for £5.
RICHARD SMITH, Worcester.

GERMAN FLOWER SEEDS.—Superb Varieties of Aster, Stock, Balsam, Wallflower, Phlox Drummondii, Portulaca, Larkspur, Zinnia, &c. For prices see Descriptive Seed List.
RICHARD SMITH, Seed Merchant, Worcester.

Newly Imported
LILIUM AURATUM,
3s. 6d., 5s. 6d., 7s. 6d., 10s. 6d., and 12s. 6d. each.
BARR & SUGDEN, Seed, Bulb, and Plant Merchants,
12, King Street, Covent Garden, W.C.

JIVERY AND SON beg to announce that their DESCRIPTIVE PRICED CATALOGUES of AZALEA INDICA, HARDY BRITISH FERNS, ROSES, CONIFERÆ, GRAPE VINES, and SEEDS, may be had on application at their Dorking Nursery.

VERBENAS.—Strong, healthy, in any quantity.
E. B. HAYNES, Penge Nursery, Surrey.

VERBENAS, FUCHSIAS, PETUNIAS, ROSES, &c., New and Old, of only those that are worth growing. Nice Plants now ready to send out. DESCRIPTIVE CATALOGUES free.
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SPECIMEN PLANTS for SALE.—Consisting of Fine ORANGE TREES, CAMELLIAS, AZALEAS, ERICAS, and many other Stove and Greenhouse Plants.
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REBECCA, the finest BEDDING GERANIUM ever raised. Plants ready in May, price 5s. each.
See WM. PAUL'S SPRING CATALOGUE.
PAUL'S Nurseries, Waltham Cross, London, N.

100,000 Camellias.
JOSEPH BAUMANN, NURSERYMAN, Ghent, Belgium, begs to offer 100 CAMELLIAS of the best sorts, without flower buds, good plants, 100 CAMELLIAS of stronger plants, £6 to £8.
Free to the Custom House, London.

The Admiration of the World.
DOBSONS' CELEBRATED CALCEOLARIAS.
Sealed packets of Seed, 1s. 6d., 2s. 6d., 3s. 6d., and 5s.
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CATALOGUES of SEEDS and NURSERY STOCK on application.
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NEW and CHOICE SEEDS.—Bull's Verbena, Bull's Tropæolum, Cyclamen persicum grandiflorum, Giant 10-week Stock, Perfection Aster, Lilium auratum, Intermediate Stock, James' Prize Calceolaria, Barr's Select Strain of Primula, each 2s. 6d. p. pkt.
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LARCH.—To be Sold, cheap, 30,000 strong LARCH, from 2, 3, to 4 feet, at 12s. 6d. and 15s. per 1000; and other NURSERY STOCK, very cheap.
Apply to J. EVANS, Nurseryman, Handbridge, Chester.

To the Trade.
SPLENDID Transplanted LARCH, 2½ to 3 feet, 3 to 4 feet. Price low.
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NATURAL GRASSES: their Names and Derivations; Quality, Produce, Elevation, Situation, Soil, Use, Peculiarity, Season, Growth, Increase, Time of Flowering, Price, &c.
Free for one postage stamp.
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GOOD CLOVER SEEDS at Market Prices.—Red, White, Dutch, Alsike, Cow Grass, and Trefoil; also Perennial, Italian Rye and other Grasses. For samples and lowest prices apply to RICHARD SMITH, Seed Merchant, Worcester.

DICKINSON'S ITALIAN RYE-GRASS SEED, grown by him and sold to Agriculturists this season for present payment at 44s. per qr., 5 qrs. at 40s.
New Park, Lymington, Hants.

SUTTON'S PERMANENT GRASS SEED'S For ALL SOILS.

SUTTON'S PERMANENT GRASS SEEDS, 26s. to 36s. per acre, according to quantities required, and soils for which they are intended.

NEW FORAGE PLANTS.
NEW ZEALAND PRAIRIE GRASS (Bromus Schraderi)
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PETER LAWSON & SON, The Queen's Seedsmen, 28, King Street, Cheapside, London, E.C.

FINEST LAWN MIXTURE.—Composed only of the best and cleanest Seeds of the most suitable dwarf Evergreen Grasses. 1s per lb. Carriage free.
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NEW FARM SEEDS of best selected quality. PRICED DESCRIPTIVE LIST post free upon application.
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GEORGE GIBBS AND CO., SEEDSMEN, beg to inform the public that their CATALOGUE of PRICES is now published, and will be forwarded free on application.
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To the Trade.
ASPARAGUS ROOTS, strong, 2 years old, at 10s. per 1000. On application to
MARSH & PERKINS, 42, Drapery, Northampton.
Terms cash.

GIANT ASPARAGUS.—Extra fine 2-yrs., 2s. per 100; extra fine 3-years, 3s. per 100.
Price to the Trade on application.
JOHN CRANSTON, Nurseries, King's Acre, near Hereford.

GRAYSON'S GIANT ASPARAGUS.
Fine strong 2-year roots, 30s. per 1000, 3s. 6d. per 100
Fine strong 2-year roots, 21s. per 1000, 2s. 6d. per 100.
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THE LONGSTANDER LETTUCE.—Most remarkable for duration without running, crisp, and excellent. Packets 1s. each.
STEPHEN BROWN, Seed Grower, Sudbury, Suffolk.

ROYAL ASH-LEAF POTATO.—This is one of the earliest and the most productive of all the Ash-leaf Kidney Potatos. Price per ton of finely prepared Seed given on application to Messrs. THOS. RIVERS & SON, Nurseries, Sawbridgeworth.

MESSRS. PATERSON AND SON, Dundee, beg to inform their friends that Mr. PEARCE, of Ashby-de-la-Zouch, is NOT AUTHORISED in saying that he has the Seed of PATERSON'S VICTORIA POTATOS direct from them.

Paterson's Seedling Potatos.
SUTTON AND SONS having been appointed AGENTS for the above, can supply them in quantity, at moderate prices, which may be had on application to
SUTTON & SONS, Seed Merchants, Reading.

DAINTREE'S SEEDLING POTATO is the best early round white Potato in cultivation, and can be obtained at a moderate price on application.
Mr. S. A. DAINTREE, Rendruyton, St. Ives, Hunts.

SEED POTATOS.—Myatt's Prolific Kidney, Early Dalmahoy, Webb's Imperial Kidney, Daintree's Seedling, and all the best early and late varieties at low prices.
H. & F. SHARPE, Seed Growers and Merchants, Wisbech.

SEED POTATOS.—SKERRY BLUE, 4s. 6d. per bushel; MYATT'S PROLIFIC ASHLEAF, 6s. per bushel; SEEDLING ROCK, 6s. 6d. per bushel. These kinds are the most hardy, free from disease, and abundant croppers known.
GEORGE DAVISON, Hereford.

SEED POTATOS.—Early Ashleaf or Evesham Leader; Myatt's Early Prolific Kidney; Skerry Blue, hardy, productive, of good quality, and keeps free from disease. Prices on application to RAYNBIRD, CALDECOTT, BAWTREE, DOWLING, & CO., Limited, Basingstoke; or Seed Market, Mark Lane, London, E.C.

THE KING of POTATOS, one of the finest Potatos in cultivation, quite distinct, and free from disease, price 5s. per bushel, or 56 lb. Also PARKER'S VICTORIAS, Seed direct from Mr. Paterson, price 7s. 6d. for 56 lb.
Apply to Mr. PEARCE, Measham, Ashby-de-la-Zouch.

JOHN LUFF, NURSERYMAN, Battle, offers for cash Surplus Stock of ASHLEAF KIDNEY POTATOS, 3s. 6d per bushel; also a quantity of Strong PRIVET, 25s. and 30s. per 1000.

H. AND R. STIRZAKER have a few Tons of Early IMPROVED LEMON and MYATT'S ASHLEAF KIDNEY POTATO; also DALMAHOY ROUND, which they offer very cheap to clear out. Skerton Nurseries, Lancaster.

EARLY KIDNEY POTATOS.—Webb's Telegraph, 21 first early, 20s. per bushel; Webb's President, second early, 16s. per bushel; Webb's Imperial Kidney (best Potato known for all purposes), 12s. per bushel.
Apply to Mr. WEBB, Calcot Gardens, Reading.

White Belgian Carrot.
SUTTON AND SONS can supply fine New Seed of the above at a very moderate price, according to quantity required.
Apply to
SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

To the Trade.
PURPLE-TOP SCOTCH or YELLOW ABERDEEN TURNIP. New Seed. Price on application.
JAMES DICKSON & SONS, 102, Eastgate Street, Chester.

THE HARDY WELSH-GROWN RED CLOVER may be had new and genuine of
Messrs. JAMES DICKSON & SONS, Seed Merchants 102, Eastgate Street, Chester. Samples and prices post free.

New Roses for 1866.

10,000 strong healthy well-grown Plants of all the New Roses.

W. Oulands Nursery, Maresfield, near Uckfield, Sussex.

WM. WOOD AND SON have to offer an extraordinary stock of the best NEW ROSES of the present season, in fine healthy plants.

New Roses.

JOHN KEYNES, in offering the above, begs to state that they are in the finest possible condition, having all been budded, and now well established, ready for immediate removal. Price 36s. per dozen. The usual allowance to the Trade.

Salisbury, March 21.

NEW ROSES of 1866.—Owing to the annual introduction of so many inferior, and, in fact, worthless varieties of New Roses, John Cranston has this season carefully selected 25 varieties out of 50 or 60 sorts offered by the French raisers. These he can confidently recommend, and he believes his selection contains all that are worthy of note.

A List, with prices, sent on application. The plants are strong, and will be fit to send out in March.

Nurseries, King's Acre, near Hereford.

New Roses of 1866.

JOHN FRASER, of the Lea Bridge Road Nurseries, Leyton, Essex, N.E., will forward on application a LIST of all the best varieties of NEW ROSES for 1866.

The plants are strong, healthy, and are now ready for sending out. Early orders are respectfully solicited.

Paul's Nurseries, Waltham Cross, N.

New Roses and English Seedlings.

WM. PAUL (Son and Successor to the late A. Paul) has to offer in May next the following first-class NEW HYBRID PERPETUAL ROSES:—

BLACK KNIGHT, H.P. (Wm. Paul).—Flowers dark crimson, shaded with black, cupped, large and full. This Rose may be called a very dark Gloire de Santenay, which it resembles in most respects, but is more distinct in colour. Price 2s. each.

DR. LINDLEY, H.P. (Wm. Paul).—Flowers crimson, with black centres, very large and full. Growth robust, foliage splendid. One of the finest English Roses yet raised. Price 7s. 6d.

GLOBOSA, H.P. (Wm. Paul).—Flowers of a clear shade of bright crimson, colour intense and uniform throughout. This flower is quite unique in character, the petals closing at the top, so as to form a complete crimson globe. Certificate from the Royal Horticultural Society. Price 5s.

LADY SUFFIELD, H.P. (Wm. Paul).—Flowers purplish crimson, colour full and rich, shaded with purple tint predominating; large, full, and of fine form. Price 2s.

The following, which are already out, can be supplied in strong healthy plants:—

ELIZABETH VIGNERON (Wm. Paul).—Flowers rosy pink, very large and full, cupped in the way of Baron, but fuller, fresher and brighter in colour; constitution hardy, growth vigorous; blooms continuously; one of the best of last year's novelties. Price 2s.

MADAME EMILE BOYAU (Wm. Paul).—Flowers soft rosy flesh-colour, changing to blush, sufficiently large, perfect in form, constitution hardy, growth moderate; very constant, distinct, and good. Price 3s. 6d.

PRINCE DE JOINVILLE (Wm. Paul).—A fine large showy Rose, somewhat in the style of Général Jacqueminot, but more precious of Wm. Paul's seedlings and hardy. Price 2s. 6d.

PRINCESS LICHTENSTEIN (Wm. Paul).—Flowers white, globular, large and full, perfect in form in the young state, a good hardy Rose, coming shortly into bloom. Price 2s. 6d.

GLORY OF WALTHAM (Wm. Paul).—Flowers crimson, in the way of Jules Margottin, but more double; growth of extraordinary vigour; one of the best of recent introductions. Price 2s. 6d.

All the really good French Novelties, 3s. 6d. each; the older kinds, by name, 12s. to 18s. per dozen; 75s. to 100s. per 100.

Hardy Climbers.—To the Trade.

CLEMATIS JACKMANNI, 2s. 6d. each; 21s. per doz.

" RUBROVIOLACEA, 2s. each; 18s. per doz.

" VERTICILLATA, 2s. 6d. each; 18s. per doz.

" STANDISHII, 2s. each; 18s. per doz.

" SOPHIA FLORE PLENO, 2s. each; 18s. per doz.

" VERULEA MAGNIFICA, 2s. 6d. each; 18s. per doz.

Besides other good old varieties.

A CATALOGUE, including Descriptions and Treatment of Clematises, will be forwarded free on application.

Geo. Jackman & Son, Woking Nursery, Surrey.

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DOWNIE, LAIRD, and LAING beg to intimate that their PRICED DESCRIPTIVE CATALOGUES of FLORIST FLOWERS, NEW PLANTS, GARDEN, FLOWER, and AGRICULTURAL SEEDS are now ready, and may be had free on application.

17, South Frederick Street, Edinburgh; and Stansfield Park, Forest Hill, London, S.E.

Select Catalogues of Seeds and Plants.

ROBERT PARKER begs to announce that his NEW PRICED and DESCRIPTIVE CATALOGUES, containing Select Lists of the Choicest Flower, Vegetable, Agricultural, and Flower Seeds, New and Rare Plants, &c., are now published, and will be forwarded to applicants. All Seeds are warranted to be of the finest quality, and Nurserymen and Florists are requested to compare the prices with those of other houses.

Exotic Nursery, Tooting, Surrey, S.

GEO. SMITH'S NEW CATALOGUE, with a splendid Woodcut of NOSEGAY GERANIUM LE GRAND, which is the finest of all Geraniums for effect. Together with descriptions of New Seedling Scarlet Variegated Zonale, Paxtonii, Eclipse, Gladiateur, Great Eastern, Sir Robert Peel, and Pink Perfection, which for their general fine qualities have received First-class Certificates from the Royal Horticultural, Royal Horticultural Gardens, South Kensington, all of which G. S. can, with the greatest of confidence, recommend. The description see CATALOGUE, which also contains Select Lists of French, Fancy, Zonale and Variegated Geraniums, Fuchsias, Petunias, Dahlias, Verbenas, Chrysanthemums, Bedding Plants, &c. Now ready in exchange for one postage stamp.

Tottenham Nursery, Hornsey Road, London, N.

CHOICE BEDDING PLANTS, &c.

GERANIUMS, NOSEGAY (Beaton's), AMY HOGG, INDIAN YELLOW, and GLOWWORM, 1s. 6d. each, 12s. per doz.: STELLA, 2s. each, 18s. per doz.

GERANIUMS, ZONALE, BEAUTÉ DE SURESNES, 2s. each, 21s. per doz.: MADAME WERLE, 1s. 6d. each, 15s. per doz.

HIGHGATE RIVAL, 1s. 6d. each, 15s. per doz.

VERBENA, MONSTROSA, true, from Mr. Tyerman's stock, 1s. each, 9s. per doz., 60s. per 100.

PINES, BLACK JAMAICA, strong Succession and Fruiting, fine clean plants, 2s. 6d. each.

VINE SUCKERS, strong, 12s. to 18s. per doz.

T. J. Beaton offers the above in strong stock plants. Price to the Trade on application.

Beaumont Nursery, Prescot, Lancashire.

TO be Sold Cheap.—Important to Planters.

WILLIAM BARRON begs to offer the following, at extremely low figures, to Noblemen, Gentlemen, and others engaged in Planting on a large scale:—

PINUS LAMBERTIANA.—The mighty ornamental tree surpasses the Larch, both as regards its value and rapidity of timber. It will thrive where the Larch will not. It is now used as spars and masts in the Prussian navy. Two year seedlings, 10s. per 1000.

PINUS INSIGNIS.—Two year seedlings, 10s. per 100.

PINUS PALLASIANA.—Two-year seedlings, 2s. per 100.

ABIES MENZIESII.—Ten people are aware of the value of the Oil of this beautiful tree. Two year seedlings, 2s. per 100.

PICEA NOBILIS (true).—Very fine, two years, 6s. per dozen.

BERBERIS DARWINII.—To much cannot be said of this fine evergreen species. It is hardy, and the profusion of its orange-coloured blossoms, together with the quantity of berries which it bears, of which pheasants are very fond, render it one of the most attractive and desirable plants it is known as well as exceedingly cheap. Layered plants, one year seedlings, 2s. per 100.

BERBERIS WALLICHIANA.—One-year seedlings, 1s. per 100.

Elvaston Nurseries, Borrowash, near Derby.

SUTTON'S "CHOICE" COLLECTIONS of FLOWER SEEDS.

SUTTON AND SONS

Formed

Flower Seeds

Free by Post or Rail.

These requiring showy kinds of Flower Seeds, and who are not well acquainted with the sorts, are respectfully recommended to have the collection for 5s., and we will supply those we know to be really worthy of cultivation.

		s.	d.
1.	The best 12 sorts (many, half-hardy, and choice)	1	0
2.	The best 25 sorts ditto ditto	2	6
3.	The best 50 sorts ditto ditto	5	0
4.	The best 74 sorts ditto ditto	7	6
5.	The best 24 sorts (hardy sorts only)	0	5

PRICED CATALOGUES gratis and post free on application.

Sutton & Sons, Royal Berkshire Seed Establishment, Reading.

Superb Double Hollyhocks.

WILLIAM CHATER begs to remind the Admirers of this beautiful flower that now is the best time for planting it out to ensure fine spikes and fine blooms this season.

DESCRIPTIVE CATALOGUES, with instructions for its Cultivation: also Prices of Plants per dozen, 100, or 1000, may be had on application.

Seedlings in the best named varieties, 1s. per doz., or from 20s. to 30s. per 100.

Blooming Seedlings, with colours named, very fine, 6s. per doz., and from 30s. to 42s. per 100.

Seed saved from the finest named varieties, very choice mixed 2s. 6d. per packet.

In Collections of 12 separate named varieties, extra fine, 10s.; 6 varieties, 5s.

12 named varieties, all good showy flowers, 7s. 6d.

6 do. do. 4s.

William Chater, Nurseries, Saffron Walden, Essex.

Garden and Flower Seeds.

VEGETABLE SEEDS in COLLECTIONS, 10s., £1, £2, £3, £4, £5. The best FLOWER SEEDS, at 1s., 2s., 3s., 5s., 10s., and £1 per dozen packets. The choicest ingredients, and of superior excellence. Is. 6d. to £5.

DESCRIPTIVE PRICED CATALOGUES free on application

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Choice Flower Seeds post free.

B. S. WILLIAMS has much pleasure in submitting the following List of SEEDS, as of sterling and especially recommended for their beauty and superior qualities. For other Specialities and Novelties see *Gardeners' Chronicle*, March 3; and for full description, NEW SEED CATALOGUE just free on application.

	Per packet.—s.	d.
PRIMULA (Williams's superb strain), red, white, or mixed	2	6
CINERARIA (Weatherill's extra choice strain)	2	6
CALCEOLARIA (James's strain)	2	6
CYCLAMEN PERSICUM, the produce of the finest collection in the country	1	6
ASTER VICTORIA, the most elegant Aster in existence ..	1	0
" TRUFFAUT'S PERFECTION, very fine	1	0
" WHITE CHRYSANTHEMUM PYRAMIDALE ..	1	0
STOCK, BROMPTON SCARLET, very fine	1	0
" PERFECTION QUILL, very showy, branching, clear ..	1	0
BALSAM, VARIEGATED FLOWERED	1	0
CARNATION and PICOTEE, second to none in cultivation ..	1	0
MATTHIOLA BICORNIS, an exceedingly sweet Stock; a delightful border plant	1	0
NASTURTIUM KING THEODORE, new and fine	1	0
OXALIS CORNICULATA RUBRA, dark crimson foliage ..	1	0
PALAFOXIA HOOKERIANA, new	1	0
PANSY, from a fine collection	1	0
PETUNIA, fine RUBELLINA, very beautiful	1	0
SWEET PEA, the New Invincible Scarlet	1	0
PECTIS ANGUSTIFOLIA, bright yellow flowers, with citron-like fragrance	1	0
LOBELIA SNOWFLAKE	2	0
CEDRONELLA CANA, very pretty	1	6
GYNERIUM ARGENTEUM, Pampas Grass	2	6
ANTHERICUM LILIASTRUM, from Thirlwall Castle	1	0

KITCHEN GARDEN SEEDS, carriage free

Complete Collections to suit Gardens of various sizes, 10s. 6d., 21s., 42s., 63s., 84s. each. For quantities see CATALOGUE

Victoria and Paradise Nurseries, Holloway, London, N.

CHOICE SPRING FLOWERS, &c., now ready in Strong Plants.

	Per doz.—s.	d.
HEPATICAS, double red and single blue	4	0
double blue	12	0
VIOLETS, double, in four sorts	4 to 6	0
" Single, in six sorts	3s., 4s., and 6	0
" Neapolitan	6 to 12	0
PRIMROSES, double red, double lilac Violettes, 2s. 6d. each	1	0
PRIMROSES, double, in 4 fine varieties	4	0
CHRISTMAS ROSE, distinct	2s. each	1 0
" white	2	0
POLYANTHUS, finest named varieties	2	0
PAMPAS GRASS, fine plants	18s. 24s.	30
DAISIES, six new and choice kinds	1	0
ROCK PINKS, in six fine kinds	1	0
ALPINE CAMPION, or ROSE	1	0
AURICULAS, finest Alpines	0	0
Perfection	3	0
ROCKETS, double white and yellow	1	0
LAVENDER, fine plants	3	0
CLOVES, one of the finest sorts	1	0
PINKS, fine named sorts	1	0
SWEET WILLIAM, Auriculated, &c.	1	0
WALLFLOWER, double yellow and dark	4	0
The following in Stock Plants:—		
LUCHSIAS, new, fine	6	0
VERBENAS, new, of 1866	4	0
GERANIUMS, new, of 1866	9s. to 12	0
PETUNIAS, fine, double	6	0
CHRYSANTHEMUMS	6	0
TROPÆOLUMS and LOBELIAS, new	6	0
ANTHERRHINUMS and PENTSTEMONS, new	9	0
PHLOX, new	6	0
CINERARIAS, new	12	0

100 CHOICE HARDY HERBACEOUS PLANTS, in 50 fine named varieties, for 25s.

ROSES.

24 Finest STANDARD and DWARF ROSES, 24 distinct varieties, 21s.

24 ditto ditto on their own roots, in pots, 21s.

ASPARAGUS, 1, 2, and 3 years, fine.

CATALOGUES free on application; also, TRADE CATALOGUE of NURSERY STOCK.

Post-office Orders on Castle Hedingham.

Wm. Dellistone, Munro Nursery, Sible Hedingham, Essex.

Pelargonium Mrs. Pollock.

ALFRED FRYER offers healthy well-grown Plants of this beautiful Bedding PELARGONIUM at 12s., 18s., and 24s. per dozen for each. All the plants are well established in pots, and were struck in open borders last autumn.

Remittances requested from unknown correspondents.

Address, Alfred Fryer, Nurseries, Chatteris, Cambridgeshire.

CHOICE VARIEGATED PELARGONIUMS.

Mrs. Pollock	Golden Vase	Rainbow
Sunset	Snowflake	Burning Bush
Yellow Belt	Picturata	Princess Alexandra
Golden Tom Thumb	Aegina	Fontainebleau

The above 12 choice varieties, suitable for exhibition, for 21s., basket and packing included.

Address, Alfred Fryer, Nurseries, Chatteris, Cambridgeshire.

Remittances requested from unknown correspondents.

CHEAP PELARGONIUMS, &c.

PELARGONIUMS.—Show, Spotted, and Fancy. Fine named exhibition kinds, strong healthy plants, in 48-inch pots, summer-struck, 6s. per dozen.

DIPLADENIA AMABILIS.—This is a plant of great value for home decoration or exhibition. It is of good habit, and produces freely large expanding flowers of blush coloured exquisite beauty. It gained general admiration wherever exhibited last year. 2s. 6d. and 5s. each. Price per dozen to the Trade on application.

TACSONIA VAN VOLXEMII. See *Gardeners' Chronicle*, Feb. 24, 1866. Fine plants 1s. 6d. each.

PANDANUS UTILIS.—Strong plants, 2s. 6d. each.

A remittance of reference is requested from those unknown correspondents. A SUPPLEMENT to our DESCRIPTIVE HERBACEOUS and ALPINE CATALOGUE of 1866 is now ready, and will be forwarded free on application.

James Backhouse & Son, York Nurseries.

GLADIOLI, GLADIOLI, GLADIOLI.—Collections, including all the finest varieties in cultivation, from 10s. 6d. to £5.

HARDY 100 do. 5s., 10s., 20s.

HALF HARDY 100 do. 5s., 10s., 20s.

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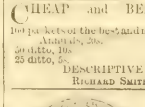

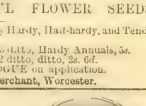

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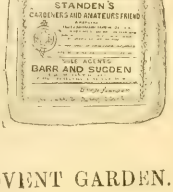

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Six beautiful varieties raised by Mr. Parsons, of Welwyn, and far in advance of any yet sent out. PINK PERFECTION the same size as Mauve Queen and equal in substance, while GRANDIS gives the deepest violet shade; all the others will be found equally distinct in their separate colours. Received Certificates of Merit from the Floral Committee.

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PINK PERFECTION.—Flowers very large, colour magenta rose; the upper part of the eye rich carmine, the under lobes beautifully rayed with violet, very fine. *7s. 6d.*

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B. S. W. believes this to be the most useful plant he has ever had the pleasure of offering, the whole character being quite distinct to any other Thunbergia, and whether grown as a pot plant or planted in the border for covering pillars and trellis-work it will be invaluable, being free in growth, with ample foliage of a dark green, with great substance. It continues flowering throughout the year, but its principal period is during the winter months, a time when white flowers are scarce. Although grown in a warm stove, it has never shown the least sign of red spider, a most important feature in this class of plants. *10s. 6d.*

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ANDREW MARVEL.—Leaves bright green, with broad brownish zone flowers, large, and of remarkable substance and smoothness; colour vermilion red; a fine variety. *7s. 6d.*

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KATE ANDERSON.—Flowers average size and form, trusses globular, colour the most brilliant shade of true scarlet; blooming profusely, likely to prove the most effective scarlet known; leaves deeply zoned. *7s. 6d.*

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The above set for 40*s.*

Pelargonium Rosalie (Holland).

The peculiar good qualities of this variety consist of free and compact habit of growth, with a moderate supply of rich salmon red flowers of great substance and excellent form; large trusses, well furnished with flower buds, mounted on stout stalks, well above the foliage. For Winter Decoration it will be found invaluable. Received Certificates during the past season for its general usefulness. *7s. 6d.*

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SCOTCH PURPLE and GREEN-TOP	1 10 0	0 16 0	0 9 0	0 4 6
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	Cwt.	Half Cwt.	Quarter Cwt.	14 lb.
LONG RED MANGEL	2 14 0	1 8 0	0 15 0	0 8 0
LONG YELLOW MANGEL	3 3 0	1 12 6	0 17 0	0 8 6
YELLOW GLOBE MANGEL	2 10 0	1 7 6	0 15 0	0 8 0
RED GLOBE MANGEL	2 14 0	1 8 0	0 15 0	0 8 0
FISHER HOBBS'S ORANGE GLOBE	2 14 0	1 8 0	0 15 0	0 8 0
DRUMHEAD CABBAGE	10 0 0	5 10 0	3 0 0	1 12 6
ALTRINGHAM CARROT	5 0 0	2 15 0	1 10 0	0 17 6
WHITE BELGIAN CARROT	3 15 0	2 0 0	1 2 6	0 12 6
YELLOW BELGIAN CARROT	5 0 0	2 15 0	1 10 0	0 17 6
LARGE CATTLE PARSNIP	4 4 0	2 5 0	1 5 0	0 13 6
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Hollyhocks, Hollyhocks, Hollyhocks.

J. C. PADMAN has a splendid stock of Autumn-struck Plants, now ready, 5*s*. per 100; price to the Trade on application. List on application. SALVIA PATENS, 3*s*. per doz.; 20*s*. per 100.

Providence Nursery, Boston Spa, Yorkshire.

CAMELLIA BLOOMS and other choice Flowers for Easter Decorations, and other purposes, on reasonable terms.

For particulars of which, apply to LUCOMBE, PINCE, & Co., Exeter Nursery, St. Thomas, Exeter.

N.B. Orders promptly executed, and packed securely to travel any distance.

Chrysanthemums.

FIRST PRIZES STOKE NEWINGTON AND GUILDHALL, 1865.

ADAM FORSYTH begs to inform the Public that he is now sending out his large COLLECTION of CHRYSANTHEMUMS, at 6*s*. per dozen, including Attraction, Eve, Golden Ball, Golden Dr. Brock, Hercules, King of Denmark, Lady Carey, Mr. Brunless, Mr. Wynes, Mrs. Raines, Pink Pearl, Prince of Wales, Sam Weller, Venus, Virgin Queen, &c.

CATALOGUES for one stamp.

Brunswick Nursery, Stoke Newington, N.

British Fern Catalogue.

ROBERT SIM can now send, post free for six postage stamps, Part I. (Common Ferns and some rare varieties, 36 pages, including prices of Hardy Exotic Ferns) of his NEW and PRICED DESCRIPTIVE CATALOGUE of BRITISH and EXOTIC FERNS, No. 7.

*** Part II. (Exotic Ferns) will be issued as early as possible.

Croft's Cray Nursery, S.E.

RICHARD SMITH'S SEED CATALOGUE contains a Calendar of Time for Sowing, particulars of Collections with Prices, Directions for Growing, and concise Details of Soil, Manure, Depth, Distance, Season, Hardiness, Duration, Form, Height, Colour, Storing, Use, Flavour, and other qualities described. This List free by post for one stamp. Seeds direct from the growers, the surest way to success.

RICHARD SMITH, Seed Merchant, Worcester.

American Plants, New Hardy Rhododendrons.

WATERER AND GODFREY'S PRICED and DESCRIPTIVE CATALOGUE of AMERICAN PLANTS, as exhibited in the Horticultural Gardens, South Kensington, free on application. This Catalogue fairly describes the Rhododendrons most worth growing, as well as some new and very handsome kinds exclusively in their possession, and now for the first time offered.

Knap Hill Nursery, Woking, Surrey.

Hardy Scarlet Rhododendrons.

JOHN WATERER'S CATALOGUE of HARDY SCARLET and other CHOICE RHODODENDRONS as annually displayed in the Royal Botanic Gardens, Regent's Park, can now be had on application.

It contains faithful descriptions of all the varieties really worthy of cultivation, as well as a selection of HARDY CONIFERS, with heights and prices, with ORNAMENTAL EVERGREENS, FOREST TREES, &c.

The American Nursery, Bagshot, Surrey.

Hardy Scarlet and other Choice Named Rhododendrons.

W. H. ROGERS, Red Lodge Nursery, Southampton, can offer a splendid Assortment of the above, strong bushy plants, £10 per 100; or selected, 30*s*. per dozen.

A DETAILED CATALOGUE may be had on application, and also of a very fine General Stock, extending over 60 acres.

To the Trade.

CUPRESSUS LAWSONIANA SEED (true), of excellent quality, and warranted crop of present season. Price, postage paid, 5*s*. 2*d*. per oz.; 32*s*. per half lb.; 60*s*. per lb. nett. From unknown Correspondents a remittance must accompany order.

WHOLESALE CATALOGUES of GENERAL NURSERY STOCK can be had on application to

THOS. CRIPPS, Nurseryman, Tunbridge Wells, Kent.

TO BE SOLD, for Cash, 2500 DAHLIAS, best out, in 250 Varieties, containing the leading kinds of 1864, 3*s*. 3*d*. per dozen, 12*s*. 6*d*. per 100; also 200 Old Stools, in excellent health, 4*s*. 6*d*. per dozen, or 33*s*. per 100.

CATALOGUE of the above, containing Hollyhocks and Bedding Plants, on application, containing stamped envelope.

J. C. PADMAN, Boston Spa, near Tadcaster.

NEW PLANTS.

AUBRIETIA CAMPBELLI (effective spring flower).
FUCHSIA BANKSII BEAUTY.
VERONICA FRUTICOSA GLAUCA.
CLIANTHUS DAMPIERI, in varieties (seed only).

Coloured Plates, post free on receipt of Stamps, of the following:—
AUBRIETIA CAMPBELLI, 7*d*.
CLIANTHUS DAMPIERI ALBIFLORA, 1*s*. 1*d*.

For description of the above see E. G. HENDERSON & SON'S NEW AUTUMN CATALOGUE, post free.

Wellington Nursery, St. John's Wood, London, N.W.

To the Trade only.

JOHN KEARSLEY AND SONS, NURSERYMEN, Leeds, offer as below, all very fine healthy stuff:—

Choice named CARNATIONS and PICOTEES, per 100 pairs, 50*s*.; do. Mixed, 25*s*.
DAHLIAS, choice varieties, pot roots, 15*s*. per 100.
PANSIES, choice varieties, 15*s*. per 100.
PHLOXES, Herbaceous, choice, 15*s*. per 100.
RASPBERRIES, FASTOLFF, True, 5*s*.
Dwarf-trained APRICOTS, 21*s*. per dozen.
" PEACHES, 24*s*. per dozen.

Primula, Calceolaria, &c.

WM. CUTBUSH AND SON are now sending out SEED of their superb PRIMULA SINENSIS FIMBRIATA, which has for many years given great satisfaction.

The *Gardeners' Chronicle* of the 6th of January, in Notices to Correspondents, says:—"The blooms sent are remarkably fine, richly coloured, full, and densely fringed; they are evidently the produce of a capital strain."

The *Journal of Horticulture* of the 23d of January, says that:—"The finest and richest coloured Chinese Primulas we have yet seen are those raised by Messrs. Cutbush & Son."

Sealed packets 2*s*. and 3*s*. 6*d*. each.

CALCEOLARIA (JAMES).—This is the finest herbaceous variety extant. Per packet 2*s*. 6*d*. and 3*s*. 6*d*. each.

CINERARIA, from finest named varieties. Per packet 2*s*. 6*d*. and 3*s*. 6*d*. each. Highgate Nurseries, London, N.

Fine Grass Seeds for Cricket Grounds,

BOWLING GREENS, or CROQUET GROUNDS.

SUTTON and SONS can supply suitable kinds of the finest-growing GRASSES and CLOVERS for the above purposes, at 1*s*. 3*d*. per lb., 24*s*. per bushel.

SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

New Lucerne Seed (Luzerne de Provence).

SUTTON and SONS have just imported a very fine parcel of NEW LUCERNE SEED, which they can offer at 1*s*. per lb., or cheaper by the bushel. (Sow 20 lb. per acre in drills.)

Royal Berks Seed Establishment, Reading.

COCKSFOOT GRASS (DACTYLIS GLOMERATA).—This highly nutritive Grass is included in all Messrs. SUTTON'S MEADOW MIXTURES, or may be purchased separately at a very moderate price, which may be had on application to

SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

SWEET-SCENTED VERNAL GRASS (ANTHOXANTHUM ODORATUM).—This very excellent Grass, so desirable in Pastures, is included in all Messrs SUTTON'S MIXTURES, or may be purchased separately at a moderate price, on application to

SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

Fruiting Vines.

E. G. HENDERSON AND SON offer the above, with splendid Canes of well-matured growth, with prominent eyes, sure to give a heavy crop of fruit, 10*s*. 6*d*. each.

LIST of SORTS sent on application.

Wellington Nursery, St. John's Wood, London, N.W.

To the Trade.

EXTRA fine Dwarf-trained APRICOTS, PEACHES, PEARS, PLUMS, and CHERRIES.

Extra fine STANDARD PEARS, CHERRIES, PLUMS, &c.

GRAPE VINES, ORCHARD HOUSE TREES, Fruiting or otherwise. List of sorts on application.

JOHN CRANSTON, Nurseries, King's Acre, near Hereford.

W. VIRGO AND SON having a surplus stock of the undermentioned FRUIT, FOREST, and other TREES, can offer them at a very reduced price, viz.:—

Standard and Dwarf Apples	Alder, 2 to 3 feet
Standard and Dwarf Pears	Larch Fir, 2 to 3 feet
Standard and Dwarf Trained Cherries (very fine)	Spruce Fir, 18 inches, 2 and 3 feet
Hazel, 2 to 3 feet	Berberis Aquifolium, 1 foot
Birch, 2 to 3 and 4 feet	" Dulcis, 2 feet
Spanish Chestnut, 2 to 3 feet	Portugal Laurel, 2 feet
Withy, 3 to 4 and 5 feet	Common Laurel, 2 to 3 feet
	Privet, 18 inches to 2 feet

Also a large quantity of Trees fit for hedging.

Prices of the above can be had on application at the Nursery, Wonersh, near Guildford, Surrey.

To the Trade.—Overstock, very Cheap.

STANDARD-TRAINED ROYAL GEORGE PEACH, DWARF-TRAINED ROYAL GEORGE and other sorts

CHERRIES, dwarf trained, in great variety, as May Duke, Waterloo, Werder's Early Black, Bigarreau, Adam's Crown, Belle d'Orleans, Knight's Early Black, &c.

PLUMS, dwarf trained, in great variety, as Cox's Emperor, Bryanstone, Green Gage, Drap d'Or, St. Martin's, Quetsche, Angeline Burdette, Orleans, &c.

CHERRIES, standards, in variety, as May Duke, Elton, Bowyer's Early Heart, Black Heart, Belle de Orleans, Florence, &c.

PEARS, pyramids on Quince, Louise Bonne, Glou Morceau, Maréchal de la Cour, Bergamotte d'Esperen, and White Doyenné.

MAIDEN PEACHES, NECTARINES, and APRICOTS; STANDARD and DWARF ROSES.

RICHARD SMITH, Nurseryman, Worcester.

THE LADY, a SEEDLING STRAWBERRY, raised by Mr. UNDERHILL, who was the originator of Sir Harry.

Plants are now ready to be sent out in lots of not less than 20.

All applications must be accompanied by a post-office order, on Birmingham, with stamps, or cash, to receive attention.

Price of the Lady Strawberry Plant: — 100, £5; 75, £4 5*s*.; 50, £3 6*s*.; 20, £1 10*s*.

Plants not less than 10, at 2*s*. each, package included.

The above scale of prices will be slightly changed in August, 1866.

Mr. UNDERHILL'S "Treatise on the Cultivation of Strawberries," either in English, French, or German, may be had through the post, price 1*s*. Address,

Mr. RICHARD UNDERHILL, Sir Harry's Road, Edgbaston, Birmingham.

RASPBERRIES.—Cornwell's Seedling, 12*s*. per 100; Cutbush's Prince of Wales, 16*s*.; Sclater's Semper Fidelis, £1; Carter's Prolific, 10*s*.; Red Prolific, 8*s*.; Double Bearing, 8*s*.; Evans's White, 12*s*.

STRAWBERRIES.—British Queen, Admiral Dundas, Sir Charles Napier, Eleanor, Oscar, Rifleman, Myatt's Eliza, Keen's Seedling, Prince of Wales, Black Prince, 2*s*. per 100, or 15*s*. per 1000.

Strong GOOSEBERRIES and CURRANTS, 16*s*. to £1 per 100.

ASPARAGUS, 2 years, 2*s*. 6*d*.; 3 years, 3*s*.; 4 years, 4*s*. per 100.

ROBERT, late GEO. CORNWELL & Co., opposite Red Lion, Barnet, N.

WANTED, a quantity of Small Seedling WELLINGTONIA, CUPRESSUS LAWSONIANA, ARAUCARIA IMBRICATA, and other rare CONIFERÆ.

Send List and price per 100 and 1000, stating height

Address, WATSON, care of Barr & Sugden, 12, King St., Covent Garden.

Box Edging.

MESSRS. JAMES VEITCH AND SONS are in want of a quantity of BOX EDGING. It must be dwarf and good, and warranted to plant at least three yards for one.

Parties having any to offer may send One Yard as sample, carriage paid to London, to be forwarded by Parcels Delivery. The price to include free delivery into a truck at a Railway Station.

Royal Exotic Nursery, Chelsea, London, S.W.

New and Choice Flower Seeds.

JOHN AND CHARLES LEE, SEEDSMEN to the QUEEN, offer the following choice FLOWER SEEDS (free by post), at the following prices per packet:—

Auricula, choice mixed	1*s*. 6*d*.	Lobelia Snowflake	2*s*. 6*d*.
Clianthus Dampieri	1 0	Polyanthus, choice mixed	1 0
Calceolaria, choice mixed	2 6	Primula fimbriata, mixed	2 6
Cineraria from named flow.	2 6	Salvia patens	1 0
Gloxinia, choice mixed	1 0	Salvia argentea	1 0
Heartsease, choice mixed	1 0	Waltzia acuminata	1 0
Hollyhock, Lee's Superb	2 6	Zinnia elegans, double	1 0

Royal Vineyard Nursery and Seed Establishment, Hammersmith, London, W.

Aucuba japonica Seed.

JOHN AND CHARLES LEE beg to offer WELL-RIPENED BERRIES of AUCUBA JAPONICA, impregnated with the best Male varieties. These Seeds will produce a large proportion of MALE PLANTS, by which the common Aucuba will in a short time be fertilized out of doors, and will produce the most charming effects in our borders.

Price 2*s*. each, 18*s*. per dozen, £5 per 100.

Price to the Trade on application.

Royal Vineyard Nursery and Seed Establishment, Hammersmith, London, W.

LEE'S CAMELLIA-FLOWERED BALSAMS, in collections of nine fine distinct colours, 2*s*. 6*d*. A Stand of this beautiful strain of Balsams was awarded a First-class Certificate at the Royal Horticultural Society's Meeting, on August 12, 1865.

JOHN & CHARLES LEE, Royal Vineyard Nursery and Seed Establishment, Hammersmith, London, W.

Aucuba japonica, loaded with Bright Red Berries.

JOHN AND CHARLES LEE, SEEDSMEN to the QUEEN, invite inspection of their large Stock of magnificent SCARLET-BERRIED AUCUBAS, which they believe to be unrivalled for extent, perfection of form, and colouring. The Berried Aucubas are valuable for Table Decoration, for which purpose they may be hired at 10*s*. 6*d*. per night.

Plants may be purchased at £3 3*s*., £4 4*s*. and £5 5*s*. each; and Ripe Seeds, producing innumerable varieties, at 2*s*. each, or 18*s*. per dozen. The Trade supplied on liberal terms.

Royal Vineyard Nursery and Seed Establishment, Hammersmith, London, W.

ASTER.—GERMAN ASTER, the finest Strain in the kingdom.—Was awarded the First Prize at the Brighton and Sussex Horticultural Show (open to all England), in 1864 and 1865, and wherever exhibited in 1865. Packets, 1*s*. 6*d*. each.

J. JENNINGS, Seed Establishment, New Street, Shipston-on-Stour.

Notice.

MR. VEITCH begs to intimate that he has now associated in PARTNERSHIP with himself, his two Sons, Mr. JOHN GOULD, and Mr. HARRY JAMES VEITCH. The Business will in future be carried on under the name of JAMES VEITCH AND SONS. In making this announcement, Mr VEITCH solicits a continuation of the same kindness and support as has hitherto been so liberally accorded to him.

Royal Exotic Nursery, King's Road, Chelsea, S.W.

ROYAL BOTANIC SOCIETY'S SPRING EXHIBITION, March 17.

LIST of AWARDS.

12 HYACINTHS. (Amateurs.)

1st, Mr. W. Young, Gr. to R. Barclay, Esq., West Hill, Highgate
2d, Mr. G. Wheeler, Gr. to Sir F. B. Goldmid, Bart., Regent's Park
3d, Mrs. L. Young, 6, Blenheim Terrace, Kentish Town

12 HYACINTHS. (Nurserymen.)

1st, Mr. W. Paul, Waltham Cross
2d, Mr. G. Davies, Liverpool

6 NEW HYACINTHS.

1st, Mr. W. Paul | 2d, Mr. G. Young, Gr.

18 TULIPS.

1st, Mr. W. Paul | 2d, Mr. W. Young, Gr.

6 CAMELLIAS (Nurserymen)

1st, Messrs. J. & C. Lee, Hammersmith
2d, Mr. W. Bull, King's Road, Chelsea

12 CAMELLIAS, Cut Blooms. (Amateurs.)

1st, Mr. T. Todman, Gr. to R. Hudson, Esq., Clapham Common
2d, Mr. T. Trussler, Gr. to D. J. Kay, Esq., Hoddesdon, Herts
3d, Mr. W. Young, Gr.

12 CAMELLIAS, Cut Blooms. (Nurserymen.)

1st, Messrs. J. & C. Lee

12 CYCLAMENS.

1st, Messrs. E. G. Henderson, Nurserymen, St. John's Wood
2d, Mr. J. Wiggins, Gr. to W. Beck, Esq., Worton Cottage, Isleworth
3d, Mr. G. Wheeler, Gr.

12 CHINESE PRIMROSES.

1st, Mr. T. Todman, Gr. | 2d, Mr. G. Wheeler, Gr.

6 FOLIAGE and FLOWERING PLANTS.

1st, Mr. B. S. Williams, Nurseryman, Holloway
2d, Messrs. J. & C. Lee
3d, Mr. G. Wheeler, Gr.

MISCELLANEOUS.

Silver Medal to Messrs. Paul & Son for Collection of Roses in Pots
Silver Medal to Mr. W. Bull for Collection of New and Rare Plants
Silver Medal to Mr W. Paul for Collection of Hyacinths
Silver Medal to Mr. W. Paul for Collection of Roses in Pots
Small Silver Medal to Mr. W. Paul for Collection of Rhododendrons
Bronze Medal to Mr. J. Reeves, Nurseryman, Notting Hill, for 12 Deutzias
Bronze Medal to Mr. W. Paul for Boxes of Cut Roses
Small Bronze Medal to Mr. W. Paul for Collection of Tulips
Small Bronze Medal to Mr. W. Paul for Collection of Narcissus
Small Bronze Medal to Mr. W. Young, Gr., for Collection of Hyacinths

NEW PLANTS.

First-class Certificate of Merit to Messrs. E. G. Henderson, for Primula sinensis Mrs. Eyre Crabbe
Ditto, to Messrs. E. G. Henderson, for Primula sinensis Stewarti
Ditto, to Mr. W. Bull, for Selaginella Martensii aloe-variegata
Ditto, to Mr. W. Bull, for Bignonia argyræa violascens
Ditto, to Mr. W. Bull, for Pandanus ornatus
Ditto, to Mr. W. Bull, for Dammara Moorei
Ditto, to Mr. B. S. Williams, for Calanthe Turneri.
Ditto, to Messrs. Paul & Son, for Dicrylla multiflora
Ditto, to Messrs. Paul & Son, for Philadelphus grandiflorus coronarius
Second-class Certificate of Merit, to Messrs. F. & A. Smith, for Cineraria Gipsy Queen.

LEEDS HORTICULTURAL SOCIETY.—THIRD ANNUAL GREAT FLORAL FETE and GRAND GALA, on WEDNESDAY and THURSDAY, May 23 and 24. Prizes £400.

AUTUMN EXHIBITION of FRUIT and CUT FLOWERS, on September 7 and 8, 1866. Prizes, ONE HUNDRED GUINEAS.

The North, South, Eastern, Great Northern, Lancashire and Yorkshire, Midland, and London and North-Western Railway Companies will convey Plants, Flowers, and Fruits at ordinary rates, to the Show, and return them free if they remain the property of the Exhibitor.

The Committee undertakes to receive Boxes of Fruit and Cut Flowers for Exhibition. All Fruit and Cut Flowers so sent will be carefully unpacked and exhibited, and the following morning returned to Exhibitors, or as specially directed. Schedules and forms of entry will be forwarded on application.

JAMES BIRDER, Secretary, Shakespere Street, Burmantoft, Leeds.

HORTICULTURAL DINNER.—At a Meeting of Gentlemen interested in Horticulture, held at Anderton's Hotel, Fleet Street, E.C., on Thursday, March 22, Mr. WILLIAM PAUL in the Chair,

It was Resolved,—"That a PUBLIC HORTICULTURAL DINNER take place in London on THURSDAY, May 24 (during the week to be occupied by the International Horticultural Exhibition), in compliance with the wishes of a large number of London Horticulturists desirous of having an opportunity of meeting their friends from the country who will be in London during that week."

Those who intend being present are requested to communicate with the Secretary at once. Tickets, including wine, 10*s*. 6*d*. each.

RICHARD DEAN, Hon. Sec.,

8, Denmark Villas, Ealing, London, W.

The Gardeners' Chronicle.

SATURDAY, MARCH 24, 1866.

MEETINGS FOR THE ENSUING WEEK.

TUESDAY, March 27	Zoological	3½ P.M.
SATURDAY, " 31	Royal Horticultural Weekly Show, at South Kensington	12 P.M.

LEAVING the lawyers to deal with the legal questions involved in Mr. AUGUSTUS SMITH'S recent raid upon Lord BROWNLOW'S iron fencing, we need not hesitate to express our sympathy with Mr. SMITH'S object, whatever may be said of the means he took to effect it. Up to within comparatively a few years London was begirt with a chain of BREEZY COMMONS, which afforded fresh air, pleasant scenery, and a host of attractions to the denizens of our smoke-begrimed metropolis. What greater boon to members of the working classes of all denominations, than the means of sweetening the toils of labour, by an occasional ramble in the woodland glades of Epping, or the heathy dells of Wimbledon? We do not merely allude to those to whom such resorts had special attractions—the butterfly catchers, the beetle hunters, the Orchid lovers; we have not specially in view the joys of the botanical student when he alighted upon the fringed Sundew, the Sweet Flag, or other rarities

which Wimbledon did afford before the days of waterworks and rifle volunteers. These are classes for whose delectation it is possible, in a measure at least, to provide, even if our metropolitan forests and commons are absorbed. Thanks to excursion trains and museums, the wants of these enthusiasts may be partly supplied; and their zeal, as well as love for their favourite pursuit will overcome not a few difficulties. It is possible to gather the Drone Orchis on Folkestone Downs, to scoop out a glittering ammonite from the gault near the same town, and to return home laden with spoils from the coral rag, in little less time, and with little more necessary expenditure, than once it took to gather the Butterfly Orchis at Epping, or the Narthecium at Putney Heath.

The amiable folk therefore whose intense delight in their pursuit is of itself a sufficient recompense for the difficulties of following it, are not so much to be pitied in these days of encroachment, as are the less gifted denizens of our towns, who, with as keen a sense of enjoyment at finding themselves freed from the depressing effects of grimy London streets, crowded workshops, and pestilent habitations, have not the same all-absorbing passion for the details of natural history. Such persons revel in the sense of liberty they feel when let loose from their employ; they enjoy the pure air, the wide expanse, the ample prospect. Who can fully estimate the benefits, material and moral, from such opportunities of converse with beauteous, health-giving Nature? Who can fairly estimate the mischief that will be done if, now that each suburb has become in itself a town of large magnitude, the few open spaces that we still have are not left free from encroachment? Do our pastors and masters, and those in authority over us, imagine that in course of time, as the railways and warehouses drive more and more of the population from the central parts to the outskirts, that Finsbury Square will become a common, Moorfields again justify its name, and lively squirrels gambol on the trees in St. John's Wood? It would almost seem as if the authorities did think so. On the question of right on the part of the public to continue to enjoy as their own what has been practically theirs for centuries, we have nothing to say, but we do say that it will be an act of blundering, stupid cruelty to the next generation if steps be not speedily taken to preserve these open spaces, and to render them as inviolable as are our parks. On moral and sanitary grounds, nay even on the score of economy, we earnestly hope that the recommendations of the Select Committee appointed to consider the subject may be acted on, and that the necessary steps may be taken to "preserve the commons and open spaces within the metropolitan area."

MR. G. F. WILSON kindly placed in our hands a few days since specimens of a little SNAIL, which was living at the expense of his young Cucumber plants. We at once saw its resemblance to Bulimus Goodallii, a West Indian species, which has for many years abounded in the pineries of a nursery at Bristol, where it lives mostly at the bottom of the pots where they are plungedin the tan, as we ourselves have witnessed, but never preys upon the roots. The specimens were, however, so much larger than usual, that we did not like to trust to our own memory, and therefore submitted them to Mr. J. GWYN JEFFREYS, who tells us that they differ in no respect from the Bristol species, except in size. He was surprised indeed to hear of their attacking the Cucumber plants, as the species is generally supposed to be carnivorous. There are, however, many well-authenticated cases of allied molluscs being occasionally carnivorous, as well as herbivorous. LISTER reports a case in which the common large garden snail partially devoured a black slug, and we have ourselves seen instances of species when shut up in a box without food attacking each other. Some of the transparent snails referred to the genus Zonites, one of which is sometimes found in cellars, appear to be omnivorous; and this seems to be the case with the large cellar slug, which eats lard or other animal substances when it cannot find vegetables.

There is, however, a mollusc which occurs occasionally about London, belonging to the genus Testacella, and resembling a slug externally, except that it has a little shell near the end of the foot, which appears to be entirely carnivorous. It burrows in earth, following the worms in their course, or occasionally piercing laterally into their holes, and will devour one almost as large as itself. It never appears above ground except at night, which is the best time to look for it. When once it has fairly seized on its victim it is quite helpless, notwithstanding the bristles on its rings and its violent struggles; as the tongue of the Testacella is armed with hooked teeth, which effectually prevent its escape. When the Testacella has gorged its prey it lies quite dormant like a Boa after taking its food, and if the worm was too large to be devoured at once, when the portion which it has swallowed is digested, it will often swallow the remainder. It is occasionally found abundantly about London and Bristol, but is not very generally diffused, though from its subterraneous habits it may often escape notice. *M. J. B.*

—— THE calling into existence of local effort in behalf of the INTERNATIONAL HORTICULTURAL EXHIBITION has been attended with considerable success, for already the following influential committees are in active operation:—For Lincolnshire: Hon. Sec. Mr. D. LUMSDEN, the Gardens, Bloxholm Hall; for Bristol: Hon. Sec. Mr. JAMES R. GARAWAY, Durdham Down Nursery; for Oxford: Hon. Sec. Mr. W. H. BAXTER, Curator of the Botanic Gardens; for Warrington: Hon. Sec. Mr. W. BISHOP, the Gardens, Bewsey Hall; for Nottingham: Hon. Sec. Mr. E. J. LOWE, F.L.S., Beeston; for Derby: Hon. Sec. Mr. E. COOLING, Mileash Nurseries; for Leamington: Hon. Sec. Mr. JOHN H. HAWLEY, Brunswick School; for Hereford: Hon. Sec. Mr. N. WYNN, Midland Bank; for Hertford: Hon. Sec. Mr. E. R. FRANCIS, the Nurseries: and for Doncaster: Hon. Sec. Mr. JAMES TINDALL, the Gardens, Sprotbro' Hall. In Scotland three of these local committees are actively at work, viz., Glasgow and the West of Scotland: Hon. Sec. Mr. JAMES ANDERSON, Meadow Bank, Uddingstone; Elgin and the North of Scotland: Hon. Sec. Mr. JOHN WEBSTER, The Gardens, Gordon Castle; and Kelso and the South of Scotland: Hon. Sec., Mr. W. MEIN (Messrs. STUART & MEIN), Kelso. In Ireland two influential Committees have been formed, viz., Dublin, of which the Right Hon. the LORD MAYOR is Chairman; and Belfast, at which the Right Hon. Lord LURGAN is Chairman, and Mr. W. HOOKER FERGUSON is Hon. Secretary.

In the following places Honorary Local Secretaries have kindly volunteered to act:—Chelmsford: ROBT. WARNER, Esq.; Manchester: Mr. JOHN SHAW; Taunton: Mr. R. H POYNTER; Ascot: Mr. JOHN STANDISH; Chester: Mr. ARTHUR DICKSON (of F. & A. DICKSON & SONS); Bradford: Mr. W. DEAN; Ipswich: Mr. T. BLAIR, the Gardens, Shrubland Park; Coventry: Mr. W. MILLER, the Gardens, Combe Abbey; Redditch: Mr. JOHN GOULD; Leicester: Mr W. PENN COX; Huntingdon: Mr. JOHN INGRAM, the Nurseries, Huntingdon; Chepstow: Mr. JOHN PILLINGER, the Nurseries, Chepstow; and Jersey: Mr. C. B. SAUNDERS, Cæsarean Nurseries, St. Saviour's.

As evidence of the success of organisation of this kind we may mention that the following sums have already been announced by the Secretaries of the places named:—Glasgow and West of Scotland, 1257.5s.; Doncaster, 50*l.*; Bristol, 18*l.* 18s.; Ascot, 14*l.* 14s.; Warrington, 21*l.* 3s.; Chelmsford, 63*l.*; Coventry, 26*l.* 5s.; Manchester, 31*l.* 10s.; Oxford, 5*l.* 5s.; Derby, 21*l.* 1s.; Belfast, 36*l.* 15s.; Hertford, 10*l.* 10s.; Elgin and North of Scotland, 25*l.* 4s.

The various Horticultural Societies scattered through the country might, we think, have assisted the movement more zealously than they have done, and with advantage to their members, for the privileges of admission thus secured might have been distributed amongst them or given as rewards to the most deserving supporters. The Glasgow and West of Scotland Horticultural Society has set an excellent example of this kind by subscribing 25*l.*, and many others, we doubt not, would also find it advantageous to subscribe.

—— The following Programme, relating to the BOTANICAL CONGRESS which is to be held in connection with the International Horticultural Exhibition, has been issued, and we earnestly hope that all classes of botanists and horticulturists will do their best to render the meeting agreeable to their foreign guests. Englishmen are not likely to be wanting in hospitality, nor will those who were present at the two preceding Congresses readily forget the kindness shown them on those occasions, or omit to do what they can to show their appreciation of it:—

"The object sought to be obtained in the establishment of a Congress in connection with the International Horticultural Exhibition, is, to reciprocate as far as possible the courtesy and hospitality shown to British botanists and horticulturists by their continental brethren at all times, and specially on the occasion of the two preceding Congresses at Brussels and Amsterdam respectively. In this manner the Committee hope not only to promote and extend mutual feelings of cordiality and good will, but also to render service to Botany and Horticulture, by bringing into more intimate communication than has hitherto been done in this country, the students of the one, and the practitioners of the other, to the advantage of both. With these views the Committee have arranged that there shall be held two meetings of the Congress. The first to take place on Wednesday, May 23d, at 11 A.M., when Professor ALPHONSE DE CANDOLLE will read an inaugural address, copies of which will be circulated at the meeting in the English, French, and German languages. Other papers on matters relating to Botany and Horticulture (of which a Syllabus or abstract will be prepared and distributed), will be read, and discussion invited thereon. The second meeting of the Congress will be held on Thursday, May 24th, at 11 A.M. The meetings will be held, by permission of the Lords of the Committee of Council on Education, in the Raphael Cartoon Room at South Kensington Museum.

"Papers have already been promised by the following gentlemen:—Mr. J. E. HOWARD, Dr. F. MUELLER, Professor E. MORREN, Professor LECOQ, Mr. W. G. SMITH, Dr. SEEMANN, Dr. MASTERS, M. VAN HULLE, Mr. TUFFEN WEST, Dr. MOORE, Mr. A. G. MORE, Dr. SCHULTZ BIPONTINUS, Dr. SCHULTZ SCHULTZENSTEIN, Mr. W. BULL, Mr. B. CLARKE, Mr. JAMES ANDERSON, Meadowbank, &c.

"In addition to the morning meetings of the Congress, there will be a grand banquet at the Guildhall on May 22d, to which a large number of eminent Botanists and Horticulturists and delegates from Foreign Governments and Societies have been invited as guests. Arrangements are also being made for holding two Conversazioni, one on the evening of Wednesday, May 23d, the other on Friday, May 25th. The meetings of the Congress will be free to all visitors provided with tickets, to be had on application to the Secretary. Invited guests will receive a card of admission to the Exhibition, the Banquet, the Conversazioni, and the meetings of Congress. Subscribers will also receive certain privileges according to the amount of their subscriptions. Gentlemen wishing to take part in the proceedings of the Congress are requested to communicate without delay with the Honorary Secretary; and it is especially requested that those who intend to read papers on the occasion should send the titles of such papers (together with short abstracts of them) to the Secretary before the 28th of April.

"A volume of Proceedings will probably be published subsequently to the meetings.

"The Committee will endeavour to arrange with the several Railway Companies so as to secure a reduction in the cost of transit of passengers and of objects for exhibition; and visitors from the Continent are reminded that during Whitsun week unusual facilities will be afforded in the way of low fares by the English Railway Companies.

"Further particulars as to future arrangements, and notice of any modification of the present scheme, will be published when requisite. In the meantime, intending visitors desirous of fuller information on matters relating to the Congress are requested to apply to the Congress Secretary; and on matters connected with other Departments of the Exhibition, to either of the Secretaries, Mr. THOMAS MOORE, F.L.S., or Dr. HOGG, F.L.S., at the Office, 1, William Street, Lowndes Square, London, S.W. *Maxwell T. Masters, M.D., F.L.S., Hon. Secretary, Botanical Congress, March, 1866.*"

—— A meeting of gentlemen connected with Horticulture, convened by circular, was held at Anderton's Hotel, Fleet Street, on the 22d inst., Mr. W. PAUL in the chair, to consider the propriety of holding a public HORTICULTURAL DINNER in May next, during the week fixed for the holding of the International Horticultural Exhibition. Among those present were Messrs. C. LEE, T. RIVERS, S. HIBBERD, B. S. WILLIAMS, T. F. WILDING, C. EDMONDS, D. CUNNINGHAM, and Dr. HOGG. Letters were also received from several gentlemen regretting their inability to be present, but expressing their cordial concurrence in the proposed dinner. It was unanimously agreed: That a public dinner, as proposed, should take place on Thursday, the 24th of May next, the place and time to be hereafter settled. That the cost of such dinner should be fixed at 10*s.* 6*d.* per head, including wine. That the dinner should be publicly announced by advertisement in the principal gardening papers; and that the following gentlemen should constitute a Sub-Committee to make the necessary arrangements, viz., Mr. CHARLES LEE, Chairman; Messrs. B. S. WILLIAMS, C. EDMONDS, T. F. WILDING, G. F. MESTON, and Mr. R. DEAN, Honorary Secretary. As affording to horticulturists visiting London at the time of the Exhibition, an opportunity of meeting each other in a genial way, we regard this proposition as well-timed and appropriate.

New Plants.

330. TRICHOCENTRUM CORNUCOPIÆ. *Lind. & Rchb. fil.*

Vix. T. purpureo: labello pandurato retuso cuneiformi disco subcalcitrato carinis geminis velutino a lobi vertice disco in tuberculatis, columnæ brevis auribus deltoid rudibus lobatis serratis.

Sepala et petala oblongo-ligulata acuta viridula. Labellum cuneato panduratum disco crassum. Columnæ purpureum apiculatum alatum. Columna luteo alba purpureo punctulata.

A new little epiphyte, introduced from "Southern America" by Director Linden. It is a botanical

curiosity, very interesting for botanical gardens, but of no value for amateurs. We have named it "cornucopiæ," in allusion to its neatly curved spur, but might as justly have called it "T. cornu miseriæ," in allusion to its poor looks. The flowers are of a greenish-white colour. *H. G. Reichb. fil.*

EXTRACTS FROM THE JOURNAL

OF MR. JOHN GOULD VEITCH,

DURING A TRIP TO THE AUSTRALIAN COLONIES AND THE SOUTH SEA ISLANDS.

(Commenced on page 243.)

August 18, 1865. *The New Hebrides Group.*—We are now fairly in Melanesia, and amongst the dark-coloured, woolly-headed Papuan races. Almost all traces of civilisation have been left behind, for as yet missionaries have made but little progress amongst the Papuans. The inhabitants of the New Hebrides are looked upon as being peculiarly savage. They are almost all cannibals, and many of their heathenish practices are most revolting. The old men are killed as soon as they become a burden, and few women live out their days. It is also a common practice to kill female children. The greatest hostility exists between the different tribes, often between neighbouring villages. The weapons, as in Polynesia, are spears, clubs, and bows and arrows; many of the latter are poisoned. No one goes abroad unarmed. All these causes account for the rapid decrease in the population of the Melanesian Islands which is going on. The people of the New Hebrides are in every respect lower than any we had yet seen, being small and decrepid, and living in mere hovels. Their only occupation is the planting of a few Yams, Arums, and Bananas to supply themselves with food. They can scarcely be said to wear any clothing. The men seem brave, but the women are shy, and hide themselves on the least approach of a white man. The Melanesian languages differ altogether from those of Polynesia; the latter all emanate from one common stock, each group having its peculiar dialect; while those of Melanesia are endless, each island having its own language, and in some cases several; I heard of one where six different languages are spoken. Bishop Patterson, the Melanesian Missionary Bishop, has already discovered 40 distinct languages. All this makes European intercourse with these people difficult. The New Hebrides are of volcanic origin, mountainous, and very picturesque. At Tanna there is a volcano still active. The mean temperature is from 78° to 80°. They doubtless present a rich botanical field, and it is much to be regretted that one cannot travel safely through them.

All of them abound with Sandal-wood of the best quality. The vegetables are much the same as those of the eastern islands. Fruit is scanty; Bananas and the Papaw Apple (Carica Papaya) may be said to be all. The timber is small; it is even difficult to find trees large enough to make good-sized canoes. The Cocoa-nut and Bread-fruit abound throughout all. We called at four islands of this group, viz., Aneiteum, Tanna, Erromango, and Fató, or Sandwich Island.

Aneiteum rises to an elevation of 2800 feet. The population scarcely exceeds 2000. The vegetation is most luxuriant, and very different from that of the eastern islands. I consider Aneiteum a rich botanical field, and one likely to produce many ornamental plants which would be highly valued in European gardens. Mr. M'Gillivray found 100 Ferns. I met with six or eight beautiful new Crotons, two new Palms, several pretty terrestrial Orchids, some distinct Dracænas, a red-foliaged Musa, several Aroids and Pandanus, some with pretty variegated foliage. Parasites are very common. Had time permitted, I might doubtless have found more, but as we only just touched at these places it was difficult to form large collections.

At *Tanna* we anchored in Port Resolution. No one could land. A missionary was driven from the island some three months since, and lost all his property. The Commodore demanded satisfaction of the natives, which being refused, the villages were shelled, and the houses, crops, and canoes destroyed. After this lesson the chiefs sued for peace, and promised to respect white men in future. It was very tantalising to be obliged to remain on board ship two days, in sight of a magnificent island teeming with vegetation, without being able to land.

Erromango was not much better, for the natives openly avow their hatred to white men, and some time since killed and ate the resident missionary and his wife. It was on this island that the Rev. Mr. Williams, the founder of Polynesian Missions, was murdered. I got on shore for a few hours, and walked a mile or two along the banks of a good-sized river, the largest we had seen since leaving Sydney. The vegetation of this island is not very luxuriant. The greater portion is open grassy country. It produces beautiful Sandal-wood (Santalum Freycinetianum). I found some pretty Eranthemums, Amaranthuses, and Crotons during my ramble; but my time being short, I saw scarcely anything of the place.

Fatí, or *Sandwich Island*, is in my opinion the finest of the group; it is 35 miles long, possessing two of the best harbours that we had seen since leaving Sydney. The natives are a finer race than those of the Southern Islands, but equally savage. Most of the men cut large holes in their ear lobes, in which they put shell and Bamboo ornaments; they also wear tortoiseshell nose-rings. I was allowed on shore for three or four hours only, during which time a native chief was retained on board as a guarantee for my safety. The natives treated me very well; several of them accompanied me into the woods and carried my collecting cases. I saw but very little of the island, and found only one or two interesting plants—a pretty Elæocarpus and Bœhmeria. Varieties of Canna indica are perfect weeds.

August 22, 1865. *Banks' Island.*—We proceeded here to meet the Bishop of Melanesia, who had promised to accompany us to the Solomon Group. Bishop Patterson speaks many of the Melanesian languages; without his guidance we could scarcely have landed on any of the northern islands. Banks' Island is the head-quarters of the Melanesian Mission. The natives, although far from being Christians, are quiet, and treat white men civilly; they are quite naked, and their dwelling-places scarcely deserve the name of sheds. The island is excessively unhealthy; it is said to be a rare thing for two days to pass without rain. I spent a day on shore. Everything bore signs of extreme moisture; during a walk of five or six hours, we had to cross five streams, or swamps, some of them up to our armpits. I am told that all the level land is similar to this. Taro (Arum) seems to be almost the only food. During my short walk I noticed five distinct Palms, numerous Ferns and Mosses, but no Orchids; a fine Dracæna, in the way of terminalis, with half the foliage white; several kinds of Coleus, terrestrial and parasitical Aroids in great variety, two or three species of Croton, several of Pandanus (some growing 30 feet high), and 5 or 6 varieties of Chinese Hibiscus. Beautiful specimens of Barringtonia speciosa and Calophyllum Inophyllum were scattered along the sea-beach; the trunks of the former are generally covered with parasites.

(To be continued.)

TREATMENT OF CONIFERS.

IT has frequently been a matter of speculation to me to know what becomes of all the young Conifers which are being constantly advertised in your Paper, and also of those to be seen growing in nurseries. Why, if only one-half for instance, of the Wellingtonia seeds which have passed through Mr. Stevens' hands since that fine tree was first introduced are now alive and growing, a forest might be created which in time would rival even those of Northern California itself. But where are all these (I may say) millions of young Wellingtonias to be found? How seldom do we hear of or see one growing well and healthily. The same may also be said of one or two other choice Conifers; take for example that noble plant the Araucaria imbricata—who is there who can point to 20 thriving specimens (out of nurseries) which he remembers to have seen? So, again, with that truly magnificent tree the Deodar, and what, let me ask, can be more stately and beautiful than a flourishing and healthy specimen of it? and what better calculated to enhance the beauty of our fine old English parks? Quick-growing, and hardy, and by no means particular as to soil, it will soon, when properly planted and treated, form an object of admiration to every beholder. Yet, comparatively speaking, how seldom do we see any of these trees doing well. On the other hand, who cannot bring to mind innumerable specimens of them presenting a small, starved, stunted, miserable aspect; and when the owner's attention is drawn to them, he replies, "Oh! my soil don't suit them"—'tis either too dry or too wet, something or another. Let me ask why is this? Doubtless there are differences between our climate and that of the respective native countries from which these trees come, that may influence, either for good or evil, their after development or ultimate timber value; but that there is in many parts of England no real climatic influences which can prevent their healthy growth is clearly demonstrated by the vigour and beauty which they exhibit in such places as Elvaston Castle or Dropmore. One of the principal causes of ill health in Conifers is doubtless the practice of either keeping them altogether in pots in nurseries, or what is worse, selling plants from the open ground, which, when planted out in the nursery, were turned out of pots, having been kept in them for years without their roots being spread out in a natural manner. Under the circumstances first mentioned, if the plant is young and the planter has the courage, he may, with time, patience, and dexterity, disentangle and spread out the roots when planting, and then, if circumstances, such as time of year, and suitableness of weather, are in his favour, the plant may live, and ultimately do well; but in the latter case his chance is hopeless—he had better keep his money in his pocket, for even if such a plant should grow for a few years, it is certain sooner or later to be blown down. An evergreen tree, like a Conifer, feathered to the ground with branches, must, if badly rooted, some day yield to the storm, and as regards nourishment, the roots as they increase in bulk and become woody from being coiled and twisted, strangle and kill each other, and fail from sheer want of capability to supply the plant with food; it may, therefore, starve in the midst of plenty.

Nearly 20 years of hard-earned experience and much bitter disappointment have impressed the truth just alluded to firmly on my mind. In 1851, being in London, I visited a nursery not far from town for the purpose of purchasing a specimen Araucaria imbricata. I had been a customer there previously, and I was further attracted by the proprietor advertising that his plants were grown in the open ground, and were free from the evils attending pot culture. I was shown what was called the five-guinea quarter, and was told, as I had been a customer, and had nearly 300 miles of carriage to pay upon my purchase (for I was then living in Durham) that I might select any plant there for four guineas. I chose one to all appearance as healthy and robust as I could desire. It was sent me, and arrived safely; it was carefully planted, staked, watered, and protected for the first two winters. It grew pretty well for two or three years, but one Christmas day, after a very stormy night, my gardener came to tell me that my Araucaria had been blown down, and that it was almost out of the ground. I told him to set it up again and secure it in its place as well as he could until the spring, when I determined either to kill or cure it. Upon examination I found that it had not only been in a pot, but that it had been potted three times, and that without even so much as removing the crocks and potsherds which had been used in the usual way for drainage. We found the roots hopelessly coiled, twisted, and pot-bound. I did what I could, and had as many of the roots as was possible pulled out, disentangled, shortened to a clean cut where injured, and spread out in a natural position. The plant grew, and I have no doubt that if it had been in a more favoured portion of the country it would in time have made a tree, but the climate of Durham is too cold and too smoky for Conifers, and the very exceptionally cold winter of 1860–1861 killed it.

I can also quote a similar instance which has occurred to me in my present residence. When I purchased this small place I did my best to form a collection of Conifers. The climate, soil, and situation are all most favourable to them, and generally I have found that they do exceedingly well with me. On one occasion I was planting a Deodar, sold to me as a "tubbed" plant, the tub being more correctly speaking a crate, through the open bars of which the roots were supposed to spread. Great stress was laid upon this supposition, and a proportionally high price was asked. In planting, the ball of earth was accidentally broken, and I found that I had only got after all a pot-bound plant. It had evidently been for years in a pot before being "tubbed," and when this operation was performed on it, not a root had been disturbed. It had simply been turned out of its pot, put into the tub or crate, and the latter put into the ground. Since I have been here, now six years, I have lost from the same cause from 18 to 20 plants of Cupressus macrocarpa, each measuring as many feet in height.

Let planters and purchasers of Conifers allow me to assure them that the very first and strongest reason why so few healthy plants are to be seen is that nine out of ten are pot-bound when planted. I have in my own mind no doubt that half if not all the "Fungus" we hear so much of as destroying so many plants, arises primarily from this cause; the roots strangle and kill each other as they grow, and the dead portions encourage the growth of Fungus. Why should not our choice Conifers do as well and grow as quickly as common Spruces, Larches, Scotch and Silver Firs?—simply because the former are kept in pots, the latter are raised and reared in the open ground.

Nurserymen are, however, not the only persons in fault in reference to unhealthy Conifers. Let them do ever so justly and honestly by their plants, unless equal justice is done them by the purchaser after they leave the nursery, failure must still be the result. There are many ways of planting: we plant a tree one way, a gate-post another; we ought to make a wide distinction between the two, though I hear many adopt the latter fashion with regard to trees. How can a plant grow under such circumstances? Many men think nothing of giving a guinea or more for a plant, but begrudge a quarter of one to prepare a proper place for it.

The best season for planting all Evergreens, and especially Conifers, is the months of August and September. The place in which they are to grow, if they are intended to form single specimens, should be thoroughly prepared by trenching and digging to the full depth of the natural soil, and in extent at least from 14 to 15 feet in diameter, keeping the surface soil on the top, but also well breaking up the subsoil to the depth of from 18 inches to 2 feet; moreover, if the situation is at all damp and the soil retentive, it must be thoroughly drained. I am not an advocate for adding fresh soil except in cases where the

natural soil is exceptionally poor; then of course a few cartloads of good sound sweet loam and the same quantity of charred vegetable refuse may with advantage be incorporated with the natural soil of the place, and the tree carefully planted in the middle, staked, well-watered, shaded from the sun, and syringed overhead once or twice a day for two months, or until there is fear of frost. Of course the syringing may be omitted on days when it rains, and in addition I would if practicable shelter the plant for the first winter; and I can think of nothing better for this purpose than what are called in this neighbourhood wreath hurdles, or in some parts of the country wattle hurdles. These being set on end and fastened to stakes will effectually shelter any plant up to say 5 feet in height, and may be removed in spring as soon as the growing season has set in, when, if the weather is dry, or rather unless it is very wet, the plant should have two or three good soakings of water. A plant right at the roots and so treated will amply repay in a very few years the little extra trouble which may have been expended upon it.

In conclusion, let me recapitulate that a pot-bound condition is the worst in which a plant can be; that because a tree is seen growing in the open ground, it by no means follows that the evil does not exist; and that when a healthy plant right at the roots is obtained, it must be carefully and properly planted and tended. *C. F. P., The Grange, Kingston, near Taunton.*

TABLE DECORATIONS.

IN bygone days the characteristics of a pleasant dinner were good food, good wine, and good society; but, though these are still indispensable, we now-a-days want something more. The solid joints which delighted our grandfathers have not such charms for us; heavy port and luscious brown sherry are looked upon in the same way as curious coins are when contrasted with current ones; in both food and wine our taste is now for lightness and variety. In all this we are disposed to see an advance in civilisation, inasmuch as not only is the palate more educated, but the eye also takes greater part than formerly in the thorough enjoyment of a social meal. The delicately-flavoured made-dishes and sweets, which constitute the chief part of a dinner, are arranged and ornamented in a manner which, by giving pleasure to the eye, increases the satisfaction with which the palate appreciates them. The variety of these which are now served could not be offered as hot as they should be, if they were all placed upon the table, as in olden time, when a dozen enormous silver dish-covers were regarded as indispensable; and it is this banishment of the dishes of meat from under the noses of the guests which has afforded an opportunity for the arrangement of fruit, flowers, and other ornamental objects.

It is an old saying, and no less true than old, that a well-dressed man will pass muster everywhere; by which is meant that, if his clothes are neither in advance of nor behind the fashion of the day, and if there be nothing to specially attract the eye in the fit or colour of his garments, he will not be exposed to the critical remarks of others. But this is not all. The best-dressed man in Hyde Park in the afternoon, would not be considered so if he wore the same costume at a ball in the evening, or in the hunting-field on the following day. When, therefore, we speak of a well-dressed man, we refer to one whose attire is suitable to the occasion.

Let us proceed to apply this to dinner-table decoration, and to remark upon the much-disputed question of what constitutes a well-dressed dinner-table.

There can be but little doubt that a very large majority of table decorators regard their occupation as the art of grouping the greatest possible quantity of fruit and flowers in the most showy manner. We presume to differ with them on this matter, and to regard table decoration as worthy of being treated as a branch of the fine arts.

If eating and drinking were the sole object of a dinner-party, it is obvious that the presence of flowers would be superfluous. But inasmuch as the real object is social enjoyment, and not merely "taking in coals to keep up the steam" (as our American cousins expressively phrase it), it becomes imperative that nothing should in any way interfere with conversation, or be offensive to the eye or nose.

Now, obstructions to view, and consequent interference with conversation, between any two persons sitting at a table, are amongst the most frequent of what we venture to call offences against good taste. On a recent occasion we were entertained most luxuriously by a wealthy neighbour. It was a party of 14, all pleasant people; the table was a long one, bearing in its centre a massive epergne, raised upon a stand, and crowned with a very heavy basin of very heavy flowers. On either side of this centre-piece were two very handsome silver wine-coolers, each containing a grand plant of Adiantum cuneatum in a No. 16 flower-pot. Two better grown plants probably were not often seen, and very proud of them was their worthy owner. But little did he think of the annoyance which they and the epergne were inflicting upon his friends, for while he, from his presidential chair, could see and converse with every one but his better half, without swaying either to the right or to the left, his guests were literally divided into two dinner parties by a wall of solid silver. We confess to our chagrin at seeing a charming creature taking her seat opposite to ours and disappearing from view for a couple of hours—"though lost to sight, to memory dear;" and we leave our readers to conceive the amount of satisfaction with which we heard the merry laugh and repartee of our "superior moiety," without being able to see with whom she was conversing.

With but few exceptions, there should never be, in our judgment, anything to interrupt the view across a dinner-table. The line of sight may be said to range from the height of 15 to 20 inches above the table. Low dishes or stands of fruit or flowers should therefore never exceed 15 inches in height, while vases and other tall ornaments should have slender stems, and none of their contents should droop or hang over to a lower point than 20 inches from the table. The line of sight will thus be free, and the general conversation be uninterrupted—by inanimate objects at least.

In thus dictatorially laying down the law for the implicit preservation of the line of sight, we would not be misunderstood by its being supposed that we should approve of any arrangement which would render these lines of height, viz., 15 and 20 inches from the table, markedly noticeable. As little should we speak approvingly of the head of hair which had been cut with the aid of an inverted slop-basin. While this space must be left open, it is both unnecessary and undesirable that its margins should be observable; and further, it is a relief to the eye, without causing any obstruction to the view, that this open space should be here and there varied by delicate climbers, drooping from the taller vases. For this purpose we know of nothing so lovely as the young branches of the Climbing Fern (Lygodium scandens); next to which come the Selaginellæ, Cissus discolor, Virginian Creeper, and similar graceful foliage. In the same way the stringent regulations laid down, enforcing the preservation of the lower line of 15 inches, may be agreeably relaxed to the extent of the occasional peeping up of a spike or blade of Grass, or a spray of Gleichenia, or some other elegant and delicate Fern. In short, the range of sight may be intersected by fine stems and delicate foliage to any extent short of interruption or confusion of view.

Such an arrangement being suitable to the purpose for which a dinner party is given, would go thus far towards being pronounced a well-dressed table; while the decorations of our friend with the magnificent wine-coolers (which ought to have found a place on the side-board, or anywhere but on the table) were a mistake—nay, more, they were a nuisance. *T.*

Home Correspondence.

Rookeries.—I have lately seen several suggestions in your columns relative to establishing a rookery, but none which I think so good as the following:—As soon as the young rooks are nearly fledged, apply to the owner of the nearest rookery, and if he will give permission, cut the branches on which the nests are fixed, and take the branches, nests, and birds to the trees where it is wished to form the rookery, and fasten them with strong cords; the old birds will follow them, and feed them as though they had never been moved, and you may depend upon the young birds building there the following season. I have seen this answer for a distance of 2½ miles. *R. C. Strelley, Oakenthorpe, Alfreton.*

Bird-feeding Trees.—This expression, used by "J. Sm., Kew" (see p. 245), in relating the story of an Arbor-vitæ growing on a brick wall, induces me to ask of him, or of any other of the staff at Kew, the favour of a list of Yew, Elder, and other bird-feeding trees, not exactly growing on walls, but in ordinary situations. My principal object is to ascertain what resources may be available here in the south, for supplying the food of black game, compared with the profusely fruiting Service and Mountain Ash berries of the north. I think, also, that the general question of wild or other bird-fruit would form an interesting and far more extensive chapter than may be generally surmised. For instance, I have myself become aware that the berries of the Cotoneaster microphylla have afforded sustenance to many small birds this winter; and, keeping primarily in view the list of winter-fruiting shrubs, suitable for acclimatising in our wilds of Dorset, Wilts, Hants, &c., and thus sustaining black game amongst us, I should feel indebted to any of your correspondents for the results, and at the same time for their observations on the bird-feeding products of this country. *W. Wallace Fyfe, Dorset, March 19.*

Propagation of Rhododendrons.—Your answer to a correspondent (see p. 224) respecting the propagation of Figs, has induced me to send you the following fact:—About 12 months ago I cut down some Rhododendrons (ponticum); in one of the plants I discovered what I considered to be an old bird's-nest, the shape of which was almost perfect; on examination, however, I found that it was not the original nest, but a bundle of fibres emitted from the surrounding branches. I afterwards found another old nest in precisely the same condition; both were 6 feet or more above the soil. I cut off the branches just below the "nests," and planted them; they are now healthy plants, with flower buds on them. Could not some such plan, therefore, as you recommend for the propagation of Figs, be practised in reference to raising quickly large plants of the better and scarcer kinds of Rhododendron? And would it not, if found practicable, save much of the disappointment which is now experienced in the case of grafted plants? For after the plants have acquired a good size, we often find that the graft suddenly dies down to its point of union with the stock. *Hy. Mills Enys, Penryn.*

Nettle Spinach.—Having read your remarks on Water-cresses (see p. 193), may I beg to direct attention to another vegetable which Nature has given us in equal abundance—I allude to the Nettle, which I have eaten as a substitute for Spinach. The fresh young leaves are stripped off the stalks and boiled in the same manner as Spinach, from which they differ only in not possessing an equally good flavour. *B. B. C.*

Figs for Small Gardens.—Your correspondent Mr. Simpson (see p. 244), seems to have forgotten that he lives near the sea, so favourable to the growth of the Fig tree. If he would make a tour round the southern coast of England he would find large standard Fig trees common enough. At Tarring, near Worthing, are some very old and large. No such trees can be found in inland districts, although wall Fig trees are often found of large size. There is indeed no certain method of growing Figs in the interior of the country, unless against walls or under glass. Half-standards or bushes in the open borders would probably bear and do well, if we had regularly such summers and winters as the last, but I need not say how rare such seasons are. In winters such as we generally experience, every fruit on a half-standard Fig in the open ground in inland counties would be killed, unless the tree were taken up and housed. *T. R.*

Ailantus glandulosa.—Is there any true morphological relation between the samaræ or winged fruit of this, and the little gland imbedded in the margin of the leaflets? The outward resemblance is somewhat striking. *G.* [There is certainly a close resemblance between the gland on the margin of these leaves, and a rudimentary ovule on the margin of a carpel. Has our correspondent examined these glands microscopically?]

Gardeners' Wages.—Your correspondent of last week has fallen into an error respecting the length of time the wages of 15*s.* per week have been paid to gardeners in the employ of W. Rollisson & Sons, of Tooting. On reference to the books I find that 15*s.* per week has been paid for over 60 years. I may also state that the wages paid to gardeners on contracts of new work, are considerably higher. *W. G. C.*

The Chiswick Trial of Peas.—In the Royal Horticultural Society's Report on their trial of Peas, published in the *Gardeners' Chronicle* of February 24, I find amongst other varieties my Pea figuring with a character most contrary to that which myself and every one else have represented it to possess. "Essex Rival could not be distinguished from the ordinary Early Frame." How is this to be accounted for, when not a particle of similarity exists between the two? The seeds for trial, which are represented as having been obtained from their original sources, were not in this case supplied by me: hence I apprehend the error, which has caused no little dissatisfaction, and, moreover, leads to remarks such as are made by "F.R.H.S." against testimonialised subjects generally. I beg to inform "F.R.H.S.," whose allusions undoubtedly refer to Essex Rival, that ere I suffered my Pea to go before the public, I submitted it indiscriminately for trial and cultivation, not knowing whither it went; but after the season was over, I found it had been in the hands of men of great practical experience, whose high honour and integrity would not have allowed them to represent "anything" approaching to fraud or dishonesty. Being myself an amateur only in horticultural pursuits, I knew of no other plan whereby to convince the public that this Pea was worthy their patronage, than by submitting testimonials of the most genuine character; and I have not adopted any measure or language calculated to "puff" an article which I am now more than satisfied is highly appreciated by the public. *Thos. Eley, Sible Hedingham.*

Bale Ghool.—Can any of your correspondents tell me what is the name of a Jasmine-like plant, known in India by the local name of Bale Ghool, or Bale plant? *B. Goodbold.*

Foreign Correspondence.

JAMAICA BOTANIC GARDEN.—The following are extracts from Mr. Wilson's last report on this Garden, as presented to the Governor of the Island:—"I again embrace the opportunity of bringing to your notice a number of plants in this department commercially or economically valuable, taken but little or no advantage of by the general public.

I refer to the Sarsaparilla, Vanilla, Cinnamon, Nutmeg, Guinea Pepper, Long Pepper, the African Palm-oil Plant (Elæis guineensis), dye-woods, coir, and a variety of fibre-producing plants, in value from 16*l.* to 280*l.* (?) per ton, constitutionally adapted for a diversity of soils and climate, from the arid sands to the humidity of the higher mountains. The products of these plants are sources of wealth in other parts of the tropics, and ought to produce corresponding results here, where they are found to luxuriate without culture. I may instance the plant which produces the Palm-oil (Elæis guineensis) of Western Africa, now yielding to that continent a source of wealth equal to that of the slave trade in its best days. This Palm, unlike the Cocoa-nut, will thrive inland, where it is frequently found, having been dispersed by the John Crows, who feast on the oleaginous pulp enveloping the seeds. Dye-woods deserve special notice. The Sappan realises three times as great a price as Logwood, while its growth is matured in half the time, with but little choice of locality. The Camwood is the most valuable of all dye-woods, but requires more attention in establishing it. The market price ranges from 23*l.* to 30*l.* per ton. The only known habitat of this plant is Sierra Leone. I have 300 of these plants on hand for distribution. The Nutmeg and Cinnamon have been freely distributed for years past, and have arrived at seed-bearing maturity. The Sarsaparilla, for which there is an increasing demand, would repay culture handsomely in waste lands of a loose friable nature. But however valuable the cultivation of these plants may be found elsewhere, they will only be so here in proportion to the industry and intelligence of the community making use of them. It is not to be supposed that adults will take to the cultivation of plants they are comparative strangers to, but they may be speedily and successfully brought into notice and culture through the agency of reformatory, industrial, and parochial schools throughout the island; such employment, combined with moral and religious training, would tend to establish habits of industry and forethought in the rising generation, resulting in healthy and profitable employment in after life, conferring lasting benefits on the country.

"The Cinchona plants continue to thrive vigorously; and in October last, one of the plants of Cinchona succirubra (red bark), produced flowers, being then three years and six months old (from the time it was planted) and every succeeding year will rapidly increase the fructification of these trees, as the climate they are in appears to be as favourable for their development as can be desired; and this, as it would appear, and which has been tested, depends as much on a climate generally moist, and where no protracted periods of dry weather occur, as it does on altitude. I find it stated that in Ecuador the red bark plants have been found growing at 1000 feet altitude, and at 3000 feet, where the climate is very moist, they arrive at the greatest perfection, The grey or Peruvian barks require 5000 to 7000 feet to arrive at perfection. The progress of these trees in Jamaica will be better understood by giving their present dimensions of growth, which are as follows:—Cinchona succirubra measures in height 10 feet 9 inches, and in circumference of stem at base, 10 inches, having 24 primary branches. Cinchona nitida: height of tree, 9 feet 6 inches; circumference of stem at base, 7 inches, with 17 primary branches. Cinchona micrantha: height of plant 9 feet 6 inches; circumference of stem at base, 6¼ inches, with 14 primary branches. The above statement is an index of how these plants may be expected to thrive here, and to arrive at maturity in a climate suited to their constitution: and I have proved by experience that a generally moist one is equally as suitable for them as altitude, more particularly so where no protracted periods of dry weather occur. These plants may now be increased successfully by cuttings, in the hands of an experienced propagator, in a congenial climate; but I must remark that the increase of a general collection of plants by cuttings is an art with which but few horticulturists are thoroughly conversant, and on which will depend future results."

Societies.

ROYAL HORTICULTURAL: *March* 20.—Lord H. G. Lennox, M.P., in the chair. After the election of 21 new members and the affiliation of 7 Societies, including the Royal Horticultural of Ireland, the usual announcement of awards and of donations was made, and the Rev. M. J. Berkeley offered a few remarks on the different subjects exhibited. After alluding to a fusion of the spikes of Odontoglossum hystrix, similar to that which sometimes occurs in Asparagus, he adverted to a fine specimen of the Lizard Orchis, concerning which he had received a communication from Mr. G. C. Oxenden. Attention was then directed to a new double-flowered variety of Fern-leaved Primula from Messrs. Windebank & Kingsbury, of Southampton. Mr. Berkeley then alluded to certain anomalies in the structure of Primulas, in connection with which he stated that a perfect flower of Clarkia elegans had been observed by himself growing from the side of a petal. Sonchus platylepis, a plant of which was shown by Mr. Wilson Saunders, was stated to be infested with Orobanche minor, which defied all attempts at displacement. If, therefore, it was remarked, cultivators were made acquainted with the plants on which such parasites thrive best, as in this case, the extreme difficulties attending their growth under artificial treatment would be greatly diminished. A specimen of Chloranthus inconspicuus was exhibited, and it was mentioned that its flowers are used by the Chinese for flavouring tea. Dammara Moorei, a tree from New Caledonia, received attention, as did also a section of a pendulous branch of Pinus Lambertiana, cut from a tree recently felled in the Society's Garden at Chiswick. In this the wood on the lower side, measuring from the pith to the outside, was 8½ inches in thickness, while that on the upper side, measuring from similar points, was only 1½ inch. The greater deposit of woody matter on the lower side it was stated might be partly accounted for by gravitation, but there were other conditions of structure which were probably attributable to some other cause, such as the preponderance of branches on the lower side. A little West Indian Mollusc that had been found to be injurious to vegetation, both at Weybridge and Bristol, then occupied attention. Of this an account will be found in another column. While speaking of the white variety of Cucurbita melanosperma, it was mentioned that M. Naudin had found that Cucurbit at Paris to be perennial, while further south it produced hard stems, lasting for years, and extending many yards in length. The difficulty of growing certain kinds of Cucurbits was stated to be an interesting point in the theory of horticulture; for although London was nearly as warm in the summer time as Paris, yet Cucurbits succeeded better at the last-named place than about London. It was conjectured that light played as important a part in their cultivation as heat.

Mr. Bateman then directed attention to the most attractive object in the room, viz., the Amherstia nobilis, after saying a few words about the Orchids and one or two other plants that were exhibited. The poisonous qualities of Andromeda floribunda, a well-known ornamental shrub from the Himalayas, were alluded to in the columns of the *Agricultural Gazette* last week (see p. 255). Two years ago Mr. Bateman had his suspicions aroused as to its being poisonous, by a goat which had eaten of it having been taken, as it were, in an epileptic fit; more recently, however, all doubts that may have existed on the subject were dispelled by two cows belonging to a farmer in Cheshire, which had eaten some withered branches of it, being seized apparently by rinderpest. Of these, one died, the other recovered. Care must therefore be taken to keep cattle out of the reach of this shrub, whether in the shape of dead branches or in a living state. Concerning Orchids, it was mentioned in reference to Odontoglossum radiatum of Professor Reichenbach, and O. hystrix of Mr. Bateman, that these two names must, it was feared, for the future be extinguished, as the two supposed new species just mentioned do not appear to be specifically different from the O. luteo-purpureum of Lindley, a fine specimen of which was shown by Messrs. Backhouse In illustration of the difficulties which surround the correct determination of species when first introduced, a weakly example of Dendrobium luteolum, with one flower on it, from a small plant just imported at Kew, and a fully flowered spike of the same plant from the excellent collection of Orchids at Meadow Bank under the care of Mr. Anderson, were produced. From the last-named collection there was also sent a pure white variety of Lycaste Skinneri; and specimens of Epidendrum rhizophorum, Lælia flava, and other Orchids, to which allusion was made. A weakly plant of Odontoglossum Alexandræ, with a few flowers on it, was shown by Mr. Robson, gr. to G. Cooper, Esq.; but Mr. Bateman stated that on a plant belonging to Mr. Patterson, of Glasgow, he had seen as many as seven blossoms on one spike. The name Bluntii, as in the case of the Odontoglossums mentioned above, must, it was stated, be dissociated from the plant which bore it. An example of the well-known Dendrobium speciosum was furnished by Mr. Buller, of Strete Raleigh, Exeter, who stated that he had flowered it in a warm greenhouse in which Pelargoniums are kept. The only secret in regard to its successful cultivation was, he said, not to shade it, but on the contrary to let it have as much light as possible. Mr. Buller stated that at Kew he had seen D. Hillii, and he could detect no difference between that and speciosum. The last was, however, found among rocks, whereas Hillii grows on trees. In reference to D. macrophyllum, a plant of which was shown, Mr. Bateman took occasion to remark that the so-called D. Dayanum of our gardens was none other than the true D. anosmum of Lindley, and that the plants which had of late years usurped the latter name were nothing but varieties of D. macrophyllum. From Mr. Marshall came what was called Dendrobium thyrsiflorum, probably a form of D. densiflorum; and from Mr. Wilson Saunders came Pleurothallis dichroa, a plant more remarkable for singularity of structure than for real beauty. As regards Orchids that last long in bloom, Mr. Bateman said that a plant of Angræcum eburneum, which had been in flower before Christmas, was only just beginning to show indications of being on the wane. With a judicious selection, therefore, Orchids might easily be had in flower the whole year round.

The history of the discovery of Amherstia nobilis by Dr. Wallich in Burmah was then related. Of the glorious inflorescence of that rare stove tree, a fine bunch was furnished by Mr. Taplin, gr. to the Duke of Devonshire at Chatsworth, under whose care it has flowered. The specimens were also accompanied by a statement of his mode of treatment, which was not read to the meeting, but will be published in the Proceedings of the Society. Little was advanced in reference to this plant different from what has already appeared in our columns; but in speaking of its first introduction to Chatsworth, Mr. Bateman said that it was nearly killed by having been put into a tub, the wood of which had been kyanised. Owing to this accident, although the Duke of Devonshire was the first to introduce the plant, yet to Mrs. Lawrence, of Ealing Park, belonged the honour of having first flowered it, a full account of which has also been given in our volume for 1849 (p. 199). After the meeting, the blossoms of it shown on this occasion were presented to Lady Hay Williams, formerly Lady Amherst, who, together with Lord Amherst, accompanied Wallich to the spot in Burmah where the Amherstia was discovered. The glorious representative of the house of Devonshire, viz., Cavendishia, it was observed had not yet been introduced; and a hope was expressed that the present Duke might furnish an arm long enough and strong enough to bring this desideratum to our shores.

March 20 (*Floral Committee*).—From Mr. Wm. Paul came a collection of Roses, in which were Dr. Lindley, Glory of Waltham, Elizabeth Vigneron, and Black Prince, the last a fine deep velvety crimson, to which a First-class Certificate was awarded. Similar awards were also made to the same grower for the Hyacinths named Vunxbaak, Sir Henry Havelock, and Bird of Paradise, already described by us. The last, although somewhat like Ida in colour, is nevertheless an improvement on that variety in point of substance and breadth of petal, and is, doubtless, the best of all yellow Hyacinths hitherto introduced. Mr. Toombs, gr. to W. S. Roots, Esq., furnished a double-blossomed compact free-flowering variety of Primula filicifolia, called rubra plena, a real acquisition, to which a First-class Certificate was awarded. Messrs. Windebank & Kingsbury, Southampton, also contributed a group of Chinese Primulas, in which P. sinensis alba gigantea, P. s. magnifica, purplish crimson, and P. s. filicifolia rubra, a very fine salmon rose-coloured sort, all received First-class Certificates. From Mr. Bull came the large and fine collection of plants, previously shown by him, and among Camellias from the same establishment, was a small rosy-flowered kind, called Emilia Lechi, to which a Second-class Certificate was awarded. A First-class Certificate was also awarded to the same nurseryman for Dammara Moorei, mentioned above. Mr. Robson, gr. to G. Cooper, Esq., received a similar award for the variety of Dendrobium densiflorum called thyrsiflorum, a kind with white sepals and petals and orange lip; as did also Mr. Wilson, gr. to W. Marshall, Esq., of Enfield, for a much finer plant. Handsome cut blooms of Camellia eximia were shown by Mr. Brown, gr. to W. Alston, Esq., of Elmdon Hall, near Birmingham. Messrs. Osborn had a yellow-blossomed Sinningia; and Mr. Willcock, gr. to Dr. Pattison, St. John's Wood, a collection of Orchids, in which were Cattleya pallida, Lycaste Skinneri, Dendrobium chrysotoxum, and Oncidium sarcodes. A rosy pink double-flowered variety of Chinese Primula named Distinction came from Mr. Sheppard, of Bedford. In a collection of plants from Mr. Wilson Saunders came Nicotiana wigandioides, a stately variety of Tobacco, with large handsome leaves and loose branching panicles of creamy yellow flowers; the Sonchus and Pleurothallis adverted to above, the fragrant Maxillaria picta, and one or two other plants. The Nicotiana looked as if it might make a handsome plant for out-door decoration in summer. Mr. Buller furnished the Dendrobium speciosum mentioned above, which had two fine spikes of flowers on it, and showed evidence of having had several more; and D. aggregatum, from hills in Moulmein. Mr. Robson had, moreover, Odontoglossum gloriosum and Cervantesii, the last remarkable for its beautiful concentric markings. Wistaria sinensis in the shape of a little standard, covered with flowers, was shown in a pot, from the Society's Garden at Chiswick.

March 20 (*Fruit Committee*).—The only fruit exhibited on this occasion consisted of specimens of Lady Downes', Black Alicante, and Muscat of Alexandria Grapes from Mr. Tillyard, gr. to J. Kelk, Esq., in an admirable state of preservation. The Committee reported that on tasting them their flavour was found equal to their appearance. These deservedly received a Special Certificate.

March 17 (*Weekly Show*).—Collections of bulbous plants were

furnished by Mr. W. Paul and Mr. George Macintosh, of Hammersmith, to whom prizes were awarded in the order in which the names stand. The latter also had a collection of 12 mixed hæmous plants. Mr. Bartlett, Mr. Greeves, and Messrs. Lucking supplied collections of bulbous and other plants, for which extra prizes and certificates were given.

ROYAL BOTANIC *Meeting* 17 (*First Spring Show*). In most respects this was a counterpart of the exhibition held at South Kensington on the 14th inst., a full report of which appeared at p. 245. In addition to the magnificent collections of Hyacinths reproduced on this occasion by Mr. Wm. Paul, Mr. Lancaster contributed from the neighbourhood of Liverpool a group in which were well grown and beautifully flowered examples of Von Schiller, Ida, Grand Lilas, Macular, Charles Dickens, Laurens Koster, Grootvorst, Gunder, a Merveille, Duc de Malakoff, Madame Van der Hoop, Mont Blanc, and Sultana Favourite. Mr. Young, gr. to R. Barclay, Esq., and Mr. Wheeler, gr. to Sir F. H. Goldsmid, Bart., showed collections in the Amateurs' class. New Hyacinths did not differ from those shown at South Kensington.

Tulips were again furnished in admirable condition by Mr. Wm. Paul and Mr. Young, also a single kind, Keizer Kroon. Yellow and White Pottebakker, Rose Luisante, Proserpine, and Cerise Gris de Lin, on account of its delicate assortment of colour, were six of the best; to these may be added Vermillon Brillante, and of doubles, Tournesol with its yellow variety, and Leonidas, and its Vinea, the last a medium sized showy red, edged with yellow.

Narcissi, Lily of the Valley, and Cyclamens were represented by Mr. Wm. Paul to whom 1st prizes were deservedly awarded for the high state of perfection in which these plants were shown by him. Mr. Young also exhibited Narcissi.

Of Cyclamens there was a charming display; and on the group contributed by Messrs. E. G. Henderson, too much praise can scarcely be bestowed. It consisted of different varieties of *C. persicum*, all of which were extremely well grown and loaded with blossom. Next in point of merit came a collection from Mr. Wiggins, gr. to Walter Beck, Esq.; and Mr. Wheeler also showed examples of these favourite spring flowers.

Chinese Primulas were shown by Mr. Todman, gr. to R. Hudson, Esq., and Mr. Wheeler. A large flowered variety called Stewarti, white, beautifully mottled and striped with purplish crimson, came from Messrs. E. G. Henderson, who also showed a double flowered sort named Mrs. Eyre Crabbe, a smaller kind than the last, with white flowers suffused with pink.

Camellia pots were contributed by Messrs. Lee and Mr. Bull. Among the varieties were Fulgens nova, Valtevarede, Madame Langelier, Rossii, Alba illustrata, Prince Albert, Sarah Frost, Double White, and Marchioness of Exeter. Cut blooms were furnished by Messrs. Lee, Todman, Trussler (gr. to D. J. Lee, Esq.), and Stapleton (gr. to Joseph Clark). These were Double White, Fimbriata, Reine des Fleurs, Middlemista, Optima, Carmyphylloides, Variegata, Valtevarede, Lavinia Maggi da Brescia, Countess of Orkney, and Lady Hume's Blush.

Of Roses in pots, beautiful examples were shown by Mr. W. Paul and Messrs. Lee. These, 12 in number, were all comprised in Dr. Lindley, Senateur Vaisse, Elizabeth Vigneron, Mrs. Bosanquet, Duchess of Sutherland, Madame de St. Joseph, Victor Verdier, and Général Jacqueminot. From the latter came Model of Perfection, Maurice Bernardin, Louise de Savoie, Victor Verdier, Alba rosea, Madame de St. Joseph, Beauty of Waltham, Prince Camille de Rohan, Princess Mary of Cambridge, President, and others. Among these Alba rosea appeared to be one of the best for forcing, its beautiful compact white blossoms being set off to much advantage by the rosy-tinted centre with which they are adorned.

Among hardy shrubs Messrs. Lee contributed, with a crimson eye and Dendrobium primulinum gigantenm, with a pale primrose lip, and lilac sepals and petals, came from Mr. Williams, of Holloway: Messrs. Paul & Son furnished Philadelphus grandiflorus speciosissimus, a hardy shrub with fragrant white flowers massed on the branches; and Rhododendron villa multiflora, another hardy shrub with handsome white flowers, relieved by white anthers and a long pistil, all mounted by a white stamen. Both these looked as if they would be acceptions, more especially the last, which is a great improvement upon that of the well-known old-fashioned white-blossomed Syringa.

Mr. Bull also exhibited a large collection of plants, among which were the most standard Orange trees which were exhibited the other day at South Kensington. Messrs. Lee and Cheeseman also contributed a number of Orange trees. Groups of flowering and fine foliaged stove and greenhouse plants also came from Mr. Williams, Messrs. Lee, and Mr. Wheeler. Among them were Azaleas, Camellias, Erica ventricosa, Epacris grandiflora, Pimelea decussata, Dracæna fragrans, Dracæna terminalis, Pandanus Veitchii, variegated Pandanus utilis, Pandanus javanicus variegatus, Dieffenbachia seguina, and a very fine specimen of Alocasia metallica, the last came from Mr. Wheeler, who also exhibited half a dozen exotic ferns. Messrs. Lee again produced their handsome trailing Aeschynanthus, Mr. Williams the group of Rhododendrons, and Mr. Young greenhouse Acacias and forced shrubs. From the Rev. George Chester came a pot of Anna Boleyn Pinks, and lastly, Mr. Reeves, of Notting Hill showed a dozen dinner-table specimens of Deutzia gracilis, which, though only in small pots, were quite bouquets of snowy white blossoms, so profusely were they covered with flowers. It would indeed be difficult at this season of the year to find a match for this charming little exhibition of forced shrubs.

MR. WM. PAUL'S EXHIBITION OF SPRING FLOWERS. Royal Horticultural Gardens, South Kensington.—This exhibition opened on the 21st inst., and will continue till the 3d of April. It is quite a flower show in itself, equaling in one of the arcades adjoining the Conservatory, and for beauty, extent, and general excellence, equals any of the spring shows which we have seen. Banks of flowers filling the whole arcade successfully uphold the fame of the nurseries at Waltham Cross as a cultural establishment for the Queen of flowers. Among Tea-scented varieties, President, Madame Willermoz, Souvenir d'Elise Vardon, and Alba rosea, are at present in good beauty. Bourbons, Noisettes, and Chinas are also well represented. Of Hybrid Perpetuals Victor Verdier, Comtesse Cecile de Rhone, Mrs. Wm. Paul (dark), Duke of Edinburgh, Elizabeth Vigneron, Dr. Lindley, Black Prince (a new and beautiful variety), and Glory of Waltham were large and well formed, and finely-coloured flowers. The last named is a perpetual climbing Rose, the colour intense crimson, the habit hardy and vigorous. There is one bank of miscellaneous greenhouse plants: Azaleas being the most conspicuous, flanked with Lilacs, Scarlet Pelargoniums, and Rhododendrons. Another bank is formed of Hyacinths and Tulips, supported by Rhododendrons, principally of the scarlet and purple kinds, while a third bank of Camellias and other greenhouse plants is joined to masses of the pink, white, and crimson double-blossomed Peaches. Of Hyacinths, the best reds are:—Cavaignac, Garibaldi (fine spike), Grootvorst, Ida, Ali Noor, Lord Wellington, Macaulay, Solfaterre, Von Schiller, and Vuurdreek; the best whites are Alba maxima, Grandeur à Merveille, Mont Blanc, and Snowball. Of blues, Ferrus Khan, Garrick, Grand Lilas, King of the Blues (one of the finest in the exhibition), Laurens Koster, Lord Palmerston, Marie, Princess Mary of Cambridge, and Van Speyk are all excellent. Blacks are represented by General Havelock and Prince Albert, the latter one of the darkest Hyacinths known; and yellows by Duc de Malakoff, Ida, and Bird of Paradise. There are also several new colours and shades of colour, the most distinct of which are of lilac and mauve tints: Haydn is good, and Sir Henry Havelock, which is flowering for the first time in England, is indeed a magnificent variety, of a rich plum colour. The breadth and length of spike of many of these Hyacinths are much greater than we have ever before seen, and the colours are remarkable for their solidity and clearness. The Tulips are in great variety, among them several double kinds quite new. Desirable as are these latter, the single varieties are perhaps generally more acceptable to public taste. Such are Duc d'Autriche, rich crimson and yellow, the colour shaded and well defined, is a beautiful variety. Brutus, Keizer Kroon, and Red Pepin, are also beautiful varieties, well representing the combination of red and yellow. Cerise Gris de Lin is a pleasing and delicate shade, whereas Rose d'Amour is dark with fawn. Of reds and crimsons, Couleur Cardinal, Cramoisie Superbe, and Vermillon Brillante, are the best. The White and the Yellow Pottebakker are two of the most effective in the exhibition, while Rose Luisante, Proserpine, Thomas Moore, and Van Der Neer, are all good and distinct. The Rhododendrons are a fine feature in the Show; Prince Camille de Rohan is pleasing and distinct; there are splendid plants of Blandyanum and Everestianum, one mass of flower; and smaller plants in abundance of Schilleanum, Broussaii, Edgeworthii, Dalhousiæ, minator, and other leading varieties. A series of semi-circular tables confront the pillars on the opposite side of the arcade, and on these are massed groups of Hyacinths, in some instances red, in others white or blue, edged with the red or white Chinese Primrose; the various kinds of Polyanthus Narcissus, which are principally yellow, are also disposed on this side, as are Cinerarias, Dielytras, Cyclamens, and Lily of the Valley.

There are many very pretty variegated plants, and an extensive collection of Crocuses, of which we noted Queen Victoria, Mammoth, and Caroline Chisholm (white); Davy, Rizzio and Sir John Franklin (purple); Ida Pfeiffer and Princess Alexandra (striped); Ne Plus Ultra and Skyblue (blue).

On viewing the exhibition as a whole, we cannot but pronounce it a marked success, and while it reflects the highest credit on the cultural skill of the exhibitor, it also bears ample testimony to his enterprise and taste. We observe that it is announced that the various plants to which have been awarded no less than 29 first prizes within the space of a week, are included in this exhibition. The Princess Mary and Duchess of Cambridge honoured the display with their presence on Thursday last.

MR. CUTBUSH'S EXHIBITION OF SPRING FLOWERS AT THE CRYSTAL PALACE.—Hitherto Mr. Cutbush's show of Heaths and other spring flowers has been held on the Highgate Nurseries; this year, however, the Crystal Palace has been selected for it. It fills no less than 60 feet in length of table in the centre of the Nave. One side is well filled with pots of Hyacinths and Tulips, whilst on the other are massed Azaleas, Rhododendrons, Deutzias, Cytisus, Heaths, Epacrises, &c., interspersed with Crocuses, Snowdrops, and other bulbs, amid each end is a large Camellia: these, however, are the property of the Crystal Palace Company. The whole is covered with evergreens, among which, the coloured of the flowers are seen to great advantage.

Notices of Books.

Drawing from Nature, &c.: to which are appended Letters on Art delivered at Rugby School. By George Barnard. Longmans, pp. 342.

Few know better than Mr. Barnard himself that it is impossible to teach drawing by the aid of books alone, but that many valuable suggestions may be conveyed through their medium the present volume sufficiently shows. It is, however, less for its practical utility that we commend this beautiful volume to our readers, than for its healthy sensible notions regarding natural objects in general, and the proper way of seeing them.

The author is evidently an enthusiastic lover of Nature, and his descriptions are so glowing that in reading them one is carried away in imagination to the woodal lanes and breezy heaths of Surrey, or the mountain sides of Switzerland, and the journey is effected so pleasantly that we forgive our conductor if he trips occasionally in his botany. But that we might bore him, as one Dobson evidently did at Leith Hill, we should greatly like to accompany the artist in his sketching tours.

We have not read lately so good an illustration of the old story of eyes and no eyes, as is conveyed in this volume, and although as naturalists we should demur to some of Mr. Barnard's dicta, we nevertheless recommend his book to all desirous of cultivating their observant faculties, or of increasing their appreciation and reverence for beauteous Nature. We need only add, that the book is enriched with eighteen coloured plates and more than a hundred woodcuts.

Debrett's Illustrated Peerage. 1866. London. Dean & Sons.

Debrett's Illustrated Baronetage, Knightage, and House of Commons. 1866. Same Publishers.

The name "Debrett" has become so thoroughly a household word, that little more than an announcement of its publication is requisite. The delay that has occurred in its issue this year is amply compensated for by the addition that the editor has been able to make of those recently raised to the Peerage or the Baronetage.

As a directory, Debrett is well known and appreciated, but its value in this respect by no means constitutes its only claim on the attention of the reader. Any one interested in the history of his country, and in the noble names and noble deeds that shed lustre on it, will find much to gratify him in these pages, while those who dabble in heraldry will find ample illustrations of their favourite science. We have often admired the concise manner in which a herald describes a complicated escutcheon, with its numerous tinctures, ordinaries, charges, &c. Laurens, who hated long-winded descriptions of plants, might have been a herald, but that in his desire to be brief, he is, to us moderns at any rate, sometimes obscure.

Thoughts in Verse upon Flowers of the Field. Illustrated by Mary Antoinetta, Marchioness of Huntly. (London: 4to, Day & Son, 1866.) This elegant volume was prepared for the benefit of the Peterborough Diocesan Training School, in behalf of which a Bazaar was held at Cambridge last summer. It could not, however, be finished in time, and the subscribers have certainly not suffered by the delay. Each month is devoted to one of our indigenous plants, the illustrations of which are all that can be desired; the Snowdrop, Yew, and Poppy, perhaps being most successful, though all are extremely good. Each page is adorned with a fancy border, and where appropriate verses could not be found, the noble authoress has herself supplied lines, which will be admired for their genuine vein of poetry and pure sentiment. The volume is an appropriate ornament for the table of the drawing-room, and the object which it was intended to promote is so excellent, that we shall be disappointed if it does not meet with all the success it deserves.

Florists' Flowers.

THE GLADIOLUS.—The papers which have lately appeared in your pages, and in those of other periodicals which treat of floral affairs, show conclusively that the Gladiolus is rapidly advancing in public estimation, and that it bids fair to occupy, at no distant time, a high position among florists' flowers. The lists of the most desirable sorts, which have been given by some of the best growers, I consider most valuable, although one cannot help being struck by the difference of opinion as to the quality of individual flowers. I suspect much of this discrepancy is due to peculiarity of soil, situation, &c. I cannot refer to any of these lists, as my copies of them are on their way to the antipodes; but I remember one grower discards Princesse Clotilde and Lord Raglan, two varieties which I prize very highly, and which I always show, if possible; the former, as it grows with me, is really one of the very best sorts we have. On the other hand, I have grown Impératrice Eugénie from the time it first came out (like most of your correspondents, I annually indulge myself with Souchet's novelties), but have never had a spike fit to cut for exhibition. Now I have seen this so often shown in first-rate condition, that I am sure there must be some particular ingredient composing the soil of my garden which renders the petals limp and flimsy, with a colour far more suggestive of the wash-tub than the Crown Imperial. On the whole, I can corroborate the testimony already advanced in praise of the seedlings sent out by M. Souchet within the last four or five years; but the following, as I have grown them, have scarcely fulfilled the characters with which they were presented to the public. Edulia, although undoubtedly pretty, has always been too small for a show flower; of the defects of Impératrice Eugénie I have already spoken; John Waterer is a little uncertain, but very fine when at its best, and therefore cannot be dispensed with; Leonardo da Vinci would not be tolerated a day, were it not for its unique colour; and the same may be said of Peter Lawson. I do not remember ever to have seen a good spike of Stuart Low, either at home or abroad. As I am not aware that any one has yet furnished you with a list of the sorts which thrive well in the south-eastern district of England, I append the names of those which furnished the blooms exhibited by me in the years 1863, 1864, and 1865, and which represent about one-third of my entire collection:—

1. Adèle Souchet
2. Belle Gabrielle
3. Colonel Oliver
4. Charles Dickens
5. Clémence
6. Comte de Morny
7. Cuvier
8. Dr. Lindley
9. Duc de Malakoff
10. Flore
11. Fulton
12. James Carter
13. James Veitch
14. James Watt
15. Janire
16. [illegible]
17. Jean Bart
18. John Waterer
19. Jupe
20. Le Prestre
21. Linné
22. Lord Raglan
23. McMahon
24. Madame Casseville
25. Madame Binder
26. Madame de Sévigné
27. Madame J. Vatry
28. Madame Desforge
29. Madame Furtado
30. Madame Eugène Verdier
31. Madame Rabourdin
32. Madame Vilmorin
33. Maria Dumortier
34. Marie
35. Marianna
36. Mayflower
37. Napoleon III.
38. Neptune
39. Nec plus Ultra
40. Ophir
41. Oriflamme
42. Pluto
43. Prince of Wales
44. Princess of Wales
45. Princesse Clotilde
46. Raphael
47. Rubis Victoria
48. Stephenson
49. Velleda
50. Walter Scott

From these I should select as the best 25, Numbers 2, 4, 8, 10, 11, 12, 13, 17, 18, 20, 23, 24, 26, 27, 31, 36, 37, 40, 41, 43, 44, 45, 47, 48 and 50. Of these 25, fully three-fourths are of recent introduction, a convincing proof of rapid improvement.

The foregoing were all, or nearly all, raised by M. Souchet, of Versailles, to whom undoubtedly belongs the merit not only of being the first to recognise the importance of the Gladiolus as a florist's flower, but also of originating, by the raising

of seedlings, an immense majority of the beautiful varieties which now form so conspicuous a feature of our autumn exhibitions. But while we do justice to M. Souchet, we shall do well to remember that the production of hybrid Gladioli is being actively carried on at home. I think this fact is scarcely so generally known as it ought to be; and I have been much surprised to find that, except in a very casual way, no notice has been taken by former correspondents of the many fine varieties raised by Mr. John Standish, of the Royal Nursery, Ascot.* Several of these are of first-rate excellence, and should be in every collection. I append the names and colours of a dozen, selected from a large number, with which I have been most pleased; and feel certain they will suffer nothing by comparison with the best continental varieties.

Carlotta Grisi.—Rosy cream-colour, with purple stripes.
Carminata.—Light carmine, very large and effective.
Eleanor Norman.—White, delicately striped and tinged with purple.
Garibaldi.—Deep scarlet, with violet throat.
Kathleen.—Pure white, striped and tinged with violet.
Miss Foster.—Peach with carmine centre, rich purple midribs.
Mowbray Morris.—Light red, with lemon throat, and crimson markings, fine spike.
Mrs. Dombrain.—Pale rose, striped with lake, and lake feathers.
Samuel Waymouth.—Rich scarlet, with yellow centre, very fine spike.
Sir James Clark.—Salmon pink, with carmine throat on a yellowish ground; large spike.
The Colonel.—Dark scarlet, with white throat.
The Ensign.—Red, flushed with a deeper shade, fine spike.

I am informed that Messrs. Kelway & Son, of Langport, Somerset, are now sending out some very fine seedlings: these I have not seen, and cannot, therefore, say anything about their quality; but from what I know of the Messrs. Kelway as growers and exhibitors, I shall be disappointed if I do not find some good things among their own productions. Other growers, both professional and amateur, are also in the field, so that we may confidently anticipate, at an early period, a rich harvest of English-raised Gladioli.

Hereafter I may say a few words on the planting of the bulbs, and the raising of seedlings. *J. S., Ash, next Sandwich.*

* The above was written before the communication from "D.," of Deal (see p. 175) had appeared.

The Apiary.

Bee-Culture: *Hives.*—There is considerable difference of opinion among apiarians as to the best material of which hives can be constructed. Some are warm advocates for straw, and fierce denunciators of wood. Others are equally strong in their belief that wooden hives, while not at all inferior to those of straw for the protection of bees and their works, are vastly superior to them in facilities for performing all operations incidental to bee culture.

There is again a class of bee-keepers whose prejudices in favour of one or the other kind of material are not so very strong or decided. Many use hives constructed of either wood or straw indiscriminately, and are unable to discover any particularly great superiority in one over the other. In my own apiary, consisting at present of 23 hives, one only is of straw. I have found no reason to be dissatisfied with wooden hives, or to condemn them as being not so well adapted as those of straw for keeping bees in a healthy, populous, and prosperous condition at any season of the year; while as affording me large supplies of honey, I must certainly give the palm to my wooden hives. This conclusion has been arrived at by me in no hasty manner; during my bee-keeping career of more than 20 years hives both of wood and straw have been always more or less largely in use. Prior to my constructing and adopting a modification of the Langstroth Frame Hive, straw, as a material, greatly predominated in my apiary; since that time the improved wooden hive has gradually ousted its straw rival from its accustomed pedestal, and I confess to having at present no desire to see it reinstated in favour, at least to any considerable extent. I do not, however, wish to be misunderstood on this point. I have no prejudice against straw itself. The principal reasons which have induced me gradually to adopt the almost exclusive use of wood, have been the vastly superior conveniences which the latter has hitherto afforded in the construction of hives of the desired form and shape, and in the various manipulations adapted for advanced management. But as great improvements in the manufacture of straw hives have been lately introduced, and they can now be obtained almost as true to shape as those of any other description, it would be a matter of perfect indifference to me in choosing a hive for the purpose of starting a new swarm or stock, of which substance it might be made, provided all other requisites of size and form were equally efficient. In due course a full description of these improved straw hives will be given.

To work bees on the depriving system, and to obtain really fine supers of honey, it is not necessary to commence with expensively made hives and boxes. Every one is well acquainted with the common Cottage Hive, which, taking all things into consideration, is, probably, the very best for the requirements of the great bulk of the lower class of bee-keepers that has been devised.

To alter this hive, so as to render it applicable for supering, is not at all difficult. Any hive, already populous and well supplied with combs, may be selected for the purpose, but, if possible, choose one of large size and as flat in the crown as can be obtained. Have made a top-board of 13 inches square by ⅞ of an inch thick, properly clamped at the ends, a 3-inch circular hole is to be cut in the centre. A ring of any kind of paint is applied to the lower side an inch or two from the central aperture, for the object of causing the greater adhesion of putty. Next, with a long, sharp, narrow-bladed pocket-knife, cut through between the strands of straw in the crown of the hive so as to form a hole of somewhat larger diameter than that cut in the board. In one part the whole strand of straw will have to be cut through. Keep the blade of the knife well down so as to ensure the complete severance of every straw. Now work up some soft putty into a very plastic state, and place a ring of it on the lower side of the board where the paint was applied. It will also be advisable to apply a similar ring of paint on the straw hive. The board, the hole in which may be covered with a plate of glass, is held in the left hand, the blade of the knife is inserted under the loosened piece of straw, and with a steady upward pressure this is detached and pitched away. The board is now adjusted to its destined position and well pressed down, so as to fix the putty effectually. No putty should be allowed to come near the interior of the hive, or the bees may for a long time refuse to work. When not in use the hole must be covered with a block of wood. This operation is most easily performed while the bees are at work. The fracture of the combs and the escaping honey prevents the manifestation of much anger. To the amateur a bee dress will be advisable, as giving that confidence which is an absolute necessary in all apiarian manipulations.

Any kind of super may be used, but it should be of large size, equal to holding from 20 lb. to 40 lb. of honey. If of glass, it must be well covered with some woollen material, and whether of wood or glass it will be advisable to attach some clean comb (worker-celled honey-comb preferred) to the top or to bars. From a hive thus treated, we have now a glass super, which when removed in 1851, weighed nearly 50 lb. of nett contents. For protection of the entire hive, if kept out of doors, a wooden case is requisite. The kind I would most recommend is similar to that I use for my frame hives, and will be described in connection with them. *S. Bevan Fox.*

Oil-cake as Food for Bees.—On referring back a week or two, Mr. William Earley will see that we have already alluded to the substance of his communication. With him, although having but little faith in the correctness of the account, we should like it to be properly tested, and to have the experience of other correspondents after giving oilcake a fair trial.

Imitation Bees'-comb: *R D H.* The impressed wax sheets for artificial guide comb can be obtained only through some of the large dealers in London, such as Neighbour. For guide combs it is best to cut the sheet into strips of rather more than an inch in width. A warm knife must be used. Then cut on one edge slits of ¾ inch deep, and about 2 inches apart. Take two bars, and placing the wax between, leaving a width of ⅛ inch exposed, slightly warm it and bend over at right angles in alternate laps. Have ready some hot melted wax; with a small painter's brush apply quickly over one side of a bar, then, with the strip of wax sheet still between the two bars, press gently against the waxed surface of the bar, using the fingers to ensure a secure adhesion. The two bars greatly facilitate fixing the strips both straight and firm.

Garden Memoranda.

Oxton Hall, Southwell, the Residence of Henry Sherbrooke, Esq. (*Concluded from p.* 248).—Since Mr. Barton has been gardener at Oxton, considerable additions have been made to the shrubbery borders. Old buildings have been pulled down, and the shrubbery put back near the house; and openings have also been made, to bring in distant views. These alterations have been tastefully carried out, and are now assuming a finished form. In the shrubbery borders, also in special beds, and as single plants, are many fine specimens of Rhododendrons and other American plants; and when I say the garden was modernised and planted some years back by Waterer, of Knap Hill, that is sufficient evidence that the American plants are good of their kind. Young thriving specimens of some of the more remarkable Coniferæ, such as Picea nobilis, Nordmanniana, and Pinsapo, Wellingtonia gigantea, Thuja gigantea, Cupressus Lawsoniana, &c., &c., have been planted in various parts of the ground, and are thriving well, and the borders everywhere are studded with the finer kinds of Roses, which here thrive with remarkable luxuriance. It only remains for me to remark of the pleasure ground, that at the time of my visit the walks and Grass were in excellent order, and must in the summer look exceedingly well.

The kitchen garden, which contains about three acres within the walls, is situated a short distance from the house, beyond the lake, and the walls are screened and sheltered by a thriving belt of Spruce and other Firs. Fruit trees do well here, and the walls are covered with a fine collection of Plums, Pears, Apricots, Peaches, Cherries, &c. Some of the trees are very large, and in size and quality the Plums are specially excellent. The outer and inner garden contains a very good assortment, and many fine bush and pyramidal trees of Pears and Apples, the crop even in the last untoward season being so large as to leave, at the present time, a large surplus in the fruit-room for future use. Among these we met an old friend, much grown in Nottinghamshire, and excellent at this season, the Apple called Bess Pool, brilliant in colour, rich in flavour, and with scarcely a crack upon it, though much given to crack in some soils. Here, also, I tasted the old Aromatic Pippin, one of the best dessert Apples grown at this season, and many kinds which I cannot stop to enumerate. Some of the best of the new kinds of fruits are also being planted for trial.

The forcing and plant-houses are mostly of ancient construction, and are heated by flues, but still they produce an abundance of excellent fruit. The first is a span-roofed forcing pit for general purposes—French Beans, Cucumbers, Asparagus, Roses, and other plants, at the present time; Vines in pots to follow, and then Melons for the autumn. This house is heated by brick flues, with hot water for bottom heat. In consequence of the small volume of the atmosphere it is found very difficult to keep it sufficiently moist; but if shallow cast-iron pans were substituted—say six feet apart, for the covering stones of the flue, and kept filled with water, the supply of moisture would then be at the discretion of the gardener. The second house, a lean-to, is devoted exclusively to bedding plants, and contains an ample stock of the leading and most popular varieties—some in pots and others in boxes, but all crowded as thickly as possible together, waiting "the good time coming," when milder skies will allow of their having more breathing room. Mr. Barton has an easy way of hardening off his bedding plants. As I remarked before, the kitchen garden is screened by a belt of Fir trees, standing thinly, and most of them feathered to the ground. Between these trees, where there is a sufficient opening, he has formed temporary pits, and there, without any further protection, even when there are 5° to 7° of frost, the plants stand unscathed.

The third house is a large late Vinery nearly 60 feet long, and something more than 20 feet in width. The Vines here have been planted only a few years, but they are making good progress, and produce abundant crops of excellent fruit. This house contains a number of specimen Azaleas and other greenhouse plants, and also a fine dwarf specimen of Phœnix dactylifera, the Date Palm, which, five years back, when the house was under repair, resisted 16° of frost with only a single mat around it.

The fourth house is an early vinery, the Vines in which are just breaking, and promise an abundant crop. This house is also used for forcing Lilacs, Laburnums, and similar large plants for the conservatory. The fifth house is devoted to plants only, Oranges, Camellias, &c. The back wall of this house is covered with two large plants of the Cape or Nepal Gooseberry, now yielding an abundant crop of fruit, and which will continue to fruit throughout the year. The fruit of course does not attain its full flavour in a cold house, but if, after it is gathered, it is placed in a warm, dry atmosphere, the saccharine fermentation is continued, and it becomes really very eatable in the depth of winter, and forms a nice contrast in the dessert. To secure a succession of fruit, Mr. Barton prunes or cuts in the plants in three successions; the lower part, say four feet from the ground, has been cut in a week or two, and has made shoots two to three inches long. A second part will be cut in as soon as the fruit is gathered; and the third or top part just as the bottom portion is coming into bearing. I may be thought rather circumstantial about so trifling a matter, many not considering the plant worth house-room; but fortunately we are not all of the same opinion, and some may be glad to know how to secure a crop of so simple a thing as the Cape Gooseberry. The sixth house is a Peach-house, with some nice trees on the back wall, but the front trellis has had a new border, and been planted with young trees this season. In addition to the preceding houses there are some pits and frames, used principally for vegetable forcing.

At the back of the houses will be found the usual complement of sheds and offices, with Mushroom house, fruit-room, Potato stores, &c. Mr. Barton keeps all his Carrots, Beet, Parsnips, &c., in the open air, not in common soil, but laid in in ashes at the back of a north wall. In this way, he contends, both Beet and Carrots are better flavoured than when kept dry. I know such is the case with Parsnips, but I have had no experience with other roots. Among vegetables I did not notice anything new except the Perpetual Spinach, which he received some years back through a friend in the Colonial Office, being part of the seed sent there from one of the colonies. It is evidently not a Spinach at all, though an excellent substitute, but is some kind of

bulbless Beet or Mangel. It is perfectly hardy, having stood unscathed for several winters, and a crop sown in the spring will yield a supply throughout the year, or for several years, if its blooming is prevented. In quality it is quite equal to the ordinary Spinach, while it may be grown with a tithe of the trouble, and a perfect certainty as to the result.

Not the least interesting part of a visit to Oxton, is to see the excellent house which is provided for the gardener. As a sweetener of labour nothing is more cheering, when the toil of the day is over, than to retire to a comfortable and good-sized house—not one of those places built for external effect, where the sight of a child would be offensive to the employer, but a good and commodious residence, which a man may feel is "his castle" for the time being, and where he and his family can move about, as if they were really at home. Such is the case at this place; the gardener's cottage is situated at one corner of the pleasure-ground, surrounded by a neat flower-garden and lawn, while inside it is replete with every necessary convenience. Would that there were more of the same kind in the country, and similarly situated. We might then hear less of gardeners' "incumbrances," and the honest dignity of his calling would be relieved of that foul aspersion. All Mr. Sherbrooke's cottages are similar in character, and are in good repair.

The extent of the pleasure-grounds and gardens at Oxton is about 11 acres. To mention the number of hands allowed to work it would only subject my statement to doubt, and therefore I will only say it is well kept with about half the number of hands that would generally be considered necessary. During the summer and autumn the garden is thrown open to all well-conducted visitors, and on special occasions it is not unusual for from 1700 to 2000 people to visit it on a single day; while as an earnest of their appreciation of the privilege, Mr. Barton assured me that not six-pennyworth of damage had been done in the years he has resided at the place. *W. P. A.*

Miscellaneous.

The late Mr. Francis Dickson.—It was only the other day (see p. 200) that it was our melancholy duty to record the death of Mr. Osborn, of Fulham. The Nursery trade has again sustained a loss in the death of Mr. Francis Dickson, the Senior Partner of the firm of Messrs. Francis & Arthur Dickson & Sons, of Chester. Weakened by age (73) and long illness, his manly frame gave way, and he died on the 3d instant, and was interred in the cemetery at Chester on the 8th. Mr. Dickson was the last of the great "Dicksons" of Edinburgh, a name famous in connection with the Nursery profession, and one with which everybody in any way connected with Gardening has long been familiar. He left that city more than half a century ago, and commenced business at Chester, where he brought together a collection of hardy plants, and especially of rare herbaceous and Alpine plants, that was at the time considered to be unequalled. His love for Coniferous plants was great, and around his commodious residence in the Nurseries at Upton are some magnificent examples of that deservedly favourite class of trees, planted years ago by his own hands. Of Araucaria imbricata in particular there are some admirable specimens. Even to the last he took unusual interest in all that was new in the shape of hardy trees and plants, and the advent of the recent glorious introductions from China and Japan, &c., seemed as it were to infuse into him fresh life and vigour. He was a man of sterling integrity, and was in appearance as well as in heart and feeling one of Nature's gentlemen. His hospitality to genuine horticulturists—men fond of their business—of all degrees, was conspicuous; and the experience and information he had acquired during so long a life of intelligent and observant application, rendered his society both instructive and entertaining. He was considered by those best able to judge to be one of the cleverest Nurserymen of his day. He was an intimate friend of the late T. A. Knight, and also of J. C. Loudon, and was frequently consulted by those gentlemen. It may truly be said of him, that he formed one of the now few remaining links which connect the present with the past generation. His funeral was attended not only by his more immediate relations, but also by a large assemblage of *cognigos* and people in all ranks of life, who were anxious to embrace this last opportunity of paying respect to his memory.

How to Make Coffee.—The usual quantities both of coffee and water are to be retained; a tin measure containing ½ an ounce of green berries, when filled with roasted ones, is generally sufficient for two small cups of coffee of moderate strength, or one, so called, large breakfast-cup (1 lb. of green berries, equal to 16 ounces, yielding after roasting 24 tin measures [or ½ an ounce] for 48 small cups of coffee). With three-fourths of the coffee to be employed, after being ground, the water is made to boil for 10 or 15 minutes. The one quarter of the coffee which has been kept back is then flung in, and the vessel immediately withdrawn from the fire, covered over, and allowed to stand for five or six minutes. In order that the powder on the surface may fall to the bottom, it is stirred round; the deposit takes place, and the coffee poured off is ready for use. In order to separate the dregs more completely, the coffee may be passed through a clean cloth; but generally this is not necessary, and often prejudicial to the pure flavour of the beverage. The first boiling gives the strength, the second addition the flavour. The water does not dissolve of the aromatic substances more than the fourth part contained in the roasted coffee. *Baron Liebig in "Popular Science Review."*

Wages of Jobbing Gardeners.—At a recent preliminary meeting of nurserymen carrying on business in the neighbourhood of Brixton, Clapham, and Camberwell, to consider a request from their men relating to a rise in wages, Mr. F. J. Smith, Dulwich, in the chair, and Mr. J. Ponsford acting as Hon. Secretary, it was moved and seconded—"That this meeting having considered the subject of wages paid by nurserymen to men employed by them, with reference to jobbing, has resolved that them, with reference to jobbing, has resolved that the rate of wages to be paid to efficient men shall be the rate of wages to be paid to efficient men shall be *3s. 6d.* per day, and that the charge for men supplied by them for day labour shall be *4s. 6d.* per day." The meeting then proceeded to practical particulars relative to the carrying out of the resolution.

Calendar of Operations.

(For the ensuing week.)

THE judicious regulation of temperature in plant-houses, with adequate attention to the admission of fresh air and supplies of humidity, are recommendations which demand attention, but which the present uncertain and at times ungenial weather renders of somewhat different application. As a great proportion of plants under glass are, however, now in a state of activity, and as their condition hereafter will greatly depend on the treatment which they now receive, their requirements must not be overlooked.

FLOWER GARDEN AND PLANT HOUSES.

All dead spray from trees or other rubbish on lawns should be carefully removed before the roller is used, or ultimately mowing may be much impeded. The planting of herbaceous plants, where required, should also be completed without delay, and the beds they occupy dressed with fresh soil. Under glass many plants will now require repotting. As a rule fibrous peat and silver sand are the principal ingredients for hard-wooded plants, using more or less of loam with these for free-growing kinds. Take care to secure thorough drainage, as much of the after success will depend upon that. Continue to harden-off bedding plants, covering them up, however, at night.

CAMELLIAS.—While in bloom, these will require particular attention as to watering, letting them have occasionally a supply of clear weak manure-water. As they go out of flower, place them in a cool house to recruit their energies.

CINERARIAS.—Plants struck late should now be put into their blooming pots; they will form a good succession to those now coming into flower. Keep down green fly by fumigating with tobacco smoke.

PELARGONIUMS.—Watering and keeping aphides in check will now require unusual attention with regard to these. Train into proper shape as the plants advance in growth, and use the syringe occasionally to clear the foliage from dust. Where abundance of root has been made, give weak manure water fresh, and let the plants have plenty of room, light, and air.

PINKS.—The effect of cold winds is already in some instances becoming disagreeably apparent. The plants having been firmly pressed in the soil, and the beds top-dressed, little remains to be done for some time. If, however, the weather continues dry, a good watering on a mild morning will prove of advantage.

TENDER ANNUALS.—If not already done, sow Balsams, Cockscombs, and other tender annuals for indoor summer display.

TULIPS.—Protect the best bed with canvas, Frigi Domo, or mats. Stir the surface between the bulbs as soon as it is in the best state for the operation, i.e., between wet and dry.

FORCING GARDEN.

CUCUMBERS.—Get out successional crops, if not done. Take every precaution to avoid burning at the roots. To this end, when making the hills for them, form a hole three parts the depth of the bed in the centre of each light; half fill it with raw turf chopped slightly, and on this place the compost for the hills. Never finally soil over the beds until all danger from burning is past, and then only half at a time, taking care that the linings are in good order at that period, or an injurious depression of the temperature will suddenly take place. Melons may receive similar treatment.

FIGS.—More Figs are lost through drought than by any other evil. A constantly moist state of the soil is indispensable to their success, when confined in boxes or pots. They succeed admirably when a pit of leaves in a state of fermentation can be given up to them. Plunged in a bottom-heat of 70° or 75° in this way, and allowed to ramble at the root, with close stopping in the wood, and a humid atmosphere of 65° or 70°, they will be everything that can be desired.

PEACHES.—Early fruit will in many cases be stoning. Remember that this process will not bear pushing. See that young wood is carefully trained.

STRAWBERRIES.—Introduce sufficient plants every fortnight to meet the demand; keep them near the glass; give them all the air possible while in flower; when sufficient are set for a crop, pinch all the rest of the blooms off. Plants that are swelling fruit should be well supplied with manure water.

VINES.—Thinning and shoulder-tying being finished in early Vineries, little is necessary to be done, except to pursue an even course in regard to heat and atmospheric moisture. See that all the principal leaves, on which so much depends, have fair play as to a free exposure to light, and endeavour to prevent their coming in contact with the glass. Follow up stopping, more especially with the grosser shoots, and allow lower branches to ramble a little, to equalise the sap. Late Vines as before; keep the wood moistened at least twice a day.

HARDY FRUIT AND KITCHEN GARDEN.

ASPARAGUS.—In planting this it is of the utmost importance to give every attention to a proper rotation of crops. Where Celery is grown in what are called Scotch beds, the latter make capital Asparagus ground. The preparation consists in trenching it much deeper than the rest, and in manuring heavily.

STATE OF THE WEATHER AT CHISWICK, NEAR LONDON, For the Week ending March 21, 1866, as observed at the Horticultural Gardens

March	Moon's Phases	Barometer: Max.	Barometer: Min.	Temperature of the Air: Max.	Temperature of the Air: Min	Temperature of the Air: Mean	Temperature of the Earth: 1 foot deep.	Temperature of the Earth: 2 feet deep.	Wind	Rain.
Thurs 15	28	29.242	29.211	52	44	43.0	41	41	S.	.01
Friday 16	●	29.467	29.137	54	36	45.0	43	41	S.E.	.29
Satur 17		29.111	28.921	53	39	41.0	44	43	S.	.04
Sunday 18	2	29.291	29.231	52	34	43.0	44	42	N.E.	.04
Mon 19	3	29.258	29.091	49	35	40.5	43	42	N.E.	.06
Tues 20	4	29.258	29.091	49	32	37.0	45	43	N.E.	.22
Wed 21	5	29.051	29.002	44	25	34.5	45	43	N.E.	.07
Average		29.352	29.254	49.7	31.5	40.6	43.8	41.9		.54

March 15—Cloudy, cold and windy, although wind south; slight rain
" 16—Rain overnight; cloudy, clear rain
" 17—Rain heavy at times; clear; very slight frost.
" 18—Slight haze overcast, rain at night
" 19—Hazy, dusky haze, overcast, rain
" 20—Rain, overcast, rain at night
" 21—Slight snow, cold rain, frost at night
Mean temperature of the week, 0.9 deg. below the average

STATE OF THE WEATHER AT CHISWICK,

During the last 10 years for the ensuing Week, ending March 31, 1866

March	Average Highest Temp.	Average Lowest Temp.	Mean Temp.	No. of Years in which it Rained	Greatest Quantity of Rain	Prevailing Winds.						
						N.	E.	S.	W.	N.E.	S.W.	N.W.
Sunday 25	51.0	32.0	41.8	10	0.50 in.	3	1	2	2	1	1	1
Mon 26	51.6	32.0	41.8	10	0.41	2	2	1	2	3	1	1
Tues 27	51.7	31.2	41.5	13	0.37	1	2	1	3	2	2	2
Wed 28	51.7	31.2	41.5	10	0.38	1	2	2	2	1	3	2
Thurs 29	52.0	33.1	42.6	14	0.55	1	3	1	3	2	2	1
Friday 30	52.6	34.4	43.5	17	1.00	1	2	3	4	2	3	1
Satur 31	53.0	34.0	43.5	18	0.90	1	2	3	4	3	3	1

The highest temperature during the above period occurred on the 27th, 1850—therm. 75 deg., and the lowest on the 25th, 1850—therm. 11 deg.

Notices to Correspondents.

BROCCOLI *T W.* Your Broccoli leaves are spotted with a minute Fungus, *Peronospora arcuata*. It is extremely common on the lower leaves. *M J B.*

CAMELLIA *Specialist.* It would be best to defer lifting the plants till the young growth is matured and the buds set. They may then be taken up and potted, but great care must be observed that they do not suffer from drought or from too powerful evaporation, which would hinder the swelling of the buds. They should be kept close for some time in a cool, moist, and nearly close atmosphere.

CATERPILLARS IN ORCHID HOUSES. *A Beginner.* Search for them at night by candle light, and destroy all you can get at; also lay some of Chaw's Beetle Poison about the house in the paths they most frequent. This, if followed up, will speedily thin the number.

CATERPILLARS WORMS. *H S.* We never suffer a personal attack, which was the form assumed by your letter, to be made in our columns. We have printed the only new fact brought out by your communication; the other cases had previously been made public.

GRAPES. *J R Pearce.* The Duchess of Buccleuch produces long bunches of rather small berries, but it has a rich Muscat flavour. The Royal Vineyard is a useful and good-looking White Grape, which hangs well, but is strongly-marked character is needs to be known. If you desire variety, we should recommend you to introduce both. Your "Carencarpus cargatus" is probably Colymocarpus hevigata, a greenhouse evergreen shrub of easy culture, and of little value except as an evergreen.

PASSAGE *M N.* You may get very good succession of blooming plants by planting single cuttings in thumb pots, placing them in moderate heat, and keeping them well watered and shaded. They must be hardened off into cold frames after they get established in pots, and may be planted out towards the end of May, being in the meantime shifted into larger pots, and kept in a free growing state.

PEACH TREES. *T B W.* I have seen other Peach trees this year affected exactly like yours. The spots are, in all probability, the effect of the unusually mild time after a very dry summer. At a later period Fungi will probably appear on them, but the consequence, not the cause, of the affection. *M J B.*

PEACH TREES NOT SETTING. *T S.* From the description you give of the trees and their treatment, your own suggestion of too much heat is probably the correct explanation of your want of success.

SEAWEED AS A MANURE. *P R Z* Manure water if applied with moderation will be beneficial. One or two power recommendations use twice a week from the time the fruit is set till it begins to change colour; and bushes his treasure from soot or the dung of sheep or deer, in preference to guano, which rather induces an overgrowth of the foliage. But you must remember it is used quite clear, and so weak as only just to colour the water.

COMMUNICATIONS RECEIVED. Rev. F. Hawke (much obliged)—J. Forsyth.—Dr. Mueller.—J. Hardie (shall be glad to hear further).

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SALISBURY MEETING, 1866.

President—The Right Hon. the EARL of PORTSMOUTH.

The ANNUAL MEETING, 1866, will be held at SALISBURY, on the 4th, 5th, 6th, 7th, and 8th of JUNE NEXT.

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Entries will close on the 14th of April.

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By Order of the Council,

JUSTAN GODWIN, Secretary,

17th February, 1866. 4, Terrace Walk, Bath

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The Agricultural Gazette.

SATURDAY, MARCH 24, 1866.

—— ON Tuesday evening last it was urged upon Government in both Houses of Parliament that the provisions of the Cattle Diseases Prevention Act against live cattle traffic by railway, which expire this day, should be extended by Orders in Council. From the replies however of Lord GRANVILLE and Sir G. GREY, we learn that the strict rule of the Act will not be maintained, but that an Order in Council will be issued as soon as possible, establishing a system of licences under which the carriage of live cattle by railway may be resumed.

—— We are glad to observe that the Council of the Royal Agricultural Society are being urged to procure for publication full and detailed reports of different branches of English agricultural experience. Certainly, the publication of authentic information, ascertained over a sufficiently extensive area and a sufficient number of years, regarding many of the novelties introduced into English farm practice during the career of the National Society, is very much to be desired. The practice of reaping and mowing by machinery, the utilisation of town waste of all kinds, and the practice of steam cultivation, all require this careful examination in the field. And a report drawn up by competent commissioners, after a patient inquiry into each under the circumstances of ordinary agriculture, would command greater assent and confidence than any verdict of merit or demerit can obtain which is awarded by judges after a few hours' trial amid the excitement of an annual meeting. We hope to hear that the proposals on this subject have been accepted by the Council; and that an exhaustive and conclusive report of the costs and returns of steam cultivation, for example, on different soils and under various systems of management, may soon be looked for.

—— On Thursday in the House of Lords it was stated by Lord GRANVILLE that a cargo of cattle had recently arrived from Holland, among which, after being landed, the disease had manifested itself. The Foreign Office had been informed that [illegible] ations taken in Holland were insufficie[illegible] event affected cattle being sent to Engla[illegible] it was therefore intended to issue an Or[illegible] ncil prohibiting for a time the impor[illegible] ttle from that country.

—— It is [illegible] great regret that we announce the [illegible] Wednesday last, of Mr. MACDUFF, of [illegible] the recently elected Secretary of t[illegible] and and Agricultural Society, who h[illegible] entered on the duties of the office [illegible] gned by Mr. HALL MAXWELL, C.B.

AFTER eight [illegible] uration of the Cattle Plague among [illegible] ve are led to inquire, with some anxiety, what are our present condition, and future prospects?

Curative, preventive, and restrictive measures have been tried, if not fairly, at all events as fairly as they are likely to be tried in a country where every man has an opinion, and a habit also of acting upon it without reference to his neighbour's views. And now, how does the matter stand?

The returns published weekly by the Veterinary Department should answer the question, and notwithstanding certain grave charges of incorrectness, they probably do answer it as well as such questions are ever answered by statistics.

For the week ending February 24, as compared with the week ending February 17, we find a total decrease in the counties of England, Scotland, and Wales, of 2834 cases; but we are further told in a note of explanation, that 281 inspectors failed to report in time for this return; and that of these, 35 of them returned 2847 cases the week before; the question then arises, how is such a statement to be estimated, and to what extent does it qualify the previous statement of a decrease of 2834 cases?

In endeavouring to answer this inevitable inquiry, we must ask attention to one or two points that are of considerable importance. In the first place the large number of weekly defaulters is a thing of less moment than it appears to be, for the reason that of the total number a very large proportion—in one instance 277 out of 306—do not send in returns in consequence of not having any cases of cattle plague in their districts; and in the paragraph we have just quoted, out of 281 defaulters only 35 returned cases the previous week. Further, it must be remembered that cases not reported in time for one week will appear as back cases in the next return, and that this system of adding back cases has been pursued from the first. The amount of actual error is, therefore, in all probability not very great; and by taking an average of a certain number of returns, may be reduced to a minimum. A common objection to the Privy Council returns is based upon statements emanating from non-official and non-professional sources. Reports of the number of cases of cattle plague existing in a particular parish, or a certain petty sessional division, are generally furnished by the constabulary, who, as a matter of course, have their reports upon hearsay, and thus are likely to include among the cases of "attacked" instances of foot and mouth disease and pleuro-pneumonia, not to speak of other even more common illnesses. Such a method of obtaining information would be objectionable on two grounds: it would lead to an erroneous impression, first as to the number of attacks, and, secondly, as to the number of recoveries, which would most certainly be considerable. Whatever may be the defects of the present system of obtaining statistics upon the subject of cattle plague, those defects arise purely from individual inattention; and in any case it is the only system likely to insure any approach to correctness. Unless the information received is derived from men having some knowledge of cattle diseases, the result must be hopeless confusion. Assuming, then, that the official returns furnish the most trustworthy information that can be obtained, and that on an average the amount of error is not serious, it follows that the outbreaks of plague have been diminishing week by week since February 24, each week showing a positive decrease, notwithstanding the addition of back cases.

Thus, for the week ending February 24 the decrease is 2834; March 3, 2857; March 10, 792. Our satisfaction at this intelligence is marred by a contemplation of surrounding circumstances, to wit, the number of herds that have died out or been destroyed under the provisions of the Act, leaving so many less to become victims; and further, our own observations in different parts

of the country unfortunately prove that the disease is not less virulent in its character, not less infectious, and not less fatal in results. New outbreaks are constantly occurring in localities hitherto free, and even within the last few days cases have appeared among newly purchased stock, making it evident that there is no safety at present. So long as the movement of cattle is restricted, and diseased and infected stocks are slaughtered as soon as discovered, the number of cases will necessarily become small by degrees, but we see no chance of a return to our ordinary system of management and traffic for some time to come; in fact, before we can claim a clean bill of health a vast deal remains to be done, and we fear we shall yet be forced to the conviction that our estimate of the magnitude of the calamity is more hopeful than true.

A STUD of Cochin-Chinas, rugg'd, surcingled, haltered to patent stable fittings in a long range of stalls, was a fancy of friend *Punch* at the time of the "Poultry Mania." Extravagant, of course, the notion of fowls taking the place of either horses or horned cattle in stall and shed; but not so extremely preposterous as many people may imagine. For instance, the present writer, having lost nearly every head of his Short-horn herd—bulls, milch cows, incalf heifers, yearlings, steers, and beautiful young calves—is actually turning his deserted bullock hovels into hen houses. Each standing for two beasts makes a capital "run" for a brood of fresh-hatched chickens, the clucking mother under a coop, and the little "cheepers" confined to the limits of their stall by sheep hurdles "wattled" with straw, a bit of the cheap "tanned netting" (inch mesh), or any other little-bird-proof fencing that is available. A low fence is all that one requires; for though a Dorking chick at a month old will jump, by aid of legs and wings, completely over a good-sized coop, this can be prevented by plucking the tiny feathers from one wing. The long rows of shedding are open towards the south, west, and east, admitting plenty of sunshine; while the birds are roofed over from rain, and sheltered from violent winds. Dry crumbly soil is laid down for the little feet to run upon without fear of cramp; a portion of short strawy manure is provided for the little claws to scratch; green food is given occasionally, in addition to the usual soft mess, soaked grain, &c.; and hard water in an earthenware "spittoon" (that won't upset), awaits the dips of the little bills. Fleas are most to be dreaded in such a situation; but the abundance of loose mould in which the birds can "rustle," will be some comfort in the warm weather, while a little bricklayer's white paint (namely, lime whiting), will do something towards maintaining health. Bloodthirsty vermin, as weasels, polecats, stoats, and common rats, are dangerous enemies in such a situation. But then frequent visits to the pets will scare the rogues during daylight; and the coops are of such a build that, at nightfall, the chickens can be shut in with their mother, leaving no aperture big enough for even a mouse to enter.

How many farmers might obtain lots of new accommodation for poultry by simply making use of the buildings they already possess; and how many farmers consider fowls unworthy of consideration, because of some supposed difficulty or expense in erecting suitable houses? And worse than this, how many farmers try to make poultry pay, without any result beyond continual vexations, merely from lack of ingenuity in bringing ordinary appliances into play. "Why bother about raising chickens in cow-sheds and outbuildings, when you can set out as many coops as you like on the Grass of a paddock, the gravel of a stable-yard, or upon the scattered rick-yard straw?" Because, generally speaking, half your chickens die under the common farm-yard treatment. They get wet feet, and die of cramp; they drink rain water out of cart ruts, or drink the high-coloured soak-water of manure heaps, of straw-yard drainings, and other filthy slops, and consequently sicken and die by dozens. We have a troop of adult breeding fowls loose in the farmyard; they pick up a large part of their living there. But they do not thrive so well or keep so healthy as other troops of breeding stock which we have stationed at houses purposely erected in Grass fields, far from the homestead. For a very small sum you may knock up a square boarded house, tarred outside, lime-whited inside, and covered with asphalted felt. Each of the four sides is in a separate piece, the roof (if of gable form) in two pieces, all hooked together at the corners by staples and pins. So a house (say 6 or 7 feet cube) can be popped into a cart, and temporarily set up in a pasture, on a stubble, or wherever there may be good picking for the fowls. A couple of perches, a few nests, and a drinking pan, form the furniture; while the ground covered in by the house (for there is no wooden floor), is spread over with loose earth, ashes, and mortar. Such is a home for one cock and eight to 10 hens and pullets during the breeding season, or the home of double this number of half-grown chickens. The house should be placed against a hedge, or in a corner where two hedges meet, so that a few poles and posts may protect it against cattle.

There can be no good reason against grazing fowls as well as other "animals;" and the farmer who tries it for the first time will be surprised at the amount of "grub" (literally, perhaps) which the active scratchers and peckers find in a Grass field, in and under the droppings of sheep and cattle, among hedge-roots, upon ditch sides, and so on; only a small supply of grain being necessary twice a day. It is late in the day to get hold of breeding hens and pullets; but still, they may be obtained in time for the present spring hatching. We wish that many farmers may take our advice.—Procure what hardy sort you most fancy, Cochins or Brahmas that endure close quarters, Game that are strong old English birds, Dorkings that like dry chalk and gravel countries; or, if you are in a low or wet neighbourhood, on a tenacious soil, put a Cochin cock to Dorking females (no cross-breds allowed for parents, mind; but get good blood of pure breeds), and you will have hardihood in your chicks, as well as weight and quality in your couples for market. The best of every breed can be supplied now, we should think, by Mr. JOHN BAILY, and other eminent "fancy" men; and, at any rate, good stocks may be always purchased at STEVENS'S fortnightly sales in Covent Garden.

Ducks, too, earn a very large proportion of their own livelihood. Once get them "out of harm's way" as ducklings, and they dabble and dive and wallow in filthy holes, and feed on insect life and offal garbage—making you wonder as (with thumb and finger constricting your nose) you watch their degraded habits, how their roasted flesh can be so flavoury and delicious. And the final topping up on meal for a short time before they are killed, is a trifling expense when compared with the market value of well-grown farm-yard ducks.

"Three geese," say some people, "eat as much as a sheep," but they may be grazed, perhaps, as profitably. Our bullocks, as we said, being now *non est*, and fool's caps and bells being ready for us if we should embark our capital in another lot (when we can find them), we are prepared to put bipeds, or quadrupeds, or any other form of animal on our pastures. And geese, under these circumstances, having no power to injure us as they do sometimes by spoiling the pond water that cattle have to drink, may take the place of some oxen and sheep. We remember observing a regular regiment of colossal Toulouse geese, parading in a large pasture somewhere between Leicester and Birmingham, remote from any farm buildings. It is a usual thing, too, with ourselves to receive from a "gosherd" in March a number of goslings (with old birds in the proportion of one to ten of the yellow woolly-heads), and part with them at Michaelmas. We have between 200 and 300 "to arrive" next week; they will be divided into two companies, with a pond each. A bunch of straw by the pond side, and a trifling quantity of offal Wheat daily for the first fortnight, keep them away from the farmstead (where the ducks don't want to be interfered with); and while an occasional chasing by a boy will prevent serious depredations in the corn crops, a trespass now and then into the hay meadow will only involve a bottle of beer to the mowmen for the trampled-down tracks that the scythe-edge refuses. After harvest, the noisy "saviours of the Capitol" will augment their flesh upon the grain-littered stubble. The gosherd comes three times during the summer to pluck the birds, always when the feathers are ripe, because the geese are beginning to "moult." Our share of the proceeds is half the young birds living at the end of the grazing (they seldom meet with any mischances), half the quills and feathers, each goose yielding about a pound weight of plumage, for making soft beds and bolsters. The ordinary price is 5*s.* a bird, the feathers giving about a shilling per bird more; so that we shall get 30*l.* to 35*l.* for our goose grazing. But this year is expected to see high prices for birds, and we shall perhaps be hard-hearted enough to pull off most of the "down" at the last time of plucking—an injury to the geese; but then, you see, down is selling for a shilling an ounce. We hope to realise 40*l.*, or more.

Will anybody "go in" for a few more fowls? Depend upon it he won't repent; and those voracious people, the consumers, will be very much obliged to you. *I. A. C.*

HOP GROWING.

[We add the rest of the Paper on this subject, translated by Mr. Evershed from the *Journal d'Agriculture Pratique*. See p. 252.]

THE Hop is a climber. Its stems, when allowed to do so, climb almost vertically, and twine themselves when they can from left to right around a pole or a tree. About the middle of the summer they push forth lateral shoots from the axils of the leaves, which shortly bend down, loaded more or less with leafy cones or female flowers, especially towards their extremities.

For a length of time the bine was supported in all Hop gardens by poles set upright, and 16 feet to 20 feet long. The object was to raise the bine, and to allow the lateral shoots to hang free to the period of the formation, development, and the maturity of the Hop.

This method of support has the advantage of allowing the plant to grow under conditions as natural as possible; unfortunately it compelled the grower to provide 1000 poles of Fir, Alder, or Oak for every acre of Hops. The poles, which are 26 feet to 33 feet long, cost, delivered on the spot and peeled, 10*d.* to 15*d.* each. They must be renewed on an average every six or twelve years, according to the durability of the wood.

The large capital required in the cultivation of Hops, especially on soils fresh and well manured, where long poles are needed, induced M. Denis, about the year 1826, to replace these supports by iron wires, stretched horizontally 7 to 10 feet above the ground. This method of support was first adopted at Roville in 1834, and Matthew de Dombasle strongly recommended it in 1837 to the growers of Lorraine and Alsace. The celebrated founder of Roville considered that the plan of horizontal iron wires had the advantage of avoiding the losses that occur from high winds at the time the poles are loaded with Hops near maturity.

This plan was adopted here and there in the Vosges and Alsace, as Matthew de Dombasle predicted, but most of the growers who substituted it for the use of poles were obliged to abandon it. They found out, as I have observed at Avignon for the last three years, that the Hop when it entwines around a horizontal support is always less productive than when its stems climb almost vertically. When the bine takes an upward direction the course of the sap is not interrupted, the long slender shoots formed at the axils of the leaves, upon the main stems, fall in festoons around the pole and become loaded with Hops. Then, and only then, as M. Alphonse Esquiros has so well said in his "Observations on England and English Life," "the Hops clinging to the tall poles form alleys narrow, hidden, and long drawn out between a double row of verdure with strong contrasts of struggling light and shade, that blend at last into a sort of shaded light lovely as the twilight. The beautiful clusters of Hops, green at first, but yellowing as they ripen, shaken by the wind, shed around at evening time a delicious bitter fragrance."

Hops supported with horizontal iron wires do not present a picture quite so smiling and so full of rustic poetry, because their festoons and natural garlands are less luxuriant and less heavily loaded with that balsamic flower that one plucks with so much pleasure in the month of September.

M. Schattenmann, having often experienced the inconveniences of the plan devised by M. Denis, and wishing to establish a Hop garden upon the property that he farms, some miles from Bouxwiller, made trial of the plan successfully practised for nearly 10 years by M. Matthis, the mayor of Neuwiller. This plan, the Society may remember, consists in replacing most of the poles by iron wires. A few words will describe how these supports are placed: every 30 feet a pole steeped in sulphate of copper is fixed, like the posts of the electric telegraph. This pole is 30 feet long; it stands 30 feet out of the ground; at the height of 27 feet above the ground is fixed a ring with two hooks. When similar poles have been fixed over the whole of the ground, they are tied together at their ends by galvanised iron wires (No. 16), and wooden pulleys furnished with cords are fastened to the hooks, so as to allow of a tarred chain (No. 25) being raised and lowered between the posts. This chain is furnished with 36 galvanised iron wires (No. 16), the other ends of which are fastened to nails or hooks driven into stakes six in number, and so placed that each stake six plants of Hops. Thus the interval right and left between the two posts is connected, and the result is that there are 36 plants of Hops—18 on each side—which climb obliquely by the wires to the 30-foot chain which has been described as stretching between the posts.

At picking time the chain is lowered by means of the pulleys, to enable the labourers to pick the Hops. After lowering the chain, the bine, if required, can be cut above the stakes that are driven in the ground, and the ends of the iron wires can be detached, so as to allow of their being carried under cover.

This system is less expensive than poles, but it is a question whether it offers the same advantages in the free access of light and air to the crop. The outside bines, supported on the oblique lines furthest from the ground, are more favourably exposed to light and air than the shorter central ones.

M. Schattenmayer, deputy mayor of Strasburg, being satisfied that the method devised by M. Matthis was cheaper and more productive than that of M. Denis, adopted that of the former, but with considerable modifications. But neither of these plans allow of those interlacing alleys which, in an ordinary Hop ground, are so favourable to the access of air and light to the plants. But the method devised by M. Stromayer is identical in this respect with that of poling. It offers all the advantages of poles without their inconveniences, and it allows of that upright growth of the Hop plant which is natural to it.

When poles are used for support, they must be set up in the spring, and pulled again at the time of picking, after which they must be collected into heaps and piled up in the form of large cones, wide at the base, so as to stand against violent winds for the period between autumn and April. These heaps are generally about 10 feet to 13 feet in diameter at their base.

All these operations are expensive on account of the length of the poles and the depth to which they must be driven in the ground; and to these expenses must be added that of the manual labour of tying the young leading shoots with rushes, or damp straw, at the time of growth, after the pruning of the plant. If the bine, which twines from left to right, was not tied to the poles at about 6 feet high, it would continually fall, and would hardly succeed in reaching to the top of its support.

Neither of the new systems of support have this disadvan-

tage When the young shoots reach the bottom of the wires they twine around it as freely as Bind weed or the climbing Cobæa entwine about a string. Therefore the substitution of iron wires for poles has the advantage of lessening the annual expense of cultivation.

M. Stromayer's plan consists in planting the Hops in rows 6½ feet apart, and the same distance from plant to plant. Posts, 8 feet long, and 10 feet apart are fixed in these rows, to make them secure they should be set in holes 1½ feet deep.

When the poles are fixed, stakes are driven in the ground outside the end of the rows, so that one stake stands 14 feet and another 22 feet from the outside posts. Then an iron wire (No. 8) is fastened to the nearest stake, passed round the first post and stretched above the row of plants at the height of 13 feet from the ground; its end is fastened to the corresponding stake at the other extremity of the row; this wire is nailed to the posts. Next a wire is fastened to the outer stake, strained in the same manner down the line of posts at 3 feet above the ground. Its end is fastened to the corresponding stake, namely the one standing furthest from the outside post at the opposite extremity of the row. This upper wire, however, is not fastened to the posts by nails, but is carried by strong hooks driven into the posts so that it can be lowered at will.

When this has been done, stakes 12 inches to 2½ inches long are driven into the ground just outside the row of plants, one stake to each plant. The upper iron wire is then lowered for the purpose of fastening to it the hooks that are to carry the perpendicular wires that take the place of poles. These hooks have long eyes, with the opening nearly closed, to which the training wires are fitted. When thus provided with No 12 wires, rather more than 20 feet long, the horizontal bearer-wire is replaced on the post hooks with the help of small poles, long enough than to use them when mounted on trestles of average height.

When the bearer wire is thus replaced, the ends of the horizontal training wires are fastened to the stakes, taking care to have them well strained. The arrangement is completed by fastening the upright training wires to the lower horizontal wires, which may be done by twisting round them short lengths of No. 10 wire. The object of this is to keep the uprights from being shaken by wind in spring and summer. Without this precaution the bines might be broken and stripped by constant sagging to and fro, and the crop considerably damaged.

The young Hop shoots are led to the uprights by means of sticks, about 20 inches long, fastened at one end to the stakes and at the other to the wires.

At picking time they detach the lower ends of the uprights, cut the wire which made them fast to the lower horizontal bearer, and two workmen with a pole—long, light, and forked at the end, lift the upper bearer off the hooks which carry it, and lodge it on hooks fitted to the posts at the height of 13 feet from the ground. Then, with a cutting-hook they easily unhook the upright or training wires, one by one, and hand them to the workpeople whose business it is to pick the crop. Two children or women can carry these wires loaded with bine—it is easy work.

M. Stromayer has made a road through the middle of his Hop garden, to allow of the passage of a cart. In the centre there is a space in turf, large enough for the erection of a tent, under which the picking can proceed in wet or foggy weather.

To sum up, this new method, adopted in 1862 at Graffenstaden on an extent of about 7½ acres, has the advantage of being less expensive and more economical than the old system; the same time more favourable to the maturing of the crop than that adopted by M. Schattenmann in 1860.

I have called the attention of the Imperial and Central Society of Agriculture to the trellis devised by M. Stromayer, for the purpose of inducing the growers of the present day to carry out the original idea of Matthew de Dombasle, and to avoid spending 40*l.* to 48*l.* per acre for poles. Having for 15 years carefully watched the cultivation of Hops in Flanders, the Vosges, Lorraine, Alsace, Wurtemburg, and England, it became my duty to endeavour to simplify the one of the attempts made in France to reduce the cost of producing them.

I have mentioned that France imports 20 millions of Hops every year, worth, at the average of prices, 200,000*l*. This considerable fact evidences that French agriculture has an interest in the further extension of the cultivation of Hops.

It is not enough, however, to point out that the Hop might cover a larger breadth in France. We ought also to inquire, whether on our soil the crop is of equal quality with the Hops imported every year from Germany. Hops are very in quality according to the district where they are grown. The least esteemed are those grown in the neighbourhood of Hazebrouck and Bailleul, in the department of the North. The Hops of Lorraine are better than those of French Flanders, but inferior to those of Alsace. The Hops from the latter period considered inferior to those grown near Saaz and Spalt and they still more so in regard to the growth of the Hazebrouck districts. But in the Strasburg district the great huge are manured with care, and the cultivation of better varieties from Germany. Fermentable, several varieties of this sage they have been introduced, naturalised, and the ground has been dressed with manures, rich in salts of lime and of potash, and in phosphoric acid, aiming to supply the Hops with all the elements required for vigorous growth, to enable them to produce 30 to 40 dry Hops to each plant.

M. Stromayer makes a compost consisting of 50 parts of city dirt, 25 of road scrapings, and 25 of stable manure. For each plant he gives about 9 lb. of this mixture every year.

It used to be thought that the Hop did not require very much manure, experience has everywhere proved that the plant is exhausting, and that it yields satisfactorily only when grown on soils rich or well manured. In general it is the strong plants growing on land well treated that vary least in yield and produce the best crops of the best quality.

The Hops cultivated in England are of three distinct sorts; 1st, the early Hop; 2d, that which ripens in first fortnight in September; and 3d, the late variety. Hops are generally of very ordinary quality, their only advantage is their ripening at the end of August, when the principal Hops most esteemed get those that ripen towards the close of the season and before the setting in of the September rains. That is the case with the varieties imported from Germany. They should be substituted for the very early and the late Hops. In England Hops remarkable for their size are often grown, but they are always inferior to what are called "small bodied Hops," which are generally more full of lupulin, the yellow powder.

After being picked, the Hops are in fine weather exposed to the sun for a day, and thus, having lost part of their moisture, the drying is completed by artificial heat. The latter operation is generally managed in kilns, but many of the Hop growers have not special drying places. However that may be, they ought to give up using boxes, or open drawers, if they would preserve the condition of the Hop. The shaking they get in these receptacles occasions the waste of a large part of the lupulin. The Alsacian Hop growers, who use boxes with strong paper bottoms, obtain Hops of the best quality.

In England the Hops are generally sulphured, a process which has not yet been adopted in France, because it is generally thought that the sulphuric acid injures the quality. It is a pity that this means of preservation is neglected, for it has shown its harmlessness, and its fitness for preserving the quality of Hops kept out of the air.

Finally, it is important to bag the Hops with sacking of thick and close texture. It is only by regular compression in good sacking and good warehousing of the packets, without exposure to air, that it is possible to preserve the aroma of the Hop until the spring. Howard the packing French Hops, dried with care, and kept properly, can successfully compete on the market with those sent to us by the Belgians and Germans.

The cultivation of the Hop will henceforth extend, from year to year, in various districts in France. It has already attained a certain importance in Champagne and Burgundy, in the neighbourhoods of Meaux and Dijon, and at the present time persons are engaged in introducing it in Vegetals and around Paris.

Thirty years since, Messieurs Payen and Chevalier, in their excellent work on the Hop, enlightened agriculture, and made known to brewers what Hops must affect the quality of beer. The considerable changes in the cultivation of the Hop, which occupies in France more than 21,250 acres, and the new varieties which have been introduced, seem to me ample reason why our different Hops should be studied anew, analysed, and compared with foreign Hops. The agriculture and industry of France can but derive advantage from scientific examinations of that kind.

The necessity of having poles, to the number of 1200 or 1600 per acre, has prevented the profitable introduction of the Hop in the departments of Seine-et-Marne, Seine-et-Oise, Eure-et-Loire, and Oise. M. Stromayer's plan having succeeded beyond all expectations, no obstacle will henceforth oppose the extension of Hop-growing in those localities where poles are scarce and dear.

The Imperial and Central Society of Agriculture having already directed its attention to the cultivation of the Hop, it will perhaps consider the utility of promoting further scientific investigations. I may be permitted to refer to the importance attained by Hop growing in Flanders, from the time when John the Fearless, Duke of Burgundy, instituted a competition by which those agriculturists who had grown most Hops received medals of gold, bearing the impression of a crown of Hops. And it has been by the offer of similar rewards that the Society has been enabled to enrich its publications with articles of interest, and which have made it respected by all enlightened agriculturists who are friendly to science.

APPENDIX.

In Alsace the yield of Hops this year (1865) was rather over a half a crop, the return being 40,000 cwt. instead of 70,000 cwt. That of Germany was in the same proportion. On strong land the yield was good, on average land middling, but on land with a sandy or gravelly subsoil it was very indifferent.

M. Stromayer counteracted the effect of the great drought by liberal irrigation from the beginning of August till the middle of September.

The following is the average of his crop:—Strong land, 17 oz. per plant. Average land, 12 oz. Light land, 8 oz. do.

Hop plants in March last, and watered twice in the end of the summer, yielded 1 oz. per plant.

In spite of severe storms M. Stromayer was entirely satisfied with his system. The cutting to the Hops supported by wires was thought to be less than in the piece that was poled; the latter surrounded the ground managed in trellis.

THE CATTLE PLAGUE.

1. The following returns were issued on the 17th: These returns do not profess to give the total number of cases which have occurred in Great Britain, but only those which have been ascertained from information received at the office from inspectors. Columns 1 only record the cases reported as having commenced during the weeks indicated by the headings: "back" cases being added to columns 2.

Cesses Divisions.	1 Number Attacked. Week ending March 4.	Week ending March 11.	2 Total Reported Cases from Commencement of Disease. Attacked.	Killed.	Died.	Recovered.	Unaccounted for.
Metrop. ..	17	14	7639	3234	3490	333	5
S. Eastern .	23	13	4947	1567	2783	442	210
S. Midland .	755	616	15,143	5385	9821	1487	455
Eastern Co.	241	313	9556	3946	4756	723	481
S. Western .	41	35	1481	451	757	198	75
W. Midland .	1067	945	4077	1773	7005	1192	108
N. Midland .	1632	990	10,179	3564	6261	1039	551
N. Western .	1744	2023	48,401	4212	33,311	4691	5987
Yorkshire .	1193	811	29,572	3012	18,021	5659	2880
Northern Co.	686	592	6606	2455	3478	926	147
Monmouth & Wales .	113	90	7291	765	5780	1017	329
Scotland ..	834	766	44,785	5027	26,447	9839	3444
	7,310	6,618	197,823	43,267	119,740	27,426	15,889

NOTE.—227 inspectors have not reported this week in time for this return. Of the 15 reported absent last week,—viz., for the county of Buckingham, 1; Chester, 2; Lancaster, 1; Lincoln, 1; Norfolk, 1; Oxford, 1; Suffolk, 1; East Riding of York, 2; the Metropolitan Police District, 1; and for Scotland 4. These inspectors returned 14 this week, last week.

2. REPAYMENT FOR CATTLE SLAUGHTERED TO PREVENT THE SPREAD OF THE CATTLE PLAGUE.—It is somewhat amusing to observe with what obliquity of mental vision this is viewed by some, and the clap-trap argument employed for the "poor urban ratepayer." It is now with scarcely an exception admitted that the plague was brought into this country by imported cattle, and thus it was in behalf of the consumer's interest, and in pursuing a process for the consumer's sole benefit, and in direct competition with the agriculturist's trade, that it was brought upon and inflicted upon the stock-owner, destroying his herds, and stopping most seriously the indispensable free exercise of his trade operations; and, as he has been no party in any way to the disaster and loss thus brought about, it is a forcible argument that not only should the consumer repay the cattle owner of this country for cattle slaughtered for the object of staying its spread, or to stamp it out, but that the innocent party should be paid not only for all cattle slaughtered, but also for all that have died, along with his losses both by deterioration of those which have recovered, and by the interruptions and impediments in his British right of free trade in dealing with the objects of his business. It is also a sound and equitable dictum of law that if any one, from negligence or gross incompetence, performs any matter by which an innocent third party suffers loss or damage, the innocent person is entitled to full compensation; and the same occurs if instead of the principal committing the negligence, and exhibiting the gross incompetency, his agent does it instead. Now, very few will contend that the Government of this country have not been extremely negligent and grossly incompetent to employ the means the law and the meat consumer had placed in their hands, and directed them to employ to meet any such emergency as the introduction of the rinderpest; notwithstanding that they were stimulated, urged, and prayed to take the course which there was abundant experience upon the Continent was the proper and only one needed easily to have arrested and destroyed the evil upon its first or soon after discovery. Glaring and prominent examples were shown them by France stamping out this plague by killing, &c., 43 beasts; our other neighbour Belgium accomplished the same under greater difficulties, and with the disease raging in an adjoining country, by slaughtering 300; even then our Royal Commission advised much that was good—yet Government, the agents of the consumers, with all these reasons and information, persisted in neglecting their duty and proclaiming their incompetency till this frightful evil culminated to an extent that it struck even them with panic upon seeing that 13,000 cattle a week were attacked; and then, as proof that negligence and incompetency were guilt, no sooner were something like reasonable means taken to battle with the plague than the returns show the number of attacked falls to 7000, or half per week. Obviously it was on behalf of the consumer these losses and restrictions upon the farmer's trade were incurred by the bringing in of the rinder pest, and by the gross negligence of the country's agents in not taking the ordinary and unofficially known methods of preventing the evil from conveying loss to the farmer. Thus, in all reason, right, and upon the recognised principles of law, the innocent party who has suffered should be recompensed by the country. H. L. *Woods, March* 17.

3. CARBOLIC ACID.—The Cattle Plague Commission have recommended carbolic acid as a disinfectant, and it is now extensively used as such. A spurious article composed of oil of tar, utterly valueless as a disinfectant, is now being imposed on the public. The iniquity of this fraud claims exposure, and I beg through your assistance to direct public attention to the fraud, as well as to the means by which it may be detected.

Commercial carbolic acid is soluble in from 25 to 70 parts of water, or in twice its bulk of a solution of caustic soda, while oil of tar is nearly insoluble. To apply these tests:—1. Put a teaspoonful of the carbolic acid in a bottle; pour on it half a pint of warm water; shake the bottle at intervals for half an hour, when the amount of oily residue will show the impurity. 2. Dissolve one part of caustic soda in 10 parts of warm water, and shake it up with five parts of the carbolic acid. As before, the residue will indicate the amount of impurity.

These tests are not given as having any pretension to scientific accuracy, but as affording persons who are desirous of using carbolic acid a rough-and-ready means of seeing whether or not they possess the right article. *William Crookes, F.R.S., London, March* 17. [Read Dr. Voelcker on this subject.]

4. MR. WORMS' TREATMENT.—I beg to send you a short reply to Mr. Worms' letter which appeared in the *Times* of the 8th inst., commenting on my report to the Clerk of the Council on the progress of the cattle plague among the animals belonging to Baron Rothschild.

In making this communication it may be necessary to explain that the subject would have received my earlier attention but for the circumstance that I have been almost continuously out of town during the last week, investigating supposed outbreaks of cattle plague among sheep in different parts of the country.

Mr. Worms says I "would have the world believe that of the herd of 119 animals the majority had died, whereas, in fact, a very small proportion died, and the remainder had been slaughtered in conformity with the Act." He adds, also, that "Baron Rothschild wrote to the Privy Council, requesting that a few days might be granted in order to give a fair chance to cattle under treatment," and received an answer from Lord Granville to the effect that "the operation of the Act could not be suspended, and that it must be put in force at once, which was accordingly done, and the animals forthwith slaughtered." With regard to

the latter part of this statement, I may remark that the Act was passed on the 25th of February, and that my visit to Mentmore was made on the 3d of March, at which time 66 animals of the original 119 were still alive. Three-fourths of those animals were in a dying condition, notwithstanding which, and that six days had elapsed since the passing of the Act, the requirements of the law had not been "put in force." On making inquiry as to the cause of the delay I was informed that the local authorities had not taken the first necessary steps in carrying out the law by having an estimate made of the original value of the animals.

With reference to the former part of Mr. Worms' statement, that "a very small proportion had died, and the remainder were slaughtered," I may observe, that if the 66 animals referred to be deducted from the original 119, there will remain 53 to be accounted for. Now, of this number 18 only were shot, and 35 had died, so that the proportions of deaths to those slaughtered was a very large, rather than a small one.

Leaving these facts to speak for themselves, *James B. Simonds, Royal Veterinary College, Camden Town, March* 15.

5. RINDERPEST IN SHEEP.—The committee of the Chamber of Agriculture and Scottish Farmers' Club, at a meeting held at Edinburgh on Wednesday, resolved, on the motion of Mr. Hope, Fentonbarns, "That the evidence of sheep having taken rinderpest is far from conclusive, and that if sheep become affected with the disease they are certainly not naturally susceptible of it." The Edinburgh Cattle Plague Committee, on the other hand, have adopted a resolution of an opposite tenour—namely, "Having carefully inquired into the alleged cases of rinderpest in sheep reported to have occurred in the county of Fife; having had the advantage of hearing a full statement on the subject by one of their own number, Professor Strangeways, veterinary surgeon, who went down to Fife for the purpose of examining into the matter; and having themselves witnessed the *post mortem* examination of several of the sheep in question, they are of opinion that the cases reported from Fife are undoubtedly cases of rinderpest, and that it is expedient that measures should be adopted for the prevention of the removal of sheep from infected places to places hitherto uninfected."

6. THE MEAT MARKET.—It is now just four weeks since our Monday's report from the Metropolitan Cattle Market first exhibited the effect of the temporary regulation against the conveyance of cattle by railway. The fourth report on the effect of this regulation appeared in our columns yesterday. In one respect, indeed, it is not less satisfactory than surprising. The price of beef has actually fallen to what it was on the 19th of February, before the prohibition came into force; and, notwithstanding the sudden derangement of the trade, the best beef is at this moment cheaper than it was at the same time last year, and is at the same price as in 1864. Prime beef was quoted yesterday at 5*s.* the stone, against 5*s.* 2*d.* last year, and 5*s.* in 1864. Another feature of Monday's market, to which this reduction of price must probably, to a large extent, be attributed, is not less unexpected. For the past three weeks, as we have noticed, the supply of live cattle was but half the usual number, and these were all imported. This week, however, the supply is very nearly as large as it was before the prohibition came into force. On the 19th of February the total number of beasts for sale was 4520, and this was considered a more plentiful supply than usual. But on Monday the number of beasts at the market was no less than 4160. This remarkable result has been attained by the sudden expansion of the foreign supply. By the stopping of the home traffic about two-thirds of the usual sources have been suddenly closed, but the remaining third has been so much developed as almost completely to supply the deficiency. On the 19th of February, out of 4520 beasts for sale, 1710 were English cattle, and 1050 were Scotch or Irish; the remainder, or 1760, were imported from the Continent. Yesterday, on the contrary, out of 4160 beasts, only 290 were English, having been conveyed by water from Norfolk and Suffolk, 377 were Scotch or Irish, and the remainder, to the number of 3490, were imported from the Continent, 3080 coming from Germany and Holland, and 410 from France. We may almost say that the live cattle market is in just the same condition as before the recent prohibition. The only difference is in the source of the supply. We can hardly, indeed, suppose that there are the same number of prime animals among these foreign cattle as among those which formerly arrived from the English counties, and we can hardly doubt that the sudden and complete return to the former price of beef is partly due to an increased supply at the dead meat market. Still the fact remains that we have just as much a live cattle market as before. However the change may affect the dealers, the practical result to the metropolis is not altered. In fact, the streets of London were yesterday not less crowded by droves of cattle than under the old system. The inveterate habits of the British butcher are not, it would seem, to be eradicated in a day, and he is ready to organise a new sea transport service if he can possibly avoid an unwelcome reformation. Nevertheless, we must by no means be induced by such an unexpected turn of affairs to abandon the hopes we were entertaining. It was not to be expected that the new system of conveying dead meat could be completely arranged in a month, and it appears by a letter in our columns yesterday, from Mr. Mechi that the Railway Companies have not yet realised their obligations and their interest in this emergency. In carrying live animals they have to compete with the bullock himself, who can walk to town if the railway charge is too expensive; whereas in carrying dead meat they have only to compete with the ordinary carriers. Accordingly, while a live bullock can be carried from Kelvedon to London for 5*s.* 6*d.*, the conveyance of the dead carcase costs no less than 16*s.* 8*d.*; and this, too, notwithstanding that the weight is less in the latter case than in the former, the offal having been removed. Such a scale of charges appears to be as unreasonable as it is against the interest of the public. It must be less trouble, and must demand far less space, to carry the dead carcase of a beast than the live animal itself, and the charge should be rather less than more. It would unquestionably be a benefit to the railways if they obtained the whole carrying trade of the metropolitan meat market, and it is evident that they must lower their prices if they wish to obtain it. *Abridged from the Times.*

7. ASSESSMENT OF THE CLERGY.—Rumours had reached me that the rate for compensation under the Cattle Diseases Act was to be charged to the clergy upon their rent-charge. Till this morning, when I received authentic information to that effect, I refused to credit so monstrous a statement; for anything more flagrantly unjust was never proposed. By a fiction of pseudo-political economy the agricultural classes are saddled with this partial impost on the ground that the consumers, and not they, are the real sufferers by the wholesale loss of their stock, and that, remunerated as they will be by increased prices, they, and not the public at large, ought to bear the burden of compensation. Granting, for argument's sake, the validity of this reasoning, in what way does it apply to the tithe rent-charge? As owners of glebe lands the clergy are, perhaps, to that extent as justly liable as other owners and occupiers of land; but to charge such a rate upon the rent-charge is to inflict upon the clergy an income-tax from which the rest of their fellow subjects are exempt. A partial income-tax, I repeat, is the injustice to which the clergy are subjected by this compensation rate. The rent-charge rises and falls with the average prices of certain grains; but special and partial charges like that of the compensation rate were surely not contemplated in the tithe-commutation. There are hundreds of the clergy whose whole income from the Church does not enable them to enjoy the luxury of keeping a cow, and why are we to be amerced by a special rate as though we were specially interested in live stock? The very principle, false as I believe it to be, that limits the compensation rate to the owners of cattle, logically excludes the owner of rent-charge from liability to the rate, and yet we are to be taxed, if rumour speaks true, to the amount of one-fifth and more towards this rate in our respective parishes! In fact, the clergy will have to pay more in proportion than even the owners and occupiers of land. We do not object to share a national burden equally and equitably with the rest of our fellow subjects, but I must protest against the unfairness which imposes upon me a special tax from which others with no assignable reason are exempted. The prospect is frightful, with hundreds of cattle—numbers of which never had the disease, nor were ever, I believe, in any danger of having it—being slaughtered around us, to contemplate the having to pay one-fifth of the parish rate for this enormous waste. *J. K. Tucker, Rector of Pettaugh, Suffolk.* (*Times.*)

8. THE POLEAXE.—I venture to ask you to insert in your columns the following short statement of facts which, in my opinion, constitute a grievance of no ordinary magnitude:—

I am a landed proprietor and a ratepayer in the county of Chester, and, unfortunately, a great sufferer by the ravages of the cattle plague. I think, therefore, I have a right to complain both if the provisions of the Act passed to prevent the spread of the disease be not strictly acted upon in this county, and also if the compensation which must be paid out of the rates to be levied on house property and land be unduly increased.

Now, the Act directs that all infected cattle shall be slaughtered and buried, and compensation paid to the owners, leaving an option to the local authority in the case of cattle in contact with infected stock. In the face of this provision, the district committees for the hundred of Northwich have instructed their inspectors to deal tenderly with all infected cattle, which order the inspectors interpret, and their interpretation is assented to by the committee, to mean that infected cattle are not to be condemned so long as there is any hope of their recovery, but that as soon as the case is hopeless, the slaughter may be ordered and compensation awarded.

The result is that cattle in every stage of this disease are kept alive for days, distilling poison from their pores and spreading infection far and wide among the healthy stocks of the neighbouring farms. A further result is that the compensation, which was meant to include an equivalent for the possibility of recovery, is now merely a payment for a dead animal, as the farmer has the benefit of the few cows that do recover from the disease.

The only excuse that I have heard for this illegality is that the ratepayers are saved paying for the cattle that do recover. But surely this is but short-sighted policy, for if infected animals are the means of spreading the disease, the ratepayer will have to pay for hundreds of animals which have been infected by a herd out of which a miserable percentage only have been saved.

I have endeavoured in my capacity as a member of the Northwich District Committee to induce my fellow committee-men to act in accordance with the law. Hitherto I have been unsuccessful, and fear that I shall continue to be so unless, by the ventilation of the question in your columns, they become convinced that their present conduct is as short-sighted as it is illegal. *George William Latham, Bradwall Hall, March* 17. (*Times.*)

9. CARRIAGE OF DEAD MEAT.—I trust that our railway directors will take into favourable consideration the present unfortunate condition of the British farmer as regards his transmission of meat to the Metropolitan and other city markets.

Take my own case as an illustration. A live bullock weighing 1400 lb. is carried from Kelvedon to London for 5*s.* 6*d.* The same bullock when sent as dead meat ready for the butcher would only weigh 800 lb., or 100 stones of 8 lb. The charge for this would be about 2*d.* per stone, or 16*s.* 8*d.*, although there was very little more than half the weight. The carriage of the skin and offal would be an additional and considerable charge. The reason why the railways charge so much cheaper for live bullocks is that they can walk to London if the charge were too high, whereas in dead meat they have only to compete with the ordinary carriers, who cannot convey our dead meat hence to London under 2*d.* per stone.

This, no doubt, is a fair advantage to take under ordinary circumstances, but now that the traffic in living animals is prohibited, our railway directors should (during the continuance of the prohibition) meet the difficulty with a liberal hand. *J. J. Mechi, Tiptree Hall, Kelvedon, Essex, March* 16.

SHEEP BREEDING.

(*Concluded from p.* 252).

Winter Management.—Coming on the month of October some of the flock generally begin to scour. These should be removed at once to dry stubble ground, and get some physic, to clear off any inflammatory matter in the bowels; then get some tonics with opium. Lately I have used Day & Hewitt's black mixture, which I consider the best medicine for scour in lambs I have ever got. Some breeders don't think of using Oats till dysentery sets in, when it only increases the disease. There will not be much dysentery amongst the flock if managed in the way I have described; but when lambs have been neglected, and kept on old pasture after weaning, I have seen as many as 50 per cent. carried off by it. Sometimes mortality amongst lambs is caused by in-and-in breeding, and by using pampered and over-fed rams. Any ram that has been kept confined in a house and forced for showing is sure to get delicate-constitutioned lambs. I believe no amount of healthy feeding will injure a ram (such as cake, corn, and Turnips), provided he be allowed plenty of room for exercise to grow muscle as well as fat, and not dosed with tonics to give a false appetite. The proper selection of sheep to answer the climate in which the breeder is situated has a material effect on this disease. In the beginning of October some early Turnips and Cabbage should be spread all over the pasture where the lambs are grazing. At first they will begin to shake them about in their mouths, as they meet them, for amusement; but it will soon come to earnest with them, and they will be taught to eat them before they know it themselves. Some should also be cut to accustom them to the Turnips. By this means the lambs will lose no condition by the change of food when put on the Turnips, and many lives will be saved, as, when they are not taught to eat the Turnips when in good heart, they will often not eat them till they get so weak that the Turnips kill them. If the land is dry they should be put on the Turnip brake before the 1st of November. If the farm does not answer feeding on the red land, they should be kept on the lea fields to be ploughed that season, so that the manure may not be lost. But if the ground is dry, or middling dry, I prefer the feeding of them where the Turnips grow, as they do better, and a great expense of carting is saved, and the land is much more evenly manured, as it is trampled into the ground at once. When first put on the Turnip brake they should get a large piece of ground with most of the Turnips pulled off it, or they will foul the

Turnips too much, running over it before they get contented. The hurdles or nets should be moved once every week. The half of the Turnips should be pulled and cut in the troughs, to give the sheep room to lie. If the crop is a very heavy one, the half of the Turnips can be carted off for the use of cattle; otherwise the sheep would be too long on the ground, and leave it too rich for the following corn crop. One of Gardner's Turnip cutters should be kept in the field, and some cut and put in the troughs three times to habituate them to cut ones. Having their choice, they will scoop most of their food themselves at first; but as their teeth begin to fail they will resort to the troughs for most of it. Then the advantage of accustoming them to the troughs in time will be seen. But no shepherd can feed lambs successfully if the crops are not properly prepared for him. If young, unripe Turnips are given at first, the flock will scour on them, get weak, and many deaths will be the result, and the flock will get a dislike to the feeding, and do badly on it all winter. Turnips, to commence lambs on, should be sown early in May. Swedes and soft Turnips should be sown turn about, two drills of each, the Swedes to be pulled and cut in the trough, and the soft ones allowed for them to scoop. There should also be a few drills of Cabbage and Rape throughout the brake, so as to give a variety of feeding for the hoggets. The Turnip seed should also be a mixture of the best varieties. The want of proper precaution in having the Turnips in a ripe state for them at first is the unseen cause of the failure of so many in Turnip-feeding sheep; and men who have fed sheep on the Turnips successfully have been disappointed when trying it in Ireland. In Scotland the frost sets in sharp, generally about the 1st of November, and if Turnips are not at their growth then, they are not expected to do anything after that time; but in Ireland I have often seen the crop grow till January, and therefore the roots are not fit for sheep till that time. Some seasons we have not as much frost as stops the growth of the Turnip; therefore it is necessary to sow as many early soft Turnips early in May as will keep the sheep till after the new year; otherwise deaths amongst the sheep will be numerous, the system will be blamed, and one of the most profitable ways of farming light land will be abandoned.

Winter Fattening.—Hoggets intended to go off the Turnips as mutton should not be forced to clean up the Turnips too close, as they will not fatten so well if forced to clean up tainted Turnips. I generally run the ram and wether hoggets that are intended for mutton first, and follow them with the ewe store hoggets, making them clean up all the refuse. Care must be taken to have the Turnips hoed up as they come level with the ground; otherwise they will fill with sand and injure the sheep. When hoed up the rain washes them, and the sheep become very fond of them. Hoggets that are to be fattened must get a good supply of Oats three times each day. The store ewe hoggets should get a little every day up till the new year, when they ought to be strong and accustomed to the Turnip feeding, and will then do without any more corn. The Turnip and Oat troughs should always be well cleansed out, as the sheep is a very dainty animal. The corn should be given before each feed of cut Turnips. This keeps the Turnips from griping them. The hoggets should not be disturbed much, or hurried about over the soft ground. Several cocks of sweet oaten straw should be put up on the Turnip ground, according to the number of sheep—about one to every 50 sheep. A pole stuck in the ground, and the straw built firm round it, is preferable to giving it in racks, as they will begin to the cock for mischief, and will eat it sooner than out of racks. It is surprising how much straw they use, picking the fine parts of it, and leaving the coarse to make bedding of. To some particular people this plan may seem wasteful, but the refuse can be carted home to litter the cattle boxes, and straw cannot be wasted if it goes to the manure heap. Some are also amused at the idea of giving straw to sheep instead of hay; but I find that along with the Turnips they do better on it, and it is a great deal cheaper. During frost the sheep must be moved up from their lair about 10 o'clock at night; for when the ground gets frozen hard their feet get tender, and they will be lazy to rise; and sheep taking a large feed of Turnips must necessarily void a great quantity of urine. Some of them will lie so long that they take inflammation in the neck of the bladder, and when pain forces them to get up there will be a complete stoppage of the water; braxy follows, and death in a few hours. The advantage of disturbing them at this hour is at once visible, as when raised the water will flood from them. It is very difficult to get herds to attend to this regularly. Whether it is that they don't believe in its value or not, I cannot say. Of course, when asked, they will say they did; but, on making it my business to see if they did, I never found them doing it regularly, and I lost several valuable sheep by trusting to their doing it; so that I now make it a practice to walk out amongst them every frosty night, and raise them up; and there is no walk through the day I enjoy more than my walk among the Turnip sheep on a frosty night; but I believe habit is everything, especially if by it we find our pockets the better. By particular attention to this during hard frost, I consider we owe our freedom from braxy in the flock. If the hoggets have been properly attended to, according to the system I have described, they should be ready for the knife by the 1st of April. A lot of the best should be picked out, washed, and put on bare pasture till dry, getting their usual allowance of feeding. When dry they should be clipped, and, if room can be spared, it is astonishing what a difference a fortnight's feeding will make in their appearance. A shed can be easily formed for the purpose against a wall, and thatched with rushes or any other material convenient. The second lot can go in when the first goes out, and they should be all gone about the 1st of May, without getting any of the second year's Grass from the ewes and lambs.

Results.—By this system of feeding, a much larger flock of ewes can be kept, as there will be nothing on the Grass except the ewes and lambs, and what ewe hoggets are kept to replace the culled ewes. I cannot understand how it pays to breed large, coarse sheep, that are hard feeding brutes, and keep them till three years old before going to the market. I do not care what weight they come to, it must be unprofitable to the feeder. No doubt, the mutton may please the consumer better, and turn out more inside fat to the butcher, but will they both pay for this? I say "no," as I get as much for fat hoggets per lb. as I see others get for three-year-old wethers. The season before last the Blandsfort half-bred Irish wethers averaged 50*s.* each, clipped in April, and the fleece about 17*s.* Last season the half-bred Cheviots made 49*s.* average, and 13*s.* fleece, but I think the difference of the last was paid up in the difference of keep, as three of the Cheviot ewes could be easily kept instead of two of the larger Irish ewes, and would bear twin lambs nearly as well as the others would single lambs. Such a price for sheep at that age I think pays exceedingly well, especially when we take into consideration the manuring and consolidation of the light land in a manner that no other manuring is equal to; but the system cannot be carried out without the right breed of sheep, bred for the purpose, as many of the soft breeds would only entail great loss on the owner who would expose them to the general treatment laid down, and they must likewise be well attended to, and proper food prepared for them. It is an old saying that "If a thing is worth doing at all, it is worth doing well," and if anything is worth doing well, at present prices, I think it is the breeding and management of our sheep flocks. I have no doubt many theorists will say my system is too plain and simple, and would like to introduce a great deal of chopping of straw, and making mixtures of straw and gruel, &c. I have also given this a very fair practical trial, but had to come to the conclusion that—except under the pressure of a Turnip failure such as was in England last season—it does not pay for the extra trouble and expense. I certainly found it do what the great advocates of the system say—viz., save the Turnips, but I also found it save the mutton as much. Feeding stock will not do well if forced to eat all the coarse parts of straw and other feeding, as they must do if mixed in this way. My plan is to grow plenty of Turnips, corn, and straw (and the more you grow, the more you would be enabled to grow). Give the feeding stock plenty of everything; but let them have their choice, and make the store stock clean up the refuse. There should never be more stock kept than there is plenty of feeding for, as one beast well kept will pay more than three badly kept. By my system the feeding is mostly all grown on the farm, the stock all bred on the farm, so that when they are sold the money is all rent. I never use much hay, as I consider it too expensive, and after feeding stock all winter on hay, they are only then ready in May for something to fatten them. By this system of feeding sheep on the Turnip ground, all the Turnips on the light land are grown at little expense, as there is no carting of manure on or Turnips off, the ground being evenly manured and trampled with that firm substance so essential to the growth of a corn crop in light soils, and by feeding the ewes on Vetches during summer, and with the aid of the farm-yard manure, which should be all used on the heavy land, it is kept in good order. I seldom use any cake during winter for the sheep on the Turnip-brake, as the ground is too rich after it; and the corn crop would lodge and also smother the Grass and Clover crops. Not so in England. Under their climate the corn crop will stand up and be improved by every pound of cake the sheep gets. But I have found it pay well to give cake to the sheep on the Turnip brake, then sow it down with Grass, Clover, and Rape, without a corn crop. I have several times fed ten sheep on an acre of this from July to November, and this is one of the best ways of improving a poor light farm. I never yet found any difficulty in getting a farm rich enough. I always find more difficulty in keeping it from getting too strong for corn growing. I see it is the practice of some breeders to put all their feeding sheep into small paddocks, and build sheds for them to lie in. This must be unprofitable, as the mutton has to pay for all the Turnips, corn, cake, and hay or straw used, as there is no return of valuable manure to tell on the following corn and Grass crops; besides the expense of carting the food all to them. Growing Turnips on light land by artificial manure and carting them off would ruin any light land, and leave it far worse than if Turnips had never been grown on it. During the summer Grass in such land, treated in this way, will get burned up when a slight drought comes. Besides, the sheep will do much better in the open field; for, no matter how much is written about sheds for sheep, it is against nature. When the outside of the fleece gets wet, and they lie down in a shed—a lot of them together—they sweat and get cold on the lungs and foot-rot, and often lose more condition in one month than they gain again in two. If moderately close-woolled sheep are kept—the only wool suited to our wet climate—and kept well filled, they will jump up in the morning after a wet night, shake themselves to the breeze, and kick up their heels for better weather.

Judging Sheep.—I consider this a fitting opportunity, before finishing this paper, to make some remarks on the judging of sheep; for this is the first thing a young sheep-breeder should learn, and I believe it is the most difficult lesson in connection with farming that the beginner has to learn, as there is no more difficult animal to judge belonging to our general stock than the sheep; and I have often heard men say that it is a thing that cannot be learned by a man in the after part of his life. I have sometimes been amused to see the careless way in which sheep are judged at the various shows. I have seen it so simply passed over that in a week after, when the same sheep met in another yard, held by different herds, the same judges reversed their decision of a week previous. It is impossible that any person can tell all the different points of a sheep by merely looking at him, the same way they would look at a race horse about to start for a race, when they can see every bone, muscle, and sinew in his body. But what would they know of this horse if he was all covered but his head with a rug, with wool on it 6 inches long? No doubt, they handle the sheep in a kind of sham way. They will pull off their glove scientifically, and press their fingers so gently on his fiddle-back, just as if they were going to feel what sort of wool was on the back of a hedge-hog. Then they take a circuit round him—whether to get a side view at him or save their trousers I don't know—and lay their finger and thumb round his neck, and after knowing that he has a back bone and neck, give their decision. No wonder that such gentlemen, judging, as they call it, should leave the competition in the sheep classes all in the hands of a few breeders; as many farmers, who have a good, useful sheep, fed in a profitable way, will not bring him out, as they know well that the sheep that has been house-fed, pampered, and sheeted is sure to take the eye of such judges. It is this class of judging that has left the Leicester sheep of England and Ireland at the present time all but despised by the men who have rents to pay. The breeders of these sheep latterly bred them for showing, and lost size, constitution, and wool—the three things indispensable in a profitable sheep. Notwithstanding all that is written about the improvement of the Leicester sheep of to-day, I have no hesitation in saying that they are not so useful a sheep as they were ten years ago. This is caused by the type of sheep selected by the judges for prizes at the shows. Not long since I heard a very extensive sheep owner remark, while looking at a prize sheep, that he was the nicest sheep ever he saw; "but that is his fault," he said. "Are you thinking of buying him?" I asked. "No," said he; "I would not use him to 50 ewes if I got 100*l.* for it. I have lost a great deal by using the like of him for some years." Then, why does this sheep get a prize? Because he was bred, fed, and kept for showing. But this is like farming that does not pay—all humbug. The breeders of the Leicester sheep in Scotland, rather than spoil their large, hardy, rent-paying sheep, stopped showing, preferring to forego the honours of the show-field before they would please the taste of the judges; the consequence was that they got a separate class of their own for their large Leicesters. And at present it is impossible to breed a ram to take prizes and also sell well, as the farmers are too wide-awake now to be deceived by a flea on a jelly-bag. Most of the shows have a rule that no names are to be branded on the sheep. What is the use of this when the herds are allowed to stand and hold their own sheep? In many cases the owner's name might as well be printed on the sheep's back. Why not turn the rams into a ring and let the judges stick first, second, and third on three of their backs? No fear they will soon find an owner, and this would show what sort of metal the judges are made of.

Home Correspondence.

International Exhibition of Fish in France.—Having been requested by Government to act as British Commissioner at the Exhibition to take place at Arcachon in July next, I shall feel greatly obliged if you will allow me to make public, through your columns, the object of that Exhibition. The vast

importance of the products of the sea, rivers, and lakes, both as food and for use in the arts, is forcing itself into notice. The French Government have organised an exhibition illustrative of this, under the presidency of the Minister of Marine and the Colonies, to be held at Arcachon, a seaport near Bordeaux, in July next. They invite from the seaports of their own country, and the fishing ports of their maritime neighbours, contributions to the Exhibition. These are variously classed, and comprehend specimens of cured and preserved fish for food; oil for use as medicine; chemical products extracted from Seaweed; shell, amber, pearl, colouring matter, &c., in connection with art; industrial products, such as oils, skins, whalebone, sponges, &c.; marine manures, shell sand, and Seaweed. Another class includes tools and machines for making boats, models of fishing boats, of oyster beds, and of salmon ladders; lines, nets, and fishing apparatus, and oyster dredges. Then there are instruments for preserving and smoking fish, with plans and models of curing establishments, and descriptions of modes of packing and transporting fish. There will be collections also of memoirs on the subject of fish and fish culture and management, with plans, charts, drawings, and photographs. For these prizes will be awarded according to their respective merits, and the cost of transporting the articles for exhibition will be borne, either altogether or in part, by the administration of the Exhibition. It is very desirable that the important fishery interests of this country should be creditably represented, and I shall be happy to receive and reply to any communication on the subject from persons desiring to contribute to the Exhibition. The entry of articles is requested by the beginning of April, and they must be despatched so as to reach Arcachon by the 1st of July. *James Oxford, 3, St. James's Square, March 9.*

Foreign Correspondence.

American Reaping Machine: 39, *Montgomery Street, New York, United States, Feb. 16.* Seeing from the ably written articles which appear from time to time in the *Agricultural Gazette*, that you take a great interest in improvements of farm machinery, and that you strongly advocate its adoption, I venture to send you a description of some improvements I have made in reaping and mowing machines, the object of which is to remove the tendency of the knives to break; to lessen the violent vibration and consequent undue wearing of the working parts (both resulting in stoppages at a most critical time), and also to reduce the horse-power required to cut a fair width of crop.

Hitherto the knife has been composed of one series of blades extending the whole cutting width of the machine and fastened on to one knife-bar, and the cutting of the crop against the fingers or guards the whole width has been simultaneous, and the strain caused by the sudden chops has, sooner or later, been too much for the strength of the knife-bar, notwithstanding the substitution of steel in place of iron. These alternate rapid concussions and cessations of work are also the cause of the immense vibration alluded to, and make irregular and unpleasant work for the horse-power.

Now my improvement consists in dividing the cutting width into two knives, and I drive them by two connecting-rods from a two-throw crank, which has the throws at quadrantial distance from each other on the circle described in its revolutions. Thus in a machine of 5 feet cutting width, one knife takes 2½ feet of this width, and the other knife takes the remaining 2½ feet; and whilst the advanced points of one series of blades (which compose the knife) are in the slots of the fingers or guards, those of the other series of blades (which compose the other knife) are about midway between the fingers—one knife doing the cutting (of 2½ feet), whilst the other knife is at rest, or nearly so, "turning the dead centre" of the crank; the latter knife then takes its turn of cutting, whilst the former knife is "at rest," or nearly so—and so on alternately.

You will thus see that (the speed of the crank shaft being the same), 1st, there is not, at any one time, much more than half the usual power required to work the machine, only one half the width being in actual cut at any one time.

2d. That there is only one-half the strain on each knife-bar and connecting-rod.

3d. That there is a better distribution of the work, the work of one knife balancing the cessation of work of the other knife; and that there is consequently a great reduction in the violence of vibration, the work on the horses more equalised, and a greater durability of the machine.

4th. That the power being reduced, the horses need not go at a distressing pace to overcome the resistance, and that consequently the raker-off (in manual raking machines) has leisure to do his work tidily, and without the usual excessive labour.

In anticipation of the possible objection which may arise in your mind to the weight of the extra connecting rod, and extra portion of knife-bar which runs behind the first knife, I need only draw your attention to the fact that one man can draw along a properly-made reaping-machine in gear when not in a crop (two men do it easily), whilst it is hard work for two horses to do it in a crop, showing that it is the resistance of the crop and not the weight of the knife-bar which requires the power.

It is hardly necessary to show that the bar of the second knife, working in rear of the first knife, is not detrimental to the good and clean working of the machine. Years ago, when the principle of cutting was not properly understood, makers were careful to avoid any impediment which was supposed to impede the clearance of the cut crop, but it was found that the (then) defect was in the fingers or guards in front of the knife; and since this has been remedied, rows of nuts, platform edges, and in some cases the platform risen some inches for the purpose of depositing gavels, are used without affecting the clearance of the knife; this doubt may therefore I think be set at rest.

The first cost will necessarily be greater by the extra connecting rod and part of knife-bar; and the double throw in the crank costs more than a single one, but this, with royalty added, should not show a greater advance than 30*s.* a machine at the most. And if the farmers are, for this amount, insured against stoppages, loss of serious time, and wages of hands, as well as blacksmiths' bills for remedying what after all is imperfectly done, I think they will be only too glad to pay it.

I enclose a small plan drawing, to assist you in understanding my description.

If you think the substance of this letter deserving a place in a corner of your excellent Journal I shall be glad, and it may prove useful to the agricultural community, by inducing the manufacturers to take it up.

I should have sent an advertisement with this calling manufacturers' attention to the matter, but I wished to avoid any appearance of making a bargain, and more particularly I wished the question to rest entirely on its own merits in your estimation. If the idea be good, it is sure to be brought before the public by means of advertisements. *S. Gideon.*

Reviews.

The Transactions of the Highland and Agricultural Society of Scotland. A. King & Co., Aberdeen.

The prize essays and other records of the Highland Society are now published annually in a separate volume, of which No. 1 is before us. It contains a very full account of Mr. Campbell's experience of sewage at Rugby; a most detailed and elaborate report of the Agriculture of Ayrshire, from which we make a long extract; and reports on Land Improvements, on the Sale of Timber, on the Proceedings in the Chemical Laboratory, and on the Murrain [not Rinderpest].

Mr. Campbell's paper is conclusive, as all agricultural experience is, of the uselessness of small doses of sewage as a fertiliser. It is only when he gets up to many hundred tons per acre per annum that any good results follow his application. The following extract describes the results on two pieces of the fields:—

"If there is one lesson more distinctly to be learned than another from the experience of these three years in the application of town sewage, it is the utter unprofitableness of shedding small quantities over a large area of land. Both the lessee of the town sewage and myself are quite at one upon the necessity of concentrating the sewage upon a smaller area, and accordingly, in 1857, I took more land from him with a new agreement for ten years, by which I had the power to apply the sewage without that limitation as to quantity which had embarrassed me before. Under this new agreement, I ceased, as a general rule, to measure the quantity applied, and kept it going all the year round, and chiefly on Grass land. I have, however, made use of it for green crops, such as Mangel Wurzel and Turnips, in dry seasons with good effect, and the same may be said of cereal crops, occasionally in spring, but not in wet seasons.

"It is to be observed that these three fields were watered all the year round, portion after portion, as was most convenient, by the hose and jet. It is impossible to estimate the quantity put on the land; it must have been considerable, but the results were by no means satisfactory, probably from insufficient supply during the previous season.

"*No. 3 Field.*—Nine acres Italian Grass, second year, began to water with sewage, March 13th. Began to cut the Grass, April 13th. N.B.—6½ cwt. of guano was also applied to this field.

	Tons per Acre.
1st crop gave	10½
2d do. do.	9¾
3d do. do.	7
4th do. do.	3¾
5th do. do.	Not cut this year.
Average	7·5

"*No. 18 Field.*—This is a field which I took in 1858 at that time very poor pasture. Its history, as respects sewage, may be useful. In 1857 it was drained to the depth of 4 feet; the soil is light, and in some places very wet, a kind of quicksand from 3 to 4 feet below the surface. Sewage was applied by means of hose and jet. It did much better as pasture, and this year (1858) I took hay from it, about 1¾ ton of hay to the acre. In 1859, the sewage was applied to 4½ acres of it, by means of the open gutters; from this portion 2 tons of hay per acre was cut, and it yielded an abundant aftermath. In 1860, the same process of irrigation by open gutters was carried on, and the result was an early bite for sheep, fully 2 tons of hay per acre, and an increased aftermath. In 1861, under the same plan, a crop of two tons of hay per acre was carried June 19, and from 3 acres of the same field, not watered with sewage, only one ton of hay per acre was obtained, and that was not carried until the 9th of September. In addition to this, the sewaged portion was cut a second time, yielding 4 tons per acre of green forage for cows, between August 28 and October 18, and besides that, about 1¼ acre were cut a third time during the same period; there was also a fair aftermath. In 1862 a very large supply of sewage was given to this field, both winter and summer, probably about 8000 tons to the acre. The whole field was cut green for the cows, when the 4½ acres which received the sewage yielded—

	Tons.	cwt.	qrs.
1st cutting	20	10	1
2d do.	31	0	3
3d do.	22	14	2
From 4½ acres.	104	5	3

"The 3 acres without sewage, but top-dressed with street soil, give only 8 tons 16 cwt. of Grass cut green from the whole 3 acres.

"*No. 18 Field.*—In 1863, with about the same amount of sewage applied winter and summer, the 4½ acres gave

	Tons.	cwt.	qrs.
1st cutting	47	1	3
2d do.	32	3	0
3d do.	19	11	2
	99	16	1

"The small falling off in quantity this season I attribute to the character of the season in point of temperature, which affects the period of cutting, nor is the supply of sewage so abundant in a dry hot summer. In 1864 the supply of sewage was greatly diminished. It was not applied in the winter months, nor from May 3 to June 17—most important weeks, the steam engine being out of order. And again, the extraordinary drought of the season materially affected both the supply of sewage and growth of Grass. The crop was, therefore, a comparatively poor one; the first cutting did not take place until the end of June.

	Tons.	cwt.	qrs.
1st cutting	34	2	2
2d do.	16	2	0
3d do.	10	1	1
	61	1	3

"The 3 acres not sewaged, but top-dressed with the liquid manure from the farmyard tanks and gas works, by means of the water cart, gave 15 cwt. of hay per acre,—by no means a bad crop for the season."

The above are some of the successes among many failures in the application of sewage which have been recorded in the experience of these farms, and which were owing generally to the insufficient quantity of the sewage available for application.

The following record of accurate weighings and measurements is conclusive as to the greater efficiency of the larger dose:—

"*Experiment on Natural Grass:* 1861.—In 1861, four plots of about one acre each were marked out in a field of old Grass pasture on my farm. The sewage applied was accurately gauged, and the produce carefully weighed. One plot was to have no sewage, and the remaining three to have it in different quantities. The sewage was put on by means of open gutters every month, in the first year, from March to November, and the Grass was cut and carried to my milk cows from May to November.

No. of Plot.	Acreage.	Quantity of Sewage per Acre.	Quantity of Grass per Acre.
		Tons.	T. c. q. lb.
1	One	None	5 3 3 5
2	One	307 68	14 10 1 8
3	.03081	14,000	7 0 0 0
4	1.0081	614 74	27 15 2 0

Grass cut per Month.

Month.	Plot 1.	Plot 2.	Plot 3.	Plot 4.
	T. c. q. lb.	T. c. q. lb.	T. c. q. lb.	T. c. q. lb.
May ..	—	—	1 14 3 14	
June ..	4 17 0 14	7 14 1 27	6 14 3 3	
July ..	0 4 0 7	2 8 0 13	1 6 0 26	6 14 0 13
August ..	—	0 16 2 25	0 12 2 8	5 18 2 16
Sept. ..	0 2 2 8	1 3 0 12	0 6 0 1	2 3 0 0 8
Oct. to 17	0 10 0 18	2 11 3 6	0 6 0 0	2 1 0 16 8
November	—	—	0 3 0 1	0 6 1 2 0 7
Total ..	5 3 3 5	14 16 1 27	9 1 1 2	32 15 3 0

"1862.—This year the same field was again irrigated with sewage, as in the year previous, the same division into plots being continued. It is well worth while to take notice that Plot 4, which received the largest amount of sewage, did not yield so large a return as Plot 3, which had 3000 tons less. This is probably owing to the wet season. The rain

fall for 1862 was 25.185 inches; for the previous year, 1861, it was 20.819 inches, and the year following, 1863, it was 18.514 inches.

No. of Plot.	Acreage.	Quantity of Sewage per Acre.	Quantity of Grass per Acre.
	Tons.	Tons.	T. c. q. lb.
1	One	None	8 3 1 10
2	.93375	2991.8	27 18 0 18
3	.93081	5984.5	41 10 0 19
4	1.00512	8966.7	52 9 2 22

GRASS CUT EACH MONTH.

Month.	Plot 1.	Plot 2.	Plot 3.	Plot 4.
	T. c. q. lb.	T. c. q. lb.	T. c. q. lb.	T. c. q. lb.
May ..	—	0 19 1 19	0 15 3 0	3 7 2 6
June ..	0 8 1 26	5 10 0 10	5 16 0 26	7 15 1 15
July ..	3 16 0 2	8 2 2 3	—	14 10 1 10
August ..	2 2 1 10	4 16 2 16	9 0 2 0	9 2 0 24
Sept. ..	—	2 0 1 0	6 12 2 10	4 17 0 0
October ..	1 10 0 7	1 8 — 16	2 15 1 7	1 11 1 11
Total ..	8 7 1 14	27 18 0 18	54 10 0 19	52 9 2 22

1863. "The same field was the subject of exact experiment this year, the sewage being applied in similar proportions, but the atmospheric character of the seasons was very different, the rainfall below the average. So we find Plot 4 again giving the largest produce.

No. of Plot.	Acreage.	Quantity of Sewage per Acre.	Quantity of Grass per Acre.
	Tons.	Tons.	T. c. q. lb.
1	One	None.	4 18 3 13
2	.90375	2989.0	22 5 0 11
3	.93081	5966.6	34 18 1 27
4	1.00512	8946.7	47 0 2 5

GRASS CUT EACH MONTH.

Month.	Plot 1.	Plot 2.	Plot 3.	Plot 4.
	T. c. q. lb.	T. c. q. lb.	T. c. q. lb.	T. c. q. lb.
April .	—	—	—	3 16 3 13
May ..	—	4 0 1 25	1 0 1 18	6 6 0 15
June ..	—	6 1 3 —	6 2 2 20	10 13 2 0
July ..	1 18 3 14	6 7 — 16	7 15 — —	— — — —
August ..	—	— 1 —	2 17 — 16	2 17 — 16
Sept. ..	0 10 3 27	2 7 1 —	4 12 0 2	7 14 0 2
October ..	—	2 12 1 1	2 2 — 5	3 0 1 1
November	—	0 3 0 16	0 2 2 16	0 3 2 24
Total ..	2 18 3 17	22 5 0 11	34 18 1 27	47 0 2 5

It is a remarkable thing that this volume for 1863-6 should contain nothing about the Cattle Plague!

Farm Memoranda.

FARMING SOUTH OF AYR: LAGG, GREENAN, MYREMILL, &C.—[We take the following from the Transactions of the Highland Society.]—Mr. Andrew W. Ralston occupies the farm of Lagg (Lord Ailsa), situated on the Maybole coast, about 5 miles south of Ayr. Extent, 325 imperial acres arable, and 190 acres hill pasture. Soil of the low lands generally a good strong loam with stiff clayish subsoil, and the higher arable lands of a lighter loam similarly bottomed. Fifty acres of the low land are under liquid-manure irrigation, of which more anon. The rest of the lower lying land is managed on a 7-shift—viz. (1) Oats out of ley; (2) green crop, mostly Potatos, with drilled Beans on the heaviest portions of soil; (3) Wheat; (4) green crop, mostly Turnips; (5) Wheat, sown out; (6) young Grass or hay; (7) pasture. The lighter soiled fields next the hill are under a 6-shift—Oats, Turnips (partly or wholly "fed off," growing with sheep), Oats, and three years pastured. Mr. James Todd, Dunure Mains (Hon. T. F. Kennedy), a mile or two farther along the coast, manages with precisely similar rotations to above, but often substitutes Barley for the second Wheat crop, as many of the Carrick soils (and Carrick farmers also, haply) are becoming "Wheat-sick" from a too frequent recurrence. The young Grasses are always better after Barley, and should climate more permit, its larger substitution for Wheat would be a step in the right direction. Mr. Young, of Highfield, Mr. Wright, of S. Sanquhar, and others in St. Quivox parish, by skilful and wary management can grow it successfully, and many more might do the same with like soils. Mr. Ralston's manuring for green crops generally under his ordinary rotations is—25 good carts of farm-yard dung, 5 cwt. dissolved bones, and 2 cwt. Peruvian guano, per Scotch acre. And the farmyard manure at Lagg is unusually good, from a large number of pigs being fed upon the dung-stead. The dung-stead, however, is not covered. We only know of three cases of "roofed in" steads in Ayrshire, although, of course, manure made under cover in sheds and straw-yards is very common. The covered dung-stead at Kincaidstone, the property of James Morton, Esq., of Belmont, is an admirable instance of the utility of this sort of thing. The kinds of Wheat sown at Lagg are—Drewitt's Woolly-eared, Archer's Prolific. Kinds of Oats sown—Potato, Canadian, Tam Finlay, Black Tartarian. Twenty-seven milch cows are kept, but only half a dozen or so of the quey calves reared to hold for stock. The fatting cattle are of all kinds (excepting "Irish"), but young farrow Ayrshire cows and Short-horn crosses are preferred; the latter mostly so, if they can be procured at a reasonable price. The beasts are mostly tied up, but the young ones generally in loose boxes. Cheviot ewes crossed with Leicester rams are maintained on the hill, and the lambs fed off on Turnips, &c.

On the 50 acres of low land, the diluted cattle-urine manure is distributed by gutta percha hose screwed on to stop-cocks in the iron pipes which convey it from the steading, placed at convenient distances throughout the four fields. All the urine and waste liquid of every sort goes into the tanks, and they hold about 70,000 gallons. The fall for some distance from the tanks is very little, but gradually increases, till just above the low ground the liquid descends about 80 feet. In spring the liquid is diluted about half and half with water, and in summer about two-thirds water to one-third urine. The 50 acres are worked on a four-shift—viz., (1) Italian Rye-grass, sown with the Wheat crop about the middle of April, at the rate of 3½ bushels of seed, along with 2 lb. each of Red and Alsyke Clovers, per Scotch acre; (2) Broadcast Beans, without manure; (3) Green crop of sorts, manured with nearly 40 carts of farm-yard dung, 2 cwt. Peruvian guano, and 4 cwt. bones, per Scotch acre; (4) Wheat, without manure. Only the Italian Rye-grass break gets liquid-manure, so that each field comes in for its turn of irrigation once in four years. In seasons of sufficient warmth of sun, four good cuttings are taken from at least part of the Italian break, and three off the remainder; and Mr. Ralston estimates the average of green Grass obtained each year per Scotch acre at about 25 tons. From the appearance of the crops of Italian which the reporter has seen growing at Lagg now and again, he would have estimated the yearly yield fully higher than what Mr. Ralston does, but of course Mr. Ralston knows best. In good seasons, six head of cattle are fattened to the Scotch acre of it, or 60 head to the break, besides the dairy cows and horses occasionally getting a little. They are "soiled" from May till end of October, but receive at same time a little oilcake (more or less to each, as may seem necessary) at night, and always an allowance of Oat fodder, although they do not appear to care much for it. As auxiliary to the liquid, from 1 to 1½ cwt. of Peruvian guano or sulphate of ammonia per Scotch acre is applied to each cutting, and washed well in with the liquid from the pipes immediately after.

The liquid-manuring at Lagg was set agoing about 15 years ago by the present Mr. Ralston's father, the late Alex. Ralston, Esq., Dunduff, than whom a more intelligent farmer or gentlemanly man Ayrshire never produced. It was the first instance (we may say) of the profitable application of "cattle-urine manure" by pipes and hose for soiling purposes in Scotland. But of later date, equal areas of low land have been under almost exactly similar treatment on the farms of Greenan (Mr. Quintin Bone) and Drumshang (Mr. John Craig), both also on the Maybole coast. Mr. Bone, we believe, has a fully larger area laid with pipes than at Lagg, and is also well deserving of notice for his general good management. These cases of "high-farming" are all carried on to good pecuniary advantage. Most other instances of the kind that the writer has heard of were always at the landlord's risk, but Messrs. Bone, Ralston, and Craig, are merely tenant-farmers, shrewd business men all, without a bit of "fancy" material in them, and by whom it must be and is made to pay—paying as they do at least 3*l.* per imp. acre of rent for their low lands, and interest as well on the outlaid money for tanks, pipes, &c.

The present tenant of Myremill (Mr. Duncan) only uses the pipes on a small low-lying holm of some 8 or 10 acres, keeping a large stock of dairy cows now on Myremill, and feeding also to a certain extent. Myremill "high-farming" was certainly a failure in a financial point of view. Probably the chief cause of that was, the endeavour to convert most of the solid excrement as well into a sort of fluid state, and force the whole through the pipes by steam-power. The dispersing power used at Lagg, &c., it must be remembered, is simply gravitation. But Mr. James Kennedy deserves very great credit, at least, for originating the system at Myremill on a grand scale. He had many difficulties to contend with that do not now present themselves, and few farmers in Ayrshire or elsewhere could have stood alongside of Mr. Kennedy for equal tact and ability in carrying on a business so extensive and complicated. The Ayrshire men noted above—as well as Lord Kinnaird, at Millhill, and others—all had the benefit of Mr. Kennedy's experience, and doubtless profited thereby.

In the previous section was noticed, generally, Mr. Wason's improvements at Corwar. We give here an instance of what can be done by a tenant-farmer, unaided, in the reclaiming and improving of waste moor, and bettering his own condition and that of his family at same time. Mr. David Hutcheson took the farm of Ducharneil (Hamilton of Pinmore), nearly 40 years ago. It lies on the water of Muick, in the north of Colmonell parish, and at that time was just a very middling sheep walk, all covered with Heather and with hollow places of "spretty" ground, excepting some 10 acres of holm land. Extent, 400 acres, all light land, near the till, with a greyish (mossy) top. Draining ought to have preceded by a year or two, as is done by Mr. Wason on his lands further south; but draining was not thought of then, and Mr. H. just began and ploughed one field after another till the whole was gone over that the horses could go upon. The Heather was ploughed down in spring with as thin a furrow as possible, and about 10 inches broad, the land spread with warm lime at the rate of 8 to 9 tons per acre immediately after, and again ploughed before winter, running the same furrow about as deep again as at first—say six inches. Two crops of Oats were taken, and the land sown down to Grass, the third ploughing with a still deeper furrow—say 8 to 10 inches. About 15 years ago Mr. Hutcheson had a good part of the farm drained with Government money, and green-cropped it afterwards, but finds now that that part will not keep nearly the stock which it did under the first simple improvement. He does not blame the draining of course, but the green cropping; being of opinion that green cropping in Ayrshire hilly districts with greyish-topped soil is harmful to the subsequent pasturage. This is a very common complaint with Ayrshire farmers generally. But we suspect that the main cause of the disappointment with Mr. Hutcheson and others is the practice of sowing down the land nearly wholly with Rye-grass seeds, and preserving the seeds from the first year's Grass. Green-cropping does of course kill the roots of the natural Grasses and plants of the soil, and unless the seeds of plants peculiar to the soil of the district to be sown down, or of others equally well or better fitted, be supplied, the land afterwards will be barer of plants than before. We quite concur, however, with Mr. Hutcheson, that green-cropping in most inland districts of Ayrshire can only be profitably carried on to a slight extent; and his system of breaking up only once in ten years with two Oat-crops, and again laying down to Grass, is probably as good as could be adopted. Sow down, however, with proper seeds, and take no seed-crop. Thirty milch cows are kept on Ducharneil, and their produce turned into cheese, excepting what of it goes to 20 of their progeny reared and grazed till 2½ years old. About 4 score of black-faced ewes are also kept on the farm, and served with Leicester rams. Half a score of swine are annually fattened off. Mr. Hutcheson and his son now hold other three farms besides Ducharneil—two of them sheep farms from the Earl of Stair, in New-Luce parish, of 1600 acres area; and the other, Balhamie, near Colmonell, on the Stinchar, from Cathcart of Knockdolian. The latter is of about 400 acres; the low ground, deep alluvial soil, being wrought on a 4-shift rotation, with dairy cows grazed on the upper pasture, and about 12 score of ewes on the hill, taking cross-lambs same as at Ducharneil. Mr. David Hutcheson is an example of a numerous class amongst the Ayrshire tenant-farmers, who have raised themselves to good social positions by their honesty, perseverance, and most industrious habits.

Miscellaneous.

Lord Palmerston as Farmer and Landlord.—It is well-known that a high-minded, conscientious holder of English offices of State does not amass money from them, but that at the close of a long Ministerial career he usually resigns his portfolio, leaving his country, not merely in sentiment, but in fact, very largely his debtor. Lord John Russell acknowledged before a Committee of the House of Commons, that he never was in debt until he became Premier; and, except the Order of the Garter, and the dearly-earned salary of offices to which Lord Palmerston gave his whole talent and energy with unflinching devotion, we know not that he received anything for the arduous services of 50 years. This being the case, it became necessary that he should husband the resources of his own patrimony, which he did with great care. As a landlord his example is worth observation. While absorbed in the affairs of State, he has found time to keep himself level with—nay, a little in advance of—the age in the matter of improvements affecting stock, tillage, farm-buildings, drainage, labourers' cottages, &c. During the past six years his lordship has been expending, in drainage and farm-buildings, some 4000*l.* or 5000*l.* a-year on the Broadlands estate. His special attention has been given to the drainage of the valley of the Test, so far as his estate goes, which extends from Nursling to Romsey. This tract of land formerly, owing to the unmanageable character of the water supply, was of little value; but now, under systematic drainage, it has become workable and productive. The position of the land in relation to the river has rendered this valley particularly favourable for irrigation. Until lately the tenants, with the concurrence of their landlord, laid great store by their water-meadows. Recently, however, a change appears to have come over Lord Palmerston's mind with respect to their value; and, at a time when so much is being said and written about water-meadows, it is important to observe this change in the mind of one who was no novice in practical agriculture—of one who could say to his agent, on his attempting to stop the loquacity of the

foreman of some drainage works, "Don't check him! don't check him! I'd rather listen to him than the best speech in the House of Lords." Lord Palmerston was as conversant with outfalls and levels as he was with statecraft; and while putting kings and queens, viziers and viceroys, to school in State policy, he was ever at liberty for a chat on rural affairs. The following letter, which was written on the very day the answer arrived from the Government at Washington concerning the Trent affair, affords a lively proof of his versatility in this respect:—

"94, Piccadilly, Jan. 6, 1862.

"My Dear Sir,—I have received your letter of to-day. The question to which it relates seems to me to be as clear and as simple as anything can be. It is self-demonstrable that underdraining must render more dry the atmosphere of the lands draining; and it is equally plain that it cannot materially, if at all, diminish the supply of water to any river that flows through such lands. Undrained land is like a sponge that is saturated with the moisture which, by capillary attraction, it draws up from below, and by the moisture conditions, such as sea-fogs, it imbibes from the atmosphere, and with the water which falls in the shape of rain or snow. The moisture thus held by this spongy upper stratum of the land is got rid of mainly by evaporation into the atmosphere in contact with such land, and the quantity of water with which that atmosphere is then charged is, in some cases, very considerable; and being much greater than the air can hold in solution, it is precipitated in the shape of mists and fogs, to the detriment of the health of the inhabitants of the district. The effect of sufficient under-drainage is to convert 1 foot, or 2 feet, or 3 feet of the upper crust of the land from the condition of a sponge to that of dry earth. That thickness of crust no longer draws moisture from below by capillary attraction, and the water which falls upon it, rain or snow, or which is deposited upon it by sea fogs, instead of rising into the atmosphere by slow evaporation, finds its way rapidly into the drains, and is carried off by them. The soil will, however, always, by its retentive nature, keep to itself moisture enough to supply the wants of vegetable roots. The good effects of draining, then, upon the atmosphere of the district drained are demonstrable in theory; and anybody who, like me, has had dry wells in a large extent of land, which before had been very wet, will have amply experienced those good effects in practice. The improvement in the atmosphere of that part of the valley of the Test which extends from a mile above Romsey to two miles or more below it, is most striking and satisfactory, and is entirely owing to the drainage works which have been executed within those limits. But then, as to the effect of under-drainage upon the supply of waters to rivers. Rivers are supplied with water by rivulets which flow into them and by water which rises from springs in their beds as they flow along. The rivulets will probably be much reduced by the drainage works, because they will be made the outfalls for the drainage of land on higher elevations. Then, as to the water which was before contained in 4 or 5 upper feet of the land through which the river flows—that water, instead of being evaporated into the atmosphere, is carried off by the under-drain, and is collected in the drains, and at the earliest point at which the descending level of the river will give a sufficient outfall; and, supposing the depth of the drain to be 5 feet or 6 feet, in a river of average rapidity of current the drained water may be discharged into the river at no very great distance from the beginning of the drain. But the water which feeds the feeding springs which rise up in the beds of rivers, the only water that is withdrawn from them is that which would have been contained in the 4 feet or 5 feet of the upper surface of adjoining lands; and I have already shown that, as regards such water, the river is a gainer and not a loser by the drainage. All the water in the soil below 4 feet or 5 feet from the upper surface of the land will, as before, find its way in springs to the beds of the rivers, without being in any way diverted from its course by the drainage of the upper surface. That this has been the case with the Test I can attest by experience, for the volume of its water has not been in the slightest degree affected by the drainage works in adjoining lands. It has so happened that the river has been much full of water during the last two years than it has been for several years before; but that was owing to causes quite unconnected with the drainage of works.—Yours, &c.,

"B. Denton, Esq." "Palmerston."

His Lordship's interest in the labourers upon and around his estates is well known. He was incessant in his attention to their happiness and prosperity, and was as ready to encourage virtue as to condemn vice. He was among those who consider that the possession of a good house must be at the foundation of domestic morality and thrift. In the erection of new cottages he was ever careful to build roomy, substantial dwellings, affording sufficient and decent accommodation to the tenant at a moderate rent; but he showed more interest in improving and enlarging existing cottages, on the ground that the money thus expended would go further in securing the comfort of the inhabitants than could be derived from new buildings. *Illustrated London News.*

The Cattle Plague.—Chester. The following is the number of cases reported to the 17th inst.:—Died, 38,676; killed, 13,296; under treatment, 4158; recovered, 7308 — total attacked, 63,438. During the week ending March 21, 5726 have been attacked, or 818 per diem, and dead and killed, 4589, or 655 per diem. The disease has now appeared in 432 localities in the county. *Times of March* 23. [This report represents an enormous increase on the previous week. The number killed may be understood as the result of the new Act; but the new cases show a frightful increase upon 1827—the number reported of the week ending March 10.]

Calendar of Operations.

March: *Potato Culture.*—This is the appropriate time for a word upon Potato culture as practised upon an extensive scale. The season for planting will soon be in, so that every preparation should at once be made. The land ere this ought to have been ploughed and cross-ploughed in readiness for the after working. Great care and judgment is requisite to ensure the proper cultivation or working of the soil in the early spring. The object to be attained is a fine open friable mould, suitable for ridging as for Turnip culture. This care and judgment therefore has plenty of scope for exercise throughout the early spring to achieve this ultimatum. On no account must the land be worked when in a wet state; nor is it worth while to spend much labour upon a tough or unkind soil, or upon a soil temporarily injured by water, so as to become stiff and "siddy." These can seldom be brought into proper order to yield a heavy crop, and a light or bad crop of Potatos is ruinous, the expense of culture being so great. The proper soils for Potato culture are our open strong loams. If other soils are forced into this order of culture, the aim must be to assimilate them as nearly as possible to these rich open loams by management and manurings. If this can be attained a satisfactory result will be forthcoming, a good crop may be depended upon. In order to do this advantageously, all the other work of the farm must give way to this. As soon as the land is dry and ready for working, all the available force of the farm must be made to bear upon it at once, so that with ploughings, harrowings, and the like, it may be brought to a fine tilth speedily. When this is achieved the planting may commence, and all should be got in by the 1st of May. The mode of planting should be upon the ridge system, and the preparation something like the following. The ridges should be at least 30 inches apart, and be set out in the usual way, *i. e.*, commencing with about 13 ridges, so as to give abundant room for the deposit of the fold-yard manure from the carts. All the work should go on simultaneously—the deposit of the manure—its careful spreading along the bottom of the ridges. On this about 3 cwt. of Lawes' superphosphate, or other of the many artificial manures, should be sown broadcast. The planting upon this should follow. A sufficient number of planters should be engaged as may keep the plough or ploughs going, *i. e.*, in opening one ridge, in going out on the one side of the carts, and closing up another after planting on coming back on the other side. In this way all is completed expeditiously and satisfactorily. The spaces between each planted set should vary according to the variety of Potato to be planted, *i. e.*, Flukes, about 11 inches; Regents, 14 inches; Rocks, 15 inches; and all other strong-growing varieties about the latter width. The sets must all be good, and of large size. Fine whole Potatos are certainly the best for a crop, but probably not correspondingly with the cost. Large well-chosen "seed," uncut, stand probably next, and cut sets last of all. The latter is the ordinary course, and probably, all things considered, it may be the best. Seed in this way goes much further, and should the season prove favourable, it will generally equal any other way—the expense of seed, of course, much less. In dry seasons this mode often fails, and then the larger the sets the better and safer the crop. In the average of seasons it is best to roll down the ridges lightly. The subsequent culture must consist of repeated hoeings, both by horse and hand, the moulding-up when sufficiently grown, and if the subsoil is rather stiff it ought to be subsoiled before the moulding up. If the tops grow profusely, the moulding-up should be repeated too. *O. F.*

Notices to Correspondents.

Cattle Mess: *J L T* You must dibble the seeds in two in a place, about a yard apart on the top of well dunged drills, done as for Mangel Wurzel, at 30 inches, or 2 feet intervals. Plant the seed in this way about the middle of May.

Corn in Grass: *Constant Reader.* No. 1 is a mere surface Bent. No. 2, true Couch Grass. You shall have a full botanical account of the two next week.

Gorse: *T H M* asks for information on the consumption of Gorse. He has 2 acres now fit to cut, and sadly wants it to help out his other food, but cannot prepare it, the machines made to crush it and make it eatable are too expensive to work unless in a large way. Will any of our correspondents help a brother farmer, and inform him how it can be made into a fit state for sheep? [A miller of Ulleck, the former armed with cross knives standing about three-quarters of an inch out of the hammer, will cut and crush it in small quantity.]

Grant's Patent Portable Railway: *Geo.* Under this heading there appears an advertisement in our columns a letter from Mr. Bunnyngham, of Hunton Court, Kent, who has given a thorough trial to this railway for farm work (as purchaser), including the dunging over of upwards of 200 acres of Hop land during the recent wet season. We entirely agree with him in regarding Grant's invention as important to agriculture, especially in the cultivation of clay lands, which are often manured heavily and injured in the process of carting, and thereafter are often again poached and injured in removing a heavy crop of Cabbages or Mangels. Mr. Grant's railway well deserves examination by all large cultivators of land.

Lucerne: Will any grower of Lucerne tell us his experience of the hay made from it. Is it ever cut for hay—how does it stand the mowings necessary in the process—and what sort of hay does it make?

Moss in Grass Land: *S G.* Harrow it out, and then fold cake fed sheep on the land. Or after harrowing it give a strong dressing of gas water, or of sulphate of ammonia, or other ammonical manure. Anything that tends to promote the growth of the Grass will help the eradication of Moss.

Natal: *A J.* We can but repeat the advice already given. In a long-established colony the wants of colonists have long since been considered by tradesmen on the spot. You had better take out nothing with you but things of personal or domestic need, about which there can be no doubt.

Onion: *X.* Assafœtida and Ginger: *J Gardener.* The so-called red pickling Onion was specified. It does not matter in the least which you use. The common blood red will do as well as any other.

Poultry: *R. Jackson.* You shall have a reply in full detail next week.

H A L L E T T ' S
TRADE
CHEVALIER PEDIGREE BARLEY.
MARK

Weight 56 lb. per bushel.

This has been "bred" in the same manner as the "Pedigree Wheat," viz: by repeating annual selection, re-starting in each year from a single grain upon a poor soil (resting immediately upon the chalk of the South Downs), which upon neighbouring farms produces Barley weighing but 51 lb., and that only for grinding.

Seed Required:—

If drilled in March .. .. 1 bushel on 3 acres.
" April .. .. 2 " "

Price Two Guineas a Bushel (including bag), delivered in bags sewed up and sealed, at the Brighton Railway Station, upon receipt of Cheque or Post Office Order, without which it will not in any case be sent to unknown correspondents. Less than a bushel will not be supplied.

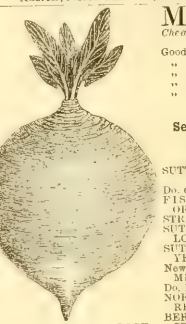
Apply to Frederic F. Hallett, Esq., F.L.S., The Manor House, Brighton, Sussex.

BLUNDELL'S CATTLE MELON and CATTLE MARROW.—These have now been tested in 37 counties in England, and in various parts of Ireland and Scotland, and proved to be a heavy cropping and valuable Fruit for Feeding all kinds of Stock.

Prices, exclusive of carriage.—100 Seeds, 2s. 6d.; Seed for ¼acre, 5s.; do. ½ acre, 9s; do. 1 acre, 16s.

Cash remittances from unknown correspondents.

Address, Joseph Blundell, Horsledon, Southampton.



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MANGEL WURZEL SEED from large Bulbs. *Cheaper by the cwt.*

	Per lb.—s. d.
Good YELLOW GLOBE..	0 9
" ORANGE GLOBE..	0 9
" RED GLOBE ..	0 9
" LONG RED ..	0 9
" LONG YELLOW ..	0 9

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Selected Mangel Seed
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SUTTON'S Selected YELLOW GLOBE	1 0
Do. do. ORANGE GLOBE	1 0
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Lowest price per cwt. on application.

Sutton & Sons, Royal Berkshire Seed Establishment, Reading.

GOOD CLOVER SEEDS at MARKET PRICES.

Red	White Dutch	Yellow	
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For samples and lowest prices, apply (stating quantity required) of Sutton & Sons, Seed Merchants, Reading.

The Cultivation of Bromus Schraderi.

SUTTON and SONS can supply genuine Seed of the above New FORAGE GRASS, in packets, for trial, at 1s. each, or in larger quantities at 8s. per lb., with instructions on cultivation.

Sutton & Sons, Royal Berkshire Seed Establishment, Reading.

Amaranthus cruentus grandiflorus.

SUTTON and SONS confidently recommend the above as one of the most showy hardy Annuals. The colour is a rich crimson, and has a most elegant and graceful appearance. It usually attains the height of 4 feet, and is therefore very suitable for groups in front of Shrubbery, or by the sides of Drives.

Price 6d. per packet, post free.

Sutton & Sons, Royal Berkshire Seed Establishment, Reading.

Improvement of Grass Lands.

SUTTON'S RENOVATING MIXTURE FOR SHOOTING LAND.

This Mixture consists of the finest Grasses and perennial Clovers, and if sown early in the season the improvement in the pasture will be very great, and at small expense. Quantity of Seed required per acre, 12 to 12 pounds. Price 10d. per lb.

From T. E. Osmond, Esq., *Thorp-le-Soken, February* 27, 1865.

"Your Renovating Mixtures for old pastures have answered my purpose well."

From J. Blackett, Esq., *Thorpe Lee, Egham, September* 30, 1865.

"Mr. Blackett will be obliged to Messrs Sutton to send him Renovating Grass Seed, of the same quality as last year, which was excellent."

From W. Harper, Esq., *Agricultural Costuay, Whitwick, Jan.* 4, 1866.

"You will be glad to hear that your Renovating Mixture for our Home Meadows has answered remarkably well. It is now the greenest and freshest 10-acre field in the neighbourhood."

PRICED LISTS gratis and post free. All goods carriage free, except very small parcels.

Sutton & Sons, Royal Berkshire Seed Establishment, Reading.

SUTTON'S MIXTURES of CLOVERS and RYE-GRASS.—To be sown with Corn for a crop of Clover, &c, which will produce good feed during the Autumn, and in the following year.

CLOVERS and ITALIAN RYE-GRASS (Messrs. Sutton's Mixture), for One Year's Cover Hay, at 14s. per acre.

CLOVERS and COMMON RYE-GRASS (Messrs. Sutton's Mixture), for One Year's Cover Hay, at 14s. per acre.

CLOVER and PERENNIAL RYE-GRASS (Messrs. Sutton's Mixture), at 12s. 6d. per acre.

In the Mixtures of Clovers and Rye-Grass described above, we generally give 11lb of Clovers (principally Red and Alsike) and one peck of Rye-Grass per Acre; but if more Rye-Grass should be desired, it can be supplied without altering the price, by omitting a pound or two of Clovers. If but one kind of Clover is required to sow with Rye-Grass, it is only necessary to name the sort in giving the order, and the proper quantity will be sent.

Those who require Seeds to sow with Corn for One Year's Cover Hay will save themselves trouble, and ensure a proper mixture for their soil, by ordering the above-named Mixtures for the number of acres to be sown.

GRASS and CLOVER SEEDS, for Two Years' Lay.—This Mixture contains a large proportion of Perennial Clovers, and under favourable circumstances will often stand for three years.

The following sorts are included, and invariably answer well:—

Broad Red Clover	Round Cocksfoot
Perennial do. (Cow Grass)	Sheep's Fescue
White Clover	Timothy
Alsike Clover	Paces's Perennial Rye-Grass
Yellow Trefoil	Sutton's do. "
Meadow Foxtail	Italian Rye-Grass

The quantity required per acre is one bushel, weighing about 25 lb. Price 20s. per acre.

GRASS and CLOVER SEEDS, for Three or Four Years' Lay.—The sorts contained in this Mixture are somewhat similar to the preceding, but the quantities of Permanent Grass Seeds are increased to insure the continuance of the pasture for three or four years. The quantity required per acre is two bushels. Price 24s. per acre.

These Mixtures are highly profitable, producing enormous crops of Grass of the best quality, but must not be expected to form Permanent Pastures.

From C. F. Thruston, Esq., *Talgarth Hall, Machynlleth.*

"I had a most famous hay crop on a 10-acre field from the 'seeds for three years' you sent me last season. I have never, since I commenced farming, had such a heavy crop."

PRICED LISTS of other FARM SEEDS gratis and post free.

All goods carriage free; 5 per cent. discount allowed for cash payment.

Sutton & Sons, Royal Berkshire Seed Establishment, Reading.

Brighton and Sussex Seed Warehouse.

EDWARD CARPENTER'S MIXTURES of PERMANENT GRASS and CLOVER SEEDS.—Best quality, 36s. per acre (2 bushels light seeds, and 12 lb. Clovers and small seeds per acre).—See testimonials in Catalogue.

EDWARD CARPENTER'S RENOVATING MIXTURES for Improving Old Pastures.

PRICED CATALOGUES of KITCHEN GARDEN, FLOWER, and FARM SEEDS now ready.

EDWARD CARPENTER, Seed Merchant and Grower, 96, St. James's Street, Brighton.

To Market Gardeners and Others.

CABBAGE PLANTS, EASTHAM, ENFIELD, and DRUMHEAD, 1s. 9d. per 1000. The stock true and can be warranted.

RED CABBAGE PLANTS, extra fine, 5s. per 1000.
ONION, WHITE SPANISH, 1s. 3d. per lb.
WURZEL, YELLOW GLOBE, 28s. per cwt.
EARLY SHAW POTATOS, 6s. per cwt, warranted true.
Terms cash.

RICHARD WALKER, Seed Merchant and Grower, Biggleswade, Bedfordshire.

TO AGRICULTURISTS.

JOHN MALDEN, AGRICULTURAL SEEDSMAN,

BIGGLESWADE, BEDS,

RESPECTFULLY INFORMS AGRICULTURISTS THAT HE HAS BUT A SMALL QUANTITY LEFT OF THE

SEED OF HIS NEW FODDER PLANT, MALDEN'S CLOVER,

And to prevent disappointment, Orders should be immediately given to the following Agents:—

Messrs. Peter Lawson & Son, Seedsmen to the Queen, Edinburgh and London | Mr. J. Sarnby, Merchant, Epping
Messrs Sutton & Son, Royal Seed Establishment, Reading, Berks | Messrs. Stewart & Son, Dundee, Scotland
Messrs Hurst & Son, Seedsmen, 6, Leadenhall Street, London | Mr J. Dixon, Highgate, Kendal, Westmorland; or sent to

J. MALDEN, BIGGLESWADE, BEDS.

Thomas Lipton

ROYAL AGRICULTURAL SOCIETY OF ENGLAND — APPOINTED APRIL 1864 — THE SEEDSMEN

THOS. GIBBS & Co. Corner of HALF-MOON St. PICCADILLY, London.

CORNER of STREET.

Trade Mark.

GRASS SEEDS, AGRICULTURAL SEEDS,

KITCHEN GARDEN SEEDS, FLOWER SEEDS.

Catalogues forwarded post free to any address on application.

PETER LAWSON & SON,

THE QUEEN'S SEEDSMEN,

LONDON and EDINBURGH.

FARM, VEGETABLE, and FLOWER SEEDS.

28, KING STREET, CHEAPSIDE, LONDON, E.C.

SUTTON'S

GRASS SEEDS FOR ALL SOILS,

26s. to 36s. per Acre.

Messrs. SUTTON'S GRASS SEEDS being Mixed expressly to suit the Soils for which they are required, Persons ordering have only to state the Nature of the Soil, and Acreage to be laid down, when suitable Seeds will be supplied.

SUTTON'S **GRASS and CLOVER SEEDS** FOR

PERMANENT PASTURES,
RECLAIMED MARSHES,
GOOD BLACK PEATY SOIL,
CHALKY UPLANDS,
SHEEP DOWNS,
WATER MEADOWS,
CHURCHYARDS,
CRICKET GROUNDS,
CULTIVATION with LIQUID MANURE

SUTTON'S **GRASS and CLOVER SEEDS** FOR

PERMANENT PASTURES,
PARK LANDS,
for 3 or 4 YEARS' PASTURE
HAY or SOILING,
2 YEARS' DITTO,
1 YEAR'S CROP of HAY,
FINE GARDEN LAWNS,
NEW PARK LAWNS,
BOWLING GREENS,
ORCHARDS,
RENOVATING OLD PASTURES.

Messrs. SUTTON beg to announce that their GRASS and CLOVER SEEDS, which have hitherto given such great satisfaction, are now ready for sending out. The Seeds this year have been harvested in the best possible condition, and Messrs. SUTTON respectfully request early orders, which shall meet with their best personal attention.

List of Prices of Turnip, Mangel, and other Farm Seeds, with any information required, will be sent on application.

MR. MARTIN SUTTON'S "ESSAY on PASTURES," 6d. post free, or Gratis to Customers.

SUTTON AND SONS, ROYAL BERKSHIRE SEED ESTABLISHMENT, READING.

THE ALSIKE CLOVER for CLOVER-SICK LANDS.—This excellent Clover will thrive in almost any soil. It produces two good cuttings in the year, and makes superior Clover hay. It may be sown alone (14 lb. per acre), or in conjunction with other seeds, either for alternate husbandry or for Permanent Pasture. If sown with Italian Rye-grass, it is ready for mowing three times in the year. It is included in all Messrs SUTTON'S Mixtures, and they strongly recommend it to more general cultivation. Price may be had on application (depending on quantity required)

Royal Berkshire Seed Establishment, Reading.

Very Early Sheep Feed.

SUTTON'S IMPROVED ITALIAN RYE-GRASS.—This "Improved" Italian Rye-grass is recommended in preference to every other variety, producing three or four heavy crops in one summer, and being almost if not strictly perennial.

At a Meeting of the Royal Agricultural Society, on March 16, in a Lecture delivered by Alfred Hughes, Esq., of Thorness, Isle of Wight, Mr. Hughes said—

"I always reserve a portion of Oat land to lay down with SUTTON'S Improved Italian Rye-grass, the most reliable plant I have come across for some years for Ewes and Lambs in the Spring. When I tell you that I put it in in the spring, and dressed it after harvest with guano, and that in the autumn, when my Sheep fed it off, it was up to their knees, and that I fed it off again this spring with Ewes and Lambs, I think you will agree that this is a crop of very great value. The Italian Rye grass which is sold by SUTTON, of Reading, is a most astonishing vigorous plant; indeed, I never saw anything to equal it in the course of all my experience."

SUTTON & SONS have a fine stock on hand at present of their Improved Italian Rye-grass, which is a very different and superior article to much that is sold as Italian Rye-grass.

Present price, 6s. 6d. per bushel; cheaper in quantities over 5 qrs. Carriage free in quantities of 5 bushels and upwards.

Quantity required per acre, if sown alone, 3 bushels.

Royal Berkshire Seed Establishment, Reading.

FINE GRASS LAWNS in FLOWER GARDENS, &c.—The great expense of cutting and carting Turves from a distance may be avoided, and a superior Turf produced in a few months by sowing SUTTON'S LAWN GRASS SEEDS, which consist solely of the finest and shortest-growing kinds, perfectly free from Moss and other weeds.

From Mr. JOHN JOHNSON, *Gardener, Mowbray Park, Sunderland, April 26, 1865.*

"The Lawn Seed we got last year about this time has come up excellently."

From Mr. THOMAS POLLINGTON, *Gardener to* H. W. Vincent, Esq., *Bradwell Grove, Burford, January 10.*

"The Grass Seed you supplied me with last season grew remarkably well, though sown under trees. I think every seed grew."

From HENRY H. CAVE, Esq., *Desborough, Market Harborough, May 13, 1865.*

"The Lawn Grass Seeds I had from you last year have made a very good turf already."

From J. NIGHTINGALE, Esq., *High Street, Kingston-on Thames, May 2, 1865.*

"I may add that the Grass Seeds you supplied last year, have (notwithstanding the very unfavourable season) succeeded very well."

SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

Sutton's Grass Seeds for Cultivation with Sewage and other Liquid Manure.

SEEDSMEN BY APPOINTMENT — Sutton AND Sons

MESSRS. SUTTON having for several years been engaged in supplying various GRASS SEEDS for experiments with Liquid Manure on the Bagshot Sands, the Aldershot Camp, and other poor soils, are now prepared to offer the sorts which have been found to thrive best under this treatment, and confidently recommend their cultivation as highly remunerative and profitable. The quantity required per Acre is Three Bushels, and the price is 8s. per Bushel.

Also GRASS SEEDS for various other soils, particulars of which will be forwarded on application.

SUTTON & SONS,
Royal Berkshire Seed Establishment,
Reading.

DAVISON'S MIXTURES of GRASS SEED, 10s. 6d. per bushel; per acre, 32s.—Italian Rye-grass, best, 5s. per bushel, 14 lb.; Pacey's Perennial, 6s. 6d.; Devon Evergreen, 6s.; Red Clover, best, 9d. per lb.; White Dutch, best, 10d. per lb.; Trefoil, best, 5d. per lb.; Swede, all the best kinds, 9d. to 10d. per lb.; Mangel Wurzel, 9d. to 1s. per lb. PRICED LISTS free.

Hereford.

GRASS SEEDS for Laying Land Down to Permanent Meadow and Pasture, allowing 2 bushel of Large Seeds, and 12 lbs. Small Seeds to each acre. Price 36s. per acre.
MIXTURES for IMPROVING OLD PASTURES, 1s. per lb.
MIXTURES for LAWNS, 1s 6d. per lb
PRICE LISTS free.

GEORGE GIBBS & Co., Seedsmen, 25 and 26, Down Street, Piccadilly, W.

Grass Seed for all Soils.

RICHARD SMITH offers the best selection that can be made of PERMANENT MEADOW GRASS and CLOVER at 30s. per acre, consisting of Two Bushels light, and 12 lb. heavy Seed. The kinds and quantities are chosen for their Early Growth, Crop, Nutritive Qualities, Reproductiveness, and Permanency, and can be had separately, or properly mixed to suit Heavy, Light, or Medium Soil. RICHARD SMITH, Seed Merchant, Worcester.

To Improve Meadow Land.

RICHARD SMITH'S MIXTURE of the finest GRASSES and PERENNIAL CLOVERS (8 to 12 lb. per acre, at 10d. per lb.), if sown early, will cause a valuable improvement to the crop. RICHARD SMITH, Seed Merchant, Worcester.

RAYNBIRD, CALDECOTT, BAWTREE, DOWLING, AND COMPANY, Limited,
CORN, SEED, MANURE, AND OIL CAKE MERCHANTS,
Address, 89, Seed Market, Mark Lane, E.C.; or Basingstoke.
Samples and Prices Post free on application. Prize Medals, 1851, for Wheat; 1862, for "Excellent Seed Corn and Seeds."

Seed Corn from the Chalk.

ALL THE MOST APPROVED VARIETIES SUPPLIED BY

RAYNBIRD, CALDECOTT, BAWTREE, DOWLING, AND COMPANY, LIMITED.

Address, Basingstoke; or 89, Seed Market, Mark Lane, London, E.C.

*** Samples and prices on application.

Turnip Seed for Sale.

W. WOODCOCK, for 30 years Agricultural Seed Grower in Wisbech, begs to draw attention to the following kinds, from transplanted Bulbs, all of his own careful growth:—

SKIRVING'S PURPLE-TOP SWEDE, 16s. per bushel; GREEN-TOP SWEDE, 15s. per bushel; RED-TOP, round, 18s. per bushel; GREEN-TOP, YELLOW SCOTCH, 16s. per bushel.

Important to Farmers, Gardeners, and the Trade.

CABBAGE PLANTING.—Excellent Cabbage Plants, which for quality and price cannot be surpassed, may still be had at 2s. per 1000, or cheaper if very large quantities are taken, of the following unequalled varieties:—EARLY YORK, TRUE NONPAREIL, EASTHAM, and DRUMHEAD. Excellent Red plants at 5s. per 1000. A remittance or reference must accompany all orders.

FRED. GEE, Seed Merchant and Grower, Biggleswade, Bedfordshire.

Seeds of the finest quality for the Garden and Farm.

ARCHIBALD HENDERSON, late Superintendent to the Horticultural Society of London, and of His Grace the Duke of Sutherland's Gardens, Trentham, Staffordshire, begs to announce that his DESCRIPTIVE CATALOGUE of SEEDS and useful GARDEN CALENDAR is now published, and will be forwarded post free on application.

A. H. has selected the leading varieties only in each Class, his past practical experience having enabled him to do so.

Sion Nursery, Thornton Heath, Surrey, S.

GIANT ASPARAGUS, fine selected Roots for early cropping, 2s. 6d. per 100. This delicious Vegetable does not require half the expense usually incurred in planting it. For instructions, see RICHARD SMITH'S SEED LIST for 1866.
Strong Transplanted SEA KAIL, 2s per dozen.
RICHARD SMITH, Nurseryman, Worcester.

Grayson's Mortlake Giant Asparagus, True.

FRANCIS R. KINGHORN has a fine stock to offer, 1, 2, and 3-years old, grown on the ground where the late Mr. Grayson brought it to such perfection
The best time to plant is when the roots have begun to grow; it moved earlier they continue to die back till growth commences. Per 100, 2s. 6d., 4s., and 6s.
Sheen Nursery, Richmond, S.W.

HAAGE'S DWARF EARLIEST CAULIFLOWER.—Very dwarf, the earliest, hardiest, and finest of Cauliflowers. Packets 1s. 6d. each.
SEED CATALOGUES, containing the finest New Vegetables, free by post.
STEPHEN BROWN, Seed Grower, Sudbury, Suffolk.

THE BEST FOUR KINDS of PEAS.

Sutton's Longpodded Ton-Thumb, 2s. 6d. per quart	McLean's Advancer, 1s. 6d. per quart
Turner's Little Gem, 2s. 6d. per quart	Sutton's Prelude, 2s. 6d. per quart.

May be had of
SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

For Bouquets and as Cut Flowers

THE INVINCIBLE SCARLET SWEET PEA is invaluable. The colour is intense and permanent. Packets 6d., 1s., and 2s. 6d. each. Sold by the principal Seedsmen throughout the kingdom, or of the Raiser,
STEPHEN BROWN, Seed Grower, Sudbury, Suffolk.

INVINCIBLE SCARLET SWEET PEA, very fragrant, strikingly brilliant, and extremely distinct in colour. A First-class Certificate from the Royal Horticultural Society; also a Certificate at the Crystal Palace Show in September. Packets 6d., 1s., and 2s. 6d. each; packets of 100 Seeds 7s. 6d. Supplied by the principal Seedsmen throughout the Kingdom. Also of Messrs. Krelage, of Haarlem; Vilmorin & Co., Paris; Benary and Haage & Schmidt, of Erfurt, Prussia; and Smith & Co., Hamburgh: also of the Raiser,
STEPHEN BROWN, Sudbury, Suffolk.
Price to the Trade on application.

New Seedling Potatos.

TELEGRAPH, 14 days earlier than the Ashleaf, a handsome heavy cropper.
PRESIDENT, 14 days later than the above, wonderful cropper, per bushel, 10s.
For description see BUTLER & M'CULLOCH'S SPRING CATALOGUE, free and post paid on application.
Covent Garden Market, W.C.

SUTTON'S POTATOS for PLANTING.
Prices per peck, bushel, sack, or ton, may be had on application.

Royal Ashleaf	Wellington	King of Potatos
Prince of Wales	Pink-eyed Regent	Myatt's Ashleaf
Red Regent	Early Matchless, or	Elvin's Queen
Hudson's Nonsuch	Webb's Imperial	Skerry Bute
Wheeler's Gloucester-shire Hero	Hudson's May	Early Ashleaf
Dahirree's Seedling	Dalmahoy	Early Walnut-leaf
Fluke	Walker's Improved	Improved Early Shaws
York Regent	Lapstone	Flour-ball

PATERSON'S SEEDLING POTATOS.

Victoria	Napoleon	Paterson's Regent
Seedling Rock	Perthshire Red	Paterson's Blue
Irish Blue	Scotch Blue	

SUTTON'S DESCRIPTIVE LIST of POTATOS may be had gratis and post free
SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

SURPLUS STOCK.
Samples good and true to name of

RIVERS' ROYAL ASHLEAF	SPENCER'S KING, 9s.
KIDNEYS, 10s. per sack of 4 bush.	PRINCE OF WALES KIDNEYS, 10s.
LEMON KIDNEYS, 10s.	EARLY SHAWS, 8s.; per ton, 160s.
ASHTOPS, old sorts, 12s.; per ton, 110s.	WEBB'S KIDNEY, 14s.
MYATT'S PROLIFIC, 11s.; per ton, 100s.	RED REGENTS, 9s.
FORTYFOLDS, 9s.; per ton, 75s.	FLUKES, 9s.; per ton, 75s.

Strong 2 years ASPARAGUS PLANTS, 12s. 6d. per 1000.
New 41-lb. Sacks, 1s. 9d. each.
Remittances to accompany Orders.
CHRISTMAS QUINNEY, Seed Grower and Seedsman, Peterborough.

First Prize Potato (Extraordinary).

PRINCE of WALES' KIDNEY POTATO. This new variety, which obtained the First Prize at the Royal Horticultural Society's International Root Show, Dec. 7, 1864, is the handsomest and finest eating, as well as the most prolific Potato in the world, *being early in use*. It keeps in dressity after the Ashleaf, and retains its exquisite flavour all through the summer

TESTIMONIALS.

From the late Professor LINDLEY (Editor of the *Gardeners' Chronicle*).
"I have this morning had the Seedling Potatos examined. The crop is very extraordinary, and the Potatos themselves are very handsome, and finely flavoured."

From SIDNEY HERBERT, Esq. (Editor of the *Gardeners' Weekly Magazine*)
"The Seedling Potato (Prince of Wales), I have found to be a wonderfully productive, excellent flavoured, handsome, and such a one as the world ought to have the benefit of."

To be had of Mr. James Veitch, Royal Exotic Nursery, King's Road, Chelsea, S.W.; Messrs Barr & Sudden, King Street, Covent Garden, W.C.; Alexander Forbes, 30, St Mary Axe, London; Sutton & Sons, Seedsmen, Reading; Mr Charnes, Nursery, Exeter; and through every Nurseryman and Seedsman in Great Britain.
Price 1s. per 6 pounds, 2s. per dozen.
N B They may be planted up to the end of May.

VARIEGATED KAIL SEED for Winter Decoration of Flower Beds.—Seed the above sort out last year having given general satisfaction, CHARLES CLARKE feels pleasure in again offering a packet containing numerous beautiful varieties, post free for 7 stamps. A great variety of VEGETABLES, fine, large and small, for spring planting; Ornamental FOREST TREES; extra strong ASPARAGUS for forcing, &c.
CHARLES CLARKE, Windmill Hill Nursery, Gravesend.

Henry's Prize Hybrid Leek, Genuine.

DOWNIE, LAIRD, and LAING are now sending out the above in packets at 1s. each. This is unquestionably the largest Leek in cultivation, growing 16 inches in length of blanch and 10 inches in circumference. Was awarded the First Prize at the Edinburgh and other Exhibitions.
17, South Frederick Street, Edinburgh; and Stanstead Park, Forest Hill, London, S.E.

Choice Seeds.

BACKHOUSE'S WINTER WHITE PROTECTING BROCCOLI.—Highly recommended for its earliness, hardiness, whiteness, size, and fine flavour. 2s. per packet.
MATTHIOLA BICORNIS.—A deliciously sweet Night-scented Stock
New hardy Annual. 1s. per packet.
MALCOLMIA INCRASSATA.—A new species of Virgin Stock, with larger flowers and more vigorous habit, and lasting longer in bloom. 1s. 6d. per packet.
VERONICA GLAUCA. A hardy Annual, producing tufts of the most lively blue flowers. 6d. per packet.
INVINCIBLE SCARLET SWEET PEA.—6d. and 1s. per packet.
Price Lists of the above (free) on application.
FRENCH KIDNEY POTATO.—The earliest and most prolific Ashleaf Potato we have seen. Quality excellent. 2s. 6d. per peck.
JAS. BACKHOUSE & SON, York Nurseries.

Notice.

PURCHASERS of LARGE QUANTITIES of FARM or GARDEN SEEDS will be supplied liberally by SUTTON & SONS. For prices apply stating quantity required to
SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

Sea Kail for Forcing and Planting.

MESSRS. JAMES VEITCH and SONS are in want of a quantity of SEA KAIL ROOTS for Planting, and also extra strong for Forcing.
Parties having any to offer are requested to send samples, carriage paid, to be forwarded by Parcels Delivery, and to state prices and quantity
Royal Exotic Nursery, Chelsea, London, S.W.

New Edition of

SCOTT'S FRUIT TREE CATALOGUE of the finest Collection in England. The Catalogue is allowed to be the best published, and is full of information about the Cultivation of Fruits, over 1000 being described. Apply to
J. SCOTT, Merriott, Somerset.

SPECIAL OFFER of FRUIT TREES.—25 per cent. off Catalogue prices.—Having a large and fine stock of the undermentioned, they are offered at greatly reduced prices, to clear ground:—Cherries, Nectarines and Apricots (trained and untrained), Apples, Pears, Plums, and Cherries (trained and untrained).
DESCRIPTIVE CATALOGUES on application to
J. SCOTT, Merriott, Somerset.

To Clear Ground.

SPECIAL OFFER.—20 per cent. off Catalogue prices.—HOLLY (GREEN), YEWS, DEODARS, ARBUTUS, LAURELS (Common), Laurels (Portugal), Cupressus Lawsoniana, Thuja Lobbii, Pinus insignis, P. excelsa, P. pondorosa, Taxodium, Hazel (a large breadth), Larch 6cs., Scotch fir, Austrian Pine do., Beech do. For sizes and prices, see CATALOGUES, sent on application to
J. SCOTT, Merriott, Somerset.

30,000 Common Laurels,

Fine bushy plants and well rooted, from 1 to 3 feet.
WM. WOOD and SON having a large stock of the above, will be happy to give special quotations at reduced prices.
Address, Woodlands Nursery, Mayfield, near Uckfield, Sussex.

MAURICE YOUNG'S DESCRIPTIVE LIST of Conifers, New and Rare Hardy Plants, Ornamental Trees and Shrubs, Rhododendrons, Japanese Novelties, Forest Trees, and Roses, forwarded on application.
Milford Nurseries, near Godalming, Surrey.

Spring Planting.

PETER LAWSON and SON are prepared to execute orders for every description of FOREST STOCK suitable for FOREST and ORNAMENTAL PLANTATIONS.
To prevent disappointment, it is recommended that requirements for SPRING PLANTING should be sent in as early as possible, that the plants may be reserved in the Nurseries until required. Large quantities of LARCH, SCOTCH FIR, CORSICAN PINE, and other leading TREES are wanted, and P. LAWSON & SON will be glad to submit special offers when desired.
Edinburgh and London

HAND R. STIRZAKER can supply fine ASH, ELM, SYCAMORE, ALDER, HAZEL, OAK, ENGLISH, PRIVET in sizes from 1½ to 1 Foot; Scotch and Spruce Fir, 1 to 2 feet; Larch, fine, 2 to 3 feet; Beech, Chestnut and Oak Turkey, from 3 to 7 feet. Prices per 1000 very low. Fine Canes of Northumberland Thinglass Raspberries, 5 to 7 feet, cheap per 100. Also Asparagus Roots, 1 and 3 years line, 4 years strong. Lt Lincoln, Seakale, 2 years roots.
Skerton Nursery, Lancaster.

HERBACEOUS and ALPINE PLANTS, the best sorts.

200 fine showy varieties	£1 0 0
100 do. do.	0 17 6
100 do. do., including new varieties	2 10 0
50 do. do. do.	1 0 0

DESCRIPTIVE CATALOGUES, giving heights, colours, seasons, &c.
A great variety of SPRING FLOWERS in Pots.
STEPHEN BROWN, Seed Grower and Nurseryman, Sudbury, Suffolk.

To Noblemen and Gentlemen about to be engaged in Planting.

DICKSONS and CO., NURSERYMEN, SEEDSMEN, and Florists, Waterloo Place, Edinburgh, have this season a large and very healthy stock of Seedling and Transplanted LARCH (false and True breed), True Highland Scotch Fir, Spruce, Oak, Ash, Elm, Thorn (Plants or Quickset), Chestnut, Alder, Ash, Elm, Thorn Quick, Beech, Evergreen, Privet, Poplar, Willow, &c., as well as all other kinds of Forest and Ornamental Trees and Shrubs. Fruit Trees, Bush, Greenhouse and Stove Plants, Heath woods and Alpine Plants, Ferns, &c.
Their Forest Trees, which are grown on exposed ground, are particularly well ripened, and can be sent with perfect safety to any part of the Kingdom
Samples and prices will be sent free on application

Forest Trees, Stove and Greenhouse Plants.

A Splendid Stock at
B. WHITHAM'S, The Nurseries, Reddish, near Stockport.

LARCH, very strong, 1 to 2 feet, 12s. per 100
SCOTCH " 12 to 18 inches, 12s. per 1000
SPRUCE " 24 to 30 inches, 12s. per 1000
RIBES, splendid, extra strong, 12s. per 100
RASPBERRIES, WHITE ANTWERP, good Canes, 6s. per 100
APPLES, fine strong 2 years budded and lowers, 6s. per 100

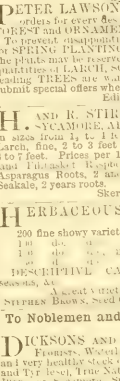
Stove and Greenhouse Plants, very strong, at 18s. per dozen.

BOYA BELLA	BRESSELIA CILIATOPHYLLA
" VARIEGATA	CROTONS, in 15 VARIETIES, LONGIFOLIA
" LONGIFOLIA	ADIANTUM ASSIMILE
RHYNCHOSPERMUM JASMINOIDES	DAVALLIA PENTAPHYLLA
	ALLAMANDA NERIIFOLIA

CHOROZEMAS, best varieties, 15s. per dozen
ACACIA LOPHANTHA, 10s. to 12s. per dozen
CYTISUS FRAGILANS, 4s. to 6s. per dozen
EUGENIA PICTA, 6s. to 9s. per dozen
DRACÆNA GRACILIS, 12s. to 18s. per dozen
An allowance to the Trade

LAMOUREUX, CLARK, and CO., SEED MERCHANTS, Plymouth.
The SEED CATALOGUE and GARDENING DIRECTORY for 1866, is now published and may be had gratis. Instructions respecting prices and other matters in connection with the Business, will be sent gratis and post free to any address in the kingdom.

FIBROUS PEAT, of fine quality, for Orchids and all potting purposes, and Ammoniated Plants, may be obtained from Farmington, Road Station on the London, Chatham, and Dover Railway by application to
THOMAS JESSOP, Farmingham Wood, Farmingham, Kent.



COCOA-NUT REFUSE delivered within 20 miles of Charing Cross, at 2s. per bag.
For particulars, and how to use it, see long Advertisement in *Gardeners' Chronicle* of the 21st March, 1863; or apply to the MANILLA FIBRE COMPANY, Kingston-upon-Thames.
Postage Stamps or Post-office Orders payable to J. BARSHAM & Co.
BARSHAM'S BRUSHES and MATS are sold in every town.
CAUTION.—Every Brush is stamped, J. BARSHAM'S Patent.

THE LONDON MANURE COMPANY
(ESTABLISHED 1840).
Have now ready for delivery in dry fine condition,
CORN MANURE, for Spring Use
DISSOLVED BONES, for Dressing Pasture Lands
SUPERPHOSPHATES of LIME
PREPARED GUANO
MANGEL and POTATO MANURES
Also Genuine PERUVIAN GUANO, and NITRATE of SODA, ex Dock Warehouse; SULPHATE of AMMONIA, FISHERY SALT, &c.
E. PURSER, Secretary.
Offices, 116, Fenchurch Street, E.C.

THE PATENT NITRO-PHOSPHATE or BLOOD MANURE COMPANY, LIMITED, Manufacturers of ODAMS'S PATENT BLOOD MANURE for CORN and ROOTS. ODAMS'S SUPERPHOSPHATE of LIME and DISSOLVED BONES.
Chief Offices—100, Fenchurch Street, London, E.C. Western Counties Branch—Queen Street, Exeter. Irish Branch: 40, Westmoreland Street, Dublin.

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Chairman—JOHN CRAVEN, Littlebury, Essex
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Charles Bodman, 22, Essex Street, Strand.
Thomas Webb, Wellington Iron Works, Shropshire.
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This Company was originally established under the Direction of Agriculturists, circumstances that have justly earned for it another Title, viz.—"THE TENANT FARMERS' MANURE COMPANY."
Its Members are Cultivators of Land, Graziers, Dairymen, &c., which has been for years under management with Manures of their own Manufacture. The Consumer, therefore, has the best Guarantee for the genuineness and efficacy of the Manures manufactured by this Company.
A Prospectus will be forwarded on application to the Secretary, or may be had of the local Agents.
C. T. MCADAM, Secretary
Chief Offices, 100, Fenchurch Street, London, E.C.

Established 1812.

PROCTOR and RYLAND'S PREPARED BONE MANURES for TURNIPS, GRASS, WHEAT, BARLEY, OATS, POTATOS, &c.; and their
BONE SUPERPHOSPHATE of LIME
are the best prepared and cheapest Manures offered to the Public.
Offices and Bone Preparing Works, Soho Iron Bone Mills, Smethwick, near Birmingham, Warwick, Bristol, and Chester.

LAWES' MANURES.
The Manures manufactured by J. B. Lawes for the present season, of 1866 are now ready for delivery at his Factories, at the following prices, per ton:

LAWES' SPECIAL TURNIP MANURE, and BONE SUPERPHOSPHATE of LIME mixed	£ s. d. 6 6 0
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CONCENTRATED CORN and GRASS MANURE	12 0 0

These Manures can be obtained of Mr Lawes, or through the appointed Agents in all parts of the United Kingdom, at prices varying according to cost of carriage.
Genuine Peruvian Guano direct from the Importers. Nitrate of Soda, Sulphate of Ammonia, and other Chemical Manures.
American and other Cakes at market prices.
Address, Lawes' Manure Works, 1, Adelaide Place, London Bridge, E.C.; 20, Eden Quay, Dublin.

INTERNATIONAL HORTICULTURAL EXHIBITION and BOTANICAL CONGRESS.—Those who are preparing Packets for the above Exhibition should feed them liberally with STANDEN'S GARDENERS' and AMATEURS' FRIEND. Sold by the leading Nurserymen and Seedsmen.

APPLEBY'S GENUINE TOBACCO PAPER, in 4-lb. packets.—Testimonials too numerous for insertion. Price on application to
HENRY APPLEBY, Factory to Messrs. IVERY & SON, Dorking, Surrey

ROLL TOBACCO CLOTH.—The cheapest and best article for Smoking Greenhouses and destroying the Fly; equal to Tobacco in value. Sold in packets at 1s. 6d.
Joseph Rock, 16, Gough's Square, Fleet Street, E.C.
Post Office Orders payable Fleet Street

Plagues of the Garden.

SIMPLE AND SAFE REMEDY.—By using the APHIS WASH, these Pests of the Garden, together with Scale, Caterpillars, Slugs, &c., are immediately destroyed. Leaves no stain, but strengthens the Trees or Plants.
See *Gardeners' Chronicle*, August 19, 1865, and "Gardeners' Magazine," July 1, 1865.
Sold by Chemists and others, in 1s. bottles, and 2s. 6d. a gallon, with full directions for use.
Wholesale at the CHEMICAL WORKS, Milton Street, London, E.C.

Red Spider

Magnified.

GISHURST COMPOUND, whether used against Mosses and Mildew on Growing Plants, or, as Winter Dressing on Trees at rest, should be diluted in hours before use. This gets rid of smell, and if the Solution be dissolved previous to any shaking of foliage. A strength of from 1 to 2 oz. to the gallon of water is recommended for growing Plants, and from 4 to 10 oz. for Trees at rest.
Sold Retail by Nurserymen and Seedsmen, in boxes, 1s., 3s., and 5s. 6d. each
Wholesale by
PRICE'S PATENT
CANDLE COMPANY
(LIMITED).

DAY, SON, AND HEWITT'S UNIVERSAL CHEMICAL EXTRACT, for bad cases in Drawing Lambs, and to stop Fever and Straining. Mr. Woods, in his Lecture on "Breeding and Management of Sheep," says . . . "My shepherd declares it to be worth a guinea a bottle." Price 2s. 6d. and 7s. per bottle.
Also, the original GASEOUS FLUID, for Debility and Exhaustion in Ewes after Lambing, and Cows after Calving, for Lambs and for Colic and Gripes in Horses and Cattle. In feverish cases, and for cleansing in Ewes and Cows, a dose of the "Red Drench" should be given.
Mr. Bowick, Author of the Prize Essay on the "Rearing of Calves," says:—"I have reared 26 calves this year, and by the use of the Gaseous Fluid I have not lost one."
Price 1s. 9d. per bottle; or one dozen in a wooden box, 20s.
Full Directions for use given with each article. Prepared by the original and only proprietors—DAY, SON & HEWITT, 22, Dorset Street, Baker Street, London, W.

CLIFF'S ANTISEPTIC FLUID.
Manufactured by F. C. Calvert & Co., Manchester.
A Valuable Sheep Dip, a certain cure for Scab, and a powerful Antiseptic in case of Infectious Diseases. For further particulars apply to Robt. Coleman & Son, 150, Leadenhall Street, E.C.

CATTLE PLAGUE.—The Cattle Plague Commissioners having specially recommended CARBOLIC ACID as a Disinfectant and Preventive for this class of disease, Farmers and others are hereby informed that they may be supplied with this Acid by
F. C. Calvert & Co., 7, Bond Street, Manchester.

Cattle Plague.

PUBLIC NOTICE.—Owners of Stock are earnestly advised to protect their Stock, by the use of

MCDOUGALL'S PATENT DISINFECTING POWDER, as recommended in both Reports of the Royal Commission.
For washing the bodies of healthy and sick Cattle to prevent infection, use M'DOUGALL'S PATENT DISINFECTING SOAP.
CARBOLIC ACID at lowest prices.
Alexander McDougall, Manufacturing and Agricultural Chemist.
London: 11, Arthur Street West, London Bridge, E.C.
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Agents throughout the Kingdom.

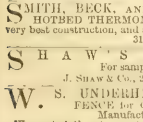
EARTH CLOSETS—(MOULE'S PATENT).
No Unwholesome Cesspools.
No Bad Smells.
No Water Pipes to get out of order.
The Best Night Commodes.
May be applied to any House or Closet
By its use a valuable Manure is saved.
White & Co., 28, Bedford Street, Strand, W.C., where full information may be obtained.

SMITH, BECK, AND BECK'S GREENHOUSE and HOTBED THERMOMETERS.—These Instruments are of the very best construction, and at moderate prices.
31, Cornhill, E.C.

SHAWS TIFFANY.
For samples and prices apply to
J. Shaw & Co., 5, Oxford Street, Manchester.

W. S. UNDERHILL'S NEW PATENT IRON FENCE for GARDENS, LAWNS, &c.
Manufactory: Newport, Salop.
Warranted the strongest and most durable Fence ever offered at corresponding prices. It cannot be required if broken from accident, can be rolled up most compactly when not in use, is admirably adapted for exportation, and can be had of any height and mesh required, at prices from 4d. to 1s. 6d. per yard and upwards.
For further particulars apply at the Manufactory; or of the London Agent, Mr. R. Winder, 15, Abingdon Street, Westminster, S.W.

Iron Hurdles, Fencing, and Gates.
COTTAM'S HURDLES are made in the best manner of superior Wrought Iron. SHEEP HURDLES, from 6s.; CATTLE HURDLES, from 8s. 11d. each; CONTINUOUS FENCE, from 8d. per foot; FIELD GATES, from 25s. each. Illustrated Price List on application.



ENTRANCE GATES, RAILING, and IRON WORK of every description. Designs and Estimates free of Cottam & Co.,
No. 2, Winsley Street (opposite the Pantheon), Oxford Street, London, W.

GALVANISED WIRE NETTING.

PRICES of NETTING, 24 INCHES HIGH.

Size of Mesh.	Proof against	Light, per Yard	Medium, per Yard.	Strong, per Yard	Extra strong per Yard.
2½ inch	Hares, Dogs, Poultry, &c.	3½d.	4½d.	5½d.	6½d.
2 inch	All kinds of game	4½d.	5½d.	6½d.	7½d.
1½ inch	Small Rabbits, Hares, &c.	4½d.	5½d.	6½d.	7½d.
1 inch	Ditto	Ditto ..	5½d.	6½d.	8d. .. 10d.

100 Yards and upwards Carriage Free.
GALVANISED IRON WATER CISTERNS.
GALVANISED CABLE STRAND FENCING.
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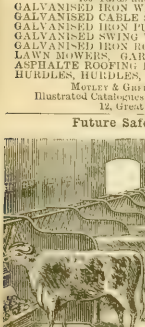
GALVANISED SWING WATER BARROWS.
GALVANISED IRON ROOFS and BUILDINGS.
LAWN MOWERS. GARDEN ROLLERS.
ASPHALTE ROOFING FELT, 1d. per square foot.
HURDLES, HURDLES, HURDLES, 1s. 9d. to 3s. 0d. per yard.
Motley & Green, late H. J. Morton & Co.
Illustrated Catalogues and Estimates free on application.
12, Great George Street, Leeds.

Future Safety from Rinderpest.



MUSGRAVE'S PATENT IRON COW STALLS, with fresh Air Inlets, as used in the Government Model Farms.
MUSGRAVES' PATENT STABLE FITTINGS and LOOSE BOXES Adopted by H.R.H. the Prince of Wales, for Sandringham.
MUSGRAVES' PATENT HARNESS BRACKETS, IRON PIGGERIES, and DOG KENNELS.
MUSGRAVES' PATENT SLOW-COMBUSTION STOVE. Employed by the Ecclesiastical Commissioners.
The PATENT IRON COW STALLS and AIR INLETS are perfect in their arrangements for Feeding and Ventilation; every part being of iron they are indestructible, inexpensive, very compact, cleanly, and healthful for the animal. Should distemper occur, if the iron work be painted and the walls washed with lime, they can neither harbour nor communicate contagion. The system in fact is to and to be the only true Safeguard against the Spread of Epidemics.
Priced Engravings of all these Inventions will be sent free on application to Musgrave Brothers, Ann Street Iron Works, Belfast.

SWING WATER BARROW.—This is the best and cheapest article yet introduced for use in Gardens, Farm Yards, &c. The Water may be dipped out, or the Tub tilted and poured out, or it may merely remain, the Handle it can be placed on the ground, and the Frame detached. The Tub holds 30 or 36 gallons, price 42s. Carriage paid to any station on Great Eastern Line

POWERFUL GARDEN ENGINE, suitable for the above, price 45s.
IMPROVED WATER and LIQUID MANURE CARTS.
Catalogues on application.
Manufactured by W. S. Bolton, Rose Lane Iron Works, Norwich.

Oil Paint no longer Necessary.

HILL AND SMITH'S PATENT BLACK VARNISH for preserving Iron Work, Wood, or Stone. This Varnish is an excellent substitute for oil paint on all out-door work, and is fully two-thirds cheaper. It may be applied by an ordinary labourer, requires no mixing or thinning, and is used cold. It is used in the grounds at Windsor Castle, Kew Gardens, and at the seats of many hundreds of the nobility and gentry, from whom the most flattering testimonials have been received, which Hill & Smith will forward on application.

From J. A. Taylor, Esq., *Stoneshaw Court*.
"In answer to your inquiries, I beg to inform you I find your Black Varnish an excellent substitute for oil paint upon iron and wood out of doors, and have found the iron Barrow with apparatus created in mapping the Village to have a finer coating. To-day I have created the Black Varnish to all out-door work as superior to anything I have yet used for the purpose, and it can be applied with great economy by careful labourer."

Sold in casks of about 30 gallons each, at 1s. 6d. per gallon, at the Manufactory, or 1s. 8d. per gallon paid to any Station in the kingdom.
Apply to Hill & Smith, Brierly Hill Iron Works, near Dudley, and 22, Cannon Street, West, E.C., from whom only it can be obtained.

D. FERGUSON, LANDSCAPE GARDENER, CONTRACTING PLANTER, and VALUER of NURSERY STOCK, &c.
Whitton Nursery, Hounslow, W.

ALEXANDER BLAKE, LANDSCAPE GARDENER Plans and Estimates provided for every variety of Ornamental Ground Work, Planting, Rockwork, Ferneries, &c.
Britannia Road, Fulham, London, S.W.

Horticultural Agent and Valuer.

MR. A. CHANDLER (of the late Firm of Chandler & Son), continues to undertake all kinds of VALUATIONS connected with Horticulture.
1, Devonshire Terrace, Fulham Road, S.W.

IMPORTED CREVECŒUR, LA FLECHE, and HOUDAN FOWLS, TOULOUSE GEESE, ROUEN DUCKS, and NORMANDY TURKEYS. Prices on application.
Jones, Dairy, Round Street, London, S.W.

EGGS for SITTING from selected BIRDS of the principal Breeds of Poultry, now ready. Priced Lists on application.
John Baily, 115, Mount Street, W.

PHEASANTS. Tame, for Breeding, in Pens — Versicolor, Chinese, Bohemian, Ring-necked, and Common. Prices on application.
John Baily, 115, Mount Street, London, W.

JOHN BAILY'S PRICED LIST for 1866 now ready.
115, Mount Street, W.

POULTRY: Houdan, La Flèche, Crèvecœurs, &c.
Apply privately to well ground Grains for Chickens, Laying and Fattening Stock; Dessicated Minced American Beef; Portable Double Poultry House, with Patent Chickenproof Hurdle Fencing, £10 10s.; also all other Poultry Appliances.
POULTRY BREEDING in a COMMERCIAL POINT of VIEW, 2s. 6d. Price Lists of
Mr. Geyelin, Belgrave House, Argyle Square, London, W.C.

Brighton.

To Nurserymen, Florists, and Others.

TO BE LET, with Immediate Possession, the BUSINESS of a NURSERYMAN and FLORIST, situated in an improving locality, with extensive Nursery Grounds, Forcing-house, and other conveniences for carrying on an extensive Trade. The whole plant in excellent working condition. Eleven years of lease unexpired, and a liberal Renewal will be secured. The whole can be taken at valuation, or at a fixed amount.
For particulars apply to E. Sparr, Nurseryman and Horticultural Valuer, Brighton; or Mr. Cruttenden, Rose Hill Nursery, Brighton.

Barbourne Nurseries, Worcester.

THE TRUSTEES of Mr. Archibald Wood are prepared to DISPOSE of the BUSINESS and STOCK of the above NURSERIES and SEED SHOP, centrally situated, in full operation, with immediate possession, comprising good House, Buildings, and nearly 20 Acres of Land, fronting a good road, held at a moderate rent.
Apply to Mr. Southall, Solicitor, Worcester.

Sales by Auction.

Consignment of Plants from Surrey.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, March 28, at half-past 12 o'Clock precisely, 500 lots of Fine Old ORNAMENTAL TREES and SHRUBS, from an old-established Nursery in Surrey, consisting of Fruit Trees, Laurels, Conifers, Cercidis, Rhododendrons, Aucubas, Yuccas, Daphnes, Lilacs, Spiræas, Azaleas, Roses, &c.
On view the Morning of Sale, and Catalogues had.

Important Sale of Hardy and Ornamental Plants

At the Royal Nurseries, Great Yarmouth, Norfolk.

MR. J. C. STEVENS, Horticultural Auctioneer and Valuer, 38, King Street, Covent Garden, W.C., begs to announce that he has been favoured with instructions from Messrs. Pagnell & Co., who are retiring from business, to SELL by AUCTION on the Premises, the Royal Nurseries, Great Yarmouth, on MONDAY, March 26, and three following days, at 12 o'Clock precisely, the first portion of their VALUABLE STOCK of HARDY PLANTS of this celebrated Nursery, which has been established upwards of half a century, consisting of splendid specimens of Weeping Ashes, Pyramidal Oaks, Cupressus, Chamæcyparis, Abies, Cupressus, Yews, Thujas, Arbor-vitæ, choice variegated and green Hollies in common and Portugal Laurels, Aucubas, Tritomas, Tree Box in varieties, evergreen Oaks, white and scarlet and dwarf Roses, standard, dwarf, and trained Fruit Trees; Rhododendrons, Azaleas, Kalmias, Euonymus, Berberis, Clematis, Cotoneaster, Thorns, Deutzias, Ivies, Loniceras, Pyracanthus, Robes, Skimmias, Lilacs, Tamarix, Weigelias, Jasmines, Honeysuckles, Raspberry Canes, Gooseberry and Currant Bushes, Peonies, Hepaticas, Iris, Phlox, Violets, Primroses, Pyrethrums, Asparagus, Sea-kale, Rhubarb Roots, &c.
On view three days prior and Morning of Sale, and Catalogues had on the Premises, and of Mr. J. C. Stevens, Auctioneer and Valuer, 38, King Street, Covent Garden, London, W.C. Frequent Trains from all parts of the Kingdom.
N.B.—The Second Portion, consisting of upwards of 50,000 BULBS of the choicest GLADIOLI, for which this Nursery has been so justly celebrated for so many years, comprising Show, Early, and Common Sorts, will be sold in London in the course of the month of April. The Third Portion, consisting of several thousand pairs of the choicest varieties of named Italian, yellow, and Tree Carnations, Picotees, and Pinks, and Alpine Auriculas, choice English-grown Camellias, Azaleas, Rhododendrons, Heaths, Lilium, and other Greenhouse Plants, will be Sold in London in the course of the spring. There will also be frequent Sales of all the choicest varieties of HEDGING PLANTS at the Auction Rooms, 38, King Street, Covent Garden, London, W.C.; and the concluding Portion, consisting of the LEASE and GOODWILL of this desirable Nursery, which has been established for upwards of fifty years, with the remaining Stock of Growth now and other Plants, several thousand Plants in Pots, Greenhouses, Pits, Frames, Propagating-houses, Garden Implements, Horses, Carts, Dog Cart, &c., will be Sold during the month of May, unless previously Disposed of by Private Contract. Due notice of the days of Sale and further particulars will be given in future Advertisements.

Nursery Stock at Turnham Green, Middlesex,

To be Sold, by Order of the Kensington and Richmond Railway Company.

MR. J. C. STEVENS will SELL by AUCTION, on the Premises, adjoining the Roebuck Inn, Turnham Green, W., on MONDAY, April 2, at half-past 12 o'Clock precisely, without reserve, the NURSERY STOCK on Mr. Goldman's Holding, lately at Turnham Green, required by the Railway Company, comprising specimen CONIFERS and Hardy and Ornamental SHRUBS of various sizes, including 30 American Arbor-vitæ, 20 Deodars, 50 Portugal and Common Laurels, Irish, Common, and Golden Yews, Picea Pinsapo, Abies Nordmanniana, Hollies in Standard, Pyramid, and Natural Forms, Ornamental Trees, Quicks, &c.
On view the day prior and Morning of Sale; and Catalogues had of Mr. J. C. Stevens, Auctioneer and Valuer, 38, King Street, Covent Garden, W.C. There are Omnibuses from Hanging Sword Alley, Whitechapel, and Kew Street Station; and Omnibuses pass the Nursery every quarter of an hour.

Hampstead Road.

Important Sale of Nursery Stock.

MESSRS. PROTHEROE AND MORRIS have received instructions from the Executors of the late Mr. James Dodd, deceased, to SELL by AUCTION, without reserve, on the Premises, Isabel Nursery, Hampstead Road, opposite the Bull Farm Station on the North London Railway, on MONDAY, March 26, and 4 following days, the whole of the Valuable NURSERY STOCK, including Thousands of fine Bushy Laurels, from 1 to 1 feet; Arbor-vitæ, 1 to 8 feet; Green Hollies, Evergreens, Box, Phillyrea, Bays, Berberis, Yews, Araucaria Imbricata, Portugal Laurels, Whitethorn Plants, a quantity of large Irish Yews in pots; large Lilacs, Ribes Spiræa, and other Deciduous Shrubs, Chestnuts, Planes, Thorns, Laburnums, Birch, Beech, Sycamore, Weeping Ashes, Ash, fine Standard and Dwarf Roses, Dwarf-trained and Standard Fruit Trees, &c.
May be viewed one week prior to the Sale. Catalogues may be obtained, 6d. each, refundable to purchasers on the Premises; at the principal Seed-shops in London; and of the Auctioneers and Valuers, American Nurseries, Leytonstone, Essex, N.E.
Also the whole lease, 6 years unexpired upon about 3 Acres of Land. Also the choice Greenhouses, Plants, extensive erections of Greenhouses, Sheds, and other Buildings; ranges of Pits, and numerous effects, will be offered shortly.

Sale of first-class Carnations, Picotees, Pinks, &c.

MESSRS PROTHEROE AND MORRIS will SELL by AUCTION, at 8 and 10, Gracechurch Street, City, E.C., on WEDNESDAY, March 28, at 1 o'Clock precisely, a fine class Collection of CARNATIONS, PICOTEES, and PINKS, of the finest growth, the entire stock of an eminent grower; also 500 handsome Standard and Dwarf Roses, and Cases, Tubs, Frames, and other Sundries, American Plants, Double Camellias and Azalea indica Lilium lancifolium, &c.
May be viewed the Morning of Sale. Catalogues may be had at the Room as above, and of the Auctioneers and Valuers, Leytonstone.

TO BE SOLD, pursuant to an Order of the High Court of Chancery, made in the causes of Pavey v. Pavey, and Pavey v. Pavey and Others, with the approbation of the Judge to whose Court the said Causes are attached, by Messrs. Prothero & Morris, the lots now appointed to be sold at the sale, at Chelsea, Durham Nursery, Flood Street, King's Road, Chelsea, in the county of Middlesex, on MONDAY, April 9, 1866, at 12 o'Clock at noon precisely, the valuable LEASE, GOODWILL, and Trading of about 18,000 choice Greenhouse and Bedding Plants, and sundry Nursery Stock, Greenhouses, Pits, Heating Apparatus, and numerous other effects, the property of Messrs. Pavey, Nurserymen and Florists.
Particulars and Conditions of Sale of the Leasehold Premises and Catalogues may be had of Messrs. Lavery & Kent, Solicitors, 16, Strand; of G. E. Mead, Esq., Solicitor, 118, Jermyn Street, St. James's; at the Commercial Hall, 110, King's Road, Chelsea; and of the Auctioneers, Leytonstone, Essex.
Henry Lewis, Chief Clerk, Laundy & Kent.

Very Important Sale of Specimen Plants.

MESSRS. PROTHEROE AND MORRIS are favoured with instructions from Mr. John Fraser, of the Lea Bridge Nurseries, to offer by PUBLIC AUCTION the first week in April next, without the least Reserve, the whole of his valuable collection of HARD-WOODED STOVE and GREENHOUSE EXHIBITION PLANTS, which is known as containing the finest, most symmetrically-formed Specimens that have ever been submitted to public competition, and have been cultivated with that care and attention requisite to ensure taking First-class Prizes at the forthcoming Great International Horticultural Exhibition. The collection includes Azaleas, Ericas, and the choicest varieties for Hard-wooded Stove and Greenhouse Plants, varying in size from about 2 feet to 7 feet in height, so that purchasers desiring Specimens of moderate size may be suited, as well as those that require them of gigantic dimensions. Catalogues of each, returnable to purchasers.
The day and place of Sale will be announced in next week.
The Stock may be viewed at the Lea Bridge Nurseries; and Catalogues, when ready, may be obtained of the Auctioneers and Valuers, American Nurseries, Leytonstone, Essex, N.E.

JOHN FRASER, of the Lea Bridge Nurseries, N.E., respectfully announces that in consequence of requiring the space for the cultivation of a large stock of New Plants, he is reluctantly compelled to DISCONTINUE the EXHIBITION of STOVE and GREENHOUSE PLANTS; he has therefore instructed Messrs. PROTHEROE AND MORRIS to offer unreservedly by

PUBLIC AUCTION THE WHOLE COLLECTION.

In giving up the Exhibition of these Plants it may be as well to state that the attention of the Staff hitherto employed in their culture will after this Sale be devoted to the YOUNG STOCK, so that customers may rely upon having a better article than ever, and at a more moderate rate.
For other particulars see Messrs. Protheroe & Morris's Advertisement in this Paper.

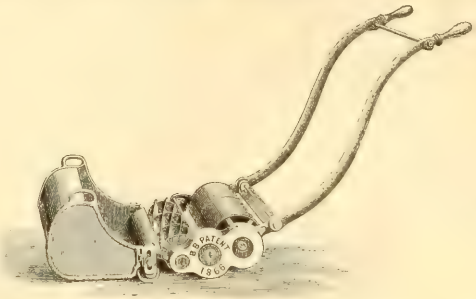
J. B. BROWN & CO.'S NEW PATENT B B LAWN MOWER.

PATENTED AND MANUFACTURED BY

J. B. BROWN & CO.,

148, UPPER THAMES STREET,

LONDON, E.C.



GUARANTEED TO GIVE

PERFECT SATISFACTION,

AND IF NOT APPROVED OF

MAY BE AT ONCE RETURNED.

J. B. BROWN AND CO. beg to mention, that having executed their numerous orders for the NEW PATENT B B LAWN MOWER up to the present time, with most unqualified satisfaction, they are now actively executing further orders for the present season,—and, owing to the large number of orders already received and constantly coming in, it is most important that orders for delivery this season should be sent in *as early as possible.*

The Machine combines all the latest improvements in Lawn Mowing Machines, being simple in construction, very light, silent in movement, easily worked, and so strong and durable as to be literally unbreakable,—an all-important feature in Machines of this class; the ordinary cast-iron being entirely done away with in all breakable parts, and every part being accurately made to standard gauges. The workmanship and finish are also of a superior character; the entire Machine being quite equal to a revolution, so to speak, in Lawn Mowers. The Machines are all guaranteed to give perfect satisfaction in every respect.

The NEW B B PATENT LAWN MOWER is manufactured by J. B. BROWN AND CO. on their own Premises in London, under their personal superintendence.

PATENT B B HAND MACHINE.

PRICES—Including Carriage to any Railway Station or Shipping Port in England, with the necessary tools and Directions for use.

10-inch Machine	£3 10 0	*Easily Worked by a Boy.*		18-inch Machine	£7 10 0	*Easily Worked by a Man.*	
12-inch Machine	4 10 0			20-inch Machine	8 0 0	*Ditto by Two Men.*	
14-inch Machine	5 10 0			22-inch Machine	8 10 0		
16-inch Machine	6 10 0	*Ditto by a Man.*		24-inch Machine	9 0 0		

If with Brass-mounted Grass Box, 5*s.* extra.

PATENT B B HORSE MACHINE.

PRICES—Complete, without extras, including Carriage to any Railway Station or Shipping Port in England, with the necessary tools and Directions for use.

42-inch Machine	£28 10 0	*Drawn by a Horse.*
36-inch Machine	24 10 0	
30-inch Machine	21 10 0	*By a Horse or Strong Pony.*

PATENT B B PONY and DONKEY MACHINE.

PRICES—Complete, without extras, including Carriage to any Railway Station or Shipping Port in England, with the necessary tools and Directions for use.

30-inch Machine	£17 10 0	*Drawn by a Pony.*
28-inch Machine	16 10 0	
25-inch Machine	14 10 0	*Drawn by a Donkey.*

New Improved Horse, Pony, and Donkey Boots, wholly of Leather, as follows:—Horse Boots, 24*s.*; Pony Boots, 21*s.*; Donkey Boots, 16*s.* per set.

*** *Every Machine sent out is warranted to give ample satisfaction, and, if not approved of, may be at once returned.*

The NEW PATENT B B LAWN MOWER has already been patronized by Her Majesty the QUEEN, for the Royal Gardens at Windsor Castle, Osborne, Kew, and Hampton Court; by His Royal Highness the PRINCE of WALES, for Sandringham; and by His Grace the Duke of SOMERSET, the Right Hon. the Earl of DERBY, the Right Hon. the Earl of CHARLEMONT, and numbers of the principal Nobility and chief Landed Proprietors in the Kingdom. This Machine has also been selected by Merchants for the execution of their orders for export to the Continent, and to Egypt, India, Australia, Natal, and other countries, and by a large number of the most respectable Ironmongers, Nurserymen, and Seedsmen in various parts of England, Scotland, and Ireland, many of whom have applied for special Agencies, and are now ordering Machines for immediate delivery.

AGENTS IN IRELAND—MESSRS. THOMAS McKENZIE & SONS, 34, Dawson Street, Dublin, and Camden Quay, Cork.

AGENT IN PARIS—MR. R. A. CLEGG, 42, Boulevard Sebastopol.

AGENTS IN VIENNA—MESSRS. CLAYTON, SHUTTLEWORTH, & CO., who are exhibiting the Machines at the Vienna Show this season.

TESTIMONIALS.

From the Hon. P. ASHBURNHAM, *Shernfold Park, Frant, Sussex, March* 7, 1865:—"My gardener was very well satisfied with the working of the B B Mowing Machine."

From Mrs. PRICE, *Hagley Villa, Lugwardine, Hereford, August* 18, 1865.

"I have much pleasure in informing you that the Mowing Machine [a 14-inch B B] I ordered from you at the Bath and West of England Meeting, held in Hereford, has in every respect given the greatest satisfaction, and I am very much pleased with it."

From W. H. APPERLEY, ESQ., *Withington, near Hereford, August* 11, 1865.

The New B B Lawn Mower I purchased of you has now been frequently used by my Gardener, and he is perfectly satisfied with it. It does its work well. I shall feel pleasure in recommending your Machines."

From GEORGE McRAE, ESQ., *Matcham Common, Surrey, September* 27, 1865.

"I am very pleased with the Lawn Mower I had from you [a 14-inch B B Machine] It is certainly the most compact one I ever saw, and does its work well."

From A. LYON, ESQ., *Napier House, Edmonton, October* 4, 1865.

"I have given the B B Mowing Machine [a 14-inch one] a good trial, and am quite satisfied with it. It works so easily that my daughters have on several occasions used it. I shall be glad to give you a testimonial at any time, as I consider it worth one. You can make what use you like of my name in furthering the sale of the Mower."

*** *Every Machine sent out is warranted to give ample satisfaction, and, if not approved of, may be at once returned.*

J. B. BROWN AND CO., OFFICES, 18, CANNON STREET, CITY, LONDON, E.C.

WAREHOUSE (where Machines are kept in Stock), 148, UPPER THAMES STREET, E.C.

OPPOSITE the CITY of LONDON BREWERY, and close to the LONDON BRIDGE STEAM BOAT PIERS.

Editorial Communications should be addressed to "The Editor." Advertisements and Business Letters to "The Publisher," at the Office, 41, Wellington Street, Covent Garden, London, W.C.
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THE GARDENERS' CHRONICLE

AND

AGRICULTURAL GAZETTE.

A Newspaper of Rural Economy and General News.

No. 13.—1866.] SATURDAY, MARCH 31. {Price Fivepence. / Stamped Edition, 6d.

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ROYAL HORTICULTURAL SOCIETY.—The EXHIBITIONS will be held on THURSDAYS, viz.:—SPRING FLOWERS, April 12. SUMMER EXHIBITIONS, May 24, and the ROSE SHOW, June 28. Scientific may be had on application. Admission on April 12 and June 14 by Fellows' Privileged Tickets, to be bought prior to the days, 2s. 6d.; Public, 5s. 6d. or on the days, 10s. 6d. On May 24 and June 28, subject to same regulations, 3s. 6d., 5s., or 7s. 6d. Bands at 3.30

ROYAL HORTICULTURAL SOCIETY.—Mr. WILLIAM PAUL'S EXHIBITION of SPRING FLOWERS will be held at South Kensington, from MARCH 21 to APRIL 3. Admission: Tuesdays and Saturdays (Band at 3), 2s. 6d.; Mondays, 6d.; other days, 1s.

INTERNATIONAL HORTICULTURAL EXHIBITION and BOTANICAL CONGRESS.
Under the Patronage of Her Majesty THE QUEEN, and of their Royal Highnesses the PRINCE OF WALES and the DUKE OF CAMBRIDGE.
The EXHIBITION and GARDENS will OPEN on MAY 22, and continue till May 25. Subscribers' names will be received, and Schedules and Prospectuses may be obtained on application to the Secretary, at the Offices, 1, William Street, Lowndes Square, London.

ROYAL BOTANIC SOCIETY'S GARDENS, Regent's Park.—EXHIBITION of SPRING FLOWERS, AZALEAS, &c., SATURDAY NEXT, April 7. Tickets 2s. 6d. each, to be obtained at the Gardens by Vouchers from Fellows of the Society. Gates open at 2 o'clock. Band performs from 3 to half-past 5. Tickets not used at the Spring Exhibitions will be admitted to the EXHIBITION of JOHN WATERER'S AMERICAN PLANTS in June.

ROYAL BOTANIC SOCIETY'S GARDENS, Regent's Park.—EXHIBITIONS of PLANTS, FLOWERS, and FRUIT, WEDNESDAYS, May 9, June 6, and July 4. Tickets 4s. each.

Genuine Garden Seeds.

WM. CUTBUSH and SON'S DESCRIPTIVE PRICED CATALOGUE of SEEDS, which contains everything New and Old worth growing, can be had post free on application. Highgate, London, N.

PETER S. ROBERTSON AND CO.'S CATALOGUE of FOREST and ORNAMENTAL TREES and SHRUBS post free on application.
Trinity Nursery, and 33, St. Andrew Square, Edinburgh.

PETER S. ROBERTSON AND CO.'S PRICED DESCRIPTIVE CATALOGUE of GENUINE GARDEN and FLOWER SEEDS, and NOVELTIES for 1866, post free on application.
Trinity Nursery, and 33, St. Andrew Square, Edinburgh.

HOOPER AND CO., Seed and Plant Merchants, Covent Garden Market, London, W. C.
SPRING CATALOGUE (New illustrated Edition), just published, forwarded for SIX stamps, or gratis to all customers.

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S. GLENDINNING AND SONS' PRICED LIST of KITCHEN GARDEN, AGRICULTURAL, and FLOWER SEEDS, is now published, and may be had free on application.
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Garden Seeds, Carriage free.

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CATALOGUES of SEEDS and STOCK on application.
GEORGE DAVISON, Hereford.

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REBECCA, the finest BEDDING GERANIUM ever raised. Plants ready in May, price 6s. each.
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JOHN SALTER'S DESCRIPTIVE CATALOGUE of NEW CHRYSANTHEMUMS and PYRETHRUMS for 1866 is now ready, and will be sent free on receipt of two stamps.
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NEW ZONALE PELARGONIUM WILTSHIRE LASS.—The finest Pink-coloured variety ever raised. Awarded two First-class Certificates. Plants ready on May 1st at 5s. each. See New CATALOGUE.
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CARSTAIRS AND SONS are now sending out the above fine Double White Geranium; price 10s. 6d. each. A full Description and List of Testimonials post free on application.
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JAMES DICKSON AND SONS can supply Stout, perfectly ripened CANES of the leading varieties.
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H. LANE & SON'S Nurseries, Berkhampstead, Herts.

CASTLE KENNEDY FIG.—Plants of the above may now be had at 10s. 6d. and 21s. each; the usual discount to the Trade. PETER LAWSON & SON, Edinburgh and London.

WEBB'S PRIZE COB FILBERTS, and other Prize Nuts and Roberts. Of these splendid Nuts to be had of Mr. WEBB, Calcot Gardens, Reading. Catalogues on application.

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SOUND GARLIC, 84s. per cwt., SHALLOTS, 30s. per cwt.
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Fine bushy plants and well rooted, from 1 to 3 feet.
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To the Trade.

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IVERY AND SON beg to announce that their DESCRIPTIVE PRICED CATALOGUES of AZALEA INDICA, HARDY and BRITISH FERNS, ROSES, CONIFERÆ, GRAPE VINES, and SEEDS, may be had on application at their Dorking Nursery.

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For particulars see page 288.

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To the Trade.

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GIANT ASPARAGUS.—Extra fine 2-yrs., 2s. per 100; extra fine 3-years, 3s. per 100.
Price to the Trade on application.
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GRAYSON'S GIANT ASPARAGUS.
Fine strong 3-year roots, 30s. per 1000, 3s. 6d. per 100.
Fine strong 2-year roots, 21s. per 1000, 2s. 6d. per 100.
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THE LONGSTANDER LETTUCE.—Most remarkable for duration without running, crisp and excellent. Packets 1s. each.
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DRUMHEAD or CATTLE CABBAGE.
Strong plants, 3s. per 1000.
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DAINTREE'S SEEDLING POTATO is the best early round white Potato in cultivation, and can be obtained at a moderate price on application.
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SEED POTATOS.—Myatt's Prolific Kidney, Early Dalmahoy, Webb's Imperial Kidney, Daintree's Seedling, and all the best early and late varieties at low prices.
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SEED POTATOS.—SKERRY BLUE, 4s. 6d. per bushel; MYATT'S PROLIFIC ASHLEAF, 6s. per bushel; SEEDLING ROCK, 4s. 6d. per bushel. These three kinds are the most hardy, free from disease, and abundant croppers known.
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H. AND R. STIRZAKER have a few Tons of Early IMPROVED LEMON and MYATT'S ASHLEAF KIDNEY POTATO; also DALMAHOY ROUND, which they offer very cheap to clear out. Skerton Nurseries, Lancaster.

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CARTER'S GENUINE FARM SEEDS.

CARTER'S PERMANENT PASTURE GRASS, per acre, 26s., 30s. and 36s.
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CARTER'S PRIZE MANGEL SEED, per lb. 1s.
SPECIAL LIST of FARM SEEDS gratis and post-free on application.

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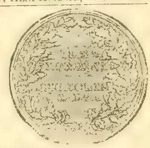

The Greatest Novelty of the Season.

STRIPED-LEAVED JAPANESE MAIZE.— Second Importation of Seed just arrived.

This beautiful and valuable addition to our Ornamental-foliage Plants was obtained in Japan. It appears to be a variety of Curagua, or the Zea Peruvian Maize, as it in many respects differs from the Zea Mays or Indian Corn, as it is called in the United States. It grows to a height of from 5 to 6 feet, the foliage is from 2 to 3 inches wide, and is about 4 feet in length. It is beautifully and evenly striped, or ribboned with alternate stripes of green and white, and in its earlier stages of growth is also striped with rose colour. It resembles the Arundo donax variegata in appearance, but is of a much more elegant and imposing habit. Nothing in the way of a foliage plant can excel in gracefulness and beauty a group of three to five plants of this variety of Zea. Sow in hot-bed and plant out in June. Price 1s. per packet.

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FIVE HUNDRED THOUSAND SILVER FIR, 1-year Seedlings, 1s. per 1000.
500,000 SPRUCE FIR, 1-year Seedlings, 2s. per 1000.
MYATT'S PROLIFIC ASHLEAF KIDNEY POTATOS, true, £5 10s. per ton, sacks 1s. 6d. Reference or remittance required.

J. RIDDELL, Park Attwood, Bewdley, Worcestershire.

JOHN KEYNES' NEW DAHLIAS, 10s. 6d. each. A liberal allowance if the set is taken.

67. MARQUIS of WINCHESTER (KEYNES).—Bright crimson; the flower of the season.
First-class Certificates:—Royal Horticultural Society; Devizes, Trowbridge, Crystal Palace, Bath, Salisbury, Dorset Horticultural Society, Winchester.

68. LOTTY ATKINS' (KEYNES).—Blush, tipped lilac; most chaste flower, always good, must be much cut out.
First-class Certificates:—Royal Horticultural Society; Trowbridge (the silver prize, as the best in the Show), Salisbury, Dorset Horticultural Society, Shepton Mallet, Crystal Palace, Bath, Winchester, Brighton.

69. JOHN DOWNIE (KEYNES).—Yellow, tipped red; beautiful form, very first-class flower, always good.
Certificates:—Royal Horticultural; Salisbury, Trowbridge, Brighton, North Wilts, Dorset Horticultural Society.

71. ANNIE AUSTIN (KEYNES).—Bright light amber, beautiful form, must be well cut out, most constant, and very first-class.
First-class Certificates:—Crystal Palace, Salisbury, Shepton Mallet, North Wilts Horticultural Society, Trowbridge, Dorset Horticultural Society.

72. GEORGE WHITE (KEYNES).—Large deep purple, most desirable colour, always good.
Certificates:—Trowbridge, Devizes, Dorset Horticultural Society.

73. HELEN POTTER (KEYNES).—Blush white, deeper shade of colour to Miss Henshaw, which it much resembles in shape and growth, but quite distinct, very large, very full, constant.
Certificates:—Brighton, North Wilts, Dorset Horticultural Society, Trowbridge.

74. MRS. SAVORY (CHURCH).—This is the flower that was so much admired at the Crystal Palace, where it had a First-class Certificate by acclamation. It is a laced flower, like Bird of Passage, [illegible], and rather deeply pencilled with purple lilac, grand flower.

75. GLADIATOR (CHURCH).—White, very deeply laced, like a Picotee, with deep pink. This is a most striking flower, and surpasses all in its class, exquisite.

These two flowers of Church's are unapproachable in their colour.

76. ULTIMATUM (KEYNES).—Blush, tipped rosy crimson. The form of this flower it is impossible to improve; it must be much cut out, or will be small, a beautiful flower.
First-class Certificates:—Royal Horticultural Society; Brighton.

77. LADY MARY WILDE (ECKFORD).—White, with purple rose tips, a very useful flower, not to be cut out.
Certificates:—Royal Horticultural Society; Bath.

78. JAMES BACKHOUSE (GOODWIN).—Very deep plum or mulberry, the finest show flower of the season. Shown in J. Keynes' Stand at the Crystal Palace. Magnificent.

79. LADY of the LAKE (GOODWIN).—Blush, edged purple, large fine show flower, always to be had.
These two flowers could not be shown much, only one Plant, to increase them, being grown by J. Keynes.

1[illegible]. TOP SAWYER (KEYNES).—White, striped and mottled purple, very fine, centre well up.

139. JOHN BUNN (KEYNES).—Yellow striped crimson, one of the finest flowers of the season, full, constant, and good.
Certificates:—Royal Horticultural; Bath, Salisbury, Winchester, Dorset Horticultural Society.

140. FRANK TIFFIN (KEYNES).—Yellow, heavily striped red; a beautiful fancy, chaste and striking.
Certificates:—Horticultural Society; Shepton Mallet, Trowbridge, Dorset Horticultural Society.

141. CHANG (KEYNES).—Yellow, striped and mottled scarlet, a most extraordinary flower; disbud, [illegible] it will produce enormous size flowers of the most perfect shape; if let alone it will give beautiful show flowers of [illegible].
Certificates:—Crystal Palace, Bath, Brighton, Winchester, North Wilts Horticultural Society.

142. PRESIDENT LINCOLN (KEYNES).—Red, striped red and orange, very fine fancy, much admired.
First-class Certificate:—Brighton.

143. JEANIE DEANS (KEYNES).—Orange, striped purple, very constant, large deep show flower.
First-class Certificates:—Bath, Shepton Mallet, Dorset Horticultural Society.

CATALOGUES now ready.
Salisbury.—March 31.

SUTTON'S CHOICE COLLECTIONS of FLOWER SEEDS.

SUTTON AND SONS forward **Flower Seeds** Free by Post or Rail.

Those requiring showy kinds of Flower Seeds, and who are not well acquainted with the sorts, are respectfully recommended to leave the selection to us, and we will supply those we know to be really worthy of cultivation.

				£	s.	d.
1.	The best 100 sorts (hardy, half-hardy, and tender)			1	1	0
2.	The best 50 sorts	ditto	ditto	0	10	6
3.	The best 36 sorts	ditto	ditto	0	7	6
4.	The best 24 sorts	ditto	ditto	0	5	0
5.	The best 24 sorts (hardy sorts only)	..	..	0	5	0

PRICED CATALOGUES gratis and post free on application.

SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

NEW PLANTS.

AUBRIETIA CAMPBELLI (effective spring flower).
FUCHSIA BANKS'S BEAUTY.
VERONICA FRUTICOSA GLAUCA.
CLIANTHUS DAMPIERI, in varieties (seed only).

Coloured Plates, post free on receipt of Stamps, of the following:—
AUBRIETIA CAMPBELLI, 7d.
CLIANTHUS DAMPIERI ALBIFLORA, 1s. 1d.

For description of the above see E. G. HENDERSON & SON'S New AUTUMN CATALOGUE, forwarded post free.

Wellington Nursery, St. John's Wood, London, N.W.

New and Choice Flower Seeds.

JOHN AND CHARLES LEE, SEEDSMEN to the QUEEN, offer the following choice FLOWER SEEDS (free by post), at the following prices per packet:—

	s.	d.		s.	d.
Auricula, choice mixed ..	1	6	Lobelia Snowflake	2	6
Clianthus Dampieri ..	2	6	Polyanthus, choice mixed	1	0
Calceolaria, choice mixed	2	6	Primula fimbriata, mixed	2	6
Cineraria Dobbin's dwarf flow.	2	6	Salvia patens	1	0
Gazania, choice mixed ..	1	0	Salvia argentea	1	0
Heartsease, choice mixed	1	0	Waltzia acuminata ..	1	0
Hollyhock, Lee's Superb ..	2	6	Zinnia elegans, double ..	1	0

Royal Vineyard Nursery and Seed Establishment, Hammersmith, London, W.

Aucuba japonica Seed.

JOHN AND CHARLES LEE beg to offer WELL-RIPENED BERRIES of AUCUBA JAPONICA, impregnated with the best Male varieties. These Seeds will produce a large proportion of MALE PLANTS, by which the common Aucuba will in a short time be fertilized out of doors, and will produce the most charming effect in our borders.

Price 2s. each, 18s. per dozen, £5 per 100.
Price to the Trade on application.

Royal Vineyard Nursery and Seed Establishment, Hammersmith, London, W.

Aucuba japonica, loaded with Bright Red Berries.

JOHN AND CHARLES LEE, SEEDSMEN to the QUEEN, invite inspection of their large Stock of magnificent SCARLET-BERRIED AUCUBAS, which they believe to be unrivalled for extent, perfection of form, and colouring. The Berried Aucubas are valuable for Table Decoration, for which purpose they may be hired at 10s. 6d. per night.

Plants may be purchased at £3 3s., £4 4s. and £5 5s. each; and Ripe Seeds, producing innumerable varieties, at 2s. each, or 18s. per dozen. The Trade supplied on liberal terms.

Royal Vineyard Nursery and Seed Establishment, Hammersmith, London, W.

CHOICE SPRING FLOWERS, &c., now ready in Strong Plants.

		Per doz.—s.	d.
HEPATICAS, double red and single blue ..		4	0
" double blue ..		12	0
VIOLETS, double, in four sorts ..	4s. to	6	0
" single, in six sorts ..	3s., 4s., and	6	0
" new single striped ..	1s. 6d. each	12	0
" new double striped, Reine des Violettes, 2s. 6d. each		24	0
PRIMROSES, double, in four varieties ..		6	0
CHRISTMAS ROSE, scarlet ..	2s. each	18	0
" white ..		9	0
POLYANTHUS, finest laced varieties ..		3	0
PAMPAS GRASS, fine plants ..	40s. per 100	6	0
DAISIES, six new and choice kinds ..		6	0
ROCK CISTUS, in 20 fine kinds ..		6	0
OLD CRIMSON CHINA ROSE ..		9	0
AURICULAS, finest Alpines ..		6	0
" Perrin's red ..		3	0
ROCKETS, double white and yellow ..		6	0
LAVENDER, fine plants ..		3	0
CLOVES, old crimson and others ..	3s. to	6	0
PINKS, fine named sorts ..		4	0
SWEET WILLIAM, Auricula-eyed, &c. ..		3	0
WALLFLOWER, double yellow and dark ..		4	0
Also the following in Stock Plants:—			
FUCHSIAS, new, of 1865 ..		6	0
VERBENAS, new, of 1865 ..		4	0
GERANIUMS, new, of 1865 ..	9s. to	12	0
PETUNIAS, new, of 1865 ..		6	0
CHRYSANTHEMUMS ..		6	0
TROPÆOLUMS and LOBELIAS, new ..		6	0
ANTIRRHINUMS and PENTSTEMONS, new ..		6	0
PHLOX, new ..		9	0
CINERARIAS, new ..		12	0

100 CHOICE HARDY HERBACEOUS PLANTS, in 50 fine named varieties, for 25s.

ROSES.

24 Finest STANDARD and DWARF ROSES, 24 distinct varieties, 21s.
24 ditto ditto on their own roots, in pots, 21s.

ASPARAGUS, 1, 2, and 3 years, fine.

CATALOGUES free on application; also, TRADE CATALOGUE of NURSERY STOCK.

Post-office Orders on Castle Hedingham.

WM. DILLISTONE, Munro Nursery, Sible Hedingham, Essex.

NEW ROSES of 1866.—Owing to the annual introduction of so many inferior, and, in fact, worthless varieties of New Roses, JOHN CRANSTON has this season carefully selected 23 varieties out of 40 or 50 sorts offered by the French raisers. These he can confidently recommend, and he believes his selection contains all that are worthy of note.

A List, with prices, sent on application. The plants are strong, and will be fit to send out in March.

Nurseries, King's Acre, near Hereford.

New Roses of 1866.

JOHN FRASER, of the Lea Bridge Road Nurseries, Leyton, Essex, N.E., will forward on application a LIST of all the best varieties of NEW ROSES for 1866.

The plants are strong, healthy, and are now ready for sending out. Early orders are respectfully solicited.

Paul's Nurseries, Waltham Cross, N.

NEW ROSES AND ENGLISH SEEDLINGS.

WM. PAUL (Son and Successor to the late A. PAUL) has to offer in May next the following first-class NEW HYBRID PERPETUAL ROSES:—

BLACK PRINCE, H.P. (WM. PAUL).—Flowers dark crimson, shaded with black, cupped, large and full. This Rose may be called a very dark Gloire de Santenay, which it resembles in most respects, but is very distinct in colour. Price 5s. each.

DR. LINDLEY, H.P. (WM. PAUL).—Flowers crimson, with black centres, very large and full. Growth robust, foliage splendid. One of the finest English Roses yet raised. Price 7s. 6d.

GLOBOSA, H.P. (WM. PAUL).—Flowers clear dark bright crimson, colour intense and uniform throughout. This flower is quite unique in character, the petals closing at the top, so as to form a complete crimson ball. Certificate from the Royal Horticultural Society. Price 5s.

LADY SUFFIELD, H.P. (WM. PAUL).—Flowers purplish crimson, colour uniform throughout, the purple tint predominating; large, full, and of fine form. Price 5s.

The following, which are already out, can be supplied in strong healthy plants:—

ELIZABETH VIGNERON (WM. PAUL).—Flowers rosy pink, very large and full, cupped in the way of Lælia, but fuller, fresher and brighter in colour; constitution hardy, growth vigorous; blooms continuously; one of the best of last year's novelties. Price 3s. 6d.

MADAME EMILE BOYAU (WM. PAUL).—Flowers soft rosy flesh-colour, changing to blush, sufficiently large, perfect in form, constitution hardy, growth moderate; very constant, distinct, and good. Price 3s. 6d.

PRINCE DE JOINVILLE (WM. PAUL).—A fine large showy Rose, something in the way of, but of a lighter colour, than Princess of Wales; vigorous and hardy. Price 2s. 6d.

PRINCESS LICHTENSTEIN (WM. PAUL).—Flowers white, globular, large and full, perfect in form in their young state, a good hardy Rose, flowering abundantly. Price 2s. 6d.

GLORY OF WALTHAM (WM. PAUL).—Flowers crimson, in the way of Red Rover, but more double; growth of extraordinary vigour; one of the best of climbing or pillar Roses. Price 3s. 6d.

All the really good French Novelties, 3s. 6d. each; the older kinds, by name, 12s. to 18s. per dozen; 75s. to 100s. per 100.

Superb Double Hollyhocks.

WILLIAM CHATER begs to remind the Admirers of this beautiful flower that now is the best time for planting it out to insure fine spikes and blooms this season.

DESCRIPTIVE CATALOGUES, with instructions for its Cultivation; also prices of Plants per dozen, 100, or 1000, may be had on application.

Seedlings from best named varieties, 4s. per doz., or from 20s. to [illegible] per 100.
Bloomed Seedlings, with colours named, very fine, 6s. per doz., and from 30s. to 40s. per 100.
Seed saved from the finest named varieties, very choice mixed 2s. 6d. and 5s. per packet.
In Collections of 12 separate named varieties, extra fine, 10s.; 6 varieties, extra, 5s.
12 named varieties, all good show flowers, 7s. 6d.
6 do. do. do. do. 4s.

WILLIAM CHATER, Nurseries, Saffron Walden, Essex.

HERBACEOUS and ALPINE PLANTS, the best Sorts.

		£	s.	d.
200 fine showy varieties	..	3	0	0
100 do. do. 30s.; 50 do. ..	..	0	17	6
100 do. do., including new varieties ..	..	2	10	0
50 do. do. do. do. ..	..	1	10	0

DESCRIPTIVE CATALOGUES, giving heights, colours, seasons, &c.

A great variety of SPRING FLOWERS in pots.

STEPHEN BROWN, Seed Grower and Nurseryman, Sudbury, Suffolk.

NEW VERBENAS.

JOHN KEYNES (ECKFORD).—Bright scarlet, with white eye. The most beautiful scarlet bedder in the world, and was awarded a First-class Certificate at the Horticultural Meeting without a dissentient voice; unequalled for smoothness, size, and colour. Price 6s.

LADY JANE ELLIS (ECKFORD).—White, with a small green eye, surrounded by a distant and very distinct pale rosy ring. A very handsome variety, with large flowers and good form. See Horticultural Meeting. First-class Certificates at Horticultural Society and Bath. Price 5s.

MR. GLADSTONE (ECKFORD).—Dark scarlet, having a large light eye. Certificate at Horticultural Society. Price 5s.

ISA ECKFORD (ECKFORD).—Bedding, puce of the finest quality, and most effective, filling the bed well, and keeping its colour all the season. Price 5s.

KING CHARMING (ECKFORD).—Bright rose, with a ring of maroon and pink eye. A most beautiful variety. Price 5s.

GEORGE ECKFORD (ECKFORD).—Bright crimson. The King of all Verbenas. Guaranteed by J. Keynes to be the finest quality of Verbena in existence. Price 5s.

These six Verbenas have been very carefully selected by J. Keynes himself, having seen them growing, and he has no doubt they will prove very first-rate, either as bedding or pot. Fine Plants ready May 1.

The set complete will be 20s. to the Trade.

Plates of these fine Verbenas will be forwarded on receipt of 14 stamps.

JOHN KEYNES, Castle Street, Salisbury.

Choice Flower Seeds post free.

B. S. WILLIAMS has much pleasure in submitting the following LIST of SEEDS, all of which are specially recommended for their beauty and superior qualities. For other Specialities and Novelties see *Gardeners' Chronicle*, March 3; and for full description, NEW SEED CATALOGUE, post free on application.

		Per packet.—s.	d.
PRIMULA (Williams's superb strain), red, white, or mixed seed ..	2s. 6d., 3s. 6d.,	5	0
CINERARIA (Weatherill's extra choice strain) ..	3s. 6d.,	5	0
CALCEOLARIA (James' strain) ..		3	6
CYCLAMEN PERSICUM, the produce of the finest collection in the country ..	1s.,	2	6
ASTER VICTORIA, the most elegant Aster in cultivation ..		1	0
" TRUFFAUT'S PERFECTION, Victoria Red ..		0	6
" WHITE CHRYSANTHEMUM-FLOWERING ..		0	6
STOCK, BROMPTON SCARLET, very fine ..		1	0
" PURPLE QUEEN, very double, beautiful colour ..		0	6
BALSAM, CAMELLIA-FLOWERED ..		1	0
CARNATION and PICOTEE, saved from selected plants ..		1	0
MATTHIOLA BICORNIS, an evening scented Stock of unrivalled fragrance ..		1	0
NASTURTIUM KING THEODORE, new intense black ..		1	0
OXALIS CORNICULATA RUBRA, dark-leaved ribbon border plant ..		1	6
PALAFOXIA HOOKERIANA, new ..		1	0
PANSY, from a fine collection ..		1	0
SILENE PENDULA RUBERRIMA, very beautiful ..		1	0
SWEET PEA, the New Invincible Scarlet ..		1	0
PECTIS ANGUSTIFOLIA, bright yellow flowers, with citron-like fragrance ..		1	0
LOBELIA SNOWFLAKE ..		2	6
CEDRONELLA CANA, very pretty ..		1	6
GYNERIUM ARGENTEUM, Pampas Grass ..		0	6
ANTIRRHINUM MAJUS, Tom Thumb Crimson ..		1	0

KITCHEN GARDEN SEEDS, carriage free.

Complete Collections to suit Gardens of various sizes, 10s. 6d., 21s., 42s., 63s., 84s. each. For quantities see CATALOGUE.

Victoria and Paradise Nurseries, Holloway, London, N.

ROSES, NEW ROSES, HOLLYHOCKS, and GLADIOLI.

PAUL & SON,

OLD CHESHUNT NURSERY, CHESHUNT, N.,

Would solicit before final close of Planting Season, orders for the following. Prices, their selection of varieties:—

STANDARD ROSES, 24 to 4 ft., 18s. per doz.; £6 to £7 10s. per 100.
DWARF STANDARDS, 12s. per doz.; £4 to £5 per 100.

HOLLYHOCKS, set of 7 new varieties, 42s.; 7s. 6d. each; including GEO. EYLES and JOHN LAING. First-class Certificate Royal Horticultural Society. Good Border Flowers, 12s. per doz.; Good Exhibition Flowers, 18s. per doz.

GLADIOLI, all the newest varieties at lowest advertised prices: older sorts, 6s. to 12s. per doz.; newer sorts, 18s. to 30s.

NEW ROSES of 1866, some thousands of strong plants now ready, 3s. 6d. to 5s. each; 42s. per doz.

Largest usual discount to the Trade.

Their New H.P. Rose, Princess Mary of Cambridge, is now ready, 7s. 6d. each.
Very large, full enough, deliciously fragrant, of fine shape, free and exceedingly vigorous; colour pale rose, deeper centre. This is now in bloom in their forcing houses, and fully bears out the Advertisers' description. It is a very fine new light Rose.

☞ PAUL & SON believe their choice of Sorts to include every good variety. Their Lists for the past two years are proofs of their judgment and a guarantee of the care taken by them in a selection so difficult.

PRICED LISTS of the above, FRUITS, SEEDS, &c., now ready.

CHESHUNT.—March 31.

Thomas Gibbons

THOS. GIBBS & Co.
Corner of
HALF-MOON St
PICCADILLY,
London.
APPOINTED APR. 3 1864
THE SEEDSMEN
HORTICULTURAL SOCIETY OF ENGLAND

CORNER of STREET.
Trade Mark.

GRASS SEEDS,
AGRICULTURAL SEEDS,
KITCHEN GARDEN SEEDS,
FLOWER SEEDS.

Catalogues forwarded post free to any address on application.

40 Tons per Acre of INTERMEDIATE AUTUMN and WINTER CATTLE FOOD.

BLUNDELL'S CATTLE MELONS and CATTLE MARROWS:—100 Seeds, 2s. 6d.; ¼ lb., sufficient for ¼ of an acre, 5s.; ½ lb., sufficient for ½ of an acre, 9s.; 1 lb., sufficient for 1 acre, 16s.

For Improving our Native Flora, Enriching Woodland Walks, Wildernesses, Shrubberies, Railway Embankments, Rockeries, Carriage Drives, beside Rivulets, &c. Cheap mixed FLOWER SEEDS for the above purposes, 3s. 6d. to 5s. 6d. per lb.; 7 lb. to 10 lb. per acre. Now is the time to purchase.

MIXED GLADIOLI, for large effective masses, per 100, 10s. 6d., 15s., and 21s.; per doz., 2s. 6d. and 3s. 6d.

BARR & SUGDEN.
THE METROPOLITAN
SEED BULB & PLANT WAREHOUSE
12, KING STREET, COVENT GARDEN, W.C.

Orders amounting to 21s. sent Carriage Paid.

For SPECIALITIES in VEGETABLE SEEDS, see our large Advertisement, p. 72.

NATHANIEL HAWTHORNE on the GOURD.

"Speaking of Gourds, I must say a word of their beautiful and varied forms. They presented an endless diversity of urns and vases, shallow or deep, scalloped or plain, moulded in patterns which a sculptor would do well to copy, since Art has never invented anything more graceful. A hundred Gourds in the garden were worthy—in my eyes at least—of being rendered indestructible in marble. If ever Providence (but I know it never will) should assign me a superfluity of gold, put of it shall be expended for a service of plate, or most delicate porcelain, to be wrought into the shape of Gourds, gathered from Vines which I will plant with my own hands. As dishes for containing vegetables they would be peculiarly appropriate."—*Nathaniel Hawthorne's Mosses from an Old Manse.*

PERMANENT PASTURE GRASS SEEDS and CLOVERS for ALL SOILS | FINE LAWN GRASS SEEDS for ALL SOILS
COMPLETE COLLECTIONS of VEGETABLE SEEDS for One Year's Supply (Carriage paid), 10s. 6d., 15s. 6d., 21s., 30s., 42s., 63s., 84s., and 105s.
COLLECTION of FLOWER SEEDS (post paid), 2s. 6d., 3s. 6d., 5s. 6d., 7s. 6d., 10s. 6d., 15s., 21s., 30s., 42s., to 105s.

INTERNATIONAL BOTANICAL AND HORTICULTURAL CONGRESS.

Those who intend to Exhibit Plants at the above grand gathering, should use STANDEN'S GARDENER'S and AMATEUR'S FRIEND MANURE, a Compound of the richest fertilising Phosphates known. It promotes a healthy vigorous growth in plants, increases the size, and enriches the colour of the flowers, and greatly improves the foliage. In all cases it should be laid on the surface dry, and watered in, thus gradually and continuously nourishing the plant and effecting a considerable saving in labour.

No. 1 quality for Hard-wooded Stove and Greenhouse Plants, Fruit Trees, Roses, Vegetables, and Lawns. Sample canisters, 1s. and 2s. 6d.; and bags, 5s. 6d., 10s. 6d., & 21s.
No. 2 quality for Soft-wooded Plants and Bulbs. Sample canisters, 1s. and 2s. 6d.; and bags, 5s. 6d., 10s. 6d., and 21s.

The above valuable Manure can be procured from any respectable Nurserymen or Seedsmen.

THE FOLLOWING ARE A FEW OF THE AGENTS:—

For London:—
Messrs. E. G. HENDERSON & SON, St. John's Wood
" HUGH LOW & Co., Upper Clapton
" JAMES CARTER & Co., High Holborn
" DOWNIE, LAIRD, & LAING, Forest Hill and Edinburgh
" HOOPER & Co., Covent Garden
Mr. B. S. WILLIAMS, Paradise Nursery, Holloway
" GREEN, Covent Garden
" KENNEDY, Covent Garden
" GAINES, Covent Garden
" BUCK, Covent Garden
" WILLIAM CUTBUSH, Barnet
For London:—
Mr MACINTOSH, Hammersmith
" W. BARNES, Camberwell
" ANSELL, Camden Town
For the Provinces:—
Mr. CHARLES TURNER, Slough
" W. DEAN, Bradford
" C. FELTON, Erdington, Birmingham
" S. MAY, Leeds
" F. G. GODWIN, Sheffield
" W. DILLISTON, Hedingham, Essex
" T. HOBBS, Landport
For the Provinces:—
Mr J. SCOTT, Yeovil, Somerset
" J. J. CHATER, Cambridge
" CHARLES H. DICKSON, Manchester
" GEORGE DAVIES, Old Swan, Liverpool
Messrs. SMITH & SON, Aberdeen
" JOHN KEARSLEY & SONS, Leeds
" JACKSON & SON, Kingston-on-Thames
" DICKSON & ROBSON, Manchester
" J. & W. SHAW, Swansea
" G. & W. YATES, Manchester
" STUART & MAIN, Kelso

*** *Additional names of Agents will be given from time to time.*

BARR and SUGDEN, SEED, PLANT, and BULB MERCHANTS, 12, KING STREET, COVENT GARDEN.

Fruiting Vines.

E. G. HENDERSON AND SON offer the above, with splendid Canes of well-matured growth, with prominent eyes, sure to give a heavy crop of fruit, 10s. 6d. each.
LIST of SORTS sent on application.
Wellington Nursery, St. John's Wood, London, N.W.

Vines, Vines.

EXTRA-STRONG FRUITING VINES.

LUCOMBE, PINCE, AND CO. have a fine large Stock of the above, with well-ripened short-jointed wood, each cane being 10 feet long, and capable of producing 10 bunches of Grapes this season. The following are the Sorts:—

BLACK ALICANTE | BLACK HAMBURGH
BUCKLAND SWEETWATER | LADY DOWNES' SEEDLING
MUSCAT of ALEXANDRIA.

For prices and particulars apply to them.
Exeter Nurseries, Exeter.

VINES.—Strong Fruiting Canes of the following leading varieties:—Black Hamburgh, Mill Hill Hamburgh, Black Frontignan, Buckland Sweetwater, Lady Downes', Frankenthal, Bowood Muscat, Trentham Black, Chasselas Musqué, Eschallota, Charnwood Muscat, Muscat Hamburgh, White Frontignan, Dutch Sweetwater, Muscat Troveren, Trebbiano, Black Alicante, Barbarossa, Muscat of Alexandria. Price on application to
FISHER, HOLMES, & Co., Handsworth Nurseries, Sheffield.

To the Trade.—Overstock, very Cheap.

STANDARD-TRAINED ROYAL GEORGE PEACH, DWARF-TRAINED ROYAL GEORGE and other sorts.
CHERRIES, dwarf trained, in great variety, as May Duke, Waterloo, Werder's Early Black, Bigarreau, Adam's Crown, Belle d'Orleans, Knight's Early Black, &c.
PLUMS, dwarf trained, in great variety, as Cox's Emperor, Bryanstone, Green Gage, Drap d'Or, St. Martin's, Quetsche, Angeline Burdette, Orleans, &c.
CHERRIES, standards, in variety, as May Duke, Elton, Bowyer's Early Heart, Black Heart, Belle d'Orleans, Florence, &c.
PEARS, pyramids on Quince, Louise Bonne, Glou Morceau, Marechal de la Cour, Bergamotte d'Esperen, and White Doyenne.
MAIDEN PEACHES, NECTARINES, and APRICOTS; STANDARD and DWARF ROSES.
RICHARD SMITH, Nurseryman, Worcester.

RASPBERRIES.—Cornwell's Seedling, 12s. per 100; Cutbush's Prince of Wales, 16s.: Scinter's Semper Fidelis, £1; Carter's Prolific, 10s.; Red Prolific, 8s.; Double Bearing, 8s.: Evans's White, 10s.
STRAWBERRIES.—British Queen, Admiral Dundas, Sir Charles Napier, Eleanor, Oscar, Rifleman, Myatt's Eliza, Keen's Seedling, Princess of Wales, Black Prince, 2s. per 100, or 18s. per 1000.
Strong GOOSEBERRIES and CURRANTS, 16s. to £1 per 100.
ASPARAGUS, 2 years, 2s. 6d.; 3 years, 3s.; 4 years, 4s. per 100.
ROBERT, late GEO. CORNWELL & Co., opposite Red Lion, Barnet, N.

THE LADY, a SEEDLING STRAWBERRY, raised by Mr UNDERHILL, who was the originator of Sir Harry.
Plants are now ready to be sent out in lots of not less than 20.
All applications must be accompanied by a post-office order, on Birmingham, postage stamps, or cash, to receive attention.
Prices of The Lady Strawberry Plant:—100, £5; 75, £4 5s.; 50, £3 5s.; 25, £1 10s.
Plants in Pots, not less than 10, at 2s. each, package included.
The above scale of prices will be slightly changed in August, 1866.
Mr UNDERHILL'S "Treatise on the Cultivation of Strawberries," either in English, French, or German, may be had through the post, price 1s. Address,
Mr. RICHARD UNDERHILL, Sir Harry's Road, Edgbaston, Birmingham.

For Park Scenery, Islands, Select Plantations, Small Orchards, extensive Lawns, Mounds, Sub-tropical Gardens and Raised Flower Beds, also Verandahs and Rustic Arches, likewise Sloping Banks, &c, ORNAMENTAL GOURDS are exceedingly attractive both for their foliage and fruit. When ripe the fruit forms a unique Hall and Drawing-room Ornament.

The Gourd Seeds in warm localities can be sown early in May where intended to grow.

Selections of ORNAMENTAL GOURDS, including Miniature, Medium, and Mammoth varieties, or either separate:—10 varieties, 2s. 6d.; 15 do., 3s. 6d.; 20 do., 5s. 6d.; 30 do., 7s. 6d.; 40 do., 10s. 6d.; 50 do., 12s. 6d.; 100 do., 21s.; 200, 42s.

SUTTON'S GRASS and CLOVER SEEDS for all SOILS.

SUTTON & SONS,

SEEDSMEN TO THE QUEEN, AND TO H.R.H. THE PRINCE OF WALES,

ROYAL BERKSHIRE SEED ESTABLISHMENT, READING,

HAVE ONE OF THE

LARGEST STOCKS IN EUROPE OF PERMANENT NATURAL GRASS AND CLOVER SEEDS,

WHICH THEY MIX EXPRESSLY TO SUIT THE SOIL FOR WHICH THEY ARE REQUIRED.

SPECIAL CONTRACTS MADE FOR LARGE QUANTITIES.

SUTTON'S MIXTURES of PERMANENT GRASS and CLOVER SEEDS

FOR LAYING DOWN LAND TO MEADOW OR PASTURE :—

Sutton's Mixture for Loamy Soil of Medium Texture,

26s. to 36s. per acre, contains the following sorts :—

ACHILLEA MILLEFOLIUM	LOLIUM PERENNE PACEYANUM
ALOPECURUS PRATENSIS	,, SEMPERVIRENS
ANTHOXANTHUM ODORATUM	PHLEUM PRATENSE
CYNOSURUS CRISTATUS	POA TRIVIALIS
DACTYLIS GLOMERATA	,, PRATENSE
FESTUCA DURIUSCULA	,, FERTILIS
,, PRATENSIS	MEDICAGO LUPULINA
,, OVINA	TRIFOLIUM REPENS PERENNE
,, RUBRA	,, PRATENSE PERENNE
,, LOLIACEA	,, HYBRIDUM

The above selection of Seeds, weighing about 44 pounds, and measuring fully 2 bushels, can be supplied of best quality, thoroughly cleaned and mixed—the Clovers, &c., in one mixture, and the large seeds in another.

Sutton's Mixture for Stiff Heavy Soils, 26s. to 36s. per acre,

contains the following sorts :—

ALOPECURUS PRATENSIS	LOLIUM PERENNE PACEYANUM
ANTHOXANTHUM ODORATUM	,, SEMPERVIRENS
AGROSTIS STOLONIFERA	PHLEUM PRATENSE
DACTYLIS GLOMERATA	POA TRIVIALIS
FESTUCA DURIUSCULA	,, FERTILIS
,, ELATIOR	,, AQUATICA
,, PRATENSIS	MEDICAGO LUPULINA
,, LOLIACEA	TRIFOLIUM REPENS PERENNE
GLYCERIA AQUATICA	,, PRATENSE PERENNE
	,, HYBRIDUM

The above selection of Seeds, weighing about 44 pounds, and measuring fully 2 bushels, can be supplied of best quality, thoroughly cleaned and mixed—the Clovers, &c., in one mixture, and the large seeds in another.

Mixture for Chalky or Gravelly Uplands and Sheep Downs.

For this purpose Grass Seeds are annually collected from dry and hilly districts, where they are found growing spontaneously; and, after many years' experience, we can confidently assure our friends that a good and permanent sward may be obtained on any upland from this mixture. Price 26s. to 36s per acre.

Mixture for Reclaimed Marshes and Heath Lands.

Many acres of land of this description have been successfully laid down to Permanent Pasture by us, including much of the sandy soil at the Aldershot Camp. Price 26s. per acre.

Mixture for good Black Peaty Soil.

These soils produce excellent pasture when sown with the proper kinds of Seeds. Price 26s. to 36s. per acre. Or the cost may be reduced by omitting some of the more expensive kinds.

Mixture for Laying down Water Meadows.

In this department also we have been very successful, many customers having expressed their great gratification at the effect of these Seeds. Price 26s. to 30s. per acre.

Renovating Grass and Clover Seeds for Improving Old Pastures.

Our Renovating Mixture consists of the finest Grasses and Perennial Clovers. If the seeds are sown early in the season, the improvement in the pasture will be very great, and at a small expense. Quantity of seed required, 8 to 12 lb. per acre. Price 10*d.* per lb., or cheaper by the cwt.

Mixture of Grass and Clover Seeds for 3 or 4 Years' Lay,

20s. to 24s. per acre, contains the following sorts :—

SUTTON'S PERENNIAL RYE-GRASS	PHLEUM PRATENSE
PACEY'S PERENNIAL ,,	PERENNIAL RED CLOVER
ITALIAN RYE-GRASS	BROAD RED CLOVER
ALOPECURUS PRATENSIS	YELLOW TREFOIL
DACTYLIS GLOMERATA	WHITE DUTCH CLOVER
FESTUCA DURIUSCULA	ALSIKE CLOVER

The quantity required per acre is 2 bushels.

New Clover Seeds.

Cheaper by the cwt., price of which, and samples, may be had on application.

COMMON RED or BROAD, fine and clean, 7½*d.* to 9*d.* per lb.
,, ,, extra fine, 10*d.* per lb.
WHITE or DUTCH, fine and clean, 9*d.* to 11*d.* per lb.
,, ,, extra fine, 1*s.* per lb.
YELLOW TREFOIL, fine and clean, 4*d.* to 5*d.* per lb.
,, ,, extra fine, 6*d.* per lb.
ALSIKE or HYBRID, fine and clean, 1*s.* 9*d.* to 2*s.* per lb.
,, ,, extra fine, 2*s.* 6*d.* per lb.
COW-GRASS, the true sort, fine and clean, 11*d.* to 1*s.* per lb.
,, extra fine, 1*s.* 2*d.* per lb.

Also other sorts at equally moderate prices, as see Catalogue.

Sutton's Mixture for Light Blowing Sands, 26s. to 36s. per acre,

contains the following sorts :—

ANTHOXANTHUM ODORATUM	LOLIUM PERENNE PACEYANUM
CYNOSURUS CRISTATUS	PERENNE SEMPERVIRENS
DACTYLIS GLOMERATA	POA PRATENSIS
FESTUCA DURIUSCULA	,, SEMPERVIRENS
,, HETEROPHYLLA	MEDICAGO LUPULINA
,, OVINA	TRIFOLIUM REPENS PERENNE
,, RUBRA	,, PRATENSE PERENNE
,, TENUIFOLIA	,, HYBRIDUM.

The above selection of Seeds, weighing about 44 lbs., and measuring fully 2 bushels, can be supplied of best quality—thoroughly cleaned and mixed—the Clovers, &c., in one mixture, and the large Seeds in another.

Mixture to Lay Down New Park Lawns, 20s. per bushel.

For this purpose all coarse-growing kinds are carefully excluded; and the sward will, at all seasons, present a luxuriant verdure, so desirable in parks contiguous to the mansion. 2 or 2½ bushels required per acre. The following sorts are contained in this mixture :—

ACHILLEA MILLEFOLIUM	LOLIUM PERENNE SUTTONII
ANTHOXANTHUM ODORATUM	POA PRATENSIS
CYNOSURUS CRISTATUS	,, NEMORALIS
FESTUCA DURIUSCULA	,, SEMPERVIRENS
,, HETEROPHYLLA	TRIFOLIUM REPENS PERENNE
,, OVINA	,, MINUS
,, LOLIACEA	,, HYBRIDUM
,, RUBRA	MEDICAGO LUPULINA.
,, TENUIFOLIA	

Permanent Evergreen Grasses for Churchyards and Cemeteries.

We have had the honour of supplying His Grace the Archbishop of Canterbury and many others of the Clergy with Grass Seeds for Churchyards and Cemeteries, which have given great satisfaction. Price of Seed, 20*s.* per bushel (2½ bushels required per acre).

Mixture for Orchards and Pastures Overshadowed with Trees.

An excellent Mixture can be supplied, suitable for this purpose, at 36*s.* per acre.

Permanent Grass Seeds without Clovers.

Those who possess Perennial Clover Seeds, &c., can be supplied with an excellent mixture of FESCUES, COCKSFOOT, LOLIUMS, POAS, SWEET VERNAL, and other Permanent Grasses. 2 bushels of this Mixture, and 12 lbs. of mixed Perennial Clovers, will be the proper quantities per acre for Permanent Pasture. Price 12*s.* per bushel.

Grass Seeds for Cultivation with Sewage and other Liquid Manure.

Having for several years been engaged in supplying various Grass Seeds for experiments with Liquid Manure on the Bagshot Sands, the Aldershot Camps, and other poor soils, we are now prepared to offer the sorts we have found to thrive best under this treatment, and confidently recommend their cultivation as highly remunerative. The quantity required per acre is 3 bushels, and the present price is 8*s.* per bushel.

Mixed Grass Seeds, of coarse kinds, for Game Covers, &c.,

2*s.* 6*d.* to 5*s.* per bushel.

Mixed Grass Seeds, for Railway Embankments, &c.,

3*s.* 6*d.* to 5*s.* per bushel.

Fine Lawn Grass Seeds,

for making New or Improving Old Garden Lawns.

As these Grasses are of small neat growth, and do not spread so much as other kinds, it is necessary they should be sown thickly For forming New Lawns, 3 bushels or 60 lbs. is the quantity required per acre; or 1 gallon to 6 rods (or perches) of land. Price 1*s.* 3*d.* per lb., or 24*s.* per bushel.

Mixture of Grass and Clover Seeds for 2 Years' Lay,

16*s.* to 20*s.* per acre.

This Mixture contains a large proportion of Perennial Clovers, and under favourable circumstances will often stand for 3 years. Contains the following sorts :—

BROAD RED CLOVER	ROUND COCKSFOOT
PERENNIAL CLOVER	SHEEP'S FESCUE
WHITE CLOVER	TIMOTHY
ALSIKE CLOVER	PACEY'S PERENNIAL RYE-GRASS
YELLOW TREFOIL	SUTTON'S PERENNIAL RYE-GRASS
MEADOW FOXTAIL	ITALIAN RYE-GRASS.

The quantity required per acre is 1 bushel, weighing about 25 lbs.

Mixtures of Clovers and Rye-Grass.

To be sown with Corn for a Crop of Clover, &c., in the following year.

CLOVERS and ITALIAN RYE-GRASS for One Year's Clover, &c., including 14 lbs. Alsike and other Clovers, at 14*s.* per acre; or second quality, 10*s.* to 12*s.* per acre.
CLOVERS and COMMON RYE-GRASS, including 14 lbs. Alsike and other Clovers, at 14*s.* per acre; or second quality, 10*s.* to 12*s.* per acre.
CLOVER SEEDS without Rye-Grass, 12*s.* 6*d.* per acre; second quality, 10*s.* 6*d.* per acre.

Rye-Grasses, cheaper in large quantities.

ITALIAN RYE-GRASS, good English seed, 6*s.* per bushel.
FRESH IMPORTED SEED, thoroughly well cleaned, 7*s.* per bushel.
SUTTON'S IMPROVED ITALIAN, 6*s.* 6*d.* per bushel.
PERENNIAL RYE-GRASS, heavy seed, 6*s.* 6*d.* per bushel; lighter seed, 5*s.* to 6*s.* per bushel
PACEY'S PERENNIAL RYE-GRASS, very fine, 6*s.* 6*d.* to 7*s.* per bushel.
EVERGREEN RYE-GRASS, 7*s.* 6*d.* per bushel.
ANNUAL, or COMMON, best quality, 6*s.* 6*d.* per bushel; lighter seed, 4*s.* 6*d.* to 5*s.* 6*d.* per bushel.

Bromus Schraderi, the new Forage Grass, 5s. per lb.

With Instructions on Cultivation.

Also SUTTON'S IMPROVED VARIETIES of MANGEL WURZEL, SWEDISH and other TURNIPS, KOHL RABI, CARROT, &c., &c., at very moderate prices, List of which may be had on application.

All kinds of Seeds and Potatos Carriage Free. 5 per cent. discount for Cash payment.

SUTTON AND SONS, ROYAL BERKSHIRE SEED ESTABLISHMENT, READING.

Superb Double Hollyhocks.
THE FINEST COLLECTION EVER OFFERED TO THE PUBLIC.
WCHATER has a large Stock of fine healthy Plants now ready, which he can supply on liberal terms.
See Advertisement on other page
Address, W. CHATER, Nurseries, Saffron Walden.

Hollyhocks, Hollyhocks, Hollyhocks.
J. C. PADMAN has a splendid stock of Autumn-struck Plants, now ready, 50s. per 100; price to the Trade on application. List on application. SALVIA PATENS, 3s. per doz; 20s. per 100.
Providence Nursery, Boston Spa, Yorkshire.

For Dahlias apply to
G. RAWLINGS, who is permitted to announce that he supplied Clark & Co., and Mr. Boshell, of the Borough, for 16 years. Nearly 200 varieties, at 3s. per doz.; New ones of 1865, including LEAH, CHAMPION, and GEO. WHEELER, 9s. per doz.
CATALOGUES are ready.
Waterloo Road, Romford, Essex, E.

BUTLER AND MCCULLOCH'S Collections of Choice FLOWER SEEDS forwarded Post free.
NEW ANNUALS, 5s. and 10s. 6d.
HARDY DO., 2s. 6d., 5s., 10s., 20s.
HALF HARDY DO., 4s., 7s. 6d., 15s., 30s.
For details of above Collections, see B. & McC.'s SPRING CATALOGUE, sent free and post paid, upon application.
Covent Garden Market, W.C.

Established Upwards of a Century.
BUTLER AND MCCULLOCH'S Complete COLLECTIONS of VEGETABLE SEEDS for ONE YEAR'S SUPPLY, all of the Growth of 1865.

No. 1	No. 2.	No. 3.	No. 4.	No. 5.
£3 3s.	£2 2s.	£1 10s.	£1 1s.	10s 6d.

All orders amounting to 21s. and upwards sent carriage paid.
DESCRIPTIVE PRICED CATALOGUES sent free and post paid upon application.
BUTLER & MCCULLOCH, South Row, Covent Garden Market, W.C.

SUB-TROPICAL FOLIAGE SEEDS, and other Novelties, post free.
PRICED LISTS, with cultural directions, free on application; see also large Advertisement in *Gardeners' Chronicle*, page 240.
DOWNIE, LAIRD, & LANG, Stansted Park, Forest Hill, S.E.; and 17, South Frederick Street, Edinburgh.

LOBELIA, NEW WHITE.—This White Lobelia is quite distinct from all others; it is of neat compact habit, immense bloomer, and will be found for edging or making a white bed, superior to any other White Bedding Plant extant.
It may be obtained of Messrs. Dobson, Isleworth; HIGH Low & Co., Messrs. DILLISTONE, PADMAN, F. PERKINS, &c. Price 2s. 6d. each; 18s. per doz.; or £5 per 100
MARTIN & SON, Hull and Cottingham.

British Fern Catalogue.
ROBERT SIM can now send, post free for six postage stamps, Part I. (British Ferns and their varieties, 56 pages, including prices of Hardy Exotic Ferns) of his NEW AND PRICED DESCRIPTIVE CATALOGUE of BRITISH and EXOTIC FERNS, No. 7.
*** Part II. (Exotic Ferns) will be issued as early as possible.
Foot's Cray Nursery, S.E.

RICHARD SMITH'S SEED CATALOGUE contains a Calendar of Time for Sowing, particulars of Collections with Prices, Directions for Cropping well and economically, Soil, Manure, Depth, Distance, Season, Hardiness, Duration, Form, Height, Colour, Storing, Use, Flavour, and other qualities described. This List free by post for one stamp. Seeds direct from the growers, the surest way to success.
RICHARD SMITH, Seed Merchant, Worcester.

American Plants, New Hardy Rhododendrons.
WATERER AND GODFREY'S PRICED and DESCRIPTIVE CATALOGUE of AMERICAN PLANTS, as exhibited in the Horticultural Gardens, south Kensington, free on application. This Catalogue fairly describes the Rhododendrons most worth growing, as well as some new and very handsome kinds exclusively in their possession, and now for the first time offered.
Knap Hill Nursery, Woking, Surrey.

Hardy Scarlet Rhododendrons.
JOHN WATERER'S CATALOGUE of HARDY SCARLET and other CHOICE RHODODENDRONS as annually displayed in the Royal Botanic Gardens, Regent's Park, can now be had on application.
It contains faithful descriptions of all the varieties really worthy of cultivation, as well as a selection of HARDY CONIFERS, with heights and prices, with ORNAMENTAL EVERGREENS, FOREST TREES, &c.
The American Nursery, Bagshot, Surrey.

To the Trade.
CUPRESSUS LAWSONIANA SEED (true), of excellent quality, and warranted crop of present season. Price, postage paid, 5s. 2d. per oz.; 35s. per half lb.; 60s. per lb. nett. From unknown Correspondents a remittance must accompany order.
WHOLESALE CATALOGUES of GENERAL NURSERY STOCK can be had on application to
THOS. CRIPPS, Nurseryman, Tunbridge Wells, Kent.

Chrysanthemums.
FIRST PRIZES STOKE NEWINGTON AND GUILDHALL, 1865.
ADAM FORSYTH begs to inform the Public that he is now sending out his large COLLECTION of CHRYSANTHEMUMS, at 6s. per dozen, including Attraction, Eve, Golden Ball, Golden Dr. Brock, Hercules, King of Denmark, Lady Carey, Mr. Brunlees, Mr. Wyness, Mrs. Raines, Pink Pearl, Prince of Wales, Sam Weller, Venus, Virgin Queen, &c.
CATALOGUES for one stamp.
Brunswick Nursery, Stoke Newington, N.

Pelargonium Mrs. Pollock.
ALFRED FRYER offers healthy well-grown Plants of this beautiful Bedding PELARGONIUM at 12s., 15s., and 18s. per dozen for cash. All the plants are well established in 60-pots, and were struck in open borders last autumn.
Remittances requested from unknown correspondents.
Address, ALFRED FRYER, Nurseries, Chatteris, Cambridgeshire.

CHOICE VARIEGATED PELARGONIUMS.

Mrs. Pollock	Golden Vase	Rainbow
Sunset	Snowflake	Burning Bush
Yellow Belt	Picturata	Princess Alexandra
Golden Tom Thumb	Argus	Pomponellum

The above 12 choice varieties, suitable for exhibition, for 21s., basket and packing included.
Address, ALFRED FRYER, Nurseries, Chatteris, Cambridgeshire.
Remittances required from unknown correspondents.

TWELVE of the FINEST GERANIUMS extant for BEDDING are—

Italia Unita	Variegated Little David	Indian Yellow
Sunset	Venus	Orange Nosegay
Mrs Pollock	Amy Hogg	Fairy
Luna	Glowworm	Enamel

The above 12, in good plants, for One Guinea. Post Office Orders on Castle Hedingham.
WM. DILLISTONE, Munro Nursery, Sible Hedingham, Essex.

CHEAP and BEAUTIFUL FLOWER SEEDS.
100 packets of the best and most showy Hardy, Half-hardy, and Tender Annuals, 20s.
50 ditto, 10s. | 25 ditto, Hardy Annuals, 5s.
25 ditto, 5s. | 12 ditto, ditto, 2s. 6d
DESCRIPTIVE CATALOGUE on application.
RICHARD SMITH, Seed Merchant, Worcester.

To the Trade only.
JOHN KEARSLEY AND SONS, NURSERYMEN, Leeds, offer as below, all very fine healthy stuff:—
Choice named CARNATIONS and PICOTEES, per 100 pairs, 50s.; do. Mixed, 25s.
DAHLIAS, choice varieties, pot roots, 15s. per 100.
PANSIES, choice varieties, 10s. per 100.
PHLOXES, Herbaceous, choice, 18s. per 100.
RASPBERRIES, FASTOLFF, True, 8s.
Dwarf-trained APRICOTS, 21s. per dozen.
" PEACHES, 24s. per dozen.

CHOICE BEDDING PLANTS, &c.
GERANIUMS, NOSEGAY (BEATON'S), AMY HOGG, INDIAN YELLOW, and GLOWWORM, 1s 6d. each, 12s. per doz.; STELLA, 6s. per doz. Any two sorts.
GERANIUMS, ZONALE, BEAUTÉ DE SURESNES, 2s. each, 21s. per doz.; MADAME WERLE, 1s. 6d. each, 15s. per doz; HIGHGATE RIVAL, 1s. 6d. each, 15s. per doz.
VIOLA MONTANA, true, from Mr. Tyerman's stock, 1s. each, 9s. per doz., 60s. per 100.
PINES, BLACK JAMAICA, strong succession and Fruiting, fine clean plants, from 3s. 6d. to 10s. each.
VINE SUCKERS, strong, 12s. to 18s. per doz.
T. J. BOOTH offers the above in strong stock plants. Price to the Trade on application
Rainhill Nursery, Prescot, Lancashire.

Primula, Calceolaria, &c.
WM. CUTBUSH AND SON are now sending out SEED of their superb PRIMULA SINENSIS FIMBRIATA, which has for many years given great satisfaction.
The *Gardeners' Chronicle* of the 6th of January, in Notices to Correspondents, says:—"The blooms sent are remarkably fine, richly coloured, full, and densely fringed; they are evidently the produce of a capital strain."
The *Journal of Horticulture* of the 23d of January, says that:—"The finest and richest coloured Chinese Primulas we have yet seen are those raised by Messrs. Cutbush & Son."
Selected packets 2s. 6d. and 5s. 6d. each
CALCEOLARIA (JAMES')—This is the finest herbaceous variety extant. Per packet 2s. 6d. and 3s. 6d. each.
CINERARIA, fine, from named varieties. Per packet 2s. 6d. and 3s. 6d. each Highgate Nurseries, London, N.

Hardy Climbers.—To the Trade.
CLEMATIS JACKMANNI, 2s. 6d. each; 21s. per doz.
" RUBRO-VIOLACEA, 2s. each; 18s. per doz
" HYBRIDA SPLENDIDA, 2s. each; 18s. per doz.
" STANDISHII, 2s. each; 18s. per doz.
" SOPHIA FLORE PLENO, 2s. each; 18s. per doz.
" CŒRULEA (AZUREA) GRANDIFLORA, 50s. per 100.
Besides other good old varieties.
A CATALOGUE, including Description and Treatment of Clematises, will be forwarded free on application to
GEO. JACKMAN & SON, Woking Nursery, Surrey.

To be Sold Cheap.—Important to Planters.
WILLIAM BARRON begs to offer the following, at extremely low prices, to Noblemen, Gentlemen, and others engaged in Planting on a large scale:—
PINUS LARICIO (true).—This highly ornamental tree surpasses the Larch, both as to rapidity of growth and quality of timber. It will thrive where the Larch will not. It is also used as spars and masts in the French navy. Two-year seedlings, 10s. per 1000.
PINUS ROMANA.—Two-years seedlings, 10s. per 100.
PINUS PALLASIANA.—Two-year seedlings, 10s. per 100.
ABIES MENZIESII.—Few people are aware of the value of the timber of this beautiful tree. 2s to 3 feet, 60s. per 100.
PICEA NOBILIS (true).—Very fine, 6 to 9 inches, 10s. per dozen.
BERBERIS DARWINII.—Too much cannot be said of this fine evergreen species. It is hardy, and the profusion of its orange-coloured blossoms, together with the quantity of berries which it bears (of which pheasants are very fond), render it one of the most attractive and desirable plants for lawn as well as covert planting ever introduced. One-year seedlings, 20s. per 1000.
BERBERIS WALLICHIANA.—One-year seedlings, 15s. per 100.
Elvaston Nurseries, Borrowash, near Derby.

New Catalogues.
DOWNIE, LAIRD, AND LANG beg to intimate that their PRICED DESCRIPTIVE CATALOGUES of FLORIST FLOWERS, NEW PLANTS, AMERICAN FLOWER, and AGRICULTURAL SEEDS are now ready, and may be had free on application.
17, South Frederick Street, Edinburgh; and Stansted Park, Forest Hill, London, S.E.

Select Catalogues of Seeds and Plants.
ROBERT PARKER begs to announce that his NEW PRICED and DESCRIPTIVE CATALOGUES, containing Select Lists of the best varieties of Vegetable, Agricultural, and Flower Seeds, New and Rare Plants, &c., are now published, and will be forwarded to applicants. All Seeds are warranted to be of the finest possible quality. Intending purchasers are requested to compare the prices with those of other houses.
Exotic Nursery, Bedford Road, Surrey, S.

GEO. SMITH'S NEW CATALOGUE, with a splendid Woodcut of NOSEGAY GERANIUM LE GRAND, which is the finest of all Geraniums for effect, together with descriptions of New Seedling Zonale Geraniums, Chieftain, Christabel, Exhibitor, Gladiateur, Great Britain, Sir Robert Peel, and Perfection, which for their general fine qualities have received First-class Certificates from the Royal Botanic Gardens and Royal Horticultural Gardens, South Kensington, all of which G. S. can, with the greatest of confidence, recommend. For description see CATALOGUE, which also contains Select Lists of Show, French, Fancy, Zonale and Variegated Geraniums, Fuchsias, Petunias, Dahlias, Verbenas, Chrysanthemums, Bedding Plants, &c. Now ready in exchange for one postage stamp.
Tollington Nursery, Hornsey Road, London, N.

Genuine Garden and Farm Seeds to be had at
THOMAS KENNEDY AND CO.'S Nursery and Seed Establishment, Dumfries, N.B.
And delivered free of carriage as formerly.
PRICED CATALOGUES furnished on application.

LAMOUREUX, CLARK, AND CO., SEED MERCHANTS, Plymouth.
The SEED CATALOGUE and GARDEN DIRECTORY for 1866, now published, will give full particulars respecting prices and other matters in connection with the Business. Will be sent gratis and post free to any address in the kingdom.

AMBROISE VERSCHAFFELT, NURSERYMAN, Ghent, Belgium, begs to announce that his NEW CATALOGUE, No. 78, has just appeared, and can be had at his Agents, Messrs. E. SILBERRAD & SON, 5, Harp Lane, Great Tower Street, London, E.C.

Genuine Garden and Agricultural Seeds.
PAUL TOLLARD, SEED GROWER and MERCHANT, 29, Quai de la Mégisserie, 29, Adevant à Prince des Trois Barres 4, à Paris. SPECIAL PRICED LIST of NEW SEEDS, in English weights and money, on application.

100,000 Camellias.
JOSEPH BAUMANN, NURSERYMAN, Ghent, Belgium, begs to offer 100 CAMELLIAS of the best sorts, without flower buds, good plants, 4 to 5 feet high, for 100 francs; 200 francs, £6 to £8. Free to the Custom House, London.

ASTER.—GERMAN ASTER, the finest Strain in the kingdom.—Was awarded the First Prize at the Brighton and Sussex Horticultural Show (open to all England), in 1864 and 1865, and wherever exhibited in 1865. Packets, 1s. 6d. each.
J. JENNINGS, Seed Establishment, New Street, Shipston-on-Stour.

Flower Seeds.
ENGLISH and CONTINENTAL NOVELTIES for 1866.—See DESCRIPTIVE LIST in *Gardeners' Chronicle* of March 10, p. 244; also March 17, in first column of the Newspaper part. Offered by
STEPHEN BROWN, Seed Grower, Sudbury, Suffolk.
CATALOGUES sent free

GARDENERS' ROYAL BENEVOLENT INSTITUTION
NOTICE IS HEREBY GIVEN that FOUR PENSIONERS will be added to the LIST in JULY NEXT. Persons desirous of becoming Candidates are required to send their applications, Certificates, &c., to the Committee Room, 26, Store Street, on or before 2d May, after which time they will not be received.—By order of the Committee,
EDWARD R. CUTLER, Secretary.
14, Tavistock Row, W.C., March 23, 1866.
Printed Forms may be had upon application to the Secretary.

HORTICULTURAL DINNER.—At a Meeting of Gentlemen interested in Horticulture, held at Anderton's Hotel, Fleet Street, E.C., on Thursday, March 22, Mr WILLIAM PAUL in the Chair,
It was Resolved,—"That a PUBLIC HORTICULTURAL DINNER take place in London on THURSDAY, May 24 during the week to be occupied by the International Horticultural Exhibition, in compliance with the wishes of a large number of London Horticulturists desirous of having an opportunity of meeting their friends from the country who will be drawn to London during that week."
Those who intend being present are requested to communicate with the Secretary at once. Tickets, including wine, 10s. 6d. each
RICHARD DEAN, Hon. Sec.,
8, Denmark Villas, Ealing, London, W.

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JOHN FRASER,
OF THE LEA BRIDGE NURSERIES, N.E.,
Respectfully announces that in consequence of requiring the Space for the Cultivation of a large stock of NEW PLANTS, he is reluctantly compelled to DISCONTINUE the EXHIBITION of STOVE and GREENHOUSE PLANTS; he has therefore instructed Messrs. PROTHEROE AND MORRIS to offer unreservedly by
PUBLIC AUCTION THE WHOLE COLLECTION.
In giving up the Exhibition of these Plants it may be as well to state that the attention of the Staff hitherto employed in their culture will after this Sale be devoted to the YOUNG STOCK, so that customers may rely upon having a better article than ever, and at a more moderate rate.
For other particulars see Messrs. PROTHEROE & MORRIS's Advertisement in this Paper.

The Gardeners' Chronicle.
SATURDAY, MARCH 31, 1866.

MEETINGS FOR THE ENSUING WEEK.

MONDAY,	April 2	Entomological	7 P.M.
TUESDAY,	— 3	Royal Horticultural Floral and Fruit Committees, at South Kensington	11 A.M.
		Botanical	4 P.M.
WEDNESDAY,	— 4	Microscopical	8 P.M.
THURSDAY,	— 5	Linnean	8 P.M.
SATURDAY,	— 7	Royal Horticultural Weekly Show, at South Kensington	2 P.M.
		Royal Botanic Second Spring Show	2 P.M.

THERE is one feature in connection with the forthcoming INTERNATIONAL HORTICULTURAL EXHIBITION which has not as yet received the attention which we believe it merits. We are the more surprised at this, as the point is one which concerns the interests of exhibitors and professional growers both at home and abroad. We allude to the regulation which permits the *price* of the plants and other objects exhibited to be affixed to them during the continuance of the Show. This is, indeed, a novel feature in our exhibitions, but it is one which may prove very advantageous to the trade; for many visitors would no doubt gladly purchase plants from so memorable a display as this is likely to be, and would point to them in the future with pride as exhibition specimens. Exhibitors, too, would in all probability secure prices for their plants which they would not obtain in the ordinary way, and which would go far towards compensating them for the trouble and expense of conveying them to London. Other exhibitors again, having future competitions in view, would in many cases seize the opportunity afforded by such an occasion to pur-

chase specimen plants; while our foreign friends would no doubt gladly avail themselves of the chance of disposing of some of their treasures, and probably of obtaining better prices for them than they would be able to realise at home; and in this way they too would not only reimburse themselves for the expense they had been at in bringing their plants here, but save themselves the trouble of carrying them back. All this at least is provided for, as will be seen on reference to Regulation 10 of the Prize Schedule, which reads thus: "Prices may be affixed to the plants and other objects exhibited."

In addition to this, moreover, it seems to us that a sale by auction at the close of the Show, say on the Saturday, and in the Exhibition tent, of such plants as their owners might be inclined to dispose of in this manner, would be an additional convenience, and we beg to offer it as a suggestion for the consideration of the Executive Committee. Such a sale would answer many of the purposes above indicated, and would prevent much trouble to the exhibitors in the removal of their plants. If a precedent be wanted for such a step, it may be found in the records of the Amsterdam Congress, where such a sale was held at the end of the Exhibition. At any rate, we think the suggestion deserves the attentive consideration of the Committee.

We have yet to learn a great deal before we rightly understand the nature of Double Flowers, or the conditions required to produce them. One of the facts connected with the subject is that plants indigenous to the northern hemisphere of our globe are more apt to become double than those of the southern. Another supposed fact, equally singular, which may help us a step further, has been pointed out by Professor E. Morren, who holds that variegated leaves and double flowers never occur on the same individual, and who explains it by assuming that variegated leaves—the partial disappearance of chlorophyll—is a proof of weakness, and the production of double flowers is a proof of strength, and that as the two conditions cannot possibly exist together, variegated leaves and double flowers are never seen on the same plant. This view, however, seems to be entirely set aside by such cases as the double-flowered Gardenia radicans variegata, whose flowers are as full as the other cultivated forms of Cape Jasmine; and the variegated Althæa frutex with double blossoms. Another apparent exception which seems to be presented by Kerria japonica, may be explained by the artist of the "Illustration Horticole" having made up his figure with the variegated leaves of one plant and the double flowers of another—the ordinary green-leaved variety of our gardens. The truth is, that the variegated Kerria is single-flowered, and thus so far coincides with Prof. Morren's view.

It may be admitted that Professor Morren's theory agrees very well with the prevailing opinions on the subject. The older views that double flowers were simply brought about by a transformation of stamens and pistils into petals or petal-like expansions is now felt to require considerable amplification. In many very double flowers the stamens and pistils have not undergone any change at all, and yet we have a great number of petals. We have, therefore, nothing left but to grant that several additional whorls of leaves, or bracules, as some modern writers insist upon calling them, have been interpolated between the calyx and stamens. Is this a sign of weakness or strength? We certainly think that a great deal may be said in favour of the latter alternative. Every gardener knows that plants showing the most robust growth are not always those that are inclined to produce the most fruit; indeed the very contrary is the case, and all of us know what means we have to resort to in order to check plants when for economic purposes they are required to produce more flowers than leaves. The reason why we see comparatively so few flowers amongst the luxuriant vegetation of the tropics is entirely owing to the same causes. Everything seems to run into leaf, and generally it is only in specimens that have experienced some check, that the disappointed traveller has a chance of seeing flowers. The turning of the leaves into petals instead of carpellary leaves, or rather say into fruit, may therefore be assumed to be a sign of strength rather than of weakness. [?]

The well-known case of the flowering of the double Hawthorn in the Botanic Garden of Edinburgh would seem to have a special bearing on this point. After producing double flowers in the spring, it retained its leaves during the autumn and winter of the same year. This certainly must be called a proof of strength. But in the following spring, much to the surprise of every one, it produced single flowers, and has continued to do so ever since. This is clearly a sign of weakness, and might have been expected after the tree had expended its strength in the previous year. One of Fortune's variegated Camellias which has lately flowered in Mr. Bull's establishment, and has been figured in the "Journal of Botany," is also calculated to strengthen Prof. Morren's position. Until now few of the plants of Camellia japonica in our gardens have been known to produce flowers in the strictly normal condition, namely, with five petals only; and Dr. Seemann, when publishing his Monograph on Camellia and Thea, was compelled to state that though we had thousands of representations of the different varieties of Camellia japonica, we did not possess a single plate exhibiting its normal state, even Siebold and Zuccarini, in their "Flora Japonica," having figured a form with semi-double flowers. Bull's variegated Camellia, with its five petals, is therefore as happy an illustration as Prof. Morren could wish to have to prove that variegated leaves and double flowers—weakness and strength—never, or, as we would rather put it, seldom, go hand in hand.

We have not put forward these considerations in a dogmatic spirit, and we shall be very glad if any of our correspondents will furnish us with such facts as may possibly show them to be erroneous, and thus force us to search for the truth in another direction. *B. S.*

— A slight error having crept into the report of the proceedings at the meeting at South Kensington on the 20th respecting Monsieur Naudin's observations on Cucurbita melanosperma, the best way of correcting it is by giving a translation of that part of his communication which refers to the subject:—"Cucurbita melanosperma succeeded well at Paris, the white as well as the variegated form. There is, however, a fact which may be interesting to you, namely, that though annual at Paris it is perennial at Hyères. Its stem there becomes hard, brown, and slightly woody. I have seen a plant five years old, in a garden in that city, whose stem was more than 40 yards long, and which appeared not to have attained its full growth. The difficulty which you experience in England in the cultivation of Cucurbitaceæ appears to me to indicate an interesting circumstance in the theory of horticulture, to which, as it appears to me, all the attention has not been paid which it deserves. It is almost as warm in London as in Paris: nevertheless, the Cucurbitaceæ succeed much better there than in London. What is the reason? I believe because the London. What is the reason? I believe because the sky is clearer. At Bordeaux, with 21° Centigrade of heat more than at Paris, and a much clearer sky, the success is incomparably greater than at Paris: and at Hyères, where the light is splendid, they thrive still more, notwithstanding the nightly chills, which are considerable. Doubtless the heat is greater, which is an important element; but I am quite convinced that light, all considerations of temperature being set aside, plays a part quite as great as heat in their cultivation." *M. J. B.*

NEW GARDEN FERNS.

Lomaria ciliata, *Moore*.

Fronds pinnately parted, not pinnatifid, 8–12 inches long, ovate or ovate-oblong, smooth, and of thin firm texture; pinnæ subundulate, linear-oblong, narrowed below, the lower distant and tapered to a stalk-like base, the upper more approximated and almost connate, with obtuse gibbous lobe like wing extending from the lower side downwards nearly or quite to the next pinna, but not confluent with it, all bluntish, frequently bifid or emarginate, the margin lobate, with truncate or emarginate lobes, and having a fringe of spinulose teeth; veins forked (the lowermost twice), terminating at the margin between the teeth, sometimes a little thickened at the apex; fertile fronds pinnate, their pinnæ narrow-linear, decurrent along the rachis, sometimes pinnatifid with acute segments ½–¾ inch long; sori slightly into marginal, membrane thick membranaceous, somewhat ciliate at the edge, transversely wrinkled; stipes chestnut, glossy, furrowed below with dark-coloured subulate entire scales, ciliate and resent, a span high, and about ¼ inch in diameter.

This very distinct and elegant arborescent Fern has been imported by Mr. Veitch from New Caledonia, and is a charming acquisition for our plant-houses. In the swollen decurrent bases of the pinnæ it has some resemblance to L. gibba, but it differs essentially in its less numerous crown of fronds, which are also stipitate, instead of being nearly sessile; it is further dissimilar in the much less crowded series of pinnæ as well as in their very apparent fringe of spinulose teeth. The arborescent character of the stem, together with the lobate character of the pinnæ, their undulate surface, truncate lobes, and spinulose teeth thus present obvious features of distinction, so that the plant may be regarded not only as one of the most ornamental, but also as one of the most distinct-looking and interesting of its genus.

Lomaria dura, *Moore*.

Fronds pinnate below, lanceolate, fleshy coriaceous, 1 foot or more in length; pinnæ or segments close with a narrow sinus, not confluent, obtuse, entire, somewhat marginate, the middle ones oblong, subfalcate, the upper diminishing into an acuminate apex, the lower dwarfed into gnuded lobes; veins forked, slightly club-shaped at the ends, terminating within the thickened margin; fertile fronds lanceolate, abruptly caudate, with broadish crowded very blunt pinnæ curving upwards, slightly decurrent on the anterior side, and there furnished with a minute free auricle; sori marginal; indusium narrow transversely wrinkled lacerate-fimbriate at the margin; caudex erect subarborescent: stipes an inch long, with ovate-lanceolate scales at the base, the rachis prominent and bluntly-keeled behind, 5 furrowed in front.

This very distinct Fern was introduced from the Chatham Islands some few years since by Mr. Watson, from whom it passed into the hands of Mr. Veitch and Mr. Standish, to both of whom we are indebted for specimens. It is related both to L. lanceolata and L. blechnoides, but differs from them in its thick leathery texture while fresh, and in the entire somewhat cartilaginous margin of its fronds. It is a very handsome hardy greenhouse or cold frame plant, producing a spreading head of arching evergreen dark-green sterile fronds, longer than the fertile ones, which latter are remarkable for their stout densely-fruited very blunt crowded pinnæ, and fringed indusia. In this respect it further differs from L. lanceolata, whose fertile pinnæ are slender and attenuately pointed, while from L. blechnoides the short as well as stout fertile fronds are further distinctive. The plant has in some cases obtained the unauthorised garden name of L. recurva. *T. M.*

THE WALLFLOWER.

The poet beautifully expressed the true character of this flower, when he said:—

"Thou ask'st no kindly cultured soil
Thy natal bed to be,
Thou ask'st not man's officious toil,
To plant or water thee."

On the ruins of Conway Castle, as you go from Chester to Holyhead, the mass of Wallflower is very conspicuous in early spring, and when I came to examine closely the character of some Wallflower plants that grew on an old wall near Dartford in Kent, I was forcibly struck with the very marked difference of the wild plant from the ordinary garden Wallflower. That which had been sown by hand in the garden had a heavy gouty appearance and a cart-horse character about it, whereas that sown by the wind on the crumbling mortar of the old wall, had got all the elegance of build and richness of colouring that gives the charm to flowers of all kinds; every plant was, in sailor's phrase, "trim," little sail was set as the breeze was strong, the wood was short-jointed, and the leaves small and stiff. As this must be the normal character of the Wallflower, it is but right to say that those we see in gardens some 18 inches in height, with coarse loose foliage, are degraded specimens of that beautiful flower. We shall, therefore, do well to imitate Nature, and try, if we can, to grow Wallflowers superior in every way to those found on old castle walls.

No name can add any further charm to the genuine English name of Wallflower, and if we are to be successful with, it we must grow it in the storm, for although it will bloom in almost any situation or in any soil, decayed mortar and vegetable mould, with a small supply of water, and plenty of ventilation, does best for it. I am not now speaking of a pennyworth of Wallflower seed, sown one year to flower the next, but of the handsome varieties of double Wallflower that adorn our gardens, and come in so early, and last so long in flower.

No plant is better adapted for pot culture than the Wallflower—the pinching and starving of pot culture stunts it to perfection; and as the plants are got by cuttings, and begin to flower as soon as they are strong enough, we have in the double Wallflower a very powerful arm in the way of flowers for bleak and exposed situations—and verily there are legions of such, in which half-hardy plants are of no service. After a thunderstorm a bed of Calceolarias will be found with their slippers full of sand and water, weighted to the earth, whilst the chubby, thick-set Wallflower seems gladdened by the visitation, and has woody fibre enough not to bend or break under a shower of hailstones. In the ordinary acceptation of the word, a garden is a sheltered patch of ground near one's residence, and generally speaking this patch of ground is rich soil, and more or less enclosed by walls or sheltered by fences. Now, in the case of a plot of ground, shaded by trees and sheltered from high winds, and not very dry, we have a first-rate situation for growing Ferns; and although it would make a very inferior garden for showy flowers, that would be no reason why it should not be adorned with the elegant fronds of hardy Ferns. On the other hand, where the residence is bleak and the garden stony, we begin to inquire of our friends as to what we can cultivate in such a place. We have the Stonecrops, requiring little earth to live

in, as they are quite at home in the chinks between the layers of stone in an old wall; we have the Rock-roses (Cistus) requiring likewise little else beyond a heap of stones to grow in; but above all we have the Wallflower, easier to manage than either of the other two, and whoever has seen the rich colours and the profuse bloom of the fragrant double varieties of the Wallflower tribe, and has some exposed patch of poor soil to adorn, will be glad to have his attention called to the very best plant for such a purpose.

In plants there is nothing old; they do not lose caste or get vulgar. We should be thankful to get plants to live in one place that are mere weeds in another. What is more common than the Furze bush, and yet a plant of double-flowered Furze in bloom has scarcely any plant to equal it in the intensity of its colour, and the harmony of its yellow and green. I wish to correct a misapprehension here in regard to plants being tender. Many plants will not stand frost, but they will bear any amount of wind; succulent plants, such as Mesembryanthemums, will die of wet and frost, but if well wintered will flower splendidly on exposed rockwork; and so of the Wallflower tribe (Cheiranthus), many of them are easily frosted, yet will grow anywhere after being well wintered. This is not all; their length of leg may be reduced by the mode in which they are propagated, as is easily seen by the method adopted to shorten the legs of Chrysanthemums; they are layered after they have legs a yard long; and the plants thus obtained are made tidy, and behave themselves, occupying only half the height they would have done had they been divided instead of being layered. No plants are easier to propagate than Wallflowers by cuttings or layers, and if grown in stony soil with sand and a small portion of leaf-mould, the plants will have an alpine character, which is the true feature of the tribe to which they belong. In the chalky and flinty districts of Berks and Bucks, near Windsor, where water is scarce and stones plentiful, I have noted splendid beds of Cheiranthus by the road side. *Alex. Forsyth.*

EXTRACTS FROM THE JOURNAL

OF MR. JOHN GOULD VEITCH,

DURING A TRIP TO THE AUSTRALIAN COLONIES AND THE SOUTH SEA ISLANDS.

(Continued from p. 267.)

August 25. *Santa Cruz Island.*—We lay-to off this island for 24 hours, the savage character of the natives preventing our landing. Last year Bishop Patterson was attacked by them, and two of his boat's crew were mortally wounded with poisoned arrows. Scores of canoes full of savage-looking fellows surrounded us all day, bringing off native food and all kinds of curiosities, to barter for knives, hatchets, iron hoops, &c. The men besmear their bodies with Turmeric root (Amomum Curcuma), and ornament themselves with numerous fancy ear and nose-rings, armlets, bracelets, necklaces, head-dresses, &c. The natives of this island chew the Betel Nut (Areca Catechu); it is the most southern point on which I have found this Palm. It seems to be very common; its fruit is chewed by both men and women, together with the leaves of a species of Pepper and Chunam, or Lime, as in India. The dull red appearance this gives the teeth and lips renders the people very ugly.

September 9. *The Solomon Group.*—These islands, situated between the 6th and 11th degrees of south latitude, are probably as seldom visited by white men as any part of the world. We landed for a short time on five of them, viz:—Contrarieté, Gulphe Island, San Christoval, Guadalcanae, and Ysabel. No islands can be more luxuriant. Tropical vegetation in all its beauty covers every yard of ground, from the water's edge to the tops of the highest peaks. All are mountainous. Guadalcanae rises to an elevation of 8000 feet. Orchids I have no doubt are plentiful; I found several without being able to ascend any of the mountains. Ebony (Diospyros Ebenum) is found on Ysabel; we cut down a tree 2 feet in diameter. Barringtonia speciosa is very common on the sea-coasts. A species of Parinarium, producing large brown nuts, is one of the most valuable trees to the natives; from its fruit they make a cement with which they fasten the seams of their canoes. No heat affects it.

I noticed noble specimens of some Eugenias and Ficus, several species of Palms and of Pandanus, P. odoratissimus being the most common; one species of Tree Fern, and Cycas circinalis with stems 10 or 12 feet long. Amongst ornamental-foliaged plants there are numerous Crotons, Coleus, Aroids, Anæctochilus, Amaranths, Acalyphas, &c. Ipomœas, Hoyas, and other climbers overrun the forests to such an extent as to render it necessary to cut one's way in many places. Flowering shrubs did not appear to be plentiful; one or two Gardenias and Melastomas, two brilliant Heliconias, an Eranthemum, and an Ixora are the principal. The average temperature during our stay was 82°.

It was very vexing to see these places and not to be able to explore them. Some day it is to be hoped that the natives will be more friendly; at present it is necessary to be very cautious in going amongst them, for at any moment one may most unintentionally offend a prejudice and excite their anger. Every one not belonging to their own district is a deadly enemy. The race is naturally gradually becoming extinct. The men are very dark, with large bushy heads of woolly hair; the women are small, and so shy that one seldom sees them. All are said to be more or less cannibals. They are fond of smoking, and chew the Betel-nut. Their weapons are clubs, bows and arrows, and spears; the latter are generally pointed with human shin bones. Both sexes decorate their bodies and limbs with endless forms of ornaments; many are very pretty, and display great taste. Shells and seeds are in most common use, but necklaces and bracelets of dogs', bats', and human teeth are considered the choicest. The houses are built of Bamboo, and thatched with Palm and Sugar-cane leaves; they are clean and neat. Each village contains a large boat-house, in which the war canoes are kept; these buildings are generally highly ornamented with grotesque wooden carvings and elaborate paintings, and hung round with the skulls of vanquished enemies. Each village has also its idols, erected on poles in an open square, which is generally planted about with clumps of ornamental shrubs.

The canoes are quite different from those of Polynesia; they are without outriggers, having the bow and stern pointed and carried up 3 or 4 feet higher than the body of the boat. The best are inlaid with mother-of-pearl shell, and prettily painted. A vast amount of labour is expended on them. It strikes one as being something wonderful to see such well-made and finished articles, constructed without any kind of tool, excepting a stone or a shell. At Ysabel the natives have a practice peculiar to themselves of building houses some 40 or 50 feet from the ground in large trees. They retire to these aërial dwellings when attacked by an enemy stronger than themselves, and from thence throw down spears, stones, &c. The Solomon Islands are, I think, the most peculiar and interesting group we visited during our cruise.

September 30, 1865. *New Caledonia.*—On leaving the Solomon Islands we returned to Erromango (one of the New Hebrides Group) to punish some natives who had ill-treated the missionaries. From thence we proceeded to New Caledonia and anchored off Port de France, the chief town of the island. This fine island is in possession of the French. As yet it has assumed little or no importance in the commercial world, being rather a military colony and convict settlement.

The island is long and narrow, with no striking or picturesque scenery. The highest point is about 4000 feet above the level of the sea. A chain of mountains extends with more or less regularity throughout the entire length of the island, affording a plentiful supply of water to the surrounding valleys and plains, rendering them most fertile and admirably suited for agricultural purposes. The island has a barren appearance from the sea coast; there is scarcely any luxuriant vegetation to be met with. At first sight the aspect of the country greatly resembles that of New South Wales, Eucalypti and Melaleucas being plentiful, and forming indeed almost the only trees on the grassy plains near the coast, but on getting into the hilly districts, the vegetation becomes varied and rich.

A Government farm, of considerable extent, has been established at Port de France, for the purpose of receiving newly introduced vegetable products from all parts of the world. Any plant found to thrive and suit the climate is immediately propagated and distributed amongst the settlers in the interior. Coffee and Sugar-cane are being extensively planted, and bid fair to become the chief commodities of the island.

The garden attached to Government House at Port de France is under the superintendence of Mons. Pancher, from the Jardin des Plantes. It contains specimens of most of the New Caledonian plants at present known. The time of our visit was unfavourable for seeing plants in flower. I noticed a very pretty Bauhinia; two or three Eranthemums, Oxera pulchella, loaded with bunches of white flowers—this would prove a valuable conservatory plant in England; three other Oxeras, but less striking; two Justicias; and a white sweet-scented Bignoniaceous plant, apparently new and distinct. The Flora is rich in fine trees and shrubs remarkable for their ornamental foliage. Araucaria Cookii and Dammara obtusa are plentiful in the immediate vicinity of Port de France. Araucaria Rulei and intermedia (a new dwarf species) are only found in the northern part of the island. None of the New Caledonian Araucarias bear comparison for symmetry and beauty with those from Norfolk Island and Queensland. Dammara Moorei is one of the finest trees of the island. Four distinct Palms are known to exist. There are several umbelliferous shrubs, with large ornamental foliage, six species of Dracæna, and the same number of Pandanus, numerous Aralias, Cycas circinalis, two species of arborescent Alsophilas, and a vast number of dwarf Ferns. The above struck me as the most remarkable plants in the grounds of Government House. Our visit being the first made by the Commodore to the Colony, it partook somewhat of an official character, and lengthened our stay. After a week's gaiety we found ourselves once more at sea, and bound for Sydney.

My South Sea Island voyage was thus completed. I shall always refer to it as one of my most interesting trips. At some future day the Melanesian Islanders will doubtless be civilised, under which altered circumstances there is a rich botanical harvest in store for some future traveller.

(To be Continued.)

HARDY EDGING PLANTS.

A very old subject, surely! As old as flower gardening at all events. I wonder who first thought of the neat little hedge of Box, and employed it—he must have been a great man among his contemporary blue aprons. However, we may pass over the days when Parkinson wrote "it is of excellent use to border up a knot, and a marvellous fine ornament thereunto," just glancing for a moment at the Strawberry edgings running round the kitchen garden squares, and the Sea-Pink, Gentian, and dwarf Campanula margining the flower borders of a more recent era of gardening, and come at once to the present edging-hunting phase of horticultural progress.

We began to "bed-out" with simple masses, but these were not to be long endured, and in consequence there is, and has been for years, an active demand for neat and dressy edgings. Nothing can surpass some things at present used in this way, such as Cerastium tomentosum and Stachys lanata; but of course we want variety, and for the sake of that, people are often satisfied with a point or two less on the score of individual merit. Let us have a look at some of the little hardy plants in cultivation at present, and see if we cannot find some at once distinct and beautiful, considered as edging plants.

Did anyone ever see an edging of Alyssum spinosum? If it were only to prove that there is something new under the sun, I shall begin with that. I first admired it as a very neat rockwork alpine—a tiny shrub with a dense and pretty habit, and small silvery leaves, the stellate hairs of which under the microscope are very beautiful. Plants of it nearly three years put out are now reaching their fifth inch, and during all that time have looked neat and dressy, winter or summer. Plants turned out of thumb pots last March have grown to nearly 6 inches in diameter and 2½ high, quite dense and symmetrical, and look the *beau idéal* of dwarf edging plants for the winter. It would differ from most edging plants by not requiring clipping or trimming from year to year if planted well and regularly at first. It is, I think, a scarce plant.—indeed it is only within the past few years that some botanic gardens have got it, but it is easily struck from cuttings in spring to any extent, and it will do better planted out, than in the alpine frame or standing ground.

The variegated Cocksfoot Grass, Dactylis glomerata variegata, is a plant well-known to some as valuable, but as Mr. M'Nab remarked to me, "it is not at all sufficiently used, and no plant can be more readily increased." Every bit grows. Mr. Findlay makes capital use of it at Liverpool. Mr. Gibson is pretty well acquainted with its merits at Battersea; and a line of it in the new garden in the Regent's Park, with a thin line of scarlet Verbena behind it, and a little Privet hedge behind that, was one of the prettiest things of the kind I saw last season. There are two varieties, one with much more of white in the leaf. The drooping brightly banded leaves give it quite a distinct look among edging plants, and it is even tractable enough to bear clipping with the shears, which does not indeed immediately improve its aspect, but the points soon shoot out again, and hide the amputated blades with a young and slender crop.

Sempervivum californicum is a desirable and excellent subject for making edgings with; glaucous in hue, and with leaves distinctly tipped with chocolate, it is one of those things that ought to be grown in every garden—whether as an edging or not matters little, for no one will err by adding the plants mentioned in this paper to their collection of herbaceous and alpine plants.

It has been a favourite thought of mine for some time past that the encrusted Saxifrages would make very charming permanent and hardy edgings. There can be no doubt about their doing so, though I have never seen an edging of such; but then I have seen individual plants from 6 inches to 2 feet in diameter growing in the open air in London, and looking the picture of neatness and singularity combined; and what is required but to plant edgings of such to make them succeed! Try Saxifraga Aizoon, Aizoon minor, pectinata, crustata and Hostii; and there are others will do. If any reader should find himself in the neighbourhood of Hull he may, by walking into the Botanic Garden there, see the most beautiful collection of them in Britain, or probably in the world. In elaborate geometrical gardens such things as these may some day prove of great use and beauty as permanent edgings. Those who have the best present opportunity of introducing them to public notice are the curators of botanic gardens; but good botanic gardens are very scarce things indeed in these islands, and when they are good, the curator are usually confined to scientific and very

ugly arrangements of plants. But, gentlemen of the botanic garden persuasion, is there not one way in which you could "edge" with great advantage from an æsthetic point, and no loss to "science?" Would "Ranunculaceæ" be any the less useful for being hemmed with a margin of Hepaticas—the colours mixed? Would the Irises look any the worse from being belted with a galaxy of lovely striped and mixed Crocuses; or the Polemonium bed from being edged with a beautiful, or *the* beautiful dwarf Phloxes? You cannot think how pretty a poor scared Veratrum bed looked last spring with a thick-set edging of Bulbocodium vernum around it. And even those natural orders that do not afford from their own ranks a plant neat and pretty enough to make a good edging, might be edged with no end of charming mixtures of Squills and Crocuses and Snow-drops mixed, as these would flower, and in most cases disappear, before the "natural orders" were in bloom or required for students' use. I have indulged in an edging of Aubrietia round my Crucifer bed, and one could back that pretty thing with snowy Iberis or golden Alyssum, only that would look too like a covert attempt at extinguishing all the "rubbish" in the interior.

But we want subjects that will grow "anywhere," and cannot beat in this way some of the variegated Ivies. They make neat and bright margins, and look often fatter and better on the ground than on a wall. Hedera marginata robusta is probably the best; and good also, and with a yellowish tinge, is H. marginata major. Doubtless there are other Ivies would do well in this way. Certain it is that these will not disappoint, and I know nothing to make a better permanent edging plant. Vinca "elegantissima" is good, if trimly pegged in. There is a newish kind of "Golden Sage," which though not decisive in tone, yet forms a very pleasing medium-sized edging, quite distinct. Arabis lucida variegata, alpina variegata, and albida variegata, and the variegated Alyssum are too well known to need more than being just mentioned. Arabis procurrens variegata is as good as any of them, but I believe scarce. Euonymus radicans variegata I have recommended elsewhere. Wherever the silvery and pleasing Androsace lanuginosa grows freely in the open air, it might be made an edging plant of. I remember having seen it very pretty in front of a mass of Commelyna, with Mr. Bain. And wherever it would do well, so would the pretty alpine Linaria, which in a suitable soil is nearly always in flower. Santolina incana is likely to prove a good thing. Veronica candida is a prime, dwarf, hardy edging plant. For a very dwarf, very neat, and white edging commend me to Antennaria tomentosa; it is scarce yet, but is easily increased. The new Aubrietia variegata is a very likely subject indeed. Cerastium grandiflorum also makes a pleasing edging and a good border plant, along with tomentosum and Biebersteinii. Achillea Clavennæ is worth trial; in any case it will be useful for rockwork or alpine arrangement. Artemisia maritima, the Sea Wormwood, pinched and trimmed a bit, will form a capital edge. A. argentea is an excellent thing for the same purpose, but is not quite hardy, and must be put out with the Centaureas, &c. The Violas "montana" and lutea have proved distinct and useful bedding and edging plants, and will doubtless be much used, particularly the first mentioned. It is probable that they, like some other herbaceous plants that have proved useful for bedding, will be much best when planted out yearly like tenderer bedding stuff. And, by the way, do not many of our common bedding plants owe their continuity of bloom to this fresh planting into fresh ground yearly? If they remained over the winter in beds, as hardy plants do, would not some of them flower right off in the early summer? It is well to bear in mind when dealing with hardy bedding subjects. Achillea aurea is a hardy plant, which, the first year of being planted, flowers continuously, and is attractive till late; but leave it in the same soil and position all the winter, and next year you will find it bloom, "and have done with it at once," like many herbaceous plants.

On the great merits of such things as the Iberises, Erica carnea, dwarf Phloxes, Silene alpestris, Saxifraga oppositifolia, the hoary and other Helianthemums for making permanent edgings round choice shrubbery and in other places, I have already remarked. A mixture of the blue and white Campanula carpatica would be very charming among such. There is one Dianthus which does not appear to be so grateful to the wireworm as other species, and being next in beauty to alpinus, is well worth trying as an edging plant. I allude to D. petræus. Nothing surpasses in beauty a good mass of this, and it appears to grow without difficulty everywhere. I would particularly recommend the botanic gardener to increase it, and plant a band round his Caryophyllaceous bed.

In addition to low shrubberies, &c., does not the Rose ground often offer capital opportunities for planting permanently lines of these fine spring plants? How many are there with naked margins along which Iberis, Arabis, Gentian, Aubrietia, Alyssum montanum, the Sea Pink, and dozens of others, would grow and flower beautifully. When I say the Sea Pink, I mean a fine crimson variety of it, not either of the common forms, for though pretty, they are poor indeed when compared with this, which is plentiful at Glasnevin. *W. Robinson.*

Home Correspondence.

English Names of Plants.—An eminent Austrian correspondent of mine complains of certain usages adopted by British men of science, which, he says, are a source of embarrassment to persons in other countries who wish to consult their writings. One of these is the substitution of the title or profession of an author quoted for his name. We all know, he says, that the Astronomer-Royal is Mr. Airy, but we are not all so much at home in your insular concerns as to be aware that "the Master of Trinity" is the title belonging to the head of a particular College in Cambridge, or that the individual who held that position was the celebrated Dr. Whewell. Moreover, in giving the locality of an object of Natural History, Englishmen content themselves with setting down the name of an obscure town or village without specifying the county or affording any other clue to its geographical position, forgetting that their foreign readers have not always a Gazetteer at their elbow to refer to. The practice too, favoured particularly by the late Dr. Lindley, of substituting an English name for the Latin one previously employed to designate a natural family of plants, or of using the two terms indiscriminately, is productive of much inconvenience to the foreigner, as indeed, it may be added, it sometimes is even to the British botanist. Every tyro indeed must be expected to know that the Crowfoot family is synonymous with the Ranunculaceæ, the Spurges with the Euphorbiaceæ, the Crane's Bill with the Geraniaceæ; but he may be obliged to fall back upon his text-book or dictionary when he finds the Fig Marigold family used in the place of the Ficoideæ, the Fig-worts for the Scrophularineæ, and the Broom-rapes for the Orobancheæ. And the case is worse when reference is made to families chiefly made up of exotic species, such as the Menispermeæ, the Bixaceæ, the Sapindaceæ, the Crescentiaceæ, the Gnetaceæ, for their English synonymes—Moon-seeds, Arnotto-worts, Soap-worts, Calabash trees, Jointed Firs, &c.—are quite as difficult to recollect as the Latin, and impose a double tax upon the memory, as they can never supersede the former appellations, which are so generally adopted in other countries. It was formerly our aim to employ a language which should be intelligible throughout the world to all who cultivate Botany, and for this purpose the descriptions were given in Latin; but the application of English terms for families, genera, and species seems a move in the opposite direction, as being framed solely to meet the convenience of the more illiterate of our own countrymen, and calculated to prevent the spread of knowledge beyond the limits of our own island. *Charles Daubeny.*

Structure of Coal.—Can any of your correspondents furnish me with any particulars as to the kind of coal best suited for microscopical examination, and also where it can be procured? The vegetable structure is not readily made out in ordinary specimens of coal, and the ordinary text books are for the most part silent as to the particular kind of coal which shows the structure best? *J. S.* [We have seen evidence of vegetable tissue in coal said to have been obtained from the sea-coast at St. Andrew's, N.B. Many kinds of lignite show the woody structure well. EDS.]

Bale Ghool.—Perhaps I may help the inquiry of your correspondent Mr. B. Goodbold (see p. 268), by the following notes. I do not know any plant called exactly "Bale Ghool," or "Bale plant;" though in Hindee, Bél is the name of a fruit, Cratæva or Ægle Marmelos; also of the tree. But the following is most likely the plant your correspondent mentions. Béla, name of a shrub (Jasminum Sambac). There is also Bélee, applied to any creeping plant, a climber, or a tendril. There is also Chúmbélee, a flower of Jasminum grandiflorum; also the plant. Ghool is no doubt gul or gool (pronounced as in Goody), a Persian word, used also in Hindostanee, meaning a rose, also a flower generally. I am not aware of the conjunction of the words Bél and Gool or Béla and Gool, as a name, nor does it seem likely. Your correspondent does not say from what part of India he has it. *A. S., Salop.*

Mealy Bug destroyed by Fumigation.—In one of the stoves here is a Bignonia radicans [?] trained along the roof, and it is in general a resort for mealy bug. One night the house was fumigated, and also in the morning, but was not so strongly dosed as others, on account of some Ferns which occupy part of it. After the smoke had partly cleared away in the morning my attention was directed to some mealy bug on the floor, and to ascertain whether or not they were dead, I allowed some to remain on the kerb-stone and found them lifeless on the third day. Tobacco paper was used in the fumigating. Has any one else noticed the effect of tobacco smoke on these pests? I cannot say whether it would be effectual on plants situated lower in the house, as the bug was confined to the Bignonia in question. *W. P. R., Shrubland.*

Araucaria imbricata.—I have a plant of this Araucaria, about 12 or 14 feet high, from several places on the trunk of which a whitish-coloured gum or resin has been oozing out. Some attribute the evil to frost; others to wind, the situation in which it grows being rather exposed; and some say that the soil is the cause of the mischief. When planted, a pit was dug in the gravel for it, 12 feet in diameter and 3 feet in depth; this was filled with good rotten turf intermixed with a little leaf-mould. Can any of your correspondents assist me with advice in the matter? *W. C., Forfarshire.*

Poisoning by means of Portugal Laurel Leaves.—At this place six pigs, about 10 or 12 weeks old, have been feeding on refuse from the kitchen. All the six were taken ill the other day; three died, the others are recovering. A few Portugal Laurel leaves that had been used for garnishing the dessert had been inadvertently put amongst their food. The housekeeper had been making marmalade, and she likewise added the refuse of that; one of the pigs was opened, and the stomach was found to be as yellow as an orange. Do you think the Laurel leaves were the cause of death, or may the calamity be attributed to the marmalade refuse? *W. C., Forfarshire.* [Portugal Laurel leaves are poisonous; but pure Orange marmalade would only hurt a PIG.]

Grapes.—In an excellent paper in a contemporary on the Cultivation of the Vine, by Mr. James Taplin, Gardener to the Duke of Devonshire, at Chatsworth, I observe that he does not recommend planting the new varieties, preferring the Black Hamburgh (Frankenthal) and Muscat of Alexandria to all others for a general crop. For a late Grape, Meredith's Black Alicante, though an old sort, is, he says, the best-flavoured late Grape at present known, and also one of the best to keep after being ripe. Perhaps some of your Scottish readers would kindly state the result of their experience of this variety, as I find in the counties of Ayr and Renfrew, Lady Downes' Seedling and West's St. Peter's are more generally grown than it, to hang through the winter months. *L., Greenock.*

Cupressus sempervirens.—In a recent number I observed a very favourable notice of the good qualities of this Cypress as a forest tree. Perhaps your correspondent would kindly favour me with information as to the soil and climate in which it does so well. No one can be more tired of "everlasting Larches" than myself. *H. J. Moule, Gatehouse, Scotland.*

Rookeries.—The following plan for the establishment of a rookery has been successfully adopted by an acquaintance of mine. He cut off branches containing old magpies' nests, and fastened these branches in the trees where he wished to have a rookery. This imitation of an old colony at once attracted several pairs of rooks, and they built in the trees the first season. *H. J. Moule.*

Odontoglossum grande.—In the latter part of 1864 I sent you a photograph of a plant of Odontoglossum grande, bearing nine spikes of bloom, of which you gave a favourable report. This plant has continued to improve under cool greenhouse treatment, and now consists of 45 bulbs, many of which measure 5 inches in length and 7 inches in circumference in the broadest part, with foliage on the top—two or three leaves—15 inches in length, and 4 inches broad, in the widest part. The bulbs and leaves are of the darkest green, and the former as hard and sound as a well-ripened Spanish Onion, giving great promise of a fine bloom in the autumn. I have never seen the bulbs of this plant so fine before, under any treatment; but possibly some of our Goliaths in the Orchid world may have larger bulbs of it, and if so, it would be interesting to the advocates of "cool treatment" to know their size and mode of cultivation. *Joshua Saunders, F.R.H.S., Clifton, near Bristol.*

Currants.—In the article on this subject (see p. 220), mention is made of the Raby Castle, Victoria and Houghton Castle Currants as being one and the same kind. This is incorrect. The Raby Castle was brought to Raby many years ago by the late Mr. Lindsey, I believe from the neighbourhood of Howick; cuttings of it were obtained by a nurseryman in Yorkshire, and sent out under the name of Victoria. The Houghton Castle was a seedling found growing in a hedge at that place. The Raby Castle has very long bunches and large deep red-coloured berries, which are very acid, and hang longer on the trees than those of any other Currant. The Houghton Castle has short bunches, larger berries than the Raby, of a much lighter red, and they are less acid; it is seldom found true in the nurseries of the south. A peculiarity of the Raby Castle is, its tendency to break from the terminal bud only, the rest generally remaining dormant; consequently close pruning to two or three eyes is requisite to keep the trees within bounds. *Ebor.*

Figs for Small Gardens.—In answer to Mr. Rivers (see p. 268) I beg to say that I had not forgotten that proximity to the sea is conducive to the welfare of the Fig tree; but notwithstanding the favourable circumstance just alluded to, I still think that certain kinds of Figs are equally hardy with the Rose or Portugal Laurel. The Green Fig alluded to in my former remarks on this subject, would, if planted in a favourable aspect, withstand an ordinary winter in almost any inland situation in England. It would of course be necessary to protect both its

head and roots for a few winters until it had become established. Since my last communication on this subject, I had occasion to pay a visit to Tattingstone Place, East Suffolk, the property of Sir Thomas Western, Bart., and there I found in the open air, in a thriving condition, the Green Fig just alluded to, which has been planted not less than 20 years. Mr. Price, the gardener, as well as myself, does not know this Fig ; and although I have lived in the East, South, and Midland Counties of England, and visited several of the London and provincial exhibitions, I have never to my knowledge previously made its acquaintance. I am therefore of opinion that it is but little known generally, and I may remark moreover that it only requires to be known to be appreciated. Mr. Rivers' method of culture may undoubtedly be followed with good results, and where the more tender kinds of Figs are grown it is of course necessary that they should be housed in some way, or otherwise safely protected. But every small garden cannot boast of its vinery or orchard-house to receive the trees in winter ; where, therefore, there is a desire to grow some of the tender Figs on Mr. Rivers' system, means must be found to protect them. This year I had some of the Brown Ischia and Brown Turkey in pots in the open air all winter, and since placing them in a vinery about a month ago they have broken, and show indications of producing a splendid crop. The past winter has, however, been an exceptional one. *Thos. Simpson, Gardener to the Rev. Thomas Mills.*

Social Position of Gardeners.—That gardening, or horticulture, in theory and practice, is, or ought to rank among the skilled professions, none can deny, seeing what a vast amount of application and forethought is requisite in the case of every *bonâ fide* gardener, not to mention the many privations he has sometimes to encounter whilst learning his business. It is literally a hard case for a man who has a thorough knowledge of his business, having served an apprenticeship, and gone through the different grades of journeyman and foreman, on wishing to settle in life as head gardener, to find that he is obliged to accept wages much below those of a carpenter or blacksmith, knowing at the same time that there are perhaps no applicants for the situation, except those of whom would have accepted lower wages even than those offered, and that in securing an engagement he ought to think himself fortunate. Poor return, this, for all he has endured whilst striving to acquire that knowledge of his profession which he had vainly hoped would one day place him in a position in some degree above that of a common labourer! Sad consolation, to find that after all his toil, he must still drudge on at wages which, if he had been a smith or a carpenter, he would have indignantly refused, but which as a gardener he is glad to accept, having no other resource except the nursery, of which he has perhaps had enough in his time. Now it occurs to me that the unprotected state of the profession is the chief cause of this evil. The skill required in the craft of the smith, carpenter, tailor, shoemaker, &c., excludes quacks, or pretenders at tradesmen, and no man can obtain employment as workman, who in order to be so must have gone through a regular apprenticeship, and not have jumped into the trade all at once. Can the same be said of gardeners? I answer, No. That profession swarms with quacks,—men who have failed in other professions, and who have never given a thought or attention to gardening, when, after a few weeks' or months' practice, they not unfrequently get situations, which they as often disgrace, thereby spoiling many employers who to a properly qualified gardener (had they but paid a little higher wages, and engaged one) would have been all that could have been desired. These imperfectly qualified men are quite aware that their stay in a place will be of short duration, and they in many instances rob their employers in every way they can, neglect the garden, and are at last discharged. The victimised employer is disappointed, and has been imposed upon, and perhaps this time he goes a little higher, and engages a man of superior abilities, who finds himself watched, suspected, and the observed of all observers, other servants in the establishment wondering whether he will turn out like his predecessor or not. But he remembers to be extremely circumspect, in order even to keep his place, and he finds that it takes a long time to gain his employer's confidence, or to occupy that position in society to which he is entitled ; and all this arises from the faults of the man who preceded him. It is plain, therefore, that our profession suffers from quackery, in more ways than one, in pecuniary matters, and in reputation as well as in pecuniary matters. The cause of the evil which ought to be remedied. The properly qualified, intelligent, persevering gardener, out of place or in a situation, ought not to be placed on a level with the quack. We have to thank the Royal Horticultural Society for all that it is doing to improve the social position of gardeners. Can the Society do nothing to rid the profession of the injurious parasites to which I have just alluded—those hangers-on who retard our progress more than all the efforts which have as yet been made can counterbalance? I venture to suggest that the Royal Horticultural Society should institute a Register of Qualified Gardeners, with a first and second class for members, open to all who passed the necessary examinations on really practical subjects, sufficient to satisfy the examiners that the candidate really deserved a first or second class certificate of membership. The arrangement of the subjects for examination should be made by the Society, and the examination should consist in the satisfactory answering the various questions which would be sent to every applicant in any part of the country[*] in a printed form, for which the charge would be one shilling ; first-class members should pay double the number of certificates, and second-class ones one-and-sixpence, the latter being permitted to rise from second to first-class on passing a second examination, and paying two-and-sixpence for the certificate. The answers to the questions should be in the handwriting of the applicants, and should be sent to the Society, which would appoint a committee, consisting of at least two-thirds practical head-gardeners, members of the Society, to examine the written answers and judge every man according to his attainments—withholding the Certificate if the applicant be not up to the mark ; but having once proposed himself of a form of examination, the applicant may at any future time come forward again. By having the examinations in writing they would be conducted with little expense, and I venture to predict that all qualified gardeners would hasten to avail themselves as members in one or other of the classes, to the utter exclusion of quacks. The possession of the Society's Certificate would in many instances prove of great service in securing a situation in the event of a member being out of place, because the employer would then know exactly the qualifications of the applicant, and it would be at least a tolerable recommendation, for the Certificate to confer the degree of M.R.H.C.—1st or 2d class. This distinction between qualified and unqualified men would drive the latter out of the ranks, and as a natural consequence, gardeners would be scarcer, and wages higher. Gentlemen who choose to employ imperfectly qualified men might take the consequences, but a few years' experience of the plan I have just suggested, would, in my opinion, work a change for the better, and secure to the really skilful gardener that position in society which ought to hold. *F. N., Worcestershire.*—As regards the Royal Horticultural Society's scheme for improving the social position of gardeners, I am quite willing to accept your view of the case (see p. 129), where you state that you would rather look upon the Society as exercising—to a limited extent—assisting gardeners—the functions of a College. I do not think it right to ask the Society to pledge itself to get first-class situations for all those who may avail themselves of its offers ; much less, however, do I think it right to offer the sum of 12*s.* per week to men in its employ whose abilities would be rewarded in other professions and trades with a much higher salary. It is with reference to remuneration in which the great grievance of gardeners rests, and if the Society wishes to benefit them it must begin by giving higher wages to, and also by demanding higher wages for, gardeners. To be a successful gardener requires the possession of a mind not only capable of being taught but of being educated. In the one case recognised facts only are dealt with, in the other besides these attention is paid to principles, out of which new facts are produced. It is men of the latter turn of mind who generally excel in whatever they undertake, very little where such men "served their time," or what they were taught—no sooner are they properly situated than they begin to make themselves famous. The fact of so many complaints being made as to the want of education in gardeners proves, I think, that men of this class are dying out of the business, because they can get more remuneration for their talents in other branches of industry. How many gardeners lose their situations through want of knowledge? Judging from an experience of upwards of 25 years, I would venture to assert, not one in 500. A hasty disposition on the part of the men, and overexacting and exasperating conduct on that of employers, are the chief causes of gardeners leaving places. Now an education such as that proposed by the Royal Horticultural Society would not remove either of these evils. Besides a considerable advance of wages, I would recommend a greater amount of conciliation on the part of employers, for the manner in which gardeners are changed every year : surely they cannot all be bad. But to return to the Chiswick scheme : I am rather inclined to think that what gentlemen want is not highly educated gardeners, but men who can do the greatest quantity of work and get the largest amount out of them, and of this I do not complain. We live in an emphatically industrious age, in which labour seems to be the birthright of all—employers and employed—but I think we have a right to complain that men in situations of trust, where several assistants are employed, are not better paid than journeymen masons or joiners, and that journeymen gardeners are in a much worse plight. Again, would a recommendation be more relied on from the Superintendent of Chiswick, where experimental gardening will, to a great extent, be carried on, than one from a gentleman's gardener, who can successfully conduct the less important operations of his establishment? I think most gentlemen would prefer a recommendation from the private garden. But is it not a fact, that as a rule, those who know most do not succeed best? How often have we seen clever, active, intelligent young journeymen and foremen, go wrong when saddled with the responsibility of a situation. Would the education at Chiswick prevent such calamities? And why should a gardener, of all the men in a nobleman's establishment, be singled out to be ornamented with "Drawing," "Painting," "Mathematics," "Writing," &c. while his fellow-servants, though better paid, are allowed to go without these qualifications. The last objection I have to the Chiswick scheme is this—that the more successful it is, the more injury it will do, inasmuch as the experimental practice of one year will be thrown overboard for those of the next season, and diplomas will be given for knowledge which this year was looked upon as correct, but which next season's experience may demonstrate to be wrong. The facts, we have no recognised standard to go by, such as students of law, medicine, and divinity have ; consequently diplomas, the crowning of the arts, are out of the question. Continue to advocate fearlessly, yet respectfully, the necessity of a considerable advance in the salaries of gardeners, and you will very soon have no reason to complain of deficient education. *A Gardener.*—Undoubtedly much is due to Mr. Fish for the laudable efforts of Mr. Fish to promote their welfare. I, for one, feel much indebted to him. What effect his analysis of the Royal Horticultural Society's scheme will have, remains to be seen. The Society, it seems, is not to be an example to the employers of gardeners, for it will not have a head gardener, but to be stocked with three or four years' practitioners, it will fail to make itself worthy of imitation in the practical element. The foreman or superintendent may be both skilful and intelligent, but he cannot do all the work himself, and much will depend on the operative. We all know the peculiar advantage we were at the end of three years' practice ; the best of us were very awkward in performing even ordinary operations, and our superintendents were unwilling to trust anything to our care beyond a few bedding plants. Chiswick might be made a model garden, as regards the peculiar advantages it would command, but that will not happen where three-year-olds only are employed. Each young man must have a special charge before he can show his skill in the practical work for which he is to be remunerated ; for if he works under the direction of a foreman, he will be little more than a labourer. If my superintendent gives me directions to treat such and such things according to prescribed rules of his own, and if I follow them closely, what claim have I for merit should success attend his instructions? I quite agree with Mr. Fish that the Society ought to take advantage of the more than ordinary years and lengthened experience ; some display of skill might then be expected. They would accomplish more work execute it in much better order. Such, therefore, ought to be the men for Chiswick. If half the number were of this stamp, the duties of the Superintendent would be diminished, while his practical directions and theoretical instructions would be better appreciated. Principals of colleges do not teach schoolboys. It cannot be denied that our educational standard is low compared with that set up by the Society. Since the questions for the proposed examination appeared in your columns, I believe they, as well as myself, have something in them. They marked out a course by which we might steer. The stream of ignorance continually floating into our ranks might be thus rated if head gardeners were to make inquiries about the mental capacities of those whom they engage. When a boy is received into the garden, the most intelligent should have preference. Half of us enter the profession without a single question being put to us on the subject of education, our physical powers being apparently the only item requisite. In the garden where I am employed there are no fewer than six boys who can barely read or write, spelling being entirely out of the question These are hereafter to become head gardeners. It will thus be perceived, that what ought to have been taught in school has to be done when attention should be directed to matters more in connection with the profession of a gardener. There does not appear to me to be an answer yet to the question of low wages. Let us trust that the Society will form some scheme to settle this grievance. The gardeners of Sheffield have taken a step towards improving their condition. In a large meeting of gardeners it was unanimously agreed that they should send printed circulars to all employers, requesting them to consider the low state of their wages, and to grant them an advance. They noticed in their petition the gentlemanly conduct of the London nurserymen in giving the gardeners in their employ an advance of 6*d.* per day. Of the success of the application you will probably hear before long. *W. F. R.*

[*] To be of any value the examination must be held at certain fixed spots, at a stated time, and with all the safe guards against deception usually adopted. If he is to write his answers at home and without supervision, what is to hinder the veriest blockhead in the race or of gardening from concocting a set of the most brilliant replies. Eds.]

Foreign Correspondence.

OOTACAMUND.—This, the principal sanitary station of Southern India, is the highest European settlement on the Neilgherry mountains, and lies in an irregular oval basin running S.W. by N.E., surrounded by low rounded hills gradually rising from the S.W. to the N.E., where they join the lofty Dolabetta range. These hills are generally composed of underlying gneissic rock capped by greenstone and disintegrated felspathic rock, which, wearing down by time and exposure, afford a stiff loamy soil of considerable fertility when properly brought under cultivation. In some of the hills iron occurs in considerable quantity, giving them a sharp angular outline. The residences of Europeans are generally situated on the sides of the oval basin above mentioned, and are imbedded in groves of Acacia Melanoxylon and A. dealbata, and have a most picturesque appearance. These two species of Acacia were originally imported from Australia, but have now become so common as to give a marked feature to all the settlements on the hills—the former, with its erect pyramidal habit and sombre hue, contrasting well with the airy graceful habit of A. dealbata. This latter species has a most beautiful appearance when in flower, which is in August and September, the flowers being produced in great profusion, and resembling masses of golden-coloured wool. Both of these trees are also largely planted for firewood, A. dealbata especially, as from the abundance of suckers it sends up, a scarcity of this commodity need never be apprehended when the trees have fairly established themselves. Acacia lophantha is likewise very common, but from its rough straggling habit is but seldom planted ; it springs up, however, in myriads wherever its fallen seeds find sufficient moisture to germinate. Several other species of Acacia are also introduced, but not in such quantity as to give any feature to the settlement. Two species of Eucalyptus, E. globulus and E. giganteus, are, however, being now introduced and largely planted, and will no doubt be highly beneficial to the Neilgherries, as their timber, according to report, is scarcely inferior to Teak.

The gardens of European villas are well stocked with Roses, Fuchsias, Verbenas, Dahlias, &c., all of which thrive well. Fruit trees are largely planted, but their produce does not usually come to any great degree of perfection ; sometimes in good situations a fair crop is obtained, and of good quality, but this cannot always be depended upon—these are Apples, Pears, and Plums ; Grapes, Peaches, Figs, Oranges, &c., will not bear, but thrive well at about 1000 feet lower elevation, where the temperature will average 10° warmer. Vegetables grow well, and are extensively cultivated by native gardeners for the supply of the Ootacamund market, which is held on Tuesdays ; the demand for these is very great. Potatos are largely grown in Ootacamund, but are of an inferior quality, owing to the tracts selected for their cultivation being peaty marshes, which, being imperfectly drained, retain a great deal of stagnant water, making the Potatos waxy and watery ; two crops are gathered in the year, one early in June and the other in December.

The general aspect of the country situated around Ootacamund is that of low rounded hills, with bare grassy summits, and ravines filled with dense forest. Of the arborescent vegetation, Rhododendron arboreum is a conspicuous member, never forming forests of itself, but scattered over the country in an isolated manner. A pink and a white variety exist, the latter very rare. This plant, from having a ferruginous pubescence on the under side of the leaves, has been called R. nobile by Dr. Wight, the arboreum of the Himalayas having a white pubescence. Of the other indigenous trees two species of Eugenia, two of Ilex ; Michelia nilagirica, a handsome Magnolia-like plant, with large white flowers ; a Microtropis, two species of Millingtonia ; Vaccinium Leschenaultii, producing a fruit similar to that of the Whortle-berry of Great Britain ; Myrsine capitellata ; Stemonurus fœtidus, the flowers of which when opening have a very powerful smell of carrion ; Sapota elengioides, Pittosporum tetraspermum, and Cleyera gymnanthera form the greatest bulk on the upper plateaux of the Neilgherries. Salix tetrasperma is also common in moist valleys. Of shrubs Hedyotis Lawsoniæ is one of the prettiest, bearing in profusion panicles of pale lilac-coloured flowers, with dark green shining leaves ; several species of Crotolaria are common, the finest one being C. Wightiana, a sub-scandent species. Myrtus tomentosa is also very common, yielding a fruit much eaten by the natives, and made into jellies by Europeans ; it is locally called "Hill Guava," and "Hill Gooseberry." Hypericum Hookerianum is

also a handsome plant, occurring plentifully on sunny slopes, its bright yellow flowers being conspicuous at a considerable distance. A Dodonæa is very common, also a Lasianthus, a Coffea, a shrubby species of Lonicera, a Rhamnus, Viburnum Wightianum, two Osbeckias—O. Wightiana, a large purple-flowered shrub, growing by the sides of streams or on wet rocks in exposed situations, and O. Leschenaultii, a pretty little pink-flowered species, found in valleys where there is a good deposit of soil. Gaultheria Leschenaultii is also a very pretty low-growing shrub, forming considerable masses on the upper part of the hills, its snow-white flowers being succeeded by bright steel-blue berries. Three species of Rubus occur very plentifully on the upper part of the hills, one of which is a very glaucous species, called here the "Raspberry;" the other two bear a yellow and black fruit respectively, and are of considerable merit, the latter especially.

The undergrowth in the forests is principally composed of Acanthaceæ, which are also found in exposed situations; one species, Strobilanthes Kunthiana, grows extensively in bare stony places fully exposed to the sun; it is a biennial blue flowering plant, and from the profusion in which its flowers are borne, gives the tracts it inhabits quite a blue appearance. Piper nigrum and a sweet white-flowered climbing Jasmine are also common in the woods. Of the herbaceous and low-growing vegetation, Impatiens Leschenaultii is a conspicuous member; it grows most luxuriantly in good soils well drained, and prefers an exposed situation; another species of Impatiens is common in damp places, and may be seen, when in flower, of all shades between red and white—it is by far the prettiest species on the hills. Impatiens scapiflora is very plentiful in Grass lands. Sonerila elegans also grows plentifully, and may be found on moist rocks in forests, or in the vicinity of water in exposed situations; in the latter places the plant is much more sturdy, and the flowers of a brighter colour. Two Bupleurums are common—B. ramosissimum, and B. plantaginæfolium, the latter having much the appearance of a green-leaved Dracæna. Pilea smilacifolia is also very common. A Doronicum, an Anemone, a Ranunculus, and Pedicularis Wightiana grow very plentifully in pasture land, the latter being a most beautiful object when in flower, its blossoms being of a bright magenta colour; several Gnaphaliums grow in great profusion all over the hill tops, along with a species of Leucas. Tradescantia pilosa, and a little blue Commelyna may also be found in great abundance all over the hills, as also a pretty little red-flowered Indigofera. Two species of Fragaria are common, one of them, F. elatior, yielding a very good fruit; and in shady places a pretty Anæctochilus-like plant grows in great abundance; it grows equally well either in peat or loam. In marshy land, Parnassia Wightiana, Drosera Burmanni, and D. peltata, and a little blue Utricularia, with numerous species of Cyperaceæ and Gramineæ, form the principal vegetation; and in moist but well-drained land a beautiful little Gentian grows abundantly. Lobelia excelsa grows everywhere, and in such abundance as to form a marked feature in the landscape; and Kalanchoe grandiflora grows freely, only in rocky places. A Graminaceous plant, nearly allied to the Bamboo, and from 12 to 20 feet high, covers large tracts, in some places to the exclusion of other plants. Terrestrial Orchideæ are well represented both in number and species, their pseudobulbs being dug up and used as salad. Epiphytal Orchideæ are rich in numbers, but not in species, being principally Saccolabium rubrum, S. paniculatum, two or three species of Oberonia, and a minute green-flowered species: these occur in all situations, but thrive best where their roots can reach a good bed of decaying vegetable *débris;* in places where they are more exposed the growth is not so luxuriant, as decaying vegetable matter which would otherwise feed them is either blown away, or its moisture speedily evaporated by the sun's heat. Ferns are numerous, both in numbers and species. Pteris aquilina covers large tracts, as in Britain; Pteris quadriaurita and P. cretica are also very common, and Cheilanthes farinosa grows in abundance in rocky exposed situations. The genus Asplenium is well represented, the most common species being A. formosum, A. furcatum, and A. tenuifolium, the latter a very pretty little Fern. Several species of Pleopeltis exist in great abundance, in company with Elaphoglossum conforme; Adiantum æthiopicum is common, also Gymnopteris Féei, and Loxogramma involuta. Of Lastreas, L. hirtipes, L. patentissima, and L. octhodes, are most abundant. Polystichum angulare grows plentifully everywhere, and a pinnate species, P. auriculatum, is common in woods; Botrychium virginicum var. lanuginosum is also plentiful in moist loamy soils.

Loranthaceæ are well represented, covering many trees to their ultimate destruction. Acacia Melanoxylon is especially liable to be overrun by these, notwithstanding the amount of tannin its bark contains. They will attach themselves to nearly all kinds of trees, with the exception however of the Coniferæ; on these they do not seem to grow. On the garden varieties of the Fig and Peach they grow vigorously, their eliminating power in the former case being well shown by their own juices not being milky. Their germination is very peculiar: the seeds are imbedded in a viscid fluid contained in a semi-transparent skin as in the Yew, if the seed be pressed out, the viscid fluid adheres to it as a thread, and falling on any branch or leaf there attaches itself, leaving the seed suspended; the radicle then protrudes from the lower end of the seed, and expands into a trumpet-shaped disc; it then elongates, the disc at the same time curving upwards until it meets the branch, on which it firmly grows, and in a few months becomes a vigorous bush. If however it falls on a leaf or on its own branches, the seed will germinate until the curved disc reaches its own support, after which it dies. Some species of this order are very beautiful, the finest being L. neilgherrense, which grows to perfection on Rhododendron arboreum, and when in flower is a complete blaze of scarlet. Two species of Viscum, V. moniliforme and V. orbiculatum, occur, though sparingly.

The climate of Ootacamund is peculiar; in the winter months the thermometer in the shade frequently rises up to 77° Fahr., and at night will descend to 35°; in cold, land-locked hollows, it has gone down to 20°, consequently hoar frost sufficiently severe not only to nip many introduced plants severely, but also much of the indigenous vegetation. Frost, however, in the true meaning of the term, is quite unknown, the hoar frost which does occur being caused by excessive radiation in clear bright nights. The spring is a most genial season, the mean temperature much exceeding that of the other season. At this time it is interesting to watch the progress of vegetation; though the soil may be dry and parched, and the dry and wet bulb thermometers indicate a difference of 20°, still the trees will begin to shoot, sometimes a month or even more before a drop of rain falls, and make young growth a foot or 18 inches long before they receive a drop of rain, and dew at the latter part of the dry season is so scanty that a difference in the thermometer of 10° at 7 A.M. is a common occurrence. When the spring rains set in they are usually heavy, accompanied by severe thunder storms, and alternated by periods of fine growing weather. In the beginning of June, the south-west monsoon usually sets in; it is characterised by high winds blowing steadily from the south-west, accompanied by much rain and dense fog. The weather is cold and cheerless, the thermometer sometimes showing only 2° or 3° difference between day and night, the average being about 54°. No thunder occurs during the monsoon, and its occurrence, which is about the end of August, may be taken as a sign that the monsoon is over; the weather between this and the middle of October is alternated with showers and sunshine, after which the north-east monsoon commences, the characteristics being much the same as the other, only that the rainfall is greater. The rain will now last more or less until the 8th or 10th of December, when it usually clears up for the four or five months. A Table is annexed below, showing the temperature, rainfall, &c., of the different months:—

	Mean Max. in Shade.	Mean Min.	Rain-fall.	Mean Dry Bulb.	Mean Wet Bulb.
1864. January	..	..	..	56	51
,, February ..	..	..	..	58	52
,, March ..	..	..	0.08	62	55
,, April ..	..	..	8.37	59	57
,, May	..	..	6.38	59	58
,, June ..	..	..	5.24	59	58
,, July	61	50	8.66	55	54
,, August ..	64	50	6.16	56	54
,, September ..	65	..	3.92	56	54
,, October ..	67	49	3.55	56	52
,, November ..	68	47	2.64	56	52
,, December ..	71	46	0.86	56	49

G. B.

Societies.

Linnean: *Feb.* 15.—G. Bentham, Esq., President, in the chair. W. Bowman, Esq.; W. Bull, Esq.; C. Stewart, Esq.; H. Trimen, M.B.; and E. Woakes, M.D., were elected Fellows. A letter from Dr. Campbell to the President was read, giving some information respecting the increase of Cinchona plants in India (see p. 222). The following communications were also read:—1. *Observations on the Origin and Geographical Distribution of Gum Copal in Angola*, by Dr. Welwitsch. This was a resumé of the author's notes and observations on the subject of copal, made during his travels in Tropical West Africa, and if, he observed, "they do not lead to a conclusive result, especially in the indication of the species of trees which at present furnish, or may have formerly furnished, this resin, I hope at least to show that nearly all opinions published on this subject by foregoing authors are more or less erroneous." The Gum Copal, which is called by the Bunda negroes Ocote, Cocoto, or Mucococto, is mostly found in sandy soil, in the hilly or mountainous districts all along the coast of Angola. The limits within which, in Western Tropical Africa especially, Gum Copal is at present, or will hereafter be found, was stated to be coincident with the distribution of Adansonia digitata. In the province of Angola, the lands belonging to the government of Benguella, extending south of the Cuanza river, yield the most. The quantity exported from Benguella during the period from 1850 to 1860 amounted to 50,000 arrobas, or 1,600,000 lb. per annum. This resin is dug out of the loose strata of sand, marl, or clay, or else is found in isolated pieces washed to the surface by heavy rains, or exposed by earth-falls, such isolated pieces inducing the negroes to dig for larger quantities in adjacent spots. The search is sometimes carried to a depth of 8 or 10 feet; and is in certain cases combined with the gathering of the Urzella, that is, the different varieties of Roccella fuciformis; and also with the collection of several other gums, including gum arabic, which is found on the Acacias of these countries. The copal, being of unequal value, has to be sorted when brought to market; it is mostly classed according to colour, the deeper-coloured being generally worth double as much as the lighter sort, and the price is determined by weight. The lumps of copal vary in size, but are rarely found larger than a hen's egg, though occasionally they weigh 3 or 4 lb. The pieces are all covered with a whitish earthy crust, which sometimes exhibits veins or net-work. The occurrence of this crust was regarded by the author as proving that after falling from the mother tree they were forcibly transported by floods or earthfalls, and embedded in the soil in which they are now found. The total annual export of gum copal from all the districts of Angola was estimated at 2,000,000 lb. As to the origin of this W. African copal, the author concluded that it was the exudation of some tree, though now found in a fossilised state, many of the pieces showing distinctly the remains of bark to which they had adhered. Whether all the varieties come from the same tree he regarded as a question remaining to be solved, but his observation had tended to establish the conviction that the differences were attributable to the age of the tree, or the nature of the soil on which it grew. According to Dr. Daniel, the Sierra Leone copal comes, in part, from a tree described by Mr. Bennett as Guibourtia copalifera, and which Mr. Bentham has since named Copaifera Guibourtiana; though he also states that a considerable portion of it is washed to the surface of the earth, and is therefore of a fossilized character. The author concluded a lengthy review of the supposed sources of copal by observing, "that West African copal, and probably all gum resins exported under this name from tropical Africa, may be looked upon as a fossil resin, produced by trees which in long past periods adorned the forests of that continent, but which at present are either totally extinct, or exist only in a dwarfed posterity." This, he remarked, would be all the less surprising if the consideration were taken into account "that tropical Africa, the home of this copal, is at the present moment the least explored continent; and if it were further borne in mind that after another analogous resin, the amber, became known and brought into practical use, more than 500 years elapsed before the learned Dr. Goeppert, whilst pointing to its fossil nature, succeeded with some degree of probability in tracing its origin to Coniferous trees."—2. *Contributions to the Lichen-Flora of Northern Europe*, by Dr. W. Lauder Lindsay.

March 1.—G. Bentham, Esq., President, in the chair. The following papers were read:—1. *On Circulation and the Formation of Wood in Plants*, by Herbert Spencer, Esq. Of this paper an abstract has already appeared in our columns (see p. 218).—2. *Note on the Existence of the True Cyperus Papyrus in Palestine*, by the Rev. H. B. Tristram, M.A. This plant was met with on the shores of the Lake of Galilee and elsewhere. Professor Babington has determined that it is the true C. Papyrus, and not the plant usually cultivated under that name, which is the C. syriacus of Parlatore. The true plant was hitherto only known to grow in marshes of the White Nile in Nubia, 7° north, being lost in Egypt.—3. *Memorandum on the genus Thunaria and other Bruniaceæ contained in the South African Herbarium of the late Dr. Burchell*, by Prof. Oliver.

Entomological: *Jan.* 22.—F. Pascoe, Esq., F.L.S., President, in the chair. This was the anniversary meeting of the Society, when the Council and officers were elected for the ensuing year, and other annual business transacted. Sir John Lubbock, Bart., was elected President in the room of Mr. Pascoe, whose term of office had expired, and who, before quitting the Chair, delivered an address on the progress of Entomology during the past year. It was announced that the prize offered by the Council for the best essay on Economic Entomology had been awarded to Dr. Wallace, of Colchester, for a memoir on the history of the Ailantus Silk Moth (Saturnia Cynthia), which, together with the President's address, was ordered to be published.

Feb. 5.—Sir John Lubbock, Bart., in the chair. After returning thanks for his election, the chairman nominated Messrs. Wilson Saunders, Pascoe, and Westwood Vice Presidents for the ensuing year. The prize awarded to Dr. Wallace for his Essay on Ailanticulture was presented to that gentleman, who stated that both the

tree and the moth, S. Cynthia, appeared to thrive better in this country even than in France. The President announced that the Council had again determined to offer two prizes of five guineas each for essays of sufficient merit, drawn up from personal observation, on the anatomy, economy, or habits of any insect or group of insects especially serviceable or obnoxious to mankind; the essays to be sent to the Secretary on or before the 30th of November next. M. Guérin Meneville, of Paris, and M. Bohemann, of Stockholm, were elected honorary members of the Society. Mr. MacLachlan exhibited, on behalf of Mr. Dorville, some remarkable varieties of British Lepidoptera, including a gigantic Painted-lady Butterfly nearly 3 inches in expanse. Mr. S. Stevens exhibited the male of the singular Papilio Semperi from Mindanao, in the Philippine Islands. Mr. Wilson Saunders exhibited an extensive series of butterflies taken in one locality in Cayenne, belonging to the genus Helicoma, and which, notwithstanding their great variation in the colours and markings of the wings, he was inclined to regard as varieties of one species, H. Melpomene, although they had been considered as forming a considerable number of distinct species. This subject led to much discussion as to the geographical range of the insects, and its effects in producing variation in the individuals. Mr. Bates affirming that in some districts the species was uniform, in others (as in the hilly parts of Guiana) it had an unusual tendency to sport into varieties, and that elsewhere the varieties seemed to resolve themselves into three distinct species—H. Melpomene, Helxiope, and Vesta. Professor Westwood exhibited a number of young living dog-ticks, produced from a female which had been in confinement, without food, for 12 months; also the remarkable sub-aquatic larva of Tipula replicata, which exhibits a singular analogy with the larvæ of Sialis (among the Neuroptera), and Hydrocampa (among the Lepidoptera) in the numerous branchial filaments along the sides and back. A note from Mr. Henry Doubleday was read, affirming from actual observation, that the sound usually attributed to the death-watch was really produced by the Anobium, by striking the head against the surface on which it stands. The death of the Senator Van Heyden, of Frankfort, was announced, as well as the arrival of Mr. Wollaston at Cape de Verd Islands on an entomological excursion. Memoirs by Mr. Baly on some new Phytophagous beetles, and by Mr. Hewitson on seventeen new exotic species of Hesperia, were read.

ROYAL HORTICULTURAL *March 26 (Bootle Show).*—This, together with Mr. William Paul's exhibition of Spring flowers, noticed last week (see p. 270), made a highly interesting display. Miscellaneous plants were furnished by Mr. Young, gr. to R. Barclay, Esq., Mr. Beasley, gr. to Mrs Wood, and Mr. Bartlett, of Hammersmith, prizes being awarded in the order in which the names just mentioned stand. Mr. Young and Mr. Bartlett also contributed collections of bulbous plants. Mrs Young, 6, Blenheim Terrace, Kentish Town, showed an interesting group of Hyacinths in glasses, as an illustration of the success which had attended her cultivation of them in windows.

GLASGOW AND WEST OF SCOTLAND HORTICULTURAL.—By far the best exhibition of flowering plants, &c., that has ever taken place in Scotland at a Spring Show, was that of the City Hall, Glasgow, held on Wednesday, under the auspices of the above Society. It comprised quite a host of magnificently bloomed Azaleas, many choice foliage plants, and a great variety of fine Orchids. The Hyacinths were decidedly inferior to those in the Edinburgh exhibition of the 14th ult., but in all other respects the present display was superior. The spacious City Hall and adjacent galleries were handsomely decorated for the occasion, and the table arrangements and promenading space were much less objectionable than heretofore. Although heavy showers fell the greater part of the day, there was not appearance of wet for the pressing crowd, and not less than 5000 visitors graced this horticultural exhibition with their presence.

There were 267 entries for the various articles in demand in the prize schedule, and in not a few instances there were ten entries in the class. The prize for the miscellaneous collection of plants, which formed the "blue riband" of the day, fell to Mr. Mitchell, Hamilton Palace, who had a choice lot, comprising the Phœnicophorum sechellarum, or the Thief Palm; a finely-grown plant of Anthurium magnificum, with leaves 20 by 16 inches; the handsome Seaforthia elegans; good Cordyline indivisa; a large bush, 2 by 2½, of the fertilised Aucuba japonica, quite loaded with its crimson-scarlet berries, and showing fine mottled foliage; Sansevieria japonica, Dendrobium nobile, finely coloured; a good Croton variegatum; a handsome Yucca gloriosoides; the best flowered plant of Clerodendron Balfourianum that ever came under our notice, having much larger crimson flowers with prominent white calyces than Thomsonæ; the Bird's-nest Fern (Asplenium Nidus avis); a good plant of Azalea Beauty of Europe; Theæ viridis, certainly a variety of Thea Bohea; the Dwarf Fan Palm, with a brownish tint on the dark green leafage; a large Dasylirion glaucum, Phalænopsis amabilis, and a good panicle of P. Schilleriana, along with the curious Beaucarnea stricta, &c. On this same table also stood the first-prize Azaleas and greenhouse plants, the former comprising a densely bloomed pyramid, 4 feet high and 3 feet through, of Alba magna, a fine white, relieved at intervals with an occasional salmon and mauve-coloured flower, showing its sportive character; Vesta was also good, and so was Triumphans, which stood highest as a specimen plant in the exhibition. Mr. Mitchell's greenhouse plants were Tetratheca ericoides, flanked on either side by Eriostemons of sorts, quite pyramids of bloom.

Mr. Kirk, gr. to W. C. Paterson, Esq., Ashville, Partick, had, as usual, a very interesting table, including several nice sorts of Lycaste Skinneri, Cypripedium villosum, Epidendrum rhizophorum, the pretty hooded Oncidium cucullatum, Odontoglossum Cervantesii, Dendrobium macrophyllum giganteum and anosmum—alias Dayanum, Phalænopsis amabilis, and several Azaleas, including the showy double white Flag of Truce.

Mr. Dickson, gr. to Thomas Coats, Esq., of Feynslie, had also a very fine assortment, among which were a splendid Cordyline indivisa, a good Francisacea eximia, a noble Alsophila elegans, a fine-bloomed Imantophyllum miniatum, the Stag's-horn Fern, Acrostichum alcicorne, the curious perforated Philodendron pertusum, several Camellias of sorts, a fine showy Azalea named Triumphans flore pleno, two or three good Amaryllises, &c.

Mr. Kirk put up also by far the best three Orchids ever shown in Glasgow, viz., Vanda suavis, with about 30 flowers; a noble Cypripedium Lowii, with two racemes, each three-flowered; and an extra fine variety of Lycaste Skinneri, with numerous flowers. Mr. Clark, from the Botanic Gardens, showed a very interesting collection, comprising a fine Maranta Forteana, a couple of good Araucaria Cunninghami, the pretty Dieffenbachia maculata, Nothochlæna lævis, the curious peltate-leaved Peperomia maculosa, the very handsome grass-leaved Pandanus graminifolius, Agave geminiflora, Miconia pulverulenta, Hymenodium crinitum, and other good things. Mr. Murray, gr. to David Pod, Esq., Ironbank, had a nice Phalænopsis Schilleriana, a most beautiful variety of Cattleya Trianæi, very much like Warscewiczii delicata of Warner, but better-coloured in the lower part of labellum; a very good Dendrobium albo-sanguineum, and Lycaste Skinneri. The same grower had also Dendrobium Dalhousianum, Phajus grandifolius, and Dendrobium anosmum, nice plants, and well flowered. James Kidston, Esq., of Newton House, had a noble plant of a dwarf Grammatophyllum (?), bearing splendid panicles of Indian red and yellow-barred and blotched flowers, with a curious labellum, and prominent broad crest covering the base of petals. It is a noble addition to our plant stoves, and will most likely be exhibited at the next scientific meeting of the Royal Horticultural Society.

In Miscellaneous Plants there were lots of Azaleas and Acacias, of which Drummondii was the most prominent. The next best lots to Mr. Mitchell's were those of Mr. Alex. Walker, Merrylees House, Cathcart, and Mr. D. McBroade, Hazelwood. In Azaleas Mr. Mitchell eclipsed his compeers, although there were seven competitors, and Mr. Robt. Caskie, Thornwood, Partick, had also noble plants. The best sorts were Magnificans; Duke of Devonshire, like a ball of wax; Model, exquisitely soft purple; the finely-formed Roi Leopold; Beauty of Reigate, quite full of bloom in all the samples, although a little more difficult to manage in that way than most others; Alexander II., a good-formed white, &c. Heaths and Epacris were only indifferent in point of merit. Deutzias were quite like balls of snow, and formed not the least interesting feature in the show. Dicksytra spectabilis was in groups of half a dozen, and nicely managed. In the miscellaneous way Mr. Doig, gr. Hafton House, Dunoon, had a fine fan-formed trellis of that fine perennial bulb Tropæolum tricolorum, richly clad with its crimson flowers. Messrs. Austin & M'Aslan had a table of upwards of 50 Azaleas in sorts, nicely bloomed. Smith & Simons had a good assortment of garden and farm seeds as samples, in light-blue chip boxes, which looked very nice. Mr. Peter M'Kenzie, 1, Gordon Street, had an assortment of Dutch bulbs and a few miscellaneous small things; so had Mr. Paton, Turnerfield, who was first in that section. Droghorn & Aitken, Kilmarnock, had also a good mixed assortment.

Some Amaryllids were shown by Messrs. Sutherland, Boyd, &c., containing marginatum, reticulatum, conspicuum, miniatum, Regina, and the veined granditlora, &c. Club Mosses were creditably shown by Messrs. Forbes, Beechwood, Gilbert, Mackay, Govan, and J. Fleming, Eastwood Park; S. Willdenowii, cæsia, and densa, being in capital trim. Camellias were not very remarkable as cut blooms, although some nice pot plants came from Mr. Alex. Walker, and some others. Rhododendrons were in large quantities, and densely bloomed, but not remarkable for sorts. Melanthemum, Speciosum, and Illuminator, were the best in that way. In trusses Messrs. Doig, Hafton; Graham, Garscube, and Rutherford, gr. to Neil Tod, Esq., Perth, contributed good lots, including Duc Nectanum, Barclayanum, John Waterer, Mrs. J. Waterer, Standard of Flanders, Atrosanguineum, Grand Arab, Queen Victoria, &c.

Hyacinths, although there were 41 entries, were not quite up to the average as a whole. Mr. P. Wilson Craig had the two among nineteen nosegays with Mont Blanc, Macaulay, Miss Nightingale, Alba maxima, Dickens, Ida, Wellington, Howard, Koh i Noor, Alba superbissima, Cavaignac, Tuyll, Madame Hodson, Reine Blanc, Duchess of Richmond, Mimosa, Havelock, Von Schiller, Sultan's Favourite, and some others. Mr. Paton was 2d in the Glasgow, Bothwell, and Uddingston; to Mr. Mackie, Esq., of View Park, was 1st with a creditable lot; and Mr. Graham, Garscube, 3d; while in the smaller classes Mr. Boyd, Easterhill, excelled. Among Amateurs, Mr. John Wilson, Moray Place; Hans Newall, Albert Gardens; Adam Tordall, Galston, and others, were highly creditable. Glass Hyacinths in pots were not at all praiseworthy. The best among the whole were Solfaterre, a fine deep ruby red; Von Schiller, always good; Cavaignac, Koh-i-Noor, La Dame du Lac, very nice soft rose; Laurens Koster, a good double blue; Macaulay, Robinson, good blue and white; Grootvorst, Gigantea, Comte de la Hoye, a soft pink; Mont Blanc, Miranda-like, good white; Mozart, with large white pips; Madame Van der Hoop, far the best of the whites, being much inflated, large, and of good substance. Von Schiller, in Mr. John Wilson's lot, was singled out as the best spike in the whole show, and was a splendid variety that has for years had so many honours heaped upon it. Tulips were quite an exhibition of themselves—well grown and beautifully bloomed—Messrs. Kirk, Ashville; Buchanan, Lochbrae; and Boyd, Easterhill, having the best. Tournesol, both the common and double, was shown in a splendid variety. Vermilion Brillante, the handsome bizarred Standard Royal, White Pottebakker, Proserpine, a good pale flame; and Bride of Haarlem. Narcissi were not quite so numerous; Bazelman major, Grand Monarque, and gloriosa, a fine white and yellow, were by far the best. Anemone Hortensis, Celestial, a large deep blue; Sir Walter Scott, and Mont Blanc, both very good whites. There were also several good potfuls of Primula, both semi-double and fimbriated. Mr. Alex. Storrie, Whitwich, showed a box of trusses of a good white Rhododendron.

A single Collection of Fruit was furnished by Mr. Ramsay, gr., Mountstuart, comprising the following Apples in fine order:—Dumelow's Seedling, Hawthornden, Paradise and Ribston Pippins, Emperor, Ochiltree, King of Pippins, Stirling Castle, Catshead, Hoary Morning, Wormsley Pippin, Reinette du Canada, Scarlet Nonpareil, and one or two Pears of sorts.

The members of the Society, Judges, &c., dined together afterwards under the Presidency of R. Goodwin, Esq., with Mr. Mitchell as Vice-President, when several toasts were proposed, including that of the Society, and congratulations on the great monetary and horticultural success which was more and more attending the efforts of the Directors, to which Mr. Campbell, the Secretary, feelingly replied. The International Show and its success was also commented upon, and great hopes were expressed as to the successful issue of the undertaking.

Notices of Books.

Australia for the Consumptive Invalid. By J. B. Brown, jun. London: Hardwicke. 8vo, p. 137.

A book whose title is to some extent necessarily depressing, but withal hope-inspiring; and in truth, the reader, be he ill or well, a stay-at-home or one contemplating a sea voyage, will find much information and much sound sense conveyed in a very agreeable form in this unpretending little volume. The author very justly lays stress on the many varieties of climate necessarily met with in so vast a continent as Australia. He descants lightly on the advantages and drawbacks of a residence in the several colonies, and gives his decided preference, so far as beauty and healthiness are concerned, to Tasmania.

"There is," says our author, "a larger proportion of old people to be found in Tasmania than in any other part of the globe. I know nowhere where a pink complexion and a white beard are so often seen in unison; where with age, the senses, instead of failing, ripen into mellowness; where memory and all other faculties remain perfect to the last. * * * * We find here all the advantages of the Australian climate, with none of its disadvantages.

"We find the Gooseberry, the Currant, Raspberries, and Apples, growing and thriving as well as at home. Flowers and shrubs transplanted from England grow not with an over-quick and lanky speed as in New South Wales, but take the same character, and are as hardy as the stock from which they are derived. We see here bright green fields, not tracts of dried bents, hedges of Sweet Briar, Blackberries, and Thorn, and it is difficult for the settler to believe that he is many thousands of miles from the home of his fathers. As I have remarked of the hardy English character of plants, so of man. In Tasmania one sees most thoroughly the English *physique*, whereas as we go north we see the tropical climate producing a Yankee cast of feature and limb."

Intending emigrants, especially those in search of health, will find this a useful and encouraging book.

Florists' Flowers.

A SOMEWHAT important question relating to the exhibition of NEW ROSES, is opened in the following communication:—

"What a mixture of pleasant and disagreeable feelings do these words, New Roses, recall! How do they tell of hopes exalted to fervent summer heat, and results as cold as zero—of the perplexity of the grower for sale as he looks at M. Souffler's list, with his *annonces emphatiques*, detailing the particulars of a list of some 70 or 80 new varieties, each of which is *superbe, magnifique, en grande tenue*, &c., and wonders which he shall order—for with him it is not merely the payment of his 20 or 25 francs, but also his propagation of what may after all prove utterly worthless. They tell, too, of the almost equal perplexity of the amateur, who seeks to buy his dozen or so of new varieties, but who can only obtain from the grower the somewhat unsatisfactory announcement that he really cannot guarantee any of them—that he has only the raiser's opinion—that such opinions are not very reliable, &c. But into these points I do not purpose entering. I have given my opinion on the new Roses of this year, and have only to reiterate what I have frequently said, that we must rely rather on the character and previous achievements of the raiser than on the magnificence of descriptions. There is one point, however, in connection with it that I should much like to see settled, viz.: what are New Roses? In the Royal Horticultural Society's schedule, as well as in that of the Crystal Palace Company, there appears the following:—18 New Roses of 1864 and 1865, single trusses, distinct kinds, open, 2*l.*, 1*l.* 10*s.*, 1*l.*, 15*s.*;" and the question most requiring an answer here, both as far as judges and exhibitors are concerned, is, what is to be considered a New Rose of 1864 and 1865? At first sight this might appear a ridiculous question, but it is not so, and I believe perplexity has more than once been occasioned by the question not having been decided.

"It arises in this manner: the great bulk of new Roses come from France, and they are sent over here in the autumn of each year; they come then almost exclusively into the hands of the growers for sale, who set to work at their propagation, and they are distributed by them in the spring of the following year. Now, to which year are they to be considered as belonging? Are the Roses of 1865, for instance, those which came over in the autumn of that year, or came out in the spring? Are Alfred Colomb, Josephine Beauharnais, Marguerite Dombrain, &c., to be looked for in the stands, and if so, will it be fair to include in the same stands Roses of the spring of 1864? My own judgment is, that it is the intention of those who arrange the schedule to bring the novelties forward, and that therefore in the exhibitions of 1866 we ought only to see those flowers which came out (mainly in France) in the autumns of 1864 and 1865.

"There is also another point as to the adjudication of such stands: Ought not preference to be shown to those stands which contain the greater number of Roses of 1865? Supposing Mr. A.'s stand to contain 12 of 1864 and 6 of 1865, and Mr. B.'s to contain 12 of 1865 and 6 of 1864, it is more than probable that the finest Roses will be found in Mr. A.'s stand, simply because, having a larger stock of the Roses of 1864, not so worked and cut about as those of the current year, he can cut finer blooms; but if the object be to bring out the novelties, the nurseryman who sacrifices his stocks for the purpose of getting blooms,

when he might make so much more money by working them, ought, I think, to be considered.

"This is simply a nurseryman's question, for no amateur has as yet ventured into the field in the class now under consideration; and I know, from the expressed opinions of several of them, that they would be glad that a little more certainty and less confusion appertained to the class of New Roses. *D., Deal.*"

As regards the first of these questions, we are clearly of opinion that for purposes of English exhibitions the words "New Roses of 1864 and 1865" mean those let out by our own nurserymen in the early part of those years. As regards the second question, we should hold, that supposing the object to be the encouragement of good novelties, the stand with the greatest number of fine blooms should win, rather than the stand with the highest proportion of varieties of 1865. Indeed we fail to see how an award made on this latter principle could afford any test of the merit of the Roses, which is the point to be ascertained. What say others on this knotty question, which, for the sake both of judges and exhibitors, ought to be settled?

The Apiary.

DYSENTERY AMONG BEES.—Since I last wrote (see p. 127) respecting the condition of my apiary, I am sorry to inform you that my bees have suffered terribly from this fearful disease, which has long prevailed among them, no less than eight hives having succumbed to its attacks, and two more, I fear, are doomed to die. I tried in vain Mr. Everest's remedy procured from him, and also, as far as I was able, carried out the advice with which you kindly furnished me, but the bees seemed too weak and too much overpowered by the disease, for any curative measures to be of any avail. In many of the hives there was an abundance of honey, in one or two as much as 20 lb. Some of the honey, which was not sealed over, seemed watery. There has been no brood in any of the hives which have died this winter and spring. I send a few of the bees and the queen from the last stock which perished, and I should feel much obliged if you would examine them, and see if you can throw any light on the nature of the disease, or "Rinderpest among bees" as I call it, which has proved such a scourge to me. The hive and bees were in an abominably dirty condition, and some of the combs were mouldy. Last summer, in the supers I put up on the hives, there was a good deal of brood, as well as numerous drones. The beauty of the glasses was quite spoiled. This must, I think, have been owing to some fault in the arrangement or size of the holes or slits in the adapting boards for communication. Will you be so good as to tell me how these ought to be arranged, as it was very provoking to find nearly every super spoiled by the queen ascending to lay eggs. *A Lady.*

[We are sorry for our correspondent's misfortune. We have examined the dead bees sent: most of them were in too dry a state to furnish any clue; but a few were filled with corrupt dark-coloured fluid, not similar to dysentery, but very unlike the usual condition in which bees would be found a week or more after death. The queen was quite free from any appearance of having suffered from the malady. She was probably the last to perish, and may have died from starvation after having lost all her attendants. For eradicating this disease from your apiary, we cannot offer any other suggestions than have been already given. Avoid in future feeding later in the year than September and the beginning of October, as it is possible that unsealed, and consequently fermented food, may have something to do with propagating the evil. We do not adopt any particular means for preventing the queen breeding in the supers, nor the drones from obtaining access to them. We use both circular holes and long narrow slits, the latter usually approximating to the two sides, or the back and front of the hives; the last for choice. We seldom ventilate our supers. On the whole, we have had little reason to complain of brood in them. We have remarked that in some seasons there is a greater tendency among queens to take possession of the upper portion of the hives.]

Miscellaneous.

Horticultural Societies in Union with the Royal Horticultural Society.—We understand that the following Provincial Floral and Horticultural Societies have been admitted into union with the Royal Horticultural Society at South Kensington, viz.:—Alton Floral and Horticultural; Boston ditto; Bury St. Edmund's Horticultural; Darlington ditto; Devon and Exeter Botanical and Horticultural; Durham, Northumberland, and Newcastle-on-Tyne ditto; Faversham Horticultural; Fermoy, Lincoln, and Maidstone ditto; Manchester Botanical and Horticultural; Newbury Horticultural; Royal Horticultural of Ireland; Shepton-Mallet and East Somerset Horticultural; Southampton and South of Scotland ditto; Staffordshire Floral and Horticultural; Swansea and Glamorgan Horticultural; Watford Horticultural; and Wrexham Floral and Horticultural.

Calendar of Operations.

(For the ensuing week.)

GENIAL spring weather having apparently at last set in, most matters connected with cultivation will now begin to claim attention. Recently transplanted trees and shrubs ought to be carefully inspected, for failure is often caused by the occurrence of cold drying winds before the plants have had sufficient time to replace their lost roots. Occasional waterings should therefore be given as soon as the weather shall have become at all warm, and to maintain a more uniform state of moisture about the tender newly-formed fibres, spread, where it can be done, a thick mulching of rotten leaves or dung over the ground as far as the roots extend. This, if objectionable on account of its appearance, might be hid by some covering, as that of Moss, or in some cases even ordinary soil. As a matter of course, large trees which have been recently planted will before now have been firmly secured against wind-waving, in order that they may not be displaced, or their roots strained or broken.

FLOWER GARDEN AND PLANT HOUSES.

AURICULAS.—Weak liquid manure now once a week will strengthen the trusses; give plenty of air whenever the weather is at all favourable, and fumigate occasionally.

AZALEAS.—Continue to give young growing plants liberal shifts as they may require them; a good fibrous peat with a little white sand suits them admirably, but for stronger-growing kinds a small portion of loam may be used with advantage. Give air freely in fine weather, and attend regularly to the stopping, thinning, and training of the shoots. Large specimens will now require more water.

CALCEOLARIAS.—Any plants struck during the winter should be repotted into 4-inch pots to succeed the first plants. If not so large, they will make compact handsome bushes for purposes of decoration.

CARNATIONS AND PICOTEES.—If there is any green-fly on the plants, give them a good smoking with tobacco or tobacco-paper before taking them from the pit in which they have been wintered.

CINERARIAS.—Plants intended for exhibition should now be kept as near the glass as may be convenient; fumigate, so as to have them thoroughly clean before coming into flower, and sulphur such as may be affected with mildew.

DAHLIAS.—Cuttings struck now will be found to make the best plants; therefore propagate freely.

FORCING GARDEN.

CHERRIES.—If the fruit of these has set too thickly, it must be thinned, leaving sufficient for a fair average crop.

CUCUMBERS.—See that the plants do not get overcrowded with wood and foliage, and do not crop too heavily. If you wish them to continue in a bearing state for a lengthened period, give them a good watering occasionally with liquid manure.

PEACHES.—The night temperature should not exceed 60° in the early house, until the "stoning" of the fruit is completed.

PINES.—Young stock will now be beginning to make rapid growth; take care to give air freely if the thermometer can be kept above 60°. In the afternoon, however, syringe and shut up at 90°, if possible for a couple of hours. Pines swelling will, of course, now require liberal waterings of warm liquid manure.

VINES.—Those which were started early will now or soon have fruit in its last stage of swelling. See therefore that nothing is wanted in order to have it in first-rate condition.

HARDY FRUIT AND KITCHEN GARDEN.

Notwithstanding the favourable change that has taken place in the weather, wall trees should be covered at night, and during hail and snow storms, should they occur; on ordinary occasions the covering should be removed during the daytime. The young shoots of Peach and Nectarine trees are very subject to attacks of greenfly, which, if allowed to get ahead, seriously injure them. Syringing occasionally with tobacco-water will be found a good remedy.

BEANS.—Earth up transplanted ones, and put in another crop if those last sown are fairly up.

CAULIFLOWERS.—Sow for an early autumn supply.

CELERY.—That sown early in boxes will soon want pricking out. The old plan is very good, viz., to put some very rotten and mellow dung on a firm bottom. On this the plants, pricked three inches apart, will produce many fibres, and will remove with the trowel, in balls, with the most trifling amount of check. The chief reason why Celery runs is that luxuriance of growth is succeeded by a sudden check.

MUSTARD AND CRESS.—Sow at the foot of a south wall.

POTATOS.—Continue to plant as the winter crops of Borecole, Brussels Sprouts, and other greens are cleared away.

SPINACH.—Hoe between the rows of autumn crops. If the ground is poor, a good soaking of manure-water will increase and prolong its produce.

STRAWBERRIES.—Get beds and borders of these weeded, and otherwise cleaned. Where appearances do not require to be studied, a thin mulching of long stable litter will be found to protect them from cutting winds, and to encourage and strengthen their growth.

STATE OF THE WEATHER AT CHISWICK, NEAR LONDON,
For the Week ending March 28, 1866, as observed at the Horticultural Gardens.

March.	Moon's Age.	Barometer.		Temperature					Wind	Rain.
				Of the Air.			Of the Earth			
		Max.	Min.	Max.	Min.	Mean	1 foot deep.	2 feet deep.		
Thurs. 22	7	29·887	29·722	47	29	38·0	43	43	N	·62
Friday 23	8	29·831	29·399	48	34	41·0	44	43	N	·00
Satur. 24	9	29·141	29·036	51	30	43·5	45	44	S W	·08
Sunday 25	10	30·098	29·627	48	29	37·5	45	43	N W	·00
Mon. 26	11	30·175	30·098	52	25	38·5	44	44	S	·02
Tues. 27	12	30·146	30·09	52	35	43·5	48	44	S W	·30
Wed 28	13	30·133	29·951	50	41	45·5	48	44	S W	·04
AVERAGE		29·901	29·703	4·4	45·5	12·5	45·5	43·5		0·06

March 22—Partially overcast, and cold: white clouds and cold; cloudy: slight frost: rain.
" 24—Overcast: partially overcast: rain at night.
" 24—Fine, becoming overcast: showery.
" 25—Cloudy: fine: very fine: slight frost at night.
" 26—Slight fog: overcast: very fine at night.
" 27—Cloudy: sunshine and showers alternately: fine.
" 28—Fine: cloudy: rain at night.

Mean temperature of the week, 1·5th deg. above the average.

STATE OF THE WEATHER AT CHISWICK.
During the last 40 years, for the ensuing Week, ending April 7, 1866

April.	Average Highest Temp.	Average Lowest Temp.	Mean Temp.	No. of Years in which it Rained	Greatest Quantity of Rain.	Prevailing Winds.						
						N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.
Sunday 1	51·9	31·5	41·6	21	0·75 in	3	3	1	3	7	11	5	5
Mon. .. 2	52·5	30·6	41·7	20	1·11	4	5	4	4	4	12	5	3
Tues. .. 3	53·0	30·7	41·4	20	1·19	4	1	6	4	4	14	3	3
Wed. .. 4	53·0	30·1	41·5	18	1·09	3	1	3	3	4	12	6	6
Thurs .. 5	53·1	30·4	41·7	19	0·99	2	6	5	2	6	8	2	2
Friday .. 6	53·1	30·8	41·9	18	0·90	3	9	5	2	4	11	2	1
Satur .. 7	53·5	30·7	42·1	18	0·90	3	4	3	3	3	14	2	1

The highest temperature during the above period occurred on the 7th, 1859—therm. 79 deg., and the lowest on the 1st, 1838—therm. 16 deg.

Notices to Correspondents.

AMMONIA WATER. *J. R. B.* This may be mixed with the water in the evaporating pans in vineries for the purpose of supplying the atmosphere with a certain portion of ammonia in a gaseous state, and the use of it may be commenced as soon as the foliage of the Vines is sufficiently advanced to be able to absorb it. It is best to commence with a very small quantity, and to increase the amount gradually as the foliage acquires strength. This caution is absolutely necessary, because the application of heat to a vessel containing ammoniacal water causes the solution of ammonia in the gaseous state, and this in a confined space may become destructive to animal and vegetable life. Fortunately, however, the animal life fails first, and a proportion which would destroy the life of every insect in the house in a very short time would not injure Vines to any tender foliage if fresh air were admitted for a quarter of an hour. That proportion should be two ounces per cent. of the cubic contents of the house: but since, in order to market even that amount destructive it would be necessary to keep the house close, we may infer that wherever there is a constant circulation of air, ammonia may be used occasionally with perfect safety until the berries begin to colour. It is best used early in the morning, and if left on at night, care must be taken to leave what gardeners call "top-air" on. As to the real advantages to be derived from the use of ammonia, we consider them but problematical at the best, and should rather feel inclined to let well alone. At the same time, with proper care, no harm need arise from it, and in the case of healthy vines no doubt the foliage is strengthened, and becomes of a darker green. It will, however, never cure unhealthy vines, nor is it an absolute substitute for good cultivation. *J. C. R.*

BOOKS. *R. F.* The books you name are long out of print, and can only now be picked up on book-stalls or in second-hand shops.

BRILLIANTUS. *Alex* anxious to be informed as to the best way of tuning those instruments. Can any of our correspondents kindly furnish us with practical instructions on the subject?

EDUCATION. *Reader.* The writer alluded to is evidently floundering in his horticultural allusion. Gardeners don't "paint" the bulbs of tulips as the first step towards obtaining the gaily painted flowers, but "plant" the bulb, but it is Nature that "paints" the flower.

ENGLISH AND CONTINENTAL HORTICULTURE. *J. C.* We quite agree with you that Britain has nothing to fear in the open-culture competition; but while we fully believe in the general superiority of our gardeners, we may nevertheless gain many important suggestions from our foreign friends if we keep our eyes and ears open.

FUCHSIAS. *H. C.* We believe the variety known as Venus Victrix was raised by Mr. Cripps, of Tunbridge Wells.

LOCUST-POISONS. *Blackadder.* A good deal may depend on the mode of using your specific, but there cannot, we should think, be much difficulty in avoiding all risk of the house becoming the haunt of rats.—*E. Archer.* We cannot undertake to advise on readers on their legal remedies in particular cases. You must consult your solicitor.

MOSS-GRASS. *J. S.* This should be spelt Mignonette, not Mignonnette.

NAMES OF PLANTS: *M. C.* The seed probably belongs to one of the species of Quamoclit.—*D. & Sons.* Spartannnia africana.—*C. A., Bromley.* Serissa foetida and Bifleckata. (formerly Marginata).—*Inquisitive.*—*W. B.* Schizanthus alpina.

OSIER-BED BOX. *Inquirer.* Unless you have bottom heat, which might readily be had by setting your box on a bed of fermenting dung and leaves, you cannot raise tender annuals successfully. Cuttings of roots, and plants of that sort, require bottom heat. Balsams might succeed without it, but they would be late. Sow your Pampas Grass seed in shallow pans in light soil, and place them in your "box," in which if the soil is good the plants will soon make their appearance. When strong enough they may be pricked out, and during hot weather they should be well attended to with water, giving them a little weak liquid manure occasionally. They will not flower much before the third year. As regards Wallflowers you will find an article on their cultivation in another column. Canterbury Bells sown in June will not blossom this year.

SMUTTING. *H. Mell.* A mixture of skim milk and hot lime rubbed on the inside of the glass with the point of a painter's brush will give the glass a nice frosted appearance, and will answer your purpose as well as sulphur.

STRAWBERRY-LEAF. *Thistle.* Dung may possibly have been the cause of the evil of which you complain. Can you send us a specimen for examination?

COMMUNICATIONS RECEIVED.—T. C. Brown, Cirencester (with thanks).—Dr. Regel.—A. Forsyth.—J. Hurrell.—Mr. —.—W. D. (next week).—A. F. should have added his address.—J. Anderson.

J. C. WHEELER AND SON, SEED GROWERS, Gloucester.

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The Agricultural Gazette.

SATURDAY, MARCH 31, 1866.

MEETING FOR THE ENSUING WEEK.

MONDAY, April 2 { London Farmers' Club; Mr. A. Crosskill on Rollers; Mr. Cuthbert on Sheep, and their Influence on Agricultural Progress, 6p.m.

THE annual batch of Seed Lists for the farm now before us, though by no means so "fat" as are those of the horticulturist, are well worthy of a few passing notes—not that they aim at the introduction of so many novelties as are introduced to the gardener, still there is a great effort to make an appearance in print; and catching title-pages with an occasional exhibition of colour seem to be quite the order of the day. Among the more elaborated portions of agricultural seed lists for the present season, are those which deal with Grasses and fodder plants: these are described with more or less minuteness, and we have prescriptions presented to us for almost every condition of land and circumstance that may present itself, and though these too often show an admixture of many forms perfectly useless and sometimes even mischievous, yet on the whole they display an amount of thought and intelligence now directed to these matters which we might have sought for in vain only a few years ago.

Still our own experience shows us, that, as in the prescriptions of an experienced physician the really useful ingredients are but few and simple, so in pastures the number of forms of value scarcely exceeds a dozen, and we are convinced that in prescribing for the cultivation of pasture the main thing to do is to apportion the proper quantities of these, and then to administer them properly, to guard against adverse circumstances by keeping down weeds, and attend to the proper hygienic conditions, which are as necessary to the healthy growth of a plant as of an animal. The novelties introduced to our notice form an exceedingly small list, and even of these, few are really new. We would direct attention to the following:—

1. Bromus Schraderi.
2. Anthyllis vulneraria.
3. Trifolium striatum.
4. Lupinus.
5. Symphytum asperrimum.
6. Cattle Melon.

1. *Schrader's Brome Grass* excited some little attention a few years since, but it has made little way in this country; the truth is, it is a large coarse Grass, but ill adapted for the agriculture of England. In the Colonies, on the contrary, and in some parts of the United States, such as the river flats of the Ohio and Mississippi, it might yield even larger crops than the Timothy Grass, which is there sown as a self crop and yields a large mass of fodder; but while we can grow hay or Clovers in our system of farming, neither this Brome nor the Timothy are likely to be much attended to for special cropping.

2. *Anthyllis vulneraria*, or Lady's Fingers, is again recommended as a fodder plant, both on the Continent and at home, and our experiments lead us to conclude that it is not without great merits; at the same time it must be confessed that the hairiness and want of sap of the usual plant is much against its employment, though we find that these natural characters become modified in cultivation, so that its foliage becomes devoid of hairs and much larger and more succulent. But for this it requires cultivation in a tolerably good soil, so that we still hold to the opinion that this plant, like all others, is incapable of growing any abundance of useful cattle feed in soil where scarcely anything else will grow.

3. *Trifolium striatum*, Soft Knotted Trefoil.—Its English prefix would at once condemn it, as its softness proceeds from long silky hairs, and the specimens we have seen as cultivated in England still retain this character; at the same time we are quite ready to believe that the introduced seed—as reported—with seeds from France may be better. Farther cultivation, too, may advance it, but we confess that even our own native Trefoils seem to us to offer better chances of success in cultivation, such probably as the true Trifolium medium, T. ochroleucum, and T. maritimum.

4. The *Lupines*, both white and blue, have been grown to a small extent for some years, but with such varied success, or rather general want of success, as to have hitherto prevented them from being commonly cultivated. If a paying crop can be got (and it will not be on the poorest soil), its green food or hay is reported to possess good feeding properties, and its seeds to be useful. It has been grown on the Continent for ploughing in green, but this we hope is a nearly exploded system everywhere, always excepting cases where winter cultivation will encourage such weeds as the Charlocks to flourish, with a view to their extermination before the land is cropped.

5. *Symphytum asperrimum*, the Prickly Comfrey.—Some ten years since we cultivated this to some extent as a soiling plant for cows, and we must say that these animals ate it greedily, and it seemed to be useful; its crop is large in May and June, and when cut down it speedily throws up a second crop of succulent stems and leaves, but it must be consumed green, as no creature could eat so rough a plant in a dry state.

There is, however, no need to go to the Caucasus for Comfrey, as the S. officinale of our rivers and water-courses is equally good, if not better; it is not so rough in its foliage, and yields a larger crop. Indeed, from a long series of experiments we conclude that our wild plant becomes so much like the foreign form as to be if not identical as a species, at least to be no more than a variety.

6. Perhaps the greatest novelty of our list will be found in the *Cattle Melon* and *Cattle Marrow*; these have only been tried for a very few years. As regards the Melon we grew a small quantity in the dry summer of 1864, but scarcely with the average of a Melon to a plant; but Mr. BLUNDELL, who introduced it, still thinks well of it, though in our variable climate—for most, if not all of England, it must be what the farmer calls a "casualty crop."

As regards the large Marrows we can bear witness to the avidity with which sheep will devour them. Still we conclude that with plants confessedly uncertain it is hardly worth while, for the present at least, to do more than experiment upon them, when after all the produce is so very watery.

From these notes it will be seen that with the limited list before us the Leguminous plants form one half, and we still think that this natural order is yet capable of adding largely to our list of fodder plants. *B.*

We beg to direct attention in another column to a sketch of the past and present condition of the Farm Labourer in the purely agricultural county of East Lothian. It may lead others to make similar local inquiries, the general results of which, judging from the present tendency of poor-law legislation, cannot but possess a national interest.

There is an increasing agitation amongst farm labourers, from Kent to Aberdeenshire. Tenants of cottages scattered at wide intervals over the land, and possessing few facilities for combination, we find great diversities in their condition: there are local systems of resident and non-resident labourers, of single men, and families; there are wages in cash, and wages in kind; the amount must ever be regulated by supply and demand; the nature of the payment, by the tastes of the labourer, the accommodation in his cottage, and the ability of his wife to deal with the raw material. Modern agriculture requires a proportion of labourers of a higher type than formerly. It is their errors, and their misfortunes as a class, which bring the burden of poor and other rates home to the owners and occupiers of the land; it is from their class that the ranks of our mechanics and domestic servants are everywhere largely recruited. The tyranny of strikes and trade unions is one of the characteristics of the age; the tall talker lives upon the busy worker; there is a perverse, too often an *enforced* ignorance of the laws which regulate wages, reckless extravagance in expenditure, and great waste in the preparation of food. The recent statistics of the Post-office Savings Banks are pregnant with hope for the future, and the pecuniary success of cooking depots, and the low price at which nourishing food can be produced, are facts which the philanthropist and political economist should bring home to the working man's fireside. We deprecate Government interference with the liberty of the subject, but we hold that education should be made compulsory; it should embrace the teaching of common things, the first principles of health, the sources of bodily strength, and special instructions to girls how to prepare the most nourishing food from the materials within their reach. *E. L.*

Country people so often speak of Thistles as though there was only one sort, that we deem it will not be out of place if we devote an article to the explanation of our different species of native Thistles, and point out the mischief they do to the farm.

Our British Floras contain an account of a variable number of species. The following list, adapted from Hooker's "British Flora," the 5th edition, refers to 15 species, to which we shall refer in the order in which they are placed.

List of British Carduidæ—Thistles.

No.	Botanical Name.	Trivial Name.
	Carduus, Thistle.	
1	Carduus nutans	Musk Thistle
2	,, acanthoides ..	Welted Thistle
3	,, tenuiflorus ..	Slender-flowered Thistle
4	,, Marianus ..	Milk Thistle
	Cardus (Cnicus), Plume Thistle.	
5	Carduus arvensis	Creeping Plume Thistle
6	,, Forsteri ..	Branching Bog Plume Thistle
7	,, pratensis' ..	Meadow Plume Thistle
8	,, heterophyllus .	Melancholy Plume Thistle
9	,, tuberosus ..	Tuberous Plume Thistle
10	,, acaulis	Stemless Thistle
11	,, eriophorus ..	Woolly-headed Plume Thistle
12	,, lanceolatus ..	Spear Plume Thistle
13	,, palustris ..	Marsh Plume Thistle
	Onopordum, Cotton Thistle.	
14	Onopordum Acanthium	Cotton or Scotch Thistle
	Carlina, Carline Thistle.	
15	Carlina vulgaris	Common Carline Thistle

These have reference to what were considered as four genera, namely, Carduus, 4 species; Cnicus, 9; Onopordum, 1; Carlina, 1: total, 15 species.

The two first genera were distinguished by the fact that in Carduus the *pappus* or down of the seed is *simple*, that is in single lines, whilst that of Cnicus is *feathery*, having shorter downs feathered upon the central one, and hence the term *Plume Thistle* as applied to the latter group. Botanists however now agree to regard them as a single genus, making two groups in accordance with the facts just noted.

Thistles are found in all parts of the world, some being peculiar to wide-apart countries, whilst others seem to track cultivation, and to take root in accordance with the curse pronounced upon Adam:—"Cursed is the ground for thy sake; in sorrow shalt thou eat of it all the days of thy life. Thorns also, and *Thistles* shall it bring forth to thee."

Sinclair, indeed, considers weeds, and especially Thistles, as a blessing, for he says:—"Providence could not have better contrived than that exertion should be perpetual, and that *success* should be in proportion."—"Does any man think" (he asks) "that our various soils would have been sufficiently pulverised and worked had there been no enemies of this sort to challenge forth our labour?"

Without, however, coming to the conclusion that a good farmer would omit necessary work if he were not blessed, or, as we should say, plagued with Thistles, we know that they are everywhere too abundant, and we would now direct more particular attention to their different forms.

1. The Musk, sometimes called Nodding Thistle, from its large drooping flower-heads, is a common agrarian plant, easily recognised from its drooping habit, and fine bright purple and fragrant flowers. Occasionally white-flowered varieties are met with, and as this is not uncommon with most of the Thistles, it is here mentioned. The Musk Thistle makes its appearance the first year of its growth as a compact mass of prickly leaves arranged in circular patches getting larger from the centre to the circumference; these lie flat on the ground, and do not send up flower shoots until the second year; the consequence is that when it grows in seeds or corn the second year's shoots are cut down by the scythe, but those in their first year are left unscathed, which necessitates weeding in the first year of their growth; and as this operation is usually done with the hoe or spud, it too frequently happens that a portion of the heart is left, which ultimately seeds. We think, therefore, that unless the work be done by deeply cutting, so as to avoid this, the slower process of lifting them with a close-pronged Dock-fork or Fletcher's Plantain-lifter will be found to be better.

We have been so far particular in describing the growth and action of this Thistle, as so many others, particularly Nos. 2, 3, 8, 12, and 13, have so far the same characteristics, and the importance of preventing even a single flower from perfecting its seed will be seen from an estimation of the numbers of seeds some of them can produce upon the ripening of a single flower. Thus, the species under review, Carduus nutans, Musk Thistle, to a single flower may have 150 seeds × 25 heads of flowers = 3750 seeds estimated on a single plant.

While on this subject we now give a list of the observed seed development of the following six species, merely remarking that it is with Thistles, as with most of the Compositæ, a curious fact that their seeds ripen with greater rapidity after flowering than do those of most other families:—

Seeding of Thistles.

Botanical Name.	Trivial Name.	Estimated Number of Seeds.
Carduus nutans ..	.. Musk Thistle .. .	3,750
,, lanceolatus	.. Spear Plume Thistle ..	30,000
,, arvensis..	.. Corn Plume Thistle ..	5,000
,, acaulis ..	.. Stemless Thistle ..	600
,, eriophorus	.. Woolly-headed Thistle ..	50,000
,, palustris .	.. Marsh Plume Thistle ..	30,000

2. The farm history of this Thistle is much the same as that of the previous one, only that it seldom affects the arable parts of the farm, but is found in hedge-rows and in the pasture nearest the hedges. It is common by way-sides and in waste places, but more particularly in the more shady and secluded spots. Wherever it occurs it takes up much room in its first year of growth, as the flat leaves are even longer than those of the Musk Thistle; like this form, it is easily destroyed in its first season, but all operations connected with it require to be performed with the precautions previously noted.

3. The habit of the Slender-flowered Thistle is much that of the preceding, but it affects the neighbourhood of the sea, where fields, gardens, and waste places alike afford habitats for it; here its habits are so like that of those already described, that we need not dwell upon it further in this place.

4. The Holy or Milk Thistle is not generally so common as to cause it to be placed in the category of weeds; it however occasionally makes its appearance in a most unexpected manner, and sometimes in considerable quantity. The truth is, it is not a true native plant, but comes to us in foreign seeds, which will explain its fitful habits. This season our parish has presented several specimens in different situations; in one on our own farm it was clearly introduced with some seeds used for laying down a bit of permanent pasture. Some examples in a cottage garden came probably with some foreign garden seeds. We look upon this as an interesting example of the manner in which our flora has in times past been enriched by foreign introductions, and which, indeed, is yearly becoming a fertile source of weed propagation.

6. The Corn Thistle, Creeping Thistle, Cursed Thistle, are all significant of this species; it is the pest of the corn fields, and its creeping habit, by means of underground stems (rhizomata), renders it so difficult of extirpation, that it is not difficult to divine a reason for the third appellation given. Indeed, none more fully carries out the promise in the curse with regard to Thistles than does this species. It is found everywhere in England—in the arable and pasture, the hedge-rows, by the way-side, and on the hedge-bank, in all of which it seems to be equally prolific. It seems to have followed man in all his wanderings. Beck, in his "Botany of the United States," calls it "a very troublesome weed. Introduced from Europe." Bentham, in the "Handbook of the British Flora," has the following remarks:—

"It is the commonest of European and Asiatic Thistles, accompanying cultivation to all parts of the world; extending far to the north, though not quite to the Arctic circle."

This Thistle, with others, has so invaded our Antipodes that the question was asked in our Journal for Oct. 15, 1859:—"Can any of our correspondents lend a helping hand to their brethren in Tasmania, where a Plague of Thistles has invaded the land, and threatens as much mischief as clouds of locusts? We learn from one of the principal proprietors in this important colony that acres and acres are already overrun, and that the mischief is spreading at such a rate that the landowners are seriously alarmed, and ask for legislative interference."

Now, as regards our colony, we can well understand how this plague under which the colonists *so groan* may have been introduced from Europe. Just so, indeed, was it in our American dependencies, but are Thistles as a rule aboriginal natives of Great Britain, or have they been introduced from the East to us in like manner as they have been from us to the West?

It is a curious fact that of the 11 species of Thistle described by Beck as North American, only four are identical with our native forms, and these have probably been introduced from England, or at least from Europe. They are (we quote Beck's names):—Cnicus benedictus (Carduus Marianus of our list), Common Blessed Thistle; Onopordum Acanthium, Cotton Thistle, Scotch Thistle: Cirsium arvense (Carduus arvense of our list); Cirsium lanceolatum (Carduus lanceolatus of the list). The two latter we found abundantly about an Irish homestead near Saratoga, with many other introduced plants.

Now, on the other hand, it will be found that nearly all our British forms are common to the East, and we look upon the style of these plants as more Asiatic or South European than as belonging to northern Europe.

But whether with us the most mischievous Thistles have tracked the progress of agriculture, as they have done to America and Australia, is of little consequence, for here they are, and the question how to get rid of them is really a pressing one, and especially with the one now under review.

In the case of the Creeping Thistle we have a plant possessing two methods of increase, one by seed and another by creeping underground stems.

In regard to the seeds of the plant, it is but right to state that farmers hold fast to the notion that they will not grow; having however experimented upon them, we find that perfect seeds of this Thistle germinate as freely as do those of most other plants, and we therefore now dismiss this notion by a reference to a series of experiments detailed in our Journal for August 24, 1860. The question then how to get rid of or indeed how to keep under this "plague of Thistles" is an important one both at home and in our colonies.

In Australia they have introduced goldfinches, whilst we are exterminating them at home; but their presence or absence can have but little to do with the Thistle plague. In England at least we are inclined to think that these birds do as much mischief in destroying the larvæ of an insect by which so much Thistle seed is destroyed, as they do good by rifling the seeds. These yellow larvæ are sometimes so thick in the midst of the seeds that some seasons in some places it is really difficult to find a perfect seed, especially of the Creeping Meadow Thistle. This has doubtless given rise to the opinion we so often hear expressed that this Thistle does not grow from seed. It may, perhaps, then be well to inquire into the natural history of this insect with a view to its exportation as a destroyer of Thistles, only that in all probability, like the Cecidomyia tritici, the Hessian fly, it may attack some of our cultivated seeds. But the truth is that Thistles should never be allowed to seed; every

farmer should be compelled to prevent this on his land, and road sides, commons, &c., should be looked to by road surveyors.

But with regard to the Creeping Thistle we shall find that its very ready propagation in the arable may be entirely independent of seed, as in the continually-spreading rhizomata we have developed a series of buds which, when the plant is let alone, soon forms a thicket from a single individual, or when cut in bits by the plough, leaves behind a number of buds capable of making large plants even quicker than a seedling.

When, then, this plant occupies but a few centres in a field, it will be well to fork it out and carefully pick up all the bits; when too much or too scattered for this method, deep ploughing should be had recourse to, but like Couch Grass each bit must be picked up and carried away. It, however, is seldom found that in couching this Thistle, Bindweed, Campion roots, and the like, is made to accompany the rhizomata of the Grass, although they are scarcely less mischievous. It is in this way that the Creeping Corn Thistle grows up in the corn crop, and to keep it under, the farmer sends men, women, and boys to spud them off, a plan which only diminishes the evil for a time, as the buds near the surface of the ground soon make head, and all the quicker for a clean cut. The best way, then, is to pull them up when the ground is moist, when that which is left behind is so deep as not readily to grow again; if, however, it be cut off at a scythe cut from the ground, the whole of the buds below immediately commence to grow. Of course, in the work of pulling, the operator must have some thick gloves, and it will perhaps take a little more time, but it is worth doing, as the most effectual way of dealing with this pest.

6, 7, 8. These forms are less abundant than some of the other biennial Thistles: they are all pastoral plants, occurring for the most part in low meadows, more especially the C. pratensis; the others, C. Forsteri on the one hand, and C. heterophyllus, occasionally affect positions under stone walls and about mounds in the chalk districts; and from their varying characters, in which they approach the Meadow Plume Thistle, they are most probably either hybrids or varieties of the latter species. They are scarcely sufficiently abundant to be very noxious as weeds, but where they are, if prevented flowering, their evils will soon cease.

9. The Tuberous Thistle is here only referred to to complete our list. Mr. Syme, in his splendid new edition of "English Botany," now in progress, says of this plant, that it is found "in meadows and borders of woods? very rare. Great Ridge Wood, near Boyton, Wilts, where, however, it has not been gathered for some years, the only living botanist who has found it being, I believe, Mr. T. B. Flower." We, however, had the pleasure of finding this plant on Avebury Circle, Wilts, in the summer of 1857, in company with our friend, Mr. E. Lees, having indeed noticed it some years before without identifying it as the C. tuberosus of authors. We that year described it to the Cotteswold Club (Oct. 6, 1857), and also to the Wiltshire Archæological and Natural History Society, in both of whose Transactions will be found papers upon the subject. We then gave it as our opinion that it was a hybrid, and Mr. Symes's observations upon this section of Thistles confirms us in our view. Still it is a very handsome plant—so much so that Mr. W. Cunnington, of Devizes, we subsequently ascertained, had grown plants in his garden from the Boyton station, where it is now extinct.

10. The Stemless Thistle is common to upland pastures, especially on the chalks and oolites; this is best got rid of by constant depasturing and whatever tends to enrich the soil. It is so abundant on Stinchcomb Hill, Gloucestershire, inferior oolite, as once to have caused us to wade above our knees in its down in a hollow way by the hill side.

Though said to be stemless, we find that in cultivation these plants have absolutely made many flowered stems more than a foot high, and in this state it is often found about the stone walls of the Cotteswolds.

11. The C. eriophorus is a splendid hedge and way-side plant on limestones, seldom obtruding on cultivation; it is easily got rid of by cutting it up the first year of its appearance.

12. This Spear Thistle, so called from its sharp-pointed leaves, is far too abundant everywhere, both in the meadow and in the pasture, by the way-side, in the hedge-row, and all waste places. The plough destroys it in the fallows; the hoe and spud is also efficacious with young plants—remembering our previous remarks to cut them off below the ground.

13. The Marsh Plume Thistle will often be found to accompany the above in the pastures, from which it should always be cut up.

The injury done to pastures, or young seeds, by the flat-growing leaves of such Thistles as we have described in Nos. 1, 2, 12, and 13 will be made apparent by observing the ground they frequently occupy. In our own neighbourhood we have measured several examples, and in the following table we give admeasurements of the diameter observed in some of their circles, in which it should be observed the ground is so thickly covered by leaves, as to make the growth of Grass or Clover within this charmed circle impossible.

Table of the Diameters of the First Year's Bunch of Leaves.

Botanical Name.	Trivial Name.	Diameter of Leaves.
		Inches.
Carduus nutans	Musk Thistle	25
,, acanthoides ..	Welted Thistle ..	30
,, eriophorus ..	Woolly-headed Thistle ..	48
,, lanceolatus ..	Spear Thistle	40
,, palustris	Marsh Thistle	24
,, acaulis	Stemless Thistle	12

14. May be classed with 4, and is only an occasional visitant brought with seeds; can be destroyed in the bud as easily as most other kinds. We have seen it rapidly increase from a few seeding flowers, but it soon gets scarce again.

15. The common Carline Thistle is a native of the wilder uplands, and usually accompanies the C. acaulis, and, like it, is soon destroyed with whatever makes the pasture better.

Having now brought these remarks to a conclusion, we can only hope that the length of our paper may be justified by the importance of the subject. In Thistles we have seen that they are various in their form and habits, and therefore require different treatment. The question, then, "How shall we get rid of Thistles?" has been attempted to be answered by a few remarks appertaining to each species.

—— The following are the names of the successful candidates for the College Certificates, and for the Prizes given by the Highland Society in the Winter Session of the Agricultural Class, Edinburgh University.

Class Medal and First-class Certificate of Honour, F. M. Haldane.

Second-class Certificate of Honour, David Carswell, W. C. Bonallo, Arthur Dickson, D. F. Paull.

Highland Society's Prizes:—1st Prize, F. M. Haldane, Stirlingshire; 2d Prize, D. Carswell, Fifeshire.

FARM LABOURERS IN EAST LOTHIAN.

The whole system of farm labour is based upon the well-being of the labourers; they and their families residing on the farm, in cottages situate convenient to the homestead. As a rule the land is entirely devoted to tillage where that is practicable; one man and a pair of horses are equal to the proper cultivation of 60 acres; and six ploughmen, six pair of horses, one grieve or bailiff, one barnman, one shepherd, one labourer, four women and stout boys, constitute the permanent staff for the profitable management of 360 acres under tillage; below that extent it is impossible to attain to the greatest economy in the working expenses consistent with good management. Besides the above there may be six youngsters, or, as they are termed, "workers," employed almost constantly for nine months, and four or five others for about four months in the year, their numbers having been much increased since the extension of draining and Turnip husbandry on our heavier soils. In the supposed case 10 cottages would be required, and one or two additional cottages for an aged labourer or widow with a family add greatly to the convenience of the farm.

On ordinary occasions nine hours are accounted a full day's labour for a horse, a yoking of five hours in the morning, and four hours in the afternoon, and arranged according to the hours of daylight, so as to secure, when practicable, several hours' rest at noon. The ploughmen turn out sufficiently early in summer to catch and ride their horses from the pasture, to dress, and give them, if necessary, a feed of Oats; at other seasons, when a feed is always given, there is a corresponding increase of stable duty. When that is done the men return to their homes to breakfast, and very often in summer they stop in the field for 10 minutes, and have a second breakfast. On their return to the stable they are joined by the other labourers and workers, and the bailiff assigns their respective tasks; the horses are harnessed, the halters are cast off, the bridles put on. Each ploughman leads out his pair, mounts, and rides a-field, or yokes his cart or pair of carts. The yoking ended, the horses are again ridden to pasture or the stable; after being unharnessed, fed, and watered, the men adjourn to their homes to dinner, and return in time to tie up and carry hay or other fodder and litter for their horses; but if the horses are on green Clover or Vetches these are always mown to hand, and a man and pair of horses always leave the field in good time so as to have the fodder awaiting the return of the other horses. The labourers and field workers generally work about the same hours as the ploughmen—never more than 10 hours. This pleasant habit of keeping early hours secures an interval of five hours' rest, and a refreshing sleep, if necessary, during the heats of summer; the longest yoking is carried on in the coolness and beauty of the morning, and the strength is recruited to meet the declining heat of the afternoon.*

Cottages and Wages.

Until within the last 20 years the farm cottages were generally built in one row, and were very sorry dwellings judged by our present lights. The bailiff's cottage generally contained at least two apartments, but the ordinary cottage only one. There was no ceiling, the walls were only plastered for a few feet on either side of the open fireplace and the largest window, which always opened to the front; there was also a very small window nearly opposite the door. The floor was composed of clay and ashes. This poor apartment was furnished with a ceiling of planks or mats, and was subdivided into two apartments by means of two huge wooden box beds, the end of one forming a short passage, provided with an inner door, from the outer door to the general room. The box beds were provided with sliding doors, which were generally closed by day; in front stood two or three large chests containing clothes, flower-pots in the window, an eight-day clock, shelves for books, &c., one or two folding tables, chairs, stools, cupboard press, dresser, plate-rack, the whole being admirably adapted to meet the end in view. Behind the outer door were shelves, opposite to it a partition of planks and a door opening into the pantry behind the box beds; here stood a third box bed, tubs for washing, and a cask for salting meat, chests for meal, shelves for the milk pans, the winter store of Potatos, and the coals. The whole of the furniture was made of good well-seasoned deal and beech by the village carpenters, and as a rule the materials and workmanship were admirable. The husband provided the furniture at a cost of about 25*l.*, the cow about 8*l.* or 10*l.* The wife, at a cost of 12*l.* to 18*l.*, provided blankets, linen, dairy and cooking utensils, and crockery. There can be no better test of the high moral worth of our labourers than the numbers who enter the marriage state after making suitable provision for its obligations.

The husband's working dress consisted of flannel underclothing, home-spun woollen stockings, and linen shirt, breeches and long gaiters or trousers, waistcoat with sleeves, and jacket or frock-coat of suitable corduroy, moleskin, or velveteen; stout, well-nailed shoes, and a blue woollen cap or home-made straw-hat covered with painted canvas, and a loose-fitting, warm great-coat, and woollen gloves without fingers. For Sundays there was a black hat, coat of broadcloth, stuff waistcoat, and cloth breeches or trousers, or sometimes a new suit of their tidy substantial working-dress was carefully used until required for everyday wear. One thing was very striking—that every young man strove to earn a suit of black clothes for funerals, which were carefully preserved for many a long year.

The women were dressed in plain coloured substantial cottons and ginghams, Paisley shawls or a warm cloak, and straw bonnet, with a cotton cap for every-day use; by degrees silk gowns were now and then seen, but as a rule the dress of both sexes was most serviceable and within their means. The dress of the children was in keeping with their parents'; but in summer, both at home and when attending the parish school, the youngsters went barefoot from motives of pure economy to pay for school books and school fees. When the girls took to field labour they put an old cast-off coat or jacket of their father's over their ordinary dress, and with stout nailed shoes and warm gloves bade defiance to the cold in winter.

Every cottage had its conveniently situate garden, containing about one-eighth of an acre. Early Potatos were its staple product, and as these were cleared off, the land was planted with Cabbages, but chiefly hardy winter Greens; but there were always plots of summer Cabbage, Leeks, Potato, and Onions, sometimes a patch of Chamomile, Hyssop, and other simples, and perennial flowers, and sometimes several hives of bees.

The bailiff received from 5*l.* to 7*l.*, in addition to the wages of an ordinary ploughman, which consisted of, say 72 bushels of Oats, 18 bushels of Barley, 8 bushels of Beans or Peas, 1500 to 1800 lineal yards of land for Potatos, drilled, manured, and the sets covered by the plough; about 20*s.* in cash for commutation of old rights to plant Flax and keep poultry; keep of a cow, or 5*l.* in lieu; coals driven, and a daily ration of 2 quarts of thick oatmeal porridge, a loaf, and 3 pints of beer for 30 days in harvest; one bushel of Wheat allowed for stacking and one for sowing by hand, and right to keep a pig. A young ploughman residing with his parents had the same allowance, less cow's keep. All the other adult labourers were generally paid wages in money, harvest food, Potato land, and carriage of coal being allowed. The hiring was from Whitsunday to Whitsunday, no deductions for bad weather nor for sickness amongst ploughmen, but other labourers who

* The crop was formerly reaped by Irish and Highland labourers of both sexes, who were hired by the week, and lodged in barns on straw. Each had the use of a pair of blankets and spoon, and a daily ration of two quarts of thick oatmeal porridge, a quart of milk, a quart of beer, and a loaf. It was a horrid system, the growth of circumstances, and has gradually disappeared under an increased demand for unskilled labour and improved reaping machinery.

received cash wages were mulcted in their day's wage during sickness. In name of rent the labourer was bound to furnish a reaper for 18 days, who was entitled to meat and drink during that period. The wages in Oats were paid shortly after harvest; a sufficient quantity was made into meal, and stored in chests to last for a year, and the remainder was put into one large lot, carted to our ready-money markets, sold by one of the men appointed by a majority of votes, and the proceeds divided. Barley and Beans were generally taken up in small quantities for grinding into meal, a portion of the former being made into pot barley for broth, and the remainder sold in spring. The field Potatos were dug and carted to the cottage; a few were occasionally covered up in a pit in the garden. The cow was invariably insured in one of the two mutual insurance societies organised, managed, and maintained by the labourers in the county. She was lodged in the homestead, and fed with all kinds of chaff, Barley or Oat straw, littered, and turned out for exercise and water in a suitable fold-yard at the master's expense. After calving in March or April the owner's wife removed the calf to the pantry in her cottage, accustomed it to feed from the pail, adding a little Oatmeal porridge to the milk as it grew older, and so fattened it for the butcher in six or seven weeks; or if got by a useful bull, it was immediately sold, to be reared and fattened when two years old. She also prepared twice a day a hot mess of Barley, Bean, or other chaff, and a handful of meal steamed in a tub, for the cows whilst being milked. The cow was turned to Grass between the 15th May and 15th November, after which she was housed for the season. She was milked three times a day in the field early in the season, and twice a day afterwards. The milk was allowed to stand for 24 hours, the cream was removed, and when a store of cream was gathered it was churned, and the butter sold without delay. The weather is seldom too hot for butter making, so that very little cheese is made, and that chiefly from skim milk, and nothing but skim milk is used in the family, and very little butter.

A suitable stye is provided for the pig near the cottage; it is bought when weaned, fed four or five times a day with warm skim milk, boiled Potatos, Cabbages, and three or four coal cinders, and when nearly ripe a little meal; it is then that another weaned pig is bought for a small sum to take the place of the first, which is slaughtered, scalded, and dressed and salted by our labourers with skill; the hams are sometimes prepared, but bacon is very seldom seen. A worthy ploughman blessed with a good wife has no difficulty in feeding two pigs a year, and (other things being equal) we should prefer a man who keeps a cow and feeds and consumes two pigs a year in his family.

The fire-place in the cottage was of moderate dimensions; the grate of a few iron bars inserted into stone jambs, which admitted of a saucepan or iron pot being placed on either side; there was an iron cran with a chain and pothook, on which was occasionally hung a very large iron pot containing several gallons, or a thin plate of wrought iron about 20 inches in diameter, with a semi-circular handle termed a "girdle," on which was baked the whole bread of a family. Wheat flour was not often used—when obtained it was mixed with water or butter milk, kneaded, rolled into thin cakes and toasted on the girdle; Barley-meal, pure or mixed with Bean or Pea-meal, was prepared after the same fashion. Oatmeal cakes were little used, but Oatmeal porridge, made by rapidly stirring handfuls of meal thinly dropt between the fingers into fresh boiling water until the pudding became thick, and then thoroughly well boiled before being poured into dishes. When cold it was eaten with skimmed or butter milk, and when the cow ceased giving milk, some weeks before calving, with treacle or a simple home-made beer of treacle, boiling water, and a little yeast fermented in bottles before use. This was the staple breakfast and supper dish of the husband and children and wife; the latter often took tea and a little butter to her bread in the afternoon. The husband would sometimes join her on Sundays, but I have often heard him declare that "he could not work on tea." Bread purchased at the village baker's was esteemed a luxury by old and young. Dumplings were quite unknown. Now and then dripping or a piece of coarse beef or mutton, or a sheep's-head and feet, were purchased; the hair on the two latter was singed with a red-hot iron at the smithy, and after being steeped over night in water they were scraped clean, and slowly boiled for many hours, until quite tender. Salt pork was the staple animal food: it was sometimes fried, but generally boiled, after the French fashion, with a quantity of decorticated or pot-Barley, Cabbages, Greens, Leeks, and Onions in their season, into a thick broth, no pot-liquor being ever thrown away: the meat was eaten along with cakes of Barley or other meal, and vegetables—chiefly Potatos. The latter were often made into a very palatable soup, with a piece of fat meat or dripping, by being boiled to a pulp and passed through a colander; they were sometimes fried, but oftener mashed with dripping or milk, and thus formed an important article of diet to both old and young. When the family was large the supply of meat was always scanty; a cask of salt herrings was often purchased, and when the coast fishery was productive and herrings cheap, here was a pleasant variety, and the good wife often salted down a winter store. The quantity of buttermilk and skim milk, either sweet or curdled by the heat of summer, which was eaten along with cakes, mashed Potatos, and Oatmeal porridge, or used as a beverage when thirsty by old and young, was very great, and every cottager who did not possess a cow spent a comparatively large portion of his wages in purchasing this indispensable necessary. A bottle of whisky was occasionally purchased as a cordial, and also for hot punch at merrymakings, especially at New Year; malt liquors were rarely seen in the cottage.

THE PEOPLE.

As a race both men and women are tall, robust, active, very sober, and trustworthy; the children are numerous, and a large proportion attain to maturity. We cannot quote medical statistics for the average age to which they attain, but very aged people are frequently met with. When drenched with rain the labourer changes his clothes, and no doubt the vicinity of his cottage and the facilities for procuring hot meals at stated intervals help to ward off rheumatism and many diseases. We have heard an enlightened medical man state that the dietary of our labourers was defective, especially in the autumn of life, when the digestive organs begin to fail. Ague was banished 50 years ago; gout is quite unknown, whilst rheumatic gout is very rare, and confined to the middle and upper classes.

The happy influence which parish schools exerted on the labourers and middle classes of society, demands a short notice. John Knox, the brave spirit who guided the Reformation and assisted kindred spirits to complete and establish the same in England, was a native of this county. He was a man of great conceptions, the first in modern times to enunciate and give organisation to the working of the Christian duty of maintaining the helpless poor, and that the Church of Christ is built on the school: herein are contained the germs of civil and religious liberty, and all advance in solid material prosperity and social well-being. Knox's plan embraced a school in every parish, a grammar school in every county town, and an extension of the ancient universities, the two latter to aid the progress of poor distinguished scholars from the primary schools. The endowments were to be provided from the forfeited Church lands, but the cupidity of the aristocracy limited this glorious polity to the endowment of a school in every parish, and an obligation to erect and keep in repair a suitable school and dwelling-house and garden for a master qualified to teach reading, writing, arithmetic, grammar, and the elements of Latin. The clergyman of the parish had the selection of candidates, but the appointment, after examination and certificate, rested with the clergymen composing the Presbytery, an ecclesiastical subdivision of the county. The appointment was for life, but drunkenness or immorality led to expulsion. They were often men of considerable acquirements: one of their number, Mr. Dickinson, of Prestonkirk, had a very considerable part in the editorship of the *Farmers' Magazine*, in connection with its founder, Mr. Robert Brown, of Markle, in the same parish. In the parish schools at a distance from the market towns very many of the sons and daughters of even better-class farmers obtained elementary education before proceeding to superior schools; there sat the fathers of our local agricultural progress,—Meikle the elder, who risked his life in Holland to master the details of the Barley mill; Meikle the younger, who first invented or first applied inventions to the threshing machine; Rennie, the engineer, who first extensively applied cast iron to machinery, built the Waterloo Bridge in London, and tamed the wild waves of Plymouth Sound. So highly did our labourers value education, that I have known many mothers who denied themselves butter to their bread, aye, sugar and tea, to purchase school-books and pay the moderate school fees. It was held to be disgraceful to have children who could not read and write; it was rare to meet an adult who could not read; and many ploughmen could draw up a little bill, and show the receipt, expenditure, and balance of a sum of money with which they might have been intrusted at the market town.

The children of labourers began life in this way: provided with a bottle of milk and cakes for dinner they were sent to school at about six years of age, and remained until suitable employment could be had in the field in summer, returning to school in winter. Such was the love for education, that in many rather populous parishes the school was opened for two hours during the long winter evenings, and many a stalwart youth and tidy maid attended to revise or extend their knowledge, and farmers gave every facility in their power.

When entered to field labour they were termed "workers," and their tasks were proportioned to their strength. All the workers were under the immediate charge of the bailiff or foreman, and in spreading dung, hoeing Beans, Potatos, or Turnips, two or three youngsters did duty for an able worker, until they acquired skill and strength in after years—a girl's highest ambition as a worker being to take her place with a reaping-hook at harvest, and a boy's to drive a pair of horses. Girls or young women were not allowed to load dung-carts, or fork or pitch straw or sheaves in the harvest field. Boys were early accustomed to ride their father's horses, to drive harrows, single-horse carts, and, at a later period, to handle the swing plough, the more aspiring to sow with the hand and build corn stacks. If he desired to become a tradesman his wish was generally gratified, even though it entailed considerable expense in apprentice fees and tools at the outset; self-denial and patient industry grappled with every difficulty. At home boys learned to manage the cottage garden, plait and make up straw hats, repair shoes, and slaughter, dress, and cure pork. The girls were taught by their mother to swingle or dress and spin flax yarns for home-made linens, to bleach the cloth as returned from the weaver, to card and spin wool, to knit stockings, neck wrappers, and fingerless gloves; to cut out and sew their own clothes, and repair those of the family; to wash, iron, and even mangle clothes by beating them with a beetle, on a flat stone; to prepare and cook meals, to milk the cow, churn and prepare butter, hand-feed the calf, and prepare hot messes for the cow and pig at stated intervals. Sometimes the girl abandoned field labour, and entering the domestic service of a small tradesman, or, not unfrequently, the master's family, rose by degrees to even a higher style of domestic service. About 30 years ago it was held to be disgraceful to allow their aged and infirm relatives to ask subsistence from the parish; sons and daughters and grand-children all combined to put such reproach from their door.

The farms are held under lease for 19 years. Many farms had been in the occupation of the same family for generations, and the relations of many of their labourers had been equally enduring, the old and infirm being the object of the master's care. Peace prices to meet rents entered into at war prices, and the will-o'-the-wisp operation of the Corn Laws soon produced a great change in the tenantry under the system of letting by public tender. Farmers from other counties flocked in; in many cases their way of organising and carrying on their business was very justly distasteful to the native labourers; coldness, distrust, and repeated change of situation was the consequence. About 1835, thorough drainage began, then followed guano and the enormous increase in the breadth of Turnips, and application of capital to farming, requiring a large increase of workers. The landlords had previously deliberately pulled down many cottages to lessen the poor-rates; there was no surplus population to fall back upon, and farmers were most reluctantly compelled to require that every cottager should furnish a suitable worker, so that those who had a very young family, or no children, were compelled to lodge and board a worker. This brought discontent to a climax. The landlords began more rapidly to improve the existing farm cottages, and to erect excellent new ones, the labourers got them rent-free, hundreds of Highland girls, or Irish labourers, were brought into the county, and lodged in one or two cottages on the farm, so as to mitigate or abolish the hard necessity for compelling each householder to provide a worker, but all in vain—the breach between employer and employed has become wider year by year, until it is notorious that at least five-eighths of the latter remove their furniture every Whitsunday term, after one year's service. Changes have also become apparent in the labourer; previous to 1845 a tobacco-pipe was very rarely seen in the cottage, and its use, unless in the case of tooth-ache, was a source of reproach amongst the neighbours; shortly after that period the pipe appeared in the field, and then in the stack-yard and farm-buildings, at first in a hidling manner; example and precept had but little effect in staying the practice, which is now openly carried on everywhere by old and young. Some new masters abolished payment in kind; some adhered to payment in kind but compelled labourers to accept 5*l.* to 6*l.* in lieu of a cow's keep; the money wage threw the men into the village shop, the payment for the cow was a poor substitute for the nourishing milk and the income from the calf and butter. The pig fared worse, and fewer were fattened. Then the relatively high price of Oats and comparatively low price of Wheat and the cheapness of tea tempted many to abandon oatmeal-porridge, to sell all their grain, and purchase bread at the village baker's, for they have no ovens wherein to bake Wheaten bread. Many of the best young men have emigrated, or taken to other employments; more boys are brought up to trades, and girls to domestic service. The old race of labourers is steadily passing away, and the blanks are being supplied by a rapidly increasing Irish population, who are slowly rising in the social scale which prevailed in their own unfortunate country.

We leave the results of the present condition of the East Lothian farm-labourer to be judged by posterity. We have in our earliest school-boy days taken our place by merit in a class in the parish school with boys and girls from our father's farm, who

afterwards laboured in our own fields; there was equality at school, but there were stations in after life. Time has brought its sad changes: the aged, who clustered round the old roof-tree, have gone to their rest; several of our youthful compeers are dead, and some are changed, but we could name several who, not only as the best of servants, but in all the domestic relations of life, are worthy of the self-denying energy of their parents.

We have made many inquiries about the condition of the labourer in different counties in Scotland; we should like to extend them amongst the rural police and country surgeons, but such as they are we are entitled to state:—

That wherever the farm-labourer is furnished with a cottage and garden on the farm, keep for a cow, and payment of the whole or part of his wages in kind, *i. e.*, grain and Potatos, there will be found the best results to employers and employed. *E. L.*

THE CATTLE PLAGUE.

1. The following returns were issued on the 24th: These returns do not profess to give the total number of cases which have occurred in Great Britain, but only those which have been ascertained from information received at the office from inspectors. Columns 1 only record the cases reported as having commenced during the weeks indicated by the headings; "back" cases being added to columns 2.

Census Divisions.	1 Number Attacked.		2 Result of Reported Cases from Commencement of Disease.				
	Week ending March 10.	Week ending March 17.	Attacked.	Killed.	Died.	Recovered.	Unaccounted for.
Metrop. ..	14	34	7657	3262	3498	333	584
S. Eastern .	13	12	5018	1581	2785	442	210
S. Midland .	616	584	15,747	3983	9844	1549	411
Eastern Co.	313	233	9858	3947	4764	745	402
S. Western .	35	35	1534	503	761	198	72
W. Midland.	405	831	10,476	2444	6109	1187	736
N. Midland .	916	873	11,817	4169	5981	1048	619
N. Western .	2023	1504	51,240	6045	33,870	3208	5223
Yorkshire .	811	999	30,673	4137	18,067	5657	2812
NorthernCo.	522	547	6555	3021	2478	928	128
Monmouth. & Wales .	90	160	7433	247	3852	1036	338
Scotland ..	766	449	45,262	5256	26,825	10,365	2816
	6,518	6,261	203,350	39,487	120,834	28,656	14,374

NOTE A.—The operation of the Cattle Diseases Prevention Act, 1866, is indicated by the return this week, showing 7220 cattle as "killed" as compared with 6132 last week, 5197 the previous week, 1711 for the week ending February 24, and 980 for the week ending February 17.

NOTE B.—261 Inspectors have not reported this week in time for this return, of these 19 reported cases last week. These Inspectors returned 1468 cases last week.

2. NEW ORDER IN COUNCIL.—The Lords of the Privy Council, in exercise of the powers given under Acts 11th and 12th of Vict., cap. 107, have issued an Order, applicable to England and Wales only:—

Part I. of the Order, and other regulations of Part II., which relate to the isolation of infected places, and the rules with respect to infected places, are to come into operation immediately. The residue of the Order will not come into operation until the 16th of April, 1866.

Part I. provides that every local authority shall from time to time appoint such inspectors or other officers as it thinks necessary to carry into effect the provisions of the Order within its district.

Part II. provides that every person having diseased animals shall forthwith give notice to the officer appointed to receive such notices, and, if there is no officer appointed, to a police constable, and shall, as far as practicable, keep such animals separate from animals not diseased. No diseased animal and no animal which has, within 28 days, been in the same shed or stable, shall be removed alive from the premises where such animal may be, except with a licence from the local authority. No such animals shall be placed in any field or other place insufficiently fenced, be exposed for public sale, be driven along any highway, or be sent or carried by any railway, &c. Where any offence is committed with respect to any animal under the preceding regulations, the local authority may cause such animal to be slaughtered and buried. All diseased animals shall be buried as soon as practicable in some proper place, with their skins slashed in such a manner as to prevent their being made of any use, and with a sufficient quantity of quicklime or other disinfectant, and shall be covered with at least 5 feet of earth, or otherwise disposed of as directed by the local authority with approval of the Privy Council. No person shall dig up any diseased animal, or part of a diseased animal. Every local authority shall within its district, at its own expense, cause the premises in which diseased animals have been to be thoroughly cleansed and disinfected. No fresh animal shall be admitted into any yard or premises in which a diseased animal has been kept until the expiration of 30 days after the cleansing and disinfecting of such premises. The dung, &c., of a diseased animal shall be destroyed, or, with the sanction of the local authority, shall be disinfected and dealt with to the satisfaction of the inspector. The dung, &c., of a diseased animal shall not be removed from the premises where such animal has been, except for the purpose of being destroyed or disinfected. Every local authority shall direct the disinfecting of clothes of, and the use of due precautions by inspectors and other officers brought into contact with diseased animals. Any local authority may, by order made at any time after the passing of this Order, declare any place in which disease exists to be an "infected place," out of which no animal shall be moved. No hides, skins, horns, hoofs, or offal of animals; no carcase of, or undressed meat that has formed part of any bull, bullock, cow, ox, heifer, or calf; no dung of animals, and no hay, straw, litter, or other articles forming the food of animals, or used for or about animals, shall be removed without the licence of some officer of the local authority in writing, and such licence shall not authorise the removal of any articles beyond the district of the local authority. This regulation shall not apply to any animal or article carried by railway. No market, sale, &c., of cattle shall be held until the 1st day of June, 1866; except of cattle not within an infected place, free from disease, and in the possession of the owner or occupier not less than 28 days immediately previous to the sale, which may be sold on the premises. Markets may be held, with the licence of the Privy Council, for the sale of cattle intended for immediate slaughter, under certain provisions. Until the 1st of June, 1866, cattle brought by sea from any place abroad shall be marked by clipping the hair off the end of the tail, and shall not be removed alive from such town or place, except by sea. No cattle brought by sea from any place in the United Kingdom into any town or place in England shall be removed from such town or place alive, without a certificate from the local authority that such cattle have been examined and are free from disease. No cattle shall be removed from the metropolis; but persons occupying a farm situate partly within and partly without its boundary, under regulations specified, may remove cattle under licence for seven days. No cattle shall be moved along any highway, thoroughfare, or public place within the metropolis, except for a distance not exceeding 500 yards from part to part of the same farm, or to water, without a licence.

The following are General Regulations:—No cattle shall be moved on any highway between sunset and sunrise, except within a city or town. No cattle shall be moved by or upon any railway, canal, navigation, river, or highway, or by any vessel coastwise, without a licence, except for a distance not exceeding 500 yards from one part of the same farm to the other.

Licences shall be of two descriptions,—a licence for cattle intended for immediate slaughter, called a fat stock licence; a licence for other cattle, called a store stock licence.

No cattle shall be moved out of the district of the local authority in which they are without a licence in one of the forms aforesaid. Cattle brought by land from Scotland into England may be moved in England with the same licences that in Scotland authorise their removal from the district of one local authority to another.

No hide, skin, horn, or hoof of animals shall be moved by highway, railway, &c., unless effectually covered. Hides, &c., imported into the United Kingdom from India, Australia, South Africa, or America, and those that have been effectually limed for manufacturing purposes, are not affected by this order. A local authority may make such orders as it thinks expedient for preventing the propagation of disease by dogs, and may order stray dogs to be destroyed. Every railway or other company or person carrying animals for hire, shall, on every occasion after an animal has been taken out of any pen, truck, or boat, cleanse and disinfect it.

Powers are granted to inspectors and other officers authorised by special order in writing of the local authorities, to enter fields, stables, and suspected premises, &c.

Officers or constables are authorised to inspect trucks, &c., and, on reasonable grounds of suspicion to apprehend without warrant those in charge; also to stop any animal moved in contravention of the Order, and to bring them in charge before the justices in manner set forth, who may order the animals to be destroyed.

Every person guilty of an offence against the Order shall for each such offence incur a penalty not exceeding 20*l.*

Part III.—On and after the 16th of April, 1866, there shall be revoked, so far as respects England and Wales, the Order of July 24, 1865; of November 23, 1865; of December 16, 1865; of January 20, 1866; of February 6, 1866; and of February 23, 1866.

3. THE CATTLE PLAGUE RESTRICTIONS.—A letter was recently addressed by Mr. Hopwood, Clerk to the Holborn Board of Works, to Sir George Grey, the Home Secretary, stating that the attention of the district board has been called by the medical officer of health to the vast and increasing accumulations of manure, &c., in the stables in the Holborn district, arising from the prohibitory orders issued by the magistrates of Kent and other home counties against their removal. He stated that the orders were made to include the street sweepings, and that the contractors were therefore unable properly to remove them from the streets. In answer to this complaint, Sir G. Grey wrote that he "believed that the difficulty alleged to exist as to the disposal of manure of horses and other animals from the district arises from a misconception as to the state of the law upon the subject." The Order in Council of the 20th of January last, sec 2, enables local authorities to publish notices, after which the removal of "dung, hay, straw, fodder, or litter likely to propagate infection," is unlawful, and subjects the offender to a penalty of 20*l.*; but no power is given to local authorities to prohibit absolutely the removal of manure, either of horses or of other animals into their jurisdiction. The Cattle Diseases Prevention Act, 1866, provides for the destruction of all dung, litter, &c., which has been in contact with infected animals, and if, as Sir George Grey is confident is the case, the Metropolitan Board of Works, who are responsible for carrying that Act into effect, have taken proper measures with respect to the very few cases of cattle plague which have lately appeared in the metropolis, no lawful prohibition can exist against the removal of other refuse from the Holborn district, or any other part of the metropolis, to the country. Sir George Grey has examined the notices published by the local authorities in the neighbourhood of the metropolis, and it appears to him that the justices of the counties of Middlesex, Kent, and Essex have exceeded the powers given to them by the Order of Council of the 20th of January last. Sir George added that he had caused a communication to be addressed to them upon the subject, and under these circumstances it seemed to him that the responsibility of preventing any injury to the public health, in consequence of an accumulation of refuse, rested with the authorities in the Holborn district, there being nothing in the existing state of the law which interfered with its removal. At a recent meeting of the Holborn Board of Works, Dr. Gibbon, Medical Officer of Health, reported that in one or two adjacent counties the magistrates had relaxed the prohibition, and under certificate as to freedom from infection some large accumulations of both cowdung and horsedung have been removed. However, there are still several undue accumulations remaining. He proposed that the Board should put a pressure upon the owners of these accumulations, and issue sanitary orders, and if these orders were not complied with in three days, legal proceedings should be taken against the owners. Mr. Lloyd said the mews around the neighbourhood were getting full of manure; a Buckingham waggon loaded with horse manure was leaving John's Mews when the police stopped it, and on going to the police-station a permit for its removal was refused, and it had to be unloaded again. The chairman, Mr. Hall, considered the police had overstepped the boundaries of duty. Dr. Gibbon said he had selected three cases to try the question—one a cow-yard, in a very bad state, where there was no infection, but the neighbours complained of it, and a case of death had occurred in consequence of its condition; the two others were accumulations of stable manure. Mr. Boog moved that proceedings be at once taken to cause the removal of the accumulations in the three cases referred to, which was unanimously agreed to.

4. LIABILITY OF SHEEP.—The following is an abridgment of the letter addressed by Dr. Smart to the Lord Provost of Edinburgh on the subject of rinderpest preventives and the liability of sheep to the disease:—

In my Third Interim Report on "The Means of Preventing the Cattle Plague," I ventured to direct special attention to the great importance of recommending such measures as should contemplate rather the prevention than the cure of the disease. In the report referred to I recommend the use, in regulated doses, of the sulphite of soda as best calculated to act as a preventive. I further supported this view by stating that Dr. Polli, of Milan, had proved, by careful experiment, that the compounds of sulphurous acid with alkalies and alkaline earths possess in an eminent degree the property of arresting decomposition and fermentation in both living and dead animal tissues. This recommendation has been largely and generally carried into operation over the country; the statement of general principles in my report, upon which I base the advocacy of the preventive action of the sulphites, has proved not unfruitful of many kindred suggestions. Sulphur, sulphurous and sulphuric acids, and the hypo-sulphite of soda, are amongst the chief re-agents which have thus sprung into notice, and been widely tried. The two substances which are, however, undoubtedly of greatest value as re-agents of this class, are the sulphite and hypo-sulphite of soda—bodies which differ only in constitution in the slight difference of sulphuric acid element composing them.

[Reference is then made to the cases of Mr. J. T. Noakes, of Brockley Hall, Lewisham, Mr. T. Lyon Thurlow, of Baynards Park, Horsham, the Rev. Mr. Smith, rector of Dry Drayton, near Cambridge, and others.]

Mr. Charles Townshend, the treasurer for the county of Chester, was among the very first to adopt Dr. Andrew Smart's "preventive" of sulphite of soda. He has perseveringly used it since last October in his own dairy at Gresford, and has urged it upon all his neighbours. He gives 3 ounces one day and 1½ ounce on the alternate day in water to his cows in the shippon, and in tasty mashes to his young stock in the paddocks. Whilst his neighbours' stock all around him have been swept off, he has not lost a single animal to this day! True, he is most indefatigable in insisting upon his people

using instant disinfectants, and, in short, in keeping his [illegible] clean and sweet [illegible].

M. Willet, [illegible] of [illegible], a farmer [illegible] of Cheshire, [illegible] sulphite and hyposulphite treatment was first commenced he consulted a clever and disinterested physician, who told him, if there were any preventive in the world, that was the likeliest. He used it [illegible] all his tenants. All who adopted and persevered with it [illegible]; all who were incredulous and [illegible], lost their cows.

Generally we may add that from the most scientific agriculturists in Cheshire down to the least scientific Cheshire farmers, there is a growing conviction that "prevention," rather than "cure," is now their main chance; and that, encouraged by its signal success in the instance of Mr. J. F. Noakes, and of many others alluded to, those who have any cattle left (and two-thirds of the cattle are still left in Cheshire) are wisely adopting this sulphite and hyposulphite "preventive."

A gentleman in Scotland, communicating the results of his experience of the sulphites to the *North British Agriculturist* (November 29), expresses himself in very similar terms, thus:—

"I have had a number of cases on a farm which I occupy. On seeing Dr. Smart's recommendation and prescription for dosing all the unaffected animals with sulphite of soda as a disinfectant, I immediately set to work and had each given its quantum—viz., [illegible] in a half bottle of water, almost daily. I beg now to state that all the animals [illegible] seized have recovered under the treatment of the inspector, while those who were not dosed all died."

I shall only at present, in relation to this topic, ask leave to add one extract more. It is from the *Lancaster Mail* (March [illegible]) from an article headed "Rinderpest Preventives." The writer, after quoting and commenting upon the Edinburgh reports, expresses his estimate of their utility by stating, in conclusion, that "experience proves that the third of these reports by Andrew Smart, M.D., of Edinburgh, has been the most widely useful as suggesting preventives for the Rinderpest which proceed on known scientific principles, and which have proved far away the most successful of any in this country."

Before closing this letter, I shall ask your lordship's permission to express once more my opinion upon one of the most vital and important questions of the day—viz., Do sheep take rinderpest? In a report which I had the honour to submit to your lordship and colleagues, dated the 11th December, and subsequently published, I stated that I had completed a careful experiment, undertaken for the purpose of deciding that very important question, and that I had succeeded in inducing the disease in a perfect form in a sheep which had during a lengthened period been kept in contiguity with affected cattle. Although there were at this time many conflicting opinions and apprehensions as to the extreme probability of the poison of rinderpest [illegible] gave the first public announcement [illegible] conclusive experiment, that sheep were undoubtedly liable to the disease. [illegible] with cattle. With the exercise of ordinary precaution such a catastrophe will not occur, although isolated cases and occasional little [illegible] the disease in the country.

[illegible] or in consequence of lengthened exposure to the contagion in [illegible].

AGRICULTURAL EDUCATION.

BY THE COUNT DE P[illegible].

A REPORT presented to the General Meeting of Agricultural Societies, held at Montbrison, on the 13th of February, 1866. Translated from the "Journal d'Agriculture Pratique."

It seems to me unnecessary to point out the advantages of general education, and still less those of professional education. Instead of inquiring whether agricultural education is a good thing, it is more to the purpose to ascertain in what it consists, and by what means, in the [illegible] supply what is deficient and correct what is defective.

In the first place, it should be recognised that agricultural education may have two distinct objects, affecting two classes. It may attract capital to farming [illegible] commerce that the land offers a field of profitable investment; or it can lend its aid in the instruction of the class exclusively devoted to farming.

The first of these objects does not now engage our attention. It requires for its accomplishment larger means than we have at our disposal; besides [illegible] thought and feeling. We want [illegible], but we want still more to improve our farmer.

Such progress as improves our cultivation, without enlarging the intelligence and promoting the well-being of our cultivators, does not satisfy us. Our end [illegible] in the cultivation of the land by securing the improvement of those who cultivate it; our immediate object is to neglect nothing which, while it is for the good of the country, at the same time improves the condition of our countrymen. Is this result possible? We are convinced that it is by means of establishing and encouraging a system of education specially intended for farmers.

If we wish to instruct anybody we must ascertain: 1st, what they already know; 2d, what it will be useful for them to learn. It is often said that farmers know nothing. This may be correct enough as regards recent progress in the art of agriculture, but is it so as regards farming as a whole? I think not, and for these reasons: All experimental science consists of theory, which is truth demonstrated by reasoning; and of practice, which is truth established by experience. I readily admit the ignorance of farmers in everything belonging to the theory of agriculture, but it is impossible to deny their real knowledge of all that relates to its practice.

There are two distinct classes of agriculturists, theorists and practical men. The former, starting from logical principles, condemn that practice with which they are unacquainted; the latter [illegible] with their traditional practice without intelligence. Which of the two has the most real agricultural knowledge? The innovator has received a better education; he possesses varied information; he might have been [illegible] or a merchant instead of a farmer. In an agricultural point of view he has obtained, by intelligent inquiry, many special endowments; he brings to an undertaking [illegible] their own ends, instead of a mere spirit of resignation and yielding to necessity. He is a man earnest and determined, and instructed in many matters apart from the art that he attempts to practise; but what does he know of practical farming? [illegible], very little indeed.

The working farmer, on the contrary, is ignorant of everything relating to general knowledge, history, geography, mathematics, and perhaps even reading and writing; but he has an intimate knowledge of practical cultivation. He is initiated into the mysteries of the soil on which he was born; he is acquainted with all the specialities of cultivation that vary in every locality; he possesses an agricultural instinct, a love of its routine, and that patience without which the labour and long waiting of life in the fields would be impossible. In a word, he may be said to have acquired nothing, but he is acquainted with that which cannot be acquired. A stranger to everything that constitutes a mind of common intelligence, he is nevertheless strong in real agricultural knowledge, a knowledge truly invaluable, without which cultivation would be impossible, and which cannot be imparted to those who have it not.

Nothing is more desirable than the education of the working farmer; as long as this result is not attained, whatever amount of capital may be invested in farming, general improvement will remain in abeyance, because agriculture cannot entirely prosper except in the hands of those who are entirely farmers.

The theorist may conduct a farm with intelligence, courage, disinterestedness, but he will not devote his life to it; whether he succeeds or fails the day will come when he will abandon his undertaking. But to make real progress in anything we must not merely give up a part of our life to it, we must make it our entire life, and it is only a farmer who can give his entire life to farming.

To give the farmer an education which will enable him to rise to the theory without losing the advantages of the practice of agriculture—such is the problem we have to solve.

Education is indispensable, but what sort of education? In the first place we must teach the man who drives a plough or digs the ground that it is thought that controls the plough and can improve the land. We must impress upon him that all real progress proceeds from mind; that the hands are but instruments of the will; that the art of agriculture, like all other arts, is destined to see intellectual labour rule over physical power; and that material advantages are more dependent on reason and contrivance than on unintelligent labour.

We think this principle ought to be developed progressively, without seeking to overturn routine practice, to do which would only increase the danger arising from an incomplete theory, addressed to men incapable of forming a judgment. We must be contented with gradual advancement, in order that the learner may appreciate the soundness of the ideas that he acquires, and that every new mental acquisition may widen, without contradicting, the circle of his thoughts. The mind must be prepared before it can be tilled, and therefore a general elementary education ought to be the [illegible] only those who are capable of understanding and appreciating its advantages will [illegible].

It is in this way that agricultural education ought to be offered to the farmer. Its aim should be to infuse something [illegible] we must build on the foundation of what they already know, and enable them to form fixed ideas by giving them an education preliminary and simple.

What are the means of attaining this object? There are at present agricultural schools, but they are too often useless as [illegible] needs.

There are two classes of educational establishments appertaining [illegible] instruction in exchange for manual labour. When a preliminary education has been already secured, the district schools [illegible] farming.

Here is just that gradation of studies which we pointed out [illegible] gratuitous and unlimited, except by the capabilities of the [illegible] tutes the second step, after which the pupil ought to be able [illegible] another.

[illegible] established; but it has evidently not produced the results that might have been expected. No doubt that must be attributed, in some measure, to the negligence of the farmers for whose instruction these establishments were founded. That, however, is not the only cause. There are, without doubt, [illegible] defects in the organisation of these establishments.

The youths who engage themselves in the service of the farm school are servants rather than scholars. This is the natural consequence of the system of manual labour by which these schools are supported; but the condition of servitude, however natural and necessary it may be, is open to grave objections. Clearly it is the son of the rich farmer who is the most desirous of instruction, and the most impressed with its necessity. He will only seek instruction when he is of an age to appreciate it, that is when he approaches manhood. Here, then, is a young man, who, just at the age when he is capable of giving orders, is expected to subject himself; and just when he might undertake the management of the labourers on his father's farm, he is expected himself to become a labourer under the [illegible]. It must be confessed this is a prospect not very promising.

A father does not willingly consent to lose his son for several years, just at the age when he might be useful. So, as the son does not wish it, the father troubles himself no more about the matter. Consequently well-to-do young men remain at home [illegible] filled with poor children, who, on quitting it, not having [illegible] capital [illegible] farm [illegible] to place themselves as servants under the orders of a master inferior to them in education, forsake farming, and try to secure in the towns some means of turning to account the knowledge they have acquired.

With regard to regional schools, the difficulties of gaining admission are considerable. It is necessary to pass an examination requiring an amount of instruction that cannot be found among farmers. Besides this, the scholar at the commencement, and probably during the whole period of his remaining at the school, will have to pay a sum quite large enough, and which is exacted with the same strictness as the taxes. And the regional schools are so few in number that they could only offer a means of education altogether exceptional. An independent and intelligent farmer would not dream of placing his son at a regional school; nobody of his acquaintance would be likely either to have come from or to wish to enter one of them. Three farms in all France cannot educate the agricultural population. From their fewness it happens that those persons who might be able to enter them have no knowledge of them.

Without [illegible] the neighbourhood of [illegible] farm [illegible] the regional schools. What proves [illegible] culture? Where are its heads of [illegible], its implements, its works on agriculture? Where are its pupils? If a proprietor in Forez, a district essentially agricultural, and where rents are low, wishes to farm his domain, no Saulsaie scholar is likely to offer himself as his manager. This fact may be singular, but it is unanswerable; it suffices, without other proofs, to show that the actual education, either defective or insufficient, does not answer the end, does not promote the education of the agricultural classes, and, consequently, if it be desired to attain that result, other means must be sought.

There are several ways of doing this.

(*To be Continued.*)

Societies.

AGRICULTURAL OF ENGLAND: *The Cattle Plague.*—At the Weekly Meeting of the Society last week, a lecture on this subject was delivered by Earl Cathcart, of which the following is the substance:—

I shall take M. Lavergne's calculation as to the horned cattle of Great Britain, which he states amounts to somewhere about 6,000,000 in round numbers. It appears from the Government returns that by means of the plague we have got through (lost) 210,000 head. But from my own personal observation I know that the Government returns do not adequately represent the actual losses. It is not an over-estimate to double the 210,000, and so put down 420,000 as the total losses we have already sustained. In other words, something like one-fifteenth of the whole of the stock in the country. You will observe that I am speaking of Great Britain, not England alone. This loss would be bad enough even if the incidents were equal, but the blow has fallen with a crushing weight upon certain districts. Cheshire, for example, most heavily punished by the great plague in the last century, is said now to have lost from one-half to two-thirds of its horned stock.

Next comes the question, and this is the all important question—Where is the disease to end? Then, as to the probable continuance of the plague, there are some 22,000 places where the plague has been, and those plague spots are dotted pretty nearly all over the fair face of Britain. Infected hay conveyed infection after four months' exposure to air. That fact I take from the German report. Dung laid out in the autumn, and frozen in the winter, conveyed infection in the spring. Clothes or sacks laid upon cattle also conveyed infection. There have been numerous bad and insufficient burials, with the probability of the bones being dug up or exhumed. The disease in Holland was imported from England in the month of July—it came from the Metropolitan Market, they left the matter too much to the local authorities, they sent tainted cattle to market, and the disease spread far and wide. Holland thus became completely overrun, whilst the population was impatient of restrictions, and even resisted them by force. Tainted meat, or meat repulsive to the eye, was openly sold. The country was in a deplorable condition; the disease is not likely to be rooted out for years to come, and the land has gone down to one-half its value—that is, half its rental value I presume.

Contrast with this what has been done in the neighbouring country of Belgium. The Belgians at once closed their frontier, and stamped out the disease with signal success. They said the only way is to kill the disease in the germ. They took an inventory of stock—a thing which we ought to have done. They had recourse to the system of home slaughter. All imports of ruminants were forbidden. The thing is stifled in the germ. The Minister stimulates his subordinates. He says: "In such a calamity as this every one must do his duty, and do it with devotion; and, above all, we depend upon the zeal of the local authorities, and their sense of the grave responsibility which weighs upon them." Then the disease broke out among sheep, of which they lost 112. But the courage of the Minister saved the country. Professors Gamgee and Simonds, Mr. Barron says, were derided at first; but the teaching of events is irresistible. Disinfecting the fleece will not disinfect the live sheep. Professor Seifman's experience in the centre of Europe is, that in contact sheep do not invariably take the disease; but that they are most clearly liable to it, and that 20 per cent. usually recover. It is important to observe that a writer in 1747 says that the disease is propagated in the wool of sheep. I believe there is now a decided opinion, arrived at tardily, that sheep are liable to infection, and that there have been cases all over England and Scotland. This is a very important matter indeed, because the transit of sheep must immediately be considered, and the present is the lambing season, when changes of tenancy are going on, and farms have to be re-stocked.

And now we come to the important question of compensation. If there is to be curing of diseased animals, then compensation will break down, because the very object of compensation is that diseased animals should be slaughtered as soon as they are attacked. But if they are to be cured and doctored, and are then killed, compensation is clearly paid for nothing. I repeat, then, that the object of compensation is that slaughter should take place at once, and that if a system of nursing is adopted, compensation must utterly break down.

A very important matter comes next for our consideration, and that is the subject of disinfection. Previous to our meeting to-day I ventured to say

something to our friends here about carbolic acid: but I was informed that there was nothing to be said about disinfectants, for there is only one, namely, chloride of lime. I am sure, however, that great good might be done by the use of carbolic acid, and I would suggest that it should be kept in the different police-stations, as the smaller occupiers will not get it for themselves, the same as has been done in the North-Riding of Yorkshire.

Let us now contemplate the attacks as shown by the Government return—in other words, the results of the practical working of the Act so far as we can gather them from the Government veterinary reports. I find that in the week ending February 17th, the disease appeared to have reached its climax. The attacks in that week were in round numbers something like 13,000; in the next week, ending February 24, they had fallen to 10,000; in the following week, ending March 3, there was a further fall to 7310; and in the week ending March 10, which is the last return I have, they were 6518. But here there is rather a fallacy, because back cases are not recorded; taking the back cases, however, the numbers would be for the four weeks respectively 18,000, 11,000, 9000, and 7000. But I think we should have a more sensitive and satisfactory test perhaps in the number of fresh centres as showing the working of the Act. In the first of the four weeks I have referred to, these were 995; in the second week, 712; in the third week, 602; and in the fourth week, ending the 10th of March, 581. Again, there were killed of diseased animals 864 in the first week, 1641 in the second week, 4674 in the third week, and 5587 in the last week. All the English counties appear to have carried out the law more or less effectually.

We come now to an important subject—the subject of dead-meat markets. There are in England 68,000 butchers and meat salesmen who have no doubt been greatly inconvenienced; and I fear that, for some reason or other, there is very little sympathy between the butchers and the farmers. Now, the state of Newgate Market is most interesting to farmers, and it is equally interesting to the public. The state of that market is, as I can testify from personal observation, having spent a night there, a disgrace to our civilisation. Ten million pounds of meat per week now come into that market, that being double the quantity that was sent before the plague. This is interesting to the public. All are interested, from those who eat the dishes made from the gouged ears of lambs which I saw, or the fat from a cow-calf's udder, to the poor man's dinner of cooked bullock's liver. Conceive this place at 4 o'clock in the morning, flaring with gaslights—a great beehive of a place, like a number of Wardour Streets rolled together, jammed up with meat of all kinds instead of furniture: sawdust scattered about in all directions, sides of beef walking in on four legs, that is, carried in by two men. This market is positively jammed with meat, and men, and baskets, and vans. The proper idea of a great meat market for the metropolis, is that of a wide covered space, with spacious span roofs, the lightest possible pillars, convenient side-walks for pedestrians, and a tramway for the conveyance of the meat. There were at Newgate Market, on the morning to which I allude, large quantities of clearly unripe meat, and some meat which looked very nasty and flabby. But the great crying evil of the present system of slaughtering in the country is that the poor are deprived of the offal on which so many live. The offal is often sold at a loss of one-third. Small quantities of it are brought up to London in baskets, and arranged in such a manner as to be absolutely disgusting. When I speak of offal, I allude to beasts' liver and pluck. The next question is, whether veal ought not to be given up. And here I am reminded of a saying which is of universal application in all the relations of life, namely, that "where the carcase is, there will the eagles be gathered together"—that is to say, there is a tendency, in cases of calamity, to make capital out of it. The railway companies are said to charge three times as much for carcases as for live beasts, although a truck will carry twice as many of the former as of the latter. In favour of the poor, therefore, there should be some provision for the convenient carriage of offal by means of some kind of travelling larder. On the occasion of my visit to Newgate Market, the meat generally appeared to be in fair condition. Dead meat comes from abroad; and Mr. Barron says that the 112 Belgian sheep suspected of having the plague were sent to England as mutton. Let us hope that due care will be taken, and that we shall not hear of death in the pot.

We will now go on to the live-meat market at Islington. That is a magnificent market. You see there Spanish cattle with long horns, and white and black Dutch and French cattle; and Monday last witnessed the unparalleled fact that the market was nearly as full as it was prior to the breaking out of the plague, nearly every one of the animals being a foreigner. It is a strange circumstance, and well worthy of note, that on Monday there were 4160 foreign cattle in the market, or very nearly as many beasts as there were previous to the stoppage of the movement of English stock. It is curious to observe that, within eight years, the foreign imports have risen from 300 a-week to 12,000 or 13,000.

Society of Arts: *March 21.—Highland Agriculture.*—Professor Leone Levi read a paper on this subject, for which we may hereafter find room. The following are his conclusions:—

1. That there is reason to believe that the process of conversion of tillage land into sheep-walks, and the consequent extinction of the crofter system, with the removal of the native population from the Highlands of Scotland, has been carried out to an excess injurious to the best interests of the country.

2. That since large tracts of land capable of tillage exist in different parts of the country, either altogether neglected or used as sheep-walks, which might be rendered more productive were it let out in small farms, it is greatly to be desired that the same should be utilised, especially with a view to an increased number of cattle, and for the winter keeping of sheep.

3. That, having regard to the exceedingly small and sparse population in the Highlands, side by side with the alleged over-crowding of some parts, especially on the sea-coasts, it would appear most important that advantage be taken of any arable land for reinstating an industrial population in the heart of the country.

4. That, with a large population to feed in Great Britain, and great material interests to subserve, the maintenance, and far more, the extension of forest land and deer forests is incompatible with, and most inimical to, the welfare of the people, in so far especially as they keep out of cultivation or of pasture any portion of land capable of being profitably employed.

5. That the maintenance of such forests cannot be justified by the rent obtained for sporting, since such rent is no indication whatever of their productiveness, and cannot be considered as representing any increase of wealth, but is simply the fictitious price paid for the pleasure enjoyed, and consists only of money transferred from one to another.

6. That, allowing that a certain amount of produce is extracted from the chase in venison and grouse, the market value of such produce is inconsiderable and altogether incommensurate with the expenditure incurred for such forests, whilst the permanent injury committed on the land, and far more, the withdrawal of such large portions of land from productive purposes, especially from sheep and cattle, must be considered as most injurious to the country at large.

7. That the gross misappropriation of such land, and the great need of endeavouring to increase the production of animal food at home, are sufficient reasons for the institution of a public inquiry on the subject, and that, following the precedents of commissions and committees on waste lands, it is highly desirable that a Royal Commission should be issued "to inquire into the extent and character of the forests and uncultivated lands in the Highlands, and how far such lands are capable of being rendered productive for agriculture, and otherwise to report on the state of Highland agriculture, and generally on the economic condition of the people in the Highlands and Islands of Scotland."

Farmers' Clubs.

Athy, Ireland.—[The following discussion on *Sheep Breeding and Management* followed the paper read by Mr. Davidson, which we have already published:—]

Mr. Robertson said—There can be no doubt of the special importance of sheep-farming at the present moment, in view of rinderpest among cattle; but, even under ordinary circumstances, sheep are, in my opinion, much more profitable than cattle on all second-class soils, and more particularly wherever such are farmed under a mixed system of tillage and grazing. Sheep in these circumstances have several advantages over cattle. They yield quicker returns, in that you may, by ordinary management, have a well-bred sheep at full maturity for the butcher at 18 months old; whereas with cattle it will take three years. Then, sheep are much less expensive for winterage, and one is not under the necessity of stripping so much of his farm in hay-making, in order to furnish the means of carrying the same money's worth of sheep over the winter as he would have to do were his capital invested in stock. Again, sheep do not poach the land in winter as cattle often do, and are greater improvers in the way of manuring the land more equally. An old man once remarked to me, "You seldom see a sheriff's auction where sheep are largely kept;" thereby quaintly expressing, in another form, what is known in England as a proverb—namely, "That sheep have golden feet," which means that they are the cause of so great improvement to land that gold may be gathered after them. In the profitable breeding and feeding of sheep there is much room for improvement, and it is only by great care in many respects that full profits will be realised. A flock of sheep should have good breeding to ensure early maturity, and well-bred animals will make more money for continuous early feeding than sheep of a coarser description. In many parts of England lambs are cake-fed even while suckling the ewe, and after weaning are put on to Tares, Clover, Rape, Cabbage in succession, and, finally, to Turnips, and are finished for the butcher at from 12 to 14 months old. The best made up sheep in the London market, in their season, are sheep of this age, forced on with the above changes of green food and oil-cake and corn; and so high do the prices at which they sell reach that I am afraid to quote them, lest they might be looked upon as fabulous. But in all cases the success in a great measure, as I have already said, depends upon having quality, at least, upon the sire's side. The great popular error in sheep breeding, or in the breeding of Short-horns or pigs as well, is in looking to size, without having substance. A large skeleton or frame is indicative of anything, in fact, but early maturity or profitable investment; and I always look upon large bone, a high, hard-touching back, a narrow chest, and over-heavy fleece as true indications of large offal and slow-feeding properties. Why, in hundreds of instances, one might readily fancy from the sort of large-looking, coarse-framed sheep that is so much preferred, that bone-dust was of much more value in the market than mutton. Young sheep more especially are liable to several diseases; but of these I am convinced that nine-tenths of the deaths which happen are to be traced to want of sufficient condition of stamina in the animal. Many people only half-feed their ewes, and even grudge them a morsel of sweet hay daily while carrying their young. Is it, therefore, to be greatly wondered at that the young animal should be wanting in constitution after its birth; or that the dam should be unable to give it a sufficiency of nourishing milk? When weaning time arrives, under this state of things, the lamb is far from being in robust condition, and is in this state put on to ordinary pasturage, at a period of the year when most grazings have lost their succulency and nourishing properties. Or, it may be that it is put to feed among the older sheep, in pasture fouled from constant grazing, off which it is never changed, and where it, therefore, contracts disease. Diarrhœa or purging commences; the animal struggles on until winter comes, when, in desperation, the owner introduces it to his haggard, to meet its fate in death, or barely outlive the consequences of its improper treatment, as the case may be. Under any circumstances the animal barely struggles on until the Grass appears to save its life, and once more enable it, as it were, to have a second birth. Such are the two systems of management. Under the one of care and constant feeding the young sheep is fat at 14 months old, and, when stripped of its wool, sells to the butcher at a high price; 50*s.* have been reached per head in Dublin Smithfield market in this way, and 17*s.* for the fleece. Under the other, the animal is barely alive at a similar age, and can never after pay so well. I have an opinion that when, by mismanagement, you stop the growth of wool in the young sheep, you thereby render it much more liable to internal ailment. We know that in the human system, in health, there is as much respiration or exhalation through the pores of the body as through the mouth, and when you suddenly check this respiration, you as suddenly impose a double duty upon the lungs, the heart, and other internal organs, with consequences of the most dangerous kind; and so in sheep, in the checking by mismanagement of the growth of wool, I fancy there is a double duty imposed in like manner upon the respiratory and digestive organs, which also naturally tend to fatal results. I lose a number of my lambs annually at from four to eight months old from what I cannot but call a form of disease. The animal takes a slight purging, yet feeds, and is to all appearance well. He then begins to grind his teeth occasionally, gradually gets worse, and in a few hours is dead. On opening the last stomach, or looking at the entrance to the narrow intestines, we invariably find a hair or woollen ball which cannot pass, and which causes death. How this is introduced is a mystery. At first I fancied it came from suckling the dam, but soon had proofs that such was not the case. Next I thought it might be from biting the wool in consequence of ticks upon the skin, and that in this way wool might adhere to the teeth, and get into the stomach. To prevent any danger in this way I had my lambs early dipt, so as to kill all the ticks, and thus prevent biting; but, notwithstanding, my cases of death from this cause still continue, and, as if to puzzle me more than ever, I had the other day a case of the death of a pet lamb from hairball, which seldom suckled a ewe at all, but which was fed almost from the first from a bottle, upon which, of course, there was no wool. I have brought in a few of these balls for your inspection, and perhaps some one or other may be able to give you a useful hint for their prevention, for cured the animal with one cannot be. I will conclude by relating how a piece of old Grass land was improved by sheep. A friend of mine some years ago took a large farm in the county Meath. There was a house lawn to it of some 20 acres which he was forbidden to plough up, which could not be grazed by cattle on account of some shrubberies which abutted upon it, and

which had been mown for hay until in this way it had been spoiled; for, as you nearly all know, mowing land constantly for hay without any top-dressing is about as bad as constant tillage without manure. Under these circumstances my friend resolved to top-dress this lawn with sheep eating oilcake, roots, and hay. He, therefore, bought in a lot of wethers at Ballinasloe, at 36*s.* each. He gave each sheep 20*s.* worth of oilcake from November until the 17th May, when they were sold fat out of the wool in the Liverpool market, at 3*l.* a head, and for each fleece he received 17*s.* This paid very well, but he had an additional profit in the increased crop of hay, which made 210 cocks, against 95 of a similar size carried from it the year previous to the sheep folding. Encouraged by his first year's success my friend continued the process. I forget how his sheep paid the following years, but I remember his telling me that after the second winter's folding his crop of hay made 320 cocks of similar size to those of his first year's crops, which seemed to be as much as the land could be made to produce, for he never afterwards, fold with sheep as he liked, could make it yield more.

Mr. MACCULLOCH: I do not think it would be the wish of any of us here for it to go forth that it was the feeling of this Club to ignore the keeping of sheep to a greater age than 15 months. We all know that this is most profitably done, and our friend in the chair does it, I believe, to very great advantage—I do positively think to more advantage than what we do in disposing of them at so early maturity. What I consider Mr. Davidson has brought out so well, and what Mr. Robertson has alluded to, has regard to the particular land—the particular circumstances—upon which the sheep are kept. The early maturity system may be the best in their localities, and I think it is not the intention that it should go from the Club that it is the system to be solely adopted in Ireland.

Miscellaneous.

Field Labour for Women.—The following correspondence lately appeared in the *Times*:—(1). "If 'X. Y. Z.' had known more of the peasantry of Wilts and their habits than he appears to do, he would not have been surprised at meeting a girl 15 years of age employed in shooting small birds on a farm in that county. I believe that 'bird-keeping,' as it is called, is rather considered by the girls themselves as the reverse of an unsuitable training for the field work to which they are born, and for which they appear to have an hereditary relish. The majority of the female portion of the labouring classes of this county infinitely prefer field work of any kind to household duties, and, in nine cases out of ten, they would select the former if the two were simultaneously offered. A woman here acting as a charwoman would receive, in all probability, wages and food equal to, at least, a sum of 2*s.* per day, and for field work the same woman would receive 8*d.* per day. I do not mean to say that all the women could be employed as helpers in households, were they even anxious to be, but I do mean to say that, from experience, I have known the greatest difficulty in obtaining such help when field labour is abundant, and that the women prefer the shameful licence, liberty, and companionship formed in the field and 8*d.* per day to the more orderly and quiet duties of a household for 2*s.* Your correspondent may rest assured that the girl whom he accidentally met will continue almost to the end of her days in this degrading work, which so unsexes the women here, and without any shame or desire on her part to rise above it. *X., Amesbury, near Salisbury.*"——(2.) "Had 'X.' known more of the peasantry of Wessex than he appears to do, he would have been more than surprised to read the following statement made by him in the *Times* of Friday last:—'The majority of the female portion of the labouring classes of this county infinitely prefer field work of any kind to household duties, and, in nine cases out of ten, they would select the former if the two were simultaneously offered.' As a Wessex vicar, and one for some years intimately acquainted with the peasantry both in Wilts and Dorset, I most unhesitatingly affirm that 'X.' is decidedly mistaken in the above statement. Why, so far from anything of the kind being true of 'the majority of the female portion of the community, I am constantly hearing complaints from these very persons that they are actually compelled to labour in the fields. You ask how this can possibly be. It is in this way—and now I will speak from my knowledge of one parish in particular, a fair type, however, of the whole neighbourhood. The farmers will engage only those men whose wives and girls (when old enough) will work in the fields, and that, mind you, all the year round; and should any poor woman at any time slink from such employment, the husband is very soon given to understand that he must give up his cottage and be prepared to go elsewhere. At this present time I have no less than three families, consisting of five or six children each, the majority requiring the undivided care of the mother, where, alas, the mother is thus compelled to go 'to field.' Would, Sir, that you would use your powerful advocacy in this matter. It is a thing of which, in these days, England should be ashamed. Let us have 'gloving,' or 'charing,' or 'straw-plaiting,' or anything indoors, rather than this unfeminine, miserable, degrading field-work. Only too ready do I find the poor women here to go 'gloving' rather than to go a-field. Of the few independent women in the parish not one goes out to work, but all most gladly do anything else to which they can put their hands. *A Wessex Vicar.*

Sweet Wort v. *Milk for Lambs.*—The lambing is now becoming general, and I am willing to impart my experience on this subject for the information of my neighbours, and it will be for them to act upon it or not, as they may deem prudent. I am not about to puff up a patent medicine or mixture, but rather to advocate the use and superiority of an outrageously-taxed portion of our home produce over milk. My trial has been so conclusive and beyond doubt, that I have considered it advisable to communicate the result to Mr. Gladstone. Under the present trying circumstances, the preservation of every head of young stock, lamb, or calf, and the economising the consumption of milk for cattle, to enable the various districts to supply the wants of the cities and towns with that article, has been, and will become more so (to say nothing about what is now sold for butter), a question for serious consideration. My flock, 300 longwools, began to lamb three weeks since, and, as frequently occurs, there are ewes whose milk does not flow properly for a few days after lambing, and there are weakly lambs unable to draw the milk for a time, and require equal attention. Cows' milk has been the remedy, although by experienced shepherds given with caution. This season I have tried sweet wort and new milk side by side until this day, having now ordered new milk to be discontinued, and I will pledge myself to the fact that sweet wort has the advantage in every way. There is no shortness of breath or scouring, and their skins are perfectly healthy, and not one has been lost in the trial. Strength of wort, 1 bushel of malt to 10 gallons of water. It can be made in as small quantities as circumstances require, keeping about one day's consumption in hand. It is no trouble: damp the malt, and pour on the boiling water as in brewing; let it stand until sufficiently drawn, then strain it through a fine cloth to take away all sediment. Bottle it for use. Give it milk-warm, and in the same proportion as new milk. Give the grains to the mothers. *Mr. F. Salter, Attleburgh, Norfolk, in the Mark Lane Express.*

Lord Palmerston on Irrigation.—Whether the dislike he manifested to water-meadows arose more from sanitary than economical grounds, we do not know; but we know that it has only been with the greatest possible reluctance that he has allowed any of his tenants to retain an acre of water-meadow. Properly drained meadows were much more highly regarded by him than irrigated meadows; and so firmly did he hold to his view of the question, that neither tenant, agent, nor engineer could alter his determination to get rid of them. Although, out of good feeling to his tenantry, he has left a small proportion of the valley in water-meadow, he has done so with regret; and this may have been purely for sanitary considerations, since he was frequently known to exclaim about the difference he experienced in the temperature after the meadows surrounding his mansion had been laid dry. He tersely expressed the nature of the change by saying that it made the difference of a top-coat less to him. This should be borne in mind by those who are anxious to deluge our already water-logged and ague-tenanted valleys, particularly that of the Thames, with the fluid-sewage of the towns to the extent of thousand of tons on each statute acre.

Notices to Correspondents.

APOPLECTIC FOWLS. *A Cockney.* It is difficult to pronounce a correct judgement on the case of your hen without a sight of the patient, or at least a fuller detail of symptoms. You say, "she seems to have fits at certain times, spinning round and round, and is only now kept alive by being fed by hand. She will stand in the same spot for a length of time quite listlessly, and seems to pine away. I am told that it is apoplexy," &c. My own belief is that cases of apoplexy never occur among fowls that are at liberty, and are only fed in the ordinary manner. Birds shut up to fatten, or long confined in coops, as on board ship, would be more liable to the disease; but we do not hear of it appearing among them and if we did, the affection, like that of cage birds, would probably assume an epileptic rather than an apoplectic character. However, cases often do occur among fowls that may at large which we might easily suppose to be apoplexy, but which strict investigation discovers to be caused by cruelty—wanton blows with sticks or stones. "A Cockney" will do well to look sharp amongst those who have access to his fowls, and think whether there be no ill-natured person from whose hands the poor hen may have received an "apoplexy." Severe cases of roup, where the eyes are blinded by a discharge of pus, the whole head acutely inflamed, and the bird weakened and distracted by starvation (the consequence of blindness and suffering), sometimes produce symptoms similar to those described. The agony the poor thing undergoes, and the little chance there is of saving it, point out the most humane mode of relief to be by knocking it on the head.

CORRIGENDA OF *Oats.* We have remarks in type, which must be delayed a week, on the two Couch grasses which you sent,—the one Triticum repens, and the other Agrostis stolonifera.

HOPS. *Bess.* Brown Hops, if better than green are only so from having arrived at fuller maturity, and even then they must be of sound and healthy growth, and not have lost colour from blight or disease. The finer colour must, in any case, be used for delicate ales.

The Cultivation of Bromus Schraderi.

SUTTON AND SONS can supply genuine Seed of the above New FORAGE GRASS, in packets, for trial, at 1*s.* each, or in larger quantities at 6*s.* per lb., with instructions as to cultivation.
SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

Very Early Sheep Feed.

SUTTON'S IMPROVED ITALIAN RYE-GRASS.—This "Improved" Italian Rye-grass is recommended in preference to every other variety, producing three or four heavy crops in one summer, and being almost if not strictly perennial.

At a Meeting of the Royal Agricultural Society, on March 16, in a Lecture delivered by Alfred Hughes, Esq., of Thorness, Isle of Wight, Mr. Hughes said—

"I always reserve a portion of Oat land to lay down with SUTTON'S Improved Italian Rye-grass, the most reliable plant I have come across for some years for Early Autumn Lambs in the Spring. When I tell you that I put it in in the spring, and dressed it after harvest with guano, and that in the autumn, when my Sheep fed it off, it was up to their knees, and that I fed it off again this spring with Ewes and Lambs, I think you will agree that this is a crop of very great value. The Italian Rye grass which is sold by SUTTON, of Reading, is a most astonishing vigorous plant; indeed, I never saw anything to equal it in the course of all my experience."

SUTTON & SONS have a fine stock at present of their Improved Italian Rye-grass, which is a very different and superior article to much that is sold as Italian Rye-grass.

Extreme price, 6*s.* 6*d.* per bushel; cheaper in quantities over 5 qrs. Carriage free in quantities of 8 bushels and upwards.

Quantity required per acre, if sown alone, 3 bushels..

Royal Berkshire Seed Establishment, Reading.

GRASS SEEDS for Laying Land Down to Permanent Meadow and Pasture, allowing 2 bushels of Large Seeds, and 12 lbs. Small Seeds to each acre. Price 36*s.* per acre.

MIXTURES for IMPROVING OLD PASTURES, 1*s.* per lb.

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GEORGE GIBBS & Co., Seedsmen, 25 and 26, Down Street, Piccadilly, W.

Grass Seed for all Soils.

RICHARD SMITH offers the best selection that can be made of PERMANENT MEADOW GRASS and CLOVER at 30*s.* per acre, consisting of 2 bushels light, and 12 lb. heavy Seed. The kinds and quantities are chosen for their Early Growth, Crop, Nutritive Qualities, Reproductiveness, and Permanency, and can be had separately, or properly mixed to suit Heavy, Light, or Medium Soil. RICHARD SMITH, Seed Merchant, Worcester.

DAVISON'S MIXTURES of GRASS SEED, 10*s.* 6*d.* per bushel; per acre, 32*s.*—Italian Rye-grass, best, 5*s.* per bushel, 14 lb.; Pacey's Perennial, 6*s.* 6*d.*; Devon Evergreen, 6*s.*; Red Clover, best, 9*d.* per lb.; White Dutch, best, 10*d.* per lb.; Trefoil, best, 6*d.* per lb.; Swede, all the best kinds, 9*d.* to 10*d.* per lb.; Mangel Wurzel, 9*d.* to 1*s.* per lb. PRICED LISTS free.
Hereford.

Brighton and Sussex Seed Warehouse.

EDWARD CARPENTER'S MIXTURES of PERMANENT GRASS and CLOVER SEEDS.—Best quality, 36*s.* per acre (2 bushels light seeds, and 12 lb. Clovers and small seeds per acre).—See testimonials in Catalogue.

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Weight 56 lb. per bushel.

This has been "bred" in the same manner as the "Pedigree Wheat," viz.: by repeated annual selection, re-sifting in each year from a single grain upon a poor soil (testing immediately upon the chalk of the South Downs), which upon neighbouring farms produces Barley weighing but 51 lb., and fit only for grinding.

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Price Two Guineas a Bushel (including bag), delivered in bags sewed up and sealed, at the Brighton Railway Station, upon receipt of Cheque or Post Office Order, without which it will not in any case be attended to unknown correspondents. Less than a bushel will not be supplied.

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Per bushel	*s.*	*d.*	Per lb.	*s.*	*d.*
Rye-grass—			Swedish Turnips—		
Pacey's Perennial.. ..	5	0	Brown's Bronze-top, the best variety in cultivation (see Testimonials on application)	1	0
Italian, pure	5	0	Skirving's Purple-top ..	0	9
Annual	4	0	Skirving's Ring	0	9
Meadow Foxtail	8	0	Chirnside	0	10
Cocksfoot	7	0	Common Turnip—		
Dogstail Grass, per lb.	1	0	Purple-top, Scotch ..	0	10
Timothy	6	0	Green-top, Scotch ..	0	10
Rib-grass	0	6	Green-top, Hybrid ..	1	0
Mangel Wurzel, select sorts	0	9	Grey Stone	0	10
Kohl Rabi	3	0	Orkney	0	9
Mustard .. per bushel	1	8	Carrot—		
Lucerne .. per lb.	1	6	Altringham	1	6
Cow or White	1	6	Long Surrey	1	0
Rye, Spring .. per bushel	6	0			
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BLENDELL'S CATTLE MELON and CATTLE MARROW.—These have now been tested in 37 counties in England, and in various parts of Ireland and Scotland, and proved to be a heavy cropping and valuable Fruit for Feeding all kinds of Stock.

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W. WOODCOCK, for 30 years Agricultural Seed Grower in Wisbech, begs to draw attention to the following kinds, from transplanted Bulbs, all of his own careful growth:—

SWEDE TURNIPS, PURPLE-TOP, 1*s.* per bushel; GREEN-TOP SWEDE, 15*s.* per bushel; RED-TOP, round, 18*s.* per bushel; GREEN-TOP, YELLOW SCOTCH, 15*s.* per bushel.

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JOHN GAINES begs respectfully to offer to Gentlemen, Nurserymen, and others GLOBE ARTICHOKE PLANTS at 25*s.* per 100; CABBAGE or PROVENCE Plants at 10*s.* per 100; also a quantity of WALLFLOWER and CARNATION SEED, a Bargain. A good discount to the Trade. All orders must be accompanied with Post Office Order payable to

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VARIEGATED KAIL SEED for Winter Decoration of Flower Beds.—Seed of the above sent out last year having given general satisfaction, CHARLES CLARKE feels pleasure in again offering a packet, containing numerous beautiful varieties, post free for 7 stamps. A great variety of EVERGREENS, large and small, for Spring planting; Ornamental FOREST TREES; extra strong ASPARAGUS for forcing, &c.

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DOWNIE, LAIRD, AND LAING are now sending out the above in packets at 1*s.* each. This is unquestionably the largest Leek in cultivation, growing 16 inches in length of blanch, and 30 inches in circumference. Was awarded the First Prize at the Edinburgh and other leading Shows.

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	Bushel.	Half Bushel.	Peck.	Gallon.
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SKIRVING'S ,, ,, ...	1 11 0	0 16 0	0 8 6	0 4 6
WHITE GLOBE, GREEN, and RED ditto	1 11 0	0 16 0	0 8 6	0 4 6
SCOTCH PURPLE and GREEN-TOP	1 10 0	0 16 0	0 9 0	0 4 6
GREY STONE	1 17 0	0 19 0	0 10 0	0 5 0
	Cwt.	Half Cwt.	Quarter Cwt.	14 lb.
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YELLOW GLOBE MANGEL	2 10 0	1 7 6	0 15 0	0 8 0
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WHITE BELGIAN CARROT	3 15 0	2 0 0	1 2 6	0 12 6
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Every care has been used in the selection of the several kinds, therefore he trusts they will give the highest satisfaction.

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The two following beautiful varieties will be found great acquisitions, and B. S. W. feels confident that they must take first rank as exhibition plants, PRINCESS ALEXANDRA being raised from the same parents as Elegantissima, which has proved to be one of the best. The present variety will be found superior in quality, with much larger flowers, of a substance never before met with—the most important feature for prolonging the flowering season. PRINCESS HELENA is recommended for its general usefulness, being a free bloomer and quite distinct in habit.

PRINCESS ALEXANDRA.—A beautiful form of Elegantissima, with flowers 3½ inches across; petals round and smooth, of great substance, slightly striped with deep crimson; a profuse bloomer. 31s 6d.

PRINCESS HELENA.—Deep rosy pink, upper petals spotted with lake. The transparency of the flowers causes it to be distinct from all other kinds; habit good and free. 21s

Rhododendrons.

These two elegant varieties are the Seedling productions of Mr. Bowie, late of Stoke Park, and were exhibited by him a few seasons since at the Royal Horticultural Meetings, and received Certificates of Merit as valuable additions for greenhouse decoration, being of free-flowering habit, a feature much wanted in a greenhouse Rhododendron.

DENISONII.—A Seedling from Dalhousianum, crossed with Edgworthii and Gibsonii; a very fine variety, with splendid habit, well furnished with clean-looking flattish elliptic leaves and large campanulated flowers, pure white, with a lemon stain towards the base, very elegant. 21s.

McNABBII.—From ciliatum, crossed with Edgworthii; a very handsome plant, dwarfish in habit, with smooth elliptic leaves, and beautiful large blush white flowers. 21s.

Achimenes.

Six beautiful varieties raised by Mr. Parsons, of Welwyn, and far in advance of any yet sent out. PINK PERFECTION the same size as Mauve Queen and equal in substance, while GRANDIS gives the deepest violet shade; all the others will be found equally distinct in their separate colours. Received Certificates of Merit from the Floral Committee.

ADVANCE.—Flowers deep reddish purple, with a light spotted eye, shaded towards the margin, quite distinct. 7s 6d.

ARGUS.—Colour rich plum, large deep orange eye, spotted with carmine, upper lobes of the flowers beautifully rayed towards the margin. 7s. 6d.

AURORA.—Flowers 2 inches across; colour rich heavy scarlet, with light yellow eye, very effective. 7s. 6d.

GRANDIS.—Flowers deep violet colour, with a deep orange eye, finely spotted and shaded with carmine. 7s. 6d.

PINK PERFECTION.—Flowers very large, colour magenta rose; the upper part of the eye rich carmine, the under lobes beautifully rayed with violet, very fine. 7s. 6d.

STELLA.—Flowers 2½ inches across, clear magenta, orange eye, spotted with carmine, nicely serrated, distinct and beautiful. 7s. 6d.

The above set for 40s.

Passiflora Hulletii.

A Stove Climber, recently introduced from Rio Negro, on the banks of the Amazon, in growth much resembling P. quadrangularis, the leaves, which are very ornamental, being 8 inches across; the flowers are large, white spotted with pink. Besides being a desirable addition to our flowering plants, it will no doubt prove to be one of our most valuable Exotic Dessert Fruits, the flavour of that produced by it in this country last season being so delicious that it was pronounced superior to any of our Pine-apples. It requires a moist stove temperature. 21s.

Swainsonia magnifica.

Figured in the "Floral Magazine."

A free-growing and free-flowering greenhouse climber; native of Australia; habit and character partakes of both the Clianthus and Swainsonia; while it has the robust and graceful-growing habit of the former, it produces more prominently the long pendent racemes of delicate bright-coloured pink flowers of the latter, with a pure white centre in the upper petal or lobe. It is well adapted for a cool greenhouse, treated as a pot plant or planted out in a border for pillars or trellis-work. 10s. 6d.

Thunbergia fragrans.

B. S. W. believes this to be the most useful plant he has ever had the pleasure of offering, the whole character being quite distinct to any other Thunbergia, and whether grown as a pot plant or planted in the border for covering pillars and trellis-work it will be invaluable, being free in growth, with ample foliage of a dark green, with great substance. It continues flowering throughout the year, but its principal period is during the winter months, a time when white flowers are scarce. Although grown in a warm stove, it has never shown the least sign of red spider, a most important feature in this class of plants. 10s. 6d.

Pelargoniums, Bedding.

The following six Zonale Geraniums were raised by Shirley Hibberd, Esq., the eminent Horticulturist. It is well known that this gentleman has for some years given his close attention to this class of Bedding Plants, planting in his extensive experimental garden every kind that has been raised, and carefully testing or proving their worth as regards habit and novelty by comparison, &c. He has already raised several valuable kinds, but prior to this season none have been sent out under his name. B. S. W. has prevailed upon Mr. Hibberd to allow him to use his name. This will convince all that they are each varieties of more than ordinary merit, and real novelties.

ANDREW MARVEL.—Leaves bright green, with broad brownish zone flowers, large, and of remarkable substance and smoothness; colour vermilion red; a fine variety. 7s. 6d.

EVANGELINE.—Leaves rich green, with dark zone; smooth circular flowers, colour French white, shading to delicate rose blush, large globular trusses, very distinct and beautiful. 7s. 6d.

H. W. LONGFELLOW.—Flowers finely formed, colour deep salmon flesh with red centre, with trusses large and globular; leaves dark green, with brown zone; a very fine variety. 7s. 6d.

KATE ANDERSON.—Flowers average size and form, trusses globular, colour the most brilliant shade of true scarlet; blooming profusely, likely to prove the most effective scarlet known; leaves deeply zoned. 7s. 6d.

MAGNA CHARTA.—Flowers very large and smooth, top petals the same size as the bottom ones, colour deep red; leaves pale green, with obscure zone. 7s. 6d.

MAY QUEEN.—Bright green foliage, flowers large, well formed and smooth; colour clear rosy pink shading to white, trusses large and round. A great improvement on Beauté de Suresnes, being much richer in colour. 7s. 6d.

The above set for 40s.

Pelargonium Rosalie (Holland).

The peculiar good qualities of this variety consist of free and compact habit of growth, with a moderate supply of rich salmon red flowers of great substance and excellent form; large trusses, well furnished with flower buds, mounted on stout stalks, well above the foliage. For Winter Decoration it will be found invaluable. Received Certificates during the past season for its general usefulness. 7s. 6d.

A NEW GENERAL PLANT CATALOGUE

In preparation, and when ready will be forwarded to all previous Customers and Applicants.

VICTORIA AND PARADISE NURSERIES, HOLLOWAY, LONDON, N.

Bedding Stuff.

JAMES CRAWFORD, High Beech, Essex, begs to offer a fine variety of BEDDING GERANIUMS and other first-class Bedding Plants, nearly all Donald Beaton's fine varieties and New Stock from them. His Stock of first-rate Bedding things is numerous and very good.

FIVE HUNDRED THOUSAND SILVER FIR, 4-years Seedlings, 4s. per 1000
50,000 SPRUCE FIR, 4-years Seedlings, 2s. per 1000.
MYATT'S PROLIFIC ASHLEAF KIDNEY POTATOS, True, 25s. per ton, sacks to be returned. References or remittance required.
J. Rhodes, Park Attwood, Aylesbury, Bucks.

W. VIRGO AND SON having a superb stock of the undermentioned FRUIT, FOREST, and other TREES, can offer them at a very reduced price, viz. —

Standard and Dwarf Apples	Alder, 2 to 3 feet
Standard and Dwarf Pears	Larch Fir, 3 feet
Standard and Dwarf Trained Cherries (very fine)	Spruce Fir, 18 inches, 2 and 3 feet
Hazel, 4 to 5 feet	Berberis Aquifolium, 1 foot
Ash, 5 to 7 and 8 feet	Privet, 2 feet
Spanish Chestnut, 2 to 3 feet	Portugal Laurel, 2 feet
Withy, 4 to 5 and 5 feet	Common Laurel, 2 to 3 feet
	Privet, 18 inches to 2 feet

Also a large quantity of Trees fit for hedging.
Prices of the above can be had on application at the Nursery, Wimbledon, near Guildford, Surrey.

New Edition of

SCOTT'S FRUIT TREE CATALOGUE of the finest Collection in England. The Catalogue is allowed to be the best published, and is full of information about the Cultivation of Fruits, over 1000 being described. Apply to
J. Scott, Merriott, Somerset.

SPECIAL OFFER of FRUIT TREES —25 per cent. off Catalogue.—Having a large and fine stock of the undermentioned, they are offered at greatly reduced prices, to clear ground:—Peaches, Nectarines, Apricots (trained and untrained), Apples, Pears, Plums, and Cherries (trained and untrained).
DESCRIPTIVE CATALOGUES on application to
J. Scott, Merriott, Somerset.

To Clear Ground.

SPECIAL OFFER 20 per cent. off Catalogue prices.—Splendid EVERGREENS, YEWS, Hollies, Portugal and Common LAURELS (Colonnade), Laurelia Pyramids, Cupressus Lawsoniana, Thuia Lobbii, Pinus insignis, Pyramidalis, Thujopsis borealis, Taxodium, Hazel, in large breeding, cloth, &c. Nonesuch Austrian Pine &c. Seedlings. For Sizes and prices, see CATALOGUE, sent on application to
J. Scott, Merriott, Somerset.

Scarlet Geraniums (Beaton's Race).

WM. PAUL (late and Successor to the late A. PAUL) has to offer fine bushy new ZONALE and HYBRID NOSEGAY GERANIUMS, which have been selected from several Thousand Seedlings raised by Donald Beaton, and which Donald Beaton knows are now offered to be in advance of any and all previous sorts. Orders received now, the plants delivered in, or about, October, to May next.

Grand Fiery Nosegays.

*. * Are 12 varieties whose trusses (not the two following Groups) may be selected by the purchaser for 42s.

BANNERET.—Flowers of the richest crimson shaded, very large and of fine form; trusses massive. Price 7s. 6d. each.

FAIRY QUEEN.—Rose pink; a large smooth flower, very distinct and beautiful. Price 7s. 6d. each.

MINSTREL.—Orange salmon, shaded with scarlet, a striking variety of fine habit and free flowering, but trifling in colour and not worthy of the name. Price 7s. 6d. each.

MONTE BLANC.—Large white, passing to pure colour, large trusses, very fine. Price 7s. 6d. each.

NIMROD.—Orange scarlet, shaded with crimson, large flower and truss, foliage fine habit. Price 7s. 6d. each.

PHŒNIX.—Rich and clear scarlet, of fine and general character, the constitution of which is perfect. Price 7s. 6d. each.

PRINCE OF ORANGE.—Orange, shaded, very bright, great substance, good habit, prodigious bloomer. Price 5s. 6d. each.

PEACH NOSEGAY.—Flowers of bright peach colour, very free bloomer, spotted upper petals, pleasing habit. Price 7s. 6d. each.

REBECCA.—Cherry colour, large trusses, dwarf compact habit, very pretty, the flowers lasting for a long time. Price 5s. each.

ST. GEORGE.—Dark chestnut, shaded with blackish crimson, quite unique, very free flowering, an extreme new colour among Zonals. Price 7s. 6d. each.

SALMON NOSEGAY.—Flowers pure salmon, large truss, good habit. Price 5s. each.

SIR J. PANDO.—Flower true orange, very bright, fine large truss, a splendid variety for massing. Price 5s. each.

WOOD NYMPH.—Salmon pink, large and fine. Price 5s. 6d. each.

Group 2.—Variegated Leaved Nosegays, suitable for Growing in Pots or Vases.

BRIDE.—Flowers white, with large crimson eye, of fine shape and substance, a first-class variety for pot culture. Price 5s. 6d. each.

CARDINAL.—Flowers dark crimson scarlet. For shape, substance, colour and habit, this is in advance of any scarlet variety yet sent out. Price 5s. each.

CELESTIAL.—Flowers fine lake, with fiery spot on upper petals, then centres almost purple, resembling the "Celtis Speciosa" variety, false Virginia, new in colour, and very beautiful. Price 5s. each.

LORD CHANCELLOR.—Salmon pink, white eye, perfect shape, very free flowered. Price 5s. 6d. each.

POET LAUREATE.—Rose purple, petals orange scarlet, yellowish eye, perfect shape. Price 5s. 6d. each.

TIARA.—Flowers scarlet crimson suffused with purple, good truss, very free, fine habit; quite distinct from any yet raised, and very lovely. Price 5s. each.

Group 3.—Variegated in Forms & Varieties.

DIAMOND.—Fine bold purple centre, white eye, flowers profuse. Purely bold and distinct. Price 5s. 6d. each.

DRYAD.—Beautifully rosy pink, fine shape and truss. Price 5s. 6d. each.

NAIAD.—Flowers purple, scarlet top; pleasing and distinct. Price 5s. 6d. each.

WALTHAM LILAC.—Flowers true lilac, very profuse; a new and valuable colour, the nearest approach to blue yet raised. Price 5s. each.

ZEPHYR.—Flowers light purple top, petals rose colour; stands the rain and sun well, very dwarf and free. Price 5s. 6d. each.

Group 4.—Bedding Varieties sent from their Nurseries in Pots.

Many of them have received First-class Certificates from the Royal Horticultural and Royal Botanic Societies of London, and the most leading Horticultural Societies of the Provinces, and are meant in the Royal Horticultural Society's Trial Ground at Chiswick.

Now Ready, Autumn-stock Plants.

ALEXANDRA.—Magenta. Price 2s. 6d. each; 24s. per dozen.
AMY ROSE.—Rose. Price 2s. 6d. each; 24s. per dozen.
BEATON'S INDIAN YELLOW.—Orange scarlet shades with yellow. Price 1s. 6d. each; 15s. per dozen.
BLANCHE HOWARD.—Dark crimson. Price 1s. 6d. each; 15s. per dozen.
DONALD BEATON.—Clear orange scarlet. Price 1s. 6d. each; 15s. per dozen.
DUCHESS.—Salmon pink. Price 1s. 6d. each; 15s. per dozen.
JULIEN.—Vivid scarlet. Price 2s. 6d. each.
GLOWWORM.—Magenta crimson flushed with scarlet. Price 2s. 6d. each; 24s. per dozen.
MAGENTA QUEEN.—Magenta. Price 2s. 6d. each.
ORANGE NOSEGAY.—Bright orange. Price 1s. 6d. each; 15s. per dozen.
PRIMA DONNA.—Rose. Price 2s. 6d. each.
PRINCESS ELIZABETH.—Salmon pink. Price 2s. each; 18s. per dozen.
SALAMANDER.—Intense scarlet, large white eye. Price 2s. each; 18s. per dozen.
SCARLET GEM.—Intense orange scarlet. Price 1s. 6d. each; 15s. per dozen.
MRS. WILLIAM PAUL.—Delicate rose pink. Price 2s. 6d. each, 24s. per dozen.
WALTHAM SEEDLING.—Dark crimson. Price 2s. each, 18s. per dozen.

The above set of twenty-three choice plants for 21s.

SELECT CATALOGUES, with full descriptions of these and other plants, free by post. The usual discount to the Trade.

IMPORTANT.—All letters should be addressed WILLIAM PAUL (the Christian name in full), Waltham Cross, London, N.

Spring Planting.

PETER LAWSON AND SON are prepared to execute orders for every description of NURSERY STOCK suitable for FOREST and ORNAMENTAL PLANTATIONS.

To prevent disappointment, it is recommended that requirements for SPRING DELIVERIES should be ordered as soon as possible, and the plants may be reserved in the Nurseries until required. If large quantities of LARCH, SCOTCH FIR, CORSICAN PINE, and other leading TREES are wanted, PETER LAWSON & SON will be glad to submit special offers when desired.

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GIANT ASPARAGUS, fine selected Roots for early cropping, 2s. 6d. per 100. This delicious Vegetable does not require half the expense usually incurred in planting it. For instructions, see RICHARD SMITH'S SEED LIST for 1866.
Strong Transplanted SEA KALE, 2s. per dozen
Horseradish Sets, Rhubarb Roots, &c.
Richard Smith, Worcester.

Grayson's Mortlake Giant Asparagus, True.

FRANCIS R. KINGHORN has a fine stock to offer, 1, 2, and 3-years old, grown on the ground where the late Mr Grayson brought it to such perfection.
The best time to plant is when the roots have begun to grow; if matted over the crowns to the back fall growth commences.
Per 100, 2s. 6d., 4s., and 6s.
Sheen Nursery, Richmond, S.W.

HAGE'S DWARF EARLIEST CAULIFLOWER.—Very dwarf, the earliest, hardiest, and finest of Cauliflowers
Packets, 6d. each; per dozen, 5s.
SEED CATALOGUES, containing the finest New Vegetables, free by post.
Stephen Brown, Seed Grower, Sudbury, Suffolk.

For Bouquets and as Cut Flowers

THE INVINCIBLE SCARLET SWEET PEA is invaluable. The colour is intense and permanent. Packets 6d., 1s., and 2s. 6d. each; packets of two Sorts, 2s. 6d. Supplied by the principal Seedsmen throughout the Kingdom. Also of Messrs. Kirkham, of Hanham, Villa Bath & Co., Paris; Denamy and Haage & Schmidt, of Erfurt, Prussia, and Messrs. Dammann & Co. of the Kaiser.
Stephen Brown, Sudbury, Suffolk.
Price to the Trade on application.

SEED POTATOS Early Ashleaf or Evesham Leader; Myatt's Early Prolific Kidney, Sharp's Blue, Early Frame, of good quality, and keeps free from disease. Prices on application to RAYMOND, CATTERICK, BAWTREY, DOWLING & Co., Limited, Raising stock, or Seed Market, Mark Lane, London, E.C.

SEED POTATOS for SALE.—About 8 tons of DALMAHOY EARLY and 10 of ELEGENT POTATOS (not above are worthy the attention of parties who may want a change of seeds). For further particulars apply to Thomas Dalmahoy, Dalmahoy, by Ratho, Edinburgh.

New Seedling Potatos.

TELEGRAPH, 11 days earlier than the Ashleaf, abundant bearer, pot tested, 20s.
PRESIDENT, 11 days later than the above, wonderful cropper, pot tested, 10s.
Both for 25s. carriage paid. D. P. LIGHT.
For description see Report & 50 others in SPUD CATALOGUE, free and post paid on application.
Covent Garden Market, W.C.

SEED POTATOS.—
PINK-EYE KEMP, 15s. per cwt. | HANDSWORTH, 15s. per cwt.
MONA'S PRIDE, 25s. per cwt. | MYATT'S KIDNEY, 20s. per cwt.
Sacks to be returned. DANIEL D. LIGHT.
All many other varieties. Potatos received and cleared, at market prices.
GARLIC, 75s. per cwt. | SHALLOTS, 25s. per cwt.
SEED OATS, 10s. per bushel.
All kinds of certain Farm and Garden Seeds. Catalogues of which will be sent on application to
Henry Brooks, 4, Commutation Row, Liverpool.

RAYNBIRD, CALDECOTT, BAWTREE, DOWLING, AND COMPANY, Limited,
CORN, SEED, MANURE, AND OILCAKE MERCHANTS,
Address, 80, Seed Market, Mark Lane, E.C.; or Hastingstake.
Samples and Prices Post free on application. Prize Medals, 1851, for Wheat; 1862, for "Excellent Seed Corn and Seeds"

THE LONDON MANURE COMPANY
(ESTABLISHED 1840).
Have now ready for delivery in any fine condition,
CORN MANURE, for Spring Use
DISSOLVED BONES, for Dressing Pasture Lands
SUPERPHOSPHATES of LIME
TREBLED BONE MANURE
MANGEL and POTATO MANURES
Also Genuine PERUVIAN GUANO, and NITRATE of SODA, ex Peak Warehouse; SULPHATE of AMMONIA, FISHERY SALT, &c.
E. PURSER, Secretary.
Offices, 116, Fenchurch Street, E.C.

LAWES' MANURES.
The Manures manufactured by J. B. Lawes for the present season will be now ready for delivery at his Factories, at the following prices, per ton —

	£	s.	d.
LAWES' PATENT TURNIP MANURE, and BONE DUST	5	0	0
SUPERPHOSPHATE of LIME	6	6	0
LAWES' SUPERPHOSPHATE of LIME from BURNT BONE or MINERAL PHOSPHATES	5	5	0
LAWES' WHEAT, BARLEY, GRASS, and MANGEL MANURE	5	0	0
CONCENTRATED CORN and GRASS MANURE	12	0	0

These Manures can be obtained of Mr Lawes, or through the appointed Agents in all parts of the United Kingdom, at prices varying according to cost of carriage.
Genuine Peruvian Guano direct from the Importers. Nitrate of Soda, Sulphate of Ammonia, and all Chemical Manures.
American and other Oilcakes at market prices.
Address, John Bennet Lawes, 1, Adelaide Place, London Bridge, E.C.; and 22, Eden Quay, Dublin.

THE PATENT NITRO-PHOSPHATE or BLOOD MANURE COMPANY, Limited, Manufacturers of ODAMS'S PATENT BLOOD MANURE for CORN and ROOTS ODAMS'S SUPERPHOSPHATE of LIME and DISSOLVED BONES.
Chief Offices 109, Fenchurch Street, London, E.C. Western Counties Branch, Queen Street, Exeter. Irish Branch, 40, West Moreland Street, Dublin.
Directors.
Chairman, John Chalk, Littlebury, Essex.
Deputy Chairman, Thomas Hodgkin, Hoe, Hertfordshire.
Edward Bell, 18, Marine Parade, Brighton.
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The Company's machinery is worked under the direction of Mr. Odams, a manager of long experience, and the Manures are manufactured from the best materials.
THE PATENT NITRO-PHOSPHATE COMPANY
Is now in the Confidence of upwards of 4000 Agricultural, who have had it in use under management with Manures of the highest character, and who have thereby tested the best Corn and Root Manure, and have witnessed the efficacy of the Manures manufactured by this Company.
A Pamphlet will be forwarded on application to the Secretary, or may be had of the local Agents.
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AGRICULTURAL IMPLEMENTS.—Steam Engines, Threshing Machines, Tramps, Carts, Waggons, Ploughs, Harrows, Chaff Cutters, Cake Breakers, Turnip Cutters, Churns, Garden Tools, &c. Impetuous Wire Netting. Convenient carriage free.
Price Lists per post.
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Works, Brentwood, Essex.

"PHOSPHO GUANO surpasses, most certainly, by its more correct and constant quality, the best sorts of Peruvian Guano; and of its superior efficacy there can be not the slightest doubt."—*In a Report by the Barons Justus von Liebig.*

PHOSPHO GUANO.

The Prices, including cost of Bags, Carriage Free at any Railway Station or Shipping Port in the Kingdom, are as follow —

For 10 tons and upwards	.. £12	0	0	per ton.
For 5 tons up to 10 tons	... 12	5	0	,, ,,
For smaller quantities	... 12	10	0	,, ,,

Ten Shillings per ton discount for Cash within a month.

To prevent fraud, all Bags are branded with the PHOSPHO GUANO COMPANY'S Trade Mark, as well as that of the Contractors, copies of which appear at the head of this Advertisement.

Contractors' Trade Mark.

Company's Trade Mark.

Report by DR. VOELCKER of a Visit of Inspection to the Phospho Guano Stores at Seacombe, Birkenhead, and of Analysis of Samples taken from the Stores on the 9th of February, 1866.

"In compliance with Messrs. Peter Lawson & Son's request, I again this year paid a visit of inspection to the Phospho Guano Stores at Seacombe, Birkenhead, and on that occasion took the following samples from the bulk.

1. A sample from a bulk of 40 tons, stored in Shed No. 1
2. A portion from a heap of about 4000 tons, in Shed No. 3.
3. A sample from about 1000 tons, stored in Shed No. 4
4. A sample from the middle of the same bulk
5. A sample taken from the top of a heap of 7000 tons in Shed No. 7.
6. A sample from the middle of the same bulk
7. Men were at work filling bags from a large quantity from a bulk of about 3000 tons, and I took a sample from the bags raised for shipment.
8. A sample taken out of the 2000 tons, being the stock in which Phospho Guano is prepared for use.

"Two of the samples I submitted to careful and complete analysis, the others I did not think it necessary to examine. The main results of the eight analyses gave 40.02 per cent. of Soluble Phosphates, and 4.07 of Insoluble, while the Ammonia averaged 3.77 per cent.

"I can confidently recommend the Phospho Guano of the extensive buildings, and left at liberty to select as many samples as I chose, and to take them from any portion of the stores; and I cannot refrain from declaring that, under no circumstance with the numerous analyses I have made of Guano, have I found the whole bulk ready for delivery in the present season.

"(Signed) AUGUSTUS VOELCKER, PH.D.,
"Professor of Chemistry to the Royal Agricultural Society of England."

"11, Salisbury Square, London, E.C., Feb 24, 1866"

"Since my last visit, a decided improvement has been effected in the mechanical condition of the Phospho Guano. The bulk for 1866, whilst fully as rich in intrinsically valuable fertilizing constituents, is now shipped in a beautifully fine and uniform condition, which it maintains even when submitted to pressure or violent agitation.

"Much practical inconvenience is frequently experienced in the use of artificial manures rich in Soluble Phosphate of Lime, inasmuch as such manures, although dry and in a good condition when they leave the factory, become sticky or pasty during the transport, rendering any thing like a uniform quantity of manure. This serious inconvenience has been entirely overcome by an improved plan of preparation and the Phospho Guano can now be sent to any destination, even to the tropics, in any required amount of pressure, without it losing its fine and dry pulverulent condition.

"Having on frequently expressed an opinion of the intrinsic fertilizing value of Phospho Guano, I need not repeat former statements, but have especially to state, that I may be permitted confidently to vouch, as to the fact, that what is the chemical composition of the Guano I have analysed on the three occasions of former years, its mechanical condition has been greatly improved.

"(Signed) AUGUSTUS VOELCKER, PH.D.,
"Professor of Chemistry to the Royal Agricultural Society of England."

"11, Salisbury Square, London, E.C., Feb 24, 1866"

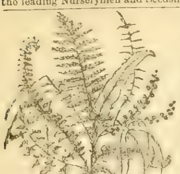
There are numerous Agents appointed for the Sale of PHOSPHO GUANO in all the Principal Towns and Villages in the United Kingdom; but where any difficulty exists in procuring supplies, Orders may be sent direct to

PETER LAWSON AND SON, GEORGE IV. BRIDGE, EDINBURGH; or,
28, KING STREET, CHEAPSIDE, LONDON, E.C.

PETER LAWSON & SON, Contractors.

☞ *The attention of Farmers is particularly directed to the fact that* PHOSPHO GUANO *is the only Manure the quality of which is vouched for by Chemists of high standing, who have themselves visited the bulks and drawn their own samples for analysis.*

INTERNATIONAL HORTICULTURAL EXHIBITION and BOTANICAL CONGRESS.—Those who are preparing Plants for the above Exhibition should feed them liberally with STANDEN'S GARDENER'S and AMATEUR'S FRIEND. Sold by the leading Nurserymen and Seedsmen.



COCOA-NUT REFUSE delivered within 2½ miles of Charing Cross, at 2s. per bag.

For particulars, and how to use it, see long Advertisement in *Gardeners' Chronicle* of the 21st March, 1863; or apply to the PATENT COCOA FIBRE COMPANY, Kingston-upon-Thames.

Postage Stamps or Post-office Orders payable to J. BARSHAM & Co.

BARSHAM'S BRUSHES and MATS are sold in every town.

CAUTION.—Every Brush is stamped, J. BARSHAM'S Patent.

ROLL TOBACCO CLOTH.—The cheapest and best article for Smoking Greenhouses and destroying the Fly; equal to Tobacco in strength, 1s. 4d. per lb.; over 10 lb., 1s. 1d.
JOSEPH BAKER, 10, Gough Square, Fleet Street, E.C.
Post Office Orders payable Fleet Street.

APPLEBY'S GENUINE TOBACCO PAPER, in 4-lb. packets.—Testimonials too numerous for insertion. Price on application to
HENRY APPLEBY, Foreman to Messrs. IVERY & SON, Dorking, Surrey.

By Royal Letters Patent.

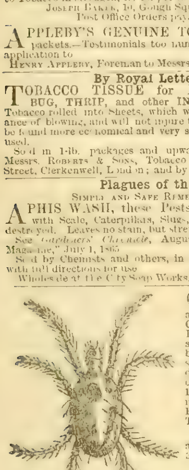
TOBACCO TISSUE for DESTROYING MEALY BUG, THRIP, and other INSECTS.—Manufactured from Tobacco rolled into Sheets, which will consume without the assistance of blowing, and will not injure the most tender plants. It will be found more economical and very superior to the article generally used.

Sold in 1-lb. packages and upwards, price 3s. 6d. per lb., by Messrs. ROBERTS & SONS, Tobacco Manufacturers, 54, St. John Street, Clerkenwell, London; and by all Seedsmen and Nurserymen.

Plagues of the Garden.

SIMPLE AND SAFE REMEDY.—By using the

APHIS WASH, these Pests of the Garden, together with Scale, Caterpillars, Slugs, Earwigs, &c., are immediately destroyed. Leaves no stain, but strengthens the Trees or Plants.
See "*Gardeners' Chronicle*," August 19, 1865; and "Gardeners' Magazine," July 1, 1865.
Sold by Chemists and others, in 1s. bottles, and 2s. 6d. a gallon, with full directions for use.
Wholesale at the City Soap Works, Milton Street, London, E.C.



Red Spider. Magnified.

GISHURST COMPOUND, whether used against Insects and Mildew, on Growing Plants, or as Winter Dressing on Trees at rest, should be dissolved 48 hours before use. This gets rid of smell, and if the Solution be decanted, prevents any staining of foliage. A strength of from 1 to 2 oz. to the gallon of water is recommended for growing Plants; one from 4 to 16 oz. for Trees at rest.

Sold Retail by Nurserymen and Seedsmen, in boxes, 1s., 3s., and 10s. 6d. each.

Wholesale by
PRICE'S PATENT CANDLE COMPANY (LIMITED).

LONG'S "DIPPING" for TICK in SHEEP.
LONG'S "SPECIFIC" for SCAB in SHEEP.
LONG'S "MAGGOT LOTION" for SHEEP STRUCK by the FLY.
Well-known, effective, Non-poisonous.
Wholesale—S. & E. RANSOM & CO., Essex Street, Strand, W.C.
Retail Agents in all parts.

CATTLE PLAGUE.—The Cattle Plague Commissioners having specially recommended CARBOLIC ACID as a Disinfectant and Preventive for this class of disease, Farmers and others are hereby informed that they may be supplied with this Acid by
F. C. CALVERT & CO., 7, Bond Street, Manchester.

Cattle Plague.

PUBLIC NOTICE.—Owners of Stock are earnestly advised to protect their Stock, by the use of

MCDOUGALL'S PATENT DISINFECTING POWDER, as recommended in both Reports of the Royal Commission.

For washing the bodies of healthy and sick Cattle to prevent infection, use MCDOUGALL'S PATENT DISINFECTING SOAP.
CARBOLIC ACID at lowest price.
ALEXANDER MCDOUGALL, Manufacturing and Agricultural Chemist, London: 11, Arthur Street West, London Bridge, E.C. Manchester: Riga Street, Shudehill.
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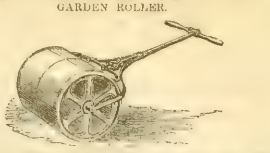
READ'S NEW PATENT HYDRAULIC SUCTION PUMP.—This Pump is highly approved by the Nobility, Gentry, and by the principal Horticulturists, &c., throughout the Kingdom; also by Shirley Hibberd, Esq., F.R.H.S.; the late Professor Lindley, and many others connected with Horticulture, &c.
R. READ has also a large assortment of GARDEN ENGINES, MACHINES, and SYRINGES, upon the most approved principle.
Manufactured by the Patentee,
RICHARD READ, 35, Regent Circus, London, W.
⁂ Drawings sent post free.

GREEN'S IMPROVED NEW PATENT GARDEN ROLLER.



The above Rollers possess many advantages over all others. They are made in two parts, and are free to revolve on the axis, affording greater facilities for turning, and the outer edge are rounded off or turned inwards, thus avoiding the unsightly marks left by other Rollers.

Diameter, 30 inches;	Length 32 inches,	£7	10	0
" 24 "	" 26 "	4	10	0
" 20 "	" 22 "	3	10	0
" 16 "	" 17 "	2	15	0

Prices for Rollers fitted with Shafts suitable for Pony or Horse Power, free on application.
Delivered carriage paid to all the principal Railway Stations and Shipping Ports in England.
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SAYNOR AND COOKE'S WARRANTED PRIZE PRUNING and BUDDING KNIVES, see that you get them. Observe the mark SAYNOR, also the corporate mark OBTAIN WARRANTED, without which none are genuine.
S. & C. regret having to caution Gardeners and others, but are compelled to do so, in consequence of an imitation, of common quality, having been sold for the genuine one, and which has caused many complaints to be made to them of Knives which were not of their make, all of which are warranted both by sellers and makers.
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TESTIMONIAL.
"Hunton Court, Kent, March 5, 1866.
"SIR,—After nearly two years' use of your Portable Railway, I think it due to you to express my favourable opinion of its merits and utility. It is simple and easily worked; is not liable to break or go out of order, and for manual labour of transport well as other expeditious and economical. Its value of importance are seen in this particularly in a country so wet as ours, such as we have had in this locality for several months past. In this soil roots and getting in manure in the absence of frost, however the land will not bear carting, it is invaluable, for then it may be used to the cheapest and under such circumstances, by horse or ox, and carting, except, it is well known, be estimated. During the past winter, my bailiff Pettitt has by the use of your Railway, with four or five men we had some seven or more hands, managed to give a good dressing of yard manure to upwards of 20 acres of Hop land. He and myself told me he does not know how in a season like this we could have got on without it.
"I am, sir, yours faithfully,
"Mr. JOHN GRANT." "HENRY BALSTON."

D. FERGUSON, LANDSCAPE GARDENER, CONTRACTING PLANTER, and VALUER of NURSERY STOCK, &c.
Whitton Nursery, Hounslow, W.

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ON SALE, by Private Contract, SIX YEARLINGS and THREE BULL CALVES, of undeniable descent, being got by the well-known, pure Bates, Duchess Bull 7th Duke of York (17,754), from dams chiefly descended from the original Tortworth herd, consequently can be well recommended for quality, style, and colour.
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IMPORTED CREVECŒUR, LA FLECHE, and HOUDAN FOWLS, TOULOUSE GEESE, ROUEN DUCKS, and NORMANDY TURKEYS. Prices on application.
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EGGS for SITTING from selected BIRDS of the principal Breeds of Poultry, now ready. Priced Lists on application.
JOHN BAILY, 113, Mount Street, W.

PHEASANTS, Tame, for Breeding, in Pens:—Versicolor, Chinese, Bohemian, Ring-necked, and Common. Prices on application.
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JOHN BAILY'S PRICED LIST for 1866 now ready.
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"POULTRY BREEDING in a COMMERCIAL POINT of VIEW, 2s. 6d. Price Lists of
Mr. GEYELIN, Belgrave House, Argyle Square, London, W.C.

To Nurserymen and Garden Seedsmen.

TO BE LET, with the Gardens and Premises, situated in the London Road, Newbury, the BUSINESS carried on upwards of 50 Years by Mr. CHARLES DOLTON (in consequence of his decease).
Apply first by letter, addressed to H. DOLTON, Speenhamland, Newbury.

TO BE LET, a convenient COTTAGE, and FIVE ACRES of excellent GARDEN GROUND, well planted with choice, sweet, and profitable Fruit Trees, within two miles of Lincoln, where a large Vegetable Market is held. Inventory at a valuation. Possession at any time. An opportunity for a Gardener rarely met with.
Mr. T. WHITE, 18, Norman Street, Lincoln.

To Manure Manufacturers, Millers, and Others.

TO BE LET, from Michaelmas next, all those convenient and well-arranged MANURE WORKS and FLOUR MILLS, situate at Moolham, near Ilminster, Somerset, known as the Moolham Chemical Works, together with the Dwelling House, Gardens, and Premises adjoining, and about 11 Acres of first-class Orchard, Meadow, Pasture, and Arable Land.
The whole of the above are now in full work and good condition, and in the occupation of Mr. E. T. Kensington, who is about to retire from business. The Machinery, which has recently been erected, to be taken off at a valuation, consists of three pairs of Millstones, Smutting and Flour Machines, Oilcake and Bone Crushers, Bone Mill, powerful Rollers, and other requisites for carrying on an extensive business, and is driven by efficient Water-power.
For viewing the same, and further particulars, apply to the Proprietor, JAMES PITTMAN, Esq., Kingstone; or Mr. S. H. COLLINS, Solicitor, Ilminster.—March 3.

WANTED to PURCHASE, a SMALL NURSERY BUSINESS, in a good neighbourhood near London. Immediate possession not essential.
Particulars to HORTICULTURIST, 4, Martlett Court, Bow Street, Covent Garden, W.C.

Sales by Auction.

TO BE SOLD, pursuant to an Order of the High Court of Chancery, made in the causes of Pavey v. Pavey, and Pavey v. Pavey and Others, with the approbation of the Judge to whose Court the said Causes are attached, by Messrs. PROTHEROE AND MORRIS, the persons appointed to SELL the SAME, on the Premises, Durham Nursery, Flood Street, King's Road, Chelsea, in the County of Middlesex, on MONDAY, April 2, at 12 o'Clock at noon precisely, and following day, the LEASEHOLD PREMISES called or known as DURHAM NURSERY, and situate as aforesaid; also the LEASEHOLD PREMISES, No. 117, King's Road, Chelsea, aforesaid; and the GOODWILL and STOCK in TRADE, consisting of about 18,000 choice Greenhouse and Bedding Plants, and sundry Nursery Stock, Greenhouses, Pits, Heating Apparatus, Household Furniture, and numerous other Effects, the property of Messrs. Pavey, Nurserymen and Florists.
Particulars and Conditions of Sale of the Leasehold Premises and Catalogues may be had of Messrs. LAUNDY & KENT, Solicitors, 147, Strand; of G. E. MEAD, Esq., Solicitor, 118, Jermyn Street, St. James's; at the Commercial Hall, 119, King's Road, Chelsea; and of the Auctioneers, Leytonstone, Essex.
HENRY LEMAN, Chief Clerk, Laundy & Kent.

Sale of first-class Carnations, Picotees, Pinks, &c.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, at 38 and 39, Gracechurch Street, City, E.C., on FRIDAY, April 6, at 1 o'Clock precisely, a first-class Collection of CARNATIONS, PICOTEES, and PINKS, of the finest growth, the surplus stock of an eminent grower; also 500 handsome Standard and Dwarf Roses, selected Fruit Trees, Coniferæ, and other Shrubs, American Plants, Double Camellias and Azalea indica, Verbenas, Fuchsias, Dahlias, &c.
On view the Morning of Sale. Catalogues may be had at the Rooms as above, and of the Auctioneers and Valuers, Leytonstone.

Blackheath.

TO GENTLEMEN, NURSERYMEN, BUILDERS, AND OTHERS ENGAGED IN PLANTING.

MESSRS. PROTHEROE AND MORRIS are instructed by Mr. John Hally to SELL by AUCTION, on the Premises, Granville Park, Blackheath, three minutes walk of the Lewisham Station on the North Kent Line, on MONDAY, April 9, at 11 for 12 o'Clock precisely, without reserve, in consequence of the land being required to be cleared immediately for Building purposes, the whole of the valuable NURSERY STOCK, including Aucubas, Common Laurels, Portugal Laurels, Araucaria imbricata, Cupressus Lawsoniana, Thuiopsis borealis, Wellingtonia gigantea, and other Evergreen and Deciduous Shrubs; also Ornamental and Forest Trees, the whole well-grown; fine Double Camellias, Azalea indica, and other Greenhouse Plants, together with the Erection of a newly-erected Span-roof Show-house, and other effects.
May be viewed prior to the Sale. Catalogues had on the Premises, and of the Auctioneers and Valuers, American Nurseries, Leytonstone, N.E.

Very Important Sale of Specimen Exhibition, Hard-wooded Stove and Greenhouse Plants.

MESSRS. PROTHEROE AND MORRIS are favoured with instructions from Mr. John Fraser to SELL by AUCTION, without reserve, under a spacious Tent, in a Meadow adjacent to the Premises, the Lea Bridge Nurseries, Lea Bridge Road, N.E., within ten minutes' walk of the Lea Bridge Station on the Great Eastern Railway, on WEDNESDAY, April 11, at 12 for 1 o'Clock precisely, being compelled to make an immediate clearance to accommodate a large stock of New Plants, the whole of his valuable collection of choice HARD-WOODED STOVE and GREENHOUSE PLANTS, which is known to contain the most magnificent and symmetrical specimens that have ever been submitted to public competition. The Plants have been cultivated with that care and attention requisite to ensure First-class Prizes at the forthcoming Great International Horticultural Exhibition. The collection includes gorgeous examples of Azalea indica, which cannot fail to elicit the highest praise and admiration, also charming specimens of the best varieties of Erica, Eriostemon, Boronia, Epacris, Chorozema, Acacia, Pimelea, Polygala, Hedaroma, Pleroma, Podolobium, Adenandra, Aphelexis, Prostanthera, Clerodendron, Gardenia, Medinilla, Ixora, Stephanotis, Dipladenia, Allamanda, Dracæna, Bougainvillea, &c., varying from 2 to 7 feet in height, so that Purchasers desiring specimens of moderate size may be suited, as well as those who require them of gigantic dimensions. Each specimen is perfectly symmetrical and elegant in form, exquisitely arrayed in the richest attire of healthful foliage, and beautifully furnished with bloom buds. Both large and small are so well cultivated, that with ordinary care they will now profusely develope their flowers in the highest state of perfection.
May be viewed until the Sale at the Lea Bridge Nurseries. Catalogues may be had on the Premises, of the principal Seedsmen in London; and of the Auctioneers and Valuers, Leytonstone, Essex. Trains leave Bishopsgate Street Station for Lea Bridge at 10.20 A.M., and 12 o'clock.
N.B.—P. & M. having heard it intimated that this Sale only consists of surplus stock, beg to assure the public that it is not the case, but that the entire collection is to be sold without reserve.

Periodical Sale of Poultry and Pigeons.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY, April 3, at half-past 12 o'Clock precisely, a capital ASSORTMENT of POULTRY and PIGEONS, including the entire stock of Pouters of Mr. Buckus.
On view the Morning of Sale, and Catalogues had.

Nursery Stock at Turnham Green, Middlesex.

TO BE SOLD, BY ORDER OF THE KENSINGTON AND RICHMOND RAILWAY COMPANY.

MR. J. C. STEVENS will SELL by AUCTION, on the Premises, adjoining the Roebuck Inn, Turnham Green, W., on WEDNESDAY, April 4, at half past 12 o'Clock precisely, without reserve, the NURSERY STOCK on Mr. Glendinning's land at Turnham Green, required by the Railway Company, comprising specimen CONIFERS and Hardy and Ornamental SHRUBS of various sizes; including 30 Araucaria imbricata, 50 Cedrus Deodara, 50 Portugal and Common Laurels, Irish, Common, and Golden Yews, Picea Pinsapo, Abies Nordmanniana, Hollies, Standard, Pyramid, and Trained Fruit Trees, Ornamental Forest Trees, &c.
On view the day prior and Morning of Sale; and Catalogues had of Mr. J. C. STEVENS, Auctioneer and Valuer, 38, King Street, Covent Garden, W.C. There are frequent trains to Chiswick and Kew Stations; and Omnibuses pass the Nursery every quarter of an hour.

Choice Gladioli and Conifer Seeds.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, April 5, at half-past 12 o'Clock precisely, the first portion of the STOCK of GLADIOLI of Messrs. Youell, Great Yarmouth, including fine large bulbs of G. Brenchleyensis, G. Gandavensis, G. Flora Banner, G. Bowiensis, and other capital sorts. Also a CONSIGNMENT of CONIFER SEEDS, consisting of Wellingtonia gigantea, Abies Menziesii, A. Mertensiana, Pinus Lambertiana, Picea nobilis, P. Nordmanniana, &c.
On view the Morning of Sale, and Catalogues had.

Turnham Green.

TO MARKET GARDENERS, CARMEN, AND OTHERS.

MR. J. S. GOMME is instructed by the Proprietor to SELL by AUCTION, on the Premises, Hampstead Cottage, Acton Green, W., on THURSDAY NEXT, April 5, at 12 for 1 o'Clock, all the STOCK and IMPLEMENTS in TRADE appertaining to a MARKET GARDENER, comprising a capital strong Spring Market Waggon, 3 Carts, 2 Horses, Plough, Horse Hoes, Scuffler, Hand Harrows, capital Garden Tools, Gathering Ladders, Market Baskets, Water Tubs, Portable Counting House, 2 tons Shaw Potatos, 3 qrs. Seed Rye, 3 bushels Scarlet Beans, Spinach, Cabbage, and Broccoli Seed, and numerous other effects.
May be viewed the day prior and Morning of Sale; and Catalogues had on the Premises; at the usual Inns in Covent Garden Market; and at the Offices of the Auctioneer, 10, Bucklersbury.

THE HYDROPULT.

EXTRACTS FROM THE PRESS.

Editorial, written by ROBERT HOGG, LL.D., F.L.S.

THE HYDROPULT.—The great secret of successful in-door gardening consists in the free and judicious use of the Syringe. A Greenhouse or Conservatory that does not enjoy this luxury, becomes a miserable lazar-house of vegetable incurables. Vermin and filth hold unbounded sway, and people become disgusted with their own want of success. Well do we recollect the former days of plant-culture, the days of "collections," when the use of the Syringe was yet limited or unknown. What a time for red spider, scale, and green fly! What fumigations and consumption of tobacco and tobacco paper, washings with tobacco water, and all sorts of remedies were resorted to! We regard the introduction of the free use of the Syringe as one of the events in modern gardening. To this is due the success of Orchard-house management, Vine Management, and Plant Management, but the old Syringe with its slow suck and squirt, is now as much out of date in modern gardening, as an old stage waggon in modern locomotion. Many are the improvements and complications of the old simple Syringe. We have tried several of them, but for ease in working and efficiency in result, we have not yet met with anything to equal the Hydropult, sent us by Mr. BUTTON. It is powerful in operation, and so easy and comfortable to work, that one never gets fatigued. With such an instrument, plants may be kept in perfect health, and quite free from insects and dirt. We first tried it on a few Geraniums in our Conservatory, which were smothered with green fly during our temporary absence of 10 days, but on our return, a stout discharge from the Hydropult sent them clean off across some unknown bourne, whence they have never yet returned.—*The Florist and Pomologist.*

Editorial, written by SHIRLEY HIBBERD, Esq., F.R.H.S.

THE HYDROPULT.—This is an invention introduced in a most spirited manner by Mr. C. P. BUTTON. It is at once a Fire Engine and a Garden Engine, is always ready for use at a moment's notice, is neat and portable, weighing only 8 lb., and can be worked by a boy of moderate strength for some hours in succession without fatigue. The mechanical power employed being economised by combining the action of the hand and the resistance to the foot, between which the instrument is placed and used as a Double-action Pump. From the sole to the handle the Hydropult measures 24 inches. The two Brass Cylinders measure 12 inches in length, and 3½ inches in breadth. At the top of these cylinders India-rubber tubing is attached, on one side to feed, on the other to discharge the water. It will perhaps surprise the reader to be told that this little contrivance, which is pretty as a toy, and can be carried under the arm as easily as a trumpet, will throw from 7 to 8 gallons of water per minute a distance of 50 feet. But it will do it, as we know from having tried it, finding the experiment an agreeable exercise, and of special service in washing down a stuccoed wall, which it accomplished quite as well as if we had sent for the parish engine. Gardeners will not need to be told the value of a Portable Force Pump of this simple kind. It can be used to produce a powerful stream to extinguish a Fire, or a gentle shower to Syringe a whole houseful of Plants, without the necessity of moving a single step from the position most convenient for a supply of water. Wherever a Pump or Syringe is needed, the Hydropult can be brought into use, to remove Water from a Cellar or a Boat, to Cleanse a Cistern, Wash a Pavement, or Drench the Foliage of Trees loaded with Soot, or annihilate at one fell swoop the whole Insect population of a Plantation of Roses. But we will not enlarge upon its merits, they are obvious, and having a Hydropult in use we can say that it will soon pay for its cost in a Garden, besides being always at hand in case of an emergency of any kind which may require an immediate removal or discharge of water.—*Gardeners' Weekly Magazine.*

Editorial, written by Rev. H. H. DOMBRAIN, A.B.

THE HYDROPULT. — When we formerly noticed this instrument, we did so from merely seeing it at the Proprietor's; since then, we have had an opportunity of testing it personally, and can bear testimony to the excellence of the invention. The force with which it throws a stream of water is almost incredible; while, for syringing a Greenhouse, a gentle shower, as fine as that from a Hand Syringe, with considerably more effect, can be easily given. We have a gardener, quite of the old-fashioned school, who does not generally fall in love with new-fangled notions, but he is perfectly enchanted with the saving of labour and time that the Hydropult will be to him.—*Floral Magazine.*

THE HYDROPULT.—We strongly recommend this to the attention of our readers, for—which is not always in our power to say—it fully comes up to this statement of its Proprietor:—"It is a Fire-Annihilator and Garden Engine, simple, effective, and convenient. It weighs but 8 lb. and will throw 7 or 8 gallons of water per minute to a distance of 50 feet when worked by the power of one man." It throws the water either in one stream, or dispersed in the form of the finest shower of rain, by means of a sprinkler which is screwed on beneath the pistons, and which can be fixed when needed on the end of the jet. Wherever a man with a bucket can pass, there can the Hydropult be brought into operation, so that narrow walks, and other places inaccessible with a Garden Barrow Engine, are no impediments to the approach of this very simple and very effective contrivance. — *Journal of Horticulture and Cottage Gardener.*

THE HYDROPULT.—The Hydropult is a Hand-Engine for throwing water, of singular simplicity and power, and we are much mistaken if it does not speedily supersede all the complicated and expensive Garden Engines, Gutta Percha Tubing, and such appliances. Any description of the little instrument would fail to give our readers an idea of its simplicity. It weighs only 8 lb., can be worked by a lad, and throws a strong jet of water 40 or 50 feet with the greatest ease. It is extensively used as a Hand Fire-Engine, and it is on record that many disastrous conflagrations have been prevented by its agency; and we strongly recommend its use to all owners of manufactories, and to those householders who are not within easy hail of the ordinary Fire Engines. But though this is its primary use, it is admirably adapted for garden purposes. We have practically tested its efficacy in this way, and a more easy and effectual mode of irrigation cannot be conceived. It is equally useful for washing windows, carriages, and all such purposes.—*Birmingham Journal.*

THE HYDROPULT.—Under this title a contrivance for throwing water by hand power has recently been patented. The Machine is certainly the most compact and efficacious Force-Pump of its size that we have ever seen. Its form is simply that of a double cylinder, beneath which is fixed a pedal, or stirrup, for steadying the apparatus, which is worked easily with short vertical strokes, by a wooden handle. The hose branches forth from the top of either tube, and thus we have an engine as portable as could well be devised, while at the same time its force has been found adequate to extinguish fires. When it is considered that the length of the stroke is only from 5 to 8 inches, and the whole Machine is not more than 8 lb. in weight, it is surprising to be told that public buildings have been saved from destruction by its agency. Yet such we find to be an officially certified fact.—*Daily Telegraph.*

THE HYDROPULT. — It is admirably adapted for sprinkling gardens, trees, graperies, washing windows, carriages, and for household purposes: its simplicity and portability being its strong recommendation.—*Illustrated News of the World.*

THE HYDROPULT.—The slightest examination convinced us that a more useful—we might say necessary—apparatus could not possibly be found in dwelling-houses, offices, and shops. It weighs only a few pounds, and consists of two tubes of about 2 feet long. It will throw water 50 feet high at least, will serve to wash windows, and in the event of fire, would certainly extinguish it in any dwelling-house while it was confined to a single apartment; for by its means water can be projected into the place without opening doors or windows. In fact, it can be poured in volumes through the key-hole; and where a close room is on fire, it is not at all necessary that the water should touch the fire. It will be quite enough if it is converted into steam, for steam is the great enemy of fire. We are satisfied that all house-keepers ought to have one, and we are equally satisfied that if they once see it they will order it.—*Liverpool Daily Post.*

THE HYDROPULT.—A vast number of the fires which daily devastate the metropolis and provinces might be effectually prevented, and a large amount of human life preserved, by the timely use of a portable but effective machine for extinguishing the flames while in the first stage of progress. The most effective, compact, and economical contrivance that we have yet seen, and the most multiform in its uses that has ever been introduced to the public, is that known as the Hydropult, or Portable Fire Annihilator and Garden Engine. In a word, it is available for every possible purpose, as a Hydrant or Force Pump; it is always ready, constantly available, and so easily worked, that the most inexperienced can efficiently use it at a moment's notice. We have before us the unvarnished and straightforward testimony of the managers of the principal fire insurance companies, proprietors, and superintendents of works and public institutions throughout the United Kingdom, relative to its utility, efficacy, and universal adaptability. Our provincial and metropolitan contemporaries, who have, with ourselves, witnessed the admirable results of the experiments made with the Hydropult in the various uses above enumerated, also unite in according the invention (or rather the inventor) the utmost praise, and thoroughly and unequivocally endorsing the truth of his assertions respecting it. We can only say, that no public establishment or private house should be without one of these useful machines.—*The Commercial Daily List.*

THE PATENT HYDROPULT OR PORTABLE FIRE AND GARDEN ENGINE. — This ingenious but simple contrivance, though so insignificant and valueless in appearance, is, notwithstanding, one of the most powerful, unique, and useful illustrations of the practical application of scientific principles to common things. Though scarcely 2 feet in length, and weighing but 8 lb., it is superior in its use to the ordinary garden engine, or that revered piece of antiquity, the parish engine, and its attendant magnate the beadle, in all the splendour of his three-cornered hat, and gold-bedizened coat. It can be entrusted to the most inexperienced youth, who can use it with ease, and bring it into action at once, without the possibility of disappointment or failure. The great feature in this invention is its simplicity. It consists of two parallel metal cylinders and boxes fitted with valves so arranged that whether you push the piston down or pull it upwards, it expels the water through the india-rubber pipe at the rate of *eight gallons per minute* (the velocity being always proportionate to the force applied by the hand). For performing any purpose to which a Hydrant or Force Pump is applicable, it is invaluable and trustworthy. We commend it to the notice of the proprietors of warehouses and other buildings, public and private, in the metropolis and provinces. The Hydropult possesses the advantages of economy, utility, and applicability to a variety of purposes.—*The Mechanics' Magazine.*

The above Extracts are selected from some hundreds which this invaluable instrument has received.

TRADE MARK—

"THE HYDROPULT."

CHARLES POMEROY BUTTON, 142 and 143, CHEAPSIDE, LONDON, E.C.

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THE GARDENERS' CHRONICLE

AND

AGRICULTURAL GAZETTE.

A Newspaper of Rural Economy and General News.

No. 14.—1866.] SATURDAY, APRIL 7. {Price Fivepence, Stamped Edition, 6d.

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ROYAL HORTICULTURAL SOCIETY.—The EXHIBITIONS will be held on THURSDAYS, viz.:—SPRING FLOWERS, April 12; SUMMER EXHIBITIONS, May 3, June 14; and the ROSE SHOW, June 28. Schedules may be had on application. Admission on April 12 and on June 14 by Fellows' Privileged Tickets, to be bought prior to the days, 2s 6d; Public, 3s 6d; or on the day, 5s. On May 3 and June 28, subject to the same regulations, 5s 6d; 7s 6d. Bands at 3 30.

INTERNATIONAL HORTICULTURAL EXHIBITION and BOTANICAL CONGRESS.

Under the Patronage of Her Majesty THE QUEEN, and of their Royal Highnesses the PRINCE of WALES and the DUKE of CAMBRIDGE.

The EXHIBITION and CONGRESS will OPEN on MAY 22, and continue till May 25. Subscribers' names will be received, and Schedules and Prospectuses may be obtained on application to the Secretary, at the Offices, 1, William Street, Lowndes Square, London.

ROYAL BOTANIC SOCIETY'S GARDENS, Regent's Park.—EXHIBITIONS of GARDEN PLANTS, FLOWERS, and FRUIT, WEDNESDAYS, May 9, June 6, and July 4. Tickets on or before April 28th, 4s; after that day 5s. each, to be obtained at the Gardens by Vouchers from Fellows of the Society.

JOHN WATERER'S AMERICAN PLANTS in JUNE. The LAST SPRING EXHIBITION, APRIL 21. Tickets 2s. 6d. each.

SOUTH ESSEX HORTICULTURAL SOCIETY.—The FIRST SHOW of the above Society for the year 1866 will be held at SOUTHEND, about MIDSUMMER. The Schedule of PRIZES is now published, and may be obtained of the Secretary, Mr. HENRY MAY, 8, Royal Terrace, Southend, Essex.

New Roses of 1866.

REVISED DESCRIPTIVE LIST NOW READY.

PAUL and SON, Cheshunt Nurseries, N., have Now Ready fine Plants of all the Varieties in their List. The Trade and Amateurs should consult this.

ROSES in POTS, now ready for planting out, can be obtained in any quantity of
H. LANE & SON, Nurseries, Berkhampstead.

Yellow and Blue Lupins.

SUTTON and SONS can supply the above at very moderate prices, which may be had on application.
SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

VERBENAS.—Strong thoroughly healthy Plants in any quantity, 25s. per 100.
HAYNES, Penge Nursery, Surrey.

Early Spring Flowers.

WEBB'S GIANT POLYANTHUS and GIANT COWSLIPS, and other varieties, largest stock in England. List and prices on application to Mr. WEBB, Salop Gardens, Reading.

TRANSPLANTED RHODODENDRONS.—1-year-old Hybrids saved from the choicest Crimson, White, and Claret-coloured sorts, 12s 6d per 100, or 1000 for £5.
RICHARD SMITH, Nurseryman, Worcester.

GERMAN FLOWER SEEDS.—Superb Varieties of Aster, Stock, Balsam, Wallflower, Phlox Drummondii, Portulaca, Larkspur, Zinnia, &c. For prices see Descriptive Seed List.
RICHARD SMITH, Seed Merchant, Worcester.

GLADIOLI.—Splendid sorts for EXHIBITION, or growing in Masses, &c., 2s. 6d., 3s. 6d., 4s. 6d., 5s. 6d., 7s. 6d., 9s., 12s., 18s., to 20s. per dozen; 10s. 6d., 15s., 21s., 30s. per 100.
BARR & SUGDEN, 12, King Street, Covent Garden, W.C.

GLADIOLUS, the finest cultivated, new and older varieties
CATALOGUES, CULTURAL and DESCRIPTIVE, sent free.
STEPHEN BROWN, Seed Grower, Sudbury, Suffolk.

GLADIOLI, GLADIOLI, GLADIOLI.—Collections, including all the finest varieties in cultivation, from 10s. 6d. to 63s.
All orders amounting to 21s. and upwards carriage paid.
BARR & MCCULLOCH, Covent Garden Market, W.C.

VERBENAS, FUCHSIAS, PETUNIAS, ROSES, &c., New and Old, of only those that are worth growing. Nice Plants now ready to send out. DESCRIPTIVE CATALOGUES free.
WM. KNIGHT, Floral Nursery, Hailsham, near Hurst Green, Sussex.

J. WEEKS AND SON beg to announce that their DESCRIPTIVE PRICED CATALOGUES of AZALEA INDICA, HARDY BRITISH FLOWERING SHRUBS, CONIFERÆ, GRAPE VINES, and SEEDS, may be had on application at their Dorking Nursery.

REBECCA, the finest BEDDING GERANIUM ever raised. Plants ready in May, price 5s. each.
See WM. PAUL'S SPRING CATALOGUE.
PAUL'S Nurseries, Waltham Cross, London, N.

NEW and CHOICE SEEDS.—Bull's Verbena, Bull's Tropæolum, Cyclamen persicum grandiflorum, Giant 10-week Prize Calceolaria, Barr's Select Strain of Primula, each 2s. 6d. p. pkt.
BARR & SUGDEN, 12, King Street, Covent Garden, W.C.

New Chrysanthemums and Pyrethrums.

JOHN SALTER'S DESCRIPTIVE CATALOGUE of NEW CHRYSANTHEMUMS and PYRETHRUMS for 1866 is now ready, and will be sent free on receipt of two stamps.
Versailles Nursery, William Street, Vale Place, Hammersmith, W.

Vines from Eyes.

H. LANE AND SON have still a good stock of strong well-ripened FRUITING VINES of all the popular sorts.
The Nurseries, Great Berkhampstead.

PINES.—Strong Fruiting, Succession, and Suckers, of all the leading kinds, can be had of
B. S. WILLIAMS, Victoria and Paradise Nurseries, Holloway, London.

Fruiting Trees in Pots.

PEACHES, NECTARINES, &c., may be had by the Thousand, at
H. LANE & SON'S Nurseries, Berkhampstead, Herts.

CASTLE KENNEDY FIG.—Plants of the above may now be had at 10s. 6d. and 21s. each; the usual discount to the Trade. PETER LAWSON & SON, Edinburgh and London.

WEBB'S PRIZE COB FILBERTS, and other Prize Nuts and Filberts. Trees of these splendid Nuts to be had of Mr. WEBB, Calcot Gardens, Reading. Catalogues on application.

Fruit Trees.

S. GLENDINNING AND SONS invite attention to their superb stock of healthy well-grown FRUIT TREES.
PRICE LIST on application.
Chiswick Nursery, London, W.

Genuine Garden Seeds.

WM. CUTBUSH AND SON'S DESCRIPTIVE PRICED CATALOGUE of SEEDS, which contains everything New and Old worth growing, can be had post free on application.
Highgate, London, N.

Seeds.

S. GLENDINNING AND SONS' PRICED LIST of KITCHEN GARDEN, AGRICULTURAL, and FLOWER SEEDS, is now published, and may be had free on application.
Chiswick Nursery, London, W.

Garden Seeds, Carriage free.

WM. PAUL'S SELECT LIST contains many articles worthy the attention of Exhibitors and others who wish to have FIRST-CLASS VEGETABLES and FLOWERS in their seasons.
PAUL'S Nurseries, Waltham Cross, N.

Genuine Garden and Agricultural Seeds.

JAMES CARTER AND CO., SEED FARMERS, MERCHANTS, and NURSERYMEN, 237 and 238, High Holborn, London, W.C.

JAMES FAIRHEAD AND SON, SEED GROWERS and MERCHANTS, 7, Borough Market, London, S.E.
New and Genuine AGRICULTURAL, GARDEN, and FLOWER SEEDS. Special prices and advantageous offers on application.

PETER S. ROBERTSON AND CO.'S CATALOGUE of FOREST and ORNAMENTAL TREES and SHRUBS post free on application to the Trade.
Trinity Nursery, and 33, St. Andrew Square, Edinburgh.

PETER S. ROBERTSON AND CO.'S PRICED DESCRIPTIVE CATALOGUE of GENUINE GARDEN and FLOWER SEEDS, and NOVELTIES for 1866, post free on application.
Trinity Nursery, and 33, St. Andrew Square, Edinburgh.

CAMBRIAN COLLECTIONS of GARDEN SEEDS for 10s. 6d., 21s., 31s. 6d., and 42s., sufficient for One Year's Supply for Large and Small Gardens; a basket included.
CATALOGUES of SEEDS and NURSERY STOCK on application.
GEORGE DAVISON, Hereford.

CLIANTHUS DAMPIERI.—Imported Seed, of excellent quality, 6d. per packet, containing a dozen seeds.
Trade price per 1000 Seeds on application.
PETER LAWSON & SON, Edinburgh and London.

Verbenas.

WOOD AND INGRAM beg to offer fine sturdy Plants of the above, in all colours, well established in 3-inch Pots, and thoroughly hardened off, at 2s. per 100, package included.
Nurseries, Huntingdon.

Scarlet, Pink, and Salmon Zonale Geraniums.

WOOD AND INGRAM beg to offer fine sturdy Autumn-struck Plants of the above, well established in 3½-inch pots, and thoroughly hardened off, at 3s. per 100, package included.
Nurseries, Huntingdon.

ASTER.—GERMAN ASTER, the finest Strain in the Kingdom.—Was awarded the First Prize at the Brighton and Sussex Horticultural Show (open to all England), in 1864 and 1865, and wherever exhibited. Packets, 1s. 6d. each.
J. JENNINGS, Seed Establishment, New Street, Shalesbon-on-Stour.

To the Trade.—Golden Chain Geraniums.

HUSSEY AND SON beg to offer fine Autumn-struck Plants of the above, from store pots, at 14s. per 100.
Also CHINESE ARBOR-VITÆ, 3 to 5 feet, 50s. per 100.
Mile End Nursery, Eaton, Norwich.

100,000 Camellias.

JOSEPH BAUMANN, NURSERYMAN, Ghent, Belgium, begs to offer 100 CAMELLIAS of the best sorts, without flower buds, good plants, £5; 100 CAMELLIAS, stronger plants, £6 to £8.
Prices to the Custom House, London.

DOBSON'S PRIZE CALCEOLARIA, unsurpassed by any strain in the world, may be had through all Seedsmen, &c.
Sealed packets, 1s. 6d., 2s. 6d., 3s. 6d., 5s.
DOBSON & SONS, Seedsmen, Isleworth, London, W.

DOBSON'S PRIZE PRIMULA, unequalled for quality, colour, and fringe. Sealed packets, 1s., 2s. 6d., 5s.
Dobson & Sons, Seedsmen, Isleworth, London, W.

DOBSON'S PRIZE CINERARIA.—The finest strain in the Kingdom for variety, novelty, and general good qualities.
Sealed packets, 1s., 2s. 6d., 5s.
DOBSON & SONS, Seedsmen, Isleworth, London, W.

WANTED, ONE PLANT of each of the following:—The Pear-bearing Guava (Psidium pyriferum); Apple-bearing Guava (Psidium pomiferum); Cherimoyer (Anona Cherimolia); Akee Apple to J. STEVENSON, Gr., Lambton Castle, Fence Houses.

WANTED, 500 or 1000 BLACK DOGWOOD, 1½ to 2 feet, or 2 to 3 feet. Send price to
JAMES SMITH, Darley Dale Nurseries, near Matlock.

SUB-TROPICAL FOLIAGE SEEDS, and other Novelties, post free.
PRICED LISTS, with cultural directions, free on application; see also large Advertisement in *Gardeners' Chronicle*, page 240.
DOWNIE, LAIRD, & LAING, Stanstead Park, Forest Hill, S.E.; and 17, South Frederick Street, Edinburgh.

SUTTON'S PERMANENT GRASSES and CLOVERS for ALL SOILS.
For particulars see page 288 of last week's Paper.

SUTTON'S PERMANENT GRASS SEEDS, 25s. to 36s. per acre, according to quantities required, and soils for which they are intended

GOOD CLOVER SEEDS at Market Prices.—Red, White Dutch, Alsike, Cow Grass, and Trefoil; also Perennial, Italian Rye and other Grasses. For samples and lowest prices apply to
RICHARD SMITH, Seed Merchant, Worcester.

To Improve Meadow Land.

RICHARD SMITH'S MIXTURE of the finest GRASSES and PERENNIAL CLOVERS (8 to 12 lb. per acre, at 10d. per lb.), if sown early, will cause a valuable improvement to the crop.
RICHARD SMITH, Seed Merchant, Worcester.

NATURAL GRASSES: their Names and Derivations; Quality, Produce, Elevation, Situation, Soil, Use, Peculiarity, Season, Growth, Increase, Time of Flowering, Price, &c.
Free for one postage stamp.
RICHARD SMITH, Seed Merchant, Worcester.

DICKINSON'S ITALIAN RYE-GRASS SEED, grown by him and sold to Agriculturists this season for present payment at 44s. per qr., 5 qrs. at 40s.
New Park, Lymington, Hants.

FINEST LAWN MIXTURE.—Composed only of the best and cleanest Seeds of the most suitable dwarf Evergreen Grasses. 1s. per lb. Carriage free.
JAMES DICKSON & SONS, Seed Merchants, 102, Eastgate Street, Chester.

THE HARDY WELSH-GROWN RED CLOVER may be had new and genuine of
Messrs. JAMES DICKSON & SONS, Seed Merchants 102, Eastgate Street, Chester. Samples and prices post free.

NEW FARM SEEDS of best selected quality. PRICED DESCRIPTIVE LIST post free upon application.
JAMES DICKSON & SONS, Seed Merchants, &c., 102, Eastgate Street, Chester.

H. AND F. SHARPE,
SEED GROWERS and MERCHANTS, Wisbech.
SPECIAL PRICED LIST of NEW SEEDS on application.

ZEA CURAGUA, new Striped Japanese Maize.—Greatest novelty of the season. Newly imported Seed, 1s. and 2s. 6d. per packet, sent post free.
BUTLER & MCCULLOCH, Covent Garden Market, W.C.

SUTTON'S SELECTED MANGEL and TURNIP SEEDS.
For prices and particulars see page 329 of this week's Paper.

Green and Purple Kohl Rabi.

SUTTON and SONS can supply genuine New Seed of the above, at very moderate prices, as see CATALOGUE, which may be had gratis and post free on application.
SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

To the Trade.

PURPLE-TOP SCOTCH or YELLOW ABERDEEN TURNIP. New Seed. Price on application.
JAMES DICKSON & SONS, 102, Eastgate Street, Chester.

LAING'S SWEDE, true, crop of 1865, 25s. per Bushel. Prices of other kinds of SWEDE, TURNIP, and MANGEL upon application to
ALFRED LEGERTON, Seed Merchant, 5, Aldgate, London, E.

CABBAGE PLANTS.—Strong Drumheads for Cattle, Early kinds, Battersea and Nonpareil, 3s. per 1000.
W. VIRGO & SON, Wonersh Nursery, Guildford, Surrey.

CATTELL'S RELIANCE CABBAGE. DRUMHEAD or CATTLE CABBAGE.
Strong plants, 3s. per 1000.
JOHN CATTELL, Westerham, Kent.

White Belgian Carro

SUTTON AND SONS can supply fine New Seed of the above at a very moderate price, according to quantity required.
Apply to
SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

RAPHANUS CAUDATUS, the EDIBLE PODDED RADISH. 2s. 6d. per packet
BARR & SUGDEN, Seed Merchants, 12, King St., Covent Garden, W.C.

GIANT ASPARAGUS.—Extra fine 2-yrs., 2s. per 100; extra fine 3-years, 3s. per 100.
Price to the Trade on application.
JOHN CRANSTON, Nurseries, King's Acre, near Hereford.

GRAYSON'S GIANT ASPARAGUS.
Fine strong 3-year roots, 30s. per 1000, 3s. 6d. per 100
Fine strong 2-year roots, 21s. per 1000, 2s. 6d. per 100.
STEPHEN BROWN, Nurseryman, Sudbury, Suffolk.

THE LONGSTANDER LETTUCE.—Most remarkable for duration without running, crisp and excellent. Packets 1s. each.
STEPHEN BROWN, Seed Grower, Sudbury, Suffolk.

Paterson's Seedling Potatos.

SUTTON AND SONS having been appointed AGENTS for the above, can supply them in quantity, at moderate prices, which may be had on application.
SUTTON & SONS, Seed Merchants, Reading.

SEED POTATOS.—Early Ashleaf or Evesham Leader; Myatt's Early Prolific Kidney; Skerry Blue, hardy, productive, of good quality, and keeps free from disease. Prices on application to RAYNBIRD, CALDECOTT, BAWTREE, DOWLING, & Co., Limited, Basingstoke; or Seed Market, Mark Lane, London, E.C.

ROYAL ASH-LEAF POTATO.—This is one of the earliest and the most productive of all the Ash-leaf Kidney Potatos. Price per ton of finely prepared Seed given on application to
Messrs. THOS. RIVERS & SON, Nurseries, Sawbridgeworth.

DAINTREE'S SEEDLING POTATO is the best early round white Potato in cultivation, and can be obtained at a moderate price on application.
Mr. S. A. DAINTREE, Pembrayton, St. Ives, Hunts.

SEED POTATOS.—Myatt's Prolific Kidney, Early Dalmahoy, Webb's Imperial Kidney, Daintree's Seedling, and all the best early and late varieties at low prices.
H. & F. SHARPE, Seed Growers and Merchants, Wisbech.

EARLY KIDNEY POTATOS.—Webb's Telegraph, first early, 20s. per bushel; Webb's President, second early, 16s. per bushel; Webb's Imperial Kidney (best Potato known for all purposes), 12s. per bushel.
Apply to Mr. WEBB, Calcot Gardens, Reading.

Fruiting Vines.

E. G. HENDERSON AND SON offer the above, with [illegible] eyes, sure to [illegible]
LIST of SORTS sent on application.
Wellington Nursery, St. John's Wood, London, N.W.

Extra extra-strong Fruiting Vines.

[illegible] ARTHUR DICKSON AND SONS can [illegible] WELL-RIPENED, SHORT [illegible] this season, [illegible] very [illegible]
"Upton" Nurseries, Chester.

VINES.—[illegible] Bowood Muscat, [illegible] Muscat [illegible] Muscat Hamburgh, [illegible] Muscat [illegible] Hamburgh [illegible]
[illegible] & Co., Handsworth Nurseries, Sheffield.

Vines, Vines.

[illegible] FRUITING VINES
[illegible] AND CO. have a fine large Stock [illegible] of Grapes this season. The following are the sorts:—
[illegible] BLACK HAMBURGH
[illegible] LADY DOWNES SEEDLING
[illegible] OF ALEXANDRIA
[illegible] Nurseries, Exeter.

THE [illegible] SEEDLING STRAWBERRY, raised [illegible]
[illegible]

Superb Double Hollyhocks.

WILLIAM CHATER begs to remind the Admirers [illegible] best time for planting [illegible]
DESCRIPTIVE CATALOGUES, with instructions for its Cultivation [illegible] application.
[illegible] per doz., or from 20s. to [illegible]
[illegible]

[illegible] ALPINE PLANTS.
[illegible]
[illegible] Suffolk.

Chrysanthemums.

[illegible] CHRYSANTHEMUMS [illegible] Ball, Golden Dr. Brock, Hercules, King of Denmark, Lady Carey, [illegible] Pearl, Prince of Wales [illegible]

[illegible] and Picotees.

JOHN [illegible] Successor to the [illegible] FLORISTS' FLOWERS at GREEN HOUSE PLANTS [illegible] Calceolarias [illegible]
Orders punctually attended [illegible]

GEORGE [illegible] Plants [illegible] VERBENA [illegible] BRILLANTE DE VAISE [illegible] LOBELIA SPECIOSA, true, 12s. per 100.
[illegible]

CHOICE SPRING [illegible] now ready in [illegible]

	Per doz.—s. d.
HEPATICAS, double red and single blue ..	4 0
[illegible]	

100 CHOICE HARDY HERBACEOUS PLANTS, in 50 fine named varieties, for 25s.

ROSES.

24 First STANDARD [illegible] ROSES, 24 distinct varieties, 21s.
24 ditto ditto on their own roots, in pots, 21s.
ASPARAGUS [illegible]
CATALOGUE [illegible] TRADE CATALOGUE of NURSERY STOCK.
[illegible] Nurseries [illegible] Essex.

SUTTON'S CHOICE COLLECTIONS of FLOWER SEEDS.

SUTTON AND SONS forward

Flower Seeds

Free by Post or Rail.

These [illegible] showy kinds of Flower Seeds, [illegible] are respectfully recommended to [illegible] we will supply those who [illegible]

			£ s. d.
1. The best [illegible] sorts (hardy, half-hardy, and tender)			1 1 0
2. The best 50 sorts	ditto	ditto	0 15 6
3. The best [illegible] sorts	ditto	ditto	0 [illegible] 6
4. The best [illegible] sorts	ditto	ditto	0 [illegible] 0
5. The best [illegible] sorts			[illegible]

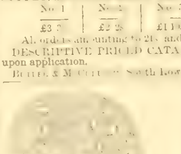
PRICED CATALOGUES [illegible] free on application.
SUTTON & SONS, [illegible] Seed Establishment, Reading.

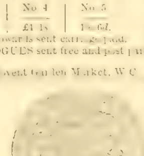
Established Upwards of a Century.

BUTLER AND McCULLOCH'S Complete COLLECTIONS of VEGETABLE SEEDS for ONE YEAR'S SUPPLY, all of the Growth of 1865.

No. 1	No. 2	No. 3	No. 4	No. 5
£3 3s.	£2 2s.	£1 10s.	£1 1s.	10s. 6d.

All orders amounting to 21s. and upwards sent carriage paid.
DESCRIPTIVE PRICED CATALOGUES sent free and post paid upon application.
BUTLER & McCULLOCH, South Row, Covent Garden Market, W.C.

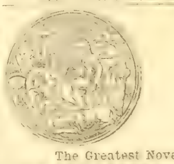




CARTER'S CHOICE FLOWER SEEDS [illegible] Post Office Order. PRICE LISTS gratis and post-free on application.
JAMES CARTER & CO., 237 and 238, High Holborn, W.C.

CARTER'S GENUINE GARDEN SEEDS, [illegible] Post Office Order. PRICE LISTS gratis and post-free on application.
JAMES CARTER & CO., 237 and 238, High Holborn, W.C.

CARTER'S GENUINE FARM SEEDS.
CARTER'S PERMANENT PASTURE GRASS, per acre [illegible] and 30s.
[illegible]
SPECIAL LIST of FARM SEEDS gratis and post-free on application.
JAMES CARTER & CO., 237 and 238, High Holborn, W.C.



The Greatest Novelty of the Season.

STRIPED-LEAVED JAPANESE MAIZE.
[illegible] called in the United States. [illegible] resembles the Arundo donax variegata in appearance, but is of [illegible] in June. Price 1s. per packet.
JAMES CARTER & CO., 237 and 238, High Holborn, London, W.C.

New Seedling Petunias.

THOMAS BARNES has to offer the following Seedling PETUNIAS, which have been selected for form, distinctness, and [illegible] effect. They will be ready on and after the 20th inst., price [illegible] each.

DOUBLE VARIETIES.
LILACEA, mauve lilac. | LUNA, bright rose, very fine.
ROSETTA, rosy lilac, centre edged.
SINGLE VARIETIES.
[illegible] striped mauve.
[illegible] white.
STRIATA, white ground, cherry crimson stripes.
Dane Croft Nursery, Stowmarket.

G. SMITH'S NEW CATALOGUE, with a splendid [illegible] of NOSEGAY GERANIUM LE GRAND, which is [illegible] together with descriptions of New Seedling Zonale Geraniums, Chieftain, Christabel, Exhibitor, Gladiateur, Great Eastern, Sir Robert Peel, and Pink Perfection, which for their general fine qualities have received First-class Certificates from the Royal Botanic Gardens and Royal Horticultural Gardens, South Kensington, which G. S. can, with the greatest of confidence, recommend. For description see CATALOGUE, which also contains Select Lists of Show, French, Fancy, Zonale and Variegated Geraniums, Fuchsias, Petunias, Dahlias, Verbenas, Chrysanthemums, Bedding Plants, &c. Now ready in exchange for one postage stamp.
Tollington Nursery, Hornsey Road, London, N.

New Roses of 1866.

JOHN FRASER, of the Lea Bridge Road Nurseries, Leyton, Essex, N.E., will forward on application a LIST of all the best varieties of NEW ROSES of 1866.
The plants are strong, healthy, and are now ready for sending out. Early orders are respectfully solicited.

NEW ROSES of 1866.—Owing to the annual introduction of so many inferior, and, in fact, worthless varieties of New Roses, JOHN [illegible] has this season carefully selected [illegible] varieties out of [illegible] sorts offered by the French raisers. These he can confidently recommend, and he believes his selection contains all that are worthy of note.
A List, with prices, sent on application. The plants are strong, and will be fit to send out in March.
Nurseries, King's Acre, near Hereford.

Paul's Nurseries, Waltham Cross, N.

NEW ROSES AND ENGLISH SEEDLINGS.

WM. PAUL (Son and Successor to the late A. PAUL) has to offer in May next the following first-class NEW HYBRID PERPETUAL ROSES:—

BLACK PRINCE, H.P. (WM. PAUL).—Flowers dark crimson, shaded with black [illegible] This Rose may be called [illegible] Price 5s. each.
DR. LINDLEY, H.P. (WM. PAUL).—Flowers crimson, with black centres, very large and full. Growth robust, foliage splendid. [illegible] Price 7s. 6d.
GLORIOSA, H.P. (WM. PAUL).—Flowers clear dark bright crimson, [illegible] a complete [illegible] Certificate from the Royal Horticultural Society. Price 5s.
LADY SUFFIELD, H.P. (WM. PAUL).—Flowers purplish crimson, [illegible] large, full, [illegible] Price 5s.
The following, which are already out, can be supplied in strong healthy plants:—
ELIZABETH VIGNERON (WM. PAUL).—Flowers rosy pink, very large [illegible] vigorous; [illegible] Price 3s. 6d.
MADAME EMILE BOYAU (WM. PAUL).—Flowers [illegible] constitution hardy, growth moderate; very constant, distinct, [illegible]
PRINCE DE JOINVILLE (WM. PAUL).—A fine large showy Rose, something in the way of, but of a lighter colour, than Princess of Wales [illegible]
PRINCESS LICHTENSTEIN (WM. PAUL).—Flowers white, globular, [illegible] a good hardy Rose [illegible]
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THOMAS METHVEN

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From Dr. Robert Hogg, *of the Journal of Horticulture.*

"I was particularly struck with the brilliant colour and telling effect of your Crimson King Verbena, when I saw it for the first time on entering the Kitchen Garde at Archerfield, forming a line in the ribbon border on each side of the main walk. But when I entered the Flower Garden at Dirleton Castle, remarkable for its breadth and variety of colour, in the distance my eye rested on two brilliant masses standing boldly out from all the others, which I did not fail to see was produced by the same Verbena. I was particularly struck with its compact body of colour; and on placing it in proximity with Beaton's Stella Geranium, its depth was such as to give Stella an orange hue. You have great merit in having raised so valuable a decorative plant."

From Mr. Toward, *Osborne House, Isle of Wight.*

"Your Verbena Crimson King is one of the best varieties I have seen; its brilliancy of colour, profusion of bloom, and upright habit of growth will place it in the front rank."

From Mr. John Robson, *Gardener to* Viscount Holmesdale, *Linton Park, Kent.*

"For many years we have been on the outlook for a class of Verbenas having the upright growth and free flowering qualities of Purple King, but differing from it in colour. Such an one Mr. D. Thomson has obtained in his Crimson King, which is equally adapted for massing, for edging, or for lines in ribbon borders, while for continuous blooming it positively is superior to Purple King. It is deeper and richer in colour than the well-known Geranium Stella, and although the latter was in its best trim at Archerfield, it was the unanimous opinion of several gardeners we met with, who, like ourselves, had seen this Verbena and Geranium Stella in juxtaposition at Archerfield, that the Verbena was by far the more brilliant of the two. There seems nothing left to wish for, unless it be for other Verbenas of like habit, but of different colours, not yet represented in this way.

From Mr. John Clark, *Gardener to* Earl de Grey and Ripon, *Studley Royal, Ripon.*

"I was particularly struck with your seedling Verbena Crimson King. It will, indeed, be a valuable acquisition to all who require dense masses of colour. I cannot give you a better testimony of my appreciation of it than by saying that immediately on my return to Edinburgh I ordered 100 plants to be secured for me as soon as it is sent out."

From Mr. Thomas Lees, *Gardener to the* Earl of Haddington, *Tyninghame.*

"I have great pleasure in bearing the highest testimony to your Verbena Crimson King, having had opportunities of seeing it bedded along with other Verbenas in the Gardens at Archerfield, both last year and this. Both in fine weather and after dashing rains it at all times was pre-eminent. Colour rich crimson, borne in great profusion. Habit of plant same as the well-known Purple King."

From Mr. H. Rose, *Gardener to the* Duke of Roxburgh, *Floors Castle, Kelso.*

"Having seen your Seedling Verbena Crimson King at Archerfield for two successive seasons, I am convinced that it is the best crimson in cultivation. Its habit is that of Purple King. It will be a great acquisition, whether used for beds or ribbon borders."

From Mr. J. Bisset, *Gardener to the* Earl of Sefton, *Croxteth Park.*

"Crimson King Verbena, which I saw at Archerfield in great perfection, is of a most brilliant colour, much earlier than Verbenas. Habit good, being very erect and a great bloomer. I had great pleasure in giving an order for a quantity of this plant."

To be sent out next May at 18s. per dozen.

Orders are now being booked, and will be executed in rotation as they are received.

The following Nurserymen have already ordered it, and will be able to supply when sent out:—

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ALTRINGHAM CARROT	5 0 0	2 15 0	1 10 0	0 17 6
WHITE BELGIAN CARROT	3 15 0	2 0 0	1 2 6	0 12 6
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CUPRESSUS LAWSONIANA SEED (true), of excellent quality, and warranted crop of present season. Price, postage paid, 5s. 2d. per oz. ; 32s. per half lb. ; 60s. per lb. nett. From unknown Correspondents a remittance must accompany order.

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CATALOGUES sent free.

Superb Double Hollyhocks.

THE FINEST COLLECTION EVER OFFERED TO THE PUBLIC.

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GERANIUMS, NOSEGAY (BRATON'S), AMY HOGG, INDIAN YELLOW, and GLOWWORM, 1*s*. 6*d*. each, 12*s*. per doz. ; STELLA, 6*s*. per doz., 40*s*. per 100.

GERANIUMS, ZONALE, BEAUTÉ DE SURESNES, 2*s*. each, 21*s*. per doz. ; MADAME WERLE, 1*s*. 6*d*. each, 15*s*. per doz. ; HIGHGATE RIVAL, 1*s*. 6*d*. each, 15*s*. per doz.

VIOLA MONTANA, true, from Mr. Tyerman's stock, 1*s*. each, 9*s*. per doz., 60*s*. per 100.

PINES, BLACK JAMAICA, strong Succession and Fruiting, fine clean plants, from 3*s*. 6*d*. to 15*s*. each.

VINE SUCKERS, strong, 12*s*. to 18*s*. per doz.

T. J. BOOTH offers the above in strong stock plants. Price to the Trade on application

Rainhill Nursery, Prescot, Lancashire.

BUTLER AND MCCULLOCH'S Collections of Choice FLOWER SEEDS forwarded Post free.

NEW ANNUALS, 5*s*. and 10*s*. 6*d*.
HARDY DO., 2*s*. 6*d*., 5*s*., 10*s*., 20*s*.
HALF HARDY DO., 4*s*., 7*s*. 6*d*., 15*s*., 30*s*.

For details of above Collections, see B. & MC'S SPRING CATALOGUE, sent free and post paid upon application.

Covent Garden Market, W.C.

CHEAP and BEAUTIFUL FLOWER SEEDS.

100 packets of the best and most showy Hardy, Half-hardy, and Tender Annuals, 20*s*.

50 ditto, 10*s*.	25 ditto, Hardy Annuals, 5*s*.
25 ditto, 6*s*.	12 ditto, ditto, 2*s*. 6*d*.

DESCRIPTIVE CATALOGUE on application.

RICHARD SMITH, Seed Merchant, Worcester.

TWELVE of the FINEST GERANIUMS extant for BEDDING are—

Italia Unita	Variegated Little David	Indian Yellow
Sunset	Venus	Orange Nosegay
Mrs. Pollock	Amy Hogg	Fairy
Luna	Glowworm	Enamel

The above 12, in good plants, for One Guinea. Post Office Orders on Castle Hedingham.

WM. DILLISTONE, Munro Nursery, Sible Hedingham, Essex.

To the Trade.

SCARLET GERANIUMS, 10*s*. per 100.
CALCEOLARIA AUREA FLORIBUNDA, 7*s*. 6*d*.
LOBELIA SPECIOSA, 5*s*.

The above are strong plants, shaken out of cutting pots.

CATALOGUES of these and other plants on application

SAMUEL COX, Nurseryman, Ludlow.

Select Catalogues of Seeds and Plants.

ROBERT PARKER begs to announce that his NEW PRICED and DESCRIPTIVE CATALOGUES, containing Select Lists of the best varieties of Vegetable, Agricultural, and Flower Seeds, New and Rare Plants, &c., are now published, and will be forwarded to applicants. All Seeds are warranted to be of the finest possible quality. Intending purchasers are requested to compare the prices with those of other houses.

Exotic Nursery, Tooting, Surrey, S.

Hollyhocks, Hollyhocks, Hollyhocks.

J. C. PADMAN has a splendid stock of Autumn-struck Plants, now ready, 50*s*. per 100 ; price to the Trade on application. List on application. SALVIA PATENS, 3*s*. per doz ; 20*s*. per 100.

Providence Nursery, Boston Spa, Yorkshire.

LEE'S SUPERB HOLLYHOCKS, saved from choice named Flowers, in collections of nine distinct colours, post free, 2*s*. 6*d*.

A DESCRIPTIVE CATALOGUE of FLOWER SEEDS, containing all the Novelties of the season, may be had post free on application.

JOHN & CHARLES LEE, Royal Vineyard Nursery and Seed Establishment, Hammersmith, London, W.

New and Choice Flower Seeds.

JOHN AND CHARLES LEE, SEEDSMEN to the QUEEN, offer the following choice FLOWER SEEDS (free by post), at the following prices per packet :—

Auricula, choice mixed	1*s*. 0*d*.	Aster La Superba	1*s*. 0*d*.
Chanthus Dampieri	2 6	Polianthes, choice mixed	1 0
Calceolaria, choice mixed	2 6	Primula Sinensata, mixed	2 6
Cineraria from named flow	2 6	Salvia patens	1 0
Gloxinia, choice mixed	1 0	Salvia argentea	1 0
Heartsease, choice mixed	1 0	Wallflower, mixed	1 0
Hollyhock, Lee's Superb	2 6	Zinnia elegans, double	1 0

Royal Vineyard Nursery and Seed Establishment, Hammersmith, London, W.

Aucuba japonica, loaded with Bright Red Berries.

JOHN AND CHARLES LEE, SEEDSMEN to the QUEEN, invite inspection of their large Stock of magnificent SCARLET-BERRIED AUCUBAS, which they believe to be unrivalled for extent, perfection of form, and colouring. The Berried Aucubas are valuable for Table Decoration, for which purpose they may be hired at 10*s*. 6*d*. per night.

Plants may be purchased at £3 3*s*., £4 4*s*. and £5 5*s*. each ; and Ripe Seeds, producing innumerable varieties, at 2*s*. each, or 18*s*. per dozen. The Trade supplied on liberal terms.

Royal Vineyard Nursery and Seed Establishment, Hammersmith, London, W.

NEW ZONALE PELARGONIUM WILTSHIRE LASS.—The finest Pink-coloured variety ever raised. Awarded two First-class Certificates. Plants ready 6th May 17 at 5*s*. each. See New CATALOGUE.

DOWNIE, LAIRD & LAING, Stanstead Park, Forest Hill, S.E. ; and Edinburgh.

Double White Pelargonium Lady Victoria Kerr.

CARSTAIRS AND SONS are now sending out the above fine Double White Geranium, price 10*s*. 6*d*. each. A full Description and List of Testimonials post free on application.

121, George Street, and Warriston Nurseries, Edinburgh.

Pelargonium Mrs. Pollock.

ALFRED FRYER offers healthy well-grown Plants of this beautiful Bedding PELARGONIUM at 12*s*., 15*s*., and 18*s*. per dozen for cash. All the plants are well established in 60-pots, and were struck in open borders last autumn.

Remittances requested from unknown correspondents.

Address, ALFRED FRYER, Nurseries, Chatteris, Cambridgeshire.

LOBELIA, NEW WHITE.—This White Lobelia is quite distinct from all others ; it is of neat compact habit, in dense bloomer, and will be found for edging or making a white bed, superior to any other White Bedding Plant extant.

It may be obtained of Messrs. Dobson, Isleworth ; HUGH LOW & CO., Messrs. DILLISTONE, PADMAN, F. PERKINS, &c. Price 2*s*. 6*d*. each ; 18*s*. per doz. ; or £5 per 100.

MARTIN & SON, Hull and Cottingham.

Genuine Garden and Agricultural Seeds.

PAUL TOLLARD, SEED GROWER and MERCHANT, 20, Quai de la Megisserie 20, et devant 4, Place des Trois Maries 4, à Paris. SPECIAL PRICED LIST of NEW SEEDS, in English weights and money, on application.

LAMOUREUX, CLARK, AND CO., SEED MERCHANTS, Plymouth.

The SEED CATALOGUE and GARDENER'S DIRECTORY for 1866, now published, will give full particulars respecting prices and other matters in connection with the Business. Will be sent gratis and post free to any address in the kingdom.

British Fern Catalogue.

ROBERT SIM can now send, post free for six postage stamps, Part I. (British Ferns and their varieties, 36 pages, including prices of Hardy Exotic Ferns) of this NEW and PRICED DESCRIPTIVE CATALOGUE of BRITISH and EXOTIC FERNS, No. 7.

*** Part II. (Exotic Ferns) will be issued as early as possible.

Foot's Cray Nursery, S.E.

New Catalogues.

DOWNIE, LAIRD, AND LAING beg to intimate that their PRICED DESCRIPTIVE CATALOGUES of FLORIST FLOWERS, NEW PLANTS, GARDEN, FLOWER, and AGRICULTURAL SEEDS are now ready, and may be had free on application.

17, South Frederick Street, Edinburgh ; and Stanstead Park, Forest Hill, London, S.E.

RICHARD SMITH'S SEED CATALOGUE contains a Calendar of Time for Sowing, particulars of Collections with Prices, Directions for Cropping well and economically Soil, Manure, Depth, Distance, Season, Rotation, Duration, Form, Height, Colour, Storing, Use, Flavour, and other qualities described. This List free by post for one stamp. Seeds direct from the growers, the surest way to success.

RICHARD SMITH, Seed Merchant, Worcester.

GOOD CLOVER SEEDS at MARKET PRICES.

Red	White Dutch	Yellow
Alsike	Cow Grass	White Suckling

For samples and lowest prices, apply (stating quantity required) to SUTTON & SONS, Seed Merchants, Reading.

The Cultivation of Bromus Schraderi.

SUTTON AND SONS can supply genuine Seed of the above New Forage Grass, in packets, for trial, at 1*s*. each, or in larger quantities at 5*s*. per lb., with instructions on cultivation.

SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

Notice.

PURCHASERS of LARGE QUANTITIES of FARM or GARDEN SEEDS will be supplied liberally by SUTTON & SONS. For prices apply at once, quantity required to

SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

Notice.

J. R. TANTON (late of the Pine-apple Nurseries) begs to intimate that he has PURCHASED of Mrs. G. S. DODS the old-established EPSOM NURSERIES, and solicits a continuance of that patronage which has been so liberally bestowed upon this concern during the last forty years.

J. R. T. invites an inspection of his unrivalled stock of STOVE, GREENHOUSE, and SOFT WOODED PLANTS (also of his FRUIT TREES, SHRUBS, TREES, and SEEDS) of every description.

Epsom, Surrey.

GARDENERS' ROYAL BENEVOLENT INSTITUTION.

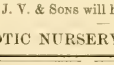
NOTICE IS HEREBY GIVEN, that FOUR PENSIONERS will be added to the LIST in JULY NEXT. Persons desirous of becoming Candidates are requested to send in their applications, Certificates, &c., to the Committee on or before the 24 May, after which time they will not be received.—By order of the Committee,

EDWARD R. CUTLER, Secretary.

14, Tavistock-Row, W.C., March 28, 1866

Printed Forms may be had upon application to the Secretary.

GENUINE FARM SEEDS.



JAMES VEITCH & SONS

BEG TO ANNOUNCE THAT THEIR

CATALOGUE OF AGRICULTURAL AND GRASS SEEDS FOR 1866

Is now published, and will be forwarded Free on application.

Special attention is devoted to the preparation of GRASS SEED MIXTURES to suit all soils and situations. These Mixtures cannot be surpassed in quality.

TURNIP, MANGEL WURZEL, and other SEEDS, from the most carefully grown and best selected stocks.

Where large quantities are required, J. V. & Sons will have much pleasure in quoting special prices.

ROYAL EXOTIC NURSERY, CHELSEA, S.W.

JOHN FRASER,

OF THE LEA BRIDGE NURSERIES, N.E.,

Respectfully announces that in consequence of requiring the Space for the Cultivation of a large stock of NEW PLANTS, he is reluctantly compelled to DISCONTINUE the EXHIBITION of STOVE and GREENHOUSE PLANTS, he has therefore instructed Messrs. PROTHEROE AND MORRIS to offer unreservedly by

PUBLIC AUCTION THE WHOLE COLLECTION.

In giving up the Exhibition of these Plants it may be as well to state that the attention of the Staff hitherto employed in their culture will after this Sale be devoted to the YOUNG STOCK, so that customers may rely upon having a better article than ever, and at a more moderate rate.

For other particulars see Messrs. PROTHEROE & MORRIS'S Advertisement in this Paper.

The Gardeners' Chronicle.

SATURDAY, APRIL 7, 1866.

MEETINGS FOR THE ENSUING WEEK.

TUESDAY, April, 10—	Zoological	..	8½ P.M
THURSDAY, — 12	Royal Horticultural Second spring Show), at South Kensington	..	2 P.M
SATURDAY, — 14	Royal Horticultural Weekly Show), at South Kensington	..	2 P.M

THE article which appeared in our columns some short time since (see p. 241) on SPORTS, has brought us several letters concerning these exceptions to the general rule. Some of our correspondents have also kindly forwarded us specimens for examination, for which we have to express our thanks, and as gratitude is said to be a keen sense of favours to come, our hopes, that they will continue to favour us in this way as opportunity may offer. Among the illustrations sent to us, Mr. EARLEY has forwarded leaves of that very singular species, if species it really be, of Begonia, originally called by VON MARTIUS Begonia phyllomaniaca. A Begonia affected with leaf-madness ! So say the botanists. Perhaps, if the plant could speak, it would not express itself as very well pleased with such a designation. At any rate the fact is that this Begonia habitually produces a profusion of small leaves on its stem, its branches, its leaf-stalks, and on the upper surface of the leaves them-

selves. At first sight it would appear as if these leaflets were exaggerated developments of the little scales so common among these plants, but a little closer examination shows that they are really the first leaves of little buds, and that they are not produced from the scales just mentioned, which seem, however, to act as stipules to the new leaves.

This particular Begonia was first made known by VON MARTIUS, and was mentioned in the fourth volume of the "Kew Journal of Botany." Subsequently it was figured in the "Botanical Magazine," tab. 5254, and in MARTIUS' "Brazilian Flora." It is well known that Begonias may be propagated from leaves, as indeed many other plants can be, owing to the production of little buds on the leaves and stems under certain conditions. And this fact is interesting not only to the cultivator but to the botanist, because among other things it shows that there is less absolute difference between stem and leaf than is usually supposed. The occasional production of buds on leaves, as in Bryophyllum, Cardamine, the common Watercress, Drosera, Nymphæa guineensis, some Arads, Ferns, and other plants, has often been commented on, but in most of these instances the little bud falls off from the leaf ere the bud develops into a shoot, or the parent leaf decays, so that it is a rare thing to see a perfect shoot springing from a perfect leaf. Nevertheless this has been seen in Drosera by NAUDIN, in Nymphæa guineensis pretty constantly, and in the Tomato by DUCHARTRE; while in the specimens of Begonia sent us by Mr. EARLEY the fact is equally apparent, and there is a small shoot springing from the petiole, besides numberless minute ones springing from the blade of the leaf.

We have spoken doubtfully of this Begonia being a true species, as M. A. DE CANDOLLE, the most recent monographer of this family, considers the plant to be either a hybrid or a variety, because of the great variability in the bracts and in the flowers. Sometimes the petals of the male flower are entirely absent, VON MARTIUS' figure represents them with one petal only, while Mr. EARLEY's specimens, as well as those figured in the "Botanical Magazine," have two. Mr. EARLEY's observation that the seedling plants do not invariably present this excess of leaf-formation may be cited in confirmation of DE CANDOLLE's views. A similar tendency to produce buds on the leaf has been noticed in Begonia geranioides by M. VERLOT, of Grenoble. Specimens of this species were sent by M. VERLOT to M. PRILLIEUX, and formed the subject of a communication from the latter gentleman to the French Botanical Society. Indeed, Begonias are particularly liable to this production of adventitious buds, the most remarkable instance of which occurs in Begonia gemmipara, figured in Dr. HOOKER's splendid Illustrations of Sikkim Himalayan plants, but which we believe is not yet in cultivation. If we were called on to place Mr. EARLEY's Begonia in its proper position among kindred deviations, we should group it under the head of Prolification of the Leaf, a group including all those cases wherein there is a production of adventitious buds on the leaves.

We are glad to be able to state that on the recommendation of the Chiswick Board of Direction, the Council of the Royal Horticultural Society have decided to provide lodgings for the STUDENTS admitted to the Garden. The students are nominally to pay for this accommodation, in order that its value may be the more appreciated, but their wages are to be raised to the extent of the payment required, so that they will now actually receive 12*s.* + lodgings free. This is, therefore, virtually an admission on the part of the Society that the present wages rate is lower than it should be, and we trust the example may have weight with other employers of garden labour.

While referring to this subject, we may observe that the studentships available for the present season are all filled up, besides which other candidates are entered on the list to await an opportunity of being taken into the Garden. We shall hope, therefore, if all goes on well, that the number may be increased another season, when the arrangements have fairly got into working order. There is much already which is instructive to the students in the Chiswick Garden. There will be more hereafter, if the Directors can only be provided with the necessary means for carrying out their views.

It is further but right that we should correct a misapprehension under which "W. P. R." evidently labours, as shown by his remarks on Chiswick and its students, at p. 293. There is, in the first place, only a limited number of the students employed; there are various skilled journeymen engaged at a higher rate of wages for carrying on sundry necessary operations; and there are the departmental foremen paid higher still, and acting as the lieutenants of the superintendent. These are the very arrangements which "W. P. R." advocates, overlooking the fact of their existence.

With the letter of Mr. FISH, part of which appears in our present impression, we must close for the present the discussion of the question of low wages. The fact we admit; that it should be remedied we press on the good feeling of employers generally; but that it can be remedied by combinations or other similar means, as sketched out in some of the letters that reach us, we altogether deny. And, finally, we would urge this general consideration on those who feel dissatisfied with the present state of things, that wherever there is real genius and undoubted talent, the possessor will most assuredly, sooner or later, raise himself to the level of his merits.

STERN utilitarians, disposed to look at the *utile* rather than at the *dulce*, would doubtless put a very different estimate on the CONTENTS OF OUR ORCHID HOUSES from that which the lovers of these strangely beautiful plants would affix. We do not propose at this time to combat the views of the mistaken individuals to whom we have alluded, but we would ask them after all if it is not in part their fault, that the Orchidaceæ supply comparatively so few useful products. Vanilla and Salep, neither of them articles of first-rate importance, are about the only articles of commerce derived from this family. No doubt more would be forthcoming were proper search made, but we confess the prospect is not very encouraging in this direction, at least for us who are disposed to retain our insular prejudices, and not to take on with a new love before we are compelled to be off with the old one. Nevertheless from time to time we hear of uses being made of Orchids which are sometimes new to us, or at any rate generally disregarded by us. In our last year's volume, p. 962, for instance, Mr. Consul SWINHOE made known to us that certain Formosan Orchids were diligently sought after by the Chinese as medicine, and indeed some of our indigenous Orchids were esteemed by our drug-loving forefathers, less sceptical than ourselves. Our correspondent "G. B." in our last week's impression, tells us that the pseudobulbs of certain terrestrial Orchids are dug up and used as salad in the neighbourhood of Ootacamund. From time to time, too, we have heard of the leaves of Angræcum fragrans being used as tea, under the name of Faham tea, in the Island of Bourbon, but it is only quite recently that certain French merchants have introduced this substance into commerce, as is stated in another column.

The substance to which this so-called tea owes its fragrance is Coumarin, to which also the Tonka Beans are indebted for their powerful and persistent odour. We need not, however, send to Réunion for Faham tea, or apply to our perfumers for Tonka Beans to make tea withal, as the same active principle, chemists tell us, is found in the sweet-scented Vernal Grass (Anthoxanthum), in Woodruff (Asperula), in Melilot (Melilotus), and in the leaves of one of our indigenous Orchids, Orchis fusca. This Coumarin, then, is familiar enough to our noses if not to our palates. Of course, in the plants mentioned, the substance in question exists but in small proportions, which is the more fortunate, as the taste of the pure substance is described as "burning," and its vapour is said to "act very strongly on the brain."

Its very different chemical composition from Theine (especially the absence of nitrogen) forbid the hope that we have in Faham tea a valid substitute for tea, whether of "Celestial" or Assamese growth. Nor will it bear comparison in this respect with Holly or Paraguay tea, on which a correspondent has furnished us with some remarks which we hope to publish shortly. At any rate it adds another illustration of the fact that the same chemical principle may be found in plants as widely different in their botanical affinities as they are in their geographical habitat.

—— WE are authorised to state that the Executive Committee of the INTERNATIONAL HORTICULTURAL EXHIBITION has ruled as follows on certain points relating to the Exhibition which had been brought officially under its notice. As the replies may be of use to others besides those immediately concerned, it has been thought desirable to give them publication in the present form.

In respect to Variegated Plants, the inquiry was put whether Anthurium cordifolium, and the Alocasias —Lowii, Veitchii, and zebrina, were admissible as variegated plants in Class 17 of the Schedule. It was ruled by a majority of votes that they were *not* to be admitted. Another inquiry as to the same plants, along with Alocasia macrorhiza, being eligible to be shown in Classes 14 to 16 inclusive, was made, and it was decided that they were eligible in those Classes. It was further ruled that variegated plants—a group exceedingly difficult of accurate definition—were to be understood as those having two distinct colours on the upper surface of the leaf, exclusive of that of the costa and ribs. This decision applies also to Class 25.

As regards Orchids, in reply to a suggestion that Class 28, (that for 20 distinct sorts), should be taken as the leading collection in that group of plants, the Committee thought it sufficient for them to point out, that Class 27 was intended by them to include a mass of showy plants staged entirely for their effectiveness and splendour, while Class 28 was intended for specimen plants of distinct kinds, showing high cultivation.

The first six classes in the Schedule relating to New Plants, had given rise to the inquiry whether specimens of the same species (duplicate plants) were admissible in more than one class. This was ruled in the affirmative. One querist desired to know if Tree Ferns might be shown in Classes 42 to 45, and was told yes, though their exhibition there would confer no special advantage, as they would have to be judged as Ferns, not as Tree Ferns. Another inquiry related to hardy Conifers, in this form:—Is novelty or size and beauty to be the test of merit in Classes 61 to 63? The reply was to the effect that size and beauty combined were the qualities to be preferred.

An intending exhibitor desired to know how Forced Vegetables (Class 201) were to be determined—what what was to be understood by forcing? It was in this case ruled, that to be forced the vegetables must be grown by the aid of artificially applied heat. Mere protection was not to be understood as constituting forcing.

The classes for Designs and Water-colour Drawings also elicited some inquiries, the replies to which may be stated thus: The designs must be tinted in the usual way; they must be mounted so as to admit of being suspended against a wall, framing and glazing being optional; and they must be sent in with mottoes. As to the drawings which are invited on folio paper, this was ruled to mean any folio not larger than "imperial," and these also are required to be mounted or framed, so as to be easily suspended.

We may add that the Committee decided in favour of holding an auction sale in the tent on the Saturday following the show day, for the sale of such of the exhibited subjects as their owners might desire to dispose of in this way.

—— A Yorkshire correspondent writes as follows in respect to the ADMISSION OF GARDENERS at the forthcoming International Exhibition:—"Many gardeners about the country wish to know if there will be a day devoted to them? say a 2*s.* 6*d.* day. If not an entire day, there should be at least the half of one day given up to them. I have heard that the mornings up to 9 o'clock are to be given to the gardeners, but as it will be impossible to get more than a passing glimpse of things in two or three hours, it would not only entail additional expense but great waste of time if they had to go two or more mornings." Our correspondent and others will be glad to learn that the Executive Committee have already decided that *bonâ fide* gardeners shall be admitted on the 23d for 2*s.* 6*d.*, and on the 24th for 1*s.*, provided ticke's are secured before the 1st of May; these tickets admitting—not from 6 to 9 A.M. as originally set down in the regulations, but from 10 A.M. to 7 P.M., that is during the whole time the show is open to the public. We think this is a just concession to the class of practical gardeners, from whom the show itself must derive its chief attractions, and we trust they will know how to profit by it.

The same correspondent adds:—"I would also suggest to the Executive that steps should be taken to induce all the railway companies to run special trains at excursion prices for the Exhibition, say for three days, chiefly to accommodate gardeners, who cannot in the month of May spare much time from home." We can, in respect to this matter, report that the convenience of gardeners and exhibitors, so far as travelling is concerned, has not been overlooked. The principal Railway Companies, including the London and North-Western, South-Western, South-Eastern, Chatham and Dover, Brighton, Great Northern, and Great Western, have undertaken to convey subjects for the exhibition at half rates. They point out, in respect to passengers, that, the show being held during Whitsun week, there will be unusual facilities for cheap travelling; but the Committee hope to obtain further concessions, not only from the foregoing, but from other Companies, and if they are successful in their efforts, the gardening community, we may venture to say, will be duly apprised thereof.

—— We are happy to learn that the arrangements for the HORTICULTURAL DINNER, to which allusion was made at p. 266, are progressing in a very satisfactory way, and a large company is anticipated. Though not directly connected with the International movement, it is under the management of gentlemen closely identified therewith, and its primary object is, we may state, to supplement the grand Banquet at Guildhall; for, notwithstanding the large amount of accommodation there provided, the space would be utterly inadequate to seat the crowds of professional men who

on such an occasion as the 'International' of '66 would only be too happy to meet each other in a social way.

— Horticulturists cannot wish with ALEXANDER that they have no more worlds to conquer—indeed one of the chief charms of their pursuit is that it is one which admits of constant novelty. All plant lovers should inspect Mr. FITCH's beautiful drawings of ARISTOLOCHIA GOLDIANA, CEPHALOTUS MAXIMA, and BALKHIA INSIGNIS in the last Part of the Transactions of the Linnean Society. Brief reference is made to these plants in another column, and we trust that we shall not be long before we see with our own eyes "the splendid bunches of pendulous milk-white flowers tinged with gold on the crisped edge of the petals." Truly Dr. WELWITSCH was favoured; to few travellers has it been granted to discover so strange a plant as that which now bears his name (Welwitschia), or so beautiful a one as the Cancoensia.

New Plants.

331. CATTLEYA AMETHYSTOGLOSSA, *Lind. & Rchb. fil.* var. SULPHUREA.

Cattleya amethystoglossa was introduced long ago by M. Linden; and there are some specimens of the original type scattered about on the Continent. In England the species has not been well understood, Mr. R. Warner having unfortunately represented the splendid white and amethyst variety of Cattleya guttata, which we have called Prinzii, in lieu of the true plant. The species no doubt stands very near the old guttata, yet we have always observed it to have a crenulate margin to the lip, and quite a different arrangement of papillary excrescences on its surface. The original plant had splendid flowers, beginning with yellowish brown, and then turning gradually into a chestnut colour, with the lip deep amethyst colour, and the column white, yellow at the anterior base, and streaked with purple under the stigmatic hollow. The bulbs get nearly as high as those of a strong guttata. What we formerly got from England was very small and very ugly; but at length Mr. Stuart Low has introduced what no doubt must become, when well grown, a most curious pendent to Lælia xanthina. The flowers are nearly or quite of as pure a lemon-colour as those of Cattleya citrina, and the lip is cream-coloured. This is our new var. sulphurea, which no doubt well deserves its name. *H. G. Rchb. fil.*

ORCHID TEA.

To have to look to the Orchid family for any large staple articles of trade other than Vanilla, would be not only to look to a new field, but also to a very interesting one. The application of the leaves of one of these plants as a substitute for tea has lately come under my notice. The product has been heard of before in its native country, but never, so far as I know, in fashionable or civilised society. It has, however, now made its appearance in Paris as a regular article of trade, and is highly recommended as a most agreeable beverage.

The plant yielding this new description of tea is the Angræcum fragrans of Thouars, an epiphytal Orchid of the Island of Bourbon, where it is known and used by the natives under the name of "Faham." This word, once an obscure native name, is now, if we are to believe the enterprising French firm who has just introduced it, destined to become a "household word," for "Faham" is the name under which it is now sold in Paris, and this word appears in large letters upon the boxes in which it is packed, as well as upon the circulars accompanying them. The headings of these circulars run as follows:—"Faham from the Isle of Réunion, imported from and manufactured at Réunion." There is also a rough, but not at all a bad cut of the plant producing it. The circular itself begins by saying that tea proper has never been well received in France, owing to the wakefulness resulting from its use, which has caused many persons to reject it altogether, while many of those who do use it drink it in default of a better substitute. The circular then goes on to state that it is for the purpose of remedying this state of things that the new infusion is intended; not to replace tea, which has indisputable advantages, but to afford an opportunity of choosing between two beverages, equally beneficial and useful. "Faham is not a new production. From time immemorial the natives of the islands of Réunion and Mauritius, though situated as it were at the very gates of China, have preferred it to tea; every traveller has partaken of their preference: one of our most illustrious writers, George Sand, eulogises it in the midst of the fine description which she gives of the Isle of Bourbon, an eulogy which cannot be suspected of puffery, inasmuch as it was written upwards of 30 years before the introduction of Faham into France was thought of. Every work on botany of any importance similarly places it in the foremost rank of the beneficial productions of this favoured clime. The difficulties experienced in the gathering and manufacture of Faham on a large scale, and consequently the almost impossibility of procuring a sufficient quantity to recompense the labour of obtaining it for consumption, and also its very high price, have alone prevented until now this valuable article of diet from being imported into France. After many fruitless attempts, these obstacles have been overcome.

"Faham belongs to the family of Orchids; it grows upon the high slopes of the Island of Réunion, in the midst of almost inaccessible forests. It possesses a taste differing greatly from that of tea, and is preferred by the majority of persons who have tasted it. It can be used as a substitute for tea on all occasions, as it combines its tonic and digestive qualities, free from the sleepless effect. It possesses an aroma of great delicacy, capable of being rendered more or less pungent according to the quantity used, and it gives forth a most agreeable perfume, after being drunk it leaves a lasting fragrance in the mouth, and in a closed room the odour of it can be recognised long after. This beverage has the further advantage over tea, which requires to be drunk at the time of making, that it can be reserved for a future occasion if requisite, and may either be taken cold or made hot again. Milk, or spirits in small quantities, especially rum, serve to develop its aroma, and lending it additional delicacy or greater strength, render it a delicious drink. Lastly, this valuable plant is made use of to flavour custards and ices, to which it communicates its delicate fragrance.

"To be taken as a warm beverage, the leaves and stalks should be placed in cold water, in about the proportion of one gramme to a tea-cup, more or less, as the consumer may desire it of a greater or lesser degree of strength. The water should be immediately made to boil for about the space of ten minutes in the tea-kettle or other closed vessel. It should then be emptied into the teapot or tea-cups and sweetened accordingly."

A sample of this new kind of tea has recently been received at the Kew Museum; it was packed in a very neat canister-shaped box, similar to those now sold in Paris. These boxes are of two sizes, the smaller containing material sufficient for making 50 cups of Faham, and sold at 2f. 50c., and the larger 105 cups, and sold at 5f. Upon opening the box in question the perfume emitted was exceedingly powerful, and very similar to that of the Tonquin Bean. The leaves, unlike those of tea, appear simply dried, not shrivelled by heat, but are as flat as we should find them in any herbarium. The absence of any artificial colouring matter, or roasting, accounts for the very light colour of the infusion.

No doubt there are many persons who would prefer the fragrance of this article to the aroma of Chinese tea, but for my part I give preference to the latter—perhaps prejudice may have something to do with it. The perfume from the teapot is certainly very agreeable, and is an undoubted novelty; and if Faham came into general use, this domestic article would serve the twofold purpose of a teapot and a "perfume vaporizer." Doubtless if these leaves can be obtained in quantities sufficient for consumption as tea, the French perfumers might also import them to advantage, if for no other use. Powdered they would make excellent sachets.

In the Museum at Kew are some cigars made of the leaves of A. fragrans simply rolled in a thin Tobacco leaf. They are probably very agreeable smoking, but I am unable to say if this application is a common one in the Island of Bourbon, or whether these specimens are rather a curiosity. *John R. Jackson.*

THE NATURAL v. THE ARTIFICIAL SYSTEM OF BOTANY.

THE following extracts from the introductory lecture on Botany, delivered at the then London University, on April 1, 1830, by the late Professor Lindley, will interest many of our readers. The lecture, of which they form part, is entirely in manuscript, and allived to it is a memorandum in the Professor's handwriting, which is very suggestive. It runs thus, "I am not satisfied with this lecture. It did not appear to me to read well. I think it contained too much about systems, for which people in an introductory class are hardly prepared."

I remember very well that when from particular circumstances Botany appeared likely to become a study of importance to me, and I first commenced the career in which I have since continued to move, the system by Linnæus was [illegible] the "Philosophia Botanica" and Berkenhout's "Synopsis" were put into my hands; these formed my botanical library. The former I could not understand, and the latter was of little use to me. I then received Rose's "Elements of Botany," which helped me to comprehend the "Philosophia" and the "Amœnitates Academicæ," which first rendered the science an object of interest. I found access to the "Flora Lapponica," the "Flora Britannica," Rose's [illegible] a edition of Withering's [illegible] of the "Hortus Kewensis." I also occasionally saw "English Botany" and the "Botanical Magazine." By these means I gradually acquired a knowledge of the systematic names of a few plants, and was led into the principles of what I was told was the science (!) called Botany. I found out that the Pimpernel, the closing and expanding of which I had so often noticed, was called Anagallis arvensis; that the Bachelor's Button was Lychnis dioica; the Daisy, Bellis perennis; the Stinging Nettle, Urtica; and the Dead Nettle, Lamium: these facts were ascertained with no inconsiderable pains, and I was told I had made great progress.

I must confess, however, that to myself my supposed advance was less satisfactory than to my friends. I could not understand why the scientific name of the Daisy was better than the English one, or that there was more use in knowing the Latin name of a plant than of an utensil or any other object. It is true that in acquiring this knowledge I had ascertained the number of stamens and styles of my plants, I had learned that some were bisexual and others unisexual, and that the parts of fructification were subject to particular modifications; in short, that I had picked up a little information which was partly true and partly false; but I could not apply it, nor did my books point out the mode of doing so.

I then made the acquaintance of the late President of the Linnean Society, whom I found an amiable man. I paid great deference to all that he told me of the merits of the school of Linnæus; I had previously read with delight some of the Essays of that highly gifted genius, and I did not doubt that his mantle had fallen upon his followers. But notwithstanding my acquaintance with the President, and the advantageous position in which I was placed for pursuing my studies, I became heartily tired of Botany; it appeared to me to lead to nothing; I suspected that if it consisted merely in a power of gaining a knowledge of certain Latin names my memory would fail me, and I found this kind of information but a poor reward for the trouble of acquiring it.

That there was any other method of studying Botany than that of the Linnean school, I should not perhaps have known except for the cautions I had received from the worthy President, not to allow myself to be led astray by the [illegible] and on no account to forsake that which was certain and precise for what I should find to be vain and unprofitable. Curiosity is an inherent quality of the human mind, at least it was at that time of mine, and I became eager to find out what was the [illegible] the prohibited system, [illegible] which I had been told I ought to be ashamed, but more especially because I found various favourable allusions to a natural system in the writings of Linnæus himself, and I could not reconcile the language of that great master with that of his disciples.

At length a happy accident threw me in the way of a gentleman, the late Sir William, then Dr. Hooker, to whose friendship and kindness I owe much, and from him I learned that the school of Linnæus was not quite so important as I had been told. This gentleman showed me Richards' "Analyse du Fruit," Jussieu's "Genera Plantarum" and Mirbel's "Elemens," and here my botanical life commenced. I procured Jussieu's "Genera Plantarum," which I studied with avidity; I sat up two nights in making a bad translation of Richards' Analyse, an exercise, which I was afterwards very glad to be spared. Notwithstanding the friendly warnings I received from the highest authority, which, as I now see, were the best reading in the public [illegible] I found that that science which I had hitherto found most dull and unsatisfactory, possessed attractions such as I had no power to resist. Theoretically I was delighted with it, and practically I met with no more difficulty, vagueness or uncertainty, even as I then knew it, than I had formerly encountered with a triandrous plant called Stellaria media, which belongs to Decandria; a dicecious Cucumber, which [illegible] to be sought in Monœcia, or a synœcious Lobelia which I met with, because some one told me its name, in Pentandria. I found, indeed, my labour increased, but this I did not regret, when I saw to what it led; that an accurate examination of the characters of one plant made me acquainted with those of a multitude of others; [illegible] knowledge of the properties of one was a step towards that of the properties of many, and that the names of the divisions which I found substituted under the titles of orders, for the classes and orders of Linnæus, conveyed some intelligible meaning. I saw that while Pentandria monogynia meant nothing more than that a collection of plants possessed five [illegible] a fact which did not strike me [illegible] ing or useful to know. Every phrase

of plants having their leaves, stems, flowers, and fruit arranged in a particular way, having similar physiological characters, a similar anatomical construction, and similar sensible properties. In short, that at least there *was* something in the Natural System of Botany, if there was nothing in the sexual method.

PALMS FOR GENERAL DECORATION.

There is no class of plants which combines so many good properties for decorative purposes, both indoors and out, as the Palms. Many of them, as Thrinax, Latania, Chamærops, &c., are graceful in habit, with most beautiful foliage, and most charming objects in the form of young plants for the centre of jardinettes in drawing-rooms, or for vases and other choice room ornaments, table decoration, &c. They are seldom out of place. When the plants become large they are again useful for entrance halls, staircases, &c. Abroad they are used much more freely than, as yet, with us for purposes of this sort. In the glass-covered court of the Hôtel de Louvre in Paris there are generally to be seen during the summer months some fine large Palms on the pedestals of the staircases.

Last year we ventured to use them out-doors in the garden here for the first time, with very good results. They were planted and plunged in sheltered places about the first week in June, and were taken up in the middle of October; many of them during that time made several fresh leaves, which expanded freely, and their distinct foliage and habit imparted a pleasing variety to the spots where they were introduced. Our experience here leads me to consider the best position for them to be by the sides of shady walks, well sheltered. I do not say they will not succeed when exposed, but we found that the sun had a damaging effect upon some of the tender-leaved sorts, such as Seaforthia elegans. A clear circle or half-round irregular break in front of shrubs near the walk is perhaps the best place for them to occupy. The leaves of the Palms should stand clear of any others, and if the plants are large, the ground should have a good covering of some dwarf plant, which adds greatly to their effect. For example, Phœnix dactylifera might be planted or plunged in the centre, and the ground covered with Pteris serrulata; or Latania borbonica might be introduced, and the ground covered with Agrostis nebulosa or Briza gracilis —these last standing long after the stalks and seeds have arrived at perfection.

Chamærops Fortuni is hardy in many places. I have seen some fine specimens in front of the Royal Palace at Osborne and elsewhere, that had been standing out for several years. But with us, whether the winter is severe or mild, I find it leaves the plants in a seemingly exhausted state, so that they are not in a position to take advantage of the first fine summer weather to expand early leaves. And I think with all Endogens this is a great point in regard to their beauty through the summer months. When the plants are small, a better effect is gained by driving into the ground a circle of stakes, sufficiently wide at the top to allow a margin of soil after the plant is plunged, and with sufficient height to bring the plant nearer the eye. The top of these stakes may be fastened with Willow or Hazel rods, or two pieces of thick rope may be twisted in and out round the top. The more crooked the stakes the better the effect, as when filled with soil and moss, the spaces between are planted with Ferns, Lycopods, &c., and the margin round the top is furnished with Isolepis gracilis. *J. F.*

[Our correspondent suggests that others who have had experience in the outdoor growth of Palms should state the results, many persons being just now much interested in the question, but with very few data to guide them in their experiments.]

OUR PARK PLANE TREES.

As I walk down the Park side of Piccadilly and from the Marble Arch to Hyde Park Corner, I feel my eyes constantly attracted to those terribly tall ugly crooked Plane trees that have been planted there within a few years by some one not overburdened with tree knowledge. The standard Thorns planted in the parks a few years since are also so wretchedly crooked that it would require a sharp search into a neglected country nursery to find their equals; this does not seem good management. With regard to the Planes, they belong to that thin-leaved sort called in error the Occidental Plane; they are, in fact, of that species called Platanus acerifolia, and a most inferior variety of the race. The most beautiful of all Planes, next to the Platanus orientalis, is the Palmate Plane, a very straight-stemmed vigorous grower, with palmated leaves, nearly as deeply cut as those of the Oriental Plane, now very rare in the nurseries. This palmate Plane is a variety of the Maple-leaved Plane, Platanus acerifolia, and is called by cultivators Platanus acerifolia palmata. It is remarkable not only for its robust growth and hardy habit, but also by its young leaves and buds being covered by a thick fawn-coloured downy coat, which protects them from spring frosts. Its leaves are also stout, so that they resist violent winds better than any other Plane, and above all they remain on the trees a long time in the autumn, retaining their freshness. As far as I have yet seen, its bark does not scale off to that disagreeable extent seen in the common Plane trees now usually planted in our parks. It may be asked, why is not this sort planted? I cannot tell: it has been in this country several years, and was sent from the Sawbridgeworth nurseries some years ago to Kew. I can only suppose that the planting functionaries of Government are, as usual with such gentlemen, slightly bound with red tape.

There is another most desirable variety of the Platanus acerifolia, viz., P. acerifolia pyramidalis, the Pyramidal Plane-tree. This does not form so large a tree as the Palmate Plane, but is very remarkable for its fastigiate growth, something in the way of the Lombardy Poplar, and, for a Plane, is very compact in its habit. This sort has foliage of a very lively green, and retains it till very late in autumn. Its leaves are but slightly lobed, and it is altogether a very distinct, pretty tree.

There are many varieties of Platanus acerifolia, which for the most part have been raised from seed in France; in a bed of seedlings as many varieties may be found as in a bed of seedling narrow-leaved Elms, varying only in the form of their leaves, but I have as yet found none so distinct and promising as the two varieties I have endeavoured to describe.

It is much to be regretted that our most beautiful Plane—the Oriental (P. orientalis), is so rare; there are many large trees in the South of England, many in and about London, and particularly, in Surrey, there are some grand old trees in the grounds at Weston House, Albury. These trees bear seed abundantly, but it has hitherto failed to vegetate, requiring, probably, a warmer climate to ripen it; while grafts from these trees, owing probably to the close-grained nature of the shoots, have not succeeded. The old-fashioned mode of propagation was by layers, but they were some years before they formed good trees. Seedlings of this fine Plane are often sold by foreign nurserymen, but I have never yet found them the true kind; they have always proved to be seedlings of Platanus acerifolia, with leaves more deeply cut than the common sort, and lacking the elegant laciniated form and glossy bright green of the true species. *Platanus.*

NEW APPLICATION OF PEAT.

The innumerable applications to which cork is now put, and the increasing demand for it, is a very good plea why we should look around us for any substances that might be used as a substitute for it. Fragments of cork, which were formerly considered waste, are now made into a stuffing for beds, as well as for pulverising and mixing with caoutchouc, which constitutes Kamptulicon. Depending, as we do chiefly, on the forests of Spain and Portugal for our supplies of cork, it is our duty to look out for new and similar substances, as well as to spread the cultivation of cork itself in climates suitable for its production. It was with this forethought that the Colonial Government of South Australia recently undertook to introduce this useful economic plant into that colony.

Rough or virgin cork, which was formerly considered useful only for fuel in Portugal, being of such irregular growth and loose open texture, has of late been introduced into this country for horticultural purposes, such for example as imitation rustic rockwork for growing Ferns or Orchids upon, as it absorbs so much moisture. But after all, it is not a difficult matter to find corky substances in the vegetable kingdom: the difficulty is in getting them adapted for economic purposes. I might mention many that are well suited to uses to which cork is at present applied, as, for instance, the wood of the Indian Shola (Æschynomene aspera, L.), or that of the West Indian Cotton tree (Ochroma Lagopus, Sw.), besides a host of others. I am not prepared to say that all or any of these could ever become a perfect substitute for cork; on the contrary, I know that as stoppers for bottles cork must ever hold its place, but I do say that there are many substances, quite as light and perhaps lighter than cork, that might be used for such purposes as the lining of insect trays. Pressed peat is one of the most recent materials which have come under my notice as applicable to this purpose. Peat, as we know, is decomposed vegetable matter, into the composition of which Mosses largely enter. Near the surface peat is light and porous, and of course only partially decomposed; the lowest stratum is that which is best adapted for fuel, being harder and nearer the density of coal, and of a black colour, but it is the surface peat of which I have now to speak. It is easily cut out with a spade, and upon exposure to the air and light usually changes quickly in colour from a dusky yellow to a darkish brown, but a specimen of pressed peat has lately been presented to the Kew Museum of a colour as near that of cork as possible, and considerably lighter in weight than a good even-grown piece of cork of the same bulk would be. The specimen in question is about the size of a common brick, and the angles are as sharply cut. This material is undoubtedly well adapted to the purpose for which it is recommended, viz., that of lining insect boxes, for the finest entomological pin can be inserted without fear of bending. The whole of the entomological cases in the Polytechnic at Zurich are now lined with this material. It is obtained from the peat bogs of Hanover, but the bogs of Ireland, Dartmoor, and others of our own country would furnish us with a similar product. In these days, when so much is done towards converting waste products into useful articles, and when peat itself is one of the products upon which so much has been said and written, but comparatively little practically effected, I should be glad to see it brought into use with us, even to the extent to which the entomologists of Zurich have applied it. *J.*

EXTRACTS FROM THE JOURNAL

OF Mr. John Gould Veitch,

DURING A TRIP TO THE AUSTRALIAN COLONIES AND THE SOUTH SEA ISLANDS.

(*Continued from page 291.*)

November 1st, 1865. Melbourne.—My visit to the colony of Victoria was one of great interest. It is in many respects the most prosperous and advanced portion of Australia. Melbourne is doubtless destined at some future day to become one of the most important points of the whole of Australia, though at present Sydney has still the advantage of age. Many public institutions, societies, and buildings are long established whereas in Melbourne nothing is finished, everything is in course of formation. One cannot but admire, however, the foresight and sound principles so universally displayed, which must in time produce the most satisfactory results.

Hobson's Bay, at the head of which the city of Melbourne is built, is devoid of picturesque scenery or especial interest, and cannot be compared with the beautiful harbour of Port Jackson. The aspect of the country in the immediate neighbourhood of the town is also uninteresting, and needs no special remark. It is the same undulating grassy country so generally met with on the Australian coast, without even *green* vegetation to add to its beauty.

A stranger's first impression of Melbourne is most pleasing. It is laid out with the greatest regularity; the streets all run at right angles, and are both wide and beautifully clean. Numerous public buildings on a grand scale are in course of construction, the principal being the Library, Post Office, University, Catholic Cathedral, and Bank of Victoria. A striking feature about Melbourne worthy of remark is the quantity of ground set aside for the recreation of the public. Probably there is no town in the world which possesses so many public parks and reserves. At some future day these will be of immense importance to the city, and add greatly to its beauty.

Horticulture in Victoria is making rapid advances. Private firms import largely and with great spirit from Europe. Many things, such as Roses, fruit trees, soft-wooded plants, &c., are received in Melbourne a few months after becoming known at home. The climate of Melbourne is colder than that of Sydney, the temperature during the summer months being much the same, but that of the winter more severe. The nature of the soil is also better, so that horticultural operations differ slightly from those of Sydney, and are carried on more as in England. Glasshouses for the cultivation of tender plants are necessities rather than luxuries.

Almost all our forest and Coniferous trees thrive admirably; the Wellingtonia gigantea for instance grows, if possible, faster than in England. Again, all our English fruits do well. During my visit in November Cherries and Gooseberries were plentiful, and Apricots just coming in; later, Plums, Peaches, Pears, Apples, &c., are most abundant. Vines are planted on a large scale in Victoria, and a good deal of wine is annually made. Light wines (resembling those made on the banks of the Rhine) bid fair to become the general beverage of the country. Many farmers even now give their workmen a daily allowance of wine, just as our Devonshire labourers have cider.

The Melbourne Botanic Gardens are beautifully situated about a mile from the town; they comprise over 160 acres of ground, lying in the form of an extensive amphitheatre, gradually falling to the banks of the River Yarra. Adjoining the gardens is a Government reserve of 170 acres, selected as the future site for the mansion and private domain of the Governor of Victoria. The selection would appear to be an admirable one, for, although within easy distance of the city, its privacy is complete, and it commands at once a bird's-eye view of the whole town and a large extent of surrounding country, together with a view of Hobson's Bay and its shipping. The whole of these grounds are under the directorship of Dr. Mueller, the celebrated botanist, so well known in Europe in connection with the flora of Australia. The Melbourne Botanic Gardens, like almost everything else, are in a state of formation; no portion of them can be said to be finished or in order. From this cause they do not present an attractive appearance, and contrast but poorly with those of Sydney. The natural capabilities of the site, however, are doubtless very great, and time only is wanted to render them worthy of comparison with any in Europe.

With a view to render the gardens a popular place of resort and promenade, the greater portion of the grounds are laid down in Grass and ornamentally planted, while at the base of the amphitheatre an artificial lake of 14 acres in extent has been formed from the waters of the Yarra. The effect thus produced from the ornamentally-planted rising ground is very good. Several islands are scattered about the lake, on which clumps of Bamboos, Weeping Willows, Tree Ferns, Dracænas, Papyrus, &c., are most suitably introduced, whilst numberless waterfowl from all parts of the world seem to be perfectly at home, and form a source of general attraction. An allotment of land is set aside exclusively for the exemplification of the natural system of Botany. Again, several acres are inclosed and reserved as a nursery for the propagation and growth of forest and coniferous trees and shrubs, many thousands being annually required for the various public grounds in course of formation throughout the colony, and almost all of which are supplied by Dr. Mueller.

There are several greenhouses, a Palm-house, heated by hot-water, in which the plants of North Australia and other tropical countries are cultivated; a small conservatory, containing chiefly Ferns and flowering plants, and in addition some five or six propagating houses. In forming the garden, Dr. Mueller has taken into consideration the great desirability of affording shade in so hot a climate. Most of the main walks are planted with permanent trees, to form avenues, whilst in some places hedges have been introduced. Of the 42 kinds of avenue trees which are being tried, many are natives of Australia, such as Grevillea robusta, Araucaria Bidwillii, several species of Ficus and Sterculias, &c. Those of foreign introduction which are found to do best, are Maples, Planes, Elms, Poplars, Birch, Pinus insignis, halepensis and canariensis, Cedrus Deodara, Wellingtonia gigantea, and Cupressus Lawsoniana, torulosa, and macrocarpa.

As hedge plants, Acacias, especially A. lophantha, the close-growing New Zealand Pittosporum, and the

Cupressus tribe seem to do best. One thousand Cork Oaks, recently received from Kew, have been planted and are doing well. Should this trial prove a successful one it is confidently expected that the Cork tree will be of great commercial value to this colony. To give an idea of the immense variety of plants collected together by Dr. Mueller, and planted in the garden and domain, I may mention that there is a complete collection of the known Eucalypti and Melaleucas, 110 species of Acacias, and over 10,000 Coniferous trees. Those which seem to be the most suitable to the climate, in addition to those before mentioned, are Pinus Pinaster, maritima, Laricio, Cembra, excelsa, Strobus, Sabiniana, and Abies Douglasii and Nordmanniana. Following the plan adopted at Kew, the wing of a building which some day is intended to become a Museum of Natural History, has been constructed on the grounds; it is now exclusively used as an herbarium, and already contains nearly 300,000 dried specimens.

Attached to the University of Melbourne is a small but well-kept Botanical Garden, containing a large collection of plants, systematically arranged for the exclusive use of the students. The grounds contain little novelty, but I was much struck with their extreme neatness. Their condition reflects great credit on Mr. Elliot, the Superintendent. The representatives of the various botanical families are planted on a circular piece of ground of several acres entirely surrounded by a hedge of Acacia lophantha. This plant when clipped forms one of the densest and most elegant hedges that I have seen.

(To be Continued.)

WAGES OF GARDENERS.

I wish the fact that our wages are inadequate needed proving, but it is only too obvious, and it is therefore generally admitted. The universal acquiescence of gardeners, and the emphatic testimony of yourselves and others, place it beyond controversy. In a leading article of the *Chronicle* of Feb. 10, I read—"That gardeners in the best sense of the term, not mere garden labourers, are underpaid, is undeniable. It is equally undeniable that their abilities, and the multifarious requirements expected from them, are such as to entitle them to a higher rate of payment, to a better class of residence, and to a higher position altogether than they generally get."

Starting then with this fact, I will proceed to discuss the reasons and remedies for this state of things. It will be better to take them together, as the discovery of the former will often prove suggestive of the latter. It may be desirable to preface the inquiry by a few remarks on the nature of wages and the general principles that govern them. Adam Smith observes, that "the produce of labour constitutes the natural recompense of labour." In a primitive state, doubtless, when every worker used his own tools on his own material, and only worked to productive ends. Then of course all the enhanced value that anything, be it cotton, leather, or land, derived from the labour expended upon it, became at once and absolutely the wealth of the worker. But as comparatively few workers now work only on their own land, with their own materials, and their own hands, it is obvious that three claimants at least must spring up for the reward that was primarily the heritage of one only. These are the rent of land, the profits of stock, and the wages of labour. Even the man who works for himself is generally compelled to share the produce of his labour between the interests of capital and the rent of land. It thus happens that natural wages can never be enjoyed unless in a state of nature. They are altogether incompatible with civilisation.

Notwithstanding this, and although wages are now generally regulated by mere contract or competition, this elementary principle seems to underlie these contracts, and to exert an influence in determining the vital question of wages. Our great commercial system may be said to rest upon these three foundations—the rent of land, the profits of stock, and the rewards of labour. Absolutely it all rests upon labour alone; for it is only labour that imparts value to the other two. But having acquired worth by labour, the three enrol themselves into a joint-stock company for trading purposes. It will be wise for Labour at the very outset to study the character of his co-partners. Here is Land, a heavy immovable partner, which cannot possibly take any harm, and is protected from injury at all points by stringent laws as well. Then there is Capital, hard and generous as adamant, more than a match for the most keen and grasping of men. There is Labour, often ignorant, isolated, dispirited, weak, oppressed. He is the senior partner in the great firm of the world's industry, but he seems to have lost his rightful position. He is evidently of the dispersed and in the power of the other two. Is it too much to ask that labour should be restored to its legitimate influence in the management, and have its just share of the profits? Surely, between the natural wages, which claimed all the produce of labour as its reward, and the minimum wages (or less cannot be given) which doles out a bare subsistence, a medium might be secured, which would be what Mr. Ruskin contends for—"a just wage." Such a wage cannot be determined by an appeal to supply or demand, nor by trading on the necessities of either party or on men, but by a reference to the great laws of reciprocal obligation and the principles of eternal rectitude. Mr. Ruskin illustrates this point thus—"I want a horse-shoe for my horse. Twenty smiths, or 20,000 smiths may be ready to forge it; their number does not in one atom's weight affect the question of the equitable payment of the one who *does* forge it. It costs me a quarter of an hour of his life, and so much skill and strength of arm, to make that horse-shoe for me. Then at some future time I am bound in equity to give a quarter of an hour and some minutes more of my life (or of some other person's at my disposal), and also as much strength of arm and skill and a little more, in making or doing what the smith may have need of." This may be defined as the theory of paying for labour by equivalents. Mr. Ruskin admits the difficulty of its practical application. The different values of different work, the difficulty of assessing skill at its true worth, render the payment of such wages a matter of complexity. "But these difficulties do not affect the principle of exchange. The real worth of the work may not be easily known, but it has a worth as fixed and real as the specific gravity of a substance, though such specific gravity may not be easily ascertainable when the substance is united with many others. By the present mode of exchange it is impossible to ascertain whether the seller would have taken no less, or the purchaser given no more. But this uncertainty does not prevent people buying for the least or selling for the most possible. And, adds Mr. Ruskin, "It is easier to determine scientifically what a man ought to have for his work, than what his necessities will compel him to take for it. In the one case you try your answer to the sum like a puzzled schoolboy till you find one that fits, in the other you bring out your result within certain limits by process of calculation."

It is impossible to follow Mr. Ruskin here through his lucid reasonings, which result in proving that it is on this vital problem of a just wage that the entire destiny of the worker is ultimately dependent. It must be obvious that if this principle of payment could be applied to gardeners, it would at once remedy the worst evils to which we are exposed. A gentleman wants a gardener. Thirty, fifty, or a hundred men apply for the place. The services to be performed are justly worth, say 120*l.* a year, and they are worth just the same whether one or a thousand men apply for the situation. But the effect of their competition forces the wages down to 70*l.* The result is that the man who obtains the place loses nearly half his legitimate wages. He receives 50*l.* less than he was fairly entitled to. Neither does the evil end here. It is all but certain that the best man has not been selected for the place. More probably the worst has. In this way it happens that the best men may remain idle, while the worthless are employed. Such a mode of hiring workers may be and doubtless is in exact accordance with the dicta of political economy, but it is disastrous to the nation and irreconcilable with justice. And should the working of a system of just wages tend, as Mr. Ruskin anticipates, to shorten the apparent and direct, though not the unseen and collateral power, both of Wealth as the lady of pleasure, and of Capital as the lord of toil, it would surely afford fit matter for rejoicing, knowing, as most of us do, "that the attraction of riches is already too strong, as their authority already too weighty, for the reason of mankind." *D. T. Fish.*

(To be Continued.)

Home Correspondence.

Hardy Edging Plants.—Your talented correspondent has (p. 291) given us a very valuable list of plants for edgings, and I beg leave to tender him my best thanks. Some of the plants are as yet far from common, and consequently little known. I have to add to his valuable list a very old plant, but still one that has no equal in its odour, its elegantly-cut foliage, its determination to grow under all difficulties, and its lovely green—a green quite peculiar. I say nothing of its flower, although that is what Loudon would have called "gardenesque," being double, full, and heaped up with pure white florets, and when gathered retaining their sweetness and other virtues for a long time. I have grown it as an edging, and as a patch upon raised rockwork, and can vouch that it will not disappoint the grower if well used. The plant is no other than the Double White Chamomile. I dare not put my proper name to this note, because the plant is downright vulgar. It hath, indeed, been said of it, "The more it's trampled on the more it grows." No plant likes good treatment better than the Chamomile. I know of very few gardeners that I could trust to plant me an edging of it neatly. Let them break up the old plants into single sets with a tiny bit of root to each at least, get a bit of soft 2 or 3 inches long, and get some puddle, made of cow-dung and clay, rather thicker than paint, and plant the sets neatly in that first, and then add some sifted sand or finely-sifted soil over the puddle, and all will go well if the watering is attended to after. *David Sangster.*

Weather at Eridge Castle, Tunbridge Wells, in 1865:—

Month.	Mean Day-Temperature.	Mean Night-Temperature.	Rain.
	Deg.	Deg.	Inches.
January	38	29	5.13
February	39	30	2.51
March	42	27	3.98
April	68	38	0.26
May	73	43	4.35
June	76	48	1.59
July	78	52	2.93
August	76	50	3.71
September	79	52	—
October	60	43	10.85
November	49	37	4.15
December	43	35	1.71
The year ..	60	40	39.19

The hottest day was the 21st June, when the thermometer indicated 91°; the coldest night the 15th February, when the thermometer marked 7°. *J. Rust.*

Herons and the Weather.—I am ten miles, as herons fly, from a heronry, and 30 from the sea, where they go. We never see them, except in heavy weather. Last Friday week one flew so low as to be within gunshot; "we shall have heavy weather" was immediately said, and within six hours we had that, our heaviest for many years, gale of wind. This barometer may be relied on. *Somerset, March* 30.

Potato Disease and Ladybirds.—The following extract from Miss Eyre's "Walks in the South of France," may perhaps be worth notice:—"Potatos grow well on the mountains; and last year, when all the Potatos in the lowlands were blighted, there was not one touched on the mountains. This tallied with what I had always thought—that the disease arose from a superabundant degree of moisture in the soil. I was told in France that if Beans were planted with Potatos in the lowlands, the Beans prevented the disease by absorbing the superfluous moisture." Allow me to copy another extract from Wood's "Garden Friends and Foes:"—"The ladybirds are an unmitigated benefit to the gardener. . . In the Hop-grounds the ladybirds are to be found in vast numbers feeding upon the 'fly' . . it is calculated that one of these little Amazons will destroy thousands and tens of thousands to her share. . . In some parts of France the gardeners are so well aware of the services rendered by this insect, that they take care of every ladybird which they can find and place it upon some greenhouse plant. 'Each ladybird,' was the saying, 'is money to the farmer.'" Having lived in a Hop country, I can in a degree corroborate the truth of the above, in so far that a good Hop-year was said to be foretold by numerous ladybirds; the cause of the prediction being verified, seems to be accounted for. *H. B.*

Gardeners' Examinations.—Your correspondent "F. N." (see p. 293) cannot have read the former numbers of your Paper, in which you have given a full account of a form of examination already established by the Horticultural Society in connection with the Society of Arts; and if all the head gardeners in the country had met in conference, they could not have devised a better scheme, for a knowledge of the subjects set down for examination must be in daily requisition, and the candidates can be examined without going far from home. I think that there are 10 places in Worcestershire where "F. N." or any one else might be examined on the 13th and 14th of this month, but to be eligible for that it is necessary that he should have passed a preliminary examination on the 13th and 14th of March. From what I have stated it will be seen that the cry for a form of examination is needless. The question is—how many of our head gardeners will even attempt to pass the examination, and give us who have to follow in their footsteps an example worthy of imitation? *W. P. R., Shrubland.*

Cracking of Peach Stones.—Will any of your correspondents kindly inform me why the stones of forced Peaches burst? The trees, two in number, of which I have the care, are very large, each being about 16 feet square; they are about 13 years old, and at present are pictures of good health. The fruit, now stoning, is quite as large, or larger, than common Walnuts. I should state that the trees are planted inside the house, and that they have an area for their roots equal to that occupied by their tops; besides, they have an outside border. The soil is such as the Peach thrives well in, and is in a healthy condition. During the time I have known them, now three years, the fruit has always looked most promising until nearly ripe, when the stones have more or less opened, thus destroying the flavour and beauty of the fruit; and as they did in the past season, becoming filled with earwigs. Can the evil be attributed to giving too much water, or too large a quantity of it at one time, or would too heavy a crop, say an average of 15 dozen on each tree, cause the mischief? As this has puzzled older and wiser heads than mine, who have seen trees forced in precisely the same manner, and yet not crack in the stone, I hope these facts will enable some one to give such a solution of the difficulty as will enable you to prevent it occurring this season. *A Young Gardener.*

The late Mr. Francis Dickson.—I have read your notice (see p. 272) of the lamented death of my much respected cousin, and for more than 33 years my partner in trade, Mr. Francis Dickson. While I most cheerfully and cordially endorse all that is there said of him personally, for no man knew his worth and qualities better than I did, having lived in close friendship with him since we were boys, and having been brought up together, and learned our trade in the same extensive "Edinburgh Nursery and Seed Establishment," yet allow me, for the information and satisfaction of my friends, to correct an error as to his being the *last* of the "Edinburgh Dicksons." The facts are these:—He and myself made up our minds, in the year 1819, when yet fellow apprentices, to go into partnership together, and in that year got and leased land at Chester for the purpose of establishing a nursery. Early the next spring we left Edinburgh, and at once commenced the nursery and seed business in Chester under the firm of "Francis & James Dickson," and so carried on business until the end of the year 1853, when we dissolved partnership by mutual consent—my cousin carrying on business with his sons, and I with my sons, as I am still doing, as separate establishments. It will, therefore, be seen, that as I, an elder brother of my late cousin's (residing at York), and several of his nephews, who were brought up in the same "Edinburgh Establishment" as he and I were, are still living, my late cousin was not the last of the "Edinburgh Dicksons." *James Dickson, The "Newton" Nurseries, near Chester, April* 4.

Mealy Bug.—Be so good as to correct a mistake into which I have fallen in my remarks upon this subject (p. 292):—Bignonia radicans should have been Bignonia venusta. The former, which is sometimes called Tecoma radicans, is hardy here, whilst B. venusta delights in the temperature of a stove or warm conservatory; in the latter its trumpet-like flowers hang at present in clusters. *W. P. R., Shrubland.*

Walnut-tree Bleeding.—I cut off a large branch from a Walnut tree about a month ago, and I am afraid the tree will bleed to death. Can you tell me if I can do anything to stop the bleeding? I am told that there is a cement that would do it. *R. W., Finchley.* [Apply Thomson's Styptic.]

Bale Plant.—Not having seen Mr. B. Goodbold's question respecting this plant, I am at some loss as to the nature of the reply he requires, but from the remarks of "A. S." at p. 292, I think I can guess that the following facts will be of service to him, and not to him only but to others, for the plant in question is no unimportant one. There is a jar of the preserved fruit on the table before me, obtained at a great expense from India by a gentleman living in this neighbourhood, who spent many years in Hindostan, and who had good reason to know the medicinal importance of the fruit of the "Bahl" (Bale, Bael, Bel, Behl, for it is spelt many ways). In cases of dysentery and diarrhœa, when all other remedies have failed, the Bahl has cured the patient. A gentleman from Torquay, a seafaring man, was so ill at Calcutta that he was not expected to rally; and as he had a recommendation from me to call upon my friend, who was then growing Sugar-cane on the Hoogley, he set off from the ship inland as a last resort, to see if aught could be done to save his life. After getting the Bahl, and the comforts of a good home, he rallied, and survived the shock for some 10 or 15 years. As this serious complaint is frequently the forerunner of cholera, and is by itself deadly enough, any remedy of such repute is of the greatest importance. A medical gentleman, 15 miles from Manchester, has used Bahl in this country with good effect. Indeed, it was on Dr. W——'s suggestion that a supply was obtained from India by my friend above mentioned. Your

correspondent is quite right as to the botanical name, Ægle Marmelos. It is the Bengal Quince, belongs to the Orange tribe, has a coarse fleshy fruit, and is fully described in Roxburgh's "Plants of the Coast of Coromandel." The generic name Ægle is taken from the place, that being the name of one of the Hesperides. Indian Bale, the Bale plant, Bale fruit, or Bahl fruit were the names usually given to this article in Hindostan, so that there can be no doubt of the identity, and if any doubt remains, let any one consult the authority given above. *A. Forsyth.*

Foreign Correspondence.

Palace Gardens, Gazeereh, Cairo, Egypt. *March* 5, 1866.—Vine Culture.—It is impossible for a gardener who has any love for his profession, especially if, like me, he is settled in a far-away land, not to take a deep interest in your weekly reports respecting gardening at home. It is incalculable the amount of good which must result from the variety of opinions you promulgate, bearing on points of real interest in horticulture. The larger the induction of facts, the safer and sounder in all cases must be the ultimate conclusions arrived at.

In one of your recent numbers I have read with pleasure the reports of Messrs. Ayres and Meredith on Vine cultivation. The subject is one of importance to English gardeners, and with all that has been said of Mr. Speed, I heartily concur.

The allusion to the garden of I. Platt, Esq., M.P., Llan-fair-fechan, has afforded me peculiar satisfaction. In that gentleman's gardens I feel as if I had a personal interest. It was under my superintendence the foundations for them were laid, and it was I who prepared the borders of many, if not of most of the forcing houses. It is not, however, because of any personal feeling that I obtrude myself on the attention of your readers, but it has seemed to me that certain facts bearing on the success of the gardens in question, but which might have escaped the observation of Messrs. Ayres and Meredith, ought to be distinctly stated.

I found the original bottom dry and gravelly. There was a peculiar incline of the ground to the north and west, which necessitated a large amount of filling up with good round stones, which abounded on the estate. Of these I put a layer, varying in depth from two to six feet; this I overlaid with a thin covering of small stones, in order that more effectually to secure perfect drainage.

The Vine borders were prepared with special care. From an old pasture on the estate I caused a quantity of turf to be cut, composed of good sandy loam. This I had collected into heaps; and having allowed it to lie for about 12 months, I then mixed it with farm-yard manure and crushed bones. The material thus prepared forms the borders of the Vine house.

With regard to the question in connection with which reference has been made to these gardens, I may be excused if I offer an opinion. The first requisite to the successful cultivation of the Vine in England is a thoroughly dry bottom—always implying of course abundance of food for the roots, and those under proper cover. It is of advantage to be able to give or withhold water as occasion may require. The locality, in my opinion, is a matter of subordinate importance. I have seen as good crops inland as I ever saw on the coast.

Some of your readers may say, "What about Vines in Egypt?" On this subject I may take occasion to write soon. Let it suffice for the present to say that they are just now bursting into leaf. *James Hardie.*

Canterbury, New Zealand, *Dec.* 19, 1865.—Cherries.—That the Cherry (says Mr. William Swale, in the *Lyttelton Times*) is equal to the Peach in the shape of stone-fruits in this part of the world, there is abundant proof. The first sample to which I shall allude is the Bigarreau Napoléon, which, as regards size, is more like a Plum than a Cherry. This variety is a good bearer, resembling the old Bigarreau, but is darker in colour, and of first quality and size. The second sample is the May Duke, which is not so large as the last, but it possesses many other good qualities. It is well known to be an abundant bearer, and the hardiest of early Cherries. The third sample is the Black Tartarian, a Cherry of great excellence. It is also valuable for its earliness, and it is a good bearer.

The three varieties just named I consider to be the best we have in New Zealand. I have picked, adds Mr. Swale, 336 lb. or 3 cwt. of ripe early Cherries between December 11th and January 5th, 1866; exclusive of the Morello, Kentish, and other late sorts, which are now ripening and coming into perfection. They have realised for me 1*s.* per lb. from first to last; the trees on which they are grown are very young.

Societies.

Royal Horticultural. *March* 21 (*Weekly Show*).—Bulbous plants were shown on this occasion by Mr. Young, gr. to R. Barclay Esq., Highgate, and Mr. Bartlett, of Hammersmith. Mr. Wm. Paul had an interesting collection of miscellaneous plants, among which were Rhododendrons, a pink Hawthorn nicely in flower, Deutzias, Azaleas, Cinerarias, and other plants. Mr. Young furnished four or five pottfuls of Amaryllis, and a tray of Camellia blooms. From Messrs. Lee of Hammersmith, also came beautiful examples of cut Camellias, the usual collections of forced flowers were contributed by Messrs. Lucking; and Messrs. Reeves had six finely-flowered plants of Boronia gracilis.

April 3.—F. P. Wilson, Esq., F.R.S., in the chair. After the election of new members, and the affiliation of one Society (the Maidstone Horticultural), the usual announcement of awards was made, and the Rev. M. J. Berkeley offered a few remarks on the different subjects exhibited. An Angræcum from Madagascar, with pale primrose-coloured flowers, from Messrs. Veitch, was stated to be in the way of A. bilobum, and it was added, was probably next adverted to. Although introduced many years ago from the Cape of Good Hope, and figured in the Botanical Magazine in 1828, yet this Orchid is still rare in gardens. Among its associates, a class of plants very difficult to cultivate, it was remarked, are not only many remarkable for singularity of appearance, but also some most beautiful species, as, for instance, the magnificent Disa grandiflora, a plant which until recently was considered to be almost unattainable. In an old work by Buxbaum, published at Constantinople, many of these terrestrial Cape Orchids are figured, but whether from dried specimens or from plants growing about Constantinople, Mr. Berkeley was unable to say. In connection with the variegated variety of Cynosurus cristatus, called foliis variegatis, it was remarked that in some localities nearly all plants became variegated. Lord Chief Baron Pollock, it was stated, has in his garden at Hatton multitudes of variegated forms of wild plants, all collected within a few miles round his house. In this Cynosurus there is also another variegated form, with more green in it than in that under notice. After adverting to the greenhouse Exacid Lysimena floribundum, Rhododendron Griffithii, a plant of which was shown by Mr. Standish, engaged attention. It has large pure white flowers, which are sweet-scented, like Hawthorn. It is a Bhotan species, of which R. Aucklandii is probably a variety. Camellia Limpidria, red mottled with white, Mr. Berkeley said doubtless came from Italy (Insubria meaning Lombardy), a country from which many varieties of Camellias have been obtained. In connection with Italian Camellias, a minute Fungus was mentioned affecting the leaves of these plants, and also those of Oranges, was some four or five years ago sent to Mr. Berkeley for examination. Since then, however, he had heard nothing more of the affection, a very fortunate circumstance, as at the time referred to (1861) Mr. Berkeley was overwhelmed with work. Ripe fruit of Ficus Cooperi, growing on a plant from the Society's Garden, was exhibited. Though of great value as an ornamental-foliaged plant, this Fig can never be grown for the sake of its fruit, which was stated to have no more flavour than the fruit of the pale sweet yellow Hawthorn. It was remarked, however, Mr. Berkeley said, as to whether Figs could be advantageously grown as standards in the Midland counties or not. His (Mr. Berkeley's) experience was that they could only be cultivated in that manner profitably on the warm, sandy, inland-grown trees he could observe, as having only produced a few fruit one warm summer year in some 40 years, and that on the current summer's shoots, not on last year's wood. About Hastings, however, fruit of exquisite flavour ripens on Standard Figs in abundance. Allusion was then made to an experiment respecting the growth of Truffles now in progress in the Society's Garden, the ground having been rather limy. Of late, Mr. Berkeley is in hopes may not be without good results. Several attempts to grow Truffles artificially in this country were instanced, all of which had ended in failure, the difficulty being to get the spawn to run. The English Truffle was said to be white, while that of Paris is black, and of finer flavour; it was stated, however, that there are many species of Truffle in this country, Mr. Broome having noticed no fewer than 40 near Bath. About Poitou, whence Truffles are largely supplied to the Paris markets, the way in which they are grown is merely to plant Oaks and Beeches, and to reinforce it in and sow acorns on it. In ten or twelve years Truffles may be found under the trees, and the bed will last for 20 years or more, when a fresh plantation is made. In this country it is thought that they succeed best in Beech woods, but an impression was that they would be found in woods even under Spruce Firs; in short, Mr. Berkeley stated that it did not matter much what kind of tree was employed so long as the soil was calcareous. That he considered indispensable, and another important point was to disturb the ground as little as possible after the spawn had been put in. Instances of this it was stated that a plantation in which 3 or 4 lb. of Truffles could be gathered in as many hours was entirely ruined by being dug over, and otherwise disturbed. Greater knowledge of the nature of the spawn, which by some had been said to be mycelium, was still a desideratum, but what is most wanted, for until that is acquired little progress with respect to artificial cultivation can be expected.

Scale. (*Floral Committee*).—Messrs. E. G. Henderson contributed the beautiful variegated variety of Cynosurus, mentioned above, together with Limonium sinuatum, Cineraria cruenta, Calathium, and other plants. A Silver Banksian Medal was awarded; handsome trusses of Epiphyllum, also of Azalea indica alba, and Rhododendron Princess Royal, were shown by Messrs. Veitch, and a Cultural Commendation was awarded to the way of Mr. Pollock, named Sophia Cusack, and other plants. Messrs. Veitch also contributed a fine Dipladenia Brearleyana, which received a First-class Certificate. Of the Amaryllis referred to above; associated with it were Aucuba japonica bicolor, with leaves splashed and mottled with yellow; Maranta splendida, with pale green markings, on a deep green ground colour, a charming plant, to which a First-class Certificate was awarded; Rhododendron Azaleas, viz. President Victor Van den Hecke, and Dieffenbachia gigantea, with marbled stems, and leaves spotted with white in the neighbourhood of the midrib; for this last a Second-class Certificate was awarded. The same collection, moreover, contained a fine specimen of Lælia purpurata, with cupped flesh-coloured faintly striped flowers, to which a First-class Certificate was awarded, and associated with it were other Camellias; the glorious Azalea Stella, with brilliant large orange-salmon coloured flowers, blotched in the upper petals with white, Hibiscus Cooperi, Dracæna Chelsoni, Croton Weismanni, the singular-looking Anthurium Scherzerianum, and other plants. Examples of a Forget-me-Not called Myosotis hybridus semperflorens Imperatrice Elizabeth came from Messrs. Haage & Schmidt, of Erfurt. Mr. Watson, St. Albans, sent Dr. Anderson Graham, of Calcutta, named Miss Watson, with beautifully-marked foliage, and large rosy-salmon well-formed flowers. Mr. Blair, gr. to Sir G. Broke Middleton, Bart., Shrubland Park, Ipswich, exhibited specimens of the showy Bougainvillea spectabilis in beautiful condition. Mr. Standish contributed a deep chocolate-coloured Rhododendron Griffithii. In addition to the Begonia speciosa already referred to, Mr. W. Saunders furnished a variegated leaved Amorphophallus, a Hippeastrum from Vera Cruz, and the singular-looking Sauromatum speciosum, with a short spadix, and a long green pointed sheath-like appendage to the spathe. From the Society's Garden came a group of plants, among which were double-blossomed Peaches, Odontoglossum Alexandræ, a standard Wistaria sinensis finely in flower, Cinerarias, Deutzias, Cytisus, Pelargoniums, and Dracænas.

Scale and Insect Committee.—Mr. Swan, Hollow Walnut, Woodstock, Oxfordshire, came examples of English Grape, Gooseberry, and Rhubarb Wines, stated to have been made without spirituous liquors. A Pine-apple was furnished by Mr. Standish; and a Seedling Apple by Messrs. Ivery of Dorking, to which latter a First-class Certificate was awarded. The fruit of this shown was of medium size, yellow, mottled and streaked with red on the sunny side, excellent in flavour, and in a state of perfect preservation. This was stated to have been raised by Mr. Balchin, Union Gardens, Dorking, and promises to be an acquisition.

Botanical of Edinburgh. *Feb.* 9.—Professor Archer in the chair. The following communications were read:—I. *On Diseases of Plants in connection with Epidemics in Man and Animals.* By Dr. W. Lauder Lindsay.—II. *Notes on a Botanical Tour through Canada in* 1865. By Mr. R. M. Stark. These were made during excursions to Montreal, Ottawa, the shores of the Georgian Bay, and Niagara. Among the more remarkable plants found by him were species of Cypripedium and other terrestrial Orchids, Asclepias, Lilium, Trillium, Uvularia, Erythronium, &c. Some interesting facts were also given regarding the geographical distribution of several of these plants over the country, and of the prevailing weeds, most of which seemed to be of European origin. Several of the rare American Ferns and their varieties were also noticed.—III. *Notes of a supposed Ash Tree fossil in a Peat Moss in the Island of Shapinshay, Orkney.* By Mr. Alex. Buchan. Four specimens of what appeared to be trees were sent to Mr. Buchan from a moss in Shapinshay by Mr. Balfour, of Balfour. From this and other facts it was conjectured that Orkney has not always been the treeless region that it is now is, but that at least Oaks and Birches of considerable dimensions had once grown there. The author then referred to the relations existing between the physical features of Orkney and its climate. He stated that the hilly country in the west of Mainland consisted of limp and trappean rocks, while those in the west of Scotland; but that to the east of the high ground the climate was drier and the rainfall less, being in Shapinshay very little more than the rainfall of Edinburgh. It is in this latter district that most of the trees have been found, and it is probable that trees might still be grown with some success in this comparatively dry climate. Referring to the effect which would follow if Orkney was joined to Scotland in increasing the cold of winter and the heat of summer, and thereby producing a climate better suited to the growth of trees, he inferred the probability of Orkney being united to the Mainland of Scotland at the time when the large trees as those to which he had referred grew in Shapinshay.—IV. *On the Development of Leaves.* By Mr. Wm R. M'Nab.—V. *Report on the Flowering of Plants in the open air at the Royal Botanic Garden.* By Mr. M'Nab. Since the 11th of January the temperature has progressed at a very rapid rate, owing to the comparative mildness of the weather. On the 12th of January the thermometer about daylight fell to 20°, and on the 13th to 21°. With the exception of the 29th, 30th, and 31st of January, when the thermometer on each of these mornings fell respectively 1°, 3°, and 2° below zero, no other night showed any appearance of frost. Since the commencement of February the lowest point indicated up to yesterday was 36°, while this morning (9th Feb.) the thermometer fell to 30°, but only for a short period. The report on the aspect of the open air vegetation laid before the last meeting, showed that 177 species of plants were then in flower. This large number has greatly diminished the amount usually recorded as being in bloom at the February meeting—only 116 extra being now added—viz., Galanthus nivalis on the 14th January; Eranthis hyemalis on the 20th; Crocus vernus, 23d; Leucojum vernum, 25th; Scilla bifolia, 30th; Galanthus plicatus on the 4th February; Orobus vernus, 6th; Narcissus cordifolia, 7th; Scilla sibirica, 8th; Symplocarpus fœtidus, 8th. Many of the plants recorded as being in flower on the 11th of January had only a few blooms expanded at that time; some of these are now in perfect flower, such as Helleborus orientalis, H. niger, H. abschasus, H. albicans, H. olympicus, Crocus sativus, &c. Many of the ordinary herbaceous plants continue to flower profusely, and have been blooming during the whole winter. Of these may be mentioned the Pansy, Sweet Violet, Primroses, Oxalips, Double Daisies, Stocks, Wallflowers, and the Sweet-scented and White Coltsfoot. The Winter Aconite, the common and Crimean Snowdrop, and Vernal Snowflake are now in perfection, and all the varieties of the Crocus vernus are rapidly advancing. Calceolarias and Verbenas are still alive in the open ground, no frost having occurred of sufficient force to destroy them. Herbaceous vegetation of every description is advancing fast, such as Tulips, Crown Imperials, Narcissus, Jonquils, Snowflakes and Glads, some of them having pushed from 2 to 6 inches through the ground. Many of the Rhododendrons are also showing their flower-spikes freely; the yellow Japan Jasmine is still in full bloom, and the Rhododendron Nobleanum is also in flower in sheltered situations; while the Ranunculus, from the incessant gales accompanied by heavy showers, has been robbed of the beauty which it usually presents at this season of the year. Sallow catkins and Scotch Elm seeds are also in flower; standard plants of the latter being unusually green with new formed foliage, and also thickly studded with flower buds. The Garrya elliptica, Hazels, and Poplars are still covered with their catkins. The buds of Ribes, Roses, Scarlet Currants, Gooseberries, and Thorns are now fast advanced, the leaves of the latter being partially expanded. The leaf-buds of all the deciduous forest trees are thickening up very fast, so as to make them appear darker and heavier than they generally are at this period of the year. There is every prospect of an early spring, unless some unforeseen check of weather takes place. Many of the plants now recorded as being in flower are fully a month earlier compared with late years. From a record kept by M'Nab of the flowering of the Snowdrop during the last 16 years, marking the date of the opening of the first bloom during each season, it is found that in 1850 the first flower was seen open towards the end of December. In 1851, 1852, 1853, 1854, 1858, 1859, 1860, 1861, 1862, 1864, 1865, and 1866, the first flowers were observed open in January, and mostly between the 8th and 24th of the month. In 1855, 1856, and 1857 the first flowers appeared in bloom in February, while in 1863 the month of March before the first bloom appeared, owing to the frozen state of the ground under a coating of snow.—The Rev. Francis Redford sent a notice of the flowering of Daphne Mezereum on the 21st January, the Winter Aconite on the 24th, and the Crocus sativus on the 26th, at St. Paul's Parsonage, Silloth.

March 8.—Dr. A. Dickson, V.P., in the chair. The following communications were read:—I. *Notice of the Plantations of Cinchonas at Darjeeling.* By Dr. Anderson. Communicated by Dr. Lindsay. In this paper it was stated that plantations of Cinchona have been formed at Darjeeling at five elevations—viz., 5321 feet, 5000 feet, 4410 feet, 3332 feet, and 2256 feet above the level of the sea; and that the number of Cinchona plants in these plantations on 1st November, 1865, were—1st, 1,000 C. succirubra, 1,000 C. officinalis, 1,000 C. micrantha, 1,000 C. 4264; C. officinalis (including vars.), 56,330. C. Pahudiana, 5092—total, 108,962.—II. *Notes of a Botanical Tour through the United States in* 1865. By Mr R. M. Stark. The author gave a short sketch of various botanical trips he had made during last year in the United States.—III. *Report on the Flowering of Plants in the Open Air at the Royal Botanic Garden.* By Mr. M'Nab. Mr. M'Nab stated that since the last meeting of the Botanical Society (Feb. 9, 1866), vegetation had almost been at a standstill in consequence of the prevalence of frost and snow. Up to the 16th of February the lowest reading of the self-registering thermometer were 20° and 21°, which happened on the 12th and 13th of January. On four other mornings only did the thermometer fall below the freezing point—viz., once to 28°, twice to 30°, and once to 31°. The comparatively mild weather then experienced caused vegetation to advance rapidly, as indicated by the large number of plants in flower recorded at the meetings of the Society on 11th Jan. and 9th Feb. Since the latter date there has been a complete change. Only on three mornings did the thermometer at daylight stand above the freezing point—viz. on 23d February, when it indicated 34°, 23d February, 38°, and 3d March, 34°, on all other mornings the thermometer ranged from 28° to 32°, except on the morning of the 5th of March, when it fell to 14°. At the present time, Snowdrops may be said to be in perfection, as well as the Winter Aconite, Vernal Snowflake, and the whole of Gold Crocus (*C. susianus*), while the ordinary varieties of spring Crocuses, with the exception of the large yellow variety are still very far behind

Scilla sibirica and S. bifolia remain much in the same state as at the last report. Many of the plants previously mentioned as being in bloom during the months of January and February have not advanced. The dark variety of Primula vulgaris has been flowering freely since the beginning of December. The varieties of Primula vulgaris are exceedingly hardy, and therefore very useful, and ought to be more cultivated during the spring months as edging plants. When done flowering they can be stored away in some back corner till autumn. The dwarf Narcissus pumilus, which usually flowers about the end of February, is not yet showing bloom. The Crown Imperial (Fritillaria imperialis), which has been noted in flower as early as the 10th of March, is not more than six inches above the surface of the ground, which is exactly the height it was on the 9th of February last. Ribes sanguineum has been recorded in flower as early as the 5th of March, but up to this time there are no signs of any of the flower buds opening, flowers, and unexpanded buds of all the early Rhododendrons, particularly those belonging to the Nobleanum set, have been totally destroyed by the late severe frost, while all the later varieties seem as yet uninjured. The catkins of the Hazel and Poplar have become brown and flaccid, as well as the young growths on many of the Roses pruned during the winter months. The spring-flowering Hellebores have suffered much, and the young shoots of many other perennial herbaceous plants are more or less injured. Intermediate Stocks and Wallflowers planted out last August have grown rapidly during the autumn and winter months. This forward state has caused many of these plants to get destroyed by the recent low temperature. In some cases their tops were taken off late in autumn for the purpose of dwarfing, which has caused them to put out numerous young growths. Those so treated are now in perfect health, while many of those uncut are much destroyed. The topping of many of these plants seems to secure them against the effects of an inclement winter. Owing to the state of the weather during the past month, few plants can be added to the former lists. Of shrubby plants, the only additional one to record is Nuttallia cerasiformis, a Rosaceous plant which came into flower on the 12th of February, both on walls and standards. This introduction from California may be ranked amongst our earliest shrubby plants introduced during recent years, both for flower and foliage. This is one of the few instances in which a botanical name being applied to two different plants at the present time. The plant under consideration was named Nuttallia by Dr. Torrey in 1848, after a distinguished American botanist. The other plant, which has the same generic name, is an American Malvaceous plant, named after the same botanist, by Dick, in 1833. Amongst the herbaceous plants which have flowered since the last meeting are Sisyrinchium grandiflorum album on the 23d of February, Arabis albida on the 24th of February, and Aubrietia grandiflora on 25th February; certainly a short list when their advanced period of the year is considered.—— Miss Gibson-Craig, Hermiston House, sent a note describing a Hyacinth bulb which had been placed in a flower-pot in an inverted position. It produced leaves and a flowering stem with flower buds beneath the soil, which, when the plant was taken out and placed in the proper position, expanded in a few days.

Zoological of London.—*Feb.* 27.—Dr J. E. Gray, F.R.S., in the chair. Dr. Gray exhibited and made remarks on a series of glass models of Actiniæ, made in Dresden, which had been presented to the Trustees of the British Museum by the Rev. R. Hudson.—A communication was read from Professor Baird, of the Smithsonian Institution, Washington, containing some notes on the habits of the American Prong-Buck (Antilocapra americana) by Dr. C. A. Canfield, which had been addressed in a letter to Professor Baird, from Monterey County, California, in September, 1858. Dr. Canfield's notes tended to show that this animal sheds its horns periodically, and thus confirmed Mr. Bartlett's observations made upon this animal from the example living in the Society's Gardens, which had been reported to the Society at one of their previous meetings. —Dr. J. E. Gray communicated a general revision of the genera of Phyllostomine or Leaf-nosed Bats, in continuation of former papers upon the Cheiroptera, or Chiroptera.—Mr. P. L. Sclater read a paper upon the genera and species of Caprimulgidæ belonging to the New World, commencing his communication by some preliminary remarks on the general arrangement of the whole family, and its geographical distribution. He then proposed to divide the family Caprimulgidæ into three sub-families—1, Caprimulgine; 2, Steatornithinæ; 3, Podargine—and showed that each of these groups possessed very distinct characters, which might almost entitle them to rank as three different families. As regards the American Caprimulgidæ, Mr. Sclater was acquainted with about 40 well-distinguished species of this family, two from the Old World, among which was one from New Grenada, considered to be new to science, and proposed to be called Stenopsis ruficervix.

March 13.—Dr. Gray in the chair. Mr. St. George Mivart communicated some notes on the dentition and other points in the structure of the rare Lemurine animal, Microrhynchus laniger, of Madagascar.—A paper was read by Mr. St. G. Mivart and Dr. J. Murie, on the anatomy of the Agouti (Dasyprocta cristata), principally relating to the myology of this animal.—Mr. A. Murray read a communication on the minor characters by which the species of Mammals may be distinguished, and called particular attention to the structure of the hair as shown under the microscope, and the form of the manus, likely to lead to results available in classification.—Mr. P. L. Sclater read some additional notes on the limits of the genera Dendrocygna and Tadorna, being supplementary to previous communications to the Society upon the same subject.—Mr. Fraser communicated a second list of species of Mollusks collected by Mr. R. Swinhoe in Formosa, which had been drawn up for him by Mr. H. Adams.—Mr. R. B. Tristram gave an account of the recent capture of the great Ribbon Fish (Gymnetrus Banksii) off the coast of Durham.—One or two other communications were also read.

Notices of Books.

The Transactions of the Linnean Society of London. Vol. 25. Part 2.

In this Part, among certain zoological papers of great value and importance, are some botanical memoirs, the subjects of which fall more especially within our scope. Dr. Hooker describes three species of Aristolochia from Western Tropical Africa, one of these, A. Goldiana, rivals A. gigas in the size of its flowers. Imagine a large funnel-shaped flower of a violet colour variegated with purple, nearly 2 feet in length, the lower part of the funnel bent at an acute angle with the upper portion, which forms a symmetrical bell-shaped cup. In internal structure this flower differs from most of its congeners, and on all accounts it is very desirable that the plant be speedily introduced to our stoves. It is a native of Sierra Leone.

Captain Beddome contributes a list of exogenous plants found in the Anamallay mountains of Southern India, among which are several new species. Mr. Miers has a paper on Gripidea, a new genus of Loasaceæ, founded on a plant collected in Brazil by Mr. Weir. It has five stamens opposite each of the five petals, and its capsule, like that of Caiophora, bursts along its sides into three spiral valves, attached to which are the placentæ bearing numerous very minute seeds, having a loose membranous integument wholly detached from the nucleus of the seed, and destitute of those nourishing vessels which ordinarily extend from the placenta to the base of the seed. A similar structure is observable in the seeds of Bartonia and Blumenbachia. We trust Mr. Miers will continue his observations on these anomalous seeds. Mr. Bentham gives a description of some new genera and species of tropical Leguminosæ, accompanied by plates. Among them is a climbing plant, with splendid bunches of pendulous milk-white flowers, the fringed edges of whose petals are edged with gold. Each flower is nearly a foot in length, and has a long slender tube from the mouth of which protrudes the papilionaceous corolla. It has been named in honour of the author of the Lusiad, Camoensia, and was discovered in Western Tropical Africa by Dr. Welwitsch.

Another noble flower is that of Baikiea insignis. The tree that produces them is a native of Fernando Po. The flowers are borne on nodding clusters, and each has a very thick calyx divided into linear segments, 3 in. in length; the oblong petals attain double the size of the sepals, and are slightly downy on the outer surface.

Supplementum Sylloges Floræ Europææ. Auctore Carol. Frider. Nyman. Oerebroæ, 1865. Pp. 78.

The "Sylloge" of Nyman is well known as a handy book of reference on questions relating to the names and distribution of European plants. The author has now added a Supplement, bringing the information down to 1865. This will be found a very useful adjunct to the original work, notwithstanding some few oversights, such for instance as attributing the name Polypodium flexile to Dr. Milde, with the date of 1857, whereas it had been published four years previously in England. A large number of new names of authors are referred to their typical species under Hieracium and Rubus.

Florists' Flowers.

The National Rose Show (see p. 295).—I agree with the Editors as to their answers to both the questions proposed by "D., Deal." We have nothing to do with French dates, or with the time English nurserymen may receive their Roses from France for propagation. The Roses must date from the time of general introduction to the public. The Roses of 1864 and 1865 are the Roses sent out in the spring of those years, and advertised as belonging to those years. You may get the advertisement of 1864 Roses in the autumn of 1863; but the Roses must be dated from the time of spring delivery. If the Roses of 1864 and 1865 are to be shown together, it is plain that the judges must award the prize to the best Roses, without reference to the 12 and 6 of the Roses of 1864 and 1865, or of the 12 and 6 Roses of 1865 and 1864. It is mainly a nurseryman's question. It would be well if one of the leaders would state his opinion. It is, I think, desirable that some of the novelties of 1866 should be shown, if they are good. I think, perhaps, it would be well, if the Horticultural Society see no objection, to word the class thus: For 18 Roses sent out in the spring of the year 1864 and subsequently. That would give persons an opportunity of making up their box out of the three years. Of course the 1864 Roses will have the best chance. I hope that Mr. Lindley will not be shut out; I believe it to be the best seedling. At any rate I have ordered 12 plants of it, and at present I have ordered nothing else. We want deep purples, lakes, and blue violets. There appear to be some of these colours in the list of the novelties of 1866, namely, Abraham Lincoln, blackish purple; Carl Coers, dark purple; Souvenir de Docteur Jamain, fine bluish violet. If these are true to colour, and good in other respects, they will be acquisitions in these days of rose and crimson. *W. F. Radclyffe, Tarrant Rushton.*

The Reminiscences of a Florist are often very delightful. The love of flowers is inherent in our nature. We find in the garden that enjoyment which the world often refuses. We daily see the bud expanding into the flower, and our desires are excited to see what beauties it may possess. We raise seedlings, and we have a kind of affection for them almost as great as if they were part of our family, and feel the highest pleasure when we see them take a prominent place at an exhibition. It is now upwards of 60 years since I made my first attempt at gardening in a plot of ground in the centre of the city of Manchester, and it is as vivid in my recollection as if it were only yesterday. It did not consist of flowers, as they then were at a price my finances (a penny a week) would not allow, and it was some years before I could call myself an owner of flowers.

I began with the Pinks—as Tulips, Auriculas, Carnations, and Picotees, such as they were, were very dear. After more than 52 years I could go to the garden where I grew them, and point out the spot to a few inches. The leading varieties at that time (1813) were Midshipman, I believe, a red variety, and Davy's Eclipse, black and white. The Pinks of those days would now scarcely be grown as border flowers. Mr. Bow, of Broughton, near Manchester, above 40 years ago became a Pink grower, and being a man who had pushed himself into a position, turned those energies to the improvement of flowers; and his gardener, under his directions, raised many Pinks, which for a time eclipsed those in cultivation, and led the way to greater improvements. Falkner's Duke of St. Albans became, as it was termed, a clipper, and eclipsed all the purple-laced ones for many years; now it is consigned to oblivion, and I question if it could be obtained, although its only fault lay in its serrated edges. At that period there were but few florists in the South, excepting Maddock, succeeded by Groom & Davy, of Chelsea—all were principally supplied from the North, which was swarming with florists almost like a beehive; and one Thomas was the collector or buyer for the Southern growers, by which he made an independency, and retired. Pinks have now arrived at perfection, and they are nearly as large as Carnations. John Ball, were it not for the centre (which is called by the Northern florists the *mooning*, and should be as round as possible) being starry, which is a drawback, would be perfection itself. In 1822 there were 45 varieties of purple-laced Pinks; amongst the winners, Turner's Prince Regent took 19 first and premium prizes, and Ardwick Beauty took 15; these are not to be found now. The red-laced numbered 35 varieties, and Field's Fair Phillis took the lead. The same may be said of them as of the purple-laced. The Black and Whites numbered 30, Davy's Eclipse taking the lead.

Auriculas then began to take my attention, and I purchased from Daniel Bradshaw, of Prestwich, near Manchester, a small quantity. I remember well that we had a large flag outside the summer-house, not quite a yard square, which served for various purposes. Under this flag, which stood on four pieces of wood, I wintered them for many years, and then they got at last a frame with glass for their winter quarters, but I did not observe that they grew any better.

It may probably be interesting to present growers to have some particulars of this flower. The Auricula was grown at Middleton, near Manchester, as early as 1725. The oldest varieties known are Rule Arbitrar, green edged; Hortaine, white edged; and Pott's Eclipse green edged. The first and second can be traced as far back as 1757—108 years ago, and the third to 1767, 98 years ago. About the year 1785 the following varieties were introduced:—Grime's Privateer, green edged, shown then in the grey edged class; Popplewell's Conqueror, white edged; Grime's Hyder Ali; Wrigley's Northern Hero, green edged; Walker's Goldfinch, yellow self, now known as Gorton's Goldfinch; Gorton's Champion, green edged; and Gorton's Stadholder, yellow self. In 1776 the principal varieties were Taylor's Victory—(this variety in 1822 took three prizes—two 4ths and one 5th; Siberon's Fame, light green edged; Foden's May Duke, green edged; Pott's Delegate, green edged; Clough's Defiance, green edged; Clough's Jingling Johnny, green edged; Riding's Junius, grey edged; Ashworth's Man-of-War, grey edged; Hortaine, white edged; Hughes' Pillar of Beauty, white edged; Berry's Lord Lee, self; and Pope's Gardener, self. These were then considered very fine, but only three out of these are now in cultivation—Jingling Johnny, Lord Lee, and Pillar of Beauty. Joseph Partington, 73 years ago, took the 1st prize, which at that time was 21*s.*, with Taylor's Victory, a green edged variety, rather bare in the dust or farina, and having no dark green edge. At that period they were all of a pale green. Redmayne's Metropolitan, a self, was introduced about 1790 by a florist named Tottle. It is generally supposed that it was stolen from some one in the South. One Heys, of Castleton Moor, near Rochdale, got it and sold it under the name of Apollo, by which name it is more generally known than its true one. He sent it to some distant place, it is supposed the south of England, whence it was sent again to this neighbourhood by some one else, under its proper name; but where the raiser lived is not known. It is a singular fact, that many years ago it was so plentiful that it became a border flower (as many now living can remember), and was sold at 2*d.* per plant.

In 1822 the leading varieties in green edges were—Pollitt's Highland Boy, which took 30 prizes; Stretch and Barton's King, 29; Buckley's Jolly Tar, 22; Rider's Waterloo, 16; Stretch's Commander, 15; Lee's Colonel Taylor, 12; and Booth's Freedom, 9; and the prize list contains 55 winning sorts, but only nine of them, besides those enumerated, are now in existence.

The grey-edged class consisted of 52 varieties—of the leading ones, Grime's Privateer took 46 prizes; Kenyon's Ringleader, 44; Rider's Waterloo, 25; Taylor's Plough Boy, 13; Hey's Lovely Ann, 11; and Popplewell's Conqueror, 9; and there were about eight others that were grown a few years ago.

The white-edged consisted of 31 varieties, among which Hughes' Pillar of Beauty took 38 prizes; Taylor's Glory, 33; Leigh's Bright Venus, 33; Taylor's Incomparable, 28; Pott's Regulator, 25; Popplewell's Conqueror, 16; Ashworth's Rule All, 14; and four others which were grown a few years ago.

The selfs consisted of 45 varieties, the leading ones being Redmayne's Metropolitan, which took 39 prizes; Berry's Lord Primate, 34; Flora's Flag, 27; Schole's Ned Lud, 28; Whittaker's True Blue, 17; Grand Turk, 18; Lord Lee, 14. These are all of the 45 that are now grown. *John Schofer, Lapwing Lane, Didsbury, near Manchester, late of Cheetham Hill.*

(*To be Continued.*)

The Apiary.

Bee-hives.—I should be glad to hear from "A Sussex Clergyman" on what plan he managed his two Stewarton hives, which gave him but 13 lb. and 12 lb. of honey respectively, in so good a honey season as last year—I mean how many boxes did he leave them for the stock hive during the winter previous to his harvest, and the depth of his boxes. Also with what depth of box he supered them, and the date of doing so. I have a double reason for asking these questions. One is, that very erroneous instructions for the management of these hives have been lately published by a popular writer on the subject; the second is, that I have lately heard from Ayrshire that all the bee-keepers, who in general get 20 lb. of honey from a swarm in a year, last summer obtained two boxes of 20 lb. each, and some of them more. *A. B.*

"In my letter," says 'A Sussex Clergyman,' referred

to by "A. B." it was very far from my intention to institute a comparison between the Stewarton and any other hive. I simply gave the results of my honey harvests, without attempting to show how those results were arrived at. Had this last been my purpose, I should have stated that I managed my Stewartons very badly, from ignorance resulting from inexperience. The relative positions of the different boxes were altered more than once, and other mistakes were made. This ill-management will suffice to account for the poor result which is placed to my humble paper. At the same time I must confess to having no liking for the Stewarton arrangement. It is almost impossible to draw out the slides when necessary, after the boxes have been tenanted for a short time. I have no wish to cast discredit on these hives, as some persons manage them so as to exhibit them to at least an equality with any other. The honey harvest of 1866 was far from good in this immediate neighbourhood: below that of 1864, which was itself below the average. 1865 will be remembered hereas the swarming year."

We are surprised at the opinion expressed by our correspondent as to the honey seasons of 1864 and 1865. In the south of Devon, and many other parts of the kingdom, they rank high in the list of prolific honey years; 1865, owing to the great drought of the latter half of the summer, was not so good as the previous year, but large quantities of honey were stored in the earlier part.]

The Parasite of the Bee.—M. Duchesnin has done good service by pointing out the source of the minute creature which attacks the hive-bee. From several observations and experiments, he believes he is justified in affirming that the parasite is to be found upon the Helianthus annuus, and that the bee takes it from the plant, not the plant from the bee. *Proceedings of French Academy of Sciences.* We have had the opportunity of an inspection of one of these parasites which was found, attached to a living bee, by Mr. Woodbury. It is a formidable looking creature when placed under the lens of a good microscope. It is so formed as to be capable of maintaining a very tenacious hold on the body of its victim. Whether M. Duchesnin be correct in the conclusion he has arrived at, we cannot say. It seems rather strange that a parasite which derives its nourishment from the juices of an insect, should originally find its habitat on a plant.

Miscellaneous.

Bougainvillea spectabilis in New South Wales.—The Bougainvillea, an ornamental and showy evergreen climber, a native of the lowlands of Peru and Bolivia, is now naturalised in New South Wales, where it attains great perfection. It may be seen in full bloom during the months of September, October, and November, displaying a mass of rich and brilliant rose colour, or rather hue closely resembling the new and delicate colour called mauve. This beauty of colour is imparted by the floral bracts, among which on examination, the small, insignificant flowers are found. This elegant shrub continues fully two months in bloom. I saw a magnificent specimen at the end of October in full bloom at the rear of the residence of William Byrnes, Esq., at Tarramatta, forming a gorgeous show the tree being enveloped in a "perfect blaze of flowers," extending by measurement to the length of 17 feet by 12 feet forming 840 superficial feet. The trunk at the base measured a diameter of 8 inches, and the tree is now said to be 16 years old. I was informed that when first planted by Mrs. Byrnes, it was trained in an eastern aspect; in that situation it grew luxuriantly, but never flowered. The branches were then cut down to a certain extent, and trained in its present position, a northern aspect, the result of which was that it soon commenced to blossom and has continued to produce flowers annually in great profusion ever since. The Bougainvillea is readily propagated by cuttings, and is also considered a most useful plant to cut for indoor decorations, retaining its brilliant colour for a long time. It is not uncommon to see in and about Sydney this plant, the Bignonia venusta, with its elegant festoons of orange-coloured blossoms, and the Wistaria sinensis, with a profusion of pendulous clusters of delicate blue flowers all in bloom at the same time, imparting their rich and bright colours upon the walls and verandahs of the houses, or trailing over the trellis in the gardens.—*C. Bracebridge, M.D., Sydney, in Swanston's Journal of Botany.*

Sale of Mr. Fraser's Specimen Plants.—A very important sale of specimen hard-wooded stove and greenhouse exhibition plants is to take place next Wednesday, Mr. Fraser, of the Lea Bridge Nurseries, who is well known as one of the most successful growers of exhibition plants, as his usual position in the various prize lists sufficiently indicates, is relinquishing the cultivation of this class of subjects, in order to accommodate his increasing stock of novelties. This will be an excellent opportunity for those who desire to commence this branch of cultivation, as well as for those who may wish to supplement their present collections, in view of the approaching International Exhibition.

Calendar of Operations.

(For the week ending 14th April.)

Although the weather just now is somewhat cold, weeds it will be perceived are beginning to start into growth with vigour; the best and most economical policy, therefore, is to keep them under in due time. Hoeing and otherwise frequently stirring the surface of the ground will be found the most efficient remedy. Labour being more needed now than at any other season there should be no stint of it, and an extra man or two at this time of the year will not unfrequently be found as profitable to the employer as to the employed.

FLOWER GARDEN AND PLANT HOUSES.

Besides the permanent specimens in Conservatories, many choice plants in pots will be required to keep a succession of gay flowers throughout the summer. Let these, therefore, have all possible attention, and bring them forward in several lots, so that one set may succeed another.

Achimenes.—A succession of these should now be placed in heat. Some of those of former successions may be potted for hanging vases, for which A. longiflora and cupreata are particularly well adapted. Pans or bread shallow pots are preferable for their general cultivation, and, as they require an abundant supply of moisture when they are in flower, let the drainage be very perfect that they may be freely watered without running the risk of stagnating the soil.

Annuals.—Patches of some of the more showy of the hardy varieties should now be sown in vacant places, which usually exist in herbaceous beds and in the edges of clumps and borders in the shrubbery.

Bedding Plants.—Lose no time in potting off, or pricking out into frames or boxes, young cuttings as soon as they are sufficiently rooted, and seedlings as soon as they will bear handling. As the potted off plants become established, they should be gradually inured to the open air. The hardier kinds if in pots may be set upon a bed of coal ashes, or plunged in the open air, and protected at night by hoops and mats. If plunged in old tan, ashes, or some other light material, much of the labour of watering will be saved, and the plants will be in a better state than they otherwise would be when the planting out season arrives. The most economical plan however is to plant them out in frames, and, at the proper season, to remove them to the beds with good balls of soil attached to them.

Camellias.—Plants which have just done flowering should be kept a little warmer than usual till they have made their wood and set their flower buds. A moist top-heat of 60° will suit them while they are growing; they need no bottom-heat. Whether they require repotting or not can only be determined by inspection; but if they are not repotted, a little weak guano water given them now and then will be found to prove of service to them.

Polyanthuses.—As soon as these and Primroses have done blooming, they should be removed from the beds, in order that the ground may be prepared for its summer crop. The plants which are taken up should be parted and planted in some nice loamy soil in the reserve garden, watered and shaded with evergreen branches till their roots are re-established; in this situation they will prepare themselves for a repetition of their duties next spring.

Violets.—These are everybody's flowers, and therefore well worth a little attention. A frame of light rich compost, consisting of loam and leaf-mould under the shade of a north wall, should be prepared for their summer quarters, as in such a situation they are more easily preserved from the ravages of red spider, which will certainly attack them if they are exposed to scorching sunshine. In this frame the offsets from the old beds should be planted about 9 inches asunder, and the whole placed over them till they have begun to form new roots. The best varieties for indoors are the Neapolitan and the Tree Violet.

FORCING GARDEN.

Figs.—These require an abundance of air, with free exposure to light, and without these essentials, a plentiful crop of good fruit cannot be hoped for. A moist atmosphere and a liberal supply of water to the roots are also necessary; and if the roots are confined within reasonable limits, every alternate watering during the swelling of the fruit should be of liquid manure. As the fruit begins to ripen, however, the atmosphere should be kept rather drier, to prevent its rotting; and in damp dull weather, sufficient fire-heat should be used to permit the superabundant vapour to escape. Let the later successions be brought on gradually at first, in a temperature by night of from 50° to 55°.

Melons.—Excessive moisture must be carefully avoided during the setting of the fruit; and as it is an easy matter to thin the latter after all danger of dumping is over, it is a good plan to allow more to set than will be ultimately wanted. Remove the blossoms as soon as they fade, and do not allow more male blossoms to expand than are required, as they tend to weaken the energies of the plant.

Peaches.—Let all very vigorous growths be stopped as soon as they have made six or eight leaves in order to divert the flow of sap into the weaker shoots. Avoid a high night temperature, or the fruit, though ripened considerably earlier, will be obtained at a sacrifice of size and flavour.

Pines.—Keep up a brisk day temperature to fruit which is now swelling, and admit air freely so that a circulation may be produced. If the latter be not attended to, the plants will grow weakly, and have an unhealthy drawn-up appearance; and, with regard to fruiting plants, the crowns will increase in size, instead of the fruit itself, which will be watery and deficient in flavour. Take advantage of every fine afternoon to syringe the pits, and close them for two or three hours before sunset. Remove all gills and useless suckers, that the whole energy of the plant may be occupied in perfecting the fruit.

Vines.—Successional Vines which are just starting may be indulged with a good heat, and particularly Muscats which were ripened late last year, as the wood of such is not generally so well matured as that of the earlier forced Vines, and unless they are encouraged by a temperature rather higher than usual, until their blossoms are fairly set, the shows for fruit, however strong they may be to all appearance, not unfrequently prove abortive. Attend punctually to the stopping and training of the shoots, and thinning of the berries on the Vines, in the earlier stages; maintain a moist atmosphere by evaporation where the berries are swelling, particularly in fine clear weather like the present, but this must be moderated as soon as they begin to change colour, and air must be more freely given.

HARDY FRUIT AND KITCHEN GARDEN.

In consequence of the changeable character of the weather at present wall trees will require strict attention in the way of protection. Lime is well known to be useful for destroying snails and slugs; it is, however, not always at hand in a quick state. Cinder ashes riddled to the size of Radish seeds, all dust being excluded, will in such cases be found a good substitute. These, strewed over young crops when just emerging from the ground, will be found to be an efficient protection. A handful of good Peruvian guano, blended minutely with these ashes, would also prove to be a ready mode of manuring a weak seed-bed.

Beans.—Put in successions of these as required.

Leeks.—These are fond of moisture; the ground, therefore, for this crop should be double dug 18 or 20 inches deep, and the manure laid into the bottom of the trench, which should be previously loosened with a fork.

Onions.—When these are fairly above ground, the soil between the rows should be well stirred, an operation which may be performed with advantage when the ground is comparatively dry.

Raspberries.—Thin the suckers from these as early as can be done, leaving four or five to each stool.

Spinach.—Sow some round Spinach for succession in a cool aspect.

Strawberries.—A sloping bank should be prepared, and planted with nice runners of the Alpine varieties, as soon as they can be obtained, for fruiting in September and October; plant three in a patch, at intervals of 15 inches; the ground should be well dressed with slates when the plants are established.

STATE OF THE WEATHER AT CHISWICK, NEAR LONDON.

For the Week ending April 14, 1866, as observed at the Horticultural Gardens.

March and April	Month's Age.	Barometer		Temperature				Wind	Rain.
				Of the Air			Of the Earth at 1 foot deep		
		Max.	Min.	Max.	Min.	Mean			
Thurs. 29	15	30.143	29.909	64	38	50.0	49	Var.	00
Friday 30	16	30.171	29.958	61	34	47.0	48	SW	14
Saturd. 31	0	29.930	29.651	55	29	42.0	46	NW	00
Sunday 1	1	29.712	29.106	58	33	45.5	45	W.	06
Monday 2	2	29.611	29.185	53	34	43.5	45	N.	00
Tues. 3	3	29.827	29.490	50	26	38.0	43	N	04
Wed. 4	4	29.875	29.668	54	28	41.0	43	N	10
Average		29.779	29.567	55.3	33.8	44.5	46.1		34

March 29—Fine, cloudy and warm; overcast.
" 30—Fine; overcast; very fine overcast; rain
" 31—Overcast and dull; overcast; rain at night.
April 1—Slight haze; and sunny; very fine; slight frost.
" 2—Overcast; fine and cold; slight frost.
" 3—Overcast; fine throughout; slight frost at night
" 4—Fine; overcast; fine; frosty; rain
Mean Temperature of the week, 44.5 deg.; 0.5 on the average.

STATE OF THE WEATHER AT CHISWICK.

During the last 10 years, for the ensuing Week, ending April 14, 1866

April	Average Temperature of the Week.			Mean Temperature of the Week.			Mean Amount of Rain in the Week.	Number of Years in which it fell.	Greatest Quantity of Rain	Prevailing Winds.							Mean Amount of Cloud.
	From 10 Years.	Highest.	Lowest.	From 10 Years.	Highest.	Lowest.				N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	
Sunday 8	50.7	59.7	43.9	44	51	36	0.60	10	1.27	2	3	1	1	1	1	1	1	5
Mon. 9	50.6	59.4	43.8	44	51	36	0.74	10	1.27	2	3	1	1	1	1	1	1	5
Tues. 10	50.7	59.1	43.2	45	54	37	0.27	10	0.75	2	3	1	1	1	1	1	1	5
Wed. 11	50.8	59.3	43.8	46	56	37	0.61	10	1.27	2	3	1	1	1	1	1	1	5
Thurs. 12	50.8	59.5	43.8	46	56	37	0.61	10	1.27	2	3	1	1	1	1	1	1	5
Friday 13	51.0	59.8	43.9	46	56	37	0.45	9	0.75	2	3	1	1	1	1	1	1	5
Saturd. 14	51.2	60.1	44.2	46	56	37	0.45	9	0.75	2	3	1	1	1	1	1	1	5
Sum	50.8	59.4	43.8	45.3	54.9	36.7	3.73	68	1.27	14	21	7	7	7	7	7	7	35

The highest temperature during the above period occurred on the 14th in 1865 (60.1 deg.), and the lowest on the 10th, 1886 (36.0 deg.)

Notices to Correspondents.

Books.—*Enquirer Sub.* Williamson on Oil Mills.—*C. M. E.* Wyatt "On the Growth of Plants in Closed Cases," and Miss Maling's "Indoor Gardening" will exactly suit your purpose.—*Inquirer.* We know that Mr. Bliss has this year in stock the following:—

Daffodils.—The following 24 varieties may possibly suit you:—Barr, John Salter, George Wheeler, Freebooter, Edward Sparey, Champion (Incomparable), Black Boss, Burnette, Bird of Passage, Annie (Queen), Lady Maude Beaufort, Maudie, Miss Robson, Sir John Elliot, Purple King, Queen of Primroses, Sprite, Charlotte Darling, Charles Turner, Model, Willie Austin, Lady Gladys Herbert, Andy Wooler, and Lady Bantree.

Fern Cases.—*C. M. E.* The Shamrock will scarcely flourish in so close a place as a Fern case, kept constantly warm to suit the Killarney Fern. We cannot say where you could procure plants.

Gardeners' Wages.—*T. D.* We do not agree with you. If the result at which you arrive is not to be accomplished by other means than that you allude to, namely, combination, it will not be accomplished at all.

Lawn Levelling.—*C. C. Spencer.* You may do this safely now. Pare off the turf rather thickly, and pulverize evenly, then fill up the hollows, rounding the new soil well in, and finally dress over the surface so as to make it quite smooth and even before rolling. The turf may be relaid if well rolled after it has been settled down by a good shower.

Lawn Mowers.—*Sub.* We make it a rule never to recommend tradesmen.

Names of Plants.—*D. J. C.* 1, Calcéolaria Meléagris? 2, Rivéa pedicunculósa. 3, Pulmonária officinális. *C. S.* Saxífraga sarmentósa apparently, but much crushed. 4, Bittéuaria Hartwégiana. The best account in a state to be examined from.—*Inquirer.* The plant sent is in fruit, but we cannot undertake to name it from a single specimen. We have no lord cultural interest.—*A Rose.* 1, Lastræa plicata. 2, Cyclóphorus fulvidus. 3, Asplénium marinum. 4, Pteris tremula. 5, Woodwardia angustifolia. 6, Asplenium bulbiferum.

Pruning.—*J. B. C. Cornwall.* In your Primroses the leaves have become badly attacked by a common enemy in these plants. It is curious that other flowers from the same stock should not be similarly affected.

Vine Leaves.—*L. D.* The spots on your Vine leaves are extremely common. They are not the leaves, inasmuch as long as they are confined to the leaves, and we never saw them on the fruit. *M. J. B.*

Communications Received.—G. D. Rawlins (our space will not permit us to print your letters, which moreover in our opinion it would be of no advantage to do).—Verax.—Inquirer (Kent).—J. Anderson.—W. E. Broughton.—D. T. Fish.—J. Forbes (Mr. Machattie, Nurseryman, Hammet-hill, will be able to give you the address for which you enquire. To your other question, yes.

J. C. WHEELER AND SON, SEED GROWERS, Gloucester.

WHEELER'S ILLUSTRATED BOOK on GRASSES,

New Edition, now ready.

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III. LONDON CLAY.—Sussex, Essex, Surrey, Berks, Hants, Dorset, Kent

IV. CORN BRASH, and GREAT and INFERIOR OOLITE.—North Riding of York, Lincoln, Rutland, Gloucester, Northampton, Oxford, Berks, Wilts, Dorset

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VII. NEW RED SANDSTONE and KEUPER MARL.—York, Nottingham, Stafford, Leicester, Derby, Warwick, Worcester, Cheshire, Flint, Gloucester, Devon, Somerset

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The Agricultural Gazette.

SATURDAY, APRIL 7, 1866.

—— WHAT has become of the Cattle Plague Commission? It is to be feared (or *hoped*, may we not rather say?) that the disease will have dwindled and disappeared before their Third Report shall have appeared, which is to reflect upon us all the light that men of science have thrown upon the subject.

—— A very admirable paper by Mr. W. J. EDMUNDS, of Lechlade, upon the breeding and management of sheep, was read at the last monthly meeting of the energetic young Farmers' Club which has arisen this year at Cirencester. We give the first portion of it in another column, and the rest will appear next week.

—— Mr. CROSSKILL discussed before the London Farmers' Club last Monday, the merits of the Prize system as applied to agricultural machines exhibited in our show-yards. This year's experience may throw some light on this subject, for excepting that of the Bath and West of England Society we shall have no great agricultural Shows this season; and at the Salisbury meeting, which will be the great and exceptional gathering of the year,* no prizes are awarded to implement makers, so that they will have to prosper or to languish, as the case may be, without the fostering and the stimulating influence of these guides and spurs to effort. Moreover this year we are to have a good inauguration of the rival system. The English Agricultural Society will commission able men to examine carefully into the ordinary agricultural experience of one great class of machines. And their report, unaccompanied by any such rigid "yes" or "no" (without "extenuating circumstances"), as success or failure in the prize competition pronounces, will state in detail the merits and demerits of the various rival plans which have been ascertained upon a hundred farms. No doubt a rigid "yes" or "no" is altogether deficient and erroneous when applied to many other subjects besides the excellence of a plough or engine; and among other things we must not forget that either would mislead us, even on the subject which Mr. CROSSKILL has so cleverly discussed. The merits of the Prize system, as it appears to us, depend simply upon the quantity of time and patience which judges can bestow on the subject of their verdict. Its demerits are obvious in cases where long experience has enabled all competitors to attain complete success, and where shades of difference, therefore, if they exist, are not easily detected; but it may be useful enough in the case of novelties and comparatively recent inventions, whose worth is still problematical.

"How much a year do you make of your fowls?"—"Fully 50*l.*, by sale of eggs and market birds."—"At the ordinary cadger's price?"—"Yes; none are sold for breeding purposes, beyond one or two cockerels in a season perhaps."—"What is the breed?"—"Oh, cross-breds; a little Dorking, and a little Cochin, and the old barn-door blood combined."—"And how much land do you occupy?"—"Under 100 acres."

This is the case of a neighbour of ours, a small farmer, whose "missis" loves her chicken pets as dearly as if they were shrill ear-piercing canaries. The farm-buildings are of a rather primitive build; there are no wired runs or other specially convenient arrangements for birds; and you would never think that a few coops standing out on the Grass (with old sacks over them, perhaps, during rain) formed almost the sole shelter of the chicks that grow most part of the 50*l.* What food is purchased the farmer's wife cannot tell, but it is of small account; the main living of the feathered stock being in the stable-yard, in the rick-yard, on the top of "a cutting" in an Oat-stack (Oat sheaves being cut into chaff for horses), or in the bottoms of other corn stacks, also in the paddocks and Grass fields, scratching over the dried dung patches of horses and cows, picking bits of Mangel, Turnip, &c., with, of course, all the offal grain from the dressing-machine.

Another keeper of poultry in our neighbourhood (though without a farmyard) has only a nice run of Grass for his birds, buying everything else that they consume, besides herbage and insects; and he informs us that his annual expense for food is 6*l.*, while his market receipts are about 30*l.* The birds are a leggy-looking Dorking and Cochin "cross." We place less faith in this account than in the former, because a relative of ours has kept accurate books of his poultry stock during 1865, and finds that (where everything is purchased), his adult chickens have cost him 2*s.* each, the produce being 96 birds from eight Dorking hens and pullets. Our own experience (without strictly accurate figures) is, that our birds help themselves in a large farmyard to fully half their livelihood out of stuff that would otherwise be entirely wasted—or worse than that, would feed thousands, perhaps of sparrows, mice, and other nuisances. We are quite satisfied, without going into elaborate estimates (for the exact value of food consumed by farmyard poultry is a variable and altogether unknown quantity), that cocks and hens pay the attentive farmer handsomely; and if with the poor appliances, short accommodation, and spare food on a 100-acre holding, 30*l.* a-year can be realised, what might be the poultry receipts upon 300 to 500 acres? And we would intimate that

* The Royal Agricultural Improvement Society's Meeting, which was to have taken place at Dublin, is postponed till 1867.

the case we have named is not in a regular poultry district, like Dorking or Aylesbury, but in a land of villages, remote from any great town, and with no advantages whatever for the sale of produce at other than low rates.

We are very anxious that more attention should be given to the matter, by those who enjoy every facility for rearing and feeding either fowls, turkeys, ducks, or geese. Fancy houses and costly fittings are by no means required. Most farm premises present ample accommodation; and where they do not, it can be easily and cheaply added. Famous sitting houses and roosting houses may be made of post uprights and tarred weather boarding, with roofs of asphalted felt. Very little cash will furnish all the material; the main thing about poultry keeping is abundant, ingenious, and sound "contrivance." Endless attention and trouble often seem to plague those who try their hands for the first time at poultry. But we believe that half the worry and annoyance arises from a want of system in management, and perhaps even more from a lack of the proper tools to work with. For instance, some people suffer incessant annoyance because they have allowed themselves to be put off with old-fashioned and absurdly inefficient coops for hens nursing chickens. And it is surprising how much of failure or success depends upon this one circumstance. Money is to be made according to the number of chickens raised; and yet it is deemed folly and extravagance to procure a well-constructed suitable coop for their protection. The old coop is commonly shaped like the gabled roof of a house, each end in the form of a letter A. The sloping back is boarded, the sloping front slotted, and the upright ends sometimes closed, sometimes made of open slots. The sole use of such a cover is merely as a prison for the hen, and a partial shelter when the wind happens to come from behind. Otherwise it seems contrived on purpose to admit all the drowning rain and scorching sun, and cutting wind that can be caught or admitted for the discomfort and killing of hen and chicks. The only reason for having such a thing is that it has been readily knocked together out of old broken pieces of wood and tumble-down boards picked from anywhere. The trouble of having half-a-dozen of these traps to watch, to turn every time the rain comes from a different quarter, or cover over with old cloth at night, or carry under shelter, or set out in the sun, &c., is tremendous, in addition to the necessarily frequent feeding of the birds.

Now, a coop should be the comfortable home of its inmates; especially as in the cold weather of early spring the hen must be kept in for say six weeks, though three to four weeks may be long enough in summer. Therefore the shape should be that of a small house—walls upright, and all roofed well over. The longest dimension should be from front to back, and the slotted front low, so that the birds can brood far enough out of reach of a driving shower. The most absurd feature in the old-fashioned coop is the caging of the parent while permitting the chicks perfect liberty to hop in or out as they please. Why, it is the early excursions of the tender little things among dewy or frosted Grass that kills off so many by cramp and other ailments; and what we require is a coop in which the young ones can be shut until the weather is favourable for them. Hence, the coop must be spacious; our own are made 33 in. by 24 in. within. When the chickens are gathered under their mother's plumage in the afternoon, we slide a plate of perforated zinc across the slotted front, and with a little food left inside for the morning meal the chickens are right enough until we let them out after the dew or frost are off. Besides, they are also tolerably secure from weasels and other depredatory enemies. With hay to rest on in cold weather, and at other times, loose earth laid down as a bottom for the coop, the little house is comfortable; and the earthenware pan containing the hard water is made widest at the bottom, so as not to turn over. Before adopting these ("spittoons" they really are), we used to lose dozens of chickens from drowning. We have lost hundreds of chickens when placed upon a nice short-Grass paddock,—entirely owing, we believe, to their having free exit from their coops at any hour of the morning. Of course, in a time of prolonged rains, day after day, even the new style of coop requires to be taken into a building where the chickens can enjoy a dry scamper; and with stables, calf-houses, cow-sheds, &c., it is unnecessary to erect all the paraphernalia of special poultry houses, wired and "glass-covered" runs, and so on. Only arrange properly for your successions of birds of different ages, and you will not find half the trouble that people talk of, or be disappointed in your ultimate profits. *I. A. C.*

The reports of her Majesty's Consuls at the various foreign ports, which at this season of the year make so many Blue Books, and strew the tables of the Houses of Legislature, always contain more or less of interesting matter relating to the commercial products of the vegetable kingdom. In the report just furnished by the Secretary of Legation at Munich, the following notes on the Bavarian Hop Culture may be of interest:—Hops are more largely cultivated in Bavaria than in any country in Europe, excepting England. Their average annual produce, which 30 years back did not exceed 74,000 cwt., may now be estimated at 180,000 cwt.; and the district of Nürnberg has acquired, especially of late years, the highest repute in this branch of cultivation, owing to the favourable nature of its soil, and the care and intelligence devoted to this peculiar produce. The value of the annual sale of Hops in the Nürnberg country alone, during the few market months, attains an average of from 9,000,000 to 12,000,000 florins. But not only knowledge, also much good luck is requisite in the lottery of the Hop trade, for that produce is of a delicate and perishable nature, and while some fortunate speculators may soon enrich themselves, many lose in it their whole possessions. The result, then, of a few critical months or weeks is a life question in Hop-growing districts.

The Hop harvest of 1865 has been on the whole a favourable one in this country, especially as regards quality, the long-continuous heat having allowed of a thorough drying and ripening of the fruit.

England being a continual and considerable purchaser of Bavarian Hops, at times even of the inferior qualities, it may be useful here to state the prices now realising for the produce of the last harvest in this country (Bavaria), namely, according to the various qualities, from 90 florins (7*l.* 10*s.*) to 180 florins (15*l.*), and if other prices than these have been quoted in public print, that has been done on interested and improper motives, though it frequently occurs that they do not represent the real quotations of the Bavarian market. The speculations, however, which the holders of Hops have lent themselves to, this year in particular, counting on far higher prices than customary, on account of the finer quality of the harvest, have been improvident, have created a disturbance in the trade, and have caused large quantities of Hops to remain on hand, even up to a very recent period from this time, and I am told that in the highest reputed districts, of Spalt for instance, seven-eighths of the whole produce of 1865 was still unsold as late as the commencement of November.

The enormous manufacture and consumption of beer in Bavaria continues still to increase, and has nearly doubled in the course of the last 15 years. Taking the returns of the summer consumption of 1864-65 for the capital alone, we find that 31 breweries employed no less than 208,804 scheffel* of malt, and produced 769 eimers of beer; yet this ocean of liquid did not suffice to meet the Munich demand during four short months, and the winter stores had to be attacked before that time.

The Munich breweries are now carried on upon a very large scale, and the trade has accumulated in the hands of a few considerable capitalists. Fifteen years ago Munich counted 32 breweries, but they produced not half the quantity of beer now annually consumed. The great excellence and wide reputation of the beer of Bavaria is owing to a peculiar manipulation in the process of brewing. Both what is termed the 'concentration' of the wort and the temperature of the fermentation are kept much lower by the Bavarian than by British brewers; but, on the other hand, the Bavarian beer, as it is commonly made, will not bear keeping or exporting. It must be drunk within the half year and on the spot.

HIGH-PRICED MEAT.

[The following is the substance of a Lecture delivered by Mr. J. Seaman, V.S., before the Saffron Walden Farmers' Club, as reported in the *Essex News*.]

The price of beef and mutton, like all other manufactured articles, must be regulated by supply and demand. The demand fairly met, the price is unaltered. Increase the supply, and the question we have to deal with is the converse of this: our demand is greater than the supply. Independently of the cattle plague, this truth is becoming every day more apparent to persons who pooh-poohed my assertions of the fact some years since. The cause of high-priced meat is not wholly involved in the question of supply. There is also a gradually increased demand in proportion to our national prosperity.

The stimulus given to the cotton trade, the immensity of our ship-building, gigantic railway works, bridge-building, and other architectural improvements, so characteristic of the present time, are daily calling into the most active labour increased numbers of the population upon increased wages, and, naturally enough, an increased demand for meat. The low price of bread is another cause of the increased demand for meat. With a 4-lb. loaf at 9*d.*, a labourer, or a person with a large family and scanty income, would, after paying for bread, have little left for the purchase of meat; but when 4½*d.* only is paid for the same weight, and not so much required, because of the increased consumption of meat, the sober and comfort-loving workman is able, after paying his baker's bill, to purchase something like an adequate supply of meat—that, is when it is sold at a reasonable price. The additional quantity of meat given away by our Poor Law Boards is another source of demand for beef and mutton.

To those unacquainted with farming it may appear that immense profits have been realised by fatting sheep and oxen at the present prices. It would be so were it possible to breed and fatten animals upon fixed principles, like the production of inanimate substances, under cover and between walls; but there are influences constantly in operation, damaging to the health of cattle and sheep, and other prejudicial circumstances—such as blights, mildews, vegetable parasites, destroying the Turnip, Bean, and Pea crops; the excessive dry seasons, accompanied by failure of the various Grass crops; excessive wet seasons, and luxuriant Grasses; and impure artificial foods, which are so detrimental to the health of cattle, with epizootic diseases. Over all these hurtful causes the stockmaster has no control.

Hitherto the greatest obstacle to the production of beef and mutton is a tax of 75 per cent. upon an important raw material which the farmer is prohibited manufacturing from the produce of his own farm.

A clever philosopher, with a view to supply more beef and mutton, recommends more pasture land; but this great genius appears to have overlooked the fact that Grass grows only six months out of the 12, and he has not told us what sheep and cattle are to be fatted upon during the winter months. He has censured the British farmer for not breeding more sheep and oxen, but the farmer has found it impossible to increase the numbers of his breeding ewes and cows in consequence of the impossibility of obtaining enough suitable food for rearing, and the only available food for this most important purpose the British Parliament prohibits being manufactured. To tell the stockmaster to rear more lambs and calves without being allowed to manufacture suitable food for them, is just about as preposterous as to tell him he can walk as well on his head as on his heels. During the last four seasons there has been an almost entire failure of Grass crops, and sheep and oxen have had to be fed, winter and summer too, in many parts of England, upon the produce of arable land and unwholesome manufactured stuffs. The arable upland farms which produce the greatest quantity of beef and mutton, if they were laid down to pasture, would not keep alive a goose per acre.

In August, 1865, when meat was at a price unattained since 1813, workmen in different parts of England struck for wages, and in some cases almost approached to famine mobs. In Worcester they paraded the streets, and protested that they would not eat any more meat until it could be obtained at a cheaper rate. The butcher was said to be monopolising the trade, was a worse pest than the rinderpest, and many other bad names were applied to him which he did not deserve. Even the farmer was said to be involved in the conspiracy. When an animal attains a certain stage of fatness, the farmer finds it prudent to sell. To keep it longer incurs certain loss. The animal must eat, and food costs money. It gets fatter, but the public do not like so much fat, and it will not realise so much money in the market. I think we may dispose of the question of conspiracy and monopoly, and acquit the butcher of the crime of plundering the people out of their money by charging high prices for meat. The farmer ought to obtain from the butcher a price for his ox proportioned to the outlay in getting it into a fit state for slaughtering—and during the last four years the outlay has been very great—and the butcher, in his turn, ought to regulate the price of his meat in proportion to the price paid for the animal, receiving, besides, a common trade profit. Let the farmer be unrestricted in the use of the produce of the farm, and a restriction be placed upon the importation of foreign cattle, and in a few years beef and mutton would be lowered to 6*d.* or 7*d.* per lb. Professor Gamgee, in his statistics of the loss by death of cattle from epizootic diseases brought to this country from the Continent, has shown that within the year 1862 we did not lose in England less than three times the number imported. And within the last eight months upwards of half a million have been destroyed by a most frightful malady, also brought from the Continent, which is still raging with unabated violence. All that the free importation of foreign cattle has done for England has been to impoverish the British farmer, and assist in raising the price of all kinds of flesh food. A butchering company was about to be formed in London a short time ago under the presidency of the Earl Talbot; but this company would be of little avail if sufficient animals could not be obtained to slaughter.

The question we propose to consider is, How the threatened scarcity of animal food can be best averted?

* A scheffel of Barley is 65 lb. The eimer in Munich is 84 gallons.

Observing the frequent recurrence of periods of great difficulty in obtaining wholesome cattle food, it has been my constant aim to prove to the farmer the possibility of manufacturing his own, by a most simple method, from the produce of his farm. Wheat or Barley steeped, spread upon a floor until it sprouts, and used while moist, is a material far superior in quality, and at the price of raw grain during the last five years 20 per cent. cheaper, than any other manufactured food that can be purchased. But now that its value is becoming appreciated, and its use greatly extended, the Board of Inland Revenue have informed me that it is illegal to prepare the grain, except by a licensed maltster. This is truly unfortunate at this particular time of high-priced meat, and scarcity of wholesome cattle food—when, to use the language of the *Times* a few weeks ago, "so far as meat is concerned, famine is at our door"—that Excise restrictions should be allowed to continue upon the manufacture of any article of cattle diet, and more especially upon one which, of all other cattle foods, is the most wholesome, the cheapest, quickest, and best quality mutton and beef producer, as can be irrefutably proved by the experience and testimony of leading agriculturists of all classes. During the last two seasons a very large number of lambs have been reared, thousands of sheep fatted, and upwards of 20 different flocks, debilitated by disease, restored to health in this and other neighbourhoods, by using semi-malted grain; and during the last two tropical-like summers, when the Grass crops have almost entirely failed, this food has been found of the greatest value, resembling more in its effects the natural food of sheep than any other that I am acquainted with. It is an excellent substitute for Turnips and green Rape of winter, and the different Clovers and Grasses of summer.

During the last lambing season the advantage of using germinated Wheat and Barley has been most marked. On many farms, where flocks of breeding ewes were kept, scarcely a Turnip had grown, and whilst 20 per cent. of lambs were lost from flocks fed upon dry and hence indigestible food, not more than 1 per cent. was lost from those fed upon semi-malted Wheat and Barley. Twenty-five years' experience has convinced me of the scarcely-to-be-exaggerated importance of the subject. I discovered at an early period that a very large proportion of the mortality of sheep and oxen was attributable to improper food, and I then commenced a series of experiments upon the subject, which have led me to the conclusion that grain, semi-malted, is incomparably the best form in which it can be used as a food for cattle, and is entitled to stand in competition with any other that can be resorted to. Theoretical considerations alone first induced me to try it as a food for fattening herbivorous animals; and experiments concluded 15 years ago convinced me that grain so prepared is the most wholesome and quickest of all flesh-forming foods. Until 1860 horses only had been the subject of my experiments, but during the spring of 1861 a nobleman in this district, distinguished for his desire to promote in every way the advancement of agricultural science and practice, permitted me to apply it to an ewe flock, and the experiment was a signal success. The sheep were maintained in perfect health, and fatted their lambs very fast. From that period I have continued to urge the use of this new food upon flockmasters generally. Much prejudice existed against it at first, but gradually converts were made, and when I received the communication from the Board of Inland Revenue before referred to, not far short of 10,000 sheep, besides horses and oxen, were to my knowledge being fed with it; and on making the communication to them, the Excise notice was looked upon by the different flockmasters as a positive calamity.

During the winter 1864-5, the consumption of semi-malted grain on the farms of one proprietor amounted to 25 sacks per week, as food for sheep, lambs, and horses; and it is most satisfactory to remark, that lambs from the flocks, from 11 to 13 weeks old, fetched in the Metropolitan market last spring from 42*s.* to 44*s.* each, and lambs from the flock of another farm, fed upon the same kind of food, sold in the same market for 46*s.* each—the highest price obtained during the whole fat-lamb season. The dams of these lambs were afterwards fatted upon the same material during the following summer, and sold at from 70*s.* to 80*s.* each, weighing 15 stone each. A gentleman at Spilsby, Lincoln, in a letter to me, says, "Since being prohibited preparing grain as advised by you, my lambs are not doing so well, and will not be worth so much by 5*s.* per head, in the spring."

I have reason to suppose that, had not the thousands of half-fatted cattle and sheep been slaughtered through the fear of losing them by the cattle plague, and thus kept down the price of the meat market, it would have risen at least 2*d.* per lb. higher. These animals the farmer under ordinary circumstances would have kept until the coming spring and summer. Their premature slaughtering, although producing a present amelioration of prices, must necessarily augment the future evils, and meat may very reasonably be expected to reach a famine price, unless every encouragement be given to its production, and every restriction upon it removed.

I am enthusiastic enough to believe that if my plan were allowed a free and fair trial, the danger of so disastrous a result to a flesh-eating population like our own would be to a great extent removed. There cannot be a question upon the cheapness of the food recommended, as compared with other artificial food; and as to obtaining enough of Wheat and Barley, two-thirds of the civilised world can supply us with these grains, but they cannot supply us with roots and Grasses.

Cotton cake during the last four years has varied in price from 5*l.* to 6*l.* per ton. Most of the cake I have examined contained from 60 to 80 per cent. of impurities, and the analysis of Professor Voelcker shows a similar result. Wheat has been selling during the last four years at 7*l.* 10*s.* per ton, but if the expense of cartage be deducted, as it ought to be, the price would be reduced to 7*l.* 5*s.* In Wheat prepared as I recommend we have a food much superior to pure cotton cake, at a price little exceeding the adulterated article; but in order to ascertain the comparative value of the two kinds of food it is necessary to take into account the adulteration, and the cost of the nutritive portion of the cake. Supposing the impurities not to exceed 50 per cent. (a very rare condition), it would be 12*l.*, or 62½ per cent., above the material which every farmer has ready at hand. Barley has been selling during the same period at 6*l.* 5*s.* per ton, which gives even more favourable results. This is without taking into account the loss of cattle arising from the use of impure cake.

It appears to me that it ought to be the business and duty, not only of the producer but of every meat consumer, to agitate this question, and bring such a pressure upon the Chancellor of the Exchequer that he shall be obliged to permit the meat producer to prepare in his own way those foods for his cattle which a beneficent Providence has given for his use, and if this cannot be accomplished without a repeal of the malt tax, then that obnoxious tax must be repealed; for merely fiscal measures can never be permitted to interfere with a question so vital as an adequate supply of necessary food to our working population.

THE CATTLE PLAGUE.

1. The following returns were issued on March 31.

These returns do not profess to give the total number of cases which have occurred in Great Britain, but only those which have been ascertained from information received at the office from inspectors. Columns 1 only record the cases reported as having commenced during the weeks indicated by the headings; "back" cases being added to columns 2.

Cesses Divisions.	1 Number Attacked.		2 Result of Reported Cases from Commencement of Disease.				
	Week ending March 17.	Week ending March 24.	Attacked.	Killed.	Died.	Recovered.	Unaccounted for.
Metrop. ..	34	60	7749	3318	3704	331	394
S. Eastern .	12	6	5042	1905	2785	442	910
S. Midland .	584	542	16,309	4522	9865	1525	401
Eastern Co. .	233	199	10,050	4121	4766	758	405
S. Western .	45	10	1,466	525	771	108	74
W. Midland	841	444	16,977	2870	6147	1205	755
N. Midland.	573	671	12,676	4995	6005	1049	627
N. Western .	1504	1402	52,969	8425	33,925	5433	5186
Yorkshire .	2990	683	51,704	4911	18,250	5785	2778
Northern Co.	547	264	6819	3289	2488	936	120
Monmouth. & Wales .	160	85	7,97	312	5004	1059	322
Scotland ..	449	257	45,564	542	26,966	16,585	2569
	6,2611	4,704	269,022	44,305	121,369	29,286	14,062

Note.—39 Inspectors who reported cases last week have not reported in time for this return viz. for the county of Berks, 1; Bishop's Beckes, 2; Cambridge, 1; Chester, 2; Cumberland, 1; Essex, 1; Hereford, 1; Huntingdon, 1; Lancaster, 1; Lincoln, 7; Norfolk, 2; Northampton, 1; Oxford, 1; Stafford, 1; Yorkshire, 6; and Scotland, 9.

These Inspectors returned 1217 cases last week.

2. Mr. Herapath upon Rinderpest.—I last evening was present at the slaughter and *post-mortem* of two cows, ordered to be killed by the magistrates at the parish of St. George's, near Bristol. The animals were the two remaining after the death of the first. They had stopped ruminating, refused food and drink, and the milk of one had shortened in one day from 11 quarts to 3. I found them drooping, with expanded pupils; the appearances after death were inflammation of the larynx, trachæa, and bronchial tubes. Of the alimentary canal the first appearance of inflammation was in the manyplies, but very slight, not at all like that arising from an irritant poison, which is in such cases very strong there. The last stomach was extensively and uniformly inflamed, much resembling that from strychnia, and from this point downwards the appearances increased to the end of the canal. The reproductive organs were greatly inflamed; but the liver, spleen, and kidneys were natural. Upon removing specimens of the injured parts for chemical examination, which took place within an hour after death, I found that the blood, the mucous surfaces, and the adherent matters were alkaline, and the alkali was ammonia. Now, in the natural state, recent blood is quite neutral—neither acid nor alkaline; and the intestines of herbivorous animals are more or less acid from the conversion of a portion of the sugar of plants into acetic acid.

This statement will, I hope, set physiologists and veterinarians to examine whether this chemical state is invariable in rinderpest, and also to inquire whether it is the cause or an effect of it; if it is either of the two latter it will naturally suggest a means of prevention or of a cure, while it would readily account for the infectious character of the disease, as the volatile ammonia would carry the poison into the atmosphere, from which it would be received into the lungs of the healthy animal; it would also account for its condensation on the clothes and persons of attendants on sick animals. It is worthy of note that the owner of those beasts had drenched some beasts which were ordered to be destroyed some few days back.

I think it is worth trying whether this ammonical poison might not be decomposed in the living blood in early states of the disease by the administration of chlorine in some state or other, such as chloride of lime, chloro-carbonate of soda (Labarraque's disinfecting liquor), or chlorine water in safe doses, as there is no agent so powerful in destroying ammonia as chlorine. I have been told that 20 grains of chloride of lime is a safe dose for a man. *William Herapath, sen., F.C.S., Professor of Chemistry, Bristol, March* 29.

3. The Rinderpest in Sheep.—So much difference of opinion exists about sheep being liable to rinderpest, that I believe you will consider the following plain statement of facts of sufficient importance to the agriculturists of this country to induce you to give it a place in your columns:—

During the end of last month and the beginning of the present I lost a great number of cattle from rinderpest, 38 of which were on that part of my farm lying on the west side of the estuary, and they were buried in a corner of a field in which were 142 long-woolled hoggets feeding on Coleseed and Turnips, and which sheep were constantly taken into a stackyard close by the graves of the cattle to be folded at night.

On the 1st inst. one of the sheep was taken with violent purging, loss of appetite, drooping of the ears, and great thirst; other sheep in the same lot kept falling down with a similar disease, until it gradually extended to 400 sheep on that part of the farm.

The two veterinary inspectors of this district, Mr. Cross and Mr. Beart, saw the sheep, and after careful examination of several of them, pronounced it to be true rinderpest; and I understand Professor Simonds was written to on the matter, and said that from the description given he concurred in that opinion.

The sheep kept dying, and on the 19th inst. I had lost 25, and there appeared every prospect of losing my whole flock. In my trouble I named the state of my sheep to Messrs. Allen and Willis, of Lynn, and they immediately wrote and asked Mr. Woods, of Merton, Lord Walsingham's agent, who has been so successful in treating the diseases of sheep, to go and look at my sheep, and say if anything could be done for them.

On Monday, the 19th, Mr. Woods saw the sheep and took much pains in examining them, and made a *post mortem* examination of one found dead that morning. He said they were in a bad state, and unless something was quickly done, the greater part of them would die. I quite agreed with this opinion. He kindly made two propositions to me, viz.,—either to treat 100 average sheep, or he would undertake to treat the whole on condition that his directions were carried out in every particular. He spoke with so much confidence of being able to cure the greater part of the sheep, and said he hoped that not more than 15 or 20 more would die, that I was only too glad to agree to his terms. It is only right to say that his time was so limited that he was unable to see 84 of the smallest and most weakly sheep, or he would probably have thought more would die, but I think his opinion was strengthened by the following circumstance: On Thursday the 15th my shepherd took 41 of the worst affected sheep from the lot first attacked, and gave them a dose of the same kind of medicine Mr. Woods proposed using for the whole, and placed them in a meadow apart from the rest. On Monday, the 19th, these sheep were better, while five had died out of the lot from which they were taken. The 41 are now alive and quite well. On Tuesday morning, the 20th, the whole of the sheep had a strong dose of medicine, and two weakly animals dropped down dead while it was being administered, and when opened their lungs were so congested as to be quite black, the liver and kidneys appeared rotten, the intestines very much inflamed, and the fourth stomach spotted, as also was the tongue of this and several other animals that died. A frothy matter came from the mouth, and the air passages appeared choked with it.

When I visited the folds on Wednesday morning, the 21st, where the different lots of sheep had laid during the night, the appearance of the evacuations of the sheep was very alarming, being a mass of slime, blood, and mucous-like matter. During the day six more of the very weakly sheep died, exhibiting the same symptoms as those described above, and the appearance of the remainder was so bad that I was quite depressed by it, and remarked to a friend that I should lose three out of four of the whole lot. On Thursday morning Mr. Woods saw the sheep again, and when I went to the fold with him I was more than surprised to see the extraordinary improvement in the appearance and state of the sheep. The diarrhœa had almost disappeared, the dung was in a more natural state, and the sheep looked better in every respect. Mr. Woods remarked that had he known there were some animals so weakly he should have regulated the dose of medicine to the strength of the sheep, and he thought the six that died on Wednesday, the 21st, had been too much acted on by the medicine, which might have been prevented if he could have been present himself when it was given. No more sheep died until Saturday, the 24th, when another dose of medicine was given to the sheep, and one died from choking, and another got to water and soon died. Two sheep that were paralysed from the first attack died on Sunday, and another, badly affected, on Monday, the 26th, making 13 in all since they were treated.

I firmly believe, and I am supported in this opinion by several experienced men, that the bulk of my flock are now cured, and will require no more medicine, and that I shall not lose many more, although it is possible a few of the worst attacked and most delicate animals may sink from exhaustion, now that the fever has left them; and I also believe that I should have lost but few sheep if Mr. Woods had been sent for earlier. It is not my desire to discuss the question as to the liability of sheep to take rinderpest, but to give actual facts as they have occurred in my flock, and I think it only just to Mr. Woods that the public should be made

acquainted with them. *William Marshall, The Hall, North Lynn, March* 29. *(Times.)*

4. IRON.—In the early stage of the cattle plague it was suggested (I think in your Journal) that iron would be found if not a cure, at least a preventive of the disease, and I think it therefore worth while to call your attention to the fact that Devonshire, which has a red soil largely impregnated with iron, has been almost entirely free from the plague, which has rapidly died out in the one or two localities where it has appeared from imported cases, and beyond the confines of which localities it has never spread. Cornwall, on the other hand, rich in minerals, but not in iron, has been severely visited. I have it also on trustworthy authority that Wiltshire is like Devonshire, largely abounding in iron, and has as yet enjoyed similar immunity. A gentleman also who farms largely in Essex has been long surrounded by disease, but his cattle have escaped contagion, which is worth noting, as the only water on the estate is, as my friend informs me, a highly chalybeate spring, which is brought some four or five miles in iron pipes. If your correspondents generally would favour you with their own observations on the existence or non-existence of disease, and whether in a violent or mild form, where from circumstances iron may or may not be presumed to be present in the food of the animals, a conclusion of more or less value might possibly be arrived at. Another and cognate circumstance as connected with this immediate locality is also worth naming, viz., that on the two occasions on which cholera made its appearance in this county, the adjacent parishes, which principally rest on lime rock, suffered severely from the scourge, whilst this and other places, which are for the most part on red sandstone, enjoyed comparative immunity from it, and if I am rightly informed this coincidence was also observed in other parts of the kingdom. Leaving it to you to judge how far this subject may be worth further investigation. *J. Belfield, Paignton, March* 30.

5. THE GLOUCESTERSHIRE INSURANCE COMPANIES have dissolved during the past week. About 30,000 cattle had been insured, the county Society taking 14,839, at the declared value of 151,376*l.*; and the Berkeley Vale Society taking 14,951, of the value of 102,343*l.* The following is abridged from the report of the county Association, signed by its chairman, Mr. Holland, M.P., to whom, and to Mr. Wheeler, of Gloucester, its energetic secretary, thanks were heartily voted:—

"This Society owes its origin to a resolution passed at a county meeting held at the Shirehall, on the 2d Sept., 1865. The rules of the Association appear to have given general satisfaction. They were at once accepted by those districts in the county in which local associations had not been already established; and in 12 petty sessional divisions meetings were speedily held, resolutions passed, and committees appointed to act as local committees, in connection with the central one at Gloucester.

"The following Table exhibits the extent and the results of the Society's operations:—

District.	No. of Cattle Insured.	Value Insured.	Deposit.		
		£	£	*s.*	*d.*
Chipping Sodbury ..	3675	40,758	5[illegible]	9	6
Gloucester	2643	25,123	314	0	9
Thornbury	1769	18,306	228	16	6
Whitminster	1740	15,718	191	[illegible]	6
Tewkesbury	1227	14,228	177	17	0
Lydney	1182	10,185	127	6	3
Cheltenham	803	8,4[illegible]	105	11	[illegible]
Winchcomb	562	7,040	88	[illegible]	[illegible]
Newnham	633	5,621	70	[illegible]	[illegible]
Lawford's Gate ..	487	5,300	66	3	[illegible]
Stroud	72	8[illegible]4	10	8	[illegible]
Coleford	16	[illegible]	2	11	[illegible]
	14,839	151,376	1892	4	0

The extent of the insurances effected has necessitated a large amount of care and close attention. This has been cheerfully given by those to whom the management of the concern has been entrusted, and thus has resulted that rare occurrence, viz., a most successful instance of mutual cattle insurance. Had the plague virulently visited the county, it is impossible to say in what position our association might have found itself. We should not have been able to report as we can now, that out of the 14,839 head of cattle insured, not a single case of disease has occurred, and that consequently no claim whatsoever has been made on its funds. The insurers have had only to pay a deposit of one and a quarter per cent. (or 3*d.* in the pound) upon the amounts insured, and no additional calls have been required. It will not be overlooked that in arranging and printing a set of books suitable for the carrying out of a Cattle Assurance Association of the magnitude this has assumed, measures had to be taken for registering every particular, such as the date of insurance, and the class of every animal, value, deposit, certificate; also similar particulars of increased stock to the number originally insured; the same particulars on reduction of stock by sale; the number attacked by disease, slaughtered, died, recovered, and under treatment; total number, and aggregate value. Tables were arranged providing for these contingencies, which most fortunately proved unnecessary, yet in the working of the association it is needless to add that they form an important item. The central committee have the pleasure of stating that their total expenses do not exceed in amount five per cent. on 1892*l.* (being the amount of deposits paid in). Bearing in mind the state of former agricultural insurance companies, both at home and abroad, your committee recommended a limit of six months only for the existence of the association, the affairs of which we have now met to wind up. Although the whole county have not become insurers, yet a general interest has been taken in our proceedings, and all are gratified that, after a voyage of six hazardous months, we have been able to bring our vessel to anchor in a safe harbour, and to make a satisfactory report of our stewardship to our employers."

Mr. Holland stated at the close of the meeting to receive the report of which the above is the substance: Throughout the whole of the area in which our association has been at work we have found ready and expert workmen, who have been ready and willing to give up their time, and have taken a great deal of trouble in forming the local committees, and keeping them up to the mark. Our machinery has been perfect through the whole of the short time we have been in existence. By this movement I feel that farmers have got into the habit of making exertions of self-defence which they will not forget; and thus they will know on future occasions how to band themselves together for the purpose of self-interest. One and all who belong to the Central Committee will be quite of the same mind as myself, that nothing could be wiser than incorporating into that Central Committee the Committee of the Agricultural Society of the county. By that means we got members from all the different parts of the county.

6. THE CATTLE PLAGUE IN FRANCE (*Abridged from the Journal of the Society of Arts*):—

The cattle disease has appeared in France, as well as in other countries, but its effects to the present time have been extremely insignificant, owing, as some people say, to the extreme attention paid by the Government at the first moment of its appearance. We have no returns before us later than the commencement of December; but at that time the number of cattle lost by the epidemic in question was stated officially to have been only 43, in the two departments of the Nord and the Pas de Calais. The disease has, however, appeared in Paris, at the Jardin d'Acclimatation in the Bois de Boulogne, which has lost 35 animals by it, including gazelles, stags, a female urus of Lithuania, and a peccary. M. Bouley has presented a memoir on the subject to the Academy of Medicine of Paris, in which he declares it to be proved, not only that the disease is essentially contagious, and may attack all kinds of ruminating animals, great or small, indigenous or exotic, but also man himself. At any rate, he believes that beyond question it may and has been transmitted by man. A stag in the gardens of the Society, confined at a considerable distance from the building in which the disease existed, was attacked by it and died, in consequence, as supposed, of the same attendant having the care of the animal in question as well as of those which had been previously attacked. It cannot be said that a single case of this sort can be quoted as positive proof; in fact, it would be most illogical to consider it so. The epidemic is said to have been imported into the gardens in the Bois de Boulogne by two gazelles brought from England, but no suggestion is made as to the manner of its appearance in the two departments already named. The Minister of Agriculture has extended the regulations, adopted in September last for checking the spread of the disease, to all kinds of animals, with the exception of horses, asses, mules, and dogs.

The Imperial Government sent a veterinary surgeon to England to study the question; and that gentleman has published his opinions respecting the conduct of the English authorities and men of science, who, he says, might have arrested the disease had they taken the advice which he offered them. We have not seen any account of the means proposed by the surgeon in question, or we should make it our business to publish it, as it is extremely important to know what are the opinions of practical foreigners upon the subject. There is no doubt that the French authorities are extremely vigilant and active in such cases; and that which happened in the instance of the first gazelle that died in the Jardin d'Acclimatation is a proof of it. There was no suspicion of the cause of the animal's death at first, and the body was given over to a stuffer; when the disease reappeared, and its nature was revealed, an officer, M. Bouley, we believe, was instructed to trace the remains, in order to ascertain whether they had communicated the disease on their road; the attempt, however, was fruitless; the skin was found in the possession of the stuffer to whom the body had been delivered, but all the rest had been carried away by a *chiffonnier*, who, upon being interrogated, declared that he had thrown it on a heap of rubbish, on a waste spot on the outskirts of the town, and no trace of it could be discovered. It is extremely fortunate for France that the disease has at present exhibited so little power, and the care and intelligence exhibited by the authorities is most praiseworthy; but the atmospheric condition, or some other circumstance, may be different in the two countries. The Potato disease and the Grape disease ought to make us modest respecting the power of our science in such cases.

PROFESSOR GAMGEE AND THE CATTLE PLAGUE.

PROFESSOR GAMGEE has written a book about the Cattle Plague. He says the disease came over Europe from east to west. His conclusion from this is that the disease spread only by contagion or infection. But Asiatic cholera spread over Europe from east to west; nobody believes that cholera was only or chiefly spread by contagion or infection; cholera amongst men, like this plague amongst cattle, raged in the crowded and unhealthy localities. As a knowing old farmer said to me the other day:—"I turns my beasts out every day, they kick about and keeps themselves healthy. Why, we heard nothing of this plague, except in the town cowhouses, till cold weather come, and all the cattle were taken up and crowded together in yards and sheds." Professor Gamgee said long ago quite rightly that there is no specific cure for the cattle plague. But that smallest of minorities, the men of clear-seeing common sense, said the same thing from analogy. For in men there is no specific cure for malignant low fever; still, in men, open windows, bright daylight, and cold fresh air, will cure the majority of cases. But our cattle have not had a chance, for the veterinary profession prescribe warm air and darkness almost to a man. Prof. Gamgee adheres to the opinion, long exploded amongst educated physicians with regard to similar diseases amongst men, that this malignant cattle fever is only taken by contagion; and yet amongst the more educated classes there must be many who will remember some curious coincidences pointing to an opposite conclusion. The last summer was the warmest and longest ever known in the memory of living men. I wonder whether Professor Gamgee ever heard or read how Homer in three places alludes to pestilence following close upon extraordinary heat; that is, in the first, fifth, and twenty-second books. Or, again, of the mention made by Livy of a terrible epidemic amongst both cattle and men, following an excessively hot season in the year of Rome 325. Or, again, that the summer preceding the outbreak of cattle plague in England about a hundred years ago was unprecedentedly hot? Last summer there was a plague of flies. I wonder whether Professor Gamgee has ever heard or read that plagues of flies have often been observed to precede great pestilence, as Webster, in his History of Epidemics, specially mentions with regard to the plague at Dantzic, in 1709, and a pestilence in America in 1633. Vast numbers of the cattle in England are half-starved by farmers in winter. I wonder whether Professor Gamgee ever heard of the Greek proverb, ὁ λοιμὸς μετὰ λιμὸν—"The plague after famine." This has been the wettest winter ever known, with the lowest barometer. I wonder whether Professor Gamgee ever heard or read of the malignant epidemic that broke out in London in 1799, after an extraordinarily wet autumn. Farmers crowd their cattle together in sheds and yards. I wonder whether Professor Gamgee has ever heard or read of gaol fevers, camp fevers, and ship fevers, from crowding men together. Cattle are every day taking the disease, they are then put into dark stuffy places, and they die forthwith. I wonder whether Professor Gamgee has ever heard or read how Sir John Pringle records that in 1757 several soldiers were brought into the ship hospital at Portsmouth with the common fever of the season, but upon their being shut up in the crowded hold of the ship, the fever turned to malignant typhus, and they died forthwith. Professor Gamgee has the exaggerated idea about contagion that is so prevalent just now. I wonder whether he has ever heard or read how Dr. Haggarth proved by careful investigations at the end of last century, that although in the close air of a court of justice, gaol fever killed two judges and sundry lawyers in 1577, as recorded by Lord Bacon, yet that in the open air contagion never has any effect beyond a very short distance. I wonder, also, whether he has ever read how this same Dr. Haggarth records his conviction, from a whole life's practice and study of the matter, that though clothes shut up in a box will carry contagion indefinitely, no living person ever carries it in his own clothes through the open air. The fact is, one can hardly exaggerate either the danger of contagion in enclosed air, or the disinfecting power of bright daylight and cold open air. History tells us that these epidemics always cease after a time. I wonder whether when this one ceases Professor Gamgee will say that it was stamped out by the massacre that is now going on. I have said above that I wonder whether Professor Gamgee has read all these things. But of course I know he has not, nor do I for a moment blame him for not knowing what his education and professional duties have not allowed him opportunities of learning. "How shall he get wisdom whose talk is of oxen?" &c., says Ecclesiasticus. All I wish to do is to protest against our being led by the nose by men who, however admirable for zeal and diligence in their profession, cannot be expected to be authorities in matters beyond their beat. To our allowing ourselves to be led in this somewhat ignominious manner, we owe it that our ideas of contagion, true enough in moderation, are just now carried to superstitious credulity, and that this useless, senseless, destructive, and barbarous massacre of cattle, is now horrifying the sensible part of the community.—*H. S. Constable, Athenæum Club, Pall Mall, March* 31*st.*

P.S.—I see in my *Pall Mall Gazette* of March 12 that the Professor tells us that pleurisy and inflammation of lungs (pleuro-pneumonia, as the profession call it) are diseases that would have never existed in England if they had not been taken by contagion from continental cattle. What shall we hear next?

AGRICULTURAL EDUCATION.

BY THE COUNT DE POUCINS.

(*Concluded from page 302.*)

THE following is the conclusion of a Report presented to the General Meeting of Agricultural Societies, held at Montbrison on the 13th of February, 1866. Translated from the "Journal d'Agriculture Pratique:"—

Our villages all have schools, established with the sole object of teaching the children who frequent them whatever it is most useful for them to know. Instead of inflicting upon them precisely the same sort of teaching, all after the same rule, and almost at the same hour, without any regard to whether they belong to the trading classes, or the agricultural classes, would it not be more rational to make their education subordinate to their requirements? Why should not the teacher, charged with the education of farmers' sons, be qualified to instruct them in the elements of agriculture? Instead of acquainting them with the names of African rivers or the marvels of Australia, he might make them understand the theory of rotations, and give them an intelligent explanation of things they do every day, without knowing the why or wherefore.

The primary schools only, by their regular and universal organisation, enable us to give each youth a certain amount of elementary instruction, insufficient to constitute an education of great intrinsic value, but sufficient, if he be intelligent, to give him a desire for instruction, and to prepare him for superior teaching. In addressing the Agricultural Society of Montbrison, and in the presence of its honourable President, it is not necessary to insist on the advantages of an agricultural catechism,* nor on the facilities that the establishment of elementary schools offer for circulating it.

But the true school, that which ought to produce men of agricultural ability, is the secondary school. The question is, how can it be organised?

Would it be impossible to obtain modifications in the management of Government farms, which would make admission to them easier and residence in them more desirable. I am not sure that it would be possible in all cases to avoid two serious inconveniences. Reform, supposing we could obtain it, can only be the fruit of a Ministerial concession, or of a subscription contributed by those interested in obtaining it. In the first case, the bad disposition of one Minister might undo all that was accorded by his predecessor; in the second, the central power would deprive the local body of all influence in the administration of the school.

Why not endeavour to carry out, by union and private enterprise, that which the State either cannot do, or cannot do well?

To realise this idea two plans suggest themselves:—1st, the establishment of a school in our own department; 2d, the association of several departments comprised in the same agricultural district, having therefore the same interests and the same need of a district farm, that would be organised and administered by an officer appointed by the subscribers. Such a school might be supported by contributions from agricultural societies, or by subscriptions of private individuals.

It is for you, gentlemen, to say which of these plans may be possible, or preferable. I do not pretend to do more than draw your attention to the great question of agricultural education. It would not become us to pronounce beforehand on the merits

* M. de Chevalard, the President of the Agricultural Society of Montbrison, is the writer of an excellent agricultural catechism.

of projects which cannot be properly discussed without enlisting in their favour the labour, thought, and goodwill of all who understand and are attached to agriculture and agriculturists. What seems to me certain is that farmers cannot educate themselves; that we must find out some way of providing them with instruction; and that individual effort is attended with advantages which even the well-meant interference of the State does not offer.

While I am satisfied that it is very desirable for a farmer to have the opportunity of instruction, I believe it to be still more important that he should have the desire. And there lies the rub; there is the real difficulty of the question of agricultural education.

Already some farmers begin to feel the want of education, but without, as yet, any real determination to obtain it; and the reason is, they are not convinced that the study of theory would be practically beneficial to them. One can easily imagine how such an idea originated.

The actual application of a theory does not always succeed, and even when it does, it is often by a slow and protracted process that a neighbouring farmer cannot either appreciate or follow, and by operations based on data that escape his observation and accomplished by means that are not at his disposal. Besides, the pecuniary result is almost always left out of the calculation when agricultural experiments are undertaken by men whose wealth makes them independent of the profit or loss that may attend them.

The farmer is naturally mistrustful and opposed to novelty, and he always makes up his mind that there was a loss, which is probably a mistake; for, although the cultivation of lands is not as profitable in this locality as in many others, still we can all of us point out proprietors, even in Forez, who have made money by farming. A loss leads people to suppose that the system of cultivation was bad, which may not have been the case, for it often happens that where the theoretical farmer loses money through his ignorance of details, a practical man manages to make a good profit by exactly the same system of farming.

A great number of proprietors constantly go into farming; their example does good, but its effect is very much impaired by the awkward circumstance of their management being less successful than that of their neighbours.

If we wish to benefit farming by the improvement of farmers, they must be educated; and in order that they may desire instruction, they must have more frequent opportunities of seeing successful farming carried on by wealthy men, who farm better than themselves. This would be an honour to our agriculture, and it would be a guarantee of its future progress; but unfortunately it is seldom met with. Here, then, lies the future of agriculture and of agricultural education. When farmers can see parents better at building than themselves getting richer than they do, then the cause of agricultural education will be gained.

All our efforts, all our sacrifices, all that we undertake, whether as a society or as individuals, with the object of promoting the success of farming, will be more advanced than their equals, will tend directly to the improvement of farming. By seeking out the intelligent farmer, by treating him liberally, by encouraging his enterprise, by neglecting nothing that can improve his prospects, we shall do more for the cause of education than by the mere act of building schools. Schools are undoubtedly necessary, but what is needed before everything else is to give rise to a conviction that schools would be a benefit: and it is by the example of success that this can be accomplished. The farmer, more intelligent and more enterprising than others, must succeed better than they do, and that must depend partly upon the encouragement he may meet with.

I may be told that it is arguing in a circle to maintain the necessity of education for the acquisition of wealth, and the necessity of the example of money getting to impart a desire for education. The fact is, this is not everything is a circle: but no circle is insuperable to mind, and all obstacles will be overcome if we are convinced that agricultural education is necessary, and if we take all possible means to give the agriculturist the opportunity and the desire for education.

Home Correspondence.

Cow Cottagers' Widows.—In many parts of England there are a large number of cow cottagers, and almost everywhere a sprinkling of them is to be found. They are a highly respectable and industrious class, but are not wealthy, and though they live in comfort and save a little, they are not able to lay by large sums of money. Thus their widows would be left in poverty if the custom did not prevail of allowing them to keep the cottage after the husband's death. The son generally lives with his mother and works as a labourer, giving her in after hours any assistance she may require with her land and cows. Sometimes he marries and lives in a cottage near at hand; sometimes, if the mother is infirm, they all live together, and the daughter-in-law does the work, *i. e.*, makes the butter; but under any circumstances, the widow is sure of a provision and of kind treatment from her son, as the cottage and land are in her holding. But now circumstances are not unlikely to occur which will put an end to this happy arrangement, and leave the widow dependent on the kindness of their sons, and if they have no sons, deprive them altogether of the advantage of the cottage, and leave them most likely to the parish. These circumstances are political, and though the *Agricultural Gazette* rightly avoids politics, I hope you will not consider the subject unsuitable to your columns on this account, as this is an affair of humanity more than of politics. It is proposed to give the franchise to occupiers of land at 14*l.* rental. This will include many cow cottagers, and I do not say a word against the arrangement, but as the widows will have no votes, landowners will be less willing to let them keep the cottages than they now are. This will be a great hardship to a numerous, respectable, and deserving class of women, who will be deprived of material advantages, and condemned to poverty from no fault of their own. This will not be the case under all landlords; some will give up their political influence rather than act unkindly to the widow of an old tenant, but others will not be so considerate. Now, to obviate this hardship, I would suggest that the same plan might be pursued in England which is followed in Austria, and from which no bad consequences appear to have arisen. The plan is simply this—that persons who hold land should have votes, whether men or women. In Austria, however, female voters do not go in person to the polling booth; they send their vote by proxy. Nothing could be more easily done. The female land occupier might write down the name of the candidate she favoured, followed by her own signature in the presence of a magistrate, a churchwarden, or any other accredited person, who would also sign his name as a witness, and then this paper would be conveyed to the polling-booth by any neighbour who was going to vote for the same candidate. By this simple contrivance a great practical hardship and cause of suffering would be avoided. *J. B.*

The Working of the Cattle Diseases Bill.—The new Bill has been put into operation and carried forward by "The Local Authorities" in each separate district, and to these local authorities we must still look for the effective working out of the law. The general public is by no means aware of the power and authority which is intrusted to these bodies. They have to make the rules and regulations for the guidance of their inspectors; to appoint and direct the movements of their valuers; to lay or assess the rates upon their respective districts; to decide upon claims of compensation, and direct the payments. This will be a very onerous duty, and will often be attended by great perplexity. The interests of rate-payers are in their hands, as well those requiring compensation, and the burthen is by no means a light one to limited districts. The district from whence I write will require a compensating rate equal to a two years' poor-rate for losses already sustained, and the plague is still raging with unabated virulence. Of course it will be distributed over a number of years, but there it lies a burthen to be borne. The inspector's duties are now very strict; he must order immediate slaughter whenever he finds a diseased animal—no compromise, no delay with a view to cure. The valuer, as appointed in this district, has to cause these condemned animals to be destroyed, and to see to their effective burial; for this duty he receives 10*s.* per day and 2*s.* 6*d.* per head as valuer, and he can award 4*s.* for each grave to the owner for burial. The power possessed by "the local authority" is almost unbounded when a clear case occurs. The inspector, whose decision is absolute, reports to "the local authority" that danger arises from cases in certain localities owing to contiguity of healthy herds to infected ones. It is, then, their duty to exercise their enormous power, and order the slaughter of every animal having been in contact with infected ones, in order to stop the spread of the contagion. And it would not do to make exceptions, therefore the most valuable of all herds may be subjected to this wholesale destruction, and that without appeal. No matter be it the herd of a Bates, a Towneley, or a Booth—the law is imperative. The local authorities "may, if they see fit," order the whole to be destroyed, awarding one half the marketable value for the infected, and three-fourths of the said value for healthy ones. This mode of compensation is limited enough, but at the same time it bears heavily upon rate-payers where losses fall heavily. The tithe owner is probably the most heavily rated or dealt with; he has but little chance of alleviation. The cattle owner receives one half the value of his destroyed animals, and the local authority may limit the whole of his rate. The members of an Assurance Association, or those who may have paid a voluntary rate for purposes of compensating each other's losses—their rates may also be deducted by the local authority under certain arrangements, so that in fact the actual losses are borne by those owners whose cattle escape the plague, or by the general class of householders, traders, &c. In districts of limited area this will be severely felt, although provision is made in the Act to extend the rate over a period of seven years, if the sum levied exceeds 6*d.* in the 1*l.*, and if it exceeds 9*d.*, over a period of 14 years. The Act is framed too much upon the assumption that the plague is to be of short duration. These payments for compensation by no means cover the outlay. Each local authority has a staff of officers, including clerks, inspectors, valuers, and rate collectors. These all have to be paid. The inspectors receive 1*l.* per day, and 6*d.* per mile: the valuers 10*s.* per day, and 2*s.* 6*d.* for each animal. Their bills are very large, and daily augmenting. I believe all these minor matters will require thorough investigation immediately before Parliament, as "the local authorities" will be unable to carry out the Bill. Areas must be extended—District Commissioners must be appointed to aid the authorities—inspectors and valuers must be paid by Government. It ought to suffice that local districts meet the claims for compensation. *O. F.*

Chloroform for Cattle Plague.—While the cattle plague is devastating our herds in England, and all the efforts of our veterinary surgeons are valueless, I think it only right to call your attention to the great success that has attended Dr. Dickson, of Bolton Street, Piccadilly, in the use of chloroform, Mr. A. Hammond, of High House, Norfolk, well known in the agricultural world, having saved a great portion of his valuable herd by following Dr. Dickson's advice. Dr. Dickson formerly practised with very great success at Cheltenham, was the man who wrote the "Fallacies of the Faculty," and, as the late Dr. Jephson told me, taught us all to discontinue bleeding. Sincerely do I hope something like a cure is found at last. *T. Beale Browne, Salperton Park, Andoversford, Gloucestershire, April 4.*

Societies.

ROYAL AGRICULTURAL OF ENGLAND.

Monthly Council: *Wednesday, April 4*, 1866.—Present, Lord Tredegar, President, in the Chair; the Earl of Shrewsbury, the Hon. A. H. Vernon, Mr. Amos, Mr. Bowly, Col. Challoner, Mr. Clayden, Mr. Brandreth Gibbs, Mr. Hamond, Mr. Holland, M.P., Mr. Wren Hoskyns, Mr. Jonas, Mr. Lawrence, Mr. Pope, Mr. Randell, Mr. Torr, Professor Wilson, Mr. Jacob Wilson, Mr. Frere, and Dr. Voelcker.

His Highness the Maharajah Duleep Singh was elected a Life Governor of the Society.

The following new Members were elected:—

Bolam, Robert George, Westwood Hall, Wooler, Northumberland.
Boulton, R. C., Lower Ballingham, Ross, Herefordshire.
Bourne, John, Bugsell, Salehurst, Hurst Green.
Cole, Robert, Benniworth, Wragby, Lincolnshire.
Houlder, Edwin S., Fernwood, Sutton, Surrey.
Kennard, Adam S., Dawpool, Birkenhead.
Oliphant, Ferguson, G. H. H. F., Broadfield House Carlisle.
Purton, Charles C., The Woodhouse, Cleobury Mortimer, Salop.

Finances.—Mr. Torr presented the Report, from which it appeared that the Secretary's receipts during the past month had been examined by the Committee, and by Messrs. Quilter, Ball, & Co., the Society's accountants, and were found correct. The balance in the hands of the bankers on March 31st was 956*l.* 8*s.* The balance sheet for the quarter ended 31st March, 1866, and the statement of subscriptions and arrears, were laid on the table, the amount of arrears then due being 781*l.*

Mr. Wren Hoskyns presented the report of the Journal Committee, and the Hon. A. H. Vernon having moved that the Council should take into consideration the propriety of making a grant for the purpose of carrying out a complete investigation into the practical working of Steam Cultivation, the report was adopted, as follows:—

In compliance with instructions given by the Council of the Royal Agricultural Society of England, at their meeting held on the 7th of March, 1866, the Journal Committee having taken into consideration the proposal made to the Council that an inquiry should be instituted into the practical working of Steam Ploughs, and other Steam Implements for the Cultivation of Land in different parts of the Kingdom, beg to report:—

That inasmuch as the investigations into steam cultivation conducted at the Society's shows have necessarily been attended with disadvantages, from the limited time and area available, from difficulties as to soil and season, and the presence of a crowd of anxious spectators, who interfered with the different tests applied by the Judges and the Society's Engineer, the Journal Committee consider that the time has now arrived when the Society may fairly institute such an inquiry as will decide how far the conclusions hitherto arrived at are borne out by practical experience.

That it is suggested that the inquiry should be made on a certain number of selected farms, and should comprise soils of different texture and under different circumstances, and that each system of applying steam to the cultivation of the soil should be equally and impartially tested.

The inquiry should be specially directed to the following points:—

1. The cost per acre, the depth and nature, including the various items of expenditure for each kind of work.

2. A special investigation into the age of the machine and the amount paid annually for repairs, stating the nature of breakages, and their causes.

3. How far the adoption of steam cultivation has assisted the drainage of strong lands, how far the cropping of the farm has been changed by the adoption of steam cultivation—more especially to what extent autumn cultivation has increased the growth of green crops, and how far the productiveness of the soil has been increased by steam cultivation.

4. The number of working days on which the engine power has been used for the purpose of steam cultivation on or off the farm.

5. The number of days in which it has been used for other purposes on or off the farm, stating the nature of the work done, daily cost, and amount charged when let on hire.

6. The number of days lost by breakage and other causes.

7. In the case of steam ploughs, &c., let out for hire, to ascertain what loss of wages occurs from the non-employment of the men, this being an item of expense against the apparatus.

8. The consideration of the economical supply of water for steam cultivation.

9. The economical mode of arranging and forming roads and headlands for steam cultivation.

To conduct such inquiries the Journal Committee suggest—

That a Central Committee representing each of the Society's districts be appointed, consisting of the following members:—Earl Cathcart, Earl of Shrewsbury and Talbot, Viscount Hill, Lord Berners, Major-Gen. Hon. A. N. Hood, Hon. A. H. Vernon, Sir E. C. Kerrison, Bt., M.P.; Sir Massey Lopes, Bt., M.P.; Sir A. K. Macdonald, Bt.; Sir M. W. Ridley, Bt., M.P.; Mr. Acland, M.P.; Mr. Amos, Mr. Barthropp, Mr. Bowly, Mr. Clayden, Mr. Clive, M.P.; Mr. Dent, M.P.; Mr. Druce, Mr. Holland, M.P.; Mr. Hoskyns, Mr. Jonas, Mr. Latour, Mr. Milward, Mr. Pope, Mr. Randell, Mr. Rigden, Mr. Sanday, Mr. Torr, Mr. Thompson, Mr. Owen Wallis, Mr. Wells, Mr. Jacob Wilson.

It will be the duty of the Committee to communicate with the owners of implements for steam cultivation with a view to making a selection of farms to be inspected and reported on.

For purposes of inspection, an "Inspection Committee" shall be nominated by the Central Committee. The Inspection Committee (for which any member of the Society shall be eligible), shall visit the farms that may be selected by the Central Committee.

With each Inspection Committee there shall be associated a paid Secretary, whose duty it will be to attend them in their investigations, and assist them in drawing up their report.

That a sum of 500*l.* be placed at the disposal of the Committee to carry out this inquiry.

Cattle Plague.—The Council having discussed the effects of the recent Order in Council on the foreign cattle trade, resolved to convey to the Lords of the Privy Council their sense of the extreme importance of establishing *permanent* means for and compelling the slaughter of all foreign fat stock at the place of disembarkation; and also by an efficient system of quarantine applied to store animals; and by stringent restrictions upon the purchasers of stock after they are liberated from such quarantine, to protect the public as far as possible from the risk of infection caused by the importation of foreign cattle; and further that no exception be made as regards the Metropolitan market. The Secretary was directed to convey these resolutions at once to the Lord President of the Council.

Professor Voelcker will deliver a lecture on Wednesday, April 18, at 12 o'clock, on the conditions to be observed in carrying out agricultural experiments in the field.

Bath and West of England.—At the last Monthly meeting of the Council of this Society, the following prizes, offered by the Local Committee, were sanctioned by the Council:—

Ponies.—For the best Pony bred in the New Forest, under 14 hands, of any age, 5*l.*; second ditto, 3*l.*; for

the best Mare and Foal, 5*l.*; second ditto, 3*l.*; for the best pair of Ponies, 5*l.*

WILTSHIRE CHEESE.—Prizes amounting to 18*l.*

WHEAT AND BARLEY.—For the best sack of Wheat grown in Wiltshire, or within 20 miles of Salisbury, in 1855, by the Exhibitor, 5*l.*; for the best sack of Barley ditto, 5*l.*

DOG SHOW.—At the February meeting of Council it was resolved "that under the exceptional circumstances of the year, the Council are willing to make arrangements for the admission into the show yard at Salisbury of an exhibition of dogs, provided the expenses attending it are guaranteed by the Salisbury Local Committee." The Salisbury Committee at a meeting since held have resolved to offer 100*l.* in prizes for dogs, and the Council to-day accepted and approved the prize sheet, which was ordered to be printed and issued without delay, as the time for entry is necessarily very limited. The Show will be under the direction of the stewards, Messrs. T. Pain, S. Pitman, and J. Hole; secretary, Mr. J. Goodwin.

Farmers' Clubs.

LONDON: *April 2.—Agricultural Exhibitions.*—The following is an abridgment of the paper read on this subject by Mr. CROSSKILL. He said: In considering the general condition, effects, and uses of Agricultural Shows, it will be convenient to divide the subject into their past results, their present state, and their future prospects, and to treat successively each of these divisions.

PAST RESULTS.

Some introductory allusion must also be made to the various descriptions or classes of shows held by a number of societies differing greatly in magnitude and importance, but this paper will not be unduly extended, or the time of the Club unnecessarily occupied by a recapitulation of all the statistics connected with their various ages, sizes, and objects. The three National or Royal Societies of England, Scotland, and Ireland naturally claim the first notice: their general influence on agricultural progress may be said to date from about the years 1839 or 1840, and the distinctive feature of their annual shows or exhibitions is, that they are not restricted to any part of their respective countries, but visit in rotation each agricultural division or large county. Closely following on these in importance, and indeed in many respects successfully rivalling their exhibitions, are the great shows of the Yorkshire Society in the North of England and the Bath and West of England in the South-west, while the North Lincolnshire and other societies of smaller counties, being confined to more limited fields of operation, do not attract so large an amount of general notice. A very numerous class of local and district shows next claims attention, consisting generally of an exhibition limited to one day only, the distinctive characteristics of which vary greatly in different localities. In the small market towns of North and East Yorkshire, and to some extent in Suffolk, where the breeding and rearing of horses is largely carried on, the horse show forms an important as well as attractive feature of the meetings, some of which almost deserve the name of horse fairs from the gradual increase in the amount of business annually transacted in this department. In many of the Southern and Midland counties, varieties of the human species in the shape of cottagers, servants, labourers, and even their wives and families, share the honours of the prize sheet with fat beasts and improved ploughs, and a common concession to nearly all these gatherings is a dinner, attended by the local celebrities and Members of Parliament, at which speeches on agricultural, and frequently general politics, form the staple entertainment. Lastly, many of the ploughing and hedging matches in the Midland counties are extending their field of operations, so as to include, at least partially, the objects of agricultural shows, and must not be altogether omitted from this enumeration. In reviewing the results which the various shows, meetings, and exhibitions have [illegible] produced on agricultural progress, it may be broadly stated, without the slightest fear of contradiction, that they have been most highly beneficial. This was especially the case in England for some time after the establishment of the Royal Agricultural Society, about 25 years ago, when the circumstances of the country were very different from those prevailing at the present time, particularly in two most important matters—namely, the facility of intercommunication and the diffusion of knowledge. It is very difficult for us who live surrounded by railways, telegraphs, and an abundance of newspapers to realise the state of ignorance and stagnation of mind existing at that time in most country districts. The enterprising agriculturist who practised an improved system of cultivation, or by observation and care discovered important facts connected with the breed and management of stock, had almost as much chance of communicating the result of his experience to Americans or West Indians as to the generality of his brother farmers, excepting to the few who resided in his own immediate neighbourhood. Owing to the comparative difficulty and rarity of travelling, and to the very small circulation of newspapers or other similar periodical publications, knowledge travelled then very slowly, and when communicated made little impression on the general apathy and incredulity. Under such circumstances, it was almost impossible to over-estimate the value of an agricultural show as a means of spreading useful information. All the reports, official or general, of the early meetings of the Royal and other Agricultural Societies testify strongly to the great advance that immediately followed in any neighbourhood where the shows had been held, and no doubt can exist that the fact was so. Landowners, occupiers, and even labourers had their minds and faculties opened, improved, and stimulated by visiting a show-yard, where the best specimens of animals and the most modern implements and machines were brought prominently and forcibly to their notice. The value of the shows as stimulants in promoting improvements in the breed of animals and in the construction of machinery must also be noticed. It would of course be erroneous to attribute to this cause the exertions of those celebrated agriculturists who in the early part of the present century, while regenerating, and in fact almost creating the new breeds of Short-horn bullocks and Leicester sheep, did not neglect the improvement of older established races; but there can be no doubt that the renown to be gained by taking prizes as well as the profit resulting from the possession of a herd, whose reputation was established and maintained by success at agricultural exhibitions, have been powerful incentives to the efforts of many of their successors. The pleasure of winning prizes and the opportunity afforded by the shows of exhibiting their beautiful and well-formed animals to an admiring public has doubtless also been in many cases instrumental in inducing titled or wealthy landowners, including many of the principal members of our aristocracy, to pursue the rearing, breeding, and management of stock, and so far as their bold and abundant enterprise has benefited the practical farmer by directing attention to maintaining and improving varieties and specimens of animals, which would not otherwise have received such care, the service thus conferred on agricultural progress is, to a great extent, due to the shows. With reference to agricultural implements, there is abundant evidence that the money prizes offered for novelties and improvements, as well as the opportunities which the meetings afforded for their exhibition and trial, did for some time after their establishment produce beneficial results, and the collection together of a large body of customers naturally caused the makers of implements to flock to these gatherings with their goods in such yearly increasing numbers, that hasty thinkers have, in many cases, attributed to the shows alone the rapid advance and improvement of agricultural machinery, overlooking the fact that in every other branch of mechanical art, especially in manufacturing machinery of all kinds, of which there are no annual shows or exhibitions, the progressive increase has been equally striking. Perhaps one of the most prominent instances of the great value of an agricultural show as a means of making generally known discoveries of the utmost practical importance, occurred at the first Newcastle Meeting of the Royal Agricultural Society in 1846, when the lecture delivered on deep drainage by the consulting engineer, Mr. Josiah Parkes, gave an extraordinary impetus to the adoption of that valuable improvement, not only on account of the able manner in which the subject was treated by the lecturer, but also because of the large number of influential landowners and others, whose attention was forcibly drawn to it through the agency of the Society.

PRESENT INFLUENCE.

Proceeding from the first division of the subject to the influence exercised by the shows at the present time on agricultural progress, we find that a marked change has taken place in the circumstances which existed when they were originally founded. The great increase in all facilities of intercommunication throughout the length and breadth of the land, extending frequently to the most remote country districts, accompanied, as it has been, by an enormous development in the spread of knowledge by means of the cheap newspaper press, has greatly diminished the value of agricultural meetings as diffusers of information. Improvements, or even the crudest suggestions about the breeding and treatment of stock, the course of husbandry, or the adaptation of machinery, are now reported with the greatest avidity, and attain immediate celebrity, not always very well deserved; but under such circumstances, there is obviously no longer the same scope which formerly existed for the utility of the shows, in extending and communicating agricultural knowledge. While, therefore, it must be admitted that their advantages have been to some extent in this respect diminished, they have, on the other hand, gained in many ways by increased facilities of travel. The difference between holding large meetings in towns possessing railways, and going to places without such convenience, was forcibly felt by visitors to the Royal Show at Shrewsbury in 1845, where the trouble, delays, and losses caused by a partial return to the old system of coaching and post horses dwelt long in the memories of those upon whom they were inflicted. Perhaps a latent desire to give the present generation a slight specimen of what their predecessors endured, may have been among the motives which induced the Council of the Royal Agricultural Society to fix the next country meeting at Bury St. Edmunds, a little town, possessing only a single line or a branch railway, and totally inadequate to the exigencies of such a traffic as the Royal Meeting invariably causes. The great meetings of the Royal and principal district societies possess also considerable value in furnishing occasion for the annual collecting together of every one connected with agriculture. If the amount of actual business done has no tendency to increase, the opportunity of spending a few days in the society of, and conferring personally on the numerous topics in which all take a common interest, is not without considerable value to the agricultural community. Perhaps the last two meetings of the Royal Society were not very favourable specimens of this kind of utility, Plymouth and Newcastle being in comparatively inaccessible localities; but the extreme corners of the land cannot engross everlasting attention, and we may reasonably look forward during the next few years for places of meeting more convenient to the great bulk of the agricultural public. In promoting, extending, and stimulating the breed of cattle, sheep, and stock of every description, the original utility of the meetings appears to be fully maintained; the number of wealthy and titled gentlemen who continue to pursue that object indicates no sign of diminution, and, as it is scarcely to be presumed that with many of them profit is the attracting motive, the pleasure of exhibiting at shows, and the prospect of winning prizes there, may fairly be added to the other inducements furnished by a sincere desire to aid the practical farmer by maintaining purity of breed and symmetry of form in agricultural stock.

THE PRIZE SYSTEM.

The shows continue also to afford a good opportunity for the agricultural implement maker to display his productions and meet his customers, especially if he is in the fortunate position of being able to attract a little extra attention by parading a list of prizes recently awarded to his machines; but the notion that these implement prizes are of any service to the practical agriculturist is one of the strangest fallacies that has ever been impressed upon the public mind. The arguments chiefly relied on to justify their retention for the supposed benefit of the agricultural community are, first, that the offer of prizes is the chief cause of the improvements of implements and machinery, and secondly, that it is for the advantage of the public, and especially of intending purchasers, that official indications should be given of which are the best machines; but it is not difficult to show that both these reasons rest on no substantial foundation. Those who attribute the improvement of implements solely, or even chiefly, to the prize system, overlook entirely the effect of competition in every branch of industrial occupation: a maker of machinery of any kind cannot remain stationary without being speedily distanced by his rivals; and no one acquainted with the trade in implements will dispute that competition in it is at least as severe as in any other branch of business. The real improvements required in agricultural machinery are discovered by actual work on the farm, and everyone desirous of acquiring a permanent trade in implements finds it necessary to supply them of the best and most approved construction, and needs no competitive trials to stimulate him in adapting them to the requirements of practical agriculture by urging his utmost skill and ingenuity to improve their efficiency and durability. The statement contained in the second reason, that the prizes are useful in showing the public which are the best implements, would only be true if the official indications of agricultural societies about machinery were generally correct and such as purchasers could implicitly rely upon. Now it is perfectly notorious that the awards of judges at shows are, under circumstances continually and necessarily beyond their own control, exceedingly liable to error, and after every important series of trials, the columns of the agricultural journals are, for many weeks in succession, filled with remonstrances from spectators as well as competitors, all uniting in condemning the utter inadequacy of the tribunal. If consecutive trials of the same implements take place at different meetings the results are frequently in direct contradiction to each other, proving the truth of the oft-repeated statement that management and favourable circumstances are the principal requisites for winning a prize, and that to determine the capability of a machine or implement for practical work on the farm, a short competitive trial, partaking more or less of the nature of a race, is absolutely worthless. The knowledge that this really is the case has, during the last few years, gained ground rapidly with observant agriculturists, especially among those who have allowed official decisions to influence their purchases of implements, and have not found worthy information as to which machines work best in actual practice, and as agricultural societies have persisted in giving their decisions which deserve [illegible] public confidence, the system of trials and prizes cannot [illegible] on the ground that the public desire to retain it. The difficulties of a judge anxiously endeavouring to do his duty amid the pressure and bustling of a crowd of eager spectators, should be seen or felt to be fully appreciated, and the unpleasant nature of the work, together with [illegible] of the small practical result arising from that trial performance, continually increase the reluctance of the best and most practical farmers to act as judges, especially those who have had a little experience in that capacity. Only last summer one of the most active agriculturists in the north of England, who, with three other gentlemen, had spent a great deal of time and trouble in judging a large number of threshing machines, said, in my presence, "Of course we gave the prize to that which did the work best here; but it is not the one that any of us would buy for our own practical use." It was, therefore, evident that the judges had either been entirely wasting their time by arriving at a conclusion which was of no consequence, and would be disregarded by the agricultural public, or that if any one was so inexperienced as to believe their decision trustworthy, and to buy a prize machine in consequence, its practical working would probably most certainly convert to the [illegible] of doing away with a system at once so useless and fallacious. A reason that has prevented this conclusion from being reached long ago is, that all the machines sent for trial at our great shows contain an amount of excellence which makes it scarcely possible for a prize to fall to an actually bad specimen of its kind, and purchasers who follow the prize-sheet are frequently content with the good machines they get, without knowing that still better ones have, in many cases, been passed over without any sort of recognition or notice. The fact is, that the farmers of England are now as capable as any other body of business men of forming a correct opinion as to what is wanted for their own purposes, and do not require a number of engineers or mechanical amateurs at shows to be judges of what implements are best suited to their practical work at home; and when this truth is recognised by the managers of our principal agricultural societies, their meetings will be relieved from a series of prolonged and costly operations, troublesome and unsatisfactory to nearly every one connected with them, and of no advantage whatever to the general public. The recent experience of this Club may also be quoted as an illustration of the difficulties inseparable from the working of a prize system. At the first meeting this year our Chairman had to announce that owing to the invidious nature of the duties it imposed upon the committee, no more cups should be given for papers read at the monthly meetings; but the committee did not express any apprehension that for want of such a stimulus the number or merit of subsequent communications was on that account in danger of being diminished, and no one who heard or read last month the excellent paper of our Secretary (one of the strongest supporters of the implement prizes) is likely to infer that he did not exert all his ability in its preparation because he was not competing for a prize, or that the offer of a cup or reward of any kind would have made him produce a better essay than he actually did after the prize system we abolished.

FUTURE PROSPECTS.

In concluding these remarks with a brief reference to the future prospects of the shows, it seems impossible to predict for them such an important influence on agricultural progress as they have in past times exercised, owing mainly to the great difference in the circumstances under which they are held, to which allusion has been made at length in the previous division of the subject, and partly also to the undoubted fact that the rapid rate of agricultural improvement during the last 20 years has not left the same scope which formerly existed for important and beneficial reforms. Notwithstanding this diminution of their utility, the prospects of the meetings as centres of attraction [illegible] is their popularity likely to be lessened. Few persons connected with agriculture, either as stock-owners, cultivators, or implement makers, will neglect [illegible] visiting to the gatherings of the great Royal and district societies or to the smaller shows held in their own localities. The increasing wealth of the country, and the growing interest taken in agricultural pursuits by all classes of the community, ensure a steadily increasing number of visitors to the shows, as well as of subscribers to the various societies, and will doubtless continue to render such displays of well cultivated farms, carefully bred animals, or improved implements furnish attraction to the general public as well as to special observers, to the reflective student as well as to the practical agriculturist.

CIRENCESTER: *The Feeding of Stock.*—At the monthly meeting of this Club, held on Monday, March 5, Mr. Edward Bowly in the chair, Mr. W. J. EDMONDS said:

I do not propose to enter into any statistical comparative values of the different kinds of artificials, such as corn, cake, &c., or of their analyses, because I consider that the very valuable opinions of our scientific friends upon these very subjects can be best considered by quietly studying their works and consulting them when we require their assistance; and I would wish to bear my testimony to the amount of instruction and of advantage that I have gained from the lectures and works of those gentlemen, and from none more than from those of our respected friend, Dr. Voelcker. Theoretic views must always in practice be adopted with caution, but theory has given us many wrinkles, and it must make experiment surer than it was when farmers had to work without it, and certainly were obliged to feel their way in the dark, as it were, more than we are now. I have considered that, as a farmer, I shall be expected to make a practical lecture.

First, then, what should guide our choice in the purchase of stock bought for feeding?

I would first say, never buy culls—it is the worst thing a grazier can do, for although they may appear cheap, they really are not so, for they are either ill proofed, and consequently will not do justice to the food they eat, or (especially in the case of sheep) they have received a check, and as soon as they begin to thrive so surely do they begin to die. As an instance that I am not alone in this idea, I may mention the case of an eminent grazier, I believe it was the late Mr. Trinder, of Wantage, who always after purchasing his different lots of grazers, the best he could find, looked over them, and picked out all which he considered as not likely to fatten well and quickly, and sold them to a dealer at the best price he could get. It may be asked, who is to buy all these bad and cull animals? I will answer that the more they are at a discount, the more careful will breeders and dairymen be to improve their stock, and so avoid keeping that kind which graziers dislike to buy. I believe myself that one of the best points to guide a grazier in the purchase of his stock is that of a well formed head with a full eye mild eye. We generally find in all animals that if we can get that we are tolerably sure to have with it a well made frame and an aptitude to fatten:

and why. Because it is a proof that such animals are well bred, and hence their good qualities. Of course there may be exceptions, for instance we may meet with thin flesh and coarse bone, and still dislike the animal; we should look at once to perfection in the way pointed out by Mr. Rham's description of a well made horse, &c. He says, speaking of cattle, "There are certain forms and appearances which any amateur is supposed to be conversant with as a perfect combination of shape, and especially the carcass is considered the best, the head small, the neck thin, the shoulder well framed, barrel, strong and straight spine, hips loose well separated, and length of quarter—all which can be traced to be essential to the perfect functions of the body. Small and short bones in the legs give firmness without unnecessary weight. A thick skin well covered with hair indicates purity of blood, and its soft loose feel indicates a good seat of cellular substance underneath, which will be closely knitted with deposited fat. All these are indispensable points in an ox which is to be profitable to feed, and whatever be the breed, they will always in their supreme degree be the same sheep, you'll find, as to the shape of the necessary shape and quality of the South Devon, and Mr. Culley's opinion of the points necessary to be observed in the purchase of Longwools. Mr. Ellman, after describing the shape of the head, &c. (beautiful and living specimens of which are to be seen in the park at Glynde, the residence of Lord Bathurst's park), goes on to say, "The neck should be of medium length, thin towards the head, but enlarging towards the shoulders, where it should be broad and high, and straight in its whole course above and below; the chest wide, deep, and projecting between the fore legs, indicating a good constitution and a disposition to thrive; the shoulders on a level with the back, and not too wide above, but bowing outward from the top to the breast, leaving room for the springing rib behind. The ribs come out horizontally from the spine, extending towards the hips, and the last rib should be as large as any of the others; the back flat from the shoulders to the setting on of the tail; the loin broad and flat, the rump long and broad, the hips wide; the space between them and the last rib on either side as narrow as possible, and the ribs presenting a circular form like a barrel. Whether the hips and rump be paid (covered) with flesh, and how much, is a point which would be uneven formation where the shoulders join either the neck or the back, particularly no rising of the withers or hollow behind the situation of those bones. Then he speaks of the chest, barrel, and quarters, in the same strain as Mr. Ellman, especially mentioning that the thighs should be full, and in the same way with store pigs, regard must be had to their being of good quality, and hence to their breed, if we wish to make pig feeding pay; and although we may not be able to find grazing stock generally to bear out in all points the descriptions I have quoted, especially the flesh marks, I would not have it thought that in buying to graze of any breed, and of any description of animals, buy good ones of the sort. One thing I think we should never lose sight of, and that is that the public, and as a consequence the butchers, want plenty of lean meat with the fat, and more than this, they want it of a fine grain and quality, which carry, or are likely to carry, plenty of natural flesh, as well as having an aptitude to fatten. It does not in my opinion come within the province of this lecture even to suggest the particular breed which is most to be recommended, as we all hold our different opinions, and the climate and soil have a purpose, its particular merit. Possibly, particular soils and difference of climate may cause this or that breed, even of cattle and pigs, to suit best this or that particular county, and most certainly does this happen with regard to sheep. For instance, Long wools, despite of the outcry all country, will degenerate, and in point of fact are profitless, in parts of Wiltshire, in Sussex, and, it may be said, in the Southdown counties. I can mention an instance. My late father, as a young man farming in this neighbourhood, left after Wiltshire. He had a partiality for the Cotswolds, and he took with him, and he was right in so doing, a very little time, as they lost their size and the fleece was almost all cotted.

We now come to the feeding of animals. Let us begin with cattle.

It is hardly necessary to say anything of summer or Grass feeding, excepting that I think that where our grasses are so forward condition at lattermath, a little money is well laid out in providing shade to be given them from sun, particularly during the night in August, when abundance of dew and the state of the weather, until they come to stall, which they ought to do at some time during the middle fortnight of September. I am speaking now of Christmas cattle. Of course others which are to be kept until the spring may, with advantage, be out another fortnight, or possibly three weeks—but in no case longer than they are seen to be improving in condition, because from the moment they cease to thrive out of doors until they come to stall, the Grass they are eating is all wasted. Grass which would be very useful and valuable for stall fat cattle or for sheep before coming to Turnip time. Now I approach that the problem we want to solve with regard to stall feeding is, what food, or what proportions of different kinds of food, shall we give our fatting cattle in order to make the growth or weight of meat at the least cost. I have heard of greasers who have given a large bullock a peck of oats, and a peck of chicken or bean, with hay *ad libitum*, but most of us would be inclined to say that such feeding was extravagant. We know that it is useless to give an animal more stimulating or nutritious food than it can assimilate, for if we do the excess is voided by the animal, and although we may have a very rich manure, we have paid too much for it. I will give my idea of the best method of proceeding. It is one of those points upon which it is desirable that a discussion should arise, and I think that in Farmers' Clubs there is at present, as far as practical agriculture is concerned, will arise from a discussion of the original words of the Chronicle. The proof, and free adverse criticism, wherever a weak point is found in it. I must confess I am an advocate for steamed food, as I have tried it on rather a large scale this year, and found it to answer admirably. For fatting cattle I should recommend two parts steamed, and one part raw food, that is to say, three parts hay and one part straw cut in chaff. Those of average size will eat somewhere about 5 bushels per day, with 4 lb. oil cake, and 1 peck of mixed meal, Barley and Peas or Beans, and, if cheap, a proportion of Wheat also, to be increased to 1 peck per day in a month or six weeks after they have come to stall. Oil cake and meal to be boiled in water for half an hour in three quarters, and thrown in the form of rich soup over the chaff, and well mixed, to which add a little salt. The feeding arising from such chaff is that of newly mown hay, and the animals eat it with a relish. The first week or fortnight I should never be inclined to give more than 12 to 14 gallons before it is used, seven or eight is still better, or I see more a little sour, and I begin to like it well. A double quantity can be boiled on Saturday to be kept in tubs, and mixed as required. There is no waste in putting the oil cake in water, and I maintain that in this way the food is rendered more digestible, the animals have less to do to assimilate it, and that therefore the greatest amount of nourishment which can be derived from it is obtained. My Christmas cattle were fed in this way, with the addition of a peck of roots, and the six best were sent to London, and made 30*l.* each into pocket. They handled remarkably firm, and the price shows that they were not only heavy but also well-fed beasts, for the market was, as all are aware, by no means brisk at the time. In support of my own views of cooked food, I may mention that the late much respected Mr. W. Bowly cautiously commenced the system, gradually adopted it for all his stock, and spoke highly of it. The following is a receipt I had from his man. A farmer's team of gallons is sufficient for 10 cows. Fill the furnace with water and boil, then put in 10 lb. flour per cow, stirring and boil gently for an hour; put some chaff, three bushels per cow, into a long trough (a cow will eat in the day six bushels), then mix half the boiled meal, and give the cows in half an hour; the other remains to be mixed in the afternoon. Again, Mr. Duckham, in his lecture at the Central Farmers' Club in December last, says, speaking of the year 1865, and "In consequence of a most supply of hay and a failing crop of roots, with the prospect of a high price for beef, and a low price for corn, I was induced to substitute straw chaff for hay chaff, and in the absence of roots to make Linseed-tea, which was applied boiling hot upon the chaff, with a little salt, and the meal added thereto. This, with a little hay in the rack at night, constituted their feed. I prefer applying the Linseed-tea boiling hot, as it softens the straw, and renders it less indigestible. I never saw my steers and cows feed faster than they did under that system." By adopting this plan we are rendered more independent of roots for our feeding cattle; still, when never they can be had, I have no doubt that a peck or even half a peck of roots per day would be beneficial, and also a valuable addition to their other food, more especially where dry food would otherwise be given. They should by all means be mulped and mixed with the chaff one day before the other. And I have no hesitation in saying that the introduction of the pulper, by enabling us to do this, has been a most valuable assistance, as I know by experience how much faster cattle thrive with such food than with the same quantity of dry chaff and sliced roots. To return for one moment to nutritive foods, I would just say that whether they are given in a dry state, or steamed, they are the best for the purpose of fattening animals of different kinds, rather than a larger quantity of one kind; and with regard to hay, I hold that although on Grass farms it may be perfectly right to give it to feeding cattle unmixed with straw, yet to those on our arable farms, unmixed hay is a kind of food exceedingly expensive, and I cannot help considering it wasteful. By this I must not be understood to mean that hay is not an essential in feeding, all I contend for is that in economising our hay by the intermixture of straw we are enabled, with the help of a moderate quantity of our nutritive foods, rich in flesh-forming material, and in heat-giving and fattening matters, to feed profitably one-quarter or one-third more than we otherwise could. On the other hand I much doubt whether feeding—that is fatting cattle, could be profitably carried on without some hay, because straw, being so much deficient in flesh forming material, would require so large a quantity of artificial food for so long a time to make up that deficiency.

We now come to concentments.

I remember once having a young ox which did not thrive; in fact it looked a regular out of health. Medicines stared it little avail, so we gave it cake, &c., to try as a last resource whether high living would improve it, and it did so. However, my friend Mr. Mear Lane asked us to try his cattle food, and we had a buy. It was then a high price—about 30*s.* per cwt., I think. After giving some to the ox, according to the directions, for about a fortnight, the old man who looked after it, and who was a dissolute old fellow, and very good hand at the trade, told me that the ox was better, the skin was looser, and it appeared likely to thrive. And so it did, and it went on well until the time, entirely, we all believed, from the effect of the condiment, and we sold in the course for 20*l.* The long and short of the matter is, that we, instead of paying double price for a condiment in that instance it would have answered, and I am inclined to think that such stimulants, which can now be met with from 12*s.* to 16*s.* per ton are very usefully given the last six weeks or two months of feeding, as they stimulate the appetite, and assist digestion. Another fact I have is that I have not mentioned, which would, I believe, be largely and beneficially used as a condiment, were it not that at the present time the law practically disallows its use by raising its price, through vexatious restrictions, beyond its value as cattle food. I mean our own Barley, which having been sprouted and dried again, takes the name of malt.

A few words with regard to the best kind of stalls for feeding cattle.

I incline very much to the opinion that covered ones are the most desirable, provided they are so arranged as to be comfortable, having plenty of ventilation, and not too high. The best I have seen for the comfort of cattle are in Braden, at a farm belonging to Lord Ashburton, and I think it right I should say that such require less food under well arranged covered sheds than in open ones, but by far the greatest benefit to be derived from them, in my opinion, is the better quality of the manure so obtained. I have thought more of this subject since Mr. Gilbert's lecture here in December, when he explained to us that in animals as in vegetables, and if the difference in the value of the liquid and solid excreta is the same in animals as in those of the human frame many of us, I fear, from many causes, are losing a good portion of our most valuable manure. Mr. Mechi, in his essay on "Liquid Manure," which may be found in the second series of the "Royal Agricultural Journal," vol. 1, part 1, says that in an experimental trial animals with something under one-eighth less food gained as much weight as others fed with the same description of food, but kept in the common form of court or shed. He then goes on to show some statistics of very great importance to the subject of the manure. Mr. Thompson, too, speaks strongly on that point. However, we are, for the most part, so situated that we must endeavour to do the best with what we have, and I would suggest that at all events we should spout our buildings, keep straw under cover, and that the tying be abolished, and a heap day by day, salt the heap from time to time, and further so arrange matters that wherever our cattle are, draughts should be excluded.

We now come to the management of cattle during feeding.

I remember, in a lecture given by Mr. Beasley, of North Crapton, at Faringdon, some five or six years ago, he said, addressing himself to the young gentlemen who were present, "If you mean to take to farming as a matter for your guide in business, I would give you these three words—Attention to details. You might construct a very clever and very powerful machine—perfect in all its design and mechanism—but by omitting one little screw you would probably fail. Omit it, and you would be as unsuccessful as if you had forgotten the chief moving power." So, in this case, it is quite certain that we may buy the most perfect grazers, give the best food and the proper quantity, and yet the condition of our cattle will disappoint us, if the food is not properly administered. In a short time a feeder has attended to a certain number of cattle for three or four days, he can tell to a nicety their probable appetite, and will give a little less or more to the one or the other as the case may require. Small quantities should be given at a time. Of the steamed food, a peck, or quite enough, and during the intervals of feeding the cowman should always clean out the pens, or the inside part of the stalls, if he have but a few to attend to, or if many, a boy should be employed for the purpose—that as soon as the animals have finished eating, which will take them about an hour and a half, they may be made to their clean stalls and lie down. That is the plan we adopt. Our feeding times are morning and evening, but they have a small quantity as a sort of lunch in the middle of the day. One great point in feeding, and the remark applies to all kinds of animals, is to give as much food as is required at one time. If, as a rule, we find empty feeding places at nine o'clock and in the evening, and our cattle thinking about their rumination or asleep, and we hear from time to time that particular grunt which indicates a full stomach, I think we may be pretty sure they are being looked after well, and that our food is not being wasted. It will sometimes happen that one ox is less have less expensive food, or fresh food is the sun on that left in the manger to the detriment of our feeding cattle, and all I would say is, let him give up his place to a better man as soon as possible.

(To be continued.)

Reviews.

The Quarterly Journal of Science. No. X. April, 1866. John Churchill & Sons, New Burlington Street.

A very interesting number. It contains an elaborate discussion of Mr. Darwin's doctrines, in which justice is done to the veteran naturalist and the profound philosopher. There are also a short reference by Mr. Fairbairn to the Isle of the London; a paper on Sewage and Sewerage, in which the plans of Mr. Menzies are favourably discussed; a paper by Professor Daubeny on the Volcanos of Auvergne; and others on Philology, Cell-life, the Laryngoscope, &c. In addition to this, we have the Chronicles of the Quarter, recording the progress of the various sciences. Agriculture is specified among them; and, although it occupies a comparatively humble place amongst its neighbours—indeed, *because* it is surrounded in these pages by so much that will take him beyond the limits of his occupation, we strongly recommend the work to the attention of the agriculturist.

Report of Experiments undertaken by Order of the Board of Trade to determine the Relative Values of Unmalted and Malted Barley as Food for Stock.

Blue Book presented to Parliament.

Those who have still to make up their minds on this important subject, of which Mr. Seaman speaks so confidently in another column, should read this account of Mr. Lawes elaborate experiments. They are of course open to discussion as to the agricultural skill and therefore fairness with which they have been contrived and carried out; but they are not open to discussion as to the perfect good faith and honesty with which the attempt has been made to arrive at truth. The following is the general conclusion arrived at.

"The general conclusion from the results of the direct experiments with cows, oxen, sheep, and pigs, is, that a given weight of Barley is more productive, both of the milk of cows, and of the increase in live weight of fattening animals, than the amount of malt and malt-dust that would be produced from it.

"The results of these new experiments, as here stated, are consistent with those obtained in an official inquiry conducted, in 1845-6, by the Drs. Thomas and Robert Dundas Thomson, with cows and with oxen. They are consistent with the results of experiments made at Rothamsted, in 1848 and 1849, with sheep; and also with those of others made in 1854 with pigs, in which some were fed on malt.

"Wherever weight has been taken as a measure of the effects produced, experience hitherto has failed to show any advantage in malt over the amount of Barley from which it would be produced as a staple food for healthy milking cows or fattening animals; and, if no advantage, there must, in point of economy, be a loss, on account of the cost of the malting process.

"Irrespectively of economy, malt is undoubtedly a very good food for stock; and common experience seems to show that a certain amount of it is beneficial when given in admixture, and in change, with other food, to young or weakly animals, or in 'making up' or 'finishing' for exhibition or sale; that is, when the object is to produce a particular result irrespective of the economy required in ordinary feeding."

Farm Memoranda.

North Wales.—The month of March just closed has to some extent retained its old character for "rains, and floods, and cloudy skies," though, like the preceding winter months, it has been much milder than we usually experience. Snow fell more or less on five days in the early part of the month, accompanied by a slight frost, but changing to rain; heavy showers have since occasionally continued to fall, which has greatly retarded farming operations, there being only a few instances in our neighbourhood of spring sowing having commenced. Farmers are beginning anxiously to wish for a favourable change of bright sunny days, that field work may be resumed. Autumn cultivation, which is now everywhere considered as essential to profitable farming, is generally practised, and, besides other advantages, greatly facilitates spring labour, especially with an unfavourable seed time.

To farm profitably in these days is a matter of increasing interest to all, and hardly we find, of some inquiry amongst practical men, with immediate reference to the management of land. The propriety of

occasional deep tillage, and the judicious application of manure, are matters worthy of much consideration, but of course, from the variations of soil and climate, no general rule would be applicable. Lime is being largely used here, both on arable and pasture, partly on account of its well-known fertilising properties, and partly from a belief of its efficacy as a preventive to the cattle plague.

Supplies of food for stock are now well-nigh exhausted, in consequence of which large numbers of beasts in generally lean condition are being turned out to pasture, which affords as yet but a scanty bite, vegetation having made but little progress.

The lambing season is pretty well over, with an average fall of lambs, giving some good hopes for a future day against the uncertainty all feel now with respect to cattle; for though the plague has considerably abated, and may, with the strict measures now adopted and enforced, eventually subside, as we hear it has done in some parts of the Midland counties, there is still reason to fear it may return when cattle begin to move; and if, as we may expect, there be many obstacles in the way of procuring sufficient grazing stock, the prospects against a coming rent day are not very cheering. *April* 2.

Miscellaneous.

Small-pox in Sheep.—For the first time during some months we vary the title of our first article, albeit we have reason to regret not to be able to suggest that in this case "variety is charming." By this time our readers are doubtless aware of the fact that "small-pox" has appeared among some sheep in Northamptonshire, on a farm situated a few miles from Daventry. [Also in Essex.] The facts are in many respects peculiar, and for that reason we think it desirable to record them without comment. On December 24, 1865, the owner of the farm in question bought 76 foreign sheep in the Metropolitan market: the lot formed part of a large number consigned to the same salesman, and appeared from their condition to have recently crossed the water; they were also, it was stated, the only sheep at the time in the market that looked unfit for the butcher. The sheep were taken by rail to Northamptonshire and placed on some pasture. Nothing of a very decided character appears to have been noticed up to the end of December, except that some of the animals did not look well. December 30th the flock was moved by road to another part of the country, a mile or two distant; at this time one animal was noticed to be ill and unable to walk, it was consequently taken in a cart and placed with the rest. The sheep, on arriving at their new location, were mixed with the owner's flock of English sheep, or at least were separated from them only by means of hurdles. In a short time some of the foreign sheep became affected with "the blind," and in a fortnight after their arrival the sheep that was moved in a cart died. Between this and January 28, three other sheep died, and several were seen to be unwell. Accordingly it seems to have occurred to the owner that further advice was necessary, and Mr. J. H. Reynolds, veterinary surgeon of Daventry, was called in. After making a *post mortem* examination of one sheep that died while he was there, and inspecting the sick animals, he came to the conclusion that the disease was "variola." And it is very important to note that he found one animal that gave indications of having recovered from an attack, proving that the affection had been existent among the flock for some time before his attention was called to them, and further showing how perfectly possible it is for a deadly and contagious malady to be steadily progressing without exciting any suspicion in the minds of non-professional persons. Soon after the newly-purchased sheep were allowed to associate with the others on the farm, the disease appears to have extended to them, and up to February 18, ten English and nine foreign sheep had died from its effects. A report of the outbreak was received on February 17th, and immediately one of the officers from the Veterinary Department was instructed to proceed to the locality and report to the Government in order that the necessary steps might be taken to isolate the district in the event of the disease proving to be small-pox. An inspection of the flock was made with all possible speed on the following day, and by the next evening an Order in Council was published in the *Gazette* of date 19th February. *Veterinarian.*

Calendar of Operations.

April.—*Wheat* will require hoeing this month, after which if necessary it may be harrowed and rolled. Where the foliage of the young crop is so luxuriant as to make one fear its being laid by rain, it may either be eaten down by sheep, or mown down.

Barley sowing should be completed early this month, and after the Clover seeds have been sown, the land should be harrowed and rolled.

Beans may require horse-hoeing.

Carrots should be sown in the first and second weeks of this month. The land, in good tilth and rolled as hard as possible, is to be sown in rows 18 inches apart, by the common Suffolk drill, which is to be followed by a light roller, and this completes the operation. The weights are to be taken off the coulter levers, and care otherwise taken that the seed shall not be buried too deeply. Or Carrots may be sown on ridges as Turnips, only not so far apart, a rut being made by the common Turnip drill on the top of each, and the seed being sown by hand, and trod in by children. In either case 5 lb. per acre is an abundant seeding, and this should be mixed with 2 bushels of sand or ashes, the drill being set to sow the bulk of 2 bushels per acre. If the sand be damp, it may be necessary to mount a boy on the drilling machine, to keep the seed box continually filled from the store in front of it. It is well that the sand be somewhat damp, and that the seed be mixed with it some days before it is sown, the whole being turned daily, so as to help the process of germination, which in the Carrot is very slow. When the land is full of the seed of small weeds, as Chickweed, it may be necessary to sow half a peck of Oats, or a few ounces of Turnip seed per acre, with the Carrot seed; either of these will sprout long before the Carrot seed, and showing the position of the rows, will enable with safety the earlier use of the hoe. When the double culture of this crop with Beans is adopted, the seed must be sown in double rows, between the couples of Bean rows that were planted in October.

Mangel Wurzel should be planted this month. The seed is best planted by the dibble on the tops of the drills raised by the plough, which contain the manure. After the manure has been laid in the furrows, before splitting the ridges, one or two cwt. per acre of guano, or some other artificial manure, may be sown over the whole. The after splitting of the drills, at the same time that it covers the manure, will mix the guano with the soil. A roller then goes over the land, the horse walking in the furrows, and ribs at the proper distances having been nailed on to the roller, it leaves equidistant marks upon the ridges, at intervals of a foot or more, as guides to the dibblers who follow. These use blunt dibbles, to avoid placing the seed too deep (half an inch is sufficient), and planting the seed in the roller marks, cover it with the foot. This may cost 1*s.* 6*d.* per acre. A light roller goes over the land, and completes the operation.

Kohl Rabi may be sown in a bed now for transplanting in May.

Lucerne may be sown towards May; 10 or 12 lb. per acre, in rows 12 inches apart, on deeply tilled rich calcareous soil.

Potatos should all have been planted by the first week of this month. Those which were planted early in March, will be coming through about the middle of April. The drills should be well harrowed down, and then immediately "set up" by the double-mouldboard plough passing up them on the first symptoms of the appearance of their Potatos; as frost, to which they are still liable, would kill all the exposed parts of them. Where Potatos have been planted by ploughing in every third furrow, the land should be well harrowed 10 days before the young plants are expected to break through, and the roller may be used.

Spring Tares.—A piece sufficient for consumption in July and August may be sown some time this month.

Flax.—Sow early this month about 2½ bushels of clean seed per acre. Sow broadcast, either by hand, or, which is better, by a drilling machine, from which the drill coulters have been removed. Cover with the Grass seed harrows, and roll.

Turnip land may receive its first spring furrow, a deep cross-ploughing, early in April, after which it should be immediately harrowed and cleaned of weeds.

Paring and Burning may proceed. As soon as the ashes are spread, the land will receive its first shallow furrow, after which it must be well harrowed and rolled.

Laying down Grass.—This may be done this month, either by sowing Grass seed or planting. When the latter plan is adopted, the plants of Grass must be obtained by paring a piece of good pasture, chopping up the turf, and the bits are to be spread broadcast out of a cart over a well-tilled and highly manured field, women and children being employed to put and tread them securely down, about 6 inches from each other, right side up, all over the land. The field is then to be heavily rolled, and 20 or 30 cart-loads of earthy compost may be spread over it, and some Grass seeds sown, "bushed" in, and rolled.

Fallow.—If there is any land on the farm to which it is necessary to give a bare summer fallow, it should be cross-ploughed after all the land intended for green crop.

Manures.—The yards, boxes, and sheds must be again cleaned out by the end of this month, and the manure carried to the yards, or to the Turnip fields, in order that it may be partly rotted before use. The early part of this month is the best season for sowing half-soluble manures, as guano, soot, gypsum, superphosphate of lime, &c., over grain crops. It should be done in wet weather, and the land, if not too wet, immediately harrowed. And the end of the month is the best time for sowing easily soluble manures, as salt, nitrate of potash.

Notices to Correspondents.

Bark *F.M.* Bark is quoted at 16*l.* to 17*l.* per load of 45 cwt. in London. We have your letter, and shall obtain the information you seek.

Couch Grass. *A Constant Reader* We have a leading article in type referring in detail to your case, but it is impossible to give it this week.

Potato Manure: *G. Frost.* If you send a sample to Dr Voelcker, 11, Salisbury Square, Fleet Street, he will tell you the cost of his examination—from 1*l.* to 3*l.* 3*s.*, according to the quantity of information you want.

Poultry. *R Jackson.* In reply to your question, we think you may keep poultry profitably in the yard named by making up to them in care and attention that which they will lack in space and range. The Brahma Poutras, Spanish, and Malays will all thrive in very confined pens. If you are in a position to supply your birds with plenty of green food, you may take your choice of the three breeds above named. We would recommend the Brahmas or Malays in preference, as the Spanish suffer much in moult. You should not keep more than four hens and a cock, and if you intend to rear any chickens from them, it should be at a time of year when they can have the range of the field of which your letter speaks. The crumbs and scraps from your breakfast and dinner table, with the odd crusts of bread soaked in the leavings and drainings from the beer jugs, are all great helps in the way of egg producing.

Publishers. *E W.* We know nothing against the firm you name.

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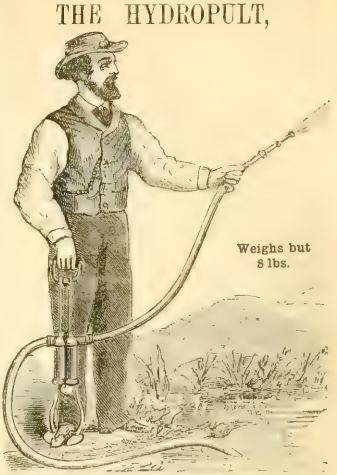

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FOR APRIL 1866. PRESENT PRICES. FOR APRIL 1866.

Sutton's Selected Yellow Globe Mangel.

From A. Davis, Esq., *Portishead.—April* 17, 1865.

"I have gained two silver cups in succession with Mangel Wurzel grown from your seed."

From Mr. James Hiscock, *Paul's Place Farm, Shaftesbury.—March* 28, 1865

"I took the first prize for Mangel at the Shaftesbury Agricultural Society, from seed purchased from you."

From the Hon. A. L. Melville, *Branston Hall, Lincoln.—March* 10, 1865.

"The Yellow Globe Mangel was out the best I have ever grown."

Sutton's Champion

Perfectly hardy.
Rarely if ever suffers from mildew.

Purple-top Swede.

Very productive.
Stores exceedingly well.

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From Messrs J. & T. Hepburn & Sons, *Southwark, S.E.—Nov* 15, 1865.

"We forwarded yesterday from our Farm at Dartford, for exhibition at your Show, 9 Yellow Intermediate Mangels, taken from a piece of 34 acres, which produced 75 tons per acre—the rows 2 feet 6 inches apart, and the plants 18 inches in the rows."

From Wm. Tyack, Esq., *Pedmarsonder, Sithney.—February* 13, 1865.

"Your Mangel Seed was most excellent; and the New Yellow Intermediate is admired by all."

Extracts from Letters recently received respecting SUTTON'S CHAMPION SWEDE :—

From Mr. Jas. Henderson, *Steward to* Capt. Pryse, M.P., *Peithill, near Aberystwith.—January* 5, 1865.

"Capt. Pryse had a splendid crop of your Champion Swede last season; we sold 10 acres of them by auction, that averaged £20 per acre."

From Mr. William Fox, Jun., *Bawdon Mossle.—February* 24, 1865.

"From the Champion Swede Seed last year we had a splendid crop for the season. It was truly astonishing to see the progress they made in the driest weather."

From E. N. Cull, Esq., *Croston Hall, Thetford.—March* 2, 1865

"Your Champion Swedes were by far the best I grew this year, both in quantity and quality, and stood the drought of summer and the severe frosts this winter remarkably well."

From Mr. James George, *Garballa, Ballinasloe, Ireland. December* 5, 1864

"I took the first prize with your Champion Swede at Ballinasloe Agricultural Society on the 1st October. My 12 bulbs weighed 171 lbs., and two of them (tops included) weighed 70 lbs."

From the Rev. Thomas Harvey, *Cowden Rectory, Edenbridge. September* 12, 1865.

"I have not only as good a piece of Champion Swede as ever was grown here, but I doubt if a finer could be produced in any county—they are so even, so wonderfully good, and healthy."

Extracts from Letters recently received respecting SUTTON'S CHAMPION SWEDE :—

From Walter Symington, Esq., *North House, Horndean. April* 25, 1865.

"Your Champion Swede last year, notwithstanding the dry season, was a first-rate crop. All the other Swedes I had, although sown at the same time, were very little worth. I shall sow no other this season."

From Wm. Cox, Esq., *Braisfield. April* 18, 1865.

"Your Champion Swede is still very sound and good in the field."

From Mr. Henry Prosser, *Penbrea House, near Chepstow. April* 24, 1865.

"Your Champion Swede last year was the best in this part of the country."

From E. B. Wood, Esq., *Moreton Hall, Chirk. April* 21, 1865.

"The Champion Swede Seed I had from you last year was admirable. I grew the best and heaviest crop of Swedes that I saw anywhere."

From Mr. George Fears, *at* C. F. Clements, Esq., *Heamond's Lodge, Hurst Green. May* 5, 1865.

"We grew some of the best Swedes from your Champion Seed last year I ever saw."

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WHICH ARE ALL OF HOME GROWTH, GENUINE, NEW, AND UNADULTERATED, AND HAVE BEEN PROVED TO GERMINATE WELL.

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Saved from large roots, 9*d.* per lb.

GOOD YELLOW GLOBE | GOOD RED GLOBE | GOOD ORANGE GLOBE
GOOD LONG RED | GOOD LONG YELLOW.

Selected Sorts of Mangel Wurzel.

From choice selected roots.

	Per lb.—*s*	*d*
SUTTON'S SELECTED YELLOW GLOBE (see above).—Saved from selected roots, a very heavy cropper, thrives in all soils, has gained many prizes	1	0
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SUTTON'S ELVETHAM LONG RED (We gained the first prize at Birmingham last year) with these two sorts, each	1	0
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STRATTON'S RED GLOBE.—Fine shape, keeps well	1	0
RED OLIVE or OVAL SHAPE	1	0
YELLOW OLIVE or OVAL SHAPE	1	0
NEW YELLOW INTERMEDIATE (see above).—A most desirable kind, very fine shape, free from roots, and produces great weight per acre	1	6

Field Carrot.

Cheaper by the cwt.

	Per lb.—*s*	*d*
WHITE BELGIAN.—Fresh imported Seed; a very heavy cropper	1	0
LARGE GREEN-TOP YELLOW BELGIAN.—Similar to White Belgian in size, and more nutritious	1	6
RED INTERMEDIATE.—Excellent for shallow soils	1	9
ALTRINGHAM.—The largest Red Carrot	1	9

Kohl Rabi, or Turnip-rooted Cabbage.

This Seed is very scarce this season.

LARGE GREEN.—Very large; the best sort for general cultivation	4	0
LARGE PURPLE.—Not quite so large as the preceding	4	0

Turnip Seeds.

	Per lb.—*s*	*d*
SUTTON'S CHAMPION SWEDE (see above).—A very large Purple-top Yellow Swede. Gained 12 Silver Cups presented by His late Royal Highness the Prince Consort in six successive years, of 20 guineas value each, besides numerous other distinguished Prizes in other parts of the Kingdom	1	0
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HARDY BRONZE-TOP SWEDE.—Will stand the most severe winter	0	10
KING of SWEDES.—Very large	0	10
HARDY WHITE SWEDE.—Choice stock, excellent for late feed	1	0
SUTTON'S GREEN-TOP YELLOW HYBRID TURNIP.—Good substitute for Swedes	1	0
" PURPLE-TOP YELLOW HYBRID TURNIP.—Large, and of fine feeding properties	1	0
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SUTTON'S RED PARAGON TURNIP.—Very large, and of excellent feeding properties	0	9
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TANKARD, RED, WHITE, or GREEN.—For early feeding only	1	0
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GREY STONE, or MOTTLED GLOBE.—Fine large, strongly recommended	0	10
WHITE STONE, or STUBBLE SIX-WEEKS	0	10

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	Per lb.—*s*	*d*
OXHEART.—New early, produces a heavy crop	3	6
LARGE DRUMHEAD.—From fine selected plants	2	6
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	SERRADELLA
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SUTTON'S PERMANENT GRASS and CLOVER SEEDS for all SOILS. For particulars see page 288 of last week's Paper, or

SUTTON'S FARM SEED LIST,

Which may be had Gratis and Post Free on application.

All Goods Carriage Free, except very small parcels. 5 per cent. discount allowed for cash payment.

A reference or remittance is requested from unknown correspondents.

SUTTON AND SONS, ROYAL BERKSHIRE SEED ESTABLISHMENT, READING.

Scarlet Geraniums (Beaton's Race).

WM. PAUL (Son and Successor to the late A. PAUL), has to offer the following new ZONALE and HYBRID NOSEGAY GERANIUMS, which have been selected from several Thousand Seedling Plants from the stock of the late Mr. Harold Beaton, East-lane nurseries, and is believed to be in advance of or equal to any of the previously known Orders received now, for Plants delivered to order on, as near as the end of October, in May next

GROUP 1.—BEDDING VARIETIES.

*** Any 12 varieties from this Group for Three Guineas. Groups may be selected by the purchaser for £2 2s.

BANNERET.—Flowers crimson-scarlet, and purple shaded very bright, of beautiful form; a habit of growth and free. Price 3s. 6d. each

FAIRY QUEEN.—Rose pink, a large smooth flower, very distinct and an effective. Price 3s. 6d. each

MINSTREL.—A peculiar and pleasing shade of crimson, something in the way of L'Etoile de Feu, but brighter in colour and broader in its petals.

MONTE ROSA, dark, rose purple, pleasing colour, large truss, very fine. Price 3s. 6d. each

NIMROD.—Orange scarlet, white eye, large flower and truss, foliage and habit of fine. Price 3s. 6d. each

PHŒNIX.—In habit of growth, and bloom and general character, the finest dark crimson scarlet. Price 3s. 6d. each

PRINCE OF ORANGE.—Orange scarlet, very bright; great substance, good habit, pending colour. Price 10s. 6d. each

PEACH NOSEGAY.—Flowers deep rich peach colour, very free blooming, splendid truss, pink-leaf, fine habit and distinct. Price 3s.

REBECCA.—Cherry colour, fine truss, smart compact habit, very showy, perhaps the finest bedding Geranium of its class. Price 3s. each

ST. GEORGE.—Dark chestnut, shade with blackish crimson, quite unique, very free and effective, an entirely new colour among Pelargoniums. Price 5s. each

SALMON NOSEGAY.—Flowers pure salmon, large truss, good habit. Price 3s. 6d. each

SIR JOSEPH PAXTON.—Flowers true orange, very bright, fine large truss, a splendid variety for massing. Price 5s. each.

WOOD NYMPH.—Salmon pink, large and fine. Price 2s. 6d. each.

GROUP 2.—VARIETIES ESPECIALLY RECOMMENDED FOR GROWING IN POTS OR VASES.

BRIDE.—Flowers white, with large crimson eye, of fine shape and substance, a first-class variety for pot culture. Price 3s. 6d. each.

CARDINAL.—Flowers dark orange scarlet. For shape, substance, colour and habit, this is in advance of any scarlet variety yet raised. Price 5s. each

CELESTIAL.—Flowers rosy lake, with fiery spot on upper petals, the centres blush purple, resembling the "Cactus speciosissimum." Large white eye, new in colour, and very beautiful. Price 5s. each.

LORD CHANCELLOR.—Salmon pink, white eye, perfect shape, very free in habit. Price 3s. 6d. each.

POET LAUREATE.—Rosy purple, top part orange scarlet, yellowish eye, perfect shape. Price 3s. 6d. each

TIARA.—Flowers scarlet-crimson suffused with purple, good truss, very large fine habit, quite distinct from any yet raised, and very lovely. Price 5s. each.

GROUP 3.—MINIATURE OR DWARF VARIETIES.

DIAMOND.—Pure scarlet, purple top, white eye, flowers produced in good, distinct. Price 3s. 6d. each

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NAIAD.—Flowers purple, scarlet top; pleasing and distinct. Price 2s. 6d. each

WALTHAM LILAC.—Flowers true lilac, very profuse; a new and distinct colour. Price 2s. 6d. each; 12s. per dozen.

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GROUP 4.—BEDDING VARIETIES SENT FROM THE NURSERIES LAST YEAR.

Many of the above received first-class Certificates from the Royal Horticultural and Royal Botanic Societies of London, and those marked thus *** have been awarded the highest marks of merit in the Royal Horticultural Society's Trial of Seedlings.

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*** ALEXANDRA.—Magenta. Price 2s. 6d. each; 24s. per dozen.

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PRINCESS LICHTENSTEIN.—Salmon pink. Price 2s. each; 18s. per dozen.

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The three sets of 16 varieties, one post free for 21s.

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PEDIGREE
CHEVALIER BROWSE BARLEY
(Malting).

Which yields [illegible]

"For I is born "pre-ri-n the merchantry as the "Pedigree Wheat," v[illegible] is repeatedly named in selling catalogues, each year being a Single [illegible] the best for fine malt, which up to the close of the Season, 1865, which upon weighing firms pronounce Barley weighing [illegible] lb., and if dried, proportional.

Seed Required for —

If drilled in March .. .. 1 bushel on 3 acres
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Price Two Guineas a Bushel (including bag), delivered in bags sewed and sealed, carriage paid to the Station, upon receipt of Cheque or Post Office Order, without which it will not in any case be sent to unknown correspondents. Less than a bushel will not be supplied.

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H. BROWN was awarded the MANCHESTER and LIVERPOOL AGRICULTURAL SOCIETY'S First Prize Medal, 1865 | First Prize Medal, 1864 | £5 Prize, 1863, for Superiority in Quality of Seeds.

	Per bushel		Per lb.		Per lb.—d.
Rye's Perennial..	..	0 0	Brown's Bronze-top, the best variety in cultivation—See Testimonials on application	..	1 0
Italian, single..	..	5 0			
Annual ..	..	4 0			
Meadow Foxtail ..	..	0 0			
Cocksfoot ..	..	7 0	Skirving's Purple-top	..	0 9
Downland Grass ..	per lb.	1 6	Sutton's King ..	..	1 0
Timothy ..	..	0 6	Chatsworth ..	..	0 10
Ribbon ..	..	0 6	Common Turnip—		
Mangel Wurzel—Red sorts ..	..	0 9	Purple-top, Scotch	..	0 10
Kind Rohi ..	..	0 3	Green-top, Scotch	..	0 10
Mustard ..	per bushel	8 0	Green-top, Hybrid	..	1 0
Lucerne ..	per lb.	1 6	Green-top, Swede	..	0 10
Cress or White ..	..	0 6	Orange, sorts..	..	0 9
Rye, Spring ..	per bushel	6 0	Carrot—		
Vetches, Spring ..	..	8 0	Altringham ..	..	1 6
			White Belgian ..	..	1 0

Special offers of NATURAL GRASSES and other Seeds submitted. BRIDGET'S DIRECTORY, CATALOGUE of FARM and GARDEN SEEDS, &c., on application to H. BROWN, 4, Commutation Row, Liverpool.

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SUTTON'S MIXTURES of PERMANENT GRASSES and CLOVERS for Laying-down Land to Meadow or Pasture, 20s. to 30s. per Acre.

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All goods carriage free to any railway station. Every small parcel by SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

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Prices, exclusive of carriage: 1-Stone 2s. 6d.; 2-Stone 4s. 6d.; 4-Stone 8s. 6d.; 8-Stone 16s.; 16-Stone 30s.; 24-Stone 42s.; 32-Stone 56s.

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Special quotations when 5 or 10 thousand are required.

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EARLY SHAW POTATOES, 10s. per sack, without sacks.
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2-year GIANT ASPARAGUS, per 100 .. .. 12s.
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Carefully selected, 12s. per 100
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The best time to plant is when the roots have begun to grow; it is then a very valuable crop to the back end growth commences. Per 1,000, 2s. 6d.; 3s., and 4s.

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Strong Transplanted SEA KALE, 2s. per dozen.

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For Bouquets and as Cut Flowers

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INVINCIBLE SCARLET SWEET PEA, very fragrant, strikingly brilliant, and extremely distinct in colour.—A First-class Certificate from the Royal Horticultural Society; also a Certificate of Merit from the Royal Botanic Society. Registered 1s., 2s., and 5s. each; packets of two seeds 7s. 6d. Supplied by the principal Seedsmen throughout the kingdom: also of Messrs. Kreinge, of Haarlem; Vilmorin & Co., Paris; Bonavy and Haage & Schmidt, of Erfurt, Prussia, and Sandra, of Hannover, sole of the Raiser,

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Have now ready for the Season in dry fine condition,

CORN MANURE | 14 Special Dose
DISSOLVED BONES, for Fine Dry Pasture Lands
SUPERPHOSPHATE of LIME
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Also Genuine PERUVIAN GUANO, NITRATE of SODA, Rape Dust, Wardsend, SULPHATE of AMMONIA, FISHERY SALT, &c.

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The Manures manufactured by J. B. Lawes for the present season of 1866 are now ready for delivery at his Factories, at the following prices, per ton:

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LAWES' PATENT TURNIP MANURE, and BONE DUST	6	0	0
LAWES' SUPERPHOSPHATE of LIME	6	0	0
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CONCENTRATED CORN and GRASS MANURE	12	0	0

Lawes' Manures can be obtained of Mr. Lawes, or through the agricultural agents in all parts of the United Kingdom, at prices varying according to cost of carriage.

Genuine Peruvian Guano from the Importers. Nitrate of Soda, Sulphate of Ammonia, and other Chemical Manures

Also Linseed and other Cakes at market prices.

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For 10 tons and upwards	...	£12	0	0	per ton.
For 5 tons up to 10 tons	..	12	5	0	,, ,,
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Ten Shillings per ton discount for Cash within a month.

To prevent fraud, all Bags are branded with the PHOSPHO GUANO COMPANY'S Trade Mark, as well as that of the Contractor, a copy of which appears at the head of this Advertisement.

Report by DR. VOELCKER *of a List of Inspectors to the Phospho Guano Stores in Scotland, Berkenhead, and at Andrews of Samples taken from the Stores on the 20th of February, 1866.*

"In accordance with Messrs. PETER LAWSON & SON'S request, I again have been paid a visit of inspection to the Phospho Guano Stores at Seacombe, Birkenhead, and on that occasion took the following samples from the:—

1. A sample from a bulk of about 1000 tons, stored in Shed No. 1.
2. A sample from a smaller bulk of about 100 tons, stored in Shed No. 2.
3. A sample taken from the top of a heap of all set apart in Shed No. 2.
4. A sample from the middle of the same bulk.
5. A sample from the bottom of the same bulk.
6. Men were at work at the time I took samples from the bags of about 200 tons, and I took a sample from the bags ready for the carts.
7. A sample from each of four parcels, bags, in the docks at which Phospho Guano is prepared for use.

"The first seven samples I submitted to careful and complete analysis, the four others I did not think only the amount of soluble and insoluble Phosphates. The mean results of the seven analyses gave 30·05 per cent. of soluble Phosphates, and 4·65 of insoluble, while the Ammonia averaged 3·77 per cent.

"I was certainly not aware of the whole range of the extensive buildings, and felt astonished to see so many samples as I did see, and to trace them from any quarter of the Stores; and I cannot refrain from mentioning that, while in Seacombe, I was much struck with the remark, by three different men, whom I found the whole bulk ready for delivery in the present season

"since my last visit, a decided improvement has been effected in the mechanical condition of the Phospho Guano. The bulk is now found to be as much in a fine state of division as fresh manufactured Superphosphate of Lime, although dry and in a good condition when they leave the stores, become sticky and adhere among their transport, without causing any appreciable quantity of moisture. This serious inconvenience has been entirely overcome by an improved plan of preparation, and the Phospho Guano of the present season is, to any customer, or be set exposed to any reasonable amount of pressure, without losing its fine and dry powdery condition

"Having so frequently expressed an opinion of the intrinsic fertilising value of Phospho Guano, I need not repeat former statements in the present instance, but I may be permitted prominently to direct upon the fact, that while the chemical composition of the Phospho Guano is fully equal to that of the best samples of former years, its mechanical condition has been greatly improved

"AUGUSTUS VOELCKER, PH.D.,
"Professor of Chemistry to the Royal Agricultural Society of England."

"11, Salisbury Square, London, E.C., Feb. 24, 1866."

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THE PATENT NITRO-PHOSPHATE or BLOOD MANURE COMPANY, Limited, Manufacturers of ODAMS'S EARLIEST BLOOD MANURE for TURNIP and ROOTS. ODAMS'S SUPERPHOSPHATE of LIME and DISSOLVED BONES. Chief Offices—109, Fenchurch Street, London, E.C. Western Counting-House, Queen Street, Exeter. Irish Branch: 10, West-moreland Street, Dublin. *Directors*

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Price 1 ton ... per ton for Wheat, Oats, Barley, &c. ... £4 9 6
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... 1 ... ... 1 0 0
... ½ 0 10 6
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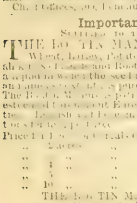
N.B.—The Wheat grown on the Royal Norfolk Farm, Windsor, by the use of the Loch Manure alone, was far superior to that grown with Peruvian Guano, Dung, or Night Soil. The Barley was also finer and better by 4 cwt per acre than black, tail, or malt, where Guano or Dung alone were made; small ears (Chaff-mould) covered more than all sizes of Seed. Sold by



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By Royal Letters Patent.

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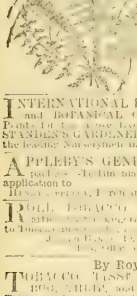
Sold in 1lb. packages and upwards, price 3s. 6d. per lb. by Messrs. Proctors & Sons, 5, Penfold Mansion Street, 24, St. John Street, Clerkenwell, London, and by all Seedsmen and Nurserymen.



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Red Spider. Mealy Bug.

Sold Retail by Nurserymen and Seedsmen, in boxes, 1s., 2s., and 5s. each

Wholesale by PRICE'S PATENT CANDLE COMPANY (LIMITED).

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Simple and Sure Remedy.—By using the APHIS WASH, these Pests of the Garden, together with Scale, Caterpillars, Slug, Earwigs, &c., are immediately destroyed. Leaves not to rot, but strengthens the Trees or Plants.

See *Gardeners' Chronicle*, August 16, 1856; and "Gardeners' Magazine," July 1, 1865.

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HAYTHORN'S HEXAGON and CHISWICK GARDEN NETS will protect Bloom from Frosts, Hail, and Rain, and the Fruit from Wasps, Flies, Birds, &c. Patterns, prices, and Testimonials free by Post.

Direct Mr. HAYTHORN, Chingford.

TANNED GARDEN NETTING for preserving Seed Beds, Fruits, Strawberries, from Frost, Blight, Birds, &c., and as a Fence for Fowls, &c. 1 yard wide, 1½d.; 2 yards, 3d.; 3 yards, 4½d.; and 4 yards, 6d. per yard run in any quantity, made to any length.

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VARNISHED FLOWER STICKS.—1 foot, 5d. a 12; 1½ foot, 2; 2 feet, 2; 2½ feet, 3; 3 feet, 4; 4 feet, 6; 5 feet, 8; 6 feet, 10; 7 feet, 1s. per dozen. Also Rustic Stakes, 1s. 6d., 2s., 3s., 4s., 5s., 6s. per dozen. An allowance to Nurserymen.

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HOWARD & BOTTOM & Co., Marquee, Tent, and Rick-cloth Manufacturers, Thomas Street, Old Kent Road, London, S.E.

Address as above to the Trade.

NETTING for FRUIT TREES, SEED BEDS, RIPE STRAWBERRIES, &c.—TANNED NETTING, for protecting the above from Frost, Blight, Birds, &c., 2 yards wide, 3d. per yard; 3 yards, 4½d.; 4 yards wide, 6d. per yard, or 40 yards as NEW TANNED NETTING, suitable for Fruit Trees, Seed Beds, &c., 1 yard wide, 1d. per yard; 2 yards wide, 2d. per yard. Also Netting for Fowls, 2 yards wide, 6d. per yard; 4 yards wide, 1s. per yard; 2-inch mesh, 4 yards wide, 1s. 6d. per yard.

Can be had in any quantity of EATON & DILLEE, 6 and 7, Crooked Lane, London Bridge, E.C.

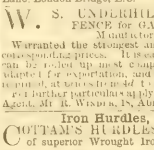
W. S. UNDERHILL'S NEW PATENT IRON FENCE for GARDENS, LAWNS, &c. Manufactory, Newport, Salop.

Warranted the strongest and most durable Fence ever offered at corresponding prices. Both Wood and Iron Rockets (no packers), can be rolled up most compactly when not in use, is admirably adapted for exportation, and can be had of any height and mesh required, at seven pence half penny per yard and upwards

For further particulars apply at the Manufactory; or of the London Agents, Mr. R. WINDUS, 18, Abingdon Street, Westminster, S.W.

Iron Hurdles, Fencing, and Gates.

COTTAM'S HURDLES are made in the best manner of superior Wrought Iron. SEPARATE HURDLES, from 4s.; CATTLE HURDLES, from 8s. 6d. each; CONTINUOUS FENCE, from 8d. per foot; FIELD GATES, from 25s. each. Illustrated Price List on application.

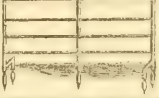


ENTRANCE GATES, RAILING, and IRON WORK of every description. Designs and Estimates free of

COTTAM & Co.,
No. 2, Wansley Street
(opposite the Pantheon),
Oxford Street, London, W.

GALVANISED WIRE CABLE STRAND FENCING, for FARMS, PARKS, and GARDENS

The ORIGINAL INVENTORS and MANUFACTURERS.



The CHEAPEST, STRONGEST, and NEATEST FENCING in USE THOUSANDS of MILES of this FENCING have been SUPPLIED by us at home and abroad. It sustains no injury by being trespassed upon.

Price, with three lines of Strand and Iron-pronged Standards, and one straining post, stay and screw bolts to every 1 yards, 1s. per yard. Five lines of Cable Strand, and Staples for wood or posts, 9d. per yard. HURDLES, GATES, HURDLES to Match, 4s. per yard.

CONTINUOUS IRON FENCING, GATES of all kinds.

PATENT STRAINING PILLARS, &c.

CABLE STRAND FENCING for POULTRY, &c.

GALVANISED SWING WATER BARROWS.

GALVANISED IRON WATER CISTERNS

GALVANISED IRON PUMPS.

LAWN MOWERS, ROLLERS

ASPHALTE ROOFING FELT, 1d. per square foot.

MORTON & GREEN, late H. J. MORTON & Co.,

Illustrated Catalogues and Estimates on application.

12, Great George Street, Leeds.

E. T. ARCHER'S "FRIGI DOMO." — Patronised by her Majesty the Queen, the Duke of Northumberland for Syon House, his Grace the Duke of Devonshire for Chiswick Gardens, Professor Henslow for the Botanical Society, Sir Joseph Paxton for the Crystal Palace, Baron de Tuyll for Orsett Hall, &c.

PROTECTION from COLD WINDS and MORNING FROSTS. "FRIGI DOMO," a Canvas made of paper prepared Hair and Wool, a perfect non-conductor of heat. For Vineries, Walls, &c. It is applied, a fixed temperature. It is adapted for an horticultural and floricultural purposes, for preserving Fruit and Flowers on the standing trees. The sun, by means, from diseased insects, and from damaging effects, can be had in any required heat.

Two yards wide ... ... 1s. per yard run
Four yards wide ... ... 2s. per yard
An intermediate 3 yards wide ... 2s. per yard
An intermediate 3½ yards wide ... 2s. per yard run
Also "Frigi Domo" Netting, 2 yards wide, 1s. 6d. per yard run

EUSEBIA THOMAS ARCHER, Whose and Sole Manufacturer, 7, Great Tower Hill, London, E.C. Any size made, and of all Sizes Plants and Seed-ings thrown out the best load.

"It is much cheaper than Mats as a covering."

ALEXANDER BLAKE, LANDSCAPE GARDENER and Plans and Estimates provided for every variety of Ornamental Ground Work, Planting, Drainage, and Water.

Britannia Road, Fulham, London, S.W.

CLIFF'S ANTISEPTIC FLUID. Manufactured by F. C. CALVERT & Co., Manchester.

A Valuable Sheep Dip, a certain cure for Scab, and a powerful Antiseptic and general Disinfectant. For further particulars apply to Rose Coleman & Son, 150, Leadenhall Street, E.C.

LONG'S "DIPPING" for TICK in SHEEP. LONG'S "SPECIFIC" for SCAB in SHEEP. LONG'S "MAGGOT LOTION" for SHEEP STRUCK by the FLY

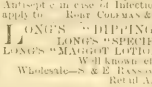
Can be had in any quantity of

Wholesale—S. & E. Rasson & Co., Essex Street, Strand, W.C.
Retail Agents—all parts

CATTLE PLAGUE.—The Cattle Plague Commissioners having recently recommended CARBOLIC ACID as a remedy for the Cattle Plague, all Cattle Owners and others are hereby informed that they may be supplied with this Acid by

F. C. CALVERT & Co., 7, Bond Street, Manchester.

Cattle Plague.



PUBLIC NOTICE.—Owners of Stock are earnestly advised to keep their Stock clean and free from Lice.

MCDOUGALL'S PATENT DISINFECTING POWDER, as recommended in both Reports of the Royal Commission.

For washing the houses of healthy and sick Cattle to prevent infection, use McDOUGALL'S PATENT DISINFECTING SOAP.

CARBOLIC ACID at lowest prices.

ALEXANDER MCDOUGALL, Manufacturing and Agricultural Chemist.
London: 11, Arthur Street West, London Bridge, E.C.
Manchester: Pin Street, Shudehill.
**. Agents throughout the Kingdom.

Short-horn Bulls.

ON SALE, by Private Contract, SIX YEARLINGS and THREE BULL CALVES, of undeniable breed and by the well-known, prize-taking Bulls, Junction (13,771), by Duke (11,000), from dams chiefly descended from the Mantalini, Duchess of Gloster, and Crown Prince families. The young stock are well known as the produce of a select herd of

The whole breed, like the large surrounding district, is perfectly healthy, and has been quite free from the disease.

For Pedigrees, &c., apply to the Breeder, Mr. S. BIRD, Lamarton, Glenn stevenson.

JAPAN PEA FOWL.—For SALE, some fine Young Birds. Apply, by letter or otherwise, to Mr. JOHNSON, Westwood Nurseries, Lewisham.

IMPORTED CREVECŒUR, LA FLECHE, and HOUDAN FOWLS, TOULOUSE GEESE, ROUEN DUCKS, and NORMANDY TURKEYS. Prices on application.

JOHN BAILY, 113, Mount Street, London, W.

EGGS for SITTING from selected BIRDS of the principal Breeds of Poultry, now ready. Priced Lists on application.—JOHN BAILY, 113, Mount Street, W.

PHEASANTS, Tame, for Breeding, in Pens.—Versicolor, Chinese, Bohemian, Ring-necked, and Common. Prices on application.

JOHN BAILY, 113, Mount Street, London, W

JOHN BAILY'S PRICED LIST for 1866 now ready. 113, Mount Street, W.

Sales by Auction.

Nine Cases of Imported Orchids,

JUST ARRIVED PER MAIL STEAMER FROM NEW GRENADA, IN CAPITAL CONDITION.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY, April 10, at half-past 12 o'clock precisely, 500 CHOICE ODONTOGLOSSUMS and ONCIDIUMS, 150 TRICHOPILIAS, STANHOPEAS, and various other Orchids, just arrived from New Grenada

On view the Morning of Sale, and Catalogues had.

Choice Gladioli.

MR. J. C. STEVENS begs to announce that he will include in his SALE of NEXT TUESDAY, a further portion of Messrs. ADLER'S choice GLADIOLI, and a small Importation of CONIFEROUS SEEDS.

On view the Morning of Sale, and Catalogues had.

Important Sale of Imported Orchids.

MR. J. C. STEVENS begs to announce that he has received instructions from Mr. G. U. Skinner to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, WC., on THURSDAY, April 19, at half-past 12 o'clock precisely, an IMPORTATION of PLANTS and ORCHIDS, consisting of splendid masses of Lycaste Skinneri, barbatum, Skinner, and specialdis, Oncidium crispum, cucullatum, Pescatorei, tigrinum, &c.

Also a fine Collection of VARIEGATED and ACCOLADE'D BROMELIADS, ARECHEA VIRENS, &c., just received from the East Indies

The whole of the Plants are in the finest possible health, and will be found worthy notice.

On view the Morning of Sale, and Catalogues had

Blackheath.

TO GENTLEMEN, NURSERYMEN, BUILDERS, AND OTHERS ENGAGED IN BUILDING.

MESSRS. PROTHEROE AND MORRIS are instructed by Mr. John Hally to SELL by AUCTION, on the Premises, Granville Park, Blackheath, three minutes walk of the Lewisham Road Station on the North Kent Railway, on MONDAY, April 16, at 12 o'clock precisely, without reserve, in consequence of the Land being required to be Leased immediately for Building purposes, the whole of the valuable NURSERY STOCK, including about 1000 Common Laurels, Laurustinus, Aucubas variegata, Cupressus Lawsoniana, Lamprocs borealis, Wellingtonias gigantea, and other Evergreen and Deciduous Trees and Shrubs, also a valuable collection of choice HARD WOODED STOVE and GREENHOUSE PLANTS, which is known to contain the most magnificent and symmetrical specimens that have ever been cultivated in any private competition. The Lands have been cultivated with that care and attention requisite to create First-class Prizes at the forthcoming Great International Exhibition, and cannot fail to exhibit the highest praise and admiration, also charming specimens of the best varieties of Lilac, Pyrus mica, Deutzia, Ivies, Chrysanthemums, Acacia, Jasmines, Ivy-leaved Pelargoniums, Phormium tenax, Aucuba, Araucaria, Arbutus, Privet mixed, Clerodendron, Gardenia, Myrtles, Roses, Stephanotis, Daphnes, Adiantum, Pteveris, Ferns, Cactus, &c., and everything that is grown in England, we Dare Parchasers desiring specimens at moderate size may be suited, as well as those who require them of gigantic dimensions. Each specimen is perfectly unmutilated, and has been carefully grown, separately arranged on the richest stance of beautiful foliage, and beautifully furnished with bloom buds. Both large and small are so well cultivated, that with ordinary care they will most gradually develope their powers to the highest state of perfection.

May be viewed until the Sale at the Lea Bridge Nurseries. Catalogues may be had on the Premises of the principal Seedsmen and Florists, and of the Auctioneers and Valuers, Tenterden, Kent. Trains leave Bishopsgate Street Station for Lea Bridge at 10.20 A.M., and Peckham

Mr. S. P. & M. having heard it intimated that this Sale only consists of surplus stock, beg to assure the public that it is not the case, but that the entire collection is to be sold without reserve.

Sale of first-class Carnations, Picotees, Pinks, &c.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, at 38 and 39, Gracechurch Street, City, E.C., on FRIDAY, April 20, at 12 for 1 o'clock precisely, a Collection of CARNATIONS, PICOTEES, and PINKS, of the finest growth, the stock of about an eminent grower above Battersea Stairhead, and Dwarf Roses, several fine Specimen Plants of Azalea indica, American Plants, Double Camellias and Azalea indica, choice General and the Flower Seeds, Vermeers, Ducheses, Dahlias, &c.

On view the Morning of Sale. Catalogues may be had at the Rooms as above, and of the Auctioneers and Valuers, Leytonstone.

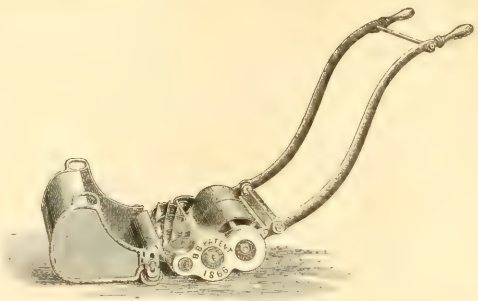
Ashford and Stanwell, Middlesex.

TO MARKET GARDENERS, NURSERYMEN, BUILDERS, AND OTHERS. 101 Acres of VALUABLE FREEHOLD and COPYHOLD LAND, by order of the TRUSTEES of the late F. EVANS, Esq., DECEASED, in THREE LOTS, with possession in HARVEST.

MR. DAVENPORT will SELL by AUCTION, at Garraway's, Change Alley, Cornhill, E.C., on FRIDAY, May 11, at 12 o'clock, the above VALUABLE PROPERTY, the greater portion of which is well adapted for Market Garden or Nursery Purposes, or for Building Purposes, about 8 acres lying close to the Ashford Station, on the Windsor and Reading Branch of the South-Western Railway, the remainder being in the village of Stanwell, within 1 mile of the high road from Hounslow to Staines, to which there is very considerable frontage. The Estate is let on Leases at an unexpired term of three years from Michaelmas next, to Mr. Edward Curtis, who will give early possession on reasonable terms, and will show persons over the Land.

Particulars may be had of the Auctioneer, Mr. DAVENPORT, Solicitor, 21, Bly Place, Holborn, E.C., at Garraway's; and of the Auctioneer, 35, Bucklersbury, Mansion House, E.C.

J. B. BROWN & CO.'S NEW PATENT B B LAWN MOWER.



PATENTEES AND SOLE MANUFACTURERS,

J. B. BROWN & CO.,

148, UPPER THAMES STREET,

LONDON, E.C.

GUARANTEED TO GIVE

PERFECT SATISFACTION,

AND IF NOT APPROVED OF

MAY BE AT ONCE RETURNED.

J. B. BROWN AND CO. beg to mention, that having executed their numerous orders for the NEW PATENT B B LAWN MOWER up to the present time, with most unqualified satisfaction, they are now actively executing further orders for the present season,—and, owing to the large number of orders already received and constantly coming in, it is most important that orders for delivery this season should be sent in *as early as possible.*

The Machine combines all the latest improvements in Lawn Mowing Machines, being simple in construction, very light, silent in movement, easily worked, and so strong and durable as to be literally unbreakable,—an all-important feature in Machines of this class; the ordinary cast-iron being entirely done away with, and malleable iron substituted, in all breakable parts, and every part being accurately numbered and made to standard gauges. The workmanship and finish are also of a superior character; the entire Machine being quite equal to a revolution, so to speak, in Lawn Mowers. The Machines are all guaranteed to give perfect satisfaction in every respect.

The NEW B B PATENT LAWN MOWER is manufactured by J. B. BROWN AND CO. on their own Premises in London, under their personal superintendence.

PATENT B B HAND MACHINE.

PRICES—Including Carriage to any Railway Station or Shipping Port in England, with the necessary Tools and Directions for use.

10-inch Machine	£3 10 0	*Easily Worked by a Boy.*	
12-inch Machine	4 10 0		
14-inch Machine	5 10 0		
16-inch Machine	6 10 0	*Ditto by a Man.*	
18-inch Machine	£7 10 0	*Easily Worked by a Man.*	
20-inch Machine	8 0 0		
22-inch Machine	8 10 0	*Ditto by Two Men.*	
24-inch Machine	9 0 0		

If with Brass-mounted Grass Box, *5s.* extra.

PATENT B B HORSE MACHINE.

PRICES—Complete, without extras, including Carriage to any Railway Station or Shipping Port in England, with the necessary Tools and Directions for use.

42-inch Machine	£28 10 0	*Drawn by a Horse.*
36-inch Machine	24 10 0	
30-inch Machine	21 10 0	*By a Horse or Strong Pony.*

PATENT B B PONY and DONKEY MACHINE.

PRICES—Complete, without extras, including Carriage to any Railway Station or Shipping Port in England, with the necessary Tools and Directions for use.

30-inch Machine	£17 10 0	*Drawn by a Pony.*
28-inch Machine	16 10 0	
25-inch Machine	14 10 0	*Drawn by a Donkey.*

New Improved Horse, Pony, and Donkey Boots, wholly of Leather, as follows:—Horse Boots, *24s.*; Pony Boots, *21s.*; Donkey Boots, *16s.* per set.

*** *Every Machine sent out is warranted to give ample satisfaction, and, if not approved of, may be at once returned.*

The NEW PATENT B B LAWN MOWER has already been patronized by Her Majesty the QUEEN, for the Royal Gardens at Windsor Castle, Osborne, Kew, and Hampton Court; by His Royal Highness the PRINCE OF WALES, for Sandringham; and by His Grace the Duke of SOMERSET, the Right Hon. the Earl of DERBY, the Right Hon. the Earl of CHARLEMONT, and numbers of the principal Nobility and chief Landed Proprietors in the Kingdom. This Machine has also been selected by Merchants for the execution of their orders for export to the Continent, and to Egypt, India, Australia, Natal, and other countries, and by a large number of the most respectable Ironmongers, Nurserymen, and Seedsmen in various parts of England, Scotland, and Ireland, many of whom have applied for special Agencies, and are now ordering Machines for immediate delivery.

AGENTS IN IRELAND—MESSRS. THOMAS McKENZIE & SONS, 34, Dawson Street, Dublin, and Camden Quay, Cork.

AGENT IN PARIS—MR. R. A. CLEGG, 42, Boulevard Sebastopol.

AGENTS IN VIENNA—MESSRS. CLAYTON, SHUTTLEWORTH, & CO., who are exhibiting the Machines at the Vienna Show this season.

TESTIMONIALS.

From the HON. P. ASHBURNHAM, *Sherinfold Park, Fraut, Sussex, March 7, 1866.*—"My gardener was very well satisfied with the working of the B B Mowing Machine."

From MRS. PRICE, *Hayley Villa, Lugwardine, Hereford, August 18, 1865.*

"I have much pleasure in informing you that the Mowing Machine [a 14-inch B B] I ordered from you at the Bath and West of England Meeting, held in Hereford, has in every respect given the greatest satisfaction, and I am very much pleased with it."

From W. H. APPERLEY, Esq., *Withington, near Hereford, August 14, 1865.*

"The New B B Lawn Mower I purchased of you has now been frequently used by my Gardener, and he is perfectly satisfied with it. It does its work well. I shall feel pleasure in recommending your Machines."

From GEORGE MCRAE, Esq., *Mitcham Common, Surrey, September 27, 1865.*

"I am very pleased with the Lawn Mower I had from you [a 14-inch B B Machine]. It is certainly the most compact one I ever saw, and does its work well."

From A. LYON, Esq., *Napier House, Edmonton, October 4, 1865.*

"I have given the B B Mowing Machine [a 14-inch one] a good trial, and am quite satisfied with it. It works so easily that my daughters have on several occasions used it. I shall be glad to give you a testimonial at any time, as I consider it worth one. You can make what use you like of my name in furthering the sale of the Mower."

*** *Every Machine sent out is warranted to give ample satisfaction, and, if not approved of, may be at once returned.*

J. B. BROWN AND CO., OFFICES, 18, CANNON STREET, CITY, LONDON, E.C.

WAREHOUSE (where Machines are kept in Stock), 148, UPPER THAMES STREET, E.C.

OPPOSITE the CITY of LONDON BREWERY, and close to the LONDON BRIDGE STEAM BOAT PIERS.

Editorial Communications should be addressed to "The Editor," Advertisements and Business Letters to "The Publisher," at the Office, 41, Wellington Street, Covent Garden, London, W.C.
Printed by WILLIAM BRADBURY, of 13, Upper Woburn Place, in the Parish of St. Pancras, in the Co. of Middlesex, and FREDERICK MULLETT EVANS, of No. 11, Bouverie Street, in the Precinct of Whitefriars, City of London, Printers, at their Office, Lombard Street, Precinct of Whitefriars, City of London, and Published by them at the Office, No. 41, Wellington Street, Parish of St. Paul's, Covent Garden, in the said Co.—SATURDAY, April 7, 1866.

THE GARDENERS' CHRONICLE
AND
AGRICULTURAL GAZETTE.

A Newspaper of Rural Economy and General News.

No. 15.—1866.] SATURDAY, APRIL 14. {Price Fivepence. / Stamped Edition, 6d.

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☞ *Persons wishing to send the* GARDENERS' CHRONICLE *by Post should order the Stamped Edition.*

ROYAL HORTICULTURAL SOCIETY, SOUTH KENSINGTON.

NOTICE.—A MEETING of the FRUIT and FLORAL COMMITTEES will be held on TUESDAY NEXT, April 17, at 11 o'Clock

INTERNATIONAL HORTICULTURAL EXHIBITION and BOTANICAL CONGRESS

Under the Patronage of Her Majesty The Queen, and of their Royal Highnesses the PRINCE of WALES and the DUKE of CAMBRIDGE.

The EXHIBITION and CONGRESS will OPEN on MAY 22, and continue till May 25. Subscribers' names will be received, and Schedules and Prospectuses may be obtained on application to the Secretary, at the Offices, 1, William Street, Lowndes Square, London.

INTERNATIONAL HORTICULTURAL EXHIBITION and BOTANICAL CONGRESS of 1866.

☞ NOTICE IS HEREBY GIVEN, that the FORMS of APPLICATION for SPACE, which it is necessary that Exhibitors should fill up, if they intend to take part in the forthcoming Exhibition, are now ready, and may be had, post paid application. These Forms must be returned on or before May 1.

THOMAS MOORE, Exhibition Secretary.
Offices: 1, William Street, Lowndes Square, London, S.W.

INTERNATIONAL HORTICULTURAL EXHIBITION and BOTANICAL CONGRESS of 1866.

☞ GARDENERS wishing to avail themselves of the privilege of PURCHASING TICKETS for this Exhibition at a reduced rate, under No. 30 of the Regulations specified in the Schedule, are requested to observe that application must be made for them to Mr. THOMAS MOORE, Exhibition Secretary, Botanic Garden, Chelsea, London, S.W., previous to May 1. Tickets for Wednesday, May 23, will be charged Half-a-Crown, and those for Thursday, May 24, One Shilling. They will be available on each day respectively from 10 A.M. to 7 P.M. A remittance must accompany the application.

ROYAL BOTANIC SOCIETY'S GARDENS, Regent's Park.—EXHIBITIONS of PLANTS, FLOWERS, and FRUIT, WEDNESDAYS, May 9, June 6, and July 4. Tickets on or before Saturday, April 28th, 3s.; after that day 5s. each, to be obtained at the Gardens by Vouchers from Fellows of the Society.

JOHN WATERER'S AMERICAN PLANTS in JUNE. The LAST SPRING EXHIBITION, SATURDAY NEXT, April 21. Tickets 2s. 6d. each.

BRITISH ASSOCIATION FLORAL FETE.—This Fete will be held at Nottingham on THURSDAY, August 23d, and FRIDAY, August 24th, instead of on August 28th, and Tuesday, August 28th, as Monday is found to be inconvenient for distant Exhibitors. Schedules may be had on application. By order, A. LOWE, Exhibition Secretary.
Highfield House, near Nottingham.

DOBSON'S PRIZE CALCEOLARIA, unsurpassed by any strain in the world, may be had through all Seedsmen, &c. Sealed packets, 1s. 6d., 2s. 6d., 3s. 6d., 5s.
DOBSON & SONS, Seedsmen, Isleworth, London, W.

DOBSON'S PRIZE PRIMULA, unequalled for quality, colour, and fringe. Sealed packets, 1s., 2s. 6d., 5s.
DOBSON & SONS, Seedsmen, Isleworth, London, W.

DOBSON'S PRIZE CINERARIA.—The finest strain in the Kingdom for variety, novelty, and general good qualities. Sealed packets, 1s., 2s. 6d., 5s.
DOBSON & SONS, Seedsmen, Isleworth, London, W.

Scarlet, Pink, and Salmon Zonale Geraniums.

WOOD and INGRAM beg to offer fine sturdy Autumn-struck Plants of the above, well established in 3½-inch pots, and thoroughly hardened off, at £1 6s. per 100, package included.
Nurseries, Huntingdon.

REBECCA, the finest BEDDING GERANIUM ever raised. Plants ready in May, price 5s. each.
See Mr. PAUL'S SPRING CATALOGUE.
PAUL'S Nurseries, Waltham Cross, London, N.

Dwarf Dahlias for Beds or Ribbon Borders.

PURPLE ZELINDA and LITTLE NAJADE, white, richly edged with crimson, in strong ground roots, at 6s. and 8s. per dozen.
CHARLES SHILLING, Hill Nursery, Winchfield, Hants.

Dahlias, Verbenas, Bedding Plants, &c., now ready.

C. E. ALLEN'S CATALOGUE of the above can be had on application.
Norfolk Nursery, Shacklewell, near London, N.E.

VERBENAS for BEDDING. — Purple, White, and Scarlet, good strong Plants in thumb pots, at 16s. per 100. Package included. Terms cash.
PHILIP LADDS, Florist, Bexley Heath, Kent.

VERBENAS, FUCHSIAS, PETUNIAS, ROSES, &c., New and Old, of only those that are worth growing. Nice Plants now ready to send out. DESCRIPTIVE CATALOGUES free.
WM. KNIGHT, Floral Nursery, Hailsham, near Hurst Green, Sussex.

Early Spring Flowers.

WEBB'S GIANT POLYANTHUS and GIANT COWSLIPS, and other varieties, largest stock in England. List and prices on application to Mr. WEBB, Calcot Gardens, Reading.

TRANSPLANTED RHODODENDRONS.—4-year-old Hybrids saved from the choicest Crimson, White, and Claret-coloured sorts, 12s. 6d. per 100, or 1000 for £5.
RICHARD SMITH, Nurseryman, Worcester.

New Roses of 1866.

JOHN FRASER, of the Lea Bridge Road Nurseries, Leyton, Essex, N.E., will forward on application a LIST of all the best varieties of NEW ROSES for 1866.

The plants are strong, healthy, and are now ready for sending out. Early orders are respectfully solicited.

New Roses of 1866.

REVISED DESCRIPTIVE LIST NOW READY.

PAUL and SON, Old Cheshunt Nurseries, N., have Now Ready fine Plants of all the Varieties in their List. The Trade and Amateurs should consult this.

ROSES in BLOOM and for BEDDING.—Now ready, a fine collection of the above. Prices and particulars on application. Liberal offers to the Trade.
THOS. S. WARE, Hale Farm Nurseries, Tottenham, Middlesex, N

PINES.—Strong Fruiting, Succession, and Suckers, of all the leading kinds, can be had of
B. S. WILLIAMS, Victoria and Paradise Nurseries, Holloway, London

Vines from Eyes.

H. LANE and SON have still a good stock of strong well-ripened FRUITING VINES of all the popular sorts.
The Nurseries, Great Berkhampsteed.

Fruiting Vines.

E. G. HENDERSON and SON offer the above, with splendid Canes well-matured growth, with prominent eyes, sure to give a heavy crop of fruit, 10s. 6d. each.
LIST of SORTS sent on application.
Wellington Nursery, St. John's Wood, London, N.W.

CASTLE KENNEDY FIG.—Plants of the above may now be had at 10s. 6d. and 21s. each; the usual discount to the Trade. PETER LAWSON & SON, Edinburgh and London.

STRAWBERRIES, STRAWBERRIES.—Elton Pine, Keen's Seedling, Oscar, and British Queen. Planted July and August last. Fine strong Plants, 2s. 6d. per 100.
G. DUCKLIN, Avenue Nursery, Brook Green Lane, Hammersmith, W.

WEBB'S PRIZE COB FILBERTS, and other Prize Nuts and Filberts. Trees of these splendid Nuts to be had of Mr. WEBB, Calcot Gardens, Reading. Catalogues on application.

Genuine Garden and Vegetable Seeds.

W. HOOPER, SEED MERCHANT and NURSERYMAN, Wandsworth, S.W.

DRAWING-ROOM PLANT CASES.—The beautiful Novelties in Plant Cases just introduced by BARR & SUGDEN are now on view at their Warehouse. An Illustrated Sheet is in preparation for ladies living in the country.
BARR & SUGDEN, 12, King Street, Covent Garden, W.C.

J. IVERY and SON beg to announce that their DESCRIPTIVE PRICED CATALOGUES of AZALEA INDICA, HARDY BRITISH FERNS, ROSES, CONIFERÆ, GRAPE VINES, and SEEDS, may be had on application at their Dorking Nursery.

PANSY CLOTH of GOLD, the best yellow, finest quality for exhibition or bedding, now being sent out, 3s. 6d. each. Usual discount to Trade.
CARNATIONS and PICOTEES, 50s. per 100 pairs.
STAFFORD'S Nurseries, Hyde, Manchester.

Double White Pelargonium Lady Victoria Kerr.

CARSTAIRS and SONS are now sending out the above fine Double White Geranium, price 10s. 6d. each. A full Description and List of Testimonials post free on application.
121, George Street, and Warriston Nurseries, Edinburgh.

GERMAN FLOWER SEEDS.—Superb Varieties of Aster, Stock, Balsam, Wallflower, Phlox Drummondii, Portulaca, Larkspur, Zinnia, &c. For prices see Descriptive Seed List.
RICHARD SMITH, Seed Merchant, Worcester.

New Chrysanthemums and Pyrethrums.

JOHN SALTER'S DESCRIPTIVE CATALOGUE of NEW CHRYSANTHEMUMS and PYRETHRUMS for 1866 is now ready, and will be sent free on receipt of two stamps.
Versailles Nursery, William Street, Vale Place, Hammersmith, W.

HOLLYHOCKS, 9s. to 12s. per dozen.
PAUL & SON, Old Cheshunt Nursery, N.

GOOD BUSHY LAURELS, 4 to 5 feet, 50s. per 100.
PAUL & SON, Old Cheshunt Nursery, N.

BOX EDGING, 4d. per yard; one yard sufficient to make three.
JOHN CRANSTON, King's Acre Nurseries, near Hereford.

FIVE HUNDRED THOUSAND SILVER FIR, 4-years' Seedling, at 4s. per 1000.
500,000 SPRUCE, 4-years' Seedling, at 2s. per 1000.
Reference or remittance required.
J. RIDDELL, Park Attwood, Bewdley.

TRUE NATIVE SCOTCH FIR.—A quantity of the above, from 1½ to 2½ feet, twice Transplanted, will be put on the Rails at Brandon Station at 21s. per 1000.
Apply to Messrs. JAMES DICKSON & SONS, Seedsmen, 32, Hanover Street, Edinburgh.

WANTED, a Quantity of NURSERY SEED of Sorts, and real CONIFERÆ, growth of 1865. Lowest cash price to FREDERICK KING, Nurseryman, High Street, Lincoln.

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PURCHASERS of LARGE QUANTITIES of FARM or GARDEN SEEDS will be supplied liberally by SUTTON & SONS. For prices apply (stating quantity required) to
SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

CLIANTHUS DAMPIERI.—Imported Seed, of excellent quality, 2s. 6d. per packet, containing a dozen seeds. Trade price per 1000 Seeds on application.
PETER LAWSON & SON, Edinburgh and London.

GLADIOLUS, the finest cultivated, new and older varieties.
CATALOGUES, CULTURAL and DESCRIPTIVE, sent free.
STEPHEN BROWN, Sudbury, Suffolk.

GLADIOLI are best planted without delay. CATALOGUES of the finest sort free.
STEPHEN BROWN, Seed and Nursery Establishment, Sudbury, Suffolk.

GLADIOLI, GLADIOLI, GLADIOLI.—Collections, including all the finest varieties in cultivation, from 10s. 6d. to 63s.
All orders amounting to 21s. and upwards carriage paid.
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Genuine Garden and Agricultural Seeds.

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Genuine Garden Seeds.

WM. CUTBUSH and SON'S DESCRIPTIVE PRICED CATALOGUE of SEEDS, which contains everything New and Old worth growing, can be had post free on application.
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Garden Seeds, Carriage free.

WM. PAUL'S SELECT LIST contains many articles worthy the attention of Exhibitors and others who wish to have FIRST-CLASS VEGETABLES and FLOWERS in their seasons.
PAUL'S Nurseries, Waltham Cross, N.

JAMES FAIRHEAD and SON, SEED GROWERS and MERCHANTS, 7, Borough Market, London, S.E.
New and Genuine AGRICULTURAL, GARDEN, and FLOWER SEEDS. Special prices and advantageous offers on application.

NEW FARM SEEDS of best selected quality. PRICED DESCRIPTIVE LIST post free upon application.
JAMES DICKSON & SONS, Seed Merchants, &c., 102, Eastgate Street, Chester.

ZEA CURAGUA, new Striped Japanese Maize.—A Greatest novelty of the season. Newly imported Seed, 1s. and 2s 6d., per packet, sent post free.
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SUTTON'S PERMANENT GRASS SEEDS, 20s. to 56s. per acre, according to quantities required, and soils for which they are intended.

NATURAL GRASSES: their Names and Derivations; Quality, Produce, Elevation, Situation, Soil, Use, Peculiarity, Season, Growth, Increase, Time of Flowering, Price, &c.
Free for one postage stamp.
RICHARD SMITH, Seed Merchant, Worcester.

DICKINSON'S ITALIAN RYE-GRASS SEED, grown by him and sold to Agriculturists this season for present payment at 44s per qr., 5 qrs. at 40s.
New Park, Lymington, Hants.

GOOD CLOVER SEEDS at Market Prices.—Red, White Dutch, Alsike, Cow Grass, and Trefoil; also Perennial, Italian Rye and other Grasses. Samples and prices apply to
RICHARD SMITH, Seed Merchant, Worcester.

GOOD CLOVER SEEDS at MARKET PRICES.

Red	White Dutch	Yellow
Alsike	Cow Grass	White Suckling

For samples and lowest prices, apply (stating quantity required) to
SUTTON & SONS, Seed Merchants, Reading.

FINEST LAWN MIXTURE.—Composed only of the best and cleanest Seeds of the most suitable dwarf Evergreen Grasses. 1s. per lb. Carriage free.
JAMES DICKSON & SONS, Seed Merchants, 102, Eastgate Street, Chester.

English-saved Sowing Rape Seed.

CHARLES SHARPE AND CO. have the above to offer, of fine quality. Sample and price forwarded on application. Seed Warehouse, Sleaford.

SUTTON'S SELECTED MANGEL and TURNIP SEEDS.
For prices and particulars see page 329 of last week's Paper.

THE HARDY WELSH-GROWN RED CLOVER may be had now and genuine of
Messrs. JAMES DICKSON & SONS, Seed Merchants 102, Eastgate Street, Chester. Samples and prices post free.

To the Trade.

PURPLE-TOP SCOTCH or YELLOW ABERDEEN TURNIP. Now Seed. Price on application.
JAMES DICKSON & SONS, 102, Eastgate Street, Chester

LAING'S SWEDE, true, crop of 1865, 24s. per Bushel. Prices of other kinds of SWEDE, TURNIP, and MANGEL upon application to
ALFRED LEGERTON, Seed Merchant, 5, Aldgate, London, E.

CATTELL'S RELIANCE CABBAGE. DRUMHEAD or CATTLE CABBAGE.
Strong plants, 3s. per 1000.
JOHN CATTELL, Westerham, Kent.

CABBAGE PLANTS.—Strong Drumheads for Cattle. Early kinds, Battersea and Nonpareil, 3s. per 1000.
W. VIRGO & SON, Wonersh Nursery, Guildford, Surrey.

RAPHANUS CAUDATUS, the EDIBLE PODDED RADISH. 2s. 6d. per packet.
New Striped-fringed JAPANESE MAIZE, 1s. per packet.
BARR & SUGDEN, Seed Merchants, 12, King St., Covent Garden, W.C

THE LONGSTANDER LETTUCE.—Most remarkable for duration without running, crisp and excellent. Packets 1s. each.
STEPHEN BROWN, Seed Grower, Sudbury, Suffolk.

ROYAL ASH-LEAF POTATO.—This is one of the earliest and the most productive of all the Ash-leaf Kidney Potatos. Price per ton of finely prepared Seed given on application to Messrs. THOS. RIVERS & SON, Nurserics, Sawbridgeworth.

DAINTREE'S SEEDLING POTATO is the best early round white Potato in cultivation, and can be obtained at a moderate price on application to
Mr. S. A. DAINTREE, Fendrayton, St. Ives, Hunts.

EARLY KIDNEY POTATOS.—Webb's Telegraph, first early, 20s. per bushel; Webb's President, second early, 16s. per bushel; Webb's Imperial Kidney (best Potato known for all purposes), 12s. per bushel.
Apply to Mr. WEBB, Calcot Gardens, Reading.

GIANT ASPARAGUS.—Extra fine 2-yrs., 2s. per 100 extra fine 3-years, 3s. per 100.
Price to the Trade on application.
JOHN CRANSTON, Nurseryman, King's Acre, near Hereford.

GRAYSON'S GIANT ASPARAGUS.
Fine strong 3-year roots, 30s. per 1000, 3s. 6d. per 100.
Fine strong 2-year roots, 21s. per 1000, 2s. 6d. per 100.
STEPHEN BROWN, Nurseryman, Sudbury, Suffolk

GIANT ASPARAGUS, fine selected Roots for early cropping, 2s. 6d. per 100. This delicious Vegetable does not require half the expense usually incurred in planting it. For instructions, see RICHARD SMITH'S SEED LIST for 1866.
Strong Transplanted SEA KALE, 2s. per dozen.
RICHARD SMITH, Nurseryman, Worcester.

New Catalogues.

DOWNIE, LAIRD, and LAING beg to intimate that their PRICED DESCRIPTIVE CATALOGUES of FLORISTS' FLOWERS, NEW PLANTS, GARDEN, FLOWER and AGRICULTURAL SEEDS are now ready, and may be had free on application. 17, South Frederick Street, Edinburgh, and Stanstead Park, Forest Hill, London, S.E.

RICHARD SMITH'S SEED CATALOGUE contains a Calendar of Free for Sowing, particulars of Culture, with Prices, [illegible] Manure, Depth, [illegible]. Lists free by post for one stamp. Seeds direct from the growers, the surest way to success.

Richard Smith, Seed Merchant, Worcester.

Select Catalogues of Seeds and Plants.

ROBERT PARKER begs to announce that his NEW PRICED and DESCRIPTIVE CATALOGUES, containing Select Lists of [illegible] Vegetable, Agricultural, and Flower Seeds, New and Rare Plants, &c. are now published, and will be forwarded [illegible]

BUTLER and McCULLOCH'S Collections of Choice FLOWER SEEDS free by Post free. NEW ANNUALS [illegible] HARDY DO. [illegible] HALF HARDY DO. [illegible] For details of above Collections, see B. & McC.'s SPRING CATALOGUE, sent free and post paid upon application. Covent Garden Market, W.C.

CHEAP and BEAUTIFUL FLOWER SEEDS. 100 packets of the [illegible] Hardy, Half hardy and tender Annuals, 20s. [illegible] DESCRIPTIVE CATALOGUE [illegible] Richard Smith, Seed Merchant, Worcester.

TWELVE of the FINEST GERANIUMS extant for BEDDING are— [illegible] Variegated Little David [illegible] Mrs. Pollock [illegible] The above in good plants, for One Guinea. Post Office Orders on [illegible] Wm. [illegible] Nursery, Sible Hedingham, Essex.

LOBELIA, NEW WHITE. This White Lobelia [illegible] Messrs. [illegible] Hull and [illegible]

GEORGE EDWARD can supply good Plants, well [illegible] VERBENA [illegible] LORD RAGLAN [illegible] CATALOGUES of DAHLIAS, GERANIUMS, and other [illegible]

MAURICE YOUNG'S DESCRIPTIVE LIST of [illegible] Herb Plants, Ornamental Trees, [illegible] Shrubs, [illegible] Roses, [illegible] Milford Nurseries, near Godalming, Surrey.

A RIBBON BORDER, Six Colours, Post Free, 2s. 6d. Stamps.

The selection of the above is unique, equalling Bedding Plants, at one-thirtieth the cost.

Poynter's 25s. Anglican Collections of Garden and Flower Seeds for One Year's Supply

Contains one of the above, and is altogether the best and cheapest offered. Carriage free.

☞ Seed PRICE LISTS gratis.

ROBERT H. POYNTER, SEED MERCHANT, TAUNTON.

FORTHCOMING INTERNATIONAL HORTICULTURAL EXHIBITION.

SPECIMEN ORNAMENTAL and VARIEGATED PLANTS and FERNS.

JAMES GARAWAY & CO.,

DURDHAM DOWN NURSERIES, BRISTOL,

Offer the undermentioned. The whole are well-grown and in good condition. Amateurs or the Trade wanting to complete Collections will find this a first-rate opportunity.

AGAVE PICTA [illegible]
ALOCASIA ZEBRINA [illegible]
ARECA RUBRA [illegible]
CARYOTA URENS [illegible]
CROTON PICTUM [illegible]
CYCAS REVOLUTA [illegible]
EURYA LATIFOLIA VARIEGATA [illegible]
FICUS LEOPOLDI [illegible]
[illegible]
LATANIA BORBONICA [illegible]
MARANTA ORNATA [illegible]
PANDANUS ELEGANTISSIMUS [illegible]
PHOENIX DACTYLIFERA [illegible]
[illegible]
YUCCA ALOIFOLIA VARIEGATA [illegible]
[illegible]
PARMENTIERI [illegible]
QUADRICOLOR.—In 12-in. pot, [illegible] beautifully coloured specimen

Ferns.

ALSOPHILA AUSTRALIS [illegible]
ALSOPHILA [illegible]
CYATHEA DEALBATA [illegible]
CYATHEA MEDULLARIS [illegible]
DAVALLIA ACULEATA [illegible]
DAVALLIA PYXIDATA [illegible]
[illegible]

The whole to be seen and prices had on application to

JAMES GARAWAY and CO., DURDHAM DOWN NURSERIES, BRISTOL.

VERBENA CRIMSON KING.

THOMAS METHVEN

Has much pleasure in announcing that he has arranged to send out the unrivalled VERBENA CRIMSON KING, which was raised in 1863 by Mr. David Thomson, at Archerfield, where it has been extensively used for the last two seasons. Its superiority consists in its great and continuous profusion of bloom, vigorous and compact habit, and its healthy constitution. It is in fact a companion to the well-known Purple King, having all the good qualities of that variety, without its tendency to mildew or to become diseased in winter. Crimson King has fine bold crimson trusses of bloom, with petals of unusual substance, borne on short stiff stalks, which constitutes it one of the very best plants for standing heavy rain without much injury. Either for masses or for lines it is considered by the many Gardeners who have seen it this season at Archerfield to stand unrivalled for striking effect. The following TESTIMONIALS, which have been received by Mr. Thomson, will more than corroborate what is said above of its merits:—

From Dr. Robert Hogg, *of the Journal of Horticulture.*

"I was [illegible] Crimson King Verbena [illegible] Kitchen Garden at Archerfield [illegible] ribbon border on each side of the main walk. But when I entered the Flower Garden at Dirleton [illegible] merit in having raised so valuable a decorative plant."

From Mr. Toward, *Osborne House, Isle of Wight.*

"Your Verbena Crimson King is one of the best varieties I have seen; its brilliancy of colour, [illegible]"

From Mr. John Robson, *Gardener to Viscount Holmesdale, Linton Park, Kent.*

"For many years we have been on the outlook for a class of Verbenas having the upright growth and free flowering qualities of Purple King, but differing from it in colour. Such an one Mr. D. Thomson has [illegible] in ribbon borders; while for continuous blooming it promises to be superior to Purple King. It is [illegible] by far the more brilliant of the two. There seems nothing left to wish for, unless it be for other Verbenas of like habit, but of different colours, not yet represented in this way."

From Mr. John Clarke, *Gardener to Earl de Grey and Ripon, Studley Royal, Ripon.*

"I [illegible]"

From Mr. Thomas Lees, *Gardener to [illegible], Tyninghame.*

"I have great pleasure in bearing the highest testimony to your Verbena Crimson King, having had [illegible] year and this. Both in fine weather and after dashing rains [illegible] Purple King."

From Mr. H. Rose, *Gardener to the* Duke of Roxburgh, *Floors Castle, Kelso.*

"[illegible] a reputation, which it must not [illegible] ribbon borders."

From Mr. J. Bisset, *Gardener to the* Earl of Stelton, *Crosteth Park.*

"[illegible] pleasure in giving an order for a quantity of this plant."

To be sent out next May at 18s. per dozen.

Orders [illegible]

The following Nurserymen have already ordered it, and will be able to supply the same:—

Messrs. [illegible]
Mr. Wm. Bull, Chelsea, London
[illegible]
,, Dickson & Turnbull, Perth and Brechin
[illegible]
Messrs. Dreghorn & Aitken, [illegible]
Mr. Wm. Dillistone, Sible Hedingham, Essex
Messrs. [illegible]
Mr. Wm. Dean, Shipley, Yorkshire
Messrs. [illegible] & Son, Hull
,, W. Drummond & Sons, Stirling
[illegible]
,, James Garaway & Co., Bristol
[illegible]
Mr. W. Hooper, St. John's Hill, Clapham, S.W.
Mr. W. Ivery, Rye Lane, Peckham, S.
Messrs. Ivery & Son, Dorking, Surrey
,, Thomas Imrie & Sons, Ayr
[illegible]
Messrs. Paul & Son, Cheshunt, Herts
[illegible]
Mr. Richard Smith, Worcester
[illegible]
Messrs. James Veitch & Son, Royal Exotic Nursery, Chelsea
,, W. [illegible], near Guildford, Surrey
Mr. R. T. Veitch, Exeter
[illegible]

SEED WAREHOUSE, 15, PRINCES STREET; and LEITH WALK NURSERIES, EDINBURGH.

NEW PLANTS.

AUBRIETIA CAMPBELLI (effective spring flower).
FUCHSIA RANKES'S BEAUTY.
VERONICA FRUTICOSA of LACA.
CLIANTHUS DAMPIERI, in varieties (scarlet only).

Coloured Plates, post free on receipt of Stamps, of the following:—
AUBRIETA CAMPBELLI, 6d.
CLIANTHUS DAMPIERI ALBIFLORA, 1s. 1d.

For description of the above see F. G. Henderson & Son's New AUTUMN CATALOGUE, forwarded post free.

Wellington Nursery, St. John's Wood, London, N.W.

To the Trade.

CUPRESSUS LAWSONIANA SEED (true), of excellent quality, and warranted crop of present season. Price, postage paid, 3s. 6d. per oz.; 25s. per half lb.; 45s. per lb. nett. Prices to make will on receipt of a sample. Quantities to be stated (according to order).

WHOLESALE CATALOGUES of GENERAL NURSERY STOCK can be had on application to

Thos. Cripps, Nurseryman, Tunbridge Wells, Kent.

Chrysanthemums.

THOS. PELLS'S NEW, NEWINGTON AND GUILDHALL, 1865.

ADAM FORSYTH begs to inform the Public that he is now sending out his large COLLECTION of CHRYSANTHEMUMS, at 6s. per dozen, including Prince Teck, Eve, Golden Ball, Golden Dr. Brock, Hercules, King of Denmark, Lady Carey, Mr. Brunless, Mr. Wanless, Mrs. Rames, Pink Pearl, Prince of Wales, Sam Weller, Venus, Virgin Queen, &c.

CATALOGUES for one stamp.

Brunswick Nursery, Stoke Newington, N.

Primula, Calceolaria, &c.

WM. CUTBUSH AND SON are now sending out SEED of their superb PRIMULA SINENSIS FIMBRIATA, which has for many years given great satisfaction.

The *Gardeners' Chronicle* of the 6th of January, in Notices to Correspondents, says:—"The 10s. 6d. set are remarkably fine, rich coloured, full, and delicately fringed; they are evidently the produce of a superb strain."

The *Journal of Horticulture* of the 23rd January, says that:—"The finest and newest coloured Chinese Primulas we have yet seen are those raised by Messrs. Cutbush & Son."

Sealed packets 2s. 6d. and 5s. 6d. each.

CALCEOLARIA (new).—This is one of the finest herbaceous variety extant. Per packet 2s. 6d. and 5s. 6d. each.

CINERARIA, in four distinct varieties. Per packet 6d. and 2s. 6d. each.

Highgate Nurseries, London, N.

Paul's Nurseries, Waltham Cross, N.

NEW ROSES AND ENGLISH SEEDLINGS.

WM. PAUL (Son and Successor to the late A. PAUL) has to offer to the Trade the following first-class NEW HYBRID PERPETUAL ROSES:—

BLACK PRINCE, H.P. (Wm. Paul).—Flowers dark crimson, shaded with black; a good, large, and full. This Rose may be called a very dark coloured Souvenir d'Elise, which excels in most respects, but is not distinct enough. Price 5s. each.

DR. LINDLEY, H.P. (Wm. Paul).—Flowers crimson, with black centres, very large and full. Growth robust, foliage splendid. One of the finest Roses for exhibition. Price 5s. 6d.

GLOBOSA, H.P. (Wm. Paul).—Flowers clear dark bright crimson, cream edged, and delicately fringed; they are evidently unique in character, the petals closing at the top, so as to form a complete cup. Both varieties from the Royal Horticultural Society. Highly recommended.

LADY ELIZABETH, H.P. (Wm. Paul).—Flowers purplish crimson, colour uniform throughout, the purple tint predominating; large, full, and of fine form. Price 5s.

The above, which are all very fine, can be supplied in strong healthy plants.

ELIZABETH VIGNERON (Wm. Paul).—Flowers in pairs, very large and full, quite in the way of Lodoïa, but fuller, fresher and brighter in colour; constitution hardy, growth vigorous; a most admirable variety, and one of the best of last year's novelties. Price 5s. 6d.

MADAME EMILE BOYAU (Wm. Paul).—Flowers soft rosy flesh-colour, globular, and of perfect form; the petals, perfect in form, constitution hardy, growth moderate; very constant, distinct, and good. Price 5s. 6d.

PRINCESS DE JOINVILLE (Wm. Paul).—A fine large showy Rose, something in the way of, but of a lighter colour, than Princess of Wales; vigorous and hardy. Price 5s. 6d.

PRINCESS LICHTENSTEIN (Wm. Paul).—Flowers white, globular, large and full, perfect in form in the young state; a good hardy R. sc. blooming abundantly. Price 2s. 6d.

GLORY OF WALTHAM (Wm. Paul).—Flowers crimson, in the way of Red Rover, but more double; growth of extraordinary vigour; one of the best of the dark Roses. Price 5s.

All the really good French Novelties, 5s. 6d. each; the older kinds, by name, 12s. to 18s. per dozen; 75s. to 100s. per 100.

GEO. SMITH'S NEW CATALOGUE, with a splendid Woodcut of NOSEGAY GERANIUM LE GRAND, which is the finest of all Geraniums for effect, together with descriptions of New Seedling Zonale Geraniums, Cineraria, Chrysanthemum, Gladiator, Great Easter, 5s. Beauty Pool, and Pink Perfection, which, by their general merit, justly have received First-class Certificates from the Royal Botanic Gardens and Royal Horticultural Gardens, South Kensington, all of which G. S. can, with the greatest of confidence, recommend. For description see CATALOGUE, which also contains Select Lists of Show, French, Fancy, Zonale and Variegated Geraniums, Fuchsias, Petunias, Dahlias, Verbenas, Chrysanthemums, Bedding Plants, &c. Now ready in exchange for one postage stamp.

Tollington Nursery, Hornsey Road, London, N.

To the Trade.

CORNELIUS WHITEHOUSE, Brereton Nurseries, Rugeley, Staffordshire, has a very large Stock of finely grown and well-rooted GREEN HOOLLES, 12 to 18 inches, and 18 to 24 inches, which he can offer at very low prices on application. Also 2-years ASPARAGUS PLANTS, 10s. per 1000.

LAMOUREUX, CLARK, AND CO., Seed Merchants, Plymouth.

The SEED CATALOGUE and GARDEN DIRECTORY for 1866, now published, will give full particulars respecting prices and other matters in connection with the Business. Will be sent gratis and post free to any address in the Kingdom.

Aucuba japonica, loaded with Bright Red Berries.

JOHN AND CHARLES LEE, Seedsmen to the Queen, invite inspection of their large Stock of magnificent SCARLET-BERRIED AUCUBAS, which they believe to be unrivalled for extent, perfection of form, and colouring. The Berried Aucubas are valuable for Table Decoration, for which purpose they may be sent at 10s. 6d. per inch.

Plants may be purchased at 42s. per 100, and £5 5s. each; and Ripe Seeds, containing innumerable varieties, at 2s. each, or 18s. per dozen. The Trade supplied on liberal terms.

Royal Nurseryard Nursery and Seed Establishment, Hammersmith, London, W.

THE CZAR, a NEW RUSSIAN VIOLET, raised by F. J. Graham, Esq., obtained two First-class Certificates in 1865 for its magnificent flowers and foliage; and a Special Certificate in the present year. Its flowers attain 1 inch in depth, and continue from October till May.

"Not only is the plant remarkable for its extreme luxuriance, but the smell surpasses that of any other Violet I ever met with.—*Report of Journal of Horticulture*, March 15th, 1866.

Very fine Plants in bloom may be had from Mr. John Graham, Orford, near Hounslow, 4s. per 100. 1s. per dozen, prepaid, post-office order. The usual allowance to the Trade.

CALCEOLARIA AMBASSADOR (Sang's).—Strong Plants in single pots of this magnificent Bedding or Calceolaria are now ready, price 12s. per dozen. The Trade supplied.

"The plant is of robust compact habit, growing from 12 to 15 inches high; the flowers are produced in enormous trusses, tipped with scarlet, and the trusses so large and numerous as to give the appearance of an entire mass of bloom, rendering this the most splendid bedding plant in the country."—*Journal of Horticulture*, 1st of May, 1866. It does make a most desirable and showy pot plant for the Conservatory.

EDWARD SANG & SONS, Nurserymen and Seed Merchants, Kirkcaldy.

NEW VERBENAS.

JOHN KEYNES (Keynes' Bright scarlet, with white eye. The most beautiful scarlet bedder in the world, and rewarded by a First-class Certificate at the Horticultural Meeting without a dissentient voice, and also a Second-class Certificate at the Crystal Palace.

LADY JANE ELLIS (Keynes').—White, with a small crimson eye, and edged by a distinct and very distinct pale rosy ring. A very handsome variety, with large trusses, raised from New Horticultural Meeting. First-class Certificates at Horticultural Society and Bath. Price 5s.

MR. GLADSTONE (Keynes').—Dark scarlet, having a large light eye. Certificate at Horticultural Society. Price 5s.

ISA EGERTON (Keynes').—Bedding, one of the finest quality, and most effective, taking the bed well, and keeping its colour all the season. Price 5s.

KING CHARMING (Keynes').—Bright rose, with a ring round each petal, eye. A great favourite. Price 5s.

GEORGE EGERTON (Keynes').—Bright crimson. The King of all Verbenas. Guaranteed by J. Keynes to be the finest quality of Verbena in existence. Price 5s.

These Six Verbenas are a very carefully selected by J. Keynes himself, having seen them growing, and he has no doubt they will prove very first-rate, either as bedding or pot. Fine Plants in early May.

Plates of these fine Verbenas will be forwarded on receipt of 13 stamps.

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JOHN WATERER'S CATALOGUE of HARDY SCARLET and other HORSE RHODODENDRONS as annually displayed in the Royal Botanic Gardens, Regent's Park, can now be had on application.

It contains faithful descriptions of all the varieties really worthy of cultivation, as well as a selection of HARDY CONIFERS, with heights and prices, with ORNAMENTAL EVERGREENS, FOREST TREES, &c.

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CORSICAN PINE (Pinus Laricio), Seedlings and Transplanted; a large stock of well-grown plants at moderate prices.

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TWO MILLION SYCAMORE SEEDLINGS, 1-year, all good tops, 10,000 YEWS, English, in seed bed, some, but not all, transplanted plants, at 2s. per 100. Also EARLY IMPROVED LEMON KIDNEY POTATOS; a few tons cheap, to clear out. ASPARAGUS ROOTS for forcing, 2, 3, and 4-years, fine. Prices on application to

H. & R. Stirzaker, Skerton Nurseries, Lancaster.

HERBACEOUS and ALPINE PLANTS, the best sorts.

200 fine showy varieties	£4	0 0
100 do. do.	2	0 0
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A large variety of SPRING FLOWERS in pots.

Stubbs Brown, Seed Grower and Nurseryman, Sudbury, Suffolk.

TO BE SOLD or EXCHANGED, Three Plants of SKIMMIA OBLATA (scarce), and Three of AUCUBA JAPONICA FOEMINA VERA, well set with Berries. The above were purchased at Mr. Standish's sale last week, and will furnish cuttings.

Apply to C. Clark, Post-office, Stamford.

To the Trade.

STRONG PEAR STOCKS, extra bushy.
PORTUGAL LAURELS, 2 and 3 years.
SEEDLING SPRUCE. All very fine.
Lines upon application.

James Dickson & Sons, Newton Nurseries, Chester.

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THOMAS PAGE can supply strong, Fruiting and Succession PINE PLANTS of PROVIDENCE, MONTSERRAT, BLACK PRINCE, and JAMAICA, warranted clean and healthy. Also VINES with strong Canes, in large pots, for planting this season or fruiting early.

Turnbridge Nursery, Bradford, Yorkshire.

RASPBERRIES.—Cornwell's Seedling, 12s. per 100; Cutbush's Prince of Wales, 10s.; Seltzer's Scarlet Fotelds, 6d.; Carter's Prolific, 10s.; Red Prolific, 8s.; Double Bearing, 8s.; Evans's White, 10s.

STRAWBERRIES.—Bright Queen, Admiral Dundas, Sir Charles Napier, Elephant, Oscar, Rifleman, Myatt's Eliza, Keen's Seedling, Prince of Wales, Black Prince, 2s. per 100, or 15s. per 1000.

Strong GOOSEBERRY PLANTS, 10s. per 100.

ASPARAGUS, 2 years, 5s. 6d.; 3 years, 8s.; 4 years, 8s. per 100. Rooter, late Geo. Cornwall & Co., opposite Red Lion, Barnet, N.

THE LADY, a SEEDLING STRAWBERRY, raised by Mr. Underhill, who was the originator of Sir Harry. Plants are to be sent to be set out in lots of not less than 20.

All applications must be accompanied by a post office order, on Birmingham, postage stamps, or cash, to receive attention.

Prices of the Lady Strawberry Plant:—100, 2s.; 75, £4 5s.; 20, £2 0s.; 6, £1 0s.

Plants in Pots, not less than 10, at 2s. each; package included.

The above scale of prices will be slightly changed in August, 1866.

Mr. Underhill's "Handy-man" has a full stock of Strawberries, either in English, French, or German, may be had through the post price 1s. Address,

Mr. Richard Underhill, Sir Harry's Road, Edgbaston, Birmingham

10 Tons per Acre of INTERMEDIATE AUTUMN and WINTER CATTLE FOOD.

BLUNDELL'S CATTLE MELONS and CATTLE MARROWS.—100 Seeds, 2s. 6d.; ¼ lb., sufficient for ¼ of an acre, 5s.; ½ lb., sufficient for ½ of an acre, 9s.; 1 lb., sufficient for 1 acre, 16s.

For Improving our Native Flora, Enriching Woodland Walks, Wilderness, Shrubberies, Railway Embankments, Rockeries, Carriage Drives, beside Rivulets, &c. Cheap mixed FLOWER SEEDS for the above purposes, 3s. 6d. to 5s. 6d. per lb.; 7 lb. to 10 lb. per acre. Now is the time to purchase.

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Orders amounting to 21s. sent Carriage Paid.

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For Park Scenery, Islands, Select Plantations, Small Orchards, extensive Lawns, Mounds, Sub-tropical Gardens and Raised Flower Beds, also Verandahs and Rustic Arches, likewise Sloping Banks, &c., ORNAMENTAL GOURDS are exceedingly attractive both for their foliage and fruit. When ripe the fruit forms a unique Hall and Drawing-room Ornament.

The Gourd Seeds in warm localities may be sown early in May where intended to grow.

Selections of ORNAMENTAL GOURDS, including Miniature, Medium, and Mammoth varieties, or either separate 10 varieties, 2s. 6d.; 15 do., 3s. 6d.; 20 do., 5s. 6d.; 30 do., 7s. 6d.; 40 do., 10s. 6d.; 50 do. 12s. 6d.; 100 do., 21s.; 200, 42s.

PERMANENT PASTURE GRASS SEEDS and CLOVERS for ALL SOILS | FINE LAWN GRASS SEEDS for ALL SOILS

COMPLETE COLLECTIONS of VEGETABLE SEEDS for One Year's Supply (Carriage paid), 10s. 6d., 15s. 6d., 21s., 30s., 42s., 63s., 84s., and 105s.

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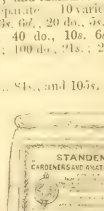

Sold in Canisters, 1s. and 2s. 6d.; and in Bags, 5s. 6d., 10s. 6d., and 21s., and in two qualities. No. 1 quality for Hard-wooded Stove and Greenhouse Plants, Fruit Trees, Roses, Lawns, Kitchen Garden Crops, and Flower Beds and Borders. No. 2 quality for Soft-wooded Plants. It is always laid on the surface dry, and watered in.

BARR AND SUGDEN, SEED, PLANT, and BULB MERCHANTS, 12, KING STREET, COVENT GARDEN.

CARTER'S

NEW AND CHOICE PLANTS FOR 1866.

WE BEG TO ANNOUNCE THAT WE HAVE

LATELY BECOME PURCHASERS OF THE ENTIRE STOCKS OF SEEDLINGS

OF SEVERAL CELEBRATED GERANIUM-GROWERS,

And have now in our possession some of the most splendid Strains of ORNAMENTAL-FOLIAGED GERANIUMS ever introduced. In the VARIEGATED SEEDLINGS there are many as far surpassing Mrs. Pollock and Sunset, as those two favourite varieties have surpassed Golden Chain and all the other older sorts; we shall at all times be most happy to exhibit our NEW SEEDLINGS to any of our Customers who may favour us with a visit at our Nursery at Perry Hill.

We propose exhibiting a set of our New Geraniums at the forthcoming International and other Metropolitan Exhibitions of 1866, where the public will have the opportunity of appreciating their very superior merits.

THE FOLLOWING NEW PLANTS WILL BE SENT OUT ON MAY 20, 1866:—

NEW CRYSTAL PALACE GERANIUMS.

The following varieties, raised by Mr. Gordon, the eminent Garden Superintendent of the Crystal Palace, were selected from several hundred carefully hybridised seedlings raised in the framing ground contiguous to the Gardens, where the immense quantities of Bedding Plants required for the summer decoration of the Crystal Palace Gardens are so skilfully propagated and raised, and where such ample opportunities occur for comparing and proving new varieties with all the best sorts already in cultivation.

These new varieties now offered are distinguished by immense size of bloom, great substance of petal, large truss, and splendid compact habit of growth; and in these properties far surpass any of the sorts at present in cultivation.

For Greenhouse and Conservatory decoration, also for Vases, and for single specimens in Parterres, they will be found invaluable; and from their hardy, dwarf, compact, free-blooming habit, combined with foliage having a very deep clearly-defined zone, they can be recommended as most suitable and effective Bedding plants.

The late Sir Joseph Paxton, who saw the first blooms on them, admired them very much; we have obtained the entire stock of the three varieties, and can most highly recommend them as three most beautiful and distinct Zonale Geraniums.

Souvenir de Sir J. Paxton (Gordon).

Bright rosy pink, pure white eye, a most delicate and pleasing colour, fine round flower, of good substance, often 5 inches in circumference, produced in immense large globular trusses, which keep well filled up in the centre, and remain in perfection a long time; deeply marked zonale foliage

Price 7*s.* 6*d.* each.

Crystal Palace Beauty (Gordon).

Fine bright fleshy salmon self-coloured variety, a very delicate tint, flowers of perfect shape, well reflexed; large truss, well set above the foliage, broad, nearly black zone on each leaf.

Price 7*s.* 6*d.* each.

Crystal Palace Gem (Gordon).

Brilliant cerise, or cherry red self, the most perfect formed flower that ever came under our notice, 4½ to 5 inches in circumference; very large trusses, with scarcely any tendency to seed; good dwarf compact habit, deep zoned foliage.

Price 7*s.* 6*d.* each.

New Bronzy-Scarlet Zoned Geranium Goldfinch (Goode).

This gorgeous variety was raised by Mr. Goode, gardener to the Rev. E. Parker, of Oxenden, from whom we have purchased the entire stock, and is by far the most striking of the golden-foliaged Geraniums yet sent out. When seen by us at a distance of 100 yards, bedded out by the side of Mrs. Pollock, it was infinitely the most effective bedding plant of the two, its bright golden foliage making Mrs. Pollock by comparison look quite dingy. It has a bushy, vigorous, dwarf, and compact habit, with foliage of great substance, 4 to 5 inches in diameter, margined with deep yellow; bronzy scarlet zone 1 inch in diameter, and bright golden yellow centre. The flowers, of vivid scarlet, are produced in great profusion in large trusses, and make a most perfect contrast with its handsome foliage. From its free-growing habit, we can unhesitatingly recommend it both as a first-class bedding plant and also as being equally suited for pot culture.

Price 7*s.* 6*d.* each.

New Miniature Bedding Geranium (in the way of Christine) Christabel (Simmons).

This uniquely beautiful miniature Geranium is a most desirable novelty, and from its great merits must speedily become an universal favourite. The raiser, the Rev. J. C. Simmons, of Kilvington Rectory, of whom we have purchased the entire stock, wrote of it in the autumn of 1864 as follows:—

"Herewith you have a truss or two of the Miniature Geranium. I have tried it both in and out of doors, and find it excellent. The small trusses of bloom appear on all sides, and as they will not seed, are of unusual duration; it strikes as freely as any other Geranium. The parent plant came into blossom in the spring, has been ever since, and is now in full flower (November 2). I recommend it for low growth, profusion of bloom, neat compact habit, and duration. The flowers sent are cut off at their greatest length. Short as the stalks are, they are always well above the foliage; you will judge of habit by this."

Again, on October 26th, 1865, he writes:—

"I have made further trial of my seedling Geranium Christabel, and find it most useful as an edging. You will observe by blooms sent that it is quite distinct in its general character; moreover, it never seeds, and is always in bloom. The parent plant has not been without flowers winter or summer for two years. The maximum height is about 6 inches, habit very compact, and blooms well above the foliage." Colour of flowers, a rich deep rose, like Helen Lindsay, produced in great profusion on footstalks about 2 inches long, but still well clear of the foliage, which is a light pleasing green plain leaf; habit exactly as above described, which high commendation we fully endorse.

Price 7*s.* 6*d.* each.

*** The Set, one plant of each of the above, for £1 12*s.* 6*d.*

NEW BEDDING LOBELIAS.

The many different and quite distinct shades now available in Lobelias, from the delicate shades of the following to the deep blue of L. speciosa, make them most valuable for bedding and general decorative purposes.

The following distinct varieties were raised by F. Stanton, Esq., Lewisham, rom whom we have purchased the entire stock:—

Starlight (Stanton).

A variety selected from thousands of Seedlings in 1864 for its peculiar compact habit of growth and profuse blooming qualities. It was proved again last season, and found to be a great improvement on all varieties at present in cultivation. Colour light blue, large white eye, with three distinct deep blue spots, a great improvement on L. Gordoni, as well as being quite distinct in its shade of blue.

Price 1*s.* per dozen; 2*s.* each.

Cambridge (Stanton).

A variety selected and proved at the same time as the above, to which it is quite equal in habit and profuseness of bloom. Colour of flower very light French blue, the most delicate and charming shade of light blue known.

Price 1*s.* per dozen; 2*s.* each.

Beauty of Ravensbourne (Stanton).

An exceedingly pretty dwarf variety, of miniature habit, forming very dense tufts, and producing a profusion of small mauve-coloured blossoms, with distinct pure white spotted purple centre; suitable for edgings to small beds.

Price 18*s.* per dozen; 2*s.* each.

New Bedding Tropæolum, Regent's Park Favourite (Don).

A variety raised by Mr. Don, at the Royal Botanic Gardens, Regent's Park, from King of Tom Thumbs and the Lobbianum Crystal Palace variety, retaining the peculiar qualities of the above-named in about equal proportions; it is an intermediate runner, of good habit for bedding purposes, handsome dark foliage, with a very brilliant deep scarlet flower; it is much esteemed at the Royal Botanic Gardens for early work, its very rapid growth producing full effect very early in the season.

Price 1*s.* per dozen; 2*s.* each.

NEW BEDDING PETUNIAS.

Nellie.

A variety selected from thousands of Seedlings in our vast seed beds at St. Osyth. Colour pure white, ground beautiful, striped and flaked with rich crimson lake, very constant. The peculiar beauty of a bed planted with this variety cannot be appreciated unless seen in a mass.

Price 18*s.* per dozen; 2*s.* each.

Beauty of St. Osyth.

A lovely flesh-coloured variety; quite a novelty in its particular shade, and forming, like the above an exceedingly pretty delicate bed.

Price 18*s.* per dozen; 2*s.* each.

New Variegated Selaginella denticulata fol. var.

This lovely variety is a sport from the old denticulata, very constant, and almost as free a grower as its parent; each terminal point is of a beautiful silvery white, producing a singular and very pretty effect

Price 3*s.* 6*d.* each.

*** *Prices of the above to the Trade on application.*

In the Press and will be published on the 21st inst., post free 1*s.* (Gratis to Customers),

THE ILLUSTRATED SPRING SUPPLEMENT OF CARTER'S GARDENER'S AND FARMER'S VADE-MECUM,

Containing complete Lists of New and Choice Stove, Greenhouse, and Bedding Plants, to which is added an Addendum, comprising original and practical articles on "Bedding Plants for Summer Garden Decoration," on "Variegated and Ornamental-foliaged Plants for Bedding," and 120 Geometrical Designs for Flower Beds, with reliable information for the proper combination of Bedding Plants to produce chaste and striking effects. The result of notes and practical observations taken during the past and previous summers at the Crystal Palace, Battersea Park, and the majority of the large gardens, both public and private, in the kingdom.

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NEW ZONALE PELARGONIUM WILTSHIRE LASS.—The finest Pink-coloured variety ever raised. Awarded two First-class Certificates. Plants ready on May 17 at 5s. each. See New CATALOGUE.
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Pelargonium Mrs. Pollock.

ALFRED FRYER offers healthy well-grown Plants of this beautiful Bedding PELARGONIUM at 12s., 15s., and 18s. per dozen for cash. All the plants are well established in 60-pots, and were struck in open borders last autumn.
Remittances requested from unknown correspondents.
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CHOICE VARIEGATED PELARGONIUMS.

Mrs. Pollock	Golden Vase	Rainbow
Sunset	Snowflake	Burning Bush
Yellow Belt	Picturata	Princess Alexandra
Golden Tom Thumb	Argus	Pontanebleau

The above 12 choice varieties, suitable for exhibition, for 21s., basket and packing included.
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CARTER'S GARDENER'S and FARMER'S VADE MECUM (illustrated) contains all the information necessary for the successful management of the Kitchen Garden, Flower Garden, Fruit Garden, Greenhouse, Conservatory, Stove, Vinery, &c.; also copious information on Farm Management. Post free, 66 stamps.
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CAMBRIAN COLLECTIONS of GARDEN SEEDS for 10s. 6d., 21s., 31s. 6d., and 42s., sufficient for One Year's Supply for Large and Small Gardens. Basket included.
CATALOGUES of SEEDS and WHOLESALE STOCK on application.
GEORGE DAVISON, Hereford.

ASTER.—GERMAN ASTER, the finest Strain in the kingdom.—Was awarded the First Prize at the Brighton and Sussex Horticultural Show (open to all England), in 1864 and 1865, and very highly commended in 1866. Packets, 6d. each.
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NEW and CHOICE SEEDS.—Bull's Verbena, Bull's Trapeolum, Cyclamen persicum grandiflorum, Giant 10-week Stock, Perfection Aster, Lilium auratum, Intermediate Stock, James' Prize Cineraria, Barr's Select Strain of Primula, each 2s. 6d. p. pkt.
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WALTER P. HUME has nice Plants now ready for Sale of all the leading varieties. Purchasers of large quantities will be liberally treated. DESCRIPTIVE and PRICED CATALOGUE free.
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Superb Double Hollyhocks.

THE FINEST COLLECTION EVER OFFERED TO THE PUBLIC.

W. CHATER has a large Stock of fine healthy Plants now ready, which he can supply on liberal terms.
See Advertisement at on other page.
Address, W. CHATER, Nurseries, Saffron Walden.

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12 finest sorts, 5s. ; 12 first-rate sorts, 3os
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12 good for decoration, 9s., or 50s. per 100.
The above are fine healthy Plants, and the stock consists of many thousands.
DESCRIPTIVE CATALOGUES of the above are now ready, and sent free on application. The usual discount to the Trade.
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LEE'S SUPERB HOLLYHOCKS, saved from choice named Flowers, in collections of nine distinct colours, post free, 2s. 6d.
A DESCRIPTIVE CATALOGUE of FLOWER SEEDS, containing all the Novelties of the season, may be had post free on application.
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SUB-TROPICAL FOLIAGE SEEDS, and other Novelties, post free.
PRICED LISTS, with cultural directions, free on application ; see also large Advertisement in *Gardeners' Chronicle*, page 249.
DOWNIE, LAIRD, & LAING, Stanstead Park, Forest Hill, S.E. ; and 17, South Frederick Street, Edinburgh

Flower Seeds.

ENGLISH and CONTINENTAL NOVELTIES for 1866.—See DESCRIPTIVE LIST in *Gardeners' Chronicle* of March 10, p. 244 ; also March 17, in first column of the Newspaper part. Offered by
STEPHEN BROWN, Seed Grower, Sudbury, Suffolk.
CATALOGUES sent free.

Bedding Plants, Bedding Plants.

JAMES HOLDER can supply VERBENAS, SCARLET and VARIEGATED GERANIUMS, DAHLIAS, CALCEOLARIAS, FUCHSIAS, PETUNIAS, LOBELIAS, GAZANIAS, KONIGAS, CUPHEAS, &c. 2s. dozen for 20s., 4 dozen for 10s. 6d. Hampers and package included.
Crown Nursery, Reading, Berks.

British Fern Catalogue.

ROBERT SIM can now send, post free for six postage stamps, Part I. (British Ferns and their varieties, 56 pages, including Index of Botanical Names) of his NEW and PRICED DESCRIPTIVE CATALOGUE of BRITISH and EXOTIC FERNS, No. 7.
*** Part II. (Exotic Ferns) will be issued as early as possible.
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To the Trade.

SCARLET GERANIUMS, 10s. per 100. CALCEOLARIA AUREA FLORIBUNDA, 7s 6d. LOBELIA SPECIOSA, 5s.
The above are strong plants, shaken out of cutting pots.
CATALOGUES of these and other plants on application.
SAMUEL COX, Nurseryman, Ludlow.

To the Trade.

TWENTY THOUSAND VERBENAS, extra strong plants, about 36 of the leading varieties, at 2s. per 100, packing included. Strong rooted Cuttings of the above, 12s. per 100.
All orders containing a remittance will meet with prompt attention. CATALOGUES gratis.
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For Dahlias apply to

G. RAWLINGS, who is permitted to announce that he supplied Clark & Co., and Mr. Boshell, of the Borough, for 16 years. Nearly 200 varieties, at 3s. per doz ; New ones of 1865, including LEAH, CHAMPION, and GEO. WHEELER, 9s. per doz.
CATALOGUES are ready.
Waterloo Road, Romford, Essex, E.

New Dahlias.

THOMAS BARNES has great pleasure in offering the undernamed SEEDLING DAHLIAS, feeling assured they will give entire satisfaction in every respect, the colours being new and distinct, the form perfect, and all quite constant.
Plants ready in May, 10s. 6d. each. No discount on Miss Tollemache when ordered alone.
DANE CROFT HERO.—Clear rose lilac, fine shape and habit, blooming well above the foliage, every bloom fit for show.
DAIRY MAID.—Deeded cream colour ; may be shown with whites and yellows, being perfectly distinct and very constant.
MISS TOLLEMACHE.—Peach, rose, or solferino ; unequalled in beauty, finest shape, constant, and of first-rate habit.
QUEEN OF ROSES.—Bright rose pink, beautiful shape and habit, decided rose colour, and very pleasing.
Dane Croft Nurseries, Stowmarket.

FINE GRASS LAWNS in FLOWER GARDENS, &c. —The great expense of cutting and carting Turves from a distance may be avoided, and a superior Turf produced in a few months by sowing SUTTON'S LAWN GRASS SEEDS, which consist solely of the finest and shortest-growing kinds, perfectly free from Moss and other weeds.

From Mr. JOHN JOHNSON, *Gardener, Mowbray Park, Sunderland, April 26, 1865.*

"The LAWN Seed we got last year about this time has come up excellently."

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"may add that the Grass Seeds you supplied last year, have (notwithstanding the very unfavorable season) succeeded very well."

SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

Established Upwards of a Century.

BUTLER AND MCCULLOCH'S Complete COLLECTIONS of VEGETABLE SEEDS for ONE YEAR'S SUPPLY, all of the Growth of 1865.

No. 1.	No. 2.	No. 3.	No. 4.	No. 5.
£3 3s.	£2 2s.	£1 10s.	£1 1s.	10s 6d.

All orders amounting to 21s. and upwards sent carriage paid.
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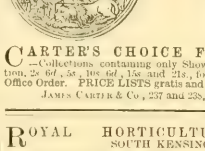

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ROYAL HORTICULTURAL SOCIETY. SOUTH KENSINGTON.
SHOW of EARLY AZALEAS, ROSES, and SPRING FLOWERS, THURSDAY, April 12, 1866

AWARDS OF THE JUDGES.

CLASS 1.—3 AZALEAS, distinct. (Nurserymen.)
1st, Mr. C. Turner, Slough, £5.
2d, Messrs. H. Lane & Son, Great Berkhampstead, £1 10s.

CLASS 2.—6 AZALEAS, distinct. (Amateurs)
1st, Mr. T. Todman, Gr. to R. Hudson, Esq., Clapham Common, £2.

CLASS 3.—6 AZALEAS, distinct. (Nurserymen)
1st, Mr. C. Turner, £3 10s.
2d, Messrs. H. Lane & Son, £1.

CLASS 4.—3 AZALEAS, distinct. (Amateurs.)
1st, Mr. Thos. Todman, £1 10s.
2d, Mr. Wm. Young, Gr. to E. Barclay, Esq., Highgate, £1.

CLASS 5.—AZALEA, Single Specimen. (Open.)
1st, Mr. C. Turner, £1.
2d, Messrs. H. Lane & Son, 15s
3d, Mr. Wm. Paul, 10s.

CLASS 6.—9 ROSES in POTS, distinct. (Nurserymen.)
1st, Mr. C. Turner, £2.
2d, Messrs. Paul & Son, Old Nurseries, Cheshunt, £1 10s.

CLASS 7.—6 ROSES in POTS, distinct. (Amateurs.)
3d, Mr. J. James, Gr. to W. F. Watson, Esq., Isleworth, £1.

CLASS 8.—NEW ROSES in POTS, of 1865, not fewer than 6 kinds. (Open.)
1st, Mr. Wm. Paul, Paul's Nurseries, Waltham Cross, £2.
2d, Messrs. Paul & Son, £1 10s.
3d, Mr. C. Turner, £1.

CLASS 9.—ROSE, Single Specimen in Pot. (Open.)
1st, Mr. Wm. Paul, £1.
2d, Messrs. Paul & Son, 15s.

CLASS 10.—6 CINERARIAS, distinct. (Open.)
1st, Mr. George Fairbairn, Gr. to the Duke of Northumberland, Isleworth, £1 10s.
2d, Mr. D. Clarke, Alton Cottage, Whitton, near Hounslow, £1.
3d, Mr. J. James, 15s.
Extra do., Mrs. Hooke, Melville Lodge, Fulham, 10s.

CLASS 11.—6 CALCEOLARIAS, distinct. (Open.)
1st, Mr. J. James, £1.

CLASS 12.—6 AMARYLLIDS, distinct. (Open.)
1st, Mr. W. Young, £1 10s.

CLASS 13. 12 AURICULAS, 3 Grey-edged, 3 White-edged, 3 Green-edged, and 3 Selfs, distinct kinds. (Nurserymen)
1st, Mr C. Turner, £1 10s.

CLASS 14.—8 AURICULAS, 2 of each Class, distinct. (Amateurs)
1st, Mr. J. James, £1 10s.

CLASS 15.—6 ALPINE AURICULAS, distinct. (Open.)
1st, Mr. C. Turner, £1.
2d, Mr. J. James, 15s.

CLASS 16.—6 POLYANTHUS, distinct. (Open.)
1st, Mr. John Wiggins, Gr. to W. Beck, Esq., Isleworth, £1.

CLASS 17.—4 CYCLAMENS. (Amateurs.)
1st, Mr. J. Wiggins, 15s.
2d, Mr. G. Fairbairn, 10s.
3d, Mrs. Hooke, Melville Lodge, Fulham, 5s.

CLASS 18.—COLLECTION of CYCLAMENS. (Open.)
1st, Messrs. E. G. Henderson & Son, Wellington Nursery, St. John's Wood, £1 10s.
2d, Mr. J. Wiggins, £1.

CLASS 19.—24 PANSIES, cut blooms, 12 distinct kinds. (Open.)
1st, Mr. J. James, 10s.
2d, Mr. H. Hooper, Widcombe Hill, Bath, 5s.

CLASS 21.—MISCELLANEOUS COLLECTION of PLANTS in FLOWER. (Open.)
Extra, Mr. Geo. Fairbairn, for a Collection of Flowering and Foliage Plants, £2 10s.
Extra, Messrs. H. Lane & Son, for a Collection of Azaleas, £2.
Extra, Mr. Wm. Bull, Chelsea, for a Collection of New and Rare Plants, £2.
Extra, Messrs. J. & C. Lee, Hammersmith, for a Collection of Plants in flower, £1 10s.
Extra, Messrs. Paul & Son, for a Collection of Cut Roses, £1 10s.
Extra, Mr. Wm. Paul, for a Collection of Roses in pots, 1l. 10s.
Extra, Messrs. H. Lane & Son, for a Collection of Rhododendrons, 10s.
Extra, Mr. Wm Bartlett, Hammersmith, for a Collection of Plants in Flower, and Bulbs, 1l. 10s.
Extra, Messrs. F. & A. Smith, Dulwich, for a Collection of Plants in Flower, 1l.
Extra, Mr. Wm. Young, for a Collection of Foliage and Flowering Plants, 1l.
Extra, Messrs. J. & C Lee, for 6 Standard Azaleas, 10s.
Extra, Mr. Wm. Paul, for a group of Lilies of the Valley, 10s.
Extra, Mr. H. Beasley, for a Collection of Plants in Flower, 10s.
Extra, Mr. Thos. Rumsbie, Esq., for a Box of Citrons, 7s. 6d.
Extra, J. Luscombe, Esq., for Cut Hybrid Rhododendrons, 7s. 6d.
Extra, Mr. W. Young, for Cut Camellias, 7s. 6d.

ROYAL BOTANIC SOCIETY'S SPRING EXHIBITION, April 7, 1866.
LIST OF AWARDS.
6 AZALEAS. (Amateurs.)
1st, Mr. G. Wheeler, Gr. to Sir F. H. Goldsmid, Bart., Regent's Park
6 AZALEAS. (Nurserymen.)
1st, Mr. C. Turner, Slough, Bucks
2d, Messrs. H. Lane & Son, Great Berkhampstead, Herts
3 NEW AZALEAS.
1st, Messrs. H. Lane & Son
2d, Messrs. J. Ivery & Son, Dorking and Reigate
3d, Mr. C. Turner
6 CINERARIAS. (Amateurs)
1st, Mr. J. James, Gr. to W. F. Watson, Esq., Isleworth
2d, Mr. R. Cox, Gr. to Capt. Cahill, Southall, Middlesex
3d, Mr. R. Marcham, Gr. to E. Oates, Esq., Bydorp House, Hanwell
6 CINERARIAS. (Nurserymen.)
1st, Mr. W. Clarke, Whitton, near Hounslow
6 AMARYLLIS.
1st, Mr. W. Young, Gr. to R. Barclay, Esq., Highgate
12 LILIES of the VALLEY.
1st, Mr. W. Paul, Nurseryman, Waltham Cross
12 BRITISH FERNS.
1st, Messrs. J. Ivery & Sons
6 BEGONIAS.
1st, Mr. G. Wheeler, Gr. } 2d, Mr. W. Young, Gr.
3d, Mr. R. Marcham, Gr.
6 FOLIAGE and FLOWERING PLANTS.
1st, Mr. B. S. Williams, Nurseryman, Holloway
2d, Mr. J. Wheeler, Gr.
3d, Messrs. F. & A. Smith, Nurserymen, Dulwich
MISCELLANEOUS COLLECTIONS.
Silver Medal to Messrs. H. Lane, for Collection of Azaleas
Small Silver Medal to Messrs. H. Lane, for Collection of Rhododendrons
Small Silver Medal to Messrs. Paul & Son, Cheshunt, for Collection of Cut Roses
Small Silver Medal to Mr. W. Paul, for Collection of Flowering Plants
Small Silver Medal to Messrs. E. G. Henderson & Son, for Collection of Cyclamen
Bronze Medal to Mr. E. Ballinger, Gr. to F. Shadbolt, Esq., for Collection of Gloxinias
NEW PLANTS.
First-class Certificate of Merit to Messrs. E. G. Henderson & Son, for Cytisus cristatus fol. variegatis
Ditto, to Mr. W. Paul, for Pelargonium Rebecca
Ditto, to Messrs. F. & A. Smith, for Cineraria Perfection
Ditto, to Mr. W. Bull, for Maranta splendens
Second-class Certificate of Merit to Mr. W. Bull, for Dieffenbachia picturata
Ditto, to Mr. W. Bull, for Aspidistra Sieboldi
Ditto, to Messrs. F. & A. Smith, for Azalea Magnum Bonum

HORTICULTURAL SOCIETY of LIVERPOOL. FIRST GREAT EXHIBITION of ROSES, ORCHIDS, FERNS, &c., JULY 3 and 4, in ST. GEORGE'S HALL. The following, and other liberal Prizes, will be awarded :—

72	CUT ROSES, distinct (Nurserymen),	1 Truss,	£8, £4.
48	,, ,,	3 Trusses,	£6, £3, £2.
24	,, ,,	3 Trusses,	£3, £2, £1.
24	,, ,,	1 Truss,	£3, £2, £1.
24	,, (Amateurs),	1 Truss,	£4, £3, £2.
18	,, ,,	1 Truss,	£3, £2 5s., £1 10
6	,, ,,	3 Trusses,	£3, £2 5s., £1 10s.
10	EXOTIC ORCHIDS (Open), £10, £7, £5.		
6	(Amateurs), £6, £1, £2.		
18	FERNS (open), £8, £6, £4.		
12	,, ,, £5, £3, £2.		
3	TREE FERNS ,, £4, £3, £2.		
12	ORNAMENTAL FOLIAGE PLANTS (Open), £5, £3, £2		

Liberal Prizes will be awarded to Plants of Merit. The Hall is close to the London and North Western Railway Station.
For Schedules and every information apply to ROBT. W. KER, Hon. Sec., 1, Bassett Street, Liverpool.

KINGSTON and SURBITON ROYAL HORTICULTURAL SOCIETY.—The SECOND GREAT EXHIBITION of FLOWERS, FRUITS, and VEGETABLES, of this Society, will be held on WEDNESDAY, June 13, 1866, in the grounds of the Woodbine, Queen's Road, Kingston, by the kind permission of Mr. CHAS. COOPER. Rules and Schedules, and further information can be had on application to the Secretary,
Mr. J. KIRK, 5, Queen's Place, Canbury, Kingston.

The Gardeners' Chronicle.

SATURDAY, APRIL 14, 1866.

MEETINGS FOR THE ENSUING WEEK.

TUESDAY, April 17	{	Royal Horticultural Floral and Fruit Committees, at South Kensington	11 A.M.
		Botanic Scientific Discussion	3 P.M.
		Linnean	8 P.M.
THURSDAY, " 19		Zoological	4 P.M.
SATURDAY, " 21		Royal Horticultural Weekly Show, at South Kensington	2 P.M.
		Royal Botanic Third Spring Show	2 P.M.

We beg to call the attention of gardeners and exhibitors to two short advertisements which appear to-day in our columns, relating to the INTERNATIONAL HORTICULTURAL EXHIBITION. The one reminds intending exhibitors that the time has come to take the usual steps to secure a portion of the available space ; the other reminds gardeners that special privileges have been granted to them on the score of admission, of which if they seek to avail themselves, they must apply without delay in the proper quarter.

The exhibitors will, we hope, allow us to urge on them the importance of attending to the matters which the advertisement in question brings before them. An attempt is to be made to create a much grander effect than our English exhibitions have hitherto presented, by a better arrangement of the materials brought together. This is not, let us assure the exhibitors on official authority, to be brought about by breaking up their collections, and distributing the fragments hither and thither, but after careful study, by placing the subjects forming the different classes just where they will, as small groups, be most telling. In this way a much greater variety of treatment than usual will be secured ; while the competing collections will still be kept side by side, as indeed is necessary, not only for the sake of the judges, but also in order to obtain the full benefit which should result to Horticulture as a science, from the stimulus afforded by close comparisons of realised results, either by those who come forward as champions in the contest, or those who are but interested spectators of the

struggle. Now, to enable those in charge of the arrangement of the plants to make this attempt with a fair prospect of success, the exhibitors must do their part, and that part is a very easy one, namely, to fill up the entry forms with exactness, to give a fair estimate of the space they require under each class, and to take care to show whatever they enter, and not, as is too often the case, to hold back, or to change their collections at the last moment. This latter course indeed renders any exact and studied arrangement impossible, and is more damaging to the general appearance of an exhibition than any other single cause whatever.

A week after the returns above referred to are sent in, the exhibitors will be asked to furnish a list of the plants to be shown, in order that they may be inserted in the Catalogue. Here, again, a little trouble on the part of the exhibitor will provide the public with information which it will fully appreciate; and though it may happen that in a few cases a plant which it was expected would be shown may not prove to be presentable at the time, a notice of any substitutions for the subjects of the original list sent in some three or four days before the opening —a very small labour to fall upon individual exhibitors, and for which provision can readily be made by the issue of duplicate 'forms'—would prevent any serious errors from appearing in the Catalogue. Those who exhibit new plants or special rarities will, we believe, be allowed to refer to full descriptions of them in the advertising sheet of the Catalogue.

Those whose lease of life has been sufficiently long to admit of their taking a retrospective glance at the gardening of the last quarter of a century, and a little more, must have noticed the different phases which Practical Gardening has gone through, and many no doubt have noted the result. Thirty years ago gardening professors depended mainly upon the blind empiricism of practical detail—they did certain things because their fathers or preceptors had done so before them; and those who had even a slight glimmering of the why and wherefore of their proceedings, were few and sparsely located. Nor was this want of a knowledge of first causes confined to out-door practitioners only, for those who aspired to the management of exotic plants, or under-glass gardening, were scarcely better informed. In fact cultivation was a sort of "hit or miss" at a certain end, and that man was the best exponent of the views of the times, who the most systematically carried out this kind of rule-of-thumb practice. Thus certain things must be done upon certain days; certain soils in given proportions must be used; and in in-door gardening certain temperatures must be maintained by night as well as by day. To fail in securing the exact degree of temperature in a Pine stove or plant house was a crime of omission in the young gardener frequently expiated by dismissal, or a reduction to the ranks of out-door operators, and we well recollect the subterfuges that used to be resorted to in order to keep things quiet.

In those days gardeners were specially practical. They knew from experience the manipulation of soils and composts. A few experts could pot a plant as well as it could be potted at the present time, whilst some few had advanced as far as the use of "composition water," or liquid manure. We perfectly recollect the secrets and mystery connected with the periodical shifting of the Pines—the preparation of the soil, the mode of potting, and the component parts of the liquid manure. No apprentice was initiated into these mysteries of the Pine stove until the last year of his service, and then he had strict injunctions not to divulge the knowledge with which he had been furnished.

But our preceptor, and in fact progenitor, was a man of mark, and had a right to be proud of his success. From a full-size oil-painting now hanging before us, we find that so early in the English history of the Pine-apple as September, 1813, he cut a Cockscomb Pine (now called Enville) weighing 8½ lb., a weight which has been rarely exceeded up to the present time. This Pine was sent through the late Mr. Afton, of Kew, to his Majesty George IV., and Mr. Afton had models of many other Pines grown about the same time, in the same establishment, of proportionate size. We introduce this "link" of the Pine growing of the past, and shall now proceed to consider the Pine growing of the present and future.

To wade through Speechley, Nicoll, Abercrombie, and more of the earlier authors would be only to waste time; their works may be regarded more as histories of Pine growing than treatises upon its cultivation. Indeed the first really systematic directions for the management of the Pine which came under our cognisance were written by Mr. Thomas Appleby in Loudon's "Gardeners' Magazine" some 30 years ago. About the same time Thomas Andrew Knight, one of the founders, and the then President of the Horticultural Society, and some of his followers, were advocating the culture of the Pine in curvilinear iron-roofed houses without air, and without bottom-heat for the roots, a system which resulted in much disappointment, and in many deaths among the plants. Indeed it is *now* difficult to understand how an observer of Mr. Knight's turn of mind, and who was then the first vegetable physiologist of the day, could have fallen into such a blunder. Shortly afterwards followed the treatise of our good friend the late Mr. Robert Glendinning, then gardener to Lord Rollé; and shortly afterwards, in the "Gardeners' Magazine," came the broad common-sense views of Mr. James Barnes, who succeeded Mr. Glendinning at Bicton. These treatises led to a revolution in Pine growing, a revolution which was completed when Mr. Glendinning returned from a Continental tour, and gave in this Journal the history of the Meudon system of Pine growing, which history was well backed up by specimens of the Queen Pine 6 to 8 lb. in weight, grown upon very small plants, and subsequently corroborated by the visit of the late Professor Lindley to Meudon, to see the Pines in question. Then followed Mr. Mills' 15½ lb. Providence, and two or three smaller fruits of the same variety; but as Mr. Mills never succeeded in repeating the feat, we shall not be far wrong in regarding these monster productions as accidents, originating from the lapse of time, and unbounded resources, rather than from any decided novelty in the management.

Such may be considered the history of Pine cultivation to a very recent date, and while we are writing, a treatise * has come into our hands, which, from the cursory glance we have been able to take at it, we shall have much pleasure in referring to in a subsequent notice. We have read sufficient to convince us of the sound practical nature of the directions, and of the certain success that must result from following them. Mr. Thomson's object appears to have been to reduce Pine growing to a system that will produce fruit at a certain time without failure, and in that he has succeeded. His [illegible] with our own, that we have no doubt of his success, and recommend the book with perfect confidence.

[illegible] connexion [illegible] that Introduced Plants should in certain cases supplant those of indigenous growth, and establish themselves as if they were the original inmates of the soil. That, however, is so, and has been frequently recorded in the case of naturalisation by cultivation. It is now, it appears, in course of contemplation as regards the Flora of Pennsylvania. From a statement in *Les Mondes* we learn that the plants introduced to that North American State are invaded by others of foreign origin, and are rapidly growing wild around them. Those plants, it is observed, which in one of the first botanists of the United States has described as rare, have become abundant and established in the valley of the Susquehanna; while numerous plants not indigenous have appeared in the courtyard of the prison at Philadelphia. In the latter case it might be supposed that the foreign plants had been introduced with the weed on which the prisoners have been employed, but the change of the Flora upon a large scale is attributed to the extension of railroads. It was even feared that before long the foreign Flora would replace the indigenous.

—— M. Reveil, whose loss science has recently had to deplore, had, it appears, sent in for competition before the Paris Academy of Sciences an essay treating on the Action of Poisons upon Plants. According to his observations, not only mineral acids but organic acids, as citric, tartaric, &c., in the form of a dilute solution (one part to 1000) soon cause the death of plants by which they are absorbed. It is the same with several saline solutions and mixtures much diluted with alcohol or ether, all substances which, in that state, would be absorbed with impunity by animals. The referees by whom this paper has been considered have marked their appreciation of the labours of the author by the award of an honourable mention.

—— The qualities of the Iresine Herbstii or Achyranthes Verschaffeltii seem to be as much debated on the other side of the Channel as on this. In a recent Number of the *Revue Horticole* we read an energetic protest in favour of the plant from the pen of M. Lemaire, who repudiates indignantly the aspersions cast upon it by M. Naudin.

— M. Carrière describes in the last Number of the *Revue Horticole* three curious varieties of trees. The first, Acer platanoides quercifolium, resembles the type in appearance, but has cucullate leaves. The second, Populus alba laciniosa, has very flexuose stems and branches, and cucullate leaves. These two varieties were received from M. Barthère, of Toulouse; while the third, Broussaltia papyrifera asplenifolia, is a seedling obtained by M. Carrière himself, and which has its leaves hollow on the upper surface, so as to form a cup, which holds water. The buds, too, are of a reddish-brown colour, and lengthened into a point, and the leaves are for the most part opposite, instead of alternate.

—— We learn with much pleasure that the degree of D.D. has been conferred by the University of St Andrews on our excellent and highly-valued correspondent the Rev. John Smith, of Ecclesmachan, who, moreover, as the descendant of the late Mr Smith of Hopetoun Gardens, is quite one of ourselves. We trust our talented friend may long enjoy his well-earned honours.

The French Académie des Sciences has just elected M Trécul a member of the botanical section of their august body, the other candidates being M. Chatin, M. Arthur Gris, M. Baillon, and MM. Bureau and Prillieux.

— Among other novelties and rarities to be exhibited at South Kensington on Tuesday next, we have been informed that Dendrobium McCarthiæ will probably be included. This is the fine or "Ramsmouth flower" of Ceylon, and is spoken of as one of the most beautiful of its tribe.

ORCHARD HOUSES.

Although, being an amateur, I cannot expect to throw any new light upon mere manipulatory details with respect to these structures, still the success which has attended me in early and late fruits at home growing upon a somewhat extensive scale, may tend to give many an enquirer in the orchard-house system of culture some little confidence by proving that patience and perseverance, assisted by an ordinary amount of intelligence and energy, can overcome what at first sight appears to be insurmountable in the undertaking. Take for instance the case of growing splendid fruits of the more delicate kinds, such as Grapes, Apricots, Nectarines, and Peaches, to perfection inside of a tenement which at the first glance appears to be subversive of all the important laws of Nature, which give unrestricted root-room, as to almost warrant the obstacle at first met with. And yet this system, will in time become, if not universal, at any rate a common object of interest in almost every garden.

By accident I met with Mr Rivers' valuable little work on Orchard-house Cultivation in the autumn of 1861, and being about to build a wall some 150 feet long, in place of an old Privet hedge which divided my garden from a public lane-gate, I determined to cover the wall with sash and boldly try the experiment so successfully carried out by Mr. Rivers. My wall being built by January 1862, I purchased what timber I required and made something on a similar construction to Mr. Rivers', with the exception of material, using the 3" by 2" for the top of the wall. I confess that the work I had undertaken was very much harder than I had anticipated, but by dint of perseverance to the few leisure moments I could spare from business engagements, I completed the first portion in two months. I obtained a glazier to put the glass on, and a painter to give it the last finishing touch. Although I was rather proud of my or hard nurse, for although it was not perhaps as endless as the last 70 feet built the next summer by a regular carpenter, having no time then at my own disposal, till it was a substantial and useful structure, and was made to the grass-sheds at each end, and weather-tight at the back, and shutters in the front, so as to ensure perfect ventilation. The expense, including glass and the value of some timber I had by me and had worked up, was about 10s per lineal foot, exclusive of the brickwork, as I built for the wall. I then purchased some Peach, Apricot, Nectarine, Pear, and Plum trees from various nurserymen. My house is now 130 feet long and contains about 200 trees, all in the most exuberant health, and after four years' treatment literally covered with blossom-buds. Immediately on receiving my trees I repotted them in maiden loam, and in 1863 I had a most abundant crop. In the autumn of that year, I obtained a large quantity of a clay-soil, and had it thrown upon some garden ground from which Potatoes had been removed. This was well turned over, and with it I have repotted my trees each autumn since, keeping strictly to the hard ramming recommended by Mr. Rivers. Each succeeding spring has witnessed a most splendid bloom on every tree, followed invariably by a magnificent crop. Every spring, after constant artificial fertilisation, when all danger from frosts is over, every plant is turned out of doors to ripen its fruit in succession, which I find by experience to greatly improve the flavour of the fruit.

After four years of careful and successful culture my 200 trees show, at the present moment, an unusual amount of vigour, with every prospect of bearing another splendid crop of fruit. My rule has been to paint them well with Gishurst Compound in the winter, and to syringe them with pure water twice a-day in the summer until the fruit begins to colour. Since the erection of my orchard-house, I have never allowed the ventilators to be closed, except upon two or three nights of very severe frost. I have thus ensured in

* A Practical Treatise on the Culture of the Pine-apple, by David Thomson Archerfield Gardens, Haddington William Blackwood Edinburgh and London.

spring, summer, autumn, and winter a free current of air through the house, to which I attribute much of my success.

So far as present experience goes, the whole success of the orchard-house system of cultivation depends upon the summer pinching, the attentive potting, the hard ramming, perfect ventilation, and a plentiful but judicious supply of water to roots and leaves during the summer and autumn. Of Peaches I have some of the best known kinds, I think for extreme beauty of colour, size of fruit, and superb flavour, that the Reine des Vergers bears off the palm. Pitmaston Orange, Elruge, and Hunt's Tawny, I class first as Nectarines, for good bearing qualities, and fine flavour.

Since the erection of my house a great advance has been made, both as regards their cost and suitability, in these structures. I should never again build, but get Sir Joseph Paxton's patent houses, or what will be I think, to me, equally good and cheaper—those brought out by an ingenious tradesman of this town —Mr. Tucker—which answer all the purposes of the more expensive structures. The amount of head-room given by the almost semi-circular roof in the houses last-named is an important advantage compared with having a low roof, and being compelled to lower the walk inside to give height.

Every one interested in gardening must, I am sure, hail the marked reduction in the price of horticultural buildings of this description as a very great boon, inasmuch as it will render the delicious Peach, Apricot, and Nectarine more accessible to tables remote to the home where they are now rarely to be had in luxuries, to say nothing of the interesting and profitable employment such structures may be made to furnish to the amateur gardener, preventing as they do, the mind from lying fallow even during the few leisure moments of dull weather.—*J. H., Leamington.*

EXTRACTS FROM THE JOURNAL

OF Mr. JOHN GOULD VEITCH,

DURING A TRIP TO THE AUSTRALIAN COLONIES AND THE SOUTH SEA ISLANDS.

New Zealand [N.S. *Wales*]. Vegetable gardening in the vicinity of Melbourne is quite in its infancy, but on considering what a short space of time there has been formed, and how young everything connected with it is, one cannot help be surprised. On the whole, there would appear to be a very general and liberal taste for gardening. There are [illegible] but few or them are [illegible] difficulty of obtaining skilled labour are the chief causes of this, these appear to be the great drawbacks to horticultural operations in Victoria, and deter many from taking an interest in gardening.

The only private establishment that I visited, worthy of notice, is that of Mr. Hugh Glass, of Flemington, about three miles out of Melbourne. The pleasure grounds are 25 acres in extent, and contain one of the most complete collections of Coniferæ and ornamental trees and shrubs in the colony. The garden is admirably suited for the growth of a collection of plants. Gradually falling from the summit of a hill, on which Mr. Glass's residence is built, to the margin [illegible] of water, it [illegible] admits of each plant being specially accommodated. Mr. Ferguson the head gardener, who has been many years in charge of the establishment, has evidently [illegible] taken advantage of the existing capabilities of the ground, and formed a series of [illegible] which a number of [illegible] and pieces of statuary [illegible] appropriately arranged.

Four ornamental greenhouses have been erected close to the dwelling house, viz., two conservatories, an aquarium, and a propagating and Orchid-house combined. These houses are generally very gay with flowering and foliage plants, &c., Mr. F. succeeds admirably in the growth of almost all classes of plants, both tropical and hardy. A kitchen garden is placed as an Orangery, but the Victorian winters are almost too cold to admit of success. Amongst the imported tree and shrub which I particularly noticed as doing well are Wellingtonia gigantea, 8 feet high; Abies Douglasii, Webbiana, Lasiocarpa, and amabilis; Pinus Cembra, Sabiniana, insignis, Benthamiana, and Macedonica; Araucaria excelsa, Bidwillii, Cunninghamii, and imbricata; Cedrus Deodara, atlantica, and Libani; Cupressus Lawsoniana, Lambertiana, macrocarpa, and funebris; Thuja Lobbii, aurea, and Kingsmillii; Rhododendrons, Azalea indica, Gynerium argenteum, Rhus cotinoides, Laurustinus, Magnolias, Portugal Laurel, Limestone, &c.

I was much pleased with the Victorian nurseries; altogether they are the most practically arranged of any in Australia. The stocks are large and generally in good order, and are continually being added to by importations from Europe. There is a very decided spirit in Victoria for the introduction of any novelty which may be likely to prove of use or ornament to the gardens of the colony.

The principal establishments near Melbourne are Messrs. Harrison and M'Millan's, of South Yarra, which contains examples of several of the finer and large stock of Conifers and shrubs in pots. Mr. Harris's establishment, also in South Yarra, is very nicely kept. There are three or four houses and a considerable stock of soft-wooded and herbaceous plants, Conifers, &c.

Mr. Scott's, of Hawthorn, was one of the first nurseries established in Melbourne. Mr. S. cultivates a good collection of Ornamentals, Evergreens, and soft-wooded Plants, and in addition to the usual kinds of shrubs and Conifers many recently introduced Japanese kinds. All Japanese plants seem to be peculiarly suited to the climate. Mr. Bramming's nursery at St. Kilda, although not so old as some others, is fast rising to be one of the first. The whole establishment is kept in a beautiful order, and the stock as well grown as in a European establishment. Mr. B. devotes his especial attention to Roses, and annually imports the newest French and English varieties, regardless of expense. Fr. China Rose is found to be the best stock for Australia, and so rapid is the growth of the Rose, that by having a supply of stocks ready to work on the arrival of a case of novelties from England, fine plants can be sent out the same season. The largest nurseries for the growth of fruit trees and general out-of-door stock, are those of Messrs. Perry, of Heidelberg; Messrs. Johnson, of Thomastown; and Messrs. Smith, of Riddles' Creek. At the last-named establishment I saw Lilium auratum in bloom; it was, I believe, the first that had flowered in the country. There is no doubt of this plant thriving admirably in the open air in Australia.

Being desirous of seeing some of the famous gold fields which have added so much to the prosperity of Australia, I paid a visit to Ballarat, taking Geelong on my way. The latter is two hours' ride by train from Melbourne, and the former four.

Geelong is one of the prettiest seaport towns that I have seen in Australia. It is situated at the head of a beautiful bay, being otherwise surrounded by rich agricultural, hilly country.

The view from the rising ground overlooking the town and bay struck me as being particularly picturesque. The neighbourhood of Geelong is a prosperous agricultural district. Vines are found to thrive admirably, and a very considerable extent of country is already devoted to their culture, so that it bids fair to become quite a wine-making district.

Geelong has a large and prettily situated Botanical Garden, under the directorship of Mr. Bunce. At present it contains but a small collection of plants, and is worthy of any especial note. The Government of Victoria seems to be devoting its attention and funds for the present almost entirely to the Melbourne Garden. A little outlay, however, would render that of Geelong very pretty, and the principal feature of the town. There are two nurseries near Geelong, viz., Mr. Wyatt's, of Fryansford, and Messrs. Adcock's. Both of these are devoted entirely to the growth of fruit trees and ornamental trees and shrubs; the former is peculiarly neat and well kept. I was astonished to find an establishment in a remote part of Australia which might bear favourable contrast with any English provincial nursery.

The ride by train from Geelong to Ballarat is devoid of interest. The country is flat, and almost entirely covered [illegible] and Brown Gum-tree. Eucalyptus forest.

Ballarat, although not remarkable for any especial beauty, is a wonderful specimen of the power of gold, and of what it can accomplish in a short space of time. Twenty years ago there was not a house to be seen, yet there is now a settled population of over 22,000, and it is in every respect a well-built and thriving city. Numerous additions are being worked in all directions, some of them even in the very town itself. All surface gold [illegible] has disappeared, and it is now necessary to invest capital and sink shafts, often 300 or 400 feet in depth, to obtain the coveted metal. The mines are worked night and day incessantly, and at the present time produce about 7000 oz. of gold per week. Ballarat lies much higher than Melbourne, and is particularly bleak and cold. Experience teaches me that a wet cutting day is quite as cold as a mid-winter's day in England. The agricultural districts deserve a second notice; they are ranked as amongst the finest in Victoria, producing a continual succession of splendid crops of all kinds of grain, fruit, vegetables, &c. The soil is wonderfully rich and productive. My visit to Ballarat was rendered of especial and unexpected interest through the kindness of Mr. Lang, of the firm of Messrs. Lang & Elliott, nurserymen and seedsmen of the town. Mr. Lang being one of the first settlers in the district, and having seen the formation of the town from its infancy, was able to give me every information, and to show me all objects of interest.

Messrs. Lang & Elliott's seed warehouse and greenhouses are in the town itself; the latter are devoted to the cultivation of new European introductions, and a collection of soft-wooded plants. An out-of-door nursery of 30 acres is situated at Warhenheip, five miles out of Melbourne. This establishment contains a large collection of fruit, forest, and ornamental trees and shrubs, and is probably the first of its kind in Australia. The climate being favourable, and the soil everything that can be desired, almost all classes of plants thrive well. Amongst other things Messrs. L. & E. have succeeded, after many failures, in importing a very complete collection of Dutch bulbs, and are now propagating large quantities of Hyacinths, Tulips, Crocus, &c. Messrs. L. & E.'s is one of the few Australian establishments that I have seen managed on a large scale with the order and method of an English nursery. Specimen trees of all newly introduced fruit and ornamental trees are permanently planted to prove their adaptability to the climate, and correctness to name.

I may mention that layering is the favourite mode of propagation throughout Australia. Almost everything takes to being layed, whereas cuttings often fail from the excessive dryness and heat of the atmosphere. A well-kept stoolery consequently becomes the most important part of an Australian nursery.

ARTIFICIAL MANURES.

THANKS to Mr. Lawes and other agricultural chemists, our farmers now have an abundant supply of artificial manures suited to every kind of crop they grow, and sold at even reasonable prices. Why gardeners should not be equally well served is inconceivable, unless the supposition is, that the immense variety of plants which they cultivate would demand a correspondingly large variety of manures. This is, however, a mistake, for the requirements of the gardener may be full met by a couple or even a smaller number of artificial manures than are now offered to the farmer, and I am even convinced of the efficacy of an artificial manure and that it could be obtained of a known strength, and free from offensive smell, the demand for it would soon be large enough to induce manufacturers to produce the article required at a reasonable price. The most successful cultivators now use manure largely, and are clearly of opinion that plants are benefited by its application in a concentrated form. Manure water is, however, a troublesome way of employing a stimulant, occupies much time, and is always offensive, especially in a close stove, and even in a greenhouse or conservatory. There is, moreover, much uncertainty about the strength of manure water, whether taken from the farm-yard or the stable tank, so that the same quantity which at one time is beneficial to a plant may at another time be injurious to it. This I have long felt to be an objection to the use of manure water; and I have been long anxious to procure an artificial manure which could be applied in a dry state.

Some eight or ten years ago I met with a manure which was highly spoken of by a few gardeners who had used it. I invested 10*s.* in the purchase of it, and at once set to work to ascertain by careful experiment its real value. I applied it to a number of plants to which I had been in the habit of giving manure water, and found that it answered much better than that in every case. I simply sprinkled it on the surface of the ball of the plant, and although the collection under my care was large, the time and trouble involved in using it was but trifling. After using this manure for 12 months, I was satisfied that if the cost of labour in applying manure water were taken into account, this stimulant would not be one-tenth the expense of manure water. I injured some plants by the manure, but these were such as I should not have thought of treating with manure water. I have now used it largely for some six or seven years, and I am so satisfied with it that I have no hesitation in strongly recommending it to gardeners, especially to those who are enthusiastic plant growers. It is now sold, I find, under the somewhat fanciful name of "Standen's Gardeners' and Amateurs' Friend."

Soon after I had obtained a liberal supply of this manure, I received from Messrs. Goulding a small sample of the manure which they manufacture for gardeners; and in order to enable me to test it fairly against the article which had given me so much satisfaction, I procured three additional canisters of it. I then selected a number of plants, and treated part with one dose of Standen's manure, and part with Goulding's. In all cases I was disappointed with the result produced by Goulding's manure. In the case of Azaleas I could not, after waiting for a month, perceive that it had effected any improvement in the condition of the plants. I then applied a second and more liberal dose to the same plants, and after waiting a fortnight, and being scarcely able to perceive any result, I gave them an ordinary allowance of Standen's manure, which in less than a fortnight effected a marked improvement. I also used the two manures against each other on almost all classes of plants which I had been in the habit of treating either with manure water or the artificial manures which I had been using, and in every case I found Standen's to act more quickly, and to be much more efficient than Goulding's.

Whilst I was amusing myself by testing these manures, an article appeared in your columns, giving the result of experiments with Goulding's and Standen's manure and guano, which greatly interested me. I at once selected two plants of the Coleus, in 7-inch pots, and gave one about a teaspoonful of Goulding's manure, and the other a like quantity of Standen's, and each received a second and similar allowance after an interval of a fortnight. The plants were treated in every respect alike, placed within a few feet of each other in the same house, and after watching their progress for some six weeks I found that the plant to which I had given Standen's manure was in all respects greatly superior to the other, or the one to which Goulding's had been applied, and in at least 20 instances in which I tried these manures against each other, Standen's proved to be the most effective.

If your contributor whose experiments led him to give the preference to Goulding's applied the manures in the liquid state, this may account for the difference in the result of our trials of these manures. If I must use artificial manures in a liquid state, I should not, I think, use them, for they would then be as expensive to apply as manure water, and any gardener can by steeping solid manures obtain manure water at a nominal cost which may be used with safety, and will answer tolerably well for most purposes. But there is another way of accounting for the result obtained by your correspondent, and I am inclined to believe that this is the correct explanation of the matter, viz., that he gave the plant which he treated with Standen's manure too liberal an allowance, and so injured it that during the six weeks in which he watched the progress of the plants, this had not sufficiently recovered from the effects of the first dose to be noticed by any after application. At all events I found Standen's manure to be quicker in its action than Goulding's and also much more powerful. If your contributor will apply these manures to such plants as Azaleas, Camellias, Ferns, &c., which are really benefited by manure, and continue the experiment long enough to fairly enable him to see which proves the most efficacious, I shall be surprised if he does not come to the same conclusion at which I have arrived. I shall also be pleased if he finds a better article than Standen's. *Ed.*] In our own experiment alluded to above, the manure was used in solution, as recommended on the canister.]

WAGES OF GARDENERS.

(*Continued from p.* 317).

HAVING thus glanced back to a primitive or natural, and forward to the wage of the future or a just one, I will now briefly notice some inequalities of wage arising from the nature of different employments. Stuart Mill refers to Adam Smith's "Wealth of Nations," Chapter 10, "as the best exposition yet given of this portion of the subject." Turning to this we find the five following "are the principal circumstances which make up for a small pecuniary gain in some employments, and counterbalance a great one in others." First, the agreeableness or disagreeableness of the employments themselves; secondly, the easiness, or cheapness, or difficulty, or expense of learning them; thirdly, the constancy or inconstancy of employment in them; fourthly, the small or great trust that must be reposed in those who exercise them; and 5thly, the probability or improbability of success in them. It will be observed that with the exception of the first, each of these considerations here noted are valid reasons why gardeners should receive high wages. Their business is difficult to learn; employment is uncertain; they hold positions of great trust and responsibility; and success in their business is always difficult, sometimes all but impossible. And even the agreeableness of gardening is sadly over-estimated. A garden may confer the highest pleasure upon others, while it is a source of bitter sorrow and disappointment to a gardener. How seldom it is that everything succeeds! How much oftener that the one thing we are most anxious about fails. No class of men are exposed to such a constant succession of petty anxieties and ever-present fretting cares. Insects, cold winds, frosts, droughts, rains, &c., pursue us like a swarm of mosquitoes, and almost as effectually destroy our peace, Neither is the government of men always an agreeable task, nor a constant supply of produce, nor the satisfaction of all parties concerned with its quantity or quality. And then as to health—why I doubt if the collier himself, lying on his side or back for eight hours a day, is half so subject to rheumatism, neuralgia, or tic doloreux as numbers of gardeners. Yet he receives his 2*l.* or 3*l.* a week for his unskilled labour because it is so disagreeable. Doubtless there is more sudden danger attending it, but for discomfort and fatality to health, or even life, I question if the collier's work at all equals that of an apprentice or journeymen gardener's—stoking a dozen or more furnaces in places generally well named holes, with perspiration streaming from every pore, and carbonic and sulphurous acids cutting into his lungs—leaping up into a temperature ranging from 6° of frost to zero. Neither can it well be worse than nailing against a north wall in winter, with a north easter withering up the very marrow of the bones, nor mowing from morning to night in the pouring rain, or laying Box on the saturated earth in wet weather. These were the agreeable employments of gardeners in my young days, and although I believe that many masters have become more humane to their men, yet there are some—many, I fear, especially in Scotland, who treat them as iron or stone. I have a man in my employ at the present time who laid Box for a whole month in wet weather in a ducal garden in the North, and was never dry for the whole time—nor warm even in bed. Measured by the disagreeableness and danger of this work, six guineas a week would not have been more than a just wage to that man. Yet the journeyman smith and butcher are well paid, because their labour is odious or disagreeable, and the gardener is miserably underpaid because his labour is honourable and pleasant! Such honour is too dearly purchased, and as to the pleasure, those who have wooed it most have often wooed in vain, or if found, it has proved heavily weighted with care. Nevertheless this idea of the pleasantness of gardening is one of the chief causes of low wages in it. One of the first gardeners in Scotland writes to say that the reason why gardeners are so badly paid is that people think that gardening, like virtue, is its own reward. And doubtless, pursued under favourable circumstances with enthusiasm and success, it yields a large amount of pleasure. The pleasure, however, is mostly on the surface. Every one can see *that*, consequently it is very much exaggerated. It throws a false colouring over the business, and draws the young and sanguine towards it. Experience alone can pierce through the thin crust of pleasure, and it finds as much or more hardship and disagreeability about gardening as in almost any other business. Hence the depression of wages, arising from the supposed pleasantness of our business, ought to cease

The second circumstance affecting the wages of labour is the ease and cheapness, or the difficulty and expense of learning the business. Looking merely at the number of years served by apprentices to gardening, and the moderate fees exacted from them, averaging only from 10*l.* to 20*l.* for the whole period, it would seem as if gardening could be easily or cheaply learned. But it is not so. Future success demands a good preliminary education, and this costs both time and money. Expensive books have also to be purchased. A long season of probation is passed as journeyman or foreman in the acquisition of further knowledge and experience. These resemble second apprenticeships in their most vital features. The men are not only supposed to be learning all the time, but in a sense to be paying for instruction; and the strangest part of it is they do not pay the master gardeners who teach them, but the employers of these masters. The skilled labour of journeymen and foremen are given to our employers at almost labourer's wages, because the necessities of journeymen demand a sphere to learn their business in; and these processes go on often for ten or more years. During the whole of this period the journeyman gardener earns a bare subsistence. That business must be expensive and difficult to learn that absorbs ten of the best years of a man's life, and leaves him at the end of it with no capital, but a box of books in his room, and a knowledge of his business in his head.

Stuart Mill says, "If an artizan must work several years at learning his trade before he can earn anything, and several years more before becoming sufficiently skilful for its finer operations, he must have a prospect of at last earning enough to pay the wages of all this past labour, with compensation for the delay of payment, and an indemnity for the expense of his education. His wages, consequently, must yield, over and above the ordinary amount, an annuity sufficient to pay these sums, with the common rate of profit, within the number of years he can expect to live and be in working condition. This, which is necessary to place the skilled employments, all circumstances taken together, on the same level of advantage with the unskilled, is the smallest difference that can exist for any length of time between the two remunerations, since otherwise no one would learn the skilled employments." Exactly so; and unless gardeners' wages are thus raised to compensate them fairly for the time and means that they have invested in their business, sensible men will not become gardeners. The expense and difficulty of learning the business become an unanswerable argument for a higher wage. For proof, look at the rewards of lawyers, physicians, painters, &c.

Constancy or inconstancy of employment also affects the rate of wages. "In the greater part of manufactures a journeyman may be pretty sure of employment almost every day in the year that he is able to work. A mason or bricklayer (or jobbing gardener), on the contrary, can work neither in hard frost nor in foul weather, and his employment at other times depends upon the calls of his customers. He is liable in consequence to be frequently without any. What he earns, therefore, while he is employed, must not only maintain him while he is idle, but make him some compensation for those anxious and desponding moments which the thought of so precarious a situation must sometimes occasion." Hence the wages of bricklayers and masons are generally from one-half to double those of many other trades; yet no species of skilled labour is easier to learn than that of laying bricks, and the high wages of these workmen are not so much a recompense for their skill as compensation for the inconstancy of their employment. This inconstancy also enables the London coalheavers to earn four times the wage of ordinary labourers. Now, whatever the condition of journeymen gardeners in private places may be in reference to this matter, it cannot be denied that the work and pay of master and jobbing gardeners is more inconstant than that of any other trade whatever; and yet, by a singular fatality, we seem to have altogether missed the higher wage which this uncertainty entitles us to, so that a journeyman stonemason is better paid than the majority of master gardeners, and journeymen gardeners receive less than bricklayers' labourers.

Fourthly, the wages of labour vary according to the trust reposed in the workmen. Goldsmiths and jewellers are better paid than many other workmen of equal or superior ingenuity, on account of the precious materials with which they are intrusted. We trust our health to the physician, our fortune and reputation to the lawyer and attorney. Their rewards correspond to the magnitude of the trust reposed in them, and the importance of the thing committed to their care. Stuart Mill pursues this branch of the subject at great length, showing how the learned professions enjoy a monopoly in certain employments, on account of their learning, and that their superior rewards are not in consequence of competition but of its absence. I can only quote one sentence: "The degree of integrity required being supposed to be uncommon, those who can make it appear that they possess it, are able to take advantage of the peculiarity, and obtain higher pay in proportion to its rarity."

Here, again, gardeners must prove that they possess the integrity, but are baulked of its due reward. The trust reposed in gardeners in large places is unbounded. Thousands of pounds worth of property is put into their hands, and it is all but absolutely under their control; the safety and existence of it all depends upon such trifles as these: whether a man shall sleep or wake at a certain hour; whether he shall be at home or in a public house; whether he shall indulge himself or attend to his business. And, upon the whole, nobly and well are the obligations imposed by these trusts discharged. But higher things than property are intrusted to gardeners. The proper care and training of living beings, and the very comfort and enjoyment of the highest and best in the land, are to a great extent in their hands. And these trusts they are also faithful to. I put it to those for whose enjoyment we are expending our lives, whether or not we are sufficiently rewarded for our integrity, and our religious faithfulness to our great trusts?

The last point here is that the wages of labour in different employments vary according to the probability or improbability of success in them. Stuart Mill says that this is one of the best points illustrated by Adam Smith. If the chances are great of total failure, the reward, in case of success, must be sufficient to make up, in the general estimation, for those adverse chances. The probability that any particular person shall ever be qualified for the employment for which he is educated, is very different in different occupations. In the greatest part of mechanic trades success is almost certain, but very uncertain in the liberal professions. Put your son apprentice to a shoemaker, there is little doubt of his learning to make a pair of shoes; but send him to study the law, it is at least 20 to 1 if he ever makes such proficiency as will enable him to live by the business. "In a perfectly fair lottery," proceeds Mr. Mill, "those who draw the prizes ought to gain all that is lost by those who draw the blanks. In a profession where 20 fail for one that succeeds, that one ought to gain all that should have been gained by the unsuccessful 19. The counsellor at law, who perhaps at near 40 years of age begins to make something by his profession, ought to receive the compensation not only for his own tedious and expensive education, but for that of more than 20 others who are never likely to make anything by it. How extravagant soever their fees may sometimes appear, their recompense is never equal to this."

In a modified sense surely all this is emphatically true of gardening as well as of law. Success in it is difficult. For one who gains a competence in gardening there are a thousand who can barely live by it. A hundred fail for one that is successful. And the great prizes, where are they? "Not more than 100 places in England where the gardeners' wages are over 100*l.* per annum." Does this compensate for the risk? Is this the share of the hundred who have failed? Tried by such rules our business ought to be the best paid of any; tested by actual facts it is the worst. Finding that neither nor all of these modifying circumstances, advanced by the political economists, will account for the low wages of gardeners, I look for other reasons.

The first that presents itself is a mistaken notion about productive and non-productive labour. We are told that our labour is not productive, and therefore we are badly paid. Is it not productive? Let us see. Mill says, the requisites of production are two: labour, and appropriate natural objects. This labour may be bodily or mental; or, to express the distinction more comprehensively, either muscular or nervous. Nature does more than provide materials; she also supplies powers to help us to work. All work that terminates in the production or distribution of a useful article may be termed productive work. It has been contended that as exchange adds nothing to the value of any article, therefore buying and selling is not a productive operation. But Mill very pithily shows that exchange does increase the value of all it touches, by removing it from where it is not wanted to where it is. Some kinds of productive labour are employed in producing materials for workers to work upon; others in making tools to work with. Some are growing food to support those that are working, and others planning or making inventions and machinery. Other kinds of productive labour consist in maintaining order, securing good government, imparting knowledge, administering justice, and preserving health. The discharge of such functions enables others to work. In one word, productive labour means labour productive of wealth.

Unproductive labour, on the contrary, says the same writer, is labour which does not terminate in the creation of material wealth. Thus starts the inquiry, What is wealth? To be wealthy, says Mr. Mill, is to have a large stock of useful articles. Mr. Ruskin accepts this definition, and defines first the nature of possession, and then of utility. He shows that the mere having a thing is not possession. Thus, lately, in a wreck of a Californian ship, one of the passengers fastened a belt with 200*l.* of gold in it round his waist, with which he was found afterwards at the bottom. Now, as he was sinking, had he the gold, or had the gold him? Ruskin's definition of wealth becomes the possession of those articles, *which we can use*. Usefulness he defines as "value in the hands of the valiant, and in considering wealth as a power existing in an individual or a nation, the value of the thing and the value of its possessor must be estimated together." Ruskin prefers dividing labour into two kinds: positive, that which produces life, and negative, that which produces death. "Production does not consist in things laboriously made, but in things serviceably consumable, and the question for the nation is not how much labour it employs, but how much life it produces. For as consumption is the end and aim of production, so is life the end and aim of consumption."

From all which it follows that the gardener's labour is productive labour of the highest kind. It tends to life, and to the pleasurable enjoyment of existence. Mr. Mill himself admits gardeners to be productive workers. In Book I, chap. 5, section 9, he draws a distinction between direct and indirect service, with a view of proving that a demand for commodities is not a demand for labour. He distinguishes between the men employed to lay out pleasure grounds and to manufacture velvet, declaring that it makes material difference to the labouring classes in which of these two ways a capitalist spends his money; because the employment of the gardeners is a demand for labour, but the purchase of the velvet is not. "As far," observes Mr. Ruskin, "as the pockets of the men are concerned, it makes absolutely no difference whether we order him to make green velvet with seed and scythe, or red velvet with silk and scissors. Neither does it in any way concern him—whether when the velvet is made, it is consumed by walking on it or wearing it. Either may be looked upon as luxuries rather than utilities; but, nevertheless, the labour that produced both is productive labour, and should be paid for as such."

Mr. Ruskin divides all work into five great intellectual professions relating to the daily necessities of life:—

The soldier's profession is to defend it.
The pastor's to teach it.
The physician's to keep it in health.
The lawyer's to enforce justice in it.
The merchant's to provide for it.

And might I not, without presumption, add, the gardener's and other artists to adorn it.

We also help to provide for it, and in this way our labours are productive of hard cash. By adorning it we produce satisfying ennobling pleasure. Either or both products can be realised at the option of the possessor. Thus, whether gardening is pursued from utilitarian or artistic considerations, the labour of gardeners is productive labour, and ought to be paid for accordingly. It matters not, either to the fair worth or the character of the work, whether it is expended on smooth walks of green velvet for the eyes and feet, or luscious Grapes, Peaches, and Pines for the mouth, or secures satisfying enriching beauty for the mind and heart.

A second reason for the low wages of gardeners is excessive supply. The political economists do not believe in an over production of goods, and perhaps, abstractedly considered, there is not and cannot be too many gardeners or other workmen in the world. But there are often too many in one place at any particular time, and this practically is what I mean by excessive supply. The evil may arise from unequal distribution, and not from real excess of numbers, but it exists, or seems to do so, all the same. And what is more, the political economists admit and complain of the excess of labour and promulgate their great remedies for its cure. These are the reclamation of waste lands, colonisation, and checks upon marriage. These remedies belong rather to national policy, than to such papers as the present. Doubtless, Emigration would thin the garden market of men, and no class do better in our colonies than gardeners. As to the last, I know of no profession in which there are so many and such cruelly effective checks upon marriage, and the increase of families, as in gardening. In this respect we are widely different from most other trades. Our ranks are mainly recruited from without, not by the natural increase of numbers from within. The happiness of gardeners, and the future interests of gardening demand—not a better knowledge of Malthus, but enlarged facilities for marriage and the raising of families. *D. T. Fish.*

(*To be Continued.*)

Home Correspondence.

Admission of Gardeners to the International Exhibition.—I am glad to see, in a recent number (p. 314) that a correspondent has addressed you on the above-named subject. There are an immense number of hard-working, intelligent gardeners, in whose lives a visit to the forthcoming Exhibition will be indeed a grand epoch, but if they are to be admitted, the boon should be gracefully offered. They should be allowed to see the Exhibition before the plants, flowers, and fruits have become faded and stale [it will be open to them on the first public day]; for they will go not to see the splendidly dressed company, but to observe carefully the specimens exhibited, and to learn and profit by what they see. The entrance fee for them should be small, and arrangements should be made with the railway companies to convey them to and from London at very low fares. [All this has been done or is doing.] In order to prevent fraud by persons representing themselves as gardeners, who are not so, I would suggest to the committee that a form of certificate, on cards, should be issued to all gardeners who may apply for them, such certificates to be signed by the employers in all cases where the gardener is in service, and by a magistrate or clergyman where the gardener is in business on his own account. This certificate should enable the holder to travel by railway at a very cheap rate by any ordinary train between certain dates, and should of course be produced before admitting him to the Exhibition. *M. J. C., Grimston, Horrabridge, April 8.*

Orchidaceous Exaggerations.—Let me add a few remarks to the memorandum in your columns (see p. 244). There is a grand difference between a higher development, and a monstrosity: the latter should only be represented as what it is—a monster. It appears to be a rule that the Ophrydeæ never have a branched inflorescence. There is no such inflorescence to be seen in the Kew herbarium, as far as I know; neither have I ever seen any one in all my life, as long it has been devoted to Orchidology, except once, at Tharand, in Saxony. I found in 1849, among thousands of Orchis Morio, a single plant of quite uncommon vigour, bearing under the usual raceme a smaller extra-axillary raceme. The plant, too, had three large tuberidia, and was represented by me as an anomaly in "Orchidographia Europæa," tab. 150. The specimen is to be seen in my herbarium. Now, concerning Disa grandiflora, *L.*, I believe I am sufficiently experienced to be allowed to express some doubts as to certain representations. I will not allude to the hundreds of dried specimens which have passed through my hands during more than a quarter of a century, but I should like to say that near Hamburg both Mr. Kramer and Mr. Schmidt grow this plant with the highest success. Mr. Kramer, in the garden of Frau Senatorin Jenisch (the same who was formerly suspected to feed his plants with wonderful

and mysterious philtres) has not many specimens, but he sometimes produces seven-flowered spikes, and these are unbranched. At Mr. Schiller's you can see every year as many as 40 very large pots, each containing a good number of plants. When flowering they all stand under the verandah, displaying masses of flowers as scarlet as an English soldier's jacket, provided it be new. Now I have never seen anything of them any branched spike, though Mr. Schmidt in growing Disas is beyond all praise. I hope he may never get unfavourable results from his trials as to how many degrees of frost these plants will bear. After so much experience, I should hope not to be accused of being "hardly fair" when alluding to a branched Disa as to something one would like to see before believing in it. Wishing to avoid any personalities, I did not even name the place where the plant is figured, and where (Plate XXXVI.) every one who has eyes may read "J. Andrews, del. et lith." and the "J. A." are added between the two parts of the plant. In the letter-press I could never find any allusion to a panicled inflorescence, the more since it is thus described: "and terminating in a loose open spike of several showy flowers." Now imagine my stupefaction when reading that our excellent "W. H. P." claims for himself the advantage of having represented the now famous panicled Disa! Is "J. Andrews" an alias of "W. H. P."? Perhaps—it overpowers my mind: Je n'y vois que du feu. *H. G. Rchb. fil.* [We have ourselves seen at least one instance of a branched spike in Ophrys aranifera, and there does not seem to be any good reason why such may not occur in other Ophydreæ.]

Wages of Gardeners.—It seems to me that in Mr. Fish's observations (p. 317) on a "just wage" for gardeners, he has left out one very important consideration, viz., that if the wages of gardeners are to be raised as he thinks it just that they should be, the necessary result would be that the number of those who could afford to keep such gardeners would be diminished by at least one-half, and so many men would be thrown permanently out of employment. The real fact is that the question with every man employed is not whether he has a right to view his work as worth more than he gets, but whether he can get more. With a man in employment it is often a question whether he shall give up a place—where he is happy and comfortable, where he has a kind employer, and where he is fond of the garden—for the chance of bettering himself by a few pounds a year; and I must say that I think it is not wise to put before men abstract notions of their supposed rights which may induce them to forget the proverb that "a bird in the hand is worth two in the bush." In fact, in every profession or occupation the wages are practically settled by the supply and demand. What makes Lord Stamford give 600*l.* for the services of his jockey but that such little imps are scarce? Why is a miniature painter now obliged to content himself with one quarter of what he got before photography, but that cheaper competitors in the taking of likenesses having sprung up on every side, there is no longer demand for his art? And Mr. Fish may be depended upon it that the result of a rise in wages would be a dimination in the demand for skilled gardeners. The increased expense of labour is already pressing very severely upon employers, whose incomes do not increase in proportion. The rope is strained nearly as tight as it can bear. Many persons who now employ gardeners, more or less trained to gardening as a profession, will be compelled to curtail their expenses; and the point in which, in ninety-nine cases out of a hundred, curtailment will be least felt, will be the garden expenses. We must revert to the garden establishment of olden times, in which a gardener was thought to know enough if he knew how to supply the kitchen with common vegetables, and gardening as a skilled profession will be confined to a few great gardens. Nor must it be forgotten that gardening is a light healthy occupation [?] and that the gardener reaps as much of that enjoyment which results from his work as his master, if not more—he is not working only for his master, but also for himself. My object in writing to you is to warn gardeners against hopes and schemes which will, if successful, diminish the chances of employment which are now open for an industrious young man. *An Employer.*

Cracking of Peach Stones.—"A Young Gardener" (see p. 317) wishes to know why his Peach stones crack just before the fruit arrives at maturity, but he omits to state in what condition he found the kernels of the fruit at the time of bursting. If in a decayed or imperfect state I should think the evil began when the trees were in blossom. I have a number of Peach trees about the same size. Amongst them is an Apricot which receives the same treatment as the Peaches, the fruit of which has cracked with me more or less every year, but not a single fruit upon the Peach trees has ever shown a symptom of the kind. On examination I found the kernels of my Apricots decayed and imperfect; this I attributed to deficient fertilisation, although I use artificial means in setting my Apricots, but not my Peaches. Your correspondent's mishap may arise from another cause, which also originates during the blossoming season. We all know what a job it is to have our Peach trees in bloom at a time when the air is loaded with vapour, and we look anxiously day after day for the embryo fruit to cast off its coat; at such a time it requires some attention to keep the mass of decayed blossom dry enough to prevent Fungus from attacking the fruit, which may or may not develop itself at a future stage of its growth. It is no uncommon thing to see Peaches with one side of the fruit ripe and perfect, and the other tough and dry as a piece of leather. We seldom think of tracing the cause of this to the proper source. This may possibly have no application to your correspondent's case, whose evil may be traced to some other cause than imperfect development, but still it is just possible he may derive a hint as to the cause of his complaint from what has just been stated. *J. Thomson, Wortley.*

Foreign Correspondence.

Palace Gardens, Gazereih, Cairo, *March* 16, 1866.—Vines in Egypt.—As I hinted in my last (see p. 318) that I might on an early day say something on this subject, I proceed at once to make good my promise. During the three years I have lived in Egypt my attention has naturally been directed to the habits and culture of the Vine.

As a rule the Vine grows well in Egypt, and in general the fruit is abundant. The soil is all that could be wished. Wherever the Vine is planted—whether on the rich brown loam which abounds in some districts, or on the black, greasy, saline loam which abounds in others, or on the red sandy soil which is to be found in a greater or less degree over the whole land, it becomes healthy and fruitful. There is no necessity for preparing border for Vine—Nature has done all that already. Dig down as deep as you may, you still find the same rich soil. The one important point to be attended to, is by occasional waterings to keep the soil in a moist healthy state, especially during the period of growth.

We have a fine dry atmosphere; we have neither the winter's frost nor winter's drenching rains to contend against. We have, however, certainly had an unusual quantity of rain this winter. No man living remembers having seen so much; still, that can be numbered in a few smart showers. The weather here just now is beautiful, very much like that of June in England, and the Vines are showing beautifully. As we have nothing to fear from frost, and nothing to fear from rain, we have roots and tops almost entirely under our own control. We are therefore looking forward hopefully to an abundant crop.

The modes of training here, as at home, are various; that which is most common is the horizontal table. This table varies from 4 to 8 feet in height, and is made sometimes of strong wood-work, and sometimes it consists of wicker-work, made from a species of cane. Some train and prune the Vine very much as at home you train and prune Currant bushes. The espalier mode, too, I have seen attempted with success, *i. e.*, what you would call the long-rod system.

With our tropical sun we have never any difficulty with the ripening off of the young wood, a circumstance of the utmost importance.

The Vine is liable to mildew here as at home. I have seen it frequently, and I have had reason to believe that the cause in every instance was improper watering. Give the Vine too much water and you will beget mildew, which will also occur if you allow the Vine to become too dry.

In the culinary department young Vine-leaves are extensively used, and seem to be much prized. It is I believe pretty generally known, that since the outbreak of the American war the markets here have been very high. Even necessaries of life can only be had at a high price. Your readers may, therefore, infer how abundant the Vine crop is when, under these circumstances, Grapes are to be had as low as 3*d.* or 4*d.* per pound. I have not heard that the very best have ever exceeded 5*d.*

There are other topics of interest to which I may advert on some future occasion. *James Hardie.*

Societies.

Royal Botanic: *April* 7 (*Second Spring Show*).—Azaleas on this occasion constituted the principal feature of the exhibition, which was in other respects also well supported with gay flowering plants. From Mr. Turner, of Slough, came Azaleas Duc de Nassau, Perryana, Magnifica, Prince Jerome, Variegata superba, and Etoile de Gand. Messrs. Lane & Son contributed well-bloomed examples of Magnificent, Chelsoni, Conspicua purpurea, Reine des Blanches, Petuniæflora, and Eulalie Van Geert. From the same establishment also came a collection of smaller plants, among which were Madame Ambroise Verschaffelt, rose, bordered with white, and conspicuously spotted in the upper petals with dark crimson; Leopold I., large, rose; Perfection, bright rosy crimson; President Claeys, salmon, edged with white; Sir II. Havelock; Elegantissima, white, occasionally flaked with red; and Duke of Cambridge. Of Azaleas sent out in 1862, 1863, and 1864, Messrs. Lane exhibited Souvenir du Prince Albert, semi-double, rose, broadly edged with white; Advance, in the way of Perfection, but larger and deeper in colour; and Sécrétaire Claus, large, blush, spotted with crimson. From Messrs. Ivery & Son came Flag of Truce, white; Madame Dominique Vervaene, delicate rose, spotted in the upper petals with crimson; and Madame de Cannaert d'Hamale, large, white, occasionally striped with crimson. Mr. Turner had Belle Gantoise, pink, edged with white, boldly spotted in the upper petals with crimson; Sir J. Paxton, orange scarlet; and Louise Von Baden, a fine white. Of absolutely new kinds, Messrs. Smith contributed several, one of which, Magnum Bonum, received a Second-class Certificate. It is an orange red, slightly spotted in the upper petals with crimson. Fine specimens of Azalea indica Fielderi punctulata; President Humann, rose, spotted with crimson; and President Victor Van den Hecke, white, striped with deep rose.

Collections of Ornamental-leaved Begonias came from Mr. Wecler, Mr. Young, gr. to R. Barclay, Esq., and Mr. Marcham, gr. to E. Oates, Esq., Hanwell. Messrs. Smith contributed half a dozen plants of Erica Willmoreana in good condition. The same firm also contributed miscellaneous collections of fine-foliaged and flowering plants, as did also Mr. Williams and Mr. Wheeler. Mr. William Paul also had a miscellaneous collection, consisting of broad-leaved Kalmias, Deutzias, double-flowering Peaches, and Rhododendrons. Rhododendrons, dwarf plants, in small pots, and in fine bloom, also came from Messrs. Lane.

Collections of Cinerarias were furnished by Mr. James, gr. to W. F. Watson, Esq., Isleworth; Mr. Cox, gr. to Captain Cahill, Southall; Mr. Marcham; Mr. Clarke, Whitton; and Mr. Beech, gr. to W. Rogers, Esq., Redhill. Several seedlings were also exhibited; by far the best was Perfection, from Messrs. Smith, which received a First-class Certificate. It is of a rich violet purple, with a narrow ring of crimson at the base of the ray florets, and a narrow ring of white round the disk; it is altogether a large and showy variety.

A small collection of Amaryllis was exhibited by Mr. Young, and a dozen Gloxinias, chiefly erect-flowering kinds, came from Mr. Ballenger, gr. to F. Shadbolt, Esq., Highgate. Messrs. F. G. Henderson contributed a collection of Cyclamens, beautifully grown and well bloomed; and the same remark applies to a dozen pots of Lily of the Valley from Mr. William Paul, who also exhibited Zonal Pelargonium Rebecca, a magnificent scarlet flowered kind, to which a First-class Certificate was awarded. From Messrs. Henderson also came a collection of tricolor-leaved and variegated Pelargoniums; and the variegated Cynosurus, noticed on a former occasion, was also produced.

Of Roses, Messrs. Paul & Son showed four boxes of cut blooms, conspicuous among which were Marechal Niel in great beauty, Gloire de Dijon, Roses alba, John Hopper, Senateur Vaisse, Lord Clyde, Madame Bravay, Madame Maman, Pierre Notting, and Princess Mary of Cambridge. Of other subjects, hardy British Ferns were shown by Messrs. Ivery and Mr. Bull, those from the former comprising a nice Wardian case of Trichomanes radicans; and among those from Mr. Bull were very good examples of Hymenophyllum tunbridgense and Trichomanes speciosum. Mr. Bull also contributed a variety of novelties, among which were Maranta splendida, Dieffenbachia gigantea, and Aspidistra Sieboldii, the last with dark green foliage broadly striped with pale yellow, one half of the leaf being sometimes entirely yellow and the other half green. Other plants were the pretty yellow-flowered Berberis stenophylla, Pychotria macrocephala, with ample deep-green foliage, and heads of white flowers; and Meyenia Veggiana, violet, with a yellow throat. Stanhopea tigrina nibilatum was shown in excellent bloom, and a leaf of Coccoloba pubescens, about three feet across, were also shown by the same exhibitor.

Royal Horticultural: *April* 7 (*Weekly Show*).—Bulbous plants in flower were shown on this occasion by Mr. Young, gr. to R. Barclay, Esq., and Mr. Bartlett, of Hammersmith. Greenhouse plants were furnished by Mr. Beasley, gr. to Mrs. Wood, Twyford Abbey, Acton, and Mr. Young. Mr. Tweedie, gr. to D. J. Kay, Esq., Hoddesdon, and Mr. Young, had cut Camellia blooms. From Mr. Rivers came a collection of Apples and Pears, still in a state of excellent preservation. Among the Apples were Rhode Island Greening, Lodgemore Nonpareil, Stamford Pippin, Norfolk Beaufin, Newtown Pippin, Mela Carla, Lamb Abbey Pearmain, Reinette Dié, Baxter's Pearmain, Calville de Chavy, Scarlet Nonpareil, Cockle Pippin, Betty Geeson, Baldwin, Pearson's Plate, Dominiska, Forge, and Belle d'Angers. The Pears consisted of Colmar Van Mons, Beni Mai, Easter Beurré, Dunmore, Madame Millet, Seigneur Esperen, Beurré Brétonneau, and Beurré Perreau. Mr. Tonkin, gr. to G. T. Kakewich, Esq., Exeter, had a handsome Smooth-leaved Cayenne Pine-apple.

April 12 (*Second Spring Show*).—This in all respects excellent exhibition was held in the upper arcades on each side of the Conservatory. This structure at present full of gay flowering plants, among which is a noble tree of Rhododendron arboreum, covered from head to foot with magnificent trusses of scarlet blooms, and is of itself worth a journey to South Kensinton to see.

As regards the exhibition, its principal feature consisted of Azaleas, beautiful specimens of which were shown by Mr. Turner, of Slough, and Messrs. Lane, of Berkhampstead. Nine plants from the former—large in size and loaded with bloom—consisted of Eulalie Van Geert, Magnificans, Duc de Nassau, Perryana, Roi Leopold, Louise Von Baden, Queen of Roses, and what is termed a "cut-back," *i. e.*, two varieties worked on one stock, a mode of treatment by which very pleasing results are often produced. Messrs. Lane had Rosea alba, Souvenir de l'Exposition, Sécrétaire Claus, Eulalie Van Geert, Souvenir du Prince Albert, Advance, Holfordii, President, and Perryana.

A group of six plants from Mr. Turner consisted of Iveryana, Magnet, Brilliant, Magnifica flore pleno, Prince Jerome, and Flower of the Day. Messrs. Lane also showed in the same class four handsome pyramidal plants of Tobacea superba, Petuniæflora, Magnificans, Chelsoni, Eulalie Van Geert, and Conspicua purpurea. Mr. Todman, gr. to R. Hudson, Esq., Clapham, contributed The Bride, Roi Leopold, Eulalie Van Geert, Concinna, Iveryana, and Duchesse Adelaide de Nassau. Groups of 3 Azaleas were shown by Mr. Todman and Mr. Young, gr. to R. Hudson, Esq., and a large and effective collection of them came from Messrs. Lane. Of single specimens Mr. Turner had Criterion, a magnificent plant; and Messrs. Lane Reine des Blanches, a beautiful white kind. Mr. Young also showed in this class. Mr. Turner had two new kinds of Azalea, namely, Gem of Staples, large orange-coloured, and Prince Arthur of Fife, King, similar but more fiery in colour, but not quite so large or flat, and heavily spotted in the upper petals; both promise to be acquisitions.

Several collections of Roses were shown, beautifully in bloom, as they always are, as they always do, objects of great attraction. From Mr. William Paul came Madame Alfred Regement, a large light-coloured Hybrid Perpetual; Madame Clemence Joigneux, Souvenir d'un Ami, Jean Goujon, Beauty of Waltham, John Hopper, and Le Rhone. A beautiful group of nine Roses came from Mr. Turner; it consisted of Madame Willermoz, Souvenir de Malmaison, Jules Margottin, Souvenir d'un Ami, Gloire de Dijon, General Jacqueminot, Victor Verdier, Le Rhone, and Alba rosea, the last with white flowers, charmingly tinted in the centre with pink. From Messrs. Paul & Son came Virginale, a white Hybrid Perpetual, with a blush centre; Madame Willermoz, Charles Lawson, Lord Raglan, Anna Alexieff, Madame Damazin, John Hopper, Madame Julie Daran, and Souvenir d'un Ami. New Roses of 1865 6 came from Mr. Wm. Paul, Messrs. Paul & Son, and Mr. Turner. Among crimson scarlets of different shades were Waltham, large and showy; Dr. Andry, a very fine kind; Dr. Lindley, Madame Mowry; Charles Margottin, Prince Eugène Beauharnais, John Keynes, a beautiful velvety sort; Triomphe des Français, Madlle. Amélie Halphen, General d'Hautpoul, Souvenir de Bernardin de St. Pierre, Jean Rosenthaniel, Mr. Rivers, Edouard Ory, and Michel Bonnet. Among rose and pink kinds were Joséphine Beauharnais, Marcella, and Mademoiselle Marguerite Dombrain. Yellows were confined to Maréchal Neil, in praise of which too much can scarcely be said. Among other kinds jwere Madame Knorr, a blush-tinted rose. Conspicuous in Messrs. Paul & Son's group, and different from the kinds just named, were Xavier Oliba, velvety crimson scarlet; Souvenir de William Wood, a singular-looking brownish black kind; Rushton Radclyffe, a promising sort; Duc de Wellington, very double, very dwarf in the bud state; Baronne de Maynard, a pure white Hybrid Perpetual, which we hope to see again when the season is farther advanced; Duchesse de Caylus, crimson scarlet; and Pline. In Mr. Turner's collection we noticed Charles Wood, a good velvety crimson scarlet kind, and Abraham Lincoln, new in colour, being quite a violet rose. It will be seen that of dark-coloured new Roses there is no scarcity. What we want are more good light-coloured varieties. Of single specimens Mr. Wm. Paul showed a fine plant of Prestonii, with about a score of trusses in various stages of development. Messrs. Paul & Son had Rubens, and from the same firm also came various boxfuls of handsome cut Roses.

Cinerarias were furnished by Mr. Fairbairn, gr. to the Duke of Northumberland, at Syon; Mr. Clarke, Whitton; Mr. James, gr. to W. F. Watson, Esq., Isleworth; and Mrs. Hooke, Fulham. Among self-coloured kinds in these collections were Bob and Lord Elgin, both crimsons, with dark disks; Aimée and Favourite, both rosy purples, with pale disk; Commander-in-Chief, crimson; and

Captain Schribler, dark blue, with pale disk. Among white sorts were Snowflake, white, with dark disk; Modesta was white, tipped with crimson; and among other white kinds, with dark disk and petals more or less heavily tipped with crimson and rose, were Chas. Dickens, John Harrison, Bertie, Bouquet, Flourish, Annie; Densa, a compact, free-blooming, kind. Lovely Miss, Conqueror of Europe, and Lizzy Stuart in very good condition. Among Alpines, collections of which came from Mr. Turner and Mr. James, we noticed Attraction, Star, Emperor, Hector, Conspicua, and Brilliant, all fine kinds.

Polyanthuses were shown by Mr. Wiggins, gr. to Walter Beck, Esq. They were well grown and bloomed, but too much alike.

Pansies came from Mr. James, the stand of 24 consisting mainly of dark selfs. Mr. Hooper, of Bath, also showed Pansy blooms.

Cyclamens were contributed in large numbers by Messrs. E. G. Henderson, Mr. Wiggins, Mr. Fairbairn, Mr. Young, and Mrs. Hooke. They consisted of different varieties of persicum, and being well grown and finely flowered, they made an excellent display.

Among Miscellaneous subjects were Variegated Ivy; the compact-growing Genista prostrata, with comparatively large bright yellow flowers; and a variety of Chianthus Dampieri, with a white keel, from Messrs. E. G. Henderson. Mr. Bartlett had Rhododendrons, Azaleas, Medinilla magnifica, and Cytisus racemosus. Mr. Bartlett furnished Roses, Cinerarias, Polyanthuses, Isolepis gracilis, Fuchsias, Diclytra spectabilis, Tulips, Hyacinths, and other bulbous plants. Mr. Young sent Tulips, Hyacinths, Epacrises, Cytisus, Azaleas, and Dracænas. From Mr. Fairbairn came Pelargoniums, Caladiums, the Oleander-leaved Eriostemon, a fine plant of Croton angustifolium, Camellia Storeyi and Duchess of Northumberland, the small white-flowered Heath called persoluta alba, the Foxbrush Aerides, and one or two other Orchids; the prize of 4 specimen bulbed plants, Hyacinths only, with ample shining green leaves; various Cinerarias and Cyclamens, and half a dozen nice potfuls of the compact-growing cheerful green-coloured Selaginella apoda, a plant not nearly so much used for decorative purposes as it deserves to be. Messrs. Smith, Bridwich, furnished Heaths, Azaleas, Cinerarias, Eriostemons, Azaleas, Aphelexis, and different varieties of Dracæna in flower. From Mr. Turner came a plant of Kerria (Corchorus) japonica, with beautifully white variegated leaves, which, together with its comparatively large though slight yellow flowers, makes a very desirable effect. Messrs. Lee, Hammersmith, had six prettily-blossomed standard Azaleas, various kinds of Camellias, Aucubas in fruit, one or two Orchids, the beautiful lilac-blossomed Tremandra ericæfolia hirsuta, various Heaths, Rhododendrons, well-flowered and fairly grown, and Deutzia gracilis. In a collection of plants from Mr. Bull were Trichopilia suavis, Bignonia argyræa violascens, various seedling Imantophyllums, the white-flowered Psychotria macrocephala, Aspidistra Sieboldii, and Maranta splendida, noticed before. Messrs. Veitch had Exanthemum Versicheltii, the huge-leaved Coccoloba pubescens, Azaleas of different kinds, Dracæna Cooperi, Araucaria Rulei, the white variegated Selaginella Martensi, Sonerila margaritacea, and one or two Ferns. From J. Luscomb, Esq., Coomb Royal, near Kingsbridge, Devon, came some citrons, Mangoes, and Bananas all grown in the open air, with merely the protection of reed-mats, or rather hurdles, in winter. Blooms of Camellias and of Rhododendron arboreum and other kinds were also shown by the same gentleman as illustrations of the mildness of the climate of Devonshire. A collection of the best varieties of Rhododendrons, bloomed under glass, was shown in excellent condition by Messrs. Lane. Pots of Lily of the Valley, finely in bloom, were shown by Mr. William Paul. Mr. Reeves, Notting Hill, again showed Deutzia gracilis in good condition; and a collection of wax flowers was contributed by Mrs. Mitchell, Anglesea Terrace, Bridge Road, Battersea. Two plants of Kæmpferia ovalifolia were shown by Mr. Mundell, gr. to J. C. Pickersgill, Esq., of Hooley House, Coulsdon, Surrey. It has showy lilac and white Iris-like blossoms, which make their appearance before the leaves, which rise up above them, guarding their delicate texture as it were from injury.

A list of the prizes awarded on the occasion will be found in our advertising columns.

ENTOMOLOGICAL: *March* 6.—W. W. Saunders, Esq., F.R.S., in the chair. Mr. Stevens exhibited a large and remarkable series of Coleopterous and Lepidopterous insects from Hakodadi in Japan, many of which appeared to be identical with British species, the entire collection having quite an European character, and with a few exceptions. The Orthoptera comprised only two genera not European.—M. Tegetmeier also exhibited a large series of Japan insects from Nagasaki, chiefly large Lepidoptera, more oriental in character.—Mr. Stone sent for exhibition some nests built by worker wasps (Vespa sylvestris), after the original nest, including the queen, had been removed. The nest and cells were malformed, showing that the working instinct had deteriorated after the loss of the queen, who was thus shown to be the master builder.—A note from Mr. Groser was read, containing a confirmation, by the Rev. L. Jenyns, of Mr. Doubleday's statement as to the noise made by the death-watch (Anobium).—A twig of Mulberry, collected by Captain Alexander in India, was exhibited, on which was affixed three rows of eggs (about 60 in number), of a species of Ascalaphus, the young larvæ having escaped from some of them.—The Rev. Richard Burney, Cambridge, exhibited extensive series of insects of all orders collected by himself in Palestine, Syria, the Styrian Alps, &c. These insects were intended for publication in the work undertaken by Mr. Trustram on the Fauna and Flora of Palestine, as part of the great work of the Palestine Exploration Society.—A valuable paper by Mr. Edward Saunders was read, containing descriptions of a great number of new species of Buprestidæ, collected in Siam by M. Mouhot. A conversation took place on the insects found in copal, amber, &c., founded upon Dr. Wellwitsch's recent communication to the Linnean Society. (See p. 294.)

ZOOLOGICAL OF LONDON: *March* 27.—Dr. Gray in the chair. A letter was read from Dr. Bennett giving details concerning the habits of the Lyre Bird (Menura novæ-hollandiæ) in captivity.—Dr. Murie and Mr. St. George Mivart communicated a joint memoir on the anatomy of the Lemuroidea, principally relating to the myology of these animals.—Mr. Sclater and Mr. Salvin read a catalogue of birds collected by Mr. Bartlett during his recent expedition up the river Ucayali in Eastern Peru, with notes and descriptions of the new species. The total number of specimens contained in Mr. Bartlett's collection was about 700, referable to 252 different species, of which 12 proved to be new to science.—Dr. Gray gave a notice of an apparently new species of Monkey of the genus Cercopithecus living in the Society's menagerie, and proposed to be called C. erythrogaster, and a notice of a new species of Nasua from South America, proposed to be called N. dorsalis.

Notices of Books.

A Concise Dictionary of the Bible, for the Use of Families and Students. Edited by William Smith, LL.D., Classical Examiner in the University of London. Pp. 1039. John Murray, Albemarle Street. 1865.

People in general are rather disposed to accept the opinions which scholars express of each other, *cum grano salis*, whether they be in praise or in disparagement; but certain it is that a singular unanimity prevails in literary circles as to the qualifications which Dr. William Smith possesses for editing dictionaries and works of that description. The public is greatly indebted to Dr. Smith for the services he has rendered to the cause of education. He is a positive benefactor to the whole race of students. Few persons, however, are aware what a vast amount of organising skill needs to be exercised, and what difficulties must be overcome before such a work as the famous "Dictionary of the Bible" is brought to a satisfactory conclusion. With a distinct appreciation of what is wanted by the student, a clear scheme in his own head, and a general knowledge as to where the proper materials may be found, the more difficult task remains of selecting the most competent assistants, and inducing them to undertake the parts assigned them, and still farther to handle their subjects in such manner as to fall in with the general plan of the work, writing fully up to the prevailing tone of literary thought, and yet not so far in advance of it as to shock people's prejudices.

Dr. Smith's works are deservedly held in the highest estimation, and his "Dictionary of the Bible" is acknowledged to be a great success. The list of contributors also is sufficiently satisfactory (and this is in some sense a guarantee), including an archbishop and three bishops, with a goodly array of deans, dignitaries and other well-known writers, each distinguished in his own line of study, and every article is signed with the initials of the writer. The preface to the "Concise Dictionary of the Bible" states that "it is intended to satisfy an expressed wish for an account of the most recent Biblical studies, in a form adapted for universal circulation." It is intended for "students in the Universities, boys in the upper forms of schools, private families, and that numerous class of persons who desire to arrive at *results*;" while those who wish to go more deeply into the various subjects connected with the Bible must consult the larger Dictionary.

The work of condensation has been executed by Mr. William Aldis Wright, M.A., the able librarian of Trinity College, Cambridge, whose literary labours are well known throughout the country; and judging from a careful comparison, which we have made in some few points, between this and the larger Dictionary, there can be no doubt that Mr. Wright has shown very great discrimination. Those of our readers who possess the larger work may see for themselves, by the initials "W. A. W.," and those who do not possess that work may like to be informed, that Mr. Wright contributed a series of very important articles to it: such for instance are those marked on "Hebrew Poetry," "Music" and "Writing," "Proverbs" and "Psaltery," indicating what has been one great branch of his studies. The article "Jehovah," those on the prophets Micah and Malachi, others on the office of Procurator and Proconsul, and others, again, on a multitude of the more obscure names found in Scripture, serve to show the various lines of research with which he is conversant. We may also mention that Mr. W. A. Wright is joint editor with the Rev. W. G. Clark, Fellow of Trinity College and Public Orator, of the new and very excellent Cambridge Edition of Shakspeare.

The "Concise Dictionary" is the same size as the larger work, but contains one-third the number of pages, and consequently forms a single thick volume.

The Students' Scripture History. Old Testament. Edited by William Smith, LL.D. Pp. 608. 8vo. John Murray, Albemarle Street. 1865.

Large works, displaying a considerable amount o research, we have had, under the title of Introductions to the Bible, and excellent little works with the modest title of Helps to the Reading of the Bible; but, strange to say, up to the present time, the schoolmaster has looked in vain for a text book of Old Testament history, written in a sound, clear, scholarlike style, and withal compendious, such as he would like to put into the hands of his pupils. The little volume before us will receive a cordial welcome from the large class of persons who are engaged in the important and responsible work of education; for, to say the truth, it has been no easy matter of late years to know exactly what to teach young people on many subjects connected with Biblical investigations. Probably there is no study in which so much progress has been made in so short a time; and in a matter of such universal interest and importance, the teacher of youth is naturally anxious to know what results have been arrived at, which he may regard as established truths; what are the opinions of the learned on confessedly difficult points; and what are the questions which he must be content to leave for the present unanswered.

The volume before us is mainly a concise history from the Creation to the return of the Jews from the Babylonish captivity, written in a candid tone, and always in a reverential spirit. Besides the short footnotes and references, there are more important notes and illustrations at the end of nearly every chapter. These occupy somewhere about one page to every six of the text, and include such subjects as "the Hebrew names of God," "the Serpent," "the Book of Enoch," "Scripture Chronology," &c. At the end of the book there is an Appendix on the Books of the Old Testament, chronological tables, and tables of weights and measures. The work is illustrated by about 40 maps and woodcuts, and there is a general index. The whole is edited by Dr. William Smith, and is to be followed immediately by a similar Students' Manual of the New Testament History.

The Shilling Peerage for 1866 (Hardwicke).—*The Shilling Baronetage* (same publisher).—*The Shilling House of Commons* (same publisher). Little handbooks whose general accuracy, compact form, and low price, are great recommendations.—*The Danger of Deterioration of Race from the too rapid increase of great Cities.* By J. E. Morgan, M.A., M.D. A paper read at the Social Science Congress at Sheffield, and now published by Messrs. Longman. It should be read by all interested in the physical welfare of their fellow creatures. The main causes which undermine the health of dwellers in towns are referable to vitiated air and profligate habits. In the pamphlet before us the author throws out suggestions as to how these evils may be palliated.—*Scientific Opinion.* Under this title has been issued the first number of a new journal or "weekly retrospect of home and foreign scientific literature." The idea of this publication is a good one, as a judicious selection of trustworthy abstracts from the various scientific periodicals, transactions of societies, and recently issued scientific works would be of great value to readers afflicted with the prevailing complaint of want of time. The bibliographical records in the unhappily defunct Natural History Review, and those more extended ones in the Bulletin of the French Botanical Society, are of great use to all students, and we trust that from the pages of this new periodical we may derive in the future much assistance. Accuracy and promptitude are two great desiderata for the successful prosecution of this undertaking. There is not much to complain of in the way of promptitude in the report of the Proceedings of the French Academy as here given, but in five consecutive lines we meet with such misprints as Montange for Montagne, Chaint for Chatin, Athur Gris for Arthur Gris, while a little further on M. Prillieux is stated to have contributed a paper "on the colouring matter of *Raisins*, when, we believe, M. Prillieux's remarks had reference to Resins. The unquestionable utility of such a publication should not be marred by such oversights as these.—*A Century of Sonnets*, by Jacob Jones (Bennett). There is more mechanism than poetry in these sonnets. Some of them have, however, narrowly missed being pretty.—*Alexander von Humboldt; or, What may be Accomplished in a Lifetime*, by F. A. Schwarzenberg (Hardwicke). A glowing eulogium on the great Prussian philosopher. There is little in this sketch of Humboldt's life and achievements that has not been before made public, but the subject is so grand a one that it will bears repetition.—*The Journal of the Linnean Society*, No. 36, Botanical Section, contains papers on the Vegetation of the Shores of the Dead Sea; on the Flora of the Desert of Sinai; the Palms of East Tropical Africa; and the Coco de Mer, (Lodoicea sechellarum), one specimen of which is stated to have attained a height of 186 feet.—*The Quarterly Review* for April comprises several very interesting articles; among which we would especially mention those on Sir Joshua Reynolds, Foss' Judges of England, the Science of Language, and the Children's Employment Commission. The facts as related in the latter are of so horrible a nature as to call for immediate legislative interference.

CATALOGUES RECEIVED.—Our table is literally strewn with examples of this class of horticultural literature. We take up the following, relating to Soft-wooded, Florists', and Bedding-out Plants chiefly:—*E. G. Henderson & Son's*, including all sorts of novelties, and especially rich in Tricolor Pelargoniums; *G. Rawlings'*, a list of the best Dahlias; *W. Paul's*, in which New Roses and Beaton's race of Bedding Pelargoniums are the most prominent subjects; *C. Turner's*, devoted to all sorts of Florists' flowers; and *Carstairs & Sons'*, select Florists' flowers, including a new double white Pelargonium.—*Charlwood & Cummins* issue a brief list of Seeds of Trees and Shrubs.—*John Scott* sends out a good descriptive fruit list, in which the question of Paradise stocks, which has been occupying some public attention, is raised. Mr. Scott says the true Paradise is the Pomme Paradis, and is not so tender as it is represented to be.—*Messrs. Backhouse & Son* have found a Supplement to their list of Alpine Plants necessary; it includes many choice things of that class.—*John Morse* issues his Catalogue of Cuttings grown for sale.

Florists' Flowers.

NEW ROSES.—I have read with some interest the remarks made by "D. Deal" at p. 295, respecting the exhibition of new Roses for the prizes offered by the Royal Horticultural Society and the Crystal Palace Company at their annual exhibitions; also the suggestions of the Rev. W. F. Radclyffe, and the note appended by the Editor to the first-named remarks. It appears, as "D., Deal" states, a very simple question, yet it is surrounded with difficulties, and might lead to unpleasantness unless more correctly defined. I quite coincide in the Editorial remarks, that the prizes should be given to the best formed flowers, with the most distinct colours—flowers in fact which are improvements upon existing kinds, no matter whether all were the issue of 1864 or 1865. The suggestion brought forward by Mr. Radclyffe, that the wording of the schedule should be "1864 and subsequently," is good. This would be better than confining the exhibitor to the two years, as he may have ready on the day of

exhibition one or two good blooms of the new Roses of 1866, which would carry him far ahead of other competitors, but by the present wording he would be prohibited showing them. I think all exhibitors tacitly understand that, by the expression "new Roses of 1864 and 1865," is meant those catalogued by English nurserymen for the first time in the spring of those years. To place the question at rest, a few of the leading exhibitors should respond to the appeal, and should thus set the precedent by which decisions for the future should be ruled, as there is at present no recognised tribunal of florists to decide upon disputed matters such as the present.

I cannot agree with your correspondents that this is at present solely a nurseryman's question. The amateur has as good a chance to exhibit new Roses in this class as the nurseryman, especially if he purchases 12 of one kind, as stated by your contributor at page 319. The amateur can purchase one plant of each variety of 1864, and the same of 1865. From each of these he may reasonably expect a dozen good sound buds, and if he work these, and they bloom as they ought in the spring of 1866, what advantage will the nurseryman have? He will if possible have turned his stock into cash, whereas the amateur grower will have retained his plants to exhibit from, and will thus have rather the better opportunity of exhibiting the new Roses to advantage, while the nurseryman will most probably only have the produce of those stocks worked in the summer of 1865 to show from. The competition in this class has hitherto been limited. I see no reason why it should be so, and certainly think the amateur has as fair a field as the nurseryman, provided his soil is congenial to their growth. The soil appears to me to be the great difficulty, as it is only in rich loam or loamy clays that the Rose will grow with sufficient vigour to throw good blooms for exhibition. The splendid flowers shown from Slough, Cheshunt, Waltham, and Hereford, have a rich satiny appearance, great substance of petal, and the delicious perfume for which the Rose is so highly prized, and these qualities cannot be produced to so great an extent in any soil but a rich retentive loam. *William Heale.*

Is the Rose a Florists' Flower?—The following remarks may possibly induce "Rosa Canina" (see p. 942, 1865) to think that whilst the Rose is a florists' flower, it loses none of its charms by being placed in that category. Your correspondent protests against our "Queen of Flowers" being classed as a florists' flower, which, like the old-fashioned English florist, he says seem to be on the wane. It is just possible that the "old-fashioned" English florists are becoming extinct, and if they bore the slightest resemblance to the somewhat fanciful sketch of them drawn by "Rosa Canina," I say the sooner they are altogether out of existence the better; but the picture in question is much too highly coloured.

Your correspondent inquires "What are florists' flowers?" and by way of reply alludes to a variety of subjects which have received considerable improvement at the hands of the florist. I however maintain that any flower which is capable of improvement, and whose qualities have been enhanced by the assiduous perseverance and attention of the florist, is entitled to a place among what are termed florists' flowers. What, may I inquire, were the properties of the Pelargonium, the Fuchsia, the Calceolaria, the Cineraria, and the Verbena, nay, even the Aster, the Phlox, the Mimulus, and the Gladiolus, besides other varieties of flowering plants which are now so much admired at floral exhibitions, until they were taken in hand by enterprising florists? Were they not devoid, comparatively speaking, of either shape, size, or symmetry?

Let me direct the attention of "Rosa Canina" to the culture of the Rose, from the time of its being planted until its blooms are placed on the exhibition table. He must certainly be in a state of blissful ignorance if he imagines that it is only necessary to dig a hole in the garden, plant your Rose, and there leave it to "Nature." If this was all, I am sure it would require all the available "manipulation" a florist possessed, to render a bloom from Nature's plant passable. To grow the Rose in perfection so as fully to develope its beauties, the soil must receive its necessary preparation, viz., drainage, manuring, and dressing; the plant must be judiciously pruned and disbudded, and the selection of buds allowed to bloom, and their future shading and management are all points to be decided by the judgment of its cultivator—and the grower who fully carries out these points, it is scarcely necessary for me to observe, must be a florist. At the same time it is obvious that these are absolute requirements to enable the plant to develope perfect flowers, and therefore I do not hesitate to say that the Rose is truly a "florist's flower."

The Rev. W. F. Radclyffe, in one of his recent essays, says he is "no florist himself," but I am inclined to believe that no amateur florist can peruse the reverend gentleman's numerous remarks on the Rose without arriving at the conclusion that he is a "florist," and one possessed of high attainments.

It is not essential that a florist should be conversant with the mode of treatment of every flower grown, as it is an admitted fact that a diversity of tastes exists in the floral community, one person admiring the Rose, another the Tulip, and a third the Dahlia, whilst others have a predilection for the Pelargonium, and so forth.

I have in my time met with many men amongst the working classes who have possessed taste and judgment enough to discern the difference that exists in the qualities constituting a first-rate flower and an inferior bloom, and these men, be it understood, were not what are usually termed "florists."

The Rose, I feel persuaded, will not lose any of its attractions by the protest of "Rosa Canina," neither will the "old English florist" or his successor be deterred by it from gratifying his taste, if he prefers to do so, in cultivating the Rose as a "florists' flower." *Florista, Leicester.*

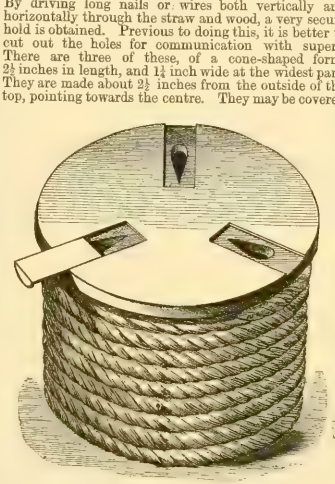
The Apiary.

Bee-Culture: Hives.—Mr. Taylor, in some of the later editions of his "Bee-Keeper's Manual," gives a description of a flat, wooden-topped straw hive, which I have found, after many years' trial, to be one of the simplest, and, at the same time, one of the most remunerative hives I have ever possessed.

I have made some alterations in the dimensions and mode of construction, but the main features of the hive, a representation of which is subjoined, are taken from Mr. Taylor.

Have made a cylinder of straw open at both ends, 15 inches wide, and 9¾ inches deep, inside measure. The lower part of the hive may with advantage be an inch less in diameter than the upper. Let the bands of straw be of good thickness, not less than 1½ inch, well and tightly pressed together. No entrance is to be cut in the straw.

The top is made of two boards of deal, nailed together across the grain. The lower board, ¾-inch thick, is cut the exact diameter of the upper part of the straw cylinder, fitting tightly within it. The upper board is of half-inch stuff, and projects all round beyond the other the thickness of the straw, or about 1½ inch. By driving long nails or wires both vertically and horizontally through the straw and wood, a very secure hold is obtained. Previous to doing this, it is better to cut out the holes for communication with supers. There are three of these, of a cone-shaped form, 2½ inches in length, and 1½ inch wide at the widest part. They are made about 2½ inches from the outside of the top, pointing towards the centre. They may be covered



with simple blocks of wood on a plain surface, or, for the more timid operators, slides may be adopted. These are best made of stout zinc, about 1-16th of an inch thick, 2 inches wide, and 6 inches long, with one end turned down; a shallow channel is cut out rather more than the thickness of the zinc. No retaining grooves or guides for the slides are necessary. The chief advantage of the pointed apertures is, that when the slides are pushed in from the outside, the bees are gradually urged out of the way, the risk of crushing being thus reduced to a minimum, as certainly not more than one bee can be injured. These three apertures are intended for communication only with one super, whether of glass, straw, or wood, although, if preferred, three can be worked at once, but this is a plan I cannot recommend, when large supplies of honey are desired.

The lower, inside surface of the top must be left roughened. I have adopted, with great advantage, the plan of screwing up across the top, avoiding the holes of communication, a narrow bar having some worker-comb attached, or the remains of previous attachment. This induces the bees to work at least the central comb, or combs, in a straight direction, otherwise I have found the greatest irregularity in the formation of the combs usually to prevail in these wide flat-topped hives. This guide-bar should of course be placed from front to back.

The bottom board should be of 1¼ stuff, securely strengthened by cross pieces below, which are best run in as a wedge or dovetail. The entrance must be cut in the bottom board, and not in the hive. It may be 5 inches long by ⅜ inch in height, contracted, when advisable, by blocks or wedges.

The supers which I usually work on these hives are octagonal boxes, 13 inches in diameter by 5½ inches deep, inside measure, fitted with seven bars. When that one first given becomes nearly filled with combs, it is raised, provided the season appears likely to prove propitious, on a shallower octagon box of 3½ inches in depth, having no top or division between the two. The combs are brought down without interruption, making when complete a super containing about 40 lb. I also frequently substitute for these wooden supers, octagonal framed glass boxes, constructed of mahogany, with framed glass top. These are also fitted with bars, which are so placed as to be ⅜ of an inch below the glass. The diameter is usually the same as that of the first described; the depth may vary according to locality or the taste of the apiarian—mine being 7⅜ inches from the glass cover. These supers, when filled, are remarkably handsome. The ordinary bell-glass may also be used with advantage, provided it be capable of containing not less than 20 lb.

Many apiarians err greatly in putting on supers much too limited in capacity. As the stock becomes strong, the bees are oppressed with heat and want of room, work is at a comparative standstill, and at length, most probably, a swarm is thrown off; whereas, if a large-sized super had been substituted, the bees would have increased in numbers, without the hive becoming over-populated; more workers could prosecute their labours in the super, consequently work would progress much more rapidly; and there would also be less liability of a disposition of the bees to throw off a swarm.

In my early bee-keeping experiences, I used to think a super of about 15 lb. a great achievement; I now find that supers of 30, 40, 50 lb., and upwards, can be as easily obtained, requiring but little more time for their completion. This may be considered a bold assertion, but I am convinced of its truth, and therefore I speak advisedly. These observations on supers will be applicable to all hives hereafter described. *S. Bevan Fox.*

Garden Memoranda.

Danesbury, near Welwyn, Herts, the Seat of W. Blake, Esq.—Danesbury House is pleasantly situated upon a hill, and has a wide piazza running the whole length of the south and east sides of it. The pillars supporting this are clothed with hardy creepers, which in autumn especially give them a very cheerful appearance. Dotted here and there upon the lawn are thriving young specimens of Pinus, among which is a fine example of Pinus Lambertiana, some 30 or 40 feet in height, evenly and uniformly clothed throughout with branches, of which the lower ones are gracefully pendent. Near this stood, previously to the winter of 1860-61, a very fine Araucaria imbricata, which was killed by that heartless winter.

From the lawn let us pass to the flower garden, which is not very extensive, but very tastefully arranged. The main features of this garden last autumn were Beaton's Silver Nosegay Pelargonium, which is truly one of the most showy of all the silver-leaved varieties, producing also an abundance of light rosy pink flowers. Among Calceolarias, which were exceedingly strong and healthy, aurea floribunda and canariensis had overgrown their respective limits, and were literally masses of yellow blossoms. Two or more neutral colours were massed in the same beds and had a good effect, the colours being properly blended, not unskilfully thrown together as is sometimes the case. Around, Roses were trained to artistically formed trellis work; there were also some goodly sized beds of the newer varieties upon their own roots.

Contiguous to the flower garden is the conservatory, a building of recent erection, and of large dimensions. Evenly trained over the roof were a variety of creepers, some of which in the flowering season have a truly gorgeous effect. Tacsonia ignea appeared to be greatly superior to mollissima, both in point of colour and freedom of bloom. Whilst Solanum jasminoides is worthy of a place in every conservatory on account of its evergreen foliage alone, on this occasion it was, however, laden with masses of the whitest of flowers. No house in which creepers can be grown should be without this Solanum, the blossoms of which are very suitable for bouquets. Lapageria rosea was flowering freely, and Kennedya and Habrothamnus aided in giving the roof a very pretty appearance. On the stages was a profusion of plants, among which were three or four distinct varieties of the beautiful Lilium auratum, some good varieties of Primula filicifolia, and of P. carminata splendens; many new Azaleas in good health, and well set with flower buds; a fine Acacia Drummondi; exotic and semi-hardy Ferns, &c. Planted out in beds in this house were Camellias, Oranges, &c.; whilst in a side border at the base of a wall were very fine specimens of Hovea Celsi, the prettiest of all blue flowering shrubs. Here were also the gorgeous Plerema elegans and Luculia gratissima, both showing abundance of blooms; with roots at freedom to roam in a well-prepared border, rather dry in its texture, and slightly attached to a dry wall at the back, these plants grow and flower here most satisfactorily. Well-grown examples of Cyclamen overrun with a dwarf Selaginella lined the front edge of these ground borders. Last, and though small, not least, were two or three gems among British Ferns, too tender, and yet too rare, to be allotted a place in the out-door Fernery. These were Asplenium Trichomanes cristatum, a constant and most elegant variety, the extremity of each frond being flat, much crisped, nearly circular in form, and measuring an inch or so across. Of A. Trichomanes incisum the pinnæ were unusually fully developed, one overlapping the other, and very much toothed. A. lanceolatum microdon, a very distinct and extremely pretty variety of Hudson's Spleenwort, was also in this collection, as was also Scolopendrium v. Drummondii, a striking variety, freely crisped and tasselled, as is the case with Wollaston's variety cristatum gracile. Among Aspleniums, A. germanicum acutidentatum is a dwarf, oft-divided variety, sharply toothed, distinct, and pretty. Lastrea dilatata ramosa is also so distinct and pleasing as to be conspicuous even amongst a crowd of others. At the northern side of this conservatory is the kitchen garden, walled in and well furnished with fruit trees of every description, the walls being stocked with varieties suited to their different aspects.

Apricots, planted at the end of the fruit-room, extend their branches up to the very top wall, and are evenly fruited throughout. In another portion of the kitchen garden are pits, forcing-houses, gardener's house, &c. The first house on the right is a Vinery,

attached to which is a Peach and Nectarine house. On the left is a Fig house, well furnished with young plants. Through an archway, passing a fine young plantation of Cherries and pyramidal Pears, we come to a small stove, the roof of which is partially covered with Dipladenia crassinoda. Amongst the plants in this house, in addition to Orchids, were two or three fine specimens of the tasselled Gold and Silver Ferns. Some of Mr. Parsons' Achimenes were also here. Leopard, very distinctly spotted in the throat; Purpurea elegans, dark mulberry with orange throat; and Vivicans, carmine, with deep coloured throat, are well worthy of mention. In a division of this house devoted to Cucumbers, was a dark-spined variety, originated here, which is supposed to surpass the Telegraph, plants of which were fruiting plentifully near it. Opposite this house, and in a line with it, are two Vineries, both large high houses. In the first of these Vineries, at the time of my visit, some fine bunches of Muscats and Hamburghs. The Vines in the farther of these two houses were at rest. At the back of these an addition has lately been made to the hereditore too small kitchen garden; this is filled with the customary green crops. Among late Raspberries Carter's is considered excellent.

In the park is a hardy Fernery, situated in a dell, and reached by means of a good gravel walk. It is associated with some large trees which are surrounded by Laurels, &c., which aid in keeping the rougher winds away from the more tender kinds of Ferns, and the whole is inclosed by substantial rabbit-proof fencing. Entering under an archway, formed of grotesque-looking wood, we proceed a few yards, and an interesting scene presents itself, the imitation rockwork being in itself worthy of a visit. Here are steps by which to descend to the level below, formed, as it were, out of hard rock by time itself. On the opposite side is a ravine, over which has been thrown a rustic bridge, whilst nearer to the left, under the more massive upper rock—as is customary—is a capacious grotto, from the rock at the side of which streamlets of pure water trickle down into its basin bed. Here and there, abutting upon the green sward, the rocks appear, cragged and pointed, each having at its base, or upon its bosom, some quaint form which culture and observation have brought to light. The whole is well backed up by huge boulders, placed here and there, as if they were the work of one of Nature's strange convulsions.

Let us now note a few of the more distinct and noticeable Ferns found here: varieties essential to all having in view the getting together of a collection, however small. O. Athyrium f.-f. Victoriæ there is here a fine example, the pinnules or divisions in which are very narrow, distinctly forked at the base, and varying in their structure in such that they are divergent, crossing each other the whole length of the frond, the apices of pinnæ and frond being uniformly neatly tasselled. A. F.-f. coronatum has short spreading fronds, much crisped and forked at the end, with huge heavy tasselling. There is here a variety of A. F.-f. Elworthii, having the individual pinnæ very much crested, whilst the extremity or point is equal to the best A. F.-f. multiceps; of the last there is a fine large specimen, with narrow fronds, ending in cut-divided spreading crisped tassels. A. F.-f. Grantii is a dwarf upright form, with dense pinnæ overlapping each other at and near the points, being divided and crisped. A. F.-f. coronans var. nanum has drooping short narrow fronds, the pinnæ crested, and the frond ending in a many times divided crest, of large dimensions as to width, with the size of this dwarf variety. A. F.-f. grandiceps is dwarf, upright, very densely and heavily crested. Asplenium viride multifidum has here assumed its true habit, a circumstance questioned by some.

Polystichum angulare grandiceps is a beautiful green-leaved variety, with divided rachis, every division being more or less branched again and again, the individual pinnæ ending in small crests, the terminal points being large crispy tufts. P. a. gracile is a very graceful variety, the pinnules markedly slender near the midrib. P. a. plumosum has a waving pleasing habit; P. a. latipes, a large fine variety, has green fronds, with distant divisions, and sharp-pointed termination; P. a. rotundatum (a very fine specimen) has deep green fronds. P. a. multifido-cristatum has branched fronds, and the pinnæ and pinnules are slightly crested. Of P. a. proliferum Wollastoni the best plant here came from Mr. Wollaston's original specimen. P. a. proliferum Footii varies from the preceding only in having smaller fronds and smaller pinnæ, but a little wider; this was also obtained from the original plant. Of P. Lonchitis there is here a fine large plant which has become well established, and consequently is beginning to assume its real habit; it is branched, divided, and tasselled. Before leaving this class reference must also be made to the beautiful P. vestitum venustum of New Zealand, which succeeds admirably here.

Amongst Lastreas is a fine specimen of the rare F.-n. abbreviata cristata; it is a branch-forked and crested variety, of very pleasing appearance; L. montana curvata has narrow curved fronds; L. opaca (Japanese) has very dark green foliage and is distinct; L. F.-n. crispa, generally supposed to be too tender for our climate, is quite hardy here; it has short fronds and the pinnæ fringed; L. dilatata ramosa has branched fronds, and is tufted. Of L. Standishii there is here a very fine specimen.

Lomaria chilensis is a fine bold Fern with three or four huge fruiting fronds. It is quite hardy.

Amongst the endless varieties of Scolopendriums, ramo-marginatum is distinct, upright, and variably divided, each frond being very narrow and generally lengthy, until the ramose part is reached. The fruit, or seed vessels, frequently show themselves upon the upper side of the frond. Of S. cristatum major, the individual fronds are three times divided and freely tasselled. S. subcornutum, a foot across, is sometimes four times divided, as the frond is ascended, horn-like, with projections. There is here a very distinct and beautiful variety of Adiantum pedatum, the pinnæ in which are larger and more indented than the ordinary kind, and undulated: the rising centre of each frond giving the plant a very pleasing wave-like appearance. Let us conclude with a passing glance at the acquaintances of our youth a passing glance at the scaly Spleenwort, Brittle Bladder Fern, Green Spleenwort, and other native Ferns, all of which afford pleasing recollections of days gone by. *W. E.*

Miscellaneous.

Pollard Trees.—It was the custom to cut the Pollards of Windsor Forest down to about 6 feet from the ground every tenth or twelfth year, when the young branches grew up again very fast. To this system, as well as to the lopping of the branches for browse-wood, formerly pursued, we are indebted for the great number of highly picturesque trees, though it is also the reason why so little of the older timber is sound and valuable.

Ice-houses in America.—The ice-house of Lyman R. Lyon, at Lyon's Falls, New York, has not been empty for 20 years, nor has a pound of ice been put into it. The building is constructed after the ordinary method, and when it is designed to fill it a rosette is placed upon the water-pipe, and as the water comes through it is chilled, and drops into the ice-house, where it forms in one solid mass. *American Paper.*

Portland Cement.—Made into a thin solution like whitewash this cement gives wood-work all the appearance of having been painted and sanded, and may, for aught we know, have as preservative a property. Piles of stone may be set together with common mortar, and then the whole washed over with this cement, making it look like one immense rock of grey sandstone. For temporary use a flour barrel may have the hoops nailed, so as not to fly apart, and the inside washed with 10 cents-worth of Portland cement, and it will do for a year or more to hold water. Boards nailed together, and washed with it, make good hot-water tanks; and in so many ways is it of use, that we have come to look on it as one of those peculiar things in a garden which it is "always good to have about." *Gardeners' Monthly.*

Calendar of Operations.

(For the ensuing week.)

THE weather, though bright occasionally during the day, still continues cold at night. Calceolarias and other bedding plants pricked out in turf pits to harden must therefore still be covered up at night. Any protection that may have been afforded to line specimens of standard Laurustinus, or other shrubs, should however now be either wholly or partially removed.

FLOWER GARDEN AND PLANT HOUSES.

Thoroughly dress all beds and borders; prepare stations on lawns for extraordinary specimens of ornamental plants, as large Fuchsias, &c., putting drainage in the bottom, and good turfy and mellow compost above. Trim and prune all climbers on out-door trellises or conservative walls; and prepare stations for plants to fill up blanks. Cold pits will now be covered with some of the early struck or potted-off stock, hardening for the flower garden.

ANNUALS.—Half-hardy sorts should now receive attention. The best method of raising them is to sow them in pans or boxes now, or in a bed about 3 inches thick, of light soil, placed on a gentle bottom-heat, furnished by means of stable manure or vegetable refuse, and protected with a frame. Water sparingly, and give plenty of air when the plants appear: thin out or prick off in small pots, and be careful to get the plants well inured to the weather previous to planting in the open border, and also to give water as may be necessary, after planting, until they become established.

AZALEAS.—Specimens now in full blossom must be shaded from bright sunshine. Plants that have been kept in heat to bring them into flower will now require pretty liberal supplies of water. Great attention should be paid to ventilation, particularly in guarding against cold currents of wind. Young plants will grow rapidly if shifted and placed in a moist warm temperature: see that they are clear of insects.

CALCEOLARIAS.—Those intended to make large specimens will have received their final shift. As the season advances, so must the grower be more watchful to keep down insects. A very mild moist temperature is the best suited for the Calceolaria at this season.

CAMELLIAS.—Plants that have done blooming should be placed in heat to make their growth; shift any that require it; syringe them daily. Water freely plants now in bloom, and occasionally with weak liquid manure.

CINERARIAS.—These should now have all the air possible on every favourable opportunity, avoiding cold draughts. Pick off decaying leaves and blooms, and look well to mildew.

FORCING GARDEN.

CUCUMBERS.—Get those intended for ridges hardened forthwith, preparatory to turning out, and let trenches be prepared for them. A trench thrown out 3 feet wide and 2 feet deep, and filled to a foot above the ground level with such materials as litter, Grass mowings, or leaves with a little hot manure, all thoroughly blended, will make an excellent bed. When completed, raise mounds of soil 3 or 4 feet apart, to receive the hand glasses.

FIGS.—As the season advances gradually raise the temperature of the house. Syringe mornings and afternoons. Keep a moist atmosphere. When the borders require watering give them a good soaking. Plants in pots and tubs should have some weak manure water occasionally.

PEACHES AND NECTARINES.—Continue to keep the shoots well tied-in in the early house, and be careful not to get them crowded. In disbudding, the bearing wood of the present year should be divested of all shoots except the terminal one and those near the base. When a deficiency occurs in any part of the tree, more may be tied in. Ventilate freely in fine weather, and be careful to close up early in the afternoon. Syringe once or twice daily, and keep a moist atmosphere by throwing plenty of water on the pathways, borders, &c.

PINES.—See that good mellow turfy soil is ready under cover for the shifting process; also materials for thorough drainage, such as broken crocks, rough bones, charcoal, &c. Use clear liquid manure to swelling fruit, when necessary; and keep up a lively heat, with plenty of atmospheric moisture.

VINES.—Let disbudding, tying, stopping, &c., be duly attended to, according to principles laid down for the earlier houses.

HARDY FRUIT AND KITCHEN GARDEN.

Disbudding wall trees should be commenced early in order that the energies of the trees may not be expended in producing superfluous wood. In the final regulation of the shoots do not allow more to push into wood than can be conveniently trained in. When working at wall trees avoid treading upon the soil, a plank and a few bricks moved along as the work proceeds will obviate the evil just named, and will yield more comfort to the workman.

LETTUCES.—After this time it is best to sow these where they are to remain. Drills for them should be drawn 10 or 12 inches apart, and a few seeds dropped in at intervals of about 8 inches asunder; as soon as the plants are fairly up, the superfluous should be thinned to one plant.

STATE OF THE WEATHER AT CHISWICK, NEAR LONDON,
For the Week ending April 11, 1866, as observed at the Horticultural Gardens

April	Month after Leap Year	Barometer		Temperature					Wind	Rain
				Of the Air.			Of the Earth			
		Max	Min	Max.	Min	Mean	1 foot deep.	2 feet deep.		
Thurs.	6	30·203	29·878	54	35	45·1	48	46	E	03
Friday	7	30·060	29·875	48	38	43·0	48	46	E	01
Satur	8	30·093	29·893	48	38	43·0	48	46	NE	01
Sunday	9	30·085	29·895	55	30	47·1	48	49	I	00
Mon	10	29·850	29·478	56	34	45·0	48	48	NW	24
Tues.	10	29·805	29·785	50	47	46·0	46	46	SW	00
Wed	11	30·005	29·790	57	32	49·0	49	49	E	25
Average		29·917	29·786	49·1	38·3	44·8	48·5	49·0		·71

April 5—Foggy and drizzly: fine: overcast
— 6—Rain early: overcast: fine at night
— 7—Mostly dull and cold: overcast
— 8—Foggy: overcast: clouds and still: overcast
— 9—Overcast: cold rain, with N.E. wind: snowery at night.
Tues. 10—Overcast: damp and murky: overcast
11—Hazy: showery: constant rain: wet throughout
Mean temperature of the week 4 deg. below the average.

STATE OF THE WEATHER AT CHISWICK,
During the last 10 years, for the ensuing Week, ending April 21, 1866

April.	Average Temperature from 57 Years.		Average Temperature in 1866.		Mean Temp.	Prevailing Winds.							
	Highest.	Lowest.	Highest.	Lowest.		No. of Years on which Rain fell in Quantity of Rain.	Greatest Quantity of Rain.						
Sunday 15	58·1	37·7	47·0	19	0·47 in.	1	0	0	0	0	4	3	1
Mon. 16	57·9	36·6	49·2	20	0·6	0	2	1	0	0	3	1	1
Tues. 17	57·8	36·1	49·6	21	0·6	0	2	1	0	0	3	1	1
Wed. 18	57·8	36·0	49·8	21	0·6	0	2	1	0	0	3	1	1
Thurs. 19	57·8	36·0	49·8	21	0·6	0	2	1	0	0	3	1	1
Friday 20	57·8	36·0	49·8	21	0·6	0	2	1	0	0	3	1	1
Satur 21	57·8	36·0	49·8	21	0·6	0	2	1	0	0	3	1	1

The highest temperature during the above period occurred on the 19th, 1801—therm. 77 deg., and the lowest on the 16th, 1862—therm. 20 deg.

Notices to Correspondents.

APHIDES: *Amicus.* We are of opinion that the decay of Abbiet trees is accelerated by excessive dryness at the roots, by successive seasons, and by mild now on the top. The heat of these trees should be guarded against by watering, soon to thoroughly cool the soil all, but in doing this take care that the water is warmed from the sun before it is applied, or the roots will be severely badly. Scorching may be obviated by shading the exposed parts of the stem during very bright weather, and for mildew sulphur is the best remedy. Let it be applied when the leaves are wet.

GRAPE-VINE: *A B C.* You can now see one of Beard's Patent Plant Metallic Non-conducting Glass-houses in the Royal Botanical and Horticultural Society's Garden at South Kensington. It is some 40 feet in length and 10 feet in width, with ample means of ventilation at top and bottom, and has attached to it a light and elegant pit-frame. These houses, also, are manufactured by Messrs. Bray, Sharpe, Bray St. Edmunds, and may be had entirely of iron, glass, and lubrication felt. The iron receives several coatings of the best lead, which is then hardened into a smooth and durable enamel by being baked in a hot stove. The felt supersedes the use of putty, and it separates at all points the iron from the glass. The glass is used in large panes measuring 40 inches in width by 30 long. The iron and glass rise from the ground line, thus dispensing with brick or dwarf upon walls, and so increasing the area of the house, and the quantity of the light admitted.

NAMING PLANTS: *Verax.* The confidence you repose in our omniscience is flattering, and although we endeavour to justify it by giving an opinion upon the fragments of seeds you have sent us, we would beg you to say before-hand not to let us have better materials upon which to rest it. The seeds in question seem to us to be those of the common Spruce (Abies excelsa), but as we have been unable to find a perfect wing among them, this opinion must be taken with a corresponding qualification.—*Beta.* Lustrous Shepherd's-purse.—*E. Tozer.* The plant sent is Botrychium lunaria, Spathulis, The ordinal of which is not very accurately given in the Books referred to.—*W. & S.* 1. Polystichum angulare proliferum; 2. Polypodium vulgare. The Moss is some Polytrichum, but it is of no horticultural importance.—*J. B. & S.* Nopela Museum.—*M.* Mercurialis perennis.

PALMS: *Sub.* The kinds mentioned at p. 316 may doubtless be procured at any of the large nurserymen. For obvious reasons we make it a rule never to recommend tradesmen.

WALL SHRUBS: *R T T.* Next week.

CORRESPONDENTS RECEIVED.—Query—T. M.—A Constant Subscriber—A. M. H. (next week).

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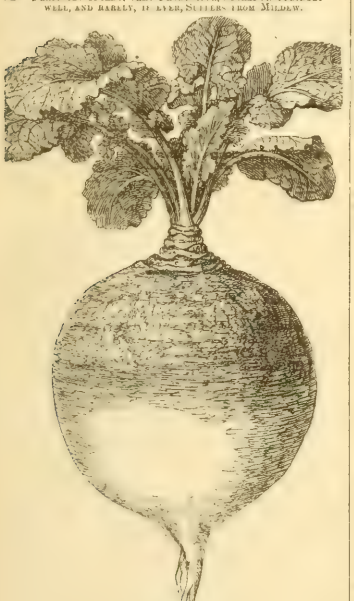

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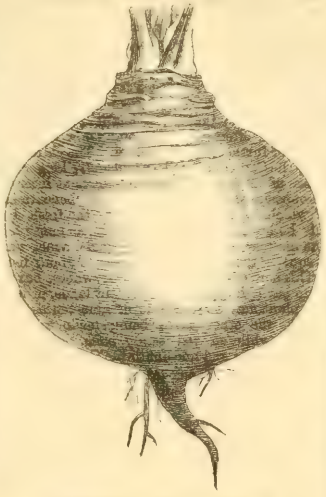

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Light, 28s.; Medium, 31s.; Heavy, 36s. per acre

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Light, 31s. 9d.; Medium, 35s. 6d.; Heavy, 41s. 3d. per acre

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Light, 31s. 2d.; Medium, 37s. 7d.; Heavy, 38s. 1d. per acre

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Light, 33s.; Medium, 34s. 11d.; Heavy, 36s. 8d. per acre.

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ESTABLISHED 1777. BATH & WEST OF ENGLAND SOCIETY. WORK & LEARN

Entries Close on May 1

Applications to be made to JOSIAH GOODWIN, Secretary, 4, Terrace Walk, Bath.

ROYAL AGRICULTURAL SOCIETY of ENGLAND.—On WEDNESDAY, April 18, at 12 o'clock, Dr. VOELCKER will deliver a LECTURE on "The Conditions to be observed in Carrying Out Agricultural Experiments in the Field."

By order of the Council,
12, Hanover Square, W. H. HALL DARE, Secretary.

The Agricultural Gazette.

SATURDAY, APRIL 14, 1866.

MEETING FOR THE ENSUING WEEK.

WEDNESDAY, April 18 { Agricultural Society of England—Noon. Do. Weekly on Field Experiments.

—— We understand that Mr. HOLLAND, M.P., has given notice of his intention to move at the next Council Meeting of the Royal Agricultural Society,—

"That the present Charter, although well adapted to the wants of the Society during its first years of existence, contains provisions inapplicable to the present progressive state of agriculture; such provisions having a tendency to limit the usefulness of the Society, and generally to impair its efficiency. Resolved, therefore, that application be made to HER MAJESTY in Council for an amended Charter."

The history of the past few months, and the difficulties which the existing Charter have placed in the way of any efficient action by the Society in connection with the Cattle Plague, have amply proved the necessity of enlarged powers being conferred. And although it is not likely that this resolution will be adopted by the present Council, so many of whose members have grown grey under the working of the existing Charter, yet members of the Society may be roused to take action in the same direction, and good will no doubt ensue.

THE directors of the Highland and Agricultural Society will soon have to elect the successor of their late Secretary, Mr. MACDUFF, of Bonhard. His appointment dated from only a few months back, but owing to ill health he was never able to undertake the duties of the office, which continue to be discharged by Mr. HALL MAXWELL, C.B.; and his lamented death a few weeks ago renders a new election necessary.

It is of great importance for the right direction of whatever influence on agricultural progress our national societies exert that their office-bearers be properly selected. In no instance has this been more conclusively exhibited than in the history of Mr. MAXWELL'S career as Secretary. It needed a man of his force of character and original as well as acquired and increasing popularity, rightly to direct a great institution like the Highland Society in the new course of action upon which the changing circumstances of British agriculture 20 years ago required that it should proceed. And, with many an agency still in operation, which has yet to produce its effect upon agricultural progress, there still remains the need for many of Mr. MAXWELL'S most useful qualifications. We do not imagine that so much independent force is required now to give full effect to the position of Secretary as he has displayed; nor is it so necessary now as it was in the outset of recent agricultural progress, that the power should exist, and be exerted, of swaying great numbers by strong personal influence. With everybody now agreed upon the main lines on

which agricultural progress rests, it is less of an executive than of an administrative officer that is needed.

And seeing that it is useless to seek for a man who possesses all Mr. Maxwell's qualifications, it is fortunate that now they are not all required. His successor must of course possess settled convictions as to what alone is abstractly just and right in the business relations of the several classes interested in agriculture, on which, after all, agricultural progress principally depends: and he must possess sufficient experience also to know how much is practicable and expedient in the effort to attain the ideal which is thus before him. It is, moreover, especially desirable that his past career should have given him full acquaintance, and, so to speak, sympathy with all the different agencies on which the current agricultural progress depends.

It would, we believe, be hard to name a man better qualified in all these respects for the vacant office than Mr. John Wilson, Professor of Agriculture in the University of Edinburgh. For many years he has been unobtrusively but efficiently discharging the duties of his Professorship; and through it and its connection with the Highland Society he has been a leader in one of the most important though still undeveloped departments of its activity. It is of the greatest importance that the new Secretary be able to take the lead in connection with the subject of Agricultural Education, which is now making a stir in all parts of the island; and no one can speak with greater effect on such a subject than Professor Wilson. The question of Steam Cultivation, which this year pretty nearly fills the agricultural horizon, is one on which Prof. Wilson is also an acknowledged authority. And of his general capacity and power of organising co-operation and directing effort there is sufficient proof in his connection with, we believe, all the great exhibitions of this country, of France, and of the United States. We do not even know whether Professor Wilson is a candidate for the vacant Secretaryship; but it is difficult for a mere spectator to imagine one better qualified for its duties. And it is, we believe, quite within the province of agricultural journalism to speak out on a question of this kind, whenever favouritism on one side or prejudice on the other is likely unjustly to influence an important public appointment.

"A Constant Reader" forwards us two specimens of Grass, with the following questions:

1. Is not No. 2 (Triticum repens) Couch?—It runs underground.

2. Is No. 1 (Agrostis stolonifera) Couch?—It runs above ground.

Now these questions have been so often asked that a few notes on the different forms of Couch can hardly be out of place.

Couch, Cooch, Twitch, Quitch, Squitch, are various names given to Grasses which have the property of creeping beneath the soil by means of underground stems, called by the botanist rhizomata. Couch is commonly supposed to be referable to a single species, or to belong to one kind of Grass, but an examination of the flowers of creeping Grasses will show that various species have this property, of which the Common Couch (Triticum repens) with its head of flowers after the manner of Wheat, is one type, while the Agrostis stolonifera, with diffuse flowers like a miniature bunch of Oats, is the other.

These are the two principal Couch-grasses which are troublesome to the farmer, though there are others, which, from possessing the same creeping characters in a minor degree, are of less mischief in consequence. The following is a list of such rhizomatous Grasses as may be termed Couch by the farmer. There are Grasses with creeping underground stems by the sea-side which come under another category:—

List of Rhizomatous (Couch) Grasses.

No.	Botanical Name.	Trivial Name.	Remarks.
1.	Triticum repens ..	Common Couch ..	Everywhere. No. 2 of our Correspondent.
2.	Agrostis stolonifera	Fiorin. Couch Grass	Too common in sandy marls. No. 1 of our Correspondent.
3.	Poa compressa ..	Wiry Couch ("Squitch")	Common in stony places.
4.	Poa pratensis ..	Meadow Grass ..	Slightly rhizomatous.
5.	Brachypodium pennatum	False Brome Grass	Common to limestones and poor clays.

1. Common Couch is distinguished in flower by its spicate inflorescence, and when not in flower by a peculiarly strong smell in its crushed foliage, due doubtless to the presence of some active quality, which renders it a medicinal agent to dogs, and has given it the French name of *Chien-dent*, or Dog-grass.

Its creeping stems in the fresh state are bitter, but on drying become sweet; and when we pick up a blade of Couch with this sweet taste we may decide with tolerable safety that it has lost its vitality, a test which has often prevented our going to the expense of further Couch-picking. The rhizomes of this, the Common Couch, are usually longer than those of any other, and they have at intervals, on opposite sides, a thin membrane, beneath each of which is a bud; if, then, in the fresh state, this be broken between the buds, as many fresh sets may be made as there are buds, a fact which is equally true of the second species of our list.

This sort of Couch grows everywhere, but it is more particularly common in stiff lands, in which this plant may be said to form nine-tenths of the Couch, the other tenth being made up of the Fiorin, while in wet sandy soils, nine-tenths may be Fiorin and one-tenth the Common Couch.

2. The Fiorin Couch-grass, besides the distinction of a diffuse panicle of flowers, has the property of growing stolons, or side shoots, above the ground, while it has rhizomes beneath the soil rivalling the common Couch in stoutness and in the distance to which they can creep. And the stoutness of the rhizomata of Couch when it grows really strong may not inaptly be illustrated by a rejoinder we once had from a Welsh gardener, who, on our remarking that he was digging up some fine Couch, remarked:—"Indeed to goodness you may call it fain, but I call it mighty coörse."

The Fiorin is common, as described by "A Constant Reader," on "poor undrained sand," but it is not altogether wedded to poverty, as it soon makes its way in deep sandy loams if the farming be of a slovenly description.

On taking possession of our own farm it was full of Fiorin Couch, so much so as in 300 acres to cost us as much as 150*l.* the first year of occupation in dealing with it alone; indeed, in the vernacular of the district, it turned up "as thick as a straw backen." This we collected and burnt, making such a smother of smoke that the cottagers complained that they could not see across their rooms, which are not after all so very large. The next year about half the sum named was expended on Couch, and this year less than 50*l.* will cover the cost of Fiorin. This Couch is much more troublesome than No. 1 of our list, as it seeds more readily, and if a head of flowers ripens its seed we may have from four to five thousand seeds, against 100 to a spike of Common Couch.

We find, however, in practice that the greatest encourager of Fiorin, besides dirty farming, is shallow ploughing. The rhizomata of this Grass seldom dip into the soil beyond 5 inches; hence, then, ploughing from 3 to 4 inches deep, as was practised on our farm, only multiplied the sets, as the old ones would be left behind, and the bits cut off would be too small to be wholly picked out even if carefully done. Ploughing then 7 inches deep with the ordinary plough, which we did the first year, got quite under it, bringing up its long wires, which, though large in quantity, were easily and more entirely picked up. Steam cultivation to the depth of a foot has with us been even more efficacious. Most probably the sample No. 2 sent by our correspondent is this very Fiorin Couch, which in the soil indicated certainly creeps underground quite as much as the Common Couch, and therefore, its having stolons as well makes it even more mischievous, as these stolons equally make new plants; and when they are broken off in shallow ploughing the Couch-picker "takes no account on 'em," thinking they are bits of ordinary Grasses.

3. The Flat-stemmed Meadow Grass has wiry rhizomata as long but by no means so stout as the preceding. This, on the stony Cotteswolds, is distinguished as Squitch, and as it creeps beneath the brashes it is so hard of removal that the farmers tell us they "don't mind strong healthy Couch, but they cannot bear the wiry Squitch." It is, however, quite local, being for the most part confined to the brashes of the free-stone or oolitic rocks.

4. The Smooth-stalked Meadow-grass has a short rhizome, which renders it useful in the pasture, as tending to mat the turf and make a perfect warp for Nature's carpet. It is of little consequence in the arable, as it cannot well grow without repose, but in the turf in which flower-beds are cut, it frequently runs into the beds, sending up bunches of Grass which have an unsightly appearance.

5. The False Brome Grass has but a short rhizome; its habitat is in poor sterile soil, on limestones, so that it at once becomes an indication of condition. It is soon killed by the nightly folding of sheep upon land where it abounds, or indeed by any process that will make the land better.

Besides these there are other British rhizomatous Grasses, but they are more particularly denizens of the sea-side, where they are useful in keeping up the banks of the shore; such are the Ammophila arundinacea, Sea Reed-grass, and Elymus arenarius, Sea Thyme-grass. These in Holland are protected by State laws, and there can be no doubt that they would often be useful in keeping up the banks of railway cuttings.

There remains now to notice the Arrhenatherum arenaceum, variety bulbosum, called "Onion Couch;" in this, however, the mischief is not caused by rhizomata, but arises from the expanded nodes, which are so close beneath the soil as to give the so-called root of this Grass the appearance of a string of small Onions; each of these nodes, if broken, may give rise to a new Grass, and hence this is sometimes so troublesome as to have got for it the name of Couch. It is often met with in great quantities in sandy soils, but we have found no difficulty in getting rid of it. By ploughing deeply to get below it, and hand-picking, it is readily kept under; indeed, deep cultivation is the sheet-anchor of good farming, for it not only roots out weeds, but lets in air and water to dissolve new materials upon which our wished-for plants can so flourish as to aid in weed destruction by smothering them. *B.*

ON THE CULTIVATION OF GREEN CROPS,

And the most Economical way of Consuming them.

[Lecture by Mr. Alderman Mechi, read before the Wenlock (Salop) Farmers' Club, Monday, 9th April, 1866.]

I accept cheerfully the task you have assigned to me, and I first ask,—Why is an extension of root and green crop cultivation necessary and profitable?

In a new country where Nature has reigned supreme, and where, for ages, vegetation has grown and decayed, unremoved by the hand of man, and where the action of the elements and seasons (called the "hand of time") has rendered soluble and available the mineral food of plants, we might remove year after year the most exhaustive crops without for a long time returning to the soil any manure. The cultivation of root and green crops under such circumstances is not required. Now, however, we have quite a different state of circumstances to deal with.

A vast extent of pasturage and woodland has been broken up and worked out. Wide rentless wastes no longer afford a cheap means of raising our store stock; our 60 millions of acres that 70 years ago had only to feed some 10 millions of people, are now called upon to answer the hungry demands of a population of nearly 30 millions. This necessitates a different and more artificial and intensified system of agriculture, both as regards landlord and tenant.

High and increasing rents must be met by maximum crops. Animals must no longer wander over large areas in search of a scanty supply of food, but we should force from the soil, by high feeding of stock, by rich manuring of the soil, by deeper cultivation and drainage where required, heavy crops of roots and green food, and having produced these great and costly crops they should be administered to our live stock on the most improved modern principles. All this cannot be done without the concurrent action of the landowner, who shall provide suitable buildings for the proper accommodation of the much larger number of animals which it becomes now necessary to keep. My experience of 23 years as a farmer has taught me that it will not pay to look entirely or mainly to the barn-doors for my returns, but that I must look to meat quite as much as to corn, and in fact the more meat you make the greater crops of corn you will grow, for the man who produces three times as much meat as his neighbour must of necessity produce three times as much manure. It often pays much better to sell your crops to your stock rather than to the miller or factor. We do sell our root and green crops to our stock—why not sell them a corn crop? I always sell all my Beans, Peas, Oats, and much of my Barley to my live stock, so that these crops ultimately go to market on four legs, and 9-10ths of their elements are thus returned to the land. My live stock (on 170 acres) consume about 700*l.* of cake and corn annually. After paying full *market* price for these, they, as an average, leave me from 6*l.* to 7*l.* per acre for my root and green crops. This, you will admit, is not an unsuccessful way of obtaining plenty of manure to fertilise your soil. It is, in fact, the key to my farming profit.

Let us now consider "What sorts of root and green crops we should grow."

That question depends upon soil and climate. In our Southern and Eastern counties, with very few hills, consequently with a small rainfall (under 20 inches annually), a dry atmosphere and high temperature, winter Tares and winter Beans may be safely grown. It is not so, I believe, in the colder North. A crop of

Cabbage, Rape, or Kohl Rabi also stands our winter well. Italian Rye-grass makes very early and good food; it is a thirsty, rapid growing plant; in our dry climate there is no growth of it in the warm months without irrigation. Sainfoin and Lucerne do well on calcareous soils. Mine is non-calcareous. I often use part of my Bean crop as green food, passed through the chaff-cutter, in July or August, and I consider it pays me as well or better than when harvested. It is first-rate food for stock and horses, and comes at a handy time—after the cutting of the Clovers. Cabbage at harvest time is essentially necessary, and very good, too, for working horses. My most dependable and productive root crop is Mangel Wurzel. Its deep powerful roots penetrate and search our hard tenacious clays; its shining expansive leaves rejoice in hot bright sunshine; it never does better than when the leaves flag from heat, and are crisp in the early morning with dew. Swedes, on the contrary, seldom do so well in our stiff clays. They often mildew, and if sown early are dried up by the 1st of September. They are rarely sown here until Midsummer day. They require more rain and a moister atmosphere than sun. We also prefer winter Tares to those sown in spring.

Mangels are a great crop in our country this past season. I have nearly or quite 40 tons per acre. Swedes are comparatively a failure.

White Turnips sown in July answer better with us than Swedes. Swedes thrive best in a moist or vaporous atmosphere, and a friable soil. I have often been struck with the contrast, passing from Essex to Cumberland in a hot July or August day; our Swedes being barely visible and fly-eaten, while at Kendal and among the hills, the blades were green, fresh, and knee high. Those hills attract and arrest the masses of steam called clouds, and thus plants flourish, although the moisture may not have descended as rain.

As to the "Preparation of the Soil," we may for all hard-bottomed or stiff soils, lay down as an axiom, that deep cultivation is profitable. I don't mean that the bad unaired soil should be brought to the surface, but that it should be broken up by subsoil or trench ploughing before winter, and thus exposed to the action of frost, which beats all the harrows and ploughs, scarifiers and rollers, for pulverising our heavy soils—I speak, of course, of drained heavy soils. I consider undrained heavy lands quite unfit for profitable farming.

I very much prefer putting on my manure before I plough and subsoil, because it then falls in and intermixes with the soil and subsoil, which is most important: and the winter rains distribute the soluble and valuable portions of the manure among the granules of the soil, where it becomes fixed for the use of plants, and cannot be washed out or washed away in the drains (see Liebig).

On the subject of tillage details I would refer you to a paper recently read by me before the London Farmers' Club, a copy of which I beg to present to you. I find that if my land has been amply manured and deeply cultivated before winter, it is in the spring like an ash heap, only requiring scarifying, harrowing, and drilling.

To plough up our heavy land in the spring would be to make it dry, blocky, and unfit to receive the seed—and this is why many people fail in their Mangel plants.

I need hardly say that I consider it indispensable to scarify or broadshare all the stubbles immediately after harvest, thus preventing the growth of old weeds, and permitting the vegetation of any seeds of weeds. We also fork out carefully any patches of Twitch or Couch Grass, shake the earth from them, and carry them off the land. All rubbish is harrowed or raked together, and burned or carbonised.

I have said very little about the preparation of loose or friable soils for root crops. As a rule they are easily dealt with at almost any period. A very able root grower and large successful farmer tells me that he ploughs and rolls several times both before and after manuring, and does not consider the land fit for Turnips until it is fine enough to go through a sieve. His soil is more mellow than mine.

Cultivation of Growing Crops.

Among the growing crops of roots, after being thinned, we use Garrett's horse-hoe between the rows, and the hand hoes between the plants, our Mangel standing about 12 to 15 inches apart, and about 28 inches from row to row. I never permit weeds to grow in my crops; it is like permitting a hungry unwelcome intruder to devour part of your dinner. Nothing pays better than keeping down weeds.

I lay down as an agricultural axiom, "never employ a man where you can use a horse, and never a horse where you can work a steam engine." The reasons are obvious: a man costs as much daily as a horse, while the latter has six times the power; a steam engine beats the horse in a like proportion; therefore, with Garrett's horse-hoe, which takes a width of 7 to 8 feet, a pair of horses and one man will clean cultivate from 8 to 12 acres a-day. With two pair of horses my man has occasionally clean horse-hoed from 20 to 22 acres of Wheat or Beans in a long day. Our Beans are harrowed well with iron harrows when they are one inch out of the ground, and receive in addition two or three horse-hoeings and two hand-hoeings; our Tares are sometimes horse-hoed, and our Clovers are invariably hoed in the spring if there are any weeds to remove. A truss of Clover will pay the cost of hoeing an acre.

Manure.

Science and practice have proved that the very best manure is that made by fattening animals with rich food, such as Linseed or Rape-cake, Beans and Peas, or other substances rich in phosphates, nitrogen, and potass; but then remember that that manure must be made under cover, unwashed, and not like too much open yard manure, which, after this wet winter, I would compare to tea leaves when all the strong tea solutions have left them. Agriculturists do not, I am afraid, appreciate that it is not bulk of manure that produces result, but quality. The soluble portions of the manure are the only portions available, the mass consisting of some 75 per cent. of water, and a quantity of woody fibre and insoluble matter. The mere peppering with guano, which surpasses the massive dung heaps, has taught us a lesson, and, on its first use, created much doubt and disbelief. I rarely make a dung heap, but usually cart my manure at once from under the animals to the field. This spares much useless labour and waste of manure.

The sheep-fold does well without any mixing or turning over. By steam-power I cut my straw into short lengths for litter, and it is always ready for carting and spreading.

The time is approaching when an open farm-yard and a dung heap will be "the light of other days." The bottoms of all covered sheds and farm-yards should be paved with hard bricks set in cement. In a general way much of the best part of the manure soaks deeply into the soil and is lost to the land.

There is no reason why farm-yard manure should not equal the sheep-fold were it properly economised.

I will now tell you how much manure I put on for a Mangel or root crop: 20 or 25 cart loads of shed manure, 4 cwt. of best Peruvian guano, and 2 cwt. of common salt. I lay down, as a rule, that we must "go in" for a maximum crop; it costs no more for ploughing, harrowing, rolling, sowing, drilling, hoeing, rent, rates, tythes, and horse labour, than a half or three-quarter crop. Then, why "spoil the sheep for a halfpennyworth of tar?" It is the minimum crop that keeps the farmer poor; too much land, and consequently too little capital. Better have one-half the space thoroughly manured, than spread it thinly over a double area. We cannot over manure or too deeply cultivate for a root crop. Superphosphate alone never shows upon my farm. I presume I have already sufficient in my land by my rich cake and corn manure.

How to Convert your Root and Green Crops into Meat to the Best Advantage.

This is, in my opinion, one of the most important of agricultural questions, and one of very difficult solution. It is dependent on so many considerations, such as the breed and quality of your stock; whether you should breed or buy; the health and comfort of the stock as regards shelter, temperature, and, above all, purity of air by ventilation; and then again, the admixture of various sorts of food, and their state of preparation by comminution; and, when all these matters are in proper order, there is still one of importance—that is, a stock-keeper with keen perception and due regard for his master's interest; or, better still, the farmer's own eye, if a correct one.

If we are wrong on stock management, adieu to profit, for it is the sheet-anchor of farming. And here allow me to express my deep sympathy and sorrow for those unfortunate yeomen whose capital has been diminished or swept away by the dire cattle plague. Surely this will move the hearts of the well-disposed to contribute largely to the Royal Agricultural Benevolent Institution. Allow me to say on this subject of the cattle plague, that it is very desirable to call in a second or third veterinary before you carry out the inspector's directions to slaughter. I knew of several instances where inspectors have mistaken the complaint, and thus wasted much valuable property.

Salt is very important for animals, as for ourselves. Large blocks of rock salt are always put into the mangers and feeding troughs. One half the ash of animal blood consists of salt; without it the blood cannot be in a natural or healthy state. Some think that I owe to salt the exemption of my animals from cattle plague. I presume ventilation and non-contact have much to do with it. I find salt unmistakably useful on drained soils.

We shall never agree as to "How much meat a ton of Turnips will produce" until our modes of administering them are more uniform. The money estimate of value now varies from 2*s.* 6*d.* per ton in the open field, to 7*s.* if pulped and mixed with other food, in warm and dry quarters. My live stock account shows on an average of years, that after paying full market price for 700*l.* worth of corn and cake, 200*l.* is left for 30 acres of green and root crops, which, if taken as equal to 20 tons of roots per acre, would be 600 tons of roots, at 6*s.* 8*d.* per ton. I could not produce such a result except by comminuting the food, mixed with a large quantity of very fine cut straw, and administered to the animals in warm dry quarters. My irrigation also aids to produce so favourable a result. In Suffolk the estimate is that a ton of roots will make 14 lb. of meat (net), and in Essex, a bushel of 56 lb. of roots is valued for consumption at 2*d.*, or 6*s.* 8*d.* per ton.

In order to test what return we get in meat for one ton of roots, I take the admission by many practical men that it requires 150 tons to produce one ton of meat, net butcher's weight. A ton of meat (2240 lb.) at the present price of 7½*d.* per lb. comes to 74*l.* 5*s.*; 150 tons of roots at 10*s.* per ton would be 75*l.* I doubt whether we get near so much as 10*s.* per ton for our roots. At 5*s.* per ton, which is a much more probable estimate, it would require 300 tons of roots to produce one ton of meat, or, which is the same thing, 300 lb. of roots to make 1 lb. of meat. If therefore we grow on an average 20 tons of roots (which is in my opinion very far above the average), the return in meat would be 5*l.* per acre.

Crops of Turnips are sometimes "given away" to feed on the ground, but generally are sold for from 40*s.* to 5*l.* per acre—very rarely the latter price in our county. You are no doubt aware that 150 tons of Turnips contain 135 tons of water, and only 15 tons of dry substance. Hence the necessity for adding dry food to correct the excessive and injurious disproportion of water.

A pound of rumpsteak contains three quarters of a pound of water. Our own bodies have 76 per cent. of water. Good dry hay only contains about 15 per cent. of water. We make a great mistake when we feed on fresh-drawn Turnips alone. I am very anxious to receive from my brother farmers some carefully conducted experiments to show how much meat a ton of Turnips or Mangel would make under the most favourable and successful management. Can you enlighten me on this point? Mr. Lawes's valuable experiments, recorded in the Royal Agricultural Society's Journal, show that no price was left for Turnips after paying for cake and hay. This occurred with several lots of 40 sheep of different breeds fattened for six months. One lot absolutely lost 3*l.* 13*s.* 6*d.*, besides leaving nothing for Turnips. It is true that meat was cheaper then than now, but so were cake and hay. My system of plenty of fine-cut Wheat and Bean straw and mixed food gives me much better results than those of Mr. Lawes.

Mr. J. C. Morton's experience with 4000 tons of roots left only 3*s.* 4*d.* per ton after paying for the cake and hay. At this rate it would require the enormous quantity of 450 tons of roots to make one ton of meat. In Mr. Lawes's case it must have been very much worse than Mr. Morton's, and would make it appear that feeding with cake and hay was a very losing operation, leaving out of view the quality of the manure.

I was very much amused by a farming friend telling me that it did not pay to feed with cake, but it did with home-grown hay. "Well," I said, "do you charge the animal's *market* price for your hay?"—"Oh no!" he replied, "we only charge *half* market price, that is 'feeding price.'" I said, with a smile, "Charge 'feeding price,' that is 'half market price' for your cake, and then you will find that it pays you well." The same remark applies to pigs; pigs lose less money than any other stock; but then you must charge them "feeding price" for the Barley they consume, the same as you do to your bullocks with hay.

It may appear strange, that while 7 lb. of Barley, or Bean-meal, or oil-cake, will make 1 lb. of meat, net butcher's weight, it takes 150 to 200 lb. of Turnips to produce a similar result. In one case we must give water as well as meal; in the other we give 10 per cent. of water in the Turnips—or equal to 13½ gallons of water to every 7 lb. of meal. It appears absurd to propose to do this, and it proves that Turnips alone are not proper and profitable food for animals. I think about 2 gallons of water would be more proper than 13½ to mix with the meal.

Beware of too succulent and unripe food, especially for young and breeding animals *before* parturition. Young washy Tares, young rank-growing Grass, and roots, especially Mangel, forced to a rapid growth by high farming, are all likely to produce scouring or inflammation of stomach. So are mildewed Turnips and Rape. The second growth of Red Clover after the first growth has been folded with sheep, highly fed, is very dangerous and destructive to lambs, and even to older sheep.

Had we statistics, as we ought to have, an amazing amount of loss would be recorded under the above heading. It is singular that Mangel and roots, which are so destructive to sheep before parturition, may be given safely a few days after parturition, especially if mixed with some Cabbage; and this remark applies in degree to other animals.

Male sheep, especially rams, suffer much in the urinary organs from the salt and alkalies in Mangel Wurzel, especially if confined; when permitted to range the fields there is much less danger. The ash of Globe Mangel roots contains 24½ per cent. of salt, their leaves 38⅜ per cent. Long Red contain 14¼ per cent. in the roots, and 29⅜ per cent. in the leaves.

Swedes and Carrots only contain about 6 per cent. of salt in their bulbs. All these roots contain in their ashes a very large quantity of potass and soda; more than 50 per cent. of the ash of Mangel is so composed.

The acrid substance in fresh Mangel disappears, in a great measure, in the storing of this root, so that in the spring there is less danger with them. Swedes and Carrots, from their small quantity of salt, may be given earlier, and in larger quantities. It is not to be wondered at that such enormous losses occur among flocks, and especially breeding flocks, when fed on the fields with cold and succulent Turnips uncorrected by dry food; roots are, in my opinion, very dangerous for breeding animals before parturition.

Roots, especially Mangel, are first-rate food for horses if given moderately with dry corn, hay, and chaff. But for breeding animals before parturition, and generally for young animals, Cabbage may be very safely given, passed through the pulper and mixed with chaff. If we ask why, the analysis of the ashes at once explains it. In lieu of the 50 per cent. of soda and potass, and the 30 per cent. of salt, Cabbage has less than 5 per cent. of salt and 30 per cent. of potass and soda, but it has (which is very material) 20 per cent. of lime and 5 per cent. of magnesia (Globe Mangel has only 2 per cent. of lime and magnesia); Cabbage has 12 per cent. of phosphoric acid, Mangel only 4½ per cent. It is thus easy to understand why Cabbage abounding in flesh-forming substance is so innocuous and so suitable for animals in breeding condition. A certain proportion of Cabbage given with Mangel might mitigate the evil effects of the latter.

Kohl Rabi has so much of the nature of Cabbage as to be much more safe in the early season than Mangel. It only contains 10 per cent. of salt, and like Cabbage stands a hot dry climate better than Swedes.

The words "extreme succulency" are of great agricultural significance and import. Experience of a very unprofitable nature has taught me the danger of allowing animals to have free access to food in such a

condition. If by sewage irrigation, by guano, or other forcing manures, aided by suitable atmospheric condition, green or root crops grow with extreme rapidity, animals often suffer illness or even death; and yet if that same food be brought home, cut into short lengths, and lie for some hours mixed with drier food, it may be given with perfect safety. I once lost 13 fine four-months'-old calves by allowing them to help themselves in a field of fine rapidly-growing young Italian Rye-grass, which my practical neighbour pronounced to be just the thing for them; and yet they were receiving other and dry food. Previous to the turning in, those very animals were doing well, fed on the same Grass when cut up into short lengths, and allowed partially to dry, and given to them in sheds.

There is evidently some satisfactory chemical change that takes place in the process of drying. In fact, we know that the heaps of cut food soon ferment, and, unless spread out thinly, pass into the sour and unpalatable condition.

Even ordinary Grass, Turnips, and Tares and Clover have, from extreme succulency, proved dangerous, unless allowed to dry partially or wither.

I dare not sewage-irrigate the Italian Rye-grass intended for my young lambs in the spring—experience having taught me that the extreme succulence kills them. They thrive admirably upon it when not so manured. It can never be too rank or too rich for mowing and making into hay. If properly got up with a green colour it surpasses any other hay in nutritive properties. Our hard-working horses give evidence of this fact when fed upon it.

One cause why succulent food is injurious is, decidedly, the quantity of water it contains. Fresh-drawn roots contain 90 per cent. of water. The remedy for this evil is clearly to allow the food to lose much of its water by drying. I have so many proofs of this from various practical farmers that there can be no doubt about it. In one case the Mangels were pulled in hot September, and allowed to remain two days on the ground to wither. Sheep then folded on them went on admirably. In another case the Mangel roots, early in the autumn, were pulled and allowed to shrink and shrivel in the shed—this was accidental, but as soon as the cattle were changed to fresh-drawn roots they went wrong. In another case of 500 breeding ewes on white Turnips in full growth the ewes suffered and were removed to Grass and recovered, then again put on Turnips and suffered loss. Ultimately the Turnips were picked up and allowed to remain three to four days before consumption, and then the ewes were healthy. All this proves that the diminution of water by evaporation is an advantage gained; possibly some chemical change may take place in the juices of the roots. It does seem unreasonable that a bullock eating 150 lb. of roots daily should be thus compelled to take 13½ gallons of water with only 15 lb. of dry matter. The same remark applies to sheep.

A neighbour tells me that his male fattening sheep are doing well on Mangel and Linseed cake, although they were not healthy on Mangel and Cotton cake.

Roots, and especially Mangel, when pulped lose much of their water or juice by drainage. By mixing them with plenty of very fine cut dry chaff the juices are absorbed, and the proportion of dry substance to water is advantageously increased.

But while I warn you against over-succulent food, beware of the other extreme. When Tares and Clover are far advanced in growth and maturity they become dry and tough; it is then essential to have them passed through the chaff-cutter, and when so finely divided they are more accessible to the gastric juices, and less likely to produce windy swelling and inflammation.

I know some very large farmers who, as a source of profit, have their horse-work chaff-cutter in the field, and pass all their sheep food, even Grass, through it, for their large flocks of sheep; they find it profitable. I cut up and comminute and intermix every kind of food, and grind the corn, especially for horses. Although I had at first great doubts, I have convinced myself unmistakeably that a small quantity of condimental food hastens the fattening of cattle, especially young ones, which are generally more difficult to fatten. I sell my young Short-horns sufficiently fat at 21 months at about 20*l.* to 22*l.* each.

I consider my success in the management of stock, and my getting a good return for my root and green crops, attributable to my cutting the green food into short lengths, and mixing it with plenty of very fine cut straw chaff, some meal, some cake, and a small portion of malt-combs and bran.

In winter this food is administered in a warm state, the waste steam from the engine giving us heat and hot water without cost. The roots are pulped, and the whole mass mixed up together in the great coppers, or rather cheap cast-iron tubs. The difference between warm and cold food in winter is soon seen in the condition of the animals.

Let me advise you to look upon straw as a profitable feeding stuff, especially Wheat and Bean straw; the latter, when passed through the chaff-cutter and then moistened with hot-water, becomes soft and mucilaginous, and is worth two-thirds the price of hay. Bean straw as long and as hard as walking-sticks becomes, by hot-water moistening, soft, and is eaten greedily by our animals; it is better than any other straw; all mine is eaten. Wheat straw stands next in value to Bean straw, but then you must cut it very fine, say one-eighth of an inch. I presume you all use steam power. Not to do so on a farm of 200, or even 150 acres, is a great commercial mistake. I will not now go on to explain all its advantages. I recommend you to use a Cornish boiler for a fixed engine.

Without my engine, which I have had for 18 years, I should be, agriculturally, "nowhere." It grinds pulp, breaks cake, threshes cut roots, raises sacks, and pumps and irrigates. We really must intensify our farming in these progressive times.

Some of my bullocks are on sparred floors, others on cut straw and paved floors, all under cover and properly sheltered. Although there has been "plague" all around me, I am thankful that at present mine have escaped. Let me particularly call your attention to

Proper Ventilation.

The want of this is the fruitful source of disease. It is annoying to me to see new buildings erected without any opening above the animals. In my case, immediately under the wall plate, at intervals of about 6 feet, some bricks are left out, giving openings of about 9 inches by 6 on each side of the building, and at least 7 to 9 feet from the ground, so as to let the ventilation be some distance (about 3 to 5 feet) above the animals. In the roof there should be louvre boards or openings with a vertical divisional pendent board, 3 feet deep, dividing the openings, and causing circulation. In the case of milch cows the opening should extend far along the roof, as they require more air than fattening animals. To give you an idea of the utility of this, and of the openings under the wall plate, you may smell the impure odours coming through them at many yards distance, showing how injurious it must be to keep those poisonous gases in constant contact with the animals where there is no escape for them. The manure is only removed from under my bullocks about once a month or six weeks, according to weather; in cold weather it may remain a long time. It would never do to keep animals on long straw, or to over-litter them, because then air would be admitted, and you would have fermentation, which would destroy your animals. By cutting straw into short lengths, and littering sparingly and evenly (on a paved floor of course), the whole mixes up into a hodge-podge or paste, no heating takes place, the animal is kept clean, and the manure is at once ready to take direct to the field for immediate use. You can keep animals much cleaner on short cut straw than on long straw, because the former absorbs at once all moisture. The long straw, with its glassy outside, cannot do so until broken up.

Profit of Shelter.

Shelter is so important as a source of profit, and can be so cheaply extemporised where it is not convenient to put up permanent buildings, that I must say a word about it.

A few rough poles and some straw and bushes will, with a few shillings' worth of labour, give you a thatched shed and yard for 100 sheep for less than 9*d.* a sheep, and will last four or five years, or about 2*d.* per sheep per annum.

My plan is to let them run out in the daytime in winter on a pasture, and shut them up at night. Just imagine the comfort of lying on a dry bed under cover for some 14 or 15 hours, instead of on cold, wet Grass, or clay, with wet fleeces from pelting rain or sleet, white frosts, &c. It is an immense and unprofitable mistake to allow such things. I cannot afford to do so; and although certain people may laugh at my farming, I managed to make this past year, at low prices, 11 per cent. on my farming capital, after paying myself the high improved rent of 40*s.* per acre. I don't expect everybody to believe this, but rather the contrary; but at all events facts are stubborn things, and a clear conscience is a sufficient support.

Much of the poverty of farming is caused by the want of care and comfort of live stock. Animals are, like ourselves, keenly sensitive to atmospheric influences. In a cold evening they will at once get under the shed; when warmer they choose the open yard. I have now a number of very old ewes that have produced equal to one lamb and a half each—fine lambs. By sheltering the old folks with their lambs at night, and immediately after parturition, we have not lost a single lamb, and by good feeding shall, as we did last year, get probably over 40*s.* for them before summer is out.

Should we Breed or Should we Buy our Stock?

I am decidedly of opinion that we should breed, at any rate a portion of our stock, especially sheep. By the enclosure of common, waste, and breaking up of Grass lands we are annually diminishing our rough breeding ground. Many breeders now fatten their own stock, and thus prices for lean stock are so high as to trench upon the feeder's profit. Animals reared at home, and well fed from their birth, are altogether more hardy and more profitable, because less risky than those we buy in. I find no difficulty in breeding on an arable farm—a few acres of pasture, some extemporised sheds, and covered yards at the homestead. In every way I consider it more profitable than buying in. I need hardly comment upon the necessity for a good male parent especially, as well as well-bred mothers. I like cross-breeds for sale, but not for breeding.

There are in my opinion some points in cattle feeding which I think have hitherto escaped observation, and that is the "cause of the increase of lung complaint or pleuro-pneumonia." Although it may occasionally arise from cold, my view is that it is often caused by another very obvious means. We purchase lean animals, often mere skin and bone, especially Irish, which have been from their birth but poorly fed; consequently their blood is thin, watery, and pale, and the blood vessels small and contracted. In our attempts to fatten them quickly we administer good rich food; the blood thickens and increases in volume, and demands more space for circulation. In passing through the millions of fine vessels in the lungs obstruction takes place, producing irritation, short cough, inflammation, and ultimately suppuration and death. The importance of a free circulation of the blood may be estimated by the fact that in the human frame from 31,000 to 38,000 lb. of blood pass through the heart and capillaries every 24 hours—although the actual weight of blood in the body may be only 31 to 38 lb. In a full-grown bullock, 9 or 10 times the weight of a man, the quantity of blood passing through the heart and capillaries daily must be 300,000 lb. or 134 tons daily. I am led to make these remarks from observing that when very lean animals are brought on to poor badly-farmed lands and scanty herbage they generally keep healthy, although their improvement is very gradual. Indeed, on the poor heath close to me I have constant evidence that mere ragged skeletons of animals, picked up as odd unsaleable lots at a cheap rate at the tail of a market, wander about the heath and roads for a considerable time, and ultimately they very slowly pick up a little condition and grow and improve sufficiently to become useful.

One very seldom hears of lung complaint among them, although exposed to the cold blasts of winter and tormenting flies of summer.

They are brought home to a yard at night. It seems as if you could not kill them, however much you may pity them. How careful then should we be in graduating the supply of food to animals in such a condition! Should we not so deal with a human being almost skeletonised by starvation? Certainly by very slow and cautious supplies of suitable food. The rule holds equally good for cattle, sheep, and farm animals generally.

How different the circumstances of an animal well fed from the day of its birth! Such an animal will "stand" any amount of good food, and will be larger and weigh more at two years old than the other at three years.

It is thus easy to understand why good high feeders who desire rich manure and a quick return purchase well-kept and high-fed animals half or three quarters fat. They "go in" for finishing up, and as my friend Hudson and other good Norfolk men say, "we begin then with 5 lb. of oilcake daily, and get them on to 10, 15, and ultimately 20 lb. per day, with all the roots they like to eat, and in addition meal and hay"—in fact all they can eat, to make them "ripe." Fat beasts make fat crops, and lean beasts make lean crops.

In certain poorly farmed districts the natives may well be astonished that our Norfolk friends do this as a source of profit, but so it unmistakeably is; therefore I say, "go and do likewise."

It is important not to overfeed animals in a state of confinement without exercise; they are then in an unnatural condition. If, therefore, there is any indication of loathing food, immediately stop the supplies, taking care, however, that they have free access to water. Empty mangers are as essentially necessary as full ones. A well-cleared plate indicates a good appetite and a not more than sufficient supply of food. I am often made angry by my ploughmen, who will persist in feeding their horses even more abundantly when, from weather or other causes, they are not at work. Nothing will endanger a horse's health or our own more than absence of exercise and rich feeding. A sagacious old friend of mine, who only uses his pony occasionally, takes care to put him on short commons when not at work, and keeps him thus in good health.

A dose of salts or cold shower-bath in hot weather will stimulate the appetite. When I fattened many hoggs in hot weather on sparred floors, an occasional shower-bath from the irrigating jet would cause a clearing of the bowels, a cooling of the system, and a cleansing of the skin that prevented fever and gave them good appetites, although then very fat. These remarks would apply forcibly to many obese human beings. I need not apologise for thus enlarging on the feeding question, because it is essential to the turning to good account our root and green crops.

I object to undue confinement for breeding animals, male or (more particularly) females.

For 18 years one of my sheds, having sparred floors, has been used by various lots of bullocks, and we have been struck by their usual and uniform sanitary condition. The secret is those spars give much exercise to the tendons and sinews of the whole system by the hoofs opening or expanding.

It largely developes the bone and muscle, and, in fact, if pigs are put on when large it gives them capped hocks. Sheep on sparred floors do well, for they too thus get exercise. When very concentrated rich food is given alone to animals in confinement, they can only endure it for a short period. Poultry fed on rich Barley-meal or suet become fat in about a fortnight, but don't go on after that. The necessity for mixing hay or straw with our cattle food is obviously necessary as well as advantageous.

We must deal differently with adult or growing animals; giving to the latter bone and muscle-making substance.

I know some very keen farmers who in October pay 40*s.* to 50*s.* each for lambs at the great sheep fairs to carry on. Many of these are fit for the butcher, but they find it ultimately cheaper and more suited for their high feeding than lean half-starved animals at a low price.

I would say in conclusion, especially to those who farm poor lands and are young beginners, cultivate deeply, keep down weeds, manure abundantly, and produce that manure as much as possible at home by a larger consumption of the crops you grow, aided by oleaginous cakes.

To make the most of your roots and green crops it is essential that the bulk of your straw should be finely comminuted, and consumed with those roots and green crops. Keep your animals warm and dry in winter and cool in summer. When agriculture increases in intelligence and scientific knowledge, farmers will use coal instead of food for the production of animal heat, and will consider ventilating shafts or openings in the roofs of their cattle sheds and stables an essential item in farm profit; washed manure will then be an exception, and not, as now, a rule.

Wherever the sewage of towns can be brought on to the land, green crops and Grasses thrive abundantly, especially the rapidly growing Italian Rye-grass, and

various strong-growing Grasses. A great many towns are now pouring their sewage over Grass lands, instead of wasting it by poisoning our rivers. Our Legislature will, no doubt, in due time make it penal to pollute our rivers; this will compel town corporations to act upon the reasonable conclusion that the only true and remunerative deodoriser is the soil.

THE CATTLE PLAGUE.

1. The following returns were issued on April 6. These returns do not profess to give the total number of cases which have occurred in Great Britain, but only those which have been ascertained from information received at the office from inspectors. Columns 1 only record the cases reported as having commenced during the weeks indicated by the headings; "back" cases being added to columns 2.

Census Divisions.	1 Number Attacked.		2 Result of Reported Cases from Commencement of Disease.				
	Week ending March 24.	Week ending March 31.	Attacked.	Killed.	Died.	Recovered.	Unaccounted for.
Metrop. ..	60	92	7841	3389	3510	336	606
S. Eastern .	66	78	5050	1610	2785	42	213
S. Midland .	542	529	16,861	7651	7854	1546	810
Eastern Co .	199	217	10,317	4789	4768	762	598
S. Western .	10	42	1608	562	775	199	72
W. Midland .	444	514	11,547	3353	6162	1226	806
N. Midland .	674	737	13,422	5621	6630	1460	811
N. Western .	1492	880	41,104	9482	23,948	5772	5002
Yorkshire .	683	534	32,312	5501	18,257	5789	2765
Northern Co.	264	281	7105	3556	2488	941	120
Monmouth & Wales .	83	122	7721	164	3928	1072	317
Scotland ..	257	294	45,817	5590	27,046	10,636	2745
	4,704	3,956	213,675	48,568	121,571	29,741	13,875

NOTE—19 Inspectors who reported cases last week have not reported in time for this return—viz., for the county of Chester, 1; Lancaster, 3; Lincoln, 4; Northampton, 1; Stafford, 2; East Riding of York, 1; Metropolitan Police District, 1; and Scotland, 2.

These Inspectors returned 290 cases last week.

2. THE NEW ORDER IN COUNCIL.—We repeat the publication of this Order, which comes fully into operation this day:—

PRELIMINARY.

1. Part I. of this Order, with the first schedule hereto, and the Regulations, 26 and 27 of Part II., which relate to the isolation of infected places, and the rules with respect to infected places, shall come into operation immediately. The residue of this Order shall not come into operation until the 16th day of April, 1866. The whole of this Order shall remain in force from the time of its coming into operation until it is revoked or altered.

2. This Order shall apply to England and Wales only.

PART I.—DEFINITIONS (abridged).

7. Every local authority shall perform all such duties as are imposed upon it by this Order, and shall make such reports to the Privy Council as the Council may from time to time require.

8. Every local authority shall from time to time appoint such inspectors or other officers as it thinks necessary to carry into effect the provisions of this Order within its district; it shall assign them such duties and award them such salaries and allowances as it thinks expedient, and may revoke any appointment so made.

PART II.—DISEASED ANIMALS.

14. Every person having in his possession or under his charge any diseased animal shall forthwith give notice thereof to such officer as may have been appointed by the local authority of the district to receive such notices; or, if no such officer has been appointed, to a police constable, whose duty it shall be to report without delay to the local authority the fact of such notice having been given to him. Any person failing to comply with this regulation as to giving notice shall be deemed guilty of an offence against this Order.

15. Every person having in his possession or under his charge any diseased animal shall, as far as practicable, keep such animal separate from animals not diseased. Any person failing to comply with this regulation shall be deemed guilty of an offence against this Order.

16. No diseased animal, and no animal which has, within the preceding 28 days, been in the same shed or stable, or in the same herd or flock, or in contact with a diseased animal, shall be removed alive from the premises where such animal may be, except with a licence from the local authority of the district, which licence shall only permit the removal of such animal to some place within the district of such local authority where it can be conveniently slaughtered, or kept apart from all other animals until such local authority is satisfied that there is no reasonable probability of such animal propagating disease; provided that no such licence shall authorise such animal to be removed in contravention of the 17th regulation of this Order.

If any animal is removed in contravention of this regulation, the person causing, directing, or permitting the removal of such animal, and also the person removing the same, shall respectively be deemed guilty of an offence against this Order.

17. No diseased animal, and no animal that has within the preceding 28 days been in the same shed or stable, or in the same herd or flock, or in contact with a diseased animal, shall—

1. Be placed or kept in any common or unenclosed land, or in any field or other place insufficiently fenced.
2. Be sent or brought to any fair or market, or exposed for public sale.
3. Be driven along or allowed to stray upon any highway, or the sides thereof.
4. Be sent or carried by any railway, canal, river, or other inland navigation, or by any coasting or sea-going vessel.

If any animal is dealt with in contravention of this regulation, the owner of such animal, and also the company or person other than the owner dealing with the same in contravention of this regulation, shall be deemed guilty of an offence against this Order.

18. Where any offence is committed with respect to any animal under the 14th, 15th, 16th, and 17th regulations of this Order, or any of them, the local authority of the district, and any authority of a fair or market in which such animal may be, may, by themselves or their officers, cause such animal to be slaughtered and buried, and recover from the owner in a summary manner all expenses so incurred.

19. All diseased animals, whether they have been slaughtered or have died of the disease, shall be buried by the owner as soon as practicable, in some proper place, with their skins slashed in such a manner as to prevent their being made of any use, and with a sufficient quantity of quicklime or other disinfectant, and shall be covered with at least five feet of earth, or shall be otherwise disposed of in such manner as may be directed by any regulations made by the local authority, and approved by the Privy Council.

If any diseased animal is not buried or otherwise disposed of in pursuance of this regulation, the owner of such diseased animal shall be deemed guilty of an offence against this Order, and it shall be lawful for the local authority to bury or otherwise dispose of any such animal, and to use any convenient place on the premises of the owner for that purpose.

The local authority may recover from the owner in a summary manner any expenses incurred by it under this regulation.

20. No person shall dig up any diseased animal, or part of a diseased animal. Any person acting in contravention of this regulation shall be deemed guilty of an offence against this Order.

21. Every local authority shall within its district, at its own expense, cause the premises in which diseased animals have been to be thoroughly cleansed and disinfected; and the occupier of such premises shall give all facilities for such cleansing and disinfecting. Any occupier of premises failing to give such facilities shall be deemed guilty of an offence against this Order.

22. No fresh animal shall be admitted into any yard, shed, stable, field, or other premises in which a diseased animal has been kept while affected by disease, or has died, or been slaughtered, until the expiration of 30 days after the cleansing and disinfecting of such premises. If any fresh animal is admitted into any yard, shed, stable, field, or other premises in contravention of this regulation, the occupier of such yard, shed, stable, field, or other premises shall be deemed guilty of an offence against this Order.

23. The dung of a diseased animal, and all hay, straw, or litter, or any other article that has been in contact with or used about a diseased animal, shall not be removed, or, with the sanction of the local authority, shall be disinfected and dealt with to the satisfaction of the inspector. If such dung, hay, straw, litter, or any other article is not destroyed or disinfected and dealt with in pursuance of this regulation, the local authority may, in a summary manner be destroyed or disinfected, and recover in a summary manner all expenses incurred by it from the occupier of the premises on which such articles were found, and in addition thereto such occupier shall be deemed guilty of an offence against this Order.

24. The dung of any animal, and all hay, straw, or litter, or any other article that has been in contact with or used about a diseased animal, shall not be removed from the premises where such animal has been, except for the purpose of being destroyed or disinfected and dealt with in compliance with this Order and with a licence of an inspector specifying the place to which and the manner in which it is to be conveyed and dealt with, and shall not be removed beyond the limits of the district of the local authority in which the said premises are situate without the consent in writing of the local authority into whose district it is moved. Any person doing any of the things in this regulation mentioned in contravention of this regulation, the occupier of the premises from which it is removed, and also the person removing the same, shall be respectively deemed guilty of an offence against this Order; and it shall be lawful for the local authority to destroy or disinfect any such article, and to recover in a summary manner the expenses of such destruction or disinfection from the said occupier.

25. Every local authority shall direct the disinfecting of clothes of and the use of due precautions by inspectors and other officers brought into contact with diseased animals, with a view to preventing the spreading of the disease by such agencies. Any inspector or officer disobeying the directions of any local authority as to such disinfection and use of due precautions shall be deemed guilty of an offence against this Order.

INFECTED PLACES.

26. The authorities hereinafter mentioned—that is to say, any local authority as to any place within its district shall, and the Privy Council as to any place in England may, by order made at any time after the passing of this Order, and published in manner hereinafter mentioned, declare any place in which disease among animals at that time exists, together with such other places, including such place as to such authority may seem to be required, to be an "infected place," from and after a date to be specified in such Order; and the authority declaring a place to be infected may, at the expiration of one month after the disappearance of disease in that place, by order published in like manner, declare such place to be free from disease, and after the publication of such last mentioned Order such place shall cease to be an "infected place" within the meaning of this Order, unless again declared in manner aforesaid to be an "infected place."

Any local authority may include in the area of an "infected place" any adjoining part of the district of another local authority, with the consent of such last-mentioned authority, testified in writing by a letter signed by the clerk of such authority.

The area of an "infected place" may be described by reference to a map deposited at some specified place, or by reference to parishes, townships, farms, or otherwise, as the authority may think expedient.

An order declaring a place to be an "infected place" shall be published by notice being posted up in or near the "infected place," and, so far as is possible, in all places where notices are usually posted up, within five miles of such "infected place," or in such other manner as the authority declaring the place to be infected may think expedient.

The local authority, on declaring any place infected, shall forthwith report the fact to the Privy Council the fact of such declaration having been made.

No objection shall be taken in any legal proceeding in respect of an "infected place" on the ground that due notice has not been given of such place having been declared to be an "infected place."

Any Order made by the Privy Council under this regulation shall supersede any Order inconsistent with it that may have been made by a local authority.

27. The following rules shall be observed with respect to "infected places," in addition to the other regulations of this Order with respect to diseased animals; that is to say:—

1. No animal shall be moved out of an "infected place."

2. No hides, skins, horns, hoofs, or offal of animals shall be moved out of an "infected place" without the licence of some officer of the local authority appointed to issue such licences, certifying that such articles have not formed part of a diseased animal, and if necessary, have been properly disinfected.

3. No carcase of, or undressed meat that has formed part of, any bull, bullock, cow, ox, heifer, or calf, shall be moved out of an "infected place," without the licence of some officers of the local authority appointed to issue such licences, certifying that such carcase is not that of a diseased animal, or that such meat has not formed part of a diseased animal.

4. No dung of animals, and no hay, straw, litter, or other article forming the food of animals, or used for or about animals, shall be removed out of an infected place without the licence of some officer of the local authority appointed to issue such licences, certifying that such articles have not been in contact with or used about a diseased animal.

A licence for the purpose of the limits of regulation must be in writing, and shall not authorise the removal of any articles beyond the district of the local authority in which the infected place is situate without the licence of the local authority into whose district it is proposed to move such articles.

If any animal, dung of animals, hides, skin, horns, hoof, offal, meat, hay, straw, litter, or other articles, is or are moved in contravention of this regulation, the owner of such animal or articles, and also the person moving the same, or causing, directing, or permitting the same to be moved, shall respectively be deemed guilty of an offence against this Order.

All constables and police officers shall enforce the provisions of this regulation to the utmost of their power, and may apprehend all persons committing any offence against this regulation, and may require all animals and articles being moved out of such place in contravention of this regulation to be forthwith taken back within the limits of such place.

This regulation shall not apply to any animal or article carried by railway through an infected place.

MARKETS AND FAIRS.

28. No market, fair, auction, fair, or sale of cattle shall be held until the 1st day of June, 1866, except as hereinafter mentioned; that is to say,—

Firstly. Cattle belonging to the owner or occupier of premises that are not situate within the limits of regulation of an infected place, if the cattle are free from disease, and have been in the possession of the owner or occupier not less than 28 days immediately previous to the sale, may be sold on such premises.

Secondly. Markets may be held, with the licence of the Privy Council, for the sale of cattle intended for immediate slaughter; provided that no cattle shall be removed from such market until they have been marked in the manner in which cattle are ordinarily marked for slaughter according to the custom of such market, or, if there is no such custom, by clipping the hair off the end of the tail; and all cattle required to be marked by this regulation shall be slaughtered within four days from the date of the holding of such market (if sold) by or by the order of the purchaser, or (if not sold) by or by the order of the owner, and shall in no instance be taken, in the case of cattle brought to the Metropolitan Cattle Market, beyond the limits of the Metropolis, including the city of London and the liberties thereof, and in the case of cattle brought to any other market, beyond such limits as may be described in the licence of the Privy Council allowing such market, and under such conditions with respect to their movement within such limits as may be imposed by such licence.

If any cattle are sold in contravention of this regulation, both the seller and the purchaser of such cattle shall be deemed guilty of an offence against this Order.

If any cattle required to be marked by this regulation are not so marked, the persons for the time being in charge of such cattle shall be deemed guilty of an offence against this Order.

If any cattle required to be slaughtered by this regulation are not so slaughtered, the purchaser or owner of such cattle or his agent (as the case may be) shall be deemed guilty of an offence against this Order.

If any cattle are removed in contravention of this regulation, the person removing such cattle, and the person causing, directing, or permitting the removal of such cattle, shall respectively be deemed guilty of an offence against this Order.

29. No sheep, lambs, goats, or swine shall be brought into or exposed for sale in any market licensed for the sale of cattle under the last preceding regulation, except for the purpose of immediate slaughter, and all such sheep, lambs, goats, and swine, when brought into or exposed for sale in any such market, shall be subject to the last preceding regulation, in the same manner as if they were cattle, except that they shall be marked in such manner as the market authority may direct, instead of in the manner prescribed by the said regulation.

FOREIGN CATTLE.

30. Until the 1st of June, 1866, all cattle brought by sea from any place out of the United Kingdom into any town or place in England shall be marked by clipping a tuft of the hair off the end of the tail, and no such cattle shall be removed alive from such town or place except by sea.

"Town or place" in this regulation shall, according to circumstances, mean as follows:—

1. The area of the metropolis, including the city of London and the liberties thereof.
2. The area of any borough or such other limits as may be defined by the Privy Council in respect of such borough.
3. In the case of any other town or place, such area as may be defined by the Privy Council to constitute such town or place.

CATTLE BROUGHT BY SEA FROM ANY PART OF THE UNITED KINGDOM INTO ENGLAND.

31. No cattle brought by sea from any place in the United Kingdom into any town or place in England shall be removed from such town or place alive, without a certificate from the local authority having jurisdiction in such town or place that such cattle have been examined by some officer appointed for that purpose by such authority, and that such cattle are free from disease; but such certificate shall not exempt such cattle from any other regulation of this Order with respect to the movement of cattle or otherwise, provided, nevertheless, that in the case of cattle landed in any place in England from Ireland, the certificate of the local authority that such cattle are free from disease shall be accepted, in the case of a fat-stock licence, by the person authorised to grant the same, as sufficient for the purpose of granting such licence, and, in the case of a store-stock licence, such certificate shall be accepted or by the justice as equivalent to the declaration of the owner or by the justice, and to the certificate of the occupiers required by the form of the said store-stock licence.

"Town or place" shall in this regulation have the same meaning as in the preceding regulation.

SPECIAL REGULATIONS WITHIN THE METROPOLIS.

32. The following additional regulations shall be in force as respects the movement of cattle within the metropolis, inclusive of the city of London and the liberties thereof:—

1. No cattle shall be removed from the metropolis, inclusive as aforesaid; provided that where any person occupies a farm situate partly within and partly without the metropolis, inclusive as aforesaid, or any other contiguous premises so situate, he may, with a licence from the Commissioner of Police of the metropolis (which licence such Commissioner is hereby empowered from time to time to grant, and, if he think fit, to revoke), and for a time not exceeding seven days from the date of such licence, move from one part of such premises to another, any animal not diseased which has been in his own possession for 28 days immediately previous to the date of such licence, and has been marked in such manner as the said Commissioner of Police may direct.

If any cattle are moved from the metropolis for lucrative as aforesaid without the production of the licence in that behalf of such cattle, and also the person in charge of the cattle, shall each be liable to a penalty not exceeding the said sum.

2. No cattle shall be moved along any highway, footway, or public place within the limits aforesaid between the hours of 10 o'clock in the forenoon and 5 o'clock in the afternoon, or be driven into the River Thames, or any creek or water, without a licence from the said Commissioner of Police specifying such time, shall state the number and description of animals licensed to be removed, and the place to which destination is to be delivered, and shall be delivered to the person in charge of the cattle, and shall be produced by him on demand to any officer of police, which are sent to or from the said Metropolitan Cattle Market.

3. Any cattle moved along any highway, the neighbourhood or public place in contravention of this regulation the owner thereof, and the person in charge of the cattle, shall each be liable to the said respective penalties hereinbefore mentioned for offence against this Order.

GENERAL REGULATIONS

Movement of Cattle.

4. No cattle shall be moved on any day between sunset and sunrise except within the limits of the metropolis, inclusive of the City of London and the liberties thereof, or any other city or town.

No cattle shall be moved by any railway, canal, navigation, river, or other means of conveyance, or be moved without a licence, except for such time, and subject to such conditions, as may be specified in the licence.

Licences shall be of the description —

1. A licence for cattle intended for immediate slaughter, hereinafter called a slaughter licence.

2. A licence for other cattle, hereinafter called a store stock licence.

A slaughter licence shall be in the form and contain the particulars in the schedule to this Order marked A, and a store stock licence shall be in the form and contain the particulars in the schedule to this Order marked B.

A slaughter licence shall be granted only for cattle which are intended to be slaughtered within six days after the day on which the licence is granted, and shall not be granted for the removal of cattle to any place more than 10 miles distant from the place where the cattle are at the time when the licence is granted.

A store stock licence may be granted for the removal of cattle to any place within the limits aforesaid, or to any place not more than 10 miles distant from the place where the cattle are at the time when the licence is granted.

Licences may be granted by the Commissioner of Police of the Metropolis, or by any superintendent of police of the district of the Local Authority, or by any officer of police authorised in that behalf by the Commissioner, for the removal of cattle from the district of one local authority to the district of another local authority.

Licences may be granted by any officer of police authorised in that behalf by the Commissioner, for the removal of cattle from any place within the limits aforesaid to any place without the limits aforesaid.

No licence for the removal of cattle to any place without the limits aforesaid shall be granted by any officer of police, except on the application of the owner of the cattle, or of the person in charge of the cattle, and except on the production of a certificate that the cattle have been inspected by a duly appointed inspector of cattle, and that the cattle are free from disease.

36. No regulation of this Order shall apply to the following [illegible] —

(1.) The [illegible] cattle [illegible] highway, footway, or public place [illegible] to the [illegible] shall [illegible] cattle.

(2.) Cattle [illegible] market [illegible] [illegible] shall, during the continuance [illegible]

Provided that no person shall [illegible] cattle [illegible] to remove [illegible] cattle [illegible] the same in any additional [illegible]

Power of Officers to enter Premises.

37. Any officer of police authorised by the Commissioner of Police may, if authorised so to do by any general or special order in writing of the local authority, enter any field, stable, outhouse, or premises within the limits aforesaid [illegible] cattle [illegible] and may examine the cattle [illegible] and if any person [illegible] obstructs [illegible] any officer [illegible] in the execution of his duty under this Order, [illegible] shall be liable to a penalty not exceeding [illegible]

38. It shall be lawful for the Commissioner of Police of the Metropolis, or any officer of police authorised by him in that behalf, to stop and detain any animal moved, or which he has reasonable grounds for suspecting is being moved in contravention of this Order, and to apprehend without warrant the person in charge of such animal, and bring him before the justices, or any other city or town.

No cattle shall be moved by any railway, canal, navigation, river, or other means of conveyance, or be moved without a licence, except for such time, and subject to such conditions, as may be specified in the licence.

Licences shall be of the description —

1. A licence for cattle intended for immediate slaughter, hereinafter called a slaughter licence.

2. A licence for other cattle, hereinafter called a store stock licence.

A slaughter licence shall be in the form and contain the particulars in the schedule to this Order marked A, and a store stock licence shall be in the form and contain the particulars in the schedule to this Order marked B.

A slaughter licence may be granted only for cattle which are intended to be slaughtered within six days after the day on which the licence is granted, and shall not be granted for the removal of cattle to any place more than 10 miles distant from the place where the cattle are at the time when the licence is granted.

A store stock licence may be granted for the removal of cattle to any place within the limits aforesaid, or to any place not more than 10 miles distant from the place where the cattle are at the time when the licence is granted.

Licences may be granted by the Commissioner of Police of the Metropolis, or by any superintendent of police of the district of the Local Authority, or by any officer of police authorised in that behalf by the Commissioner, for the removal of cattle from the district of one local authority to the district of another local authority.

Licences may be granted by any officer of police authorised in that behalf by the Commissioner, for the removal of cattle from any place within the limits aforesaid to any place without the limits aforesaid.

No licence for the removal of cattle to any place without the limits aforesaid shall be granted by any officer of police, except on the application of the owner of the cattle, or of the person in charge of the cattle, and except on the production of a certificate that the cattle have been inspected by a duly appointed inspector of cattle, and that the cattle are free from disease.

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Provided that no person shall [illegible] cattle [illegible] to remove [illegible] cattle [illegible] the same in any additional [illegible]

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Licences may be granted by any officer of police authorised in that behalf by the Commissioner, for the removal of cattle from any place within the limits aforesaid to any place without the limits aforesaid.

No licence for the removal of cattle to any place without the limits aforesaid shall be granted by any officer of police, except on the application of the owner of the cattle, or of the person in charge of the cattle, and except on the production of a certificate that the cattle have been inspected by a duly appointed inspector of cattle, and that the cattle are free from disease.

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based on long-continued observation. *J. J. Mechi, April* 4.

The Brighton Volunteer Review.—A friend who was among the volunteers on Easter Monday tells me that they trampled down many acres of young corn and other crops. Does it not seem like mocking the Almighty, a few days after the solemn humiliation day on account of the scarcity of meat, thus wantonly to destroy the material of thousands of bread-loaves? *W. R. Tate, 4, Grove Place, Denmark Hill.* The young corn will be none the worse for the trampling.

Irish Ivy.—I have read (page 297) your list of fodder plants for cattle, and beg to say I have not seen any notice ever taken by you of the Irish Ivy. There is a castle in North Wales covered with it, as also some of the Park walls. A quantity has been cut in previous years, and in this year to the amount of 5 tons. It is excellent fodder for milch cows during winter, very productive of milk, and gives to the butter the taste of new Grass. It is eaten with great avidity, and has been given in alternate feeds with Oats not in the straw. *B. B. C.* [You must take care.

Farmers' Clubs.

Cirencester: *The Feeding of Stock.*—The following is the conclusion of Mr. W. J. Edmunds' paper on this subject at the last Monthly Meeting of this Club:—

I will now say a word or two as to the feeding of sheep.

I am more and more convinced that sheep intended for the butcher should be liberally fed from lambs, and as round this neighbourhood we almost all of us breed as well as feed our sheep, I do not think I shall be wandering from my subject if I commence my idea of their management from the time they are weaned. We must bear in mind that if, by our unbroken good living, we can humanly speaking make about 3 lb. more weight each of our young sheep some time in January, that is, at from 10 to 11 months old—sheep full of flesh and good quality, we can keep a heavier breeding flock, and by that means make more mutton and also more wool than we could if, by less liberal living, we were unable to dispose of them before March or April, or, as is the case in many instances, even later. Now, how are we to attain so desirable an end? I believe only in this way—by not only preventing our lambs from losing flesh, but by doing our utmost to make them gain flesh from the very moment they leave their mothers. There is ordinarily not much danger of their losing condition before, because Nature supplies the food most suitable to their wants. Still, even for two or three weeks before they are weaned, I would recommend a small quantity of Pea-meal or oil cake dust to be given, just to use them to it. Then as soon as they are weaned, which with me is generally done while folding on seeds, I would recommend them to have ¼ oz. of cake or split Peas each (I prefer oil cake) from that time until August, their other food consisting of Grass, Vetches, and aftermath Clover—two kinds of food at best—then Rape and Vetches, or Rape, until the time comes for them to be cautiously put on to Turnips. Toward the end of August, or even before unless the weather is very hot, I would add to the other food a quarter of a pound of cracked Beans each, and as the season advanced increase by degrees the oilcake until it reached three-quarters of a pound each (if straw chaff be given), but if a fair proportion of good hay, I think half a pound would be enough. By such living sheep may be brought to good weights, fat, yet with plenty of flesh, at 11 if not 10 months old, without forcing so as to produce disease, and without extravagant living. I wish to speak of what may be commonly done. The total cost of the artificial food would be for the whole time 11s. to 12s. per head. As an instance, I can mention a lot of half bred tegs, 120, sold by weight this year. During the average time all were killed by the end of the 4th February, and they weighed 7½ lb. each, or nearly 10 tons. These sheep had had artificial food as I have described, Turnips and Swedes and straw chaff, with a very small allowance of Trefolium hay. My opinion is that for young animals flesh-forming food should be given as far as practicable, but we must be cautious that it does not interfere with their health. For instance, Beans, I believe, contain more flesh-forming matter than oilcake does, yet practically we find the latter more suitable in dry hot weather than the former, because Beans are too heating. Another advantage we obtain by thus gradually supplying from the first and gradually increasing these supplies of food to our lambs is that we run less danger of losing them in the autumn, at which time there is often a great mortality, more especially if, as it is said, they are began to be forced. Should we find cancer, indeed, in any case I think it is very desirable, and certainly it is necessary if we buy sheep to feed, to give them a little alterative medicine. I gave all mine some last autumn, and I firmly believe with great advantage. I had the medicine from Mr. S. Matthews of Lechlade, who has made the veterinary art his study, and has succeeded in producing a really valuable mixture. Of the certainty of our losing sheep out of those which have received a check or have been badly done, even with the greatest caution, I have spoken before, but with all kinds of sheep care is necessary when we begin to give them Swedes. They should be given at first in very small quantities, with plenty of chaff, and doubtless the plan recommended in that excellent pamphlet by Mr. Wood, viz., of cutting a few common Turnips to mix for the first few days, would be attended with beneficial results. Just the same caution is again required in the spring if we give our sheep Mangel Wurzel, and chaff should be liberally supplied. I believe, however, that for sheep one of the most valuable times for giving that root is with Vetches in hot weather. My shepherd has often said it does them more good than corn, and if we can spare it for the purpose we generally store some near our Vetch land, so convinced are we of the benefit arising from its use at that time. As regards Vetches for fatting sheep, I would prefer to cut them unless quite young, and there again the little and often feeding is so necessary; and if dry hot weather, in case of no Mangel, water should be plentifully supplied, as sheep will not thrive at such times without some moisture, and we should be losing the whole value of this expensive crop. With regard to the fatting of lambs, it is on the one hand argued that to fat lamb is very wasteful and should be discontinued, while on the other hand many people argue that as by it a proportionately greater weight is made in a shorter time, it is advantageous to the producer and consumer alike. I think we should bear in mind that if weight is made it is not of so useful or so wholesome a quality, neither does it go so far, weight by weight, as mutton; therefore it is a matter for serious consideration, in these times especially, whether, as a rule, fatting lambs should not be discontinued. One word I will say on fatting them, and indeed all I can say, for I have never, since I left Wiltshire, seen any fatted or taken much interest in the matter. One spring when there were no Turnip-tops, the shepherd we had with us advised my late father to fat 100 lambs from ewes which I believed he had bought. He was asked how he would fat them? "Nothing green, and the ewes on Swedes. Give me a little Pea flour and I can do it," the man said, and so he did. The mother's milk, with quite a small quantity of Pea flour given in covered troughs, made those lambs quite fat in May (the latter part), and they went out at a good price. In this neighbourhood, our rule is to fatten sheep on the land, not in yards, but as it is a practice not very distant to keep sheep in yards through the winter, I think it right to bring it into notice, and would suggest, for the consideration of those who are or may be obliged to keep sheep in yards, the adoption of pulping roots to mix with their chaff, or if cake or corn or both be given, to boil them and throw the soup over it instead of giving dry food. I am quite confident that had I done so last year, when from necessity I was obliged to keep sheep in yards, I should have been a great gainer by it. I tried a small quantity of pulped Mangel with the chaff in the spring, and found that the sheep ate their food with greater avidity, and I believe if we could conveniently manage to mix a little pulped roots with chaff for all our sheep, even in the fields, it would be of great advantage. I cannot, however, see my way clear to do that; it would be attended with considerable trouble and inconvenience, to say nothing of having to overcome prejudices in the attendants' minds. I may say that salt is a thing that we generally use for our stock. We have for many years thought it conducive to their health, and we prefer sprinkling a little over their chaff, as it makes them eat it better. Of our nutritive foods, then, for sheep, we have not, in my opinion, much choice. Barley is indigestible, malt too dear, too many Beans tend to spoil the quality of the mutton, as in bacon, by making it hard, and there remain only Linseed cake and Peas, for I cannot say I like either Cotton or Rape cake. Speaking of malt, I would just refer you to a letter of Mr. Williams, of Baydon, to the Chancellor of the Exchequer, in which he states that a Mr. Wentworth, of Enham, near Andover, sold at Weyhill fair, on the 10th of September last, 200 lambs, only nine months old, at 69s. per head. About a month before the fair, these lambs fell ill with the foot and mouth disease, and to endeavour to prevent their losing the high condition to which they had been brought, he gave them one bushel of malt per day, or about one fifth of a pound each. The consequence was that they immediately recovered their appetites, and made the price named, &c. This fact speaks for itself. Again, Mr. Hudson, of Castleacre, has stated that 1 peck of malt per day would lay on more flesh than 10 lb. of oil cake, or 1½ peck of Barley, when given to cattle of 100 or 120 stone weight, other food being alike; and Dr. Voelcker's analyses of different samples of malt prove that [illegible] chief [illegible] as far as I can [illegible] less [illegible] malt than is usually made, would be more suitable and wholesome food for cattle than that at present used. The price of malt is, however, a denial to its use. Take Mr. Hudson's idea. He appears to consider the value of 1½ peck of Barley equal to 1 peck of malt; the Barley would cost at the most 1s. 6d., while the malt would be 2s. or 2s. 3d. per bushel more. I am inclined to think, however, that the time is not far distant when we shall be able to use malt, unfettered by any restrictions, in the feeding of our general stock.

A few words as to the feeding of pigs.

With them, as with our other fattening animals, it is necessary that we should lend our aid as much as possible to secure those which while having an aptitude to fatten are well furnished with lean meat. I remember sending some beautiful little porkers, as I thought, to London, and in return the salesman wrote,—"Your pigs did not make the best price; they were nothing but blown fat!" I may be expected to commence the mode I would suggest as the right one for fatting pigs from the time that the stores are worth about 4s. each. In my opinion it is a mistake and a waste of food to give them at that time no other kind than corn. I believe that pigs always do better with some green food or roots until the last eight or ten weeks before being fit for the butcher. For store pigs with the price I have named I believe that the cheapest food at the present time is Mangel Wurzel, with one pint of Beans or Peas daily, and a little Barley meal made very thin. I would then by degrees as the pigs progressed, lessen the Beans, introduce some Pea meal with the Barley, and instead of raw Mangel boil it or steam with the meal; then, as they approach the fat state, withhold the Mangel, and if Barley is plentiful, the Pea also for nothing will make such good bacon as Barley meal. In the summer time Vetches, Lucerne, or any green food given to store pigs which are about to be fatted saves so much of the corn which must otherwise be given, and is more readily for them. In any case I am fully convinced that a part of the food for fatting pigs until just at last should consist of vegetable food other than corn, and boiled or roots. Potatoes are best, if not too expensive, but if they are Swedes, Mangel or Cabbage will answer. In the winter, and especially in frost, their food should be given slightly warm, and this reminds me of the great necessity there is for the feeder to judge accurately the quantity of food they will eat at a meal. I am happy to say that at the present time my men all know the importance of proper feeding, and act up to their knowledge; but I have many times, with second men especially, had to complain of too much food having been given at a time, and, as a consequence, some was left in the troughs. At the next meal an addition was made, and so on again and again; of course it would not have been so palatable to the pigs; they were never really hungry, and never seemed to enjoy their food. I have often asked the men this question. How would you enjoy your food, if, after having previously had more given you on your plate than you could eat, you were to see some fresh food placed on the same plate with your former leavings and offered to you again at your next meal? Would you not rather have a clean plate? So would pigs. However, they would not or could not see it, and it was only by having intelligent men who can understand such matters, and take an interest in their work, that I have been able to get my own way. I have said nothing as to the right time to sell stock, as, of course, every one must use his own judgment in such a matter. He may be influenced by many things to sell sooner, or, on the contrary, to hold longer than would be profitable, if we speak only of the state of the animals. As a rule, I believe that the proper time to sell is when they are fit to sell—that is when they are in that state in which they are said to die well, or in other words to have plenty of lean fat, &c. If they are killed before or after that time the butcher cannot afford so high a price per lb., because in one case the offal being light, he has not so much profit there, and in the other, he is, in order to satisfy his customers, obliged to pare off the over-abundance of fat, and sell it at tallow price.

Conclusion.

In conclusion, may I be allowed to say that we have for some years now been told to look to our stock for profit, and think less of corn. Late events have shown us that that also is a precarious source of profit. The dreadful disease which has destroyed so many herds, and brought poverty, disappointment and sorrow to so many of our brother farmers, the no less fearful small pox in sheep which has lately shown itself in Northamptonshire; and the scourge among pigs which last year was so prevalent, all should convince us that although we may have been for years past labouring to bring our stock to perfection, and endeavouring to carry out the most useful suggestions of modern science in our management of them, all our labours may in a short time be dashed away, and we may be left with nothing to show for all our labour. Our duty, however, is plain. Let us take every precaution to keep our stock healthy. Strengthen the hands of the local authorities who are called upon to carry out the Acts of Parliament regulating the movements of cattle by willingly suffering necessary inconvenience, and persuading others to do so. Urge upon our rulers the importance—the absolute necessity—of strict quarantine and watchful vigilance with regard to the importation of foreign stock, for our country is now suffering deeply from the neglect of that vigilance, for doubtless from abroad have come all these diseases. Let us remember also that we are in the hands of an all-wise Ruler—let us endeavour to lay a loose hold on the things of this world, and to feel that our property is only a talent lent to us, so that if the loss of herds and flocks should overtake us, we may still be enabled with cheerfulness to bless the hand that may have taken away that which it alone had given.

[During the discussion which followed Mr. Edmunds' paper, and which we shall give next week, Mr. Ruck, Mr. Lawrence, and Professor Wrightson referred to some of the points which the lecturer had raised. In particular the use of salt for the health of animals—the need of punctuality in feeding—the various practices of different districts as regards the quantity of Turnips and of oilcake used in the feeding process, and the question of steaming food came under review.]

Reviews.

The Journal of Agriculture. No. 92. C. & E. Layton, 150, Fleet Street.

The current number of this old periodical is filled with various and interesting contributions. We have in it first a memoir of the late Hugh Watson, an agriculturist whose energy and good judgment achieved for his country very great agricultural improvement, and for himself a wide-spread and well-founded reputation. Following this, Sir J. H. S. Forbes, Bart., writes on the Present Position of Steam Cultivation, in which full credit is given to the Woolston example for its influence, though, perhaps, too much is made of the rivalry between Messrs. Smith and Fowler, as if it were an unmixed evil. The first of a series of papers follows on the Improvement of Landed Estates by Proprietors, in which the plans and details of farm buildings are discussed and illustrated.—There is then a short discussion of the subject of Agricultural Education, in which the general subject of professional or technical training is referred to, and the conclusion arrived at is "that there is at present a great deficiency of special or industrial education; that the particular branch of agriculture ought to be taken up along with others in providing the necessary increase; that much might be done by arrangements with existing grammar and endowed schools for advanced study; and that the agricultural class ought either separately, or in conjunction with the manufacturing and commercial interest, by means of the great agricultural societies, and in correspondence with the societies of arts, to make a combined effort to provide a curriculum of study in various districts in connection with the Highland and Agricultural Society's diplomas and examinations as far as Scotland is concerned, and to establish one or more model farms, to complete the practical department, on the plan described above as adopted in France, where the superintendent receives a small fixed remuneration for conducting the educational department as well as the work of the students, but takes the farm as tenant by private agreement."

An Old Norfolk Farmer writes a very interesting paper on Chicago, "the greatest grain port in the world." Martin Doyle, another veteran agricultural writer, tells the story of Road-making in Ireland. Then we have an illustrated lecture on Eggs, and another capital discourse by Mr. Wallace Fyfe on Artificial Manures. And a reference to the Cattle Plague, with the usual Quarterly Summary of past events, closes the volume.

Seeing that we shall have no cattle shows this year, let us take one specimen extract from the history of a prize-taker, one of Hugh Watson's celebrated herd—a memoir included within a memoir, as both are given in this volume by one of Mr. Watson's daughters:—

"I may mention one animal—an ox—which, I believe, he considered to be on the whole the most perfect specimen of the polled breed which he had ever reared. This ox took a first prize at the Highland Society's Show at Dundee in 1843, having walked there from Keillor, a distance of 13 miles, the day before adjudication, and another at Belfast in the same year. Here he took the fancy of the late Prince Consort, who bought him, and at the Christmas Show at Smithfield, in 1844, exhibited him as extra stock. He was then sold to a butcher; but upon the Prince going up to his side to give him a farewell pat, the gentle animal tried to lick his hand; and the Queen, who on that occasion for the first time honoured any show with her presence, immediately gave orders that the ox should be re-purchased from the butcher, and sent back to Windsor, a 'Royal pensioner' for life.

"His honours did not stop here, however. A good many years ago a young officer of the 80th, an acquaintance of my father's, when upon a sporting expedition in the far North West Provinces of India, one day entered a miserable hovel, whose only occupant he found engaged in his devotions, prostrate before a rude altar, over which was suspended a coloured print of this identical ox. Upon a closer inspection he found that it was a copy taken from a painting in our possession of 'A Polled Angus Ox, the property of H.R.H. Prince Albert, and bred by Hugh Watson of Keillor.' How the print had got there he endeavoured vainly to discover. More than once my father saw his old favourite when visiting his friend the late General Wemyss, who managed the Home Farm at Windsor.

"Another excellent portrait of him was taken by our eminent animal painter, Gourlay Steell, and it is in the interesting collection of farm animal portraits at Redbraes Cottage, Edinburgh. Doubtless, long ere now he has followed the long succession of 'Black Jocks.' His mother was rather a celebrated old lady, who lived to the mature age of 36, and was the

mother of more than two dozen other prize-takers. She herself, when she was 24, was shown at Aberdeen as extra stock in 1858, and created quite a sensation in the show yard."

Miscellaneous.

The late Professor Dick.—We very much regret to see that the death of Professor Dick, of Edinburgh, the distinguished Veterinary Professor, is announced.

"*Property has its Duties as well as its Rights.*"—A man whom, though only one among millions, the law permits to hold thousands of acres as his single share, is not entitled to think that all this is given to him to use and abuse, and deal with as if it concerned nobody but himself. The rents or profits which he can obtain from it are at his sole disposal; but with regard to the land, in everything which he does with it, and in everything which he abstains from doing, he is morally bound, and should, whenever the case admits, be legally compelled, to make his interest and pleasure consistent with the public good. The species at large still retains, of its original claim to the soil of the planet which it inhabits, as much as is compatible with the progress for which it has parted with the remainder. *J. S. Mill.*

The Horse Show at the Agricultural Hall.—At the meeting of the Directors of the Agricultural Hall, held on Tuesday last, it was resolved, in accordance with the suggestion made last week by *Bell's Life*, and supported by ourselves, to confine the class of hunter-stallions to thorough-bred horses. *Mark Lane Express.*

The Cattle Plague.—On Tuesday evening last Lord R. Montagu asked the Secretary of State for the Home Department whether, in fulfilment of the promise given by the Chancellor of the Exchequer, any measure had been prepared to give compensation to those persons whose cattle had been killed, under the orders of the Privy Council, previous to the passing of the Act of this Session; and, if so, when that measure will be introduced. Sir G. Grey said certain inquiries had to be instituted on the subject before the Government could come to any conclusion; but no time would be lost in setting those inquiries on foot.—A separate department has been formed for the transaction of business relating to the Cattle Plague, under the superintendence of Colonel Harness, R.E., C.B., to whom all communications on the subject should in future be addressed, as follows:—Colonel Harness, R.E., C.B., Cattle Plague Department, 7, Westminster Chambers, Victoria Street, S.W.

Lord Palmerston on Cottages.—He gave some examples of how this renovation could be effected, and spoke with much force on the subject at the Romsey and other agricultural meetings. His own words on this subject are as follows:—"It is not necessary to pull down old cottages to build new ones." When he said this, he added, "the effects of improving these dwellings is almost marvellous. In the first place, the comfort of a man's house depends on the tidiness of his wife, and on the mode in which she tries to make him comfortable. But there is a temper of the human mind which is denominated recklessness. When a thing seems impossible it is given up in despair. When a cottage is in such a ramshackle state that it is impossible for the wife to keep it clean, she becomes slattern; everything goes to ruin; the man is disgusted and flies to the beer-shop." So much importance did he attach to the cottage accommodation that he visited every cottage on his farm, and gave personal instructions for carrying out the enlargements. Bedroom accommodation, good drainage, and good ventilation were his primary objects; but such simple things as the convenient placing of pegs for the clothes, and the shelves for the housewife, did not escape his attention. By his kindly and genial consideration of their wants and comforts he won his way to the hearts of his peasantry, and will long live in their affections. Lord Palmerston was an intelligent encourager of all landed improvements. He was ever ready to expend money for those who desired better drainage, better roads, or better buildings—charging a moderate interest upon it. He was adverse to extreme expenditure—that is to say to refinements—in farm homesteads. He had spent a considerable sum of money in improving such buildings, but has left only one or two specimens of new homesteads constructed on what he considered to be the best principles. Though a keen sportsman, he was by no means arbitrary in the matter of game. It is very certain that he never preserved to the injury of his tenantry without being perfectly willing—nay, anxious—to compensate them for the damage done. Much more might be added from a store of personal recollections; but enough has been recorded to show the practical habit or character of the man in dealing with his private affairs—enough to show that the hand which guided with such matchless skill the helm of State could simultaneously grasp and guide the plough. *Illustrated London News.*

Calendar of Operations.

APRIL.—*Wheat* is now generally in full growth, and in mild spring weather will soon cover the ground. Where it is too luxuriant, sheep may be herded on the land, and allowed to crop the overgrowth; or the scythe may be used to mow the top leaf off. The young plant, if dissected, will already show the form and position of the young ear, and a little care will save it from injury, while the removal of the overshadowing leaf will tend to the strengthening of the stem, and so to the hindrance of any liability to be laid by heavy rain. The "April" Wheat may still be sown on any late piece of sheepfold which is expected to yield a more valuable crop of Wheat than of Barley.

Barley and Oats are both sown this month to a considerable extent, especially in the southern counties; and heavy crops are often had off late-sown fields. It is, however, never to be recommended to delay the seed-time of these crops beyond March when it can be avoided. A better produce both as to quality and quantity is obtained from the earlier sown crops.

Hoeing operations are the principal employment of April among all our corn crops. The earlier sown Peas and Beans will need the horse-hoe; and most of the Wheat, Barley, and Oat fields will need either horse or hand hoeing. The operation should be preceded by a rolling; and the horse-drawn implement, or the hand-hoers follow it. In the former case it may cost 1*s.* an acre, and in the other from 3*s.* to 5*s.*, according as the width of drill enables the use of a wide or narrow hoe, or according to the foulness of the land. Where it is free from Couch-grass, and infested merely with annuals, as Chickweed or Speedwell, a sufficient cultivation and destruction of the surface and its weed-growth is effected by the harrow. Where the corn horse-hoe is used among young Wheats, an implement which takes as many rows at once as had been sown at once by the drill is used. And any variations from the straight line being followed alike by all those rows together, can be also followed by the hoeing implement. The man who guides it keeping his eye on a single row, and saving it, is sure to save the whole. This horse-hoe, followed next month by men with spuds for the removal of Thistles in the rows of corn, is a cheap and efficient substitute for the much more costly process of hand-hoeing.

It is to be remembered that this tillage of the soil during the growth of the plant is useful not merely for the removal of its enemies, which is thus effected, but for its stimulating influence on growth. Growth is essentially a process dependent on the activity of those chemical processes going on within the soil which tend to the provision of vegetable food. These processes are quickened by a stirring, which acts on the soil as a poking does on the fire in the grate; and all the products of a renewed chemical action are as much a manuring as if the fertilising matters thus supplied were directly added to the land.

Soluble Manures may be applied to unpromising corn crops early in this month. Sulphate of ammonia or nitrate of soda may be thus applied broadcast, before rain if possible, at the rate of one cwt. per acre. There are especial advantages in the case of all corn crops in the attainment of a vigorous habit of growth when young, and on this account tillage and manure brought to bear upon them early in the spring exert an influence upon the future crop which is not witnessed in the case of green crops.

Let us take the Wheat plant and the Turnip respectively as representatives of these two classes. In the latter case, the efforts of the farmer are all bent upon obtaining size of bulb; this is the one point which is the object of cultivation; and, however backward the plant may be at an early stage of growth, genial weather and good cultivation may start it again, and quite remedy previous bad fortune: its size will increase under such influences; its growth is from the beginning to the end a mere process of accumulation—a mere work of addition. In the case of Wheat, however, there are several parts to be looked to. It is the seed which is here important; and the farmer aims not only at obtaining size but number also. This number depends on two circumstances—the tillering of the plant, which increases the number of ears from each root, and the size of these ears—the number of seeds on each. The former of these particulars, equally with the latter, renders it of great importance that plants should be placed in such circumstances when young as will enable them to grow vigorously; but it is to the latter point especially that I wish to direct attention. I have pulled a Wheat plant early in April, when barely six inches high, and on dissecting in my hand bade the embryo ear, then hardly the tenth of an inch long, and by the help of a microscope I have counted the buds upon it, at this early period—the buds from which the flowers and the seed are to spring. Now this embryo ear in the month of April appeared to possess about the same number of parts, each in an embryo state, as the average of perfect ears; and though I do not know that the ear of corn is formed in embryo perfect, so far as the number of its parts is concerned, from the first, yet it is extremely unlikely that in this case any addition would have been made to the number of those parts, for that was already as great as is usually observed. How important, then, that during the very early period when this number admits of increase, the young plant should be in a vigorous condition! No future exertions, no skill though they may be by genial weather, will here remedy a fault occasioned by inattention during the first stages of the plant's growth. It is then that the limits are assigned to number, and any future vigour on the part of the plant must expend itself in the production of size, and in the full filling up of all the parts which have been formed in an embryo state. This latter point is doubtless of great importance, and the farmer, by all means in his power—a right preparation of the land and due thinness of sowing—must endeavour to push the plant on so as to induce the fertility of all the buds on the ear, which is, be it remembered, of rare occurrence; but let him, by careful attention to these same means, endeavour, in the first place, to obtain length of ear, and such a number of buds on each as, if all brought to perfection by a good season, may result in a large crop.

Notices to Correspondents.

MANGELS.—*H. T.* says—"I have been told that it is considered very dangerous to give Mangel Wurzel to ewes either before or after lambing. I have been giving my ewes Mangels whole upon the land since lambing, and one or two have died suddenly without any apparent cause." [Mangels are first rate food for ewes at this season, especially after lambing.]

PRE-DRYING EGGS.—*H. B. R.* There are many modes of preserving eggs, all of which have their supporters. We will next week each recur to, give a few of the best for your selection and experiment.

The Cultivation of Bromus Schraderi.

SUTTON AND SONS can supply genuine Seed of the above New FORAGE GRASS, in packets, for trial, at 1*s.* each, or in larger quantities at 5*s.* per lb., with instructions on cultivation.
SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

COCKSFOOT GRASS (DACTYLIS GLOMERATA).—This highly nutritive Grass is included in all Messrs. SUTTON'S MEADOW MIXTURES, or may be purchased separately at a very moderate price, which may be had on application to
SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

SWEET-SCENTED VERNAL GRASS (ANTHOXANTHUM ODORATUM).—This very excellent Grass, so desirable in Pastures, is included in all Messrs. SUTTON'S MIXTURES, or may be purchased separately at a moderate price, on application to
SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

Fine Grass Seeds for Cricket Grounds,
BOWLING GREENS, or CROQUET GROUNDS.

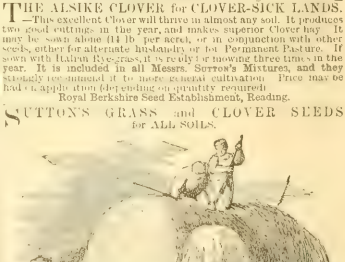
SUTTON AND SONS can supply suitable kinds of the fine-growing GRASSES and LOVERS for the above purposes, at 2*s.* 6*d.* per lb., 24*s.* per bushel.
SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

Green and Purple Kohl Rabi.

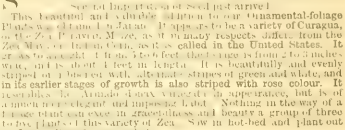
SUTTON AND SONS can supply genuine New Seed of the above, at very moderate prices, as see CATALOGUE, which may be had gratis and post free on application.
SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

THE ALSIKE CLOVER for CLOVER-SICK LANDS.—This excellent Clover will thrive in almost any soil. It produces two good cuttings in the year, and makes superior Clover hay. It may be sown alone (14 lbs. per acre), or in conjunction with other seeds, either for alternate husbandry or for Permanent Pasture. If sown with Italian Rye-grass, it is ready for mowing three times in the year. It is included in all Messrs. Sutton's Mixtures, and they strongly recommend it to more general cultivation. Price may be had on application (free) stating quantity required.
Royal Berkshire Seed Establishment, Reading.

SUTTON'S GRASS and CLOVER SEEDS for ALL SOILS.



SUTTON'S MIXTURES for PERMANENT GRASSES and CLOVERS for Long-down Laid to Meadow or Pasture, 20*s.* to 30*s.* per Acre.
SUTTON'S MIXTURE of GRASSES and CLOVERS for Three or Four Years' Lay, best Mixture, 14*s.* per Acre; cheaper ditto, 20*s.* per Acre.
SUTTON'S MIXTURE of GRASSES and CLOVERS for Two Years' Lay, best Mixture, 20*s.* per Acre; cheaper ditto, 16*s.* per Acre.
SUTTON'S MIXTURE of GRASSES and CLOVERS for One Year, best Mixture, 14*s.* per Acre; cheaper ditto, 10*s.* to 12*s.* per Acre.
SUTTON'S RENOVATING MIXTURE for Improving Old Pastures, 10*d.* per lb., cheaper by the cwt.
SUTTON'S FINE LAWN GRASS MIXTURE, 1*s.* 3*d.* per lb., 24*s.* per bushel.
SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.



The Greatest Novelty of the Season.

STRIPED-LEAVED JAPANESE MAIZE.

Special importance of seed just arrived.

This beautiful and valuable variegated ornamental-foliage Plant was obtained by Fortune. It appears to be a variety of Curagua, or Gigantic Maize, as it so many respects differs from the type. Mature Canes, as yet called in the United States. It grows to a height of from 6 to 8 feet, the cane is from 2 to 3 inches wide, and is about 4 feet in length. It is beautifully and evenly striped or barred with alternate stripes of green and white, and in its earlier stages of growth is also striped with rose colour. It resembles the Arundo donax variegata in appearance, but is of a much more elegant and imposing habit. Nothing in the way of a foliage plant can excel in gracefulness and beauty a group of three to five plants of this variety of Zea. Sow in hot-bed and plant out in June. Price 1*s.* per packet.
JAMES CARTER & Co., 237 and 238, High Holborn, London, W.C.

MIXED SEEDS for LAYING DOWN NEW or RENOVATING OLD PASTURES. These Seeds are taken from the celebrated Pastures on the Limestone surrounding Dublin, and are of prime quality. Cash price, 2*s.* per bushel, free on rails at Cheltenham. Also SEEDS, Mostly grown locally at Andoversford.
Address JAMES HOPKINS, Salperton, Andoversford.

Brighton and Sussex Seed Warehouse.

EDWARD CARPENTER'S MIXTURES of PERMANENT GRASS and CLOVER SEEDS—Best and Cheapest, for nearly 12 months' light seeds, and 12 lb. Clovers and small seeds per acre).—See testimonials in Catalogue.
EDWARD CARPENTER'S RENOVATING MIXTURES for Improving Old Pastures.
PRICED CATALOGUES of KITCHEN GARDEN, FLOWER and FARM SEEDS now ready.
EDWARD CARPENTER, Seed Merchant and Grower, 96, St. James's Street, Brighton.

PERMANENT PASTURE SEEDS.—The benefit to Pasture Fields sown down with Natural Grass Seeds cannot be over estimated. The trifling cost of these per acre over common Rye-grass and Clover is fully repaid by the greater abundance of Herbage produced of a highly nutritious and more permanent character.
KENNEDY'S MIXTURES for PERMANENT PASTURE continue to give the greatest satisfaction, and the demand for them is every year on the increase.
A DESCRIPTIVE PRICED CATALOGUE of these SEEDS, as also of Rye-grass, Clover, Turnip, and other Farm Seeds, may be had on application to
THOMAS KENNEDY & Co., Nurserymen and Seedsmen, Dumfries.
Free delivery as formerly.

To Improve Meadow Land.

RICHARD SMITH'S MIXTURE of the finest GRASSES and PERENNIAL CLOVERS (8 to 12 lb. per acre, at 10d. per lb.), if sown early, will cause a valuable improvement to the crop.
RICHARD SMITH, Seed Merchant, Worcester.

Grass Seed for all Soils.

RICHARD SMITH offers the best selection that can be made of PERMANENT MEADOW GRASS and CLOVER at 22s. per acre, consisting of 2 bushels light, and 12 lb heavy Seed. The kinds and quantities are chosen for their Early Growth, Crop, Nutritive Qualities, Reproductiveness, and Permanency, and can be had separately, or properly mixed to suit Heavy, Light, or Medium Soil.
RICHARD SMITH, Seed Merchant, Worcester.

RAYNBIRD, CALDECOTT, BAWTREE, DOWLING, AND COMPANY, Limited,
CORN, SEED, MANURE, AND OILCAKE MERCHANTS,
Address, 89, Seed Market, Mark Lane, E.C.; or Basingstoke.
Samples and Prices Post free on application. Prize Medals, 1851, for Wheat; 1862, for "Excellent Seed Corn and Seeds.

HALLETT'S TRADE MARK CHEVALIER PEDIGREE BARLEY.

Weight 56 lb. per bushel.

This has been "bred" in the same manner as the "Pedigree Wheat," viz.: by repeated annual selection, re-starting in each year from a single grain upon a poor soil (resting immediately upon the chalk of the South Downs), which upon neighbouring farms produces Barley weighing but 51 lb., and fit only for grinding.

SEED REQUIRED:—

If drilled in March	.. ..	1 bushel on 3 acres.
" April	.. ..	1 " 2 "

Price Two Guineas a Bushel (including bag), delivered in bags sewed up and sealed, at the Brighton Railway Station, upon receipt of Cheque or Post Office Order, without which it will not in any case be sent to unknown correspondents. Less than a bushel will not be supplied.

Apply to FREDERIC F. HALLETT, Esq., F.L.S., The Manor House, Brighton, Sussex.

GENUINE NEW CARROT SEED.

The Three Best Sorts are
WHITE BELGIAN, 1s. per lb.
RED INTERMEDIATE, 1s. 6d. per lb. } Cheaper
LONG RED CATTLE, 1s. 6d. per lb. } by the Cwt.
SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

BLUNDELL'S CATTLE MELON and CATTLE MARROW.—These have now been tested in 37 counties in England, and in various parts of Ireland and Scotland, and proved to be a heavy cropping and valuable Fruit for Feeding all kinds of Stock
Prices, exclusive of carriage—100 Seeds, 2s. 6d.; Seed for ¼ acre, 6s.; do. ½ acre, 9s.; do. 1 acre, 16s.
Cash remittances from unknown correspondents.
Address, JOSEPH BLUNDELL, Bursledon, Southampton.

Special Notice to Farmers, Gardeners, and the Trade.

EXCELLENT CABBAGE PLANTS of Drumhead or Ox, Eastham, Early Nonpareil may be had by early application at 1s. 6d. per 1000. Special quotations given for genuine New Seeds.
A reference or remittance must accompany all orders.
FREDK. GEE, Seed Merchant and Grower, Biggleswade, Bedfordshire.

To Market Gardeners and Others.

CABBAGE PLANTS, EASTHAM, ENFIELD, and DRUMHEAD, 1s. 9d. per 1000. The stock true and can be warranted.
RED CABBAGE PLANTS, extra fine, 5s. per 1000.
ONION, WHITE SPANISH, 1s. 3d. per lb.
WURZEL, YELLOW GLOBE, 2s. per cwt.
EARLY SHAW POTATOS, 6s. per cwt., warranted true.
Terms cash.
RICHARD WALKER, Seed Merchant and Grower, Biggleswade, Bedfordshire.

To the Trade.—Turnip Seed for Sale.

W. WOODCOCK, for 30 years Agricultural Seed Grower in Wisbech, Cambridgeshire, begs to draw attention to the following kinds from transplanted Bulbs, all of his own careful growth:—

	Per bushel.—s. d.
SKIRVING'S PURPLE-TOP SWEDE	15 0
GREEN-TOP SWEDE	15 0
PURPLE-TOP SWEDE	15 0
GREEN-TOP YELLOW SCOTCH	15 0
RED-TOP ROUND	18 0

Five per cent. less for cash on delivery, and 4 months' credit with a satisfactory reference to a London house.

Henry's Prize Hybrid Leek, Genuine.

DOWNIE, LAIRD, AND LAING are now sending out the above in packets at 1s. each. This is unquestionably the largest Leek in cultivation, growing 16 inches in length of blanch, and 10 inches in circumference. Was awarded the First Prize at the Edinburgh and other leading Shows.
17, South Frederick Street, Edinburgh; and Stanstead Park, Forest Hill, London, S.E.

Prize Medal Seeds.

H. BROWN was awarded the MANCHESTER and LIVERPOOL AGRICULTURAL SOCIETY'S First Prize Medal, 1865; First Prize Medal, 1864; £5 Prize, 1863, for Superiority in Quality of Seeds.

Rye-grass—	Per bushel.—s. d.	Swede Turnip—	Per lb.—s. d.
Pacey's Perennial.. ..	5 0	Brown's Bronze-top, the best variety in cultivation (see Testimonials on application)	1 0
Italian, pure	5 0	Skirving's Purple-top ..	0 9
Annual	4 0	Skirving's King	1 0
Meadow Foxtail	8 0	Champion	0 10
Cock's-foot	7 0	Common Turnip—	
Dogstail Grass, per lb.	1 6	Purple-top, Scotch ..	0 10
Timothy .. .. "	0 6	Green-top, Scotch ..	0 10
Rib-grass .. .. "	0 6	Green-top, Hybrid ..	1 0
Mangel Wurzel, select sorts .. .. "	0 9	Grey Stone	0 10
Kohl Rabi .. .. "	2 0	Globe, sorts..	0 9
Mustard .. per bushel	18 0	Carrot—	
Lucerne .. per lb.	1 0	Altringham..	1 6
Gorse or Whin ..	1 6	White Belgian	1 0
Rye, Spring .. per bushel	6 0		
Vetches, Spring "	8 0		

Special offers of NATURAL GRASSES and other Seeds submitted also. PRICED DESCRIPTIVE CATALOGUE of FARM and GARDEN SEEDS, &c., on application
H. BROWN, 4, Commutation Row, Liverpool.

Thomas Gibbons & Co

GRASS SEEDS,
AGRICULTURAL SEEDS,

THOS. GIBBS & Co. Corner of HALF-MOON St PICCADILLY, London. — ROYAL AGRICULTURAL SOCIETY OF ENGLAND — APPOINTED APR. 3 1844 — THE SEEDSMEN

CORNER of STREET.
Trade Mark.

KITCHEN GARDEN SEEDS,
FLOWER SEEDS.

Catalogues forwarded post free to any address on application.

GENUINE FARM SEEDS.

JAMES VEITCH & SONS

BEG TO ANNOUNCE THAT THEIR

CATALOGUE OF AGRICULTURAL AND GRASS SEEDS FOR 1866

Is now published, and will be forwarded Free on application.

Special attention is devoted to the preparation of GRASS SEED MIXTURES to suit all soils and situations. These Mixtures cannot be surpassed in quality.

TURNIP, MANGEL WURZEL, and other SEEDS, from the most carefully grown and best selected stocks.

Where large quantities are required, J. V. & SONS will have much pleasure in quoting special prices.

ROYAL EXOTIC NURSERY, CHELSEA, S.W.

SPECIAL OFFER BY THE

LONDON SEED COMPANY, LIMITED,

TO

LARGE PURCHASERS OF FARM SEEDS.

The Directors beg to call particular attention to the following LIST of SEEDS, which can be had at the annexed prices, delivered Carriage Free, agreeably to the Carriage Arrangements specified in the FARM SEED PRICE CURRENT, just published.

	Bushel.	Half Bushel.	Peck.	Gallon.
LONDON PURPLE-TOP SWEDE TURNIP	£1 14 0	£0 17 6	£0 9 6	£0 5 0
PLYMOUTH "	1 14 0	0 17 6	0 9 6	0 5 0
SKIRVING'S "	1 11 0	0 16 0	0 8 6	0 4 6
WHITE GLOBE, GREEN, and RED ditto	1 11 0	0 16 0	0 8 6	0 4 6
SCOTCH PURPLE and GREEN-TOP	1 10 0	0 16 0	0 9 0	0 4 6
GREY STONE	1 17 0	0 19 0	0 10 0	0 5 0
	Cwt.	Half Cwt.	Quarter Cwt.	14 lb.
LONG RED MANGEL	2 14 0	1 8 0	0 15 0	0 8 0
LONG YELLOW MANGEL	3 3 0	1 12 6	0 17 0	0 8 6
YELLOW GLOBE MANGEL	2 10 0	1 7 6	0 15 0	0 8 0
RED GLOBE MANGEL	2 14 0	1 8 0	0 15 0	0 8 0
FISHER HOBBS'S ORANGE GLOBE	2 14 0	1 8 0	0 15 0	0 8 0
DRUMHEAD CABBAGE	10 0 0	5 10 0	3 0 0	1 12 6
ALTRINGHAM CARROT	5 0 0	2 15 0	1 10 0	0 17 6
WHITE BELGIAN CARROT	3 15 0	2 0 0	1 2 6	0 12 6
YELLOW BELGIAN CARROT	5 0 0	2 15 0	1 10 0	0 17 6
LARGE CATTLE PARSNIP	4 4 0	2 5 0	1 5 0	0 13 6
ITALIAN RYE-GRASS	5s. per bushel, or 38s. per quarter.			
PERENNIAL RYE-GRASS	5s. " 38s. "			
MIXED GRASSES, for PERMANENT PASTURE	12s. " 90s. "			
WEST of ENGLAND COW CLOVER	75s. to 90s. per cwt.			
WHITE DUTCH ditto	70s. to 84s. "			
TREFOIL	35s. to 40s. "			

This Company was formed by the purchase of the Business of one of the Oldest Established Firms in the Kingdom, of more than Eighty Years' standing.

Copies of the PRICE CURRENT will be forwarded postage free to any address, as the Company desire that their Terms and Mode of Business should be extensively known, and can be obtained from

MR. ALFRED BREWIN, MANAGER, LONDON SEED COMPANY,
68, WELBECK STREET, CAVENDISH SQUARE, W.

MAMMOTH GOURD (True).—The Specimen the [illegible] measured 5 feet 2 inches in circumference, [illegible] a splendid ornament, [illegible] easier grown than the [illegible] in North America. [illegible] 6d. and 1s., free per post.
T. [illegible], Seedsman, [illegible], Abingdon, Berks.

Globe Artichokes.

JOHN GAINES begs respectfully to offer to Gentlemen, Nurserymen, and others, GLOBE ARTICHOKE PLANTS, at 25s. per 100, the OLD CABBAGE or PROVENCE Plants at [illegible]; also a quantity of WALLFLOWER and CARNATION SEED. A Bargain. A good discount to the Trade. All orders must be accompanied with Post Office Orders payable to
John Gaines, [illegible], Covent Garden Market, London, W.C.

For Bouquets and as Cut Flowers

THE INVINCIBLE SCARLET SWEET PEA is invaluable. The colour is intense and permanent. Packets 6d., 1s., and 2s. 6d. each. Sold by the principal Seedsmen throughout the kingdom, or of the Raiser,
Stephen Brown, Seed Grower, Sudbury, Suffolk.

INVINCIBLE SCARLET SWEET PEA, very fragrant, [illegible] bred, and extremely distinct in colour.—A First-class Certificate from the Royal Horticultural Society, also a Certificate at the Crystal Palace Show in September. Packets 6d., 1s., and 2s. 6d. each [illegible]. Supplied by the principal Seedsmen in the kingdom; also of Messrs. [illegible]; Vilmorin & Co., Paris; Benary and Haage & Schmidt, of Erfurt, Prussia; and Smith & Co., Hamburg; [illegible] of the Raiser,
Stephen Brown, Sudbury, Suffolk.
Price to the Trade on application.

Grayson's Mortlake Giant Asparagus, True.

FRANCIS R. KINGHORN has a fine stock to offer, 1, 2, and 3 years old, grown on the ground where the late Mr. Grayson [illegible] its perfection. [illegible] plants when the roots have begun to grow [illegible] Price [illegible]
Sheen Nursery, Richmond, S.W.

New Cucumber.

HUME'S IMPROVED RIDGE.—This is a cross between "Henderson's A1 Ridge," and "Lord Kenyon's Favourite" frame variety. It is perfectly hardy, but also does [illegible] it will be found to be the best of all kinds [illegible] as a Winter variety. It is very prolific. [illegible]
[illegible]

Seed Potatos. Surplus Stock.

WOOD and INGRAM [illegible] 40 Bushels MYATT'S [illegible] 17 Bushels EARLY [illegible] WORTH [illegible] Bushels DAINTREE'S EARLY [illegible] per bushel; [illegible] Bushels HENDERSON'S PROLIFIC, at [illegible] per [illegible]
Nurseries, Huntingdon.

SPECIAL OFFER to the TRADE.—[illegible]
[illegible]
SPRUCE, LARCH, and ALDER [illegible]
[illegible]
[illegible] strong plants.
[illegible]

New Seedling Petunias.

THOMAS BARNES [illegible] Seedling PETUNIAS, which [illegible]

[illegible]

LILACEA, [illegible]
ROSETTA, [illegible]

[illegible]

GEM, [illegible]
IMOGENE, [illegible]
STRIATA, white [illegible] stripes.
[illegible]

To the Trade, 30s. per 1000; 4s. per 100.

SPECIAL OFFER: SURPLUS STOCK of SPRING and other FLOWER ROOTS.

[illegible]	[illegible]
[illegible]	[illegible]
Achillea millefolium rubra	[illegible]
tomentosa	[illegible]
Antirrhinums, fine mixed	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
Cerastium tomentosum	[illegible] Pink
Pansies from Seed-bed	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]

[illegible]

Tree and Shrub Seeds.

CHARLWOOD and CUMMINS have now on Sale, SEEDS of the following in good condition:—Cedrus Deodara, [illegible] Cedar; Cupressus Lawsoniana and macrocarpa; [illegible]; Pavia flava (the yellow-flowered Horse Chestnut) [illegible] Dampieri, with a general assortment of Forest Tree [illegible]
A LIST [illegible]

CHOICE SPRING FLOWERS, [illegible]

HEPATICAS, double red and [illegible]
double blue [illegible]
VIOLETS, double, in four sorts .. .. .. 4s. to 6
[illegible]
[illegible]
PRIMROSES, [illegible]
CHRISTMAS ROSE, scarlet
[illegible]
POLYANTHUS, finest [illegible]
PAMPAS GRASS, fine plants
DAISIES, [illegible] and choice kinds
[illegible]
OLD CRIMSON CHINA ROSE
AURICULAS, finest Alpines ..
Perrin's red
ROCKETS, double white and yellow
LAVENDER, fine plants
[illegible] and others
PINKS, fine named sorts
SWEET WILLIAM, [illegible]
WALLFLOWER, [illegible]
[illegible]
FUCHSIAS, [illegible]
VERBENAS, [illegible]
GERANIUMS, new, of 1865
PETUNIAS, [illegible]
CHRYSANTHEMUMS
TROPÆOLUMS and LOBELIAS, new
ANTIRRHINUMS and PENTSTEMONS, new 6 0
PHLOX, new
CINERARIAS, new 12 0
100 CHOICE HARDY HERBACEOUS PLANTS, in 50 fine named [illegible] 25s.

ROSES

24 Finest STANDARD and DWARF ROSES, 24 distinct varieties, 21s.
24 ditto ditto on their own roots, in pots, 21s.
ASPARAGUS, 1, 2, and 3 years, fine.
CATALOGUES free on application; also, TRADE CATALOGUE of NURSERY STOCK.
Post Office Orders on Castle Hedingham.
Wm. Dillistone, Munro Nursery, Sible Hedingham, Essex.

CARNATIONS and PICOTEES for the MILLION.—20,000 Carnations and Picotees at 50s. and 70s. per 100 pairs. Also a choice selection of Florists' Flowers and Greenhouse Plants constantly on hand.
Orders punctually attended to and respectfully solicited by James J. Hassall, son-in-law to the late Mr. John Holland, Bradshaw Gardens, Chadderton, Manchester.

Choice Flower Seeds post free.

B. S. WILLIAMS has much pleasure in submitting the following LIST of SEEDS, all of which are specially recommended for their beauty and superior qualities. For other Specialities and Novelties see Gardeners' Chronicle, March 3, and for full description, NEW SEED CATALOGUE, post free on application. Per packet.—s. d.
PRIMULA (Williams's superb strain), red, white, or mixed [illegible] 5 0
CINERARIA (Weatherill's extra choice strain) .. [illegible] 5 0
CALCEOLARIA (James' strain) 3 6
CYCLAMEN PERSICUM, the produce of the finest collection in the country 2 6
ASTER VICTORIA, the most elegant Aster in cultivation .. 1 0
" TRUFFAUT'S PERFECTION, [illegible] .. 0 6
" WHITE CHRYSANTHEMUM-FLOWERING .. 0 6
STOCK, BROMPTON SCARLET, very fine .. 1 0
" PURPLE QUEEN, [illegible] .. 0 6
BALSAM, CAMELLIA-FLOWERED .. 1 0
CARNATION and PICOTEE, [illegible] .. 1 0
MATTHIOLA BICORNIS, an evening scented Stock of unrivalled fragrance 1 0
NASTURTIUM KING THEODORE, new [illegible] .. 1 0
OXALIS CORNICULATA RUBRA, dark-leaved ribbon border plant 1 0
PALAFOXIA HOOKERIANA, new .. 1 0
PANSY, from a fine collection 1 0
SILENE PENDULA RUBERRIMA, [illegible] .. 1 0
SWEET PEA, the New Invincible Scarlet .. 1 0
TECTIS ANGUSTIFOLIA, [illegible] .. 1 0
LOBELIA SNOWFLAKE 1 0
CELOSIA, [illegible] .. 1 6
GYNERIUM ARGENTEUM, Pampas Grass .. 0 6
ANTIRRHINUM MAJUS, [illegible] .. 0 6
KITCHEN GARDEN SEEDS, carriage free.
Complete Collections to suit Gardens of various sizes, 10s. 6d., 21s., 42s., 63s., 84s. each. For quantities see CATALOGUE.
Victoria and Paradise Nurseries, Holloway, London, N.

Scarlet Geraniums (Beaton's Race).

WM. PAUL, Son and Successor to the late A. Paul, has to offer the following new ZONALE and Hybrid NOSEGAY GERANIUMS, which [illegible] selected from several [illegible] May next.

[illegible]
be selected by the purchaser for £2 2s.

[illegible]

MONTE ROSA, [illegible] fine. Price 5s. each.
NIMROD, orange-scarlet, white eye, large flower and truss, foliage [illegible]
[illegible]
SALMON NOSEGAY [illegible] Price 3s. 6d. each.
SIR J. PAXTON.—Flowers true orange, very bright, fine large truss, a splendid variety for massing. Price 5s. each.
WOOD NYMPH [illegible]

[illegible]

BRIDE.—Flowers white, with large crimson eye, of fine shape and substance; a first-class variety for pot culture. Price 3s. 6d. each.
CARDINAL.—Flowers dark orange scarlet. For shape, substance, [illegible] raised. Price [illegible]
CELESTIAL.—Flowers rosy lake, with fiery spot on upper petals [illegible] "[illegible]ssimus," large white eye, new in colour, and very beautiful. Price [illegible]
LORD CHANCELLOR.—Salmon pink, white eye, perfect shape, very fine [illegible] habit. Price [illegible]
POET LAUREATE.—Rosy purple, top petals orange scarlet, yellowish eye, perfect shape. Price 3s. 6d. each.
TIARA.—Flowers scarlet crimson suffused with purple, good truss, very free, fine habit; quite distinct from any yet raised, and very lovely. Price [illegible]
[illegible]
DIAMOND.—Fine scarlet purple centre, white eye, flowers profusely, habit good, distinct. Price 3s. 6d. each.
[illegible]
WALTHAM LILAC [illegible]
ZEPHYR.—[illegible] purple top, petals rose colour; stands the [illegible] well, very dwarf and free. Price 3s. 6d. each.

[illegible]

Many of them have received First-class Certificates from the Royal Horticultural and Royal Botanic Societies of London, and those marked thus *** have been awarded the highest marks of merit in the [illegible]

[illegible]

[illegible] ALEXANDRA [illegible]
*** AMY HOGG.—Bright purplish [illegible]
[illegible] INDIAN YELLOW [illegible]
[illegible]
BLACK DWARF.—Dark [illegible]
DONALD BEATON.—Clear orange scarlet. Price [illegible] 15s. per dozen.
[illegible] 6d. each.
[illegible] flushed with scarlet. [illegible]
[illegible]
MAGENTA [illegible]
ORANGE NOSEGAY [illegible]
[illegible]
PRINCESS LICHTENSTEIN.—Salmon pink. Price 2s. each; 18s. per dozen.
SALAMANDER [illegible]
SCARLET GEM [illegible]
MRS. WILLIAM PAUL [illegible]
WALTHAM SEEDLING.—Dark crimson. Price 2s. each, [illegible] per dozen.
The above set of 16 varieties, one plant of each, 21s.
SPRING CATALOGUE, with full descriptions of these and other plants, free by post. The usual discount to the Trade.
Important.—All letters should be addressed William Paul (the Christian name in full), Waltham Cross, London, N.

Superb Double Hollyhocks.

WILLIAM CHATER begs to remind the Admirers of this beautiful flower that now is the best time for planting it out to insure fine spikes and blooms this season.
DESCRIPTIVE CATALOGUES, with instructions for its Cultivation, [illegible] prices of Plants per dozen, 100, or 1000, may be had on application.
Seedlings from best named varieties, 1s. per dozen, [illegible] 50s. per 100.
Bloomed Seedlings, with colours named, very fine, 6s. per dozen, and from 18s. to 40s. per 100.
Seed saved from the finest named varieties, very choice mixed [illegible] per packet.
In Collections of 12 separate named varieties, extra fine, 1s., 6 varieties, extra, 5s.
[illegible] named varieties, all good show flowers, 7s. 6d.
6 do. do. do. do. 4s.
William Chater, Nurseries, Saffron Walden, Essex.

Genuine Garden and Agricultural Seeds.

PAUL TOLLARD, Seed Grower and Merchant, 20, Quai [illegible], Marseille 20, ci-devant 4, Place des Trois-Maries 4, à Paris. SPECIAL PRICED LIST of NEW SEEDS, in English weights and money, on application.

JOHN KEYNES' NEW DAHLIAS.
[illegible] each. A liberal allowance if the set is taken.
67. MARQUIS of WINCHESTER (Keynes).—Bright crimson, the flower of the season.
First-class Certificates:—Royal Horticultural Society, Devizes, Trowbridge, Crystal Palace, Bath, Salisbury, Dorset Horticultural Society, Winchester.
6[illegible]. LOTTY ATKINS (Keynes).—Blush, tipped lilac; most [illegible] flower, always good, but too much of it out.
First-class Certificates:—Royal Horticultural Society, Trowbridge, [illegible], Salisbury, Dorset Horticultural Society, Shepton Mallet, Crystal Palace, Bath, Winchester, Brighton.
69. JOHN DOWNIE (Keynes).—Yellow, tipped red; beautiful form, very first-class flower, always good.
Certificates:—Royal Horticultural, Salisbury, Trowbridge, Brighton, North Wilts, Dorset Horticultural Society.
71. ANNIE AUSTIN (Keynes).—[illegible] must be well cut out, [illegible]
First-class Certificates:—Crystal Palace, Salisbury, Shepton Mallet, North Wilts Horticultural Society, Trowbridge, Dorset Horticultural Society.
72. GEORGE WHEELER (Keynes).—Large deep purple, most [illegible]
[illegible]
73. HELEN POTTER (Keynes).—Blush white, deeper shade of [illegible] growth, but quite distinct, very large, very full, constant.
Certificates:—[illegible], North Wilts, Dorset Horticultural Society, Trowbridge.
[illegible]
flower.
[illegible]
surpasses all in its class, exquisite.
[illegible]
First-class Certificates:—Royal Horticultural Society; Brighton.
[illegible] LADY MARY WALDEGRAVE [illegible]—White, with purple [illegible] very useful flower, not to be cut out.
[illegible]
78. [illegible]—Very deep plum [illegible]
[illegible]
[illegible] fine show flower, always to be had.
[illegible]
[illegible] TOP SAWYER (Keynes).—White, striped and [illegible] purple, very full centre, well up.
139. JOHN BUNN (Keynes).—Yellow striped crimson, [illegible] the finest flowers of the season, full, constant, and good.
Certificates:—Royal Horticultural; Bath, [Salisbury, Winchester, Dorset Horticultural Society.
140. FRANK [illegible] (Keynes).—[illegible]
Certificates:—Horticultural Society; Shepton Mallet, Trowbridge, Dorset Horticultural Society.
141. CHANG (Keynes).—Yellow, striped and mottled scarlet, a most extraordinary flower; if cut out it will produce enormous size flowers of the most perfect shape; if let alone it will give beautiful show flowers fit for any stand.
Certificates:—Crystal Palace, Bath, Brighton, Winchester, North Wilts Horticultural Society.
142. PRESIDENT LINCOLN (Keynes).—Buff, striped red and orange, very fine fancy, much admired.
First-class Certificate:—Brighton.
143. JEANIE DEANS (Keynes).—Orange, striped purple, very con[illegible]
[illegible] Certificates:—Bath, Shepton Mallet, Dorset [illegible]
CATALOGUES now ready.
Salisbury, April [illegible].

PEAT, of superior quality, for Orchids, American Plants, and general Potting purposes, for Sale, loaded at Farnborough Station, on the London, Chatham, and Dover Railway. Apply to Mr. [illegible] Jessop, [illegible] Farnborough, Kent.

COCOA-NUT REFUSE delivered within [illegible] miles of Charing Cross, at 25s. per ton.
For particulars, and how to use it, see long Advertisement in Gardeners' Chronicle of the [illegible] March, 1865, or apply to the Patent Cocoa Fibre Company, Kingston upon Thames.
Postage Stamps or Post Office Orders payable to J. Barsham & Co.
Barsham's [illegible] and MATS are [illegible]
[illegible] Barsham's Patent.

GISHURST COMPOUND, used since [illegible] against Insects and Mildew, on Growing Plants, [illegible] Winter Dressing on Trees at rest, [illegible] smell, and if the Solution be decanted, prevents any staining [illegible]. A strength of from 1 to 2 oz. to the gallon of water is recommended for growing Plants; one from 4 to 16 oz. for Trees at rest.
Sold Retail by Nurserymen and Seedsmen, in boxes, 1s., 3s., and 10s. 6d. each.

Wholesale by
PRICE'S PATENT
CANDLE COMPANY
(Limited).

THE LONDON MANURE COMPANY
(ESTABLISHED 1840).
Have now ready for delivery in dry fine condition,
CORN TANCRE, for Spring Use
DISSOLVED BONES, for Dressing Pasture Lands
SUPERPHOSPHATES of LIME
PREPARED GUANO
MANGEL and POTATO MANURES
Also Genuine PERUVIAN GUANO, and NITRATE of SODA; ex Dock Warehouse; SULPHATE of AMMONIA, FISHERY SALT, &c. E. PURSER, Secretary.
Offices, 116, Fenchurch Street, E.C.

LAWES' MANURES.
The Manures manufactured by J. B. Lawes for the present season of 1866 are now ready for delivery at his Factories, at the following prices, per Ton:—
LAWES' PATENT TURNIP MANURE, and BONE £ s. d.
SUPERPHOSPHATE of LIME ... 6 6 0
LAWES' SUPERPHOSPHATE of LIME (from BURNT BONE or MINERAL PHOSPHATES) ... 5 5 0
LAWES' WHEAT, BARLEY, GRASS, and MANGEL MANURE ... 5 0 0
CONCENTRATED CORN and GRASS MANURE ... 12 0 0
These Manures can be obtained of Mr. Lawes, or through the appointed Agents in all parts of the United Kingdom, at prices varying according to cost of transport.
Genuine Peruvian Guano direct from the Importers. Nitrate of Soda, Sulphate of Ammonia, and other Chemical Manures.
American and other Oil Cakes, Rape, Linseed, &c.
Address, JOHN BENNET LAWES, 1, Adelaide Place, London Bridge, E.C.; and 22, Eden Quay, Dublin.

THE BOXTIN MANURE (as supplied to the Royal Farms, Windsor), is the best and cheapest for Agricultural, Kitchen Garden, and Flower Crops. It is a liquid in which the seed is steeped previously to sowing, and has no offensive smell. The Boxtin Manure is a powder to three Gallons, and readily extracts the valuable Ether peculiar to extraordinary fruitfulness in Bulbs. Full Waterloo Prize Medals, &c., &c., particularly advantage as when used in the proportion of one part of the Manure to 80 parts of water. Directions for use, testimonials, &c., post free.
Half Pints, 1s. 6d.; Pints, 2s.; Quart, 4s.; Gallon, 10s.
The Boxtin Manure Company (Limited), 117 & 118, Leadenhall Street, E.C.

THE PATENT NITRO-PHOSPHATE or BLOOD MANURE, COMPOUNDED and MANUFACTURED by ODAMS' PATENT BLOOD MANURE for CORN and ROOTS ODAMS' SUPERPHOSPHATE of LIME and DISSOLVED
C... Office, 240, Tooley-st., London-bridge, S.E. Works, Old Kent Road, Deptford, and Bow, Middlesex.
Observe—Address Cannon, Liverpool, Bow
Recent Testimonials from Messrs. Hall & Sons, Hollaway, Islington; Messrs. Munro, Patent Distillers, Richard Hall, Stapleford Abbotts, Romford; Messrs. Peacock, Bow, Middlesex; John C. Lucas, West Lexton, Norfolk; George Sowell, Bottisham, near Stourbridge; Messrs. Bennett & Co., Cambridge; Charles Dennis, Esq., Ely; and
Th... Wells, Hobleton, Cambridgeshire.
John Woods, Merton Hall, Lincolnshire.
Measrs. Richards, Haines & Co., Lombard Street
Messrs. Kingsford & Dunning, 22, Essex Street, Strand.
Auctioneers, Messrs. Cumberlidge.
See rating, C. T. Mackinnon.

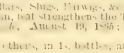
The Company was originally formed by, and is under the Direction of, Agriculturists, and has had the highest Testimonials as to the Purity and Excellence of its Manures.
Its Members are Contractors of supply of Manures to, and, with the best Farmers under management of, with Manures of their own Manufacture. For Competition Prices, Testimonials, and Pamphlet on the genuineness and efficacy of the Manures manufactured by this Company.
A Prospectus will be forwarded on application to the Secretary, or may be had of the local Agents.
C. T. MACKINNON, Secretary.
Chief Offices, 109, Fenchurch Street, London, E.C.

PALM-NUT MEAL, Manufactured by ALEXANDER M. SMITH & Co., Kent Street Mills, Liverpool.
£7 a Ton free to Rail or Boat in Liverpool.
£7 15s. delivered to Rail in Bristol.
£7 12s. delivered to Rail in London.
In Bags containing 2 cwt. each, by 5 ft. 1
"This cattle Meal, containing above 20 per cent. of fatty matter, is recommended as a valuable addition to food to mix with home-grown produce." (See Dr. Voelcker, R. A. S. E. Journal, Vol. 1, 2d Series, page 170.
For further particulars and Analyses apply to Messrs. SMITH, or their Agents, Messrs. HUMPHRIES & CO., Bristol
JOHN COLMAN, Esq., Norwich
London Agency—150, Leadenhall Street, E.C.

Plagues of the Garden.
SIMPLE AND SURE REMEDY.—By using the
APHIS WASH, these Pests of the Garden, together with Scale, Coccus, Mealy Bugs, Thrips, &c., are more readily destroyed. Leaves no stain, but strengthens the Trees on Fruits.
See Gardeners' Chron. &c., August 19, 1865; and "Gardeners' Magazine," July 1, 1865.
Sold by Chemists and others, in 1s. bottles, and 2s. 6d. a gallon, with full directions for use.
Wholesale at the City Soap Works, Milton Street, London, E.C.

LONG'S "DIPPING" for TICK in SHEEP.
LONG'S "SPECIFIC" for SCAB in SHEEP.
LONG'S "MAGGOT LOTION" for SHEEP STRUCK by the FLY.
Well-known, effective. Sold by the
Wholesale—S. & E. Long and Co., Essex Street, Strand, W.C.
Retail Agents in all parts.

CATTLE PLAGUE.—The Cattle Plague Commissioners have especially recommended CARBOLIC ACID as a Disinfectant and Preventive for this class of disease. Farmers and others are hereby informed that they may be supplied with this Acid by
F. C. CALVERT & Co., 7, Bond Street, Manchester

Cattle Plague.

PUBLIC NOTICE.—Owners of Stock are earnestly advised to protect their Stock, by the use of
MCDOUGALL'S PATENT DISINFECTING POWDER, as recommended in both Reports of the Royal Commission.
For washing the bodies of healthy and sick Cattle to prevent infection, use McDOUGALL'S PATENT DISINFECTING SOAP.
CARBOLIC ACID at lowest prices.
ALEXANDER MCDOUGALL, Manufacturing and Agricultural Chemist.
London—11, Arthur Street West, London Bridge, E.C.
Manchester—Irwell Soap Works, Salford.
Liverpool—Argyle Street, Birkenhead.

THE GARDEN REPOSITORY, 32, James Street, Covent Garden, W.—Spring Flowers, Bedding Plants, Garden Engines, Forced Protection, Terra Cottas, Flower, Rhubarb and Sea-Kale Pots, &c.

E. T. ARCHER'S "FRIGI DOMO."—Patronised by her Majesty the Queen, the Duke of Northumberland for Sion House, his Grace the Duke of Devonshire for Chiswick Gardens, Professor Lindley for the Royal Botanic Society, Sir Joseph Paxton for the Crystal Palace, Royal Gardens, Sydenham, &c.
PROTECTION from COLD WINDS and MORNING FROSTS
"FRIGI DOMO," a canvas like material impregnated Rain and Wool, a perfect non-conductor of heat and cold, keeping, wherever it is applied, a fixed temperature. It is adapted for all horticultural and florist cultural purposes, for preserving Fruits and Flowers from the scorching rays of the sun, from wind, rain, attacks of insects, and from unseasonable frosts. Can be laid on any glass or Hedges.
Two yards wide ... ... 1s. 9d. per yard run.
Four yards wide ... ... 3s. 6d. per yard run.
An impervious make, 3 yards wide ... 2s. 9d. per yard run.
Ditto, 4 yards wide ... ... 3s. 8d. per yard run.
Also "FRIGI DOMO" Netting, 2 yards wide, 1s. 6d. per yard run.
ELISHA THOMAS ARCHER, Whole and Sole Manufacturer, 7, Great Trinity Lane, Queen Street, Cheapside, City, and of all Nurserymen and Seedsmen throughout the Kingdom.
"It is much cheaper than Mats as a covering."

SMITH, BECK, AND BECK'S GREENHOUSE and HOTBED THERMOMETERS.—These Instruments are of the very best construction, and at moderate prices.
31, Cornhill, E.C.

Horticultural Improvements.
DEANE'S NEW PATENT HYDRAULIC SUCTION PUMP.—This Pump is highly approved by the Nobility, Gentry, and by the principal Horticulturists, &c., throughout the Kingdom; also by Shirley Hibberd, Esq., F.R.H.S.; the late Professor Lindley, and many others, as mentioned in Mr. Hibberd's work. R. Deane has also a large assortment of GARDEN ENGINES, MACHINES, and SYRINGES, upon the most approved principle.
Manufactured by the Patentee,
RICHARD DEANE, 46, Gracechurch Street, London, W.
N.B.—Drawings sent post free.

JAPAN PEA FOWL.—For SALE, some fine Young Birds. Apply by letter or otherwise, to Mr. DONALDSON, Wentworth, Staines.

WANTED to RENT, a FLORIST and SEED BUSINESS.—Address, with full particulars, to A. B., 8, Upper Rock Gardens, Brighton.

TO BE LET, with Immediate Possession, a Large FLORIST BUSINESS, the Lease and Stock at a valuation of Messrs.
JAMES COLE, Markham Common, Surrey, S.

To Manure Manufacturers, Millers, and Others.
TO BE LET, from Lady-day next, all those convenient and well-arranged MANURE WORKS and FLOUR MILLS, situate at Moolham, near Ilminster, Somerset, known as the Moolham Chemical Works, together with the Dwelling House, Counting-house, Premises, and Plant, and about 11 Acres of Rich Soil Orchard, Meadow, Pasture, and Arable Land.
The whole of the above are now in full-work and good condition, and have been for many years carried on by the present Tenant, who is about to retire from business. The Machinery, which has recently been erected, to be taken off at a valuation, consists of three pairs of Mill-stones, Shutting and Floor Machines, Hydraulic and Bean Crushing Machine, Portable Steam Engine, and other requisites for carrying on an extensive business, and is driven by efficient Water-power.
For view of the same, and further particulars, apply to the Proprietor, JAMES PITTMAN, Esq., Kingstone; or Mr. S. H. COLLINS, Solicitor, Ilminster.—March 3.

Burnham, Somerset.
TO BE LET, by a Term of Years, with immediate possession, NURSERY GARDENS, about 3 acres, well stocked with the choicest Fruit Trees. Three large Forcing Houses, fitted with the most approved Heating Apparatus, containing about 1,000 feet of 4-inch hot-water pipes. The Hot-house grapes are well known in the neighbourhood. The Nurseries are also well stocked with Bedding Plants, which may be taken at a valuation. Also a large established Nursery trade, producing about £250 per annum. The Gardens are situate in a first-rate locality for business, which has been carried on by the present tenant, now about to retire, affording a favourable opportunity to parties seeking such a business.
For view, and further particulars, apply to Mr. R. SAUNDERS, Surveyor and Auctioneer, Burnham, Somerset.—April 5, 1866.

Sales by Auction.

Sale of first-class Carnations, Picotees, Pinks, &c.
MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, at their Rooms, 67, Cheapside, Great Trinity Lane, City, E.C., on TUESDAY, April 17, at 1 o'clock precisely, a first-class Collection of CARNATIONS, PICOTEES, and PINKS, of the finest growth, the surplus stock of an eminent grower, also 240 handsome Standard and Dwarf Roses, selected Fruit Trees, Conifers, and other Shrubs, American Plant Stands, Garden Engines, Syringes, Vermin, and other Flower Seeds, Verbenas, Fuchsias, Dahlias, &c.
Can be viewed the Morning of Sale. Catalogues may be had at the Rooms as above, and of Messrs. LOCKHART, Seedsmen, Covent Garden.

Important Sale of Plants from a well-known Nursery. Without Reserve.
MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, April 18, at half-past 12 o'clock precisely, in consequence of STANDARD and DWARF ROSES, Fruit Trees, Ornamental Trees and Shrubs.
On view the Morning of Sale, and Catalogues had.

Important Sale of Imported Orchids.
MR. J. C. STEVENS begs to announce that he has received instructions from Mr. G. U. Skinner to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, April 19, at half-past 12 o'clock precisely, an IMPORTATION of PLANTS from Guatemala, consisting of splendid masses of Lycaste Skinneri, Barkeria Skinneri and spectabilis, Oncidium sphacelatum, Epidendrum Wallisii, &c.
Also a Collection of VERY CHOICE and SACCOLABIUM GUTTATUM, ANGRŒCUM SESQUIPEDALE, ANGRŒCUM EBURNEUM, AERIDES VIRENS, &c., just received from the East Indies.
On view the Morning of Sale, and Catalogues had.

To Gentlemen and others Engaged in Planting.
MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on SATURDAY, April 21, at half-past 12 o'clock precisely, 200 LOTS of HARDY ORNAMENTAL TREES and SHRUBS, Choice HERBACEOUS PLANTS, BULBS, &c.
On view the Morning of Sale, and Catalogues had.

Choice Collection of Established Orchids and Fine-foliaged Plants.
THE PROPERTY of a GENTLEMAN REMOVING from SURREY.
MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY, April 24, at half-past 12 o'clock precisely, 200 LOTS of ARIDES VANDARUM, VITTEATUM, SACCOLABIUM, ODONTOGLOSSUM, ONCIDIUM, &c., including many fine specimen Plants which have been exhibited and obtained Prizes at the Metropolitan Shows; also a Collection of ANTHURIUMS, Choice CROTONS, and some Fine-foliaged Plants.
On view the Morning of Sale, and Catalogues had.

Nursery to be Sold without Reserve,
BY ORDER OF THE EXECUTORS OF THE LATE MR. JAMES PEARSON.
MR. BILLIARD will SELL by AUCTION, on FRIDAY, May 11, at Garraway's, the ESCHOL NURSERY, with Residence, Stock, Glass-houses, Pits, Sheds, &c., covering nearly 4 acres, situate in Hampstead Road, opposite the Chalk Farm Railway Station, and in the occupation of Harold Hall. Held for about 46 years to expire at Midsummer next. There is a valuable old-established connection, the advantages of which the purchaser will secure. Early inspection is invited. Particulars, 27, Chancery Lane, E.C.

Ashford and Stanwell, Middlesex.
TO MARKET GARDENERS, NURSERYMEN, BUILDERS, AND OTHERS.
101 ACRES of VALUABLE FREEHOLD and COPYHOLD LAND, by ORDER of the TRUSTEES of E. FARNHALL, Esq., DECEASED, IN THREE LOTS, with possession at Michaelmas next.
MR. DAVENPORT will SELL by AUCTION, at Garraway's, Change Alley, Cornhill, E.C., on FRIDAY, May 11, at 12 o'clock, the above VALUABLE PROPERTY, the greater portion of which is well adapted for Market Garden Ground or Nurseries, or for Building Purposes, about 8 acres lying close to the Ashford Station, on the Windsor and Reading branch of the South Western Railway, the remainder being in the village of Stanwell, within 1 mile of the high road from Bamshow to Staines, to which there is very considerable frontage. The whole is let on Leases for an unexpired term of three years from Michaelmas next, to Mr. Richard Curtis, who will give early possession on reasonable terms, and will show persons over the land.
Particulars may be had on the Premises, of Mr. W. DAVENPORT, Solicitor, 25, Ely Place, Holborn, E.C.; at Garraway's; and of the Auctioneer, 35, Bucklersbury, Mansion House, E.C.

"PHOSPHO GUANO surpasses, most certainly, by its more correct and constant composition, the best sorts of Peruvian Guano; and its superiority in this respect can be not the slightest doubt."—*From a Report by the Baron de Justus von Liebig.*

PHOSPHO GUANO.
The Prices, including cost of Bags, Carriage Free at any Railway Station or Shipping Port in the Kingdom, are as follow:—

For 10 tons and upwards	...	£12	0	0 per ton.
For 5 tons up to 10 tons	...	12	5	0 ,, ,,
For smaller quantities	...	12	10	0 ,, ,,

Ten Shillings per ton discount for Cash within a month.

To prevent fraud, all Bags are branded with the PHOSPHO GUANO COMPANY'S Trade Mark, as well as that of the Contractors, copies of which appear at the head of this Advertisement.

Contractors' Trade Mark.
Company's Trade Mark.

Report by DR. VOELCKER *of a Visit of Inspection to the Phospho Guano Stores at Isleworth, Deptford, and of Analyses of Samples taken from the Stores on the 9th of February, 1866.*

"In compliance with Messrs. Peter Lawson & Son's request, I again this week paid a visit of inspection to the Phospho Guano Stores at Sceaux-du-Burkenhead, and on that occasion took the following samples out of the bulk:—
1. A sample from a bulk of about 1000 tons, stored in Shed No. 1
2. A portion from a bulk of about 1000 tons, in Shed No. 3.
3. A sample from about 5000 tons, stored in Shed No. 6.
4. A sample taken from the top of a heap of about 7000 tons in Shed No. 7.
5. A sample from the middle of the same bulk.
6. A sample from the bottom of the same bulk.
7. Men were at work filling barrels for foreign shipment from a bulk of about 7000 tons, and I took a sample from the barrels ready for delivery.
8. A sample from a lot of about 2000 tons, lying in the docks in which Phospho Guano is prepared for use.

"The analyses of the samples I submitted to careful and complete analyses, as the others I determined only the amount of soluble and insoluble Phosphates. The mean results of the eight analyses gave 46·6 per cent. of Soluble Phosphates, and 4·67 of Insoluble, while the Ammonia was found 6·7 per cent.

"I was conducted over the whole range of the extensive buildings, and left at liberty to select as many samples as I chose, and to take them from any portion of the Stores; and I cannot refrain from noticing that, while doing so, I was much struck with the remarkably fine condition in which I found the whole bulk ready for delivery in the present season.

"Since my last visit, a decided improvement has been effected in the mechanical condition of the Phospho Guano. For such lot loss, until fully as rich in nitrogen as the best Peruvian Guano, still it is by no means so pulverulent and beautifully fine-grained as that which it measures even when submitted to pressure or hard treatment.

"Much trouble and inconvenience is frequently experienced in the use of artificial manures, such as Soluble Phosphate of Lime, which are, as such manures, although dry and in a good condition when they leave the stores, become sticky or lumpy during their transport, without sufficient pressure being applied to reduce them to powder, a process which has been entirely over-come by an improved plan of preparation; and the Phospho Guano can now be sent to any distance, or be subjected to any reasonable amount of pressure, without losing its fine and dry pulverulent condition.

"Having so frequently expressed an opinion of the intrinsic fertilizing value of Phospho Guano, I need but to point former statements on the present occasion; but I am especially pleased to be able to dwell upon the fact, that whilst the chemical composition of the bulk of 1866 is fully equal to the Phospho Guano of former years, its mechanical condition has been greatly improved.

"AUGUSTUS VOELCKER, Ph.D.,
"Late Professor of Chemistry to the Royal Agricultural Society of England."

"11, Salisbury Square, London, E.C., Feb. 24, 1866."

There are authorized Agents appointed for the Sale of PHOSPHO GUANO in all the Principal Towns and Villages in the United Kingdom; but where any difficulty exists in procuring supplies, Orders may be sent direct to
PETER LAWSON AND SON, GEORGE IV. BRIDGE, EDINBURGH; or,
28, KING STREET, CHEAPSIDE, LONDON, E.C.
PETER LAWSON & SON, Contractors.

☞ *The attention of Farmers is particularly directed to the fact that* PHOSPHO GUANO *is the only Manure the quality of which is vouched for by Chemists of high standing, who have themselves visited the bulks and drawn their own samples for analysis.*

SHANKS' PATENT LAWN MOWERS FOR 1866.

PATRONIZED ON FIVE SEPARATE OCCASIONS DURING THE SEASON OF 1864 BY

HER MAJESTY THE QUEEN,

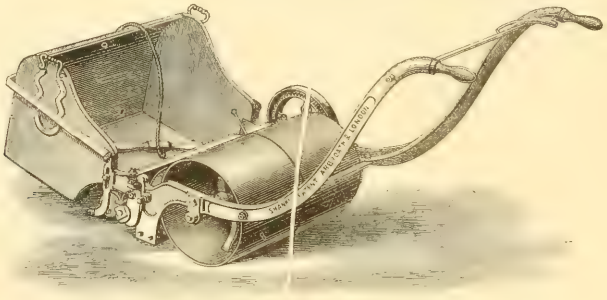
AND ONCE BY HIS MAJESTY THE KING OF SAXONY;

AGAIN ON FOUR SEPARATE OCCASIONS DURING THE SEASON OF 1865 BY HER MAJESTY THE QUEEN:

ONCE BY HIS MAJESTY THE KING OF HOLLAND;

AND ONCE BY HIS MAJESTY THE KING OF PRUSSIA.

EVERY MACHINE WARRANTED.



IF NOT APPROVED OF, CAN BE AT ONCE RETURNED.

PATENT HAND MACHINE.

These are the only Machines that can be depended on to give lasting satisfaction.

THESE ARE THE ONLY MACHINES THAT WILL MOW PROPERLY WHEN THE GRASS IS WET.

THESE ARE THE ONLY MACHINES THAT DELIVER THE GRASS WITHOUT STOPPING, THUS SAVING AN IMMENSE AMOUNT OF LABOUR.

SHANKS' PATENT LAWN MOWERS are the only Machines that have been in operation in Her Majesty's Gardens for a quarter of a century, and they are in daily use in all the Public and Principal Gardens in the Kingdom.

A. SHANKS AND SON have now ready for delivery a large Stock of their celebrated LAWN MOWERS. The Machines have been manufactured by skilled workmen, of the best materials, and by the aid of the most improved Machinery.

A. S. AND SON have been particularly careful that the advantages in point of durability and simplicity of construction which have always been a peculiarity of their Machines should still remain, and that no improvement be introduced which has merely novelty to recommend it.

SHANKS' PATENT LAWN MOWERS for 1866 are unrivalled for simplicity of construction, ease of working, and durability.

PRICES, including Carriage to any Railway Station or Shipping Port in the Kingdom.

SHANKS' NEW PATENT HAND MACHINE.

Width of Cutter		Easily Worked	Silent Movement
10-inch Machine	£3 10 0	*By a Lady*	4*s.* extra.
12-inch Machine	4 10 0		
14-inch Machine	5 10 0	*By a Boy*	

Width of Cutter		Easily Worked	Silent Movement.
16-inch Machine	£6 10 0	*By a Man or Two Boys*	4*s.* extra.
19-inch Machine	7 12 6	*By a Man and Boy*	
22-inch Machine	8 7 6	*By Two Men*	7*s.* 6*d.* extra.
24-inch Machine	8 17 6		

SHANKS' NEW PATENT PONY and DONKEY MACHINE.

Width of Cutter.		If with Patent Delivering Apparatus.
25-inch Machine	£12 10 0	25*s.* extra.
28-inch Machine	14 10 0	30*s.* ,,
30-inch Machine	15 15 0	30*s.* ,,

Silent Movement, 12*s.* 6*d.* extra; Boots for Pony, 21*s.* per set;
Ditto for Donkey, 16*s.* per set.

SHANKS' NEW PATENT HORSE MACHINE.

Width of Cutter		If with Patent Delivering Apparatus.
30-inch Machine	£19 0 0	30*s.* extra.
36-inch Machine	22 0 0	30*s.* ,,
42-inch Machine	26 0 0	40*s.* ,,
48-inch Machine	28 0 0	40*s.* ,,

Silent Movement, 20*s.* extra; Boots for Horse's Feet, 24*s.* per set.

*** ORDERS EXECUTED ON THE DAY THEY ARE RECEIVED.

N.B.—*A. S. & Son specially announce to their numerous patrons that they have a staff of experienced workmen at their London Warehouse, thoroughly acquainted with all the details of their Machines, so that they are enabled to repair Lawn Mowers in London as well as at the Manufactory.*

ALEXANDER SHANKS AND SON, DENS IRON WORKS, ARBROATH.
LONDON OFFICE and SHOW ROOMS: 27, LEADENHALL STREET, E.C.
PARIS OFFICE and SHOW ROOMS: 56, BOULEVARD HAUSSMANN.

A. S. & SON *keep a stock of all sizes of Machines at their London and Paris Establishments, from which Orders are executed on the day they are received.*

☞ 27, *Leadenhall Street is the only place in London where intending purchasers of Lawn Mowers can choose from a stock of from* 150 *to* 200 *Machines. All sizes kept there, whether for Horse, Pony, or Hand Power.*

A. SHANKS & SON *find it necessary to caution intending purchasers of their Lawn Mowers, whether for Horse, Pony, or Hand Power, to make sure that the words "Shanks' Patent" be cast on every Machine. A. S. & SON are aware that there are worthless imitations of their celebrated Machines in the market, and hence the reason for this intimation.*

Editorial Communications should be addressed to "The Editor," Advertisements and Business Letters to "The Publisher," at the Office, 41, Wellington Street, Covent Garden, London, W.C.
Printed by WILLIAM BRADBURY, of 13, Upper Woburn Place, in the Parish of St. Pancras, in the County of Middlesex, and FREDERICK MULLETT EVANS, of No. 11, Bouverie Street, in the Precinct of Whitefriars, City of London, Printers, at their Office, Lombard Street, Precinct of Whitefriars, City of London, and Published by them at the Office, No. 41, Wellington Street, Parish of St. Paul's, Covent Garden, in the said Co.—SATURDAY, April 14, 1866.

THE GARDENERS' CHRONICLE
AND
AGRICULTURAL GAZETTE.

A Newspaper of Rural Economy and General News.

No. 16.—1866.] SATURDAY, APRIL 21. [Price Fivepence, Stamped Edition, 6d.

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ROYAL HORTICULTURAL SOCIETY.—The EXHIBITIONS will be HELD on THURSDAYS, viz.,—Show of ORCHIDS, PELARGONIUMS, &c., May 3; SUMMER EXHIBITION, June 14; and the ROSE SHOW, June 28.

Schedules may be had on application. Admission on May 3 and June 28, by Fellows' privileged tickets, to be bought prior to the days, 3s. 6d.; Public, 5s; or on the Day, 7s. 6d. Bands at 3.30.

INTERNATIONAL HORTICULTURAL EXHIBITION and BOTANICAL CONGRESS.

Under the Patronage of Her Majesty THE QUEEN, and of their Royal Highnesses the PRINCE OF WALES and the DUKE OF CAMBRIDGE.

The EXHIBITION and CONGRESS will OPEN on MAY 22, and continue till May 25. Subscribers' names will be received, and Schedules and Prospectuses may be obtained on application to the Secretary, at the Offices, 1, William Street, Lowndes Square, London.

INTERNATIONAL HORTICULTURAL EXHIBITION and BOTANICAL CONGRESS of 1866.

☞ NOTICE IS HEREBY GIVEN, that the FORMS of APPLICATION for SPACE, which it is necessary that Exhibitors should fill up, if they intend to take part in the forthcoming Exhibition, are now ready, and may be had on post-paid application. These Forms must be returned on or before May 1.

THOMAS MOORE, Exhibition Secretary.

Offices: 1, William Street, Lowndes Square, London, S.W.

INTERNATIONAL HORTICULTURAL EXHIBITION and BOTANICAL CONGRESS of 1866.

☞ GARDENERS wishing to avail themselves of the privilege of PURCHASING TICKETS for the Exhibition at a reduced rate, under No. 40 of the Regulations issued with the Schedule, are requested to observe that application must be made for them to Mr. THOMAS MOORE, Exhibition Secretary, Botanic Garden, Chelsea, London, S.W., previous to May 1. Tickets for Wednesday, May 23, will be charged Half-a-Crown, and those for Thursday, May 24, One Shilling. They will be available on each day respectively from 10 A.M. to 7 P.M. A remittance must accompany the application.

ROYAL BOTANIC SOCIETY'S GARDENS, Regent's Park.—EXHIBITIONS of PLANTS, FLOWERS, and FRUIT, WEDNESDAYS, May 9, June 6, and July 4. SATURDAY NEXT, April 28, is the LAST DAY for the 4s. Tickets and the Fellows' Privilege Packets of 30 for 5s 5s. Tickets to be obtained at the Gardens only.

CRYSTAL PALACE.—GREAT FLOWER SHOW of the SEASON, SATURDAY, May 12.

For Schedules apply to I. WILKINSON, Superintendent.

New Roses of 1866.

REVISED DESCRIPTIVE LIST NOW READY.

PAUL AND SON, Old Cheshunt Nurseries, N., have Now Ready fine Plants of the New Varieties in their List. The Trade and Amateurs should consult this.

New Roses of 1866.

JOHN FRASER, of the Lea Bridge Road Nurseries, Leyton, Essex, N.E., will forward on application a LIST of all the best varieties of NEW ROSES for 1866.

The plants are strong, healthy, and are now ready for sending out. Early orders are respectfully solicited.

Fruiting Vines.

E. G. HENDERSON AND SON offer the above, with splendid Canes of well-matured growth, with prominent eyes, sure to give a heavy crop of fruit, 10s. 6d. each.

LIST of SORTS sent on application.

Wellington Nursery, St. John's Wood, London, N.W.

PINES.—Strong Fruiting, Succession, and Suckers, of all the leading kinds, can be had of B. S. WILLIAMS, Victoria and Paradise Nurseries, Holloway, London.

PINES.—To be Sold, a quantity of very fine QUEEN PINE PLANTS, from a Stock that never had Scale. Apply to M. ROBINSON, Market Gardener, Fageon Green, Tottenham, N.

CASTLE KENNEDY FIG.—Plants of the above may now be had at 10s. 6d. and 21s. each; the usual discount to the Trade. PETER LAWSON & SON, Edinburgh and London.

To the Trade.

STRONG PEAR STOCKS.

Extra bushy PORTUGAL LAURELS.

2 and 3 years SEEDLING SPRUCE.

All very fine. Prices upon application.

JAMES DICKSON & SONS, "Newton" Nurseries, Chester.

SUB-TROPICAL FOLIAGE SEEDS, and other Novelties, post free.

PRICED LISTS, with cultural directions, free on application; see also large Advertisement in *Gardeners' Chronicle*, page 240.

DOWNIE, LAIRD, & LAING, Stanstead Park, Forest Hill, S.E.; and 17, South Frederick Street, Edinburgh.

Superb Double Hollyhocks.

THE FINEST COLLECTION EVER OFFERED TO THE PUBLIC.

WCHATER has a large Stock of fine healthy Plants now ready, which he can supply on liberal terms.

See Advertisement on other page.

Address, W. CHATER, Nurseries, Saffron Walden.

BUTLER AND McCULLOCH'S Collections of Choice FLOWER SEEDS forwarded Post free.

NEW ANNUALS, 5s. and 10s. 6d.

HARDY DO., 2s. 6d., 5s., 10s., 20s.

HALF HARDY DO., 4s., 7s. 6d., 15s., 30s.

For details of above Collections, see B. & McC.'s SPRING CATALOGUE, sent free and post paid upon application.

Covent Garden Market, W.C.

HOLLYHOCKS, 9s. to 12s. per dozen.

PAUL & SON, Old Cheshunt Nursery, N.

GOOD BUSHY LAURELS, 4 to 5 feet, 50s. per 100.

PAUL & SON, Old Cheshunt Nursery, N.

BOX EDGING, 4d. per yard; one yard sufficient to make three.

JOHN CRANSTON, King's Acre Nurseries, near Hereford

GLADIOLI are best planted without delay. CATALOGUES of the finest sent free.

STEPHEN BROWN, Seed and Nursery Establishment, Sudbury, Suffolk.

GLADIOLUS, the finest cultivated, new and older varieties.

CATALOGUES, CULTURAL and DESCRIPTIVE, sent free.

STEPHEN BROWN, Sudbury, Suffolk.

GLADIOLI, GLADIOLI, GLADIOLI.—Collections, including all the finest varieties in cultivation, from 10s. 6d. to 63s.

All orders amounting to 21s. and upwards carriage paid.

BUTLER & MCCULLOCH, Covent Garden Market, W.C.

J. IVERY AND SON beg to announce that their DESCRIPTIVE PRICED CATALOGUES of AZALEA INDICA, HARDY BRITISH FERNS, ROSES, CONIFERÆ, GRAPE VINES, and SEEDS, may be had on application at their Dorking Nursery.

Dahlias, Verbenas, Bedding Plants, &c., now ready.

C. E. ALLEN'S CATALOGUE of the above can be had free on application.

Norfolk Nursery, Shacklewell, near London, N.E.

REBECCA, the finest BEDDING GERANIUM ever raised. Plants ready in May, price 5s. each.

See WM. PAUL'S SPRING CATALOGUE.

PAUL'S Nurseries, Waltham Cross, London, N.

Scarlet, Pink, and Salmon Zonale Geraniums.

WOOD AND INGRAM beg to offer fine sturdy Autumn-struck Plants of the above, well established in 3½-inch pots, and thoroughly hardened off, 24 for 20s, package included.

Nurseries, Huntingdon.

To the Trade—Geraniums.

HUSSEY AND SON beg to offer, from store pots, GOLDEN CHAIN, 14s. per 100; TOM THUMB, 8s. per 100; BRILLIANT, 8s. per 100; I. C. LEAF, 10s. per 100; PUNCH, LADY ROBERTS, SYMMETRY, and other green-leaved sorts, 8s. per 100.

Mile End Nursery, Eaton, Norwich.

Scarlet, Pink, and Salmon Zonale Geraniums.

WOOD AND INGRAM offer fine sturdy Autumn-struck Plants of the above, good varieties, all named, well established in 3½-inch pots, thoroughly hardened off, at 25s. per 100, package included. Names of varieties sent may be seen in W. & I.'s NEW DESCRIPTIVE CATALOGUE, which will be sent on pre-paid application.

Nurseries, Huntingdon.

GERANIUM MRS. POLLOCK, by the dozen or 100, strong, to be sent out the third week in May next; also a large stock of the best NOSEGAY and ZONALE GERANIUMS, CALCEOLARIAS, VERBENAS, &c., very strong plants, to give immediate effect. Prices on application.

T. J. BOOTH, Rainhill Nursery, Prescot, Lancashire.

VERBENAS, FUCHSIAS, PETUNIAS, ROSES, &c., New and Old, of only those that are worth growing. Nice Plants now ready to send out. DESCRIPTIVE CATALOGUES free.

WM. KNIGHT, Floral Nursery, Hailsham, near Hurst Green, Sussex.

Verbenas.

WALTER P. HUME has nice Plants now ready for Sale of all the leading varieties. Purchasers of large quantities will be liberally treated. DESCRIPTIVE and PRICED CATALOGUE free.

WALTER P. HUME, Exotic Nursery, Gloucester.

New Chrysanthemums and Pyrethrums.

JOHN SALTER'S DESCRIPTIVE CATALOGUE of NEW CHRYSANTHEMUMS and PYRETHRUMS for 1866 is now ready, and will be sent free on receipt of two stamps.

Versailles Nursery, William Street, Vale Place, Hammersmith, W.

TRANSPLANTED RHODODENDRONS.—4-year-old Hybrids saved from the choicest Crimson, White, and Claret-coloured sorts, 12s. 6d. per 100, or 1000 for 45s.

RICHARD SMITH, Nurseryman, Worcester.

Yellow and Blue Lupins.

SUTTON and SONS can supply the above at very moderate prices, which may be had on application.

SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

Double White Pelargonium Lady Victoria Kerr.

CARSTAIRS AND SONS are now sending out the above fine Double White Geranium, price 10s. 6d. each. A full Description and List of Testimonials post free on application.

121, George Street, and Warriston Nurseries, Edinburgh.

GERMAN FLOWER SEEDS.—Superb Varieties of Aster, Stock, Balsam, Wallflower, Phlox Drummondii, Portulaca, Larkspur, Zinnia, &c. For prices see Descriptive Seed List.

RICHARD SMITH, Seed Merchant, Worcester.

WM. LOCKHART, FLORIST, The Cottage, Colehill Lane, Fulham, London, S.W., begs to offer his unrivalled CALCEOLARIA, CINERARIA, and PRIMULA SINENSIS, in packets, at 1s. and 2s. 6d. each; postage stamps taken in payment. The above are warranted first-rate.

CLIANTHUS DAMPIERI.—Imported Seed, of excellent quality, 2s. 6d. per packet, containing a dozen seeds.

Trade price per 1000 Seeds on application.

PETER LAWSON & SON, Edinburgh and London.

MAURICE YOUNG'S DESCRIPTIVE LIST of Conifers, New and Rare Hardy Plants, Ornamental Trees and Shrubs, Rhododendrons, Japanese Novelties, Forest Trees, and Roses, forwarded on application.

Milford Nurseries, near Godalming, Surrey.

NEW and CHOICE SEEDS.—Bull's Verbena, Bull's Tropæolum, Cyclamen persicum grandiflorum, Giant 10-week Stock, Perfection Aster, Lilium auratum, Intermediate Stock, James Prize Calceolaria, Barr's Select Strain of Primula, each 2s. 6d. p. pkt.

BARR & SUDDEN, 12, King Street, Covent Garden, W.C.

DRAWING-ROOM PLANT CASES.—The beautiful Novelties in Plant Cases just introduced by BARR & SUDDEN are now on view at their Warehouse. An Illustrated Sheet is in preparation for ladies living in the country.

BARR & SUDDEN, 12, King Street, Covent Garden, W.C.

Notice.

PURCHASERS of LARGE QUANTITIES of FARM or GARDEN SEEDS will be supplied liberally by SUTTON & SONS. For prices apply (stating quantity required) to SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

Genuine Garden and Vegetable Seeds.

W. HOOPER, SEED MERCHANT AND NURSERYMAN, Wandsworth, S.W.

Genuine Garden Seeds.

WM. CUTBUSH AND SON'S DESCRIPTIVE PRICED CATALOGUE of SEEDS, which contains everything New and Old worth growing, can be had post free on application.

Highgate, London, N.

Garden Seeds, Carriage free.

WM. PAUL'S SELECT LIST contains many articles worthy the attention of Exhibitors and others who wish to have FIRST-CLASS VEGETABLES and FLOWERS in their seasons.

PAUL'S Nurseries, Waltham Cross, N.

JAMES FAIRHEAD AND SON, SEED GROWERS and MERCHANTS, 7, Borough Market, London, S.E.

New and Genuine AGRICULTURAL, GARDEN, and FLOWER SEEDS. Special prices and advantageous offers on application.

Genuine Garden and Agricultural Seeds.

JAMES CARTER AND CO., SEED FARMERS, MERCHANTS, and NURSERYMEN, 237 and 238, High Holborn, London, W.C.

New Catalogue.

CHARLES TURNER'S CATALOGUE of PLANTS for the Spring is now ready. It includes lists of all the leading Bedding Plants, New Dahlias, Pelargoniums, Roses, Verbenas, and select general Collections.

The Royal Nurseries, Slough.

Blooming Pelargoniums.

WOOD AND INGRAM offer very fine Plants of good named varieties of the above in 5-inch pots at 6s. per doz., 45s. per 100; and in 4-inch pots, 4s. per doz., 30s. per 100.

Names of varieties may be seen in W. & I.'s new SPRING CATALOGUE, which will be sent on prepaid application.

Nurseries, Huntingdon.

ZEA CURAGUA, new Striped Japanese Maize.—Greatest novelty of the season. Newly imported Seed, 1s. and 2s. 6d. per packet, sent post free.

BUTLER & MCCULLOCH, Covent Garden Market, W.C.

GIANT ASPARAGUS.—Extra fine 2-yrs., 2s. per 100; extra fine 3-years, 3s. per 100.

Price to the Trade on application.

JOHN CRANSTON, Nurseries, King's Acre, near Hereford.

GRAYSON'S GIANT ASPARAGUS. Fine strong 3-year roots, 30s. per 1000, 3s. 6d. per 100. Fine strong 2-year roots, 21s. per 1000, 2s. 6d. per 100.

STEPHEN BROWN, Nurseryman, Seed Grower, Sudbury, Suffolk.

GIANT ASPARAGUS, fine selected Roots for early cropping, 2s. 6d. per 100. This delicious Vegetable does not require half the expense usually incurred in planting it. For instructions, see RICHARD SMITH'S SEED LIST for 1866.

Strong Transplanted SEA KALE, 2s. per dozen.

RICHARD SMITH, Nurseryman, Worcester.

THE LONGSTANDER LETTUCE.—Most remarkable for duration without running, crisp and excellent. Packets 1s. each.

STEPHEN BROWN, Seed Grower, Sudbury, Suffolk.

DAINTREE'S SEEDLING POTATO is the best early round white Potato in cultivation, and can be obtained at a moderate price on application.

MR. S. A. DAINTREE, Fendrayton, St. Ives, Hunts.

Seed Potatos, Surplus Stock.

WOOD AND INGRAM offer 40 Bushels MYATT'S KIDNEY at 3s. per bushel; 15 Bushels EARLY HANDSWORTH at 3s. per bushel; 5 Bushels DAINTREE'S EARLY, at 2s. per bushel; 15 Bushels HENDERSON'S PROLIFIC, at 2s. per bushel

Nurseries, Huntingdon.

RAPHANUS CAUDATUS, the NEW LONG-PODDED RADISH. A few plants for disposal by HOOPER & CO., Covent Garden Market, London, W.C.

SUTTON'S CHOICE MANGEL SEED.

SUTTON'S CHAMPION SWEDE.

CABBAGE PLANTS.—Strong Drumheads for Cattle, Early kinds, Battersea and Nonpareil, 3s. per 1000.

W. VINCE & SON, Wonersh Nursery, Guildford, Surrey.

English-saved Sowing Rape Seed.

CHARLES SHARPE AND CO. have the above to offer, of fine quality. Sample and price forwarded on application. Seed Warehouse, Sleaford

NEW FARM SEEDS of best selected quality. PRICED DESCRIPTIVE LIST post free upon application.

JAMES DICKSON & SONS, Seed Merchants, &c., 102, Eastgate Street, Chester.

DICKINSON'S ITALIAN RYE-GRASS SEED, grown by him and sold to Agriculturists this season for present payment at 44s. per qr., 5 qrs. at 40s.

New Park, Lymington, Hants.

ITALIAN GRASS SEED.—A few Quarters of Italian left, which are offered at 22s. 6d., weight 15½ lb. per bushel.

Apply early to JOSEPH DIXON, Kendal, Westmoreland.

SUTTON'S PERMANENT GRASS SEEDS, 20s. to 36s. per acre, according to quantities required, and soils for which they are intended

GOOD CLOVER SEEDS at MARKET PRICES.

Red	White Dutch	Yellow
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NATURAL GRASSES: their Names and Derivations; Quality, Produce, Elevation, Situation, Soil, Use, Peculiarity, Season, Growth, Increase, Time of Flowering, Price, &c.

Free for one postage stamp

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"April 12, 1866

"The Brilliant Superb Scarlet Geranium is one of the very best for bedding in the flower garden or for flowering in pots or boxes. It has the fine compact habit of the old Brilliant, but is rather more luxuriant in growth, has better foliage, which is much more freely supplied with white blotches of a clear colour, and the trusses of flower and the individual flowers are much larger and of a richer scarlet. I have no hesitation in speaking of this variety as one of the most satisfactory that can be used, after trying it for two seasons.

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CHARLWOOD AND CUMMINS have now on Sale, SEEDS of the following in good condition:—Cedrus Deodara, Libani, and Red Cedar; Cupressus Lawsoniana and macrocarpa; Picea balsamea, nobilis, Nordmanniana, and cephalonica; Pinus flexilis and Lambertiana; Thuja orientalis and occidentalis; Wellingtonia gigantea; Ailantus glandulosa; Kalmia latifolia; Magnolias, 4 varieties; Pavia flava (the yellow-flowered Horse Chestnut); Portugal Laurel; Platanus orientalis; Oaks, 7 varieties; Common Yew, and Chanthus Dampieri, with a general assortment of Forest Tree and Shrub Seeds.

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THE QUEEN'S SEEDSMEN,

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CHOICE MANGEL WURZEL SEED

SAVED FROM FULLY DEVELOPED ROOTS

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GOOD LARGE YELLOW GLOBE, 9*d.* per lb. | GOOD ORANGE GLOBE, 9*d.* per lb
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Sutton's New Yellow Intermediate Mangel.

Sutton's Selected sorts of Mangel Wurzel.

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	Bushel.	Half Bushel.	Peck.	Gallon.
LONDON PURPLE-TOP SWEDE TURNIP	£1 14 0	£0 17 6	£0 9 6	£0 5 0
PLYMOUTH " "	1 14 0	0 17 6	0 9 6	0 5 0
SKIRVING'S " "	1 11 0	0 16 0	0 8 6	0 4 6
WHITE GLOBE, GREEN, and RED ditto	1 11 0	0 16 0	0 8 6	0 4 6
SCOTCH PURPLE and GREEN-TOP	1 10 0	0 16 0	0 9 0	0 4 6
GREY STONE	1 17 0	0 19 0	0 10 0	0 5 0
	Cwt.	Half Cwt.	Quarter Cwt.	14 lb.
LONG RED MANGEL	2 14 0	1 8 0	0 15 0	0 8 0
LONG YELLOW MANGEL	3 3 0	1 12 6	0 17 0	0 8 6
YELLOW GLOBE MANGEL	2 10 0	1 7 6	0 15 0	0 8 0
RED GLOBE MANGEL	2 14 0	1 8 0	0 15 0	0 8 0
FISHER HOBBS'S ORANGE GLOBE	2 14 0	1 8 0	0 15 0	0 8 0
DRUMHEAD CABBAGE	10 0 0	5 10 0	3 0 0	1 12 6
ALTRINGHAM CARROT	5 0 0	2 15 0	1 10 0	0 17 6
WHITE BELGIAN CARROT	3 15 0	2 0 0	1 2 6	0 12 6
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LARGE CATTLE PARSNIP	4 4 0	2 5 0	1 5 0	0 13 6
ITALIAN RYE-GRASS		5*s.* per bushel, or 38*s.* per quarter.		
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ROBERT SIM can now send, post free for six postage stamps, Part 1. (British Ferns and their varieties, 36 pages, including prices of Hardy Exotic Ferns) of his NEW and PRICED DESCRIPTIVE CATALOGUE of BRITISH and EXOTIC FERNS, No. 7

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Foot's Cray Nursery, S.E.

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WOOD AND INGRAM offer fine VERBENAS, by name, in various colours, good plants, well-established in single pots; also HELIOTROPES, in three fine varieties, at 20s. per 100, package included.

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20,000 VERBENAS, extra strong plants, about 36 of the leading varieties, at 21s. per 100, packing included. Strong rooted Cuttings of the above, 12s. per 100.

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100 packets of the best and most showy Hardy, Half-hardy, and Tender Annuals, 20s.

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GERANIUMS, in 25 or 50 varied shades, less or more, 100, £1 5s.; 200, £2 5s.; 500, £5

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100 BEDDING PLANTS in pots, in 20 varieties, including Dahlias, Geraniums, Verbenas, &c., for £1; 200 ditto, 31s.; 500 ditto, £4 4s.

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DOWNIE, LAIRD, and LAING are now sending out the above in packets at 1s. each. This is unquestionably the largest Leek in cultivation, growing 16 inches in length of blanch, and 10 inches in circumference. Was awarded the First Prize at the Edinburgh and other leading Shows.

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PRIMULA (Williams's superb strain), red, white, or mixed seed	2s. 6d.; 3s. 6d. 5 0
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PANCRATIUM HOOKERIANA, new	1 0
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PECTIS ANGUSTIFOLIA, bright yellow flowers, with citron-like fragrance	1 0
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GYNERIUM ARGENTEUM, Pampas Grass	0 6
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Complete Collections to suit Gardens of various sizes, 10s. 6d., 21s., 42s., 63s., 84s. each. For quantities see CATALOGUE.

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WM. PAUL (Son and Successor to the late A. PAUL), has to offer the following new ZONALE and HYBRID NONSUCH GERANIUMS, which have been selected from several Thousand Seedlings raised from the stock of the late Mr. Donald Beaton. Every one now offered is believed to be in advance of or equal to all pre-existing varieties. They will be sent out now, the plants delivered in rotation, as far as the stock will allow, in May next

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*** ANY 12 varieties from this and the two following Groups may be selected by the purchaser for £2 2s.

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FAIRY QUEEN.—Rose purple; a large smooth flower, very distinct and effective. Price 3s. 6d. each.

MINSTREL, a peculiar and pleasing shade of salmon, somewhat in the way of Lord Palmerston, but brighter in colour and broader in the petals.

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PHŒNIX, in the way of "Stella" in habit and general character, the colour flamiferous-scarlet. Price 5s. each.

PRINCE OF ORANGE, orange-scarlet, very bright; great substance, good habit, prodigious bloomer. Price 3s. 6d. each.

PEACH NOSEGAY.—Flowers peach; bright peach colour, very free bloomer, spendid truss, plain leaf, first-rate and distinct Price 5s.

REBECCA.—Cherry colour, fine truss, dwarf compact habit, very fine; the finest bedding geranium yet raised. Price 5s. each.

ST. GEORGE.—Dark chestnut, shaded with blackish crimson, quite unique, very free and effective, an entirely new colour among Pelargoniums. Price 5s. each.

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SIR J. PAXTON.—Flowers true orange, very bright, fine large truss, a splendid variety for massing Price 5s. each.

WOOD NYMPH.—Salmon pink, large and fine. Price 3s. 6d. each.

GROUP 2.—VARIETIES ESPECIALLY RECOMMENDED FOR GROWING IN POTS OR VASES.

BRIDE.—Flowers white, with large crimson eye, of fine shape and substance; a first-class variety for pot culture. Price 3s. 6d. each.

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CELESTIAL.—Flowers rosy lake, with fiery spot on upper petals their centres blush purple, resembling the "Cactus specio sissimus," large white eye, fine in colour, and very beautiful. Price 5s. each.

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POET LAUREATE.—Rosy purple, top petals orange scarlet, yellowish eye, perfect shape. Price 3s. 6d. each.

TIARA.—Flowers scarlet crimson suffused with purple, good truss, very free, fine habit; quite distinct from any yet raised, and very lovely. Price 5s. each.

GROUP 3.—MINIATURE OR POMPON VARIETIES.

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NAIAD.—Flowers purple, scarlet top; pleasing and distinct. Price 3s. 6d. each.

WALTHAM LILAC.—Flowers true lilac, very profuse; a new and desirable colour, excellent for massing. Price 5s. each.

ZEPHYR.—Flowers light purple top, petals rose colour; stands the rain and sun well, very dwarf and free. Price 3s. 6d. each.

GROUP 4.—BEDDING VARIETIES SENT FROM THESE NURSERIES LAST YEAR.

Many of them have received First-class Certificates from the Royal Horticultural and Royal Botanic Societies of London, and those marked thus *** have been awarded the highest marks of merit in the Royal Horticultural Society's Trial Ground at Chiswick.

NOW READY, AUTUMN-STRUCK PLANTS.

*** ALEXANDRA.—Magenta. Price 2s. 6d. each; 24s. per dozen

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ORANGE NOSEGAY.—Bright orange. Price 1s. 6d each; 15s per dozen.

PILLAR of BEAUTY.—Brick red. Price 2s. 6d. each.

PRINCESS LILIHTENSTEIN.—Salmon pink. Price 2s. each; 18s. per dozen.

SALAMANDER.—Brilliant scarlet, large white eye. Price 2s. each; 18s per dozen

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MRS. WILLIAM PAUL.—Delicate rose pink. Price 2s. 6d. each, 24s. per dozen.

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The above set of 16 varieties, one plant of each, 24s.

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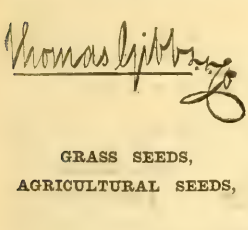

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JAMES GARAWAY & CO.,

DURDHAM DOWN NURSERIES, BRISTOL,

Offer the undermentioned. The whole are well-grown and in good condition. Amateurs or the Trade wanting to complete Collections will find this a first-rate opportunity.

AGAVE PICTA.—A fine plant, in 18-inch pot, 24 inches high, with 17 good well-marked leaves

ALOCASIA ZEBRINA.—In 19-inch pot, with 6 good leaves, the largest 2 feet 6 inches long

ARECA RUBRA.—A pair of these graceful Palms, in 12-inch pots, about 4 feet high

CARYOTA URENS.—A fine specimen of this beautiful Palm, in 18-inch pot, 5 feet 9 inches high

CROTON PICTUM.—Well variegated, in 18-inch pot, 5 feet 3 inches high by 4 feet 6 inches through

CYCAS REVOLUTA.—The Sago Palm, in 20-inch pot, with 12-inch stem; just throwing up fresh leaves

EURYA LATIFOLIA VARIEGATA.—The handsomest of the Japanese plants, in 10-inch pots, 2 feet high, 18 inches through

FICUS LEOPOLDI.—In 16-inch pot, 3 feet 6 inches high, leaves 21 inches by 12 inches

FICUS LYALLII.—In 16-inch pot, 3 ft. 6 in. high, leaves 20 in. long

LATANIA RUBRA.—In 22-inch pot, with 9 leaves, last 6 fee 6 inches long

MARANTA ORNATA.—In 18-inch pot, 3 feet high by 4 feet through

" VITTATA.—In 18-inch pot, 3 feet high by 3 f. et through

PANDANUS ELEGANTISSIMUS.—In 18-inch pot, 3 feet 6 inches high by 4 feet 6 inches through

PHŒNIX DACTYLIFERA.—The Date Palm, in 20-inch pot, 4 feet high by 4 feet 6 inches through

TUPIDANTHUS CALYPTRATA.—The finest of the Araliaceæ, in 18-inch pot, 6 feet 9 inches by 4 feet 6 inches

YUCCA ALOIFOLIA VARIEGATA.—A fine pair, in 18-inch pots, 5 feet high

" CORNUTA or CONCAVA.—In 14-inch pot, 1 foot 8 inches high

" PARMENTIERI.—In 20-inch pot, 2 feet 3 inches high

" QUADRICOLOR.—In 12-inch pot, 1 foot 8 inches high. A beautifully coloured specimen

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ALSOPHILA AUSTRALIS.—A fine pair of these beautiful Tree Ferns, well-established, stems 5 feet clear from pot, crowns 7 feet across.

ALSOPHILA GUIANENSIS.—In 17-inch pot, 12-inch stem, 9 fronds, last 4 feet long

CYATHEA DEALBATA.—In 22-inch pot, 2 feet 6 inch stem, 20 fine fronds, forming a beautiful head

CYATHEA MEDULLARIS.—In 22-inch pot, 14-inch stem, 9 fronds, the last 6 feet long

DAVALLIA ACULEATA.—In 14-inch pot, 3 feet high by 2 feet 3 inches through

DAVALLIA PYXIDATA.—In 18-inch pot, 4 feet high by 4 fee through

DIDYMOCHLENA TRUNCULATA.—In 16-inch pot, 2 feet 3 inches high, by 3 feet through

GLEICHENIA DICHOTOMA.—In 22-inch pan, 3 feet 6 inches high by 6 feet 9 inches through

GLEICHENIA SPELUNCÆ.—In 18-inch pot, 2 feet 9 inches high by 3 feet

LOMARIA GIBBA.—In 16-inch pot, 3 feet through

NEOTTOPTERIS VULGARIS.—In 18-inch pot, 4 feet 8 inches across

The whole to be seen and prices obtained on application, and of

JAMES GARAWAY and CO., DURDHAM DOWN NURSERIES, BRISTOL.

SUTTON'S GRASS and CLOVER SEEDS for all SOILS.

SEEDSMEN BY APPOINTMENT. Sutton AND Sons

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HAVE STILL ON HAND SOME OF EACH OF THE

LEADING KINDS OF GRASS AND CLOVER SEEDS,

WHICH THEY MIX EXPRESSLY TO SUIT THE SOILS FOR WHICH THEY ARE REQUIRED.

Present Prices are—

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SUTTON'S BEST MIXTURE of PERMANENT GRASS and CLOVER SEEDS.—2 bushels of light and 12 lbs. of heavy seeds to each acre	56 0
Cheaper ditto	28*s.* to 30 0
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SUTTON'S BEST CLOVER SEEDS, without Rye-Grass	12 6
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SUTTON'S RENOVATING MIXTURE for Improving Old Pastures, 10*d.* per lb. SUTTON'S FINE LAWN GRASS, 1*s.* 3*d.* per lb.; 24*s.* per bushel

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40 Tons per Acre of INTERMEDIATE AUTUMN and WINTER CATTLE FOOD.

BLUNDELL'S CATTLE MELONS and CATTLE MARROWS.—100 Seeds, 2*s.* 6*d.*; ¼ lb., sufficient for ¼ of an acre, 5*s.*; ½ lb., sufficient for ½ of an acre, 9*s.*; 1 lb., sufficient for 1 acre, 16*s.*

For Improving our Native Flora, Enriching Woodland Walks, Wildernesses, Shrubberies, Railway Embankments, Rockeries, Carriage Drives, beside Rivulets, &c. Cheap mixed FLOWER SEEDS for the above purposes, 3*s.* 6*d.* to 5*s.* 6*d.* per lb.; 7 lb. to 10 lb. per acre. Now is the time to purchase.

Beautiful NOVELTIES in PLANT CASES just introduced. An Illustrated Sheet in preparation.

BARR & SUGDEN.

THE METROPOLITAN.

TRADE MARK

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12. KING STREET. COVENT GARDEN W.C.

Orders amounting to 21s. sent Carriage Paid.

For Park Scenery, Islands, Select Plantations, Small Orchards, extensive Lawns, Mounds, Sub-tropical Gardens and Raised Flower Beds, also Verandahs and Rustic Arches, likewise Sloping Banks, &c, ORNAMENTAL GOURDS are exceedingly attractive both for their foliage and fruit. When ripe the fruit forms a unique Hall and Drawing-room Ornament.

The Gourd Seeds in warm localities can be sown early in May where intended to grow.

Selections of ORNAMENTAL GOURDS, including Miniature, Medium, and Mammoth varieties, or either separate:—10 varieties, 2*s.* 6*d.*; 15 do., 3*s.* 6*d.*; 20 do., 5*s.* 6*d.*; 30 do., 7*s.* 6*d.*; 40 do., 10*s.* 6*d.*; 50 do. 12*s.* 6*d.*; 100 do., 21*s.*; 200, 42*s.*

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PERMANENT PASTURE GRASS SEEDS and CLOVERS for ALL SOILS | FINE LAWN GRASS SEEDS for ALL SOILS

COMPLETE COLLECTIONS of VEGETABLE SEEDS for One Year's Supply (Carriage paid), 10*s.* 6*d.*, 15*s.* 6*d.*, 21*s.*, 30*s.*, 42*s.*, 63*s.*, 84*s.*, and 105*s.*

COLLECTION of FLOWER SEEDS (post paid), 2*s.* 6*d.*, 3*s.* 6*d.*, 5*s.* 6*d.*, 7*s.* 6*d.*, 10*s.* 6*d.*, 15*s.*, 21*s.*, 30*s.*, 42*s.*, to 105*s.*

THE FOLLOWING ARE AGENTS FOR STANDEN'S GARDENER'S AND AMATEUR'S FRIEND MANURE:—

For London:—
Messrs. E. G. HENDERSON & Son, St. John's Wood
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" HOOPER & Co., Covent Garden
Mr. B. S. WILLIAMS, Paradise Nursery, Holloway
" GREEN, Covent Garden
" KENNEDY, Covent Garden
" GAINES, Covent Garden
" BUCK, Covent Garden
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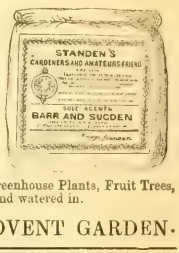

Sold in Canisters, 1*s.* and 2*s.* 6*d.*; and in Bags, 5*s.* 6*d.*, 10*s.* 6*d.*, and 21*s.*, and in two qualities. No. 1 quality for Hard-wooded Stove and Greenhouse Plants, Fruit Trees, Roses, Lawns, Kitchen Garden Crops, and Flower Beds and Borders. No. 2 quality for Soft-wooded Plants. It is always laid on the surface dry, and watered in.

BARR AND SUGDEN, SEED, PLANT, and BULB MERCHANTS, 12, KING STREET, COVENT GARDEN.

VERBENA CRIMSON KING.

THOMAS METHVEN

Has much pleasure in announcing that he has arranged to send out the unrivalled VERBENA CRIMSON KING, which was raised in 1863 by Mr. David Thomson, at Archerfield, where it has been extensively used for the last two seasons. Its superiority consists in its great and continuous profusion of bloom, its vigorous and compact habit, and its healthy constitution. It is in fact a companion to the well-known Purple King, having all the good qualities of the latter variety, without its tendency to mildew or to become diseased in winter. Crimson King has fine bold crimson trusses of bloom, with petals of unusual substance, borne on short stiff stalks, which constitutes it one of the very best plants for standing heavy rain without much injury. Either for masses or for lines it is considered by the many Gardeners who have seen it this season at Archerfield to stand unrivalled for striking effect.

To be sent out next May at 18s. per dozen.

Orders are now being booked, and will be executed in rotation as they are received.

The following Nurserymen have already ordered it, and will be able to supply when sent out:—

Messrs Austin & McAslan, Glasgow
" James Backhouse & Son, York
Mr. Wm. Bull, Chelsea, London
Messrs. Thomas Bunyard & Sons, Maidstone
" Hallantyne & Son, Dalkeith
Mr. Wm Cutbush, Barnet, Herts
Messrs Cuthbert & Son, Peterborough
" James Carter & Co., High Holborn, London
" Carstairs & Sons, Warrington Nursery, Edinburgh
Mr. E. Cooling, Mileash, Derby
" W. Chater, Saffron Walden, Essex
" John Cranston, King's Acre, Hereford
" H. Cannell, Woolwich
Messrs. James Dickson & Sons, Chester
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" James Dickson & Sons, Edinburgh
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" E. G. Henderson & Son, St. John's Wood, London
" Howden Brothers, Inverness
Mr W. Hooper, St. John's Hill, Clapham, S.W.
Mr. W. Ivery, Rye Lane, Peckham, S.
Messrs. Ivery & Son, Dorking, Surrey
" Thomas Iurie & Sons, Ayr

Messrs. Thomas Jackson & Sons, Kingston, Surrey
" Thomas Kennedy & Co., Dumfries
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" Hugh Low & Co., Clapton, London
" Peter Lawson & Son, Edinburgh and London
" Little & Ballantyne, Carlisle
" H. Lane & Son, Great Berkhampstead
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Mr. John Monro, Osborne Park Gardens, Barnet
" W. Masters, Canterbury
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" R. Parker, Tooting, London
Messrs. Paul & Son, Cheshunt, Herts
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Messrs. Benjamin Reid & Co., Aberdeen
" Wm. Rollisson & Sons, Tooting, London

Mr. Charles Ramsay, Ball's Bridge, Dublin
Messrs. J. Slater & Sons, Malton, Yorkshire
" E. Sang & Sons, Kirkcaldy
" John Stewart & Sons, Dundee
" F. & A. Smith, Dulwich
Mr. Richard Smith, Worcester.
" Wm. Skirving, Liverpool
Messrs. Smith & Simons, Glasgow
" Stuart & Mein, Kelso
Mr. Charles Turner, Slough
Messrs. James Veitch & Sons, Royal Exotic Nursery, Chelsea
" W. Virgo & Son, Wonersh, near Guildford, Surrey
Mr. R. T. Veitch, Exeter
" B. S. Williams, Holloway, London
Messrs. W. Wood & Son, Maresfield, near Uckfield, Sussex
" Wood & Ingram, Huntingdon

SEED WAREHOUSE, 15, PRINCES STREET; and LEITH WALK NURSERIES, EDINBURGH.

American Plants, New Hardy Rhododendrons.

WATERER AND GODFREY'S PRICED and DESCRIPTIVE CATALOGUE of AMERICAN PLANTS, as exhibited in the Horticultural Gardens, South Kensington, free on application. This Catalogue fairly describes the Rhododendrons most worth growing, as well as some new and very handsome kinds exclusively in their possession, and now for the first time offered.
Knap Hill Nursery, Woking, Surrey.

CARNATIONS and PICOTEES for the MILLION.—20,000 Carnations and Picotees at 50s. and 70s. per 100 pairs. Also a choice selection of Florists' Flowers and Greenhouse Plants constantly on hand.
Orders punctually attended to and respectfully solicited by JOHN J. HASLAM, son-in-law to the late Mr. John Holland, Bradshaw Gardens, Chadderton, Manchester.

CALCEOLARIA AMBASSADOR (SANG'S).—Strong Plants in single pots of this magnificent Bedding-out Calceolaria are now ready, price 12s. per dozen. The Trade supplied.
The plant is of a dwarf compact habit, growing from 12 to 15 inches high; the flowers are large, bronze-crimson, tipped with scarlet, and the trusses so large and numerous as to give the appearance of an entire mass of bloom, rendering this the most magnificent Bedding-out Calceolaria of the class in cultivation. It also forms a most desirable and showy pot-plant for the Conservatory.
EDWARD SANG & SONS, Nurserymen and Seed Merchants, Kirkcaldy.

Chrysanthemums.

FIRST PRIZES SCOTTISH CHRYSANTHEMUM GUILDHALL, 1865.

ADAM FORSYTH begs to inform the Public that he is now sending out his large COLLECTION of CHRYSANTHEMUMS, at 6s. per dozen, including Attraction, Eve, Golden Ball, Lee, Dr. Brock, Hercules, King of Denmark, Lady Carey, Mr. Brunlees, Mr. Wyness, Mrs. Lees, Mrs. Rawes, Pink Pearl, Prince of Wales, Sam Weller, Venus, Virgin Queen, &c.
CATALOGUES for one stamp.
Brunswick Nursery, Newington, N.

GEORGE EDWARD can supply good Plants, well established, out of pots, to save expense of carriage and package. VERBENA PURPLE KING, 16s. per 100; ditto BRILLANTE DE VAISE, 16s. per 100; ditto LORD RAGLAN, 16s. per 100; LOBELIA SPECIOSA, true, 8s. per 100.
SPRING CATALOGUES of DAHLIAS, GERANIUMS, and other Bedding Plants can be had on application at his
Seed Establishment, 1, Bridge Street, and at the
Clarence Nurseries, York.

To the Trade.

CUPRESSUS LAWSONIANA SEED (true), of excellent quality, and warranted crop of present season. Price, postage paid, 5s. 2d. per oz.; 32s. per half lb.; 60s. per lb. nett. From unknown Correspondents a remittance must accompany order.
WHOLESALE CATALOGUES of GENERAL NURSERY STOCK can be had on application to
THOS. CRIPPS, Nurseryman, Tunbridge Wells, Kent.

Bedding Plants, Bedding Plants.

JAMES HOLDER can supply VERBENAS, SCARLET and VARIEGATED GERANIUMS, DAHLIAS, CALCEOLARIAS, FUCHSIAS, PETUNIAS, LOBELIAS, GAZANIAS, KONIGAS, CUPHEAS, &c. 8 dozen for 20s., or 4 dozen for 10s. 6d. Hampers and package included.
Crown Nursery, Reading, Berks.

Genuine Garden and Agricultural Seeds.

PAUL TOLLARD, SEED GROWER and MERCHANT, 20, Quai de la Mégisserie 20, ci-devant 4, Place des Trois Maries 4, à Paris, SPECIAL PRICED LIST of NEW SEEDS, in English weights and money, on application.

Primula, Calceolaria, &c.

WM. CUTBUSH AND SON are now sending out SEED of their superb PRIMULA SINENSIS FIMBRIATA, which has for many years given great satisfaction.
The *Gardeners' Chronicle* of the 27th January, in Notices to Correspondents, says:—"The blooms sent are remarkably fine, richly coloured, full, and densely fringed; they are evidently the produce of a capital strain."
The *Journal of Horticulture* of the 23rd of January, says that:—"The finest and richest coloured Chinese Primulas we have yet seen are those raised by Messrs. Cutbush & Son."
Sealed packets, 2s. 6d. and 5s. 6d. each.
CALCEOLARIA (JAMES').—This is the finest herbaceous variety extant. Per packet 2s. 6d. and 3s. 6d. each.
CINERARIA, from finest named varieties. Per packet 2s. 6d. and 3s. 6d. each Highgate Nurseries, London, N

New Dahlias.

THOMAS BARNES has great pleasure in offering the undernamed SEEDLING DAHLIAS, feeling assured they will give entire satisfaction to all purchasers, the colours being new and distinct, the form perfect, and all quite constant.
Plants ready in May, 10s. 6d. each. No discount on Miss Tollemache when ordered alone.
DANE CROFT HERO.—Clear rose lilac, fine shape and habit, blooming well above the foliage, every bloom fit for show.
DAIRY MAID.—Decided cream colour; may be shown with whites or any colour, being perfectly distinct and very constant.
MISS TOLLEMACHE.—Peach, rosy, or salforine, unequalled in beauty, finest shape, constant, and of first-rate habit.
QUEEN OF ROSES.—Bright rose pink, beautiful shape and habit, decided rose colour, and very pleasing.
Dane Croft Nurseries, Stowmarket.

New Roses of 1866.

JOHN HARRISON, North of England Rose Nursery, Darlington, has now ready for planting out, some thousands of fine plants of the NEW ROSES of the present season, at 30s. per dozen. Usual allowance to the Trade. Also a few Thousands of Autumn-potted MANETTIS, in fine condition for working, to dispose of at 25s. per 100, or £10 per 1000. Fine autumn-struck CALCEOLARIA AUREA FLORIBUNDA, 8s. per 100, or 70s. per 1000.

Paul's Nurseries, Waltham Cross, N.

NEW ROSES AND ENGLISH SEEDLINGS.

WM. PAUL (Son and Successor to the late A. PAUL) has to offer in May next the following first-class NEW HYBRID PERPETUAL ROSES:—
BLACK PRINCE, H.P. (WM. PAUL).—Flowers dark crimson, shaded with black, cupped, large and full. This Rose may be called a very dark Gloire de Santenay, which it resembles in most respects, but is very distinct in colour. Price 5s. each
DR. LINDLEY, H.P. (WM. PAUL).—Flowers crimson, with black centres, very large and full. Growth robust, foliage splendid. One of the finest English Roses yet raised. Price 7s. 6d.
GLOBOSA, H.P. (WM. PAUL).—A very dark but bright crimson, colour intense and uniform throughout. This flower is quite unique in character, the petals closing at the top, so as to form a complete crimson ball. Certificate from the Royal Horticultural Society. Price 5s.
LADY SUFFIELD, H.P. (WM. PAUL).—Flowers purplish crimson, colour uniform throughout, the purple tint predominating; large, full, and of fine form. Price 5s.
The following, which are already out, can be supplied in strong healthy plants:—
ELIZABETH VIGNERON (WM. PAUL).—Flowers rosy pink, very large and full, cupped in the way of Lselia, but fuller, fresher and brighter in colour; constitution hardy, growth vigorous; blooms continuously; one of the best of last year's novelties. Price 6d.
MADAME EMILE BOYAU (WM. PAUL).—Flowers soft rosy flesh-colour, changing to blush, sufficiently large, perfect in form, constitution hardy, growth moderate; very constant, distinct, and good. Price 3s. 6d.
PRINCE DE JOINVILLE (WM. PAUL).—A fine large showy Rose, something in the way of, but of a lighter colour, than Princess of Wales; vigorous and hardy. Price 2s. 6d.
PRINCESS LICHTENSTEIN (WM. PAUL).—Flowers white, globular, large and full, perfect in form in their young state, a good hardy Rose, flowering abundantly. Price 2s. 6d.
GLORY OF WALTHAM (WM. PAUL).—Flowers crimson, in the way of Red Rover, but more double; growth of extraordinary vigour; one of the best of climbing or pillar Roses. Price 3s. 6d.
All the really good French Novelties, 3s. 6d. each; the older kinds, by name, 12s. to 18s. per dozen; 75s. to 100s. per 100.

CARTER'S CHOICE FLOWER SEEDS.
12 Superb Prize FRENCH ASTERS, 2s. 6d.
12 Do. do. GERMAN STOCKS, 2s. 6d.
12 Do. do. CAMELLIA BALSAMS, 2s. 6d.
12 Showy sorts of Hardy ORNAMENTAL FOLIAGED PLANTS, 3s.
12 Beautiful varieties of ORNAMENTAL GRASSES for Winter Bouquets, 5s.
12 Do. do. of EVERLASTINGS for do. do. 5s.
Collections of Showy FLOWER SEEDS, containing only varieties of easy cultivation, 2s. 6d., 5s., 10s. 6d., 15s., and 21s.
Any of the above forwarded on receipt of Post Office Order.
JAMES CARTER & CO., 237 and 238, High Holborn, W.C.

Just Published, post free 12 Stamps
(GRATIS TO CUSTOMERS),
of BEDDING PLANTS for SUMMER DECORATION of the FLOWER GARDEN. See original article on the above in the Illustrated Plant Supplement of CARTER'S "Gardeners' and Farmers' Vade Mecum."
237 & 238, High Holborn, W.C.

Just Published, post free 12 Stamps
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VARIEGATED and ORNAMENTAL FOLIAGED PLANTS for GARDEN DECORATION.—See original article on the above in the Illustrated Plant Supplement of CARTER'S "Gardeners' and Farmers' Vade Mecum."
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Just Published, post free 12 Stamps
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120 ILLUSTRATIONS of GEOMETRICAL DESIGNS for FLOWER BEDS, with examples of the most admired Bedding combinations. See Illustrated Plant Supplement of CARTER'S "Gardeners' and Farmers' Vade Mecum."
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ILLUSTRATIONS of NEW DESIGNS in FERNERIES and FERN CASES. See Illustrated Plant Supplement of CARTER'S "Gardeners' and Farmers' Vade Mecum."
237 and 238, High Holborn, W.C.

GERANIUMS.—The following Twelve Splendid ZONALE GERANIUMS will be sent in good Plants, in 3-inch pots, on receipt of a Post Office Order for 10s.

Sunset	Clipper	Monitor
Mrs. Pollock	Triomphe	Prince of Wales
Snowball	Dr Lindley	Mrs. Vernon
Magenta	Cybister	Adonis Hallez

SAMUEL COX, Nurseryman and Florist, Ludlow.

Choice Bedding Geraniums.

THOMAS PESTRIDGE will supply strong Plants of MRS. POLLOCK, at 12s. per dozen.

	Per doz.—s. d.		Per doz.—s. d
Cloth of Gold	4 0	Ellen Lindsay	1 0
Madame Vaucher	4 0	Fontainea	1 0
Stella	4 0	Variegated, in varieties	4 0

Show and Fancy Geraniums in large 60s Pots, at 8s. per dozen.
Coleus Verschaffelti, 1s. per dozen.
Terms Cash.
The Greenway Nursery, Uxbridge, Middlesex.

New Seedling Petunias.

THOMAS BARNES has to offer the following Seedling PETUNIAS, which have been selected for form, distinctness and general effect. They will be ready on and after the 20th inst., price 3s. 6d. each.

DOUBLE VARIETIES.
LILACEA, mauve lilac. | LUNA, bright rose, very full.
ROSETTA, rosy lilac, centre edged.
SINGLE VARIETIES
GEM, white striped, edged mauve.
IMOGENE, lilac, tipped white.
STRIATA, white ground, cherry crimson stripes.
Dane Croft Nursery, Stowmarket.

NEW ZONALE PELARGONIUM WILTSHIRE LASS.—The finest Pink-coloured variety ever raised. It awarded two First-class Certificates. Plants ready on May 17 at 5s. each. See New CATALOGUE.
DOWNIE, LAIRD & LAING, Stanstead Park, Forest Hill, S.E.; and Edinburgh.

Pelargonium Mrs. Pollock.

ALFRED FRYER offers healthy well-grown Plants of this beautiful Bedding PELARGONIUM at 12s., 15s., and 18s. per dozen for cash. All the plants are well established in 60-pots, and were struck in open borders last autumn.
Remittances requested from unknown correspondents.
Address, ALFRED FRYER, Nurseries, Chatteris, Cambridgeshire.

CHOICE VARIEGATED PELARGONIUMS.

Mrs Pollock	Golden Vase	Rainbow
Sunset	Snowflake	Burning Bush
Yellow Belt	Picturata	Princess Alexandra
Golden Tom Thumb	Argyra	Fontainebleau

The above 12 choice varieties, suitable for exhibition, for 21s., basket and packing included.
Address, ALFRED FRYER, Nurseries, Chatteris, Cambridgeshire.
Remittances required from unknown correspondents.

NEW PLANTS.

AUBRIETIA CAMPBELLI (effective spring flower).
FUCHSIA RAINBOW BEAUTY (Novelty).
VERONICA FRUTICOSA GLAUCA.
CLIANTHUS DAMPIERI, in varieties (seed only).
Coloured Plates, post free on receipt of Stamps, of the following:—
AUBRIETIA CAMPBELLI, 1s. 1d.
CLIANTHUS DAMPIERI ALBIFLORA, 1s. 1d.
For description of the above see E. G. HENDERSON & SON'S NEW AUTUMN CATALOGUE, forwarded post free.
Wellington Nursery, St. John's Wood, London, N.W.

FINEST EXHIBITION HOLLYHOCKS.—200 First Prizes in four seasons have been awarded to HENRY MAY for Hollyhocks.
12 finest sorts, 50s.; 12 first-rate sorts, 30s.
12 good exhibition, 21s.; 12 good and effective, 12s
12 good for decoration, 9s., or 50s. per 100.
The above are fine healthy Plants, and the stock consists of many thousands.
DESCRIPTIVE CATALOGUES of the above are now ready, and sent free on application. The usual discount to the Trade.
HENRY MAY, The Hope Nurseries, Bedale, Yorkshire.

LEE'S SUPERB HOLLYHOCKS, saved from choice named Flowers, in collections of nine distinct colours, post free, 2s. 6d.
A DESCRIPTIVE CATALOGUE of FLOWER SEEDS, containing all the Novelties of the season, may be had post free on application.
JOHN & CHARLES LEE, Royal Vineyard Nursery and Seed Establishment, Hammersmith, London, W.

Superb Double Hollyhocks.

WILLIAM CHATER begs to remind the Admirers of this beautiful flower that now is the best time for planting it out to flower this year. Strong plants.
DESCRIPTIVE CATALOGUES, with instructions for its Cultivation; also prices of Plants per dozen, 100, or 1000, may be had on application.
Seedlings from best named varieties, 4s. per doz., or from 20s. to 30s. per 100.
Blomed Seedlings, with colours named, very fine, 6s. per doz., and from 30s. to 40s. per 100.
Seed saved from the finest named varieties, very choice mixed 2s. 6d. and 5s. per packet.
In Collections of 12 separate named varieties, extra fine, 10s.:
6 varieties, extra, 5s.
2 named varieties, all good show flowers, 7s. 6d.
6 do. do. do. do. 4s.
WILLIAM CHATER, Nurseries, Saffron Walden, Essex.

New Catalogues.

DOWNIE, LAIRD, AND LAING beg to intimate that their PRICED DESCRIPTIVE CATALOGUES of FLORIST FLOWERS, NEW PLANTS, GARDEN, FLOWER, and AGRICULTURAL SEEDS are now ready, and may be had free on application.
127, South Frederick Street, Edinburgh; and Stanstead Park, Forest Hill, London, S.E.

RICHARD SMITH'S SEED CATALOGUE contains a Calendar of Time for Sowing, particulars of Collections with Prices, Directions for Cropping well and economically, Soil, Manure, Depth, Distance, Season, Hardiness, Duration, Form, Height, Colour, Sowing, Use, Flavour, and other qualities described. This List free by post for one stamp. Seeds direct from the growers, the surest way to success.
RICHARD SMITH, Seed Merchant, Worcester.

RAYNBIRD, CALDECOTT, BAWTREE, DOWLING, AND COMPANY, Limited,
CORN, SEED, MANURE, AND OILCAKE MERCHANTS,
Address, 89, Seed Market, Mark Lane, E.C.; or Basingstoke.
Samples and Prices Post free on application. Prize Medals, 1861, for Wheat; 1862, for "Excellent Seed Corn and Seeds.

For Dahlias apply to

G. RAWLINGS, who is permitted to announce that he supplied Clark & Co., and Mr. Boshell, of the Borough, for 16 years. Nearly 200 varieties, at 3s. per doz.; New ones of 1865, including LEAH, CHAMPION, and GEM THEELER, 9s. per doz.
CATALOGUES are ready.
Waterloo Road, Romford, Essex, E.

Flower Seeds.

ENGLISH and CONTINENTAL NOVELTIES for 1866.—See DESCRIPTIVE LIST in *Gardeners' Chronicle* of March 10, p. 214; also March 17, in first column of the Newspaper part. Offered by
STEPHEN BROWN, Seed Grower, Sudbury, Suffolk.
CATALOGUES free.

RASPBERRIES.—Cornwell's, Seedling, 12s. per 100; Cuthbush's Prince of Wales, 16s.; Seinter's Semper Fidelis, £1; Carter's Prolific, 10s.; Red Prolific, 8s.; Double Bearing, 8s.; Evans's White, 10s.
STRAWBERRIES.—British Queen, Admiral Dundas, Sir Charles Napier, Eleanor, Oscar, Rifleman, Myatt's Eliza, Keen's Seedling, Prince of Wales, Black Prince, 2s. per 100, or 15s. per 1000.
Strong GOOSEBERRIES and CURRANTS, 10s. to 40s. per 100.
ASPARAGUS, 2 years, 2s. 6d.; 3 years, 3s.; 4 years, 4s. per 100.
ROBERT, late GEO. CORNWELL & CO., opposite Red Lion, Barnet, N.

GLENNY TESTIMONIAL FUND.—At a Meeting of Florists and others, including a deputation from the Tower Hamlets Floricultural Society, held at the Rooms of the Central Horticultural Society, 40, Essex Street, Strand, London, W.C., it was resolved that a TESTIMONIAL should be presented to Mr. GEORGE GLENNY, for his long and valuable services in the promotion of Floriculture, and a Committee was formed to carry out that object.
Contributions will be thankfully received by the Treasurer, Mr. J. A. CONNINGHAM, 40, Essex Street, Strand, London, W.C.; or by Mr. SAMUEL BROWN, Temple Gardens, London, E.C.
Post Office Orders to be made payable at the Post Office, Doveroux Court, Temple, E.C.

PRIZES, OPEN to ALL ENGLAND.
First Prize: a very superior Gold Watch, value 14 guineas.
Second Prize: a first-class Silver Watch, value 6 guineas.
The above Prizes will be given by the COMMITTEE of the COVENTRY and WARWICKSHIRE FLORAL and HORTICULTURAL SOCIETY, at their FLOWER SHOW, to be held at COVENTRY, on the 1st, 2nd, and 3rd days of July, in the Wood Street Exhibition Rooms, by the kind permission of Mrs. Christy. Copies of Rules and Schedules, and further information can be had on application to the Secretary,
MR. J. KIRK, 8, Queen's Place, Canbury, Kingston.

HORTICULTURAL SOCIETY of LIVERPOOL.
THE FIRST GREAT EXHIBITION of ROSES, ORCHIDS, FERNS, &c., JULY 3 and 4, in ST. GEORGE'S HALL. The following, and other liberal Prizes, will be awarded.

72	CUT ROSES, distinct (Nurserymen),	1 Truss,	£8, £6, £4.
24	" " "	3 Trusses,	£6, £4, £2
24	" " "	3 Trusses,	£3, £2, £1.
12	" " "	1 Truss,	£3, £2, £1.
24	" " " (Amateurs),	1 Truss,	£3, £2.
18	" " "	1 Truss,	£3, £2, £1.
12	" " "	3 Trusses,	£3, £2 5s., £1 10s
10	EXOTIC ORCHIDS (Open),	£10, £7, £5.	
6	"	(Amateurs),	£5, £4, £2.
18	" FERNS (Open),	£8, £6, £4.	
12	" "	£6, £4, £2.	
3	TREE FERNS	£4, £3, £2.	
12	ORNAMENTAL FOLIAGE PLANTS (Open),	£5, £3, £2	

Liberal Prizes will be awarded to Plants of Merit. The Hall is close to the London and North Western Railway Station.
Tickets and every information apply to ROBT. W. KER, Hon. Sec., 4, Bassett Street, Liverpool.

ROYAL HORTICULTURAL GARDENS.—A PERMANENT EXHIBITION of HORTICULTURAL ELEGANCIES, and HORTICULTURAL and AGRICULTURAL IMPLEMENTS. Amongst the Exhibitors may be quoted the Coalbrook Dale Co., Messrs. Rosher, Weeks, Green & Son, Hooper, Naylor & Co., Braby, Patent Concrete Stone Co., Whitwick Colliery Co., Chadwick, Bramah, Messrs. Bowers (Bark), Hacking Bros., Melliship & Harris, and about 30 others. There are still a few advantageous positions vacant, applications for which should be made early to
Mr. Fox, Royal Horticultural Gardens, South Kensington.

The Gardeners' Chronicle.

SATURDAY, APRIL 21, 1866.

MEETINGS FOR THE ENSUING WEEK.

TUESDAY, April 24—Zoological ... ... 4 P.M.
SATURDAY, " 28 { Royal Horticultural (Weekly Show), at South Kensington ... ... 2 P.M.

WE cannot boast of the architectural features of our metropolis—we dare hardly mention our Parks when we call to mind the scarecrow Elms and mutilated Planes which disfigure them. We chuckle over our treasures in the British Museum, but we stow them away, or at any rate a great number of them, in cellars or in sheds under the portico, just to show what the proper use of a portico is! We have a noble collection of pictures, but we keep them in a building that is a laughing-stock whenever it is mentioned. We have a very miscellaneous but most valuable assortment of useful and ornamental objects at S. Kensington, but that Palace of Art is at present fragmentary and kaleidoscopic. But if there be one of our National Institutions of which we Britons have a right to be more proud than another, that Institution is Kew. The Palm-house, the

Gardens, the Museums, the Herbaria—we can point to all these with satisfaction; they may not be perfect in all points; it would be strange indeed if we did not or could not find something to grumble at; but still, taken for all in all, Kew is *the* Botanic Garden of Europe, and is recognised as such by our continental friends. When these gentlemen shall have feasted their eyes upon the Great International Flower Show which we are preparing for them next month, the very next thing they will want to see will be the Gardens, the Houses, the Museums, the Herbaria of Kew. The fame of these has gone abroad; the reputation of the former as well as of the present Director is as well established on the Continent as it is here. Not alone in Europe, but in our several Colonies in every quarter of the globe is Kew known. It is hardly possible to estimate fairly the benefits to our Colonies that, directly or indirectly, have had their source from Kew. Nor can it by any means be denied that even greater results may accrue from the maintenance in a due state of efficiency of the several departments of these gardens, than any that have hitherto been arrived at. Much has been done, and is still doing, but even more may be expected in the future, if no unwise parsimony or official red tapeism be allowed to hamper the proper working of this vast establishment. Well might a question be put, as it was recently, in the House of elective wisdom, as to the unfinished state of the great temperate house—the winter garden at Kew. There stands the body, a handsome structure with guardian statues, sculptured cornucopias, and elaborately decorated vases—and there it has stood, for how long we are afraid to say; but the wings, which for architectural if not for horticultural reasons, should long since have been added—where are they? There are the terraces raised at considerable cost to serve as their bases—there are the workshops, the contractor's plant, and other preparations lying unused, as they have been for months—nay years; but the wings are nowhere, unless in Mr. COWPER'S imagination. There is the "temperate house," incomplete in itself, buried in the backwoods, from the want of proper means of access to it; set-off by workmen's sheds, which, however useful, are not ornamental, and assuredly were not intended to be permanent erections in such a situation; though from the fact of the building of a bald ugly brick engine-house within only a few yards of the building we begin to think, after all, that the sheds we have alluded to do really constitute an integral part of the Government design. However this may be, it must be a matter of profound regret that Government should continue to delay the execution of what has been long promised, and long since sanctioned, and of what is so urgently needed.

The original idea was to collect in this house plants representing the Floras of the various temperate countries of the globe, and specially of our own Colonies. Australia was to have its section, New Zealand its corner; China and Japan were to be represented in this department, California or Mexico in another, and so forth. In this way the collection might be rendered most interesting and valuable. Many plants might be grown which now find no place in the houses at Kew or elsewhere; others, once cherished inmates, but which from insufficient or unsuitable accommodation have disappeared, might be re-introduced, while others new to this country, and that do not admit of cultivation under present circumstances, might be and would be procured.

For its own credit's sake, if for no more general reason, we hope the Government will soon cease from stultifying itself in this matter, and that we may soon have the satisfaction of recording the completion of the "temperate house" at Kew.

IN returning to the subject of CLIMATE IN RELATION TO THE CULTURE OF FRUIT, we would direct attention to the Sun, the great source of heat, and hence the grand ruler of temperature. On a matter so elementary we can hardly expect to say aught that is not more or less known to most of our readers; but if we can promote accuracy of thinking, or aid in discriminating things which differ but are often confounded, we shall not quite lose our labour.

It is known that the great luminary is subject in itself to periodical variations, which to some extent modify its light-giving and heat-emitting properties. There is a procession of spots across its disk, of varying number and magnitude, which appear to recur in cycles of a little more than 11 years. It can hardly be doubted that these changes have an appreciable, though, perhaps, minute effect on the climate of a particular place when compared with itself in successive seasons. As yet, the conclusions of meteorologists on this subject are only provisional, but much is to be hoped from the researches of scientific observers already in progress.

The effects arising from the obliquity of the earth's axis to the plane of the ecliptic are much more conspicuous, and better ascertained. From this cause arise the successive seasons, with the grateful vicissitudes of warmth in summer, cold in winter, and the intermediate heat of spring and autumn. The vertical or oblique direction of the sun's rays has material influence on temperature, whether we consider the whole year, or a day and night of 24 hours, which is in fact a miniature picture of the whole year, midday and midnight corresponding to the semestral solstices.

We may first direct attention to the results of the geometrical position of the sun, simply considered. Within the tropics, the sun is vertical at some place during the whole year, at all places within the bounding circles it is vertical twice a year, and accordingly this vast belt, the Torrid Zone as it is called, is the warmest portion of the earth's surface. Beyond the Tropics the temperature sensibly declines towards the Poles. The warmth of summer and the cold of winter are due to the sun's obliquity, or distance from the zenith when on the meridian. At the Tropic of Cancer, for example, the sun is vertical at midday on the 21st of June. Suppose its rays are made to pass through an aperture, a foot square, in a horizontal screen, on level ground they would cover exactly 144 square inches. At noon of that day at London the same bulk of rays (that is, rays passing through an equal aperture, the plane of which is perpendicular to their direction) would be spread over an area of 163.2 square inches, while at noon of the winter solstice they would extend to an area of 629.9 square inches. In mathematical language these areas are as the co-secants of the angles of elevation. On the other hand, the intensity of light, and as it is supposed of heat, the quantity being the same, is inversely as the spaces covered, or directly as the sines of the same angles. Calling then the effect of light or heat, when the sun is vertical, 1, the corresponding effect at London at noon of midsummer is .882, and at midwinter is .259, that is, in the latter case it is little more than one-fourth of what is due to vertical sunshine. It is to be observed, however, that these proportions strictly apply only to horizontal surfaces. Every one must have observed how snow on a bank or ridge facing the south is thawed, while snow on level ground, and still more on ground inclined to the north, remains unmelted. Indeed, this variation of heat has reference almost exclusively to earth temperatures. It has little direct influence on the temperature of the free atmosphere. A plant or tree, growing perpendicularly from the ground, is at least as favourably placed, relatively to the sun, in winter as in summer; a wall tree on a south aspect is more favourably placed, for the sun looks right into the face of it; and the sun is three millions of miles nearer the earth in January than in July; and yet there is no perceptible growth in the winter season. The black-ball thermometer tells the same tale. It may, indeed, be presented to the sun exactly in the same way in January and in July; if it is allowed to hang perpendicularly, the position is rather in favour of the former month; yet the Chiswick tables, taking an average of five years (1836-1840 inclusive), give the maximum direct radiation of the sun as 58°.1 for January, and 106°.7 for July; in other words, the effect of the direct rays of the sun in winter is little more than half of what it is in summer. It is evident, therefore, that we must seek for some other cause of the remarkable decrease of winter temperatures.

One main cause is to be found in the absorption of light and heat while passing through the atmosphere. It is obvious that if there is absorption at all, its amount must bear some proportion to the length of track which is traversed by the sun's rays. The atmosphere being, as it is supposed, a spheroidal envelope of our terraqueous globe, the track of light increases as the altitude of the sun decreases, and consequently it is much longer in winter than in summer. Hence, too, the absorption of light and heat is greater in winter than in summer. It is also longer in the morning and the evening than at midday; and therefore we can look calmly on the rising and setting orb, while our eyes blench under its meridian rays. The scientific treatment of this absorption of light and heat is attended with great difficulties. In the mathematical department, the resources of the higher calculus are required; and the physical facts on which the calculations must be based are of a very indefinite kind. We do not know the real height of the atmosphere, and we cannot tell when it begins the work of absorption. We are equally ignorant of the actual absorption of vertical light, which must form the first datum in our computations, LESLIE assumes that 25 per cent of vertical light is absorbed in passing through the atmosphere, SECCHI 28 per cent., Sir JOHN F. HERSCHEL 33 per cent., and Principal FORBES, founding on certain observations made by himself, in concert with KÄMTZ in Switzerland, as high as 46 per cent. Here, it will be observed, there is complete uncertainty. In the article *Climate*, in the "Encyclopædia Britannica," there is a table exhibiting the absorption of light, and the consequent diminution of heat, at different elevations of the sun. The track passed through by the vertical rays being 1, and the light transmitted .750, the track traversed by the meridian rays at the summer solstice at London is stated at 1.133, and the light transmitted is .722; while at the winter solstice the track would be 3.84, and the transmitted light .331. It is hardly worth while to cite these figures, for however exact may be the mathematical reasoning, the data are not at all reliable. They give us however some insight into the theory of absorption. Here again the analogy of the year and the day reappears; for in the course of the day, as well as in the year, the elevation of the sun, and the corresponding amount of light and heat, are continually varying. This diminution of the direct calorific effect of the sun is not without its counterbalancing advantages. The absorption of heat by the atmosphere supplies a warm medium in which plants and animals exist with safety, and without which they would speedily freeze when the sun had withdrawn its rays. It is also the source of great part of the radiation of heat into infinite space, and so diminishes the direct radiation from the surface of the earth. It is besides the cause of the warmth of the summer winds, by which a part of the balmy influences of the tropics are wafted to our less favoured climes.

We propose to continue the subject in our next.

— FROM India we learn that the Travancore Government has established a garden for the culture of the CINCHONA at Peermade. Dr. CLEGHORN, in reporting upon the progress of this establishment, considers that attention should be specially given to the cultivation of Cinchona and Tea, and that the garden should be placed under the superintendence of a skilled European horticulturist.

— We may again remind those who intend to be EXHIBITORS at the Great International Horticultural Show that the time has come to make application for space. The time fixed for this is somewhat earlier than usual, but there is a reason for this. We are to have a Catalogue of the International Exhibition, which will doubtless prove to be a valuable memento of what will probably be the grandest display of horticultural skill ever made. Now to have this prepared in time to be of use at the Show, the returns must be obtained earlier than usual. It is a very small demand to make on individual exhibitors, as a little forethought will enable them to supply the information required approximately correct, and those who obtain the proper forms will find that provision is made to receive corrections up to within a few days of the Show.

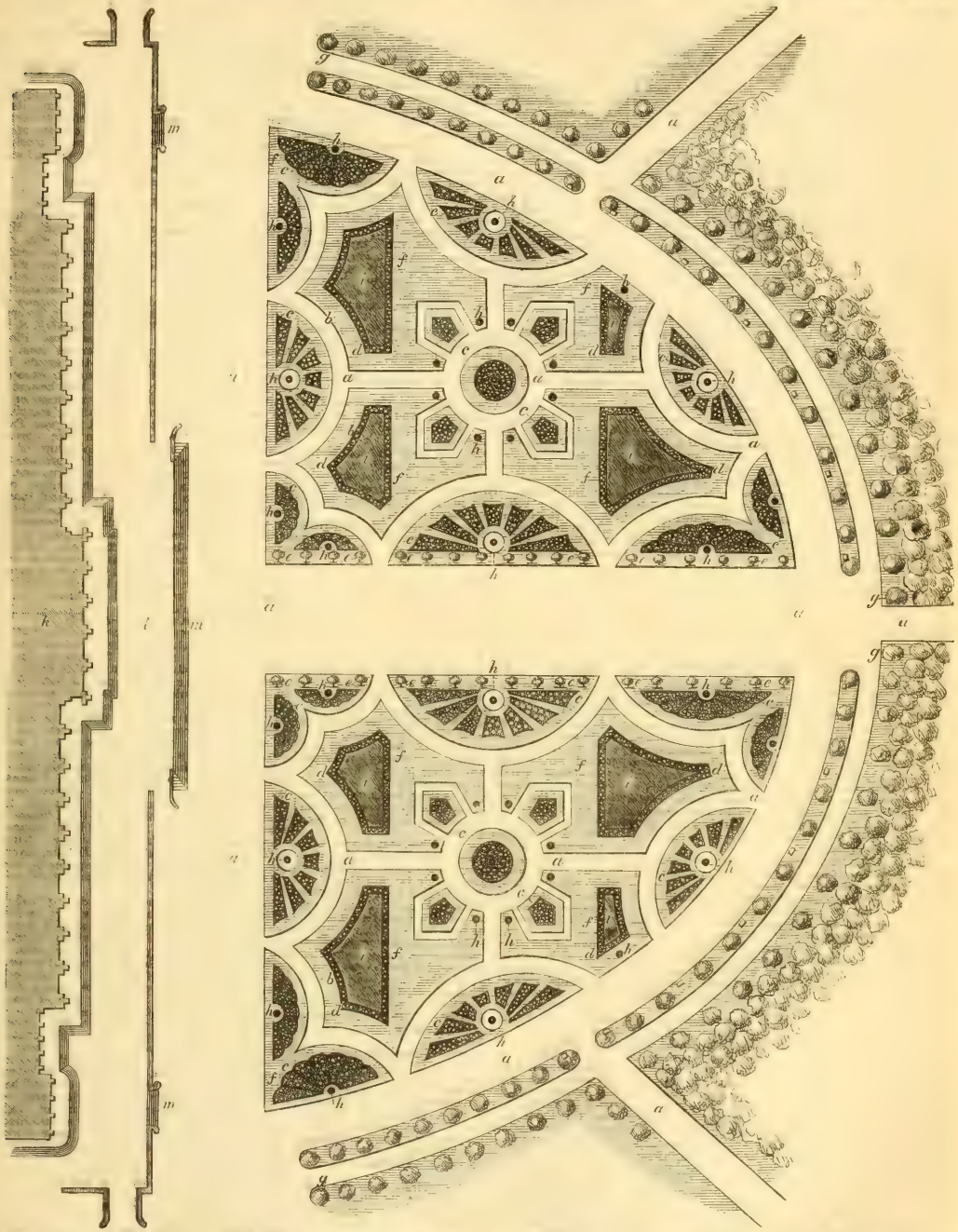
— Some of those who propose to exhibit in the Class of TENDER VARIEGATED PLANTS at the 'International' may be glad to know that, in answer to an application for information on the point, it has been decided by the Committee that Agaves and Yucca aloifolia variegata are to be accounted tender. These will form an index to other subjects in respect to which the question might arise. Evidently, therefore, the construction put upon the wording in this class, is, that it simply means 'indoor' plants, and stands in opposition to the class of hardy or 'outdoor' subjects.

— We understand that the Royal Horticultural Society intend to hold a meeting early in May, of which due notice will be given, for the purpose of ascertaining the views of the Florists and Horticulturists of this country, in regard to the French Exhibition of 1867.

FLOWER GARDEN AT SANS SOUCI.

IN the *Gardeners' Chronicle* of 1865 (p. 1159) appeared a notice of the Royal Gardens of Sans Souci at Potsdam. It was there mentioned that the New Palace is the summer residence of the Crown Prince and Princess—"our Princess Royal." The general decoration of the noble gardens at this place had been of a mixed Dutch and Italian character, little consideration having been paid to flowers and colour, so that they appeared to fall far short of the high taste

shown in the other arrangements. Something of this must have been apparent to her Royal Highness, who has prepared and caused to be laid down the beautiful design accompanying these remarks. The Garden contains in all about 2 English acres, and looks singularly appropriate from the terrace promenade as commencing the long avenue, with the large fountain in the distance. Her Royal Highness has been introducing our most popular bedding plants largely, and



a. Gravel walks. *b*. Box edging. *c*. Flower beds. *d*. Border of herbaceous plants (Hemerocallis) to beds of Ivy (*f*). *e*. Avenue of red flowered Chestnuts, parallel with the long walk. *f*. Grass. *g*. Avenue of Platanus occidentalis, with statuary. *h*. Orange trees. *i*. Ivy beds. *k*. Palace. *l*. Terrace. *m*. Steps.

doubtless in a little time the gardens of Sans Souci will contain as much colour as the most noted of our English ones do at present. *John Fleming. Cliveden.*

THE PROPERTIES AND USES OF OAK BARK.

A CORRESPONDENT wishing to know something of the properties and uses of Bark, or, as gardeners call it, Tan, I have endeavoured in the following brief remarks to supply the information which he requires.

I presume it is Oak bark that is alluded to. The properties thereof may be described as threefold: first, the very useful one of tanning hides into leather; secondly, that of generating heat when laid together in a body; and thirdly, that of fertilising and improving the texture of soils.

With regard to the first of these properties, I have only to observe that when the bark has performed the office of tanning the hides into leather, it then becomes refuse, and is thrown out of the pits, to be in most cases got rid of in the easiest manner possible; and this is the point at which it becomes eligible for the use of the gardener as a generator of heat. For this purpose it was formerly in very much greater repute than it is at the present day, the invention of heating garden structures by means of the circulation of hot water through pipes and gutters, having almost entirely superseded its use; and both on the score of economy, the steadiness, and command of heat, and general efficiency, this source of heat is in every way preferable. Yet at the

same time, as there are possibly many circumstances in which it may be desirable to make use of a material easily obtained and cheaply worked, I will endeavour to detail a few of the uses to which Tan may be put for the gardener's purpose. In the first place I can only travel in an already well-beaten track when I remark that it may be used for the purpose of furnishing a bottom-heat in pits for the culture of the Pine-apple; also for the same purpose in a bark stove for the culture of tropical plants, and for furnishing the bottom-heat to pits in the propagating house. For all the above and other like purposes it *may* be employed, but I repeat that, unless urgent circumstances require its use, and it is almost if not quite on the premises, it is not worth the trouble, expense, and inconvenience which its use occasions.

As, however, there may be such circumstances, I will just add that the mode of preparing it for the above purposes is simple enough. The first great principle is to avoid overheating, to which it is very liable, and consequently it must never be used in a fresh state, as the heat is often very violent at first; and even after what is considered a due preparation the greatest watchfulness is necessary, as the heat sometimes rises in a mysterious manner, so high even in a single night as to burn the roots of the plants which are plunged into it. In order to guard against this, whenever pits are to be renovated or entirely filled with new material, it should be laid out under an open shed and turned over twice a week until the violent heat is exhausted, and has become not only general through the mass of bark, but sweetened, that is, losing that rank nauseous smell which is characteristic of fresh bark. To assist this process it should be slightly moistened at each turning, and in about five weeks it will be safe to remove it to the pit. It is always desirable to mix a portion of old bark with the new, as it helps to correct the tendency to a violent heat, and also to sweeten it: but when from necessity it is all fresh, the greatest care must be taken not to plunge any pots into it until it is clearly ascertained that the heat is steady, and rather declining than on the rise. For example, when the bottom-heat ranges at 90°, the pots may be placed on the top preparatory to plunging, and after a few days, when the heat is rather on the decline, they may be plunged either wholly or partially according to the judgment of the operator. These little niceties of practice cannot be described,—they must be acquired by attention and experience.

In a space of time, varying according to circumstances from three to six months, the heat will be getting considerably below 70°, when it will be proper to remove the pots, and moisten and thoroughly stir up the bark; this will probably generate a temperature of 80° or more, which will last for some time; but when it declines much below that temperature, it will be necessary to add fresh tan, which has been previously prepared by frequent turnings as before advised. The quantity required to be added will at all times depend upon the state of the tan in the bed; if that is in a very much comminuted or decomposed state it will be best to pass it all through a moderately fine sieve to get out all the dust and fine stuff, and then to add a sufficient quantity of newly prepared material to fill up the bed, after which the whole should be well moistened and thoroughly mixed up together, guarding as before against the violent heat likely to arise at first, and which will be more or less according to the quantity of newly-prepared material added, and which indeed forms the criterion as to the depth to which the pots may be plunged. These are the principal operations connected with the uses of bark as a means of supplying bottom-heat.

I may also mention that I have seen very splendid Melons grown in a frame placed on a large heap of tan which had been thrown on one side, and in which the heat had become partially exhausted. In this situation Melons flourished in a most healthy and fruitful manner, but of course they were subjected to the usual routine of management as regards soil, watering, &c., and the bark could only be considered as a substitute for a hot-bed, thus showing that where bark is plentiful there is no reason why it should not be brought under the routine of preparation, and be used instead of stable litter for the purpose of supplying bottom-heat both for Melons and Cucumbers.

The most economical use however which can be made of the refuse bark of the tanner's yard is its application as a manure to certain kinds of soil. Perhaps, when thoroughly comminuted and decomposed into the condition of black mould, it may be applied with advantage to any kind of land, but, generally speaking, its application will be found most beneficial to cold strong lands. When prepared either by decomposition, incineration, or charring, it has been found in practice, that its application to such lands has been more lasting in the good effect it has had upon them, than would have been produced by double the quantity of farmyard manure, which may partly arise from the slowness of its decomposition. Nor is this to be wondered at when we consider that the ashes of Oak bark are found upon analysis to contain seven per cent. of soluble salts, three of earthy phosphates, 66 of earthy carbonates, 1½ of silica, and two of metallic oxides, all of which substances contribute very much to supply the waste consequent upon exhaustive cropping, as well as to improve the texture and increase the fertility of soils. *John Cox.*

NOTES ON NEW FRUITS.

[The following notes on various new fruits are selected from the recently published reports of the Fruit Committee of the Royal Horticultural Society.]

Bailbrook Seedling Apple.—This Apple, sent by Mr. Cooling, of Bath, was raised at Bailbrook, Batheaston, near Bath, and belongs to the Irish Peach class. It is a beautiful and very early dessert Apple, tender-fleshed, with a balsamic flavour; recommended as a handsome, early, dessert Apple, ripe in the beginning of August.

Lord Burghley Apple.—A seedling Apple, of unusual excellence for March, the season at which it was shown. It was exhibited by Mr. House, of Peterborough, and is of medium size, roundish, slightly flattened, somewhat bluntly angular on the side, and ridged on the apex, this ridging being caused by the prominent termination of the side angles. The skin is of a deep golden yellow, becoming a clear shining crimson on the sunny side, the whole surface dotted over with large russet specks, like the Golden Reinette. The eye is somewhat closed, and set in a deepish basin, which is uneven in consequence of the angles which terminate there. The stalk is half-an-inch to three-quarters long, frequently a mere knob. The flesh is yellowish, very tender, leaving but little marc in the mouth, very juicy, sweet, and with a fine Pine flavour and rich aroma. This delicious Apple appears as if it would keep till June. Apart from its excellent quality, it is highly ornamental, and has a tenderness of flesh and flavour similar to Cox's Orange Pippin. It received a First-class Certificate.

Oulton Russet Apple.—A seedling raised near Oulton Park, and exhibited by Mr. Wills, while gardener at that place. It is a handsome-looking medium-sized fruit, somewhat flattened in shape, and ridged round the apex. The flesh is tender, and has a very pleasant flavour. The tree has the merit of being a constant bearer, according to Mr. Wills's observations during four seasons.

Frogmore Early Bigarreau Cherry.—This was raised by Mr. Ingram, of Frogmore. It is of large size, almost white where shaded, and with a brilliant crimson cheek where exposed to the sun. The flesh is remarkably tender and richly flavoured. It received a First-class Certificate.

Frogmore Early Crown Cherry.—Also a seedling from Mr. Ingram, of Frogmore, and about 10 days earlier than May Duke. It is a small red variety, and when fully ripe of rich flavour.

Large Purple Gean Cherry.—From Messrs. Rivers. This comes in after all the Bigarreaus are over.

Love Apple Cherry.—This variety belongs to the Late Duke class. The fruit is very large, an inch across, with a colourless juice, and furrowed like a Tomato. It was sent by Messrs. Rivers.

Black Bordeaux Grape.—Received by Messrs. Rivers under the name of Muscat à gros grains; it was much more sugary than the Black Hamburgh, and a month earlier.

Diamant Traube Grape.—A fine large form of Chasselas, with a pure Sweetwater flavour. The bunches are large, and the berries unusually so. It is a valuable early grape, ripening in a cool house in August, and it will hang as long as the Barbarossa without exhibiting any symptoms of decay. This was awarded a First-class Certificate.

Early Silver Frontignan Grape.—This Grape has a very thin skin, and is 8 or 10 days later than Golden Frontignan, and the same number of days earlier than the Black Hamburgh. The berries are also larger than Golden Frontignan. It came from Messrs. Rivers.

Early Smyrna Grape.—The Muscat de Smyrne of the French; it is a form of White Frontignan, not so early as Golden Frontignan, but hardier, and will probably succeed out of doors; at all events it will ripen in an ordinary greenhouse. From Messrs. Rivers.

Golden Frontignan Grape.—This is the Muscat Salomon of the French. It is three weeks earlier than the Black Hamburgh, and produces bunches from 12 to 18 inches long. The colour is golden or deep amber. From Messrs. Rivers.

Lateroade Noir Grape.—A large oval Grape, with dark black purple skin, and covered with a thin grey bloom; the flesh is tender, but not richly flavoured, in which respect it is inferior to Lady Downes' Grape.

Muscat Champion Grape.—This is a most valuable acquisition, having berries as large as those of the Mill Hill Hamburgh, with a strong admixture of the Muscat flavour. It came from Mr. Veitch.

Oulton Park Hybrid Melon.—This Melon was raised by Mr. Wills. It is of medium size, round, and with a salmon-coloured, not quite scarlet flesh. The flesh is wonderfully tender and melting, and very rich in flavour. It received a First-class Certificate.

Frogmore Golden Peach.—A seedling freestone variety raised by Mr. Ingram. It is not so large as Crawford's Early, nor so delicious as that and some other of the yellow-fleshed sorts.

Lord Palmerston Peach.—A seedling raised by Messrs. Rivers, of Sawbridgeworth. It is of large size, and rather pale colour, having only a little red on the side next the sun; and the flesh is remarkably firm, and richly flavoured. It was raised from a variety obtained from the Pavie de Pompone, and retains in some measure the character of its grandparent, in being very deeply stained with red at the stone, and having the flesh rather adherent. This will prove one of the best, as it is one of the largest of late Peaches. It received a First-class Certificate.

Slindon Park Peach.—A seedling from the Late Admirable, raised by Mr. A. Stewart, of Slindon Park. It is a freestone, as large as the Late Admirable, and of excellent flavour for a late kind. It received a First-class Certificate.

Seedling Peach.—A seedling Peach was exhibited by Jonathan Clarke, Esq., The Mall, Chiswick, gathered from a standard 10 or 12 years old, and which bears well every year. The fruit was very large, roundish, tinged with red next the sun; flesh pale, slightly rayed with red at the stone, from which it parts; it was a little astringent, but from its very large size, and ripening on a standard, it was recommended to be tried against a wall. The tree has leaves with reniform glands.

Prince Consort Pear.—A large and handsome Pear, in shape somewhat resembling a very large Marie Louise or Van Mons Léon le Clerc, and measuring sometimes as much as 5 inches in length, and 3½ inches in width. The skin is yellowish-green; the flesh yellowish, firm, very juicy and rich, with a sort of Gansel's Bergamot flavour. This, which is a seedling raised by the Rev. John Huyshe, of Clysthydon, near Exeter, received a First-class Certificate.

Autumn Compôte Plum.—A seedling raised by Messrs. Rivers, from La Délicieuse. It is a valuable culinary Plum, ripening a week before the Belle de Septembre, and much resembling the Victoria in the habit of the tree, and in bearing abundantly.

Belle de Septembre Plum.—Also sent by Messrs. Rivers. It is a valuable culinary Plum; its usual time of ripening is towards the end of September.

Gordon Castle Plum.—A large obovate greenish-yellow Plum, which promises to be of considerable merit. It was raised at Gordon Castle, and was sent by Messrs. Lee, of Hammersmith.

Home Correspondence.

Melons in the Open Air.—I am anxious for advice about how to grow Melons in the open air. My only authority on the subject is Loudon, who says:—"Mr. Williams, of Pitmaston, has for several years been trying to give increased hardiness to the Melon by growing it in the open air. He does not state what varieties he grows, &c." Any of your correspondents, therefore, who will kindly give me the names of any varieties that will be likely to succeed in the open air, will greatly oblige me. *W. Bayley, Llandaff, S. Wales.*

Double Flowers on Variegated-leaved Plants.—Important aids are sometimes derived from deeper sciences and wider views than the agents in the common branches of industry can be expected to reach. It will be readily allowed, that however these may help, nevertheless they can by no means supersede the improvements which unlearned sagacity and vigilance produce. It is stated in your Paper of March 31, that "we have yet to learn a great deal before we rightly understand the nature of double flowers or the conditions required to produce them." I should consider that statement a true one, but I should doubt the supposed fact pointed out by Prof. Morren, who holds that "variegated leaves and double flowers never occur on the same individual." It may be wrong for an old and out-of-the-way gardener to controvert any statement made by persons more learned than he can lay claim to be; but there are no many positive assertions made from time to time, some of which have scarcely a leg to stand upon, that persons must be cautious in laying hold upon everything that is presented to them. No doubt we shall soon be told—

> The bees shall loath the flower and quit the hive,
> And Saughs (Willows) on boggy ground shall cease to thrive.

"B. S." tells us (p. 290) that one of Fortune's variegated Camellias, which has lately flowered in Mr. Bull's establishment, is calculated to strengthen Prof. Morren's position. I have a Camellia plant in flower just now, which I think would have a tendency to weaken the position taken up by the Professor in question. The leaf enclosed will show that it has not got an overdose of chlorophyll, and the flowers are double enough and large enough, for one that I measured was fully 5 inches in diameter. Surely there were variegated Camellias with double flowers in this country long before Mr. Fortune went to China. I think mine can tell an older story, but I should require a Dictionary of Dates at my elbow to be certain. If there is any truth in the claims of the Chinese to an extravagant antiquity, many wonderful things must have been produced in that country. Ninety-six millions of years might satisfy Darwin, Lyell, and Bowring regarding the origin of species by variation, starting from the lowest organisms of the old red sandstone. *P. M. P.*

Culture of Tobacco, and Manufacture of it for Fumigating Purposes.—If your readers will try the following method of manufacturing tobacco after it is grown, it will save them a deal of expense where tobacco-paper has to be purchased for purposes of fumigation. Every gardener knows that the Tobacco-plant grows freely in this country out of doors in the summer time. Therefore all that is necessary to be done is merely to sow the seed in March in shallow pans or boxes, and give them a little heat. The seed will soon germinate, and when the plants are large enough to get hold of with finger and thumb, prick them into other boxes, as you would do Celery. After this operation they will require a little heat to start them into growth again. Harden them to the weather by degrees, and by the end of May they will be ready to plant out in the open ground. I have also seen the seed sown out of doors at the end of May, and germinate pretty freely; but sowing as just directed is the best plan. The next thing is to choose a nice rich warm corner of the garden for the plants; let it be where they will have the full benefit of sun, and as much shelter from high winds as possible. They should be planted a yard apart every way, and eagerly defended from the ravages of slugs, which are sure to devour the young plants if not watched. The best way is to place two or three Cabbage leaves round each plant, and if Mr. Slug is about, you will easily apprehend him. As the plants increase in growth they will be all the better for being staked, and they must not suffer from want of water during dry weather. Let me now show to the best of my abilities how tobacco may be manufactured advantageously for fumigating purposes. The leaves will be ready for gathering about the beginning or middle of September, but before that time many of the under leaves will have begun to decay. So, as soon as they are observed to change colour, they should be cut from the plant, and preserved until the general crop is gathered, which ought to take place on a nice

sunny day. Cut all the leaves from the plants, and lay them in the sun to dry, turning them over several times during the day. If the night is likely to be wet, collect them into a heap and protect them from the rain. When the leaves have become perfectly withered, and not likely to heat when put away, twist them together as you would do in making a hay band, and coil them into a barrel or box; serve the stems in the same manner, close all tightly up, and let them remain so for about two months. At the end of that time take out a few of the leaves and put them into a vessel, adding about half a gallon of water and 1½ lb. of raw sugar: let the whole boil slowly for an hour. Untwist the rest of the leaves, and sprinkle the face of each with a little of this decoction, laying the one on the top of the other as you proceed, and put them evenly into a box, which has a lid made to fit the interior, by which you will be able to press the whole firmly down. In a short time the tobacco will be fit for use, and capable of killing any insect with which plants may be infected, if judiciously applied. *Brassica.*

Social Position of Gardeners.—The scheme of the Royal Horticultural Society in connection with the Society of Arts relative to gardeners' examinations is a very good one, and provided its advantages could be extended to every properly qualified gardener, in the shape of a certificate according to his attainments, it would be all that could be desired as a means of separating the really deserving gardeners from those spurious pretenders whose name is legion, and who are one of the principal causes of low wages, and many other evils which beset the gardener. I fear, however, that the scheme of the Society is not sufficiently known, for in many instances the gardener has not an opportunity to procure the leading horticultural publications, by which he would be informed of what is taking place relative to the improvement of his profession, &c. The Society would, in my opinion, confer a great favour on gardeners by occasionally causing an advertisement to be inserted, fully explaining their whole scheme, the local examinations, &c., together with the names of the places where the examinations are to be held, the forms of examination, and other necessary details. Were this done, few of us would remain in ignorance of what every gardener ought to know. I assure "W. P. R." that if there are 10 places in this county where gardeners can be examined, I have not yet been able to find them out. *F. N., Worcestershire.*

Vitis opaca, a Vine of rather wide distribution through the warmer parts of East Australia, is remarkable for producing as many as from eight to ten large tubers to each plant. Mr. Thonet, an intelligent observer of the vegetation around Rockhampton, found that the produce of one plant in tubers might weigh as much as 20 lb. to 25 lb. These tubers, though insipid, are eagerly sought by the natives for food. *F. M.*

Cattleya amethystoglossa.—My friend H. G. Rchb. fil. says: "This species has not been well understood in England, Mr. R. Warner having unfortunately represented the splendid white and amethyst variety of Cattleya guttata, which we have called Prinzii, in lieu of the true plant." The misfortune, *if* any, arises from Mr. Linden having many years ago sent to England, under the name attached to it, the plant from which my drawing was taken. Mine is the original plant, so named by Linden, and if one cannot depend on a botanist like Linden for the correct name of an Orchid, on whom can we depend when a said-to-be new Orchid is advertised for sale on the Continent? *Robert Warner, Broomfield.*

Gardeners' Wages.—I think when "An Employer" hears me through to the end he will admit that, while claiming an equitable wage for gardeners, I have been equally careful to be just to employers. I see no reason to fear the evil he adverts to. In the present day there is no danger of the supercession of gardening by other pursuits. The demand for gardening pleasure and gardeners' skill, is everywhere growing. Our request for a higher wage will neither arrest its progress, nor limit the number employed. As a matter of fact, low wages does not mean the employment of greater numbers. The number out of work is greatest when wages are lowest. The chief distinction between a high and low wage system, is not in the number, but in the character of the men employed. Those who give the lowest wage employ the worst men in the labour market, and leave the best idle. Those, on the contrary, who give a better wage employ the best, and leave the worst unemployed. It is easy to see which mode of payment is the best for the employer. Neither is a low wage equivalent to cheapness of labour. It is generally just the opposite of this. In those counties where wages are lowest, the absolute price of any given quantity of work is invariably the highest. It is emphatically so in gardening. Where the gardener is worst paid, the expense of keeping the garden in proportion to its produce and size, is nearly always the highest. And it must be so until man can be converted into a mere steam-engine. The fact is, the question of wages cannot be solved apart from moral considerations. After all, it is only love that can make our cheerful feet in swift obedience move, and that can give that promptitude of head and nimbleness of finger upon which all effective work ultimately depends. Under such a motive power, which, however, can only be inspired by just treatment, a greater amount of work can be performed, infinitely more profitable and pleasant to "An Employer," than any that can be extracted under the tight strain of the low-wage regimen. *D. T. Fish.*

Gardeners' Royal Benevolent Institution.—Amidst the masses of noble plants which will fill the banks of the ample erection for the International Exhibition, might not room be found for an inscription calling attention to the Gardeners' Benevolent Institution? A wider knowledge of the Society's existence is so desirable, that so good an opportunity should not be passed over. I cannot believe that the fact of there being so noble a charity amongst us would lessen us in the respect of our foreign friends who may be present; if they will help us we would thank them—if not, they may, thinking charity begins at home, go and do likewise. That many home supporters would be added to the subscription list I think you will agree with me in believing. *G. P., Jun.*

Foreign Correspondence.

On some American Oaks, Beech, and Chestnut.—On looking over the recent volume of DeCandolle's Prodromus, treating of the Cupuliferæ, I think the learned author is mistaken in several matters relating to some American trees; and as I gather from an expression in one of your notes, that American trees interest many of your readers, I take the opportunity to point out the errors in question.

Quercus heterophylla, *Mx.*, is classed as a variety of Q. aquatica, *Walt.*; but its proper alliance is with Q. Phellos, *L.* Dried specimens of heterophylla have, by reason of their polymorphism, a strong resemblance to Q. aquatica, but the living plants show clear distinctions. In reference to Q. aquatica, his "propter folia perennia" deserves more weight than it receives. The leaves of the heterophylla fall at once with Q. Phellos; but in this latitude the leaves of Q. aquatica stay on green till near Christmas. Of course this alone would be no specific distinction, but it is one of many. No person seeing them growing within a few miles of each other, but would decide at once the affinity was with Q. Phellos. DeCandolle says of Q. heterophylla, "Unica arbor olim in fundo Bartrami prope Philadelphiam;" but of late years it has been found by Dr. Joseph Leidy, Edward Tatnal, and other eminent botanists, in New Jersey and other places, and by myself in Delaware. But the most satisfactory proof of all is that of two seedlings from the original tree (the old tree being many years dead), one is a perfect Phellos, the other (now in the garden of the Marshall family—Humphrey Marshall, the author of the first work on American trees—"Arbustum Americanum"), a true Q. heterophylla.

Quercus Lecana, *Nutt*, is retained as a good species. I have not been able to get living specimens, but the prevailing impression is that this also is but a variety of Q. Phellos or Q. imbricaria, which two often run pretty near each other.

Quercus tinctoria, *Bartram*, is reduced to a variety of Q. coccinea, *Waugh*. Many of the characters given by authors as marking each kind, are certainly common to both; but there are some which permanently distinguish them not often noticed. The scales of the cup in Q. tinctoria are free at the apex, giving the cupule a burry appearance. In Q. coccinea the scales are closely appressed, and the cup has a smooth, polished, mahogany appearance. The colour of the flesh of the nut of Q. tinctoria is of a deep orange colour; in the Q. coccinea it is white, or very faintly tinged with yellow. These are constant specific differences. Practically, the trees cannot well be confounded. The bark of the Scarlet Oak is clear and smooth, resembling, often exactly, Q. rubra. That of Q. tinctoria is extremely rugose, often more so than any American Oak; the timber, too, is very distinct.

Referring to Fagus, M. De Candolle retains F. ferruginea, *Ait.*, distinct from F. sylvatica, *L.*, rather, as it would seem, in deference to the views of the late Dr. Bromfield; for when he comes to Castanea, where the relative differences between the European and American forms are precisely the same, he reduces C. americana to a variety of C. vulgaris, *Lam.*

You did me the honour, several years ago, to reprint from the Proceedings of the Academy of Natural Sciences a paper on the relative differences between allied species of American and European trees (see vol. for 1862, p. 666). These distinctions are particularly well marked in the cases of the Chestnuts and Beeches. The relative differences, as there pointed out, are so strongly marked, and so constant, that I am sure, when understood, no American tree, so far as at present known, will be classed otherwise than as having a distinct organisation of its own. The singular uniformity of these differences is surprising. Having described how the American species of Fagus differs from its ally of Europe, the same characters exactly describe the differences between the Planes, Lindens, Oaks, Ashes, Birches, and all other genera that have representatives on either side of the Atlantic. When one understands this difference in one case—say, for instance, between Fagus ferruginea and Fagus sylvatica, he can tell at once the American from the European allied species, in all cases, where he has had before no experience, even though the name and order of the plants should be quite unknown to him. *T. M., Germantown, near Philadelphia.*

Australian Ferns.—While lately engaged in examining critically all the Ferns hitherto found in Australia, I was reminded of the likelihood that very many of our southern species could be grown without protection in the south of Britain. In No. 36 of my "Fragmenta," an enumeration of all the species is printed, and of these I regard at least the following to be hardy in the milder parts of Britain, viz.:—Lycopodium densum, L. laterale, L. scariosum, L. volubile, Selaginella uliginosa, Psilotum triquetrum, Tmesipteris tannensis, Schizæa fistulosa, S. dichotoma, Todea africana, Gleichenia flabellata, G. dicarpa, G. circinata, Trichomanes venosum, Hymenophyllum demissum, Cyathea medullaris, Alsophila australis, Dicksonia antarctica, Alsophila Leichhardtii, Davallia dubia, Lindsæa linearis, Adiantum formosum, A. hispidulum, Blechnum striatum, B. cartilagineum, B. lævigatum, Lomaria capensis, L. discolor, L. vulcanica, L. lanceolata, L. alpina, L. fluviatilis, L. Patersoni, Cheilanthes tenuifolia, C. distans, C. vellea, C. hirsuta, Pteris falcata, P. incisa, P. comans, P. longifolia, P. umbrosa, P. arguta, Polypodium australe, P. Grammitidis, P. scandens, P. rugulosum, P. serpens, Doodia caudata, D. aspera, Aspidium attenuatum, A. furcatum, A. flabelliifolium, A. bulbiferum, A. flaccidum, A. umbrosum, Nephrodium decompositum, Aspidium coriaceum, and A. hispidum. Evidently many of the New Zealand Ferns need no housing in the South of England if places were artificially prepared for them resembling the localities in which Hymenophyllum tunbridgense spontaneously occurs. Vast numbers of Ferns might also readily be transferred from North America and extra-tropical Asia to such spots. An assemblage of Ferns of all parts of the globe as far as they would endure the British clime, if made in one of your great institutions, would be very interesting. *Ferd. Mueller.* [Dr. Mueller's views as to the "hardiness" of many of the foregoing Ferns must be taken with considerable limitation.]

Societies.

Royal Horticultural: *April 14 (Weekly Show).*—Mr Turner of the Royal Nurseries, Slough, on this occasion various handsomely grown and well-flowered Azaleas, and an interesting group of Roses in pots was furnished by Mr. Wm. Paul. Hyacinths, Tulips, and other bulbous plants in blossom, were shown by Messrs. Cutbush, Bartlett, and Young, from all of whom also came collections of miscellaneous plants. Messrs. Lee and Mrs. Hooke likewise showed in the last-named class.

April 17.—W. Wilson Saunders, Esq., in the Chair. After the election of 15 new Members, and the affiliation of two Societies, the usual announcement of awards was made, and the Rev. M. J. Berkeley offered a few remarks on the different subjects exhibited. Aspidistra Sieboldii, from Mr. Bull, which has leaves sometimes all white, and at other times wholly green or striped with white, was not considered to present a distinct case of variegation. It was mentioned in regard to the genus Aspidistra that it is remarkable for the singular structure of its flowers, especially of the antheræ, which bears considerable resemblance to a Mushroom. Crinum capense, a flowering plant of which was exhibited from the Society's Garden, was stated to belong unfortunately to an unpopular class of plants. It is however sweet-scented, and it was mentioned that Dr. Herdman attributed the perfume of C. capense could be infused into other species they might possibly become greater favourites. To Pitcairnia tabuleformis, which has a flat table-like habit, and to Nidularium Pinelli, a plant nearly related to the Pine-apple, attention was also directed, as well as to Psychotria macrocephala, from Mr. Bull. Concerning the last, a fine plant with large deep green leaves, and close terminal panicles of fleshy snow-white blossoms, it was stated that it was possibly not a Psychotria at all, but a Rudgea. The genus Psychotria is nearly allied to Coffea. Emetic properties are assigned to the roots of one of the species, and a decoction from another (P. noxia) is said to be used in Brazil for poisoning mice and rats. Magnificent cut blooms of Rhododendron Auckandii, each measuring some 5 inches across, were shown by Mr. Cox, gr. to J. Mills, Esq., of Heileaf. Those of R. Griffithii, shown at the last fortnightly meeting, were more tubular than Mr. Cox's blossoms, which otherwise greatly resembled them. An exhibition of cut Camellias from the Society's Garden at Chiswick, next came on the table. These were the produce of three plants of an old kind called the Middlemist's Red, which at a time were kept in pits under glass, but which have now for many years occupied a position in the open air on the north side of a wall, where they generally flower freely, and this season are literally masses of bloom. From Mr. Edmonds, gr. to the Dowager Duchess of Sutherland, were magnificent blooms of many of the finer kinds of Camellia, and also of the large showy C. reticulata, a noble tree of which, loaded with blossom, now stands in the centre of the Conservatory at Chiswick House. A cut specimen of Wellingtonia gigantea, bearing male cathkins, was shown by Mr. Cox, making the second time that the Wellingtonia has been shown in that condition. A basketful of Peziza lanuginosa was contributed by Mr. Edmonds, who found it under Cedar trees at Chiswick House. It grows like Truffles beneath the surface, and until recently was not considered to be indigenous to Britain. Examples of it of English growth were first furnished by Mrs. Sumner; Mr. Berkeley therefore proposes to call it P. lanuginosa Sumneriana. It was mentioned at the last meeting that experiments were being made at Warwick in regard to the growth of Mushrooms. There are now in operation there with respect to the growth of esculent Fungi. It is generally imagined that only one kind of Mushroom springs up in artificially prepared beds; but the fact is that various kinds not unfrequently make their appearance. In addition to ordinary Mushrooms there are also many other varieties, both of these, and of other eatable Fungi, with which people are unacquainted; and it is with the view of bringing some of these into notice that the experiment in question has been undertaken. A case was mentioned in which Boletus edulis had been found a good substitute for butcher's meat; and during the autumn months the amount of food yielded by field Mushrooms to the country poor is very considerable. Mr. Berkeley mentioned that the books written by Dr. Badham, Mr. Cooke, and Dr. Hogg on esculent Fungi might be consulted with advantage. Now that the view of diffusing more information respecting these esculents than at present exists, a gentleman well acquainted with such matters has been appointed to make drawings of all eatable kinds of Fungi for the Kensington Museum.

Mr. Bateman said that he had received after a few remarks on Epidendrum MacCarthiæ, the "Rainy-month flower" of Ceylon; but as his plant of that fine species had through some accident not arrived, he would defer his observations on it till next meeting. He alluded to the recently-introduced Epidendrum erubescens in terms of high praise, adding that it was not only the finest of Epidendra, but also one of the most beautiful of Orchids. Concerning Schomburgkia tibicinis he explained that it was named generically in compliment to the late Sir Robert Schomburgk; that the word tibicen meant trumpeter, and was applied with reference to the pseudobulbs, which are long, large, and hollow, and which are used by boys in Honduras as trumpets, much in the same way as rustic urchins in this country use cow-horns, to which the pseudobulbs in question bear great resemblance. Native specimens, however, are often tenanted by fiery ants, the severity of whose sting renders their dislodgement by no means a pleasant occupation. Allusion was then made to various unusually well-flowered Trichopilias from Messrs. Veitch, to which Mr. Bateman's Challenge Medal has been awarded for the greatest number of Orchids furnished during the last two years to the Society's fortnightly meetings, and to whom also a Lindley Medal was awarded on this occasion. A magnificent spike of Odontoglossum Pescatorei, from Mr. Pilcher, gr. to S. Dickson, Esq., was also adverted to as an example of what cool treatment and skilful cultivation can effect, giving visions of beauty such as could never have been realised under

the old mode of managing such plants. Single blossoms of this fine species bear considerable resemblance to those of O. Alexandræ, but the mode of production in each case is very different, those of the last-named kind being borne in racemes, while Pescatorei has its flowers in branched panicles. After alluding to a small plant of the white-blossomed Dendrobium Heyneanum, shown by Mr. Dean, gr. to the Earl of Harrowby, Mr. Bateman directed attention to two species of Callixenc (Luzuriaga), viz., erecta and polyphylla, miscalled radicans, plants belonging to the same family as the Lily of the Valley, and which under proper treatment may be made to confer a grace and a charm on every greenhouse. The kind called radicans Mr. Bateman received some 10 years ago along with Rhododendrons from Messrs. Standish & Noble. He tried it out of doors, but even a mild winter nearly killed it. He then planted it in the bed of a conservatory, where it covered the ground with a dense leafy carpet, unburned in all directions, till all length its slender branches caught hold of the stem of a plant of Berberis nepalensis, up which they ran, and apparently acquiring fresh life and vigour as they progressed, they soon covered the Berberry stem. They did not even object to climb over the harsh hairy stem of Tree Ferns. While on the ground no flowers were detected, but when thus supported delicate little white blossoms were produced in abundance. Plants of this Callixene were sent by Messrs. Standish & Noble to the Royal Gardens at Kew, and it was figured in the "Botanical Magazine" in 1860. In this country for that year it is stated to come from the extreme south of Chili, where it is found running over trunks of trees, enlivening them with its bright green leaves, glaucous beneath, and its drooping white flowers.

Mr. Wilson Saunders stated that he had the Callixene in question, but that with him it did not run freely, a circumstance which was attributed to its being kept in a pot.

April 17 (*Floral Committee*).—Mr. Salter received a First-class Certificate for a bright red flowered Camellia named Princess Mary, which promises to be a great acquisition. From Mr. Green, gr. to W. W. Saunders, Esq., came a Scuticaria, Amorphophallus papillosus, and a Peperomia, with shining deep green leaves prominently overlaid with silver along the principal veins. From Messrs. Veitch came Trichopilia suavis superba, a charming variety, more brightly coloured than the species; the original, with velvety red flowers; Chysis bractescens, and C. Limminghii, both with colours unusually well brought out; the beautiful yellow-lipped blush-flowered Dendrobium Farmeri; Rhododendron Countess of Haddington, white flushed with pink, of which we have spoken in praise on former occasions; varieties of the sporting Azalea called punctulata; Raphiolepis ovata, a valuable white-blossomed evergreen Japanese plant, which will probably turn out to be as hardy as the common Aucuba; the showy Imantophyllum miniatum; Anthurium Scherzerianum, and last, but not least, the well-named Tacsonia calycina. An Azalea named Spotted Queen came from Mr. Kinghorn, and one or two Cinerarias from Mr. Hopwood, of Cheltenham. Kæmpferia ovalifolia was again shown by Mr. Mundell, gr. to J. C. Pickersgill, Esq. Mr. Williams, Nurseryman, Kortis Green, Hackbridge, had two seedling varieties of Tropæolum, one of which, called Beauty, had pale primrose-coloured blossoms, spotted with mulberry: the other, which was called Attraction, had bright yellow flowers, spotted with orange-red. These will, if sufficiently profuse, make valuable plants for bedding purposes. From Mr. Rendle's Garden came two beautiful standard trees of the Persian Lilac, loaded with flowers; various Rhododendrons, Azaleas, Cinerarias, Kalmias, Dracænas, the white-blossomed Eranthemum tuberculatum, Thyrsacanthus rutilans, and Berberis stenophylla, the last a useful, free-flowering, hardy shrub, especially suitable for rockwork.

April 17 (*Fruit Committee*).—Mr. Ruffett, gr. to Viscountess Palmerston, furnished various Apples in an unusually good state of preservation. Among them were Cox's Orange Pippin, Mitchell, Parmain, Scarlet Nonpareil, and Esopus Spitzenberg. These were stated to have been kept on open trellis-work in a low slate roofed lean-to well-ventilated fruit room. Specimens of what are called "Japonicas" in Covent Garden Market, were shown by Mr. Bleasdale, of Wellbeck Square. They are the fruit of Zizyphus sinensis, of which an account was given by Mr. Fortune at p. 102. Those shown, however, were stated to come neither from China nor Japan, but from the South of France. The seedling Apple shown at the last meeting by Mr. Ivery, of Dorking, has, it was stated, been named Bakhuis's Pearmain.

Notices of Books.

Bhotan and the Story of the Doar War, including Sketches of a Three Months' Residence in the Himalayas, and Narrative of a Visit to Bhotan in May 1865. By Surgeon Rennie, M.D., &c. London: John Murray, Albemarle Street. 1866.

This is the dreariest narrative of political blundering and military disaster that has ever fallen in our way. At best it would be difficult to dress up in an attractive form the dismal narrative of the Hon. Ashley Eden's mission to the Bhotan Court, which terminated directly in unheard of insults to the representative of the British Government, and indirectly in a series of military operations that have resulted in the loss of many British lives and more national honour; but it would not have been difficult so to chronicle their disasters and describe the scenes in which they occurred, as that the result should have proved useful reading to a large class at home and in India. Such, however, is far from the case; for Surgeon Rennie's work is neither a clear narrative nor a good history; whilst with regard to his observations on the Himalaya mountains, their inhabitants, scenery, and productions, his descriptions are so poor and inaccurate as to have no value at all.

The work commences with an account of Bhotan and Thibet, in the 4th page of which we are told that the celebrated Hungarian Csoma de Koros studied several years at Lhassa! a visit to which capital was, as Mr. Rennie, who appears to have visited his tomb at Darjeeling, should have known, the frustrated object of that great scholar's journey to India. It was at a convent in Western Tibet that de Koros resided, and prepared for his Lhassan expedition, en route to which place he died at Darjeeling.

Chapters 2 and 3 contain more preliminary matter, and the three following detail the incidents of Mr. Eden's ill-advised mission. According to this, our Envoy was treated with studied insult and opposition, from the day he entered Bhotan, till that on which he fled from it; the insults being so gross, that but for the dead flatness of Dr. Rennie's style, our blood would boil as we read their details. As it is, we are already too familiar with them from the graphic accounts in the Indian newspapers to dwell on them here; the climax to them was, the extortion by insult rather than by force of a treaty purporting to cede large portions of British territory to the Bhotanese, which was a summary turning of the tables on the Envoy, who came to seek redress for grievances on the part of his own Government.

Mr. Eden has been both praised and blamed for his conduct in this matter. Surgeon Rennie goes so far as to justify him. In our apprehension such an action under such circumstances is neither strictly laudable nor blameable, whilst the term justifiable as little applies to it. Excusable it may have been—probably was. Mr. Eden had others to consider besides himself, whence it became a question of expediency, involving in all probability the lives of his party, as well as his own.

To follow the military operations for the recovery of our lost national honour along the jungly tropical malarious frontiers of Assam and Bhotan is our next task, and a very weary one it is. With a proverbial eye to the main chance, Britain's first step was to annex a good slice of the Bhotanese territory bordering on its own, and one sure to pay if it could only be held, and defended from aggressions by its former occupiers. To effect this two columns of troops were marched into it, which captured, after some disasters, successively various Bhotanese forts that threatened its tranquillity. This done, all was pronounced snug, the forts were garrisoned, troops withdrawn, and our wounded vanity soothed by the prospect of substantial revenues. But no sooner were our backs turned, than down came the savages, and attacked the garrisons, whose defenders were in some cases *repulsed*, whilst in others they *evacuated* their positions, and in still others *retired* from them—euphemisms which, being interpreted, signify that we were well licked by the savages, and expelled from our forts.

But one course remained for the British Government—to try again, and with this trial commences Surgeon Rennie's participation in the affairs of Bhotan. Heretofore ten chapters have been compiled from hearsay and documents; we have now the record of an eye-witness, of what, if we are to accept his accounts, (and we believe them to be entirely unadorned in every sense,) is as astounding a series of fatal blunders as ever dogged the march of British troops. Whatever may have been the difficulties of conveying troops into the jungles of Assam and Bhotan, there can be none in a march through the healthiest districts of green and tranquil Bengal, where it is studded with European civil stations and thriving Indigo and Cotton plantations. Now let us see how these matters are conducted in the centre of Indian civilisation, and at the headquarters of military rule.

The narrative commences with a scene of indescribable turmoil at the Calcutta Railway Station, where "a scene of great confusion prevailed, * * * the men of the regiments making free use of very expressive language towards the native servants, * * * their colour admitting of an additional expletive being added to the combination most approved by the British soldier."

The train, which was to have started at 8.30, did not move till 11.30; it then seems to have gone on till 4 P.M. on the following day, stopping only for the men to take their meals, and not for sleeping. Arrived on the banks of the Ganges, they proceeded to cross that river on the same midnight, under sousing rain, against which there was no adequate protection: next, the flotilla disperses during a strong breeze in the mid-stream, many of the boats stick fast in the mud, and having no provisions, the troops there had to be fed on the river by light boats sent up the stream for supplies; finally, none of the boats reach the opposite shore till 4 P.M. on the following afternoon; others are stayed in during the third day, "the men wet, cold, and hungry; tents and beds saturated," &c. The result was inevitable: cholera broke out in the camp, and they buried as they went on,—marching through swamps under heavy rain, sleeping on the ground without tents and bedding, bullocks used for transport dying, drivers running away; the natives fleeing before the advancing troops to escape from being pressed, along with their cattle, into the service—and so on. All this, be it remarked, in the most civilised and longest inhabited parts of our own territories! Page after page is occupied with recitals of wretched mismanagement and its consequent disasters, in the middle of which the author consoles himself and the reader with the following reflection: "I believe that the transport arrangements were made by the Bengal Government with as much care as it was practicable, under the circumstances, to exercise," &c.

After terrible hardships, the troops arrive at the Bhotan frontier and recapture the forts. This ends the narrative, but since then a treaty has been signed, whose results are not yet manifest, and of which the best excuse that can be made for its dishonourable terms is that (as Dr. Rennie expresses it in cumbrous language) "a conciliatory policy towards Bhotan is a question of diplomatic and sanitary expediency."

The rest of this work is occupied with vague and inaccurate accounts of the natives of Sikkim and Bhotan, their origin, manners, customs, religion, &c., and with the natural productions of the country; as however Surgeon Rennie knows nothing of the languages, nor, as it would appear, even of Hindustani or Bengali, and as he never lived amongst the natives, or indeed spent more than three months in their country, he cannot be expected to have obtained even a rudimentary acquaintance with these subjects; some of his statements, indeed, are simply ludicrous.

The woodcut illustrations are in character with the rest of the work; there are 10 in all, of which seven (not specified) are taken from Dr. Hooker's "Journal of a Naturalist in the Sikkim Himalaya," some of them representing scenes Dr. Rennie never witnessed, with their designations suppressed, or actually misrepresented! The map is in character in point of contents and execution, and the whole is little creditable to the literature of the day.

BOOKS RECEIVED.—The *Popular Science Review* amply sustains its well-earned repute in this number. Dr. Hicks contributes an interesting article on that favourite plant with microscopists, the Volvox globator. Mr. J. T. Taylor gives an account of Mr. Woodbury's system of "relief printing" with a sunbeam, one of the many scions of an art that may be said to have been unknown 30 years since. Dr. Lionel Beale comments upon certain entozoon-like bodies in the muscles of animals destroyed by cattle plague. These creatures, however, are found under other circumstances, and do not seem to be directly connected with this direful malady. Dr. Voelcker, after referring to Mr. Morton's paper on "London Milk," gives a "short account of the chemical and physical characters of good, bad, indifferent, and adulterated milk, and of a ready means of obtaining, with at least some degree of accuracy, the extent of adulteration to which milk is frequently subjected." Dr. Voelcker looks on the hydrometer—or rather lactometer—as affording the best indications for general purposes of the amount of water added to milk. Out of nine samples analysed by the Professor only one was pure; some of the others were adulterated with 30 to 40 per cent. of water. Our space does not allow us to allude to the other papers in this Review, but we may mention that the Scientific Summary is one of its most useful features.—The *Technologist* for April contains a list of the timber trees and useful plants of the Bijnour Forest, Himalayas, by Dr. Stewart. This is not a mere catalogue of names, but comprises also remarks on the quality of the timber, its price, and other circumstances of interest alike to the botanist and to the merchant. This enumeration will be useful for reference, in the same publication is a short notice of the Bael fruit and its properties, which latter, judging from our own slight experience, are less important in this country than they are, if report be true, in India and Ceylon.—The *Dictionary of Chemistry*, Part XXXIII., extends now to the article Potassium. Sticklers for expressive nomenclature in the case of plants will hardly be disposed to admire their pet system as practised by the chemists. No doubt "Ethylene-hexethyl-phospharsonium," or "Triethyl-allyl-sulpho-carbo-phosphonitride" are very significant appellations, but they are not euphonious.—The monthly issue of *Science Gossip* must be anxiously awaited by its readers, and deservedly so. The present part contains an article on "Bath Bricks." How few of us know what these common household articles really are—of course they do not come from Bath.—We can only say of *Frazer's* this month that it begins with Plato and Dr. Whewell, and ends with the native tribes on the Zambesi River, but the reader will find much to interest him *between* the two.

CATALOGUES RECEIVED.—Of Foreign Catalogues, we have from *Fr. Förer* (Stuttgard) a Fruit list, which among other things, is rich in Strawberries.—*Metz & Co.* (Berlin), a general list.—*L. Van Houtte* (Ghent), a very full list of stove, greenhouse, and hardy subjects, ranging from Pansies to Palms.—*H. Laurentius* (Leipsig), a full and varied list including good collections of Camellias, Azaleas, Tree Pæonies, &c.—*Thibaut & Keteleer* (Paris), a general select Catalogue of good things, of all sorts from Orchids to Verbenas.—*A. Verschaffelt* (Ghent), a brief list of novelties, with a woodcut of Verschaffeltia splendida.—*Vilmorin-Andrieux et Cie.* (Paris), a list of choice seeds, and Supplement thereto.—*Groenewegen & Co.* (Amsterdam), an extensive list of stove, greenhouse, and hardy plants, prefaced by an account of several novelties, among which we notice Hoya maxima and Cibotium assamicum.—*J. A. Bruce & Co.* (Hamilton, Canada West) chiefly devoted to seeds, but contains a list of hardy native Grapes, including some of Rogers' Hybrids, which are said to combine the hardiness and vigour of the native with the richness of the foreign parents. They were produced by hybridising the wild Mammoth with Black Hamburgh and Chasselas.

Florists' Flowers.

THE CALCEOLARIA has well-nigh ceased to be a florists' flower in the same sense as the Pansy, Pink, Verbena, &c. It has retired from the vantage ground of being one of those subjects to the improvement of which men were devoting their best energies. A named variety of the herbaceous Calceolaria is a thing of the past; and where are those admirable shrubby varieties that Mr. J. Cole, of St. Alban's, gave to floriculture 12 years ago? The Florist of 20 years ago, and even later, is "dying out." In his normal form he was a "distinct species" in the horticultural world; now he has become a kind of floricultural recluse, or else, in the onward march of "new ideas," he is being swallowed up in the order of "natural selection" by that higher form the Nurseryman, who in his turn is being absorbed by that superior development, the Plant Merchant.

Fifteen years ago, and later, named herbaceous Calceolarias were annual creations of engrossing interest. At an earlier date Messrs. Woodhouse and Holmes, and later on Mr. Stone, and with him Mr. Constantine, and that widely-renowned Calceolaria grower, Mr. Major, of Knosthorpe, and more recently Mr. Cole, were continually producing new and higher forms of this once popular flower. Its fame culminated with the appearance of the fine shrubby varieties raised by Mr. Cole, though within the last few years a new interest has sprung up, quickened into life by the exertions of Mr. James, of Isleworth. Mr. Cole's endeavours were directed to the production of a class of flowers which should combine a stouter, hardier, and compacter growth, with the gorgeous heads of

bloom of the "annual kinds," as the common forms of the herbaceous Calceolaria have been termed. Of this class Gem was the type, a variety that excited considerable interest at one of the Regent's Park Shows in 1856. These were designated "sub-shrubby" kinds, and were presently displaced by those remarkable shrubby varieties which were the result of patient and skilful hybridisation on the part of Mr. Cole. They were grown and exhibited by Mr. Turner for two or three years, and then were scarcely seen after. The only present exhibitor of shrubby kinds is Mr. Burley, of Limpsfield, who has some very fine sorts, especially of dark scarlet and crimson colours. Such varieties are Garibaldi, Victor Emmanuel, &c., are very telling as exhibition plants, while in the conservatory they must be of great use. Some considerable difficulty has been found in wintering them, as they betray a tendency to mildew; they do best stowed away in a sheltered position in a dry pit, the bottom of which should be strewn with coal ashes, and into which warmth can be directed through the medium of hot-water pipes. During the short damp days, which is also a period of comparative rest, they should be sparingly watered, and the foliage kept scrupulously dry, and plenty of air should be admitted on all favourable occasions. In the growing season they should not be allowed to become pot-bound; the roots accumulate rapidly, and at this stage a check will frequently prove fatal to the plant. The shrubby kinds are often found to be more difficult to grow than the "annual" plants, and they have also been found to do well in a cool climate, like the north of England.

The splendid dwarf herbaceous varieties that have been produced at the London shows by Mr. James, of Isleworth, represent *the* form that will prove most acceptable to Calceolaria growers. The habit of the plants is all that can be desired, the foliage being stout, short, and stiff; the flowers are unusually large, of fine form, and varied in colour. Some of the dark-coloured flowers are intensely rich and attractive. Flowers of a yellow ground, very beautifully spotted, generally prevail, and the plants produce their blossoms in rich profusion. As exhibition plants they are unrivalled. With these high qualities the strain appears to partake of a robustness of constitution that carries them through the dreariest and most severe weather with perfect safety. To be kept clean, to be kept growing, and to have plenty of air, are the three great essentials in their culture, if it is not a work of supererogation to iterate such well-known facts. I am not aware that any of Mr. James's flowers have been or are to be sent out as named kinds. I imagine they are named by him for the purpose of exhibition, and for that only. They are therefore propagated by seed.

By Calceolaria growers, two sowings are invariably made; the one about the middle of July, the other about the second week in August. Pans should be used, and be half filled with drainage. The soil used should be sifted very fine, and be compounded of light loam, which should form the major part of the soil, peat, leaf-mould, and silver sand. A good sprinkling of the last ingredient is desirable. Previous to sowing, the soil must be watered in every particle, and the seed sown as thinly as possible, and then some very fine soil scattered over it. The pans can be set on the shady side of a cool house, or under a north wall, with a hand-glass placed over them; and when it is requisite to administer water, it should be done through a very finely punctured sprinkling pot. Great care is requisite in doing this; if the water be given heavily, it will wash away the extremely minute seeds. When the plants are perceptible, more air can be given, and, as soon as they are large enough, they may be pricked off into other pans prepared as for the reception of the seed. They will soon grow to size, and may then be potted off into small 60-pots, using a compost of good turfy loam coarsely sifted, thoroughly rotted dung, leaf-soil, and silver sand. They should be placed in a cool frame, and as soon as established be allowed plenty of air. By successive shiftings as the pots become filled with roots, they will at last reach their blooming pots, which should be from 8 to 12 inches in diameter, according to the size of the plants. To make good specimen plants, the side shoots should be kept pegged down; they will soon throw out roots into the soil, and bring an accession of strength to the plants. Stopping can be resorted to if it is wished to retard the blooming season, and manure water can be administered just before and during blooming time. Bedding Calceolarias shall be treated of in another paper. *Quo.*

The Apiary.

Bee Culture: Hives.—There is a very good form of straw hive with wooden top made and used in Devonshire, and supplied by some of the manufacturers of apiarian appliances, which is well adapted for the use of ladies and the more timid operators. This is called "the Revolving-top hive," from its having the top formed of two separate pieces, the upper one of which being secured by a pin or screw in the centre, is capable of being easily turned round. The credit of the invention of this hive was claimed by Mr. Milton, and probably was due to him; but I believe that others also lay claim to being the originators of it, having probably worked out the idea about the same time. As in the hive last described, a straw cylinder is constructed of 14 or 15 inches in diameter, and 8 or 9 inches in depth, according to the locality. The lower or fixed division of the top may be of ¾-inch wood, planed only on the upper surface. This, as well as the other half of the top, must be strengthened by suitable clamps to prevent warping. It may be secured to the straw hive either by working a narrow band of straw around it, or by long pins forced down through wood and straw, taking care that the surface is left quite smooth and even. Three holes of 1½ inch diameter must be cut within a circumference of 12 inches, corresponding in both boards. The upper board is of half-inch stuff, planed smooth on both surfaces. The hive, as usually sold, has a projecting thumbscrew in the centre for fastening and unfastening the top. This is very greatly in the way, and is easily dispensed with. It prevents the possibility of working one good-sized super only, instead of three small ones. A common broad-headed screw, immoveably fixed in the lower division, is quite as efficient. It is well to mark on the outside edges of the boards where the communication is open or shut, otherwise it might be difficult to ascertain the exact state of the case when the super is *in situ*.

I do not recommend any windows in these straw hives, but they are very easily added if desired. Windows not only weaken the stability of the straw bands, but also contribute very much to the evil of condensed moisture within the hives. The entrance must not be cut in the straw, but in the bottom board. If this hive is to stand in a bee-house, the bottom board may be made of any shape most suitable in appearance or adaptability to the place. If it is to stand on a separate pedestal, I would recommend the board to be 23 inches long by 19 inches wide, of ¼-inch stuff. It is best made of two 12-inch wide boards rabbetted, or ploughed and tongued, and strengthened by two projecting dovetailed shaped cross-pieces. Each cross-piece is secured by two screws driven in about an inch from the junction of the two boards, and in no other place. This allows the board to swell or contract without the danger of warping.

For straw hives, as well as some of the wooden hives, a rabbet of 1 inch wide at the back and on the sides, and 5 inches wide at the front, by ⅜ inch in depth, may be cut away in the board, forming a raised platform for the hive of 17 inches in diameter by ⅜ inch in depth, in which the entrance way, 5 inches wide, is to be cut out. This must be level for 2 inches, and then sloped up to nothing near the centre of the board.

Cases suitable for this and many other descriptions of hives, may be constructed in the following manner:—The wood is of half-inch stuff, 18 inches in diameter by 11 inches deep inside measure, nicely dovetailed together. It rightly made the outside ought, when in position, to be flush with, or perhaps an eighth of an inch beyond, the edge of the sides and back of the board. A projecting porch of 5 inches wide by 8 inches in height in the centre, and sloping to the sides according to the pitch of the roof, covers and protects the part of the board which forms the alighting place. A 2-inch moulding is attached to the sides and back of the case, and is brought down an inch below so as to quite cover the edges of the bottom board. This prevents the possibility of any wet penetrating to the lower part of the interior.

A second case is made of the same diameter, but only 9 inches deep, with the same protecting moulding, and without the porch. This is to be used only when supers are being filled. The roof, which is best made of the simple span-shaped character, should be of good width for protection from sun and rain, and so constructed as to fit either of the divisions of the case equally well. Several apertures for ventilation should be cut under the eaves at the two sides, and in the centre both at front and back, which may if liked be protected by perforated zinc from the inroads of spiders and other noxious intruders. This case is well adapted for the majority of the hives which I have found most serviceable, and will be described more particularly in connection with the Frame Hive.

The outside of the roof and cases should of course be painted, but on no account must any part of the bottom board or the hive itself be so treated. The best colour is a light stone, as being cooler in summer and warmer in winter. A pretty effect is made by painting the upper surface of the roof of a slate colour, and the remainder of light stone, with the mouldings of a darker shade of the latter.

Present Management.—If not already done, now will be a very good time for a thorough inspection of hives. If frame hives are in use, I recommend a complete transference of combs and bees into clean boxes, with fresh bottom boards. Search for the queen and note the strength of the population, the quantity of brood, honey, &c., and the dryness or otherwise of the interior. Cut away any very mouldy comb. Clean cases from dirt, spiders, and other nuisances. Scrape, and wash if necessary, the hive and board removed, and when dry, substitute for the next colony to be operated on.

With hives whose combs are immoveable, a change of bottom boards, and a removal of the lowermost of any mouldy comb that may be visible on turning up the hive, together with the cleaning of cases and other surroundings, is all that can be accomplished. It is often very remarkable how much life and energy this simple proceeding seems to infuse into the bees. The season is so very backward, that there will be little further required until the end of the month. No supers must be put on until the hive seems almost full of bees, as much injury is often done by giving room injudiciously. Should any of the hives appear destitute of food, a few ounces may be administered on the top twice or three times a week until a decided improvement in the season takes place. *S. Bevan Fox.*,

Bee-hives.—It may perhaps be interesting to some of your readers to know that the bee-hives recommended by Mr. Fox (see p. 343) are in all respects precisely similar to hives which I have had made, and which I have used for some years; and that I consider them not only simple and cheap, but certainly, of all the different kinds that I have tried, they are the best for the bees, and the most profitable for the bee-keeper. A wide and rather shallow circular straw hive, with a top board made as described, and with octagon wooden boxes for collecting the honey, are simple, and are at the same time, I believe, as good for all practical purposes as it is possible for hives to be made. I was not aware that any one else had used hives of this construction. I am just having some made with the top board 18 inches in diameter and the straw 7½ inches deep, to try which will produce the most honey. *C. W. Strickland.*

Natural Bee-hive.—A few days ago a Silver Fir, measuring 107 feet in height, was cut down at Packington Hall, the seat of the Earl of Aylesford. The tree was sound to about 40 feet from the ground. Here was a large hole which formerly had been a favourite resort of jackdaws, but it was now found to be tenanted by a very thriving colony of bees. The tree was sawn above and below this hive, and about 5 feet in length of it was conveyed into the garden and placed on a stand. The bees are not the least injured by the fall of the tree, or by the removal of their establishment, which is full of honey, and the bees are at work. *J. W.*

Garden Memoranda.

Osberton Hall, the Seat of G. S. Foljambe, Esq.—This is situated about three miles from Worksop on the Retford road, and is described by Loudon "as a seat surrounded by thriving woods, verdant glades, and watered by a rivulet, which expands itself into a lake of great natural beauty." Within the last six years the whole of the grounds have been very much improved, and so much altered that the place may be termed remodelled. The gardens occupy some 20 acres. Among more recent improvements may be mentioned a terrace adjoining the mansion, and also a newly laid down lawn. Some idea may be formed of the labour required to effect these works, when it is stated that upwards of 14,000 loads of soil had to be moved. The boundary on the park side is finished off with a wall and balustrade. On the north, leading to the gardens, it is ornamented with a neat grassy slope, and flights of steps. On the terrace are flower beds cut out on the Grass, and during last summer Beaton's Variegated Nosegay, Lady Middleton, and Stella Pelargoniums were conspicuous. At the bottom of the steps already mentioned is the lawn just alluded to, part of it is used for croquet, and a more beautiful piece of lawn for that purpose could not be wished for. From the lawn start two walks, one leading to the rockery, the other by a nice waterfall, to the principal part of the gardens. Crossing a rustic bridge we come to a new piece of broad greensward which has been formed with the intention of making it into a Pinetum, The Cembran Pine and the Wellingtonia gigantea have been planted here on trial, and judging from their vigour they appear to like the situation. From a second rustic bridge, thrown over a narrow part of the lake, a fine view of the water can be obtained. Here is another recently laid out piece of ground, which is now termed the American Garden; here Berberis Darwinii, Andromedas, &c., grow most luxuriantly, as well as some fine patches of Pampas Grass. This garden, which is of an oval shape, has a border 16 feet wide, all round it, and also a walk 6 feet wide. At the further end, leading from the mansion, is a quaint old summer house and arch, built of stone. Passing under this a third rustic bridge is arrived at, near which, with an ornamental seat round it, is a fine old Pinus sylvestris. This brings us to the long principal walk, on either side of which are flower beds, Crystal Palace fashion, and behind them, on either side, stand fine specimens of Cembran Pine, which give this walk a noble appearance. Roses trained on umbrella trellises are placed in the open spaces behind the beds with good effect. It was from this walk last year that a first glimpse was obtained of Iresine Herbstii, which has been so popular at Osberton. Great credit is due to Mr. Bennett, the gardener, for bringing this useful bedding plant under especial notice; its colour and habit are good, and it is easily propagated, which is not an unimportant consideration. In four oblong beds along this walk, the Iresine was used as an edging to Christine Pelargonium, while the centre beds contained the same plant, edged with Mrs. Pollock. The most striking beds were those last mentioned. Christine and Bijou Pelargoniums edged with Viola cornuta, and Perilla nankinensis edged with Flower of the Day Pelargonium, were also good combinations. At the end of this walk, in an elevated position, stands a beautiful church, and on the left, below the level of the pathway, is the principal flower garden, in which the beds are cut out on the Grass. This piece of ground itself is apparently upwards of 3 acres. Mr. Bennett stated that it took 24,000 bedding plants for this garden, including the beds along the principal walk. This garden is reached by means of a flight of steps, a broad walk running down to the lake, dividing it into two compartments. Here Lord Palmerston, Pink Pearl, and Helen Lindsay Pelargoniums, and Calceolaria amplexicaulis were last season particularly conspicuous, as were also four beds of Amaranthus melancholicus, edged with Golden Chain Pelargonium. A little in advance, on an elevated spot, stands the conservatory, in front of which is a balustraded wall, which cuts it off from a tracery garden below. On the way to the conservatory a long series of trellis work covered with Roses is passed under. Near here is the trial ground for new bedding plants; it is laid out in diamond-shaped beds formed with Gentian; between the beds coloured gravels are used, giving the whole a clean and lively appearance.

In the conservatory are two stages filled with flowering plants, varying in respect to kinds according to the season. The back is covered with Camellias, and in the centre is a neat little fountain. Leaving the conservatory by means of a flight of steps, we come upon an elaborately coloured design laid out in Box and pounded glass of different colours, and instead of

Derbyshire spar, plaster or gypsum is used. On either side of this design are chain borders, in which the Iresine might have been seen last year in perfection, several hundreds of it having been used along with Cloth of Gold Pelargonium on one side, while on the opposite the combination consisted of Amaranthus and Cloth of Gold. Other beds in this flower garden were not particularly striking, except one of Calceolaria amplexicaulis. On the right and left of this garden is a large square of standard Roses, which when in flower must have a fine appearance. Further to the left stands a new Rosery, containing upwards of 1000 of the best varieties of the queen of flowers. This has been constructed with great care in order that all the plants can easily be got at without treading on the beds, a great advantage, especially in wet weather. Adjoining this is a greenhouse, containing fine specimens of Azaleas, Epacrises, Camellias, and New Holland plants, together with two very large specimens of Rhododendron arboreum. A walk from this house leads the visitor to another coloured design in Box enclosed with a Yew hedge. This design is the counterpart of an oval one at Witley Court, Worcestershire, and is ornamented with Pelargoniums, Calceolarias, &c., Merrimac, Rival, and Stella Pelargoniums being the best beds.

Crossing three more rustic bridges on the right, near a second waterfall, we come at once to the main feature of the place, viz. the rockery or rootery, which comprises about an acre. This, which has been but recently formed out of very low marshy ground, is well situated for the growth of Ferns, &c. Indeed it is quite a charming spot, consisting of many varied nooks, mountains and dingles, rocks and roots, the whole being surrounded with lofty trees, which give shade to its inhabitants. At the further end of this rockery is a tastefully made summer-house. From this point another walk has been cut, called Lady Milton's Walk, which leads back to the bridges just adverted to; also to a long walk by the river side leading to the Rhododendron ground. Leaving this walk and retracing our steps over the bridges, we turn by the lake side and follow a path which leads up to the Scotch Pine before alluded to. Between this and the long walk there is an ornamental strip of lawn leading down to the flower garden near the church. Below this stands Pinus Cembra, 55 feet high, and also a splendid Hemlock Spruce.

Let us now pass into the kitchen garden through a pair of massive wrought-iron gates. On the left stands a range of houses, comprising three vineries and a stove, in front of these is a riband border extending the whole length of the garden. In this Tagetes signata pumila was beautiful a season or two ago. At the back of this border is another range of houses, consisting of a Vinery, Peach house, and Pine pit; in the latter the Vanilla was in fruit. Two of the Vineries have been recently planted. The kitchen garden contains upward of four and a-half acres, and is surrounded with a good brick wall, which is well covered with fruit trees. A flued Peach wall over a hundred yards in length is trellised with iron wire, painted, and furnished with good trees. Culinary crops did not seem to have suffered from the drought last year; indeed, Osberton lays low and damp, and is generally visited with early and late frosts.

Leaving this garden, we enter a smaller one, surrounded with another well-covered wall of Peaches and Nectarines. In this garden are the principal sheds, which are well fitted up for garden purposes; in front of these is a well-arranged lot of pits, frames, and houses, viz., a Melon and Cucumber house, propagating house, Pine pit, Orchid house, plant stove, &c. Nothing could look better than the Cucumbers and Melons. Tanks are cast upon the hot-water pipes for bottom heat, with upright pipes to admit moisture when required. The Pines appeared to be in vigorous health. Orchids were good, and among other plants Croton variegatum measured 5 ft. high and 4½ wide, perfect in form, and finely variegated. Allamandas were 7 feet in height, and 5 feet through; Dipladenias were also excellent, as were Ixoras, Vincas, Ixoras, Pandanus, Alocasias, Cyanophyllums, Dracænas, Caladiums, and Serpentines. The pits were filled with Cinerarias, which are grown to a large size; besides these, others were filled with Primulas, Pelargoniums, &c. Strawberries are extensively forced here, the sorts being Keens' Seedling and Sir C. Napier. The whole of the houses except the conservatory are heated on the one-boiler system, two boilers being fixed in case of accident. *J. M. M. G.*

Calendar of Operations.

(For the ensuing week.)

VENTILATION in regard to all houses in which plants are kept will soon require increased attention. In structures in which this cannot be freely secured, ill health, with its attendant evils, is sure to present itself, rendering the best directed cultural efforts in other respects abortive. The planting-out of bedding plants is another matter to which attention must soon be directed. During April and early in May the skies are often so propitious that one cannot but believe the winter has departed. All hands are set to work to turn out Pelargoniums and other plants intended to decorate the flower beds during summer, and we flatter ourselves that we shall have a long and brilliant display of floral beauty. But north and east winds return, as well as night frosts, and a few hours blast the labour of a whole summer. Be therefore in no hurry to turn delicate plants out of doors, but take care to encourage free growth until planting-out time has arrived.

FLOWER GARDEN AND PLANT HOUSES.

Climbing or trained plants while growing will require constant attention in the way of thinning and stopping. Air must also be freely admitted, and pot plants, especially fine specimens, should be allowed abundance of room. Maintain a moist temperature, and see that nothing suffers from want of water. Inspect carefully young stock, especially that for blooming next winter. Early-sown Chinese Primroses and Cinerarias may be had in flower in October and November. Out of doors, rolling and cleaning, preparatory to mowing, will require attention.

ANNUALS.—When these are large enough to handle, they must be thinned. If the plants are allowed space, they will develop themselves properly, which cannot be the case when they are crowded together. Such kinds as Nemophilas, Clarkias, Eschscholtzias, Erysimums, and others, which are not only beautiful but well known, may be freely thinned out.

CAMELLIAS.—If any of these require more pot room it may be given after they have done blooming; use for the purpose two-thirds good turfy loam and one-third peat, mixing the two well together, and adding perhaps a little silver sand. Let the drainage be as perfect as possible, as on that success greatly depends. When making their wood give them a little extra heat, and syringe them freely.

CARNATIONS AND PICOTEES.—Before the plants have made large quantities of roots, place sticks to them. When deferred to a later period, thrusting in the stick often destroys some of the roots. Attend to watering.

CINERARIAS.—While in bloom these should be well watered and shaded. If it is wished to save seed let it be done from the best kinds only, which should have a place to themselves, from which bees are excluded. Fertilise them carefully with a camel's hair pencil.

DAHLIAS.—Soil for these should be rich and well worked, preparatory to planting out. See that the young plants do not get pot-bound.

EPACRISES.—When done blooming these should be cut back, and encouraged to break by moistening them overhead with the syringe, and placing them in a close pit or intermediate house. When fairly started repot any that may require that attention, draining well and using turfy peat and silver sand in the way of compost.

ORCHIDS.—Encourage these to make good growth by means of a moist genial atmosphere and nicely regulated temperature: see that they do not get too dry at the roots, as any check now might do them serious injury.

PELARGONIUMS.—These will now be growing rapidly, and should have plenty of air, room, and water. Train into the desired shape as the shoots advance in growth, and keep the foliage free from dust and green fly. Use as little shade as possible until the plants are coming into bloom.

PINKS.—Place small neat sticks to these, and top-dress the beds with good decomposed manure.

POLYANTHUSES.—Shade and moisture are absolutely necessary for these at this season. Save seed from the best-formed flowers.

RANUNCULUSES.—Water between the rows—not often, but when it is done, let it be well done. Keep the beds free from weeds.

ROSES.—Should the weather continue dry, the heads of trees recently planted should be moistened occasionally with the syringe. Pruning of all kinds should now be finished as soon as possible, and all protections to tender kinds removed. In-doors search frequently and carefully for maggots, which must be destroyed, and fumigate for green fly as often as may be required. Plants in bloom should be watered once or twice a week with weak liquid manure.

TULIPS.—Attend to these with water, and keep the beds in which they are growing neat and clean.

FORCING GARDEN.

MELONS.—Keep the soil in a properly moist state, and take every means to preserve the foliage in perfect health. Keep the shoots thin, and prevent their being encumbered with useless laterals: removing decaying leaves at once, as these when left only serve to harbour insects.

PINES.—Where these are grown on the planting out system, it should be remembered that the soil ought to be entirely renovated once in three or four years; the time for this operation must be left to the judgment and convenience of the cultivator; but if all or nearly all of the older plants in any pit have perfected their fruit, such is an excellent opportunity for the purpose, and this is a very favourable time of year for the operation. The younger plants (which have been put in, one after another, as vacancies occurred) after being well watered, may be carefully lifted with balls, and set in a close shed while the soil is being changed. But if any remain of those which have already shown fruit, they may be left standing, with a small mound of earth about their roots. Or if they are not very far advanced, they may, for appearance sake, be removed with balls to the back row, as they do not suffer if this be carefully done. The soil should consist of about one-third of the best peat that can be obtained, and two-thirds of rich turfy loam, with an admixture of sand, according to the requirements of the other materials. The plants of the back row should be planted before the soil is put in for the second one; and the remaining rows proceeded with in the same order, that none of the soil be needlessly compressed. If the new soil is moderately moist, it will be better to withhold water from the roots for a few days, to allow the plants to make an effort of their own; and until they are thoroughly re-established a moister atmosphere must be kept up, and the pits shaded rather more than usual.

VINES.—A liberal supply of air is the best preventive of scorching. Thin early and keep laterals in check.

HARDY FRUIT AND KITCHEN GARDEN.

Water where necessary, and keep down weeds among growing crops.

LETTUCE.—Prick out or sow as wanted.

ONIONS.—An occasional dusting with soot, on damp evenings, has been found highly beneficial to these. Thin out, and hoe between the rows.

PEAS. Continue to sow for successional crops.

POTATOS.—Stir the soil between the rows, and earth up as requisite.

RADISHES.—Turnip-rooted and others may be sown now as often as may be required.

TURNIPS.—Sow for successional crops. The Snowball, Orange Jelly, and Stone, are good kinds.

STATE OF THE WEATHER AT CHISWICK, NEAR LONDON, For the Week ending April 18, 1866, as observed at the Horticultural Gardens

April.	Moon's Age.	Barometer. Max.	Barometer. Min.	Temperature. Of the Air. Max.	Temperature. Of the Air. Min.	Temperature. Of the Air. Mean	Temperature. Of the Earth 1 foot deep	Temperature. Of the Earth 2 feet deep	Wind!	Rain.
Thurs. 12	26	29.788	29.623	58	48	53.0	49	46	S.W.	.02
Friday 13	27	29.88	29.815	60	30	45.0	51	47	S.W.	.02
Satur. 14	28	30.008	29.936	55	31	43.5	51	47	S.W.	.08
Sunday 15	●	30.257	30.160	54	31	42.5	51	47	S.W.	.10
Mon 16	1	30.220	29.846	58	42	50.0	52	47	S.W.	.04
Tues. 17	2	29.846	29.781	59	32	45.5	51	48	S.W.	.00
Wed. 18	3	29.960	29.902	58	32	45.0	51	48	S.W.	.00
Average		30.017	29.875	59.7	36.7	48.2	50.6	47.1		.28

April 12—Cloudy, fine, overcast and warm at night.
" 13—Dense fy cloudy, fine, very slight frost at night.
" 14—Very fine, hail showers, 12—1 P.M., very fine, rain.
" 15—Fine, cloudy, rain at night.
" 16—Rain, densely cloudy, fine.
" 17—Fine, brisk wind, fine, very fine; slight frost.
" 18—Clear, quite cloudless, very fine throughout.
Mean temperature of the week, 2.4 5th deg above the average.

STATE OF THE WEATHER AT CHISWICK,
During the last 10 years, for the ensuing Week, ending April 28, 1866

April.	Average Temp. of the Week.	Average Highest Temp.	Average Lowest Temp.	Mean Temp.	No. of Years on which it Rained.	Greatest Quantity of Rain.	Prevailing Winds. N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.
Sunday 22	50.0	57.1	43.1		20	0.32 in.	5	10	5	3	1	5	8	2
Mon. 23	50.1	57.4	42.8		21	0.86	3	6	1	4	0	6	7	4
Tues. 24	50.1	57.6	42.6		15	0.60	5	7	6	2	2	8	4	3
Wed. 25	50.2	57.1	43.1		16	1.10	5	6	5	3	3	5	3	3
Thurs. 26	50.1	57.2	43.0		17	0.81	5	9	3	3	1	5	5	3
Friday 27	50.3	58.0	42.5		16	0.64	11	3	8	2	3	5	3	1
Satur. 28	50.0	57.7	42.1		16	0.61	4	7	6	4	3	5	6	3

The highest temperature during the above period occurred on the 27th, 1865-therm. 82 deg.; and the lowest on the 24th, 1864-therm. 18 deg.

Notices to Correspondents.

BACK NUMBERS. One shilling will be given for a clean copy of the *Gardeners' Chronicle* of July 14th, 1865, on being sent to C. Ferard, Esq., Ascot Place, near Windsor.

BEDDING PLANTS. *Constant Reader.* The Early Dwarance is the best variety you can plant for the purpose of obtaining good-sized heads in February; later in the season larger heads may be obtained from Veitch's Early White, Snow's Early White, and the Perpetual, if true. To obtain large heads you must plant early in well manured and deeply trenched ground.

CEDAR OF LEBANON (*Cedrus*). The oldest Cedars in this country are under 200 years old.

CINERARIAS: *A M H.* The leaves do not appear diseased, but injured by cold. Cinerarias are very tender, and quickly susceptible of damage from this cause, and we feel inclined to venture the surmise that yours have been affected by cold during the past possibly rendered still more hurtful by the vitiated state of the atmosphere in your locality.—*J P A.* Your seedling is not at all good as kinds having the same colours already in cultivation.

EXHIBITION ORCHIDS TRAVEL. *H W Castle.* Application has been made for accommodations of the kind you mention, but the question is not yet settled.

FRUIT FOR PRESERVING. *A & W* will feel obliged by any of our correspondents informing him of any book or other way of getting information about fruits for preserving in quantities for the London preserving houses, especially with reference to Raspberries, Strawberries, currants, &c.

INSECTS. *H K.* We can detect no traces of insects on the leaves sent, and are therefore unable to say what kind of insect has eaten them.

INTERNATIONAL HORTICULTURAL EXHIBITION; *J Watson*, who asks for information respecting the price of admission to the garden after the first day, and observes that there are many amateur florists in his locality anxious to see some of the exhibition, but who cannot afford 20s., *plus* the expenses of the journey, is informed that the price of admission is 10s. on Wednesday the 25th, on Thursday the 26th, and 1s. on Friday the 27th and May.

MOSSES. *Subscriber.* Any one might perhaps get what you require on application to Mr. Stark, of Edinburgh, or Mr. Mitten, of Bluntsperpoint.

NAMES OF PEARS. *M & P.* Beurré de Canada Apple.—*F & H.* Probably Easter Beurré Pear, but as the stalk is wanting it is difficult to determine.

NAMES OF PLANTS: *J S.* 1, Saxe Gotheria; 2, Cytisanthus Galeottia. *A K.* Impossible to name.—*J Lee.* Hæmanthus Episcopalis, *alias* Boophia Episcopalis.—*J Bradley.* 1, Asplenium flexibum; 2, Woodwardia orientalis; 3, Cheilanthes tenuifolia; 4, Aspidium bulbiferum.—*F T.* 1, Dennstoëtia cicutaria; 2, Asplenium bulbiferum; 3, Onoclea sensibilis; 4, Doodia media.—*Enquirer.* Apply to *Mother of Vinegar*, Your rubarum.—*Charles.* 1, Doodia media; 2, Niphobolus Lingua.

PORTLAND CEMENT: *W B.* We make it a rule never to recommend dealers.

RAILWAY RADII: *G.* You will find all the positive information we have in refer nce to this wonderful Relish at p. 7 of our present volume. We do not know what *Vitis Labrusca* is, but the name by which R. candidus is known in France, so that it is most probable that the sort named in M. Vilmorin's list is that species. They certainly agree in this, that both are described as edible pebbled. In the American "Gardener's Monthly" the Messrs. Rakestraw, of Chester, have been kicking about for the last 20 years," and its seeds not valued at 10 cents a packet.

SEEDS. *Amos.* Your seeds are those of the common Ivy. *M P.*

VINE BORDERS: *A B.* The border of a Vinery 10 feet wide, close behind evergreen shrubs 15 feet high, is in the worst possible position. If the shrubs cannot be removed, we should advise you at once to remove the house to a position where both house and border may have the unobstructed rays of the sun. We do not wonder that very little fruit has been got from it as yet, and that this year there is not a bunch in the house. The few thousands of bedding plants would be better kept elsewhere.

WALKS. *Mowgli.* Good cinder walks may be formed by a mixture of tar and gravel, if in a position where the smell they give out at first and in hot weather, will not be a nuisance. Gas tar is that used for this purpose, and the gravel, especially for the upper surface, should consist of grit or small even sized stones. You will find much information on the subject in our Volume for 1851.

To Improve Meadow Land.

RICHARD SMITH'S MIXTURE of the finest GRASSES and PERENNIAL CLOVERS (8 to 12 lb. per acre, at 10d. per lb.), if sown early, will cause a valuable improvement to the crop. RICHARD SMITH, Seed Merchant, Worcester.

Grass Seed for all Soils.

RICHARD SMITH offers the best selection that can be made of PERMANENT MEADOW GRASS and CLOVER at 32s. per acre, consisting of 2 bushels light, and 12 lb. heavy Seed. The kinds and quantities are chosen for their Early Growth, Crop, Nutritive Qualities, Reproductiveness, and Permanency, and can be had separately, or properly mixed to suit Heavy, Light, or Medium Soil. RICHARD SMITH, Seed Merchant, Worcester.

MIXED SEEDS for LAYING DOWN NEW or RENOVATING OLD PASTURES.—These Seeds are taken from the celebrated Pastures on the Limestone surrounding Dublin, and are of prime quality. Cash forwd, 5s. per bush.; free on rails at Cheltenham; bags extra. Money orders payable at Andoversford.
Address: JAMES HOPKINS, Salperton, Andoversford.

Brighton and Sussex Seed Warehouse.

EDWARD CARPENTER'S MIXTURES of PERMANENT GRASS and CLOVER SEEDS.—Best quality, 30s. per acre (2 bushels light seeds, and 12 lb. Clovers and small seeds per acre).—See testimonials in Catalogue.
EDWARD CARPENTER'S RENOVATING MIXTURES for Improving Old Pastures.
PRICED CATALOGUES of KITCHEN GARDEN, FLOWER and FARM SEEDS now ready.
EDWARD CARPENTER, Seed Merchant and Grower, 16, St. James's Street, Brighton.

PERMANENT PASTURE SEEDS.—The benefit to Pasture Fields sown down with Natural Grass Seeds cannot be over-estimated. The trifling cost of these per acre over common Rye-grass and Clover is far more than compensated by the greater abundance of Herbage produced of a highly nutritious and more permanent character.
KENNEDY'S MIXTURES for PERMANENT PASTURE continue to give the greatest satisfaction, and the demand for them is every year on the increase.
A DESCRIPTIVE PRICED CATALOGUE of these SEEDS, as well as of Clover, Turnip, and other Farm Seeds, may be had on application to
THOMAS KENNEDY & Co., Nurserymen and Seedsmen, Dumfries.
Free delivery as formerly.

Meadow and Lawn Grass Seeds.

JOHN AND CHARLES LEE, SEEDSMEN to the QUEEN, are now executing orders for GRASS SEEDS, mixed to suit all Soils, viz.:—

LEE'S MIXTURES

For Heavy and Light Lands ... sow 2 bushels per Acre.
For Park and Field Lands ... sow 3 bushels per Acre.
For Irrigated or Water Meadows ... sow 2 bushels per Acre.
For Renovating Old Pastures ... sow 12 lb. per Acre.
For Land Overshadowed with Trees ... sow 2 bushels per Acre.
For Garden Lawns ... sow 3 bushels per Acre.

A DESCRIPTIVE PRICED CATALOGUE of AGRICULTURAL SEEDS post free on application.
Royal Vineyard Nursery and Seed Warehouse, Hammersmith, London, W.

The Cultivation of Bromus Schraderi.

SUTTON AND SONS can supply genuine Seed of the above New FORAGE GRASS, in packets, for trial, at 1s. each, or in larger quantities at 5s. per lb., with instructions in cultivation.
SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

COCKSFOOT GRASS (DACTYLIS GLOMERATA).—This highly nutritive Grass is included in all Messrs. SUTTON'S MEADOW MIXTURES, or may be purchased separately at a very moderate price, which may be had on application to
SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

SWEET-SCENTED VERNAL GRASS (ANTHOXANTHUM ODORATUM).—This very excellent Grass, so desirable in Pastures, is included in all Messrs. SUTTON'S MIXTURES, or may be purchased separately at a moderate price, on application to
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Fine Grass Seeds for Cricket Grounds, BOWLING GREENS, or CROQUET GROUNDS.

SUTTON AND SONS can supply suitable kinds of the finest grown: GRASSES and CLOVERS for the above purposes, at 1s. 6d. per lb., 24s. per bushel.
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THE ALSIKE CLOVER for CLOVER-SICK LANDS.—This excellent Clover will thrive in almost any soil. It produces two good crops in the first year, and makes superior hay. It may be sown alone (14 lb. per acre), or in connection with other seeds, either for a lasting Meadow or for Permanent Pasture. It is sown with Italian Rye-grass, as a renewal for mowing three times in the year. It is included in all Messrs. SUTTON'S Mixtures, and they strongly recommend it to those general cultivation. Price may be had on application (depending on quantity required).
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FINE GRASS LAWNS in FLOWER GARDENS, &c.—The great expense of cutting and carting Turf from a distance may be avoided, and a superior Turf produced in a few months by sowing SUTTON'S LAWN GRASS SEEDS, which consist solely of the finest and shortest-growing kinds, perfectly free from Moss and other weeds.

From Mr. JOHN JOHNSON, *Gardener, Mowbray Park, Sunderland, April* 20, 1865.
"The Lawn Seed we got last year about this time has come up excellently."

From Mr. THOMAS PULLINGTON, *Gardener to* H. W. Vincent, Esq., *Bushwell Grove, Buxford, January* 10.
"The Grass Seed you supplied me with last season grew remarkably well, though sown under trees. I think every seed grew."

From HENRY H. CAVE, Esq., *Desborough, Market Harborough, May* 13, 1865.
"The Lawn Grass Seeds I had from you last year have made a very good turf already."

From J. NIGHTINGALE, Esq., *High Street, Kingston-upon Thames, May* 2, 1865.
"I may add that the Grass Seed we you supplied last year, have (notwithstanding the very unfavourable season) succeeded very well."
SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

HALLETT'S TRADE CHEVALIER PEDIGREE BARLEY. MARK

Weight 56 lb. per bushel.

This has been "bred" in the usual manner of the "Pedigree Wheat," viz.:—by repeated annual selection, restarting in each year from a single grain upon a pedestal (noting immediately upon the ebook of the South Bowmal, which upon neighbouring farms produces Barley weighing but 51 lb., and fit only for grinding.

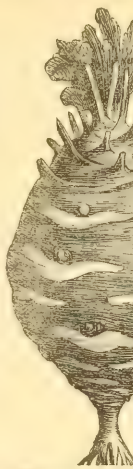
SEED REQUIRED:—

If drilled in March	1 bushel on 3 acres.
April	1 " 2 "

Price Two Guineas a Bushel (including bag), delivered in bags sewed up and sealed, at the Brighton Railway Station, upon receipt of Cheque or Post Office Order, without which it will not in any case be sent to unknown correspondents. Less than a bushel will not be supplied.
Apply to FREDERIC F. HALLETT, Esq., F.L.S., The Manor House, Brighton, Sussex.

SUTTON'S PRIZE KOHL RABI.

LARGE PURPLE, 4s. per lb. Sow April and May.



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PRICED LIST of other FARM SEEDS gratis and post free.
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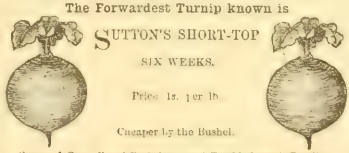
The Forwardest Turnip known is

SUTTON'S SHORT-TOP SIX WEEKS.



Price 1s. per lb.
Cheaper by the Bushel.
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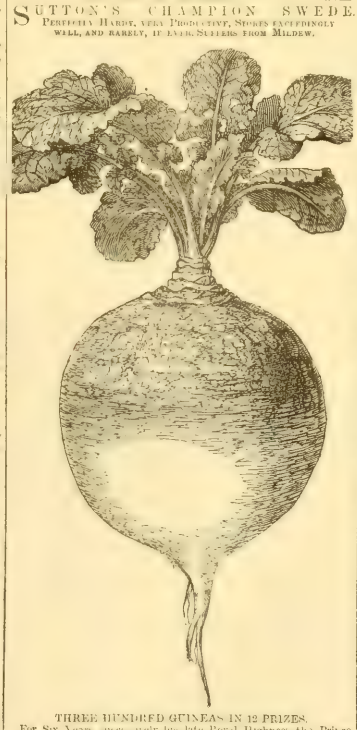
SUTTON'S CHAMPION SWEDE. PERFECTLY HARDY, VERY PRODUCTIVE, STORES EXCEEDINGLY WELL, AND RARELY, IF EVER, SUFFERS FROM MILDEW.



THREE HUNDRED GUINEAS IN 12 PRIZES.
For Six Years successively by the Royal Highness the Prince Consort's Prize Crops have been awarded to SUTTON'S CHAMPION SWEDES at the Royal East Berks and South Berks Agricultural Societies, and many other valuable Prizes in various parts of the Kingdom.

From Mr. LARGE, *Bailiff to the* Right Hon. Lord BERNERS.
"The Champion Swedes from seed Lord Berners purchased of you are far superior to any other we have grown. I can confidently say they are many Tons per acre heavier than any other Swedes growing on his Lordship's farm."

Price of Seed 1s. per pound, or cheaper by the bushel.
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GOOD NEW CARROT SEED.

The three best sorts are—

	Per lb. s. d.
WHITE BELGIAN	1 0
RED INTERMEDIATE	1 9
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Cheaper by the cwt., price of which may be had on application.

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Royal Berkshire Seed Establishment, Reading.

ROYAL AGRICULTURAL SOCIETY of ENGLAND. EDUCATION PRIZES.—One Hundred and Fifty Pounds.
Candidates already entered for the Oxford Local Examinations in May next, in connection with which the above Prizes will be given, may enter for the Society's Prizes up to Saturday, May 19.
Application for Forms of recommendation should be made without delay to the Hon. Sec., Royal Agricultural Education Committee, 12, Hanover Square, London, W., from whom further particulars may be had on application.—April 21.

The Agricultural Gazette.

SATURDAY, APRIL 21, 1866.

ON Wednesday Dr. VOELCKER gave one of his elaborate and exhaustive scientific lectures to the members of the Royal Agricultural Society at Hanover Square. His subject—the proper conduct of Field Experiments—was appropriate both to the time of the year, and to the progressive condition of agriculture among us.

The experiments in question were classified as Practical, for the determination of the economical or profitable course under given circumstances; and Theoretical, having for their object the determination of truth irrespective of special circumstances. The former, with their narrowly limited bearing and their purely selfish object, are neither so interesting nor so valuable as the latter. And it was to the latter exclusively, accordingly, to which the Professor directed our attention. The following were the points to which he referred:—

1. They need not be on a large scale. One-twentieth part of an acre of Turnips or other root crops; one quarter of an acre of corn or Grass, will answer fairly any simple question that is put to it by the application of a manure. A larger extent sometimes involves a fatal difference of treatment in the several parts of it. A difference of 6 tons per acre of Mangel Wurzel has arisen solely out of a day's delay of seed time; and unless the plots be small enough to be treated virtually *together*, the results will not be capable of comparison.

2. These experiments ought to be conducted on soil of what may be called an *indifferent* character—level, fairly drained, uniform as to depth, and without any marked character as to composition or texture. It should be neither stiff nor light, nor should it be too rich. As the distinctive effect of different foods cannot appear in the case of a man already fully fed—so manures cannot produce their characteristic effect, or indeed any effect at all, on soil already full of all that plants require.

The results of experiments illustrative of this point were laid before us, in which nitrate of soda and superphosphate of lime and common salt proved altogether ineffective on the Clover crop, in consequence of the land being already rich enough.

3. The result of the experiment depends on the time and mode in which it is conducted. Experimental manurings on Grass lands on which it is proposed to try the effect of slowly dissolving fertilisers should be done in autumn. Even ammoniacal salts may be applied in autumn, if on land possessing any retentive character. Nitrates, on the other hand, which the soil allows to pass through it, must not be applied till spring. It is thus plain that a comparison of ammonia salts with nitrates sown together in autumn will give very different results from a similar comparison tried in spring time. Care must be taken to ensure the uniform distribution of the fertilisers. Concentrated manures should be mixed with at least three times their bulk of some harmless diluent. The broadcast manure distributor should be employed to ensure their

uniform application to Grass or corn; or they may be sown by hand over the drilled fields for roots before the plough covers the dung in the drills by splitting the intervening ridgelets.

4. A careful record of the composition of the manures employed, of the character of the soil, and of its past agricultural history, must be preserved in order that the result may be read in the light of the information thus preserved.

5. It is of the greatest importance that the experiment be devised so as to answer to a very simple question. If complicated mixtures of manures be used, the result cannot be attributed to its proper cause with any certainty. Let the experiment be devised so as to be sure that it shall answer "yes" or "no," as to the effect of a single ingredient. The effect of potash as a manure is worth knowing; but these newly imported crude potash salts are mixed with common salt, and it is extremely difficult to ascertain what portion of any result they may produce is due to the one and how much to the other of the ingredients they contain. For four years, on six different farms, Professor VOELCKER has been endeavouring to ascertain the truth on this point, and he is still in doubt.

6. The experiments, moreover, must have regard to the fitness of the soil and climate to the plant which is employed to test the manures by. It is as useless to try the effect of manures on Indian Corn in Scotland as it would be to test them by means of Mangel Wurzel in Sweden. So also the soil should be fitted to the habits of the plant. The Lupine fails on land with a hard, cold subsoil, not because the food it requires is not present, but because its deep tap-root requires a subsoil in which it can extend.

7. In reading the results of experiments, regard must be had to the character of the season, wet or dry, early or late, cold or warm. And extreme diligence should be used in noting all the successive appearances of the crop under variations of weather throughout the year.

Lastly, the operator must not only have unbounded patience—waiting long and putting his question frequently before he satisfies himself that he has got the answer—but he must have both pluck and self-denial enough to throw his results into the waste paper basket, rather than mislead his brother farmers by the publication of unsatisfactory conclusions.

IT will be seen by the statistics that follow that the average price of Wheat in France, for the years 1863, 1864, and 1865, has been respectively 46*s*., 41*s*., and 38*s*. 6*d*. per quarter. For the last two years agricultural distress has been the absorbing topic of the French agricultural press. The causes and the remedy of their "sufferings" have been discussed by agriculturists with great animation, but without any effect on markets, or any other practical result at present, except the full recognition by the Government of the fact that farming, just now in France, is unprofitable.

There is a rather general disposition among French farmers to attribute the depressed state of agriculture to the adoption of free trade in Wheat, which was established in France by the law of the 15th of June, 1861, when the sliding scale was abolished, and a nominal duty of about 1*s*. per quarter (on Wheat imported in French ships) was substituted.

At a succession of meetings of the Central Agricultural Society, held from 7th to 14th of March, the special question of grain was discussed, and among other matters discussed was the political aspect of the subject, and the expediency of raising the duty to 2*s*. 6*d*. per quarter, and applying the revenue so obtained to the reduction of certain imposts that weigh heavily on agriculture.

Whatever the merits of this proposal may be, the freedom of discussion on political subjects by the principal Agricultural Society of France, contrasts favourably with the restraints imposed on the members of our own chartered Society. The result of this public agitation has been, that the Minister of Agriculture has descended into the arena of discussion, and in more than one argumentative address, has endeavoured to convince French farmers of their political heresies, by pointing out that an increased duty cannot, at the present time, be required to keep out foreign corn, since France has, for the past two years, exported Wheat largely. Free-trade therefore is not the cause of agricultural distress in France.

Nevertheless the distress exists, and is sufficiently urgent to have received special recognition from the EMPEROR in his speech on opening the Chambers, accompanied by a repetition of the Minister's argument, and by the promise of an inquiry into the condition of agriculture.

The French farmer has now obtained everything he could wish for except higher prices. He has just had the excitement of a brilliant discussion in the Assembly on agricultural affairs, and he is embarking on all the pleasures of an "Inquiry." Probably these occupations will carry him on until a period, not far distant we hope, when the causes of agricultural depression shall have passed away, and the business of farming shall have resumed its ordinary condition of moderate remuneration.

The present state of French agriculture, which is admitted to have arisen from the low price of Wheat, is of considerable importance and interest on this side of the Channel. Our own farming is not very flourishing, when Wheat is at 40*s*. a quarter, and it is important to us to know at what prices our various foreign competitors can produce it profitably. Our nearest neighbours, it appears, in a Wheat-growing and Wheat-exporting country, cannot grow it profitably at 40*s*. a quarter, and would cease to export it if the price kept at that figure for a few years. That they "suffer" more than we do, in a period of depression, is evident from their constrained outcry compared with our patient silence. The reason is equally evident: we are richer, and we have more strings to our bow.

The French farmer, except in the north, with its cooler climate, is almost entirely a corn grower; he has neither pasture, nor root crops, nor forage of any kind sufficient for maintaining a large head of live stock. His rotation is fallow and grain, and he is almost as dependent on his one crop as the Irish Potato grower is on his; and if that were to fail him totally, he would be in the same position as the Irish peasantry were in 1846.

The official estimates show an increased acreage (647,500 acres) compared with 15 years ago, representing an increased growth of 1,220,000 qrs. of Wheat. The total production of Wheat in France is officially estimated at rather more than 34 millions of quarters (about 16 bushels per acre), and the consumption for food and seed at 31 millions. This leaves an average of 3 millions for exportation. But as exports have not, even in recent years, when the crop was 40 millions in 1863, and 38 millions in 1864, been anything like to that extent, one wants to know what has become of the immense surplus. It cannot be in stock, and we can only explain the discrepancy by assuming that the average 5½ bushels of Wheat consumed per head has been enormously exceeded during the years of abundance; and that Wheaten flour has taken the place of Rye, Barley, Buckwheat, and Maize, in human consumption. We cannot but suspect also that, in spite of the elaborate system of statistics, the estimate of production and consumption in France is not much more trustworthy than our own.

M. LAVERGNE, in 1854, in calculating the value of products in France, and adopting the average prices previous to 1848, took that of Wheat at 36*s*. 10*d*. That farming could then exist, while it now "suffers" with Wheat as low as 38*s*. 6*d*. and 41*s*. for two years, only shows that the increase of taxation, and of the price of labour in France, is telling its tale on the cost of production, and adding to the disadvantages which weigh upon a system of farming, contracted in respect of its practical management, and fearfully burdened by the action of restrictive laws, the most oppressive of which relates to the compulsory transfer and succession of land, by a process which is the more vicious from its extravagant cost.

We wish to direct attention to the enormous growth of Wheat in the years 1863 and 1864, and to what we may almost call the phenomenon of its rapid disappearance from the markets of the world.

It is always observed that, in cases of over-production, the reduction in price of an article is relatively greater than its increased abundance, and it is well known that the price of Wheat is more severely affected by over-abundance than that of any other commodity. That this excessive production of Wheat has been the cause of agricultural distress we have no doubt. It is remarkable that the surplus (of which only a small proportion has been exported) should have so rapidly disappeared. It is not to be supposed that any very considerable portion of the surplus of the two abundant years can now remain in stock, and its absorption by a Rye and Barley-eating population shows the effect in France of increased wealth and of low prices. Their 5½ bushels of Wheat per head of annual consumption, compared with our 8 bushels, leaves room for a still larger absorption of the kind we have indicated, should the country continue to progress in wealth and industry. In any case France cannot, under the present circumstances, compete with England in the growth of Wheat. She may, in certain years of great and general abundance, increase the depression of our markets by her supplies, but her agriculture "suffers" from the low prices more than ours does.

According to the statistics, there were 7,500,000 acres of Rye grown in France 15 years ago, including half the land sown with Rye and Wheat mixed. This crop yields badly, and hardly pays the expenses of cultivation. It would be abandoned, but the difficulty is to find one more profitable. Rye is already grown only on soils naturally poor, or exhausted by over-cropping with cereals; and that farming which is too bad to produce a crop of Rye, would certainly not produce Wheat at a profit.

The portion of the soil of France under cereal crops, for human consumption, is about one-fourth, while that of British territory is estimated at less than one-sixteenth of the whole surface under cultivation.

The following calculations of acreage and production are derived, to a considerable extent, from LAVERGNE'S "Rural Economy of Great Britain and Ireland" (1854). M. LAVERGNE has compiled his figures from the best sources of information, but no estimates of crop or acreage can be entirely trustworthy while we are without either agricultural statistics, or an accurate measurement of our acres.

ACREAGE AND CROPS.

FRANCE.	Acres.
Natural meadows	10,000,000
Artificial do.	7,500,000
Roots	5,000,000
Oats	7,500,000
Fallows	12,500,000
Wheat	15,000,000
Rye, Barley, Maize, Buckwheat	15,000,000
Other crops	7,500,000
Vineyards	5,000,000
Wood	20,000,000
Uncultivated	27,500,000
Total	132,500,000

There is a large extent of forest, and of uncultivated land, capable of cultivation. The extent of fallow is very great. Only 22½ millions of acres are devoted to food for live stock, compared with 15 millions given to the cultivation of food for man.

ACREAGE AND CROPS.

UNITED KINGDOM OF GREAT BRITAIN AND IRELAND.	Acres.
Natural Pasture	20,000,000
Artificial Grasses	7,500,000
Potatoes, Turnips, Beans	5,000,000
Barley	2,500,000
Oats	6,250,000
Fallows	1,250,000
Wheat	4,500,000
Gardens, Hops, Flax, &c.	500,000
Wood	2,500,000
Uncultivated	27,500,000
Total	77,500,000

The waste land is chiefly in the Highlands of Scotland and North Wales, and the North of Ireland. Thirty-seven millions of acres are devoted to the growth of food for live stock, and 10 millions to that of food for man.

MCCULLOCH'S estimate of the arable land is:—

England and Wales	12,700,000
Scotland	2,592,000
Ireland	4,795,000
Total	20,087,000

Recently the arable has been estimated at 23 millions. Our total acreage is supposed to be about 77 millions, of which about 50 millions are cultivated, and of that quantity rather the larger share is in pasture. Mr. CAIRD, in his "English Agriculture," estimated the extent of Grass in the eastern division of England at one-third, and that in the midland and western division at two-thirds of the total extent of cultivated land.

LAVERGNE'S estimate of the total value of agricultural products in France (deducting seed), at the average prices previous to 1848, is as follows:—

VEGETABLE PRODUCTS.	£
Wheat (about 24 million qrs. at 36*s*. 10*d*.)	44,000,000
Other cereals (about 13,750,000 qrs. at 25*s*.)	16,000,000
*Potatos (137,500,000 bushels at 7*d*.)	4,000,000
Wine and brandy	20,000,000
Beer and cider	4,000,000
Hay, straw, and Oats for non-agricultural horses	12,000,000
Flax and Hemp	6,000,000
Sugar, Madder, Tobacco, oil, fruit and vegetables	20,000,000
Wood	10,000,000
Total	£136,000,000
Animal products	£64,000,000
Vegetable ditto	136,000,000
Total	£200,000,000

* The total production of Potatos is twice as great, but one-half is supposed to be consumed by cattle. 1,720,000 quarters of inferior cereals, as Maize, Buckwheat, &c., are cut off for the consumption of fowls and animals.

ANIMAL PRODUCTS.	£
Meat (19,640,000 cwt. at 32*s.* 7*d.*)	32,000,000
Wool, hides, tallow, offal	12,000,000
Milk (at 1*d.* per quart)	4,000,000
Poultry and eggs	8,000,000
400,000 horses, asses, and mules, supposed to be sold every year at three years old	3,200,000
Silk, honey, wax, and other products ..	4,800,000
Total	£64,000,000

McCULLOCH's estimate of the total value of the agricultural products of the United Kingdom was 220,000,000*l.*; SPACKMAN'S, 250,000,000*l.* LAVERGNE adopts the former estimate; and in order to compare it with the value of the products of French agriculture, he applies to it the prices of French articles; thus reducing the value of agricultural products in the British Islands to 160,000,000*l.*, viz. :—

ANIMAL PRODUCTS.	£
Meat (33,400,000 cwt. nearly, at 32*s.* 7*d.*) ..	54,400,000
Wool, hides, tallow, offal	12,000,000
Milk, at 1d. per quart	8,000,000
300,000 horses .. .. .. at 13*l.* 10*d.*) ..	4,800,000
Poultry	800,000
Total	£80,000,000
VEGETABLE PRODUCTS.	£
Wheat (about 15,500,000 qrs., at 36*s.* 10*d.*)	28,800,000
Barley (about 6,875,000 qrs., at 18*s.* 5*d.*) ..	6,400,000
Oats (about 5,157,000 qrs., at 13*s.* 10*d.*) ..	3,600,000
Potatos (350,000,000 bushels, at 7*d.*) ..	16,000,000
Hay and Oats for non-agricultural horses .	16,000,000
Flax, hemp, vegetables, and fruit	6,800,000
Wood	2,400,000
	£80,000,000
Animal products	80,000,000
Vegetable do.	80,000,000
Total	£160,000,000

In France the vegetable products form two-thirds and the animal products one-third of the whole. In the United Kingdom the proportion is about equal. In France the general average value of gross produce on the 80,000,000 acres (omitting wood, waste and garden cultivation), is 32*s.* per acre—say 38*s.* 5*d.* for the northern half and 25*s.* 7*d.* for the southern half; the latter ought to be the richer. In the United Kingdom the gross produce of the soil is—

	Per Acre.—*s.*	*d.*
England	64	0
Lowlands of Scotland, Ireland, and Wales ..	32	0
Highlands of Scotland	3	2

General average, 43*s.* 2*d.* per acre.

In the Department du Nord the average gross production is 4*l.* 16*s.* per acre; and in the departments of Pas-de-Calais, Somme, Oise, and Seine-Inférieure it is 3*l.* 5*s.* per acre. This is equal to English farming, and is owing to the large populations of those departments. Practically the amount of meat produced in a country indicates the condition of its husbandry, and this is governed by population and markets. This inferiority of agriculture in the southern half of France is owing to the thinness of the population.

In 1841 the population of the United Kingdom (77,000,000 acres) was 27,000,000; that of France (132,000,000 acres) was 34,000,000.

THE POPULATION PER ACRE.	
France	1 to 3¾ acres.
Central Region	1 to 5 acres.
South West Region	1 to 5 acres.
United Kingdom	1 to 2½ acres.
England and Wales	4 to 7½ acres.
Scotland	1 to 7½ acres.
Ireland	1 to 2½ acres.

The most productive departments in France were equal to England, viz., four persons to 7½ acres.

In 1861 our population had reached 29,000,000, and that of France, according to the latest census, was 37,382,225. Some writers of the present time have estimated our produce of Wheat at an average of 32 bushels per acre. Mr. CAIRD estimated it at 26⅔ bushels 12 years ago, and that estimate, we believe, would not be far wrong if applied to the present time. LAVERGNE estimates our crop of Wheat at 28 bushels per acre, and that of France at only about one half as much! He estimates the production of the 5 million acres of vineyards at 4*l.* an acre, and that of 2½ million acres of gardens, producing fruits, vegetables, and flowers in great abundance, at 20,000,000*l.*, or 8*l.* an acre. The 40,000,000*l.* thus produced, on 7½ million acres, is superior in money return to any branch of English farming; it entirely surpasses the results of our arable farming, as well as our much vaunted pastures.

The production of grain in France (deducting seed), was estimated 20 years ago at—

	Qrs.
Wheat	24,000,000
Rye	10,300,000
Maize	2,400,000
Buckwheat	2,750,000

Recent estimates of the annual production of Wheat have been about 29,000,000 quarters (deducting seed). The average yield per acre is not considered to have increased, the most recent statistics putting it at about 16 bushels per acre. The acreage of Wheat must have therefore increased considerably, probably with a corresponding decrease in the growth of Rye. The substitution of Wheaten bread for Rye bread speaks well for the general prosperity of the country, but the continued low rate of average production shows that the remark of M. LAVERGNE, in 1854, is still applicable: "The proportion of exhausting crops is still very great, notwithstanding the progress made during the last 50 years by means of ameliorating crops." This eminent agrarian statistician, so often quoted in this article, considers the soil and climate in France much more favourable to cereals than those in England, but that the same results can never be produced in France until she has reduced her breadth of cereals by many millions of acres, and covered her immense extent of fallows with root and forage crops.

In 1750, France and the United Kingdom had each 17 to 18 millions of sheep, and in 1854 the number in each country had nearly doubled; but the acreage is respectively 132 millions and 77 millions. In France, wool was always looked upon as the principal product, and meat as the accessory. The fleece has been greatly improved by crossing indigenous breeds with merinos introduced from Spain.

Number of cattle of all sorts in Britain and France:

England and Wales 5 millions, viz. 1 to 7½ acres.		
Scotland 1	,,	viz. 1 to 20 ,,
Ireland 2	,,	viz. 1 to 10 ,,
France 10	,,	viz. 1 to 13 ,,

The value of dairy produce in France was estimated at 4,000,000*l.*; in the United Kingdom, 16,000,000*l.*, 15 years ago. Since then prices here have risen enormously, owing to our increasing manufacturing population. In France the cows are estimated to yield about 550 quarts a year, or only half as much as in England.

LAVERGNE estimates the production of pork in France at 7,850,000 cwt., and that in England at twice as much. The only branch of animal products in which France retaliates is that of the poultry yard. Our production of eggs and poultry is estimated at 1,000,000*l.*, that of France at 8,000,000*l.*; divided between poultry and eggs in equal portions of four million pounds for each. Our damp climate is unsuitable for the rearing of fowls. In France, and especially in the south, a large portion of the population lives on poultry.

OFFICIAL INFORMATION ON THE YIELD, CONSUMPTION, AND PRICE OF WHEAT IN FRANCE, FROM 1861 TO 1865, INCLUSIVE.

The following article, reprinted from the *Moniteur* of March 5th, appeared in the "Journal d'Agriculture Pratique" of March 20:—

"Persons taking an interest in agricultural questions having expressed a wish to be furnished with information, derived from official sources, on the production, the consumption, and the price of grain in France, and on our foreign corn trade for some years past, we publish the Tables appended, relative to the growth of Wheat and the Wheat trade, for the five years from 1861 to 1865.

"In order to ascertain the appearance and the yield of the crops, the Minister of Agriculture, Commerce, and Public Works obtained from the prefects, regularly every year, five successive reports. The first report, early in the winter, gave an account of how the seed had been got in; the second, furnished in April, gave similar information as to the spring seeding; the third, towards the end of June or beginning of July, reported how the blooming of the corn crops had gone on; the fourth, sent in just after harvest, gave the estimated results. And in the fifth report, received towards the end of the year, the prefects estimate the yield of the various crops by figures carefully drawn from sources of information that afford a guarantee of accuracy.

"It was after the approximate estimate based on the fourth report, that the exposé of the situation of the Empire announced that the crop of 1865 was deficient to the extent of nearly 10 per cent. compared with the yield of an average year. At the time of this estimate the final documents were far from being complete. But it now appears, from the figures referring to the year 1865, that the first accounts as to the result of the Wheat crop in that year must be greatly modified. In fact the yield for the whole of France reaches the figure of 32,700,000 quarters, and the average yield for the 10 preceding years having been 33,300,000 quarters, the deficiency of last year's crop is only about 2 per cent. compared with an average year."

The accounts of the Wheat crop in France are as follows. For the year 1861, the worst for a long period, the crop was:

Acres.	Total Number of Qrs.	Bush. per Acre.
16,883,267	25,821,223	12¼

In 1862, about an average year, the crop was:—

Acres.	Total Number of Qrs.	Bush. per Acre.
17,204,032	34,130,000	16

In 1863, the most productive year of the present century, the crop reached:—

Acres.	Total Number of Qrs.	Bush. per Acre.
17,296,920	40,100,000	18¾

In 1864, the Wheat crop was again very great:—

Acres.	Total Number of Qrs.	Bush. per Acre.
17,000,000	38,200,000	18

The accounts for the year 1865 are not yet complete, but the following figures will not prove far wrong:—

Acres.	Total Number of Qrs.	Bush. per Acre.
17,209,000	32,800,000	15½

According to documents collected in 1864, the annual consumption of Wheat in France for human food has been in recent years 25,900,000 quarters. Inclusive of the quantity required for seed, and of the small quantity consumed by the inferior animals, the total quantity of Wheat used in France annually was 31,030,000 quarters.

The population, according to the last census, being 37,382,225, the average yearly consumption is five bushels and four gallons per head. The consumption is greater in the north than in the south. The above estimate does not include the consumption of other grain, such as Rye, Buckwheat, Barley, Maize, &c.

The average number of acres sown every year with Wheat, during the five years from 1861 to 1865, was 17,157,565; the average for the five preceding years was 16,560,000 acres. There are 647,500 acres more of Wheat sown now than there were 15 years ago, and this represents an increased production to the amount of 1,220,000 quarters.

The quantity of seed sown per acre has averaged two bushels two gallons.

The average price of Wheat in France, according to the *Moniteur*, was—

1861.	1862.	1863.	1864.	1865.
57*s.* 2*d.* per qr.	54*s.* 3*d.*	46*s.*	41*s.*	38*s.* 6*d.*

The last statistics of the weight of Wheat were for the year 1852, when it was 60 lb. per bushel; the usual weight is estimated at 61 lb. per bushel.

"Imports and exports of Wheat (and flour reduced to quarters of Wheat) from 1861 to 1865:—

	Imports.		Exports.	
Year.	qrs.	Year.	qrs.	
1861	.. 5,260,000	1861	.. 676,000	
1862	.. 2,680,000	1862	.. 974,000	
1863	.. 1,740,000	1863	.. 1,198,000	
1864	.. 1,200,000	1864	.. 1,540,000	
1865	.. 1,000,000	1865	.. 3,032,000	

100 parts by weight of Wheat are considered equal to 70 parts of flour.

On the whole these statistics are greatly in favour of British agriculture—that is, of those branches which are especially favoured by climate, soil, and markets. None of the accidental advantages favourable to farming are so stimulating as that of good markets. French farmers, admitting their inferiority, say their country has never yet enjoyed 50 years of freedom from disastrous revolution and internal discord. On equal terms they think they might compete with us, and they have *begun the race*. Our strong arm lies in stock farming, and that alone will enable us to challenge all comers; but to use it to advantage, skill, capital, and security are especially required. Probably the weakest point in English agriculture is the want of security in the tenure of land.

Reverting to the recent over-productions of Wheat and its low price, it should be remembered that a fluctuation of 8 or 10 bushels per acre, according to season, is not uncommon. In 1860 our growth was probably more than 5 bushels under an average, and in 1863 and 1864 more than 5 bushels over an average. The agricultural statistics, returned by the constabulary in Ireland, showed 10 bushels an acre less Wheat in 1848 than in 1847. A falling off in crop often implies reduction in weight. Mr. CAIRD says that when the weight of Wheat is reduced from 62 lb. per bushel to 58 lb. per bushel, the corresponding figures in flour are 53 lb. and 47 lb., equivalent to another 3 bushels an acre. So that a 5 bushel deficiency in the yield of Wheat may represent an actual deficiency equal to 8 bushels an acre.

STEAM CULTIVATION.

THE ROYAL AGRICULTURAL SOCIETY'S INQUIRY.

ACCORDING to a report in your Paper last week, the Royal Agricultural Society "proposes that an inquiry should be instituted into the practical working of steam ploughs and other steam implements for the cultivation of the land in different parts of the kingdom." At the same time we are told that the trials "at the Society's shows have necessarily been attended with disadvantages from the limited time and area available, from difficulties as to soil and season, and the presence of a crowd of anxious spectators, who interfered with the delicate tests applied by the judges and the Society's engineer;" and the report goes on to say that "the Journal Committee consider that the time has now arrived when the Society may fairly institute such an inquiry as will decide how far the conclusions hitherto arrived at are borne out by practical experience."

A tardy confession is better than none. How many times this Society has been told through the agricultural papers by myself of its "limited" and inefficient trials, I cannot tell you but by reference to my book. I find that in a letter of mine, dated December 19, 1856, published in the *Times* and other papers, I wrote thus: "I should have been glad if the time of the officers of the Royal Agricultural Society could have allowed a little more than 30 minutes at the most to have investigated the merits of my implements." This was a complaint against the Chelmsford judges. After every meeting that I have attended, I have made similar complaints, and now, after more than nine years have passed away, the Society is frank enough to tell us that I was right in condemning their "limited" and inefficient trials.

"The difficulties as to soil and season" come next. At Worcester we were told by the judges that the field in which the second-class trials were worked off was "a stiff loam, part Clover, and the rest Bean stubble, dry and rendered hard by the treading of sheep; a portion of it laid in narrow ridges, which were difficult to work across; the rest presented a fair trial for steam cultivation." Here is what the judges say of my work done in this field:—"Throughout the whole of this trial he (Mr. Smith) preserved a uniform and steady pace, making by far the best work over ridge and furrow, and stirring the soil most effectually." This is positive evidence that the whole of this field was nothing more than "a fair trial." Of the next field into which we were taken, the judges write thus:—"A clean Clover lea in a high state of cultivation. The quality of the soil varied exceedingly; the top portion being quite of a light character, whilst the bottom part was an extremely tough and retentive clay, considerably baked and cracked by the action of the sun."

No fault whatever was made here as to the "difficulty of soil," &c., by the judges, but they cut out a tougher job for us for the next day. Here is what they say of it: "A field of old sward on the heaviest and most obdurately-hardened of clays. It was in fact a test of the utmost power and endurance of the apparatus in most difficult and trying operations." Now this was a picked "difficulty." Then judges sent us there on purpose to break the machinery to pieces if they could, and they did manage to break it. Both of Fowler's sets went to the wall in the shaft of breakage. In those days the Society looked out for a short life and a merry one at the cost of the exhibitors; now it talks about its "difficulties."

The next charge is—"and the presence of a crowd of anxious spectators, who interfered with the delicate tests applied by the judges and the Society's engineer." Now this is a false charge. The "spectating" public on all occasions were well-behaved; they were invited to look and they did look, and that was all, for until now I never heard of a "delicate test being interfered with" by them.

Now the Society think it is time to look to their past awards to see whether hard practice will support them. Hard practice will tell them that the old roll-over plough is but a tenth-rate implement when applied by steam-power, and that when they awarded to it the great 500*l.*, it was not worked practically at all, for the apparatus with which it was then worked is not now in existence, and was not then a practically and economically-working machine. It will also tell them that the 10-horse set of Fowler's, to which they awarded 25*l.* at Worcester, was not a practical machine, neither is it now, for it is not in practice at all.

So much for the past; now for the future. This noble Society is going to do something. Now as I have no faith whatever in what it is going to do, I will add the two following letters:—

"Royal Agricultural Society, 12, Hanover Square, London, March 16, 1866.

"Dear Sir,—Being anxious to gather particulars relating to cultivation by steam power over the whole of England and Wales, I shall esteem it a favour if you will kindly furnish me with the number of sets of tackle of your manufacture now at work, with the names and addresses of the proprietors arranged by counties. I am, dear Sir, yours faithfully,

"W. Smith, Esq." "H. HALL DARE, Sec."

"Woolston, Bletchley Station, March 17, 1866.

"Dear Sir,—In reply to your inquiry, I beg to inform you that I shall not give the information required, the Royal Society having used me so unfairly throughout that I have no faith whatever in anything they may now do upon the question of Steam Cultivation. I send you herewith a book of "Facts," worth, in the shape of information, double anything your Society can do. Yours truly, W. SMITH."

"H. H. Dare, Esq., Sec. Royal Agricultural Society."

This Commission of the Royals is to get cost per acre, depth, &c. My book gives all this, with some exaggerations into the bargain. Some of Fowler's men talk about 16 inches deep, &c.

The age of the machinery is to be looked after. The Woolston machine is over 10 years old, and is now in good working order. There are a number of the Woolston sets over eight years old. The Woolston farm stands A 1 as to age of working, and the Woolston followers come next, look where the Royals may. Surely they will never look at Woolston farm or Woolston men.

I will not follow their queries further. They are all dealt with in my book of "Facts." I think it right to let the public know what I do in the matter, therefore I beg that you will publish this. *William Smith, Woolston, Bletchley Station, Bucks. April* 16.

THE CATTLE PLAGUE.

1. The following returns were issued on April 13.

These returns do not profess to give the total number of cases which have occurred in Great Britain, but only those which have been ascertained from information received at the office from inspectors. Columns 1 only record the cases reported as having commenced during the weeks indicated by the headings; "back" cases being added to columns 2.

Census Divisions.	1 Number Attacked. Week ending March 31.	Week ending April 7.	2 Result of Reported Cases from Commencement of Disease. Attacked.	Killed.	Died.	Recovered.	Unaccounted for.
Metrop. ..	92	67	7008	3442	3516	343	007
N. East. ..	8	6	5456	1615	2785	445	211
S. Midland .	526	396	17,262	5443	9886	1546	393
Eastern Co.	217	122	10,446	4509	4770	766	401
S. Western .	42	18	1634	587	776	199	72
W. Midland .	513	444	11,991	3661	6203	1316	810
N. Midland .	537	511	13,941	6166	6040	1066	669
N. Western .	880	899	55,331	10,479	33,975	5862	5015
Yorkshire .	534	338	32,651	5832	18,259	5804	2756
Northern Co.	281	280	7456	3904	2491	941	120
Monmouth. & Wales .	122	120	7864	523	5950	1079	312
Scotland ..	204	154	46,143	5869	27,078	10,671	2525
	3,956	3,361	217,683	52,029	121,725	30,038	13,891

NOTE.—62 Inspectors who reported cases last week have not reported in time for this return—viz., for the county of Buckingham, 1; Cambridge, 3; Chester, 1; Hertford, 1; Huntingdon, 2; Lancaster, 7; Lincoln, 6; Norfolk, 3; Northampton, 3; Northumberland, 1; Salop, 1; Suffolk, 1; Stafford, 1; Surrey, 1; Yorkshire, 15; Metropolitan District, 7; Flint, 2; and Scotland, 8

These Inspectors returned 594 cases last week.

* "Facts of Interest to the Farmer, by John Fowler & Co., Revised and Amended by William Smith."

2. THE NEW ORDER IN COUNCIL.—At the adjourned meeting of the Staffordshire Quarter Sessions at Stafford the other day, the Earl of Lichfield, who has taken a prominent part in promoting measures for the suppression of the cattle plague, criticised with some severity the course pursued by the Government on the question. With regard to the general system of licences laid down in the recent Order in Council, his Lordship pointed out that nothing could be easier than to secure a form of certificate and fill it up with names. And how was any one in Staffordshire to say whether such names were or were not the genuine signatures of persons in, say Devonshire, duly authorised to sign such certificates? His lordship referred to his own proposals on this subject, that all forms of licence should be issued by the Government to the local authorities throughout the country, through the Post Office, that they should bear a Government stamp, and that before their issue from the local post office they should receive its stamp also, as a proof that they really emanated from the place from which they professed to have come. Again, there was the danger of owners of stock, on the first appearance of the disease, trying to get rid of their animals, which would, under the system now proposed, diffuse the plague through the country. To avoid this he had some time ago proposed that every local committee should open a register for cattle to be sold or moved, and that they must be so registered at least three days before they could be moved. This would at once prevent the removal of animals having the seeds of the disease before its existence became known, and would afford a means by which purchasers might readily inform themselves of animals which were for sale. It was decided to retain in the hands of the Court of Quarter Sessions the power of declaring infected districts.

3. CHLOROFORM TREATMENT AT SUSSEX FARM (*From Norwich Mercury*).—The cattle plague or rinderpest, as I suppose, appeared amongst my fat cattle on the 3d of March; it had been making havoc during the preceding fortnight on three farms in my immediate neighbourhood, the nearest only one mile distant. The first animal attacked on my premises was immediately slaughtered; there were unmistakeable symptoms of the disease both externally and internally, but he was taken in time. My other cattle were all attacked so rapidly, yard after yard, that between the 3d and the 11th, 88 beasts were slaughtered off the farms. I lost, however, only one, which was condemned and buried on the 10th, a Devon working ox, which I had thought was safe.

I had from the first used carbolic acid and chloride of lime as disinfectants. My yards, sheds, and outhouses were sprinkled or watered with solutions of both three or twice a day, hoping thereby to save my cows, calves, and workers. On the 11th I had only six cows and their calves left. On the 10th, my cows showed the early symptoms, and I determined at once to try chloroform, of which I had just heard from Mr. Hammond that he could recommend it as a remedy. We began that afternoon, but we were ignorant and awkward in the application, and it took us three days to learn how to administer the chloroform properly. At last we succeeded.

The symptoms of disease, as manifested in my cows, appeared nearly in this order:—

1st.—A rubbing of the head against posts, and shaking it.

2d.—Dull, listless eyes, with weeping and drooping eyelids.

3d.—Loss of appetite.

4th.—Dry nose, nostril husky outside, swelling inside, and of dull, copper-like colour.

5th.—Staring coat, erected mane, tight skin, with shaking or shivering.

6th.—Inflammation of eyes, mouth, and nostrils; drooping eyelids; breath bad. The papillæ of the cheek very red; some slightly ulcerated. Urine smelling very strong.

7th.—A constant low moaning.

The chloroform was administered every time the fever returned, as it did at irregular intervals of from 12 to 24 by 48 hours, and in this way one cow had six doses, two cows had seven each, one had eight and one had 12, and one had 13 doses.

The first cure was effected in ten days, with six doses; the one longest in hand had 13 doses in 16 days.

The immediate effects of a successful dose were—first, the inflammation of the eye, eyelids, and mouth gradually disappeared, and the moaning ceased during the trance; secondly, the cow, although she perhaps refused to eat anything for several hours previously, ate greedily of Turnips, or drank greedily of gruel, the moment she recovered consciousness, and often before she could walk steadily.

The cows had no medicine of any kind, but they were fed, by the advice of our veterinary surgeon, with oatmeal gruel and Linseed tea mixed, bran, oilcake, cut hay, long hay, and a few Carrots and Turnips. When they would neither eat nor drink, gruel was given to them by the horn. They were kept warm and dry, under cover, and with cloths upon them, in well-ventilated sheds or low houses, and were well rubbed down every day. They never scoured; they fell off about one-third of their quantity of milk; and they all lost flesh. Two of them were very much reduced.

The chloroform was administered by first casting the cow in a straw yard, and then placing a leather nosebag over the muzzle, and fastening it to the back of the head, loose enough to admit the hand of the operator.* A handkerchief doubled to about 6 inches square, upon which we poured half a liquid ounce of chloroform, was then placed directly before the nostril (a little hay is necessary at the end of the bag, and up under the jaws of the animal to keep the handkerchief in its place); in about three minutes from the first application we gave the second ½ ounce in the same way; in five minutes the animal would be asleep, breathing easily, and she would be so for eight or 10 minutes. If it happened that the breathing was laboured, the bag was loosened, and handkerchief readjusted, or the cow might be suffocated. The hopples were loosened whilst the cow was in the trance, and then as she recovered she could get up without trouble.

I know that professional men do not believe in the efficacy of chloroform. They tell me we were mistaken as to the disease; it was not rinderpest. I cannot argue with professional men, but I state what I saw, and what I know; and my statement must go for what it is worth. They say it was some other fever; if so, three inspectors who saw the cows were mistaken as well as myself; but even if it was some other fever, chloroform cured it, and if it can cure one fever why not another? They "cannot see how chloroform can operate as a remedy." Perhaps not, yet they use chlorides for killing fever poisons in the air—why not in the blood?

My cows had all the early symptoms which marked the attack in my neighbours' cattle, and my own. Many of the former, and one of my own, were killed and buried whole. I slaughtered all my others by the advice of one inspector, and he was right in giving that advice. I acted on my own responsibility as to my cows, and they are now all alive and well. *H. E. Blyth, Sussex Farm, April* 11.

P.S.—Since writing the above I have learned that chloroform has been applied by some farmers, in a very imperfect manner, to diseased cows, and that there has been no benefit. Parties must bear in mind that unless the animal can be made to inhale the chloroform in a quiet way little good can be done, and that unless perfect sleep is produced very little benefit can be expected; and that if the disease is very far advanced before this treatment is begun, there is little chance of recovery. These imperfect applications only tend to throw discredit upon the use of chloroform.

4. PROFESSOR GAMGEE AND THE CATTLE PLAGUE.—Your correspondent Mr. H. S. Constable, in his notice of Professor Gamgee's "book about the cattle plague," advances opinions and theories which I consider the dear-bought experience of this nation should long since have banished from the minds of the most sceptical. I have not seen the Professor's book, but I have been a close observer of events in connection with the plague from its first introduction into this kingdom until the present period, and I feel convinced that had the Government paid more respect to the advice of the veterinary professors in its early stage they would have saved the lives of many thousands of valuable animals, and the loss of several millions of the nation's wealth—which has been sapped from its inmost core by this insidious and fatal disease—would have been averted.

Mr. Constable professes to quote the opinion of "a knowing old farmer," and indeed, if his statement is correct, he must be one of the olden school who could in these times of cheap publications and facility of communication have told him that "we heard nothing of this plague except in the town cowhouses till cold weather came and all the cattle were taken up and crowded together in yards and sheds," whereas it had so far extended its direful influence throughout the country that the Privy Council issued their order empowering the appointment of inspectors on the 24th July last, and slaughtering without compensation was speedily resorted to. Mr. Constable admits that Gamgee was right when he said "there is no specific cure for the cattle plague," and proceeds to say the same thing in respect to malignant low fever in man, adding "open windows, bright daylight, and cold fresh air will cure the majority of cases," and he would fain have the world believe that our cattle do not enjoy those blessings—and thus accounts for the extended ravages of the disease. The fallacy of his reasonings can be readily shown by the experience of the plague in this county. It was introduced by a bull from the London market, and offered for sale in the Hereford market on the 16th of August; he was placed with other cattle on pasture, and died on the 14th September. In a few days his companions sickened and died; they had grazed beside a meandering stream of water, and several lots of cattle belonging to occupiers of land adjoining that stream caught the disease and died. There was no lack of pure fresh water, no lack of ventilation (they were the whole time in the open air), no lack of bright daylight, yet only one animal out of the first four herds on which were attacked recovered, although these were all allowed to linger on until exhausted nature closed their sufferings. Mr. Constable proceeds to question the correctness of the Professor's opinion, that "the disease is a strictly contagious one;" but the experience of this county confirms that opinion in most marked manner—the disease having followed the downward course of the brook before alluded to. The herds grazing on its banks were removed, and thus its further extension in that direction was arrested, but unfortunately a lot of animals in a state of incubation was driven along a large road but little used for several miles to a distant farm, and alas, in a short time the disease broke out in five distinct herds depastured at different points along the route they had travelled, and all attacked died. This was in the month of October, therefore before the cattle were taken to the yards; happily strict isolation confined it to those herds. I could extend the information respecting subsequent visitations, but I consider that by so doing I should unnecessarily trespass upon your valuable columns. I will therefore briefly add that the origin of nearly every case which has occurred in this county can be satisfactorily traced to contagion.

* The handkerchief should be stitched round the edges to prevent the corners getting up the nostrils, as they did two or three times. We tried lint and sponges, but the handkerchief was best to handle, for by the rapid evaporation through the sponge half the chloroform was lost, and ice formed on the outside of the sponge.

and, to use Mr. Constable's own words, "all I wish to do is to protest against one being led by the nose by men who, however admirable for zeal and diligence in their profession, cannot be expected to be authorities in matters beyond their beat," which is evidently the case with that gentleman in his criticisms. In reference to the slaughtering now going on he designates it a "useless, senseless, destructive, and barbarous massacre of cattle;" but he surely could not have compared the official returns for the past 10 weeks, or he would have hesitated in using such language. The following analysis is to my mind a satisfactory proof that under God's blessing the right course is now being pursued for the extermination of this frightful malady, which a short time since threatened the destruction of those beautiful herds which had become the pride of our land and the envy of the world.

	Attacked.	Killed.	Died.	Made no return.	
Week ending Jan. 27	11,745	471	8854		
" " Feb. 3	9,153	506	6417	200 inspectors	
" " " 10	11,590	723	8524	251	"
" " " 17	13,001	864	8979	306	"
" " " 24*	10,167	1641	7175	281	"
" " March 3	7,319	4670	3271	246	"
" " " 10	6,518	5587	1185	225	"
" " " 17	6,261	5446	779	261	"
" " " 24	4,704	4196	318	30	"
" " " 31	3,956	3591	154	19	"

T. Duckham, Ross, Herefordshire, April 11.

THE POTATO CROP.

[The following excellent paper on the cultivation of the Potato was read by Mr. Shirreff, of Saltcoats, before a recent meeting of the East Lothian Agricultural Society.]

I WILL begin by telling you that the Potato has been cultivated in Europe for nearly 300 years. It was imported from South America, and I am certain that wonderful country, rich though its mines were with the most precious minerals of the world, produced no gem which could approach in value that small, unknown, and then despised tuber, which has since become an essential item in the food of man. In its value as food it might compare with the manna of the wilderness, on which the Israelites were miraculously fed in days of old. Are there not wildernesses in our isles where Potatos are mostly the whole food of the population? A sad and painful experience proved this when the Potato blight of 1846 occurred. In other and more highly favoured districts Potatos are a principal article of food of every class, both rich and poor. You all know the story of the Irishman in Scotland who had been for some time deprived of favourite "Praties." Meeting with a friend one day, he asked on what he had dined. "Roast-beef and Pitaties," says he. "By my soule that's quare," says Pat, "I had the very same dinner—*barrin the beef*." Now in these times, when the herds of Great Britain are being decimated by this mysterious rinderpest, this Irishman's joke may not be such a joke after all.

Having endeavoured to show the value of the Potato as an article of food, we now come to regard its value as an article of farm produce. Here the change which a few years have wrought is immense. Twenty years ago very few Potatos were grown in this county. Now the balance-sheet of every farmer in the middle and lower districts of the county is more affected by the Potato break than the whole of the other farm produce. The causes which led to this were first—the disease or Potato failure of 1846, the opening of the North British Railway, and the introduction of guano, which, by the way, comes from Peru. It is a curious fact that we should be indebted to the same country, both for the vegetable and a manure almost absolutely necessary to its successful and extended cultivation. Great success attended the early speculations of those farmers who went heavily into Potato growing; at first they were few in number, and had the trade all to themselves; the dry climate of East-Lothian gave them a great advantage over districts in Scotland where Potatos were extensively grown, but where they were much more liable to disease. To show how great was the success for some years, one extensive farmer told me that one field realised upwards of 80*l.* per Scotch acre. This was a wonderful return, being almost equal to the fee-simple value of the land. But what has all this led to? Reports of the real profits became exaggerated by hearsay into enormous gains, and this led to a fictitious value being attached to the land. Farms in districts not suited for their growth have been taken at increased rents on the calculation of the profits of the Potato trade; but I fear this will be found to be a mistake, because it is only in land thoroughly adapted for their cultivation that the trade can be pushed with anything like success. Take, for example, red land near the coast, let at say 6*l.* per Scotch acre, and contrast it with the average soils in the county, let at 3*l.* we shall suppose. Dunbar soil Potatos always command from 10*s.* to 15*s.* per ton more. This extra price, even on the calculation of equal produce, gives the Dunbar grower an advantage of 1*l.* per acre, although he pays 3*l.* per acre more rent; and I have no hesitation in saying that a dealer's estimate of the two crops would probably reach 10*l.* per acre, and the probability is the expenses for manures would be greater on the 3*l.* per acre land. I offer these illustrations to show that it is not so much a question of rent as one of soil and locality, which is the great essential for success in Potato husbandry.

The expenses of the Potato crop are enormous; besides the husbandman's expenses for rent, labour, and manure, the raw material passes through so many hands. The grower sells to the dealer: he consigns to the town commission agent, who sells to the retailer, and at last they arrive at the consumer. I think nothing can illustrate this better than the fact of one of our Club having actually been out of pocket for charges alone, with a truck of good Potatos he sent to London in spring, 63*s.* Most of us can recal a bright year in Potato cultivation, viz., crop 1860; but I believe its very success has done harm. It has led to a kind of agricultural gambling. Luckily for farmers they have been assisted by speculative dealers, otherwise their losses would have been greater. We have to contend against increasing cultivation, both at home and abroad. These high-speed steamboats almost equal the despatch of luggage trains. Abroad the expenses are very much less than ours, and the quality of their produce, especially of the early varieties, nearly equal to ours, while they have the great advantage of an earlier climate. But with all these disadvantages what can we do? There seems little prospect for the farmer who must purchase lean stock being paid by his Turnip crop. Consumers, I have no doubt, are under the impression that feeders of stock must, with present prices, be realising large profits; but it is not so, because the price of lean stock is very high; there is therefore little encouragement to sow a large Turnip break. Seed Potatos are unusually cheap, and the temptation is strong to try them again, and trust in another lucky year like 1860, when all the Potatos in Britain were blighted but our own. There is no doubt we benefit to some extent when the disease is rife—our dry climate saves our crop.

I would now pass on briefly to the practical part of the subject—namely, the best system of cultivation and most profitable varieties to plant. Speaking as I do before some of the most extensive and successful growers of Potatos in our county, I beg to say that it is done far more with the hope of hearing your experience than of being able to communicate anything new or interesting myself; and there are others still greater in the Potato trade—Potato princes I might call them—not members of this Club, whose very name you would associate with a prime Regent or choice Dalmahoy, who may chance to notice our discussion. We would ask them to correct our fallacies. We wish we could secure the benefit of their superior skill. Then, first of all, with regard to the preparation of the soil. Deep cultivation is the great essential for success. The soil should not be turned over in spring, merely stirred as deeply as possible with grubbers, then harrowed and drawn off in drills varying from 25 to 28 inches in width, according to the variety of Potato. These drills should remain untouched for a considerable time, so as to allow all the weeds to braird, when they can be harrowed and rolled. The harrowing may be repeated once or twice after the Potatos are through, and no damage done to the plants if harrowed across the drills—a great saving of hand-labour is effected. In June and July single-horse grubbers are used between the drills. Some people prefer the large double-horse grubber—you can use it by removing the two outside teeth. For stiff soils this is a great advantage. The last process is what we call earthing or furrowing up. This should not be done too early, and, if possible, when the land is a little moist. It is a most important feature of Potato husbandry this. If the drills are thoroughly clean, the earthing up ploughs should just follow the single-horse grubber. Then in regard to lifting, the general practice of farmers is to use a plough. A number of dealers who purchase by the acre use the graip, which in the hands of an experienced Irishman is perhaps the most profitable mode—only how difficult to command such labour! It is a pleasure to see an Irishman working *con amore* with a spade or hoe, but above all with a Potato graip. With him it is indeed a labour of love.

When Potatos are intended for seed they should be lifted before they are ripe. This causes less sprout in the pits. When intended for table use the stems should indicate that the bulbs are quite ripe. Some people suppose that by cutting off the stems early they avoid the disease; but this is a mistake, and more liable to do harm than good. We now come to the last act, viz., pitting. Potatos, if possible, should never be lifted wet. The pits should never be more than 4 feet wide at the bottom—I would almost prefer 3—and gradually sloping like a cone to the top. Straw should not be put too thickly over the Potatos—just a moderate covering and then a layer of earth, leaving the straw exposed with 18 inches of the apex of the pit for a fortnight or three weeks after being pitted. I have given a few of the leading features of the labour. I would now direct your attention to the best varieties to plant. You are all aware the different varieties of Potato have increased enormously of late. Their name is almost legion, and would lead to endless discussion were I to attempt to enumerate even a few. I suppose you all agree in regard to the variety known as the Regent or Prince Regent being the best field variety for late planting. We now come to the planting of the sets. Should the tubers be cut or uncut? I cannot give you any experience of my own on this point, but I consulted an eminent horticulturist in our neighbourhood, who assures me beyond all doubt that you can raise the largest and most valuable crop by planting whole Potatos, taking care to rub out the eyes except one or two at what is known as the rose or cluster end, and never to put a knife in the Potato. He allows 3 feet between the drills, and from 14 to 20 inches betwixt the sets. With some early garden varieties he allows less interval between drills and between the plants. By planting whole tubers, he says, how much less chance of the crop being blanky, which often happens from the cut sets taking dry rot before throwing out the shoots! So much for one experience. But I consulted another gardener, one of great observation and experience; he told me never to plant whole, but set with single eyes; to cut off the rose end, and divide the tuber into sets with single eyes—at least with not more than two if possible. Now you see here is difference of opinion, and as far as possible to solve the problem, for my own satisfaction I have instituted a series of experiments with ten varieties of Potatos. Some of these experiments are made in the field, some in the garden. I give the names of the different varieties—Dalmahoys, Daintree's, Ross's Early, the Flounder, Bloomer, Mona's Pride, Prince of Wales, Rivers' Royal, Hudson's King, and Myatt's Prolific. The result of these experiments I will be glad to communicate to the Club. For early purposes the Dalmahoy. The latter should be planted in light early soil in the end of February or beginning March; 25-inch drills. The former should be planted about the end of March or beginning of April; 28-inch drills. Besides these varieties there are Flukes and Rocks and Daintree's; the latter thought by some to be superior to the Dalmahoy. The Red varieties have almost disappeared in our neighbourhood. The Orkney Red was a great favourite some years ago—of late it has actually refused to grow, even though imported direct from its favourite island. I think it is of immense importance to change the seed every year. Last year was an exception, but in nine cases out of ten you will find the advantage of getting seed from a later to an earlier district. I can give a strong illustration of this. In regard to crop 1860 (which I might call a jubilee year), I planted seed from the neighbourhood of Dunbar, also some grown by a neighbour, and some from Ayrshire. I sold them all by the acre, and the dealer's valuation was 8*l.* per acre more for the Ayrshire than the Dunbar seed, and 5*l.* per acre more than the produce from my neighbour's seed. I believe large quantities of seed Potatos are sent from this county to Yorkshire, and there could be no finer seed for this purpose than from the neighbourhood of Dunbar. There remains now one most important point upon which I have not yet touched, viz., manure. This, of course, is regulated by the previous cropping of the field—in short, by the condition of the land. There is no greater fallacy than attempting to grow too large a breadth of Potatos, *i. e.* to try to persuade yourself and spin out the manure, applying say 18 loads per acre instead of 30, because you will have more Potatos in a comparatively small plot thoroughly well done to, than even a large plot tolerably manured. Our system of farming in East Lothian is generally a five or seven years shift. On many farms of late Potato has been substituted for a Bean crop. When we grow Potatos after stubble perhaps the best system is to plough in a portion of dung in autumn, and apply more in the drill in spring. Occasionally Potatos are grown after a Turnip crop, where the roots have been eaten off with sheep. This is done on some farms to get rid of wild Oats. Artificial manure is only applied. We sometimes grow Potatos after two or three-year old pasture. This is being done extensively this season, owing to a scarcity of dung. Very large crops of Potatos can be raised after pasture with artificial manure alone, especially when oilcake has been given to the grazing stock. There is a subject occupying much attention at present, viz.:—Can artificial manures be substituted entirely for farmyard dung, and the condition of the soil kept up? My own impression is that it can. I have a few acres of a field (for experiment) which has not been manured with dung since 1854, and I can see no decay in its condition; but with regard to this I would refer you to the careful experiments made by Mr. Mylne at Middry Nains, and published in the Messrs. Cunningham's annual circulars. I will now read to you some extracts of a letter from Professor Anderson, to whom I wrote asking what mixture of manures he would recommend. You observe how much value he attaches to potash. I have tried it two seasons, and am convinced it is of great benefit. I recollect observing a field of Potatos in the immediate neighbourhood of Dirleton—by far the best crop in the district. Potash and magnesia had been applied with the guano. I am sure we are all indebted to Professor Anderson for his advice, and the best return we can make, is that two or three of us should join and conduct the experiments which he has proposed. Farmers, as a rule, are bigoted to old customs, and most difficult to persuade. Why should we not try to imitate the medical profession in their ready adaptation of every newly-discovered theory, and test its value by practice. What a complete change a few years has made in the treatment of fever and inflammation! All bleeding has been stopped in the medical world. I wish we could say the same in the agricultural. We are bled freely enough, the outlay for manures is enormous, and what makes this all the more galling is the conviction that a great deal of it is thrown away. In conclusion, I have only to observe, with all these expenses in connection with growing Potatos, coupled with the long distance we are from the principal market, it is only profitable to grow Potatos to a large extent in the soils best suited, and where there is easy delivery of the crop either by sea or rail. We have to contend against an increasing trade in the large counties of England near the great metropolis. I have a letter from a large commission salesman in London, who tells me that the breadth of Potatos planted in Middlesex, Essex, Kent, and Lincolnshire, has been doubled of late. Numbers of branch railways are being opened up, giving every facility of transit. Gentlemen, patience is a virtue; I fear I have taxed yours sadly, besides proving a theory of the great Carlyle, who, in his inaugural address as Rector of the Edinburgh College, is reported to have said—"There is too much spoken," and that would imply also too little done.

We subjoin the letter from Professor Anderson referred to by the Chairman:—

"13, Shuttle Street, Glasgow, March 21, 1866.

"Dear Sir,—I can quite understand that the cultivation of the Potato, for which farm-yard manure is commonly con-

* The Cattle Disease Prevention Act came into operation during that week.

sidered so important, should give rise to some discussion at a time when the supply of dung is likely to be small. I directed some attention to the subject several years ago, and I came to the conclusion that it was perfectly possible to raise, on ordinary soils, a good crop of Potatos by means of artificial manure, but that, in order to succeed, it was necessary to use them liberally. The use of potash I think especially important, because the Potato removes from the soil a very large quantity of that element. The action, however, is somewhat uncertain, and a remarkable instance of this came under my notice in the course of some experiments made with potash salts at the instance of the Highland Society several years ago. Potash was tried on Potatos with the most extraordinary results, so much so that one of the experimenters wrote to me to ask when he could obtain a supply for the next year's crop. He obtained a considerable supply at some cost (for it happened to be dear at the time), but during that year it produced no effect whatever. No cause for this difference could be detected, but this was probably because we did not know the conditions under which potash acts.

"Were I to use an artificial manure along with farm-yard, I think I should select a mixture of 9 cwt. Peruvian guano, 9 cwt. of a good phosphatic guano, and 2 cwt. of muriate of potash, containing 50 per cent. of potash. In default of a phosphatic guano, which is sometimes not easily got of good quality, I would use a good bone ash superphosphate. For use without farm-yard manure the same materials, with a somewhat larger proportion of Peruvian guano, might be taken, and I believe that great benefit would be derived from the addition of Rape dust to them.

"Of course, considerations of economy must not be neglected, and it might often be necessary to modify proportions on this account; but I would not reduce the quantity of potash, but, on the contrary, would rather increase it where no dung is to be used. Fortunately potash has lately become much cheaper, and I have no doubt it will soon come into more general use as a manure. The diminution in price is due to the opening up the supplies found in the salt mines at Stassfurt, in Prussia, which has had such an effect that muriate of potash, containing 83 per cent. of the pure salt, which was formerly sold at 21l. per ton, has been as low as 7l., and is now about 9l., above which it is not likely to go.—I am, dear Sir, yours truly, "Thomas Anderson."

"Samuel D. Shirreff, Esq., Saltcoats, Drem."

During the discussion which followed, Mr. Hope, Fenton barns, said his experience of lifting Potatos was that they should not be lifted perfectly dry; only if he did so he found that they could be preserved by throwing in a few shovelfuls of earth among them. If he did not do that they were apt to become black ended, and a loss was incurred. Mr. Shirreff had travelled over almost the whole subject, but one thing he had omitted, namely, the use of Potatos for feeding purposes. He himself had been one of the largest growers of Potatos for many years, and he considered there was a great deal of truth in what Mr. Shirreff said, that unless the land was fitted for their growth no great profit was to be derived. To grow Potatos well land required to be in first-rate order, and there was no doubt farm-yard manure was best adapted for them after a white crop. He thought it would be well that a good portion of the land under green crop should be laid out in Potatos, as in such years as the present what would farmers do with their cattle but for Potatos. A great many cattle had this year been fed on Potatos, hay, and linseed cake. With the railways shut up as at present, they could not get away their cattle, and though there was an extra crop, a crop and a half, of Potatos last year throughout Scotland, which caused their cheapness, they were now finding the benefit of them in feeding their cattle and sheep. The late Mr. Howden, Lawhead, who was deservedly considered to stand at the head of the profession, grew one acre of Potatos for every two acres of Turnips he had, and this he found to pay much better than growing Turnips only. He had been in the habit of growing Potatos after Turnips for many years. He ate the Turnip crop off with sheep, and then followed with Potatos, applying artificial manure only; he found that was an excellent way of getting the land thoroughly cleaned, and was perfectly sure always to have a good Wheat crop with good seed Grass afterwards. He found that by growing Potatos after two or three years old pasture the largest crop was returned at the least expense.

Mr. Dunbar, Borneymains, said they could not as a rule produce Potatos to feed cattle with at a profit. He had had a good deal of experience in the feeding of cattle, and as a rule they could not give 30s. a ton for Potatos for that purpose. As it happened Turnips were scarce this year, and he believed they were feeding three-fourths of their cattle with Potatos, but they were eating them with a profit. They could grow a far larger quantity of Turnips with the same manure. He would undertake to grow far more Turnips for cattle feeding with Professor Anderson's prescriptions than he could of Potatos. He believed that Potato cultivation had done more to ruin the farmers of East Lothian within the last ten years than any other circumstance. A few men near the railways had made fortunes, but the effect had been to raise the rent of land from the coast to the Lammermuirs, where Potatos could not be grown. Instead of encouraging the extension of the growth of Potatos, they should say to every man, "Grow as few Potatos as you can."

Mr. Elder, Beresford, said he considered he would be as well with a crop of Beans or of Turnips as of Potatos. When he took everything into account, when he considered that they were grown at great expense, getting the best manure, the best land, and the best of everything on the farm, he was sure he would have been as well with a crop of Turnips or of Beans. He believed Liberty Hall to be the best house the farmer could live in; but notwithstanding, he could not help thinking that the restriction which the noble Marquis the Lord-Lieutenant of the county put his tenants under, might safely be extended to some of them. He thought there was nothing more clear, than that there were too many Potatos grown, and unless the disease came to the rescue, it would ruin half the farmers of East-Lothian, especially those who persisted in growing a large extent on poor land. He might state to them his method of growing Potatos. He ploughed the land deep in the autumn, giving it a good stock covering. He then gave it another turn over in the spring. He then ploughed it up, giving 25 or 30 cart-loads of the best made dung from the farm, along with 4 cwt. of Peruvian guano. He had tried bone manure and Rape as well as guano, but he always found that guano gave him the largest return. The question they had to decide was, how to make Potatos a remunerative crop, and he thought this could be done by observing the following conditions:—First, never plant Potatos on land that was not naturally adapted for them. He was not going to enter into the question of what land was and what land was not adapted for growing Potatos; but he might say that strong clay land, strong bottomed land, was not. They might dung it as they liked, but it was seldom they would be able to grow a large crop in a wet season. The second condition was, after having selected the land, to give it plenty of dung and guano, for Potatos were greedy of dung. The third condition he would name was to restrict the breadth to one half. He might be wrong, but he thought from a consideration of the great laws of supply and demand, that they would realise as much from half the breadth as they were doing for the whole which was now planted, and they would have that land, which he maintained was not needed, for the growth of Turnips and Beans or something else. It was a loss to grow Potatos at 7s. or 8s. a boll, and he might say if the present price of Potatos continued, it would have been well for the British farmer never to have seen the face of a Potato.

Mr. Scot Skirving said he was much pleased to see so many members taking part in the discussion. The Chairman had alluded to Mr. Carlyle's aphorism that "silence was the eternal duty of mankind," and he was sure if Mr. Carlyle were to visit this Club, he would be delighted with the philosophy of many of the members, who had been practising the doctrine he taught all their lives. With regard to growing Potatos without farm-yard manure, he had had some little experience of it, though chiefly upon ground which had for some years been under pasture. He thought if the land was in good condition, and had been long pastured by sheep, that giving farm-yard manure only renders the Potatos too coarse. This had once happened with him. It was the largest crop he ever grew, but the Potatos had to be given to cattle. He used a mixture of portable manure, compounded by the Messrs. Cunningham, giving 16 cwt. per acre. It contained what those gentlemen thought a proper mixture of guano, phosphates, potash, &c. The remark of Professor Anderson as to potash when dung was not used was a very valuable one. With regard to the practical point of whether they should stop growing Potatos, there were one or two things to be said. Cobbett said long ago that Potatos had ruined Ireland. Now he (Mr. Scot Skirving) thought they had gone a long way to ruin the farmers of East Lothian, however much they had benefited the owners of the land.

Mr. Sadler, Ferrygate, was perfectly sure that if there were a clause in all their leases that the Marquis's restrictions were to be observed, the rent of land would fall 1l. per acre. He himself had had good years, and he had had bad years, but he considered if he could grow on the average a fair crop of Potatos, he would be very wrong to abandon their cultivation. He believed the question of soil was of great importance, for he had heard of Dunbar Potatos selling for 5l., while the same variety from Dirleton were sold for 2l., or even for 15s. Notwithstanding all this, one year with another they put a considerable sum in their balance sheet. The preparation for cropping entailed good farming, and no bad farmers would continue to grow Potatos. He believed that that portion of farming came nearer garden culture than any other. He had had great pleasure in copying from his friends what he thought was good, but from none more than Mr. Hope, who, he believed, introduced the practice of growing two green crops successively.

Home Correspondence.

The Poultry Yard.—As I am a poultry keeper and a poultry lover, I read with much interest the articles that from time to time appear in your Journal on "The Poultry Yard." Having had 10 years' experience, and having tried various modes of rearing both with and without coops, I think I can mention an improvement on the kind of coop recommended by "I. A. C." in your number of April 7. I decidedly object to any plan which confines the hen and allows the chicks liberty, not only in the early morning, as "I. A. C." mentions, but at any part of the day. They may do well at first, but they become indifferent to the sound of their mother's cluck, and from disregarding her call when at large, so many misfortunes happen, that for some time I have discarded the use of coops altogether. In my contrivance in place of them, the hen as well as the chickens can go in and out to the little enclosure attached at their pleasure, and no trouble need be taken to shut them up at night, as the mother's instinct leads her to keep them in as much as is necessary, and she is sufficiently protected at the sheltered end, particularly if the opening for egress, as seen in the sketch, is made quite near to one corner. If this be placed in a dry sheltered spot, where in hot weather it is also protected from the mid-day sun, and the ground under it is thickly covered with sand or ashes, it need scarcely be moved from the time the chicks are put in till they are fit for liberty. This is much less trouble than putting them on Grass, and much safer in wet weather. Here, in North Wales, we have had lately a great deal of cold east wind and driving rain, notwithstanding which I have just set at liberty two hatches, not one of which has died since they came out of the shell at the beginning of March. *J. W.*

An accompanying sketch shows the shape of the shelter and yard. It is made of ¾-inch deal, and the yard is covered with zinc wire netting. One of the planks of the roof is made to work up and down in a groove for convenient access and inspection. The highest part of the roof is 2 feet from the ground. From back to front of shelter is 1 foot 6 inches; across the front is 2 feet; the length of inclosure 3 feet 6 inches; height of sides of inclosure 14 inches. Larger coops of the same kind are useful in bringing up turkeys.

Farmers' Clubs.

London: *The Prize System.*—The following report of the discussion on this subject last Monday is abridged from the "Journal of the Farmers' Club":—

Mr. E. Edmunds (Rugby) said the question was, were the Royal Agricultural Society and other societies of the same kind established simply for the purpose of holding shows? Mr. Crosskill thought that they were instituted for more important objects than that, and he (Mr. Edmunds) agreed with him. When the show system was first established there were no great agricultural implement makers, and almost all implements were in a rude state; the magnificent Shorthorns, Devons, and Herefords, and the different crosses of sheep had not then penetrated to all parts of the kingdom as they had done through the influence of the shows, but excellence had since been carried home as it were to every quarter of England, and it had been shown even in remote districts what could be produced. He agreed with Mr. Crosskill that agricultural shows had produced a great influence up to a certain point; but then came the question, if the farmers had got beyond their A B C, if they had really got the article they wanted, if they had got as good an animal and as good an implement as could be produced, what was the use of constantly offering prizes for the same thing produced over and over again? Were agriculturists less intelligent than any other portion of the nation? Did they not know a good thing when they saw it; and was it necessary to continue showing them what they saw and approved 15 or 20 years ago? He would give a practical illustration of what he meant. At the meeting of the Royal Agricultural Society he asked the Council whether they thought a plough had been produced which for all practical purposes was better than that which was exhibited at their Southampton show? He knew that ploughs exhibited on that occasion by Ransomes, Howards, and others would plough a piece of land as well as any plough that had been produced since. Yet how many hundreds, he might almost say thousands, of pounds had been spent in the interval in prizes for the best plough! Had they got an article which did all they wanted in a plough? If they had, what was the use of offering money to have it reproduced? For instance, the Royal Agricultural Society offered an enormous prize for a steam-plough; and they discovered, after all, that it was not a steam plough that they wanted, but a steam cultivator. Again, he should like to know how many prizes Gardner's Turnip cutter had taken. It had never been beaten, and yet year after year a prize was offered for it. The case of the winnowing machine was similar. The great mistake lay in continuing to give prizes for the same article. When a good thing had been produced, let it be stamped with a 50l. or even a 100l. prize, but it was useless to go on stamping it with prizes year after year. There was one important point which Mr. Crosskill did not touch upon. As an implement maker he might have told them that the article sent out to the farmer was not precisely the thing that was sent out for competition. Again, at the Warwick meeting he saw prizes offered for ploughs, when the ground upon which they were to be tried was in such a state that they might as well have tried to plough up Fleet Street. Was a plough, which was strong enough in all its parts to do that, the kind of plough which was required for the general purposes of agriculture? There must be a fitness in all such things. As Mr. Crosskill remarked, if they wanted to try a thing, they should try it in the position in which it would be wanted. Any one could tell them that if they had a plough that required 10 or 12 horses, they might as well be in bed as using such an implement. Now, there were a few unfortunate individuals whom Mr. Crosskill completely ignored in his remarks. It was not often that he (Mr. Edmunds) talked 'shop'; but one was obliged to do so sometimes, and when nobody else would blow your trumpet, you must do it yourself. The agricultural implement makers had talked as if they were the people who were going to supply the whole country with implements, and they never thought of the agents; but they had now found out that such people were really necessary. Persons like himself told their customers and those around them what was the best thing to get. The reason was they were more honest, comparatively speaking, than the manufacturers. As a father believed his own bantling to be the finest in the world, so an implement maker believed his own implement to be the best ever invented. It was quite right that the manufacturers should think that: he did not blame them for it; but the middle-man would say to his friend and his neighbour, "So-and-so makes a very good implement," and he would tell the implement makers that, whether they ignored the agents or not, people would be guided by their opinion. Mr. Crosskill spoke rather slightingly of a class of persons who were encouraged at the shows. One great difficulty of farmers was that, if they wanted a good hedge-cutter, or a good man to thatch a rick or to drain, they would find only about one in a parish. Sufficient care was not taken to have persons trained for such work; and he contended that by offering prizes for good hedge-cutting, thatching, or draining, they were stimulating improvement, and benefiting agriculture. Mr. Crosskill said, that as the Royal Agricultural Society was not going to hold a show this year, it ought to endeavour to stimulate the veterinary art. Now he (Mr. Edmunds) preferred dropping the quadrupeds and turning to the bipeds. The Royal Agricultural Society had education included in its charter, and he thought it might do something better than offering prizes like those which he had alluded to. It was desirable to infuse some new blood in Hanover Square, and to get rid of some of the red tape. The Council ought to be a little more liberal, and when they had a great society receiving 5000l. or 6000l. a year, they should not be stopped with the objection that this or that subject was political; but the Council should be prepared to deal with every subject connected with agriculture. In the great crisis which had been recently passed through, there was hardly any society that had done less for agriculturists than the Royal Agricultural Society of England; and he must say that out of its large income that Society ought to find the means of paying for professorships, and securing cheap agricultural education, and for this purpose he asked for some of the 5000l. which would not be expended this year.

Mr. H. Corbet said he thought the Agricultural Hotel had been opened at a very significant era, for it seemed that at that point agricultural progress stopped. Having followed Mr. Crosskill's paper very carefully, he gave that gentleman full credit for much good matter; but he felt all the while that he was building up a wonderful pile only to pull it down again. He (Mr. Corbet) spoke with a sort of authority on that question, having attended nearly all the great agricultural shows held in England, Ireland, and Scotland during the last 14 or 15 years. For the last 10 years more especially he had heard complaints constantly made against the prize system, but always by one class of men, and almost by them alone: he meant, of course, the great agricultural implement makers. It was a very extraordinary thing that up to a certain time agricultural shows should have done an immense amount of good, and that they should then have ceased to be at all beneficial. Twenty years ago, Mr. Edmunds would tell them, there were no great agricultural implement makers, and everything was at a dead level; and then there came a period during which improvement went on, and agriculturists learnt how to lay out their money on implements. That was a very fine hypothesis, but in his (Mr. Corbet's) opinion agricultural prizes were as useful now as they were 20 years ago. Mr. Crosskill said the Council of the Royal Agricultural Society had gone from annual to biennial or triennial exhibitions of implements. Of course they had done so. It was gradually found impossible to try all the implements exhibited every year, and the Council with much good sense yielded to the representation of the great implement makers in favour of the change referred to. Mr. Crosskill alluded to the qualifications of the judges. Why, among the judges of the Royal Agricultural Society there were not only some of the best men in England, but some of the most practical men in that Club; and some, at least, of the judges at those out-of-the-way places, Newcastle or Plymouth, were men whose opinions when expressed in their own counties of Norfolk or Northampton, or elsewhere, were always treated with respect. He maintained that the judges did their duty on the whole admirably, considering the difficulties under which they laboured. Every judge, indeed, performed his duties under difficulties, whether he were a judge sitting at Westminster or one watching a trial in a field at Newcastle or Plymouth. When Mr. Crosskill proposed to do away with the prizes for ploughs and other implements, he should like to know whether they were going to sweep the whole deck. Were they going to do away with the prizes for Shorthorns, Herefords, and Devons? or, to bring the question home to some who were present, with the prizes for horses? Let them look at this question in relation to horses. Let them consider how improvement had gone on for the last ten or twelve years in connection with the great shows; and he would put it to them whether the advance as regarded ploughs, harrows, or anything else, had not made similar strides during the same period, and whether it ought now to stop. Twenty years ago there were no great agricultural implement makers; now there were many of them. At the Leeds meeting they said they would never exhibit again, but they did so in the very next year. Then they said to the Bath and West of England Society, "If you do away with prizes we will support you." But how was that promise fulfilled? Why, for the last two or three years some of them never went

near those shows. The case reminded him of one that occurred last Christmas, about the time when the London Dog Show took place. A man had a pointer that never got any sort of prize. At last he said, "I'll have a show without prizes at my own place, where all who like can come and show their dogs, and then it will be seen what wonderful animals they all are." Of course it was the first thing in the world; and all who were present at the exhibitions of implements to which he alluded at the shows of the Bath and West of England Society. He quite agreed with Mr. Crosskill that agricultural shows 20 years ago did a great deal of good, but he also maintained that they did a great deal of good still; and if they visited different parts of England where these shows had been held, they might witness the improvement thus effected, and hear persons constantly telling each other how different makers triumphed in the various trials. Trials of that kind were a great stimulus to improvement, and tended to the greatest amount of efficiency; and he believed that the kind of education which depended on the prize system was proceeding as usefully now as it did 20 years ago.

Mr. J. Wilson (Manor House, Woodhurst, Morpeth, said:—He could not understand why Mr. Crosskill drew a distinction between implements and cattle or stock, as regarded prizes. They were all striving after excellence, whether in stock-producing or in cultivation, and the same general principles were applicable to both. No doubt Mr. Bates, Mr. Booth, and other Short-horn breeders had profited by good prizes, as the shows in former days as they would ever do again; but it did not follow that they were to stop there, neither should there be any stopping with regard to implements. It might be said that they had already got the best plough or the best cultivator that could be produced; but the implement makers of England were of that opinion. After the Leeds meeting, many implement-makers attempted to secede from the competitive trials: but at Canterbury their agents placed prize placards over their implements; and that showed that they were proud of having obtained a prize from the Society. One great advantage connected with prizes of the Royal Agricultural Society was this: The Society moved into a new district every year. Thousands of farmers and farm labourers came to the showyard, and saw there some 5000 or 6000 implements; but he should like to know what they learnt by that? They looked hastily round them; but their attention could not be turned to any peculiar qualification in an implement for their operations; and without something to guide them, they would go home very little wiser than they came. On the other hand, if there were a prize, they naturally assumed that there must have been a trial, and that there must be some reason why a prize placard was placed above particular implements; and if there were even a weak point, they had an opportunity of noticing it in a way that they would never have done under other circumstances. He certainly was with Mr. Crosskill in his objection to trials. He were of as much value in the present day as they ever were; but he had always advocated—and, as a member of the Council of the Royal Agricultural Society, he should continue to advocate—an extension of the trials, and their taking place at the prize meeting. The first trial of the kind was made by Mr. Edmunds which seemed to him to require correction. Mr. Edmunds said the Royal Agricultural Society originally offered a prize for a steam plough, but afterwards discovered that what was wanted was not a steam plough, but a steam cultivator. Now, that was a mistake. It was discovered when steam was first talked of, in connection with the cultivation of the soil, the Council, naturally directing its attention to the plough, offered a prize of 500*l.* for the best steam plough. The offer was continued for some years, until at last Mr. Chester came forward with a machine made by Mr. Fowler, for the best steam plough. Mr. Smith, of Woolston, was not at all satisfied with that decision, his argument being that steam was out of place as applied to the plough. As a great many agriculturists appeared to concur in that opinion, the Council offered a prize of 1000*l.* for the best machine for the cultivation of the soil. Although Mr. Fowler's cultivator beat Mr Smith's, that did not prove that it was universally the best kind of implement; and he (Mr Wilson) was of opinion that the plough or digger was the best at one time of the year, and the cultivator at another. He was glad to see Mr. Edmunds that sufficient attention had not been paid hitherto by the Council of the Royal Agricultural Society to the improvement of education; and, in conclusion, he would remark that he hoped the absence of unopen show this year at Bury St. Edmund's would be followed in future years in other way, which would further tend to develope the agriculture of this country.

Professor Coleman (Escrick, York) believed Mr. Crosskill's sketch of the past history of shows was unduly; and if he had taken up the line of argument which he put up, it would be comparatively useless, because they were hurried over and not thorough and exhaustive, he would have carried the feeling of the great majority of the Club and of the farming interest with him. Having, himself, acted in the capacity of a judge at two exhibitions, he had certainly experienced the difficulties to which Mr. Crosskill alluded in what he said about want of completeness, crowding, and so on. These were matters of detail upon which a pressure should be put upon the Council; and he thought it worthy of consideration whether the giving of prizes, when they were awarded for mere novelty, and whether as regarded time or machinery, was not mischievous rather than useful. Mr. Crosskill made capital out of the remark of a judge at Doncaster last year. That gentleman would have told them if he had been present that the difficulty of awarding the prize must have been the result of full trials, and that if the trial had been made under the superintendence of a competent engineer, with proper machinery for testing, the result would have unquestionably been satisfactory. It appeared to him that the Bath and West of England Society, considering the limited area over which its shows extended wisely in leaving that question in the hands of the Royal Agricultural Society. Now, Mr. Crosskill, who was a great traveller, must really have shut his eyes to what was going on if he had come to the conclusion that agriculture was as yet in anything like a state that it ought to be in. There were great improvements. He (Professor Coleman) thought it was the exception rather than the rule to find land farmed in the best manner; at all events, if good farming was the rule, there were a great many exceptions. Most of them, he believed, felt that wherever judges were appointed, the best and fair implements, and that if the trial had been made under the superintendence of a competent engineer, with proper machinery for testing, the result would have unquestionably been satisfactory. It appeared to him that the Bath and West of England Society, considering the limited area over which its shows extended wisely in leaving that question in the hands of the Royal Agricultural Society. Now, Mr. Crosskill, who was a great traveller, must really have shut his eyes to what was going on if he had come to the conclusion that agriculture was as yet in anything like a state that it ought to be in. There were great improvements. He (Professor Coleman) thought it was the exception rather than the rule to find land farmed in the best manner; at all events, if good farming was the rule, there were a great many exceptions. Most of them, he believed, felt that wherever judges were appointed, the best and fair implements would have a very marked influence arising from its exhibitions; and therefore he thought the argument for doing away with the prize system, whether for implements or for stock, was a rather weak one. Moreover, he would venture to hint whether implement makers themselves really had no advantage arising from the trials. He had heard implement makers honestly confess that they had never thought of this or that until it was suggested to them in the show-yard. Therefore he thought the arguments of Mr. Crosskill, so far as they had reference to future shows, would not be endorsed by that Club.

Mr. W. Barford (Peterboro') said he represented the rather large section of small and rising implement-makers—persons who had not reached to the top of the tree; and he must say that, in his opinion, if the present system of awarding prizes at the country shows were abolished, there would at once come a sort of calm which would be as near as possible to finality. The abolition of the prize system would be a great influence to the smaller houses, for this reason: The larger houses having attained the position they had done by the prize system, by means of the very large capital invested in their business, and by means of liberal agencies, the smaller implement makers would, in the absence of the prize system, be lost sight of and remain in oblivion. For years his firm made a certain article before it had a competitive trial, and although it was the best article of its kind, they could make no general impression; but as soon as a prize was offered by the Royal Society, and they gained it, it took a leading place, and they had since done a larger trade in that particular article than any three other houses in England. Last year he attended the show of the Bath and West of England Society at Hereford, and last year that of the Royal Cornwall at Plymouth. At Hereford he watched the trial of the mowing machines, and it was a most stupid affair with the absence of competition. There was a sort of amateur trial on green Rye; and, altogether, he never saw anything more hollow or uninteresting. A fortnight after, he went to Plymouth, and watched the trials of the mowing machines there also; and he saw about two thousand implement-makers, farmers, and their labourers, who were all benefited by what they witnessed. Again, as regarded the fullness of the trials, he could go back for at least seven years, and he could testify that at Gloucester and other places he had seen the judges labouring with the greatest diligence during the whole day. He thought that if the Council went on extending the trials as they had done for the last few years, no implement-maker could be dissatisfied with the result; and he believed that, on the whole, the present prize system was beneficial to both for the purchaser and the producer of implements.

Mr. W. Woodward (Northway, Tewkesbury) would suggest for consideration whether the Royal Agricultural Society should not offer a prize for an implement that would save the soil better than the plough; and, if so, whether it would not be well for the judges to give their reasons for the best implements along with the awards.

Mr. Grieg (Messrs. Fowler & Co.) agreed with Mr. Crosskill that the prize system as at present carried on was entirely fallacious. The trials, indeed, were all with a view which might well be the last to complain of that system, as it had gained every prize for which it had competed. Still he must say that the time occupied by the trials was so short that it was often almost impossible to arrive at a sound conclusion. If a steam plough had to be tried, it ought to be started in August, and to be continued under trial till August in the following year. Mr. Barford said the suppression of the prize system would put down the small men; but when he said that, he in effect added, "I had a machine which was better than any made by the Society's judges, and I could not get a prize, and I could never succeed." Well, if there had been no prize system in operation in the period, he at all events would have had the glory of the day, for he would not have had the judges' opinion counteracting the favourable opinion of the public. He should be the last man in the world to say a word against our small implement makers, for he never went to an agricultural meeting without copying a bit of their designs. If a small man were placed in competition with a big one for a long-continued trial, the latter was sure to succeed; but the reverse was the case if the trial were a short one. He considered the prize system at present conducted, absurd. What was wanted was a continuous trial, and not a dilly-dallying one, and if that could not be obtained, the system should be altogether abolished, and the public left to judge for itself. There was no sort of solidity in the present method of prizes. He would be better to have one great trial in each year, and let the whole of England compete.

Mr. S. Sidney (London) said: It was a remarkable thing that they should have come there to be informed that the farmers themselves were not appreciating the question of the value of the implements which they had to use. If that were so, their business differed from all others in that respect. What was wanted was an opportunity of testing the different implements that were produced under various circumstances, and this the judges did not possess. A good deal was said about the trials of prize implements by the farmer. Well, he recollected seeing some judges with about 60 drills before them: they gave them in two runs up the field and then awarded the prize. He did not wish to say anything against the awarding of prizes when the trials were properly conducted, but no one can call the attention of the Council of the Royal Agricultural Society, or of any other society, without feeling that the way in which many of the prizes were awarded was perfectly farcical. The truth was, there was often a confounding of the advantages derived from intercourse between implement-makers and farmers in the handling of the various kinds of reaping machines. When Mr. Corbet told them of the extraordinary benefit derived, from prizes, he would ask him what they were to think of prizes being given to different implements in different years. About every year, he thought, a new machine was brought out, and unless the trials of reaping machines were to be of any value, they must be made consecutively, and on the crop intended to be cut; whereas, under the system adopted in the Royal Agricultural Society, the crop was grown expressly for the trial. It was no doubt a significant thing that the judges were all regarding implements under such circumstances, but no farmer was guided practically by the results. During the last 20 years vast improvements had been made in every branch of mechanics in this country, and there had been great progress as regarded steam engines, iron ships, and everything else, down to common carpenters' tools. All this advance had been made without prizes; whereas in France and Germany prizes had been relied upon, and the result was far less satisfactory. The truth was, progress in machinery of every kind depended not on prizes, but on the intelligence and skill brought to bear on it. Still, if the prizes of the Royal Agricultural Society, instead of being distributed over such a vast area, were confined to a few definite objects, no doubt some good would result. The practical question was, how the Royal Agricultural Society might do more good with its money. He did not suppose any one wished all trials to be done away with; the grand object was that they might be made more practical and useful. As to drawing a comparison between improvement in live stock and improvement in implements, he was surprised to hear that from Mr. Corbet. Improvement in the former was the selection and improvement in implements on invention. They might teach people how to breed, but he would defy them to teach people how to invent.

The Chairman said: As regarded implements, no one who considered the difficulties of the subject but would see that what was done through the system of giving prizes carried out by the Royal Agricultural Society. He did not believe that the giving of prizes was the cause of the improvement, nor did he think that any better system of prizes would alone secure that object. The prizes carried out by the Society, by means of unskilled persons belonging to different districts, and who were not good judges, to choose what was best for their purpose. It would be very rash for such persons to go into the show yard and pretend to choose the best implement; and it was a great disadvantage to them to be called upon to do such a thing. He did not mean to assert that the best implements always got a prize any more than the best cattle, for mistakes must sometimes be made by fallible men; but it was a great advantage to those who wished to buy to have something of that kind to aid them in forming an opinion. He felt sure that the objections offered that evening with the exception of those of Mr. Crosskill, Mr. Edmunds, and Mr. Greig, were intended to apply rather to the mode of trying implements than to the giving of prizes. No doubt great improvements might be made in that respect; and, in his opinion, a rich society like the Royal Agricultural might afford to grant sufficient money as well as time for the trial of implements at all parts of the year. It was folly to suppose that an implement which could be used advantageously at one period of the year could be used with equal advantage at others. Mr. Crosskill had remarked that even the trials of the reaping machines at Boxted Hall, at harvest time, were fallacious. If that were the case, when a piece of ground had been selected for the trial of corn-cutting machines, when there was the best kind of land and crops, and the best men selected as judges, what chance had ordinary farmers of selecting a good implement of that description? A farmer might hear that a man in a living five or ten miles off, had got a good implement, and that another man living in another direction had got a good one of a different kind; but how was he to settle the question in his own mind unless the implements were tried under those circumstances? The trials did not differ from trials as that at Boxted might not be failures, but the farmer would be liable to still greater failures if left entirely to himself. It had been asked why farmers could not select suitable implements for themselves as well as manufacturers. He replied that they never placed in any such circumstances. The manufacturer used his implement every day of his life, and soon arrived at a just estimate of its value; but a great many of the implements of the agriculturist were used only for one or two weeks in the year. How, then, could he be compared in that respect with the manufacturer? If the Royal Agricultural Society would spend part of its money, as it very well might this year, on trials with scarifiers and other implements of that kind which were wanted in the autumn, and if, when land had got softened, these were succeeded by trials with other implements suited to the season, it might be made of very great value as regarded agricultural progress.

Reviews.

Journal of the Royal Agricultural Society. Vol. II. Part I. John Murray.

The Editor may be congratulated on having issued a particularly interesting number of his Journal. The subject of middle-class, and to some extent of agricultural education occupies the chief place among the topics discussed. The management and cross breeding of cattle is treated of by two practical men, Mr. Little, of Chippenham, and Mr. G. Murray. Professor Austed gives the first part of a paper on rainfall, natural drainage, and subterranean water. And Mr. Orlebar speaks on one of the practical aspects of this subject in a paper on the management of ponds and wells. Mr. Frere writes a paper on the poultry of France. Dr. Voelcker's lecture on disinfectants, and Professor Simonds' lecture on the cattle plague, are reported. There are elaborate essays on iron and wood in the construction of farm buildings, by Mr. Bailey Denton, Jun., and Mr. P. D. Tuckett. Professor Buckman writes on Anthyllis vulneraria. Liebig's recent publication on the diseases of plants is translated, so also is a paper on the rural economy of the Netherlands; and Mr. R. P. Ffrench describes Flax culture in Belgium. Mr. Howard Reed gives a summary of an experience hitherto of the cattle plague. The proceedings of the Agricultural Society in connection with agricultural education are also summarised. There is a report by Mr. W. J. M. Pocock of experiments with artificial manures at Wonston Manor Farm, Hants; and there is the usual statistical information on the meat supply, food prices, weather, &c., of the past half year. The Number is thus characterised by the unusual variety and great interest of its contents. We must add, however, that we regret Lord Ashburt's very interesting allusion on the cattle plague is not reported here. It will doubtless appear in regular course in the second part of the Journal, published next autumn. But it is this conduct of affairs in "regular course" which diminishes the usefulness of the Society whenever things like the cattle plague happen out of the regular course.

Miscellaneous.

Agricultural Effects of the Malt Tax.—The following is an abridgment of Mr. Clare Sewell Read's Speech in the House of Commons last Wednesday.—

"As a member of the deputation which on this subject had gone to the Chancellor of the Exchequer, it occurred to him to point out how the duty affected the growers of Barley, and he did this by reference to his own case. Last year he grew 300 acres of Barley, and sold it for purposes of malt about 1400*l.* The duty that would be charged on it would be nearly 1000*l.* This duty bore most unfairly on different classes of Barley, and was specially injurious to the growers of the inferior class. This inequality had been felt, and the Chancellor of the Exchequer had last year introduced a Bill providing that Barley should be malted by weight; but the Excise had entirely destroyed the good which the right hon. gentleman wished to confer, and there was hardly a bushel of Barley malted by weight instead of measure. With regard to the leading qualities of malt, his experience as a farmer had been varied and considerable. He had found that a large quantity of indigestible and unpalatable hard food was made both palatable and digestible by a fair admixture of malt with it, and that its effect upon young stock and sickly animals was perfectly marvellous. Calves and lambs made great progress by the use of malt. In his own county Mr. Salter had raised a large flock of lambs with sweet wort instead of milk, which under present circumstances it was rather difficult to obtain. The Government would of course refer him to the experiments of Mr. Lawes, but they were somewhat one-sided, as they had been conducted upon totally wrong principles—that was to say, they proceeded on the idea that malt should be used largely as a substitute for other food. It was wrong to give 4 lb. a day to bullocks and 1 lb. to sheep. He should never have thought of giving more than 2 lb. a day to bullocks and 1 lb. to sheep. As to pigs, they had stomachs which could digest anything. Malt should be used rather as a good, sound, healthy condiment than as a substitute for oilcake and other food. He complained that the Malt-tax restricted cultivation, and made the farmers grow some crops which they would much prefer growing others. He would like to dispel the idea that if they had cheap corn they must as a necessary consequence have cheap beef. The consequence of having cheap corn was that as a matter of course the land must be put out to Grass, and that was held out to them as the only means by which they could compete with the foreigner. He contended that arable land in the south and in the middle of the kingdom and in parts of the Lothians would grow as much meat as if it were laid out in Grass, and that the country would also have the benefit of all the corn produced upon that land. Of course under Grass there would be much less expenditure to

the farmer upon manual labour. The cheapness of corn had in a measure, even upon arable land under the plough, reduced the quantity of stock kept; because it was impossible for the farmers—and it was the small farmers generally who reared stock—to meet their fixed payments from the corn they sold, while, as a matter of course, they must sell a portion of their young stock; and that caused a diminution in the quantity of stock. That process commenced about 1850, and had been going on gradually. The pressure was not felt during the Crimean War, but it had been felt lately; and of course the disastrous cattle plague had considerably augmented it. His own colleague, himself, and one or two other members of that House had presented 273 petitions from various parishes in Norfolk, and signed by 13,000 of its inhabitants. There was this difference between the labourer in the town and the agricultural labourer, that whereas the former got bad and adulterated beer, through the operation of the malt-tax, the latter got none at all, except at hay seasons and at harvest time. Nothing would so much conduce to the sobriety and comfort of the labouring population as their being enabled to procure cheap and wholesome beer. The Chancellor of the Exchequer lately told them most forcibly of the amount of indirect taxation paid by the poor man. The right hon. gentleman said the labouring man paid largely in the shape of duty on spirits and tobacco, and if he did not add 'on beer,' it should be remembered that although the labourer might not pay a duty on that article, the farmer did. The whole system connected with beer was a gigantic monopoly. It began with the maltster and went through the brewer until it reached the consumer. The labouring man should have his fair share of beer, and now that the price of meat had risen so much, beer was more than ever necessary to him. It was said that there was no possibility of the labouring man brewing beer in their tea-kettles, but out of 20 men whom he employed last harvest 17 did brew at home, and he need not say they were the best men by far. Beer was in fact requisite to the labouring man if he were not well fed. For some time he persisted in not giving his men beer, and gave them money instead, but he found that a 'wet sixpence went further than a dry shilling,' and he was obliged to abandon his system."

The steady Decline of the Cattle Plague continues to justify the legislation of February. The progress of the disease, which up to that time had been constantly maintained, was immediately arrested by the measures adopted, and the return which we published on Saturday last shows only one-sixth of the number of cases reported seven weeks before. In the week ending with the 17th of February upwards of 18,000 cases were found to have occurred. In the week ending with the 7th inst. the numbers returned were but 3361, and though some addition must be made for cases not reported in time for publication, the corrected figures are only 4008. Upon the whole, therefore, we may fairly suppose that a total of 3600 or 3700 takes place of 18,000 now represents the proportions in which the Plague has been reduced by seven weeks of decisive action. Five-sixths of the mischief have disappeared. These results undoubtedly confirm the view taken by the Royal Commissioners in autumn last, and tend to show that the course of the disease in this country is analogous in all respects to its course elsewhere. We could do nothing with it in the way of treatment any more than our Continental neighbours did, but the isolation of infected animals and the suspension of cattle traffic produced an instantaneous effect. In a single week the number of reported attacks dropped from 18,000 to 11,000, and from that time to this the decline has continued, till the numbers, as we have shown, have been brought down to 4008. We might have saved ourselves much loss, and have found ourselves, no doubt, in a better position at this moment, if we had adopted the recommendations of the Commission at an earlier period, but the delay had this advantage—that it enabled us to bring many systems of treatment to the test of experiment. We have ascertained that this murrain is not the small-pox, and that it cannot be prevented by vaccination or controlled by inoculation. Homœopathy was of no avail against it, and though one or two remedies were applied with some apparent success, it must be concluded, on the whole, that we know of no cure for the Cattle Plague. Henceforth we know how only to deal with it. We must do as they do in Prussia and Hungary—prevent the dissemination of a poison to which we know no antidote. Had the murrain been "stamped out" last summer, we should have saved many thousand head of cattle, but we should not have been convinced of the incurability of the disease. *Times.*

Notices to Correspondents.

Grasses: *An Old Subscriber.* The two specimens of Grass are 1. Bowers of Agrostis stolonifera, Florin-grass. 2. the above-ground shoots, stolons, &c., of Poa trivialis, smaller parcel contains the seeds of the same, intermixed with seeds of several kinds of weeds. If anything like conditions suitable for irrigation are present, this Grass may be made to afford an abundance of food of a tolerably good quality; but if not, the species is little better than a weed. We would rather sow Festuca duriuscula or F. rubra: these and the Florin can be got from the seedsmen. Had you not better get your land examined with a view to its being properly laid down?

Growing Flax: *Farmer.*—The following is the extent of Flax grown in Ireland in each of the following years:—1854, 151,403 acres; 1855, 97,075 acres; 1856, 106,311 acres; 1857, 97,721 acres; 1858, 91,646 acres; 1859, 136,282 acres; 1860, 128,595 acres; 1861, 147,957 acres; 1862, 149,889 acres.

Preserving Eggs: *H B R.* The most successful mode of preserving eggs for use that we have fairly tried is also one of the most simple. The eggs are tightly packed, small end downwards, in common salt, in a tub, cask, or covered pan. The vessel should be quite filled and the air excluded by lid or head of cask. We have known 400 eggs preserved in one vessel in this way through the winter without one failure. Another mode: mix quicklime with water to the consistence of thick cream; arrange the eggs in a stone jar, and pour in the lime and water until they are covered. Eggs thoroughly greased as soon as laid are said to keep well. Réaumur approved the above, and recommended oil, lard, or butter for the operation. A patent has lately been taken for air-tight jars for the preservation of eggs, but we are not in a position to speak of their merits. All eggs to be placed in lime, salt, &c. for preservation, should be very fresh when put down.

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Report by DR. VOELCKER *of a Visit of Inspection to the Phospho Guano Stores at Seacombe, Birkenhead, and of Analyses of Samples taken from the Stores on the 9th of February*, 1866.

"In compliance with Messrs. PETER LAWSON & SON'S request, I again this year paid a visit of inspection to the Phospho Guano Stores at Seacombe, Birkenhead, and on that occasion took the following samples from the bulk:—

1. A sample from a bulk of about 1000 tons, stored in Shed No. 1.
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3. A sample from about 5000 tons, stored in Shed No. 4.
4. A sample taken from the top of a heap of about 7000 tons in Shed No. 7.
5. A sample from the middle of the same bulk.
6. A sample from the bottom of the same bulk.
7. Men were at work filling barrels for foreign shipment from a bulk of about 7000 tons, and I took a sample from the barrels ready for delivery.
8. A sample from a lot of about 2000 tons, lying in the docks in which Phospho Guano is prepared for use.

"Two of the samples I submitted to careful and complete analyses; in the others I determined only the amount of Soluble and Insoluble Phosphates. The mean results of the eight analyses gave 40.62 per cent. of Soluble Phosphates, and 4.67 of Insoluble, while the Ammonia averaged 3.77 per cent.

"I was conducted over the whole range of the extensive buildings, and left at liberty to select whom as I chose, and to take them from any portion of the Stores; and I cannot refrain from noticing that, while doing so, I was much struck with the remarkably fine condition in which I found the whole bulk ready for delivery in the present season.

"Since my last visit, a decided improvement has been effected in the mechanical condition of the Phospho Guano. The bulk for 1866, while fully as rich in intrinsically valuable fertilising constituents, is now obtained in a beautifully fine and uniform condition, which it maintains even when submitted to pressure or violent agitation.

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"Having so frequently expressed an opinion of the intrinsic fertilizing value of Phospho Guano, I need not repeat former statements on the present occasion; but I may be permitted prominently to draw attention to the fact, that while the chemical composition of the bulk of 1866 is fully equal to the Phospho Guano of former years, its mechanical condition has been greatly improved.

"AUGUSTUS VOELCKER, Ph.D.,
"Professor of Chemistry to the Royal Agricultural Society of England."

"11, Salisbury Square, London, E.C., Feb. 24, 1866."

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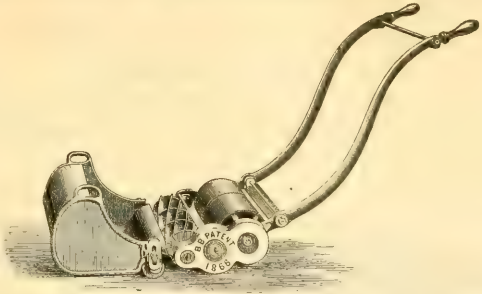

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MAY BE AT ONCE RETURNED.

J. B. BROWN AND CO. having so very successfully introduced, at the Meeting of the Bath and West of England Society at Hereford in June 1865, the NEW PATENT B B LAWN MOWER, of their own manufacture, and having executed their numerous orders up to the present time, with most unqualified satisfaction, they are now actively executing further orders for the present season,—and, owing to the large number of orders already received and constantly coming in, it is most important that orders for delivery this season should be sent in *as early as possible*.

The *Hereford Journal*, dated June 10th, 1865, thus notices this NEW MACHINE :—"MESSRS. BROWN AND CO. are well known in connection with the best Lawn Mowing Machines—these very useful and now almost indispensable Machines, which save so much labour and at the same time so much improve the appearance of the Lawn. Messrs. BROWN show a New Lawn Machine of their own manufacture, which attracted much attention on account of the compact arrangement of its parts, and light elegant appearance, and neat workmanship. It is worked by means of well-made geared or toothed wheels, which we believe to be more desirable than the use of chains, which are found to stretch and break so frequently, and cause much trouble. The working of this New Lawn Mower is light and silent, and we have no doubt it must become a great favourite."

This NEW PATENT LAWN MOWER combines all the latest improvements in Lawn Mowing Machines, being simple in construction, very light, silent in movement, easily worked, and so strong and durable as to be literally unbreakable,—an all-important feature in Machines of this class; the ordinary cast-iron being entirely done away with, and malleable iron substituted in all breakable parts, and every part being numbered and accurately made to standard gauges. The workmanship and finish are also of a superior character; the entire Machine being quite equal to a revolution, so to speak, in Lawn Mowers. The Machines are all guaranteed to give perfect satisfaction in every respect.

The NEW B B PATENT LAWN MOWER is Manufactured by J. B. BROWN AND CO. on their own Premises in London, under their personal superintendence.

PATENT B B HAND MACHINE.

PRICES—Including Carriage to any Railway Station or Shipping Port in England, with the necessary Tools and Directions for use.

10-inch Machine	£3 10 0	*Easily Worked by a Boy.*	18-inch Machine	£7 10 0	*Easily Worked by a Man.*
12-inch Machine	4 10 0		20-inch Machine	8 0 0	
14-inch Machine	5 10 0		22-inch Machine	8 10 0	*Ditto by Two Men.*
16-inch Machine	6 10 0	*Ditto by a Man.*	24-inch Machine	9 0 0	

If with Brass-mounted Grass Box, 5*s*. extra.

PATENT B B HORSE MACHINE.

PRICES—Complete, without extras, including Carriage to any Railway Station or Shipping Port in England, with the necessary Tools and Directions for use.

42-inch Machine	£28 10 0	*Drawn by a Horse.*
36-inch Machine	24 10 0	
30-inch Machine	21 10 0	*By a Horse or Strong Pony.*

PATENT B B PONY and DONKEY MACHINE.

PRICES—Complete, without extras, including Carriage to any Railway Station or Shipping Port in England, with the necessary Tools and Directions for use.

30-inch Machine	£17 10 0	*Drawn by a Pony.*
28-inch Machine	16 10 0	
25-inch Machine	14 10 0	*Drawn by a Donkey.*

New Improved Horse, Pony, and Donkey Boots, wholly of Leather, as follows :—Horse Boots, 24*s*.; Pony Boots, 21*s*.; Donkey Boots, 16*s*. per set.

*** *Every Machine sent out is warranted to give ample satisfaction, and, if not approved of, may be at once returned.*

The NEW PATENT B B LAWN MOWER has already been patronized by Her Majesty the QUEEN, for the Royal Gardens at Windsor Castle, Osborne, Kew, and Hampton Court; by His Royal Highness the PRINCE of WALES, for Sandringham; and by His Grace the Duke of SOMERSET, the Right Hon. the Earl of DERBY, the Right Hon. the Earl of CHARLEMONT, and numbers of the principal Nobility and chief Landed Proprietors in the Kingdom. This Machine has also been selected by Merchants for the execution of their orders for export to the Continent, and to Egypt, India, Australia, Natal, and other countries, and by a large number of the most respectable Ironmongers, Nurserymen, and Seedsmen in various parts of England, Scotland, and Ireland, many of whom have applied for special Agencies, and are now ordering Machines for immediate delivery.

AGENTS IN IRELAND—MESSRS. THOMAS McKENZIE & SONS, 34, Dawson Street, Dublin, and Camden Quay, Cork.

AGENTS IN VIENNA—MESSRS. CLAYTON, SHUTTLEWORTH, & CO., who are exhibiting the Machines at the Vienna Show this season.

TESTIMONIALS.

From the Hon. P. ASHBURNHAM, *Shernfold Park, Frant, Sussex, March* 7, 1866 :—"My gardener was very well satisfied with the working of the B B Mowing Machine."

From Mrs. PRICE, *Hagley Villa, Ludwardine, Hereford, August* 18, 1865.

"I have much pleasure in informing you that the Mowing Machine [a 14-inch B B] I ordered from you at the Bath and West of England Meeting, held in Hereford, has in every respect given the greatest satisfaction, and I am very much pleased with it."

From W. H. APPERLEY, Esq., *Withington, near Hereford, August* 14, 1865.

"The New B B Lawn Mower I purchased of you has now been frequently used by my Gardener, and he is perfectly satisfied with it. It does its work well. I shall feel pleasure in recommending your Machines."

From GEORGE MCRAE, Esq., *Mitcham Common, Surrey, September* 27, 1865.

"I am very pleased with the Lawn Mower I had from you [a 14-inch B B Machine]. It is certainly the most compact one I ever saw, and does its work well."

*** *Every Machine sent out is warranted to give ample satisfaction, and, if not approved of, may be at once returned.*

J. B. BROWN AND CO., OFFICES, 18, CANNON STREET, CITY, LONDON, E.C.
WAREHOUSE (where Machines are kept in Stock), 148, UPPER THAMES STREET, E.C.
OPPOSITE the CITY of LONDON BREWERY, and close to the LONDON BRIDGE STEAM BOAT PIERS.

SHANKS' PATENT LAWN MOWERS FOR 1866.

PATRONIZED ON FIVE SEPARATE OCCASIONS DURING THE SEASON OF 1864 BY

HER MAJESTY THE QUEEN,

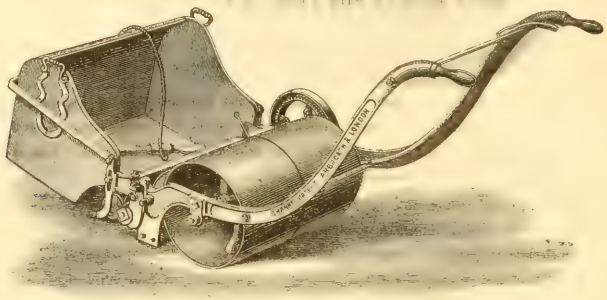
AND ONCE BY HIS MAJESTY THE KING OF SAXONY;

AGAIN ON FOUR SEPARATE OCCASIONS DURING THE SEASON OF 1865 BY HER MAJESTY THE QUEEN:

ONCE BY HIS MAJESTY THE KING OF HOLLAND;

AND ONCE BY HIS MAJESTY THE KING OF PRUSSIA.

EVERY MACHINE WARRANTED.



IF NOT APPROVED OF, CAN BE AT ONCE RETURNED.

PATENT HAND MACHINE.

These are the only Machines that can be depended on to give lasting satisfaction.

THESE ARE THE ONLY MACHINES THAT WILL MOW PROPERLY WHEN THE GRASS IS WET.

THESE ARE THE ONLY MACHINES THAT DELIVER THE GRASS WITHOUT STOPPING, THUS SAVING AN IMMENSE AMOUNT OF LABOUR.

SHANKS' PATENT LAWN MOWERS are the only Machines that have been in operation in Her Majesty's Gardens for a quarter of a century, and they are in daily use in all the Public and Principal Gardens in the Kingdom.

A. SHANKS AND SON have now ready for delivery a large Stock of their celebrated LAWN MOWERS. The Machines have been manufactured by skilled workmen, of the best materials, and by the aid of the most improved Machinery.

A. S. AND SON have been particularly careful that the advantages in point of durability and simplicity of construction which have always been a peculiarity of their Machines should still remain, and that no improvement be introduced which has merely novelty to recommend it.

SHANKS' PATENT LAWN MOWERS for 1866 are unrivalled for simplicity of construction, ease of working, and durability.

PRICES, including Carriage to any Railway Station or Shipping Port in the Kingdom.

SHANKS' NEW PATENT HAND MACHINE.

Width of Cutter		Easily Worked.	Silent Movement.
10-inch Machine	£3 10 0	*By a Lady*	4s. extra.
12-inch Machine	4 10 0		
14-inch Machine	5 10 0	*By a Boy*	

Width of Cutter		Easily Worked.	Silent Movement.
16-inch Machine	£6 10 0	*By a Man or Two Boys*	4s. extra.
19-inch Machine	7 12 6	*By a Man and Boy*	
22-inch Machine	8 7 6	*By Two Men*	7s. 6d. extra.
24-inch Machine	8 17 6		

SHANKS' NEW PATENT PONY and DONKEY MACHINE.

Width of Cutter		If with Patent Delivering Apparatus.
25-inch Machine	£12 10 0	.. .. 25s. extra.
28-inch Machine	14 10 0	.. .. 30s. ,,
30-inch Machine	15 15 0	.. .. 30s. ,,

Silent Movement, 12s. 6d. extra; Boots for Pony, 21s. per set;
Ditto for Donkey, 16s. per set.

SHANKS' NEW PATENT HORSE MACHINE.

Width of Cutter		If with Patent Delivering Apparatus.
30-inch Machine	£19 0 0	.. .. 30s. extra.
36-inch Machine	22 0 0	.. .. 30s. ,,
42-inch Machine	26 0 0	.. .. 40s. ,,
48-inch Machine	28 0 0	.. .. 40s. ,,

Silent Movement, 20s. extra; Boots for Horse's Feet, 24s. per set.

*** ORDERS EXECUTED ON THE DAY THEY ARE RECEIVED.

N.B.—*A. S. & Son specially announce to their numerous patrons that they have a staff of experienced workmen at their London Warehouse, thoroughly acquainted with all the details of their Machines, so that they are enabled to repair Lawn Mowers in London as well as at the Manufactory.*

ALEXANDER SHANKS AND SON, DENS IRON WORKS, ARBROATH.
LONDON OFFICE and SHOW ROOMS: 27, LEADENHALL STREET, E.C.
PARIS OFFICE and SHOW ROOMS: 56, BOULEVARD HAUSSMANN.

A. S. & SON *keep a stock of all sizes of Machines at their London and Paris Establishments, from which Orders are executed on the day they are received.*

☞ 27, *Leadenhall Street is the only place in London where intending purchasers of Lawn Mowers can choose from a stock of from* 150 *to* 200 *Machines. All sizes kept there, whether for Horse, Pony, or Hand Power.*

A. SHANKS & SON *find it necessary to caution intending purchasers of their Lawn Mowers, whether for Horse, Pony, or Hand Power, to make sure that the words "Shanks' Patent" be cast on every Machine. A. S. & SON are aware that there are worthless imitations of their celebrated Machines in the market, and hence the reason for this intimation.*

HOTHOUSES for the MILLION.—Medal, 1862.
[Invented by the late Sir Joseph Paxton.

ILLUSTRATED PRICE LISTS will be sent on application to Messrs. Herbman & Morton, 7, Pall Mall East, London, S.W.
Also, a HANDBOOK of VINE and FRUIT TREE CULTIVATION, price 1s.; post free, 1s. 1d.

By Her Majesty's Royal Letters Patent.

THE TERMINAL SADDLE BOILER.—This is superior to all others. Having an end piece which quite closes the arch, the Boiler itself forms the back of the furnace. No brickwork is required at the end. Has a dome above the side flues, where the heat collects. Side flues covered with the wings of the Boiler. It is fitted with hollow furnace bars. Contains one-third more heating surface, just where the fire plays with all its force.
Its extraordinary power can be seen at the Victoria Nursery, Holloway, N.; Mr. Williams having adopted it and kindly consented to show it to any one who will call at that Establishment.
Circulars, prices, &c., on application to
J. Ireland, The Works, Edward Street, Broughton Lane, Manchester.

Dublin Exhibition Medal, 1865.
The ONLY PRIZE MEDAL for HORTICULTURAL BUILDINGS has been awarded to
T. H. P. DENNIS, Horticultural Builder in Wood and Iron, Hot-Water Engineer and Patentee, Chelmsford, Essex.
PATENT GALVANIZED METAL GREENHOUSES, "The Gardener's Own," are tenant's fixtures.
PATENT GALVANIZED METAL ORCHARD HOUSES as supplied to Mr. Rivers, with his improved ventilation; are the most economical erection for this important branch of gardening.
PATENT GALVANIZED METAL VINERIES, CUCUMBER and MELON HOUSES, STOVES, PEACH HOUSES, &c.
PATENT GALVANIZED METAL GREENHOUSES, "The Novelty," are tenants' fixtures and the cheapest buildings extant as a Lean-to, 20 ft. long, including glass, with 8 ft. rafter, £10; 10 ft., £12 17s. 6d.; 12 ft., £15 10s.
PATENT GALVANIZED METAL WALL TREE COVER should be possessed by every one who has a garden wall; it is a tenants' fixture, and costs for walls, 6ft high, 8s.; 7ft., 9s.; 8ft., 10s.; 9ft. 11s. per foot run including glass.
PATENT GALVANIZED METAL and WOOD GROUND VINERIES and DWARF ORCHARD HOUSES, from 12s. 6d. to 25s. per pair, unglazed.
PATENT GALVANIZED METAL PIT LIGHTS, 4d. per foot.
PATENT GALVANIZED METAL HAND GLASS FRAMES, will not rust nor break, do not require painting, and are the best in use. Prices from 4s. to 8s. 6d. each. Special prices for quantities.
Illustrated Catalogues and estimates on application.

CRANSTON'S PATENT BUILDINGS for HORTICULTURE.
"Dry Glazing without Putty."
"Glass without Laps."
"Ventilation without Moving Lights."
Highly Commended by the Royal Horticultural Society, South Kensington.

Plans and Estimates free on application. Descriptive Book fully illustrated, post free for 20 stamps, from the Author and Patentee, James Cranston, Architect, Birmingham.
Works: Highgate Road, Sparkbrook, Birmingham.
Henry J. Growtoge, Manager, 1, Temple Row West, Birmingham.

T. G. MESSENGER, Midland Steam Power Horticultural Works, Loughborough, Hot-Water Apparatus and Valve Manufacturer.
Honourable mention awarded at the International Exhibition, 1862; and at the Dublin Exhibition, 1865; also a First-class Certificate to the Royal Horticultural Society.
T. G. Messenger, Patentee of many important improvements in Buildings and Implements connected with Horticulture, and which meet with unqualified approbation, is prepared to give reference to hundreds of works entrusted to him and pre-eminently answering the purpose for which they were constructed.
Any House glazed single or double, with or without putty.
The mode adopted by T. G. Messenger for Heating and Ventilating Forcing Houses is particularly successful.
Houses are constructed by his Patented Ventilating principle to open the whole of roof and sides as though the glass were entirely removed, at once placing the plants in the external atmosphere.
T. G. Messenger's Boiler possesses all the advantages of the Tubular and Saddle combined, has hollow furnace bars, requires but a shallow stokehole, and exposes as much surface to the direct action of the fire as can possibly be obtained, the whole of which can be easily cleaned; and it is an important fact that out of upwards of 600 now at work made upon the improved principle not one has cracked.
T. G. Messenger's Valve (single or double) is effective, simple, easy to work, and as durable as the pipe to which it is attached.
Designs and Estimates supplied for all kinds of horticultural Works, and guaranteed to answer the purpose for which they may be intended.

HOT-WATER APPARATUS, of every description, fixed complete in any part of the country, or the materials, viz., Boilers, Pipes, &c., delivered to any Station.
Estimates on application.
J. Jones & Sons, 6, Bankside, Southwark, London, S.E.

Card.
SAMUEL N. McGERROW,
General Horticultural Builder,
Knotty Ash, Liverpool.
Reference permitted to the Nobility and Gentry throughout Great Britain and Ireland.

Heating by Hot Water.
W. J. HOLLANDS, Iron Merchant, 31, Bankside, London, S.E.
HOT WATER PIPES, from Stock, per yard—2-inch, 1s. 2d.; 3-inch, 1s. 10d.; and 4-inch, 2s. 4d. Bends from Stock, 4-inch, 2s. 6d.; and 3s. each. THROTTLE VALVES, 10s., 13s., and 14s. each. Other Connexions at equally low prices, and all goods of first-class manufacture. Estimates given, and orders by post punctually attended to the same day.

JAMES WATTS and CO., Hothouse Builders and Hot-Water Apparatus Manufacturers, 363, Old Kent Road, S.E.
200 CUCUMBER and MELON BOXES and LIGHTS, and from 400 to 500 LIGHTS for PITS of all SIZES kept in STOCK. Glazed and Painted complete, ready for immediate use. Packed and sent to all parts of the kingdom. Public and Private Buildings, Warehouses, &c., Heated on the most approved scientific and economical principles. References to the Nobility, Gentry, and Trade in most of the Counties in England.

NORTH BRITISH RUBBER COMPANY (Limited).
GARDEN HOSE and FITTINGS.
London Warehouse: 56, Cannon Street West, E.C.
Manchester Warehouse: 8, Spring Gardens.

PEAT, of superior quality, for Orchids, American Plants, and general Potting purposes, for Sale, loaded at Farnborough Road Station, on the London, Chatham, and Dover Railway. Apply to Mr. Thos. Jessup, Woodsman, Franks, Farningham, Kent.

COCOA-NUT REFUSE delivered within 2½ miles of Charing Cross, at 2s. per bag.
For particulars, and how to use it, seeking Advertisement in Gardeners' Chronicle of the 24th March, 1863; or apply to the Patent Cocoa Fibre Company, Kew Bridge, Brentford-upon-Thames.
Postage Stamps or Post-office Orders payable to J. Barsham & Co.
Barsham's BRUSHES and MATS are sold in every town.
Caution.—Every Brush is stamped, J. Barsham's Patent.

ROLL TOBACCO CLOTH.—The cheapest and best article for Smoking Grapes and destroying the Fly; equal to Tobacco in strength, 1 lb. per lb., over 10 lb., 1s. 7d.
Joseph Baker, 10, Gough Square, Fleet Street, E.C.
Post Office Orders payable Fleet Street.

Plagues of the Garden.
Simple and Sure Remedy.—By using the
APHIS WASH, these Pests of the Garden, together with Scale, Caterpillars, Slugs, Earwigs, &c., are immediately destroyed. Leaves no stain, but strengthens the Trees or Plants.
See Gardeners' Chronicle, August 19, 1865; and "Gardeners' Magazine," July 1, 1865.
Sold by Chemists and others, in 1s. bottles, and 2s. 6d. a gallon, with full directions for use.
Wholesale at the City Soap Works, Milton Street London, E.C.

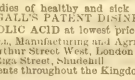
Red Spider. Mealy Bug.

GISHURST COMPOUND, whether used against Insects and Mildew, on Growing Plants, or as Winter Dressing on Trees at rest, should be dissolved 24 hours before use. This gets rid of smell, and if the Solution be decanted, prevents any staining of foliage. A strength of from 1 to 2 oz. to the gallon of water is recommended for growing Plants; one from 4 to 16 oz. for Trees at rest.
Sold Retail by Nurserymen and Seedsmen, in boxes, 1s., 2s., and 10s. 6d. each.
Wholesale by
PRICE'S PATENT CANDLE COMPANY (Limited).

LONG'S "DIPPING" for TICK in SHEEP. LONG'S "SPECIFIC" for SCAB in SHEEP. LONG'S "MAGGOT LOTION" for SHEEP STRUCK by the FLY. Well-known, effective, Non-poisonous.
Wholesale—S. & E. Ransome & Co., Essex Street, Strand, W.C.
Retail Agents in all parts.

CLIFF'S ANTISEPTIC FLUID. Manufactured by F. C. Calvert & Co., Manchester.
A Valuable Sheep Dip, a certain cure for Scab, and a powerful Antiseptic in case of Infectious Disease. For further particulars apply to Robt. Coleman & Son, 150, Leadenhall Street, E.C.

Cattle Plague.



PUBLIC NOTICE.—Owners of Stock are earnestly advised to protect their Stock, by the use of
MCDOUGALL'S PATENT DISINFECTING POWDER, as recommended in both Reports of the Royal Commission.
For washing the bodies of healthy and sick Cattle to prevent infection, use M'DOUGALL'S PATENT DISINFECTING SOAP.
CARBOLIC ACID at lowest prices.
Alexander M'Dougall, Manufacturing and Agricultural Chemist.
London: 11, Great Tower Street, London Bridge, E.C.
Manchester: Ross Street, Shudehill.
. Agents throughout the Kingdom.

Burnham, Somerset.
TO BE LET, for a term of years, with immediate possession, NURSERY and FRUIT GARDENS, about 2 Acres, well stocked with the choicest Fruit Trees. Three large Forcing Houses, fitted with the most approved Heating Apparatus, containing upwards of 4000 feet of Glass in good condition. The Houses are now stocked with a collection of Stove, Greenhouse, and a variety of healthy Bedding Plants, which may be taken at a valuation; also a large established Vinery (about 1600 feet of glass). The above Gardens are situate so as to command a first-class business, which has been carried on by the late tenant, now deceased, affording a favourable opportunity to parties seeking such a business.
To view, and for further particulars, apply to Mr. R. Salisbury, Surveyor and Auctioneer, Burnham, Somerset.—April 21, 1866.

TO BE LET, with Immediate Possession, a large FLORIST BUSINESS, the Lease and Stock at a valuation or otherwise.
James Over, Mitcham Common, Surrey, S.

To Surveyors, Land Agents, and Auctioneers.
WANTED, a PARTNER, by a Gentleman who has been established for 25 years in the country, contiguous to London, and is doing good business. The object is to extend the Business, and the Partner must understand the several branches of it, yet possess midnutions, business-like habits, and have at his command at least £1500.—Apply, in the first instance by letter only, stating name and address, age, experience, qualifications, and means of applicant, to B. A., under cover to Messrs. Batty & Whitehouse, Solicitors, 28, Charles Street, St. James's Square, S.W.

First-rate Nursery Business for Sale.
MR. J. C. STEVENS has received instructions from Messrs. Cousell, of the Royal Nurseries, Great Yarmouth, who are retiring from business, to offer for SALE, by Private Contract, the LEASE and GOODWILL of their well-known BUSINESS, which has been established upwards of 80 years, and commanding a very extensive trade, the stock of Hardy and Greenhouse Plants, including several thousand in Pots, Valuable Stools, Pits, Frames, Propagating Houses, Garden Implements, Horse, Carts, Dog Cart, &c., to be taken at a Valuation.
For further particulars apply to Mr. J. C. Stevens, Horticultural Auctioneer and Valuer, 38, King Street, Covent Garden, who can strongly recommend the before-mentioned concern.

Sales by Auction.

Important Sale of Plants, Bulbs, Rustic Seats, Garden Hose, &c.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY, April 24, at half-past 12 o'Clock precisely, a choice collection of CARNATIONS, PICOTEES, AURICULAS, Azaleas, Cacti, Aloes, Agaves; first-class Gloxinia, Pæonies, Liliums, Rustic Seats, Vases, Stools, &c.; India-rubber Hose, &c.
On view the Morning of Sale, and Catalogues had.

The Choice Collection of Greenhouse Plants

OF MR. TEVENS, The Grange, Dulwich.
MR. J. C. STEVENS begs to announce that he has been favoured with instructions from G. Widdowson, Esq., who is removing, to SELL by AUCTION on the Premises, The Grange, Dulwich, on WEDNESDAY, April 25, at half-past 12 o'Clock precisely, without reserve, the choice collection of STOVE and GREENHOUSE PLANTS, comprising fine Specimens in good condition.
On view the Morning of Sale, and Catalogues had.

Choice Collection of Established Orchids and Fine-foliaged Plants.

The Property of a Gentleman Removed from Surrey.
MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, April 26, at half-past 12 o'Clock precisely, some choice AERIDES, VANDAS, CATTLEYAS, SACCOLABIUMS, ODONTOGLOSSUMS, ONCIDIUMS, &c., including many fine Specimen Plants, which have been established and awarded Prizes at the various Metropolitan Shows. Also a select Collection of ANERCHOHILI, and some Fine foliaged Plants.
On view the Morning of Sale, and Catalogues had.

Choice Orchids.

MR. J. C. STEVENS begs to announce that he has been favoured with instructions to SELL by AUCTION at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY, April 30, at half-past 12 o'Clock precisely, a quantity of CHOICE ORCHIDS, including Dendrobium Dalhousianum, Dendrobium formosum, and some fine healthy plants of Odontoglossum Hallii, O. nebulosum, O. Pescatorei, O. membranaceum, O. Cervantesii, O. Roezlii, O. aureo-purpureum, O. Alexandræ, Cœlogyne Barkeri, Phalænopsis Lueddemanniana, and many other choice sorts.
On view the Morning of Sale, and Catalogues had.

Sale of first-class Carnations, Picotees, Pinks, &c.

MESSRS. PROTHEROE and MORRIS will SELL by AUCTION, at 8 and 39, Gracechurch Street, City, E.C., on MONDAY, April 23, at 1 o'Clock precisely, a first-class Collection of CARNATIONS, PICOTEES, and PINKS, of the finest growth, the surplus stock of an eminent grower; also 200 handsome Standard and Dwarf Rose, Conifers, and other Trees, American Plants, Azalea indica, Geraniums, choice German and other Zonale Seeds, Verbenas, Fuchsias, Dahlias, &c.
On view the Morning of Sale. Catalogues may be had at the Rooms as above, and of the Auctioneers and Valuers, Leytonstone.

Stratford, Essex.

Sale of Stove, Greenhouse, and Bedding Plants; Greenhouses, Boilers, and other effects.
MESSRS. PROTHEROE AND MORRIS are instructed by E. Burford, Esq., to SELL by AUCTION on the Premises, the Printing Ground, adjoining the Stratford Bridge Railway Station on the Great Eastern Railway on TUESDAY, May 1, at 12 o'Clock precisely, in consequence of the ground being immediately required to be cleared for Building Purposes, the whole of his valuable collection of STOVE and GREENHOUSE PLANTS, including Anectochilus, Orchids, some choice Cacti of sorts, Brassia, Tillandsia, Billbergia, Ferns, Abutilons, Poinsettias, Hydrangea, Callas, five large Specimen American Aloes in tubs (6 to 8 feet), Hoya carnosa, &c.; Geraniums, Verbenas, Calceolarias, and other Bedding Plants; with the erection of Greenhouses, Hot-water Piping, capital Coiled Boiler, Slate Tank, Fountain, Hand Lights, 2 and 3 light Boxes, Garden Pots, Vases, and sundry effects.
May be viewed the Day prior and Morning of Sale. Catalogues may be had at the Swan, Stratford; at the Eagle, Sparesbrook; and of the Auctioneers and Valuers, American Nurseries, Leytonstone.

Shacklewell.

Preliminary Notice of an Important Sale of about 100,000 Choice Shoots and Budding Plants, Greenhouse, &c.
MESSRS. PROTHEROE and MORRIS are instructed by Mr. Adam Forsyth to SELL by AUCTION, on the Premises, Shacklewell Nursery, near the Amherst Arms, Rectory Road, Stoke Newington, on TUESDAY, May 7, at 11 o'Clock, in consequence of the land being immediately required by the Great Eastern Railway Company, the whole of the valuable GREENHOUSE and BEDDING STOCK, including an unusually large assortment. Also the Greenhouses, Tiles, Boxes, and Sundry Effects.
Further particulars will appear in future Advertisements.
American Nurseries, Leytonstone, Essex.

Nursery to be Sold without Reserve,

By order of the Executors of the late Mr. James Pearson.
MR. ELLIOTT will SELL by AUCTION, on FRIDAY, May 11, at Garraway's, the Exchol NURSERY, with Residence, Shop, Glasshouses, Pits, Sheds, &c., covering about 2 Acres, situate in Hampstead Road, opposite the Chalk Farm Railway Station, at the foot of Haverstock Hill, held for about 46 years to come at only £61 per annum. There is a valuable old business connection, the advantages of which the purchaser will secure. Particulars of the Auctioneer, 24, Poultry Lane, E.C.

Ashford and Stanwell, Middlesex.

To Market Gardeners, Nurserymen, Builders, and Others, 104 Acres of Valuable Freehold and Copyhold Land, by order of the Trustees of G. F. Furnivall, Esq., deceased, in Three Lots, with possession or reversion.
MR. DAVENPORT will SELL by AUCTION, at Garraway's, Change Alley, Cornhill, E.C., on FRIDAY, May 11, at 12 o'Clock, the above VALUABLE PROPERTY, the greater portion of which is well adapted for Market Garden Ground or Nurseries, or for Building Purposes, about 8 Acres lying close to the Ashford Station, on the Windsor and Reading branch of the South-Western Railway, the remainder being in the village of Stanwell, within 1 mile of the high road from Hounslow to Staines, to which there is very considerable frontage. The whole is let on Lease for an unexpired term of three years from Michaelmas next, to Mr Edward Curtis, who will give early possession on reasonable terms, and will show persons over the land.
Particulars may be had on the Premises; of Mr. W. Davenport, Solicitor, 21, Ely Place, Holborn, E.C.; at Garraway's: and of the Auctioneer, 35, Bucklersbury, Mansion House, E.C.

THE ELEVATOR GUN.

SECURED BY ROYAL LETTERS PATENT.

DESIGNED for TRAVELLERS, EMIGRANTS, ORNITHOLOGISTS, SPORTSMEN, &c.

INVALUABLE FOR HOUSEHOLD DEFENCE.

GENERAL ADVANTAGES

Presented by the ELEVATOR GUN over the shoulder Fowling Piece.—It is less costly, far more portable, more easily cleaned; has nothing about it liable to break by an ordinary fall; is less liable by bursting or accidental discharge to injure the shooter or his companions; offers complete security against the loss of an eye by the escape of the percussion cap.

SHOOTING ADVANTAGES.

Greater effectiveness in thick cover, as it comes up quicker, and commands shots in positions not available with a gun resting against the shoulder.

Especially adapted for Shooting in Boats and for Ornithologists. As a household protective weapon, it makes the loud report of a gun, while, like a pistol, it can be kept loaded under lock and key in a bedroom drawer, or in its case.

Price for Fowling Piece, 12, 17, or 20 Bore .. .. £7 7s.

Complete with Case of best Oak, Lined, and fitted with Flask, Shot Pouch, Cleaning Rod, with suitable Apparatus, Nipple and Turn-screw, Oil Bottle and Picker, Folding Rod and Sheath, Rod Holder, Punch, Cloth Cover for Case, &c.

Fowling Piece, without Case or Fittings .. £4 10s.

Rifle (36 or 52 Bore) without Case or Fittings .. £6 10s.

The Rifle is admirably adapted for Rook Shooting.

EXTRACTS from TESTIMONIALS.

W. H. Russell, Esq., LL.D., late Special Correspondent of the *Times*, and Editor of the *Army and Navy Gazette*, says:—

"The Elevator Gun is a very ingenious contrivance, and after a personal experience of its use and power, we can recommend it to any person, who may desire to have a weapon for defence or for sport, and yet dispense with a lowering piece. It is very handy, and comes up very quick. It is very cheap, and with a light charge is effective for cover and general shooting at twelve yards."

Captain Burton, the African Explorer, says:—

"The utility of the Elevator is sufficiently established. I am taking one out with me to South America."

Captain W. H. Patten-Saunders, K.C.G., says:—

"Your Elevator Gun is a step in advance of anything I have ever seen. I can certainly do with it what I have never been able to do with any other."

John Phillips, Esq., of Granville Park, says:—

"I have tried the Elevator Gun constructed by Mr. Charlesworth, since his return to England, and for general purposes much prefer it to the shoulder gun; while the readiness with which this new Firearm can be used on horseback, and the small compass in which it can be stowed away, make it invaluable to travellers."

Mr. Chalk, Chief Constable of York, referring to a trial of the Elevator principle which took place there, writes:—

"I was present officially and witnessed the loading and firing by Mr. Charlesworth of the Elevator Gun. The mark aimed at was a circular piece of card-board backed by a lessen ring, and bowled about the meadow. Every shot was successful."

Colonel Battersby (Stanley Villa, Surbiton), in a letter to Captain Norton, speaking of the death of Captain Speke, and the numerous Gun accidents occurring about the same date, writes:—

"Though time alone must decide how far the adoption of the Elevator principle may diminish the number of gun accidents, I have no hesitation in saying, as a sportsman and old soldier, that in the combination of power, portability, and facility of shooting, these Elevator Guns surpass anything yet known."

Viscount Milton says:—

"I consider Mr. Charlesworth's Elevator Gun peculiarly adapted for travellers."

Mr. W. P. Colchester, writing from Grundisburgh Hall, Suffolk, says:—

"I am myself won over to the opinion expressed in the *Times*, and am prepared to see the shoulder pieces of our guns succumb to the Elevator in the same way as flint and steel have given way before the detonating cap."

Samuel Waring, Esq., of The Oaks, Gipsy Hill, Norwood, writes:—

"I find I can shoot quite as well with the Elevator as with the shoulder gun, and much prefer it, as it throws the recoil on the hands, which are much more able to bear the shock of a heavy charge. It is also much cheaper, lighter, and certainly safer."

F. H. Salvin, Esq., of Killingbeck Hall, Leeds, Author of the "Falconry of the British Islands," writes:—

"The Elevator Gun, for which I enclose a cheque, has arrived safely, and I like it upon trial very much."

Edmund Thos. Higgins, Esq., M.R.C.S., says:—

"I have found Mr. Charlesworth's Elevator Gun a most useful companion in my Ornithological rambles, and I think that when these Guns become known, no Ornithologist will be without one."

Richard Taylor, Esq., of Wimbledon Common, says:—

"I have had but one opportunity of trying the Patent Elevator Gun which I purchased last week, but that was a very satisfactory one. I went out for an hour in the afternoon on Wednesday last in the plantations at Cardew, Cornwall, and shot with it three times. The first time at a Blackbird on the wing, the second at a Rabbit, and the third at a Woodcock, killing all three, finding the Gun very handy and quick."

The late Sir Angus Campbell, of Dunstaffnage Castle, Argyleshire, writes:—

"I have received the Elevator Gun, and find it a very handy weapon. My keeper at the first shot killed a Swallow with it on the wing."

The Editor of *Bell's Life*, after trying these Guns, says, in the columns of that Paper:

"We are inclined to think with Captain Norton that this Elevator principle will before long be recognised as one of the important inventions of the present day."

All Orders must be accompanied with a City reference or remittance to

CHARLES POMEROY BUTTON, Nos. 142 and 143, CHEAPSIDE, LONDON, E.C.

Editorial Communications should be addressed to "The Editor." Advertisements and Business Letters to "The Publisher," at the Office, 41, Wellington street, Covent Garden, London, W.C.
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THE GARDENERS' CHRONICLE

AND

AGRICULTURAL GAZETTE.

A Newspaper of Rural Economy and General News.

No. 17.—1866.] SATURDAY, APRIL 28. {Price Fivepence. STAMPED EDITION, 6d.

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ROYAL HORTICULTURAL SOCIETY, SOUTH KENSINGTON.

Notice.—The FRUIT and FLORAL COMMITTEES will meet on TUESDAY NEXT, May 1, at 11 o'Clock.

ROYAL HORTICULTURAL SOCIETY.—The EXHIBITIONS will be HELD on THURSDAYS, viz.: MAY SHOW, &c., MAY 3; SUMMER EXHIBITION, JUNE 14; and the ROSE SHOW, JUNE 28.

Schedules may be had on application. Admission on May 3 and June 28, by Fellows' privilege cards, to be had on or prior to the days, 3s. 6d.; Public, 5s.; or on the Day, 7s. 6d. Band at 1 30

INTERNATIONAL HORTICULTURAL EXHIBITION and BOTANICAL CONGRESS.

Under the Patronage of Her Majesty The QUEEN, and of their Royal Highnesses the PRINCE OF WALES and the Duke of CAMBRIDGE.

The EXHIBITION and CONGRESS will OPEN on MAY 22, and continue till May 25. Subscribers' names will be received, and Schedules and Prospectuses may be obtained on application to the Secretary, at the Offices, 1, William Street, Lowndes Square, London.

INTERNATIONAL HORTICULTURAL EXHIBITION and BOTANICAL CONGRESS of 1866.

☞ NOTICE IS HEREBY GIVEN, that the FORMS of APPLICATION for SPACE, which it is necessary that Exhibitors should fill up, if they intend to take part in the forthcoming Exhibition, are now ready, and may be had on post-paid application. These Forms must be returned on or before May 1.

THOMAS MOORE, Exhibition Secretary.

Offices: 1, William Street, Lowndes Square, London, S W.

INTERNATIONAL HORTICULTURAL EXHIBITION and BOTANICAL CONGRESS of 1866.

☞ GARDENERS wishing to avail themselves of the privilege of PURCHASING TICKETS for the Exhibition at a reduced rate, under No 10 of the Regulations issued with the Schedule, are requested to observe that application must be made for them to Mr. THOMAS MOORE, Exhibition Secretary, Botanic Garden, Chelsea, London, S.W., previous to May 1. Tickets for Wednesday, May 23, will be charged Half-a-Crown, and those for Thursday, May 24, One Shilling. They will be available on each day respectively from 10 A.M. to 7 P.M. A remittance must accompany the application.

ROYAL BOTANIC SOCIETY'S GARDENS, Regent's Park.—The FIRST GENERAL EXHIBITION of PLANTS and FLOWERS, WEDNESDAY, May 9, Tickets to be obtained at the Gardens only by Vouchers from Fellows of the Society, price 5s.; or on the day of Exhibition, 7s. 6d. each.

KINGSTON and SURBITON ROYAL HORTICULTURAL SOCIETY.—The SECOND GREAT EXHIBITION of FLOWERS, Fruit, and VEGETABLES, of this Society, will be held on WEDNESDAY, June 13, 1866, in the grounds of the Woodbine, Queen's Road, Kingston, by the kind permission of Mrs. Christy. Copies of Rules and Schedules, and further information can be had on application to the Secretary, Mr. J. Kirk, 5, Queen's Place, Canbury, Kingston.

JAMES FAIRHEAD and SON, SEED GROWERS and MERCHANTS, 7, Borough Market, London, S.E.

New and Genuine AGRICULTURAL, GARDEN, and FLOWER SEEDS. Special prices and advantageous offers on application.

Genuine Garden and Agricultural Seeds.

JAMES GARDNER and CO., SEED FARMERS, MERCHANTS, and NURSERYMEN, 237 and 238, High Holborn, London, W.C.

Genuine Garden Seeds.

WM. CUTBUSH and SON'S DESCRIPTIVE PRICED CATALOGUE of SEEDS, which contains everything New and Old worth growing can be had post free on application. Highgate, London, N.

New Catalogue.

CHARLES TURNER'S CATALOGUE of PLANTS for the Spring is now ready. It includes lists of all the leading Bedding Plants, New Dahlias, Pelargoniums, Roses, Verbenas, and select general Collections.

The Royal Nurseries, Slough.

New Chrysanthemums and Pyrethrums.

JOHN SALTER'S DESCRIPTIVE CATALOGUE of NEW CHRYSANTHEMUMS and PYRETHRUMS for 1866 is now ready, and will be sent free on receipt of two stamps. Versailles Nursery, William Street, Vale Place, Hammersmith, W.

CLIANTHUS DAMPIERI.—Imported Seed, of excellent quality, 2s. 6d. per packet, containing a dozen seeds. Trade price per 1000 Seeds on application.
PETER LAWSON & SON, Edinburgh and London.

TRANSPLANTED RHODODENDRONS.—4-year-old Hybrids saved from the choicest Crimson, White, and Claret-coloured sorts, 12s. 6d. per 100, or 1000 for £5.
RICHARD SMITH, Nurseryman, Worcester.

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JOHN CRANSTON, King's Acre Nurseries, near Hereford.

MAURICE YOUNG'S DESCRIPTIVE LIST of Conifers, New and Rare Hardy Plants, Ornamental Trees and Shrubs, Rhododendrons, Japanese Novelties, Forest Trees, and Roses, forwarded on application.
Milford Nurseries, near Godalming, Surrey.

PINES.—Strong Fruiting, Succession, and Suckers, of all the leading kinds, can be had of
B. S. WILLIAMS, Victoria and Paradise Nurseries, Holloway, London

Fruiting Vines.

E. G. HENDERSON and SON offer the above, with splendid Canes of well-matured growth, with prominent eyes, sure to give a heavy crop of fruit, 10s. 6d. each.
LIST of SORTS sent on application.
Wellington Nursery, St. John's Wood, London, N.W.

CASTLE KENNEDY FIG.—Plants of the above may now be had at 10s. 6d. and 21s. each; the usual discount to the Trade. PETER LAWSON & SON, Edinburgh and London.

New Roses of 1866.

REVISED DESCRIPTIVE LIST NOW READY.

PAUL and SON, Old Cheshunt Nurseries, N., have Now Ready fine Plants of all the Varieties in their List. The Trade and Amateurs should consult this.

TEA and other ROSES in BLOOM and for BEDDING.—Now ready, a fine collection of the above. Prices and particulars on application. Liberal offers to the Trade.
THOS. S. WARE, Hale Farm Nursery, Tottenham, Middlesex, N.

DWARF DAHLIAS for Beds or Ribbon Borders.—PURPLE ZELINDA and LITTLE NAJADE, white, richly edged with crimson, massive ground roots, at 6s. and 12s. per dozen.
CHARLES SHELLARD, Hill Nursery, Winchfield, Hants.

Dahlias, Verbenas, &c., now ready.

C. E. ALLEN has a fine stock of the above is now ready, and can be had on application.
Norfolk Nursery, Shacklewell, N.E.

ONE HUNDRED THOUSAND VERBENAS, and general Collection of BEDDING PLANTS now ready at the Norfolk Nursery, Shacklewell, N.E.

Lobelia speciosa, true variety, from Cuttings.

C. E. ALLEN has a large stock of the above.
Norfolk Nursery, Shacklewell, N.E.

VERBENAS.—Purple King, Blue King, Firefly, Fox-hunter, No Plus Ultra, Ariosto Improved, &c. A large stock.
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WALTER P. HUME, Exotic Nursery, Gloucester.

DOBSON'S PRIZE CALCEOLARIA, unsurpassed by any strain in the world, may be had through all Seedsmen, &c. Sealed packets, 1s., 2s. 6d., 5s. 6d., 10s. 6d., &c.
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DOBSON'S PRIZE PRIMULA, unequalled for quality, colour, and fringe. Sealed packets, 1s., 2s. 6d., 5s.
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MRS. POLLOCK GERANIUM.—Strong Plants can be supplied by the dozen or 100, on application to
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See WM. PAUL'S SPRING CATALOGUE.
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BARR & SUGDEN, 12, King Street, Covent Garden, W.C.

DRAWING-ROOM PLANT CASES.—The beautiful Novelties in Plant Cases just introduced by BARR & SUGDEN are now on view at their Warehouse. An illustrated Sheet is in preparation for ladies living in the country. See illustrations, p. 384.
BARR & SUGDEN, 12, King Street, Covent Garden, W.C.

WEDDING BOUQUETS, EPERGNES FILLED, Tables Decorated, Conservatories Furnished, by C. ELWES & CO., 148, Park Terrace, Regent's Park.

GLADIOLI, GLADIOLI, GLADIOLI.—Collections, including all the finest varieties in cultivation, from 10s. 6d. to 63s.
All orders amounting to 21s. and upwards carriage paid.
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For Dahlias apply to

G. RAWLINGS, who is permitted to announce that he supplied Clark & Co., and Mr. Boshell, of the Borough, for 16 years. Nearly 200 varieties, at 3s. per doz.; New ones of 1865, including LEAH, CHAMPION, and GEO. WHEELER, 9s. per doz.
CATALOGUES are ready.
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Bedding Plants, 2s. 6d. per dozen.

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CATALOGUES on application.

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See Advertisement on other page
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The SEED CATALOGUE and GARDEN DIRECTORY for 1866, now published, will give full particulars respecting prices and other matters in connection with the Business. Will be sent gratis and post free to any address in the Kingdom.

GIANT ASPARAGUS.—Extra fine 2-yrs., 2s. per 100; extra fine 3-yrs., 3s. per 100.
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DAINTREE'S SEEDLING POTATO is the best early round white Potato in cultivation, and can be obtained at a moderate price on application.
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W. HEATH has a quantity of FLUKE POTATOS for Seed to offer at 3s. per bushel, or 90s. per ton. The sample is excellent.
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SUTTON'S CHOICE MANGEL SEED.

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ZEA CURAGUA, new Striped Japanese Maize.—Greatest novelty of the season. Newly imported Seed, 1s. and 2s. 6d. per packet, sent post free.
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English-saved Sowing Rape Seed.

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NEW FARM SEEDS of best selected quality. PRICED DESCRIPTIVE LIST post free upon application.
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The Cultivation of Bromus Schraderi.

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SUTTON'S PERMANENT GRASS SEEDS, 25s. to 35s. per acre, according to quantities required, and soils for which they are intended.

GOOD CLOVER SEEDS at MARKET PRICES.

Red	White Dutch	Yellow
Alsike	Cow Grass	White Suckling

For samples and lowest prices, apply (stating quantity required) to
SUTTON & SONS, Seed Merchants, Reading.

GOOD CLOVER SEEDS at Market Prices.—Red, White Dutch, Alsike, Cow Grass, and Trefoil; also Perennial Italian Rye and other Grasses. For samples and lowest prices apply t
RICHARD SMITH, Seed Merchant, Worcester.

NATURAL GRASSES: their Names and Derivations; Quality, Produce, Elevation, Situation, Soil, Use, Peculiarity, Season, Growth, Increase, Time of Flowering, Price, &c.
Free for one postage stamp.
RICHARD SMITH, Seed Merchant, Worcester.

E. G. HENDERSON & SON'S NEW PLANTS FOR 1866.

THE NEW BEDDING PLANT CATALOGUE WILL BE PUBLISHED MAY 1.

MESSRS. E. G. HENDERSON & SON

HAVE MUCH PLEASURE IN CALLING THE ATTENTION OF

AMATEUR CULTIVATORS AND OTHERS TO THE FOLLOWING NOVELTIES,

Possessing great merit, and which will prove as valuable acquisitions for the Flower Garden as many others they have previously sent out.

New Variegated-leaved Geraniums.

Yellow and White-margined, including the Tricoloured Sections.

BEAUTY OF GUESTWICK.—A fine variety, with broad creamy-white leaf-belt, and inner zone of alternate bronze and bright rosy carmine whilst young, forming an effective bed by its freely-branched habit, and profusion of brilliant scarlet flowers.

EDWINIA FITZPATRICK.—A decided improvement upon Mrs. Pollock in its more vigorous constitution, freely-branched habit, and larger foliage. The leaves show a broad rich golden margin, or belt, more uniformly marked by zones of rich bronze and brilliant flamed scarlet. Its ample velvety-surfaced leaves, combined with its fine habit, form a beautiful and effective bed, which retains its picturesque features throughout the season.

LADY OF SHALLOT.—Silver leaf-margin or belt, with a bright rosy tinted narrow zone, finely-branched habit, and a profusion of bloom in clusters of trusses of rich scarlet.

LIGHT AND SHADOW.—The broad and effective silver leaf-margin of this variety forms a fine contrast with the rich dark green centre, which is belted with an alternately blended rich bronze and carmine rose zone. The flowers being a rosy-tinted carmine colour, are well adapted as an intermediate tint to higher or lower shades; profuse flowerer.

LUCY GRIEVE.—One of the most beautiful tricolour-leaved variety, having rich velvety golden-margined leaves, exquisitely figured on the inner side by a broad and brilliant surface zone of bright crimson upon an under bronze ground. For an exhibition group, or fancy vase in conservatory decoration, it is unsurpassed by any kind yet grown in its section. In its native growth, it is conspicuously distinct from others by its evenly expanded and velvety textured foliage, also in its remarkably picturesque zone tints being more equally and broadly developed over each leaf.

MOIRÉ ANTIQUE.—Pure cream yellow or bright sulphur coloured leaf-margin, with a bright salmon-rose coloured inner belt or zone; growth dwarf, compact, and free; flowers rosy-lake colour, forming a middle tint, or contrast between higher and lower ones.

SOPHIA DUMARESQUE.—A striking improvement upon the much-admired variety Sunset, in habit, growth, leaf, and effect. In constitution it is more robust, in habit more vigorous, and freely branched, and in effect, the golden leaf-margin more effectively marked by a brilliant flame-tinted scarlet inner zone. Its compartively dwarf and compact style of growth will form a select and beautiful bed, and equally valuable for flower garden groups or parterres, terrace lines, and ribband rows.

SPANISH BEAUTY.—A neat and compactly dwarf-growing variety, with broad pure lemon yellow leaf-margins, and well-defined dark bronze leaf-zone, overlaid with a bright flame-scarlet tint, flowers rich scarlet; a picturesque and effective kind.

SOPHIA CUSACK.—A very beautiful and effective tricolor-leaved variety, with bright lemon-yellow leaf margin and golden disc, the latter distinctly belted with a very bright flamed-scarlet zone, upon a broken bronze border. It is a great improvement upon all varieties in its section of last season by its far richer and more uniformly developed leaf-tints. It is a highly ornamental variety for decoration in beds, pots, or terrace vases.

JOCK O' HAZELDEAN.—An improvement upon Mrs. Pollock, with bright canary-yellow leaf-margins, and rich flame-coloured zone with intermediate bronze bars. Growth compact and freely branched, forming an effective bed or group.

GOLDEN RAY.—Pure lemon-yellow leaf-margins, with velvety-surfaced circularly-lobed foliage, ornamented with a broad rich bronze red zone, suffused with bright flame; habit moderately branched.

COUNTESS OF TYRCONNEL.—Golden leaf-margins, with a nearly equally blended dark bronze and bright carmine-tinted zone. The fine constitutional vigour of this variety, shown in its free and compactly branched sub-erect growth, is well adapted for forming a pyramidal or conical outline of growth, for diversified effect in decorative garden groups, large pots, or vases.

GOLDEN HAIR.—Brilliant golden leaf-margin or belt, having a rich inner bronze zone, alternately marked by dark carmine, which is finely contrasted with its deep green leaf-centre, similar to the beautiful variety Mrs. Benyon.

MAY QUEEN.—Silver leaf-margin, marked by a pretty rosy-carmine inner zone; habit of growth vigorous and compact, flower truss full centred; a profuse and effective scarlet-flowered variety.

Pure Golden Yellow-leaved.

GENERAL LONGSTREET.—Style of Golden Fleece, with a clear bright self gold-coloured leaf, growth free, compact, and dwarf, forming large trusses of finely-shaped crimson scarlet flowers; one of the finest bedding varieties in its section.

LIGHTNING.—Leaves large, circularly lobed, the bronze zone merging in mature growth into a pure light self golden-leaf ground, flowers bright rosy or flame scarlet.

Golden Yellow and Shaded Yellow, with rich broad Vandyke Zone.

Growth and freeness of propagation similar to the Green-leaved Scarlet Geraniums.

CROWN DIAMONDS (E. G. H. & Son).—A neat well-branched variety, of dwarf compact growth, and medium-sized foliage, marked with a bright red-crimson zone upon a yellow leaf-ground; an effective free scarlet-flowering variety.

BEAUTY OF OULLINS.—The finest variety in its section, having a dense and compact habit, with vigorous growth, the leaves being picturesquely marked with a beautiful broad rich bronze crimson belt or zone upon a clear yellowish green ground; flowers bright cerise scarlet, borne in large compact trusses; adapted for a very effective bed or large group.

PRESIDENT LINCOLN.—A seedling form between Volcano and Mrs. Pollock varieties, of a vigorous, but dwarf, compact habit, the leaves being marked with a rich red crimson or bronze zone, flower truss compact, rosy scarlet, and fine shape.

GAIETY.—A beautiful and effective variety, of dwarf and compact habit, its large circularly-lobed leaves of yellow summer-tint showing a somewhat angularly-lobed broad rich bronze crimson zone, with a proportionate variegation of rosy scarlet; profuse flowerer of rich pendulous trusses.

CIRCLET.—A pretty variety, distinguished by its sharply defined and angularly-lobed narrow rich bronze zone, deepening by age, its yellow leaf-centre being well contrasted by a broad green outer margin, growth vigorous, flowers rich cerise scarlet; forming an effective model bed in its section.

NEATNESS.—Growth neat, dwarf, and compact, with circularly-lobed leaves, marked by a prominent well-defined lighter bronze zone, well contrasted by a yellow leaf-centre and broad outer belt, flowers rosy salmon, an abundant bloomer.

CANARY-BIRD.—A fine-habited variety, with vigorous well-branched and compact growth, leaves marked with rich bronze red zone upon a light canary yellow-leaf ground, and well contrasted by a proportionately broad outer belt or margin.

Pelargonium peltatum elegans.

A very elegant variety of the larger Ivy or Shield-leaved Geranium, forming a gracefully drooping growth for suspended baskets, or window groups in boxes. Its numerous flower heads of pure mauve flowers yield a beautiful contrast to the pearly outlines of the common, scarce coloured, or white-flowered Ivy-leaves, which, in itself is one of the finest objects when judiciously grouped for marginal decoration in large plant vases, or baskets, on terrace fronts or lawns.

The ample glossy shield-like leaves of these varieties form a beautiful underground tint for the blended colours of the kinds now referred to, which, when viewed either at a level distance, or from a lower position, may not unjustly be compared to starry clusters of snowy white and mauve-coloured bloom reposing upon a rich surface of emerald green verdure.

Two First-class Certificates were awarded to this variety, one by the Royal London Horticultural Society, and the second by the Royal Botanic Society, in testimony of its graceful adaptation for marginal effect to large plant vases, and window decoration in boxes.

New Dwarf Bedding Geraniums.

ZONAL SECTION.

GARIBALDI.—This variety is admirably adapted by its very dwarf, close, and compact habit for select terrace and flower-garden groups, beds, and belts, and by its neat small leaf-growth, forming one of the finest kinds yet raised for second row effect in ribband borders, or for outer edge decoration to self-coloured beds of everygreens, &c. Its Flower Trusses are borne in Compact Full Heads of a brilliant scarlet, and good shape. It is distinct from, and much superior to, all the older dwarf kinds now generally discarded, and from them it is readily distinguished by its remarkably neat and circular rich dark green leaves, and, lastly, by its full Compactum-like flower heads. Unlike some others, it is not liable to leave its naturally low style of growth, but preserves its uniformly effective character through the season.

It was awarded a First-class Certificate from proved ground specimens in the Chiswick Gardens by the Royal Horticultural Society, in whose Proceedings its description is thus summed up:—"A beautiful plant for small beds or margins."

The entire stock of this desirable variety was purchased from the raiser of Calceolaria aurea floribunda (Mr. William North), who considers that the plant now offered will eventually prove as useful in its class as the one now quoted has already done for some years, and still maintain its supremacy over a host of rival forms.

It may not be uninteresting to cultivators of garden flowers to know, from authenticated facts, what adverse influences some well-known plants have had to contend with in obtaining a due appreciation of their merit.

New Dwarf Bedding Geraniums.

ZONAL SECTION.

One of the first well-bloomed plants of Calceolaria aurea floribunda was exhibited by Mr. North at the Crystal Palace Exhibition of Plants, &c., with a view to prove its merit by open competition, and to receive the unbiassed opinions of reputed competent judges. The result of a journey of nearly 200 miles to exhibit one of the most valuable and effective plants in its colour yet raised was that as a variety it was not worth noticing! not even a bare recommendation for further trial!

We are correctly informed that as its unsuccessful yet fortunate raiser was returning home with it over London Bridge, his warm sense of the abilities of the censors employed on that occasion was practically appreciated by his pitching the unfortunate plant into the river. Whether the plant was eventually stranded into a more favourable position for obtaining a due estimate of its merit, or whether the thousands of plants that have since adorned our gardens have sprung, Phœnix like, out of its own ashes, we are not informed. Most likely the raiser's belief in need of satisfaction lay in the conscious investment of his stock in bone, and he probably looked forward to the future with a confidence as firmly reliant, and a success as proudly achieved, as was the case with a well-known and distinguished member of the British Cabinet, who, on being refused a first hearing, calmly replied, "the time is coming when you will hear me." So it was with the abused plant.

REGALIA (E. G. H. & Son).—A beautiful and effective variety for bedding or pot culture, growth of medium height, vigorous and compact, leaves with dark zone on green ground, flowers bright cerise-rose, good form and size, borne in large sub-globular trusses. Each, 3s. 6d.

LA REINE (E. G. H. & Son).—Leaf self-green, with a close compact habit of growth, and medium vigour, flowers beautiful pink; a free-blooming and effective variety. Each, 3s. 6d.

KING OF WHITES (E. G. H. & Son).—A bold and effective self-white flowering variety, of a free and vigorous branching dwarf growth, with rich dark leaf-zones, well contrasted with a broad green outer margin, and large globular trusses of finely-shaped pure white bloom.

This is one of the best kinds yet offered for effect in specimens of mature growth for vases, or as portable specimens in conservatory decoration and terrace groups. Each, 7s. 6d.; four plants, 25s.

QUEEN OF WHITES (E. G. H. & Son).—A more abundant flowering variety, with an equally good branching and proportionately vigorous growth, distinguished by its being less villose or hairy, and more evenly-expanded dark-zoned leaves, blooming more profusely in large, compact, full-centred trusses of pure white. It is finely adapted in mature growth for, by its beautiful globular flower heads, for portable specimens in vases and pots, for conservatory decoration, terrace lawns, and house approaches. Each, 7s. 6d.; four plants, 25s.

DR. NEWHAM (E. G. H. & Son).—A pretty and distinct variety, having in some degree the aspect of Cerise Unique, with variegated-tinted leaf-belts, and light yellow leaf-centre, circled with a broad chequered bronze zone, and outward rich green leaf margin; flowers clear pinky-rose, good habit and truss; by its abundant bloom well adapted for bedding or pot culture. Each, 3s. 6d.

Nosegay Geranium.

PINK STELLA.—A first-class desideratum for the flower garden, being one of the finest and most distinct forms in the Nosegay Bedding Section, having a free and well-branched habit. It is an exact counterpart of Stella in growth, with bigger and well-formed trusses of gay pink bloom; admirably adapted for a transition colour to the rich crimson and carmine varieties, and very effective for a large mobile bed or ribband row. It is really distinguished from most other kinds by its thin semicircular zone not extending over above one-third of the leaf disc, thus presenting an ample pure green leaf-surface as a relief ground to the upper masses of bloom.

New Fuchsias for 1866.

E. G. HENDERSON & SON again offer a selection of Fuchsias, principally raised by Edward Banks, Esq., whose repute in this branch of Floriculture is sufficiently known by the well-sustained and permanent merit of the varieties recognised by his name, and by the majority of such being found in the most prominent competing groups, both in England and Foreign Exhibitions.

The present selection are the proved varieties of two seasons' bloom, and are distinguished for brilliancy of colour, variety of outline, and general effect in decoration.

ALEXANDRINA (BANKS).—Brilliant glossy scarlet tube and sepals, finely reflexed, good form and substance, corolla pure white, good outline; a model variety.

ARABELLA.—An improvement on Annie, with purer white tube and sepals, the latter longer and well reflexed, corolla rich rose colour; by its free-flowering habit and good growth, well suited for exhibition groups.

BLANCHETTE.—A very beautiful and effective variety, with well-proportioned pure glossy white tube and sepals, of good size and substance, gracefully recurved, and the corolla large, of good texture and fine form, scarlet tinted rose colour, with well-lapped lobes, opening to a medium cup-shaped outline. By its free growth and profuse blooming habit, when duly pinched or trained for early lateral shoots, it forms a model specimen plant for competition groups.

CATHERINE PARR.—White tube and sepals, the latter well recurved, of good substance, corolla cup-shaped, rich red or scarlet tinted rose; in the style of Reine Blanche variety. Its free and well-branched habit of growth, and profuse bloom, form a valuable addition to exhibition kinds.

HARRY GEORGE HENDERSON.—A remarkable and very effective variety, with large bright coral-scarlet coloured broad sepals, prominently recurved, and of good substance, parachute-formed corolla, of a rich plum-blue tint, changing into violet-red, the margin being slightly revolute. The almost flat outline and great dimensions of the corolla, form a very distinct and attractive feature for competition groups and conservatory decoration.

LADY DUMBELLO (BANKS).—A noble and effective flower, having large and long brilliant carmine sepals of great substance, which are proportionately large goblet or cup-shaped corolla, of a rich lavender blue and purple colour; the bloom is produced in large pendulous trusses. Its free and vigorous growth requires early pinching to induce lateral branches.

LIZZIE HEXAM (BANKS).—A beautiful and telling variety, of tall and effective growth, in the style and deliciously contrasting colouring of Lucy Grieve, with large sepals, elegantly recurved, and large rich plum-coloured black cup- or bell-shaped corolla, changing into maroon crimson. Its graceful sub-erect growth, free-flowering habit, and attractiveness in bloom are its most valuable features.

BEAUTY'S BLOOM (BANKS).—A distinct and attractive form, with gracefully reflexed bright glossy carmine-scarlet sepals, and deep coloured cup-shaped corolla, of a dark violet-tinted plum-black colour, habit vigorous, requiring early pinching to form exhibition growth. A very effective and richly-featured flower.

BEN E. GLOE.—A very beautiful and uniquely-featured flower, showing broad bright carmine-scarlet sepals, gracefully recurved, and rich dark lavender cup-shaped corolla, elegantly marked with carmine rays from the base upwards; comparatively dwarf in growth, with a free-flowering habit, after the style of La Traviata.

CONQUEST (BANKS).—Sepals bright carmine-scarlet, well reflexed, of good width and substance, corolla very rich dark plum colour, merging into maroon, flowers medium size, free in bloom, graceful in effect, and forming an elegant variety for decoration or exhibition.

JULIA DE GUEST (BANKS).—A distinct and desirable variety, fine erect growth and profuse bloom, showing clear light scarlet or bright coral-red sepals of good substance, and well recurved, with rich lavender-blue corolla shading to a chalice cup-shaped outline. By its erect and free-flowering habit, it is specially adapted for a pyramidal style of growth, for conservatory decoration, or competition groups.

LAND O' PLENTY (BANKS).—An elegant and effective variety, with glossy rich red-scarlet sepals, gracefully recurved, corolla bursting from the base, loose and largely expanded, and of a dark violet-black at the base, of a rich violet-black hue; growth free, and effective for its distinctive features in groups.

The form of this flower is considered by some cultivators to be the most perfect and natural of the tribe, and the present variety was so highly thought of by its eminent raiser, as a model outline, that it was held back for two years, with a view to obtain, if possible, greater improvements from it in the same style.

New Antirrhinums.

AMETHYST | GARNET | JASPER | SARDONYX | TOPAZ | TURQUOISE

Exhibition Verbenas.

VERBENA BEAUTY OF ENGLAND.—This noble-flowering variety received a First-class Certificate for a trayful of flowers exhibited before the Floral Committee of the Royal Horticultural Society, for its very superior properties, as few varieties of this tribe are now considered worthy of receiving the highest reward of merit, but which on the occasion referred to, was unanimously given by the most eminent judges and cultivators of the Verbena to the present variety. E. G. HENDERSON & SON have availed themselves of its purchase at the high sum of £30, by which they are enabled to announce themselves as being in possession of the entire stock.

It is distinguished from all others in its class and colour, by its remarkably free and robust erect style of growth, healthy foliage, and large circular flower trusses, of great depth, substance, and chaste model outline. The individual florets or blossoms being large and slightly cupped, impart a more strictly circular form and perfect outline than is recognised in Verbenas generally. Its erect and vigorous constitution will probably prove the parent type of a more vigorous and hardy race in its tribe, specially adapted to resist the effects of damp and mildew, common to weaker varieties, under the effects of cold and wet seasons.

E. G. HENDERSON & SON'S NEW PLANTS FOR 1866—*(Continued).*

Exhibition Verbenas.

As a variety for forming decorative summer groups and competition trays, it is the nearest approach to a perfect outline in its aggregate features of bloom yet recognised, and appreciated by the highest judges in flowers.

ADA.—Blush white, with rosy-pink eye, good form.

ANTONIA.—Very rich claret-crimson, with rosy-lilac eye, good truss.

KING OF SCARLETS.—Glowing tinted scarlet, with a very large round picturesque white eye, truss and florets large, growth robust. A fine flower for competition groups, extra fine.

QUEEN OF ENGLAND.—Rich pure salmon, with a large and fiery-scarlet centre, truss large, good form and substance in bloom; a splendid flower for exhibition trays.

SANTIAGO.—Scarlet shaded crimson, with a large round white eye, good truss, large pip, and full-centred flower; fine exhibition variety.

PLUTO.—Brilliant deep plum colour, with a large canary-coloured eye, good size and outline.

Bedding Verbenas.

CELESTIAL BLUE.—The finest blue bedding variety. In style of growth, intermediate between Purple King and The Queen, free, vigorous, and erect, truss opening to the centre, good size, well formed, and a free bloomer, forming a very distinct and beautiful bed, exceedingly bright and beautiful in the sun. Most of the varieties in this colour for many years have proved defective for massing as the feature of the year. The present one possesses all the requisite properties of a fine bedding variety, and by comparison in growth and bloom is superior to all known varieties in its group.

CLARET QUEEN	ROSY CIRCLE	LILIAN	PAINTED LADY
GENERAL GRANT	PRINCESS HILDA	CELESTIAL ROSE	JUNIUS
LAURA	CHARMING	DUNKELD	QUEEN of SCOTS
MRS. GENERAL LEE	CHILDE HAROLD	FAIRY	SCARLET NONPAREIL

VERBENA SCARLET CUSHION.—Awarded a First Class Certificate by the Floral Committee of the London Royal Horticultural Society.

This very valuable variety is in growth and general habit a type of the Velvet Cushion (violet), being one of a hybrid section or race from V. venosa. The present beautiful form is the result of a cross breed between the same V. Cushion and V. Foxhunter, its growth is equally neat and compact, but an improvement in its stronger and more robust constitution, combining a free growth, cespitose habit, small rich green leaves, with numerous trusses of intensely scarlet flowers, rising about 5 inches in height. Its great substance of petal, depth and richness of colour, retaining its brilliant tint through sun and rain, are valuable features in its favour for decoration.

Like the one previously quoted, its uniformly low neat growth is admirably adapted for forming a beautiful miniature front riband line or belt, contrasting finely with V. Henriette, or other pure white variety as compact and dwarf in habit, and equally valuable for effect in the most select parterres, marginal belts, or terrace borders, yielding in such positions a succession of bloom from June until Oct., ber.

VERBENA PRINCESS VICTORIA (Maonetti hybrid).—Awarded a First-class Certificate of Merit by the Floral Committee of the London Royal Horticultural Society, for its unique adaptation in garden decoration.

This beautiful variety is one of the most valuable and useful of dwarf plants for the flower garden. It was obtained from the produce of hybridised plants, obtained by cross impregnation of Verbena Maonetti Impératrice Elizabeth, and the beautiful Verbena Velvet Cushion, by Mr. John Wills, late Gardener at Oulton Park, Cheshire.

It forms a neatly compact half-trailing plant, of spreading carpet-like growth, with small rich green elegantly-lobed leaves, and numerous erect flower scapes, from 6 to 8 inches in height, bearing terminal flower heads of a beautiful rich magenta, or violet-shaded rose colour. In its class it may be regarded as the best representative of a new race, and strikingly adapted for producing an effect in decorative gardening, hitherto little practised but by its quinquefarious raiser. Being a great improvement upon all the varieties or forms of V. pulchella (var. Maonetti) yet produced, in its more densely-branched, yet compact and half-trailing habit, yielding a greater amount of bloom and for a much longer period; also much more easily preserved in cold pits throughout the winter months—these valuable features will prove its special value and high merit for effective usefulness.

A most striking feature of excellence is, that where it can be planted somewhat extensively, it is admirably adapted for forming a beautiful ground-surface growth by its compactly-spreading habit, in blank spaces of arboretums, and the foreground of shrubberies; also for adorning the intervening spaces in extensive avenues of flowers or shrubs.

The following remarks will show its intrinsic interest and value, as applied and illustrated in the gardens at Oulton Park, in the summer of last year:—It was observed to form an excellent effect when planted for marginal decoration around large basket groups and vases, also on the front foreground of low rock mounds, terrace slopes, or banks—in short, wherever a relief surface tint or verdure was required, its long-continued growth and bloom gave a finished effect to the otherwise formal outline of trees and shrubs, throughout the late summer and autumn months.

It appeared equally suitable for decorating the ground surface of thinly planted, but majestic forms of tropical verdure, such as the stately Canna, Caladium, Papyrus, Bamboo, Humea, &c., whether arranged in natural groups or as avenue lines; and, whilst thus associated with the noblest forms of vegetable structure, it was itself an object of equal interest and beauty, by its superior adaptation for imparting an elegant and finished effect to larger summer groups of plants and flowers.

Bedding Verbenas.

Its perfect adaptation for working out an extensive and picturesque ground surface of verdure and bloom, up to the latest required period, and its beautiful effect for fringing the margins of elevated borders, or the foreground of sloping terrace fronts—requiring neither protection nor support in its growth; enduring storm and sunshine alike; modifying the excessive influence of summer surface-heat to the root action of larger and nobler growths, whilst aiding in their more perfect development of bloom, alike testify to its great value for combination of effect, and completeness of design, in the formation of flower groups.

MAONETTI DELICATA and MAONETTI ERECTA.

These three hybrids possess superior habits to the old V. Maonetti, and larger and more showy flowers.

New Bedding Dahlias.

SAMBO | SCARLET TOM THUMB | MOONBEAM | TARANTELLE | QUEEN OF ROSES

New Lobelias.

ERINUS SECTION.

SPECIOSA SPECTABILE.—Amongst the most desirable acquisitions of garden flowers for the season, E. G. HENDERSON & SON are enabled to offer the present variety as a very valuable and marked improvement upon the original L. speciosa, by its more brilliant and darker blue, more vigorous undergrowth, with a still dwarfer and more compact habit, inclining to a level outline. It has been found that the seed of the present L. speciosa does not as formerly yield a produce equal in beauty to the parent type of this beautiful plant, but appears in many cases to have deteriorated in the quality and effect of its bloom; it has, therefore, been a desideratum amongst cultivators to obtain a variety which should combine an improvement both in habit and bloom upon the present garden form, and the one now offered may be regarded as the most beautiful plant known in its group. It yields a profusion of intensely rich dark blue flowers from June until October, with-standing sun and rain, expanding alike in storm and sunshine through every change of summer weather. Its great beauty forms a most valuable and invaluable feature in the decoration of flower gardens, for the most finished designs in flower groups or parterres, front riband rows, picturesque marginal belts or terrace lines; and for forming a beautiful relief ground tint in the foregrounds of arboretums and pleasure grounds by masses of colour, blended with other deeper or lower tints of blue, rose, or white, it is unequalled by any other summer blooming plant in its duration of bloom, neatness of growth, and depth of colour.

SPECIOSA PICTURATA.—A very picturesque-coloured variety for general decoration in flower gardens. Blossoms pure white, with a clear and well-defined blue margin. Its profusion of bloom and compact habit forms a very attractive border plant in riband rows or broad belts, also for vase culture, and admirably adapted as groups for relief ground tints in the foreground of arboretums and shrubberies. In its fine contrasting opposite colours it makes a very effective second row or line to the beautiful dwarf L. speciosum spectabile in front.

The foregoing varieties of Lobelia speciosa are the richest coloured and most effective forms yet offered.

New Erythrinas.

CRISTA-GALLI SECTION.

ORNATA.—A beautiful hybrid variety, forming a small dwarf shrub from 1 to 2 feet in height, with long, compact, terminal, dense spikes of large vermilion-scarlet flowers, having a crimson front keel or lower lobe.

MADAME BELLANGER.—Equally as dwarf in growth and prolific in bloom as the foregoing, and distinct from it in its rich dark velvety crimson flowers, and darker keel or lobe, being produced in long terminal spikes. A fine variety for house decoration or warm conservatory wall in the summer months, and an improvement upon the larger-growing kinds by its adaptation for blooming in smaller pots.

Among other novelties and rarities offered in this Catalogue are the DOUBLE-FLOWERED GERANIUM, 2s. 6d. each; Ditto, GLOIRE DE NANCY, a new double variety of great merit, 5s.; FUCHSIA FULGENS MULTIFLORA PUMILA, 3s. 6d.; VITIS HETEROPHYLLA FOL. VAR., most elegant and beautiful bedded out, 3s. 6d.; the pure white LATHYRUS ALBIFLORUS, 1s. 6d. each; CLEMATIS FULGENS, Ditto ATROPURPUREA, 5s.; Ditto VIOLACEA, 5s.; Ditto BOLLANDI, 5s.; CLEMATIS AURELIANA, rich dark-blue, immense-sized blossoms, 7s. 6d.; ALLAMANDA HENDERSONI, 21s. and 21s. 6d.; Ditto St. HOTTI HENDERSONI, 5s. 6d. and 5s.; CALADIUM CHANTINI FULGENS, and other new varieties, 10s. 6d. each; CENTAUREA RAGUSINA COMPACTA, the very best of all permanent white-leaved bedding plants. CISSUS AMAZONICA, 2s. 6d. to 5s.; DELPHINIUM CARDINALIS; ECHITES AMŒNA, 6d., 1s. and 2s. 6d.; EPIGONIUM LEUCOBOTRYS, elegant fronded, 2s. 6d. to 10s. 6d.; HYBRANGEA IMPERATRICE EUGENIE, good and distinct; Ditto JAPONICA ROSALBA, 3s. 6d.; LINUM MACRÆI, orange-coloured species like L. flavum, 3s. 6d.; DOUBLE-FLOWERED MIMULUS, many varieties, 1s. 6d. each. New Hybrid Forget-me-not, MYOSOTIS DECORATRICE ELIZABETH, beautiful colour. ORCHIS MACULATA SUPERBA, splendid hardy variety. SALVIA BARBATA (?), a distinct and fine plant. SANTOLINA INCANA, a most elegant white glaucous-leaved edging plant. VARIEGATED SELAGINELLA. TACSONIA VAN VOLXEMII, strong plants, 3s. 6d. and 5s. 6d. VITIS HETEROPHYLLA FOLIIS VARIEGATIS, a most elegant plant bedded out. GERANIUM BRILLANTISSIMA, a beautiful bedding plant (variegated leaves). AUBRIETIA CAMPBELLII, beautiful plant. Ditto PURPUREA FOLIIS VARIEGATIS, flowers similar to the species; foliage pretty under glass, no use out of doors.

E. G. HENDERSON AND SON, WELLINGTON NURSERY, ST. JOHN'S WOOD, N.W.

Thomas Lipton

ROYAL AGRICULTURAL SOCIETY OF ENGLAND
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CORNER of STREET.

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GRASS SEEDS,
AGRICULTURAL SEEDS,

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NOVELTIES, NOVELTIES.

JAMES GARAWAY & CO.,

DURDHAM DOWN NURSERIES, BRISTOL,

OFFER THE

THREE UNDERMENTIONED NEW SEEDLING GERANIUMS

As not only Novelties but decided acquisitions.

Tricolor Section.

QUEEN of TRICOLORS.—This variety surpasses in beauty the well-known Mrs. Pollock, from which it is a seedling; the colours are of the same shade but much more vivid, and, being a great improvement, the green colour does not project itself beyond the zone. The flowers are produced in abundance, and are scarlet in colour and of good shape.

Well-established Plants will be supplied the last week in June, at 21s. each.

Four sent when Three are ordered.

Cloth of Gold Section.

BRONZE QUEEN.—A variety raised from Cloth of Gold, with foliage of same colour, but with the addition of a dark bronze zone distinctly marked; of good dwarf habit, free in growth and very effective, well adapted for bedding; flowers scarlet cerise, produced in good-sized trusses.

Price 7s. 6d. each.

Four sent when Three are ordered.

Nosegay Section.

L'AFRICAINE.—A hybrid Nosegay of compact habit, with extra fine trusses of purplish crimson flowers, which, elevated on stiff flower stems, produce a very fine effect. As a plant for the back or second row of a ribbon border or centre of bed, this will be found a very attractive acquisition.

Price 5s. each.

Four sent when Three are ordered.

Prices to the Trade on application.

JAS. GARAWAY AND CO.'S SPRING CATALOGUE, containing PRICED LISTS of STOVE and GREENHOUSE PLANTS, FERNS, and BEDDING-OUT PLANTS, is now ready, and will be forwarded post free on application.

JAS. GARAWAY AND CO., DURDHAM DOWN NURSERIES, BRISTOL.

American Plants, New Hardy Rhododendrons.

WATERER AND GODFREY'S PRICED and DESCRIPTIVE CATALOGUE of AMERICAN PLANTS, as exhibited in the Horticultural Gardens, South Kensington, free on application. This Catalogue fairly describes the Rhododendrons most worth growing, as well as some new and very handsome kinds exclusively in their possession, and now for the first time offered.

Knap Hill Nursery, Woking, Surrey.

To the Trade.

CUPRESSUS LAWSONIANA SEED (true), of excellent quality, and warranted crop of present season. Price, postage paid, 5s. 2d. per oz.; 32s. per half-lb.; 60s. per lb. nett. From unknown Correspondents a remittance must accompany order.

WHOLESALE CATALOGUES of GENERAL NURSERY STOCK can be had on application to

THOS. CRIPPS, Nurseryman, Cambridge Wells, Kent.

BUTLER AND McCULLOCH'S Collections of Choice FLOWER SEEDS forwarded Post free.

NEW ANNUALS, 5s. and 10s. 6d.
HARDY DO., 2s. 6d., 5s., 10s., 20s.
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For details of above Collections, see B. & McC.'s SPRING CATALOGUE, sent free and post paid upon application.

Covent Garden Market, W.C.

Established Upwards of a Century.

BUTLER AND McCULLOCH'S Complete COLLECTIONS of VEGETABLE SEEDS for ONE YEAR'S SUPPLY, all of the Growth of 1865.

No. 1.	No. 2.	No. 3.	No. 4.	No. 5.
£3 3s.	£2 2s.	£1 10s.	£1 1s.	10s. 6d.

All orders amounting to 21s. and upwards sent carriage paid.

DESCRIPTIVE PRICED CATALOGUES sent free and post paid upon application.

BUTLER & McCULLOCH, South Row, Covent Garden Market, W.C.

Superb Double Hollyhocks.

WILLIAM CHATER begs to remind the Admirers of this beautiful flower that now is the best time for planting it out to insure fine spikes and blooms this season.

DESCRIPTIVE CATALOGUES, with instructions for its Cultivation; also prices of Plants per dozen, 100, or 1000, may be had on application.

Seedlings from best named varieties, 4s. per doz., or from 20s. to 30s. per 100.

Blooming Seedlings, with colours named, very fine, 6s. per doz., and from 30s. to 40s. per 100.

Seed saved from the finest named varieties, very choice mixed 6d. and 1s. per packet.

In Collections of 12 separate named varieties, extra fine, 10s.; 6 varieties, extra, 5s.

2 named varieties, all good show flowers, 7s. 6d.

6 do. do. do. 4s.

WILLIAM CHATER, Nurseries, Saffron Walden, Essex.

Chrysanthemums.

FIRST PRIZES STOKE NEWINGTON AND GUILDHALL, 1865.

ADAM FORSYTH begs to inform the Public that he is now sending out his large COLLECTION of CHRYSANTHEMUMS, at 6s. per dozen, including Attraction, Eve, Golden Ball, Golden Dr. Brock, Hercules, King of Denmark, Lady Carey, Mr. Brunlees, Mr. Wynes, Mrs. Baines, Pink Pearl, Prince of Wales, Sam Weller, Venus, Virgin Queen, &c.

CATALOGUES free on one stamp.

Brunswick Nursery, Stoke Newington, N.

New Drawing-room Plant Case.

BARR & SUGDEN.

THE METROPOLITAN

SEED BULB & PLANT WAREHOUSE

12, KING STREET, COVENT GARDEN, W.C.

Orders amounting to 21s. sent Carriage Paid.

New Drawing-room Plant Case.

BLUNDELL'S CATTLE MELONS and CATTLE MARROWS: — 100 Seeds, 2s. 6d.; ¼ lb., sufficient for ¼ of an acre, 5s.; ½ lb., sufficient for ½ of an acre, 9s. 1 lb., sufficient for 1 acre, 16s.

Selections of ORNAMENTAL GOURDS, including Miniature, Medium, and Mammoth varieties, or either separate:—10 varieties, 2s. 6d.; 15 do., 3s. 6d.; 20 do., 5s. 6d.; 30 do., 7s. 6d.; 40 do., 10s. 6d.; 50 do. 12s. 6d.; 100 do., 21s.; 200, 42s.

PERMANENT PASTURE GRASS SEEDS and CLOVERS for ALL SOILS | FINE LAWN GRASS SEEDS for ALL SOILS

COMPLETE COLLECTIONS of VEGETABLE SEEDS for One Year's Supply (Carriage paid), 10s. 6d., 15s. 6d., 21s., 30s., 42s., 63s., 84s., and 105s.

COLLECTION of FLOWER SEEDS (post paid), 2s. 6d., 3s. 6d., 5s. 6d., 7s. 6d., 10s. 6d., 15s., 21s., 30s., 42s., to 105s.

STANDEN'S GARDENERS' AND AMATEURS' FRIEND MANURE.

The best concentrated Manure for all Kitchen Garden crops and Flowers in or out of doors. For List of Agents see our Advertisement in *Gardeners' Chronicle* for February, March, and April; and favourable Notice of the Manure in the *Gardeners' Chronicle*, p. 339, April 14.

Sold in Sample Canisters, 1s. and 2s. 6d.; and in Bags, 5s. 6d., 10s. 6d., and 21s., and in two qualities. No. 1 quality for Hard-wooded Stove and Greenhouse Plants, Fruit Trees, Roses, Lawns, Kitchen Garden Crops, and Flower Beds and Borders. No. 2 quality for Soft-wooded Plants. It should always be laid on the surface dry, and watered in.

BARR AND SUGDEN, SEED, PLANT, and BULB MERCHANTS, 12, KING STREET, COVENT GARDEN.

Sutton's Selected Yellow Globe Mangel.

SUTTON'S

CHOICE MANGEL WURZEL SEED

SAVED FROM FULLY DEVELOPED ROOTS

(the advantages of which have been proved for several years past).

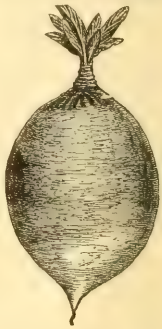
All kinds cheaper by the Cwt.

GOOD LARGE YELLOW GLOBE, 9d. per lb. | GOOD ORANGE GLOBE, 9d. per lb.
GOOD RED GLOBE, 9d. per lb. | GOOD LONG RED, 9d. per lb.
GOOD LONG YELLOW, 9d. per lb.

Sutton's Selected sorts of Mangel Wurzel.

	Per lb	s.	d.
SUTTON'S SELECTED YELLOW GLOBE (see above).—A very heavy cropper, has gained many Prizes		1	0
SUTTON'S SELECTED ORANGE GLOBE.—Fine, but varies a little in colour		1	0
SUTTON'S ELVETHAM LONG RED } We gained the first prize at Birmingham last year with those two kinds		1	0
SUTTON'S SELECTED LONG YELLOW }		1	0
STRATTON'S RED GLOBE.—Fine shape, keeps well		1	0
NEW YELLOW INTERMEDIATE.—A most desirable kind, very fine shape, free from roots, and produces great weight per acre		1	6

Sutton's New Yellow Intermediate Mangel.



Lowest price per Cwt. on application.

Many PRIZES at Birmingham and other Shows throughout the kingdom have been taken by Messrs. SUTTON'S Customers, both for MANGEL and for SWEDES.

PRICED LISTS of SWEDES, TURNIP, GRASSES, &c., will be sent Gratis and Post Free.

☞ *Carriage Free to all parts, except small parcels.*

SUTTON AND SONS, ROYAL BERKSHIRE SEED ESTABLISHMENT, READING.

VERBENA CRIMSON KING.

THOMAS METHVEN

Has much pleasure in announcing that he has arranged to send out the unrivalled VERBENA CRIMSON KING, which was raised in 1863 by Mr. David Thomson, at Archerfield, where it has been extensively used for the last two seasons. Its superiority consists in its great and continuous profusion of bloom, its vigorous and compact habit, and its healthy constitution. It is in fact a companion to the well-known Purple King, having all the good qualities of the latter variety, without its tendency to mildew or to become diseased in winter. Crimson King has fine bold crimson trusses of bloom, with petals of unusual substance, borne on short stiff stalks, which constitutes it one of the very best plants for standing heavy rain without much injury. Either for masses or for lines it is considered by the many Gardeners who have seen it this season at Archerfield to stand unrivalled for striking effect.

To be sent out next May at 18s. per dozen.

Orders are now being booked, and will be executed in rotation as they are received.

The following Nurserymen have already ordered it, and will be able to supply when sent out:—

Messrs. Austin & McAslan, Glasgow
" James Backhouse & Son, York
Mr. Wm. Bull, Chelsea, London
Messrs. Thomas Bunyard & Sons, Maidstone
" Ballantyne & Son, Galashiels
Mr. Wm. Cuthbush, Barnet, Herts
Messrs. Carbon & Son, Peterborough
" James Carter & Co., High Holborn, London
" Carstairs & Sons, Warriston Nursery, Edinburgh
Mr. E. Cooling, Milcash, Derby
" W. Chater, Saffron Walden, Essex
" John Cranston, King's Acre, Hereford
" H. Cannell, Woolwich
Messrs. James Dickson & Sons, Chester
" F. & A. Dickson & Sons, Chester
" Dickson & Turnbull, Perth and Brechin
" Dickson & Turnbull, Hawick
" James Dickson & Sons, Edinburgh
" Downie, Laird, & Laing, Edinburgh and London
Messrs. Drechsler & Aitken, Kilmarnock
Mr. Wm. Dillistone, Sible Hedingham, Essex
Messrs. John Dobson & Sons, Isleworth, London, W.
Mr. Wm. Dean, Shipley, Yorkshire
Messrs. E. P. Dixon & Son, Hull
" W. Drummond & Sons, Stirling
Mr. Charles Felton, Erdington, Birmingham
" John Fraser, Leyton, Essex
Messrs. Fowler & Co., Glasgow
" Fisher Holmes & Co., Sheffield
" J. Gartshore, Sons, & Co., Falkirk
" James Garaway & Co., Bristol
" E. G. Henderson & Son, St. John's Wood, London
" Howden Brothers, Inverness
Mr. W. Hooper, St. John's Hill, Clapham, S.W.
Mr. W. Ivery, Rye Lane, Peckham, S.
Messrs. Ivery & Son, Dorking, Surrey
" Thomas Imrie & Sons, Ayr
Messrs. Thomas Jackson & Sons, Kingston, Surrey
" Thomas Kennedy & Co., Dumfries
Mr. John Keynes, Salisbury
" Philip Ladds, Bexley Heath, Kent
Messrs. J. & C. Lee, Hammersmith, London
" Hugh Low & Co., Clapton, London
" Peter Lawson & Son, Edinburgh and London
" Little & Ballantyne, Carlisle
" H. Lane & Son, Great Berkhampstead
" W. P. Laird & Sinclair, Dundee
Mr. John Munro, Osborne Park Gardens, Barnet
" W. Masters, Canterbury
Messrs. J. & A. Pearson, Chilwell, Nottingham
Mr. W. Pritchard, Shrewsbury
" R. Parker, Tooting, London
Messrs. Paul & Son, Cheshunt, Herts
Mr. Wm. Paul, Waltham Cross, N.
Messrs. Benjamin Reid & Co., Aberdeen
" Wm. Rollisson & Sons, Tooting, London
Mr. Charles Ramsay, Ball's Bridge, Dublin
Messrs. J. Slater & Sons, Malton, Yorkshire
" E. Sang & Sons, Kirkcaldy
" John Stewart & Sons, Dundee
" F. & A. Smith, Dulwich
Mr. Richard Smith, Worcester.
" Wm. Skirving, Liverpool
Messrs. Smith & Simons, Glasgow
" Stuart & Mein, Kelso
Mr. Charles Turner, Slough
Messrs. James Veitch & Sons, Royal Exotic Nursery, Chelsea
" W. Virgo & Son, Wonersh, near Guildford, Surrey
Mr. R. T. Veitch, Exeter
" B. S. Williams, Holloway, London
Messrs. W. Wood & Son, Maresfield, near Uckfield, Sussex
" Wood & Ingram, Huntingdon

SEED WAREHOUSE, 15, PRINCES STREET; and LEITH WALK NURSERIES, EDINBURGH.

British Fern Catalogue.

ROBERT SIM can now send, post free for six postage stamps, Part I. (British Ferns and their varieties, 36 pages, including prices of Hardy Exotic Ferns) of his NEW and PRICED DESCRIPTIVE CATALOGUE of BRITISH and EXOTIC FERNS, No. 7

*** Part II. (Exotic Ferns) will be issued as early as possible.
Foot's Cray Nursery, S.E.

RAYNBIRD, CALDECOTT, BAWTREE, DOWLING, AND COMPANY, Limited,
CORN, SEED, MANURE, and OILCAKE MERCHANTS,
Address, 89, Seed Market, Mark Lane, E.C.; or Basingstoke.
Samples and Prices Post free on application. Prize Medals, 1851, for Wheat; 1862, for "Excellent Seed Corn and Seeds.

RICHARD SMITH'S SEED CATALOGUE contains a Calendar of Time for Sowing, particulars of Collections with Prices, Directions for Cropping well and economically, Soil, Manure, Depth, Distance, Season, Hardiness, Duration, Form, Height, Colour, Storing, Use, Flavour, and other qualities described. This List free by post for one stamp. Seeds direct from the growers, the surest way to success.
RICHARD SMITH, Seed Merchant, Worcester.

Flower Seeds.

ENGLISH and CONTINENTAL NOVELTIES for 1866.—See DESCRIPTIVE LIST in *Gardeners' Chronicle* of March 10, p. 214; also March 17, in first column of the Newspaper part. Offered by
STEPHEN BROWN, Seed Grower, Sudbury, Suffolk.
CATALOGUES sent free.

CALCEOLARIA AMBASSADOR (SANG's). — Strong Plants in single pots of this magnificent Bedding-out Calceolaria are now ready, price 12s. per dozen. The Trade supplied.
"The plant is of a dwarf compact habit, growing from 12 to 15 inches high; the flowers brilliant, bronze-crimson tinged with scarlet, and the trusses so large and numerous as to give the appearance of an entire mass of bloom, rendering this the most magnificent Bedding-out Calceolaria of its class in cultivation. It also forms a most desirable and showy pot-plant for the Conservatory."
EDWARD SANG & SONS, Nurserymen and Seed Merchants, Kirkcaldy.

ROYAL BOTANIC SOCIETY'S SPRING EXHIBITION, April 21, 1866.

LIST of AWARDS.

6 ROSES. (Amateurs.)

2d, Mr. J. James, Gr. to W. F. Watson, Esq., Isleworth

6 ROSES. (Nurserymen.)

1st, Mr. C. Turner, Slough, Bucks
2d, Messrs. Paul & Son, Cheshunt, Herts

3 ROSES, new.

1st, Mr. C. Turner | 2d, Messrs. Paul & Son

24 ROSES, cut blooms.

1st, Messrs. Paul & Son

MISCELLANEOUS BOXES of ROSES.

1st, Messrs. Paul & Son

6 PELARGONIUMS. (Amateurs.)

1st, Mr. J. Wiggins, Gr. to W. Beck, Esq., Worton Cottage, Isleworth

6 PELARGONIUMS. (Nurserymen.)

1st, Mr. D. Clarke, Alton Cottage, Whitton, near Hounslow

6 AURICULAS. (Amateurs.)

1st, Mr. J. James, Gr.
2d, Mr. E. Paine, Kentish Town, N.W.
3d, Mr. J. Butcher, Camberwell, S.

6 AURICULAS. (Nurserymen.)

1st, Mr. C. Turner

24 PANSIES.

1st, Mr. J. James, Gr.
2d, Mr. H. Hoopes, Nurseryman, Widcombe Hill, Bath

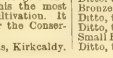
6 FOLIAGE and FLOWERING PLANTS.

1st, Mr. B. S. Williams, Nurseryman, Holloway
2d, Mr. J. Wheeler, Gr. to Sir F. H. Goldsmid, Bart., Regent's Park

MISCELLANEOUS.

Silver Medal to Messrs. H. Lane & Son for Collection of Rhododendrons
Ditto, to Messrs. H. Lane & Son for Collection of Roses
Ditto, to Mr. C. Turner for Collection of Roses
Small Silver Medal to Mr. C. Turner for Collection of Auriculas
Ditto. to Mr. J. James, Gr., for Collection of Calceolarias
Bronze Medal to Mr. J. James, Gr., for Collection of Pansies in Pots
Ditto, to Mr. J. James, Gr., for Collection of Cinerarias (Cinerarias
Ditto, to Mr. W. Lacey, Gr. to C. S. Mortimer, Esq., for Collection of
Small Bronze Medal to Mr. G. Wheeler, Gr., for Collection of Flowering
Ditto, to Mr. G. Wheeler, Gr., for Collection of Begonias (Plants

CLIANTHUS DAMPIERI.



MESSRS. VEITCH & SONS

OFFER NEWLY IMPORTED

SEED OF THIS MAGNIFICENT GREENHOUSE PLANT

At the following low prices.

THE SEED IS GUARANTEED TO GROW WELL.

6 Seeds, 1s.; 12 Seeds, 1s. 6d.; 30 Seeds, 3s. 6d.

Special offers to the Trade on application.

ROYAL EXOTIC NURSERIES, KING'S ROAD, CHELSEA, S.W.

FORTHCOMING INTERNATIONAL HORTICULTURAL EXHIBITION.

SPECIMEN ORNAMENTAL and VARIEGATED PLANTS and FERNS.

JAMES GARAWAY & CO.,

DURDHAM DOWN NURSERIES, BRISTOL,

Offer the undermentioned. The whole are well-grown and in good condition. Amateurs or the Trade wanting to complete Collections will find this a first-rate opportunity.

AGAVE PICTA.—A fine plant, in 18-inch pot, 21 inches high, with 17 good well-marked leaves
ALOCASIA ZEBRINA.—In 19-inch pot, with 6 good leaves, the last 4 feet 6 inches long
ARECA RUBRA.—A pair of these graceful Palms, in 12-inch pots, about 4 feet high
CARYOTA URENS.—A fine specimen of this beautiful Palm, in 16-inch pot, 4 feet 9 inches high
CROTON PICTUM.—Well variegated, in 18-inch pot, 5 feet 3 inches high by 4 feet 6 inches through
CYCAS REVOLUTA.—The Sago Palm, in 20-inch pot, with 12-inch stem; just throwing up fresh leaves
EURYA LATIFOLIA VARIEGATA.—The handsomest of the Japanese plants, in 10-inch pot, 2 feet high, 18 inches through
FICUS LEOFOLDI.—In 16-inch pot, 3 feet 6 inches high, leaves 21 inches by 12 inches
FICUS LYALLII.—In 16-inch pot, 3 ft. 6 in. high, leaves 20 in. long
LATANIA RUBRA.—In 22-inch pot, with 9 leaves, last 6 fee 6 inches long
MARANTA ORNATA.—In 18-inch pot, 3 feet high by 4 feet through
" VITTATA.—In 18-inch pot, 3 feet high by 3 fe et through
PANDANUS ELEGANTISSIMUS.—In 18-inch pot, 3 feet 6 inches high by 4 feet 6 inches through
PHŒNIX DACTYLIFERA.—The Date Palm, in 20-inch pot, 4 feet high by 4 feet 6 inches through
TUPIDANTHUS CALYPTRATA.—The finest of the Araliaceæ, in 18-inch pot, 5 feet 9 inches by 4 feet 6 inches
YUCCA ALOIFOLIA VARIEGATA.—A fine pair, in 18-inch pots, 3 feet high
" CORNUTA or CONCAVA.—In 14-inch pot, 1 foot 8 inches high
" PARMENTIERI.—In 20-inch pot, 2 feet 3 inches high
" QUADRICOLOR.—In 12-inch pot, 1 foot 8 inches high. A beautifully coloured specimen

Ferns.

ALSOPHILA AUSTRALIS.—A fine pair of these beautiful Tree Ferns, well-established, stems 5 feet clear from pot, crowns 7 feet across
ALSOPHILA GUIANENSIS.—In 17-inch pot, 12-inch stem, 9 fronds, last 4 feet long
CYATHEA DEALBATA.—In 22-inch pot, 2 feet 6 inch stem, 20 fine fronds, forming a beautiful bend
CYATHEA MEDULLARIS.—In 22-inch pot, 14-inch stem, 9 fronds, the last 6 feet long
DAVALLIA ACULEATA.—In 14-inch pot, 3 feet high by 2 feet 3 inches through
DAVALLIA PYXIDATA.—In 18-inch pot, 4 feet high by 4 fee through
DIDYMOCHLÆNA TRUNCULATA.—In 16-inch pot, 2 feet 3 inches high, by 3 feet through
GLEICHENIA DICHOTOMA.—In 22-inch pan, 3 feet 6 inches high by 4 feet 9 inches through
GLEICHENIA SPELUNCÆ.—In 18-inch pot, 2 feet 9 inches high by 3 feet
LOMARIA GIBBA.—In 15-inch pot, 3 feet through
NEOTTOPTERIS VULGARIS.—In 18-inch pot, 4 feet 8 inches across

The whole to be seen and prices obtained on application, and of
JAMES GARAWAY AND CO., DURDHAM DOWN NURSERIES, BRISTOL.

INTERNATIONAL HORTICULTURAL EXHIBITION.

INTENDING EXHIBITORS ARE REMINDED THAT

ALL APPLICATIONS FOR SPACE AND ENTRIES OF PLANTS

Must be made on or before MAY 1st NEXT.

This Rule will be strictly enforced, to admit of the proper arrangement of the Plants for the Exhibition, and for the preparation of the Catalogue.

Forms of Application for Space, &c., can be obtained from Mr. R. DEAN, at
THE OFFICES, 1, WILLIAM STREET, LOWNDES SQUARE, LONDON, S.W.

LECTURES on BOTANY.—Prof. OLIVER, F.R.S., F.L.S., will COMMENCE his COURSE on TUESDAY May 1, at 4 P.M. The Class will be abundantly supplied with fresh Specimens, and the Lectures illustrated by a very extensive series of Drawings and Diagrams, Herbarium and Museum Specimens, &c. Occasionally on Saturdays the Class will have the opportunity of engaging in the Microscopic Examination of Tissues, &c. Fee for the Summer Term, £3: Perpetual, £6. On payment of 10s. College Fee, in addition, the Course is open to Gentlemen who are not attending other Classes in the College.
GEO. HARLEY, M.D., F.R.S., Dean of the Faculty of Medicine.
A. DE MORGAN, Dean of the Faculty of Arts and Laws.
CHAS. C. ATKINSON, Secretary to the Council.
University College, London, April 20.

PARIS UNIVERSAL EXHIBITION of 1867.—The Lords of the Committee of Council on Education have received a communication from the Imperial Commission, announcing that a SPECIAL EXHIBITION of HORTICULTURE will be held at Paris contemporaneously with the Exhibition. British Horticulturists are specially invited to take part in this Exhibition.
A MEETING of HORTICULTURISTS and others interested in the subject will be held on TUESDAY NEXT, May 1, in the Conservatory of the Royal Horticultural Gardens, at 10 30 A.M.

PRIZES, OPEN to ALL ENGLAND.
First Prize: a very superior Gold Watch, value 14 guineas.
Second Prize: a first-class Silver Watch, value 6 guineas.
The above Prizes will be given by the COMMITTEE of the COVENTRY and WARWICKSHIRE GEORGES HALL. The following, and other liberal Prizes, will be awarded:

72 CUT ROSES, distinct (Nurserymen),			1 Truss, £8, £6, £4.
48	,,	,,	3 Trusses, £6, £4, £2.
24	,,	,,	3 Trusses, £3, £2, £1.
24	,,	,,	1 Truss, £3, £2, £1.
24	,,	,, (Amateurs),	1 Truss, £4, £3, £2.
18	,,	,,	1 Truss, £3, £2 5s., £1 10
12	,,	,,	3 Trusses, £3, £2 5s., £1 10s
10 EXOTIC ORCHIDS (Open), £10, £7, £5.			
6		(Amateurs), £6, £4, £2.	
18	,,	FERNS (Open), £8, £6, £4.	
12	,,	,, £6, £4, £2.	
3 TREE FERNS		£4, £2, £1.	
12 ORNAMENTAL FOLIAGE PLANTS (Open), £5, £3, £2			

Liberal Prizes will be awarded to Plants of Merit. The Hall is close to the London and North Western Railway Station.
For Schedules and every information apply to Rear. W. KER, Hon. Sec., 4, Bassett Street, Liverpool.

COMPLIMENTARY FLORAL FETE at Nottingham, AUGUST 27 & 28, in honour of the British Association Meeting.
President—Dr. J. D. HOOKER, F.R.S., &c.
About £250 in Prizes for Stove, Greenhouse, and Ornamental-foliaged Plants, Orchids and Ferns. Upwards of £30 in Fruit Prizes. Nearly £30 in Cut Flower Prizes and Special Certificates of Merit. A Catalogue of the Award of Prizes will be printed. Exhibitors to declare before July 1.
Schedules may be had of the Exhibition Secretary, E. J. Lowe, Esq., of Highfield House, near Nottingham.

ROYAL HORTICULTURAL GARDENS.—A PERMANENT EXHIBITION of HORTICULTURAL ELEGANCIES, and HORTICULTURAL and AGRICULTURAL IMPLEMENTS. Amongst the Exhibitors may be quoted the Coalbrook Dale Co., Messrs. Rosher, Weeks, Green & Son, Hooper, Naylor & Co., Bruby, Patent Concrete Stone Co., Whitwick Colliery Co., Claudet & Houghton, Britannia Rubber Co., Lucking Bros., Mellship & Harris, and about 30 others. There are still a few advantageous positions vacant, applications for which should be made early to
Mr. Fox, Royal Horticultural Gardens, South Kensington.

The Gardeners' Chronicle.

SATURDAY, APRIL 28, 1866.

MEETINGS FOR THE ENSUING WEEK.

TUESDAY, May 1	Royal Horticultural (Floral and Fruit Committees), at South Kensington	11 A.M.
	Ditto (Scientific Discussion)	3 P.M.
	Royal Horticultural (May Show), at South Kensington	2 P.M.
THURSDAY, — 3	Linnean	8 P.M.

In continuation of the remarks on CLIMATE made last week, we may add that another considerable cause of the well-known diminution of the temperature of the air and ground in winter is the shortness of the period during which, at that season, the sun is above the horizon. It is trite to remark that days are short in winter, and long in summer. As in all other cases of calorific agency, the heat being equal, the quantity transmitted or absorbed is proportional to the time. For example, at midsummer in London, the sun is above the horizon 16 hours 24 minutes of solar time; or correcting for refraction and parallax, about 16 hours 34 minutes, that is more than two-thirds of the 24 hours which make up the whole day. The case is exactly reversed in winter. The following Table will show the effect of latitude on this cause of the variation of summer temperature. We have chosen the five places named as being not far from the same meridian, and as having known mean temperatures in the months compared. These means we have obtained from the Journal of the Horticultural Society of London, vol. iv.:—

Place.	Latitude	Greatest elevation of sun.	Length of longest day.	Hours of sunshine in June and July	Mean temperature in June and July.
London	51°28'.6	61° 51'.6	16h 24'.2	981h 51'.6	62°.025
Edinburgh	55 57 .25	57 30 .5	17 19 .6	1033 15 66	57 .36
Elgin	57 37	55 49	17 46 .3	1051 1 .35	60 .38
Christiania	59 54 .6	53 33	18 4	1094 56	59 .99
Drontheim	63 26	50 1	20 1 .5	1177 16 .16	62 .36

In the above Table, the fourth column of figures, called "hours of sunshine," exhibits the hours and minutes during which the sun is above the horizon in the months of June and July at the several places. These are calculated in solar

time, without correction for refraction and parallax, which corrections would have made the hours a little longer, but would have scarcely affected the relative proportions. We had hoped to give the whole sunshine for the summer half-year, but we found the calculations too operose for an occasional article like this. As it is, the short column cost us 60 logarithmic calculations, and to ensure the strictest accuracy would have required many more. Our readers will accept this as a tentative effort. We trust that some of our mathematical friends, more expert in the use of trigonometrical formulæ, will supply wherein we are lacking. A thorough investigation of this point, combined with an exact estimate of the effective sunshine, during the varying elevations of the sun in each day, and on successive days, would be a boon to meteorologists.

Meanwhile the Table, brief and imperfect as it is, suggests some curious results. It will be seen that during the two midsummer months Drontheim enjoys 195 hours 25 minutes longer sunshine than London does; and that the consequence of this, combined perhaps with other causes, is that Drontheim, though nearly 12° of lat. farther north, has a mean temperature about half a degree higher than that of London, during June and July. It may be added, that it appears from the Table in the London Horticultural Society's Journal cited above, that the mean of Drontheim for the months of May, June, July, and August, viz. 58°.62, is nearly identical with the mean, for the same period, of Elgin, which possesses one of the finest climates in Scotland, and nearly 6° farther south.

In the northern regions of Europe the summers are short but brilliant. Plants have little time to lose, and they lose but little. It is stated by BERGHAUS, that the Wheat harvest does not take place sooner in the south of England than at Upsal (lat. 55° 52'), and Barley is 10 days later in ripening in England than in Sweden. At Alten, in Norway, lat. 64° 57'.5, Dr. SCHÜBELER found that six-rowed Barley ripened in 55 days from sowing, while it takes about 90 days to come to maturity on the banks of the Nile—a most noteworthy fact in regard both to climate and acclimatisation, if we could only be sure that the variety of Barley was exactly the same. Dr. SCHÜBELER also states that Grapes and Peaches ripen on walls in Norway in lat. 61°; and that numerous Plums, and among them the Greengage, ripen as standards (?) and against walls as far north as lat. 64°. On this subject we may refer to an extract in another column (p. 391), relative to the "Vegetable Productions of Norway," from the Rev. Mr. BARNARD'S interesting volume on "Sport in Norway," in which he reports some of the results of Dr. SCHÜBELER'S researches.

The mean temperature of Edinburgh for June and July in the Table given above, suggests a variety of inquiries. It is obviously the lowest in the series; a circumstance which is no doubt partly due to what M. A. DE CANDOLLE calls "nebulosity," or cloudiness of the atmosphere, about which we shall have something to say in another article; and partly to peculiarities of local position. The effect of these peculiarities comes out very strongly when we compare the genial summer climate of Scandinavia with the miserably cold seasons of Greenland, and the conterminous regions of North-eastern America, lying under the same parallels of latitude. The shores of the former are bathed by the expiring Gulf Stream; while the iron-bound coasts of the latter are rasped and chilled by icebergs from the Polar regions. Here we have a striking confirmation of Sir J. F. HERSCHEL'S opinion that in Meteorology we cannot proceed far or safely on *deductive* methods without often checking our conclusions by *inductive* observation.

Two special points have engaged the attention of those observers who have studied the ASCENT OF THE SAP, viz., the tissues through which it passes, and the causes which induce the upward flow. As to the first point, the questions which have to be solved are these—Does the sap pass up mainly or entirely through the cellular tissue, and specially through the soft immature wood-cells? Does it pass up through the vessels? or does it traverse in its upward course the intercellular spaces? The older authors, GREW, MALPIGHI, and HALES, were of opinion that the vessels contain, under ordinary circumstances, air only. More recent writers, such as BISCHOFF, HOFFMANN, and UNGER, are of the same opinion, but they admit that in spring, or whenever the plant is gorged with moisture, sap may be found in the vessels. GRIS and LESTIBOUDOIS maintain that liquid exists in the vessels at all times. TRÉCUL considers the ordinary vessels of a plant to have an equivalent function to the arteries in an animal, but with this difference—that whereas in an animal the blood is of the same quality throughout the whole arterial system, in a plant the sap at one place is different in its nature from what it is in another; and indeed it may be absent from some vessels and present in others. RAINEY thought the sap passed up through the intercellular passages, but against this view it may be urged that in the root the cells are so dense that there are few if any interspaces, and what there are, are certainly too small in size and too insignificant in number to convey so large a current.

The experiments made to determine the course of the sap have in general been made in such a way as to lead to fallacious results. Thus, if the cut end of a shoot be immersed in fluid, it is reasonable to expect that that fluid will pass through by different channels from what it would if it permeated membrane, as it does under ordinary circumstances. The cut end of the vessels and intercellular passages would be patulous, and would allow ready passage of the fluid, and so a different result would be obtained from that which would occur if the uninjured roots were allowed to absorb the fluid. We have ourselves found this to be the case.

Another possible source of error lies in the employment of chemical solutions, which may affect the vitality of the plant and produce different results from those which would occur, were the fluid employed neutral in its action on the tissues, and on their contents. This objection is obviated by employing some vegetable solution which does not affect the plant. Thus UNGER used for this purpose the red juice of the berries of Phytolacca; and Mr. SPENCER, in his recent experiments, caused the plants to absorb a weak decoction of logwood, and then, by applying a solution of chloride of tin to the cut surface, the channel through which the fluid passed became marked out by the purplish tinge which results, and which is very evidently confined to the vascular bundles. Mr. SPENCER'S experiments were performed not only on cut branches, but also on germinating seeds, in which the roots were uninjured, and the fluid allowed to pass into the tissues in the ordinary way.

In this manner the current of the sap can be traced in Mr. SPENCER'S experiments through the vascular bundles of the radicle, the cotyledons, and the plumule. Now, as so many good observers have come to the conclusion that the spiral vessels at least do not, unless under exceptional circumstances, convey fluid, Mr. SPENCER'S experiments, convincing as they appear at first sight, must be repeated under varying conditions, in order to ascertain whether some fallacy does not lurk in them. The seedling Bean, which, through Mr. SPENCER'S kindness, we had the opportunity of seeing, was grown in pure water. The rootlets, as they were developed, were pushed down into the water. Now, under such circumstances, it may well be that the plant would absorb more water than it would under ordinary circumstances, and all observers have noticed the presence of fluid in the vessels when the plant is gorged with sap.

We have occupied so much space with the discussion of the channels through which the sap passes, that we must defer for the present the consideration of the forces which promote its ascent, though Mr. SPENCER'S opinions on this point are more original and ingenious than those relating to the tissues through which the fluid passes.

WE called attention a short time ago to that very singular plant the Begonia phyllomaniaca, with the view of showing how freely the leaves of this as well as of some other plants produce other leaves, small buds, and even shoots from their surface, and thus in some measure take upon themselves the function of stems; or, to put the case a little differently, we may say that the stem is by no means the only part of the plant capable of developing buds, and hence the production of the latter organs is no proof that the part from which they originate is necessarily a stem or a branch. Our valued correspondent "M. J. B." has even seen a bud produced upon the petal of a flower of a Clarkia. That roots may be formed from leaves has long been known, and practical men have not been slow to avail themselves of this property, though it has been found in practice that leaves are more ready to produce roots than buds. Among the plants which may be propagated by leaf-cuttings is the Orange, but it appears that it is possible not only to multiply the Orange in this way, but even to GRAFT A SCION UPON THE LEAF AS A STOCK! MM. THIBAUT and KETELEER have accomplished this curious feat, the record of which may be found in a recent number of the "Revue Horticole." The specimen in question was shown at a meeting of the Central Horticultural Society of Paris. A leaf-cutting was taken in the ordinary way, then a notch was cut on the under surface of the midrib, wherein a graft was inserted and kept in place by a ligature. The leaf-stalk produced roots, the graft "took," and as its bud developed, a little stem was formed, the base of which consisted partly of the leaf-stalk and the median nerve of the stock, thus rendered woody and persistent—partly of the scion. The leaf in this instance then lost its usual transient character, and became woody and persistent like a stem; verily in this case union was strength.

—— OUR attention has lately been directed to the newly-introduced LONG-PODDED RADISH, and the question of its distinctness from the old Madras Radish, which has been long known and little valued. Botanically there seems no reason to doubt that they both belong to one and the same species—Raphanus caudatus; but in a practical point of view there is considerable difference between a pod 3 ft. 3 in. long, such as were shown by Mr. BULL last Year at Regent's Park, and one of about 9 inches. At the Botanic Garden, Edinburgh, as we are informed by Prof. BALFOUR, both varieties are in cultivation, and keep true to their respective characters. Both seem to be suited for salad, the short-fruited one being the more pungent of the two.

—— A correspondent has forwarded us a TULIP BULB with three smaller ones dangling from its base, suspended as it were by so many thick cords, an inch or two in length. On cutting the bulb open it becomes evident that the smaller cloves are formed as usual in the axils of the scales of the parent bulb, but what is very remarkable is that the outer leaf or scale of the secondary bulbs is prolonged *downwards* so as to form a long tubular sheath, at the bottom of which lies safely ensconced the young bulb. What may have caused this downward growth we cannot say.

THE INTERNATIONAL EXHIBITION TENT.

WE this week introduce to our readers the plan of the monster tent which is being erected at South Kensington for the forthcoming International Exhibition. The surface of the ground to be occupied, as will be seen from the sections, lies some five or six feet below the level of the surrounding roads. This circumstance has been taken advantage of to obtain a *coup d'œil* of the general effect, and it also places the tent in a naturally secure and sheltered position.

Entering the ground from the Cromwell Road, on a level, the visitor will presently find himself on a kind of promontory, where, during the continuance of the Show, he may feast his eyes on the blaze of beauty spread out before him—not all to be seen at once, however, for Mr. Gibson, of Battersea Park, to whom the arrangements have been confided, has cunningly contrived that the view at certain points shall be cut off, more distant glimpses being here and there obtained of charms almost hidden, but enough to lead him onwards to examine the whole in all its details.

The general features of the arrangements will be understood from the plan and sections. It may suffice to state, that the surface is altogether irregular; that the sloping banks are cut out in terraces, to be clothed with turf, on which the plants will stand; that the higher portions of each bank will be occupied by a background of some kind of evergreen; and that here and there, in front of the more gaudy-coloured plants, relief from the blaze of colour will be afforded by a green turf foreground.

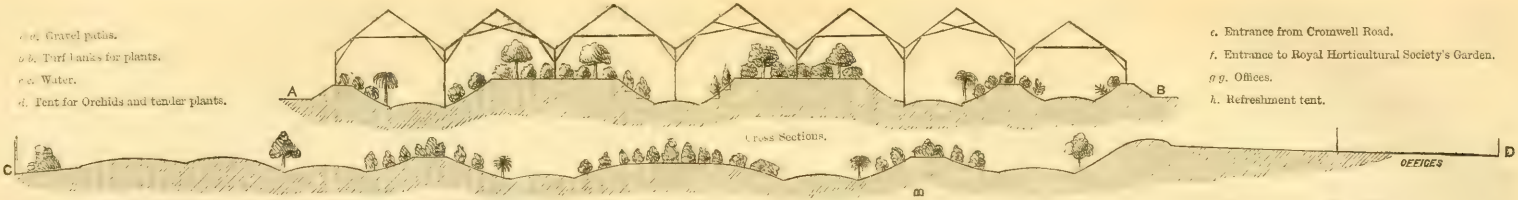
The area to be covered by canvas, which is now in course of being put up, is 3a. 2r. 38p. Of this large space, 2a. 3r. 19p., or 125,000 superficial feet, are appropriated for the plants and visitors, exclusive of the Orchid tent, which contains about 10,000 feet, and is to be covered with glass and oiled canvas, and to be warmed by Mr. Ormson, of Chelsea, to a minimum temperature of 50°, in order to secure the safety of the valuable plants that will be consigned to it. Of the above 125,000 feet, the walks occupy about 60,000 feet, and thus, allowing 1 square foot for each person, they will accommodate 65,000 persons under the tent without crowding. Mr. Gibson calculates that in the larger and more ornamentally disposed portion of the tent there will be a space of 55,000 feet available for the distribution of the plants, and that this will accommodate at least 6000—the Orchids, fruits, and vegetables being elsewhere provided for, and that 20,000 feet will remain to be devoted to decorative effect, and for the disposal of single specimens.

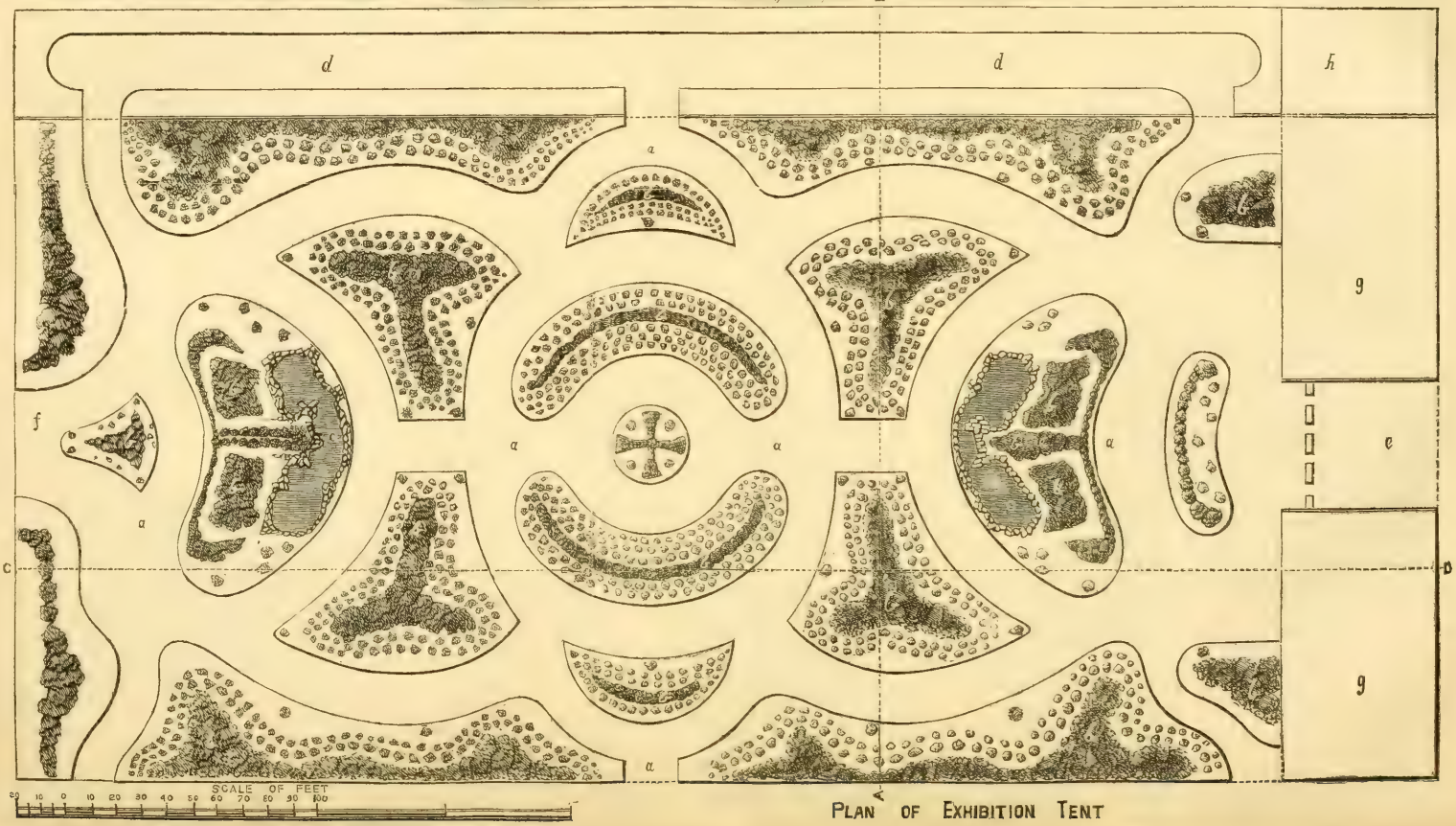
We can only now add that we have been highly pleased at the very prompt and efficient manner in which Mr. Unite has carried on the building operations, and at the great taste which has been shown in the disposition of the ground. When it shall have become decorated with the choicest examples of horticultural skill, it will indeed be as a scene in fairy-land.

The sections on the lines A B, and C D, indicate how the varied surface is to be taken advantage of in the distribution of the plants.

a a. Gravel paths.
b b. Turf banks for plants.
c c. Water.
d. Tent for Orchids and tender plants.

c. Entrance from Cromwell Road.
f. Entrance to Royal Horticultural Society's Garden.
g g. Offices.
h. Refreshment tent.





PLAN OF EXHIBITION TENT

THE IRIS.

IT may be safely stated, that among all the plants now in cultivation, there is not a single genus more beautiful or more neglected than the Iris. They have not the brilliancy of Lilies, it is true, but for beauty and delicate variety of exquisite colour, they infinitely surpass them. They are thoroughly hardy, and of noble habit—some of the finer species sending up when on rich light soil stems of magnificent flowers, which quite astonish those unacquainted with any but the common one—I. germanica, the varieties of which by the way would yield no small amount of loveliness, even if no other species were cultivated. I know an enthusiastic and successful grower of Orchids who had a few fine species of Iris sent him. When established and in flower, he was not a little surprised, and declared them to be "finer than the Orchids;" and undoubtedly their individual blooms are amongst the most beautiful of any plants that we grow. The Lilies have not been made so much of as ornamental plants as one could desire, but the good Irises do not appear to have got into cultivation at all, except in botanic gardens. I have seen such weedy plants as Lysimachia vulgaris and ciliata, and bad Michaelmas Daisies, in mixed borders, but not one of these. Can it be wondered at then that such gardening came into disrepute? The majority of gardeners know nothing of the beauty of Irises, from the fact that they have no opportunity of seeing them in a fair state. In botanic gardens they may be found, perhaps in the same bed for 20 years, and of course looking as ugly as possible, from the necessity or practice of keeping "likes together." Now I am confident that beds of the best kinds, introduced in proper situations in our gardens, would form as strikingly beautiful features to our gardens for the early summer months as anything that can be put in. First, then, for a glance at the best kinds. I cannot have made personal acquaintance with many species of this magnificent genus, as no doubt some have been lost and many never introduced, but I am familiar with quite enough to warrant all I say.

Iris ochroleuca is the tallest we cultivate, very distinct in habit, and of a pale yellow (describing from memory); it does grandly among low shrubs, where it is partially sheltered. I. pendula is a king among its fellows, with enormous flowers of soft pale blue, and borne freely on the stem; the plant quite hardy and free, best of course, like all its family, on a light rich and deep soil; this should be used for the centre of the bed or beds. I florentina, white, with a delicate suffusion of pale lilac, free, and comparatively common. I. variegata, dark shining brown and yellow, very beautiful and distinct. I have a large flowering variety of it, which came from Mr. Niven, in which the yellow is yellower and the dark blacker, a rich and striking flower "as you could lay your eye on," as they say in Ireland.

I. germanica is known to almost everybody, and is quite worthy of it. It is a favourite in London gardens, and perhaps makes the greatest show in them of any other plant. The front gardens along the Marylebone Road, and many others about London, are full of its handsome flowers in early summer. There are numerous pleasingly-coloured varieties of it. It often happens that when a single species of a genus becomes popular, as in this case, it is far ahead of its brethren in beauty, but this is not the case with I. germanica. Fine as it undoubtedly is, variegata and pallida altogether surpass it, not to mention others quite as good; besides these species are thoroughly distinct. It would add great beauty to the homes of people who can only grow hardy plants if they were as common as germanica, and I trust these remarks may at least conduce to their being better known than they are at present. No one I am sure would be disappointed with them.

I. flavescens is a good kind, yellow, and about the size of germanica. I. amœna, or one sometimes called by that name, has delicately striped flowers, blue and white stripes, one of the prettiest. I. Kæmpferi is one I have not yet seen in flower, but the fuss made about its varieties, and the "mother plant" as they call it, in the Dutch catalogues, leads one to have big hopes of them. I. subbiflora resembles germanica, but is of a dark violet colour—valuable from that alone. I. Swertii is as delicately striped or variegated with blue and white as the most fastidious could desire. I. sambucina is a good and pretty well-known kind.

Of the dwarfs the Crimean Iris (I. pumila) leads the way; it has several very pretty varieties. I. cristata is perhaps not quite so easily cultivated, though it grows like a weed in some places; it is a very beautiful dwarf. I. tenax is another tiny one, a great favourite of Mr. M'Nab's. These are quite enough for even the most enthusiastic cultivator to begin with.

To obtain the best possible results with such a batch, in a private garden, I would excavate a bed three feet, in some comparatively isolated green spot, where nothing need be interfered with, fill it with rich light soil, plant pallida, ochroleuca, and sambucina in the centre, the others I have named around them—all mixed up equally—finishing off with such of the dwarfs as could be got; and wait for the result. It is one about which there can be no doubt. The species would flower at different times, and there would be a fascinating display of beauty for weeks. The bed would require no further attention for years. There is hardly a garden but has unused spots in which such an arrangement could be made without interfering with any other object whatever. In a large place with winding walks, and little green glades here and there, several such beds might be made with great advantage.

I have omitted the bulbous Irises from the preceding remarks, because they are apt to dwindle away in our soil; and I have also left out the charming reticulata, which should be favoured with a nice spot on the rockwork, at all events till sufficiently plentiful. A few of the best Lilies might even be mingled with the Irises; they would flower later, and keep the interest on through the summer, though the beauty afforded by the Irises alone could not fail to more than compensate for the very little trouble required. They too, flower longer than some popular flowers we cultivate at considerable expense indoors. I do not think it would be wise to have beds of one kind, or two either, but have no doubt that the mixture of the larger kinds I have named would be as near perfection as possible, from the variety of colour and bloom, and a longer bloom would be secured from some kinds succeeding others. I would not be very particular about the dwarfs; unless they found a very light, peaty, or other congenial soil, they might fail to be effective. *W. Robinson.*

WAGES OF GARDENERS.

(*Concluded from page* 340.)

IT is a fact demonstrably true that wages are depressed by excessive supply. While one man only is required and 50 apply for the place, it matters not what theory of wages we adopt—practically, as human nature now is, employers will make a profit out of our necessities, and wages will remain as they are, or sink lower. Now, the greatest evil of all is, that the 50 should apply. Supposing them to be all out of place, which they will not be, at least 40 of them will be totally unfit for the situation. Remove these by any and every means, and the competition becomes reasonable and fair, and the price of our services would at once bound up to its legitimate rate.

The wealth of this country has been more than doubled within the present half century. Consequently wages ought to have doubled; but they are little more. Why have they not in gardening? Chiefly because the increase of numbers has more than kept pace with the growth of capital. There are at least three modes of checking the excessive supply of gardeners. Restrict the increase of apprentices; raise given numbers of journeymen, and make the condition of journeymen and foremen a permanent instead of a transitionary one as at present. Then these remedies, combined with a wise administration through the Central Registration Office, by which the numbers of gardeners could be distributed evenly singly to where they were wanted, instead of rushing down upon each place in undisciplined masses as at present, would pull up the evil of low wages by the roots. How is the number of apprentices to be restricted? In ordinary cases this is the cause given when numbers are found entering any particular business. Here the natural antidote to excessive supply is inoperative. Not only is the excess of numbers the cause of the lowness of wage, but the low wage becomes the cause of the excess itself. Master gardeners are so miserably paid, that few can afford to take apprentices, charging them a moderate fee for instruction. For bare subsistence they increase the number of gardeners, and thus render it still more difficult for them to live at all.

There are two other modes of restricting their number. Raise the fees and thereby gallbeaking would be done. Let business more select, and introduce a better class of men. None but the very best men will ever come to the front or hold their own in the great future of British gardening.

My next remedy for excessive supply is to widen the area of employment. The great pressure at the present time in sphere for journeymen gardeners is chiefly confined to Scotland, the north of England and Ireland; few, if any, places in England are worked by journeymen. The chief reasons for this are their migratory habits and the Law of Settlement. The former is fast disappearing, and the latter has already modified the latter. While the property of each parish was saddled with the burden of its own poverty, it was natural that the proprietors of property should guard themselves against the possible burden in every imaginable manner. One of the best modes of doing so was to employ all the labour in the parish. Work is the grand antidote to pauperism. It was better for all parties that the labourer should support himself by labour, than be supported by others in idleness by rates. Hence mainly it has come to pass that the gardens of England are so much cultivated as a stepping-stone to something else. There is no reason in justice nor in the nature of things why this should be so. A journeyman gardener's work is worth as much or more than that of a journeyman mason or carpenter. It should, therefore, command as high a price. And this is all that is needed to keep men perfectly permanently in it. Preliminary to marrying or settling in life, they must become head-gardeners. And it is this vertical competition rather than the lateral pressure of those already in the business, that keeps down wages. To these recruits almost any wages seem good compared to their previous journeyman's rate. Raise the wages of journeymen to a fair level, and the chief temptation and inducement to a change of condition is removed. This change is demanded in the interests of the men themselves and of our employers, quite as much or more than in that of head gardeners. The best provision we can make is so to improve the condition of journeymen as to make it worth the while for ordinary men to continue such; then all who entered the business might cherish the hope of obtaining a fair journeyman's wage.

Neither would the adoption of these suggestions prove any hardship to the rising race of gardeners. For observe, I advocate their receiving a wage higher than that which most of them will receive as master gardeners. All that they would lose would be the speculative possibility, and victory of masters, and for this they would gain the greater freedom and independence and more substantial pay of journeymen or foremen. Neither would it prevent the best and cleverest men rising up to fill the best places, but it would make all situations better worth filling. It is manifestly unjust and suicidal that almost every good gardener that applies for a good situation has his worth depreciated by being brought into competition with perhaps 50 others, ranging from apprentices up through all the ages of journeymandom and foremandom, nineteen-twentieths of whom do not really compete with the man whose place their foolish applications have done their worst to ruin.

Let me not be misunderstood. I fear no fair and honest competition. But, in the name of common sense, let it be with equals—men qualified as well as myself for the vacant post, and not with those who have not *one* and may never have the requisite qualifications. According to Mr. Ruskin, good and bad gardeners must be paid alike. The only function left for employers is the vital one of selection. Thus, by making the conditions of foremen or journeymen permanent, we shall at least enable employers to select more easily, free ourselves from overwhelming competition, and reap the due reward of our talents and labour.

The next cause of low wage is uniformity of payment. I do not mean that all gardeners are absolutely paid alike, but that there is far too much sameness of wage. Neither do I mean that all gardeners are under paid. There are some men in single-handed places at from a guinea to 30*s.* a week, which is excellent wages for them. But generally the wages of gardeners bear no proper relative proportion to the services required of them. One place is six times the size of another, and the wages in the large place will be less than in the small one. At times there may be no unfairness in that. Perhaps the wear and tear may be greatest in the small place. But as a rule it would more probably be the reverse. But size would not be much a good measure of value as service. A large place has a quiet easy gentleman's life. Another is worked both in body and mind at the highest pressure all the year round. And yet probably the wage of the last is smallest. I am aware it is a very difficult point to mete out pay in proportion to service given, especially so, as the highest and best reward is that springing from the affections, can never be paid for at all. Still some approximation might be made towards it. And the first means of securing a better and juster wage will consist in breaking up the leaden uniformity which now prevails.

The other reason of our low wages is the combination of our employers. Employers are wiser in their generation than gardeners. They don't advertise their Mutual Protection Societies, nor announce their workmen's halls or houses of call. They enjoy all the benefits of an organisation without the odium. We have it on authority of weekly papers that combinations of workmen to raise wages are right and proper, so long as their rules are voluntary. How far they will prove successful in their object is quite a different question. As far as gardeners are concerned, I believe such attempts to raise wages would fail. We are too different with our masters. They agree to be guided by the actual rate of wages. This average becomes a law to them. Pride prevents them from going much under it; self interest guards them against exceeding it. The man who breaks through this tacit understanding becomes unpopular. Masters, too, as we all know, sometimes combine to sink wages lower than the actual rate; our employers have never done this. The increase of wealth, our superiority of service, the enlarged productiveness of our labour, all demand a higher wage. But they continue to keep down by their own unaided understandings employers not to exceed the actual rate. I think the registration scheme that I have proposed in connection with the Royal Horticultural Society would prove the best antidote to this powerful perpetuating cause of low wage.

Another cause of the low wages of gardeners is the mistaken notions that prevail concerning the nature and character of our work. Labour is somewhat empirically divided into skilled and unskilled. The division has no foundation in fact. All labour is skilled labour. The only difference is one of degree. And Adam Smith shows that the empirical division is false.

Even the commonest operations of gardening demand a large amount of skill. The planning, foresight, and experience requisite to supply a table throughout the year require much more than a high order of intelligence. Added to all this, other departments of our business need a knowledge of the highest principles and the best practice of the fine arts and most of the sciences. And yet the pay for it all is less than that given to colliers or coalheavers; and those who add degradation to toil are paid less than those who toil as that we are so badly paid because our labour is *unskilled*.

A fourth cause of the low wages of gardeners may be, that the rate of wages of any nation is not so much determined by its actual wealth as by the continuity and rapidity of its accumulation. Manufacturing industry is better paid than agricultural, because the returns are quicker and the profits larger in the former than in the latter. Those who have served manufacturers and landed proprietors must have experienced the immense difference between their modes of expending money. The former may be the richer man in wealthiest, but as he has not made his money so fast as the other he refuses to spend it so freely. As far as this principle affects our wages, it does not unfortunately stop with the landowner. The commercial man reasons thus: Compared with his father *engaged* he has made his gardener's underpaid—but then the Duke of Broadlands gives no more than he does. And this generally settles the question. Now, I submit that our wages have not advanced with the increased value of the land even. Another consideration comes in here—we give more than formerly the service of the same wage. On this ground we are entitled to an advance. A higher wage would also secure a larger return; it would go far to secure for our employers that entire devotion of intellect and heart to their service which never fails to return cent. per cent. on the outlay.

Another cause of low wages is that I will notice at present is "Extras." One of the most important modes of obtaining a higher wage is either to have a clear understanding about, or entirely to abolish, these. We want no perquisites, and recognise no such thing. Those, namely, which vegetables, light, which are often called such, are simply part of our wages, and are given and received as such by both parties. By extras, I mean such things as gratuities in show places, disposal of surplus stock or seedlings, prize money, and per centage fees on purchases, and other such reckonings as extras. And in reference to these other extras, the first thing I note concerning them all is, that they are altogether exceptional. In the majority of gardens they do not exist: in more they are so trifling in amount as hardly to be worth reckoning. And in those where they do exist they are rarely or never invariably taken into consideration in the regulation of wages. Consequently these extras ought not to exercise any control upon wages in general. Vague notions are abroad among employers concerning the number and value of gardeners' extras, and the best mode of dealing with them. Something like the whole truth about them once for all. If we are to gain what I think we are justly entitled to—a rise of 20 per cent. in our wages—we must establish our claim to it with clean hands, emptied of all else.

The first principle to lay down in reference to all extras is that none of them are ours by right; we can only come into honest possession of them by special leave of our employers. Take, to begin with, gifts for showing places. First of all, whether it ought to be shown or not; the secondly more important still, whether anything shall be accepted for showing it, are points for our employers to settle. It is well known by all honourable gardeners, that the right of showing by no means involves the privilege (?) or degradation (?) of accepting of money for doing so. Private gardens are often practically open to most comers, where no money is ever either tendered or accepted, and the surplus stock, whether of plants or other produce, is of course wholly the property of our employers. No gardener would ever dispose of an atom of anything *for money* or money's worth without his employer's direct assent and sanction. Reciprocal exchanges between gardeners are altogether different. These offer no pecuniary advantage to gardeners, and are effected entirely in the supposed interests of employers. Custom sanctions this, but even these any employer has a perfect right to prohibit if he chooses. The same principle is applicable to seedlings. Many employers are generous enough to give gardeners a right of property in these, and they are entitled to our gratitude on that account; but it must be obvious to all that we have no abstract right to

them. The skill that calls them into being is not our own, but is bought with a price—our wages; the glass, pots, soil, time devoted to their culture belong to our employers; hence seedlings can only become a source of profit to gardeners by the express sanction or favour of their masters. It is the same with prize money. It is customary to give it to gardeners, as a set off they have often to pay, for the honour of exhibiting; generally it is to the ultimate advantage of employers that gardeners should receive it. It stimulates them to do their best, and proves some recompense for the care, labour, and anxiety attendant upon exhibiting. But when it amounts to much it is reckoned as part of the pay, and in other places where it is trifling it is received as a favour.

And then there are percentages. Well, what of them? This: that they are simply and wholly abominable in principle, and degrading and demoralising in practice; and further, that the sooner they are absolutely and finally abolished the better. Percentages are the receipts of the Evil One himself for the prostration of upright manly character; dragging it down through a deep descending series of degradations to a state of deceptive impotency and cowardice. They are mainly the premiums that incompetent knaves extract from grasping employers to recoup themselves for accepting the lowest wage. Did your space permit, I might advert to another cause of the low wages of gardeners, that is, their deprivation of political power. But this would not be suitable for your columns.

I have now placed the main reasons for our low wages before your readers. Side by side with these I have noted such remedies as have suggested themselves, so that the bane and antidote might appear together. I believe that the best remedy is a clear statement of the truth, and the promulgation of sound views upon the subject. Beyond the gardener's committee I have no panacea to offer. I also venture to recommend these thoughts to employers. I have no faith in, do not wish to try compulsion. I confidently appeal to the noblemen and gentlemen of Britain. Their first characteristic is, or ought to be, "to do justly and love mercy." This is all we ask for in the matter of our wages. *D. T. Fish, Hardwicke Gardens, Bury St. Edmund's, Suffolk.*

Home Correspondence.

Bark of Taxodium sempervirens and Birds.—Birds have found the soft bark of this tree a beautiful material for building their nests. My complaint against them is, that instead of taking the outside bits, which could well be spared, they make holes to get at the inside bark, which appears to be of a finer texture. There is no cause I should think to fear any damage, yet those who have but one tree, and many birds desiring to line their nests with a little of its bark, would perhaps rather protect it than have their trees disfigured. Nature certainly provides it with a good thick bark: a tree measuring 4 feet around at its base has bark 3 inches in thickness 1 foot above the soil. *Henry Mills, Enys, Penryn.*

United Horticultural Society.—May I be allowed to ask whether or not the office-bearers of this association are in a profound sleep? The morning of floral exhibitions has dawned, and they do not appear to be astir. I naturally inferred from the success of their undertaking at Guildhall last season, that they would commence the subsequent year with vigorous efforts, but nothing that I can ascertain is being done, no subscription has been solicited, and even those who received awards of merit have not yet obtained them. Perhaps this may induce an explanation. *Geo. Fry, Lee, Kent.*

One of our Colonists.—The introduction of a new plant that takes its rank amongst our own indigenous ones should be carefully noted, or in a few years the generation will have passed away, and sometimes all record of the plant with it. Many of our so-called British plants had doubtless an European origin, and some even came originally from parts of the earth yet more distant. There are many persons still living, but remember the disastrous Walcheren Expedition; but few are aware that to the effect of this is to be ascribed the introduction of the most troublesome weed to agriculturists, saving Gravel Bine, Convolvulus arvensis, for, like it, the new comer dives deeply into the earth, from 8 to 9 feet, and cut it or break it off as you will, new buds are formed and shoots developed that in time will find their way to the surface, luxuriate in leaves and flowers, from which, in due time, seeds are produced, and the race extended. All this increase by seed the husbandman can prevent by cutting off the tops; but how is he to rid the soil of the roots thus deeply seated? Again, when the deeply seated bud has forced up a spindling weakly-looking shoot to the air, his very first effort (in which it is usually successful) is to thrust out lateral thready roots in all directions within from 6 to 12 inches of the surface, and often extending to 6 feet and more. These ramifications are full of buds, and the second year produce a plentiful supply of herbage and flowers, as just recorded. But it is time that I explain its denizenship, and its connection with the Walcheren Expedition. When our troops returned to England many disembarked at Ramsgate; the poor fellows were suffering under malarious fever, and their beds were ripped up and the straw, &c., was placed in an old chalk pit belonging to a Mr. Thompson. Time passed on, and this heap of refuse was mixed with seaweed and manure, and finally employed to fertilise the fields. Wherever this was done a plentiful crop of the new weed was produced, and which to distinguish it was called Thompson's weed. I have traced its introduction, and its spread over many parts of the Isle of Thanet—it now remains to show its subsequent progress. It seems to take to the banks of ditches, the edges of footpaths, &c., in preference to the open fields, and may be traced through Canterbury, Chatham, Sittingbourne, Gravesend, Deptford, Peckham, &c., as I have myself done; but how far it has reached towards the northern and midland counties I have had no opportunity of ascertaining. It may be well, however, for me to state, that I have measured one root in the chalk that was 9 feet long, and even then did not succeed in reaching the extremity. *W. M.* [Our correspondent does not name the plant to which he alludes, but we suppose he refers to Lepidium Draba. This has some good qualities, for about New Cross it helps to keep up the slippery clay banks of the railway cuttings, and to a less extent does a similar service in places on the equally slippery gault of Folkstone.]

Melons in the Open Air.—Allow me to inform Mr. Bayley (p. 364) who asks what sort of Melon was used by the late Mr. Williams, of Pitmaston, for growing in the open air, that it was a scarlet-fleshed variety of his own raising, resembling Scarlet Gem, but not so rich in flavour. I have a packet of seeds of it saved several years ago, and Mr. Bayley is welcome to a few of them. Mr. Williams used to choose a very warm sheltered spot in his garden for outdoor Melons, and by means of a few leaves, Grass from lawns, or other materials, he made a slight hotbed for them. This was earthed over, and was either furnished with plants raised in heat or from seed sown in the bed. The young plants were protected for a time by hand-glasses, and the bed was covered over with flat tiles. *John Stevens, Gardener, Malvern Hall, Solihull, Warwickshire.*—I am of opinion that no Melon will ripen properly in the open air in England. I have tried several American varieties without success, although they have been treated nearly in the same way as they are grown in that country. Moreover, English varieties of Melons will not succeed in the open air in America. For two seasons I tried Trentham Hybrid and several other green-fleshed varieties in that way; they certainly grow moderately and set fruit as large as hen's eggs, but after that they began to dwindle and die "right away." Singularly enough Yankee Melons will not succeed grown on the English hot-bed system; they grow "all over creation," but not a fruit will they set until the glass is removed. I am afraid they can never be cultivated in abundance in England, although in the United States I have had bushelfuls of them in perfection every day for weeks together. *W. S., near Birkenhead.*

Beet-root Sugar.—With us Beet, though a common plant, is chiefly used boiled as a vegetable or mixed with salads. On the Continent it is employed for similar purposes, but very much more extensively, as it is grown to a large extent, chiefly for sugar making. The discovery of sugar in the Beet dates back to the year 1747, and though Beet-root sugar has been known more or less ever since, especially on the Continent, the foundation or connecting link of the present manufacture may be referred to the year 1829, when about 5,000,000 kilogrammes were produced in France, equal at that time to about a sixteenth of the total consumption of sugar in that country. Germany, France, and Russia have all now their large Beet-root sugar manufactories, though Germany produces by far the largest quantity. From the latest official commercial reports we find that at many Continental ports this particular manufacture is becoming rapidly of greater importance, owing to the greater amount of duty imposed upon sugar of colonial produce. We are told by the Consul at Cologne that the Prussian refineries, in which the colonial sugar trade was once carried on so successfully, have been compelled solely to use the Beet on account of the high rate of duty charged upon cane sugar; and as a consequence, unless speedy measures are adopted to equalise the duties on colonial and Beet-root sugars, the few remaining refineries which still use colonial sugar must be closed. The following statistics in proof of this may be interesting: the importation of colonial or cane-sugar into Cologne in 1864amounted to 141,212cwt., against 182,983 cwt. in 1863; while the quantity of Beet-root sugar produced in the refineries of that city amounted in the season of 1863-64 to 624,457 cwt.; and in 1864-65 to 671,973 cwt. The report concludes by stating that at least 30 new Beet-root sugar refineries will be open and at work in 1865-66. In Belgium this branch of manufacture has likewise increased considerably, and the consumption of cane sugar decreased accordingly. In the province of Hainault, where the plant is most extensively grown, there were, in 1856, 3670 hectares of land under cultivation. Though we do not meet with Beet-root sugar in this country as a regular article of trade, it is more than probable that it is frequently mixed with cane-sugar. The fineness of the crystals, as compared with colonial sugar, and its comparative softness, afford good means of distinguishing the two kinds; but a recent writer on this subject says that Beet-root sugar is not only identical in every respect with cane sugar, but that much of the Dutch lump-sugar is actually the produce of Beet-root. The circumstance cannot be too much insisted upon that the seeming distinction between yellow beet-sugar and yellow cane-sugar depends on the extraneous coloured matters present. These, when eliminated by refining, leave white materials in all respects identical. There is positively no difference between these two, either of colour or of grain. Grain, or crystals, can, from either, be developed to the size of the largest candy if desired; in fact, at the present moment, France is sending here large white crystals, produced from Beet-root, to compete with London, Bristol, Scotch, and other crystal manufactories. *John R. Jackson.*

Orchidaceous Exaggerations.—I did not see M. Reichenbach's remarks (p. 340) soon enough to answer them last week. I congratulate the facetious Professor on the remarkable discovery that the plate of the branched spike of Disa grandiflora in Mr. R. Warner's work was not one of the perpetrations of W. H. F., who ventured, perhaps rashly, to express his belief therein. If the Professor had looked further in the same work he would have found a 2-flowered scape of Cypripedium hirsutissimum, for which W. H. F. is answerable. Far be it from me to defend branched spikes; the plants that indulge in such abnormal freaks can have little respect for their characters. As the Professor informs us they do not occur abroad, it may be that they have the fear of the law before them; but this is a free country, and at the risk of throwing M. Rchb. f. into an agony of doubt, it is my painful duty to inform him that Mr. R. Warner flowered the branched spike of Disa grandiflora, and that he has now growing 2-flowered spikes of Cypripedium hirsutissimum, and also of Lycaste Skinneri. *W. H. F.*

Horticultural Dinner and Gardeners' Congress.—I should be glad to hear further particulars about the horticultural dinner. I am also desirous that during the International Exhibition some opportunity may be provided for gardeners to confer together on their present condition and future prospects. It is seldom so many horticulturists meet together, and as the occasion will test and exhibit their skill, it would be most appropriate that it should also tend to elevate their status, and increase their rewards. I should be glad to hear from or communicate with any one upon this subject, and should be still more gratified to learn that the Royal Horticultural Society, or the Dinner Committee, could make arrangements in furtherance of a Gardeners' Congress. *D. T. Fish, Hardwicke, Bury St. Edmund's, Suffolk.*

Gardeners' Royal Benevolent Institution.—Suggestions similar to that of "G. P., jun." (see p. 365) have already received the very earnest attention of the Committee of this charity. The decision arrived at, however, keeping in view the very questionable amount of good likely to accrue from such matters, was that it was not advisable to put subscribers to the expense necessary to follow out such suggestions. When "G. P. jun." desires us, however, to ask subscriptions from our foreign visitors whom we hope to welcome so shortly, adding—that "they may go and do likewise" at home,—save me from my friends! I involuntarily articulate; for can there be a greater blot upon the escutcheon of our craft—I say it with shame!—than that out of some 10,000 gardeners, fully capable of contributing one guinea per annum, 9,700 refuse their aid towards their fellow sufferers in old age from causes incidental to our calling, and to which each and all of us are liable? Does "G. P., jun.," know that the Committee lately forwarded 1000 copies of the operations of this Institution to members of the gardening community, at a cost of 6*d.* odd per copy, and that it had not half a dozen responses? While from without numbers of non-subscribers are at the present moment earnestly desirous of receiving the incalculable benefits of the Institution, is it then desirable that the funds should be appropriated for other purposes than those which would seem to give the greater certainty of success? *William Earley.*

Culture of Tobacco, and Manufacture of it for Fumigating Purposes.—"Brassica" (p. 364) has not told your readers to what narrow limits Tobacco culture is restricted by Acts passed in the several reigns of Charles II., George III., and William IV.; if he plants as he proposes "a yard apart every way," 16 plants will be rather more than he will find room for in the "one-half of one pole" (15¼ square yards), which the quantity planted must not exceed in any one place or garden. It appears, also, that the weed must be grown for physic or chirurgery only. And there is a penalty on having tobacco the growth of the United Kingdom, in any quantity exceeding one pound in weight. *Diss.*

Foreign Correspondence.

The Prevention or Mitigation of Droughts in Australia.—When reading the appalling accounts of the effects of the long-lasting drought in the desert districts of the interior of Australia, we are ever led to reflect by what measures the misery thus from time to time arising might be alleviated or obviated. On various occasions I have pointed out publicly that the wide dissemination of trees in the arid parts of the interior would exercise a marvellous effect on the increase of rain, on the retention of humidity, and on the mitigation of burning winds. For the purpose of raising timber in shadeless barren wastes, perhaps no country possesses greater facilities than Australia, inasmuch as some of our trees seemingly surpass those of any other country in celerity of growth, and in power to resist the dry heat of our summer season. I am satisfied that if over the extensive sheep-runs visited by drought such plants as the common so-called Cape Wattle (the West Australian Acacia lophantha), the ordinary Wattle tree of Victoria (Acacia mollissima), and additional Eucalypti of quick growth, were raised, merely by scattering during the earlier part of the cool season large quantities of the seed over the ground, we should in due time no longer have to lament the destruction of vast flocks for want of fodder, and perhaps water, because the general climate of such districts would gradually become more humid, a tegument of herbage and Grass would, under the shelter of timber vegetation, continue to cover the now generally naked soil, even during summer; and from a heated and bare surface of soils that heat would no longer emanate which now disperses every rain-cloud often for many a month, and which sweeps in currents of burning winds now widely over the continent. Moreover the absorbing power of vegetation would prevent to a large extent the rain-water to flow away into temporary channels, and perhaps even the sudden and transient floods after thunder-storms would discontinue. Why the pastoral tenants in districts subject to drought do not cause the seeds of trees, especially such as mentioned, to be gathered and sown, with a view of establishing belts of timber, appears almost enigmatical. The seeds of Acacia lophantha and Acacia mollissima might be gathered by tons for the most trifling expense, and sufficient seeds for 100,000 Eucalypti might be obtained for the value of a few head of cattle. If merely the flocks were kept away for a season from the spots on which the Acacia seedlings spring up, it would with the least care become an impossibility to annihilate the copses again, even by subsequent invasion of the pastoral animals,

which indeed might to some extent browse on the young trees, and finally find in dry years even much additional food. Around Jerusalem, in Natal, in some of the South Sea Islands, in the dry high lands of India, and in Algeria, we have endeavoured by transmission of seeds from here to clothe the naked soil and ameliorate the climate. In Australia, however, almost no exertions are made in this direction. Not the least of the advantage of the measure which I urge anew on the pastoral settlers consists in the augmentation of the fertility of the land, by bringing, through the evaporative power of vegetation, the latent and dormant alkalies, and earths and acids needed for the nutrition of plants to the surface from strata below, into which the roots of trees will penetrate for food, to convey it to their foliage, and to leave these fertilisers with the decay of the leaves on the surface soil, not to be washed away, as was long erroneously supposed, but to be stored up for subsequent vegetation. But the remarks here offered apply as advice not to Australia alone. Who can cast a view over a North African landscape without reflecting what changes an extensive Australian Acacia and Eucalyptus-vegetation would effect on the pictures of treeless desolation which mountains and plains, alike bare and waterless, there present? What amount of timber might not be realised on the desert ridges; what a cheerful image within a very few years be impressed on whole countries so near to the seats of ancient industry and learning; and what vast extension of means for human settlement, and activity, and support be afforded? *Ferd. Mueller, Melbourne Botanic Gardens.*

Societies.

Royal Horticultural *April 21 (Third Spring Show).*—As far as plants were concerned, this exhibition was very small as to its predecessors. Its distinguishing feature was an excellent display of Grapes from Mr. Miller, gr. to Lord Crewe, at Combe Abbey, near Coventry. The fruits exhibited were beautiful bunches of Lady Downe's Grape in a wonderfully perfect state of preservation, and also excellent in flavour. These were stated to have been allowed to hang on the Vine ever since they were ripe in September last, until the sap began to rise, when they were removed. Mr. Miller also exhibited a good early Black Hamburgh Grape, and a punnet of Keens' Seedling Strawberry.

Royal Botanic *April 21 (Third Spring Show).*—Roses and Pelargoniums formed the chief features of attraction on this occasion. Of the former, beautifully bloomed and well-grown plants were contributed by Mr. Turner, Royal Nurseries, Slough, Mr. Mitchell, Covent Garden, Messrs. Paul & Son, Messrs. Lawson, Beauty of Waltham, Jas., Souvenir d'un Ami, Vicar's Verdier, Maréchal Vaillant, John Hopper, Celine Forestier, and Le Rhone. From Messrs. Paul & Son came President, Madame Alfred de Rougemont, Prince Camille de Rohan, Maréchal Vaillant, Mitchell, Souvenir d'un Ami, Celine Forestier, and John Hopper. Other choice sorts of Roses finely in flower were likewise furnished by the same exhibitors, and by Messrs. Lane, of Berkhampstead; among these we noticed Madame William Paul, Duchesse de Caylus, Dr. Andry, Vainqueur de la Baltique, Jean Ducher, Duchesse d'Abbatucci, Adolphe de Rothschild, Madame Victor Verdier, John Hopper, and Souvenir d'un Ami. The only Roses shown in the Amateurs' class were half a dozen from Mr. James, gr. to W. F. Watson, Esq., Isleworth. Of new Roses of 1865, and of Mr. Turner's last brood, Hibernica, Lord Macaulay, and Bracelet, of decided merit, Mr. James's box likewise an excellent exhibition, the plants in which fully bore out the statements made by our correspondent "Q." at p. 366 of last week's Number. Mr. James had likewise some well-grown Cinerarias as had also Mr. Rose, gr. to C. S. Mortimer, Esq., Camden Hill; the former likewise contributed a stand of cut blooms of Pansies, and a dozen plants of the same in pots. A stand of cut Pansy blooms was also shown by Mr. Hooper, Bath.

Auriculas came from Mr. Turner, who had Moore's Violet, Grimes' Privateer, Headley's Splendour, Traill's General Neill, Summerscales' Catherine, and Netherwitts Othello, all in excellent condition. Mr. James had Lovely Ann, Ne Plus Ultra, Prince Albert, Conqueror of Europe, Mercer Ploug, and Mrs. Smith. Mr. Turner likewise exhibited the following varieties of Alpine Auriculas, viz.—Brilliant, Admiration, Starlight, Minstrel, Cardinal, Conspicuous, Beauty, Tiny King, King of Crimsons, Brutus, Sparkler, and Sovereign. Mr. Wiggins had a group of Pelargoniums.

Of miscellaneous plants, Lane & Son, sent a collection of Rhododendrons, mostly all little standards, beautifully bloomed, and very effective. From Mr. Wiggins came Pelargonium Purpureum, a variety stated to be suitable for forcing; it was of a soft bright rose colour, with a light eye, and a dark blotch on the upper petal. Pendulum cuspidatum, a pretty species, with a large cream-coloured lip, and long narrow petals and sepals of a delicate pink, also came from the same establishment. Messrs. E. G. Henderson again exhibited their white-keeled variety of Chamthus Dampieri and silver variegated Japanese Ivy, and Rhododendron Princess Royal and Lilium Lancifolium. Miscellaneous collections of flowering and fine-foliaged plants came from Mr. Williams and Mr. Wheeler.

Botanical of Edinburgh *April* 12.—Dr. Greville, President, in the chair.—The following communications, among others, were read:—*On the Diseases of Scolytus destructor, Curculionidæ, and other insects, in Forest Trees.* By Prof. Archer. The extensive ravages made in the forests and plantations of Europe by various insects in their larva state have lately attracted much attention from those interested in the preservation of timber trees. Hitherto nothing has been done systematically in this country for preventing or curing the evil; but the greater value of wood in France has led our ingenious and highly methodical neighbours to investigate the matter thoroughly; and several ingenious men have bestowed time and attention upon it, and have devised means for saving the trees which are attacked. Dr. Eugene Robert, of Bellevue, France, has been most successful. He finds that if the bark is removed partially from the parts attacked, the larvæ can be killed by an application of gas tar, after which a new growth of bark covers the exposed part of the stem. If left to itself this would cause a sort of strangulated growth of the wood, because the new bark clings so tightly that the tree becomes what is technically called hide bound under it. He remedies this by an instrument in the form of a triple knife, with sharp cutting points, and with this he scratches the young bark longitudinally. The effect is complete, and many trees are saved by this method which otherwise would be quite killed. The most serious of these insect enemies are:—1. Scolytus destructor, which particularly attacks the Elm. This tree is also subject to injury from Scolytus pygmæus, S. multistriatus, Hylesinus varius, Saperda punctata, S. charcharias, Zeuzera æsculi or wood leopard, and Cossus ligniperda or goat moth. 2. The Oak is attacked by Scolytus multistriatus, S. intricatus, Clytus arcuatus, Cucujus latus, &c. 3. The ash is attacked by Hylesinus fraxini, H. crenatus, &c. 4. The Conifers by Scolytus pini, &c. 5. The Apple and Plum by Scolytus pruni. 6. The Acacia by Clytus mysticus, &c. 7. The Birch by Scolytus betulæ. The Willow, of all these, except Cossus, is the smallest supplier of Rice, but those of Scolytus pygmæus are often more than an inch in circumference, and form a favourite food for the woodpecker. The paper was illustrated by specimens of wood, showing the effects produced by the different insects.—*On the Influence of Atmospheric Pressure from Wood.* By Mr. Collador. Communicated by Prof. Archer.—*Notice of Fungi collected near Buxton, Derbyshire, in September* 1865. By Mr. J. Sadler. The author gave an account of an excursion he made in September last to the woods in the neighbourhood of Buxton, in search of Fungi, in company with Prof. Balfour. The enumerated list of Fungi, of which are of rare occurrence in Scotland. The paper was illustrated by dried specimens of the plants.—*On the Movement of Sap in the Shell-bark Hickory.* By J. Townley Ley, Wisconsin, U.S. Communicated by Prof. Balfour. Mr. Townley's communication is a reference to the circulation of sap from the trunks of Hickory trees after they had been cut down. He alluded particularly to the occurrence of this even during intense frost.—*Report on the Flowering of Plants in the Open Air at the Royal Botanic Garden.* By Mr. M'Nab. Mr M'Nab stated that since the last meeting of the Society (8th inst.) the weather had been very variable, with frequent showers of hail and snow. The long continuance of cold easterly winds, with little or no sunshine, has considerably retarded vegetation. From 8th March till 12th April, the lowest point indicated from 8 A.M. observations was 21°, and the highest on 31st March, which registered 57°, and the lowest morning reading was on 28th March, when the thermometer at 6 A.M. stood at 49°. On 10 mornings the barometer fell to or below the freezing point, 36° being the general average temperature on the other mornings. During the past month the little progress made in the deciduous trees, with the exception of the Balsam Poplar, its yellow leaves being now conspicuous. In the spring-bulb department a few stray Snowdrops may still be seen in flower, as well as numerous late Crocuses. The Stayrinchium grandiflorum, purple and white, is now in full flower, as well as Puschkinia scilloides, Scilla bifolia (blue and white), Orni thogalum exscapum, Muscari botryoides (the blue, white, and pale varieties); also Narcissus pumilus, N. minimus, and Erythronium Dens-canis. Only 20 plants were enumerated as being in flower in the open ground at this meeting, the lowest previous meetings. Many common species could have been given to swell the list, but it was thought better to adhere to those species and varieties selected when the observations were first commenced. The number is below what is usually given in the April meeting of the Society. Some years as many as 41 species have been recorded. In the list now submitted are several plants which have been frequently noticed as being in bloom at the March meeting, while many of those usually recorded at the April meeting are not yet in flower. The average opening of the first bloom of Ribes sanguineum, the plant selected for this purpose is a large standard specimen growing at the west side of the garden, raised from a cutting taken from one of the original plants introduced by the late David Douglas. The following table will show the average of the time of flowering of this scarlet Ribes for the last 17 years. During this period the flowering has been noted 13 times during the month of March, and four times during the month of April. The earliest period was during 1863, when the first flower observed was on the 14th of March, and the latest was on the 12th of April. Some blooms on standard seedlings raised in this country were observed open this season on the 6th April, while those planted on walls were in bloom on the 2d. Flowering of Ribes sanguineum:—1850, March 11; 1851, March 21; 1852, March 25; 1853, March 24; 1854, March 16; 1855, March 26; 1856, March 29; 1857, March 26; 1858, March 2; 1859, March 29; 1860, March 1; 1861, March 7; 1862, March 10; 1863, March 2; 1864, April 12; 1865, April 8; 1866, April 9. The crown Imperial (Fritillaria imperialis) has during the last 17 years shown a similar range of flowering with the Ribes sanguineum, although the earliest and latest dates recorded are not exactly in the same years, still the early and late periods generally happen during one of the early and late years for the Ribes. The earliest date given for the Crown Imperial was in 1851, when the first bloom opened on the 17th of March. The latest date for the first flower opening on the 10th of April. This year the first bloom was observed on the 6th of April." Professor Balfour exhibited specimens of Nephelium Longan in flower. This tree yields the well known China fruit called Longan or Lungan. The tree is at present in flower in the Palm-house at the Botanic Garden. Dr. Balfour also exhibited a specimen of Thunbergia mollissima which had flowered in the Botanic Garden. The seeds had been transmitted by Dr. Cleghorn from India. Mr. R. M. Stark exhibited living plants of Begonias obtusilobum, Plat-anthera Hookeri, Pedicularis comosissima, Smilacina stellata, Delphinium triforme, Asplenium fragrans, Pteris stenophylla, and Asplenium angustifolium, which had been brought from America last year. Miss Gibson-Craig sent the Hyacinth-like bulb which was noticed at last meeting as having produced its flowers under the soil in an inverted position.

Cambridgeshire Horticultural *April* 18.—Among special prizes exhibited at this first Spring Show the following deserve commendation, viz., for Hyacinths, collections exhibited by Messrs. Wood & Ingram, of Huntingdon. Some fine specimens of Chionodoxa Melindii magnifica, and other plants were exhibited by Messrs. P. & H. Hudson, of Cambridge. Hyacinths were not, generally speaking, first-rate; but six shown by Mr. J. J. Chaplin, of Cottenham, Cambridge, were in all respects excellent. There was also a collection of these beautiful spring-flowering bulbs from the same establishment. Cinerarias wanted a few more days to bring them to perfection among them were Queen Victoria, Great Western, Brilliant, Golden Queen, Slough Rival, Fire Queen, Brilliant, and others. Roses in pots were good; those belonging to Dr. Clark were awarded the 1st prize, being compact and well bloomed plants. On the whole the show was satisfactory for April.

Zoological of London *April* 10.—J. Gould, Esq., in the chair.—The Secretary called attention to some recent additions to the Society's Menagerie, amongst which were particularly mentioned two species of Australian birds (Sephanoides pulcherrimus and Otis australis) never before exhibited in the Society's Gardens.—Mr. Tegetmeier exhibited and made some remarks upon a supposed original drawing of the Dodo (Didus ineptus), in which the colour of that extinct bird was represented as being nearly white.—Dr. Gray gave a notice of an Ape (Macacus inornatus) and a Bush-buck (Cephalophus breviceps) in the gardens of the Society, which he considered to belong to undescribed species.

Notices of Books.

Our Reptiles. By M. C. Cooke. Fcp. 8vo. London: Hardwicke.

Gardeners, we believe, may fairly take credit to themselves for being more tolerant of the creatures to whose history the present volume is devoted than are most people. A tortoise or two are no uncommon occupants of our stoves, moving along with a stately never-to-be-hurried pace, quite in consonance with the large house that has to be dragged along by its small occupant. One or more toads are also no unwelcome denizens of forcing pits and Pine stoves, as they have a decided partiality for insects. More than once we have seen the eggs of the common snake safely deposited in a Cucumber frame. We welcome the publication of Mr. Cooke's agreeably-written little volume, not only for the information it contains, but also in the hopes that the diffusion of accurate information will do something to obviate the foolish terror occasioned by, and the thoughtless cruelty practised on, these most unjustly despised of God's creatures. What more graceful than the movements of the snake as he swims across a ditch! What more brilliant than the eye of the toad! Our author does not allude to the microscopical appearance of the retina of the toad, but it is singularly beautiful, while that of the edible turtle is comparable to nothing but a tray of polished gems, so brilliant are the colours. In spite of these beauties and others that might be mentioned, there is no doubt a cold slimy feel about these reptiles which, combined with the many superstitions and the few better founded notions concerning them, will account for the general dislike of these cold-blooded animals. It cannot be too often repeated that we have in this country but one venomous reptile, the viper, the distinction between which and the snake is thus given by Mr. Cooke:—"The snake is commonly the largest of the two, and is found in the dampest situations, generally in near proximity to water, in which it delights to bask. The snake has large plates or scales upon its head, few in number; in the viper they are numerous and small. The snake has no continuous line of a darker colour running along its body, but is spotted all over; the viper has a continuous line, zigzag and blotched, running down its entire length. The head in the snake is more depressed and acutely pointed in front than in the viper, which latter has a characteristic blotch, something like the death's head and thigh bones of the death's-head moth, on the top of its cranium." We have only to add that the present volume is illustrated by 11 coloured plates, which satisfactorily supplement the descriptions given in the letter-press.

Books Received.—*Local Museum Notes* (Hardwicke). A small pamphlet setting forth the means of forming a museum of natural objects in any parish or district. A list of the objects to be collected—minerals, plants, birds, beasts, fishes, as the case may be—is given. We extract the following to show how valuable such a plan would be, if properly carried out, in extending our knowledge of natural history:—"Seeds and seed vessels: collections should be made of all the seeds and seed vessels in the district, arranging them in classes, as the different kinds of acorns, &c.; also a series showing the finest specimens of seed, giving their exact weight when ripe; also a series of the finest ears of corn, Barley, Oats, &c. with their weight, admeasurement, &c."—*Bacon's Map of London* will be found useful by strangers in London, containing as it does a table of cab fares, lists of the various exhibitions, &c.

Florists' Flowers.

Fuchsia Culture.—In growing Fuchsias young plants may be procured at any time from Christmas to August; if so late as August, they should be kept growing as late as November, but they must be sufficiently strong to endure going thoroughly to rest for a month or so, as circumstances may require, by being placed in a cool airy situation, and kept almost dry at the root. About January they must be introduced into a moderate heat, say about 55°. As soon as the buds appear, shake the soil from the roots, and repot them into smaller pots, which should be either new or perfectly clean. Preserve the roots of the small plants; those of older ones can be slightly shortened. The soil should be prepared by being placed in some warm dry place, so that it may become gently warmed. Be particular about the drainage of the pots. Place a few small pieces of potsherd at the bottom of the pots, and add a thin layer of Moss over them, to keep the soil separate. If this is not attended to, the drainage will become choked, and the plant sickly; and, if this happens, they rarely recover themselves during the season.

Fuchsias are like Dahlias—the quicker they are grown the better. Let the plants be potted carefully, placing the roots round the pots, and settling the soil well between the roots, pressing it down moderately firm, but leaving sufficient space for water on the top. After potting is finished, plunge the pots where the roots will have the benefit of a slight bottom heat of about 75°, till they get thoroughly into growth, after which they must be gradually removed. Keep them well syringed, and let the top heat range about 55° at night, and about 65° in the day time. Be careful of damp, and by no means admit cold draughts nor use cold water; if so the leaves will become brown, and the vigour of the plant will be gone.

Suppose cuttings to have been struck about the beginning of January, and to have been potted off and doing well. About the third week in February the

question of stopping must be considered. One of the first objects in Fuchsia growing should be to get the plants into a good shape when young, and this requires some consideration. There are some sorts very difficult to get up sufficiently high for specimens, but which if once got up will be sure to get bushy at the bottom afterwards, because they are naturally dwarf. Others that are strong growers, such as Prince Alfred or Exhibition, require a good deal of stopping when they are young. They must have their tops taken out when about six inches high, and four to six side branches must be tied out, by placing a piece of bass round the rim of the pot, and fastening the branches to it; these must be allowed to grow about five inches long before a centre shoot is again permitted to grow up; and when this centre shoot has grown from six to ten inches more, it is to be stopped again, to give the side branches strength, and to give a better bottom to the plant. This kind of stopping is to be continued till the plant is so thick that you cannot see through it, and the top of the plant must by no means be allowed to out-grow the bottom—which indeed can easily be prevented by the simple process of taking out the centre of each shoot with a sharp-pointed knife. As the pots fill with roots, the plants must be shifted into larger ones; they must never become pot-bound, as that would throw them into blossom. They must receive their last shift at least three months before they are required to be in bloom, and the stopping must be discontinued nine weeks before they are required for exhibition. It is important to keep a regular temperature, for no plant is more liable to injury from sudden changes of heat than the Fuchsia. Let the temperature range, after the middle of March, 5° higher than already mentioned; and as the season advances, 5° more may be permitted, with plenty of moisture in the house. Always syringe twice a day, and in hot weather very frequently, and keep plenty of water on the floors and staging when the ventilators are open. Give all the air possible in fine weather. As soon as the sun begins to give out much heat, the blinds must be put in requisition; they are very necessary in growing Fuchsias, but the very minute the sun is off the plants, let the blinds be drawn up, for they require all the light possible.

Young plants, treated the first season as I have described, will make fine exhibition plants the second; some sorts will do even the third, but they very seldom make creditable specimens after their second year.

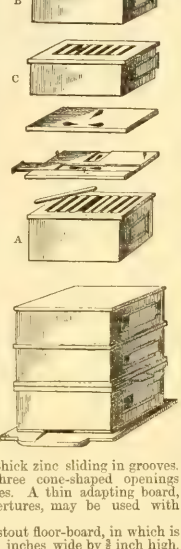
About 13 weeks before the show day, the plants should have their last shift, into 12-inch pots. The soil must be in good condition, and the pots clean and well drained with broken pots about an inch thick, and a layer of Moss over them; then add about an inch of soil pressed down rather firmly, and all is ready for the plants to be turned into the blooming pots. Loop the branches up on one side, to prevent breaking them; be sure the ball of the plant is thoroughly moist: take out all the drainage, and place the ball carefully into the new pot, filling up all round, without injuring the roots. Keep the house moist and closed for a few days, and the sun from them, but be sure not to over-water them till they get hold of the new soil. In about three weeks they will be growing fast; then commence stopping, for the last time, by taking a few points out each day for a week. At this stage prepare the liquid manure tub. Get some horse droppings fresh from the stable, say about half a bushel to a barrel of rain water; let these be mixed well together, and half a peck of soot added. When the liquid is clear, let each plant have a small quantity, say about a pint, every three days, to be increased each week, but be sure not to give it too strong, or it will take all the flowers off. Apply it in the after part of the day, with the regular water. Give the plants every encouragement to grow, and regulate the branches that may require it. The plants should each have a strong stake in the centre, to which the shoots should be well fastened. The bloom buds will soon begin to appear; but the forward ones should be picked off, till they appear regular all over the plant. *Henry Cannell, Woolwich.*

The Apiary.

Ligurian Bees.—A few days ago I made a rather interesting discovery respecting the habits of the Ligurian bees. Last September I purchased a stock of them, and placed them this spring in a shed constructed for six hives, placing the Ligurians at one end and a hive of common bees at the other, the four intermediate spaces being empty. On one day, removing the slide from the top of the hive of common bees, I was surprised to see a Ligurian fly out, but concluded it had gone there for plunder; however, I shortly afterwards discovered that this was not the case, but that the Ligurians had coalesced with the common stock in great numbers. I have more than once counted 10 Ligurians in a minute enter the other hive, and that clearly not for plunder, because they were nearly all heavily loaded; and I have never since examined the hive without observing many Ligurians working in perfect harmony with the common bees. This fact might suggest the idea that all bees are more or less in the habit of straying from hive to hive, and that the different species enables the observer to detect the bees of another hive, were it not that only one hive of common bees contains Ligurians amongst others in the immediate neighbourhood, and I have made my shed so different in the various compartments as to leave no possibility of the bees mistaking the openings. Notwithstanding so many Ligurians having left the parent hive, it seems in a fair way of becoming the strongest in my apiary. *Arthur Maw, Benthall Hall, Broseley, Shropshire.*

Bee Culture: *Hives.*—In the year 1849 Mr Taylor published an Appendix to the third edition of the "Bee-keeper's Manual," in which he described a hive of his invention that appeared to me at the time to possess considerable merit. Shortly afterwards, through the kindness of a friend who presented me with one, I had an opportunity of testing its capabilities; and although the results then obtained, from unpropitious seasons and other drawbacks, were by no means very extensive, yet I was led to entertain a favourable impression respecting the hive, and have ever since thought that it deserved a greater popularity than it seems to have obtained. Since Mr. Taylor's first description alterations have been made in the measurements, and some modification in the construction of the various parts. As I consider these to be, on the whole, improvements, I shall not give a transcript of the inventor's directions.

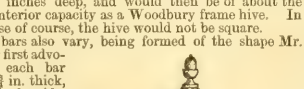
In the useful little treatise, "The Apiary, or Bees, Bee-hives, and Bee Culture," by Mr. Neighbour, published in 1865, is the following description of the hive in its altered character. A reference to the engraving will supply the absence of more elaborate detail. The hive consists of three boxes; the lower one, A, is the stock box, in which the swarm is first placed; B is the first super; and C the centre box. All three boxes are of the same diameter, viz., 13½ inches square inside; A_1 the stock box, is 7½ inches; B, 6½ inches deep. Both are fitted with eight moveable bars, each bar being 1⅛ inch wide, with spaces between of half an inch.



The middle box C is but 5 inches deep, and has no bars, but instead thereof is furnished with a grating made by seven openings, each ¼ inch wide and 9 inches long. This box is used only when additional room is required in the super, and is then inserted between the super B and the stock box. Each box has two windows — one at the back and another at the side, closed by shutters of thick zinc sliding in grooves. The crown board has three cone-shaped openings closed by stout zinc slides. A thin adapting board, having corresponding apertures, may be used with advantage.

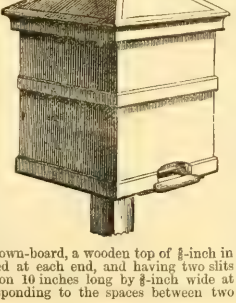
This hive stands on a stout floor-board, in which is cut the entrance way, 4 inches wide by ⅜ inch high. The floor-board is constructed sufficiently wide so as to support an outer case of half-inch wood, surmounted by a sloping roof. The dimensions of this hive, with outside cover, are 18 inches square, and 2 feet 6 inches high. I would suggest the following modification in the construction of this hive.

The stock box is to be 13 inches diameter by 8⅜ inches deep, and is to contain *nine* bars instead of *eight* for the somewhat larger diameter given above. In good localities the diameter may be increased to 14½ inches to carry 10 bars. This gives ⅛ inch for



width of the bars, and a trifle over ½ inch space between each. If this latter size should be considered as too great, the box may be made 14½ inches by 13 inches, and 8⅜ inches deep, and would then be of about the same interior capacity as a Woodbury frame hive. In this case of course, the hive would not be square.

The bars also vary, being formed of the shape Mr. Taylor first advocated, each bar being ⅜ in. thick, by ⅞ inch wide, and ½ inch longer than the width of the box; to be sunk in notches ⅜ inch deep. A portion of the two ends of each bar, 2 inches long by ⅜ inch deep, is to be cut away from the upper surface, thus forming passages for the bees immediately underneath the crown-board. I have found these passages of great use in facilitating the labours of the bees. For the crown-board, a wooden top of ⅝-inch in thickness, clamped at each end, and having two slits for communication 10 inches long by ⅜-inch wide at each side, corresponding to the spaces between two side bars, may be substituted for the crown-board with cone-shaped apertures and zinc slides. This board may be fixed down to the hive, screwing only through the clamps to allow play for shrinkage and the opposite; and the slits when not in use may be covered by loose pieces of wood 11 inches long by 3 inches wide. One window only should be allowed in the stock box.



The honey box or super No. 1 is to be 13 inches in diameter by 6⅜ ins. deep, furnished with eight bars of the same size and form as those in use in the stock box, but with a greater space between each. This box may have two or more windows, and is covered by a top, usually fixed, but removeable at pleasure.

Super box No. 2 is of the same diameter, and may be three, four, or five inches in depth. It may be used without any cover, and either with eight plain bars half an inch thick, or simply as an eke for the extension of the combs downwards. In either case it is slipped in between the stock box and the first partially filled super. Proper judgment as regards the affording increased room must be exercised, taking into consideration the period and probable prospects of the honey season, as, if too much room be given, an unfinished and unremunerative super will be the result.

The outer case most suitable for this hive is one very similar to that in use for the Woodbury hive. An engraving is given above. The entrance way and alighting board must be larger than is there represented. *S. Bevan Fox.*

Miscellaneous.

Climate of Norway.—There is another cause which in connection with the above (the Gulf-stream), exercises a great influence on the vegetation of the whole country—the more appreciable the higher the latitude—and that is the long days, or, in other words, the continued light. Under lat. 70° the sun never sinks below the horizon from May 24th to July 19th. At Throndhjem (Drontheim), lat. 63° 26', it rises at 1.50 A.M. on June 1st, and sets at 10.13 P.M.; and at Christiania, lat. 59° 54.6', it rises on this date at 2.40 A.M. and sets at 9.23 P.M. Consequently during this period the earth does not become so cooled during the short nights as in more southern latitudes, and therefore vegetation continues without interruption. Thus in Norway a continuous degree of warmth produces the same effect that a higher temperature during the day, and colder nights, do in countries farther south. It might not be unnaturally supposed, that owing to the greater distance from the equator, a longer time would be required for the development of a plant, the farther it is found to the north. Such however is not the case. Corn and other plants will ripen under a much lower temperature, and in a much shorter time, in Norway, than in any of the more southern countries, and even in the same country there is a marked difference in this respect between the southern and northern districts. Corn and other seeds brought from a southern to a northern climate require at first a longer time to ripen in, than the same species which have been cultivated there for some time; and conversely, seeds brought from a higher to a much lower latitude, will in the first years ripen earlier than those of the same species which belong to that lower latitude. Again, it may be remarked, that so long as the plant is not cultivated further north than is compatible with its attaining its full development, the seed increases both in size and in weight for the first three years; but it diminishes in like manner if cultivated several degrees farther south. The greater the difference in the latitude, the more marked is the disparity. Again, the flowers of plants assume an intenser colour and the foliage of trees a brighter green the farther they are found to the north. Those plants whose roots, leaves, flowers, &c. possess aromatic properties, develop this peculiarity in a surprising degree the farther north they are found. Even an interval of 3° of latitude produces a marked difference in this respect. Thus the Bird Cherry, Lily of the Valley, &c., have a much stronger scent in the neighbourhood of Throndhjem than near Christiania. Another curious fact moreover may be noticed that, in the case of fruits, their sweetness diminishes in proportion as their aroma is more fully developed. In average summers different varieties of Plums ripen as far north as lat. 64°, and wall Grapes at a little over lat. 61°, though it must be allowed that they are deficient in point of sweetness. But this deficiency is more than counterbalanced by the delightful flavour which their increased aromatic properties imparts. The phenomena above-mentioned can only be accounted for by the great influence the long days exert upon the vegetation in the far north, and by which Oats will ripen under latitude 90°, Rye under 69½°, and Barley under 70°, where also the Scotch Fir and Birch may be found with stems three feet and one foot in diameter respectively. The rapidity with which vegetable growth goes on is almost incredible. From observations made at Alten, lat. 64° 57.5', it has been ascertained that Barley will grow two and a half inches, and Peas three inches in the 24 hours for several days consecutively, and this is the more remarkable when it is borne in mind that in Norway agriculture can be carried on successfully under the same parallel of latitude as that under which the ice-bound and desolate regions of Victoria-land, Disco Island, and Boothia Felix are situated. *Barnard's Sport in Norway.*

Esparto Grass.—An important modern discovery is that of the applicability of the Atocha, or, as it is called in Spain, Esparto (Macrochloa tenacissima), to the manufacture of paper. Mr. Lloyd, of the Walthamstow Paper Mills, is stated to have had a great share in the merit of this discovery; and Mr. Mark, the British Consul at Malaga, has drawn up an interesting report on the subject, which has been made public. This Grass is the produce of waste lands; it requires no expense in cultivation, and little in collecting; it is best propagated from the roots, and

[illegible] it is perennial propagates itself, and [illegible] regular yearly gathering, if plucked with sufficient care. Mr. Mark has devoted great care in his endeavours to ascertain the climate and soil which are favourable to the development of the plant; and it appears that the Atocha requires a decidedly hot and dry climate, that it grows equally well in the plains and in the mountains to a moderate elevation, and that as regards soil it flourishes both in calcareous and argillaceous soils, or when these soils are blended in [illegible]. The greatest quantity is shipped from the provinces of Almeria and Murcia; but it is found, though in less abundance, in all the southern provinces of Spain. It is also said to be plentiful in some parts of the opposite coast of Africa, and shipments are made from Oran to England. Prior to the discovery of its being available for the manufacture of paper the Esparto had been used in Spain as fuel, [illegible] for [illegible] and for making baskets and matting. But the discovery of [illegible] properties of the Grass has made a complete revolution in the districts where it grows. Fortunes have been realised by individuals who were the proprietors of the land which produce it. The price has more than doubled, and is [illegible] by Mr. Mark at [illegible] per English ton on board. The greater part of the exports have as yet been directed to England, where, in the brief space of three or four years, the article has become a requisite of the highest importance, 160,000 tons having been, it is said, imported into England in that period; and Mr. Mark estimates the present rate of annual export at 50,000 tons. Mr. Mark anticipates that even at its present enhanced price the Spanish Grass will take a place with cotton, hemp, and wool as one of the staple and essential bases of manufacturing industry; and if this anticipation should be realised, in addition to the valuable resource which it seems likely to prove to our paper manufacturers, it will form an important element in trade between this country and Spain. *Economist.*

Colours from Theine.—A German chemist, it is said, has discovered colouring matters, purple and scarlet, almost surpassing in beauty the finest aniline hues, in theine, the alkaloid to which tea and coffee owe their principal stimulating qualities. The Chinese teas, which are the richest in theine, do not contain more than 2 per cent.; but happily these are not the only [illegible] from which this alkaloid can be extracted. [illegible] the Kola-nut of Western Africa, in which theine has just been discovered, the leaves of Paullinia Sorbilis contain nearly 5 per cent., and Ilex paraguayensis is also very rich in it. The prepared fruit of Paullinia Sorbilis constitutes the celebrated Guarana bread, and a spoonful of this powdered, and thrown into a quart of boiling water, makes a refreshing beverage, much used in Brazil. But still more sought for in Brazil and other parts of South America, are the leaves of Ilex paraguayensis, or herb of Paraguay, which contains as much theine as the best Chinese teas. Of this it is calculated that several millions of kilogrammes of leaves are lost every year in the forests of South Paraguay, by their falling to the ground, where they rot. If, then, the colouring matter of theine offers such real and important advantages, we should not fail to extract it. [illegible]

[illegible]—Seeing what a considerable portion of the Australian [illegible] New Holland [illegible] the exact [illegible] answer. Wherever similar or the same effects [illegible] Europe [illegible] the same [illegible] New Holland [illegible] at the Eocene period, a set of conditions prevailed [illegible] the Australian flora at present exists. It is not con[illegible] Araucarias, instead of Pines, and our underwood of Proteaceæ, Santalaceæ, &c., instead of Rhamni, Privets, and Hazels, the climate and soil should have been the same as they are now. We know but too well what peculiar conditions of temperature, light, moisture, &c., certain [illegible] rules in our cultivation of foreign plants. True, Araucarias [illegible] grow, at present, exceedingly well in Europe, but only when protected [illegible] artificial temperature and light, and a well-prepared soil [illegible] the exceptional conditions under which they are grown to those of their native country. We may, therefore, conclude with good reason that the conditions which we produce artificially, in order to grow these plants, existed in the whole of Europe; in short that, at the Eocene period, Europe must have had a climate like that of New Holland at the present day. *Popular Science Review.*

Calendar of Operations.

(For the ensuing week.)

Amongst the numerous enemies with which a gardener has to contend, snails and slugs hold no unimportant position. The pressure of business in April and May is generally so great that the destruction of [illegible]. It is, however work, of paramount importance. Lime is well known to be instant destruction to them; but it is not [illegible], and, moreover, a shower of rain soon impairs its efficiency. Under these circumstances cinder-ashes will be found a good substitute, and if timely applied will bid defiance to the mischievous propensities of these pests. They should be sifted to the size of Radish seeds, all dust being excluded. These strewed over young crops just coming through the ground will be found to be a safeguard for them, and if mixed with guano to make an excellent top-dressing. A handful of good Peruvian guano, blended minutely with the ashes, is a ready and efficient mode of manuring a weak seed-bed.

FLOWER GARDEN AND PLANT HOUSES.

Continue to fork up borders slightly that were dug last autumn, and to regulate any of the more advanced herbaceous plants as the work progresses, tying them up if they require it. Recently transplanted shrubs that may have been loosened by wind must be made firm, giving them, if necessary, a good watering. Hardy annuals coming up too thickly should be thinned out and transplanted if required. Sow annuals amongst rockwork, and plant out any rock plants that may have been kept in pots during winter. Such half-hardy plants as have been removed to cold pits may now be left uncovered during mild nights. Recently-struck Verbenas might be pricked out into well-made beds, protecting them with hoops and mats; in a week or two they would be suitable plants for turning out into the flower garden, taking care to preserve balls of earth to their roots. Pot-off tender annuals, and keep them in a mild heat until they have become well rooted. As regards plant houses, owing to the increased temperature which we are now experiencing, great vigilance will be required to keep down bug and scale. The foliage which plants are now making is in many instances destined to be their chief ornament for months to come; care must, therefore, be taken to keep it clean and healthy.

In conservatories and other show houses, Rhododendrons and Azaleas will now be in full bloom, and by judicious arrangement both borders and shelves may be rendered extremely gay. Highly dressed ground should be mown at least once a week after this period, for a well-kept lawn is always a pleasing object.

Auriculas.—Let these have all the air possible; they must also be kept clear of insects, and protected from rain.

Camellias.—Keep such as are making growth well syringed. Should black-fly appear on the young shoots, a good washing with tobacco-water will soon destroy it.

Carnations and Picotees.—If not already done, these should now be staked. Remove decaying foliage, if any, and water as often as may be necessary.

Cinerarias.—Remove to a cool shady house such as are required for a late display. Weak liquid manure may be given liberally, say two or three times a week. Look well to seedlings, and place approved sorts apart from the more common kinds for seed.

Dahlias.—Let ground be put in order for these; but do not plant out yet, more especially if the plants can be kept growing on without check. Repot, therefore, as often as the pots they occupy are filled with roots. Give them plenty of air so as to keep them hardy, as they should not be risked out of doors before the end of May.

Pelargoniums.—A slight shade will now be necessary for a few hours on bright days; green fly is occasionally very injurious to them at this season, and therefore the plants should often be fumigated; tie and regulate the shoots according to previous instructions.

Tulips.—Protect the best bed, if not already done, with canvas. Stir the surface between the bulbs.

FORCING GARDEN.

Peaches.—When the fruit is fairly stoned a slight increase of temperature may be allowed, and water may be more liberally applied to the roots. The trees should also be well washed with the engine. Attend to training in the succession house.

Pines.—Early potted suckers or young succession plants will soon have filled their pots with roots. Where such is the case, give them a liberal shift. When dry they had better be watered occasionally with weak liquid manure, *i. e.*, after the plants shall have become sufficiently established to enable them to receive it with advantage.

Strawberries.—These will want abundance of water. They must not be allowed to flag by any means, and if the weather continues bright they will succeed best in a comparatively cool situation, where they will rarely be attacked by red spider, an evil to which plants forced late are liable.

Vines.—The fruit from pot Vines will now be cut, and in some places that upon permanent Vines will be ripe. Let it, therefore, be remembered that a tolerable amount of dryness in the atmosphere is necessary, in order to obtain good flavour. A free and wholesome circulation of air, early in the morning and continued until evening, will be found to increase both colour and flavour. Be very moderate in fire-heat until late Vines approach the period of blossoming. Keep the syringe employed morning and evening until the flowers begin to open; after that it must be discontinued.

HARDY FRUIT AND KITCHEN GARDEN.

Thinning out and hoeing between progressing crops will now be the principal work in the vegetable department. As regards wall trees, disbudding, stopping, and keeping down insects must receive attention.

Broccolies.—Where these are turning in too fast some of the plants may be removed before the heads are too far advanced, to a cool situation, so as to prolong the supply.

Cabbages.—The soil between the rows of growing plants should be well stirred up, and a little drawn to the stems of the plants.

Cucumbers.—Stations should now be prepared for plants to be grown under hand-glasses.

Kidney Beans.—Sow for succession; a few may also be raised in pans to fill up vacancies.

Lettuces.—Sow regularly for succession, and tie up Cos varieties to bleach the hearts.

Radishes.—Keep sowing as often as may be thought necessary, both Turnip-rooted and other kinds, and water beds from which they are to be drawn for use.

STATE OF THE WEATHER AT CHISWICK, NEAR LONDON,

For the Week ending April 25, 1866, as observed at the Horticultural Gardens

April.	Moon's Age.	Barometer. Max.	Barometer. Min.	Temperature. Of the Air. Max.	Of the Air. Min.	Of the Air. Mean	Of the Earth 1 foot deep	Of the Earth 2 feet deep	Wind	Rain.
Thurs 19	4	29.881	29.733	65	38	51.5	52	48	S.	.00
Friday 20	5	29.[illegible]	29.81[illegible]	[illegible]	36	47.0	52½	48½	S.W.	.14
Satur 21		30.22[illegible]	29.926	64	29	46.5	53	48	N.W.	.00
Sunday 22	7	30.430	30.357	56	34	45.0	52	48½	E.	.00
Mon. 23	8	30.[illegible]	30.[illegible]	[illegible]	31	45.0	52	49	E.	.00
Tues 24	9	30.193	30.[illegible]	60	26	48.0	52	49	E.	.00
Wed 25	10	30.070	30.022	68	30	48.5	52	49	E.	.00
Average		30.151	30.050	60.7	33.8	47.3	52.2	48.6		.14

April 19—Fine; very fine throughout.
— 20—Fine; cloudy; very fine; rain at night.
— 21—Fine; very fine; slight frost at night.
— 22—Fine, with dry slight haze; very fine.
— 23—Cold dry easterly wind; fine; very fine.
— 24—Fine; dry air; very fine.
— 25—Dry haze; cloudless; excessively dry air; very fine.
Mean temperature of the week, ½ deg. below the average.

STATE OF THE WEATHER AT CHISWICK,

During the last 40 years, for the ensuing Week, ending May 5, 1866.

April and May	Average Highest Temp.	Average Lowest Temp.	Mean Temp.	No. of Years in which it Rained	Greatest Quantity of Rain	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.
Sunday .. 29	60.8	37.5	49.1	13	0.75 in.	4	4	9	2	4	9	1	7
Mon. .. 30	61.3	39.1	50.2	16	0.31	6	1	8	2	[illegible]	7	5	5
Tues. .. 1	61.7	39.7	50.7	15	0.51	4	7	8	4	5	7	4	1
Wed. .. 2	62.7	39.4	51.1	14	0.72	4	9	10	1	5	7	3	2
Thurs. .. 3	62.0	40.2	51.1	19	0.58	2	8	10	1	4	7	2	6
Friday .. 4	62.3	38.8	50.5	15	0.70	6	10	8	1	7	[illegible]	3	1
Satur. .. 5	62.7	38.9	50.8	21	1.26	5	11	4	4	9	5	1	1

The highest temperature during the above period occurred on the 29th, 1840—therm. 79 deg.; and the lowest on the 2d, 1855—therm. 20 deg.

Notices to Correspondents.

Books: *H O.* If it is a knowledge of British plants you seek, get Bentham's "Handbook of the British Flora," of which, if you prefer it, there is an edition with small but capital woodcuts. If a compendious account of all the natural orders, get such a book as Balfour's "Class Book." Your note does not make it clear which of these would suit your purpose best.—*M M.* [illegible] Your letter was mislaid. You will find Lindley's "School Botany," or Oliver's "Lessons on Elementary Botany," answer your purpose.

Cucumbers: *H W.* A relaid [illegible] would be the best in [illegible] in the case you mention. Burn the plants, take out all the soil, wash over the sides of the pit with quicklime, put in fresh soil which has not been used for a similar purpose before, and plant afresh with clean healthy plants, taking especial care at all times to maintain a genial moisture both in the soil and atmosphere of your pit. If, however, you are disposed to experiment upon your present plants, try the effect of an application of Pike's Blight Composition in the proportion of 1 quart to a gallon of water, and pour it over the whole of the bed and the plants about 2 o'clock in the afternoon, closing the pit immediately, and keeping all thoroughly shaded until the evening and during the next day. Next morning syringe the plants early and ventilate, shading slightly during the middle of the day for a week or so, taking care to syringe more or less every day.

Names of Plants: *A H.* 1, Veronica hederæfolia, probably, a wretched specimen; 2, Cardamine hirsuta; 3, Glechoma hederacea; 4, Lamium purpureum, var. incisum.—*E L.* 1, Acer rubrum; 2, Acer eriocarpum; 3, Prunus triloba; 4, Forsythia viridissima.—*Coolattin, Wicklow.* Picea balsamea, Balm of Gilead.

Paint for Hothouses: *Sutsex [illegible].* The almost general use of a paint for hothouses, &c., of which the body is formed of white lead, naturally leads to the inference that it is the best for the purpose, or at all events that a substitute likely to become general has yet to be found. We therefore adhere to the conviction that it is so. Its durability, however, of which you complain depends very much upon the purity of the materials used, and the proportions in which they are mixed. If too much dryers and spirits of turpentine are used in proportion to the oil and white lead, the best of materials will very shortly perish from atmospheric action, and rub off in the form of a white powder. There is another very important thing to be considered, which is, to be especially careful at the time of painting that the woodwork and putty are perfectly dry. If the paint is laid on a damp surface it never becomes closely united to it, and when exposed to the action of the sun, the damp below expands, and a blister is the consequence. By using pure and unadulterated white lead, mixed with a larger proportion of oil and less of dryers, and laying it on a very dry surface, we have no doubt that you will find it as durable as can reasonably be expected. Hothouse work and the action of the sun is peculiarly trying to paint, and it requires to be often renewed even under the most favourable circumstances.

Stephanotis floribunda: *I M.* This plant was introduced to Paris, and first bloomed there in 1831, and seems to have made its way to England soon after 1838, that being the date assigned to it, probably on the occasion of its first producing blossoms.

Vines: *[illegible].*—The appearances which you have so accurately described as having taken place in your Vine are precisely such as would be caused by the action of severe frost upon the lower part of the stem of a Vine planted outside the house, at a time when the cane inside would be subjected to a high temperature. You may feel assured that the roots are not in fault, for we have known precisely the same appearance to take place from the above cause in the most robust and healthy Vines. You did quite right in your subsequent treatment, and you will find that the Vine will eventually recover its healthy and vigorous action, but you will do well to secure the outside stems from severe frost.

Vines in Flower: *J W H.* We should hesitate about using strong tobacco-cloth for the purpose of fumigation until the Vines are a little further advanced, as the slightest overdose would probably affect the young leaves injuriously; three moderate fumigations, with intervals of a day or two between each, will be far more effectual in the destruction of insects, and less liable to injure foliage, than one strong smoking, however carefully conducted.

Vine Leaves: *R H.* Your Vine leaves, being young and delicate, have either been burnt by the sun, or have suffered from nocturnal radiation. You will observe that it is exactly the most tender parts of the leaves which have suffered. The pattern on them is extremely pretty. *M. J. B.*

Wellingtonia: *[illegible].* With the sight of your Wellingtonia it is impossible to say what is the matter with it, or whether it is only brown from the winter. It is very common for such plants as Thuja to have their leaves browned in winter, and to recover their verdure in spring. We are not aware that the subject has at present been properly studied. *M. J. B.*

Communications Received.—E. C., Finchley.—Prof. A. De Candolle.—W. T.—Prof. Balfour.—W. B.

HALLETT'S
CHEVALIER PEDIGREE BARLEY.
MALT.
Weight 56 lb. per bushel.

This has been "Tried" in these same manners as the "Pedigree Wheat," viz.: Very pointed annual sowings, resulting in each year from a single grain on a poor soil, treated same drily upon the chalk of the South Downs, which upon, usually among farms produces Barley weighing, but of lb., and fit only for grinding.

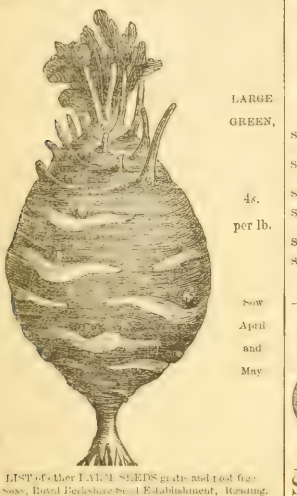
If drilled in March ... 1 bushel on 3 acres
" April ... 1 " 2 "

SEED REQUIRED:—

Price Two Guineas a Bushel, including bags, delivered in bags sewed up and sealed, at the Brighton Railway Station, upon receipt of Cheque or Post Office Order, without which it will not in any case be sent to unknown correspondents. Less than a bushel will not be supplied.

Apply to FREDERIC P. HALLETT, Esq., F.L.S., The Manor House, Brighton, Sussex.

SUTTON'S PRIZE KOHL RABI.



LARGE PURPLE, 4s. per lb.

LARGE GREEN, 4s. per lb.

Sow April and May.

Sow April and May

PRICED LIST of other FARM SEEDS gratis and post free.
SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

Grass Seed for all Soils.

RICHARD SMITH offers the best selection that can be made of PERMANENT MEADOW GRASS and CLOVER at 32s. per acre, consisting of 2 bushels Hunt, and 12 lb. heavy Seed. The Kinds and quantities are chosen to Cut Early Growth, Crop, Nutritive Qualities, Keep Rich in Autumn, and Harmonize, and can be had separately, or properly mixed to suit Heavy, Light, or Medium Soil. RICHARD SMITH, Seed Merchant, Worcester.

Brighton and Sussex Seed Warehouse.

EDWARD CARPENTER'S MIXTURES of PERMANENT GRASS and CLOVER SEEDS—Best quality, 28s. per bushel—for all soils. Also Cheaper Kinds and small seeds per acre. Seed time, and Catalogue.

Ewe and Cotswold RENOVATING MIXTURES for Improving Old Pastures.

PRICED CATALOGUES of KITCHEN GARDEN, FLOWER and FARM SEEDS post free.

Edward Carpenter, Seed Merchant and Grower, 96, St. James's Street, Brighton.

PERMANENT PASTURE SEEDS.—The benefit to Pasture Fields sown down to Natural Grass Seeds cannot be over-estimated. The finding of all these per acre over common Rye-grass and Clover is £1 to £2 in the increase of Keep by the greater abundance of Herbage produced of a richly nutritious and more permanent character.

KENNEDY'S MIXTURES FOR PERMANENT PASTURE continue to receive the great support of the Public, and the demand for them is every year on the increase.

A DESCRIPTIVE PRICED CATALOGUE of these SEEDS, as well as of Cover, Turnip, and other Farm Seeds, may be had on application to

THOMAS KENNEDY & Co., Nurserymen and Seedsmen, Dumfries.
Free for every accurate.

Meadow and Lawn Grass Seeds.

JOHN and CHARLES LEE, Seedsmen to the QUEEN, are now executing orders for GRASS SEEDS, mixed to suit all Soils, viz.:—

LEES' MIXTURES

For Heavy and Light Lands ... sow 2 bushels per Acre
For Parkland Field Lawns ... sow 3 bushels per Acre.
For Irrigated or Water Meadows ... sow 2 bushels per Acre.
For Rich-eating Old Pastures ... sow 12 lb. per Acre.
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For Garden Lawns ... sow 3 bushels per Acre.

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BLUNDELL'S CATTLE MELON and CATTLE MARROW. The Cattle Melon has been tested in 37 counties in England, and in various parts of Ireland and Scotland, and proved to be the most prolific and valuable Food for Feeding all kinds of Stock. Price ... ounce of each—the Seeds 2s. 6d.; Seed to 1 acre, 4s.; do. 4 acres, 8s.; do. 1 acre, 1s.

Cash to accompany all orders from unknown correspondents.

Address, JOSEPH BLUNDELL, Dunsbridge, Southampton.

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CABBAGE PLANTS, EASTHAM, ENFIELD, and DRUMHEAD, 1s. 6d. per 1000. The Stock true and can be warranted.

RED CABBAGE PLANTS, extra fine, 2s. per 1000.
ONION, WHITE SPANISH, 1s. 3d. per lb.
WURZEL, YELLOW GLOBE, 2s. per cwt.
BARLEY SHAW POTATOES, 6s. per cwt., warranted true.
Terms cash

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SUTTON'S GRASS and CLOVER SEEDS
FOR ALL SOILS.

SUTTON'S PATENTED PERMANENT GRASSES and CLOVERS for Lasting Lawns, Lawn Land to Meadow or Pasture, 56s. to 70s. per Acre.
SUTTON'S MIXTURE of GRASSES and CLOVERS for Three or Four Years' Lay, best Mixture, 42s. per Acre; cheaper ditto, 20s. per Acre.
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SUTTON'S MIXTURE of CLOVERS and RYE-GRASS for One Year, best Mixture, 18s. per Acre; cheaper ditto, 10s. 12s. per Acre.
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SUTTON'S FINE LAWN GRASS MIXTURE, 1s. 6d. per lb., 24s. per bushel.

All seeds carriage free to any railway station in England, Wales, and Scotland.

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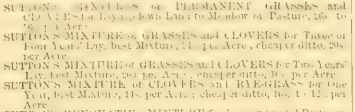
The Forwardest Turnip known is



SUTTON'S SHORT-TOP
SIX WEEKS.
Price 1s. per lb.
Cheaper by the Bushel.

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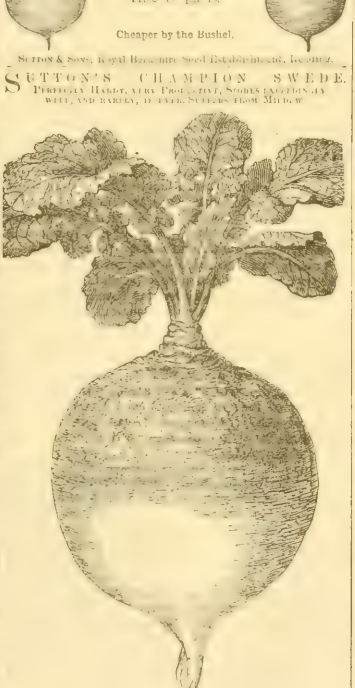
SUTTON'S CHAMPION SWEDE.
PRODUCED HARDY, VERY PRODUCTIVE, SOUND (NOTORIOUSLY WELL), AND RARELY, IF EVER, SUFFERS FROM MILDEW.



THREE HUNDRED GUINEAS IN 12 PRIZES.
For Six Years successively in the Royal Highness the Prince Consort Prize Crops, awarded to SUTTON'S CHAMPION SWEDE at the Royal Lord Bacon and Scots Public Agricultural Societies, and many other valuable Prizes in various parts of the kingdom.

From Mr. LAWES, *Rothamsted*, near Right Hon. Lord BERNERS.
"The Champion Swedes bought of Lord Berners proved to be of you are far superior to any others we have grown. I can confidently say they are nearly tons per acre heavier than any other Swedes growing on my Lord Berners' farm."

Price of Seed 1 pint, post free, 1s.; 1 quart by the bushel
SUTTON'S NEW FARM LIST gratis and post free
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FINE GRASS LAWNS in FLOWER GARDENS, &c.—The great expense of cutting and carting leaves from a distance may be avoided, and a splendid Turf produced in a few months, by sowing SUTTON'S LAWN GRASS SEEDS, which consist wholly of the finest and shortest growing kinds, perfectly free from Moss and other weeds.

From Mr. JOHN JOHNSON, *Gardener, Mowbray Park, Sunderland*, April 26, 1865.
"The Lawn Seed we got last year about this time has come up excellently."

From Mr. THOMAS PURRINGTON, *Gardener to* H. W. VINCENT, Esq., *Bradwell Grove, Burford, Oxon, January* 19.
"The Grass Seed you supplied me with last season grew remarkably well. Indeed, I never had a finer lawn. It very soon grew."

From HENRY H. CAVE, Esq., *Desborough, Market Harborough*, May 13, 1865.
"The Lawn Grass Seeds I had from you last year have made a very good start indeed."

From J. NIGHTINGALE, Esq., *Heath Street, Kingston-on-Thames*, May 2, 1865.
"I have add that the Grass Seeds you supplied last year, have fully answered, and the very wide-spreading habit succeeded very well."
SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

ROYAL AGRICULTURAL SOCIETY of ENGLAND.—EDUCATION PRIZES.—One Hundred and Fifty Pounds Candidates already entered for the Oxford Local Examinations in May next, in connection with which the above Prizes will be given, may be had on the Society's House in Saturday, May 19.

Application for Forms of Free nomination should be made without delay to the Hon. Sec., Royal Agricultural Education Committee, 12, Hanover-square, London, W., from whom further particulars may be had on application.—April 21.

THE SHENSTONE and WEEFORD AGRICULTURAL ASSOCIATION offer for general competition a PRIZE of £25 for the best ESSAY on "CO-OPERATION between LANDLORDS and TENANTS, so as to remedy as far as possible the ill effects of the RINDERPEST or PLAGUE, with special reference to those Districts or Farms which have lost their Stock."

The particulars, apply (enclosing stamped and directed envelope) to the Secretaries of the Shenstone and Weeford Agricultural Association, Shenstone, Lichfield, to whom the Essays, with motto and name, sealed up, must be sent on or before June 24, 1866.

WILLIAM KING, Chairman of Sub-Committee.
LOUNGE W. EASINGTON, } Hon. Secretaries.
HENRY OSBORN, }

THE BIRMINGHAM CATTLE and POULTRY SHOW, 1866.—The EIGHTEENTH GREAT ANNUAL EXHIBITION of FAT CATTLE, SHEEP, PIGS, DOMESTIC POULTRY, CORN, ROOTS, and IMPLEMENTS, will be held in Bingley Hall, on SATURDAY, MONDAY, TUESDAY, WEDNESDAY, and THURSDAY, December 1st, 3d, 4th, 5th, and 6th.

It is intended to hold an EXHIBITION of HORSES in Bingley Hall, in the month of JULY NEXT, further particulars of which will be shortly advertised. In the meantime, persons who are willing to guarantee the sum of £1000 for the Exhibition are invited to communicate freely with the Secretary. JOHN B. LYNALL, Secretary.

Offices, 93, New Street, Birmingham.—April 13th

TO CARRIAGE MANUFACTURERS.—Manufacturers willing to LET PONY CARRIAGES to EXHIBITORS at the HORSE SHOW, AGRICULTURAL HALL, LONDON, for Daily Use in the RING, can obtain details from

S. SIDNEY, Secretary and Manager.

N.B.—A CARRIAGE for FOUR PONIES in Hand WANTED.

HORSE SHOW, AGRICULTURAL HALL.—NOTICE.—ADVERTISEMENTS for the CATALOGUES must be sent on or NOT LATER THAN SATURDAY, MAY 5.

HORSE SHOW, AGRICULTURAL HALL, LONDON.

Prize Lists and Conditions are now ready. ENTRIES close on SATURDAY, May 5.

S. SIDNEY, Sec. and Manager.

Offices of the Company, Barford Street, Islington, N.

The Agricultural Gazette.

SATURDAY, APRIL 28, 1866.

MEETING FOR THE ENSUING WEEK.
WEDNESDAY, May 2.—Agricultural Society of England.—Noon.

It is difficult to gather a very distinct idea of the plan proposed by Mr. VALLENTINE in his Essay on Middle-class Education in the current Number of the Royal Agricultural Society's Journal.

At the commencement he sets himself the question—"How the rising generation of farmers is to be educated in a suitable manner for their future profession and position in society at such a cost of time and means as can be afforded."

We are next told that our great public schools are too high and our national schools too low for the requirements of farmers, and that the establishment of good schools, in which sound teaching is combined with small fees, would be a great blessing to the country.

That the founding of such establishments would be more advantageous to farmers than to other classes is, however, exceedingly difficult to prove. Farmers would doubtless in a measure support such institutions, but in order to succeed, the sons of men in other walks of life would also have to be admitted, and the scheme, instead of specially benefiting the agricultural community, would be a general advantage to the middle classes as a whole.

Excellent as the result would be to the country at large, it seems to us somewhat monstrous that such a mighty movement should be undertaken and carried out by the agricultural interest. Is the Royal Agricultural Society proposing to educate young England, in order that the sons of farmers may get their mental food in the general scramble after the good things thus sown broadcast?

Mr. VALLENTINE'S scheme consists in the establishment of good and cheap schools throughout the country: "half a dozen" is the happy number fixed upon, and if this were once done, we are told that the requirements of the case would be met. Bravo! Mr. VALLENTINE.

The best way to secure a good education is to go to a good school.—The idea is grandly simple,

and worthy of a 50*l.* prize from the great Society which asked the question and received the answer. And *such* schools, too, as may make the mouths of needy parents with large families water with expectancy;—schools where 20*l.* per annum will suffice for the board and washing, &c., of each boy; where "three masters, *some* assistants," and a staff of servants to attend upon 200 boys, will be maintained for 1000*l.* per annum!

We know that agriculturists like a "bargain," and that whether their patronage be sought by the implement maker or the manure vendor, the article must be supplied at the lowest possible cost; but the rate at which the sons of farmers have to be educated as proposed by Mr. Valentine outdoes for cheapness the most paltry implement, or the most worthless concoction sold to the British farmer under the title of manure; and we can hardly say we hope that a scheme carried out upon Mr. Valentine's principle will not prove as shaky as the one, and as ineffective as the other.

In the first place we would lay it down as an axiom that the boy intended for a farmer requires precisely the same education up to a certain point as the boy intended for any other business. We do not pretend to say of what this education should consist, except that it should be as general as possible, and that the subjects taught should be those recommended by the best authorities.

For this reason we would suggest, with Mr. Valentine, that the sons of farmers (who can afford the money) should be sent to good schools; but on the other hand, if we are told that there are no good schools (a very questionable statement), we cannot see what the Royal Agricultural Society has to do with the creating of such establishments on the supposition that they will be supported by farmers, and *that the boys educated thereat will turn their knowledge towards the improvement of agriculture.*

Why cannot the Royal Agricultural Society leave the education of children to their parents and guardians? Farmers are not one class, but many classes, and we find the wealthiest men among them sending their sons to public schools and the Universities. Others educate their children at less pretentious, but good schools; while the poorer farmers, who depend for their living upon manual work almost as much as a labourer, are content with the national school of the village.

We do not say that this is the best system possible, but as part of the Royal Agricultural Society we cannot see how it comes within our province to meddle in the matter all.

We detect a lurking consciousness of the weakness of his case in Mr. Valentine's proposed curriculum of instruction by the manner in which he introduces subjects more or less connected with scientific agriculture. It is this part of his scheme which must strike any one at all experienced either in teaching or studying as peculiarly absurd.

He proposes to admit boys at 13, and that they should leave at 16 years of age, and in order to give space for the huge amount of cramming to be done in this comparatively short period, he assumes that they are *masters of a common English education before they enter the school*—that is, that they have accomplished this arduous task before they are 13 years of age. This assumed, he further proposes that they should be taught Chemistry, the elements of Geology, Medicine, and Natural Philosophy; Mathematics, including Arithmetic, Logarithms, Algebra, Geometry; Land Surveying and Measurement of all kinds; Geography, Ancient and Modern History, Book-keeping, and Classics. Besides these subjects the boy of course must read, write, spell, &c. What a muddle! What a burden on the boys! What a Herculean task for "the three masters and some assistants!" What versatility on the part of the teacher to turn from his Geology class to his Book-keeping class, and from this to the explanation of chemical equivalents! What a joke to good chemists, to eminent geologists, and to practical accountants such teaching would appear.

The whole idea is a mistake from beginning to end, and it all results from an attempt to mix up general and elementary education with professional and special instruction.

Let us try to point out a more excellent way. First, let the Royal Agricultural Society leave parents to manage the education of their children in the way best suited to the requirements of their families.

Second, let the Society give encouragement to young men above the age of 16 years, who are prosecuting their studies as agricultural students. By this method they will encourage general education, for the men who have received the best previous education will invariably be found to take the prizes offered for proficiency in science.

A faint endeavour in the direction intimated has indeed been made by the Society, and a few pounds have been distributed as prizes for proficiency in Chemistry and Mechanics applied to Agriculture. The amount so given was however absurdly small; and we cannot but express surprise that a great Society should so unequally distribute its favours as to bestow 50*l.* on Mr. Valentine's essay on middle-class education, and only 5*l.* for a competent knowledge of agricultural chemistry. *W.*

The numerous insects which abound in our corn fields at harvest time are fortunately for the most part harmless to the crops, and entirely so to man. How different our fortune from that of other countries may be gathered from the following note. During the past two years the approach of harvest in some parts of Russia has brought with it a poisonous enemy in the form of a black spider. Though the insect does not appear to be destructive to the crops, but rather to the labourers in the fields, the following account of its ravages from a recent report on the Agriculture of Berdiansk in 1865, may not be without some interest. "The appearance of a poisonous black spider amongst the Wheat at harvest time created for a few days a panic among the labouring classes. Wages rose to double their ordinary rate, and it was with difficulty the labourers could be induced to work. More than 300 persons were bitten by this venomous insect, but only three cases are reported to have proved fatal, and these deaths, it is supposed, are not to be attributed solely to the bite of the spider. Fortunately, this visitation was restricted to one part of the town lands, otherwise the consequences might have been very serious. From some villages in this district (Berdiansk) news was received that the spider had also visited them. The bite of this insect was indicated by a hard white spot. The first symptoms experienced were alternate violent heat and cold, shortness of breath bordering on suffocation, an increased pulsation of the heart, and pains in the chest and back, then weakness in the legs and dizziness in the head. After a few hours these symptoms diminished, and in two days the patient was able to resume his work. The general remedy employed was to cup the poisoned part, and liberally wash it with cold water. Some cauterised the place, but this remedy was not so efficacious, and it created besides a fresh wound."

The first time this spider was seen at Berdiansk was in 1864, but a very few persons were bitten by it. Last year, however, it increased to a most alarming extent. It was remarked that the spider was very active in killing locusts, on which it seemed principally to feed, and it was only when disturbed that it stung persons. The majority of the persons bitten did not know the cause of their illness, and it was only the same symptoms in each case that proved it to be the sting of the spider.

—We understand that Professor John Wilson, of Edinburgh, and Mr. Lawson, the late Lord Provost, will represent Great Britain at the ensuing International Agricultural Meeting at Vienna. We ought to be also represented at the forthcoming Danish agricultural meeting in Jutland; and we hope that the Foreign Office will instruct Professor Wilson to attend that meeting also. The same compliment should be paid to Denmark as to Austria; and at the present "beef and mutton" crisis, a good report on the agriculture of Jutland and its meat-producing capabilities might be of great importance to us.

THE CULTIVATION OF ROOT CROPS.

We lately published the suggestive but somewhat discursive remarks on this subject, recently read by Mr. Alderman Mechi before a Shropshire Agricultural Society. The cultivation of root crops is the agricultural business of the next two months, and we make no apology therefore for occupying many columns with a paper on the same subject by Professor Wrightson, of the Royal Agricultural College, before the recently established Cirencester Farmers' Club. After some preliminary remarks on his own position as a north countryman, and to some extent therefore possibly disqualified as a critic of Cotswold management, he proceeded:—

I propose to consider the subject in the same order as is unfolded by the seasons:—1st, the preparation of the soil; 2d, the sowing of the seed; 3d, the manures to be used; 4th, the after cultivation; 5th, the harvesting; 6th, the value of the crop produced.

Preparation of the Soil.

It is necessary always to bear in mind that the various root crops have taken the place of the bare fallow to which most land was subjected at stated periods.

The object of the bare fallow is two-fold—1st, to renovate the fertility of the soil; 2d, to thoroughly clean it. In root crop cultivation the same two important points must be kept in view, and if land be not thoroughly clean and in good heart, after a root crop, it can hardly be expected to be so at any other period of the rotation. In the south of England, and especially in this district, too much stress can hardly be laid upon the advantage of autumn cultivation in the preparation of root land. Owing to the land having been so recently occupied by a crop, the weeds are in a somewhat enfeebled state, and the Couch is found to lie nearer the surface than it does at any other period of the year. Now, therefore, thin ploughing, or broad-sharing, by Bentball's broadshare or Coleman's cultivator, can be performed with the greatest possible effect, and the Couch and other roots be separated from the soil which surrounds them by rolling with the Cambridge or Crosskill roller, and by subsequent harrowing. When thus exposed and strewn on the surface, the first plan is to rake the weeds together, cart them into heaps and burn them. All these operations can be much better performed in autumn than in the early spring, and, at a later period, when the season for root sowing is approaching, there is every reason for supposing that the less land is starved by tillage implements the better is the prospect of a crop. After the preparatory work of cleaning is concluded, the farm-yard dung should be applied before the deep winter furrow is given. I would urge the importance of this step because I consider that in seasons such as we have lately experienced, the ploughing in of farm-yard dung in the spring, shortly before the sowing season, has in many cases been of little utility to the root crop. This last season we had a striking example of this kind on the College Farm, in which a plot of Swedes which received farm-yard manure ploughed in in the spring, with the addition of superphosphate and guano, was altogether an inferior crop to a parallel piece which only received superphosphate, but which after a winter's ploughing was simply cultivated in the spring, and sown at the same time as the first-mentioned plot. When cleaned, dunged, and ploughed in the winter, the spring work is very much simplified, and upon free working land consists in cultivating by a Coleman or other cultivator, rolling, harrowing, picking off weeds—these several operations being repeated according to the requirements of the land, in a manner which depends on circumstances varying with each field. In all spring operations, however, the important consideration of keeping the moisture in the land should be kept in view. Until a comparatively recent time the plough was used much more generally in the preparation of root land than at present. The cultivator has, however, displaced it in a great measure from two large classes of soils, namely, the lightest and heaviest lands. On both these classes of soil, one winter furrow, followed by spring cultivations, is preferable to several ploughings—on the first because moisture is retained better than by ploughing, and on the second because by this operation the fine surface which has been caused by the winter's frost is kept on the top, instead of a raw cutting clay furrow turned up by the plough; and by this method much stiff soil may be made to produce a crop of Swedes which was formerly considered too strong for that purpose. It is well known that the best quality of Swedes can be grown on strong soils, and that the main difficulty in their cultivation consists in getting them to germinate successfully, and pass through the early stages in which they are liable to be attacked by the Turnip fly (Altica nemorum). The necessary conditions of a fine surface and moisture are best obtained by the method already indicated of deep autumn ploughing (done by steam, if possible), and "cultivations" in the spring.

Seed and Sowing.

The season for sowing root crops varies exceedingly in different districts.

Thus, in the North of England any time between May 1 and May 20 is considered a good season for Swede sowing. In Northumberland we always try to finish the white Turnip sowing by the 20th of June, although occasionally they are sown later. Mr. Goodrick, who has for many years occupied an important post as subagent to the Greenwich Hospital Estates, writes to me as follows on this subject:—"I should say from the 10th to the end of May is the best time, and in this district the average is from the 16th to the 20th. They are sown earlier in Scotland and Northumberland than in Yorkshire and Lincolnshire, as they would always rather run to seed so early in the South. White Turnips, time of sowing from June 1st to July 6th; from June 15th to 20th average time of sowing, and I think the best." Mr. Newton, of Sudbrooke, Lincolnshire, who farms extensively upon the Heath, informs me that the best season for Swede sowing is between May 25th and June 9th. In other Southern districts we find sowing continued throughout the month of June. The sowing of white Turnips is also continued later in the South than in the North by at least one month. The reason of this discrepancy in season lies in the fact that early sown Turnips are apt to mildew and to run to seed in the autumn in the South of England, neither of which consequences are so much feared in the North, owing to the moistness of the climate and the shorter period of growth in the autumn. Besides the important differences just mentioned the farming practice of this country is often find the future of the crop influenced by the exact period at which the seed is sown. Who has not remarked that while the Turnips sown one day are attacked and eaten off by the fly, those sown a day or two after escape this terrible ordeal? What critical stage between the germination and the rough leaf rapidly and successfully? I have heard of a Yorkshire farmer who was peculiarly successful in obtaining almost invariably good plants of Turnips, who attributed his good fortune to his sowing from 6 o'clock in the morning to 9, then resting till the middle of the day, and drilling again towards evening as long as it was light. I am convinced that this principle is correct, although I confess it would be somewhat difficult to thoroughly carry it out upon farms where a large breadth of Turnips is grown. Turnips or Swedes never germinate so regularly as when the seed bed is so moist at the time of sowing that the vital operation commences immediately the seed is deposited. For this reason advantage should be taken of showery weather to sow as large a breadth as possible, and while the season is early it is advisable to hold back rather than to sow in an arid soil.

Methods of Sowing.

There are two principal methods of committing the seed to the ground, known as the raised ridge or Northumberland system, and the flat system.

Both have their advocates, and both are suited to particular classes of soils. The advantages of the raised ridge system are that first, the farmyard manure is placed immediately under the seed, and if the work is well done the drills should be split over the dung as soon as it is spread in the drills. In

allowing this system the common plough or double mould board are alike used, and in order to cover the dung in the shortest time, the best plan is to allow the teams to raise 11 or 12 drills, into which the dung is carted and spread; then, instead of continuing to raise drills both up and down the field, the ploughmen raises only one, which is up the field, and splits a ridge over the manure as he comes down. Thus there are constantly some 15 drills receiving manure between the last raised ridge and the last split one. This plan not only insures the dung being buried in the shortest possible period after the spreading, but it also enables the ploughmen to go at a regular speed, the manure carters and spreaders must keep up to the work, and if the force of men and horses be properly balanced, the whole process goes on with a machine-like exactness which is seldom equalled in agricultural operations. Two teams thus employed will raise and split four acres per day, and six women will be sufficient to spread the dung. One man draws out manure for three drills at a time into small heaps which fall into the middle drill, the cart wheels being generally just a fit for a drill on either side of the centre one. Two men and a boy or three men will be required at the dung heap to fill, and carts and lads according to the distance between the field and the manure heap. Artificial manure is sown broadcast along the bottom of the ridges upon the dung before the ridge is split. Artificial manures, however, when used in this way, four acres per day, and six women will be sufficient to spread the dung. One man draws out manure for three drills at a time into small heaps which fall into the middle drill, the cart wheels being generally just a fit for a drill on either side of the centre one. Two men and a boy or three men will be required at the dung heap to fill, and carts and lads according to the distance between the field and the manure heap. Artificial manure is sown broadcast along the bottom of the ridges upon the dung before the ridge is split. Artificial manures, when used in this way, it is advisable to raise the ridges very lightly—to sow the manures broadcast as before, and split the ridge somewhat deeper than it was raised. In this way the manure is brought nearer to the plant than when the ridges are raised the same depth as they are split. The seeds would be sown on the ridges by Garrett's drill, but it is done much neater by the two-rowed Turnip-drill, with concave from rollers preceding the coulters, and followed by a light wood roller. When well done few objects look neater than a Turnip field prepared and sown in the way just described. The entire process of raising and splitting drills, spreading and sowing manure, carting dung, and sowing seed, has been estimated at 30s. per acre. Besides the advantage which this system possesses of presenting a consumption of moist well-rotted dung to the young plant, and thus assisting germination, it also enables the work of after cultivation to be commenced sooner than when Turnips are sown on the flat. As soon as the Turnips can be seen along the top of the ridges the horse-hoe can commence operations, while such a result would be impossible if the seeds were drilled or sown on the flat, as the disturbed earth would be apt to bury the young seedlings. Neat and admirable, however, as the raised ridge system undoubtedly is, it is not adapted to a shelly light and dry character. It is peculiarly suitable to deep loamy clay subsoils, which may be ridged up in autumn, and splitting in the manure in the autumn it can be used with success upon the stiffest kinds of land. It is evident, however, owing to the larger surface exposed to the influence of the sun and wind, that evaporation must progress faster on a field raised into ridges than on one which is flat, and it is this which has caused the less complicated method of sowing on the flat, practised in this and other light-land districts. On the Yorkshire and Lincolnshire Wolds and the Cotswold hills, all light, thin, and dry land districts, we find sowing on the flat to be the rule, while in moister and in heavier land in north country districts, and I may say in those districts where Turnip culture is carried to the greatest perfection, the raised ridge system prevails. The distance between the rows of Turnips or Swedes is an important consideration. On soils which grow the heaviest crops these rows 27 inches apart will be no means to be considered too wide. On dry lands, such as we have to do with on the Cotswold hills, it is well, however, to place the rows nearer together, as by this method the ground is better shaded by the leaves, and the roots will develop to much the same size as though more room were allowed. It is an advantage of flat sowing over ridges that the breadth need not be so great between the rows, for while it would be difficult to raise ridges narrower than from 20 to 24 inches in the ground, the hoes can be made to cut to many extent in sowing with Garrett's drill. Mr. Newton informs me on this point as follows: On the Lincolnshire Heath "Turnips of all kinds are sown on ridges above the flat. I prefer the flat drilled with five rows in a 4-feet drill, with ridges now cannot produce more than two rows of Swedes well, and I always find a heavier crop from five coulters than four. With one of Archer's horse hoes you can hoe the five rows quite as well as the four." We find 14½ inches yielding a larger crop than 8 inches between the drills on the Lincolnshire Heath, and this is the more interesting from the fact that it is certainly worth the consideration of this meeting, whether a breadth of from 18 to 20 inches between the rows would not be an improvement upon the usual breadth, which, I believe, is wider by several inches. The next question of interest is the kind of Swede or Turnip to grow, and this one which I fear cannot be answered conclusively. The fact is that so many of the varieties sold as new have so little distinctive character that their own promoters would find it impossible to identify them if they were asked to pick them out of a crop composed of a mixture of such varieties. Skirving's Improved Purple top is one suited to this locality, as it grows well out of the ground and thrives upon thin soils. Laing's Swede grows a large leaf, and thus shades the ground from drought, and keeps remarkably well, but it is a small cropper and requires deeper soil than we usually meet with on the Cotswold Hills. The great point to be attended to in the growth of a succession of food for stock throughout the winter, and the proportion in which white and yellow Turnips and Swedes are grown must depend upon this and upon the quality of the land. Swedes are the most lasting. Turnips are much more certain than Swedes. Much land that is capable of producing 20 to 25 tons of Pomeranian White Globe or Green Globe Turnips would be entirely unable to produce half that weight of Swedes. The Swedes, therefore, should be sown upon the best (strongest) portion of the root land, and the Turnips be sown on the remainder. Of White Turnips the Pomeranian White Globe or common White Globe cannot be beaten for early feed, but they must be consumed before severe frosts set in. Green Globes and Greystones are better able to resist frost, and should succeed those last-mentioned varieties.

Manure for Turnip Crop.

Among the most valuable of general manures, farmyard dung occupies a foremost place, since it contains every necessary constituent for the building up of the plant structure:—

This old-established and universally recognised farmer's friend does not require a word to be said in its favour, as its position is undoubted. Almost the same now a days may be said of superphosphates and other manures which are used with great success as a means of improving our Turnip crops. The question before us is the kind and the quantity of manure which will be most effective in producing a large crop of Turnips. First, with regard to farm yard dung: its value is universal, and it can hardly be said to produce a greater effect in one district or on one class of soil than another. The only point of interest to us is the quantity which the farm-yard manure should be applied to the land. The method adopted in many districts is to take the opportunity of carting out the fold-yard manure in frosty weather, and making manure heaps in the fields intended for roots. After once or twice turning the dung is either spread on the land and ploughed in or placed in the bottom of raised ridges, as before described, and the ridges afterwards split over the dung. The evils of this system on light thin soils have been already dwelt upon, and it appears to me to be a much better plan to cart straight from the folds in autumn and plough it in long, as the whole of the constituents, both organic and inorganic, are thus retained, and the drying of the land by spring cultivation is obviated. If all the dung cannot thus be used, I should prefer dressing the young seeds during the winter, and trusting entirely to the use of portable manures for raising a Turnip crop. The portion of root land to which the dung ought to be applied is that part from which the roots will be hauled for cattle feeding, while the portion which has to be fed off with sheep may be treated less liberally. I know of no rule for guidance in this matter, beyond the number of the Turnips and the hauling out of the dung. As to the quantity of farm-yard dung to be applied per acre, we can only say, the more the better, if only applied at the right time, and any quantity between 15 and 30 loads will pay in an increased crop.

Purchased Manures.

Of these there are several of undoubted merit.

They are divided into two principal classes—Nitrogenous manures and Mineral manures. Among the best examples of the first class we find nitrate of soda, sulphate of ammonia, blood manure, and animal refuse of all kinds. The second class is represented by superphosphates, lime, and salts of potash. Guano contains a large percentage of ammonia, and nitrogen in the form of uric acid, and may be classed with the nitrogenous manures, but it also contains mineral matters in abundance. The principal purchased manures for Turnips are the various forms of phosphate of lime, and drivers manures sold under the name of Turnip manures. In the north of England and Scotland guano is almost universally the favourite, although it is generally mixed with other substances when used as a manure for roots. Thus Mr. Goodrick, whom I have already quoted, writes, "The best Peruvian guano is preferred to any other manure; superphosphate and dissolved bones stand next" Mr. Lee, of Dilston, for many years the active Secretary of the Hexham Farmers' Club, writes to me as follows on this subject:—"For many years I have tried experiments between Peruvian guano and other manures (in Turnip cultivation) at equal price per acre. Three years out of four the guano produced the heaviest crop. Mr. Wood, of Thornbrough, a successful Northumberland farmer and a man of great experience, who has repeatedly given us Swede Turnips of 25 to 30 cart loads of farm yard manure and 3 cwt. of guano—8 bushels of bones (dissolved at home with vitriol and mixed with saw-dust and ashes) and 4 cwt. of guano produced the best crop of Turnips that we ever saw. The same remark applies equally to Scotland. On the wolds of Yorkshire and Lincolnshire, and in the south of England generally, we find the evidence in favour of the use of superphosphates. It has been often remarked that guano promotes a long continued autumn growth, while superphosphates encourage a quick development in the earlier stages of growth. It is impossible to lay down any rule as to the proportion in which these fertilisers should be used, but I certainly believe in a mixture of the two, and if the Cirencester Farmers' Club would institute an inquiry during the coming summer as to the most effective mixture of manures suitable for the Turnip crop in this district, and offer premiums for the best crop, I feel sure the result would repay them. Experiments conducted this year on the College Experimental Farm with several manures gave no some results which we hope to confirm in the coming season. It may be interesting here to state that the coprolite superphosphate manufactured from ground coprolites by Messrs. Lane, gave a superior result to that produced by Proctor's bone superphosphate, applied equal price per acre. Ground coprolites applied in large quantities, viz. 4 cwt. per acre, and on another value with the two manures just mentioned, also gave no satisfactory a result as to tempt us to try it again.

	Amount applied per acre.	Produce of Swedes per acre.
		t. c. q. lb.
Ground Coprolites	8 cwt., 24s.	10 12 2 8
Coprolite Superphosphates ..	4½ ,, 23s. 6d.	11 8 2 20
Proctor's Superphosphates ..	3½ ,, 24s. 6d.	10 19 3 12

Notwithstanding the difficulty of the season, the plant was on the whole regular.

Quantity of Manure used.

This is also an important point; and here permit me to express an opinion that too small a quantity of manure is used on these hills for growing Turnips to the best advantage and at the cheapest rate per ton.

If I am wrong in taking 3 cwt. of superphosphate of lime and 25 bushels of ashes as a fair average of the manure applied to Turnips in this district, I shall be glad to learn otherwise. The light carry working soil of the Cotswold Hills apparently is well adapted for Turnip cultivation; the rainfall averages 30 inches, while that of Berwickshire is 31.5, and of Durham 24.1. If there is anything which acts against the Turnip crop it is the readiness with which the land dries, and there is no doubt that much of it would be better for rain every day when sown with Turnips. Whatever the reasons may be, the fact seems evident that the average crop of Turnips and Swedes is light, and that 12 tons (to perhaps 15 tons) per acre may be looked upon as a good average. I have here a table showing the weights of Turnips and Swedes on farms possessed by members of the Hexham Farmers' Club, inspected November, 1855. Fifty nine instances are given, of which 24 are above 20 tons per acre, and only 8 out of the 59 are below 15 tons per acre. I might give instances in which the average yield is much higher, but they would be from districts where the rainfall is considerably greater than here, whereas Tyne-side is quite as dry a climate as that of the Cotswold hills. An inspection of the quantity of purchased and farm yard manure applied in order to obtain such crops may be interesting. Referring to the published report of the Hexham Farmers' Club, we find a 12 acre field of White Globe Turnips, grown by Mr. Atkinson, of Bywell Hall Farm, a well-known Short-horn breeder. The average produce of this field was 29 tons per acre, manured with 20 yards of farm-yard dung 4½ cwt. superphosphate, and 1½ cwt. guano. Mr. Lee, of Dilston, informs me further in a letter upon this subject as follows:—"The quantity of manure I used last year for Swedes was 17 cartloads of farm-yard manure, 1½ cwt. of guano (Peruvian), and 4 cwt. of dissolved bones. Again, for Farmers Yellow Turnip on light land:—8 bushels of half inch bones, 1 cwt. Peruvian guano, 2 cwt. Bolivian guano, and 3 cwt dissolved bones. Again, 8 bushels half inch bones, 1½ cwt Peruvian guano, and 3 cwt. dissolved bones. Mr. Wood, of Thornbrough, Northumberland, manures the Swedes on his farm with farm-yard manure and 3 cwt. of Peruvian guano. I should much like to see three plots of Swedes or Turnips grown side by side in the coming season manured respectively with 3, 6, and 8 cwt. of superphosphate per acre, and to have a fair opportunity of weighing the crops thus produced. One of the greatest improvements in the application of manures consists in using the water drill. This implement seems destined to supersede the old method of sowing the manures with ashes.

After Cultivation.

This is most important in Turnip culture, and it is a part which is often not attended to sufficiently.

The late season for sowing root crops, and the early harvest of the south of England, interfere very much with this important work. In Northumberland we always hand-hoe twice, and often three times, and horse-hoe as often. Thus the land is kept free from weeds, the soil loose around the roots, and able to absorb a much greater quantity of moisture from the air and dews than when unhoed. Thinning and singling the plants are the greatest care: 1st, to leave always the finest plants; 2d, to set them at the right distance; 3d, never to leave a double; 4th, to cut all the weeds. As to the distance apart, that depends on the variety of Turnip or Swede, the season of the year, and the quality of the land. In an early season on good land, Swedes should be set 13 inches apart, but no more. Nine to 10 inches is quite enough space to leave between White Turnips, and to effect this those large hoes which work people are so apt to bring with them should not be permitted to be used. Eight inches is the outside length of the blade for a skilful hoer. This, while it knocks out a sufficient blank, allows the hoer a greater selecting power in leaving the plants than when a space almost a foot in length is made at once by the hoe. Of all labour this should be carefully looked after by the master, for many crops of Turnips have been ruined by unskilful singling, after 5l., 6l., or 7l. per acre has been laid out upon tillages, manure, and rent of the land. I prefer the work people to be concentrated for this work, especially the women, who should be made to work in a company, each woman taking a distinct piece across the field, and when going up the field, the other omitted drills being brought back on coming down the field. Both more and better quality of work is thus done than when each hoes by herself, the only essential point being that they are never left a moment to themselves, but that constant supervision, which the steady man remains with them constantly. When the work is let to men by task this rule need not be observed, but in this case also supervision is absolutely necessary. In the second hoeing, the scuffler or horse-hoe should have already preceded the hoeing people, and the whole of the ground should be moved around each plant, all weeds cut, and any doubles removed. Work-people and farmers also are too liable to insist only on the weeds being chopped, but if the most has to be made out of both crop and land, the hoe must be circled around each plant, so as to loosen the soil to the depth of 2 inches at least, and all that the horse-hoe could not reach. The third hoeing should also be preceded by a horse-hoeing, but generally speaking the harvest calls off the force of the farm to more important work at this juncture, and the Turnips are left alone for a season. The third hoeing of Turnips should be carefully and constantly continued after harvest in the same way as above described. It is to be feared, however, that the after cultivation of the Turnip crop is often slurred over, and this careless treatment can only result in poor crops.

Storing.

In a district where sheep folded on Turnips are the principal stock, this department becomes less important than where the roots are used for bullock feeding.

Swedes to be drawn home or stored for the tegs in spring are, in this district, pulled and topped, the great bulk of adhering earth shaken off, and the rounders, with the small roots and tap root attached, is stored away with the bulbs. The advantage of thus storing with the earth adhering is said to be the sounder and better state that the roots come out of the pit in the spring. In many districts, however, the roots are cut with the leaf attached, and the practice of thus leaving the earth attached seems to me to be the carting of useless material home and the robbing of the field of some of its most valuable soil, the richest parts of the soil and fragments of manure forming a large percentage of the adhering matter. After dressing the Swedes in the spring, this valuable matter should be carted back on to the land, and here again we have extra labour. As to the Swedes keeping when dressed previous to carting, I have had full experience on the point and can vouch for the roots both keeping sound and preserving their quality to the end of May. A covering of 12 or 14 inches of straw is quite sufficient protection for Swedes.

Value of Roots.

The value of a root crop is a rather difficult matter to arrive at, and a Club of this kind ought to be the means of throwing considerable light on the subject.

There are several methods of ascertaining the value of roots, two of which I will mention—first, when sold off the premises, and second, when consumed at home. In the neighbourhood of Durham and other great towns large quantities of roots are carted into the town, and 1l. to 1l. 2s. per ton for Mangels, and 15s. to 1l. per ton for Swedes, have been realised in this way. Then there is a plan for letting Turnips for consumption on the land by sheep, and this is one of the most perfect means of ascertaining the value of the roots. I have known as much as 10s. or 1s. per sheep per week given in the spring of the year, but 4½d. to 5d. per head for hoggets, and 6d. per head for shear sheep, was a common price some years ago. A letter received more recently from Mr. Lee, of Dilston, informed me that Turnips were this season taken at 6d. per head per sheep; 4s. 11½d. per ton has been realised by feeding sheep in this way. This, then, may be looked upon as the market value of eating Turnips at home or on the land, and the amount realised per acre depends upon the weight of the crop. Thus, if hoggs on acre depends upon the weight of the crop. Thus, if hoggs on Turnips consume 15 lb. per day of roots, then it can be shown that 20 tons will last 400 sheep one week, and at 6d. per week the consuming value would be found to equal 10l. per acre, or 10l. can be obtained for the roots without selling them off the premises. This, however, could not be done without additional food, as 15 lb. of roots would not alone suffice for a sheep, and for the extra food supplied deductions would have to be made from the above estimate. It has been stated that Mr. McCombie realised 12l. per acre from his Turnip crop. Numerous calculations have been made which go to prove that 5s. per ton is about the consuming value of Turnips, 6s. that of Swedes, and 6s. 6d. that of Mangels. In experiments which have been carried out in this matter the most advantageous results that have been obtained have invariably been in cases where roots have been given with a mixture of Barley-meal, Peas, or oil cake, and if the most is to be made of a root crop, this is with

out about the best plan to adopt. As I before stated, it is a difficult matter to arrive at the exact value of a crop of roots, and I hope the remarks I have made on the subject will draw out the discussion upon it, so that if we are unable to get at the most reliable price, we may yet arrive at an approximate estimate.

THE CATTLE PLAGUE.

1. The following returns were issued on April 20. These returns do not profess to give the total number of cases which have occurred in Great Britain, but only those which have been ascertained from information received at the office from inspectors. Columns 1 only record the cases reported as having commenced during the weeks indicated by the headings; "back" cases being added to columns 2.

	1 Number Attacked.		2 Result of Reported Cases from Commencement of Disease.				
Inspectors.	Week ending April 7.	Week ending April 14.	Attacked.	Killed.	Died.	Recovered.	Unascertained.
Metrop. ..	63	58	7946	3478	3523	346	599
S. Eastern ..	6	4	5696	1618	2786	440	210
S. Midland ..	396	344	18,204	6284	9895	1543	307
Eastern ..	126	127	10,611	4672	4771	767	401
S. Western ..	18	2	1666	589	793	207	69
W. Midland ..	444	132	12,257	3866	6239	1365	787
N. Midland ..	511	510	14,591	6779	6054	1087	671
N. Western ..	930	921	36,957	11,909	34,014	6151	4883
Yorkshire ..	358	324	33,041	6195	18,267	6314	2765
Northern Co.	280	34	7490	3993	2491	941	1299
Monmouth & Wales ..	126	101	7365	508	5974	1084	309
Scotland ..	154	60	46,214	5935	27,087	10,679	2513
	3,361	2,582	224,906	55,971	121,896	30,435	13,694

NOTE.—43 Inspectors who reported cases last week have not reported in time for this return—viz., for the county of Cumberland, 1; Cornwall, 1; Cumberland, 3; Lancaster, 1; Lincoln, 5; Middlesex (extra-metropolitan), 2; Northampton, 1; Oxford, 1; Stafford, 2; Worcester, 2; Yorkshire, 5; the Metropolis, 1; and Scotland, 18.

These inspectors returned 780 cases last week.

2. UNDERGROUND TREATMENT.—You some time since inserted a letter from Mr. Batho, of English Frankton, near Ellesmere, the inventor of a plan for planting cattle in detached underground stalls, in which he described the manner of forming the cells, and the success which had hitherto attended the experiment.

Although the system has been adopted in several parts of the district with most satisfactory results, it does not appear to be generally known to the public, and as some of the Cheshire farmers whose stocks have been swept away express a regret that they were not made aware of it in time, I am induced to ask you to give it publicity in the *Times*.

The original plan has been somewhat improved. Where the subsoil is porous, or a fall of 6 feet can be obtained for a drain, there is no difficulty whatever. A hole is made 15 feet in length, 10 feet wide, gradually decreasing towards the bottom to prevent the falling in of the soil, and 5 feet in depth. A light rail or two stretched across the top support branches or brushwood placed in a conical shape and surmounted by thatch. The entrance is by an inclined pathway at the lower end or corner of one of the sides; a hurdle laced with straw forms the door, for which a south aspect should be chosen; a manger or trough, with upright poles for tying two cows, completes the stall. The average expense for labour is 4*s.* 6*d.*, or 2*s.* 3*d.* per head for digging and thatching.

In the village of Lineal, near Ellesmere, Mr. Jarvis has had his cattle for nearly three months underground; there has been no difficulty as to the calving, and his farm is the only one in or near the village which has escaped the disease. At Mr. Batho's own stalls a large stock underground are doing very well, although under most disadvantageous circumstances, as they have been surrounded by the dying and the dead cattle of his adjoining neighbour, an extensive stock-owner, and yet only one animal has been attacked, and that in a mild form.

At Bartlemy, near Crewe, on a large farm, the result has been most gratifying. In the parish of Newtown the owner of a valuable stock has so skilfully arranged his plans that he finds no difficulty whatever in the cows being milked, or supplied with food and water, although the stalls are far apart and at a distance from the house. In fact, from every quarter where the experiment is being tried, most satisfactory reports are received.

From their construction and perfect ventilation the stalls preserve an even temperature, whether in cold or warm weather, and the animals are, therefore, free from the evil effects of sudden atmospheric changes.

As the summer approaches, no insurmountable difficulty need be apprehended, as, although it will involve some slight expense to have the fodder cut and brought to the stock, an acre of Grass will go further than when grazed, and much valuable manure will be secured.

It is true that in looking forward to breeding for next year some little doubt may be expressed, but I believe that the accustomed attendants will in most instances be able to form a correct idea as to the usual indications. There is sufficient length in the stalls for the newly-born calves to be comfortably and securely confined in the lower corner.

To detach is a *sine qua non*, and the first step to be insisted upon, for wherever large stocks are crowded together the disease created fearful havoc. In a Cheshire parish near Malpas every farm has been attacked, the losses in some instances being 75 per cent., while the cottagers with only one or two cows have escaped. Mr. Batho desires that the public should have an opportunity of testing the value of an experiment in which he and all who have tried it have the utmost confidence, and he will give every facility for the inspection of the stalls, or answer any written inquiry. The plan involves no risk whatever, and but a trifling expense, while it appears to be the only preventive suggested which has not failed. *A North Shropshire Vicar.*—(*Times.*)

3. EFFECTS IN DISTURBING THE ROUTINE OF FARM MANAGEMENT.—The following memorandum on this subject has been issued by Mr. Lawes:—

The agricultural interest is now suffering, not only from the actual loss of stock by the ravages of the cattle plague, but also from the great disturbance in the economy of the farm, which is the unavoidable result of the means adopted to limit its extension, and, if possible, to suppress it. Some farmers have a super-abundance of stock and a deficiency of home-grown food, whilst others have plenty of food, but are afraid, or unable, to purchase stock to consume it. It is obvious that under such circumstances many must find it no easy matter to conduct their farming operations with profit.

In some observations which I published this time last year, when roots were very scarce, I gave an account of some feeding results, which showed that stock could be kept in good store condition on straw, with cake or corn, and could even be fattened with good hay in addition, though but slowly, and at a comparatively high cost.

It is evident that on those farms where there is this season too much stock in proportion to the roots or pasturage at command, dry food must, to a great extent, be relied upon. Where straw, with little or no hay, must be used with cake or corn, the food will be more suitable for cows and oxen than for sheep, but where the latter description of animals have to be kept, more or less hay is desirable even to keep them in good store condition, whilst both descriptions of animal may, as already said, be slowly fattened with plenty of good hay as well as cake or corn.

On farms where there is not sufficient stock to convert the roots and straw into dung, and they cannot be more profitably disposed of, they will have to be converted directly into manure without the intervention of animals. In such cases the roots will generally be ploughed in, and the straw must either be spread upon the land at once, and there left until it can be ploughed in in the spring, or it may be rotted down by making it into clamps with earth. The want of quality of the straw-made manure, arising from the absence of the excrements derived from the consumption of cattle food, may, with great advantage, be temporarily compensated by the use of Peruvian Guano. For this purpose it may be reckoned that 1 ton of Peruvian Guano will be approximately equal to the manure obtained from the consumption of—

3 to 3¼ tons Linseed, Cotton, or Rape Cake.	8 tons (50 quarters) Oats.
4 to 4½ tons (16 to 17 quarters) Beans.	10 tons (12 quarters) Wheat.
4 to 4½ tons (18½ to 21 quarters) Peas.	10 tons (12 quarters) Barley.
	6 to 7 tons Clover hay.
	10 to 12 tons Meadow hay.

On farms where the cattle plague has broken out, it is of the utmost importance to bear in mind that the excrements of the diseased animals are a most fruitful source of infection. All the manures that can possibly have become contaminated with the excrements of the diseased animals should be at once carted into a field and made into a clamp, 2 or 3 cwt. of freshly burnt and freshly slaked lime being well mixed with each load or cart-load of dung. The whole should then be covered with earth to the thickness of at least 1 foot, both at the top and sides. This covering will serve to prevent the loss of the ammonia given off from the dung by the action of the lime upon it.

It is however not sufficient to remove and disinfect the dung produced by the diseased animals. The yards, stalls or sheds, carts and implements, must all be thoroughly cleansed and disinfected. The yards should be scraped clean, spread over with quick lime, and then, after some days, this should be removed and a solution of chloride of lime sprinkled over the ground. The stalls or sheds should be treated in the same way, with the additional precaution that any paving should be removed, well cleansed with a solution of soda, rinsed with a solution of chloride of lime, and, after the use of lime and chloride of lime to the ground, re-laid. All wood-work and iron-work should also be well washed with soda, and then rinsed with a solution of chloride of lime; and the walls and ceilings should be first well white-washed with the chloride of lime solution, and then twice lime-washed. The carts and implements should also be scoured with soda, and then washed with chloride of lime. For these purposes the soda solution may be made by dissolving from 2 to 3 lb. of common soda in a pail of water, and the chloride of lime solution by mixing 1 lb. of chloride of lime with every gallon of water required. There are many other deodorisers and disinfectants, but chloride of lime is, I think, the most effective, and it is at the same time, perhaps, the most easily obtained, and the most convenient in use.

The general practice seems to be to bury the entire bodies of animals that have died or been slaughtered under the influence of the disease, and this is certainly the most effective means of preventing mischief, provided the process be properly conducted; that is, if the animal be buried sufficiently deeply, and with a sufficient coating of quicklime over it. But such a proceeding is attended with great loss, and is, I am inclined to think, not necessary if proper precautions be taken. If the hide be well salted on the inside, and well washed with a solution of chloride of lime on the outside, it might then be sent to the tanner; the inside and all other easily separable fat might be well washed with chloride of lime, and then sent to the tallow-melter; the remainder of the animal should, however, be buried, with quicklime, some feet below the surface of the soil. *J. B. Lawes, Rothamsted.*

4. A SUBSCRIPTION FOR CATTLE.—So many appeals are made to public benevolence, and so few are made in vain, that we do not willingly call attention to new claims on a charity which is already overburdened. But the appeal which has been made in our columns by Mr. Barbour, the High Sheriff of Cheshire, on behalf of the many sufferers by the Cattle Plague in his county, is one of those which may well be laid before the country, and to which it may properly respond. Four years ago the American war deprived Lancashire of the means of industry. Widespread distress followed, but the apprehensions were worse than the calamity, for not only did Parliament, by well-timed legislation, enable the cotton districts to give relief to the displaced artisan, but the bounty of the nation was freely bestowed. Seldom has there been a more noble spectacle of patience and self-denial on the part of the sufferers, and of ready sympathy on the part of those who are able to help them. The distress of Lancashire was relieved, and it was proved to the world that not even the greatest and most sudden misfortune would be allowed to reduce an English population to want. On the present occasion we have to deal with a less calamity, but one which has fallen on a limited district with extraordinary severity. Cattle are the staple wealth of Cheshire. It is the great dairy county of England, and its property mainly depends on the profits of cheese-making. It has now been heavily afflicted. Mr. Barbour states that it has in five months lost by the plague 65,000 head of cattle, of the value of 900,000*l.*, independently of the heavy loss sustained by the farmers who sold thousands of cattle under dread of the disease. The debt on the county rate for compensation for the animals slaughtered is rapidly increasing, and, with the expenses of the Act, will probably reach the sum of 350,000*l.* in the current year. A public subscription has been opened for the purpose of giving relief to the poorer class of those who have suffered most. The number of agricultural labourers and dairymaids who have been thrown on public charity is very large, and the county is heavily burdened. It seems not unreasonable that, in the case of Lancashire during the cotton famine, those districts which have escaped loss from the cattle disease should do something for a county which has met with such a misfortune. It will be a long time before Cheshire recovers its former prosperity. In the meantime large numbers of people are deprived of employment, and must depend for support on embarrassed landlords and half ruined farmers. Some timely aid from their more fortunate fellow-countrymen would relieve them in their deep distress. *The Times of April 25.*

THIN-SOWING.

A PECK AN ACRE OF WHEAT.

LET us keep our minds unprejudiced in this matter, and open to conviction, by small and continued experiments, which will give us safe ground to act upon. I wish that it were possible that all agriculturists could see my experimental half acre of Wheat, dibbled with one peck per acre, in all the stages of its growth. I see it daily from my window, and it suggests no end of reflections. There are the four stetches, looking in the distance like a bare fallow; while the rest of the field, sown with four pecks per acre (my usual quantity), is as green as a Grass-field. Judging from its appearance, I should at once condemn it as a failure, and yet we know from past experience, and feel confident, that these bare lands will, at harvest, produce a crop more abundant than the green mass that surrounds it.

It would be most interesting to record, by shorthand notes, all the feelings engendered by an inspection of those bare stetches by practical agriculturists during the various stages of Wheat's growth—from positive disbelief and doubt, passing, in gradation, to the admission of surprise and conviction at the result, so successful but so unanticipated. But so it is, and we felt it ourselves, more than once. There are the little plants from single kernels, at intervals of 6 inches by 4½, and on looking closely to them we see peeping out the tiny but numerous shoots that are to radiate horizontally, and cover the ground with strong and reedy stems, so that the field will look as though it had been rolled with an immense roller, and every stem almost glued to the soil. In due time those horizontal shoots will take an upward movement, having at the time that admirable and useful curve of resistance, which enables the plant to hold its erect position, regardless of winds and storms. How different at harvest from the laid and matted crops which, owing to crowding, are compelled to go up at once vertically to crowding, are compelled to go up at once vertically to the curve of resistance. How small the kernels and dull and soft the straw of the thick-sown compared with the bright and glossy reeds of the thin-sown, whose plump, well-developed kernels give unmistakable evidence of a more natural and proper proceeding.

When harvested and "traved," or shocked, the contrast in the straw is most striking and convincing. By this thin-sowing you get more straw (tested by weight) as well as more corn than by thicker-sowing; besides the absence of mildew. Said a Wiltshire man to me, just before harvest, as he was closely examining each plant, or bundle of growing stems—"Well, Mr. Mechi, you might have written all your life about this, but I should never have believed it had not seen it;" and it certainly is very wonderful that the stems from each kernel would range from 10 to 30, but so it is, and this does not depend upon the quantity of the seed sown, but upon the quantity of nutritious matter in the soil available for the growth and full development of the plant. Twenty times as much seed would not produce a crop where there was not available food.

I will now describe the whole of the facts quite irrespective of mere opinions. On one Clover lea yearly, when I have drilled my usual quantity—4 pecks of Wheat, I dibble in, on four lands or half an acre, half a peck of Wheat, which is one kernel in each dibble hole, 6½ inches by 4 inches apart. It is dibbled at the same time as the rest of the field, sometimes in October and sometimes in November, so as to be a fair comparative trial. The land is strong clay land. I have not yet tried so small a quantity on the light land, although I shall do so next year. I fear

however, it might not answer so well on light land, on account of birds and other reasons. The yield from this peck an acre was in 1864, 68 bushels per acre, and 2¼ tons of fine straw. This last year, 1865, the yield was 58 bushels per acre (the straw not weighed). In both years the yield exceeded the remainder of the field by 2 bushels per acre, and the straw in 1864 was also more abundant. This year (D.V.) I shall duly report the results, which I have no doubt will be the same; and yet with these facts so patent I lack the courage to reduce my quantity from a bushel generally. By these repeated trials I shall, however, gain confidence, and probably drill an acre or two in each field with 2 pecks. Last year I thought it impossible that the thin-sown could equal the bushel, for it went in badly, and altogether looked like a failure.

The peck of thin-sown Red Wheat only equalled the thicker sown red in 1865, but the white beat the thick-sown white by 2 bushels. In 1864 both red and white thin-sown carried the day over the thick-sown. All my heavy-land Wheat in 1865 averaged something over 7 quarters per acre.

I don't believe that farmers know how much they often lose by thick-sowing. They would do so if they tested, as I have done for years, comparative qualities on a small scale. Every man should thus judge for himself according to his soil, climate, and other circumstances of condition, &c.

The frothy straw and light kernels of a thick-sown and early-laid grain crop are a losing affair.

If ever we hear of an extraordinary yield, it is usually from a crop so thin in the spring that its owner thought of ploughing it up; but after well harrowing, &c., it branched amazingly, and became the best crop on the farm.

It is clear that there is some gross error in sowing when our average increase is only nine kernels for one. Mine is at least 40 to 58 for one. *J. J. Mechi, Tiptree, April* 4, 1866.

P.S.—The thin-sown ripens about 3 to 5 days later than the thick-sown.

THE CATTLE PLAGUE IN CHESHIRE.

[At the late monthly meeting of the Over (Cheshire) Society, Mr. Rigby (Secretary to the Society) read a paper on "The Cattle Plague, and its influence on Cheshire Farming," from which we make the following extracts.]

The question we are all now most anxiously considering is that which I have placed before you for discussion—"What is the best course of farming to pursue now? Whereon are our rents and sustain our families?" Whatever its origin, we know that the plague has come without respect to persons, and with similar fatality in all places—in the best managed herds and in the worst, and no perceptible difference of success has been noticed in the use of various medicines, or where none at all have been administered. Not more than 5704 have recovered in Cheshire up to [April 14, out of 52,456 attacked with the disease, which is not quite one for every ten], while a very large number have been killed and sold as beef, in fear of the attack of the disease.

When it first came amongst us we hoped its progress would soon have been checked by veterinary skill; but our leading veterinarians promptly declared their inability to suppress it, and declared that they knew of nothing better than to use the pole-axe at once, and adopt the stamping-out process wherever the disease made its first appearance. Against this our feelings and interests recoil led, however, and methods of prevention and cure in abundance have been highly recommended and largely tried, but to the present time each and all have proved almost futile. We have been hoping lately that an effectual check would be given to the disease by vaccination, but the evidence is very conflicting at present as to its virtue. There is no doubt that cattle have been attacked and have died of the disease after having been successfully vaccinated; but there is some hope from other facts, that if they had been vaccinated earlier, or more perfectly, it might have been a shield to ward off the attack, or at least have dispossessed the disease of some portion of its fatal power. Its natural producing cause is still as great a mystery to us as it has ever been, and whole shippons have been cleared by it in many places. It would be only prudent to adopt the utmost precaution, where the disease has been, against its return, by thoroughly cleansing and disinfecting at once all places wherein diseased stock has been kept. And as to the future it may even be necessary, and it would be well for a time at least, to demand a letter of health, or a warranty of freedom from disease, with all purchased cattle; and if vaccination should be successful in assuring us of its power to avert or moderate the attack of the disease, we may add this to other precautions, and be more assured thereby. And as the season of spring calving is now drawing near, and it is most desirable to rear as many calves as possible, it would be well, a friend suggested to me yesterday, to vaccinate all "rearing" as soon as possible, as there is considerable hope that if the operation is properly performed it may be more effectual than we could reasonably expect it to be in our late trials. To many farmers, however, the means of purchasing fresh cattle will be most difficult of attainment. One-third of them at least have lost their all by this calamity, and another third nearly so, whether they were insured or not, for the various mutual cattle insurance societies which have been originated can do little more than return the premiums which have been paid in. Had the mortality been only about 10 or 20 per cent., these societies would have done good service; but when it reaches 70 or 80 per cent. of the stock insured, as it may do before May-day next, they can do little more than equalise the losses of each; but I trust that those who may be spared this calamity will honourably pay the calls made upon them, as their loss can in no case be equal to that of their brethren who are afflicted by it.

The Conduct of the Landowners and the Government.

Naturally, perhaps, as tenants, we are looking to our landlords to share with us the losses we are sustaining, either in the shape of an allowance of a fixed sum for every animal we lose, or an abatement of rent, for a time at least, and in giving us some further grace or credit in its payment. The former is most considerate and generous on their part; and it is pleasing to know that many landowners have already comforted their tenants by liberal promises of this kind, and I doubt not their generosity will be well reciprocated in the future; but in some instances it may be out of the power of the landlord to do so, however much he may be disposed, and we must not be too expecting, as the calamity will fall almost as heavily upon the landlord as on the tenant, and our position will resolve itself into a mere business matter. Our present rents have been arranged under circumstances which are now totally changed. We expected, and have hitherto been able, to feed cattle, or to keep them for dairy purposes, and have been farming our lands with these objects principally in view. Our soil and climate are peculiarly adapted to cheese-making, and long practice has endorsed the idea that this is the most profitable practice we can pursue. We may turn to some other course of farming, and must do so for the present, but in no other course can we hope for such profitable results. Our strong soils and heavy clays will not bear to be heavily and wholly stocked with sheep, and we grow as good or as much corn per acre as can be done in other counties on more friable soils and in a drier atmosphere. But we must be prepared to make some sacrifices as tenants, and endure our adversity with fortitude, and I trust our landlords will be as considerate as the circumstances of the case require. We have no wish to dictate to them what they should do, but I have been frequently told they desire to know the opinions of farmers on the point. And with the view of bringing these out in the discussion, I will remark that I think they would be much helped in the postponement of the next year's rent for six months longer, for the whole or half of the rent at least, and by making such reduction in its amount for the future as the justice of the case demands. Most farmers will have the value of their Lady Day rents by them in cheese or in cash; but if they have not, as in the case of this county, the majority of them will be stripped of means to purchase other stock, supposing it is safe to do so, or to purchase seeds or manures for an increase of tillage; but with rents in hand they would put forth their best efforts to retrieve their losses, and, I am sure, would gladly hold out hope to repay the obligation. Obtaining some compensation from Government for cattle that have died appears to be hopeless, and, indeed, I have never seen any good reason assigned for the expectation. We are only one class of traders or manufacturers among many in the community, and cannot expect, in strict justice, to be more favourably dealt with in our trade than others. It would not allow other classes of traders or manufacturers to be assisted from the public purse in their times of distress. But from manufacturers or tradesmen, and from persons of independent means, those who are nearly ruined by the calamity may expect to receive some assistance, not from motives of charity, but as a duty. I have a strong feeling against farmers being treated as paupers; and although it may appear like taking a high stand to ask for such help in this strain, yet I think it may be justified on the ground of mutual reciprocity. If the agricultural industry has not pursued with energy and enterprise, the former of these classes must suffer in business, and the latter in comfort, more perhaps than they would have to do by the depression of any other trade. Under no circumstances can we expect there will be the same outlay in agricultural improvements as hitherto, or the same expenditure in social life. In all things the most rigid economy will have to be practised under our altered circumstances, but the larger the means of farmers the better for all classes of tradesmen; and as cheese-factors, millers, implement makers, artificial manure manufacturers, coopers, and tradesmen of all classes have benefited by the farmer in the past, and are hoping to benefit by him in the future, I think they will see it to be their duty and their interest to help forward, as we really needy, by subscribing to a general fund for this purpose. Such a fund, in other cases, it has not been occasioned by speculation, by overtrading, by neglect, or by extravagance. We have been intently pursuing the best principles of breeding and feeding as far as we have known them for years; and when the alarm was sounded of our coming enemy we were unprepared, unarmed, and did our best to ward off his attack, and to cope with him in the struggle, but all to little purpose. The hand of God (we say it reverently) has been against us, and we ask for the sympathy and liberal help of the friends we have mentioned, on these accounts. The mode of distributing any benevolently such contributions would have to be carefully digested and arranged, but that which was pursued in raising and distributing the Patriotic Fund is not an unsuitable pattern to follow. As Unions are about to be soon generally formed into Cattle Assurance Societies, let the guardians be appointed collectors in their several townships, and when they have thoroughly canvassed their districts, let them send the amount of their collection to the treasurers of a central committee, consisting say of the magistrates, the chairman, two members, and the secretary of every union in the county, and let these gentlemen distribute a portion of the funds which may be placed at their disposal among the sufferers according to their discretion.

Altered Practice.

I proceed to notice the influence which the plague will have upon our farming practice for the present and the future. Some considerable change in our course is clearly certain. Another kind of grazing stock must be sought for our pastures, and our horses and ploughs must be yoked more closely to their work. But, in making these changes, we shall require to exercise a wise discretion. Stiff clay lands, as a rule, must not be stocked thickly and wholly with sheep alone. It will bear a fair quantity of such stock when drained, if wisely selected and put on at the right season. For the present I would not purchase dairy cattle from farms which have been cleared of cattle by the plague. It is not quite certain yet that they will not take the disease. They are the same class of ruminating animal as the cow, and have a similar organic construction, and we can scarcely conceive of their breathing the same air, and pasturing in the country, and in which the cattle have lived and died recently, without being in danger of contracting the same fatal contagion. It is encouraging to know that the several experiments which have been made to test this point have been satisfactory in the main, but they have only been experiments. Had 50 sheep been out of five been placed in the sanatorium at Edinburgh, the result might have been different, and it would be wise to let some months elapse, which will be no great loss at this season, before purchasing sheep, to graze on lands containing the recently-made graves of murrain-stricken cattle. And when purchasing, it would be best, I think, to buy young healthy wethers or hoggets, such as would make good mutton in the course of summer, rather than breeding ewes, or even ewes and lambs. There may come some cold, wet, bleak, and stormy weather between this time and the summer, and on such farms young lambs would be much more likely to starve and die, or get so stocken in their growth as not to recover the effects for some time. My favourite sheep, as you know, is the Shropshire Down, but I fear they will not be got in sufficient number at a remunerative price, for no breed bears running thickly better. The next best, I think, is the Cheviot and Leicester cross, and as larger numbers of these, and chiefly yearlings, come south every spring, they may be got more satisfactorily; and I would suggest, as the best course of purchasing, that farmers resident in certain districts should co-operate together, and send two of their number to the north to purchase what they all want, and share the expenses and advantages equally. On no account would I stock thickly with poor Irish or blackfaced horned sheep. The lower price at which they may be got may be a temptation; but, as a rule, they are bad feeders, and not much weight when fed, and will not do as well, as sole occupants of our pastures, as they may have done in small numbers. The Irish Leicester is a good sheep, as are the larger Welsh sorts; the Clun and the Woodlands also have some good points for our purpose. On good soil farms, which have been drained and boned, the Lincoln and Leicester, the Cotswold, or the Ross sheep would do well, and on the clovered lands of such farms nothing more profitable can be put than ewes and lambs. Much, however, will depend upon their management. Should the latter take to feeding, a change to the old pasture must be at once given, and varied occasionally or regularly as good judgment dictates. Dipping the lambs at the time of shearing their dams, to prevent the attacks of fly, and the ewes and the old sheep a month afterwards, must on no account be neglected by us. Foot-rot must not be allowed to get ahead, or it will be difficult to eradicate; nor should any infectious disease have the least chance of obtaining a footing in the flock. Sheep management will be a new pursuit in Cheshire farmers, but I hope a not unprofitable one; and having had some considerable experience, I may just say that with care and good judgment, it is generally successful. But I am trespassing both upon your time and the subject itself, on which I hope to obtain a paper from one of the most successful breeders in Shropshire, at any one of our coming monthly meetings.

Increase of Tillage Farming.

I approach the question of corn growing, our chief resource, with diffidence, as I can see it will require great judgment and discrimination in pressing the plough further into work. If it be needful for sale to replace the stocks we have lost, by cattle purchased from Ireland, from Holland, from Spain, or from any other country where the rinderpest has not prevailed, then I would not that we should plough one acre more this spring than we should have ploughed had our cattle been saved; for although vaccination or inoculation, or any other preventive, we could confer an immunity from plague upon cattle so purchased, it would be better to keep our land with its Grass side uppermost. But this is scarcely to be expected, and we must do the best we can with the plough, not from choice, but through necessity. As no case should undrained stiff clay lands be ploughed; the first crop may be tolerably satisfactory, but the expense of tillage afterwards, and the uncertainties of the seasons, will add so much to the cost of production that there will be little left as profit. As a rule I should advocate the allotment of none but good land for arable cultivation, but no more of it than could be well managed; a little well done will be more profitable than double the extent only half farmed. In all cases the consent of the landlord should be obtained before breaking up any particular field, and if the selection be judicious, it is probable the request will be gratified, and where it is not, it will be as likely (if the landlord or his agent are practical men) that it will be for the tenant's advantage to have some other field substituted, or his own too extensive notions corrected.

There are two sides to every question. The tenant may be incompetent to manage much tillage, or may be too desirous to obtain present profit without regard to the future; and there is no injustice in the landlord seeking to protect his own interests. But if he insists upon the preservation of old rest pastures, and determines to confine the plough to one continuous round in the same fields as after ones, he must be contented with less rent; for it is obvious that the tenant cannot get so good crops on old tilled land, and without the aid of his manure heap which he has hitherto had, as he may raise on fresh sod thoroughly beaten up and well worked into the soil. We may be considerably in opinion, but I think it will be for the interest of both landlord and tenant, with rare exceptions, that the best and most conveniently situated fields on the farm be subjected to the plough. If we look into this question it may not be so injudicious as it first seems. The best fields on most farms (and I am speaking of the average class of land in Cheshire, not of the very light or sandy portion) are those which were boned many years ago, when never less than from one to two tons per acre were applied, most of which was in lumps of the size of your thumb. These bones, it will be found on ploughing, have sunk 9 to 10 inches below the soil, and are lying there in a half-decomposed state; but by ploughing you replace them near the surface, where the action of the air and repeated tillage reduces them to powder, and lays them under a renewed contribution as fertilisers. There are hundreds of fields also which were formerly known by a common phrase, and which, by growing in a weak and spiral form, and by matting together as they grow longer, seem to appeal to the eye of the practical man and ask to be ploughed; and it is almost certain these fields can be returned to permanent pasture again by one ploughing and a good harrow state than when first broken up. Then, again, the expenses of ploughing, sowing, reaping, and harvesting good land are all less than they are in poor unsuitable soil, and less still in fields that are conveniently near the homestead, which will be better for the tenant and no worse for the landlord.

There is another adjunct to our farming in which the cattle-plague will make serious alterations—I allude to pig-feeding. Figs are almost an integral part of dairy operations as consumers of buttermilk and whey, and in most farmyards there are always more breeding sows than are needed for our years, and what it will be best to do with the litters when they come is a question which must give some concern to their owners. Will it be best to sell them as suckers, or retain them to run in the straw yards and feed for the butcher? The latter course I think is the best, and there will be abundance of straw to be made into manure, and manure will be more wanted for our new course of farming than it was in the old, while more difficult to obtain. The necessarily high price of other animal food, such as mutton and beef, must also enhance the value of fat pigs; and as our price for potatoes will tell you there is plenty of profit to be made in feeding pigs of a good breed, and our millers be ready to supply you with feeding stuffs, it would be well to pay even closer attention to this branch than formerly, and to strive by regular and judicious feeding to redeem some portion of the loss attendant upon the plague. Another question which suggests itself is, whether it is possible to grow any other corn crop to advantage than we have been growing? Oats are invariably the first crop put upon leys. They are generally a remunerating crop, and there is a proverb which tells us to "let well alone." But we fear there may be 20,000 or 30,000 consumers of Oats less in our county next winter and spring, and there may be as many more acres of the crop grown, consequently their price must recede and their net profit decline unless some other counteractive cause arise. Perhaps Beans may be substituted with advantage to a partial extent. The Egyptians, who used to send us large quantities, have been cultivating Cotton largely during the American war, and their Government have had to prohibit exportation of this cereal, so that its price stands relatively higher than other feeding stuff. Then Beans are a capital forerunner of Wheat in a course of cropping; their

hard-pointed tap roots go straight down into the stiffest soil, causing it to pulverise quickly under the harrow when ploughed, and rendering it easier work for the Wheat roots to grasp and feed upon. They will wait for the sickle until you have harvested your white crops, and as a rule will yield as many measures of corn per acre as Oats, though not quite so much value of straw. It would not be unwise, therefore, to sow a few acres on all strong-soil farms, either on leys or in ground which would have been sown with Turnips; and here again we shall feel the effects of the plague in depriving us of our cattle, for they being gone we shall require no green crops for their consumption, and consequently must either have bare fallows occasionally, or cultivate Beans in drills in the same way. The last time we met in this room we had an animated discussion on Flax growing; and as its growth is largely increasing in Ireland, and meeting with considerable success, and our climate being very similar to that of the sister-isle, we may improve upon the hint thus offered us for our own advantage. But as I hope our friends Mr. Rothwell and Mr. Falk will discourse to us on these subjects in the course of the spring, and I begin to fear seriously for your patience, I will conclude by suggesting, in addition, that those of us who possess suitable soil may also redeem a portion of the loss we are suffering by the growth of a better class of edible vegetables, such as early Potatoes, green Peas, Cauliflowers, celery, and perhaps some kinds of garden fruits. It would require some time to go even superficially into their cultivation, but we are near to a good market by rail, which would take all we could grow, and three last-named vegetables would attain in fresh-broken land to even a finer size than in old tilled gardens. Try a row of Peas as an experiment, of the Prizetaker or Champion of England, or other prolific kind, in the field among your Potato-drills, and running north and south if you can, and you will be surprised at the quantity they will bear. So also of Cauliflowers, cultivate and manure the land as for ox Cabbages, plant thinly, say 7,000 plants per acre, for the larger you can grow them the better they will sell, and they will go to a bad market if they don't make 1*l.* per dozen, and yield 50*l.* as a gross return. Carrots and garden Turnips, I incline to think, may also be profitably grown by many farmers if their cultivation be studied and pursued with perseverance.

PROFESSOR GAMGEE.

ALTHOUGH the Professor is no doubt well able to defend himself from the onslaught made on him by Mr. Constable in your Paper of the 7th inst., yet, as he is treated somewhat unfairly in that article, perhaps you will allow an unprejudiced on-looker to make a few remarks. In the first place I know nothing of Mr. Gamgee, except from his speeches and writings; yet I consider he deserves great praise from all agriculturists for his constant and firm advocacy of plans which, if carried out by Government, would have saved farmers a loss of millions of money, and an anxiety and trouble which hardly any money can compensate. He deserves a testimonial as well as any man ever did. And his courage and perseverance in withstanding the attempt to "stamp" him out by some of the influential metropolitan papers are such that not one man in fifty would have exerted. I think it therefore only my duty to object to that assumption of superiority on the part of Mr. Constable over a man who has probably studied the character of the disease as much as any one in England. Probably there are not half a dozen who understand so much about it. As to Mr. Constable's column of extracts, I might ask him in return whether he has read the daily papers, the Journal of the Royal Agricultural Society, or even Youatt's book on Cattle; for if he had, he would never suppose that he was telling either Mr. Gamgee or any intelligent reader anything new, and although what he writes has no doubt a basis of truth, yet it has no practical bearing on the position of the cattle disease in England. The whole letter is answered by the paragraph just above it, which shows how France, by employing at once what Mr. Constable calls the "senseless, destructive, and barbarous massacre of cattle," is now free from disease, at a cost of a loss of 43 animals—that is, probably, an expense to the country of 500*l.* England, by listening to quack prescriptions, to objections of amateurs, to leading articles of daily newspapers, and to the opinions of townsmen and dealers, is infected from one end to the other, and has sustained a loss of 200,000 cattle, of the value probably of two millions of money—and perhaps an equal loss from the terror, anxiety, and expense, leading to costly modes of isolating, or to selling half-fed cattle at a sacrifice. So far from the disease only appearing in crowded London cowhouses till the winter, it swept off Guilford Fair, Suffolk, at the commencement of the attack, a fine herd of cattle, amounting to nearly 200, kept in the most natural manner. And Mr. Morton has proved in his lecture that the cleanest and best London cowhouses suffered as great losses as those in a more crowded and filthy condition. Imperfect as our English modes of keeping stock may be, they are beyond comparison superior in cleanliness, and adherence to nature, to anything practised in the north of Europe. From our mild winters our cattle are for the greater part of the winter abroad, and when at home are kept in yards with a great proportion of succulent food, as Turnips and Beet. Abroad, during the long and severe winters (such as we in England know nothing of), cattle and sheep are crowded into close sheds, in which for the advantage of the animal warmth, the owners, or at all events their workmen, also reside: few openings and no ventilation, the cattle food, straw and hay, kept in the air above the animals and exposed to their perspiration and breath. These are hulks and hospitals if you please—this accounts for the diseased beasts that are sent to us, and if I may be allowed to theorise, I would say that from this filthy revolting foreign mode originate the rinderpest, the lung disease, the sheep-pox, and the trichinæ of the pig, the three first of which have been introduced to us by free trade in cattle, and the last probably soon will. Cattle and pigs constantly housed up in an unnatural and unhealthy state, with human beings perhaps suffering from typhus fever, small-pox, and all the other ailments to which frail human nature is subject, eventually confract somewhat similar disorders—just as sheep which of themselves would be free from rinderpest, if closely confined with affected animals contract the disorder. If the disease is epidemic, or is caused by errors in feeding or breeding, how is it that Belgium and France have become free, and that Ireland remains free? England, from its being surrounded by ocean, the natural shield of contagion—from the peaceful and law-loving character of its people, its small fields and scattered homesteads, and the intelligence of all classes, ought to have been the easiest to free from rinderpest of all countries. Unfortunately the matter was made a source of dispute and argument between the agricultural and commercial classes, in which the last obtained the ear of those in authority, and we see the unhappy result. *W. R., April* 16.

Home Correspondence.

Summer Grazing—our Sheep Stock.—The high price of store sheep at the present time is likely in all probability to be the cause of an unprofitable summer's grazing. It is to the breeder a source of great encouragement and profit, but to the grazier it is very perplexing and uncertain; he dare not purchase largely of cattle, the risk is so great from rinderpest; and sheep are so excessively dear, he hesitates as to the course he should pursue. To buy sheep of British breeds, at the present exorbitant rates, whilst foreign sheep still retain their low value, is to say the least a very doubtful speculation. Owing to the restrictions already placed upon importations, and the probabilities of their being further increased, the price of foreign sheep, more particularly, rules very low. Good Prussian sheep, of from 15 months to 40 months old, may be purchased at from 14*s.* to 24*s.* each; the expense of transit and risk might add a per centage of some 10 to 15 per cent.; but what is all this compared with our British breeds of like ages, which are now freely selling at from about 50*s.* to above 100*s.* each? It is true they are bigger and better than most foreign sheep, but by no means equal to the difference in price. One of the greatest boons that could at the present juncture be conferred upon the sheep grazier would be a large importation of foreign sheep. There is unquestionably a large supply to be had, and which ultimately, as mutton, will find its way to our market. The better course by far would be to import large numbers of these sheep to be grazed and fatted by our own graziers. In this way their lands might be profitably stocked, and the profit of grazing would be realised by them, instead of going into the pockets of the foreign grazier. Neither would it be very detrimental to our sheep-breeders, because the stock of British sheep by no means equal to the requirements of graziers, owing to the immense losses of cattle by the cattle plague. This is amply sufficient to keep up the price of our own breeds of sheep, these to be supplemented by foreign importations only; and be these importations never so large, they cannot in the present season suffice to fill up the void made by the cattle plague. Of course, the greatest caution is requisite to guard against the importation of disease. In order to accomplish this satisfactorily, a clean bill of health should be demanded from the authorities of any foreign shipping port before the cargoes of stock sent from them shall be permitted to land on our shores, and these cargoes should also be closely examined again by competent persons upon their arrival, and on no account must they be allowed to land if disease has broken out amongst them. Under a careful supervision of this kind importations might be permitted, and ought to be encouraged, for it behoves the Government to take every reasonable step or means to provide for the nation's necessities, and unless this is done promptly the time may come when great scarcity of food, if not absolute want, will be felt. There can be no great difficulty in obtaining these required supplies under salutary Government regulations. There are plenty of competent agents, who would readily undertake the duties and responsibilities of purchasing and shipping healthy sheep in or from any of the countries where they are to be found. These men ought to go out under Government sanction as authorised agents, but they need not necessarily to purchase on Government account. There are plenty of capitalists, or companies, who would gladly avail themselves of such a promising source of profit. These agents, acting under Government sanction or licence, shall alone be permitted to forward stock to our shores, and for which they shall be responsible to provide clean bills of health, and no stock shall be permitted to land except coming through their agency. *O. F.*

What are "Disinfectants?"—The article in your Paper a short time since was a very good and useful one, but I observe Mr. Condy was not pleased with it, and it is well known that chlorine will prevent contagion, but we have yet to learn whether deodorisers will do so. Earth will deodorise, but yet it does not seem to prevent contagion, and many other things will do the same, but do they destroy the poison of contagion? It would therefore be a good thing if Mr. C. or any of your correspondents could state if any of these other deodorisers will destroy the poison of contagion. Mr. Condy's fluid is very good in a sick room, or for destroying the smell in drains, water, &c., and I am much pleased with it; but I should like to know if it will prevent or destroy the plague poison. *A. C.* Read Dr. Voelcker's paper on this subject in the Royal Agricultural Society's Journal.]

Deep Covering of Grass Seeds.—Allow us to warn you against covering Grass and Clover seeds too deep, it being well known that in many instances they are positively buried. In most cases we find it best to sow these seeds after the grain harrows, and then merely roll the land. With a view to bring this matter prominently before the numerous visitors to the Highland and Agricultural Society's Show held here last year, we exhibited in our stand a number of large earthen pans, containing, in a healthy growing state, several kinds of seeds sown at various depths, and we give you the result below:—

Experiment, showing the Proportion of Seeds which Vegetate under various Depths of Covering.

	Depth. ¼ inch.	Depth. ½ inch.	Depth. 1 inch.	Depth. 1½ inch.
	Per cent.	Per cent.	Per cent.	Per cent.
Rye-grass ..	99	81	68	25
White Clover ..	78	65	53	4
Timothy-grass ..	83	79	57	19
Mangel Wurzel ..	1 inch. *140	2 inch. 113	3 inch. 86	

* It should be borne in mind that what seems to be a seed of Mangel is a pod or husk containing from 1 to 3 seeds. This of course increases the percentage.

W. Drummond & Sons, Stirling.

Reviews.

Cattle Plague Inquiry. Report on the Origin, Propagation, Nature, and Treatment of the Cattle Plague. From Information received at the Veterinary Department, &c. By A. Williams, L.R.C.P. Edin., M.R.C.S.L., &c., Secretary to the Veterinary Department. Eyre & Spottiswoode.

This blue book has just been issued by the department to which its subject belongs. The origin of the disease is spoken of with some reserve; but the great mass of evidence points to direct contagion and the importation of a poisonous germ; which, however, may not, until June, 1865, have found in this country favourable conditions for its development. As to the propagation of the disease, the attempt to connect it with the character of the soil or subsoil has been a failure. The elevation of the land has had little to do with it. The size and character of the farms have had some influence; and in a country of small farms of pasture land the propagation has been the most rapid. There is then a long discussion of the various modes of treatment which have been adopted. We make the following extracts:—

"Tabulating the treatment according to the four classes under which the cases have been arranged, we have the following results:—

GENERAL RESULTS OF THE VARIOUS METHODS OF TREATMENT.

Classes of Treatment.	Numbers treated.	Recovered.	Died.	Remaining under Treatment at Date of Return.	Per-centages Recovered.	Per-centages Died.
1. Antiphlogistic	1389	293	695	149	29.453	72.547
2. Tonic and Stimulant	3842	595	1706	403	25.858	74.142
3. Antiseptic	2970	621	1734	615	26.360	73.631
4. Special ..	1507	293	870	224	25.831	74.169
Totals..	9708	1782	5005	1391	26.256	73.744

"On reviewing the results of the treatment of this large number of cases of cattle plague, by such varied and opposite remedies, the observer must be struck by the entire absence of any decided advantage of one method of treatment over another, and must be disposed to believe that no mode that up to the present time no efficient method of treatment has been discovered which will materially lessen the mortality of this disease.

"There exists, however, the fact that, on the totals of the cases throughout Great Britain, the per centages of the "recovered" have been increasing, without exception, week by week, and after the "killed" and "remaining" have been deducted, have risen gradually from 2.484 per cent. in the third week of July to 14.373 per cent. for the week ending the 30th December.

"As the result of treatment is so discouraging, one is naturally led to inquire if any of the preventive measures have been attended with more satisfactory results.

"Among these measures may be mentioned vaccination with variolous matter, which has been tried, but without any decided success. This result had been anticipated by the medical officers of this department, who had at a very early period proved that an animal which had suffered from the cattle plague and recovered, would, on inoculation with variolous matter, take the small-pox and pass through its various stages, side by side with an inoculated healthy animal, which had not previously suffered from the cattle plague.

"Inoculation has been suggested and tried in this country on a limited number of animals with results which give us very little encouragement for its further prosecution, when all the circumstances are considered. In those few instances where it has been tried, inoculation has induced the disease in its most virulent form; and although from other reports the percentage of recoveries from the disease induced by inoculation has been far higher than from the disease taken in the natural way, yet the evidence of these beneficial results is unsatisfactory, and the enormous risk entailed by suggesting to the farming community a practice by which it is possible that about 80 per cent. of the whole stock of this country would be ill-conditioned, entirely precludes the recommendation of the trial of this method of prevention.

"A valuable treatise on the plague in Holland in 1769, by Dr. Camper, has been forwarded to this office, in which, among other interesting matter, and after a long series of experiments, he states his belief in the advantages of inoculation, but insists that its success will depend on the passage of the matter through several animals, and that the operation should only be performed on young calves.

"Another mode of prevention which has been suggested is the early use of disinfectants and antiseptics, not only in the sheds, &c., but also to the animals, internally and externally.

"Among those which were suggested in the early stages of the disease as prophylactics, to be used internally, were Condy's Fluid, small quantities of carbolic and creasylic acids, and other tar products, sulphites, &c., but there has been received no satisfactory evidence of any beneficial results accruing from their use.

"In October, hyposulphite of soda was suggested by Dr. Wilkinson, both as a prophylactic and to be used as part of the treatment of cattle infected with the disease, but the result of these measures suggested has not been reported.

"It remains to be proved whether this or any other preventive treatment will give satisfactory results, but these, with the hope of the gradual dying out of the disease, which

has been observed to take place after a time in human epidemics of a similar character, appear to be our only chance up to the present time.

"Isolation of a district has also been suggested as a preventive measure. Its success is well illustrated by the effects of the Order in Council of November 3, applying to the North Western district of Scotland. No case of Cattle Plague had occurred in this district up to the date of this report.

"Under the head of preventive measures, but scarcely under that of treatment, would come the 'stamping out' of the disease, which has been so much discussed even from its commencement.

"So far as an isolated district in an infected country is concerned, this process appears to have had a fair trial in Aberdeenshire, and the result arrived at does not appear so thoroughly successful as could be wished, there having been up to the present time eight outbreaks of disease in this county, and nearly 500 animals slaughtered.

"In an uninfected country, as France, however, where this process has been carried out, on the first appearance of the disease, and where stringent regulations as to importation have been from the first enforced, the "stamping out" appears to have been hitherto attended with success.

"This result may serve us as our guide in preventing any future visitation of this disease as an epizootic, but it would have been useless to have attempted to adopt it at the commencement of the present visitation.

"At that time there existed no machinery through which the Government could either have been early informed of the outbreak of the disease in any given locality, or by which it could have carried out the slaughter. There was at that period no department to which information could be sent concerning the diseases of animals, nor was there any person specially interested in giving such information.

"Although verbal notice had been given to the Clerk of the Council on the 10th of July, it was not until the 14th, when the disease had broken out in at least four counties, as well as in the metropolis, that the Government received such a report as could be acted upon; and it is certain that, long before any action could have been taken in the matter, the number of infected places had largely increased, as we find that before the end of July there were 82 centres of infection, and 2285 animals had been attacked.

"Again, it must be borne in mind that at that time, and even until a much later period, the agricultural community, as a mass, entirely disbelieved in the existence of a disease of such a terrible character as the cattle plague, and there is reason to believe that any stringent regulations affecting that body would have been resisted throughout the country.

"The 'stamping out' could, therefore, only have been carried out by the use of strong coercive measures, and would have been, at the time, in direct opposition to public opinion."

In an Appendix are given a series of elaborate returns from the various counties, and maps of the whole country, showing the progress of the disease from month to month. There is also a curve showing the weekly progress of the plague, and the wonderfully rapid way in which the number of attacks, which had mounted up to many thousands daily towards the end of February, fell immediately on the passing of the Cattle Diseases Prevention Act, until it does not now exceed 300 a day.

Farm Memoranda.

SCHOOL GARDENS AT EYEMOUTH.—[We have again the pleasure of publishing a report of the last year's experience in the Eyemouth School Gardens.] Mr. Cox, the schoolmaster, in his report to Mr. D. Milne Home, says:—

"I am unable to give any correct return of the time spent by the boys in the cultivation of their respective plots, but can confidently say that the returns are generally in proportion to the amount of care and labour bestowed upon them. I will endeavour to get the boys to keep a diary of their time for this year.

"It gives me pleasure to know that our school garden scheme is attracting a good deal of public notice; after eight years' experience, my fixed opinion is, that it is well worthy of general adoption; and that in many localities, it would be productive of even greater benefits than we realise. No sports which boys usually engage in, when left to themselves, can be more conducive to health or enjoyment than what they obtain from working in their little gardens."

REPORT ON THE EYEMOUTH SCHOOL GARDENS.—YEAR 1865.

Total extent of ground occupied, 865 square yards.

Plot.	Boys' Names.	Potatos.	Cabbage	Greens.	Onions.	Leeks.	Shallots.	General Remarks.
		s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	£ s. d.	
1	Charles Gray; age 12; has had a garden 1 year.	Seed cost .. 0 6	0 2	0 2	0 6	0 1½	0 1	0 1 10½	Exposure and soil fair, well-kept; 1 cartload of horses' manure.
		Produce .. 5 0	3 11	2 10	3 0	1 0	0 7	0 16 4	
		Profit 4 6	3 5	2 8	2 6	0 10½	0 6	0 14 5½	
2	Thomas Cairns; age 12; has had a garden 1 year.	Seed cost .. 0 11½	0 9	0 2	0 4	1 0	Carrots 1	0 2 4½	Exposure fair; soil stony; tolerably kept.
		Produce .. 1 6	2 7½	3 0	2 8	5 0	Stolen 0	0 15 7½	
		Profit 1 4½	2 10½	2 10	2 2	4 0	..	0 13 3	
3	Adam Marshall; age 12; has had a garden 1 year.	Seed cost .. 0 3	0 9	0 1	0 4	0 6	..	0 1 11	Exposure and soil bad; tolerably well kept; 8 barrowfuls of pigs' manure. No winter crop, and the profit therefore small.
		Produce .. 4 6	2 2½	0 5	1 2	1 7	..	0 9 10½	
		Profit 4 3	1 5½	0 4	0 10	1 1	..	0 7 11½	
		Cauliflower.							
4	David Cockburn; age 11; has had a garden 1 year.	Seed cost .. 0 3	0 9	0 1	0 6	1 0	0 1	0 2 8	Exposure fair; part of the plot very poor soil; pretty well kept. He made excellent profit on the greens by selling plants, &c.
		Produce .. 1 6	4 6	6 0	5 0	6 0	2 0	1 3 0	
		Profit 1 3	3 9	5 11	2 6	5 0	1 11	1 0 4	
5	Joseph Purves; age 14; has had a garden 1 year.	Seed cost .. 0 6	0 6	0 1	0 4	0 1	0 1	0 1 7	Exposure and soil good; very well kept; 6 barrowfuls of horses' manure. The carcles to much in which the plot was kept by its last possessor cost its present one much labour.
		Produce .. 7 8	3 8½	1 11	2 3½	0 11	0 4	0 16 10	
		Profit 7 2	3 2½	1 10	1 11½	0 10	0 3	0 15 3	
6	Robert Geggie; age 14; has had a garden 1 year.	Seed cost .. 0 6	0 6	..	0 1	..	..	0 1 1	Exposure best; soil good. Fair attention given to it. No winter crop, and profit therefore small.
		Produce .. 1 6½	2 ..	..	1 9½	..	..	0 8 7½	
		Profit 1 0½	1 9	..	1 3½	..	..	0 7 6½	
		Radish, Carrots, &c.							
7	John Jordan; age 14; has had a garden 3 years.	Seed cost .. 0 3	1 1½	0 7½	0 7½	0 7	0 3	0 3 5	Exposure and soil best; very well kept; 7 barrowfuls of pigs' manure.
		Produce .. 2 1	9 6½	2 4½	4 1½	4 7	3 1	1 6 0½	
		Profit 1 10	8 5	1 9	3 6	4 0	3 1	1 2 7½	
8	Thomas Sibbet; age 15; has had a garden 4 years.	Seed cost .. 0 6	..	0 1	0 4	0 3	0 2	0 1 4	Exposure and soil pretty good. Remarkably well kept; 7 barrowfuls of pigs' manure. This has been a model plot for some years past.
		Produce .. 5 0	5 6	0 11	1 7	2 4	1 0	0 17 1	
		Profit 4 6	..	0 10	1 3	2 1	1 7	0 15 9	
9	John Blyth; age 13; has had a garden 1 year.	Seed cost	Sum paid for seed and labour				0 8 6		Exposure very fair; well kept. This plot exchanged hands in the month of April last.
		Produce	(See letter accompanying report.)				No book kept.		
		Profit	Profit calculated as an average				0 15 11		
10	John Robertson; age 15; has had a garden 4 years.	Seed cost .. 0 6	0 6	0 1	0 6	0 3	0 2	0 2 6	Exposure and soil very fair; kept in a superior manner. Manure (pigs). On this plot there are 100 square yards.
		Produce .. 8 9½	5 5	5 7	3 9¼	4 2	0 10½	1 8 7¼	
		Profit 8 3¼	4 11	5 6	3 3½	3 11	0 8½	1 6 7¼	
					Total profit			£7 19 5¼	

Calendar of Operations.

APRIL: *Cultivation of Mangel Wurzel.*—The Mangel Wurzel* is the crop on which we have latterly in chief depended as the substitute for our failing Turnip crop. Yielding with greater certainty a much heavier produce of food as good as the Turnip, no wonder that it is rapidly growing in favour. It has always been known as keeping good till late in the following season; but, till of late, it has laboured under the stigma of being so excessively relaxing when fed early in the season, as to be more injurious than nutritious until the spring; and even then we have heard of its causing abortion in swine, sheep, and cows, so that it was only under special circumstances that it could be chosen by the cultivator as his main green crop. In 1859, however, we had a frost upon our green crops, which killed them down, and forced their consumption before winter, if it was desired to save them at all; and it was found that even the frosted Mangels spread in the pastures and in the yards did ewes in lamb and swine in farrow no harm. And last year (1860), when the Mangel Wurzel crop has been a comparative failure, it has been a common practice to fold sheep on them early in the autumn, leaving Swedes for that later period of feeding for which the Mangel Wurzel had hitherto been deemed especially adapted; and it is found, especially where the root is pulped and mixed in varying proportions with chaff of hay or straw, that no relaxed state of the bowels has, under good management, followed the large and early use of the crop. It is still, however, as the root crop of the summer months that the Mangel Wurzel possesses an especial value. So good a keeper is it, that stock might indeed be kept on it all the year round; for there is no better food for pigs and cattle generally in June, July, and August following the year of its growth. Any season like the past, therefore, which by its unusual coldness has proved less adapted to the growth of this crop than any we have had for years, is, in its effect on our supplies of cattle food, no less than a national calamity. A crop which in ordinary seasons produces 30 to 40 tons per acre, has during the past year in many cases failed to produce 15; and that on which we generally depend for late spring food, was in many cases fed in autumn by sheep on the fields of its growth.

The cultivation of the Mangel Wurzel is precisely the same as that of the Swedish Turnip, to which we shall refer in detail next month. There is a difference in the seed time, but hardly any in the treatment of the soil, either before it, or during the growth of the crop. Mangels like a stiffer soil than Turnips; but there is the same need of an industrious and forward autumnal cultivation of the land. If the plough is used in spring, it will on clay soils turn up a cloddy surface which is difficult to reduce, and which is a hindrance to the proper cultivation of the crop. A heavy dressing of dung, and a liberal supply of superphosphate, will be well repaid in the future crop, and it is found, in accordance with what is known both of the natural history and the chemistry of the plant (viz., that it is a native of the seashore, and that its ash contains a large proportion of chloride of sodium, or common salt), that the crop will also repay, by additional and more healthy growth, a considerable dressing of common salt, to the extent, indeed, of two or three cwt. per acre.

The seed may be either drilled on the top of each drill or row, or dibbled therein at intervals of 15 to 18 inches—the rows themselves being 28 to 30 inches apart. The proper seed time is about the end of April. No advantage is obtained by sowing too early, as the seed will be longer in the land without germination, and the plants will also be more liable to run to seed. From 6 to 7 lb. per acre should be used; and if to be dibbled, the seed should be previously steeped for two or three days before sowing, it will sprout the sooner. The cheapest way to sow it is by the drill, depositing two rows or more at once, either on the flat, or what is better, on the top of the ridgelet over the row of manure; but it is not much more costly, and there are some advantages in depositing the seed by the hand dibble. The women or boys who plant the seed have a stick the length of the interval between the future bunches, and they measure out the place of the next plant by means of it. With the end of it they remove any clod which may lie there, making a little bed for the two or three seeds which they drop in that place, and then covering them up with a little fine earth, and half treading them in.

Mangel seed is very easily buried, and not more than half an inch of earth should be used to cover it. The plants come up in bunches in these places. The intervals between the rows are horse-hoed; those between the bunches are hand-hoed, and the bunches themselves are pulled to single plants as soon as the leaf is the size of a child's hand; and the cultivation during the summer, by horse-hoeing and hand-hoeing if necessary, is continued as long as the leaves do not cover the ground. This, however, is work for June and July, when it will be referred to again.

The varieties of Mangel Wurzels include distinctions of shape and of colour. The globe-shaped are best for several reasons, one of which is that the globular form presents least outside in proportion to its quantity of contents, and so there is less exposure to frost or drought, and less liability to injury either during winter or the following summer. And as to the former, there is this special advantage of the globular over the Long and Tankard Mangels, that the former grow upright, and are thus sheltered against the early frosts under a canopy of foliage, while the long-shaped roots straggle over the surface of the ground, and are thus exposed in every direction to the sky, and the consequent frost of a clear autumnal night. This is no mere speculation, but was verified in the experience of many during October, 1859. The Globe Red and Orange Mangels are therefore to be preferred to the Long Reds and Long Yellows, notwithstanding that the latter might have been expected to yield the larger produce per acre. The greater facility, too, of removal from the ground, which one would expect in the long Mangels, from the greater hold which their shape enables to be taken of them, is in practice not obtained. The Globe has this year, 1860-61, in our experience, pulled more easily than others which have had long and forked roots, giving them so much greater hold of the ground on which they grew. There are, however, many different sorts both of Long and of Globe Mangels, which have been selected for seed with varying degrees of care for various periods of time, and so exhibit in their produce various degrees of excellence and constancy to the type of the best specimens of each.

Weaning Calves.—When calves are intended for weaning, which is usually done this month, or as early as convenient in the season, they should be selected from the best and oldest cows, experience proving to the farmer that a heifer's first and second calf are not so strong and likely to thrive well as those from cows of tried constitution. Much patience and care is required by the attendant to induce them to drink well

* Sutton's "Farmer's Manual," 1861.

without sucking it from the fingers, and great loss is often occasioned by neglect, and letting them remain to be driven by hunger to take the milk. The stomach of a calf being very delicate, it is most easily affected by any change, and scouring soon follows a little fasting aggravated by the irritation and fear of losing its mother, which often retards the growth of young calves for several weeks, if it does not cost their lives. A little patient teaching, and the observation of their natural habits and instincts, are quite necessary in those having the charge of young animals, which of course need to be taught a process even of feeding when it is unnatural to them. When they can drink well, one quart of best or new milk will be sufficient, added to which they should get half a pint of good oatmeal; or the same quantity of Linseed has been found equally nourishing and sufficient to keep them in good growing condition. Both the meal and Linseed may be prepared in the same way, viz., thus, take for each calf half a pint of oatmeal or Linseed, mix it in a little cold water, and then add sufficient quite boiling to make the allowance for each calf two quarts of liquid; keep it in a covered vessel till required to be given. The morning's meal should be prepared the night before, as it should stand for some hours, and that given at night should be made in the morning, and if made in large quantities it retains some heat: a little more boiling water may be added to give it the warmth of new milk, one quart of which should be given with two quarts of this liquid to each calf.

Miscellaneous.

Secretaryship of the Highland Society.—We understand that the Directors of the Highland and Agricultural Society have unanimously elected Mr. Fletcher Norton Menzies as Secretary, in room of the late Mr. Alexander Macduff, who died before entering upon the office to which he was chosen in November last.

Infant Nourishment.—There will be few right-thinking persons found to deny that the milk of a healthy mother is the very best food for her *own* child during the first few months of its existence; but considering the artificial state of society at the present time, and the difficulty in persuading mothers—even when they undertake the office of suckling—to observe the conditions necessary to promote their health and that of their infants, it really seems probable that the physical well-being of the little ones would be better secured if we could produce a food as nearly as possible resembling, in its composition, the qualities of human milk. It is well-known that cow's milk is most commonly resorted to as a substitute for breast-milk, not only because it is readily obtained, but for the reason that it approaches more nearly than any other animal milk to human milk in its constituents and their relative proportions; but the differences that do exist are so essential, as to render an exclusive milk diet for hand-reared infants very inadequate to meet the requirements of a growing child, and insufficient in nourishing power to answer the purposes of bodily development. Bearing in mind the particular elements that are deficient in cow's milk as compared with woman's milk, it would be worth while trying some experiments in feeding the milch cow with the view of supplying those qualities which would bring the milk up to the standard of human milk. In the meantime, I have every reason to recommend confidently the employment of a small proportion of Wheat flour in combination with cow's milk—a dessert-spoonful of pure flour to half a pint of milk, slightly sweetened with loaf-sugar; we obtain by this means a model food, which would be found to answer every purpose set forth in an elaborate prescription which has been recently given to the public; for by this simple and very practicable process we add to the milk—which is naturally rich in butter and casein—the elements which are wanting in proper proportions, viz.; the carbonaceous or heat-forming, the sugar, and the alkali; thus we produce a composition equivalent in its properties to human milk. *M. A. B., in the Social Science Review.*

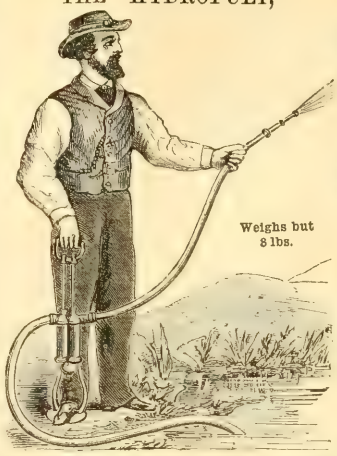
[The following, from the pages of the "Veterinarian," relates to the same subject:—"I have not particularised the precise kind of food which it may be desirable to substitute for, or employ in addition to, that which is now usually given as fodder to milch cows. As an amateur I cannot be expected to enter into details, having only an instinctive appreciation of the subject to guide me, and a common-sense view of the matter generally. If I did suggest anything, it would be that Beet-root or Carrots might supply the saccharine properties, ground corn the calorifacient and the alkali; these, varied according to circumstances with bran-mashes, grains, or hay, would seem to fulfil all the conditions indicated. It appears rational to suppose that green food, Turnips, &c., should be suspended while the experiment is continued; and as the kind of food proposed would come under the description of high feeding, air, and exercise, besides all other conditions necessary to health should be freely promoted; for it may be presumed that animals undergoing special treatment, can have the advantage of these exceptionally favourable circumstances."]

Notices to Correspondents.

SEEDS: *Cor.* Your parcel of seeds will be reported on next week.

WORMS: *Inquirers to Gardens.* A farm is greatly infested with this worm. Mr. Curtis says ("Farm Insects," p. 514) that a solution of salt and water will destroy it, "as will also corrosive sublimate, but one of the easiest and most efficacious modes of extirpating worms is to water the land with lime-water. It is, however, said that, while unslacked stone-lime is efficacious, lime of chalk has no effect upon them." [Can any of our readers do us the favour to give us his experience on this subject, stating in what proportions per acre (salt or lime per acre), and at what period of the year either of the above solutions should be applied? We fear that salt enough to kill worms would also kill Grass.]

THE HYDROPULT,



An Invention for Throwing Water by Hand Power.

(SECURED BY ROYAL LETTERS PATENT).

PRICE LIST.

	£	s.	d.
COMPLETE WITH BRASS CYLINDERS AND JAPANNED STIRRUP	1	12	6
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The Price "Complete" as above, includes 25 feet Suction and 3 feet Delivery Hose, Galvanised Wire Strainer, Rose and Small Jet.

THE HYDROPULT

is invaluable for use in the GARDEN for

WATERING BEDS,
SPRINKLING PLANTS,
DROWNING OUT INSECTS,
CLEANSING TREES FROM SMUTS,
DRESSING WITH LIQUID MANURE,
&c. &c.

CAUTION.

IMPORTANT TO THE PUBLIC.—The extensive sale of the Hydropult has excited the cupidity of so-called respectable, but in reality unprincipled Manufacturers, who are now palming on the Public worthless imitations of the Hydropult, and through their connections are enabled to place said devices on exhibition, and for sale, in many of the principal Ironmongery and Seed Establishments throughout the city and provinces. These devices resemble in many respects the Hydropult in appearance, and are calculated to deceive the unsuspecting. The Proprietor therefore issues this Caution, and respectfully intimates that parties wishing to purchase the Hydropult should examine the machine offered for sale, and see if it has attached thereto a label, with the following words:—"The Hydropult, Vose's Patent, manufactured only by GROSVENOR & BOOMER, Birmingham. CHARLES POMEROY BUTTON, Proprietor, 142 and 143 Cheapside, London." Unless this label is attached, the Machine is not the Hydropult.

Prospectuses, with Testimonials, on application.

HYDROPULT SHOW ROOM, 142 & 143, CHEAPSIDE, LONDON.

IMPERIAL SUGAR BASIN.

SECURED BY ROYAL LETTERS PATENT.

USEFUL, ORNAMENTAL, UNIQUE.

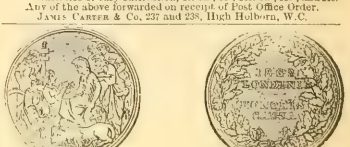
The novelty and utility of this invention consists in a Revolving Cover, so constructed that by turning the knob on either side of the Basin, it can be covered or uncovered instantly; the lid disappearing into a receptacle or false bottom, thus not only having the lid ready for instant use, but obviating the necessity of its removal from the table. The Sugar Basin can be used for a Butter Dish.

Price, in white metal, electro-plated, £2 2s.

CHARLES POMEROY BUTTON,
142 and 143, Cheapside, London, E.C.

CARTER'S CHOICE FLOWER SEEDS.

12 Superb Prize FRENCH ASTERS, 2s. 6d.
12 Do. do. GERMAN STOCKS, 2s. 6d.
12 Do. do. CAMELLIA BALSAMS, 2s. 6d.
12 Showy sorts of Hardy ORNAMENTAL FOLIAGED PLANTS, 5s.
12 Beautiful varieties of ORNAMENTAL GRASSES for Winter Bouquets, 5s.
12 Do. do. of EVERLASTINGS for do do, 5s.
Collections of Showy FLOWER SEEDS, containing only varieties of easy cultivation, 2s. 6d., 5s., 10s. 6d., 16s., and 21s.
ANY of the above forwarded on receipt of Post Office Order.
JAMES CARTER & Co., 237 and 238, High Holborn, W.C.



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BEDDING PLANTS for SUMMER DECORATION of the FLOWER GARDEN. See original article on the above in the Illustrated Plant Supplement of CARTER'S "Gardeners' and Farmers' Vade Mecum."
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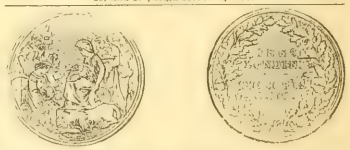

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GOOD NEW CARROT SEED.

The three best sorts are—

	Per lb —s. d.
WHITE BELGIAN	1 0
RED INTERMEDIATE..	1 3
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Cheaper by the cwt., price of which may be had on application

SUTTON & SONS,

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For Bouquets and as Cut Flowers

THE INVINCIBLE SCARLET SWEET PEA is invaluable. The colour is intense and permanent. Packets 6*d*., 1s., and 2s. 6*d*. each. Sold by the principal Seedsmen throughout the kingdom, or of the Raiser,

STEPHEN BROWN, Seed Grower, Sudbury, Suffolk.

INVINCIBLE SCARLET SWEET PEA, very fragrant, strikingly brilliant, and extremely distinct in colour.—A First-class Certificate from the Royal Horticultural Society; also a Certificate at the Crystal Palace Show in September. Packets 6*d*., 1s., and 2s. 6*d*. each; packets of 100 Seeds 7s. 6*d*. Supplied by the principal Seedsmen throughout the Kingdom. Also of Messrs. Krelage, of Haarlem; Vilmorin & Co., Paris; Benary and Haage & Schmidt, of Erfurt, Prussia; and Smith & Co., Hamburgh; also of the Raiser,

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Price to the Trade on application.

HALLETT'S TRADE CHEVALIER PEDIGREE BARLEY.

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Weight 56 lb. per bushel.

This has been "bred" in the same manner as the "Pedigree Wheat," viz., by repeated annual selection, re-starting in each year from a single grain, upon a poor soil (resting immediately upon the chalk of the South Downs), which upon neighbouring farms produces Barley weighing but 51 lb., and fit only for grinding.

SEED REQUIRED:—

If drilled in March	1 bushel on 3 acres.	
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Price Two Guineas a Bushel (including bag), delivered in bags sewed up and sealed, at the Brighton Railway Station, upon receipt of Cheque or Post Office Order, without which it will not in any case be sent to unknown correspondents. Less than a bushel will not be supplied.

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Sunset	Clipper	Monitor
Mrs. Pollock	Provost	Prince of Wales
Snowball	Dr. Lindley	Mrs. Vernon
Magenta	Cybister	Adonis Hallez

SAMUEL COX, Nurseryman and Florist, Ludlow.

GERANIUMS, in 6-inch Pots, for Greenhouse Culture or Bedding, 24 for One Guinea.—Flower of Spring, Glowworm, Fontainebleau, Bijou, Flower of the Day, Dr. Hogg, Gold, Golden Chain, Mrs. Lennox, Lady Plymouth, Golden Fleece, Madame Vuchier, Baron Hugel, Crystal Palace, Tom Thumb's Master, Rose Unique, Lady Muddleton, Christiana, Tom Thumb, Spread Eagle, Sheen Rival, Mrs Turner, Helen Lindsay, Little David, Stella Nosegay. Special offers to the Trade on application.

THOS. S WARE, Hale Farm Nursery, Tottenham, Middlesex, N.

GEO. SMITH'S NEW CATALOGUE, with a splendid Woodcut of NOSEGAY GERANIUM LE GRAND, which is the finest of all Geraniums for effect, together with descriptions of New Bedding Zonals Geraniums, Cineraria, Calceolaria, Fuchsia, Gladiateur, Great Eastern, Sir Robert Peel, and Pink Perfection, which for their general fine qualities have received First-class Certificates from the Royal Botanic Society, Regent's Park, Horticultural Gardens, South Kensington, all of which G. S. can, with the greatest of confidence, recommend. For description see CATALOGUE, which also contains Double Lilac Primula, Fancy Zonals, and Variegated Geraniums, Fuchsias, Petunias, Dahlias, Verbenas, Chrysanthemums, Bedding Plants, &c. Now ready in exchange for one postage stamp.

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"The Brilliant Scarlet Perilla Geranium is one of the very best for bedding in the flower garden or for flowering in pots or boxes. It has the fine compact habit of the old Brilliant, but is rather more luxuriant in growth, has better foliage, which is much more freely supplied with white blotches of a clear colour, and the trusses of flower and the individual flowers are much larger and of a richer scarlet. I have no hesitation in speaking of this variety as one of the most satisfactory that can be used, after trying it for two seasons.

"R. FISH, Putteridge Bury, Luton, Beds."

*** The usual allowance to the Trade.

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WM. PAUL (Son and Successor to the late A. PAUL) has to offer the following new ZONALE and HYBRID NOSEGAY GERANIUMS, which have been raised from several Thousand Seedlings raised from the stock of the late Mr. Donald Beaton. Every one now offered is believed to be in advance of or distinct from all pre-existing kinds. Orders received now, the plants delivered in rotation, as far as the stock will last, early in May next.

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*** Any 12 varieties from this and the two following Groups may be selected for the purchaser's list of £2 2s.

BANNERET.—Flowers crimson, scarlet, and purple shaded, very bright and beautiful ; a hybrid nosegay. Price 3s. 6d. each.

FAIRY QUEEN.—Rosy purple ; a large smooth flower, very distinct and effective. Price 3s. 6d. each.

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MONTE ROSA, dark rosy-purple, pleasing colour, large truss, very fine. Price 5s. each.

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PRINCE OF ORANGE, orange-scarlet, very bright ; great substance, good habit, prodigious bloomer. Price 3s. 6d. each.

PEACH NOSEGAY.—Flowers of very bright peach colour, very free bloomer, splendid truss, plain leaf, first-rate and distinct. Price 5s.

REBECCA.—Cherry colour, fine truss, dwarf compact habit, very pretty and useful bedding variety. Price 3s. 6d. each.

ST. GEORGE.—Dark chestnut, shaded with blackish crimson ; quite unique, very free and effective, an entirely new colour among Pelargoniums. Price 5s. each.

SALMON NOSEGAY.—Flowers pure salmon, large truss, good. Price 3s. 6d. each.

SIR J. PAXTON.—Flowers true orange, very bright, fine large truss, splendid variety for massing. Price 5s. each.

WOOD NYMPH.—Salmon pink, large and fine. Price 3s. 6d. each.

GROUP 2.—VARIETIES ESPECIALLY RECOMMENDED FOR GROWING IN POTS OR VASES.

BRIDE.—Flowers white, with a crimson eye, of fine shape and substance ; a first-class variety for pot culture. Price 3s. 6d. each.

CARDINAL.—Flowers dark orange scarlet. For shape, substance, colour and habit, this is in advance of any scarlet variety yet raised. Price 5s. each.

CELESTIAL.—Flowers rosy lake, with fiery spot on upper petals their centres bluish purple, resembling the "Cactus speciosissima," large white eye, new in colour, and very beautiful. Price 5s. each.

LORD CHANCELLOR.—Salmon pink, white eye, perfect shape, very free, fine habit. Price 3s. 6d. each.

POET LAUREATE.—Rosy purple, top petals orange scarlet, yellow ish eye, perfect shape. Price 3s. 6d. each.

TIARA.—Flowers scarlet crimson suffused with purple, good truss very free, fine habit ; quite distinct from any yet raised, and very lovely. Price 5s. each.

GROUP 3.—MINIATURE OR POMPON VARIETIES.

DIAMOND.—The smallest purple variety, white eye, flowers profusely, habit good, distinct. Price 3s. 6d. each.

DRYAD.—Beautifully rosy pink, fine shape and truss. Price 3s. 6d. each.

NAIAD.—Flowers purple, scarlet top ; pleasing and distinct. Price 3s. 6d. each.

WALTHAM LILAC.—Flowers true lilac, very profuse ; a new and desirable colour, excellent for massing. Price 5s. each.

ZEPHYR.—Flowers light purple top, petals rose colour ; stands the rain and sun well, very dwarf and free. Price 3s. 6d. each.

GROUP 4.—BEDDING VARIETIES NOT SENT FROM THESE NURSERIES LAST YEAR.

Many of them have received First-class Certificates from the Royal Horticultural and Royal Botanic Societies of London, and those marked thus *** have the highest award of merit in the Royal Horticultural Society's Trial Ground at Chiswick.

NOW READY, AUTUMN-STRUCK PLANTS.

*** ALEXANDRA.—Magenta. Price 2s. 6d. each ; 24s. per dozen.

*** DR. HOGG.—Bright orange rose. Price 2s. 6d. each ; 15s. per doz.

*** BEATON'S INDIAN YELLOW.—Orange scarlet suffused with yellow. Price 1s. 6d. each ; 15s. per dozen.

BLACK DWARF.—Dark crimson. Price 1s. 6d. each ; 12s. per dozen.

DONALD BEATON.—Clear orange scarlet. Price 1s. 6d. each ; 15s. per dozen.

*** DUCHESS.—Soft rosy lake. Price 2s. each ; 18s. per dozen.

*** FULGENS.—Vivid scarlet. Price 2s. 6d. each.

*** GLOWWORM.—Magenta crimson flushed with scarlet. Price 2s. 6d. each ; 24s. per dozen.

MAGENTA QUEEN.—Magenta. Price 3s. 6d. each.

ORANGE NOSEGAY.—Bright orange. Price 1s. 6d. each ; 15s. per dozen.

PILLAR of BEAUTY.—Brick red. Price 2s. 6d. each.

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SALAMANDER.—Brilliant scarlet, large white eye. Price 2s. each ; 18s. per dozen.

SCARLET GEM.—Bright orange scarlet. Price 1s. 6d. each ; 15s. per dozen.

MRS. WILLIAM PAUL.—Delicate rose pink. Price 2s. 6d. each, 24s. per dozen.

WALTHAM SEEDLING.—Dark crimson. Price 2s. each, 18s. per dozen.

The above set of 18 varieties, one plant of each, 24s.

SPRING CATALOGUE, with full descriptions of these and other plants, free by post. The usual discount to the Trade.

IMPORTANT.—All letters should be addressed WILLIAM PAUL (the Christian name in full), Waltham Cross, London, N.

New and Beautiful.

TWELVE of the BEST GERANIUMS extant for BEDDING are—

Italia Unita	Variegated Little David	Glowworm
Sunset	Amy Hogg	Orange Nosegay
Luna	Indian Yellow	Fairy
Mrs. Pollock	Tangstead, in varieties	Enamel

One over for carriage. The 12, in fine plants, £1 1s.

Post Office Orders on Castle Hedingham.

WM. DILLISTONE, Munro Nursery, Sible Hedingham, Essex.

Choice Bedding Geraniums.

THOMAS PESTRIDGE can supply strong Plants of MRS. POLLOCK, at 12s. per dozen.

	Per doz.		Per doz.—*s. d.*
Cloth of Gold	.. 4 0	Ellen Lindsay	.. .. 4 0
Madame Vaucher	.. 4 0	Christiana	.. .. 3 0
Stella	.. 4 0	Tangstead, in varieties	.. 4 0

Show and Fancy Geraniums in large 60-Pots, at 8s. per dozen.

Coleus Verschaffelii, 4s. per dozen.

Terms Cash.

The Greenway Nursery, Uxbridge, Middlesex.

First-class Certificates.

GEO. SMITH is now sending out his magnificent Nosegay Geranium LE GRAND, together with Zonale Geraniums CHIEFTAIN, SIR ROBERT PEEL, GLADIATEUR, PINK PERFECTION, &c., in fine flower, collection ever offered, and have received 10 First-class Certificates.

G. S. is also sending out his two fine Double FUCHSIAS, and now offers the above for the first time. For description see CATALOGUE in exchange for one postage stamp.

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BEDDING PLANTS, BEDDING PLANTS. Extra-strong plants of the following now ready, well-established in pots :—

GERANIUMS, in 25 or 50 varied shades, less or more, 100, £1 5s. ; 200, £2 5s. ; 500, £5.

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100 BEDDING PLANTS in pots, in 20 varieties, including Dahlias, Geraniums, Verbenas, &c., for £1 ; 200 ditto, £1 15s. ; 500 ditto, £4 4s.

CATALOGUES free. Post Office Orders payable on Castle Hedingham.

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To the Trade.

20,000 VERBENAS, extra strong plants, about 36 of the finest varieties, at 2Is. per 100, packing included. Strong rooted Cuttings of the above, 12s. per 100.

All orders containing a remittance will meet with prompt attention. CATALOGUES gratis.

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WOOD AND INGRAM offer fine VERBENAS, by name, in various colours, good plants, well-established in single pots ; also HELIOTROPES, in three fine varieties, at 20s. per 100, package included.

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SPRING CATALOGUES of DAHLIAS, GERANIUMS, and other Bedding Plants can be had on application at his

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NEW VERBENAS.

JOHN KEYNES (ECKFORD).—Bright scarlet, with white eye. The most beautiful scarlet bedder in the world, and was awarded a First-class Certificate at the Horticultural Meeting without a dissentient voice ; unique colour, fine size, and colour. Price 5s.

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These six Verbenas have been very carefully selected by J. Keynes himself, having seen them growing, and he has no doubt they will prove very first-rate, either as bedding or pot. Fine Plants ready May 1.

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Complete Collections to suit Gardens of various sizes, 10s. 6d., 21s., 42s., 63s., 84s. each. For quantities see CATALOGUE.

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JOHN KEYNES' NEW DAHLIAS, 10s. 6d. each. A liberal allowance if the set is taken.

67. MARQUIS OF WINCHESTER (KEYNES).—Bright crimson ; the flower of the season.

First-class Certificates:—Royal Horticultural Society; Devizes, Trowbridge, Crystal Palace, Bath, Salisbury, Dorset Horticultural Society, Shepton Mallet.

68. LOTTY ATKINS (KEYNES).—Blush, tipped lilac ; most chaste flower, always good, must be much cut out.

First-class Certificates:—Royal Horticultural Society ; Trowbridge (money prize, as the best in the Show), Salisbury, Dorset Horticultural Society, Shepton Mallet, Crystal Palace, Bath, Winchester, Brighton.

69. JOHN DOWNIE (KEYNES).—Yellow, tipped red ; beautiful form, very first-class flower, always good.

Certificates :—Royal Horticultural ; Salisbury, Trowbridge, Brighton, North Wilts, Dorset Horticultural Society.

71. ANNIE AUSTIN (KEYNES).—Bright light amber ; beautiful form, must be well cut out, most constant, and very first-class.

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72. GEORGE WHITE (KEYNES).—Large deep purple ; most desirable colour, always good.

Certificates :—Trowbridge, Devizes, Dorset Horticultural Society.

73. HELEN POTTER (KEYNES).—Blush white, deeper shade of colour to Miss Hembrow, which it closely resembles in shape and growth, but quite distinct, very large, very full, constant.

Certificates :—Brighton, North Wilts, Dorset Horticultural Society, Trowbridge.

74. MRS SAVORY (CHURCH).—This is the flower that was so much admired at the Crystal Palace, where it had a First-class Certificate by acclamation. It is a laced flower, like Bird of Passage, larger, and rather deeply pencilled with purple lilac, grand flower.

75. GLADIATOR (CHURCH).—White, very deeply laced, like a Picotee, with deep pink. This is a most striking flower, and surpasses all in its class, exquisite.

†These two flowers of Church's are unapproachable in their colour.

76. ULTIMATUM (KEYNES).—Dark, tipped rosy crimson. The form of this flower it is impossible to improve ; it must be much cut out, or will be small, a beautiful flower.

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77. LADY MARY WILDE (ECKFORD).—White, with purple rose tips, a very useful flower, not to be cut out.

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78. JAMES BACKHOUSE (KEYNES).—Very deep plum or mulberry, the finest show flower of the season. Shown in J. Keynes, Stand at the Crystal Palace, Magnificent.

79. LADY of the LAKE (GOODWIN).—Blush, edged purple, large fine show flower, always to be had.

These two flowers could not be shown much, only one Plant, to prove them, being grown by J. Keynes.

130. TOP CLAWTER (KEYNES).—White, striped and mottled purple, very full centre, well up.

139. JOHN BUNN (KEYNES).—Yellow striped crimson, one of the finest flowers of the season, full, constant, and good.

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140. FRANK TIFFIN (KEYNES).—Yellow, heavily striped red ; a beautiful fancy, chaste and striking.

Certificates :—Horticultural Society ; Shepton Mallet, Trowbridge, Dorset Horticultural Society.

141. CHANG (KEYNES).—Yellow, striped and mottled scarlet, a most extraordinary flower ; if cut out it will produce enormous size flowers of the most perfect shape ; if let alone it will give beautiful show flowers fit for any stand.

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142. PRESIDENT LINCOLN (KEYNES).—Buff, striped red and orange, very fine fancy, much admired.

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143. JEANIE DEANS (KEYNES).—Orange, striped purple, very constant, large deep show flower.

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CEDRUS DEODARA SEED.—A quantity of this expected daily by Overland Route of new and genuine growing quality seed, at 45s. per lb.
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Tropæolum Prince of Wales.
JAMES KITTLE begs now to offer his New TROPÆOLUM, PRINCE of WALES. The colour is a very bright deep scarlet, habit very good, a very free bloomer, the flower standing well above the foliage, forming a brilliant mass of scarlet. See *Gardeners' Chronicle* of July 14, 1866, page 656. Strong Plants, 1s. 6d. each, free by post, or 12s. per dozen.
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PETER LAWSON AND SON are prepared to execute orders for every description of NURSERY STOCK suitable for FOREST and ORNAMENTAL PLANTATIONS.
CORSICAN PINE (Pinus Laricio), Seedlings and Transplanted; a large stock of well-grown plants at moderate prices.
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Standard Cucumber, Orion Melon, Hollyhock, Pansy, Polyanthus, and Balsam, at 1s. per packet, saved from growers who spare no expense to obtain the best. Address
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CHARLWOOD AND CUMMINS have now on Sale, SEEDS of the following in good condition:—Cotinus Dreadnut, Laburnum, and Red Cedars; Cupressus Lawsoniana and macrocarpa; Picea balsamea, nobilis, Nordmanniana, and cephalonica; Pinus Pinsapo and Lambertiana; Thuja orientalis and occidentalis; Wellingtonia gigantea; Adansonia digitata; Bauhinia variegata; Magnolias, 4 varieties; Pavia flava (the yellow-flowered Horse Chestnut); Portugal Laurel; Platanus orientalis; Oaks, 7 varieties; Cemetery Yew, and Chamæcyparis Dumpsori, with a general assortment of Forest Tree and Shrub Seeds.
A LIST of which will be forwarded on application.
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WM. CUTBUSH AND SON are now sending out SEED of their CHOICE PRIMULAS and CINERARIAS PERMANENTLY, which has for many years given great satisfaction.
The *Gardeners' Chronicle* of the 6th of January, in Notices to Correspondents, says:—"The blooms were remarkably fine, rich coloured, full, and delicately fringed; they are evidently the produce of a capital strain."
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Sealed packets 2s. 6d. and 5s. 6d. each.
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CINERARIA, from finest named varieties. Per packet 2s. 6d. and 5s. 6d. each.
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GLORIA.—"A good-sized handsome round fruit, with a rich piquant Hautbois flavour; a very heavy cropper, and alt. gether a first-class kind." 25 Plants, 20s.; 50 Plants, 35s.; 100 Plants, 60s.
PRINCE ARTHUR (originally named New Oxford).—"A good-sized handsome round fruit, moderately rich and juicy, a good bearer, and those who want a large handsome Strawberry will find it here." 25 plants, 20s.; 50 plants, 35s.; 100 plants, 60s.
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N.B.—A remittance must accompany each order.

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WM. PAUL (Son and Successor to the late A. PAUL) has to offer in May next the following first-class NEW HYBRID PERPETUAL ROSES:—
BLACK PRINCE, H.P. (WM. PAUL).—Flowers dark crimson, shaded with black, cupped, large and full. This Rose may be called a very dark Giant de Battaille, which it resembles in most respects, but is very distinct in colour. Price 5s. each.
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The following, which are already out, can be supplied in strong healthy plants:—
ELIZABETH VIGNERON (WM. PAUL).—Flowers rosy pink, very large and full, cupped in the way of Louis, but fuller, fresher and brighter in colour; constitution hardy, growth vigorous; blooms continuously; one of the best of last year's novelties. Price 1s. 6d.
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PRINCE DE JOINVILLE (WM. PAUL).—A fine large showy Rose, something in the way of, but of a lighter colour, than Princess of Wales; vigorous and hardy. Price 2s. 6d.
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All the really good French Novelties, 3s. 6d. each; the older kinds, by name, 12s. to 18s. per dozen; 75s. to 100s. per 100.

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Per Packet of 6 Seeds, 1s.
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Genuine Peruvian Guano direct from the Importers. Nitrate of Soda, Sulphate of Ammonia, and other Chemical Manures.
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Have now ready for delivery in dry fine condition,
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SUPERPHOSPHATES of LIME
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Also Genuine PERUVIAN GUANO, and NITRATE of SODA, ex Dock Warehouse; SULPHATE of AMMONIA, FISHERY SALT, &c. E. PURSER, Secretary.
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In Bags containing 2 cwt. each, branded
"This valuable Meal, containing above 20 per cent. of fatty matter, is recommended as an economical food to mix with home-grown produce." (See Dr. Voelcker, R. A. S. E. Journal, Vol. 1, 2d Series, page 176).
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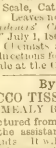
SIMPLE AND SAFE REMEDY.—By using the
APHIS WASH, these Pests of the Garden, together with Scale, Caterpillars, Slugs, Earwigs, &c., are immediately destroyed. Leaves no stain, but strengthens the Trees or Plants.
See *Gardeners' Chronicle*, August 19, 1865; and "Gardeners' Magazine," July 1, 1865.
Sold by Chemists and others, in 1s. bottles, and 2s. 6d. a gallon, with full directions for use
Wholesale at the City Soap Works, Milton Street London, E.C.

By Royal Letters Patent.
TOBACCO TISSUE for DESTROYING RED SPIDER, MEALY BUG, THRIP, and other INSECTS.
Manufactured from Tobacco rolled into Sheets, which will consume without the assistance of blowing, and will not injure the most tender plants. It will be found more economical and very superior to the Tobacco Powder usually used.
Sold in 1lb. packages and upwards, price 3s. 6d. per lb., by Messrs. ROBERTS & SON, Tobacco Manufacturers, 54, St John Street, Clerkenwell, London, and by all Seedsmen and Nurserymen.

GISHURST COMPOUND, whether used against Insects and Mildew, on Growing Plants, or as Winter Dressing on Trees at rest, should be dissolved 48 hours before use. This gets rid of smell, and if the Solution be decanted, prevents any staining of Pots. One ounce to 1 gallon of Iron is recommended for growing Plants; one from 4 to 16 oz. for Trees at rest.
Sold Retail by Nurserymen and Seedsmen, in boxes, 1s., 3s., and 10s. 6d. each.
Wholesale by
PRICE'S PATENT
CANDLE COMPANY
(LIMITED).

Red Spider


Mealy Bug

"PHOSPHO GUANO surpasses, most certainly, by its more correct and constant composition, the best sorts of Peruvian Guano; and of its superior efficacy there can be not the slightest doubt."—*From Report by the* BARON JUSTUS VON LIEBIG.

Contractors' Trade Mark.

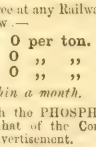
PHOSPHO GUANO.

The Prices, including cost of Bags, Carriage Free at any Railway Station or Shipping Port in the Kingdom, are as follow :—

For 10 tons and upwards	...	£12	0	0 per ton.
For 5 tons up to 10 tons	...	12	5	0 ,, ,,
For smaller quantities	...	12	10	0 ,, ,,

Ten Shillings per ton discount for Cash within a month.

To prevent fraud, all Bags are branded with the PHOSPHO GUANO COMPANY'S Trade Mark, as well as that of the Contractors, copies of which appear at the head of this Advertisement.



Company's Trade Mark.

Report by DR. VOELCKER *of a Visit of Inspection to the Phospho Guano Stores at Seacombe, Birkenhead, and of Analysis of Samples taken from the Stores on the 9th of February*, 1866.

"In compliance with Messrs. PETER LAWSON & SON'S request, I again this year paid a visit of inspection to the Phospho Guano Stores at Seacombe, Birkenhead, and on that occasion took the following samples from the bulk :—

1. A sample from a bulk of about 1000 tons, stored in Shed No. 1.
2. A portion from a heap of about 4000 tons, in Shed No. 3.
3. A sample from about 5000 tons, stored in Shed No. 4.
4. A sample taken from the top of a heap of about 7000 tons in Shed No. 5.
5. A sample from the middle of the same bulk.
6. A sample from the bottom of the same bulk.
7. Mean sample from a bulk of about 2000 tons, lying in the docks in which Phospho Guano is prepared for use.

"Two of the samples I submitted to careful and complete analyses; in the others I determined only the amount of soluble and insoluble Phosphates. The mean results of the eight analyses gave 40·02 per cent. of Soluble Phosphates, and 4·67 of Insoluble, while the Ammonia averaged 3·77 per cent.

"I was conducted over the whole range of the extensive buildings, and left at liberty to select as many samples as I chose, and to take them from any portion of the Stores; and I cannot refrain from noticing that, while doing so, I was much struck with the remarkably fine condition in which I found the whole bulk ready for delivery in the present season.

"since my last visit, a decided improvement has been effected in the mechanical condition of the Phospho Guano. The bulk for 1866, whilst fully as rich in intrinsically valuable fertilizing constituents, is now obtained in a beautifully fine and uniform condition, which it maintains even when submitted to pressure or violent agitation.

"Much practical inconvenience is frequently experienced in the use of artificial manures resembling Soluble Phosphate of Lime, inasmuch as such manures, although dry and in a good condition when they leave the Stores, become sticky or lumpy during their transport, without gaining any excessive quantity of moisture. This serious inconvenience has been entirely overcome by an improved plan of preparation; and the Phospho Guano can now be sent to any distance, or be subjected to any reasonable amount of pressure, without losing its fine and dry powdery condition.

"Having so frequently expressed an opinion of the intrinsic fertilising value of Phospho Guano, I need not repeat former statements on the present occasion; but I may be permitted prominently to dwell upon the fact, that whilst the chemical composition of the bulk of 1866 is fully equal to the Phospho Guano of former years, its mechanical condition has been greatly improved.

"AUGUSTUS VOELCKER, Ph.D.,
"Professor of Chemistry to the Royal Agricultural Society of England."

"11, Salisbury Square, London, E.C., Feb. 24, 1866."

There are authorized Agents appointed for the Sale of PHOSPHO GUANO in all the Principal Towns and Villages in the United Kingdom; but where any difficulty exists in procuring supplies, Orders may be sent direct to

PETER LAWSON AND SON, GEORGE IV. BRIDGE, EDINBURGH; or,
28, KING STREET, CHEAPSIDE, LONDON, E.C.

PETER LAWSON & SON, Contractors.

☞ *The attention of Farmers is particularly directed to the fact that* PHOSPHO GUANO *is the only Manure the quality of which is vouched for by Chemists of high standing, who have themselves visited the bulks and drawn their own samples for analysis.*

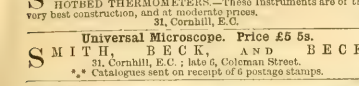
To the Trade.—Russian Bast for Tying.

STUART AND MEIN beg to intimate the arrival of a second importation of RUSSIAN BAST of the best quality. Price 45s. per cwt. Samples may be had on application.
Kelso, N.B.

SMITH, BECK, AND BECK'S GREENHOUSE and HOTBED THERMOMETERS.—These Instruments are of the very best construction, and at moderate prices.
31, Cornhill, E.C.

Universal Microscope. Price £5 5s.

SMITH, BECK, AND BECK,
31, Cornhill, E.C.; late 6, Coleman Street.
*** Catalogues sent on receipt of 6 postage stamps.



GARDEN BORDER EDGING TILES, in great variety of patterns and material, the plainer sorts being especially suited for KITCHEN GARDENS, as they harbour no Slugs and Insects, take up little room, and once put down, incur no further labour and expense, as do "grown" Edgings, consequently being much cheaper.

GARDEN VASES, FOUNTAINS, &c., in Artificial Stone, of great durability, and in great variety of design.

F. & G. ROSHER, Manufacturers, Upper Ground Street, Blackfriars, S.; Queen's Road West, Chelsea, S.W.; Kingsland Road, Kingsland, N.E.

Sole London Agents for FOXLEY'S PATENT GARDEN WALL BRICKS. Illustrated Price Lists free by post. Tile Trade supplied.

ORNAMENTAL PAVING TILES for Conservatories, Halls, Corridors, Balconies, &c., as cheap and durable as Stone, in blue, red, and buff colours, and capable of forming a variety of designs.

Also TESSELATED PAVEMENTS of more enriched designs than the above.

WHITE GLAZED TILES, for Lining Walls of Dairies, Larders, Kitchen Ranges, Baths, &c. Grooved and other Stable Paving Bricks of great durability. Dutch and Adamantine Clinkers, Wall Copings, Red and Stoneware Drain Pipes, Slates, Cements, &c.

To be obtained of F. & G. ROSHER, at their Premises as above.

SILVER SAND (REIGATE, best quality), at the above addresses—14s. per Ton, or 1s. 3d. per Bushel; 2s. per Ton extra for delivery within three miles, and to any London Railway or Wharf. Quantities of 4 Tons, 1s. per Ton less.

FLINTS, BRICK BURRS or CLINKERS, for Rockeries or Grotto Work.

F. & G. ROSHER.—Addresses see above.
N.B. Orders promptly executed by Railway.

VASES, STATUES, FOUNTAIN BASINS, FLOWER-POTS, &c., in TERRA COTTA and FINE STONE WARE, warranted to stand frost, by JOHN N. BRASWELL, Stamford, Lincolnshire. Applications for Drawings and Prices will receive attention.

A Large Assortment of

FOUNTAINS, VASES, JARDINETTES, BALUSTRADES, GARDEN EDGINGS, &c., of elegant designs, in RANSOMES' PATENT STONE, to be sold at Ipswich, at greatly REDUCED PRICES, in consequence of the removal of the Works to London. The material closely resembles natural stone, and is far more durable.

Orders received at the Office of the Patent Concrete Stone Company, Limited, 2, Queen Street Place, Southwark Bridge, or at the Stone Works, Ipswich. Also

RANSOMES' PATENT SCYTHE STONES, at 2s. 6d. per dozen.
RANSOMES' PATENT STONE FILTERS, from 10s. each.

FOUNTAIN JETS.

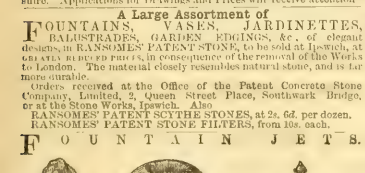


Fig. 520. JET D'EAU. 18 holes, 5s 6d; 24 do., 8s. 6d.; 36 do., 6s. 6d.

Fig. 531. DOME and CONVOLVULUS. 17s.

Fig. 525. DOME. 8s. 6d.

Fig. 523. CONVOLVULUS, 8s. 6d.

Fig. 521. BARKER'S MILL. 11s.

Fig. 522. WIRE BASKET with BALL. 10 ins., 8s. 6d.; 12 ins., 17s. 6d.; 14 ins., 28s. 6d.

Connecting Screws to all the above Jets, 1s. 6d. extra.
Branch Pipe for raising Jets 1 foot high, 5s. 6d.
A TAP is required to be fixed in the Pipe to regulate the supply of Water to Fountain Jets.
J. TYLOR & SONS, Manufacturers, Warwick Lane, Newgate Street, London, E.C.

FOWLER'S PATENT STEAM PLOUGH and CULTIVATOR may be seen at Work in every Agricultural County in England. For particulars apply to JOHN FOWLER & Co., 28, Cornhill, London, E.C.; and Steam Plough Works, Leeds.

NORTH BRITISH RUBBER COMPANY
(LIMITED).
GARDEN HOSE and FITTINGS.
London Warehouse: 86, Cannon Street West, E.C.
Manchester Warehouse: 8, Spring Gardens.

THE IMPROVED LEATHER DRIVING STRAPS for MACHINERY are stronger, more durable, drive better, and cost less than other kinds of Driving Belts. SPECIAL STRAPS for PORTABLE ENGINES. Price Lists free by post.
TURNER'S Patent Strap and Hose Company.
Manufactory: Armit Works, Greenfield, near Manchester.
Warehouse: 81, Mark Lane, London, E.C.
MR. H. FERRABEE, Agent.

Important Reduction in the Prices of Portable Engines for 1866.

CLAYTON, SHUTTLEWORTH AND CO., ENGINEERS, Manufacturers of Portable and Fixed Steam Engines, Machinery for Pumping, Hoisting, Grinding, Sawing, &c.; Engines for Steam Cultivation, Self-moving Engines for Common Roads and Agricultural Purposes generally.
Stamp End Works, Lincoln; and 73, Lombard Street, London; also at Lowengasse No. 44, Landstrasse, Vienna; and Gegenuber dem Bahnhof, Pesth.
Descriptive, Illustrated, and Priced Catalogues Free per Post. Special Drawings when required. The best Steam Threshing Machinery made.

Caution to Gardeners.—When you ask for SAYNOR AND COOKE'S WARRANTED PRIZE PRUNING and BUDDING KNIVES, see that you get them. Observe the mark SAYNOR, also the corporate mark OBTAIN WARRANTED ONLY which are engraved on every genuine pair.
S. & C. regret having to caution Gardeners and others, but are compelled to do so, in consequence of an imitation, of common quality, having been sold for the genuine one, and which has caused many complaints to be made to them of the Knives which were not of their make, all of which are warranted both by sellers and makers.
S. & C.'S Pruning and Budding Knives are the best and the cheapest in the market.
Paxton Works, Sheffield. Established upwards of 125 years.

GRANT'S PATENT PORTABLE RAILWAY affords the cheapest and most satisfactory means of clearing Root Crops off stiff land, and of planting out Farm-yard Manure, either with or without a frost. It also supersedes Planks and Barrows for earth moving, at an immense saving of expense, especially where the ruts are long. It is also cheaper than Carting for similar purposes besides avoiding injury to roads or land and vexatious delays from wet weather.
For particulars and Price List apply to MR. J. GRANT, Portable Railway Works, Love Lane, Rainville, Southwark, London S.E.

Oil Paint no longer Necessary.

HILL AND SMITH'S PATENT BLACK VARNISH for preserving Iron Work, Wood, or Stone. This Varnish is an excellent substitute for oil paint on all out-door work, and is fully two-thirds cheaper. It may be applied by an ordinary labourer, requires no mixing or thinning, and is used cold. It is used in the grounds at Windsor Castle, Kew Gardens, and at the seats of many hundreds of the nobility and gentry, from whom the most flattering testimonials have been received, which HILL & SMITH will forward on application.

"*From the* Right Hon. Lord GREENOCK, *Wood End, Thirsk*
"Lord Greenock has seen the Patent Black Varnish made by Messrs. HILL & SMITH, applied with success, and has heard it highly recommended by friends who have tested it extensively."
Sold in casks of about 30 gallons each, at 1s. 6d. per gallon, at the Manufactory, or 1s. 8d. per gallon paid to any Station in the kingdom.
Apply to HILL & SMITH, Brierly Hill Iron Works, near Dudley, and 22, Cannon Street West, E.C., from whom only it can be obtained.

LONG'S "DIPPING" for TICK in SHEEP. LONG'S "SPECIFIC" for SCAB in SHEEP.
LONG'S "MAGGOT LOTION" for SHEEP STRUCK by the FLY.
Well-known, effective, Non-poisonous.
Wholesale—S. & E. EASSON & CO., Essex Street, Strand, W.C.
Retail Agents in all parts.

Cattle Plague.

PUBLIC NOTICE.—Owners of Stock are earnestly advised to protect their Stock, by the use of
MCDOUGALL'S PATENT DISINFECTING POWDER, as recommended in both Reports of the Royal Commission.
For washing the bodies of healthy and sick Cattle to prevent infection, use MCDOUGALL'S PATENT DISINFECTING SOAP.
CARBOLIC ACID at lowest prices.
ALEXANDER MCDOUGALL, Manufacturing and Agricultural Chemist.
London: 11, Arthur Street West, London Bridge, E.C.
Manchester: Rigg Street, Shudehill.
*** Agents throughout the Kingdom.

TO BE LET, with Immediate Possession, a large FLORIST BUSINESS, the Lease and Stock at a valuation or otherwise.
JAMES OVER, Mitcham Common, Surrey, S.

To Nurserymen and Florists.

TO BE LET, NINE GREENHOUSES and PITS, Thousands of Plants. Cottage, Long Lease, Rent moderate—a capital opportunity—easily managed—family arrangements compel letting.
Apply to A. B., Silchester Nursery, Silchester Road, Notting Hill.

TO FLORISTS.—A very advantageous place for the Exhibition and Sale of Flowers and Bouquets TO BE LET at the AGRICULTURAL HALL, during the six days of the HORSE SHOW.
For terms apply personally to the SECRETARY of the Hall, Barford Street, Islington, N.

To Market Gardeners and Others.

TO BE DISPOSED OF, the STABLE MANURE, &c., of a large Establishment in London, employing on an average 170 Horses.
Any person wishing to Contract for same will apply by letter to X. Y. Z., Messrs. Leyton & Co., 166, Strand, London.

To Farmers and Others.

NEWTON PARK, NEWTON-IN-THE-WILLOWS, NEAR LIVERPOOL AND WARRINGTON.
THE EXECUTORS of the late James Wilson are interested in this Property under a Lease which expires on the 2d February, 1868. There is in hand about 500 Statute Acres, viz., 160 in Grass and 37 under plough; other parts of the holding are let off. The fair rent payable is £402 10s. per annum, but that is reduced by £405 for the period of the Lease. The land is well adapted for a dairy, and is in a high state of cultivation.
The Bailiff, Mr. JEFFS, will show the Premises. Tenders to be sent to Messrs. T. E. & W. IRVING, Solicitors, 3, Dunbar Court, Liverpool, on or before the 7th May next, but the Executors do not bind themselves to accept any Tender.

First-rate Nursery Business for Sale.

MR. J. C. STEVENS has received instructions from Messrs. Young, of the Royal Nurseries, Great Yarmouth, who are retiring from business, to offer for SALE, by Private Contract, the LEASE and GOODWILL of their well-known BUSINESS, which has been established upwards of 50 years, and commanding a very extensive trade, the stock of Hardy and Greenhouse Plants, including several thousand in Pots, Valuable Stools, Pits, Frames, Propagating Houses, Garden Implements, Horse, Carts, Dog Cart, &c., to be taken at a Valuation.
For further particulars apply to MR J. C STEVENS, Horticultural Auctioneer and Valuer, 38, King Street, Covent Garden, who can strongly recommend the above mentioned concern.

Sales by Auction.

Nursery to be Sold without Reserve,
BY ORDER OF THE EXECUTORS OF THE LATE MR. JAMES PEARSON.

MR. ELLOART will SELL by AUCTION, on FRIDAY, May 11, at Garraway's, the ESCHOL NURSERY, with Residence, Shop, Glasshouses, Pits, Sheds, &c., covering nearly 3 acres, situate in Hampstead Road, opposite the Chalk Farm Railway Station, at the foot of Haverstock Hill. Held for about 40 years to come at only £61 per annum. There is a valuable old business connection, the advantages of which the purchaser will secure. Particulars of the Auctioneer, 27, Chancery Lane, E.C.

Sale of first-class Carnations, Picotees, Pinks, &c.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, at 3 and 20, Gracechurch Street, City, E.C., on MONDAY, April 30, at 1 o'Clock precisely, a Splendid Collection of CARNATIONS, PICOTEES, and PINKS, of the finest growth, the whole Stock of an eminent grower; Standard and Dwarf Roses, Aurealas, American Plants, Azalea indica, Geraniums, choice German and other Flower Seeds, Verbenas, Fuchsias, Dahlias, and other Plants for Bedding.
On view the Morning of Sale. Catalogues may be had at the Rooms as above, and of the Auctioneers and Valuers, Leytonstone.

Stratford, Essex.

SALE OF STOVE, GREENHOUSE, AND BEDDING PLANTS; GREENHOUSES, BOXES, AND OTHER EFFECTS.

MESSRS. PROTHEROE AND MORRIS are instructed by E. Burford, Esq., to SELL by AUCTION on the Premises, the Pleasure Ground, adjoining Manor House, Stratford Bridge Railway Station on the Great Eastern Railway, on TUESDAY, May 1, at 12 o'Clock precisely, in consequence of the ground being immediately required to be cleared for building purposes, the whole of his valuable collection of STOVE and GREENHOUSE PLANTS, including Anœctochilus, Orchids, some choice Cacti of sorts, Brassia, Tillandsia, Bulbergia, Ferns, Aralia nobilis, Poinsettias, Hydrangeas, Calias, five large Specimen American Aloes in tubs, 6 to 6 feet), Hoya carnosa, &c.; Geraniums, Verbenas, Calceolarias, and other plants for bedding; with the erection of Greenhouses, Hot-water Piping, Conical Boiler, Metal Tank, Fountain, Hand Lights, 2 and 3-light Boxes, Garden Pots, Vases, and sundry effects.
May be viewed the Day prior and Morning of Sale. Catalogues may be had at the Swan, Stratford; at the Eagle, Snaresbrook; and of the Auctioneers and Valuers, American Nurseries, Leytonstone.

Stoke Newington.

CLEARANCE SALE FOR THE GREAT EASTERN RAILWAY OF ABOUT 50,000 CHOICE GREENHOUSE AND BEDDING PLANTS.

MESSRS. PROTHEROE AND MORRIS are instructed to SELL by AUCTION, on the Premises, Shacklewell Nursery, adjoining Hackney Downs, and close to the Amherst Arms, Shacklewell, on MONDAY, May 7, at 12 o'Clock precisely, by order of Mr. Adam Forsyth, the ground being immediately required for the construction of the Great Eastern Extension line of Railway, the Valuable Collection of the valuable GREENHOUSE and BEDDING PLANTS, including 2,000 Pelargoniums, 1,000 Verbenas, other Geraniums; 500 Polargoniums, 500 Genistas, 500 Myrtles, 800 Calceolaria aurea floribunda, 800 Lobelia speciosa, 3000 Verbenas, named Dahlias, 500 Tropæolum Elegans, 400 Petunias, 1,000 choice several ranges of Pits, a quantity of Hot-water Piping, two capital Boilers, Bricks, Paving, and numerous other Effects.
May be viewed the Saturday prior and Morning of Sale. Catalogues may be had on the Premises; and of the Auctioneers and Valuers, American Nurseries, Leytonstone, Essex, N.E.

Choice Orchids.

MR. J. C. STEVENS begs to announce that he has been favoured with instructions to SELL by AUCTION at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY, April 30, at half-past 12 o'Clock precisely, a quantity of ORCHIDS, including an Importation of Dendrobium formosum, and some fine healthy plants of Anœctochilus Dawsoni, O. nobile sum, O. Pescatorei, O. tuembinanense, O. Rossii, O. Cervantesii, O. ornatum, O. Alexandræ, Oncidium Barkeri, Pinelia ovata, Lælia autumnalis, and many other choice sorts.
On view the Morning of Sale, and Catalogues had.

Bedding Plants, Carnations, Picotees, &c.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on SATURDAY, May 5, at half-past 12 o'Clock precisely, INDIAN AZALEAS in bud, fine new double DEUTZIA CRENATA, PINKS, PICOTEES, and CARNATIONS; GERANIUMS, Mrs. Pollock and other good varieties; Stove and Greenhouse Climbers, Hardy and other Ferns, Cacti in sorts; fine Dahlia Roots, Rock and Border Plants, &c., &c.
On view Morning of Sale, and Catalogues had.

Shaftesbury Park Estate, Richmond, Surrey.

TO TIMBER DEALERS, BUILDERS, GARDENERS, AND OTHERS.

MESSRS. W. G. AND R. TAYLOR are favoured with Instructions from the owner to SELL on the Premises, on TUESDAY, May 1st, at 12 for 1 o'Clock precisely, 8 PLOTS of FREEHOLD BUILDING LAND, with frontages to the New and Shaftesbury Roads. Also, without reserve, in Lots, the whole of the valuable Timber, shrubs, &c., growing on the above Estate, together with the excellent Building Materials of the extensive Glass-houses, Stables, Laundry Sheds, and the Iron Brick Wall surrounding the Whole of the property.
Particulars and conditions may be obtained of the various Inns in the neighbourhood; and of the Auctioneers, George Street, Richmond, S.W.

Waterloo Road, Uxbridge.

ABOUT 8000 BEDDING PLANTS.

MR. STRANSOM will SELL by AUCTION, by direction of Messrs. J. & G. Lowe, in suitable Lots for private Purchasers, on the Premises, Waterloo Road, Uxbridge Moor, on WEDNESDAY, May 9, at 12 o'Clock precisely, about 8000 very healthy, and well-hardened BEDDING PLANTS, consisting of Calceolarias, Tom Thumb, Lobelias, and variegated Geraniums; Verbenas, Heliotrops, Cuphæas, calceolate collections of Scarlets, Fancies, Bedders, and Bouquet; Dahlias, and various other plants.
MAY be viewed, on application, one week prior to the Sale. Catalogues had on the Premises; and of the Auctioneer, Uxbridge, Moulbrees; and 12, Hart Street, Bloomsbury Square; where also the General Nursery Catalogue, with name, description, and full particulars of the various plants, may be had.

Ashford and Stanwell, Middlesex.

TO MARKET GARDENERS, NURSERYMEN, BUILDERS, AND OTHERS, 104 ACRES OF VALUABLE FREEHOLD AND COPYHOLD LAND, BY ORDER OF THE TRUSTEES OF G. F. PETTIWARD, ESQ., DECEASED, IN THREE LOTS, WITH POSSESSION IF REQUIRED.

MR. DAVENPORT will SELL by AUCTION, at Garraway's, Change Alley, Cornhill, E.C., on FRIDAY, May 11, at 12 o'Clock, the VALUABLE PROPERTY, the greater portion of which is well adapted for Market Garden Ground or Nurseries, or for Building Purposes, about 8 acres lying close to the Railway station, on the Windsor and Reading branch of the South-Western Railway, the remainder being in the village of Stanwell, within 1 mile of the high road from Hounslow to Staines, to which there is very considerable frontage. The whole is let on Lease for an unexpired term of 11 years, at Midsummer next, to Mr. Edward Curtis, who will give early possession on reasonable terms and will show persons over the land.
Plans of the Lots may be had on the Premises; of Mr. W. DAVENPORT, Solicitor, 21, Ely Place, Holborn, E.C.; at Garraway's; and of the Auctioneer, 35, Bucklersbury, Mansion House, E.C.

Ashford, Middlesex.

About 92 Acres of valuable Freehold Land, fronting the main road from Staines to Kingston, situate about half-a-mile from the Sunbury Railway Station, eligible for Building, Market Garden, or Accommodation Purposes.

MESSRS. DEBENHAM, TEWSON, AND FARMER will SELL at the London Tavern, on TUESDAY, May 22, at 1 o'Clock, in 16 Lots, varying from three to 10 acres each (unless previously sold as a whole), the first portion of the ASHFORD MANOR ESTATE, which is Freehold, land to recommend itself to attractive, affording eligible sites for the erection of superior residences, or moderate-sized villas, being situate in a favourite and healthy locality, within easy reach of Sunbury, half a mile from the Sunbury and Staines Station, and only two miles from the Ashford Station on the South-Western Line; also valuable as market garden or accommodation land. The subsoil is gravel. Each lot has an important frontage to a capital road, and there are numerous good houses in the immediate neighbourhood.
Particulars of Messrs. COVERDALE, LEE, COLLIER, BRISTOW, & WYATT, Solicitors, 4, Bedford Row; and the Auctioneers, 80, Cheapside, E.C.

SHANKS' PATENT LAWN MOWERS FOR 1866.

PATRONIZED ON FIVE SEPARATE OCCASIONS DURING THE SEASON OF 1864 BY

HER MAJESTY THE QUEEN,

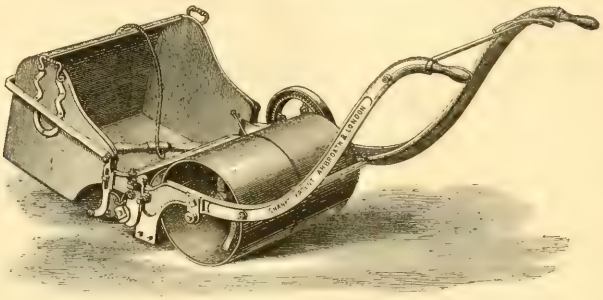
AND ONCE BY HIS MAJESTY THE KING OF SAXONY;

AGAIN ON FOUR SEPARATE OCCASIONS DURING THE SEASON OF 1865 BY HER MAJESTY THE QUEEN;

ONCE BY HIS MAJESTY THE KING OF HOLLAND;

AND ONCE BY HIS MAJESTY THE KING OF PRUSSIA.

EVERY MACHINE WARRANTED.



IF NOT APPROVED OF, CAN BE AT ONCE RETURNED.

PATENT HAND MACHINE.

APRIL, 1866.—ANOTHER 42-INCH HORSE MACHINE HAS JUST BEEN ORDERED FOR

THE ROYAL GARDENS AT KEW.

A. SHANKS AND SON HAVE TO INTIMATE THAT THEIR

MACHINES ARE THE ONLY LAWN MOWERS USED IN THE ROYAL GARDENS AT KEW.

These are the only Machines that can be depended on to give lasting satisfaction.

THESE ARE THE ONLY MACHINES THAT WILL MOW PROPERLY WHEN THE GRASS IS WET.

THESE ARE THE ONLY MACHINES THAT DELIVER THE GRASS WITHOUT STOPPING, THUS SAVING AN IMMENSE AMOUNT OF LABOUR.

SHANKS' PATENT LAWN MOWERS are the only Machines that have been in operation in Her Majesty's Gardens for a quarter of a century, and they are in daily use in all the Public and Principal Gardens in the Kingdom.

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A. S. AND SON have been particularly careful that the advantages in point of durability and simplicity of construction which have always been a peculiarity of their Machines should still remain, and that no improvement be introduced which has merely novelty to recommend it.

SHANKS' PATENT LAWN MOWERS for 1866 are unrivalled for simplicity of construction, ease of working, and durability.

PRICES, including Carriage to any Railway Station or Shipping Port in the Kingdom.

SHANKS' NEW PATENT HAND MACHINE.

Width of Cutter		Easily Worked.	Silent Movement.
10-inch Machine	£3 10 0	*By a Lady*	4s. extra.
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16-inch Machine	£6 10 0	*By a Man or Two Boys*	4s. extra.
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24-inch Machine	8 17 6		

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Ditto for Donkey, 16s. per set.

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*** ORDERS EXECUTED ON THE DAY THEY ARE RECEIVED.

ALEXANDER SHANKS AND SON, DENS IRON WORKS, ARBROATH.
LONDON OFFICE and SHOW ROOMS: 27, LEADENHALL STREET, E.C.
PARIS OFFICE and SHOW ROOMS: 56, BOULEVARD HAUSSMANN.

A. S. & SON *keep a stock of all sizes of Machines at their London and Paris Establishments, from which Orders are executed on the day they are received.*

☞ 27, *Leadenhall Street is the only place in London where intending purchasers of Lawn Mowers can choose from a stock of from* 150 *to* 200 *Machines All sizes kept there, whether for Horse, Pony, or Hand Power.*

Editorial Communications should be addressed to "The Editor." Advertisements and Business Letters to "The Publisher," at the Office, 41, Wellington Street, Covent Garden, London, W.C.
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THE GARDENERS' CHRONICLE
AND
AGRICULTURAL GAZETTE.

A Newspaper of Rural Economy and General News.

No. 18.—1866.] SATURDAY, MAY 5. {Price Fivepence. STAMPED EDITION, 6d.

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INTERNATIONAL HORTICULTURAL EXHIBITION and BOTANICAL CONGRESS.

Under the Patronage of Her Majesty THE QUEEN, and of their Royal Highnesses the PRINCE OF WALES and the Duke of CAMBRIDGE.

The EXHIBITION and CONGRESS will OPEN on MAY 22, and continue till May 25. Subscribers' names will be received, and Schedules and Programmes will be delivered on application to the Secretary, at the Offices, 1, William Street, Lowndes Square, London.

ROYAL BOTANIC SOCIETY'S GARDENS, in Regent's Park.—FIRST GENERAL EXHIBITION of PLANTS and FLOWERS, WEDNESDAY NEXT, May 9. Tickets to be obtained at the Gardens, and of the Society's Clerk, Austin's Ticket Office, St James's Hall; by Vouchers from Fellows of the Society, price 5s; and on the day of Exhibition, 7s. 6d each. Gates open at 2 o'Clock. Bands from 3 to 7 o'Clock.

JOHN WATERER'S AMERICAN PLANTS will be Exhibited in JUNE.

CRYSTAL PALACE.—GREAT FLOWER SHOW, on SATURDAY NEXT, May 12. Entries should be at once forwarded to I. WILKINSON, Superintendent.

MANCHESTER BOTANICAL and HORTICULTURAL SOCIETY.—The FIRST GENERAL EXHIBITION of FRUITS, PLANTS, and FLOWERS will be held at the Gardens, Old Trafford, on WEDNESDAY and THURSDAY, the 16th and 17th of May next. Schedules of Prizes, and any further information, may be obtained from the undersigned.

By order,
Botanical Gardens, Manchester. BRUCE FINDLAY, Curator.

KINGSTON and SURBITON ROYAL HORTICULTURAL SOCIETY.—The SECOND GREAT EXHIBITION of FLOWERS, FRUITS, and VEGETABLES, of this Society, will be held on WEDNESDAY, June 13, 1866, in the grounds of the Woodbine, Queen's Road, Kingston, by the kind permission of Mrs. Christy. Copies of Rules and Schedules, and further information can be had on application to the Secretary,

Mr. J. KIRK, 5, Queen's Place, Canbury, Kingston.

HORTICULTURAL DINNER at ST. MARTIN'S HALL, Long Acre, London, W.C., on THURSDAY, May 10.

The Lord HENRY GORDON LENNOX, M.P., Vice-President of the Royal Horticultural Society, has kindly consented to take the Chair

HORTICULTURAL DINNER at ST. MARTIN'S HALL, Long Acre, London, W.C., on THURSDAY, May 24

The Lord HENRY GORDON LENNOX, M.P., Vice-President of the Royal Horticultural Society, has kindly consented to the Chair.

Tickets, to include a Bottle of Wine, 10s. 6d. each.

Persons intending to be present should apply at once for Tickets.

RICHARD DEAN, Hon. Sec.
8, Denmark Villas, Ealing, London, W.

International Horticultural Exhibition.

MR. J. C. STEVENS has received instructions from the Executive Committee of the International Horticultural Exhibition at South Kensington, to SELL by AUCTION, in the Building, on SATURDAY, May 26, and following days (Sunday excepted) nay PLANTS, COLLECTIONS of PLANTS, HORTICULTURAL IMPLEMENTS, &c., that the owners may be desirous of disposing of after the closing of the Exhibition.

Mr. J. C. STEVENS therefore solicits that all persons intending so to dispose of their Plants, will immediately furnish him with a Descriptive List for insertion in the Catalogue.

Terms and further particulars may be obtained upon application to the Auctioneer, 38, King Street, Covent Garden, W.C.

Genuine Garden and Agricultural Seeds.

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Genuine Garden Seeds.

WM. CUTBUSH and SON'S DESCRIPTIVE PRICED CATALOGUE of SEEDS, which contains everything New and Old worth growing, can be had post free on application.

Highgate, London, N.

New Catalogue.

CHARLES TURNER'S CATALOGUE of PLANTS for the Spring is now ready. It includes lists of all the leading Bedding Plants, New Dahlias, Pelargoniums, Roses, Verbenas, and select general Collections.

The Royal Nurseries, Slough.

JAMES FAIRHEAD and SON, SEED GROWERS and MERCHANTS, 7, Borough Market, London, S.E.

New and Genuine AGRICULTURAL, GARDEN, and FLOWER SEEDS. Special prices and advantageous offers on application.

TRANSPLANTED RHODODENDRONS.—4-year-old Hybrids saved from the choicest Crimson, White, and Claret-coloured sorts, 12s. 6d. per 100, or 1000 for £5.

RICHARD SMITH, Nurserymen, Worcester.

DRAWING-ROOM PLANT CASES.—The beautiful Novelties in Plant Cases just introduced by BARR & SCDDER are now on view at their Warehouse. An Illustrated Sheet is in preparation for ladies living in the country. See illustrations, p. 408.

BARR & SUDDEN, 12, King Street, Covent Garden, W.C.

MAURICE YOUNG'S DESCRIPTIVE LIST of Coniferæ, New and Rare Hardy Plants, Ornamental Trees and Shrubs, Rhododendrons, Japanese Novelties, Forest Trees, and Roses, forwarded on application.

Milford Nurseries, near Godalming, Surrey.

Roses in Pots.

PAUL AND SON, in addition to the NEW ROSES of 1866, can offer fine Plants of the finest TEA-SCENTED NOISETTE and best HYBRID PERPETUAL ROSES in pots for Planting during present and next month.

Old Cheshunt Nurseries, N.

Notice.

MR. WM. PAUL begs to announce that he has received orders to the full extent of his Stock of the following NEW ROSES:—HR. LINDLEY, BLACK PRINCE, LADY SUFFIELD, and GLOBOSA. A few strong healthy plants of GLORY OF WALTHAM, ELIZABETH VIGNERON, MADAME EMILE BOYAU, and PRINCE DE JOINVILLE, can still be supplied at 3s. 6d. each.

PAUL'S Nurseries, Waltham Cross, London, N.

VERBENAS, FUCHSIAS, PETUNIAS, ROSES, &c., New and Old, of only those that are worth growing. Nice Plants now ready to send out. DESCRIPTIVE CATALOGUES free.

WM. KNIGHT, Floral Nursery, Hailsham, near Hurst Green, Sussex.

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WALTER P. HUME, Exotic Nursery, Gloucester.

NEW and CHOICE SEEDS.—Bull's Verbena, Bull's Tropæolum, Cyclamen persicum grandiflorum, Giant 10-week Stock, Perfection Aster, Linum auratum, Intermediate Stock, James' Prize Calceolaria, Bull's Primula, and Primula, each 2s. 6d. p. pkt.

BARR & SUDDEN, 12, King Street, Covent Garden, W.C.

DWARF DAHLIAS for Beds or Ribbon Borders.—PURPLE ZELINDA and LITTLE NAJADE, white, richly edged with crimson, in strong clumps 4 roots, at 6s and 8s. per dozen.

CHARLES SHARMAN, Hill Nursery, Winchfield, Hants.

For Dahlias apply to

G. RAWLINGS, who is permitted to announce that he supplied Clark & Co., and Mr. Boshell, of the Borough, for 16 years. Nearly 200 varieties, at 5s. per doz.; New ones of 1865, including LEAH, CHAMPION, and GEO WHEELER, 9s. per doz.

CATALOGUES are ready.

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STEPHEN BROWN'S SPRING PLANT CATALOGUE contains a very select assortment of BEDDING PLANTS at low prices. Copies free.

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Bedding Plants, 2s. 6d. per dozen.

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CATALOGUES on application.

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Bedding Plants, Bedding Plants.

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100,000 Bedding Plants.

C. ELWIN AND CO. beg to offer the above, from 2s. 6d. to 6s. a dozen. Banker's reference or Post Office Order from unknown correspondents.

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A few dozens of VIOLA MONTANA, at 9s. per dozen.

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WOOD and INGRAM offer fine sturdy Autumn-struck Plants of the above, good varieties, all named, well established in 3½-inch pots, and thoroughly hardened off, at 9s. per 100, package included. Names of varieties sent may be seen in W. & I.'s NEW DESCRIPTIVE CATALOGUE, which will be sent on pre-paid application.

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WM. PAUL'S selected strains of these popular Flowers, 1s. 6d. to 2s. 6d. per packet. All other Seeds of first quality at moderate prices. CATALOGUE on application.

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Blooming Pelargoniums.

WOOD and INGRAM offer very fine Plants of good named varieties of the above in 5-inch pots at 6s. per doz., 45s. per 100; and in 4-inch pots, 4s. per doz., 30s. per 100.

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Nurseries, Huntingdon.

J. IVERY and SON beg to announce that their DESCRIPTIVE PRICED CATALOGUES of AZALEA INDICA, HARDY BRITISH FERNS, ROSES, CONIFERÆ, GRAPE VINES, and SEEDS, may be had on application at their Dorking Nursery.

WEDDING BOUQUETS, EPERGNES FILLED, Tables Decorated, Conservatories Furnished, by C. ELWIN & Co., 9, Park Terrace, Regent's Park.

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LIST of SORTS sent on application.

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PINES.—Strong Fruiting, Succession, and Suckers, of all the leading kinds, can be had of

B. S. WILLIAMS, Victoria and Paradise Nurseries, Holloway, London.

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Superb Double Hollyhocks.

THE FINEST COLLECTION EVER OFFERED TO THE PUBLIC.

W. CHATER has a large Stock of fine healthy Plants now ready, which he can supply on liberal terms.

See Advertisement on other page.

Address, W. CHATER, Nurseries, Saffron Walden.

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WATERER and GODFREY'S PRICED and DESCRIPTIVE CATALOGUE of AMERICAN PLANTS, as exhibited in the Horticultural Gardens, South Kensington, free on application. This Catalogue fairly describes the Rhododendrons most worth growing, as well as some new and very handsome kinds exclusively in their possession, and now for the first time offered.

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The above are warranted. Stamps taken in payment.

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BOX EDGING, 4d. per yard; one yard sufficient to make three.

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ZEA CURAGUA, new Striped Japanese Maize.—Greatest novelty of the season. Newly imported Seed, 1s. and 2s. 6d. per packet, sent post free.

BUTLER & MCCULLOCH, Covent Garden Market, W.C.

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GOOD CLOVER SEEDS at MARKET PRICES.

Red	White Dutch	Yellow
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GIANT ASPARAGUS, fine selected Roots for early cropping, 2s. 6d. per 100. This delicious Vegetable does not require half the expense usually incurred in planting it. For instructions, see RICHARD SMITH'S SEED LIST for 1866.

Strong Transplanted ONE YEAR'S ROOTS, 1s. per dozen.

RICHARD SMITH, Nurseryman, Worcester.

GIANT ASPARAGUS.—Extra fine 2-yrs., 2s. per 100; extra fine 3-years, 3s. per 100.

Price to the Trade on application.

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New Cucumber.

HUME'S IMPROVED RIDGE.—This is a cross between "Henderson's A 1" Ridge, and "Lord Kenyon's Favourite" frame variety. It is perfectly hardy, but also does capitally in a hot bed, and will be found to be the best of all kinds for growing as a Winter variety. It is wholly spindle.

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For Bouquets and as Cut Flowers

THE INVINCIBLE SCARLET SWEET PEA is invaluable. The colour is intense and permanent. Packets 6d., 1s., and 2s. 6d. each. Sold by the principal Seedsmen throughout the kingdom, or of the Raiser,

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Fine Long Red Surrey Carrot.

SUTTON AND SONS can supply excellent new Seed of the above at very moderate price, which (according to quantity required), may be had on application.

SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

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Wetherell's Prize Swede Turnip.

W. JACKSON and CO., SEED GROWERS, Bedale, Yorkshire, can supply the above at 1s. per lb., or 45s. per bushel. Mr. Wetherell gained all the great Prizes offered by the late Duke of Northumberland with this Swede; it is of excellent quality and fair size.

Choice Bedding Geraniums.

THOMAS PESTRIDGE can supply strong Plants of MRS. POLLOCK, at 12s. per dozen.

	Per doz.	s. d.		Per doz.	s. d.
Cloth of Gold	.. ..	1 0	Ellen Linasso	.. ..	1 0
Madame Vaucher	.. ..	4 0	Cerise	.. ..	3 0
Stella	.. ..	1 0	Variegated in Varieties	.. ..	1 0

Show and Fancy Geraniums at 18s. to 24s. per dozen.

Cocoa Nut Refuse at 6s. per cwt.

Terms Cash.

The Great Nurseries, Cambridge, Middlesex.

New and Beautiful.

TWELVE of the BEST GERANIUMS extant for BEDDING are

Italia Unita	Variegata, Little Davat	Growmore
Sunset	Victor	Prince Nosegay
Lima	Amy Hogg	Lucia
Mrs. Pollock	Beauty Vesuvius	Lassell

One set of 12 strong Plants, Rs. 12, in the usual 24 Sts.

Post Office Orders to be made payable at Castle Hedingham.

WM. DILLISTONE, Sible Hedingham, Essex.

BEDDING PLANTS, BEDDING PLANTS. Extra strong, pinched plants of the best and most showy, well-established kinds in pots :—

GERANIUMS, in 25 of 50 named shades, best sorts, for bedding, 10s., 14s., 18s., 20s., 25s., 30s., 42s.

VERBENAS, 25 fine scarlet, 10s., 14s., 20s., 24s., 30s., 42s.

100 BEDDING PLANTS, in pots, in 25 distinct kinds, viz., Double Daisies, Geraniums, Verbenas, &c., for £1; 200 ditto, £2; 300 ditto, £3.

CATALOGUES free. Post Office Orders payable on Castle Hedingham.

WM. DILLISTONE, Sible Hedingham, Essex.

First-class Certificates.

GEO. SMITH is now sending out his magnificent New Geraniums, LE GRAND, together with Zonale Geraniums, CHIEFTAIN, SOUVENIR DE PHIL, GLADIATEUR, PINK PERFECTION, &c., the finest collection ever offered, and have received 10 first-class Certificates.

G. S. is also sending out his two fine Double FUCHSIAS, and now offers the above for the first time. For description see CATALOGUE in exchange for one in stage stamp.

Tollington Nursery, Hornsey Road, Islington, London, N.

J. WATSON, New Zealand Nurseries, St. Albans, begs leave to offer his new BRILLIANT SUPERB GERANIUM for Flower Garden purposes, unrivalled, at 24s. per dozen, to be sent out the first week in May. Messrs. Henderson, Mr. Herbert Fish, and others, who has had it on trial the last two seasons :—

"April 12, 1866.

"The Brilliant Superb scarlet Geranium is one of the very best for bedding in the flower garden or for flowering in pots or boxes. It has the fine compact habit of the old Brilliant, but is rather more luxuriant in growth, has better foliage, which is much more freely supplied with white blotches of a pure white, and the trusses of flower and the individual flowers are much larger and of a richer scarlet. I have no hesitation in speaking of this variety as one of the most satisfactory that can be used, after trying it for two seasons.

"J. Fish, Pattering Bury, Lincoln, Beds."

"The finest thing out in the Trade."

Choice Zonal Geraniums for Bedding.

SALTMARSH AND SON offer the following in strong Plants, fit to bloom late this year :—

MRS. POLLOCK, 6s. per dozen.

*** LUNA.—Rich scarlet, with deep chocolate zone, good habit, and very effective, 30s. to 42s. per dozen.

*** LITTLE TREASURE.—A very distinct variety, with scarlet zoned flowers, very suitable for cutting, small boxes, 18s. per dozen.

N.B.—The stars affixed to the above, which were sent out here last season, for the first time, received the awards of the Royal Horticultural Society at their trial grounds.

Messrs. Saltmarsh and Son, Chelmsford.

Choice Flower Seeds post free.

B. S. WILLIAMS has much pleasure in submitting the following LIST OF SEEDS, most of which are specially selected for those requiring superior qualities, from other Specialities and Miscellaneous Grower's Catalogues. Many of the best novelties, NEW SEED CATALOGUE, post free on application.

	Per packet	s. d.
PRIMULA (Williams's superb strain), red, white, or mixed		1 0
,, seed	25 3d., 50 6d.,	5 0
CINERARIA (Williams's superb choice strain)	25 6d.,	5 0
CALCEOLARIA (Williams's superb strain)		3 0
CYCLAMEN PERSICUM, the produce of the finest collection in this country		1s., 2 6
ASTER VICTORIA, the most distinct of Aster ,,		1 0
,, TRIUMPH OF EXETER, Victoria sort		1 0
,, WHITE CHRYSANTHEMUM-FLOWERING		1 0
STOCK, BROMPTON DWARF, very fine		1 0
,, PURPLE QUEEN, very distinct, beautiful colour		1 0
BALSAM, CAMELLIA-FLOWERED		1 0
CARNATION and PICOTEE, saved from selected plants		1 0
MARECHIOLA ELEGANS, an extreme scented shrub of delightful fragrance		1 0
NASTURTIUM KING THEODORE, new intense black		1 0
ONOPORDUM ACANTHIUM ELATUM, dark-leaved tall-growing plant		1 6
PALAFOXIA HOOKERIANA, new		1 0
PANSY, saved from fine flowers		1 0
SILENE PENDULA RUBERRIMA, very beautiful		1 0
SWEET PEA, the New Invincible Scarlet		1 0
PERENNIALS and HERBACEOUS, bright yellow flowers, with citronlike fragrance		1 0
LOBELIA SNOWFLAKE		2 6
CHRYSANTHEMUM, very pretty		1 6
GYNERIUM ARGENTEUM, Pampas Grass		0 6
ANTHERICUM MAJUS, Tall Plume Grass		1 0

KITCHEN GARDEN SEEDS, carriage free.

Complete Collections to suit Gardens of various sizes, 10s. 6d., 15s., 42s., 63s., 84s. each. Full particulars and CATALOGUE.

Victoria and Paradise Nurseries, Holloway, London, N.

Tree and Shrub Seeds.

CHARLWOOD and CUMMINS have now on Sale, SEEDS of the following in good condition :—Cedrus Deodara, Libani, and Red Cedar; Cupressus Lawsoniana and macrocarpa; Pinus bracteata, tededa, Nordmanniana, and orphanacea; Pinus Benthamiana, Douglasii, and ponderosa; Abies nobilis and excelsa; Wellingtonia gigantea; Arbutus gratuloides; Kalmia latifolia; Magnolias, 4 varieties; Pavia flava (the yellow-flowered Horse Chestnut); Podocarpus chilina; Prunus cerasifera; Oaks, 7 varieties; Common Yew, and Chandler's Evergreen, with a general assortment of Forest Tree and Shrub Seeds.

A LIST of which will be forwarded on application.

14, Tavistock Row, Covent Garden, W.C.

New Strawberries.

MRS. NICHOLSON, Eggleshill, Yarm, Yorkshire, has several pleasing and interesting of these very fine new kinds, raised by herself, which have proved to be very attentive to Strawberries for many years. These have now been fully tested by herself, and the descriptions given are taken from the Gardeners' Journal of 26 Sept., both a reply of Mr. "Yarm Strawberries."

ALICE NICHOLSON.—"Fruit conical, fresh yellowish, seed and flesh, very rich and sugary with a rich pine and Hautbois flavour; a very heavy cropper, and altogether a first-class variety." 25 plants, 20s.; 50 plants, 35s.; 100 plants, 65s.

GLORIA.—"A good-sized handsome round fruit, with a rich piquant Hautbois flavour; a very heavy cropper, and altogether a first-class variety." 25 plants, 20s.; 50 plants, 35s.; 100 plants, 65s.

PRINCE GEORGE (originally named New Jubilee).—"A good-sized handsome round fruit, moderately rich and juicy, a good bearer, and those who wish a large handsome Strawberry will find it here." 25 plants, 20s.; 50 plants, 35s.; 100 plants, 65s.

FLOVER.—"Out of the large number which should be introduced, is one Mr. Ewbank, the Superintendent of the Gardens, has named Flover, a medium-sized fruit, of a rich scarlet colour, with a very rich Hautbois flavour, juicy, and a good bearer." 25 plants, 20s.; 50 plants, 35s.; 100 plants, 65s.

N.B.—A remittance must accompany each order.

SPECIAL OFFER.—250,000 BEDDING PLANTS

CONSISTING OF THE UNDERMENTIONED VARIETIES.

DESCRIPTIVE LISTS FREE.

Not I and to these Prices beyond one month from the date herein given, and all Orders received subject to NOT HAVING SOLD OUT. All the Plants are in Thumb and small 60-pots, and in fine healthy condition.

	Per doz.	Per 100.
	s. d.	s. d.
AGERATUM, sorts	2 6	17 6
ANTIRRHINUMS (new sorts of 1866)	3s. to 4s.	..
CALCEOLARIAS, yellow, brown, and dark	3 0	20 0
CHRYSANTHEMUMS (new sorts of 1866)	4 0	25 0
DAHLIAS, finest Show, Fancy and Pompon	3 0	20 0
DAISIES, finest varieties, named	3 0	20 0
PETUNIAS, finest varieties (new sorts of 1866)	4 0	25 0
GAZANIAS, sorts	2 6	17 6
GERANIUMS, scarlet, pink, white, and rose	3 0	20 0
,, Variegated, finest sorts	1s. to 6s.	..
,, NOSEGAY, including Beaton's and others, new varieties	6 0	40 0
,, MRS. POLLOCK	12s. to 18s.	100s. to 150s.
HELIANTHEMUMS (Rock Cistus)	1s. to 6s.	..
HOLLYHOCKS, finest named	6s. to 9s.	40s. to 60s.
HELIOTROPES, sorts	2 6	17 6
KONIGA (Alyssum variegatum)	2 6	17 6
LOBELIAS, blue, white, and others	2 6	17 6
MIMULUS, finest new kinds	3 0	20 0
PAMPAS GRASS, fine plants	4 0	25 0
PANSIES, fine sorts	3s. to 6s.	..
PENTSTEMONS, finest	4 0	25 0
PETUNIAS, white and purple	2 6	17 6
,, finest named single and double	4 0	25 0
PHLOXES, finest new varieties	4 0	25 0
POLYANTHUS, finest laced varieties	3 0	20 0
PINKS, fine varieties, to name	2s. to 6s.	..
PYRETHRUM PRINCE ARTHUR, new dwarf white, variegated	6 0	40 0
ROSES (the petals, Hybrid Perpetual, Tea, Noisette, Bourbon, China, &c., in 200 varieties)	6s., 9s., 4os., 50s., and 72s.	and ..
TROPÆOLUMS, finest varieties	3 0	20 0
VERBENAS, white, scarlet, purple, rose, and pink	2 6	17 6
,, finest named kinds, including the new and beautiful kinds of 1865	3 0	20 0
VERONICAS, fine sorts	3 0	20 0

Variegated and other Fine-foliaged Plants.

AMARANTHUS MELANCHOLICUS	2 6	17 6
ACHYRANTHES VERSCHAFFELTII (fine-leaved Herbsts)	3 0	20 0
COLEUS VERSCHAFFELTII	3 0	20 0
CENTAUREAS, sorts	4s. to 6s.	..
GAZANIA SPLENDENS VARIEGATA	4 0	..
PERILLA NANKINENSIS	2 6	17 6
VARIEGATED FUCHSIAS	4 0	..

New Violet.

QUEEN of VIOLETS, the finest Violet ever raised; full description upon application | 24 0 ..

A 56-page CATALOGUE of NEW PLANTS of 1865, free upon application.

The Prices are greatly reduced this month. Post-office Orders payable on Castle Hedingham.

Cheques crossed MESSRS. SPARROW, TUFFNELL & CO.

WILLIAM DILLISTONE, MUNRO NURSERY, SIBLE HEDINGHAM, ESSEX.—May 1.

SCARLET GERANIUMS (BEATON'S RACE).

WILLIAM PAUL

(SON and Successor to the late A. PAUL,)

HAS TO OFFER THE FOLLOWING

NEW ZONALE AND HYBRID NOSEGAY GERANIUMS,

Which have been selected from several Thousand Seedlings, raised from the stock of the late Mr. DONALD BEATON. Every one now offered is believed to be in advance of or distinct from all pre-existing kinds. The Plants will be delivered in rotation, as far as the stock will allow.

Group 1.—Bedding Varieties.

*** Any 12 varieties from this and the two following Groups may be selected by the purchaser for £2 2s.

BANNERET.—Flowers crimson, scarlet, and purple shaded, very bright and beautiful; a hybrid nosegay. Price 3s. 6d. each.

FAIRY QUEEN.—Rosy purple; a large smooth flower, very distinct and effective. Price 3s. 6d. each.

MINSTREL.—A peculiar and pleasing shade of salmon, somewhat in the style of Lord Palmerston, but brighter in colour and broader in the petals.

MONTE ROSA, dark rosy-purple, pleasing colour, large truss, very fine. Price 3s. each.

NIMROD.—Fine scarlet, white eye, large flower and truss, foliage and habit fine. Price 3s. 6d. each.

PHŒNIX.—In the way of "Stella" in habit and general character, the colour flame-tinged scarlet. Price 3s. each.

PRINCE OF ORANGE, orange-scarlet, very bright; great substance, good habit, producing a bloomer. Price 3s. 6d. each.

PEACH NOSEGAY.—Flowers deep bright peach colour, very free bloomer, splendid truss, pyramidal, first-rate and distinct. Price 5s.

REBECCA.—Cherry colour, fine truss, dwarf compact habit, very profuse, the finest bedding Geranium yet raised. Price 5s. each.

ST. GEORGE.—Dark chestnut, shaded with blackish crimson, quite unique, very free and effective, an entirely new colour among bedding Geraniums. Price 5s. each.

SALMON NOSEGAY.—Flowers pure salmon, large truss, good. Price 3s. 6d. each.

SIR J. PAXTON.—Flowers true orange, very bright, fine large truss, a splendid variety for massing. Price 5s. each.

WOOD NYMPH.—Salmon pink, large and fine. Price 3s. 6d. each.

Group 2.—Varieties especially recommended for Growing in Pots or Vases.

BRIDE.—Flowers white, with large crimson eye, of fine shape and substance; a first-class variety for pot culture. Price 3s. 6d. each.

CARDINAL.—Flowers dark orange scarlet. For shape, substance, colour and habit, this is in advance of any scarlet variety yet raised. Price 5s. each.

CELESTIAL.—Flowers rosy lake, with fiery spot on upper petals, their centres bluish purple, resembling the "Cactus speciosissimum," large white eye, low in colour, and very beautiful. Price 5s. each.

LORD CHANCELLOR.—Salmon pink, white eye, perfect shape, very free, fine habit. Price 3s. 6d. each.

POET LAUREATE.—Rosy purple, top petals orange scarlet, yellowish eye, perfect shape. Price 3s. 6d. each.

TIARA.—Flowers scarlet crimson suffused with purple, good truss, very free, fine habit; quite distinct from any yet raised, and very lovely. Price 5s. each.

Group 3.—Miniature or Pompon Varieties.

DIAMOND.—Fine scarlet purple centre, white eye, flowers profusely, habit good, distinct. Price 3s. 6d. each

DRYAD.—Beautifully rosy pink, fine shape and truss. Price 3s. 6d. each. (3s. 6d. each.)

NAIAD.—Flowers purple, scarlet top; pleasing and distinct. Price

WALTHAM LILAC.—Flowers true lilac, very profuse; a new and desirable colour, excellent for massing. Price 5s. each.

ZEPHYR.—Flowers light purple top, petals rose colour; stands the rain and sun well, very dwarf and free. Price 3s. 6d. each.

Group 4.—Bedding Varieties sent from these Nurseries Last Year.

Many of them have received First-class Certificates from the Royal Horticultural and Royal Botanic Societies of London, and those marked thus *** have been awarded the highest marks of merit in the Royal Horticultural Society's Trial Ground at Chiswick.

Now Ready, Autumn-struck Plants.

*** ALEXANDRA.—Magenta. Price 2s. 6d. each; 24s. per dozen.

*** AMY HOGG.—Bright purplish rose. Price 2s. each; 18s. per doz.

*** BEATON'S INDIAN YELLOW.—Orange scarlet suffused with yellow. Price 1s. 6d. each; 15s. per dozen.

BLACK DWARF.—Dark crimson. Price 1s. 6d. each; 12s. per dozen.

DONALD BEATON.—Clear orange scarlet. Price 1s. 6d. each; 15s. per dozen.

*** DUCHESS.—Soft rosy lake. Price 2s. each; 18s. per dozen.

FULGENS.—Vivid scarlet. Price 2s. 6d. each.

*** GLOWWORM.—Magenta crimson flushed with scarlet. Price 2s. 6d. each; 24s. per dozen.

MAGENTA QUEEN.—Magenta. Price 3s. 6d. each.

ORANGE NOSEGAY.—Bright orange. Price 1s. 6d. each; 15s. per dozen.

PILLAR of BEAUTY.—Brick red. Price 2s. 6d. each.

PRINCESS LICHTENSTEIN.—Salmon pink. Price 2s. each; 18s. per dozen.

SALAMANDER.—Brilliant scarlet, large white eye. Price 2s. each; 18s. per dozen.

SCARLET GEM.—Bright orange scarlet. Price 1s. 6d. each; 15s. per dozen.

MRS. WILLIAM PAUL.—Delicate rose pink. Price 2s. 6d. each, 24s. per dozen.

WALTHAM SEEDLING.—Dark crimson. Price 2s. each 18s. per dozen.

The above Set of 16 varieties, One Plant of each, 21s.

SPRING CATALOGUE, with full descriptions of these and other Plants, Free by Post.

The usual discount to the Trade.

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THE QUEEN'S SEEDSMEN,

LONDON and EDINBURGH.

FARM, VEGETABLE, and FLOWER SEEDS.

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BUTLER AND MCCULLOCH'S Collections of Choice FLOWER SEEDS forwarded Post free.
NEW ANNUALS, 5s. and 10s. 6d.
HARDY DO., 2s. 6d., 5s., 10s., 20s.
HALF HARDY DO., 2s. 6d., 5s., 10s., 15s., 30s.
For details of above Collections, see B. & McC.'s SPRING CATALOGUE, sent free and post paid upon application.
Covent Garden Market, W.C.

British Fern Catalogue.

ROBERT SIM can now send, post free for six postage stamps, Part 1 (British Ferns and their varieties, 36 pages, including prices of Hardy Exotic Ferns) of his NEW and PRICED DESCRIPTIVE CATALOGUE of BRITISH and EXOTIC FERNS, No. 7
*** Part II. (Exotic Ferns) will be issued as early as possible.
Foot's Cray Nursery, S.E.

Tropæolum Prince of Wales.

JAMES KITTLE begs now to offer his New TROPÆOLUM, PRINCE of WALES. The colour is a very bright deep scarlet, habit very good, a very free bloomer, the flower standing well above the foliage, forming a brilliant mass of scarlet. See *Gardeners' Chronicle*, April 15, 1865, page 650. Strong Plants, 1s. 6d. each, free by post, or 12s. per dozen
The Nurseries, Eccleshall.

CALCEOLARIA AMBASSADOR (SANG's).—Strong Plants in six fine pots of this magnificent Bedding-out Calceolaria are now ready, price 10s. per dozen. The Trade supplied.
"The plant is of a dwarf compact habit, growing from 12 to 15 inches high; the flowers brilliant bronze-crimson tinged with scarlet, and the corymbs so large and numerous as to give the appearance of an entire mass of bloom, rendering this the most magnificent Bedding-out Calceolaria of its class in cultivation. It also forms a most desirable and showy pot-plant for the Conservatory."
EDWARD SANG & SONS, Nurserymen and Seed Merchants, Kirkcaldy.

30,000 Bedding Plants.

To the Nobility, Gentry, and Clergy.

MR. C. ALLEN having an extensive stock of the above, can offer them at the following low prices, viz :—2s. 6d. per dozen, 15s. per 100, or £7 per 1000, consisting of Scarlet Geraniums, Verbenas, Calceolarias, Lobelias, Petunias, Heliotropes, &c.; also a choice collection of Fuchsias, Zonal and Variegated Geraniums, at 3s. per dozen; £1 per 100. They are strong and well-established plants, and can be turned out of pots to save the expense of carriage.
A fine assortment of PELARGONIUMS in 48-sized pots, strong plants, and well set for bloom, at 4s. and 9s. per dozen basket package included. A remittance from unknown correspondents must accompany the order.
Mr. C. ALLEN, Stone Hills Nursery, Higham, Norwich.

PETER DRUMMOND AND CO. (late J. SCOTT), Preston Road Nursery, Yeovil, Somerset, have to offer to intending purchasers upwards of 200,000 BEDDING-OUT FLOWER GARDEN PLANTS, including all the leading varieties of Dahlias, Fuchsias, Geraniums, Heliotropes, Lantanas, Lobelias, Petunias, Salvias, Verbenas, &c. And all kinds of Frosted and Variegated-leaved Plants suitable for the Decoration of the Flower Garden, at unprecedented low prices. CATALOGUES free on application.
Also SEEDS of every description for the FARM and GARDEN, of the best quality, at moderate prices.
Please address as above.

E. COLE AND SONS have to offer as below a few fine SPECIMEN PLANTS, the property of a Gentleman who is giving up exhibiting. They are all in first-class condition for immediate effect. Price upon application.

	Height.	Width.
ARALIA SIEBOLDII	7 feet	
DRACÆNA DRACO	6 feet	
RHOPALA CORCOVADENSE	7 feet	5 feet
CROTON VARIEGATUM	4 ft. 6 ins.	4 feet
,, ANGUSTIFOLIUM	4 ft. 6 ins.	4 feet
ALLAMANDA CATHARTICA	3 ft. 6 ins.	2 ft. 6 ins.
ERIOSTEMON BUXIFOLIUM	5 feet	5 feet
EPACRIS MINIATA	5 feet	5 feet

The Nurseries, Withington, near Manchester

CHOICE SPRING FLOWERS, &c., now ready in Strong Plants.

	Per doz.—s. d.
HEPATICAS, double red and single blue	12 0
,, double blue	12 0
VIOLETS, double, in four sorts	4s. to 6 0
,, single, in six sorts	3s., 4s., and 6 0
,, new single striped	1s. 6d. each 12 0
,, new double striped, Reine des Violettes, 2s. 6d. each	24 0
PRIMROSES, double, in four varieties	6 0
CHRISTMAS ROSE, scarlet	2s. each 18 0
,, white	3 0
POLYANTHUS, finest laced varieties	3 0
PAMPAS GRASS, fine plants	40s. per 100 6 0
DAISIES, six new and choice kinds	6 0
ROCK CRESS, in 20 fine kinds	6 0
OLD CRIMSON CHINA ROSE	9 0
AURICULAS, finest Alpines	6 0
,, Farina red	3 0
ROCKETS, double white and yellow	3 0
LAVENDER, fine plants	3 0
CLOVES, old crimson and others	3s. to 6 0
PINKS, fine named sorts	4 0
SWEET WILLIAM, Auricula-eyed, &c.	3 0
WALLFLOWER, double yellow and dark	4 0

Also the following in Stock Plants :—

FUCHSIAS, new, of 1865	6 0
VERBENAS, new, of 1865	4 0
GERANIUMS, new, of 1865	9s. to 12 0
PETUNIAS, new, of 1865	6 0
CHRYSANTHEMUMS	6 0
TROPÆOLUMS and LOBELIAS, new	6 0
ANTIRRHINUMS and PENTSTEMONS, new	6 0
PHLOX, new	9 0
CINERARIAS, new	12 0

100 CHOICE HARDY HERBACEOUS PLANTS, in 50 fine named varieties, for 25s.
ROSES.
24 Finest STANDARD and DWARF ROSES, 24 distinct varieties, 21s.
24 ditto ditto on their own roots, in pots, 21s.
ASPARAGUS, 1, 2, and 3 years, fine.
CATALOGUES free on application; also, TRADE CATALOGUE of NURSERY STOCK.
Post-office Orders on Castle Hedingham.
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The SEED CATALOGUE and GARDEN DIRECTORY for 1866, now published, will give full particulars respecting prices and other matters in connection with the Business. Will be sent gratis and post free to any address in the kingdom.

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12 Superb Prize FRENCH ASTERS, 2s. 6d.
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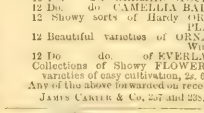
12 Beautiful varieties of ORNAMENTAL GRASSES for Winter Bouquets, 5s.
12 Do do. of EVERLASTINGS for do. do. 5s.
Collections of Showy FLOWER SEEDS, containing only varieties of easy cultivation, 2s. 6d., 5s., 10s. 6d., 15s., and 21s.
Any of the above forwarded on receipt of Post Office Order.
JAMES CARTER & Co, 237 and 238, High Holborn, W.C.



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WOOD AND INGRAM offer fine VERBENAS, by name, in various colours, good plants, well-established in single pots, also HELIOTROPES, in three fine varieties, at 20s. per 100, package included
LOBELIA PAXTONIANA, from cuttings, bushy plants, all in single pots, at 10s. per 100.
Names of the Verbenas sent may be seen in W. & I.'s NEW CATALOGUE, which will be sent on prepaid application.
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GEORGE EDWARD can supply good Plants, well established, out of pots, to save expense of carriage and package. VERBENA, PURPLE KING, 10s. per 100; ditto BRILLANTE DE VAISE, 16s. per 100; ditto LORD RAGLAN, 10s. per 100; LOBELIA SPECIOSA, true, 12s. per 100.
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20,000 VERBENAS, extra strong plants, about 36 of the leading varieties, at 21s. per 100, packing included. Strong rooted Cuttings of the above, 12s. per 100.
All orders containing a remittance will meet with prompt attention. CATALOGUES gratis.
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CATALOGUES for one stamp.
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ROBERT PARKER begs to announce that his NEW PRICED and DESCRIPTIVE CATALOGUES, containing Select Lists of the best varieties of Vegetable, Agricultural, and Flower Seeds, New and Rare Plants, &c., are now published, and will be forwarded to applicants. All Seeds are warranted to be of the finest possible quality. Intending purchasers are requested to compare the prices with those of other houses.
Exotic Nursery, Tooting, Surrey, S.

A. VAN GEERT, NURSERYMAN, Ghent, Belgium, begs to announce that he has just published a SUPPLEMENT to his GENERAL CATALOGUE of PLANTS, which may be obtained on application of his Agents, Messrs. R. SILBERRAD & SON, 5, Harp Lane, Tower Street, London, E.C.

INVINCIBLE SCARLET SWEET PEA, very fragrant, strikingly brilliant, and extremely distinct in colour.—A First-class Certificate from the Royal Horticultural Society; also a Certificate at the Crystal Palace Show in September. Packets 6d., 1s., and 2s. 6d. each; packets of two seeds 7s. 6d. Supplied by the principal Seedsmen throughout the Kingdom; also of Messrs. Krelage, of Haarlem; Vilmorin & Co., Paris; Benary and Haage & Schmidt, of Erfurt, Prussia; and Smith & Co., Hamburgh; also of the Raiser, Stassen Brown, Sudbury, Suffolk.
Price to the Trade on application.

To the Trade.

MANGEL WURZEL AND TURNIP SEED.
H. AND F. SHARPE can still supply the Trade with their selected stocks of—
SKIRVINGS KING of the SWEDES TURNIP.
SHARPE'S IMPROVED PURPLE-TOP SWEDE TURNIP.
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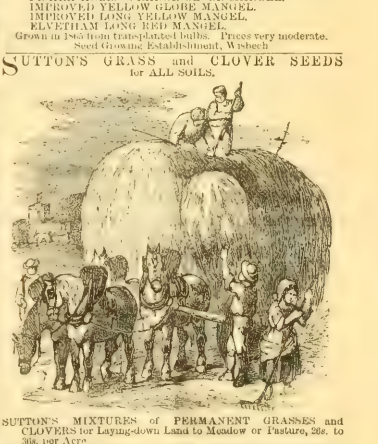
FISHER HOBBS' ORANGE GLOBE MANGEL.
IMPROVED YELLOW GLOBE MANGEL.
IMPROVED LONG YELLOW MANGEL.
ELVETHAM LONG RED MANGEL.
Grown in 1865 from transplanted bulbs. Prices very moderate.
Seed Growing Establishment, Aylesbeech

SUTTON'S GRASS and CLOVER SEEDS for ALL SOILS.



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SUTTON'S FINE LAWN GRASS MIXTURE, 1s. 3d. per lb., 24s. per bushel.
All goods carriage free (except very small parcels).
SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

FINE GRASS LAWNS in FLOWER GARDENS, &c.—The great expense of cutting and carting Turves from a distance may be avoided, and a superior Turf produced in a few months by sowing SUTTON'S LAWN GRASS SEEDS, which consist solely of the finest and shortest-growing kinds, perfectly free from Moss and other weeds.

From Mr. JOHN JOHNSON, *Gardener, Mowbray Park, Sunderland*, *May 20, 1865.*
"The Lawn Seed we got last year about this time has come up excellently."

From Mr. THOMAS POLLINGTON, *Gardener to* H. W. Vincent, Esq. *Bradford Grange, Bradford, January 19.*
"The Grass Seed you supplied me with last season grew remarkably well, though sown under trees. I think every seed grew."

From HENRY H. CATE, Esq., *Desborough, Market Harborough*, *May 13, 1865.*
"The Lawn Grass Seeds I had from you last year have made a very good turf already."

From J. NIGHTINGALE, Esq., *High Street, Kingston-on Thames*, *May 2, 1865.*
"I may add that the Grass Seeds you supplied last year, have (notwithstanding the very unfavourable season) succeeded very well."
SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

CHEAP and BEAUTIFUL FLOWER SEEDS.

100 packets of the best and most showy Hardy, Half-hardy, and Tender Annuals, 20s.
50 ditto, 10s. | 25 ditto, Hardy Annuals, 5s.
25 ditto, 5s. | 12 ditto, ditto, 2s. 6d.
DESCRIPTIVE CATALOGUE on application.
RICHARD SMITH, Seed Merchant, Worcester.

CHOICE VARIEGATED PELARGONIUMS.

Mrs. Pollock	Golden Vase	Rainbow
Sunset	Snowflake	Burning Bush
Yellow Belt	Picturata	Princess Alexandra
Golden Tom Thumb	Argus	Fontainebleau

The above 12 choice varieties, suitable for exhibition, for 21s. basket and packing included.
Address, ALFRED FEYER, Nurseries, Chatteris, Cambridgeshire.
Remittances required from unknown correspondents.

Choice Seeds from Perfect Specimens.

THOMAS WILD, Ipswich, confidently recommends his superior PRIMULA SEED of world-wide celebrity, 2s. 6d per packet, saved from the finest strain in cultivation.
Standard Cucumber, Onion Melon, Hollyhock, Pansy, Polyanthus, and Balsam at 1s. per packet, saved from growers who spare no expense to obtain the best. Address
THOMAS WILD, Seedsman, &c, The Primulary, Ipswich

Primula, Calceolaria, &c.

WM. CUTBUSH AND SON are now sending out SEED of their superb PRIMULA SINENSIS FIMBRIATA, which has for many years given great satisfaction.
The *Gardeners' Chronicle* of the 6th of January, in Notices to Correspondents, says :—"The blooms sent are remarkably fine, richly coloured, full, and densely fringed; they are evidently the produce of a capital strain."
The *Journal of Horticulture* of the 23rd January, says that:—"The finest and richest coloured Chinese Primulas we have yet seen are those raised by Messrs. Cutbush & Son."
Sealed packets 2s. 6d. and 5s. 6d. each.
CALCEOLARIA (JAMES).—This is the finest herbaceous variety extant. Per packet 2s. 6d and 5s 6d each.
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Superb Double Hollyhocks.

WILLIAM CHATER begs to remind the Admirers of this beautiful flower that now is the best time for planting it out to insure fine spikes and blooms this season.
DESCRIPTIVE CATALOGUES, with instructions for its Cultivation; also prices of Plants per dozen, 100, or 1000, may be had on application.
Seedlings from best named varieties, 4s. per doz., or from 20s. to 30s. per 100.
Bloomed Seedlings, with colours named, very fine, 6s. per doz, and from 30s. to 40s. per 100.
Seed saved from the finest named varieties, very choice mixed 2s 6d and 5s. per packet.
In Collections of 12 separate named varieties, extra fine, 10s.; 6 varieties, extra, 5s.
2 named varieties, all good show flowers, 7s. 6d.
6 do. do. do. do. 4s.
WILLIAM CHATER, Nurseries, Saffron Walden, Essex.

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ROYAL AGRICULTURAL SOCIETY OF ENGLAND
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Catalogues forwarded post free to any address on application.

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JAMES GARAWAY & CO.,
DURDHAM DOWN NURSERIES, BRISTOL,
OFFER THE
THREE UNDERMENTIONED NEW SEEDLING GERANIUMS
As not only Novelties but decided acquisitions.

Tricolor Section.

QUEEN of TRICOLORS.—This variety surpasses in beauty the well-known Mrs. Pollock, from which it is a seedling; the colours are of the same shade but much more vivid, and, being a great improvement, the green colour does not project itself beyond the zone. The flowers are produced in abundance, and are scarlet in colour and of good shape.
Well-established Plants will be supplied the last week in June, at 21s. each.
Four sent when Three are ordered.

Cloth of Gold Section.

BRONZE QUEEN.—A variety raised from Cloth of Gold, with foliage of same colour, but with the addition of a dark bronze zone distinctly marked; of good dwarf habit, free in growth and very effective, well adapted for bedding; flowers scarlet cerise, produced in good-sized trusses.
Price 7s. 6d. each.
Four sent when Three are ordered.

Nosegay Section.

L'AFRICAINE.—A hybrid Nosegay of compact habit, with extra fine trusses of purplish crimson flowers, which, elevated on stiff flower stems, produce a very fine effect. As a plant for the back or second row of a ribbon border or centre of bed, this will be found a very attractive acquisition.
Price 5s. each.
Four sent when Three are ordered.

Prices to the Trade on application.

JAS. GARAWAY AND CO.'S SPRING CATALOGUE, containing PRICED LISTS of STOVE and GREENHOUSE PLANTS, FERNS, and BEDDING-OUT PLANTS, is now ready, and will be forwarded post free on application.

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GENERAL PLANT CATALOGUES FOR 1866.

JAMES VEITCH & SONS
BEG TO ANNOUNCE THAT THE UNDERMENTIONED
CATALOGUES FOR THE PRESENT SEASON
ARE NOW PUBLISHED, AND WILL BE FORWARDED POST FREE ON APPLICATION.

A GENERAL CATALOGUE of STOVE and GREENHOUSE PLANTS, including ORCHIDS, FERNS, ORNAMENTAL FOLIAGED PLANTS, AZALEAS, CAMELLIAS, &c.
A DESCRIPTIVE CATALOGUE of HARDY TREES and SHRUBS, including CONIFERÆ, AMERICAN PLANTS, and the most recent JAPANESE Introductions.
A CATALOGUE of SELECT SOFT-WOODED and BEDDING PLANTS, including the most desirable NOVELTIES of the Season.

☞ *J. V. & SONS' CATALOGUE of NEW and RARE PLANTS of their own introduction will be published on the 15th of May.*

THE ROYAL EXOTIC NURSERY, KING'S ROAD, CHELSEA, LONDON, S.W.

New Drawing-room Plant Case.

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THE METROPOLITAN.
SEED BULB & PLANT WAREHOUSE
12. KING STREET. COVENT GARDEN W.C.
Orders amounting to 21s. sent Carriage Paid.

New Drawing-room Plant Case.

BLUNDELL'S CATTLE MELONS and CATTLE MARROWS.
100 Seeds, 2s. 6d.; ¼ lb., sufficient for ¼ of an acre, 5s.; ½ lb., sufficient for ½ of an acre, 9s.; 1 lb., sufficient for 1 acre, 16s.
Selections of ORNAMENTAL GOURDS, including Miniature, Medium, and Mammoth varieties, or either separate:—10 varieties, 2s. 6d.; 15 do., 3s. 6d.; 20 do., 5s. 6d.; 30 do., 7s. 6d.; 40 do., 10s. 6d.; 50 do. 12s. 6d.; 100 do., 21s.; 200, 42s.
PERMANENT PASTURE GRASS SEEDS and CLOVERS for ALL SOILS | FINE LAWN GRASS SEEDS for ALL SOILS
COMPLETE COLLECTIONS of VEGETABLE SEEDS for One Year's Supply (Carriage paid), 10s. 6d., 15s. 6d., 21s., 30s., 42s., 63s., 84s., and 105s.
COLLECTION of FLOWER SEEDS (post paid), 2s. 6d., 3s. 6d., 5s. 6d., 7s. 6d., 10s. 6d., 15s., 21s., 30s., 42s., to 105s.

STANDEN'S GARDENERS' AND AMATEURS' FRIEND MANURE.

The best concentrated Manure for all Kitchen Garden crops and Flowers in or out of doors. For List of Agents see our Advertisement in *Gardeners' Chronicle* for February, March, and April; and favourable Notice of the Manure in the *Gardeners' Chronicle*, p. 339, April 14.
Sold in Sample Canisters, 1s. and 2s. 6d.; and in Bags, 5s. 6d., 10s. 6d., and 21s., and in two qualities. No. 1 quality for Hard-wooded Stove and Greenhouse Plants, Fruit Trees, Roses, Lawns, Kitchen Garden Crops, and Flower Beds and Borders. No. 2 quality for Soft-wooded Plants. It should always be laid on the surface dry, and watered in.

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HORTICULTURAL SOCIETY of LIVERPOOL.
FIRST GREAT EXHIBITION of ROSES, ORCHIDS, FERNS, &c., JULY 3 and 4, in ST. GEORGE'S HALL. The following, and other liberal Prizes, will be awarded.

72 CUT ROSES, distinct (Nurserymen), 1 Truss, £8, £6, £4.
48 " " " 3 Trusses, £6, £4, £2.
24 " " " 2 Trusses, £3, £2, £1.
24 " " " 1 Truss, £3, £2, £1.
24 " " (Amateurs), 1 Truss, £4, £3, £2.
18 " " " 1 Truss, £2, £2 5s., £1 10
12 " " " 3 Trusses, £3, £2 5s, £1 10s
10 EXOTIC ORCHIDS (Open), £10, £7, £5.
6 (Amateurs), £6, £4, £2.
18 " FERNS (Open), £8, £6, £4.
12 " " £6, £4, £2.
3 TREE FERNS £4, £3, £2
12 ORNAMENTAL FOLIAGE PLANTS (Open), £5, £3, £2

Liberal Prizes will be awarded to Plants of Merit. The Hall is close to the London and North Western Railway Station.

For Schedules and every information apply to ROBT. W. KER, Hon. Sec., 4, Basnett Street, Liverpool.

PARIS EXHIBITION of 1867.
EXHIBITION of HORTICULTURE.

At the Meeting of Horticulturists and others which took place on May 1 in the Conservatory of the Royal Horticultural Society, South Kensington, relative to the representation of Horticulture by this country in the Paris Exhibition, the following Resolutions were agreed to:—

Proposed by Mr. VEITCH, seconded by Mr. J. LEE—"British Horticulturists will be happy to accept the invitation of the Imperial Commission to support an International Exhibition of Horticulture for a period not exceeding a fortnight, such Exhibition to take place in a Special Building to be provided by the Imperial Commission, and would suggest for consideration that such Exhibition should take place in the latter end of May or beginning of June."

Proposed by Mr. TURNER, seconded by Mr. LAING—"British Horticulturists would be willing to co-operate with the British Executive in Exhibiting from time to time Specimens of various Plants and Flowers which may be in season."

The following persons were present:—Messrs. ROBERT WARNER, MURRAY, WILSON, EDMONDS, TURNER, J. G. VEITCH, OSBORN, A. WATERER, BULL, LAING, BUPP, MOORE, BOOTH, BLANCHARD, BARR, LEE, KINGHORN, BOHN, DEANE, EYLES, BARRON, BEARD, DR. PIESSE, Dr. HOGG, Dr. MASTERS, Captain COCKERELL, and Colonel SCOTT.

INTERNATIONAL

HORTICULTURAL EXHIBITION
AND BOTANICAL CONGRESS.

The MEETINGS of the BOTANICAL CONGRESS are fixed to Commence on WEDNESDAY, 23d of MAY. M. ALPHONSE DE CANDOLLE will take the Chair at 11 o'Clock.

T. MAXWELL MASTERS, Hon. Sec.

INTERNATIONAL HORTICULTURAL EXHIBITION.

MAY 22d, Tickets £1 1s.; MAY 23d, 10s.; MAY 24th, 2s. 6d.; MAY 25th, 1s.

Tickets may be obtained of the principal London Nurserymen, and of the usual London Agents.

INTERNATIONAL HORTICULTURAL EXHIBITION.

Tickets may be obtained of the principal Nurserymen and Seedsmen, and at—

AUSTIN'S, St. James's Hall
CHAPPELL'S, New Bond Street
COCK, ADDISON, & Co.'s, Regent Street
KEITH & PROWSE'S, Cheapside
LACON & OLLIER'S, New Bond Street
LETTS & SON'S, Royal Exchange
MITCHELL'S, Bond Street
OLLIVIER'S, New Bond Street
SAM'S, St. James's Street
WESTERTON'S, St. George's Place.

GUILDHALL BANQUET OF THE

INTERNATIONAL HORTICULTURAL EXHIBITION.

The Committee have to announce that Messrs. RING & BRYMER, having made plans of the Hall, find they will only be able to place, in comfort, 580 guests. The Committee had been led to hope that 650 would have been accommodated, and they think it, therefore, only proper to give notice that the Subscription List must close on the above number being reached. Above 450 Seats are already required.

SUBSCRIBERS OF TEN GUINEAS TO THE

INTERNATIONAL HORTICULTURAL MEETING

RECEIVE ONE BANQUET TICKET;
ONE PERSONAL TICKET, ADMITTING ALL FOUR DAYS OF THE SHOW;
SEVEN GUINEA TICKETS, ADMITTING FIRST DAY;
AND TWO CARDS, ADMITTING THREE EACH TO THE CONVERSAZIONE.

INTERNATIONAL HORTICULTURAL EXHIBITION.

NOTICE TO GARDENERS.

The Executive Committee give Notice that in accordance with the urgent request of many Gardeners, the day for the PURCHASE of GARDENERS' TICKETS is EXTENDED to MAY the 12th. The price of the Cards, for Gardeners only, is *2s. 6d.* for the WEDNESDAY, and *1s.* for THURSDAY. Under no circumstances will any further delay be granted.

Address, enclosing remittance and stamped directed envelope, London, S.W.

Mr. T. MOORE, Botanic Gardens, Chelsea,
By Order of the Executive Committee.

CLIANTHUS DAMPIERI.

MESSRS. VEITCH & SONS

OFFER NEWLY IMPORTED

SEED OF THIS MAGNIFICENT GREENHOUSE PLANT

At the following low prices.

THE SEED IS GUARANTEED TO GROW WELL.

6 Seeds, 1s.; 12 Seeds, 1s. 6d.; 30 Seeds, 3s. 6d.

Special offers to the Trade on application.

ROYAL EXOTIC NURSERIES, KING'S ROAD, CHELSEA, S.W.

ROYAL HORTICULTURAL SOCIETY.
SOUTH KENSINGTON.
MAY SHOW, THURSDAY, May 3, 1866
AWARDS OF THE JUDGES.

CLASS 1.—5 STOVE and GREENHOUSE PLANTS, in FLOWER, distinct. (Open.)

1st, Mr. D. Donald, Gr. to J. G. Barclay, Esq., Leyton, £6.
2d, Messrs. J. & C. Lee, Royal Vineyard Nursery, Hammersmith, £4.

CLASS 2.—12 ORCHIDS, in FLOWER, distinct. (Nurserymen.)

2d, Messrs. J. & C. Lee, £7.

CLASS 3.—9 ORCHIDS, in FLOWER, distinct. (Amateurs.)

1st, Mr. C. Penny, Gr. to H. H. Gibbs, Esq., Regent's Park, £9.
2d, Mr. T. Page, Gr. to W. Leaf, Esq., Streatham, £7.
3d, Mr. J. Hill, Gr. to R. Hanbury, Esq., Ware, £5.
Extra, Mr. J. Robson, Gr. to G. Cooper, Esq., Coburg Road, S.E., £3

CLASS 4.—6 ORCHIDS, in FLOWER, distinct. (Open.)

1st, Mr. W. Howard, Gr. to J. Brand, Esq., Balham, £6.
2d, Mr. J. Robson, £4.

CLASS 5.—1 SPECIMEN ORCHID, in FLOWER. (Open.)

1st, Mr. C. Penny, £2.
Equal 1st, Mr. W. Howard, £2.

CLASS 6.—9 GREENHOUSE AZALEAS, in FLOWER, distinct. (Open.)

1st, Mr C. Turner, Royal Nursery, Slough, £10.

CLASS 7.—6 GREENHOUSE AZALEAS, in FLOWER, distinct. (Amateurs.)

1st, Mr. S. M. Carson, Gr. to W. R. G. Farmer, Esq., Cheam, £6.
2d, Mr. C. Penny, £4.

CLASS 8.—1 SPECIMEN AZALEA, in FLOWER. (Open.)

1st, Mr. C. Turner, £2.
2d, Mr. S. M. Carson, £1.
3d, Mr. W. Young, Gr. to R. Barclay, Esq., Highgate, 10s.

CLASS 9.—6 HARDY or HALF-HARDY RHODODENDRONS distinct, in FLOWER. (Open.)

3d, Messrs. J. Ivery & Son, Dorking and Reigate Nurseries, £1.

CLASS 10.—9 PELARGONIUMS in FLOWER, distinct. (Open.)

1st, Mr. C. Turner, £3.
2d, Mr. J. Fraser, Lea Bridge Road Nurseries, Leyton, £6.

CLASS 11.—6 PELARGONIUMS in FLOWER, distinct. (Amateurs.)

1st, Mr. J. Ward, Gr. to F. G. Wilkins, Esq., Leyton, £5.
3d, Mr. J. Wiggins, Gr. to W. Beck, Esq., Isleworth, £2.

CLASS 12.—1 SPECIMEN PELARGONIUM in FLOWER. (Open.)

1st, Mr. C. Turner, £1 10s.
2d, Mr. J. Fraser, £1.
3d, Mr. J. Ward, 10s.

CLASS 13.—9 ROSES in POTS, in FLOWER, distinct. (Open.)

1st, Mr. Wm. Paul, Paul's Nurseries, Waltham Cross, £9.

CLASS 14.—6 ROSES in POTS, in FLOWER, distinct. (Amateurs.)

2d, Mr. J. Wiggins, £4.
3d, Mr. H. Beasley, Gr. to Mrs. Wood, Twyford Abbey, W., £2.

CLASS 15.—1 SPECIMEN ROSE in Pot, in FLOWER. (Open.)

1st, Mr. Wm. Paul, £1 10s.

CLASS 16.—6 EXOTIC FERNS, distinct. (Open.)

1st, Mr. H. Barnard, gr. to J. W. Taylor, Esq., Woodberry Down, N., £4.
2d, Mr. Wm. Bull, King's Road, Chelsea, £3.
3d, Mr. F. Preece, Gr. to E. Wood, Esq., Acton, £2.

CLASS 17.—12 HARDY FERNS, distinct. (Open.)

1st, Messrs. J. Ivery & Son, £4.
2d, Mr. Wm. Bull, £3.
3d, Mr. Wm. Young, £2.

CLASS 18.—MISCELLANEOUS COLLECTION of PLANTS in FLOWER. (Open.)

1st, Messrs. J. & C. Lee, £5.
2d, Messrs. W. Cutbush & Son, The Nurseries, Highgate, £2.
Extra, Mr. C. Turner, for a Collection of Auriculas, £3.
Extra, Mr. Wm. Bull, for a Collection of New and Rare Plants, £2.
Extra, Messrs. Barr & Sugden, Covent Garden, for Plant Cases furnished with Plants, £1.
Extra, Mr. J. Jones, Gr. to W. F. Watson, Esq., Isleworth, for a Collection of 6 Caleeolarias, £1.
Extra, Mr. W. Lucas, Gr. to C. S. Mortimer, Esq., Surrey, for a Collection of Cinerarias, £1.
Extra, Mr. R. Parker, Tooting, for a Group of Rhododendron Countess of Haddington, £1.
Extra, Mr. H. May, Gr. to Lady Burrell, Shirvenham, for a Specimen Melaleuca nesophila, 10s.
Extra, Mr. W. Bartlett, Hammersmith, for Adiantum cuneatum, 10s
Extra, Mr. J. Jones, Gr. to W. F. Watson, Esq., Isleworth, for a Group of 12 Pansies in pots, 10s.
Extra, Mr. J. Jones, for a Group of 12 Auriculas, 10s.
Extra, Mr. J. Jones, for a Stand of 24 Pansies, 10s.
Extra, Mr. T. Page, Gr. to W. Leaf, Esq., Streatham, for a Prickly Cayenne Pine-apple, 10s.

The Gardeners' Chronicle.

SATURDAY, MAY 5, 1866.

MEETINGS FOR THE ENSUING WEEK.

MONDAY,	May 7	Entomological	7 P.M.
TUESDAY,	— 8	Zoological	8½ P.M.
WEDNESDAY,	— 9	Microscopical	8 P.M.
		Royal Botanic (Last Great Exhibition)	2 P.M.
THURSDAY,	— 10	Royal Horticultural (Weekly Show., at South Kensington	2 P.M.
SATURDAY,	— 12	Crystal Palace Flower Show	Noon

EVERY now and then, amid the dazzling splendour of our RIBBON BORDERS, and the gorgeous brilliancy of our FLOWER BEDS, there comes a sigh, low indeed, but heart-felt, so that in those who do hear it, it excites at once sympathy and compassion. It is a sigh of weariness, of ennui—the expression of a timid, modest feeling, such as is felt by retiring people when by some accident they find themselves thrust into gay society. "Were you over at one of the Botanic fêtes?" asked a young acquaintance of our's of an old lady with half an acre of garden and a small greenhouse, which she attended to with all the assiduity that her strong love of plants engendered. "Yes, once," was the reply. "You were delighted, of course?"—"I hid myself behind the shrubs till the time came for me to go away." And yet we never knew any one with a deeper love of flowers, or more discriminating appreciation of their charms, or, for an amateur, a better knowledge of them. Of course in this instance it was the gay company rather than the gay flowers that distressed our friend, but a similar feeling is prevalent to a much greater extent than might be supposed with reference to our modern system of gardening. There are many persons who feel as much out of place among our bright parterres as our old lady friend did at the fête. And the reasons, we take it, are to be sought for, not so much in any abstract objection to

brightness of colour, or perfection of form, or what the florists consider to be such, as in a sense of repletion: one sees, with but slight variation, the same thing over and over again. The interest, save for the professed florist, soon vanishes, and leaves nothing behind. To the real garden-loving public, or to a large section of it, these constant repetitions become irksome, just as the "rabbits cold, rabbits hot, rabbits tender, rabbits tough," did to the proverbial individual condemned to feed off them for an unlimited period. We have not one word to say against our glittering parterres when arranged with nice art and refined taste, and so disposed as to be, as they comparatively seldom are, in harmony with the rest of the establishment. Too often they are out of place; still more often they are staring and obtrusive, like an over-dressed vulgar woman.

We salute General Tom Thumb with becoming respect; we gaze approvingly on Stella; we admire Mrs. Pollock with all the deference her unquestioned beauty demands, but we hope we shall not be considered rude in saying that there are many other friends whom we would gladly see more often than we do, and many of whom we fear, from our unjust neglect, have dwindled out of existence.

Where fashion reigns supreme we are aware it is useless to attempt resistance, but we do hail with joy the glimmering indications that meet our eyes, and the sounds that greet our ears, leading to the inference that a little more variety, and a great deal more interest, is likely to be infused into our gardens. There is little fear that the reign of bedding stuff is approaching its end—that we hope will never be the case, but a little less despotic sway, a little lowering of the franchise, will in this case at least be an inestimable boon, not only to those old-fashioned people who grieve over the neglect of the hardy perennials, to each one of which a special interest attached, and which presented something to look at all the year round, but also to that very large class to whom the present system, from its costliness and the great amount of skill and labour required for its maintenance, is virtually forbidden.

Those of our readers who may chance to have perused the article on hardy edging plants, p. 291, or that on the Iris, p. 388, will see what a field of interest there is for them at little cost; and if they seek to know what the non-professional public, or a portion of it, thinks of modern gardens and gardening, they will find much to amuse them in the account of Hornby Mills Garden in the April Number of the "Argosy," which we commend to their notice, without, however, endorsing all that is said therein.

No branch of science stands more in need of the help of practical men and accurate observers than does VEGETABLE PHYSIOLOGY. In unravelling the problems of animal physiology, we have always a standard of comparison within ourselves which is available for the purpose: moreover, there is a complexity of structure, and an adaptation of particular organs to serve particular purposes, which does not exist to anything like the same extent in the vegetable kingdom, where the tissues are simpler in their construction, and less restricted in the range of their functions.

That the labours of the physiologist are of the greatest importance to horticulture, no one bearing in mind the researches of NAUDIN and DARWIN in recent times, to say nothing of those of others, will be inclined to deny. It is for practical men to avail themselves of the results obtained by these experimenters, and to extend and supplement them by their own observations. It is on these grounds that we believe the establishment of a Congress, in connection with the International Horticultural Exhibition, is likely to be so valuable. Hitherto it has been far too much the practice of the botanists on the one side, and the horticulturists on the other, to stand aloof from each other, and, in practice at least, to ignore the doings of their fellow labourers. What would be said of the physicians of our day if they neglected the teachings of the physiologist, or what value would the researches of the latter have, if they were not corrected and controlled by the practical experience of the former?

The case is precisely similar with the botanists (using the term Botany here in its largest sense), and the horticulturists. Those who attempt to dissociate the two pursuits really do an injustice to their favourite science. Both Horticulture and Botany must necessarily be classed under the same great group of biological sciences, and although, from the extent of the subject and the limited time and capacity of their professors, it is impossible for any one to be equally proficient in all departments, it is undeniable that great advantages must result from the combined action, whenever practicable, of the workers in different departments. No mere word-quibbling—above all, no petty personalities, should be allowed to stand in the way of the good work, but each and all in their several departments should help on the good cause, and give their aid with a will to their fellows when called on to do so. In illustration of our meaning, let us take one among the many instances in plant life which requires clearing up, and the due explanation of which would not only be a gain to physiology, but would in all probability be suggestive to the cultivator of plants, either in our stoves or in our sub-tropical gardens. Our correspondent "G. B.," a practical gardener (see p. 294), speaking of the spring climate at Ootacamund, mentions a fact which is startling enough to us, with our "temperate experiences." "Though the soil may be dry and parched," he writes, "and the dry and wet bulb thermometers indicate a difference of 20°, still the trees will begin to shoot, sometimes a month or even more, before a drop of rain falls, and make young growth a foot or 18 inches long before they receive a drop of rain; and dew at the latter part of the dry season is so scanty, that a difference in the thermometer of 10° at 7 A.M. is of common occurrence." This is in precise accordance with the observations of Mr. DALZELL (see our vol. for 1865, pp. 1058-1203), who remarks that a great number of trees in India begin to sprout in the hottest and driest month—at a time "when the heat and drought would seem great enough to wither up all vegetation." The tropical spring therefore takes place "at the very period when there is a minimum amount of moisture in the ground as well as in the air." Mr. DALZELL admits his inability to explain the phenomena, and refers them "to specific vital action unconnected with external circumstances." This however is a "rest and be thankful" way of getting out of a dilemma, which will not find favour with those physiologists or horticulturists who see that to evade a difficulty is not to overcome it, and moreover precludes all possible advantages that may be derived from its solution. The dry season of the tropics is generally considered by physiologists to afford the same rest to plants that they get in the winter season of higher latitudes, the drought checking vital activity in the one case as efficiently as the cold in the other. The facts just cited at any rate show that this activity is not always checked by drought, while the illustrations adduced by our American correspondent (p. 197) go to prove that there is a far less complete arrest of the functions of trees from cold in the very severe climate of North America than is considered to take place in our own more temperate clime. We should be glad to hear the opinions of those having practical experience of the effects of these extremes of temperature on plants.

—— WE hear with the most lively satisfaction that at the ensuing commemoration at Oxford, on June 13, it is proposed to confer the honorary degree of D.C.L. upon M. A. DE CANDOLLE, President of the International Botanical Congress, and upon Dr. HOOKER, the Director of Kew Gardens. So graceful and well merited a compliment will be warmly appreciated by all classes of botanists and horticulturists both at home or abroad.

—— The BELGIAN GOVERNMENT, as well as the railway and steam-boat companies, have accorded very great facilities by the reduction of fares for the transport of passengers and goods by way of Antwerp or Ostend to London, on the occasion of the International Horticultural Exhibition. The Netherlands Government have also accorded a like boon in regard to their fiscal arrangements. So good an example should not be lost on our own Government.

—— Dr. HOOKER and Mr. SMITH have with great liberality allowed Mr. GIBSON to select a very large number of fine SPECIMEN PLANTS from the gardens at Kew, for the decoration of the International Horticultural Exhibition.

—— Through the kindness of Dr. HOOKER the ROYAL GARDENS, KEW, will, during the Congress week, be open to our foreign guests at 10 A.M. instead of at 1 P.M. as usual.

—— The Council of the ROYAL BOTANIC SOCIETY, Regent's Park, and that of the ZOOLOGICAL SOCIETY, have most liberally thrown their respective gardens open to the distinguished foreign members of the Botanical Congress.

—— We English can never get on with our public, any more than we can with our private business, without a good DINNER. We rejoice, therefore, to find that, in addition to what we may call the State Banquet of the International Exhibition, there will be one of a more social character on May 24 at St. Martin's Hall, over which Lord HENRY LENNOX, M.P., Vice President of the Royal Horticultural Society, has kindly consented to preside. The tickets have been fixed at a low price so as to ensure a large attendance of gardeners. Messrs. SPIERS & POND have undertaken to furnish the *material*. Intending diners should communicate without delay with Mr. R. DEAN, 8, Denmark Villas, Ealing; and as certain preliminary expenses —such as the hire of the Hall, &c.—must be met, a small subscription will be thankfully received. So large an assemblage of gardeners of all degrees is not likely soon to be got together again, and we feel assured so fine an opportunity of promoting cordiality and goodwill among the craft will not be lost. We shall hope also to see many of the Continental gardeners among the company.

—— We invite the attention of our readers to the following account of a meeting held at South Kensington on Tuesday last to consider the best means of forwarding the horticultural interests in connection with the Paris Universal Exhibition of 1867. There were present Messrs. VEITCH, TURNER, BULL, LAING, WATERER, LEE, OSBORN, MOORE, BOOTH, EDMONDS, MURRAY, Colonel SCOTT, Captain COCKERELL, Dr. HOGG, Dr. MASTERS, and others. An invitation from the Imperial Commission for the Exhibition in question, requesting British Horticulturists to co-operate in an International Horticultural Exhibition to be held in the Champ de Mars contemporaneously with the Exhibition of Arts and Manufactures, was read and discussed. It was then moved by Mr. J. G. VEITCH, seconded by Mr. JOHN LEE, and carried unanimously, "That British Horticulturists will be happy to accept the invitation of the Imperial Commission to support an International Exhibition of Horticulture for a period not exceeding a fortnight, such exhibition to take place in a special building to be provided by the Imperial Commission, and would suggest for consideration, that such exhibition should take place at the latter end of May or beginning of June." Mr. TURNER further moved, "That British Horticulturists would be willing to co-operate with the Executive in exhibiting from time to time specimens of various plants and flowers which may be in season." This having been seconded by Mr. LAING, and carried unanimously, the meeting terminated.

—— Our Correspondent the REV. W. F. RADCLYFFE, writes that he has left Rushton, with which his name has become so intimately associated in horticultural literature, and that he now resides at Okeford Fitzpaine, Shillingstone, Dorset.

New Plants.

332. ONCIDIUM HOLOCHRYSUM. *Rchb. f. Otto. Hamhg. Gtz.* xviii. 1862, p. 33.

(Macropetala, petalis spatulatis racemo oblongo secundo, petalis ovatis apiculatis patulo-undulatis, labello trilobo lobulis posticis lineari-ovatis, isthmo angusto, lobulo medio separatis, hac brevissima, angulosa, retrorsis, illicis maximis, calloso-lapsos expansos evali depresso, infra libero, apice in pulvos suos linearem bifidum excurrente, columna brevissima, antherino postice angulato, antice ornithorhynchos alis semifalcatis hinc dentatis.

Pseudobulbis oblongi sulcati monophyllis; folio cuneato ligulato obtusissimo, subcoriaceo, rigido, pedalem multifloro. Flores aurei magnitudine illorum Oncidii ampliati medians.

I made the acquaintance of this plant in 1861, in the garden of M. Borsig at Moabit, near Berlin, which is so rich and so well known for the great curiosities grown there under the care of M. Gaerdt. The little plant, hanging in a Cocoa-nut shell, came from England, where M. Gaerdt had been some time before, with the object of enriching M. Borsig's celebrated garden. The plant gave me the impression as if *vadite ad inferos* was written on its little spike, and I never saw the species again until a few weeks ago, when I got a quite unexpected ray of light concerning it.

Messrs. Backhouse & Sons, of York, having now engaged a collector in some part of tropical mountainous America, ordered the collector to send numbered bulbs, adding coloured sketches and dried specimens with the same corresponding numbers. The latter they sent over to me. I was very much surprised to find a very strongly ribbed, spotted bulb, with a living eye, and two long dried spikes having quite a new character, for I know of no Oncidium with racemes so densely flowered as those of a Foxbrush Aerides. Let me add, that to make the impression still more curious, all the golden flowers are one-sided, as in Rodriguezia secunda. After having made a most careful analysis, I was not a little astonished to find again, but in a much better condition, the old holochrysum I had previously known only in a starved condition. No doubt we have here a very desirable Oncid. *Rchb. fil.*

ORCHIDS AND THEIR CULTIVATION.

No. XII.

(Continued from p. 292.)

Odontoglossum nebulosum (Mexico).—This species, physiologically speaking, is one of the most delicate of the race. Its colour when in good health is pale yellowish green—a colour indicative of plant-sickness, as a rule, but in this instance forming a prominent exception. It is, however, one of the most difficult of cool plants to grow successfully, as its constitution is unable to withstand extremes, either of heat or cold, drought or moisture, and the cultivator is necessarily compelled

to guard vigilantly against sudden fluctuations, else he can never hope to be successful. I use a little more drainage for this variety in the shape of charcoal and broken pots in the usual compost, and place the plant in the warmest end of the house as a safeguard; and my efforts have been hitherto attended with success. The pseudobulbs should be ovate and plump, about 4 inches long, with pale green lanceolate lustrous leaves. The inflorescence is produced from the young growths in process of development, on racemes producing from five to eight flowers, each about 3 inches across. Sepals oblong, with a prominent midrib like a keel on the exterior, and rather inclining forwards, with petals nearly uniform and inclining backwards; ground colour white, with raw sienna spots and blotches, arranged densely around the base, and forming on the whole a tolerably accurate circle, with the column erect and exposed; labellum contracted at base and abruptly widening out towards extremity, forming a bluntish point; also white, with spotting as above towards the base, and the calli very prominently blotched with yellow. Period of flowering May and June; and duration from four to five weeks.

O. Pescatorei (New Grenada). — This is preeminently the queen of Odontoglots, flowering when well managed with a profusion that quite eclipses all its compeers. What other species of this highly ornamental family could yield a pseudobulb capable of carrying to perfection an inflorescence of 117 flowers, each from 2½ to 2¾ inches across! We have now, in the act of expanding, a plant whose two matured growths yield in the aggregate 215 flowers. The principal panicles, which are in the form of a thyrse, and coming from the base of either bulb, bear respectively 65 and 58 flowers; while the numerous smaller panicles that make up the group are emitted from the summit or crown of the bulbs in quite an abnormal sort of fashion. The order of expansion of the inflorescence is centrifugal, this being the only individual, to the best of my knowledge, where such occurs in the family. The pseudobulbs when well grown should be nearly circular in outline, very plump, and not at all shrivelled; they should also be dark green, stained, especially towards the crown, with dark brown—a sure index of vigour; leaves lanceolate, smooth on the edges. The flowers when in bud are very handsome, being a sort of brownish crimson, that after they are expanded this colour only shows in the centre of the sepals, which gradually change to white after the flowers have been a length of time expanded. The front or face of the sepals and petals is pure white, like frosted silver, nearly uniform, broadly ovate, and nicely filling up, as florists would say, making a square outline. Column, as usual, exposed and quite erect; labellum panduriform also pure white, with yellow blotched calli, interwoven with purple and occasional dashes of crimson in the basal portion of labellum. It is, so to speak, of easy culture, and would live in an atmosphere where many New Holland plants would die; but it is of very slow growth, and seemingly incapable of producing eyes for the reproduction of young shoots. I have grown our plant for eight years from a tiny little thing to its present size, but it took five years to produce two young growths in a season. It requires nine months for perfect its flower panicles from the time they first make their appearance, and each individual flower with care will remain good for 12 weeks.—by far the longest period of any Orchidaceous flower that has ever come under my cognisance. The new varieties of Alexandræ, *alias* Bluntii, are closely allied to this species, but differ materially in the form of the labellum, which in the latter is oblong cordate, and in the former panduriform. From what I have been able to gather from seeing their inflorescence I believe the Alexandræ breed will never produce a panicle, so that while in Pescatorei we have panicles yielding from 60 to 70 flowers each, we shall have its newly-introduced compeer yielding racemes of from 8 to 12 flowers only.

O. Phalænopsis (Ocaña).—One can easily imagine the sensation which accompanied the flowering of this plant when M. Linden exhibited it in London in 1856; all the more a subject of astonishment and delight from seeing that such tiny ovate pseudobulbs were capable of producing highly ornamental flowers in some instances quite three inches across. The flowers are produced from the matured pseudobulb in short racemes bearing two to three flowers. The sepals and petals are ovate, nearly uniform, and pure white; while the lip is broad and nearly bifid, contracted towards the basal portion, and afterwards forming two slight wings, white veined with pink; lower portion also white, with deep and distinct dashes of rosy pink over its surface. Period of flowering April and May, but can be retarded to June, and will last from six to seven weeks in bloom. This plant should never be in an atmosphere below 45°, else the bulbs will be affected. A black speck is first seen at the base of the long linear leaves, or crown of bulbs, and gradually spreads over the bulb until its vitality is destroyed. It is of the easiest possible culture in the ordinary compost; and as bulbs are full of eyes at the base, which are all easily excited, a plant of some size is not difficult to obtain. I believe it would be possible to cut up individual pseudobulbs and grow them from eyes successfully, like so many Potatos. It is likely, however, to remain a scarce plant, owing to the difficulty in getting imported plants safely to hand.

O. pulchellum (Mexico).—With a fragrance more refined, if I may so express myself, than either that of Orange blossoms or Hyacinths, this elegant variety adorns our Orchid houses, and, strange to say, is not nearly so much grown as half-guinea plants—surely cheap enough in all conscience, if we go by comparison—might be by the lovers of flowers. There are several spurious varieties in the country under the name, which cannot for a moment be compared to the best and true sort, either in point of size of flower, or free blooming properties. The small variety is sometimes called Egertonii. It is scarcely possible to single out the best sorts until they have proved themselves, as the pseudobulbs are so similar in all the varieties, notwithstanding the variation in point of size of flower. Pseudobulbs oblong, with long linear leaves. The inflorescence is produced from racemes, each from 6 to 12-flowered, the larger sort having the lesser number. By a natural contortion the pedicels are twisted in such a way as to turn the flowers upside down; dorsal sepal and petals uniformly ovate, with the two inferior ones connate, pure white. Basal portion of labellum thick and fleshy, yellow spotted with brown; lower portion depressed so as to appear at right angles to the upper, also white. Period of flowering April and May, and duration six weeks.

O. stellatum.—A small plump Cervantesii-like bulb, with short lanceolate leaves, producing solitary flowers from the base of matured growth. Sepals and petals arranged like a star, of a dull cinnamon colour, with a white labellum nearly an inch across, deeply serrated on its edges; calli rather prominent, by being finely blotched with flesh colour. This is the least interesting of the group, and remains in bloom only about a fortnight.

O. Uro-Skinneri (Guatemala). — This is a very robust-growing species, and very distinct and ornamental. It produces large handsome pseudobulbs of a pale green, spotted with brown, when vigorous measuring 6 by 4 inches, of flattish formation. The leaves are oblong, and show very distinctly the parallel venation. The inflorescence is produced in racemes about 2 feet long, bearing from 9 to 15 flowers, proceeding from the bulbs when in course of formation. It occasionally produces a panicle, as happened with the plant under my charge—only once, however—and at that time it bore 20 flowers. When first expanded the flower is very high-coloured, but it becomes bleached by exposure to sun and light. Each flower measures fully 2 inches across. Dorsal sepal and petals uniform, ovate; inferior ones oblong; ground colour a glossy Indian-red, with olive "barrings." Labellum orbicular, and slightly undulated on the surface; ground colour white, heavily clouded with colours varying in varieties from a pale lilac to a soft purple. These flowers require pretty close shading to keep them in condition. As this plant makes two sets of bulbs in the season, it is scarcely ever out of flower; but it is in best condition in April and May. Liberally treated to suit it will thrive like a Pumpkin; and I have found it to increase in bulk a little more rapidly if treated, say once a fortnight, to weak manure waterings. Duration of flowers from four to five weeks.

O. hastilabium (New Grenada).—Singularly enough, although this plant was originally found in an altitude where the extreme of cold in that latitude prevailed, it will not live in the same minimum temperature as Pescatorei, cordatum, or grande. I had a plant five years ago that died in the same house where the above were successfully wintered. I have ever since entertained a suspicion about conforming my practice to the conditions of a natural climate, without at all events feeling my way bit by bit. In fact the best artificial climate that it is in our power to create must fall lamentably short in providing conditions suitable to the constitution of the various plants which we domesticate. The variety in question is of rampant growth, producing bulbs fully as large as those of Uro-Skinneri, and throwing up a panicle from the matured growth from 4 to 5 feet long, with flowers about the same size as in O. leve. Sepals and petals rather narrow, and angular in some varieties, of a pale cream ground, spotted and barred with brown; the labellum about twice the breadth of petals, and slightly contracted in the middle, rose in the basal portion, shaded with white, and paler towards extremity. Time of flowering, May and June; duration from five to seven weeks. Some very fine plants of this have been recently imported, from which we may anticipate some choice varieties.

We have bloomed numbers of the Bogota varieties, including gloriosum, radiatum, Alexandræ, &c.; but as there is still a numerous lot to prove, it will be better for the sake of accuracy and completeness to allow the description of that batch to stand over for a time.

J. Anderson, Meadow Bank.

TIMBER SUITABLE FOR BUILDING PURPOSES.

AT the late annual meeting of the Northern Architectural Association, the President, Mr. J. Green, Newcastle (says the *Builder*), read an address on timber suitable for building purposes. In the course of it he said,—Without entering into a discussion of the anatomy and physiology of trees, and the properties that will hence result to the timber of each class or natural order, I intend to confine my remarks to topics of a strictly practical character. In the first place, I will offer some remarks on the timber of those trees which have the medullary rays in their composition; after which, proceed to make some remarks upon the timber of those trees in which the medullary rays are absent. [?] The timber of trees in the first of the classes into which I have divided my subject, constitutes that which is generally and popularly known as hard wood, and of which the Oak, the Ash, the Elm, and the European or Spanish Chestnut may be considered as the principal types. That in the second of the above referred-to classification is the timber of the Coniferæ or resinous woods; and as examples, the Scotch Fir, the Tyrolese Pine, the White or Weymouth Pine, the Pitch Pine, the Norway Spruce, the Larch, &c., may be pointed to.

In comparing the nature of the timber required for the purposes of domestic architecture under different circumstances—as, for instance, previous to and during the Tudor period, and of that required during the present time—we find a marked and important difference to exist. The resinous wood of the Coniferous trees composing the immense Pine forests of Northern Germany, Russia, Norway, and Sweden, whilst admirably adapted to the roof trusses and floor joists of the stone and brick buildings of the present day, would be ill suited to the frame erections of from 300 to 400 years ago. Besides the risk of fire that would have attended the use of Fir timber in such edifices, it would have been wholly unfit for the system of carpentry which then prevailed. The use of pins and treenails, as fastenings, would split Fir, whilst such fastenings are the best that could be used in the Oak carpentry of our ancestors. The reason of such immunity from splitting by such fastenings in the mediæval system of carpentry alluded to, is the binding of the yearly increase by annular additions to the size of the timber by the medullary rays of the hard wood then used, which are wholly (?) wanting in the timber of trees of the Pine tribe used in the system of carpentry of the present time. Here, then, an altered and a much improved system of house-carpentry at the present day, has opened to us the use of the Pinus sylvestris, which, when grown on the strong soils and in the cool climate of the northern countries of Europe, is by far the strongest, the stiffest, and most durable timber for edifices erected according to the mode of building of the present day, at a most reasonable cost. Although this is decidedly by far the best variety of Pine for building timber, when grown under favourable circumstances for producing good quality, yet there are many other varieties indigenous to different countries and climates, which, although not so valuable for main timber or carpenter-work, are better adapted for the inside fittings or the joiner-work of houses. The varieties to which reference is now made are the White or Weymouth Pine, and the Yellow Pine, both from America. The Norway Spruce, or Pinus Abies, from which the White Norway battens are sawn, and also Larch, make excellent flooring boards and tread boards for stairs. Larch is also excellent for framed work, such as doors, panelling, and the like; but is too resilient for beams, or for any purpose subject to cross strain, without allowing a much greater scantling than would be necessary for the best Fir, or for well-grown and well-seasoned Oak.

Of domestic-grown timber suitable for house-carpentry the catalogue is certainly a short one. It comprises but three descriptions of hard wood, and perhaps a fourth, if Elm be included, and but two of the timber of the Coniferæ. The two varieties of Oak which are indigenous to Britain are the Quercus Robur and the Quercus sessiliflora. The heartwood of these varieties of the Oak, when the tree is well matured, is unquestionably the very best, all properties considered, of any British-grown timber. It is, however, becoming scarce, and timber of good quality of these varieties is so much in demand for shipbuilding as seldom to be available for house-carpentry, except at a very high price. In speaking of these varieties of Oak timber for the purpose of house-carpentry, it must be borne in mind, that when the timber is young, it must not be considered better than, if so good as, red Fir from the Baltic ports, or from Norway, or from Sweden. The hard-wood timber of home growth next in importance to the Oak, is the European or Spanish Chestnut, Castanea. This timber is as durable as either variety of Oak just mentioned, and, in general appearance, it bears a strong resemblance to that of the Quercus sessiliflora, but it is inferior in strength to either variety of British Oak spoken of. The last of the British-grown hard woods to be mentioned, although seldom used for the purpose, but which may be found useful under some circumstances in house-carpentry, is Elm. It has the property of not splitting, and, when mortised, luting a tenon inserted into it tightly; but it is extremely difficult to work. It, however, makes a better king-head in a composite roof-truss than any other kind of timber, but is inferior for this purpose to cast iron, and can only be recommended for that use when few such members for roofs of a building may be needed. Any other of the British-grown hard woods it is unnecessary to speak of, as all of them, on account of their liability to the attack of insects, rapidly deteriorate in strength, and fall into a state of decay.

Of the timber of the Coniferæ of domestic growth, the Larch and the Pinus sylvestris grown in the Scottish islands are the only kinds suitable for the use of the house-carpenter; the former-mentioned for the purposes already spoken of, and the latter-mentioned for inferior work in general carpentry. It may here be mentioned, to condemn the practice, as the most egregious folly on the part of proprietors of estates to use home-grown timber, because it happens to be on their estates, in the erection of buildings for agricultural purposes, when the cost of sawing and preparing any such stuffs brings the price of it to much more than Baltic deals, in every respect infinitely superior to any home-grown timber, except such as will always command a much higher price than any ready-sawed foreign timber can be purchased for.

Besides Oak of British growth, previously treated of, Oak is imported from the Continent of Europe and from America. The Turkey Oak, Quercus Cerris; the Holm Oak, Quercus Ilex; Wainscot from Riga and Dantzic, and the Cork-tree Oak from the Mediterranean, are from the former mentioned part of the world; whilst the American Oak, Quercus alba, and the Canadian Oak, Quercus rubra, are American varieties. All these foreign varieties of Oak are, however, inferior to English Oak in durability. Riga Wainscot, imported in quartered logs, with the bark on the outside surface of the quartered tree, and sold by the quantity of 18 feet cubic measure, is frequently very beautifully mottled, and valued by cabinet-makers for the manufacture of furniture, and by joiners for doors, panelling, window-sashes and cases, floors and stairs for the best fitted houses. Mahogany is still more useful for the purposes mentioned than Wainscot.

Let me now draw attention to a matter of considerable importance in the use of timber in domestic archi-

tecture, and that is the preparation or seasoning of timber, with a view to prevention of its decay. The seasoning of timber is, no doubt, best and most perfectly attained by air drying, that is, in being subjected to a current of atmospheric air in the shade, and protected from rain. This, however, requires great length of time thoroughly to effect, and has led to several expedients to be had recourse to, to obtain the same results in a much less space of time; but although effectual to a great extent for the immediate purpose in view, all the artificial processes to which I allude are accompanied by some objectionable result so as greatly to deteriorate from their merits, and thereby to render them in a greater or less degree failures. I shall now make a few brief remarks on the processes of artificial seasoning of timber which have been most frequently adopted with a view to increasing its durability. The first of the means alluded to, rendering timber more durable, to which I will refer, is placing it in a stream of water saturated with lime for eight or ten days. This process has certainly the effect of rendering timber more durable, and less liable to the attack of worms; but it, however, becomes so hard, after being dried, as to be very difficult to be worked; and, therefore, the process should be applied after the timber has been sawn into the scantlings in which it has to be used. This process, it may be remarked, is to be recommended in cases where home-grown timber—particularly Fir—is used for building purposes. By the process of creosoting—that is, of timber after being heated being painted over or steeped in Stockholm tar, oil of tar, or creosote, all of which articles are the same, but in different degrees of purity—the timber is rendered more durable and less liable to the attack of worms; but by this process it is rendered very inflammable and liable to accident from fire; in addition to which the disagreeable odour from timber so treated renders it objectionable for being used in the building of dwelling-houses. Kyan's process for prevention of decay, which consists in impregnating the timber with corrosive sublimate, renders wood to which it is applied brittle. Timber, when steeped in a strong solution of alum, soda, and in some other solutions of mineral salts, is free from the attack of insects, and rendered in a great degree fire-proof; but the process greatly impairs its strength. Whatever may be the direct advantage obtained by the processes of which I have just spoken, when accompanied by some objectionable property or other, they cannot be said to be worthy of adoption in preference to, and to supersede, the air-drying of timber to season it for building purposes, except when the saving of time may be an important object.

Before dismissing the present topic, there is an important fact in relation thereto yet remaining to be noticed, and which appears to be but little understood, or, at least, seldom attended to. The fact to which I allude is, that when timber used as posts inserted in the ground is placed in the inverted position to that in which it stood when growing, it is very much more durable than if placed in its natural or growing position. This is easily accounted for in the valves of the sap vessels of the growing timber opening upwards; but when that position is inverted, the valves of the sap vessels become reversed in their action; and, therefore, when timber is used as posts inserted in the ground, the valves being so reversed prevent the ascent of moisture from the soil in the wood. As a safeguard against the decay of posts, which should never be omitted to be taken, is charring their lower ends to the distance of several inches above the ground in which they are to be inserted. I may also remark that charring the lower end of posts is to be preferred to the use of creosote.

[The author does not tell us what these extraordinary valves can be. They have escaped our vision, nor have we ever heard of them before. EDS.]

ADIANTUM CAPILLUS-VENERIS.

MOST authors that I have had access to set down this beautiful Fern as being very difficult to cultivate out-of-doors. Mr. Smith says—"This beautiful Fern, like Asplenium marinum, will not succeed in the hardy Fernery." Mr. Moore says—"On exposed rockwork in the open air I have never known it to survive through the winter, and the situation must be favourable for it to make much progress through the summer."

During the making of a hardy Fernery here in the beginning of 1865 little spots were kept in view for tenderlings, and this one in particular, but constantly the cold thought came up—"It won't do, it has been tried, and won't succeed." However, I brought out a potful in the end of May, broke it up, and placed three patches of it in a nearly perpendicular position, and in a very short time they were truly beautiful objects, bearing fronds such as I have never seen indoors; but the horrid Grass mice set to work and cleared them off, and as fast as fronds made their appearance they cut them down. I tried both traps and poison, and killed a number of the mice, but all was in vain. The fronds were kept down till the end of August, when I suppose the mice got a change of food, and the poor Adiantum got a short respite. It made good use of its time, and the plants were soon again in a state of great luxuriance, and remained so up to the end of September, when they were again swept off by their merciless enemies, and kept down through the winter, for excepting during frost they have showed signs of growth during all the season.

On the spot where I divided the potful a few broken scraps had fallen among the soil. I did not know they were there until they showed some tiny fronds. Being on the level ground the mice did not trouble them, and by the end of September there were some fronds in the patch 8 inches high; but the plant did not look half so beautiful on the level ground as the patches did which were hanging out of the perpendicular wall formed of vitrified bricks. I have got a few plants that have been in a cold frame through the winter, which I mean to try in another place, and if the mice will only leave them alone, I feel confident, from what I have seen of its struggle to grow, that it will succeed. Grass mice seem to be very fond of Adiantums, for they attacked A. pedatum; but this being in a place where it was possible to protect it, was secured by a wire guard, when it grew well, and its new fronds are now (May 2) 15 inches high.

Asplenium marinum also grew very well. I did not measure any of its fronds when in growth, but I find that the largest remaining upon it now is 11 inches long, and the young fronds are just making their appearance above the loose soil. It is true that the past has been a mild winter, and perhaps severe frost would have killed both, but judging from the appearance of A. Capillus-veneris at the present time, it is as little influenced by cold as Lastrea Filix-mas.

It seems to me that most of the hardy Ferns have made unusual progress this spring. I have measured a few this morning, which are as follows:—

	Ins.		Ins.
Adiantum Capillus-veneris	5	Lastrea dilatata	36
,, pedatum	15	Athyrium Filix-femina..	15
Polypodium Dryopteris ..	8	Onoclea sensibilis ..	11
Cystopteris fragilis ..	6	Osmunda regalis	34
Struthiopteris germanicum (young plants) ..	20	Asplenium Adiantum nigrum ..	5
Polystichum aculeatum lobatum	12	,, Trichomanes..	5
		Cystopteris falcatum ..	6

The fronds of the latter have retained their beautiful green through the winter. I look upon it as one of the most beautiful of hardy exotic Ferns. *D. Buchanan, Durham Park, Barnet.*

LANCASHIRE GOOSEBERRIES.

THE following selection of Lancashire Gooseberries made from a large collection of some 176 varieties at Chiswick, and recently published in the reports of the Fruit Committee, may be recommended on the authority of the Committee as possessing high qualifications as dessert fruit, and deserving of cultivation on account of their flavour. It was found that the majority of the sorts forming the collection were worthless as regards this important quality, and had nothing but size to recommend them:—

GREEN VARIETIES.

Anthony, smooth thin skin, tender flesh; good flavour.
Beeston Castle, smooth thin skin, tender flesh, very fine and rich.
General Mockhaw, skin smooth, thin, flesh tender and nicely flavoured.
Green Overall, smooth downy thin skin, tender and melting flesh, and delicious flavour.
Green Pitmaston, thick skin, coarse flesh, but good flavour.
Green Rose, smooth thin skin, tender flesh, and good flavour.
Gunton Green, rough thin skin, good brisk flavour.
Keepsake, fine large hairy fruit, thin skin, and deliciously flavoured.
Loftus, very thin, hairy skin, tender flesh; very rich and delicious.
Lord Eldon, smooth thin skin, tender flesh, sweet, and very rich.
Model, rough thin skin; richly flavoured.
Random Green, immense bearer; very large long fruit, thin skin, tender flesh: excellent flavour.
Safety, long and smooth; skin thin, flesh tender and of good flavour.
Sir Charles Napier, smooth thin skin, tender flesh; good flavour.
Slave, smooth thin skin, very tender flesh; good flavour.
Tantivy, smooth thick skin, coarse flesh, and good flavour.
Telegraph, immense bearer; smooth thick skin, coarse flesh, but good flavour.

YELLOW VARIETIES.

Broom Girl, rough, and thin-skinned, tender flesh; very fine flavour.
Candidate, long, smooth, thin-skinned; very tender and rich.
Fanny, rough thin skin; very rich and excellent.
Gipsy Queen, thin skin, delicate flesh, and richly flavoured.
Golden Drop, large long, rough yellow; very richly flavoured.
Leader, a smooth dark yellow, large, thin-skinned, tender-fleshed, and with a very rich flavour.
Legerdemain, very large and long, smooth and thin-skinned, tender flesh; good flavour.
Morston Hero, smooth light yellow, thin-skinned, and very richly flavoured.
Perfection, thin-skinned, tender flesh, and with a fine Melon flavour.
Tiger, long, smooth, thick-skinned, coarse flesh, but good flavour.
Two-to-One, thin-skinned, tender flesh; good.

WHITE VARIETIES.

Eagle, smooth thick skin; fine flavour.
Flora, smooth thick skin; good flavoured.
Jenny Jones, smooth thin skin, tender flesh; melting, and richly flavoured.
King of Trumps, oval, smooth, rather firm flesh: excellent flavour.
Lady Leicester, oval, rough thin skin, tender flesh; sweet and good.
Mayor of Oldham, smooth, very thin skin, and tender flesh; exquisite flavour.
Morston Long, round, slightly downy, thin skin, tender flesh; good flavour.
Patience, smooth, tender skin and flesh; very fine flavour.
Snowball, roundish, downy; fine flavour.
Snowdrift, round, hairy, hard flesh, but good flavour.
Tally-ho, large and long, hairy, thin skin; very fine flavour.

RED VARIETIES.

Companion, a bright rough red, with rich flavour: very excellent.
Ricardo, bright rough red, coarse flesh, but good flavour.
Speedwell, rough light red, thin-skinned, with a fine Grape flavour.

ON WATER.

THE very large proportion of water which we find in vegetables tells us plainly that whatever else the plant may require to extend itself, it must be supplied during its growing season with plenty of water.

It may amuse an idle man to think that he has done quite enough when he has sowed seeds, and is lazily waiting till they grow up, but he has forgotten that Wheat and many other seeds will lie a hundred years in dry earth unaltered, just for want of water and the other ingredients necessary for their growth; neither will they die because of the weakness of the force, the want of power in that final ruin which is so certain to overtake all things. Vegetable life suspended in a grain of Wheat for 100 years, and then at the scent of water germinating, growing, flowering, and fruiting, is really something to be wondered at.

Although we cannot control the seasons, so as to get all the sunshine we could wish when our crops require it, we may generally control the supply of water, either by deep tillage and the application of manure, or by artificial watering. A summer shower is quite a study of itself. Holding up its cloud like a parasol to the face of the sun, it drops gently on the tender foliage the watering necessary for the thirsty rootlets, and that without letting the sun scorch the wet foliage of the unripened leaf; and when the nightly dew succeeds to the daily sun, it seems as if God gave us this marvellous blessing of water by stealth, or as if the heavens rained the elements of our bread, whilst the sun was blindfolded. A lawn wet with the dew that fell at sunset tells of a watering so constant and so tranquil that it cannot be misunderstood, for when the sun rises we see that the tiniest leaf has been nursed for 10 or 12 hours in the bosom of the cloud that has come down to refresh it after the heat of the day.

I do not recollect ever meeting with any gardener, young or old, that had clear views of the importance of the supply and demand of water in gardening. To grow flowers without a constant supply of dew or vapour to their leaves is destruction; but to wet the flowers of the Vine when the sweet odour tells you that the fruit is on the anvil, is ruinous to the crop of Grapes; and the same may be said of all the finer flowers under glass. The flowers must not be wetted, and the leaves must not be dry. Ask the starry heavens, and the clear blue sky will silently show the simple and the learned alike a feat of watering in the form of dew, that flings the fine-rose watering-can far into the shade. Asplenium marinum may be seen on the coast of Devon hanging from the roof of a cavern by the sea-side, root uppermost, in splendid condition, well-watered, lighted, and sheltered; but how this is done and how the spore got settled so nicely in the chink and behaved so well, bearing fruit downward and taking root upward, is rather hard to be understood. Still there stands the fact undisputed, and the lesson for the fine-watering after this fashion has to be learnt by every young gardener. There is nothing more easily reared than Ferns are from their spores, but the outraged cultivator is horrified at the sight of his assistant coming with the watering-can to make a flood, without an ark to save even a remnant alive.

Again, most of the succulent plants have cause to curse the day that filled their gouty limbs with water, when they would have rioted in dry land, as long as the days were cold.

Water, besides being one of the constituent parts of vegetables, is certainly the mother liquor, and common solvent to the vegetable kingdom. Hence we find a communication established among the chemicals contained in fertile soil by means of water, just as we see a battery set going by having its plates in juxtaposition and immersed. The addition of violent chemicals, such as salts, acids, alkalies, and the like, is of the highest importance to plants, because, dissolved in water, they come in contact with substances that must also be rendered soluble in the form of solutions before the Palms and Grasses could get their share of lime and flint, for never was important fact more unlikely than this—that two of the ingredients of the food of the principal plants used as bread corn, are marble rock and flint-stone.

In all the indoor operations of horticulture, the various forms of watering are so intimately connected with successful cultivation that it may be said to be the very soul of gardening. There is indeed a time to drench and a time to keep things dry. The water in its temperature should belong to the climate whose growing season we are imitating. The cases are very few indeed in which deep well-water can be used, for we see the rain broken into drops and carried through the summer air before it is offered as drink to that array of living silent gems that stud the fair mantle of the earth which we inhabit. I mean these commonsense views of things for young men who are easily led away from real practice by some imaginary notion, some easy road to success. Painstaking and laborious is the path of gardening, but deep and abiding is the delight, for whilst God is clothing the Lily, the humble, patient youth is ministering as best he may, planting or watering, adding his care and anxiety, and claiming no small share of the gorgeous reward when the well-dressed beauty comes forth.

In the outdoor department of gardening two crops a year may often be got instead of one by the addition of water. Every acre gets enough of water; it swims in it in its native ditch, and only exists in gardens by the depth of tillage and heavy manuring it gets. Who would eat Water-cress grown on dry land? Or who could say how much water they would require in driblets? Osmunda regalis, the flowering Fern, has its wiry roots 6 feet deep in shingle, whilst its tuft of fronds is surrounded with water, sometimes a peat moss puddle, and at other times, as in the river Dart, pure water. Watering such plants as these would be a mockery; they are children of the flood, and must have a swill tub to thrive in.

We are lost in astonishment at the vast body of ever moving yet apparently still platform of pure water which covers more than half of the earth's surface; and when we see the tide ebb, and the thousands of morsels of food for birds, beasts, and men left dry for the gathering, like the manna of old, we learn how much we are beholden to the agency of water. But I must

leave the cases of individual watering for another time, as my remarks might be tedious if lengthened; but the truth has to be told (and however unpleasant it may be, sound practical truth is always safe ground to stand upon), senseless watering is one of the greatest curses of the craft. *A. Forsyth.*

Home Correspondence.

Artificial Manures.—Like your correspondent "Alpha" (see p. 339), I, too, have for many years experimented with many kinds of manure, and like him have killed many plants. This result, however, I did not always attribute so much to manures, as to my mode of using them. Your correspondent has instituted a comparison between two chemical horticultural manures—one with a fanciful name, savouring somewhat of quackery, viz., "Standen's Gardeners' and Amateurs' Friend;" the other, "Goulding's Horticultural Manure." Permit me, however, to inform your correspondent that his experiments were not based upon correct data. He did not use Goulding's Manure according to that maker's directions, consequently it was not fairly tested; and therefore his conclusions are of little value. Amongst many other manures I have used Goulding's, both in a dry state, and in a liquid form, upon vegetables of different kinds as well as on Fuchsias, Roses, Camellias, Pelargoniums, and other greenhouse plants, and I have no hesitation in saying that it is the most effective stimulating agent that I have ever employed, and I am acquainted with many gardeners and amateurs in Scotland who have used, and are using it at this moment, with most satisfactory results. One of my neighbours, who has always been somewhat sceptical regarding artificial garden manures of every kind, has been induced from seeing its good effects with me, to try a few boxes of it, in his orchard houses, greenhouse and conservatory, and also on some out-door plants, and he states that the results have been so satisfactory as to astonish him, so much so that without trying it he could not have believed that such a small quantity could have made so rapid and extraordinary a change in the growth of some of his plants. I can also inform your correspondent that I have used upon a very considerable scale Goulding's agricultural manures against those of other makers, and I can affirm without prejudice to one more than another, that Goulding's was decidedly the most effective. In testing the relative values of different manures, your correspondent should weigh his doses, not in a teaspoon, but in the even scales of justice. I may farther state that Goulding's horticultural manure, applied dry on the surface of pots and afterwards watered, has an excellent effect on soft-wooded plants. I, however, certainly prefer using not only it but any other manure in a liquid form. *Omega.*

United Horticultural Society (see p. 389).—The "office-bearers" have been for some time engaged in elaborating a Gardeners' Benefit Fund. This they were bound to do in accordance with the rules on which the United Horticultural Society is based. But until this was done they could not, with any satisfaction to themselves, solicit further support from the public. After many delays, such as are common to undertakings of this kind, the benefit fund has advanced so far as to have obtained the approval of an eminent actuary, and particulars of its constitution will be made public shortly. Thus, though apparently asleep, the executive have been fully occupied, working, like the mole, underground, expecting that in due time the results of their labours will be seen and appreciated. *Shirley Hibberd, Stoke Newington, N.*

Farfugium grande.—I am surprised that this beautifully blotched Coltsfoot is not used more than it is for bedding purposes; it withstands all weathers, and although not perhaps quite hardy, a very little protection is all that it requires. When a tolerably good-sized plant is obtained it can be readily divided into dozens, a single crown to each division being sufficient. I have propagated it extensively this spring, and purpose bedding it out along with some other plants that will furnish a suitable contrast in the way of colour. As regards the result I may have something to say hereafter. *John Edlington, Wrotham Park, Barnet, N.* [It has proved quite hardy in at least one suburban garden that we know. Eds.]

Taxodium sempervirens and the Squirrels.—I fear it will afford small comfort to Mr. Mills to learn that this fine tree has much worse enemies than the birds—the squirrels delight in its bark for their nests. We have a fine specimen here, 6 feet in girth and about 60 feet high. Its bold tapering stem and deeply-veined elastic bark gave it a fine bold rustic appearance. We were justly proud of the whole tree, and I may add vain of its extraordinary bark. For a few days I had not noticed it, and, when I went, the barking season seemed not only to have begun but to be well-nigh completed. Long strips, 2 inches thick, and ranging from 6 inches to 2 feet in length, lay scattered about in all directions. My first thought was that it must have been wanton mischief, but, as one side of it was stripped right up to the top, I at once blamed the true delinquents. Immediate search was made, and two nests, containing a barrow-load each of sempervirens bark, were found, varying in texture from the roughest outer to the finest inner bark, resembling cotton wool in all but its colour. Six squirrels perished for their temerity, and since then one has travelled from a greater distance and attacked it again. I fear there is no remedy but the entire destruction of the squirrels, and this we hesitate to adopt, for their merry chatter and gladsome leaps are almost as beautiful amid garden scenes as the bark itself. I do not think the tree is at all injured, but its characteristic feature is ruined for ever. Allow me to highly recommend this beautiful tree to any one who can plant it in good loam, in a rather moist situation. The stem partakes very much of the shape and character of the Wellingtonia, its leaves are more beautiful, and in its bark no tree can equal it. *D. T. Fish.*

Ants in Vineries.—Can any of your correspondents furnish me with an effectual means of destroying black ants in plant stoves and vineries? In my case I find them to be most industrious propagators of scale and mealy bug, and on this account I am fearful as to the results they are calculated to produce, burrowing as they do in the Vine borders outside and in the pots inside, among the roots of the plants. They carry along with them the Fungus-like germs of the mealy bug. In these hiding places the bug in question is safe from any intrusion from sponge, brush, or syringe, especially in the burrows outside, which are quite 2 ft. deep. I have tried guano water and carbonate of ammonia with good effect some years ago under similar circumstances, but this time I find both these applications to be useless. I have also resorted to other severe and trying remedies, such as steeping rags and list in camphorated spirits of wine and spirits of turpentine, tying bands of this steeped list round the pots and also round the stems of the Vines, but with only partial success. These appliances certainly stopped their communication with their friends in the Vine border, and partially stopped their progress in the pits and among the plants inside. But their caustic nature does not admit of their application, except very sparingly, among either soft or hard-wooded plants; therefore I shall be glad to know if there is any other remedy by which I can exterminate these destructive little pests. *T. C., Yorkshire.*

Triteleia for the Spring Garden.—In treating of the best spring flowers generally I have before recommended Triteleia uniflora in your columns, but till this year I had no adequate idea of its beauty and excellence as a hardy spring bulb. I find it is not only a first-class spring flower, but that it lasts longer, much longer, in beauty than any with which I am acquainted. It came into flower with or before Scilla sibirica, and is now, during the last days of April, still in effective flower, while the vivid blue of the Squill has been of course long replaced by green leaves. It is a native of Mendoza in South America, and has strap-shaped spreading leaves, above which the flowers stand clear. They are from about 6 to 8 inches high, nearly an inch and a half across when the plants are not grown too thickly; colour white, with delicate descending bars of pale blue on the inside. The leaves smell exactly like those of an Allium—the flowers like those of the Persian Iris—a delicate and grateful perfume. They open with the morning sun, and are conspicuously beautiful on bright days. In taking up a few plants the other day I found that each plant was giving off offsets as free and numerous as a young Shallot, while the leaves seem to have passed through the not very agreeable spring with less injury than those of our oldest and hardiest spring bulbs, and this in a cold soil and very exposed situation. An exposed position is usually a very bad one for hardy bulbs, as the leaves get lacerated, and the bulbs suffer in consequence; but from lying nearly flat on the ground, the leaves of Triteleia appear to escape injury from this cause, and it multiplies at quite an unusual rate. Whether it is hardy enough to withstand such a winter as that of 1860 I cannot say, but I have had it perfectly safe for three winters past in stiff ground. It does still better in light or sandy soil; and in Mr. Farmer's garden at Hornsey, which now contains almost everything in the way of spring flowers, it proved the most satisfactory of all, notwithstanding that some hundreds of Mr. Mackay's Squills were entered in the competition. It is, I believe, to be had cheap from the Dutch. Associated with the best Scillas, Leucojum vernum (which has recently been found wild in Dorsetshire, by-the-by), Iris reticulata, or surrounding beds of the best Narcissus (*e. g.*, odorus, major, tortuosus, bicolor, poeticus, &c.), this would form a charming addition to the select spring garden. It may also be grown with advantage as a profuse-flowering frame plant, to be introduced to the conservatory when in flower, in a little bed on rockwork in the front line of a mixed border, and, when plentiful enough, as a permanent edging to beds of dwarf American plants, and the like. *W. Robinson.*

Privet.—Can any of your correspondents inform me whether or not the young shoots of Privet are poisonous to rabbits? I have found one here dead, with every appearance of having been poisoned, and on examination the mouth and stomach were found to contain young shoots of Privet; the flesh and tongue were quite black, and the latter was much swollen. Death had evidently been instantaneous, as the rabbit was found close to the hedge, and must have died while feeding. *E. Chitty, The Elms, Finchley.*

Foreign Correspondence.

THE GINKGO.—I have read in the *Gardeners' Chronicle* of March 3d an account of Henkel and Hochstetter's *Synopsis of Coniferæ*, and a quotation from that work attracted my attention. It is said, speaking of the Ginkgo: "Two remarkable examples of the Ginkgo, a male and a female, exist in the Imperial Botanic Garden at Vienna, which flowered and bore fruit in the year 1846. It is curious that the older examples which are found in Europe are all males, and that the first female plants were raised in the Montpellier Botanic Gardens from seed about 1788." The translation from the original German is accurate, except that a note of interrogation accompanies the date 1788; but unfortunately the facts contained in the last phrase are wrong. Had the authors paid more attention to an article by De Candolle, in *Bibl. Univ. Genève*, 1821, vol. vii., an article which indeed they quote—had they also read Loudon's *Arbor. Brit.* iv. 2094, likewise quoted by them, they would have learned that all female branches of Ginkgo that have flowered in Europe, come from grafts of a tree discovered by my father, in 1818, at Bourdigny, a village two leagues distant from Geneva, where a gentleman (Mr. Gaussen de Chapeaurouge) had cultivated rare trees in the last century. Grafts were sent by my father to Montpellier, to Vienna, and elsewhere; and according to the climate they flowered sooner or later. I gave the size of the original tree of Bourdigny in my *Notice sur les Arbres indigènes et exotiques de la Suisse* (*Bibl. Univ. de Genève*, Octob. 1835); and Mr. Louden found out that it had been sent in 1790 to Mr. Gaussen de Chapeaurouge, by Mr. Blakie, an English horticulturist residing at that time on the Continent. Now I am sorry to say that the tree at Bourdigny has been cut down by a new proprietor of the ground, who cares nothing for Botany; and thus my present letter may serve as an epitaph to a *female*, about which several pages have been written, and whose scions are numerous. *Alph. De Candolle.*

GARDENING IN NEW ZEALAND.—Green Peas seem to be a most popular vegetable in Canterbury. The varieties I am going to write about are Maclean's Princess Royal and Advancer, introduced last season. For many years past Dr. Maclean has been engaged in the laudable work of hybridising and cross-breeding Peas, and for these two varieties, along with many others, we have to thank him. Now for their character, which arrived here with them: "Princess Royal is a second early, very like the old Dwarf Marrow, but a most decided improvement on that variety." "Advancer, recommended for a second crop, is one of the four best sorts recommended to be grown in England, and the best and earliest wrinkled kind at the present time, feathered with pods from the top almost to the ground." By means of these two varieties Peas are well represented here. The pods of Princess Royal are from 4 to 5 inches in length; the flavour of the Peas is excellent, and I find the variety to be a good cropper. I emptied 100 full pods, and I had for my trouble one quart measure brim-full of green Peas. To test this small quantity against other varieties, I emptied 100 full pods of Dickson's Favourite Pea, *alias* Auvergne, and I only got one pint—the measure not quite full. I tested Advancer in the same way, and had one quart again; against this I emptied 100 full pods of Beck's Gem, *alias* Pois Nain Hâtif, an old Pea, which I have known for the last 30 years, and I only obtained one pint of Peas. In my opinion old varieties should be discarded, in order to make room for better kinds. When we pay our seedsmen here 3*s.* per quart for seed, we have a right to expect a good result, and there is nothing like testing the merits of anything new in the shape of vegetables, &c., on their arrival. It seems, in this country, we can have plenty of green Peas, when we cannot cut a Cabbage for use. From what has been stated it will be seen that we are not far behind other countries in the cultivation of the Pea. I consider in many respects, in our Antipodal gardening matters, we are far behind others as many people imagine. "March of intellect"? Nothing wonders amongst us in the science of horticulture. *William Swale, Avonside Botanic Garden, Jan.* 15, 1866.

Societies.

ROYAL HORTICULTURAL: *May* 1.—W. Wilson Saunders, Esq., in the chair. After the election of 19 new members, the usual announcement of awards was made, and the Rev. M. J. Berkeley offered a few remarks on the different subjects exhibited. Psychotria macrocephala, exhibited by Mr. Bull at the last fortnightly meeting, received on this occasion a First-class Certificate. In reference to this Psychotria, Mr. Berkeley stated, that after examining some 170 species of that genus in the Kew Herbarium, and about 20 or 30 kinds of Rudgea, he could not find any to entirely agree with it. To some cut blooms of Magnolia, contributed by Mr. Cox, from trees at Redleaf at present in full bloom, attention was next directed, as well as to cut flowers of a Sikkim Rhododendron, which was stated to be a form of R. ciliatum, from Messrs. Veitch came a white flowered Rhododendron named Princess Alice, which was said to be a cross between R. edithæ and R. dalhousiæ, to which it bears considerable resemblance, and R. Edgworthii. A Rubus called Giroudianus, from the Society's Garden, next came under notice, it had been received from Berlin, and was probably new, but as it had no flowers on it, it could not be stated with certainty whether it was really a Rubus or not. To a collection of cut specimens of Conifers, both in flower and bearing cones, from Mr. Cox, attention was next directed, as well as to two kinds of ornamental Gourds sent to Mr. Berkeley by M. Naudin. One, Lagenaria Monticeli, from St. Paul de Luanda, on the west coast of Africa, was stated to be new, the other, L. sphærica, from Natal, had been exhibited before. Both were apparently small, hard-shelled, egg shaped, green-skinned, semi-marbled and spotted with pale yellow. A Medl, probably new to Britain, and different from the common Medl, was exhibited by Mr. Smith, who, as has already been stated (see p. 365), has been appointed to make drawings of fruit for the South Kensington Museum. Some remarks were then made on a disease affecting Peach trees, of which a full account will be given next week.

The Chairman directed attention to a Radish, on which was tied a natural knot. It was said that the tap root coming in contact with some hard curved surface when young, had probably caused it to take the singular form presented by it.

Mr. Bateman complained, and with much reason, of the want of punctuality of railway companies in regard to the delivery of plants sent from the country by rail to these meetings. He had taken the greatest possible pains to secure the exhibition of specimens on which he had remarks to make, and yet was disappointed. He therefore hoped that attention would be directed to the matter in the proper quarter, with a view to its amendment. He exhibited a photograph of a huge Pear tree growing in the Vicarage gardens at Hulme Lacy, the seat of Sir E. S. Staunhope, Bart. This tree, it was said, formerly covered nearly two acres of ground. Many of it had fallen, but much of it has been cut down from time to time, owing to its too closely surrounding the house. As many as from 14 to 16 hogsheads of Perry, of 100 gallons each, were stated to have been made from it in one year. Photographs of remarkable trees like this, it was mentioned, would not be unacceptable presents to the Society.

Among Orchids, exhibitions of which, owing to the coldness of the weather, were somewhat meagre, was a beautiful variety of Cattleya intermedia, shown under the name of C. amethystina.

Lycaste Harrisoniæ, a well-grown and finely flowered plant of which was contributed from the Society's garden, next come under notice, as did also the new and beautiful Epidendrum cnubescens alluded to at p. 365. If attention were directed, said Mr. Bateman, to the distribution of Orchids over the world, it would be found that certain great genera prevail in particular countries. Thus Brazil is the country of the world what Epidendrum are to the new, but while out of some 200 Dendrobia a large per centage are plants of real, lasting beauty, out of a similar number of Epidendra scarcely more than half a dozen could be found worth cultivation. As many as these Epidendra not yet introduced are however known to botanists and among them, until very recently, was the beautiful E. cnubescens in question. This was however discovered in London quite accidentally the other day at a sale of newly imported Epidendrum not known to be in flower, whose pink eye detected it by means of a dried flower which accompanied the importation. He, however, kept the secret to himself, and the half-dozen plants of it offered for sale were knocked down to him at 21s., while if it had been known that the lot consisted of the rare E. cnubescens it would have fetched as many pounds. What hitherto, it was said, has misled collectors who have endeavoured to discover this species in its native habitats, has been the supposition that it belonged to the leafy-stemmed section of the genus; it is, however, pseudo-bulbous, the section to which the most beautiful of the Epidendra belong. Mr. Skinner stated that further importations of it are expected very soon; lovers of handsome Orchids will, therefore, have another chance of possessing it. Cool treatment, it was stated, would doubtless suit it best. Attention was then directed to Dendrobium Mooreanum, the Rhododendron flower of Ceylon, a plant of which, with one flower only, it was now shown for the first time by Mr. Bateman (see our volume for 1864, p. 653). In colour it somewhat resembles D. nobile; but in form of blossom as well as in habit it is very distinct from that well-known species. In Ceylon its pendulous shoots, loaded with flowers of the most beautiful description, are said to ornament the trunks of large trees in the forests about Ratnapoora and towards Galle, where it is known under the native name of Wis-sak-mal, or Rainy-month flower, on account of its blooming during the rainy season. It was mentioned that in Ceylon as much as 16 inches of rain fall in a year, and that of that quantity about four-fifths fall between November and May. The west coast of the island is, however, drier than that on the east, from which this plant comes: it may therefore inferred that it would probably enjoy warmth and moisture better than cool treatment.

Messrs. Veitch exhibited a tree, beautifully in flower, of the handsome Rhododendron Nuttallii; three bushes of Erica ventricosa coccinea minor, a handsome green flowered Lycaste, with brown stained lip, probably new; but a specimen of Aeridium venustum, a slender-growing kind, and the white-flowered Rhododendron Sesterianum. From Mr. Turner, Royal Nurseries, Slough, came a number of splendid specimens of Azaleas, amongst which the kinds contained beautifully flowered examples of Campbell's Admiral Napier, Headley's Conductor, Dickson's Duke of Wellington, Trail's General Neill, Campbell's Lord Palmerston, Ashton's Prince of Wales, Smith's Waterloo, and Beale's Colonel Seely, as well as the old and unsurpassed Waterloo, honoured Conqueror of Europe, Dickson's Duke of Cambridge, Chesthunt Hybrid, Rose's Miss Catherine Hall, Lady Rachael Huntley, Chapman's Sultan, Beale's Stafford Hero, and Maclean's Unique. Among Rhododendrons were those handsome varieties, Standish's Queen Victoria, Standish's Countess of Haddington, and Fair Maid, Lee's Earl Spencer, Lowe's Maggie Lauder, Fletcher's Mary Ann, and small, Ne Plus Ultra. Conspicuous among soft-wooded plants were Blackbird and Mary Gray, Sims' Elfin, Smith's Perfection (a pink kind), Gorton's Goldfinch, Lightbody's Queen of Peg, Hamilton's Mrs. Lee, Healey's Purple Royal and Vulcan. Of Cinerarias shown along with this collection we noticed Brilliant, Brutus, Conspicua, Dazzle, Defiance, and Victoria. To the two last first-class certificates were awarded, Defiance a yellow-eyed deep lavender purple flower finished with a velvety margin, and Victoria a dwarf yellow one surrounded by rich velvety crimson. Mr. Hedges, Gravelly Hill, Birmingham, sent, in addition to the Cattleya amethystina already mentioned, cut flowers of a rosy pink-blossomed Rhododendron named lanciflium; and a sickle-shaped Aeridium, with compact heads of long thin blossoms, named Aeridium falcatum, from Moulmein. Kingsbridge, Devon. The Society's Garden contributed, in addition to a small group of Orchids, various well-flowered plants of Azaleas and Rhododendrons; also the pretty little Caladium argyrites, the handsome leaved Peperomia ariifolia from Mr. Veitch's collection, and Hyophorbe Verschaffeltii, two dwarf Palms, the pretty little Schaginella apoda, Pandanus elegantissimus, Saxifraga tricolor, Cyanophyllum magnificum, Caladiums, Dracænas, Antirrhiniums, and one or two other plants.

Mr. Ivery (Dorking) sent a basket of two dishes of Apples from Mr. Barnard's collection (Hopes Grove), and a bundle of the Lime-leaved Beech from Mr. Baker, gardener to the Duke of Portland at Welbeck. The latter, though somewhat injured by carriage, was still in a state of good preservation, and there will be no difficulty in obtaining a supply of it. Specimens of a cream-coloured Broccoli, called Richmond Late White.

Messrs. Osborn sent a collection of fruits, but the exhibition was well supplied, not only with gay flowering plants, among which Azaleas, Pelargoniums, Roses, and Orchids formed the most conspicuous features, but also with Ferns, both tender and hardy, and other fine-foliaged plants.

Orchids.—Of these there were several exhibitions. Messrs. Lee had Cattleya amethystina and Skinneri, in good condition; Oncidium roseum, Phalænopsis grandiflora, Saccolabium guttatum and violaceum, Aerides virens, Dendrobium nobile, and one or two varieties of Cypripedium barbatum. Mr. Bull also exhibited in this class a highly interesting collection, which was, however, disqualified through some inattention to the rules. From Mr. Penny, gr. to H. H. Gibbs, Esq., of Regent's Park, came an interesting collection, in which Trichopilia crispa, two varieties of Lycaste Skinneri, Dendrobium albo-sanguineum, Cypripedium Lowii and villosum, the beautiful rich brown and yellow-flowered Oncidium sarcodes; Phalænopsis grandiflora, with two magnificent spikes of bloom, and Ada aurantiaca, were noticed. From Mr. Hoss, gr. to W. Leaf, Esq., Streatham, had a wonderfully fine Oncidium amphiatum majus, bearing two large branching spikes of clear yellow flowers on it; Vanda tricolor and insignis, Aerides virens, Phalænopsis grandiflora and amabilis, Cypripedium barbatum, the handsome dark-coloured variety of Dendrobium tortile, and a Lycaste, called by some Lawrenceana. Mr. Hill, gr. to R. Hanbury, Esq., The Poles, Ware, furnished well-managed examples of Dendrobium densiflorum, D. primulinum, and D. Dalhousianum; also Cattleya Skinneri and mutabilis, Phalius grandifolius, with two spikes of flower on it, Odontoglossum Veitchianum, varieties of Vanda suavis and Cypripedium barbatum, the last unusually robust and well flowered. From Mr. Robson, gr. to G. Cooper, Esq., Coburg Road, came Phalius grandifolius, furnished with nine spikes of flowers; Vanda tricolor, Cattleya Mossiæ, Phalænopsis grandiflora and amabilis, Lycaste Skinneri, the beautiful Phalænopsis Schilleriana, with its flowers on a spike, and the rare P. Luddemanniana, the last bearing two open blossoms. In a group of six Orchids, contributed by Mr. Howard, gr. to J. Granger, Esq., Balham, were Cattleya intermedia, with 7 spikes of flowers; Dendrobium Dalhousianum, and its very near associate, as far as colour is concerned, D. albo-sanguineum; also D. Farmeri, with 7 spikes of flowers; D. pulchellum, quite a dense mass of pinkish lilac blossoms, blotched in the lip with orange; and Vanda insignis. From Mr. Robson came Trichopilia crispa with the white-lipped Oncidium luteo-purpureum. Of single specimens, Mr. Penny had an extremely handsome variety of Lycaste Skinneri, with some two dozen blossoms; and Mr. Howard had an equally good plant of the charming Dendrobium Farmeri, decorated with some eight spikes of flowers.

Awards.—12: 1, withheld; 2, Messrs. Lee. 9: 1, Mr. Penny; 2, Mr. Page; 3, Mr. Hill; extra, Mr. Robson. 6: 1, Mr. Howard; 2, Mr. Robson. Single specimens: Equal 1, Mr. Penny and Mr. Howard.

Azaleas.—These were large, well flowered, and effective. From Mr. Turner came Gem, Louise Margottin, Perfection, Coronata, Madame Miellez, Perryana, Mary, Holfordii, and Empress Eugenie, all handsome pyramidal plants some 6 feet in height. In a group of 6 plants from Mr. Carson, gr. to W. R. G. Farmer, Esq., Cheam, were Optima, Sir Charles Napier, Staulenana, Duke of Devonshire, Lateritia, and Holfordii, all finely flowered, but too much alike in regard to colour. Mr. Penny also showed 6 fine plants in this class, and an equal number was likewise furnished by Mr. Young, among whose plants was an example of the double-blossomed white kind called Flag of Truce. Iveryana was shown in beautiful condition in a group of 6 from Mr. Turner; and Mr. Turner's nearly equally fine double red came from Mr. Carson, and Mariantha purpurea was shown by Mr. Young. From Mr. Bull came a basketful of a semi-double rosy salmon kind called Grande Duchesse de Bade. Also Madame Dominique Vervaene, a pink kind, spotted with crimson and irregularly edged with white, and one or two others.

Azaleas.—1, Mr. Turner. 6: 1, Mr. Carson; 2, Mr. Penny. Specimen Plants: 1, Mr. Turner; 2, Mr. Carson; 3, Mr. Young.

Rhododendrons.—In a small group of these, to which a 3d prize was awarded, shown by Messrs. Ivery, were Barclayanum and Album Pink, two handsome high-coloured kinds.

Pelargoniums.—These, though wonderfully gay for the time of year, had scarcely reached their best. Mr. Turner had dwarf spreading well-flowered plants of Patroness, Candidate, Lilacinum, Lady Canning, Empress Eugénie, Beacon, Celeste, Rose Celestial, Mrs. Pearson, and Mr. Pearson. Mr. Penny had Bridge, came Fair Rosamond, Lurline, Roseum, Fairest of the Fair, Rose Celestial, Mer Polaire, Leviathan, Beadsman, and Candidate. Into Beadsman 16. Mr. Ward, gr. to F. G. Wilkins, Esq., Leyton, had Fairest of the Fair, Nestor, Lilacinum, Bracelet, and Silver Dark, two handsome high-coloured kinds. Mr. Wiggin, gr. to Walter Beck, Esq., Isleworth, also exhibited in this class. Of specimens, Mr. Turner had Desdemona, large in size, and beautifully in bloom. Mr. Fraser had Empress Eugénie, and Mr. Ward, Rose Celestial.

Ivies.—9: 1, Mr. Turner; 2, Mr. Fraser. 6: 1, Mr. Ward; 2, withheld. 3, Mr. Wiggins. Specimens: 1, Mr. Turner; 2, Mr. Fraser; 3, Mr. Ward.

Roses.—Though good these were not so fully in bloom as they may be expected to be a week or two hence. The best came from Mr. Wm. Paul, who furnished clean healthy plants of Souvenir d'un Ami, Victor Verdier, Prince Camille de Rohan, Madame Boutin, Triomphe de Rennes, Marquise de Foucault, Madame Bravy, Jules Margottin, John Hopper, Anna Alexieff, and Souvenir d'Elise Vardon. Rose in pots from Mr. Wiggins, and Mr. Beesley, gr. to Mrs. Wood, Twyford Abbey, Acton. Mr. Wm. Paul showed a fine collection of standard and dwarf plants. Of cut blooms of Roses in pots from Mr. Turner, we noticed nicely-flowered plants of Celine Forestier, Senateur Vaisse, Jean Rosenkrantz, and Madame Wm. Paul.

Roses.—6: 1, Mr. Wm. Paul. 6: 1, withheld; 2, Mr. Wiggins. Mr. Beesley. Specimen: 1, Mr. Wm. Paul.

Cinerarias.—A group of well-grown pretty flowered plants of these was contributed by Mr. Lucey, gr. to C. S. Mortimer, Esq., Morden Park, Surrey. It contained among others Smith's Miss Smith, a handsome blue-tipped kind; Turner's Duke of Cambridge, and Allan Beck, both good self-coloured kinds, white with dark disc; and Lucey's Eclipse, bright rosy purple, with a white zone, and white and dark disc.

Ferns.—Two good collections of these, consisting chiefly of hardy kinds, came from Mr. Barnard, gr. to J. W. Taylor, Esq., Woodberry Down, and from Mr. Bull. Mr. Barnard had handsome examples of Adiantum Lindsayi, Asperi and beautiful Pteris Parkeriana, Cretica albo-lineata, and Wilsoni, and Davallia Dyeriana. Mr. Bull had, among others, the variety of Osmunda regalis called cristata, Athyrium Filix-femina cristatum, and A. F.-f. Victoriæ, both handsome kinds; Trichomanes speciosum; Hymenophyllum tunbridgense, Woodwardia orientalis, and one or two sorts of Lastrea. Mr. Ivery also came collections of both hardy and exotic Ferns.

Awards.—6 Exotic kinds: 1, Mr. Barnard; 2, Mr. Bull; 3, Mr. Ivery. 12 hardy kinds: 1, Messrs. Ivery; 2, Mr. Bull; 3, Mr. Young.

Miscellaneous Plants.—Among the collection of these was shown by Mr. Donald, gr. to A. Brogden, Esq., Leyton. It contained a luxuriant specimen of Medinilla magnifica, bearing some 14 or 15 glorious spikes of rosy pink inflorescence; Genetyllis tulipifera; an extremely beautiful example of Stephanotis floribunda; Eriostemon linearifolium; Vinca rosea, and a couple of Allamandas. Messrs. Lee came Francisceas confertiflora, a large plant of Genetyllis tulipifera, remarkable for the unusual brightness of its flowers, also a high coloured variety of Epacris grandiflora, the yellow-blossomed Hibbertia Reidii, Erica ventricosa coccinea minor, and a fine specimen of Bougainvillea glabra, with its rosy-purple high-coloured inflorescence. In skilful hands this will evidently make a good plant for purposes of exhibition. Messrs. Lee had also a collection of miscellaneous plants, among which were Clerodendron Thomsonæ, the useful Cape Heath called Erica Sindryana, and a small white-blossomed New Zealand Epacris, together with Genetyllis fuchsioides, Epacrises, Chorozemas, Camellias, Azaleas, Stephanotis, and the rosy pink-blossomed Adenandra fragrans. A collection of plants, consisting chiefly of neat little half-standard Azaleas, interspersed with Heaths, Aphelexis, Chrysanthemums, and Begonias, was shown in an own-rooted pot by Messrs. Cutbush, of Highgate. Mr. May of Shirley had a good Medinilla.

Awards.—6: 1, Mr. Donald; 2, Messrs. Lee.

Miscellaneous Seedlings.—Foremost amongst these must be mentioned a charming collection of Auriculas from Mr. Turner, of which a list of a few of the best will be found in another column. The same grower had also a beautiful specimen of the common hardy Trillium grandiflorum in a pot, so profusely covered with three-petalled snowy blossoms as to be striking even at a distance. From Mr. Parker, Tooting, came several finely-flowered plants of Rhododendron Countess of Haddington, of which we have spoken favourably on one or two former occasions. Mr. Bull contributed a little Rhododendron named Blanca, with heads of white blossoms nearly as compact and not much larger than those of a Gueldres Rose; one or two Petunias in the way of Mrs. Ferguson; Browne princeps and Macherium firmum, both plants with interesting leaves, especially when in a young state; Rhododendron Dalhousianum; a charming little violet purple-flowered Primula with yellow eye, called P. intermedia; varieties of double-flowered Mimulus, Zonal Pelargoniums, Dracænas, and Palms. Calceolarias, Pansies, and Auriculas came from Mr. James, gr. to W. F. Watson, Esq., Isleworth. Mr. Wm. Paul contributed a fine collection of Nosegay Pelargoniums, among which St. George, crimson scarlet, and Salmon Nosegay, remarkable not only for its colour but also for the size of its individual flowers and trusses, were conspicuous. From Messrs. Barr & Sugden, King Street, Covent Garden, came a large and extremely interesting collection of plant cases tastefully filled with plants suitable for that kind of decoration; and Mr. Page, gr. to W. Leaf, Esq., Streatham, had a Prickly Cayenne Pine-apple weighing 7 lb.

A list of prizes awarded for miscellaneous subjects, as well as for other matters of exhibition, will be found in our advertising columns.

Notices of Books.

The Miscellaneous Botanical Works of Robert Brown, Esq., D.C.L., F.R.S., &c. Vol. I., containing 1, *Geographico-Botanical; and* 2, *Structural and Physiological Memoirs.* London: Published for the Ray Society by Robert Hardwicke, 192, Piccadilly. 1866. 8vo. 612 pp.

Nearly eight years have elapsed since the greatest Botanist of his age passed away from amongst us, leaving behind him a mass of published papers of the highest value, whether as regards their permanent importance or the position they hold as marking an epoch in the history of botanical discovery. Unlike many other men of wide and even well-founded reputation, Robert Brown was better known at all periods of his career by his works than in person; his unaffected modesty and retiring disposition leading him to shun posts of honour and to avoid opportunities of personal distinction, or even of honourable recognition. To such an extent was this carried, that he was by foreigners erroneously supposed to be as little regarded by his scientific countrymen as he was generally in general society, and British botanists are still twitted abroad with the fact (or fable) that whereas, when the arrival of R. Brown was announced in the most aristocratic capital in Europe, its Emperor placed a carriage at his disposal, in England, when Sir R. Peel announced his intention of granting him a pension, the House of Commons asked who he was; and when he was receiving in public the honorary degree of Doctor of Civil Law at the oldest and greatest English University, his name was greeted with a laugh and a jeer by the assembled students. Be all this as it may, Robert Brown received from his scientific compatriots every honour they had to give, and which he would accept, and on his death the tributes to his memory in the periodicals of the day were full and warm. Amongst the latter by far the longest and fullest is that contained in our own pages (see 1858, pp. 176, 193, 701, 782), to which we must refer for the principal events of his career, and an analysis of his mind and labours.

After Mr. Brown's death most of his collections, library, and MSS. passed by his will into the hands of his devoted friend and assistant in the British Museum (now his able successor there), J. J. Bennett, F.R.S., who is collecting the various printed papers of his late friend, and publishing them in a uniform manner under the auspices of the Ray Society. From the editor's preface it appears that it was Mr. Brown's intention to have thus republished them himself, with annotations, which intention never having been carried out, it remained a duty on the editor's part to repair the omission by superintending a verbatim reprint. In doing this the editor has judiciously arranged the articles under three heads—1, Geographico-Botanical; 2, Structural and Physiological; 3, Systematic; and he states that the whole will be comprised in two volumes octavo, with one quarto volume of illustrative figures.

Thankful as we are for this contribution to botanical literature, we cannot but deeply deplore the opportunity lost, we might almost say thrown away, of doing honour to the name and works of Brown, by appending a sketch of his life and labours; by giving some introductory account of each paper, and the circumstances that led to its preparation and publication; by pointing attention to those observations and discoveries that have either since been lost sight of, or which, though once disputed or discredited, are now regarded as accepted truths, and whose origin and authorship are alike forgotten; by adding notices as to where and by whom the subjects have been subsequently discussed; and by giving to the world some of the copious unpublished papers said to be contained amongst his effects. This might reasonably have been expected eight years after the decease of Robert Brown, and all this and much more could have been better and more easily accomplished by the gifted and amiable editor, than by any other living botanist. And though we can deeply sympathise with that feeling of veneration which perhaps has led the editor to regard as sacrilege any attempt on his own part to illustrate the labours of his friend and patron, yet this neither accounts for the absence of biographical or explanatory matter, nor lessens our regret that so splendid an opportunity of doing real honour to the labours of so distinguished a man should have been lost, and this too with the concurrence of such a body as the Ray Society, who thus in some sort do a positive disservice, if not injury, to British science. Valuable as R. Brown's writings are, they are neither so scarce, nor all of them of such conspicuous value, that a mere reprint was absolutely called for; whilst the fact that his life is unwritten, and his labours

uncommented upon, is a standing reproach to British science. Hence, warmly as we praise Mr. Bennett's intentions, and respect the scruples to which we assume he has yielded, we by no means regard the Ray Society as having in this instance done its duty by a liberal and, as far as botanists are concerned, a much-enduring and subscribing public.

Florists' Flowers.

FUCHSIA-GROWING (see p. 391).—The plants are prepared for exhibition in this way. The day before the show a supply of stakes, thin paper, and Cuba bast must be got ready. Put the stakes in the soil, gather three or four bunches of bloom together, put the paper round them, and fasten the paper to the top of the stakes. All the blooms must be done in this way to make them travel well, and if they are carefully tied, and three large nails driven into the bottom of the van round the bottom of each pot, the plants will travel any distance without damage. When they arrive at the show the paper has to be taken off, and the flowers will then look as fresh as they did before they started. Place them on the stage, the tallest at the back, and very much raised; if they are three deep, so they will show themselves: if only two deep, of course they will not require so much. Every flower must be made the most of. Let each pot be slightly pitched forward, and let every defective leaf and bloom be picked off, and the names plainly written. All is now ready for the First Prize. As soon as the show closes, let them be carefully papered up again, and they will be little or none the worse for being shown to the public.

To get the First Prize, the plants should have abundance of large blooms distributed regularly all over the plant. The blooms must be of a perfect shape, and the sorts distinct in colour. The foliage must be perfectly green, and free from dirt and insects. The plants must have health and vigour, so that they can throw out branches to give them a graceful and elegant appearance, and should be as near the shape of a good specimen of Cedrus Deodara as possible, with only one stake in the centre. Every plant should be of the same shape, and about the same size, so that they may have the appearance of having come out of one mould. The plants must be perfectly round, so that one side is as good as another. Let the blooms hang about 4 inches from the floor all round the pot, in which way the pot will be quite half-hidden by the plant. Plants in a 12-inch pot, when well grown, ought to be 5 to 6 feet high, and 4 to 5 feet through.

In the early part of the spring, Fuchsias are very much injured by what is commonly known by the name of the "spittle fly," and they must be well looked after. The only means that I know to get of them is to catch them and kill them, for tobacco smoke has not the slightest effect on them. Green fly and thrips are easily got rid of in the ordinary way of fumigation with pure tobacco. I have tried many things recommended, but none answer so well as this. Two applications, one in each week, will remove them for a long time if properly done.

The soil that I use is one part yellow decayed loam, one part leaf-mould, one part peat or heather soil, and one part well-decayed cow dung, with almost another of sharp silver sand, well mixed together two months before using. *Henry Cannell, Woolwich.*

THE HOLLYHOCK.—Having "many a time and oft" been requested by friends and others to give them lists of the best varieties of Hollyhocks, I am induced, now that the planting-out time is upon us—indeed, it should begin the middle of April—to forward the names of such as I know to be really good. I have for many years grown most of the new flowers introduced, and though I may have left out of the list many good kinds, still I think I have forgotten none better than those included. Several are only second-class, but being the best of their respective colours they could not well be left out. No flower is being so rapidly improved as the Hollyhock, and in a few years at horticultural exhibitions, like the story of Eclipse in bygone days, it will be a case of the Hollyhock first, and all other autumnal flowers nowhere. Some readers may be amused at my setting the Hollyhock so high, but those who remember the magnificent spikes Mr. Chater exhibited in August, 1864, at the Floral Committee, will not be surprised. They were truly magnificent, and no stand of Dahlias or any other flower could be so fine and effective. Taking the Hollyhock both as to spike and single blooms, it is far above the Dahlia. For many years I cultivated Dahlias for exhibition as well as the Hollyhock, and only gave up growing them last season. Year by year I liked the Hollyhock more and the Dahlia less.

(S) Varieties best adapted for spikes; (B) for blooms. An asterisk is attached to such kinds as are most effective for garden decoration.

Acme (S B), peach, very beautiful; one of the best.
Alex. M'Nab (S B), crimson satin, good.
*Alex. Shearer (S), deep red.
Bridesmaid (B), white, large.
*Chairman (S B), cherry, good.
*Charles Eyre (S B), deep crimson of a distinct shade, extra fine.
Chrysolite (S B), yellowish buff, extra fine.
Countess Craven (B), very rosy peach; one of the most beautiful, but too apt to come coxcomb.
*Countess Russell (S), rosy peach.
*Cygnet (S), pure white, beautiful spike.
*Decision (S B), salmon and rose; an improved W. Blackwood: one of the best.
*Fanny Chater (S B), an improved Mrs. Chater.
*Fearless Imp (S), creamy buff, fine long spike.
George Young (B), apricot and rose, fine and close.
*George Keith (S B), light crimson, magnificent flower; one of the best.
*Glory (S B), rosy red.
Glory of Walden (S B), vermilion scarlet.
*Golden Fleece (S), pale yellow.
Governor-General (S B), cherry scarlet, good.
*Hercules (S B), yellow shaded with pink, a magnificent variety; one of the best.
*Illuminator (S), carmine scarlet.
Impératrice Eugénie (B), French white, rather flat.
*Imperator (S B), deep salmon; one of the best.
Invincible (B), salmon, very fine, spike too apt to come cock'scomb.
*Iris (S), white, purple base, pretty.
J. Allen (S B), plum, good.
J. Clarke (S), cherry crimson, bloom very fine, but the spike usually comes cock'scomb.
J. Bullett (S B), rosy crimson, one of the best.
Lady Dacres (S B), light rosy salmon, not so good now as it used to be.
*Lady Paxton (S), pale flesh, beautiful spike.
Lady Des Vœux (B), pink, very fine flower.
Lady King, (S B), deep ruby, very fine from spring-struck plants, otherwise inconstant.
*Lilac Perfection (S B), white and lilac suffused with chocolate, good.
Lord Clifden (S B), light rosy crimson, fine.
*Lord Rokeby (S B), magenta, one of the best.
*Lucretia (S), purple and white suffused, pretty.
*Miss Lizzie King (S), yellow, flower thin but spike most lovely and constant.
*Monarch (S B), cherry.
*Morning Star (S), cherry red.
Mrs. Cochrane (S B), deep ruby.
*Mrs. Chater (S B), rose and carmine.
*Mrs. Downie (S B), salmon rose, one of the best.
Mrs. Mackenzie (S B), scarlet, very fine, but blooms easily spoilt by wind and rain.
*Narcissus (S), creamy white, pretty.
Ne Plus Ultra (S B), deep lilac.
Orange Perfection (B), orange yellow, very fine.
*Pink Noisette (S), rose, good spike.
Premier (S B), salmon and buff.
*Prince Charlie (S B), bluish lilac, very pretty and effective.
*Princess (S), rosy purple, fine spike.
Purple Emperor (S B), light shaded purple; one of the best.
*Purple Prince (S), deep purple.
Queen Victoria (S B), rosy carmine.
Rev. J. Dix (B), deep crimson, distinct and good.
*Rev. E. Hawke (S B), cherry, one of the best.
*Royal Scarlet (S B), scarlet, fine spike; one of the best.
Stanstead Rival (B), rosy salmon.
The Queen (B), French white, an improved Eugenie.
W. Dean (S B), light rosy salmon, good but small.
*W. Blackwood (S), salmon and pink.
*Willingham Defiance (S B), shaded pink, one of the best.
Yellow Defiance (B), pale yellow, very fine but inconstant.

Edw. Hawke.

The Apiary.

LIGURIAN BEES: AMICABLE COALITION.—The account of the friendly union of his Ligurians with the bees of another stock, given by Mr. Maw last week (p. 391) is very interesting, but the conclusion at which he arrives is, I think, not altogether a correct one. The union of strugglers from one hive with the bees of another, is by no means a characteristic merely of the Ligurian variety. I have seen several instances among the bees of the ordinary species, in which more or less of free intercourse has taken place. In one case, there were three hives standing on one long board. The majority of the bees of two of these on their return flew to the entrance of one hive; and from that, to the adjoining one along the platform, a continuous stream of bees laden with pollen and honey was sustained during the entire working hours of the day. If Mr. Maw had been in possession of his stock of Ligurians early in the month of September, there might be another solution of the problem; nor would it, even as it is, be altogether an impossible one. The queen of the stock of common bees may have perished about the time, or perhaps rather earlier than when he obtained the Italians; the bees may have then raised a queen which may have become impregnated by a Ligurian drone, and thus the appearance of bees with the distinguishing marks may be accounted for. I have had a hive, the queen of which was at the head of a second swarm of black bees, located in an apiary at the distance of at least two miles and a half from any hives of Ligurian bees; yet this queen bred beautifully marked Italians.

If this is not the true cause of the appearance of Italian bees among those of the other hive, it is possible that this latter may not possess any queen at all; that is, if the proportion of Ligurians to common bees is very considerable. Fifty or 100 bees may unite as mere strugglers to those of another stock, and, in the case of those possessing such distinctive marks as do the Ligurians, the numbers appear much greater than is really the fact. It is quite true that the bees of all hives "are more or less in the habit of straying from hive to hive," and are by no means unfrequently permitted to enter and join the community, the more readily if they come well provided with food or forage. When this occurs between the red-banded Ligurian and the ordinary bees, it is all the more noticeable, but it is quite a mistake to suppose the case quoted by Mr. Maw to be a proof of an interesting peculiarity as regards the habits of Ligurian bees.

If such an instance were to present itself in my own apiary, I should not be satisfied until I had dislodged and carefully examined all the inmates of the two stocks, and ascertained whether both the hives possessed fertile queens. One of the most populous hives in my apiary, which has all the spring exhibited every outward appearance of prosperity, the bees carrying in pollen freely, I have discovered, after two or more careful examinations, to have no queen. The hive consisting of moveable frames, I have complete access to and control over every comb, and have satisfied myself that the bees have not had any queen for months. Means have since been adopted for providing this hive with a queen by uniting to it the queen and bees of a small stock near at hand.

I am glad Mr. Maw has furnished the apiarian readers with the particulars of this interesting case, which, however, although it may prove that bees are in the habit of transferring their favours to other domiciles, does not therefore prove that Ligurians are more prone to this than common bees. The contrary is, I believe, the real fact, there being a certain amount of antagonism between the members of the two varieties, as any one who has had much to do in attempting the carrying out of forced unions will probably bear testimony. *S. Bevan Fox.*

EMIGRATION OF BEES.—On examination of the interior of a frame hive which was peopled by an artificial Ligurian swarm, made last season, I found the combs well filled with at least 20 lb. of sealed honey; a very fine Ligurian queen, and only about 80 or 100 bees. A small portion of one comb was filled with eggs. The cause of this very diminished population is a mystery, as it was by no means a weak stock late in the autumn. Thinking that the bees might be benefited if placed in a small nucleus-box, until I could decide what course to adopt, I transferred them into a hive capable of containing four frames, and they appeared to settle nicely. A few days subsequently I discovered the absence of a queen in the hive previously mentioned. I considered how I should best succeed in giving it a fertile mother. It then occurred to me that I had a fine queen suitable for my purpose. On visiting the diminutive box, I found that it was perfectly tenantless, so that I had to look elsewhere for the means of rectifying the existing deficiency. By mere accident, on visiting a hive situated about 30 feet from the deserted tenement, I discovered on the ground in front a dead queen. It at once occurred to me that this must be the one from the nucleus, and that she had, with her few subjects, attempted a forcible entry. The hive into which she had sought admission possessed at its head my purest Ligurian queen, so I thought it just possible that this dead queen might be the one belonging to that stock, which might either be wholly queenless or headed by the victorious usurper. On examination of the combs, however, I was glad to find the rightful sovereign, and that her beautiful majesty was apparently uninjured by any conflict with a more youthful rival, whom doubtless the bees themselves put to a violent death. There were but a few bees dead in front of the stronger hive, but I cannot tell if any of the emigrants had obtained admittance. It is also remarkable that from the nucleus not a cell of honey seemed to have been removed by robber-bees. *S. Bevan Fox.*

Garden Memoranda.

HOOLEY HOUSE, THE SEAT OF J. C. PICKERSGILL, Esq.—This is situated about five miles from Croydon, and six from Reigate. Its front faces the south. On the right-hand side of the approach to it lies a portion of the park, nicely studded with choice Conifers; on the left is the garden, the wall of which is concealed by climbing Roses and shrubs of different kinds. It contains a range of Peach houses 95 feet in length, stoves, greenhouses, &c.; between the latter and the Peach-houses is a neat little geometrical flower garden, laid down on gravel, and edged with Box. In the Peach houses, in addition to the trees, are choice bedding plants, such as Golden Chain, Golden Fleece, Cloth of Gold, and Mrs. Pollock Pelargoniums. On a border in the centre of the house are fruit trees in pots, which, together with those planted out and trained to the back wall, are well set with fruit. Here are also a fine plant of Eugenia Ugni, and Singleton Figs in pots; over head, on a shelf, are Strawberries. In one of the Peach houses the trees have only been recently planted; it was formerly filled with Apricots in front and Plums on the back, but owing to the Apricots not succeeding well, they were carefully lifted and planted outside.

Among plant houses is a conservatory, on the east side of which is a greenhouse, and on the west a Nymphæa house. The conservatory is at present beautifully decorated with forced Azaleas, Roses, Deutzias, and bulbous plants, together with Camellias, Ericas, Epacrises, Monochætums, Cyclamens, and similar early-flowering subjects. In the greenhouse, Camellias, Pimeleas, Aphelexis, Eriostemons, Heaths, Primulas, Cinerarias, Lily of the Valley, and other bulbous plants are one mass of bloom. With these a few Ferns are intermixed. In a Vinery at the back, filled with Black Hamburghs, are most luxuriant leaves and fine bunches. The Vines producing these had their roots for the first three seasons confined exclusively to the inside border; but on account of the Vines not doing so well as could have been wished, Mr. Mundell, the gardener, set the roots free by making an outside border, and openings in the front wall to permit them to get outside. Since then the result has been every way satisfactory. In the centre of this house are some large plants of Mandarin, St. Michael's, and Sweet Oranges, Shaddocks, Limes, and Lemons, all in excellent condition, and some in full bloom. The fruit of the Mandarin is used for dessert, and when cut with a short stalk and a few leaves attached to it, it has a fresh and interesting appearance. Overhead are Strawberries with tempting ripe fruit, and at the back are Figs.

This Vinery is contiguous to a house 22 feet square and 25 feet in height, with a lantern top for ventilation. This is called the Banana-house. In the centre is a square bed on a level with the path, and neatly edged with half-inch slate. Planted therein are noble specimens of Musa zebrina, sapientum, and glauca, the tops of which are ready to thrust out the roof of the lantern. The two former measure at their base 3 feet in circumference, and although their leaves are rather crowded, yet they are not, as is generally the case, rent in pieces like the tattered sails of a ship after a severe storm. The vacancies on the bed are filled up with dwarf plants, such as Ferns, Caladiums, &c. On the stages round the sides are some choice Orchids and other valuable and economical plants, among which we noticed the Nutmeg (Myristica moschata), Allspice (Pimenta vulgaris), Cinnamon (Cinnamomum verum), Cocoa-nut (Cocos nucifera), the Date Palm (Phœnix dactylifera), the Coffee tree (Coffea

arabica), and Chocolate (Theobroma Cacao), with the Cycas circinalis, Calamus dealbata (a beautiful thing), and Musa Cavendishii in pots and tubs. The walls are ornamented with Bougainvillea spectabilis, Ipomœa Horsfalliæ, Allamanda Schottii, Quisqualis indica, Passiflora quadrangularis, and others. A bushel of Granadillas (the fruit of the Passion-flower) is stated to have been cut in this house in one season; it grows here to the roof, and one on the west, and a plant stove on the south. In the centre of the bed of the latter was planted out a Cicca disticha, or East Indian Gooseberry, and beside it stands a noble plant of the variegated Pine-apple (Ananassa sativa variegata), just showing fruit. The sides are crowded with Begonias, Gardenias, Thyrsacanthus rutilans—a most useful plant for blooming in winter and early spring Sanseviera javanica, Clerodendrons, and a very nice plant of Browne a coccinea, with graceful drooping foliage, and large tassel-like bunches of orange-scarlet flowers. Climbers are also neatly trained, by means of three rods of wire up each rafter; among them are Tacsonia Van Volxemi, Passiflora Buonaparten, edulis, princeps, and kermesina; Ipomœa Bonanox and Learii, Allamanda cathartica, and Hoya carnosa. Returning through the Banana house, the West Vinery is arrived at. This is filled with Muscats and Lady Downes' Grapes. In the centre are half a dozen fine Peaches and Nectarines in tubs, and Strawberries on shelves, as in the east house.

The Nymphæa house is tastefully decorated with Ferns and Orchids suspended in baskets, and some climbers, such as Aristolochias, Ceropegia Gardneri, Thunbergia Harrisii, and climbing Ferns. A tank runs the length of the house, in which are Nymphæas and two fine specimens of the Lattice plant (Ouvirandra fenestralis). On stands over the water are noble plants of Alocasia metallica, A. zebrina, A. macrorhiza variegata, Caladium Veitchii, C. Lowii, C. Chantini, C. Wightii, C. Belleymei, and others; also a fine plant of Nepenthes Rafflesiana, and Monstera perforata, with roots dangling in the water, in which are also gold and silver fish. On a stage at the side are choice species of Gymnogramma, Adiantum, and Pteris, mixed with fine-foliaged plants, such as Eranthemum, Maranta, Eriocnema, Campylobotrys, &c., while an interesting nook is set apart for Gymnostachyum Verschaffeltii, which seemed to revel in its hiding place, and to repay with larger leaves and brighter colours the extra care thus bestowed on it. At the back are Stag's-horn Ferns, Platycerium grande and P. alcicorne, growing on blocks of wood.

The fruit of some Vines in an old house is colouring, and to the west of this, and running parallel with it, a double-roofed Orchid-house is in course of erection. Associated with these are also two new Vineries, with a border, or rather pit, in the centre of them, 5 feet high and 6 feet wide. The permanent Vines are planted in the middle of it, and are breaking strongly. These were struck from eyes last spring, and planted out as soon as the houses were finished in the early part of September. The borders are made in the middle of the houses to insure the roots being kept in a temperature uniform with that of the branches, as the Vines are intended for very early work, so as to keep up a succession of Grapes all the year round. In front of these are two Pine stoves, one filled with clean healthy Pines, the other partly so; the remainder of the bed is filled with fruiting Vines in pots. On the sides are shelves for growing on plants for the decoration of stoves.

The whole of the houses just named are heated with one of Weeks' boilers, though two are set side by side, in case anything should go wrong with the one, when the other might be worked. The greater portion of the houses are ventilated by means of machinery, which together with the heating apparatus gives the greatest satisfaction.

Under a west wall are planted out some fine rows of Peas that had been sown in turf, and the Strawberries on several of the squares seemed to have very strong crowns. The soil is a good yellow loam.

In addition to the glass already mentioned, there is at the front entrance of the mansion a large vestibule, the front of which is of glass; this also is kept full of fine-foliaged plants and others in bloom, while at the east of the mansion is a span-roof house with Vines trained up each rafter. It is, however, at present used as a Heath-house.

The flower garden lies at the back of the mansion, and is reached by ascending three flights of steps. It is not at present very extensive, but it is intended shortly to enlarge it; and as there is a natural incline towards the house, it could with great facility be made into a very beautiful terrace garden. At the west of the house is a place suitable for a grotto, which is at the present time occupied with four beds of choice hybrid Rhododendrons. *B. G.*

Calendar of Operations.

(For the ensuing week.)

As the season for turning out bedding plants is at hand, a repetition of the following instructions in reference to grouping plants according to their complementary colours may not perhaps be uninteresting. The leading principles of this system of management are contrast and symmetry—contrast such as will be produced by placing the complementary colours pretty closely together, as purple with yellow, orange with blue, scarlet with white, and so on with the various shades of these colours *ad infinitum*; and symmetry such as will result from every bed having a corresponding one in form and disposition, and these beds planted with flowers of the same colour. In borders (not ribbon ones) which are seen throughout their length and breadth, the colours should be repeated at regular intervals, as scarlet, white, purple, yellow, blue, orange, and so on to the end; and where beds are placed on Grass, and without a corresponding one near them, they should be belted with complementary colours, as blue with an orange margin, purple with yellow, and scarlet with white; or, as green is the proper contrast for scarlet, beds of that colour might perhaps be left without a margin, and white, under such circumstances, used as a distinct bed. Where beds are on gravel, which is a warm colour, cold colours should be used the most, as blue, purple, and white; or if warm colours must be introduced, it is indispensable that they be margined with cold colours. In gardens where there is a great preponderance of green, as large lawns or trees, especially if the latter are sufficiently lofty to throw considerable shade upon the scenery, nothing but warm colours should be employed, as scarlet, orange, and yellow, and these should be planted in large masses and stand out prominently in the foreground of the scenery, and especially near water, if any. For ribbon borders, now so fashionable, the directions just given are equally applicable.

FLOWER GARDEN AND PLANT HOUSES.

Out of doors work up arrears with all possible speed. Rolling and mowing should be proceeded with unremittingly. Newly laid turf should be beaten and thoroughly rolled, in order that an even and smooth surface may be obtained. Pot all stove or greenhouse plants which require it, in order that they may have the advantage of the next two months in which to produce a vigorous growth; and have time for ripening it before winter. Many free-growing plants which were potted early will now require larger pots, with which they should be supplied, unless it is wished to flower them in their present sizes, and somewhat earlier than their usual season. In the latter case occasional waterings of liquid manure of moderate strength will be useful, both in maintaining the present vigour of the plants, and in assisting the future development of their flowers.

Azaleas.—Specimens now in full blossom must be shaded from bright sunshine. Plants that have been kept in heat to bring them into flower will require pretty liberal supplies of water. Great attention should be paid to ventilation, particularly in guarding against cold currents of wind. Young plants will grow rapidly if shifted and placed in a moist warm temperature; see that they are clear of insects.

Bedding Plants.—If it is wished that half-hardy plants should make rapid progress when planted out, it is absolutely necessary that those taken from indoor protection should undergo a hardening process for at least a week. To be well established in their pots, and well hardened, is to insure success. Many, however, do not use pots after a certain stage of growth has been attained; on the contrary, they prick out the struck cuttings from their store pots into beds about 3 inches apart, and hoop them over and cover with mats at night. Thus treated, they lift with good balls of soil, and when transferred to their final destination receive little or no check. Do not plant out until all danger from frost is over.

Tulips.—As seedlings expand they must be marked, either for trial a succeeding season, or to be discarded altogether; it is useless, for instance, to preserve those which have either ill-formed or stained cups.

FORCING GARDEN.

Figs.—As the season advances, gradually raise the temperature of the house. Syringe mornings and afternoons. Keep a moist atmosphere. When the borders require watering, give them a good soaking. Plants in pots and tubs should have some weak manure water occasionally.

Melons.—If there be any room to spare on kerbs or over back flues of houses "at work," some of the finer Melons may be placed thereon in pots or boxes. These, however, should be roomy, and filled with mellow turfy loam, out of which the loose soil has been separated.

Peaches and Nectarines.—Continue to keep the shoots well tied in the early house, and be careful not to get them crowded. In disbudding, the bearing wood of the present year should be divested of all shoots except the terminal one and those near the base. Where a deficiency occurs in any part of the tree, more may be tied in. Ventilate freely in fine weather, and be careful to close up early in the afternoon. Syringe once or twice daily, and keep a moist atmosphere by throwing plenty of water on the paths, borders, &c. Attend to the disbudding and thinning of the fruit in the second house.

Pines.—Let shifting take place as soon as the plants have filled their pots. Give air freely to all growing stock, and above all plenty of atmospheric moisture.

Vines.—Let late Vines breaking have every attention in regard to disbudding, &c. The litter or dung covering should now be removed from all borders, whether early or late. Litter in an unfermenting state keeps the soil cool instead of imparting warmth in the early part of summer.

HARDY FRUIT AND KITCHEN GARDEN.

Continue to disbud wall trees, and to keep them free from insects.

Broccoli.—If not already done, sowings of the best kinds may now be made. Ward's Superb, a late form of Knight's Protecting, is a good late spring white. Snow's Superb, as a winter white, and Mutchinson's Penzance for early spring, are also excellent.

Onions.—These will now or soon require thinning, and if a sufficient breadth has not been sown, a bed should be prepared for transplanting those into which are thinned out of the principal bed. Make a sowing of the silver-skinned variety, moderately thick, to produce small bulbs for pickling.

STATE OF THE WEATHER AT CHISWICK, NEAR LONDON, For the Week ending May 2, 1866, as observed at the Horticultural Gardens.

April and May.	Month's Age.	Barometer. Max.	Barometer. Min.	Temperature. Of the Air. Max.	Temperature. Of the Air. Min	Temperature. Of the Air. Mean	Temperature. Of the Earth. 1 foot deep.	Temperature. Of the Earth. 2 feet deep.	Wind.	Rain.
Thurs.	28	11	29·974	29·864	75	46	60·5	53	49½	E.	·00
Friday	27	12	29·856	29·681	79	48	63·5	54	50	N.	·74
Satur.	28	13	29·681	29·428	70	37	53·5	54½	50½	W.	·39
Sunday	29	0	29·821	29·731	48	32	40·0	52	50½	N.E.	·10
Mon.	30	16	29·746	29·624	50	30	41·0	50	50	N.E.	·00
Tues.	1	17	29·484	29·418	44	34	39·0	49	50	N.E.	01
Wed	2	17	29·602	29·463	52	33	42·0	50	49	W.	·14
Average			29·720	29·600	59·4	37·8	48·6	51·8	50·0		10·9

April 28—Dry haze, hot and dry, very fine throughout.
" 27—Fine, very hot, heavy rain at night
" 28—Cloudy and warm, cloudy, rain at night.
" 29—Overcast, cold easterly wind, rain, overcast.
" 30—Overcast, cold and boisterous, fine at night.
May 1—Overcast, cloudy and cold, rain
" 2—Cold and overcast, slight but very cold showers, nearly freezing, rain

Mean temperature of the week, 0.10th deg. below the average.

STATE OF THE WEATHER AT CHISWICK,
During the last 40 years, for the ensuing Week, ending May 12, 1866.

May.	Average Highest Temp.	Average Lowest Temp.	Mean Temp.	No. of Years in which it Rained	Greatest Quantity of Rain	Prevailing Winds. N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.
Sunday.. 6	62·0	38·5	50·2	16	0·88 in.	11	6	5	4	6	6	2	0
Mon. .. 7	63·4	39·5	51·4	17	0·80	6	7	6	3	4	8	2	4
Tues. .. 8	59·1	39·3	49·2	17	0·92	21	7	8	—	6	6	1	1
Wed. .. 9	62·0	39·7	50·8	17	0·73	3	10	8	1	4	12	2	—
Thurs. .. 10	61·7	40·7	51·2	18	0·67	10	6	3	2	3	7	2	7
Friday .. 11	62·1	40·8	51·4	18	0·82	6	7	9	1	6	5	3	4
Satur. .. 12	60·8	40·8	50·8	19	0·71	4	11	5	3	9	4	3	3

The highest temperature during the above period occurred on the 9th, 1862—therm. 84 deg.; and the lowest on the 6th, 1865—therm 20 deg.

Notices to Correspondents.

Amateurs *versus* Traders: *A. R.* A person who year after year issues priced lists of flowers and plants which he offers for sale, is to all intents and purposes a trader or dealer, and therefore must be held to be "in the trade," though in a special trade, but this does not hinder him from asking fancy amateur prices for his goods, especially if they are of a choice character.

Aquajet: *Requirer, Clonmel.* We have had no personal experience with the Aquajet, but our correspondent may safely rely on the reputation of the makers.

Books: *T. Robertson.* We do not know of anything exactly meeting your requirements. "Indoor Gardening," by Miss Maling, will, however, probably be useful.

Fungi: *D.* Mucilius lacrymans, the common dry rot, covered with an unusual quantity of spores.—*W. D. F.* Your Fungus is the common Morel (Morchella esculenta).—*M. J. B.*

Mosses: *Old Subscriber.* Address Mr. R. Stark, Trinity, Edinburgh; and W. Mitten, Esq., Hurstperpoint, Sussex.

Names of Fruits: *S. T.* Apparently Downton Nonpareil Apple.

Names of Plants: *W. D. F.* Claytonia perfoliata. 2 North American plant, not Australian.—*Covent Gardener.* 1, some Thuja—specimen sent insufficient for determination; 2, Pinus, probably ponderosa, but it is scarcely possible to determine Pines by a few leaves only; 3, Abies canadensis; 4, Chamæcyparis sphæroidea; 5, Abies pectinata; 6, Juniperus recurva.—*R. G. G.* The "flore cut harems" in your Borist's bill from Covent Garden probably refer to some blooms which you have had of Richardia (Calla) æthiopica.—*G. E.* The correct name is Anthurium magnificum.—*H. T.* 5, Pteris ruberenria. 6, Nephrolepis cordifolia. 7, Asplenium nidus Avis. 8, Pteris argyrea.—*P. P. O.* Rhododendron Thomsonii.—*Investor.* Probably a leaf of a Tecoma.—*W. Earley.* Jasminum simplicifolium.—*G. M.* Your plants were so hopelessly crushed that it was impossible to recognise some of them, and those we have identified can scarcely be relied upon. 1, Tulbaghia angustifolia; 2, Narcissus incomparabilis; 3, Doronicum caucasicum; 5, perhaps Pæonia tenuifolia; 7, Dicentra formosa, others next week.—*H. C.* Veratrum nigrum or viride.—*S. W.* Thanks; Pinnoon Richardi.

Passiflora Macrocarpa splendens: *W. T.* No plant of this name is to be found in the ordinary books of reference or in the botanic nurseries, nor does it appear to be known to the trade. The imported says it is a "tree" that has not been introduced before, and "that it is abundant in Rio Negro, in Amazonia, but bears few fruits." The flowers are said to be magnificent, being fully 7 inches in diameter, and of a lovely colour; the foliage is large, and the fruit is not only edible and very ornamental, but attains the immense weight of from 10 to 14 lb. So valuable a plant as this of these wonderful fruits would be, of course be worth what is asked for it, but we strongly advise you to see before you buy. The collection of prodigies at Cosham, or Carlisle, or wherever it may be, must be worth seeing, but we believe it is rather difficult to obtain admission. Some of our friends, however, in the neighbourhood of these wonders, which would be to the interest of a truculture to publish.

Peach-buds: *P P.* The buds of your Peach are full of little cavities, the walls of which are decayed. A very similar condition exists in the shoots of some Peach trees which have suffered more than yours, on which we hope soon to make some observations, but we are quite ignorant of the cause. *M. J. B.*

Pelargonium and Geranium: *A. B., Herts.* The former has irregular flowers, a spurred calyx, or nectary; the latter regular flowers, destitute of the nectary, and there are other more trifling differences.

Pepino Gardeners: *A Londesian.* We quite agree with you; the letter in our last issue touches on that matter among others, and as it has been now fully discussed we must decline any further correspondence on the subject.

Red Spider: *W. T.* Frequent washings with water will tend greatly to neutralise the effects of a smoky town atmosphere on these and similar plants growing in the open air; they should be given either early in the morning or in the evening.

Vervain: *W. T.* The fragrant roots of an Indian Grass, Andropogon muricatus.

Water Crassula: *Bella.* Water which is impregnated with oxide of iron is not prejudicial to the growth of Water Crasses, but if the oxide is present in such large proportions as to form a thick scum on the surface of the water it is then a very difficult matter to get them clean, and the flavour is not so good; but where the stream flows sufficiently fast to prevent either scum or sediment, the presence of the oxide will not affect the possibility of obtaining a good crop. Their cultivation is easy where there is a constantly running gentle-flowing stream, and a depth of from 3 to 6 inches of water can be secured. If the bottom is of mud it must be removed, and a new bottom of gravel or chalk substituted. The best time to form beds is May and June for autumn use, and September and October for spring use, at which time select strong well-rooted cuttings, and fasten them to the bottom of the stream on the gravel, by means of a stone placed on each cutting. The rows in shallow water should be 18 inches apart, but if the stream is very deep, 4 or 5 feet is not too much. Care should be taken in gathering the crop not to disturb the plants; hence it is always best to use a knife instead of breaking them off.

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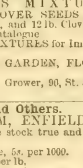

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WILLIAM KING, Chairman of Sub-Committee.
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H.R.H. The PRINCE OF WALES, K.G.
SALISBURY MEETING, 1866.
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By Order of the Council, JOSIAH GODWIN, Secretary.
5th May, 1866. 1, Terrace Walk, Bath.

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HORSE SHOW.—AGRICULTURAL HALL, LONDON.
OPENING DAY, SATURDAY, May 19.

The Agricultural Gazette.

SATURDAY, MAY 5, 1866.

In a recent Number of the *Agricultural Gazette* we pointed out how in the common farm operations connected with the growth of the Barley crop, the properly arranged results partook of the nature, and possessed the value, of experiments. We now proceed to point out the same conclusions in connection with the even more important root crop.

In 1865 our main crop of roots, namely, Mangels and Swedes, was grown in a 50-acre field, for the most part situate on some brashy land in which the oolite sands of the geologist were strewn with the broken rock of a thin stratum of the bottom bed of the inferior oolite as this occurs in Somerset and Dorset. The previous crop had been Barley, and the land was not seeded down, as it was too full of Agrostis stolonifera, Fiorin or Creeping Bent (the Couch of the district), and Docks. The general method of preparation for the root crop was as follows:—As soon after the removal of the corn crop as possible all the available manure was carted and spread upon the land, and this without reference to whether it was rotten or not; in fact, we conclude that in winter preparation for roots the manure is equally valuable when carted direct from the sheds, and if so, it will be seen that by this means much labour and expense involved in carting to a heap, turning the whole and recarting to the land, is avoided. In this case fully half the field was manured with dung directly carted on the land, from straw yards in which cattle had wintered upon straw and cake.

As the manure was spread the land was ploughed to the depth of from 6 to 7 inches, simply with the view of covering the manure on the one hand and burying the weeds on the other; this has the effect of exposing the soil and the buried manure to the mellowing and decomposing action of winter weather, at the same time killing both weeds and insects.

In this state the field was left until the 7th of March, on which day it was commenced cultivating with CAMBRIDGE'S steam tackle, by which it was ripped up to the depth of fully 10 inches, which left the work in a finely pulverised state, affording no bad seed-bed for the growth of Charlock and other weeds; which, thus encouraged, came forth with a pride destined to an early fall, for in the middle of April the whole was harrowed down and cleaned of Couch, preparatory to sowing the seed. Previous to this, however, it will be well to state that a large portion of the 42 acres destined for roots was treated with a dressing of 3 cwt. to the acre of Proctor's root manure, sown broadcast.

Here we would direct attention to the fact that in using artificial manure for roots this plan of proceeding is not in accordance with general practice, as it is usual to drill "artificials" with the seed. Our experience, however, has convinced us that this plan is open to very serious objections. In the first place, we find that if the season be dry when the seed is sown in contact with stimulating manures, the young radicles of the seed become, as it were, burnt up, and so, though the *cotyledons* or first leaves come green above the ground, they wither like the seed in the parable: which when the sun was up were scorched; and "because they had no root they withered away."

If then they succeed in making a proper growth of root and first leaves, those with a scorching sun above and the heated stimulus below soon die away; and no doubt much of the injury attributed to the fly is really due to this cause; and what is more unfortunate is that in hot weather both causes, namely the chemical and the insect ones, exert their fullest powers!

But supposing a good plant to be attained with drilled manure, we find that in the regulation and singling thereof the drilled fertiliser is pulled by the action of the hoe away from the young plants just as they most need it, and this on to the *surface* of the soil; there to dry up with the scorching sun just at the time when in our plan of broadcasting it has been uniformly mixed with the earth, and is ready to act as food and to be taken up by the lateral or secondary rootlets.

Indeed our plan of winter-manuring and surface broadcasting of the guano insures a due preparation of food for our young plants wherever the seed may fall; and we find that by this means we get a more regular plant, and one which grows away more steadily than it can by the usual method. It is certain that manure, however well rotted, which is now carted on to the soil for the root crop, cannot be well mixed in the seed bed; and lumps of dung or lumps of chemicals in their unmixed state in the soil, are as ill adapted to the growth and nutrition of plants as is undigested food to animals. On land thus prepared, when the artificial manure was employed, the crops as under were drilled in the order tabulated:—

TABLE OF ROOT CROPS FOR 1865.

Field 8.	Crop.	When Sown.	Number of Acres.	Remarks.
Section 1	Mangel Wurzel	April 24	8	The Messrs. Proctor's root manure in addition to straw yard dung.
,, 2	Kohl Rabi and Cow Cabbage	,, 26	4	
,, 3	Swedes	May 13	8	
,, 4	Do.	,, 20	8	A better dung from the feeding stalls, stables, and piggeries.
,, 5	Do.	June 5	10	
Headlands, &c.	Rape	,, 12	4	
			42	

Now, as regards the Mangels, it may be noted that this crop was further made subservient to experiment, or rather to the getting an experimental result—1st, by the employment of three sorts of roots; and 2d, by using seed from two places.

1. The sorts and the results, according to our judgment, may be tabulated as follows:—

	Proportional Value of Crop.
1. The Yellow Globe	15
2. The Intermediate	10
3. The Long Red	12

These figures are important, as a near neighbour, on a stiff soil, grows "the Intermediate sort much larger than any other."

2. The bulk of our seed from our usual seedsmen had to be supplemented by enough Yellow Globe for about another acre from a neighbouring seedsman, and we infer from the result that the latter was old, as though sown on the same day it was days later in coming up, and then only a comparatively thin plant, with the deplorable result of only about two-thirds the crop of the better seed.

Again, as regards the Kohl Rabi, two sorts were used, the Red and the Green, the latter yielding fully double the crop of the former.

In thinning the Kohl Rabi and Cow Cabbage

we may remark, as an additional experiment, that we employed three men on some damp days to dibble these in every vacant or missed place in the rows of both the Mangels and Swedes of the whole field. This, which was done at a cost of 30s., we conclude, from the like results in 1864 and 1865, is rarely worth doing, as the main crop, from having possession of the soil with its original roots, starves out these interlopers, so that they never attain a size to make the work remunerative. The same may be said of sowing Turnips to patch up Swedes, as, if the soil be good, a thin plant will often make up in size if not interfered with by weeds or other interlopers.

As regards the general results of this crop of roots, it may be stated that they were remarkably good in quality and in general a large crop, more especially where the artificial manure was employed.

It should be stated that the crops grown with artificial manure were weighed and estimated by a judge appointed for the purpose, with a view to the award of prizes in connection with the Local Agricultural Society.

RESULTS OF WEIGHED AND ESTIMATED MANGEL AND SWEDE CROPS.

Crop.	With Artificial Manure.	Without Artificial Manure.	
	T. c. qr. lb.	T. c. qr. lb.	
Yellow Globe Mangel (from best seed)	55 12 0 0	48 0 0 0	Average about 50 tons an acre.
Ditto ditto (from inferior seed)	.. ..	45 0 0 0	
Skirving's Swede	41 2 2 20	36 0 0 0	Average about 37 tons an acre.

The crop of Swedes was awarded the prize of Plate, the Mangels just missed by falling short of the 56 tons per acre; but whether they had been successful or not, one thing is quite certain, that success, as well as the want of it, is due to some cause or causes, the systematic noting of which will give to good as well as poor results the effect of experiments.

In conclusion, we would explain that in the application of artificial manures we always leave an average patch as near the middle of the piece as possible, for the sake of comparison, and here, during all the periods of their growth, both of the Mangels and Swedes, there was a marked deficiency of crop. *B.*

A VERY instructive paper appeared in our columns some weeks ago describing the condition of the East Lothian agricultural labourer. We should be glad if correspondents in other counties would state the case of their neighbours in a similar way, at once impartial and friendly. The relationship of master and servant is one which already rights itself to a great extent without interference; but the result varies exceedingly according to the condition of the parties to the agreement. Education, not only that of the school—home education, which includes all the various influences of the cottage—will ultimately no doubt elevate the labourer himself, and then improve the position in which he stands to his master. And as we cannot have too much light thrown anywhere, so especially we would rather have it cast upon the circumstances out of which any result arises than upon the result itself. Let us understand the various circumstances of the labourer's life; and then the ultimate fact of the wages he receives, or the plight in which he appears, will be no longer either a puzzle or a scandle.

This wage is kept down in some cases by the practice of giving beer or cider. In Gloucestershire, Somersetshire, and Herefordshire the labourers generally receive a part of their pay in cider, and the remainder in cash, and when the question of wages comes to be adjusted, it hinges, as a rule, upon the quantity of cider. It is a very bad system for the man, a still worse one for the poor wife and children, and as a matter of course it reacts upon the master; both in getting a less quantity of work performed by his workpeople, and by breaking down the constitutions of the men and their families, and thus ultimately increasing the poor rates.

We have never given in to this system. Our men have been paid in cash once a fortnight on Friday evening, and have only the customary allowance of cider at hay and corn harvest, or, if they do not choose to draw it, payment in full at current market price. It is, however, melancholy to find that in many cases ignorant stupid wives (not intemperate) cannot keep their husbands decently well on 11s. per week. They cannot market, they cannot cook, and too often the husband has only a morsel of cheese, an Onion, or an Apple to his dry bread. The young generation are being well educated at the village schools; the girls are taught plain needlework, but it is most desirable that they should also learn plain cookery. There is too much waste in the kitchen everywhere, but even in the cottage it is incredible.

We have had long discussions and urgent protests as to how our labourers are housed, and how they ought to be housed, but the diet question has not been taken up in a comprehensive manner. Milk, Oatmeal, porridge, Potatos, Onions, Cabbages, and Leeks; Barley and Peas (mixed cakes), home-fed pork, pickled (rarely made into bacon or ham); now and then cakes of Wheat flour, and a loaf from the baker, used to constitute the staple diet of the East Lothian farm labourer. Latterly we understand that the consumption of loaf bread has largely increased; their cottages *were* not provided with ovens to bake Wheaten bread; and even now, we believe, the improved cottages do not possess ovens, but the supply is obtained from the baker. As to the milk supply, which is so important a feature in the dietary here, when the cow is dry before calving, a mild sweet beer is made of treacle as a substitute for milk. Beer is provided only during harvest by the master, and sometimes a small allowance of beer is also given at hay time.

The majority of cottages in English country villages are provided with brick ovens for baking, and wood for heating is got by "hook or crook" somehow or other. The best flour is used for baking, experience having proved that white bread is more nourishing than brown. Notwithstanding the valuable and nutritive ingredients which the chemist tells us bran contains, its influence on the process of digestion interferes with the nourishment which it might otherwise be expected to give. And the reaction from the impression which analyses had created on the subject, came in the form of a protest from a medical man to the effect that if the labourer had been shut up to the diet which was recommended by the chemist, "science and brown bread would have been the death of him." While, however, it has proved in this case, as in many others, that experience justifies the common practice, yet it cannot be doubted that there is immense waste in cottage cookery and feeding; and full information on this subject is much to be desired.

—— THE general meeting of the Royal Agricultural Society of England will take place in Hanover Square on Tuesday, May 22, at 12 o'clock. The relations of the Society to the Cattle Plague will probably be referred to at this meeting; and the need of a new Charter may be deduced from that and many other points in its recent career. In particular, its patronage of the Middle-class Education movement can hardly fail of being discussed. Both of these subjects were under discussion at the meeting of Council last Wednesday, as our readers will see in the report.

—— The movement for establishing a Central Chamber of Agriculture for the discussion not only of what are generally termed practical questions, but of the social and political relations of agriculture, is gaining ground. A meeting will be held in London, probably on the 22d of May, for the purpose of discussing and carrying out the project. Mr. C. CLAY, of Wakefield, who has been its most ardent promoter, publishes a long list of those who adhere to his plan, and it has ample encouragement in the success of a capital precedent at Edinburgh, where the Chamber of Agriculture is an influential and most useful body. At the interview of the large agricultural deputation with the Home Secretary last February on the subject of cattle plague legislation, marked deference was shown by Sir GEORGE GREY to Mr. SMITHIES, the Chairman of the London Farmers' Club, and to Mr. GOODLET, Chairman of the Edinburgh Chamber of Agriculture; and we cannot doubt that a body of agriculturists, truly representing the practical farmers of the whole country, if associated in a Central Chamber of Agriculture for England, would exert a useful influence on the conduct of public affairs in all matters affecting the agricultural interest.

—— The Cattle Plague returns, which startled us all last week with what appeared to be evidence of an increased fatality, resulting in some hundreds of additional deaths, in the midst of that rapid weekly fall over which we had all been rejoicing, do not when properly read give any reasons for the dismay which they created. When the "back cases" are added to the weekly returns, there seems to have been a fall in the whole number happening during the week. The figures are given in full in another column. We are glad to learn that the restrictions existing under Orders in Council, which would otherwise cease on May 10, are to be maintained for another period. Everybody will agree in their necessity as long as the poison exists in the country. Three weeks or a month after the last case of plague has been reported we shall all be glad to be released; but so long as freedom would be dangerous, it is to be hoped that restrictions will be maintained.

ROTTEN MANGEL.

I FEAR that this will be a very general expression just now, for most of the Mangel crops were lifted under so-called "very favourable circumstances." The hot and dry weather of September had rendered the stiff clays dry and hard, and although it was very difficult to "lift" the Mangel out of the tight binding dry clay, still the carting was easy and the crop pronounced to be ripe.

I resisted the temptation of easy carriage, because experience had taught me to consider those circumstances very unfavourable, and I therefore preferred the adhesive and unctuous clay of a wet October and early November. The cartage was, of course, much more difficult, but the raising much less costly.

In my paper "On Preserving Roots," dated May, 1864, I said (p. 514 of my book)—"It is the greatest possible mistake to store roots in a dry condition and free from soil," and then gave my reasons for it.

This season has given unmistakeable evidence of the correctness of that view, for I hear of early rotting in every direction, while my own roots are as fresh and break as short and juicy as if just taken from the ground. They have plenty of wet clay adhering to them, in which their living fibres find moisture and food; these fibres form a confused net-work of very fine white-lace like threads. Without food and moisture we shrivel and decay: so do bulbous roots.

This remark applies in degree to Potatos, for I see that Mr. Hope, of Fenton Barns, has recently commented on the advantage of their being stored with moist earth.

The same rule holds good in degree for Turnips, Carrots, and Parsnips as for Mangel, although Turnips are generally consumed earlier than Mangel.

The main point in the clamp or heap is to keep out both heat and frost. The latter is effected by a covering of Barley straw, and then a layer of earth 6 or 8 inches thick. As soon as sunshine arrives, in March and April, the covering of earth is warmed by the sun's rays. We know that the earth is (all wisely) so attractive of the sun's rays that it attains a heat some 20° to 40° greater than the air through which those rays pass. To prevent this heating and drying of the clamp, a close outside layer of smooth reedy straw on the sunny side of the clamp will interpose a non-conductive barrier. We know how cool thatch keeps a place in very hot weather. Where it is considered profitable to have roots for summer consumption, it pays to take these means of preserving them.

I generally avail myself of a fence bank for the south side of the clamp, so as to have its ends east and west, and the other side on the north.

In dry soils, where the earth will not adhere, a sprinkling of earth among the roots, and then watering them or allowing rain to fall on them, will be useful.

Beware of using dry burned clay or brick dust to preserve your roots. Some 20 years ago, when I had much burned clay, I tried it as a clamp for Potatos. The result was that they quickly decomposed entirely, proving the great difference between wet and burned clay.

I think we are partially indebted to the very heavy rains of August for our extraordinary Mangel crop; it suggests the use of the jet when our August is dry. I find some folks rather shy of admitting that their Mangel roots had rotted; but one hears of it incidentally. *J. J. Mechi, May* 1.

ON MIDDLE CLASS EDUCATION.

MANY of your readers who take an interest in this question, will doubtless have read with some little disappointment the articles just issued in the present number of the Royal Agricultural Society's Journal. The offer of a large prize for an Essay on Education as applicable to farmers, will necessarily have excited hopes of the inauguration by the Society of some large and beneficent system, which I fear the essays now published by them will not realise, and which the subsequent record of the committee's proceedings in this direction, with which they express themselves satisfied, will tend utterly to dispel. Mr. Vallentine's prize essay, containing a valuable history of what has been done in the matter, and some very useful notes and suggestions as to what is required to be done, yet proposes no practical mode of carrying these suggessions into effect. There are excellent notes on which to base a plan of agricultural schools, but no kind of superstructure is raised on them. The same may be repeated of the two following papers by grammar-school masters—their experience and advice when we have got the school will be most valuable, but where is the school to come from? As I fully expect the appearance of these essays in the

Journal will re-open the discussion on this question; and as the very short step taken by the Society is at least a step in the right direction, but will require a gentle pressure from without from the subscribers and public at large to urge them to some further progress in this path, I venture to send you some ideas of my own which I had transmitted last year to the Committee, but which, for obvious reasons, they did not notice, begging you to make such use of them by extracts or otherwise as you may deem suitable to the pages of the *Gazette*, and useful in calling forth a fresh discussion of the educational question; not that I conceive them to contain anything either new or valuable in themselves, but as tending to put the question on the right issue, namely, to inquire whether it is not the duty of the Royal Agricultural Society to help the farmers where they have confessedly no power to help themselves, and to lead them to consider whether they might not appropriate a larger proportion of their annual savings than 130*l.* out of 2000*l.* for that purpose. I am persuaded they would have the sanction of a great majority of their subscribers for such an expenditure, and their thanks for the extra trouble they might incur. *J. B. M.*

The present time appears highly suitable for the discussion of this question. There is on all sides a general conviction that our middle class has not in this respect kept pace with the general improvement in the upper and lower classes of society. Great efforts have been made by the University and Public Schools Commissions on one side, and by the Educational Committee of the Privy Council assisting private charity on the other, to raise the attainments of these classes considerably above the low standard with which our fathers were contented; while the middle classes and their schools have received but little attention and less help either from public or private resources. As, however, the establishment of middle-class schools is now receiving its due share at the hands of the friends of education, it is highly desirable that this Society, whose interests and whose success are so intimately bound up with those of the farmer, should undertake its proper share in this movement, and should at least lend a helping hand in the matter to that portion of the middle class which is its peculiar care. Nor is it unreasonable to hope that the same practical good sense which has guided it during the past 25 years of its existence, and manifested such good results in the rearing and feeding of animals and the invention and adaptation of machinery, should succeed during the next generation in infusing more life and vigour into their prime mover and manager—the mind, as it were—of these new creations, and infuse into the brains of the farmer that strength and symmetry, expansive growth, and early maturity so well exemplified in the lower material of their annual cattle shows.

With this view I shall steer clear, as far as possible, from the general subject of middle-class education, and confine my observations to that portion of the class in which the Society is more particularly interested, and to those lessons which it can hope specially to impart.

In glancing over the last census returns, we shall find the agricultural population to be about one million and a half, including, in round numbers, about one million male labourers, and about 300,000 farmers, bailiffs, and land agents; these last scattered over 55,000 square miles, or about 10 to each square mile of country, and by far the largest proportion holding under 200 acres of land apiece; and if we take 30 years to be the period of a generation, there will thus be an annual influx of say 10,000 young men into the business, upon whose qualifications and attainments the future improvement of English agriculture will mainly be found to depend. And from what source is this annual force recruited? It does not follow that a farmer's sons should be farmers or bailiffs. Probably not more than one or two out of a family will take to their father's profession. Here we encounter at once a sort of agricultural law of our nature; for as in a labourer's family the sharpest, the most active, and adventurous will fight out into the towns, and become either domestic servants or artisans, and make their own way in the outer world, while the meek, the backward, the idle remain at home in their native villages, and end their days where they were bred and born—so among the middle classes the cleverest and most ambitious boys will push themselves into situations where they can rise to a competency, while the milder spirit, or the dullard, or the contented mind of another will induce him to eschew the book learning and figures which he cannot master, in favour of the country pursuits that he delights in, and so he remains at home, and in due time he becomes a farmer. And when we consider the great difficulties under which his education has been obtained we shall cease to wonder so much at the small progress made, but rather admire the amount of shrewdness and general information he has contrived to pick up. The chief impediment to his getting any education worthy of the name is the isolated position and distance generally from any available school. We have seen the majority of occupiers hold less than 200 acres: they are consequently not rich. We know also how scattered are the country schools in country places. The distance makes it necessary they should be boarders, the consequent expense falls heavy on the father of a family, whose occupation is probably his only means of livelihood; can we wonder, then, if he soon takes his boy away, and makes him useful at home, especially as probably the youth himself is not ambitious of becoming a scholar, but takes kindly to his occupation at home. Again, the boy grows up an isolated individual, with few playmates, and therefore without that manner and temper which the constant attrition of mind with fellow mind in large schools, so humanises and polishes. He becomes shy and retiring, and therefore less likely to examine and profit by the improvements that are introduced around him. But I leave the subject of general middle-class education to the wiser heads that are now deeply occupied in its elucidation. Up to a certain age the requirements of the farmer's and tradesman's son are alike. It is only after making choice of their future profession that their paths will diverge. We will suppose our young farmer, therefore, to have made some progress in learning, to have arrived at 17 or 18 years of age, a stout hardy youth who can read and write tolerably, and can do simple sums in arithmetic, in addition to which he can probably ride and shoot, knows the points of a horse and a beast, and is a tolerable judge of how the common operations of ploughing, drilling, reaping, &c., should be performed. In these latter respects he starts with some advantage over the tradesman's son from the neighbouring town, who, being well schooled in English, with a smattering of physical science, is yet afraid of the animals he meets, and perfectly incapable of distinguishing between the implements and the crops he sees on the farm. Such, then, is the raw material out of which the occupiers of land are to be recruited. These are the youths by whose improved attainments the Society hopes to raise the future condition of British farming, and for whose especial behoof and benefit the present discussion has been proposed. Our first question will be, what is required? The second, how can these requirements be satisfied?

In addition to the physical qualities of a good constitution, habits of early rising, activity, and temperance, the man who aspires to be a tenant farmer or gentleman's bailiff should combine the moral qualities of good temper, conciliatory manner, firmness of purpose, and determination to carry out through difficulties and discouragements whatever he has deliberately undertaken. His intellectual acquirements should embrace a competent knowledge of all the various works performed on a farm, their quality and value. He should be a sufficient judge of stock and the different points of excellence of the various breeds to be able to choose what will suit his land, and to buy and sell at the proper price in the market. He should have an experienced eye to tell him which are thriving and which are stationary in condition. He should be chemist enough to judge of the value of artificial foods and artificial manures, doctor enough to remedy slight diseases or injuries, mechanician enough to set to work and keep at work the machinery and implements, surveyor enough to measure lands and to set out drainage works or buildings, ever ready in his resources, provident of the future, mindful of past experience,—a combination of qualities which would raise an officer to the rank of general, a barrister to the post of attorney-general. Oh how necessary are each of these acquirements! How much would the absence of any one of them retard and impede success. They may be comprised shortly in the two qualities—perseverance and judgment. The necessary perseverance a young man may impose on himself. The necessary judgment can only be acquired by a thorough acquaintance with the experience of others compared with his own, *i. e.* by study combined with practice, which combination of study and practice it must be our task to devise, and to put within the reach of our young aspirant.

In this respect we may conclude that an agricultural education should follow the methods successful in all other callings and professions. The medical student walks the hospitals for years before he sets up for himself, in order to see the best practice of different localities. The law student reads for years with a special pleader or barrister before he can start as a junior counsel; the staff officer and the divine have each their own certificates and competitive examinations before they are qualified for their respective appointments; so should we expect that the agricultural student, having laid in a foundation at some middle-class school, must undergo a system of training and some species of examination before he can be considered qualified to undertake the management of a farm. He should have *walked* farms, and seen the different routine of management under varieties of soil, situation, and climate. He should have studied the theory and reason of every practice and appliance, and of the different systems of carrying the same into execution, and above all he should be able upon examination to give the reasons for these differences, and to state how under certain given circumstances he would himself proceed.

We find in all systems of education that nothing so imprints knowledge on the memory as periodical examination, nothing so excites emulation as the hope of a certificate or reward for progress made. These three methods of educating the farmer are fully carried out at the Royal Agricultural College at Cirencester. The study of the theory in the classes, the daily practice in the field, and the periodical examinations leave little or nothing to be desired; and the success, as far as it has been tried, has been commensurate with the pains bestowed. But unfortunately it is not applicable to our middle-class farmer; its fatal drawback to the great body of tenant farmers and middle-class students has been the necessary expense. Few can afford to keep a son there for two years, and perhaps fewer still appreciate the necessity or the advantage of so doing.

The next best school, and one coming daily into vogue, is the pupil system. Men who are themselves proficients can with little personal trouble and with great advantage to both parties initiate a young pupil into the daily practice of a farm. They can teach the routine of that farm thoroughly, and some few will have the power, and some will take the trouble of guiding their studies, and teaching them how to apply their knowledge to other systems and counties, while there are some, I fear, who look more to the annual payment as a recompense for harbouring a wild young cub upon their premises; and leave it to the pupil's own disposition or to accident whether he carries away any information at all equal to the amount paid. This system, when honestly carried out, leaves little to be desired; it lacks the essential of a competitive examination, by which both the pupil and teacher would be tested, and for want of this test it frequently leaves the choice of a tutor very much to chance, or what is worse, to the too partial recommendation of an indulgent or an interested neighbour.* The last and commoner system of bringing up a boy entirely at home may be dismissed as inferior to the last. A periodical system of examinations and certificates of competency, both in master and pupil, would go far to remedy this defect; it would show forth to all inquirers, both who were the successful teachers, and where the best taught young men were likely to be obtained. The foundation of scholarships tenable for one or two years, either at the College at Cirencester or with certificated farmers, would excite a new spirit of emulation, both in the teacher and in the taught. It would prove a trustworthy guide to parents in search of a tutor for their boys—to gentlemen in search of tenants for their farms, and to the occupier of his own land in want of a bailiff—a guide so often needed and so rarely found among the shoals of applicants searching for employment and profitless when employed.

Having thus traced out the chief requirements for our purpose, is it too much to suggest to the Royal Agricultural Society to undertake this work? Is it not rather a duty thrown on them by the terms of their Charter, or can there be a more appropriate mode of expending their surplus funds? Their balance of income over expenditure is now about 2000*l.* per annum. Could it be more beneficially or more nobly expended than in raising the condition of those whom no other means or Society can reach, and for whose especial benefit those funds were collected and are now intrusted to them? The local examinations already conducted by the Universities and by the Society of Arts afford ample opportunities for organising the beginning of such a system. A few certificates given for proficiency in agricultural subjects would soon arouse a spirit of exertion throughout the rural community. A few scholarships awarded for superior attainments would awaken inquiry and emulation among the rising generation, both those aspiring to be taught farming as those who are anxious to teach. We have seen that by a natural law the farmer is of a slow, contented, and conservative disposition, too apt to think that what has been good enough in former times will be sufficient for the present and the future. Active competition brought home to his doors would soon arouse him from his lethargy. If practice and study were once made to advance hand in hand as I have recommended, he would soon see that new ideas are not always delusions, book-learning not invariably a failure, but that his calling, like others, must be indebted to science for bringing it to its perfection, and to diligent and earnest study for continued success. Since this Society was incorporated a new generation has nearly succeeded to the one now passing away; it has seen through its exertions a great improvement in all branches of production, both of corn and meat. Should it now be persuaded to launch out on a wider course, it may not see so marked or so rapid a return; but it must infallibly clear the ground and sow the seeds of a great moral and social improvement, thus leading the way for others, and giving an example to the great Highland and Southern Societies, who are anxiously watching the present movement, and hoping to take advantage of it; so that before the expiration of the next quarter of a century it may be able to point with equal pride to the great body of tenant farmers as a thriving and prosperous, because an active and intelligent, class of men; and to farms highly cultivated, and produce largely increased. May it not also hope to point to an equally improved body of county gentlemen's bailiffs and stewards, who shall not only be able to show good cultivation, but also a handsome profit as the result of it?

I am aware that in the recommendations I have made I have not reached directly the most numerous portion of the 10,000 young men who we saw were yearly recruited into the service of agriculture. About half of them will be the occupiers of less than 100 acres. To these the certificates and scholarships I am advocating would be but sour grapes far beyond their reach. But fortunately man is an imitative animal; and if once the spirit of improvement were kindled in the upper ranks of this class, and it before me made evident that knowledge there, too, knowledge is power, and the educated farmer was seen to outstrip the uneducated, it would spread itself surely and rapidly among the lower ranks. The want of superior training once felt would react upon the little village schools and their masters, and create a supply commensurate with the rising demand. But here also the Royal Agricultural Society might step in with great effect. If they would take a leaf out of the book of two great Educational Societies, the Christian Knowledge Society, and the Useful Knowledge Society, they might, through their 5000 subscribers, scattered over Great Britain, diffuse a mass of useful cheap periodical information among the poorer homesteads at once highly acceptable and efficient. They might reprint for circulation many useful articles and papers now inaccessible to us, that gratuitous without a chart—their own† unindexed Journal, as well as in other agricultural works and periodicals. And having awakened a taste for reading and a habit of thinking among those whose practical education has been already half-

* In some cases an exchange of boys for a season or two, whereby each has an opportunity of seeing the difference of practice in a different locality, has, I believe, been found beneficial to both parties at a minimum of cost.

† This was written in February, 1866, before the Index was compiled.

completed by growing up in the midst of country occupations, they would add to it that superstructure of accurate science, that knowledge of the reason why such and such things are effectual or otherwise, the want of which is now the great stumbling-block to their improvement—the impediment to their rising in the world. It is from this class that foremen, bailiffs, and land stewards are mostly taken—men skilled in the routine practice, good judges of work, and excellent hands at marketing, honest and persevering in their business—and yet how few can so manage their employers' farm as to produce a balance on the right side at the end of the year! Am I wrong in attributing this failure to a want of forethought, a want of that wider view of the year's operations which a larger mind would take in—to a want of that judgment in the expenditure of their employers' capital which only a well balanced mind can exercise? Is it not equally true, that if this difficulty could be got over, and a farm in a bailiff's hand could be made pay a rent equal to that obtained from a tenant, many more country gentlemen would be found residing on their own estate, improving it and all that belongs to it, who now cannot afford to do so? Here again, then, is an opportunity for the Society of disseminating among the lower class of those who live by the land a portion of the new light which is daily breaking in upon agriculture, and of implanting the necessary qualifications into an industrious and deserving set of men. They would thus put into their hands the means of that study by which, as we have shown, practice must be regulated and judgment formed.

Such are the conclusions to which the consideration of the subject of Agricultural Education has finally led us—such the suggestions which have resulted from an inquiry. In advocating a system of scholarships for the highest attainments, of certificates for competency, and of discriminating useful tracts for all, we do not put forward any new doctrine or untried experiment, but follow rather the teaching of experience. I have avoided entering into any details of the plan I have suggested, preferring to leave the manner of doing so to those who undertake to carry them out in practice. Suffice it to bear in mind that we must excite as well as satisfy a craving for knowledge. We must feed the hunger when we have created it. One word of advice before we close. Let no man think when he has earned a certificate or taken a prize that his education in farming is complete; there is no limit to the study of this profession, no rest to the inquiring mind. Each recurring year brings with it some new phase, some fresh development, some additional pleasure in its discovery. One who is now growing grey in the pursuit can safely say that he has learnt more in the last ten years than in the previous twenty, and should he be spared to enjoy another ten years, he doubts not that by prolonged study, blended with his lengthened experience, he will still learn much that yet he is ignorant of, and will be enabled to look back from the end of that term to the time when he wrote these pages as to a season of darkness and of ignorance. Could we but persuade ourselves how little we know instead of vaunting our progress, our education would indeed have begun.

THE CATTLE PLAGUE.

1. The following returns were issued on April 27.

These returns do not profess to give the total number of cases which have occurred in Great Britain, but only those which have been ascertained from information received at the office from inspectors. Columns 1 only record the cases reported as having commenced during the weeks indicated by the headings; "back" cases being added to columns 2.

Districts.	1 Number Attacked.		2 Result of Reports from Commencement.				
	Week ending April 14.	Week ending April 21.	Attacked.	Killed.	Recovered.	Remaining Attacked.	Uncontrolled by Returns.
Metrop. ..	24	29	5457	3534	23	2900	1.0
S. Eastern .	4	..	7000	1018	2786	440	21
S. Midland .	344	347	18,620	6503	9991	1558	36
Eastern Co.	127	129	10,754	4806	4772	76	0
S. Western .	28	26	1060	591	376	93	0
W. Midland	342	369	12,637	4711	6241	1396	289
N. Midland	710	540	15,430	7582	6661	1098	89
N. Western .	621	684	57,918	12,696	39,097	6225	4.0
Yorkshire .	324	364	33,866	6947	18,259	5866	2754
Northern Co.	34	46	7729	4198	2492	941	100
Monmouth & Wales .	101	112	8137	747	5991	1094	305
Scotland ..	67	104	46,469	6487	37,194	1.784	2 44
	2.32	2.83	225,801	59,413	132,..	23,661	1,8.4

NOTE.—The Inspectors who reported cases last week have not reported in time for this return—viz., 1 the county of Carmarthen, 1 Chester, 5 Derby, 1 Hampshire, 1 Lincoln, 1 Denbigh, 1 Flint, 4 in Scotland, 1

These Inspectors returned 330 cases last week.

2. COMPENSATION—SALVAGE VALUE.—In the report of the discussion which followed Professor Simonds' lecture, as it appears in the late Journal of the Royal Agricultural Society of England, I am reported as follows:—"He then adverted to the Bill which had just passed through Parliament, and said it would in his opinion have been better, instead of imposing on juries or individuals the task of ascertaining the value of animals that had long been dead, to have given a fixed sum of 2*l.* for all animals attacked." If I had made such observations as these I should certainly have had no reason to be proud of them. Instead of wasting the time of the meeting by regretting the past, I distinctly adverted to the future by reminding the members of either House that although the late Bill provided compensation for all plague-stricken beasts that might in future be killed by order of the inspectors, yet that it did not deal with past, and that the question of giving a partial compensation for all animals that had been slaughtered by order of the inspectors previous to the passing of the Bill was postponed for the present. After pointing out the extreme difficulty of ascertaining the value of such animals long since dead and buried, I suggested that it would be far better, easier, and fairer to allow the salvage value—say, 2*l.* per head for every animal that had been buried in consequence of the disease. The relief thus afforded would be more general and substantial, and it would not savour of charity but of justice, inasmuch as the carcases were buried out of the way for the same reason as the beasts are now slaughtered, viz., for the purpose of getting rid of the infection. The Cheshire farmers would, according to this plan, receive the sum of 100,000*l.* from the public funds, and who so churlish as to begrudge such a just appropriation? I am rather surprised that the representatives of those districts that have suffered most do not take up and press the subject in Parliament. It would I think be far better than appealing to the public generally for assistance in the way of charity, however well deserved. I do not think I overrate the carcase value of a fair-sized beast too high at 2*l.*, as it includes the skin, fat, bones, and flesh. *W. C. Spooner, Eling, Southampton.*

3. CATTLE PLAGUE RETURNS.—Although the cattle plague has considerably declined in the United Kingdom, its ravages are still destructive, as will be seen by the annexed recapitulation of the attacks week by week from the commencement of this year to April 21:—

Week ending	Current cases.	Back cases.	Total.
Jan. 6 ..	7106	1462	8568
„ 13 ..	9245	2956	12,299
„ 20 ..	10,941	2801	12,842
„ 27 ..	11,745	1893	13,638
Feb. 3 ..	9153	2290	11,443
„ 10 ..	11,590	4305	15,895
„ 17 ..	12,091	5353	18,356
„ 24 ..	10,167	1143	11,310
Mar. 3 ..	7549	2969	9370
„ 10 ..	6518	1745	8263
„ 17 ..	6251	1767	8028
„ 24 ..	4764	908	5672
„ 31 ..	3956	697	4653
April 7 ..	3361	647	4008
„ 14 ..	2587	1758	4290
„ 21 ..	2823	982	3805

The public must not merely look at the current cases, but account must also be taken of the back cases; thus the apparent decrease of the disease in the week ending April 14 was nullified by the increase of the back cases, while in the week ending April 21 the reverse was the fact. It is important to observe that the Contagious Diseases Prevention Act is not exactly fully carried out. Thus in the week ending April 21, 137 beasts and cows were permitted to die of the disease, although legally every animal attacked ought to be killed. The recoveries in the week ending April 21 numbered 229, so that in all 366 animals are here shown to have been permitted to be fresh centres of infection. In the week ending April 14 the corresponding total was 568, and in the week ending April 7, 451. The question is whether we shall ever get rid of the cattle plague so long as a policy of universal slaughter as regards infected animals is not enforced with rigid severity. Even now the number of attacks is larger than it was during September, October, and part of November, when a complete panic prevailed on the subject.

4. LOCAL REPORTS.—*Cheshire.*—The following are the number of cases reported to the 28th ult.:—Died, 39,903; killed, 29,104; under treatment, 2901; recovered, 10,772—total attacked, 82,679. During the week 1313 have been attacked, or 259 per diem, and dead and killed 1626, or 232 per diem. The disease has now appeared in 461 localities in the county.

Dorchester.—Much excitement was created in this borough on Saturday evening last at the intelligence that a most virulent case of rinderpest had occurred in the immediate vicinity, several cattle belonging to Mr. Laver, a dairyman of Fordington, having been attacked with the disease. About 8 o'clock the unwelcome news was communicated to the borough authorities, who at once proceeded to the barton in which Mr. Laver's cows, 18 in number, were kept, and Messrs. Redwood and Norris, two veterinary surgeons, immediately expressed their opinion that eight of the number were suffering from the fatal malady. It has not been authentically stated how the outbreak originated, but it is believed to have been introduced by some sheep which were brought into this district from an "infected place" in Somersetshire, and which had been turned into a meadow in Fordington where Mr. Laver's cattle were grazing. On Sunday the symptoms were considerably worse, and several persons who visited the spot concurred in the opinion expressed by the veterinaries; during the day 12 of the animals were suffering with the disease, and fears are entertained that the whole herd will be swept away. We learn from the owner of the cattle that since March the cows had been feeding chiefly on hay, and had occasionally been turned into dry meadows, but that on Monday last they were turned into a water meadow, and he was of opinion they were suffering from the symptoms commonly apparent after cattle have been turned into "lavish pasture." The usual remedies were applied. Mr. Laver entertaining a suspicion that his herd was suffering from cattle plague. The premises have been placed in the hands of the police, and all communication with the infected animals has been cut off, as the neighbourhood abounds with dairies which contain several hundred head of kine.

THE DEAD MEAT TRADE.

THAT a large number of practical farmers will profit by the lesson which experience under the cattle plague is now teaching them, in reference to the more judicious, safe, and economical of two methods of marketing the animal produce of the farm, is but reasonable to suppose. But whilst this must be acknowledged with every degree of approbation, it must, at the same time, we fear, be admitted that a very large proportion, if not the majority, of the whole body, are so allowing their minds to get bewildered amidst the contention of things as they are and things as they should be, as to allow a golden opportunity to go past them in the march of improvement. Being wedded to the antiquated routine of the old system of live-stock marketing, and having no experience in any improved method of the dead meat trade upon which they can rely, they can neither see the shortcomings of the former nor appreciate the advantages of the latter; hence the restrictions now experienced by them in reference to the conveyance of stock are keenly felt as hard and up-hill times—anything but fair play in the conversion of their live stock into hard cash to meet the demands of the landlord and the weekly outgoings upon the farm. You may as well lecture the Evening and Morning Star on the agricultural necessity of keeping pace with the times, as to tell such old-school farmers that in sending their fat bullocks to the Metropolitan Cattle Market they are guilty, not only of "burning the candle at both ends," but also in selling what remains to the old piping tune of the "Trade Whistle" of the capital! If in answer to this they tell us, as they often do, that they, after all which has been said to the contrary, actually make more money in the live stock than in the dead meat market, we can well afford to sympathise with their position in the commerce of their cattle, as it is virtually telling us that "a part is equal to the whole," a doctrine and a practice by far too antiquated to be admitted a hearing in the councils of modern times. On the other hand the most consistent advocate of agricultural progression in its broadest sense must confess that although the carcase-trade is annually growing in magnitude and improving in many respects, not only in the capital but throughout the kingdom, and therefore gradually supplanting the live stock trade, it is nevertheless in a very unsatisfactory state at the present time, more especially in the metropolis, where the trade has so overgrown Newgate and Leadenhall markets as to render it impossible to get through the business daily in a business-like manner, the disgraceful market scene almost every morning presenting a heterogeneous hubbub, as if the whole commercial fabric was suffering from paralysis, or in the last stage of rinderpest itself.

The whole commerce of animal food in the metropolis requires to be closely studied at the present time, in order to be practically understood by the farmer. It is no hasty superficial view of the matter that will enable him to ascertain how far justice is being done to the produce of his industry, either in the live stock or dead meat trade. General conclusions are easily arrived at, but something more is required than this, and when the commercial details are gone into, and the whole facts of the case brought into broad daylight, it requires a clear head, a strong nerve, and a thorough acquaintance with human nature and the commercial maxims of the olden time, to be able to account for things as they are, and a great deal more to solve the problem of things as they should be.

Fortunately or unfortunately, the solution of the problem of things as they should be, is one that must be gone into practically by somebody, and in point of fact it has for years past been slowly prosecuted, chiefly by intermediate jobbers, farmers and graziers having little or nothing in the great work of commercial improvement thus to be done in connection with their profession. At home, for example, in the provinces, fat stock are bought by cattle dealers and sold to local butchers and others, who slaughter and consign to carcase salesmen in the capital. Others forward live fat stock to cattle salesmen. Some individual bullocks of these lots are bought by metropolitan butchers, but a large proportion of the whole are bought by intermediate jobbers and slaughtered for the dead-meat market, and the proportion thus slaughtered has of late been greatly on the increase. It is not very easy reconciling such an anomalous state of the commerce of the animal produce of the land with the general intelligence and enterprise now so conspicuously manifested by the agricultural body in other branches of farming, but the facts of the case speak for themselves in a language that cannot be misunderstood by practical farmers of skill and experience.

There are involved in this abnormal state of both the live-stock and carcase trade of the capital a series of interesting facts that call for mature consideration at the hands of farmers. These may, in the form of propositions, be enunciated as follows:—

1. The weekly demand of Newgate and Leadenhall dead meat markets greatly exceeded the normal supplies of slaughtered meat sent from the country prior to the outbreak of rinderpest, the deficiency having been made up from the Metropolitan Cattle Market, and for years past this deficiency has been annually increasing.

2. Since the encouragement given to the carcase trade by the Cattle Plague statute, country supplies to Newgate and Leadenhall have greatly increased; but the demands of butchers have increased in a corresponding ratio, so that the deficiency has still to be made up from the home and foreign live stock trade by intermediate jobbing and slaughtering for the dead meat markets.

3. In this abnormal state of the cattle trade a heavy sacrifice is sustained in the quantity and quality of the meat, and both these losses have to be borne by the

producer, generally speaking. In other words, were the farmer to slaughter his own fat bullocks at home, and to forward the carcases in a proper way to Newgate and Leadenhall, he would dispose of a greater weight of meat of a finer quality than he now does, in the present condition of the live stock trade.

4. The profits and expenses of all intermediate jobbing have to come out of the proceeds of this depreciated quality and reduced weight of meat, so that the producer realises less than he otherwise would do under an improved system.

5. Market dues and charges of the Corporation of London, including all et ceteras, have also to be deducted from this depreciated quality and reduced weight of meat. And when the cattle are bought by intermediate jobbers to supply the demands of Newgate and Leadenhall markets, then the farmer pays the Corporation of London a second tax on his cattle, as the charges of the latter, like those of the former, have to come out of the next proceeds of the cattle. Moreover, when the new Dead Meat Market is built, this second tax upon the farmer will be greatly increased!

6. The railway conveyance of dead meat is not only objectionable in an engineering sense, but it is also highly unjust and disproportionate in a pecuniary sense, as compared with the charge for the conveyance of live cattle. Thus, although the dead carcase weighs little more than half the weight of the live ox, yet Alderman Mechi complains that the former costs him 16*s.* 8*d.*, while the latter only costs 5*s.* 6*d.*; the railway charges of dead meat being upwards of three times that of the whole live weight! Other instances of this kind might be quoted that call for legislative interference at the present time.

Such, then, being the losses now sustained by the farmer, is it at all surprising that the fattening of stock should not pay? Who that knows anything practically about the matter could arrive at a different conclusion? The case is a clear one, however thickly it may be surrounded with mist and clouds in certain localities, for a more spendthrift system of doing business than that followed by the great bulk of farmers, including Alderman Mechi himself, can scarcely be imagined. And this, unfortunately, is not the worst feature in the trade, as the future manifestly appears determined to be manifold more lavish in commercial prodigality than the past, and all this at the expense of the producer!

It is evidently high time for the more intelligent body of farmers to reconnoitre their commercial position in marketing the animal produce of the land, from a pecuniary point of view. Upon the proposition generally, there cannot be two opinions, and therefore we may at once pass on without comment to the investigation of its details.

It is an easy thing accounting for the manner farmers have got into the trammels of a prodigal commercial system in the marketing of the animal produce of their farms, but it is not such an easy matter saying how they are to get out again. The first step to be taken, however, is self-evident, and that in a great measure determines the general course of action afterwards: and this first step is evidently to "cease burning one's candle at both ends," which involves the doing away altogether with live stock markets, and the general establishment of an improved system of dead meat marketing. Abridgment and organisation of labour have revolutionised all other branches of trade, and those engaged in the present cattle and carcase trades may depend upon it their craft is no exception to the common rule, for they are as much subject to the laws of organised industry as any other branch of commerce. The work of economy and retrenchment is no doubt one of time and degrees, but when once the keen edge of the commercial wedge is fairly entered the result is manifest, for the greater the impediments in the way, and the broader the old foundation, the more sweeping and permanent will be the clearance effected in the long run before the wheel of progress.

The second step is an improved method of railway, river, and sea conveyance of dead meat, on more reasonable terms than those now charged, so as to deliver the meat in the shortest possible time free from depreciation of quality and reduction of weight, and at a less expense for conveyance than that now charged for live meat. If the four quarters of a bullock, for example, weigh little more than half his live weight, the railway charges for the conveyance of the former ought certainly to be rather somewhat under those of the latter than higher, the dead meat being conveyed directly into the market by railways so as to avoid the expense of horse traffic delivery. "Because Alderman Mechi's fat ox can travel on his feet, his fare to London by rail must therefore only be 5*s.* 6*d.*;" and "because his carcase cannot convey itself, the charge for it is consequently 16*s.* 8*d.*," is one way for railway directors arguing the question, but it is certainly not in keeping with the permanent interest of shareholders and the line, for such short-sighted selfishness on the part of railway directors raises a threefold source of opposition to remunerating dividends.

First, it encourages and keeps up the old drove system in the provinces, so as to reduce the railway traffic in live stock to a minimum, in order to supply the increasing dead meat demands of Newgate and Leadenhall, indirectly through the Metropolitan Cattle Market.

Secondly, it keeps up a large horse traffic in the conveyance of dead meat, which otherwise would be by railway.

Thirdly, it stimulates the conveyance of dead meat by steamboats, and at the present time is giving rise to the organisation of canal and river conveyance of dead meat, in barges constructed expressly for the purpose. What, for example, is to hinder all the beef and mutton produced in the great valley of the river Thames, being conveyed to London in flotillas of carcase-barges daily, on terms greatly below the current charges of the railway? Such, then, being the facts of the case, is it for the interest of shareholders that railway directors should, under existing circumstances, continue to give encouragement to such opposition by an unreasonable and prohibitory scale of charges?

The third step is, with the above improved system of railway, river, and sea conveyance of dead meat, on fair and equitable terms, at command, to take the full advantage of such improved means in abridging time and labour, so as to get rid of all intermediate jobbing, and the antiquated expensive commercial machinery to which such jobbing has given rise. If Alderman Mechi finds valid grounds of complaint against railway charges, as doubtless he does, we hope he will also bear in mind Corporation charges, and therefore clench his fist and make his brother Aldermen and the whole Corporation of London hear on the deaf side of the head, as they never heard before, that to charge one tax on the farmer's fat ox in the new Cattle Market, and the carcase of the said ox a second tax in the new Dead Meat Market, is a system of "black mail" so out of date as to be without a parallel on this side the days of Robin Hood or Rob Roy Macgregor. That there will be a tough struggle before this ancient corporate body part with the immense revenues now derived from the Metropolitan Cattle Market, and the dead meat markets of Newgate, Leadenhall, &c., about to be concentrated in old Smithfield on an increased scale of charges, is natural, or at least in accordance with their conduct hitherto under similar circumstances; but with all the trade influences at their command there is a limit to the commercial power of the Corporation of London in this respect, which the cattle plague, coupled with the exorbitantly high retail prices of butchers, have brought prominently into view. Of late, for example, some of the inhabitants of the capital have been daily supplied by the butchers of Paris, by means of the telegraph, railway, &c., and others get their weekly supplies direct from various English counties; and from the superior quality and moderate charges of such supplies, there is a growing disposition on the part of the public to patronise this abridgment of the old system, so as to establish a permanent direct trade between producer and consumer, thus avoiding altogether the expensive antiquated machinery of both the live and dead meat markets of the Corporation of London. At present the Corporation are doing their utmost to make railways and steamboats subservient to their purposes, but this cannot be done without fresh outlays of capital to a very large amount, attended with a corresponding increase of charges and expenses generally of commercial machinery out of date, so that it may not inaptly be said that the one half of their doings run counter to the other half—hence the commercial ultimatum. And besides private families in the metropolis getting their butcher-meat directly from the country, the proposition of "Butcher Companies, under the Limited Liability Act," has been enunciated, such companies to get their daily supplies directly from the producer, home and foreign, and there cannot be a doubt that the moment rinderpest disappears, and the present unsettled state of the animal produce of the country clears up, that numbers of such Butcher Companies will be established in all our large towns, so that the present round-about expensive system is likely to be at no very distant date supplanted by one erected upon a more scientific and economical basis. The antiquated state of the present trade of the metropolis in animal food may be familiarly illustrated by many an old farm homestead, to which addition after addition has been made until it would baffle anybody to say to what period of history its architectural style belongs; and yet the whole incongruous congeries stand, by no means unworthy of ages long gone by, but they neither suit the demands of the present age nor the requirements of the future. That this new proposition of doing business directly, with the producer at the one end and the consumer at the other, will have to work its way uphill on its own merits, against much trade opposition, may be granted, but the commercial balance is nevertheless greatly in its favour, for the interests of all the parties involved mutually reciprocate towards its present and ultimate success.

HIGHLAND AGRICULTURE.

[The following is the substance of the paper read by Professor Leone Levi before the Society of Arts the other day.]

A STRIKING feature of these Highlands is the extreme paucity of population. In this country we glory in our large population, we are thankful for its rapid increase, and count it as one of the most certain evidences of economic progress. But there has been a constant retrogression in this respect. Many of the old inhabitants, who, with their families, had for generations lived in the country, have been ruthlessly driven out,—here to give place to the sheep, there to convert the land into deer forests, and elsewhere because the landowner decided on joining farm to farm and pendicle to pendicle. Such as remain have been, and are, to a great extent looked upon more as obnoxious burdens than as useful producers. In the four Highland counties already named there are at present only 22 persons per square mile, in Sutherlandshire there being only 13, whilst England, taking the whole country together, has 344 per square mile. No doubt in some agricultural counties of England the population has not been increasing, yet nowhere do we see such a desolation. You may, in fact, walk miles and miles through the Highlands without seeing a cottage. A "toon," as a farm-steading is there called, is quite a rarity. In very many places no stranger is even permitted to settle in villages, and no land would be given for the erection of houses and churches. Can any system be right or good that leads to such results? Is it expedient, is it right, may we ask, to throw impediments to the settlement of human beings in such extensive tracts of country? Does the right of property go so far as to have unlimited power to displace whole populations, and to shut out the land to every new comer? Paraguay under Francia was no more shut up than are many portions of the Highlands under the owners of the soil this very day. But it is said there is no food for them; the land is barren and rocky; it cannot sustain a large population. This is true to a certain extent, but, if I am not mistaken, the plan of depopulating the Highlands and destroying the crofters has been forced and carried to a point inimical to the best interests of the country.

In the system of agriculture in the Highlands, the prominent points are — the enlargement of farms obtained by the constant amalgamation of small holdings, the tenants having been in many cases suddenly dispossessed and compelled either to emigrate or to crowd on some piece of land on the coast, whilst the remaining holders have been rendered as uncomfortable as possible by high rents and onerous conditions; the conversion of tillage land into sheep-walks with the same effect, acting still more oppressively on the tenants; and lastly the enclosure of all lands which admit of being let out for shooting into forests, whether they might or might not be otherwise productive of food. That in certain cases it is more advantageous to produce on a large than on a small scale is quite evident. A manufacture carried on on a large scale within one large factory admits of greater division of labour, greater use of machinery, greater economy in superintendence, and greater investment of capital. And so a large farm may admit of a more extended use of agricultural machinery, prevent much waste in hedges, and render labour more efficient. But there are certain conditions, without which all such advantages can never be realised. It is not all kinds of land that will admit of the use of machinery, or of being worked on one uniform system. On the Highlands, where the land is so uneven, where one portion differs so much from another, and where machinery is not so much available, farming on a large scale cannot universally answer. It is possible that in some cases the incorporation may have proved beneficial, but in many I am sure it must prove a disappointment to the landowner, the rent from a large farm not being equivalent to the aggregate of small rents derived from many separate holdings. As to the effect of such amalgamation on the production of food, it is a grave question whether a number of small farmers anxious to draw from the land as much as it is capable of rendering would not, by assiduous care, succeed much better than a large farmer working by means of hired labourers. We have no statistics to show the progress made in such amalgamation of farms from year to year, but the process is going on extensively even at this moment. It would be erroneous indeed to imagine that there are no small farms in the Highlands. The grave difficulty arises from the fact that whilst in some parts of the country the land is divided into very large farms, in other parts it is split up into far too small holdings. According to the agricultural statistics prepared by the Highland Agricultural Society for 1855 to 1857, there were then as many as 16,000 occupiers in the four counties of Argyll, Ross, Inverness, and Sutherland, at a rental below 20*l.*, and 3000 occupiers at rents at or above 20*l.*; the total acreage held by these 19,000 occupiers being 280,000 acres, or an average of 14 acres per occupier. The amount of rental given for the whole was 640,000*l.*, which gives an average of 33*l.* per occupier, a sum scarcely sufficient for rendering the holder independent of extraneous sources of income. That the condition of the small holders might be much improved, were the proprietors willing to invest more capital and give greater encouragement to improvements, there is no doubt. As it is, the position of such occupiers is very precarious, and great temptation, no doubt, is afforded to the landowners to remove them from a false position. What is required, however, in first that no forced enlargement be made without considering the case of the occupier, and that when from any cause an enlargement is practicable, the cultivator shall not be left destitute and compelled to emigrate to foreign lands, but shall rather be allowed to rent any other tracts of land of competent size within the country, for which he may have the means of competing. A still more marked feature of Highland agriculture consists in the conversion of arable land into sheep-walks. This has been a favourite plan of late years; and ever since, under Mr. Loch's agency, the Sutherlandshire tenants were driven from their soil, their huts being burnt before their own eyes, the sheep and the shepherd have taken the place of tillage land and industrious cottiers. We may well imagine that land which produced little or no rent under cultivation, might be made more profitable if let out as sheep-walks, since the expense of maintenance of labour is considerably less. But the fact that the landowner gets more rent is not an evidence that the land produces more food in one way than in another. It only follows from this, that what was before divided among many is now monopolised by the few. Great difference of opinion exists as to the effects of such clearances. Not a few regard the change as decidedly beneficial. Under the old system, it is said, the people, collected in the glens and valleys between the mountains, produced but little corn, and were mainly dependent upon cattle. There was a redundant population; rents were trifling, and no capital was invested for the improvement of land. By the overthrow of the cottier system, the clearing of the glens, and the introduction of sheep farms, extensive mountain land, formerly useless, has been made productive, the production of food has greatly increased, and the inhabitants, formerly most indolent, have become industrious and active. This is, however, evidently far too bright a view of the real

state of the Highlands. At what expense have these clearances been made? Was the displacement of the population an easy task? Is the condition of the population in the places where they have been thrown, even at this moment, at all satisfactory? Allowing that more mutton and more wool are produced in these Highlands under the present system, are cattle as abundant? What chances are there of developing the resources of the country where there is no population? Whence these periodical lamentations, whence this discontent, whence this poverty, if the Highlands were now as fruitful as the apologists for the present system would represent them to be?* We doubt very much whether, however the owners of land may have benefited, the country at large has substantially improved.

The talented editor of "Good Words," in his "Reminiscences of a Highland Parish," gives us a most practical illustration of the change thus operated:—

"When tacksmen were swept away to make room for the large sheep farms, and when the remnants of the people flocked from their empty glens to occupy houses in wretched villages near the seashore by way of becoming fishers, often where no fish could be caught, the result has been that the 'parish for ever' which, some years ago, had 2,000 souls, and received only 11*l.* per annum from the public (Church) Fund for the support of the poor, expends now, under the Poor-law, upwards of 600*l.* annually, with a population diminished by one-half, and poverty increased in a greater ratio. The temptation to create large sheep farms has no doubt been very great. Rents are increased and more easily collected; outlays are fewer and less expensive than upon houses. But should more rent be the highest, the noblest object of a proprietor? Are human beings to be treated like so many things used in manufacturing? Are no sacrifices to be demanded for their good and happiness? Granting even, for the sake of argument, that profit, in the shape of obtaining more money, will be found in the long run to measure what is best for the people, as well as for the landlord, yet will not the converse of this be equally true—that the good and happiness of the people will in the long run be found the most profitable? The proprietors, we are glad to hear, are beginning to think that if a middle class tenantry, with small arable farms of a rental of 20*l.* to 100*l.*, were again introduced in the Highlands, the result would be increased rents; better still, the glens, along which a solitary shepherd is now found to be heard for 20 or 30 miles but the bleat of sheep and the bark of dogs, would be tenanted, as of yore, by a comfortable and happy peasantry."

By far the most important point, however, in relation to the agriculture of the Highlands is the great extension of forests. In England, we are constantly hearing of the reclaiming of land, and of the disafforesting of forests, the Legislature passing every year Acts authorising the enclosure of large extents of land; and we need it all, seeing that the population increases so rapidly. But in Scotland it is quite different, and if not arrested in time there is danger that the greater part of the country in the northern part at least may become once more a great wild desert. The landed proprietors have been studying of late the newest system of agricultural economics, certainly not that taught either by Adam Smith or Stuart Mill, Say, or Michel Chevalier. They found out that land left wild and uncultivated, land dedicated to deer and rabbits, pays better than land used as sheep-walks or dedicated to cultivation. And the landowners have acted on this new discovery by at once turning out the sheep as they once turned out the men from their estates, and welcoming the new tenants—the wild beasts and the feathered birds. It is estimated that there are in Scotland upwards of 2,000,000 acres of forests; and one can walk from the Earl of Dalhousie's estates in Forfarshire to John o'Groat's, without ever leaving forest land. I might mention the forests of Alyth, Athol, and Dunmuie, in Perthshire; of Balmoonan and Leanx, in Rossshire; of Boon and Glenavon, in Banffshire; of Mar and Birsa, in Aberdeenshire; of Gaisk, in Inverness-shire; and of Platers, in Forfarshire. In many of these the fox, the wild cat, the marten, the polecat, the weasel, and the Alpine hare are common; whilst the rabbit, the squirrel, and the rat have lately made their way into the country. Immense tracts of land, much of which is described in the statistical account of Scotland as having a "pasturage in richness and extent of very superior description," are thus shut out from all cultivation and improvement, and are solely devoted to the sport of a few persons for a very brief period of the year. Can we afford such a great waste? Can it be defended by any economical or social law? Can anything be put forth in behalf of a system so destructive? Who can say how many cattle and how many sheep could be maintained were such forests profitably used? It has been gravely asserted that there is only a difference in the kind of meat produced. But who can compare beef or mutton with venison? Who eats venison as food? Beef is the sustenance of the many; venison the luxury of the few. Beef feeds and strengthens the labourer for his hard daily toil; venison may please the palate of the noble; but after having ornamented the rich man's table, it is usually wasted by the servants. It may be true that venison has a price in the market, but trace it to its destinies, and tell me whether it can be counted as food for the people. Moreover, let me remind you that the venison usually eaten is not the produce of the forest at all. It is the fallow deer, reared and fattened in the English gentleman's park. The red-deer is seldom if ever seen in the London market. It is not fit for human food, especially in such ill condition as it comes. Grouse, partridges, and pheasants are, no doubt, sold largely, but the middle classes do not take them, and the high cost puts them quite out of reach.

It is sometimes said that a deer forest will employ as many gamekeepers as a sheep-farm will employ shepherds. But the great difference is that the shepherd is a productive labourer and the gamekeeper is not. A policeman may, with greater propriety, be considered as a productive labourer than a gamekeeper, since the former, by preserving peace and security, promotes the production of real wealth, whilst the latter protects land devoted to no useful purpose. Much expenditure is indeed incurred in the maintenance of such forests. But what of that? It is all the worse if what is got from them comes short of the only condition of utility—an increase of wealth. It is true that in some cases, whilst the fashion lasts, a higher rent may be got from a forest than from either tillage land or sheep-farms, but that does not necessarily represent production. Rent so obtained is nothing more than a transfer of money from one pocket into another. It is no more wealth produced than the money gained by a great singer or musician as the price of a passing enjoyment.

The great benefit of such forests in promoting healthy exercise should not be underrated. When August comes we do long for a little fresh air, and for a freer and less conventional life. But for that timely invigoration of our sun-worn and hard-toiled minds and bodies the duration of our active life would be considerably shortened. And nowhere can we go more likely to quicken our forces than to the mountains and glens, to the forests and moorlands of the Highlands of Scotland. Nor is it of little advantage to Scotland to attract into her midst the Queen and the Princes of the Royal House, nobles and millionnaires, who transfer thither for a season their large establishments, scattering wherever they go a profusion of wealth. Who can tell how much is thus left behind among that thrifty population? But even this is not production, but simply a transfer of wealth northward. Economically, there is only one rule for ascertaining the real value of forests—and it is whether we do extract the most out of a given place. We cannot take the pleasure of the sport as tantamount to the production of wealth. The world is wide enough. There are enough of places wild and desolate to satisfy the keenest tourist, pedestrian, or sportsman, as we were in Sweden, Norway, or the Black Forest, on the Rhine, if they take away some of the wealth produced in this country, provided we can thereby use our own land to better purposes.

* As an evidence of the forlorn condition of the Highland population at the present time, we may notice the state of education, especially in the four Highland counties. From the official returns of the Registrar of Births, Deaths, and Marriages for 1864, it appears that the number of persons signing the marriage register with their marks, because they could not write their own names, was in round numbers 30 per cent. of the men and 46 per cent. of the women. This is considerably in excess of the portions of Scotland, where the proportion seldom rises above 25 per cent. of the men and 39 per cent. of the women, and even worse than in England where the proportions are 24 and 37 per cent respectively. The Highland Improvement Society and the Gaelic Society, an auxiliary of which is established in London, have done much to improve education in the Highlands and Islands by establishing schools and providing teachers. But their efforts are crippled for want of sufficient support, and certainly they deserve the aid of all who take an interest in the education of the people.

Home Correspondence.

The Cattle Melon and Cattle Mangel—their Cultivation and Uses.—As many still regard this crop only as an experiment, and as I have for two years made it part of my rotation in the growth of cattle food on the farm, I must say I know of no vegetable food so valuable for use in the months of August, September, October, and November, as the Cattle Melon, whether it is regarded as food for dairy cows, pigs, sheep, or fatting bullocks, and I maintain that they ought now to be admitted into the farming rotation, as they certainly cannot be equalled in acreable produce or feeding value by any of our known root crops during the autumnal months, besides which they are far less trouble than root crops in general; they require no cleaning or preparing for use, nor do they require to be pitted and covered like Mangels, Carrots, &c., but are ready for daily use as they become of sufficient size. The Cattle Melon does not exhaust the land like root crops, and is also a capital alternation where the land has been repeatedly cropped with Turnips, &c. There has been an idea abroad that they require culture as nearly allied as possible to garden culture, but I have proved this to be a mistaken notion, for whenever I have attempted to treat them more liberally with manure than I should Mangel Wurzel or Turnips, I have always failed to secure so good a produce as when I have manured and cultivated for them exactly in the same manner as for Mangel or other root crops. Another idea has prevailed—that the Cattle Melon requires a climate like the southern and eastern counties of England, but my correspondence with parties whom I have supplied with seed for several years does not justify such an opinion, but rather the reverse, for those parties who have grown them in the western and northern counties, also in Ireland and Scotland, report very favourably of the produce; in fact, wherever the rainfall is greatest there they flourish the most, for although a certain warmth of climate is necessary to enable them to ripen their seed, yet large crops may be grown where the climate is moist and late, if the fruit are constantly and daily cut and used as food for cattle. Some of my best sorts, both of Melons and Marrows, were products of America originally, and my relatives who have resided there during the last 30 years, grow them to a large extent for cattle and pig-feeding, never less than 20 acres in a year upon each farm, in fact it is a common thing to grow the Maize or Indian Corn in alternate lines with the Cattle Melon and feed them off together with pigs and bullocks, and upon this food only they will fatten fit for the butcher. The intercultures of roots, Indian Corn, &c., will answer best in this country, because it gives plenty of room for the trailing habit of growth peculiar to the Melon and Marrow tribes; it is true that only the early sorts of American dwarf Maize will ripen in this climate, yet any of the Maize kinds will produce valuable pig food used in the unripe state. In previous seasons it would have been useless to recommend the Melon crop for general agricultural purposes, because the seed was so expensive that it would cost from 1*l.* 10*s.* to 5*l.* to seed an acre of land, but now the best seed of the most productive and best feeding sorts can be obtained at a cost of less than 1*l.* per acre. In my former papers upon the Cattle Melon I have stated the best method of planting, &c., and at present I forbear saying more than that I am convinced from past experience that no crop is so valuable as a combined crop of Melons and Mangels. *Joseph Blundell, Burskedon, April 24.*

Iron for the Cattle Plague.—In support of the theory of your correspondent Mr. Belfield, I can state that, except perhaps in a few isolated cases, the cattle plague has been unknown in the ironstone district of the Wealds of Kent and Sussex. I am bound to add, however, that the exemption is not confined to this district, but extends for some miles beyond it. Would your correspondent, Mr. Constable, give his authority for the outbreak of cattle plague, about 100 years ago, having been preceded by a summer of extraordinary heat? I had before seen it stated that the preceding summer had been cold and wet. Accurate information on such points would be, I believe, of great value. *W. C. M., Lamberhurst.* [It will, we fear, be found that all attempts at generalising the *circumstances* of the attack have failed to explain it. A new poison has been introduced and spread.]

Ploughs.—As regards implements, more especially ploughs, the farmer's chief question ought to be not so much which is the best plough—there is hardly a hair to split between Howard, Ransome, Hornby, &c.—but rather which plough stands the greatest tear and wear and costs least for repair. Several years' experience of four Howards' P P used as swings, and two as wheels, and one of Ransome's Y L as swing, and two as wheels, leaves the palm to Ransome. The fathers of the modern wheel plough found it a mere implement, but by combined skill and capital they have made it a machine so perfect, that when properly adjusted and working on favourable ground the management is within the powers of a mere lad. Emigration, manufactures, railways, and public works are everywhere drawing off the best class of agricultural labourers, hence simple, light, handy wheel ploughs will command greater attention. *B. M. F.*

Societies.

ROYAL AGRICULTURAL OF ENGLAND.

MONTHLY COUNCIL: *Wednesday, May 2, 1866.*—Present—Lord Tredegar, President, in the Chair; Earl Cathcart, the Earl of Shrewsbury, the Earl of Powis, Lord Berners, Lord Feversham, Lord Walsingham, Major-Gen. the Hon. A. N. Hood, the Hon. A. H. Vernon, Sir J. V. B. Johnstone, Bart., M.P.; Sir A. R. Macdonald, Bart.; Sir J. V. Shelley, Bart.; Sir Watkin W. Wynne, Bart., M.P.; Mr. Acland, M.P.; Mr. Amos, Mr. Barnett, Mr. Barthropp, Mr. Bowly, Mr. Cantrell, Colonel Challoner, Mr. Clayden, Mr. Dent, M.P.; Mr. Druce, Mr. Brandreth Gibbs, Mr. Hamond, Mr. Holland, M.P.; Mr. Hoskyns, Mr. Hutton, Mr. Jonas, Colonel Kingscote, M.P.; Mr. Lawrence, Mr. Pain, Mr. Randell, Mr. Rigden, Mr. Sanday, Mr. Shuttleworth, Mr. H. S. Thompson, Mr. Torr, Mr. Turner, Mr. Wallis, Mr. Jacob Wilson, Professor Wilson, Mr. Frere, and Dr. Voelcker.

The following new Members were elected:—

Corbett, Richard John, Cirencester
Herbert, Major Edmund, Llansantffraed House, near Abergavenny
Marsh, Josiah, Hawkedon Hall, Clare, Suffolk
Smith, Richard Sadler, Broad Hinton, Swindon, Wilts

FINANCES.—Major-General the Hon. A. N. Hood presented the report of the Committee, from which it appeared that the Secretary's receipts during the past month had been examined by the Committee, and by Messrs. Quilter, Ball, & Co., the Society's accountants, and were found correct. The balance in the hands of the bankers on April 30 was 1424*l.* 1*s.* 9*d.*

DISCUSSIONS.—The following arrangements for the weekly meetings of the Council were announced:—Wednesday, May 30, The Supply of Meat to Large Towns; Wednesday, June 13, subject not decided on.

SHOW-YARD CONTRACT.—Mr. Randell presented the report, recommending that Mr. Pollard's tender for the erection of the entrances and adjoining portable buildings be accepted, and that the surveyor prepare the necessary agreement to be executed by the Secretary and Mr. Pollard. This report was adopted.

AGRICULTURAL EDUCATION.—The Earl of Powis having moved that the Education Committee be authorised to offer for 1866 the same amount of prizes in connection with the Cambridge Local Examinations as were offered in 1865, the motion was seconded by Mr. Thompson. Mr. Holland, M.P., then moved as an amendment, that no further grant be made for the Society's prizes in connection with Oxford and Cambridge local examinations. On a division, 18 noes to 11 ayes decided against the amendment, and 19 ayes to 13 noes declared in favour of Lord Powis's motion.

Mr. Holland, M.P., having withdrawn the motion of which he had given notice relative to an application for an amended Charter, Mr. Thompson moved that a committee be appointed to consider the existing provisions of the Charter, and report whether in their opinion it is advisable to make any alterations therein; to this Sir John Shelley moved the following addition—but that no alteration of the Charter be brought before the Committee other than the words "or which shall refer to any matter to be brought forward or at any time pending in either of our Houses of Parliament." The rider was seconded by Lord Feversham, but, on a show of hands, only 5 ayes were in favour of it, and Mr. Thompson's motion was carried by 29 votes.

HOUSE LIST.—Agreeably with the bye-laws the

Council arranged by ballot the following election-list, to be recommended by them for adoption at the ensuing General Meeting on the 22d inst.

ATTENDANCES (FROM THE RISING OF THE NEWCASTLE MEETING, IN 1864, TO THE PRESENT TIME).

NAMES.	Monthly Councils. Total, 23.	Special Councils. Total, 4.	Weekly Councils. Total, 22.	Committees. No. of Meetings	Committees. Attendances.
Ames, Charles Edward, 5, Cedar's Road, Clapham Common, Surrey ..	5	..	4	17	3
Barthropp, Nathaniel George, Hacheston, Wickham Market, Suffolk ..	9	1	..	29	13
Bowly, Edward, Siddington House, Cirencester, Gloucestershire ..	13	1	2	13	9
Cheshan, Lord, Latimer, Cheshan, Bucks	8	..	..	11	7
Clive, George, M.P. (Elected June 7, 1865), Perrystone, Ross, Herefordsh.	1	..	..	..	..
Bruce, Joseph, Exhibition, Oxford	13	2	1	16	12
Gibbs, B. T. Brandeth, Halfmoon Street, Piccadilly, London, W. ..	15	3	9	47	37
Holland, Edward, M.P., Dumbleton Hall, Evesham, Worcestershire ..	14	2	8	49	37
Hornsby, Richard, Grantham	4	..	..	..	..
Hoskyns, Charles Wren, Harewood, Ross, Herefordshire	4	..	6	45	12
Hutton, William, Gate Burton, Gainsboro', Lincolnshire	3	..	3	..	..
Jonas, Samuel, Chrishall Grange, Saffron Walden, Essex	11	..	2	6	4
Kerrison, Sir Edward Clarence, Bart., M.P., Brome Hall, Scole, Suffolk	10	1	12	35	24
Lawes, John Bennett, Rothamsted, St. Albans, Herts	2	..	1	2	4
Lawrence, Charles, Cirencester, Gloucestershire	7	..	1	..	..
Macdonald, Sir Archibald Keppel, Bt., Woodlee Lodge, Liphook, Hants	6	..	1	11	5
Randell, Charles, Chadbury, Evesham, Worcestershire	15	2	1	47	40
Read, Clare Sewell, M.P., Honinghaun, Thorpe, Norwich	..	..	..	..	..
Richmond, His Grace the Duke of, Goodwood, Chichester	..	..	..	..	..
Sanday, William, Helmeyriercpeint, Notts	9	..	1	18	9
Shrewsbury and Talbot, Earl of, Ingestre Hall, Staffordshire ..	2	1	..	..	..
Shuttleworth, Joseph, Hurlsholme Hall, Lincoln	6	..	..	17	9
Smith, Robert, Emmett's Grange, Southmolton, Devon	12	1	..	..	..
Tredegar, Lord, Tredegar, Newport, Monmouthshire	10	1	1	13	10
Wells, William, Holmewood, Peterborough, Northamptonshire ..	11	..	6	26	11

The Council then adjourned to Tuesday, the 15th inst., at 1 P.M., for the completion of their report to the General Meeting.

BATH AND WEST OF ENGLAND.—The following is the programme of the Salisbury Meeting:—The Exhibition will open on Monday, June 4th, when the horses and poultry will be publicly judged, the implement, arts, and horticultural departments will be open to inspection under the most favourable conditions, and the band of the Royal Marines (Plymouth division) will attend. On Tuesday all the departments will open at 9 a.m.; field implements of various kinds will work at intervals from 9 to 3 o'clock; and a Dog Show, for which the funds have been provided by the Salisbury Local Committee, will be open. On Wednesday, usually the grand day of the meeting, all the attractions of Tuesday will be repeated, with the addition of the competition for shoeing prizes, the annual meeting of members, and the Society's banquet. At 3.30 p.m. the combined bands of the Grenadier Guards and the Royal Marines will perform a selection of concerted pieces. Thursday and Friday are the popular days, and as the railway companies are disposed to make every effort to accommodate exhibitors and visitors, it is expected that the exhibition, though deprived of the presence of cattle, will be so unusually attractive in other departments that it will prove one of the very largest and most successful that the Society has ever held.

Reviews.

Agriculture, Ancient and Modern, &c. Parts 17, 18, 19, and 20. By "The Old Norfolk Farmer." J. S. Virtue.

We have omitted hitherto to mention the completion of this work, in which the history as well as the principles and practice of farm management are discussed. The concluding Parts are characterised by the same faults and the same merits to which we have already referred. There is an entire want of any intelligible principle of arrangement among the several chapters or subjects which come under review. In the three last Parts we have the Pests of the Farm described, Insects, Weeds, Birds, and Quadrupeds—then comes Malting and Brewing; and in succession, Capital, Insurance, Rents, Farm Accounts, Prices, the Garden, Paring and Burning, the Wool trade, Rotation of Crops, the Cider Districts, Permanent Pasture, the Homestead, Field Sports, and Land Measuring! Each of these topics is discussed, with a good deal of help from other publications, in rather a gossiping style—amusing anecdotes being interspersed with more instructive and substantial matter, the whole being readable and suggestive, rather than elaborately instructive.

We take an illustrative extract from the last Part:—

"We now come to the method of improving those old pastures that have been deteriorated by the exhausting processes described above: and probably some of our readers would be inclined to apply to such lands the same sarcasm as was flung by a beggar to the poet Pope,* and would rather break up the ground, and taking two or three crops of corn, again lay it down with natural Grasses. For a tenant farmer to do this would be an error, because it would require a long time before the new pasture would yield enough Grass to return a profit upon the outlay, whereas by a judicious outlay an old worn-out pasture may in one season be so improved as to be profitable. The first step is to drain such land—and unless a tenant has a long lease, this is the landlord's work; and if he will not thoroughly execute it, the tenant must be satisfied with open drains. But, with a 21 years' lease, the latter might safely drain if the landlord refuses to do it, because it will instantly begin to make a return. If the fall will admit of it, the drains should not be less than 4 feet deep; but, at any rate, drain as low to that extent as the fall will admit of. Stagnant water in a soil encourages only the coarsest and most unprofitable species of Grass, the finer and more tender kinds being destroyed by it. Some persons object to the draining of pasture land, alleging that the water encourages the production of herbage. And this is true, so far as the coarse unprofitable Grasses are concerned: but it is the getting rid of these and the gradual substitution of a finer and more nutritious herbage that constitutes the value of drainage.

"We had an opportunity of witnessing the good effects of draining pasture land on a large scale a few months back. In the parish of Beccles, in Suffolk, there is a tract of marsh land belonging to the Corporation, containing about 900 acres. It was in ancient times covered by the sea, but which has long receded, and left this marsh a mere bog, and covered generally with water in the winter. In the summer it was sound enough for light cattle, but, being covered with Sedge, Rush, and the coarsest of Grass, it only let at from 12*s.* to 15*s.* per acre. Through the influence and representations of one member of the Corporation, after some years of violent opposition from the majority on account of the expense, Mr. Fenn, the individual referred to, gained his point, and the drainage of the marsh was determined on. Open drains were constructed at regular distances, and brought to the lowest point of the marsh, where a powerful steam-engine was stationed, which raised the water from the drains to a level that discharged it into the Waveney river, only about 8 or 10 yards distant. Never was any enterprise more successful. The Rushes, Sedges, and coarse Grasses have gradually all died out, and a fine quality of herbage has replaced them. The marsh itself is sound enough to bear heavy cattle all the year round; and instead of 15*s.* per acre, it lets readily at 3*l.* 10*s.* per acre, and never lacks tenants. And thus, by the judicious outlay of 4000*l.* or 5000*l.*, instead of an income of 675*l.*, the Corporation is now in receipt of upwards of 3000*l.* per annum."

Facts and Useful Hints relating to Fishing and Shooting. Edited by I. E. B. C. H. Cox, 346, Strand, W.C.

One hundred closely packed octavo pages of small print, full of recipes, instructions, notes, and maxims conveyed in the fewest possible words, with diagrams and illustrations wherever necessary.

We extract a paragraph relating to what may be called an agricultural subject:—

"*Dogs Worrying Sheep.*—1. Shut the dog up with an old ram, who will punish the dog very much. The owner should stand by and cry "worse sheep, worse sheep!" at every attack of the ram, and also to see that no injury is done the dog.

"2. Borrow any dog of a peaceable disposition, and clothe him in a sheepskin as well as you can, and then introduce him to the sheep, who will soon discover that he has "caught a tartar," and the effect will be marvellous.

"3. First give the dog a good dose of jalap, or some other physic, so as to make him somewhat uncomfortable in his inside; then take him of an evening to where the sheep are, and give him a good thrashing, one or two. After which, tie him (muzzled) to a stout, pin by old ram, and leave them in company all night. Let the cord be of a tolerably good length, so as to give the ram free scope with his horns.

"4. Having muzzled the dog, attach a light though strong cord to the collar of the worst-behaved one of each lamb, lead him into the field where the sheep are, take him as near to them as possible, and on his attempting to "worry" draw him up to you at once, and "thong" him severely with a stout dog-whip (previously concealed from the dog); admonish him with the words "ware sheep!" whilst thonging him. Repeat this lesson for three successive days, for an hour at a time. After this take the dog unmuzzled, and, allowing him the full range of the cord, near the sheep, repeat the "thonging dose" if necessary. Repeat this lesson three or four times, and if the "worrying propensities" soon be not subdued, then take him out, muzzled, but otherwise free; and if he does not "worry," the muzzle may be taken off. But if these lessons fail to have a good effect, he may be said to be incurable.

"5. In a gateway in a fence let a strong stake be driven into the ground, and to it let the offending retriever be tied so closely that he cannot stand up; then let, say half a dozen hurdles be pitched on each side, at an angle of 45° from the fence, so as to form a gradual approach to the opening in which the dog is tied, which should not be more than 4 feet wide; then take one sheep on the opposite side of the fence to that where the hurdles are pitched, to attract the others, and quickly drive, with a dog or two at their heels, eight or ten sheep through the opening from the hurdle side, and they will, in their hurry to get through, give the delinquent such a pommelling with their feet as they can ever humans be will not easily forget. The sheep should be driven very fast, or they will either run on one side, or jump over the dog without hurting him."

We must add number 6 to the list of cures thus described; and if it be an old offender who has to be hindered for the future, we are certain that it is in fact the only trustworthy remedy for the evil—shoot the dog.

Poultry as a Meat Supply: being Hints to Henwives, &c., by the Author of the "Poultry Calendar." W. P. Nimmo, Edinburgh.

We have no doubt that the author is a good poultry manager—any kind of live stock, indeed, would be sure to prosper in his hands. His story is quite that of one who would treat any living thing (let alone a reader) with that constant, regular, persistent, not to say prosy attention under which it will do well. And indeed the reader of it is very apt to do just what a well-managed domestic animal seems occasionally disposed to do, *i. e.*, fall asleep over the very best of food. And it is food of the best that is offered here, for the pages of this little book are evidently written by one who has himself experienced and directed all that is here described. The information and instruction, trustworthy as they may be, are, however, conveyed in such a quiet monotony and prolixity of manner, that the best appetite for such food does not hinder us from getting into that dreamy mood which is calculated to promote the digestion rather of food for the body than of food for the mind.

We add that the relations of rinderpest to the subject, to which we referred some weeks ago, are intelligently discussed; and the book quite deserves its title—"Poultry as a Meat Supply; being Hints to Henwives how to Rear and Manage Poultry Economically and Profitably."

The Poultry Book. No. I. By W. B. Tegetmeier. G. Routledge & Sons.

Judging from the first part of this work, which is the only one before us, we have here the promise of a well written and admirably illustrated book on what is now a most popular subject. A thoroughly competent author, first-rate artist, and enterprising publishers ought in combination to ensure success, and we have no doubt they will achieve it.

Farm Memoranda.

WEST SUSSEX: *April* 17.—We can report little progress for some time back; work is getting behind, and no help for it. We have had one continued period of damp and rainy weather, and nothing has been done on the land in good season. Oats and Barley are only partially sown, and no Wheat has been rolled, and it will probably have to do without it this year, as it will be too high before the land is dry enough. But it still looks well, and with bright weather we may expect it to continue so. There is plenty of food for sheep, and it will be late before the land is clear for sowing. Nothing is yet done in the preparation of land for roots, and Mangel will not be got in so soon as we could wish. Peas and Beans are doing well, and all summer food is coming on, and there will be a good deal of hay made, as cattle will not be got to feed the pastures, and the stock of sheep is not so full as usual, so that we may expect prices to remain high as they are now.

We have at last got cattle plague prevention laws in force, that we may hope will make short and sharp work of the disease, where it does prevail. Happily it has not been in this county for some time, and now we hope to escape any further trouble. Like other parts of the kingdom we formed a cattle club, in fact two; the one most largely patronised had 3*d.* in the pound paid when the entry was made, and might call up 9*d.* more if the losses required it. This is now dissolved, and had some losses which the first payment of 3*d.* cleared off and left a small balance, which was handed over to a subscription list for the benefit of those who lost before the Club was established, and some of them lost heavily, while the subscriptions enabled the committee to pay only one-fourth of the value of the cattle lost, instead of three-fourths as they hoped to do. The other Club was established on the principle of making calls to any amount required. I do not know if they had any losses, but they could not have been large. Lambs have not yet come to market in great numbers, but what there are bring high prices; some cross-bred ones sold for 51*s.* and 52*s.*, but they weighed more than 6 stones. The work now will be ploughing and sowing after the sheep as closely as possible, rolling, if weather permit, and preparing for Mangel sowing, which we should like to get in before the second week of May. *G. S.*

MERSE OF BERWICKSHIRE: *April* 28.—From our first sowing on the 6th we enjoyed a pleasant alternation of wet and dry, in the proportion of Falstaff's sack and bread, and throughout our procedure was unavoidably heterodox. Our clay-land neighbours have been fortunate in getting a dry week, and are able to show us some genuine dust. First sowings are coming through, and rolling is the work of the day. After waiting all March, Turnip land had to be ploughed wet and by snatches, and much of the Barley is finished in very middling order. Wheat seems thick enough, but the crust needs vigorous harrowing to prepare for the Grass seeds. On free soils the breadth is considerable, and all winter-sown, but the necessity of growing Turnips has again prevented the sowing of Wheat on Wheat soils. We have got our modest break of Potatos planted, after twice ploughing to obtain a tilth; and our extra acre or two serves to carry on for a few weeks the cattle still on hand. Fat boggs, now at Grass with cake, will be clipped within ten days in regular course. Ewes are getting rather ragged, from a nip of hunger, and their pastures never got a right start. Lambs are generally said to be a big crop, and will be all needed for districts where attention has hitherto been confined to cattle.

Government action and a marked decrease of the

* Pope, who was greatly deformed, was once accosted by an Irish beggar, who asked alms of him. "God mend me," said the poet, "I've no money to spare." The beggar eyed the crooked figure before him from head to foot, and then replied, "Is it God mend your honour? Sure and he'd make a dozen new ones before he'd mend one such as *you!*"

plague are coincident, *argal*, cause and effect. As our county was all but clean when Parliament took the matter in hand, we can view with satisfaction the results of individual action, impeded though it was by authority. As soon as the disease was carried to any farm, the sound cattle were sent off to market, and the plague stamped out. Justice, however, came down on some laggards, and enabled the infection to spread to store cattle and cows. The cleansing of trucks is an excellent provision, and might with advantage be made permanent.

If foreign stock were excluded there would be a better supply at home, but free-trade principles are to be kept in abeyance by Government only when dealing with us natives.

It is easy to sneer at homœopathy because it has not the diploma of "the profession;" yet the fact stands recorded in your columns that it can show a percentage of cures more than double that of the "regular" system.

Some turbulent persons are determined to make sheep take the plague, but such theorists are not of much account, save in Parliament. No sane man would inoculate his sheep with the virus, or force them into close contact with diseased cattle; and, unless that be done, sheep are perfectly safe. Whether they could convey the infection from cattle to cattle is quite a different question. The fact is, the V. S. is now making his first acquaintance with sheep; for with them (the sheep) the knife has always been the best cure.

Farm servants have succeeded in getting an advance of wages equal to 1*s.* 6*d.* to 1*s.* per week. In most cases, too, the "bondage" of hiring a woman to work is done away; and those hinds who have families of workers are most in request. The hind with 15*s.* a week, wet and dry, is the best paid labourer in the country, for he has no apprenticeship and no tools to find, and if he ails, the loss is to his master. *J. T.*

Calendar of Operations.

MAY: ARABLE FARM.—*Wheat*, if "proud," may be flagged, or even mown, as last month, taking care not to cut the stem. Weed Wheat, Oat, and Barley fields.

Beans may require horse-hoeing and hand-hoeing this month. The ridge-plough may slightly hill up the rows, if the intervals are wide enough.

Potatos will need horse or hand hoeing in May, the latter being done with a heavy hacker, and costing 8*s.* per acre.

Carrots should be horse-hoed where the ridge cultivation is adopted, and hand-hoed on the flat.

Mangel Wurzels should also be horse-hoed towards the end of May, and the ridges should then be hoed clean with the hand-hoe, children following the hoers and singling out the bunches. In doing this they seize the best plant in the bunch, and saving it with the left hand, they tear all the rest away at a stroke with the right. Blanks may be filled with these plants.

Drying Clover.—Swedish Turnips should be got in during the early part of the month in Scotland, and in South England in June. The land, after the cultivation already received, may be reduced to a sufficient tilth, and will probably be sufficiently cleaned by once using the cultivator or scarifier, which is to be followed by the harrows, and then by women to gather weeds, pick stones, &c. The land is then to be ridged up in drills, about 26 inches wide; the dung-cart passes up every third furrow, the man behind it pulling out the manure as the horse proceeds, so as that the load shall be emptied in a length of from about 50 to 100 yards, according as the quantity to be applied is from 40 to 20 loads per acre. The filling of the manure may be let at ¾*d.* per cubic yard. The manure thus delivered is divided, by a man who follows, amongst the three drills to which it belongs, and the share of each is spread evenly by three women or boys following the man. If no guano, or especially superphosphate of lime, has been mixed with the dung in the heap, now is the time to apply it broadcast over the field, so that on the splitting of the drill it may be covered with the manure, and at the same time mingled with the earth which is to act as seed bed. In some cases bones and artificial manures are all that the Turnip crop receives; in this case the drills may be opened as before, the manure sown by hand along the furrows, and mingled with the soil by a horse-hoe following the sower. In either case it will be understood that in order to avoid the loss of moisture, both from the soil and the manure, the ploughs which are at work in the field, after opening up about 12 drills on which the dung cart or manure sower is at work, keep working round and round the parties thus engaged, opening furrows on the one side for receiving the manure, and closing them on the other side, thus covering their contents. The sowing machine is immediately to follow all, sowing 2 or 3 lb. per acre. The principal remedies for fly are, a good and rich cultivation and abundant seeding, which all tend to force the young plant rapidly through the season of its danger. It is well to have 12 or 14 drills ready for the sowing machine on the evening before you commence sowing, that there be no loss of time in the morning. A piece of common Turnips may be sown this month, as an early root crop for consumption in September. Land that has been broken out of old pasture, which received its first shallow ploughing in April, should be cross-ploughed now, and may be again worked with grubber, harrows, and roller, until in sufficiently fine tilth for Turnips. It is advisable to plough shallow at the first furrow, and cross-plough deep afterwards, both because the operation of reducing to tilth is better done thus piecemeal, a few inches at a time, and because the ashes which were spread on the surface are thus not buried too deep in the land. Crosskill's clod-crusher will be found useful this and next month.

Rye all through this month, and Vetches during part of it, will have been supplying cattle, sheep, and horses with food. The land which bears these crops is to be ploughed as soon as cleared. The roller must immediately follow the plough, to keep all the moisture in the soil.

Cabbages may be transplanted in the fields, the land having been prepared, as for any other green crop, by deep and clean cultivation, and plentiful manuring. The large Drumhead Cabbage seldom requires a less space than 27 by 24 inches: on very rich or highly-manured land the distance between the rows may be as much as 3 ft.

Lucerne will furnish a succession of cuttings through the summer.

Flax is to be carefully hand-weeded by women and children, who go on the land on their knees, facing the wind, that the bent plants may be blown upright again.

Buckwheat.—One bushel of seed per acre should be sown in rows 12 inches apart, in the middle of this month, on any light soil ploughed early in spring, and now cleaned and reduced to a tilth by the action of scarifier and harrows.

Hemp.—Two bushels per acre of bright heavy seed should be sown on the land prepared for it—in rows 30 inches apart.

Notices to Correspondents.

IMPORTS OF AGRICULTURAL PRODUCE IN THE THREE MONTHS ENDED MARCH 31, 1865 and 1866:—

Articles.		Importations.	
		1865.	1866.
Animals, Living	number		
Oxen, Bulls, and Cows	.. ..	20,343	29,707
Calves	.. ..	1,061	5,170
Sheep and Lambs	.. ..	55,012	134,049
Swine and Hogs	.. ..	14,256	11,976
Bones	.. .. tons	7,850	12,472
Flax	.. .. cwt.	136,012	167,718
Guano, from	tons		
West Coast of Africa	.. ..	1,022	—
United States	.. ..	—	—
Peru	.. .. ..	33,257	22,345
Bolivia	.. ..	1,572	—
British and West India Islands	..	—	673
Other countries	.. .. ..	2,628	2,496
Total	.. .. ..	38,459	25,514
Hemp and Tow, or Codilla of Hemp: From Russia	.. cwt.	2,855	960
Austrian Territories	.. ..	10,347	48,944
British India	.. ..	1,733	4,231
Philippine Islands	.. ..	70,083	15,698
Other countries	.. ..	24,484	8,374
Total	.. .. ..	118,500	78,207
China Grass	.. ..	—	11
Jute and substances of the nature of Hemp	.. ..	142,748	34,496
Hops	.. ..	21,109	9,018
Oil-seed cakes	.. .. .. tons	16,206	20,774
Potatos	.. .. .. cwt.	203,568	96,004
Provisions—			
Bacon and Hams	.. ..	121,745	111,266
Beef, salt	.. ..	53,307	39,325
Pork, salt	.. ..	26,604	52,161
Butter	.. ..	209,056	200,931
Cheese	.. ..	127,184	162,045
Eggs	.. .. number	67,853,200	88,717,200
Lard	.. .. .. cwt.	19,004	41,569
Saltpetre	.. ..	19,637	32,393
Cubic Nitre	.. .. ..	118,417	277,414
Seeds—	.. .. tons		
Cotton	.. .. ..	8,823	27,104
Clover	.. .. .. cwt.	73,341	130,827
Flaxseed and Linseed	.. .. qr.	280,975	238,576
Rape	.. ..	25,261	93,609
Wool, Sheep and Lambs': From Europe	lb.	4,089,471	5,057,040
British Possessions in Sth. Africa		1,260,912	3,797,795
British India	.. ..	1,812,760	1,103,737
Australia	.. .. ..	11,006,898	13,498,843
Other countries	.. ..	4,789,020	2,488,844
Total	.. .. ..	25,847,461	26,846,249
Alpaca and the Llama Tribe	.. ..	488,361	666,274
Yeast, dried	.. .. .. cwt.	26,842	24,530
Corn—Wheat, from Russia	..	1,071,117	2,339,170
Prussia	.. .. ..	1,091,884	293,961
Denmark	.. .. ..	138,699	44,524
Schleswig, Holstein, and Lauenburg	.. .. ..	37,529	12,891
Mecklenburg	.. .. ..	24,828	9,884
Hanse Towns	.. .. ..	1,163	35,612
France	.. .. ..	149,004	1,289,149
Turkey and Wallachia and Moldavia	.. .. ..	148,364	174,835
Egypt	.. .. ..	—	—
United States	.. .. ..	124,426	290,980
British North America	.. ..	2,294	8,789
Other countries	.. .. ..	139,044	750,033
Total	.. .. ..	3,912,614	5,671,948
Barley	.. ..	1,777,649	1,745,551
Oats	.. ..	761,991	1,213,902
Peas	.. ..	40,612	115,155
Beans	.. ..	135,411	67,244
Indian Corn, or Maize	.. ..	1,173,942	3,338,874
Wheat-meal and Flour, from Hanse Towns	.. ..	66,671	17,687
France	.. ..	378,219	1,583,182
United States	.. ..	71,441	140,570
British North America	.. ..	9,959	4,343
Other countries	.. ..	8,206	64,278
Total	.. .. ..	694,496	1,855,510
Indian Corn meal	.. ..	1,408	6,097

SEEDS. *T. & J.* Your White Dutch Clover, as near as we can make out from the sample before us, may be estimated to contain the following seeds in a pint:—

Red Clover	2,080
A Chenopodium, probably *C. album*	320
A Polygonum, probably *P. minus*	320
A Scabious (?)	1,600
Others	580
	4,900

It is not an unusually unclean sample. *B.*

SUTTON'S YELLOW GLOBE, Lowest price per cwt. forwarded on application to Price 1*s.* per lb.
SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

MANGEL WURZEL
SEED from large Bulbs.
Cheaper by the cwt.

	Per lb.—*s. d.*
Good YELLOW GLOBE	0 9
,, ORANGE GLOBE	0 9
,, RED GLOBE	0 9
,, LONG RED	0 9
,, LONG YELLOW	0 9

SUTTON'S
Selected Mangel Seed
from Selected Roots.
Cheaper by the cwt.

	Per lb.—*s. d.*
SUTTON'S Selected YELLOW GLOBE	1 0
Do. do. ORANGE GLOBE	1 0
FISHER HOBBS' ORANGE GLOBE	1 0
STRATTON'S RED GLOBE	1 0
SUTTON'S ELVETHAM LONG RED	1 0
SUTTON'S Selected LONG YELLOW	1 0
New YELLOW INTERMEDIATE	1 6

THE LONDON MANURE COMPANY
(ESTABLISHED 1840),
Have now ready for delivery in dry fine condition,
CORN MANURE, for Spring Use
DISSOLVED BONES, for Dressing Pasture Lands
SUPERPHOSPHATES of LIME
PREPARED GUANO
MANGEL and POTATO MANURES
Also Genuine PERUVIAN GUANO, and NITRATE of SODA, ex Dock Warehouse; SULPHATE of AMMONIA, FISHERY SALT, &c. E. PURSER, Secretary.
Offices, 116, Fenchurch Street, E.C.

Established 1812.
PROCTOR and RYLAND'S
PREPARED BONE MANURES
for
TURNIPS, GRASS, WHEAT, BARLEY, OATS, POTATOS, &c.
and their
BONE SUPERPHOSPHATE of LIME
are the best prepared and cheapest Manures offered to the Public.
Offices—Corn Exchange Buildings, Carr's Lane, Birmingham.
Works—Birmingham, Warwick, Bristol, and Chester.

LAWES' MANURES.
The Manures manufactured by J. B. LAWES for the present season of 1866 are now ready for delivery at his Factories, at the following prices, per ton:—

	£ *s. d.*
LAWES' PATENT TURNIP MANURE, and BONE SUPERPHOSPHATE of LIME	6 6 0
LAWES' SUPERPHOSPHATE of LIME from BURNT BONE or MINERAL PHOSPHATES	5 5 0
LAWES' WHEAT, BARLEY, GRASS, and MANGEL MANURES	8 0 0
CONCENTRATED CORN and GRASS MANURE	12 0 0

These Manures can be obtained of Mr. LAWES, or through the appointed Agents in all parts of the United Kingdom, at prices varying according to cost of carriage.
Genuine Peruvian Guano direct from the Importers. Nitrate of Soda, Sulphate of Ammonia, and other Chemical Manures.
American and other Cakes at market prices.
Address, JOHN BENNET LAWES, 1, Adelaide Place, London Bridge, E.C.; and 22, Eden Quay, Dublin.

Important to Agriculturists.
SUPPLIED TO THE ROYAL FARMS, WINDSOR.
THE BOUTIN MANURE is the best and cheapest for Wheat, Barley, Potatos, Turnips, Mangel Wurzel, &c., and for all kinds of Seeds and Roots that are committed to the earth. It is a liquid in which the seed is steeped, thereby economising labour to an immense extent, is purely chemical, and has no offensive smell. The Boutin Manure is prescribed by three Governments, and highly esteemed throughout Europe for its extraordinary fructifying qualities. English and Foreign Testimonials, Official Report, and directions for use, post-free.
Price for 1 acre of Cereals (Wheat, Oats, Barley, &c.) .. £1 9 6
,, 2 acres ,, ,, ,, ,, .. 2 16 0
,, 3 ,, ,, ,, ,, .. 4 1 0
,, 4 ,, ,, ,, ,, .. 5 6 0
,, 5 ,, ,, ,, ,, .. 6 10 0
,, 10 ,, ,, ,, ,, .. 12 10 0
THE BOUTIN MANURE COMPANY (LIMITED),
117 and 118, Leadenhall Street, E.C.
N.B. The Wheat grown on the Royal Norfolk Farm, Windsor, by the use of the Boutin Manure alone, was far superior to that grown under the application of dung in the usual way, the ears being larger and better filled, and perfectly free from black, rust, or smut, while throughout the other there were many smutty ears. (Testimonial received from Her Majesty's Steward, Sept. 1865.)

THE PATENT NITRO-PHOSPHATE or BLOOD MANURE COMPANY, LIMITED, Manufacturers of ODAMS'S PATENT BLOOD MANURE for CORN and ROOTS. ODAMS'S SUPERPHOSPHATE of LIME and DISSOLVED BONES.
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Robert Leeds, West Lexham, Norfolk.
George Savile, Ingthorpe, near Stamford
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Charles Dorman, 23, Essex Street, Strand.
Thomas Webb, Hildersham, Cambridgeshire.
Jonas Webb, Babraham, Cambridgeshire.
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This Company was originally formed by, and is under the Direction of Agriculturists, circumstances that has mainly earned for it another Title, viz.:—"THE TENANT FARMERS' MANURE COMPANY."
Its Members are Cultivators of upwards of 50,000 Acres of Land, which has been for years under management with Manures of their own Manufacture. The Consumer, therefore, has the best Guarantee for the genuineness and efficacy of the Manures manufactured by this Company.
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&c. &c. &c. &c.
The best and cheapest are the Patent Wrought Iron Adjustable WATER BALLAST ROLLERS,' made all sizes, from 1 cwt. to 5 tons, by the Patentees,
AMIES, BARFORD & Co., Agricultural Engineers, Peterborough, who will forward Price Lists on application.

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"PHOSPHO GUANO surpasses, most certainly, by its more correct and constant composition, the best sorts of Peruvian Guano; and of its superior efficacy there can be not the slightest doubt."—*From Report by the* BARON JUSTUS VON LIEBIG.

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The Prices, including cost of Bags, Carriage Free at any Railway Station or Shipping Port in the Kingdom, are as follow:—

For 10 tons and upwards	...	£12	0	0 per ton.
For 5 tons up to 10 tons	...	12	5	0 ,, ,,
For smaller quantities	...	12	10	0 ,, ,,

Ten Shillings per ton discount for Cash within a month.

To prevent fraud, all Bags are branded with the PHOSPHO GUANO COMPANY'S Trade Mark, as well as that of the Contractors, copies of which appear at the head of this Advertisement.

Company's Trade Mark.

Report by DR. VOELCKER *of a Visit of Inspection to the Phospho Guano Stores at Seacombe, Birkenhead, and of Analyses of Samples taken from the Stores on the 9th of February*, 1866.

"In compliance with Messrs PETER LAWSON & SON'S request, I again the year paid a visit of inspection to the Phospho Guano Stores at Seacombe, Birkenhead, and on that occasion took the following samples from the bulk:—

1. A sample from a bulk of about 1000 tons, stored in Shed No. 1
2. A portion from a heap of about 4000 tons, in Shed No. 3.
3. A sample from about 5000 tons, stored in Shed No. 4.
4. A sample taken from the top of a heap of about 7000 tons in Shed No. 7.
5. A sample from the middle of the same bulk.
6. A sample from the bottom of the same bulk.
7. Men were at work filling barrels for foreign shipment from a bulk of about 7000 tons, and I took a sample from the barrels ready for delivery.
8. A sample from a lot of about 2000 tons, lying in the docks in which Phospho Guano is prepared for use.

"Two of the samples I submitted to careful and complete analyses; in the others I determined only the amount of Soluble and Insoluble Phosphates. The mean results of the eight analyses gave 40.02 per cent. of Soluble Phosphates, and 4.67 of Insoluble, while the Ammonia averaged 3.77 per cent.

"I was conducted over the whole range of the extensive buildings, and left at liberty to select as many samples as I chose, and to take them from any portion of the Stores; and I cannot refrain from noticing that, while doing so, I was much struck with the remarkably fine condition in which I found the whole bulk ready for delivery in the present season.

"Since my last visit, a decided improvement has been effected in the mechanical condition of the Phospho Guano. The bulk for 1866, whilst fully as rich in intrinsically valuable fertilizing constituents, is now obtained in a beautifully fine and uniform condition, which it maintains even when submitted to pressure or violent agitation.

"Much practical inconvenience is frequently experienced in the use of artificial manures rich in Soluble Phosphate of Lime, inasmuch as such manures, although dry and in a good condition when they leave the stores, become sticky or lumpy during their transport, without gaining any appreciable quantity of moisture. This serious inconvenience has been entirely overcome by an improved plan of preparation; and the Phospho Guano can now be sent to any distance, or be subjected to any reasonable amount of pressure, without losing its fine and dry powdery condition.

"Having so frequently expressed an opinion of the intrinsic fertilizing value of Phospho Guano, I need not repeat former statements on the present occasion; but I may be permitted prominently to dwell upon the fact, that whilst the chemical composition of the bulk of 1866 is fully equal to the Phospho Guano of former years, its mechanical condition has been greatly improved.

"AUGUSTUS VOELCKER, Ph.D.,
"Professor of Chemistry to the Royal Agricultural Society of England."

"11, Salisbury Square, London, E.C., Feb. 24, 1866."

There are authorized Agents appointed for the Sale of PHOSPHO GUANO in all the Principal TOWNS and Villages in the United Kingdom; but where any difficulty exists in procuring supplies, Orders may be sent direct to

PETER LAWSON AND SON, GEORGE IV. BRIDGE, EDINBURGH; or,
28, KING STREET, CHEAPSIDE, LONDON, E.C.

PETER LAWSON & SON, Contractors.

☞ *The attention of Farmers is particularly directed to the fact that* PHOSPHO GUANO *is the only Manure the quality of which is vouched for by Chemists of high standing, who have themselves visited the bulks and drawn their own samples for analysis.*

EARTH CLOSETS AND COMMODES.
(Moule's Patent.)

NO UNWHOLESOME CESSPOOLS.

NO BAD SMELLS.

NO WATER PIPES TO GET OUT OF ORDER.

THE BEST NIGHT COMMODES.

MAY BE APPLIED TO ANY CLOSET.

A VALUABLE MANURE SAVED.

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Where full information may be obtained.

"The most feasible plan for the utilisation of night soil is that brought forward by the Rev. Henry Moule, of Fordington Vicarage, Dorset."—*John Wilson, Edington Mains.*

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HAVE 50 ALL ENGLAND CHAMPION PRIZES **WON** IN LESS THAN A YEAR AND A HALF.

AND FOUR OUT OF FIVE FIRST PRIZES AT THE LAST ROYAL SHOW AGAINST MOST SEVERE COMPETITION.

THEY ARE STRONG. LIGHT IN DRAUGHT. SIMPLE. ECONOMICAL.

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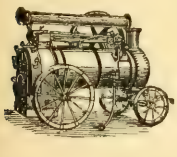

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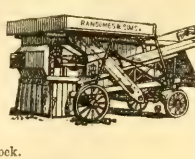
WHICH IS THE BEST AND CHEAPEST MADE.



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PROPAGATING GLASSES.

Each.—s. d.		Each.—s. d.
2 inches in diameter .. 0 3½	12 inches in diameter ..	1 9
3 ,, ,, .. 0 4½	13 ,, ,, ..	2 0
4 ,, ,, .. 0 6½	14 ,, ,, ..	2 6
5 ,, ,, .. 0 8½	15 ,, ,, ..	3 0
6 ,, ,, .. 0 8	16 ,, ,, ..	3 6
7 ,, ,, .. 0 10	17 ,, ,, ..	4 0
8 ,, ,, .. 1 0	18 ,, ,, ..	5 0
9 ,, ,, .. 1 2	19 ,, ,, ..	6 0
10 ,, ,, .. 1 4	20 ,, ,, ..	7 0
11 ,, ,, .. 1 6		

BEE GLASSES, with Conical or Flat Tops.

Each.—s. d.		Each.—s. d.
4 inches in diameter .. 0 6	9 inches in diameter ..	1 8
5 ,, ,, .. 0 8	10 ,, ,, ..	2 0
6 ,, ,, .. 0 10	11 ,, ,, ..	2 6
7 ,, ,, .. 1 1	12 ,, ,, ..	3 0
8 ,, ,, .. 1 4		

CUCUMBER GLASSES.

Each.—s. d.		Each.—s. d.
21 inches long .. 2 0	16 inches long ..	1 4
22 ,, ,, .. 1 10	14 ,, ,, ..	1 2
20 ,, ,, .. 1 8	12 ,, ,, ..	1 0
18 ,, ,, .. 1 6		

Made to any length.

HAND GLASSES,

WITH OPEN TOPS.

Each.—s. d.		Each.—s. d.
12 inches .. 0 6	18 inches ..	0 6
14 ,, .. 0 6	20 ,, ..	10 6
16 ,, .. 0 6	22 ,, ..	11 6
	24 ,, ..	12 6

Painted and Glazed with 16-oz. Sheet Glass.

SHEET and ROUGH PLATE GLASS, SLATES of all sizes. BRITISH PLATE, PATENT PLATE, ROLLED PLATE, CROWN, SHEET, HORTICULTURAL, ORNAMENTAL, COLOURED, and every description of GLASS, of the best Manufacture, at the lowest terms. Lists of prices and estimates forwarded on application to

JAMES PHILLIPS & CO., 180, Bishopsgate Street Without, E.C.

VASES, STATUES, FOUNTAIN BASINS, FLOWER-POTS, &c., in TERRA COTTA and FINE STONE WARE, warranted to stand frost, by JOHN N. BLASHFIELD, Stamford, Lincolnshire. Applications for Drawings and Prices will receive attention.

A Large Assortment of

FOUNTAINS, VASES, JARDINETTES, BALUSTRADES, GARDEN EDGINGS, &c., of elegant designs, in RANSOMES' PATENT STONE, to be sold at Ipswich, at GREATLY REDUCED PRICES, in consequence of the removal of the Works to London. The material closely resembles natural stone, and is far more durable.

Orders received at the Office of the Patent Concrete Stone Company, Limited, 2, Queen Street Place, Southwark Bridge, or at the Stone Works, Ipswich. Also

RANSOMES' PATENT SCYTHE STONES, at 2s. 6d. per dozen.
RANSOMES' PATENT STONE FILTERS, from 10s. each.

FOUNTAIN JETS.

Fig. 526. JET D'EAU. 18 inches, 5s 6d; 24 do., 8s. 9d; 30 do., 13s. 6d

Fig. 524. DOME and CONVOLVULUS. 17s.

Fig. 525. DOME. 8s. 6d.

Fig. 523. CONVOLVULUS, 8s. 6d.

Fig. 521. BARKER'S MILL. 11s.

Fig. 522. WIRE BASKET with BALL. 10 ins., 16s. 6d.; 12 ins., 17s. 6d.; 14 ins., 18s. 6d.

Connecting Screws to all the above Jets, 1s. 6d extra.
Branch Pipe for raising up Jets 1 foot high, 6s. 6d.
A Tap is required to be fixed in the Pipe to regulate the supply of Water to Fountain Jets.

J. TYLOR & SONS, Manufacturers, Warwick Lane, Newgate Street, London, E.C.

Silver Medal and Cup, 1863, awarded for

JAMES'S FIRST PRIZE MANURE CART, which has been awarded 20 PRIZES. Is now fitted up to answer for LIQUID MANURE, for supplying the STEAM PLOUGH, for WATERING STREETS, or for a FIRE ENGINE. Nearly 300 already sold.

Washing.

The last great improvement in Washing Machines is in JAMES'S new Patent PRIZE WASHING, WRINGING, and MANGLING MACHINES, awarded several FIRST PRIZES. Will Wash 20 Shirts in 20 Minutes, with much less injury than with the hand. More than 300 Sold.

Address, I. JAMES, Tivoli Works, Cheltenham.

Card.

SAMUEL N. McGERROW,
GENERAL HORTICULTURAL BUILDER,
Knotty Ash, near Liverpool

Reference permitted to the Nobility and Gentry throughout Great Britain and Ireland.

HOT-WATER APPARATUS, of every description, fixed complete in any part of the country, or the materials, viz., Boilers, Pipes, &c., delivered to any Station.
Estimates on application.
J. JONES & SONS, 1, Princess Street, Lambeth, S.E.

Heating by Hot Water.

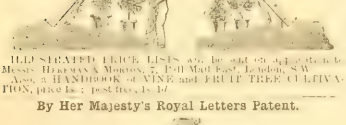
W. J. HOLLANDS, IRON MERCHANT,
31, Bridge Side, London, S.E.
HOT WATER PIPES, in 9-in Stocks, per yard—2-inch, 1s. 3d.; 3-inch, 1s. 9d.; 4-inch, 2s. 6d. FLANGES, from Stock, 1-inch, 2d.; 2s. 6d.; and 3s. each. THROTTLE VALVES, 2s., 4s., and 14s. each. Other Connexions at equally low prices, and all goods of first-class manufacture. Estimates given, and orders by post punctually attended to the same day.

JAMES WATTS AND CO., HOTHOUSE BUILDERS and HOT-WATER APPARATUS MANUFACTURERS, 35, Old Kent Road, S.E.
200 CUCUMBER and MELON BOXES and LIGHTS, and from 30 to 500 LIGHTS and UPWARDS of all SIZES kept in STOCK. Glazed and Painted complete, ready for immediate use. Packed and sent for shipment to all parts of the kingdom. Public and Private Buildings, Warehouses, &c., Heated on the most approved scientific and economical principles. References to the Nobility, Gentry, and Trade in most of the Counties in England.

HOTHOUSES for the MILLION.—Medal, 1862.
INVENTED BY THE LATE SIR JOSEPH PAXTON.

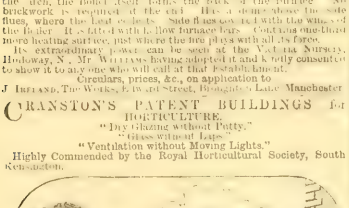
ILLUSTRATED PRICE LISTS may be had on application to Messrs. HEARD & MORTON, 7, Pall Mall East, London, S.W.
Also, a HANDBOOK of VINE and FRUIT TREE CULTIVATION, price 1s.; post free, 1s. 1d.

By Her Majesty's Royal Letters Patent.



THE TERMINAL SADDLE BOILER.—This is superior to all others. Having an end pace which quite crosses the ash, the Boiler itself forms the back of the furnace brickwork is required at the end. Has a dome above the side flues, where the heat collects. Side flues cover 1/3 with the wheel the Boiler fits to the ash-pit. Large furnace bar. Contains one-third more heating surface, put where the fire plays with all its force.
Its extraordinary power can be seen at the Victoria Nursery, Bodoway, N. Mr. WILLIAMS having adopted it and kindly consented to show it to any one who will call on that establishment.
Circulars, prices, &c., on application to
J. IRELAND, The Works, Eldon Street, Brought on Lane Manchester

CRANSTON'S PATENT BUILDINGS for HORTICULTURE.
"Buy Glazing without Putty."
"Glass without Laps."
"Ventilation without Moving Lights."
Highly Commended by the Royal Horticultural Society, South Kensington.



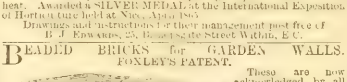
Plans and Estimates free on application. Description, fully illustrated, post free for 20 stamps, from the Author and Patentee, JAMES CRANSTON, Architect, Hereford.
Wych Hall Nurseries, Birmingham.
HENRY J. GROVES, Manager, 1, Temple Row West, Birmingham.

Dublin Exhibition Medal, 1865.
The ONLY PRIZE MEDAL for HORTICULTURAL BUILDINGS has been awarded to
T. H. P. DENNIS, HORTICULTURAL BUILDER in Wood and Iron, HOT-WATER ENGINEER and PATENTEE, Chelmsford, Essex.
PATENT GALVANIZED METAL GREENHOUSES, "The Gardener's Own," are tenants's fixtures.
PATENT GALVANIZED METAL ORCHARD HOUSES as supplied to Mr. ROSES, with his improved ventilation, are the most economical erected on the important branch of gardening.
PATENT GALVANIZED METAL VINERIES, CUCUMBER and MELON HOUSES, STOVES, PEACH HOUSES, &c.
PATENT GALVANIZED METAL GREENHOUSES, "The Novelty," are tenants's fixtures and the cheapest buildings extant as a Lean-to, 20 ft. long, including glass, with 3 ft. rafter, £10; 10 ft., £12 15s. 6d.; 12 ft., £15 10s.
PATENT GALVANIZED METAL WALL TREE COVER should be possessed by every one who has a garden wall; it is a tenants's fixture, and costs for walls, 6 ft. high, 3s.; 7 ft., 3s. 8d.; 8 ft., 10s.; 9 ft. 11s., per foot run including glass.
PATENT GALVANIZED METAL and WOOD GROUND VINERIES and DWARF ORCHARD HOUSES, from 12s. 6d. to 25s. per foot, unglazed.
PATENT GALVANIZED METAL PIT LIGHTS, 4d. per foot.
PATENT GALVANIZED METAL HAND GLASS FRAMES, with best sash bars, 6 oz. glass, painting, and are the best in use. Prices from 4s. to 8s. 6d. each. Special prices for quantities.
Illustrated Catalogues and estimates on application.

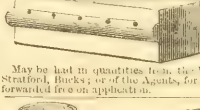
By Royal Letters Patent.

WELLS' PORTABLE FOLDING GROUND VINERY, for Growing and Ripening Grapes without artificial heat. Awarded a SILVER MEDAL at the International Exposition of Horticulture held at Nice, April 1865.
Drawings and instructions for their management post free of E. J. EDWARDS, 25, Bennet's Hill, Street Within, E.C.

BEADED BRICKS for GARDEN WALLS.
FOXLEY'S PATENT.



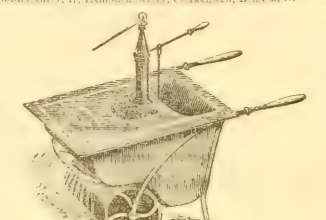
These are now acknowledged by all those who have used them to effect more, with less cost, than anything that has been introduced in connection with Horticulture for the past 30 years.
May be had in quantities from the Works of the Patentee, Stony Stratford, Bucks; or of the Agents, for list of which see Prospectus, forwarded free on application.



SWING WATER BARROW.—This is the best and cheapest article yet introduced for use in Gardens, Farm Yards, &c. The Water may be shipped out, or the Tub filled and poured out, or by merely raising the Handle it can be placed on the ground, and the Frame detached. To hold about 30 or 36 gallons, price 42s. Carriage paid to any station on Great Eastern Line.

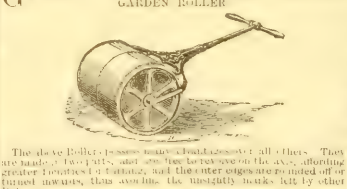
POWERFUL GARDEN ENGINE, suitable for the above, price 45s.
IMPROVED WATER and LIQUID MANURE CARTS.
Catalogues on application.
Manufactured by W. S. BOTTOMLEY, Rose Lane Iron Works, Norwich.

THE IMPROVED PATENT GARDEN WATER and LIQUID MANURE ENGINE may be had of J. DOWIE, the Sole Manufacturer, 17, Lamb's Street, Church-yard, Lee-bon, N.



The three-quarter size of the Engine will throw a stream of water to a height of 50 feet, and is specially adapted for Gardens, Farm Yards, Orchards, &c. It contains about 20 gallons. Price £7 10s., 20 gallons, £10 10s.

GREEN'S IMPROVED NEW PATENT GARDEN ROLLER

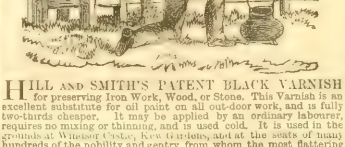


The above Roller possesses many advantages over all others. They are made in Two parts, and can be turned over on the axis, affording greater breadth of bearing, and the outer edges are rounded off or turned inwards, thus avoiding the unsightly marks left by other Rollers.

Diameter, 30 inches,	Length, 24 inches,	£7 10 0
" 24 "	" 22 "	4 10 0
" 20 "	" 22 "	3 10 0
" 16 "	" 17 "	2 15 0

Prices for Rollers fitted with Shafts suitable for Pony or Horse Power, free on application.
Delivered carriage paid to all the principal Railway Stations and Shipping Ports in England.
THOMAS GREEN & SON, Smithfield Iron Works, Leeds. 54 and 55, Blackfriars Road, London, S.; and 119, Lime Quay, Dublin.
N.B. All Orders executed on the day they are received.

Oil Paint no longer Necessary.



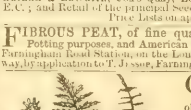
HILL AND SMITH'S PATENT BLACK VARNISH for preserving Iron Work, Wood, or Stone. This Varnish is an excellent substitute for oil paint on all out-door work, and is fully two-thirds cheaper. It may be applied by an ordinary labourer, requires no mixing or thinning, and is used cold. It is used in the grounds at Windsor Castle, Kew Gardens, and at the seats of many hundreds of the nobility and gentry, from whom the most flattering testimonials have been received, which HILL & SMITH will forward on application.
From J. A. FAVIELL, Esq., *Streatham Court.*
"In answer to your inquiries, I beg to inform you I find your Black Varnish an excellent substitute for oil paint upon iron and wood out of doors, and like-wise upon the iron fencing with apparatus essential in applying the Varnish to lines of fencing. I can strongly recommend the Black Varnish for all out-door work as superior to anything I have yet used for the purpose, and it can be applied with great economy by careful labourers."
Sold in casks of about 30 gallons each, at 1s. 6d. per gallon, at the Manufactory, or 1s. 8d. per gallon paid to any Station in the kingdom.
Apply to HILL & SMITH, Brierly Hill Iron Works, near Dudley, and 22, Cannon Street West, E.C., from whom only it can be obtained.

THE IMPROVED LEATHER DRIVING STRAPS for MACHINERY are stronger, more durable, drive better, and cost less than other kinds of Driving Belts. SPECIAL STRAPS for PORTABLE ENGINES. Price Lists free by post.
TURNER'S Patent Strap and Hose Company.
Manufactory: Armit Works, Greenfield, near Manchester.
Warehouse: 81, Mark Lane, London, E.C.
Mr. H. FERRABEE, Agent.

AGRICULTURAL IMPLEMENTS.—Steam Engines, Threshing Machines, Pumps, Carts, Ploughs, Harrows, Reaping Machines, Garden Tools, Lawn Mowers, Garden Rollers, Churns, Garden Tools, &c. Improved Wire Netting. Delivered carriage free. Price Lists per post.
BURGESS & KEY, 39, Newgate Street, London, E.C.
Works, Brentwood, Essex

F. A. HAAGE, JUN.'S, WOOD GARDEN STICKS and TALLIES (Commended by the Royal Horticultural Society).—The above can now be had of all sizes, Wholesale, of BERTRAM & BLAKITE, Cook Quay, Lower Thames Street, London, E.C.; and Retail of the principal Seedsmen and Florists.
Price Lists on application.

FIBROUS PEAT, of fine quality, for Orchids and all Potting purposes, and American Plants, may be obtained from Farningham Road Station, on the London, Chatham, and Dover Railway, by application to T. JESSOP, Farningham Wharf, Farningham, Kent.

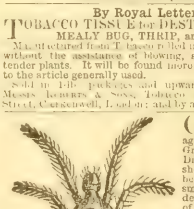


COCOA-NUT REFUSE is becoming scarce, the old reserves will soon be gone. Now sold in bags, 1 for 2s., 10 for 16s., 20 for 30s., 50 for 68s., 100 for £6.
Fourpence allowed for each bag returned carriage-paid.
A Railway Truck-load (not in bags), 40s.
Postage Stamps or Post-office Order, payable to J. BARSHAW & Co., Kingston-on-Thames, SAW.

ROLL TOBACCO CLOTH.—The cheapest and best to use Roll for Smoking Greenhouses and destroying the Fly; equal to Tobacco in strength, 1s. 4d. per lb.; over 10 lbs., 1s. 1d.
JOSEPH BAKER, 10, Gough Square, Fleet Street, E.C.
Post Office Orders payable Fleet Street

By Royal Letters Patent.

TOBACCO TISSUE for DESTROYING RED SPIDER, MEALY BUG, THRIP, and other INSECTS.
Manufactured from Tobacco rolled into Sheets, which will consume without the assistance of blowing, and will not injure the most tender plants. It will be found more economical and very superior to the article generally used.
Sold in 1-lb. packages and upwards, price 5s. 6d. per lb., by Messrs. LEGRICE & SONS, Tobacco Manufacturers, 61, St. John Street, Carnaby-street, London; and by all Seedsmen and Nurserymen.



Red Spider
Magnified.

GISHURST COMPOUND, whether used against Insects and Mildew, on Growing Plants, or as Winter Dressing on Trees at 10s., should be dissolved 48 hours before use. This gets rid of the Insect, and if the Solution be decanted, prevents any staining of foliage. A strength of from 1 to 2 oz. to the gallon of water is recommended for growing Plants; one from 4 to 16 oz. for Trees at rest.
Sold Retail by Nurserymen and Seedsmen, in boxes, 1s., 3s., and 10s. 6d. each.
Wholesale by
PRICE'S PATENT CANDLE COMPANY (LIMITED).

Plagues of the Garden.
SIMPLE AND SURE REMEDY.—By using the
APHIS WASH, these Pests of the Garden, together with Scale, Caterpillars, Slugs, Earwigs, &c., are immediately destroyed. Leaves no stain, but strengthens the Trees or Plants. See *Gardeners' Chronicle*, August 19, 1865; and "Gardeners' Magazine," July 1, 1865.
Sold by Chemists and others, in 1s. bottles, and 2s. 6d. a gallon, with full directions for use.
Wholesale at the City Soap Works, Milton Street London, E.C.

CLIFF'S ANTISEPTIC FLUID.
Manufactured by F. C. CALVERT & Co., Manchester.
A Valuable Sheep Dip, a certain cure for Scab, and a powerful Antiseptic in case of Infectious Diseases. For further particulars apply to Messrs. COOPER & SONS, 27, Lewisham Street, E.C.

LONG'S "DIPPING" for TICK in SHEEP.
LONG'S "SPECIFIC" for SCAB in SHEEP.
LONG'S "MAGGOT LOTION" for SHEEP STRUCK by the FLY.
Well known, effective, Non-poisonous.
Wholesale—S. & E. LONG, 3, Arundel Street, Strand, W.C.
Retail Agents in all parts.

Cattle Plague.

PUBLIC NOTICE.—Owners of Stock are earnestly advised to protect their Stock, by the use of
MCDOUGALL'S PATENT DISINFECTING POWDER, as recommended in both Reports of the Royal Commission.
For washing the bodies of healthy and sick Cattle to prevent infection, use MCDOUGALL'S PATENT DISINFECTING SOAP.
CARBOLIC ACID at lowest prices.
ALEXANDER MCDOUGALL, Manufacturing and Agricultural Chemist, London: 11, Arthur Street West, London Bridge, E.C.
Manchester: Riga Street, Shudehill.
*** Agents throughout the Kingdom.

TO BE LET, with Immediate Possession, a large FLORIST BUSINESS, the Lease and Stock at a valuation or otherwise. JAMES OVER, Mitcham Common, Surrey, S.

TO BE LET, a capital FARM of 155 ACRES, in South Hants, with immediate possession, to a Tenant who will take Stock, Crops, Tillages, &c., at valuation. This to a gentleman requiring a pleasant country residence and valuable occupation presents an opportunity which rarely occurs.
For particulars apply with references to Mr. JOSEPH BLUNDELL, Land Agent, &c., Romsdean, Southampton.

To Farmers and Others.
NEWTON PARK, NEWTON-LE-WILLOWS, NEAR LIVERPOOL AND WARRINGTON.
THE EXECUTORS of the late James Wilson are interested in this Property under a Lease which expires on the 2d February, 1868. There is in hand about 280 Statute Acres, viz., 165 in Grass and 35 under plough; other parts of the holding are let off. The entire rent payable is £262 10s. per annum, but that is reduced by £405 for the parts let off. The land is well adapted for sheep, and is in a high state of cultivation.
The Bailiff, Mr. JEFFS, will show the Premises. Tenders to be sent to JOHN H. T. MANNING, Solicitor, Orange Court, Liverpool, on or before the 7th May next, but the Executors do not bind themselves to accept any Tender.

Sales by Auction.

International Horticultural Exhibition.

MR. J. C. STEVENS has received instructions from the Executive Committee of the International Horticultural Exhibition at South Kensington, to SELL by AUCTION, in the Building, on SATURDAY, May 26, and following days (Sunday excepted) the PLANTS, COLLECTIONS of PLANTS, HORTICULTURAL IMPLEMENTS, &c., that the owners may be desirous of disposing of after the closing of the Exhibition.

Mr. J. C. STEVENS therefore hints that all persons intending so to dispose of their Plants, will immediately furnish him with a descriptive list for insertion in the Catalogue.

Terms and further particulars may be obtained upon application to the Auctioneer, 38, King Street, Covent Garden, W.C.

Important Sale of Plants at Claremont, Surrey.

BY ORDER OF THE TRUSTEES OF HIS MAJESTY THE LATE KING OF THE BELGIANS.

MR. J. C. STEVENS begs to announce that he has been honoured with instructions to prepare for SALE by AUCTION, at Claremont Gardens, Esher, Surrey, on MONDAY, June 4, and following days, at 12 o'Clock precisely each day, without reserve, by order of the Executors, the whole of the Plants of the Belgians, the Choice and Select Collection of STOVE, GREENHOUSE, and ORNAMENTAL-FOLIAGED PLANTS, including Dracænas, Palms, Caladiums, Orange Trees, Indian Azaleas, Rhododendrons, Ericas, Epacris, Acacias, Tea Roses, Dracænas, Gardenias, Abeautas, Crotons, Cyanophyllums, Marantas, Begonias, Gardenias, Camellias, Ixoras, Allamandas, Clerodendrons, Pleromas, Oxybobuses, Cytisus, Conifers in pots, Leschenaultias, French Geraniums, &c.; and a large assortment of Bedding-out Plants, Fruiting and Succession Pines, Vines, &c.

On view the Friday and Saturday prior, and Mornings of Sale, and Catalogues had of Mr. J. C. STEVENS, Horticultural Auctioneer and Valuer, 38, King Street, Covent Garden, London, W.C.

SALE THIS DAY AT HALF-PAST TWELVE PRECISELY.

Bedding Plants, Carnations, Picotees, &c.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on SATURDAY, May 5, at half-past 12 o'Clock precisely, INDIAN AZALEAS in bud, fine new double DELTZIA CRENATA, Prize PINKS, PICOTEES, and CARNATIONS, GERANIUMS Mrs. Pollock and other good varieties; Stove and Greenhouse Climbers, Hardy and other Ferns, Cacti in sorts; fine Dahlia Roots, Rock and Border Plants, &c., &c.

On view the Morning of Sale, and Catalogues had.

Important Sale of Plants from Norfolk.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY, May 7, at half-past 12 o'Clock precisely, without reserve, a Collection of YELLOW CARNATIONS and PICOTEES, NEW FRENCH and other CARNATIONS, PICOTEES, GERANIUMS Mrs. Pollock and other good varieties; Stove and Greenhouse Climbers, Hardy and other Ferns, Cacti in sorts; fine Dahlia Roots, Rock and Border Plants, &c., &c.

On view the Morning of Sale, and Catalogues had.

Choice Minerals and Fossils.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY, May 8, at half-past 12 o'clock precisely, the entire Collection of Choice MINERALS and FOSSILS of F. SARGENT, Esq., who is going up Collecting, including his efficient Specimens of rare Substances, and a few polished.

On view the Morning of Sale, and Catalogues had.

Very Important Collection of Choice Shells.

MR. J. C. STEVENS has received instructions to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, May 9, at half-past 12 o'Clock precisely, the First Portion of the Valuable and Select COLLECTION of SHELLS of the late Dr. Meade, deceased, late Resident at Mauritius, who spared no expense, for many years past, in obtaining the most perfect and rare species that could be obtained.

Catalogues are preparing, and will be ready one week previous to the Sale.

Miscellaneous Sale.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on FRIDAY, May 11, at half-past 12 o'Clock precisely, a Choice Collection of CARNATIONS, PICOTEES, PINKS, VIOLETS, HELIOTROPES, and CALCEOLARIAS, TREE PELARGONIUMS, FUCHSIAS, and a variety of hardy Herbaceous Plants.

On view the Morning of Sale, and Catalogues had.

Importation of Rare Orchids from Mexico and India.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY, May 14, at half-past 12 o'Clock precisely, a Collection of ORCHIDS, comprising, in perfect health, a variety of Scarce and very rare and fine Odontoglossums and Oncidiums, some Specimens of Epidendrum ciliare, &c., and received per steamer Shannon from Mexico. Also a fine Collection of Vascellabras, Vandas, Aerides, and Dendrobiums from India.

On view the Morning of Sale, and Catalogues had.

Interesting Sale of a Curious Collection of Ancient Rifles of the XVIIth and XVIIIth Centuries.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY, May 15, at half-past 12 o'Clock precisely, a most curious Collection of ANCIENT RIFLES of the XVIIth and XVIIIth CENTURIES, which have been collected with great trouble and expense, to show the principles of Rifling at various dates, and a very complete Collection of Ancient FIRE ARMS, viz. early Portative Cannon, Match, Wheel, and Flint Locks, serves (examples of this very rare lock), and early Flint, Percussion, and Zündnadel Guns and Pistols, showing with unusual completeness the gradual development of Firearms.

On view the Morning of Sale, and Catalogues had

Important Sale of Scientific Instruments.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on FRIDAY, May 18, at half-past 12 o'Clock precisely, a first-class Collection of Valuable PHILOSOPHICAL INSTRUMENTS, PHOTOGRAPHIC APPARATUS, and a variety of Miscellaneous Articles

On view the Morning of Sale, and Catalogues had.

Bedding-out Plants.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on SATURDAY, May 19, at half-past 12 o'Clock precisely, a Collection of BEDDING GERANIUMS, CALCEOLARIAS, VERBENAS, CARNATIONS, PINKS, RUSTIC SEATS, STOOLS, &c.

On view the Morning of Sale, and Catalogues had.

First-rate Nursery Business for Sale.

MR. J. C. STEVENS has received instructions from Mr. Joseph Mead, of the Nursery, Great Yarmouth, who are retiring from business, to offer for SALE, by Private Contract, the LEASE and GOODWILL of their well-known BUSINESS, which has been established upwards of 40 years, and commanding a very extensive trade, the Stock of Hardy and Greenhouse Plants, including several thousand in Pots, Valuable Stools, Pits, Frames, Propagating Houses, Garden Implements, Horse, Carts, Dog Cart, &c., to be taken at a Valuation.

For further particulars apply to Mr. J. C. STEVENS, Horticultural Auctioneer and Valuer, 38, King Street, Covent Garden, who can strongly recommend the before-mentioned concern.

Dr. Lindley's Botanical Library.

MR. J. C. STEVENS begs to announce to the numerous applicants for Catalogues, that he has SOLD the above LIBRARY by Private Contract, in One Lot, to the Royal Horticultural Society.

Auction Rooms and Offices, 38, King Street, Covent Garden, London

Dr. Lindley's Scientific and General Library.

MR. J. C. STEVENS begs to announce that he has been favoured with instructions from the Executors of the late Dr. Lindley to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, May 30, at half-past 12 o'Clock precisely, without reserve, the MISCELLANEOUS and GENERAL LIBRARY, being the portion not taken by the Royal Horticultural Society, including many very valuable works elegantly bound; also, a MICROSCOPE, and sundry Miscellaneous Articles, being a portion of the Effects of the late Dr. Lindley.

On view the Day prior and Morning of Sale, and Catalogues had.

Important Notice.—To Sportsmen and Naturalists.

THE COLLECTION OF SOUTH AFRICAN HUNTING TROPHIES WHICH BELONGED TO THE LATE ROBERT GORDON CUMMING, AND WAS EXHIBITED IN HIM IN LONDON AND OTHER CITIES.

MR. J. C. STEVENS begs to announce that he has been favoured with instructions from the Executors of the late R. Gordon Cumming, Esq., to Offer for SALE by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on FRIDAY, June 1, and following days, at half-past 12 o'Clock precisely each day, the very Valuable and Interesting NUMEROUS LOT of NATURAL CURIOSITIES, including the following specimens, the following:—25 Skulls of Lions, Tigers, Bears, and Panthers, Giraffe Head Stuffed, 2 Elephants' Heads with Tusks, 2 Heads of Hippopotamus, Rhinoceros, Bull Buffalo, Heads of Gemsbucks, 50 Rods, 17 Caiguethian Stags, 62 Rhinoceros Horns, 10 Lions' Skins, Robes of Leoparas and other Skins, Assagais, Knobkerrys, and Walking-sticks of Rhinoceros Horn, and many other specimens collected by Mr. Gordon Cumming in Africa and elsewhere. Also a large and very valuable collection of EGGS of BRITISH BIRDS, from Golden Eagle to Golden-crested Wren.

On view the Day prior and Mornings of Sale, and Catalogues had.

Periodical Sale of Poultry and Pigeons.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY, June 5, at half-past 12 o'Clock precisely, 200 pens of choice POULTRY and PIGEONS, from the yards and lofts of well-known Breeders and Exhibitors.

On view the Morning of Sale, and Catalogues had.

Miscellaneous Assemblage.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on FRIDAY, June 8, at half-past 12 o'Clock precisely, a variety of SCIENTIFIC ARTICLES, NATURAL HISTORY SPECIMENS, JEWELLERY, BOOKS, PICTURES, &c.

On view the Day prior and Morning of Sale, and Catalogues had.

Seed of Picea Nordmauniana.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., during the Month of MAY, 500lb. of CLEAN SEED of PICEA NORDMANNIANA.

The exact date of Sale and further particulars will be shortly announced.

Importation of Tree Ferns from Melbourne.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., during the Month of JUNE, a fine Importation of TREE FERNS from Melbourne, including Dicksonia antarctica, Alsophila australasica, &c., from 3 to 12 feet high.

The exact date of Sale, and further particulars, will be shortly announced.

Collection of Established Orchids removed from the Continent.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., during the Month of JUNE, a Collection of ESTABLISHED ORCHIDS, the property of a Gentleman deceased, removed from the Continent.

More detailed particulars and the Day of Sale will be shortly announced.

Importation of Rare Plants from Sydney.

MR. J. C. STEVENS will SELL by AUCTION, during the Month of JUNE, at his Great Rooms, 38, King Street, Covent Garden, W.C., several WARDIAN CASES of RARE PLANTS, shipped by a Correspondent in Sydney.

More detailed particulars and date of Sale will shortly be announced

Portion of the Stock of Rustic Garden Work of a well-known Manufacturer.

MR. J. C. STEVENS begs to announce that he will include in his Sale of PLANTS, during the Season, a large quantity of RUSTIC GARDEN SEATS, STOOLS, VASES, BASKETS, &c.

On view the Morning of Sale, and Catalogues had.

Dried Plants.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., during the Season, several small HERBARIUMS, SPECIMENS of WOOD, &c., the property of a Botanist deceased.

The Day of Sale and further particulars will be shortly announced

The late Mr. H. Cuming's Duplicate Shells, being the portion not taken by the British Museum.

MR. J. C. STEVENS begs to announce that he has been favoured with instructions from the Executors of the late H. Cuming, Esq., to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., during the Month of JUNE, that portion of the valuable Collection of LAND and MARINE SHELLS, not taken by the Trustees of the British Museum.

The Days of Sale and further particulars will be shortly announced.

Fossils.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., during the season, a valuable COLLECTION of FOSSILS, including many choice Specimens.

The Day of Sale and further particulars will be shortly announced.

The late Mr. W. H. Wheelwright's Valuable Collection of Eggs and Birds.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., during the Season, the Valuable and Extensive Collection of BIRD SKINS and EGGS, the property of the well-known "Bushman," the late Mr. W. H. Wheelwright, of Sweden.

The Day of Sale will shortly be announced.

Medical Books.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., during the Season, a SMALL LIBRARY of about 500 Volumes of Medical Works, the property of a well-known Surgeon.

The Date of Sale will shortly be announced.

British Lepidoptera and Coleoptera.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., during the Season, a Choice Collection of COLEOPTERA and LEPIDOPTERA, the property of a Gentleman deceased.

The Day of Sale and further particulars will be shortly announced.

Valuable Shells.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., during the Month of JUNE, a Choice Collection of 5000 SHELLS, the property of a Gentleman residing on the Continent.

Further particulars will be shortly announced.

New Zealand, Japanese, and other Curiosities.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., during the Season, an interesting Collection of JAPANESE, CHINESE, and NEW ZEALAND WAR CLUBS, SPEARS, BRONZES, CARVINGS, STONE FIGURES, &c.

More detailed particulars will shortly be announced

Consignment of Antiquities from the Continent.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., during the Season, a Consignment of Rare CARVINGS, ANTIQUE CHINA, ASIATIC FURNITURE, and various other interesting effects.

More detailed particulars will shortly be announced

Important Sale of Specimen Stove and Greenhouse Plants at Oxford.

MR. J. C. STEVENS begs to announce that he has been favoured with instructions from the Executors of the late James Norrell, Esq., to SELL by AUCTION, on the Premises, Headington Hill, Oxford, on FRIDAY and SATURDAY, May 18 and 19, without reserve, the whole of the valuable COLLECTION of SPECIMEN STOVE, GREENHOUSE, and ORNAMENTAL-FOLIAGED PLANTS, consisting of splendid Specimen Azaleas, many in full bloom, Camellias, Orange Trees, Epacris, Ericas, Acacias, Caladiums, Crotons, Palms, and a great variety of other valuable Plants, many of which have been Exhibited, and obtained Prizes at the various Shows.

On both Two Days prior and Mornings of Sale, and Catalogues had on the Premises, and of Mr. J. C. STEVENS, 38, King Street, Covent Garden, W.C.

Choice Imported Orchids from Mr. J. Linden's well-known Collections.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY, May 21, at half-past 12 o'Clock precisely, an importation of extra fine ORCHIDS from Ecuador and Columbia, among which are the true and splendid Cattleya maxima, Odontoglossum Hallii, Odontoglossum grande and luteo-purpurascens, Oncidium Sehlimii, cucullatum, Dindema, macranthum, Oncidium bastalabium, Oncidium Wallisii, Trichocentrum albo-purpureum, Oncidium leopardinum, and a great variety of other valuable Orchids from Mr. J. Linden's Collections, and for Sale without reserve.

On view the Morning of Sale, and Catalogues had.

Stoke Newington.

CLEARANCE SALE FOR THE GREAT EASTERN RAILWAY OF ABOUT 50,000 GOOD GREENHOUSE PLANTS.

MESSRS. PROTHEROE AND MORRIS are instructed to SELL by AUCTION, on the Premises, Shacklewell Nursery, adjoining Brooksby Downs, and close to the Amhurst Arms, Shacklewell Lane, Stoke Newington, on TUESDAY, May 22, precisely, by order of Mr. Adam Forsyth, the 21 and being immediately required for the construction of the Great Eastern Extension line of Railway, the whole of the valuable GREENHOUSE and BEDDING PLANTS, including 5000 Fuchsias, Myrtles, and other Greenhouse; 5000 Pelargoniums; 500 Gunnias, 500 Myrtles, 500 Coleus in variety, Iberis sempervirens, 5000 Lobelia speciosa, 5000 Verbenas, 5000 Petunias, 1000 Perilla, Ageratum, Rose Geraniums, Lobelias, Dahlias, 500 Tagetes, Iris Ekeana, 400 Petunias, 1000 choice Chrysanthemums, &c. Also the erection of four Greenhouses, several Lengths of Pits, a quantity of Iron Hot-water Piping, two capital Rollers, Bricks, Paving, and numerous other Effects.

May be viewed the Saturday prior and Morning of Sale. Catalogues may be had on the Premises; and of the Auctioneers and Valuers, American Nurseries, Leytonstone, Essex, N.E.

Epsom Nursery.

SALE OF GREENHOUSE AND BEDDING PLANTS.

MESSRS. PROTHEROE AND MORRIS are instructed by Mr. J. R. Tamplin to SELL by AUCTION, without reserve, at the Epsom Nursery, Epsom, Surrey, adjoining the Epsom Railway Station, on THURSDAY, May 10, at 11 for 12 o'Clock precisely, 800 Choice GREENHOUSE and BEDDING PLANTS, including Fuchsias, Scarlet Geraniums, Calceolarias, Petunias, &c.

May be viewed three days prior to the Sale. Catalogues had on the Premises, and of the Auctioneers and Valuers, American Nurseries, Leytonstone, Essex, N.E.

Choice Greenhouse and Bedding Plants.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, at No. 36 and 38, Gracechurch Street, City, E.C., on MONDAY and SATURDAY, May 14 and 19, at 12 o'Clock, a fine Collection of GREENHOUSE and BEDDING PLANTS, including the usual assortment; and a few Novelties just received from Belgium.

May be viewed the Morning of Sale. Catalogues had at rooms as above; and of the Auctioneers, American Nurseries, Leytonstone, Essex, N.E.

Green Lane, Stoke Newington.

IMPORTANT TO THE TRADE, PROPRIETORS OF PUBLIC GARDENS, GARDENERS, AND OTHERS.

MESSRS. PROTHEROE AND MORRIS are directed by Mr. H. Streatfield to SELL by AUCTION, on the Premises known as Birds' Nursery, adjoining the Waterworks, Green Lane, Stoke Newington, on TUESDAY, May 15, at 12 o'Clock precisely, about 8000 choice GREENHOUSE PLANTS, including 1000 fine Fuchsias, Myrtles, and other Greenhouse; 1,000 Pelargoniums, both of Good and Variegated Geraniums; 3000 beautiful compact Tom Thumb and other Scarlet Geraniums, in No. 3 and 6 pots; 1000 Zonales in bloom; 1000 Lobelias, Calceolarias, Petunias, Lobelia pendulina in pots, Francoa ramosa, Begonias, Coleus, and other Greenhouse Plants. A choice assortment of about 800 Chrysanthemums, Alpine Auriculas, Polyanthus, and other Autumn and Spring BEDDING PLANTS, comprising Scarlet and Variegated Geraniums, Fuchsias, Verbenas, Heliotropes, Ageratum, Salvia splendens, Petunias, Lobelia speciosa, Calceolarias, Cuphæas, Gazania, &c., the whole of which are well-grown and in the best condition. Together with a light Spring Van, a small Tumbril Cart, &c.

May be viewed the Saturday and Monday prior to the Sale. Catalogues may be had on the Premises; and of the Auctioneers and Valuers, American Nurseries, Leytonstone, N.E.

To Tulip Fanciers and Others.

MESSRS. PROTHEROE AND MORRIS are instructed by the Executor of the late Mr. Hooper to SELL by AUCTION, on the Premises, Vine Cottage, New Hampton, Middlesex, on MONDAY, May 21, at 1 o'Clock precisely, the whole valuable Stock of about 2000 Tulips, which have been carefully prepared regardless of expense from celebrated growers, and a large stock of desirable Seedlings of the late Mr. Groom's, and from other unpublished sources. Also the Tulip Stage, nearly new, with Oak supports and Tulip Labels, Tulip Catalogues, and Tulip Boxes, all from Hooper.

May be viewed the Saturday previous and Morning of Sale. Catalogues may be had of the Auctioneers and Valuers, American Nurseries, Leytonstone, N.E.

Nursery to be Sold without Reserve,

BY ORDER OF THE EXECUTORS OF THE LATE MR. JAMES PEARSON.

MR. ELLOART will SELL by AUCTION, on FRIDAY, May 11, at Garraway's, the ESCHOL NURSERY, with Dwelling, Sheds, Greenhouses, Stock, and Premises, nearly 7 acres, situate in Hampstead Road, opposite the Chalk Farm Railway Station, at the Foot of Haverstock Hill. Held for about 40 years unexpired at a Rent of £50 per annum. There is a valuable old business connection, the advantages of which the purchaser will secure. Particulars of the Auctioneer, 7, Chancery Lane, E.C.

Ashford and Stanwell, Middlesex.

TO MARKET GARDENERS, NURSERYMEN, BUILDERS, AND OTHERS.

BY MR. DAVENPORT, at the Mart, on FRIDAY, May 11, at 12 for 1, by order of the TRUSTEES of C. F. TUNNICLIFF, Esq., DECEASED, in THREE LOTS, with possession if required.

MR. DAVENPORT will SELL by AUCTION, at Garraway's, Change Alley, Cornhill, E.C., on FRIDAY, May 11, at 12 o'Clock, the very VALUABLE PROPERTY, the greater portion of which is well adapted for Market Garden Ground or Nurseries, or for Building Purposes, about 8 acres lying close to the Ashford Station, on the Reading and Reading branch of the South-Western Railway, the remainder being in the village of Stanwell, within 1 mile of the high road from Bounslow to Staines, to which there is very considerable frontage. The whole is let on Lease for an unexpired term of three years from Michaelmas next, to Mr. Edward Curtis, who will give early possession on reasonable terms, and will show person over the land.

Particulars may be had on the Premises; of Mr. W. DAVENPORT, Solicitor, 21, Ely Place, Holborn, E.C.; at Garraway's; and of the Auctioneer, 35, Bucklersbury, Mansion House, E.C.

SHANKS' PATENT LAWN MOWERS FOR 1866.

PATRONIZED ON FIVE SEPARATE OCCASIONS DURING THE SEASON OF 1864 BY

HER MAJESTY THE QUEEN,

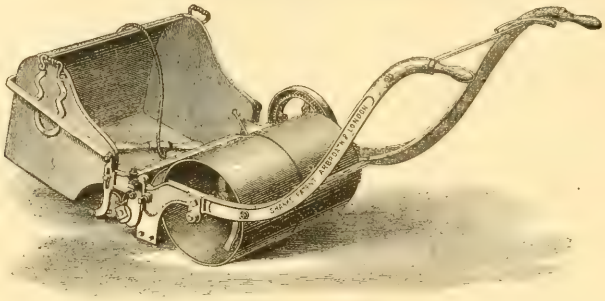
AND ONCE BY HIS MAJESTY THE KING OF SAXONY;

AGAIN ON FOUR SEPARATE OCCASIONS DURING THE SEASON OF 1865 BY HER MAJESTY THE QUEEN;

ONCE BY HIS MAJESTY THE KING OF HOLLAND;

AND ONCE BY HIS MAJESTY THE KING OF PRUSSIA.

EVERY MACHINE WARRANTED.



IF NOT APPROVED OF, CAN BE AT ONCE RETURNED.

PATENT HAND MACHINE.

APRIL, 1866.—ANOTHER 42-INCH HORSE MACHINE HAS JUST BEEN ORDERED FOR

THE ROYAL GARDENS AT KEW.

A. SHANKS AND SON HAVE TO INTIMATE THAT THEIR

MACHINES ARE THE ONLY LAWN MOWERS USED IN THE ROYAL GARDENS AT KEW.

These are the only Machines that can be depended on to give lasting satisfaction.

THESE ARE THE ONLY MACHINES THAT WILL MOW PROPERLY WHEN THE GRASS IS WET.

THESE ARE THE ONLY MACHINES THAT DELIVER THE GRASS WITHOUT STOPPING, THUS SAVING AN IMMENSE AMOUNT OF LABOUR.

SHANKS' PATENT LAWN MOWERS are the only Machines that have been in operation in Her Majesty's Gardens for a quarter of a century, and they are in daily use in all the Public and Principal Gardens in the Kingdom.

A. SHANKS AND SON have now ready for delivery a large Stock of their celebrated LAWN MOWERS. The Machines have been manufactured by skilled workmen of the best materials, and by the aid of the most improved Machinery.

A. S. AND SON have been particularly careful that the advantages in point of durability and simplicity of construction which have always been a peculiarity of their Machines should still remain, and that no improvement be introduced which has merely novelty to recommend it.

SHANKS' PATENT LAWN MOWERS for 1866 are unrivalled for simplicity of construction, ease of working, and durability.

PRICES, including Carriage to any Railway Station or Shipping Port in the Kingdom.

SHANKS' NEW PATENT HAND MACHINE.

Width of Cutter		Easily Worked.	Silent Movement.
10-inch Machine	£3 10 0	*By a Lady*	4*s.* extra.
12-inch Machine	4 10 0		
14-inch Machine	5 10 0	*By a Boy*	

Width of Cutter.		Easily Worked.	Silent Movement.
16-inch Machine	£6 10 0	*By a Man or Two Boys*	4*s.* extra.
19-inch Machine	7 12 6	*By a Man and Boy*	
22-inch Machine	8 7 6	*By Two Men*	7*s.* 6*d.* extra.
24-inch Machine	8 17 6		

SHANKS' NEW PATENT PONY and DONKEY MACHINE.

Width of Cutter.		If with Patent Delivering Apparatus.
25-inch Machine	£12 10 0	25*s.* extra.
28-inch Machine	14 10 0	30*s.* ,,
30-inch Machine	15 15 0	30*s.* ,,

Silent Movement, 12*s.* 6*d.* extra; Boots for Pony, 21*s.* per set;
Ditto for Donkey, 16*s.* per set.

SHANKS' NEW PATENT HORSE MACHINE.

Width of Cutter.		If with Patent Delivering Apparatus.
30-inch Machine	£19 0 0	30*s.* extra.
36-inch Machine	22 0 0	30*s.* ,,
42-inch Machine	26 0 0	40*s.* ,,
48-inch Machine	28 0 0	40*s.* ,,

Silent Movement, 20*s.* extra; Boots for Horse's Feet, 24*s.* per set.

*** ORDERS EXECUTED ON THE DAY THEY ARE RECEIVED.

ALEXANDER SHANKS AND SON, DENS IRON WORKS, ARBROATH.
LONDON OFFICE and SHOW ROOMS: 27, LEADENHALL STREET, E.C.
PARIS OFFICE and SHOW ROOMS: 56, BOULEVARD HAUSSMANN.

A. S. & SON *keep a stock of all sizes of Machines at their London and Paris Establishments, from which Orders are executed on the day they are received.*

☞ 27, *Leadenhall Street is the only place in London where intending purchasers of Lawn Mowers can choose from a stock of from* 150 *to* 200 *Machines All sizes kept there, whether for Horse, Pony, or Hand Power.*

Editorial Communications should be addressed to "The Editor." Advertisements and Business Letters to "The Publisher," at the Office, 41, Wellington Street, Covent Garden, London, W.C.
Printed by WILLIAM BRADBURY, of 13, Upper Woburn Place, in the Parish of St Pancras, in the Co. of Middlesex, and FREDERICK MULLETT EVANS, of No 11, Bouverie Street, in the Precinct of Whitefriars, City of London, Printers, at their Office, Lombard Street, Precinct of Whitefriars, City of London, and Published by them at the Office, No. 41, Wellington Street, Parish of St. Paul's, Covent Garden, in the said Co.—SATURDAY, May 5, 1866.

THE GARDENERS' CHRONICLE
AND
AGRICULTURAL GAZETTE.

A Newspaper of Rural Economy and General News.

No. 19.—1866.] SATURDAY, MAY 12. {Price Fivepence, STAMPED EDITION, 6d.

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☞ *Persons wishing to send the* GARDENERS' CHRONICLE *by Post should order the Stamped Edition.*

ROYAL HORTICULTURAL SOCIETY, SOUTH KENSINGTON.
Notice.—A MEETING of the FRUIT and FLORAL COMMITTEES will be held on TUESDAY NEXT, the 15th inst., at 11 o'Clock.

INTERNATIONAL HORTICULTURAL EXHIBITION and BOTANICAL CONGRESS.
Under the Patronage of Her Majesty The Queen, and of their Royal Highnesses the PRINCE of WALES and the DUKE of CAMBRIDGE.
The EXHIBITION and CONGRESS will OPEN on MAY 22, and continue till May 25. Subscribers' names will be received, and Schedules and Prospectuses may be obtained on application to the Secretary, at the Offices, 1, William Street, Lowndes Square, London.

ROYAL BOTANIC SOCIETY'S GARDENS, in Regent's Park.—SECOND GENERAL EXHIBITION of PLANTS, FLOWERS, and FRUIT, on SATURDAY, JUNE 9. Tickets to be obtained at the Gardens, and of the Society's Clerk, Austin's Ticket Office, St. James's Hall, by Vouchers from Fellows of the Society, price 5s., and on the day of Exhibition 7s. 6d. each.
JOHN WATERER'S AMERICAN PLANTS will be Exhibited in JUNE.

BIRMINGHAM ROSE SHOW, THURSDAY and FRIDAY, July 5th and 6th.—For Prize Lists, apply to Mr. A. Fowler, Sec., Queen's Head, Cherry Street, Birmingham.

HORTICULTURAL DINNER at ST. MARTIN'S HALL, Long Acre, London, W.C., on THURSDAY, May 24.
The Lord Henry Gordon Lennox, M.P., V.P.R.H.S., in the Chair.
Persons intending to be present should apply at once (with remittance) to the Hon. Sec., as places cannot be long taken.
Tickets, to include a Bottle of Wine, 10s. 6d. each.
By an Error of the Engraver the Tickets have been Printed Tuesday, May 24th, instead of THURSDAY, May 24th.
Richard Dean, Hon. Sec., 8, Denmark Villas, Ealing, London, W.

VISITORS to the INTERNATIONAL HORTICULTURAL EXHIBITION are respectfully invited to INSPECT the ROSES, GERANIUMS (Beaton's race), and other Plants and Trees at Paul's Nurseries, Waltham Cross, N. Entrance from the platform, Waltham Station, Great Eastern Railway; half an hour's ride from Shoreditch.

CASTLE KENNEDY FIG.—Plants of the above may now be had at 10s. 6d. and 21s. each; the usual discount to the Trade.
Peter Lawson & Son, Edinburgh and London.

A SPLENDID SHOW of GRAPES on 2-year Canes, now fit for Planting out. Sure of a good crop.
James Crawford, High Beech, Essex.

Fruiting Vines.

E. G. HENDERSON and SON offer the above, with splendid Canes of well-matured growth, with prominent eyes, sure to give a heavy crop of fruit, 10s. 6d. each.
LIST of SORTS sent on application.
Wellington Nursery, St. John's Wood, London, N.W.

MAURICE YOUNG'S DESCRIPTIVE LIST of Conifers, New and Rare Hardy Plants, Ornamental Trees and Shrubs, Rhododendrons, Japanese Novelties, Forest Trees, and Roses, forwarded on application.
Milford Nurseries, near Godalming, Surrey.

TRANSPLANTED RHODODENDRONS.—4-year-old Hybrids saved from the choicest Crimson, White, and Claret-coloured sorts, 12s. 6d. per 100, or 100 for £5.
Richard Smith, Nurseryman, Worcester.

Roses in Pots.

PAUL and SON, in addition to the NEW ROSES of 1866, can offer fine Plants of the finest TEA-SCENTED NOISETTES and best HYBRID PERPETUAL ROSES in pots for Planting during present and next month.
Old Cheshunt Nurseries, N.

Notice.

MR. WM. PAUL begs to announce that he has received orders to the full extent of his Stock of the following NEW ROSES:—H. BARNEY, BLACK PRINCE, LADY SUFFIELD, and GLOBOSA. A few strong healthy plants of GLORY OF WALTHAM, ELIZABETH VIGNERON, MADAME EMILE BOYAU, and PRINCE DE JOINVILLE, can still be supplied at 3s. 6d. each.
Paul's Nurseries, Waltham Cross, London, N.

VERBENAS, FUCHSIAS, PETUNIAS, ROSES, &c., Now and Old, of only those that are worth growing. Nice Plants now ready to send out. DESCRIPTIVE CATALOGUES free.
Wm. Knight, Floral Nursery, Hailsham, near Hurst Green, Sussex.

NEW and CHOICE SEEDS.—Bull's Verbena, Bull's Tropæolum, Cyclamen persicum grandiflorum, Giant 10-week Stock, Perfection Aster, Lilium auratum, Intermediate Stock, James' Prize Calceolaria, Barr's Select Strain of Primula, each 2s. 6d. p. pkt.
Barr & Sugden, 12, King Street, Covent Garden, W.C.

Special Offer.

J. SCOTT, The Nurseries, Merriott, Somerset, offers 10,000 LOBELIA SPECIOSA, and his new L. SPECIOSA SPLENDIDA, 3000 CALCEOLARIA AUREA FLORIBUNDA, 4000 GERANIUM STELLA, and many other fine things (from his unrivalled collection of 500,000 plants), at 15s. per 100; also 2000 fine named DAHLIAS, at 20s. per 100, his selection. CATALOGUES on application.

Bedding Plants, 2s. 6d. per dozen.

J. SCOTT, Merriott, Somerset, has now ready for sending out his unrivalled Collection of the above.
CATALOGUES on application.

BEDDING PLANTS.—Upwards of 100,000 vigorous Plants of the leading varieties. Price from 2s. 6d. per dozen. See CATALOGUE, forwarded upon application.
James Dickson & Sons, "Newton" Nurseries, Chester.

Bedding Plants.

ARCHIBALD HENDERSON begs to announce that his DESCRIPTIVE and PRICED CATALOGUE is now published. Can be had gratis and post free upon application.
Sion Nursery, Thornton Heath, Surrey, S.

Bedding Plants, Bedding Plants.

JAMES HOLDER can supply VERBENAS, SCARLET and VARIEGATED GERANIUMS, DAHLIAS, CALCEOLARIAS, FUCHSIAS, PETUNIAS, LOBELIAS, GAZANIAS, KONIGAS, CUPHEAS, &c. Eight dozen for 20s., or four dozen for 10s. 6d., hampers and package included.
Crown Nursery, Reading, Berks.

100,000 Bedding Plants.

C. ELWIN and CO. beg to offer the above, from 2s. 6d. to 6s. a dozen. Banker's reference or Post Office Order from unknown correspondents.
Address, 9, Park Terrace, Regent's Park; or Clifton Nursery, Clifton Villas, Maida Hill.

WEDDING BOUQUETS, EPERGNES FILLED, Tables Decorated, Conservatories Furnished, by C. Elwin & Co., 9, Park Terrace, Regent's Park.

REBECCA, the finest BEDDING GERANIUM ever raised. Plants ready in May, price 6s. each.
See W. Paul's SPRING CATALOGUE.
Paul's Nurseries, Waltham Cross, London, N.

GERANIUM MRS. POLLOCK.
Price per dozen, 100, or 1000, on application.
James Dickson & Sons, "Newton" Nurseries, Chester.

MRS. POLLOCK GERANIUM.—Strong Plants, by the dozen, 100, or 1000; and all other first-class Bedding Plants, strong. CATALOGUE with prices on application, free.
A few dozens of VIOLA MONTANA, at 6s. per dozen.
T. J. Booth, Ramhill Nursery, Prescot, Lancashire.

To the Trade.—Geraniums.

HUSSEY and SON beg to offer fine plants, well-established—TOM THUMB, 14s. per 100; SILVER-VARIEGATED, 16s. per 100; GOLDEN CHAIN, 18s. per 100.
Mile End Nursery, Eaton, Norwich.

Scarlet, Pink, and Salmon Zonale Geraniums.

WOOD and INGRAM offer fine sturdy Autumn-struck Plants of above kinds, well named, well established in 3½-inch pots, and thoroughly hardened off, at 25s. per 100, package included. Names of varieties sent may be seen in W. & I.'s NEW DESCRIPTIVE CATALOGUE, which will be sent on pre-paid application.
Nurseries, Huntingdon.

BEATON'S GERANIUMS, at Reduced Prices.—Indian Yellow, Donald Beaton, Orange Nosegay, Scarlet Gem, Princess Lichtenstein, and Salamander, 1s. each, 9s. per dozen, not less than six of a sort. Fulgens, Pillar of Beauty, and Waltham Seedling, 1s. 6d. each, 12s. per dozen. Amy Hogg, 1s. 6d. each, 15s. per doz. Alexandra, 2s. each, 18s. per doz. For other sorts see separate Advertisement.
Wm. Paul, Paul's Nurseries, Waltham Cross, London, N.

TO BE SOLD, Cheap, a large quantity of SPECIMEN GERANIUMS, in 12-inch pots, suitable for decorating and furnishing, including Madame Vaucher, Stella, Tom Thumb, Little David, &c.; also 10,000 SCARLETS, in 48-pots, including Mrs. Pollock, Flower of the Day, Bijou, Golden Fleece, Cloth of Gold, and many others.
G. Wells, Grove Nursery, Coleman Street, Camberwell.

WANTED, SCARLET GERANIUMS and VERBENAS.—State lowest cash price per 100, for good stocky plants, delivered at Winderton Station.
John Grieg, The Nurseries, Ambleside.

INDIAN AZALEAS.—Fine bushy Plants, in 48-pots, the best named kinds, 18s. per dozen.
J. R. Tanton, Nurseryman, Epsom, Surrey.

Perry's New Verbenas.

CHARLES TURNER is now sending out the Set of 13 New Varieties of this much admired plant, in strong plants.
The Royal Nurseries, Slough.

VERBENAS, DAHLIAS, GERANIUMS, with a General Stock of Bedding Stuff, upwards of 20,000 Plants, from James Crawford, High Beech, Essex.

DOBSON and SONS' splendid collection of CALCEOLARIAS NOW in BLOOM.
Woodlands Nursery, Isleworth.

The Admiration of the World.

DOBSON'S UNRIVALLED CALCEOLARIAS.
Seed in sealed packets, 1s. 6d., 2s. 6d., 3s. 6d., and 5s.
Dobson & Sons, Seedsmen, Isleworth, London, W.

Blooming Pelargoniums.

WOOD and INGRAM offer very fine Plants of good named varieties of the above in 5-inch pots at 6s. per doz., 45s. per 100; and in 48-pots, 4s. per doz., 30s. per 100.
Names of varieties may be seen in W. & I.'s new SPRING CATALOGUE, which will be sent on prepaid application.
Nurseries, Huntingdon.

STEPHEN BROWN'S SPRING PLANT CATALOGUE contains a very select assortment of BEDDING PLANTS at low prices. Copies free.
Seed and Nursery Establishment, Sudbury, Suffolk.

Genuine Garden Seeds.

WM. CUTBUSH and SON'S DESCRIPTIVE PRICED CATALOGUE of SEEDS, which contains everything New and Old worth growing, can be had post free on application.
Highgate, London, N.

New Catalogue.

CHARLES TURNER'S CATALOGUE of PLANTS for the Spring is now ready. It includes lists of all the leading Bedding Plants, New Dahlias, Pelargoniums, Roses, Verbenas, and select general Collections.
The Royal Nurseries, Slough.

DAHLIAS.—CATALOGUES of the above, also of GERANIUMS, VERBENAS, &c., comprising fine Plants of new and old varieties. Gratis on application to
Messrs. James Fairhead & Son, 7, Borough Market, London, S.E.

British Fern Catalogue.

ROBERT SIM can now send, post free for six postage stamps, Part I. (British Ferns and their varieties, 30 pages, including prices of Hardy Exotic Ferns) of his NEW and PRICED DESCRIPTIVE CATALOGUE of BRITISH and EXOTIC FERNS, No. 7.
*** Part II. (Exotic Ferns) will be issued as early as possible.
Foot's Cray Nursery, S.E.

MRS. POLLOCK GERANIUMS, 12s., 15s., and 18s. per doz.; SCARLET and VARIEGATED GERANIUMS, VERBENAS, CALCEOLARIAS, FUCHSIAS, PETUNIAS, LOBELIAS, KONIGA, &c., bearing included, at the 100, 50 for 10s. 6d. NEW DESCRIPTIVE PRICED CATALOGUE now ready and free on application.
W. Hoopes, Nurseryman, Seedsman, &c., New Wandsworth, S.W.

BUTLER and McCULLOCH'S Collections of Choice FLOWER SEEDS forwarded Post free.
NEW ANNUALS, 5s. and 10s. 6d.
HARDY DO., 2s. 6d., 5s., 10s., 20s.
HALF HARDY DO., 5s., 7s. 6d., 15s., 30s.
For details of above Collections, see B. & McC.'s SPRING CATALOGUE, sent free and post paid upon application.
Covent Garden Market, W.C.

THE BEAUTIFUL GEM PLANT-CASES, for Drawing Room and Table Decoration, just introduced by Barr & Sugden, are now on EXHIBITION at their Warehouse. They are exceedingly elegant and sensonable presents.
An ILLUSTRATED PRICED SHEET is in preparation. See Illustrations, p 419.
Barr & Sugden, 12, King Street, Covent Garden, W.C.

Superb Double Hollyhocks.

The Finest Collection ever Offered to the Public.

W. CHATER has a large Stock of fine healthy Plants now ready, which he can supply on liberal terms.
See Advertisement on other page.
Address, W. Chater, Nurseries, Saffron Walden.

SELECT HOLLYHOCKS.—The month of May being a good season for planting Hollyhocks, the Undersigned begs to offer good, strong, blooming plants of all the leading kinds and Exhibition Flowers, 2s. to 12s. per dozen. Price per hundred on application.
William Perry, Wiseman's, Sawbridgeworth, Herts.

J. IVERY and SON beg to announce that their DESCRIPTIVE PRICED CATALOGUES of AZALEA INDICA, HARDY BRITISH FERNS, ROSES, CONIFERÆ, GRAPE VINES, and SEEDS, may be had on application at their Dorking Nursery.

A. VAN GEERT, Nurseryman, Ghent, Belgium, begs to announce that he has just published a SUPPLEMENT to his GENERAL CATALOGUE of PLANTS, which may be obtained on application of his Agents, Messrs. R. Silberrad & Son, 6, Harp Lane, Tower Street, London, E.C.

JAMES FAIRHEAD and SON, Seed Growers and Merchants, 7, Borough Market, London, S.E.
New and Genuine AGRICULTURAL, GARDEN, and FLOWER SEEDS. Special prices and advantageous offers on application.

Genuine Garden and Agricultural Seeds.

JAMES CARTER and CO., Seed Farmers, Merchants, and Nurserymen, 237 and 238, High Holborn, London, W.C.

LAMOUREUX, CLARK, and CO., Seed Merchants, Plymouth.
The SEED CATALOGUE and GARDEN DIRECTORY for 1866, now published, will give full particulars respecting prices and other matters in connection with the Business. Will be sent gratis and post free to any address in the kingdom.

NEW FARM SEEDS of best selected quality. PRICED DESCRIPTIVE LIST post free upon application.
James Dickson & Sons, Seed Merchants, &c., 102, Eastgate Street, Chester.

RAYNBIRD, CALDECOTT, BAWTREE, DOWLING, and COMPANY, Limited,
Corn, Seed, Manure, and Oilcake Merchants,
Address, 89, Seed Market, Mark Lane, E.C.; or Basingstoke.
Samples and Prices Post free on application. Prize Medals, 1851, or Wheat; 1862, for "Excellent Seed Corn and Seeds.

ZEA CURAGUA, new Striped Japanese Maize.—Greatest novelty of the season. Newly imported Seed, 1s. and 2s. 6d. per packet, sent post free.
Butler & McCulloch, Covent Garden Market, W.C.

English-saved Sowing Rape Seed.

CHARLES SHARPE and CO. have the above to offer, of fine quality. Sample and price forwarded on application. Seed Warehouse, Sleaford.

TO THE TRADE.—Fine ENGLISH WHITE MUSTARD; fine ENGLISH SOWING RAPESEED, clean, good-coloured samples, and at low prices.
H. & F. Sharpe, Seed Growers, Wisbech.

THE LONGSTANDER LETTUCE.—Most remarkable for duration without running, crisp and excellent. Packets 1s. each.
Stephen Brown, Seed Grower, Sudbury, Suffolk.

For Bouquets and as Cut Flowers

THE INVINCIBLE SCARLET SWEET PEA is invaluable. The colour is intense and permanent. Packets 6d., 1s., and 2s. 6d. each. Sold by the principal Seedsmen throughout the kingdom, or of the Raiser,
Stephen Brown, Seed Grower, Sudbury, Suffolk.

DAINTREE'S SEEDLING POTATO is the best early round white Potato in cultivation, and can be obtained at a moderate price on application.
Mr. S. A. Daintree, Fendrayton, St. Ives, Hunts.

CABBAGE PLANTS.—Strong Drumheads for Cattle, Early kinds, Battersea and Nonpareil, 3s. per 1000.
W. Virgo & Son, Wonersh Nursery, Guildford, Surrey.

WETHERELL'S PRIZE SWEDE TURNIP. Apply to W. Jackson & Co., Bedale, Yorkshire.

Fine Long Red Surrey Carrot.

SUTTON and SONS can supply excellent new Seed of the above at very moderate prices, which may be had on application.
Sutton & Sons, Royal Berkshire Seed Establishment, Reading.

Early Sheep Feed—Mustard and Rape.

SUTTON and SONS can supply good new Seed of the above at very moderate prices, which may be had on application.
Sutton & Sons, Seed Merchants, Reading.

NEW PLANTS FOR 1866.

B. S. WILLIAMS, Victoria and Paradise Nurseries, Holloway, London, N., has great pleasure in offering, for the first time, the undermentioned SPLENDID PLANTS. Every care has been used in the selection of the several kinds, therefore he trusts they will give the highest satisfaction.

AZALEAS.

The two following beautiful varieties will be found great acquisitions, and B. S. W. feels confident that they must take first rank as exhibition plants, PRINCESS ALEXANDRA being raised from the same parents as Elegantissimum, which has proved to be one of the best. The present variety will be found superior in quality, with much larger flowers, of a substance never before met with: the most important feature for prolonging the flowering season. PRINCESS HELENA is recommended for its general usefulness, being a free bloomer, and quite distinct in habit.

PRINCESS ALEXANDRA.—A beautiful form of Elegantissimum, with flowers 2½ inches across, petals round and smooth, of great substance, slightly striped with deep crimson; a profuse bloomer. 31s. 6d.

PRINCESS HELENA.—Deep rosy pink, upper petals spotted with lake. The transparence of the flowers causes it to be distinct from all other kinds; habit good and free. 21s.

RHODODENDRONS.

These two elegant varieties are the Seedling productions of Mr. Bouge, late of Stoke Park, Guildford, were exhibited on few seasons since at the Royal Horticultural Meetings, and received Certificates of Merit as valuable additions for greenhouse decoration, being of free-flowering habit, a feature much wanted in a Greenhouse Rhododendron.

DENISONII.—A Seedling from Dalhousianum, crossed with Edgeworthii and Gibsonii; a very fine variety, with splendid habit, which is furnished with clean-looking flattish elliptic leaves and large compound flowers, pure white, with a faint blush towards the base, very elegant (figured in the "Floral Magazine" for May). 21s.

McNABIII.—From ciliatum, crossed with Edgeworthii; a very handsome plant, dwarfish in habit, with smooth elliptic leaves, and beautiful large blush-white flowers. 21s.

ACHIMENES.

Six beautiful varieties raised by Mr. Parsons, of Walsall, and far in advance of any yet sent out. PINK PERFECTION, the same size as Mauve Queen, and equal in substance, while GRANDIS gives the deepest violet shade; all the others will be found equally distinct in their separate colours. Received Certificates of Merit from the Floral Committee.

ADVANCE.—Flowers deep reddish purple, with a light spotted eye, shaded towards the margin, quite distinct. 7s. 6d.

ARGUS.—Colour rich plum, large deep orange eye, spotted with carmine, upper lobes of the flowers beautifully rayed towards the margin. 7s. 6d.

AURORA.—Flowers 2 inches across; colour rich heavy scarlet, with light yellow eye, very effective. 7s. 6d.

GRANDIS.—Flowers deep violet colour, with a deep orange eye, finely spotted and shaded with carmine. 7s. 6d.

PINK PERFECTION.—Flowers very large, colour magenta rose; the upper part of the eye rich carmine, the under lobes beautifully rayed with violet, very fine. 7s. 6d.

STELLA.—Flowers 2½ inches across, clear magenta, orange eye, spotted with carmine, very distinct, and beautiful. 7s. 6d.
The above set for 40s.

SWAINSONIA MAGNIFICA.

Figured in the "Floral Magazine."

A free-growing and free-flowering greenhouse climber; native of Australia. Habit and character of foliage of both the ciliantinus and Swainsonia; while it has the robust and graceful-growing habit of the former, it produces more prominently the long pendent racemes of deep-set bright-coloured pink flowers of the latter, and a pure white centre in the upper petal or lobe. It is well adapted for a cool greenhouse, treated as a pot plant or planted out for a border for pillars or trellis-work. 10s. 6d.

THUNBERGIA FRAGRANS.

B. S. W. believes this to be the most useful plant he has ever had the pleasure of offering, the whole character being quite distinct to any other Thunbergia, and whether grown as a pot plant for planted in the border for covering pillars and trellis-work, it will be invaluable, being free in growth, with ample foliage of a dark green, with great substance. It continues flowering throughout the year, but its principal period is during the winter months, a time when white flowers are scarce. Although grown in a warm stove, it has never shown the least sign of red spider, a most important feature in this class of plants. 10s. 6d.

PASSIFLORA HULLETII.

A stove climber, recently introduced from Rio Negro, on the banks of the Amazon. Its recorded habit is creeping if quadrangulare, the leaves, which are very ornamental, being 8 inches across; the flowers are large, white spotted with pink. Besides being a desirable addition to our fine-foliaged plants, it is expected to be one of our most valuable exotic dessert fruits. It requires a moist stove temperature. Price 21s. each.

PELARGONIUMS, BEDDING.

The following six Zonale Geraniums were raised by Shirley Hibberd, Esq., the eminent horticulturist. It is well known that this gentleman has for some years given his close attention to this class of Bedding Plants, planting in his own experimental garden every kind that has been raised, and carefully testing or proving their worth as regards habit and novelty by comparison. Mr. Hibberd has raised several valuable kinds, but prior to this season none have been sent out under his name. B. S. W. has prevailed upon Mr. Hibberd to allow him to use his name. This will convince all that they are each varieties of more than ordinary merit, and real novelties.

ANDREW MARVEL.—Leaves bright green, with broad brownish zone flowers, large, and of remarkable substance and smoothness; colour vermilion-red; a fine variety. 7s. 6d.

EVANGELINE.—Leaves rich green, with dark zone; smooth circular flowers, colour French white, shading to delicate rose blush, large globular trusses, very distinct and beautiful. 7s. 6d

H. W. LONGFELLOW.—Flowers finely formed, colour deep salmon flesh with red centre, very distinct and effective; leaves dark green, with brown zone; a very fine variety. 7s. 6d.

KATE ANDERSON.—Flowers average size and form, trusses globular, colour the most brilliant shade of true scarlet; blooming profusely, likely to prove the most effective scarlet known; leaves deeply zoned. 7s. 6d

MAGNA CHARTA.—Flowers very large and smooth, top petals the same size as the bottom ones, colour deep red; leaves pale green, with obscure zone 7s. 6d.

MAY QUEEN.—Bright green foliage; flowers large, well formed, and smooth, colour clear rosy pink, shading to white; trusses large and round. A great improvement on Beauté de Suresnes, being much richer in colour. Price 7s. 6d.
The above Set for 40s.

PELARGONIUM ROSALIE (HOLLAND).

The peculiar good qualities of this variety consist of free and compact habit of growth, with a moderate supply of rich salmon-red flowers of great substance and excellent form; large trusses, well furnished with flower-buds, mounted on stous stalks, well above the foliage. For Winter Decoration it will be found invaluable. Received Certificates during the past season for its general usefulness. 7s. 6d.

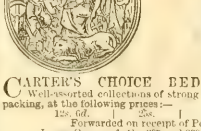
A NEW DESCRIPTIVE and PRICED PLANT CATALOGUE will be sent next week to all customers and applicants.

Victoria and Paradise Nurseries, Holloway, London, N.

CARTER'S CHOICE BEDDING PLANTS.—Well-assorted collections of strong plants, including basket and packing, at the following prices:—

12s. 6d. | 25s. | 50s. | 100s.

Forwarded on receipt of Post Office order.
JAMES CARTER & Co., 237 and 238, High Holborn, W.C.



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(GRATIS TO CUSTOMERS),
CARTER'S NEW BOOK,

BEDDING PLANTS for SUMMER DECORATION of the FLOWER GARDEN. See original article on the above in the Illustrated Plant Supplement of CARTER'S "Gardeners' and Farmers' Vade Mecum."
JAMES CARTER & Co., 237 & 238, High Holborn, W.C.

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CARTER'S NEW BOOK.

VARIEGATED and ORNAMENTAL FOLIAGED PLANTS for GARDEN DECORATION.—See original article on the above in the Illustrated Plant Supplement of CARTER'S "Gardeners' and Farmers' Vade Mecum."
JAMES CARTER & Co., 237 & 238, High Holborn, W.C.

Just Published, post free 12 Stamps
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CARTER'S NEW BOOK,

120 ILLUSTRATIONS of GEOMETRICAL DESIGNS for FLOWER BEDS, with samples of the most admired Bedding combinations. See Illustrated Plant Supplement of CARTER'S "Gardeners' and Farmers' Vade Mecum."
JAMES CARTER & Co., 237 and 238, High Holborn, W.C.

CARTER'S" NEW JAPANESE STRIPED-LEAVED MAIZE.

The following is an extract from *The American Agriculturist* of March, 1866:—"Every one knows the old striped or Ribbon Grass of the gardens, in which the leaves are marked with white stripes, and, like the marks on the showman's zebra, are 'nary one of them alike.' This new corn is much like the Ribbon Grass metaffixed; its leaves bottom ones, but we never knew one of these sports to be perpetuated. The Japanese, who have a great fancy for horticultural stripes and speckles, have succeeded in establishing the peculiarity, so that it is perpetuated with great certainty by the seed. Our friend Thomas Hogg sent home the seed of this novelty to his brother, who planted about ½ of an acre with it. We saw the piece when the plants were about a foot high, and failed to find any in which the leaves were not marked. At that age, the leaves were striped with rose colour as well as white, but we learn that this disappears as the plants get older. From its habit of growth, Mr. Hogg thinks it belongs to a species of Zea different from our ordinary Indian Corn (*Zea Mays*). We judge that it will prove very effective when placed in ornamental groups."

Price per packet, 1s. and 2s. 6d.

The above may be had direct from the Importers on receipt of postage stamps. A plant of this beautiful novelty may be seen at their Holborn Establishment.

JAMES CARTER & Co., 237 & 238, High Holborn, W.C.

CAUTION.—The Japanese Maize is not identical with the Striped-headed Zea Curagua.

Select Catalogues of Seeds and Plants.

ROBERT PARKER begs to announce that his NEW PRICED and DESCRIPTIVE CATALOGUES, containing Select Lists of the best varieties of Vegetable, Agricultural, and Flower Seeds, New and Rare Plants, &c., are now published, and will be forwarded to applicants. All Seeds are warranted to be of the finest possible quality. Intending purchasers are requested to compare the prices with those of other houses.
Exotic Nursery, Tooting, Surrey, S.

JOHN and CHARLES LEE, SEEDSMEN to the QUEEN, beg to offer sealed packets of the following CHOICE FLOWER SEEDS, saved from the finest strains. Per Packet—*s. d.* *s. d.*

CINERARIA, from named flowers . . . . . 2 6 and 5 0
CALCEOLARIA, a superb stock . . . . . 2 6 and 5 0
PRIMULA FIMBRIATA, RED } superior strain 2 6 and 5 0
" " WHITE }
" " MIXED . . . . . 2 6 and 5 0

Royal Vineyard Nurseries and Seed Establishment, Hammersmith, London, W.

Choice Bedding Geraniums.

THOMAS PESTRIDGE can supply strong Plants of MRS. POLLOCK, at 12s. per dozen.

For doz.—s. d.		Per doz.—s. d.
Cloth of Gold 4 0	Ellen Lindsay	1 0
Madame Vaucher 4 0	Christine	3 0
Stella 4 0	Variegated, in varieties ..	4 0

Show and Fancy Geraniums in large 60-Pots, at 8s. per dozen.
Coleus Verschaffelth, 4s. per dozen.
Terms Cash.
The Greenwar Nursery, Uxbridge, Middlesex.

Choice Zonal Geraniums for Bedding.

SALTMARSH and SON offer the following in strong Plants, suitable for immediate use:—

MRS. POLLOCK, 12s. to 18s. per dozen.

*** LUNA.—Rich golden leaf, with deep chocolate zone, good habit, and very effective, 30s. to 42s. per dozen.

*** LITTLE TREASURE.—A very dwarf variety, with slightly zoned leaves and bright scarlet flowers, very suitable for edges or small beds, 18s. per dozen.

N.B.—The stars affixed to the above, which were sent out here last season for the first time, denote the awards of the Royal Horticultural Society at their trial grounds
Moulsham Nurseries, Chelmsford.

New and Beautiful.

TWELVE of the BEST GERANIUMS extant for BEDDING are—

Italia Unita	Variegated Little David	Glowworm
Sunset	Venus	Orange Nosegay
Lotus	Amy Hogg	Fairy
Mrs. Pollock	Indian Yellow	Enamel

One over for carriage. The 12, in fine plants, £1 1s.
Post Office Orders payable at Castle Hedingham.
WM. DILLISTONE, Munro Nursery, Sible Hedingham, Essex.

J. WATSON, New Zealand Nurseries, St. Albans, begs leave to offer his new BRILLIANT SUPERB GERANIUM for Flower Garden purposes, unrivalled, at 24s. per dozen, to be sent out the first week in May. Attached is Mr Robert Fish's description, who has had it on trial the last two seasons:—
"April 12, 1866.
"The Brilliant Superb Scarlet Geranium is one of the very best for bedding in the flower garden or for flowering in pots or boxes. It has the fine compact habit of the old Brilliant, but is rather more luxuriant in growth, has better foliage, which is much more freely supplied with white blotches of a clear colour, and the trusses of flower and the individual flowers are much larger and of a richer scarlet. I have no hesitation in speaking of this variety as one of the most satisfactory that can be used, after trying it for two seasons.
"R. FISH, Butterfields Farm, Luton, Beds."

*** The usual allowance to the Trade.

First-class Certificates.

GEO. SMITH is now sending out his magnificent Nosegay Geranium LE GRAND, together with Zonale Geraniums CHIEFTAIN, SIR ROBERT PEEL, GLADIATEUR, PINK PERFECTION, &c., the finest collection ever offered, and have received 10 First-class Certificates.

G. S. is also sending out his two fine Double FUCHSIAS, and now offers the above for the first time. For description see CATALOGUE in exchange for one postage stamp.
Tollington Nursery, Hornsey Road, Islington, London, N.

BEDDING PLANTS, BEDDING PLANTS. Extra-strong plants of the following now ready, well-established in pots:—

GERANIUMS, in 25 or 50 varied shades, less or more, 100, £1 5s.; 200, £2 5s.; 500, £5.
VERBENAS, 25 fine varieties, 100, £1; 200, £1 17s. 6d.; 500, £3 10s.
100 BEDDING PLANTS in pots, in 20 varieties, including Dahlias, Geraniums, Verbenas, &c., for £1; 200 ditto, £1 15s.; 500 ditto, £4 4s.
CATALOGUES free. Post Office Orders payable on Castle Hedingham.
WM. DILLISTONE, Sible Hedingham, Essex.

UNRIVALLED SEEDS for present Sowing. All of extra fine quality and germinating properties.

CALCEOLARIA, the finest blooming species ever seen, a admiration of the world, having been successfully grown in some of the Royal Gardens and the principal Horticultural, Botanical, and Public Gardens, and by many hundreds of the nobility, gentry, and the principal florists in the United Kingdom; also in America, Australia, Belgium, Brussels, Canada, France, Denmark, Guernsey, Indian, Jersey, New Zealand, Russia, &c. Packets of this strain have been already sent out this season to January 1, 1866.

Sealed packets, 1s. 6d., 2s. 6d., 5s. 6d., 5s. each, post free. A 2s. 6d. packet will produce from 250 to 500 varieties.

CINERARIA, from Prize Flowers, 1s., 2s. 6d., 5s.

A List of the 100 Firms who have received a supply direct from us will be given next week.
DOBSON & SONS, Seedsmen, Isleworth, London, W.

New Petunia, Illuminator.

GEORGE CLARKE has now ready for disposal a few strong Plants of this unique variety; it was exhibited at Regent's Park, June 14, 1865 (the only occasion on which it has been shown), and was awarded a First-class Certificate.

Mr. Shirley Hibberd, in his "Gardeners' Magazine," June 24, 1865, speaks of it accurately thus:—"Another equally meritorious subject was a new Petunia from Mr. CLARKE, of Streatham, and I am particularly glad to commend this variety, as I do not name a third part of the new Petunias I see, for the simple reason that they are generally rubbish. This fine Seedling is called ILLUMINATOR. It is a single flower, the colour a rosy purple, with a broad white stripe up the centre of every petal, so that when the flower is fairly expanded, it presents a distinct white star of five rays. This is distinct from all other Petunias of the class, and as we go back so has Mr. Clarke improved, and I think will beat them all."

The plant is of neat habit, and robust in constitution, and will, doubtless, become as popular in the flower garden as conservatory.

Price 5s. 6d. each. The usual allowance to the Trade if three or more are taken.

Nurseries, Streatham Place, Brixton Hill, S.; and Mottingham, Kent, S.E.

Primula, Calceolaria, &c.

WM. CUTBUSH AND SON are now sending out SEED of their superb PRIMULA SINENSIS FIMBRIATA, which has for many years given great satisfaction.

The *Gardeners' Chronicle* of the 6th of January, in Notices to Correspondents, says:—"The Primulas sent are remarkably fine, richly coloured, full, and densely fringed; they are evidently the produce of a capital strain."

The *Journal of Horticulture* of the 23d of January, says that:—"The finest and richest coloured Chinese Primulas we have yet seen are those raised by Messrs. Cutbush & Son."

Sealed packets 2s. 6d. and 3s. 6d. each.

CALCEOLARIA (*James*).—This is the finest herbaceous variety extant. Per packet 2s. 6d. and 3s. 6d. each.

CINERARIA, from finest named varieties. Per packet 2s. 6d. and 3s. 6d. each.
Highgate Nurseries, London, N.

INTERNATIONAL HORTICULTURAL EXHIBITION.

B. S. WILLIAMS

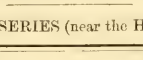
Begs respectfully to invite VISITORS coming to London to this Great Horticultural Gathering to INSPECT his NEW VICTORIA NURSERY. Although exhibiting some hundreds of Plants at South Kensington, the Nurseries during the Exhibition week will contain much to interest, and will be well worth a visit.

CARRIAGE ROUTE from WEST END.—By way of Albany Street, Regent's Park, Park Street, Camden Town, Camden Road, and Holloway Road.

OMNIBUS ROUTES.—The *Favourite* Omnibuses from the London Bridge Railways and Bank, Victoria Station, Charing Cross, Strand, and Chancery Lane, Brompton, South Kensington Museum (close to the International Horticultural Exhibition), Piccadilly, Regent Street, and King's Cross, arrive at and start from the entrance of the Nursery every five minutes.

VICTORIA and PARADISE NURSERIES (near the Highgate Archway), HOLLOWAY, N.

CLIANTHUS DAMPIERI.



MESSRS. VEITCH & SONS

OFFER NEWLY IMPORTED

SEED OF THIS MAGNIFICENT GREENHOUSE PLANT

At the following low prices.

THE SEED IS GUARANTEED TO GROW WELL.

6 Seeds, 1s.; 12 Seeds, 1s. 6d.; 30 Seeds, 3s. 6d.

Special offers to the Trade on application.

ROYAL EXOTIC NURSERIES, KING'S ROAD, CHELSEA, S.W.

MESSRS. E. G. HENDERSON & SON'S

SPRING CATALOGUE

CONTAINS, WITH MANY OTHERS, DESCRIPTIONS AND PRICES OF THE FOLLOWING GARDEN DECORATIVE PLANTS:—

CANNA NIGRICANS.—Rich deep red coloured leaves, an effective broad leaved plant.

VITIS HETEROPHYLLA FOLIA VARIEGATA.—Dwarf and elegant picturesque leaves, as seen at Battersea Park.

VERBENA TELESTIAL BLUE.—The best blue bedder. Per 100.

„ QUEEN of ENGLAND.—White; the most splendid truss of any Verbena out.

„ PRINCESS VICTORIA.—A very elegant variety for ground surface effect, in any design or extent.

„ SCARLET CUSHION.—A fine pot plant, and for every bedding purpose, riband rows, margins, or entire bed.

LOBELIA SPECIOSA SPECTABILE.—The best deep blue, surpassing the old L. speciosa. Per 100.

„ SPECIOSA PICTURATA.—Elegant and effective, white with blue margin. Per 100.

„ TALL HERBACEOUS VARIETIES.—New continental hybrids, of great variety in colour, and fine large petals. 1s. 6d. and 2s. 6d. each.

ORCHIS MACULATA SUPERBA.—A beautiful hardy species.

FUCHSIA, FULGENS MULTIFLORA PUMILA.—A profuse flowering variety, with dwarf growth and fine colour.

AUBRIETIA CAMPBELLI.—Very effective Alpine plant, with uniquely rich violet-blue coloured flowers. Per 100.

SANTOLINA INCANA.—A neat and elegant silvery-grey leaved edging plant, 2 to 6 inches high. Per 100.

THE ELIZABETH IMPERATRICE FORGET-ME-NOT.—A beautiful new rich coloured variety.

CLEMATIS LANUGINOSA NIVEA.—New and splendid pure white-flowered variety.

MIMULUS.—With double flowers, 12 varieties. 1s. 6d. each.

GERANIUM STELLA (NOSEGAY).—With pink flowers; a first-class bedding plant.

„ GARIBALDI (SCARLET).—Unique and perfect habited plant for bedding, pots, or vases, and every decorative purpose.

„ QUEEN of WHITES.—Dwarf and profuse bloomer, best pure white for bedding.

„ KING of WHITES.—Largest and finest truss in the white section.

DOUBLE-FLOWERED GERANIUMS, GLOIRE DE NANCY.—A new double-flowered scarlet Geranium, finest in the section. 5s. each.

„ GERANIUMS.—New varieties of last season. 3s. 6d. strong, 2s. 6d. each, smaller.

NEW IVY-LEAVED GERANIUM, PELTATUM ELEGANS.—With very elegant mauve-coloured flowers; a charming variety for blending with the white.

Also for Special Notice,

TACSONIA VAN-VOLXEMII.—Beautiful scarlet-flowering climber; habit of Passion Flower; strong. 2s. 6d. and 3s. 6d.

CLERODENDRON BALFOURII.—Remarkably elegant and beautiful climbing shrub. 3s. 6d. and 5s. each, strong.

WELLINGTON NURSERY, ST. JOHN'S WOOD, LONDON, N.W.

New Plants.

WILLIAM BULL, F.L.S., begs to intimate that during the International Horticultural Exhibition he will commence SENDING OUT for the first time several NEW and BEAUTIFUL PLANTS introduced from Madagascar, Peru, Philippine Islands, St. Catherine's, Rio Negro, Costa Rica, Para, Port Natal, Java, Jatan, Ascension, Feejee Islands, &c.

Names and descriptions will be hereafter announced. Meantime an inspection is invited.

Establishment for New and Rare Plants, King's Road, Chelsea, Chelsea, London, S.W.

To Intending Exhibitors at the International Horticultural Show at South Kensington.

MR. J. C. STEVENS will feel greatly obliged to Gentlemen intending to DISPOSE of their PLANTS, &c., by AUCTION after the Show, if they would forward to him without further delay a detailed list for the Catalogue, and at the same time to state whether they would like the Plants advertised in the *Gardeners' Chronicle* of Saturdays, May 19 and 26.

Auction Rooms and Offices, 38, King Street, Covent Garden, W.C.

CHOICE VARIEGATED PELARGONIUMS.

Mrs. Pollock	Golden Vase	Rainbow
Sunset	Snowflake	Burning Bush
Yellow Belt	Picturata	Princess Alexandra
Golden Tom Thumb	Argus	Fontainebleau

The above 12 choice varieties, suitable for exhibition, for 21s. basket and packing included.

Address, ALFRED FRYER, Nurseries, Chatteris, Cambridgeshire.

Remittances required from unknown correspondents.

Choice Seeds from Perfect Specimens.

THOMAS WILD, Ipswich, confidently recommends his superior PRIMULA SEED of world-wide celebrity, 2s. 6d. per packet, saved from the finest strain in cultivation.

Standard Cucumber, Orion Melon, Hollyhock, Pansy, Polyanthus, and Balsam at 1s. per packet, saved from growers who spare no expense to obtain the best. Address

THOMAS WILD, Seedsman, &c., The Primulary, Ipswich.

Verbenas, &c.

WOOD AND INGRAM offer fine VERBENAS, by name, in various colours, good plants, well-established in single pots; also HELIOTROPES, in three fine varieties, at 20s. per 100, package included.

LOBELIA PAXTONIANA, from cuttings, bushy plants, all in single pots, at 10s. per 100.

Names of the Verbenas sent may be seen in W. & I.'s NEW CATALOGUE, which will be sent on prepaid application.

Nurseries, Huntingdon.

Superb Double Hollyhocks.

WILLIAM CHATER begs to remind the Admirers of this beautiful flower that now is the best time for planting it out to insure fine spikes and blooms this season.

DESCRIPTIVE CATALOGUES, with instructions for its Cultivation; also prices of Plants per dozen, 100, or 1000, may be had on application.

Seedlings from best named varieties, 4s. per doz., or from 20s. to 30s. per 100.

Bloomed Seedlings, with colours named, very fine, 6s. per doz., and from 30s. to 40s. per 100.

Seed saved from the finest named varieties, very choice mixed 2s. 6d. and 5s. per packet.

In Collections of 12 separate named varieties, extra fine, 10s.; 6 varieties, extra, 5s.

2 named varieties, all good show flowers, 7s. 6d.

6 do. do. do. do. 4s.

WILLIAM CHATER, Nurseries, Saffron Walden, Essex.

New Strawberries.

MRS. NICHOLSON, Eggleseliffe, Yarm, Yorkshire, has great pleasure in sending out these very fine new kinds, raised by her late husband, who devoted so much attention to Strawberries for so many years. These have now been fully tested for three years, and the descriptions given are taken from the *Gardeners' Chronicle* of July 25, 1863, from a report of the "Yarm Strawberries."

ALICE NICHOLSON.—"Fruit conical, flesh yellowish, solid and luscious; size medium, with a very rich Fine and Hautbois flavour, and a good bearer." It is also quite hardy. 25 plants, 20s.; 50 plants, 35s.; 100 plants, 60s.

GLORIA.—"A good-sized handsome round fruit, with a rich piquant Hautbois flavour; a very heavy cropper, and altogether a first-class kind." 25 plants, 20s.; 50 plants, 35s.; 100 plants, 60s.

PRINCE GEORGE (originally named New Orb).—"A good-sized handsome round fruit, moderately rich and juicy, a good bearer, and those who want a large handsome Strawberry will find it here." 25 plants, 20s.; 50 plants, 35s.; 100 plants, 60s.

PLOVER.—"Out of the large number which should be introduced, is one Mr. Ewbank, the Superintendent of the Gardens, has named Plover, a medium-sized fruit, of a rich scarlet colour, with a very rich luscious Hautbois flavour, and a good bearer." 25 plants, 20s.; 50 plants, 35s.; 100 plants, 60s.

N.B.—A remittance must accompany each order.

VERBENA CRIMSON KING,

AS DESCRIBED IN FORMER ADVERTISEMENTS, NOW BEING SENT OUT BY

THOMAS METHVEN,

LEITH WALK NURSERIES, and 15, PRINCES STREET, EDINBURGH.

GENERAL PLANT CATALOGUES FOR 1866.

JAMES VEITCH & SONS

BEG TO ANNOUNCE THAT THE UNDERMENTIONED

CATALOGUES FOR THE PRESENT SEASON

ARE NOW PUBLISHED, AND WILL BE FORWARDED POST FREE ON APPLICATION.

A GENERAL CATALOGUE of STOVE and GREENHOUSE PLANTS, including ORCHIDS, FERNS, ORNAMENTAL FOLIAGED PLANTS, AZALEAS, CAMELLIAS, &c.

A DESCRIPTIVE CATALOGUE of HARDY TREES and SHRUBS, including CONIFERÆ, AMERICAN PLANTS, and the most recent JAPANESE Introductions.

A CATALOGUE of SELECT SOFT-WOODED and BEDDING PLANTS, including the most desirable NOVELTIES of the Season.

☞ *J. V. & SONS' CATALOGUE of NEW and RARE PLANTS of their own introduction will be published on the 15th of May.*

THE ROYAL EXOTIC NURSERY, KING'S ROAD, CHELSEA, LONDON, S.W.

NEW AND BEAUTIFUL PLANTS FOR 1866.

JAMES VEITCH & SONS,

IN SUBMITTING THEIR

ANNUAL LIST OF NEW AND BEAUTIFUL PLANTS,

HAVE GREAT PLEASURE IN DIRECTING ATTENTION TO THE MANY FINE NOVELTIES THEY ARE THIS SEASON ENABLED TO OFFER.

The whole of these having been introduced by J. V. & SONS direct from their native habitats, are now offered for the first time, and can be confidently recommended as being really distinct, and most desirable acquisitions in their respective classes.

N.B. Orders are now being taken, and the Plants will be delivered on and after the 25th of this month.

ATHYRIUM LATIFOLIUM (Presl).

A distinct hardy Fern, found by Mr. Pearce in Chili, from whence it has been introduced. Though having the texture and fructification of Athyrium Filix-fœmina, it is abundantly distinct, not only in structure, but in its apparently smaller size, and on the whole bears more the aspect of Asplenium lanceolatum than of the Lady Fern, while from the Athyrium latifolium of the Lake District it is altogether dissimilar. A nice addition to any collection of hardy Ferns.

Price 7s. 6d. each.

ACROSTICHUM AUREUM.

This is a fine bold-habited semi-aquatic Fern, attaining a height of 3 feet, introduced by Mr. John G Veitch from Cape York, Australia. The fronds are of a pinnate form, the pinnæ being oblong, sometimes emarginate, and at others almost cuspidate, the lower pinnæ of the tall erect fronds being entirely barren, and the upper ones wholly fertile. The venation forms a peculiarly neat and compact network of fibrous tissue. It is usually found on the margins of rivers near the sea. Its striking habit renders it eminently worthy of a place in every collection.

Price 10s. 6d. each.

BEGONIA PEARCEI.

This very beautiful species, which is botanically nearly allied to B. cinnabarina, was introduced from La Paz by our collector Mr. Pearce, whose name has been associated with it. It possesses the quality so seldom found in the same plant, of having both beautifully coloured leaves and large showy flowers; and is a most desirable acquisition to this popular section of plants. Its foliage is very pretty, the upper surface being of a dark velvety green, traversed by pale straw-coloured veins, and the under side of a dull red colour. The flowers are large and bright yellow, and are borne on slender stems well above the foliage. It is figured in the November number of the "Botanical Magazine" for 1865, and has received numerous awards. Price 10s. 6d. each.

BERTOLONIA GUTTATA.

A very fine variegated Melastomad, received by us from Madagascar, although its native habitat is probably Brazil. Its ovate leaves, which exceed 5 inches in length by 3 inches in breadth, are of a dark olive green colour, profusely marked with lines of beautiful rose-coloured spots, which present a charming contrast. It forms a handsome dwarf stove foliage plant of good habit and free growth, and can be recommended as a decided acquisition to any collection. It is figured in the "Botanical Magazine" for August 1865, and has received a First-class Certificate from the Floral Committee of the Royal Horticultural Society. Price 15s. each.

CALATHEA (MARANTA) VEITCHII.

It is with very great satisfaction that we are now enabled to distribute this remarkable plant, which is universally acknowledged to be not only the finest of all Marantads, but one of the most striking and beautiful of all tropical variegated-foliaged plants. The credit of introducing it to Europe is due to Mr. Pearce, who found it in Western Tropical America, and it has been named after the late Mr. Veitch, of Exeter, with whom it was a special favourite. In habit it is bold and striking, attaining a height of more than 2 feet. The leaves, which when fully grown measure 14 inches by 9, are glabrous on both sides, and marked both on the surface and underneath with beautiful crescent-shaped blotches, those on the upper side being light green, and on the lower of a rosy purple. No description can do justice to this ornamental plant, which must be seen to be appreciated. It is thus described by Mr. Moore, in the "Proceedings of the Horticultural Society:"—

"A beautiful variegated plant, with bold leaves finely coloured; the under surface is of a purplish wine-colour, the upper of a deep shining green, blotched with conspicuous patches along each side of a yellowish green, almost verging on grey. The contrast is very marked, and the whole plant very beautiful."

It is figured in the "Botanical Magazine" for October, 1865, and in addition to having been awarded numerous prizes at the London Shows, it gained the first prize for New Plants at the Brussels International Exhibition of 1864.

Price, First Size, strong plants, 105s. each; Second Size, smaller plants, 63s. each.

COLEUS GIBSONII.

A prettily-variegated plant sent by Mr. John G. Veitch from New Caledonia, where it was discovered growing in great profusion, its highly-coloured foliage forming a most striking feature. In habit it is quite equal to C. Verschaffeltii, being dwarf and very bushy. The leaves are large, often exceeding five inches in length, and are of a light green colour, distinctly veined and blotched with dark crimson purple. It is a most ornamental plant for pot culture, and can be recommended as an excellent companion to the other species for summer flower-garden decoration, where from its novel and distinct colouring it cannot fail to prove an acquisition.

Price 10s. 6d. each, or 84s. per dozen.

LAPAGERIA ALBA (True).

One of the most beautiful of all conservatory climbers, discovered by our collector Mr. Pearce in Chili, and sent to us direct from thence. The flowers, which are similar in shape to and quite as large as those of the popular Lapageria rosea, are of a pure white, and are produced in the greatest profusion. In habit and foliage it is also exactly similar to the rose-coloured variety, and requires the same mode of treatment. This striking plant was figured in the January number of the "Botanical Magazine" for 1856, and also in the "Floral Magazine" of February, 1865, and has received the highest awards at the leading Metropolitan Exhibitions. It is undoubtedly a really first-rate plant, and well worthy of a place in every conservatory.

Price—First size, strong Plants, 105s. each; Second size, smaller Plants, 63s. each.

NEPENTHES (HYBRIDA) MACULATA.

A remarkable hybrid raised by Mr. Dominy, who has the honour of being the only person who has hitherto succeeded in hybridizing Nepenthes, between N. distillatoria and a new unnamed spotted Borneau species. In habit it partakes of the free growth of N. distillatoria, producing a profusion of beautiful pitchers, almost equal in size to those of that species, and thickly covered with bright red spots, from which peculiarity it takes its name. It requires the same treatment as N. Raffleslana, Lowii, &c. Price 31s. 6d. each.

PALICOUREA DISCOLOR.

This is another of the many fine plants sent from Peru by Mr. Pearce, and will prove a desirable acquisition to the class of stove variegated-foliaged plants. It has lanceolate leaves of a dark olive-green, with a beautiful satiny gloss on the upper surface. The mid-rib and veins being of a bright rose-colour shading off to white, produce a striking contrast and most pleasing effect. In habit it is dwarf and compact. Price 10s. 6d. each.

PRIMULA CORTUSOIDES VAR. AMŒNA.

A beautiful dwarf herbaceous Primula, introduced by Mr. John G. Veitch from Japan, together with numerous other distinct varieties. The flowers are produced on slender stems, and form large umbels often 4 and 5 inches in diameter, standing considerably above the foliage. They are of a rich rosy purple, and very much more showy and larger than those of the original species. Being of easy culture and an abundant bloomer it cannot fail to become a general favourite as an early spring conservatory plant. It has been figured both in the Botanical and Floral Magazines, and has received numerous First-class Certificates from the London Horticultural and Botanical Societies.

Price 10s. 6d. each.

RHODODENDRON VEITCHII VAR. LÆVIGATUM.

This distinct variety of the beautiful greenhouse Rhododendron Veitchii was sent from Moulmein by Mr. Thomas Lobb. In character and habit it is similar to the original species, but its large and fine white flowers are of an even shape and outline, without the crenulated edge. It is one of the handsomest and most free-flowering of all greenhouse Rhododendrons.

Price 21s. each.

URCEOLINA AUREA.

This beautiful Amaryllidaceous plant is another of Mr. Pearce's Peruvian discoveries. It has broadly ovate leaves like those of Eucharis amazonica, and a tall scape supporting an umbel of gracefully drooping bright yellow flowers, tipped with green. It forms a peculiarly showy and free-flowering stove plant, and being of easy culture cannot fail to become a general favourite. It has been awarded a First-class Certificate by the Floral Committee of the Royal Horticultural Society, and is figured in the "Botanical Magazine" for September 1864.

Price—First size, strong Plants, 21s. 6d.; Second size, smaller Plants, 21s

THE USUAL DISCOUNT TO THE TRADE.

ROYAL EXOTIC NURSERY, KING'S ROAD, CHELSEA; and at COOMBE WOOD, KINGSTON HILL.

MANCHESTER BOTANICAL and HORTICULTURAL SOCIETY.—The FIRST GENERAL EXHIBITION of FRUITS, PLANTS, and FLOWERS will be held at the Gardens, Old Trafford, on WEDNESDAY and THURSDAY, the 16th and 17th of May next. Schedules of Prizes, and any further information, may be obtained from the undersigned.

By order,
Botanical Gardens, Manchester. BRUCE FINDLAY, Curator.

BRIGHTON and SUSSEX FLORICULTURAL and HORTICULTURAL SOCIETY.

The THIRTEENTH ANNUAL SUMMER EXHIBITION will be held, by permission of the Town Council, on the Eastern Lawn, and in the entire suite of splendid decorated rooms of the Royal Pavilion, on WEDNESDAY and THURSDAY, June 27 and 28, and the AUTUMN SHOW, September 12 and 13, on the same grand scale as in former years.

Schedules of Prizes can be had on application to the Secretary, 96, St. James's Street, or E. SPARY, General Superintendent of the Exhibitions, Queen's Graperies, Park Street, Brighton.

May 12. EDWARD CARPENTER, Secretary.

TUNBRIDGE WELLS HORTICULTURAL SOCIETY.—In consequence of the Brighton Flower Show having been fixed for June 27 and 28, it has been determined by the Committee of this Society to POSTPONE their ANNUAL GRAND FLOWER SHOW and MUSICAL PROMENADE till FRIDAY, JULY 6, in lieu of its being held on June 29, as originally advertised.

Subscriptions may be paid, and Copies of the Rules and every information obtained on personal or written application to

8, Parade, Tunbridge Wells. E. F. LOOF, Esq., Sec.

RUGBY HORTICULTURAL and COTTAGE GARDENERS' SOCIETY.

President—The Rev. Dr. TEMPLE.

The ROSE and ANNUAL SHOW of the above Society, Open to All England, will be held at Rugby on THURSDAY, July 12 next.

Upwards of 100 Prizes in Class 8 will be offered for Plants, Fruits, Cut Flowers, Vegetables, &c., including a Silver Cup of the value of £7, and 16 other Prizes for Roses.

Schedule of Prizes and further particulars may be obtained on sending two postage stamps to JOHN S. SAVAGE, } Hon. Secs.
Rugby, May 12. WM. MASON, }

HORTICULTURAL DINNER at ST. MARTIN'S HALL, Long Acre, London, W.C., on THURSDAY, May 24. The Lord HENRY GORDON LENNOX, M.P., V.P.R.H.S., in the Chair

Stewards.

Mr. Jas. Anderson, Meadow Bank	Dr. M. T. Masters, London
,, Wm. Austin, Glasgow	Mr. C. McDonald, Instioge
,, Geo. Bailey, Rugby	,, A. McKenzie, Alexandra Park
,, Wm. Bull, Chelsea	,, W. Mein, Kelso
,, J. C. Burnell, Holborn	,, J. Meredith, Garston
,, W. Carmichael, Sandringham	,, D. Mitchell, Hamilton Palace
,, E. Cooling, Derby	Dr. D. Moore, Glasnevin
,, Jas. Cutbush, Highgate	Mr. Thos. Moore, Chelsea
,, Wm. Cutbush, Barnet	,, C. Noble, Bagshot
,, Wm. Dean, Shipley	,, H. Ormson, Chelsea
,, Arthur Dickson, Chester	,, W. Paul, Waltham Cross
Rev. J. Dix, London	,, C. J. Perry, Birmingham
Mr. J. Downie, Edinburgh	,, Thos. Rivers, Sawbridgeworth
,, B. Edgington, London Bridge	,, Jas. Robertson, Dublin
,, W. H. Ferguson, Belfast	,, E. Robinson, Englefield
,, J. Fleming, Clyeden	,, J. Salter, Hammersmith
,, A. Fowler, Castle Kennedy	,, J. Shaw, Manchester
,, E. P. Francis, Hertford	,, J. Smith, Kew
,, J. K. Garway, Bristol	,, R. Smith, Worcester
,, Jno. Gibson, Battersea Park	,, W. B. Smith, London
,, R. P. Glendinning, Chiswick	,, E. Spary, Brighton
,, Jas. Gray, Chelsea	,, J. Standish, Ascot
,, S. Hibberd, Stoke Newington	,, J. C. Stevens, King Street
Rev. S. R. Hole, Newark	,, W. Thomson, Dalkeith
Mr. W. Holmes, Hackney	,, R. T. Veitch, Exeter
,, J. Hollingworth, Maidstone	,, R. H. Vertegans, Birmingham
,, T. Hollingworth, Maidstone	,, R. Warner, Chelmsford
,, F. R. Kinghorn, Richmond	,, J. Webster, Gordon Castle
,, J. Laing, Forest Hill	,, H. Wilding, London
,, J. Lee, Hammersmith	,, M. Young, Godalming
,, E. J. Lowe, Nottingham	

Committee of Management.

Mr. CHARLES LEE, *Chairman.*

Mr. Charles Edmonds	Mr. T. F. Wilding
Mr. Jos. F. Meston	Mr. B. S. Williams

Dinner at Six o'Clock precisely.

Tickets, to include a Bottle of Wine, 10s. 6d. each.

Application for Tickets should be made at once (with remittance) to the Hon. Sec. The Musical Arrangements will be conducted by Mr. Montem Smith. RICHARD DEAN, Hon. Sec.
8, Denmark Villas, Ealing, London, W.

ROYAL BOTANIC SOCIETY'S FIRST GENERAL EXHIBITION of PLANTS and FLOWERS, May 9.

LIST of AWARDS.

MEDIUM GOLD MEDAL.

Mr. B. Peed, Gr. to Mrs. Tredwell, St. John's Lodge, Lower Norwood, for 10 Stove and Greenhouse Plants.
Messrs. H. Lane & Sons, Nurserymen, Great Berkhampstead, Herts, for 10 Roses in Pots.
Mr. C. Turner, Nurseryman, Slough, for 8 Greenhouse Azaleas.
Mr. C. Penny, Gr. to H. H. Gibbs, Esq., St. Dunstan's, Regent's Park, for 8 Greenhouse Azaleas.

GOLD MEDAL.

Mr. J. Wheeler, Gr. to J. Philpott, Esq., Stamford Hill, for 10 Stove and Greenhouse Plants.
Mr. C. Rhodes, Nurseryman, Sydenham Park, Kent, for 8 Stove and Greenhouse Plants.
Mr. D. Donald, Gr. to J. G. Barclay, Esq., Leyton, for 8 Stove and Greenhouse Plants.
Messrs. J. & C. Lee, Nurserymen, Hammersmith, for 10 Foliage and Flowering Plants.
Mr. C. Rhodes, for 8 Cape Heaths.
Mr. B. Peed, Gr., for 8 Cape Heaths.
Mr. W. Paul, Nurseryman, Waltham Cross, for 10 Roses in Pots.
Messrs. J. Veitch & Sons, Nurserymen, Chelsea, for 8 Greenhouse Azaleas.
Mr. W. Gill, Gr. to Mrs. Beaufoy, South Lambeth, for 8 Greenhouse Azaleas.
Mr. T. Page, Gr. to W. Leaf, Esq., Park Hill, Streatham, for 10 Exotic Orchids.
Mr. B. Peed, Gr., for 8 Exotic Orchids.

LARGE SILVER GILT MEDAL.

Mr. G. Wheeler, Gr. to Sir F. H. Goldsmid, Bart., Regent's Park, for 10 Stove and Greenhouse Plants.
Messrs. J. & C. Lee, for 8 Stove and Greenhouse Plants.
Mr. W. Kemp, Gr. to Earl Percy, Albury Park, Guildford, Surrey, for 8 Stove and Greenhouse Plants.
Mr. A. Ingram, Gr. to J. J. Blandy, Esq., Highgrove, Reading, for 8 Stove and Greenhouse Plants.
Mr. W. Gill, Gr. to Mrs. Beaufoy, South Lambeth, for 10 Foliage and Flowering Plants.
Mr. B. S. Williams, Nurseryman, Holloway, for 10 Foliage and Flowering Plants.
Messrs. Jackson & Son, Nurserymen, Kingston, for 8 Cape Heaths.
Mr. J. Wheeler, Gr. to J. Philpott, Esq., Stamford Hill, for 8 Cape Heaths.
Mr. B. Peed, Gr. to Mrs. Tredwell, for 8 Greenhouse Azaleas.
Mr. G. Wheeler, Gr. to Sir F. H. Goldsmid, Bart., Regent's Park, for 8 Greenhouse Azaleas.
Mr. C. Turner, Slough, for 6 Greenhouse Azaleas.
Messrs. J. & C. Lee, Nurserymen, Hammersmith, for 6 Exotic Orchids.
Mr. J. Wiggins, Gr. to W. Beck, Esq., Worton Cottage, Isleworth, for 8 Exotic Orchids.
Mr. H. Barnard, Gr. to H. W. Naylor, Esq., Stoke Nowington, for 12 Exotic Ferns.
Mr. C. Turner, Slough, for 9 Pelargoniums.
Mr. J. Ward, Gr. to F. G. Wilkins, Esq., Leyton, Essex, for 9 Pelargoniums.

LARGE SILVER MEDAL.

Messrs. Glendinning & Sons, Chiswick Nursery, for 8 Stove and Greenhouse Plants.
Mr. W. Kaile, Gr. to Earl Lovelace, East Horsley Towers, Ripley, Surrey, for 8 Stove and Greenhouse Plants.
Mr. A. Ingram, Gr. to J. J. Blandy, Esq., for 6 Cape Heaths.
Messrs. J. Veitch, for 6 Greenhouse Azaleas.
Mr. D. Donald, Gr., for 6 Stove and Greenhouse Plants.
Mr. J. Fraser, Nurseryman, Leyton, for 9 Pelargoniums.
Mr. C. Turner, for 6 Fancy Pelargoniums.
Mr. J. Weir, Gr. to Mrs. Hodgson, The Elms, Hampstead, for 6 Fancy Pelargoniums.

SILVER GILT MEDAL.

Mr. C. Rhodes, for 8 Greenhouse Azaleas.
Messrs. T. Jackson & Son, for 6 Exotic Orchids.
Mr. J. Wheeler, Gr. for 6 Exotic Orchids.
Mr. W. Young, Gr. to W. Barclay, Esq., West Hill, Highgate, for 12 Exotic Ferns.
Mr. H. Barnard, Gr. to J. W. Taylor, Esq., Woodberry Down, Stoke Newington, for 6 Foliage Plants.
Mr. J. Wiggins, Gr., for 9 Pelargoniums.
Mr. R. Baxendine, Nurseryman, Guildford, Surrey, for 8 Stove and Greenhouse Plants.
Mr. O. Rhodes, for 10 Foliage and Flowering Plants.
Mr. J. Carr, Gr. to P. L. Hinds, Esq., The Lodge, Byfleet, Surrey, for 10 Foliage and Flowering Plants.
Mr. W. Kaile, Gr., for 6 Cape Heaths.

SILVER MEDAL.

Mr. G. Wheeler, Gr., for 6 Cape Heaths.
Mr. T. H. Terry, Gr. to A. Pullen, Esq., Youngsbury, Ware, Herts, for 6 Roses in Pots.
Messrs. J. Dobson & Sons, Nurserymen, Isleworth, for 6 Greenhouse Azaleas.
Mr. C. Rhodes, for 6 Exotic Orchids.
Messrs. F. & A. Smith, Nurserymen, Dulwich, for 6 Foliage Plants.

SMALL SILVER MEDAL.

Mr. W. Young, Gr., for 6 Foliage Plants.
Mr. J. Wiggins, Gr., for 6 Roses in Pots.
Mr. W. Bull, Nurseryman, Chelsea, for 6 Exotic Orchids.
Mr. H. Hooper, Nurseryman, Bath, for 30 Pansies.
Mr. J. James, Gr. to W. F. Watson, Esq., Isleworth, for 24 Pansies.
Mr. J. James, Gr., for 6 Calceolarias.
Mr. D. Donald, Gr., for Leelia purpurata.
Mr. C. Turner, for Collection of Auriculas.

BRONZE MEDAL.

Mr. E. T. Kingston, Bristol Road, Bath, for 24 Pansies.
Messrs. J. Dobson, for 6 Calceolarias.
Messrs. T. Jackson & Son, for Clerodendron Balfouri.

FIRST-CLASS CERTIFICATE of MERIT.

Mr. J. James, Gr., for 12 Pansies in Pots.
Mr. C. Turner, for Aurucula John Leech.
Mr. W. Bull, for Rhododendron Brunca.
Mr. W. Bull, for Selaginella Martensii albo-variegata.
Mr. W. Bull, for Primula intermedia.
Mr. Bryant, for Pansy Colonel Murray.

SECOND-CLASS CERTIFICATE of MERIT.

Mr. H. Hooper, for Pansy Princess Helena.
Mr. W. Bull, for Nidularium Pinelli.
Mr. W. Bull, for Peperomia argyrioloba.
Mr. W. Bull, for Abutilon vexillarium.
Mr. W. Bull, for Aranaea Porteana.
Mr. W. Bull, for Maranta splendida.

INTERNATIONAL

HORTICULTURAL EXHIBITION

AND BOTANICAL CONGRESS.

The MEETINGS of the BOTANICAL CONGRESS are fixed to Commence on WEDNESDAY, 23d of MAY. M. ALPHONSE DE CANDOLLE will take the Chair at 11 o'Clock.

MAXWELL T. MASTERS, M.D., Hon. Sec.

INTERNATIONAL HORTICULTURAL EXHIBITION.

MAY 22d, Tickets £1 1s.; MAY 23d, 10s.; MAY 24th, 2s. 6d.; MAY 25th, 1s.

Tickets may be obtained of the principal London Nurserymen, and of the usual London Agents.

INTERNATIONAL HORTICULTURAL EXHIBITION.

Tickets may be obtained of the principal Nurserymen and Seedsmen, and at—

AUSTIN'S, St. James's Hall
CHAPPELL'S, New Bond Street
COCK, ADDISON, & Co.'s, Regent Street
KEITH & PROWSE'S, Cheapside
LACON & OLLIER'S, New Bond Street
LETTS & SON'S, Royal Exchange
MITCHELL'S, Bond Street
OLLIVIER'S, New Bond Street
SAM'S, St. James's Street
WESTERTON'S, St. George's Place.
THE HORTICULTURAL SOCIETY
THE OFFICES, 52, St. George's Place

NOTICE TO SUBSCRIBERS TO THE

INTERNATIONAL HORTICULTURAL EXHIBITION.

All the TICKETS, except the CARDS for the BANQUET, have been despatched by Post to SUBSCRIBERS.

Persons not having received theirs, are requested to write immediately to

T. MOORE, ESQ., BOTANIC GARDENS, CHELSEA, S.W.

GUILDHALL BANQUET OF THE

INTERNATIONAL HORTICULTURAL EXHIBITION.

The Committee have to announce that Messrs. RING & BEYMER, having made plans of the Hall, find they will only be able to place, in comfort, 580 guests. The Committee had been led to hope that 650 would have been accommodated, and they think it, therefore, only proper to give notice that the Subscription List must close on the above number being reached. More than 450 Seats are already required.

SUBSCRIBERS OF TEN GUINEAS TO THE

INTERNATIONAL HORTICULTURAL MEETING

RECEIVE ONE BANQUET TICKET;
ONE PERSONAL TICKET, ADMITTING ALL FOUR DAYS OF THE SHOW;
SEVEN GUINEA TICKETS, ADMITTING FIRST DAY;
AND TWO CARDS, ADMITTING TWO EACH TO THE CONVERSAZIONE.

OFFICES: 52, ST. GEORGE'S PLACE, KNIGHTSBRIDGE; and 1, WILLIAM STREET, LOWNDES SQUARE, S.W.

The Gardeners' Chronicle.

SATURDAY, MAY 12, 1866.

MEETINGS FOR THE ENSUING WEEK.

TUESDAY, May 15 { Royal Horticultural (Floral and Fruit Committees), at South Kensington .. 11 A.M. / Ditto (Scientific Discussion) .. 3 P.M.
SATURDAY, — 19 { Royal Horticultural (Weekly Show), at South Kensington .. .. .. 2 P.M.

SEVERAL cases have lately been submitted to us of different diseases with which PEACH TREES have been affected, both on the wall and in the Peach house. In the former case we were quite prepared for a good deal of mischief, as the trees were evidently much impaired by the extreme drought of summer, and the unusual moisture of the spring was likely to induce further injury. The roots had got into a bad condition, and some of the consequent mischief in the young shoots did not declare itself at once, but a few months

later dead patches occurred on them, which rapidly spread to the surrounding tissues, and at length caused the whole shoot to perish, the buds meanwhile bursting very irregularly, producing extremely weak flowers, and ultimately withering.

It is not, however, to be supposed that plants in the Peach house would be much affected by the external heat and dry atmosphere, provided proper measures were taken. It is, nevertheless, matter of fact that the health of the trees in some instances has been anything but satisfactory.

A very able report by Mr. THOMPSON of the condition of some of the Peach trees at Chatsworth was read at the last Tuesday meeting of the Horticultural Society. The roots were found to be much decayed, in some cases greatly infested with fungous mycelium, and the breaking of the buds and setting of the fruit were very indifferent. It appeared that the compost which had been used, and of which we received a specimen, was very likely to produce fungous spawn; it has, however, been suggested to us, as the soil about the roots was completely sodden with moisture, the situation being low, that the condition of the trees might be in great measure owing to this circumstance, and that they would probably be much improved by careful removing of the present soil, judicious root pruning, and the substitution of fresh maiden loam, such as would not be likely to encourage the growth of mycelium. A similar condition had, it seems, once before existed at Chatsworth, and especially as regarded an unusually magnificent tree, which had been the pride of the gardens from the excellence and abundance of the fruit, and a complete renovation took place in consequence of this treatment.

In another case submitted to us, it was principally the terminal bud of the shoots that was affected. On making a vertical section the subjacent wood was found to be traversed by a number of cavities, which struck us the more as calling to mind a circumstance in another very aggravated case which we shall presently notice. As the roots are said to be in good condition, we cannot divine the reason of the affection, especially as we have been unable to detect in the buds the least trace of insects, to which we were at first inclined to attribute it.

We now come to a most formidable affection which has appeared in some trees on a south-east wall in the Isle of Wight. An account was sent of it to Messrs. RIVERS, who replied that they were quite unacquainted with the disease. The external characters of the malady in question as described by our Correspondent are as follows. In trees which are affected, the first indication is the curling of the leaves, which turn red and drop off from the branches when the green fruit has attained its full size. In many trees one-half perishes entirely. The roots when examined are found to be swollen here and there into irregular knots, and are covered with a white powder. On the other side of the tree, if the roots on that side are free from disease, young shoots are pushed out, and it partially recovers. Some trees, however, perish altogether.

On examining the roots, which have been sent to us in three different conditions, we find that these knots are studded all over with the facets, from which adventitious buds have ineffectually striven to push forth. These young buds die, and cause decay or deformity. The bark is much thickened, and it is in the subjacent wood itself, which is in an abnormal condition, that the cellular cavities appear precisely similar to those mentioned above. Unfortunately the white powder had vanished before the specimens were sent, so that we can say nothing of its nature, though it is extremely probable that it was the spawn of some Fungus.

There is a peculiar form of canker, and a very formidable one, in Apple trees, which arises from the formation of irregular discs on the bark of the trunk, in which adventitious roots are similarly produced, but which never come to perfection, and in which decay is rapidly induced. In this case it is quite clear that something is wrong about the normal roots, whether from the nature of the subsoil or from too great dryness, it is difficult to say. In consequence of this there is an attempt to repair the mischief by throwing out adventitious roots, which would probably be perfectly developed if surrounded by proper soil, but as they are completely exposed to the air, the delicate tissues at their extremities are dried up, and they soon perish.

It can scarcely be doubted in the Isle of Wight case, that from something in the soil incompatible with health, the greater part of the roots capable of conveying nutriment have been destroyed, and that an attempt has been made to supply the defect from the more healthy tissue above, but the attempt not succeeding, the tree ultimately perishes. In those cases in which a portion of the tree recovers, and where the roots supplying that portion more especially remain sound, we must suppose that more favourable conditions of the surrounding soil have existed, or that adventitious roots have been advantageously thrown out. This can be ascertained only by a careful inspection on the spot, for which we have had no opportunity. The case is, however, so curious and interesting that even the present imperfect notice will not be superfluous.

In conclusion, we would caution our readers never to use any artificial manure of which they are not thoroughly acquainted with the composition. We have no doubt that much mischief has arisen from this source alone, and it is one which it is not always easy to trace. A single error in this direction may cause irreparable mischief. *M. J. B.*

A LETTER which we insert this week in our Home Correspondence, deserves the earnest consideration, not only of all lovers of flowers, but appeals to the conscience and good feelings of all who, by the dispensation of Providence, are placed above the class specially alluded to in the communication of our enlightened and truly philanthropic correspondent. Horticulturists need not be told how much they owe to the introduction of WARD'S CASES; their daily use in transporting from the uttermost parts of the globe new and rare plants to add to their stores, is sufficient evidence of their utility. Nor need we do more than allude to the immense benefits conferred on future generations by the use of these contrivances in the transport to India and elsewhere of the health-giving Cinchona. The success of this experiment, which is a matter of such profound congratulation to all who have the interests of their fellow men at heart, is dependent in no ordinary degree upon these unpretending Cases. But there is another and no less important use to which they may be put, and which is alluded to by our correspondent, viz., the moral and material improvement of that neglected class whom we have suffered to grow up among us in our large towns especially, with scarcely an effort, to our intense shame be it said, to ameliorate their condition or to lift them from the slough of almost incredible abasement in which they are placed. Readers of the Reports of the Commissioners appointed to inquire into the employment of children and young persons in trade and manufactures, or of the summary given in a recent number of the "Quarterly Review," must experience a feeling of unmitigated horror at the state of affairs there pourtrayed. Disregarding for the moment the truly awful moral and physical conditions in which thousands of our own flesh and blood drag out a wretched, hopeless existence, let us point attention to the astonishing, nay, almost incredible ignorance which exists among them. We quote from the "Quarterly:"—"In Birmingham 32 persons, averaging more than 12 years of age, including a young man of 20 and two young women, could not tell the QUEEN'S name. The commonest and simplest objects of Nature, such as flowers, birds, fishes, mountains, and the sea, were unknown. Some thought London a county—one that it was in the Exhibition; a Violet was said to be a pretty bird, a Primrose a red Rose, a Lilac also a bird; but whether a robin or an eagle were birds none could say; some knew not what a river meant, or where fishes live, or where snow comes from; and a cow in a picture was pronounced to be a lion. Multitudes of these poor children can never have seen a Primrose by a river's brim, or heard the song of a lark:

> Not for them
> The vernal cuckoo shouteth; not for them
> Murmurs the labouring bee."

What can be done to remedy this state of things, is the question that must rise on many lips. Horticulturists have it in their power to do much at little cost or trouble to themselves, and we rejoice to hear that working men's flower shows are springing up in our thickly populated districts. We may be quite sure that the flowers we admire so much, and cultivate so assiduously, were not given to us to admire only, but to exercise an influence for good over us in many ways—not the least in refining and elevating the feelings. Most of our readers are familiar with what the deeply-lamented HENSLOW effected in a benighted district, by his unflagging efforts to improve the condition of his parishioners, and they know that he effected it in a great degree by exciting an interest for flowers and other natural objects. Our correspondent cites another similar instance.

In the midst then of our Floralia, while we revel on the beauties which the industry and skill of our horticulturists have brought together, let us consider whether we cannot do something for that less favoured class who are not able to help themselves.

If there are "sermons in stones" there is a pæan of praise to be extracted from flowers, and by the encouragement of a love for these beautiful objects, either by means of such flower shows as we have alluded to, or by the employment of WARD'S Cases, or by other means which will readily suggest themselves to all who are in earnest in the good work—horticulturists may pave the way for, nay to some extent supersede, the necessity for the efforts of the schoolmaster, the minister, and the doctor.

— WE are requested to state, in order to obviate possible misunderstanding, that the Committee of the INTERNATIONAL HORTICULTURAL EXHIBITION AND BOTANICAL CONGRESS decided at an early stage of its proceedings not to invite DELEGATES from the foreign Societies, but simply to invite foreign horticulturists and botanists in their individual capacity. The foreign Governments alone have been applied to to send delegates. Several of the horticultural Societies have, however, intimated their intention of sending representatives, and we need not say that they will be cordially received, and every possible facility accorded to them. Tickets have been sent to all foreigners who have intimated their intention of honouring the Congress, &c., with their presence.

— Amongst the decisions arrived at by the Executive Committee of the International Horticultural Exhibition, the following relating to NEW PLANTS will be of interest to exhibitors. In the first place, it has been found necessary, in order to meet certain questions and difficulties which have arisen, not the least being the difference of custom observable at English and foreign Exhibitions in respect to the meaning to be attached to the term "New Plant," that in those classes of the Schedule relating to "New Plants not in Commerce," this latter condition shall be taken as sufficient evidence of novelty. Secondly, New Plants, of which the stock has been purchased from the importer by some other person, who thus becomes the owner, cannot be shown by that person as if he were the introducer, the object of the classes in which the introduction of the objects exhibited is a condition, being to serve as an encouragement to those enterprising individuals who, at their own risk and cost, send out collectors to enrich our gardens with the spoils of foreign lands. A third point, self-evident indeed, but one which experience shows it is necessary to define, is that no plants of garden origin, hybrids, varieties, sports, or what not, can be shown in the classes designated for New Plants, these classes being restricted to introduced species or reputed species. Seedling novelties, sports, and hybrids find a place in one or other of the classes which form Section 5 of the Schedule. Again, according to the wording of the Schedule, duplicate examples of the species shown in any of the classes designated for New Plants, can be shown in either of the other new plant classes, of which the terms correctly describe them. These are, in brief, the rules under which the jurors on New Plants will be instructed to act.

— Owing to the material diversity in the system of JUDGING PLANTS at Continental and English flower shows, and in consideration of the very short space of time that can be allotted for that purpose at the forthcoming International display, the Committee have decided to limit the number of foreign judges to a few, who by their position and repute are esteemed as specially representative men.

— It seems almost incredible that so much labour should have been undergone and so large an expenditure incurred on an exhibition that is to be so short-lived as, according to the present arrangements, the "INTERNATIONAL HORTICULTURAL OF 1866" is intended to be. The labour and expenditure, indeed, have both been unavoidable if the movement was to have any chance of being brought to a successful issue, such as seems likely to be realised, but we must confess to having felt some misgivings, and some feelings of regret while lately standing in the monster tent, whose interior is rapidly assuming a definite and finished form, when the thought flashed before us that all this was so soon to vanish, leaving behind it little but pleasant recollections. Three or four days' exhibitions are indeed new institutions amongst us, and this may be carrying them as far as is feasible in respect to certain tender plants, but we see no reason why many attractive hardier subjects, enough to occupy the space—for at first, we believe, the tent will be filled to cramming—should not be left for another week, to furnish additional funds, as well as to have a further opportunity of exerting their moralising influence over the crowds which constitute our London population. The exhibitors would, of course, have to be reimbursed their additional expenses, but beyond this there need be very little further outlay. We place the suggestion at the service of the Executive Committee.

—— By some unaccountable mismanagement or perversity, the Exhibition of the DUBLIN HORTICULTURAL SOCIETY is fixed to take place at the time when our own great International display is going on. It is not for us to say what can have been the reason for this.

—— We hear of nothing but INTERNATIONAL EXHIBITIONS just now—here is another, the full particulars of which may be read in the *Revue Horticole*, and which is to be devoted to ROSES only. It is to be held at Brie-Comte Robert on the 8th and 9th of July next. Written or verbal communications relating to the history or cultivation of the Rose will be thankfully received. Owners of new seedlings are requested to send their plants for the adjudication of the Congress, and delegates from French or foreign horticultural societies are invited to take part in the proceedings. Rose growers are recommended to apply to the President, M. CAMILLE BERNARDIN.

—— M. GRIN, of Chartres, proposes instead of PRUNING FRUIT TREES in any of the ordinary methods, to pinch off the tops of the young leaves or of the young buds just after their expansion, leaving intact, however, the first leaf that is produced. By this simple proceeding, says M. GRIN, the sap is arrested, undue growth checked, the shape of the tree preserved, and the production of fruit encouraged. The removal of the tips of the young leaves is effected in April, and is followed by the development of flower-buds at the base of the buds. We ought to have said that Mr. GRIN, as a preliminary step, prunes in November, so as to secure in the buds that are allowed to remain all the sap elaborated in the winter. We should like to hear the opinion of some of our practical friends upon this process, which is simple enough, if effectual.

—— M. DUCHARTRE, who has been investigating the RATE OF GROWTH in plants by DAY AND BY NIGHT, considers that the greatest increase in length takes place at night. His measurements have been made on the Vine, the Gladiolus, the Strawberry, the Hop, and other plants. He laid an account of his experiments before a recent meeting of the "Société Centrale d'Horticulture."

—— MR. E. GOEZE, lately of the Kew Herbarium, has been appointed Curator of the Botanic Garden, Coimbra, Portugal. A better selection could hardly have been made.

New Plants.

333. PALAVA FLEXUOSA, *Mast.*

Annua, pilis stellatis plus minus densè vestita, ramis cæspitosis, decumbentibus, superne flexuosis; foliis petiolatis (petiolo 1 centim. subæquante), radicalibus oblongo-ovatis, crenulatis, palmatim 5-7 nerviis, caulinis bi pinnatifidis, segmentis ovatis acutis; stipulis persistentibus, subulato lanceolatis, rubicundis, ad margines ciliatis; pedunculis solitariis axillaribus, 1-floris, exarticulatis, folia superantibus; calycis late campanulati, 5-fidi, segmentis late ovatis, acutis, basi purpureis; corolla calycem duplo triplove superante, carpellis oblique obovatis, rugoso reticulatis. Peruvia, McLean in herb. Hook.', v. v. in hort. Veitch.

A slender annual, about 18 inches in height, more or less densely clothed in all its green parts with stellate hairs. Branches decumbent, flexuose above; leafstalks as long as or longer than the blades, lowermost leaves oblong ovate, crenulate, scarcely an inch in length, less than three quarters in breadth; upper leaves nearly of the same size, bipinnately divided, segments ovate, pointed. Flowers on solitary axillary stalks, which exceed the leaves in length; calyx broadly cup-shaped, 5-cleft, segments ovate, acute, or slightly acuminate, densely covered with stellate hairs, purplish at the base and along the median nerve; corolla about an inch in diameter, of a pale mauve colour; column dividing above into five parcels of filaments; stigmas numerous; carpels several in a rather globose head, each obovate, oblique at the base, coarsely wrinkled on the surface.

An elegant little Malvaceous plant, hitherto undescribed, though noted by Planchon as a new species in the Kew Herbarium, whither it was sent from Peru by MacLean. Our description has been drawn up from a comparison of the living plant in Messrs. Veitch's nursery with the dried specimens; the latter are more densely hairy, but otherwise there is no difference. There are one or two other species of Palava in cultivation, but the present one is readily distinguishable by its flexuose stem and the other characters above given. It will be suitable for the greenhouse or for planting out in a warm border. *M. T. M.*

TABLE DECORATIONS.

So much interest has been manifested during the last three or four years in this art, that the glass and China manufacturers have found it worth their while to invent a great variety of articles for holding flowers and fruit, some of them costly, others to be had for a trifling sum, some elegant, and others heavy, clumsy, and inappropriate.

In the absence of any special vases or dishes, an excellent substitute can be made by fastening with wire, one upon another, to the required height, soup plates, finger glasses, saucers, and tall champagne glasses. It was an example of this mode of building up which on a certain occasion displayed such an extreme absence of good taste that we must attempt a description of it, for the purpose of holding it up as a "horrid example." The flowers used were scarlet Geraniums, bright yellow Calceolarias, and dark blue Larkspurs. Not a leaf of any kind appeared to subdue the glaring mass of gaudy colours. Bunches of the respective flowers had been tied up, like "ha'p'orths" of Watercresses, and with these bunches a feeble attempt at some kind of geometric arrangement had been made, which would have puzzled Euclid to describe. Had these flowers been used singly (instead of being so crowded together that not a bloom retained its form), and had a due proportion of foliage been introduced, a very pleasing effect would have been substituted for one that was vulgar in the highest degree. We well remember the astonished look of the late Sir Joseph Paxton when this brilliant effort of genius fell under his observation; he paused for a moment, muttered "Whitechapel," and hurried away.

Andersen's account of the Swedish peasants of Dalecarnia going to church on the occasion of their Midsummer festival occurs to us at the moment. He says, "The dress of the women is a black skirt, red bodice, and white sleeves; all of them had a psalm-book wrapped in the folded silk pocket-handkerchief. Fiery red, and grass-green aprons meet our gaze. The little girls were entirely in yellow, and with red aprons; the very least were in Turkish-yellow clothes. The men were dressed in black coats, embroidered with red woollen cord; a red band with a tassel hung down from the large black hat; with dark knee-breeches and blue stockings, with red leather gaiters—in short, there was a dazzling richness of colour, and that, too, on a bright sunny morning." Doubtless this must be a very picturesque sight upon the shores of the deep dark waters of the Swedish lakes, and with such a background as the Fir-clad mountains afford—a beautiful subject for the painter. But what would be said of the artist who, in placing upon canvas this lovely view, so filled up his foreground with the peasants in crowded groups that nothing of the distant scenery was visible? Would he not thus fail to convey to those who had not visited the spot, the natural beauty of the scene? Would he not be giving undue prominence to a part, to the serious detriment of the whole of the picture? Would he not have lost the opportunity of making a charming painting that would have pleased all, and have substituted for it a vulgar mass of glaring colours which would be condemned by every one of taste, and appreciated only by the ethnologist or the dealer in fancy dresses?

And yet this exhibition of bad taste would in our judgment be entitled to less severe denunciation than the arrangement of flowers to which we have been alluding. A mass of gaudy colours close in front of you when you are partaking of a well-selected list of viands, is to the eye of any one of good taste as great a source of annoyance as an unpleasant smell would be to another person. The medical student, who takes his bread-and-cheese lunch in the peculiar atmosphere of a dissecting-room, does not eat it there by choice; but it is a convenience to him, and a saving of time, and he therefore submits to, and soon ceases to observe, the inconveniences which, in another place, would possibly prevent his partaking of any food at all. The same may be said of those whom necessity compels to take their daily meal in the reeking atmosphere of a City eating-house. But when you are invited to a sumptuous entertainment you go quite unprepared to submit to any such inconveniences as these; the strings of your powers of appreciation are tuned to concert pitch, and the eye and the nose are alike sensitive to all around, while the taste is more or less sensibly affected by the amount of pleasure or dissatisfaction derived through the organs of smell and sight.

I was lately present at a wedding breakfast, where the arrangement of the flowers upon the tables attracted much attention and excited many comments. The "high table" was placed across the top of the room, and from either end of it a long narrow table ran down each side, leaving the middle for the servants to wait on the guests. The massive cake occupied the centre of the high table, and was surrounded by a ring of 24 glasses, each containing one red or one white Camellia, of great size and purity of colour, the colours being arranged alternately. On either side was a tall elegant vase, in which were placed Fern fronds only, some large and arching, others long and drooping. At each end of this table was a "March" glass, having in the upper dish white flowers and small ferns, with three bunches of white Grapes hanging from its edge, and having purple and white Cinerarias relieved with a few other flowers in the lower dish, while the stem was partially concealed with sprays of Acacia junipera. The same arrangement of keeping the white flowers up above and the coloured flowers nearer to the cloth, characterised all the vases upon the side tables, which, however, were noticed, not only for the light effect which was thus secured, but for the height which had been obtained by building up small dishes and vases, and sparingly dressing them with flowers and delicate Ferns, by which means lightness and gracefulness were attained without interfering with the view or conversation.

But the decoration that attracted most attention was the only one that stood in the drawing-room. A very large silver epergne was placed upon an oval table, which was covered with a crimson cloth, and stood in a bay-window, with room to walk round the table. This epergne had six branches, each terminating in a cut-glass dish of about four inches diameter. These six dishes contained no other flowers than pure white Azaleas, the monotony of which was relieved by varying the shades of the Fern-fronds which were interspersed amongst the blooms, one dish containing the pale yellowish-green Adiantum assimile, another the dark-green Ad. Capillus-veneris, and another young fronds of the dull green Ad. pubescens.

In the large trifle-dish which crowned the epergne had been placed an enormous tumbler, the outer sides of which had been banked up with wet sand and covered with dark green moss. This moss served to keep moist and support six magnificently-grown white Camellias, each enriched with three or four noble leaves; below them were, alternately, small fronds of Dicksonia antarctica and large pinnæ of Cibotium Barometz, which hung over between the dishes of Azaleas, and thus brought them prominently into view. The tumbler at the top contained two large fronds of Lastrea augescens (which arched over more than 2 feet), together with one or two fronds of Nephrolepis exaltata, Asplenium lucidum, and Baccidium. Davallia polyantha, Polystichum falcinellum, and Adiantum trapeziforme; amongst which were half-a-dozen handsome blooms of Eucharis amazonica. A few pieces of Nephrolepis pectinata were introduced as a contrast to the broader foliage of the other Ferns, while a frond of Goniophlebium subauriculatum, which could not have been less than 5 feet long, curled grandly out from amongst its allies, and twisted gracefully down between two of the dishes of Azaleas and round the stem of the epergne. It was truly a bridal arrangement of flowers, to which the dark green of the carpet, and the crimson velvet couches and chairs, afforded a contrast that could not have been improved upon.

Those who depend for their effects in grouping upon the diversity of the colours of their flowers, have much to learn in the art of giving pleasure to the eye by a judicious arrangement of foliage of different shades of green. *W. T.*

THEORY AND PRACTICE OF VENTILATION.

No. VI.

THE word temperature introduces us to the great expansive and disturbing power—heat. But for heat it is probable the strong grasp of attraction of gravitation would condense all the gases into liquids, and all the liquids into solids, so that universal death would reign over an intensely solid world. Increments of heat increase the elasticity of bodies, and lessen their density. It looses the grasp of attraction, and is equivalent in the case of aeriform bodies to the removal of so much pressure. The air particles bound further off from each other in consequence of being warmed, and its volume is thus expanded or enlarged. Air expands in a different manner and to a greater extent by the same addition of heat than either liquids or solids. Thus, while steel on being heated from a temperature of 32° to 212° only increased in length $\frac{1}{1650}$th, and in bulk $\frac{3}{1650}$th, mercury $\frac{1}{550}$th, water $\frac{1}{23}$rd, and oil $\frac{1}{14}$th, air expands $\frac{3}{8}$ths; so that eight measures of air at 32° actually become 11 measures at 212°.

Most other substances have also their own specific rates of expansion, which vary with different degrees of heat. But air preserves an equable rate of expansion at all temperatures. Thus it expands in the same proportion with every degree of heat applied, from zero to 100, and from 100 to 200, and so on. Provided its elasticity and density continue the same, its ratio of expansion is $\frac{1}{480}$th part for every degree of heat applied. Practically the elasticity and density of the air so far balance each other in this country as to give a mean pressure of 30 inches of mercury at the level of the sea. At first sight it would seem impossible that this mean could be preserved over the whole surface of the globe. The difference of temperature is so great that we might have expected a fall of the barometer in tropical climes. The way by which air is heated prevents this from happening. The heat pushes the air up to a greater elevation in warm climates. Hence, although it is lighter bulk for bulk, its additional height counteracts the superior density of colder climes, and the gross pressure of the air remains the same. The coast line of the atmosphere confronting vacant space, is not a flat or even one. From the centre of the world it shoots up like a mountain peak, and being composed of such incohesive atoms, they tumble down on to the top of the colder air. The strong elastic force of this cold air causes it to bound towards the warmer climes, and thus the great convective current is established and maintained, as already described in these papers. The same processes, on a smaller scale, are carried forward in all horticultural buildings. They can only be efficiently warmed and thoroughly ventilated by a proper balancing of these three great forces which warm and ventilate the world—elasticity and density, and heat as the regulator of the powers of both.

Another important fact tends to maintain an equilibrium between the elasticity, density, and temperature of the air. It is this. The vertical temperature of the air varies from 82° at the surface to 58° below Fahrenheit's zero, which is supposed to be the temperature of vacant space. Roughly stated, for every 333 feet of perpendicular ascent, the temperature falls one degree, so that at a height of 50 times 333, or 16,650 feet, the temperature falls to 32°, and no summit reaching to 15,000 feet is ever free from snow. This snow line probably resembles very much the outer line of the atmosphere itself. It towers up to a height of 15,000 feet at the equator, descends to 8000 on the European Alps, droops down to 5000 on the Norwegian mountains, and dips into the sea itself in the Arctic regions. Now cold or the negation of heat is tantamount to an increase of pressure, and helps the intermixture of the atmosphere. The laws that govern these great currents are the same that must heat and ventilate all horticultural buildings, and hence the importance of a so that at a height of 50 times 333, or 16,650 feet, the temperature falls to 32°, and no summit reaching to 15,000 feet is ever free from snow. This snow line probably resembles very much the outer line of the atmosphere itself. It towers up to a height of 15,000 feet at the equator, descends to 8000 on the European Alps, droops down to 5000 on the Norwegian mountains, and dips into the sea itself in the Arctic regions. Now cold or the negation of heat is tantamount to an increase of pressure, and helps the intermixture of the atmosphere. The laws that govern these great currents are the same that must heat and ventilate all horticultural buildings, and hence the importance of a thorough comprehension of those great properties of elasticity and density, and of that heat which mediates between the two, and modifies the power of both.

This brings me to notice the last physical property of the air that I will advert to at present. In common with all other ponderable bodies, the air is distinguished by motion. Its momentum or force that it exerts on bodies opposed to it is determined in the same manner as in the case of solids. Its inertia or the power that keeps it at rest is exactly proportioned to its weight, and the force of its motion is obtained by multiplying its weight by its velocity. Light as the air is, its momentum is a great mechanical force. We are all familiar with its employment in driving machinery, and giving motion to ships, and occasionally it levels trees and buildings to the ground, and drives the ocean with irresistible fury over

large tracts of desolated country. The mechanical effects of air in motion on vegetation have, however, been but little studied.

That it has great power is obvious enough. We have only to go to very exposed places to be convinced of this. It is said that on the top of Dartmoor 100 Oak trees may be seen 100 feet high, that is 1 foot each. I find in Campbell's "Frost and Fire," noticed in the "Edinburgh Review" for October, the influence of wind upon trees is especially dwelt upon. I have frequently noticed similar facts in bleak situations in Scotland. The trees in exposed places always stream away from the winds, which in Britain are mostly south-westerly. Every exposed Welsh tree bends towards the dawn. Every exposed tree on the west coast of Scotland seems to be driven by a strong wind on the calmest day. At Dalwhinny there is something almost ludicrous in the stormy look of a whole plantation of Fir trees, which point their fingers down Strathspey, and bend their trunks as if yielding to a furious gale. Mr. Campbell suggests that if the direction in which trees are bent in exposed situations was carefully mapped, another physical chart might be added to those we already possess, showing the prevailing winds all over the world. He lays great stress on the phenomena of bent trees, and gives drawings of two of them, showing how entirely they were bent in an almost horizontal position by the wind. The reviewer takes objection to this deduction, and carefully shows that the buds on the windward side of the trees were prevented from growing by the force of the wind, whereas those on the lee side grew, and arrive at the extraordinary conclusion that the horizontal position of the stem was not the result of the force of wind, but of this peculiarity of growth. Every gardener knows that the peculiarity of growth was the effect of wind, and that the tree assumed the bent form to escape its violence. In fact we are all familiar enough with the effects of violent currents of air in checking or stunting growth. The point I am anxious to discuss here is whether moderate wind, such as might be produced in our glass houses by improved ventilation, would not increase the growth of plants, add to the bulk and quality of our fruits, improve the health of hothouse shrubs, and enhance the beauty of flowers.

To have clear ideas on this point, it will be necessary to advert to the velocity and force of winds. The pressure they exert in our climate is less than is generally supposed. The pressure of our atmosphere exceeds 2000 lb. on a square foot. The difference of this pressure produced by wind seldom or ever exceeds 25 or 30 lb. in the greatest storms of our climate.

The following Table will illustrate this—

Designation of wind.	Velocity in miles per hour.	Inches of Water supported.	Pressure on a square foot.
			lb. oz.
Gentle breeze	3.25	0.01	0 0.81
Pleasant breeze	6.5	0.04	0 3.33
High wind	16.25	0.25	1 5
Storm or gale	32.5	1	2 8
Great storm	56.70	3	15 3
Hurricane	79.61	6	31 3
Tremendous hurricane	97.5	9	46 12

The above Table is constructed to show the velocity and pressure of the air on a square foot of surface, corresponding to different heights of water supported in a tube, on the principle of Dr. Lind's anemoscope or wind measurer. It was proved by this instrument that the difference of pressure on the windward and leeward sides of any object, even in the greatest gales, bears but a very small proportion to the whole pressure of the air; for while the latter is capable of supporting from 32 to 34 feet of water, the column of water supported by the wind-gauge never exceeds a few inches.

From numerous experiments made in different parts of the country it appears that the whole movement of the air may average a velocity of 18 miles an hour throughout the year. This would amount to a constant pressure of about 2 lb. per square foot. In warmer climates the velocity and pressure are of course greater. Now, although this pressure is little compared to the gross weight of the atmosphere, yet it is altogether different. Atmospheric pressure, as we have already seen, and all feel, nearly balances itself. The external weight is nicely counterpoised by the internal elasticity of the air. Wind pressure is, on the contrary, entirely a weight to be borne. It acts as a strain upon leaves, branches, stems, and roots. Its very irregularity adds to its power. Vegetation is subjected now to comparative calm and then to a furious gale. The majority of the plants we cultivate, coming from warmer climes, have been accustomed to more wind pressure than our climate affords. In addition to this we have shut them up in houses where the most thorough ventilation that has yet been given them scarcely rustles a leaf. To say the least of it this seems very unnatural, and consequently cannot be right. To remain still in a calm atmosphere is a very different thing to being driven bodily backward and forward by the wind. A plant in such circumstances is marvellously like a man trying to be healthy and strong without exercise. We all know that it is simply impossible to be so. Within reasonable limits exercise is the very basis of robust health and enduring strength. It expels the aqueous humours out of the body, empties it of dead matter, and builds up bone, muscles, and flesh of the newest and best materials. I believe it is equally useful and performs similar functions for plants. In both plants and animals it may be taken in excess. High winds on the one hand, or reckless exertion on the other, may stunt, rupture, or destroy either animal or vegetable structures; but this is no argument against rational exercise and moderate winds.

It is quite true that plants have been and are admirably grown in many houses where the air has never moved over them with sufficient force to cause a sensible wind, still they might have been better and longer lived had they enjoyed its bracing effects. It is a troublesome fact that many of our best-grown plants are short-lived. Their bulk and beauty seem often acquired at the expense of their solidity and durability—in the phraseology of animal life, they would be designated fat, rather than strong and healthy. It is very possible that genial breezes playing among them would have imparted compactness and strength to their constitutions. In our climate there are doubtless great difficulties in the way of creating an artificial wind of any great force in our plant houses. Excepting in the middle of summer the cold forbids the use of the external air for this purpose. It is, therefore, of the first importance to inquire whether an artificial wind in hot-houses is of sufficient cultural importance to render it worth the trouble and expense of securing.

Unfortunately there are but few data to guide us in this matter. Since the days of the great Andrew Knight few have made this a question of direct experiment. His experiments, however, if they cannot be disproved, ought almost to be accepted as decisive. And they may be said to establish the fact that wind is a powerful aid to growth. *D. T. Fish.*

NOTES ON CONIFERS.—No. I.

WHEN we meet some one whose handsome and distinguished appearance strikes our eye, or whose acute remarks and lively conversation charm our ear, we involuntarily turn to our neighbour, and nudging him, whisper, "Who is that?" Having got his name, our next inquiry when time shall serve is, "Who is he?" meaning thereby what is his parentage and what his occupation. We do the same with our plants and every other object about us. Our first demand is for their name. Very often that tells everything. "Oh! is that it? We know all about that," say we; but if that gives us no information, we then prosecute our inquiries into their history and qualifications, and having once mastered them, the object ever after stands defined and specialised in our mind in a way it would not otherwise have done. It is the joint occurrence of the sight of the thing and the account of its history, which impresses it on our memory and gives it an unwonted interest. Either without the other would fail of the effect. We may read all the wonders of the Wellingtonia gigantea, but until we see it we do not realise it to our minds; and we might see it every day and think no more of it than a Furze bush if we were not told what it was. When the tale comes with the specimen, each enhances the other.

We wish we saw a little more of this infusion of interest thrown around our plants. It is really very rare. Generally speaking, in going round a man's garden we have to pick the kernel for ourselves and extract the information he possesses with as much difficulty as the meat out of a nut with no better apparatus than a crooked pin and a little hole. But what a difference when we meet with a man who spreads the feast unbidden before us, and helps us without waiting to be asked. The most delightful cicerone in this respect that we ever met with was the late Charles McIntosh. He had a story about every plant. Our faith in him once began to waver, and the horrid thought to take possession of us that he invented them as he went along. We now know that he did not, but we do not know that he did not lay himself out to get "stored" plants—such things as the tree, on the white downy back of whose leaves Allan Cunningham wrote his journal when his paper was all done; Wheat raised from seed 2000 years old, got from a mummy's cell; a Saxifraga oppositifolia, dug up from under the snow in Melville Island; some Swiss rarity collected by Saussure in his ascent of Mont Blanc, and so on. We wish more people did so. We had a friend who collected somewhat in the same line, but his memorials were little morsels of brick and stone—fragments from the Great Pyramid, celebrated abbeys, the Bastille, the Castle of Chillon, a morsel from the top of Peter Botte, a stone from the Sahara, a piece of silicious sinter from the Great Geyser, and even these morsels he made live again. They were his note-book; but what a poor business compared to plants! What a wide field do they take in! We have not only all the beauty of the plants, and all their properties to tell about, but also a world of human interest attached to each, and by cuttings we individualise the specimen and preserve its identity. If every reader of the *Gardeners' Chronicle* who had made a special study of any family were to contribute what he knows of such topics of interest in his own speciality, omitting the dry details of botanical characters, what an interesting collection of readable information would be gathered together!

We who write these lines have a special predilection for Conifers, and we propose to give in the following "Notes" some information regarding them, of the nature to which we allude—such a gossiping reply, in fact, as a man strolling with his friend round his lawn might give him, when he asks of any Conifer, "What is that?"

We shall begin at the beginning, and first say something as to the parentage and past geological history of Conifers in general.

It is accepted almost as an axiom now, that Conifers were already in existence during the early stages of the secondary epoch, many vegetable fossil remains, believed to be coniferous, having been found in the coal formations, and even a few considered actually to belong to the same type or form of Conifers which we have in the present day.

We confess ourselves to be unable to accept the generally received opinion. The whole subject indeed requires to be reconsidered *ab initio*. Some most important rectifications of opinion have recently been made on the relations of different supposed fossil plants of the carboniferous epoch, which unsettle the foundations of the old views on the subject. Until within the last few years we had a variety of plants bearing different names, more than one of which now turn out to be merely different names for different parts of the same tree. We had one called Stigmaria and another called Sigillaria; we had Lepidodendron and Lepidostrobus; we had Sternbergia and Pinites. These are now believed to be respectively only different parts of the same trees. The Stigmaria are the roots of the Sigillarias; the Lepidostrobi are the fruit of the Lepidodendron; and it is not beyond the bounds of possibility that the Lepidodendron itself may be the young plants or young branches of Sigillaria. We know how different the bark of young trees and branches is from that of old trunks in modern Conifers. This, however, may not be so; but one thing now established is that the Sternbergia, instead of being the trunk and branches of a good-sized tree, is merely the pith or a cast of the pith of the so-called Conifers of the carboniferous epoch, a peculiarity surely sufficient to throw a doubt upon all the previous conclusions arrived at regarding them in ignorance of that fact. But the new fact, however inconsistent with the old, is clapped on to it, and the old theory thus patched still holds possession of the public mind.

It would require more space than we can here give to state the objections to all the carboniferous fossils which have been referred by various authors to the Coniferæ; although, if we are challenged to do so, we are perfectly ready to take up the glove. We shall only here note the general line of objection to the evidence on which this ancient direct origin of the Conifers is based, and the kind of flaws by which the determination seems to us to be vitiated.

In the first place, the great objection is one in point of principle. We find, in all branches of life, that as we go backwards in geological time from the present epoch the number of remains identical with those existing gradually diminishes, and the type diverges more and more from that now subsisting. In mammals, no species which is now alive also existed at the Miocene epoch. Even in shells, which, living in a more uniform and less diversified medium, might be expected to vary less, we find the living species which also lived during the Eocene epoch to have dwindled down to a mere fraction; and when we come to the secondary formations, there are no species of any kind common both to the subsequent formations and to them.

As we go back in the secondary strata, further and further apart do the species become, until by the time they have got down to nearly the base of the mesozoic or secondary strata (the coal measures), we have an essentially different type of life from that which now exists. There is only one qualification to be made upon this statement, and that is, that the lower the organization of the plants or animals, the less difference is there between those of ancient geological date and those still surviving.

This is the *à priori* argument against the identity or near affinity of the genera of any plants found in the carboniferous strata with the Conifers of the present day. *A. M.*

(To be Continued.)

Home Correspondence.

Moral Influence of Flowers.—When we read the reports of the Commission on the state of the labouring population of large, especially of manufacturing towns, and the worse than heathenism and darkness of the lower classes on all subjects, but more especially on the wisdom and beneficence of God in creation, I cannot but believe that great good would result from the establishment of societies with the express object of attempting to infuse some knowledge, and consequently some love of the works of creation, among the benighted inhabitants of large towns. Among these, plants are some of the most pleasing, and most easy of management. There is not a situation in Great Britain in which, with the assistance of cases more or less completely closed, a very large majority of the plants in common cultivation would not succeed well in the most smoky situations. The spring flowers especially thrive far better in them than in the open air, and the continued success of one small case outside one of my windows induced me to recommend the building a house 50 feet long in the Botanic Garden at Chelsea, the flourishing contents of which have been the admiration of all beholders. Now every charitable institution or school might be furnished with one or more closed cases, containing either Ferns or flowers, according to the amount of solar light in the situations in which they are placed. It would be needless for me to detail the good effects which would result, but I will give the substance of a communication made to me by the Bishop of Ripon at the last meeting in Leeds of the British Association. The Bishop told me that a certain parish in Yorkshire had been the most lawless in his diocese, and that, in consequence of the smallness of the living and the character of the population, there had not been a resident clergyman there for many years, until a gentleman determined to cast his lot among them and endeavour to humanise and Christianise them, and this he effected primarily by the instrumentality of flowers, with which he plentifully furnished his own garden. Lugging his parishioners in by the neck and shoulders, he showed them his flowers, which they confessed were far finer than any they had seen. He told them that these flowers had been made for them as well as for him, that they should partake with him, and that he would teach them how to make them grow. In this manner he obtained access to their dwellings, clearing away by degrees all the abominations surrounding them, and by a continued series of kind actions had made his village a model village. *N. B. Ward.*

Cytisus racemosus.—What a glorious object this old-fashioned greenhouse shrub is where scope is allowed for it to develope its full beauty! I have a

plant of it in bloom here, which is indeed gorgeous, forming a striking contrast with the liliputians one meets with in 48-sized pots in Covent Garden. The plant to which I refer stands in a border in our conservatory; it measures 20 feet in height and 12 feet in diameter, and is literally loaded from bottom to top with graceful racemes of yellow bloom. It receives only ordinary treatment. After it has finished flowering it is pruned in somewhat closely. Should the summer prove very hot, it is of importance that it should receive a few good syringings, as it is subject to attacks of red spider, and it should also have copious waterings, as it soon suffers from drought. *John Edlington, Wrotham Park, Barnet.*

Chemical Properties of Plants used as Food.—Has anything been done to classify the odorous and sapid properties of plants according to their chemical nature, as suggested by the late Professor Henslow in his "Descriptive and Physiological Botany," Article 210, p. 219? If so, would you refer me to the work? I am more particularly in pursuit of the chemical analyses of the odorous and sapid properties—first, of plants the food of man; and second, of plants the food of cattle. The organs of taste and smell have been denominated chemical senses, and I wish to follow up the inquiry as to how far gardeners and farmers are attending to the nutritive value and economy of feeding materials in the somewhat forced march of modern improvement. *Tyro.* [We are not aware of any such work as that to which our correspondent alludes. When we find Theine in the Tea plant, the Coffee, and the Holly; Coumarine in hay, Tonquin Beans, and some Orchids, we despair of getting Chemistry and Botany to run together comfortably.—Eds.]

Princess of Wales Strawberry.—It is now some five years since I first directed attention to La Constante, a variety of Strawberry which is now in almost every garden, and I would on this occasion strongly recommend Knight's Princess of Wales as the best early Strawberry with which I am acquainted. I was very much struck with it last year in the open garden, but I waited until I should see how it would force before I expressed my opinion on its merits; and having now given it a fair trial both out doors and in, I can fully recommend it as a free grower and good cropper. The fruit, which is excellent in flavour, is large, somewhat irregular, and of a lively bright colour. I feel confident that when this variety shall have become more generally known, it will be a universal favourite. *J. Rust, Bridge Castle, Tunbridge Wells.*

Ascent of the Sap.—Your remarks on this subject (see p. 386) have induced me to send you the following fact:—In June last year I laid down a shoot of Lapageria rosea. In the course of the past winter all the other shoots on the plant were killed, while that laid down, until a few days ago, has been apparently healthy; its leaves have been green, and it has a shoot growing from it about 10 feet from its point *without* roots, 18 inches in length. Only a few inches from the point of the shoot just alluded to, another shoot pushed *with* roots under it. Thinking that the shoot which had begun to grow on and in some measure replace the dead portions of the plant, I tied it up, after having removed the shoot with roots, still leaving the old shoot its whole length, which had no other roots visible than those just mentioned. Next day I was somewhat puzzled when I found it flagging as if it had been cut off, and in a day or two afterwards it became brown and died. From this, I imagine that the roots at the point furnished sap not only to the shoot immediately over them, but that they sent it back some 9 feet, thus supporting the shoot without roots. Does it not also appear from this that the sap channels, whatever they may be, are capable of conveying that fluid in different directions? *Wm. Mills, Eaus, Penryn.*

Cocoa-nut Fibre Refuse.—This has been accumulating with us for 13 years, and we thought that it would ultimately have become a trouble and expense to us. In 1862 we had just commenced burning it with coal-tar under our steam engine boiler in lieu of wood, when the late Donald Beaton directed our attention to its valuable uses for garden purposes, and induced us to advertise it. In the course of four years we have sold about three-fourths of what may be called mountains of refuse, besides what we have been producing in the meantime. We therefore fear that shortly there will be very little to be had; for during the last few years the supply of Cocoa-nuts has been decreasing, while the price has been increasing. For this we of course are sorry, and so will doubtless all who have used the refuse in question, if we may judge from their repetitions of orders for it and their letters expressing the satisfactory results which have attended the variety of uses to which it has been applied. *J. Barsham & Co., Kingston-on-Thames.*

Rockwork.—Broken wine-bottles, glass, and pottery, either separate or mixed, thrown on the top of the fire (when made up for the night) of a conical or tubular boiler, combine with the clinkers and produce very nice-looking results for Ferneries and similar purposes, particularly the wine-bottles, which resemble the colour of Majolica china. Having exhausted my own heap of broken bottles, I resorted to a heap thrown on some waste ground, and was surprised at the great substance of glass of many of the bottles, quite accounting for the reason why those of some dealers hold so little, though the exterior is as large as usual. This discovery of thick bottles will be useful to me, and probably also to your readers. *N., Newport, Isle of Wight.*

Change of Colour in Cowslips.—Some years ago a quantity of Cowslip seed was sent to us from Suffolk, and in time the Cowslips were produced, but from year to year they are gradually undergoing a curious change, the original yellow colour turning into light, and from light to dark brown. In one case the change of colour is perceptible on the same head of flowers. How is this to be accounted for? Perhaps some of your correspondents may be able to throw some light on the subject. *Danny, May 2.* [The change alluded to is frequently met with, but we fear no satisfactory solution as to its cause has yet been arrived at. We have seen a similar occurrence in Violets. Eds.]

Mushrooms.—I enclose a photograph of a fine bunch of Mushrooms. There were 72 altogether in the bunch, which was taken from a bed that was literally covered with them. The spawn was had from Mr. John Bell, Nurseryman, Norwich. *John Perkins, The Gardens, Thorndam Hall, Eye, Suffolk.* [A very fine sample.]

Wasps.—It may, perhaps, be worth while to remind your readers that the time is fast approaching for finding female wasps, and that each of these insects killed destroys a nest. Last year my gardener found them in scores among the Raspberry canes when they were in flower, and killed large numbers of them. As Raspberries are now about blossoming, the probability is that wasps will be found there again. *A Wasp Hater, Woodford.*

Ants.—If your correspondent (see p. 413) will try the following on these little pests, he will be amused at the result:—Take 1 lb. of black soap, dissolve it in four gallons of water, and scatter the solution through a fine rose over the runs and nests. Death will ensue. The remedy should be repeated until all are destroyed, taking care, however, not to water the roots of plants or to destroy Grass on lawns. Stir the top of the nest on a hot day, sprinkle with the solution, and the result will be satisfactory. *R. J. Ellis, Oakwood, Bath.*—I have been greatly troubled with ants in both stove and greenhouse, and have tried several ways of getting rid of them; the most effectual of which has been to get a beetle trap baited with a moderate quantity of sugar in the bottom, and to put it in their runs at night. In the morning the trap will be found to be nearly full. Have a bucket of hot water close at hand, and immerse the trap in it. I have killed thousands in this simple manner. I have tried guano-water, and also sprinkling dry guano in their paths, but without the least effect. *A Would-be Gardener.*

Grass Mice.—Your correspondent Mr. Buchanan (see p. 412) complains that the choice Ferns on his rockery are destroyed by Grass Mice, and that traps and poison fail in keeping them down. I would suggest a remedy which succeeded with myself after all others failed, viz., a *cat. C. E. I., Lamport Hall, Northampton.*

Foreign Correspondence.

Last July, during my absence from Basle, the Curator of our Botanic Garden observed a yellowish-looking parasite growing on a fine specimen of Aralia papyrifera, the Rice-paper plant of Formosa. Soon on other plants of the same species similar growths were observed, but all were destroyed except one, which, on examination, turned out to be a distinct species of Orobanche—O. araliocton. Mesm., a description of which I have given in the "Botanische Zeitung," No. 3, 1866, p. 17.

Our plant being thus a new species, or at least a distinct variety, the question arises as to where it comes from. It may not grow exclusively on the Aralia, but possibly on some other plants unknown to us in the neighbourhood of Basle, and may have been introduced by means of the soil or by seeds; or, secondly, perhaps it is only a variety of one of our European species, altered by its growth upon a foreign nurse-plant; or, lastly, it may really and truly be a distinct species, not indigenous in Europe, but imported with the Aralia itself from Formosa. It is possible that the seeds of the parasite were attached to the roots, or were contained in the surrounding soil. The Aralia was first sent to Kew in 1852, and another plant of it was sent, about the same time, to the Duke of Devonshire. It is readily propagated by parting the roots, and all the plants of this species now on the Continent have been derived directly or indirectly from Kew. In spite of the seeming improbabilities I incline to consider that we have here a new species of Orobanche imported with the Aralia from China. A Lathraea squamaria, planted with its nurse plant in Marburg Botanic Garden (Linnæa, vol. 29, p. 727), flowered abundantly the next year, and then nothing more was seen of it for 10 years, when it again made its appearance. There is therefore no reason why the seeds of an Orobanche should not retain their vitality for 13 years; and I would recommend all growers of the Rice-paper plant to look out for this Orobanche, and if it appears, to allow it to come to maturity. If seeds can be procured, they should be repeatedly sown, not only on the roots of the Aralia, but on other plants as well; and in this way much might be done towards unravelling the mysterious history of this curious plant. Any one interested in the culture of Orobanches should read Mr. Tittelbach's papers on that subject in the "Verhandl. des Garten Vereines in den Königl. Preuss. Staat." 1853. *C. F. Meissner, Bâle.*

Societies.

Royal Botanic.—*May 9 (First Great Exhibition).*—Azaleas, Roses, and Pelargoniums were in excellent condition, and greenhouse plants and Cape Heaths were also furnished in abundance, but of new plants and Orchids there was an unusually small display, a circumstance doubtless attributable to the near approach of the forthcoming great International Exhibition, for which many growers are probably reserving their finest strength. Their Royal Highnesses the Prince and Princess of Wales and other members of the Royal Family honoured the Exhibition with their presence in the morning before it was thrown open to the public.

Azaleas.—These, as has been stated, constituted the glory of the Show, being large in size and beautifully in bloom. Mr. Turner's plants, especially, were wonderful examples of skilful management. His largest collection consisted of Conqueror, Juliana, Variegata, Gloriosa, Coronata, Sir Charles Napier, Magnificent, and Optima. His group of six plants contained Holfordii, Gledstanesii, Perryana, Etoile de Gand, Iveryana, and Gem. From Messrs. Veitch also came magnificent specimens of Cedo Nulli, Coronata, Iveryana, Praestantissima, Herbertii, Criterion, Extrani, and Stella, the last remarkable both for fine shape and colour. The same exhibitors had also Holfordii, Magnificaa, Violacea superba, Rosea superba, Empress Eugénie, and Flower of the Day, which is one of the best light coloured Azaleas in cultivation. The Amateurs' Classes at the Society's Show, Good Mr. Penny, Gr. to H. H. Gibbs, Esq., Regent's Park, was also well supported. Mr. Turner showed a fine plant of *Epacris formosa* as a single specimen in most beautiful condition. It was a pyramidal plant, measuring some 7 feet in height, and quite as much across at the base, many of the flowers being charmingly striped with red, and some wholly of that colour.

Azaleas.—1, Mr. Turner; 2, Messrs. Veitch; withdrawn; 4, Mr. Ichoes; 5, Mr. Turner. *Amateurs.*—Messrs. Veitch; withdrawn; Mr. Dobson (Amateur); 3, Mr. Penny; 2, Mr. Gill; equal 3, Mr. Peed and Mr. G. Wheeler.

Roses.—Messrs. Lane had a finer collection of these than that contained either by Messrs. Lane or this exhibit. It was a fine group, but to see before it was to admire, and to admire was to be lost in wonder. We, of course, did not fail to appreciate its beauty. Some of the blooms in Messrs. Lane's group, numbering from two to a dozen, were nearly large enough to hide one's face in; General Jacqueminot and Senateur Vaisse possessed wonderfully fine shape and colour. Madame Clémence Joigneaux, noticed as far as shape is concerned, and of the beauty and fragrance of Souvenir d'un Ami, Gloire de Dijon, Paul Perras, Anna Diesbach (the blooms of which were equally large as those of Louise Peyronny), Chas. Lawson, and Victor Verdier, it is unnecessary to speak. Messrs. Paul have just from Mr. Wm. Paul also came a beautiful collection, in which were finely-grown well-flowered plants of Beauty of Waltham, Jules Margottin, Madame Willermoz, Souvenir d'un Ami, Victor Verdier, Paul Perras, Madame Charmasin, Anna Diesbach, and Lelia, the last with unusually large and fine blooms. Amateurs' collections were not remarkable either for fine growth or bloom.

Awards.—10: 1, Messrs. Lane; 2, Mr. Wm. Paul. 6 (amateurs): [illegible]; Mr. Terry; 4, Mr. Wiggins.

Stove Plants.—Of these Mr. Peed, gr. to Mr. Lawrence Norwood, had a fine collection in which were Cypripedium insigne, the handsome Clerodendron Thomsonæ, Begonia xanthophylla and heracleifolia, both neat bushes for small greenhouses, Pitcairnia speciosa, Xanthosoma Lindeni, a splendid plant, Dracæna Mooreana, Sanderiana, and Adelaidæ in fine, the largest variety of blue Leschenaultia, the Oleander-leaved Allamanda, Rhododendron Gibsoni, a white tender fragrant Indian kind; and Gomphobolium polymorphum splendens, the last loaded with bright reddish salmon-coloured blossoms.

Awards.—10: 1, Mr. Peed; 2, Mr. J. Wheeler; 3, Mr. G. Wheeler. 8: 1, Mr. Donald; 2, Mr. Kemp; 3, Mr. Kaile. 6: 1, Mr. Ingram (Sunexperience); 1, Mr. Rhodes; 2, Messrs. Lee; 3, Mr. Glendinning; 4, Mr. Baxendine.

Orchids.—*Specimen Plants.*—These only one or two interesting examples were exhibited. The finest, Messrs. Lee's, consisted of specimens of Cyathea Smithii, Pandanus elegantissimus, Croton variegatum, Theophrasta imperialis, Aloe vera, and Yuccas, intermixed with such flowering plants as Erica ventricosa coccinea minor, Francisceas confertiflora, and Boronia serrulata. Mr. Williams, of Holloway, had came Zamia pungens, with short thick trunk, supporting a noble head of fine foliage; Dracæna lineata, Cordyline indivisa, Croton [illegible] Yuccas intermixed with Pinaleas, Heaths, Cytisus, Boronia heterophylla, Cheiranthus Allionii, and other such plants, with some deep-coloured Roses, supported on rough logs and rockwork. Palms, Splendid Latanias, plants of noble growth, Cycas media, Encephalartos magnifica, Pandanus javanicus variegatus, Alocasia metallica, the handsome Caladium Chantinii, and Dracæna ferrea.

Awards.—10: 1, Messrs. Lee; Equal 2d, Mr. Gill and Mr. Williams; Equal 3d, Mr. Rhodes and Mr. Carr.

Fancy Plants.—Of these, Mr. Donald, gr. to F. G. Bayley Esq., had a splendid, very good group in which were Abutilon Thompsonii variegata, with finely variegated leaves, the habit of which is neat, Thunbergia grandiflora, Lantana Leopoldii, Clerodendron fragrans, Ipomœa Horsfallia, in lovely shades of colour, beautiful long-clustered Pimeleas, Clerodendron Balfourianum, Mr. Barnard, gr. to J. W. Lubbock, Esq., Stoke Newington, came fine specimens of Pandanus javanicus variegatus, Dicksonia antarctica, Anthurium grande, with handsome deep green leaves and conspicuous white spathe, Aralia veitchii, Pteris cretica albo-lineata, and other plants. In Mr. Young's collection were good plants of Aspidistra lurida variegata and Alocasia albo-violacea. Messrs. F. & A. Smith also exhibited in this class.

Awards.—6: 1, Mr. Donald; 2, Mr. Barnard; 3, Messrs. F. & A. Smith; 4, Mr. Young.

Ferns.—Mr. Barnard reproduced the fine group of exotic kinds which he showed the other day at the May exhibition at South Kensington, and a collection much smaller in point of size of plants was also furnished by Mr. Young. Among Mr. Barnard's variety were fine Cyathea boconensis, elegans, Lindsæa cultrata, Odontosoria chilensis, Schizoneura meyeniana, Lygodium scandens, Todea africana, Alsophila Moyllii, and Cyathea Smithii.

Orchids.—The collection of these was contributed by Mr. Penny, who had Lælia cinnabarina, with two spikes of bright orange blooms; Oncidium ornithorhynchum, some fine flowers, fine variety of Ionopsis Skinneri, with very handsome delicately tinted blossoms; Phalænopsis grandiflora, finely flowered and in wonderful health, the same beautiful Oncidium sanguineum as noticed by us the other day at South Kensington, and Lælia purpurata, Schilleriana, and Dalbousiana, what is called the Ballroom Aerides, and Dendrobium nobile, Dendrobium nobilius, Wilkeanum, and Dendrobium nobile giganteum, by some miscalled Aerides. From Mr. Page came Phalænopsis amabilis and grandiflora, Dendrobium densiflorum, and a deeply-coloured variety of Dendrobium Pierardi, with a fine spike of beautiful blossoms; Aerides virens, Cattleya Skinneri, Cypripedium barbatum, and the noble example of Oncidium amphatum majus, shown the other day at South Kensington. In small groups from other exhibitors were noticed Cypripedium hirsutissimum, villosum, and other varieties of barbatum, the charming little Trichopilia crispa, Cattleyas, Vandas, Lælia purpurata, the fine yellow-stemmed Oncidium cassidi, and other Orchids, the yellow-flowered Tulip-like Angræcum sesquipedale, and the stout waxy white-blossomed Chysis bractescens. Mr. Donald

showed a very fine plant of Ledia purpurata as a single specimen.

Orchids.—10. 1, Mr. Penny; 2, Mr. Bause. 8: 1, Mr. Peed; 2, Mr. Wiggins; 3, Mr. J. Wheeler. 6 (Nurserymen): 1, Messrs. Lee; 2, Messrs. Jackson; 3, Mr. Hieks. 4, Mr. Bull.

Cut Blooms.—These were on the most part well grown and fairly in bloom. From Mr. Rhodes came beautiful examples of Cavendishii, the greenish yellow-flowered alluais, elegans, Victoria Regina, Beaumontiæ, vasiliera, aurantia major, in excellent condition, and eximia. Messrs. Jackson furnished a fine bush of a variety of perpetuelens, called rubiflora, which appeared to differ very little from Sinoryana; Weldoniæ aristata, Cavendishii, luteo-elegans, candidissima, a fine pure white blossomed kind; fastuosa, lutescens, studded with small cream-colored flowers; elegans, and two variety of Barnesii called virens. In collections from rather more selected species, Devoniana, simplex, Alberti major, a buff-colored sort, useful for the sake of variety; ventricosa incarnata, and v. perspicua tarn; tuberiflora, flavescens, and Spenceriana, the last seldom seen in much commoner than it was on this occasion.

Six.—1, Mr. Rhodes. 2, Messrs. Jackson. 3, (Amateurs): 1, Mr. Peed; 2, Mr. Wheeler. 6: 1, Mr. Ingram; 2, Mr. Rendle; 3, Mr. G. Wheeler.

Pelargoniums.—Of these there was a fine display, Mr. Turner's plants especially being all that could be desired, both as regards growth and bloom. His varieties consisted of Celestial Rose, Celestial, Fairest of the Fair, Charming, Desdemona, Beacon, Lilianum, Candidate, and Empress Eugenie. Mr. Fraser furnished Osiris, a showy crimson scarlet kind, spotted on all the petals with black; Peacock, Lucretium, Sir Rosamond, Fairest of the Fair, Rosetta, Rose Celestial, Empress Eugenie, and Candidate. From Mr. Ward, gr. to F. G. Wilkins, Esq., Leyton, came Spotted Gem, Fairest of the Fair, Nestor, The Bride, Rose Celestial, Lilianum, Peacock, Fair Rosamond, and Sir C. Coghill. Of fancy kinds Mr. Turner contributed Lucy, Dolly's Star, Red Van Dam, Lucinda, Modestus, and Lady Bowers. From Mr. Fraser came Undine, Maroon, Cloth of Silver, Marionette, Clara Novelle, and Arabella Goddard. In other collections were Acme, Madame Soutaz, Ambulatus, Lucy, and the white variegated Anemone. Portentia, Pelargonium zebrina, a small leaved kind, pretty enough with its silvery markings. Maranta spendida, with handsome deep green leaves, barred between the edge and midrib with pale green; some double-flowered Mimuli; new Petunias and Pelargoniums. One or two seedling Pelargoniums were furnished by Mr. Turner, and Mr. Wm. Paul had examples of his handsome Nosegay kinds.

Miscellaneous Specimens.—Among these were examples of the beautiful Clerodendron Balfourii from Messrs. Jackson; groups of Calceolarias from Mr. James and Messrs. Dobson; a fine collection of Azaleas from Mr. Rhodes, for which a First-class Certificate for a handsome yellow-eyed reddish brown Alpine called John Leak; Pansies came from Mr. Hooper, Mr. James, and Mr. Kingston. A promising seedling Fancy named Princess Helena, deep velvety purple, with white edging was contributed by Mr. Hooper; and the same kind named Lord Clyde, colored sort called Col. Murray came from Mr. Bryant, of Hounslow. Messrs. E. G. Henderson furnished variegated Pelargoniums, chiefly of the tricolor section; Acer palmatum atropurpureum, with small purple cut, bronzy olive-colored leaves; the variegated variety, and Negundo fraxinifolium, very showy, noticed by us; and one or two other plants. From Messrs. F. & A. Smith came various Pelargoniums, among which was a promising scarlet Zonal kind called Magnet. Messrs. Cutbush had a showy collection of small Azaleas and other plants; and Mr. Turner, Pelargoniums, narrowly edged with crimson purple, came from Messrs. Dobson. A pure white-spined Cucumber, named Henderson's Champion of the World, was shown by Messrs. Henderson, Pine-apple Place.

ROYAL HORTICULTURAL: *May 3.* (*Regent Street.*)—Three Pelargoniums were furnished by Mr. Beckett, gr. to Lord West, Twyford Abbey, and the same exhibitor and Mr. Young, gr. to R. Barclay, Esq., Highgate, showed small groups of Miscellaneous plants. Azaleas and Ferns came from Mr. Young and Mr. Bartlett, of Hammersmith. Messrs. Cutbush had a beautiful group of Ferns, beautiful specimens of Forget me Not, and other plants. Fine blooms of double Dijon Rose came from Mr. Morgan, gr. to the Marquis of Townshend, and from Messrs. Lucking came a collection of Pelargoniums. Fruit consisted of a dish of Strawberries from Mr. Morgan, and Black Hamburgh Grapes from Mr. Beasley.

UNITED HORTICULTURAL: *May 4.*—At this the annual meeting, the Committee produced their report for the past year, in which it was stated that after all expenses had been paid there remained a balance at the bankers of £86. 15s. 5d., the greater portion of which, after according to the rules be handed over to the benevolent fund attached to the "Benefit and Provident Society for Gardeners," the especial object for which the Society was instituted. The preparation of rules and monetary matters connected therewith had occupied longer attention than was anticipated. It was stated that they are, however, now ready, and that they have been carefully examined by a well-known actuary, Mr. Finlayson of the National Debt Office, who has pronounced them eminently adapted for the purposes for which they are intended. The Report also recorded the hospitalities of Finsbury Circus, who so liberally gave up their Garden on two occasions for the use of the Society's exhibitions, and also to their operation of the City of London, for the great boon conferred on the Society by granting it the free use of Guildhall for a similar purpose, which had enabled the Society to show so handsome a balance. The meeting then adjourned until Monday next, May 14th, in order to give members an opportunity of fully considering the rules of the Benefit and Provident Society. No decision was arrived at as to exhibitions to be held this year, a matter which will be left to the discretion of the Committee.

Notices of Books.

The Fruit Manual: containing the Descriptions, Synonymes, and Classification of the Fruits and Fruit Trees of Great Britain, with Selected Lists of the best varieties. By Robert Hogg, LL.D., F.L.S. Third Edition. London: 171, Fleet Street. 12mo. Pp. 414.

This third edition of Dr. Hogg's useful "Fruit Manual" has grown considerably in bulk as compared with its predecessor. Some idea of the extent to which it has been augmented may be formed from the facts that whilst in the last edition Cherries occupied 19 pages, they now extend to 28; that Figs occupy 16 pages instead of 7, Gooseberries 35 instead of 13, and Strawberries 16 instead of 9, which latter are the numbers of pages devoted to these subjects respectively in former editions. The distinguishing features of the new issue are an increase in the number of varieties described, a revision of the synonymes, a new classification of the various fruits, excepting the Apple and Pear, and enlarged and reconstructed lists of select varieties.

A handbook of ready reference on a subject of so much importance as the names, characters, and qualities of fruits must be when carefully prepared as this is, of very great use to gardeners, professional and amateur, —more perhaps as regards the selection of meritorious varieties for cultivation under various circumstances, than as affording the means of discriminating nice differences between varieties having more or less close resemblance to each other. In this point of view the select lists of sorts adapted for various situations and latitudes, which appear to be judiciously made up, are not the least useful portion of the Fruit Manual.

Bulletin du Congres International de Botanique et d'Horticulture reuni a Amsterdam. April 1865; Rotterdam, 1866. *Proceedings of the International Horticultural and Botanical Congress held at Amsterdam, April* 1865.—Large 8vo, pp. 524, tab. 1.

Just as we are on the eve of inaugurating our own Congress, comes the record of that pleasant gathering at Amsterdam last year. The task of editing this Bulletin has been confided to the able hands of Professor Rauwenhoff, of Rotterdam. We must at present confine ourselves to a simple mention of the principal contents of this volume, reserving for future notice some of the papers. First, there is a list of the members of the Congress, and a summary of the rules for the conduct of the meeting; then a list of the papers and subjects proposed for discussion in the botanical and horticultural section respectively. This is followed by the papers themselves printed *in extenso*, and with what appears to us to be a very complete report of the discussion which followed the reading of the several papers. Among the memoirs presented to the Congress are some important ones, such as that of Professor Caspary, on hybrids obtained by grafting; on the structure of the Anther, by M. Chatin; on the function of the Stomata, by M. Passerini; on Selenipedium, &c., by Prof. Reichenbach; on the arrangement of the Melastomaceæ, by Signor Triana; on the Connecticaceæ, by M. Hasskarl; and on the Agaveæ, by Gen. Jacobi. The pruning of trees, the nomenclature of plants, double-glazing, and other practical subjects, also find a place here; we have already alluded to some of these papers, and shall from time to time endeavour to make our readers acquainted with others.

In the April Number of the *Botanical Magazine* are representations of the following plants:—*Peperomia marmorata*, a pretty dwarf stove herb, with the ovate-cordate leaves freely marbled with grey in irregular bands between the principal longitudinal ribs. It is one of the plants sent from South Brazil by Mr. Weir to the Garden of the Royal Horticultural Society, and is commonly known by the name of arifolia, which belongs, however, to a very different plant having peltate leaves. The present species is well worth cultivating.—*Ericinella Mauni*, a small-flowered evergreen shrub with a Heath-like aspect, and belonging to the Ericaceous family, sent to Mr. Maun from the Cameroons and named by Dr. Hook. It has narrow linear leaves, and terminal heads, consisting of few drooping, minute, semi-globose, purple flowers. The genus is very closely allied to Erica.—*Polychilos cornu-cervi*, a Moulmein Orchid, related to Phalænopsis, not remarkable for beauty, but having a curious flattened rachis supporting the greenish flowers, which are barred with reddish brown. The plant is referred by Reichenbach to Phalænopsis. It flowers freely in the summer months, and is readily grown amongst Indian Orchids.—*Tacsonia Van-Volxemii*, already described in our columns (p. 171), and here designated by Dr. Hooker as "one of the most stately and beautiful plants hitherto introduced into Europe, easy of cultivation, and continuing a considerable time in flower."—*Miltonia anceps*, a species with two-edged flower stalks, and pale olive-green flowers, which have a broad white lip barred with purple. It has been reintroduced by Messrs. Low & Co.—*Mussænda luteola*, a Tropical African shrub, with ovate-oblong or lanceolate leaves, and yellow flowers, the leafy lobe of the calyx being petiolate, and either white or of a pale yellow. The plant was found by Captains Grant and Speke while exploring the head waters of the Nile, and from seeds obtained from this source the plants at Kew were raised. It forms a stove shrub of rather an ornamental character.

The May number introduces us to portraits of some other interesting plants. First comes *Cymbidium Hookerianum*, already described by Prof. Reichenbach in our columns (p. 7) as a new year's compliment to Dr. Hooker. The flowers are large, borne on a nodding scape, green, with the large crispy lip yellowish white becoming deeper at the edges, where it is decorated with rich reddish purple spots. It was sent some years ago by Mr. Lobb to the establishment of Messrs. Veitch & Sons, from the mountains of India.—*Thibaudia coronaria*, a plant distributed by M. Linden under the name of Ceratostemma, from which, Dr. Hooker observes, it differs in the filaments not being connate into a tube. It is a neat evergreen Vacciniaceous shrub, with small ovate coriaceous leaves, and axillary nodding scarlet flowers of an urceolate or ventricosely tubular form, and bluntly pentangular.—*Microcachrys tetragona*, a remarkable Tasmanian Conifer, presenting in the order the unique character of bearing a fleshy brilliantly-coloured cone.—*Iris reticulata*, a beautiful half-hardy perennial, recently obtained afresh from Persia by Lieut.-Colonel Scott, R.E.—*Ceropegia sororia*, a very curious climbing Asclepiad, with linear leaves, and having the reflexed lobes of the corolla green, transversely barred with purple. It is a Kaffrarian plant, nearly allied to C. Bowkeri, and was flowered last May at Glasnevin.

The Apiary.

BEE CULTURE: HIVES.—Ayrshire has long been celebrated as a district from whence our metropolis and other large cities obtain considerable supplies of delicious honeycombs of surpassing purity. The supers sent from thence, which may be seen in any of the warehouses in London, Glasgow, &c., which deal in this article of luxury, are very beautiful, and are not easily equalled by apiarian cultivators of any other part of the kingdom. The hive chiefly in use in Ayrshire, the reputation of which has extended to many other localities, is known as the Stewarton hive, and is in great favour with many successful apiarians. Although I cannot say that this kind of hive, as supplied by the Ayrshire manufacturers, has ever been much in use in my own apiary, yet knowing that with those before mentioned its capabilities as a remunerative honey producer have been found to be very great, and with my own favourable experience as regards a modification of it which I have adopted, I am induced to give a place to a short description of it in these brief notes on bee-hives. I shall not attempt to supply all the details of the construction of the Stewarton hive, as those supplied by the local manufacturers are so beautifully put together, and at the same time so exceedingly moderate in price, that no apiarian carpenter, amateur or otherwise, can compete with them. The hive is usually composed of four boxes or compartments of an octagonal shape, each 14 inches in diameter, and 5 or 6 inches in depth, except the honey-box which is shallower. As originally constructed, the bars were 1⅛ inch wide, and seven in number; but an alteration has since been made to suit the ideas of those who have adopted the German and American arrangement of bars, according to the ascertained instincts of the bees. Some of these hives are now, for the stock boxes, made with ten bars, each ⅞ inch in width and half an inch apart, having a central rib, as a guide for the construction of straight comb, invented by Mr. Woodbury. The honey-boxes have much wider bars, for the purpose of inducing the bees to work combs of greater thickness. As the contents of the main body of these hives are seldom removed, I do not think the width and number of bars to be of very much consequence, though I should prefer the greater number of bars more closely approximating to each other. A groove is ploughed out of the two sides of each, so that a narrow slide formed of wood of the same thickness can be pushed in, closing all apertures, and forming a top, or an adapter, with openings for communication, at pleasure. The eight sides are very nicely dovetailed together, which always struck me as a difficult task as regards octagonal-shaped boxes, and speaks much for the workmanship displayed in their manufacture.

In stocking these boxes, two of the full-sized compartments are first put together, the slides between being withdrawn, and the swarm is hived therein. When the bees have nearly filled these, the shallower, or honey box, may be given above, and when this latter becomes nearly filled with honey combs, a body box is added either below the entire tier, or it may be inserted between the stock-box and the super. It is the custom of many apiarians to join two large hives swarms together for tenanting this hive. By adopting this plan at least one good super of prime honey can usually be calculated on during the first season.

There may be good and sufficient reasons on the part of those who admire and adopt the Stewarton hives for the present arrangement, and I should be much pleased if any one who has had much experience with them would favour us with the results, and enlighten us on these points. I have more than once requested to be furnished with the desired information, but hitherto have not received any reply which has appeared altogether satisfactory. Another serious defect in the manipulation of the boxes arises from the very great difficulty which will frequently be found to attend the withdrawal and reinsertion of slides. I have occasionally failed completely in my endeavour to remove them. This difficulty seems to be somewhat increased by the adoption of the larger number of bars. The advantages of this arrangement of bars and slides would be much increased if this defect could be remedied.

In making the foregoing remarks, I have no desire to depreciate the value of this Ayrshire hive, being fully convinced that it does really possess many admirable qualities calculated to promote profitable bee-management. *S. Bevan Fox.*

DEAD BEES.—I would feel much obliged, says A Bee Admirer, if you can give me any information as to the

cause of numbers of my bees on returning to the hive falling on the ground, many of which never rise again, some laden with pollen, but most part of them without any. I enclose four bees for inspection. The hive from which most were seen to fall made an attempt to swarm a few days ago, but the bees returned; after which I put on a super, and which has not been taken to as yet. This hive did not swarm last year, being worked with a super. Though now full of bees, which are working apparently strongly, more fall from it than from any other in my apiary.

[Your bees may have died from becoming chilled. In those sent for inspection there is no appearance of their having suffered from disease of any kind. Are you quite sure that they have had a sufficiency of food? Their premature attempt to swarm is a manifestation of something being amiss. Instead of putting on a super, we should be almost inclined to recommend a good large bottle of sugar syrup. We have heard of more than one hive which has succumbed to actual starvation during the last two or three weeks, having previously wintered well. Another cause may be, that the bees have really no queen, and are consequently wanting in energy. If with improved weather, and a little food, they still continue to fall and die, we should ascertain if there is any queen, and treat them accordingly.]

Garden Memoranda.

SCONE PALACE, PERTHSHIRE, THE PRINCIPAL SEAT OF THE RIGHT HON. THE EARL OF MANSFIELD.—This palatial residence is delightfully situated in the midst of a noble park, on the eastern bank of the river Tay, two miles north of the city of Perth. The Palace stands on the extreme western edge of an elevated piece of table land, the ground from which undulates gracefully in front towards the river. It is a noble pile of Gothic architecture, resting, as tradition asserts, on the foundations of two former structures which had perished by the hand of time. It was erected in the years 1805-6-7, from designs furnished by the late Mr. Atkinson, and is acknowledged to be one of his finest works. It consists of a reddish-tinted enduring sandstone, found on the estate. Its walls on the southern and western sides, as well as the terrace by which the western front is supported, are partially covered with Ivy. The interior of the Palace is admirably arranged, superbly finished and furnished, and among the ancient and curious furniture are a bed, tapestry, and other things which at one time belonged to Mary Queen of Scots. The gallery is a noble apartment, said however to be several feet shorter than the ancient one; but it is fitted and furnished with much more magnificence. The floor consists of black Oak, obtained from the bed of the Earn, a river only a few miles distant. On the upper panes of the windows, emblazoned on ground glass, are the arms of the successive Earls.

The grounds immediately adjoining the house on the south and eastern side are laid out in sloping Grass terraces, on which no tree or shrub of any kind is seen, except a noble Plane, some 60 feet in height and 14 feet in girth, which was planted by Queen Mary. This, with its somewhat dilapidated branches, covers a considerable space in front of the principal suite of rooms on the western side. On the eastern aspect is the "Boot" or "Coronation Hill," a mound or knoll on which some of the Kings of Scotland were crowned. It was formerly surmounted by the abbey, but it now forms the site of the family mausoleum, a plain ecclesiastical-looking building, surrounded by trees of considerable magnitude. The front of this hill has of late years been sloped so as to be in keeping with the other terraces on the lower level. This dressed ground is separated from the park on the south and western sides by means of an ornamental wall, of the same material and architectural finish as those of the Palace. At 600 feet from the main entrance, which is on the eastern side, is an ancient gateway arch, which is all that now remains of the walls which formerly inclosed the Palace grounds. A writer of the 19th century says "the Palace of Scone was surrounded by gardens and orchards, fruits, and flowers," and the park, in which are still some ancient trees, abounded "in hart and fallow deer." The view from the terraces and principal rooms produces an impression both of grandeur and cheerfulness; looking across the broad waters of the Tay, with its well-clad islands, a fertile and highly enriched plain comes in view, and is lost in a well wooded distance. On the left is the "Fair City of Perth," with its handsome bridge and scattered suburban villas; while, far away in the northern distance, on the right, a rich and magnificently wooded country is bounded by the lofty Grampians. The park is irregularly triangular in form, and contains some 700 or 800 acres; it is bounded on the western side, for something more than two miles, by the river, from which the ground gradually ascends with an undulating surface towards the east, where it rises up to a considerable eminence, which is covered with thriving wood, most of which was planted during the first decade of the present century; a large portion, however, formerly known as the Moor of Scone, is principally clothed with fine forms of ancient Scotch Fir, most or all of which is supposed to be self or rook-sown. Through these fine woods are judiciously led many miles of broad drives, the margins of which are ornamented at occasional intervals with Rhododendrons and other evergreen shrubs. The other portions of the park are admirably adorned with groups and masses of handsome trees, most of which were planted soon after the erection of the present Palace. Some of the Larches, planted in 1807, are now 80 feet in height, and 8 feet in girth at 3 feet from the ground. Associated with these are many remarkable specimens of ancient Ash and Oaks. Of the former several are 100 feet in height, and 12 feet in girth. King James's Oak, which occupies a position near the western point of the Palace, is a singularly grotesque-looking tree, having a large spreading head, and a gnarled, rugged stem, averaging about 10 feet in girth. The Workman's Tree is remarkable, from the circumstance of its having been produced by one of the old labourers having struck his staff in the ground and forgotten to remove it; it now girths 8 feet at 3 feet from the ground; the stem, however, is only 10 feet in height, the top having been broken off by wind some years since.

The estate of Scone, properly so called, does not contain quite 4000 acres, of which 1400 are under wood. The present Earl, however, has added the adjacent estates of Lynedoch, Logiealmond, &c., containing an aggregate of 30,000 acres. On the former of these estates are growing a pair of Douglas Firs, which were presented by their discoverer to the late Lord Lynedoch 38 years ago. Of these the smallest is 60 feet in height and 8 feet in circumference; the other, being inaccessible both to cone stealers and squirrels, could not be got at for the purpose of measurement. This tree is said to yield annually from two to sixteen thousand cones, containing on an average six fertile seeds per cone, and some have produced as many as 20 seeds in each cone. Immense quantities of trees have been raised from these seeds, and many of these are growing with as much vigour as the original plants have done. Near these fine trees are also some noble examples of Silver Fir 100 feet in height, and over 13 feet in girth. The public road from Perth to Blairgowrie bisects the park longitudinally; it is now, however, to be led into a more direct line outside the premises, and will join the Cupar Angus road at New Scone, a village two miles eastward. When this alteration has been effected, the park will be extended to some 2000 acres in a north-easterly direction.

The approach road from Perth enters the park one mile distant from that city; it has been formed several years, but has been but seldom used; it runs almost in a direct line to the eastern front of the Palace, passing over in its course a handsome bridge erected over a romantic "Den," and entering the lawn through a pair of massive iron gates in the handsome parapet wall forming its boundary. Another carriage drive proceeds from the main entrance eastward, passing through the ancient arch already alluded to, and onwards by a broad well-backed avenue of Limes to the public road. This will ultimately be extended onwards to join other roads at the boundary of the new park, when the proposed alterations have been completed.

A broad walk leads from the northern end of the western terrace onwards to the Home Farm, which is distant about a mile, passing a large mass of stable buildings on the right, screened from view amongst noble trees and undergrowths of thriving Yews, Rhododendrons, and other evergreen shrubs; there are also many examples of Douglas Fir. Proceeding onwards, we pass on the right the curling pond, a sunken panel of turf, 55 yards in length and 12 yards in width, which on the approach of frost is filled with an inch or more of water, on which the national game is played. Opposite is a neat rustic luncheon room, with a birch broom (the curlers' arms) as a finale to the apex of the roof. Adjoining is another sunken panel 16 yards square, which is devoted to the game of ground billiards. On the left hand side is situated an eagle's cage and the gas-house. The walk proceeds onwards by the side of a murmuring brook, overshadowed by noble examples of Larch, and associated with many interesting native plants, in which these woods and dells abound. Passing an admirably-constructed dairy and poultry house in a broad open space on the left, we soon reach a newly-erected mass of farm buildings, the elevations of which are exceedingly handsome, and the workmanship and material of the most satisfactory kind.

The lawns, pleasure grounds, and gardens, occupy about 100 acres, extending eastward from the Palace to the Blairgowrie road, which is the boundary in that direction. A broad walk is led from the north end of the western terrace along the inside of the parapet wall to the flower garden, which is situated at its extreme end. This garden is some 3 acres in extent, and is well screened by plantations on all sides. In its centre is a noble example of Weeping Ash, from which simple forms of gaily filled flower-beds radiate. From the entrance to the centre proceeds the leading walk, on either side of which are formal beds, edged with the broad-leaved Cerastium tomentosum in wide bands, which associate admirably with beds of choice flowering plants, amongst which the gorgeous flowers of the Gladiolus, in their gayest colours, were not the least conspicuous. Outside these beds are some fine specimen plants on the turf, as well as masses of Rhododendrons and other evergreen shrubs, and a noble example of Douglas Fir, whose broad deep green foliage contrasted finely with all around it. There are also fine specimens of Golden Ash, Purple Beech, and many other trees of equal interest. From the central point the walk diverges to the east for some little distance, until it reaches some rockwork, a semicircular mass of stones slightly covered with Scotch Roses, Ferns, &c. The flower beds in this direction remain the same in form as they did some 40 years ago. At that period, however, they were filled with perhaps the best collection of herbaceous plants to be found in the country, and they possessed a peculiar charm for the young gardener, inasmuch as they were all correctly and somewhat elegantly named. Associated with these are also clumps of Roses, some filled with dwarf and standard sorts of the best kinds—others with beautiful double varieties of Scotch Rose. There are likewise Moss and Provence Roses pegged down in the manner described by Mr. Perry, at p. 55 of our current year's volume. Here also are a series of beds filled with the most showy varieties of florists' flowers. On the northern side of this walk, on a well backed up portion of ground, is the site long intended for a handsome range of plant-houses; a walk proceeds from this point through the centre of the rockery to the exterior of the garden, and onwards through the ancient avenue of the Chantrey Gate, then branching right and left; that to the right is led onwards by the side of a purling brook, which finds its way through the bottom of a "Den," the banks of which, sheltered by stately trees, form a suitable home both for Ferns and other interesting native plants. The other walk skirts the side of the enclosed grounds onwards to New Scone, a village especially interesting to horticulturists on account of its containing in its churchyard a handsome monument erected by public subscription to the memory of the lamented collector Douglas, who was born in the ancient village of Scone. It was in Lord Mansfield's gardens, too, that he received the rudiments of his instruction in botany and horticulture. The main walk just adverted to is continued onward from the rockery to the kitchen garden, a considerable distance to the east, through fine plantations of thriving woods, in which are many remarkable examples of ancient Ash trees, of which one is of historical interest, having in days of "Auld lang syne" done service as the "Bell-tree" of the parish church. The butt-end of its trunk contains, measuring over the bark, 130 cubic feet. Miles of other walks are judiciously led through these magnificent grounds.

On the south side of the garden a Pinetum of some extent has been formed on the site of a former orchard. The plants are arranged in rows on turf; amongst them are good examples of Deodars, Douglas Fir, &c.; also a fine compact specimen of Picea nobilis, which has borne cones. The margin of the noble walk which separates this ground from the garden as well as of that which runs at right angles through its centre are lined effectively with handsome thriving specimens of Irish Yews, intermixed with other evergreen trees.

The kitchen garden, which is surrounded by lofty brick walls, contains rather more than 4 acres of ground, and is subdivided into two parallelograms by a wall running east and west. The soil is of a somewhat strong loamy character, well adapted both for the cultivation of fruit trees and vegetables. The forcing-houses consist of three distinct ranges—and owing to the ground sloping to the west the western end of each range is supported by a terrace wall. The centre range is 100 feet in length and 8 feet in width, in two divisions, and the roof, which is fixed, rests on a dwarf stone parapet, and has an angle of 56°. The aeration is effected by means of ventilators in the front as well as the upper portion of the back wall. These houses were designed by the late Mr. Atkinson, and were erected when the gardens were formed, about 1807. They are admirably adapted both for the production of early and late fruit. Grapes in such structures keep plump and firm for a long time after they are ripe. The other ranges are each 80 feet in length and 13 feet in width; their roofs are pitched at an angle of 35°, and they contain several compartments. They occupy the site of two former ranges, which were of the same dimensions as the central range. The whole of these houses are devoted to the cultivation of Grapes and Peaches, of which there were at their proper seasons excellent crops of finely coloured well-ripened fruit. The Peaches are trained on a curved trellis in front, and there is also a suspended trellis from every alternate rafter above the pathway; the upper portion and the back wall too is also trained over. The whole of these houses are heated by flues which are white and clean, and their tops are made to retain water for purposes of evaporation. On the floors of the Peach-houses are some good-sized specimens of Camellias, and on the flues and floors of the other houses are also some good examples of Azaleas, Zonale and other Pelargoniums, Cytisus, Begonias, &c., as well as several admirable dwarf Orange trees in pots, whose fruit has a nice appearance. The borders in front of these houses in summer are gaily ribboned their whole length, with broad lines of Cerastium tomentosum, Calceolarias, Perilla, Pelargoniums, Heliotrope, and Ageratum, backed on the southern side with Dahlias, Sweet Peas, and Hollyhocks. On the terrace at the end of one of the ranges of houses, a rain gauge is placed in which the rainfall is constantly registered, and a record of the daily state of the temperature is also kept. The foliation and exfoliation of different trees, &c., likewise form subjects of observation. The houses are backed their whole length by buildings, in which are ample room for Mushroom-houses, fruit stores, fire sheds, offices, &c. Near here is also the gardener's house, an excellent two-storied erection, ornamented with evergreens in front, amongst which are some very handsome Box trees. The under-gardener's house is situated in an open space a little distance off; immediately in front of it is the pit ground, situated in an enclosed square on the western side of the garden; it consists of several ranges: the first is a recently constructed "hybernatory;" its walls are of turf; it is some 80 feet in length and 13 feet in width, from which frost is kept out by a single hot-water pipe in front. The next range consists of Pine stoves; in two divisions, heated by hot water, and having a walk along the back; in these fruiting and succession plants are successfully grown. The next range is principally used for the production of Melons; it is constructed on McPhail's principle, the linings being closely boarded over, so as ensure the most rigid cleanliness. In the front range, which has two compartments heated by water, Cucumbers are grown; there are also sundry other pits, in which are good specimens of fruit trees in pots. In a corner of the square is a circular pond, into which water, which is brought from a considerable distance, is constantly flowing, and the waste supplies an adjacent Cranberry bed, on which are every year plenty of fine fruit.

On the western end of the southern aspect wall of the south garden, facing the Pinetum, has been recently erected a most beautiful house, curvilinear in

form, 172 feet in length, 8 feet in width, and 15½ feet in height: the roof is fixed, strong sheet glass being glazed on cast iron bars. It is aerated by means of ventilators placed in the dwarf front wall on which the roof rests, and at the upper portion of the back wall immediately under the glass. In the front of this house, running from end to end, are two rows of Peach and Nectarine trees in pots, and which in the latter end of August last were ripening a heavy crop of admirably-coloured highly-flavoured fruit. On the back wall are trained some excellent trees of Peaches and Nectarines, which also produce good crops; conspicuous amongst them last autumn were some magnificent specimens of the delicately-coloured unrivalled Noblesse Peach. There was also a good example of the excellent Marseilles Fig, producing its rich fruit in abundance. This house was designed by Mr. Halliday, Lord Mansfield's gardener, and erected by Messrs. Shanks, of Arbroath; it is perhaps the first house of the kind that has ever been erected in cast-iron, and for Vineries or Peach-houses nothing in my opinion could possibly be more elegant or appropriate; the expense of erection, too, is but little more than that of the best description of wooden houses, which, as a matter of course, are less durable.

The excellent walls that enclose the kitchen garden are well covered with healthy trees, apparently trained with the same scrupulous care for which these gardens have ever been distinguished. Among them are some huge specimens of Morello Cherry, which are remarkable examples of cultural skill; it was in these gardens in 1811, that the system of root-pruning, first promulgated by Switzer, in 1718, was successfully practised. The Peach and Apricot trees that had rapidly covered the space assigned to them on a lofty wall "400 feet in length," without being productive, were the first operated on, and the system was afterwards carried through the entire garden; many of the trees in question still remain, and are every year heavily laden with good examples of well-ripened fruit. Among Pears I noticed Napoleon, Marie Louise, Ne Plus Meuris, Winter Nelis, Duchesse d'Angoulême, Passe Colmar, Glou Morceau, Althorpe Crassane, Beurré Rance, Beurré de Capiaumont, Buerré d'Aremberg, the Easter Beurré and the Brown Beurré. Beurré Diel does not succeed so well as those just enumerated. Black Auchan is apparently the best cropper of any of these Pears, and seems well adapted to the climate of Scotland. The margins of the walks which divide these gardens into quarters are lined with excellent examples of dwarf standard Apple trees, and they, too, produce excellent crops. Amongst them Bedfordshire Foundling was most conspicuous. Nonpareils do exceedingly well on the walls, on which there are many fine examples. The broad border of the northern aspect cherry-covered wall of the south garden is plentiful with Strawberries, Currants, and Gooseberries, and on its outer edges a rail is run along its entire length, about 4 feet high, over which a net is stretched from the top of the wall, thus protecting a large quantity of late fruit from the depredations of birds and other delinquents.

The whole of these beautiful gardens, drives, and roads, and indeed all the plantations on the property, as well as those on the not far distant estate of Balvaird, were formed for the late Earl of Mansfield by the late Mr. Beattie, who, during the 34 years preceding 1837, had planted 2,863,000 trees, including a portion of almost every known kind except Scotch Fir, and these, distributed at the usual distance of 4 feet apart, would cover an area of 1050 acres; these woods have ever had the reputation of being well managed, and the trees are now growing into fine specimens, particularly those in the Park, immediately in front of the Palace. Mr. Beattie was not only eminent as a planter, cultivator, and landscape gardener; he also made frequent contributions, the results of his successful practice, to the "Transactions" of the Horticultural Societies, both of London and Edinburgh. He was succeeded by Mr. Dodds, who held the appointment for 14 years, and during that period remodelled the terrace slopes in front of the Palace, as well as re-erected two of the ranges of forcing houses in the kitchen garden. Mr. Dodds was succeeded by Mr. Halliday, the present superintendent, under whom many improvements have been carried out. Mr. Halliday is one of the few candidates who has had the honour of obtaining a First-class Certificate, after undergoing the ordeal of an examination by the late Dr. Lindley, before leaving the Garden of the Royal Horticultural Society at Chiswick. *D.*

Calendar of Operations.

(*For the ensuing week.*)

AT this season the disbudding of stone fruit trees on walls is a matter of considerable importance; for on thinning in due time and in a proper way, success in ripening both wood and fruit very much depends. The operation, it need scarcely be stated, should not be completed at one dressing; that would be too severe. The trees should be looked over at least three times in the course of the season —firstly, when the young shoots are about 2 inches in length; secondly, in about a fortnight afterwards, finishing in about three weeks after the second inspection. The first dressing should consist chiefly in rubbing off or otherwise removing foreright and ill-placed shoots; at the second thinning, a selection of wood as regards necessary quantity and position should be made, and at the last examination all gross shoots or robbers should be stopped in order to equalise the sap. Permanent unstopped shoots will require to be trained to the wall as they advance in growth. Insects must also be kept in check by means of frequent forcible washings with a powerful garden-engine. Thinning the young fruit when too thick should likewise be done in good time; removing a few at two or three thinnings until the only proper quantity the tree should be allowed to bring to maturity is left.

FLOWER GARDEN AND PLANT HOUSES.

Conservatories should be gay with Azaleas and other showy plants, of which there ought to be now no scarcity. Out of doors, in addition to planting out as just directed, let lawns be kept closely mown, walks cleaned and rolled, and edgings put into proper repair.

AURICULAS.—As soon as these are out of bloom remove them to a cool north border, on which a bed of coal ashes has been made for their reception. Means must, however, be provided for screening them from very wet weather. They should be regularly watered and otherwise encouraged to make good growth before they are repotted in autumn.

BEDDING PLANTS.—In the South these will soon be placed in their summer quarters. It having been determined what each bed or border is to be filled with, use every means for securing their safety and success, in order that they may produce a full display of flowers as early as possible. The chief points are to plant in good soil, and to protect for the first fortnight from extremes of heat, cold, or drought. When it is necessary to water, it should be done in the morning, as the plants are liable to be injured by late frosts if watered at night. They should be well watered, however, immediately after planting, taking care to moisten the bed thoroughly. If a fine early display be desired, the beds should be planted sufficiently thick to produce immediate effect, and as the season advances, it is easy if necessary to thin out. Seldom, however, have we seen masses too thickly planted, but we have often observed the ill effects of beds planted too scantily. It is a common fault to plant too near the edges, in consequence of which the outside plants have to undergo a constant mutilation to keep them within bounds. Where the young plants have been pricked out into frames of soil, as most of them doubtless will have been, attention should be paid to lifting them with a sufficient ball of earth and roots to prevent their receiving any check, and also to safely conveying them to their destination, and replanting them as quickly and with as little injury as possible.

CAMELLIAS.—Keep such as are making growth well syringed. Should black fly appear on the young shoots, which sometimes will happen, a good washing with tobacco-water will soon destroy it.

DAHLIAS.—Encourage these to grow freely by repotting such as require it in good rich soil, hardening them as much as possible previously to planting out.

PANSIES.—Propagate these by means of cuttings made of the small side shoots, and let seedlings be often examined in order to ascertain what sorts are worth keeping, and what are worthless.

PELARGONIUMS.—A slight shade will be necessary on bright days; green fly is occasionally very injurious to them at this season, and therefore the plants should often be fumigated.

PINKS.—After this time, if the weather continue dry, these will require careful attention in the way of watering.

FORCING GARDEN.

CUCUMBERS.—Stop, thin, and water freely. See that the ball of earth, in such as are to be put out, is well soaked with water previous to planting.

PEACHES.—If red spider should make its appearance, wash repeatedly with the engine until it becomes thoroughly eradicated. Thin the fruit immediately the crop is stoned, leaving no more than the trees can bring to perfection. Give air freely to houses in which the crop is ripening; but at the same time exclude if possible cold winds.

PINES.—Attend carefully to the bottom-heat. Where much fire is used, it requires some experience to be able to keep the soil in a proper state as regards moisture, but this must be effected at any expense of attention if success is to be insured. Maintain a thoroughly moist atmosphere, but do not push young stock too fast. Avoid allowing water to lodge in the hearts of plants showing fruit, and spare those in bloom while syringing. Pot off or plant out suckers as they can be obtained sufficiently strong, and attend to keeping up regular successions.

STRAWBERRIES.—These want abundance of water. They must not be allowed to flag by any means, and if the weather continues bright they will succeed best in a comparatively cool situation, where they will rarely be attacked by red spider, an evil to which plants forced late are liable.

VINES.—Attend to disbudding and stopping, &c., as may be necessary, in succession houses, and see that inside borders are kept properly moist, giving tepid manure-water as may be necessary to effect this, and do not be afraid of giving too much of it to Vines in pots.

HARDY FRUIT AND KITCHEN GARDEN.

KIDNEY BEANS.—Full crops of these may now be sown, and also of Scarlet Runners.

LEEKS.—These may be transplanted as soon as they are large enough for that purpose. Let the rows be 18 inches apart, and the plants 9 inches asunder in the rows.

LETTUCES. Keep up successional sowings.

PEAS.—Let these be earthed up and sticked as they may require it, and others sown for succession. The latter need not be sown so thickly as those for earlier crops.

POTATOS.—Fork up the soil between the rows, which will not only be of benefit to the Potatos, but will help to keep down weeds.

ROOT CROPS.—If young plants of these are attacked by snails or slugs, give the ground about them a good dose of soot and lime, or sprinkle as formerly directed with sifted coal ashes. The best time for doing this is either at dusk in the evening, or early in the morning.

STATE OF THE WEATHER AT CHISWICK, NEAR LONDON,
For the Week ending May 9, 1866, as observed at the Horticultural Gardens.

May.		Moon's Age.	Barometer.		Temperature.					Wind	Rain.
					Of the Air			Of the Earth			
			Max.	Min.	Max.	Min.	Mean	1 foot deep.	2 feet deep		
Thurs	3	18	29.570	29.554	52	26	39.0	50	48	W.	.10
Friday	4	19	29.809	29.727	58	25	41.5	51	49	W	.01
Satur	5	20	30.133	30.040	60	39	49.5	52	49½	S	.04
Sunday	6	21	30.216	30.188	62	43	52.5	53	49½	W	.00
Mon	7	·	30.221	29.908	68	32	50.0	55	50	S W	.00
Tues.	8	23	30.267	29.880	64	44	51.0	55	50½	S W.	.05
Wed.	9	24	29.802	29.778	70	40	55.0	56	51	W.	.02
Average			30.002	29.881	62.0	35.5	48.7	53.1	49.6		.22

May 3—Densely overcast, rain, heavy showers, with some hail; frost at night
— 4—Fine, slight haze, masses of white clouds, fine, frosty
— 5—Clear, cloudy with cold though southerly wind, fine at night.
— 6—Very fine; cloudy; fine throughout.
— 7—Slight haze, fine, very fine
— 8—Very fine; overcast, rain at night
— 9—Rain, cloudy and fine, fine at night.

Mean temperature of the week, 1½ deg. below the average.

STATE OF THE WEATHER AT CHISWICK,
During the last 40 years, for the ensuing Week, ending May 19, 1866

May.	Average Highest Temp.	Average Lowest Temp.	Mean Temp.	No. of Years in which it Rained	Greatest Quantity of Rain.	Prevailing Winds. N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.
Sunday..13	63.9	38.9	51.4	14	0.66 in.	3	9	8	1	5	8	4	2
Mon ..14	63.4	40.8	52.1	16	0.16	4	11	3	2	8	9	2	1
Tues. ..15	66.1	41.9	54.5	15	0.46	6	6	7	-	2	11	3	2
Wed ..16	66.4	42.9	54.6	15	0.34	2	8	4	1	4	13	4	4
Thurs ..17	65.9	41.6	53.7	16	0.58	2	7	4	2	5	12	4	4
Friday ..18	65.8	42.5	54.1	17	0.17	2	9	5	3	3	11	6	1
Satur. ..19	66.4	42.9	54.7	13	0.50	2	8	7	3	4	5	4	1

The highest temperature during the above period occurred on the 15th and 17th, 1833—therm. 86 deg.; and the lowest on the 15th, 1850, —therm 25 deg.

Notices to Correspondents.

CYCLAMENS: *A J.* Next week.

HORTICULTURAL AND BOTANICAL CONGRESS: *An Echo from Warwickshire.* The subject you mention would be wholly unsuited to such a meeting, which is to be devoted entirely to the discussion of scientific and practical points, and not to social questions.

INTERNATIONAL EXHIBITION: *R L T.* If you will look a little carefully at the terms of subscription, which have been freely distributed, you need not be so much puzzled about your tickets. A certain amount of subscription secures a ticket which entitles the subscriber to attend everything but the banquet. This ticket happens to be a red one. Congress tickets are given in addition to this, but that such Congress tickets will not admit to the Show must be clear to any one who reads what is printed on them.—*M M, Hastings.* The concession granted to gardeners of using for the Wednesday a 10s. ticket on paying one fourth of its value does not convey any privilege in respect to the following day or days.

INTRODUCTION OF THE DEODAR: *W. B.* We believe that to the late Dr. Royle more merit is attributable for the introduction of this tree to British nurseries and private gardens than to any other person, the authorities at Kew not excepted.

NAMES OF PLANTS: *A H R, Welland.* We are unacquainted with any Thuja called Weldiana, either true or false. There is no species described under that name. It may be a nurseryman's unpublished name, but we never before heard of it. There is a Thuja Wareana, which may be that to which you refer. Indeed it probably is, because Thuja Wareana is a synonyme of Thuja tatarica, which again is a synonyme of Thuja occidentalis, which is what both your specimens are. We call Thuja tatarica a synonyme of Thuja occidentalis, although they are usually kept separate. But they are kept separate principally on account of their localities. The fructification is identical in both, and the foliage is scarcely if at all distinguishable. It is a case of frequent occurrence that species from Eastern Asia, although in point of fact indistinguishable from individuals growing in North America, have been described and introduced under different names. The two specimens sent undoubtedly belong to the same species, and that, as we have just said, the Thuja occidentalis, whether the seed has come from Asia or America. The one is of a much finer green than the other, but the form of the foliage is the same, and you doubtless know that the varieties of Cypresses in colour and shade are endless. You will find the sense of smell a very useful aid in determining on the identity of similar plants, especially Conifers. If you bruise these two and smell them you will find that the odour is the same in both, and moreover that it is the odour of Thuja occidentalis. Your Begonia is indeterminable.—*A W.* Hovea Celsi.—*C S.* 1, Lycopodium Selago; 2, Cereus flagelliformis. For Mosses you should consult some such book as Stark's "British Mosses." They are not horticultural plants. We do not take fees for naming plants.—*A W.* Lonicera tatarica.—*W B.* Smashed to a pulp.—*Quaesitor.* 1, One of the varieties of Dennstaedtia cicutaria; 2, Diplazium decussatum; 3, Lastrea dilatata apparently, but the specimens are too young for correct determination.—*J Paget.* Amelanchier vulgaris.—*J Sheppard, Wolverstone.* The Pine leaves sent appear to be those of Pinus filifolia, Lindl. (P. aztacensis and P. tenuissima of Roezl); but we must again beg our Correspondents to understand that a determination of Pines founded upon nothing but the leaves is at the best but uncertain. In every instance they should aid us by supplying all the information they possess as to the native country, hardiness, and other characters of the plants they inquire about. The specimen in question should be tender, if it is what we suppose it to be.—*A.* In future address "the Editors" 1, Amelanchier vulgaris; 2, Saxifraga ovalis; 3, Ribes aureum var flavum; 5, Orobus niger.—*Wm Whatley.* Your Oak is perhaps the var. subperennis of Quercus Cerris, but a single leaf is not sufficient to determine any plant, least of all an Oak.—*J G.* We are not quite satisfied what your Oak is, and as we shall have an opportunity of comparing it with some living ones, we prefer waiting until then before giving an opinion.

PASSIFLORA MACROCARPA SPLENDENS: *T.* We have received a private letter from the introducer of this plant, stating that it grows very fast when grafted upon the P. macrocarpa of Belgian nurserymen, forming then a tree. He goes on to say that he will guarantee it to be what he says it is. The only Passionflower yet known with edible fruit at all approaching the size mentioned is the well known P. quadrangularis. We must again recommend intending purchasers to see the plants or dried specimens before making their purchases. The vendor can have no objection to this.

REPORTERS' ERRORS: *Cornaris.* You should apply to the managers of the newspaper to which you allude.

RHODODENDRON: *T Ivery & Sons.* Your Rhododendron is a very neat and pretty early blooming hardy white variety, all the more effective for being nicely spotted on the upper part of the flower.

STRAWBERRIES: *A P* will feel obliged by some of our correspondents furnishing him with information as to the best method of packing Strawberries for transit by rail a distance of some 200 miles.

To the Trade.

MANGEL WURZEL AND TURNIP SEED.

H. AND F. SHARPE can still supply the Trade with their choicest stocks of

SHARPE'S IMPROVED PURPLE-TOP SWEDE TURNIP.
SHARPE'S IMPROVED PURPLE-TOP SWEDE TURNIP.
SHARPE'S IMPROVED GREEN-TOP SWEDE TURNIP.
SHARPE'S IMPROVED YELLOW TANKARD TURNIP.
TESTER DORIS ORANGE GLOBE MANGEL.
IMPROVED YELLOW GLOBE MANGEL.
IMPROVED LONG YELLOW MANGEL.
LANGTHAM LONG RED MANGEL.

Grown in 1865 from transplanted Bulbs. Prices very moderate.
Seed Growing Establishment, Wisbech

Wetherell's Prize Swede Turnip.

W. JACKSON AND CO., SEED GROWERS, Bedale, Yorkshire, can supply the above at 1s. per lb., or 16s. per bushel. Mr Wetherell gained all the great Prizes offered by the late Duke of Northumberland with this Swede; it is of excellent quality and fine size.

Turnip Seeds.

THOMAS KENNEDY AND CO. beg to call the attention of Agriculturists to their extra improved TURNIP SEEDS, comprise KENNEDY'S IMPROVED SWEDE, DRUMMOND'S IMPROVED SWEDE, IMPROVED GREEN-TOP YELLOW BULLOCK, and other varieties, which for size, shape, and quality are unsurpassed.

A PRICED DESCRIPTIVE CATALOGUE will be forwarded free on application. Free delivery as formerly.

Nursery and Seed Establishment, Dumfries.

To Market Gardeners and Others.

CABBAGE PLANTS, EASTHAM, ENFIELD, and DRUMHEAD, 1s. 3d. per 1000. The stock true and can be warranted

RED CABBAGE PLANTS, extra fine, 5s. per 1000.
ONION, WHITE SPANISH, 1s. 3d. per lb.
WURZEL, YELLOW GLOBE, 2s. per cwt.
BARLY SHAW POTATOS, 6s. per cwt., warranted true.
Terms cash.

R. WALLIS, Seed Merchant and Grower, Biggleswade, Bedfordshire

INVINCIBLE SCARLET SWEET PEA, very fragrant, strikingly brilliant, and extremely distinct in colour.—A First-class Certificate from the Royal Horticultural Society; also a Certificate at the Crystal Palace Show in September. Packets 6d., 1s., and 2s. 6d. each; packets of 100 seeds, 5s. 6d., supplied by the principal Seedsmen throughout the kingdom: also of Messrs. Krelage, of Haarlem; Vilmorin & Co., Paris; Benary and Haage & Schmidt, of Erfurt, Prussia; and Smith & Co., Hamburgh; also of the Kaiser,

Sprunck, Boissy, Swaagers, Buffoir, and Dupuy.

Price to the Trade on application.

Carter's Genuine Farm Seeds.

CARTER'S PERMANENT PASTURE GRASS, per acre, 56s., 28s., and 35s.
CARTER'S PRIZE SWEDE SEED, per lb., 1s.
CARTER'S PRIZE MANGEL SEED, per lb., 1s.
Special Lists of Farm Seeds gratis and post free on application.

JAMES CARTER & CO., 237 and 238, High Holborn, W.C.

Grass Seed for all Soils.

RICHARD SMITH offers the best selection that can be made of PERMANENT MEADOW GRASS and CLOVER at 32s. per acre, cwt. extra of 2 bushels Italy, and 1 lb. heavy Seed. The kinds and quantities are chosen for Deep Loam Growth, Crop, Nutritive Quality, Respective Duration, and Permanency, and can be had separately, or partially mixed Heavy, Light, or Medium Soil. Richard Smith, Seed Merchant, Worcester.

Brighton and Sussex Seed Warehouse.

EDWARD CARPENTER'S MIXTURES of PERMANENT GRASS and CLOVER SEEDS.—Best quality, 30s. per acre (24 bushels); best seeds, and 12 lb. Clovers and all seeds per acre.—Seed lists gratis on Catalogue.

EDWARD CARPENTER'S RENOVATING MIXTURES for Improving Old Pastures.

PRICED CATALOGUES of KITCHEN GARDEN, FLOWER and FARM SEEDS now ready, gratis on application.

EDWARD CARPENTER, Seed Merchant and Grower, 96, St. James's Street, Brighton.

Sutton's Grass Seeds for all Soils.

SUTTON AND SONS have still on hand some of each of the following Selected

PERMANENT NATURAL GRASSES and CLOVERS,

which were mixed expressly to suit the soils to whom they are intended.

Price 14s. to 56s. per acre.
Carriage free.

SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

SUTTON'S PRIZE KOHL RABI should now be Sown, drilled as Swedes, 3 to 4 lb. per Acre.

Cheaper in large quantities.

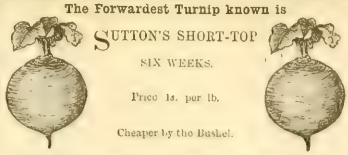
PRICED LIST of other FARM SEEDS gratis and post free.

SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

The Forwardest Turnip known is

SUTTON'S SHORT-TOP

SIX WEEKS.



Price 1s. per lb.

Cheaper by the Bushel.

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Turnip Seeds

FOR PRESENT SOWING.

CHEAPER BY THE BUSHEL.

SUTTON'S IMPERIAL GREEN ROUND or GLOBE.—This stands to come for the early Winter crop, instead of the common Green Round Turnip, being a heavier and more fine-leaved kind. For four years successively H.R.H. the late Prince Consort's Price Crops were awarded to Sutton's Imperial Green Globe Turnips, besides numerous other Cups and First Prizes in other parts of the Kingdom. Several large Turnip Crops this sort in successional sowing, from first week in June till middle of August, and none other.

Price 9d. per pound.

MOTTLED GLOBE or GREY STONE.

Price 10d. per pound.

From HENRY HUDSON, Esq., *The Island, Dresdown.*

"Your Grey Stone and your Short-top Six-weeks Turnips are everything we can desire. After a trial of the various sorts of Turnips I have found these two the best—the Grey Stone for early planting, whilst almost all the other varieties of Turnips are bolting and valueless this season, these two are excellent. Had the secret I keep not hundreds they are in the autumn is to sow them plentifully of Grey Stone Turnips through the months of August and September, pulped with Tribolium or Clover-chaff."

Also,

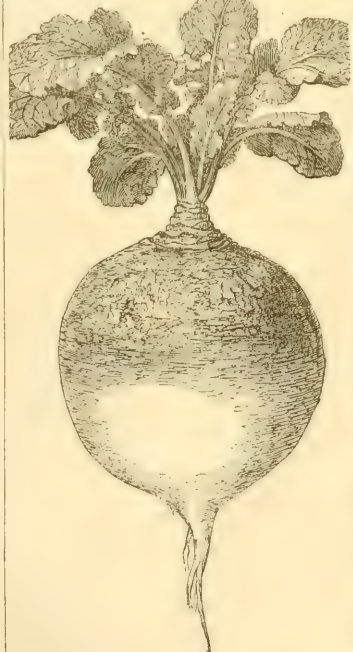
LINCOLNSHIRE RED PARAGON, 8d. per lb.
POMERANIAN WHITE GLOBE, 8d. per lb.
HARDY GREEN ROUND, 8d. per lb.
SUTTON'S SHORT-TOP SIX WEEKS, 1s. per lb.

And other choice sorts, cheaper by the bushel, carriage free.

SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

SUTTON'S CHAMPION SWEDE.

PRODUCES HEAVY CROPS OF SUPERIOR QUALITY, WELL ADAPTED FOR LATE SOWING IN JULY.



SUTTON'S CHAMPION SWEDE, price 1s. per lb.

Cheaper by the bushel, carriage free.

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BATH and WEST of ENGLAND SOCIETY, for the Encouragement of Agriculture, Arts, Manufactures, and Commerce.

Patron—
H.R.H. The PRINCE OF WALES, K.G.

SALISBURY MEETING, 1866.

President—
The Right Hon. the EARL OF PORTSMOUTH.

The ANNUAL EXHIBITION of HORSES, POULTRY, DOGS, IMPLEMENTS, WORKS of ART, HONITON LACE, and HORTICULTURAL SPECIMENS will take place at SALISBURY on the 4th, 5th, 6th, 7th, and 8th JUNE, 1866.

By Order of the Council, JOSIAH GODWIN, Secretary,
5th May, 1866. 4, Terrace Walk, Bath.

THE CENTRAL CHAMBER of AGRICULTURE.
NOTICE OF GENERAL MEETING.

I am requested to give Notice that a MEETING of AGRICULTURISTS and others interested in the formation of a Central Chamber of Agriculture, will be held on WEDNESDAY, the 23d instant, at the SALISBURY HOTEL, Fleet Street, London, at 12 o'Clock noon.

On behalf of the Provisional Committee, CHAS. CLAY.
Walton, Wakefield, May 12.

NOTICE OF COMMITTEE MEETING.

The Members of the Provisional Committee will meet at the Salisbury Hotel, Fleet Street, London, on TUESDAY, the 22d inst., at 7 P.M., to arrange the preliminaries and elect a Chairman for the General Meeting.

HORSE SHOW.—AGRICULTURAL HALL, LONDON.

OPENING DAY and JUDGING, SATURDAY, May 19.
Admission Half-a-Crown, Private Boxes and Reserved Seats.

HORSE SHOW, AGRICULTURAL HALL.
OPENS the DAY AFTER the OAKS.

HORSE SHOW, AGRICULTURAL HALL.
MONDAY, 21st May, Admission One Shilling.

HORSE SHOW, AGRICULTURAL HALL.
TUESDAY, 22d May, Admission One Shilling.

HORSE SHOW, AGRICULTURAL HALL.
WEDNESDAY, 23d May, Admission One Shilling.

HORSE SHOW, AGRICULTURAL HALL.
THURSDAY, 24th May, Admission One Shilling.

HORSE SHOW, AGRICULTURAL HALL.
FRIDAY, 25th May, LAST DAY, Admission One Shilling.

HORSE SHOW, AGRICULTURAL HALL, LONDON.—CHEAP EXCURSION TRAINS and RETURN TICKETS during the SHOW. See Time Tables.

By Order, S. SIDNEY, Sec. and Manager.

The Agricultural Gazette.

SATURDAY, MAY 12, 1866.

MEETING FOR THE ENSUING WEEK.

TUESDAY, May 15 { Agricultural Society of England Council Meeting ..... 2 P.M.

A LARGE portion of the space at our disposal is this week occupied with the Tables which have just been issued by the Statistical Department of the Board of Trade. The number of live stock in the United Kingdom is now at length known with some degree of accuracy. The returns date from the 5th of March, when a large number of the cows had still to calve, and when the lambing had not begun in the north of England and in Scotland. But taking the diminished numbers due to these causes into account, the estimates which had been already formed were wonderfully true. Our means of judging hitherto have been, as regards Ireland, an annual enumeration managed by the constabulary; as to Scotland, the annual returns up till 1857 sent in by the whole body of the tenant-farmers to Mr. HALL MAXWELL, C.B.; and as to England, an imperfect statistical return obtained 12 years ago from the occupiers of 11 counties, selected so as to be fairly representative of the whole kingdom. A rule-of-three sum founded on the figures thus obtained gave us 3,422,165 as the stock of cattle of all ages in England at that time. The return now published is somewhat less than this, but it must be remembered that we had lost upwards of 150,000 head by the cattle plague on the 5th of March, and still more that the returns now do not include above one-half of the calves of the season. As stated in the "Farmers' Almanac," the following are the latest agricultural statistics:—

Live stock.	England, estimated 1854.	Scotland, collected 1857.	Ireland, collected 1865.
Horses	1,300,010	187,020	517,867
Cattle	3,422,165	974,157	3,490,444
Sheep	18,691,088	5,681,198	3,088,742
Pigs	2,76[illegible]1	116,751	1,260,893

Compare these figures with the returns now obtained:—

Live Stock.	England, collected March 5, 1866.	Scotland, collected March 5, 1866.	Ireland, 1865.
Horses	—	—	517,867
Cattle	3,397,934	907,411	3,490,444
Sheep	15,174,441*	5,225,977*	3,088,742
Pigs	2,066,299	219,716	1,260,893

* The number of sheep in these returns, so far as they relate to the Northern counties, is short by a large number of the lambs of the present year.

Taking in Wales and the Islands, the totals are as follows :—

	Enumerated, 1866.			Estimated, 1865.		
	Cattle.	Sheep.	Pigs.	Cattle.	Sheep.	Pigs.
England	3,307,034	15,124,541	2,066,299	3,422,165	18,691,088	2,363,724
Wales	541,401	1,668,663	191,694	—	—	—
Islands	17,700	57,686	22,887	—	—	—
Scotland	937,411	5,233,077	219,716	974,437	5,683,168	146,354
Ireland	3,493,414	3,688,742	1,299,893	3,493,414	3,688,742	1,299,893
Total	8,316,960	25,794,708	3,800,399	7,890,016	28,062,998	3,809,971

If the number for Wales were deducted from the lately published totals, and the number of lambs and calves dropped since these returns were added, the estimate would stand very fairly for the truth.

And what is the truth, then, as regards the whole live stock of the country? Principally this:—We have in England about 10 cattle of all ages, upwards of 40 sheep, and 6 pigs to every 100 acres of the country. In Scotland, so much more of which is moor and waste, there are 5 cattle, 28 sheep, and about 1 pig for every 100 acres. These figures, which indicate the home means of maintaining the fertility of the land, are far beyond those which give the corresponding facts in most other European countries.

When, however, we come to compare the live stock of those countries with their respective populations, the contrast comes out on the other side. This will be seen from the following Table which has been appended to the recently published Live Stock returns. From this it appears that while there is a cow for every 9 persons in Great Britain and Ireland, there is one for every 2 in Denmark and Sleswig; for every 3 in Holstein; for every 3½ in Sweden, Holland, and Bavaria; for every 3⅔ in Prussia and Saxony; for every 4 in Wurtemberg; for every 6½ in France; for every 6 in Austria; and for every 4 in the United States of America.

The following is the Table in full:—

Statement of the Population and Number of Live Stock in the United Kingdom and Various Foreign Countries, according to the Latest Returns.

Countries.	Date of Returns of Live Stock.	Population according to Latest Returns.	Cattle.			Sheep.	Pigs.
			Cows.	OtherCattle.	Total.		
United Kingdom	1865-66	29,070,932	3,286,308	5,030,652	8,316,960	25,795,708	3,802,399
Russia	1859-63	74,139,394	..	..	25,444,000	45,130,800	10,097,000
Denmark Proper	1861	1,662,734	756,834	361,940	1,118,774	1,751,950	300,928
Sleswig	1861	421,486	217,751	172,250	390,001	462,210	87,867
Holstein	1861	561,831	198,310	92,000	290,372	165,344	82,398
Sweden	1860	3,859,728	1,112,944	803,714	1,916,658	1,644,156	457,981
Prussia	1862	18,491,220	3,382,703	2,251,797	5,634,500	17,428,017	2,709,709
Hanover	1861	1,880,070	..	..	945,179	2,211,927	554,056
Saxony	1861	2,225,240	411,564	226,897	638,460	371,989	270,462
Wurtemberg	1861	1,720,708	406,758	290,414	697,172	683,842	216,065
Grand Duchy of Baden	1861	1,429,199	348,418	273,068	621,486	177,822	307,198
,, ,, Hesse	1863	853,315	187,442	129,231	316,673	231,787	195,596
,, ,, Nassau	1864	468,311	116,421	84,224	200,645	152,584	65,979
,, Mecklenburg Schwerin ..	1857	539,258	197,622	69,215	266,837	1,198,450	157,522
,, ,, Oldenburg ..	1852	279,637	..	..	219,843	295,322	87,336
Holland	1864	3,618,459	943,214	390,673	1,333,887	930,136	294,636
Belgium	1856	4,529,461	..	..	1,257,649	583,485	458,418
France	1862	37,386,313	5,781,465	8,417,895	14,199,360	33,281,592	5,246,403
Spain	1865	15,656,000	..	..	2,909,508	22,054,947	4,264,817
Austria	1863	36,267,648	6,353,086	7,904,030	14,257,116	16,914,236	3,151,068
Bavaria	1863	4,807,440	1,530,626	1,657,456	3,188,082	2,658,688	926,522
United States	1860	31,445,080	8,728,862	8,182,614	16,911,477	23,317,756	32,555,267

Returning to our own stocks, and to their relation to the cattle plague, it appears that throughout the whole of England the per centage of losses by the cattle plague, up to the 21st of April, was 4.14; in Wales it was only 1.23, in Scotland 2.43, and in the whole of Great Britain 6.68. These averages do not, however, represent the frightful losses which certain counties and localities have suffered. In Cheshire the proportion up to April 21 of deaths was 34.28 in every hundred. Up till April 28, indeed, 31,893 cattle in that county had died of the disease; 11,784 had been killed diseased, and 4386 had been slaughtered healthy. The two former items amount to nearly 43,000, an enormous number out of 100,000 or thereabouts, which is probably the ordinary cattle population of the county — there having been 93,844 in it on the 5th of March. Certainly there never was a more appropriate case for the general assistance of agriculturists, and especially of those who have escaped the plague, than is presented by the High Sheriff of Cheshire on behalf of his county, whose losses, while they have been ruinous to the majority of its unfortunate tenantry, have tended rather to enhance the value of the stock which has escaped elsewhere.

THE LAMBING SEASON.

A Correspondent near Alresford, Hants, says:—"The losses in this neighbourhood have been most unusual in some cases, but they are in some degree counteracted by the great number of twins." The mild open weather generally experienced in our southern provinces during the past season has no doubt been a trying one in several respects to breeding ewes, more especially to improved breeds, and to none more than to the Down varieties natural to the ground —to the Sussex Down ewe more so perhaps than to the Hampshire Down ewe. This is chiefly to be attributed to the quality and supply of the keep, which has resembled in some degree the forced herbage of irrigated Grass lands. During the past season there has been an unusual amount of "freshness" of this kind in the outdoor keep of breeding ewes. And this, too, has not been wholly confined to the natural produce of their pastures, for the root crops have not undergone those ripening processes due to a lower temperature, but the contrary. Hence the practical conclusion. Under the most favourable circumstances it is no easy task to keep a thorough-bred Southdown ewe in proper condition for lambing and nursing; and the more common practice—to reduce the daily allowance of cake, corn, and roots, or give none at all, when Grass is plentiful—has aggravated the difficulty.

Such being the position of ewes between the tupping and lambing seasons, it in some measure accounts for the numerous yield on the one hand, and the mortality of newly dropped lambs on the other. For while at the former period a Southdown ewe would be in a favourable position to beget a twin progeny, yet as the winter months roll on, and spring sets in with an increase of succulent herbage and its crude sap, her blood would become less or more attenuated, the solids and fluids of her body being both in a vitiated state. As the day lengthens out, the increase of heat and light would gradually correct the unhealthy quality of the herbage where the bite was kept short, but this, under the peculiar circumstances of the case, would have a tendency either to augment the evil of watery corpulency or else to run into the opposite extreme of poverty by purging, while the rank herbage of the pastures of neat cattle, into which ewes are sometimes driven, from being more forced in growth, is often as much if not more unfit at this season than is the Grass of water meadows in the summer time. Under such conditions, how can fœtal organisation have been otherwise than defective in a large number of cases, and the health of lambs generally feeble when newly lambed? For a short time before lambing the ewes may get a fair allowance of cake and corn with roots and hay to stimulate a flow of milk, and in the majority of cases, this when successfully given may greatly improve the health of both ewes and lambs; but with a natural proneness to convert such feeding materials into fat rather than into milk, the reverse will be the condition of a large number of ewes, so that a heavy mortality in their offspring follows as a natural consequence.

The cases of our other improved breeds would be somewhat similar to that of the Southdown, to which the above remarks are chiefly directed. Some of them are said to be "better milkers," and hence would turn their cake and corn to better account prior to and immediately after lambing, but this is rather a question of degree than one of marked difference.

With our native or common breeds the question is also one of degree, the general rule being that insipid watery food is injurious to the health of the sheep. But being generally more active and willing to take exercise in search of what they need, and disposed to eat hay or dry provender of any kind when given them should they require it, so as to counteract the injurious effects of washy insipid food, they suffer less during seasons like the past in our southern counties. But there is perhaps a greater diversity amongst them than amongst our improved breeds, so that much will depend upon breeding and selection in the case of individual flocks.

The right course of action is to adapt the quantity and quality of the food to the natural requirements of the sheep. Thus, the breeding ewe during the past season in Hampshire should have received less green food and more dry along with exercise, instead of the contrary. To reduce the daily supply of the latter, and increase that of the former, is contrary to the natural requirements of the sheep, however it may tally with the circumstances of the farmer in other respects. And this, too, is not all that must be said, for as you increase the supply of washy herbage, you lower not only the muscular power of locomotion, but also, at the same time, that of the circulation, with very mischievous consequences upon the system of a breeding ewe, and that of her offspring. If artificial stuffs, such as cake, corn, and hay form too costly feeding materials for counteracting the attenuating character of the natural forage of the pasture and of root and other green crops, and are too liable to run our improved breeds to excessive corpulency, then cheaper and more health-giving artificial stuffs must be selected, and with the vast and varied productive resources of the country there is certainly nothing to prevent both these improvements being realised, and also a system of exercise being carried out so as to stimulate a healthy development of nerve and muscle, than which nothing is more essentially necessary to a successful breeding flock.

In a natural state sheep take a great deal more exercise, and consume a much greater variety of feeding materials than they do in either case under the artificial systems of husbandry to which improved breeds are now subject; and both these facts relative to exercise and a variety of forage plants in the former, obviously suggest the principles upon which the latter practice should be based. In our large mountain sheep walks flock-owners and shepherds have from time immemorial been familiar, not only with the daily perambulations of their flocks, so that they know where to find them at any given hour of the day, but also with the great variety of plants they consume, and how differently they select these in wet weather and in dry; and how, when there is a full bite of forced herbage from flooding in the valleys or from any other cause, they consume at the same time a large proportion of heather, and the like when the forage is sun-burnt and less washy in character. Again, if a flock of sheep break out of a water meadow or field of Turnips into a young plantation, they will at once begin barking the trees and cropping the Fir tops and branches greedily, as if they were absolutely necessary to counteract the unhealthy effects of the forced herbage they had previously consumed. An ignorant shepherd may call it mischief, but the instinct of the poor creatures leads them to a very different conclusion.

How different is the case of a thorough-bred ewe in both these respects—as to exercise and variety of forage plants! As to its food, the quality of the forage plants it consumes is about as objectionable as their limited variety, and what merits a special notice in the case under consideration is the fact that the position of the breeding ewe during her pregnancy, when her own health and that of her offspring require the contrary, is many degrees worse both as to variety of forage plants and exercise than at any other period of the year—as if the grand practical desideratum at issue was the degeneracy of her offspring. Farmers may talk of "Practice with Science" as their motto, but when we enter their pastures and begin to examine the ewes in lamb, how they are fed and managed, the less said about either matter be of the motto the better.

It will be no easy matter to convince some shepherds and flockmasters as to the amount of exercise a breeding ewe should have every day between tupping and lambing time, in order to preserve a healthy development of bone, nerve, and muscle, in herself, and to secure the same for her offspring. The question is second to none in the management of breeding flocks, more especially of our improved breeds, which are almost universally disposed to lie the most of their time, and walk as little as possible. Extra weight obviously requires extra strength and development of muscle, and this latter a corresponding amount of exercise before it can be attained. If young lambs have the natural use of their legs and lungs they will exercise themselves in gambolling about, provided they have a plentiful supply of rich milk. If, on the contrary, the lungs are weak, the action of the heart defective, and the limbs weakened, and the supply of milk short and of inferior quality, the lamb, like its dam, will lie the most of its time, and run to fat instead of muscular lean. No doubt proper food is necessary, but unless attended with suitable exercise it may do more harm if taken in extra quantity than more washy food. *W. B.*

IRISH IVY AS FOOD FOR STOCK, &c.

I was pleased to see in your Paper lately a short notice of our "Ivy green" used as a food for milch cows in Wales. I also saw your caution, "You must beware." Some years ago a discussion took place on the same subject in your pages, when the late J. J. Nolan, of 33, Bachelor's Walk, Dublin, joined in condemning it as food for stock, alleging as a reason that it had a tendency to produce abortion in ewes, because he had known one infusion of it to produce, by design, abortion in a Blenheim spaniel, as if unmindful of the differences existent between carnivorous and herbivorous animals. As well might it be expected that a cow or a ewe pregnant could escape abortion if fed on cassia, a delicacy for dogs, as to suppose that what would produce abortion in a bitch, in the shape of vegetable application, would have the same effect on an animal so differently constituted as a cow or a ewe; or to use an Irish aphorism, forgetful that, as it is amongst Irish tradesmen said, "what would cure a sweep might kill a tailor." It is fully half a century since I first saw the wives of the small farmers in my native county of Wexford, "the model

county of Ireland," use Ivy for the strengthening of weak cows, ewes, and goats, pending their parturition, and always with the best effect; so fully did they appreciate its strengthening and nutritious value, that they used to obtain it clandestinely. I have often myself as a land-steward and stock-feeder cut such Ivy to feed cows, sheep, and deer, and to preserve the Ivy firmly to the walls for which it was such a protection against dilapidation, and on the walls of inhabited houses against damp, whilst highly ornamental at the same time. Although the leaves of Ivy vary so much in their structure and appearance as to lead many to believe we have several varieties as well as species of it, "the father of Irish botany," the late Doctor Mackay, as well as I remember, admitted of no subdivision greater than a mere sub-variety, if in any case they amounted even to that same. Its appearance alters by a great variety of circumstances, some of which are very generally known to, whilst others are merely conjectural by, vegetable physiologists. Thus in the south of Ireland, especially near Cork, it has an immensely large luxuriant leaf, a characteristic not always fully maintained when the same plant is transferred to the north, north-east, or north-west of the island. In the latter places, as in some of the midland counties, no such luxuriance appears in the plants indigenous to such places. Still the common Ivy in these latter places often assumes a varied form of leaf, especially on old walls, when the plant comes to a certain age. In all cases when it overgrows the walls or trees it is attached to, the leaves assume quite a different form, from whose young shoots cuttings are obtained, which when grown form a fine close shrub, not having the least tendency to attach itself to any other tree or even wall. In this condition it forms the shrub I allude to as cover for game, and produces the immense crops of berries which, when ripe, birds are so peculiarly fond of. The seeds thus obtained will produce plants which, when grown close to a wall or tree, will be like the original—a perfect climber; whilst if planted in exposed situations, they will grow into perfect shrubs, and the leaves not unfrequently variegated in both conditions, and such variegations of different standard colours, rarely changing except with a change of condition as to soil and situation. It is propagated, nay frequently propagates itself by layers of the branches and an extension of its rootlets, as well as by seeds and cuttings. In many woods it is considered such a pest as to destroy the longevity of the trees which it embraces; yet to cut it down or tear it up by the roots to rid such trees of it "the cure is often worse than the disease;" as a tree long embraced and sheltered by it, when having got rid of it, if very old or stunted by the Ivy in its growth, frequently becomes "smaller by degrees and beautifully less," until death seizes it. Hence it is that many judicious foresters in seeking to prevent the effects of Ivy on trees, merely cut it at its base, and again a few feet higher, leaving the remainder of the Ivy above to die an *un*natural death; which whilst struggling for existence partially shelters for a time the tree it is sought to rid it of, until it becomes, as it were, inured to the colder climate. As already hinted, I have known old walls for years kept standing through the agency of the Ivy which they had nurtured and supported, and have seen some of them tumble soon after the Ivy was completely taken or had fallen from them. To preserve the walls and Ivy in such cases, the better way is to cut all the foreright branches which extend any considerable distance from the walls by hedge shears, to convert such clippings into sheep and cattle feeding, as so well suggested by your correspondent "B. B. C.," and if not given in excess or to animals voraciously hungry, no fear in the world need be entertained of dangerous results. *Edward Carroll, Albert Training Institution, Glasnevin, Dublin, April* 16.

MALT OR BARLEY.

THE following is the summary of Mr. Lawes' report to Government on this subject:—

THE LOSS AND CHEMICAL CHANGES WHICH THE GRAIN UNDERGOES BY MALTING.

1. In malting Barley of fair malting quality, in the usual way, there was a loss of nearly 19 per cent. of its weight, about 12 of which was water, the remaining 7 being solid matter or food-material.

2. In malting Barley of good feeding but inferior malting quality, there was a loss of about 22 per cent. of its weight, of which 15 was water, and 7 solid matter or food material.

3. The loss of solid matter consisted chiefly of starch, or other non-nitrogenous substances, but comprised also a small amount of nitrogenous or "flesh-forming" and mineral matters.

4. The most characteristic change which the grain undergoes by malting is the conversion of a portion of its starch into dextrine, and the further conversion of a portion of the latter, amounting to from 8 to 10 per cent. of the grain, into sugar.

5. By malting, the grain acquires properties, by virtue of which, when the malt is digested with water, much of its own remaining starch gradually changes into dextrine and sugar; and if the digestion be aided by heat, not only the whole of the remaining starch of the malt itself, but the starch of a considerable quantity of unmalted grain or other starchy substances mixed with it, may become so converted.

6. Owing to the great loss of moisture and non-nitrogenous substances—in fact, of total weight—which grain undergoes by malting, a given weight of the malted grain contains a larger quantity of nitrogenous or "flesh-forming" substances than an equal weight of the unmalted grain; but as there is an actual loss of those substances by malting, a given weight of malt will, of course, contain less of them than the amount of Barley from which it was produced.

MALTING AND THE USE OF MALT FOR FEEDING.

7. It is probable that if grain were malted extensively for feeding purposes, the growth would not be carried so far as in the manufacture of malt for brewing, and the loss of solid matter or food material would, of course, be less accordingly.

8. As the "malt-dust" contains a considerable amount of food material, abstracted from the grain during growth, when malt is used for feeding the "dust" should either not be separated, or, if separated, should be given to the animals along with the screened malt.

9. Owing to the loss of weight which grain undergoes by malting, equal weights of malted and unmalted grain should not be employed in comparative feeding experiments, but only so much malt (with the dust) as would be produced from the amount of raw grain given, or to be substituted, in the parallel experiment.

10. Malt given as food to animals may be supposed to act simply by supplying more or less of the starch of the grain from which it was produced in the more soluble and, perhaps, therefore, more easily digestible conditions of dextrine and sugar, or also by aiding the conversion into dextrine and sugar of the starch of other foods given with it.

THE EXPERIMENTS WITH MILKING COWS.

11. A comparative experiment was made in which, besides other appropriate food, 10 cows received, for a period of 10 weeks, 3 lb. of fair malting Barley per head per day, and other 10 received the amount of malt (with its dust) produced from 3 lb. of Barley from the same stock.

12. In the experiment in which the malt was given it contributed about 7½ per cent. of the solid matter of the total food.

13. The result was, that almost exactly the same amount of milk was yielded for a given amount of food with the unmalted and with the malted Barley, but that the milk from the cows having the unmalted Barley contained the higher proportion of cream.

THE EXPERIMENTS WITH FATTENING OXEN.

14. A comparative feeding experiment was made for a period of 20 weeks, in which, with other appropriate food, 10 oxen received 4 lb. of good feeding Barley per head per day, and other 10 the amount of malt (with its dust) produced from 4 lb. of Barley from the same stock.

15. In the experiment with malt it contributed about 13½ per cent. of the dry or solid substance of the food.

16. Both lots of oxen gave more than an average amount of increase, whether reckoned in proportion to a given live weight within a given time, or to a given amount of food consumed; but the 10 having the unmalted Barley gave rather more than those having the malted.

17. The Barley-fed oxen also gave rather the higher proportion of dead-weight to live, and, although neither lot was fully ripe, the Barley-fed animals were more even in condition and quality than the others; but the beef of some of the malt-fed ones was decidedly superior in point of ripeness and quality, and that of others decidedly inferior to that of any of the Barley-fed oxen.

18. It would seem, therefore, that the effect of the malt as food was more dependent on the constitution and condition of the individual animals than was that of the Barley; and it should be remarked that the oxen which fattened the best upon the malt were not the most backward or weakly animals, but those which were the heaviest and in the best condition at the commencement.

THE EXPERIMENTS WITH FATTENING SHEEP.

19. Comparative experiments were made for a period of 20 weeks with five lots of sheep, of 12 each. Besides other appropriate food given equally to all, the allowance per head per day was—to Lot 1, from ¾ to 1 lb. of fair malting Barley; to Lot 2, the malt (with its dust) from an equal amount of the same Barley; to Lot 3, from ¾ to 1 lb. of good feeding Barley; to Lot 4, the malt (with its dust) from an equal amount of the same Barley; and to Lot 5, an equal amount of the same Barley, two-thirds unmalted and one-third malted.

20. In experiments 2 and 4, the malt contributed about 22½ per cent., and in experiment 5 about 7½ per cent., of the dry or solid substance of the food.

21. All five lots of sheep gave about an average amount of increase; there was very little difference in the result obtained with the unmalted and the malted grain, but such as it was it was rather in favour of the unmalted.

22. The mutton of all five lots was of very good quality; there was no appreciable difference between the lots in this respect, but the Barley-fed animals gave slightly the higher proportion of dead-weight to live-weight.

THE EXPERIMENTS WITH FATTENING PIGS.

23. The appropriate food of the fattening pig contains a larger proportion of starch than does that of either cows, oxen, or sheep. If, therefore, the starch of food be rendered more digestible and assimilable by its artificial conversion into the more soluble forms of dextrine and sugar, it might be supposed that it would be peculiarly advantageous to malt a part, or the whole, of the characteristically starchy food of the fattening pig.

24. Experiments were made for a period of 10 weeks with six lots of pigs of eight each. Besides 1 lb. of Pea-meal per head per day given to all—Lot 1 had crushed malting Barley; Lot 2, the crushed malt (with its dust) from the same Barley; and Lot 3, the unmalted and the malted Barley, each separately, *ad libitum*; Lot 4, had crushed feeding Barley; Lot 5, the crushed malt (with its dust) from the same Barley; Lot 6, the same Barley, four-fifths unmalted and one-fifth malted, *ad libitum*.

25. In experiment 2 the malt contributed 87½, in experiment 3 about 18, in experiment 5 about 89, and in experiment 6 about 16½ per cent. of the dry or solid substance of the food.

26. The pigs having Pea-meal and entirely unmalted Barley (Lots 1 and 4) gave a full average amount of increase, both in relation to a given live-weight within a given time, and to a given amount of food consumed; those having only a small proportion of malted Barley (Lots 3 and 6) increased in both respects, nearly, but not quite, as well; but those having the Pea-meal and entirely malted Barley (Lots 2 and 5, more especially Lot 2), gave less increase in relation to a given live-weight within a given time, and required the expenditure of considerably more Barley to produce a given amount of increase.

27. The pigs having the unmalted Barley (Lots 1 and 4) also gave the best average proportion of dead-weight to live-weight, and their pork was of very good quality; and, with the exception of Lot 2, having (besides the Pea-meal) entirely malted Barley No. 1, the pork of the other lots was also of very good quality, but the more evenly so where only a small proportion of malt was given (Lots 3 and 6).

THE CATTLE PLAGUE.

1. The following returns were issued on May 4.

These returns do not profess to give the total number of cases which have occurred in Great Britain, but only those which have been ascertained from information received at the office from inspectors. Columns 1 only record the cases reported as having commenced during the weeks indicated by the headings; "back" cases being added to columns 2.

Census Divisions.	1 Number Attacked. Week ending April 21.	1 Number Attacked. Week ending April 28.	2 Result of Reported Cases from Commencement of Disease. Attacked.	Killed.	Died.	Recovered.	Unaccounted for.
Metrop. ..	26	47	8074	3383	3536	350	691
S. Eastern .	—	1	4834	1635	2541	460	178
S. Midland .	347	313	18,051	7131	9897	1546	357
Eastern Co.	126	92	10,879	4057	4797	776	249
S. Western .	3	—	1680	597	893	208	82
W. Midland	360	357	13,414	4816	6429	1442	727
N. Midland.	540	608	16,280	8365	6077	1142	696
N. Western .	634	818	20,115	13,631	34,180	6377	4927
Yorkshire .	304	203	33,631	6753	18,284	5837	2757
Northerngn.	163	131	8054	4294	2560	961	149
Monmouth. & Wales .	172	88	8227	838	5991	1091	307
Scotland ..	194	107	46,533	6884	27,110	10,714	2825
	2,824	2,765	229,669	62,923	122,101	30,898	15,747

NOTE.—17 Inspectors who reported cases last week have not reported in time for this return—viz., for the county of Buckingham, 2; Chester, 2; Cumberland, 1; Derby, 1; Dorset, 1; Lancaster, 2; Lincoln, 2; Oxford, 1; Yorkshire, 2; Metropolis, 1; and Scotland, 2.

These Inspectors returned 129 cases last week.

THE LIVE STOCK OF THE UNITED KINGDOM.

The following are the Returns which are the subject of comment in the Leading Article:—

No. I.—TOTAL NUMBER OF CATTLE, SHEEP, AND PIGS IN EACH DIVISION OF THE UNITED KINGDOM.

Divisions of United Kingdom.	Date of Returns.	Number of Live Stock. Cattle. Cows.	Other Cattle.	Total.	Sheep.*	Pigs.
England	5th March, 1866	1,290,329	2,016,505	3,307,034	15,124,541	2,066,299
Wales	Do.	222,546	318,855	541,401	1,668,663	191,604
Scotland	Do.	370,457	566,954	937,411	5,255,077	219,716
Ireland	Year 1865	2,107,238	3,493,414	3,688,742	1,299,893	
Isle of Man	5th March, 1866	7,755	10,932	18,687	35,954	10,956
Channel Islands:—						
Jersey	Do.	5,845	6,222	12,037	517	6,332
Guernsey, &c.	Do.	30,30	3,946	6,976	1,214	5,399
Total for United Kingdom		3,286,568	5,030,652	8,316,960	25,794,708	3,800,399

* The number of Sheep in these Returns, as far as they relate to the Northern Counties of England and to Scotland, is probably short by a large number of the Lambs of the present year, in consequence of the date at which the Return were made

No. 2. Area and Population of each County in Great Britain, and Number of each Kind of Live Stock, and Number of Cattle Died of or Killed on Account of Plague in each County of Great Britain.

Counties (Proper) in Great Britain.	Area	Population (1861),	Number of Live Stock existing upon 5th March, 1866.			No. of Cattle Died of or Killed on account of Plague up to Week ended 3d March, 1866.	Estimated Ordinary Stock of Cattle.	No. of Cattle Died of or Killed on account of Plague up to Week ended 21st April, 1866.	Per cent. of Losses of Cattle from Plague up to 21st April 1866, computed upon Estimated Ordinary Stock.
			Cattle.	Sheep.	Pigs.				
ENGLAND.									
Bedford	295,552	146,387	25,513	180,250	36,796	402	25,915	442	1.70
Berks	451,416	170,356	30,149	327,316	41,263	483	30,632	495	1.62
Buckingham	525,182	176,016	31,731	255,036	58,225	5,305	37,036	6,611	17.70
Cambridge	767,078	505,428	93,044	96,989	57,692	32,148	125,192	42,422	33.8
Chester	657,060	360,390	133,652	390,049	63,920	818	134,470	976	0.6
Cornwall	867,080	355,276	109,227	306,021	40,742	3,115	112,377	5,470	4.8
Cumberland	1,601,273	205,276	113,193	176,122	31,452	874	113,569	1,029	0.90
Derby	658,184	584,874	184,077	240,126	94,475	126	184,203	160	0.0
Devon	1,667,183	567,183	70,002	492,643	48,676	12	70,014	14	0.0
Dorset	642,962	188,739	52,322	346,906	14,140	73	52,395	146	0.2
Durham	622,476	508,666	86,206	574,129	98,048	1,846	88,052	1,928	2.1
Essex (extra Metropolitan)	1,060,189	521,407	50,736	356,373	50,943	76	50,967	116	0.2
Gloucester	805,102	485,770	96,834	619,598	74,789	286	97,126	299	0.6
Hants	1,070,276	481,815	85,869	897,175	63,260	86	85,946	200	0.2
Hertford (extra Metrop.)	358,623	128,712	65,184	257,196	23,260	525	65,717	548	0.8
Huntingdon	356,643	154,633	20,480	206,358	32,194	746	20,166	436	2.20
Kent (extra Metropolitan)	1,036,944	64,250	17,666	117,821	20,692	2,317	19,894	2,338	11.30
Lancaster	954,764	2,429,440	202,552	217,615	50,375	1,775	52,197	1,871	2.63
Leicester	514,164	237,412	89,115	286,284	23,250	240	89,355	333	0.7
Lincoln	1,777,457	412,246	160,291	1,088,204	91,522	6,369	175,654	9,965	5.66
Monmouth	368,469	174,633	36,737	131,158	13,132	—	36,737	—	—
Norfolk	1,354,301	444,978	92,186	696,086	115,876	4,774	96,960	5,648	5.81
Northampton	630,358	227,704	74,262	435,837	38,366	2,006	76,268	2,476	3.24
Northumberland	1,249,299	343,025	78,431	635,487	24,621	888	79,319	919	1.16
Nottingham	326,076	293,867	67,165	243,532	29,083	1,221	68,386	2,308	3.37
Oxford	472,717	170,944	42,135	353,304	42,372	1,032	43,447	2,560	5.90
Rutland	98,561	21,561	11,651	75,755	5,734	—	11,669	19	1.6
Salop	826,053	240,959	107,208	327,612	59,674	3,503	110,711	3,412	4.9
Somerset	1,047,220	444,873	173,547	636,975	75,469	112	173,659	178	0.10
Stafford	728,468	746,943	107,298	294,966	47,967	2,508	109,806	2,508	2.28
Suffolk	947,681	337,070	55,767	407,929	133,498	1,502	57,269	2,022	3.5
Surrey (extra Metropolitan)	377,780	141,304	21,037	121,928	23,618	1,142	23,179	1,171	5.04
Sussex	936,911	363,735	74,676	485,056	42,942	1,064	75,740	1,066	1.40
Warwick	563,946	561,855	67,240	283,878	36,613	68	67,317	68	0.8
Westmoreland	485,432	60,817	55,328	224,664	7,413	—	55,328	—	—
Wilts	865,092	249,411	77,724	596,822	61,012	90	77,814	90	0.1
Worcester	472,165	367,397	45,789	204,154	36,696	159	45,948	197	0.4
York { East Riding	769,419	240,757	64,809	416,853	52,589	} 220,845	286,121	29,796	6.9
York { City of York	720	40,433							
York { North Riding	1,350,121	245,154	110,275	462,038	53,472				
York { West Riding	1,760,185	1,507,796	231,241	500,196	72,048				
For Counties of England	32,140,902	15,731,757	3,221,457	11,005,141	1,722,240	109,706	3,269,953	144,186	4.4
For Metropolitan Police District	44,424	2,362,236	5,736	12,207	34,389	6,656	44,181	7,068	15.8
For England	32,185,326	18,093,993	3,227,193	11,017,348	1,756,629	116,362	3,314,134	151,254	4.4
WALES.									
Anglesea	193,453	54,060	32,487	96,745	17,857	—	32,487	—	—
Brecon	460,138	60,497	29,054	214,745	7,067	—	29,054	—	—
Cardigan	443,387	75,241	37,881	195,540	10,758	—	37,384	—	—
Carmarthen	666,741	111,796	84,106	110,295	19,339	—	84,106	—	—
Carnarvon	370,573	95,694	44,072	139,317	18,940	—	44,072	—	—
Denbigh	386,632	100,778	46,695	150,363	26,529	2,200	49,094	3,376	7.10
Flint	184,995	69,737	19,383	35,106	11,962	2,334	21,917	1,890	14.54
Glamorgan	547,494	217,752	45,911	177,484	14,375	—	45,911	—	—
Merioneth	383,991	38,963	33,343	235,691	7,703	—	33,343	—	—
Montgomery	483,323	66,919	58,628	220,241	20,564	—	58,628	—	—
Pembroke	401,691	90,078	63,842	64,142	25,750	—	63,842	—	—
Radnor	272,128	24,582	23,006	181,756	5,046	—	23,006	—	—
Total for Wales	4,734,506	1,111,782	514,611	1,960,429	191,044	4,534	547,044	5,748	1.24
SCOTLAND.									
Aberdeen	1,260,625	252,760	156,141	1,227,245	14,763	347	133,798	347	.27
Argyle	2,083,126	97,107	84,111	1,000,625	5,702	—	57,831	—	—
Ayr	765,262	167,471	73,544	382,705	13,502	707	76,281	781	1.02
Banff	439,219	59,215	36,542	140,000	6,171	—	36,542	—	—
Berwick	302,951	36,613	15,192	193,288	8,344	247	15,439	247	1.6
Bute	169,375	16,331	8,232	34,318	1,230	—	8,232	—	—
Caithness	455,708	41,101	19,999	82,676	3,012	—	19,999	—	—
Clackmannan	32,240	31,436	2,164	9,468	1,261	7	2,261	77	11.64
Dumbarton	241,886	62,064	10,564	53,405	1,196	723	11,287	723	6.96
Dumfries	792,455	77,878	44,454	371,486	18,612	702	45,316	715	1.59
Edinburgh	294,369	259,097	13,013	113,479	9,009	1,625	14,638	1,027	7.04
Elgin or Moray	302,000	42,000	20,000	69,078	3,500	—	23,500	—	—
Fife	328,537	154,779	27,297	93,665	11,197	479	30,776	1,781	1.7
Forfar	568,750	234,425	39,443	156,633	12,858	8,856	57,301	9,442	3.5
Haddington	170,142	33,641	9,661	91,414	7,040	111	17,170	111	0.6
Inverness	2,725,001	88,888	56,854	222,096	4,788	1	4,789	1	—
Kincardine	245,250	34,496	21,520	41,073	4,760	1,275	22,795	1,691	7.41
Kinross	46,707	7,877	1,028	22,450	1,280	762	1,790	660	14.78
Kirkcudbright	600,445	42,149	34,658	271,467	10,289	31	44,947	31	.10
Lanark	588,867	631,866	56,206	160,014	8,992	4,338	60,544	1,184	7.1
Linlithgow	81,113	38,041	5,029	23,070	3,160	629	8,189	696	8.5
Nairn	157,500	10,000	2,250	19,882	1,140	—	3,390	—	—
Orkney and Shetland	696,720	64,005	4,500	76,624	7,484	—	43,308	—	—
Peebles	227,869	11,408	5,976	125,331	1,220	5	5,975	5	.08
Perth	1,814,063	133,509	66,150	494,635	17,782	3,744	69,944	1,347	6.0
Renfrew	158,268	177,561	21,513	26,503	2,354	459	21,968	49	2.9
Ross and Cromarty	2,016,375	81,406	36,109	393,754	8,787	—	36,109	—	—
Roxburgh	428,494	54,119	16,084	310,577	6,994	65	16,149	65	.4
Selkirk	166,524	10,449	2,000	20,000	1,000	15	2,042	15	.7
Stirling	295,875	91,929	23,000	86,392	5,000	1,497	23,891	1,000	11.
Sutherland	1,207,188	24,240	11,750	144,000	1,458	—	11,202	—	—
Wigtown	487,066	42,000	31,000	152,000	10,000	—	35,703	—	—
Total for Scotland	19,630,377	3,062,744	1,375,311	5,570,077	214,116	30,564	967,675	24,194	2.5
Total for Great Britain	56,550,209	23,158,519	4,785,946	22,048,281	2,477,619	143,790	4,829,043	181,443	3.8

* This total of 7,028 includes 6,908 for the "Metropolitan Police District" up to the 31st of March, and 120 for the "Metropolis," or Districts under the Board of Works from 31st of March to 21st of April.

Foreign Correspondence.

Buenos Ayres: *Chacra de los Alamos, March* 20, 1866.—The details of the ravages of the Cattle Plague which reach us out here, as also the attention which in England is directed to the herds of cattle of the plains of Buenos Ayres and those of Australia, as the especial ton of these proving inexhaustible sources of meat supply to the European markets, lead me to select the subject for my present communication.

In the numerous publications in which the beef-supply from Buenos Ayres is referred to, the means of preserving is the point of view under which it is generally touched upon. I find pickling, salting, and drying, injecting the whole carcase with brine through the veins (Dr. Morgan's plan), packing in casks, press baling, loose stowing, hermetical sealing, with or without the introduction of nitrogen into the tins (the latest novelty in preserving), and Liebig's extract, all canvassed.

Up to the present time (Liebig's extract excepted) very inferior articles as the rule have reached Europe from this country, the majority of the lots having been comparatively, and in some cases wholly, useless and unfit for food.

Naturally the magnificent highly fed oxen and cows of Great Britain fill the mind's eye of people resident there while treating of this subject; domesticated, carefully fed, never hurried or over-driven, decently and carefully slaughtered animals, with flesh deep, veined with fat, and packed with nutrient juices, are figured; and I have seen eulogies on meat of animals fed on virgin pastures unpolluted by mineral manures—the writers, I naturally suppose, figuring to themselves a sort of sylvan paradise for animals which are assumed to luxuriate always in superabundent pasture of the richest, reposing among tall succulent Grasses and fragrant wild flowers, repose and repletion alternating. Now our cattle are somewhat more than semi-wild, roving in vast herds over vast plains to feed, travelling often long distances for water: in the winter feeding scantily on short, watery, half-organised herbage, containing little nutriment, and causing them to become thin and weak, often to a degree, by purging; in the summer picking up a scant subsistence (especially in a dry season) from the parched herbage, devoid of alkalies and saccharine matter, compensated in part by the oleaginous Thistle seed, frequently short of water, besides other contingencies incidental to a state of nature—alternate plenty and scarcity, and extremes of temperature.

The habit of cattle so reared and maintaining themselves, is of course lean, and opposed to laying on deep flesh of a nutritious kind: and when fat, the fat rapidly made is chiefly internal, the custom of constantly roaming not admitting of what you consider "quality" in the beef. So much for the cattle themselves, which yield a very sweet meat when in fair condition, and when killed on their feeding grounds, or without any long travelling; a beef which men are never tired of eating in quantity, inasmuch as it is not of that rich feeding quality which characterises highly fed beef. Now as to bringing to market, killing, &c., this is a very different affair from carefully taking domesticated, well-fed animals to the well-regulated shambles in England, where they are properly slaughtered, bled, hung, and butchered.

The cattle estancias are long distances from the city; and there are great killing establishments, or 'saladeros,' where many thousands are killed in a day, for the hide and tallow. The cattle are travelled all winters, distances of 30 to 100 leagues, frightened out of their lives, often breaking away in a stampede, eating little or nothing, and drinking rarely. Arriving at their destination, they are huddled by hundreds into a pen, and the slaughter begins; as rapidly as they can be drawn out with the lasso, they are pithed, run out on to a platform, flayed and cut up. The majority of your readers will at once understand from this, what the general public and the writers on the beef supply have probably not taken into account, and which few of the saladerestas here have admitted into their calculation, namely, that "process" can have little avail in preserving the meat of animals, thus treated, so as to constitute good food.

Long travelling, scant wood and water, excitement, fear, and occasional fury, have, as a matter of course, exhausted a large portion of the nutritive matters of the flesh, and the whole meat of the animal has become flabby, and is in a state of waste or decomposition; restoration and reconstruction having been disproportioned to the expediture of force. Salt applied to meat in this state causes to drain out of it nearly all the albuminous and mineral matters of the flesh; and you have in this simple explanation the reason why such an inferior article is presented in your markets as Buenos Ayres and River Plate beef, jerked, pickled, or otherwise preserved, and why so much of it is in a state of decomposition when it arrives.

I fear there is little prospect of anything but a limited supply of wholesome South American beef reaching England for some years to come, as few establishments are in aptitude to put even a relatively small number of cattle in the condition that is needed for meat to take the salt, or be preserved by any antiseptic process so as to yield a fair proportion of nutriment. "Process" having engrossed attention, the first essential—"condition," has not been thought of; and I was the first to explain in print in Buenos Ayres the just relations of condition and process on physiological principles.

There are a few parties having establishments on the great rivers Parana and Uruguay, with strong Grass (Pasto fuerte) feeding grounds at no great distance from them, who will be able to produce a very fair article in the way of salt and dried meats if they will comply with the condition of comparative domestication of the animals, and will adopt a proper method of slaughtering and bleeding, taking duly into account in the process of curing and packing the influences of temperature. There is an establishment working on the banks of the Parana on Morris's American principle; on the Uruguay we have Dr. Morgan's plan of injecting the carcase in operation, also Olnadin's process of curing and drying—establishments which are in more favourable positions for working than most others. Also we have at Fray Bentos an establishment producing successfully Liebig's extract.

The production of this extract does not labour under the same disadvantages as the salted meats. Whatever amount of nutrient juices, be they small or great, which exist in an animal, they are withdrawn by lixiviation, and reduced to an extract paste by evaporation. In Liebig's extract, therefore, we export the nutrient juices of our beef, whereas in the salt and jerked beefs we export the fibre of flesh, with only a small proportion of the nutrient juices (that proportion being greater or smaller according to the condition and age

of the animals), the rest remaining in the brine tanks, or flowing into the reservoirs of waste matter.

The Liebig extract produced on the Uruguay establishment is in all respects an excellent and most convenient article for soup making. A little hot water poured over a small quantity of the extract gives an exceedingly nutritive and palatable beef tea, only requiring a little salt, pepper, &c.; or it makes a capital soup with the addition of vegetables and condiments.

An undertaking, backed by sufficient capital, in the hands of a man knowing well the business, that would kill cattle put into proper condition, could not fail to a good business in salt meats, for I believe there is nothing else wanting to success. *Alamos.*

[This subject is treated in detail, as also the subject of sheep farming, sheep breeding, agriculture, &c., in a work on the River Plate and its rural industries, by the writer of the above, which is in the press, and will be shortly published.]

Farmers' Clubs.

MIDLAND: *April 5.—The Management and Improvement of Grass Land.*—Mr. C. S. BIGGE, of Much Wenlock, said they were all of them becoming aware that large profits might be realised from improvements in the pasture and meadow lands of the kingdom, and that stock farming would hereafter as heretofore hold the foremost place in the agriculture of England.

Drainage.—The first step towards the improvement of Grass land he proposed to inquire into was that of drainage. The distance apart of the drains should be:—

On very stiff clay, 18 to 21 ft. wide, 3ft. 6 in. deep.
On strong clay, 24 to 30 ft. wide, 4 ft. deep.
On clay with porous subsoil, 30 to 36 ft. wide, 4ft. 6 in. deep.
On gravel and sand, 50 to 75 ft. wide, 5 to 7 feet deep.

The cost of fair average work varied from 5*l.* to 6*l.* per acre. One thing it was important to bear in mind—that the more drains they could get in strong soils the better, the circulation of air in the pipes increasing the porosity and fertility of the soil. The outfalls and direction of the main drains must always be carefully attended to, to prevent them from becoming stopped up by sediment, roots, or the working of vermin, in which case, instead of carrying off the water, they would act merely as receivers, and make the land wetter than it was before. In long outfall drains, especially on flat lands, air holes should be inserted every 200 or 300 yards, the orifice being about the same size as the pipe or culvert for the water. With regard to the direction of the drains, which was a most hotly contested point, he preferred them cut diagonal to the ridges where there was sufficient fall; but on very flat land, and on the highly thrown up ridges of Gloucestershire and Worcestershire, this was impracticable, owing to the difficulty of keeping the bottom of the drains true and the extreme tenacity of the soil. In some stiff land it might be necessary to keep the old furrows, but every furrow must be drained, which at 12 to 15 feet wide would be an expensive though effectual proceeding.

Fertilisers.—For improving the quality, increasing the quantity, and rendering the herbage more nutritious, bone manures, in his opinion, held the first place. They were applicable to soils of every description. Bones in an unmanufactured condition—steamed, ground, and passed through a half-inch riddle, dust and all—he would apply in quantities of from 5 cwt. to 8 cwt. per acre, repeated after the lapse of five years. Ground bones should be applied in autumn, and if possible not later than January. But bones thoroughly digested with sulphuric acid, so as to form a fine powder, were preferable to raw bones. The results obtained by Mr. Brown of Wellington were most striking. His farm of 90 acres produced 85*l.* worth of butter and 70*l.* worth of cheese in 1851, and the yield increased every year—with the exception of a trifling falling-off in 1854 as compared with 1853—until in 1857 the produce was: Butter, 194*l.*, and cheese 277*l.*, making a total of 471*l.* in 1857, as compared with 155*l.* in 1851. He manured his land in the first instance with 10 cwt. of prepared bones, and in four or five years dressed it with 5 cwt. more. He expended 100*l.* a-year in bone manures, and increased his herd of cows from eight to 30. Although a great increase in the quantity of herbage was obtained by the use of nitrogenous manures, as Peruvian guano, nitrate of soda, and sulphate or nitrate of ammonia, yet they must be used with great caution, or a growth of soft innutritious Grasses would be the result. In experiments made for a series of years by Messrs. Lawes & Gilbert, and recorded in the Journal of the Royal Agricultural Society, the heaviest results were obtained by a mixed mineral manure of potash, soda, magnesia, and superphosphate and sulphate of ammonia; but the dressing was so expensive that he would recommend instead of it 1½ cwt. of Peruvian guano, and 1½ cwt. of bone superphosphate. The use of mineral superphosphates he would entirely discourage; but the phosphatic guanos, when treated with acids, gave good results. Still he was of opinion that a thorough good dressing of prepared bones would in the end pay best. With regard to natural fertilisers on rough coarse land, especially when it was very wet, lime was most beneficial. It was best applied mixed with turf, road scrapings, and salt—of lime three to four tons per acre, with the same number of cwts. of salt. This mixture should be applied in autumn or winter. Quick lime, not from the kiln, spread at once and allowed to slake on the land, had been applied effectively on recently-reclaimed moor and waste lands. As to farmyard manures, for permanent meadow land a dressing of 10 to 14 loads of well-rotted dung applied every five or six years would produce the best average results. Farmyard manure was, however, seldom available for Grass, especially on strong land farms, and was comparatively slow in its action. This might be compensated by the use of nitrogenous manures, but was a dangerous course to pursue, as, after a rank growth of a year or two, the land would probably be exhausted. To keep always going a good compost heap made up of farmyard manure, road scrapings, salt, ashes, with a few cwt. of bone manure, well mixed and rotted, would be found to be beneficial as a receptacle for odds and ends, as promoting neatness and cleanliness, and as being a most valuable fertiliser. Another mode of improving Grass land was almost, if not quite, equal to the use of bones—that was, by folding sheep in the same way as over arable land, giving roots, hay, straw, chaff, corn, and cake. The improvement of the land would more than repay the cost of the extra food, and the sheep, especially on strong lands, would do far better. When the Grasses were very coarse, folding a second time might be necessary. A great advantage of folding on Grass was that you could easily vary the size of your folds with the weather, nature of the soil, and herbage, while the sheep could always be kept dry under foot. After the drainage of Grass land, where the herbage is good, the turf should be replaced on the drains, and the superfluous soil spread over the land. On rough lands the turf might be made into compost, or chopped up at once and spread over the ground, with a dressing of bones. The drains from the farmyard should be led off to an adjacent meadow, and not to the nearest brook. In speaking of mechanical fertilisers, Mr. Bigge remarked that all Grass land should be well harrowed at least twice a-year, in spring and autumn. The one light chain or bush harrowing was quite insufficient. Frequent rolling would also be very beneficial. The eradication of Thistles, Rushes, and Docks was well worth expense and trouble. Thistles should be spudded out frequently during the summer, the commoner system of autumn cutting being inefficient. Rushes would gradually disappear after drainage, but should be cut over once a year and dug out in the winter. Docks should be spudded at least six inches deep. Sheep-folding would get rid of other weeds, as Meadow Saffron, Carices, &c. He then referred to exceptional and special cases, as poor clay soils, drained, but in an uncared-for condition. In this case, if there was a fair sward, and the land had been down more than 10 years, he would apply bone manure and lime and as much compost as he could; but if the sward was weak and thin, it should be ploughed, not with too deep a furrow, and one or two crops of Rape or Turnips taken, after which it should be laid down in spring without a crop. He did not think breaking up Grass land and putting it through a four or five-course rotation of tillage was at all advisable. All Grass should be either eaten down close or mown once a year, and, after bearing, should be allowed to spring to a fair length. Grazing land should be allowed a fair start in the spring, and where early spring feed was required, the after-Grass of the previous autumn might be left untouched to encourage the growing Grasses. Meadow lands should be for the most part sown year after year, an occasional crop being taken from the other Grass lands of the farm.

PENRITH: *On the Principles and Practice of Disinfection, as applicable to the Cattle Plague.*—Dr. M. W. TAYLOR, of Penrith, lately delivered a capital lecture on this subject. He said:—

There are a great number of specific diseases to which man and the brute creation are liable which have in common this distinctive feature—viz., their power of propagation by means of infection through the medium of the air, or by direct touch or contact, which is called contagion. One peculiarity of these diseases is that each has a specific poison of its own, which has the power of inducing in all animals of the same race the same kind of malady, and none other. So that the virus of measles produces measles, small-pox multiplies small-pox, rinderpest breeds rinderpest, and so on. The poison by which these specific diseases are communicated and propagated is derived solely from the body of the animal so diseased, for that is the soil in which the virus is bred; to multiply and reproduce its kind it exhales with the breath, it transpires through the skin and passes off by discharges, particularly of those surfaces most affected by the disease. Nor is there any evidence to countenance the belief that any of such diseases can arise spontaneously. To have rinderpest, you must have had it propagated from a pre-existing case. On the Steppes of Russia, its natural habitation and birth-place, it has probably lingered for ages, almost unknown and uncared for by Western Europe, kept in check by a rigid cordon by the horror it inspired among those semi-civilised nations on its immediate borders. The requirements of over-population, and the facilities of locomotion, led to the traffic in live stock. Once imported by the Revel boat into Hull, once planted in conditions favourable for its diffusion, from that focus it has spread with a rapidity and havoc appalling to the present generation. But if I were to relate to you the records of epidemics of past times, I should but repeating to you, in other terms, the tale of the cattle plague of the present day. As it is with the histories of nations, and of individuals even, so is it with epidemics—that history but repeats itself. I will give you but one illustration, and that I will take from the annals of small-pox. Dr. Budd tells us there was no small-pox in the New World before its "discovery" by Columbus, in 1492.

Under ordinary circumstances, exposed to the purifying influence of the atmosphere, these poisonous emanations exhibit a proneness in themselves to decay, decomposition, and destruction; they are stamped with the tendency to change and perish. Chemistry tells us that it is the oxygen or great vivifying principle of the air, which so acts on these products of putrefaction that the organic matters which compose them are burned or oxidized, and so reduced to a state of inactivity. This fact, therefore, should teach us the practical deduction, that an ample supply of fresh air should be afforded to animals when congregated together, especially when labouring under disease, and more particularly when such a disease is of a contagious nature. Overcrowding should be prevented. Where is it that the cattle plague has been most fatal? In the dairy sheds of large towns, and where high-fed cattle have been tied up in large numbers, in a condition so far removed from their natural state. Ventilation should be strictly enforced; window frames and lattices should be looked to and kept open. We hear of stables and byres being snugly shut up for the night, but a free supply of air is even more required through the night than the day, and steps should be taken to insure it. For it is during the period of night that gases are given off in most abundance, the purifying influence of oxygen is most in abeyance, and the animal system in its lowest state of vitality, and most prone to receive disease. When we come to inquire into artificial or chemical means in use for the purposes of disinfection, we find them divided according to their properties into two classes, viz., those which check putrefaction and prevent the evolution of noxious compounds, and those which not only absorb the products of decomposition, but actually oxidise and destroy them. The first are called antiseptics, or decay preventers, and the second deodorants, or disinfectants. It may be necessary at this stage of our inquiry to offer a word of explanation in regard to the use of these two terms, deodorising and disinfecting. A deodoriser is the material used for the absorption and removal of an offensive smell; a disinfectant is that employed for the destruction or neutralisation of some infective matter. Now it would be a mistake to suppose, and one to be carefully avoided, that an offensive odour is necessarily characteristic or significant of an infectious poison. There is no proof that the specific virus which produces rinderpest, or small-pox, or typhus, has any smell at all. There are always strong putrefactive odours thrown off during the course of these fevers, but these do not constitute in themselves the poison of the disease, and the destruction of these smells by deodorisation may not be sufficient security against infection. Earth, gypsum, clay, burnt and unburnt sawdust act as deodorisers by absorbing the evil gases, and are all very useful for that purpose in collections of litter and refuse from cow and horse and manure heaps, but are not to be relied on in neutralising the infective material. This requires the use of antiseptics and disinfectants, and I will proceed to notice in detail, though necessarily in a summary manner, on account of our limited time, those which are reputed as non-effectual. These will include sulphurous acid, nitrous acid, chlorine and chloride of lime, Condy's fluid, wood and coal tar, carbolic acid, charcoal, &c.

Sulphurous Acid.—You have all doubtless seen the recommendations for disinfection printed by the Royal Commissioners, and the prominence given to fumigation by sulphur. The following is the method:—A shovelful of live coal is placed in the centre of the byre, the sulphur put upon them, and the doors and openings closed. As the sulphur burns, a quantity of dense white fumes result, which are diffused through the building; you allow the shed to remain closed for at least two hours, and then open the doors and windows. About a pound of sulphur is sufficient for a ten or 12-stalled shed. These fumes are the sulphurous acid gas, and are, as you know, so acrid and irritating that they provoke cough, and cannot be breathed, so that I need not tell you neither man nor beast can remain in the shed whilst the burning is going on. Sulphurous acid gas destroys chemically the foul gases of sulphuretted and phosphuretted hydrogen, and the vapours of ammonia which issue from fermented matter, and removes all smell. Moreover, it decomposes the virus of animal poison. It is cheap (it is 3*d.* a pound), and is said to be had everywhere. Its application is simple, and can be employed by anyone without more than the most ordinary precautions. The objections to it are, that cattle require to be excluded from the byre for so long a time; that it acts as a corrosive to all metal articles. The employment of sulphur I take to be, if not the very best, at all events the cheapest and handiest means which the farmer can use in two classes of cases, viz., first in byres which have been emptied by the disease, or where the remainder of the animals can be at being turned out for a few hours; and second, when the disease being still by, the disease is in the immediate neighbourhood, and the risk of having infectious matter on the premises imminent. In addition, I have one special suggestion to offer, which, from some experiments I have made with sulphur, appears to me to be useful, that is, to mix with the flowers of sulphur a quantity of gunpowder (itself no mean disinfectant). The proportion may be about one part of gunpowder to five or six of sulphur, thoroughly mixed, put on a cold shovel, and ignited with a heater. The presence of the gunpowder keeps up a regular and continuous burning until all is consumed, with sulphur, from the nitre it contains, gives rise to the evolution of other gases equal, if not superior, to sulphurous acid itself.

Nitrous Acid Gas is probably of all known agents the most powerful disinfectant we possess. This is due to the quantity of oxygen it contains, with which it readily parts, in coming into contact with offensive organic matters; it combines with the elements of these, and extinguishes their noxious properties. In 1780, Parliament granted 5000*l.* to Dr. Carmichael Smith for the introduction of this substance as a disinfectant, but it is undoubted, now, that it is not at all superior. Two or three ounces of aquafortis heated slightly in a pannikin, and, when all is ready, to drop in some bits of copper wire, would disengage a quantity of gas sufficient for a 10 stalled byre. Far greater precaution and supervision is requisite with this than with sulphur, and I would not recommend it for general use, unless these could be fully secured.

Chlorine.—In regard to its effect on animal matter, if I were to take a piece of putrid meat and dip it in a jar of it, its foulness would leave it, and it would become sweet to the smell. There can be no doubt, therefore, of the powerful reactions of this curious gas. In the estimation of its efficacy as a disinfectant, I should place it along with nitrous acid, before the sulphur fumigation; but in practice it is not so applicable. The same objections hold with equal force against these agents as against all the other two gases I have mentioned, viz., its corrosive action on metals, and being suffocating and dangerous to animal life. It can only be used, therefore, in empty sheds. But in the chloride of lime, with which you are well acquainted (which owes its virtues to the chlorine it is charged with), we have one of the best, more manageable, and most efficient of our solid deodorisers and disinfectants. Spread in the solid form over heaps of fermenting matter, it destroys the noxious gases as soon as they are formed—all smells disappear before it. To be used over large masses of

material, however, it would become too expensive; and for the covering of diseased carcases the cheaper methods by quicklime, charcoal, or burnt earth are preferable. Dissolved or thoroughly mixed with water, in the proportion of one pound to a gallon, it may be used for sprinkling the byres, washing woodwork, cleansing trucks, soaking hides, and many other like purposes. From its comparatively high price it must yield in general applicability to carbolic acid; on account of its bleaching and slightly corrosive effects on washing apparel, and its hard action on the skin, it is inferior, as a personal disinfectant, to another material I shall presently allude to, viz., Condy's fluid. It should be known also that chloride of lime lessens the manurial value of any fermenting masses that may be treated with it, as, like quicklime, it decomposes ammonia, the ingredient we esteem so much as a fertilising agent. In regard to quicklime itself, I do not recommend its use within the byres, on account of the action I have spoken of. But at the threshold of every byre door and at every gateway leading into the yard I would have quicklime strewn thickly and widely, so that the sole of every foot, whether of man or beast, or of nocturnal marauders, should pass over it before they can gain access to the stock.

Condy's Fluid, so called from the name of its discoverer and manufacturer. Chemically, it is called a per manganate of potash. Its action as a disinfectant resides in the facility with which it parts with its prominent ingredient, oxygen, the very agent by which, as we have seen, all natural disinfection is accomplished. The action exerted by this fluid approaches as nearly as possible to that exerted by the atmosphere on putrescent matter. The advantages of these preparations of Mr. Condy may be thus summed up—they have no smell whatever of their own, give off no odorous gas during their operation; when diluted for use are devoid of perceptible action except on offensive matters; perfectly safe to use, because not poisonous; not mistakeable for other liquids on account of their characteristic colours. The price of the green fluid is 1s. a pint, or 5s. a gallon in bulk: it is used diluted with 30 parts of water. For use on a large scale in cattle sheds it must yield in point of efficacy and economy to carbolic acid but for a number of subsidiary purposes there is nothing equal to it, particularly for the disinfection of the person and clothes. All who are in the practice of handling sick stock should use a little of it mixed with soap and water for washing themselves and for sprinkling their clothes. How to disinfect an inspector? Rather a knotty question, though a material point. First, glazed waterproof overcoats and leggings should be used, and care taken not to go near healthy animals in their infected clothes. The Commissioners here recommend the use of carbolic acid solution to their clothing, but the fragrance of it is so far from being delightful that I fear there is no chance of even an inspector becoming attached to it. I think for this purpose, and for personal ablution, Condy's fluid is in every way more appropriate, as it not only has no smell of its own, but sweetens every other smell, and may be carried about in the pocket without risk. An exception might be made in regard to the boots, which might be brushed over with the carbolic acid. It is the best thing of any for inspectors to carry with them in their visits to infected places. A bottle of Condy's fluid should be kept in every farmhouse, for it may be used not only as a deodoriser in cleansing inhabited rooms, dairies, &c., and for a multitude of domestic purposes, but it is admirable also in external wounds, and diseases of all farm stock attended with putrid discharges.

Antiseptics, or Decay Preventers.—There has been handed down to us, from the most remote ages of antiquity, a method of disinfection which, since the modern introduction of chemicals, has become now well nigh traditional. I allude to the use of wood smoke. For the fumigation of cattle there was a special observance, invested with much ancient superstition and mystic ceremony, which cannot yet have perished from the memory and experience of many whom I now address. I refer to that which was known in these northern counties as the "need fire," or cattle fire. Although we may now smile at the superstition and deride the credulity which were mixed up with the institution of "need fire," yet we shall presently see, that our forefathers had philosophy and science on their side in pursuing the practice. The pile of the "need-fire" was made up with peat, brushwood, damp straw, covered over with decayed leaves or sawdust, so as to produce as much smoke as possible. Of what does wood and peat smoke consist? Of charcoal in a most finely divided state, of a variety of compounds in a state of steam or vapour, tar, creosote, paraffin, carbolic and pyroligneous acids, and strong empyreumatic oils and others. These are the very substances to which, as prepared by the hands of the chemists, I am about to draw your attention for their disinfectant powers, and the very substances I am about to recommend you to employ. I do not ask you to kindle a fire in your folds and expose your cattle to the smoke, as your ancestors persisted in doing through many centuries, though in doing so I am persuaded you would be doing a wise and judicious thing. No, the proceeding to our modern notions may appear too crude and primitive; but the plan I recommend to you is based on the old practice, and is, in truth, but a modification of the same thing. I take the essential volatile ingredients of wood and coal tar, as manufactured by art, and employ them to fumigate the sheds, in a state of heated vapour, so that you really get all the compounds existing in wood smoke, except the charcoal.

In the now well-known carbolic acid you have the principal volatile ingredient of coal tar, and in the common spirits of tar the volatile principle of wood tar. The other volatile principles of wood smoke are contained in what is called tar acid, or pyroligneous acid. Commerce supplies all three in a cheap form—carbolic acid, per gallon, 6s.; spirits of tar, 2s.; tar acid, 8d. This olive brown-coloured, oily looking liquid is carbolic acid; it has a strongly disagreeable smell, partly of coal tar, and partly of rotten eggs; it is inflammable, and burns with a smoky flame; it is much heavier than water; its superficial gravity is 1060. I do not find that it dissolves in water either boiling or cold, but separates quickly to the bottom. This other ruby-coloured liquid is the common oil or spirits of tar, which is well known to you. It has a pure tar-like smell, due to the creosote which it contains. It is also inflammable; a slight degree of heat causes it to take fire, and it burns with much smoke. In these two spirits, then, the carbolic acid and the spirits of tar, we have the essential elements, in the one of coal tar, and in the other of wood tar. I combine them. I mix them in equal proportions, and they mix thoroughly and well, and form a perfect solution. But on account of their high inflammability I sought for some other liquid wherewith to dilute them, so as to remedy this inconvenience, and I find this is perfectly attained by the use of the tar acid, or impure pyroligneous acid of commerce. This liquid is made on a large scale from the distillation of wood, for commercial purposes, and so can be had cheaply; it can be retailed here at from 7d. to 8d. a gallon. Its principal constituent is vinegar. It is this acid which gives that sourness to taste and smell that is perceived in wood smoke. Besides the vinegar or acetic acid, this tar acid also contains some creosote, well known as the most powerful antiseptic and pickling principle that we possess; also some wood alcohol, or, in fact, the liquid which is now burning in this spirit lamp, the methylated spirit. So that here again in this tar acid you have a combination of ingredients eminently antiseptic. To equal parts of carbolic acid and spirits of tar, I add one more of tar acid, and this forms the liquid I use for fumigation. Take a pint of each. The expense is as follows, viz.:—

Carbolic acid, 1 pint	.. ..	0s. 9d.
Spirits of tar, 1 pint	.. ..	0 3
Tar acid, 1 pint	.. ..	0 1
3 pints	.. ..	1 1

So that here, at the expense of about a shilling, you have the volatile ingredients of what would represent a very large quantity of the tar both of coal and wood. For this expense too there would be sufficient liquid thoroughly to fumigate a large shed holding 15 to 20 cows, at least three times a day; for it is wonderful into what amount of vapour these concentrated volatile liquids resolve themselves. The method is this; take an old frying pan, or pot, or a large thick fire shovel, and heat it in the fire until one side is red hot, take it into the byre, and pour over it, by degrees, a pint of the mixture, and move it about among the stock. For smaller byres than I have alluded to, of course a less quantity of liquid is used three times a day, so that the atmosphere should be continuously saturated with the tar vapours. In this way, disseminated through the air in the form of vapours, you realise to the full the virtues of carbolic acid and the other principles of tar wafted through the air of the byres in the form of heated vapours; they are inhaled by the animal, they are received into its mouth, nostrils, and other passages, they cling to its hair and skin, and are retained there with surprising tenacity, and they attach themselves to, and are absorbed by, the walls, the wood-work, litter, and what the French call the *entourage* of the animal. Opinions are now running strongly in favour of the efficacy for disinfecting purposes of coal tar and ordinary tar and their products. Witness the employment of McDougall's disinfectant for the sewage of Carlisle; also of the powder of Messrs. Corne and Demeaux in France, which is composed of gypsum and coal tar; and the decision of the Royal Commissioners in the recommendation of carbolic acid. Dr. Angus Smith, who is their authority in this department, after an experimental inquiry with a variety of substances, now, I believe, looks upon the problem of disinfection as solved by the use of carbolic acid. In the measure advised by the Commissioners, they speak of its use only in the fluid form, either in a concentrated state or in a solution with water. I find it very sparingly soluble even in boiling water; and for washing wood work, and sprinkling the floors and walls of byres, I would rather mix it with tar acid, and use a portion of it at least in the way I have directed, by fumigation. I call your attention to the measure of lime-washing the walls and roof of the shed with good, freshly-burnt lime, adding to each pailful of whitewash one pint of carbolic acid, and also to the instructions for disinfecting litter and manure heaps by the undiluted carbolic acid. To sum up, then. In the selection of the various substances which I have endeavoured to classify and distinguish, I should prefer as vapours the fumigation with sulphur and the fumigation with the active ingredients of wood and coal tar; as liquids, carbolic acid, and Condy's fluid; as solids, chloride of lime and quick lime—each in the manner and according to the objects in view, as I have previously specified. You see I have not adopted any universal disinfectant, nor do I believe in any which will answer for every purpose. As, in the variety of manures that are presented to your notice, your choice is determined by the nature of the soil, the kind of crop you hope to grow, the condition of your land, and other special circumstances, so in the adoption of any of these substances I have described to you you may find one suited for your special object, and another for another.

HUNGERFORD: *Rats and Mice, Rabbits, and other Farm Pests.*—Mr. BELCHER, of Coxwell, Faringdon, read a pamphlet written by himself on "Rats and Mice," with plans for preventing their ravages and means for their destruction, lately published by C. Luker, Faringdon. At the conclusion, alluding to rabbits, he said he knew that instances were not rare where gamekeepers fattened on the principal part of the produce, and the desponding tenants were annoyed, irritated, and injured to a point almost beyond human endurance; and the gaols were filled with poachers, and the workhouses with their destitute wives and children. Were rabbits and hares worth all this misery? He asked whether rabbits or hares were worth the additional parochial taxation which tenant farmers bear to support paupers and criminals in consequence of such vermin, and gave a few startling facts, as to the large number of game which tenants were compelled to keep, and at what cost? One farmer paid rent to the amount of 210*l.*, and his crops were damaged by hares to the amount of 260*l.* Another said it was estimated that the damage to his crops ensuing from the preserving of game was estimated in some years at 800*l.* As an instance of the quantity of land required to maintain game, that killed at a recent battue in the North of England, was, it was computed, about one-third of that in the preserves, which would require no less than 1346 acres of land for their support. The number of commitments connected with game were in some instances more than half the total number in a county, and from the total returns of England and Wales he gleaned that no less than 4529 convictions for game law offences took place. Only yesterday he was in the company of a farmer of the South of Berkshire; he has been on his farm 24 years, but said he was on the point of leaving it. One principal reason was the damage he suffers from hares and rabbits that issue nightly from the covers of an adjoining estate. He did not advocate the total annihilation of game. The tenant farmers of England would be the last men who would wish it, or that there should not be sufficient game to afford fair sport for all fair sportsmen, but it is one thing to have sufficient game to eat, and another matter to be eaten out of house and home by game. He was sure that the tenantry of England would not wish for a monopoly, but would be satisfied with a joint power over the wild animals bred and fed on their farms. He occupied a large farm, the property of the Crown, which once formed part of Wychwood Forest, where deer and game abounded, and where deer stealers and poachers abounded also. He held it on a 31 years lease; in that lease the word game does not appear, therefore the tenants can keep it or not as they think proper. Had the game been reserved, some one else might have had the land. Can landlords do better than take these leases under the Crown as their model? They need not go higher for a pattern, for these leases they may be sure were framed under the best and soundest judgments in the kingdom. He concluded by giving a few words of advice to all young farmers starting in life. To them he would say—go and plough the wide prairies of America, wander with a flock of sheep over the wilds of Australia, or cultivate a small plot of ground on the southern slopes of Africa, even at the risk of having to defend it against the fierce attack of Kaffir tribes—do anything for an honest livelihood rather than attempt to farm the English land in the face of the difficulties, annoyances, the impediments, and the losses caused by the undue preservation of game in our country.

Reviews.

The Third Report of the Royal Commission on the Cattle Plague.

This Blue Book is not yet published, and will not be issued for a week or ten days. Its contents have, however, been made known through the *Times*, and the following account of it is accordingly condensed from the columns of that paper:—

As was stated in their Second Report, the Commissioners requested some of the most eminent physicians, veterinary surgeons, and chemists of the day to investigate the Cattle Plague from various scientific points of view. The Reports made by these gentlemen are printed in the Appendix to the Report of the Commissioners.

The first point of the inquiry relates to the symptoms and course of the disease. With regard to this, two very important facts have been established. The first is that the earliest indication of danger may be discerned about three days before any of the usual symptoms are observable; and that one day at least before the appearance of these symptoms the disease may be recognised with almost complete certainty. This first sign of danger consists in a rise of the natural temperature from 102° to 104° of Fahrenheit, or even to 105½°, and this takes place within 36 or 48 hours after the animal has taken the plague. This symptom, it must be kept in mind, occurs when the animal appears in no way ill. It gives us a means of separating sound from sick animals at a time when the separation may be effectual, and may render it possible, say the Commissioners, to shorten the period of quarantine. Two days after this rise of temperature the second symptom appears, and consists in a sort of eruption on the mucous membrane of the mouth and other parts. Taken in connection with the rise of temperature, this affords conclusive evidence of the presence of the disease, although it is still 24 hours before any ordinary symptoms of illness are discernible. It is obvious what an important influence this observation must have on the efficacy of any system of treatment which may be adopted. It is not until another 24 hours after these first slight indications of illness that the decided symptoms occur which are regarded by superficial observers as the commencement of the disease. Under ordinary management, therefore, no less than four days are neglected, which form, in all probability, the only period during which treatment could be of any avail.

When the animal is examined after death numerous congestions and obstructions are observed, but the two great organs of the body which are principally affected are the stomach and the lungs. Large accumulations of undigested food are met with in the first stomach, and the intestines are frequently in such a state that digestion would be impossible. When the lungs are the principal part affected, the disease is believed to be even more quickly fatal.

When we proceed to inquire into the cause of these rapid alterations in the system, there appears to be only one fact sufficiently established, and it is the second of those to which we have already adverted as being the only two points in the pathology of the disease which are placed beyond doubt. It is that a certain definite poison causes the morbid state of the blood, and that the blood contains this poison in such a manner that within less than 48 hours after infection a small portion of it will give the disease by inoculation. A minute portion of the mucous discharge from a diseased animal, if placed in the blood of a healthy animal, increases so fast that in a short space of time "the whole mass of blood, weighing many pounds, is infected, and every small particle of that blood contains enough poison to give the disease to another animal." This fact the Commissioners consider the most important discovery yet made in connection with the cattle plague, and they state that it is pregnant with consequences in ordinary medicine; for, though the existence of such a fact has long been suspected in human diseases, it has never yet been proved in any. How soon after receiving the poison the animal is capable of giving the disease to others by natural infection is not determined, nor at what time the blood and textures cease to give it; nor can any definite time be named when the energy of the poison is destroyed. Mucous discharges have been known to retain their power of giving the disease by inoculation as long as eleven months. The "matter runs down the hide to the floor or wood-work, and when dry may be carried as dust in the air and infect other beasts when received on the absorbing surfaces of the eyes, nose, mouth, lungs, or stomach." When the poison is thus known to exist, and has been in a manner localised, it is natural to expect that chemical or microscopical researches would enable us to detect and separate it; but, strange to say, the most minute inquiries on this point have hitherto been baffled. Dr. Beale has subjected the poisonous matter to a magnifying power, under which a child of 3 feet would look as high as Mont Blanc, without being able to detect any definite material of poison. Chemical tests have been equally unsuccessful, and no means are yet known of detecting the poison but by those of its effect on the living body. In this respect it resembles other animal poisons, and, like them, requires particular organisations in order to become operative. "It can multiply in the body of a bovine animal, or a sheep, goat, deer, or gazelle;" while we have satisfactory proof that it is incommunicable to non-ruminants. Moreover, it has different degrees of intensity in different species, the sheep and goat taking the disease less easily than the ox. These considerations naturally conduct us to the question of its origin and propagation. From the facts already stated it is at least certain that it is a contagious disease, and the Commissioners believe that this "expresses the whole truth" concerning it. They have not been able to discover any evidence of its having had a spontaneous origin in England. The first known cases were all in animals collected from different parts of England and Holland, which were exposed in the Metropolitan Market on one particular day, the 19th of June, and then dispersed to five different sheds. Several introductions from the Continent have since been observed, and, moreover, in most cases in England where it has since broken out, its introduction can be traced. "It follows the lines of cattle traffic, and does not arise spontaneously." In short, all the facts obtained, both at home and abroad, "are conclusive evidence against the assumption of occult atmospheric conditions, and in favour of its spread by multiplication in the bodies of living animals." To what extent the poison may be carried is not determined, and may vary with local conditions. A distance of 20 yards has been sufficient, while 100 yards have not been sufficient to secure immunity.

The next head of the Report relates to the means to be relied on for checking or curing the disease. The first inquiry

is naturally directed to measures of disinfection, or, in other words, to methods by which the poison may be destroyed. "To find a perfect disinfectant for the Cattle Plague would be to stop the disease at once." The necessary conditions for destroying a poison of the character in question reduce the available disinfectants to four—chlorine, ozone, sulphurous acid, and the tar acids (carbolic and cresylic). From these, by experiment, Mr. Crookes has selected the tar acids, combined with the occasional agency of sulphurous acid, as the most effectual, and the Commissioners strongly recommend the use of carbolic acid throughout the country in unaffected as well as in infected districts. The experiments hitherto made on the combined action of carbolic and sulphurous acids are said to be very encouraging. The Commissioners are anxious to raise no false hopes, but they think "that a fair case has been made out for a large and systematic trial of similar measures." Another means of prevention has been looked for in inoculation or vaccination, but on this head the Commissioners can only confirm the adverse verdict which has already been pronounced. The plan has been tried in all forms, and in all has failed. There remains the question of treatment, which may be cure- and as regards this, also, the Commissioners can for the most part only endorse the opinion which the public has already formed. All forms of medicinal treatment have been equally successful and equally unsuccessful. The only inference to be drawn is that the various drugs employed produced little or no effect. There is, however, one satisfactory result amid this confusion. If medicinal treatment is of no avail, the regulation of diet has the greatest influence. It is made clear by the evidence of the Edinburgh Committee that the proportion of recoveries is very largely increased "by judiciously feeding with small quantities of digestible food." Under this treatment, out of 503 cases, 191, or nearly 38 per cent., recovered. It is remarkable, moreover, that dividing these beasts into two groups, according as they belonged to large or small stocks, in the former 23 per cent., while in the latter 62 per cent. recovered. The explanation offered is that in small or stocks fewer beasts are ill at once, there is less concentration of the poison, less crowding, and, not least, better nursing. An analysis of another group of 813 cases indicates still more conclusively the influence of feeding. Among cottagers' cattle, generally fed on unsalted food, the recoveries were 7 per cent., in large stocks, where dry food was often given during convalescence, the recoveries were 57 per cent., with mixed food of mashes and hay they were 22 per cent.; while among cattle fed entirely with dry food, and treated medically with drugs, the recoveries were but 13 per cent. The number of cases is too small for us to depend on these averages; but they are sufficient to establish the general fact. We may take it as ascertained that "powerful drugs of all kinds greatly heighten the mortality of Cattle Plague." Perfect cleanliness, ample ventilation, constant disinfection of the air and discharges by tar acid, and the most careful feeding with soft mashes of the most digestible food—such, and such only, are the measures which our present experience sanctions for the treatment of the disease."

From the opinions of the Commissioners that the disease is purely contagious, and that no method of treatment or disinfection can be relied on, the conclusion is obvious that our measures must be almost entirely directed towards preventing contagion, and that such measures should be both stringent and continuous. In support of this conclusion, Mr. Simon, the sanitary officer of the Privy Council, who has made some remarkable statistics as to the course of the disease in Yorkshire and Cheshire before and after the passing of the Act which authorised compulsory slaughter. Up to that date, the disease showed no sign of diminution, but in both counties after that date it steadily declined. The diminution, say the Commissioners, "was not only coincident with the action of the new restrictive measures, but runs a course closely parallel to the operation of the most important of those measures—slaughter." "Rigid and systematic means of disinfecting," "unsparing slaughter," and "scrupulous watchfulness," will alone, in their opinion, be sufficient to extirpate the disease; and when these measures have been successful, there will still remain the duty of guarding against re-introduction. For this purpose they renew the recommendation we have so frequently urged for the establishment of lairage of cattle at the ports of disembarkation, and they urge that advantage should be taken of the present opportunity to make permanent alterations in the supply of meat to large towns.

Farm Memoranda.

CHATTERIS, ISLE OF ELY: *April* 30.—The queen of months is just about to open upon us, and without any great stretch of imagination we could conceive ourselves in mid-winter. The wind blows coldly and briskly from the east, and we crouch over the fire as though it really were a luxury. Three days ago and we were exhausted by heat, and panting for air. Such are the great and sudden changes we experience in this variable climate. On the 27th the thermometer rose to 80° in the shade; this morning there was ice as thick as a penny piece. But notwithstanding these great and sudden variations of temperature, we cannot report unfavourably of vegetation generally. We suffer more on our fen soils[when the land is very dry, and the frosty night is followed by a hot scorching sun with a high temperature. So long as cold and cloud succeed frost we have hope that our cereal crops may escape destruction. Twelve months ago this very night our own corn crops were injured to the extent of 500*l.* by a frost following rapid and tender growth occasioned by the unusual warmth of April. So fickle and uncertain are our fen soils that the brightest and most cheering prospect may be destroyed by one night's frost and one day's sunshine.

The open weather and freedom from frost during the winter months were admirably suited to the growth of our fen Wheats. We have seldom commenced a spring under more favourable auspices, and with more hopeful promises. On a few of the lowest lands where the water has been too high at times during the winter, and on some of the gravelly soils where the downfall has been too heavy, there is a tendency to lose colour, and some already look rather yellow and sickly; but the great bulk of our fen Wheats are looking strong and vigorous, and although there is the prospect of a lighter bulk of straw than there was a few weeks ago, there is nevertheless quite sufficient plant and promise for a full average yield. Oats have started very well. The next few weeks will decide what sort of a crop we may expect them to be. In a few instances the wireworm is busy, but not to any great extent at present. Should we escape the ravages of this pest, and get occasional showers to keep up a continuous growth, we have the prospect of a good crop. Most of the Oats in this neighbourhood are now sown with artificial manure, and in a great many instances this is applied with the water drill, and we consequently get more quickly through the danger periods, the growth being so much more rapid, as well as sustained to the time of harvest.

Beans come up and promise as well as we ever saw them. They are unusually strong, and we are now giving them their first hoeing. Peas are likewise strong and healthy. Our Barley is not all up yet. We had to steam cultivate the lands designed for this crop in the spring, and this operation was retarded considerably by adverse weather, but we have at length succeeded in finishing it, and the last seed was deposited about a week since. The first sown is up, and looks strong and healthy. We sow this crop as well as the Oats with Lawes' manure and the water drill.

We are now actively engaged with the fallows, and are ready to sow Mangels and Kohl Rabi. We had a good rain on the 28th, which pulverised the soil, and made the hard stubborn clods yield, and we have now as good a seed bed as we could well desire.

We have an abundance of Grass keeping, and our pastures have now their full complement of stock upon them. We fortunately abstained from purchasing lean cattle in the autumn, and consequently have been preserved from heavy losses by the rinderpest. We substituted sheep and horses in the winter as manure-makers, and are employing the same animals to consume our Grasses this summer. We wintered six head of bullock stock; four of these fell victims to the plague, two survive. We have just been selling 272 sheep grazed in yards in the winter, and have realised an average of 72*s.* 1½*d.* per head, after market expenses were paid. They clipped about 10 or 11 lb. of wool each, which at present prices will bring them up to something over 90*s.* per head. We kept our breeding ewes also in yards, and only turned them out after they had lambed. We unhesitatingly pronounced the experiment of yarding a very perfect success.

The corn trade is exceedingly dull, and nothing but gunpowder and cannon-balls appear to inspire it with life. An European war would doubtless give speedily enhanced prices. But at what a cost to secure increased gain! Rather let us continue the present comparatively low rates, until, by natural and peaceful circumstances, a more remunerative price shall be paid. *A. S. R.*

BELGIAN HUSBANDRY.—That which is known as the Belgian system of husbandry was imported into this country from Lombardy, and carried into England, where it is known as the Norfolk system. It is based upon the knowledge that each plant takes from the soil its own peculiar food, and that the fertility of the soil is best preserved by a succession of crops; the land is not scourged or exhausted by taking from it all the aliment required by one class of plants. The original idea of a rotation of crops might be expressed in the words, "food for man," "food for beast;" thus, the Norfolk or four-course shift consists of 1, green crops (beasts); 2, grain (man); 3, Clover (beasts); 4, grain (man). It is, however, necessary that the elements extracted from the soil by the mouths of the plants, their roots, should be again restored to the soil; any waste in this respect is sure to bring its punishment. This is very strikingly shown upon some of the most fertile land of the world, the black soil of Russia, where, under a succession of crops of Sugar-beet, the soil has been exhausted and gone back to an almost sterile condition. England tries to retain her land in fertility by using the dung of birds (guano) to supply the waste caused by the consumption of food in cities, and the consequent neglect of the most important natural laws. Belgium, with a population in some of her provinces nearly double that of England, is not driven to use guano in the same extent, because the food is principally consumed where it is grown, and thus the fertility of the soil is kept up. Sir George Nicholls, who did not attempt to investigate causes, states the result of his experience thus:—"The success of the Belgian farmer depends mainly upon the number of cattle which he can maintain by the produce of the land, the general lightness of the soil rendering the constant application of manure absolutely necessary to the production of a crop. The attention of the cultivator is always therefore especially directed to obtain a supply of manure. Some small farmers with this view agree with a sheep-dealer to find stall room and straw for his sheep, to attend to them, and to furnish fodder at market price, on condition of retaining the dung. The small farmer collects in his stable, or in a fosse lined with brick, the dung and urine of his cattle. He buys sufficient lime to mingle with the scourings of his ditches, and with the decayed leaves, Potato tops, &c., which he is careful to collect in order to enrich his compost, which is dug over two or three times in the course of the winter. No portion of the farm is allowed to lie fallow, but it is divided into six or seven small plots, on each of which a system of rotation is adopted; and thus, with the aid of manure, the powers of the soil are maintained unexhausted in a state of constant activity." The above was written in 1838; every word of it is applicable to-day, and as a proof of the preservation of the land in unexhausted fertility, I find that the crops of 1863 were larger than those of 1846. He says, the small farms consisted of 5 to 8 acres, and that "the live stock on each of those he visited consisted of a couple of cows, a calf or two, one or two pigs, and sometimes a goat or two and some poultry." This is greater than the average quantity of stock on each farm, as shown in the tabulated returns issued by the Government of that country.

The husbandry of Belgium, to which I allude, is mixed cultivation, being partly by the plough and partly by the spade. The spade gives a finish to the land after it is sown, which makes it appear like a garden, and causes the more certain vegetation of the seed, whereby there is a large saving of seed, or rather, a large addition to human food. The earth which is dug out with the spade in the trenches, between that turned with the plough, is spread evenly over the seed. Where the subsoil is poor this top-dressing is treated with liquid manure before it is spread on the seed. The land is thus perfectly drained, and the seed, well covered, is kept out of the reach of birds. Upon the smaller farms no horse is kept, and all the work is done by the cultivator and his family with the spade or hoe; the cattle are kept in the house and stall-fed; they are principally the Dutch breed, black and white, and are of good size. The average yield of milk, and the quantity of butter made from a given quantity of milk, is greater than that of the best English dairy-farms. An ordinary cow fed on young Clover will give at three milkings per day, for the first three months after calving, from 15 to 18 quarts per day, which will produce about nine pounds of butter per week. If the farmers can raise Wheat, Rye, and Potatos enough for bread for the family, and Mangels, Carrots, and Clover for the cows, they do well; they have no rent to pay, and the produce of the sale of their Rapeseed, their Flax, their hemp, and their butter, gives them a good profit. It is not necessary that I should go into details of the management of these small estates, but the following account of the expenditure, and produce, of an estate of 15 acres near Ghent, shows how much the Belgians make of their land. It maintained four milch cows and a heifer, a horse, two or three pigs, and a couple of young calves:—

The produce of this farm was	£171 12 6
The expense	88 10 0
Leaving an annual profit of	£83 12 6

It will be seen that all the labour is charged in the account; of course that performed by the family would form an additional profit. The amount realised (about 11*l.* 10*s.* per acre) appears large.* *Mr. Fisher's new work.*

* Produce of an estate of 15 acres near Ghent, after deducting the seed:—

RECEIPTS.	£	*s.*	*d.*
90 bushels Wheat, at 7*s.*	31	10	0
90 ,, Rye, at 4*s.* 3*d.*	19	2	6
30 ,, Buckwheat, at 4*s.*	6	0	0
100 ,, Oats, at 3*s.*	15	0	0
An acre of Flax	20	0	0
60 bushels Rape seed, at 6*s.*	18	0	0
8 cwt. butter, at 5*l.*	40	0	0
2 fat swine	14	0	0
A heifer and two calves	8	0	0
	£171	12	6

EXPENDITURE.	£	*s.*	*d.*
635 days of men in summer, at 2*s.*	63	10	0
86 ,, ,, winter, at 1*s.* 8½*d.*, threshing ..	6	14	4
264 ,, ,, women, at 10*d.*	11	0	0
180 bushels peat ashes, 5*d.*	3	0	0
200 Rape cakes, at 2*l.*	1	13	4
Extra expense at harvest	2	3	4
Balance, £83 12*s.* 6*d.*	£88	0	0

Miscellaneous.

The Keep of a Bullock. I very much question whether during the winter months high-fed cattle will not fatten better without than with roots. I am giving my bullocks 56 lb. of Linseed oilcake and 56 lb. of hay a week, and what straw they like to eat; they are large beasts, and are really doing well. I have just added 14 lb. of Linseed oilcake to half my fatting bullocks, making their allowance 70 lb. Linseed oilcake and 56 lb. hay a week; the others remain at 56 lb. of Linseed oilcake and 56 lb. of hay a week. Probably I may increase the allowance of cake by degrees. I like to give them time, and not force them too fast. I intend to limit the cost of food, so that each bullock does not exceed 16 cwt.

Linseed cake	£8 11 0
13 cwt of hay	3 5 0
And, if I can spare it, 1 ton of Wurzel at the rate of 2½ cwt. a week during the last eight weeks ..	1 1 0
	£13 0 0

Besides the straw they like to eat, and the cost of the attendance. [Written when roots were scarce.]

Calendar of Operations.

MAY: *Live Stock.*—As the hot season approaches, animals become more subject to diseases of the digestive organs, and epidemic diseases become greatly modified; for instance, in horses, influenza, when it occurs, is characterised by great derangements of the liver and the mucous membrane of the bowels. Colic, particularly the flatulent kind, is also very common with horses, from the green food with which they are usually supplied, and which might to a great extent be prevented by greater moderation with this article of diet. Inflammation of the bowels is also more prevalent; and inflammation and congestion of the lungs from over-exertion. Lamenesses, from the hardness and dryness of the roads, are frequent.

In animals more in a state of nature, such as horned cattle and sheep, summer is the healthiest period. In both classes, however, Hoven, or blasting, is common, from the Clovers and Grasses which are partaken. The fly also proves exceedingly troublesome with sheep.

Horses will be receiving their full allowance of Oats, and as much Rye-grass, Clover, and Vetches (to which they must be gradually accustomed), as they choose to eat. The last-named should always be given to them the day after it is mown.

Cattle.—Root crops will now be consumed, but it is always advisable to have as many as will keep the young cattle well through this month. There is economy in letting pasture be forward in growth before stocking it. In putting cows to Grass caution is necessary, as

they are susceptible of cold. Young calves may be turned out during the day, but should have the court-yard at night, and some cake and sliced roots, or cut Clover when it is ready.

Sheep must be purchased for feeding on the Clovers and pastures; from six up to as many as 12 sheep per acre may be procured, according to the Grass and the animals. Hoggets must be washed and shorn as the weather permits. The practice of night folding on fallows, common along the edge of the Chalk Downs, begins this month. The ewes on good pastures will now be doing well. Their lambs will require constant attention; and change of pasture and food will be necessary. Fattening and ordinary grazing sheep will require extra care, as the transition from Turnips to Grass frequently causes purging, which may be partially stopped by bleeding; if, however, it prove obstinate, some astringent must be given, as catechu, chalk, laudanum, Wheat-meal, &c. Their feet should be examined, and all loose portions of skin and hoof removed, in order to prevent foot-halt.

Pigs.—All fat pigs should be sold, and others kept in a store condition. Clover, Vetches, and green food of that description, are better adapted for this purpose than for fattening, and the early litters kept in a growing state will be of the right size for herding over the stubbles in autumn, and for fattening into bacon during winter. The sows may have access to the boar this month; their produce will have attained a hardy size before cold weather arrives, and then they may be fattened into pork.

Dairy Farm.—Cheese-making is become general, even in the smallest dairies. Care must be taken that, in turning out the cows to Grass, which is done about the 10th of May, they be not chilled by sudden changes of weather, as this will immediately lessen their produce of milk. Pigs must be bought to consume the whey and buttermilk. By the end of this month the earliest calves are turned to Grass, which is done with great care. They are placed in a field near the homestead, where milk and water, or sweet whey, is given them once a-day. It is well to wean them from milk by diluting it with water. At 10 weeks old they will need nothing but Grass. The older cows are allowed access to the bull this month. In cheese-making, the night's milk is used to cool the morning's new milk. The rennet should be added at a temperature of about 80° Fah., and when the curd has formed, a portion of whey may be heated, so that when returned it may raise the whole to 90° Fah., when the curd will be rich, firm, and well formed. The whey should be run into shallow vats, and the cream collected and churned; the quantity of whey butter should never exceed half a pound per week for each cow.

When the Grass is late, the milking cows should get the best food provided for them, with access to good water; the comfort of shelter, and everything tending to secure their good condition, surely tending to greater produce of milk. Roots and good hay can generally be supplied on every farm, and any disagreeable taste in the butter from the food of the cattle can be prevented by putting about a dessert spoonful of saltpetre, finely powdered, to about three quarts of the cream immediately it is taken off the milk, placing it in an open vessel to stand in boiling water, and constantly stirring the cream while it is heating and until it cools again; about half an hour is sufficient for the whole process. About a teaspoonful of common salt, and half the quantity of saltpetre have been found to give a pleasant flavour in butter occasioned by the food of the cattle, being put into the proportion of two gallons of milk, when it is brought in warm from the cow and placed in pans, or any vessel provided to receive it, to stand in till the cream is skimmed from it.

Moorland Farm.—Lambing should be over by the middle of the month. It is more profitable to have barren ewes than very late lambs. The lambs should be castrated about three weeks after they are dropped. Let this be done in a clean dry place. Showery moist weather is more favourable than when the air is very dry. Bring both ewes and lambs together, and then run off as many as will fill the pen, taking care that every lamb in the pen has its mother there also. After the operation is over, again mother and lamb off to their pasture. Black-faced lambs are not castrated till about six or seven weeks old. Any weakly ewes should be put into inclosures, where the better keep will be well repaid by a level lot of lambs at weaning time.

Notices to Correspondents.

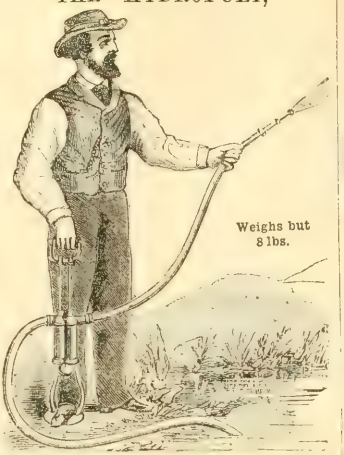
CONCRETE FLOOR: *An Old Sub.* The following recipe, by Mr. Lawrence, of Circncester, has been frequently published in these columns, viz.:—Three parts coal ashes (these from the blacksmith's forge to be preferred) and two parts gas lime from gas works, to be thoroughly mixed, and then made into a mortar with gas tar. If the gas tar come from gas-works where the ammoniated liquor is not separated, it will be sufficiently mixed for the purpose; but if the latter be separated, and the tar be thick, it will set quicker if about one-fourth part of water be mixed thoroughly with the tar when used. For the floors of cow-sheds, this should be laid about 3 inches thick in one layer, on an even surface of gravel, or stone broken very small with a sprinkling of gravel over, and rolled down. The mortar may be laid on with a common shovel, and merely patted down flat. In dry warm weather, if the mortar has been carefully made, the floor will set firm in a few days. For any ordinary outhouse, half the thickness will make a permanent floor.

RIVER PLATE: *Alamos.* We shall be happy to be of any service in our power.

THE VETERINARIAN PROFESSION: *R.* Mr. Holland's Bill, inflicting a penalty on any one who shall hereafter designate himself Veterinary Surgeon without having received a diploma, was read a second time last Wednesday.

WEEDS: *Inquirer.* In pastures weeds are discouraged by drainage, close pasturage, and artificial top-dressings, and by perseverance in spudding or pulling large plants at all seasons of the year, especially in the spring and summer, and before their seed time. If these means will not avail, the land must be ploughed up, well fallowed, and laid down again.

THE HYDROPULT,



An Invention for Throwing Water by Hand Power.

(SECURED BY ROYAL LETTERS PATENT).

PRICE LIST.

	£	s.	d.
COMPLETE WITH BRASS CYLINDERS AND JAPANNED STIRRUP	1	12	6
COMPLETE WITH BRASS CYLINDERS AND COPPER STIRRUP	2	2	0

The Price "Complete" as above, includes 2½ feet Suction and 3 feet Delivery Hose, Galvanised Wire Strainer, Rose and Small Jet.

THE HYDROPULT

is invaluable for use in the

GARDEN for

WATERING BEDS,
SPRINKLING PLANTS,
DROWNING OUT INSECTS,
CLEANSING TREES FROM SMUTS,
DRESSING WITH LIQUID MANURE,
&c. &c.

CAUTION.

IMPORTANT TO THE PUBLIC.—The extensive sale of the Hydropult has excited the cupidity of several disreputable, but in reality unprincipled Manufacturers, who are now palming on the Public worthless imitations of the Hydropult, and through their connections are enabled to place said devices on exhibition, and for sale, in many of the principal Ironmongery and Seed Establishments throughout the city and provinces. These devices resemble in many respects the Hydropult in appearance, and are calculated to deceive the unsuspecting. The Proprietor therefore issues this Caution, and respectfully intimates that parties wishing to purchase the Hydropult should examine the machine offered for sale, and see if it has attached thereto a label, with the following words:—"The Hydropult, Venn's Patent, manufactured only by GARRETTS & BROWITT, Birmingham. CHARLES POMEROY BUTTON, Proprietor, 142 and 143, Cheapside, London." Unless this label is attached, the Machine is not the Hydropult.

Prospectuses, with Testimonials, on application.

HYDROPULT SHOW ROOM, 142 & 143, CHEAPSIDE, LONDON.

IMPERIAL BUTTER COOLER,

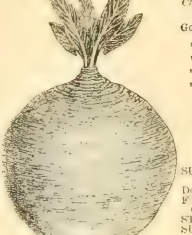
SECURED BY ROYAL LETTERS PATENT.

USEFUL, ORNAMENTAL, UNIQUE.

The novelty and utility of this Invention consists in a Revolving Cover, so constructed that by turning the Knob on either side of the Basin, it can be covered or uncovered instantly; the lid disappearing into a receptacle or tube-bottom, thus not only having the lid ready for instant use, but obviating the necessity of its removal from the table. The Butter Cooler can be used for a Sugar Basin.

Price, in white metal, electro-plated, £2 2s.

CHARLES POMEROY BUTTON,
142 and 143, Cheapside, London, E.C.



MANGEL WURZEL
SEED from large Bulbs.
Cheaper by the cwt.

	Per lb.—s.	d.
Good YELLOW GLOBE..	0	9
„ ORANGE GLOBE..	0	9
„ RED GLOBE	0	9
„ LONG RED	0	9
„ LONG YELLOW ..	0	9

SUTTON'S
Selected Mangel Seed
from Selected Roots.
Cheaper by the cwt.

	Per lb.—s.	d.
SUTTON'S Selected YELLOW GLOBE	1	0
Do do ORANGE GLOBE	1	0
FISHER HOBBS' ORANGE GLOBE ..	1	0
STRATTON'S RED GLOBE	1	0
SUTTON'S ELVETHAM LONG RED ..	1	0
SUTTON'S Selected LONG YELLOW ..	1	0
New YELLOW INTERMEDIATE..	1	6

SUTTON'S YELLOW GLOBE, Price 1s. per lb. Lowest price per cwt. forwarded on application.

SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

GEORGE EDWARD can supply good Plants, well established, out of pots, to save expense of carriage and package:—VERBENA PURPLE KING, 16s. per 100; ditto BRILLIANTE DE VAISE, 16s. per 100; ditto LORD RAGLAN, 16s. per 100; LOBELIA SPECIOSA, true, 12s. per 100.

SPRING CATALOGUES of DAHLIAS, GERANIUMS, and other Bedding Plants can be had on application at his Seed Establishment, 1, King Street, and at the Clarence Nurseries, York.

Novelties, Novelties.

JAMES GARAWAY AND CO., Durdham Down Nurseries, Bristol, offer the three undermentioned NEW SEEDLING GERANIUMS as not only Novelties, but decided acquisitions.—

TRICOLOR SECTION.

QUEEN of TRICOLORS.—This variety surpasses in beauty the well-known Mrs. Pollock, from which it is a seedling; the colours are of the same shade but much more vivid, and, being a great improvement, the green colour does not expand itself beyond the zone. The flowers are produced in abundance, and are scarlet in colour and of good shape.

Well established Plants will be supplied the last week in June, at 21s. each. Four sent when Three are ordered.

CLOTH OF GOLD SECTION.

BRONZE QUEEN.—A variety raised from 'Cloth of Gold, with foliage of a bronze colour, but with the addition of a dark bronze zone distinctly marked; of good dwarf habit, free in growth and very effective, well adapted for bedding; flowers scarlet cerise, produced in good-sized trusses.

Price 7s. 6d. each. Four sent when Three are ordered.

NOSEGAY SECTION.

L'AFRICAINE.—A hybrid Nosegay of compact habit, with extra fine trusses of purplish crimson flowers, which, elevated on stiff flower stems, produce a very fine effect. As a plant for the back or second row of a ribbon border or centre of bed, this will be found a very attractive acquisition.

Price 5s. each. Four sent when Three are ordered.

Prices to the Trade on application.

JAS GARAWAY & CO.'S SPRING CATALOGUE, containing Priced Lists of Stove and Greenhouse Plants, Ferns, and Bedding-out Plants, is now ready, and will be forwarded post free on application.

JAS GARAWAY & Co., Durdham Down Nurseries, Bristol.

JOHN KEYNES' NEW DAHLIAS, 1s. 6d. each. A liberal allowance of the set is taken.

67. MARQUIS of WINCHESTER (KEYNES).—Bright crimson; the flower of the season.
First-class Certificates:—Royal Horticultural Society; Devizes. Trowbridge, Crystal Palace, Bath, Salisbury, Dorset Horticultural Society, Winchester.

68. LOFTY ATKINS (KEYNES).—Blush, tipped lilac; most chaste flower, always good, must be much out.
First-class Certificates:—Royal Horticultural Society; Trowbridge (money prize, as the best in the Show), Salisbury, Dorset Horticultural Society, Shepton Mallet, Crystal Palace, Bath, Winchester, Devizes.
Certificates:—Royal Horticultural; Salisbury, Trowbridge, Brighton, North Wilts, Dorset Horticultural Society.

71. ANNIE AUSTIN (KEYNES).—Bright buff amber, beautiful form, must be well cut out, fine, exquisite, and very distinct.
First-class Certificates:—Crystal Palace, Salisbury, Shepton Mallet, North Wilts Horticultural Society, Trowbridge, Dorset Horticultural Society.

72. GEORGE WHITE (KEYNES).—Large deep purple; most desirable colour, always good.
Certificates:—Trowbridge, Devizes, Dorset Horticultural Society.

73. HELEN POTTER (KEYNES).—Blush white, deeper shade of colour to Miss Henshaw, which it much resembles in shape and growth, but quite distinct, very large, very full, constant.
Certificates:—Brighton, North Wilts, Dorset Horticultural Society, Trowbridge.

74. MISS SAWYER (CHURCH).—This is the flower that was so much admired at the Crystal Palace, where it had a First-class Certificate by acclamation. It is a laced flower, like Bird of Passage, large, and rather deeply pencilled with purple lilac, grand flower.

75. GLADIATOR (CHURCH).—White, very deeply laced, like a Picotee, with deep pink. This is a most striking flower, and surpasses all its colours, exquisite.
These two flowers of Church's are unapproachable in their colour.

76. ULTIMATUM (KEYNES).—Blush, tipped rosy crimson. The form of this flower it is impossible to improve; it must be much cut out, or will be small, a beautiful flower.
First-class Certificates.—Royal Horticultural Society; Brighton.

77. LADY MARY WILDE (EGERTON).—White, with purple rose tips, a very useful flower, not to be cut out.
Certificates:—Royal Horticultural Society; Bath.

78. JAMES BACKHOUSE (GODWIN).—Very deep plum or mulberry, the finest show flower of the season. Shown in J. Keynes, Stand at the Crystal Palace. Magnificent.

79. LADY of the LAKE (KEYNES).—Blush, edged purple, large fine show flower, always to be had.
These two flowers could not be shown much, only one Plant, to secure them, being grown by J. Keynes.

138. TOM SAWYER (KEYNES).—White, striped and mottled purple, very full centre, well up.

139. ANNIE BURN (KEYNES).—Yellow striped crimson, one of the finest flowers of the season, full, constant, and good.
Certificates:—Royal Horticultural; Bath, Salisbury, Winchester, Dorset Horticultural Society.

140. FLANN TIFFIN (KEYNES).—Yellow, heavily striped red; a beautiful face, chaste and striking.
Certificates:—Horticultural Society; Shepton Mallet, Trowbridge, Dorset Horticultural Society.

141. CHANG (KEYNES).—Yellow, striped and mottled scarlet, a most extraordinary flower; it cut out it will produce enormous size flowers of large show shape. I let alone it will give beautiful show flowers fit for any stand
Certificates:—Crystal Palace, Bath, Brighton, Winchester, North Wilts Horticultural Society.

142. PRESIDENT LINCOLN (KEYNES). Buff, striped red and orange, very fine fancy, much admired.
Certificates:—Brighton.

143. JEANIE DEANS (KEYNES).—Orange, striped purple, very constant, large deep show flower.
First-class Certificates:—Bath, Shepton Mallet, Dorset Horticultural Society.

CATALOGUES now ready.
Salisbury.—May 12.

Chrysanthemums.

FIRST PRIZES STOKE NEWINGTON AND GUILDHALL, 1865.

ADAM FORSYTH begs to inform the Public that he is now sending out his large COLLECTION of CHRYSANTHEMUMS, at 6s. per dozen, including Attraction, Eve, Golden Ball, Golden Dr. Brock, Hercules, King of Denmark, Lady Carey, Mr. Brunless, Mr. Wyness, Mrs. Raines, Pink Pearl, Prince of Wales, Sam Weller, Venus, Virgin Queen, &c.

CATALOGUES for one stamp.

Brunswick Nursery, Stoke Newington, N.

Prize Calceolaria, &c.

BUTLER AND McCULLOCH beg to offer Seed of the above-named, only from flowers of great beauty, 1s and 2s. 6d. p. pkt.

CINERARIA (JAMES'S), extra choice, 1s and 2s. 6d. per packet.

PRIMULA (JAMES'S), extra choice, 1s. and 2s. 6d. per packet.

COVENT GARDEN INTERMEDIATE STOCK (True), 1s. and 2s. 6d. per packet.

PURPLE WHITE INTERMEDIATE STOCK, 1s. and 2s. 6d. p. pkt.

All packets of Flower Seeds sent post paid.

BUTLER & MCCULLOCH, Covent Garden Market, W.C.

SCARLET GERANIUMS (BEATON'S RACE).

WILLIAM PAUL

(SON and Successor to the late A. PAUL,)

HAS TO OFFER THE FOLLOWING

NEW ZONALE AND HYBRID NOSEGAY GERANIUMS,

Which have been selected from several Thousand Seedlings, raised from the stock of the late Mr. DONALD BEATON. Every one now offered is believed to be in advance of or distinct from all pre-existing kinds. The Plants will be delivered in rotation as far as the stock will allow.

Group 1.—Bedding Varieties.

, Any 12 varieties from this and the two following Groups may be selected by the purchaser for £2 2s.

BANNERET.—Flowers crimson, scarlet, and purple shaded, very bright and beautiful; a hybrid nosegay. Price 3s. 6d. each.

FAIRY QUEEN.—Rosy purple; a large smooth flower, very distinct and effective. Price 3s. 6d. each.

MINSTREL, a peculiar and pleasing shade of salmon, something in the way of Lord Palmerston, but brighter in colour and broader in the petals.

MONTE ROSA, dark rosy-purple, pleasing colour, large truss, very fine. Price 5s. each.

NIMROD, orange-scarlet, white eye, large flower and truss, foliage and habit fine. Price 3s. 6d. each.

PHŒNIX, in the way of "Stella" in habit and general character, the colour flamberous-scarlet. Price 5s. each.

PRINCE OF ORANGE, orange-scarlet, very bright; great sub stance, good habit prodigious bloomer. Price 3s. 6d. each.

PEACH NOSEGAY.—Flowers deep bright peach colour, very free bloomer, splendid truss, plant bad, first rate and distinct. Price 5s.

REBECCA.—Cherry colour, fine truss, dwarf compact habit, very profuse, the finest bedding Geranium yet raised. First-class Certificate. Price 5s. each.

ST. GEORGE.—Dark chestnut, shaded with blackish crimson, quite unique, very free and effective, an entirely new colour among Pelargoniums. First-class Certificate. Price 5s. each.

SALMON NOSEGAY.—Flowers pure salmon, large truss, good. First-class Certificate. Price 3s. 6d. each.

SIR J. PAXTON.—Flowers true orange, very bright, fine large truss, a splendid variety for massing. Price 5s. each.

WOOD NYMPH.—Salmon pink, large and fine. Price 3s. 6d. each.

Group 2.—Varieties especially recommended for Growing in Pots or Vases.

BRIDE.—Flowers white, with large crimson eye, of fine shape and substance; a first-class variety for pot culture. Price 2s. 6d. each.

CARDINAL.—Flowers dark orange scarlet. For shape, substance, colour and habit, this is in advance of any scarlet variety yet raised. Price 5s. each.

CELESTIAL.—Flowers rosy lake, with fiery spot on upper petals, their centres bluish purple, resembling the "Cactus speciosissimus," large white eye, new in colour, and very beautiful. Price 5s. each.

LORD CHANCELLOR.—Salmon pink, white eye, perfect shape, very free, fine habit. Price 3s. 6d. each.

POET LAUREATE.—Rosy purple, top petals orange scarlet, yellowish eye, perfect shape. Price 3s. 6d. each.

TIARA.—Flowers scarlet crimson suffused with purple, good truss, very free, fine habit; quite distinct from any yet raised, and very lovely. Price 5s. each.

Group 3.—Miniature or Pompon Varieties.

DIAMOND.—Fine scarlet purple centre, white eye, flowers profusely, habit good, distinct. Price 3s. 6d. each.

DRYAD.—Beautifully rosy pink, fine shape and truss. Price 3s. 6d. each. 5s. 6d. each.

NAIAD.—Flowers purple, scarlet top; pleasing and distinct. Price

WALTHAM LILAC.—Flowers true lilac, very profuse; a new and desirable colour, excellent for massing. Price 5s. each.

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*** ALEXANDRA.—Magenta. Price 2s. 6d. each; 24s. per dozen.

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The above Set of 16 varieties, One Plant of each, 24s.

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POLYANTHUS, finest laced varieties		3	0
PAMPAS GRASS, fine plants	10s. per 100	6	0
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OLD CRIMSON CHINA ROSE		9	0
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Fourpence allowed for each bag returned carriage-paid.
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In Bags containing 2 cwt. each, branded AMS L
"This valuable Meal, containing above 20 per cent. of fatty matter, is recommended as an economical food to mix with home-grown produce." (See Dr. Voelcker, R. A. S. E. Journal, Vol 1, 2d Series, page 176).
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Wholesale by
PRICE'S PATENT CANDLE COMPANY (LIMITED)

Destroy your Insect Pests.

You may easily Destroy all Plant Pests,

Red Spider	Green and Black		Ants
Mealy Bug	Fly		Scale
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Without injury to the most delicate Plant or Tree, by using
FOWLER'S GARDENERS' INSECTICIDE, pronounced by all who have used it to be far superior to any other remedy. One trial will prove its efficacy. Testimonials forwarded on application.
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Messrs. WILLIAM WOOD & SON, *Woodlands Nursery and Seed Warehouse, Maresfield, near Uckfield, Sussex*, say:—
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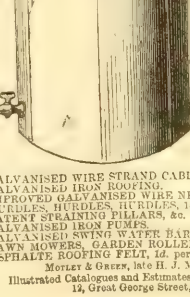

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DAISIES, finest varieties, named	3 0	20 0
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PANSIES, fine sorts	3s to 6s.	...
PENTSTEMONS, finest	4 0	25 0
PETUNIAS, white and purple	2 6	17 6
" finest named single and double	4 0	25 0
PHLOXES, finest new varieties	4 0	25 0
POLYANTHUS, finest laced varieties	3 0	20 0

	Per doz.	Per 100.
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PINKS, fine varieties, to name	3s to 6s.	...
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ROSES, fine potted, Hybrid Perpetual, Tea, Noisette, Bourbon, China, &c., in 200 varieties	6s., 9s., 12s., 18s. and 24s.	40s., 60s., and 80s.
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VERBENAS, white, scarlet, purple, rose, and pink	2 6	17 6
" finest named kinds, including the new and beautiful kinds of 1865	3 0	20 0
VERONICAS, fine sorts	3 0	20 0

Variegated and other Fine-foliaged Plants.

AMARANTHUS MELANCHOLICUS	2 6	17 6
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QUEEN of VIOLETS, the finest Violet ever raised; full description upon application	21 0	...

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INTERNATIONAL EXHIBITION, CLASS IX., No. 2119.

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NEW OVAL TUBULAR BOILER,

acknowledged by practical judges to be a great improvement on every form of Tubular Boiler yet introduced. It has proved itself superior to all other Boilers for quickness of action and economy of Fuel, doing its work with one-third less the amount required by any other.

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S. & C.'s Pruning and Budding Knives are the best and the cheapest in the market.
Paxton Works, Sheffield. Established upwards of 125 years.

Iron Hurdles, Fencing, and Gates.
COTTAM'S HURDLES are made in the best manner of superior Wrought Iron. SHEEP HURDLES, from 4s.; CATTLE HURDLES, from 4s. 11d. each; CONTINUOUS FENCE, from 8d. per foot; FIELD GATES, from 25s. each. Illustrated Price List on application.
ENTRANCE GATES, RAILING, and IRON WORK of every description. Designs and Estimates free of
COTTAM & Co.,
No. 2, Winsley Street
(opposite the Pantheon),
Oxford Street, London, W.

VASES, STATUES, FOUNTAIN BASINS, FLOWER-POTS, &c., in TERRA COTTA and FINE STONE WARE, warranted to stand frost, by JOHN N. BLASHFIELD, Stamford, Lincolnshire. Applications for Drawings and Prices will receive attention.

A Large Assortment of
FOUNTAINS, VASES, JARDINETTES, BALUSTRADES, GARDEN EDGINGS, &c., of elegant designs, in RANSOMES' PATENT STONE, to be sold at Ipswich, at cash and deferred prices, in consequence of the removal of the Works to London. The material closely resembles natural stone, and is far more durable.
Orders received at the Office of the Patent Concrete Stone Company, Limited, 2, Queen Street Place, Southwark Bridge, or at the Stone Works, Ipswich. Also
RANSOMES' PATENT SCYTHE STONES, at 2s. 6d. per dozen.
RANSOMES' PATENT STONE FILTERS, from 10s. each.

FOUNTAIN JETS.

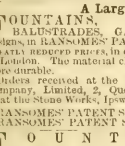


Fig. 526.
JET D'EAU, 18 holes, 6d.; 24 do., 8s. 6d.; 36 do., 6s. 6d.

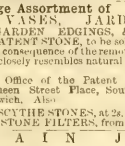


Fig. 524.
DOME and CONVOLVULUS. 17s.

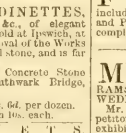


Fig. 525.
DOME. 8s. 6d.

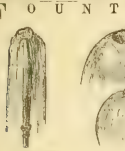


Fig. 522.
CONVOLVULUS, 8s. 6d.

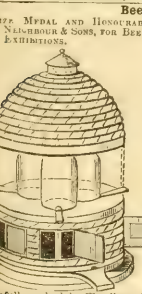
Fig. 521.
BARKER'S MILL. 11s.

Fig. 520.
WIRE BASKET with BALL. 10 ins., 16s. 6d.; 12 ins., 17s. 6d.; 14 ins., 18s. 6d.

Connecting Screws to all the above Jets, 1s. 6d. extra.
Branch Pipe for raising up Jets 1 foot high, 5s. 6d.
A Tap is required to be fixed in the Pipe to regulate the supply of Water to Fountain Jets.
J. TYLER & SONS, Manufacturers, Warwick Lane, Newgate Street, London, E.C.

E. T. ARCHER'S "FRIGI DOMO." — Patronised by her Majesty the Queen, the Duke of Northumberland for Syon House, his Grace the Duke of Devonshire for Chiswick Gardens, Professor Lindley for the Horticultural Society, Sir Joseph Paxton for the Crystal Palace, Royal Zoological Society, &c.
PROTECTION from COLD WINDS and MORNING FROSTS.
"FRIGI DOMO," a Canvas made of patent, prepared Hair and Wool, a perfect non-conductor of Heat and Cold, keeping, wherever it is applied, a fixed temperature. It is adapted for all horticultural and horticultural purposes, for preserving Fruits and Flowers from the scorching rays of the sun, from wind, from attacks of insects, and from morning frosts. To be had in any required lengths.
Two yards wide .. .. 1s. 9d. per yard run.
Four yards wide .. .. 3s. 6d. per yard.
An improved make, 2 yards wide .. 1s. 9d. per yard.
An improved make, 3 yards wide .. 2s. 8d. per yard run.
Also "Frigi Domo" Netting, 2 yards wide, 1s. 6d. per yard run.
ELISHA THOMAS ARCHER, Whole and Sole Manufacturer, 7, Great Trinity Lane, Cannon Street, City, and of all Nurserymen and Seedsmen throughout the kingdom.
"It is much cheaper than Mats as a covering."

Bee Hives.
PRIZE MEDAL AND HONOURABLE MENTION AWARDED TO GEORGE NEIGHBOUR & SONS, FOR BEE HIVES AND HONEY AT THE VARIOUS EXHIBITIONS.



NEIGHBOUR'S IMPROVED COTTAGE BEE HIVE, as originally introduced by GEORGE NEIGHBOUR & SONS, with all the recent improvements, working three bell-glasses; is neatly and strongly made of deal. It has three Windows in the lower Hive, with a Thermometer affixed to the centre one. This Hive will be found to possess many practical advantages, and a degree of management than any other Bee Hive that has been introduced.
Price complete .. £1 15 0
Stand for ditto .. 0 10 6

THE LIGURIAN or ITALIAN ALP BEE being much in repute at the present time, we are in a position to supply Stocks of the pure race carefully packed in Woodbury Bar-Frame Hives, so as to travel with no risk of damage.
ENGLISH BEES.—Stocks and Swarms may be obtained as heretofore.
A newly-arranged CATALOGUE of other Improved Hives, with Drawings and Prices, sent on receipt of two stamps.
Address, GEO. NEIGHBOUR & SONS, 127, High Holborn, W.C.; or 149, Regent Street, London, W.
AGENTS.—Liverpool: James Cuthbert, 12, Clayton Square. Manchester: J. Wilson, 50, King Street. Birmingham: J. H. Cottrell, 16, Bull Ring. Dublin: Edmondson Brothers, 10, Dame Street. Glasgow: Austin & McAslan, 16, Buchanan Street.

SEVERAL EXCELLENT NURSERIES to LET, Stocks at valuation; one with Fruit and Seed Shop in a Market Town, in full business.
GLENNY, Horticultural Agent, Fulham.

GLENNY'S Improved RALSAM SEED, 25 varieties, mixed, 13 stamps. HOLLYHOCK, BEDDING GERANIUM, PINK, CARNATION, 13 stamps each; SHOW GERANIUM, 30.

To Auctioneers and Land Surveyors.
A PRACTITIONER of many years' standing, and having a good business, is willing to take as PARTNER a young Gentleman who has been educated in the Business, and who has means and connection in London, to whom he would guarantee an income during the first year. Premium paid. The business is good, and of the best class. Applications from Principals only will be attended to.
Apply, stating particulars of Applicant's experience and services, to A. B., care of Mr. Thomas Berkeley, 12, Gray's Inn Square, E.C.

TO BE LET on Lease, from Michaelmas next, a Capital STOCK and CORN FARM, at Combe, in the County of Hants, containing 1050 Acres of Arable, Pasture, and Down Land, with immediate possession, to prepare for the Turnip Crop. The Tenant will have a joint right of Sporting over the Farm, and also over Combe Wood, which is in hand.
For further particulars apply to Messrs. RAWLENCE & SQUAREY, Salisbury; and 22, Great George Street, Westminster, S.W.

TO BE LET, a capital FARM of 155 ACRES, in South Hants, with immediate possession, to a Tenant who will take Stock, Crops, Tillages, &c., at valuation. This to a gentleman requiring a pleasant country residence and valuable occupation probably an investment of Capital advisable.
For particulars apply with references to Mr. JOSEPH BUNDELL, Land Agent, &c., Bursledon, Southampton.

FOR SALE, a 12-HORSE SET of FOWLER'S PATENT STEAM CULTIVATING MACHINERY, complete, including 12-Horse Steam Engine, 4-Furrow Patent Balance Plough, and Patent Balance Scarifier, with all the necessary working parts complete. The above is nearly new.—For price &c., apply to
WALLIS, Hawk Hall Farm, Bisley, Basingstoke.

Bulbridge Ram Sale.
MESSRS. EWER AND WINSTANLEY beg to notify that Mr. RAWLENCE'S ANNUAL SALE and LETTING of RAMS and RAM LAMBS will take place at Bulbridge Farm, on WEDNESDAY, the 1st August next.
Mr. Rawlence for many years having been such a successful competitor at the Royal, the Bath and West of England, and local exhibitions of Sheep Stock, the Auctioneers feel any further comment at present unnecessary.
Salisbury, May 12.

Sales by Auction.

Choice Greenhouse and Bedding Plants, &c.
MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, at No. 38, Southampton Street, Covent Garden, W.C., on MONDAY, May 14, and SATURDAY, May 19, at 1 o'Clock, a First-class Collection of CARNATIONS, PICOTEES, and PINKS; fine AZALEAS, INDICA, and VARIEGATED; and VARIEGATED GERANIUMS; CINERARIAS, ROSES in pots, and other plants in bloom; Hardy Climbers, American Plants, Choice Imported and other Flower Seeds; with a Fine Assortment of ORNAMENTAL PLANTS for Bedding out, including Poinciana, Mrs. Milford, Countess, and other choice Geraniums, New Fuchsias, &c.
On view the Mornings of Sale. Catalogues may be had at the Rooms as above; and of the Auctioneers and Valuers, Leytonstone, Essex, N.E.

Green Lanes, Stoke Newington.
IMPORTANT TO THE TRADE, PROPRIETORS OF PUBLIC GARDENS, GENTLEMEN, AND OTHERS.
MESSRS. PROTHEROE AND MORRIS are directed by Mr. H. Stroud to SELL by AUCTION, on the Premises known as Bird's Nursery, adjoining the Waterworks, Green Lanes, Stoke Newington, on TUESDAY, May 15, at 12 o'Clock precisely, about 8000 choice GREENHOUSE PLANTS, including 1000 fine French, Fancy and other Pelargoniums; 1500 Christine, Stella, Cloth of Gold and Variegated Geraniums; 2000 beautiful compact Tom Thumb and other Dwarf Geraniums, in 60's and 32's; 1000 fine Double of the leading varieties, Fuchsias, 200 strong Lilium lancifolium in pots, Ficus elastica, Begonias, Coleus, and other Greenhouse Plants. A choice assortment of Herbaceous Perennials, Alpine Auriculas, Passiflora and other Climbers, &c.; also 18,000 BEDDING PLANTS, comprising Scarlet and Variegated Geraniums, Rose, Verbenas, Heliotrope, Ageratum, Salvia patens, Cerastium, Petunias, Lobelia speciosa, Calceolarias, Cuphea, Gazania, &c., the whole of which are well-grown and in the best condition. Together with a light Spring Van, a small Tumbril Cart, &c.
May be viewed the Saturday and Monday prior to the Sale. Catalogues may be had on the Premises; and of the Auctioneers and Valuers, American Nurseries, Leytonstone, Essex, N.E.

To Tulip Fanciers and Others.
MESSRS. PROTHEROE and MORRIS are instructed by the Executor of the late Mr. J. F. Holmes to SELL, by AUCTION, on the Premises, Vine Cottage, New Hampton, Middlesex, on MONDAY, May 14, at 12 precisely, the valuable Collection of Choice TULIPS, including the best named varieties, procured regardless of expense from celebrated growers, and a large stock of Hyacinths, Crocus, Polyanthus, Daffodils, and from other valuable strains. Also the Tulip Stage, nearly new, Bulb Frames and Canvas, 3 Tulip Cabinets, Show Boxes, quantity of Iron Hoops, &c.
May be viewed the Saturday previous and Morning of Sale. Catalogues may be had of the Auctioneers and Valuers, American Nurseries, Leytonstone, Essex, N.E.

Lower Norwood.
CLEARANCE SALE OF FINE GREENHOUSE, BEDDING PLANTS, &c.
MESSRS. PROTHEROE AND MORRIS are instructed by Mr. James to SELL by AUCTION, on the Premises, Tivoli Gardens, Lower Norwood, on TUESDAY, May 22, at 1 o'Clock precisely, without reserve, the ground being immediately required for other purposes, the following valuable GREENHOUSE and BEDDING PLANTS, including the usual miscellaneous assortment; also four newly-erected Span-roof Greenhouses, one Lean-to Greenhouse, Brickwork, Flues, Ranges of Pits, Boxes, a Gig (nearly new), and sundry effects.
May be viewed two days prior to the Sale, and Catalogues may be had of the Auctioneers and Valuers, American Nurseries, Leytonstone, N.E.

Mile End Nursery.—Annual Sale.
MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, on the Premises, Mile End Nursery, Bow Road, Maddlesex, P., on WEDNESDAY, May 23, at 1 o'Clock precisely, about 15,000 BEDDING PLANTS, including a very handsome Show, Scarlet, and Variegated Geraniums, Calceolaria, Pink, Picotee, Verbenas, Heliotropes, Petunias, Lobelias, Cupheas, Pyrethrum, Gazania, Iresines, Ferilla, and other plants for bedding out; also Ornamental Rustic Flower Baskets, Tables, 20 dozen Painted Dahlia Stakes, &c.
May be viewed prior to the Sale. Catalogues had on the Premises, and of the Auctioneers and Valuers, American Nurseries, Leytonstone, N.E.
N.B. One Sale only will take place this season.

Importation of Rare Orchids from Mexico and India.
MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY, May 14, at half-past 12 o'Clock precisely, an Importation of ORCHIDS, comprising, in perfect health, a variety of Lælias, and very rare and fine Odontoglossums and Oncidiums, some Specimens of Masdevallia Veitchiana, &c., received per steamer Shannon from Mexico. Also a fine Collection of Sarcochilus, Vandas, Aerides, and Dendrobiums from India.
On view the Morning of Sale, and Catalogues had.

Conifer Seeds.
MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, May 17, 300 lb. of clean Seed of PICEA NORDMANNIANA, about 40 lb. of clean Seed of CEDRUS DEODARA, both just arrived in the finest possible condition.
On view the Morning of Sale, and Catalogues had.

Important Unreserved Sale of Established Orchids.
BEING DUPLICATES FROM THE WELL-KNOWN COLLECTION OF J. DAY, ESQ., OF TOTTENHAM
MR. J. C. STEVENS begs to announce that he has been favoured with instructions from J. Day, Esq., of Tottenham, to SELL by AUCTION, without the least reserve, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, May 17, at half-past 12 o'Clock precisely, a Choice Collection of Established ORCHIDS, comprising many of the best and rarest kinds in cultivation, being duplicated from this well-known Collection, including many very fine Plants in Flower, and all correctly named, of the following rare varieties:—

Aerides Lawrenciæ	Angræcum sesquipedale
„ suavissimum	Cattley's labiata
„ Lobbii	„ Zion House
Dendrobium crepidatum	Cypripedium Stonei
„ macrophyllum giganteum	„ Lowii
„ Devonianum	„ superbiens
Odontoglossum Alexandræ	Lælia elegans
„ Blunti	„ Wallisii rubolineana
„ luteo-purpureum	„ Schilleriana splendens
„ roseum	Saccolabium ampullaceum
Sophronitis grandiflora	„ coccineum, &c., &c.

On view the Morning of Sale, and Catalogues had.

Headington Hill, Oxford.
MR. J. C. STEVENS has received instructions from the Executors to SELL by AUCTION, on the Premises, on FRIDAY and SATURDAY, May 18 and 19, at half-past 12 o'Clock precisely each day, the entire valuable COLLECTION of STOVE and GREENHOUSE PLANTS, the property of the late James Morrell, Esq., of Headington Hill, Oxford (who for many years past has been a successful exhibitor), consisting of magnificent Specimen Azaleas (one measuring in full bloom, 20 feet in circumference), Acacias, Epacrises, Cytisus, Clematis, Tropæolums, Caladiums, Crotons, Allamandas, Euphorbias, Hoyas, Dracænas, Meyenias, Clerodendrons, Justicias, Vincas, Leptospermums, &c.; also a choice Assortment of FERNS, comprising amongst others Specimen Plants of Angiopteris erecta, Cyathea dealbata, Dicksonia antarctica, Marattia elegans, Gymnogramma chrysophylla, Sebaldellus variegata, &c.; 30 splendid Standard Bays in tubs, supposed to be the finest in the kingdom; Show Pelargoniums, a few Orange Trees, Fruiting and Succession Vines, &c.
On view Two Days before and Mornings of Sale, and Catalogues had of Mr. WARD, on the Premises; and of Mr. J. C. STEVENS, Auctioneer and Valuer, 38, King Street, Covent Garden, W.C.

NOTICE OF ALTERATION OF DATE OF SALE.
Choice Imported Orchids from Mr. J. Linden's well-known Collectors.
MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY, May 22, instead of Monday, May 21, as previously announced, an Importation of extra fine ORCHIDS from Ecuador and Columbia, among which are the true and splendid Cattleya maxima, Odontoglossum Hallii, cirrhosum, aureo and luteo-purpureum; Oncidium Schilleri, cucullatum, Diadema, macranthum; Odontoglossum lambeauianum, Lælia Wallisi, Trichocentrum luteo-purpureum, Oncidium leopardinum, and a great variety of other valuable Orchids from Mr. J. Linden's Collectors, and for Sale without reserve.
On view the Morning of Sale, and Catalogues had.

International Horticultural Exhibition.
MR. J. C. STEVENS has received instructions from the Executive Committee of the International Horticultural Exhibition, at South Kensington, to SELL by AUCTION, in the Building, on SATURDAY, May 26, and following days (Sunday excepted) any PLANTS, COLLECTIONS of PLANTS, HORTICULTURAL IMPLEMENTS, &c., that the owners may be desirous of disposing of after the close of the Exhibition.
Mr. J. C. STEVENS therefore solicits that all persons intending so to dispose of their Plants, will immediately furnish him with a Descriptive List for insertion in the Catalogue.
Terms and further particulars may be obtained upon application to the Auctioneer, 38, King Street, Covent Garden, W.C.

Dr. Lindley's Scientific and General Library.
MR. J. C. STEVENS begs to announce that he has been favoured with instructions from the Executors of the late Dr. Lindley to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, May 30, at half-past 12 o'Clock precisely, without reserve, the MISCELLANEOUS and GENERAL LIBRARY, the portion not taken by the Royal Horticultural Society, including many very valuable works elegantly bound; also, a MICROSCOPE, and sundry Miscellaneous Articles, being a portion of the Effects of the late Dr. Lindley.
On view the Day prior and Morning of Sale, and Catalogues had.

Important Sale of Plants at Claremont, Surrey.
BY ORDER OF THE TRUSTEES OF HIS MAJESTY THE LATE KING OF THE BELGIANS.
MR. J. C. STEVENS begs to announce that he has been honoured with instructions to prepare for SALE by AUCTION, at Claremont Gardens, Esher, Surrey, on MONDAY, TUESDAY, following days, at 12 o'Clock precisely each day, without reserve, by order of the Trustees of the late King of the Belgians, the Choice and Select Collection of STOVE, GREENHOUSE, and ORNAMENTAL-FOLIAGED PLANTS, consisting of fine Specimen Dracænas, Pandanus, Palms, Indian Azaleas, Rhododendrons, Ericas, Epacris, Acacias, Pot Roses, Dracænas, Gardenias, Abeanias, Crotons, Cyanophyllums, Marantas, Begonias, Caladiums, Aphelandras, Allamandas, Dipladenias, Dracænas, Pteromas, Oxylobiums, Cytisus, Conifers in pots, Leschenaultias, French Geraniums, &c.; and a large assortment of Bedding-out Plants, Fruiting and Succession Pines, Vines, &c.
On view the Friday and Saturday prior, and Mornings of Sale, and Catalogues had of Mr. J. C. STEVENS, Horticultural Auctioneer and Valuer, 38, King Street, Covent Garden, London, W.C.

Lewisham Park.
2a. 1r. 14p. of valuable Freehold Building Land, within five minutes' walk of the Ladywell Station, and less than a mile from the Lewisham Railway on the North Kent Line.
MESSRS. DEBENHAM, TEWSON, and FARMER will SELL at the London Tavern, on TUESDAY, May 22, at 1 o'Clock, in one lot, 2a. 1r. 14p. of valuable FREEHOLD BUILDING LAND, now occupied as Clark's Nursery Grounds, having a frontage to the turnpike road from Hither Green to Lewisham Railway Station, and the Spotted Cow Tavern, offering an eligible site for the erection of moderate-sized houses.
Particulars of Messrs. THOMPSON & DEBENHAM, Solicitors, Salter's Hall, St. Swithin's Lane; and of the Auctioneers, 80, Cheapside.

Clapham.
Unreserved Sale of 20,000 Greenhouse and Bedding Plants, including some fine healthy Camellias, Azaleas, Geraniums, Calceolarias, Verbenas, Fuchsias, Lobelias, Cuphea, Isolepis gracilis, Cytisus, Rhododendrons, Roses, Box Trees, Portugal Laurels, Aucubas, Pinus Pinea, and other Evergreens in pots.
MR. WILLIAM HARDING will SELL the above by AUCTION, on the Premises, 33, High Street, Clapham, on WEDNESDAY, May 23, commencing at 12 o'Clock.
May be viewed the day prior to Sale, and Catalogues had of Mr. GEORGE BICKLEY, Solicitor, Larkhall Lane, S., and 32, King William Street, E.C.; or at the Auctioneer's Offices, 17, High Street, Clapham.

Clapham, Surrey.
TO NURSERYMEN AND FLORISTS.
MR. WILLIAM HARDING will SELL by AUCTION on the Premises, 33, High Street, Clapham, S., on WEDNESDAY, May 23, at 12 o'Clock precisely (unless an acceptable offer be previously made, of which due notice will be given), the valuable LEASE and GOODWILL of the Old Established Business of a Nurseryman, Cut Flower, and Florist, with the CLAPHAM RISE NURSERY, commanding an entrance frontage of 50 feet to the High Street of Clapham, close to the Railway Station, and having Eight Glass Houses, Forcing Pits, Potting Sheds, Stabling, Store Houses, &c., in all occupying nearly ¾ Acre of Ground, held for an unexpired term of Lease, having 25 years at Michaelmas next, at a very low rent.
The Premises may be inspected by Orders to be obtained of the Auctioneer; and particulars with Conditions of Sale obtained of Mr. GEORGE BICKLEY, Solicitor, Larkhall Lane, S., and 32, King William Street, E.C.; and at the Auctioneer's Offices, 17, High Street, Clapham, S.

HEATING BY HOT WATER.

It is now generally admitted that Buildings of any kind can be more effectually Warmed by Hot Water than by any other means; but as so much depends on the way in which the Apparatus is fixed, it is of the greatest importance that it be done by experienced men.

J. JONES & SONS

ARE PREPARED TO ESTIMATE FOR WARMING, TO ANY EXTENT—

GREENHOUSES	PINE STOVES	LECTURE HALLS	WORKSHOPS
CONSERVATORIES	ORCHARD HOUSES	BILLIARD ROOMS	WAREHOUSES
VINERIES	CHURCHES	HALLS and PASSAGES	DRYING ROOMS
HOTHOUSES	CHAPELS	BATHS	CELLARS
FORCING PITS	SCHOOLS	FACTORIES	COACH HOUSES
PEACH HOUSES	READING ROOMS	OFFICES	HARNESS ROOMS

J. JONES & SONS' APPARATUS is simple in construction, moderate in cost, and economical in working.

It is equally available for the AMATEUR'S GREENHOUSE, or the longest range of FORCING HOUSES; for the smallest Chapel or largest Church; for Private Offices, or those of Public Companies.

It is admirably adapted for DWELLING HOUSES, as coils of pipes can be placed in any part, for warming the various rooms. One or more Baths may be heated from the same Boiler, and a constant supply of hot water obtained in any part of the house.

For WAREHOUSES and WORKSHOPS this system of Heating is unsurpassed, as it is not only the means of keeping goods dry, but it also adds to the comfort of the workpeople, and thereby effects a saving in labour.

J. JONES & SONS recommend Boilers of all kinds being set in Brickwork, if possible; but Portable Boilers can be supplied, if required.

MATERIALS.—All Materials supplied will be of the best quality.

DELIVERY.—Boilers of various kinds, and Pipes and Connections, being always in stock, can, at a very short notice, be sent to any part.

FIXING.—The Fixing will be done by experienced men, fully capable of finishing properly any work they may undertake; and J. JONES & SONS are prepared to guarantee the effectual working of any Apparatus fixed by their own men.

ESTIMATES.—Plans and Estimates will be sent, on application.

J. JONES & SONS have lately fixed their HOT-WATER APPARATUS in or near the following places; and the working of the same has in all cases given the greatest satisfaction.

Abergavenny	Cambridge	Enfield	Liphook	Sevenoaks
Abingdon	Cardiff	Epsom	Liverpool	Shiffnal
Aldershot	Carshalton	Erith	Liss	Southampton
Addlestone	Cattal	Exeter	Luton	Solihull
Abbey Wood	Caterham	Faversham	Lymington	Shrewsbury
Alton	Chelford	Farnborough	Lynn	Stafford
Anerley	Chepstow	Farnworth	Malvern	Stamford
Ascot	Cheltenham	Farnham	Manchester	Stanstead
Ash	Chertsey	Finchley	Marlow	Stone
Atherstone	Chester	Gloucester	Merthyr	Stonehouse
Aylesbury	Chilworth	Godalming	Middleton	Stroud
Banbury	Chiswick	Glynde	Minster	Sunninghill
Balham	Cirencester	Godstone	Nantwich	Swansea
Barnes	Clapham	Gomshall	Newhaven	Sydenham
Bath	Colney Hatch	Grantham	Newnham	Teddington
Battle	Congleton	Gravesend	Newmarket	Teignmouth
Beckenham	Cookham	Guildford	Newport	Thame
Beeles	Coventry	Hailsham	Northampton	Thetford
Bedford	Cowes	Hackney	Northwich	Tongham
Bexhill	Crawley	Hammersmith	Norwich	Torquay
Bickley	Croydon	Hampton	Nottingham	Tunbridge
Birmingham	Culham	Harrogate	Oxford	Tunbridge Wells
Bishop Stortford	Darlington	Haslemere	Oswestry	Twickenham
Blackheath	Dartford	Hastings	Paris	Uckfield
Blandford	Datchet	Hatfield	Pembroke	Uxbridge
Blisworth	Deal	Hayward's Heath	Petersfield	Virginia Water
Bournemouth	Derby	Hertford	Pinner	Wallingford
Boxmoor	Diss	Hitchin	Poole	Waltham
Brentford	Dingwall	Horsham	Potter's Bar	Walton
Bridgend	Dorchester	Hull	Ramsgate	Warlingham
Brighton	Dorking	Huntingdon	Reading	Warrington
Bridgenorth	Dover	Inverness	Reigate	Watford
Bristol	Downham	Kilburn	Richmond	Wellingborough
Bromley	Dublin	Kettering	Rickmansworth	Weybridge
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J. JONES AND SONS,

IRON MERCHANTS and HORTICULTURAL ENGINEERS,

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THE GARDENERS' CHRONICLE

AND

AGRICULTURAL GAZETTE.

A Newspaper of Rural Economy and General News.

No. 20.—1866.] SATURDAY, MAY 19. {Price Fivepence. STAMPED EDITION, 6d.

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THE GARDENERS' CHRONICLE of SATURDAY, May 26, will contain a full REPORT of the MEETINGS of the INTERNATIONAL and HORTICULTURAL CONGRESS; also of the HORTICULTURAL EXHIBITION and BANQUET. Order of any News Agent. A single copy sent on receipt of SIX Stamps.

Offices for Advertisements, 41, Wellington-street, Strand, W.C.

INTERNATIONAL HORTICULTURAL EXHIBITION and BOTANICAL CONGRESS.

Under the Patronage of Her Majesty THE QUEEN, and of their Royal Highnesses the PRINCE OF WALES and the DUKE OF CAMBRIDGE.

The EXHIBITION and CONGRESS will OPEN on MAY 22, and continue till May 25. Subscribers' names will be received, and Schedules and Prospectuses may be obtained on application to the Secretary, at the Offices, 1, William-street, Lowndes-square, London.

ROYAL BOTANIC SOCIETY'S GARDENS, Regent's Park.—SECOND GENERAL EXHIBITION of PLANTS, FLOWERS, and FRUIT, WEDNESDAY, June 6. Tickets to be obtained at the Gardens, and of the Society's Clerk, Austin's Ticket Office, St. James's Hall, by Vouchers from Fellows of the Society, price 5*s.*, and on the day of Exhibition 7*s.* 6*d.* each.

JOHN WATERER'S AMERICAN PLANTS will be Exhibited in JUNE.

BIRMINGHAM ROSE SHOW, THURSDAY and FRIDAY, July 5th and 6th.—For Prize Lists, apply to Mr A. FORBEST, Sec., Queen Chambers, Cherry Street, Birmingham.

HORTICULTURAL DINNER at ST. MARTIN'S HALL, Long Acre, London, W.C., on THURSDAY, May 24. The LORD HENRY GORDON LENNOX, M.P., V.P.R.H.S., in the Chair.

Persons intending to be present should apply at once (with remittance) to the Hon Sec., as places are rapidly being taken.

Tickets, to include a Bottle of Wine, 10*s.* 6*d.* each.

By an Error of the Engraver the Dates have been Printed Tuesday, May 24th, instead of THURSDAY, May 24th.

RICHARD DEAN, Hon. Sec., 8, Denmark Villas, Ealing, London, W.

VISITORS to the INTERNATIONAL HORTICULTURAL EXHIBITION are respectfully invited to INSPECT the ROSES, GERANIUMS, Bedding Stock, and other Plants and Trees at PAUL'S Nurseries, Waltham Cross, N. Entrance from the platform, Waltham Station, Great Eastern Railway; half an hour's ride from Shoreditch.

International Horticultural Exhibition.

MESSRS. F. AND A. SMITH, The Nurseries, Dulwich, S., beg to intimate that they will EXHIBIT their superb collection of NEW SEEDLING TRICOLOURED PELARGONIUMS on the above occasion.

Exhibition of Choice Hardy Scarlet and other Rhododendrons.

JNO. WATERER has the pleasure to announce that his ANNUAL DISPLAY of RHODODENDRONS will shortly be on VIEW at the ROYAL BOTANIC GARDENS, Regent's Park; announcements of which will appear in the daily Journals.

The American Nursery, Bagshot, Surrey.

Exhibition of Rhododendrons.

JOHN WATERER'S fine Collection of new HARDY SCARLET and other choice RHODODENDRONS is NOW COMING finely into BLOOM, and for several weeks will continue in great beauty. The Nursery is easily reached, being near the Sunning Dale Station, South-Western Railway, where excellent conveyances await all Trains. Admittance daily (except Sunday).

The American Nursery, Bagshot, Surrey.

PAUL AND SON, Old Cheshunt Nurseries, Cheshunt, would be happy to see their Friends in the Trade, Gentlemen Gardeners, to INSPECT their STOCK of ROSES and NURSERY STOCK during the International Exhibition.

Trains leave almost hourly (Bishopsgate) to Cheshunt Station (one mile from the Nurseries), or to Waltham (two miles), whence by omnibus or flies. Omnibus meets trains leaving London at 9 30, 12 45, 3 40, 4 5, and 6 10.

Roses in Pots.

PAUL AND SON, in addition to the NEW ROSES of 1866, can offer fine Plants of the finest TEA-SCENTED NOISETTES and best HYBRID PERPETUAL ROSES in pots for Planting during present and next month.

Old Cheshunt Nurseries, N.

New Roses.

JOHN HARRISON begs to inform his friends in the Trade that he has still on hand a Large STOCK of all the best NEW ROSES of the present season, which he is now offering at 18*s.* per dozen; also fine strong Plants in 5-inch pots of the best varieties of last season, at 12*s.* to 18*s.* per dozen.

North of England Rose Nurseries, Darlington.

MAURICE YOUNG'S DESCRIPTIVE LIST of Coniferæ, New and Rare Hardy Plants, Ornamental Trees and Shrubs, Rhododendrons, Japanese Novelties, Forest Trees, and Roses, forwarded on application.

Milford Nurseries, near Godalming, Surrey,

LAMOUREUX, CLARK, AND CO., SEED MERCHANTS, Plymouth.

The SEED CATALOGUE and GARDEN DIRECTORY for 1866, now published, will give full particulars respecting prices and other matters in connection with the Business. Will be sent gratis and post free to any address in the kingdom.

AUCTIONEERS and VALUERS in all parts of the United Kingdom who wish to receive next Season direct from a well-known Nursery, CONSIGNMENTS of DUTCH BULBS, &c., apply by prepaid letter, addressed Z. Z., care of JAC. G. ROBBERS, Bookseller, Rotterdam (Holland).

Direction, terms, and references are respectfully required

BEDDING PLANTS.—Upwards of 100,000 vigorous Plants of the leading varieties Price from 2*s.* 6*d.* per dozen. See CATALOGUE, forwarded upon application.

JAMES DICKSON & SONS, "Newton" Nurseries, Chester.

Bedding Plants.

ARCHIBALD HENDERSON begs to announce that his DESCRIPTIVE and PRICED CATALOGUE is now published. Can be had gratis and post free upon application.

Spon Nursery, Thornton Heath, Surrey, S.

500,000 Bedding Plants.

ALTERATION OF PRICES (FROM THIS DATE).

J. SCOTT, Nurseries, Merriott, Somerset, offers all the Plants Priced in his Catalogue at 2*s.* 6*d.* and 3*s.* 6*d.*, at 1*s.* 6*d.* and 2*s.* per dozen respectively, or 10*s.* and 15*s.* per 100.

CATALOGUES on application. The Stock well hardened off.

Bedding Plants, Bedding Plants,

2*s.* 6*d.* to 3*s.* per dozen; 20*s.* per 100; out of pots, 10*s.* per 100.

TOOLE AND CO. beg to offer the above, of which they hold a fine stock of the best selected varieties.

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100,000 Bedding Plants.

C. ELWIN AND CO. beg to offer the above, from 2*s.* 6*d.* to 6*s.* a dozen. Banker's reference or Post Office Order from unknown correspondents.

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JAMES HOLDER can supply VERBENAS, SCARLET and VARIEGATED GERANIUMS, DAHLIAS, CALCEOLARIAS, FUCHSIAS, PETUNIAS, LOBELIAS, GAZANIAS, KONIGAS, CUPHEAS, &c. Eight dozen for 20*s.*, or four dozen for 10*s.* 6*d.*, hampers and package included.

Crown Nursery, Reading, Berks.

Bedding Plants.

THOMAS J. BOOTH has a large stock of very strong Plants, including MRS. POLLOCK and other Variegated Geraniums, at 10*s.* per doz., 70*s.* per 100. Also the best Bedding Varieties, White, Pink, Scarlet, and others.

PRICE LIST on application. The Trade liberally dealt with.

Rainhill Nursery, Prescot.

Perry's New Verbenas.

CHARLES TURNER is now sending out the Set of 13 New Varieties so much admired last season, in strong plants.

The Royal Nurseries, Slough.

SELECT HOLLYHOCKS.—The month of May being a good season for planting Hollyhocks, the Undersigned begs to offer good, strong, blooming plants of all the leading kinds and Exhibition Flowers, at 3*s.* to 12*s.* per dozen. Price per hundred on application.

WILLIAM PERRY, Wiseman's, Sawbridgeworth, Herts.

Superb Double Hollyhocks.

THE FINEST COLLECTION EVER OFFERED TO THE PUBLIC.

W. CHATER has a large Stock of fine healthy Plants now ready, which he can supply on liberal terms.

See Advertisement on other page.

Address, W. CHATER, Nurseries, Saffron Walden.

DAHLIAS and HOLLYHOCKS.—Fine named Show and Fancy Dahlias and Hollyhocks, the former at 4*s.* per doz., the latter at 6*s.* per doz. All well-established in pots, and the Hollyhocks struck from eyes last summer. Names of varieties on application.

WOOD & INGRAM, The Nurseries, Huntingdon.

THE BEAUTIFUL GEM PLANT-CASES, for Drawing Room and Table Decoration, just introduced by BARR & SUGDEN, are now on EXHIBITION at their Warehouse. They are exceedingly elegant and seasonable presents.

An ILLUSTRATED PRICED SHEET is in preparation. See Illustrations, p. 455.

BARR & SUGDEN, 12, King Street, Covent Garden, W.C.

SPRING BLOOMING PLANTS, &c. — YELLOW BEDDING PANSIES, 5*s.* per dozen. AUBRIETIA PURPUREA, per dozen, 2*s.*

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WILLIAM DEAN, Bradford Nursery, Shipley, Yorkshire.

CASTLE KENNEDY FIG.—Plants of the above may now be had at 10*s.* 6*d.* and 21*s.* each; the usual discount to the Trade. PETER LAWSON & SON, Edinburgh and London.

PINE PLANTS, very fine QUEENS, in all sizes, from a stock that never had Scale Apply to

M. ROCHFORD, Market Gardener, Page Green, Tottenham, N.

Greenhouse, Hardy and Stove Plants; Agricultural, Flower, and Vegetable Seeds, &c.

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Exotic Nursery, Tooting, Surrey, S.

REBECCA, the finest BEDDING GERANIUM ever raised. Plants ready in May, price 5*s.* each.

See W. PAUL'S PRICED CATALOGUE.

PAUL'S Nurseries, Waltham Cross, London, N.

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HUSSEY AND SON beg to offer fine plants, well-established—TOM THUMBS, 14*s.* per 100; SILVER-VARIEGATED, 16*s.* per 100; GOLDEN CHAIN, 18*s.* per 100.

Mile End Nursery, Old Ford, Bow Road, Norwich.

GERANIUM MRS. POLLOCK. Price per dozen, 100, or 1000, on application.

JAMES DICKSON & SONS, "Newton" Nurseries, Chester.

MRS. POLLOCK GERANIUMS, 12*s.*, 15*s.*, and 18*s.* per doz.; SCARLET and VARIEGATED GERANIUMS, VERBENAS, CALCEOLARIAS, FUCHSIAS, PETUNIAS, LOBELIAS, KONIGA, &c., packing included, £1 the 100, 50 for 10*s.* 6*d.* NEW DESCRIPTIVE PRICED CATALOGUE now ready and free on application.

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WM. PAUL, Paul's Nurseries, Waltham Cross, London, N.

STEPHEN BROWN'S SPRING PLANT CATALOGUE contains a very select assortment of BEDDING PLANTS at low prices. Copies free.

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Highgate, London, N.

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CHARLES TURNER'S CATALOGUE of PLANTS for the Spring is now ready. It includes lists of all the leading Bedding Plants, New Dahlias, Pelargoniums, Roses, Verbenas, and select general Collections.

The Royal Nurseries, Slough.

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*** Part II. (Exotic Ferns) will be issued as early as possible.

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CABBAGE PLANTS.—Strong Drumheads for Cattle, Early kinds, Battersea and Nonpareil, 3*s.* per 1000.

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DAINTREE'S SEEDLING POTATO is the best early round white Potato in cultivation, and can be obtained at a moderate price on application.

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Fine Long Red Surrey Carrot.

SUTTON AND SONS can supply excellent new Seed of the above at very moderate price, which (according to quantity required), may be had on application.

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TO THE TRADE.—Fine ENGLISH WHITE MUSTARD; fine ENGLISH SOWING RAPESEED, clean, good-coloured samples, and at low prices.

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PETER DRUMMOND AND CO. (late J. SCOTT), Preston Road Nursery, Yeovil, Somerset, have to offer to intending purchasers a splendid stock of BEDDING-OUT FLOWER GARDEN PLANTS, including all the leading varieties of Dahlias, Pelargoniums, Verbenas, Heliotropes, Lantanas, Lobelias, Calceolarias, Salvias, Verbenas, &c. And all kinds of Bronze and Variegated-leaved Plants suitable for the Decorated or the Tasteful Garden, at unprecedented low prices. CATALOGUES free on application.

Also SEEDS of every description for the FARM and GARDEN, of the best quality, at moderate prices.

Trade address as above.

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The *Gardeners' Chronicle* of the 6th of January, in Notices to Correspondents, says:—"The blooms sent are remarkably fine, richly coloured, and deeply fringed: they are worthy of especially the produce of a capital strain."

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Seedlings packets 2s. 6d. and 5s. 6d. each.

CALCEOLARIA (Dawson). This is the finest and most extensive variety extant. Per packet 2s. 6d. and 5s. 6d. each.

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Superb Double Hollyhocks.

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Seedlings from best named varieties, 1s. per doz., or 100 at 20s. per 100.

Choice seedlings, with colours named, very fine, 6s. per doz.; and 10 at 10s. 6d. per 100.

Seedlings from the finest named varieties, very choice mixed 3s. per 100.

In Collections of 12 separate named varieties, extra fine, 10s.

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2 best varieties, all good showy flowers, 2s. 6d.

6 do. do. do. 5s.

WILLIAM CHATER, Nurseries, Saffron Walden, Essex.

Novelties, Novelties.

JAMES GARAWAY AND CO., Durdham Down Nurseries, Bristol, offer the Three undermentioned NEW SEEDLING GERANIUMS as not only Novelties but decided Acquisitions:—

The Best Section.

QUEEN of TRICOLORS.—Has vastly surpasses in beauty the well-known Mrs. Pollock, from which it is a sport. The character of the same dwarf habit and more vivid, and, being a great improvement on the old variety, must supplant it. The flowers are large, the trusses well formed, and the foliage is perfect in all respects, and of the most distinct and good type.

Well-established Plants will be supplied the last week in June, at 21s. each. Terms cash. Three carriage paid.

Second Best Section.

BRONZE QUEEN.—A variety raised from Crystal Queen, and differing of same evening dress habit with the Queen of Whites, but distinctly marked, and dwarf habit, free in growth, and very effective, well adapted for cutting. Rich scarlet crimson, produced in great profusion. Price 7s. 6d. each. Four sent when Three are ordered.

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LAFFERIANE.—A robust growing free habit, with large fine trusses of purplish crimson flowers, which, elevated on stiff flower stems, produce a very showy effect. Any plant that the border can produce with a bright centre of eye, thus will be found a very attractive addition.

Price 2s. 6d. Four sent when Three are ordered.

Parcels free inside on application.

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James Garaway & Co., Durdham Down Nurseries, Bristol.

HERBACEOUS, ALPINE, and ROCK PLANTS, &c., Very strong, in Pots.

ANTIRRHINUMS, fine varieties, 6s. per dozen.

ASTER, Quilled, new varieties, 12s.

BENTH. MOSS, splendid, 6s. per dozen.

PHLOX, hardy varieties, finest, 5s. to 9s. per dozen.

DWARF ROCK CACTUS, 20 different varieties, 12s.; 12 varieties, 7s.; 6 very beautiful, 4s.

PINKS, 36 sorts, in the very best, 4s.

TRITONIA AUREA, new and rare, 2s. 6d. per each.

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POTENTILLA KING OF CRIMSONS, and BEAUTY, 1s. each: in fine varieties, 6s. per dozen.

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MILDE PICTUM. Inspect varieties for 1s.

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BEDDING PLANTS.—An extensive stock at low prices.

NB A liberal supply of plants made per return of post.

STEPHEN BROWN, Seed and Nursery Establishment, Sudbury, Suffolk.

Choice and New Indian Azaleas.

A. VAN GEERT, NETSCHRYMAN, Ghent, Belgium, begs to offer the undermentioned Choice and New INDIAN AZALEAS, in fine plants, at 3s. 6d. each, per return:

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Coquette de Gand (D. Vervaene)	Louis Hebecque (Van Houtte)
Eugène Verschaffelt (Verschaffelt)	Madame Van Fredenhaven (Van Houtte)
Gloire van Peest (D. Vervaene)	Dominé par Vervaene
Grande Duchesse de Bade (Verschaffelt)	Imperialis (Veitch) (Verschaffelt)
Le Cygne (Van Houtte)	Lion des Flandres (Veitch)
Les Grandes Pays Bas (Maetschaut)	Mastodonte (Van Houtte)
Souvenir Van Langenhove (Van Houtte)	Mme de Cannart d'Hamale
Alexandre Verschaffelt (Van Houtte)	Mme Theodore Van Houtte
Auguste Van Geert (Van Houtte)	Mme Dominique Vervaene (Verschaffelt)
Ambroise Verschaffelt (Van Houtte)	Mme Theodore Vervaene (Van Houtte)
Auguste Cruselat (Van Houtte)	Singe Dominique Vervaene (Verschaffelt)
Comte de Kerchove de Denterghem (Van Houtte)	Triomphe de Gand (Maetschaut)
Eugène Mazel (Van Houtte)	Triomphe de Haerlebeke (Van Houtte)
Fabius Van Houtte (Van Houtte)	Van Houtte (Van Houtte)
Fabius Crispe (Van Houtte)	Van Houtte (Van Houtte)
Hendrik de Leew (Van Houtte)	Reconditata (Verschaffelt)
Gustave Van Geert (Van Houtte)	Reine Desirée (Van Houtte)
Jean Van Geert (Van Houtte)	Souvenir Van Tieghem (Vervaene)

Wellingtonia gigantea Seed.

MESSRS. PLANZ AND SON, Erfurt, Steinmen, &c., Trade Nursery, Prussia, have just received a limited quantity of SEED of the undermentioned CONIFERÆ direct from California:—

WELLINGTONIA GIGANTEA, £1 per oz.; £13 12s. per lb.

CUPRESSUS LAWSONIANA, 5s. per oz.

ABIES MORINSIANA, 1s. 6d. per oz., 10,000 Seeds, £1 15s.

ABIES NOBILIANA, 1s. per oz.

PINUS PARRYANA, 1s. per oz., 5s.

Orders may be sent direct to the above Firm, or to Jens & Sachse, 7, Crescent, Gracechurch-street.

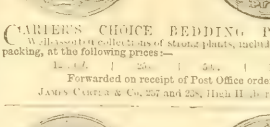
Wm. Cutbush & Son, Highgate, will forward Seeds, either a remittance or London reference is respectfully requested.

CARTER'S CHOICE BEDDING PLANTS.—A Well-assorted collection of showy plants, including basket and packing, at the following prices:—

12. 24. 50. 100.

Forwarded on receipt of Post Office order.

JAMES CARTER & Co., 237 and 238, High Holborn, W.C.



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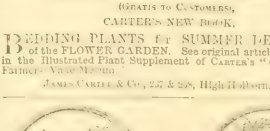

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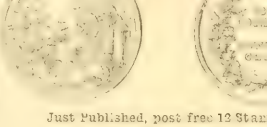

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120 ILLUSTRATIONS of GEOMETRICAL DESIGNS of FLOWER BEDS, with examples of the most admired Bedding combinations. See Illustrated Plant Supplement of CARTER'S "Gardeners' and Farmers' Vade Mecum."

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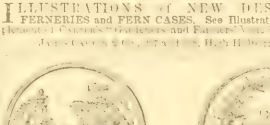


CARTER'S NEW JAPANESE STRIPED-LEAVED MAIZE.

The new Ornamental Variegated-foliaged Bedding Plants received First-class Certificates at the Great Flower Shows, as a New and Rare Plant, May 12, 1866.

Orders for it may be had direct from the Establishment at the following Prices and Terms per post.

A Plant of this beautiful, lovely mayze seen at our Holborn Warehouse.

JAMES CARTER & Co., 237 & 238, High Holborn, W.C.

CAUTION.—The Japanese Maize is not identical with the Striped-headed Zea Curagua.

NEW PLANTS for 1866.

B. S. WILLIAMS, Victoria and Paradise Nurseries, Holloway, London, N., has great pleasure in offering, for the first time, the undermentioned SPLENDID PLANTS. Every care has been used in the selection of the several kinds, therefore he trusts they will give the highest satisfaction.

AZALEAS.

The two following beautiful varieties will be found great acquisitions, as both will flower splendid in small pots, and must take first rank as exhibition plants. PRINCESS ALEXANDRA is a sport from the same parents as Elegantissima, which has proved to be one of the best. The present variety will be of great value in grouping, with much larger flowers, of a shade or colour not to be met with. The most important feature for prolonging the flowering season. PRINCESS HELENA is recommended for its great usefulness, being a free bloomer, and quite distinct in habit.

PRINCESS ALEXANDRA.—A beautiful form of Elegantissima, with flowers 4 inches across, petals of the most exquisite of great substance, slightly striped with deep crimson; a profuse bloomer. 21s. each.

PRINCESS HELENA.—Deep rose pink, upper petals spotted with lake. The transparency of the flowers causes it to be distinct from all other kinds, habit good and free. 21s.

RHODODENDRONS.

These two elegant varieties are the Seedling productions of Mr. Bause, late of Stoke Park, and were exhibited by him a few seasons since at the Royal Horticultural Meetings, and received Certificates of Merit. Each possessing a distinct and handsome decoration, being of free flowering habit, a feature much wanted in a Greenhouse Rhododendron.

DENISONII.—A Seedling from Balbonsynum, crossed with Edgeworthii and Gibsonii; a large fine variety, with splendid habit, well-furnished with clean-looking flattish elliptic leaves and large companulated flowers, pure white, with a lemon flash towards the base, very elegant (figured in the "Floral Magazine" for May). 21s.

M'NABBII.—From cinnamea, crossed with Dalhousiæ; a very handsome plant, dwarfish in habit, with smooth elliptic leaves, and beautiful large blush-white flowers. 21s.

ACHIMENES.

Six beautiful varieties raised by Mr. Parsons, of Welwyn, and far in advance of any yet sent out. PINK PERFECTION, the same size as Mauve Queen, but of a rich pink colour, while GRANDIS gives the darkest violet shade, all the others will be found equally distinct in their separate colours. Received Certificates of Merit from the Floral Committee.

ADVANCE.—Flowers deep reddish purple, with a light spotted eye, shaded towards the margin, quite distinct. 7s. 6d.

ARGUS.—Colour rich pink, large deep orange eye, spotted with carmine, upper lobes of the flowers beautifully rayed towards the throat. 7s. 6d.

ATTRACTA.—Flowers of large size; colour rich scarlet, with light yellow eye, very effective. 7s. 6d.

GRANDIS.—Flowers deep violet colour, with a deep orange eye, finely spotted and shaded with carmine. 7s. 6d.

PINK PERFECTION.—Flowers very large, colour magenta rose; the largest pink of the set with carmine, the under lobes beautifully fringed with violet, very fine. 7s. 6d.

STELLA.—Petals 2½ inches across, clear magenta, large eye of rich yellow with carmine, finely serrated, distinct and beautiful. 7s. 6d.

The above set for 4s.

SWAINSONIA MAGNIFICA.

Figured in the "Floral Magazine."

A free-growing and free-flowering greenhouse climber; native of Australia. Habit and character partakes of both the Clianthus and Colutea, while it has the finest and most charming growing habit of the former, it produces more prominently the long pendent racemes of delicate pea-shaped rose flowers of the latter, with a pure white centre to the upper petal. Very valuable, adapted for cool greenhouse, trained as a pot plant or planted out in a border in pots or trellis-work. 10s. 6d.

THUNBERGIA FRAGRANS.

B. S. W. believes this to be the most useful plant he has ever had the pleasure of offering, the whole character being quite distinct to any other Thunbergia, and whether grown as a pot plant or planted in the border for covering rafters and trellis work, &c., it will be invaluable, being free in habit, with smaller foliage of a dark green, with great substance. It continues flowering throughout the year, but its principal period is during the winter months, a time when white flowers are scarce. Although grown in a warm stove, it has never shown the least sign of red spider, a most important feature in this class of plants. 10s. 6d.

PASSIFLORA HULLETH

A very curious, near the above, found in Rio Negro, on the banks of the Amazon. In growth it resembles P. quadrangularis, the leaves are very ornamental, being marbled across. The flowers are large, white spotted with pink. Besides being a desirable addition to our flowering plants, it will, no doubt, prove to be one of our most valuable stocks for dessert fruits. It requires a most stove temperature. Price 21s. each.

PELARGONIUMS, BEDDING.

The following six Zonal Geraniums were raised by Shirley Hibberd, Esq., the eminent horticulturist. It is well known that this gentleman has for many years devoted his attention to this class of Bedding Plants, planting in his own experimental garden every kind that has been raised, and carefully testing or proving their worthiness regards habit and utility for conservatory, &c. He has already raised several valuable kinds, but prior to this season none have been sent out under his name. B. S. W. has prevailed upon Mr. Hibberd to allow him to use his name. This will convince all that they are each varieties of more than ordinary merit, and real novelties.

ANDREW MARVEL.—Leaves bright green, with broad brownish zone flowers, large, and of remarkable substance and smoothness; colour vermilion-red; a fine variety. 7s. 6d.

EVANGELINE.—Leaves bright green, with dark zone; smooth circular flowers, colour pink, shading to white; truss blush, large globular trusses, very distinct and beautiful. 7s. 6d.

H. W. LONGFELLOW.—Flowers finely formed, colour deep salmon flesh with red centre, with trusses large and globular; leaves dark green, with brown zone; a very fine variety. 7s. 6d.

KATE ANDERSON.—Flowers average size and form, trusses globular, colour the most brilliant shade of true scarlet; flowering profusely, likely to prove the most effective scarlet known; leaves deeply zoned. 7s. 6d.

MAGNA CHARTA.—Flowers very large and smooth, top petals the same size as the bottom ones, colour deep red; leaves pale green, with obscure zone. 7s. 6d.

MAY QUEEN.—Bright green foliage; flowers large, well formed, and smooth, colour clear white, shading to white; trusses large and round. A great improvement on Beauté de Surennes, being much richer in colour. Price 7s. 6d.

The above set for 4s.

PELARGONIUM ROSALIE (HOLLAND).

The peculiar good qualities of this variety consist of free and compact habit of growth, with a fine foliage of dark velvety hue; flowers of great substance and excellent form; large trusses, well furnished with flower-buds, mounted on stout stakes, well above the foliage. For Winter Decoration it will be found invaluable. Received Certificates during the past season for its general usefulness. 7s. 6d.

A NEW DESCRIPTIVE and PRICED PLANT CATALOGUE will be sent next week to all customers and applicants.

Victoria and Paradise Nurseries, Holloway, London, N.

NEW AND BEAUTIFUL PLANTS FOR 1866.

JAMES VEITCH & SONS

BEG TO ANNOUNCE THAT THEIR

CATALOGUE OF NEW AND BEAUTIFUL PLANTS for 1866,

WITH A HIGHLY FINISHED PLATE ATTACHED,

IS NOW PUBLISHED, AND WILL BE FORWARDED POST FREE ON APPLICATION.

Amongst other things, it contains a detailed description of the undermentioned NEW PLANTS, which have been introduced to Europe by J. V. AND SONS, and are now offered to the Public for the first time, viz.:—

ACROSTICHUM AUREUM	BERTOLONIA GUTTATA	LAPAGERIA ALBA (True)	PRIMULA CORTUSOIDES var. AMŒNA
ATHYRIUM LATIFOLIUM	CALATHEA (MARANTA) VEITCHII	NEPENTHES (HYBRIDA) MACULATA	RHODODENDRON VEITCHII var. L. EVIGATUM
BEGONIA PEARCEI	COLEUS GIBSONII	PALICOURIA DISCOLOR	URCEOLINA AUREA

THE ROYAL EXOTIC NURSERY, KING'S ROAD, CHELSEA, S.W.; and at
COOMBE WOOD, KINGSTON HILL, S.W.

GENERAL PLANT CATALOGUES FOR 1866.

JAMES VEITCH & SONS

BEG TO ANNOUNCE THAT THE

UNDERMENTIONED CATALOGUES FOR THE PRESENT SEASON

ARE NOW PUBLISHED, AND WILL BE FORWARDED POST FREE ON APPLICATION.

A DESCRIPTIVE CATALOGUE of NEW and BEAUTIFUL PLANTS of J. V. AND SONS' own introduction, with a highly finished Plate attached.

A GENERAL CATALOGUE of STOVE and GREENHOUSE PLANTS, including ORCHIDS, ORNAMENTAL-FOLIAGED PLANTS, FERNS, AZALEAS, CAMELLIAS, &c.

A DESCRIPTIVE CATALOGUE of HARDY TREES and SHRUBS, including CONIFERÆ, AMERICAN PLANTS, and the recent JAPANESE INTRODUCTIONS.

A CATALOGUE of SELECT SOFT-WOODED and BEDDING PLANTS, including the most desirable NOVELTIES of the Season.

THE ROYAL EXOTIC NURSERY, KING'S ROAD, CHELSEA, LONDON, S.W.

VERBENA CRIMSON KING,

AS DESCRIBED IN FORMER ADVERTISEMENTS, NOW BEING SENT OUT BY

THOMAS METHVEN,

LEITH WALK NURSERIES, and 15, PRINCES STREET, EDINBURGH.

The Gem Plant Case for Table and Drawing-room Decoration.

BARR & SUGDEN.

THE METROPOLITAN SEED BULB & PLANT WAREHOUSE

12, KING STREET, COVENT GARDEN, W.C.

Orders amounting to 21s. sent Carriage Paid.

BLUNDELL'S CATTLE MELONS and CATTLE MARROWS.—100 Seeds, *2s. 6d.*; ¼ lb., sufficient for ¼ of an acre, *5s.*; ½ lb., sufficient for ½ of an acre, *9s.*; 1 lb., sufficient for 1 acre, *16s.*

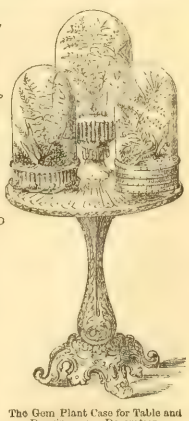
Selections of ORNAMENTAL GOURDS, including Miniature, Medium, and Mammoth varieties, or either separate:—10 varieties, *2s. 6d.*; 15 do., *3s. 6d.*; 20 do., *5s. 6d.*; 30 do., *7s. 6d.*; 40 do., *10s. 6d.*; 50 do. *12s. 6d.*; 100 do., *21s.*; 200, *42s.*

PERMANENT PASTURE GRASS SEEDS and CLOVERS for ALL SOILS

FINE LAWN GRASS SEEDS for ALL SOILS

COMPLETE COLLECTIONS of VEGETABLE SEEDS for One Year's Supply (Carriage paid), *10s. 6d.*, *15s. 6d.*, *21s.*, *30s.*, *42s.*, *63s.*, *84s.*, and *105s.*

COLLECTION of FLOWER SEEDS (post paid), *2s. 6d.*, *3s. 6d.*, *5s. 6d.*, *7s. 6d.*, *10s. 6d.*, *15s.*, *21s.*, *30s.*, *42s.*, to *105s.*



The Gem Plant Case for Table and Drawing-room Decoration.

STANDEN'S GARDENERS' AND AMATEURS' FRIEND MANURE.

The best concentrated Manure for all Kitchen Garden crops and Flowers in or out of doors. For List of Agents see our Advertisement in *Gardeners' Chronicle* for February, March, and April; and favourable Notice of the Manure in the *Gardeners' Chronicle*, p. 339, April 14.

Sold in Sample Canisters, *1s.* and *2s. 6d.*; and in Bags, *5s. 6d.*, *10s. 6d.*, and *21s.*, and in two qualities. No. 1 quality for Hard-wooded Stove and Greenhouse Plants, Fruit Trees, Roses, Lawns, Kitchen Garden Crops, and Flower Beds and Borders. No. 2 quality for Soft-wooded Plants. It should always be laid on the surface dry, and watered in.

BARR AND SUGDEN, SEED, PLANT, and BULB MERCHANTS, 12, KING STREET, COVENT GARDEN.

Prize Calceolaria, &c.

BUTLER AND MCCULLOCH beg to offer Seed of the above, saved only from flowers of great beauty, 1s and 2s. 6d. p. pkt.
CINERARIA (JAMES'S), extra choice, 1s and 2s. 6d. per packet.
PRIMULA (JAMES'S), extra choice, 1s. and 2s. 6d. per packet.
COVENT GARDEN INTERMEDIATE STOCK (True), 1s and 2s. 6d. per packet.
PURPLE WHITE INTERMEDIATE STOCK, 1s and 2s. 6d. p. pkt.
All packets of Flower Seeds sent post paid.
BUTLER & MCCULLOCH, Covent Garden Market, W.C.

Choice Seeds from Perfect Specimens.

THOMAS WILD, Ipswich, confidently recommends his superior PRIMULA SEED of world-wide celebrity, 2s. 6d. per packet, saved from the finest strain in cultivation.
Standard Cucumber, Orion Melon, Hollyhock, Pansy, Polyanthus, and Balsam at 1s. per packet, saved from growers who spare no expense to obtain the best. Address
THOMAS WILD, Seedsman, &c., The Primulary, Ipswich.

Chrysanthemums.

FIRST PRIZES STOKE NEWINGTON AND GUILDHALL, 1865.
ADAM FORSYTH begs to inform the Public that he is now sending out his large COLLECTION of CHRYSANTHEMUMS, at 6s. per dozen, including Attraction, Eve, Golden Ball, Golden Dr. Brock, Hercules, King of Denmark, Lady Carey, Mr. Brunlees, Mr. Wyness, Mrs. Raines, Pink Pearl, Prince of Wales, Sam Weller, Venus, Virgin Queen, &c.
CATALOGUES for one stamp.
Brunswick Nursery, Stoke Newington, N.

JOHN and CHARLES LEE, SEEDSMEN to the QUEEN, beg to offer sealed packets of the following CHOICE FLOWER SEEDS, saved from the finest strains.

	Per Packet—s. d.	s d
CINERARIA, from named flowers	.. .. ..	2 6 and 5 0
CALCEOLARIA, a superb stock	.. .. ..	2 6 and 5 0
PRIMULA FIMBRIATA, RED, WHITE, MIXED	superior strain	2 6 and 5 0
	.. .. ..	2 6 and 5 0

Royal Vineyard Nursery and Seed Establishment, Hammersmith, London, W.

CHOICE VARIEGATED PELARGONIUMS

Mrs. Pollock	Golden Vase	Rainbow
Sunset	Snowflake	Burning Bush
Yellow Belt	Victoria	Princess Alexandra
Golden Tom Thumb	Argus	Fontainbleau

The above 12 choice varieties, suitable for exhibition, for 21s. basket and packing included.
Address, ALFRED FELTH, Nurseries, Chatteris, Cambridgeshire.
Remittances required from unknown correspondents.

Russell's Pyramid Primula.

GEO. CLARKE begs to announce that a small quantity of Seed of the above remains for disposal. At the present is an excellent time for sowing, those who are desirous of possessing the finest strain of Primula in the world are advised to apply early. Packets 2s 6d each. Stamps taken.
Extra fine GLOXINIA SEED, guaranteed to produce none but flowers of the finest quality, and in great variety Price 1s. per pkt.
Nurseries, Streatham Place, Brixton Hill, S.; and Mottingham, Kent, S.E.

Tree and Shrub Seeds.

CHARLWOOD AND CUMMINS have now on Sale, SEEDS of the following in good condition:—Cedrus Deodara, Libani, and Red Cedar; Cupressus Lawsoniana and macrocarpa; Picea balsamea, nobilis, Nordmanniana, and cephalonica; Pinus Cembra and Lambertiana; Tsuga orientalis and occidentalis; Wellingtonia gigantea; Arbutus claudiana; Kalmia latifolia; Magnolias, 4 varieties; Pavia flava the yellow-flowered Horse Chestnut; Portugal Laurel; Platanus orientalis; Oaks, 7 varieties; Common Yew, and Cranthus Dampieri, with a general assortment of Forest Tree and Shrub Seeds.
A LIST of which will be forwarded on application.
14, Tavistock Row, Covent Garden, W.C.

Verbena Lady Leigh.

WM. THOMAS has pleasure in announcing that he has arranged to send out his unrivaled VERBENA LADY LEIGH. Its superiority consists in its great and continuous profusion of bloom, its vigorous and compact habit, and healthy constitution; and being beautifully scented, it is invaluable as a pot plant for exhibition, or for the flower garden. Its colour is a very bright lavender lilac. See "Gardeners' Almanac" for 1866.
To be sent out by the Raiser at 5s per plant.
WM. THOMAS, Florist, &c., 59, Spon Street, Coventry

BEDDING PLANTS, BEDDING PLANTS. Extra strong Plants of the following now ready, well-established in pots:—
GERANIUMS, in 25 or 50 varied shades, less or more, 100, £1 5s.; 200, £2 5s.; 500, £5.
VERBENAS, 25 finest sorts, 100, £1; 200, £1 17s. 6d.; 500, £3 10s.
100 BEDDING PLANTS in pots, in 20 varieties, including Dahlias, Geraniums, Verbenas, &c., for £1; 200 ditto, £1 15s.; 500 ditto, £4 4s.
CATALOGUES free. Post Office Orders payable on Castle Hedingham.
WM. DILLISTONE, Sible Hedingham, Essex.

Choice Zonal Geraniums for Bedding.

SALTMARSH AND SON offer the following in strong Plants, suitable for immediate use:—
MRS. POLLOCK, 12s. to 18s. per dozen.
*** LUNA.—Rich golden leaf, with deep chocolate zone, good habit, and very effective, 30s. to 42s. per dozen
*** LITTLE TREASURE.—A very dwarf variety, with slightly zoned leaves and bright scarlet flowers, very suitable for edges or small beds, 18s per dozen.
N.B.—The stars affixed to the above, which were sent out here last season for the first time, denote the awards of the Royal Horticultural Society at their trial grounds.
Moulsham Nurseries, Chelmsford.

J. WATSON, New Zealand Nurseries, St. Alban's, begs leave to offer his new BRILLIANT SUPERB GERANIUM for Flower Garden purposes, unrivalled, at 24s. per dozen, to be sent out the first week in May. Attached is Mr. Robert Fish's description, who has had it on trial the last two seasons.—" April 12, 1866.
"The Brilliant Superb Scarlet Geranium is one of the very best for bedding in the flower garden or for flowering in pots or boxes. It has the fine compact habit of the old Brilliant, but is rather more luxuriant in growth, has better foliage, which is much more freely supplied with white blotches of a clear colour, and the trusses of flower and the individual flowers are much larger and of a richer scarlet. I have no hesitation in speaking of this variety as one of the most satisfactory that can be used, after trying it for two seasons.
"R. FISH, Putteridge Bury, Luton, Beds."
*** The usual allowance to the Trade.

New Petunia, Illuminator.

GEORGE CLARKE has now ready for disposal strong Plants of this unique variety: it was exhibited at Regent's Park, June 14, 1865 (the only occasion on which it has been shown), and was awarded a First-class Certificate.
Mr. Shirley Hibberd, in the "Gardeners' Magazine," June 24, 1865, speaks of it accurately thus:—"Another equally meritorious subject was a new Petunia from Mr. CLARKE, of Streatham, and I am particular in calling attention to it, because I do not name a third part of the new Petunias I see, for the simple reason that they are generally rubbish. This fine Seedling is called ILLUMINATOR. It is a single flower, finely formed, the colour rosy purple, with a broad white stripe up the centre of every petal, so that when the flower is fairly expanded, it presents a distinct white star of five rays. This is distinct from all other Petunias of the class, even if we go back so far as Mrs. Ferguson, and I think will beat them all."
The plant is of neat habit, and robust in constitution, and will, doubtless, become as popular in the flower garden as conservatory.
Price 3s. 6d. each. The usual allowance to the Trade if Three or more are taken.
Nurseries, Streatham Place, Brixton Hill, S.; and Mottingham, Kent, S.E.

INTERNATIONAL HORTICULTURAL EXHIBITION.

SUTTON & SONS

BEG TO INFORM THEIR PATRONS AND THE PUBLIC GENERALLY THAT THEY WILL HAVE AN EXTENSIVE

STAND IN THE WESTERN ARCADES

DURING THE EXHIBITION,

Consisting of 1000 SEPARATE and DISTINCT KINDS of SEEDS in Glass Cases, arranged with their Botanical and Popular Names; COLLECTION of VARIOUS AGRICULTURAL ROOTS; SPECIMENS of the BROMUS SCHRADERI in its various stages of growth; COLLECTION of NATURAL GRASSES grown by Messrs. SUTTON in their Trial Grounds, &c.

Attendance will be given at the Stand during the Exhibition.

PRICED CATALOGUES Gratis and Post Free.

SUTTON AND SONS, ROYAL BERKSHIRE SEED ESTABLISHMENT, READING.

INTERNATIONAL HORTICULTURAL EXHIBITION.

B. S. WILLIAMS

Begs respectfully to invite VISITORS coming to London to this Great Horticultural Gathering to INSPECT his NEW VICTORIA NURSERY. Although exhibiting some hundreds of Plants at South Kensington, the Nurseries during the Exhibition week will contain much to interest, and will be well worth a visit.

CARRIAGE ROUTE from WEST END.—By way of Albany Street, Regent's Park, Park Street, Camden Town, Camden Road, and Holloway Road.

OMNIBUS ROUTES.—The *Favourite* Omnibuses from the London Bridge Railways and Bank, Victoria Station, Charing Cross, Strand, and Chancery Lane, Brompton, South Kensington Museum (close to the International Horticultural Exhibition), Piccadilly, Regent Street, and King's Cross, arrive at and start from the entrance of the Nursery every five minutes.

VICTORIA and PARADISE NURSERIES (near the Highgate Archway), HOLLOWAY, N.

NEW PLANTS.

WILLIAM BULL, F.L.S.,

BEGS TO INTIMATE THAT DURING THE

INTERNATIONAL HORTICULTURAL EXHIBITION HE WILL COMMENCE SENDING OUT FOR THE FIRST TIME

SEVERAL NEW AND BEAUTIFUL PLANTS

Introduced from Madagascar, Peru, Philippine Islands, St. Catherine's, Rio Negro, Costa Rica, Para, Port Natal, Java, Japan, Ascension, Feejee Islands, &c.

Names and Descriptions will be hereafter announced. Meantime an inspection is invited.

ESTABLISHMENT for NEW and RARE PLANTS, KING'S ROAD, CHELSEA, LONDON.

CLIANTHUS DAMPIERI.

MESSRS. VEITCH & SONS

OFFER NEWLY IMPORTED

SEED OF THIS MAGNIFICENT GREENHOUSE PLANT

At the following low prices.

THE SEED IS GUARANTEED TO GROW WELL.

6 Seeds, 1s.; 12 Seeds, 1s. 6d.; 30 Seeds, 3s. 6d.

Special offers to the Trade on application.

ROYAL EXOTIC NURSERIES, KING'S ROAD, CHELSEA, S.W.

PETER LAWSON & SON,

THE QUEEN'S SEEDSMEN,

LONDON and EDINBURGH.

FARM, VEGETABLE, and FLOWER SEEDS.

28, KING STREET, CHEAPSIDE, LONDON, E.C

INTERNATIONAL

HORTICULTURAL EXHIBITION

AND BOTANICAL CONGRESS.

The MEETINGS of the BOTANICAL CONGRESS are fixed to Commence on WEDNESDAY, 23d of MAY. M. ALPHONSE DE CANDOLLE will take the Chair at 11 o'Clock.

MAXWELL T. MASTERS, M.D., Hon. Sec.

INTERNATIONAL HORTICULTURAL EXHIBITION.

MAY 22d, Tickets £1 1s.; MAY 23d, 10s.; MAY 24th, 2s. 6d.; MAY 25th, 1s.

TICKETS MAY BE OBTAINED OF THE PRINCIPAL NURSERYMEN AND SEEDSMEN, AND AT—

AUSTIN'S, St. James's Hall
CHAPPELL'S, New Bond Street
COCK, ADDISON, & Co.'s, Regent Street
KEITH & PROWSE'S, Cheapside
LACON & OLLIER'S, New Bond Street
LETTS & SON'S, Royal Exchange
MITCHELL'S, Bond Street
OLLIVIER'S, New Bond Street
SAM'S, St. James's Street
WESTERTON'S, St. George's Place.
THE HORTICULTURAL SOCIETY
THE OFFICES, 52, St. George's Place

NOTICE TO SUBSCRIBERS TO THE

INTERNATIONAL HORTICULTURAL EXHIBITION.

The CARDS for the BANQUET have been this day despatched by Post to SUBSCRIBERS.

Persons not having received theirs, are requested to write immediately to

T. MOORE, ESQ., BOTANIC GARDENS, CHELSEA, S.W.

SUBSCRIBERS OF TEN GUINEAS TO THE

INTERNATIONAL HORTICULTURAL MEETING

RECEIVE ONE BANQUET TICKET;

ONE PERSONAL TICKET, ADMITTING ALL FOUR DAYS OF THE SHOW;

SEVEN GUINEA TICKETS, ADMITTING FIRST DAY;

AND TWO CARDS, ADMITTING TWO EACH TO THE CONVERSAZIONE.

OFFICES: 52, ST. GEORGE'S PLACE, KNIGHTSBRIDGE; and 1, WILLIAM STREET, LOWNDES SQUARE, S.W.

MAY 22.—OPENING DAY OF THE

INTERNATIONAL HORTICULTURAL SHOW.

TICKETS, price ONE GUINEA each, can now be had of all Nurserymen, and of the usual Agents.

MAY 23.—SECOND DAY OF THE

INTERNATIONAL HORTICULTURAL EXHIBITION.

TICKETS, 10*s.* each, can now be had of all Nurserymen, and of the usual Agents.

MAY 24.—THIRD DAY OF THE

INTERNATIONAL HORTICULTURAL SHOW.

TICKETS, price 2*s.* 6*d.* each, can now be had of the usual Agents.

MAY 25.—CLOSING DAY OF THE

INTERNATIONAL HORTICULTURAL SHOW.

TICKETS, price 1*s.* each, can now be had of the usual Agents.

HARDY CLIMBERS.—TO THE TRADE.

CLEMATIS JACKMANNI, 2*s.* 6*d.* each; 21*s.* per dozen
" RUBRO-VIOLACEA, 2*s.* each; 18*s.* per dozen
" HYBRIDA SPLENDIDA, 2*s.* each; 18*s.* per dozen
CLEMATIS STANDISHII, 2*s.* each; 18*s.* per dozen
" SOPHIA FLORE PLENO, 2*s.* each; 18*s.* per dozen
" CŒRULEA (AZUREA) GRANDIFLORA, 60*s* per 100

Besides other good old varieties.

A CATALOGUE, including Description and Treatment of Clematises, will be forwarded free on application to

GEO. JACKMAN AND SON, WOKING NURSERY, SURREY.

LINNEAN SOCIETY, BURLINGTON HOUSE, PICCADILLY, May 19, 1866.—The ANNIVERSARY MEETING of this Society will be held here, on THURSDAY, the 24th of this month, at 3 o'clock precisely, for the ELECTION of a COUNCIL and OFFICERS for the ensuing Year; and the Members of the Society will Dine together on that day at Willis's Rooms, King Street, St. James's. Dinner to be on the Table at half-past 6 o'clock.

GEORGE BUSK, Secretary.

N.B. Tickets for the Dinner, including Tea and Coffee, at 21*s.* each, may be had of Mr. KIPPIST, at the Apartments of the Society.

LEEDS HORTICULTURAL SOCIETY.—THIRD ANNUAL GREAT FLORAL FETE and GRAND GALA, on WEDNESDAY and THURSDAY, June 6 and 7. PRIZES £400.

ENTRIES CLOSE on MONDAY, May 28.

The North-Eastern, Great Northern, Lancashire and Yorkshire, Midland, and London and North-Western Railway Companies, will convey Plants, Flowers, and Fruit at ordinary Rates to the Show, and return them free if they remain the property of the Exhibitor.

The Committee undertake to receive Boxes of Fruit and Cut Flowers for Exhibition. All Fruit and Cut Flowers so sent will be carefully unpacked and exhibited, and the following morning returned to Exhibitors, or as specially directed.

Schedules, and Forms of Entry, will be forwarded on application.

JAMES BIRBECK, Secretary, Shakespere Street, Burmantoft, Leeds.

BRIGHTON and SUSSEX FLORICULTURAL and HORTICULTURAL SOCIETY.

The THIRTEENTH ANNUAL SUMMER EXHIBITION will be held, by permission of the Town Council, on the Eastern Lawn, and in the entire suite of splendid decorated rooms of the Royal Pavilion, on WEDNESDAY and THURSDAY, June 27 and 28, and the AUTUMN SHOW, September 12 and 13, on the same grand scale as in former years.

Schedules of Prizes can be had on application to the Secretary, 96, St. James's Street, or E. SPARY, General Superintendent of the Exhibitions, Queen's Graperies, Park Street, Brighton

May 12. EDWARD CARPENTER, Secretary.

SOUTH ESSEX HORTICULTURAL SOCIETY.—The FIRST FLOWER SHOW of the above Society for the season 1866 will be held at Southend on FRIDAY, June 29th. In consequence of the great success which attended the efforts of the Society last year, it is in contemplation to hold a SECOND SHOW in SEPTEMBER.

Application for Schedules, or other information, to be made to Mr. HENRY MAY, Hon. Sec., 8, Royal Terrace, Southend. The Subscription List will shortly be published.

Southend, Essex May 19.

YORKSHIRE FLORAL and HORTICULTURAL SOCIETY, YORK.

President—The Right Hon. LORD LONDESBOROUGH.

A GRAND FLORAL and HORTICULTURAL FETE will be held on THURSDAY and FRIDAY, the 2d and 3d AUGUST NEXT, on KEXAVESMIRE, immediately adjoining the Yorkshire Agricultural Show.

Schedules and Forms of Entry may be had on application to JNO. WILSON, Hon. Sec.

Committee Room, 13, New Street, York.—May 10, 1866.

ROYAL HORTICULTURAL GARDENS.—PERMANENT EXHIBITION of HORTICULTURAL ELEGANCIES, and HORTICULTURAL and AGRICULTURAL IMPLEMENTS. Amongst the Exhibitors may be quoted the Coalbrook Dale Co., Messrs. Rosher, Weeks, Green & Son, Hooper, Naylor & Co., Bray, Patent Concrete Stone Co., Whitwick Colliery Co., Claudet & Houghton, Britannia Rubber Co., Lucking Bros., Melliship & Harris, and about 30 others. There are still a few advantageous positions vacant, applications for which should be made early to

Mr. FOX, Royal Horticultural Gardens, South Kensington.

HORTICULTURAL DINNER at ST. MARTIN'S HALL, Long Acre, London, W.C., on THURSDAY, May 24. The Lord HENRY GORDON LENNOX, M.P., V.P.R.H.S., in the Chair.

Second List of Stewards.

Mr. J. J. Blandy, Reading
" Matt. Brown, Manchester
" John Cattell, Westerham
" Thos. Dickson, Chester
" Robt. Fenn, Woodstock
" Jno. Fraser, Lea Bridge
" A. Henderson, Pine-apple Pl.
Dr. Robert Hogg, London
Mr. Wm. Marshall, Enfield
Mr. R. Marnock, Regent's Park
" Geo. F. Morris, Leytonstone
Rev. W. F. Radclyffe, Blandford
Mr. Chas. Smith, Glasgow
" David Syme, Edinburgh
" Chas. Turner, Slough
" J. S. Trevenan, Liverpool
" John G. Veitch, Chelsea
" J. C. Wheeler, Gloucester

NOTE.—The names of Mr. C. Turner and Mr. John G. Veitch were accidentally omitted from the List of Stewards which appeared on Saturday last.

Dinner at Six o'Clock precisely.

Tickets, to include a Bottle of Wine, 10*s.* 6*d.* each.

Application for Tickets should be made at once (with remittance) to the Hon. Sec. The Musical Arrangements will be conducted by Mr. Montem Smith. RICHARD DEAN, Hon. Sec.

8, Denmark Villas, Ealing, London, W.

The Gardeners' Chronicle.

SATURDAY, MAY 19, 1866.

GREAT INTERNATIONAL HORTICULTURAL EXHIBITION.

MEETINGS FOR THE WEEK.

Exhibition at South Kensington—
Tuesday, May 22—Open from 1 P.M. till 7 P.M., at 21*s.*
Wednesday, " 23—Open from 10 A.M. till 7 P.M., at 10*s.*
Thursday, " 24—Open from 10 A.M. till 7 P.M., at 2*s.* 6*d.*
Friday, " 25—Open from 10 A.M. till 7 P.M., at 1*s.*

BOTANICAL CONGRESS, Raphael Cartoon Room, South Kensington Museum, May 23 and May 24, at 11 A.M. Open free by Tickets.

CONVERSATIONES, MAY 23, at 9 P.M., at the South Kensington Museum Admission by Subscriber's Tickets. Evening Dress.

BANQUET AT CRYSTAL, May 22, at 7 P.M. Evening Dress.

MANY interesting experiments have been conducted of late by practical men on the best modes of PRESERVING TIMBER for underground work, not only from the attacks of Fungi, but from insects, and especially from that most destructive of all insects—the white ant. In countries where these insects abound, wooden structures, piles, &c., are completely destroyed by their agency. The construction of railways in various parts of South America has afforded an opportunity for testing the timber of the forests as to its fitness for sleepers, and as to its power of resisting the attacks of insects, and it has been proved that there are but few kinds of wood that they will not attack in some degree. A committee was formed in St. Helena during the year 1864, under the title of the "White Ant Inquiry Committee," to test the resisting power of various woods. Application was made to the late Sir W. J. HOOKER for any duplicate specimens of colonial woods that could be spared from the Kew Museum. Twenty-nine were sent, including specimens of Australian, West Indian, British Guianar, and North American timber. From a report of the trial of these woods, furnished by J. C. MELLISS, Esq., the Colonial Engineer, it appears that, after having been buried in the

ground for 111 days, 19 were more or less attacked, some being completely destroyed, while 10 remained uninjured; of these 10 three were from British Guiana, viz., Hymenæa Courbaril, Carapa guianensis, and Lecythis grandiflora; three from New South Wales, viz., Callistemon pallidum, Melaleuca uncinata, and M. styphelioides; three from the West Indies, viz., Mammea americana, Cedrela odorata, and Erythroxylon areolatum. The other was the Surinam Quassia, Quassia amara. The results of these trials would lead us to the conclusion that the density of the wood has little or nothing to do in preserving it from these enemies, for amongst the specimens submitted to the same ordeal as those we have mentioned were the Tasmanian Blue Gum, Eucalyptus globulus; Stringy Bark, E. gigantea; Purple Heart of British Guiana, Copaifera pubiflora, and others of equal density. It would seem also that in the woods not injured there must have been some natural ingredient which is distasteful to the ants—this we know to be the case with that of the Cedrela odorata; it is a soft wood, but is always recommended for entomological cabinets or drawers, owing to the strong odour emitted by it. The Quassia again is another instance of the same kind, but the others we have enumerated as resisting the attacks are not known to possess any similar properties, or even to be in the least degree resinous. Perhaps the ants have a keener perception of the vegetable secretions than man! As another instance of the durability of a comparatively soft wood we have but to refer to the Pitch Pine; this is the wood of Pinus australis, a tree covering immense tracts of land in the Southern States of North America, and from which the turpentine of commerce is mostly obtained, or at least was obtained, before the American war. This wood is used in Brazil for building purposes in preference to any of the native woods, as it effectually withstands the attacks of all insects, owing to the immense quantity of resin contained in it; added to this, it can be obtained in Brazil from the American States, sawn to any required size, cheaper than timber from the adjoining forests; its application in this country before the outbreak of the war was increasing very rapidly, not alone for ordinary building purposes, but for the fittings of churches, school-rooms, &c., for when carved, or even merely planed and varnished, the dark streaks of resin give it a fine bold appearance.

Resuming the subject of the Ascent of the Sap (p. 386), we have now to discuss the alleged causes of the upward flow, that marvellous current which sets upwards in opposition to the law of gravity, with five times the force with which the blood is propelled through the arteries of a horse, and which seems not to be wholly checked either by the droughts and heat of India or the rigours of an American winter.

It is not necessary to travel over the old ground — endosmose, capillarity, the profuse evaporation from the leaves, or the suction power supposed to be exerted by the buds prior to the expansion of the leaves; all these, singly and in combination, have been considered to have a material influence in promoting the upward flow, but none of them are sufficient to explain all the phenomena. On this account then, we attach the more importance to the more recent researches of M. Boehm and Mr. Herbert Spencer. Both these gentlemen attribute the upward current to pressure, but the pressure, says M. Boehm, is that of the atmosphere on the elastic walls of the cells squeezing their contents upwards. This pressure is exercised with best effect towards the middle and upper parts of the stem, for in the lower part endosmose is equally or more powerful, and in the upper part the copious exudation of fluid from the leaves determines the upward current.

M. Boehm's experiments show that when a plant is exposed to the influence of rarefied air only, it will not live—the sap will not ascend, because the cell walls are not sufficiently compressed. It must be borne in mind that these are laboratory experiments, and they, unfortunately, do not always tell the same tale when practised by Nature on a grander scale, for if diminished atmospheric pressure were really injurious to plants in a state of nature, how can we account for the luxuriant vegetation that clothes our mountain sides up to a certain height? True, beyond a certain elevation, variable according to latitude, vegetation ceases, but we have no proof that it stops on account of diminished pressure, but rather from deficiency of heat. As Dr. Hooker long since remarked, there are many plants common to the Arctic regions and to the Himalaya mountains where they attain a height of 17,000 feet. In the latter situation the plants must grow under many inches less degree of pressure than in the former locality. And yet "there is no difference in the characters or habits of such plants as are common to both regions."

Although the diminution of pressure here would seem to have little effect, yet it must be remembered that these Alpine denizens are generally low-growing shrubs or herbs, and as such precisely those which, according to M. Boehm, would have the least need of atmospheric pressure to set their juices in motion.

Again, as heat causes rarefaction of the air and consequent diminution of pressure, it rests with the advocates of M. Boehm's theory to explain why the ascent of the sap is favoured, as we know it is, by heat. On the other hand, as cold produces condensation, we might expect the ascent of the sap to be greatest in cold weather if M. Boehm's theory held good.

It is clear, therefore, that whatever truth there may be in the Austrian experimenter's notion, that he has not arrived at the whole truth. Mr. Spencer also attributes (p. 218) the circulation of the juices to pressure, in this case caused by the oscillating movements of the stem, branches, twigs, and petioles, and he gave as an illustration of his meaning the act of tightly closing the hand, when the blood is expelled from the vessels on the surface of the back of the hand, to return, however, when the tension is taken off by the opening of the hand. That the movements of the plant have a potent influence in distributing its juices there can, we think, be no reason to doubt, and it is a familiar fact to gardeners that the moderate action of the wind tends to harden the wood and increase its thickness. Knight, it is said, used to loosen the shreds that bound his trees to the walls, in order to let them "have a little exercise;" but these effects are the result of increased secretion, and only secondarily dependent on circulation. The mixing up of the operations of these two functions, secretion and circulation, seems to us at present to be the weakest point of Mr. Spencer's argument, which also is no more in consonance with what we know of the way in which the wood cells increase in thickness, than it is in accordance with the practical experience of the horticulturist. Until the publication of the entire memoir we are however scarcely in a position to criticise Mr. Spencer's views. There can be but one opinion as to the clearness of his argument or the acuteness of his observation.

We are happy to see so many persons in the present day taking a lively interest in a group of plants which was once regarded as the offscouring of the earth. At each of the two last Tuesday meetings at South Kensington, a singular species of Fungus was exhibited, and seemed to attract almost as much attention as objects of greater beauty, though not less singular. We have since seen one of these, a variety of Peziza lanuginosa, which was sent by Mr. Edmonds, in great profusion under two of the Cedars at Chiswick House, and it is quite extraordinary what force it exerts in making its way through the soil. At first it is a complete ball, opening only when it has made its way into the free air, and after decay leaving a hollow in the ground as if a squirrel had been scratching out a Truffle. The Fungus itself is peculiarly interesting, as being a form of one figured by Bulliard, but scarcely observed by botanists since his day.

The other Fungus, exhibited by Mr. W. G. Smith on the first of May, is of even greater interest. It is one of the species of the "Flore Française," of which comparatively little is known, perfectly new to our Flora, and certainly one of the most magnificent which it has been our good fortune to see in a living state. It is admirably figured by Klotzsch in Krombholz's magnificent work, from which the following description is translated:—

The Giant Morel attains a height of from 8 to 10 inches or more. The head is almost conical, 3 to 5 inches high, with the margin united to the stem, with great irregular, obtuse, waved ribs, a line or more in thickness, and large deep pits, half an inch in diameter. The colour is brown, and the hymenium rather thick. The stem is from 5 to 9 inches high, swollen at the base and in the middle, and deeply grooved. The grooves are scattered, 1 to 2 inches long. The upper part of the stem is even and somewhat attenuated, the whole sprinkled with mealy particles.

The substance is brittle and watery, and the plant soon decays. This Morel is however used for the table when young, but it cannot be dried like the more common species.

This magnificent Fungus is tolerably common about Prague, both in spring and autumn, where it sometimes appears in the market, and where a smaller variety is not uncommon. It was found in red soil by Miss L. E. Lott, at King's Kerswell, near Newton Abbot, Devonshire, at the end of April last. *M. J. B.*

At a time when the International Horticultural Exhibition will be attracting the attention of the public to the fair side of gardening, it is only reasonable that the obverse should likewise be presented to view. The Gardeners' Royal Benevolent Institution may in one sense be said to represent this obverse, and we therefore commend to the consideration of our readers the following appeal which has just been addressed in its behalf by the Treasurer, Mr. R. Wrench, to the supporters of the International Show:—

"I have great pleasure in informing you that Sir Wentworth Dilke, Bart., has consented to preside at the Anniversary Dinner of the Gardeners' Royal Benevolent Institution on the 27th June next.

"In consequence of the Great International Horticultural Exhibition which is to be held this year, it may be confidently anticipated that a great impetus will be afforded to everything connected with Gardening. The Chairman and myself are therefore very anxious that the claims of the poorer members of a class who contribute so much to its success should not be overlooked. This Society in whose behalf I plead is at the present time relieving 97 old and deserving gardeners in straitened circumstances, and were the funds equal to the demands, would relieve many more.

"I feel assured that this appeal to your sympathy in the cause of a body of intelligent men who have contributed so materially to the delight of the eye and the delicacies of the table, will not be made in vain, but that the exertions of the Chairman and Committee to increase the funds of the Institution will be rewarded by your support, and that you will allow me to add your name to the Subscription List entered into upon the occasion of the dinner.

"Any communication addressed to Mr. Cutler, the Secretary, 14, Tavistock Row, Covent Garden, will meet with prompt attention.

"The Annual Subscription is 1*l.* 1*s.*; the Life Subscription is 10*l.* 10*s.*"

— We understand that the Prince and Princess of Wales have signified their intention of honouring the International Horticultural Exhibition with their presence on Tuesday, at 3.30 P.M.

— Cambridge will not be outdone by Oxford. The degree of LL.D. is, we hear, to be conferred upon Professor De Candolle, the President of the Botanical Congress, and upon Dr. Hooker.

— With great regret we have to record the death of Dr. William H. Harvey, F.R.S. and L.S., M.R.I.A., &c., Professor of Botany in Trinity College, Dublin, and Keeper of the University Herbarium, a highly distinguished botanist, and a most amiable and accomplished man. Dr. Harvey, who had long been ill, died of phthisis on the 15th inst. at Torquay, whither he had repaired for the benefit of his health. In a future issue we shall give the particulars of his most useful and laborious scientific career.

— We learn that Mr. Meredith, the great Grape Grower at Garston, near Liverpool, is putting up a house for young Vines, 202 feet in length and 41 feet 6 inches in width. This, therefore, makes the third large Vinery on his establishment, for two other houses are already built and furnished with thriving young Vines, each measuring 144 feet in length and 26 feet in width. There are also multitudes of houses of less size, from which he has already cut single bunches of Grapes weighing, in one or two instances, 8¾ lb.; and on one occasion a bunch of Black Hamburgh weighing no less than 9 lb. 8 oz.! Facts like these at the present moment, when horticultural Europe is assembled in London, should not be overlooked; on the contrary, let us hope that they may be the means of inducing a personal inspection of a system of Grape-growing which has been publicly shown, not only in England but also on the Continent, to be fraught with such successful results.

— The following extract from a Canadian paper, published at Kingston, August 9, 1860, respecting the Rat-tailed Radish, will be read with interest by many of our subscribers who have shared the seeds distributed by the Royal Horticultural Society, or purchased those of a very long podded variety.

"The French horticultural journals are just now discussing the merits of a new and singular plant, which produces Radishes not at the root but at the top of the stems—the Radishes being, in fact, the succulent unripe fruit of the plant. In the current month's number of the 'New York Horticulturist' the following paper on the subject appears from the pen of Professor Lawson. The paper corrects several errors into which the French and American horticulturists had fallen:—

"In the 'Horticulturist' for July (vol. xv., p. 308)

you reprint from the 'Revue Horticole' an article detailing M. COURTOIS GERARD'S success in the introduction to France of what is inappropriately termed the Madras Radish. It appears from that article, and the note appended thereto, that French and American horticulturists are not aware that this delicious vegetable has been in successful cultivation for many years by various persons in Britain and by myself in Canada. The plant is a native of Java, and appears to have been cultivated in some parts of India for a considerable time, particularly in the neighbourhood of Benares. However, in the recent enumeration of indigenous and useful plants—'Hortus Madraspatensis,' prepared by my friend Dr. CLEGHORN, Prof. of Botany at Madras, this plant is not referred to. The name Madras Radish must therefore be dropped, as it probably originated in some error. Its introduction to Europe resulted from a conversation which I had some years ago with Mrs. Colonel SPOTTISWOODE, of Benares, who accordingly forwarded seeds from that place to Prof. BALFOUR, of Edinburgh, under whose care and that of Mr. MCNAB the plant was successfully reared in the Edinburgh Botanic Garden. To these gentlemen I am indebted for the seeds whence my small Canadian stock has been raised. The following notice was inserted in the edition of Chambers' 'Information for the People' (i. 537) published in 1857, the horticultural parts of which I was requested to revise:—

"In 1856 a remarkable kind of Radish was raised in the Edinburgh Botanic Garden, from seeds sent from India by Mrs. Colonel SPOTTISWOODE. It is called the Rat-tail Radish. When sown early it produces a very abundant crop, and is well suited to the climate of Britain. The young plants require to be thinned out to a foot or more apart, in rows of about 2 feet, and plentifully supplied with water during dry weather. The Radishes or pods of this plant are very delicate, and well adapted for salad."

"I consider it as one of the most valuable vegetables that have been produced for many years. The pods have a peculiar pungent yet delicate flavour, are perfectly succulent, and may be used either as a salad or to form a pickle.

"Notwithstanding the opinions expressed by the writers in the 'Revue Horticole,' I believe the plant to be identical with Raphanus caudatus. The French horticulturists seem to find their pods comparatively short, while those of R. caudatus are described by botanists as 3 or 4 feet in length. It must be observed, however, that there are many varieties of the Rat-tail Radish, varying in the length of their pods, and that a good stock is only obtained by carefully saving seed from the very long attenuated-podded sorts. In good varieties the pods are not erect, but gracefully pendent and curved. Fourteen or 15 inches is a good length for the pods in Canada or the States. In warmer climates they will no doubt grow much longer under good management, and even here I do not despair of ultimately obtaining pods that will approach DE CANDOLLE's description :—'Pod longer than the whole plant, sometimes 4 to 5 feet long.' I am sorry to see the root referred to as edible. In the true large-podded varieties it is quite worthless. The crop must be grown for the pods alone. The leaves, however, when very young are succulent and edible, and have the same flavour as the pods."

—— It may not be generally known that one of the finest specimens of ARAUCARIA IMBRICATA in England stands in the nursery of Mr. MITCHELL, the great Rose grower at Piltdown, near Maresfield, Sussex. It is of comparatively gigantic stature, and beautifully proportioned in all its parts, the under branches sweeping the carpet of green turf on which it stands. Of this fine tree, we need scarcely say, the fortunate owner is not a little proud. One standing near it, though equally handsome in form and quite as old, is little more than half its size, a circumstance owing to the site on which it is placed not having been properly prepared for it. It has, however, been recently lifted, and after well pulverising the soil under it, replanted, and now it bids fair to rival the beauty of its more lofty associate. Deep cultivation, therefore, would seem to be necessary for the free and healthy growth of this useful hardy Conifer.

—— A very amusing mistake has been committed lately by our excellent contemporary, the "Revue Horticole," with reference to the PINE-APPLE. In our columns (p. 338) appeared a notice of Mr. D. THOMSON's valuable treatise on the culture of this fruit, and which notice was made the subject of comment in the journal above mentioned. But the writer seems to have confounded the Apple with the Pine-apple, for, says he, a Providence *Apple* grown by Mr. Mills attained the weight of 7 kilogrammes 15½ lb.)! Throughout the article the same error is made, so that a hasty English reader might imagine that Pine-apples were crushed to make cider, or that the English borrowed from the French the Meudon system of growing Apples with the wonderful results above mentioned! The International Congress must set this matter straight.

—— The flower-spikes of the PEPEROMIAS are for the most part slender in form, and much resembling a rat's tail, but Messrs. VEITCH have kindly allowed us to examine one of P. ariifolia (commonly, but erroneously, called P. variegata ovbiculatus, the P. ariifolia of gardens, moreover, being P. marmorata), which, in place of being cylindrical or tapering, is expanded at the top into a tubular or funnel-shaped mass, the margin of which is very irregularly divided into a great number of narrow blunt lobes, some shallow, others deep. The whole arrangement recalls that of Dorstenia Contrayerva, except that the little flowers are outside as well as inside the funnel.

—— We are happy to announce that the Council of the Royal Horticultural Society at its last meeting passed a resolution, opening the CHISWICK GARDENS free to strangers during the week of the International Exhibition.

—— We hope next week to give a full account of the INTERNATIONAL HORTICULTURAL EXHIBITION, and of the proceedings of the BOTANICAL CONGRESS, as well as of the festivities, &c., connected therewith.

New Plants.

331. DENDROBIUM PYCNOSTACHYUM, *Lindl. Contrib. Ind. Orchidol.*

This belongs to a very interesting group of Dendrobia Stachyobia, to the group of Dendrobium denudans. These species are small, the very lax and loose membranous sheaths of the leaves are permanent, and assume more or less of a purplish brown colour. Close dense spikes of flowers, not unlike those of the well-known Dendrochilum glumaceum, or to those of some Bolbophylla, break out, very interesting for those who like to see the elegant forms of smaller Orchid flowers, but totally indifferent to those gentlemen who measure the value of Orchid flowers by feet and inches. The flowers are white, the middle line of the chin green, the lip green; with a few brownish purplish streaks. A very excellent foreign correspondent has regarded the plant as a Bolbophyllum, but there is no doubt the justly-lamented Dr. Lindley was right in referring the plant to Dendrobium. It comes very near D. denudans of Don, but Wallichian flowers prove that this is well distinguished by a chin like an extinguisher, but curved, by a much broader lip, more elegantly lobed, being fringed all around, and by two lamellæ, bearing a third between them, and united in the base of the middle lobe of the lip into an acute apex. The species was discovered by T. Lobb in Moulmein, at a time when our grand horticulturists used to have collectors who did something for science by sending home splendid herbaria. From such a collection it was described by Dr. Lindley. Before me is a fresh spike, coming from a plant sent over by the excellent Mr. Parish, and introduced by Messrs. Low & Co., and grown under the care of Mr. Bullen. *Echb. fil.*

ON THE ARRANGEMENT OF FLOWER SHOWS.

[The following remarks from the pen of Professor Karl Koch, on the subject of the arrangement of flower shows, will be read with interest, now that we are on the eve of inaugurating the International Horticultural Exhibition. They are condensed, with the sanction of the author, from an article which appears in Professor Koch's "Wochenschrift."]

"WHAT is the object of a flower show?" inquires Professor Reichenbach (see p. 51). Is it only for amusement, or is it not rather to exhibit the progress of horticulture, to stir up gardeners to increased emulation, and to extend the taste for plant-cultivation generally? Certainly these three points are, we may say, the three capital points at flower shows; but can they be obtained by simply following Professor Reichenbach's proposals, which are based upon his acquaintance with previous English exhibitions? We doubt it very much, and think on the contrary, that such a monotonous exhibition, devoid of all artistic foundation, can only be of interest to professional men and skilful amateurs; but for the general public, whose love for flowers is intended to be awakened, it would, we fear, have the opposite effect, although the beauty and perfection of the single plants might leave nothing to wish. Prof. Reichenbach recommends, for instance, the exhibiting of specimen plants, and the placing together of those which are botanically related to each other, without regard to any other arrangement. That would be very convenient, it is true, for the exhibitors and judges, but exhibitions are not intended for them only.

We Germans have two expressions for the French and English word Horticulture, viz., "Gärtnerei," or practical gardening; and "Gartenkunst," or the arrangement of gardens, &c. The latter, although alluded to by Reichenbach, is disregarded by him in its true light; but according to our way of thinking, artistic arrangement should be first considered. This is understood in England too, and the former plan has been more or less modified.

In Berlin there are two classes of exhibitions, one of which is devoted more especially to specimen plants, including also plants new to cultivation, and new florists' flowers. The shows of this class are consequently on a limited scale, and require but little space.

Extensive, and especially international exhibitions, have quite other tendencies, as exemplified by our summer shows in Berlin. Grouping is necessary here, and that specimen plants must give way in favour of the whole, is indicated by the word "group." Plant-geography, mentioned by Reichenbach, but without laying any stress upon it, might be illustrated with success. An imitation of those thickets of flowering shrubs so often met with in the Savannahs of North America, or that of a virgin forest, or a representation of an Australian landscape, would be of great scientific value; and as some of the larger establishments possess all the material requisite for the execution of such a plan, it would not be impossible.

A systematic, but at the same time artistic arrangement, is of no less importance; beautiful groups of Proteaceæ, Dracænas, Ericaceæ, Australian Papilionaceæ, and others of the same description, are always to be seen at some of the Continental shows, and contribute much to the general embellishment.

But if Professor Reichenbach pronounces himself against tall plants serving to hide the naked walls and stages, we recognise the strict *servant*, to whom everything is odious which encroaches upon Science. A botanist prizes a stinging Nettle or any other weed far more than the finest Camellia or Azalea bought by the amateur for a high price, simply because he disregards beauty, and cares for science only. We must repeat, although contrary to Prof. Reichenbach's opinions, that the more extensive a flower-show is, the more attention we ought to pay to an artistic arrangement; and in this respect Continental exhibitions are far superior to the earlier English ones.

In conclusion we must remark, that too many judges (in Brussels, Ghent, and Amsterdam there were more than a hundred), are a great hindrance to just discrimination. It often happens that many members of the jury neither possess the necessary knowledge of plants, nor understand anything of cultivation. We would select only a few, who should previously agree as to the points of merit to be considered, so that no time may be lost after entering on their duties. [Hear, hear!]

NOTES ON CONIFERS.—No. II.

(*Last week from p. 436.*)

THE next objection is that the whole and sole evidence on which the belief that there is such an affinity rests consists of sections of timber taken from preserved trunks of trees or branches. No doubt a few specimens have been figured and described by different authors (and authors of eminence, too) as cones of Pines and leaves of Cypresses, but every one of these has been disallowed by Endlicher as "*e Coniferis excludenda.*" It may be said that Endlicher is only one authority, and he may be in the wrong. True, and we by no means adduce his opinion as settling the question; all that we mean by doing so is to remove any presumption that might otherwise have been implied in favour of the coniferous nature of the remains which he has disallowed. His opinion will not carry more weight than we challenge for it. He is not an ignoramus or a nobody, and where he gives a decided opinion many will be apt to follow; but if the reader will admit it to be as probable that he is right as that he is wrong—or at all events that the Coniferous nature of the disputed specimens is quite an open question, and that it cannot be assumed until a fresh examination of them has taken place, we shall be perfectly satisfied.

If this is conceded, the expurgated list in Endlicher's "Synopsis Coniferarum" gives us one species of Peuce, two of Pissadendron, and eight of Dadoxylon, as the whole coniferous remains found in the coal formations of the secondary epoch. Now the fact is, not only that all these, as already mentioned, are deduced from the structure of sections of the fossil wood, but the three genera in which they are placed—Peuce, Pissadendron, and Dadoxylon—are known from sections of wood and from nothing else. What may be the appearance of the tree or its leaves, fruit, or seeds we have no idea. Neither cones, fruit, nor flower of these is known; we know large trunks and branches, but nothing else. We have always felt that this was a very weak foundation on which to erect such an important super-tructure as the existence of a whole order of plants. The disposition of the discs, on which so much reliance is placed, also differs to a certain extent from those of modern Conifers, although not in a very definable manner. But what is of still greater importance is the fact that, as it now appears, the pith of these Carboniferous so-called Conifers was not a small slender spinal column such as those which we have in modern Fir trees, but a thick column, occupying two-fifths, in other words, nearly the half of the whole stem.

Sir Charles Lyell, in his most recent work, the sixth edition of the "Elements of Geology" (1865), says—"Many, *if not all of them*, seem to have differed from living Coniferæ in having large piths, for Professor Williamson has demonstrated the fossil of the coal measures, called Sternbergia, to be the pith of these trees, whether the cast of cavities formed by the shrinking or partial absorption of the original medullary axis; when these interspaces have been filled up with inorganic matter, they constitute an axis, to which, before their true nature was known, the provisional name of St. ruberoia was given." (Lyell, *op. cit.* p. 474). Lyell, in the above passage, says "*Many, if not all*;" the italics are ours, and we imagine they are very pertinent, for if this structure occurs in one member of the family, it seems probable that it may be in all. It is less a case of "many, if not all" than of all or none. Such an important peculiarity in structure cannot be a matter of indifference; it can scarcely be an individual character, found in some and absent in others; neither can it be specific, nor yet generic. Nay, we cannot imagine an order in which it should be present in some and absent in others; we remember none in which a large pith is not characteristic of the whole order, as, for example, in the Caprifoliaceæ (Elder, Honeysuckle, &c.).

But must have than this, if the trees from which these sections of timber have been taken were really Conifers, they must have borne cones, or fruit of some kind; they no doubt also must have had leaves; and we think we are fairly entitled to ask those who maintain the Coniferous nature of the trees in question to produce a few cones and a few leaves.

There is no difficulty in complying with such a demand from the Tertiary coal beds, where the existence of Conifers was undoubted. The Miocene lignites furnish plenty of cones, leaves, bark, and seeds; and if they really existed in the carboniferous epoch, there is no reason why these relics should not be found in as great abundance as in the later coals and lignites. Dr. Lindley made an interesting experiment upon this point when he and Hutton were engaged upon their "Fossil Flora of Great Britain." He had the idea that one reason for the remains of Ferns and Lycopods existing in such immense preponderance in the carboniferous formations might be that other trees existed then as well as they, but that their leaves rotted more rapidly, and in consequence were not preserved. He

put a quantity of leaves of all kinds under water in a large iron tank, and kept them there for two years, and published in the "Fossil Flora" the results at the end of that time—that is, the state in which he found those which were not wholly rotted away, and the result showed that Ferns and Conifers stood in the front rank as to long endurance of maceration. We can ourselves bear similar testimony as to the cones. Wishing to make a wooden skeleton of a cone to show that the scales were branches of woody fibre, and the bracts leaves (a thing easily enough proved when the cones are green, but very difficult when mature), we macerated some cones for a very long time almost without making any impression upon them. It is true that Dr. Lindley's expectation that something might be inferred from the relative endurance of the leaves to warrant the idea that a more extensive flora existed than that of which the remains have been left, was not borne out—because the preservation of leaves must depend upon the conditions under which they were entombed, and the Tertiary deposits in which such abundance of leaves of dicotyledonous trees are found, prove that (when they are present) the leaves of that class of trees are at least as abundantly and delicately preserved as any other kind, if not more so. Dr. Hooker's observations, too, on the growth of the large Ferns in New Zealand, and the manner in which they monopolise the whole soil, choking plants of larger growth on the one hand, and admitting no undergrowth of smaller species on the other, have shown that the prevalence of these species is not only indicative of the paucity of other plants, but almost inconsistent with their presence.

That the absence of fossil remains of cones or leaves in the carboniferous formations is due to something else than any incapacity on their part to be preserved, is, however, sufficiently plain from the facts above noticed, and the only explanation of their absence that we can imagine possible is simply that they did not exist.

There remains one, and only one, isolated chance for them, and that rests on the interpretation of a fruit called Trigonocarpus, which occurs in every part of the coal formation, except the under-clays and limestone; and in such abundance in some localities that it may be collected by the bushel. It was formerly supposed to be the fruit of a Palm, but according to Dr. Hooker it ought rather to be referred to that section of existing Conifers which bear fleshy, solitary fruits and not cones. Some specimens have been obtained from the clay-ironstone of Lancashire displaying structure; and from it Dr. Hooker infers that they belong to Taxoid Conifers or Yew tribe, the structure of the fruit resembling very closely the fruit of the Chinese Salisburia, and it having been found in close connection with a leaf not unlike that of the Salisburia, which had, however, always previously been referred to the Ferns. That it was correctly so referred seems to us very clear, but that is of course merely matter of individual opinion. The fruit has no doubt a certain resemblance to that of the Salisburia. As in it the kernel of the Trigonocarpus was enveloped in a flask-shaped exterior integument, which seems to have been cellular, and is assumed to have been fleshy. The nut or testa of the kernel itself is tripartite, about the size of a small Hazel nut, with three ridges, which are the lines of union of three sections applied closely to each other, except at the apex, where there is a vacant space. We have not space here to discuss Dr. Hooker's arguments in favour of its Taxoid affinities; but they do not convince us. It rather seems to us that he takes in only one side of the facts. The fleshy envelope, if it was a fleshy envelope, and the mode of growth, if it grew in the way supposed, do present coincidences with the Taxoid Conifers: but the nut itself is formed upon a different plan, and we do not see that we are much advanced in the coniferous direction. Those who look only at the points in which it corresponds with the fruit of a Palm believe it to be connected with that family; those who interpret the envelope as Hooker has done, believe it to be coniferous.

It may be so; and if so, it may be that true Conifers did exist in the carboniferous epoch, but certainly the proof is of the weakest. Against the idea we have the general structure of the pith of the stem, different from that of all Conifers; the total absence, without reason or analogy, of any morsel of one, leaf, or bark which can be called coniferous; and a seed vessel, one-half of whose character is not coniferous. In favour of the idea, all that we have is the other half of the character of the seed vessel, and the apparently coniferous character of the intimate structure of the wood. As to the latter we must say that we think a great deal too much weight has been attached to this.

We must remember that the structure of all timbers is referable to one of four types, the Cryptogamous or Fern type, the Monocotyledonous or Palm type, the Gymnospermatous type to which Conifers belong, and the ordinary Dicotyledonous type. To one or other of these every timber must be referred. We must also keep in mind that in the last of these (the Dicotyledonous type) the structure of the timber is so nearly the same in all the trees belonging to it that they can hardly be distinguished. The difference between the structure of the wood of the most widely opposed families is not greater than between that of the modern Conifers and the fossil Pinites and Araucarites of the coal formation; and yet, because they both fall under the general Gymnospermatous type, they must be reckoned to belong to the same family. If geologists and botanists and theory-spinners had but confined themselves to referring the timber in question to the Gymnospermatous type, we do not see any reason for refusing assent to such a proposition; but it is a totally different thing to ask our assent to classify this unknown quantity not only in a family but even in a genus of modern type, and that in the face of all analogy to the contrary (in other classes), and of the mysterious absence of all collateral evidence from other remains (as cones or leaves), and in despite of great difference in the organisation (the large pith) and differences in the structure itself, at least as great as those which in the Dicotyledons might have been the sole distinction between the timber of the most widely separated natural orders.

The conclusion which we have arrived at is that there is ground to believe that in the carboniferous epoch certain trees existed with timber bearing a structure similar to that of Gymnospermatous trees—but that there is not a particle of evidence to prove that true Conifers then existed, but every reason, so far as negative evidence can go, to believe that they did not. If we should go farther and wander into the realms of fancy, we should say that the place of Conifers was then held by something else, and that that something else may perhaps have been the Lepidodendron, from which the Conifers may have subsequently been developed.

There is only one exceptional fact requiring explanation, the Pinites anthracinus, which has been described and figured from a solitary and very imperfect fossil, supposed to be a cone. It was found in the coal measures of Newcastle, and has so far a resemblance to a cone that Endlicher and Unger have passed it as such. We cannot agree with them. It seems to us to be nothing but a part of a branch with tumid leaves, applied to the branch as in the Lycopods. On examining the figure critically and minutely we find that the supposed scales are all of one size, not, as is usually the case, smallest at the base and apex. There is no *crescendo* in them in the middle, nor *diminuendo* at the ends. Moreover it is not cone-shaped but straight on the sides, and as broad at the top as at the middle, and at the middle as at the bottom, both ends being broken abruptly off. Moreover, the scales have no apophysis, although their truncated ends are thickened at the margin. If this thickening is supposed to be an apophysis, then all we can say is that it is of a shape which no other apophysis ever bore. All Lombard Street to a China Orange, whatever it is, it is not a cone. *A. M.*

(*To be Continued.*)

Home Correspondence.

Value of Forced Peaches.—Orchard houses have now become so general that a word in favour of erecting them is unnecessary. Any facts however which tend to illustrate the value of their products must prove acceptable to all interested in the cultivation of fruit trees. The rapid modes of transport which have originated within the last quarter of a century have brought within our reach the fruitful resources of the gardens of our foreign neighbours, and that in many cases within a few hours of their having been gathered and packed; but notwithstanding all these advantages I am inclined to believe that the produce furnished by the houses and gardens of Great Britain has not deteriorated in value on account of the competition in question, as the following facts will I think prove, although it is sometimes difficult to convince the grower who is his own consumer to the contrary. In a lean-to house, 38 feet long and 16 feet wide, we have here planted near the centre, within a fourth of the distance from each end, one Royal George Peach and one Nectarine. The two trees fill the house, the growth of the former exceeding that of the latter by about one-fourth. The Peach tree has been planted 12 years; it was moved from a wall against which it had been planted some years previous. At the time of its removal every precaution was taken to confine the roots to the border prepared for them inside the house, so that they might be entirely subjected to the action of warm air. The house is heated by three rows of 4-inch pipe, one flow in front, and two returns in the middle. The trees have been under my care since the autumn of 1861, and as we annually sell the fruit, of course a faithful account is kept of the sums obtained for it, which in the case of the Peach tree have been as follows:—

Date.	Fruit ripe.	Produce.	Sum realised.
			£ s. d.
1862	June 15	42 doz. and a half	42 10 0
1863	May 28	45 doz. and a half	45 0 0
1864	May 1	42 doz. and a half	67 0 0
1865	April 21	27 doz. and a half	65 0 0
1866 ..	May 10	38 doz. and a half	50 0 0

The Nectarine tree yielded annually about 20 dozen, the sum obtained for which averaged about 15*s.* per dozen. In deducting the expenses of labour and fuel, it should be considered that the house is one of a range in which Grapes are forced, and that the whole of the compartments are heated by one of Weeks' No. 4 tubular boilers. *Michael Davis, Gardener to — Weld, Esq., Roehampton Park, Rochampton, Surrey.*

Packing Strawberries.—I have packed Strawberries which have been sent from Paris to Tarnowitz (Haute Silesia), a distance of 800 miles, as follows:—I enveloped each berry in a leaf of Vine, Lime, or Horse-Chestnut; I prefer the latter. I then packed them carefully in small oblong baskets, holding about 18 or 20 berries. These I again packed in flat white wooden boxes, the lids of which were screwed down, not nailed. This method is adopted by Mr. Thomson, gr. to the Duke of Buccleuch, at Dalkeith Park, under whose superintendence I have packed many thousand ounces during the forcing season for transit to London. Some varieties of Strawberry carry better than others, among which may be named Sir C. Napier and Eclipse. *H. K., France.*

The Weather.—I enclose you shoots of Oak, Ash, Copper Beech, Spanish Chestnut, and Silver Fir, which appear to have been cut by the sharp frost of the 4th instant. The plantation has a north-west aspect, and was cut and replanted in 1856. The Spanish Chestnuts have been injured most, and show no signs of making fresh shoots. Flowering Ash and Copper Beech have also been very much punished. I have not seen any leading shoots of the Silver Fir injured; the side branches only have suffered. Potatos, particularly Ash-leaved Kidneys, that had been planted in ground having a north aspect, near Saltash, have also been very much cut by the frost in question. *Henry Rogers, Tregonnett, Callington, May 9.*

Neglected Lawn.—What am I to do with my lawn, which is uneven, and has almost as many Dandelions, Hawkweed, and Plantains on it as it has Grass? *S. M.* [A lawn which is uneven, and which "has as many Dandelions, Hawkweeds, and Plantains on it as it has Grass," is certainly not in a good state, and the value of any advice as how to get it into better condition depends greatly on extent and other adventitious circumstances; for on the one hand it might be possible to remove the weeds in question by hand, to cut off the lumps, and fill up the hollows, spreading fine earth over all the surface, and then sowing thickly with white Dutch Clover and lawn Grasses, keeping it properly watered—a mode of treatment which would soon produce a green sward, and if lightly cut and well rolled would soon thicken and produce a good turf; but on the other hand, if new turf of good quality from pasture land can be procured, it would be preferable to dig over the whole surface about 6 inches deep so as to be able to pick out all the weeds and destroy them by burning, for which purpose a fire of wood should be made when the digging commences, and then the operator can throw the weeds on the fire as the work proceeds; the earth should afterwards be finely broken down and thoroughly levelled, the turves should then be brought to the spot, and both soil and turves should be thoroughly watered previously to relaying; after that the lawn should be frequently watered and rolled. This method, although more expensive than sowing, will produce by far the strongest turf in the shortest time. *C.*]

Lamiums.—The variegated varieties of this hardy herbaceous plant are very effective, especially where spring decorative gardening is carried out, and even during the summer months they form no mean objects of attraction, although surrounded by quite a galaxy of gay colours. The beautiful veining of the leaves is pleasing to the eye; they are readily propagated by means of division of the roots, and cuttings made of the young tops also strike freely, and grow luxuriantly in ordinary soil. Lamiums form an effective line when flanked by a colour which contrasts well with them, and they also make pretty clumps in isolated positions. *John Edlington, Wrotham Park, Barnet, N.*

Rhododendrons.—The Rhododendron season is just commencing, and, if I may judge from this neighbourhood, with the prospect of an unusual amount of bloom. One drawback, however, especially in sunny weather, attends our enjoyment of these magnificent plants, viz., the rapidity with which the trusses of flowers lose their brilliancy and pass away. The cause of this in a great measure is the attraction the flowers offer to bees and other insects, and the consequent rapid fertilisation which takes place in them. Permit me then to suggest a remedy for this, and at the same time an experiment of no little interest. If, immediately upon the first expansion of the petals, cultivators will remove the stigma from each flower, or as many as they choose to experiment upon, they will of course prevent fertilisation, and prolong the duration of the bloom. There are two ways of doing this. I think the preferable one is to remove the stigma, *i.e.*, the extreme point of the central filament only, as you thus leave the style uninjured, and this organ in the Rhododendron occupies so dignified and important a place, that, even for appearance sake, we do not like to lose it. But others may think annihilation is to be preferred to insult and injury, and may therefore think it better with a fine and sharp pair of scissors to sever the style close to the germen. It is essential that the experiment be tried as early as possible in the opening of the flower, as botanists hold that the pollen immediately it rest upon the stigma bursts elastically and fertilises the germen. A further most interesting experiment in respect of this immediate fertilisation may be tried by fertilising some of the stigmas, and then immediately after so doing removing them. If fertilisation is so immediate, the duration of the bloom will not of course be affected. *J. T. P., Alton.*

Flower and Kitchen Gardening at Porthgridden, near Truro.—You have published many letters on the subject of spring flowers for gardens, and I therefore send you a short description of what I have seen here in practice, which may perhaps be useful to others who, like myself, enjoy especially the first beauties of spring. On my arrival I was at once struck with the beauty of the terrace garden, which is in a perfect blaze of colour, more brilliant than many gardens in August. The *modus operandi* is simple, but the result surpasses anything of the kind I had ever seen or heard of. The centre beds are filled with an old-fashioned dark Wallflower, round which are placed alternate beds of Saponaria and Virginia Stock, flanked by narrow beds of yellow Alyssum—*Alyssum tetra four*—from such simple materials a blaze of colour is produced. The beds have been in full bloom for the last three weeks, and will continue till removal at the end of this month to make way for summer bedding plants. The management is simple enough. The Alyssum and Wallflower when dug up are stowed away in a reserve garden in some out-of-the-way place, where they are trimmed back, and remain till wanted next season for a fresh campaign. The Saponaria and Virginia Stock are sown in the reserve garden in August; they are afterwards, when fit, pricked out in beds, which checks their growth, and they are ultimately planted out in their final resting place when the summer plants are removed. This is the whole management. Of course this climate

is in its favour, but a few hand-glasses would probably be all that would be required in a colder county; the result is so beautiful that any trouble would be well repaid. On a side wall is a Glycine sinensis just breaking into full flower, and a bed of mixed Pansies opposite completes the picture. In the kitchen garden are the Melon pits, &c., which have been so often described, and which are now in full work. In the first compartment is a splendid crop of Cucumbers, which grow here all the year round. A fruit of 27 inches has been cut here on the 17th December. In the next division is a full crop of pot Vines now ripe, and well coloured as well as flavoured. Next is a crop of Melons just making their last swelling, and looking as healthy and strong as could be wished. The whole seems to be very simple and easily managed, but I am assured that the success is very much owing to the system of ventilation, which is so contrived as to allow free ingress of fresh air in small quantities night and day. These pits were described in the Horticultural Society's Transactions in the year 1852, and subsequently republished in your columns. My kind host, Mr. Phillpotts, informs me they have not been altered in any way since they were first constructed; and as they answer so perfectly, I advise others to copy them, as I hope to do myself. I forgot to mention that the effect of the terrace is much enhanced by a number of vases filled with the same flowers as are placed in the beds; a large one in the centre is filled with Alyssum and Saponaria mixed, which is most effective. *Francis Hopkinson.*

The Gardeners' Royal Benevolent Institution.—As you have so freely accorded space to former communications in favour of this excellent charity, I make bold again to direct the attention of your readers to it. I cannot fail to have struck persons whilst looking over the formidable list of supporters or subscribers to the Great International Horticultural Exhibition, that Horticulture has many very powerful and liberal supporters. Keeping this in view, it has been decided to make a direct individual appeal to them on behalf of this Institution. This can be done at very little outlay, and, I trust, with good results. Our untiring Treasurer, Mr. Wrench, has kindly undertaken the onerous duty, and ere this, the appeal (see another column) will doubtless have been made. Let us then upon Tuesday next, whilst gladdening strains announce triumphant Horticulture, draw a twofold satisfaction from the fact, that we have aided those who, though they may have given an impetus to our calling in their day, can only derive a melancholy satisfaction from our success. *William Earley, Dogswell.*

Meeting of Gardeners.—Will you kindly permit me, through this medium, to inform the gardeners who have written to me from all parts of the United Kingdom, Ireland and Wales, upon this subject, that no assistance can possibly be rendered by either the International or Dinner Committees. It is still, however, in the power of gardeners to hold such an assembly, and they may decide upon the time and place of meeting, and the order of proceeding, at the Exhibitors' Lunch on Tuesday the 22d inst. If the decision of the Exhibitors were announced to the Judges at their lunch the same day, and both were to inform their friends, it might be possible to hold a meeting either on Wednesday night at 8 o'clock or Thursday afternoon at 3, giving three clear hours before dinner. It may be as well to state that the holding of such a gathering by no means implies a combination or strike for wages. It would be more likely to prevent than promote such objects. Will some one on the spot inquire whether St. James's Hall or any other room could be had for this object? *D. T. Fish.* [We have grave doubts as to the expediency of such a meeting; but if the plan be carried out, great caution and tact will be required to avoid the dangers to which our correspondent alludes.]

Foreign Correspondence.

PALACE GARDENS, GAZEEREH, CAIRO, EGYPT: *March* 24, 1866.—*Potatos.*—It would appear from recent Numbers of your Paper that considerable and apparently an increasing interest is being taken at home, in the introduction and culture of new species of Potato. At this I rejoice. Indeed no horticulturist can be indifferent to any means which hold out the prospect, however dimly, of the final extinction of the Potato disease, and the restoration to us in all its original healthfulness of that most useful and wholesome of all vegetables.

I have long been of opinion (and nothing has occurred in all my experience to induce me to abandon it), that if the disease were ever to be extinguished, it could only be by falling back on and by cultivating Potatos of fresh blood seed. Those, therefore, who devote their energies to the development of new varieties seem to me to be moving in the right direction. Whatever may have been the original and immediate cause of failure, and whatever may be the influences, atmospheric or otherwise, which from time to time, and with more or less severity, provoke its reappearance, the disease itself, as well as the universality and duration of it, clearly prove weakness and debility to have been inherent in the Potato. From whatever cause it may have become enfeebled, this is a conviction now, I believe, more or less general. The tubers had become weak, and unable to throw off disease, which more or less still remains with us. What is required is strength, a larger amount of vital energy, which, however, can only be obtained by a fresh return to the source from which strength springs —viz. the seed. The success of certain well-known efforts already made in this department, affords sufficient confirmation of the truth of my remarks.

Hitherto the Potato has not been cultivated to any very great extent in Egypt, a wonderful fact, for to the European population here, which is considerable, it forms an important article of daily food. Potatos, indeed, are very extensively imported, and are sold at a high price. It cannot be said that the Potato does not grow well here, for during the last three years I have cultivated it with very considerable success, my crops of it having been in every instance both abundant and good.

It cannot, however, be denied that there are certain serious drawbacks that attend its culture. As a rule, as soon as it reaches maturity it shows a tendency to sprout. This I attribute to the intense heat of the soil, and as a consequence, we find it necessary to import our seed annually, for we cannot use our own.

By means of the use of fresh seed, however, my experience, as I have just stated, has been very favourable, both in regard to the abundance and the excellence of the crops. I have never, I am happy to say, seen the slightest indication of disease, though I have frequently planted diseased sets. For this I am not certain that I can assign a satisfactory reason; but circumstances must, in some sense, be favourable to the health of the Potato. The soil of course is excellent. The atmosphere is always bright and clear, and is seldom charged with electricity. A thunderstorm here is a rare phenomenon.

This year I have planted Veitch's Prolific Kidney, Mona's Pride, Dalmahoy, Early Handsworth, Rivers' Royal, Ashleaved Kidney, Early Globe, and Wellington. These were put in at different periods from the middle of January to the middle of February, and they are all, I am happy to say, promising well. It is amazing how rapidly all vegetables grow in this country; if planted at the proper time they seem almost to rush to perfection. On examination the other day I found some of Handsworth's Early as large as a pigeon's egg; and the Early Kidneys were about 2 inches long.

I cannot boast of having any particular method of cultivation. As soon as as the tops appear, I take care to see that the earth is well forked up between the rows, and that water is given as occasion requires. Hitherto I believe I have been the most successful cultivator of the Potato crop in this country. Not a few Europeans, however, hearing of my success, have made the attempt, with, I am glad to say, the most promising results; and I shall not be surprised if, in time, the Potato is very generally cultivated here, and becomes a prolific and lucrative portion of Egyptian produce.

I have tried the Indian Yam and the Chinese Yam (Dioscorea Batatas) with success. The latter grows to an immense size. I believe I am the first who has attempted to rear it in this country. This year I have planted a large quantity of it, and it promises well. I have adopted no peculiar method in rearing it. The tops require to be propped up with sticks. The roots keep well till spring for planting. Your English climate, I should fancy, will be found too cold for this Yam. *James Hardie.*

Societies.

ROYAL HORTICULTURAL: *May* 12 (*Weekly Show*).—Messrs. Cutbush contributed a collection of miscellaneous plants, and tastefully arranged baskets of flowers came from Messrs Lucking and Mr. Young, of Highgate. Messrs. Cutbush also received prizes for collections of Caladiums, Azaleas, and 10 pots of finely flowered Myosotis intermedia. Rev. Geo. Cheere, of Papworth Hall, had a first-class Certificate for a highly meritorious exhibition of Giant Mignonette in pots, and another for a remarkably well-grown specimen of a Tropæolum named Papworth Scarlet. A collection of Vegetables was exhibited by Mr. Young.

May 15 (*Fortnightly Meeting*).—The Duke of Buccleuch in the chair. After the election of 18 new Fellows, the usual announcement of awards and donations was made, and the Rev. M. J. Berkeley offered a few remarks on the different subjects exhibited. Psychotria macrocephala was stated to be identical with Rudgea macrophylla of Bentham. A cut specimen of a pretty brown-spotted white Rhododendron, shown on this occasion, was said to be a cross between R. arboreum and the hardy R. catawbiense. Associated with this was also an example of another Rhododendron in the way of Keysii or thibaudiense, but larger, and apparently somewhat brighter in colour than either of these two kinds. The Rhododendron shown at last meeting by Mr. Luscombe (see p. 414) was pronounced on this occasion to be a form of R. mevium of Hooker. Allusion was then made to the Giant Morel exhibited at last meeting by Mr. Smith, a short account of which will be found in another column. Mr. Shuttl, gr. to J. Bateman, Esq., furnished blooms of Acrides Warneri, Uropedium Lindeni, and other Orchids, to which attention was directed. Jonesia Asoca, alluded to by Mr. Bateman in his remarks about Anthurium (see p. 269), was stated to be coming into flower at Chiswick, and very encouraging it looks, too, as a specimen of which Mr. Berkeley had been in flower in Fifeshire, was spoken of in terms of the highest praise. A singular and really handsome upright regular-flowered Gloxinia, named Lady Cremorne, from Messrs. Veitch, next came under notice. Its flowers (see p. 865, 1865) bore considerable resemblance to those of the Lily of the Valley, they differed from them, inasmuch as in this case both hoses consisted of portions of the corolla, while in the Primrose in question the hoses are made up of the corolla and calyx. In colour it was white with a purplish blue throat, whilst in the five petal-like appendages that adhered to the outside of the petals the purplish blue colour was turned outside, a circumstance to which the flowers are indebted for a considerable portion of their beauty. It was awarded a First-class Certificate. Examples of two kinds of Lilacs were shown from the Society's Garden—one Dr. Lindley, the other Charles X., which was pronounced to be considerably the handsomer of the two. The varieties of Rat-tailed Radish, of which some account will be found in another column, next came under notice, as did also a cut branch of Holly, in which the stem was flattened, as in that form of monstrosity in the Ash tree which is called stag's horn. The same malformation may also often be found in shoots of Asparagus, in which by some accident of growth several stems have the appearance of having been soldered together and then pressed flat. The effect of Fungi on the growth of the common garden Anemone was alluded to in connection with this subject, and a few observations were also made in reference to Hop mildew and the sublimed sulphur cure for it, full accounts of which have been given in preceding volumes.

May 15 (*Floral Committee*).—Messrs. Cutbush furnished pots-full of well-grown and beautifully-flowered blue and white Forget-me-Not, and the Rev. Geo. Cheere reproduced his Giant Mignonette and Tropæolum above alluded to. From Messrs Veitch came examples of the double blossomed Deutzia crenata; Anthurium Scherzerianum, in excellent condition; and one or two Seedling Gloxinias. A large flowered yellow Calceolaria spotted with reddish brown came from Mr. Scott, gr. to J. S. Gower, Esq., Morden. From Mr. Bull came the variegated variety of Spanish Chesnut, called Castanea vesca albo-marginata: Pitcairnea tubuliformis, alluded to in previous reports; Orchids and Ferns. Mr. Hodges, gr. to R. Wright, Esq., showed flowers of Pendrobium Dalhousianum. A Pelargonium, named Rose of Dulwich, came from Mr. Keeler, gr. to J. Tod, Esq. A zonal Pelargonium, named Lady Smart, was also exhibited by Mr. Beer, Park Lodge, Hammersmith. From Messrs. Osborn, Fulham, came a small but well-grown collection of Cape Heaths, and a finely-flowered plant of Acrophyllum venosum. The Society's Garden furnished a beautifully flowered little tree of Rhododendron Nuttallii; striped Japanese Maize; two plants of Sempervivum, in the way of Youngii, which Mr. Saunders had received from Mr. Wright, and which he presented to the Society; and a charming collection of tricolor and other variegated Pelargoniums, remarkable for the fine colour and size of their leaves. These were stated to have been struck in December last. Blooms of three fine varieties of Pansy came from Messrs. Downie, Laird & Laing.

May 15 (*First Committee*).—Fruit consisted of a collection of Citrons from Mr. Scott, Knaith Hall; and Messrs. A. Henderson & Co. showed their Champion of the World Cucumber, a long-fruited white-spined kind.

CRYSTAL PALACE HORTICULTURAL EXHIBITION: *May* 12.—As this exhibition was in most respects a reflex of that held in Regent's Park on the preceding Wednesday, a full account of which has already been given in our columns (see p. 457), it is unnecessary to redescribe in detail the whole of the different subjects brought forward on this occasion.

Miscellaneous Miscellaneous Plants.—These were reproduced in large numbers, and being for the most part well grown and beautifully flowered, were much admired. Groups of mixed collections of fine-foliaged and flowering plants were, however, those which appeared to attract most attention, and well they might, for when such happy results as are Ixoras, Epacrises, Dracophyllums, Chorozemas, Tetrathecas, Eriostemons, Adenandras, Boronias, Everlastings, Diosmas, Deutzias, Vincas, Genetyllis, and others of that des ription are skilfully mixed with Palms, variegated Yuccas, Alocasias, Crotons, Dracænas, Pandanus, Sphærogynes, Theophrastas, Maranta, Pandanus, and Ferns, the effect produced is pleasing in the extreme, and is in all respects much more satisfactory than where the plants in question are kept in separate groups. In one of the collections was a well-grown example of Lemon Verbena, the leaves of which have retained their delightful odour, not unlike that of the Aloysia citriodora, or what is commonly called Lemon-scented Verbena.

Acacias.—16: 1, Mr. Peed; 2, Mr. J. Wheeler: 3, Mr. G. Wheeler; 4, Mr. Kemp. 10 (Nurserymen): 1, Mr. Rhodes; 2, Messrs. Lee; 3, Messrs. Glendinning; 4, Mr. Baxendine. 10 (Amateurs): 1, Mr. Peed; 2d, Mr. Kaile. 6: 1, Mr. C. Smith. 12 Fine-foliaged and Flowering Plants: 1, Messrs. Lee; 2, Mr. Young; 3, Mr. Carr; 4, Mr. Rhodes; extra, Mr. Barnard.

Heaths.—Judging from the fine collections of these plants produced last Saturday, these seem to be improving not only in growth, but also in public favour, as not fewer than 24 distinct varieties were well represented; and of Cavendishiana, depressa, affinis, Spenceriana, propendens, Willmorei, and Sindryana there were some magnificent specimens, as well as of mutabilis, and the different varieties of ventricosa and tricolor. Of all of these, as well as of others, Mr. Rhodes and Mr. Peed showed excellent collections, which well deserved the 1st prizes which were awarded them.

Awards.—10: 1, Mr. Rhodes. 8: 1, Mr. Peed; 2, Mr. J. Wheeler. 6: 1, Mr. Rhodes; 2, Mr. C. Smith; equal 3, Mr. J. Wheeler and Mr. Kaile; equal 4, Messrs. F. & A. Smith and Mr. G. Wheeler.

Azaleas.—In the Nurserymen's classes Mr. Turner again produced splendid plants, consisting, with but one or two exceptions, of the same varieties as were shown the other day at Regent's Park, and in equally good condition. Mr. Penny and Mr. Peed also exhibited some neat pyramidal plants of smaller size and there was, besides, a class for 12 in 8-inch pots, in which Mr. Turner exhibited well-flowered examples of Flag of Truce, Iveryana Improved, Elegantissima, Gloire de Belgique, and Madame Miellez, all whites more or less striped; Duc de Nassau, Kingbiana, and Bernard Andreas, bright rose, be Lafaveana, Souvenir de Prince Albert, and Souvenir de Hainault, shades of salmon; and Charles Enke, rosy salmon, bordered with white.

Awards.—8 (Nurserymen): 1, Mr. Turner; 2, withheld; 3, Mr. Rhodes; 4, Messrs. Cutbush. 8 (Amateurs): 1, Mr. Penny; 2, Mr. Peed; 3, Mr. J. Wheeler. 6 (Nurserymen): 1, Mr. Turner; 2, withheld; equal 3, Messrs. Cutbush and Messrs. F. & A. Smith. 6 (Amateurs): 1, Mr. Penny; 2, Mr. J. Wheeler; 3, Mr. C. Smith; 4, Mr. Peed. 12: 1, Mr. Turner; 2, withheld; equal 3, Messrs. F. & A. Smith and Messrs. Cutbush.

Orchids.—These were better represented than at the exhibition of the Royal Botanic Society, to which allusion has already been made. Mr. Bullen, gr. to A. Turner, Esq., Leicester, had elegant specimens of Dendrobium nobile, tortile roseum, albo-sanguineum, and eburneum, Odontoglossum nævium, O. cordatum, O. Alexandræ, Acineta, M. Mossiæ, Phalænopsis amabilis and grandiflora, Cypripedium Lowii, hirsutissimum, a pan of C. barbatum superbum with nearly three dozen blooms, varieties of Lycaste Skinneri, Burlingtonia fragrans, Oncidiums, and other plants, all well grown and flowered. Mr. Wilson, gr. to Mr. Marshall, had, among others, Dendrobium tortile roseum, having rosy-lilac petals and sepals, and a white lip; D. chrysotoxum, several Cypripediums, and Phalænopsis Lüddemanniana, with four beautiful blooms: and the same Phalænopsis, as well as P. Schilleriana and Denbrobium Ainsleii, in the Nurserymen's class, which is best grown on a block, came from Mr. Robson, gr. to G. Cooper, Esq., Coburg Road. Mr. Page, gr. to W. Leaf, Esq., who would have taken a higher position had his collection not contained too many species of one genus, had some excellent plants, among which, and in other classes, he produced good examples of the Foxbrush Aerides, Cypripediums Hookeræ and villosum, Oncidium sarcodes, and Lælia purpurata.

Awards.—20 (amateurs): 1, Mr. Bullen; 2, Mr. Wilson; 3, Mr. Robson; 4, Mr. Page. 10 (Nurserymen): 1, Mr. Peed; 2, Messrs. Lee; 3, Mr. Rhodes. 12 (Amateurs): 1, Mr. Penny; 2, Mr. Peed; 3, Mr. J. Wheeler. 6: 1, Mr. Penny; 2, Mr. Peed; 3, Mr. Wiggins.

Roses.—Messrs. Lane reproduced their magnificent plants, which when associated, as they were on this occasion, with fine specimens from Messrs. Paul & Son, Mr. Turner, and Mr. Wm. Paul, had a striking and excellent effect. Among specimens in 13-inch pots, in addition to those shown on the previous Wednesday, were plants of Paul Ricaut, Niphetos, Madame de St. Joseph, Juno, and General Jacqueminot; and in 8-inch pots, of Madame Bravy, Devoniensis, Madame Falcot, Beauty of Waltham, and Alphonse Belin.

Awards.—10 in 13-inch pots: 1, Messrs. Lane; 2, Messrs. Paul & Son; 3, Mr. Turner; 4, Mr. W. Paul. 12 in 8-inch pots:

equal 1, Mr. Turner and Messrs. Paul & Son. 6: 1, withheld; 2, Mr. Wiggins.

Pelargoniums.—Of these there was an admirable bank, which, under a few more days bright sunshine, would have furnished even a greater profusion of flowers than it did. The varieties differed but little from those given in our columns last week (see p. 458).

Awards.—12: 1, Mr. Turner; 2, Mr. Fraser. 10: 1, Mr. Ward; 2, withheld; 3, Mr. Weir; 4, Mr. Wiggins. 6 Fancy Kinds (Nurserymen): 1, Mr. Turner; 2, Mr. Fraser. 6 (Amateurs): 1, Mr. Weir.

New Plants.—Of these, Mr. Bull was as usual a large exhibitor. First prizes were awarded to him for Litobrochia tripartita, a handsome Fern; Cycas Ruminiana, Phœnicophorium seechellarum, or Thief Palm, and Pitcairnia tabulæformis, producing orange-scarlet flowers; 2d prizes were given for the pretty white variegated variety of Schaginella Martensii, Bignonia argyræa violacea, described on former occasions; Bertolonia margaritacea, Costus zebrinus, with green foliage longitudinally veined with white, and brown on the under side; Calamus dealbatus, Polystichum angulare parvissimum, Eranthemum argyroneurum, Maranta splendida, Terminalia nobilis, the long leaflets of which have prominent purplish midribs; Zamia cycadifolia, Cycas plumosa, the white variegated form of Podocarpus macrophyllus, Uropsatha splendens and grandis, singular looking sagittate-leaved plants; Pandanus ornatus, Verschaffeltia splendida, and a pretty whitestriped Maize, which was also shown by Messrs. Carter. Mr. Bull also exhibited examples of Rat-tailed Radish, of which the pods, though not full grown, were at least 16 inches long. Nothochlæna cretacea, from Mr. Parker, received a 1st prize; and from the same came also a new variety of Francisea calycina, known as Macrantha, of Australian habit, bearing berries. Seedling Pelargonium Sylvia, a fancy kind, from Mr. Turner, was awarded a First-class Certificate; and of tricolor-leaved and charmingly variegated kinds a very beautiful group came from Messrs. F. & A. Smith, of Dulwich.

Miscellaneous Plants.—Among these were collections of Tulips from Mr. Turner. Mr. James contributed Calceolarias; Messrs. Downie Laird & Laing, Fancy and other Pansies; Messrs. Glendinning, cut blooms of Rhododendron Fortuni; and Messrs. Lane, a fine group of little Standard Rhododendrons. Several nice Pelargoniums were shown by Messrs. Carter, who had also a beautiful collection of plant cases. Messrs. Barr & Sugden also furnished plant cases. A Dieffenbachia from New Grenada, with dark green leaves mottled with paler green, was shown by Messrs. Lee, of Hammersmith; Petunias in the way of Mrs. Ferguson were sent by Mr. Bull; and Pansies, both in pots and as cut blooms, by Mr. James.

Fruit.—Of this there was but a poor display. A Queen Pine, weighing 4 lb. 5 oz., came from Mr. Cameron, gr. to the Duke of Richmond, Goodwood; an Enville came from Mr. Wallis, gr. to Dixon, Esq., Ardwick; a Providence Pine, 6 lb., came from Mr. Page; and a Queen from Mr. Cawkell, gr. to J. G. Riddell, Esq., Hermeston Grange, Worksop. Of Black Grapes, well-coloured bunches of Black Hamburgh were furnished by Mr. Osborn, Finchley; and the same kind came from Mr. Smith, Twickenham. Mr. Cheal, of Crawley, Sussex, also showed in this class. Black Frontignan, well coloured, was shown by Mr. Allport, gr. to H. Akroyd, Esq., Doddington Park. Good baskets of Black Hamburgh came from Mr. Osborn and Mr. Allport. Good bunches of Muscat of Alexandria, tolerably ripe, were shown by Mr. Turner. Mr. Ambery, gr. to J. Drew, Esq., Hornsey, exhibited bunches of Buckland Sweetwater. Prizes were awarded to Mr. Tegg, gr. to the Duke of Newcastle, Clumber, for Royal George Peaches and for White Marseilles Figs; also to Mr. Hepper, gr. to C. Cannon, Esq., Hampstead, and Mr. Reading, gr. to J. Hiun, Esq., Aldenham, for Strawberries. A fine cluster of Bananas, partially ripe, was exhibited by Mr. Carr, gr. to P. L. Hinds, Esq., Byfleet, and a 3d prize was awarded to Mr. Hepper, for a very good dish of Fulmer's Black-speckled Kidney Bean. Scarlet Nonpareil Apples in good preservation, which, I had been informed by Mr. Read, and a brace of Harrison's Reliance Cucumbers by Mr. Roach.

The grounds of Rockhills, the residence of the late Sir Joseph Paxton, were thrown open to the visitors on this occasion, a privilege of which numbers availed themselves.

ENTOMOLOGICAL: *April* 2.—Sir John Lubbock, Bart., President, in the Chair. Mr. W. W. Saunders exhibited a curious series of eggs of some unknown insect (possibly one of the Hemerobiidæ), fixed in a row by slender peduncles to the stem of a tree, but remarkable for the contrary direction in which the foot-stalks were alternately fixed. Also a Lamellicorn? larva which had a fungoid excrescence (Sphæria?) growing out from each side of the neck, like a ram's horn. Also four larvæ of an Australian species of beast-antlered to a small branch, with their legs so tightly entangled together as to render it apparently impossible for them to extricate themselves.—Mr. Rogers sent specimens of the Ichneumon, Pimpla oculatoria, which he had reared from the egg-bag of a spider; it had previously been reared from bramble sticks.—Mr. A. Weir exhibited some larvæ of the common meal beetle (Tenebrio), which had bored into the corks of port wine bottles, which had allowed the wine to escape; this had probably occurred from bran instead of sawdust having been employed in the packing of the bottles.—Mr. Saunders mentioned other instances of the attacks of insects on the corks of wine bottles and on corn cobs.—Mr. Waterhouse and F. Smith exhibited a specimen of Bembex olivacea, stated to have been captured near Gloucester. It had already been figured by Donovan, but without any locality being recorded, and it had consequently been considered as a doubtful British species.

May 7.—W. Wilson Saunders, Esq., V.P., in the Chair. Mr. McLachlan exhibited a cluster of galls, probably of Aylax Glechomæ, found on Ground Ivy at Lewisham.—A fine variety of Cabera exanthemaria was exhibited, reared by the Rev. W. Horton.—Mr. Westwood exhibited some larvæ of Hepialus lupulinus, found among the rhizomes of Tussilago farfara, which had been destroyed by the internal growth of a fungus (Sphæria?), which in some instances had thrown out a column terminated by a knob, from the neck of the larvæ.—Mr. Stainton exhibited some dipterous larvæ from Aliva, which had devoured the main stems of young Wheat plants. The Chairman, however, stated that this was not an unusual circumstance, and that plants so attacked threw out a number of side shoots.—Mr. Stainton also exhibited drawings of a number of larvæ of Gracilaria, which he had found abundant during the month of March at Mentone and Cannes. Amongst them was a species of Prays, as destructive to the Olive as P. curtisellus is to the young shoots of the Ash. Also of the larva of a small Gelechia? found feeding on the bark of the Spindle tree beneath masses of excrement of the larvæ of Hyponomeuta Evonymella.—Mr. Ianson exhibited a new British species of Throscus, taken near Rochester.—The Chairman exhibited some interesting nests of a spider, and an Oiketicus from Australia, and Mr. E. L. Layard gave some account of the manner in which the curious sacks in which the larvæ of the latter insects are inclosed are formed and enlarged from time to time.—Mr. Haward exhibited various insects from Natal.—Mr. E. L. Layard called attention to the fearful ravages of a species of white ant on woodwork of every kind employed in the island of St. Helena, which, unless the ravages of the insects could be prevented, must inevitably end in the ultimate desolation of the island. He also gave an account of the honey bee in South Africa, which, although their nests were built in caverns where there was abundance of room, yet they threw off swarms just as our English bees confined in hives do. Plans had been adopted to prevent swarming (including a trial of Nutt's system) which had entirely failed.—A paper by the Rev. D. C. Timins, on collecting Lepidoptera at Hyères during the early spring months, was read; also a series of descriptions of new British Ichneumonidæ, by Mr. Thomas Desvignes.—Mr. Wallace's prize essay on the Cultivation of the Ailantus Silk Moth has been printed, and was ready for distribution among the members.

ZOOLOGICAL OF LONDON: *May* 8.—Dr. Gray, F.R.S., in the Chair. A communication was read from Mr. F. Pascoe, giving an account of a collection of Longicorn Coleoptera formed by Mr. J. Lamb in the island of Penang, and on the adjoining main land. The total number of species in the collection was stated to be 208, of which no less than 118 were considered to be new to science.—Mr. J. Gould brought before the notice of the Society some interesting additions to the Avi-fauna of Australia, contained in a collection recently formed at Cape York by Mr. J. Jardine, late Commissioner of Crown Lands in that district. Some of these birds were of species new to science, others had not been previously known as existing in Australia.—Mr. A. G. Butler read a Monograph of the Diurnal Lepidoptera of the genus Euplæa, containing an account of 95 species of this group of insects, amongst which were many not previously described.—Mr. P. L. Sclater pointed out the characters of a new species of Accipiter from New Granada, proposed to be called Accipiter ventralis.—The same gentleman also made some remarks on certain mammals and birds living in the gardens of the Société d'Acclimatation of Paris.—A communication was read from Dr. G. Hartlaub, giving an account of a new form of Passerine birds from Madagascar, proposed to be called Ereessa Schlegelii.—The Chairman read a notice of a new bat from Angola, proposed to be called Scotophilus Welwitschi; also some notes on the skulls of the various forms of Delphinidæ represented in the collection of the British Museum. Dr. Gray likewise communicated some notes on various mammals recently born in Port Albany, North Australia, amongst which were several species new to science.—Mr. Alfred Newton exhibited, from the collection of Mr. W. Borrer, a specimen of Sylvia aquatica of Latham, recently killed in England.

Florists' Flowers.

FOR the following notes, which we have arranged under this head, we are indebted to the American "Gardeners' Monthly."

BEDDING FUCHSIAS.—The newer and more delicate varieties do not thrive in the hot sun, but succeed admirably in arbours in plunged pots. The older and tougher kinds, and a few of the new ones bear the hottest sun, and bloom wonderfully. None surpass Meteor, whose rich golden and crimson hues are born of tropical heat and sun. The more sun the better. A bed of Coccinea and Meteor cannot fail to delight the most refined taste.

HERBACEOUS PHLOXES.—These are incontestably the flowers for the million: they need but little care or toil, are of most exquisite shades of colour, showy, delicate, profuse flowering, hardy, easily propagated, subject to no insect, and very few varieties to any ailment; they are, in short, absolutely invaluable. A few hints on their culture may, therefore, be serviceable. The soil in which they grow should not be too light or sandy, for the colours under such circumstances are less distinct and bright. Plant in heavy rich loam, mulch with manure in the fall, and work this under in spring. Too high manuring makes the colours run, yet Phloxes will bear a very generous supply. If the weather is very dry, keep the soil mulched all summer. To keep up a supply of bloom, plant the old plants to a new bed in the spring, and they will bloom at the usual time, while from the roots left in the old bed will insure stalks that will bloom admirably later in the season, and down to the severest frosts of November.

TROPICAL BEDS.—A feature of magnificent interest in any garden is a tropical bed. Plant the better varieties of Ricinus, especially sanguineus, the tallest and richest Cannas, an abundance of Gladiolus, Lobelia cardinalis, Yuccas, &c. Allow room for the Ricinus to expand in; but if the Lobelia runs its magnificent scarlet stem through the foliage of the former, all the better. The Gladiolus can also be crowded, the closer the better. A few Euphorbias and Coleus likewise work in well.

BEDDING PELARGONIUMS.—The best Pelargonium for this purpose I have ever obtained is Attraction (not the Attraction of the catalogues), obtained of Mr. Howard, Astoria. It bears magnificent trusses, and is admirable as regards foliage. I have counted 136 buds and blossoms in one truss.

The Apiary.

BEES, BEE-HIVES, AND BEE-CULTURE. *By Alfred Neighbour.* Kent & Co., Paternoster Row.—About a year ago we had occasion to write a critique on the first edition of this work. The favourable opinion which was then expressed as to the character of its contents, and of its usefulness to apiarians generally, but chiefly to young or intending bee-keepers, has, we are happy to say, been amply borne out by the fact that a second edition has been called for so soon. The author adds a short preface, in which he states, "It is a source of much gratification to find that we are called upon to prepare another edition of this work in less than twelve months from its first publication. No greater proof could have been afforded of the rapid advance which the pursuit of bee-keeping is now making in the country. In the hope of rendering the present volume more useful and instructive than its predecessor, and also in acknowledgment of the kind approbation with which our earlier efforts have been received, we have made several additions, and trust that the same may be acceptable to our readers."

The additions alluded to comprise a chapter on "The Anatomy and Physiology of the Bee," which will be of great value to the amateur who may desire to combine scientific knowledge with successful practical management.

There is also a chapter devoted to the "Diseases of Bees," particularly describing the terrible scourge, when it once takes a firm footing in an apiary, known as FOUL BROOD. The devastation which this disease has within the last few years wrought in some apiaries scattered throughout the kingdom, together with the reports of its exceeding virulence on the Continent and in America, have greatly alarmed British bee-keepers; therefore we are glad to see an able chapter on this subject, treating of the nature and character of "foul brood;" and if it should make its appearance, of the means to be adopted for effecting a cure, and thoroughly eradicating it from the apiary. A very useful addition to the description of hives contained in the previous volume, is that of "the Stewarton or Ayrshire hive," with instructions for its successful management. This we hail with pleasure, as we have never met with any clear written directions for the manipulation of this favourite and remunerative hive of Scotch bee-keepers. The description by Mr. Fox of this hive and its management, which appeared in our columns last week, will be found not to vary in any important details from the one given by Mr. Neighbour in the book before us.

Another feature in the present edition remains to be noticed. Although the subject matter has been greatly extended, the size has been reduced, rendering it a much more convenient volume for the library shelf or drawing-room table. In conclusion, we can recommend the second edition of "The Apiary" as a useful and instructive handbook.

SUPERING HIVES.—This being my first essay (says "A. B.," South Wales) with Stewarton hives, I am a good deal puzzled to know whether it is time to put on a super on a strong swarm, which last autumn weighed upwards of 50 lb. Taylor says, "if the windows become sensibly warm, attended with clustering at the mouth, increased building room should at once be given." The lower back window of my hive is sensibly warm, and there is a crowd of bees about the mouth; but the bees appear to be nearly all on the move, and the top window is quite cool. The hive, through the windows, appears to be pretty full of bees in both boxes, and is beginning to smell strongly on warm days. There is also considerable humming every evening, notwithstanding the cold weather and frosty nights.

It may be necessary to tell you that, except in such an unusual spring as the last, the first week in June is the earliest time that bees swarm with us in this district.

[The majority of hives have as yet not required the addition of any extra accommodation. We usually judge of the proper time for this important accompaniment of successful bee management by such indications as those you quote from Taylor. We are in the habit of delaying the opening of communications with supers until the bees exhibit unmistakable signs of requiring the room, but rather than err in deferring this too long, we should prefer giving that room before it was absolutely necessary. Should the weather set in warmer and finer about this present time, you may safely admit your bees to the super. If you find that they do not take to it at all in the course of 48 hours, you may push in the slides for a few days, until they become further advanced. Usually, all our strong hives are accommodated with surplus boxes, or glasses, on or before the 1st of May, but as yet we have not opened admittance to a single super. It is, however, with us quite time to attend to this, so far as the strength of the bees of several of our hives is concerned. All that is wanting is more genial weather, attended with warmer nights, such as we have been favoured with at this season for the last two or three years.]

Notices of Books.

A Plain and Easy Account of the Land and Freshwater Mollusks of Great Britain. By Ralph Tate. London: Hardwicke. Small 8vo.

It would be much to the advantage of cultivators of both fruit and flowers if more extended knowledge prevailed regarding our British snails and slugs; and we welcome this little book most heartily, as being well calculated both to advance and to encourage the still further advance of our acquaintance with these curious creatures, most of which are vegetable feeders. This work has the great charm of being all that it professes to be, and something more. It informs us that the natural history of our British snails and slugs is very imperfectly known, and it proceeds to tell us more of their natural history than is contained in any other book. It commences with an explanation of the position which these creatures hold in the animal kingdom, and states that they belong to three classes—Conchifera, Gasteropoda, and Pulmonifera. To the use of these words in this manner, in a work professing to instruct the general reader and young student, we take strong objection, since they are liable to confuse rather than to make clear the three classes, for the animals contained in the third class are quite as much Gasteropods (or belly-walkers) as those of the second. Far simpler would it have been to have divided them all into two classes—Bivalves (Conchifera) and Univalves (Gasteropoda), subdividing the latter into Branchifera, or gill-breathing Gasteropods, and Pulmonifera, or lung-breathing Gasteropods. The manner in which the three classes are exemplified and described is very clear and intelligible, and the object and value of classification is nicely explained. Contrasted with other books on this subject, the extent to which the form and structure of the animal are given calls for especial commendation, as much for the pleasing way in which the information is conveyed, as for the variety of its details.

Here we may refer to the prominence which Mr. Tate gives to the number of the teeth upon the tongue of the univalve mollusks, as a means for the determination of species as well as genera, and fully do we concur

with him in regarding the dental apparatus of great importance as a character for classification. He has copied some excellent engravings from the works of the Swedish naturalist, Lovén; and he might have enhanced the value of his book had he availed himself of the labours of some English naturalists, of whose researches in this particular field of investigation he would seem to be unaware. Here we must take another objection, and this time it will be a mathematical and not a zoological objection. Having explained that the ribbon-like tongue is covered with a number of parallel transverse rows of teeth, the author describes the centre tooth of the transverse row as being more or less unlike those which are on either side of it, and proceeds to say that "the number and arrangement of the teeth are capable of easy representation by a numerical formula." Variety is pleasing, and we confess to the anticipation of some amusement out of a combination of mathematics and mollusca. But our hair stood nearly on end at the sight of the formula, $\frac{37.1.37}{100} = 7500$. This formula is intended to intimate that in Vitrina there are 37 teeth upon each side of the central tooth, and that there are 100 transverse rows;—in a second edition of the book (which we confidently expect will soon be called for), we shall hope to see this information in the more intelligible form of $(37+1+37).100=7500$; and thus be saved the trouble of imagining by what process a snail can make $\frac{1369}{100} = 7500$!

The next point calling for remark as a novelty is the introduction of some good engravings of the horny upper jaw which is possessed by most univalves, and has not hitherto had so much attention paid to it as its importance merits.

Let not the reader, however, imagine from these remarks, that the little book is a dry collection of anatomical investigations. On the contrary he will find in it a most interesting account of all that is known of every one of our terrestrial and fluviatile mollusks; he will be able to form some idea of the age of many species of shells, by calculating (if he can) the probable length of time which it has taken to form certain deposits in which fossil specimens of the same shell as that now living may be found: he will learn where to look for the shells, both living and fossil, how to collect them, and how to preserve both animal and shell; he will find a full account of their food, habits, and mode of life; of the plants which they injure, and of the best means for destroying them; and last, not least, of their odd fashion of making love. "During the spring and summer the snails are furnished with spicula, crystalline darts, which they eject at each other; the tender passion is further excited by long-continued caresses with their horns, and they have been observed engaged in this love-making for the space of 10 hours. The love-missiles are contained in a special pouch, and are peculiar to the genus Helix; their shape, dimensions, and number, vary in the several species. In H. aspersa they are half an inch long, hollow, and square at the base. If there be but one use for these weapons, it would seem that the snail occasionally misses his mark; for Mr. Hyndman, of Belfast, once found a spiculum of Helix nemoralis stuck through a Dandelion leaf." We are curious to know upon what authority Mr. Tate asserts that these love-spicules "are peculiar to the genus Helix." Our own observation of their existence is certainly limited to H. pomatia, aspersa, and arbustorum; but we should not on that account be disposed to assert that either the Limaces or the Pupæ had no such pointed way of showing their affection. Assuming that the receipt of one of these love missiles would prove a somewhat ticklish matter, it is perhaps just as well that all do not reach the mark aimed at; we remember, while collecting Clausilia biplicata near the "Red House," on the banks of the Thames (before Battersea Park was born or thought of), having an opportunity of watching a pair of H. arbustorum making targets of each other for nearly an hour, and we can certify to their both being wretchedly bad shots: possibly firing over each other's head without hitting each other was their notion of good shooting.

Amongst other matters of interest in this book, will be found accounts of the pearl-producing mussels, of the mites which infest certain mollusks, and of which one laughs at boiling water—of a Fungus which grows in the eggs of a slug, before the eggs are deposited—of the threads of slime by means of which some descend from the branches of trees and climb up again, like spiders—and of the behaviour of several kinds of both univalves and bivalves in the confinement of an aquarium. The lithographs of all the species are admirably drawn, but the colouring, particularly that of the slugs, is not what it should be. The determination of each species is materially aided by good analytical tables. Frequent allusion is made to the occurrence of the same or nearly allied species, both in France and the United States; it is surprising therefore that there is no reference to the island of Madeira, where, as shown by Lowe and Wollaston, many of our British species occur, both alive and fossil. We miss, too, any allusion to the Bulimus Goodallii, which, has been long known in certain Pine stoves at Bristol, and which we have seen in foo great abundance in Mr. G. F. Wilson's Cucumber pits at Wandsworth (see p. 266), but these are minor points which do not materially interfere with the general value of the book.

Garden Memoranda.

LONDON NURSERIES.—The following brief notes respecting a few of the largest of these situated close to the metropolis may be of use to strangers who may visit the forthcoming Great International Exhibition:—

Messrs. Veitch's, King's Road, Chelsea. — This is readily reached by omnibus from the Bank or Charing Cross, and is so well kept and altogether so complete in all its details, that almost any amount of time spent on its inspection would be well repaid. On each side of the entrance, itself a neat architectural building, is a wing for Palms, filled with good specimens of that noble tribe of plants, and in front is a corridor, 100 feet in length, ornamented with huge specimen Azaleas and other flowering plants, backed up by Camellias trained against the walls. In connection with this corridor is a museum, in which is a rich store of horticultural productions, to which interesting additions from the South Sea Islands have lately been made by Mr. J. G. Veitch. Contiguous to this is also a small warm show-house, in which some of the finer kinds of Orchids are kept for the examination of those who may be disinclined to seek for them in the long ranges of other houses devoted to their cultivation. A conservatory full of magnificent Tree Ferns forms a striking termination to this tastefully arranged floral promenade, in front of which is a little square American garden surrounded by glass houses, two of which are devoted to new and interesting plants. Among the latter, in a warm compartment, we noticed Seaforthia elegans and other Palms, and in a cool side Araucaria Rulei, variegated New Zealand Flax, and plants of that description. The Hardy Fernery, which is one of the most charming of its class, forms as it were a central hall, by which the Fern and Orchid houses, some 10 or 12 in number, are reached. Here is a double-roofed Orchid house, with the working of which Messrs. Veitch are highly satisfied. It requires a little more ventilation than ordinary houses, a point which should not be lost sight of in their construction. In one of the houses devoted to fine-foliaged plants is a wonderfully robust example of Anthurium cordifolium, magnificent Alocasias, Marantas, Dracænas, and Dieffenbachias; and in other compartments are Pitcher plants, intermixed with Caladiums, and other things of that sort, which not only set off the Nepenthes to increased advantage in a decorative point of view, but also yield them shade under which they delight to make growth. Other houses, too numerous to mention, occupy positions on each side of a long central walk, the sides of which are lined with Japanese plants, handsome little bushes of Box, and near the entrance from the Fulham Road with fine specimens of Standard Bays growing in tubs, in imitation of Orange trees. In one of the largest houses in this part of the nursery is an aquarium, with which are associated large specimens of plants remarkable for the beauty of their leaves. Azaleas, "mountains of bloom," are kept under glass here, and among more ordinary houses not the least interesting is one filled with variegated-leaved Pelargoniums, relieved at certain intervals apart by neat little standards of the scented-leaved Lady Plymouth. Two tastefully laid out little flower-gardens, one on either side of the main walk, have also lately been formed here; these are intended to be trial grounds for new bedding plants. On the opposite side of the King's Road Messrs. Veitch have also a large hardy plant nursery laid out ornamentally, and at Coombe Wood, near Kingston, are 35 acres filled with Japanese plants, Conifers, Hollies, &c., altogether forming one of the most interesting collections in the kingdom.

Mr. Salt's, King's Road, Chelsea. — This nursery is situated close to that just noticed. At its entrance is a large conservatory filled with a miscellaneous collection of plants, among which may be found Orange trees, Camellias, Tree Ferns, variegated Aloe-leaved Yuccas, Dracæna australis, several handsome Sweet Bays, and a couple of standard common Myrtles of wonderful beauty. Other houses contain Azaleas, Petunias, double-blossomed Mimulus, Zonal Pelargoniums, and new plants; among the latter, one of the most handsome is Eranthemum argyroneurum, the leaves of which are covered with a rich network of silvery veins. The different varieties of Urospatha have also foliage of singular form and considerable beauty; and amongst Aucubas may be found examples of all the best kinds. A Phaius, with leaves striped with creamy white, may prove an attractive plant among Orchids. We also noticed a Siphocampylus, with comparatively large showy orange-scarlet blossoms, and a plant of what is said to be a blue Allamanda. Other varieties of new plants in this establishment we have often noticed in our reports of exhibitions. Of Ferns, both hardy and tender, and of stove plants there are also good collections, as well as a considerable group of officinal plants, among which Cinchona nobilis is worthy of cultivation for the beauty of its leaves alone.

Messrs. Osborn's, Fulham. — This establishment may also be readily reached by omnibus from London. It is celebrated for its stock of fruit trees of all kinds, on the rearing, pruning, and training of which great pains are bestowed. It also contains a large collection of hardy ornamental trees and shrubs, Alpine and other plants. The Belgian Azaleas, of which there are large specimens, are now coming into fine bloom. Indoors the stock consists chiefly of useful hard-wooded greenhouse and stove plants.

Messrs. Lee's, Hammersmith. — This may now be reached both by railway and omnibus. Large additions in the way of new buildings have lately been made to this nursery, which is one of the oldest about London. In its extensive ranges of glass houses may be found Orange trees in tubs, Tree Ferns, Camellias, and enormous quantities of Heaths, Epacrises, and other hard-wooded greenhouse shrubs. Of fine-foliaged plants there is also no scarcity, and there is, moreover, a choice collection of Orchids. Vines for fruiting in pots are raised in this nursery in great numbers, as are also Figs of many kinds. Large houses are devoted to their culture, and the same may be said of other fruit trees in pots, for the accommodation of which a house 180 feet in length is set apart. To fruit trees out of doors a large area is also devoted, and at outlying nurseries at Feltham, Ealing, and Isleworth, are excellent assortments of all the better kinds of Conifers and hardy Evergreens.

Mr. Salter's, Hammersmith.—Close to the establishment just noticed is that of Mr. Salter, whose great forte is Chrysanthemums. He is also rich in Pyrethrums, Nosegay and other Pelargoniums; while of hardy variegated and other out-door plants his nursery also contains an interesting collection.

Messrs. Hugh Low & Co.'s, Clapton.—This nursery is reached both by railway and omnibus from the neighbourhood of the Bank. The Tree Ferns which it contains form a feature of striking interest, being not only numerous but beautiful, both in size of trunk and shape of top. Of Orchids, too, Messrs. Low annually import very large quantities, and at present 10 houses are filled with them. The handsome genus Odontoglossum alone may be here counted by thousands of specimens. One long house with a north aspect is already filled with the different species of that genus, and another, 165 feet in length, for the reception of other plants of it, is nearly completed. These houses will be managed on the cool system. The rare and beautiful Epidendrum erubescens may also be found here. Pit after pit is filled with Cape Heaths and similar plants, and when we state that of Erica hiemalis alone as many as between 15,000 and 20,000 have been sold in much less than 12 months, we think little further need be said in favour of that well-known but still most useful variety. Among Azaleas, old Double Purple, Dr. Livingstone, and rubens were conspicuous. Long ranges of cold pits are filled with young Deodar plants, which are raised in them from seeds, and are afterwards lifted and potted. To young Camellias no fewer than five houses are devoted, and of Japanese plants there are large collections. In the soft-wooded department everything is kept in excellent order and in good condition. Of New Holland plants the stock is most extensive, and the culture of hardy Ferns and Vines is not altogether overlooked. In short this is a remarkable establishment, as far as stock in a comparatively young state is concerned.

Mr. Fraser's, Leyton.—This nursery, which is within a short distance of that of Mr. Low, has long been celebrated for its finely-grown specimens of New Holland and other plants of that kind, but these were mostly sold off by auction the other day to make room for soft-wooded plants, a description of stock the growth of which Mr. Fraser is now more inclined to encourage. Of Pelargoniums, both variegated and others, we noticed some fine specimens, and there is also a house set apart for Fuchsias. The show house is at present exceedingly gay with Azaleas, Roses, Heaths, Pelargoniums, Cytisus Atleeana, Acacia grandis, Eriostemons, the rosy-tinted variety of Pimelea spectabilis, Deutzias, and Arctotis grandiflora, the last with large orange blossoms, which when fully open are very showy. We also noticed in another house some of the better varieties of Yellow Rhododendrons, such as Primulinum elegans, Macranthum flavum, Aureum, Gloria florum, Cavendishii, Victoria Regina, and others. Camellias are also largely grown here. Roses and fruit trees are likewise extensively cultivated, both in pots and out of doors, and there are, moreover, good collections of herbaceous and Alpine plants. The latter are kept in pots plunged in Cocoa-nut fibre refuse on beds of coal ashes. Rhodanthe Manglesii in 6-inch pots when in flower meets with a ready sale. Conspicuous among Azaleas were Flag of Truce and Leviathan, both double white kinds; Grand Duc Michel, in the way of Kinghornii; Stella, brilliant orange scarlet, flushed in the upper petals with violet purple; Etendard de Flandres, a good striped white kind; and Hortense Vervaene, in the way of Criterion, but more highly coloured. Vines in pots are also grown here to a considerable extent..

Mr. Williams', Victoria Nursery, Holloway.—This nursery, to which omnibuses ply from all quarters, has been entirely remodelled since it has come into the possession of Mr. Williams, who has ornamented it with one of the handsomest conservatories, or rather show houses, in the country. This erection, which is span-roofed, is 100 feet in length, and 40 feet in width, with a noble frontage over the entrance next the road. On the ground floor of it, which is thrown into quarters by means of pathways crossing each other at right angles, are large fine-foliaged plants, Camellias, Orange trees, and Ferns. A neat terra-cotta fountain occupies the centre, and outside the pathway round the sides are slate shelves, which on one side of the house contain plants in blossom, and on the other a very extensive collection of Yuccas and other hard-leaved plants of that description. Other houses contain a profusion of stove and greenhouse plants, Orchids, Ferns, zonal Pelargoniums, and Vines, prominent among which stands the Royal Vineyard, a variety of which we have spoken in favourable terms in former reports. Though Mr. Williams has not yet left the Paradise Nursery, yet the greater portion of his valuable and extensive stock, not only of Orchids and Ferns, but also of fine-foliaged plants, has now been transferred to the Victoria Nursery, where the principal business is now carried on.

Messrs. E. G. Henderson & Son's, Wellington Road, St. John's Wood.—This well-known establishment is not only celebrated for its extensive collection of miscellaneous bulbous plants, including perhaps the largest assortments of Early Tulips and Cyclamens in the country, but also for its extensive selections of New Holland and hothouse plants. In Zonal and Variegated Pelargoniums its collections are very rich, several houses being wholly devoted to them. In what is termed the winter garden, *i. e.* a large house in which the

plants are tastefully grouped on the floor, instead of on stages, we noticed fine masses of Camellias, associated with other decorative plants requiring similar temperature, such as Conifers, Azaleas, Yuccas, and other fine-foliaged plants. In other departments we found collections of the beautiful new Japanese plants, including the handsome scarlet berry-bearing Aucubas. This establishment is also celebrated for its selections of plants for ordinary decoration. The collection of Alpine and herbaceous plants is also very extensive.

Messrs. A. Henderson & Co.'s, Pine-apple Place, Edgeware Road.—This nursery, like that just noticed, is readily reached by omnibus from most parts of London. Its show house is always gay with flowering plants, and it contains several New Holland houses, one of which is constantly filled with well-grown specimen plants. Fine-foliaged and stove plants are also cultivated here to a large extent, and in a small house are grown a few select Orchids. Of Cape Heaths we also noticed some fine specimens. In an outlying nursery belonging to this firm at Kilburn are extensive plantations of fruit and ornamental trees.

In addition to the establishments just mentioned there are others of great interest, such as those of Messrs. Barnes, Camberwell; Cutbush, Highgate; Smith, Dulwich; and others, to say nothing of those at a greater distance from town, but which are equally worth visiting.

Miscellaneous.

The Trees of Australia.—Lovers of trees do not appear to expand into planters of trees, at least on this side of the globe; the cry appears more to be, cut them down, clear them away; we want corn, we want Grass. My good friends, there is what is called the balance of nature to be preserved. There is an all-wise law which governs terrestrial things, though some people cannot be brought to comprehend any such matter; 'tis a stern fact, nevertheless. However, our task is not to try to convince anyone "against his will," but to have a short talk about "our" trees. The Gums have been sadly abused on all sides. What nasty wood, only fit for the fire; the carpenter turns up his nose at it, it puts all his tools on edge; 'tis like iron; the "new chum" nearly breaks his heart in hammering at it, before he gets into the "way" of it. On the other hand, the wood of the Eucalypti is more durable than Oak when used for ship-building purposes, for which many of the species are admirably adapted; the worm does not attack the timber. Then what capital fences and bridges these trees make; difficult to work into household furniture, but tables and other things made of this wood would last—we dare not say how long, but intended to say for ever. The rapidity with which these trees grow, particularly the Blue Gum, and the fine shelter they make, are great points in their favour. Though the Australians have not taken much to planting Gum trees, they are doing a good deal in this line in some countries. In the Cape Colony, in India, and in Algeria, the Australian Eucalypti have been planted to a considerable extent, and are found to grow more rapidly than any other species of trees. For us these trees (though so common) are of much value, not only on account of their quickness of growth, but for their suitability for all variations of climate and soil. The Iron-bark, Red Gum, Stringy-bark, and Mahogany, are almost indispensable in colonial works of various kinds. The common Wattle furnishes a considerable source of income to many. The exportation of Wattle bark is at length using up the supply of trees; we shall have to look to this. Many useless tracts of country might be made to produce large annual incomes to the State or to individuals if put under Wattles, to be disbarked when of a suitable size. The Wattle grows very fast; in three or four years they are fit for disbarking. This tree does not increase much in size annually after it has attained the age of 10 or 12 years. In establishing plantations of Wattles or Gums, the young plants may be transplanted from the nursery beds into their permanent quarters. The number of trees required per acre, at 5 feet each way, is 1210; at 6 feet, 681. A plantation may be made by ploughing and harrowing the land, and then sowing the seeds of Wattles or Gums broadcast, afterwards passing a roller over the ground, as the seeds are found to germinate better by this means than by harrowed. The proper time to sow seeds of native trees is in April or May, or earlier if the wet season occurs previous to these months; cattle and sheep should be kept off the land till the trees are 6 feet in height. There are many other useful and highly ornamental native trees, for which space would be wanting to do full justice to their merits. We may instance the evergreen Beech (Fagus Cunninghami), a native of Tasmania; the Bunya-bunya (Araucaria Bidwilli), and the Huon Pine (Dacrydium Franklini). How much good land is laying utterly waste, being completely overrun with thistles. It would be better to have it down in Wattles, if fit for nothing else; Wattles grow exceedingly fast in rich free soils. For planting in the interior (as north of the Murray), the native trees are our chief dependence; a simple harrowing of the surface soil in the moist season, and the scattering the seeds of these trees over the land, would insure a fine plantation, if kept from being browsed by stock. The European deciduous trees may do very well in the cool and mountainous districts, but are of no use in the interior. The immense plains entirely destitute of trees are the main, if not the only cause, of these interminable droughts, for it is a well-known fact that well-wooded countries are also abundantly watered; a leafy surface continually gives off moisture, hence rain and dews. In conclusion, we may be allowed to parody the French Bishop's advice to the poor curate, "Keep bees, keep bees," by saying, "Plant trees, plant trees."—*Australasian.*

Calendar of Operations.

(*For the ensuing week.*)

It is a good time just now to apply liquid manure to all growing crops. Guano is most useful mixed with water. Over a couple of pounds of it pour as much water as will fill a watering-pot; stir it up, leave it for a few hours to settle, and then use it in a clear state. It answers all purposes for all crops that require manure. The time of applying it is when plants are in active growth, and the best way is to give it in small quantities at a time and often; under such treatment it is surprising what progress young crops make in a comparatively short space of time. Goulding's and Standen's manures have also each their supporters; both might, therefore, perhaps be tried with advantage.

FLOWER GARDEN AND PLANT HOUSES.

Although spring-flowering plants and shrubs have been late this year, shrubberies now everywhere begin to have a dressy appearance. See therefore that walks, borders, and lawns are rendered equally attractive by means of good keeping. Indoors shading and watering will require particular attention.

Auriculas.—Those out of flower and out of doors will not need much water, but still take care that there is a proper supply; gather seed as it ripens, and preserve it carefully.

Calceolarias.—Shade from bright sunshine, and keep clear of insects. Herbaceous sorts ought now to be in full flower.

Camellias.—After the blooming season is over some shift these into fresh pots; if that is necessary good turfy loam and peat, in the proportion of two-thirds of the former to one of the latter, will form a safe compost. Take care that the pots are well drained; use no manure in the soil; but rather depend on it in a liquid form for what extra assistance in that way the plants may require. Give them a little extra heat while they are making their wood by closing up the house in which they are early, and do not forget to frequently give them a good syringing.

Carnations and Picotees.—Tie up the flower-stems as they advance; remove dead foliage, and top-dress beds or pots which may require it, using a mixture of good loam and well-decomposed manure.

Chrysanthemums.—Where any scarcity of these useful plants exists, it may be remedied thus: select about this time the tops of the strongest shoots for cuttings, putting four or five round the edge of a 3-inch pot, and placing them in a gentle warmth; when rooted, pot singly in the same sized pot, and keep them in a close frame for a few days, until they have become established; the tops may then be pinched out, leaving five or six joints to remain for lateral shoots; after a few days' hardening off they should be removed to an open situation, allowing the plants a sufficient distance from each other to prevent their drawing, care being observed that they do not suffer from want of water. About the third week in July shift for blooming into 7-inch pots, using a small handful of coarsely broken bones at the bottom.

Fuchsias.—Specimen plants reserved under glass for the purpose of open-air decoration may now, or very soon, be planted out. Those required in pots will well repay any attention bestowed on them now. Supply water liberally, occasionally using liquid manure.

Hollyhocks.—Support such as need it; encourage liberal growth by the usual means, such as stirring the soil and applying weak liquid manure, especially to those for competition.

Pelargoniums.—These will now be finely in flower. Shade is essential to brilliancy of colour and preservation of bloom; keep the house clear of bees. Attend carefully to watering, and maintain as far as possible a moist atmosphere round the plants, by damping the floors, stages, &c., occasionally.

FORCING GARDEN.

Cherries.—Spare lights placed now over trees of May Duke against walls would forward the crop very much without further trouble than drawing the lights a little apart during sunshine, and pushing them close, and closing the ends with canvas during the night. They must, however, be securely fastened during stormy weather.

Figs.—In favourable weather let these have plenty of air during the day, and abundance of water, and, except where fruit is ripening, use the syringe freely.

Melons.—This season has not been unfavourable for early Melons, and with many these will be swelling satisfactorily. A second set of plants may therefore be got ready for succession.

Peaches.—Forced trees in pots that are ripening fruit should have careful attention. Do not let them suffer from want of water.

Pines.—Now is a good time to go through the whole stock of succession Pines, beginning with the largest. Let them be taken out of the pits, turn them out and examine their roots in order to see if a shift is required. After the larger plants have received attention, follow with those of smaller size, putting them into larger or smaller pots according to the amount of vigour they possess.

Vines.—Houses in which Grapes are ripening should be kept at 90° or even higher, with sun heat, but if allowed to fall down to 70° at night, so much the better. Take care to keep red spider in check.

HARDY FRUIT AND KITCHEN GARDEN.

With respect to wall fruits, if green-fly or caterpillars are troublesome apply the usual remedies in time to prevent any serious injury. Continue to summer prune as previously directed, but do not remove too much of the young wood at once; take care, however, to stop all over strong growths, and to cut off entirely all ill placed shoots.

Cauliflowers.—If beds of these are becoming over crowded, pull out a few of the larger plants, otherwise the whole will be injured.

Onions.—A bed or border may now be prepared to receive thinnings; and a bed of the Silver-skinned may yet be sown in light poor soil to come in for pickling.

Peas and Beans.—As soon as these show flower, pinch off their tops and stir the ground well between the rows.

Potatos.—Fork up the soil between the rows, which will not only be of benefit to the Potatos, but will help to keep down weeds.

Root Crops.—If young plants of these are attacked by snails or slugs, give the ground about them a good dose of soot and lime, or sprinkle as formerly directed with sifted coal ashes. The best time for doing this is either at dusk in the evening, or early in the morning.

Strawberries.—Mulch with some sort of rough litter.

STATE OF THE WEATHER AT CHISWICK, NEAR LONDON.

For the Week ending May 10, 1866, as observed at the Horticultural Gardens.

May.	Moon's Age.	Barometer.		Temperature.					Wind	Rain.
				Of the Air.			Of the Earth			
		Max.	Min	Max.	Min	Mean	1 foot deep.	2 feet deep.		
Thurs. 10	23	29·940	29·836	70	44	57·0	55½	51	W	11
Friday 11	24	29·931	29·759	64	39	51·0	55½	52	S.W	15
Satur. 12	25	29·885	29·744	63	44	53·5	57	51	W	04
Sunday 13	26	29·910	29·844	61	42	51·5	56	51	S.W	00
Mon. 14	☾	29·892	29·818	57	36	46·5	53	51	W.	00
Tues. 15	1	30·059	30·013	55	41	48·0	54	51	W.	00
Wed. 16	2	30·091	30·042	58	42	50·0	55	51	S.E.	00
Average .		30·008	29·842	59·1	35·1	50·2	54·3	51·1		0·30

May 10—Dusky and white clouds: clouds: fine.
— 11—Heavy rain, showers, sometimes. Rain-shower in afternoon: fine.
— 12 Rain showers: fine: cold at night.
— 13—Cold with dusky and white clouds: fine, nearly freezing at night.
— 14 From uniformly overcast with dusky haze: frosty.
— 15 Clear and cold: clouds: fine frosty at night.
— 16—Hazy and cold: clouds: below the average.
Mean temperature of the week 1·4 deg. below the average.

STATE OF THE WEATHER AT CHISWICK.

During the last 10 years for the ensuing Week, ending May 26, 1866

May.	Average Highest Temp.	Average Lowest Temp.	Mean Temp.	No. of Years in which it Rained	Greatest Quantity of Rain	Prevailing Winds.							
						N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.
Sunday 20	67·0	44·5	55·2	10	0·44 in.	2	7	8	3	1	11	1	4
Mon. 21	66·6	45·3	56·0	18	0·56	3	8	11	2	5	6	3	2
Tues. 22	67·1	42·5	54·8	17	0·49	1	5	7	3	3	7	11	3
Wed. 23	68·8	44·3	56·1	11	0·53	1	5	8	6	3	4	9	4
Thurs. 24	68·1	44·5	55·8	11	0·61	1	4	6	3	1	6	11	3
Friday 25	68·7	44·1	56·4	15	0·46	1	4	11	3	1	5	7	2
Satur. 26	68·2	44·0	56·1	17	0·48	3	11	4	1	1	12	4	2

The highest temperature during the above period occurred on the 22d, 1847—the 30th of May—and the lowest on the 23d and 24th, 1863, and 23d, 1864—therm. 26 deg.

Notices to Correspondents.

Black Pine.—*A Constant Reader* will esteem it a favour if any of our correspondents will advise him as to the best and least expensive mode of constructing a three or four light hot-bed pit: to be used either as a cold pit or for forcing. The length, width, and depth, the thickness of walls, and the best mode of heating, are the chief points on which information is wanted.

Cast-iron Ewers.—*B.* We make it a rule never to recommend tradesmen. Any founder could doubtless cast one or two for you.

Cockscombs.—*A. J.* These should not be taken out of the pots in which they have flowered, and dried like other bulbs. On the contrary, when your plants have done blooming, place them in a cold frame, and pay as much attention to them wants as at any other season of the year, until they throw up fresh growth. Then a little water need be given them. The soil, however, should never be allowed to become quite dry. Some turn out their Cockscombs at the end of May in a sheltered spot protected from the midday sun, lift them carefully again in September, pot them, and winter them on the shelf of a greenhouse, or in a frame from which frost is excluded. Others do not turn them out of the pots, but plunge the latter in coal ashes during summer, which in case of long-continued drought are watered so as to afford a little moisture to the soil in the pots. In September the plants are moved into a greenhouse, and the surface hoed, or repotted, as may appear to be necessary. Two parts fresh turfy friable loam, one of good fibry peat and a liberal mixture of sharp sand, make a suitable compost for Cockscombs.

Holly berries Dry. It is usual to bruise and mix these with about double their bulk of soil, and then to dig a hole about 2 feet in depth, into which the berries are put, about 9 inches thick, and covered with a piece of old mat, to prevent the soil from mixing with them. Then fill up the hole, and cover it with litter, to keep out wet. In February or March take the berries, now thrown into a pulp, and cover them about an inch deep. If the soil is dry and very light they may have a gentle pressure with the foot.

Insects.—*D. J.* The insects which have attacked your Vines in pots are the troublesome Weevil, Otiorhynchus vastator. Lay a sheet beneath the plants by day, and examine them after nightfall. The insects on the least alarm fall to the ground and can be easily seen on the sheet, and must be immediately killed.—*Id.* Your Larch trees are infested with the Chermes laricus, an insect closely allied to the Coccus. They will be very destructive to your trees, and the specimen trees might be treated with sulphuric acid lime, or hot water.—*W. B., Horsham.* The insect on the Camellia Leopoldi is a species of Coccus new to us. The white appendage to each cocoon, but a mass of down enveloping the eggs, of which the females is very large, so you will do well to destroy every specimen at once.—*H.*

Names of Plants.—*G. M.* Barbarea vulgaris and Boronicum austriacum.—*C. C. F.* Caragana arborescens.—*A. P.* 1 and 2, Pomaderris elliptica; 3, Bupleurum Breissiana; 4, some Salsola; 5, Silene armeria; 6, this; 7 and 8 too much crushed to determine the species.—*Mrs. Evans.* 1, Kennedya rubicunda; 2, Polygala oppositifolia; 3, Chrysosplenium oppositifolium.

Stipa pennata: *A Z.*, who says that he has tried to raise this Feather Grass from seeds for several years, and has always failed, will feel obliged by any of our readers informing him if it can be propagated in that way. He also mentions that he has sown it in heat as well as outside with the same result.

Erratum: An advertisement appeared in our last week's Number, headed "Improver Wanted," and ending, "Apply to Messrs. Henderson & Son, Wellington Nursery, St. John's Wood." Messrs. Henderson & Son have written to us to say that the advertisement in question was inserted without their authority, and that they refuse to send replies to the party who inserted it.

Brighton and Sussex Seed Warehouse.

EDWARD CARPENTER'S MIXTURES of PERMANENT GRASS and CLOVER SEEDS — Best quality, 36s. per acre (2 bushels light seeds, and 12 lb. Clovers and small seeds per acre).—See testimonials in Catalogue.

EDWARD CARPENTER'S RENOVATING MIXTURES for Improving Old Pastures.

PRICED CATALOGUES of KITCHEN GARDEN, FLOWER and FARM SEEDS now ready.

EDWARD CARPENTER, Seed Merchant and Grower, 96, St. James's Street, Brighton.

To the Trade.

MANGEL WURZEL AND TURNIP SEED.

H. AND F. SHARPE can still supply the Trade with their selected stocks of—

SKIRVING'S KING of the SWEDES TURNIP.
SHARPE'S IMPROVED PURPLE-TOP SWEDE TURNIP.
SHARPE'S IMPROVED GREEN-TOP SWEDE TURNIP.
SHARPE'S IMPROVED YELLOW TANKARD TURNIP.
FISHER HOBBS' ORANGE GLOBE MANGEL.
IMPROVED YELLOW GLOBE MANGEL.
IMPROVED LONG YELLOW MANGEL.
ELVETHAM LONG RED MANGEL.

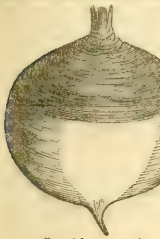
Grown in 1866 from transplanted bulbs. Prices very moderate.
Seed Growing Establishment, Wisbech.

Turnip Seeds.

THOMAS KENNEDY AND CO. beg to call the attention of Agriculturists to their extra improved TURNIP SEEDS, comprising KENNEDY'S IMPROVED SWEDE, DRUMMOND'S IMPROVED SWEDE, IMPROVED GREEN-TOP YELLOW BULLOCK, and other varieties, which for size, shape, and quality are unsurpassed.

A PRICED DESCRIPTIVE CATALOGUE will be forwarded free on application. Free delivery as formerly.

Nursery and Seed Establishment, Dunfries.



Turnip Seeds

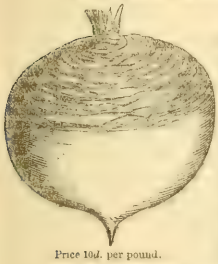
FOR PRESENT SOWING.

CHEAPER BY THE BUSHEL.

SUTTON'S IMPERIAL GREEN ROUND or GLOBE This should be sown for the main Winter crop, instead of the common Green Round Turnip, being a heavier and more nutritious kind. For four years successively H.R.H the late Prince Consort's Prize Cups were awarded to Sutton's Imperial Green Globe Turnip, besides numerous other Cups and First Prizes in other parts of the Kingdom. Several large Turnip growers use this sort in succession for sowing, from first week in June till middle of August, and none other.

Price 8d. per pound.

MOTTLED GLOBE or GREY STONE.



From HENRY HUDSON, Esq., *The Elms, Perkhore.*

"Your Grey Stone and your Short-top Six-weeks Turnips are everything we can desire. After a trial of the various sorts of Turnips, I have found these two the best—the Grey Stone for early planting, and the Six-weeks for late planting. Whilst almost all the other varieties of Turnips are hollow and valueless this season, these two are excellent. Half the secret of keeping lambs healthy in the autumn is to give them plenty of Grey Stone Turnips through the months of August and September, pulped with Trifolium or 'Clover-chaff.'"

Price 10d. per pound.

Also,

LINCOLNSHIRE RED PARAGON, 9d. per lb.
POMERANIAN WHITE GLOBE, 9d. per lb.
HARDY GREEN ROUND, 9d. per lb.
SUTTON'S SHORT-TOP SIX WEEKS, 1s. per lb.

And other choice sorts, cheaper by the bushel, carriage free.

SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

SUTTON'S PRIZE KOHL RABI should now be Sown, drilled as Swedes, 3 to 4 lb. per Acre.

Cheaper in large quantities.

PRICED LIST of other FARM SEEDS gratis and post free.

SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

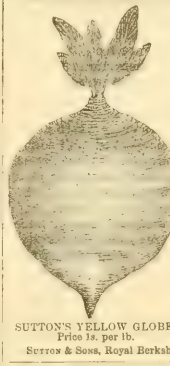
The Forwardest Turnip known is

SUTTON'S SHORT-TOP SIX WEEKS.

Price 1s. per lb.

Cheaper by the Bushel.

SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.



MANGEL WURZEL SEED from large Bulbs. *Cheaper by the cwt.*

	Per lb.	s.	d.
Good YELLOW GLOBE..	0	9	
,, ORANGE GLOBE ..	0	9	
,, RED GLOBE	0	9	
,, LONG RED	0	9	
,, LONG YELLOW ..	0	9	

SUTTON'S

Selected Mangel Seed

from Selected Roots.

Cheaper by the cwt.

	Per lb.	s.	d.
SUTTON'S Selected YELLOW GLOBE	1	0	
Do. do. ORANGE GLOBE	1	0	
FISHER HOBBS' ORANGE GLOBE ..	1	0	
STRATTON'S RED GLOBE	1	0	
SUTTON'S ELVETHAM LONG RED	1	0	
SUTTON'S Selected LONG YELLOW ..	1	0	
New YELLOW INTERMEDIATE..	1	6	

SUTTON'S YELLOW GLOBE, Price 1s. per lb. Lowest price per cwt. forwarded on application.

SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

Sutton's Grass Seeds for all Soils.

SUTTON AND SONS have still on hand some of each of the leading kinds of

PERMANENT NATURAL GRASSES and CLOVERS,

which are mixed expressly to suit the soils for which they are intended.

Price 20s. to 36s. per acre.

Carriage free.

SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

THE BIRMINGHAM HORSE SHOW, 1866.—The FIRST GREAT EXHIBITION of HORSES, PONIES, CARRIAGES, HARNESS, SADDLERY, &c., will be held in BINGLEY HALL, BIRMINGHAM, on TUESDAY, WEDNESDAY, and THURSDAY, July 10, 11, and 12, when Prizes to the amount of £550 will be awarded.

President: The Right Hon. Lord WARWICK.
Vice-President: The MAYOR of BIRMINGHAM

Prize Lists and Certificates of Entry are now ready.

The Galleries will be reserved for the exhibition of Carriages, Harness, Saddlery, Horse Clothing, Stable Fittings, &c. Particulars of the terms for space may be obtained from the Secretary.

The ENTRIES CLOSE on THURSDAY, June 21.

JOHN R. LAVELL, Secretary.

Offices, Stephenson Chambers, New Street, Birmingham.

ESSEX AGRICULTURAL ASSOCIATION, 1866.—POULTRY, GAME, FLOWER, and FRUIT SHOWS will be held at RYE PARK (in the County of Middlesex), on TUESDAY, July 31, 1866, in conjunction with the Annual Exhibition of the Essex Agricultural Association. The Prize Lists, which are upon a most liberal scale, may be had on application to the Secretary on forwarding a stamped envelope with address.

ENTRIES for the POULTRY SHOW will positively CLOSE on JUNE 25 next. Early applications are particularly requested.

Epping, May 19. By order, JOHN W. WISBEY, Secretary.

ROYAL AGRICULTURAL SOCIETY of ENGLAND.—The GENERAL MEETING of Members will be held at the Society's House, 12, Hanover Square, on TUESDAY, May 22, at Twelve o'Clock. By order of the Council,

London, May 12, 1866. H. HALL DARE, Secretary.

THE GARDENERS' CHRONICLE of SATURDAY, May 26, will contain a full REPORT of the MEETINGS of the INTERNATIONAL and BOTANICAL CONGRESS; also of the HORTICULTURAL EXHIBITION and BANQUET. Order of any News Agent. A single copy sent on receipt of Six Stamps.

Office for Advertisements, 41, Wellington Street, Strand, W.C.

The Agricultural Gazette.

SATURDAY, MAY 19, 1866.

MEETINGS FOR THE ENSUING WEEK.

MONDAY, TUESDAY, &c.	May 21 22 &c.	Horse show at the Agricultural Hall, Islington	
TUESDAY.	May 22	Agricultural Society of England General Meeting	Noon
WEDNESDAY, —	23	Chamber of Agriculture (General Meeting at Salisbury Hotel)	Noon

THE resolution of the Council of the Royal Agricultural Society to continue for another year their expenditure on the programme of their Education Committee was opposed by an unusually large minority. And it can hardly be doubted that the next determination of the governing body on this subject will be more in accordance with the objects of the Society and the will of the general body of its members. Let us state once more the grounds on which the minority have hitherto protested against the course which the Council and their Committee have hitherto adopted.

We believe that there never has been, in the whole course of the discussion, any difference of opinion whatever as to what is desirable for a thorough education, in order to good and successful agriculture. Everybody has agreed that good schooling during boyhood is necessary in order to good manhood, to whatever occupation that manhood may be devoted. There has been perfect agreement upon the all-importance of a good and sufficiently prolonged schooling for the boy, whether as a man he is to adopt a profession or to become a tradesman or a farmer. Mr. ACLAND may be said to have led the discussion on the one side and Mr. HOLLAND on the other. We believe there has been no difference whatever between these gentlemen on the importance of the primary education which the tenant farmer as much as any other man of business needs in order to be respectable, influential, and successful in the station which he occupies. We have no doubt that Mr. HOLLAND, equally with Mr. ACLAND, feels that the consideration accorded to agriculturists as a body, the position they occupy in public opinion, the influence they exert, must ever be in exact proportion to the intelligence, the self-reliance, and the power which their education has given them. And, still more, both of these authorities no doubt believe that the social position, the personal influence, and even the professional success of the individual farmer depend very much upon those qualities of head and heart for which he is indebted, not to his professional but to his general and preliminary education during boyhood and youth.

It is not therefore in any degree whatever upon the relative importance in a complete agricultural education of this preliminary schooling on the one side, and of the subsequent professional studies and apprenticeship on the other, that any difference has arisen. The discussion has been confined to what it was fit and proper for the Agricultural Society to do. One party believed that the Agricultural Society should confine itself to helping forward *agricultural* education; the other party believed that it might do what it could to help forward the preliminary education of farmers' sons. This latter was Mr. ACLAND'S opinion and advice. It is founded, we presume, on his belief, first, that this preliminary and general education during boyhood and youth is the only foundation on which a good agricultural or any other good position during manhood is possible; and secondly, that this preliminary schooling for the sons of farmers has hitherto been defective. It is also in some measure, no doubt, influenced by the impression that this preliminary and general education is the only part of the whole educational process which is capable of effective stimulant or guidance by any system of prizes or examination. Mr. ACLAND believes that more will be done towards the improvement of agricultural education by a well-directed schooling than in any other way; and he also believes that this, and only this, is capable of being tested and stimulated by examinations and by prizes. The Society has accordingly been induced to vote a certain sum of money to be awarded as prizes to those sons of farmers or of members entering for this particular competition who shall have best acquitted themselves at the various local school examinations by the delegates of the Universities; and at the recent meeting of the Council it was resolved that this vote be continued for another year. It must be noted, however, that the Charter which specifies "the promotion of the education of those who are dependent on the cultivation of the land for their support" has in some measure to be explained away, in order to justify the adoption of this particular course; for the words which it uses can hardly be considered to justify an outlay towards the general education of boys, whether they are to be ultimately dependent on the cultivation of the land for their support or not.

Mr. HOLLAND'S advice to the Society was, we believe, founded upon quite as enlarged a view of the whole subject as that of Mr. ACLAND, and it was certainly influenced more than his by the obvious meaning of these words in the Charter. He, equally with Mr. ACLAND, and we may add equally with all reasonable men, believes in the absolute necessity of a good general education; and as much as any man he urges the great importance of raising the standard of attainment as high as possible before young men set themselves to the especial studies and the especial apprenticeship by which agricultural efficiency is obtained. But he believes, first, that the general standard of intelligence and of education amongst tenant-farmers has been rapidly rising during the past two generations, and that there

is now a greater and more general anxiety on their part for the good education of their sons than there ever hitherto has been. He believes, secondly, that in the new modes of cultivation which have of late years been adopted, and in the new applications of scientific knowledge to farm practice which the last 20 years have witnessed, there is within the strictly professional part of an agricultural education an immense territory, as it were, of useful knowledge open to the sons of farmers, which their fathers did not know, to the mastery of which they ought to be guided and incited. And he believes, lastly, that guidance and incitement can be offered to young men towards their attainment of proficiency in these, the practical and professional parts of an agricultural education, by prizes and examinations, just as everybody admits that spur and rein can by prizes and examinations be brought to bear upon their attainment of proficiency in the branches of a general and preliminary education. It is mainly, no doubt, on these three grounds that Mr. HOLLAND argues that the Society ought to keep within the instructions of their Charter, and confine themselves to the strictly professional part of an agricultural education.

There is less need than ever there was to urge upon the attention of agriculturists the importance of a good general education for those who are to succeed them—there is more need than ever there was to urge upon them the great value of special and professional instruction—and it is just as possible to promote by prizes and examinations the special studies and the industry necessary to professional attainment as it is to promote by prizes and examinations the attainment of a high standard of general education.

These are the three propositions which we believe with Mr. HOLLAND are perfectly defensible, and out of which we think the Society ought, in accordance with its Charter, to have seen its way towards instituting annual examinations and prizes for agricultural students, so that professional attainment might have been encouraged and rewarded. And we repeat the assertion of these considerations now just previously to the annual general meeting of the Society, in order that they may exert whatever influence properly belongs to them upon the decision of the general meeting on this subject. It is worth while for the members of the Society to consider that a nearly blank year, so far as the agricultural operations of the Society are concerned, is certain to tell disastrously on both its reputation and its finances. There is in 1866 to be no annual exhibition; and this has hitherto been virtually the sole agricultural operation of the Society during the year.

The blank will not be filled up by any display of activity, however great, in helping the Universities to promote the general education of boys in local schools. Activity in that direction will indeed tend rather to increase the agricultural prejudice which will arise out of mere inaction. The Society, it will be said, is not merely doing nothing but it is going astray.—"We joined it," members will say, "for the sake of its agricultural uses. Any help to local education that we can contribute is better given through other channels which are more properly connected with that subject. If it undertakes the promotion of general education, and neglects its proper course and field of operations, there is no length of divergence from that field and course which it may not reach. Why, for instance, should it not follow the example of the Western Society in devoting funds to the exhibition of works of art? The refining of the taste, just as well as the improvement of the general education, in country districts, may thus be undertaken by it. There are doubtless most important purposes of this and other kinds which it might fulfil; and it is possible that a subscription list may be maintained which shall provide whatever funds its new career may need. But its membership will gradually change, if it does not dwindle. It will ultimately cease to be a body of agriculturists, and it will no longer be an agricultural society."

IT has been announced during the past week that the Rinderpest has broken out in the North of Ireland. The promptest measures have, however, been taken, by the slaughter of both affected and infected animals, to restrict it within the limits of its first appearance; and we may hope to witness that early extinction of the evil which Professor GAMGEE last summer promised for ourselves had it then been possible to adopt those vigorous measures for the purpose which he recommended, and which will now be applied.

The townland of Drennan, where the disease has manifested itself on three contiguous farms, is about five miles from Lisburn. According to the correspondent of the *Times*, it at first appeared in so mild a form that during five weeks its presence was not suspected, though 17 head of cattle were affected, of which eight died and the rest have been slaughtered and buried 6 feet deep, the places where they have died being disinfected with chloride of lime. A cordon of about three and a half miles radius has been drawn round the infected district. Poles with yellow flags have been erected, and constabulary have been stationed there night and day to prevent any dangerous communication. The *Belfast News Letter* states that during the winter cattle had died in the adjoining neighbourhood, one gentleman having lost as many as 15 head. At length alarm began to be excited, and some, though not all, of the symptoms of rinderpest were detected. The parties then communicated with Mr. MONON, Lord DOWNSHIRE's agent, who telegraphed to the Government in Dublin, and Mr. JENKS, a veterinary surgeon, was at once sent down. Mr. JENKS reported doubtfully, owing to the absence of some symptoms of the plague. But Professor FERGUSON, Inspector-General for Ireland, returned with him on Sunday night, and reported so positively as to the presence of the pest that the cattle affected were at once slaughtered, and the preventive measures just mentioned adopted under his direction. The owners of nine cows, killed on Monday, will be compensated out of a rate levied by the Government through the Board of Guardians, and all the cattle in the insulated district—117 head—have been valued. The owner of the estate in which the plague appeared is Mr. HUNTER, a gentleman who resides in England. Great alarm has been excited by the report of this much dreaded visitation, but the prompt and vigorous measures adopted for stamping out the plague have restored confidence, and there is now a feeling that the danger is over, so far as that district is concerned. So much of the agricultural property of the country now consists of cattle, that the prevalence of rinderpest would cause general bankruptcy.

Its first occurrence at an inland station is for the present an unexplained mystery; but the disease is being treated as if it were the result of an imported poison, and this is no doubt the proper view to take of it, notwithstanding our inability to trace its introduction.

—— The valuable paper on the meat supply of the country read by Mr. ROBERT SMITH last week before the Central Farmers' Club will be found reported at length in another page.

KNOWLEDGE, SKILL, AND TACT.

WHAT is it that a young man needs besides land of another and money of his own in order to make a living by farming? He needs agricultural Knowledge, Skill, and Tact.

As to the need of tact and "business" ability: we have now to bear the brunt of a competition for land with amateurs and enthusiasts, which has raised its value to rent greatly beyond what is its natural price for agricultural purposes. We have to contend with an extraordinary development of industry in other trades and manufactures, which has raised the price of labour far beyond what it used to be. We have to meet the world-wide competition of other food producers in the English market, thus beating down the value of much of our field produce far below those market standards which we used to try by artificial means to maintain. There are extraordinary alterations in the relative prices of our various articles of produce which must gradually lead to altered arrangements; there is business to be done, not only in the local markets, but with manure and food manufacturers in distant towns, and even with importers of English stock in different parts of the world. Is it not plain that there is unusual need and unusual opportunity in farming now-a-days for the exercise of shrewdness, tact, and enterprise?

Then as to the need of technical and practical skill; it seems to me that masters need it more than ever on the farm, and I am told of young men now taking farms, that they generally possess it less than they used to do. Our labourers work less than formerly in the groove that used to satisfy them. Of course I am not lamenting this, but only stating what I believe will be generally admitted to be the fact. The sons seek better-paid employment, and there is not so much of the old-fashioned almost inherited skill handed down from father to son on which masters could depend for the execution of their orders. The relationship between master and servant is not (at least in many districts it is not) so strong and lasting as it was; and all this makes the need of special skill on the part of the master greater than it used to be. He must be able not only to give orders, but to direct their execution, on the score of a diminished skill in agricultural labour; and still more I contend does he need this skill now than he used to do, on the ground of the greater intensity, as I may call it now-a-days, of farming.

It is because agriculture has to do with living things that there is such especial need in it of careful, skilful superintendence. Animal life needs it more than vegetable life, and either of them need it more than is required in dealing with the dead stuff of a merely material manufacture; but the progress of agriculture has been shown in the diminution of bare fallows, in the adoption of altered rotations, in the immense purchases now made of imported manures and imported foods; and all this has gone to increase the quantity of living things upon a farm. We grow more plants upon our acres than we used to do, and we feed more animals. And on this ground, as well as because of the altered relation of master and servant on our farms, there is now especial need of practical skill on the part of the young farmer. But what is the fact? I do not know anything about it here, but elsewhere I am told that land is generally being taken by young men with much less of this practical skill than used to be thought necessary.

And it appears to be the general opinion that the present generation of young men among the tenantry, to whom, on the score of general intelligence, there is generally conceded a higher social position than their fathers had, possess no such superiority as regards that professional ability or skill which now more than ever appears to be required.

Lastly, there is the professional intelligence on which this skill ought to be founded. What an immense field is open to us here, compared with what there used to be! Formerly a man's professional career as farmer was limited to the area represented weekly at the local market town. The practice which long experience had established in the district was the sum and substance of all the discussions in which he could take part. If a theorist intruded, it was generally with some lop-sided or imperfect truth which distorted his own judgment and was soon laughed to scorn by that of his practical hearers. If a strong-minded practical man, such as the late John Smith, of Bowldon, formed one of the comparatively small circle, his extension of the field of thought and of discussion was confined to the urgent recommendation of mere points of farm practice—the expedient of stifle-burning, for example; or the substitution of a six-field for a five-field rotation of crops. How is it now?

John Smith had an occasional agricultural correspondence, which remains to us, with a friend in Scotland, and he used on rare occasions, with much labour and expense, to travel beyond the county, and thereafter bring plenty of fresh material for hearty conversation with his friends at home. How is it with us? We have the penny post that gives us correspondents everywhere, the railway system which promptly takes us anywhere, and the penny daily paper that brings everywhere, as you may say, to us. It is no longer the mere farm, or parish, or market town which limits our agricultural intelligence and insight; we have the farm practice of the whole kingdom continually before us, and periodically the National Society steps from one county to another, and brings the farmers of the whole kingdom into actual converse with ourselves. Nor is this all. It is not merely all. We have now the advantage which the enthusiastic labours of men of science for at least a quarter of a century have given us, of a full knowledge being accessible of the natural properties and relations to one another of the substances with which the farmer deals. Here we come into the region which those practical men who have succeeded without this knowledge call "theory." It is no theory at all. It is as truly real and absolute and substantial truth as anything that can be dealt with by the horse and cart or butcher's scales. The relations to one another of the several kinds of material atoms of which the world is built are the subject of immutable laws which govern, whether we know it or not, the results which we gather in the harvest field and market place, as much as they do the multitude of examples where (carefully secluded from disturbing circumstances) they have been studied in the laboratory.

A large and comprehensive knowledge of these laws, and of their relations to the experience of the farmer, was not possible to those who took their farms 20 and 30 years ago. It is possible to any young man who takes a farm at present. And is it not desirable that he should have it? Is it not well that besides the mere knowledge that such and such results will follow such and such a practice in the field, a man should know *all* about it, with that completer understanding which sees the process apart from its circumstances, and distinguishes between the essential history of the case and the mere local colouring in which that history is wrapped. The practical value of this scientific knowledge has been already proved by the light which it has thrown on the action of manures and on the processes of the meat manufacture, *i. e.*, on the growth of both plants and animals. It would be easy to illustrate the advantage which such knowledge must confer upon the farmer at any length, but it is not necessary to do so here, for you have already acknowledged this advantage by the chemistry class which has been formed here, and taught during the past season by Professor Church, of Cirencester; so that this county has the honour of having led the way in the acknowledgment of the value of scientific knowledge, both by the establishment of the Royal Agricultural College, and by the formation of local classes for the study of the sciences of agriculture.

Well, then, gentlemen, I think I have stated at sufficient length the largeness of the field over which a strictly agricultural education extends. The student or apprentice must acquire in it knowledge, skill, and

tact before he is properly qualified as a farmer, and the severity of competition everywhere has made them all more necessary than ever for his success. And while I have admitted in all humility the comparatively greater importance of the preliminary general education of boyhood and youth, I may appeal to you whether, after however slight a survey of the extent of knowledge which a thorough good agriculturist requires, there is not even here, in the strictly professional training which he ought to undergo after leaving school, ample scope for that enlargement of the whole aim and mind of the man which is the best fruit of what is called a liberal education, and on which we must depend for the ultimate influence and position of agriculturists as a body. *J. C. Morton, before the Kingscote Farmers' Club.*

THE LIVE STOCK OF THE UNITED KINGDOM.

(Concluded from page 444.)

No. 3.—NUMBER OF CATTLE, DISTINGUISHING COWS AND OTHER CATTLE ACCORDING TO AGE; NUMBER OF SHEEP ACCORDING TO AGE; AND NUMBER OF PIGS, IN EACH COUNTY IN GREAT BRITAIN UPON 5TH MARCH 1866.

Counties (Proper) in Great Britain.	Cattle.				Sheep.			Pigs.
	Cows.	Other Cattle. 2 Years of Age and above.	Other Cattle. Under 2 Years of Age.	Total.	1 Year Old and above.	Under 1 Year Old.	Total.	
ENGLAND.								
Bedford	7,784	8,552	9,177	25,513	133,157	47,093	180,250	36,796
Berks	13,100	7,787	9,262	30,149	236,158	91,158	327,316	41,265
Buckingham	23,473	12,577	15,790	51,840	199,051	63,964	263,015	39,266
Cambridge	9,174	10,353	12,204	31,731	196,473	58,563	255,036	58,225
Chester	57,176	13,707	22,161	93,044	78,124	18,865	96,989	57,692
Cornwall	38,709	42,709	52,243	133,652	199,278	100,771	300,049	63,920
Cumberland	38,403	26,787	44,035	109,225	224,074	171,947	396,021	40,742
Derby	58,335	23,727	32,133	113,195	120,272	55,859	176,122	31,452
Devon	58,513	60,592	64,972	184,077	533,802	235,324	769,126	94,475
Dorset	42,398	13,845	13,759	70,002	335,310	157,313	492,623	38,676
Durham	16,693	15,955	19,672	52,322	88,954	57,742	146,696	14,140
*Essex (extra Metropolitan)	34,774	20,891	15,049	70,736	284,979	88,550	373,129	86,948
Gloucester	34,774	23,131	29,926	96,831	257,397	98,976	356,373	50,933
Hants	25,925	10,730	12,035	48,690	431,945	187,653	619,598	79,789
Hereford	19,988	19,136	26,060	65,184	184,633	72,563	257,196	25,260
Hertford (extra Metropolitan)	7,235	6,374	7,221	20,830	153,960	52,898	206,858	32,194
Huntingdon	4,313	6,626	6,728	17,667	89,401	28,429	117,821	26,662
*Kent (extra Metropolitan)	18,425	16,708	15,702	50,835	532,785	176,271	709,056	66,763
Lancaster	106,952	31,360	64,240	202,552	151,749	65,866	217,615	50,375
Leicester	20,336	32,439	27,340	80,115	203,929	86,625	290,554	23,250
Lincoln	38,938	68,606	61,750	169,294	762,961	325,243	1,088,204	91,522
Monmouth	10,472	10,851	12,432	33,755	99,818	31,340	131,158	13,132
Norfolk	24,516	39,066	28,774	92,356	405,117	191,566	596,683	115,876
Northampton	18,378	31,344	22,540	74,262	316,762	119,075	435,837	38,366
Northumberland	17,970	32,781	27,680	78,431	397,748	237,739	635,487	24,621
Nottingham	19,925	21,988	25,252	67,165	172,597	73,025	245,532	29,083
Oxford	14,479	12,475	15,181	42,135	232,334	100,970	333,304	42,372
Rutland	2,321	3,319	4,011	11,651	36,168	19,567	55,735	5,734
Salop	42,846	31,244	33,115	107,208	227,353	100,250	327,612	59,674
Somerset	84,262	45,157	44,128	173,547	461,055	175,920	636,975	75,469
Stafford	60,059	21,176	26,072	107,298	164,163	67,773	231,936	47,967
Suffolk	17,694	19,141	18,932	55,767	303,205	104,724	407,929	133,493
*Surrey (extra Metropolitan)	8,096	6,461	7,480	22,037	97,267	26,760	121,928	26,618
Sussex	26,130	25,450	23,090	74,670	348,995	136,061	485,056	42,642
Warwick	26,235	20,846	20,168	67,249	193,727	92,151	285,878	36,613
Westmoreland	21,005	10,452	23,871	55,328	165,318	59,346	224,664	7,413
Wilts	44,760	14,763	18,201	77,724	412,006	184,816	596,822	61,012
Worcester	12,464	12,206	12,505	37,175	153,775	50,379	204,154	36,686
York—East Riding, including City of York	18,536	21,060	25,213	64,809	237,816	179,037	416,853	52,589
York—North Riding	39,370	33,205	46,758	119,233	368,227	153,811	462,038	53,472
York—West Riding	41,248	64,822	189,341	363,438	136,758	500,196	72,048	
Total for Counties of England	1,268,445	939,055	1,061,747	3,269,247	10,512,791	4,482,653	14,995,444	2,032,210
Total for Metropolitan Police District	22,084	7,920	7,783	37,787	107,407	21,692	129,097	34,089
Total for England	1,290,529	946,975	1,069,530	3,307,034	10,620,196	4,505,345	15,124,541	2,066,299
WALES.								
Anglesea	12,759	8,677	13,991	35,427	23,651	10,064	33,715	17,875
Brecon	11,777	7,161	10,666	29,604	168,622	43,803	212,515	7,367
Cardigan	20,492	11,210	15,682	47,384	79,910	28,036	108,346	16,708
Carmarthen	40,367	18,828	24,711	84,106	77,927	32,368	110,295	19,339
Carnarvon	19,198	10,414	14,460	44,072	109,770	29,547	139,317	18,940
Denbigh	19,620	11,229	15,846	46,695	124,481	26,084	150,565	26,529
Flint	9,951	3,801	5,631	19,383	28,532	6,574	35,106	14,860
Glamorgan	18,820	13,421	13,670	45,911	138,868	38,616	177,484	14,335
Merioneth	13,064	8,269	12,070	33,343	185,137	49,974	235,091	7,703
Montgomery	20,983	16,342	21,353	58,628	166,651	53,590	220,241	20,865
Pembroke	17,049	7,068	24,725	48,842	45,486	18,926	64,412	21,789
Radnor	8,376	7,140	12,490	28,006	138,774	42,692	181,376	5,346
Total for Wales	222,546	133,560	185,295	541,401	1,287,809	380,854	1,668,663	191,604
SCOTLAND.								
Aberdeen	43,941	28,641	60,869	133,451	68,842	40,450	109,292	14,763
Argyle	23,434	15,031	19,366	57,831	538,714	161,907	700,621	5,792
Ayr	42,011	11,280	22,253	75,544	175,739	89,234	262,973	13,502
Banff	12,959	7,367	16,216	36,542	32,250	23,159	55,409	6,171
Berwick	3,989	5,173	6,030	15,192	165,739	87,549	193,288	8,344
Bute	3,682	1,673	2,897	8,252	23,085	11,293	34,318	1,250
Caithness	7,395	4,006	8,598	19,999	41,528	41,148	82,676	3,012
Clackmannan	825	419	860	2,104	7,139	2,329	9,468	1,261
Dumbarton	5,094	2,215	3,255	10,564	39,060	13,745	53,405	1,196
Dumfries	15,861	11,240	17,273	44,364	243,758	127,727	371,486	13,613
Edinburgh	5,999	3,291	3,723	13,013	72,351	41,128	113,479	9,609
Elgin or Moray	6,868	4,826	8,712	20,406	38,946	30,132	69,078	5,772
Fife	7,698	10,264	9,335	27,297	46,845	46,840	93,685	14,193
Forfar	9,555	7,893	11,197	28,645	101,082	55,571	156,653	14,868
Haddington	2,091	4,908	2,660	9,659	59,476	31,933	91,414	7,640
Inverness	19,691	7,912	17,731	45,334	394,638	127,368	522,006	4,588
Kincardine	6,869	5,250	9,410	21,529	28,874	12,199	41,073	4,769
Kinross	947	1,283	1,798	4,028	11,672	10,778	22,450	4,286
Kirkcudbright	10,717	11,537	12,404	34,658	178,714	92,753	271,467	10,289
Lanark	23,272	8,446	17,388	56,206	98,571	41,443	140,014	18,992
Linlithgow	3,354	1,983	2,692	8,029	10,314	12,756	23,070	3,166
Nairn	1,560	1,366	2,306	5,232	12,076	7,786	19,862	1,406
Orkney and Shetland	18,313	10,146	14,849	43,308	54,050	22,574	76,624	7,313
Peebles	2,426	1,400	2,144	5,970	88,562	37,269	125,831	1,220
Perth	21,735	17,366	27,149	66,150	363,596	131,039	494,635	17,729
Renfrew	12,566	3,195	5,752	21,513	16,434	10,069	26,503	4,354
Ross and Cromarty	16,636	7,688	11,785	36,109	218,069	75,685	293,754	8,489
Roxburgh	4,722	4,773	6,589	16,084	209,296	101,241	310,537	6,094
Selkirk	816	442	769	2,027	79,657	21,228	100,885	663
Stirling	8,091	5,346	8,049	21,486	60,189	25,912	86,392	3,673
Sutherland	5,340	2,396	3,726	11,462	37,720	26,340	164,060	1,458
Wigton	14,980	9,333	11,390	35,703	74,062	44,107	118,669	10,273
Total for Scotland	370,457	217,979	348,975	937,411	3,640,439	1,624,638	5,255,077	219,716
Total for Great Britain	1,883,532	1,298,514	1,603 800	4 785 846	15 538,444	6,509,837	22,048,181	2,477,619
METROPOLITAN COUNTIES (PROPER), INCLUDING THE METROPOLITAN PARISHES:—								
*Essex	16,599	21,737	15,974	54,310	289,057	89,648	378,705	102,677
*Hertford	8,160	6,916	8,126	23,202	162,673	53,255	217,930	34,239
*Kent	21,149	17,362	16,665	56,176	549,478	181,765	731,243	70,311
*Middlesex	9,565	4,739	3,197	17,501	56,198	6,452	62,650	14,675
*Surrey	15,163	7,600	9,273	32,036	116,588	32,952	149,540	33,710

THE CATTLE PLAGUE.

1. The following returns were issued on May 11.

These returns do not profess to give the total number of cases which have occurred in Great Britain, but only those which have been ascertained from information received at the office from inspectors. Columns 1 only record the cases reported as having commenced during the weeks indicated by the headings; "back" cases being added to columns 2.

Counties Divisions.	1 Number Attacked. Week ending April 28.	1 Number Attacked. Week ending May 5.	2 Result of Reported Cases from Commencement of Disease. Attacked.	Killed.	Died.	Recovered.	Unaccounted for.
Metrop.	47	14	7951	3470	3711	317	453
S. Eastern	1	—	4853	1681	2537	464	171
S. Midland	313	242	19,313	7439	9956	1543	375
Eastern Co.	92	74	10,972	5049	4799	770	354
S. Western	—	1	1699	614	895	208	72
W. Midland	357	275	13,666	5060	6320	1470	816
N. Midland	608	433	16,847	8910	6196	1179	562
N. Western	818	541	60,363	14,461	34,575	6638	4689
Yorkshire	203	203	33,905	7287	18,335	5920	2363
NorthernCo.	131	110	8164	4504	2556	961	143
Monmouth. & Wales	88	37	8012	879	5784	1050	299
Scotland	107	77	45,879	6143	27,144	10,583	2009
	2,765	2,007	231,624	65,497	122,718	31,103	12,306

NOTE.—11 Inspectors who reported cases last week have not reported in time for this return—viz., for the county of Cambridge, 1; Chester, 3; Huntingdon, 1; Leicester, 1; Middlesex (extra Metropolis), 1; Norfolk, 1; Nottingham, 1; North Riding of York, 1; and the Metropolis, 1.

These Inspectors returned 80 cases last week.

2. WEEKLY STATISTICS.—It is now possible to trace the course of the rinderpest in Great Britain during five months—December, 1865, and January, February, March, and April, 1866, and there appears no doubt that the disease is dying out. This will be seen by the annexed statement of the attacks brought down to May 5:—

Week ending	Current cases.	Back cases.	Total
Dec. 2, 1865	3,828	1,903	5,731
,, 9 ,,	5,356	2,129	7,485
,, 16 ,,	6,054	2,133	8,187
,, 23 ,,	6,246	1,951	8,207
,, 30 ,,	7,693	2,263	9,956
Jan. 6, 1866	7,106	1,402	8,508
,, 13 ,,	9,213	2,956	12,299
,, 20 ,,	10,041	2,801	12,842
,, 27 ,,	11,745	1,893	13,638
Feb. 3 ,,	9,153	2,299	11,443
,, 10 ,,	11,590	4,305	15,895
,, 17 ,,	13,001	5,355	18,356
,, 24 ,,	10,167	1,143	11,310
March 3 ,,	7,310	2,060	9,370
,, 10 ,,	6,518	1,745	8,263
,, 17 ,,	6,261	1,767	8,028
,, 24 ,,	4,704	968	5,672
,, 31 ,,	3,956	697	4,653
April 7 ,,	3,651	647	4,008
,, 14 ,,	2,582	1,738	4,320
,, 21 ,,	2,823	982	3,805
,, 28 ,,	2,765	988	3,753
May 5 ,,	2,007	1,060	3,067

The tendency is clearly towards the extinction of the disease. At the close of October the number of beasts which had actually died from the disease was 7912; at the close of November, 16,384; at the close of December, 41,491; at the close of January, 81,386; at the close of February, 117,664; at the close of March, 121,571; and at the close of April, 122,101. Only 530 beasts were thus permitted to die from rinderpest in April (March 31 to April 28), although the number slaughtered was considerable. Thus the total number of beasts slaughtered at the close of October was 6866; at the close of November, 10,061; at the close of December, 13,931; at the close of January, 17,368; at the close of February, 26,135; at the close of March, 48,508; and at the close of April, 62,923. While the number killed in March was thus 22,373, it fell last month to 14,415. The number which had recovered at the close of October was 848; at the close of November, 2429; at the close of December, 7045; at the close of January, 16,055; at the close of February, 26,106; at the close of March, 29,741; and at the close of April, 30,898. On the whole it may be said that the Contagious Diseases Prevention Act, 1866, has been carried out satisfactorily. *Times.*

TWO-YEAR OLDS OR THREE-YEAR OLDS?

Is it most Profitable to Sell Fat Stock rising Two-Years Old, or at Three Years Old? [The following is condensed from a report of a recent discussion on this subject in the *Banffshire Journal.*]—Mr. MACALLAN, Meikle Midmar, at a recent meeting of the Mar Farmers' Club, Aberdeenshire, said:—If the question had been raised 10 years ago, the answer would have been—"No, no; how could you feed your two-year-olds?" If it had been raised five years ago, the answer would have been "Well, you may feed your heifers; but you cannot feed your bullocks." But the answer now was—"You can feed your cattle any age, if you will be willing to pay proper attention to them." He could tell them it was profitable for the farmer to sell his two-year-old bullocks and heifers. The few gentlemen who had never passed from the good old ways of their forefathers might ask where their profits were. He would show them that it was more profitable to sell cattle at two than at three years of age; that it caused the

farmer to give steady and careful attention to the management of his stock, to make vigorous efforts to raise good and substantial crops, in order that his stock might be properly fed from their earliest days. It was profitable for the simple reasons that they could produce a much greater quantity of beef in a shorter time, and at the same expense. They saved the year's keep which was most expensive, and reaped the full benefit of the Turnip crop, while their manure was better. In feeding to sell at 2-years-old, they commence to their Turnips about the 1st of September with the whole stock, except cows and calves. They could have the most of them sold by the 1st March, and it was well known that Turnips were worth a third more before the month of March than after it. He instanced a farm capable of rearing and clearing out 10 three-year-olds. These 10 beasts could be brought to 7½ cwt. each, and would sell at 3*l.* 3*s.* per cwt., equal to a sum of 236*l.* 5*s.* The same farm would be equally capable of feeding off yearly 24 two-year-olds —they would breed 10, and buy in 14 one-year-olds. At two years old they would be brought to 5½ cwt. each, and would sell at the same rate as the 3-year-olds, 3*l.* 3*s.* per cwt., which would realise the sum of 396*l.* From this they would, however, have to deduct 135*l.*, the price of the 14 one-year-olds bought in, which left them 261*l.*, or a balance in favour of the 2-year-olds of 25*l.* The additional beasts were kept at the same expense in this way. After the 10 beasts were out two years, they each cost 5*s.* weekly; and their total keep for their third year would be 130*l.* But the beasts in their second year could be kept equally as well at 3*s.* 6*d.* per head weekly, so that they can's keep for 14 beasts would be 127*l.* 8*s.*, leaving a balance of 2*l.* 12*s.* for extra attendance, and still giving a balance of 25*l.* This saving over a 19 years' lease became a very great consideration, amounting to 479*l.* By buying 12 cwt. of beef yearly, they were able to sell 132 cwt. at two years old, instead of 75 cwt. by keeping only their own stock till three years old. Deducting the quantity bought—12 cwt.—they would still turn out 90 cwt., or 15 cwt. more than by 3-year-olds, which enabled them to pocket 25*l.* more yearly. The same farm would keep 30 year-olds at 2*s.* 6*d.* per head weekly, and leave a profit over the 2-year-olds, if the yearlings sold at say 9*l.* a head. The sooner they could feed their cattle to 5 cwt., or 5½ cwt., the more profit they would have. When they were that weight, and prime fat, any chance of profit after was one to five. Better to them to sell, and buy a stirk and feed it. He would feed beasts from the beginning, taking them off the Grass about 1st September. Give them plenty of Turnips three or four times a day, and towards the end of the season some bruised corn and oil-cake. By keeping the beasts warm and quiet, and selling them at 2-years-old, a profit of 15 per cent. would be realised over the old custom of keeping them three years.

Mr. BROWN was in favour of keeping fat stock till three years old. He thought that it would be necessary to confine themselves to the stock that could be bred on the farm, and not resort to buying in, because, if that plan were generally adopted, there would be no young beasts to sell. Before they could put off 24 two-year-olds, they would require nothing less than 16 cows at the very least; and these 16 cows and their calves would eat up more than all that grows upon any farm equal in size to that of Mr. Macallan. As a case in point, he supposed a farm of 150 acres, which would be able to feed off 12 cattle three years old. To rear these cattle with what grows on the farm he would keep eight cows, and would require to purchase four calves to make up the 12. He would have thus on the farm eight cows, 12 calves, 12 year-olds, and 12 two-year-olds: in all, 44 beasts. Every farmer would admit that it was the greatest stress they had to keep a calf the first year. He put the greatest difficulty upon the first year's keep. A cow and a calf would require more keep than a beast going three years old. Take the data mentioned before, that a two-year-old would come to 5½ cwt. In the third year they would come to 8 cwt. The 12 three-year-olds of 8 cwt., each selling at three guineas per cwt., would give a total price of 302*l.* 8*s.*, or thereby. Before he could get the same weight of beef raised by two-year-olds, he would require on his farm 12 cows, 18 calves, and 18 year-olds —in all, 48 cattle. He maintained that the four extra cows and other appendages would bring the gross consumption over that of the three-year-olds. If the 18 two-year-olds were brought up to 5 cwt., and sold at three guineas, that would give 270*l.* There would be a little more milk on the farm because of the extra cows, but it would be required to feed the extra calves. The three-year-olds had thus a gain of about 35*l.* If 24 years-old were taken upon a farm, when the three-year-olds were formerly fed, instead of keeping them to the month of March, there would not be keep for them to the month of December.

Mr. ALCOCK, West Mains, had tried the two-year-old system these two years, and he was thinking he had done wrong, as the markets were down and his beasts not ready. Two-year-olds could not be made ready for the market so soon in the season as three-year-olds. After they came to be three years old the same keep would not do with them in summer as when they were year-olds. It required a better soil and better Grass to keep them, and if they had not this, it was provoking to put on fat in winter and lose it in summer. He thought he would alter, and try between the two systems. January calves might be fed enough within the two years, but April and May calves he would keep through the summer.

Mr. DONALD, Gight, approved of three-year-olds. At the same time, he would buy in yearlings for those that did not appear to have growth in them. He would sell off the three-year-olds early in the season, and then the others would be ready to go on the Grass. He saw that their Grass never gave keep to cattle in good condition.

Mr. MATTHEWS, Muirtown, said if he had a good farm and good cattle, he would keep them three years. On small farms they could not manage to keep 3-year-old cattle, because if they were to sell them all by the month of March, where would the population get beef till the harvest was done? If beasts were not likely to grow well, he would have them ready for the market whenever they were required. If people were to get a long price for young beasts, they would turn them out and buy in year-olds. The 2-year-olds were, he supposed, paying well to those who had tried them. They might do better, however, by selling part of them at two years old, and keeping on the others—heifers—till Whitsunday. On large farms it would be like cutting green Barley to sell beasts before they were three years old.

Mr. WILKEN, Sauchen, thought there was great difficulty in keeping cattle three years on the small keep they had in their district. If they were pretty well for 2-year-olds they would require during the third year to feed them inside, or else take them very early off the Grass. They would lose fat if kept on the Grass alone during the third season.

Mr. YEOMAN, Tillyfourie, would not kill cattle two years old, as they were not ripe.

Mr. RANALD MACDONALD, Cluny Castle, thought Mr. Macallan might have pointed to some successful instance of the system which he recommended. This would have had much greater weight than a calculation, however moderate. In the course of conversation with Mr. Brown some time ago, he was told of a very excellent agriculturist in the Alford district who had his two-year-olds in very fine condition on the 1st May, and got 20*l.* for them. One of his neighbours grazed them, and kept them for seven months. From 1st May to 1st October they were kept on the Grass. They were then placed in a byre, and kept a month on Turnips. On the 1st November he began to give them 3 lbs. of oilcake per day. The beasts were sent to the November London Market, and the farmer got back 35*l.* a head for them. The very fact that the leading agriculturists in Aberdeenshire, who were allowed to be among the best breeders of cattle in the world, adopted the system of keeping their cattle till three years old, was a strong argument in favour of the system. He thought there would be a difficulty in getting a supply of young cattle to feed on Mr. Macallan's principle. Calves might be got, but they could not expect them to be of the same quality as the stock reared by themselves. As a society, their object was to improve the breed of cattle, and to distinguish by shape and symmetry those that would come to maturity earliest and bring the highest price in the market. But if they bought calves from the dairies in the south and brought them to their farms it could not be expected that they would come to the same shapes or quality, or bring the same prices in the market, as cattle reared by themselves with so much care as they usually bestowed on them. The dairymen in the south did not generally look to what they in the north called the best breed of cattle. They kept the cows that would give most milk, and it was not to be expected that they would put themselves to the trouble or expense of getting good bulls for them. If they got any kind of calves they did not care, because they sold them as soon as possible and looked for the milk. If they were to go for such calves, in order to be able to produce enough of two-year-olds, it would greatly deteriorate the breeding of cattle in Aberdeenshire, for which it is so famous. Looking at these things, he was inclined to go in for the three-year-olds. Another thing that was left out of sight by the breeder of two-year-olds was the quality of butcher meat produced. It was not nearly equal to the quality of the three-year-old beef. If the great proportion of farmers were to send their cattle to the market before it was three years old and fully ripe, they would soon, he feared, find a distinction in the price of two and three-year-old meat. It would be found that three-year-old cattle would bring more per pound in the market.

Mr. MACALLAN replied to Mr. Brown, and said that it would not be possible to expect beasts to show more proportional weight at the end of the third year than they would at the end of the first or second year. If a beast was 5 cwt. at two years it would not increase to 8 cwt. at three years; it would only increase at the same ratio as it did in the second year. He had no fear of getting a supply of stirks; they would last so long as there was money to buy them.

Mr. BROWN said that, if the rearing of year-olds for the purpose of bringing 2-year-olds to the market would pay, there would be no necessity for buying them. The fact was, that the people of London would not buy 2-year-old meat. So long as the great population in the manufacturing districts were prosperous, they might get it disposed of; but the aristocracy would not buy it. One of the best agriculturists in the world found it profitable to buy in even three-year-olds and keep them till they were four years old; and in that year they doubled their price. He had seen himself two-year-olds sold in the Inverury market for 15*l.*, and by the 1st of December following they sold for 35*l.* Three-year-olds, if they could get their mouths filled with Grass, would thrive on any farm as well as year-olds. It was notorious that, in the third year, cattle would grow more than in the two preceding years.

Mr. DUNCAN, Cluny, was for three-year-olds, because, if a beast was properly fed, he believed it could be brought in its second year to be worth 20*l.*, and in its third year to be worth 35*l.* On every farm of from 200 to 300 acres he would keep the cattle till they were three years old.

The vote was then taken, when 20 voted in favour of selling fat cattle at the age of three-years old; 7 voted for selling them at two years, and 5 were neutral.

Farmers' Clubs.

CENTRAL: *The Supply of Animal Food.*—At the late monthly meeting of this Club, Mr. R. SMITH, of Emmett's Grange, read a paper "On Increasing the Supply of Animal Food." He said:—The importance of our present discussion—"On Increasing the Supply of Animal Food"—at once points to a very open subject, every branch of which has been discussed in the abstract at previous meetings of this Club. It is now our province to discuss the main question—a question that is naturally surrounded with most valuable details; but as time will not admit of these, we must confine ourselves as much as possible to suggestive matter. This subject has been mainly dictated by the transition-state of the meat market. It is shown by statistics that the altered position and tastes of the great body of consumers have caused a consequent increased demand for meat, and that the supplies have not kept pace with the growing consumption of the country. It has even been predicted by what are styled "far-seeing men" that England is destined to become the workshop of the world—a prophecy which has seemingly gained support from the rapid increase in manufactures, and the heavy demand made upon the country population in favour of the towns. This change is worthy of notice. At the taking of the census in 1851, 580 towns were included in the record, and in that year the population of these towns and that of the surrounding country was nearly equal; but in the subsequent 10 years, while the population in the villages and country parishes increased at the rate of 6.5 per cent., the increase in the towns was 17.3 per cent. This rapid increase in the towns' population is not only verified by the advances made in manufactures and commerce, but by the unparalleled progress made in the arts and sciences by education and the more general diffusion of useful knowledge. Thus changing the habits of living has made England a new nation. Even the tillers of the soil have been drawn from their early habits to aid the commerce of the country in the barter of manufactured goods for foreign food; while the British producer has had to contend against the free importation of foreign produce, with a more costly labour sheet, and increased diseases and drawbacks in his herds and flocks. Not so with the town consumers—they have benefited by the change. With these facts before us, no one need be surprised that the supplies of animal food have not kept pace with the increased consumption. In fact, the imported supplies are the true measure of an increased demand overtaking the produce of our soil. As a result, arising from the consequent increased rate of wages now paid for manual labour to every man engaged in agriculture, we find that men of capital, with sound holdings, have called to their aid mechanical power; so as to limit the application of manual labour upon their farms; others have resorted to the practice of laying more land down to Grass; while those with uncertain holdings, and such as are short of capital, have allowed their farms to suffer. Hence the withdrawal of labour from the land, the want of permanent improvements on the part of certain landlords, coupled with the want of better security for tenants' outlays; have each had a tendency to check the production of the soil. On the other hand, we find that the landlords and tenants, with good mutual agreements for the security of tenure, have been the great pioneers in British agriculture—the very class of men who have contributed such liberal supplies of animal food to the Metropolitan Market; and this, most signally, from lands that were lying waste even in the memory of the present age.

IMPORTATIONS OF FOREIGN STOCK.

But even this change is not greater than the transition-state of the meat market. We have free imports and competition in stock from every available source, yet prices rule high. But how can we anticipate low currencies whilst the consuming powers of the people are rapidly increasing? It was always affirmed that beef and mutton were our "sheet-anchor,"—that foreigners could not provide that in any quantity; but this they have done, and will continue to do, just as easily as they send us grain. Foreign stock reach us from all parts of the Continent; but, from the beginning of December to July, mostly from Holland, Germany, France, and Spain; from July to December, from Schleswig-Holstein, Oldenburgh, Holland, and Spain. These are brought by steamers mostly built for the purpose. To show the growing importance of these imports, I supply a comparative tabulated statement of the first year's returns with those for the last nine years:—

FOREIGN STOCK IMPORTED.

	July 11 to Dec. 31, 1842.	1857–59.	1860–62.	1863–65.
Cattle	2,358*	190,730	227,022	516,688
Sheep and lambs .	513	1,360	902,614	1,841,201
Calves	—	1,661	82,530	140,214
Pigs	233	5,685	72,922	245,842
	3,304	902,435	1,315,088	2,752,945

We have thus received, during the last three years, nearly three million head of foreign stock, of which nearly one-and-a-half million were sent us in 1865! A considerable increase has again taken place during the first half of the present year. It is fair to anticipate a continuance of these increased supplies, as the growing facilities afforded by the new and projected foreign railways are brought into use; for, while they traverse vast continents of improvable land, they bring us nearer, at every stage, to the great northern supplies, as yet but little noticed. For instance, in the Steppes of

* Including calves.

Russia alone are grazed 8,000,000 of cattle annually, amongst which the rinderpest is stated to be always present, but in a mild form. These cattle are subsequently distributed over Russia proper, Hungary, and its dependencies. Some 30,000 oxen of the Steppe breed go to Poland annually—whence there are railroads through Prussia to the ports for shipment to London.

Question of Contagion.

This continuous route from the Steppes opens up the question of contagion; for, so long as we have foreign live stock imported into this country, so long shall we be liable to receive the rinderpest. As these animals are ever liable to come from, or through, infected districts, and are subsequently congregated together, either by steamer or on landing in this country, it is only fair to assume that disastrous consequences may follow, and thus neutralise the benefit to be derived from their import. It is thus important that prompt steps should be taken to prevent all foreign stock mixing with the English. They should either be slaughtered at the ports where landed, or conveyed by special trucks and trains to, and sold at, markets established for foreign stock only, under official regulations, near London, and there slaughtered at public *abattoirs*. In fact, as come they will, some such plan is imperative for the protection of the English producer. As regards the quality of foreign stock, we have only to note those sent from France and Spain; this will more naturally follow from an infusion of well-bred English animals, improved husbandry, and the consumption of artificial produce, such as oilcake, Linseed, &c., at home. Here, then, we have every prospect of an increased supply of animal food, but in the wrong direction; far better would it be if our native agriculture were so stimulated as to produce it upon John Bull's own soil, and thus keep our gold at home for reproduction. Time will not admit of our going into details as regards the home supplies of stock to the Metropolitan Market. These may be best consulted by reference to Mr. Herbert's statistical reports, in the Journal of the Royal Agricultural Society. But even these have no real bearing as regards the consumption of the metropolis, as so many animals are purchased by parties from the country. These statistics show that while the imports of foreign stock into London alone increased in the last half-year of 1865 some 195,266 head over that of 1864, we must bear in mind (apart from our present calamity) that the supplies of English stock have been decreasing every year, and becoming less adequate to meet the demand without foreign aid. As one step towards a heavier supply of meat, feeders may make the general cattle they feed good thick meat with artificials, instead of sending them to market, as many thousands have been sent, in good store order only.

Live and Dead-meat Markets.

The recent change in the Metropolitan live and dead meat market is a most formidable one, but nevertheless prompted by necessity, in which three great interests are involved—the producer, consumer, and butcher. There is, however, merit and convenience in both systems; for while a medium scheme, a balance between live and dead-meat markets, may be retained, there may be other and better ways of transacting the same business; out of this forced experiment may arise some new and comprehensive measure. I would suggest that there should in future be two distinct live-stock markets. Let the English supplies be sold at the Metropolitan Market, and the foreign stock at a new market near the London wharves. Second, let there be at each of these markets good and sufficient public *abattoirs* established for carcase butchers, that all animals may be slaughtered at the foreign stock market, and the same at the Metropolitan Market, except such animals as are bought for country consumption beyond a certain radius round London; my object being, first, to prevent the possibility of the foreign cattle being moved alive from their market; and, secondly, that the future supplies of live stock for the use of the metropolis shall be killed at *abattoirs* outside the town, in the way adopted at all the large cities on the Continent; and, lastly, that the new dead-meat market should be so constructed as to receive the increasing supplies of meat from all parts of the country.

The Cattle Plague.

While such a systematic scheme would economise food, and keep the filthy offal out of London, for the reproduction of meat, it would act as a preventive for staying the future importation of cattle plague, which has, alas! cleared London of its dairies, and extended its ravages to 36 of the 40 English counties; 16 out of 27 of the Scotch counties, and 2 out of 12 in Wales. The following table represents the total numbers that have been reported upon by the inspectors; but it is known that the Orders have been evaded in every district, and that numbers of cases have occurred, of which the inspectors were ignorant; but happily it is now on the decline:—

Date.	Total Attacked.	Total Died.	Total Killed
May 4	229,669	122,101	62,923

These are fearful returns—losses that are irreparable. But these are not the only losses, for even thousands have been prematurely slaughtered as a preventive against attack. Districts have been cleared of their fattening and growing stock; while in extreme cases whole herds, from the incalf-cow down to her latest offspring, have been sacrificed to the disease. What more, then, can be done to stay its remaining ravages? I see no other chance but that of prevention, both at home and from abroad, which is well expressed by Mr. Howard Read, who says, "From the pursuit of such considerations as these it is impossible to rise without a profound conviction that our strength and hope for the future lie in prevention. Medicine has afforded us no specific defence; isolation in a country densely populated, interlaced with a net-work of highways and railroads, and subject to strong winds, is impossible; disinfectants are not to be depended upon, and slaughter is a remedy little better than the plague itself." The county returns show that the breeding districts to the west and south-west, where cattle are but rarely imported, have been nearly exempt from the disease. Yet all breeds of cattle seem alike subject to it, but the more highly-bred or cultivated races possess less natural resistance against its attacks; those in good condition however resist it the longest. Breeders should thus adhere to those laws of nature which give robust constitutions to the rising generation. It is truly unfortunate that we possess no statistics of our native herds and flocks; had we these, we might the better understand our true position. I had hoped that the "stock census returns" would have been out by this date; however, when they are issued, not being compulsory, they cannot be relied upon.

How to Increase the Supply of Animal Food.

The practical increase in the supply of animal food depends, first, on the investment of capital to increase the fertility of the soil; secondly, on the subsequent improved rotation of crops, so as to secure a larger per-centage of cattle-food produce, with increased economy and diminished waste in its consumption; thirdly, on improved animals, with precocious habits as fattening stock, whether cattle, sheep, or pigs. It is thus as equally important to have an efficient and seasonable supply of food for every class of animal throughout the year, as it is to have a sufficiency of well-bred animals upon the farm. For such a purpose, the strong lands, which hitherto have done but little in the way of increasing the supplies of animal food, should be used during the summer months for growing green crops. This ought to be to the occupier of clay soils what the winter feeding of roots is to the occupier of light soils. Cabbages, early Turnips (sown on a stale furrow), Mangels, and Kohl Rabi may be grown on clays, the two former in time to be eaten upon the land by the end of September, and the two latter to be drawn off, stored, pulped, and used with Wheat-straw chaff. In this way all the straw which is not absolutely wanted for litter, may be advantageously eaten, and with the aid of oilcake and crushed corn, a good deal of mutton and some beef (the former pays best) may be made from the produce of those soils the occupiers of which have hitherto relied upon Wheat and Beans only. This change of system would require autumn cultivation for all the green crops, and so raise the question of efficient drainage and steam cultivation.

Sheep.

The quick return afforded by a good flock of sheep is by far the most important subject for increasing the supply of animal food. The dry soils in the more even climates are naturally the great sheep-producing districts; the sheep-fold and a succession of well-arranged green crops throughout the year, for a heavy breeding flock, being great essentials for a successful sheep husbandry. Early Cabbages and Globe Mangels have been substituted for roots on sharp soils during the last few years, and found, when eaten upon the land, to answer remarkably well. It is in the production of fat yearling sheep for the shambles, and stock lambs to be fatted by other parties, that the more lucrative branch of sheep farming lies. Happily the country is pretty full of sheep, and the late lambing season has been a very good one. The great drawback to a more general system of sheep husbandry is the wet state of so many farms, some of which do not produce a single sheep. Such a case—Sheep *v.* No Sheep—should at least draw attention to a subject where the wool alone would pay the interest for draining, and the mutton for deep cultivation—a profitable practice for all! Many of the best sheep breeders, especially upon the Downs, adopt the practice that may be worth mentioning, viz., that of bedding their sheep folds with straw. This plan has recently gained support in other districts. The straw is thus made into manure by sheep upon the land, instead of by cattle at the yards—a convenient practice during the present uncertainty of the cattle plague. Early maturity is the great aim of most sheep breeders; yet there are those who prefer growing their sheep to a larger size, especially when wanted as a working flock in connection with the Down lands. These sheep subsequently carry heavy carcases to market, and which from their age command a higher range of prices. The result of a first cross with large males and the proposed draft ewes is a singular means by which a more vigorous produce and an additional weight of meat may be supplied; but practice confirms the advantage of fattening all the produce. In brief, too much cannot well be said in favour of sheep; they are now the mainstay of high farming; only breed and feed them well, and they will repay you two-fold in wool and mutton.

Lambs and Calves.

There are many and loud objections to the killing of fat lambs, and of calves for veal. This is a new idea to those who have been congratulating themselves on killing ripe mutton at 12 and 14 months old instead of 24 months, and ripe beef at two years old instead of three and four years, to find themselves blamed for getting live stock ready for the butcher at eight and 10 weeks old. I believe the interests of the public are best served by every man doing the best he can for himself, so that the question of hastening the feeding of young stock, or feeding them at a slower rate to a greater weight, may be safely left where after all it must be left, in the hands of the individual stock-owners, each of whom will have to determine for himself how he can best turn the green crops he has grown to the largest profit. The increased demand for good rearing calves has most conclusively shortened the supplies of English veal, if the price of stock lambs does not check the fat-lamb trade. Nearly the whole of the supply of calves disposed of in the London market during the last six months of 1865 was composed of foreign importations.

Mixed Arable and Grazing Farms.

The largest returns from both "stock and corn" are derived from the mixed arable and grazing farms, such as have from one-fourth to one-fifth in pasture. Cattle form a prominent feature upon such farms. Full-grown animals (or nearly so) are mostly bought in for making rich farmyard dung during the winter months—an acknowledged costly process. That is, the animals do not return a sufficient profit to pay the difference between the manure and the oilcake bills. Yet the system goes on, and the deficit is charged to the "General Improvement Account." This spirited manure-making business can alone be carried on by men of capital. It thus points most strongly to the boundary line between the two classes of producers. Where men fatten large quantities of stock upon artificial agents, all subsequent works go on well. Not so with those who yet feed their cattle upon straw (or nearly so); for, in this case, the manure being straw, they are thus all straw together. A truer definition of the two opposite plans of arable farming and the production of animal food cannot be given. The four-field course of cropping or rather the alternate husbandry of corn and stock crops, demand attention in conjunction with the present state of the labour market, and the enhanced price of meat over that of corn.

A Five-field Course.

I therefore throw out the suggestion, with a view to increase the supply of animal food, that an additional year for growing stock-producing crops may be safely added to the four-field course. Thus, in place of the present established rotation of Turnips, Barley, seeds, Wheat, I would substitute Turnips, seeds (sown down without a corn crop), seeds, Wheat, Barley. I will now give my reasons for making this suggestion. 1st, the Turnip crop would not come round so quickly; 2d, the young seeds would be much more vigorous, and not endangered by lodged Barley; 3d, the Wheat crop would be heavier; 4th, the Barley after Wheat would be perfection, both in quantity and quality; 5th, while better straw would be grown and more stock kept upon the land, one-fifth of the labour bill would be saved; lastly, to meet a formidable objection as raised against the four-field course in some of the rich alluvial districts, there would be no limit to high farming. I may now add a favourite rider to my plan of a five-field course of cropping—viz., the better provision of suitable cattle for consuming these crops, and for making manure. I incline to the belief that, with such a rotation, safe and efficient returns may be made from a breeding stock; and thus, by increased numbers being reared upon the farm, there would be plenty to sell and but little to buy—an inviting practice. In the northern and western counties, where large breadths of well-farmed arable and pasture lands occur, the farmers breed everything; and have, so far, preferred selling their capital steers to the graziers, to the practice of feeding them. Some of the best farmers on the borders of these districts, especially in the Midlands, are also turning their attention to the breeding of stock, and this of the best description.

The Grazier.

The occupation of the grazier is the most difficult one. How they are to increase their supplies of animal food under present difficulties, I am at a loss to understand. Even their past occupations have been a precarious one, for the want of a proper supply of good lean cattle. The breeding of cattle has been too much confined to certain districts. Parties need not be afraid of over-stocking the market; do what they may, they will only stay the otherwise more ample supply of foreign stock. Again, to introduce lean foreign stock for grazing purposes, as once predicted, is a contemplation that cannot now be realised—if it ever could. Mr. Herbert, in his report of the Metropolitan Market for 1861, says—"A few ventures have been made by large agriculturists in the purchase of foreign stock, to be fatted on their land; but they have all resulted in heavy losses, and have been given up." The importation of lean cattle from Ireland has also been seriously checked of late. It is to be hoped that the Irish cattle breeders will put their Irish heifers to the bull instead of feeding them, in order that Cheshire and other districts may be again replenished with dairy stock. I hope our friends in the Emerald Isle will take a note of this suggestion. The supplies of Welsh runts to the Midlands, around Rugby, Northampton, and Market Harborough, have been pretty good. These should be encouraged—a good Welsh runt is a desirable animal, either as a grazer or butcher's beast for the London market. And the more so, as there is a growing desire amongst the best breeders of all sorts of cattle to finish their animals at home—a desire that is now being fostered by necessity. These conflicting drawbacks point most strongly to the inquiry, whether or not some portion of the stock required, even upon a good grazing farm, especially of mixed quality, could not be bred or reared in preparation for the richer lands—there to be fatted off? The nature of the grazier's occupation has so far checked his going into the breeding business; yet he is the first and boldest to declare that the breeders "have the best of it." But, after all, the real increase in the supply of lean cattle for the grazier lies in the improved cultivation and consequent production of more and better animals in those hitherto neglected districts which are by climate and natural cattle produce best adapted to their increase; districts that have been lying next to waste as regards the food of man, producing only a few miserable sheep and wretched steers. It is on these recognised practical improvements that our dependence must now be placed. No investment pays better than

permanent improvements upon a man's own land, or tenant's outlay in artificial food and manures when invested under security of tenure. I know no other safe investments in which moderate expense produces so large a result of profit as permanent improvements in land. Even the better Grass lands have not received that attention which is due to them. If farmers were to deal with Grass as they have dealt with corn, the production of annual food would soon form a more important item in the returns of a farm. Grazing with artificial food gives a return of at least 1*l.* per acre more than grazing without it.

Breeders.

The English breeders, especially of pedigree stock, have a copious business of their own; for, apart from the enjoyment of their Herd-book stories (for even thousands of select animals have already been registered in the Shorthorn, Hereford, Devon, and Sussex Herd Books), they yet hold a monopoly of the bull and select female business. These national records, as also the "Herds of Great Britain" as given in the "Farmers' Magazine," are consulted alike by the foreigner and the English breeder. The prize sheets of the Royal Agricultural Society and Smithfield Club all point to the growing importance of the established breeds, whose patrons have been the great pioneers in this branch of husbandry. All honour is due due to them; but their extensive work is yet to come. Modern cattle husbandry had been doing its work in a commendable way, in which the agricultural shows and public sales had done their part, by infusing new blood into the remotest corners of the land, where, as yet, all sorts of animals are kept; but the sad ravages of the cattle plague have stayed for awhile all intercourse of this improvable nature. When we note that the small holders of land produce as many calves as the larger breeders (yet not nearly so many as formerly), and that the dairy districts, though limited, produce about the same number, we have, as confirmed by our fairs and markets, at least one-half of our cattle of a secondary order. Here, then, we have a wide field open to us for increasing the supply of animal food.

Improved Calves.

Happy would it be if a new generation of improved calves could be produced in such districts. Landlords could not afford a more practical help to their tenantry than by sending them a well-bred, robust-constitutioned bull, to be kept about the centre of the property. Companies for the same desirable purpose might also be formed, but not at a costly issue, by introducing high-bred fancy males. The purchase of calves from the best dairy districts, where the breeders sell them directly they are dropped, is a useful practice for families who are not desirous of keeping a standard herd of cows. Further, a first-rate bull could be supplied to improve the produce. Early spring is the period adopted by the dairy farmers for dropping the calves. The month of January, above all others, is the proper time for rearing them. They thus grow on into summer weather, and are more easily and cheaply reared than as out of season of the year. The produce of a few good-milking, well-bred dairy cows, when mixed with some of the many agents for milk, Swedeswy, the essence of malt, to wit, boiled Linseed, oatmeal, &c.—form an excellent gruel for calves, to be supplemented by a little hay and artificial food. The best calves of the Cheddar district (Somerset) have hitherto been mostly sold to calf dealers for the London market, where they have been reared into the cow-keeping counties. Many of these are sold as fat cattle at two to two-and-a-half years old. Mr. Herbert, in his Dorset report for 1861, says:—"The Metropolitan Market is of late exhibited an important feature. Nearly a moiety of the stock exhibited was composed of beasts two years old. These and our best crosses come mostly from Scotland and the eastern counties." As regards dairy farming, when we reflect upon the sad clearances that have been made in the London and Cheshire dairies, as also the important change that has taken place in the supply of milk to the metropolis, it is fair to assume that dairy produce (in the absence of foreign milk, will, at least for some time to come, be in the ascendant.

Pigs.

The pig business, both breeding and feeding, has not yet received a proper share of the farmer's patronage. The pig, in his way, is an important personage. He acts as a scavenger, to convert your waste into money. As a machine for making capital manure, and as a prolific breeder all the year round, to be sold at all weights and sizes, from a sucking roaster to the bacon hog, he becomes a never-failing rent-paying commodity. I therefore see no reason why pigs should not form a substantial representative in the farm-yard, especially during the present uncertainty of the cattle plague. To parties who have already studied this business I need say nothing; but to those who ask: "Will a pig pay?" I say, consult our friend Fisher Hobbs, or read Fisher and Stearn's voluminous essays on pigs and piggeries. There is, further, the old cottage axiom, "No pig in the sty, no clock in the chimney corner."

Poultry.

The poultry department of agriculture has also been much neglected. Parties scarcely look to a change of blood, or even to the law of selection. If only a little time was given to it, they would find it a most pleasing study, and their tables and pockets would be improved thereby. No dinner or any pretensions is complete without it; and under proper management, poultry is a delicacy all the year round. We have spring chickens, and Aylesbury ducklings, then barn-door fowls and ducks, on to Michaelmas geese and Christmas turkey, finishing the season with guinea-fowl and peacock. Upwards of 20,000*l.* per annum is paid into the town of Aylesbury and its neighbourhood for Aylesbury ducks alone. Similar results are recorded of the Surrey Dorking fowls; while 364 millions of eggs reached this country from the Continent in 1865. Since the establishment of poultry shows, a great increase has taken place in the weight of poultry. Ducks now weigh oftentimes from 5 lb. to 7 lb. each, fowls from 7 lb. to 8 lb., geese from 14 lb. to 20 lb., and turkeys from 18 lb. to 24 lb.

Fish.

To show the importance of fish as a supply of food to the metropolis, it has been roughly estimated that this supply is equal to the cattle; for, while London consumes 300,000 cattle annually, which, at an average of 6 cwt. each, would amount to 90,000 tons of beef, there are 80,000 tons of trawled fish alone annually sent to the London market.

Rabbits.

The importation of rabbits is another branch of foreign food that has to be paid for with English money. Can we do anything in this way, by means of rabbit-warrens, as in olden times? There must be lots of dry and banky waste lands that would "rabbit;" and, if blended with the fresh-egg and poultry business, it might be well worthy of a "limited liability company."

Waste Lands.

The late Mr. Pusey told us, as far back as 1848, that while England and Wales contained about 37 million acres, and Scotland and Ireland about 20 million each, there were in the United Kingdom 29 millions of acres lying waste, one-half of which might be improved. These are startling figures, at a time when England requires more food, and is paying other countries for it, instead of improving her waste lands, to grow it at home. This is a subject with which I am practically familiar; and I fearlessly assert that a great national benefit would be derived from a proper report being made of these waste lands, setting forth their several capabilities for improvement. We must not overlook the fact that our rapid increase of population and wealth is going on upon a fixed area of land, an island, and that it is one of the obvious physical objects—the increase of population, that the proportion of land to each person diminishes. This suggest is well worthy the consideration of the Journal Committee of the Royal Agricultural Society, if not of the English Government, at this present crisis, for increasing the home supply of food for the people. Had we but a responsible Minister of Agriculture to watch over our interests and to express our thoughts, there might be a ray of hope for such a consummation, as we are now placed, we have no hope at all.

Economy.

Economy, in agriculture, is a most important means by which an increased supply of animal food may be attained, the greatest of all being the increased fertility of the soil resulting from a liberal investment of capital, under security of tenure, the fixed payments of a farm, such as rent, rates, and taxes, being the same; while, on the other hand, nothing can well be worse than the waste of capital where tenants are "farming in and farming out." There is economy in a good education; for, while a proper knowledge of the "natural sciences" is essential to enable persons to see easily and correctly to understand the principles by which Nature's laws are governed. There is marked economy even in well-formed animals, as improved machinery at the farm factory, where the animal best suited for the conversion of the boiler being akin to be consulted. We are told by our scientific and mechanical friends that we are to look to the boiler question as a certain means to a certain end, viz., for "getting up steam" at a cheaper rate. As a simile it is familiar to all, that no animal machine is shown to such advantage as the fat sucking calf, foal, pig, or lamb, the true result of Nature's fuel, "mother's milk" direct from the tap. When removed from milk, their after progress is entirely regulated by the treatment they receive from man, whose foremost study should ever be how to best preserve this calf or lamb flesh as a foundation upon which to build his future structure. If Nature's steam is turned off abruptly, the fire put out, the animal machine becomes idle, and, as a consequence, time (money) is not only lost by the machinery being thrown out of gear, and hence liable to rust (disease), but a costly consumption of fuel has to be employed, to put it to work again. When done, it does not pay nearly so well as if the animal boiler had been doing steady work from the commencement, for a quick run in at last, to win the produce stakes with "early maturity." There is also economy in assimilating the flesh-forming feeding stuffs to the varied requirements of this machinery, viz., the requirements of all animals according to their age and progress towards the shambles.

Barley and Malt.

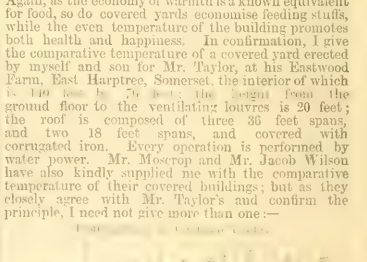
There is economy in the use of malt for the same purpose; for, apart from the Government scheme as practised through learned professors, to show that malt is not so good a fuel as Barley for the animal furnace, they do admit it to be "an excellent condiment,"—mark! not coal but excellent coke. Now, if we could only get plenty of Government coke (condiment) to mix with our refuse coal (inferior farm produce), or "sweet wort" to give our calves, I think we should be able to prepare some pretty good feeding stuff, for increasing the supply of animal food. I have not read the two statements prepared by Professor Lawes by order of the Chancellor of the Exchequer, and for this reason: I had quite enough of Dr. Thompson's book "On the Food of Animals," written for the Government in 1856, who smartly enough traced the comparative fattening properties of Barley and malt upon two Ayrshire dairy cows, and weighed their milk. This is the sort of data the Doctor arrived at:—"When placed on crushed malt and hay the brown cow receded from 33½ lb. of milk to 29½ lb. for the 15 days, while the white cow gave 35½ lb. against 33⅛ lb., being a difference of 3⅞ lb. between the white cow and brown, and *not* the food." At page 43, the Doctor qualifies this glorious trial (upon which the Chancellor's decision has been formed) thus:—"This brown cow had seen the bull two days before her arrival, but without the requisite effect, as she displayed occasionally considerable irritability, wildness of eye, and other well-known symptoms." The real result being, that these two dairy cows were diametrically opposite in condition and periodical habits, the white being in-calf, while the brown was not!

Mechanical Appliances.

There is especial economy in well-devised mechanical appliances to save manual labour on a farm, but especially in steam cultivation, to supplant the major part of the horses engaged in agriculture. It has been shown by Dr. Playfair that a horse consumes daily as much flesh-forming food as would maintain seven labouring men. The motive power of the steam-engine is coal: the motive-power of the horse, food from the land, is spared for man's use, apart from the valuable aid to be derived from deep cultivation, and the certainty of getting on the land at different seasons. The crowded periods of horse labour are so reduced that a smaller number of horses will suffice for the annual work of the farm. To show the full force of this horse-labour subject, and its especial bearing upon the consumption of farm produce, I may name that Mr. Colquhoun, in the year 1812, estimated the consumption of the 1,800,000 horses then employed at 27,117,136*l.*

Covered Yards.

There is both economy and comfort in covered yards as modern factories for the better conversion of farm-produce into meat and manure. For such a purpose the buildings should have proper height, and well-arranged ventilation, so as to maintain a uniformity of temperature, the interior being fitted agreeably with the system to be adopted in the production of animal food. If for a breeding stock (their best use), the different grades of animals must be so located as to enjoy themselves for the profitable performance of their progressive work. For instance, the cows having done growing would be placed in stalls to economise space, the fattening animals in warm boxes, the young growing stock would run loose in the centre yards, and the juniors would be placed in suitably arranged calf-pens; in the immediate vicinity of which are well-arranged root, chaff, meal, and mixing-houses, which by their concentrated position afford an economy of labour, food, and supervision well worth having. Again, as the economy of warmth is a known equivalent for food, so do covered yards economise feeding stuffs, while the even temperature of the building promotes both health and happiness. In confirmation, I give the comparative temperature of a covered yard erected by myself and son for Mr. Taylor, at his Eastwood Farm, East Harptree, Somerset, the interior of which is 140 feet by 76 feet, the height from the ground floor to the ventilating louvres is 20 feet; the roof is composed of three 36 feet spans, and two 18 feet spans, and covered with corrugated iron. Every operation is performed by water power. Mr. Moscrop and Mr. Jacob Wilson have also kindly supplied me with the comparative temperature of their covered buildings; but as they closely agree with Mr. Taylor's and confirm the principle, I need not give more than one:—



1866		Temp.	Temp.	Temp.	Temp.	Temp.	Deg.
February 27	9 A.M.	45	42	41	40	41	37
..	.. Noon.	45	43	42	40	41	37
..	3 P.M.	45	44	42	40	41	37
..	9 P.M.	36	36	36	36	36	36

Day weather cold and wet.

The water inside the building was 4 warmer than the supply-pond outside. These returns confirm the principle of ventilation upwards by showing a gradual temperature. The above statement was accompanied by a letter from the herdsman, which I give verbatim:—

"We have now 162 Beasts of all ages in the new building; they do much better than the cattle at the open yard and shed, and eat a lot of less food. Then in the shed and yards too hot, and the place wants ventilation. Although all the steers were fat alike, those that came to feed through the best. The sun will be now done well he will never catch the other. Covered yards are the right to save food. The cattle and food are all close together, which one won't eat another will; nothing is wasted, and it is so quiet than, pulping the roots and mixing them with the chaff. The best of all is, they don't eat waste by the stoppins. Their coats are so white, and they are so comfortable in the yards. Does like food like cattle on Grass in the summer time, and don't take near so much litter as the open yards. The carters like it, for their horses do capitally. I am so glad the pigs are not inside the covered building."

Time prevents my going into details, but these may be mainly supplied by consulting Mr. Bailey Denton's capital paper on "Covered Homesteads," read before the members of this Club in May last. There are also prize and other essays on the subject in the recent Journals of the Royal Agricultural Society, which will be read with much interest and profit to those who are contemplating the erection of new buildings, or transforming their old ones. I fear my very open and suggestive subject has exercised me on two long, yet I cannot conclude without expressing the hope that the law of production as dictated by "security of tenure" may become the rule and not the exception of British

agriculture, and that more general and substantial attention will be given to the breeding and feeding of every branch of stock, not alone to replace the ruinous carnage that has taken place in our native cattle, but as a certain and profitable means of increasing the future supplies of animal food.

The Discussion.

Mr. L. A. Coussmaker, of Westwood, Guildford, said he wished to make a few observations on the subject of that evening's discussion, which he considered a most important one—the production of as much food as possible for their stock. But of late the question had arisen where they were to get the stock to consume the food. What they wanted to do was to combine the two things—to get the stock, and then to feed them; in fact, to raise as much stock as they could on their farms. They were, however, very differently situated in that respect, for scarcely any two men's farms consisted of the same description of land, and there were alterations on all farms. They should endeavour to ascertain how each one on his farm could raise the most stock. Everybody was aware that there had been great difficulty in getting stock during the last few months, and he did not know how the graziers had been able to supply themselves. Men who occupied arable farms, and who had trod all their straw into manure, and consumed all their last year's roots, must get rid of their stock in some way; but in consequence of the cattle plague, although the graziers wanted stock, there was a great difficulty in the transfer of stock from sellers to buyers. He thought that too much importance could not be attached to the system of breeding; and it was most desirable to see whether they could not combine the breeding of stock with the fattening of stock. He had himself, thank God, escaped the cattle plague, although it had been violently raging in his neighbourhood. In August and September they had lost in his parish 270 head of cattle. He believed that one of the causes of his escape was that he had not for years bought any stock. He bred at one end and fattened at the other, and he never bought or sold except to the butcher, beyond the single fact of buying about once every two years a yearling bull, for the sake of change of breed. One animal of that kind could easily be isolated and prevented from bringing any infection among a herd. By breeding their own stock at one end and fattening it at the other they had at once the breeder's profit and the grazier's profit. It might be said that they had also both the losses, and that was no doubt true; but, at all events, they could thus depend upon themselves, and not upon the markets, and they were not so liable as they otherwise would be to such calamities as that by which so many farmers had been visited during the last year. Having got their stock, the next thing was to provide food for that stock. They wanted to have as much stock as possible, and they must have food for it. It was no use to have large supplies of food at one time, and to have none at another. His endeavour always had been, knowing what stock he had, to have a sufficient supply of food for it all the year round. The climate of this country enabled them to produce so many roots and Grasses that with a little management they could, he believed, accomplish that object. Discussions had been raised with respect to the value of different kinds of roots—of Turnips, Swedes, Mangels, &c. He thought they should look at their value at different seasons and under different circumstances, so that they might have early Turnips in the early autumn, Swedes in the winter, and Mangels in the spring. He did not know what they should do without Mangels, and he was at a loss to imagine how people had been able to get on without them formerly. There was always an interval between the time when Swedes began to get leathery and sapless and the early Grasses came in; but Mangels most fortunately supplied the want which then occurred. He believed that Mangel Wurzel was a German product and a German word, and that it meant in that language "The root of scarcity," and it well deserved that appellation. Mangel Wurzel continued good up to the summer; it was never worth much until decidedly after Christmas, but in the spring, and on to the very height of summer, it was invaluable. When Mangel Wurzel failed they had Tares and Rye and other articles. A succession of food for the stock on a farm was of the utmost importance, and it had a special bearing on the question they were then discussing—how they could produce the greatest quantity of food for their cattle; not the greatest quantity at any particular time, but an even supply of food all the year round. He believed that if they bore that fact in mind, and if they would breed their own stock, they would be enabled entirely to fulfil the object which was that evening brought under their consideration. Those were his views on the subject, and he felt convinced that if they were carried into effect they would be productive of great advantage to farmers and to the country at large.

Mr. James Howard, Bedford, was a young farmer, and his experience was almost entirely confined to clay lands. He started farming, believing that there was nothing like growing root crops for the consumption of cattle during the winter. But he had not been many years farming before he found that that principle might be carried too far, and that a man could not commit a greater mistake than to attempt to raise very large quantities of root crops on clay lands. There was great difficulty and expense in getting them off, which, coupled with the injury that was done to the land in carting them, was really more than the crop was worth. He believed that the best mode of raising food for stock was growing Tares, Rape, and early white Turnips, so as to get the green crops consumed in the summer months, or by the middle of October, and not to be under the necessity of putting stock on the land until the following March. He felt convinced, from his own short experience, that that was the best course to be pursued on clay lands.

Mr. J. Wood, Ockley, Hurstpierpoint, Sussex, thought Mr. Smith's paper deserved more attention than they could bestow upon it that evening. It contained many suggestions which might possibly lead to some improvements and facilitate the attainment of the end they had then in view—an increase in the production of meat for the growing population of this country. Mr Smith started what appeared to him to be rather a new theory with respect to the rotation of crops, but he did not see why that theory should not be carried out. He meant the theory of taking all their white straw crops together, and all their green crops together. The suggestion that they should sow seeds without a green crop was certainly very novel. (A cry of "No.") It was very novel, at all events, so far as crops of Clover and such articles were concerned. (A renewed cry of "No," and "Sussex.") His experience had certainly been rather confined to Sussex, but he had seen other counties, and he had not found that course adopted in them. On the stiffer lands they had to apprehend the danger of raising what were called "cuckoo" Oats—that was to say, Oats sown after the cuckoo came, about the middle of April, which were necessarily a very poor crop. He had consequently often sown spring Wheat as late as the 4th of May, and he had obtained nine sacks to the acre. He wished Mr. Smith had pointed out the time when they ought to sow their seeds. As to food for stock in summer, Tares and plenty of oilcake were very well; but what, he would ask, was to succeed them? He always found that late-sown Tares came to nothing, and that he only got Tares fit for feeding when he sowed them in the autumn, and even then he should sow them early. He had been induced to supersede them by Swedes, Turnips, and other products of that description, and he found that that answered his purpose last year in the difficult position in which they were all then placed. If they could adopt Mr. Smith's plan of sowing seeds after root crops, they need not be so much afraid of injuring their land by getting the root crops off it, as if ploughed in time the frosts would bring it right for a seed bed. In listening to Mr. Smith's paper he had hoped to have learnt something about the best means of wintering lambs on heavy farms. Last winter his sheep had so many cricket-balls hanging to their bellies that he was obliged to get a man to crack them; and from the continuous wet weather he was at last obliged to fold them on Grass land, which he considered to be better than getting them in upon straw. He quite agreed with Mr. Smith that what would tend most to benefit the community as regarded the supply of meat was for every farmer to consult his own individual profit. That was a point which should always be borne in mind by the members of that Club; for by it they would thus become farmers, and at the same time render greater service to the country. He had hoped that Mr. Smith would tell them how they might increase their stock of poultry. He had heard a good deal of late about the production of poultry in France, and the enormous number of eggs sent to this country. He had endeavoured to improve his own poultry, and with that view he gave *3d.* a head to the henwife for all that was sent to market; but he was not satisfied with the result. He was told that in France there was a system of boiling up dead horses for the purpose of feeding in some cases as many as a thousand hens that were confined to a certain space. He could never get the full particulars, but he believed that a sort of mess was made up with the soup, and that the hens were then fed upon this food, and that this caused them to lay many more eggs than they otherwise would do. He could never get any profit out of his poultry; nor did he believe that any farmer who had much land derived profit from that source. He was told that some people living in towns made a great profit by keeping hens, but for his own part he did not believe farmers generally could obtain any profit. In all such matters, however, it was of course necessary for farmers to adapt themselves to the position in which they were placed.

Mr. James Thomas said: Last time he read a paper before that Club he went at length into the question of laying arable lands down to Grass under a green crop, and he pointed out the method of proceeding which was now universal in the southern part of Scotland and the northern part of England, near where the two borders met—namely, laying Grass down with Rape during March, April, and May. The effect of this was that in the autumn, very soon after the Rape was eaten off, there was a quantity of young Grass seed to feed off, and the benefit was seen in the following year and for years after. He believed that where a great object in view was to increase the quantity of meat to supply the markets, it would be found that no plan was so good as that of laying Clover down with a green crop, like Rape or Cole seed, and afterwards breaking up the land when it had been laid down for two or three years continuously with white straw. To enter fully into the question of increasing the supply of animal food would require a very long discussion, but he had risen simply to explain to Mr. Wood what he conceived to be the best way of laying Grass down so as to produce a larger amount of food for sheep. The problem how they might produce the largest amount of mutton had, in his opinion, been solved in Lincolnshire and Gloucestershire, for he did not believe it possible to produce a larger quantity than was produced at the present time in the Wolds of Lincolnshire and on the Cotswold Hills. Keeping Grass down for two or three years consecutively, when it was laid down judiciously, must be better for the production of mutton than the old four course system.

Mr. J. A. Williams (Baydon, Hungerford) said he thought Mr. Smith had answered the question raised by the terms of the subject as stated on the card by suggesting the adoption of the five course instead of the four course system; and now that the Wheat crop was positively not worth growing—the public, and not the farmers, benefiting by the growth of Wheat—it became a question whether the system may not on all light lands be generally adopted. Under the five course system they might save a good deal as regarded artificial manure, the manure being produced in the shape of the extra green crop. Another question was how the green crop was to be produced. There were many ways in which it might be done. As regarded what Mr. Thomas recommended, he would like to know what became of the Rape root after the Rape had been eaten off. The roots would not be extinguished when the crop had been eaten by the sheep.

Mr. Thomas: You should not leave it too long; you should try and get it off early enough.

Mr. Williams continued: There were seasons in which it might be very advantageous to put Italian Rye-grass with Rape to a moderate extent for feeding. He had seen two or three instances this season; in fact, he had himself had recourse to that system, and he believed that even oilcake was not superior in its effects to Rape and Italian Rye grass when the Rape was in bloom. The present season had been favourable for that system. He found it answer well to take in the first place a crop of Peas. Harvest them as early as possible, you will have the Peas and fodder for the feeding of cattle; then plough and cultivate well for Rape, drill it in with plenty of manure, and sow 1 bushel of Italian Rye grass seed per acre, and then in the spring they produced the crop which he had mentioned. This year he meant to feed it off again, and then he would let the land become fallow for Wheat. Mr. Campbell, of Buscot Park, had also sown Italian Rye-grass without a corn crop, with the exception of 2 bushels of Oats per acre; and he believed it was a practice to cut the crop for hay in the first year. He got very good Rye-grass under those circumstances. Another peculiarity under Mr. Campbell's practice—he (Mr. Williams) could not say whether it would answer or not, but he hoped that it would, as great expense was incurred—was that, in order to grow twice or thrice the usual quantity, nitrate of soda was used to an enormous extent, and irrigation was about to be largely resorted to.

Mr. T. B. Dring (Claxby, Spilsby) thought that while some farmers might usefully follow Mr. Smith's recommendations, there were others to whom it would be dangerous to attempt to produce more animal food than they were doing. He agreed with Mr. Smith that there was a large acreage of land that ought to produce four times the amount of animal food that it did; and especially was that the case in Suffolk, where there was a large quantity of mixed and free soil on a tenacious clay bottom that was well adapted for roots, but so full of water that roots could not be grown, or if they can grow, could not be fed off. In such cases it would generally be found that the occupier had not sufficient capital to drain the land so as to bring it into a proper state for growing roots; and capital was required also to cover the land with stock when it had been drained. How that impediment was to be overcome he did not know, the difficulty being increased in many cases by the fact of the land having been in the occupation of the same family for a very long period, and that the landlord, though he would not turn out the tenant, would not advance capital for improvements. As regarded rabbit warrens, he would observe that what Mr. Smith said on the subject seemed well worthy of attention. There were some places where rabbit warrens might be kept with advantage, and others where they certainly ought not to exist. They ought not to exist in the Lincolnshire Wolds, but when he was a boy thousands of acres of land in Lincolnshire consisted of rabbit warrens; and he knew instances in which the breaking-up of a warren had greatly benefited the land, and led to a large production of corn. An old friend of his exported some rabbits from Maidenwell to a mountainous part of Wales, and two or three thousand acres of hilly land were occupied by rabbits with great advantage to the owner.

The Chairman thought the system of variation was better than the one advocated by Mr. Coussmaker, of that of every man breeding his own cattle and feeding them. Those who lived in the west would have a difficulty in increasing their animals for want of sufficient straw, which was required not only to feed stock, but also to litter it in winter. As regarded sheep, where they were kept to too large an extent, the liability to disease was increased, and he believed that the losses among sheep, of which they heard last autumn, were owing in a great degree to their having been kept too thickly on the land. Graziers now complained that young stock were fed so well by the breeders that they could not improve them. He thought the best way of obviating that objection would be for the graziers themselves to improve their mode of management. It would not do to say to the breeders, "You must not keep your animals so well; you must go backward rather than forward." But he thought it was very possible for the graziers so to improve their management as to keep young animals up to the mark when they had bought them in a good condition. Those who bred and fed their own cattle had no difficulty in getting them fattened at two years old; but when breeders wanted to sell them at a year old, graziers refused to buy them, on the ground that they were of no use to them—that they could do nothing with them. That implied that breeders ought to keep their stock in a poor condition. A similar remark applied to sheep. He really did not see how there was to be a division of labour unless the graziers in the Midland counties kept animals better. The case was similar as regarded those who lived further east, and winter fed. It was found there that more profit could be got out of old animals; but they were getting scarcer, he believed, every day. As regarded early maturity, while on the one hand it was said that it ought to be encouraged, on the other hand it was argued that they should not consume animals as lambs and calves. Why, it seemed to him that that was the essence of early maturity. A friend of his had sold lambs lately at *45s.* a-head. Surely that was early maturity. And as long as people would give such a high price for lamb and veal, it was the place of farmers to supply the public with them. As regarded the course of farming, he thought that as the time had come when meat-growing paid much better than corn growing, it became them to consider how they could grow green crops to greater advantage. It was seven years ago since the five-course system was first advocated in that Club. In 1859 Mr. Owen Wallis read a paper, recommending—not indeed what Mr. Smith had recommended that evening, but the five course system—the growing of two grain crops after the green-crop, and then seeds. The tillage lands had now got into such fine condition, that no seed crop could grow, if sown after the root crop with the first crop of corn, but it was easy to substitute two Grass crops for that course. He found great benefit after Turnips were eaten off by sheep in the growth of Mangel Wurzel. In his moist climate, Mangel Wurzel would not grow unless it were cultivated very highly indeed, and he had found that the best mode of growing it was by sowing it after the Turnip crop. It had been remarked that the sowing of Grass immediately after the corn crop was not new, but he thought it was new in connection with the ordinary five-course system. Mr. Smith recommended that Grass land should be manured and improved, so as to enable it to support an increased quantity of stock. Now, that was a rather difficult matter. It was easy to improve arable land by means of artificial manure, the use of which, in that case, would pay; but, in the case of Grass land they must use farm yard manure, and it was difficult to increase the supply. As to pigs, he must say that he had found them very useful animals. No animal seemed to him to pay better for what he received than his friend the pig, and the manure was valuable.

Reviews.

Steam Cultivation: Facts of Interest to the Farmer, by John Fowler & Co. Revised and Amended by William Smith, of Woolstone, Bletchley Station, Bucks. W. Kent & Co., Paternoster Row.

We do not believe in great commissions for the investigation of truth. That is better ascertained by individual students. A single investigator, travelling from spot to spot, and making his inquiries without excitement or display, will, if he be properly equipped by experience and impartiality, do more than a company of men can do, to ascertain the real truth, whether about steam cultivation or any other agricultural subject, even though the latter come armed with all the authority which, as representatives of a National Agricultural Society, can be given to them. And the resolution of the Council of the English Agricultural Society, which will, no doubt, be heartily sanctioned by the general meeting next week, to investigate steam cultivation, not by means of public trials, but upon the farms of of those who have adopted it, must be warily carried out, or it will mislead and fail. A formidable travelling commission or committee will not gain access to the minds of individual cultivators, though freely admitted to their farms, so readily and perfectly as a single skilful inquirer would. And the value of self-interest tends so much to quicken the apprehension and the skill of the reporter—that the report, say of Mr. Smith, as representing the Woolston plan on the one side, and of Mr. Greig as representing Fowler's system on the other, would, we believe, be more valuable to intending purchasers of steam cultivating machinery than that of a body of thoroughly impartial commissioners will be.

The book before us contains the criticisms of Mr. Smith on reports presented to Messrs. Fowler (the reports themselves are also given in full); and marked as it is not only by the talent and energy but by the strong personal conviction of its author, the oldest steam cultivator in the country, it is a capital contribution of the kind which the Society desires.

We make two extracts, one of Mr. Prout's report to Messrs. Fowler, and the other of a passage in which Mr. Smith points out why it is that steam cultivation does not extend so rapidly as it should:—

"*From Mr. J. Prout, Sawbridgeworth, Herts.*

"November 29, 1865.

"For the first two years I gave you the particulars and result after using your 14-horse engine, with the 4-furrow and subsoil ploughs, also the scarifier; and I have now, after four

years' experience, the satisfaction of giving you as favourable a result as the most sanguine could desire.

"This will be at once apparent when I tell you that, during the four years and three weeks since I first commenced with the steam plough, it has been in constant use every day when the weather would permit its being worked to advantage, except about three weeks in each year during the time of harvest; and now for the first time during the whole period I have laid up the engine, and shall not again require it until after next harvest, having completed on the 16th instant all the ploughing for my spring crops and roots, except a few headlands and one small field to be ploughed by horses. In my former statement I have given you the number of horses employed, that number being 8, and this number I have not increased by purchase; but, from the quantity of hedgerows taken down and the necessity for deep ploughing the same to make way for the steam plough, this, together with carting coals for engine, a great number of drain pipes and gravel for making new roads, has caused me, upon an average, to employ two additional horses, making together 10 really employed for the four years. Now for the future. Upon the 15th of this month we finished drilling 223 acres of Wheat, and, previous to this, 32 acres of Tares were sown, making together 255 acres; and from this it will be seen that more than half of my farm is now in crop, and the only work required for the above land from the horses will be, to horse-hoe the Wheat in the spring, and also to drill in and hoe the spring crops at the proper season, and this I consider we shall be able to do with five horses. So convinced am I upon this that I have offered for sale three horses out of the eight, reducing my number to five: thus it will be observed, including those hired, that the reduction in horses for the future will be from 10 to five, and as my land is now clean I shall in future abandon dead fallows—therefore I anticipate for the future that 60 days with the steam plough will accomplish all that I require, and the importance of being able to do this immediately after harvest is well known to every heavy land farmer.

"The following is a statement my bailiff has prepared, which will give you some idea of the work done, and its cost —

Working Expenses each Day.

	£	s.	d.
Engine driver	0	5	0
Ploughman	0	3	2
Anchor-man	0	3	2
Three porter boys	0	3	6
Man and horse for water cart	0	4	0
Coals and oil	0	15	2
	£1	14	0

Class of Work.	Width of Implement.	No. of Acres.	Depth in Inches.	Days at Work.	Quantity per Day.	Working Expenses each Day.	Cost per Acre.
	Ft. In				A. R. P.	£ s. d.	s. d.
Subsoiling .	1 10	280	14 to 15	87	3 2 3	1 14 0	9 8
Digging .	2 6	193	10 „ 11	58	3 0 12	1 14 0	6 8½
Ploughing .	3 4	712	8 „ 9	199	3 0 16	1 14 0	4 9¼
Cultivating	6 0	581	8 „ 10	47 12	1 17	1 14 0	2 9
		1775		267			

"You will see that no notice has been taken of repairs, this item not being sufficiently large to make any material addition to the cost per acre. You will also observe that no charge has arrived at gives ample room for reasonable charges for wear and tear, interest, &c.

"Messrs. J. Fowler & Co."

The following is the concluding paragraph of Mr. Smith's summing up:—

"Here we may fairly ask, How is it that this valuable and expeditious assistance has not been more generally adopted?

"The main part of the case rests with the landlords of England. They have not suitably arranged their farms, by placing the buildings at a point where the corn can be carted, either at once or at twice, at the least labour and cost. 'Oh, but,' say they (buttoning up their breeches pockets), 'we have.' They have not. Look north, east, south, and west, you may see 99 farms out of every 100 where such arrangements have not been made. 'Oh, but,' say they (buttoning up their breeches pockets again), 'we wanted to get locomotive engines and tackle to do it upon the contract plan. It answered for threshing, we hoped it would for ploughing, especially if we could get the old plough to go. We have been trying at the latter ever since the Chelmsford Meeting, and for the former ever since the Warwick Meeting.' The contracting men's evidence is dead against the old plough, for, according to the Messrs. Smith and Lungford, the plough gets 173½ acres against 1050 acres to the cultivator. Mr R. T. Smith also cultivated 690 acres. Mr Nicholls says nothing about the plough, but praises the cultivator, and did 1200 acres. Mr. Hill cultivates 569 acres, and ploughs and digs 528 acres. Messrs. Gozney & Co. cultivate and dig all—1117 acres, and Mr. Brown cultivated all—1194 acres. Mr. Richardson in three years did 106 acres of digging, 527 acres of ploughing, and 4022 acres of cultivating. The total of these are—dug 106 acres, ploughed 1228 acres, cultivated 10,113 acres;" a plain proof that though they have got it ploughed, it is not appreciated.

"The evidence against the locomotive engine and contract system is now quite as heavy as against the plough, and Mr. Hutchinson has done good service to agriculture by bringing out his comparative statement, and so have John Fowler & Co. by bringing the case up from the court below. But they say they did not wish to "institute comparisons." Why not? Because they know that the evidence is against them. We all make comparisons. We buy and sell in the market by comparison, and the best and most judicious buyer or seller gets the best off. The steam-plough prizes have all been awarded upon cut-and-dried comparisons. Then why should not the work done by steam-cultivating tackle, as to cost, &c., be compared? It is right to compare it. The public want to know all about it: they do not want to be kept in the dark. John Fowler & Co. wishing to keep them in the dark, is positive evidence against the locomotive tackle. I am now discussing the matter openly and fairly. The evidence is complete, and I will now leave it to the lords of the soil to give in their verdict."

We are glad to learn that Mr. Algernon Clarke and Mr. Howard Read are the secretaries to the Commission which the English Agricultural Society is about to issue for the investigation of English agricultural experience in steam cultivation. They have both already amply proved their fitness for the office, by many years' work of the kind which will now devolve upon them.

Miscellaneous.

Rinderpest in Man.—The *Macclesfield Courier* speaks of a farmer near Leek in North Staffordshire who had lost some cows, and was fully persuaded that he had himself been attacked by the epidemic. Forthwith he consulted his own medical man, who tried to laugh him out of the notion, but to no purpose. The farmer then went off to an old well-known practitioner, who, being a bit of a wag, and seeing how matters were, entered minutely into the details of the case, expressed his concurrence with the patient's views, and told him he could cure him. He then wrote a prescription, sealed it up, and told the farmer to go to a certain druggist in the next pottery town. The farmer lost no time in going with the prescription, but was somewhat startled when the druggist showed him the formula, which ran thus:—"This man has got the cattle plague; take him into the back yard and shoot him according to Act of Parliament." There is no need of saying that this was a "perfect cure."

Cattle Plague in Cheshire.—The losses through the cattle plague have been so heavy in Cheshire that the justices for that county have found it necessary to take advantage of the borrowing clause of the Cattle Diseases Act. They decided, at the recent general court of quarter sessions, to borrow a sum not exceeding 300,000*l.* to meet the claims for compensation—a charge which the chairman estimated would amount to 350,000*l.* by the 15th inst.

Calendar of Operations.

MAY: *Dairy Operations.*—The following, relating to the work of May, from the pen of a Gloucestershire dairywoman, is one of a series of papers communicated by her to the *Agricultural Gazette* many years ago:—

The work of the dairy can now be conducted with regularity. The calves not being expected to interfere with it, as in all well-regulated dairies they are now old enough to do without much milk, and the cows having the advantage of pasturage, the cheese is expected in this month to be of prime quality. If any of the cows should be late calving, their milk should not be used for cheese for at least a fortnight, new milk always having a tendency to make it heave. Cheese is now made twice a day. The cheeses pass through three presses in order, advancing a step in their progress at each meal or making, till at last, in four or five days, they come out of the presses, and are put upon the shelves. They are generally salted 24 hours after they are made, though this is done by some at the end of 12 hours; the cheese after this is returned to the vats and put under the press, care being always taken, according to what has been said, to put the newest cheese lowest in the press and the oldest uppermost. The brine, which drops from it when in the last press before it is taken out and placed on the shelves for drying, is quite clear; the quantity is small, and it ought to be put into the rennet-jar perhaps every two or three days, which keeps up the quantity, and is thought an improvement to the cheese.

When the cheeses are taken from the salting-presses they are put on shelves in the dairy for a day or two, where they are turned once in 12 hours. They are then taken to the cheese loft to make way for the new ones. In the cheese-room they are turned once every day; and in general in a month, or less in dry weather, from the time they are taken out of the vat, they are ready for scraping. This is accomplished with a common knife, first dipping the cheese in a wet flannel, and must be done carefully all over the cheese so as to take off the roughness that may be left upon it from the cloth or any other cause, leaving it quite smooth on the surface and sharp at the edges; the sooner this can be done the better. In order to get cheese into a state of forwardness for the factor, it will only require wiping round the edges and an inch within them once a week after this scraping; and it should be turned over twice a week, or even oftener in damp weather. Care should be taken to allow the blue coat to remain on the top of the cheese; this blue coat is considered a sign of richness by the factors. In some districts it is customary to paint the outside of the cheese with Indian red: this should be mixed with warm water to a thin paste and rubbed on with a piece of flannel, and should be done immediately after the cheese is scraped, before any grease arises upon it, and the same treatment should be adopted as if not painted. In most cases it is better to postpone making thick cheeses which weigh about four or five to the cwt. till at least the month of June.

Notices to Correspondents.

RATS.—*Destruction of.* The following is a somewhat ludicrous calculation on the idea that there are one rat and 10 mice per acre in the country. The vermin amount thus to 91,116,000 rats, which would consume 182,232 bushels of corn daily, or 4,157,167 quarters and four bushels in the half year, namely, 182 days and a half; and this would supply 5,831,424 people with a 2-lb loaf, each daily for 6 months, or 2,915,712 people daily with a 2-lb. loaf each the year round.

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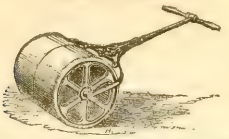

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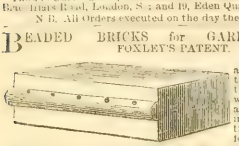

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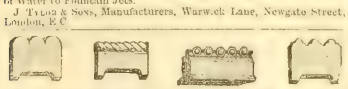

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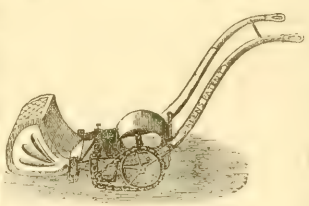

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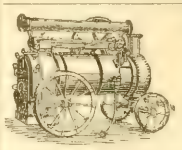

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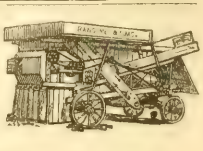

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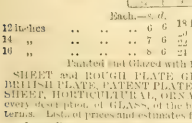

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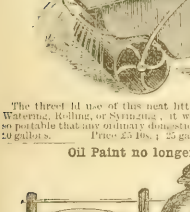
THE IMPROVED PATENT GARDEN WATER and ROLLING ENGINE may be had at J. Dean's, the Sole Manufacturer, 17, Exmouth Street, Clerkenwell, London, N.

The Patent Inlet of this neat little Machine must be obvious in Watering, Rolling, or Syringing; it will throw about 60 feet, and is so portable that any ordinary domestic may use it. It contains about 20 gallons. Price £5 10s. 1 25 gallons, £6 10s.

Oil Paint no longer Necessary.



HILL AND SMITH'S PATENT BLACK VARNISH for preserving Iron Work, We oil, or Stone. This Varnish is an excellent substitute for oil paint in all outdoor work, and is full two-thirds cheaper. It may be applied by an ordinary labourer, requires no mixing or thinning, and is used cold. It is used in the grounds at Windsor Castle, Kew Gardens, and at the seats of many hundreds of the nobility and gentry, from whom the most flattering testimonials have been received, which HILL & SMITH will forward on application.

From RICHARD HEMMING, Esq., *Bordesley Park, Worcestershire.*

"Gentlemen,—I have great pleasure in stating that I highly approve of your Black Varnish, as a substitute for paint for farm buildings, farm doors, gates, and especially when the wood has been previously painted in the usual way a few years before; in this particular case it leaves a very nice glazed surface, than which nothing could be better. The same observation also applies to ironwork of every description, such as iron hurdles, &c. The Wrought-iron Barrow with apparatus for heating gas tar has been found most useful, and as great a convenience as I consider it that I shall beg you to send me another, as well as a cask of the Black Varnish, for the use of the property which I have in Warwickshire. Please to send the whole by the same conveyance as before."

Sold in casks of about 20 gallons each, at 1s. 6d. per gallon, at the Manufactory, or 1s. 8d. per gallon put to any Station in the kingdom.

Apply to HILL & SMITH, Brierly Hill Iron Works, near Dudley, and 22, Cannon Street West, E.C., from whom only it can be obtained.

International Horticultural Exhibition.

JOSEPH NEWTON, 30, Eastbourne Terrace, W., Landscape Architect, asks the favour of those contemplating Improvements to INSPECT the Collection of PLANS and MODELS exhibited in Classes 238 and 242.

Destroy your Insect Pests.

PRESERVE YOUR PLANTS and TREES.
YOU MAY EASILY DESTROY ALL PLANT PESTS,

RED SPIDER	GREEN AND BLACK	ANTS
MEALY BUGS	FLY	SCALE
THRIP	AMERICAN BLIGHT	MILDEW,

Without injury to the most delicate Plant or Tree, by using

FOWLER'S GARDENERS' INSECTICIDE, pronounced by all who have used it to be far superior to any other remedy. One trial will prove its efficacy. Testimonials forwarded on application.

Price 1s. 6d., 2s. 6d., and 10s. per Tin. Orders amounting to 20s. carriage paid. Wholesale and Retail.

GEO. & THOMAS FOWLER, North Street, Brighton.

TO BE DISPOSED OF, a HORTUS SICCUS, containing about 500 species Dycotyledonous: 120 species Monocotyledonous (Palmaceæ); 170 species Monocotyledonous (commenced); 100 species Acotyledonous (Filices), of Indigenous English Plants, unmounted.

Apply by letter to H., Post Office, Ryde, Isle of Wight.

International Horticultural Exhibition Sale.

MR. J. C. STEVENS begs to announce that he will include in the above SALE a fine collection of NEW CALADIUMS, exhibited by M. Boen, of Paris.

More detailed particulars in Catalogue.

International Horticultural Exhibition Sale.

MR. J. C. STEVENS begs to announce that he will include in the above SALE a choice Collection of NORTH AMERICAN PLANTS, including several rare species, exhibited by Mr. R. M. Stark of Edinburgh.

More detailed particulars in the Catalogue.

International Horticultural Exhibition Sale.

MR. J. C. STEVENS begs to announce that he will include in the above SALE several valuable Collections of rare CONIFERS, STANDARD HOLLIES, ORNAMENTAL EVERGREEN SHRUBS, &c., exhibited by Messrs. G. Jackman & Son, of Woking.

More detailed particulars in the Catalogue.

International Horticultural Exhibition Sale.

MR. J. C. STEVENS begs to announce that he will include in the above SALE a Collection of ORNAMENTAL PLANTS and SPECIMEN FERNS exhibited by Mr. W. Brown, of Edinburgh, including many fine specimens.

More detailed particulars in the Catalogue.

International Horticultural Exhibition Sale.

MR. J. C. STEVENS begs to announce that he will include in the above SALE a choice Collection of Specimen AZALEAS, ACACIAS, ALLAMANDAS, BORONIAS, ERIOSTEMONS, EPACRIS, PLEROMAS, &c., exhibited by Mr. Fraser, of Lea Bridge, N.E.

More detailed particulars in Catalogue.

International Horticultural Exhibition Sale.

MR. J. C. STEVENS begs to announce that he will include in the above SALE some magnificent ARAUCARIAS and DACRIDIUMS exhibited by Mr. William Bull, of Chelsea.

Charming objects for the Conservatory, and can be obtained on application to Mr. J. C. STEVENS, Auctioneer & Valuer, 38, King Street, Covent Garden, London, W.C.

International Horticultural Exhibition Sale.

MR. J. C. STEVENS begs to announce that he will include in the above SALE a large Collection of magnificent ORCHIDS, STOVE and GREENHOUSE PLANTS, &c., including many of the finest Plants in this Kingdom, exhibited by Mr. J. Watson, of New Zealand Nursery, St. Albans.

More detailed particulars in the Catalogue.

International Horticultural Exhibition Sale.

MR. J. C. STEVENS begs to announce that he will include in the above SALE a large Collection of magnificent HARDY DECIDUOUS TREES and SHRUBS, Hardy Climbing Plants, New Roses, Specimen Hollies; Standard, Zonale, and Variegated Pelargoniums, &c., &c., also the finest Collection of rare Specimen CONIFERS, exhibited by Mr. William Paul, of Waltham Cross.

More detailed particulars in Catalogue.

Sales by Auction.

Orchid Sale next Monday. Important Notice.

MR. J. C. STEVENS begs to announce that the CHOICE ORCHIDS imported by Mr. J. LINDEN from Ecuador and Columbia, will be SOLD on MONDAY next, May 21, as at first announced, and not on the date given in the *Gardeners' Chronicle* of last Saturday.

The Plants will be on view this day and Morning of Sale, and gentlemen who are unable to attend may rely upon having their commissions faithfully executed by Mr. J. C. STEVENS, Auctioneer and Valuer, 38, King Street, Covent Garden, W.C.

Choice Imported Orchids from Mr. J. Linden's well-known Collectors.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY, May 21, an importation of extra fine ORCHIDS from Ecuador and Columbia, among which are the true and splendid Cattleya maxima, Odontoglossum Hallii, citrosmum, suave and cordatum, pulchellum, crispum, cirrhosum, vexillarium, Druhenii, macranthum; Odontoglossum hastabulum, Lehia Wallisii, Trichocentrum albo-purpureum, Oncidium longipedunum, and a great variety of other valuable Orchids from Mr. J. Linden's Collectors, and for Sale without reserve.

On view the Morning of Sale, and Catalogues had

International Horticultural Exhibition.

MR. J. C. STEVENS has received instructions from the Executive Committee of the International Horticultural Exhibition at South Kensington, to SELL by AUCTION, in the Building, during the Season of the Exhibition, the following days (Sundays excepted) any PLANTS, COLLECTIONS of PLANTS, HORTICULTURAL IMPLEMENTS, &c., that the owners may be desirous of disposing of during the days of the Exhibition.

Mr J. C. STEVENS therefore solicits that all persons intending so to dispose of their Plants, will immediately furnish him with a Descriptive List for insertion in the Catalogue.

Terms and Catalogues may be had upon application to the Auctioneer, 38, King Street, Covent Garden, W.C.

Important Sale of Plants at Claremont, Surrey.

BY ORDER OF THE TRUSTEES OF HIS MAJESTY THE LATE KING OF THE BELGIANS.

MR. J. C. STEVENS begins to announce that he has been honoured with instructions to prepare for SALE by AUCTION, at Claremont Gardens, Esher, Surrey, on MONDAY, June 4, and following days, at 1 o'Clock precisely each day, without reserve, by order of the Trustees of his Majesty the late King of the Belgians, the Choice and Select Collection of STOVE, GREENHOUSE, and GENERAL-FOLIAGED PLANTS, consisting of fine Specimen Palms, Camellias, Orange Trees, Indian Azaleas, Rhododendrons, Ferns, Epacris, Aucuras, Pot Roses, Dracænas, Gardenias, Abutilons, Cereus, Cyanophyllums, Marantas, Begonias, Caladiums, Anthuriums, Gloxinias, Achimenes, Pimeleas, Pleromas, Oxylobiums, Cytisus, Conifers in pots, Leschenaultias, French Geraniums, &c.; and a large assortment of Bedding-out Plants, Fruiting and Succession Pines, Vines, &c

On view the Friday and Saturday prior, and Mornings of Sale, and Catalogues had of Mr. J. C. STEVENS, Horticultural Auctioneer and Valuer, 38, King Street, Covent Garden, London, W.C.

Dr. Lindley's Scientific and General Library.

MR. J. C. STEVENS begs to announce that he has been favoured with instructions from the Executors of the late Dr. Lindley to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, May 30, at half-past 12 o'Clock precisely, without reserve, the MISCELLANEOUS and GENERAL LIBRARY, being the portion not taken by the Royal Horticultural Society, including many very valuable works elegantly bound; also, a MICROSCOPE, and many Miscellaneous Articles, being a portion of the Effects of the late Dr. Lindley.

On view the Day prior and Morning of Sale, and Catalogues had.

To Tulip Fanciers and Others.

MESSRS. PROTHEROE AND MORRIS are instructed by the Executor of the late Mr. J. F. Holmes, to SELL by AUCTION, on the Premises, Vine Cottage, New Hampton, Middlesex, on MONDAY, May 21, at 1 o'Clock precisely, the whole Collection of Choice TULIPS, including many of the best named varieties, procured regardless of expense from celebrated growers, and a large stock of their Seedlings of the late Mr. Groom's, and from other well-known strains. Also the Tulip Stage, named and with Oak supports and Cases, a Tulip Cabinet, Show Boxes, quantity of Iron Hoops, &c.

May be viewed the Saturday previous and Morning of Sale. Catalogues may be had of the Auctioneers and Valuers, American Nurseries, Leytonstone, Essex, N.E.

Lower Norwood.

CLEARANCE SALE of the GREENHOUSE, BEDDING PLANTS, &c.

MESSRS. PROTHEROE AND MORRIS are instructed by Mr. A. James to SELL by AUCTION, on the Premises, Tivoli Nursery, Lower Norwood, on TUESDAY, May 22, at 1 o'Clock precisely, without reserve, the ground being immediately required for other purposes, the whole of the valuable GREENHOUSE and BEDDING PLANTS, including the choice miscellaneous assortment; also four newly-erected Span-roof Greenhouses, one Lean-to Greenhouse, Brickwork, Flues, Ranges of Pits, Boxes, a Gig (nearly new), and sundry effects.

May be viewed two days prior to the Sale, and Catalogues may be had of the Auctioneers and Valuers, American Nurseries, Leytonstone, N.E.

Mile End Nursery.—Annual Sale.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, on the Premises, Mile End Nursery, Bow Road, Middlesex, E., on WEDNESDAY, May 23, at 1 o'Clock precisely, about 15,000 BEDDING PLANTS, consisting of very handsome Show, Scarlet, and Variegated Geraniums, Calceolarias, Verbenas, Heliotropes, Petunias, Lobelias, Cuphea, Pyrethrum, Gazania splendens, Perilla, and other plants for bedding out; also Ornamental Rustic Flower Baskets, Tables, 20 dozen Painted Dahlia Stakes, &c.

May be viewed prior to the Sale. Catalogues had on the Premises, and of the Auctioneers and Valuers, American Nurseries, Leytonstone, N.E.

N.B. One Sale only will take place this season.

Choice Bedding and Greenhouse Plants.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, at Sand's Graceehurch Street, City, E.C., on THURSDAY, March 24, at 1 o'Clock precisely, a choice Collection of GREENHOUSE PLANTS, including fine Azalea indica, Show and Fancy Pelargoniums, Scarlet and Variegated Geraniums, Cinerarias, Roses in pots, &c., Hybrid Rhododendrons, Kalmias, Hairy Calceolarias, &c., with a large variety of ornamental Bedding Plants, &c.

On view the Morning of Sale. Catalogues may be had at the Rooms, as above, and of the Auctioneers and Valuers, Leytonstone, E.

Hampstead Road.

IMPORTANT SALE OF THE WHOLE OF THE BEDDING AND GREENHOUSE PLANTS, &c.

MESSRS. PROTHEROE AND MORRIS are instructed by the Executors of the late Mr. Thos. Pearson to SELL without reserve, the well-established Hampstead Road Nursery, opposite the Oval, Farm Station on the North London Railway, on MONDAY, May 28, and following day, at 11 o'Clock each day, the whole of the valuable GREENHOUSE and BEDDING PLANTS, consisting of Camellias, Azaleas, Gardenias, Hydrangeas, Cytisus, Myrtles, Daphne, Orange Trees, Deutzias, Aloes, Roses in pots, Ferns, Orchids, &c., &c. Also about 5,000 BEDDING PLANTS, including quantities of fine-grown Scarlet, Pink, Variegated, and Zonale Geraniums, Pelargoniums, Heliotropes, Verbenas, Calceolarias, Fuchsias, and many other varieties, too numerous to specify in advertisement. A quantity of very fine Mignonette, Climbers, &c., together with the whole of Greenhouses, Pits, Boxes, Sheds, Brickwork, Thousands of feet of Hot-water Piping, Boilers, sundry Lights, two Iron Rollers, Hand Glasses, Garden Pots, and sundry utensils in Trade.

May be viewed prior to the sale. Catalogues, when ready, may be had on the Premises; and of the Auctioneers and Valuers, American Nurseries, Leytonstone, Essex, N.E.

Sunbury, Middlesex.

About 60 Acres of valuable Freehold Land, fronting the main road from Staines to Kingston, situate about half-a-mile from the Sunbury Railway Station, eligible for Building, Market Garden, or Accommodation purposes.

MESSRS. DEBENHAM, TEWSON, AND FARMER will SELL at the London Tavern, on TUESDAY NEXT, May 22, at 1 o'Clock, in 16 Lots, varying from 3 to 10 Acres each (unless previously sold as a whole), the first portion of the ASHFORD MANOR ESTATE, which is Freehold, land-tax redeemed, and forms the fine, affording eligible sites for the erection of superior Residences or moderate-sized Villas, being situate in a favourite and healthy locality, within half a mile of Sunbury Railway Station, and only two miles from Ashford Station on the South-Western Line; also valuable as Market Garden or Accommodation Land. The Soil is Gravel. Each Lot has an important Frontage to a capital Road, and there are numerous good houses in the immediate neighbourhood.

Particulars of MESSRS. COVERDALE, LEE, COLLYER BRISTOW, & WIGNALL, Solicitors, 4, Bedford Row, W.C.; and the Auctioneers, 80, Cheapside, E.C.

Exeter, Devon.

FREEHOLD LAND, WITH RESIDENCE; BUCKERELL VILLA AND NURSERY GROUNDS, THE PROPERTY OF THE LATE MR. VEITCH.

THESE celebrated GROUNDS, with the excellent DWELLING-HOUSE and numerous other Buildings, will be offered for SALE by AUCTION, on the Premises, on TUESDAY, June 12 next, at 3 o'Clock in the afternoon precisely. The property will first be put up in One Lot, and if not sold will be immediately offered in Five Lots.

The House, which has been recently built of Limestone, in the Elizabethan Style, and is in exceedingly good repair, is approached from a handsome entrance Lodge and Carriage Drive, and is surrounded by beautiful Shrubberies and Pleasure Grounds, constituting a most substantial and Comfortable Residence; it comprises Entrance Hall, Dining, Drawing, Morning, and Breakfast Rooms, Water Closets, Kitchen, Back Kitchen, Pantry, and other Domestic Offices, ample Cellarage underneath, two Staircases, four best Bed Rooms, two Dressing, and two Servants' Bed Rooms, &c., the Whole replete with useful Fixtures, Back Yard, Wash and Coal Houses, Stables, Coach Houses, and Offices. The plan of the building has been so arranged as to admit of enlargement at a trifling expense.

Beside the pleasure Grounds there is a very substantial and comfortable 12-roomed Dwelling House, lately occupied by Mr Veitch, and with Workshop attached, a Gardener's Cottage and Stable, and extensive Coaching-houses, with Granaries over, Cart Sheds, Yards, and other Buildings, long ranges of Brick Walling, a Magnificent Camellia House, ornamental Temple, Ponds, &c.

The Nursery Grounds, which comprise about 23 Acres, and were most tastefully laid out by the late Mr Veitch at an enormous expense, with the existing buildings, admirably adapted for an important Gentleman's Residence, are well stocked with Fruit Trees, and with Specimens of Rare and Ornamental Trees and Shrubs, Walks, Fish Ponds, &c. Should the property not be sold in One Lot, the Lottings will be so arranged as to afford facilities for the erection of Villa Residences, for which there is now a great demand in the neighbourhood.

The Land is situated in the parish of Heavitree, within one mile of the City of Exeter; it is of first-rate quality, has a southern aspect, commands beautiful and extensive views, is approached by excellent roads, and is plentifully supplied with water. It is within the Parliamentary borough of the City of Exeter, but is exempt from all its local rates and taxes. Immediate Possession may be had.

Particulars and Plans of the Lottings will be ready one Month prior to the Sale, and may be obtained of Messrs. GRIMSTONE & HEAD, Solicitors; or of Messrs. DYMOND & SONS, Surveyors, Exeter.

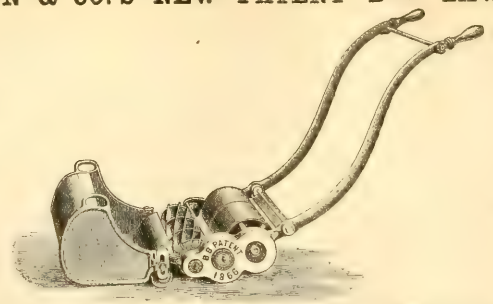
J. B. BROWN & CO.'S NEW PATENT B B LAWN MOWER.

PATENTEES AND SOLE MANUFACTURERS,

J. B. BROWN & CO.,

148, UPPER THAMES STREET,

LONDON, E.C.



GUARANTEED TO GIVE

PERFECT SATISFACTION,

AND IF NOT APPROVED OF

MAY BE AT ONCE RETURNED.

J. B. BROWN AND CO. having so very successfully introduced, at the Meeting of the Bath and West of England Society at Hereford in June 1865, the NEW PATENT B B LAWN MOWER, of their own manufacture, and having executed their numerous orders up to the present time, with most unqualified satisfaction, they are now actively executing further orders for the present season,—and, owing to the large number of orders already received and constantly coming in, it is most important that orders for delivery this season should be sent in *as early as possible*.

The *Hereford Journal*, dated June 10th, 1865, thus notices this NEW MACHINE:—"MESSRS. BROWN AND CO. are well known in connection with the best Lawn Mowing Machines—these very useful and now almost indispensable Machines, which save so much labour and at the same time so much improve the appearance of the Lawn. Messrs. BROWN show a New Lawn Machine of their own manufacture, which attracted much attention on account of the compact arrangement of its parts, and light elegant appearance, and neat workmanship. It is worked by means of well-made geared or toothed wheels, which we believe to be more desirable than the use of chains, which are found to stretch and break so frequently, and cause much trouble. The working of this New Lawn Mower is light and silent, and we have no doubt it must become a great favourite."

This NEW PATENT LAWN MOWER combines all the latest improvements in Lawn Mowing Machines, being simple in construction, very light, silent in movement, easily worked, and so strong and durable as to be literally unbreakable,—an all-important feature in Machines of this class; the ordinary cast-iron being entirely done away with, and malleable iron substituted in all breakable parts, and every part being numbered and accurately made to standard gauges. The workmanship and finish are also of a superior character; the entire Machine being quite equal to a revolution, so to speak, in Lawn Mowers. The Machines are all guaranteed to give perfect satisfaction in every respect.

The NEW B B PATENT LAWN MOWER is Manufactured by J. B. BROWN AND CO. on their own Premises in London, under their personal superintendence.

PATENT B B HAND MACHINE.

PRICES—Including Carriage to any Railway Station or Shipping Port in England, with the necessary Tools and Directions for use.

10-inch Machine	£3 10 0	*Easily Worked by a Boy.*	
12-inch Machine	4 10 0		
14-inch Machine	5 10 0		
16-inch Machine	6 10 0	*Ditto by a Man.*	
18-inch Machine	£7 10 0	*Easily Worked by a Man.*	
20-inch Machine	8 0 0	*Ditto by Two Men.*	
22-inch Machine	8 10 0		
24-inch Machine	9 0 0		

If with Brass-mounted Grass Box, 5*s*. extra.

PATENT B B HORSE MACHINE.

PRICES—Complete, without extras, including Carriage to any Railway Station or Shipping Port in England, with the necessary Tools and Directions for use.

42-inch Machine	£28 10 0	*Drawn by a Horse.*
36-inch Machine	24 10 0	
30-inch Machine	21 10 0	*By a Horse or Strong Pony.*

PATENT B B PONY and DONKEY MACHINE.

PRICES—Complete, without extras, including Carriage to any Railway Station or Shipping Port in England, with the necessary Tools and Directions for use.

30-inch Machine	£17 10 0	*Drawn by a Pony.*
28-inch Machine	16 10 0	
25-inch Machine	14 10 0	*Drawn by a Donkey.*

New Improved Horse, Pony, and Donkey Boots, wholly of Leather, as follows:—Horse Boots, 24*s*.; Pony Boots, 21*s*.; Donkey Boots, 16*s*. per set.

*** *Every Machine sent out is warranted to give ample satisfaction, and, if not approved of, may be at once returned.*

The NEW PATENT B B LAWN MOWER has already been patronized by Her Majesty the QUEEN, for the Royal Gardens at Windsor Castle, Osborne, Kew, and Hampton Court; by His Royal Highness the PRINCE of WALES, for Sandringham; and by His Grace the Duke of SOMERSET, the Right Hon. the Earl of DERBY, the Right Hon. the Earl of CHARLEMONT, and numbers of the principal Nobility and chief Landed Proprietors in the Kingdom. This Machine has also been selected by Merchants for the execution of their orders for export to the Continent, and to Egypt, India, Australia, Natal, and other countries, and by a large number of the most respectable Ironmongers, Nurserymen, and Seedsmen in various parts of England, Scotland, and Ireland, many of whom have applied for special Agencies, and are now ordering Machines for immediate delivery.

AGENTS IN IRELAND—MESSRS. THOMAS McKENZIE & SONS, 34, Dawson Street, Dublin, and Camden Quay, Cork.

AGENTS IN VIENNA—MESSRS. CLAYTON, SHUTTLEWORTH, & CO., who are exhibiting the Machines at the Vienna Show this season.

TESTIMONIALS.

From the Hon. P. ASHBURNHAM, *Sherrifold Park, Frant, Sussex, March 7, 1866*:—"My gardener was very well satisfied with the working of the B B Mowing Machine."

From Mrs. PRICE, *Hagley Villa, Lugwardine, Hereford, August 18, 1865.*

"I have much pleasure in informing you that the Mowing Machine [a 14-inch B B] I ordered from you at the Bath and West of England Meeting, held in Hereford, has in every respect given the greatest satisfaction, and I am very much pleased with it."

From W. H. APPERLEY, Esq., *Withington, near Hereford, August 14, 1865.*

"The New B B Lawn Mower I purchased of you has now been frequently used by my Gardener, and he is perfectly satisfied with it. It does its work well. I shall feel pleasure in recommending your Machines."

From GEORGE MCRAE, Esq., *Mitcham Common, Surrey, September 27, 1865.*

"I am very pleased with the Lawn Mower I had from you [a 14-inch B B Machine]. It is certainly the most compact one I ever saw, and does its work well."

*** *Every Machine sent out is warranted to give ample satisfaction, and, if not approved of, may be at once returned.*

J. B. BROWN AND CO., OFFICES, 18, CANNON STREET, CITY, LONDON, E.C.

WAREHOUSE and MANUFACTORY, 148, UPPER THAMES STREET, E.C.

OPPOSITE the CITY of LONDON BREWERY, and close to the LONDON BRIDGE STEAM BOAT PIERS.

Editorial Communications should be addressed to "The Editor." Advertisements and Business Letters to "The Publisher," at the Office, 41, Wellington Street, Covent Garden, London, W.C.
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THE GARDENERS' CHRONICLE

AND

AGRICULTURAL GAZETTE.

A Newspaper of Rural Economy and General News.

No. 21.—1866.] SATURDAY, MAY 26. {Price Fivepence. {Stamped Edition, 6d.

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ROYAL HORTICULTURAL SOCIETY.—The EXHIBITIONS will be HELD on THURSDAYS, viz SUMMER EXHIBITION, June 14; and the ROSE SHOW, JUNE 28.

Schedules may be had on application. Admission on June 28, by Fellows' privileged Tickets, to be bought prior to the days, 3s. 6d; Public, 5s; or on the Day, 7s. 6d. Bands at 3.30.

ROYAL BOTANIC SOCIETY'S GARDENS, Regent's Park.—SECOND GENERAL EXHIBITION of PLANTS, FLOWERS, and FRUIT, WEDNESDAY, June 6. Tickets to be obtained at the Gardens, and of the Society's Clerk, Austin's Ticket Office, St. James's Hall, by Vouchers from Fellows of the Society, price 5s., or on the day of Exhibition 7s. 6d. each.

JOHN WATERER'S AMERICAN PLANTS will be Exhibited in JUNE.

BOSTON FLORAL and HORTICULTURAL SOCIETY.—The FIRST EXHIBITION will be held in Major Hopkins' Park on THURSDAY, June 21.

For Schedules, &c., apply to the Honorary Secretaries, Mr. W. H. Bailey, Solicitor, Boston; Mr. Ion Cocks, West Skirbeck Nursery, Boston.

BRIGHTON and SUSSEX FLORICULTURAL and HORTICULTURAL SOCIETY.

The THIRTEENTH ANNUAL SUMMER EXHIBITION will be held, by permission of the Town Council, on the Eastern Lawn, and in the entire suite of ornamental decorated rooms of the Royal Pavilion, on WEDNESDAY and THURSDAY, June 27 and 28, and the AUTUMN SHOW, September 12 and 13, on the same grand scale as in former years.

Schedules of Prizes can be had on application to the Secretary, 96, St. James's Street, or E. Spary, General Superintendent of the Exhibitions, Queen's Graperies, Park Street, Brighton.

May 12. Edward Carpenter, Secretary.

THE ANNUAL GRAND FLORAL HORTICULTURAL EXHIBITION of FRUIT, FLOWERS, and VEGETABLES, will be held at Sleaford on THURSDAY, July 19, 1866.

Frank Warwick, Secretary, North Road Nursery, Sleaford.

CLAY CROSS HORTICULTURAL SOCIETY.—The NINTH ANNUAL SHOW and FETE, under the patronage of His Grace the Duke of Devonshire, and others of the Nobility and Gentry of the neighbourhood, will be held at Clay Cross on TUESDAY the 31st of July next. Amount of the Premiums £354. Schedules and Forms of Entry may be obtained on application to J. Stollard, Hon. Sec., Clay Cross, near Chesterfield.

ROYAL HORTICULTURAL GARDENS.—PERMANENT EXHIBITION of HORTICULTURAL ELEGANCIES, and HORTICULTURAL and AGRICULTURAL IMPLEMENTS. Amongst the Articles may be quoted the Coalbrook Dale Co., Messrs. Rosher, Weeks, Green & Son, Hooper, Naylor & Co., Braby, Patent Concrete Stone Co., Whitwick Colliery Co., Clive & Houghton, Patent India Rubber Co., Tucking Bros., Mellship & Harris, and about 30 others. There are still a few advantageous positions vacant, applications for which should be made early to

Mr. Fox, Royal Horticultural Gardens, South Kensington.

Notice.

MESSRS. WATERER AND GODFREY beg to state the AMERICAN PLANTS at KNAP HILL are NOW in GREAT BEAUTY; they are this year finer than usual.

The Knap Hill Nursery.

Roses in Pots.

PAUL AND SON, in addition to the NEW ROSES of 1866, can offer fine Plants of the finest TEA-SCENTED NOISETTES and best HYBRID PERPETUAL ROSES in pots for Planting during present and next month.

Old Cheshunt Nurseries, N.

CASTLE KENNEDY FIG.—Plants of the above may now be had at 10s 6d. and 21s. each; usual discount to the Trade. Peter Lawson & Son, Edinburgh and London.

NEW STRIPED-LEAVED JAPANESE MAIZE.—Nothing in the way of Foliaged Plants can exceed the gracefulness and beauty of a group of three to five Plants of this variety of Zea. In 4s. and 2s. 6d. packets.—Imported by Butler & McCulloch, Covent Garden Market, W.C.

J. IVERY AND SON beg to announce that their DESCRIPTIVE PRICED CATALOGUES of AZALEA INDICA, HARDY BRITISH FERNS, ROSES, CONIFERÆ, GRAPE VINES, and SEEDS, may be had on application at their Woking Nursery.

Greenhouse, Hardy and Stove Plants; Agricultural, Flower, and Vegetable Seeds, &c.

ROBERT PARKER invites inspection of his Collections of the above-named, which have been selected with the greatest care. All plants are clean and healthy, and are offered at reasonable prices. Descriptive and Priced Catalogues are published, and will be forwarded to applicants.

Exotic Nursery, Tooting, Surrey, S.

Prize Calceolaria, &c.;

BUTLER AND McCULLOCH beg to offer Seed of the above, saved only from flowers of great beauty, 1s. and 2s. 6d. p. pkt. CINERARIA (James's), extra choice, 1s. and 2s. 6d. per packet. PRIMULA (James's), extra choice, 1s. and 2s. 6d. per packet. COVENT GARDEN INTERMEDIATE STOCK (True), 1s. and 2s. 6d. per packet.

PURPLE WHITE INTERMEDIATE STOCK, 1s. and 2s. 6d. p. pkt.

All packets of Flower Seeds sent post paid.

Butler & McCulloch, Covent Garden Market, W.C.

Chrysanthemums.

First Prizes Stoke Newington and Guildhall, 1865.

ADAM FORSYTH begs to inform the Public that he is now sending out his large COLLECTION of CHRYSANTHEMUMS, at 6s. per dozen, including Attraction, Eve, Golden Ball, Golden Dr. Brock, Hercules, King of Denmark, Lady Carey, Mr. Brunlees, Mr. Wyness, Mrs. Raines, Pink Pearl, Prince of Wales, Sam Weller, Venus, Virgin Queen, &c.

CATALOGUES for one stamp.

Brunswick Nursery, Stoke Newington, N.

REBECCA, the finest BEDDING GERANIUM ever raised. Plants ready in May, price 5s. each.

See Wm. Paul's SPRING CATALOGUE.

Paul's Nurseries, Waltham Cross, London, N.

To the Trade.—Geraniums.

HUSSEY AND SON beg to offer fine Plants, well-established—TOM THUMBS, 14s. per 100; SILVER-VARIEGATED, 10s. per 100; GOLDEN CHAIN, 18s. per 100.

Mile End Nursery, Eaton, Norwich.

GERANIUM MRS. POLLOCK.

Price per dozen, 10s, or 100s, on application.

James Dickson & Sons, "Newton" Nurseries, Chester.

MRS. POLLOCK GERANIUMS, 12s., 15s., and 18s. per doz.; SCARLET and VARIEGATED GERANIUMS, VERBENAS, CALCEOLARIAS, FUCHSIAS, PETUNIAS, LOBELIAS, KONIGA, &c., packing included, £1 the 100, 60 for 10s. 6d. NEW DESCRIPTIVE PRICED CATALOGUE now ready and free on application.

W. Hooper, Nurseryman, Seedsman, &c., New Wandsworth, S.W.

BEATON'S GERANIUMS, at Reduced Prices.—Indian Yellow, Donald Beaton, Orange Nosegay, Scarlet Gem, Princess Lichtenstein, and Salamander, 1s. each, 9s. per dozen, not less than six of a sort. Fulgens, Pillar of Beauty, and Waltham Seedling, 1s. 6d. each, 12s. per doz. Amy Hogg, 1s. 6d. each, 16s. per doz. Alexandra, 2s. each, 20s. per doz. For other sorts see separate Advertisement.

Wm. Paul, Paul's Nurseries, Waltham Cross, London, N.

THE BEAUTIFUL GEM PLANT-CASES, for Drawing Room and Table Decoration, just introduced by Barr & Sugden, are now on EXHIBITION at their Warehouse. They are exceedingly elegant and seasonable presents.

An ILLUSTRATED PRICED SHEET is in preparation. See Illustrations, p. 493.

Barr & Sugden, 12, King Street, Covent Garden, W.C.

TRANSPLANTED RHODODENDRONS.—4-year-old Hybrids saved from the choicest Crimson, White, and Claret-coloured sorts, 12s. 6d. per 100, or 1000 for £5.

Richard Smith, Nurseryman, Worcester.

Superb Double Hollyhocks.

The Finest Collection ever Offered to the Public.

WCHATER has a large Stock of fine healthy Plants now ready, which he can supply on liberal terms.

See Advertisement on other page.

Address, W. Chater, Nurseries, Saffron Walden.

DAHLIAS and HOLLYHOCKS.—Fine named Show and Fancy Dahlias and Hollyhocks, the former at 4s. per doz., the latter at 6s. to 9s. per doz. All well-established in pots, and the Hollyhocks struck from eyes last summer. Names of varieties on application.

Wood & Ingram, The Nurseries, Huntingdon.

For Dahlias apply to

G. RAWLINGS, who is permitted to announce that he supplied Clark & Co., and Mr. Boshell, of the Borough, for 16 years. Nearly 100 varieties, at 2s. per doz.; New ones of 1865, including LEAH, CHAMPION, and GEO. WHEELER, 9s. per doz.

CATALOGUES are ready.

Waterloo Road, Romford, Essex, E.

WEDDING BOUQUETS, EPERGNES FILLED, Tables Decorated, Conservatories Furnished, by C. Elwin & Co., 9, Park Terrace, Regent's Park.

100,000 Bedding Plants.

C. ELWIN AND CO. beg to offer the above, from 2s. 6d. to 6s. a dozen. Banker's reference or Post Office Order from unknown correspondents.

Address, 9, Park Terrace, Regent's Park; or Clifton Nursery, Clifton Villas, Maida Hill.

Bedding Plants, Bedding Plants,

2s. 6d. to 3s. per dozen; 20s. per 100; out of pots, 16s. per 100.

TOOLE AND CO. beg to offer the above, of which they hold a fine stock of the best selected varieties.

Westmoreland Buildings, Dublin.

Bedding Plants.

ARCHIBALD HENDERSON begs to announce that his DESCRIPTIVE and PRICED CATALOGUE is now published. Can be had gratis and post free upon application.

Seed Nursery, Thornton Heath, Surrey, S.

500,000 Bedding Plants.

Alteration of Prices (from this Date).

J. SCOTT, Nurseries, Merriott, Somerset, offers all the Plants Priced in his Catalogue at 2s. 6d. and 3s. 6d., at 1s. 6d. and 2s. per dozen respectively, or 10s. and 15s. per 100.

CATALOGUES on application. The Stock well hardened off.

BEDDING PLANTS.—Upwards of 100,000 vigorous Plants of the leading varieties. Price from 2s. 6d. per dozen. See CATALOGUE, forwarded upon application.

James Dickson & Sons, "Newton" Nurseries, Chester.

Bedding Plants, Bedding Plants.

JAMES HOLDER can supply VERBENAS, SCARLET and VARIEGATED GERANIUMS, DAHLIAS, CALCEOLARIAS, FUCHSIAS, PETUNIAS, LOBELIAS, GAZANIAS, KONIGAS, CUPHEAS, &c. Eight dozen for 20s., or four dozen for 10s. 6d., hampers and package included.

Crown Nursery, Reading, Berks.

BEDDING PLANTS, BEDDING PLANTS. Extra-strong Plants of the following now ready, well-established in pots:—

GERANIUMS, in 25 or 50 varied shades, less or more, 10s, £1 5s.; 200, £2 5s.; 500, £5.

VERBENAS, 25 finest sorts, 100, £1; 200, £1 17s. 6d.; 500, £3 10s.

100 BEDDING PLANTS in pots, in 20 varieties, including Dahlias, Golden Feather, Verbenas, &c., for £1; 200 ditto, £1 15s.; 500 ditto, £4 4s.

CATALOGUES free. Post Office Orders payable on Castle Hedingham.

Wm. Dillistone, Sible Hedingham, Essex.

PETER DRUMMOND AND CO. (late J. Scott), Preston Road Nursery, Yeovil, Somerset, have to offer to intending purchasers upwards of 200,000 BEDDING-OUT FLOWER GARDEN PLANTS, including all the leading varieties of Dahlias, Fuchsias, Geraniums, Heliotropes, Lantanas, Lobelias, Petunias, Salvias, Verbenas, &c. And all kinds of Frosted and Variegated-leaved Plants suitable for the Decoration of the Flower Garden, at unprecedented low prices. CATALOGUES free on application.

Also SEEDS of every description for the FARM and GARDEN, of the best quality, at moderate prices.

Please address as above.

Genuine Garden and Agricultural Seeds.

JAMES CARTER AND CO., Seed Farmers, Merchants, and Nurserymen, 237 and 238, High Holborn, London, W.C.

JAMES FAIRHEAD AND SON, Seed Growers and Merchants, 7, Borough Market, London, S.E.

New and Genuine AGRICULTURAL, GARDEN, and FLOWER SEEDS. Special prices and advantageous offers on application.

STEPHEN BROWN'S SPRING PLANT CATALOGUE contains a very select assortment of BEDDING PLANTS at low prices. Copies free.

Seed and Nursery Establishment, Sudbury, Suffolk.

RAYNBIRD, CALDECOTT, BAWTREE, DOWLING, AND COMPANY, Limited,

Corn, Seed, Manure, and Oilcake Merchants,

Address, 89, Seed Market, Mark Lane, E.C.; or Basingstoke.

Samples and Prices Post free on application. Prize Medals, 1851, or Wheat; 1862, for "Excellent Seed Corn and Seeds.

Genuine Garden Seeds.

WM. CUTBUSH AND SON'S DESCRIPTIVE PRICED CATALOGUE of SEEDS, which contains everything New and Old worth growing, can be had post free on application.

Highgate, London, N.

New Catalogue.

CHARLES TURNER'S CATALOGUE of PLANTS for the Spring is now ready. It includes lists of all the leading Bedding Plants, New Dahlias, Pelargoniums, Roses, Verbenas, and select general Collections.

The Royal Nurseries, Slough.

MAURICE YOUNG'S DESCRIPTIVE LIST of Conifers, New and Rare Hardy Plants, Ornamental Trees and Shrubs, Rhododendrons, Japanese Novelties, Forest Trees, and Roses, forwarded on application.

Milford Nurseries, near Godalming, Surrey.

LAMOUREUX, CLARK, AND CO., Seed Merchants, Plymouth.

The SEED CATALOGUE and GARDEN DIRECTORY for 1866, now published, will give full particulars respecting prices and other matters in connection with the Business. Will be sent gratis and post free to any address in the kingdom.

British Fern Catalogue.

ROBERT SIM can now send, post free for six postage stamps, Part I. (British Ferns and their varieties, 36 pages, including prices of Hardy Exotic Ferns) of his NEW and PRICED DESCRIPTIVE CATALOGUE of BRITISH and EXOTIC FERNS, No. 7

*** Part II. (Exotic Ferns) will be issued as early as possible.

Foot's Cray Nursery, S.E.

NEW and CHOICE SEEDS.—Bull's Verbena, Bull's Tropæolum, Cyclamen persicum grandiflorum, Giant 10-week Stock, Perfection Aster, Lilium auratum, Intermediate Stock, James Prize Calceolaria, Barr's Select Strain of Primula, each 2s. 6d. p. pkt.

Barr & Sugden, 12, King Street, Covent Garden, W.C.

SEEDS for the GARDEN and FARM, all saved from the finest selected stocks

DESCRIPTIVE PRICED LISTS free on application.

Butler & McCulloch, Covent Garden Market, W.C.

For Bouquets and as Cut Flowers

THE INVINCIBLE SCARLET SWEET PEA is invaluable. The colour is intense and permanent. Packets 6d., 1s., and 2s. 6d. each. Sold by the principal Seedsmen throughout the kingdom, or of the Raiser,

Stephen Brown, Seed Grower, Sudbury, Suffolk.

CABBAGE PLANTS, SCOTCH DRUMHEAD and Early Varieties, autumn sown, very fine.—Prices on application to H. & R. Stinzaker, Skerton Nurseries, Lancaster.

CABBAGE PLANTS.—Strong Drumheads for Cattle, Early kinds, Battersea and Nonpareil, 3s. per 1000.

W. Virgo & Son, Wonersh Nursery, Guildford, Surrey.

DRUMHEAD CABBAGE PLANTS. ROBINSON'S, true, 2s. 9d. per 1000 for cash at F. Warwick's, North Road Nursery, Sleaford.

DAINTREE'S SEEDLING POTATO is the best early round white Potato in cultivation, and can be obtained at a moderate price on application.

Mr. S. A. Daintree, Fendrayton, St. Ives, Hunts.

Fine Long Red Surrey Carrot.

SUTTON AND SONS can supply excellent new Seed of the above at very moderate price, which (according to quantity required), may be had on application.

Sutton & Sons, Royal Berkshire Seed Establishment, Reading.

Early Sheep Feed—Mustard and Rape.

SUTTON AND SONS can supply good new Seed of the above at very moderate prices, which may be had on application

Sutton & Sons, Seed Merchants, Reading.

English-saved Sowing Rape Seed.

CHARLES SHARPE AND CO. have the above to offer, of fine quality. Sample and price forwarded on application. Seed Warehouse, Sleaford.

TO THE TRADE. Fine ENGLISH WHITE MUSTARD; fine ENGLISH SOWING RAPESEED, clean, good-coloured samples, and at low prices.

H. & F. Sharpe, Seed Growers, Wisbech.

Turnip Seeds.

THOMAS KENNEDY AND CO. beg to call the attention of Agriculturists to their extra improved TURNIP SEEDS, comprising KENNEDY'S IMPROVED SWEDE, DRUMMOND'S IMPROVED SWEDE, IMPROVED GREEN-TOP YELLOW BULLOCK, and other varieties, which for size, shape, and quality are unsurpassed.

A PRICED DESCRIPTIVE CATALOGUE will be forwarded free on application. Free delivery as formerly.

Nursery and Seed Establishment, Dumfries.

Brighton and Sussex Seed Warehouse.

EDWARD CARPENTER'S MIXTURES of PERMANENT GRASS and CLOVER SEEDS.—Best quality, 36s. per acre (2 bushels light seeds, and 12 lb. Clovers and small seeds per acre).—See testimonials in Catalogue.

Edward Carpenter's RENOVATING MIXTURES for Improving Old Pastures.

PRICED CATALOGUES of KITCHEN GARDEN, FLOWER, and FARM SEEDS now ready.

Edward Carpenter, Seed Merchant and Grower, 96, St. James's Street, Brighton.

Novelties, Novelties.

JAMES GARAWAY AND CO., Durdham Down Nurseries, Bristol, offer the Three undermentioned NEW SEEDLING GERANIUMS as not only Novelties but decided acquisitions:—

TRICOLOR SECTION.

QUEEN of TRICOLORS.—This variety surpasses in beauty the well-known Mrs. Pollock, from which it is a seedling; the colours are of the same shade but much more vivid, and, being a great improvement, the green colour does not project itself beyond the zone. The flowers are produced in abundance, and are scarlet in colour and of good shape.

Well-established Plants will be supplied the last week in June, at 21s. each. Four sent when Three are ordered.

CLOTH OF GOLD SECTION.

BRONZE QUEEN.—A variety raised from Cloth of Gold, with foliage of same colour, but with the addition of a dark bronze zone distinctly marked; of good dwarf habit, free in growth and very effective, well adapted for bedding; flowers scarlet cerise, produced in good-sized trusses.

Price 7s. 6d. each. Four sent when Three are ordered.

NOSEGAY SECTION.

L'AFRICAINE.—A hybrid Nosegay of compact habit, with extra fine trusses of purplish crimson flowers, which, elevated on stiff flower stems, produce a very fine effect. As a plant for the front row and row of a ribbon border or centre of bed, this will be found a very attractive acquisition.

Price 5s. each. Four sent when Three are ordered.

Trices to the Trade on application.

JAS. GARAWAY & Co.'s SPRING CATALOGUE, containing Priced Lists of Stove and Greenhouse Plants, Ferns, and Bedding-out Plants, is now ready, and will be forwarded post free on application.

JAS. GARAWAY & Co., Durdham Down Nurseries Bristol.

New and Distinct Fuchsias, now ready, in strong healthy Plants.

FUCHSIAS ARTISTIC and LORD HOLMESDALE.

GEORGE FRY, Manor Nursery, Manor Lane, and High Road, Lee, S.E., announces the sending out of the above with great pleasure, feeling assured that they are destined to give entire satisfaction, having been very much admired by those who have seen them.

The habit of ARTISTIC is all that can be desired; flowering freely in a young state, it will become a great favourite in the market, the form of the flowers giving the plant a novel, pleasing, and graceful effect, each sepal so recurving as to form four rings or complete cashes.

LORD HOLMESDALE is a very unique variety, of good substance, very broad sepals, carmine, and exquisitely recurved; corolla well developed, of a rich dark purple. Flowers were sent to two Journalists only, *vide* the following:—

GARDENERS' CHRONICLE, *Oct.* 28, 1865

"SEEDLING FUCHSIAS.—*Fry*.—Your Seedling Artistic has small leaves, and elegantly formed medium-sized well-proportioned flowers, with neatly recurved sepals: the sepal coral red, and the corolla deep violet. If the habit proved it must be a graceful variety."

GARDENERS' CHRONICLE, *Sept.* 1865

"The flower is very neat and symmetrical."

MR H. CANNELL, *of the Fuchsia Nursery, Woolwich*, one of the most successful growers and exhibitors of the present day, says:—

"Fuchsia Nursery, Woolwich, May 4, 1866.

"SIR,—The habit of your two Fuchsias, Lord Holmesdale and Artistic, is all that can be desired."

MR HOLE, *Gr. to J. N. Scott, Esq., Moorfield House, Blackburn Park*, who saw them in bloom, says:—

"SIR,—Will you please to forward me your two new Fuchsias, Lord Holmesdale and Artistic, when I can fill them in the Autumn, before, from the good habit and general appearance of Artistic and intensity of colour, good form, and substance in Lord Holmesdale, they cannot fail to give universal satisfaction."

MR RANDLE, *Gr. to Mr. Morris, Esq., The Laurels, Lee Park*, who also saw the plants in bloom, says:—

"SIR, Please send me two plants of each of your very good and distinct new Fuchsias, viz., two Lord Holmesdale, and two Artistic; finally approve Artistic, which I saw growing at Stoke Newington last season, and expressed a wish at the time to have them when sent out."

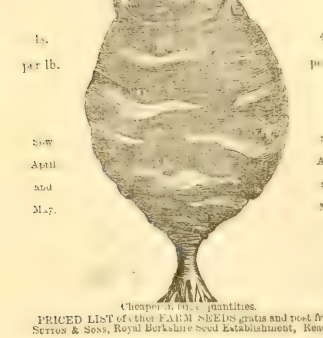
Artistic, 10s. 6d.; Lord Holmesdale, 7s. 6d. The Two, 15s. A few extra strong Plants, 21s. each. Thousand discount to the Trade.

Choice and New Indian Azaleas.

A. VAN GEERT, NURSERYMAN, Ghent, Belgium, begs to offer the undermanned Choice and New INDIAN AZALEAS, in nice plants, at 30s. to 60s. per dozen.

Colons nova (D. Verschaffelt)	Louis Van Houtte (Van Houtte)
Coquetde Gand (D. Verschaffelt)	Louis Hendrick (Van Houtte)
Eugene Mazel (D. Verschaffelt)	Charles Van Eeckhaute (V. Houtte)
Gloire ravent Tout (De Vervaene)	Dominique Vervaene
Grande Duchesse de Bade (Verschaffelt)	Impératrice (Vetchi) (Verschaffelt)
La Belge des Pays Bas (Mme Laud)	Jacques Van Artevelde (A. Verschaffelt)
Alexandre Van Langenhove (Van Houtte)	Leon des Flandres (Verschaffelt)
Alexis Dedriere (Van Houtte)	Mathilde L. (Van Houtte)
Ambroise Verschaffelt (V. Houtte)	Mme Ch. Cannaert d'Hamale (D. Verschaffelt)
Antoine Dubois (Van Houtte)	Mme Dominique Vervaene (Verschaffelt)
Auguste Van Geert (Van Houtte)	Pierre Opdenacker (Verschaffelt)
Camille Van Langenhove (V. H.)	Pierre Opdenacker (Mortreuil)
Eugene Mazel (Van Houtte)	President Van den Hecke (V. H.)
Ferd. Kegeljan (Van Houtte)	Prince Albert (Van Houtte)
Francois Coomans (Van Houtte)	Prince Albert (Verschaffelt)
Francois de Taye (Van Houtte)	Rodolphe Beaufeu (Verschaffelt)
Gustave Vanderminden (V. H.)	Rodolphe Beaufeu (Vervaene & Co.)
Jean Van Geert (Van Houtte)	Sacramentale Van Teene (Vervaene)

SUTTON'S PRIZE KOHL RABI should now be Sown, drilled as Swedes, 3 to 4 lb. per Acre.



Cheaper Prices, Quantities.

PRICED LIST of other FARM SEEDS gratis and post free.

SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

Sutton's Grass Seeds for all Soils.

SUTTON AND SONS have still on hand some of each of the leading kinds of

PERMANENT NATURAL GRASSES and CLOVERS,

which are mixed expressly to suit the soils for which they are intended.

Price 26s. to 36s. per acre.

Carriage free.

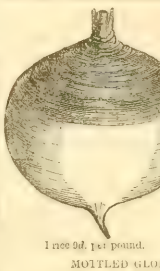
SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

Turnip Seeds

FOR PRESENT SOWING,

CHEAPER BY THE BUSHEL.

SUTTON'S IMPERIAL GREEN ROUND or GLOBE.—This should be sown for the main Winter crop, instead of the common Green Round Turnip, being a heavier and more nutritious kind. For four years successively R.H.H. the late Prince Consort's Prize Cups were awarded to SUTTON'S Imperial Green Globe Turnip, besides numerous other Cups and First Prizes in other parts of the Kingdom. Several large Turnip growers use this sort in order to sow, from first week in June till middle of August, and none other.

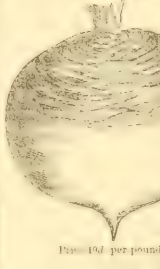


1 lb. 9d. per pound.

MOTTLED GLOBE or GREY STONE.

From HENRY HUDSON, Esq., *The Elms, Purbeck*.

"Your Grey Stone and your Skirving's Six-Weeks Rape are everything we can desire. After a trial of the various sorts of Turnips, I have found these to be the best: the Grey Stone for early planting, and the Swedes for late planting. Whilst almost all the other varieties of Foreign and Indian seed vanished this season, these two are excellent. Half the secret of keeping lambs healthy in the autumn is to give them plenty of fresh Stone Turnips through the months of August and September, pulled with Tankard or Clover-chaff."



Per 1lb. 9d. per pound.

Also,

LINCOLNSHIRE RED PARAGON, 9d. per lb.

TOMERANIAN WHITE GLOBE, 9d. per lb.

HARDY GREEN ROUND, 9d. per lb.

SUTTON'S SHORT-TOP SIX WEEKS, 1s. per lb.

And other choice sorts, cheaper by the bushel, carriage free.

SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

SUTTON'S CHAMPION SWEDE.

PARTICULARLY HARDY, VERY PRODUCTIVE, STORES EXCEEDINGLY WELL, AND RARELY, IF EVER, SUFFERS FROM MILDEW.

SUTTON'S CHAMPION SWEDE, price 1s. per lb

Cheaper by the bushel, carriage free.

SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

Tree and Shrub Seeds.

CHARLWOOD AND CUMMINS have now on Sale, SEEDS of the following in good condition:—Cedrus Deodara, Libani, and Red Cedar; Cupressus Lawsoniana and macrocarpa; Picea balsamea, nobilis, Nordmanniana, and cephalonica; Pinus flexilis and Lambertiana; Thuja orientalis and occidentalis; Wellingtonia gigantea; Atlantica glandulosa; Kalmia latifolia; Magnolias, 4 varieties; Pavia flava (the yellow-flowered Horse Chestnut); Portugal Laurel; Platanus orientalis; Oaks, 7 varieties; Common Ivy, and Chamærops Dampieri, with a general assortment of Forest Tree and Shrub Seeds.

A LIST of which will be forwarded on application.

14, Tavistock Place, Covent Garden, W.C.

To the Trade.

MANGEL WURZEL AND TURNIP SEED.

H. AND F. SHARPE can still supply the Trade with their selected Stocks of—

SKIRVING'S KING of the SWEDES TURNIP.
SHARPE'S IMPROVED PURPLE-TOP SWEDE TURNIP.
SHARPE'S IMPROVED GREEN-TOP SWEDE TURNIP.
SHARPE'S IMPROVED YELLOW TANKARD TURNIP.
FISHER HOGGS' ORANGE GLOBE MANGEL.
IMPROVED YELLOW GLOBE MANGEL.
IMPROVED LONG YELLOW MANGEL.
ELVETHAM LONG RED MANGEL.

Grown in the best districts from transplanted bulbs. Prices very moderate.

Seed Growing Establishment, Wisbech.

COCOA-NUT REFUSE

is becoming scarce, the old reserves will soon be gone. Now sold in bags, 1 for 2s., 10 for 16s., 20 for 30s., 50 for 66s., 100 for 55.

Fourpence allowed for each bag returned carriage-paid.

A Railway Truck-load (not in bags), 40s.

Postage Stamps or Post-office Order, payable to J. BARSHAM & Co., Kingston-on-Thames, S.W.

ROLL TOBACCO CLOTH.—The cheapest and best article for smoking Greenhouses and destroying the Fly; equal to Tobacco in strength. 1s. 6d. per lb.; over 10 lbs., 1s. 4d.

JOSEPH BAKER, 10, Church Square, Fleet Street, E.C.

Post Office Order payable Fleet Street.

Plagues of the Garden.

SIMPSON'S PATENT

APHIS WASH, these Pests of the Garden, together with Scale, Caterpillars, Slugs, Earwigs, &c., are immediately destroyed. Leaves no stain, but strengthens the Trees or Plants.

See *Gardeners' Chronicle*, August 12, 1865, and "Gardeners' Magazine," July 1, 1865

Sold by Chemists and others, in 1s. bottles, and 2s. 6d. a gallon, with full directions for use.

Wholesale at the City Soap Works, Milton Street London, E.C.

Destroy your Insect Pests.

PRESERVE YOUR PLANTS and TREES

YOU MAY EASILY DESTROY ALL PLANT PESTS,

RED SPIDER	GREEN AND BLACK	ANTS
MEALY BUG	SCALE	SLUGS
THRIP	AMERICAN BLIGHT	MILDEW,

Without injury to the most delicate Plant or Tree, by using

FOWLER'S GARDENERS' INSECTICIDE.

pronounced by all who have used it to be far superior to any other yet offered. One trial will prove its efficacy. Testimonials forwarded on application.

Price 1s., 2s. 6d., and 10s. per Tin. Orders amounting to 20s. carriage paid. Agents required.

GEO. A. THOMAS FOWLER, North Street, Brighton.

Red Spider. Magnified.

GISHURST COMPOUND, whether used against Insects and Mildew, on Growing Plants, or as Winter Dressing for Trees at rest, should be dissolved 48 hours before use. This gets rid of smell, and if the solution be decanted, prevents any staining of foliage. A strength of from 1 to 2 oz. to the gallon of water is recommended for growing Plants; one from 4 to 16 oz. for Trees at rest.

Sold Retail by Nurserymen and Seedsmen, in boxes, 1s., 3s., and 10s. 6d. each.

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PRICE'S PATENT CANDLE COMPANY (LIMITED).

Horticultural Improvements.

READ'S NEW PATENT HYDRAULIC SUCTION PUMP.—This Pump is highly approved by the Nobility, Gentry, and by the principal Horticulturists, &c., throughout the Kingdom; also by Shirley Hibberd, Esq., F.R.H.S., the late Professor Lindley, and many others connected with Horticulture. As R. READ has also a large assortment of GARDEN ENGINES, MACHINES, and SYRINGES, upon the most approved principle.

Manufactured by the Patentee,

RICHARD READ, 30, Regent Circus, London, W.

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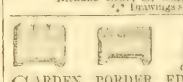

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Sole London Agents for FOXLEY'S PATENT GARDEN WALL BRICKS. Illustrated Price Lists free by post. The Trade supplied.

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SILVER SAND (KEIGATE, best quality), at the above addresses—14s. per Ton, or 1s. 3d. per Bushel; 2s. per Ton extra for delivery within three miles, and to any London Railway or Wharf. Quantities of 4 Tons, 1s. per Ton less.

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INTERNATIONAL EXHIBITION, CLASS IX., No. 2119.

MR. GRAY begs to call the attention of the Nobility, Gentry, Nurserymen, Gardeners, &c., to his

NEW OVAL TUBULAR BOILER,

acknowledged by practical judges to be a great improvement on every form of Tubular Boiler yet introduced. It has proved itself superior to all other Boilers for quickness of action and economy of Fuel, doing its work with one-third less the amount required by any other.

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"The upright form of Boiler is usually made on a circular plan, but the oval form given to Mr. GRAY'S variety of it is said to be preferable in consequence of its bringing the tubes in closer contact with the fire. The usual form of a furnace being a parallelogram rather than a square, it seems feasible that the Boilers on the oval plan should bring the tubes more completely within range of the burning fuel; and this being so, the change, though a slight one, is no doubt an improvement."

They are made of all sizes, which, with prices, may be had on application.

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HOTHOUSES FOR THE MILLION.

AWARDED A PRIZE MEDAL, 1862.
INVENTED AND PATENTED BY THE LATE
SIR JOSEPH PAXTON.

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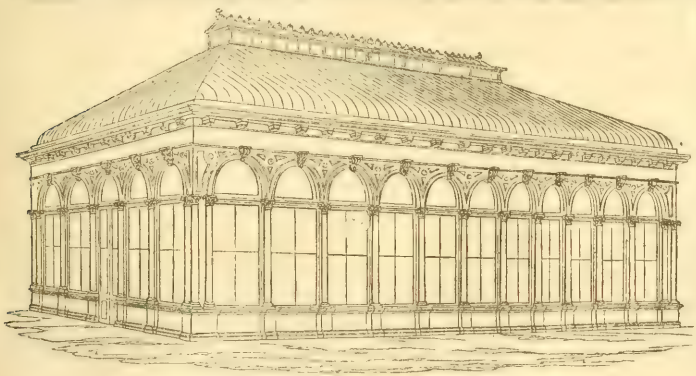
"The instructions given for the Cultivation of the Vine and other Crops are essentially practical, and are evidently written by one who has himself performed all the operations before he attempted to instruct others."—*Cottage Gardener*, Oct. 6, 1863.



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GARDEN HOSE and FITTINGS.

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THE MOST COMFORTABLE, GRACEFUL, AND CHEAPEST

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Carriage Paid to any Railway Station.

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Caution to Gardeners.—When you ask for

SAYNOR AND COOKE'S WARRANTED PRIZE PRUNING and BUDDING KNIVES, see that you get them. Observe the mark SAYNOR, also the corporate mark OBTAIN WARRANTED, without which none are genuine

S. & C. regret having to caution Gardeners and others, but are compelled to do so, in consequence of an imitation, of common quality, having been sold for the genuine one, and which has caused many complaints to be made to them of knives which were not of their make, all of which are warranted both by sellers and makers.

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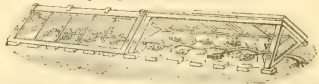

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Designs and instructions for the management post free.

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Glass for Garden Purposes.

JAMES PHILLIPS AND CO. beg to submit their prices as follows:—

PROPAGATING GLASSES.

	Each.—*s.*	*d.*		Each.—*s.*	*d.*
2 inches in diameter	.. 0	3	12 inches in diameter	.. 1	9
3 ,, ,,	.. 0	4½	13 ,, ,,	.. 2	0
4 ,, ,,	.. 0	6	14 ,, ,,	.. 2	6
5 ,, ,,	.. 0	9	15 ,, ,,	.. 3	0
6 ,, ,,	.. 0	8	16 ,, ,,	.. 3	6
7 ,, ,,	.. 0	10	17 ,, ,,	.. 4	0
8 ,, ,,	.. 1	0	18 ,, ,,	.. 5	0
9 ,, ,,	.. 1	2	19 ,, ,,	.. 6	0
10 ,, ,,	.. 1	4	20 ,, ,,	.. 7	0
11 ,, ,,	.. 1	6			

BEE GLASSES, with Conical or Flat Tops.

	Each.—*s.*	*d.*		Each.—*s.*	*d.*
4 inches in diameter	.. 0	6	9 inches in diameter	.. 1	8
5 ,, ,,	.. 0	8	10 ,, ,,	.. 2	0
6 ,, ,,	.. 0	10	11 ,, ,,	.. 2	6
7 ,, ,,	.. 1	1	12 ,, ,,	.. 3	0
8 ,, ,,	.. 1	4			

CUCUMBER GLASSES.

	Each.—*s.*	*d.*		Each.—*s.*	*d.*
24 inches long	.. 2	0	16 inches long	.. 1	4
22 ,, ,,	.. 1	10	14 ,, ,,	.. 1	2
20 ,, ,,	.. 1	8	12 ,, ,,	.. 1	0
18 ,, ,,	.. 1	6			

Made to any length.

HAND GLASSES, WITH OPEN TOPS.

	Each.—*s.*	*d.*		Each.—*s.*	*d.*
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14 ,,	.. ..	7 6	20 ,,	.. ..	10 6
16 ,,	.. ..	8 6	24 ,,	.. ..	12 6

Painted and Glazed with 16-oz. Sheet Glass.

SHEET and ROUGH PLATE GLASS, SLATES of all sizes, BRITISH PLATE, PATENT PLATE, ROLLED PLATE, CROWN, SHEET, HORTICULTURAL, ORNAMENTAL, COLOURED, and every description of GLASS, of the best Manufacture, at the lowest terms. Lists of prices and estimates forwarded on application to

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Oil Paint no longer Necessary.

HILL AND SMITH'S PATENT BLACK VARNISH for preserving Iron Work, Wood, or Stone. This Varnish is an excellent substitute for oil paint on all out-door work, and is fully two-thirds cheaper. It may be applied by an ordinary labourer, requires no mixing or thinning, and is used cold. It is used in the grounds at Windsor Castle, Kew Gardens, and at the seats of many hundreds of the nobility and gentry, from whom the most flattering testimonials have been received, which HILL & SMITH will forward on application.

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"I have used your Black Varnish for park palings and consider it to be the most durable and best thing of the kind I have ever seen. I think it might be applied with still greater advantage to iron fencing instead of paint, and it is my intention so to employ it in future."

Sold in casks of about 30 gallons each, at 1*s.* 6*d.* per gallon, at the Manufactory, or 1*s.* 8*d.* per gallon paid to any Station in the kingdom. Apply to HILL & SMITH, Brierly Hill Iron Works, near Dudley, and 22, Cannon Street West, E.C., from whom only it can be obtained.

The Forwardest Turnip known is

SUTTON'S SHORT-TOP SIX WEEKS.

Price 1s. per lb.

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A First-class Certificate was awarded at the International Horticultural Show, and a Second Prize at the Crystal Palace Flower Show.

This truly handsome foliaged plant should be in every Flower Garden. Price per packet 1s. and 2s. 6d.

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WILLIAM PAUL

(SON and Successor to the late A. PAUL,)

HAS TO OFFER THE FOLLOWING

NEW ZONALE AND HYBRID NOSEGAY GERANIUMS,

Which have been selected from several Thousand Seedlings, raised from the stock of the late Mr. DONALD BEATON. Every one now offered is believed to be in advance of or distinct from all pre-existing kinds. The Plants will be delivered in rotation, as far as the stock will allow.

Group 1.—Bedding Varieties.

*** Any 12 varieties from this and the two following Groups may be selected by the purchaser for £2 2s.

BANNERET.—Flowers crimson, scarlet, and purple shaded, very bright and beautiful; a hybrid nosegay. Price 3s. 6d. each.

FAIRY QUEEN.—Rosy purple; a large smooth flower, very distinct and effective. Price 3s. 6d. each.

MINSTREL, a peculiar and pleasing shade of salmon, something in the way of Lord Palmerston, but brighter in colour and broader in the petals

MONTE ROSA, dark rosy-purple, pleasing colour, large truss, very fine. Price 5s. each.

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PRINCE OF ORANGE, orange-scarlet, very bright; great substance, good habit prodigious bloomer. Price 3s. 6d. each.

PEACH NOSEGAY.—Flowers deep bright peach colour, very free bloomer, splendid truss, plain leaf, first-rate and distinct. Price 5s.

REBECCA.—Cherry colour, fine truss, dwarf compact habit, very profuse, the finest bedding Geranium yet raised. First-class Certificate. Price 5s. each.

ST. GEORGE.—Dark chestnut, shaded with blackish crimson, quite unique, very free and effective, an entirely new colour among Pelargoniums. First-class Certificate. Price 5s. each.

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Group 2.—Varieties especially recommended for Growing in Pots or Vases.

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ZEPHYR.—Flowers light purple top, petals rose colour; stands the rain and sun well, very dwart and free. Price 3s 6d each

Group 4.—Bedding Varieties sent from these Nurseries Last Year.

Many of them have received First-class Certificates from the Royal Horticultural and Royal Botanic Societies of London, and those marked thus *** have been awarded the highest marks of merit in the Royal Horticultural Society's Trial Ground at Chiswick.

Now Ready, Autumn-struck Plants.

*** ALEXANDRA.—Magenta. Price 2s. 6d. each; 24s. per dozen.

** AMY HOGG.—Bright purplish rose. Price 2s. each; 18s. per doz

*** BEATON'S INDIAN YELLOW.—Orange scarlet suffused with yellow. Price 1s. 6d. each; 15s. per dozen

BLACK DWARF.—Dark crimson. Price 1s. 6d. each; 12s. per dozen.

DONALD BEATON.—Clear orange scarlet. Price 1s. 6d. each; 15s. per dozen.

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SCARLET GEM.—Bright orange scarlet. Price 1s. 6d. each; 15s. per dozen.

MRS. WILLIAM PAUL.—Delicate rose pink. Price 2s. 6d. each 24s. per dozen.

WALTHAM SEEDLING.—Dark crimson. Price 2s. each 18s per dozen.

The above Set of 16 varieties, One Plant of each, 24s.

SPRING CATALOGUE, with full descriptions of these and other Plants, Free by Post.

The usual discount to the Trade.

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THE METROPOLITAN

SEED BULB & PLANT WAREHOUSE

12, KING STREET, COVENT GARDEN, W.C.

Orders amounting to 21s. sent Carriage Paid.

The Gem Plant Case for Table and Drawing-room Decoration.

BLUNDELL'S CATTLE MELONS and CATTLE MARROWS.—100 Seeds, 2s. 6d.; ½ lb., sufficient for ¼ of an acre, 5s.; ½ lb., sufficient for ½ of an acre, 9s.; 1 lb., sufficient for 1 acre, 16s.

Selections of ORNAMENTAL GOURDS, including Miniature, Medium, and Mammoth varieties, or either separate:—10 varieties, 2s. 6d.; 15 do., 3s. 6d.; 20 do., 5s. 6d.; 30 do., 7s. 6d.; 40 do., 10s. 6d.; 50 do. 12s. 6d.; 100 do., 21s.; 200, 42s.

PERMANENT PASTURE GRASS SEEDS and CLOVERS for ALL SOILS

FINE LAWN GRASS SEEDS for ALL SOILS

COMPLETE COLLECTIONS of VEGETABLE SEEDS for One Year's Supply (Carriage paid), 10s. 6d., 15s. 6d., 21s., 30s., 42s., 63s., 84s., and 105s.

COLLECTION of FLOWER SEEDS (post paid), 2s. 6d., 3s. 6d., 5s. 6d., 7s. 6d., 10s. 6d., 15s., 21s., 30s., 42s., to 105s.

The Gem Plant Case for Table and Drawing-room Decoration.

STANDEN'S GARDENERS' AND AMATEURS' FRIEND MANURE.

The best concentrated Manure for all Kitchen Garden crops and Flowers in or out of doors. For List of Agents see our Advertisement in *Gardeners' Chronicle* for February, March, and April; and favourable Notice of the Manure in the *Gardeners' Chronicle*, p. 339, April 14.

Sold in Sample Canisters, 1s. and 2s. 6d.; and in Bags, 5s. 6d., 10s. 6d., and 21s., and in two qualities. No. 1 quality for Hard-wooded Stove and Greenhouse Plants, Fruit Trees, Roses, Lawns, Kitchen Garden Crops, and Flower Beds and Borders. No. 2 quality for Soft-wooded Plants. It should always be laid on the surface dry, and watered in.

BARR AND SUGDEN, SEED, PLANT, and BULB MERCHANTS, 12, KING STREET, COVENT GARDEN.

Superb Double Hollyhocks.

WILLIAM CHATER begs to remind the Admirers of this beautiful flower that now is the best time for planting it out to insure fine spikes and blooms this season.

DESCRIPTIVE CATALOGUES, with instructions for its Cultivation; also prices of Plants per dozen, 100, or 1000, may be had on application.

Seedlings from best named varieties, 4s. per doz., or from 20s. to 30s. per 100.
Blooming Seedlings, with colours named, very fine, 6s. per doz, and from 30s. to 40s. per 100.
Seed saved from the finest named varieties, very choice mixed 2s. 6d. and 5s. per packet.
In Collections of 12 separate named varieties, extra fine, 10s.
6 varieties, extra, 5s.
2 named varieties, all good show flowers, 2s. 6d.
6 do. do. do. do. 4s.

WILLIAM CHATER, Nurseries, Saffron Walden, Essex.

Notice of Removal.

G. AND J. RUMLEY, NURSERYMEN, SEEDSMEN, and FLORISTS, late of the Firm of WM. RUMLEY & SONS, of Gilling, near Richmond, beg to inform their friends and the public in general that they have REMOVED the whole of their NURSERY STOCK, GREENHOUSE, BEDDING PLANTS, &c., to Newton-le-Willows, near Bedale, Yorkshire, where they intend carrying on the business in future, and where all Orders must now be addressed to them. CATALOGUES may be had on application.

The Nurseries, Newton-le-Willows, near Bedale, Yorkshire.

J. WATSON, New Zealand Nurseries, St. Alban's, begs leave to offer his new BRILLIANT SUPERB GERANIUM for Flower Garden purposes, unrivalled, at 24s. per dozen, to be sent out the first week in May. Attached is Mr. Robert Fish's description, who has had it on trial the last two seasons :—

"April 12, 1866.

"The Brilliant Superb Scarlet Geranium is one of the very best for bedding in the flower garden or for flowering in pots or boxes. It has the fine compact habit of the old Brilliant, but is rather more luxuriant in growth, has better foliage, which is much more freely supplied with white blotches of a clear colour, and the trusses of flower and the individual flowers are much larger and of a richer scarlet. I have no hesitation in speaking of this variety as one of the most satisfactory that can be used, after trying it for two seasons.

"R. FISH, Putteridge Bury, Luton, Beds."

*** The usual allowance to the Trade

J. LINDEN'S SUPPLEMENT to his CATALOGUE is now published, and contains several of the new Plants which attracted so much attention at the present GREAT INTERNATIONAL HORTICULTURAL EXHIBITION. Among the many species now offered for the first time, are :—

ANTHURIUM REGALE, 42s ; extra strong, 105s
MARANTA LINDENI, the extraordinary transparent species, regular size, 21s. ; extra strong, 105s.
MARANTA RONSO-PICTA, 42s. ; extra strong, 105s
PASSIFLORA MACROCARPA, bearing fruit of 8 lb. weight.
" HELLEBORIFOLIA, very fine species. Both at 12s. 6d. each

Catalogues can be obtained free by post on application to J. L.'s Agents—Messrs. R. SILBERRAD & SONS, 5, Harp Lane, Great Tower Street; or direct from the Royal Zoological and Horticultural Gardens, Brussels.

INTERNATIONAL HORTICULTURAL DISPLAY.

THIS DAY, FIFTH DAY OF THE

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Admission 2s. 6d.

MONDAY, 28TH, SIXTH DAY OF THE

INTERNATIONAL HORTICULTURAL SHOW.

Admission 1s.

TUESDAY, 29TH, SEVENTH DAY OF THE

INTERNATIONAL HORTICULTURAL SHOW.

Admission 1s.

WEDNESDAY, 30TH, LAST DAY BUT ONE OF THE

INTERNATIONAL HORTICULTURAL DISPLAY.

Admission 1s.

THURSDAY, 31ST, LAST DAY OF THE

INTERNATIONAL HORTICULTURAL DISPLAY.

Admission 1s.

NOTICE IS HEREBY GIVEN,

THAT IN CONSEQUENCE OF THE VERY GENERAL EXPRESSIONS OF REGRET AT THE PROPOSED EARLY CLOSING OF THE

INTERNATIONAL HORTICULTURAL DISPLAY,

THE EXECUTIVE COMMITTEE HAVE DECIDED ON APPEALING TO THE EXHIBITORS TO

CONTINUE IT UNTIL THURSDAY NIGHT NEXT.

The Executive Committee have the satisfaction to announce that the great Exhibitors have already consented, not only to allow all their Plants that can possibly be left to remain, but to replace those taken away.

The Executive have decided that in their opinion it would be most to the interest of the Public that the Exhibition should be open on these additional days at 1s. each person, except on SATURDAY, the 26th, when the admission will be 2s. 6d. This payment admits also into the Horticultural Gardens.

NOTICE. — NEW HARDY CLIMBERS.

CLEMATIS PRINCE of WALES. — Large flowers of a rich deep violet purple, with red bars down the centre of each sepal. First-class Certificate. 21s. each.

CLEMATIS RUBELLA. — Very fine rich velvety claret; stamens pale green. First-class Certificate. 21s. each.

The usual allowance to the Trade, and a List of Firms will be advertised at a later period.

See Proceedings of Royal Horticultural Society's Scientific Meetings, June 27th, 1865, page 124, where JAMES BATEMAN, Esq., called attention to a few prominent objects, of which the following is an extract referring to the above Clematises :—

"In the room you will notice an exhibition of Clematises, all of which are of a most magnificent type. Nothing can be more beautiful than these Clematises. See what fine large blue and purple petals they have, shining in some cases with metallic tints like the flowers of certain Ipomœas. They are varieties raised by those most successful hybridisers—Messrs. JACKMAN, of Woking, who will have the honour of introducing quite a new race of Clematises, which I believe will be 'amongst the best, if not the very best ornaments' for all out-of-door walls, &c."

MESSRS. GEORGE JACKMAN & SON

Have much pleasure in informing the Public they shall be in a position to SEND OUT the above two NEW CLEMATISES in the coming Autumn (1866).

Orders will be taken now, and the Plants will be forwarded strictly in rotation.

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HERBACEOUS, ALPINE, and ROCK PLANTS, &c. Very strong, in Pots.

ANTHRIHNUMS, fine sections, 6s. to 9s. per dozen.
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PHLOX, hardy varieties, finest, 5s. to 9s. per dozen.
DWARF ROCK CISTUS, 20 beautiful varieties, 13s. ; 12 varieties, 7s. 6d. ; 8 beautiful double, 6s.
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ANEMONE JAP. HONORINE JOBERT, 1s. 6d. each.
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EPIDENDRUM, 10 fine varieties for 7s.
GENTIANA CATESBEI, 1s. 6d. each ; 12s. per dozen
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PHYGELIA CAPENSIS, beautiful scarlet tube, 9d. each
POTENTILLA KING of CRIMSONS, and BEAUTY, 1s each ; in fine varieties, 6s. to 9s. per dozen.
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N.B. A liberal supply of plants gratis for carriage.

STEPHEN BROWN, Seed and Nursery Establishment, Sudbury, Suffolk.

ROBERT PARKER begs to announce that he can supply good healthy PLANTS of the undernamed at prices quoted :—

	Each.	s.	d.
AGAVE LONGÆVA		5	0
ARALIA HETEROMORPHA		7	6
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FRANCISCEA CALYCINA		10	6
RHODODENDRON COUNTESS of HADDINGTON		7	6
TACSONIA MOLLISSIMA		21	0
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AMARYLLIS, Hybrid Seedlings from the finest named varieties	per doz.	30	0
DRACÆNA AUSTRALIS		42	0
EPIPHYLLUM RUSSELLIANUM and TRUNCATUM —			
Hybrids, finest varieties, worked on Pereskia		30	0
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GYNERIUM ARGENTEUM		12	0
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TRITOMA GRANDIS		18	0
TRITOMA UVARIA GLAUCESCENS		12	0

PRICED and DESCRIPTIVE CATALOGUES of BULBS, PLANTS, and SEEDS, are published and will be forwarded to applicants. Exotic Nursery, Tooting, Surrey, S.

New Petunia, Illuminator.

GEORGE CLARKE has now ready for disposal a strong Plants of this unique variety : it was exhibited at Regent's Park, June 14, 1865 (the only occasion on which it has been shown), and was awarded a First-class Certificate.

Mr. Shirley Hibberd, in the "Gardeners' Magazine," June 24, 1865, speaks of it accurately thus :—"Another equally meritorious subject was a new Petunia from Mr. CLARKE, of Streatham, and I am particular in calling attention to it, because I do not name a third part of the new Petunias I see, for the simple reason that they are generally rubbish. This fine Seedling is called ILLUMINATOR. It is a single flower, finely veined, the colour rosy purple, with a broad white stripe up the centre of every petal, so that when the flower is fairly expanded, it presents a distinct white star of five rays. This is distinct from all other Petunias of the class, even if we go back so far as Mrs. Forjasson, and I think will beat them all."

The plant is of neat habit, and robust in constitution, and will, doubtless, become as popular in the flower garden as conservatory.

Price 3s. 6d. each. The usual allowance to the Trade if Three or more are taken.

Nurseries, Streatham Place, Brixton Hill, S. ; and Mottingham, Kent, S.E.

Russell's Pyramid Primula.

GEO. CLARKE begs to announce that a small quantity of Seed of the above remains for disposal. As the present is an excellent time for sowing, those who are desirous of possessing the finest strain of Primula in the world are advised to apply early. Packets 2s. 6d. each. Stamps taken.

Extra fine GLOXINIA SEED, guaranteed to produce none but flowers of the finest quality, and in great variety. Price 1s. per pkt.

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Wellingtonia gigantea Seed.

MESSRS. PLATZ AND SON, Erfurt, SEEDSMEN, &c., to the King of Prussia, have just received a limited quantity of SEED of the undermentioned CONIFERÆ direct from California, &c

WELLINGTONIA GIGANTEA, £1 per oz. ; £13 12s. per lb.
CUPRESSUS LAWSONIANA, 4s. per oz
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PINUS BANKYANA, 100 Seeds, 4s. 2d

Orders may be sent direct to the above Firm ; or to JUNG & SCHNITZER, Seedsmen, Cheltenham.

With Orders from correspondents unknown to J. & S., either a remittance or London reference is respectfully requested.

Primula, Calceolaria, &c.

WM. CUTBUSH AND SON are now sending out SEED of their superb PRIMULA SINENSIS FIMBRIATA, which has for many years given great satisfaction.

The *Gardeners' Chronicle* of the 6th of January, in Notices to Correspondents, says :—"The blooms sent are remarkably fine, richly coloured, full, and densely fringed; they are evidently the produce of a capital strain."

The *Journal of Horticulture* of the 23d of January, says that :—"The finest and richest-coloured race of Primulas we have yet seen are those raised by Messrs. Cutbush & Son."

Sealed packets 2s. 6d. and 3s. 6d. each.

CALCEOLARIA (JAMES').—This is the finest herbaceous variety extant. Per packet 2s. 6d. and 3s. 6d. each.

CINERARIA, from finest named varieties. Per packet 2s. 6d. and 3s. 6d. each.

Highgate Nurseries, London, N.

The Gardeners' Chronicle.

SATURDAY, MAY 26, 1866.

MEETING FOR THE ENSUING WEEK.

SATURDAY, June 2 { Royal Horticultural (Weekly Show), at South Kensington .. .. .. 2 P.M.

FLUSHED with the excitement engendered by so splendid an EXHIBITION OF FLOWERS as that which was inaugurated on Tuesday last at South Kensington, and bewildered by its vastness, we are scarcely in condition to do more than record a genuine triumph; for truly, in spite of minor errors which it is quite impossible to avoid in so gigantic an enterprise, the whole has proved a magnificent success.

That success is well deserved. Not only the

Committee, but horticulturists of all degrees, have laboured for many months—how hard the outside public cannot realise—to produce an Exhibition which should eclipse all previous ones, and it has done so. It has not been so much a competition of one exhibitor against another, as one grand united effort to produce a display which should surpass all hitherto done, either here or abroad.

Remembering, as we do vividly, the hospitable reception afforded to the English at Brussels and Amsterdam, we delight to find that in not a few cases on our own ground the palm has been wrested from us and awarded to our foreign friends. We rejoice at this, because it is no disgrace to us to be beaten by such antagonists, and moreover our own exhibitors have achieved such triumphs that they will not and do not grudge to the foreigners any honour they may have won. For our own part we would as far as possible waive every national feeling and local prejudice, and offer to the foreign exhibitors and to our foreign guests, as indeed has been done, every honour, every courtesy within our power. With these views we were well pleased to see so brilliant an assemblage at the Guildhall, and could but admire the hearty English character as manifested in the congratulations upon the success of the Exhibition and in the welcome accorded to the foreigners.

Turning from these seductive and brilliant scenes we have yet another success to record. No one will read the address of M. DE CANDOLLE, which we give on another page, without acknowledging it to be the composition of a far-sighted large-minded philosopher, treating Botany and Horticulture not merely as the luxuries of the man of wealth or the occupation of the recluse, but with reference to their influence on the moral and material prosperity of mankind; pointing out with all the weight which his talent, his reputation, his descent convey, the principle for which we have so often contended in these pages—the intimate reciprocal relations between Horticulture and Botany.

We need not prolong our own remarks, but we shall at once proceed to give our readers some general impressions as to the Exhibition as a whole, and for which we are indebted to three of the most eminent men in the horticultural world. Detailed reports of the several sections follow, and as far as our space will allow we give a notice of the proceedings of this eventful week. We have only to add, for the benefit of such as may not yet have visited the Exhibition, or for those who wish to see it yet once more, that it will remain open till Thursday next.

THE EXHIBITION AS SEEN BY AN ENGLISHMAN.

THE long-looked-for opening of the International Horticultural Exhibition took place on the 22d, and to the relief of many anxious co-operators and more eager exhibitors the first day's display gave high satisfaction, and was deservedly pronounced to be a complete success, whether as regards the number, beauty, variety, or the interest of the objects exhibited. Mingling amongst the crowd for several hours, one heard encomiums on every side, and if the foreign visitors will only confirm in their calmer moments the panegyrics they fitfully uttered amid the excitement of the scene, there can then remain no doubt but that in their opinion, as well as in ours, this Horticultural Exhibition is not only the largest but the finest ever brought together.

It is not our purpose in this preliminary notice to enter into any detail as to the names of the exhibitors or objects exhibited; these must come critically under notice in detail in another place. All we can now attempt is to sketch out the plan and general arrangement of the Show, so as to convey some idea of the grand total presented to the eye, for the information of the unfortunate few of our horticultural brethren who could not be present at it.

The general plan consisted of an enclosed rectangular area, 563 feet long by about 300 feet broad, and covered throughout by canvas awnings, so arranged as to the roof as to present seven similar and equal parallel aisles, running the whole length of the area, and supported by wooden posts. The ends abutted at either extremity respectively on the Cromwell Road and on the Horticultural Society's Garden, towards each of which was a single entrance, the former or principal one for carriages and pedestrians, the latter of course for pedestrians only. Of the aisles the eastern was screened off from the others, forming a separate enclosure, heated by hot-water pipes, for stove and tender plants; it was entered laterally from the main enclosure by three large openings. The other aisles formed one vast continuous enclosure, broken only by the lines of wooden posts that supported the canvas: the paths, which were also longitudinal, did not lead between the lines of posts, that is, they did not run under the roof aisles, but were themselves bisected by the rows of posts. There were three such longitudinal paths, with plants on raised gravelled terraces between them, and on promontories jutting on to them, or in areas enclosed by them.

Entering by the Cromwell Road, the visitor found himself on an elevated terrace, platform or promontory, transverse to the aisles, and overlooking a depressed central area covered with a magnificent display of Tree Ferns, Bananas, Cycads, Palms, Aralias, Dracænas, Pandani, Rhopalas, and other tall plants of tropical aspect, receding into the far distance in astonishing profusion and perfection; these towering over the terraced Grass slopes, which were covered with marvellous specimens of Roses, Rhododendrons, Azaleas, and Ferns, &c., interspersed with choice collections of Cacti, Aloes, dwarf Conifers, Hollies, Japan plants, and here and there groups of lovely Alpines, bedding-out plants, Auriculas, Pansies, Lilies, Pinks, and Picotees, &c. Very broad well-gravelled paths traversed this area longitudinally; of these the central one started from a rocky water-basin under the observer's stand-point, and terminated with a similar one at the other end. The lateral walks were similarly arranged, but smaller. At the south-west corner of the enclosure an oblong screened-off space was devoted to fruits and vegetables.

The main objects of horticultural attraction were centred in the heated aisle. This presented a central longitudinal broad walk, with on either side terraced Grass slopes, covered with the choicest and rarest plants. At the northern end was a group of admirably cultivated Japan plants; at the south some superb Nepenthes. On each side the chief attractions were collections of Japan Lilies, variegated-leaved plants, New Zealand Hymenophylla and Todeas, Begonias, and Caladiums; on the west side the most conspicuous features were the Orchids, amongst which the Cypripediums and Uropediums shone pre-eminent; and lastly, what was certainly the marvel of the whole Exhibition, a collection of new coloured-leaved and other plants, chiefly from New Grenada, which, whether for their startling novelty, perfection of cultivation, or extraordinary beauty, exceeded anything we ever saw. Though against the rule we laid down at starting, we must name M. Linden, of Brussels, in connection with this unrivalled display of novelty and beauty.

Such is a rude outline of the general arrangement, and the effect it had on ourselves, and all with whom we conversed. The principal object of those charged with the laying out of the grounds seems to have been to present, in the most unartificial sequence, a series of brilliant local effects of colour, foliage, and form, separately or combined, and this they have accomplished with very great judgment and singular success. It would be difficult to estimate the labour, thought, and powers of invention this has cost; and when it is recollected that this idea has been fully carried out with due regard to the space required for the freedom of motion amongst a vast crowd of eager gazers, we feel satisfied no amount of praise that we could award to these gentlemen will be thought excessive.

Variety and beauty everywhere met the eye; nowhere was there any conspicuous violation of order, taste, or due subordination of parts and colours; and nowhere was there any symptom of crowding amongst the throngs of admirers. In so vast an undertaking, carried out on so short a notice, faults must be committed, and as our duty is not that of a panegyrist, but of a critic, we must allude to such as struck us; but of these there was but one of any moment, and that is the want of any general *coup d'œil*. From the entrance platform it was expected some idea might be gained of the vast area covered with plants, but such was not the case; from this point the eye wandered over a mass of details, apparently arranged without reference to any general plan. Above the canvas-ridged roof and multitudinous cross bearers caught and averted the eye, dragging the attention away from what was below; and when forced down, the general effect was spotty and unsatisfactory—gay shawls and upright figures of black-coated visitors, mingled with upright posts, marred the effect of the foliage and colours of the plants, and presented with them an inharmonious assemblage. No doubt great difficulties presented themselves in the way of any other mode of treating the interior than that adopted, which involved parallel aisles, bisected by lines of posts, and a central depression of roof instead of elevation of roof; but it struck us that it would have been far simpler and more satisfactory to have treated each aisle as a vista, or valley, of itself, placing the tall trees and Grass mounds so as to have screened the posts, and running a balustraded terrace or transept at right angles to all at the entrance. The visitor would then in walking up and down the platform, transversely to the aisles, have looked up every aisle, each presenting some different feature; the visitors would have been confined to the central path of each, and would not have interfered with the view of the plants on either hand. This arrangement would have been more formal, it is true, but a series of parallel ridges supported by straight lines of posts is capable of rectilinear treatment only; it would have given a great idea of space—would have afforded good facilities for arranging the plants with more system—would have greatly facilitated the labours of the jury, and have afforded better means for the public finding what they wanted. We further think that it would have been possible to have opened two vistas from the centre of the platform to the far corner of the enclosure, diagonally across all the aisles.

We must not omit to mention that the Royal party traversed the whole Exhibition, and seemed greatly pleased and interested by it. The President of the Botanical Congress and some of the more eminent of the foreign members were presented to the Prince and Princess. It only remains to add that the blustering east wind, otherwise so ungenial, kept the whole inside cooled to a delicious temperature.

THE EXHIBITION AS SEEN BY A BELGIAN.

NEVER at any time has there been so important an Exhibition. The general effect surpassed anything previously seen, and by a combination of fortunate circumstances, the new plants now exhibited for the first time were among the most remarkable ever introduced into cultivation. The picturesque arrangement was a great success; the plants being disposed, for the most part, to the best advantage. The public had ample room to move about in the wide pathways, and from the elevated mounds placed here and there the spectators were able to enjoy the most varied effects. Perhaps the great central valley should have been a little less hemmed in, and the line of sight should not have been so much interrupted as it was, and then a finer and more extensive *coup d'œil* might have been obtained. Foliage plants were arranged in groups among the flowers, producing by the contrast a felicitous sense of harmony, and an effect of the richest character. The Rose, in spite of all rivals, here maintained her claim to be considered the queen of flowers; she still reigns supreme. The Azaleas, the Pelargoniums, arranged in great masses, were shown in full dress, with no little fulsome state and ceremony; their stems and their flowers tied to rings and hoops like those of a lady's crinoline. We are certain that this method of perverting the growth of plants will sooner or later be abandoned in favour of a more natural and less artificial mode of growing the plants. In making this remark, however, we acknowledge that the leaves of the plants in England have a fresh, pure, well graduated green colour, which cannot be obtained on the Continent. It is not necessary to go into details, which are given elsewhere, but we cannot forbear to mention some curious and interesting plants which were well represented on this occasion, such as the Nepenthes, the Sarracenias, the Lace Plants, a singular *fusus* of Pandanus utilis, with an untwisted stem; the Marattias, Trichomanes, Leptopteris, numerous Hymenophyllums; while the Marantas (25 new ones!) bid fair to drive the Begonias out of the field. Then one could but notice the splendid blossoms of the Lilium auratum, the extraordinary perfection of the zonale Pelargoniums, and the brilliancy of the spathes of Anthurium Scherzerianum.

Among Orchids the Cypripediums, Uropediums, and Selenipediums, were especially well represented; as were also the new Aucubas. Nor must we omit to mention the fruits of Vanilla planifolia. Among the new plants, more numerous than ever, the Maranta Veitchii, the Primula cortusoides amœna, the Coleus Gibsoni, the Eranthemum argyroneurum, and especially the Dichorisandra musaica and the Tradescantia undata, are truly "sensation" plants.

The Exhibition presented a thoroughly international character. Besides the improvement in the arrangements, the composition of the Jury has been perfected by the admission of the most eminent foreigners as judges. Botanists will take at least as much interest in this Exhibition as horticulturists. The presence of the illustrious De Candolle, with a galaxy of European botanists around him, lent great interest to the Congress; and at no previous Exhibition, we venture to say, has so large a number of foreigners been present. The élite of the horticulturists of Belgium, France, Holland, and Germany were present.

The Exhibition and the Congress owe their establishment to the energy of the Committee and of the Secretaries, who have triumphed over not a little incredulous *insouciance*—have broken through a vicious routine—and, in spite of opposition, have achieved a success which is all the more honourable to them from the pains and labour expended in attaining it. English hospitality, both public and private, has maintained its ancient character. The breakfast to the Jury, the banquet presided over by the Lord Mayor, the *soirée*, and a host of private entertainments, were all testimonials of the cordial feeling of the English towards their *confrères*, and of the kindly remembrance they had of the hospitality shown to the English at Brussels and Amsterdam. The foreigners, delighted as they have been with their reception, would have liked to have taken with them, as at Amsterdam and Brussels, a medal or other *souvenir* of the pleasant time they passed in London, though in truth they are not likely soon to forget the brilliancy of the Show or the cordiality of their welcome.

THE EXHIBITION AS SEEN BY A GERMAN.

WHAT a glorious thing to retain the good old English system of giving every plant room to show all its beauty, and of placing competitors for the same prizes side by side, and yet to add some of the charms of the picturesque Continental method, by having a skilful arrangement of colours, by substituting turf for benches, and by varying the surface! What an improvement, too, to have such an Exhibition open for a longer period, the first time this has been tried in England, and to have fixed the admission so low that, by payment of one shilling, any one may enjoy this great English work. It would be dangerous to enter into detail, as there would be no end to it. Those who declared that the English system would not allow of graceful arrangement, must now be convinced that the thing is possible, and we must allude to the group at the bottom of the Orchid tent as a most extraordinary composition.

Orchids, Nepenthes, Ferns, Conifers, and the splendid fruits, glorious as they are, have been seen, we believe, quite as good, perhaps sometimes even better. New plants are neither as numerous, nor are there so many competitors as one would have expected to have seen in England.

If we were ever to be members of such a Committee, we would vote for very large prizes to be awarded for the introduction of such plants that must have a great future before them, such as some of those that are

placed in the Orchid tent. It would seem that very few persons have any adequate idea of the great risk, cost, and mortification, incurred by an importer of such plants, whose much-criticised high prices are often not sufficient to cover his expenses.

That there are some Australian and a few Cape plants in beautiful condition we state as a most welcome circumstance, though we believe we have seen before in London, Hamburgh, and Herrenhausen much better Ericas. May the few collectors who grow these plants, remember that it is very desirable to preserve them, and to show them as often as possible. Where are now those pleasant greenhouses where one enjoyed the marvellous beauties of Flora, when out of doors the earth was covered with ice and snow? We are sure the taste for such greenhouses must revive. Herbaceous plants are very scarce, and it would seem as if only a few people know the charms of Alpine plants, many of which we have seen at various English places in such perfection, that the possibility of growing them is well established.

The presence of a male Cycas revoluta, and of a female Cycas circinalis, may be mentioned as a noteworthy circumstance. The Sarracenias, too, are wonderful.

If we were asked wherein there has been the greatest progress, we should undoubtedly say in the Roses. The most extravagant fancy could not imagine anything more superb than these queenly flowers.

So great is the merit of the Executive Committee that has organised this, the third International Exhibition, that it is desirable to place a votive tablet in some conspicuous place where horticulturists are wont to meet, for indeed it is impossible that human eyes can have ever seen before so magnificent a display of flowers.

A REPORT IN DETAIL.

New Plants.—For Six New Plants introduced into Europe by the exhibitor, there were five entries. M. John Linden, Brussels, was 1st and 3d, and Messrs. Veitch & Sons 2d and 4th. The first six were Anthurium regale, with fine cordate acuminate foliage, of a leathery green with distinct midribs and venation; Cyanophyllum spectandum, something after the style of magnificum, but with the leaves more oblong, and scarcely of so gigantic growth; Philodendron Lindeni, a Begoniæ-like plant, with handsome cordate leaves and brown hairy stems; Maranta Lindeni, a beautiful plant with fine shaded foliage, the under part especially very prominently lined; Bignonia ornata, a very handsome-leaved climber, white running into the glossy green from the midrib irregularly; Dichorisandra musaica, the most distinct and beautiful of the group, with leaves of a broadly ovate form, having multitudinous lines of white running across in a very deep groove, as if bored by an insect. Mr. Veitch had an Aralia from New Caledonia with handsome digitate leaves and filiform leaflets, regularly undulated on the edges; Rhododendron Brookianum, with a truss of concoloured flowers of a solferino tint; Maranta Veitchii; Acalypha tricolor, with ovate acuminate leaves of a brownish-green cast, and some of the portions as if they had been stained with red lead, a most interesting acquisition; a beautiful Peruvian Aphelandra of the Leopoldi strain but much more handsome, the midrib and principal veins being distinctly banded with yellow; Dracæna albo-marginata, having a pale green centred leaf with golden edges. The same firm had also Phyllanthus variegatus, with handsome ornamental white and green foliage; a fine sagittate-leaved Croton, with the usual green and gold which makes these plants so handsome; a very pretty Aralia, the leaves having ornamental footstalks, occasionally stained with yellow and crimson; a new Dieffenbachia; and a Coleus after the style of Verschaffelti, but having more finely-formed leaves. M. Linden had a distinct-coloured Eranthemum called igneum, with a prominent coloured midrib and the venation partly coloured; Maranta illustris, after the style of Lindeni; a curious and interesting flowered Psychotria called nivosa; and a very nice corrugated-foliaged Tradescantia called undata.

For Three New Flowering Plants, Mr. Veitch was successful with Begonia Pearcei, a very handsome velvety-leaved variety; the pink-flowered Palava flexuosa, and a Peruvian Aphelandra. Mr. Bull had his beautiful Bertolonia margaritacea; the Australian Mallow; and Siphocampylus fulgens. For One New Plant in Flower, M. Linden had a fine sample of the curious Psychotria nivosa, with woolly-surfaced flowers. Mr. Standish was 2d with a purple-flowered Clematis Fortuni, and Messrs. Veitch & Sons 3d, with the Australian Darwinia fimbriata. For One New Plant not in Flower there were some 20 entries, M. Linden winning with Dichorisandra musaica and Maranta Lindeni, and Messrs. Veitch having equal 2d and 3d with the new Aphelandra and Maranta Veitchii; Mr. Standish coming in equal 3d with a beautiful Japanese Athyrium, somewhat after the colour of Pteris tricolor. There were several interesting things exhibited under this head, and among others a Canadian Fern from Mr. Stark, Edinburgh, sweet-scented, and appropriately named Lastrea fragrans. Mr. Bull had a special award for a variegated-leaved Phajus grandiflorus, and so had M. Ambroise Verschaffelt for a curious downy-looking Cycad, named Zamia villosa; and a pretty tasselled-like Thuja from the Royal Exotic, Chelsea, demanded special notice.

In Class 5, for 12 New Plants of any description, in or out of flower, Messrs. Veitch put up a most interesting assortment, including among those already described Bertolonia guttata, quite a gem, spotted very sparingly with distinct rosy white on a dull green surface, and another species green with white; the new Coleus Gibsoni, free like its compeer, with well-formed stiff foliage, and perhaps a useful out-door plant in some localities; a species of Aralia; and the beautiful Primula cortusoides amœna, with fine large trusses of bright rosy coloured flowers. M. Linden had the Scindapsus pictum from the Philippine Islands; Dichorisandra vittata; Maranta virginalis, and the pretty dwarf M. rosea picta; a Manettia metallica, with distinct bronzy-looking elliptic leaves. Of Six New Plants of any description there were several collections, among which was that of Mr. Bull, who had Dieffenbachia eburnea; the very handsome Eranthemum argyroneurum; and several curious varieties of Urospatha. Mr. Williams had a prickly-stemmed Calamus, the highly-coloured Telianthera ficoidea versicolor, and some others. There was a nice assortment of variegated tender plants in the Orchid tent, Messrs. Veitch & Sons being 1st. Prominent among Mr. Williams's plants were the splendid Phormium tenax variegatum, Yucca Stokesii, &c. Madame Legrelle d'Hanis, of Anvers, and Messrs. Arthur Henderson & Co., also exhibited under this Class some nice plants. Of Economical and Medicinal Plants there was a most interesting display.

Store and Greenhouse Plants.—The post of honour in this department was nobly held by Mr. Baines, gr. to H. Micholls, Esq., Bowdon, near Manchester, with a collection of 16 plants, among which were magnificent examples of Franciscea confertiflora, Aphelexis macrantha purpurea, Boronia pinnata, Acrophyllum venosum, Dipladenia crassinoda, and Genetyllis tulipifera, the last with blooms unusually large and well-coloured; associated with these were also the beautiful Epacris named Eclipse, Erica Cavendishiana, E. tricolor Eppsii, and the charming E. ventricosa coccinea minor; Azaleas Extrani, Iveryana, and Criterion; Eriostemon buxifolium, Ixora aurantiaca, and I. coccinea, the last in robust health and beautifully in bloom. Mr. Peed, gr. to Mrs. Tredwell, Norwood, had a collection which stood next in point of merit. It contained a pretty white Ixora, one or two Ghorozemas, including the now seldom seen G. Henchmanni in good condition; a pretty example of Acrophyllum venosum, which, when in perfection, has at the end of each shoot fine bronzy young leaves, in which much of the beauty of the plant consists. The same collection also contained Everlastings, Eriostemons, Dracophyllum gracile, the rosy pink-blossomed Pimelea Hendersoni, and Azaleas lateritia and Gledstanesii, both worked on the same stock, a union which succeeds well together, and produces a striking yet pleasing contrast of colour. In a group of 12 plants from Messrs. Lee, of Hammersmith, to whom the first prize was awarded, were Medinilla magnifica, in beautiful condition, as were also Adenandra fragrans, one or two Everlastings, and other plants. From Mr. Rhodes, Sydenham, came the best Dracophyllum gracile in the Exhibition, a plant which, under ordinary cultivation, attracts little attention, but which, when brought to the high state of perfection in which this was shown, secures the admiration of all who see it. Mr. Carson, gr. to W. R. G. Farmer, Esq., of Clapham, received a 1st prize for an excellent group of six plants, a class which was well supported, and in which we noticed skilfully managed examples of Rhynchospermum jasminoides, the sweet-scented Rhododendron formosum, Azaleas, Pleroma elegans, the showy orange-blossomed Imantophyllum miniatum, and the bright golden yellow-flowered Oxylobium arboreum. From Mrs. Cole & Son, Manchester, came Phœnicoma proliferum, beautifully managed Everlastings, and other well-grown plants. Several well-grown plants were also shown as single specimens.

Fine-foliaged Store and Greenhouse Plants.—These were furnished in great profusion. From Messrs. Lee came a magnificent group, in which were admirable examples of Alocasia Lowii and metallica, Rhopala De Jonghi and corcovadense, Pandanus elegantissimus, the palmate deeply-divided leaved Oreopanax dactyliferum, Latania rubra, a handsome Palm; the large shining deep green hard-leaved Theophrasta imperialis, and two nice specimens of Ferns. From Messrs. Veitch came Crotons, Pandanus reflexus and Veitchii, the last in the form of a gigantic fan; Rhopalas; a very fine plant of Cycas revoluta; Dracæna indivisa lineata, Theophrastas and Palms, among which latter were Seaforthia elegans, Latania borbonica, Sabal umbraculifera, &c. Cycas circinalis, a fine spreading plant, came from Mr. Williams, of Holloway, as did also Pandanus javanicus variegatus, Crotons, Palms, Dion edule, Theophrasta, a handsome variegated Yucca, Alocasias, Dracænas, Cordylines, and Ferns. Messrs. A. Henderson & Co. contributed Pandanus ornatus, a handsome species; also P. utilis and elegantissimus, Jacaranda filicifolia, with light feathery Fern-like leaves; Hippomane longifolia, one of the new Japanese bronzy-red leaved Maples, and one or two other plants. From Mr. Baines, gr. to H. Micholls, Esq., came a beautiful collection, in which were fine plants of Gleichenia Speluncæ, Croton variegatum angustifolium and pictum, Anthurium grande, with large handsome leaves; Aralia leptophylla, Polyscias acrotrichum, Cordyline indivisa, Theophrastas, Alocasias, Rhopalas, and Tree Ferns. Mr. Taylor, gr. to J. Yates, Esq., Highgate, showed chiefly fine examples of Cycadaceous plants, in the culture and management of which he is most successful. Mr. Fairbairn, gr. to the Duke of Northumberland, furnished Maranta zebrina, the handsome white and green-leaved Alocasia macrorhiza, Anthurium acaule, with deep green leaves, quite 3 feet in length and a foot in width; Alocasia Lowii, with noble white-veined sagittate glossy foliage; and Thamnopteris Nidus, from which the eye, satiated with gay colours, derived refreshing rest. In a collection from Mr. Cross, gr. to Lady Ashburton, were Sphærogyne latifolia, Dracænas, Alocasias, a finely-coloured example of Cyperus alternifolius variegatus, and Maranta fasciata, with leaves ornamented with lateral stripes or bands of pale green, an effective plant. To other classes, Mr. Stevenson, Lark Hill, Timperley, near Manchester; Mr. Hiatt, gr. to Miss Burdett Coutts, Highgate; Mr. Young, gr. to W. H. Stone, Esq., M.P., Leigh Park, Havant; and Mr. Brown, gr. to Mrs. Alston, Elmdon, near Birmingham, contributed excellent collections. Among these we noticed Ferns, consisting chiefly of Cibotium princeps and Schiedei, and Gymnogramma aurea, Alocasia metallica, with concave bronzy purplish leaves, measuring 18 inches in length and 15 inches in width; Cyanophyllum magnificum, the red-leaved Dracæna ferrea and terminalis, Laurus Cassia, with red young leaves; Musa vittata variegata, the sword-like-leaved Sansceviera japonica, and other plants.

Hardy Deciduous Shrubs in Flower.—Collections of these came from Mr. Turner and Mr. Wm. Paul. They consisted of Deutzias, Weigelas, both pink and white; variegated varieties of Hydrangea japonica, White and Yellow Broom, Tree Pæonies, Gueldres Roses (V. plicatum and Opulus), double-flowering Thorns, Lilacs, Philadelphus mexicanus and grandiflorus, Flowering Currants, Double-blossomed Cherry, Cytisus of different sorts, Robinia hispida, Spiræas, common Berberry, Coronilla Emerus, Elæagnus argentea, and Staphylea pinnata.

Fine-leaved Hardy Deciduous Trees.—Of these Mr. Wm. Paul had a group in which were Acer Negundo variegatum and platanoides, Aralia spinosa, Aucuba-leaved Ash, the weeping variety of Ulmus microphylla, Hippophaë rhamnoides, Alnus imperialis asplenifolia, Magnolia tripetala, and acuminata, Silver Poplar, Ailantus glandulosa, a variegated variety of Quercus Cerris, a finely divided-leaved Horse Chesnut, gold variegated variety of Sambucus nigra, a purple-leaved Nut, a gold-variegated variety of Castanea vesca, a Purple Beech, Paulownia imperialis, and Symphoricarpus variegatus.

Hardy Climbing Plants.—Under this head Mr. Wm. Paul showed an interesting collection of Clematises, Honeysuckles, Aristolochias, Ivies, Vines, and climbing Roses (La Marque). Mr. Turner also had a collection in which were Ampelopsis hirsuta and hederacea, Bignonia grandiflora, Passiflora cœrulea, Clematises (including Standishii and Jackmanni), Ivies, and Honeysuckles.

Hardy Evergreen Trees and Shrubs.—The best collection of these was furnished by Messrs. Jackman, of Woking, who had among others remarkably good specimens of Laurus nobilis, Ilex scotica and dipyrena, Phillyrea angustifolia and ilicifolia, Arbutus Unedo and Rollissoni, Quercus glabra, Buxus sempervirens, B. argentea nova, and Laurustinus. Mr. Standish and Messrs. Lee also showed good groups.

New Hardy Evergreen Trees and Shrubs.—Of these Messrs. Veitch had Ilex Fortunii, Osmanthus ilicifolius and its dwarf variegated variety, a golden-variegated Elæagnus, Rhaphiolepis ovata, two variegated kinds of Euonymus, three new kinds of Aucuba, a variegated variety of Ligustrum glabrum, a species of Ternstrœmia, and Skimmia oblata. From Mr. Standish came four kinds of Aucuba, Ligustrum coriaceum, Euonymus, three kinds of Osmanthus, Skimmia fragrans, and others to which allusion has just been made.

Orchids.—The Orchids exhibited comprised many excellent specimen plants, covering a space of about 400 feet of the bank allocated for that purpose, and were as usual great objects of attraction. It might have reasonably been expected that in such a gigantic affair some of the other great collections of England besides those represented might have contributed, if for nothing else than to show our continental friends a great aggregate display. All the more honour, therefore, to the undernamed gentlemen for coming so generously forward with so many valuable specimens. Robert Warner, Esq., of Broomfield, was the only one who entered for 50 of any kind in bloom. Prominent among this group were several Vandas, well grown and bloomed, having spikes each from 8 to 12-flowered, and one plant of suavis, so prolific of bloom racemes that one was shooting forth in an abnormal fashion a strong spike, numerously flowered, from the top or centre of the specimen. The gem of this group, however, was the rare and beautiful Phalænopsis Portei, with 10 leaves, some quite a foot long in splendid health, with 4 branched panicles laden with blossoms. Cattleya Mossiæ was represented in numerous varieties, many of them unique as to size and formation of labellum, and varying in colour from white up through the various shades of flesh to the richest crimson. In truth, Mr. Warner's Cattleyas have been so often reported upon in this Journal that it would be a mere repetition to attempt to portray their highly decorative character; few of them had less than a dozen of flowers, some of them bore upwards of 30. Trichopilia crispa was a noble plant, with upwards of a score of flowers, and quite perfect in fulness; Phalænopsis amabilis, grandiflora, and Schilleriana, were well-grown plants, but the quality of the bloom not quite so good, although both panicles and flowers were numerous. In Lælias there were cinnabarina, with 5 spikes; purpurata and its variety Schilleriana, nice plants without being remarkable. Chysis lævis, with its buff and yellow-coloured flowers, a very fine thing, as was its compeer C. Limminghii. In Cypripeds there were two good barbatums, a nice plant of the pretty-foliaged but ineffective flowered Hookeræ, a good villosum, and hirsutissimum with a two-flowered peduncle. One or two nice Aerides, several Dendrobiums, comprising the rare and beautiful crepidatum, with six pseudobulbs full of flower a densiflorum, with 20 small spikes; Odontoglossum Karwinskii, or as Prof. Reichenbach will have it, Reichenheimii, which he holds to be quite distinct; a pale citrosmum, evidently hurried into bloom; and a few others of less note.

In twenties Mr. Bullen, gr. to A. Turner, Esq., Leicester, carried off the chief prize, having large plants of the following:—Dendrobium Paxtoni, with 12 spikes, a very good thing when well managed; D. formosum giganteum, with half a dozen good spikes;

densiflorum album, with five large spikes in excellent trim. Lælia purpurata, with eight spikes of smallish flowers, but a fine high-coloured sort; Oncidium ampliatum majus, quite a yard across, and having 10 branched panicles numerously flowered; Cattleya Skinneri, with 14 spikes, besides numerous shades of colour; Aclandiæ, with six finely highly-coloured flowers. A large mass of the strange, dull-coloured, and insect-like Brassia verrucosum; a noble Cypripedium barbatum, with 50 flowers in fine order; a large pot of Phalænopsis grandiflora; Odontoglossum cordatum, with a branched panicle, and much the finest sort that has been seen in this country; nævium majus in a fine large mass, but with short spikes, and not a very fine flower as exhibited; Saccolabium guttatum, with very short spikes; and some others.

Mr. Page, gr. to W. Leaf, Esq., Streatham, had much smaller specimens, but nicely managed, including a good pot of the old Oncidium flexuosum, and a fine strong panicle or two of ampliatum majus, along with a very distinct form of what is commonly called Vanda insignis, a distinct and highly-coloured form of suavis; a variety of Aerides crispum, called Brookei; a good plant of Phalænopsis amabilis, but like all the others exhibited, not in condition as to inflorescence; a good Dendrobium anosmum, with six long spikes; a nicely flowered plant of Vanda teres, with four flowers to the raceme; Saccolabium curvifolium, and a pretty well-retarded Lycaste Skinneri, &c.

Mr. Peed, gr. to Mrs. Tredwell, Norwood, had also a good assortment, including two sorts of Lælia purpurata, one of them with eight gorgeous flowers; an unusually highly coloured Vanda insignis; a grand example of Oncidium sessile, with its deep primrose flowers distinct in character. Among its fellows were Aerides Fieldingii with two branched spikes, and some others. Mr. Cullen, gr. to W. W. Buller, Esq., Exeter, had some finer sorts than either of the two above-mentioned collections, but the plants were much smaller. Conspicuous in this group were Selenipedium caudatum and Uropedium Lindenii nicely bloomed, the sweet-scented Epidendrum odoratum, a good Cypripedium Lowii, Aerides Warneri, and Phalænopsis Luddemanniana. Mr. Robson, gr. to G. Cooper, Esq., Old Kent Road, had also a fair group, among which was a branched raceme of Oncidium bifolium, a nice crispum, and a well-grown plant of Cattleya intermedia.

In the Nurserymen's Class for 12 distinct sorts, Messrs. Veitch & Sons, and Mr. B. S. Williams, Holloway, were placed in the order in which they are named, the former firm having Cattleya elegans 2 feet across, with nine finely-developed flowers; the best Lælia purpurata in the Exhibition, with four good spikes; a very handsome form of Vanda tricolor with two spikes; a noble Cypripedium villosum, with about 30 of the finely-varnished-looking flowers; an equally praiseworthy Dendrobium superbum, with upwards of 50 peduncles. Odontoglossum Pescatorei, with 20 flowers on a branched panicle; a noble plant of nævium, with at least 20 racemes; a pale-coloured Epidendrum vitellinum; Dendrobium densiflorum finely-bloomed; a gigantic Saccolabium guttatum with four spikes, each 18 inches long; Phalænopsis grandiflora, and a good Foxbrush Aerides. Mr. Williams had a nice piece of Vanda teres, finely bloomed; a noble plant of insignis, with three good spikes; a handsome specimen of Dendrobium clavatum with nine racemes, but not quite fully expanded; a splendid variety of Cattleya lobata, and apparently much the freest blooming of that species, with 17 flowers in four racemes; Mossiæ with numerous flowers; Cypripedium Stonei, really the most elegant of the race, with four handsome slippers; a very fine barbatum superbum; Phalænopsis grandiflora and Luddemanniana, Aerides Fieldingii, and one or two others. Mr. Bull was placed 4th, owing to the great gap in point of merit between this and the above collection. Conspicuous in that gentleman's lot was Anguloa Clowesii, Selenipedium caudatum, the pretty Lycaste Deppei, and others.

By far the keenest contest lay in the "tens," where Mr. Penny, gr. to H. H. Gibbs, Esq., Regent's Park, and Mr. Wilson, gr. to Wm. Marshall, Esq., Clay Hill, Enfield, were so closely pitted one against another, that it required the nicest discrimination on the part of the judges to place them. Both collections reflected the highest credit on the exhibitors, being nicely grown, cleanly put up, and artistically arranged. Mr. Penny had Dendrobium anosmum, with 10 spikes; Lælia purpurata, with 24 flowers; two fine branching spikes of the Foxbrush Aerides; a fine-grown plant of Odontoglossum nævium, with 10 spikes, evidently forced into bloom; an excellently managed plant of Phalænopsis grandiflora; a beautiful plant, covered with orange and crimson flowers, of Oncidium sarcodes; Trichopilia crispa, with 20 largely developed flowers; Cypripedium lævigatum, with four flowers to the raceme—seven in all on the plant, a decided acquisition, being of the Stonei class, but darker altogether, although not quite so large; and Saccolabium retusum, with two good spikes. Mr. Wilson's collection was rather too lavish in Dendrobiums. D. Dalhousianum had 12 spikes of highly-coloured flowers, noble, distinct, good, and covered with bloom, but not a telling plant in a choice collection, although in this instance it was as densely bloomed as an Azalea; Oncidium Phillipsianum, with 11 good panicles; an extra fine form of Dendrobium densiflorum album, with seven spikes; Cypripedium villosum, with 12 very fine flowers; a good Cattleya Mossiæ; by far the finest Selenipedium caudatum in the tent, having nine flowers—and such flowers for size and colour!—with petals about 29 inches long; D. tortile roseum, a little injured; and a good raceme of the brownish crimson and yellow Eriopsis rutidobulbon. Mr. Stevenson, Lark Hill, Timperley, Manchester, was 3d with Lælia elegans Turneri—a noble variety, which the plate in Warner's "Select Orchidaceous Plants" does not by any means do justice to; Anguloa Clowesii, with seven flowers; a good Cypripedium lævigatum, with three flowers; a well-managed Dendrobium densiflorum album, with four spikes; and a fine Odontoglossum nævium, of which there was a better display than has ever been exhibited in one tent before. Mr. Wheeler was also placed in this class.

For Six Exotic Orchids Mr. Howard, gr. to J. Brand, Esq., had Cattleya Mossiæ, with about three dozen flowers; a good plant of Phalænopsis grandiflora, with five panicles; much the finest-coloured Cattleya Aclandiæ exhibited, with eight flowers; Burlingtonia fragrans with about 20 spikes, and a good Saccolabium curvifolium. Mr. Fairbairn, gr. to his Grace the Duke of Northumberland, Syon House, was 2d with the best grown Oncidium ampliatum majus exhibited; Vanda tricolor, with three spikes; Cattleya Mossiæ, &c. Mr. Young, gr. to W. H. Stone, Esq., M.P., Leigh Park, had among other things a fine specimen of Vanda suavis, which appeared to be an improvement upon both Veitch's and Pescatore's varieties. Mr. Ingram, gr. to J. J. Blandy, Esq., High Grove, Reading, had also a neat collection. In Nurserymen's sixes there was not a spirited competition, Messrs. J. & C. Lee having the best lot, among which was Lælia purpurata, with 9 fine blooms; and the beautiful Odontoglossum citrosmum with 5 good spikes. Mr. Rhodes, Sydenham, and Messrs. Jackson & Son, Kingston, had also collections.

In the Class for New Orchids, shown for the first time in flower, there were nine entries; only two, however, were really eligible for a prize, the others having appeared more or less on former occasions. These were Aerides japonicum from M. Linden, Brussels, a plant not entirely new, but almost unknown to this country, having thick leathery leaves like a Foxbrush, only about half the length, and bearing a raceme having nine flowers, the sepals and petals white, with a shade of pale green at base, which is also covered thinly with lines of rose, the labellum short, but prettily rose-spotted —really a good thing. Angræcum citratum, from Messrs. Veitch & Sons, is a dwarf-growing sort, producing long racemes of white flowers studded closely together; this justly received the 2d award. Others, such as Vanda cristata from Mr. Williams, Oncidium concolor from Jas. Backhouse & Son, York, Cypripedium lævigatum from Messrs. Veitch, and others, have been previously shown. Mr. Warner exhibited his Cattleya Mossiæ Marianæ, a chaste white variety; and Jas. Bateman, Esq., of Biddulph Grange, had a fine form of Miltonia spectabilis, with the basal portion of the lip like Morelliana, and the lower part shaded white. The same gentleman had also Dendrobium taurinum with 11 flowers, the narrow screw-like petals being of a rich cinnamon colour and the labellum edged with same colour; the other portions of the flower straw-coloured, the two inferior sepals connate. Dendrobium Falconeri also was shown, suspended, from the gardens of Mr. Bateman; it was richly clad with its truly beautiful flowers, and received a special mark of distinction from the judges.

In Specimen Orchids there was a very fine Phalænopsis Luddemanniana from Mr. Charles, gr. to R. Barnett, Esq., Blackheath Park, with five racemes, the strongest one showing itself well above the foliage, and the plant evidently a free grower, from having a "break" coming away strong from its base. Mr. Cullen was 2d with a Phalænopsis amabilis, a strong specimen, and having, besides the main plant, two epiphytal growths on the old flower stem. Mr. Bullen was 3d with an immense nobile; and Mr. Webb, gr. to J. W. Miles, Esq., Bristol, had a well-bloomed Ansellia africana. Mr. Warner had also the rare Dendrobium Wardianum, with two flowers. The other exhibitors had contributions less meritorious.

In Variegated Orchids there were only two exhibitors, who were placed 1st and 4th respectively—Mr. Williams having splendid panfuls of Ancectochilus Lowii, intermedius, setaceus, Petola, Turneri, argenteus pictus, xanthophyllus and quercceticola; Phalænopsis Schilleriana and Goodyera pubescens. Those from Messrs. S. Glendinning & Sons were much smaller plants.

In Miscellaneous Classes for Orchids W. Marshall, Esq., had a fine-formed Trichopilia tortilis, with the extremity of its labellum like a large shell finely spotted towards the base, and the screw-like petals broader and more highly coloured than in the type; Aspasia lunata, a Miltonia-like plant, with a little more green than is usual in that family; the broad-leaved and highly ornamental-flowered Saccolabium guttatum splendens, Phalænopsis Luddemanniana, &c. Mr. Parker, Tooting, had also a few exhibited under this class, the best among which were Saccolabium ampullaceum, and a beautiful Aerides virens.

Sarracenias.—Mr. Baines had his usual good contribution, comprising Drummondi alba and rubra, flava, variolaris, purpurea, rubro-nervia, and some others unnamed. Mr. Williams was 2d with some choice sorts, but not such large specimens as Mr. Baines. J. Veitch & Sons had a First-class Certificate for Nepenthes hybrida maculata, being a fine dwarf form, and an apparently free-pitchering sort.

Palms.—Of these, two good collections were contributed by Mr. Fairbairn, gr. to the Duke of Northumberland, and by Messrs. Veitch. Among these we noticed the Cocoa-nut Palm, Latania borbonica and Jenkinsiana, Phœnix farinifera, Seaforthia robusta, Ceroxylon andicola, Corypha australis, Thrinax elegans, Chamærops humilis and excelsa, and Stevensonia grandiflora. Messrs. Williams, Jackson, and Bull also showed interesting groups of these handsome-leaved plants, as did also Mr. Young, gr. to R. Barclay, Esq., who furnished a beautiful specimen of Phœnix dactylifera.

Cycads.—Of these there were some highly interesting collections, one of the best of which was contributed by M. Ambroise Verschaffelt, of Ghent. It contained Zamia Verschaffeltii; Z. cycadæfolia, from Port Natal; and Z. Caffra, the last having a fine trunk 15 inches in diameter, and about 4 feet in height. From Mr. Yates came Zamia muricata, Z. Caffra and Cycas revoluta. Mr. Williams had Dion edule, Zamia pungens, and Cycas revoluta. Mr. Bull had the Australian Cycas plumosa, and C. Riuminiana, a comparatively new species from the Philippines.

Pandanads.—Of these Messrs. Veitch had beautiful examples of P. javanicus variegatus, P. elegantissimus, and P. ornatus. Messrs. Williams furnished P. utilis, P. reflexus, and Freycinetia imbricata. From Messrs. Jackson and Mr. Bull came P. furcatus, P. glaucescens, P. elegantissimus, P. imbricatus, P. javanicus variegatus, and P. Candelabra. An admirable example of P. elegantissimus came from Mr. Young, gr. to R. Barclay, Esq., Highgate; another of P. javanicus variegatus from Mr. Donald, gr. to J. G. Barclay, Esq., Leyton; and a third of P. utilis from Messrs. Veitch. From M. Linden, Royal Zoological and Horticultural Gardens, Brussels, came what was stated to be the true P. elegantissimus, a different kind from that usually distinguished by that name.

Ferns.—Conspicuous among these were magnificent specimens of Dicksonia antarctica and Cyathea dealbata and medullaris, from Mr. Williams, Superintendent of the Interior Gardens at the Crystal Palace. These measured sone 25 feet in height, and, having large spreading heads, were the admiration of everybody. Mr. Williams, Holloway, had a collection of 12 kinds, to which a 1st prize was deservedly awarded. It contained Platycerium grande, Dicksonia antarctica, Cibotium Schiedei and princeps, Gleichenia semivestita, microphylla, and flabellata; Woodwardia radicans, Cyathea dealbata, the handsome Lomaria gibba, and Todea africana. From Mr. Bull came Todea pellucida, Dicksonia antarctica and squarrosa, Cibotium princeps, Cyathea dealbata, Gleichenia semivestita, Marattia elegans, and others. Mr. Baines, gr. to H. Micholls, Esq., contributed Dicksonia antarctica, Alsophila excelsa, Cyathea medullaris, Cibotium princeps, Gleichenia flabellata, Davallia bullata and tenuifolia, Pteris scaberula, Platycerium grande, Cheilanthes elegans, Asplenium fœniculaceum, and Davallia pyxidata, all in excellent condition. Among collections of other amateurs who showed in this class we noticed Cyathea Cooperi and boconensis, Todea africana, Blechnum corcovadense and australe, Thamnopteris australasica, Alsophila Miquelii, Asplenium bulbiferum and Veitchianum, Adiantum cuneatum, Polypodium aureum, Pteris cretica albo-lineata, Platycerium alcicorne, Drynaria morbillosa, Marattia cicutæfolia, the beautiful feathery looking Leptopteris superba, and others. Among new varieties Messrs. Backhouse, York, furnished Asplenium anisophyllum from Natal; a specimen from the Mauritius, the Chilian Gleichenia cryptocarpa, Trichomanes fœniculaceum from Java, and others. From Messrs. Veitch came the Bornean Davallia alpina, Lomaria ciliata, and Asplenium novæ caledoniæ, both from New Caledonia; and a Peruvian Cheilanthes. Mr. Williams contributed Polystichum ordinatum, Lomaria rigida, a Gleichenia, Alsophila, Cyathea, and Adiantum. Of Hardy Ferns Messrs. Ivery had a large collection, a portion of which was placed in the niches and crevices of the artificial rockwork, to which they formed suitable decorations. Among them were some two dozen of the better and more choice kinds of Athyrium, some half-dozen Lastreas, about a dozen varieties of Polystichum, Blechnum Spicant crispum, Struthiopteris germanica, and two fine varieties of Hart's-tongue. From Mr. Salter, of Hammersmith, Mr. Wilson, gr. to W. Marshall, Esq., and others two cases interesting collections. Of new Hardy Ferns Messrs. Ivery had Lastrea Filix-mas Ingrami, a handsome robust kind; Polystichum angulare attenuato-cristatum, a slender graceful slightly crested variety; Asplenium Trichomanes Moulei, small, but very pretty; Athyrium Filix-fœmina lanceolatum, a handsomely-cut tapering-leaved kind; A. F.-f. formosum cristatum, beautifully crested, and A. F.-f. pterophorum, also a promising variety. Of A. F.-f. Applebyanum we noticed a nice basketful.

For 6 New Tender Ferns, Messrs. Backhouse was 1st with Asplenium anisophyllum, Gleichenia cryptocarpa, Asplenium resectum, Trichomanes fœniculaceum, Asplenium alternans, and Lindsæa sp.

Of 12 Lycopods the best in the different lots were Selaginella Danielsiana, erythropus, denticulata, umbrosa, cæsia, stolonifera, Willdenovii, variabilis, apoda, Martensii, cuspidata, inæqualifolia, canlescens, umbrosa, Rhrous, and Galeottiana. In nurserymen's classes, Messrs. Veitch had one unique lot, comprising Lycopodium formosum, a new species from the Solomon Isles, of totally distinct character from existing lots, assuming more the species of a pigmy Conifer, and hanging gracefully down; S. rubricaule, japonica variegata, a very pretty thing; Martensii variegata, and the handsome japonica. Others were exhibited, but they were much more common.

In Arads Messrs. James Veitch & Son were again successful with Dieffenbachia Baraquiniana, Alocasia Veitchii, zebrina, macrorhiza variegata, and longiloba, along with Aglaonema commutatum variegatum. Mr. Williams had also a nice assortment. The firm just named had a splendid lot of Marantads, comprising Veitchii, zebrina, vittata, splendida, Van den Heckii, fasciata, Jagoriana, and tubispatha. Madame Legrelle d'Hanis had also a nice lot, along with Rhynium maculatum, Van den Heckii, and some others.

Mr. Veitch's Araliads were very handsome, comprising Sieboldii, papyrifera, Oreopanax dactyliferum, peltatum, and platanifolia, with a new species of Sciadophyllum. Mr. Williams had also a nice lot. Mr. Cullen, gr. to Wentworth Buller, Esq., had a few Orchids, and a fine Amarylllis, unnamed. Some well-grown Nepenthes from Messrs. Veitch were grouped close by the Araliads, comprising Rafflesiana, Hookerii, a very beautiful dark-coloured sort; Dominiana; the

handsome small pitchering kevis, and a very distinct unnamed sort, more perfectly resembling a pitcher than most of the others. Messrs. J. & C. Lee had a nice collection of finely-fruited Aucubas, showing what their decorative character will be when under lengthened culture.

Dwarf Cacti.—Casefuls of these, and also a small collection of them, came from M. Charles Pfersdorff. Among them were Echinopsis Eyresii, bearing numerous comparatively large, pale pink flowers; Echinocactus Cummingii, with small orange blossoms; Echinocereus multicostatus, with handsome double flowers; Mammillarias of different sorts coming into flower; a small specimen of Old Man Cactus, and others.

Hardy Taxads.—Of these Messrs. Veitch had a fine collection, to which a 1st prize was justly awarded. Messrs. Waterer and Godfrey and Mr. Wm. Paul also exhibited in this class. In these collections were Taxus japonica, a handsome deep green Irish Yew-like plant; Cephalotaxus drupacea, and C. Fortunei, both bushy and handsome; Taxus fastigiata, of a pyramidal character; the Tasmanian Arthrotaxus selaginoides, the deep green Taxus adpressa, the Cheshunt and the Dovaston Yews, Podocarpus andina, Silver and Golden Yews, the little Taxus ericoides, and others. Messrs. Paul & Son, Lee, and Standish, also showed in this class.

Hardy Conifers, exclusive of Taxads.—Of these the best collection came from Messrs. Veitch, and a second in point of merit was contributed by Messrs. Waterer & Godfrey. In these groups were all the finer kinds of Picea and Abies, including A. Kæmpferi and the glaucous variety of P. nobilis, called magnifica cærulea; the handsome P. lasiocarpa, Pinuses of different kinds, Deodars, the handsome Cupressus Lawsoniana, Wellingtonia gigantea, Junipers, Thujas, and charming examples of Retinospora obtusa, pisifera, lycopodioides, and filifformis; also Thujopsis dolabrata and borealis. Smaller groups of Conifers came from Messrs. Lee and Messrs. Jackman. That from the latter formed a suitable background to the tasteful mass of artificial rockwork near the main entrance. It contained examples of Picea Nordmanniana and Pinsapo, from 4 to 6 feet in height, and about the same in diameter; Wellingtonia gigantea, very perfect in shape, 8 feet in height; and an unusually dense plant of Thuja gigantea, 8 feet in height, standing well out on the rock; also that graceful Californian tree Cupressus Lawsoniana, Abies orientalis, Juniperus sphærica, Deodar, and Thujopsis borealis. Mr. Wm. Paul, Messrs. Paul & Son, Mr. Standish, and Mr. Turner also all showed hardy Conifers. Of tender kinds, Mr. Bull furnished Araucaria Bidwillii, excelsa, Cunninghami and its glaucous variety Cookii, brasiliensis, and Libocedrus Doniana.

Caladiums.—These were well represented—Chouboutskoi, picturatum, Bellymei, argyrites, bicolor nanum, ficum and splendens, and the old Chantini; and among newer sorts, Dr. Lindley, Napoleon III. and Reine Victoria being much the best.

Anthuriums.—In these we have again Messrs. Veitch & Sons and Mr. Williams placed in the order in which they are named, both firms having good Anthurium Scherzerianum, especially the 1st prize lot; magnificum in both lots was also splendid, and so was the acaule from Mr. Williams, with its curious Cucumber-like inflorescence.

Begonias.—These formed a nice group, although much sameness characterised the assembly. Chief in importance were Helen Uhder, Victor Lemoine, President Van den Hecke, and Cloth of Silver. Begonias in flower were not a remarkable exhibition, and can only be tolerated as window plants in the crowded lanes of a city. In the same tent Mr. Watson had 12 filmy Ferns under glass shades on one side of the central division; and on the other Mr. Bull had his long-podded Radish as free in growth as a common Radish, along with Pitcairnea tabulæformis, the foliage of which is quite Sedum-like, with orange scarlet sessile inflorescence on the crown. Along with these were also the curious pendent stem and leaves of Brownea grandiceps, the handsome Cycas plumosa, the beautifully marbled Bignonia argyræa violascens, very handsome in young stage of growth; the curious Dioscorea Ancectochilus, with cordate acuminate leaves, and having the appearance in a natural state of being overrun with thrips.

Rhododendrons.—Fine collections of these came from Mr. Standish, of Ascot, and Mr. Noble, of Bagshot. The last, which consisted of some promising seedlings, was not, however, set up for competition. Messrs. Lane & Son had a large group of beautifully bloomed small plants, which gave life and beauty to a gently sloping bank that flanked one side of a piece of artificial rockwork, the other corresponding side being similarly occupied by plants of the same showy tribe from Mr. Jackman, of Woking. We also noticed some fine standard Rhododendrons.

Cape Heaths.—Of these there were several fine collections, all of which gave indications of improvement not only in regard to varieties but also with respect to culture. Of hybrids, in the way of aristata, there are now some fine things; and Spenceriana, though not quite new, is a good addition to the more fine-growing woody section. With regard to culture the collections to which the 1st prize was awarded were all that could be desired, and others were also highly satisfactory.

Yuccas, Beaucarneas, and Dasylirions.—The best collections of these came from Mr. Williams, M. Jean Verschaffelt, W. B. Kellock, Esq., Stamford Hill, and Mr. Bull. Among the Yuccas the handsomest were quadricolor, the common variegated Aloe-leaved kind, and Stokesii; Beaucarnea glauca and recurvata are both fine sorts; and among Dasylirions we noticed acrotrichum and its short-leaved variety, Hartwegii, serratum, latifolium, and longifolium.

Dracænas and Cordylines.—Beautiful collections of these were furnished by Messrs. Veitch, Williams, and Jackson. Among them were some noble specimens of Dragon tree, the size and height of which seemed marvellous to persons unacquainted with that species of vegetation; also fine examples of Dracæna indivisa, nigricans, Cooperi, and other red-leaved kinds. Among Cordylines, the most conspicuous, perhaps, were indivisa, australis, and heliconifolia, the last with deep green leaves of a large bold character.

Lilium auratum was well represented by Mr. Turner, from Slough, having each individual flower in quite as fine condition as some of that gentleman's remarkable Geraniums and Azaleas. Messrs. Veitch were 2d, and Mr. R. Parker 3d. Mr. Turner had also 6 distinct Liliums, including auratum, fulgidum, Brownii, &c. The Bougainvillæas were also very well done, in small pots.

Agaves.—These were shown in considerable numbers, and, although their stiff quaint forms did not associate well with the more flowing and graceful vegetation with which they were surrounded, yet in the neighbourhood of rock-work, near which they were placed, they were not without effect, and evidently had many admirers. In the Class of 24 varieties, M. Jean Verschaffelt was 1st. Conspicuous among his varieties were Verschaffeltii, with handsomely-formed green leaves; Jacobiana, with broad green leaves; Ousseghemiana, also a fine kind; filifera; and Noacki, the last a drooping-leaved sort. From Mr. Williams, Holloway, came schidigera, filifera, and its long-leaved variety; the common variegated American; medio-picta, with leaves striped in the middle with yellow, instead of being edged with that colour as in the American Aloe; excelsa, a spiny-leaved sort; picta longifolia, with long leaves, edged with yellow; and decalbata, the last with pale, glaucous-green, long narrow foliage. M. Charles Pfersdorff, Paris, also showed a collection, and smaller groups came from Mr. Kellock, M. Ambroise Verschaffelt, and Mr. Young, gr. to R. Barclay, Esq.

In Amaryllis there was a gorgeous display, the Messrs. Veitch leading off with a splendid assortment of 12, including Fair Helen, Stephenson, Belladonna, Anderson (in the way of Ackermanni), Madame Rachel, Souvenir d'un Ami (fine form), Prince Héréditaire (a great stride in advance of Crocea grandiflora), Queen of the Netherlands (a beautiful light-coloured sort), Enfant Cheri (also good), Goliath (in the way of Cleopatra), Goldsmith (after the order of Holfordii) and Pantheon, very fine form. Mr. Williams was 2d with Grandis (a good dark), Exquisita, Robustum, Cleopatra, Quartermaster (a good red and white), Williamsii (a very good red), Holfordii, Favourite (not quite so fine form), Ackermanni pulcherrima, Evening Star, and Princess Helena (a very fine deep crimson). Mr. Parker was 3d. The sorts differing from those already named were delicata, Johnsoni, psittacina, vittata amabilis, Matilda splendens, vittata, and Suttan. This gentleman had also a nice-flowered plant of Clerodendron Balfourii.

Azaleas.—The great contest of the day on this, as on former occasions, laid between Mr. Turner, of Slough, and Messrs. Veitch, of Chelsea, from both of whom came magnificent plants, conical "mountains of bloom," measuring 7 or 8 feet in height, and about as much across at the base. To Mr. Turner was awarded the 1st prize, for examples of Variegata, Illustris nova, Iveryana, Perryana, Sir Charles Napier, Criterion, Barclayana, and Chelsoni. Messrs. Veitch had Criterion, Chelsoni, Trotteriana, Cedo Nulli, Magnificent, Extrani, Carnea superba, and Juliana. Mr. Turner showed a noble specimen of Etoile de Gand; Messrs. Veitch had President, a showy red kind; and Mr. Carson, the old Chinese yellow, fine plants of which are now scarce. In other collections were many excellent plants of varieties with the names of which all are familiar. A large and fine collection of well-flowered little pyramidal plants was shown by Messrs. Lane.

Roses.—Charming collections of these came from Mr. Turner and Mr. Wm. Paul, to whom prizes were awarded in the order in which the names stand. About both collections, but especially the first, there was a brightness and beauty which was quite captivating. Among the kinds were Madame de St. Joseph in fine condition, Victor Verdier, Souvenir de Malmaison, Vicomte Vigier, Souvenir d'un Ami, General Jacqueminot, Madame Boll, Madame Damazin, Anna Alexieff, Baronne Prevost, Charles Lawson, Paul Ricaut, and other well known kinds. Messrs. Francis, Lane, and Paul & Son, also showed good collections, as did also Mr. Terry, gr. to A. G. Puller, Esq.; Mr. Chalmers, gr. to E. J. Coleman, Esq.; and Mr. Young, Highgate. The new Roses Mr. Wm. Paul and Messrs. Paul & Son had small exhibitions, as had also Messrs. Lane and Turner. Comtesse de Chabrillant was shown as a single specimen in excellent condition by Mr. Turner. Mr. Wm. Paul had President, Messrs. Lane Chénédolé, Messrs. Paul & Son Lælia, and Mr. Francis Souvenir d'un Ami. Of Roses in 8 inch pots there were several interesting collections as well as boxfuls of cut blooms. Among the latter were glorious illustrations of the fine new yellow Tea Rose Maréchal Niel, which were deservedly the admiration of everybody. These came from Mr. Mitchell, of Piltdown, Maresfield, Sussex. Of standard Roses one or two good collections were shown.

Hollies.—Large collections of these were contributed by Messrs. Veitch, Waterer & Godfrey, Lee, Osborn, Wm. Paul, and others. Among them were Ilex cornuta, with singularly formed leaves; I. Aquifolium Hodginsii, one of the very best of large dark green-leaved kinds; Shepherdii, a fine dark kind; and variegated varieties of every kind, among which the sorts called Milkmaid (both silver and gold-striped) are not the least attractive. Of Hedgehog varieties there were also good examples.

Standard Evergreens.—Of these there were some beautiful examples. Messrs. Jackman had a pair of Hollies (Waterer's Variegated) which are reported to have been in their possession about 40 years. They have stout straight stems of some 5 feet or 6 feet in height, and compact symmetrical heads, which could not measure less than 6 feet across. To these was justly awarded a 1st prize. Messrs. Veitch and Waterer & Godfrey also showed standard Hollies. From Mr. Bull came a nice pair of standard Laurustinus. The best pair of standard Bays came from M. Jean Verschaffelt, of Ghent; Messrs. Veitch had also a good pair. Messrs. Lee contributed the best pair of standard Portugal Laurels, and Messrs. Veitch the best pair of standard Box trees. From Mr. Bull came two charming standards of common Myrtle. Handsome pyramidal Bay trees were contributed by Messrs. Veitch, Mr. Bull, and Messrs. Lee. Standard Yews, Yews in the form of tables, cups, and other shapes, also had their admirers.

Florists' Flowers.—Zonal Pelargoniums formed an interesting feature of the Show, and those in Mr. Fraser's group were well grown and bloomed. In this lot Emilie Licau and Malakoff were both fine, and Princess Mathilde and Enamel in Mr. Turner's lot were equally good. Mr. Lermitte's plants were very fine, but not sufficiently in bloom. Mr. Paul's group of Nosegay Geraniums contained Scarlet Dwarf, Duchess, Crimson Queen, richly coloured; and Orange Nosegay, which has in it a strong yellow shade of colour.

Variegated tricolor-zoned Pelargoniums were in great abundance, and in the competitive groups, Sophia Cusack, with bright distinct markings, is in the foremost rank of Zonales. Lady Cullum is very much like it, and both are good. In Mr. Saltmarsh's lot was Bird of Paradise, which has smaller foliage than Sunset, and of compact habit with bright markings; and Electra, a fine kind of the Mrs. Milford section. Several groups of seedling variegated Pelargoniums were shown. Messrs. Saltmarsh & Son had Queen of the Fairies, which has a very distinct small well-marked leaf, with trusses of well-formed flowers, white with scarlet centre; a First-class Certificate was awarded to it. Luna, sent out last year, is a good useful kind. Messrs. Smith of Dulwich, sent several kinds, and Jetty Lacy, to which a First-class Certificate was awarded, has a high-coloured zone. Souvenir de Sir Joseph Paxton is another bright-coloured kind, and L'Empereur, Aurora, and Refulgens are all good. Messrs. Carter & Co. had a batch of showy and fine Zonals of the Mrs. Pollock strain, in some of which the colours were very distinct and good: Titania, Ruby Ring, and Oberon, being amongst the best. Messrs. Garaway, Mayes, & Co.'s collection included Queen of Tricolors, Princess Leiningen, a smallish-leaved kind with bright zone, to which a Second-class Certificate was awarded; Ada Mayes has a pale yellow leaf with bright zone, and less green than in some other kinds; L'Africaine is of Punctatus type, with a strongly marked zone. Mr. Jabez Chater had in his batch Senior Wrangler, a clearly-marked bold-leaved kind, to which a First-class Certificate was awarded. Mr. Hally, of Blackheath, sent Sirius and Mirth, both prettily marked kinds of the Italia Unita type; and Fire King, a promising variety of the Mrs. Pollock strain, with well-formed truss, but the plant was not in good condition.

Amongst Seedling Zonal Geraniums, Rebecca and Prince of Orange received First-class Certificates; and Waltham Zephyr is a capital variety of the Nosegay section. Little Gem is a small Oak-leaved kind, with an abundance of small rose-coloured flowers. These are all from Mr. W. Paul. Wiltshire Lass, from Messrs. Downie & Laird, was shown in good character. Silver Queen, from Mr. Bull, a very pretty Ivy-leaf variety, with clear white variegation, is a decided acquisition, both in leaf and flower.

Seedling Pelargoniums were not very numerous, but Mr. Bull's seedling—Mrs. Clifford, a bright flower, and Favourite, a dark painted flower—both received First-class Certificates. Nabob, Charles Turner, and Sunny Memory will all be good trade varieties. Side by side with these were dried flowers of Pelargoniums cultivated 60 years ago. Mr. Turner had a group of Fancy Pelargoniums, two of which, Duchess of Buccleuch and Sylvia, received First-class Certificates. Miss Watson will also become a favourite, and Madame Vilda is also a bright-coloured fine kind.

Mr. Bailey's Pelargoniums were so fine that it seems impossible to get them much finer; and Mr. Turner's plants were also very good. Mr. Fraser's fancies were also very fine. Mr. Bailey's single specimen Rose Celestial was in every way a noble plant.

Some capital herbaceous Calceolarias were shown, especially those from Mr. Watson, which were models of good cultivation. The tree Mignonette was not remarkable, and was very inferior to what we have seen at Liverpool and other places. The three low Standard Fuchsias on short stems, with symmetrical heads and beautifully flowered, from the Rev. A. H. Brydges, were much admired. A few fine boxes of Roses were sent, and these replenished day by day, as they have been in some cases, keep up a fresh and attractive appearance.

In the Classes for Pansies in Pots, the fancy kinds were the best grown; and the cut blooms from Messrs. Downie & Laird were very fine. Some Seedling Pansies, viz., Sunrise, Sorceress, Sweet Lucy, and Lady Clare, were all fine. A bedding kind named Imperial Blue, promises to be most useful and showy. A batch of Seedling Petunias from Mr. Bull received a Certificate, and a pretty Myosotis Impératrice Elizabeth, from Mr. Bull, received a Second-class Certificate. Close by these was a fine Seedling Azalea, Madame de Cannart d'Hamale, a large and showy flower of yellowish white, coloured with faint pink stripes.

Mr. Turner's stand of Tulips were very telling indeed, and contained Mary Headly, Sarah Headly, and many other choice flowers in fine character.

Miscellaneous Subjects.—Of the beautiful Eucharis amazonica, three or four magnificent specimens were

shown in tubs by Mr. Howard, gr. to E. Brand, Esq., Balham. They could not measure less than 5 feet in diameter, and they were quite as much in height, each shoot being ornamented with three or four large flowers, which were stated to be excellent for bouquets and to keep in perfection for 10 or 14 days in water. Little more than two years ago, it was stated, these plants were in 3-inch pots; they were shifted into larger ones as they required it, and were liberally fed with manure-water, keeping them in a stove in bottom-heat. The result has been the wonderful specimens in question, which have blossomed three times since Christmas.

Lady Dorothy Nevill had three plants of Ailantus, with the silkworm caterpillars living on the leaves; there was also a box close beside them, having the cocoons, and the perfect male and female moth, along with different specimens of silk, spun and dyed fit for use. Mr. Knight, Chateau de Pontchartrain, had a hybrid Amaranthus of a very highly decorative character, which, if maintained, will render it very useful either as an in-door or out-door plant. A series of aquatic plants and basket conservatory plants were shown by J. W. Taylor, Esq., Stoke Newington. M. Linden had a nice miscellaneous group, chiefly of some species shown under the New Plant section. Adjoining these the Messrs. Lee had a miscellaneous group, and W. Marshall, Esq., of Enfield, had a nice pan of Ouvirandra fenestralis, backed up by several Maiden-hair Ferns, which had a very charming effect. Messrs. E. G. Henderson & Son had also a miscellaneous group, into which several plants of the variegated Dog's-tail Grass were inserted. Messrs. Veitch & Sons put up a good bank at the one end of the tent adjoining Mr. Warner's Orchids, comprising many fine things, and not the least interesting in the batch was the fine new Azalea Stella, with several Aucubas, and other Japanese plants. Among these was also shown a remarkable fine collection of Alpine plants from Messrs. Backhouse, of York, which appeared to create quite as much interest as many more showy subjects. Of hardy variegated Alpine and herbaceous plants, Mr. Salter showed a beautiful group; and of handsome-leaved soft-wood plants, Messrs E. G. Henderson had some charming examples. Mr. Stark, Trinity, Edinburgh, showed a small but interesting group of Canadian plants.

It may be mentioned that the large compartment set apart for Orchids and other tender plants has been gratuitously warmed by Mr. Ormson. This has been effected by means of one of his multi-tubular boilers and 3200 feet of 4-inch pipe.

FRUIT.—After the magnificent display of flowers, the fruit somewhat fell off in quantity. The display, nevertheless, was on the whole good for the season, and in many instances the quality was quite up to the mark. We were sorry to miss at this Show some of our own great exhibitors, who have gained high honours on other occasions, probably owing to the fact that many entered their productions beforehand, and did not find them ripen sufficiently well for purposes of exhibition. Forced fruits, consisting of 10 dishes, were exhibited by Mr. Turner, of Slough. Among them were two very good Cayenne Pines, Muscat and Black Hamburgh Grapes of very superior quality, and a good dish of Grosse Mignon Peaches, Hunt's Tawny Nectarines, Figs, Strawberries and Melons.

Pine-apples.—Among these were some very good fruits. Of Queens, a very well-grown specimen came from the Duke of Richmond, and took the 1st prize; the 2d prize was awarded to the Rev. T. Micklethwaite; and the 3d was won by Mrs. Barchard. Smooth Cayennes were exhibited by Mr. Barnes, gr. to Lady Rolle, and the Duke of Richmond, both being very good fruit; but to that from Bicton was given the 1st prize. In the Providence Class there was only one fruit, which came from Mr. Meredith, of Garston. In the Open Class for Pines of any other kind, the 1st prize was awarded to Mr. Page, gr. to W. Leaf, Esq., for a large Prickly Cayenne; the 2d for a fine specimen of Black Prince, to J. Dixon, Esq.; the 3d to Mrs. Cubitt for a very neat Black Jamaica.

Grapes.—These were exhibited in considerable abundance, and many of them were good in quality. In the Class for five kinds, the 1st was carried off by Lord Bagot for a well-ripened collection, consisting of Black Tenerife, Golden Hamburgh, Black Hamburgh, Chasselas Musqué, and Black Prince; the 2d prize went to H. Akroyd, Esq., for a very good collection of Black Grapes; and the 3d to Mr. Osborn for a collection exhibiting both growth and quality.

The Class for 6 bunches was well represented. The 1st prize was awarded to Mr. Hill, gr. to R. Sneyd, Esq., of Keele Hall, for six very fine bunches of Black Prince, well coloured and well grown; and the 2d, for six Black Hamburgh, compact and well-grown bunches, was given to Mr. Osborn; the 3d to Lord Bagot, for the same, better coloured than the last, but smaller in berry. Very good collections were also exhibited in this class by J. Dixon, Esq., Mr. D. Clements, and Sir H. Beaumont, Bart.

The competition for 3 bunches of Black Hamburgh was very keen, producing 17 competitors, and containing some of the best Grapes in the Exhibition. The 1st was awarded to H. Akroyd, Esq.; the 2d to Mr. Turner, and the 3d to Sir G. H. Beaumont, all well-grown and coloured; and, treading very close upon their heels, were good fruit exhibited by Captain Glegg, Lord Bagot, J. Dixon, Esq., Mr. Clement, J. H. Lermitte, Esq., and Mr. Osborn.

In Class 169, for Black Grapes with a Muscat flavour, the 1st was awarded to H. Akroyd, Esq., for Black Frontignan; the 2d to Lord Foley, for the same; and the 3d to the Earl of Stair, for Muscat Hamburgh.

For 3 bunches of Black Grapes not having a Muscat flavour, the best came from Mr. Hill, of Keele Hall, Black Prince; 2d to West's St. Peter's, from H. Akroyd, Esq.; and the 3d to W. Jones Loyd, Esq. Black Prince, all well-grown specimens.

The Class for 3 bunches of Muscat of Alexandria produced only three competitors, of which the best were good bunches from Mr. Turner, 1st; Mr. Fowler, 2nd. White Grapes, having a Muscat flavour, Mr. Standish 1st., with excellent bunches of Muscat Trovêren; Earl of Stair 2d; Viscountess Palmerston 3d, with Chasselas Musqué. White Grapes not having a Muscat flavour, produced a very good competition; the best were 3 very fine bunches of Buckland Sweetwater from Mr. Osborn; the 2nd to the Earl of Stair for tolerable Golden Hamburgh; the 3rd to Lord Bagot for the same, small, but well ripened. In this class some good Sweetwater came from Mr. Turner, and Dutch Sweetwater from Viscountess Palmerston.

In the Class for single bunches of Black, H. Akroyd, Esq., again carried off the honour of 1st prize with a large bunch of well-coloured Black Hamburgh; 2nd to Mr. Osborn. Single bunches of White, 1st Mr. Turner, 2nd Mr. Osborn; both large and well-grown specimens. Four large Vines in pots came from Mr. Lane; these were well grown and well fruited, and richly deserved the 1st prize. Two Vines in pots were also exhibited by Colonel Lloyd, in which the rods were trained to a large iron ring about two feet in diameter, round which the fruit hung gracefully pendent.

Melons.—The competition for Melons produced some very fine handsome fruit, but as these are judged by flavour, beauty does not always carry the day. The 1st in Green-flesh was awarded to H. Littledale, Esq., for Meredith's Hybrid Cashmere; the 2d to G. Foljambe, Esq., for a new Melon called Excelsior; and the 3d to Mrs. Hope of Deepdene. Scarlet-flesh varieties were, 1st, Scarlet Gem, J. Miles, Esq.; 2d, J. Gott, Esq.; and 3d to Messrs. Gadd, of Worthing, for a fine fruit of Scarlet Cantaloup.

Peaches and Nectarines.—Peaches and Nectarines were not shown in quantity, but were very good in quality. The 1st for Peaches was awarded to Sir G. Phillips, and the 2d to Mr. Turner for Grosse Mignonne; very good fruit also came from the Duke of Newcastle and Earl of Shaftesbury. In Nectarines the 1st for three kinds was awarded to very good fruit from C. N. Newdegate, Esq.; and in six fruits, the 1st to Mr. Turner, and the 2d to the Duke of Newcastle, both very well-grown fruits.

Figs.—Of Figs, the best were good fruit of Brown Turkey, from the Duke of Northumberland, Syon House; 2d, Duke of Newcastle, with the same variety; and 3d, to the Countess Cowper, for Lee's Perpetual.

Strawberries.—The 1st prize for six kinds of Strawberries was awarded to a very good collection from J. H. Barnes, Esq., the best of which were President, Sir Harry, and Sir Charles Napier. In threes the best were from R. P. King, Esq., of Bristol; all clean, well-grown fruit. Single dishes were contributed by Mrs. Cubitt, of Denbies, 1st; R. P. King, Esq., 2d; and Duke of Hamilton, 3d. In the Class for Strawberries in Pots a good collection of well-grown plants of Keens' Seedling came from the gardens of the Duke of Northumberland, at Syon House.

Cherries.—Cherries do not call for any particular remarks; the best were Empress Eugenie, from Viscountess Palmerston, and Black Circassian from Captain Lee. A fine specimen plant in a pot of the new Frogmore Forcing Cherry, loaded with fruit, came from Mr. Turner, of Slough, to which the Committee awarded a First-class Certificate.

Raspberries.—Two dishes of Raspberries were sent by E. F. Hopwood, Esq., to which a 2d prize was awarded.

Bananas.—Two fine bunches of Bananas were exhibited. The 1st prize went to P. L. Hinds, Esq., of Byfleet; this was a very large and fine bunch, and elicited much admiration from the professionals. The 2d prize came from the gardens of J. Gott, Esq., of Leeds.

Miscellaneous.—In the miscellaneous Classes for Fruit we may particularise four very fine Queen Pine-apples from the gardens of the Duke of Richmond, at Goodwood, all well-grown and handsome fruits. A large box of well-grown Nectarines came from C. N. Newdegate, Esq.; also a good dish of the fruit of Vanilla planifolia from the gardens of G. J. Foljambe, Esq., Osberton. Good Citrons and Oranges were sent by Mr. W. Hazlewood, of Hoddesdon. Several collections of exceedingly well-kept fruit of Apples and Pears were exhibited in this class, amongst the most conspicuous of which were a good collection from Lady Hamilton, also Mr. Earley, of Digswell, and an excellent one from the Countess Cowper of Wrest Park, who also sent a fine dish of The Warden Pear. Another good collection of Apples and Pears came from the gardens of W. E. Hubbard, Esq., of Horsham; near these were exhibited very fine fruit of the new Castle Kennedy Fig, together with leaves and branches, on which were many young fruit, showing that in addition to being a large Fig of first-class quality, it is very prolific. Another interesting object was the fruit of Dion edule, exhibited by J. Yates, Esq., of Highgate; also a fine jar of pickles, sent by Mrs. Earley, of Digswell.

VEGETABLES.—The exhibition of vegetables, taken as a whole, was very good both in quantity and quality. In the class of forced productions, the 1st came from the gardens of the Rev. F. W. Micklethwaite, of Norwich, and comprised Peas, French Beans, Turnips, Carrots, Mushrooms, and Potatos; the 2d from that of the Earl of Darnley, were tastefully dished up on baskets of green Moss, and consisted of Seakale, Mushrooms, Carrots, Potatos, French Beans, and Tomatos. In the Class of Vegetables not forced, the competition was keen and close, and produced some very good exhibitions. The 1st was awarded to T. T. Drake, Esq., of Shardeloes, amongst which the most noticeable were very fine Leeks, Cauliflowers, and Asparagus; the 2d to Mrs. Hope, of Deepdene, which contained good Cauliflowers, Chinese Yams, and tolerable Asparagus; and the 3d to the Earl of Darnley, for a very even and good collection of six kinds. Among the most noticeable of the remaining exhibitions in this class may be specified a very good collection from Mr. John Cattell, of Westerham, and another from J. J. Blandy, Esq., of Reading.

Salading.—This Class produced five competitors, the prize takers treading pretty close upon each other's heels. The 1st fell to Mr. Mason, of Deptford; the 2d to the well put up exhibition by the Earl of Darnley's gardener, Mr. Budd; and the 3d to Lady Hamilton, of Bloxham Hall; all the three were very good, and consisted generally of about 14 varieties.

Asparagus, 50 heads.—This class produced a very good competition; the 1st prize fell to George Tippett Hasell, Esq., of Bristol, for very fine heads; the 2d to Countess Cowper for 50 heads, weighing 7¼ lb.; and the 3d to J. Cockle, Esq. In the class for the 12 largest heads the 1st prize was awarded to Geo. Tippett Hasell, Esq.

Mushrooms.—1st prize to the Earl of Darnley for a well-grown dish in good condition; the 2d to E. J. Hopwood, Esq., for a large and full-grown dish; an excellent dish also came from F. Pryor, Esq., of Welwyn.

Potatos.—Here likewise the competition was keen and close. In the Kidney class the 1st went to Ireland, to the Earl Fitzwilliam, of Coollattin Park, Wicklow, for Prince of Wales; 2d, Lady Hamilton, for Mona's Pride; the 3d to Mrs. Hope, of Deepdene. In the class for round Potatos, the 1st fell to Mr. T. Westbrook, of Abingdon, for a very fine dish of Royal Albert; the 2d to a sort named Early Betty.

French Beans.—Fourteen competitors strove for honours in this class. The 1st fell to T. S. Oates, Esq., Hanwell; the 2d to E. Oates, Esq., of Hanwell; the 3d to J. Gott, Esq., of Leeds.

Of *Peas*, a very good dish of Little Gem, a dwarf Marrow, was sent by Mr. Turner.

Early Carrots.—In this Class the best came from the Countess Cowper, closely followed by Mrs. Hope, of Deepdene.

Cucumbers.—The competition in this Class was very keen, and appears to have excited as much interest as anything in the tent, and it see as a matter of regret that so many beautiful specimens should have gone unrewarded. The 1st prize fell, a beautiful brace of Hamilton's Invincible, came from the gardens of Lord St. John; the 2d prize went to Mr. Smith, for a small but handsome brace of Hybrid Kenyon. Where all were so good it would be invidious to particularise. In the classes for the handsomest and the longest, the competition was not so close, but the prize fruit were of very good quality and appearance.

Rhubarb.—The whole of this exhibition was very good, some of the stalks being marvellously large. The 1st went to Mrs. Hope, some of the stalks were 3 feet in length and 6 inches in circumference near the base; the 2d was awarded to Mr. Cattell, of Westerham; and the 3d to R. Barclay, Esq.

Cabbages.—These were shown in quantity; the best came from Countess Cowper; the next from Mr. Earley, of Digswell.

Cauliflowers.—The contest here was between Mr. Cattell and Mr. Snow, the latter being close on the heels of the former, who stood 1st.

Broccoli.—Here again Mr. Cattell stood 1st, closely followed by Mr. Whiting, of Deepdene. Mr. Squibbs, of Rook's Nest, also sent very good heads.

MISCELLANEOUS VEGETABLES.—In this Class a First-class Certificate was awarded to M. Morin d'Auvere, 38, Rue St. Merry, Fontambleau, for Chinese Yams; the same was also awarded to Jones Lloyd, and Ivery & Sons, of Dorking, all three very good examples, but the Frenchman carried the palm for size in one specimen.

Well-kept Potatos were sent by Mr. Whiting, of Deepdene, and also from the Rev. G. W. St. John, rector of Woodstock. Both these collections were in very excellent condition. Gigantic Leeks were sent by the Duke of Hamilton's gardener, Mr. Irving. Also a very good Red Beet named the Nonpareil, from Messrs. Gadd, of Worthing, fine colour and good flavour.

Messrs. Ivery, of Dorking, sent a specimen of a new Lettuce called the International, a cut-leaved variety, of which we must see more before we can pronounce an opinion as to its merits.

Garden Plans and Table Decorations.—For our remarks on these we must endeavour to find room next week.

LIST OF AWARDS.

§ 1.—GENERAL COLLECTIONS.

Class 1.—6 New Plants introduced into Europe by the exhibitor: 1st prize M. John Linden, Brussels; 2d, Messrs. James Veitch & Sons, Chelsea; 3d, M. John Linden, Brussels; 4th, Messrs. James Veitch & Sons, Chelsea.

Class 2.—6 New Plants, shown for the first time in Flower: 1st, Messrs. James Veitch & Sons, Chelsea; 2d, Mr. William Bull, King's Road, Chelsea.

Class 3.—1 New Plant in Flower, introduced into Europe by the exhibitor: 1st, M. John Linden, Brussels; 2d, Mr. John Standish, Ascot and Knightsbridge; 3d, Messrs. James Veitch & Sons, Chelsea.

Class 4.—1 New Plant, not in Flower, introduced into Europe by the exhibitor: 1st, M. John Linden, Brussels; 2d, M. John Linden, Brussels, and Messrs. James Veitch & Sons, Chelsea; 3d, Messrs. James Veitch & Sons, Chelsea, and Mr. John Standish, Ascot and Knightsbridge.

Class 5.—12 New Plants of any description: 1st, Messrs. James Veitch & Sons, Chelsea; 2d, M. John Linden, Brussels.

Class 6.—6 New Plants of any description: 1st, Mr. W. Bull, Chelsea; 2d, Mr. E. G. Williams, Holloway, London.

Class 7.—16 Stove or Greenhouse Plants: 1st, Horatio L. Michells, Esq., Summerfield, Bowdon—T. Baines, gardener; 2d, Mrs. Tredwell, St. Johns Lodge, Norwood—R. Reed, gardener; 3d, J. Phillott, Esq., Stanford Hill—J. Wheeler, gardener; 4th, The Earl Percy, Albury Park, Guildford—W. Knight, gardener.

Class 8.—12 Stove or Greenhouse Plants: 1st, Messrs. J. & C. Lee, Hammersmith; 2d, Messrs. E. Cole & Sons, Withington, near Manchester; 3d, Mr. G. Rhodes, Sydenham.

Class 9.—10 Stove or Greenhouse Plants: 1st, J. G. Barclay,

Esq., Leyton—D. Donald, gardener; 2d, T. Canning, Esq., Westbury-on-Trym, Bristol—A. Morse, gardener; 3d, John J. Blandy, Esq., Reading, Berks—A. Ingram, gardener. 4th, The Earl of Lovelace, Surrey—Wm. Kaile, gardener.

Class 10.—6 Stove or Greenhouse Plants (Amateurs): 1st, W. R. G. Farmer, Esq., Cheam—S. M. Carson, gardener; 2d, Wm. Leaf, Esq., Park Hill, Streatham—Thomas Page, gar dener. 3d, Mr. A. Wilkie, Oak Lodge, Addison Road, Kensington.

Class 11.—6 Stove or Greenhouse Plants (Nurserymen): 1st, Mr. J. Stevenson, Timperley; 2d, Mr. B. S. Williams, Holloway. 3d, Messrs. Standish & Noble, Bagshot. 4th, Messrs. Jackman & Son, Kingston.

Class 13.—The finest Stove or Greenhouse Plant: 1st, Messrs. James Veitch & Sons, Chelsea; 2d, Mr. B. S. Williams, Holloway; 3d, Mr. William Bull, F.L.S., King's Road, Chelsea.

Class 14.—1 Fine foliaged Stove or Greenhouse Plants (Amateurs): 1st, Horatio L. Michells, Esq., Bowdon—T. Baines, gardener; 2d, James Yates, Esq., Highgate—W. Taylor, gardener; 3d, The Duke of Northumberland, Isleworth—G. Fairbairn, gardener; 4th, Right Hon. Louisa Lady Ashburton, Hardwick Grove, Chelsea, gardener.

Class 15.—12 Fine-foliaged Stove or Greenhouse Plants (Nurserymen): 1st, Messrs. J. & C. Lee, Royal Vineyard Nursery, Hammersmith; 2d, Mr. James Veitch & Sons, Chelsea; 3d, Mr. B. S. Williams, Victoria and Paradise Nurseries, Holloway.

Class 16.—6 Fine-foliaged Stove or Greenhouse Plants: 1st, Mr. John Stevenson, Lark Hill, Timperley, near Manchester; 2d, Miss Burdett Coutts, Holly Lodge, Highgate—C. Hutt, gardener; 3d, W. H. Stone, Esq., M.P., Leigh Park, Havant—G. Young, gardener; 4th, Wm. Leaf, Esq., Highgrove, Reading, Berks—A. Ingram, gardener.

Class 17.—12 Variegated Tender Plants: 1st, Messrs. James Veitch & Sons, Nurserymen, Chelsea; 2d, Mr. B. S. Williams, Victoria and Paradise Nurseries, Holloway. 4th, Mme. Caroline Legrelle d'Hanis, Antwerp—P. Vervoort, gardener.

Class 18.—20 Economic and Medicinal Plants: 1st, M. John Linden, Roy al Zoological and Horticultural Gardens, Brussels; 2d, Mr. William Bull, F.L.S., King's Road, Chelsea, S.W.; 3d, Messrs. Osborn & Sons, Fulham Nursery.

Class 19.—20 Hardy Deciduous Shrubs in Flower: 1st, Mr. Charles Turner, Royal Nurseries, Slough; 2d, Mr. Wm. Paul, Waltham Cross, N.

Class 20.—20 Hardy Deciduous Trees and Shrubs, shown for foliage: 1st, Mr. Wm Paul, Waltham Cross, N.

Class 21.—20 Hardy Evergreen or Deciduous Climbing Plants: 1st, Mr. Wm. Paul, Waltham Cross, N.; 2d, Mr. Charles Turner, Slough; 3d, Messrs. James Ivery & Son, Dorking and Reigate.

Class 22.—20 Hardy Evergreen Trees and Shrubs: 1st, Messrs. George Jackman & Son, Woking Nursery, Surrey; 2d, Mr. John Standish, Ascot and Knaphill Nurseries, Bagshot; 3d, Messrs. John and Charles Lee, Hammersmith.

Class 23.—12 New Hardy Evergreen Trees and Shrubs: 1st, Messrs. James Veitch & Sons, Chelsea; 2d, Mr. John Standish, Ascot and Knaphill Nurseries; 4th, Mr. W. Bull, F.L.S., King's Road, Chelsea.

Class 24.—50 Hardy Alpine and Herbaceous Plants: 1st, Messrs. James Backhouse & Son, Nurseries, York.

Class 25.—50 Hardy Variegated Alpine and Herbaceous Plants: 1st, Mr. John Salter, F.R.H.S., Hammersmith.

§ II. COLLECTIONS REPRESENTING FAMILIES.

Class 27.—50 Exotic Orchids, of any kind: 1st, Robert Warner, Esq., Broomfield, Chelmsford.

Class 28.—30 Exotic Orchids: 1st, J. Turner, Esq., Leicester —Robt. Dullen, gardener; 2d, W. Leaf, Esq., Streatham—Thomas Page, gardener; 3d, Mrs. Tredwell, Norwood—B. Peed, gardener; 4th, W. W. Buller, Esq., Exeter—Emanuel Cullen gardener.

Class 29.—20 Exotic Orchids: 1st, Messrs. James Veitch & Sons, Chelsea; 2d, Mr. B. S. Williams, Holloway, N.; 4th, Mr. William Bull, F.L.S., King's Road, Chelsea.

Class 30.—10 Exotic Orchids: 1st, H. G. Gibbs, Esq., St. Dunstan's, Regent's Park—J. Peart, gardener; 2d, Wm. Marshall, Esq., F.R.H.S., Enfield—Wm. Wilson, gardener; 3d, Mr. John Stevenson, Lark Hill, Timperley, near Manchester; 4th, Mr. J. Wheeler, Stamford Hill.

Class 31.—6 Exotic Orchids (Amateurs): 1st, J. Brand, Esq., Bury Hill, Balham—W. Howard, gardener; 2d, The Duke of Northumberland, Isleworth—G. Fairbairn, gardener; 3d, W. H. Stone, Esq., M.P., Leigh Park, Havant—G. Young, gardener; 4th, J. J. Blandy, Esq., Highgrove, Reading—A. Ingram, gardener.

Class 32.—6 Exotic Orchids (Nurserymen): 1st, Messrs. J. & C. Lee, Royal Vineyard Nursery, Hammersmith; 2d, Mr. O. Rhodes, Nurseryman, Sydenham; 4th, Messrs. Thomas Jackson & Son, Kingston, Surrey.

Class 33.—1 New Orchid, shown for the first time in flower: 1st, Mr. John Linden, Royal Zoological and Horticultural Gardens, Brussels; 2d, Messrs. James Veitch & Sons, Chelsea.

Class 34.—1 Exotic Orchid: 1st, Robert Barnett, Esq., Blackheath Park—T. Charles, gardener; 2d, The Duke of Northumberland, Isleworth—G. Fairbairn, gardener; 3d, A. Turner, Esq., Leicester—Robert Dullen, gardener; 4th, J. W. Miles, Esq., Kingsholm, Bristol—J. Weldon, gardener.

Class 35.—10 Variegated Orchids: 1st, Mr. B. S. Williams, Holloway, London, N.; 3d, Messrs. S. Glendinning & Sons, Chiswick.

Class 36.—6 Palms: 1st, The Duke of Northumberland, Isleworth—G. Fairbairn, gardener; 2d, Messrs. James Veitch & Sons, Chelsea; 3d, M. Ambroise Verschaffelt, 50, Rue du Chanme, Ghent.

Class 37.—3 Palms: 1st, Mr. B. S. Williams, Holloway, London, N.; 3d, Messrs. Thomas Jackson & Son, Kingston, Surrey; 4th, Mr. William Bull, F.L.S., King's Road, Chelsea, S.W.

Class 38.—The largest and finest Palm: 1st, R. Barclay, Esq., Highgate, N.—W. Young, gardener; 2d, Mr. William Bull, F.L.S., King's Road, Chelsea, S.W.; 3d, Mr. B. S. Williams, Holloway.

Class 39.—6 Cycads: 1st, M. Ambroise Verschaffelt, 50, Rue du Chanme, Ghent. 2d, James Yates, Esq., Highgate—W. Taylor, gardener. 3d, Mr. B. S. Williams, Holloway, London, N.

Class 40.—3 Pandanads: 1st, Messrs. James Veitch & Sons, Chelsea; 2d, Mr. B. S. Williams, Holloway, London, N.; 3d, Mr. Thomas Jackson & Son, Kingston, Surrey.

Class 41.—The largest and finest Pandanad: 1st, R. Barclay, Esq., Highgate, N.—W. Young, gardener; 2d, J. G. Barclay, Esq., Leyton—D. Donald, gardener; 3d, Messrs. James Veitch & Sons, Chelsea.

Class 42.—12 Stove or Greenhouse Ferns (Amateurs): 1st, H. L. Michells, Esq., Summerfield, Cheshire—T. Baines, gardener; 2d, R. Hanbury, Esq., The Poles, Ware, Herts—I. Hill, gardener; 3d, J. W. Taylor, Esq., Stoke Newington—H. Barnard, gardener.

Class 43.—12 Stove or Greenhouse Ferns (Nurserymen): 1st, Mr. B. S. Williams, Holloway, London, N.; 2d, Mr. William Bull, F.L.S., King's Road, Chelsea, S.W.

Class 44.—6 Stove or Greenhouse Ferns (Amateurs): 1st, W. H. Stone, Esq., M.P., Leigh Park, Havant—G. Young, gardener; 2d, The Right Hon. Louisa Lady Ashburton, Romsey—W. Cross, gardener; 3d, W. Marshall, Esq., F.R.H.S., Clay Hill, Enfield—W. Wilson, gardener; 4th, J. J. Blandy, Esq., Highgrove, Reading—A. Ingram, gardener.

Class 45.—6 Stove or Greenhouse Ferns (Nurserymen): 1st, Messrs. James Veitch & Sons, Chelsea; 2d, Messrs. Thomas Jackson & Son, Kingston, Surrey.

Class 46.—6 New Tender Ferns: 1st, Messrs. James Backhouse & Son, York Nurseries; 2d, Messrs. James Veitch & Sons, Chelsea; 3d, Mr. B. S. Williams, Victoria and Paradise Nurseries, London.

Class 47.—6 New Hardy Ferns: 1st, Messrs. James Ivery & Son, Nurserymen, Dorking and Reigate; 2d, Mr. William Bull, F.L.S., King's Road, Chelsea, S.W.; 3d, Mr. B. S. Williams, Holloway.

Class 48.—24 Hardy Ferns: 1st, Messrs. James Ivery & Son, Nurserymen, Dorking and Reigate; 2d, Mr. John Salter, F.R.H.S., Mill Place, Hammersmith; 3d, Mr. William Bull, F.L.S., King's Road, Chelsea, S.W.

Class 49.—12 Hardy Ferns: 1st, Wm. Marshall, Esq., F.R.H.S., Enfield—W. Wilson, gardener; 2d, The Earl of Lovelace, Ripley, Surrey—Wm. Kaile, gardener; 3d, The Earl Percy, Albury Park, Guildford—W. Kemp, gardener.

Class 50.—6 Tree Ferns: 1st, Mr. Thomas Williams, Crystal Palace Gardens, Sydenham; 2d, Messrs. James Veitch & Sons, Chelsea; 3d, Mr. B. S. Williams, Victoria and Paradise Nurseries, Holloway.

Class 51.—3 Tree Ferns: 2d, Mr. William Bull, F.L.S., King's Road, Chelsea; 3d, Miss Burdett Coutts, Highgate—Charles Hutt, gardener.

Class 52.—The finest Tree Fern: 1st, Mr. Thomas Williams, Crystal Palace Gardens, Sydenham; 2d, Messrs. James Veitch & Sons, Chelsea; 3d, Mr. William Bull, F.L.S., King's Road, Chelsea, S.W.

Class 53.—12 Lycopods: 1st, J. W. Taylor, Esq., Stoke Newington—Hy. Barnard, gardener; 2d, The Duke of Northumberland, Isleworth—G. Fairbairn, gardener; 3d, Mrs. Birchard, Putney Heath—M. Higgs, gardener.

Class 54.—6 Lycopods: 1st, Messrs. Jas. Veitch & Sons, Chelsea; 2d, R. Barclay, Esq., Highgate, N.—W. Young, gardener.

Class 55.—10 Arads: 1st, Messrs. Veitch & Sons, Chelsea; 2d, Madame Legrelle d'Hanis, Anvers—P. Vervoort, gardener.

Class 56.—6 Exotic Aradads: 1st, Messrs. Veitch & Sons, Chelsea; 2d, Mr. B. S. Williams, Holloway.

Class 57.—25 Hardy Conifers: 1st, Messrs. James Veitch & Sons, Chelsea; 2d, Messrs. Waterer & Godfrey, Nurserymen, Knaphill, Woking; 3d, Mr. John Standish, Ascot and Knaphill Nurseries, Bagshot.

Class 58.—12 Marantads: 1st, Messrs. Veitch & Sons, Chelsea; 2d, Madame Legrelle D'Hanis, Anvers—F. Vervoort, gardener.

Class 59.—25 Dwarf Cacti: 1st, M. C. Piersdorff, Paris; 2d, Mr. C. H. Hutton, Bath; 3d, Mrs. Pattison, Wrackleford—G. Wenzer, gardener.

Class 61.—12 Hardy Taxads: 1st, Messrs. James Veitch & Sons, Chelsea; 2d, Messrs. Waterer & Godfrey, Nurserymen, Knaphill, Woking; 3d, Mr. Wm. Paul, Paul's Nurseries, Waltham Cross, London, N.

Class 62.—25 Hardy Conifers: 1st, Messrs. James Veitch & Sons, Chelsea; 2d, Messrs. Waterer & Godfrey, Nurserymen, Knaphill, Woking; 3d, Mr. John Standish, Ascot and Knaphill Bridge.

Class 63.—12 Hardy Conifers: 1st, Messrs. John & Charles Lee, Hammersmith; 2d, Messrs. George Jackman & Son, Woking, Surrey; 3d, Mr. Charles Turner, Slough.

Class 64.—12 Greenhouse Conifers: 1st, Mr. William Bull, F.L.S., King's Road, Chelsea.

§ III.—COLLECTIONS REPRESENTING GENERA.

Class 66.—3 Aucubas, in Berry: 1st, Messrs. J. & C. Lee, Hammersmith; 2d, Messrs. Waterer & Godfrey, Knaphill, Woking; 3d, Messrs. James Veitch & Sons, Chelsea.

Class 67.—6 Aucubas, in Berry: 1st, Mr. Cambell, Esq., Cambell —A. Goodwin, gardener; 2d, Messrs. Arthur Henderson & Co., Pine-apple Place; 3d, The Duke of Northumberland, Isleworth—G. Fairbairn, gardener.

Class 68.—3 Anthuriums: 1st, Messrs. J. Veitch & Sons, Chelsea; 2d, Mr. B. S. Williams, Holloway, N.; 3d, Messrs. Arthur Henderson & Co., Pine-apple Place.

Class 70.—6 Nepenthes: 1st, Messrs. J. Veitch & Sons, Chelsea.

Class 71.—The finest Nepenthes: 1st, Messrs. James Veitch & Sons, Chelsea; 2d, W. W. Buller, Esq., Exeter—Emanuel Cullen, gardener; 3d, Mr. B. S. Williams, Holloway, N.

Class 72.—9 Sarracenias: 1st, H. L. Michells, Esq., Bowdon, Cheshire—T. Baines, gardener; 2d, Mr. B. S. Williams, Holloway, N.

Class 73.—10 Begonias: 1st, W. H. Stone, Esq., Dulwich Hill —Robert Smee, gardener; 2d, Sir F. H. Goldsmid, Bart. M.P., Regent's Park—G. Wheeler, gardener; 3d, J. H. Buchans, Esq, Hanwell—G. Venner, gardener.

Class 74.—6 Begonias, in Flower: 1st, Felix Pryor, Esq., Welwyn—N. Lady, gardener.

Class 75.—1 Allamanda: 1st, Messrs. James Veitch & Sons, Chelsea.

Class 76.—1 Croton: 1st, Messrs. James Veitch & Sons, Chelsea; 2d, Mrs. Alston, Birmingham—William Brown, gardener.

Class 77.—1 Clerodendron: 1st Mr Robert Parker, Reading, Surrey, S.; 2d, Messrs. Arthur Henderson & Co., Edgware Road.

Class 78.—1 Ixora: 1st, Messrs. James Veitch & Sons, Chelsea.

Class 80.—3 Greenhouse Rhododendrons: 1st, Messrs. James Veitch & Sons, Chelsea; 2d, Mr. B. S. Williams, Holloway, N.; 3d, Mr. W. Bull, F.L.S., Chelsea.

Class 81.—10 Greenhouse Ericas: 1st, Mrs. Tredwell, Norwood—B. Peed, gardener; 2d, Mr. O. Rhodes, Sydenham; 3d, Messrs. Thomas Jackson & Son, Kingston, Surrey.

Class 82.—6 Greenhouse Ericas: 1st, J. J. Blandy, Esq., Reading—A. Ingram, gardener; 2d, J. Philpott Esq., Stamford Hill—J. Wheeler, gardener; 3d, W. Leaf, Esq., Streatham—Thomas Page, gardener; 4th, W. H. Stone, Esq., M.P., Havant —G. Young, gardener.

Class 83.—20 Greenhouse Ericas: 1st, Messrs. Thomas Jackson & Son, Kingston, Surrey.

Class 84.—1 Greenhouse Erica: 1st, Mrs. Tredwell, Norwood —B. Peed, gardener; 2d, Thomas Canning, Esq., Bristol—Abraham Moss, gardener; 3d, Messrs. E. Cole & Sons, Withington, Manchester.

Class 85.—10 Greenhouse Yuccas, &c.—1st, Mr. B. S. Williams, Holloway, N.; 2d, M. Jean Verschaffelt, 43, Rue de la Caverne, Ghent, Belgium; 3d, W. L. Kellock, Esq., Stamford Hill, London; 4th, Mr. W. Bull, F.L.S., King's Road, Chelsea, S.W.

Class 86.—10 Dracenas, &c.: 1st, Messrs. James Veitch & Sons, Chelsea; 2d, Mr. B. S. Williams, Holloway, N.; 3d, Messrs. Thomas Jackson & Son, Kingston, Surrey; 4th, Mr. William Bull, F.L.S., King's Road, Chelsea, S.W.

Class 87.—12 Liliums: 1st, Mr. Charles Turner, Royal Nurseries, Slough.

Class 88.—6 Pots of Lilium auratum: 1st, Mr. Charles Turner, Royal Nurseries, Slough; 2d, Messrs. James Veitch & Sons, Chelsea; 3d, Mr. William Bull, F.L.S., King's Road, Chelsea, S.W.

Class 89.—24 Agaves: 1st, M. Jean Verschaffelt, Ghent, Belgium; 2d, Mr. B. S. Williams, Holloway, London, N.; 3d, M. Charles Pfersdorff, Paddington, London, and Paris.

Class 90.—10 Agaves: 1st, Mr. B. S. Williams, Holloway, N.; 2d, M. Jean Verschaffelt, Ghent, Belgium; 3d, W. B. Kellock, Esq., Stamford Hill, London.

Class 91.—12 Amaryllis: 1st, Messrs. James Veitch & Sons, Chelsea; 2d, Mr. B. S. Williams, Holloway, London, N.; 3d, Mr. Robert Parker, Tooting, Surrey.

Class 93.—1 Orange Tree: 2d, Mr. William Bull, F.L.S., King's Road, Chelsea, S.W.; 3d, Messrs. Osborn & Sons, Fulham Nursery.

Class 94.—12 Orange Trees, &c.: 3d, Mr. William Bull, F.L.S., King's Road, Chelsea, W.

Class 96.—1 Stove Pomegranate: 1st, Mr. Charles Turner, Royal Nurseries, Slough.

§ IV.—COLLECTIONS REPRESENTING SECTIONS AND VARIETIES.

Class 98.—3 Standard Hardy Rhododendrons: 1st, Messrs Waterer & Godfrey, Knaphill Nursery, Woking.

Class 100.—30 Hardy Rhododendrons: 1st, Mr. John Standish, Ascot, Berks and Knightsbridge; 2d, Messrs. H Lane & Son, Nurserymen, Great Berkhamsted.

Class 102.—8 Greenhouse Azaleas (Amateurs): 1st, W. R. G. Farmer, Esq., Cheam—S. M. Carson, gardener; 2d, Thomas Cannan, Esq., Bristol—Abraham Moss, gardener; 3d, H. H. Hobbs, Esq., Regent's Park—J. Penny, gardener; 4th, Mrs. Tredwell, Norwood—B. Peed, gardener.

Class 103.—8 Greenhouse Azaleas (Nurserymen): 1st, Mr. Charles Turner, Royal Nurseries, Slough; 2d, Messrs. James Veitch & Sons, Chelsea; 3d, Mr. O. Rhodes, Nurseryman, Sydenham.

Class 104.—6 Greenhouse Azaleas (Amateurs): 1st, E. J. Coleman, Esq., Slough—John Chalmers, gardener; 2d, J. Philpott, Esq., Stamford Hill—J. Wheeler, gardener; 3d, J. J. Blandy, Esq., Highgrove, Reading—A. Ingram, gardener; 4th, Mr. John Stevenson, Timperley, near Manchester.

Class 105.—6 Greenhouse Azaleas (Nurserymen): 1st, Messrs. H. Lane & Son, Nurserymen, Great Berkhamstead; 2d, Messrs. J. & C. Lee, Royal Vineyard Nursery, Hammersmith; 3d, Messrs. S. Glendinning & Sons, Nurserymen, Chiswick.

Class 106.—3 Greenhouse Azaleas (Amateurs): 1st, The Earl of Lovelace, Surrey—William Kaile, gardener; 2d, The Earl Percy, Guildford—William Kemp, gardener; 3d, Sir F. H. Goldsmid, M.P., Regent's Park—G. Wheeler, gardener.

Class 107.—3 Greenhouse Azaleas (Nurserymen): 1st, Messrs. John Dobson & Sons, Isleworth; 2d, Mr. R. Baxindine, Nurseryman, Guildford, Surrey; 3d, Mr. W. E. Drummond, Nurseryman, Weston Road, Bath.

Class 108.—1 Greenhouse Azalea: 1st, Mr. Charles Turner, Royal Nurseries, Slough; 2d, Messrs. James Veitch & Sons, Chelsea; 3d, W. R. G. Farmer, Esq., Cheam, Surrey—S. M. Carson, Gardener

Class 109.—30 Greenhouse Azaleas; 1st, Mr. Charles Turner, Royal Nurseries, Slough; 2d, Messrs. James Ivery & Son, Dorking and Reigate; 3d, Messrs. H. Lane & Son, Nurserymen, Great Berkhampstead; 4th, Messrs. J. & C. Lee, Royal Vineyard Nursery, Hammersmith.

Class 110.—10 Roses, in pots: 1st, Mr. Charles Turner, Royal Nurseries, Slough; 2d, Mr. Wm. Paul, Paul's Nurseries, Waltham Cross, London, N.; 3d, Messrs. Paul & Son, Old Cheshunt Nurseries, Cheshunt, N.; 4th, Messrs. B. P. Francis & Co., Nurseries, Hertford.

Class 111.—6 Roses, in pots: 1st, A. G. Puller, Esq., Youngsbury, Herts—T. Terry, gardener; 2d, E. J. Coleman, Esq., Slough—John Chalmers, gardener.

Class 112.—6 New Roses, in pots: 1st, Mr. Wm. Paul, Paul's Nurseries, Waltham Cross, London, N.; 2d, Messrs. Paul & Son, Old Cheshunt Nurseries, Cheshunt, N.; 3d, Mr. Charles Turner, Royal Nurseries, Slough.

Class 113.—8 Roses, in pots: 1st, Mr. Charles Turner, Royal Nurseries, Slough; 2d, Mr. Wm. Paul, Paul's Nurseries, Waltham Cross, London, N.

Class 114.—20 Roses, in pots: 1st, Mr. Charles Turner, Royal Nurseries, Slough; 2d, Mr. Wm. Paul, Paul's Nurseries, Waltham Cross, London, N.; 3d, Messrs. Paul & Son, Old Cheshunt Nurseries, Cheshunt, N.

Class 115.—6 Standard Roses, in pots: 1st, Mr. Wm. Paul, Paul's Nurseries, Waltham Cross, London, N.; 2d, Mr. Charles Turner, Royal Nurseries, Slough; 3d, F. Pryor, Esq., Digwell, Welwyn—N. Ball, gardener.

Class 116.—25 Roses: 1st, Messrs. Paul & Son, Old Cheshunt Nurseries, Cheshunt, N.; 2d, Mr. Wm. Paul, Paul's Nurseries, Waltham Cross, London, N.; 3d, Mr. Jas. Mitchell, Pilt Down Nurseries, Maresfield, Sussex.

Class 117.—12 Roses: 1st, E. J. Coleman, Esq., Slough—John Chalmers, gardener; 2d, John Hollingsworth, Esq., Maidstone.

Class 118.—30 Hollies: 1st, Messrs. James Veitch & Sons, Chelsea; 2d, Messrs. Waterer & Godfrey, Knaphill Nursery, Woking; 3d, Messrs. George Jackman & Son, Woking, Hammersmith.

Class 119.—1 Pair of Standard Laurustinus: 1st, Mr. William Bull, F.L.S., King's Road, Chelsea, S.W.

Class 120.—1 Pair of Pyramidal Bay Trees: 1st, Messrs Veitch & Sons, Chelsea; 2d, Mr. William Bull, F.L.S., King's Road, Chelsea, S.W.; 3d, Messrs. John & Charles Lee, Hammersmith.

Class 121.—1 Pair of Standard Bay Trees: 1st, M. Jean Verschaffelt, Ghent, Belgium; 2d, Messrs. James Veitch & Sons, Chelsea; 3d, Messrs. John & Charles Lee, Hammersmith.

Class 122.—1 Pair of Standard Portugal Laurels: 1st, Messrs. John & Charles Lee, Hammersmith.

Class 123.—1 Pair of Standard Hollies: 1st, Messrs. George Jackman & Son; 2d, Messrs. James Veitch & Sons, Chelsea; 3d, Messrs. Waterer & Godfrey, Knaphill.

Class 124.—1 Pair of Standard Bay Trees: 1st, Messrs. James Veitch & Sons, Chelsea; 2d, Messrs. John & Charles Lee, Hammersmith.

Class 125.—1 Pair of any Standard Evergreen Tree.—1st, Mr. William Bull, F.L.S., King's Road, Chelsea, S.W.; 2nd, Messrs. James Veitch & Sons, Chelsea; 3d, Messrs. John & Charles Lee, Hammersmith

Class 126.—12 Zonal Pelargoniums: 1st, Mr. John Fraser, Lea Bridge Road Nurseries, N.E.; 2d, Mr. Lemaitte, Senior, Finchley—J. Catlin, gardener; 3d, Mr. Charles Turner, Royal Nurseries, Slough.

Class 127.—12 Nosegay Pelargoniums: 1st, Mr. William Paul, Paul's Nurseries, Waltham Cross, London.

Class 128.—12 Variegated Pelargoniums: 1st, Messrs. E. G. Henderson & Son, St. John's Wood; 2d, Mr. John Fraser, Lea Bridge Road Nurseries, N.E.; 3d, Messrs. Saltmarsh & Son, Moulsham Nursery, Chelmsford.

Class 129.—6 Standard Zonal Pelargoniums: 1st, J. H. Lemaitte, Esq., Knightsbury, Finchley—W. Birse, gardener; 3d, Mr. Wm. Paul, Paul's Nurseries, Waltham Cross, London, N.

Class 131.—12 Show Pelargoniums: 1st, Mr. Charles Turner, Royal Nurseries, Slough; 2d, Mr. John Fraser, Lea Bridge Road Nurseries, N.E.; 3d, Messrs. John Dobson & Sons, Woodlands Nurseries, Isleworth.

Class 132.—10 Show Pelargoniums: 1st, T. T. Drake Esq., Amersham, Bucks—T. Bailey, gardener.

Class 133.—6 Show Pelargoniums: 1st, F. G. Wilkins, Esq., Leyton, N.E.—J. Ward, gardener; 2d, Mrs. Hodgson, The Elms, Hampstead—James Weir, gardener; 3d A. J. Boxall, Esq., Putney Heath—James Shrimpton, gardener; 4th, W. Rock, Esq., Weston Cottage, Isleworth—J. Wiggins, gardener

Class 134.—6 Fancy Pelargoniums. (Nurserymen): 1st, Mr. John Fraser, Lea Bridge Road Nurseries, N.E.; 2d, Mr. Charles Turner, Royal Nurseries, Slough.

Class 135.—6 Fancy Pelargoniums (Amateurs): 1st, T. T Drake, Esq., Amersham, Bucks—T. Bailey, gardener; 2d, Mrs. Hodgson, The Elms, Hampstead—James Weir, gardener; 3d, J. G. Barclay, Esq., Leyton—D. Donald, gardener.

Class 136.—1 Pelargonium: 1st, T. T. Drake, Esq., Amersham, Bucks—T. Bailey, gardener; 2d, Mr. Charles Turner, Royal Nurseries, Slough.

Class 137.—12 Herbaceous Calceolarias: 1st, W. F. Watson, Esq., Isleworth—J. James, gardener; 2d, Messrs. John Dobson & Sons, Woodlands Nurseries, Isleworth; 3d, Mr. Charles Turner, Royal Nurseries, Slough.

Class 139.—12 Pansies, in pots: 1st, W. F. Watson, Esq., Jalesworth—J. James, gardener; 3d, Mr. Henry Hooper, Vine Nursery, Widcombe Hill, Bath.

Class 140.—12 Fancy Pansies, in pots: 1st, Mr. Henry Hooper, Vine Nursery, Widcombe Hill, Bath; 2d, Mr. John Shackell, Old Field Nursery, Bath.

Class 141.—24 Pansies: 1st, Messrs. Downie, Laird, & Laing, Forest Hill, Sydenham: Mr. Henry Hooper, Vine Nursery, Widcombe Hill, Bath; 3d, Mr. John Shackell, Old Field Nursery, Bath.

Class 142.—50 Tulips: 1st, Mr. Charles Turner, Royal Nurseries, Slough; 2d, Mr. Thomas Westbrook, Abingdon, Berkshire; 3d, Mr. James Batten, Florist, Brook Street, Clapton.

Class 143.—12 Mignonette: Mr. George Macintosh, Nursery-man, Hammersmith.

Class 144.—3 Specimen Mignonette: 1st, Mr. Charles Ewart, The Grove, Alexandra Park, Muswell Hill; 2d, C. Leach, Esq., King's Road, Clapham—W. Watson, gardener; 3d, Mrs. Barchard, Putney Heath—M. Higgs, gardener.

Class 145.—3 Standard Heliotropes: 1st, Mr. Charles Turner, Royal Nurseries, Slough; 2d, Mr. W. Bragg, Slough.

Class 146.—6 Heliotropes: Mr. C. Turner, Royal Nurseries, Slough.

Class 147.—6 Fuchsias. (Nurserymen): 1st, Mr. H. Cannell, Fuchsia Nursery, Woolwich; 3d, Mr. Charles Turner, Royal Nurseries, Slough.

Class 148.—12 Fuchsias (Amateurs): 1st, Rev. A. H. Bridges, Beddington House, Surrey—J. August, gardener; 2d, Rev. C. H. Spurgeon, Nightingale Lane, Clapham—W. Fay, gardener.

Class 149.—6 Standard Fuchsias: 1st, Rev. A. H. Bridges, Beddington House, Surrey—J. August, gardener; 2d, Rev. C. H. Spurgeon, Nightingale Lane, Clapham—W. Fay, gardener; 3d, Mrs. Barchard, Putney Heath—M. Higgs, gardener.

Class 152.—12 Early Pinks: 1st, Mr. Charles Turner, Royal Nurseries, Slough; 2d, J. T. Dale, Esq., Shardeloes, Amersham, Bucks—T. Bailey, gardener.

Class 154.—6 Pots of Lily of the Valley: 1st, Mr. John Salter, F.R.H.S., Versailles Nursery, Hammersmith; 2d, Messrs. James Veitch & Sons, Chelsea.

§ V.—Seedlings.

Class 155.—Seedling Florists' Flower, of any kind, named. (Certificates): First-class Certificates to Messrs. E. G. Henderson & Sons, St. John's Wood; J. J. Chater, Esq.; Messrs. F. & A. Smith, Mr. C. Turner, Mr. W. Paul, and Messrs. Garaway & Co.

Class 158.—Seedling Fruit, of any kind, named. (Certificates): Certificates: Mr. Charles Turner, Royal Nurseries, Slough.

§ VI.—Fruits.

Class 160.—Forced Fruits, 10 dishes: 1st, Mr. Charles Turner, Royal Nurseries, Slough.

Class 161.—1 Queen Pine-apple: 1st, The Duke of Richmond, Goodwood, Sussex—G. Cameron, gardener; 2d, Rev. J. N. Micklethwait, Norwich—R. Carr, gardener; 3d, Mr. Higgs, Putney Heath.

Class 162.—1 Smooth Cayenne Pine-apple: 1st, The Lady Rolle, Bicton, Budleigh-Salterton—J. Barnes, gardener; 2d, The Duke of Richmond, Goodwood, Sussex—G. Cameron, gardener.

Class 163.—1 Providence Pine-apple: 1st, Mr. J. Meredith, The Vineyard, Garston, near Liverpool.

Class 165.—1 Pine-apple, any kind: 1st, W. Leaf, Esq., Park Hill, Streatham—T. Page, gardener; 2d, J. Dixon, Esq., Astle Park, Cheshire—John Wallis, gardener; 3d, Mrs. Cubitt, Denbies, Dorking—J. Drewett, gardener.

Class 166.—1 Grape, any kind: Lord Bagot, Blithfield, Rugeley—T. Bannerman, gardener; 2d, Henry Akroyd, Esq., Doddington Park—J. Allport, gardener; 3d, Mr. George Osborn, manager, Kay's Nursery, Finchley.

Class 167.—Grapes, 6 bunches: 1st, R. Sneyd, Esq., Keele Hall, Staffordshire—W. Hill, gardener; 2d, Mr. George Osborne, manager, Kay's Nursery, Finchley; 3d, Lord Bagot, Blithfield, Rugeley—T. Bannerman, gardener.

Class 168.—3 Bunches of Black Hamburgh Grapes: 1st, Hy. Akroyd, Esq., Doddington Park, Nantwich—J. Allport, gardener; 2d, Mr. Charles Turner, Royal Nurseries, Slough; 3d, Sir H. Beaumont, Bt.—M. Henderson, gardener.

Class 169.—3 Bunches of Black Muscat-flavoured Grapes: 1st, Hy. Akroyd, Esq., Doddington Park, Nantwich—J. Allport, gardener; 2d, the Lord Foley, Worksop Manor, Notts—John Strannrar—A. Fowler, gardener; 3d, Earl of Stair, Castle Kennedy, Stranraer—A. Fowler, gardener.

Class 170.—3 Bunches of Black Grapes: 1st, R. Sneyd, Esq., Keele Hall—W. Hill, gardener; 2d, Hy. Akroyd, Esq., Doddington Park, Nantwich—J. Allport, gardener; 3d, Wm. J. Loyd, Esq., Langleybury, Watford—W. Cruickshank, gardener.

Class 171.—3 Bunches of Muscat of Alexandria Grapes: 1st, Mr. Charles Turner, Royal Nurseries, Slough; 2d, H. Fowler, Esq., Woodford, Essex—S. Chambers, gardener; 3d, Mrs. Wood, Twyford Abbey, Acton, W.—Henry Beasley, gardener.

Class 172.—3 Bunches of White Grapes: 1st, Muscat-flavoured Grapes: 1st, Mr. John Standish, Ascot and Knightsbridge; 2d, the Earl of Stair, Castle Kennedy, Stranraer—A. Fowler, gardener; 3d, the Viscountess Palmerston, Herts—R. Ruffett, gardener.

Class 173.—3 Bunches of White Grapes: 1st, Mr. George Osborn, manager, Kay's Nursery, Finchley; 2d, the Earl of Stair, Castle Kennedy, Stranraer—A. Fowler, gardener; 3d, the Lord Bagot, Blithfield, Rugeley—T. Bannerman, gardener.

Class 174.—The best bunch of Black Grapes: 1st, Hy. Akroyd, Esq., Doddington Park, Nantwich—J. Allport, gardener; 2d, Mr. George Osborn, manager, Kay's Nursery, Finchley.

Class 175.—The best bunch of White Grapes: 1st, Mr. Charles Turner, Royal Nurseries, Slough; 2d, Mr. George Osborn, manager, Kay's Nursery, Finchley.

Class 176.—4 Vines in pots: 1st, Messrs. H. Lane & Son, The Nurseries, Berkhamsted.

Class 177.—2 Vines in pots: 1st, Lieut.-Colonel Lloyd, Hawkhurst, Kent—T. Record, gardener.

Class 178.—1 Green-fleshed Melon: 1st, H. Littledale, Esq., Liscard Hall, Cheshire—George Smith, gardener; 2d, G. S. Foljambe—Alberton, N.W., Worksop—J. Bennett, gardener; 3d, Mrs. Hope, Dorking—J. B. Whiting, gardener.

Class 179.—1 Scarlet-fleshed Melon: 1st, J. Miles, Esq., Whetstone—W. Lane, gardener; 2d, John Gott, Esq., Armley House, near Leeds—A. Batger, gardener; 3d, Messrs. R. Gadd & Son, Worthing.

Class 181.—6 Peaches: 1st, Sir G. Phillips, Shipston-on-Stour—, —Gardner, gardener; 2d, Mr. Charles Turner, Slough.

Class 182.—Nectarines, 3 kinds: 1st, C. N. Newdegate, Esq., M.P., Nuneaton—Samuel Evans, gardener.

Class 183.—6 Nectarines: 1st, Mr. Charles Turner, Slough; 2d, The Duke of Newcastle, Worksop—J. Tegg, gardener.

Class 184.—6 Figs: 1st, the Duke of Northumberland, Isleworth—G. Fairbairn, gardener; 2d, the Duke of Newcastle, Worksop—J. Tegg, gardener; 3d, the Countess Cowper, Ampthill—Seward Snow, gardener.

Class 185.—Strawberries, 6 kinds: 1st, J. H. Barnes, Esq., Rickmansworth—J. Widdowson, gardener.

Class 186.—Strawberries, 3 kinds: 1st, Richard Pool King, Esq., Bristol—M. O'Brien, gardener.

Class 187.—Strawberries, any kind: 1st, Mrs. Cubitt, Dorking—James Drewett, gardener; 2d, Richard Pool King, Esq., Bristol—M. O'Brien, gardener; 3d, the Duke of Hamilton, Wickham—T. D. Irving, gardener.

Class 188.—10 Pots of Strawberries: 1st, the Duke of Northumberland, Isleworth—G. Fairbairn, gardener.

Class 189.—30 Black Cherries: 1st, the Viscountess Palmerston, Brockett Hall—R. Ruffett, gardener; 2d, Captain Clegg, Withington Hall, Chelford—C. Allen, gardener; 3d, M. G. Thoytts, Esq., Sulhampstead House, Reading—G. Curd, gardener.

Class 190.—30 White Cherries: 3d, M. G. Thoytts, Esq., Sulhampstead House, Reading—G. Curd, gardener.

Class 191.—30 Red Raspberries: 2d, E. J. G. Hopwood, Esq., Manchester—W. Allen, gardener.

Class 192.—30 White Raspberries: 2d, E. J. G. Hopwood, Esq., Manchester—W. Allen, gardener.

Class 196.—Bananas, heaviest: 1st, P. L. Hinds, Esq., The Lodge, Byfleet, Surrey—J. Carr, gardener; 2d, John Gott, Esq., Armley House, near Leeds—A. Batger, gardener.

Class 197.—Fruit Trees, showing Training for Walls, &c.: 1st, MM. Jamin & Durand, Bourg-la-Reine, near Paris.

Class 198.—6 Fruit Trees, showing Training for Open Ground: 1st, MM. Jamin & Durand, Bourg-la-Reine, near Paris.

Class 199.—12 Orchard House Trees: 1st, Messrs. H. Lane & Son, Great Berkhamsted.

Class 200.—6 Orchard House Trees: 1st, Mr. Thomas H. Morten, Woodville House, Amersham, Bucks.

§ VII.—Vegetables.

Class 201.—Forced Vegetables, 6 kinds: 1st, Rev. J. N. Micklethwait, Norwich—R. Carr, gardener; 2d, The Earl of Darnley, Cobham Hall, Gravesend—R. Budd, gardener.

Class 202.—Vegetables, not Forced, 6 kinds: 1st, T. T. Drake, Esq., Shardeloes, Amersham—T. Bailey, gardener; 2d, Mrs. Hope, The Deepdene, Dorking—J. B. Whiting, gardener; 3d, The Earl of Darnley, Cobham Hall, Gravesend—R. Budd, gardener.

Class 203.—Salading, 10 sorts: 1st, Mr. James M. Mason, Lower Road, Deptford; 2d, The Earl of Darnley, Cobham Hall, Gravesend—R. Budd, gardener; 3d, The Lady Mary C. N. Hamilton, Sleaford—D. Lumsden, gardener.

Class 204.—50 Heads Asparagus: 1st, George Tippett Hasell, Esq., Barton Hill, Bristol; 2d, The Countess Cowper, Beds—Seward Snow, gardener; 3d, J. Cockle, Esq., West Molesey Lodge—J. Penfold, gardener.

Class 205.—12 Largest heads Asparagus: 1st, George Tippett Hasell, Esq., Barton Hill, Bristol; 3d, J. Cockle, Esq., West Molesey Lodge—J. Penfold, Gardener; equal 3d, Mrs. Turner, Rook's Nest, Godstone—J. Squibbs, gardener.

Class 206.—Mushrooms: 1st, The Earl of Darnley, Gravesend—R. Budd, gardener; 2d, E. J. G. Hopwood, Esq., Manchester—W. Allen, gardener.

Class 207.—24 Kidney Potatos; 1st, The Earl Fitzwilliam, Wicklow—H. W. Cordle, gardener; 2d, The Lady M. C. N. Hamilton, Sleaford—D. Lumsden, gardener; 3d, Mrs. Hope, The Deepdene, Dorking—J. B. Whiting, gardener.

Class 208.—24 Round Potatos: 1st, Mr. Thomas Westbrook, Abingdon, Berkshire; 2d, The Countess Cowper, Ampthill—S. Snow, gardener.

Class 209.—50 French Beans: 1st, John Sims Oates, Esq., Floral Villa, Hanwell; 2d, E. Oates, Esq., Bydorp House, Hanwell—R. Marcham, gardener; 3d, John Gott, Esq., Leeds—A. Batger, gardener.

Class 210.—Half a Peck Peas: 1st, Mr. Charles Turner, Royal Nurseries, Slough.

Class 211.—24 Early Carrots: 1st, The Countess Cowper, Ampthill—S. Snow, gardener; 2d, Mrs. Hope, The Deepdene, Dorking—J. B. Whiting, gardener; 3d, W. E. Hubbard, Esq., Horsham—S. Ford, gardener.

Class 213.—1 Bruce Cucumbers: 1st, The Lord St. John, Higham Ferrers—John Rabbitt, gardener; 2d, H. Littledale, Esq., Cheshire—George Smith, gardener; 3d, Mr. G. Thomas, Child's Nurseries, Station Road, Whetstone.

Class 214.—The handsomest Cucumber: 1st, The Lord St. John, Higham Ferrers—John Rabbitt, gardener; 2d, Mr. H. Carr, Jeffries Arboretum Nurseries, Ipswich; 3d, Mr. John Jennings, Nurseryman, Shipton-on-Stour.

Class 215.—The longest Cucumber: 1st, Mr. John Jennings, Nurseryman, Shipton-on-Stour; 2d, W. Tetley, Esq., Leeds—T. Dale, gardener; 3d, Mr. John House, East Gate Nursery, Peterborough.

Class 216.—12 Heaviest Rhubarb stalks: 1st, Mrs. Hope, Dorking—J. B. Whiting, gardener; 2d, Mr. John Cattell, Nurseryman, Westerham; 3d, R. Barclay, Esq., Highgate, N.—W. Young, gardener.

Class 217.—Reds Cabbage: 1st, The Countess Cowper, Ampthill, Beds—Seward Snow, gardener; 2d, F. Pryor, Esq., Digswell Welwyn—W. Earley, gardener.

Class 218.—3 Heads Cauliflower: 1st, Mr. John Cattell, Nurseryman, Westerham, Kent; 2d, The Countess Cowper, Ampthill, Beds—S. Snow, gardener.

Class 219.—3 Heads Broccoli: 1st, Mr. John Cattell, Nurseryman, Westerham, Kent; 2d, Mrs. Hope, The Deepdene, Dorking—J. B. Whiting, gardener; 3d, Lieut.-Colonel Lloyd, Hawkhurst, Kent—T. Record, gardener.

§ VIII.—Bouquets and Objects of Ornament in Natural Flowers.

Class 221.—Dinner Table Decorations: 1st, Mrs. Lermitte, Knighton's, Finchley; 2d, Messrs. Lucking, Westbourne Park, W.; 3d, Mr. T. Charles March, Ambassadors' Court, St. James's Palace.

Class 222.—Table Plateau: 2d, Miss F. A. Wint, 15, Bedford Place, Brighton.

Class 223.—Drawing-room Flower Stands: 1st, Mr. T. Charles March, Ambassadors' Court, St. James's Palace.

Class 224.—Drawing-room Plant Case: 1st, Mr. George Macintosh, Nurseryman, Hammersmith; 2d, Messrs. Cloudet, Houghton & Son, 89, High Holborn; 3d, Messrs. Barr & Sugden, King Street, Covent Garden.

Class 226.—Wedding Box: 1st, Messrs. Wm. Cutbush & Son, Nurserymen, Highgate.

Class 227.—Hanging Baskets: 2d, Messrs. Wm. Cutbush & Son, Nurserymen, Highgate.

Class 228.—Wedding Bouquet: 1, Messrs. Lucking, West bourne Park W.; 2d, Mr. John Delamere, Nurseryman, Holm Lane, Orrell, Cheshire.

Class 229.—3 Bouquets for Balls: 1st, Mr. Richard S. Yates, Sale, Cheshire; 2d, Messrs. Lucking, Westbourne Park, W.

Class 230.—3 Head-dresses or Wreaths: 2d, Mr. Richard S. Yates, Sale, Cheshire.

The remainder of the Prize List will be given next week.

M. DE CANDOLLE'S ADDRESS TO THE BOTANICAL CONGRESS.

In order to derive the full advantage from a meeting of so many lovers of science, horticulturists and botanists, brought together from all parts of Europe, it is necessary that the common object for which they have met should be perfectly understood.

It devolves on me, who am called upon to preside (an honour of which I feel myself unworthy), to point out the bond which unites us, and of so speak, an intuitive perception.

In my opinion, we are not here merely as amateurs to satisfy our curiosity. The proof of which is, we are here assembled to listen to discussions, instead of wandering about the fairy-like garden of the Exhibition. Evidently we seek something more than a mere flower show, and that something is, in my opinion, instruction. It is not sufficient for horticulturists merely to see—they must also study and reflect; neither is it sufficient for botanists to observe details minutely; they must also see the plants on a large scale and in grouped masses. The connection of Practice with Theory, and of Art with Science, is facknowledged to be indispensable; and in accordance with this prevalent opinion we here affirm, by our presence in this room, the necessary union of Botany and Horticulture. The aim of my brief observations will be to call to mind how they aid each other, and to show how much more they might do so. If I am not mistaken, it will follow from the facts to which I shall allude, that our united efforts, scientific or practical, modest though they appear, contribute to increase the well-being of man, in all conditions and in all countries.

1. The Advantages of Horticulture to Botany.

Let us first mention the services that Horticulture renders, or may render, to Botany. Without being myself a horticulturist, I affirm or recognise them willingly, the advancement of Science rendering it necessary to have recourse to all its collateral branches.

We no longer live in those times of illusion, when botanists merely occupied themselves with European plants, or with a few from the East, and, from a spirit of caution rather than from ignorance, pictured to themselves all distant countries as possessing much the same general vegetation, with a few uncommon or exceptional species. A century of discovery has made known the extreme variety in the Floras, the restricted limits of many species, and the complicated entanglement of their geographical distribution. To see all the different forms of vegetation of the world, would be to realise in a degree the history of the Wandering Jew; besides, with this constant travelling, where would be the opportunities for that reflection or study which create true science?

The traveller is too much exhausted in warm countries, too distracted in those temperate regions favourable to active life, and his faculties are too much benumbed in the colder regions, to enable him to devote himself to minute researches with the lens or the microscope, or even to sketch or properly describe that which he has gathered. He sees, in passing, a crowd of things, but he can scarcely ever stop to enter into details, especially of those that present themselves in rapid succession. Rarely can he see the fruit and flower of a species at the same time, and it is quite impossible for him to study their complete development during the whole year. The notes taken by the most intelligent naturalist are so affected by these fatal circumstances, that it is seldom they add anything to that which a dried specimen can teach the sedentary botanist.

It is Horticulture, then, which brings before us a multitude of exotic plants in a condition best adapted for study. Thanks to the variety of species it accumulates and successfully cultivates, the botanist can investigate the most difficult questions, and pursue his researches in families whose genera are not indigenous in Europe. In the herbarium, more minute observations can be made than is generally supposed; nevertheless, for certain researches, it is absolutely necessary to have the living plant, particularly for those relating to the relative disposition, the origin and development of the several organs, as well as for studying the curious phenomena of fertilisation, the movements and direction of the stem, leaves, and parts of the flowers. Horticulture has done much to advance the progress of physiological botany, but it still has much to do. The most remarkable experiments of physiologists—viz., those of Hales, Duhamel, Knight—have been made in gardens. Also the long series of experiments of the younger Gaertner, and, more recently, of M. Naudin, on hybridisation, which relate to the cardinal subject of the species. As much may be said of the numerous trials which are made, in horticultural establishments, to obtain new races or varieties. These have a great scientific importance, and it is undoubtedly the horticulturists who are the teachers of botanists on these subjects.

It appears to me, however, gardens can be made still more useful in carrying out physiological researches. For instance, there is much yet to be learnt on the mode of action of heat, light, and electricity upon vegetation. I pointed out many of these deficiencies in 1855, in my "Geographie Botanique Raisonnée."* Ten years later Mr. Julius Sachs, in his recently-published and valuable work on physiological botany,† remarks much the same deficiencies, notwithstanding that some progress has been made in these matters. The evil consists in this, that when it is desired to observe the action of temperature, either fixed or varied, mean or extreme, or the effect of light, it is exceedingly difficult, and sometimes impossible, when observations are made in the usual manner, to eliminate the effects of the constant variations of heat and light. In the laboratory it is possible to operate under more exactly defined conditions, but they are rarely sufficiently persistent; and the observer is led into error by growing plants in too contracted a space, either in tubes or bell-glasses. This last objection is apparent when it is wished to ascertain the influence of the gases diffused in the atmosphere around plants, or that of the plants themselves upon the atmosphere.

Place plants under a receiver, they are no longer in a natural condition; leave them in the open air, and the winds and currents, produced at each moment of the day by the temperature, disperse the gaseous bodies in the atmosphere. Every one is aware of the numerous discussions concerning the more or less pernicious influence of the gases given off from certain manufactories. The ruin now of a manufacturer, now of a horticulturist, may result from the declaration of

* Pages 46, 49, 57, and 1346.

† Handbuch der experimental physiologie der Pflanzen. 1 vol. in 8vo. Leipsig, 1865.

an expert; hence it is incumbent on scientific men not to pronounce on these delicate questions without substantial proof.

With a view to these researches, of which I merely point out the general nature, but which are immensely varied in details, I lately put this question*—"Could not experimental greenhouses be built, in which the temperature might be regulated for a prolonged time, and be either fixed, constant, or variable, according to the wish of the observer?" My question passed unnoticed in a voluminous work where, in truth, it was but an accessory. I renew it now in the presence of an assembly admirably qualified to solve it. I should like, were it possible, to have a greenhouse placed in some large horticultural establishment or botanic garden, under the direction of some ingenious and accurate physiologist, and adapted to experiments on vegetable physiology; and this is, within a little, my idea of such a construction:—

The building should be sheltered from all external variations of temperature; to effect which I imagine it should be in a great measure below the level of the ground. I would have it built of thick brickwork, in the form of a vault. The upper convexity, which would rise above the ground, should have two openings—one exposed to the south, the other to the north—in order to receive the direct rays of the sun or diffused light. These apertures should each be closed by two very transparent glass windows, hermetically fixed. Besides which, there should be, on the outside, means of excluding the light, in order to obtain complete darkness, and to diminish the influence of the variations of temperature when light was not required. By sinking it in the ground, by the thickness of its walls, and by the covering of its exterior surfaces with straw, mats, &c., the same fixed degree of temperature could be obtained as in a cellar. The vaulted building should have an underground communication with a chamber containing the heating and the electrical apparatus. The entrance into the experimental hothouse should be through a passage closed by a series of successive doors. The temperature should be regulated by metallic conductors, heated or cooled at a distance. Engineers have already devised means by which the temperature of a room, acting on a valve, regulates the entry or exit of a certain amount of air, so that the heat regulates itself.† Use could be made of such an apparatus when necessary.

Obviously, with a hothouse thus constructed, the growth of plants could be followed from their germination to the ripening of their seeds, under the influence of a temperature and an amount of light perfectly definite in intensity. It could then be ascertained how heat acts during the successive phases from sowing to germination, from germination to flowering, and from this on to the ripening of the seed. For different species various curves could be constructed to express the action of heat on each function, and of which there are already some in illustration of the most simple phenomena, such as germination,‡ the growth of stems, and the course of the sap in the interior of certain cells.§ We should be able to fix a great number of those minima and maxima of temperature which limit physiological phenomena. Indeed, a question more complicated might be investigated, towards the solution of which science has already made some advances, namely, that of the action of variable temperatures; and it might be seen if, as appears to be the case, these temperatures are sometimes beneficial, at other times injurious, according to the species, the function investigated, and the range of temperature. The action of light on vegetation has given rise to the most ingenious experiments. Unfortunately, these experiments have sometimes ended in contradictory and uncertain results. The best ascertained facts are, the importance of sunlight for green colouring, the decomposition of carbonic acid gas by the foliage, and certain phenomena relating to the direction or position of stems and leaves. There remains much yet to learn upon the effect of diffused light, the combination of time and light, and the relative importance of light and heat. Does a prolonged light of several days or weeks, such as occurs in the Polar regions, produce in exhalation of oxygen, and in the fixing of green matter, as much effect as the light distributed from 12 to 12 hours, as at the Equator? No one knows. In this case, as for temperature, curves should be constructed, showing the increasing or diminishing action of light on the performance of each function; and as the electric light resembles that of the sun, we could in our experimental hothouse submit vegetation to a continued light.‖

A building such as I propose would allow of light being passed through coloured glasses or coloured solutions, and so prove the effect of the different visible or invisible rays which enter into the composition of sunlight. For the sake of exactness nothing is superior to the decomposition of the luminous rays by a prism, and the fixing the rays by means of a heliostat. Nevertheless, a judicious selection of colouring matters, and a logical method of performing our experiments, will lead to good results. I will give as proof, that the recent most careful experiments concerning the action of various rays upon the production of oxygen by leaves and upon the production of the green colouring matter, have only confirmed the discoveries made in 1836, without either prism or heliostat, by Professor Daubeny,* from which it appears the most luminous rays have the most power, next to them the hottest rays, and lastly those called chemical.

Dr. Gardner in 1843, Mr. Draper immediately after, and Dr. C. M. Guillemin in 1857†, corroborated by means of the prism and the heliostat the discovery of Dr. Daubeny, which negatived the opinions prevalent since the time of Senebier and Tessier, and which were the result of erroneous‡ experiments. It was difficult to believe that the most refrangible rays—violet for instance, which acts the most on metallic bodies—as in photometrical operations, should be precisely those which have least effect in decomposing the carbonic acid gas in plants, and have the least effect over the green matter in leaves. Notwithstanding the confirmation of all the experiments made by Dr. Daubeny, when repeated by numerous physicists and by more accurate methods, the old opinions, appearing more probable, still influenced many minds,§ till Mr. Julius Sachs, in a series of very important experiments, again affirmed the truth.‖ It is really the yellow and orange rays that have the most power, and the blue and violet rays the least, in the phenomena of vegetable chemistry; contrary to that which occurs in mineral chemistry, at least in the case of chloride of silver. The least refrangible rays, such as orange and yellow, have also the twofold and contrary property, such as pertains also to white light, and which produces the green colouring matter of leaves or bleaches them, according to its intensity. It is these, also, which change the colouring matter of flowers when it has been dissolved in water or alcohol.¶ Those rays called chemical, such as violet, and the invisible rays beyond violet, according to recent experiments, confirmatory of those of ancient authors—those of Sebastian Poggioli, in 1817,** and of C. M. Guillemin—have but one single well-ascertained effect, that of favouring the bending of the stem towards the quarter from which they come more decidedly than do other rays; yet that is an effect perhaps more negative than positive, if the flexure proceeds, as many still believe, from what is going on on the side least exposed to the light.††

The effect upon vegetation of the non-visible calorific rays at the other extremity of the spectrum have been but little studied. According to the experiments we have on this subject, they would appear to have very little power over any of the functions; but it would be worth while to investigate further the calorific regions of the spectrum by employing Dr. Tyndall's process, that is, by means of iodine dissolved in bisulphide of carbon, which permits no trace of visible light to pass.

How interesting it would be to make all these laboratory experiments on a large scale! Instead of looking into small cases, or into a small apparatus held in the hand, and in which the plants cannot be well seen, the observer would himself be inside the apparatus, and could arrange the plants as desired. He might observe several species at the same time, plants of all habits, climbing plants, sensitive plants, those with colourless foliage, as well as ordinary plants. The experiment might be prolonged as long as desirable, and, probably, unlooked-for results would occur as to the form or colour of the organs, particularly of the leaves.

Permit me to recall on this subject an experiment made in 1853 by Professor Von Martius.‡‡ It will interest horticulturists now that plants with coloured foliage become more and more fashionable. M. Von Martius placed some plants of Amaranthus tricolor for two months under glasses of various colours. Under the yellow glass the varied tints of the leaves were all preserved. The red glass rather impeded the development of the leaves, and produced at the base of the limb yellow instead of green; in the middle of the upper surface, yellow instead of reddish-brown, and below, a red spot instead of purplish-red. With the blue glasses, which allowed some green and yellow to pass, that which was red or yellow in the leaf had spread, so that there only remained a green border or edge. Under the nearly pure violet glasses the foliage became almost uniformly green. Thus, by means of coloured glasses, provided they are not yellow, horticulturists may hope to obtain at least temporary effects as to the colouring of variegated foliage.

The action of electricity on vegetation is so doubtful, so difficult to experiment upon, that I dare hardly mention it; but it can easily be understood how a building constructed as proposed might facilitate experiments on this subject. Respecting the action of plants on the surrounding air, and the influence of a certain composition of the atmosphere upon vegetation, there would be by these means a large field open for experiments. Nothing would be easier than to create in the experimental hothouse an atmosphere charged with noxious gas, and to ascertain the exact degree of its action by day and by night. An atmosphere of carbonic acid gas might also be created, such as is supposed to have existed in the coal period. Then it might be seen to what extent our present vegetation would take an excess of carbon from the air, and if its general existence was inconvenienced by it. Then it might be ascertained what tribes of plants could bear this condition, and what other families could not have existed, supposing the air had formerly had a very strong proportion of carbonic acid gas.

Until horticulture can supply physiology with such convenient means of experiment, it, in the meantime, advances descriptive botany by the valuable publications it issues. The greater part of the old works with plates, such as "Hortus Eystettensis," "Hortus Elthamensis," &c.; also those of Ventenat, Cels, Redouté, &c.; the Salictum and Pinetum of the Duke of Bedford; and more recently the "Rhododendrons of the Himalaya," by Dr. Hooker; the works of Bateman, Pescatore, Reichenbach fils, on Orchids; and many others I could name, would never have existed, had there not been rich amateurs either to edit or buy them.

It is horticulture that has given us the longest series of illustrated journals that have ever been published; and here I must do justice especially to the English horticulturists. No doubt the science of our time requires a larger amount of analytical details than is contained in the plates of the "Botanical Magazine," "Botanical Register," "Andrews' Repository," "Loddiges' Botanical Cabinet," "Sweet's British Flower Garden," "Paxton's Magazine and Flower Garden," and other English journals; but what a number of forms are thus fixed by the engravings in these books, and what a fund of valuable documents for consultation they afford. One must admire the "Botanical Magazine," commenced in 1793, continued from month to month with an exemplary regularity, and which is now at its 5580th plate. Not only has it always represented rare and new species, but it has ever been conducted on a simple and uniform plan, which renders it convenient to consult.

The series of plates is unique from the very beginning. Each plate has its number, and each article of letter-press refers only to one plate, by which means the quotations from the work are rendered brief and clear. Many editors have not understood the advantage of this simple arrangement. They have varied their titles, their series, their pagings; they have affixed to their plates numbers, then letters, then nothing at all; the end of which is (and this ought to serve as a warning for the future) that the more they have altered and complicated the form of their journals, the shorter time they have lasted.

Now is it that these purely bibliographical details cause in us such sad recollections? Of the men just mentioned, who have rendered such eminent service to botany and horticulture, England has lost three during the year 1865—Sir Joseph Paxton, Dr. Lindley, and Sir William Jackson Hooker.* I should certainly fail in what is expected of me if I did not express, in the name of the foreigners attending this meeting, our deep regret at such serious losses. We know them all by their writings, and many amongst us have known personally the distinguished men I have mentioned. Their names follow us at each step in this the scene of their labours. If we admire the boldness of construction of the iron domes that characterise modern buildings, we think of the Crystal Palace, of Chatsworth, and of the humble gardener who became a great architect. If we visit the beautiful establishment at Kew, we see everywhere around us proofs of the indefatigable activity of Sir William Hooker. Lastly, if we ask the origin of the garden of the Royal Horticultural Society at Kensington, we are told it is only a development of that at Chiswick, where Lindley stood pre-eminent by his knowledge and his energy; and of that Society where botanists of my age found in their youth such valuable encouragement in their studies.

The names of Sir William Hooker and of Dr. Lindley, thanks to their special works, will ever remain distinguished in science. These two botanists have, moreover, been directors of horticultural journals, and of great horticultural establishments, and since their influence has been so fully acknowledged by practical men, I shall have little trouble in showing that science is as useful to horticulturists, as horticulture is to botanists—and this will form the second part of my discourse.

2. THE ADVANTAGE OF BOTANY TO HORTICULTURE.

The principles of vegetable physiology are what horticulturists and agriculturists usually study in books

* Géographie Botanique, 1855, pp. 49 and 1346

† See the electric apparatus of M. Carbonnier, exhibited at Chiswick in 1837, figured in the "Flore des Serres et Jardins," vol. xii. Miscell. p. 184.

‡ Germination under different Degrees of Constant Heat, by Alph. de Candolle, in the "Bibliothèque Universelle de Genève" (Archives des Sciences), November, 1857.

§ If the curves have not been constructed, the data for their construction are, at least, dispersed throughout our books. I will cite, for instance, the growth of a scape of Dasylirion, as observed by M. Ed. Morren (Belgique Hortic., 1865, p. 322). The figures there given are not favourable to the accepted notion, that the growth of tissues is more active by night than by day.

‖ The apparatus which produces the most persistent and vivid light is the magneto-electric machine, based on the developments of induction by magnetism, as discovered by the illustrious Faraday. The galvanic pile is replaced by a steam-engine of low power, which sets in motion a wheel furnished with magnets (Bibl. Univ. de Genève, Archives Scientif., 1861, v. 10, p. 160). The working of this machine is inexpensive; but, unfortunately, the magnets are very costly. This system has already been applied to two lighthouses—that at the South Foreland, and to that of the "Société l'Alliance," at Havre—in consequence of the experiments of MM. E. Becquerel and Tresca.

* Daubeny, Philos. Trans., 1836, part 1.

† Dr. Gardner, Edinb. Phil. Mag., 1844, extract in French in La Biblioth. Univ. de Genève, February, 1844; Draper, Edinb. Phil. Mag., 1844, extract ib., 1844, vol. 54; Guillemin (C.M.), Ann. Sc. Nat., 1857, vol. 7, p. 257, vol. 8, p. 5.

‡ Senebier, Mém. Phys. et Chim., 2, p. 69; Tessier, Mém. Acad. Sc., 1783; Gilby, Ann. de Chimie, 1821, v. 17; Succow, Commentatio de lucis effectibus chemicis, in 4to, Jena, 1828, p. 61; Zantedeschi, cited by Dutrochet, Compt. Rend. Acad. Sc., 1844, sem. 1, p. 853.

§ As a proof of the persistence of the old opinion, I will quote a phrase of Professor Tyndall's in his most clear and interesting treatise "On Radiation," (London, 1865), p. 6:—"In consequence of their chemical energy, these ultra-violet rays are of the utmost importance to the organic world." I do not know whether the author had in view an influence of the chemical rays over the animal kingdom; but, according to certain passages of Mr. Sachs, I doubt if they have more power over animals than they have over plants; besides, Professor Tyndall did not concern himself with these questions, he was content to explain admirably the physical nature of the various rays.

‖ The researches of Mr. Sachs first appeared in the Botanische Zeitung; they are collected and condensed in the remarkable volume called Handbuch der Physiologischen Botanik, vol. 4, Leipsig, 1865, pp. 1 to 46.

¶ Sir John Herschel, Edin. Philos. Journ., January, 1843.

** S. Poggioli, Opuscoli Scientifici, quoted by Dutrochet, Compt. Rend. Acad. Sc., 1844, sem. 1, p. 850.

†† The rather confused and questionable explanations, founded on the notions of Dutrochet, of the existence of a deoxidising power on the brightest side, clash with the fact that the blue, indigo, and violet rays, the least powerful for deoxidising tissues, are the most powerful in causing them to bend.

‡‡ "Gelehrte Anzeige," München, Dec. 2, 1853.

† Since these lines were in the printers' hands, British science has sustained a severe loss in the death of the truly amiable and learned Professor W. H. Harvey, of Dublin, so well known by his works on *Algæ*, and on the botany of South Africa. I cannot refrain from expressing our sense of this great bereavement.

on botany. They do not always find direct answers to their questions; but they can draw from them certain rules, certain ways of experimentalising and reasoning, which saves them from falling into many errors. Should some ridiculous idea be promulgated by some ignoramus or charlatan, it is by an appeal to the general rules of physiology that a practical man may at once reject them, or, at least, hold them in distrust. On the contrary, innovations, if in harmony with the principles, may be, and I will even say ought to be, readily accepted.

Do not let us put too much faith in the lucky results of experiments made absolutely by chance. It is with some of these experiments as with dreams and presentiments—if they come true once in a thousand times they are talked about, otherwise they are passed over and forgotten. Besides, it must be said, men nearly always are guided by theories; but the theories of the ignorant are often absurd and without foundation, whilst those of educated men are based on probabilities, or on an accumulation of facts.

Conjointly with physiology, botanical geography shows the distribution of plants all over the globe, their struggle with the elements, their migrations, and already raises a portion of the veil which covers the obscurity of their origin. All this ought to offer a real interest to horticulturists. We are beginning to have the power of expressing in figures the effect of each climate upon vegetation; consequently, the possibility of a given species enduring the mean or extreme climatal conditions of that country to which it is desired to introduce it. Already we can show, in the clearest manner, the analogy between the vegetation and climate of certain regions, widely separated the one from the other, and point out in which cases new attempts at cultivation should be tried or where they should be discouraged. A celebrated geologist was able to say, beforehand, there is gold in such a part of New Holland; and gold was found there. We can also say, the Olive tree and the Cork Oak will succeed in Australia; the eastern and temperate region of the United States is favourable to the growth of Chinese plants, more particularly to that of Tea; and we can assert that that part of America included between San Francisco and the Oregon territory will, one day, supply wines as varied and as excellent as those European ones produced between Portugal and the Rhine.

It is a singular fact, that the two principal beverages of the civilised world, wine and tea, which produce similar stimulating effects, but which to a certain extent are the substitutes one for the other in different countries, present also in the mode of cultivating them the most marked resemblances and differences. The Vine and the Tea-plant succeed best on stony, barren hill-sides, of which they sometimes increase the value a hundred-fold. According to the exposure, the soil, the cultivation and manner of preparing the produce, wine and tea are obtained of unquestionable excellence, whilst the neighbouring crops, but a short distance off, may be more or less ordinary in quality. The two shrubs require a temperate climate, but the Vine needs heat and no rain during summer, whilst the Tea-plant requires rain and but little summer heat; the result of which is, that these two species are almost geographically incompatible. Vine-growing countries will never produce Tea, and *vice versâ*.

But you will say, these examples belong rather to agriculture, and concern neither botany nor gardens I maintain the contrary. It is science, in the present day, which points out what plants to cultivate, and into what countries to introduce them. Horticulture makes the trial, with infinite pains. If successful, the young plants are submitted to the less refined treatment of agriculture. Before the happy introduction of Cinchonas into British and Dutch India could be effected, botanists were required to collect, distinguish, and carefully describe the various species of American Cinchonas; horticulturists were then called on to make cuttings, gather the seeds, raise the young plants, transport and establish them in another part of the world; and so at last they were passed over to the care of the agriculturists. The Coffee-plant did not spread gradually from Arabia to India, from India to Java; nor was it the American colonists who brought it from its original country to their fazendas or haciendas. The shrub was first described by botanists, and was afterwards introduced by the Dutch into a garden at Batavia; from thence it was taken to the Botanical Garden at Amsterdam, from whence a specimen was sent to the King of France in 1714. De Clieu, a naval officer, transplanted it from the garden at Paris to the French colonies in America. A multitude of such instances might be named. In the present day science has progressed, practical men avail themselves of it, governments and nations have abandoned those mistaken ideas in accordance with which it was supposed that a cultivation advantageous to one country was injurious to others. Hence we may hope to see, before long, useful species planted in all regions where they can thrive, to the great advantage of mankind in general.

One of the most evident effects of science has been to create in the horticultural public a taste for varied and rare forms. Formerly in gardens there were only to be found certain kinds of plants which dated back to the time of the Crusades, or even of the Romans. The discovery of the New World did not produce a change in proportion to its importance; perhaps because horticulturists did not travel enough, or acquaint themselves with those countries whose species were most suitable for cultivation in Europe. Botanists, fortunately, were more ambitious. Their collectors were numerous and daring. They enriched their herbaria with an infinitude of new forms, and published works upon exotic plants, such as those of Hernandez, Rumphius, Sloane, &c. The immense variety in the forms of plants was thenceforth recognised, and in point of taste the elegant simplicity of the primitive flowers was able to vie with the gaudiness of the double ones. Then ceased the reign of Tulips and Pæonies in flower gardens. Curiosity, that great incentive to all science, having penetrated horticulture, the change in gardens became rapid. Instead of a few hundred species such as were cultivated at the commencement of the last century, there are now 20,000 or 30,000 to be found in most of the present catalogues The single family of Orchids has probably more different representatives in our hothouses than was the case with all the families of plants put together, a hundred years ago. Fashion, united to the present curiosity of amateurs, causes, from time to time, old plants to be abandoned for new ones; and thus the entire vegetable kingdom will ultimately pass under the observation of civilised man.

What would horticulturists do, amidst this invasion of thousands of species, had not botanists devised convenient plans of classification and nomenclature? The families, genera, and species, have all been arranged in books, just as the districts, streets, and numbers of the houses are in our great capitals—with this superiority of method, that the form of the objects indicates their place—as if, in looking at a house in a town, one might discover, at a glance, to what street and what quarter it belonged. The plan of giving a single name to each species, besides its generic name, together with the prohibition of changing names without due reason, of giving the same appellation to two different species, or two genera, far excels our plan of distinguishing individuals. How much it would simplify our intercourse with men, and facilitate our inquiries, if, in the whole world, the members of one family only bore the same name, and if each individual had but one christian name, differing from those of the other members of his family. Such is, nevertheless, the admirable plan of nomenclature that science has provided for horticulturists, and which they cannot too much appreciate and respect.*

3. The Beneficial Effects of the Association of Botany with Horticulture.

The pursuit of horticulture demands books and herbaria, as that of scientific botany requires cultivated living plants. Hence the necessity, which is more and more recognised, of bringing together the materials for comparison in the same town, the same establishment, and even under the same administration, organised so as to facilitate the use of them. How many institutions in Europe, either private or public, would be benefited by this arrangement! How many towns and countries are now deficient—some in libraries, some in herbaria, some in respect to horticulture. Professional men proffer their complaint; let us hope that public opinion may end by listening to them.†

The bringing together the means of study, I have said, is desirable. Not less so is the interchange of ideas and impressions, both of botanists and horticulturists. Each of these classes must clearly have distinct characteristics; but the one should be influenced by the other. By these means, some too retiring dispositions may be brought out, and certain dormant powers developed. Horticulture, for instance, has a commercial tendency which may be carried too far. Charlatanism may slide in amongst flowers. Botany, on the contrary, is a science, and consequently rests on the investigation of pure and simple truth. A horticulturist who allows himself to be influenced by a scientific spirit, necessarily frees himself from overselfish tendencies. Natural history, on its side, by reason of the perfection of its method, its nomenclature and its minute observations, has something technical and dry about it, which contrasts with the grandeur of Nature, and with the sentiment of Art. It is for horticulture, combining, as it does, the planning and the decorations of gardens, to develop the æsthetic faculties of the *savant*, as of the world in general. A lovely flower, beautiful trees, a splendid floral exhibition, excite a sort of admiration, and even enthusiasm, similar to the effects produced by music or painting.

The powers of the German composers of modern days, and those of the Italian painters of the 16th century, are justly extolled; but may it not also be said, that in point of art they are equalled in their way by the beautiful parks of old England? The feeling of harmony, in form and colour—is it not also studied in them? The effect of contrast—is it not skilfully managed? The gradual transition from architectural to natural beauties—is it not treated in an admirable manner? Yes; decidedly the English landscape gardeners are poets; they have drawn from the same sources of inspiration as the most national writers of their country, and that source is the appreciation, so universal in England, of the beautiful, in an aspect of nature which is elegant and attractive, though somewhat grave.

Thus, gentlemen, for the development of our talents, as well as for our actual benefit, Art and Science keep pace together. Let us rejoice over their union, rendered conspicuous to-day by this congress of botanists, held in connection with a great floral exhibition; and after these general observations—perhaps rather too protracted—let us enter upon the consideration of those more truly scientific subjects, in which many among you are no doubt disposed to take part.

* Two years ago I made a request to the Federation des Sociétés d'Horticulture Belges, which appears to have been favourably received, and it may not be useless to report it here. It consisted in begging the horticulturists who obtain new varieties to add to their botanical names, with a Latin designation, but merely arbitrary names of quite a different nature, in order to avoid confusion and useless researches in books. For example, if they called a Calceolaria, Sebastopol, or Triomphe de Gand, every one would understand it merely as a garden variety, but if they named it Lalleryi, or mirabilis, one would think that it was a botanical species, and would search for it in scientific works, or in the Flora of Chili, and botanists, happening perhaps to mistake it, would add it to the end of the genus in their books as a species imperfectly known. The more horticultural names differ from Latin ones, the better it is, unless they can be appended to the scientific nomenclature as when we say Brassica campestris oleifera, instead of, shortly, Colza.

† The Botanical Gardens at Kew are a fine example of what should be done, either on a large or a more modest scale, in many towns where the means of study are yet inconvenient or incomplete

BOTANICAL CONGRESS.

THE first meeting of the Botanical Congress was held in the Raphael Room of the South Kensington Museum on Wednesday, May 23, at 11 A.M., Professor De Candolle in the chair.

A very large meeting, including almost all the British and foreign botanists and horticulturists present in London, assembled to hear the President's address. A large number of ladies graced the meeting with their presence. Before proceeding to the business of the meeting, Prof. De Candolle spoke as follows:—

"Before I commence my address in French, allow me to say a few words in English—first, as a mark of respect to this great country; and next, in explanation of my views for the conduct of present and future meetings of this kind. We have to choose between two alternatives: either that every member should speak in his own language, or in that of the country where the Congress meets. This last method would destroy the equality between members which is desirable in every public assembly. Not a few would be reduced to silence, or at least prevented from taking part in the discussion, and several distinguished men would therefore avoid International Congresses. The other plan of letting every one speak in his own language appears to be much more convenient. For these reasons I shall address you in French, and in doing so I establish in fact the right of every Englishman to speak in English at Paris or at Berlin, at Florence or at Vienna, under similar circumstances."

The Secretary then announced that the following gentlemen had been elected Vice Presidents of the Congress:—

Professor Lecoq, Clermont Ferrand
Dr. Weddell, Poitiers
Professor Rickx, Ghent
Professor Morren, Liège
Professor Asgarn, Kœnigsberg
Professor Reichenbach, Hamburg
Professor Karl Koch, Berlin
Dr. Schulz Bipontinus, Deidesheim
M. Hermann Wendland, Hanover
Professor Meissner, Basle
Senor Triana, New Granada

The following works were laid on the table:—

Dr. Hasskarl: a Manuscript Clavis to Rheede's "Hortus Malabaricus."

Some papers from Professor Gasparini.

An illustrated work on the species of Cotton, by Professor Parlatore, &c.

Some exceedingly beautiful water-colour drawings with analyses of flowers, by Mr. Julius Platzmann, of Leipsic; also several beautiful drawings of British plants, by Mr. W. G. Smith.

Professor De Candolle then read his inaugural address (see p. 488), on the conclusion of which a vote of thanks was proposed by Sir C. Wentworth Dilke, M.P., and seconded by Sir Roderick Murchison, who took the opportunity to allude to the philosophic views of M. De Candolle, and to the masterly way in which he had handled his subject.

Mr. Bennett, on the part of the Botanists of Britain, also tendered his thanks to the eminent Chairman for the honour he had conferred on them by presiding on this occasion, and specially for the preparation of so admirable an address.

Prof. De Candolle briefly replied.

Dr. Schulz Bipontinus, a Vice-President of the Imperial Leopoldine Academy, offered the congratulations of that learned and ancient body to the President and members of the Botanical Congress.

Dr. Moore then exhibited specimens of Megacarpæa polyandra, a Crucifer with 15 stamens, which excited great interest among the botanists present.

Mr. Rivers then made some remarks on Seedling Peaches and Nectarines, a report of which we hope to give at a future time.

Professor Caspary then spoke in English on the movement of the branches of trees in frosty weather.

Mr. Howard read an important paper on the Cinchonas, and in the discussion that followed, Dr. Weddell said that he approved of the spelling of the name of the genus as adopted by Linnæus. This paper was illustrated by numerous specimens of Cinchona barks, of dried specimens of the plants grown in India, and collected by Mr. Markham, &c.

Professor Koch then made some remarks on the Nomenclature of Plants, &c., and the meeting adjourned.

The second meeting of the Botanical Congress was held on Thursday, in the Sheepshanks Gallery, which was well filled throughout the whole proceedings.

The first paper read was that of Dr. Moore, Glasnevin, on the Climate and Flora of Ireland, &c.; the next that of Professor Lecoq.

Mr. Howlett exhibited a model of an apparatus which should combine shading with night covering of plant houses, by means of one contrivance fitted to the roof. It was considered that for most purposes this apparatus would occlude the light too much.

Mr. Anderson's paper on Orchid culture excited an animated discussion, in which Professor Daubeny, Professor Reichenbach, Mr. Bateman, M. Alfred de Morney, and Mr. Howlett took part, all advocating the justness of Mr. Anderson's views.

Mr. Krelage next addressed the meeting in German on the Nomenclature of Plants.

Dr. Dickson, Edinburgh, read some remarks on the leaves of Sciadopitys and Phyllocladus, which he considers in the light of leaf-like branches, rather than as true leaves, a view in which Professor Caspary did not fully coincid

Professor De Candolle exhibited a measure on a long strip of paper of the trunk of one of the gigantic Sequoias of California. The enormous dimensions were well exemplified by the length of the strip, which extended well-nigh from one side to the other of the room. The rate of growth was carefully noted by counting the annular rings.

Professor Reichenbach addressed the meeting in English on certain peculiarities of Orchid structure. In the course of the discussion that ensued on this subject, Mr. Bateman said that he had seen a branched spike of Odontoglossum grande, and Dr. Masters said he had also met with a similar case in Ophrys aranifera.

Professor Morren, of Liège, treated at some length on the influence of coal gas on plants, and detailed his experiments on this point.

Mr. Smith then stated his views as to the stated corona of Narcissus.

Several other communications were read, including one from M. André, Paris, and the President declared the Congress at an end, on which Mr. Bennett proposed, Dr. Daubeny seconded, and Dr. Schulz Bipontinus supported, a cordial vote of thanks to the President.

We have necessarily been very brief with our account of the Congress, but we shall have the pleasure to publish fuller accounts of some of the more important papers in future issues.

BANQUET AT GUILDHALL.

THE Banquet at Guildhall was of a brilliant character. The Lord Mayor presided, and amongst those present were Viscount Powerscourt, Sir Broke Middleton, Bart.; Right Hon. R. C. Nisbet Hamilton, Bart.; M. DeCandolle, of Geneva; Professor Koch, of Berlin; Professor Reichenbach, of Hamburg; Professor Caspary, of Königsberg; M. Weddel, of Poitiers; M. Meissner, of Basle; Professor Morren, of Liège; M. Schulz Bipontinus, of Deidesheim; M. Van Houtte, of Ghent; M. Linden, of Brussels; M. A. Verschaffelt, of Ghent; Sir Wentworth Dilke, M.P.; Dr. Hogg, Dr. Maxwell Masters, Mr. Kelk, M.P.; Mr. J. Clutton, Mr. Sheriff Gibbons, Mr. Alderman Besley, Mr. Pender, Mr. E. A. Bowring, C.B.; Mr. Nicholls, Mr. Samuel Morley, Mr. George Godwin, F.R.S.; Mr. J. J. Blandy, Mr. W. H. Dixon, Messrs. Veitch, Lee, Standish, Bull, Williams, Paul, Waterer, Low, Wendland, Fortune, and Captain Walker.

Grace was said by the Rev. Prebendary GIBBS, the Chaplain to the Lord Mayor, and after dinner the "loving cup" was sent round.

The LORD MAYOR gave the first toast, "Her Majesty the Queen." He said: "On the throne of this peaceful and constitutional country there sits a Royal lady, who reigns not alone over her subjects, but in the hearts of her people. It is amongst the happiest of our customs that upon these festive occasions we drink to the health of Her Majesty, wishing that her reign may be a long and happy one, and that her people may be prosperous, contented, and free."

The toast was drunk with the utmost enthusiasm.

The LORD MAYOR next proposed "The Army, Navy, and Volunteers." He remarked that the bravery and exploits of the army and navy were matters of history. No one could contemplate what was passing in neighbouring countries without the deepest emotion. There was not a heart that did not sympathise, not a tongue that did not lisp the hope that the miseries and horrors of war might be averted. This was the earnest prayer of every Englishman, and he trusted that it might never be uttered in vain.

Admiral MIDDLETON, in responding, said that upon an occasion like the present he was unwilling to introduce a subject which would direct the thoughts of those who listened to him to the horrors of war, but the news that had recently been received from a distant part of the world had cast a shadow over the profession to which he had the honour to belong; and as that profession had been most ungenerously attacked during the last few days in some of the public journals, he felt it right to say a few words in its defence. He alluded to what had been said in reference to the bombardment of Valparaiso. He had the honour to call Admiral Denman his friend, and he knew him to be one of the most high-spirited and gallant officers in the Service. He regretted that the system of rigid neutrality which had of late been adopted by the Government should have had the effect of casting a cloud over the naval profession, and of calling down upon an officer of such known honour, zeal, and judgment as Admiral Denman the comments which had lately appeared in a portion of the public press. He also regretted that an admiral occupying such a position should not have been supplied with sufficient vessels.

The LORD MAYOR next gave "The House of Lords and the House of Commons." There never was a period in the history of this country, he said, when there was a greater sympathy than existed at present between the House of Lords and the people. With regard to the House of Commons, he thought he might safely say that in that House the intelligence and independence of this great country were fairly represented. The toast was drunk with enthusiam.

Viscount POWERSCOURT, in acknowledging the toast, said the members of the House of Commons appeared at present to be in rather an unpleasant position, as they were principally occupied in squabbling and fighting, and were in a remarkably bad temper. With regard to the House of Lords they were in somewhat smoother water than the House of Commons at the present moment, but he did not know what might happen before the session was over. He could not resume his seat without congratulating the committee of the International Horticultural Exhibition on the very beautiful and highly successful Show they had witnessed that morning—an exhibition that must have afforded the greatest pleasure to all who took the least delight in horticulture.

Sir C. W. DILKE, Bart., the Chairman of the Executive Committee, proposed "The health of the Foreign Visitors and the President of the Botanical Congress." This he said had been the most remarkable horticultural Exhibition that had ever been held, and he was happy to add that it had been most successful in the number of visitors it had attracted. As a whole it was an Exhibition that had never been equalled, and he doubted whether it could ever be surpassed.

The toast was received with loud cheers.

Professor DE CANDOLLE, in responding, said:—"The kind words which we have just heard, and the fact that my name has been mentioned in so kind a manner, make it incumbent on me to thank you in the name of the strangers present. You have done them great honour by inviting them to this banquet, and indeed since their arrival they have not ceased to receive, in private as well as in public, the testimony of which they cannot but be proud, and which will leave many pleasant remembrances in their minds. This morning the Prince and Princess of Wales and the Princesses of the Royal family have condescended to express their regrets that they could not accept the splendid hospitality over which the chief of the illustrious city of London presides, and the hon baronet who has directed all these preparations with a zeal which has been crowned with success, has been kind enough to propose the toast. The only persons who are to be pitied in all this are those botanists and horticulturists who may have desired to come to London, and who have been prevented from doing so either by their public duties or by the unfortunate state of affairs now existing on the Continent. But let us put on one side these personal considerations, and let us rather congratulate ourselves on the prosperous state of the sciences and their applications, and particularly in the progress of Horticulture, of which this international gathering furnishes a proof. Our age is in this respect a great age. Horticulture has been pushed to an extraordinary degree of perfection, and the natural sciences have also advanced. What science wants, above all, is liberty—not only political liberty, which is to a certain extent very necessary, but, above all, that liberty which is accorded to each individual by public opinion. We have seen nations and ages where, under an absolute monarchy, there has been a great deal of liberty of thought, and, *vice versâ*, free countries in which public opinion has exercised an actual pressure on individuals. Those who seek for scientific truth require to be protected by the public, even more than by a free political system. All the world ought to know the advantage of toleration of opinion, and public reprehension ought only to fall on bad faith. Science prospers when national institutions and public opinion allow it freedom. At the present time horticulture flourishes more particularly in the West of Europe, in England, Belgium, and Holland; and in some neighbouring cities, such as Paris, Berlin, and Hamburg. Evidently a climate with neither extreme of cold, nor heat, nor dryness, is favourable to its development. Evidently, also, the intelligent and painstaking peoples of these western lands naturally give themselves to the minute details of cultivation; but there is still a condition which overrules all. Horticulture, carried to a certain extent, is a luxury. It implies wealth, and there is no extent or breadth of country more generally rich than Western Europe on either side of the Channel. Will International Horticultural Exhibitions spring up in the future in those regions? We must hope for them as well as for others a more important object—peace, for war devours men as well as capitals. Imagine to yourself (said M. de Candolle) what is the cost of the millions of soldiers at the present day massed together on Continental Europe. You will find, perhaps, that with their pay for a single day, or at least for a single week, we could construct a conservatory reaching from Paris to Berlin. And here is a piece of advice which may be given beforehand to the horticulturists of the East and South of the Continent—not to make an insignificant imitation of English, Belgian, or Dutch culture, but rather to create a new system for horticulture as different from these as possible, suitable to their particular climates—a system of horticulture having for its foundation the plants of Asia, Africa, and Australia, capable of supporting heat, cold, and dryness. In making efforts in this direction they will do something new and remarkable, and the horticulturists of the West will go to see the exhibitions of Eastern and Middle Europe with the same pleasure that they visit in the present day their own exhibitions." M. de Candolle concluded by again thanking the assembly for the kindness which they had shown to the foreign visitors.

The Right Hon. C. NISBET HAMILTON, in proposing "Success to the International Horticultural Exhibition and Botanical Congress," said: "I have no doubt that those who have witnessed the Exhibition of this day were highly gratified by what they had seen. For my own part I confess, that although I have seen numerous exhibitions of flowers in many parts of the world, the present Exhibition surpassed them all. Lord Bacon had said, nearly 300 years ago, 'God first planted a garden, which, indeed, is the purest of human pleasures; it is the greatest refreshment to the spirits of men, without which buildings and palaces are but gross handiwork.' This, it should be remembered, was an expression employed by one of our greatest philosophers. In England horticulture was pursued alike by the greatest and noblest, and the poorest and humblest in the land; and I believe it has a tendency to elevate the mind. Although we are proud in this great country of our manufacturing and commercial prosperity, we are proud also that such a meeting as the present can be held under the presidency of the chief magistrate of the City of London. It is gratifying to observe the taste for floriculture that exists among the people, as is evidenced in many of the crowded lanes of the metropolis and other densely populated places, by the care that is taken of a solitary plant, such as a Geranium or a Fuchsia. Referring, again, to the Exhibition of that morning, I may say that Belgium and Amsterdam have had their International Exhibitions, and London has followed the example set by those places, and I hope I may say, without offence, that in the show we have just seen we have been enabled to surpass those that have gone before. I trust that although this is the first show of the kind that has taken place in London, it will not be the last."

Dr. HOGG briefly responded.

Sir C. W. DILKE gave "The health of the Lord Mayor and the Corporation of the City of London."

The LORD MAYOR replied as follows:—"My Lord, ladies, and gentlemen—Different men, according to their different humours, have formed various plans for bringing the whole human race under one head. A man proved that all mankind might have one neck, that he might strangle it. A gallant bard grieved that 'fair womankind could not reserve their smiles for him alone,' and I, by an inverse process of reasoning, would give my place to-night could I be blessed with a thousand warm and varied tongues wherewith to bid you, from 'heart to very heart,' one and all a sincere and earnest welcome. The gentlemen who honour us with their presence here to-night have invited us to view the most interesting, the most marvellous, and the most wonderful Exhibition the world has ever seen. I think I may call it the queen of exhibitions. On the lingering threshold of art, science, and industry, an institution has arisen, a society has been formed, to show the power of Art without art, the power of Nature carved by human nature. The right honourable gentleman has told us that Lord Bacon says: 'The Almighty Father first planted a garden.' A garden is, and has been, the foundation of religion—of poetry—of all that is brightest and holiest amongst men. What is there on earth that so much contributes to our delight, to our enjoyment, as a garden? A garden is health—a garden is wealth—a garden is happiness. What is more refreshing, more delightful than the sweet fruits of earth? What is more fragrant than the breath of flowers? It has been said that Nature, so fair and bounteous in herself, needs not the hand of man to train and cultivate her; but Nature in every shape requires cultivation. The luscious Peach, the clustering Vine, the fragrant Myrrh, the Rose divine, abundantly illustrate the truth of this. In this age of great competitive and cosmopolitan industry our neighbours are doing with their flowers what we do with our sons—urge them to take honours at home, and send them to gain laurels abroad. On the part of this municipality, I beg to assure you that we hold out to you, one and all, the right hand of fellowship—that we recognise the great merits of art, of science, and of literature, and we look upon this Exhibition as one of the happy and peaceful triumphs of our time. May it flourish, not only for the present, and for our sakes, but may it flourish for the future."

Prof. KOCH proposed, in German, "The Executive Committee of the Horticultural Meeting."

Sir D. COOPER briefly acknowledged the compliment.

Mr. C. DILKE proposed "The Lady Mayoress and the Ladies."

The LORD MAYOR, in acknowledging the compliment, said the Lady Mayoress desired him to say that the sight she had seen that day was one of the most gratifying of her life.

During the evening the band of the Grenadier Guards, under the direction of Mr. D. Godfrey, played a choice selection of music in the gallery.

The Conversazione at the South Kensington Museum was very numerously attended, and was by no means the least brilliant of the festivities of the week.

DINNER AT ST. MARTIN'S HALL.

UPWARDS of 500 gentlemen sat down to dinner at St. Martin's Hall on Thursday evening, Lord H. G. LENNOX, M.P., presiding.

On the removal of the cloth, the CHAIRMAN said the first toast on the present occasion was one which all Englishmen delighted to honour. For many years they had had the happiness of being under the most constitutional of sovereigns, a lady whose private life would bear comparison with that of any other in the land. These were great blessings, and would always secure that wherever the toast was proposed it would be received with enthusiasm. He was one of those who thought that, possessing such blessings, they could not do better than enumerate them on every possible occasion. He asked them to respond to the toast heartily by giving three times three, and with the expression of a hope that God in His Providence may long preserve our gracious Queen to reign over a happy and a grateful people.

The toast was drunk with the greatest enthusiasm.

The CHAIRMAN said the next toast was one which would equally commend itself to their sympathies. It was that of the Prince of Wales, with that beautiful Danish rose which had been transplanted in this country, and who they trusted might long flourish on British soil, and the other members of the Royal family. Of the Prince of Wales he need say but little, for all of them by this time knew him well. He appeared to identify himself with every British movement and with every British sport, and wherever he went he met with the sympathising acclamations of the English people. His brother, Prince Alfred, was a true British tar. He had seen Prince Alfred on board ship in the Mediterranean, where he took all his watches and performed all the duties as the sons or

brothers of those present would have done if they had been in that position. He trusted also that they would give an extra cheer for the Princess Helena, who was about to be married, but who, he was happy to say, was not about to leave England, but to remain here to be a solace to her widowed mother.

The toast was drunk with rapturous applause.

The CHAIRMAN next proposed—"The Army, Navy, and Volunteers," associating with it the name of the Macleod of Macleod, who briefly returned thanks.

The CHAIRMAN said he must now crave the indulgence of the meeting while he proposed the toast of the evening. It was a toast which would naturally tax the powers of a chairman under any circumstances, for in itself it possessed an intrinsic interest to all present. He trusted that that interest would act as a cloak to cover the deficiencies of him in whose hands it had been placed. The toast, as placed in his hands, was "Success to the Promoters of the Horticultural Exhibition and the Botanical Congress." He, himself, was one of those promoters, and it would be indecent to propose success to himself. He would, therefore, with the permission of the meeting substitute—"Success to the Horticultural Exhibition and the Botanical Congress now sitting in London." From the first time this scheme was broached he had given it his most cordial support, because he thought it was simply a grateful return for the courtesies which British horticulturists had received in Belgium, France, and Holland. In the next place he supported it because he believed it tended in a great degree to foster and to increase in this country a love of horticulture, and a taste for the growth of flowers. There was no sentimentalism about that. It was an undisputed fact that a love of horticulture and a taste for floral creations tended to refine and humanise the best feelings of man. Let any one go to Battersea Park, or to Kew Gardens, and see the artisan who, confined for six days in his work, comes out on the seventh to admire the wonderful creations of nature displayed there, and he would not fail to come back with the strong conviction that through these works a man's mind must be directed to Him who was the Creator of them all. This, then, was an essentially practical matter. As a member of the Council of the Royal Horticultural Society, it had devolved upon him to receive and to read communications without end from the clergy of various denominations in this great metropolis, praying that the Society would afford them assistance in providing prizes for window gardens in the poor and densely populated districts of London in which they laboured. One and all of those gentlemen stated that in giving this aid they would be doing an immense amount of good—an amount of good which would be incalculable. In consequence of these representations they did establish prizes, and last year they expressed their willingness to co-operate with others in providing additional prizes, but owing to the illness of a gentleman who undertook the management of the matter last year, the subject had lapsed, only however to be revived next year. They had established prizes, in the shape of silver and copper medals, for the best cultivated gardens in the largest camps in England and Ireland, and they had received the warmest testimonials from generals and officers, who had agreed in assuring the Council how much what they had done had contributed to the morality and the good order of the regiments where such prizes had been given. Horticultural science had this great advantage, that from the moment a child commenced it, flowers literally grew under his feet. Even the greatest tyro in the study could never feel lonely in the secluded lanes or the wildest districts of the country, for wild flowers would crop up around him on every side, giving him ample food for meditation, and so turn out to be his kindest and most valuable friends. Thus much, then, for the reasons which had induced him to give his hearty co-operation to this scheme, and was it not a scheme that had proved a decided success? To his mind there could be but one answer to that question, and that was a most emphatic affirmative. It was an attempt on their part to rival with all possible kindness, similar undertakings that had been inaugurated in various parts of the Continent. He regretted that in the magnificent display they had witnessed there were not more productions from foreign countries: but on the other hand he rejoiced to think that both in that room and in another place there were professors of botany and horticulture who had come over from foreign lands to testify their sympathy with the efforts which had been made here. Had any one, he would ask, ever seen more beautiful specimens of horticulture than those which had been displayed? Had any one ever seen more successful fruits of unwearied patience than the horticulturists of this country had furnished? Had any one ever seen an Exhibition which had been displayed in a more advantageous or picturesque manner? Strolling down its long avenues, it really appeared that those beautiful flowers had been placed there by some magic hand, and that it must be one of those happy places in which they were told in their childhood, fairies delighted to dwell. The next point they had to consider was to whom these great successes which had been achieved were due. In the first place thanks were due to the gardeners of this country, whose public spirit, enthusiasm, unwearied zeal, and great ability, together with their great disinterestedness in trusting plants of so valuable a nature to all the chances and changes of temperature, could not be too highly commended. Next, thanks were due to a public-spirited gentleman, Mr. Ormson, who had seen that everything tender was warmly housed; and lastly, thanks were due to Mr. Gibson, who had been selected by the Executive Committee to arrange the grounds. Let them for a moment pause to consider the enormous strides this matter had made during the last few years. Some of those present would remember the first Show, how small, and comparatively insignificant it was; now the Show extended over 3½ acres; and at the Paris Exhibition, which it was proposed to hold next year, so confident were Frenchmen of the resources of England, and the public spirit of English gardeners, that they had apportioned 3½ acres of their space to England—a space which they expected English gardeners to fill. They were assembled on the anniversary of that distinguished Swedish naturalist, Linnæus. In one sense that was to be regretted, because the gentlemen who composed the Society bearing his name were holding a banquet that night, a circumstance which deprived them of the support of many of the Professors of Botany and Horticulture who otherwise would have been amongst them. In the latter part of the last century that great man visited this country. If he had gone to South Kensington on the opening day and seen those beautiful exhibitions, had looked upon the coloured foliage of the plants which vied with the Azaleas, or those Orchids, grotesque in form but brilliant in colour, would not thoughts have occurred to that scientific mind which would have opened to him a new world of inquiry? But while the gardeners of England had done well, they must not suppose that he (the Chairman) was going to let them off by saying that they had done all they could. They had done nothing of the kind. He trusted that if he were spared until next summer, he should see the English gardeners over in Paris, and that they would show to the French nation what they could do, and that they were not afraid either of transit by land, or passage by water, so that they might rival their friends abroad. He knew that many of their foreign friends were He knew that many of their foreign friends were abroad. He would tell their foreign visitors that they were heartily welcome in this country, and he trusted that they would accept the reception which had been given to them as a feeble expression of the gratitude of Englishmen for past kindnesses. Above all they would declare to their foreign friends that night, whether from France, Holland, Belgium, or any where else, that the wish of the English people was that they might cast aside old rivalries and old antiquated jealousies, and do nothing but compete with one another in the most friendly contests—not on the battle field, but in the promotion of all that tended to the advancement of science, of commerce, and of art. He would propose "Success and prosperity to the International Horticultural Exhibition, and to the Botanical Congress, and might the great objects sought to be accomplished be abundantly realised."

The toast was drunk with loud applause.

Mr. W. PAUL, in responding, stated that the origin of this movement had been so well explained, that he need not further advert to it. For its success it was greatly indebted to Mr. Moore, who had done his very utmost to secure it. They had succeeded in bridging over a chasm between horticulturists and botanists which no doubt would be turned to favourable account hereafter. He maintained that Horticulture was both an art and a science—an art as pursued from the decorative point of view, a science as regards the production of fruits and flowers. Gardening as an art had produced men of whom every Englishman, and the highest and wealthiest in the land, the most refined and intellectual take a pride and pleasure in the decoration of their gardens. Horticulture as a science has so many true sons that it would be impossible to name even the most prominent. Is there no science in producing with unerring certainty, alike amid the snows of winter and the heat of summer, those splendid fruits and flowers, without which the entertainments and assemblies of this great nation would be shorn of half their enjoyment? It is too close upon the event to estimate its results. Of this, however, we may be sure, that while Botany and Horticulture are promoted by it, it will give fresh life and a wider development to an important branch of national industry.

The Rev. J. DIX said no doubt at the present time the horticultural world was wide awake; it had been asleep some time. He had been asked to propose as a toast, "The Royal Horticultural and Botanic Societies." In all sincerity of heart he had advocated the claims of the Horticultural Society, and since he became a member of it he had gone through many difficulties. He had been called an obstinate opposer, but he had found that what was called obstinacy had been productive of very good results. When he mentioned the great success of their Tuesday meetings he thought he need say no more. They must remember that their operations were under the searching and scientific eyes of many visitors. Now, he should not like to be obliged to decipher the notes those gentlemen made in their pocket books in reference to the Show. He looked down the tables before him and saw gentlemen who were the very sinews of Horticulture, and he had no doubt they would experience the best results if members of the Society would look after their own interests. If they wished the Royal Horticultural Society to be respected as a scientific society, they must take care of the scientific operations which went on in its garden. They had plenty of materials, and he believed that there was a desire amongst gardeners to carry out everything that horticulturists could wish. Unfortunately, however, they lacked funds. They might as well think that they could get hot water for their Orchids without fire, as to expect that they could successfully carry on the operations of the Society without money. Moreover, they must take care of the education of the young men to whom they would have to look in future times to keep up the horticultural character of the nation. He proposed "The Royal Horticultural and Botanic Societies," with which he would associate the names of Mr. G. F. Wilson and Sir Walter Stirling.

Sir W. STIRLING said it was related of an officer who when asked by Hannibal his opinion of war, replied—"How can I speak of war in the presence of Hannibal?" He felt some difficulty in speaking of Botany and Horticulture in the presence of those who had cultivated it with such success. He believed that those who took delight in such pursuits were amongst the most enviable of mankind. The Horticultural Society was much indebted to the Duke of Richmond, the father of their excellent Chairman, and to Royalty, but it was to the Gardeners that they must look for ultimate success.

Mr. G. F. WILSON said he had lent his best assistance towards developing Horticulture in this country. He believed that the Society's Garden at South Kensington would become most attractive if people, instead of criticising the Council, would try to bring in Fellows and subscribers to the funds.

Dr. DAVID MOORE gave some account of the progress of horticulture in Ireland.

Mr. J. G. VEITCH said he had the privilege of proposing a toast which he believed would be most heartily responded to. It was the health of those who, by their scientific knowledge, had aided so much the Botanical Congress, and who had at the same time helped the International Exhibition so much by the exhibition of plants. He proposed "The health of their kind friends, the distinguished Foreign Visitors." It was on foreign soil that the first Exhibition of this kind took place, viz., at Brussels, and in England they were only carrying on what was there begun. He assured the foreign visitors that although their reception had not been one of ostentation or splendour, it had been a hearty and a welcome one.

M. VAN GEERT, Jun., acknowledged the toast in appropriate terms.

Mr. JOHN LEE proposed the health of "Friends from the Provinces," who always came with beaming, smiling faces, that made everybody around them happy. They had not only assisted in a pecuniary way, but had exhibited some very beautiful specimens. Their Manchester friends had exhibited some specimens which were unrivalled for growth and beauty.

The Rev. S. REYNOLDS HOLE, vicar of Caunton, Nottinghamshire, acknowledged the toast. He remarked that the oldest man in the oldest of histories spoke of a garden, and Bacon had remarked that God had made gardening the foremost of human pleasures. For himself he liked sport, but to his mind there was no sport like gardening.

Mr. A. DICKSON, of Chester, also acknowledged the toast.

Mr. CHARLES TURNER proposed the health of "Friends from Scotland and Ireland," for which Mr. DAVID MITCHELL returned thanks.

Sir C. W. DILKE, Bart., expressed his regret that he was not present earlier, but in common with some friends who had been at the Linnean Society, he had determined to be amongst them as soon as possible. He was always anxious to give as much assistance as possible to the cultivation of Horticulture and Botany. He felt that it would have been impossible for him to attend and not propose the toast which he would ask the company to drink with all the heartiness it deserved—"The Health of the Chairman, Lord Henry Gordon Lennox."

The toast was drunk amidst rounds of applause.

The CHAIRMAN, in acknowledging it, said he asked himself why he had been invited to preside. It could only have been because he felt a deep interest in the promotion of the sciences they were met to serve. The position he held had many advantages, but his sole desire was to make them conducive to the general welfare.

The company then separated.

STATE OF THE WEATHER AT CHISWICK, NEAR LONDON,
For the Week ending 26 May 26, 1866, as observed at the Horticultural Gardens.

May.	Moon's Age	Barometer.			Temperature.				Wind	Rain.
					Of the Air.			Of the Earth 1 foot deep.		
		Max.	Min.	Max.	Min.	Mean				
Thurs.	17	30·270	30·192	61	28	44·5	51	51	S.	·00
Friday	18	30·175	30·126	71	33	52·0	54½	51	S.E.	·00
Satur.	19	30·119	30·103	71	35	53·5	57	52	E.	·00
Sunday	20	30·275	30·188	67	42	54·5	56	52	E.	·00
Mon.	21	30·341	30·306	62	36	49·0	57	53	E.	·00
Tues.	22	30·350	30·306	62	36	49·5	55½	53	E.	·00
Wed.	23	30·310	29·995	74	35	55·0	56	53	E	·00
Average.		30·231	30·194	66·1	34·7	51·1	55·4	52		·00

May 17—Night hare, very fine throughout, frost at night.
— 18—Hoar frost early, dry hazy, very fine, dry air.
— 19—Very fine, dry air, at freezing in the night
— 20—Very fine throughout, strong wind.
— 21—Cloudless, with hot sun, and very dry air, fine at night
— 22—Dry hazy, fine but cold easterly wind, and very dry, frosty at night
— 23—Fine, with dry air, fine throughout, cold at night
Mean temperature of the week, 1·4 below the average.

STATE OF THE WEATHER AT CHISWICK,
During the last 10 years for the ensuing Week, ending June 2, 1866

May and June	Mean Amount of Rain in the Week.	Average Temperature of the Week.	Mean Temp.	No. of Years in which it Rained	Greatest Quantity of Rain	Prevailing Winds.							
						N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.
Sunday	·27	60·0	45·2	51·6	22	0·61 in.	2	10	8	3	2	11	3
Mon.	·28	67·7	44·8	56·3	13	0·97	1	10	8	3	6	6	3
Tues.	·28	67·0	44·2	55·6	15	0·97	1	13	3	2	6	6	3
Wed.	·30	67·9	44·7	56·3	16	0·91	1	8	8	6	1	4	6
Thurs	·31	68·1	44·8	57·0	15	0·98	1	9	7	5	3	4	6
Friday	·2	68·0	44·0	56·0	14	0·76	1	11	6	—	3	11	5
Satur.	·2	68·2	45·2	56·7	18	0·87	1	4	4	5	3	11	5

The highest temperature during the above period occurred on the 29th, 1847—therm. 91 deg., and the lowest on the 29th, 1864—therm. 29 deg.

Notice to Correspondents.

*** We are compelled, from the extraordinary demand on our space, to postpone the replies to correspondents until next week.

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Deputy-Chairman—JOHN COLLINS, Argyle House, Holloway.
Edward Bell, 48, Marine Parade, Brighton.
Richard Hunt, Standard Abbot, Herts.
Thomas Knight, Edmonton, Middlesex.
Robert Leeds, West Lexham, Norfolk.
George Savile, Inglethorpe, near Stamford
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"This valuable Meal, containing above 20 per cent. of fatty matter, is recommended as an economical food to mix with bone-grown produce" (see Dr. Voelcker, R. A. S. E. Journal, Vol. 1., 2d Series, page 176).
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By the use of this Composition Sheep are dipped or dressed with safety, and without the injurious effects on the wool and animals which are caused by the use of Poisonous Dressings. It frees the Sheep from Lice, increases the Growth of the Wool, cures Scab, and enables Sheep to feed with comfort.
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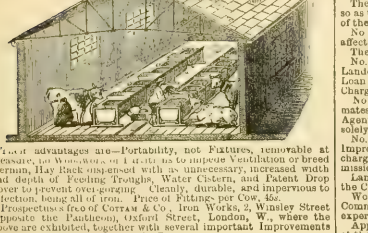

Their advantages are—Portability, not Fixtures, removable at pleasure, no Woodwork or Fixtures to impede Ventilation or breed Vermin, Hay Rack suspended with as unnecessary, increased width and depth of Feeding Troughs, Water Cisterns, and Patent Drop Cover to prevent overgorging. Cleanly, durable, and impervious to infection, being all of iron. Price of Fittings per Cow, 45s.
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STEAM PLOUGH for SALE.—One of Fowler's on the newest principle. It consists of Two 14-horse Power LOCOMOTIVE ENGINES, BALANCE PLOUGH, CULTIVATOR, &c. The Engines also adapted for all kinds of Farm Work.
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MESSRS. CROGGON AND CO., PATENT FELT MANUFACTURERS, &c., have REMOVED their LONDON BUSINESS from 2, Dowgate Hill to more extensive Premises, being { 63, New Earl Street, } Cannon Street West,
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No investigation of title is required, the Company being of a strictly limited character, do not interfere with the plans and execution of the Works, which are controlled only by the Government Enclosure Commissioners.
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The Term of Years for the Rentcharge is fixed by the Landowner, so as to adapt the amount of Annual Payment to the circumstances of the Tenants.
No Investigation of Title being required, and the Charge not being affected by Encumbrances, no Legal Expenses are incurred.
The Arrangements for Effecting Improvements are threefold —
No. 1. The Works may be Designed and Executed entirely by the Landowner's Agent, and the Company employed only to supply the Loan and conduct the matter through all the official Forms for Charging the Outlay on the Estate.
No. 2. The Company will supply Plans, Specifications, and Estimates for any Improvements to be executed by the Landowner's Agent as under No. 1. In each of these cases the Landowner will be solely under the control of the Enclosure Commissioners.
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Landowners may thus obtain what assistance they require from the Company, and no more, in effecting the objects in view.
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Applications to be addressed to WILLIAM CLIFFORD, the Secretary, at the Office of the Company, 22, Whitehall Place, London, S.W.

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For particulars, apply to the Principal.

BATH and WEST of ENGLAND SOCIETY, for the Encouragement of Agriculture, Arts, Manufactures, and Commerce.
Patron—
H.R.H. The PRINCE OF WALES, K.G.
The ANNUAL EXHIBITION of STOCK, IMPLEMENTS, POULTRY, DOGS, WORKS of ART, and HORTICULTURAL SPECIMENS at SALISBURY on the 4th, 5th, 6th, 7th, and 8th JUNE, 1866.
President—
The Right Hon. the EARL OF PORTSMOUTH.
The HORSES and POULTRY will be OPENLY JUDGED, on MONDAY, 4th June.
The other Departments will be open as follows:—
STEAM ENGINES and MACHINERY in MOTION; the ARTS and HORTICULTURAL DEPARTMENTS daily.
FIELD IMPLEMENTS of various kinds, to work at intervals on TUESDAY and WEDNESDAY.
HORSE SHOEING, at Portable Forges, WEDNESDAY.
The ANNUAL MEETING and BANQUET, on WEDNESDAY.
The HORSES paraded in the Circle at 12 and 4 daily, after Monday.
The Band of the Royal Marines, Plymouth Division, (by permission of Col. Gascoyne, C.B.) will play on Monday, Tuesday, and Wednesday; and the Band of the Grenadier Guards, (by permission of Col. Michael Bruce), on Wednesday, Thursday, and Friday.
Admission on MONDAY, TUESDAY, and WEDNESDAY, 2s. 6d.; THURSDAY and FRIDAY, 1s. JOSIAH GODWIN, Secretary,
16th May, 1866. 4, Terrace Walk.

THE BIRMINGHAM HORSE SHOW, 1866.—The FIRST GREAT EXHIBITION of HORSES, PONIES, CARRIAGES, HARNESS, SADDLERY, &c., will be held in BINGLEY HALL, BIRMINGHAM, on TUESDAY, WEDNESDAY, and THURSDAY, July 10, 11, and 12, when Prizes to the amount of £550 will be awarded.
President: The Right Hon. Lord WENLOCK.
Vice-President: The Mayor of BIRMINGHAM.
Prize Lists and Certificates of Entry are now ready.
The Galleries will be reserved for the exhibition of Carriages, Harness, Saddlery, Horse Clothing, Stable Fittings, &c. Particulars of the terms for space may be obtained of the Secretary.
The ENTRIES CLOSE on THURSDAY, June 21.
JOHN B. LYTHALL, Secretary.
Offices, Stephenson Chambers, New Street, Birmingham.

ESSEX AGRICULTURAL ASSOCIATION, 1866.—POULTRY, GAME, FLOWER, and FRUIT SHOWS will be held at EPPING in the County of Essex, on TUESDAY, July 17, 1866, in conjunction with the Annual Exhibition of the Essex Agricultural Association. The Prize Lists, which are upon a most liberal scale, may be had on application to the Secretary on forwarding a stamped envelope with address.
ENTRIES for the POULTRY SHOW will positively CLOSE on JUNE 25 next. Early applications are particularly requested.
Epping, May 19. By Order, JOHN W. WINDUS, Secretary.

ROYAL AGRICULTURAL SOCIETY of ENGLAND.—On WEDNESDAY, May 30, at 12 noon, Mr. R. HERBERT will READ a PAPER on "THE SUPPLY of MEAT to LARGE TOWNS." By Order of the Council,
London, May 25, 1866. H. HALL DARE, Secretary.

The Agricultural Gazette.
SATURDAY, MAY 26, 1866.

MEETING FOR THE ENSUING WEEK.
WEDNESDAY, May 30 { Agric. Society of England (Mr. Herbert on Meat Supply).—Noon.

At the very scantily attended General Meeting of the Royal Agricultural Society last Tuesday, the Report of the Council, declaring what had been done in respect of the Cattle Plague, Agricultural Education, and Steam Cultivation, received very vigorous criticism. Mr. ARKELL pointed out with great force, in a speech all the more effective for the simplicity with which expression was given to the feelings of farmers in his own locality (North Wiltshire), the lack of energy which had been displayed by the authorities of the Society during the past autumn when the Cattle Plague was raging. The local clubs had moved long before the National Society, to which they naturally looked for guidance. The members of the Council ought to ask themselves if they were moving with the times—if they were not rather bringing up the rear of agricultural progress instead of leading it. Trammelled by a Charter which forbids the discussion of matters to be brought before Parliament, they had proved utterly inefficient as an exponent to Government of the urgency of the calamity, a due sense of which was indeed at length forced upon the authorities, but not by the Agricultural Society of England. What a contrast to the immediateness and force with which the commercial classes and the great firms which represented them had urged the interference of Government when calamity overtook them the other day! If the Agricultural Society refused to act for the farmers of England in an emergency of this kind, the confidence in it of the agricultural body would be lost.
To this Sir WALTER STIRLING replied that neither Government, nor Courts, nor Societies, could act efficiently unless their action were backed by public opinion. The farmers were themselves in the latter part of last year still averse from Government interference, and if the conduct of the Society had been, in the opinion

of agriculturists, so blameworthy, why was not that room full of indignant members to call the Council to account?

Mr. EDMUNDS, of Rugby, pointed out that the absence of farmers from these meetings, to which Sir WALTER STIRLING had referred as a proof of the satisfaction of the agricultural body with the conduct of the Society's affairs, was rather to be taken as evidence of their conviction that the Society under its existing management was useless to them. Not only with reference to the Cattle Plague, but in other instances in which it had moved, agriculturists were dissatisfied. The continual offer of prizes for the same implements year after year was an absurdity. The petty rewards offered through the local school examinations for distinction in ordinary scholastic attainments were neither worthy of the Society nor properly within its jurisdiction to offer or award. The Society had not taken a course in this matter either worthy of its importance and position, or within the limits of its powers. Let its Council gradually accumulate a fund sufficient for the provision of more valuable prizes, and let it confine itself to the professional part of the education of the future farmer. A diploma won at a contest for honours of that sort would have a professional value, and, stamping its possessor as an efficient and intelligent agriculturist, would be sought after with avidity.

Dr. CRISP recalled attention to the inefficiency of the steps which had been taken by the authorities for stamping out the cattle plague, condemned the utter inefficiency of the existing means of veterinary education in the country, and pronounced that nothing worthy of professional education, either in veterinary science or in agriculture, would be achieved until the Government took the matter in hand and established a great central educational institution, whose degrees would command the confidence of the country.

It was announced at the meeting that the President elect for 1866-7 is Mr. HARRY STEPHEN THOMPSON, of Kirby Hall, York. There could not be a more satisfactory appointment. Ever since the Northampton meeting of the Society, and earlier than that, Mr. THOMPSON has taken a leading part in the affairs of the Society. On that occasion we remember the exceedingly able manner in which he led a practical discussion of the kind which was common at the earlier annual meetings of the Society. Since then, as Chairman of the Journal Committee, and for many years virtually Editor of the Journal, he has laboured most efficiently and constantly for the prosperity of the Society. There is no one probably who has habitually given up more of his time to its service. And his appointment as President will commend itself most thoroughly to both the good sense and the gratitude of the members.

TIME has made us familiar with the disease which continues to exert its baleful influence upon the stock in this country, and, if reports are to be relied on, has extended to the Sister Isle. Men no longer discuss Cattle Plague as the one absorbing topic; the thing has settled down to the position of an established fact, and beyond the occasional utterance of a vague conviction that the disease seems on the decline, we hear but little about the subject that a few months back was the sensational one of the time.

Those who are most concerned, however, have not lost their interest in the matter, which is to them a vital one—a problem which becomes more difficult of solution as time wears on, and as the disease still finds new centres, breaking out with renewed vigour in one place after being arrested in another. Admitting that the cases of attacked are considerably fewer than they were even a few weeks back, there is little consolation to be found in this fact when coupled with the knowledge that the affection steadily advances in spite of efforts at isolation and "stamping out."

Another unsatisfactory reflection arises from the ill-success that has attended the introduction of fresh stock upon infected premises to supply the places of those destroyed by the plague. In a few instances the animals brought in have been attacked in a fortnight after their arrival, while in other cases they have remained for a much longer time, and have been placed under such circumstances that the cause of the infection has been exceedingly difficult to trace, unless some infectious matter may be supposed to have adhered to portions of the walls and mangers, and to have been covered over by the invariable lime-wash which is so popular, apparently because it makes so good an appearance. Recent inquiries upon this subject lead to the belief that the general system of disinfection is radically wrong, and in practice utterly useless—not at all times from the nature of the agents used, but more often from the slovenly manner of applying them.

This question will require serious consideration, irrespective of the existence of disease among our present stock. In the future the important thing will be to secure healthy animals from the consequences of exposure to conditions which are likely to result in new outbreaks, assuming that we succeed in thoroughly eradicating the malady of the present. We have yet to learn how long the virus retains the power to do mischief; we are told on good authority that it is as deadly in its operation at the end of 12 months as it is when newly taken from a diseased animal. After being dried up, and apparently destroyed, the malignant matter produces in a healthy subject a disease not less rapid nor less fatal than the one from which the poison originated. The complete destruction of the virus in infected localities must, therefore, be effected before new stocks are brought in to supply vacant places.

In all the attempts at disinfection that we have witnessed, the one thing lacking has always appeared to be a thorough washing previously to the application of any disinfectant. Of the virtues of hot-water and pearlash we entertain a very exalted opinion, and feel assured that a liberal application of this fluid by means of brooms and brushes to every part of the infected sheds would be a most useful preliminary proceeding. After a perfect cleansing, chloride of lime, or zinc or carbolic acid in mixture with water may be used, and a final fumigation with sulphurous acid or chlorine gas will complete the disinfection. If a predilection exists in favour of whitewashing, it may be done now without much danger of the discharges and excretions from the diseased animals being covered over; but we should prefer, where practicable, a coating of paint, the extra expense of which will not be unproductive in the future. At any rate the act of painting or washing the walls and posts belongs rather to the decorative art than to any system of disinfection properly so termed.

If we ever indulged a hope that the labours of the members of the Cattle Plague Commission would result in the discovery of a remedy or means of prevention, the conclusions at which they have arrived, and expressed in their Third Report, tend to dispel all such pleasing illusions. Medicines, we are told, if they produce any decided effects at all, rather make matters worse; and while animals fed on soft mashes and liquid food recovered, those treated with potent draughts have died. Certain drugs, chloroform among them, have been reported to possess curative properties, and further experiments will doubtless be tried, but it is to be feared that the conclusion is substantially correct, that medicine has no beneficial effect upon the disease.

The neutralisation of the poison by disinfection is a point that has been carefully considered by the Commission, and the experiments instituted have led to the exclusion of all agents reported to possess disinfecting properties, except the four, chlorine, ozone, sulphurous acid, and tar acids (carbolic acid and cresylic acid). Practically, this is all we have gained by months of persevering labour; but scientifically we are the richer by a more comprehensive and elaborate report on the symptoms, nature, and morbid appearances of the disease than exists in reference to any other affection to which men or animals are liable. All that careful investigation, microscopic observation, and minute chemical examination could do has been done; and if we cannot cure the evil, we are now in a position to estimate the rapidity of its growth, and the earliest indications of its presence.

One of the most important facts discovered during the inquiry we take to be the rapidity with which the whole mass of blood becomes poisoned after inoculation. It appears from actual experiment that so quickly does the poison become multiplied, that in 48 hours after infection has been communicated, the blood from any part of the infected animal will convey the disease into the system of a healthy beast. Supposing it therefore to be possible to remove all the diseased blood except a minute portion, and to infuse healthy blood in its place, the poisoned drop still remaining might be expected to again infect the new blood in the course of the next two days and nights, and reduce the animal to the condition he was in before the transfusion took place. With such a material in the blood, of what avail could any treatment be, unless an antidote were known of sufficient power to arrest the development of the morbid principle, or to destroy its virulence?

Among the indications of infection the rise of temperature is spoken of as the first: taking the healthy standard of internal heat as 100° to 102°, it is stated that as early as 36 to 48 hours after infection a rise to 104° or 105½° will be observed. Without for a moment questioning the accuracy of the statement, we cannot help suggesting that as it stands it is likely to mislead, because, without asserting so much, it conveys the impression that a rise of temperature is characteristic of cattle plague, and not of other diseases; whereas it is perfectly well known that many affections during their progress are marked by variations of temperature, indicated by a delicate thermometer placed under the arm-pits, in the mouth, the rectum, or the vagina.

At the conclusion of their Report the Royal Commission strongly insist upon the rigid adoption of all means for the extirpation of the disease; and then, with the probabilities of its re-introduction before them, proceed to indicate the proper modes of prevention by a re-arrangement of our present system of cattle traffic, the establishment of quarantine for store stock, slaughter-houses at the port of debarkation, and improved means of supplying meat to large towns.

The whole Report, with Appendix, is now in the hands of the public, and we think the general feeling will be, that if the Commission have not discovered a cure for the Cattle Plague, it has at least, by its valuable suggestions and important discoveries, done the country good service.

—— AMONG the many beautiful objects exhibited in the International Horticultural Show is one of more modest appearance, possessing some agricultural interest. There is a box of Italian Rye-grass, which when brought on Monday was in luxuriant and forward growth, having been sown last February on some of the Maplin sand, and since watered with the sewage as it runs into the Thames at Barking. In perfect health and growth, equal already to a cut of several tons per acre, and sown only three months ago, it is a sufficient testimony to the capability of sewage as a Grass-grower upon sand. The experiment on a larger scale at the outfall, where an acre of the Maplin sand has been brought up and spread, is in promising progress. The Grass sown only a few weeks ago is coming satisfactorily, and, fed at intervals with dressings of the liquid manure, it will no doubt soon exhibit luxuriance equal to that in the specimen box at the International Show.

—— We very much regret to learn that Mr. HOLLAND, M.P., with Colonel KINGSCOTE and Mr. RANDALL, the minority who supported him, has retired from the chairmanship of the Education Committee of the English Agricultural Society. He has remained long enough at his post to give the views he holds their utmost chance of success in the Council; and the retirement from such a post of the man who has done more for agricultural education in this country than any other Englishman, will perhaps be more effective in urging his opinions once more upon the Society than any further maintenance of his official position.

Mr. HOLLAND'S object in originally moving the appointment of a committee was to induce the Society to take the subject of the professional education of the farmer into their consideration. From the beginning he has been overruled by a majority who would confine the action of the Society to the promotion of the school education of farmers' sons. And thus "pure mathematics" seem from the last Report to have been about the sole object to which the candidates for the Society's honours have directed their attention. We do not hesitate to say that the Society might quite as well, indeed even better and more properly, have devoted the funds which are subscribed by the members of an agricultural society to the inculcation of orthodox theology as to the teaching of pure mathematics. The scheme, however, which has resulted in so many candidates coming up to make proof of their mathematics, is, it appears, to be continued

for another year. Let us hope that Mr. THOMPSON'S presidency may be signalised by some more direct action than has yet been taken to carry out the directions of the Charter in "the promotion of the education of those who are dependent upon the cultivation of the land for their support."

—— The Scottish Chamber of Agriculture have followed the London Farmers' Club in the discussion of the meat question. Two papers by the ablest and most experienced agriculturists of Scotland, Mr. M'COMBIE, of Aberdeenshire, and Mr. JOHN WILSON, of Berwickshire, were read at the monthly meeting of the Society last Wednesday. Mr. HOPE, of Fenton Barns, also contributed a paper to the very interesting discussion. We have not received a report in time to give them in the *Agricultural Gazette* to-day, but they shall appear in full next Saturday.

OUR POWERS OF MEAT MAKING.

We have been cutting during the last week part of a crop of 6 acres of Italian Rye-grass, a yard long, and fully 10 to 12 tons per acre (the soil varying in many places, and being naturally very poor). Taking the crop as 10 tons only, it would, when made into hay, average nearly 3 tons per acre over the whole field. The Grass is passed through the chaff cutter and given to our farm horses and cattle. This Grass was sown down in the spring of 1865 on a crop of Barley. During the winter it has been occasionally irrigated by hose and jet with the sewage from our great tank, composed of our house sewage and the drainage and washings of bullock manure from under the sparred floors. Some small portion that could not be reached by our jet was quanoed in February, but it is inferior to the sewaged portion. Walking through it, it stands up nearly to one's waist.

To-day we are washing out our bullock-pudding and again irrigating that portion that has been mowed, so that in three weeks we may get another heavy mowing. I need hardly repeat that this is the most nutritive and fattening Grass, and the hay from it surpasses any other.

Our powers of meat-making by this simple treatment are enormously and profitably increased, for the rent, rates, tythes, and seed are no greater than they would be on an ordinary crop of Grass, producing at this time only a sixth in bulk and value of this crop. We thus save three rents and expenses by the cost of extra manure. A great deal of it will be made into hay in about a fortnight, as I have formerly described in my book.

The whole process of this irrigation is simple and interesting. A band from the engine shaft when chaff cutting, or doing other work, is slipped over a rigger, and to work go the pumps, like a fire-engine. The jet from the nozzle shot against the mess of bullock-pudding at the rate of 100 gallons per minute, hurries it away it a gelatinous stream to the great tank, where it gets thoroughly agitated and liquified by the air jet, and the next half hour finds it sunk into and diffused in the soil and subsoil, feeding the roots of the recently cut Grass. It convinces one that the dung-cart and dung-heap are slow and comparatively useless and unremunerative processes.

I wish that our authorities, instead of waiting for years to reclaim the Maplin Sands, would accommodate our poor farmers (who have our lands all ready) with the abundant and valuable results of John Bull's gastronomic consumption.

I cannot help feeling, both "in sorrow and in anger," when I know that we are eating up the world's produce, purchased at enormous cost, and then wasting it. It is a disgrace to us nationally, that with abundant land, not one-fourth manured, with plenty of labour and superabundant capital, we choose to be dependent on foreign nations for our food.

By our skill and capital we can envelope the whole population of the whole world in calico; but are too ignorant or too prejudiced to produce our own daily bread.

The value of this early and first cutting of Italian Rye-grass can hardly be less than 10*l.* per acre, perhaps more if made into hay.

How much of our poor Grass land might be set free for the growth of corn were this system more extensively practised. If this system were not profitable, there would then be a good reason for its non-adoption, but the case is too clearly one of individual and national gain to be controverted.

There are many meat-making crops to which too much manure can scarcely be applied, such as Mangel, Clover, Tares, ordinary pasture, Kohl Rabi, Cabbage, and especially the rapidly growing Italian Rye-grass. We should store and economise water.

These 6 acres are giving the produce of 24 acres, simply owing to their receiving a greater supply of manure in a proper and available form. Are we to be told that there is not manure enough in this country, when we are wasting it in almost incalculable quantities? For 18 years every slop from my house has gone towards the production of my food and that of my family. Is this right or is it wrong?

While on the sewage question I may mention, for the information of those interested, that I have some good leather hose from Shand & Mason, fire-engine makers, also some Sandwich hose (strong canvas between vulcanised India-rubber, from Silver & Co., and the gutta percha from the Gutta Percha Company in the City Road. They all answer well, but if well oiled after use, I am inclined to conclude "that there is nothing like leather" for rough wear and durability.

I should recommend the Gutta Percha Company to sell direct where they can, for in one instance they declined to serve me again except through an agent. The consequence was I got so-called gutta percha *not* of their manufacture, and of a worthless quality, much to my annoyance. *J. J. Mechi, Tiptree, May 21.*

THE CATTLE PLAGUE.

1. The following returns were issued on May 18.

These returns do not profess to give the total number of cases which have occurred in Great Britain, but only those which have been ascertained from information received at the office from inspectors. Columns 1 only record the cases reported as having commenced during the weeks indicated by the headings; "back" cases being added to columns 2.

Census Divisions.	1 Number Attacked. Week ending May 5.	1 Number Attacked. Week ending May 12.	2 Result of Reported Cases from Commencement of Disease. Attacked.	Killed.	Died.	Recovered.	Unaccounted for.
Metrop. ..	14	10	7969	3483	3715	318	453
S. Eastern .	—	—	4854	1681	2337	465	170
S. Midland .	242	221	19,729	7766	10052	1534	387
Eastern Co.	74	80	11,205	3491	4830	788	396
S. Western .	10	—	1689	617	791	266	74
W. Midland.	275	247	13,744	5261	6070	1417	996
N. Midland.	433	446	17,486	9491	6229	1211	552
N. Western .	541	490	62,698	16,791	34,773	6991	4143
Yorkshire .	203	146	34,066	7445	18,235	5920	2366
Northern . .	110	129	8446	47411	2613	974	118
Monmouth. . & Wales .	37	81	8093	953	5789	1031	320
Scotland ..	77	62	46,579	5797	28,067	10,688	182
	2,067	1,942	276,751	69,729	124,801	31,805	11,716

NOTE.—9 In pectoral with reported cases last week have not reported the time for this return—viz., for the county of Buckingham 1; Chester, 1; Durham, 1; Essex, 1; Lincoln, 1; Worcester, 1; York, 2; and for Scotland, 1.

These inspectors returned 52 cases last week.

2. THE CATTLE PLAGUE IN IRELAND.—The *Times* announced on Thursday that Mr. King, veterinary surgeon, Belfast, had on Wednesday morning reported a decided case of rinderpest at Ballyloughlin, county Down. A new Order in Council has been issued rendering applicable to all parts of Ireland the measures of prevention already adopted in Down and Antrim, and adding other precautions. The post-mortem examinations of the original cases, and the concurrent testimony of the Scottish veterinarians, leave no room for doubt that the cases already announced are genuine Rinderpest.

3. CATTLE PLAGUE PROGRESS.—An erroneous impression appears to prevail in the public mind with regard to the decline in the rinderpest. Most of the papers, in referring to the subject, allude merely to the current cases reported each week, and take no account of the back cases. By the annexed short table, which details the current cases and back cases recorded during the last six weeks, it will be seen that there has, in reality, been but a small decrease of the disease of late:—

Week ending.	Current Cases.	Back Cases.	Total.
April 7	3361	647	4008
,, 14	3582	1738	4320
,, 21	2823	982	3805
,, 28	2795	988	3783
May 5	2067	1000	3067
,, 12	1912	1748	3660

Of the 1748 back cases recorded, no fewer than 1274 were contributed by the unfortunate county of Cheshire, which furnished altogether 1669 cases to the total of 3660 cases, noted in the week ending May 12. The Contagious Diseases Prevention Act does not appear to be enforced with sufficient rigour in Cheshire, a considerable portion of the animals attacked being permitted to linger on and become fresh centres of infection. The *Mark Lane Express* thus comments on the subject:—In the week ending June 24 there were 30 attacks; in the week ending July 1, 147; July 8, 575; July 15, 321; July 22, 490; July 29, 757; August 5 (it was not until this date that general alarm began to prevail on the subject), 1145; in the week ending August 12, 1231; September 2, 922; October 7, 1436; November 4, 3158; December 2, 5679; December 9, 6988; January 6, 8508; February 3, 11,443; Feb. 10, 15,895; and in the week ending February 17, 18,356. A policy of slaughter was then inaugurated, and the attacks have since been as follows:—Week ending February 24, 11,310; March 3, 9370; March 10, 8263; March 17, 8028; March 24, 5672; March 31, 4653; April 7, 4008; April 14, 4320; April 21, 3805; April 28, 3783; and May 5, 3067. Although the number of attacks has thus been greatly reduced, it was still as large at the commencement of May as at the commencement of November. In the autumn the public mind was filled with the subject of the rinderpest, to the exclusion of almost every other topic; but now—use being second nature—the cattle plague comes in for only a moderate share of attention. Nevertheless, it will be seen that the rinderpest question is still not without gravity.

OUR CORN AND CATTLE TRADE.

As the population of the country keeps increasing, so must the supply of the daily necessaries of life. For a long time past our home-supplies have been falling behind our home-demands, so that we have been annually becoming more and more dependent upon the produce of a foreign soil. Improvements in agriculture have enabled us largely to increase our own produce, and thus keep down foreign imports, and doubtless the productive resources of the land can be much farther increased by steam culture, drainage, artificial manuring, and the like; but giving future improvements all the credit possible, our farmers can never hope to overtake the demands upon them for animal and vegetable food. Hence the look-out of our trading interests, and the extension of our foreign corn and cattle trade.

There are two ways of keeping the balance of demand and supply in a state of equilibrium, the first by importing corn and cattle, and the second by sending out to our colonies our surplus population to provide for themselves. Had only the former of these plans been in active operation, it is difficult to say what our present position would have been, and from what corner of the universe we could have drawn the requisite supplies to support the whole English-speaking family.

The present state of trade in supplying our increasing millions with animal and vegetable food, according to their varied requirements, does however afford an interesting field for profitable study. We continue to get a large proportion of our imports of corn from the Baltic, Black Sea, and Mediterranean, and we may safely rely upon a continuation of such supplies for many time to come; our demand for foreign cattle is only of recent date, and our supplies come chiefly from the exporting States of the Continent nearest to the metropolis. In amount they have rapidly increased to an extent almost incredible, and their increase is not so much due to an increase of population as to an increase of consumption of animal food by our working classes, arising from the improved condition of their domestic circumstances. From the new world we are also getting increasing supplies, both vegetable and animal, the latter chiefly in the form of cheese, butter, bacon, &c.

The change which is taking place in the dietary of the nation is exercising a much greater influence upon the consumption of and demand for Wheat and other articles, which at one time formed our principal support, than is perhaps generally credited by the agricultural public. The quantity of bread which many individuals now eat is remarkably small as compared with what they themselves in early life, or their ancestors, consumed; and when the price of the loaf rises above the ordinary limit, the family supply can be greatly curtailed without any perceptible amount of inconvenience. It would be an easy matter to pick out a man, who continues the old system of dietary without any perceptible change, and who consumes twice the quantity of bread and flour weekly, which another man, the latter consuming a greater quantity of animal food, similar in every respect, does—a difference which amounts to 50 per cent. in the consumption of Wheat.

In some parts of the north, and of the sister country, Ireland, an increase in the consumption of Wheat has recently taken place, but on the other hand less oatmeal and fewer Potatoes are now being used.

Two conclusions, however, may be safely deduced from present circumstances: the first, that Wheat will continue the staple bread corn of this country; and the second, that a high scale of prices is incompatible with the changes which are thus taking place in the dietary of the nation, and in the dietary of Wheat-exporting countries.

The English Wheat-grower will thus perceive that although high prices are incompatible with the progress of the dietary of the world, he may nevertheless rely upon receiving the best prices current in the world for a good article, while the liability to glutted markets with extreme low prices is annually becoming less with the progress of things.

The English Wheat-grower will further see why present prices of Wheat maintain a lower level than was predicted in the early part of the season, when it was confidently affirmed that the high price of butcher's meat would increase the consumption of Wheat, and hence its price, as our supplies from the United States and Russia were officially reported to be deficient, while our home supplies were also considered short. But our own corn statistics and those of Russia are not much to be relied upon, more especially the latter as officially reported; those of the United States are more trustworthy, but the reported deficiency of the Union in Wheat is more than counterbalanced by an excess in the growth of Indian Corn. In short, granting that our supplies of Wheat (crop 1865) are short of being an average, and that cattle plague has greatly reduced our supplies of beef, corn merchants will experience no little difficulty between this (April) and harvest time in realising a very high maximum price to cover the shortcomings of former seasons, while the greatest caution will be necessary, more especially on the part of farmers, to avoid losses on stock carried forward to another season; and this applies equally to exporting and importing States.

The extension of our corn trade involves the investment of a vastly increased capital as compared with former times, when we almost fed ourselves. And much of this increased investment of money is in stocks of old Wheat on hand. There may be less in the hands of some individual speculators than formerly, but when the whole stocks on hand in importing and exporting countries are brought together, the total quantity is of extraordinary magnitude; and the natural tendency of capital thus invested under a greatly subdivided interest is to check extreme rates, to prevent unnatural speculation, and to give a healthy tone and confidence to trade.

After all, the markets are more ruled by the proportional quantities of beef, mutton, vegetables, and bread which people eat, than by the breadth of land

under this or that kind of crop. And then the quantities of fish, fowl, eggs, and bacon which our hard-working classes now-a-days consume are something enormous. And the conclusion cannot be called in question that it would take an immense quantity of Russian and American Wheat to supply the important place which this long catalogue of edibles occupies in the yearly calendar of many an English housewife.

The improvement which is taking place in the domestic circumstances of our working classes—the increasing quantity of animal food which they are consuming—the demands they are making for higher wages, which will enable them to consume more—and the rapid increase of our foreign supplies of cattle, and cured provisions of every kind—are amply sufficient to stimulate the skill and enterprise of the British farmer. It must be admitted that cattle plague and the growing prevalence of contagious diseases are disheartening arguments against the increase of stock farming, but it will never do to let go the plough handles when the share comes against a stone, and therefore the present visitation of increasing mortality amongst cattle must be received as an indication for the necessity of a higher degree of professional attainments and perseverance than hitherto, for there cannot be a question raised on the practicability of greatly increasing the productive resources of the country as regards cattle. The improvements and extension in question, we may observe, have reference more to numbers and quality than perhaps to weight; at the same time a vast number of horned cattle and sheep are sent to the shambles long before they have attained maturity of growth. Very great advances have already been made both as to number and weight, but we are apprehensive that in competition with the older cattle of the Continent our own farmers are placing less importance upon ripe beef and mutton than they ought to do, if many of them are not overlooking it altogether.

On the continent of Europe great efforts continue to be made to grow more cattle for the English market. In many things foreign farmers closely imitate the stock-owners of this country, but in others they are obviously in advance, and one of these is the greater ripeness of meat, so that when a fair dietetic balance is made, any difference that there is, is in their favour. We may call foreign cattle ugly brutes, and so doubtless they are in the market when standing beside our own thoroughbred cattle, but when the carcases are cut up on the stall of the butcher the contrast is different—the ugly brute in very many cases, if not the majority, yielding the best quality of meat—and quality of meat, be it remembered, will ever command the English market. The importers of foreign cattle are not blind to this—hence the effort to purchase ripe natural-fed animals.

Let us remember too that besides live stock we get from the continent of Europe an immense supply of dead meat of a very multifarious and indiscriminate character, such supplies being peculiar to the small-farm system of husbandry which so largely prevails, as butter, cheese, rabbits, eggs, fowls, hams, &c.

SEWAGE IRRIGATION.

ALL expedients for disposal of town sewage otherwise than by application to land seem to us on one ground or another objectionable. Cesspits in towns corrupt the air and corrupt well-water; they are incompatible with public health, and should be abolished. Sewerage has therefore become a necessity for any large community. The difficulty is to deal with the volume of sewage thus concentrated, so as not to cause a nuisance either in the atmosphere or in rivers. Disinfectants and filtration have been tried in many forms, but without success. As applied to sewage, disinfectants do not disinfect, and filter beds do not filter. Both attempts have been costly failures. The Local Board of Health at Croydon at one time were spending large sums annually on chemical and mechanical experiments to no purpose but to expose themselves to law suits; they then commenced the process of sewage irrigation.

In order fully to ascertain the effects upon health of sewage irrigation, we have visited the principal places at which that process is carried on, viz., Croydon, Norwood, Worthing, Carlisle, Edinburgh. We also held open public inquiries at Worthing, Croydon, and Norwood.

At Worthing we found the sewage works, which have now been in operation for more than a year, unobjectionable. Not a single case of sickness was attributed to the irrigation. With regard to Croydon, the inhabitants of that town generally cannot suffer from their irrigation fields, the sewage farm at Beddington being at a distance of about three miles from the town. At the public inquiry all the witnesses, medical gentlemen and others, were agreed that the irrigation works were not injurious to health. As to the irrigation works at Norwood, no complaints have been made by the persons representing that district upon the Local Board of Health at Croydon, and the general rate of mortality in Norwood is low. Some dissatisfaction, however, is felt by one or two proprietors and occupants of house property in the immediate neighbourhood of the works; and Dr. Cresswell, one of the local practitioners, stated that the question had occurred to him as one worthy of investigation whether certain peculiar cases of illness, resembling ague, which he had met with in the district, might not have been caused by miasma from the irrigated fields. The works are inconveniently near to the outskirts of the town, and may exercise a depreciatory influence on the value of adjoining houses; but, on the whole, we are satisfied that no ground exists for serious apprehension of miasma from fields irrigated with sewage.

If sewage irrigation had really bred a special class of diseases, it would hardly have been tolerated for two centuries on so vast a scale near Edinburgh.

It is necessary not to mistake instances of abuse for defects in the system of sewage irrigation. Sewage, if fresh, and in the open air, is scarcely perceptible to the smell. If sewage be pent up in sewers and discharged on the land in a state of active putrescence; or if, as took place once at Norwood, the depositing tank is allowed to get out of order; or if, as at Edinburgh, the carriers are so rudely constructed and so neglected as to become reservoirs of stagnant sewage and accumulating places of corrupt sewage deposit, unpleasant, if not mischievous, consequences must be expected; but these are cases of abuse, preventible by common care.

Sewage water, if passed over a sufficient area of Grass land, passes off bright, tasteless, and without smell. At Croydon, ever since the town was sewered (about the year 1852), the sewage of about 17,000 of the inhabitants has been discharged into the River Wandle, a clear trout stream which breaks out from the chalk above the town, and flows, as ornamental water, through residential properties. For fouling this stream the Local Board of Health, so long as they resorted to chemicals to purify their sewage, were exposed to continual litigation. They then commenced the irrigation process upon land at Beddington, and discharged the effluent water from their irrigated fields into the Wandle. Mr. Gurney, finding a dearth of water at his mills, applied to the Local Board for leave to bring the effluent water from the sewaged fields into the Wandle at a point above his mills, and having obtained leave, formed at his own expense a conduit of considerable length, whereby the effluent water is now conducted through his grounds by the side of his carriage drive into the river as it flows through his estate. It appears from the evidence both of Mr. Gurney and of his agent, Mr. Reynolds, who resides upon the estate, close to the outfall at Beddington, that there is still occasional cause to complain of the condition of the effluent water, as it sometimes comes off the land either turbid or so imperfectly cleansed from sewage that it pollutes both the River Wandle and the atmosphere in the vicinity. These evils, so far as they exist, we are satisfied admit of explanation. When the water is turbid (as distinct from being foul from sewage), the cause probably is, as suggested by Mr. Gurney, that cattle sent in to graze upon the irrigated fields (a very large number in proportion to the acreage) have trodden the surface and fouled it with their dung. When the effluent water flows off, carrying both to sight and smell unmistakeable signs of sewage, it has not been applied to a sufficient area of land. The smell has been found most objectionable on Sunday evenings, probably because the men on those days have neglected to do the amount of work necessary to effect a proper distribution of the sewage. Mr. Reynolds expressly states that the grievance is only occasional; that at other times the water comes down as pure to look at as he could desire—as pure as the river water; that he has no fault to find with sewage irrigation if properly managed; that, on the contrary, he believes it to be a great principle, and thinks it a pity that it should be called in question through the neglect of those who conduct the works. If at any time Mr. Gurney finds the effluent water objectionable, he has only to close his conduit and keep the water out. This hitherto he has not done.

Sewage irrigation requires to be undertaken and conducted with strict attention; the site must not be too near to dwellings; adjoining wells should be watched, and if the soil be very porous, disused; the sewage must be applied fresh, and over a sufficient area of land. If these conditions are observed, irrigation will be found to be the mode of dealing with sewage which results in the largest amount of good to the land and the smallest amount of harm to flowing water.

There may be difficulty in some cases in finding land available for sewage irrigation, but with the exception of lands liable to be flooded, there seems to be no soil that will not serve the purpose. Between the light and blowing sands of Edinburgh and the stiff clay of South Norwood are included all the mechanical differences of soil which can be met with in this country, but at both extremes we find the application of sewage attended with success. In some respects, indeed, a heavy clay is even more suitable than lighter soils; from its very nature it is more productive of healthy vegetation, and from its well-known chemical properties, it is more effective in the purification of sewage.

The same land will serve the purpose of sewage irrigation continuously. The process to the soil is one not of exhaustion, but of constant renovation. Part of the Craigentinny meadows has been continuously irrigated for two centuries. Sewage can be pumped any height and carried any distance. Its conveyance, therefore, to a given point is merely a matter of cost. There is no real difficulty in dealing with sewage whether the volume be, as at Norwood, a few gallons per head, or, as we are informed that it is at Croydon, from two to four times as great as the water supply of that town.* On a clay soil (or wherever pumping is necessary) it is desirable to restrict the dilution. On a gravelly porous soil, on the contrary, as shown by Mr. Marriage, it is an advantage that the sewage should be largely diluted, since it is then much more readily distributed over the surface.

If a farm be large enough, there is no time when some portion of the land may not be capable of receiving the sewage. The process of irrigation may go on day and night, in wet and drought, in summer and in winter. At Croydon, where advantage is taken of gravitation, the sewage (though varying in volume at different hours) does run upon the land uninterruptedly, "continuous as time itself." This is a matter of first importance, regard being had to the necessity that sewage, as soon as produced, should be removed from the town and be applied whilst fresh.

The powers which towns now possess for the purposes of applying their sewage to land are contained in—

Public Health Act, 1848, 11 & 12 Vict. c. 63, ss. 45, 46, 84.
Local Government Act, 1858, 21 & 22 Vict. c. 98, ss. 50, 68–75.
Local Government Amendment Act, 1861, 24 & 25 Vict. c. 61, ss. 4–7.
Sewage Utilisation Act, 1865, 28 & 29 Vict. c. 75.
Land Improvement Act, 1864, 27 & 28 Vict. c. 114.

At present there is no power of taking land for sewage irrigation except by agreement. If, however, the application to land of town-sewage be no longer optional, it will be necessary that towns should be furnished with adequate powers to take land compulsorily for irrigation; the exercise of such powers might be made subject to proper restrictions to prevent abuse.

The cost to a town of sewage irrigation depends upon the balance of expenditure and profit. This must vary in different places.

In the selection of a site for irrigation, due regard should be had to economical considerations. The cost of conveying the sewage depends partly upon the distance, but still more upon the height to which it is to be pumped, the volume to be pumped, and the price of coal. Laying main pipes an additional length of a mile or two through open country involves an outlay, the interest of which may be trifling as compared with the annual expense of pumping. Unless, therefore, there is much difference in the price of land, it would be cheaper to let the sewage flow by its own gravity a distance down the valley than to pump it to an adjoining upland. But saving in the first cost of land may be more than a set-off against the expense of additional piping and of pumping even to a considerable height. If the land in the immediate neighbourhood of a town is building land, and none is to be had except for an inordinate price, the circumstance need create no difficulty; it will only be necessary to go further for a site where land is to be had at a lower value. The Croydon Local Board of Health, as would appear from the evidence of their chairman and their engineer, are prepared, in the event of their being refused a renewal (on reasonable terms) of their present lease of Beddington Farm, to pump their sewage to an elevation of 150 feet, so as to command land at a distance.

It is not necessary that the cost of preparing the land for sewage irrigation should be great. The carriers and distributing branches, whether made as open trenches or of earthenware or cast-iron piping, need not be costly. Whether the liquid is pumped or flows to its destination, its distribution over the land should always be effected by gravity.

"Filtration," in the sense in which the term is used of filtering water for domestic uses, is not applicable to sewage. Town sewage cannot be *filtered* through an ordinary sand filter, either by the downward or upward process; nor is it necessary in any case to attempt this form of filtration for sewage. Mechanical deposition and separation of grit and flocculent matter are alone required, and these operations can best be performed in open canal-like tanks.

Fields irrigated with sewage can be used for horses and milch cows to graze upon, and will fatten cattle and sheep. But there are practical objections to such use. Cattle grazing in a sewaged field tread the surface and foul it with their dung, and are apt also to tread down the banks of the sewage-carriers and thereby to foul the effluent water. Dung, so applied, is not required for manure by the owner of a sewage farm. Sewaged fields will yield wholesome hay; but in this uncertain climate there would be great difficulty in making hay from crops of Grass so heavy. Where irrigation is carried on upon a large scale, if the crops are to be converted into hay, probably some artificial process of hay-making will be required.

The most profitable course is, we believe, to sow Italian Rye-grass, and to sell the crop fresh cut as food for horses and cows. A field will in the year produce four or five crops, each of extraordinary weight. How often the Grass should be resown depends upon a balance of considerations. Crops from the same seed annually deteriorate; on the other hand, to break up the soil involves temporary suspension of crops additional labour, and other expenses. At Norwood, where sewage operations commenced only a year ago, the tenant has already over part of the farm had crops of 50 tons per acre, and expects in the ensuing year to obtain about 50 tons per acre uniformly over the whole. At Edinburgh the strips of irrigated land are let yearly at public roup, and fetch from 20*l.* to 40*l.* per Scotch acre. At Croydon the meadows are equally productive. At Worthing part of the sewage from a population of about 9000 persons was applied last year (1865) to 25 acres of land. The value received for the produce was 645*l.*, or about 25*l.* 16*s.* per acre. The expenses incurred were 229*l.*, viz., for labour, 164*l.*; for sundries, 65*l.*; total, 229*l.*, or at the rate of 9*l.* 3*s.* per acre; leaving a balance of 16*l.* 13*s.* per acre for rent and interest on outlay.

After a consideration of the actual results, extending over a number of years and obtained at various places and under various conditions, we confidently endorse the third conclusion of the last Report of the Royal Commission to which we have already referred, that "When local circumstances are favourable, and undue expenditure is avoided, towns may derive profit, more or less considerable, from applying their sewage in agriculture. Under opposite circumstances there may not be a balance of profit; but even in such cases a rate in aid, required to cover any loss, need not be of large amount."

Upon many points connected with sewage farms it would be unwise to lay down any fixed rules, the proper course varying under different conditions of soil, climate, lie of the land, &c., or remaining yet undetermined. For instance, as to what is the most convenient

* The supply of water at Croydon is about 30 gallons for each person per day. Subsoil water and rain bring this volume occasionally up to 150 gallons per head of the population.

disposition of the main carriers and distributing branches; what area of and suffices to purify a given quantity of sewage; how often and at what times relatively to the state of the crop such volume should be applied; the comparative effects of more and less diluted sewage; the comparative value of light soil and heavy soil under sewage irrigation; these and other like questions we prefer to leave to be settled by further experience. But we would suggest that in carrying out sewage irrigation the following points should be attended to:—

1. The irrigated fields should be at least one mile from the town, and if possible in the direction of north or east.

2. The extent should be not less than in the proportion of one acre to every 150 inhabitants whose sewage is to be applied.

3. The carriers should be so constructed as to retain as little residuum of the sewage as possible.

4. Care should be taken so to appropriate the land as to leave for each day a sufficient area available for irrigation.

The above remarks apply to the utilisation of sewage of towns of a considerable size; but sewage irrigation on a smaller scale is practicable. *Report of the Commissioners appointed to Inquire into the Best Means of Preventing the Pollution of Rivers.*

HORSE-BREEDING.

It is somewhat curious to note from time to time the opinions enunciated on the subject of horse-breeding, and how great is the confusion of thought and absence of practical knowledge on the subject. We find horse shows everywhere adopted by agricultural societies, and generally form no small attraction to their exhibitions. But we doubt, and indeed persons well acquainted with well-bred horses doubt, whether the horse shows of agricultural societies—including that of the Royal Society—do much to promote improvement amongst our horse stock. From this we of course except agricultural horses of every variety, which properly form prominent objects amongst agricultural live stock. But well-bred horses for hunting, the road, and carriage work, can scarcely be deemed agricultural stock. There are a few farmers, here and there, who, being good judges of horseflesh, will breed a colt or two yearly, and occasionally will turn out a good one. But we have often heard farmers complain that hunting gentlemen will not give farmers such good prices for their young horses as the same gentlemen will give to dealers—perhaps for horses bred by the same or neighbouring farmers. There is some, at least, apparent truth in this statement. But it is not the whole truth. The horse required for hunting, and indeed for any kind of quick riding work, must be an educated animal, and for the most part horses coming out of the hands of farmers who have bred them are raw and awkward, requiring time and trouble to render their powers available for immediate use. We have often been offered by farmers very promising four-year-old horses, which in another year, with skilful management and riding in the interval, would become worth all and more than the prices asked for them. But the best purchasers of horses, the men who will give a full price for a horse likely to do, pleasantly and effectively, the often severe work they require him to perform,—such men, as the rule, do not care to "make" young horses, or to have their stable servants employed in that sort of preliminary business. If they consent to buy a raw young horse, they are sure to require an equivalent abatement in price. Now the dealers in high-priced horses are in the habit of buying promising young horses and placing them, either by sale or otherwise, in the hands of persons who will, so to speak, educate them, when the dealer can offer them to the first classes of purchasers. There are certain districts, such as Yorkshire and parts of Lincolnshire, where the breeding of hunters and riding and carriage horses forms part of the regular business of many of the farmers, and these districts and Ireland form in fact the fields from which the demands for quick-work horses are mainly supplied.

We have on a former occasion shown that the suggestions we sometimes see made to farmers that they ought to breed horses fit for the army and artillery work—*i. e.*, horses for which they will get from 25*l.* to 35*l.*—are really absurd. Such prices may be all very well for clearing out the horse-breeders' failures, but unless for every one sold at such prices another can be sold for at least treble those sums, the breeder will find his system the reverse of profitable. Farmers may breed cart-horses with advantage. Their men are accustomed to manage them and can bring them early into farm work, with a fair probability that the colts will grow into money without any extraordinary cost. Horses for the turf may also be bred profitably by persons employing much judgment and capital in the business, but that is and must be a limited business for a limited and special market.

But for well-bred and weight-carrying hunters there is always a demand far in excess of the supply. It is easy enough to breed a horse that will get across the country with a light weight on his back, and many thorough-bred horses of no great value as hunters make very good steeple-chase horses, but to carry a man above 12 stone across all sorts of ground and over all kinds of fences safely and pleasantly, a horse must have good shape and good size—both height and substance—and must be capable of going for a long time at a fast, though not a racing, pace. Thorough-bred horses seldom answer this description, or if they do, they are commonly too valuable for racing purposes to be attainable for hunting purposes. Though a good hunter should have a thorough-bred sire, the dam should have more size and substance. And this is one of the great difficulties of hunter breeding. It is scarcely possible to tell beforehand whether a mare, herself large and powerful, will throw colts equal to herself in power.

There is always a tendency (especially when the mare herself is well bred) in her stock to lessen in size, so that a breeder may begin with a fine large hunting mare, and it may not be until she has bred three or four colts, that he finds she will not breed them of a profitable size. We have now a six-year-old mare, bred from a large hunting mare, fully 16 hands high, and of great substance, showing also much blood, whose sire is "The Trapper," a very large thorough-bred horse, yet with such parentage, our mare, though of great beauty and fine action, is only fit to carry about 10 stone to hounds.

Then, in order to get high prices, the hunter-breeder must keep a considerable number, because he must keep them till five years old, so that such a breeding establishment would involve a large outlay. Such an outlay, indeed, is limited rather to the country gentleman than to the farmer, being made in a pursuit too precarious to be properly a branch of husbandry.

At the Penrith Farmers' Club dinner, the chairman, Admiral Elliott, of Appleby Castle, entered on the subject of horse-breeding—saying—"he had done a great deal to engender a better breed of horses in these counties (Cumberland and Westmoreland), and he had gone to some little expense for that purpose." Then feeling it a subject in which the Club would be interested, he detailed some of his own experience on the subject, observing, "Dealers from other parts told them that they had nothing in Cumberland worth coming to look at. What was wanted was bone and breeding, without which no horse would carry a man through the exigencies of a day's fox-hunting. Now he took great pains to select particular animals—short-legged, substantial-looking horses, with part blood and good bone, and he always selected them for their performance. He thought like begot like, and he wanted his horse and the horses of the country to get animals of the proper stamp, and such as others could approve of."

It is quite right to select mares for their performances, because, unless a hunter be a resolute animal, it can never be depended upon to jump large fences, brooks, &c., with ease and safety. To take mares of this description for breeding at seven or eight years old, when just in their prime as hunters, will render the breeding stud a costly one. Yet the Admiral's proceedings are not discouraging, for he said: "He bred largely, and should be glad to let any of them see his stud. At that moment he had no less than 70 horses, from the colt and filly foal up to five years old. He rarely sold until the animal arrived at that age, and he never bred from an old mare or an injured one, but always tried to breed from a young mare, very often from an unbroken one. He had now in his possession a mare that he purchased when three years old, and which had had nine foals, two of which were not yet sold, not having arrived at maturity, and one had died. As a matter of satisfaction, he had that morning asked what amount the mare had produced, and he found that the sum stood at the highly respectable figure of 1150*l.* for that animal alone. He also had an old mare which he could say was never broke, but it once nearly broke his neck. This mare had had fewer foals than the other, namely, seven, and the figure against her name was 910*l.* These mares had been selected with great care. One of them was now in her tomb, and the other was going to foal to-day—he hoped a colt foal. That, however, was beyond his control. Only yesterday he had exchanged her produce of four years old for a canny northern gentleman's cheque of 250 guineas, and a gentleman from Lincolnshire who liked the Gaunders had offered him 50 guineas for a 22 months' animal. Now he wished to know why they could not all go and do likewise. He had been ashamed of some of the mares that had been brought to his horse, old broken-winded animals, with numerous other hereditary complaints, and from which a sound foal could not be expected. He did not care so much about broken knees, but the farmers seemed to be in a great hurry to put their horses into their waistcoat pockets. Instead of doing so, he recommended them to try some of their young mares, as the true secret of profitable horse-breeding was undoubtedly in the selection of proper animals. He was convinced that the farmers of the two counties were as capable of breeding good horses as any county; but when the breeders from the South came to the North they said the animals were not worth looking at, and when asked to come they declined to do so unless ensured there was something worth coming for."

This is sound advice. Whosoever attempts to breed hunters—farmers or not—should never do so save from sound, large, and young mares. But a mare suitable for the purpose can seldom be bought, even as a three-year-old, for less than 50*l.*; and few farmers (except in the horse-breeding districts) will give such a sum for a brood mare. From the small mares of about 15 hands high, which farmers ride, and often ride very well to hounds, there is no reasonable expectation of breeding a large and high-priced hunter. Country gentlemen, however, may look for very useful and interesting occupation in judicious horse-breeding. *The Economist.*

Home Correspondence.

Wheat Prospects on Stiff Cold Clays.—*i.* the stiffer the soil the better the Wheat crop—old brick the brick earths gave good crops the tile earths or plastic clays gave better; I mean those stiff clays that cannot be used for bricks because they crack to pieces in drying, and are only fit for pipes and pots. These cold tenacious non-calcareous soils contracted so much under the influence of a dry warm spring and summer that they became full of deep wide cracks, into which you might plunge your stick or umbrella to its full length. The soil and subsoil thus became warmed, consequently the young Wheat plants tillered and flourished, and the yield was abundant. Not so the light and friable soils, for on these the heat and drought of last summer parched the crop. This season all this is changed. It must be a bad heavy-land year, and the balance of advantage will be considerably in favour of the light soils Continued rains, almost from October, have brought these clays to the condition of a mud pond after the water has left it, the surface drying as hard nearly as cast iron. That which was friable last year is now like stiff putty, or, as Liebig describes it, "chemically fertile, but physically barren." The low temperature of April and May, with piercing winds and frosts up to the 18th of May, have so chilled this dense wet soil that there is but little or no branching or tillering, so that the Wheat plant rises thinly and vertically, and its colour is pale and yellow, its most succulent leaves having been "nipped" and rendered sapless by the cold and late frosts. Altogether, the Wheat prospect on these clays is most unpromising, and especially where the lands are undrained and poorly farmed the tenant's position is most unfavourable. The great rainfall has so encouraged the growth of Docks, Black Grass, Couch, and other weeds, that unless more expense than usual is incurred in eradicating them, the crops must suffer immensely. Even on drained clays the number of harrowings has been considerably multiplied in the attempt to prepare them for spring sowing. The last three days of fine sunshine with drying winds have done much to improve the colour of the crops by warming and drying the soil. Let us hope that it will continue, and thus mitigate the evils I have mentioned. The spring crops are more promising than the Wheats, but still our southern harvest must be, I fear, much later than that of last year. *J. J. Mechi, Tiptree, May 21.*

Societies.

ROYAL AGRICULTURAL OF ENGLAND.

May 22.—The half-yearly General Meeting took place on Tuesday last in the Council Room, Hanover Square. Lord Tredegar presided, and there were also present amongst others, Earl Cathcart, Lords Feversham, Walsingham, and Southampton, Sir J. Heron Maxwell, Sir W. Stirling, General the Hon. A. N. Hood, Professor Voelcker, and Col. Challoner.

The Council having been re-elected, with the addition of Mr. R. Hornsby, Mr. C. S. Read, M.P., and the Duke of Richmond,

Mr. H. Hall Dare, the Secretary, read the following Report:—

The Council have to report that since last December the Society has lost by deaths and resignations 1 governor and 58 members; while 1 life governor and 37 members have during the same period been enrolled on its list, which is now constituted as follows:—70 life governors, 84 annual governors, 1396 life members, 4019 annual members; 15 honorary members—making a total of 5622.

The Half-yearly Statement of Accounts to the 31st December 1865, has been examined and approved by the auditors and ordered to be printed. The Society, moreover, will have the balance sheet for the whole year 1865, and the statement of the Country Meeting Account for Plymouth, has been published in the last number of the Journal. The funded capital stands at 20,000*l.* in the New Three per Cents., and the cash balance in the hands of the bankers on the 1st inst. was 1424*l.* 4*s.* 9*d.*

Since the last General Meeting, the Council, impressed with the necessity of continuing their exertions in promoting measures calculated to arrest the progress of the Cattle Plague, resolved itself into a standing committee, and on the 12th of February had an interview with Earl Russell, and submitted to him the following resolutions, which had been agreed to by the Council:—

Resolved, that the Cattle Plague has increased and is increasing to an alarming extent. If the measures hitherto adopted have been wholly ineffectual to prevent its progress.

That no method of dealing with the Cattle Plague at the present time will be of any avail unless it provides for—

1st. The immediate slaughter and burial at least six feet deep of all cattle suffering from the disease; making compensation to the owners in such manner and to such extent as shall be considered advisable.

2d. The rigid cleansing of all infected farms, and the immediate slaughter of all animals which from time to time exhibit the slightest symptoms of disease.

3d. The thorough disinfection of all infected premises, and a prohibition to remove therefrom all manure, litter, hay, or straw for a period to be fixed, and then only subject to certain specific regulations.

4th. That the Government be requested to bring before Parliament a Bill to direct and empower the justices in Quarter or Special Sessions to assemble immediately to carry out the above Resolutions, and in such Bill to make provision for charging the necessary expenses on the County Rate, and also for constituting the action of counties and boroughs

5th. That all cattle markets and fairs be closed, and that the movement of diseased cattle, the transit of all animals whether by road or rail, be strictly prohibited, with such exceptions only as may be absolutely necessary.

6th. That during the existence of the cattle plague all imported cattle, sheep, or swine, shall be slaughtered forthwith at the port where they are landed, and their hides, skins, and offal disinfected there.

The Council, as such Committee, have since up to the present time held several meetings for considering this subject, and have forwarded communications to the Privy Council with the following recommendations, pointing out the extreme importance of establishing permanent means for and compelling the slaughter of all foreign fat stock at the place of disembarkation; and also a more efficient system of quarantine applied to store animals, and the stringent restrictions upon the passage of stock after they are liberated from such quarantine, to protect the public as far as possible from the risk of infection caused by the importation of foreign cattle; and further, that no exception be made as regards the Metropolitan market. The Council have since recommended:—

1. "That in the opinion of the Council it is highly desirable that the provisions of the Cattle Diseases Prevention Act, authorising the compulsory slaughter of animals suffering from the rinderpest, and the awarding of compensation to their owners, should be extended for a period of at least six months."

2. "That the attention of the Government be called to the complaints that are made that the Orders in Council are in some districts very inefficiently carried out."

To which reply was received communicating an Order in Council, dated 9th May, continuing until the 26th proximo the provisions of the Act 29th Vic., cap. 2, which relate to the slaughter of diseased animals.

The application of steam to the cultivation of the soil has caused the careful consideration of the Council, and they

society that the time has now arrived when an attempt should be made to make use of the good results which have been obtained by its use on different soils and in different localities. With this object they have appointed a Council committee composed of members of the Council from every district in England to conduct a complete inquiry. Inspection Committees will visit such farms as the Central Committee may select for inspection. To assist them in their investigations, a paid Secretary will be attached to each Inspection Committee. A sum of 500*l.* has been voted for the purpose of carrying out this investigation.

The proceedings of the Education Committee with regard to the prizes offered in connection with the last Cambridge Local Examination are detailed at full length in the last number of the Journal, and the Committee are following out similar plans to those therein detailed with regard to the ensuing Oxford Local Examinations. The Council have also authorised the Education Committee to offer prizes in connection with the Cambridge Local Examinations for 1866.

The Country meeting at Bury St. Edmund's having been postponed to 1867 in consequence of the prevalence of the Cattle Plague, a meeting will be held in the neighbourhood of London, merely *pro formâ*, in accordance with the provisions of the Royal Charter, and will be duly advertised.

Papers have been read at the weekly meetings of the Society by the Right Honourable Earl Cathcart and by Professor Simonds on the Cattle Plague, and by Dr. Voelcker on Agricultural Experiments in the Field.

The Council have been favoured with various communications from Her Majesty's Secretary of State for Foreign Affairs, and these have from time to time been published in the agricultural papers reporting the proceedings of the Council.

By order of the Council,
H. Bath Saul, Secretary.

Sir J. H. MAXWELL, in moving the adoption of the Report, expressed his regret that the Society had lost since the last meeting 308 members by death and resignation, while only 57 new members had joined in the same period, but hoped to see a better account in the Report next year. It was a matter of congratulation that the fearful plague with which the cattle of the country had been visited, though not altogether got rid of, was passing away. By the patriotism and unselfishness which had been everywhere displayed, and the general desire to follow the rules and regulations imposed by the Government, they might venture to look for the cessation of the disease. Dumfries-shire, which had suffered severely, was now free from the plague, and he believed Forfarshire and Kincardineshire were the only parts of Scotland where it was still prevalent.

Mr. BOTLY seconded the motion, and expressed his concurrence with the mover as to the prospect of a speedy cessation of the cattle disease. He was satisfactory to see the measure adopted by the Government to stamp it out, and in their efforts for that purpose this Society had given every assistance in its power by affording information and offering suggestions. They must all deplore the decrease in the number of members of the Society, but that result was to be accounted for by the absence of a country meeting this year. When the Society held its meeting in the county with which he was connected, the anticipation of the event caused a large increase in the number of members, and they must not therefore draw any conclusion that the present falling off was due to the unpopularity of the Society. All their statistics showed that whenever a country meeting took place, there had been a great addition of members from the locality in which the meeting was held; and the next Show would no doubt more than replace the number lost this year.

Mr. ARKELL looked upon the large diminution in the number of members as an indication that the Society was deteriorating, and that it did not possess the confidence of the farmers of the country. The farmers looked for what the Council did to benefit the agriculturist. He had been a member of the Society for 28 years, and had once or twice expressed his opinion that the Council did not keep pace with the times. The cattle plague broke out in August, and it was not until February that the Council began to bestir themselves in the matter.

Mr. H. HALL DARE. The first application was last year, and it is mentioned in the December Report.

MR. ARKELL: Well, it was in February that the Council formed themselves into a standing Committee, while as long ago as last harvest he and his neighbours formed an association for their protection. Of course in an association of that nature there was a great variety of opinion as to what ought to be done, but at one of the early meetings he mentioned that the cattle traffic ought to be stopped, and the measure was laughed at, though he was then laughed at, the measure had to be resorted to at last. If this great Society neglected to take the lead in questions affecting agriculture, the local societies were at a loss what to do. Local associations were not sufficiently influential to bring such a subject as the cattle plague prominently before the Government, but if the Royal Agricultural Society had bestirred themselves in the matter, it would have been brought before Parliament long before. Their Charter declared that nothing was to be interfered with by the Society which was to be brought before Parliament, and he could only account for the introduction of the prohibition by the fact that the Society was formed in 1839, in the old Protectionist times, when farmers were induced to hold their tongues by the fear of losing privileges they then enjoyed. But the time had now come by for that sort of thing, and it was the duty of the Council to keep pace with the times. A week or two ago there was a panic in the City, and the commercial classes at once went to Mr. Gladstone and got an Order in Council to stay the operation of an Act of Parliament. Agriculturists might be threatened with ruin, and yet months were allowed to elapse before any steps were taken, because there was no one to move in their behalf. He could not avoid the conclusion that in regard to the cattle disease their Council had not done their duty either to the Society, the affairs of which they administered, or to the agricultural class generally. In many counties they had had ruin staring them in the face, more especially in Cheshire, which had suffered greater loss than any other part of the country. They had a very slight touch of the disease in Wiltshire, and yet they were up and stirring, and were only waiting for the Royal Agricultural Society, which ought to be at the head of the progress of agriculture in the country, to move in the matter. It was only in February, however, that the Council constituted itself into a Standing Committee for the purpose of urging Earl Russell to take measures to stay the evil, and it was only when the Ministry were stormed that the public in general became aware of the necessity for something to be done.

Sir J. H. MAXWELL: The Council had been to the Privy Council before February.

Mr. ARKELL: Yes, but they could do nothing, because they debarred themselves from dealing with questions before Parliament.

Lord FEVERSHAM: Parliament was not sitting at the time.

Mr. ARKELL: Parliament ought to have been called together.

Lord FEVERSHAM: The Council had no power to call Parliament together.

Mr. ARKELL: But if they had represented the urgency of the case, Parliament might have been called together. They did not themselves appear to have realised the urgency. When they had 308 members going out, and only 57 coming in, he looked upon that as an indication that the Society was going down hill faster than any other Association of the same standing in the country. The Council had not done its duty in this particular case. He did not intend to move any amendment, but he could not see what had been done without attempting to stir up the management to greater activity. If the Charter was in their way, let it be revised; but at all events let the Society keep pace with the times, and promote the interests of agriculture.

Mr. BOTLY reminded Mr. Arkell that his argument founded upon the deputations to the Chancellor of the Exchequer with respect to monetary affairs cut both ways, because in the panics of 1825-6, and 1847 and 1849, agricultural produce went down more than any other article, and therefore the agriculturists had as much to thank the deputations who went to Mr. Gladstone for as the commercial classes themselves.

Sir W. STIRLING observed that the answer to Mr. Arkell's observation was most obvious. No public body whatever, and least of all the Royal Agricultural Society, could act in advance of public opinion. The Government could not so act, nor could the law be laid down with any effect, except with the concurrence of public opinion. The tenant farmers who belonged to the Society in a case of such emergency ought to be found attending their meetings in such numbers as to fill the room, to advise and assist, and if necessary to prompt and drive the sluggishness of the Council. Considering the importance of this question which the Government almost referred to the management of the Society—a matter of imperial concern, affecting every individual in the country in the food consumed, and the clothes worn, it was remarkable that the agricultural interest was not represented in greater numbers on that occasion. It was the duty of all such persons to lend their best advice and assistance, and if they did not do so, he did not know how they could blame the Council for any backwardness or short-comings in their proceedings.

Mr. EDMONDS, of Rugby, also wanted to know why the tenant farmers did not come up to their meetings, for moving as he did considerably among them, he knew that a great deal of dissatisfaction was felt with the proceedings of the Society with respect to the Cattle Plague. Then there was the Education question, which was making more impression abroad in the country than would appear from the public papers. They heard these questions discussed in every other society, but when they got to the central point there was no one to say what they thought, or to inform the noblemen and gentlemen of the Council what the views of the agriculturists were. There must be some cause for the decrease in the number of members of the Society beyond the fact of no Show being held this year. It was strongly discussed whether the Royal Agricultural Society had not a more useful object to pursue than the mere holding of shows. He should be the last to say a word against this Society, for he knew of none which had obtained such great results. Let them remember what the state of agriculture was when the Society was established, the manner in which land was cultivated and stock was managed, and the agriculturists of the kingdom were mainly indebted for the great improvement which had taken place in the cultivation of the soil, the stock, and the implements used, to the Royal Agricultural Society. But now when they had taken these wonderful animals to every part of the kingdom, till those of one show could hardly be distinguished from those exhibited six or seven years before, and when they had almost got to perfection in implements, the question arose—what was to be gained by continuing in the same course? They were offering prizes for things they did not want. They did not want a better plough, a better winnowing machine, or a better Turnip-cutter. If an implement appeared which was likely to be of great service to the country let it be stamped with a prize, but to give prize after prize for the same article appeared to him to be waste of money. There was a strong feeling in the part of the country where he lived that agriculture wanted something which should stand forth as its representative. Commerce was represented in all the large towns by Chambers of Commerce, and thus made its influence felt upon the governing classes of the country. Did the Royal Agricultural Society do this for agriculture? Were not its hands tied behind its back? No more false step could be taken than to make this a political society, and no one would regret a movement in that direction more than the agriculturists themselves. It would not do for them to discuss the effect of a Reform Bill upon the agricultural classes, but there were questions affecting the land which they might well take up, and by thus making themselves more the representatives of the agricultural interest of the country, they ought to double their present number of members. With regard to the Education question, they could not think that the mere offering of prizes to a few boys was really what was meant by the Royal Agricultural Society taking up the question of agricultural education. Certainly very good papers had been published in their Journal on the subject, but still they pointed to the establishment of schools, which he was no business of the Society. The onus of teaching children rested upon the parents and not upon any society, but if the association could provide the means of giving the children an insight into agricultural matters which could not be obtained without their help they would be doing a great work. His ideas might be in advance of the times, but in a few years they would see what might have been done in that direction. Instead of dribbling their money away in small amounts, they should set aside a portion of their income for the establishment of an education fund, and when that fund amounted to, say 10,000*l.*, they would be able to employ it with great advantage to agriculture. The money they were about to spend upon the Steam Commission would, in his opinion, be better employed if it were made the nucleus of such a fund. In almost every branch of life except agriculture, men could, by passing examinations, get stamped for what they were. Schools had been established in Sussex and Surrey, and 18,000*l.* or 20,000*l.* had been recently subscribed to found a middle-class school in Bedfordshire, and in all these institutions they taught the elements of botany, chemistry, and other things which might be useful to the boys in after life. What was wanted was a minor examination for which a certificate should be given, entitling the holder on attaining the age of 21 to undergo a further examination, success in which should stamp his professional ability. In this way skilled persons would go forth to various parts, introducing a healthy leaven, which in a short time would spread over the whole kingdom.

Dr. CRISP was astonished to hear gentlemen coming to so strange a conclusion as that the cattle plague was dying out. It was true that there were 95 cases less last week than the week before in England, Scotland, and Wales, but who could say that the disease in Ireland might not prove as deadly as it had been in the other parts of the kingdom. The conclusion that because there were a few hundred cases less per week, the disease was dying out, was not warranted by what they knew of its history. On the contrary, he believed that unless more stringent measures were adopted, and the existing Act was thoroughly and efficiently carried out, they might not get rid of the cattle plague for many a year. He was sorry that the state of the veterinary profession was not mentioned in the Report. The Veterinary College had nothing national about it. In Scotland they had the Highland Society, but in Ireland there was no college for the treatment of the diseases of cattle, and now that the plague had broken out there, he did not know where the veterinary surgeons were to come from. The whole system was most disastrous, and until the Government took steps to establish a proper veterinary college, they would never have proper veterinary assistance. The present state of the profession had had much influence in spreading the cattle disease. It surprised him that the heads of the profession should submit to be governed by men who had no knowledge whatever of veterinary medicine. Upon the subject of education he entirely disagreed with Mr. Edmonds as to the reservation of a fund. They had six of these large schools, but they were utterly useless for the purpose of agricultural education. At Hurstpierpoint 19 out of 20 of the boys were not intended for agriculture. The Government ought to take the matter in hand, and establish an agricultural college; and as agriculture was as much a science as medicine, there was no reason why it should not also have its degrees. The Council of this Society had been very negligent in not bringing the matter of the cattle plague before the Government long before they did, and the Government had been infinitely more negligent than the Society.

Mr. DUCKHAM said the cattle plague broke out in June, and he knew from having had business with Mr. Helps at the time that all through July and August the Privy Council were fully aware of the danger and extent of the disease, and were receiving daily communications from all parts of England upon the subject. They issued orders to stop the annual fair held at Croydon in August or September, but the farmers hired a private field and held their fair in spite of the warning of the Government. The Government were ready to adopt any measures, however stringent, if they could have been supported by public opinion, but, as Mr. Helps said to him, "What could they do if farmers would not help themselves?"

Sir J. H. MAXWELL thought it might tend to lessen the alarm which Dr. Crisp's observations were calculated to produce if he reminded them that the cases of disease were some thousands less than they were some weeks ago.

Dr. CRISP admitted the reduction, but was acquainted with all the statistics, and did not think the country was yet secure. Great harm would be done if it should go forth that they were getting rid of the cattle plague.

Mr. DUCKHAM confirmed the opinion that the disease had not disappeared, stated that he had been informed by the Chairman of the Chamber of Agriculture in Forfarshire that it had broken out again in that county, and expressed his regret that in the official returns there was a column stating a number of recoveries which showed that the Orders in Council were not strictly carried out.

The PRESIDENT mentioned that he had been up with four deputations of the Council to the Government to urge the necessity of stringent measures to put a stop to the cattle plague.

General HOOD thought the Society, if they could not hold a cattle show, might have had this year an excellent show of implements, horses, and poultry.

Dr. CRISP was opposed to all agricultural gatherings, as calculated to spread the disease. He had little doubt that the plague had been carried to Ireland in the clothes of some person who had had to do with infected animals.

The Report was adopted unanimously, and Mr. Harry Stephen Thompson, of Kirby Hall, York, was elected President for the ensuing year.

The Trustees, Vice-Presidents, and Auditors were re-elected, and the proceedings terminated with the usual compliment to the President.

CENTRAL CHAMBER OF AGRICULTURE: *May 23.*—A meeting of agriculturists and others interested in the formation of a Central Chamber of Agriculture was held at 12 o'clock on Wednesday last at the Salisbury Hotel, Salisbury Square, Fleet Street. The chair was taken by Mr. T. Duckham, of Baysham Court, Ross; and Mr. C. Clay, of Walton, Wakefield, who has been the main originator of the movement for the establishment of such an association, performed the duties of Honorary Secretary. The meeting was not numerously attended; but several of the limited number of gentlemen present seemed to represent the general feeling of the agriculturists in their respective districts.

The CHAIRMAN, in opening the business of the day, said that although they then formed but a small meeting, they had a provisional committee which comprised about 160 members from all parts of the kingdom, and they were all animated by the conviction that something was wanting for the promotion of the interests of the agricultural body. They had suffered in many ways from the want of any proper organisation, and that organisation would be supplied by the association which it was then proposed they should establish. The mode in which the outbreak of the cattle plague had been met showed the necessity which existed for some opportunity of concentrated action on the part of the agricultural classes. Nothing had for many months been done to afford any effectual check to the progress of that calamity until that great meeting was held at St. James's Hall in the month of February, which seemed for the first time to open the eyes of the Government to the real nature of the evil, and to the general character of the measures by which alone it could be adequately encountered. The formation of a Chamber of Agriculture in London, with associated branches throughout the provinces, would supply the best instrument for ensuring a prompt and effective attention to that and to all other subjects in which the interests of the agricultural classes were specially involved. He was sure there was not a single gentleman present who was not convinced that the object which they sought to attain was one calculated in a very important degree to promote the welfare of the occupiers of the soil in this country, and he would then leave it to them to discuss the resolutions which would be submitted to their consideration for the success of the movement in which they were engaged.

Mr. A. PELL, of Hazlebeach Hill, Northampton, proposed the first resolution, which was as follows:—"That in the opinion of this meeting a Central Chamber of Agriculture should be established." He believed they must all feel that the great agricultural body at present wanted a mouth-piece by which their opinions on those questions by which their interests were peculiarly affected might become known, and might be urged with effect upon the notice of Parliament and of the Government. He hoped that the owners as well as the occupiers of land would co-operate in that movement; and he felt convinced that the happiest results would follow from the success of their efforts.

Mr. J. ABBS, of Fulwood, Sunderland, seconded the resolution, which was then unanimously adopted.

Mr. R. MASFEN, of Pendeford, Wolverhampton, moved the next resolution:—"That the object of the Central Chamber of Agriculture shall be to take cognisance of, and to support or oppose, any measures which are calculated to affect the agricultural interest." The agriculturists had many grievances to complain of which the proposed organisation would, he believed, afford the most effectual means of removing. In the Midland counties they held that they were greatly injured by the maintenance of the malt tax, and he had not the slightest doubt that if a Central Chamber of Agriculture had been in existence for the last 20 years, that tax would long since have been abolished.

Mr. T. ARKELL, of Penhill Farm, Swindon, seconded the resolution. He believed that the agriculturists formed the most important class in the community: and if they had the means of making known their wants and wishes through some central agency, he felt assured that they would soon obtain that just influence in the councils of the nation from which they had hitherto been so singularly excluded.

The resolution was then unanimously adopted.

Mr. JOHN SMYTH, of Newsellsbury, Royston, Herts, moved the third resolution, which was as follows:—"That the Central Chamber of Agriculture shall consist of a chairman, vice-chairmen, council, secretary, and members being subscribers of not less than 1*l.* per annum." It was clear, he thought, that neither the Royal Agricultural Society, nor the Central Farmers' Club, which were prevented by their fundamental rules from discussing questions in which politics were involved, could efficiently represent the interests of the agricultural body in many most important respects, and he was convinced that they must establish some new agency if they would have their interests properly protected.

Mr. J. B. LYTHALL, of Birmingham (Secretary to the Midland Farmers' Club), seconded the resolution, which was then unanimously adopted.

Mr. T. CHANDLER, of Aldbourne, Hungerford, proposed, and Mr. J. BALDWIN, of Breedon House, King's Norton, Birmingham, seconded the following resolution, which was carried with similar unanimity:—"That Mr. E. Holland, M.P., be invited to accept the Chairmanship this year; that Mr. A. Pell be Vice-Chairman; and that a list of gentlemen be nominated as members of the Council, with power to add to their numbers, five to be a quorum."

A fifth resolution, which was also unanimously agreed to, was proposed as follows by Mr. H. Osborn, Tamworth, and seconded by Mr. W. E. Long, of The Grove, Woodnesborough, Sandwich—"That the Council be empowered to form a code of regulations, and to make arrangements for the organisation of the Chamber of Agriculture as soon as possible."

Votes of thanks were afterwards passed to the Chairman, and to Mr. C. Clay, the Honorary Secretary, and these gentlemen having acknowledged the compliment, the meeting separated.

THE HORSE SHOW.—On Saturday the Metropolitan Horse Show was opened at the Agricultural Hall, Islington, with considerable success, not only as regards the excellence of the animals exhibited, but also as to the number of visitors. The arrangements by which the spectators from the galleries could have a complete view of the trial leaps over gorsed hurdles furnished an exciting variety to the exhibition, and proved most attractive. It was mentioned as a proof of the growing popularity of the exhibition that 3000 catalogues were sold by three o'clock, as against 500 during the whole of the first day last year. With the close of the Epsom week for its opening day, and a sunny holiday time since, this popular exhibition has indeed more than maintained its attractiveness. The character, too, for excellence, which it had already achieved, has been maintained in most of its classes. There were no such prizes as had been previously offered for thoroughbred stallions, and Class XV. accordingly was greatly inferior to the corresponding class of the previous year. The hunter classes have, however, been unusually good, and the heavy classes have been excellent. Class 1., weight-carrying hunters, included no fewer than 40 entries, and the judges examined them in batches of 10 or 12 at a time, selecting always the four or five best of the number which passed through their hands. In this way Mr. Sutton's dark chestnut horse, Voyageur, a very powerful animal, of great substance and beautiful symmetry, was at length worthily placed at the head of the class, the second prize going to a brown horse, Rainbow, the property of Mr. Thomson, and the third to Mr. Percy, for a dark dapple-brown horse, Ingleby. The second class of hunters, without condition as to weight, was almost as numerous. Sir G. Wombwell took the first prize with Hawkseye, rather a light-built chestnut horse; the second went to Mr. Gee's chestnut horse, and the third to Mr. Lacy, for a stylish black horse, Rural Dean, a little too long, perhaps, and rather light in consequence behind the saddle. Other two classes of Hunters were exhibited, with limitations as to height and age respectively; the prize list names the winners. In a rather poor class of Cover Hacks Mr. Young and Mr. W. Armstrong took first and second prizes. Park Hacks and ladies' horses were a numerous and attractive class, and nothing could exceed the beauty of many of the ponies, the class containing about half-a-hundred entries. The following is the list of prizes, and of those by whom they were awarded:—

LIST OF JUDGES.

CLASSES 1, 2, 3, 4, and 13.—The Earl of Portsmouth; Sir Watkin W. Wynn, Bart., M.P.; Captain Percy Williams.

CLASSES 6, 8, 9, 10, 11, 14, 14A, and 16.—Sir George W. Wombwell, Bart.; Colonel Maude, C.B.; John Anstruther Thomson, Esq.

CLASSES 5, 12, 15, and 16A.—Sir G. W. Wombwell, Bart.; Colonel Maude, C.B.; Harvie Farquhar, Esq.

LIST OF AWARDS.

CLASS 1. HUNTERS.—Weight-carrying, the property of bona fide tradesmen.—1st, 60*l.*, Mr. Thomas Sutton's Voyageur; 2d, 30*l.*, John Anstruther Thomson, Esq. (Rainbow); 3d, 15*l.*, Hugh J. Percy, Esq. (Ingleby). Highly Commended: G. Robson, Esq. Commended: Mr. W. Newton, V.S.

CLASS 2. HUNTERS, without condition as to weight.—1st, 30*l.*, Sir George Orby Wombwell, Bart. (Hawkseye); 2d, 20*l.*, Thomas Gee, Esq. (Tom); 3d, 15*l.*, Henry Spencer Lucy, Esq. (Rural Dean). Commended: E. Paddison, Esq., and Mr. Grout.

CLASS 3. HUNTERS, without condition as to Weight, and not exceeding 15.3 hands high.—1st, 30*l.*, R. Howell, Esq. (Cobnut); 2d, 15*l.*, Edward Barnett, Esq. (Bayard); 3d, 10*l.*, Captain Ward (Topsy). Highly Commended: E. A. Sothern, Esq.

CLASS 4. HUNTERS, foaled on or after the 1st May, 1860.—1st, 20*l.*, William Morley; 2d, 15*l.*, Mr. John Drage (Thorpe Malsor); 3d, 10*l.*, Mr. George Holmes (Yellow Jack).

CLASS 5. CHARGERS.—Horses and mares, the property of officers of the Army, and bona fide hunters. Match Pairs.—1st, 25*l.*, Messrs. Samuel Wimbush & Co.

CLASS 6. COVER HACKS AND ROADSTERS, not exceeding 15.1 hands.—1st, 15*l.*, F. Young, Esq. (Mr. Briggs); 2d, 10*l.*, F. Knapp). 2d, 10*l.*, Charles M. Baker, Esq. (Master). Highly Commended: H. Crosse, Esq.

CLASS 7. PARK HACKS—WEIGHT-CARRYING, not exceeding 15.2 hands.—1st, 20*l.*, Alexander Barker, Esq. (Hoggett); 2d, 10*l.*, Hugh J. Percy, Esq. (Chatty). Highly Commended: R. Mitward, Esq.

CLASS 8. PARK HACKS AND LADIES' HORSES, of any height.—1st, 20*l.*, Mr. Charles Symonds (Fire King); 2d, 10*l.*, Captain St. Clair Ford (Beauty).

CLASS 10. PARK HACKS AND LADIES' HORSES, not exceeding 15.1 hands high.—1st, 20*l.*, John D. Lewis, Esq. (Bridesmaid); 2d, 10*l.*, Richard John Lloyd Price, Esq. (Firefly); 3d, 5*l.*, Thomas Arthur Stevens, Esq. (Little Dick). Highly Commended: A. Barnett, Esq.

CLASS 11. PARK HACKS AND LADIES' HORSES, not exceeding 14.3 hands high.—1st, 15*l.*, Thomas Brown, Esq. (Little Dick); 2d, 10*l.*, Walter Winfield, Esq. (Prince); 3d, 5*l.*, Wilfred Greetham, Esq.

CLASS 12. PONIES, not exceeding 13.2 hands high, in single harness.—1st, 15*l.*, E. Gibbins, Esq. (Bobby); 2d, 10*l.*, Mrs. S. Wood (Jack); 3d, 5*l.*, Mr. Charles Lambert.

CLASS 13. PONIES, not exceeding 13.2 hands high, in single harness.—1st, 15*l.*, Charles Ingram, Esq. (Tommy); 2d, 10*l.*, Mr. J. Morrell (Dessy). Highly Commended: R. H. Bay and W. L. Bell, Esqs.

CLASS 14. PONIES, not exceeding 12.1 hands high, for children.—1st, 15*l.*, Captain Forbes (Little Wonder); 2d, 10*l.*, Henry Skinner, Esq. (Tommy).

CLASS 14A. PONIES (ladies' riding), not exceeding 14.2 hands high, to carry children.—1st, 6*l.*, Messrs. S. & E. Lawrence (Diamond); 2d, 4*l.*, Thompstone Lees (Pen).

CLASS 15. CARRIAGE HORSES, not exceeding 15.2 hands.—1st, 20*l.*, Mr. Thomas Bumpstead, for getting Bonnets.—1st, 15*l.*, Lord Stanley of Preston, 2d, 10*l.*, Henry Richard Phillips, Esq. (Prince Plausible).

CLASS 16. SADDLE AND CARRIAGE ROADSTERS, Hacks, &c., over 15.2 hands.—1st, 20*l.*, Mr. James Phillips (Young Performer); 2d, 10*l.*, Horace Lancaster Rose, Esq. (Footaway), 3d, 5*l.*, Mr. William Burton.

CLASS 16A. STALLIONS, suitable for Hacks, Cobs, or Ponies.—1st, 30*l.*, Mr. David Lester (Black Performer); 2d, 15*l.*, Captain Barlow (Confidence); 3d, 5*l.*, William Henry Cottell, Esq. (Golden Diamond).

Farmers' Clubs.

CIRENCESTER: *Cattle Feeding.*—The following remarks, which followed Mr. EDMONDS' paper on this subject read some weeks ago, have been omitted until now:—

The CHAIRMAN said he was particularly interested himself in the remarks of the writer of the paper, as he would like to hear from the essayist that said other points adverted to by Mr. Edmonds. There was one thing which had not been stated, and that was, the cost of coal for steaming food.

Mr. EDMONDS: The expense would be very trifling—about 2*s.* a week. About 100 cwt. of coal per day would be quite sufficient to steam 100 head of beasts.

Mr. LAWES said he had noticed at one time he thought Mr. Edmonds was going to omit linseed. Very important item in the feeding of stock, and that was salt. The use of salt as a sort of specific seemed to be a comparatively new application to the treatment of cattle, but he believed it to be a most useful and health-producing element. For many years past he had always insisted upon a lump of rock-salt being placed in the cattle-troughs, and also in the troughs provided for the use of sheep, and he took care to place these in every field where sheep were turned out. A large quantity was thus consumed. Animals were very good judges of what suited them best, and he always found that those which were supplied with salt were maintained in perfect health. During a period of 19 years he had fed bullocks annually, always keeping the system to which he had referred, and during the whole of that time he had scarcely had a bullock ill, and never lost a single animal. With regard to another point mentioned by his friend—regularity in feeding stock—he had always insisted upon this as a most important matter to be attended to. Curiously enough, although animals had no watch to refer to, they seemed to be something within which accurately told them of the lapse of time, and when the hour arrived at which they ought to be fed they became very uneasy, and took care to remind the feeder of the fact by calling to him in a very distinct manner. He also agreed with Mr. Edmonds as to the food that was left ought always to be removed. There was one point in favour of roots that had not much attended to, although it had been made the subject of some experiments. He referred to the question of their flesh-forming and fattening or breath-producing elements ought to be used. As far as experiments had hitherto gone, he believed that one-fourth of flesh-forming food to that which fattened or contributed to the breathing powers of the animal had been found to be a fair proportion. He thought it was of the utmost importance that experiments in this direction ought to be carefully followed up, in order that it might be definitely to be ascertained what proportion of these two elements was likely to be most conducive to the health and fattening of animals.

Mr. WRIGHTSON said he did not rise to dispute Mr. Edmonds' statement as to the quantity of oilcake which ought to be given to an animal day after day, but he was strongly of opinion that the greater the mixture of food given the preferable, of course, that it was of the right description—the better it would be, especially if a proper proportion of the two elements referred to by previous speakers was thoroughly upon and strictly adhered to. Some years since, when looking over Mr. Hudson's premises at Sandhutton, he had noticed that about 14 lbs. of cake was given to the bullocks daily, and in a subsequent conversation with Mr. Hudson he found that that quantity was increased to 28 lbs. per day. Now, [illegible] he was at the point of [illegible] that he did not like to see at the point still, but nevertheless it was a striking fact that a man like Mr. Hudson still persevered in using such a large quantity of cake. Mr. Edmonds had also touched upon the quantity of roots which he gave to his cattle daily. Nothing was more striking to a north country-man than the coming south that he saw the roots were taken in pulping and cutting roots, and in limiting the cattle to a certain proportion. [illegible] north it was the custom to see from 12 to 14 stone of [illegible] given to the cattle, and the use of oilcake was resorted to in addition, and it was difficult to persuade the people who adopted this method of feeding that [illegible] well-matured quantity of roots, and he instanced an experiment to show that the same remark applied to sheep. He thought the system of lessening the quantity of roots with sheep as well as cattle was to be commended, and the system in such a Club as that experiments would be made and statistics brought forward in support of this view.

Mr. EDMONDS, in reply, remarked that he had always an idea that salt was good for cattle, and he had generally given them a little with the chaff. He was aware that he was not the better plan to give them rock-salt. He had read accounts of different places abroad—and he had also seen similar instances at home—where cattle and sheep had had opportunities of going to [illegible] at which they consumed, as they seemed to want it, and thereby evinced the need that it was a question with them as to its necessity, or only as partaking a treat. With regard to the 14 lbs. of oil cake per day, he knew there were exceptions to the rule, as he was aware that quantity was given with success by one who gave that quantity and even more with respect to sheep there was one important difference, because the sheep could be folded on the arable land, and the land benefited as much by the sheep as by the cake consumed. Cattle had not to be folded in that manner, and he was of opinion that the latter required their food to be of a more nutritious quality. A beast could take a large quantity of poor food, so long as it got some of a more nutritious character afterwards; but it was not so with sheep, and less was it so with pigs. Sheep required more oil-cake, more Swedes or Turnips, in proportion, than cattle. It should also be remembered that with cattle they would have to draw the Swedes home and the [illegible] to the sheep they [illegible] on the land and the

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* PHAETON HORSES.—Mr. Harradine's Pair of the Highest commended, and Judges regret there was no Class for the [illegible]

manure also, which was another reason for giving them this kind of food in greater proportion than cattle. With respect to store cattle, he recommended that a little hay be given after a time, as he had tried it with great advantage. He might depend upon it that over so little hay was a saving in help. In straw there was but little help or flesh forming matter, and if they gained to young stock, they could not expect them to grow into fat beasts. It was the same with sheep. Last year he was obliged to give his sheep straw chaff, with cake, &c., and they did not do so well; in fact, he could only just keep them growing, and hardly that; whereas this year, with a little hay and plenty of Swedes, he had got them fat and sent them away.

Mr. Lawrence proposed a vote of thanks to Mr. Simmonds for his most excellent and valuable paper. It had been his lot to hear a great many papers on subjects of this kind, but he never recollected to have heard one so full of really useful and sensible matter as that which Mr. Simmonds had favoured them with that day. It was evidently the result of constant observation and careful experience, and he believed its publication would be a great benefit to this county.

The proposition having been carried by acclamation,

The Chairman said it was their custom before separating to adopt some resolution bearing on the subject which had been discussed, and he therefore begged to move the following:—

"That the pouring of boiling water over hot unslaked lime or chalk for the purpose is of great advantage, and that the addition of a little salt is also advantageous; and further, that the amount and kind of artificial food mixed with the chaff must be regulated by the price and quality, but it is agreed that nothing is more economical, healthful, and convenient than the admixture of malt for feeding purposes, if the price would admit of it."

The resolution was unanimously adopted, and the proceedings then terminated.

Reviews.

An Account of Methods which have been employed for the Preservation of Cattle from Rinderpest, with Remarks. By Walter Crum, F.R.S.

This is a tract which has been issued by Mr Crum for the purpose of impressing on agriculturists the distinction which Dr. Vocleker has more than once urged between true disinfectants and mere antiseptics. The latter class of deodorizers are really preservatives of organic matters, and although preserving them in inert condition may yet fail of conclusively locking up the mischief which may reside in such matters. Lapse of time may set these poisons free again. Disinfectants which decompose and utterly break up the poison, redistributing its elements as new forms of combination, are the only true disinfectants. We reproduce here Mr. Crum's remarks on this subject:—

"A method for the preservation of cattle from rinderpest has been introduced into Lancashire, and is now in regular operation north and south throughout that county. Great success appears to have attended it in these districts; and there seems reason otherwise to believe it the most rational preventive that has yet been suggested.

"I am desirous to call attention in Renfrewshire, in order that holders of stock may be prepared, if they shall think proper, to adopt similar precautions in the [illegible] event [illegible] first [illegible] visited by the disease. It consists in the [illegible] the cow-house, and all attached to it, [illegible]

"The value of chlorine as a [illegible] and vegetable poisons is well known, and it has been much employed for that purpose; but the idea of producing it continuously in small but appreciable quantities, so that the air of a byre may be constantly provided with it day and night—ready to destroy the poison of rinderpest at whatever time it may arrive, seems to have been first systematically applied over large districts of country by Professor Stone, of Manchester, towards the end of [illegible]. Mr. Stone has been employed as analytical chemist to several places in Lancashire, and is occupied in [illegible] the duties of police in the [illegible] he employs. In the [illegible] Bolton, Oldham, Ashton, Hyde, &c., the [illegible] and the 7th of March last the whole [illegible] were disinfected under the superintendence of the Bolton county police.

"Mr. Stone [illegible] a mixture of muriatic acid and [illegible] in the proportion of half a pint of acid to a pint of water. The imperial pint of the acid is put into a wide-mouthed glass bottle or earthenware jar, capable of holding a pint, and from an eighth to a quarter of an ounce of chlorate of potash, according to the size of the byre, is added to it. The jar is placed on a shelf at an elevation of 7 or 8 feet from the floor; and this suffices for a byre of eight, when another smaller portion of the chlorate is added, and so on every 12 hours, until the acid become too weak for use. It is then poured out, and the process renewed with fresh acid.

"Some gratifying accounts have been received by Professor Stone of the working of the [illegible] Company, in Dublin, and [illegible] rinderpest stalls, which [illegible] ruined was testified [illegible] Eleven cows and [illegible] were also condemned by that authority. But a respite was granted to the [illegible] rigorously persevered in, and these 12 cattle, which had been immediately replaced in their former stalls, were perfectly well when the report was published.

"At Falsworth, the [illegible] stables, [illegible] plague. The [illegible] stables, [illegible] stabulary, and three cows which were put into it immediately after have remained perfectly healthy.

"Cheshire, as is well known, has been frightfully scourged by the cattle plague. On the estate of Sir Charles Shakerley the farmers have lost 1400 out of 1800 head of cattle; while Sir Charles himself, who has used chlorine on his own farm, has not lost one.

"In the township of Ellsworth, in the same county, one man has thrown off [illegible] Mr. Yates and [illegible] have used chlorine, and their cattle remain free of the disease; while every other farmer in the township has lost the greater part of his stock.

"While engaged with these observations I happened to learn that ever since Rinderpest appeared in the neighbourhood of Glasgow chlorine has been employed, very nearly in the way I have just described, and apparently with good effect, by Mr. John Craig, farmer at Littlehill, in the parish of Cadder. Mr Craig [illegible] towards the end of last October, seeing the disease in his immediate neighbourhood, he at once shut up all his cattle—20 cows and two bulls—and commenced the fumigation of his byres morning and night. His method was to take a teaspoonful of bleaching powder and to add to it water and oil of vitriol. Twice a day he traversed his byres with a basin in his hand containing this mixture, which was strong enough to produce a decided smell of chlorine throughout the whole house, and to continue for a length of time after the application. Indeed the byres were never altogether free from chlorine, yet the cattle did not suffer any inconvenience; or if, as rarely happened, a tickling cough was produced in one or two of the cows, it was removed by taking them for a few minutes into the open air.

"Mr. Craig continued this process without intermission for three months, and then every appearance of the disease had left the neighbourhood. No case has occurred in the parish of Cadder since the beginning of January. The following is a statement, as nearly as Mr. Craig could recollect, of what occurred to his neighbours, chiefly during the months of October and November:—

"At Lochgrog, distant three-quarters of a mile from Littlehill, 22 cattle were lost and three were saved.

"At Bearhill, one mile off, four only recovered out of a stock of about 24.

"At Eastercrosshill, half a mile off, 16 died and two were saved.

"At West Boghead, also half a mile off, out of eight or nine milch cows only one survived.

"At Easter Cadder, a mile and a-half from Littlehill, 25 cows died and five recovered: and at Meiklehill, where the same farmer kept only young cattle, all were saved.

"At Dryfield, a mile and a-half off, out of 22 milch cows only three were left.

"I should [illegible] these [illegible] died of the disease in [illegible] in anticipation of it, by the use of the [illegible] and [illegible] to a very large an extent at a later stage of our experience of this visitation.

"Still, I will not affirm that Mr Craig's immunity was caused undeniably by the means he employed. Many links are wanting to complete that evidence, even if other two farms in the neighbourhood (East Boghead and Jellyhill) had not escaped without these precautions. But taking together the cases I have quoted, they furnish, I think, strong negative proof in favour of the practice. Then we know positively the power which chlorine possesses, even in the most diluted state, of destroying every form of animal and vegetable organisation. All are familiar, for example, with the action of chlorine in its weakest condition on vegetable colouring matters, and the effect of its analogue, ozone, in Grass bleaching. These, being ascertained facts, must be held as material positive evidence in the more obscure but analogous case of the action of chlorine on the poison of rinderpest.

"I cannot issue this paper without calling to mind the diametrically opposite qualities of different materials which we see often classed together, and indiscriminately employed as disinfectants. Some of these, as tar, carbolic acid, and similar bodies, have the property, not of destroying, but, on the contrary, of preserving animal and vegetable matters, and they derive that character chiefly from the creosote which they contain. They are not disinfectants, therefore, if that word be taken to mean destroyers of infectious matter. They are antiseptics—for which signifies to oppose the progress of putrefaction or decay, just as the word creosote signifies preserver of meat.

"But we may well assume that the poison of rinderpest is not a product of putrefaction, or, at least, that the disease is not occasioned by the putrefaction of any matters with which we are familiar,—otherwise the filth, in every form, which in hundreds of instances has been festering over the country, would certainly have given us that disease within a shorter period than the century which is said to have elapsed since its previous occurrence. We must, rather view the matter of such pest as a poison which [illegible] to be early formed, and as our object is not to preserve that poison, but to destroy it, it is clear that we must meet it, not with materials which have the preserving power of antiseptics, but with those which have the destroying power of disinfectants. The most efficient by far, as well as the most convenient for use, and the most economical, is chlorine. It has the advantage of taking the gaseous form, and of penetrating, therefore, in a short time, every crevice and every straw in any building to which it is admitted.

"I must also mention the purple solution of permanganicacid, which is sometimes recommended as a disinfectant. And no doubt that substance possesses strong oxidizing properties, but it has also two very essential disqualifications. It does not take the form of a gas, and cannot therefore act upon any [illegible] and I have been unable to discover any trace whatever of ozone on using the means pointed out by the advertiser for its development. At all events, no one will believe in the practical efficacy of the supposed ozone, who will notice how long a time the solution [illegible]

Farm Memoranda.

[illegible] SUPPLIE. The following is the evidence of Mr. Arthur Forbes Gordon before the Hypothec Commission [illegible] in Aberdeenshire, and have been for many years commissioner over several estates in that county. The aggregate rental of the estates under my charge, including my own estate, is between 12,000*l.* and 14,000*l.*, with about 280 tenants—rents varying from 5*l.* to 200*l.* and upwards, the majority under 50*l.* I consider the law of hypothec advantageous both to landlord and tenant. It is the simplest and most convenient way, with ease to the tenant, of giving security to the landlord, while it enables the tenant to lay out capital on the farm; and I conceive the agricultural prosperity of Aberdeenshire to be very much owing to the law of hypothec and back-rents. Farms in Aberdeenshire are generally small farms, the average not exceeding 50*l.* a year. I do not think there are over 300 farms in the county rented at 200*l.* a year; and of that number not 48 are rented at 300*l.* and below 100*l.*, and 13 rented for 400 and upwards, by tenant-farmers. On a property I am well acquainted with, yielding a rental upwards of 9000*l.* a year, and with some 210 tenants, there are only 34 paying a rent of from 50*l.* to 100*l.* a year, 16 from 100*l.* and upwards, and only two paying upwards of 200*l.* a year—the highest being 335*l.* On another estate of upwards of 2000*l.* rental and 30 tenants, only two pay 70*l.* and upwards—the highest being 335*l.*, while 14 pay rents below 50*l.* I mention this, which I conceive to be a fair specimen of the county, to show the general size of the holdings. The [illegible] leases for 19 years, except the very small possessions, and they hold virtually from year to year, but as long as they are industrious and respectable they [illegible]. The terms of entry vary, either Whit Sunday or Martinmas; but there is no fixed term on the estates in question, nor do I think there is on other estates generally. If a tenant enters at, say, Whit Sunday, 1865, he does not pay rent until Martinmas, 1866—18 months after; and in some cases the rent is not asked until Candlemas—February following. As the local terms in Aberdeen are 20th June and 20th December, rents are never collected much before that time. Farm-servants in Aberdeenshire almost entirely consist of sons of farmers. All of them look forward to rising in the social scale, and becoming farmers themselves. They generally succeed, by dint of great industry and frugality, in saving and laying by a sufficient sum to enable them to rent and stock a farm, larger or smaller, according to their means. I have known many instances of their taking larger farms on the expiry of their first lease. By this training, either in service or on their fathers' farms, where they work as servants, they become practical agriculturists, having generally a good knowledge of farming operations and stock, and being quite qualified to manage a farm. The local agricultural associations which exist in most parishes and districts do much to promote a friendly spirit of emulation and rivalry, tending greatly to the improvement of stock and agriculture generally, and to excellence in ploughing and Turnip husbandry. Every farmer at these local shows tries and hopes to beat "Tillyfour," or some other noted breeder and farmer in the district; and although he may not often succeed, still the effort to do so is productive of much good, and the class of stock possessed by these small farmers in consequence is often of a very superior description. Under the present system of back-rents, large tracts of waste land in the county have been reclaimed, and rendered productive and remunerative, by this class of tenants, which otherwise, if fore-rent had been required, would in all probability be still barren. A good deal of emigration has of late years taken place from the agricultural districts, and labour in consequence is much dearer and scarcer than formerly. Were the law altered, I consider it would induce more emigration. The hard-working and industrious class of servants being unable to get farms, which they look forward to doing under the present system, would in all probability emigrate. Many valuable men would thus be lost to the country, and much land would, I think, be left unimproved. The farmers as a body could not pay fore-rents, and the landlord would not let his land without security, which he could get in no way, so far as I can see, so simply as by the law of hypothec. I do not conceive that the law, as it now stands, raises the rent unduly. Whatever gives greater ease and security will increase the value; but a landlord is not bound to take the highest offerer. His object there has always been to get a good rent on reletting a farm; in some cases very considerable, and given freely by the old tenant. This arises partly from the great improvement in agriculture, and partly from the extent of waste land improved since the last 19 years' lease commenced. In some instances the landlord has paid part of the expense of that improvement; but generally the great bulk of the land has been taken in by the tenant. The drainage loan was greatly taken advantage of, and the landlord in many cases modifies the interest according to the circumstances of the tenant. The landlord very often gives a certain quantity of lime to the tenant when he is taking in waste land. I do not think the law of hypothec has tended to give the landlord an inferior class of tenantry, or to cause undue competition. The landlord does not pit one offerer against another; and a good practical agriculturist will not generally offer more than he considers a fair rent—such as he can make a living by. It is the fault of the landlord's own if he takes a set of speculators for tenants. He has always (at least my experience has found it so) plenty of good industrious men of experience and sufficient capital to choose from; and if he is tempted by a higher offer to accept more than the farm is really worth, and takes the wrong man, he has himself alone to blame, not the law of hypothec, and does not in my opinion deserve much commiseration. It appears only fair that the landlord should have some security for his rent. He contributes, and gives out of his own personal control, a valuable subject for a period of years; and it is as just and fair that he should have security for the payment of his rent, as that the money-lender should have the security of the land for the payment of the interest of the money he lends. I do not see why the tenant's creditor should have any right to the landlord's rent or interest, so to speak, of the value or capital which he, the landlord, contributes. The present law, by giving that just and reasonable security, and which in Aberdeenshire has been productive of no hardship whatever, has enabled a body of most industrious, hardworking tenantry to take farms, and improve an amount of barren land which otherwise they could not have done, and which would now have been most probably waste. I think they have generally prospered, and have brought up families in comfort and respectability, and put them out in the world, some as farmers, some as tradesmen. They all try to better themselves. Many of them have got college education; and I know several sons of these farmers who are now clergymen and parochial schoolmasters. The condition of the farmers in Aberdeenshire is certainly much better than it was 20 or 30 years ago; they are better housed, and live better. A great deal more butcher meat is consumed. I know several instances of farms paying 100*l.* a year or less, setting up their sons in farms and stocking them for them. I know an instance of a farmer paying 80*l.* a year of rent, who has placed two sons on neighbouring farms, and fully stocked them. He has recently applied for another farm for a third son, and is about again to renew his own lease. Another, paying a rent of 118*l.*, has taken and stocked an [illegible] farm for a son, at a rent of 112*l.* I could

adduce many other similar instances where farmers, all beginning from small means, have placed their sons —more than one son—in farms, and stocked them, and all of them doing well and thriving. They could not have done this except for the law of hypothec and postponed rents. I may mention one instance of hard-working perseverance and industry of a farmer who now rents a farm of 60*l.* a year, and who began with very small means, at a rent of 40*l.*; but, by his industry, frugality, and good management, has prospered in his farm, and educated one son at college, who now holds her Majesty's commission as a surgeon in the army; his other son will likely succeed to the farm, and one of his daughters is a teacher of a female school. These are only a few instances out of many of that class which I could mention. I do not think the present law interferes in any way with reasonable accommodation to tenants from bankers. They get ample accommodation as it is; sometimes too much. The banker looks to the security the farmer has to offer for the advance; and, were the law of hypothec done away with, I do not see that it would advantage the tenant in his transactions with the bank. The tenant's own means are generally well known to the banker, and he looks to the security the tenant offers. A large quantity of bones, guano, and artificial manure is consumed in the county. A tenant pays probably from one-half to two-thirds of the sum he is rented for in manure yearly. I am not aware that tenants had any difficulty in getting from the sellers of manures what they required for their farms, and never heard of any particular loss the venders experienced in consequence of the law, more than the occasional risk which all merchants must run in dealing with the public. They are aware that the landlord has the right of hypothec, and ought to consider that in their transactions with the tenant. Moreover, the tenant's means are well known generally to the dealers and throughout the district, so that they are quite aware of any risk they run. . . . Men of larger capital than formerly are now required as tenants, partly owing to the high price of stock and labour, and the higher style of farming now required to enable them to cope with their neighbours, and also to the farms being in most districts increased in size. The landlord does not get much, if any, increase of rent, in consequence of uniting the farms; but there is a great saving in farm buildings, which is often an inducement to do away with smaller farms. This, I think, ought to be done very cautiously. I allude to the conversion of the very small farms or crofts into two-horse and four-horse farms. All small farms should not be abolished, otherwise you will do away with a most useful class of labourers and farmers, which would be a serious loss to the country. It is somewhat difficult to define exactly the amount of capital a tenant should have on entering a farm in Aberdeenshire. Some say from 8*l.* to 10*l.* an acre. Perhaps a little less might do, and I think it would, according to circumstances and the prices at the time. I conceive from 60 or 70 to 250 acres very suitable farms for the district. Formerly the buildings, which were generally of the inferior description, had been, in most instances, erected by and belonged to the tenant, and the entering tenant paid the value to the outgoing tenant. Of late years a great change and improvement has taken place in farm buildings, especially in the superior accommodation required for rearing and fattening stock; and, as new leases are entered into, the buildings are in most instances becoming the property of the landlord, the tenant maintaining them in order during his lease. The tenant is thus enabled to expend his capital on the farm, in place of paying a considerable sum to the outgoing tenant for houses and fences before he could enter upon the farm. By the improved system, the tenant having little pecuniary interest in the buildings, which belong to the landlord, it would seem more necessary for the landlord to have the security of hypothec. In letting a farm a landlord does not consider the law of hypothec, or look to have to sequestrate a tenant; he looks for the best man he can find. A great many farmers, now in good circumstances, and well-known agriculturists, have begun from very small means, with little more than enough to stock the farm, and a good character and stout person, and are now doing well and thriving, and in many instances are able and ready to take larger farms. I consider industry and labour go a long way to make up for want of much capital; and I would not object to let a farm to a practical man and good farmer, such as I have described, under the present law, if he had sufficient to stock the farm properly. I do not think it follows that, because a man has capital —perhaps twice the capital required to work and stock his farms—he is necessarily to make a good farmer, or to do well. Agriculture is a science, and, like other trades and professions, requires knowledge of the business, energy, and perseverance. One man will succeed where another fails under circumstances apparently more favourable; but, so far as my experience goes, I do not think agriculturists fail oftener, or so often, perhaps, as men following other pursuits. I do not recollect any instance of a farm being given up during the currency of the lease, from the tenant being unable to get on. One advantage of the present law is, that it enables a landlord to assist an industrious tenant by giving him indulgence.

Miscellaneous.

Agricultural Labourers on Strike.—For some time past there have been meetings of agricultural workmen in Scotland with a view to combined action to advance wages, and otherwise to obtain ameliorations in the conditions of their service. We have noticed also several meetings of farm labourers at Maidstone, in Kent, with like objects, and lately we met with the following paragraph in some of the daily papers:—

"The farm labourers in the village of Peasemore, Newbury, Berks, [have] struck for an advance of wages. Their present pay is 9*s.* per week, and many of the men have large families." On this strike some of the farmers of the parish have written to the *Times* to state that some of their labourers have received from 9*s.* 9*d.* to 14*s.* per week since Michaelmas—probably by occasional piece-work or the aid of their wives and children—but that the general rate of wages for ordinary farm labourers in the parish is 9*s.* per week, seems not to be disputed. The advance required by these Berkshire men seems to be 1*s.* per week. Of course the question must ultimately resolve itself into the question of supply and demand, and throughout the rural districts of England not only have wages somewhat advanced of late years, but there has been at certain times and in several districts an actual scarcity of labour. We know not how the rural workmen can avail themselves of this to them favourable state of the labour market so readily as by some general and combined action, and to those who have known the farm labourers of the West of England 20 or 30 years ago, the fact of their thus combining for the assertion of their own right to make the best bargains for their labour the market will afford is a sign of hope and promise. There is no doubt that the rate of wages in the Western counties is far too low for the interest of the masters themselves, as the labourers so paid do not give so much work, nor such good work, for their money as they would obtain were wages higher than they are. Low wages produce a want of spirit and energy amongst the farm labourers, which often unfits or disinclines them for more active exertions than they have been accustomed to make, even when offered better wages. Of this we recollect a striking instance. An energetic farmer, a native of Wiltshire, who occupied a large farm in Hertfordshire, some years ago, being on a visit in his native county, offered a single and able-bodied man, who had been working for 7*s.* a week and occasionally resorting to the union workhouse in winter, employment in Hertfordshire at 12*s.* per week. The Wiltshire man came to Herts and worked for two or three months at the improved wages, when he told his master that he must go back, that the other labourers laughed at him, and that he did not like the new country. And he went back accordingly to his 7*s.* a week, or the workhouse. The fact was that this man was unequal to the work, as the higher paid and more energetic labourers of Hertfordshire worked on the same farm, and he preferred going back to his semi-starvation to putting his shoulder earnestly to the wheel and fitting himself for his improved opportunity. Now, some effort at self-help on the part of agricultural labourers in the low-priced districts, would seem to afford indication of growing energy on their part, and is assuredly a hopeful sign. *Economist.*

Calendar of Operations.

May and June.—*Turnip Cultivation.*—Keep the harrows and roller [working close behind the ploughs in dry weather. Land that has borne Vetches and Rye may be sown with Turnips towards the end of June. The order in which the different kinds should be sown, is that of the hardiness which respectively characterises them: 1. Swedes; 2. Hybrids; 3. Hard Yellow Turnips; 4. Soft White Turnips. The earlier Turnips will have come into broad leaf, after which they are to be horse-hoed and singled. Three good hoers will single an acre of Turnips in a day. Where, however, much seed has been sown, and the plants are crowded in the rows, an acre's singling will be a day's work for as many as four or even five hands; it is of the utmost importance that this operation be well and carefully performed. One horse-hoe will keep before seven good hoers. Its use reduces the ridge on which the row of plants is growing to a width of about 4 inches, raised abruptly about 2 inches above the general level. The action of the hand-hoe is very rapid; alternate pushes and pulls bevel off this raised drill, so as to give it the true ridge form, and at the same time so as to destroy all the plants except those intended to grow, which are left in a neatly executed row, at intervals of about 12 inches, along the ridge line, all lying one way, with half of their roots exposed. This operation is best performed by a party of women at days' wages, headed by a man who assists the laggers, and corrects the deficiencies of the unskilful.

Rape.—The preparation of the land for Rape is similar to that pursued for Turnips, with the exception that on peaty soils in dry seasons, the last ploughing should be completed a fortnight previous to the time of sowing, and the land consolidated as much as possible, retaining a fine tilth. The end of June and beginning of July is the proper time for sowing it. Where the land is well drained, it may be sown on the flat, the rows being 13 to 14 inches apart. The best method is to drill it upon ridges, as in Turnip culture. About 2 quarts of seed is quite sufficient per acre.

Mangel Wurzel will require horse-hoeing in June.

Carrots and Parsnips must be singled out when ready to intervals of 8 inches.

Cabbages.—Transplant into rich and highly manured soil; if planted now or early in July, they will afford useful food for winter and spring use. The subsequent acts of cultivation they receive consist of horse and deep hand-hoeings, so long as there is sufficient interval for the purpose between the rows.

Notices to Correspondents.

Bitter Butter: *Sub.* Put a bit of saltpetre, about the size of a nut, to every quart of cream, as soon as it is taken off the milk, and then, the day before you churn, put the whole creek to stand in a furnace of boiling water for half an hour, stirring it frequently while it is in the hot water, and afterwards till it is cold. There are many other recipes. A good deal depends on the hot water and steaming to get rid of the aroma.

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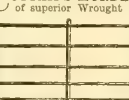

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1½ inch	Small Rabbits, Hares, &c.	4½*d.*	5½*d.*	6½*d.*	8*d.*
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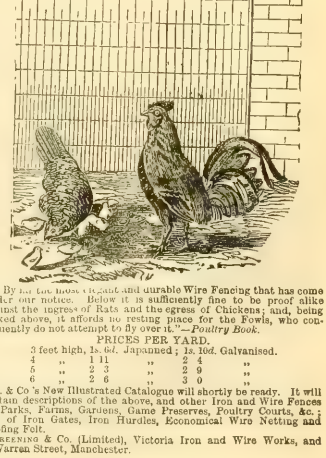
No. 11, Variety.



"By far the most cheap and durable Wire Fencing that has come under our notice. Below it is sufficiently fine to be proof alike against the ingress of Rats and the egress of Chickens; and, being spiked above, it affords no resting place for the Fowls, who consequently do not attempt to fly over it."—*Poultry Book.*

PRICES PER YARD.

3 feet high, 1*s.* 6*d.*	Japanned;	1*s.* 10*d.*	Galvanised.		
4	"	1 11	"	2 4	"
5	"	2 3	"	2 9	"
6	"	2 6	"	3 0	"

G. & Co's New Illustrated Catalogue will shortly be ready. It will contain descriptions of the above, and other Iron and Wire Fences for Parks, Farms, Gardens, Game Preserves, Poultry Courts, &c.; also of Iron Gates, Iron Hurdles, Economical Wire Netting and Roofing Felt.

Greening & Co. (Limited), Victoria Iron and Wire Works, and 7, Warren Street, Manchester.

SAMUELSON & CO.'S

PATENT LAWN MOWING and ROLLING MACHINES.

TO BE OBTAINED OF ALL RESPECTABLE IRONMONGERS OR SEEDSMEN, OR OF

SAMUELSON AND CO., BRITANNIA WORKS, BANBURY.

LONDON WAREHOUSE: 10, LAURENCE POUNTNEY LANE, E.C.

AGENTS.—Mr. S. HOLMAN, 1a, Cannon Street, City; Messrs. DEANE AND CO., London Bridge; Messrs. DRAY, TAYLOR, AND CO., London Bridge,

AND ALL SEEDSMEN AND IRONMONGERS.

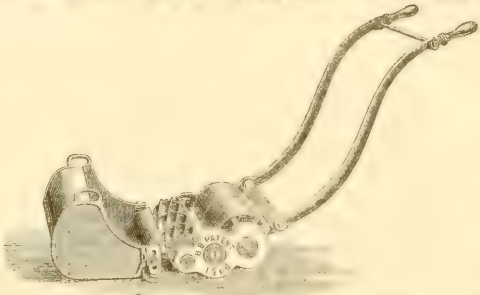
J. B. BROWN & CO.'S NEW PATENT B B LAWN MOWER.

PATENTEES AND SOLE MANUFACTURERS,

J. B. BROWN & CO.,

148, UPPER THAMES STREET,

LONDON, E.C.



GUARANTEED TO GIVE

PERFECT SATISFACTION,

AND IF NOT APPROVED OF

MAY BE AT ONCE RETURNED.

J. B. BROWN AND CO. beg to mention, that having executed their numerous orders for the NEW PATENT B B LAWN MOWER up to the present time, with most unqualified satisfaction, they are now actively executing further orders for the present season,—and, owing to the large number of orders already received and constantly coming in, it is most important that orders for delivery this season should be sent in *as early as possible*.

The Machine combines all the latest improvements in Lawn Mowing Machines, being simple in construction, very light, silent in movement, easily worked, and so strong and durable as to be literally unbreakable,—an all-important feature in Machines of this class; the ordinary cast-iron being entirely done away with, and malleable iron substituted, in all breakable parts, and every part being accurately made to the standard gauges. The workmanship and finish are also of superior character; the entire Machine being quite equal to a revolution, so to speak, in Lawn Mowers. The Machines are all guaranteed to give perfect satisfaction in every respect.

The NEW B B PATENT LAWN MOWER is Manufactured by J. B. BROWN & CO. at their extensive Premises in London, under their personal superintendence.

PATENT B B HAND MACHINE.

PRICES—Including Carriage to any Railway Station or Shipping Port in England, with the necessary Tools and Directions for use.

10-inch Machine	£3 10 0	*Easily Worked by a Man.*
12-inch Machine	4 10 0	*Easily Worked by a Boy.*
14-inch Machine	5 10 0	*Drawn by Two Men.*
16-inch Machine	6 10 0	*Drawn by a Man.*
18-inch Machine	£7 10 0	*Easily Worked by a Man.*
20-inch Machine	8 0 0	
22-inch Machine	8 10 0	*Drawn by Two Men.*
24-inch Machine	9 0 0	

PATENT B B HORSE MACHINE.

PRICES—Complete, with out extras, including Carriage to any Railway Station or Shipping Port in England, with the necessary Tools and Directions for use.

42-inch Machine	£28 10 0	*Drawn by a Horse.*
36-inch Machine	24 10 0	
30-inch Machine	21 10 0	*By a Horse or Strong Pony.*

PATENT B B PONY and DONKEY MACHINE.

PRICES—Complete, without extras, including Carriage to any Railway Station or Shipping Port in England, with the necessary Tools and Directions for use.

34-inch Machine	£17 10 0	*Drawn by a Pony.*
28-inch Machine	16 10 0	
24-inch Machine	14 10 0	*Drawn by a Donkey.*

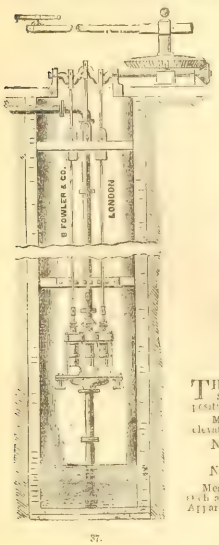
New Improved Horse, Pony, and Donkey Boots, wholly of Leather, as figures.—Horse Boots, 24s.; Pony Boots, 21s.; Donkey Boots, 16s. per set.

*** *Every Machine sent out is warranted to give ample satisfaction, and, if not approved of, may be at once returned.*

J. B. BROWN AND CO., OFFICES, 18, CANNON STREET, CITY, LONDON, E.C.

WAREHOUSE and MANUFACTORY, 148, UPPER THAMES STREET, E.C.

OPPOSITE the CITY of LONDON BREWERY, and close to the LONDON BRIDGE STEAM BOAT PIERS.



37.

CLINTON & OWENS

(LATE BENJAMIN FOWLER & CO.)

MANUFACTURERS OF

PUMPS AND HYDRAULIC MACHINERY,

WHITEFRIARS STREET, FLEET STREET, LONDON, E.C.

THE LANDSCAPE SKETCH shows an adaptation of THE IMPROVED HYDRAULIC RAM. This is a simple Self-acting Machine, suited for raising a Supply of Water for use in Public and Private Establishments. It is also not confined to circumstances shown, but it answers perfectly where a fall can be obtained from a Stream, Brook, or Spring.

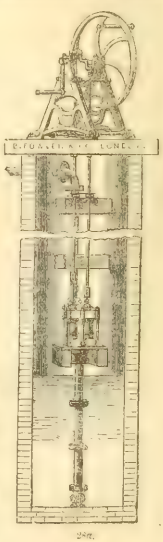
Messrs. CLINTON & OWENS have fixed a great many in various parts of the country for raising from 600 to 1,000 gallons per day to elevations ranging from 50 to 400 feet, and forcing through main pipes 50 yards to several miles in length.

No. 37. IMPROVED TREBLE BARREL PUMPS with HORSE GEARING for Raising Water from DEEP WELLS for the supply of MANSIONS and PUBLIC BUILDINGS.

No. 28*a*. DOUBLE BARREL PUMPS for HAND-POWER for similar purposes.

Messrs. CLINTON & OWENS Manufacture and Fix every description of Engineers' Work required in Public or Private Establishments, such as Pumps for any purpose on the largest or smallest scale, Steam Engines, Water Wheels, Turbines, Warming and Drying Apparatus, Baths, Gas Works and Fittings. Estimates furnished from Plans or on inspection of position.

Price Lists of Pumps, &c. free on application.



28*a*.

CONSERVATORIES, GREENHOUSES, FRAMES.

THE ONLY PAINT THAT SUCCESSFULLY STANDS UPON THE ABOVE TRYING WORK IS

CARSONS' ORIGINAL ANTI-CORROSION PAINT,

TRADE MARK.

ENTERED AT STATIONERS HALL.

AND IS CONSEQUENTLY LARGELY USED BY THE NOBILITY AND GENTRY, ALSO THE LEADING HORTICULTURISTS.

IT IS EQUALLY ADAPTED FOR ALL DESCRIPTIONS OF EXTERNAL WORK.

3 cwt. Free to any Station in England and Wales, and most Ports of England, Ireland, and Scotland.

TRADE MARK.

ENTERED AT STATIONERS HALL.

PATTERNS, PRICES, and TESTIMONIALS on application to

WALTER CARSON AND SONS, Removed to LA BELLE SAUVAGE YARD, LUDGATE HILL, LONDON.

Three doors East of London, Chatham, and Dover Railway new Viaduct.

CAUTION.—All Casks bear the Trade Mark, or are not Genuine.

JOHN WARNER & SONS, LONDON, MANUFACTURERS.

J. WARNER AND SONS

Have much improved the construction of their

GARDEN **ENGINES**

in some important particulars for this Season.

They may be obtained of the Trade generally throughout the Kingdom at the following prices:—

No. 547. WARNER'S best ENGINES, in Wood Tubs, and fitted with WARNER'S Registered Spreaders—

24	Gallons,	£6	10 0
14	,,	5	10 0

No. 547A. WARNER'S strong ENGINES, in Galvanised Iron Tubs, well painted—

10	Gallons,	£2	19 0
16	,,	3	14 0
24	,,	4	19 0
28	,,	5	10 0

No. 579½. WARNER'S WATER BARROWS, thoroughly Galvanised and well painted—

20	Gallons,	£2	2 0
30	,,	2	13 0
38	,,	3	17 0
50	,,	5	12 0

The 50-Gallon Barrow is made extra strong throughout, and fitted with handle for two men.

No. 568½. AMERICAN ENGINE, is now well known and appreciated. It throws a continuous stream, and is complete in itself. £2 2*s*.

SYRINGES in great variety, from 7*s*. 6*d*. to 18*s*. 6*d*.

The DISC SYRINGE, No. 557A, will recommend itself by the ease with which it is filled, and non-liability to get out of order. Price 9*s*.

WARNER'S **AQUAJECT**

Is recommended to the notice of Horticulturists as possessing the following advantages:—It is simple in construction, portable, and easily worked. It throws a continuous stream, and is low in price.

The Aquaject, 30*s*.

Ditto small size, 18*s*.

WARNER'S 6-Gallon GARDEN ENGINE, of Galvanised Iron and well painted, fitted with Brass Air-vessel, Branch Pipe, and WARNER'S Registered Spreader, 50*s*. Light, portable, and easily worked by a lady or child.

No. 35. WARNER'S IRON PUMPS for Wells, not exceeding 25 feet in depth — 2½-in., 28*s*. 6*d*.; 3-in., 41*s*.; 3½-in., 46*s*.; short barrel do., 21*s*.

No. 36. IRON FORCE PUMPS for raising water above their level, or Watering Yards, Gardens, &c., through hose—2½-in., 59*s*.; 3-in., 65*s*.; 3½-in., 77*s*.; 4-in., 89*s*.

No. 36½. FORCE PUMP on BARROW, recommended for its great portability and simplicity of construction. £5 10*s*.

No. 42. WARNER'S PORTABLE PUMPS on Folding Legs, are of a superior construction.

Price 55*s*.; Rubber Suction, 2*s*. 11*d*. per ft.

No. 597A. BRANCH PIPES with Cocks and Roses—½-in., 3*s*.; ⅝-in., 4*s*.; ¾-in., 5*s*.

No. 599. TAPER BRANCH PIPES—½-in., 4*s*. 9*d*.; ⅝-in., 5*s*. 3*d*.; ¾-in., 6*s*.; 1-in., 7*s*.

RUBBER HOSE in all sizes.

FOUNTAIN JETS in great variety, from 3*s*. 6*d*. to 25*s*.

DESCRIPTIVE PRICE LISTS forwarded on application.

SHANKS' PATENT LAWN MOWERS FOR 1866.

PATRONIZED ON FIVE SEPARATE OCCASIONS DURING THE SEASON OF 1864 BY

HER MAJESTY THE QUEEN,

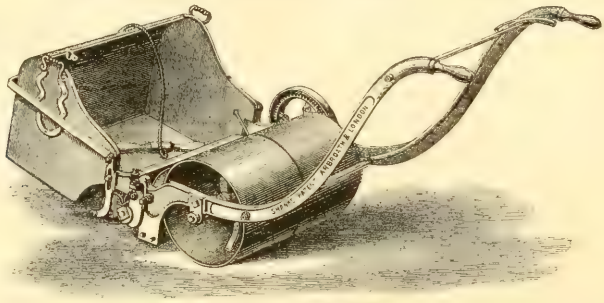
AND ONCE BY HIS MAJESTY THE KING OF SAXONY;

AGAIN ON FOUR SEPARATE OCCASIONS DURING THE SEASON OF 1865 BY HER MAJESTY THE QUEEN;

ONCE BY HIS MAJESTY THE KING OF HOLLAND;

AND ONCE BY HIS MAJESTY THE KING OF PRUSSIA.

EVERY MACHINE WARRANTED.



PATENT HAND MACHINE.

IF NOT APPROVED OF, CAN BE AT ONCE RETURNED.

APRIL, 1866.—ANOTHER 42-INCH HORSE MACHINE HAS JUST BEEN ORDERED FOR

THE ROYAL GARDENS AT KEW.

A. SHANKS AND SON HAVE TO INTIMATE THAT THEIR

MACHINES ARE THE ONLY LAWN MOWERS USED IN THE ROYAL GARDENS AT KEW.

These are the only Machines that can be depended on to give lasting satisfaction.

THESE ARE THE ONLY MACHINES THAT WILL MOW PROPERLY WHEN THE GRASS IS WET.

THESE ARE THE ONLY MACHINES THAT DELIVER THE GRASS WITHOUT STOPPING, THUS SAVING AN IMMENSE AMOUNT OF LABOUR.

SHANKS' PATENT LAWN MOWERS are the only Machines that have been in operation in Her Majesty's Gardens for a quarter of a century, and they are in daily use in all the Public and Principal Gardens in the Kingdom.

A. SHANKS AND SON have now ready for delivery a large Stock of their celebrated LAWN MOWERS. The Machines have been manufactured by skilled workmen of the best materials, and by the aid of the most improved Machinery.

A. S. AND SON have been particularly careful that the advantages in point of durability and simplicity of construction which have always been a peculiarity of their Machines should still remain, and that no improvement be introduced which has merely novelty to recommend it.

SHANKS' PATENT LAWN MOWERS for 1866 are unrivalled for simplicity of construction, ease of working, and durability.

PRICES, including Carriage to any Railway Station or Shipping Port in the Kingdom.

SHANKS' NEW PATENT HAND MACHINE.

Width of Cutter		Easily Worked.	Silent Movement
10-inch Machine	£3 10 0	*By a Lady*	4*s.* extra.
12-inch Machine	4 10 0		
14-inch Machine	5 10 0	*By a Boy*	

Width of Cutter.		Easily Worked.	Silent Movement.
16-inch Machine	£6 10 0	*By a Man or Two Boys*	4*s.* extra.
19-inch Machine	7 12 6	*By a Man and Boy*	
22-inch Machine	8 7 6	*By Two Men* ..	7*s.* 6*d.* extra.
24-inch Machine	8 17 6		

SHANKS' NEW PATENT PONY and DONKEY MACHINE.

Width of Cutter.		If with Patent Delivering Apparatus.
25-inch Machine	£12 10 0	25*s.* extra.
28-inch Machine	14 10 0	30*s.* ,,
30-inch Machine	15 15 0	30*s.* ,,

Silent Movement, 12*s.* 6*d.* extra; Boots for Pony, 21*s.* per set;
Ditto for Donkey, 16*s.* per set.

SHANKS' NEW PATENT HORSE MACHINE.

Width of Cutter.		If with Patent Delivering A, paratus
30-inch Machine	£19 0 0	30*s.* extra.
36-inch Machine	22 0 0	30*s.* ,,
42-inch Machine	26 0 0	40*s.* ,,
48-inch Machine	28 0 0	40*s.* ,,

Silent Movement, 20*s.* extra; Boots for Horse's Feet, 24*s.* per set.

*** ORDERS EXECUTED ON THE DAY THEY ARE RECEIVED.

ALEXANDER SHANKS AND SON, DENS IRON WORKS, ARBROATH.
LONDON OFFICE and SHOW ROOMS: 27, LEADENHALL STREET, E.C.
PARIS OFFICE and SHOW ROOMS: 56, BOULEVARD HAUSSMANN.

A. S. & SON *keep a stock of all sizes of Machines at their London and Paris Establishments, from which Orders are executed on the day they are received.*

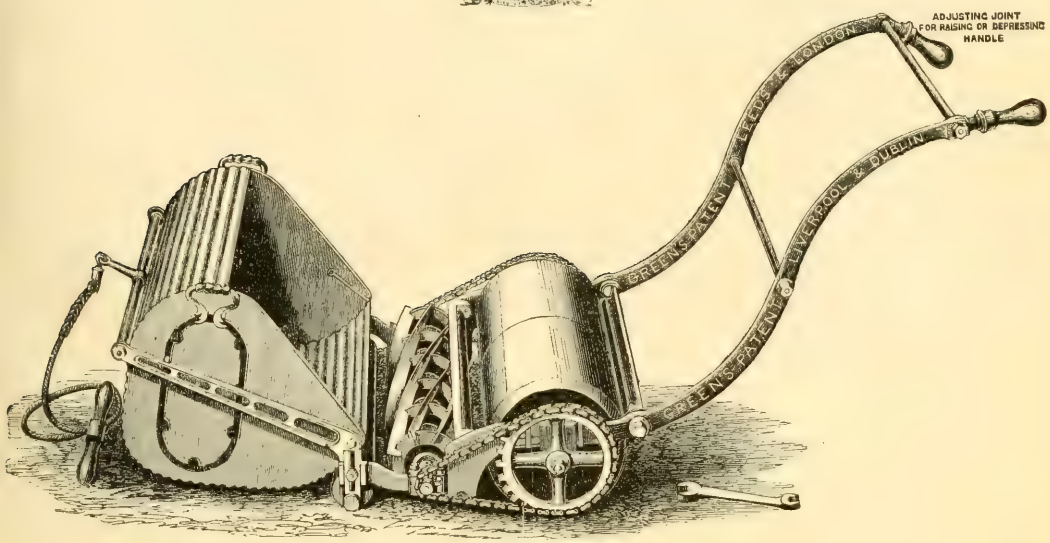
☞ 27, *Leadenhall Street is the only place in London where intending purchasers of Lawn Mowers can choose from a stock of from* 150 *to* 200 *Machines. All sizes kept there, whether for Horse, Pony, or Hand Power.*

GREEN'S PATENT SILENS MESSOR,

OR

NOISELESS LAWN MOWING, ROLLING, and COLLECTING MACHINES.

FITTED WITH PATENT SELF-SHARPENING CYLINDER CUTTERS.



GREEN'S PATENT LAWN MOWERS

HAVE PROVED TO BE THE BEST,

AND CARRIED OFF EVERY PRIZE THAT HAS BEEN GIVEN IN ALL CASES OF COMPETITION.

Every Machine warranted to give entire satisfaction, and if not approved of, can be returned unconditionally.

THEY ARE THE ONLY MACHINES IN CONSTANT USE AT

THE ROYAL GARDENS, WINDSOR | THE BUCKINGHAM PALACE GARDENS

THE ROYAL HORTICULTURAL SOCIETY'S GARDENS, SOUTH KENSINGTON

THE BOTANICAL GARDENS, REGENT'S PARK, AND IN MOST OF THE PRINCIPAL PARKS AND GARDENS IN THE KINGDOM.

THE FACT THAT UPWARDS OF

33,000 OF THE ABOVE MACHINES HAVE BEEN SENT OUT SINCE THE YEAR 1856,

(THE TIME THAT THE MACHINES WERE FIRST BROUGHT OUT)

IS A SUFFICIENT PROOF OF THEIR SUPERIORITY OVER ALL OTHERS.

T. G. & SON began the present Season with a stock of 3000 MACHINES, which is now greatly reduced, but with their numerous facilities they are still able to execute Orders on the day they are received. From 400 to 500 are being sent out Weekly.

T. G. & SON beg to call special attention to their IMPROVED DONKEY, PONY, and HORSE LAWN MOWERS.

☞ *Illustrated Price Lists, and Sheet of Prize Medals awarded to* GREEN'S PATENT LAWN MOWERS, *free on application.*

T. G. & SON having taken very extensive Premises in London, they are in a position to do all kinds of Repairs there, as well as at their Leeds and Dublin Establishments.

THOMAS GREEN AND SON, SMITHFIELD IRON WORKS, LEEDS;

64 and 65, BLACKFRIARS ROAD, LONDON, S.; and 19, EDEN QUAY, DUBLIN.

NEW TARIFF OF GLASS AND HORTICULTURAL GOODS.

THOMAS MILLINGTON,

GLASS AND COLOUR MERCHANT,

87, BISHOPSGATE STREET WITHOUT, LONDON, E.C.

SHEET GLASS.

In Sheets for Cutting up, averaging from 6 to 9 feet super.

15 oz.

4ths quality	..	..	per 300 feet case	40s.	0d.	or about 1¾d.	per foot super.
3ds	,,	..	..	,,	40	0	,, 2 ,, ,,
2ds	,,	..	..	,,	66	0	,, 2¾ ,, ,,
Best	,,	..	..	,,	96	0	,, 4 ,, ,,

21 oz.

4ths quality	..	..	per 200 feet case	40s.	0d.	or about 2½d.	per foot super.
3ds	,,	..	..	,,	50	0	,, 3 ,, ,,
2ds	,,	..	..	,,	66	0	,, 4 ,, ,,
Best	,,	..	..	,,	96	0	,, 6 ,, ,,

26 oz.

4ths quality	..	..	per 200 feet case	60s.	0d.	or about 3¾d.	per foot super.
3ds	,,	..	..	,,	78	0	,, 4½ ,, ,,
2ds	,,	..	..	,,	99	0	,, 6 ,, ,,
Best	,,	..	..	,,	110	0	,, 6¾ ,, ,,

SHEET SQUARES, Cut to Order.

Not exceeding 15 oz.

	9 in. by 7 in.	12 in. by 9 in.	1 ft. 6 in. super.	2 feet.	3 feet.	4 feet.	6 feet.	8 feet.
4ths quality	1½d.	1¾d.	2d.	2¼d.	3d.	3d.	3¾d.	3¾d.
3ds ,,	1½	2¼	3	3¾	3¾	4½	4	4½
2ds ,,	2¼	3	3¾	4	4¾	5¼	5½	5½
Best ,,	3	3½	4½	5¼	6	6¾	7	7½

21 oz.

4ths quality	1¾d.	2¼d.	3d.	3¼d.	3¾d.	3¾d.	4d.	4¼d.
3ds ,,	2¼	2¾	3¾	4	4½	4½	4¾	4¾
2ds ,,	2¾	3¾	4½	4¾	5¼	5¾	6	6¾
Best ,,	3½	4½	5¼	6	6¾	7¼	8	9

26 oz.

4ths quality	2¾d.	3¼d.	4¼d.	4¾d.	4¾d.	4¾d.	5¼d.	5¾d.
3ds ,,	3¾	4½	4¾	5¼	5¾	6	6	6¾
2ds ,,	4¼	4½	6	6¾	6¾	6¾	7½	8¼
Best ,,	5	5¼	7½	8	8½	9	9¾	11¼

32 oz., 36 oz., and 42 oz. are also supplied in various quantities.

EXTRA WHITE or CRYSTAL SHEET GLASS, very superior for Pictures and best Glazing.

RUBY, GREEN, BLUE, YELLOW, COLOURED, ENAMELLED, GROUND, and FLUTED GLASS.

Squares of the following Sizes are usually kept in Stock in 100 feet and 200 feet Boxes.

ORCHARD HOUSE SIZES, as supplied to Mr. Rivers and the leading Horticulturists.

AVERAGE THICKNESS, 15 oz.

20 Inches by 12 Inches.					
20 ,, 13 ,,					
20 ,, 14 ,,	Per 100 feet ..	14s. 2d.	15s. 4d.	17s. 6d. ,	21s.
20 ,, 15 ,,					
20 ,, 16 ,,					

AVERAGE THICKNESS, 21 oz.

20 Inches by 12 Inches.					
20 ,, 13 ,,					
20 ,, 14 ,,	Per 100 feet ..	18s. 3d.	21s. 6d.	25s.	27s. 6d.
20 ,, 15 ,,					
20 ,, 16 ,,					

SMALL STOCK SQUARES, 15 oz., per 100 feet.

in.	in. in.	in. in.	in.	4ths.	3ds. 2nds. Best.
6 by 4	7 by 5	8 by 6	9 by 7	11s. 1d.	13s. 3d. 15s. 0d. 18s. 6d.
6½ by 4½	7½ by 5½	8½ by 6½	9½ by 7½		

Per 100 feet.

10 by 8	12 by 9	12¾ by 10¼	14¼ by 10½	12s. 4d.	14s. 7d.	16s. 6d.	19s. 0d.
10½ by 8½	12½ by 9½	13 by 10	15 by 10				
11 by 9	13 by 9	13½ by 10½	15 by 11				
11½ by 9½	12 by 10	14 by 10	14 by 11				

LARGE STOCK SQUARES, 15 oz., per 100 feet.

in.	in.	in.	in. in.	in. in.	4ths.	3ds. 2nds.	Best.
13½ by 10½	14 by 12	22 by 12	22 by 16	13s. 2d.	15s. 4d.	17s. 6d.	21s. 0d.
16 by 10	14½ by 12½	17 by 13	24 by 16				
14½ by 11½	15 by 12	23 by 13	20 by 17				
15 by 11	15½ by 12½	18 by 14	22 by 17				
15½ by 11½	16 by 12	22 by 14	24 by 17				
16 by 11	16½ by 12½	24 by 14	20 by 18				
21 by 11	17 by 12	22 by 15	22 by 18				
13 by 12	18 by 12	24 by 15	24 by 18				

The above Prices are only for the Sizes stated, but if a quantity of any other Size be required, a Special Price will be given.

*ZINC HAND GLASSES.

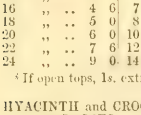
	Unglazed.		Glazed.	
	Each.—	s.	d.	s. d.
12 in. diam.		3	2	5 6
14 ,, ..		3	8	6 4
16 ,, ..		4	0	7 3
18 ,, ..		4	6	8 3
20 ,, ..		5	0	9 3
22 ,, ..		5	6	10 3
24 ,, ..		6	0	11 3

IRON HAND GLASSES.

	s.	d.	s. d.
12 in. diam.	3	6	5 10
14 ,, ..	4	0	6 9
16 ,, ..	4	6	7 9
18 ,, ..	5	0	8 9
20 ,, ..	6	0	10 3
22 ,, ..	7	6	12 3
24 ,, ..	9	0	14 3

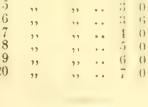
* If open tops, 1s. extra.

HYACINTH and CROCUS GLASSES.



PROPAGATING GLASSES.

	Each.	s.	d.
3 inches diameter		0	4½
4 ,, ,, ..		0	5½
5 ,, ,, ..		0	6½
6 ,, ,, ..		0	8
7 ,, ,, ..		0	10
8 ,, ,, ..		1	0
9 ,, ,, ..		1	2
10 ,, ,, ..		1	4
11 ,, ,, ..		1	6
12 ,, ,, ..		1	9
13 ,, ,, ..		2	0
14 ,, ,, ..		2	6
15 ,, ,, ..		3	0
16 ,, ,, ..		3	6
17 ,, ,, ..		4	0
18 ,, ,, ..		5	0
19 ,, ,, ..		6	0
20 ,, ,, ..		7	0

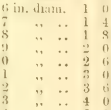


HYACINTH DISHES.

	Each.—	s.	d.
6 inches diameter		1	0
9 ,, ,, ..		1	6
12 ,, ,, ..		2	6

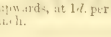
PRESERVE JARS.

In. diam.	Without Lids.		With Lids.	
	s.	d.	s.	d. Less.
3 ..	0	4½	0	6½ Less.
4 ..	0	6	0	9 ,,
5 ..	0	8	0	11 ,,
6 ..	0	10	1	2 ,,
7 ..	1	0	1	4 ,,
8 ..	1	4	1	8 ,,
9 ..	1	8	2	2 ,,
10 .	2	0	2	8 ,,



CREAM POTS.

	Without Covers		With Covers.	
Each.—	s.	d.	s.	d.
6 in. diam.	1	0	1	3
7 ,, ..	1	4	1	8
8 ,, ..	1	8½	2	0
9 ,, ..	2	0½	2	6
10 ,, ..	2	6	3	2
11 ,, ..	3	0	4	0
12 ,, ..	3	6	4	9
13 ,, ..	4	0½	5	6
14 ,, ..	5	0	6	6



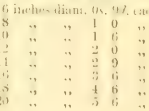
CUCUMBER GLASSES.

From 12 inches long and upwards, at 1d. per running inch.

MILK PANS.

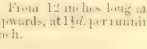
6 inches diam.	0s.	6d.	each	
8 ,, ,,	0	9	,,	
10 ,, ,,	1	0	,,	
12 ,, ,,	1	3	,,	
14 ,, ,,	1	9	,,	
16 ,, ,,	2	3	,,	
18 ,, ,,	2	9	,,	
20 ,, ,,	3	3	,,	
22 ,, ,,	3	9	,,	
24 ,, ,,	4	6	,,	

Intermediate sizes in preparation.



PASTRY PANS.

6 inches diam.	0s.	9d.	each	
8 ,, ,,	1	0	,,	
10 ,, ,,	1	6	,,	
12 ,, ,,	2	0	,,	
14 ,, ,,	2	9	,,	
16 ,, ,,	3	6	,,	
18 ,, ,,	4	6	,,	
20 ,, ,,	5	6	,,	



ROLLING PINS.

From 12 inches long and upwards, at 1½d. per running inch.

BEE GLASSES, With Ventilating Hole through knob.

½ inches diam.	0s.	6d.	each	
5 ,, ,,	0	8	,,	
6 ,, ,,	0	10	,,	
7 ,, ,,	1	1	,,	
8 ,, ,,	1	4	,,	
9 ,, ,,	1	8	,,	
10 ,, ,,	2	0	,,	
11 ,, ,,	2	6	,,	
12 ,, ,,	3	0	,,	

FLAT-TOP BEE GLASSES.

	Each.		
Height.	Width.	s.	d.
4½	by 7 ..	1	6
4½	by 8½ ..	1	9
5	by 7½ ..	2	0
6½	by 8 ..	2	3
7½	by 8½ ..	2	10

Larger sizes can be made.

FISH GLOBES.

In. diam.	Qts.	each	
7 ..	½ filled,	2½	0s. 9d.
8 ..	,,	3	0 10
9 ..	,,	4	1 3
10 ..	,,	6	1 11
11 ..	,,	8	2 1
12 ..	,,	9	2 2

Larger sizes can be had up to 16 inches.

If on feet, 50 per cent. more

AQUARIA.

	With Stands.		Without Stands.	
Each.—	s.	d.	s.	d.
8 in. diam.	2	9	1	3
9 ,, ..	3	0	1	6
10 ,, ..	3	3	1	9
11 ,, ..	3	9	2	0
12 ,, ..	4	0	2	3
13 ,, ..	4	6	2	6
14 ,, ..	5	0	3	0
15 ,, ..	6	3	3	9
16 ,, ..	7	0	4	6
17 ,, ..	9	6	5	0
18 ,, ..	10	6	6	0
19 ,, ..	12	3	7	0
20 ,, ..	13	3	8	0

Glass Tiles in Sheet and Rough Plate,

For Intermixing with Ordinary Tiles.

In Packages of 50 each.

SHEET.			ROUGH PLATE.	
15 oz.	18s. 9d.		⅛ inch thick	23s. 6d.
21 oz.	25 0		3/16 inch thick	39 0
26 oz.	31 3		¼ inch thick	52 6
32 oz.	37 6		½ inch thick	91 0

Glass Slates in Sheet and Rough Plate,

For Intermixing with Ordinary Slates.

In 16 oz., 21 oz., 26 oz., 32 oz., and ⅛, 3/16, ¼, ⅜ thickness.

DUCHESS	24 by 12	VISCOUNTESS	18 by 10
SMALL IMPERIALS ..	20 by 14	LARGE LADIES	16 by 10
SMALL DUCHESS ..	22 by 12	LADIES	16 by 8
COUNTESS	20 by 10	DOUBLES	13 by 7

PAINTS, COLOURS, VARNISHES, &c.

MILLED LEAD, in Sheets and Pipes, of all kinds. OLD LEAD Bought or taken in exchange. LIFT PUMPS, WATER CLOSETS, & PLUMBER'S BRASS WORK of all kinds.

The above are Net, and as such cannot be booked. Post Office Orders payable at Bishopsgate Street Within, or Cheques crossed "PRESCOTT, GROTE, & Co."

International Horticultural Exhibition.

JOSEPH NEWTON, 50, Eastbourne Terrace, W., Landscape Architect, asks the favour of those contemplating Improvements to INSPECT his Collection of PLANS and MODELS exhibited in Classes 238 and 252.

VISITORS to the INTERNATIONAL HORTICULTURAL EXHIBITION should Purchase whatever ORNAMENTS or IMPLEMENTS they require at their Headquarters at the Garden Repository, 32, James Street, Covent Garden, W.C. (near the Centre Avenue of Covent Garden Market), where a select stock is kept.

SHAW'S TIFFANY, from 8s. per piece; Netting, Garden Engines, Syringes, Mowing Machines, Rollers, Scythes, Tools, Garden Seats and Tables, Chamber Glasses, Wirework, Ferns Cottas, Zinc Labels, &c

The Garden Repository, 32, James Street, Covent Garden, W.C.

SHAW'S TIFFANY.

For samples and prices apply to

J. SHAW & Co., 29, Oxford Street, Manchester.

BROWN'S FLORAL SHADING.

Prices and Samples on application to

CHARLES BROWN, Greenheys, Manchester.

Bee Hives.

PRIZE MEDAL AND HONOURABLE MENTION AWARDED TO GEORGE NEIGHBOUR & SONS, FOR BEE HIVES AND HONEY AT THE VARIOUS EXHIBITIONS.

NEIGHBOUR'S IMPROVED COTTAGE BEE HIVE, as originally introduced by GEORGE NEIGHBOUR & SONS, with all the recent improvements, working three bell-glasses; is neatly and strongly made of straw; it has three Windows in the lower Hive, with a Thermometer affixed to the centre one. This Hive will be found to possess many practical advantages, and is more easy of management than any other Bee Hive that has been introduced.

Price complete .. £1 15 0
Stand for ditto .. 0 10 6

THE LIGURIAN or ITALIAN ALP BEE being much in repute at the present time, we are in a position to supply Stocks of the pure race carefully packed in Woodbury Bar-Frame Hives, so as to travel with comparatively no risk of damage.

ENGLISH BEES.—Stocks and Swarms may be obtained as heretofore.

A newly-arranged CATALOGUE of other Improved Hives, with Drawings and Prices, sent on receipt of two stamps.

Address, GEO. NEIGHBOUR & SONS 127, High Holborn, W.C.; or 149, Regent Street, London, W.

AGENTS.—Liverpool: James Cuthbert, 12, Clayton Square. Manchester: J. Wilson, 50, King Street. Birmingham: J. H. Cottrell, 18, Bull Ring. Dublin: Edmondson Brothers, 10, Dame Street. Glasgow: Aitchn & M'Kellen, 15, Buchanan Street.

VASES, STATUES, FOUNTAIN BASINS, FLOWER-POTS, &c., in TERRA COTTA and FINE STONE WARE, warranted to stand frost, by JOHN N. BLASHFIELD, Stamford, Lincolnshire. Applications for Drawings and Prices will receive attention.

FOUNTAIN JETS.

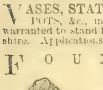


Fig. 530.
JET PEAU.
18 holes, 5s. 6d.; 24 do., 8s. 9d.; 36 do., 10s. 6d.

Fig. 531.
DOME and CONVOLVULUS.
17s.

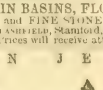


Fig. 535.
DOME.
8s. 6d.

Fig. 522.
CONVOLVULUS,
8s. 6d.

Fig. 521.
BARKER'S MILL.
18s.

Fig. 529.
WIRE BASKET with BALL.
10 ins., 16s. 6d.; 12 ins., 17s. 6d.; 14 ins., 19s. 6d.

Connecting Screws to all the above Jets, 1 inch long.

Branch Pipe for raising up Jets 1 foot high, 5s. 6d.

A Tap is required to be fixed in the Pipe to regulate the supply of Water to Fountain Jets.

J. TENNANT & SONS, Manufacturers, Warwick Lane, Newgate Street, London, E.C.

BEADED BRICKS for GARDEN WALLS. FOXLEY'S PATENT.

These are now acknowledged by all those who have used them to effect more, with less cost, than anything that has been introduced in connection with Horticulture for the past 30 years.

May be had in quantities from the Works of the Patentee, Stony Stratford, Bucks; or of the Agents, for List of which see Prospectus, forwarded free on application.

E. T. ARCHER'S "FRIGI DOMO." — Patronised by her Majesty the Queen, the Duke of Northumberland for Syon House, his Grace the Duke of Devonshire for Chiswick Gardens, Professor Lindley for the Horticultural Society, Sir Joseph Paxton for the Crystal Palace, Royal Zeological Society, &c.

PROTECTION from COLD WINDS and MORNING FROSTS.

"FRIGI DOMO," a Canvas made of patent prepared Hair and Wool, a perfect non-conductor of Heat and Cold, keeping, wherever it is applied, a fixed temperature. It is adapted for all horticultural and floricultural purposes, for preserving Fruits and Flowers from the scorching rays of the sun, from wind, from attacks of insects, and from morning frosts. To be had in any required lengths.

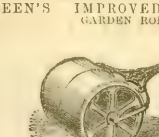
Two yards wide .. .. 1s. 9d. per yard run.
Four yards wide .. .. 3s. 6d. per yard.
An improved make, 2 yards wide .. 1s. 9d. per yard.
An improved make, 3 yards wide .. 2s. 3d. per yard run.

Also "Frigi Domo" Netting, 2 yards wide, 1s. 6d. per yard run

ELISHA THOMAS ARCHER, Whole and Sole Manufacturer, 7, Great Trinity Lane, Cannon Street, City, and of all Nurserymen and Seedsmen throughout the kingdom.

"It is much cheaper than Mats as a covering."

GREEN'S IMPROVED NEW PATENT GARDEN ROLLER.



The above Rollers possess many advantages over all others. They are made in two parts, and are free to revolve on the axis, affording greater facilities for turning, and the outer edges are rounded off or turned inwards, thus avoiding the unsightly marks left by other Rollers.

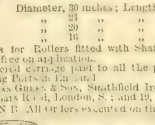
Diameter, 30 inches; Length 32 inches,	£7	10	0
,, 24 ,, ,, 26 ,,	4	10	0
,, 20 ,, ,, 22 ,,	3	10	0
,, 16 ,, ,, 17 ,,	2	15	0

Prices for Rollers fitted with Shafts suitable for Pony or Horse Power, free on application.

Delivered carriage paid to all the principal Railway Stations and Shipping Ports in the Trade.

THOMAS GREEN & SON, Smithfield Iron Works, Leeds 51 and 55, Blackfriars Road, London, S.; and 10, Eden Quay, Dublin.

N.B. All Orders executed on the day the are received.



SWING WATER BARROW.—This is the best and cheapest article yet introduced for use in Gardens, Farm Yards, &c. The Water may be dipped out, or the Tub tilted and poured out, or by merely raising the Handle it can be placed on the ground, and the Frame detached. To hold about 50 or 36 gallons, price 42s. Carriage paid to any station on Great Eastern Line.

POWERFUL GARDEN ENGINE, suitable for the above, price 45s.

IMPROVED WATER and LIQUID MANURE CARTS.

Catalogues on application.

Manufactured by W. S. BRETTON, Rose Lane Iron Works, Norwich.

THE IMPROVED PATENT GARDEN WATER and ROLLING ENGINE may be had at J. DOIG's, the Sole Manufacturer, 11, Exmouth Street, Clerkenwell, London, N.

The three-bl use of this neat little Machine must be obvious in Watering, Rolling, or Syringing. It will throw about 60 feet, and is so portable that any or many domestic may use it. It contains about 20 gallons. Price £5 5s.; carriage, £6 10s.

Starch Manufacturers

TO H.R.H. THE PRINCESS OF WALES.

GLENFIELD STARCH,

EXCLUSIVELY USED IN THE ROYAL LAUNDRY,

and Awarded Prize Medal, 1862.

Sold by all Grocers, Chandlers, &c.

Manufacturers to the Queen and Prince of Wales.

FRY'S | HOMŒOPATHIC ROCK ICELAND MOSS PEARL | COCOA.

FRY'S SOLUBLE CHOCOLATE.

J. S. FRY & SONS, Bristol and London, are the only English Manufacturers of Cocoa who obtained the Prize Medal, 1862.

DINNEFORD'S FLUID MAGNESIA.—The Medical profession for 50 years have approved of this pure solution of Magnesia as the best remedy for Acidity of the Stomach, Headache, Heartburn, Gout, and Indigestion; and as a mild aperient it is especially adapted for Children, Ladies, &c. Prepared by DINNEFORD & Co., Chemists, &c., 172, New Bond Street, London, W., and sold throughout the world by all respectable chemists. CAUTION.—See that "DINNEFORD & Co." is on each bottle and red label over the cork.

Brighton, Sussex.

TO GARDENERS, NURSERYMEN, FLORISTS, AND OTHERS.

TO BE LET, an OLD ESTABLISHED BUSINESS of a NURSERYMAN and FLORIST, with Graperies, Peach Houses, &c.; every convenience for carrying on an extensive business, with good Seed and Jobbing trade attached; the whole can be taken at a valuation or a fixed amount.

For particulars apply to KIRKHAM & SON, Estate Agents, 149, Western Road, Brighton, or to Mr. SEARS, Nurseryman, &c., Park Street, Brighton.

International Horticultural Exhibition Sale.

MR. J. C. STEVENS begs to announce that he will include in the above SALE a Collection of NORTH AMERICAN PLANTS, including several rare species, exhibited by Mr. R. M Stark of Edinburgh.

More detailed particulars in the Catalogue.

International Horticultural Exhibition Sale.

MR. J. C. STEVENS begs to announce that he will include in the above SALE several valuable Collections of rare CONIFERS, STANDARD HOLLIES, HARDY EVERGREEN SHRUBS, &c., exhibited by Messrs. G. Jackman & Son, of Woking.

More select particulars in the Catalogue.

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MR. J. C. STEVENS begs to announce that he will include in the above SALE a Collection of ORNAMENTAL PLANTS and SPECIMEN FERNS exhibited by Mr. W. Brown, of Rainhill Hall, near Barnoldham

More detailed particulars in the Catalogue.

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MR. J. C. STEVENS begs to announce that he will include in the above SALE a choice Collection of Specimen AZALEAS, ACACIAS, ALLAMANDAS, BORONIAS, ERIOSTEMONS, POLYGALAS, PLEROMAS, &c., exhibited by Mr. Fraser, of Lea Bridge, N.E.

More detailed particulars in Catalogue.

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MR. J. C. STEVENS begs to announce that he will include in the above SALE some magnificent ARAUCARIAS and DRACÆNAS exhibited by Mr. William Bull, of Chelsea.

Catalogues will shortly be ready, and can be obtained on application to Mr. J. C. Stevens, Auctioneer & Valuer, 38, King Street, Covent Garden, London, W.C.

International Horticultural Exhibition Sale.

MR. J. C. STEVENS begs to announce that he will include in the above SALE a large collection of NEW CALADIUMS, exhibited by M. Bleu, of Paris

More detailed particulars in Catalogue.

International Horticultural Exhibition Sale.

MR. J. C. STEVENS begs to announce that he will include in the above SALE a large collection of magnificent DICKSONIAS, HYMENOPHYLLUMS, CYATHEAS, &c., including some of the finest Plants in the kingdom, exhibited by Mr. J. Watson, of New Zealand Nursery, St. Albans.

More detailed particulars in the Catalogue.

International Horticultural Exhibition Sale.

MR. J. C. STEVENS begs to announce that he will include in the above SALE several Collections of HARDY DECIDUOUS TREES and SHRUBS, Hardy Climbing Plants, New Roses, Specimen Hollies; Standard, Conical, and Variegated Pelargoniums; and a fine Collection of Rare Specimen CONIFERS, exhibited by Mr. William Paul, of Waltham Cross.

More detailed particulars in the Catalogue.

International Horticultural Exhibition Sale.

MR. J. C. STEVENS begs to announce that he will include in the above SALE a Collection of Specimen CONIFERS and Choice HARDY SHRUBS, exhibited by Messrs. J. & C. Lee, of Hammersmith

More detailed particulars in the Catalogue.

International Horticultural Exhibition Sale.

MR. J. C. STEVENS begs to announce that he will include in the above SALE a fine Collection of Specimen CONIFERS, exhibited by Mr. Charles Turner, of Slough.

Catalogues will be ready in the beginning of the week.

International Horticultural Exhibition Sale.

MR. J. C. STEVENS begs to announce that he will include in the above SALE some fine Specimen STOVE and GREENHOUSE PLANTS exhibited by Mr. Williams, of Holloway.

More detailed particulars in the Catalogue.

International Horticultural Exhibition Sale.

MR. J. C. STEVENS begs to announce that he will include in the above SALE a splendid Collection of HARDY RHODODENDRONS, RARE CONIFERS, and Choice ORNAMENTAL TREES and SHRUBS, exhibited by Mr. Standish, of Ascot. More detailed particulars in the Catalogue.

International Horticultural Exhibition Sale.

MR. J. C. STEVENS begs to announce that he will include in the above SALE a Bed of choice RHODODENDRONS, exhibited by Messrs. G. Jackman & Sons, of Woking.

More detailed particulars in the Catalogue.

International Horticultural Exhibition Sale.

MR. J. C. STEVENS begs to announce that he will include in the above SALE some of the choice PLANTS exhibited by Mr. J. Linden, of Brussels.

More detailed particulars in the Catalogue.

To the Exhibitors at the International Horticultural Show.

MR. J. C. STEVENS will feel greatly obliged to the Exhibitors at the above Show, if they would forward to him at once, a detailed list for insertion in the GENERAL SALE CATALOGUE, which will be published and distributed as soon as the Lists are sent to the Auction Offices.

38, King Street, Covent Garden, London, W.C.

Sales by Auction.

Sale of Plants at the International Flower Show.

MR. J. C. STEVENS begs to announce that in consequence of the days of Exhibition being extended to Thursday next, May 31, the SALE by AUCTION on the building of PLANTS left by the EXHIBITORS will not take place till FRIDAY, June 1, and following days.

Exhibitors desirous of having their Plants inserted in the CATALOGUE must send detailed lists to Mr. Stevens, 38, King Street, Covent Garden, W.C., or to their office in the Building) not later than MONDAY EVENING NEXT. Catalogues will be ready for distribution on Wednesday Morning, and may be had on application.

Important Sale of Plants at Claremont, Surrey.

BY ORDER OF THE TRUSTEES OF HIS MAJESTY THE LATE KING OF THE BELGIANS.

MR. J. C. STEVENS begs to announce that he has been honoured with instructions to prepare for SALE by AUCTION, at Claremont Gardens, Esher, Surrey, on MONDAY, June 4, and following days, at 12 o'Clock precisely each day, without reserve, by order of the Trustees of his Majesty the late King of the Belgians, the Choice and Select Collection of STOVE, GREENHOUSE, and ORNAMENTAL-FOLIAGED PLANTS, consisting of fine Specimen Palms, Camellias, Orange Trees, Indian Azaleas, Rhododendrons, Ferns, Epacris, Acacias, Pot Roses, Dracænas, Gardenias, Aloes, Cactus, Cytisus, Cyanophyllums, Begonias, Caladiums, Anthuriums, Gloxinias, Achimenes, Pimeleas, Pteromas, Oxylobiums, Cytists, Conifers in pots, Leschenaultias, French Geraniums, &c.; and a large assortment of Bedding-out Plants, Fruiting and Succession Plants, Vines, &c.

On view the Friday and Saturday prior, and Mornings of Sale, and Catalogues had of Mr J. C. STEVENS, Horticultural Auctioneer and Valuer, 38, King Street, Covent Garden, London, W.C.

Dr. Lindley's Scientific and General Library.

MR. J. C. STEVENS begs to announce that he has been favoured with instructions from the Executors of the late Dr. Lindley to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, May 30, and following days, at 12 o'Clock precisely, without reserve, the MISCELLANEOUS and GENERAL LIBRARY, being the portion not taken by the Royal Horticultural Society, including many very valuable works also, a MICROSCOPE, and sundry Miscellaneous Articles, being a portion of the Effects of the late Dr. Lindley.

On view the Day prior and Morning of Sale, and Catalogues had.

Hampstead Road.

TO NOBLEMEN, GENTLEMEN, NURSERYMEN, AND OTHERS.

IMPORTANT SALE OF THE WHOLE OF THE VALUABLE GREENHOUSE AND BEDDING PLANTS.

MESSRS. PROTHEROE AND MORRIS are instructed by the Administrators of the late Mr. J. Pearson, to submit for Unreserved SALE by AUCTION, on the Premises, Eschol Nursery, Hampstead Road, opposite the Chalk Farm Station on the North London Railway, on MONDAY, May 28, and following day, at 12 o'Clock precisely each day, the whole of the valuable GREENHOUSE and BEDDING PLANTS, including a large quantity of Azalea indica, Double Camellias, Orange Trees, Daturas, Myrtles, Ferns, Epacris, Ericas, Begonias, Eriostemon, &c.; Also Scarlet, Variegated, and Z nale Geraniums; Pelargoniums, Cineraria, Fuchsias, Heliotropes, and quantity of fine growing Marguerite Chrysanthemums, &c.; together with sundry Lights, Garden Pots, Iron Hand Lights, Drain Pipes, Tiles, Bell Glasses, Barrows, two Iron Rollers, White Lead, Manure, and numerous other effects.

May be viewed prior to the sale. Catalogues may be had on the Premises; of the principal Seedsmen in London; and of the Auctioneers and Valuers, Abercrash Nurseries, Leytonstone, Essex.

N.B. The whole of the Greenhouses, Circular Iron-roof Conservatory, extensive Ranges of Pits, Thousands of Bricks, York Paving, Flower Pipes, Boilers, &c., will be Sold by Auction on Monday, June 18.

Sale of Choice Greenhouse and Bedding Plants.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, at 38 and 39, Gracechurch Street, City, E.C., on FRIDAY, June 1, at 1 o'Clock precisely, a Choice Assortment of GREENHOUSE PLANTS, including fine Azalea indica, Show and Fancy Pelargoniums, Scarlet and Variegated Geraniums, Roses in pots, Hardy Climbers, &c., with a variety of Ornamental Plants for Bedding.

On view the Morning of Sale. Catalogues had at the Rooms, as above; and of the Auctioneers and Valuers, Leytonstone, N.E.

THE AERIAL CHAIR.

WONDERFUL APPLICATION OF THE PRINCIPLE OF OSCILLATION.

FOR THE GARDEN, CONSERVATORY, AND NURSERY.

Entirely "Self-acting," the operator requiring no assistance whatever, and so easy of motion that a Child can propel itself to any desired altitude without the slightest danger of accident. It has been pronounced a marvel of ingenious mechanism, and cannot fail to become a necessary adjunct to every well-appointed Garden and Nursery, while for Invalids it will be hailed as a means of recreation and hygienic exercise never before offered them. They are very easily fitted up in any ordinary-sized room, and can be attached to the ceiling by means of a few common iron bolts. The only instructions necessary for the use of this invention are, that the person upon being seated simply presses the feet against the footboard, which will at once set the Chair in motion.

For Gardens or Lawns the "AERIAL CHAIR" can be secured to the branch of a tree or to the framework of an ordinary Swing.

Manufactured of Wrought Iron, in three different sizes, to wit:—

Size No. 1, suitable for Children ... ... price £2 2s. | **Size No. 2**, suitable for Youths ... ... **£2 10s.**

No. 3, suitable for Adults ... ... **£3 3s.**

These prices include packing, but not carriage. The suspending rods are about 8 feet in length. Extra rods can be obtained, if required, at 2*s.* 6*d.* per foot. The Seat to the "AERIAL CHAIR" is of wood, and moveable. Iron Seats, in imitation of Cane, can be had at 15*s.* each.

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TRADE MARK—"AERIAL CHAIR."—TERMS CASH.

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CHARLES POMEROY BUTTON, Nos. 142 & 143, CHEAPSIDE, LONDON, E.C.

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THE GARDENERS' CHRONICLE
AND
AGRICULTURAL GAZETTE.

A Newspaper of Rural Economy and General News.

No. 22.—1866.] SATURDAY, JUNE 2. {Price Fivepence. / Stamped Edition, 6d.

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ROYAL HORTICULTURAL SOCIETY, SOUTH KENSINGTON.

NOTICE.—A MEETING of the FRUIT and FLORAL COMMITTEES will be held on TUESDAY, June 5, at 11 o'Clock, and LECTURE by JAMES BATEMAN, Esq., F.R.S., on "Jonesia Asoca," at 3. Band and Promenade at 4. Admission 2*s.* 6*d.*

ROYAL HORTICULTURAL SOCIETY.—The EXHIBITIONS will be HELD on THURSDAYS, viz.: SUMMER EXHIBITION, June 14; and the ROSE SHOW, June 28.

Schedules may be had on application. Admission on June 14 by Fellows' privileged Tickets, to be had gratis prior to the day, 2*s.* 6*d.*; Public, 3*s.* 6*d.*; or on the Day, 5*s.*; on June 28, subject to same regulations, 3*s.* 6*d.*, 5*s.*, or 7*s.* 6*d.* Bands at 3.30.

WATERER and GODFREY'S Magnificent Display of RHODODENDRONS is now open.

ROYAL HORTICULTURAL SOCIETY.—Messrs. WATERER and GODFREY'S magnificent display of RHODODENDRONS under the Great Tent, Opens THIS DAY, SATURDAY, June 2. Admission 2*s.* 6*d.* Band of the Scots Fusilier Guards at 3.30.

ROYAL HORTICULTURAL GARDENS.—PERMANENT EXHIBITION of HORTICULTURAL ELEGANCIES, and HORTICULTURAL and AGRICULTURAL IMPLEMENTS. Amongst the Exhibitors may be quoted the Coalbrook Dale Co., Messrs. Doulton, Burslem, Jones & Son, Hooper, Naylor & Co., Braby, Patent Concrete Stone Co., Whitwick Colliery Co., Claudet & Houghton, Britannia Rubber Co., Lucking Bros., Mellinap & Harris, and about 30 others. There are still a few advantageous positions vacant, applications for which should be made early to

Mr Fox, Royal Horticultural Gardens, South Kensington.

ROYAL BOTANIC SOCIETY'S GARDENS, Regent's Park.—The EXHIBITION of PLANTS, FLOWERS, and FRUIT, will take place on WEDNESDAY NEXT, June 6th. Tickets to be obtained at the Gardens and of the Society's Clerk, Austin's Ticket Office, St. James's Hall, by vouchers from Fellows of the Society, price 5*s.*, and on the day of exhibition 7*s.* 6*d.* each. Gates open at 2 o'clock. Bands will play from 2 to 7 o'clock.

ROYAL BOTANIC SOCIETY'S GARDENS, Regent's Park.—AMERICAN PLANTS.—The EXHIBITION of JOHN WATERER'S AMERICAN PLANTS will take place on SATURDAY, June 4th and 16th. Gates open at 2 o'clock. The Band will play from half-past 2 till half-past 6. Tickets to be had at the Gardens, and of the Society's Clerk, Austin's Ticket Office, St. James's Hall, price 2*s.* 6*d.* each.

ROYAL BOTANIC SOCIETY'S GARDENS, Regent's Park.—EXHIBITION of JOHN WATERER'S AMERICAN PLANTS. The Gardens will be OPEN to the PUBLIC, on THURSDAY, June 7th; FRIDAY, June 8th; and SATURDAY, June 9th, from 10 to 7 o'clock. Admission 1*s.* each.

By order of the Council, C. W. SWEPSTONE, Secretary.

Royal Botanic Gardens, Regent's Park.

JOHN WATERER'S RHODODENDRONS at the above Gardens are NOW on VIEW DAILY, and will continue in great beauty for several weeks.

CRYSTAL PALACE.—GREAT ROSE SHOW, SATURDAY, 23d JUNE. Schedules may be had on application to

I. WILKINSON, Superintendent.

UNITED HORTICULTURAL SOCIETY.—The FIRST MONTHLY MEETING for the present year will be held at the Green Dragon Hotel, Bishopsgate Street, E.C., on TUESDAY NEXT, June 5.

The Meeting will commence at 7 P.M., at which time Members and others producing specimens for exhibition or discussion should have them ready. All communications to be addressed to

WILLIAM HEALE, Secretary.

14, George Terrace, Brook Street, Upper Clapton, N.E.

UNITED HORTICULTURAL BENEFIT and PROVIDENT SOCIETY.—The FIRST MEETING for the PROPOSAL of MEMBERS will be held at the Green Dragon Hotel, Bishopsgate Street, E.C., on MONDAY, June 11, at 7 P.M.

Applications for Rules, &c., to be made to WILLIAM HEALE, 14, George Terrace, Brook Street, Upper Clapton, N.E.

EIGHTH YEAR of the GRAND YORKSHIRE GALA at YORK, 13th and 14th June.—The FLORAL FETE (Prizes above £400) will be held in the splendid building specially erected for the Yorkshire Fine Art and Industrial Exhibition, in the Bootham Field, York.

ENTRIES CLOSE on WEDNESDAY, the 6th of June. Prize Schedules, &c., on application to JNO. WILSON, Sec., 13, New St., York.

BOSTON FLORAL and HORTICULTURAL SOCIETY.—The FIRST EXHIBITION will be held in Major Hopkins' Park on THURSDAY, June 21.

For Schedules, &c., apply to the Honorary Secretaries, Mr. W. H. BAILS, Solicitor, Boston; Mr. JON COCKS, West Skirbeck Nursery, Boston.

LEICESTER and LEICESTERSHIRE FLORAL and HORTICULTURAL SOCIETY.

President—The Right Hon. EARL HOWE.

The GREAT SUMMER FETE of this Society will be HELD on the LEICESTER RACE COURSE, on TUESDAY and WEDNESDAY, July 3d and 4th. In addition to the usual attractions of the ROSE SHOW, Prizes will be offered for CAGE BIRDS and PIGEONS.

For particulars see Programme, which may be had of the Secretary.

By order of the Committee, WM. PENN COX, Secretary.

37, Market Place.—May, 1866.

THE ANNUAL GRAND FLORAL HORTICULTURAL EXHIBITION of FRUIT, FLOWERS, and VEGETABLES, will be held at Sleaford on THURSDAY, July 19, 1866.

FRANK WARWICK, Secretary, North Road Nursery, Sleaford.

CLAY CROSS HORTICULTURAL SOCIETY.—The NINTH ANNUAL SHOW and FETE, under the patronage of His Grace the DUKE OF DEVONSHIRE, and others of the Nobility and Gentry of the neighbourhood, will be held at Clay Cross on TUESDAY the 31st of July next. Amount of the Premiums £354. Schedules and Forms of Entry may be obtained on application to

J. STOTLARD, Hon. Sec., Clay Cross, near Chesterfield.

International Exhibition.

INDIAN AZALEAS, all the finest kinds as exhibited. Good bushy Plants from 18*s.* per doz.

J. R. TANTON, Nurseryman, Epsom, Surrey.

Notice.

WATERER and GODFREY beg to state that the AMERICAN PLANTS at KNAP HILL are NOW in GREAT BEAUTY; they are this year finer than usual.

The Knap Hill Nursery is readily reached by Train from Waterloo Station to Woking (40 minutes). Conveyances are to be had at Woking Station.

New Double Pyrethrums.

JOHN SALTER'S Collection of these beautiful Summer Flowers is NOW in BLOOM, as also the HERBACEOUS PEONIES and IRIS GERMANICA.

Open to Visitors every day, except Sunday.

Versailles Nursery, William Street, Vale Place, Hammersmith, W.

(Near Kensington Railway Station.)

CASTLE KENNEDY FIG.—Plants of the above may now be had at 10*s.* 6*d.* and 21*s.* each; the usual discount to the Trade. PETER LAWSON & SON, Edinburgh and London.

Roses in Pots.

PAUL and SON, in addition to the NEW ROSES of 1866, can offer fine Plants of the finest TEA-SCENTED NOISETTES and best HYBRID PERPETUAL ROSES in pots for Planting during present and next month.

Old Cheshunt Nurseries, N.

TRANSPLANTED RHODODENDRONS.—4-year-old Hybrids raved from the choicest Crimson, White, and Claret-coloured sorts, 12*s.* 6*d.* per 100, or 1000 for £5.

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Milford Nurseries, near Godalming, Surrey.

British Fern Catalogue.

ROBERT SIM can now send, post free for six postage stampe, Part I. (British Ferns and their varieties, 36 pages, including prices of Hardy Exotic Ferns) of his NEW and PRICED DESCRIPTIVE CATALOGUE of BRITISH and EXOTIC FERNS, No. 7

*** Part II. (EXOTIC Ferns) will be issued as early as possible.

Foot's Cray Nursery, S.E.

REBECCA, the finest BEDDING GERANIUM ever raised. Plants ready in May, price 5*s.* each.

See WM. PAUL'S SPRING CATALOGUE.

PAUL'S Nurseries, Waltham Cross, London, N.

Mrs. Pollock Geranium.

THOMAS J. BOOTH has still to offer a few hundreds to the Trade only, at 7*s.* per 100, strong plants. Retail price on application. Bainbridge Nursery, Penrith.

MRS. POLLOCK GERANIUMS, 12*s.*, 15*s.*, and 18*s.* per doz.; SCARLET and VARIEGATED GERANIUMS, VERBENAS, CALCEOLARIAS, FUCHSIAS, PETUNIAS, LOBELIAS, KONIGA, &c., packing included, £1 the 100, 60 for 10*s.* 6*d.* NEW DESCRIPTIVE PRICED CATALOGUE now ready and free on application.

W. HOOPER, Nurseryman, Seedsman, &c., New Wandsworth, S.W.

BEATON'S GERANIUMS, at Reduced Prices.—Indian Yellow, Donald Beaton, Orange Nosegay, Scarlet Gem, Princess Lichtenstein, Diamantina, 1*s.* each, 9*s.* per dozen, not less than six of a sort. Fulgens, Pillar of Beauty, and Waltham Seedling, 1*s.* 6*d.* each, 12*s.* per doz. Amy Hogg, 1*s.* 6*d.* each, 16*s.* per doz. Alexandra, 2*s.* each, 18*s.* per doz. For other sorts see separate Advertisement.

WM. PAUL, Paul's Nurseries, Waltham Cross, London, N.

Tricolor-leaved Geraniums.

WANTED to PURCHASE, Specimen Plants of the leading kinds.

Apply to E. G., Post Office, Hull.

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100,000 Bedding Plants.

C. ELWIN and CO. beg to offer the above, from 2*s.* 6*d.* to 6*s.* a dozen. Banker's reference or Post Office Order from unknown correspondents.

Address, 9, Park Terrace, Regent's Park; or Clifton Nursery, Clifton Villas, Maida Hill.

Bedding Plants, Bedding Plants,

2*s.* 6*d.* to 3*s.* per dozen; 20*s.* per 100; out of pots, 16*s.* per 100.

TOOLE and CO. beg to offer the above, of which they hold a fine stock of the best selected varieties.

Westmoreland Buildings, Dublin.

500,000 Bedding Plants.

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CATALOGUES on application. The Stock well hardened off.

Bedding Plants, Bedding Plants.

JAMES HOLDER can supply VERBENAS, SCARLET and VARIEGATED GERANIUMS, DAHLIAS, CALCEOLARIAS, FUCHSIAS, PETUNIAS, LOBELIAS, GAZANIAS, KONIGAS, CUPHEAS, &c. Eight dozen for 20*s.*, or four dozen for 10*s.* 6*d.*, hampers and package included.

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SEEDS for the GARDEN and FARM, all saved from the finest selected stocks.

DESCRIPTIVE PRICED LISTS free on application.

BUTLER & MCCULLOCH, Covent Garden Market, W.C.

J. IVERY AND SON beg to announce their NEW PRICED DESCRIPTIVE CATALOGUES of AZALEA INDICA, and No. 10, HARDY BRITISH FERNS. Dorking.—June 2.

JAMES FAIRHEAD AND SON, SEED GROWERS and MERCHANTS, 7, Borough Market, London, S.E.

New and Genuine AGRICULTURAL, GARDEN, and FLOWER SEEDS. Special prices and advantageous offers on application.

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All packets of Flower Seeds sent post paid.

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Choice PRIMULA, 1*s.* and 2*s.* 6*d.* per packet.

Choice CINERARIA, 1*s.* and 2*s.* 6*d.* per packet.

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WANTED, CALCEOLARIA VICTOR EMMANUEL. State price to

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DRUMHEAD CABBAGE PLANTS. ROBINSON'S, true, 2*s.* 6*d.* per 1000 for cash at

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Now Ready for Planting.

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Application with references to Mr. JOHN CLAY, Bardney Dairies, Lincolnshire.

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FRANCISCEA CALYCINA		10	6
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TRITOMA UVARIA GLAUCESCENS		12	0

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TO BE SOLD, PHALÆNOPSIS SCHILLERIANA, 2 plants, one very fine; PHALÆNOPSIS AMABILIS; CATTLEYA BULBOSA, flowering plant; LÆLIA ELEGANS, 2 plants; ODONTOGLOSSUM PESCATOREI, small, in pots; ODONTOGLOSSUM CERVANTESII; CATTLEYA WAGNERI, strong bulbs from the original plant Price 30 guineas

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ANTHURIUM REGALE, 42s ; extra strong, 105s.
MARANTA LINDENI, the extraordinary transparent species, leaves nearly size; extra strong, 105s
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PASSIFLORA MACROCARPA, bearing fruit (5 lb. weight
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Catalogues can be obtained free by post on application to J. L.'s Agents—Messrs. R. Sillerman & Sons, 6, Hart Lane, Great Tower Street; or direct from the Royal Zoological and Horticultural Gardens, Brussels

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With Orders from correspondents unknown to J. & S., either a remittance or London reference is respectfully requested.

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Grande Duchesse de Bade (Verschaffelt)	Imperialis (Veitch) (Versch.)
La Reine des Pays Bas (Maechaut)	Jacques Van Arteveldt (A. Verschaffelt)
Alexandre Van Langenhove (Van Houtte)	Le Roi des Flandres (Veitch)
Alexis Dejaiter (Van Houtte)	Max milan I (Van Houtte)
Ambroise Verschaffelt (V. Houtte)	Mme de Cannart d'Hamale (D. Vervaene)
Antoine Dauthy (V. de Houtte)	Mme Destordes Valmore (Van Houtte)
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Each 2s. 6d. per packet.

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Chrysanthemums.

FIRST PRIZES STOKE NEWINGTON and GUILDHALL, 1865.

ADAM FORSYTH begs to inform the Public that he is now sending out his large COLLECTION of CHRYSANTHEMUMS, at 6s. per dozen, including Attraction, Eve, Golden Ball, Golden Dr Brock, Hercules, King of Denmark, Lady Carey, Mr. Brunlees, Mr Wyness, Mrs. Rains, Pink Pearl, Prince of Wales, Sam Weller, Venus, Virgin Queen, &c.

CATALOGUES for one stamp.

Brunswick Nursery, Stoke Newington, N.

WILLIAM RUMLEY, Sandrydge Gardens, Gilling, near Richmond, begs to intimate to his Friends and the Public that he intends continuing the BUSINESS in all its branches as hitherto carried on at this Establishment, and he hopes to conduct it in such a manner as to merit a larger share of public patronage.

Sandrydge Gardens.

Novelties, Novelties.

JAMES GARAWAY AND CO., Durdham Down Nurseries, Bristol, offer the Three undermentioned NEW SEEDLING GERANIUMS as not only Novelties but decided acquisitions:—

TRICOLOR SECTION.

QUEEN of TRICOLORS.—This variety surpasses in beauty the well-known Mrs. Pollock, from which it is a seedling; the colours are of the same shade but much more vivid, and, being a great improvement, the green colour does not project itself beyond the zone. The flowers are produced in abundance, and are scarlet in colour and of good shape.

Well-established Plants will be supplied the last week in June, at 21s. each. Four sent when Three are ordered.

CLOTH OF GOLD SECTION.

BRONZE QUEEN.—A variety raised from Cloth of Gold, with foliage of same colour, but with the addition of a dark bronze zone distinctly marked; of good dwarf habit, free in growth and very effective, well adapted for bedding; flowers scarlet cerise, produced in good-sized trusses.

Price 7s. 6d. each. Four sent when Three are ordered.

NOSEGAY SECTION.

L'AFRICAINE.—A hybrid Nosegay of compact habit, with extra fine trusses of purplish crimson flowers, which, elevated on stiff flower stems, produce a very fine effect. As a plant for the back or second row of a ribbon border or centre of bed, this will be found a very attractive acquisition.

Price 5s. each. Four sent when Three are ordered.

Prices to the Trade on application.

JAS. GARAWAY & Co.'s SPRING CATALOGUE, containing Priced Lists of Stove and Greenhouse Plants, Ferns, and Bedding-out Plants, is now ready, and will be forwarded post free on application.

JAS. GARAWAY & Co., Durdham Down Nurseries, Bristol.

Brighton and Sussex Seed Warehouse.

EDWARD CARPENTER'S MIXTURES of PERMANENT GRASS and CLOVER SEEDS — Best quality, 36s. per acre (2 bushels light seeds, and 12 lb. Clovers and small seeds per acre).—See testimonials in Catalogue.

EDWARD CARPENTER'S RENOVATING MIXTURES for Improving Old Pastures.

PRICED CATALOGUES of KITCHEN GARDEN, FLOWER, and FARM SEEDS now ready.

EDWARD CARPENTER, Seed Merchant and Grower, 96, St. James's Street, Brighton.

BATH AND WEST OF ENGLAND AGRICULTURAL SOCIETY.

SALISBURY MEETING, 1866.

STAND 179.

SUTTON & SONS

BEG TO INFORM THEIR PATRONS AND THE PUBLIC GENERALLY THAT THEY WILL HAVE AN

EXTENSIVE STAND IN THE SHOW YARD

DURING THE ABOVE MEETING, CONSISTING OF

A COLLECTION of ONE THOUSAND SEPARATE KINDS of SEEDS, arranged in Glass Cases and Labelled with their Botanical and Popular Names.

A COLLECTION of THREE HUNDRED SAMPLES of the most approved kinds of AGRICULTURAL SEEDS.

A COLLECTION of NATURAL GRASSES in Dried and Growing State, showing their respective habits.

A COLLECTION of AGRICULTURAL ROOTS, including some very fine specimens of their improved varieties of MANGEL WURZEL, &c.

Attendance will be given at the Stand, and orders received for Seeds of genuine and superior quality.

All Goods carriage free, except very small parcels.

PRICED LISTS GRATIS AND POST FREE.

SUTTON AND SONS, ROYAL BERKSHIRE SEED ESTABLISHMENT, READING.

VERBENA CRIMSON KING,

AS DESCRIBED IN FORMER ADVERTISEMENTS, NOW BEING SENT OUT BY

THOMAS METHVEN,

LEITH WALK NURSERIES, and 15, PRINCES STREET, EDINBURGH.

ADIANTUM FARLEYENSE, True.

ROBERT T. VEITCH

HAS MUCH PLEASURE IN OFFERING FOR THE FIRST TIME TO THE PUBLIC

THIS VERY HANDSOME VIGOROUS-GROWING STOVE FERN,

SO UNIVERSALLY ADMIRED AT THE LATE INTERNATIONAL EXHIBITION.

This Adiantum was introduced from Barbadoes by Thomas Daniels, Esq., Stoodleigh, Tiverton.

Plants will be ready in July next at 42s. each. Usual allowance to the Trade.

☞ *Orders are now being booked, and will be executed in rotation as received.*

NURSERY: NEW NORTH ROAD, N.; SEED WAREHOUSE: 54, HIGH STREET, EXETER.

PETER LAWSON & SON,

THE QUEEN'S SEEDSMEN,

LONDON and EDINBURGH.

FARM, VEGETABLE, and FLOWER SEEDS.

28, KING STREET, CHEAPSIDE, LONDON, E.C

NOTICE. — NEW HARDY CLIMBERS.

CLEMATIS PRINCE of WALES. — Large flowers of a rich deep violet purple, with red bars down the centre of each sepal. First-class Certificate. 21s. each.

CLEMATIS RUBELLA. — Very fine rich velvety claret; stamens pale green. First-class Certificate. 21s. each.

The usual allowance to the Trade, and a List of Firms will be advertised at a later period.

See Proceedings of Royal Horticultural Society's Scientific Meetings, June 27th, 1865, page 124, where JAMES BATEMAN, Esq., called attention to a few prominent objects, of which the following is an extract referring to the above Clematises:—

"In the room you will notice an exhibition of Clematises, all of which are of a most magnificent type. Nothing can be more beautiful than these Clematises. See what fine large blue and purple petals they have, shining in some cases with metallic tints like the flowers of certain Ipomœas. They are varieties raised by these most successful hybridisers—Messrs. JACKMAN, of Woking, who will have the honour of introducing quite a new race of Clematises, which I believe will be amongst the best, if not the very best ornaments for all out-of-door walls, &c."

MESSRS. GEORGE JACKMAN & SON

Have much pleasure in informing the Public they shall be in a position to SEND OUT the above two NEW CLEMATISES in the coming Autumn (1866).

Orders will be taken now, and the Plants will be forwarded strictly in rotation.

WOKING NURSERY, SURREY.

SCARLET GERANIUMS (BEATON'S RACE).

WILLIAM PAUL

(SON and Successor to the late A. PAUL,)

HAS TO OFFER THE FOLLOWING

NEW ZONALE AND HYBRID NOSEGAY GERANIUMS,

Which have been selected from several Thousand Seedlings, raised from the stock of the late Mr. DONALD BEATON. Every one now offered is believed to be in advance of or distinct from all pre-existing kinds. The Plants will be delivered in rotation as far as the stock will allow.

Group 1.—Bedding Varieties.

, Any 12 varieties from this and the two following Groups may be selected by the purchaser for £2 2s.

BANNERET.—Flowers crimson, scarlet, and purple shaded, very bright and beautiful; a hybrid nosegay. Price 3s. 6d. each.

FAIRY QUEEN.—Rosy purple; a large smooth flower, very distinct and effective. Price 3s. 6d. each.

MINSTREL, a peculiar and pleasing shade of salmon, something in the way of Lord Palmerston, but brighter in colour and broader in the petals.

MONTE ROSA, dark rosy-purple, pleasing colour, large truss, very fine. Price 5s. each.

NIMROD, orange-scarlet, white eye, large flower and truss, foliage and habit fine. Price 3s. 6d. each.

PHŒNIX, in the way of "Stella" in habit and general character, the colour flamboyant-scarlet. Price 5s. each.

PRINCE OF ORANGE, orange-scarlet, very bright; great substance, good habit prodigious bloomer. Price 3s. 6d. each.

PEACH NOSEGAY. Flowers deep, bright peach colour, very free bloomer, splendid truss, plain leaf, first-rate and distinct. Price 5s.

REBECCA.—Cherry colour, fine truss, dwarf compact habit, very profuse, the finest bedding Geranium yet raised. First-class Certificate. Price 5s. each

ST. GEORGE.—Dark chestnut, shaded with blackish crimson, quite unique, very free and effective, an entirely new colour among Pelargoniums. First-class Certificate. Price 5s. each

SALMON NOSEGAY.—Flowers pure salmon, large truss, good. First-class Certificate. Price 3s. 6d. each.

SIR J. PAXTON.—Flowers true orange, very bright, fine large truss, a splendid variety for massing. Price 5s. each.

WOOD NYMPH.—Salmon pink, large and fine. Price 3s. 6d. each.

Group 2.—Varieties especially recommended for Growing in Pots or Vases.

BRIDE.—Flowers white, with large crimson eye, of fine shape and substance; a first-class variety for pot culture. Price 3s. 6d. each.

CARDINAL.—Flowers dark orange scarlet. For shape, substance, colour and habit, this is in advance of any scarlet variety yet raised. Price 6s. each.

CELESTIAL.—Flowers rosy lake, with fiery spot on upper petals, their centres bluish purple, resembling the "Cactus speciosissimus," large white eye, new in colour, and very beautiful. Price 5s. each.

LORD CHANCELLOR.—Salmon pink, white eye, perfect shape, very free, fine habit. Price 3s. 6d. each.

POET LAUREATE.—Rosy purple, top petals orange scarlet, yellowish eye, perfect shape. Price 3s. 6d each.

TIARA.—Flowers scarlet crimson suffused with purple, good truss, very free, fine habit; quite distinct from any yet raised, and very lovely. Price 5s. each.

Group 3.—Miniature or Pompon Varieties.

DIAMOND.—Fine scarlet purple centre, white eye, flowers profusely, habit good, distinct. Price 3s. 6d. each.

DRYAD.—Beautifully rosy pink, fine shape and truss. Price 3s. 6d. each.

NAIAD.—Flowers purple, scarlet top; pleasing and distinct. Price 3s. 6d. each.

WALTHAM LILAC.—Flowers true lilac, very profuse; a new and desirable colour, excellent for massing. Price 5s. each.

ZEPHYR.—Flowers light purple top, petals rose colour; stands the rain and sun well, very dwarf and free. Price 3s. 6d. each.

Group 4.—Bedding Varieties sent from these Nurseries Last Year.

Many of them have received First-class Certificates from the Royal Horticultural and Royal Botanic Societies of London, and those marked thus *** have been awarded the highest marks of merit in the Royal Horticultural Society's Trial Ground at Chiswick.

Now Ready, Autumn-struck Plants.

*** ALEXANDRA.—Magenta. Price 2s. 6d. each; 24s. per dozen.

*** AMY ROGG.—Bright purplish rose. Price 2s. each; 18s. per doz.

*** BEATON'S INDIAN YELLOW.—Orange scarlet suffused with yellow. Price 1s. 6d. each; 16s. per dozen.

BLACK DWARF.—Dark crimson. Price 1s. 6d. each; 12s. per dozen.

DONALD BEATON.—Clear orange scarlet. Price 1s. 6d. each; 15s. per dozen.

*** DUCHESS.—Soft rosy lake. Price 2s. each; 18s. per dozen.

FULGENS.—Vivid scarlet. Price 2s. 6d. each.

*** GLOWWORM.—Magenta crimson flushed with scarlet. Price 2s. 6d. each; 24s. per dozen.

MAGENTA QUEEN.—Magenta. Price 3s. 6d. each.

ORANGE NOSEGAY.—Bright orange. Price 1s. 6d. each; 15s. per dozen.

PILLAR OF BEAUTY.—Brick red. Price 2s. 6d. each.

PRINCESS LICHTENSTEIN.—Salmon pink. Price 2s. each; 18s. per dozen.

SALAMANDER.—Brilliant scarlet, large white eye. Price 2s. each; 18s. per dozen.

SCARLET GEM.—Bright orange scarlet. Price 1s. 6d. each; 16s. per dozen.

MRS. WILLIAM PAUL.—Delicate rose pink. Price 2s. 6d. each 24s. per dozen.

WALTHAM SEEDLING.—Dark crimson. Price 2s. each 18s per dozen.

The above Set of 16 varieties, One Plant of each, 24s.

SPRING CATALOGUE, with full descriptions of these and other Plants, Free by Post.

The usual discount to the Trade.

IMPORTANT.—All Letters should be Addressed

WILLIAM PAUL (the Christian name in full), WALTHAM CROSS, LONDON, N.

Two of the leading Fuchsias of the Season, now sending out.

FUCHSIAS ARTISTIC and LORD HOLMESDALE. *Vide* the following Extracts.

"Elegantly formed, graceful variety."—*Gardeners' Chronicle.*
"Very neat and symmetrical."—*Gardeners' Magazine.*
"The habit all that can be wished."—*Mr H Osmaldt, Fuchsia Nursery, Woolwich*, who obtained the First Prize at the International.

A detailed description and price sent on application.
GEORGE FRY, Manor Nursery, Manor Lane, Lee, Kent, S.E.

PETER DRUMMOND AND CO. (late J. SCOTT), Preston Road Nursery, Yeovil, Somerset, have to offer to Intending purchasers upwards of 20,000 BEDDING-OUT FLOWER GARDEN PLANTS, including all the leading varieties of Dahlias, Fuchsias, Geraniums, Heliotropes, Lantanas, Lobelias, Petunias, Salvias, Verbenas, &c. And all kinds of Pinked and Variegated-leaved Plants suitable for the decoration of the Flower Garden, at unprecedented low prices. CATALOGUES free on application

Also SEEDS of every description for the FARM and GARDEN, of the best quality, at moderate prices.

Please address as above.

J. WATSON, New Zealand Nurseries, St. Alban's, begs leave to offer his new BRILLIANT SUPERB GERANIUM for Flower Garden purposes, unrivalled, at 21s per dozen, to be sent out the first week in May. Attached is Mr. Robert Fish's descriptions, who has had it on trial the last two seasons:— "April 12, 1866.

"The Brilliant Superb Scarlet Geranium is one of the very best for bedding in the flower garden or for flowering in pots or boxes. It has the fine compact habit of the old Brilliant, but is rather more luxuriant in growth, has better foliage, which is much more freely supplied with white blotches of a clear colour, and the trusses of flower and the individual flowers are much larger and of a richer scarlet. I have no hesitation in speaking of this variety as one of the most satisfactory that can be used, after trying it for two seasons.

"R. FISH, Puttenham Priory, Linton, Beds."

*** The usual allowance to the Trade.

Hollyhocks.

JOHN THOMPSON begs to offer fine strong Plants, such as will give a magnificent bloom, at 36s. per 100. The Hollyhock is surpassingly fine as a back row in Ribbon Borders.

The following New Sorts can also be supplied in strong healthy Plants ready for planting, 9s. :—

Acme	Hercules	Purple Emperor
Chairman	Jeanie Orr	Orange Perfection
Cygnet	Lady Rokeby	Rev. E. Hawke
Charles Eyre	Madame Vaux	Rev. H. Dombrain
Decision	Mrs. Downie	Rose of England
Hon. Mrs. Cocape	Mrs. Adair	Phœton

And The Marquis, at 2s. 6d. each.

JOHN THOMPSON, Swinhoe Gardens, Chathill, Northumberland.

NEW TRICOLOR-LEAVED PELARGONIUMS. — The beautiful Collection of TRICOLOURED GERANIUMS, exhibited at the Crystal Palace and Grand International Shows by Messrs. F. & A. Smith, may be seen every day (Sundays excepted), at the Dulwich Nurseries, S. The Lower Norwood Station, Crystal Palace Line, and the Dulwich Station of the Chatham and Dover main line, are both within a few minutes' walk of the Nurseries.

A DESCRIPTIVE LIST will be forwarded on application.

N.B. The above will be again Exhibited at the Royal Botanic Society's Exhibition on June 6.

The Gardeners' Chronicle.

SATURDAY, JUNE 2, 1866.

MEETINGS FOR THE ENSUING WEEK.

MONDAY,	June 4	{ Royal Horticultural Rhododendron Show during the week, at South Kensington { Entomological	7 P.M.
TUESDAY,	— 5	{ Royal Horticultural Floral and Fruit Committees, at South Kensington ..	11 A.M.
		{ Public Scientific Discussion	3 P.M.
WEDNESDAY,	— 6	Royal Botanic Second Great Exhibition	2 P.M.
THURSDAY,	7	Linnean	8 P.M.
SATURDAY,	— 9	{ Royal Horticultural (Weekly Show), at South Kensington	2 P.M.

IN gathering up the lessons which the INTERNATIONAL SHOW is calculated to teach, one of the most important, from a horticultural point of view, seems to us to be this—that one-day great flower-shows must now become things of the past. It has long been evident that financially speaking a longer duration for our shows than that of a single day was essential to success; and it has also been abundantly evident that as far as picturesque effect is concerned the advantage is all on the side of an extension of time, as this alone can make it worth while to augment the resources of the show with materials that will serve to compose a studied picture; but practically there has hitherto been this difficulty, that many exhibitors set their faces against the notion, presaging all sorts of damage as being certain to befall their plants.

The experience of the past few days must, we should think—for we take the exhibitors to be reasonable men—have in great measure dispelled any such notions, for they must have now become thoroughly aware that any slight damage which may have been sustained—and a certain amount of damage is of course unavoidable in some instances, which we need not specify—is rather to be ascribed to the accidents incurred in the transit than to the detention of the plants for a few consecutive days in a well-constructed exhibition tent. It appears to us to be abundantly evident, and it must have been equally so, we believe, to the sharp-sighted men to whose skill and experience we are indebted for such brilliant examples of successful cultivation as those which have lately graced the monster tent at South Kensington, that at a well-chosen period of the summer a four-days' or a week's, or even a fortnight's show, would be as safe for their plants as a show of a single day. That point once established, everything tells in favour of a diminution in the number of great flower-shows, and of an extension of the time of their duration. We know, moreover, that some

at least of the principal exhibitors at the International have expressed a preference that their plants should remain several days from home, as it gives them an opportunity they would not otherwise obtain, and that just at the right season, of putting their plant-houses in order, of executing repairs, cleansing, &c.

We venture, therefore, to hope that not only the Societies to whom we must look to carry on the permanent exhibitions of this country, but the exhibitors themselves, and all parties concerned, will see that their own interests lie in the same direction as those of the public. Of the six or eight so-called "great" metropolitan flower shows usually held during the summer the public is heartily tired, but if each Society, on its own ground, or all the Societies acting in combination, instead of dividing their resources, would concentrate them on a single show really deserving the title of "great," and which should be continued over a few days, they would far better please the public, and we believe would also more fully replenish their own finances; for it is a fact well known to those who are experienced in the management of public displays, that the thousands, through whose payments financial success must always be looked for, hear nothing of a one-day's show till it is past, no amount of public announcement being sufficient to gain and fix the public attention at the right moment on attractions that are of so short a duration. For our own part we do not see why those public bodies who have the convenience of space and plant, should not have a continuous show for several weeks at least in the height of the season, closing and replenishing it from time to time as required. In such a case, advertising might be made to do its work thoroughly on a pleasure-seeking public.

We think, moreover, that the days of formal arrangement are now over. It has been shown that an artistic arrangement of the plants exhibited is quite consistent with "science;" that the requirements of the exhibitors and of the connoisseurs are not quite so incompatible with those of the general public as was before imagined; and that we shall not have to deplore much longer that monotonous sameness which wearied so many, not only of the general public, but of the professional spectators. The thin edge of the wedge is fairly driven in, and we may hope now, not only for beautiful shows, but also for the less formal and more natural treatment of the plants exhibited at those shows.

—— THERE is now we hear every prospect that the success of the INTERNATIONAL HORTICULTURAL EXHIBITION will be rendered complete by a favourable balance sheet. During the past week the numbers visiting the Show have been approximately as follows:—Monday, 16,000; Tuesday, 30,000; Wednesday, 25,000; Thursday, 11,000.

—— The SALE BY AUCTION of Specimen Plants, &c., exhibited at the "International," is going on at the time when these lines are in the printer's hands, and will be continued on Saturday. Among the lots are collections of hardy shrubs, climbing plants, Conifers, Hollies, Rhododendrons, &c., from Mr. W. PAUL, Mr. TURNER, Messrs. JACKMAN, Mr. STANDISH, Messrs. PAUL & SONS, OSBORN, IVERY, BULL, and others; Azaleas from Messrs. FRASER, LANE, IVERY, &c.; M. LINDEN has a collection of economic plants, tropical fruit trees, &c.; Ferns are offered by Mr. WATSON, Colonel MILES (Adiantum farleyense), Mr. MARSHALL, Enfield; Agaves by M. JEAN VERSCHAFFELT; Greenhouse plants by Messrs. LEE, &c.; fruit trees by Messrs. JAMIN and DURAND; Fern cases by Messrs. BARE & SUGDEN, &c.

REPORT OF INTERNATIONAL SHOW.

(*Continued from page 486.*)

Garden Plans.—We confess to feeling disappointed at the exhibition of designs and drawings sent in for competition at the International Flower Show. Everything else we believe to have been a great success, but this was a failure. Perhaps the subjects for competition were unwisely chosen. They were too comprehensive in their wants, and too vague as regards the specification of them. How many gardeners are there with the leisure or ability to furnish a plan for a new horticultural garden, a gentleman's pleasure ground, or even a villa garden and grounds of five acres in extent—for small plots of ground for building, with the accessories of carriage road, kitchen and flower garden, and shrubbery, are confessedly difficult. A professional man could not be expected to compete for 10*l.*, and thus the competition lay within the scope of a very limited number of competitors. It would be well in future that such subjects should be avoided, and that prizes for the best arrangement of the glass and borders in the kitchen garden, small flower parterres, either as an independent feature, or as an adjunct to a house (for which a ground-plan should be given), should be substituted for them. Plans and sections might also be added of some existing public garden, and in this case the accuracy of the draughtmanship could be tested by reference to a plan carefully prepared for the purpose. This would call forth a mechanical knowledge highly creditable, and very necessary to every gardener.

It will surprise no one that the designs for the Laying-out of a Public Garden in the form and position of the Horticultural Society's Garden at Kensington should have been wretchedly represented. It was not an inviting task. Fine-art committees, committees of nurserymen and able horticulturists, and the highest patronage had failed to produce anything very striking in the original; and what a confusion of talent had marred, an unknown aspirant could scarcely hope to grapple with successfully. Only two drawings were sent in. The one was unplanted in the centre—unmeaning—that is to say, without any evident attempt at design, and with a belt of shrubs around it; the other was unmeaning, but intersected with walks, planted along the verges. To neither of them was one of the three prizes offered, awarded, on the grounds that a public garden should aim at being a model or standard work of art for the guidance of the national taste in gardening, and plans without any design at all could scarcely come within the sense of the competition.

For the design for Laying-out a Private Garden and Grounds of 20 Acres there were seven entries. The 1st and 3d prizes in this Class were unawarded, but the 2d was given to Mr. Chapman for a very meritorious though faulty drawing. The principal merits were in the disposition of the flower gardens near the house, and in the unconfined view from the windows. The defects were in the approach and lodge entrance at the angle of the boundary, the position of the lodge itself, in the piece of water parallel with the house with "wibble-wobbles" which thus viewed would be almost straight, in the *vis-à-vis* openings through the boundary belt, in the *vis-a-vis* planting in front of the water, and in the undefined outline of the plantations; as, since the paddock would be required for a cow or two, these plantations would necessarily have to be fenced in. Nevertheless, the position of the house was well selected to command the ground, and the sites of the kitchen and flower gardens showed thought and good sense. To attempt a criticism of the others would waste our time, and be useless.

In the next Class, for a design for Laying-out a Villa Garden and Grounds of Five Acres, four drawings were sent in. Mr. T. J. Caparn obtained a 2d prize for a coloured bird's-eye drawing, which hardly deserved it. The redeeming points consisted in its having an open reach of glade, which must almost be regarded as unintentional, as a fine Cedar of Lebanon and Deodar were planted in the line of the vista, and a stretch of water from which Mr. Chapman might take a hint. By the way, we may suggest that unaccompanied by a plan, these isometrical views are not legitimate, as the extent becomes undetermined, and in the case before us 50 acres instead of 5 would be required to realise the design.

Mr. Joseph Newton, 30, Eastbourne Terrace, Hyde Park, showed (not for competition) landscape, architectural, and picturesque views of works executed by himself; also views taken from the grounds of Lord Chief Baron Pollock, the Bishop of London, the gardens of the Royal Horticultural Society, the grounds of the Saltburn Improvement Company, Yorkshire, which are now being laid out by him, and from other sources—altogether an interesting collection.

Drawings.—The water-colour drawings of plants, British or exotic, were a more pleasing entertainment. Of these a drawing by Mr. Slocombe of Rhododendron Nuttallii was decidedly the best. The colouring was soft and harmonious, though a little chalky, and would have been better for rather a richer toning. Mrs. Hill received the second prize for drawings of Oncidium Papilio and Vanda suavis; while the third fell to a very pretty and tastefully grouped bunch of Columbine, by Miss Agnes Boyd. The competition between her and Miss Susan McNab, of Edinburgh, must have been very sharp, and we feel sure the judges must have regretted that they had not at their disposal one of the prizes unawarded in the former classes. Mr. W. G. Smith contributed some pleasing little bits, among others a Primrose plant, the leaves of which were crisply and nicely put in. Mr. Chandler sent a highly-coloured drawing, but there was no relief about it. It stuck together like flattened seaweed on a piece of cardboard, and more pains might have been taken to distinguish the outline of the leaves. Knowing what much better things Mr. Chandler is capable of, we were sorry to see him so badly represented.

We must here allude to some exquisite water-colour drawings, fifty-two in number, exhibited at the Congress by Mr. Julius Platzmann, of Leipsig. They represent various tropical plants, and artistically are of a very high degree of merit. Botanically they are not so useful as they might have been, as no scale of proportion is given, and the artist has sometimes expended skill and pains on some details which would have been better expended on other points. For representation of texture these are truly admirable.

Bouquets, &c.—The 8th section included objects of ornament in natural flowers for the dinner table, drawing-room, bridal and ball bouquets, wreaths, and head-dresses; it also included growing plants arranged in cases, window boxes, jardinets, and hanging baskets. We much regret that this section did not receive more attention from those who are so well able to furnish good specimens of artistic work—amongst all the 20 exhibitors of cut flowers in one form or another, there were but three who evinced good taste in arranging them. Of these Mrs. Lermitte, of Finchley, was undoubtedly the most artistic. Her dinner-table decoration, for which she was awarded the 1st prize, consisted of three circles of looking-glass, the largest placed in the middle, and all three edged with a band of Ferns and Lycopodiums, amongst which were a few flowers, with here and there a taller frond or piece of variegated Cyperus arching over and reflected in the glass below. Over the centre glass an arch had been formed of white coral, against which a frond of golden Fern rested on one side, and one of Adiantum trapeziforme on the other, while bits of Maiden-hair Fern dotted about assisted to screen portions of the coral where necessary. These groups were remarkable for the lightness, gracefulness, and elegance with which a few flowers, and a much larger proportion of foliage, had been thrown together, not studiedly arranged, and impressed us strongly with the idea that they must have been the work of a lady who "couldn't help it," and that from her hands flowers and leaves dropped at once into their places, and never wanted to be touched afterwards.

Next to Mrs. Lermitte we must rank Mr. March, of St. James's Palace, an old and very experienced exhibitor and arranger of flowers. He took the 1st prize for flower stands for the drawing-room table with three circles of looking-glass edged with a row of glass marbles, and having a central stem about a foot high, from the top of which three chains of glass links hung to the edge. At the foot of each central stem was arranged a bouquet of flowers, put together with his usual good taste. Now that chains of all kinds are so much in vogue from top to toe of ladies' attire, Mr. March doubtless thinks he has made a hit in introducing chains of glass amongst arrangements of flowers, for in competing for the dinner-table decorations he has applied the same idea upon a much larger scale, so much larger indeed that but few dining-tables would bear the three massive ornaments which he exhibited, The flowers were large and suitable, being Rhododendrons on either side and purple Iris in the middle; but the whole was so heavy, notwithstanding the relief afforded by the fluted links of the glass cables, that we are not surprised to find only a 3d prize awarded to it.

The only other floral exhibitor to whom we feel bound to refer is Mr. Yates, of Sale, near Manchester, whom we have to thank for an illustration of the fact that beautiful bouquets can be made without adopting the Mushroom-formed arrangement for which Covent Garden Market has long been pre-eminent. The three bouquets with which he took the 1st prize were pyramidal in their general outline, and contrasted remarkably with all the others shown, in that the flowers were few, well-chosen, and not crowded. We hope to outlive the style which at present prevails of cramming as many differently coloured flowers as possible into a certain space, and fringing them with lace or feathers. Such an arrangement doubtless suits the flower sellers, and is encouraged by those possessed of more means than taste, who like to be able to say how many guineas they gave for a certain Cauliflower-headed mass of distorted blooms, mounted upon iron wires; but we feel certain that it is only necessary to show the public a few more such contrasts between the light and the crowded styles of grouping flowers for the hand as were here exhibited, to ensure a preference for the former, ultimately to the complete exclusion of the latter by all possessed of good taste.

From illustrations of elegantly arranged flowers, we pass on to remark upon good designs for vases and other appliances for holding flowers, and amongst these the most praiseworthy were those shown, both for the dining and drawing rooms, by Messrs. James Powell & Sons, of the Glass Manufactory, Whitefriars. But for the clumsy and careless manner in which the flowers were dressed, we believe they would have taken the 1st prize in each case; as it was, no prize was awarded to them, though the judges properly marked their regret that the manufacturers of the vases had not employed competent persons to arrange their flowers for them, by in both instances appending their verdict "highly commended for design."

Another glass manufacturer, Mr. James Green, of Upper Thames Street, had three very elegant stands, which might have obtained prizes had the flowers been better arranged; but even so, their success would have been prejudiced by their not being entered for exhibition as Drawing-room Ornaments, instead of as Dinner-table Decorations, for which they too much obscured the view.

In the prizes for Table Plateaus, only three persons competed, and neither of their productions were strictly plateaus; that shown by Miss Wint, of Brighton, was the best. The only real plateau shown was that bearing the name of Lady Rokeby; and this was entered in another class, and was moreover wanting in lightness of arrangement.

In the Class of Wreaths and Head-dresses we were disappointed at finding only one exhibitor of the required number of three specimens, and this was Mr. Yates, to whom we observe only a 2d prize was given. We presume the judges intended thereby to express their opinion that something better still ought to have been shown, and if that be their meaning, we quite agree with them. The wedding bouquets were numerous, but there was nothing amongst them calling for remark, beyond their generally unwieldy size.

We turn now to speak of arrangements for holding growing plants. Of stands to place in a room (called Jardinets) there were only two, and these so miserably grouped that the prizes were very properly withheld. Of boxes for window-sills there was only one worthy of an award, and that was obtained by Messrs. Cutbush & Son, of Highgate; in this the contrast between the rich blue of the drooping fringe of Lobelia, and the deep chocolate colour of the box, was much admired; the rest were below mediocrity, though the indurated stone box made by Messrs. F. & G. Rosher, of Chelsea, was deserving of better plants. The few who exhibited hanging baskets did not pay that attention to filling them which they should have done; here again the 1st prize was withheld, and the 2d awarded to three which, had they been hung up (upon which the judges ought to have insisted) would probably have not had a prize at all,

2s, though well dressed in the baskets, they appeared to have nothing below to hide the brown Moss in which the pots were immersed. The most lively competition in this section occurred for the prizes offered for Plant Cases; the 1st prize was taken by Mr. Macintosh, of Hammersmith, whose case, however, was too dull and heavy to our taste for a drawing room; that with which Messrs. Claudet, Houghton, & Son took the 2d prize was as much too light for displaying plants to advantage, since it was all white and gold; the plants, however, in both these cases were nicely arranged. The 3d prize was taken by Messrs. Barr & Sugden, of King Street, Covent Garden, who, by sending 20 cases for competition, seemed determined not to lose a chance of getting a prize, but whose mistake, if we rightly interpret the decision of the judges, would appear to have been in filling their cases rather with interesting botanical collections than with a few effective plants.

In all these arrangements of growing plants and cut flowers for personal or domestic adornment, it is much to be regretted that those who have taken prizes during the last four or five years at the horticultural shows of London, Brighton, and other places, did not compete, and give our foreign friends a better illustration of what persons of good taste can and do daily produce on their own tables. That this was the opinion of the judges may be assumed from their withholding more than one-third of the prizes.

Implements.—Of these great numbers were exhibited; but with one or two exceptions there was nothing new or very remarkable. A horse-shoe, covered with wood, to be applied during the operations of rolling or mowing lawns, shown by Mr. Henderson, gr. to Sir G. H. Beaumont, Bart., Coleorton Hall, Ashby-de-la-Zouch, was stated to be an improvement on boots, which are apt to keep the horses' feet too warm. Of mowing machines there was a profusion, and the same may be said of syringes, pumps, and garden engines, as well as of boilers, and other appliances for heating. Amongst these latter Mr. Gray's oval tubular boiler received a First-class Certificate. Models of glass-houses were shown by several exhibitors, and Mr. Wells had his patent folding ground Vinery. From Mr. Scowan, Allen Road, Stoke Newington, came a good garden seat shade.

Mr. Earley, gr. to F. Pryor, Esq., Digswell, Welwyn, Herts, exhibited a useful-looking cheap guard for protecting young trees in parks. It is made of stout iron, with feet to go in the ground, and for 2 feet in height it is wired for the purpose of keeping out small intruders. It is made in two semicircular pieces, which are joined together when it is placed round the tree with screws and nuts.

Mr. Charles Lee exhibited a strong two-wheeled transplanting machine, which it was stated might be made for 20*l*. In principle it would act in much the same way as the old timber-gig. A prize was awarded to a machine constructed by Mr. McIndoe, gr. to Coles Child, Esq., Bromley. To two iron wheels at the back a strong pole is attached by means of bands of iron, which rise considerably above the wheels. To the sides of the pole are attached strong canvas, cordage, or chains, for passing under the ball of the tree, which is raised by leverage in the usual way. Between the two iron wheels, on the same axis, is placed a narrow wheel, notched for a racket wheel, the turning of which with a handle enables the operator to place the machine backwards or forwards with little application of physical strength.

As regards the best mode of ventilating plant-structures, the prize was awarded to Messrs. Sanders, Frewen & Co., Bury St. Edmunds, for one of Beard's patent metallic non-conducting glass houses, a full description of which will be found in our volume for last year. Mr. Newton, 30, Eastbourne Terrace, Hyde Park, furnished some ingenious models illustrative of different modes of ventilation.

Foremost among Vases was one of ribs of iron covered inside with turf to keep in the soil, from Messrs. Hunt & Pickering, of Leicester. This is an improvement on the solid cast iron or terra-cotta vase, inasmuch as it secures perfect drainage and continual circulation of air through every part of it. When not in use it can be readily taken to pieces, and packed away in a small space till wanted. Italian baskets were shown by Mr. Bull, of Chelsea. A Certificate was awarded to vases, fountains, &c., of artificial stone, sent by Messrs. Rosher, Queen's Road West, Chelsea. Also, to Mr. Thomas, 6, Newcastle Place, and 133, Edgeware Road, Paddington, for wire arches, seats, temples, and trainers, but chiefly for the great variety and artistic beauty of many suspended wire baskets, &c.

Chairs and other garden seats were shown by several exhibitors, as were also tubs for Orange trees and similar plants, but amongst these there was nothing specially deserving of being particularised.

A prize was awarded for two nice designs of rock-work or ruins, suitable for Ferns, sent by Mr. Puig, Grove Terrace, Grove Road, St. John's Wood.

We must not close our report without repeating that Mr. Ormson's multi-tubular boiler most effectually heated that portion of the tent devoted to Orchids; and we were glad to hear from exhibitors of this class of plants that not the slightest degree of injury had been sustained by them.

LIST OF AWARDS.

(*Continued from p.* 488.)

§ V.—SEEDLINGS.

CLASS 155.—Seedling Florists' Flower, of any kind (Certificates): First-class Certificates to G. W. Hoyle, Esq., Reading, for Pelargoniums Alfred Hoyle and Favourite; Mr. C. Turner, Slough, for Pelargonium (Fancy) Duchess of Buccleuch; Mr. C. Turner, for Pelargonium (Fancy) Sylvia; Mr. C. Turner, for Auriculas (Alpine) Vivid, and Bertha; Mr. W. Paul, Waltham Cross, for Pelargonium (hyb. nosegay) Rebecca; Mr. W. Paul, for Pelargonium (hyb. nosegay) Prince of Orange. Messrs. Ivery & Son, Dorking, for Azalea Fascination. Second-class Certificate to Mr. Bull, Chelsea, for Azalea Madame Cannart d'Hamale.

Class 156.—New Garden Hybrid: First class Certificate to Messrs. J. Veitch & Sons, Chelsea, for Nepenthes maculata; Mr. Earley, Digswell, for Begonia phyllomaniaca hybrida.

Class 157.—New Garden Variety: First-class Certificates to Messrs. Saltmarsh & Son, Chelmsford, for Pelargonium (tricolor-leaved) Queen of the Fairies; Messrs. Fisher, Holmes, & Co., Sheffield, for Taxus hibernica fastigiata; Messrs. J. Carter & Co., High Holborn, for Pelargonium; Mr. Ticehurst, gardener, Dynevor Castle, for Gymnogramma lanata monstrosa; Mr. W. Groom, Ipswich, for Pelargonium (tricolor-leaved) Miss Turner; Rev. W. H. Girdlestone, Ryde, for Athyrium Filix-femina Girdlestonæ; Messrs. Paul & Son, Cheshunt, for Crataegus Oxyacantha coccinea plena; Messrs. Ivery & Son, for Asplenium Trichomanes Moulei; Messrs. Ivery & Son, for Lastrea Filix-mas Ingrami; Messrs. Ivery & Son, for Polystichum angulare attenuato-cristatum; Messrs. Ivery & Son, for Athyrium Filix-femina formosum cristatum; Messrs. Ivery & Son, for Athyrium Filix-femina lanceolatum; Messrs. E. G. Henderson & Son, St. John's Wood, for Pelargonium (tricolor-leaved) Lady Cullum; Messrs. E. G. Henderson & Son, for Pelargonium (tricolor-leaved) Harry George Henderson; Messrs. J. Cheal, Sydenham, for Pelargonium (tricolor-leaved) Jetty Lacy. Second-class Certificates to Messrs. Garaway & Co., Bristol, for Pelargonium (tricolor-leaved) Princess Lichtenstein; Messrs. Ivery & Son, Dorking, for Athyrium Filix-femina picrophorum; Mr. W. Bull, for Myosotis Impératrice Elizabeth.

Class 158.—Seedling Fruit, of any kind (Certificates): Second-class Certificate to Mr. Charles Turner, Royal Nurseries, Slough, for Cherry, Frogmore Early.

Class 159.—Seedling Vegetable, of any kind (Certificates): No award.

§ VIII.—BOUQUETS AND OBJECTS OF ORNAMENT IN NATURAL FLOWERS.

Class 221.—Dinner-table Decorations, 3 pieces: 1st, Mrs. Lermitte, Knightons, Finchley; 2d, Messrs. Lucking Brothers, Westbourne Park; 3d, Mr. T. Charles March, Ambassadors' Court, St. James's Palace.

Class 222.—Table Plateau, ornamented with Flowers: 2d, Miss F. A. Wint, 15, Bedford Place, Brighton.

Class 223.—Drawing-room Flower stands: 1st, Mr. T. Charles March, Ambassadors' Court, St. James's Palace.

Class 224.—Drawing-room Plant Case: 1st, Mr. Geo. Macintosh, Nurseryman, Hammersmith; 2d, Messrs. Claudet, Houghton, & Son, 89, High Holborn; 3d, Messrs. Barr & Sugden, King Street, Covent Garden.

Class 225.—Window Jardinet: No prize awarded.

Class 226.—Window Box, furnished with Plants: 1st, Messrs. Wm. Cutbush & Son, Nurserymen, Highgate.

Class 227.—3 Hanging Baskets, furnished with Plants: 2d, Messrs. Wm. Cutbush & Son, Nurserymen, Highgate.

Class 228.—1 Wedding Bouquet: 1st, Messrs. Lucking, Westbourne Park, W.; 2d, Mr. John Delamere, Nurseryman, Holm Lane, Orton, Cheshire.

Class 229.—3 Bouquets for Balls: 1st, Mr. Richard S. Yates, Sale, Cheshire; 2d, Messrs. Lucking Brothers, Westbourne Park, W.

Class 230.—3 Head-dresses or Wreaths: 2d, Mr. Richard S. Yates, Sale, Cheshire.

§ IX.—IMPLEMENTS, DESIGNS, &c.

Class 231.—Garden Implements (Certificates): First-class Certificates to Mr. R. Read, Regent Circus, Piccadilly, for Garden Engines, Syringes, &c.; Mr. J. Gray, Danvers Street, Chelsea, for Oval Tubular Boiler. Second-class Certificate to Messrs. John Warner & Sons, 8, Crescent, Cripplegate, for Garden Engines, &c. Third-class Certificate to Messrs. Barnard, Bishop, & Barnard, Norwich, for Garden Seats, &c.

A.—Model of Fern: No entry.

B.—Transplanting Machine, 8 tons or upwards: No entry.

C.—Transplanting Machine, 1 to 2 tons: Society of Arts' prize, Mr. McIndoe, gardener, Bromley Palace.

D.—Method of ventilating Plant Structures: Society of Arts' prize, Messrs. Sanders, Frewen, & Co., Bury St. Edmunds.

E.—Garden Wheelbarrow: No prize awarded.

F.—Sunshade for Garden Seats: Society of Arts' prize, Mr. T. L. Scowan, Stoke Newington.

G.—Guard for Protecting Trees: Society of Arts' prize, Mr. W. Earley, gardener, Digswell.

H.—Levelling Instrument: no entry.

Class 232.—Garden Ornaments (Certificates): First class Certificate to Mr. J. J. Thomas, 133, Edgeware Road, for Wire-work for garden purposes; Mr. H. Lovegrove, Slough, for Summer houses, Rustic Seats, &c.; Messrs. F. & G. Rosher, Queen's Road West, Chelsea, for Artificial Stone Boxes, &c. Second-class Certificate to Mr. Puig, No. 21, Grove Terrace, St. John's Wood, for designs of Ornamental Rockwork.

A.—Earthenware Boxes for Edgings: No entry.

B.—Ornamental Flower pots: No award.

Class 233.—Tubs for Orange Trees: No award.

Class 234.—Design for Public Garden: No award.

Class 235.—Design for Private Garden of 20 acres: 2d, Mr. J. W. Chapman, Richmond, Surrey.

Class 236.—Design for Villa Garden of 5 acres: 2d, Mr. T. J. Caparn, King's Road Nursery, Newark.

Class 237.—Water colour Drawing of any Plant: 1st, Mr. F. A. Skewuke, South Kensington Museum. Rhododendron Nuttalli; 2d, Mrs. Hooper, Hill Park, for Drawings of Vanda suavis, and Oncidium Papilio; 3d, Miss Agnes Boyd, Edinburgh, for Columbine.

§ X.—MISCELLANEOUS SUBJECTS.

Class 238.—Miscellaneous Class: 5*l*., Messrs. James Veitch & Sons, Chelsea, for Miscellaneous Collection of Novelties; 4*l*., M. John Linden, Brussels, for a collection of 25 new species of Maranta; 4*l*., Mr. John Watson, St. Alban's, for fine specimens of 10 New Zealand Filmi Ferns; 3*l*., James Bateman, Esq., Biddulph Grange, Cheshire, J. Slocock, gardener, for Dendrobium Falconeri; 3*l*., Mr. W. Bull, Chelsea, for a Miscellaneous Collection of Novelties; 3*l*., Messrs. Osborn & Sons, Fulham, for Phormium tenax variegatum; 3*l*., J. Brand, Esq., Balham (W. Howard, gardener), for 3 magnificent plants of Eucharis amazonica; 2*l*., Mr. J. Slocock, gardener, for collection of new Pelargoniums; 2*l*., Messrs. E. G. Henderson & Son, St. John's Wood, for collection of new Variegated Bedding and Hardy Plants; 2*l*., Mr. John Standish, Ascot and Knightsbridge, for a large collection of Rhododendrons; 2*l*., Messrs. J. & C. Lee, Hammersmith, for Viburnum plicatum, Table-formed Yew, and other choice shrubs; 2*l*., Messrs. Lane & Son, Great Berkhamstead, for collection of Rhododendrons; 1*l*., M. John Linden, Brussels, for collection of Tropical Fruits; 1*l*., Messrs. J. & C. Lee, Hammersmith, for Aucuba japonica, in berry; 1*l*., Mr. Miles, Malmesbury, for Adiantum farleyense; 1*l*., A. Wattenbach, Esq., Camberwell (A. Goodwin, gardener), for 6 standard Coleus Verschaffeltii; 1*l*., M. J. A. Willink, Amsterdam, for 3 new Ferns and Lycopods; 1*l*., Mr. John Watson, for miscellaneous Filmi Ferns. First-class Certificate: Mrs. Hooper, The Deepdene, Dorking (J. B. Whiting, gardener), for collection of Apples. Highly Commended: Mrs. Mary Ann Mitchell, Battersea, for Wax Flowers; Mr. Joseph Newton, Eastbourne Terrace, W., for various Plans and Views relating to landscape gardening; Mrs. J. Stoddart, Notting Hill, for Rice Paper Flowers; Mrs. M. R. Townley, Holloway, for Wax Flowers. Commended: Messrs. W. B. Verity, 2, Charles Street West, for Cases filled with Ferns; Mr. R. M. Stark, Edinburgh, for collection of North American plants; The Rev. J. W. St. John, Woodstock (R. Fenn, gardener), for English Wines; The Rev. J. W. St. John, Woodstock (R. Fenn, gardener), for Fenn's Alliance Beehive; M. C. Pfersdorff, Kensal New Town, for a collection of 16 species of Euphorbia; W. Marshall, Esq., Enfield, for Ouvirandra fenestralis; Mr. C. Noble, Bagshot, for variegated Hardy Shrubs; Mr. R. Parker, Tooting, for Pleopeltis incurvata; Mr. H. Knight, Jardinier-en-chef, Chateau de Pontchartrain, for a Hybrid Amaranthus; Messrs. Lane & Son, for miscellaneous collection of Azaleas; Messrs. Downie, Laird, & Laing, Sydenham, for a stand of Fancy blooms. Communication: J. H. Buchan, Esq., Hanwell (G. Venner, gardener), for miscellaneous collection of Flowering Plants; Messrs. Backhouse & Son, York, for collection of Trichomanes and Hymenophyllum; Mrs. Milne, for Dried Mosses.

FRUITS (238).—5*l*., The Duke of Richmond, Goodwood (G. Cameron, gardener), for collection of 4 Pine-apples; 4*l*., The Countess Cowper, Wrest Park (S. Snow, gardener), for collection of Apples; 3*l*., W. E. Hubbard, Esq., Horsham (S. Ford, gardener), for collection of Apples and Pears; 1*l*., G. S. Foljambe, Esq., Osberton Hall (E. Bennett, gardener), for a dish of English-grown Vanilla; 10*s*., C. N. Newdegate, Esq., M.P., Arbury (S. Evans, gardener), for boxes of Peaches and Nectarines.

The following additions and corrections should be made in the list printed last week:—

Class 10.—6 Stove or Greenhouse Plants (Amateurs): Equal 1st, Mr. J. Stevenson, Lark Hill, Timperley.

Class 11.—6 Stove or Greenhouse Plants (Nurserymen): 1st, Mr. B. S. Williams, Holloway, N.; 2d, Messrs. S. Glendinning & Sons, Chiswick; 3d, Messrs. Jackson & Son, Kingston; 4th, Mr. R. Baxindine, Guildford.

Class 42.—12 Stove or Greenhouse Ferns (Amateurs): 4th, J. Yates, Esq., Highgate—W. Taylor, gardener.

Class 61.—12 Hardy Taxads: 3d, Messrs. Paul & Son, Cheshunt.

Class 73.—10 Begonias: 4th, R. Barclay, Esq., Highgate, N.—W. Young, gardener.

Class 97.—12 Cape Pelargoniums: 1st, Mr. J. J. Chater, Gonville Nurseries, Cambridge.

Class 99.—1 Standard Hardy Rhododendron: 1st, Mr. John Standish, Ascot and Knightsbridge.

Class 105.—6 Greenhouse Azaleas (Nurserymen): 4th, Messrs. James Ivery & Son, Dorking and Reigate.

Class 138.—6 Show Pelargoniums (Amateurs): 1st, F. G. Wilkins, Esq., Leyton, N.E.—J. Ward, gardener; 2d, A. J. Doxat, Esq., Putney Heath—James Shrimpton, gardener; 3d, W. Beck, Esq., Worton Cottage, Isleworth—J. Wiggins, gardener; 4th, Mrs. Hodgson, The Elms, Hampstead—James Weir, gardener.

Class 139.—12 Pansies, in pots: 3d, Mr. John Shackell, Old Field Nursery, Bath.

Class 141.—24 Pansies, cut flowers: 3d, Mr. John Shackell, Old Field Nursery, Bath.

Class 174.—The best bunch of Black Grapes: 3d, Mr. D. Clement, Chase Side, East Barnet.

Class 175.—The best bunch of White Grapes: 3d, Mr. John Standish, Ascot, and Knightsbridge.

Class 215.—The longest Cucumber: 1st, J. Cockle, Esq., West Molesey Lodge, Surrey—J. Penfold, gardener.

Class 220.—Newly introduced Vegetable: 1st Class Certificates to Mr. Bull, Chelsea, for Raphanus caudatus; Messrs. Ivery & Son, Dorking, for Dioscorea Batatas; W. Jones Loyd, Esq., Watford (W. Cruickshank, gardener) for Dioscorea Batatas; M. Morin, Fontainebleau, for Dioscorea Batatas.

ON THE CHANGE OF THE DIRECTION OF THE BRANCHES OF WOODY PLANTS

CAUSED BY LOW DEGREES OF TEMPERATURE.

BY PROF. ROBERT CASPARY, KÖNIGSBERG.

[The following paper was read at the Botanical Congress, and we have been favoured with the abstract in English by the author. EDS.]

THE only observation on this subject, known to me, has been made on a Lime tree by John Rogers, Esq., jun., Sevenoaks, Kent, and communicated by Dr. Lindley to the Trans. Hort. Soc. London, Ser. II., Vol. II., 1842, 230. Rogers observed on the 19th and 20th January, 1838, on which days the thermometer fell respectively to —1° and —2° Fahr., a degree of cold very rarely occurring in England, that during the extreme cold the branches of a Lime tree which overhung a part of his garden, drooped so completely as to lie on the ground, and those above fell proportionately; there was neither ice nor rime on them to increase their weight, so that this phenomenon must have been due to the direct effect of cold. The branches recovered themselves as the day advanced and grew warmer, and eventually they so completely regained their original position, that Mr. Rogers at first thought his gardener had cut away all that drooped and impeded the path in the morning.

One of my colleagues, the Professor of Physiology at the University of Königsberg, Von Wittich, made a similar observation on a Lime tree in his garden. During severe frost this tree used to droop one of its branches stretching across the path so low that it was impossible, without stooping, to pass under it. At the request of Professor Von Wittich I examined the lowered branch on the morning of the 4th of February, 1865, in a cold of —18° R. (= —8½° F.). As my attention was now directed to the phenomenon, I observed, at that very day, in and about Königsberg, that the branches of many Lime trees drooped very much, particularly one branch of a strong tree in the Royal Botanic Garden, which was more than 3' lowered, the utmost twigs touching my head when I stood under the tree, and rising afterwards, when the thermometer stood above the freezing point, to such a height that I could not reach them by the hand, even by jumping. It was clear that a phenomenon had been brought to my notice which up to this time had nearly escaped observation, and I resolved to examine it with more accuracy the next winter, 1865–66.

As it might be expected that the change of the direction of the branches, caused by low temperature, not only takes place in Lime trees, but also in others, I undertook, in the Royal Botanic Garden, the examination of the following 10 species of woody

plants (9 trees and 1 shrub):—Tilia parvifolia, Ehrh.; Æsculus Hippocastanum, L.; Carpinus Betulus, L.; Rhamnus catharticus, L.; Pterocarya caucasica, C. A. M.; Pavia rubra, Lam.; Pinus Laricio, Poir.; Pinus Larix, L.; Pinus Strobus, L.; Acer Negundo, L. Of each I subjected to observation one branch, but of Tilia parvifolia two on two different trees—one of them was the above-mentioned, which drooped on the 4th of February, 1865, more than 3′ feet. I selected branches which were at such a height above the ground that I could examine them standing upright without too much inconvenience; under two only I had to put a step, so that I could reach them conveniently. Close to each branch I had placed an upright pole, 3″ [inches] square, which was put into the ground between 2—3′ deep, a depth at which I thought that the pole would not be lifted by frost, which, as far as I have seen, does not penetrate here into the ground beyond 1½′. In the winter of 1865—66 the frost did not go so deep as 6″. The poles were set up on the west side of the branches, where this could be done, in order that the predominant and strongest winds, S.W. and W., might not rub the branches against the poles and so injure them. On that side of the pole which faced the branch, a scale was carved in feet and inches, which began 2′ above the ground, as the snow lies with us sometimes to this height, and which reached a little beyond the usual height of the branch. That place of the branch, the height of which was daily to be measured, was marked by a little notch cut into the bark. In order to find out the exact height of the branch, a square was placed with one leg towards the smoothly planed pole, and the other leg elevated from underneath the branch, till it touched this. By means of a sharply-pointed hard lead-pencil I marked the point at which the angle of the square was lying at the pole, and measured the difference between this point and the next inch-mark below it in Prussian duodecimal lines. The height of the branch of the above-mentioned Lime tree, which drooped on the 4th of February, 1865, more than 3′, was measured by another method. A long, thin, square wooden rod was fastened 17½′ above ground by strong iron wire to the branch, so that it hung down perpendicularly; the under end of the rod was about 3′ above ground, and moved along a perpendicular pole fitted up as described, and gave the height of the branch. To prevent the rod being too much thrown about by the force of wind, the lower end of it was surrounded by a strong iron wire fastened to the pole, forming a long narrow sling, which gave the rod ample space to move up and down, but prevented too much lateral deviation.

I took the observations described in this paper daily from the 29th of November to the 24th of March, and I shall continue them. They were taken in the morning between half-past 7 and 8 o'clock, or 10 minutes after 8, a time which in the middle of our winter for two to two and a-half months nearly coincides with the rising of the sun and the minimum of temperature, and which offers also the advantage, that the air is generally quite calm, or that the wind at least is so light that it does not prevent the observations, whilst in the middle of the day it generally rises with increased force. After the measurement was taken, by about 8 o'clock, the temperature of the moment and the minimum of last night was read from a minimum thermometer, containing alcohol, and made by T. G. Greiner, Jun., at Berlin. The force of the wind was noted according to the method prescribed by the instructions given to the Prussian meteorological stations (Dove, "Bericht über die in den Jahren 1848 und 1849 auf den Stationen des Meteorologischen Instituts im Prussischen Staate angestellten Beobachtungen." Berlin, 1851. Beilage. s. iii.), distinguishing 5°. 0 (zero) means the one extreme, *i. e.*, total absence of wind; 4, the other extreme, *i. e.*, storm, by which whole trees are in constant motion, sometimes twigs and branches, when in leaf, are broken off, or even whole trees uprooted. If the force of the wind surpassed the first degree—1, *i. e.*, if the branches were in such motion that they had no moment of rest, and their height therefore could not be observed with any accuracy, I took no measurement at all.

[Professor Caspary then enters into certain details which it is not necessary to give here. In the original paper, for the clearer understanding of the observations, the course of the temperature and the changes of the direction of the branches are represented by diagrams, &c., which we regret that our space will not allow us to reproduce.]

Before I sum up the results of my observations, I will make a few remarks on the disturbances of the observations caused by wind, rain, snow, sheet ice, and hoar-frost.

As regards the wind, only those observations which are made at a time when the force of the wind was 0, are quite to be depended upon; those which are made when the force of the wind was 1, are not quite accurate, although they may be only about ⅛ of a line too low or too high. When the force of the wind was 2, 3, or 4, particularly when it blew for several days, it was often observable that the branches the day after the strong wind did not quite regain their former direction, which they had lost by the derangement they suffered—it was so on the 12th of November after the storm of the 11th. On the 14th February a strong S.W. wind, which blew during the daytime with the force 3, depressed so much the branch of No. 6, Tilia parvifolia, that on the 15th February at −1°.0 R.= 34°.2 F. at 8 o'clock in the morning (minimum of last night −1°.5 R. = 28°.7 F.) it drooped more than on the 16th of February at a lower temperature:—1°.5 R. = 28°.4 F. (minimum of last night −2°.4 R. = 26°.6 F.), having been enabled, owing to the light wind of the 15th of February and the calm night between the 15th and 16th February, to rise again.

Heavy dew, forming drops, and more particularly rain, depress the branches, although only a few lines, for instance, on the 2d December in comparison with the 1st, on the 24th and 25th of December in comparison with the 23d. Sheet ice occurred on the branches only once, on the 9th of December, and only in an immeasurably thin layer. In the diagrams those days on which I found the branches depressed by rain or adherent drops of water, in general are marked by R; sheet-ice is marked by G. If the branches were only moist without drops, in consequence of dew or rain, this is noted by N.

The branches were lowered by snow much more than by rain, particularly on slender branches, as on those of —1. Tilia parvifolia; 2, Æsculus Hippocastanum; 3, Carpinus Betulus; 4, Rhamnus catharticus, &c.; the effect of snow, for instance, on the 6th and 12th March is most visible. But if the fall of snow coincided with a severe degree of frost, those branches which are raised by frost showed, in spite of their burden of snow, an elevation. So on the 24th of March those of 4, Rhamnus catharticus, and 11, Acer Negundo. On the 23d of March a little snow fell during the day time, with S., S.W., and W. winds, but it thawed, and the snow melted partially away from the branches. Early in the evening frost set in, with S.E. wind. At 8 o'clock in the evening (temp. −4° R.=33° Fahr.), I swept the snow from the branches, but did not succeed well, as the partially melted snow was fixed by frost upon the branches. The minimum of the night between the 23d and 24th of March was −7° R.=26°.3 F.; by 8 o'clock in the morning there were still −1°.7 R. =28°.2 F. During the night the sky was sometimes overcast, often clear, and much snow fell: all the branches and their twigs, even the smallest, were covered with snow 1—9″ deep, and in spite of this Rhamnus catharticus and Acer Negundo stood at 8 o'clock in the morning of the 24th, respectively ¼″ and 3¾″ higher than on the 20th of March, on which day the temperature was much higher (0°.6 R.=33°.3 F., at 8 o'clock in the morning; minimum of the previous night −0°.1 R.=31°.8 F., the branches being entirely dry, with no trace of snow upon them. I gathered the snow from the branches under observation, and from the twigs of both trees, carefully, upon plates, on the morning of the 24th of March, and the weight of snow with which the branches, in consequence of the coinciding cold, were raised up, was, according to the determination of my colleague, Professor Werther—on the Rhamnus 44 grammes (0.088 pound of the Zollverein), and on the Acer Negundo were 61 grammes (0.122 pound of the Zollverein).

On the diagrams snow is marked with S. Often there were only a few isolated flakes on the branches, which therefore could not at all be depressed by the weight of the snow, as for instance on the 19th and 21st February.

My observations gave the following results as regards the change of direction of the branches caused by frost:—

1. The branches of all trees showed a displacement in a lateral direction. From the 21st to the 24th of February, at the time of the severest frost, and on the 19th of March after there had been some mild days, I measured the distance between the branches and the poles. These distances are given in the tables of observations under those measurements, which give the height of the branches on the above-mentioned days. The difference between the position of the branch on the 19th of March and the greatest deviation on one of the days between the 22d and 24th of Feb., showed a motion to the left-hand side in 2. Æsculus Hippocastanum, by 1″ 8‴; 3, Carpinus Betulus, by 2‴; 7, Pavia rubra, by 1″ 3‴; 11, Acer Negundo, by 1″ 4‴; to the right-hand side in 1, Tilia parvifolia, by 3″ 5‴; 4, Rhamnus catharticus by 1″ 5‴; 5, Pterocarya caucasica by 1″ 5‴; 8, Pinus Laricio, by 4‴ only; 9, Pinus Larix by 3″ 4‴; 10, Pinus Strobus by 7‴. The large branches of the other Lime tree (6, Tilia parvifolia) moved also during every period of severe frost towards the left-hand side. I had, however, no means of measuring the amount of this dislocation. This lateral motion of the branches always took, whenever severe frost happened, the same direction. The amount of deviation increased with the intensity of frost.

2. In addition to the lateral motion several of the branches exhibited a drooping one as soon as frost began, and they drooped the lower the severer the frost was. This was shown by 1 and 6, Tilia parvifolia; 8, Pinus Laricio; 9, Pinus Larix; 10, Pinus Strobus. The diagrams exhibit this phenomenon to the eye at a glance. The amount of this descending motion, depending upon the degree of bending down and the distance of the point under observation from the base of the branch, was amongst the examined trees largest in 6, Tilia parvifolia, viz. 6″ 8‴; in Pinus Laricio it was 2″ 3½‴; in Pinus Larix 1″ 3½‴; in Pinus Strobus 1″ 3‴. In 1 Tilia parvifolia, of which the examined branch is a tertiary one, the effect was confused, as the motion of three generations of branches came to appearance at once; the extent was 4″ 3½‴. If we put an absolute measure to the motion, Pinus Laricio drooped most, Tilia parvifolia less, still less Pinus Larix, least of all Pinus Strobus.

3. The branches of other species of trees began to rise as soon as frost set in, and rose the higher, the severer the frost was. Of this nature are 5, Pterocarya caucasica and 11, Acer Negundo. Pterocarya caucasica showed an amount of motion of 3″ 4½‴, and Acer Negundo of 1″ 6½‴. In both cases the motion was a combination of that of several generations of branches.

4. The branches of other species of woody plants exhibited a rising motion during mild frost, but a drooping one during severe frost. Of this nature were 2, Æsculus Hippocastanum; 3, Carpinus Betulus; 4, Rhamnus catharticus; 7, Pavia rubra. The extent of the whole motion was in Æsculus Hippocastanum, 1″ 8‴; in Carpinus Betulus, 1″ 5‴; in Rhamnus catharticus, 1″ 11½‴; in Pavia rubra only 4½‴; in all it was the combination of motion of several generations of branches. The degree of frost at which they begin to droop cannot be fixed exactly, on account of the want of hourly observations and of observations of the temperature of the wood itself. Carpinus Betulus, Rhamnus catharticus, and Pavia rubra drooped the branch at −9°.8 R. = 10° F. (minimum of the foregoing night −11°.7 R. = 5°.7 F.), which temperature I observed at 8 o'clock in the morning of the 20th of Feb., but a branch of Æsculus Hippocastanum was depressed only at −15°.2 R. = −2°.2 F. (minimum of the preceding night −16° R. = − 4° F.), which the thermometer showed at 8 o'clock in the morning of the 21st of February.

As the movement of the branches, be it upwards or downwards, begins only in consequence of the heat penetrating the wood, it is sooner observable in thin than in thick branches.

It is remarkable that the branch, if the motion had begun in a direction corresponding to the present temperature, continued in that direction even after the temperature had changed to a degree that generally produces a contrary motion (compare Pterocarya caucasica between the 6th and 13th of December); and at the time when I now write this, in spring, several branches keep at the same degree of temperature, for instance +1° R.=34°.1 F., a height very different from that which they had last autumn. 1, Tilia parvifolia; 3, Carpinus Betulus; 4, Rhamnus catharticus; 5, Pterocarya caucasica; 7, Pavia rubra; 8, Pinus Laricio; 9, Pinus Larix; 10, Pinus Strobus, stand now higher than last autumn; 2, Æsculus Hippocastanum, and 11, Acer Negundo, stand now as high as last autumn; and 6, Tilia parvifolia, stands now lower than in autumn. The same degree of frost had at different times a different effect, although I could not always account for this by any difference in the duration of the frost.

What is the cause of this change of direction of the branches by different degrees of temperature? At present this question cannot be answered. The phenomenon shows, however, that the different sides of the branches seem differently contracted by low temperature in a longitudinal direction, and of course on that side in which the motion is greater than on the others. Whether this shortening only takes place at the point of insertion of the branch or along its whole length, which latter seems to be the more probable, I am unable to decide at present. I tried to take portraits of the branches at different degrees of temperature by means of a camera obscura, and by comparison of those portraits to find out the exact seat of shortening, but in vain, the two small portraits coincided with each other. The lateral dislocation of the branch is perhaps caused by a shortening of only one group or line of cells of the wood pursuing the same course along the whole length of the branch; which shortening, in consequence of the oblique or spiral direction of the cells of the wood (A. Braun, Monatsbericht der Berliner Akademie, Juni 7, 1854), is observable on different sides of the branch at different places. That the young wood is differently contracted in different places in the direction of the circumference and radius by low temperature I showed formerly (Botan. Zeitg. von V. Mohl und V. Schlech., 1857, p. 329.*) The contraction of the young wood in the longitudinal direction is, as far as I know, not yet examined. I suppose that it contracts in a by far greater measure than dry wood, which according to Kater shortens its length for 1° F. (Kater examined white deal) by 0.0000028445, and to Struve, who examined the same (?) sort of wood (Tannenholz), by 0.0000028444 (Bot. Zeit. von V. Mohl und Schlech. 1855, p. 494).

The view might be entertained that the changes of the direction of the branches are dependent upon the humidity of the air, as frost generally with us sets in with east wind, which is very dry, and so the times of frost, great dryness, and of the greatest changes of direction of the branches, happen to coincide. The coldest times of last winter had the following degrees of humidity, which are the means of three daily observations, taken at 7h. A.M., 2 and 9h. P.M. I owe them to Professor Luther.

	Per centage of vapour.	Tension of vapour in Paris. lines.	Temperature (Minimum of the preceding night.)
Dec. 5, 1865 ..	89	1.59	— 1°.9 R
Dec. 6 ,, ..	75	1.08	— 2.8
Dec. 7 ,, ..	72	0.73	— 9.6
Dec. 8 ,, ..	89	0.93	— 10.0
Dec. 9 ,, ..	96	1.61	— 6.0
Feb. 15, 1866 ..	83	1.68	— 1.5
Feb. 16 ,, ..	85	1.18	— 2.4
Feb. 17 ,, ..	83	1.44	— 3.8
Feb. 18 ,, ..	94	1.77	— 2.7
Feb. 19 ,, ..	86	0.62	— 5.5
Feb. 20 ,, ..	81	0.61	—11.7
Feb. 21 ,, ..	77	0.52	—16.0
Feb. 22 ,, ..	90	0.60	—10.8
Feb. 23 ,, ..	76	0.48	—15.6
Feb. 24 ,, ..	84	1.33	—13.8
Feb. 25 ,, ..	83	1.73	— 0.8

In these cases very low degrees of humidity, of frost, and the greatest changes of the direction of the

* I seize the opportunity to correct the fractions which I inserted Zeit. f. No. 70 (as to the proportions by which the fresh was less of the fleeh and the Oak for 1° C. were shortened. In place of "$\frac{1}{1\,4\,5}$ (0.007071)," the supposed proportion of the linear contraction of the circumference of the wood of the fresh I read—"$\frac{1}{1\,4\,8}$ (0.006757)." And in place of "$\frac{1}{1\,3\,3}$ (0.001067)," the supposed proportion of the contraction of the radius, read—"$\frac{1}{2\,0\,7}$ (0.004819)." Instead of "$\frac{1}{3\,3\,3}$ (0.00306)," the supposed proportion of the linear contraction of the circumference of the Oak VII read—"$\frac{1}{3\,1\,3}$ (0.003193)." And instead of "$\frac{1}{1\,0\,0}$ (0.009194)," the supposed prop rtion of that of the radius of the same wood, read—"$\frac{1}{1\,6\,3}$ (0.006141)." These fractions of contraction refer only to the degrees lying between + 0°.7 R. and —11°.8 R., the extremes of temperature during the

branches coincide nearly, but in other cases the relations of humidity differ widely from the two last, which coincide constantly. The minima of humidity in the months of January, February, and March are as follows:—

	Per-centage of vapour.	Tension of vapour in Paris. lines.	(Temperature Minimum of the preceding night.)
Jan. 31, 1866 ..	67	1.20	— 2.2° R
Feb. 9	60	1.81	+ 1.7
March 15	72	1.02	— 3.5

From this it is evident that the minima of humidity of the air during these three months do by no means coincide with the extremes of frost, which always were contemporary with the extremes of change in the direction of the branches. Besides this one cannot see how the changes of humidity and that of the direction of the branches could be combined.

K. F. Schimper, in Schwetzingen, made a distinction between hyponastic, epinastic, and diplonastic branches, as the excentric increase of wood takes place either in the under or upper part of the branch, or contemporaneously in both (Baum und Listing, Amtlich. Bericht ueber die 31. Versammlung deutscher Naturforscher und Aerzte in Goettingen, Sept. 1864. Goettingen, 1860, 67). But the excentric formation of the mass of wood in branches does not seem to have anything to do with the direction of the motion, which takes place in frost. The branches of Tilia parvifolia which are often hyponastic in the extreme, particularly in very old trees, in which they are often nearly flattened like planks, droop, whilst the hyponastic branches of Carpinus Betulus rise in mild and droop only in severe frost, and the generally hyponastic ones of Acer Negundo and Pterocarya caucasica rise during all degrees of frost, so far as I observed.

Further observations have to decide whether the mode of change of direction is constant for each species of woody plants or not.

NOTE ON THE CULTIVATION OF PALMS.

By HERMANN WENDLAND, HANOVER.

THE interest which people in England bestow on the noble family of Palms seems to increase more and more, and I therefore venture to give here a few hints on the cultivation of its representatives. Speaking in general, it is very simple, and differs but little from that of other tropical plants, but there are a great many species which require a more careful or rather an exceptional treatment. How is it that we so very seldom meet with fine specimen plants of Attalea, Borassus, Cocos nucifera, Corypha, Copernicia, Desmoncus, Guilielma, Hyphæne, Latania, Licuala, Manicaria, Mauritia, Nipa, Oenocarpus, Oreodoxa, Phytelephas, and Raphia, the seeds of which were imported at the beginning of this century, if not earlier, and which produced a sufficient number of young plants? That there must be something wrong in the way of treating them is evident, and I shall endeavour to show where improvements can be made.

Geographical distribution is one of the most important points to consider in the cultivation of tropical plants, and in looking at those Palms above mentioned, we find that they grow most luxuriantly near the seacoast, on borders of rivers, and on low marshy ground; even the roots of those we meet with in deserts are at all times well provided with water.

Having lost several species, especially delicate ones, in former years, by giving them only a scanty supply of water, I have entirely changed my system, and become profuse where I had before been sparing. Nevertheless I did not obtain satisfactory results with many of them till I placed pans under the pots. I have now succeeded so well in my experiments, that I think myself justified in saying that these species cannot be destroyed by too much water, but are apt to die if water is not supplied abundantly. It is a well-known fact that some Palms, especially the species of Bactris and Cocos, only root well in the lower part of the pot, and that they produce but few roots or none at all nearer to the surface. If these are provided with pans, the whole ball will form one compact mass of small roots in a short time. Some of them required a longer time to effect this, and showed even a more sickly appearance; but this did not make me doubtful, and I have had the satisfaction of seeing this treatment followed, sooner or later, by the best results. I may add, as a rule, that the more spiny a Palm is, the more moisture it requires.

ON THE ARRANGEMENT OF ALPINE PLANTS IN OUR GARDENS.

By Professor GOEPPERT, BRESLAU.

AFTER alluding to the dangers and difficulties encountered and overcome in the endeavours to reach the summits of the highest mountain peaks to investigate their productions, Prof. Goeppert condemns the indiscriminate planting and total absence of order or arrangement in our gardens of the treasures thus obtained, and adds that he considers one of the purposes of our botanical gardens should be to illustrate plant distribution.

Then follows a comparison of the Arctic with the Alpine flora, in regard to latitude and altitude; the northern and alpine limits of trees, shrubs, herbaceous plants; and, lastly, of organic life, the author pointing out their conformities and anomalies.

Of the whole phanerogamic flora of Germany and Switzerland, consisting of about 3500 species, nearly one-third belongs to the mountain and Alpine plants. Only some 450 of these, however, can be looked upon as truly Alpine, two-thirds of which are cultivated in our garden. They are about 2000 plants, some in pots, others planted out, covering a space of a Prussian acre in extent, which is situated on the bank of a canal, and are arranged amongst various kinds of stone in eight groups. Protococcus nivalis grows here, covering a hollowed slab of granite.

Each group is then treated separately. The following are the headings:—

i. Plants of the highest north, above 80°, or the Polar zone, and plants of the Central Alps, on glaciers above the snow line, between 10,000 to 10,700 feet. This is again divided into two:
   a. Plants of the highest north, between 78°—82°, with examples.
   b. Plants which also include the highest stations on our Alps, in the region of eternal snow.
ii. Plants of the snow-line of the Alps, from 8500 to 10,000 feet high. Those also occurring in the Arctic zone have an asterisk on the labels.
iii. Plants of the sub-snow region, from 6000 to 8000 feet of the Alps, or the essentially Alpine flora, which universally answers to the treeless region of the Arctic zone. On our Riesengebirge, situated much farther north, the Alpine flora commences with the disappearance of trees, at an elevation of from 3500 to 4000 feet.
iv. Plants of the highest north in the treeless region extending all round the pole, and also indigenous to Germany.
v. Contains a division of trees and shrubs, with the same distribution as those under No. 4.
vi. Pines of the Arctic zone.
vii. Shrubs of the Central Alps, which occur above the limits of trees.
viii. The mountain plants of Central Europe, within the tree region, as in various parts of Germany, between 2—6000 feet.

Lastly, for comparison, representatives of the Alpine flora of the Himalaya, but these are too few to be of any practical value.

The writer believes the advantages of this arrangement are: the being able to see at a glance the nature of vegetation according to altitude, from the plain to the extreme limit of organic life; and the power of reviewing clearly the relationship with the still problematical flora of the Arctic zone.

The author concludes by saying that this arrangement must be considered as a practical carrying out of the scientific teachings of A. von Humboldt, Schouw, Watson, A. De Candolle, &c.

SOME PROPOSITIONS WITH REFERENCE TO SYSTEMATIC BOTANY.

By Professor KARL KOCH.

THE systematist of our days has to contend with various difficulties, of which the three following are the most important, viz.:—

1. The confused nomenclature.
2. The scattered literature.
3. The importation of a great number of plants by nurserymen under fanciful names.

One man can do but very little to remove these obstacles, but perhaps a Congress of Botanists and Horticulturists, such as that which assembled in London, will be better able to effect changes and improvements where it is required. Formerly botany was the science to which special attention was directed, but of late it has become less popular, and has given way to chemistry, natural philosophy, and mineralogy, and so long as it remains in this sort of retirement, so long as it does not endeavour to answer the questions relating to mankind and the general welfare, it will neither accomplish what it should, nor obtain the consideration due to it.

After pointing out the relations between Botany and Horticulture, and the manner in which they might be mutually serviceable, Professor Koch treats of his three points in detail, beginning with—

1. *The Confusion in the Nomenclature, and how it may be remedied.*—At the time when only a few plants were known, one individual was able to master the whole material, but with the exploration of foreign countries the number of known plants has increased from year to year, so that it has attained no less than the great number of 200,000 species; and if, moreover, we take into consideration that each species is subjected again to many variations and forms, which are often taken for true species, and described as such, we must not be surprised at the confused state of their nomenclature. Synonymy in regard to genera as well as species, becomes more and more alarming.

Vanity has sometimes exercised an influence in the alteration of names, and this may be said especially in regard to genera. Describing mere forms as species is certainly not to be approved of, but it does not so much endanger the real advancement of science, as this is more or less a matter of individual opinion. But where a generic name is changed without good and sound reasons, there arise difficulties which are of a very serious character.

I propose, therefore, to keep the specific name first given, but as regards the generic name, to place that which recent investigation has adopted, first, and the one by which it was first described, afterwards in parentheses. If an author's name be given, only that one should be considered who first described the plant. Our nomenclature begins with Linnæus, and therefore all earlier botanists are to be disregarded. Linnæus, for instance, describes "Ornithogalum luteum," but Salisbury discovered characters of sufficient importance in this plant to justify him in making a new genus, viz., "Gagea." Our plant is, therefore, to be called Gagea lutea (Ornithogalum), L.

2. *The Scattered Literature.*—No science belongs to one nation alone, and least of all, Botany. Formerly Latin was universally used, but now every one writes in his own language, and a botanist is obliged to master at least the German, French, English, and the Italian languages to take cognisance of all that has been done. Besides this, the publication of new plants now takes place very seldom in independent works, which one might readily procure; but the botanist has to look for them in all sorts of periodicals and even in separate pamphlets. These are the more difficult to obtain, seeing that they are published in all parts of our globe —South Africa, Australia, the East Indies, Peru, &c., have their own botanical literature. It is true that we have Walper's Annals, the purpose of which is to collect the descriptions of all the species so as to be readily accessible; but as only one man has undertaken this gigantic task, a quick and a thoroughly complete publication is impossible.

I propose therefore to elect a number of botanists representing the various countries, to examine and collate the separate publications of their several countries; then a general editorship is to be established in a European town, where there are the best libraries, and the extracts to be sent to that place. The general editor should arrange these extracts scientifically, and publish them. As such a compilation is very much needed, I have no doubt that a publisher would be found. Walper's Annals are written in Latin, the same language should be adopted for the proposed work.

3. *The Importation of Plants by Nurserymen.*—It is a well-known fact, that all objects, not excepting plants, sell better when they have a name. We must not be surprised, therefore, if nurserymen baptise new plants from foreign countries with fancy names. No disadvantage would ensue—synonymy would not be increased, if the horticulturists would afterwards apply to a botanist for the right name, which could then be published and supersede the provisional one. But there are two difficulties. If even those names are corrected, gardeners seldom take the trouble to change the provisional for the scientific. The second difficulty arises from gardeners not knowing the Botanists who study certain families, or not daring to trouble them. This ought therefore to be the task of a Botanico-Horticultural Congress.

4. Amongst systematic botanists there is already a number of men in different countries, who have paid special attention to single families, and it is desirable that others should make up their minds to do the same. There are many families, indeed, which want a thoroughly good revision. If the botanists present at the Congress could come to an understanding in order that the horticulturists might learn to whom to apply for advice, I think very good results could be obtained. Astronomers have already divided the firmament amongst themselves as far as regards their studies; should it not be the same with systematic botanists? In De Candolle's "Prodromus" it has partly been done, but this partition should receive a more general and distinct expression. Gardeners would more easily receive the right name for imported plants, and botanists would always receive a fresh supply of tropical exotic plants to work upon.

Professor Koch then points out several instances where he has already succeeded in this proposed reform.

ON THE PRESENCE AND SOURCE OF NITROGEN IN PEAT,

WITH REFERENCE TO ITS USE AS MANURE.

By Prof. SCHULZ SCHULZENSTEIN, BERLIN.

INGENHAUSS, Saussure, Boussingault and others have all one and the same theory as far as regards the nutrition of plants, viz., that their carbon and nitrogen originate from the air, and not from the soil, and that therefore the vegetable and animal ingredients of the soil are not to be considered the food of plants, but that the mould of the soil is derived from the plants themselves, and cannot serve them hereafter as food. But notwithstanding this theory, experiments in horticulture and agriculture have shown that one can never do without carbonaceous manure, taken either from the vegetable or animal kingdom, and experience proves that carbon plays the principal part in earthy manures; that without mould there is no plant-growing, as far as all artificial mixtures of the soil are based upon earthy substances; and that mineral manure without mould is a chimera. Orchid growers know now very well that, deprived of mould (humus), their plants will not succeed for any length of time.

We have it in our power to change, to improve, or to deteriorate the different kinds of fruit; nay, the products of the vegetable kingdom altogether, in manuring the soil with different humus-substances, without the air interfering in the slightest degree, simply because the different fertility depends upon the soil and locality. The air appears to be the same everywhere, and we could not speak of a local difference in the vegetation if the air furnished the food for plants. Practical experience contradicts the theory of Ingenhauss, Saussure, Liebig, &c. All cultivation amounts practically to this—to avail ourselves of the humus-substances of the soil or to improve them. And in this way we prepare peat as manure. The easier peat decomposes, the better it acts on the vegetation, and those cheap kinds which are very light and spongy, and are not fit for burning, are especially to be recommended for manuring the soil, which is rendered more absorbent of the humidity of the air, and by-and-by the whole mass of the turf is decom-

experiments, communicated at the above quoted place. I repeat what I said already there, that these fractions do not at all claim accuracy, as from more than one reason accurate dates cannot be derived from those experiments, and are perhaps altogether impossible to be got for a body so very complex as wood is, but I gave them to show approximately that the proportion of contraction of the fresh wood in the direction of the circumference and radius surpasses that of all firm bodies, even that of zinc and iron, and is only surpassed by that of the air, a result which I have all reason to again affirm.

posed by putrefaction. The lighter and more spongy the turf is, the quicker will be the results. All turf is more or less ammoniacal or nitrogenous, and the stronger it smells in burning the richer it is in nitrogen, and the more fit therefore is it to be used as manure for corn or garden plants. Owing to the quantity of nitrogen that the peat contains, animal manure is rendered more or less needless, and we ought, therefore, to use it always in the cultivation of those plants for which any animal substances are unsuitable.

But what is the source of nitrogen in turf? The general opinion is that carburetted hydrogen gas is formed, of which the hydrogen unites itself with the nitrogen of the air so as to form ammonia. This, however, is contradicted by the nitrogen not being present in the turf itself in the form of ammonia, which is only formed by the dry distillation of turf, just in the same way as it originates through the dry distillation of animal substances. This shows that the nitrogen in the turf must be in the same condition as it is in animal substances, as for instance in horn, bones, albumen and meat. In fact, it can be proved that the nitrogen of the turf really originates from animal bodies which live or have lived therein, and of which traces are to be found in the turf. The classes of infusoria, polypes, worms, molluscs, Crustacea and insects are best represented, which through their bulky development produce the nitrogen in turf-pits and in turf itself.

Turf manure does not act so quickly as stable manure, because it decomposes more slowly, but it thereby becomes more efficacious.

Liebig affirms that turf can only be considered as manure for plants if phosphate of lime be mixed up with it. But as turf contains in itself a sufficient quantity of this substance, I need hardly say that Liebig's opinion cannot be upheld in practice. My experiments in adding bone-dust to the turf have not given any better results than by using turf alone.

Manuring with humus in general, and manuring with turf and decayed vegetable substances in particular, show irrefutably that the food of plants forms a simple substance, which is represented in the gases of humus —carbon, hydrogen, nitrogen— and that the plant does not need to procure the carbon and nitrogen from different sources, and to compose only the food out of the elementary substances.

LIST OF THE PAPERS, ETC., PRESENTED TO THE BOTANICAL CONGRESS.

ABSTRACT.*

Mr. JAMES ANDERSON, Meadow Bank, Glasgow: Observations on the temperature of water, and its effects upon plant cultivation

Mr. Anderson considers that practical gardeners do not attach sufficient importance to the science of horticulture, but rely too much on routine, especially so with reference to the temperature of the air in plant houses, and to that of the water supplied to the plants. He advocates the importance of employing water at least as warm as the air, or a little warmer, for watering tropical plants, especially Orchids. [Of this important paper we hope to give a fuller account at a future time. Eds.]

M. ANDRÉ, Paris: On landscape gardening and garden architecture in Paris from ancient times to the present, with remarks on the present style.

M. BAUMANN, Ghent:

1. In praise of English exhibitions.
2. Criticism of Belgian exhibitions.
3. Reply to the advocates of the superiority of Belgian Arboriculture.

M. A. BLYTT, Christiania: On the geographical distribution of plants in the Sognefjord, west coast of Norway.

M. BOMMER, Ghent: On the variegation and colour of leaves.

M. BOSSIN, Paris:

1. Is there any constant character by which it is possible to tell at a glance what seeds will produce double flowers: if so, what is that character?

2. To facilitate intercommunication between the natives of different countries, should Latin adjectives be employed to designate varieties of kitchen garden plants? Supposing the principle to be granted, how should the adaptation be made?

3. Is the Pear known under the names of Belle Angevine, Belle de Bruxelles, Royale d'Angleterre, Bolivar, &c., French, Belgian, or English? Is the place where it originated known, the date of its origin, or the name of the raiser?

Mr. W. BULL, Chelsea: On the relation of horticulture and botany to mankind in general.

Mr. CARROLL, Glasnevin: On garden drainage.

The author, after alluding to the necessity for, and the advantage to be derived from draining cultivated ground, goes on to state that no adequate provision is made to guard against drains being choked or stopped, and, in many cases, rendered quite useless, and even mischievous, by the intrusion of the roots of plants, and the deposit of oxide of iron, carbonate of lime, &c. The evil in question he proposes to remedy by laying a body of porous material beneath the drainage pipes instead of above them; and this, because he has observed that roots always descend by preference to the bottom of any such porous substratum as they may come in contact with.

Professor DE CANDOLLE, Geneva: On a recent very exact measurement of the diameter of the trunk of one of the gigantic Sequoias of California.

M. de Candolle in this paper gave the measurements of one of the huge specimens of Sequoia (Wellingtonia) of California, viz., that known as the Old Maid. This tree has been broken off by a storm at a height of 128 feet, its base cut across now serves as a dancing floor. M. de la Rue has recently measured the diameter of this tree in the following way. A slip of paper was stretched across the diameter of the trunk, the annual rings being marked off with a pencil on the paper, according to the convenient method originally proposed by Augustin Pyramus De Candolle. This paper was exhibited by M. De Candolle, and the following details were given. The diameter at about the height of 6 English feet was 26 feet 5 inches English. The entire height of the tree, before it was broken by the wind, was approximately 350 feet. The number of rings was counted by M. de la Rue and his assistant, one going from the circumference towards the centre, the other in the opposite direction. The one counted 1223 rings, the other 1245, which were marked on the slip exhibited by M. De Candolle. The mean of the two observations, which is no doubt nearly correct, gives the tree an age of 1234 years, which is not an extraordinary one for trees, especially Conifers; there are, for instance, Yew trees which date back from the Christian Era, Chili Saltpetre grew on a deposit, which fell, and their rate of growth appears to have been very uniform; thus on the slip it may be seen that at the age of 400—500 years, the annual rings were still thick, while in ordinary trees the layers become thin at from 80—120 years, according to the kind of tree and other circumstances. Specimens of the wood were also exhibited.

Professor CASPARY, Konigsberg: On the change in the direction of the branches of woody plants caused by low degrees of temperature. (See p. 513.)

Major TREVOR CLARKE, Daventry: On a certain phenomenon of hybridism in the genus Matthiola.

Mr. B. CLARKE, London: On the floral envelopes of Lauraceæ.

The author regards the floral envelopes of Lauraceæ as double, consisting of a trimerous calyx and corolla, and supports his views by a reference to those of Laurus itself, the fourth sepal of which he considers to be internal, and belonging to the petaline series, the other two divisions of that series being converted into stamens. He refers to the near affinity of Hernandieæ (antagonized by all authors as dissimi downwards), and of Gyrocarpeæ (pointed out by Robert Brown, and adopted by all subsequent writers), and to the evident relation of the last named family to Combretaceæ (of which indeed Lindley regarded them merely a section), and derives, from a comparison of these plants, further arguments in support of the correctness of his notion. Evidences of near relationship are also deduced from the structure of their ovaries and the attachment of their ovules, and the author finally arrives at the conclusion that Lauraceæ are "Combretaceæ, with a superior ovary and sepaloid petals."

Dr. ALEXANDER DICKSON, Edinburgh: On the leaves of Sciadopitys and Phyllocladus.

Mr. W. EARLEY: On the preparatory formation of trained wall-fruit trees.

The writer sets forth that the present system of pruning trained trees in the nurseries objectionable, on the ground that the roots are thereby much multiplied and often destroyed, the constitution of the tree when in a young state, and is one cause of wall-trees shrivelling and dying. It is also the cause of a too gross after growth, and consequent unfruitfulness. He advocates, in place of the common system, summer pinching, which advances the wood ripened in best time, and produces a sounder tree, more favourable to removal.

Professor GOEPPERT, Breslau:

1. On the arrangement of alpine plants in our gardens. (See p. 515.)

2. Palæontology and our botanic gardens.

The author draws attention to the intimate connection between recent and fossil botany, and gives an account of the steps he has taken in the Breslau Botanic Garden to illustrate the latter, by forming a model section of the coal formation, with its characteristic plants. Its a similar way the gigantic trunk of the Pinites Pitodrayi, discovered and described by the author, serves as a representative of the tertiary formation. The paper was accompanied with photographs.

Mr. S. HIBBERD, London: On the naming of plants.

The importance of botanical nomenclature to science, art, and literature.—Classical origin of many of the names of plants.—Names of plants divided into two classes, natural and artificial.—Prevalence of artificial names at the present time; objections to them.—Proposed revisi n of botanical lists.—Proposed establishment of a board of botanical nomenclature.

Dr. HILDEBRAND, Bonn: On the necessity of insect agency in the fertilisation of Corydalis cava.

Dr. Hildebrand concludes from his experiments, that the flowers of Corydalis cava, do not protect from insects, and thus acte l on by their own pollen from no capsules. 2d. That fruit is very seldom formed when the flowers of the same raceme are crossed with each other. 3d. By the crossing of flowers on different individual plants alone, is perfect fertilisation insured.

Mr. J. E. HOWARD, London: Observations on the present state of our knowledge of the species of Cinchona.

"The chief cause of the confusion in our knowledge of the Cinchonas has been the tendency to systematise without a full acquaintance with the details. I entirely disbelieve in all the so-called typical forms, and in all the attempts to classify and arrange them. The very best of these attempts seems to me to be a mere blank, and I expect, as much even as regards the exact limits of the genus itself, which blends by intermediate links with the other Cinchonaceous genera. I wish to direct especial attention to the spelling of the name of the genus, whether as Cinchona or as Chinchona, also to the name of an allied genus, whether as Cascarilla or as Ladenbergia. Nothing would tend so well to settle these questions as the free expression of opinion at a Botanical Congress. I would also point attention to the necessity of considering some as markedly distinct forms rather than as mere varieties having sub-varieties until all the details be completed. To be admitted, the Cinchona pitayensis, C. lancifolia, C. purpurea, C. erythroderma, C. Pelletieriana, &c., would take their legitimate place: and I propose, by the side of these, to place the C. Bonplandiana, vars. colorata and lutea, as representing a distinct form of the Loja bark. I would confine the name Cinchona Condaminea to the real Quina primativa (if the having cured the Countess of Chinchon entitles it to this appellation), abolishing Pavon's barbarous name Chaluangurum. I have attempted to reduce into practical use Karsten's varieties of C. lancifolia, viz., ovata, oblovata, fimila? angustifolia? and Almaguerensensis? The last three I venture myself to suggest. The varieties of Cinchona Calisaya I do not venture to do more than allude to, as I hope Dr. Weddell may further elucidate this subject. In conclusion, I will express my opinion that every well-defined region of the Andes has its own prevalent and characteristic Cinchonas, which are incapable of being reduced to any one typical form; and I believe that no one species has been clearly proved to prevail unchanged from end to end of the Cinchonaceous region; and I think that the plants which resemble each other in distant parts will be found analogous rather than identical."

Mr. Howard has succeeded in obtaining quinine from the bark of C. officinalis, which he cultivated in his own stove, and discovered very nearly as much quinine as is usually in bark of the same age in its native country. This is probably the first time that quinine has been extracted from bark grown in Europe.

In the discussion which followed on this subject, M. WEDDELL said that if indeed his work on Quinology had rendered some services to science—not the least important of them was that of having contributed to call into the field sounable and persevering an observer as Mr. Howard. M. Weddell then made some remarks on the spelling of the word Cinchona, and said that if it could be proved that Linnæus spelt the word Cinchona without the first *h* by error, then it would be right to correct that error and say Chinchona. But Linnæus used the word Cinchona for the sake of euphony, just as he wrote Jussiæa not Jussieua, &c. Linnæus' name has therefore priority; moreover the Spanish letters *ch* are now pronounced as they are in English, *e. g.* in the word church, and no advantage would therefore be gained. The change would also create a bad precedent, and one to which it would not be possible to adhere always, as when two different genera have been dedicated to the same botanist, their names, having a common derivation, such as Fontanesia and Desfontanesia, the latter name according to the new rule ought to be the one adopted.

M. Weddell fully concurred in the views expressed by Mr. Howard as to the great variability of the species of this very natural genus, saying that there were almost to be said that all those described were but races or varieties sprung from one typical form, as not one of the so-called species could be distinguished by any one absolute character, but only by a certain *ensemble* which is readily seen by the practised eye. The only way to unravel the tangled skein would be for some intelligent botanist to devote some years of his life to the study of every so-called species in its native realm, and settle once for all how many or rather how few must be the forms henceforward to be considered as typical. The very worst practice that can be rendered to quinology and to systematic botany consists in a profligate multiplication of specific names. When vegetable forms deserving to be distinguished can be ranked as varieties or sub-varieties, it is easy to see that a much more correct idea is conveyed of their filiation and of the amount of their differential characters. The same form, if all raised to specific rank, would all appear on the contrary to be equally distinct one from the other.

Mr. H. HOWLETT: On night-covering and shading of plant and forcing houses.

The author's object is to combine shading with night covering by means of one contrivance fitted to the roof. He points out the necessity for the former, and the great advantages to be derived from the latter, and suggests that both may be accomplished by fitting on the roof a series of louvre boards moved by levers. The suggestion is offered as affording ground for discussion, but has not been practically tested.

M. VAN HULLE, Ghent: Rational method of pruning.

The writer assumes that the fruits produced in England are abundant, but small, and usually produced by trees left to their natural growth, owing to which they are neither so regularly nor so fine as they might be. The same remark, of their productiveness in England, such as it is, is due rather to the skill displayed and cost incurred in managing the ground than on the management of the trees. The writer assumes that the English prune their trees to make them grow, without properly considering or caring for the results of fruit.

He recommends pruning to obtain symmetrical trees and large fruit, by recognising the character of the different branches, as, for instance, whether fruit bearing or wood-bearing, and treating them accordingly, in opposition to the system of treating all alike, which he calls the old system, and speaks of it rather as "pruning without system." The old plan leaves Nature to form wood or fruit branches at will; he would so control Nature as to form either at pleasure.

Professor KARL KOCH, Berlin: Some propositions with respect to Systematic Botany. (See p. 515.)

Professor KICKX, Ghent: On the physiology of Cryptogamous plants.

M. KREIAGE, Haarlem: On the names of garden varieties and their confused synonymy, with special reference to bulbous and tuberous-rooted plants.

Mr. THOMAS LAXTON, Stamford: On the variations effected by crossing on the colour and character of the seeds of Peas.

The specimens exhibited were selected for the purpose of illustrating the variations produced by crossing, in the colour and character of the seed of Peas, in the second and succeeding generations.

The results of experiments in crossing the Pea tend to show that the colour of the immediate offspring seed or second generation, sometimes follows that of the female parent, is sometimes intermediate between that and the male parent, and sometimes distinct from both; and although at times it partakes of the colour of the male, it has not been ascertained by the experimenter ever to follow the exact colour of the male parent. In shape, the character is frequently that of either parent. In the second generation, in a single pod, the result of a cross of Peas, different in shape and colour, the seeds therein are sometimes all intermediate, sometimes represent either or both parents in shape or colour, and sometimes both colours and characters with their intermediates appear. The results also appear to show that the third generation, or seed produced from the second generation, or immediate offspring of a cross, frequently varies from its parent in a limited manner—usually in one direction only, but that the fourth generation produces many and wider variations; the seed often reverting back partly to the colour and character of its ancestors of the first generation, partly partaking of the various intermediate colours and characters, and partly sporting distinctly from any of its ancestry. These sports appear frequently to become fixed and permanent in the next and succeeding generations; and the tendency to revert and sport thenceforth seems to become checked if not determined.

The experiments also tend to show that the height of the plant is singularly influenced by crossing, cross between two dwarf Peas commonly producing some dwarf and some tall, but on the other hand, a cross between two tall Peas does not exhibit a tendency to diminution in height.

No perceptible difference appears to result from reversing the parents and applying the pollen of the female to the variety previously employed as the male flower.

PROFESSOR LECOQ, Clermont Ferrand:

1. On the cultivation of Colchicum byzantinum.

A description of the plant, and of the method of cultivating it, is here given. The author recommends it for use in greenhouses and living rooms, its corms being concealed by Lycopodium.

2. On the migration of mountain plants.

The object of the author is to show that the mountains of

voyage have received their Alpine plants by the agency of birds and of wind, and not by a gradual migration during a supposed glacial period, the existence of which he denies altogether.

This district, he says, was, at the tertiary period, a vast plateau, with a mean altitude of 8–9000 feet. Volcanic eruptions then inundated it, altered its soil and climate, and raised it in some places 1000 metres. "Then," says he, "clouds began to settle on the heights, and snow to accumulate, and innumerable streams flowed from its icy summits, and by their murmurs seemed to call for a Grecian vegetation to come to enjoy these happy conditions. The hospitable appeal was heard," &c.

The boreal species, with which alone we are concerned, and a list of which, about 104 in number, he gives, could not, he says, have arrived till after the volcanic elevation of the district, and they could only have come from the Alps, the Pyrenees, Lapland, or the mountains of Grenada. But as all these are either Alpine or Pyrenean, with the one solitary exception of the Arabis cebennensis, we may assume that these two great chains were the home from which they came as colonists to France.

The intermediate country is low and flat, and afforded them no resting place; Darwin's theory of their progress by means of a glacial period he rejects; and concludes that they must therefore have been wafted thither through the air, and mainly by birds of passage, and violent storms of wind.

M. LAHAYE, Paris: On the preservation of fruits.

The author says it is impossible to preserve fruits out of their season, if the trees which produce them are in bad health or condition.

M. MAS, Bourg: Of the method to follow in obtaining new varieties of fruit.

Dr. MASTERS, London: Double flowers, &c.

Dr. DAVID MOORE and Mr. A. G. MORE, Glasnevin: On the climate, flora, and crops of Ireland.

The authors remark upon the well-known humidity of the climate, and the singularly slight difference that there is between the summer and winter temperature; a difference that at Dublin is only 17½° Fah., and on the west coast as small as 14°. Indeed, that of winter, they say, is as high as though the island lay 15° nearer the equator. Hence the peculiarity of the Irish flora, of which they give a list of the more interesting species, and an accompanying map to show their geographical distribution. The humidity of the climate and its low summer temperature they find to be unfavourable to the ripening of fruit and Wheat, but such as to render it and the country of all Europe the best fitted for green crops and cattle grazing.

Appended are some interesting returns sent in by gardeners in the counties of Cork, Kerry, Galway, Mayo, Sligo, and Fermanagh, in answer to queries as to their success with fruit trees and half hardy shrubs and flowers. These returns agree in showing that the climate of the southern and western counties is ill adapted to the growth of fruit, but favourable to that of evergreens.

Professor E. MORREN, Liege:

1. On the influence of coal gas on plants.

2. On double flowers.

Dr. FERD. MUELLER, Melbourne: Cultivation of the Cinchona in the South of Europe.

The culture of the Cinchonas in the Madras Presidency, according to authentic calculations, yields out most startling prospects of unmanufactured yield; and there can be no doubt that Peruvian Bark tree plantations will be among the most lucrative in any locality where these plants will prosper. The facts thus beyond dispute ascertained in India lead to the reflection how far Cinchona culture can be extended over the globe. From trials made in 1857 in the Botanic Garden of Melbourne it is apparent that for the cultivation of Cinchonas no absolute necessity exists for the rarity of air of those mountain regions of the Andes, the proper home of these trees. On the contrary, it would seem that merely a mild warm temperate atmosphere combined with moisture, by shifting, is required for Peruvian Bark plants; and as in the Cinchona plantations of India extra-tropical Australian and Mediterranean plants do prosper, the question arises whether their cultivation could not be pursued to advantage in most valleys outside Australian and Mediterranean regions, other than those of the tropical zone. In Victoria arrangements are made to try the growth of these plants in the extensive Fern tree gullies which abound. In these experiments more extended facilities now exist since Cinchonas have commenced to ripen their seeds in India, and since the generosity of the Indian authorities has rendered some already available here.

Under any circumstances it appears desirable that in South Europe and elsewhere experiments should teach us as how far these plants adapt themselves to the somewhat altered influences which they will experience.

Professor PARLATORE, Florence: The species of Cotton.

Professor PYNAERT, Ghent: On the origin of new varieties of fruit trees, and the method of producing improved varieties from seed.

Professor REICHENBACH, Hamburg: On some points connected with the Orchideæ.

Mr. RIVERS, Sawbridgeworth:

1. On the culture of fruit in unheated glass structures.

A brief history of orchard houses, and the latest improvements in their construction and ventilation. A short account of the kinds of trees to be grown in them. A new method of forming the borders for the reception of the trees. An improved mode of cultivating Apricots under glass, so that crops are insured. The culture of Cherries in orchard houses, and the stocks proper for them, Cerasus Padus. The cultivation of the finer kinds of American Apples in orchard houses is recommended, and that of Pears and Plums slightly touched on.

2. On dessert Orange culture in England.

This paper describes the perfect success of the culture of Oranges for some seasons past. The method by which they are made to ripen their fruit perfectly in about eight months, so that ripe Oranges may be placed on the table immediately after the late kinds of Peaches or Nectarines. The most eligible kinds of Oranges for English culture are named. The outlines of their management, and the proper temperature of the dessert Orange house, are given.

3. On Seedling Peaches and Nectarines.

Professor SCHULTZ SCHULTZENSTEIN, Berlin: On the presence and source of nitrogen in turf or peat, with reference to its use as a manure for plants. (See p. 515.)

Mr. W. G. SMITH, London: The corona of Narcissus.

Basing his argument upon analogous structures in other plants, Mr. Smith considers the corona of Narcissus to be made up of a series of confluent petal-stipules, leaving the normal six stamens and six petals as in the rest of the Amaryllidaceæ.

Signor TRIANA, Kew: On the manuscripts and beautiful drawings made under the direction of Mutis in his botanical expedition to New Granada, and which are preserved at Madrid.

Signor Triana desires to draw attention to the existence at Madrid of a most interesting collection of manuscripts and drawings made by Mutis and preserved at Madrid, where they have peacefully slumbered for many years. Among these are a series of species of Ficus, in all 145 in number, to be hoped that the Spanish authorities will at last cause fully to preserve these valuable documents, and render them easily accessible to botanists.

Mr. ROBERT WARNER, Broomfield, Chelmsford: On cool vinery Orchids.

Mr. HERMANN WENDLAND, Herrenhausen: Notes on the culture of Palms. (See p. 515.)

Mr. TUFFEN WEST, London: On the structure of the testa of the seed of the Solanaceæ.

Details a series of microscopical observations on the outer covering of seeds. Mr. West describes the peculiarity in the cell structure of the testa in different genera, and shows that such structure will frequently afford valuable characters. A peculiar structure is present in the testa of many Solanaceæ. It is a frame of barred tissue, constituting a support to the lateral walls of the cells; in which portion of the cells the primitive membrane is found in mature seeds to have disappeared more or less completely. The barred walls are often thickened by lignin, and even crustaceous deposit in addition to their usually very sinuous outline, the edges of the inner walls are also lobed at it by undulation; from these edges processes arise which form a fringe having the appearance of hairs. By examination of many species this structure was proved to be a form of barred tissue, which by various intermediate conditions passes in S. indicum and S. jasminoides into a reticulate tissue. The author is very desirous to procure seeds for microscopic examination, the results hitherto obtained promising to possess interest and value in proportion to the extent to which they are systematically carried out.

Dr. WIGHT, Reading: On the phenomena of vegetation in the Indian spring.

Dr. Wight, referring to some correspondence in our columns, pp. 1059, 1203, offered a suggestion towards explaining the difficulty in accounting for the sprouting of trees during the hottest and driest months of the year, at a time when the heat and drought would appear to be fatal to vegetation. This is a phenomenon often observed, and always with wonder, but one which may, he thinks, be accounted for on the same principles as the swelling of the buds and renewal of spring vegetation in higher latitudes, namely by change of temperature stimulating the dormant or torpid vegetable beyond its previous condition. In the Indian latitudes, where the cold is often intense, the susceptibility of plants to heat becomes so acute that the rise of only a few degrees of temperature above the freezing point sets the circulation in motion, especially when the soil in which the roots are distributed is still unfrozen, and capable of absorbing the moisture. Hence the swelling of the buds and stem are simultaneous through the rise of temperature of the air equalising that of the soil in which the roots are distributed, permitting their circulation to take place, and with it renewed vegetative operations of vitality and activity.

Applying this principle to the case in question, we must bear in mind that, owing to the high range of temperature in which the plants habitually grow, they susceptibility to variations of temperature is at the minimum, so that it is not until a considerable rise has taken place that the effect becomes manifest. Again, as in the other case, the transpiration action between the stem and roots is necessary. "The hottest and driest month of the year" is preceded by the wettest and coldest during which the soil is first saturated with moisture and then cooled by subsequent evaporation to a temperature considerably below that of the air. Then the dormant vegetation in abeyance deep rooting trees flags until renewed by the heat of the advancing season restoring the equilibrium between the roots and branches. Then leaf tropical vegetation with its delicate perfection is seen. Here are the circumstances in which a Bamboo shoot can almost be seen to grow, and its progress marked from hour to hour at the rate of nearly a foot a day, or even more than that.

This principle of synchronism between the above and below ground vegetation, which Dr. Wight has so fully applied, with the writer apprehends, be found applicable to the solution of several apparent anomalies presented by the renewal of vegetation after the annual rest, and in the hands of ingenious horticulturists may, he thinks, be turned to good practical account.

Mr. WILLS, Huntroyde Park, Burnley: On sports produced from "Mrs. Pollock" and other Pelargoniums.

The author is of opinion that the varieties of variegated plants cannot be perpetuated from seed, but only by propagation of sports.

Home Correspondence.

Paulownia imperialis—It may interest some of your readers to be informed that there is at present in my garden a Paulownia imperialis in full bloom. The tree was turned out of a small pot into the open ground 17 years ago, and it now measures, at a foot from the ground, 1 feet 2 inches in girth, and the branches extend from tip to tip about 27 feet; it is about 25 feet in height. It has produced some scattered blossoms before, and once or twice a full spike, but it is now completely covered with its delicate lilac and white flowers, and presents a sight of rare beauty. Every blossom, indeed, appears to have fully expanded itself in spite of the cutting north-easterly winds with which we have been lately visited. I should add that the tree has never had any protection, and that it is planted in the natural soil of my garden, a stiff chalky loam. We have counted 30 blossoms on one spike; and it may be well to state that there are some still larger spikes than that to which I have just alluded. *Thomas Methuen, Corsham House, Chippenham, Wiltshire.*

Stipa pennata—Permit me to inform "A. Z." (see p. 461) that I received a packet of seed of this Grass from Mr. Veitch, of Exeter, in the spring of 1865. I sowed it in a seed pan in March, and placed it in the open air, where it remained until last month (April), when I had the satisfaction of observing a good many plants come up. I then (*i. e.* in April) planted them out in the flower garden, where they appear to be doing well. The soil in which the seed was sown consisted of equal parts of turfy loam and leaf-mould, with a liberal sprinkling of sand. About 16 years ago, when living in Devon, I raised a number of plants of this Grass under the same treatment from seeds of my own saving. Your correspondent should be careful to keep mice off them, for I have sometimes found these little pests very destructive to Grass seeds. *J. Mitchell, Treamearnah, Tenure.*

If "A. Z." will send us a seed or two of Stipa pennata in the open border immediately they are ripe, thrusting each separately into the ground the depth of the seed, he will have no difficulty in getting them to germinate. Common soil is all they require. *A. R.*

Wasps—In reference to my communication (see vol. for 1864, p. 481) I beg to hand you a statement of the number of wasps killed and brought to my garden on or before 1st May, in each of the five succeeding years:—1862, 38; 1863, 33; 1864, 590; 1865, 2147; 1866, 653. *Diss.*

Rhododendron Falconeri—It may interest some of your readers to know that this fine Sikkim variety of Rhododendron is at present flowering profusely in the American Garden here. It has three magnificent trusses on it, each containing from 23 to 26 florets; the blooms are of a delicate milky-white, with a chocolate thread, and anthers of the same colour. They emit an agreeable fragrance, somewhat resembling that of some Orchids. Although they have been open three weeks they nevertheless promise to remain in perfection for some time to come. *Hy. Muncs, Gardener to J. Lamb, Esq., Cheverlands, Lyme, Dorset.*

Peaches and Nectarines.—Having lost my crop of Peaches and Nectarines this year, permit me to ask the opinion of your correspondents as to the cause of my failure. The house in which they are growing is built on Mr. Rivers's plan, *i.e.*, with shutters in the front and at the back. The trees are planted in front, and trained on wire halfway up the roof. A row of pot trees occupies the back border. They bore a very heavy crop last year, and ripened it well. I pruned and treated them in the same way this year: I did last. They had a good show of bloom on them. I gave them plenty of air in the daytime, shut them up at night, and kept them dry during the time they were in blossom, but I am sorry to say the blooms nearly all dropped off. The trees are looking as healthy as I ever saw them; they are very clean and free from insects. We had two frosty nights, which froze the water tub quite over when they were in full bloom. Could that be the cause of my failure? *A Six Years' Subscriber.*

Proposed Plan for putting Air in Motion in Plant-houses.—Mr. Fish, in his closing remarks on ventilation (see p. 436), expresses a doubt as to the practicability of introducing artificial wind into plant-houses. I hope, however, that he will not let the subject drop until such a desideratum as that in question is supplied. Those who take Nature as their guide in other things appreciate the growth of plants, will readily admit their failure in this matter. If wind blows out of doors, why not indoors? This, I imagine, could be effected by means of a "wind wheel" fixed at the end of, say a plant house, in a way in which the wind could act upon it at all points. If assisted by cogs, this wheel might be made comparatively small. Attached to it would be a rod of iron running the entire length of the house, furnished at intervals, or all its length, with fans. In this way, with very little mechanical skill, we might have artificial wind, which, if not equal to that out of doors, would nevertheless be a step in the right direction. In large houses the wheel should be proportionately large, and, if desired, there could be brought into use almost any number of rods, which might be placed in all the angles of the house, above or below or under the stages. Noise would doubtless be a subject on, but not unless gales, or even comparatively gentle breezes, are not without noise. Another objection might be the unsightliness of such a contrivance, but a similar objection might be urged against indoor water cisterns. The best way would be to have the whole apparatus made in such a manner as to be easily put up or taken down, an operation which could be effected by any country millwright. The expense would be the cost of galvanised iron. Whether this plan be adopted or not, I am certain that sooner or later an air disturber of some sort will be considered as necessary an accompaniment to a plant-house, as at present a stoke-hole or a cistern is. *Henry Mills, Ennis, Penrun.*

Cocoa-nut Refuse.—Your correspondent at Kingston-upon-Thames (see p. 437) informs us of the rapid diminution of his heaps of this refuse. I would ask whether any of your correspondents have applied to similar purposes the waste of the "Mexican fibre," produced, I believe, by a species of Cactus, of which I enclose a specimen; if so, I shall be obliged by any information with which they will favour me as to its effect on the growth of plants, and the best mode of applying it. I can get it from a neighbouring manufactory in greater quantities than the Cocoa-nut fibre, I would also suggest that worn-out mats, ropes, and other articles made of Cocoa-nut fibre, may be cut, or pulled to pieces, and used for the same purposes as the original refuse. *Coir.* The fibre sent being nearly as white, hard, and dry as the hair of a tooth-brush, could not, in its present state, be used as a substitute for Cocoa-nut refuse—not fibre that is used for manufacturing purposes. It would, doubtless, however, be excellent material for laying between rows of Strawberry plants to keep the fruit clean.

Liquid Manure.—Allow me to call attention to a valuable liquid manure which I have used for some time with beneficial results on almost all kinds of plants. I take human urine, quite stale, which contains a considerable quantity of free ammonia, and which turns test paper prepared with Archil liquor (used by dyers) quite blue when dipped into it, and add sulphuric acid till the test paper turns red when touched with the mixture—the redness indicates an excess of acid. I then add ground chalk to neutralise the excess in question. The amount of acid required is about 2 oz. (more or less) to each gallon of urine, and about the same weight of chalk; the quantity of the latter is not material, provided there be sufficient to take up all the excess of sulphuric acid. When wanted for use, I stir the mixture well

... to diffuse the settlings equally throughout the ... and take out of it while in an agitated state as much as is required to be used at once, adding water in the proportion of from 1 to 2 gallons for every gallon of the mixture. This I immediately apply to the plants, not allowing the settlings to be separated. The weaker strength, viz., 1 pint of mixture to 2 gallons of water, is quite strong enough for most plants if used ... and frequently. I will not particularise the ... I have obtained, but will leave those who may ... this manure worth a trial to judge for themselves. I may, however, remark, that its effects will astonish most people, *i. e.*, if the mixture be properly prepared, which is easy enough for any one to do. It is necessary to keep out all slops and water while collecting the urine, which must be kept in a moderately warm place to get stale, which will take about a week. This mixture will be found as cheap as any that can be made, and more ... than most artificial manures. It is a pity ... valuable fertiliser as human urine should ... used as it is. Used in the manner just described it will be found especially well suited to Grass and seed crops. Sulphuric acid may be had from the manufacturers at about a penny per pound, and the Archill test paper can be prepared by any chemist ... at a moderate cost. A very small bit is ... to test a large tank of liquor. *Thos. Lightfoot. Bank House, Accrington.*

Cork and Properties of Plants used as Food.—In your No. of May 12, p. 437, a correspondent asks the question—"Has anything been done to classify the odorous and sapid properties of plants according to their chemical nature, as suggested by the late Professor Henslow?" Something of the kind has been tried within the last 100 years, in a small work published upwards of 80 years ago, entitled "A Short Attempt to recommend the Study of Botanical Analogy in investigating the Properties of Medicines from the Vegetable Kingdom." In that work we are informed that there are seven kinds of smells:—the ambrosial, of which Musk is an example; the fragrant, or the flowers of the Jasmine; the aromatic, or those of the Pink, or Laurel flowers; the alliaceous, the Onion or Assafœtida; the goatish, as the Orchis or Herb Robert; the fœtid, as that of the Hemp and Opium; and nauseous, as the Hellebore and Tobacco. The aromatic and the fragrant seem to indicate a stimulating power, but in general it is slight and transitory. The fœtid and the nauseous are sedative, but the latter is frequently emetic, and sometimes cathartic. The goatish smell does not point out any useful property, and the alliaceous agrees in its powers with the substances whose tastes have been denominated acrid. This is nearly the substance of the boasted knowledge which we possess from those sagacious sentinels which are said to superintend our conduct and diligently inform us of the approach of any noxious power. The division of tastes by which we discover a discriminated permanent property in the body possessing them is the following:—the watery and dry, the viscid and salt, the sweet and the acrid, the acid and bitter, the fatty and the styptic. It is also stated that it would be superfluous at this time to make any observation on chemical analysis. The French academicians have tortured every medicine to make it manifest its virtues, but with very little success; each was obstinately silent, or gave such vague uncertain intelligence that the chemist retired in despair. We are told by one of this Society that two thousand experiments had been tried, and they found only a little acid, essential or empyreumatic oil in different proportions; a fixed and volatile salt, a quantity of insipid matter and earth. The very same proportion of these different parts was often found in plants of very different qualities. Some botanists have tried to trace the remarkable agreement between the natural character of plants and their effects on the human body. The English botanist Petiver suggested this method in the "Philosophical Transactions;" and the laborious Hoffman pursued it. Ray, who was rather inclined to think any attempt of the kind a fanciful innovation, yet allows that his Verticillata are generally aromatic, at least he observes that there are more plants of this kind in that order than of any other. *P. M. P.* [We presume our correspondent's inquiry had reference to modern works on the subject: were we to give a catalogue of writers in olden times, who have treated on this subject, the list would be as long as that of Homer's ships.—EDS.]

Early Peas.—This day, May 26, I send you a few of my Earliest and Best Peas, which have been brought in by some of my customers, who assert them to be the earliest and hardiest of all kinds, they having stood the inclemency of the weather this spring so much better than others. I may also mention that several of my market gardening friends near here tell me that they shall gather plentifully of the same kind from their fields for market during the next week. When in London this week I was informed that the Peas offered for sale in Covent Garden were foreign produce, so I would fain believe mine to be the earliest and best outdoor-grown Peas yet in market. *Robert H. Poynter, ... A very good sample.*

Wine-cork Fungus.—Considerable loss is caused in wine cellars by an attack made on the corks by Fungus, which, after a comparatively short period, forces its way between the cork and the neck of the bottle, and imparts a rotten flavour, similar to that of decayed wood, to the wine. What is the prevention in this case, apart from that of waxing the corks, and will any application obviate its formation in the cellar—*... A Subscriber of 20 Years.* The following remarks extracted from an article on this subject by "M. J. B." (see p. 6, 1865), may possibly furnish the information you ask for. It is clear (says that great authority in such matters) that the cellarman has quite as much need to guard against Fungi as the cultivator, and with both, perfect cleanliness and care are equally desirable. As far as possible all vegetable matter, as laths, sawdust, exposed beams, and above all, wooden shelves should be avoided. Felt may be substituted in packing for laths, and if after all the exposed corks should be covered with a white floccose mould, which will sometimes be the case where neither wooden laths nor sawdust fare employed, it is advisable at once to wipe it off. Sealing wax is not always a preservative, for we have seen corks highly decomposed by Fungi beneath the wax if cracked or chipped, which is often the case if the mixture in which they are dipped is not sufficiently tough as regards its consistence. Metal capsules afford doubtless the greatest security, but these are used only for certain wines. The projecting portion of the cork might be painted with an aqueous solution of corrosive sublimate, which would prove a complete preventive, were not the metallic salt so dangerous as to make it use inexpedient except in very careful and judicious hands. Where there is reason to think that the substance of the corks has been materially impaired, which may be easily seen by simply cutting off the projecting part, and observing whether the substance is marbled with white veins or patches, it is requisite at once to recork the wine, putting aside those bottles where the spawn has penetrated so deeply as to impair the distinctive aroma. This has been practised within our experience with great advantage, and a valuable cellar has thus been saved, where mischief was not only threatened, but had absolutely begun.]

Societies.

BOTANICAL AND HORTICULTURAL. *May 10.*—Dr. R. K. Greville, President, in the chair.—Professor Balfour read a notice of the botanical labours of the late Thomas Drummond, who had extensively travelled in South America, and made extensive collections of plants. The following communications were read:—I. *Account of the Cultivation of Cinchona in Java.* By Dr. Hasskarl. 1865. By R. Hall, Esq. Among the species alpina, Mulgedium alpinum (of which they saw specimens in full flower), Gentiana nivalis, Carex Vahlii, and C. vaginata, Oxytropis campestris, Alsine cerastioides, &c.—II. *Notes on Ferns collected in Nepal.* By Dr. Greville.—III. *Notes on the Species of Pinus described in Dr. Lindley's Pinetum.* By Dr. Parlatore. In this paper no account was given of the specimens of the species under the care of the Rajah of Travancore, and reference was made to the successful cultivation in it of various species of Cinchona and of Tea and Coffee plants.—IV. *Notes on the Botanical Productions of the Khondyer Hills and Mountains, as collected in 1865.* By Dr. Wight. Orchideæ, Amaryllideæ, Hæmodoraceæ, Iridaceæ, Dioscoreæ, Liliaceæ, Smilaceæ, Melanthaceæ, Colchicaceæ, Palmæ, Pandaneæ, Aroideæ, Cyperaceæ, Gramineæ, Filices, Lycopodiaceæ, Rhizocarpeæ, Characeæ, Musci, Hepaticæ, Lichenes, Algæ, Fungi, Diatomaceæ.—V. *Notes on Ferns.* By Mr. Richard Alder, Liverpool. Communicated by Mr. M'Nab. The author showed that by the use of the bulbs of Hyacinths, &c., Nitrate from the soil could be dispensed with, and that by the use of the bulbs of Onion, Garlic, &c., Potash could be dispensed with. He concluded the paper by giving a list of the principal ferns found in the shade of Mount Bonaparte.—VI. *Notes on the Species of Ferns described in Blume's Enumeratio Filicum Javæ.* By Mr. Richard Alder, Liverpool. Communicated by Mr. M'Nab. The author showed that by the use of the bulbs of Hyacinths, &c., Nitrate from the soil could be dispensed with, and that by the use of the bulbs of Onion, Garlic, &c., Potash could be dispensed with. He concluded the paper by giving a list of the principal ferns found in the shade of Mount Bonaparte.—VII. *Notes on Cinchona succirubra (erythroxylon).* By C. Lawson, Esq., of Borthwickhall. In this paper Mr. Lawson gave an account of the cultivation of this species in the neighbourhood of Grenada, Almeria, and Murcia in Spain. He ascertained that upwards of 60,000 tons of the plant were exported last year from the east coast of Spain, chiefly Alnecria and Carthagena, to Britain, the price being 4*l.* per ton, free on board. Mr. Lawson suggested that it might be advisable to try the cultivation of the plant in this country, ... with the view of ... —VIII. *Notes on Rhizomorphous Fungi.* By Mr. John Sadler. The author exhibited specimens of several rhizomorphous Fungi, collected in different situations, and described their general structure. Among the species was one recently presented to the museum at the Royal Botanic Garden by Mr. Finlay Dun, as "roots of Rushes taken from a large stone drain." No. 2 was sent by Mr. James Scrymgeour, as a "vegetable substance found in the interior of a coffin in ... between the bark and the wood of a decaying tree near Coventry, and presented to the University herbarium by Mr. J. ... Mr. Sadler ... the different specimens to be of true fungal origin, and much ... to the ... No. 1, from ... was ... and ... that ... No. 3, from ... was ... and ... that ... The author ... that these rhizomorphous Fungi are merely the mycelia of some of the common species of Polyporus or allied genera, although it has not yet been satisfactorily ... Dickinson, in his ... describes the genus, and gives good characters for it. Dr. Greville describes three species in his "Flora Edinensis:" but the latter author is now of the opinion that the ... have been ... the ... —IX. *Notes on Cryptogamic Plants collected in the Andaman Islands.* By Dr. Cooke, of the India Museum, London, to whom he had transmitted ... —X. *Notes on Cryptogamic Plants collected in Ceylon.* By Dr. Cooke. —XI. *Notes on Cryptogamic Plants collected in Nepal.* By Dr. Cooke. In this communication Dr. Cooke remarked that, although he had been met with bearing any organs of fructification, they are entirely omitted from all recent works on fungology. They are certainly very abnormal forms, perhaps of some of the common species of Fungi, but unless such connecting links are retained to distinguish them until their origin has been fully traced, they will ever perplex and puzzle the student. Their ... is ... and ... said to be very phosphorescent. Professor Balfour, in his "Outlines of Botany," remarks that these plants vegetate in the dark caverns and coal mines of Germany. They are seen hanging from the roof in great numbers, and their luminous qualities are most developed in the furthest recesses. The ... —XII. *Notes on Cryptogamic Plants collected in Nepal.* By Dr. Cooke. In this communication Dr. Cooke remarked that, although he had been met with bearing any organs of fructification, they are entirely omitted from all recent works on fungology. 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Notices of Books.

The Harmonies of Nature; or the Unity of Creation. By Dr. G. Hartwig. London: Longmans, 1866. 8vo. Pp. 466.

Gifted with an easy, fluent style of writing, and a power of seizing salient points, Dr. Hartwig has succeeded in this volume in maintaining the reputation he had already earned by his previous publications. The author has the happy knack of clothing the details of science in a poetical garb without impairing that accuracy of statement the disregard of which is so serious a drawback to most so-called popular books. The object of the present volume is sufficiently expressed by its title, while the table of contents shows how wide is the range traversed by the author, from the heavens above to the waters beneath, and including the denizens of both. As an illustration of his style we extract the following:—

"Where shall we find pliability and firmness more beautifully combined than in the structure of a leaf? A slight breath of air sets it in motion, and this circumstance is naturally very favourable to the respiratory process, as the perpetual agitation of the foliage brings it into contact with new sheets of air, and thus facilitates the exchange of oxygen and carbonic acid. But as the green cellular tissue of the leaf, in which the functions of respiration are carried on, is easily torn, a strong framework or skeleton was needed to give it the necessary support, and this is amply afforded by its ribs, which, consisting of bundles of strong, tough, and colourless vessels, proceed from a chief middle-rib, and ramifying over the whole surface, support the green-coloured cellular tissue as firmly as the trunk, subdividing into numerous branches, supports a vast crown of foliage.

"To increase the mobility of the leaves without detriment to their strength, their mid-rib frequently forms a long stalk before merging into the body of the leaf, which, being thus freely suspended upon its slender and flexible support, easily gives way to the slightest disturbance of the air, as a ship at anchor gently rocks to and fro in the heaving and subsiding waters.

"Where the foot-stalk of the leaf has to bear a considerable weight, and is moreover very much exposed to the wind, additional precautions have been taken for increasing its strength. Thus, the foot-stalks of the huge fronds of the Cocoa Palm are inclosed in a tough web or net-work, which preserves them so well from breaking, that even after death they remain attached to the tree. In the flexible Grasses we find the leaves embracing the stem with a sheath, which gives to both a much greater power of resistance, while in many herbs the sessile leaves are placed in such a manner that the rain or dew collecting on their surface flows down the stalk to the roots, where it is most needed. In several aquatic plants, the stalks of the leaves are ventricosely distended, so as to render them buoyant, and in many of the Fuci, the large air-vessels with which the stem or the fronds are furnished, answer a similar purpose. These few examples sufficiently prove that it is not by a mere caprice of growth that some leaves are barely suspended from stalks, while others embrace the stem of the plant, but that every variety of form is made to answer an especial end. No plant has been neglected, none has been encumbered with useless or inappropriate organs, but each has received all that it required."

We need only add that the work is abundantly illustrated, has a good index, and would form a most acceptable gift-book to any one with a taste for natural history.

Florists' Flowers.

BEDDING PELARGONIUMS.—Mr. Saul, Stourton Castle, Yorkshire, writes in reference to these, in a late number of the "Florist and Pomologist," as follows:—

"The busy season for 'bedding out' has again come round. Ere the close of the present month (May), the greater part of the many thousands of bedding plants, that were during the winter months crammed into every available nook and corner of our glass structures, will have been transferred to the flower garden. A few years ago, if the beds were tolerably well filled up by the early part of July it was thought to be pretty good management even in favourable seasons; but in bad and unfavourable years it was often a difficult matter to get good masses of bloom before the end of July, owing to the uncertainty attending the growth of the kind of plants then used for bedding purposes. Now, however, the case is very different. The great number of varieties of bedding Pelargoniums make us independent of seasons, and furnish materials for immediate effect. As Mr. W. Paul remarks, in reference to bedding Pelargoniums, 'The certainty with which they accomplish the work allotted to them, their freedom and continuity of bloom, the gorgeous masses of colour which they produce, and their comparative independence of the changes of the weather, place them without rivals in their own peculiar walk.'

"Most of the stronger-growing kinds of the plain and zonate-leaved Pelargoniums, which are grown principally for their flowers, require different treatment from the weaker-growing kinds of the variegated sections. Nothing takes so much from the effect of flower gardens as to see some beds badly filled, whilst others near by are, as may sometimes be seen, masses of luxuriant growth. It occurs to me that a few remarks on this subject, therefore, may not be altogether unacceptable.

"The last season was a remarkable one, the like of which may not again occur for some years. It was, on the whole, highly favourable for bedding Pelargoniums. The long continuance of fine, warm, sunshiny weather was all that could be desired for Pelargoniums, particularly those of the plain and zonate-leaved sections. The coming season may be very different. If dull wet weather should prevail for any length of time, the stronger-growing kinds of the plain and zonate-leaved sections will run too much into growth and foliage, especially if the beds are highly enriched—an error into which the inexperienced sometimes fall. The method I adopt with them is simply this:—The beds, which contain ordinary garden soil of a sandy nature, are dug from 12 to 14 inches deep before planting. I then have some leaf-soil or some very rotten dung spread over the surface. When the plants are being planted this is put into the holes around the balls with the fingers and trowel. The plants make fresh roots in this immediately, and soon start into a nice healthy growth. Later in the season, as they strike deeper, the roots get into the poor soil, and a profusion of flowers instead of rank growth is the result. With good strong plants of the very vigorous kinds it is a good plan to plunge them in the pots, taking care that there is not a great depth of soil at bottom for the roots to strike into. When masses of flowers are the principal object aimed at, everything tending to late growth should be guarded against. Young plants, when put into highly enriched soil, run too much into growth towards the end of the season, even in fine weather.

"Nearly the whole of the variegated varieties require to be planted in beds of highly-enriched soil of good depth. When I say highly-enriched soil, I do not mean that the bed should contain a mass of strong unfermented dung—far from it; the soil should consist of one-half good turfy loam, one-fourth part peat or leaf soil, and one-fourth part very rotten manure, the whole well mixed up together with a good sprinkling of river sand. The bottom of the beds should be thoroughly drained, and the depth of the above compost should be from 16 to 20 inches. If the plants are well rooted—and this is a very material point to be attended to—they may be planted-out towards the end of the month. If the weather be dry after they are planted, they will require watering a little, until they begin to root freely into the fresh soil. After this they will take care of themselves if left alone.

"There were numerous complaints last season about variegated Pelargoniums not growing freely, particularly some of the golden-leaved varieties. I believe the greater part of the failures arose through planting badly-rooted plants in shallow beds of poor soil. In visiting a place last season, where I first saw Sunset and Mrs. Pollock after they were let out, I was very much surprised not to find Sunset bedded-out, especially as Mrs. Pollock was very largely used. On inquiring the cause I was informed that Sunset was a bad grower and difficult to increase. I need hardly say my own experience of Sunset is the very opposite. I mention this case to show how often things are condemned for want of a little common fair play. There was no doubt in my mind that coddling and too much nursing had killed beautiful Sunset. Had the plants been put into beds of the compost recommended above, they would have grown and furnished abundance of cuttings, which strike as freely as common scarlets, if put into pots of very sandy soil and plunged in any warm south border from the middle of July to the middle of August.

"Cloth of Gold also grows nearly as freely as Tom Thumb when planted in good soil; but as, when it grows very freely, and especially towards the end of the season, it loses much of its golden colour, it is advisable not to plant it in too rich soil. The best plan of managing is to get good large plants for planting, and then to put them in pretty closely in beds of ordinary soil. They will not grow very freely in such beds, but will retain their fine golden colour all through the season. Beginners will often fall into mistakes which men of practical experience never commit. Attention to the foregoing very brief details at the present planting season will, I feel sure, produce very satisfactory results."

The Apiary.

BEE CULTURE: HIVES.—The slight drawbacks which I mentioned as, in my own opinion, appertaining to the Stewarton arrangement of boxes, induced me many years since to construct an octagon box hive which I have found to answer remarkably well. I do not claim having invented anything particularly new or original, but have simply utilised the ideas of various bee-keepers. I consider this hive to be well adapted for amateurs who have a wholesome fear of much manipulation in the way of the removal of a crown board and substitution of an adapter, the lifting of a full hive or a heavy pile of boxes on the top of an empty compartment, or the insertion of an additional super between the one first given and the stock. The operations necessary to the successful working of this hive, as also in the case of the straw hive described at p. 343, are comparatively free from danger.

The stock box is of an octagonal shape, 14½ inches in diameter by 8⅝ inches deep, inside measure. The wood preferred is yellow deal, 1¼ inch thick. The grain of the wood should run longitudinally. A rabbet ⅝ inch wide by ⅜ inch deep is to be cut out on the inside of the upper edges of the octagonal sides. Notches for the bars, ⅜ inch deep, and the same in width, are then to be sunk below the level of the rabbet. Having the ledge, or rabbet, a little wider than the notches facilitates manipulation. By sinking the bar to the level of the rabbet, a space of ⅜ inch between the under side of the crown board and the upper surfaces of the bars is afforded to the bees. This arrangement is found to be very conducive to successful working, both in the stock and in filling of supers, by the facility which it affords the bees of passing from one part of the hive to another. The difficulty of dovetailing boxes of an octagon form, is usually found by carpenters to be so great, that I have been content to simply fit the edges as accurately as possible, and secure with tolerably long nails, driven in contrary directions. Still the sides will open occasionally, particularly if proper care is not taken in the fastening down of the crown board, as will be described hereafter. If the sides could be as neatly dove-tailed by local carpenters, as those of the hives sent out by the Stewarton manufacturers, I should greatly prefer having them so put together.

A single window in the back is best formed by omitting one of the eight sides, and substituting a top and bottom light rail, secured by mortise or dovetail to the adjoining panels. The upper piece may be 1¼ inch deep, to allow of the rabbet and notches for the bars. The lower rail may be 1 inch deep. This will form a space for a window of about 6½ inches square. A pane of stout sheet glass, not less than 16 oz. to the foot, is to be let into a rabbet just a little more than its own thickness, cut from the inside. A few brads, not too tightly adjusted, will make all secure, when the glass should be almost flush with the inner surface of the interior. For a shutter, fit a piece of wood into the window recess. Cut out notches for the finger and thumb to take hold by. Then on the outside of the box fix a moulding on three sides, having a shallow groove cut away nearest the body of the box. Adapt to this a sliding shutter of very stout zinc, to one end of which nail the fourth side of the moulding. The block of wood in addition to the shutter of zinc, is an advantage intending to obviate the evils resulting from changes of temperature, and condensation of moisture against the inside of the glass. The bars, ten in number, are 15½ inches long, by ⅞ inch wide, and ⅝ inch thick, where they rest in the grooves or notches. They are, in reality, cut out of thicker wood, to allow of a central bead, about $\frac{1}{16}$ of an inch wide, by ⅛ inch deep. These, as well as the under surface of all bars, must be left rough. The chief object of these ribs is thereby to induce the bees to construct straight combs, but they also act as very efficient stays or strengtheners of the bars, which otherwise would require to be at last half an inch thick to be reliable for sustaining the weight of the combs.

The top is of ⅝-inch stuff when planed, and is 18 inches in diameter. Two cross pieces of 2 inches in width are keyed in, and are planed down flush. They should run in a direction from side to side, and may be placed so as to allow of about 7 inches between them. The apertures for communication are two or three on either side, about 6½ inches long by ⅓ inch wide; the first to be cut 1¼ inch from the inside edge of the box, the next ⅓ inch nearer the centre. Longer slits would be given, but the cross pieces prevent their being cut out. When not in use these are covered by two loose pieces of wood. This thin adapter-top, usually retained as a fixture, is meant to obviate the necessity of moveable adapters. It is secured to the hive by four screws run through the clamps, the wood under which is to be mortised out, to allow of play in expansion or shrinkage, and prevent warping and straining of the body of the box. This precaution should be adopted with tops for all wooden hives.

If the hive is to stand in a bee-shed or with efficient protection, the floor-board may also be octagonal, 19 inches in diameter, and is to be keyed with cross pieces below, 2 inches wide by 1½ inch thick. On the upper edges of the board a rabbet 1 inch wide by ⅝ inch deep is cut all round. The entrance, 5 inches wide, is chiselled away the depth of the rabbet, sloping up towards the centre of the board. An alighting board, projecting 4 inches, will be required, and may be made to run in grooves cut in the cross pieces underneath the floor-board, or it may be a complete fixture. Or, if the hive is to occupy a separate stand for protection, there is nothing better than the square case and roof with the accompanying floor-board, which may be constructed as described at p. 343.

In cutting the notches for the bars, let the five central bars be half an inch apart, or 1⅜ from centre to centre of each. A small additional interspace may be allowed for the remaining bars to make up the given measurement of 14½ inches. Some clean worker-comb should be attached to a few of the central bars, to induce the bees to build straight. In the absence of worker-comb, narrow strips of the impressed waxen sheets can be used with advantage. The swarm may be hived in the usual way, or first put into a common straw hive; and in the evening knocked out on a cloth, the box being tilted on a block or brick of wood. When the bees shall have all ascended, the hive must be put on its proper stand the same night. The supers suitable for this hive are in all respects similar to those I recommended at p. 343 in conjunction with the flat-topped straw hive. *S. Bevan Fox.*

Miscellaneous.

THE (LATE) HORTICULTURAL CONGRESS.

Come, Isabel, come to the *soirée*
Where Flora is placed in the chair;
Should you miss it, I'm sure you'd be sorry,
For all the *beau monde* will be there.

Only think that for four days together
Rare people, plants equally rare,
Mist on colour of cauliflowers and heather,
Will gather *a place et a place*.

We shall witness the loves of the Roses,
How flirting goes on 'mongst the flowers;
While some sly little zephyr discloses
Their courtship, its sweets and its sours.

How the moth carried unwritten letters
Twixt Orchids so faithless and fond,
And the bee bound a heart in the fetters
Of some belle in the flower *demi monde*.

We shall hear how Listera was married
To Calanthe, the pride of her race,
And how Pyramidalis was carried
By passion from fault to disgrace.

We shall hear of the meeting of Parliament
(Like our own swallows, hey dear Isabel),
And whether Russell or Derby speeds best
May be the most serious thing of all?—

Of house, manners, and wealth,
Of the weather, famine, and health;
How the Tall wrestled but could not scramble
To the gentlemanly [illegible];

Nay, perhaps the detailed speeches
May some country gentleman lay bare
Such secrets Sir Thomas Wilde's evidence
And parts to the Times are mere mare.

Only think of a Lily in trouble,
Or a lovely half-opened blush Rose
With a Queen's Counsel "working the double,"
And harping on some *méchante* chose.

We shall hear of great progress in walking
'Mongst plants once restricted to crawl;
And perhaps some celebrated Orchis
On the rapt ears of midnight may fall.

On my word I feel anxious in wearing
A object in my bosom to-day,
For to-morrow its grief may be tearing
Its own and my heart-strings away.

And the sickness [illegible] my breast
Two lives sworn to brave love's worst test;
For while one pines away in the border,
The other may die on my breast.

You have heard, dear, of course, of the wonders
That science is bringing to light;
How we groped in the stupidest blunders
Till development set us to right.

How the Oak had a Lichen forefather,
And the Nectarine grew from a Sloe,
And the shield of the Rose has a bar there
That shows its extraction was low.

Just the same as by innate expansion
The mammoth proceeds from a mouse,
Or the hovel grows into a mansion,
And the palace last link of a house.

Come, Isabel, child, are you ready?
I'm getting impatient, I own;
And so, just to keep my nerves steady,
Please pass me the eau-de-cologne.

I. R. C., to Punch, Mad'ssatire.

Royal Horticultural Society's Meeting to be held on next Tuesday.—Among many other objects of interest that we believe are likely to occupy the attention of the fellows of the Royal Horticultural Society at their Meeting on Tuesday next, special mention deserves to be made of some large and remarkable Photographs, published by a house in New York, and which convey the only adequate representation we have yet seen of the effect produced by a group of the Mammoth trees (Wellingtonia gigantea) in their native habitat. Those who are fond of new sensations will also, we are told, have the opportunity of tasting the Orchid Tea referred to in one of our recent numbers.

Digging Wells: How to Determine where Water is.—At a recent meeting of an American Institute Club, a member related his experience in this matter as follows:—"An Irishman in his employment, in order to ascertain where he ought to dig to obtain water soonest, got a stone and buried it overnight in the ground, next to the hardpan. In the morning he found it quite moist, but not to sufficiently so to suit his fancy. Next night he buried it in another spot, and it was found very wet on the following morning. 'There,' said Patrick, 'you will find water not many feet deep, and plenty of it.' Sure enough, in a few days' digging, Patrick confirmed his prediction, notwithstanding the jeers of the workmen,—finding a vein which filled the well to overflowing, and rendered it exceedingly difficult to bail out the water so as to stone it. The philosophy of the operation seems to be that as great evaporation takes place from the surface of the earth during the night, the water rises up from the depths below to supply the loss, and accumulates in the vicinity of the stone, often making quite a puddle." *Canada Farmer.*

An Historical Tree.—The Acacia, or, more correctly speaking, the false Acacia, or Locust tree (Robinia Pseud-Acacia), was first introduced into Europe by Vespasian Robin, forester to Louis XIII., in the year 1635. The original tree, brought by Robin from North America, and planted in the Jardin des Plantes, is still in existence, and is now putting forth a few leaves. In 1815 it began to show symptoms of decay, but the branches being lopped, the trunk shot out with redoubled vigour. Mr. Loudon visited this veteran in 1835, and it was then 35 feet high, but in its prime it was nearly twice that height. It has now dwindled down, and its worm-eaten and wrinkled trunk is carefully supported by iron bands, so as to prolong its existence as much as possible. The appearance of the leaves is looked forward to with much interest and anxiety by the visitors to the garden, as it is feared that every year may be its last. *Builder.*

Death of Mr. Stephens.—We have to record with regret the death of Mr. Wm. Stephens, formerly of Richmond, in Surrey, who was murdered by the blacks in the neighbourhood of Mooloolah, in Queensland. He was on a botanising excursion for Mr. Walter Hill, Director of the Botanic Garden at Brisbane.

The late Dr. Harvey.—We are compelled to delay the publication of the biographical notice of the late Dr. W. H. Harvey till next week.

Royal Botanic Society's Summer Exhibition.—This is held as heretofore in the Garden of the Royal Horticultural Society at South Kensington, and will be open every day next week. The plants are now coming beautifully into blossom, and will well repay inspection. Next week we hope to give some account of a few of the best kinds.

Calendar of Operations.

(*For the ensuing week.*)

To preserve plants in flower as long as possible is at all times a matter of the utmost importance. Therefore as soon as their blossoms are perfectly expanded, they should be removed to a cooler atmosphere than that in which they have been grown, and carefully shaded from glaring sunshine. To counteract the drying effects of hot currents of air, which are unavoidable in summer, the air of the house should be kept moist by frequently sprinkling all available surfaces. In dull or damp weather, however, a directly opposite mode of proceeding must be pursued: moisture is then injurious, and must be carefully avoided; and the plants should stand sufficiently far apart to secure a full and free circulation of air amongst them. Let no blossoms remain after they fade, and never allow the energies of a plant to be exhausted in producing seed unless it is positively required. Plants, of which it is desired to make large specimens in the shortest possible time, should not be allowed to produce flowers until they have attained the desired size. All specimen plants should have plenty of room, and should be occasionally turned round, in order to prevent their growing one-sided.

FLOWER GARDEN AND PLANT HOUSES.

Among shrubs out of doors, few are more beautiful than the Pyracantha, which promises this season to be unusually full of blossom, and in autumn its rich coral-coloured fruit is equally ornamental. For walls or for masses on lawns, or for the decoration of the background of rockwork, this plant is equally valuable. As plants in beds progress, some will require pegging down, and others tying up; and all young plants will be considerably benefited by stirring the soil between them. This will, at the same time, destroy weeds, which must be constantly kept in check at this season.

ASTERS.—Shift any that may require more room into larger pots, and others may now or soon be pricked out into open beds, protecting them, if possible, from cold winds, until they get somewhat established.

AZALEAS.—Where these have been forced for the purpose of producing an early winter bloom, they should now be placed in a cooler situation; for if left too long after they have set their flower buds in a high artificial temperature, they will, in all probability, make a second growth, which is highly detrimental, if not fatal, to the production of next year's bloom. Encourage a free growth in the young stock, and all plants going out of flower, by placing them in a rather high and moist atmosphere.

CINERARIAS.—Shade will be necessary in order to prolong the season of flowering. Weak liquid manure may be given liberally, say two or three times a week. Look well to seedlings, placing promising kinds apart from the more common sorts for seed. When the beauty of those first in flower is over, they may be placed in frames or pits facing the north, and, if seed is not wanted, the sooner they are cut down after being placed in the situation just indicated the better, in order that cuttings may be got from them early.

DAHLIAS.—No exertion must be spared to promote the growth of these plants, for the quicker the growth the finer the flowers. Let the ground between the plants be forked over occasionally, and in dry weather do not spare the watering-pot.

FUCHSIAS.—Keep these well watered, and shaded during bright sunshine. Late-flowering plants should receive a shift when required.

PELARGONIUMS.—Shade more or less according to the brightness of the weather, and keep down green fly. Bees must also be excluded, and close attention must be paid to watering. Continue to train plants intended for blooming in July and proper form; give them plenty of room, and see that they do not get drawn, by keeping them near the glass, and as cool and airy as possible.

FORCING GARDEN.

MELONS.—Encourage those newly planted out with a moist warm atmosphere, so as to get them into full growth as quickly as possible; but plants that are established should be kept cooler, admitting air on every favourable opportunity, in order to secure short-jointed, fruitful growth. Keep the shoots thin and regular, pinching out any that are not wanted, but avoid stopping the main shoots until they reach the sides of the pit, when by pinching out the points the laterals will start into growth and show fruit abundantly; and by this time the plants will have gained sufficient strength to set and carry a fair crop. Do not exceed 65° at night, and admit air when the thermometer rises to 75°, but do this very carefully on cold days. Endeavour to maintain a steady bottom-heat of about 80°, and keep the soil in a healthy state as to moisture. See to providing young plants for succession crops.

PINES.—Plants just showing or swelling their fruit will be considerably benefited by receiving liquid manure every alternate watering till the fruit begins to ripen. If the plants which are just on the point of showing, are in pots, it will be an advantage to shift them immediately into larger ones; to top-dress them with some rich turfy loam, or to turn them out entirely into the soil, which is by far the most preferable method. Where the pot system is pursued, many of the plants, especially of the young stock, will require repotting, and at this time they should receive a [illegible] approaching. After potting, a closer and moister atmosphere must be kept up for a few days, till they begin to root in the new soil. No plant stands in greater need of shading during bright sunshine than the Pine-apple; but as it is not only unnecessary, but injurious in dull weather, the canvas should be so adjusted, by means of rollers, that it can be applied or removed at pleasure.

VINES.—If the fruit is all cut in the earliest house, the Vines should again be treated with a moderately warm atmosphere, and syringed daily, to destroy insects, and to keep the foliage in a healthy state as long as possible, that they may have every means of recruiting their energies for next season. At the same time give liquid manure to the roots if they require watering, that they may have every chance of regaining their strength after having been forced at an unseasonable period.

HARDY FRUIT AND KITCHEN GARDEN.

Birds and insects, both of which are now very actively at work, must be kept in check. Old spare roots of Carrots or Parsnips may be turned to good account by planting them in beds infested with wire-worms; these will attract the enemy from other plants, and, if daily examined, will in time clear the ground of this nuisance.

ASPARAGUS.—As Peas are now coming into use, Asparagus ought not to be cut so closely as it has been; all the weaker shoots may be allowed to grow after this time, and only an occasional dish cut of the strongest. It should be borne in mind that the more Asparagus is cut this season the less there will be to cut next.

BEANS.—A succession crop of these should now be put in. Top the plants from previous sowings when in bloom, before they begin to form pods.

BROCCOLI.—Sow now some good white kind, to supply the table during October and November. Sow also a little more of Knight's Protecting, and a sprinkling of some very late spring Broccoli; it may serve to prolong the succession next spring.

CELERY.—This must have abundance of water. Plants of it pricked out from the seed-bed should have well prepared beds, the surface of which, for 2 inches deep, should consist of well-rotted manure, soaked with water, and rolled or pressed level previous to pricking out the plants. If the weather proves sunny they should be shaded with boughs.

LETTUCES.—Keep up a plentiful stock of these of different ages, by means of frequent sowings and plantings; for in dry weather many will be found to run to seed.

STRAWBERRIES.—If not already done, the soil of beds and borders of these should now be mulched or covered with some clean material, for the double purpose of keeping the fruit free from dirt in wet weather, and of preventing excessive evaporation in a dry or parching summer. Before anything is put on the ground, however, it should be loosened with a fork between the rows, and watered with liquid manure.

STATE OF THE WEATHER AT CHISWICK, NEAR LONDON.

For the Week ending May 26, 1866, as observed at the Horticultural Gardens.

May	Barometer at 32° and Sea-level		Temperature of Air			Dew-point	Wind	Rain
	Max.	Min.	Max.	Min.	Mean	Mean of the day		
Sat. 19	29.844	29.747	71	47	59	51	E.	00
Sun. 20	29.844	29.747	72	47	59½	51	E.	00
Mon. 21	29.844	29.747	72	47	59½	51	N.E.	00
Tues. 22	29.844	29.747	72	47	59½	51	E.	00
Wed. 23	29.844	29.747	72	47	59½	51	S.W.	00
Thurs. 24	29.844	29.747	72	47	59½	51	S.E.	00
Fri. 25	29.844	29.747	72	47	59½	51	S.E.	00
Average of	29.812	29.703	71	47	58	50½		.000

May 21—Generally cloudy all the day; rain at night.
" 22—Generally cloudy; cold, very cold; very fine sunset.
" 23—Generally fine, cold; very cold; mass of white clouds; heavy rain at night.
" 24—Very fine morning; cloudy at night.
" 25—Very fine morning; rain at night, but not destructive to vegetation.
" 26—Very fine; rain after sunset at night; lightning.

Mean temperature of the week 1.0 degree below the average.

STATE OF THE WEATHER AT CHISWICK,

during the last 9 years, for the ensuing Week, ending June 4, 1866

June	Mean Temperature of the Week	Mean Temperature of the Week deduced from 9 years	Mean Temperature of the Week deduced from 60 years	Greatest Heat in the Week	Greatest Cold in the Week	Mean Amount of Rain in the Week	Prevailing Winds.						
Sunday 3	60	61.2	60.6	70	1849	0.91	1	5	5	1	5	5	5
Monday 4	60	61.1	60.4	71	1852	0.75	2	6	2	2	1	2	8
Tuesday 5	60	61.1	60.4	71	1852	0.75	2	6	2	2	1	2	8
Wednesday 6	60	61.1	60.4	71	1852	0.75	2	6	2	2	1	2	8
Thursday 7	60	61.1	60.4	71	1852	0.75	2	6	2	2	1	2	8
Friday 8	60	61.1	60.4	71	1852	0.75	2	6	2	2	1	2	8
Saturday 9	60	61.1	60.4	71	1852	0.75	2	6	2	2	1	2	8

The London temperature during the above period occurred on the 9th, 1848—Greatest Cold 43°, the lowest on the 5th, 1862—Greatest Heat 84°.

Notices to Correspondents.

We must beg the indulgence of some few correspondents who complain that their letters have not been answered. [illegible]

[illegible] Jones.—"The Gardener," by McIntosh, will give you the information you require.

[illegible] Hall.—Your little bugs which have been sent into us [illegible] belong to the genus Aphis, of which there are about 50 British species, agreeing in their solitary burrowing habits. Yours is A. Trifolii, Kalt.—See *L. B.* The small black flies [illegible] are the common Chaoborus Asparagi; and the small dark-coloured oval objects fixed by one end to the stems are their eggs. We know no better plan for their destruction than hand-picking.—*R. D. S.* Your Medlar is the [illegible] (Sorbus torminalis Tilia).

[illegible] Jones.—The caterpillars feed on the Lime, Elm, and some other trees. *W.* [illegible] Your dampers are infested with [illegible] Lepisma saccharina. It is a perennial [illegible] and [illegible] Dudys.—*M. H.*

[illegible] Cuttings of [illegible] appear from your description to be the Cedar leaf-beetle; and as far as [illegible] portable, [illegible] it, as that variety.

[illegible] Yes, [illegible] species of [illegible] tall [illegible] or White-beam.—*J. W., Zembsi River.* Hæmanthus multiflorus.

[illegible] [illegible] Gold [illegible]

[illegible] [illegible]

[illegible] [illegible] [illegible]

[illegible] [illegible] [illegible] dents favouring him with a good receipt for making Nettle [illegible] [illegible] [illegible] matter, a full explanation would be desirable.

[illegible] [illegible] Your leaves are distorted with a minute Fungus, Ascomyces deformans, B. The Fungus is so minute, and so deeply seated, that you can do nothing against it beyond picking off and destroying the diseased leaves, [illegible] Your Peach leaves are infested with [illegible] Fungus, Ascomyces [illegible]. Blister is sometimes caused by cold, without any Fungus. We do not think your loss of a crop depends on the Fungus, but on ungenial weather. *M. J. B.*

THE BIRMINGHAM HORSE SHOW, 1866.—The FIRST GREAT EXHIBITION of HORSES, PONIES, CARRIAGES, HARNESS, SADDLERY, &c., will be held in BINGLEY HALL, BIRMINGHAM, on TUESDAY, WEDNESDAY, and THURSDAY, July 10, 11, and 12, when Prizes to the amount of £250 will be awarded.

President—The Right Hon. Lord WENLOCK.
Vice-Presidents—The Mayor of BIRMINGHAM.

Prize Lists and Certificates of Entry are now ready.

The Gallery will be reserved for the exhibition of Carriages, Harness, Saddlery, Horse Clothing, Stable Fittings, &c. Particulars of the terms for space may be obtained from the Secretary.

The ENTRIES CLOSE on THURSDAY, June 21.

JOHN B. LYTTELTON, Secretary.

Offices, Stephenson Chambers, New Street, Birmingham.

ESSEX AGRICULTURAL ASSOCIATION, 1866.—POULTRY, GAME, FLOWER, and FRUIT SHOWS will be held at EPPING in the Cattle Market Room, on TUESDAY, July 17, 1866, in connection with the Annual Exhibition of the ESSEX AGRICULTURAL SOCIETY. The Prize Lists, which are upon a most liberal scale, may be had on application to the Secretary on forwarding a stamped envelope with address.

ENTRIES for the POULTRY SHOW will positively CLOSE on SATURDAY next. Early application is particularly requested.

Epping, May 14. By Order, JOHN W. WEBBER, Secretary.

BATH and WEST of ENGLAND SOCIETY, for the Encouragement of Agriculture, Arts, Manufactures, and Commerce.

Patron—
H.R.H. The PRINCE of WALES, K.G.

The ANNUAL EXHIBITION of STOCK, IMPLEMENTS, POULTRY, DOGS, WORKS of ART, and HORTICULTURAL SPECIMENS at SALISBURY on the 4th, 5th, 6th, 7th, and 8th JUNE, 1866.

President—
The Right Hon. the EARL of PORTSMOUTH.

The HORSES and POULTRY will be OPENLY JUDGED, on MONDAY, 4th June.

The other Departments will be open as follows:—
STEAM ENGINES and MACHINERY in MOTION; the ARTS and HORTICULTURAL DEPARTMENTS daily.
FIELD IMPLEMENTS of various kinds, to work at intervals on TUESDAY and WEDNESDAY.
HORSE SHOEING, at Portable Forges, WEDNESDAY.
The ANNUAL MEETING and BANQUET, on WEDNESDAY.
The HORSES paraded in the Circle at 12 and 4 daily, after Monday.
The Band of the Royal Marines, Plymouth Division, (by permission of Col. Gascoyne, C.B.) will play on Monday, Tuesday, and Wednesday; and the Band of the Grenadier Guards, (by permission of Col. Michael Bruce), on Wednesday, Thursday, and Friday.
Admission on MONDAY, TUESDAY, and WEDNESDAY, 2s. 6d.; THURSDAY and FRIDAY, 1s. JOSIAH GOODS, Secretary.
16th May, 1866. 4, Terrace Walk.

The Agricultural Gazette.

SATURDAY, JUNE 2, 1866.

MEETING FOR THE ENSUING WEEK.

Monday, June 4 }
Tuesday, " 5 }
Wednesday, " 6 } Annual Meeting of the Bath and West of England Society at Salisbury.
Thursday, " 7 }
Friday, " 8 }

ON Wednesday last, before a very scantily attended meeting of the Royal Agricultural Society, in Hanover Square, Mr. HERBERT, whose reports of the meat trade in the Journal of the Society are rapidly acquiring high value as a statistical record, read a paper on the meat trade, and especially on the dead-meat trade of the metropolis. Excepting, however, Lord CATHCART'S suggestive and humorous contribution to the subsequent discussion, the proceedings generally savoured too much of instruction —"how not to do it." Mr. HERBERT declared that he sees in the local difficulties of the feeders, in the absence of a market for offal in the country, and in the consequent destruction to a great extent of central competition, great difficulties in the way of the trade in dead meat for the supply of the London market. Mr. THOMPSON assured us that the Railway Companies are doing all they can, and giving all the facilities in the way of accommodation and moderate charges which can be expected of them. And Mr. HOLLAND, who is collecting before a Committee of the House of Commons, valuable information on the whole subject, was precluded by both law and etiquette from any premature announcement or publication on the subject.

According to Mr. HERBERT, the farmer must learn a new trade and charge himself with great additional cost and labour before he can supply London with dead meat. He will, moreover, lose the price of the offal, which forms so large a portion of the whole value which he receives from the metropolitan cattle salesman in the live market; and he will lose the benefit of the competition of other towns whose butchers come up to London for their supplies. Mr. HERBERT has known 500 beasts and 3000 sheep bought in a single morning at Islington for Brighton, Ramsgate, Margate, &c. This great demand will cease with the cessation of the live fat cattle trade, and prices must drop accordingly.

No doubt considerable uncertainty and confusion will prevail at first; but it does not appear to us that the argument thus urged is sound. Though the competition may not act through the accustomed channel, yet its influence will remain. The quantity of meat consumed will be the same, and the proportion of the demand to the supply upon the whole will remain unaltered. Mr. FREBE did, indeed, relate the case of a Norfolk grazier, whose cattle fetched only 4*s.* 2*d.* a stone at Newgate, whereas they would have realised 6*s.* a stone had they been sent alive to Islington. But, as pointed out by Mr. HOLLAND, the difference in this case must have arisen solely from the present unsettled condition of the markets. As soon as the quantity of the demand in the dead meat market has been realised by experience, the supply will meet it just as exactly as it has by long practice met the demand which exists in the metropolitan live cattle trade.

Lord CATHCART'S address referred in the first place to the necessity of the foreign cattle trade. The 400,000 beasts of all ages in England are an insufficient supply for 20,000,000 of people. As to the difficulties of dealing with the offal of cattle slaughtered, whether at ports of debarcation or on farms where they have been fed, his lordship suggested that railways should provide travelling larders, which might take it where it was wanted. The Railway Companies ought not to make capital out of the calamities of the country, and their charges ought to be such as would encourage not check the traffic which the necessities of the country are imposing on them. The trade in dead meat is increasing and must increase, in spite of all the difficulties that exist or can be foreseen. There were only 13 salesmen in the Newgate Market 15 years ago,—there are now 200. Every facility that can be devised in the way of this rapid extension should be provided. Newgate Market is not three roods in extent, and anyone who has passed a night there and witnessed the confusion that prevails during market hours, and the nasty and imperfect means of carriage by which the enormous traffic is carried on, must see that there is great room for improvement. The "polished" meat of the London trade is, after all, no better than the rough-hewn style of the country goods. The telegraph and railway systems together may be trusted for ensuring both adequate supply and sufficient competition. The London beef fat goes out of town to return as butter and as tallow; and the distribution over the country of the offal of cattle slaughtered at home may in the end be attended by no more mischievous results than now attend its concentration in the metropolitan market. Past committees and commissions have declared the certainty that the dead meat trade must increase, and that farmers must learn the new duties and labours which it will enforce upon them. This was prior to the cattle plague, which has given such an impulse in the same direction. And it now only remains that every facility be given it by Railway Companies and by the authorities of great market towns and centres of consumption. To this end the arrangements which had so long been successfully adopted in Paris and other continental towns were deserving of examination, and in many cases of imitation.

Mr. THOMPSON, the President-elect of the Society, who is also Chairman over the longest mileage of railway in the hands of any one Company in this country, defended the railway authorities. The excessive charges for the carriage of dead meat are owing to the scantiness of the trade hitherto. When consigners of dead meat take whole trucks and trains, as those of living cattle do, instead of sending up their goods in more parcel form, the charges for the two will assimilate. Wherever the trade is a large one the charges become moderate. The great dead meat traffic between Aberdeen and London, for example, is so arranged as to be satisfactory to all concerned.

MEAT production and the meat trade are at present the topics of greatest agricultural interest, and we therefore offer no apology whatever for the space which these two subjects occupy in our columns this week. Nothing can exceed the detailed and practical value of the papers on Cattle-feeding, read by three of the most distinguished Scottish farmers before the Edinburgh Chamber of Agriculture last week, which are reported at length in our pages to-day. Mr. ROBERT SMITH'S paper on the same subject before the London Farmers' Club, and these, giving the experience of North-country farmers, together exhaust the subject so far as it is capable of treatment by the practical man. Of course there are many questions connected with the composition of food and with the relations of chemistry and animal life which are not considered in such a treatment of the meat manufacture. But it is the actual experience of the rearer and the feeder of animals that readers will find discussed in the following pages, and this as described by intelligent men is the safest possible guide for any one to follow. The choice of the feeding animal and of the food which, by its means, is to be converted into meat, and the management of the animal during the process—these are the points on which Mr. MCCOMBIE, Mr. WILSON, and Mr. HOPE throw the light of their long experience. The cultivation of the soil so as to produce a maximum of the food required hardly came within the scope of their discussion; though doubtless upon it in the first instance depends the quantity of meat per acre that any farm produces. And the Agricultural Society of England no doubt rightly believes that it is contributing to the meat supply of the country by its commission of inquiry into the fertilising effect of steam cultivation. Indeed, it is doubtless also thought that the promotion of good schooling among the sons of farmers tends in the same direction. So that the relationship between "pure mathematics" and the meat manufacture may not be so very fanciful after all! We advise our readers carefully to study the very excellent papers contributed by Messrs. WILSON, HOPE, and MCCOMBIE to the literature of this important subject.

—— THE Salisbury Meeting of the Bath and West of England Agricultural Society is the chief agricultural event of the coming week. On Monday the open judging of Horses and Poultry will commence at 10 A.M. The Implement Yard will open at the same hour, and there will be a Flower Show at 2 P.M. The yard will continue open until Friday evening; the admission being 1*s.* on the two last days, and 2*s.* 6*d.* on the other. The field trials of the implements will take place between 10 and 3 on Tuesday and Wednesday, and the general meeting of members and the annual dinner will take place at noon and 4 P.M. respectively on Wednesday. There is every chance of a very successful meeting.

THE CATTLE PLAGUE.

1. The following returns were issued on May 25.

These returns do not profess to give the total number of cases which have occurred in Great Britain, but only those which have been ascertained from information received at the office from inspectors. Columns 1 only record the cases reported as having commenced during the weeks indicated by the headings; "back" cases being added to columns 2.

Cesars Districts.	1 Number Attacked.		2 Result of Reported Cases from Commencement of Disease.				
	Week ending May 12.	Week ending May 19.	Attacked.	Killed.	Died.	Recovered.	Unascertained.
Metrop. ..	10	11	7359	3142	3717	318	453
S. Midland .	—	—	1854	1081	253	465	170
E. Midland .	251	293	19,756	8042	10,056	1536	396
Eastern Co.	80	73	11,279	5264	4831	788	396
S. Western .	—	1	1086	618	291	206	71
W. Midland.	247	210	11,903	5543	6677	1472	993
N. Midland.	446	358	18,143	10,111	6341	1216	542
N. Western.	501	761	65,839	29,816	34,938	1151	2875
Yorkshire ..	116	144	34,247	7990	18,343	2930	2363
Northern Co.	129	42	8507	4862	2613	974	118
Monmouth. & Wales .	81	48	8141	1091	5720	1052	297
Scotland ..	62	50	46,681	6698	28,075	10,026	1814
	1,912	1,972	241,309	73,765	124,057	32,140	11,448

NOTE.—4 Inspectors who reported cases last week have not reported in time for this return—viz., for the county of Cambridge, 2; Cumberland, 1; and Salop, 1.
These Inspectors returned 61 cases last week.

2. THE CATTLE PLAGUE IN IRELAND.—At Glasgow, 22d May, 1866, a meeting of the local authority convened—the Lord Provost in the chair—Professor M'Call, Government Inspector, being in attendance.

Professor M'Call read a report of his visit to the North of Ireland, in terms of instructions to him at meeting on 16th current.

The Committee at once discussed that notice be now at once given that no cattle from Ireland shall be landed into Scotland by the port of Glasgow, unless accompanied by certificates granted by duly appointed veterinary inspectors; that information of this resolution be forwarded to the Irish Privy Council, also to the Mayor of Belfast and Londonderry, and send to such other ports and places in Ireland as Professor M'Call may deem proper.

Professor M'Call was directed to take care that the cattle plague regulations in Glasgow be still stringently enforced; also that a placard be issued in terms of these resolutions, and copies circulated.

Mr. John Moir, Staff Veterinary Surgeon, Privy Council Office, Dublin, presented a letter from Professor Ferguson, Dublin, having been deputed by Professor Ferguson to wait on the local authority,

Glasgow, and ascertain what means might be devised for mutual protection in the circumstance of the outbreak of plague in Ireland. Mr. Moir was assured that the local authority here would readily sanction any measures which the Veterinary Director General for Ireland, in concert with Professor M'Call, might consider to be proper and expedient.

[Copy of Glasgow Portal Regulations respecting Cattle Importation from Ireland.]

CATTLE PLAGUE.

Notice to Cattle Dealers, Dairymen, and others, by the Local Authority of the City of Glasgow.

The local authority hereby gives notice, that on and after this date no cattle from Ireland will be admitted into Scotland by the Port of Glasgow, unless accompanied by certificates granted by a duly qualified Veterinary Inspector at the port of embarkation, and these certificates must be produced to Professor M'Call, Government Inspector at Glasgow, or to his assistant inspector, immediately on arrival of the steamers.

JOHN BLACKIE, jun., Lord Provost.

Council Chamber, Glasgow, May 22, 1866.

3. THE CATTLE PLAGUE IN ULSTER.—We are glad to be able to state that no further cases of the cattle plague have come within our knowledge. In several cases in which cattle have been attacked, the disease under which they were labouring was, on examination, found to be pleuro-pneumonia.

The immense and increasing interest evinced by the public respecting the state of the cattle disease, as it has shown itself in several parts of this and the next county, seems to have nearly absorbed all other questions. At fair and market, amid the bustle of commerce in towns, and the quiet of rural occupations in the country, the principal subject of conversation is the cattle plague. Considering the vast interests at stake, and how large a portion of the Irish farmers' property exists in cattle, it is not to be wondered at that even the thought of any disease, no matter under what name it appears, or by what name it is distinguished, should create the utmost alarm in all ranks of society. Hitherto the exertions put forth by the local authorities have had the best effect, and, on the whole, the loss has been comparatively trifling. But we fear that much evil will arise from the veto put on the public sale of cattle; and even already many persons have suffered severely by the Government prohibition. Again, we would impress on those individuals now vested with something more than constitutional authority, the necessity of sparing from the poleaxe every animal not infected with the disease. It is to be feared that, in the alarm stirred up by the cry of rinderpest, many healthy cows have been killed and buried, and that, had such animals been separated from those suffering under disease, they would never have been attacked. The cattle census of Ulster, taking animals of all ages, numbers about one million; and as the aggravated form of lung disease, or whatever else it may be called, has existed in some parts of Down for several weeks, it cannot be said that down to the present the total cases which have resulted fatally run up to any formidable figure. It is true that most farmers persist in stating that the disease which prevails in this part of the northern province is not the Rinderpest; but one great fact cannot be controverted, and that is, the prevalence of a plague that has killed a number of valuable animals. The fact, however, that the disease is not spreading must be considered highly gratifying, and no less interesting are the exertions going on in all parts of the country to improve the construction of cattle sheds, as well as to keep a good supply of water in grazing lands. We should not forget that many of the animals attacked with illness on grazing lands had been previously housed and kept comparatively warm; the sudden transition, therefore, from the shed to the open field, and in weather remarkably cold for the season, may have had the effect of bringing on lung disease. Some years ago the loss of cattle in May and June was considerable, and from the very causes alluded to. *Northern Whig.*

THE MEAT MANUFACTURE.

[The following admirable papers on this subject were read on Wednesday week at the monthly meeting of the Edinburgh Chamber of Agriculture.]

MR. GEORGE HOPE, FENTON BARNS.

The subject for discussion, "The most profitable methods of feeding stock, and the relative value of different substances for that purpose," embraces so many topics, that its satisfactory treatment would require at least a dozen papers, and several days in which to read them. The stock to be fed includes cattle, sheep, and pigs, and the different substances on which these animals may be fed are numberless; while we would require a day each from Professors Anderson and Macadam if we were to enter scientifically into the relative value of these substances. I will not, however, detain you long, as I propose simply to confine my remarks to the fattening of cattle, and to treat in a very general way the relative value of some of our farm crops for feeding purposes.

It is a very trite remark, that for profitable feeding well-bred animals should be selected, as they fatten easily, have little offal, and get flesh on the parts that fetch the highest price per lb. Sometimes, however, feeders are tempted to purchase coarse beasts, on account of their large bone, in the hope they will carry beef in proportion to their size. But they invariably consume a larger quantity of food than is necessary to fatten a well-bred animal of the same weight; while the meat produced sells at a less price per stone. The next thing is to have proper accommodation for the animals during the fattening process. It is difficult to over-estimate the importance of warmth and comfort in promoting profitable feeding. There is a great change for the better in this respect. I remember, even on the best and most extensive farms, that large open courts, calculated to hold from 20 to 30 cattle, with shed-room for perhaps a fourth of them, were thought quite the proper thing; at all events, if there was a straw stack in the centre, nothing more could be desired. The black cattle then fed were certainly much more robust than the Shorthorns and their crosses—which now compose, I may say, almost the whole of the animals that are fattened in the Lowlands of Scotland. But with every variety of cattle it has been found that the greater the subdivision or the smaller the number in any one place, so much the better do the animals thrive; and it is also acknowledged that ample shed-room or cover is indispensable for profitable feeding. Without entering into the special merits of open and covered courts, or of byres and boxes, for feeding purposes, I would remark that where an open court is used, it is an essential requisite that it should contain at least an equal space of covered shed-room, and that a light open shed or cover thrown over the Turnip boxes will be found beneficial, by protecting the animals from wet or cold when feeding. There should also be proper eaves for carrying off all the rainwater from the roofs. I cannot say I have had any experience with covered courts, beyond sometimes feeding a few animals confined in a shed; but there cannot be a doubt of the excellence of the manure made by this plan, as it is protected from drenching rains, which in badly constructed courts sadly deteriorates its quality; the economy in the use of straw also derived from it is considerable. The quantity of straw on a farm in relation to the Turnip crop, and also a moist or dry climate, materially influence the decision that should be come to in regard to the housing of cattle. I do not think it makes much difference whether animals are fed in byres or in single or double boxes. For two or at most three months, animals in either byres or boxes are found to make more progress than they do in open courts; but if the feeding is extended to four or five months, and still more, for six months, cattle ultimately do better in courts. This arises, I suppose, from the greater exercise they are able to obtain in courts; their skins also keep cleaner, and they do not require the constant and regular currying, absolutely necessary for their health and progress when being fed in either byres or boxes. I have a dozen of these double boxes, in which I generally place 12 or 24 of my best conditioned cattle for a month or two before disposing of them. Used in this way, in certain boxes are an aid towards profitable feeding not to be despised. There are comparatively few cattle grazed in East-Lothian, and still fewer sent to market off the Grass. An ox that has been liberally fed, even with Turnips alone, during winter, generally makes little progress on Grass, if it does not actually lose condition. But this I imagine arises from the mixed system of grazing that is practised, and sheep stock preponderating in every field; the latter eat out all the shorter and finer Grasses. Under these circumstances cattle certainly grow older; they may grow larger, but rarely fatter. If it is wished to fatten them at that season, they must have cake or corn on the Grass. It is true, very little cake or corn, with cut Grass, in courts, is a better way of feeding so far as cattle alone are concerned; but cattle are necessary to top the Grass and keep it in the best condition for sheep.

In the Lothians the feeding of cattle was long considered as merely subservient to the production of the cereal crops, but from the great change that has taken place in the relative value of grain and butcher-meat, crops are more and more grown for the purpose of being converted into butcher-meat. Foreign substances also, such as Linseed and other cakes, Indian Corn, white Peas, and Tares, are being used to an extent that 50 years ago would have been thought incredible. I remember at least 45 years ago, when a child, seeing one of my father's men arrive from Leith with two carts of Linseed-cake, and of his telling, when unloading it, that the Prestonpans people came out of their houses wondering what he had got in the carts, and that he had told them it was a new kind of "bannocks," but he did not think it would suit those who drank tea. From that day to this I don't think there has been a single bullock fattened at Fenton Barns without being finished off with either cake or corn; indeed, for many years past they have had both cake and corn. Almost all the cattle in the Lothians are now fed under cover during the autumn, winter, and spring months—the greater proportion being purchased in September and October. They are generally two-year-old Shorthorns or crosses; some try three-year-olds, and some stirks. As a rule animals generally eat in proportion to their live weight, but this is modified by their age and condition. It has even been found that if ten sheep weigh the same as one ox, they will consume daily the same quantity of Turnips; though it is curious that a piece of Grass that will maintain an ox grazing will not keep more than six sheep. Young animals eat more than old ones according to their respective weights, and animals in good condition invariably eat less than leaner ones of the same age and size. When an ox is becoming ripe for the butcher, he gradually eats less and less; he rests more and fattens faster. And it is at this stage that cattle pay best for Linseed-cake and rich feeding, and it is most profitable to give it to them without stinting—I may say without measure. In fact feeders frequently lose the best part of their profits from selling their stock a month or six weeks too soon. An ox may be very good, fat, and readily find a purchaser; but if kept on for another month, or even two, he would increase more rapidly in weight in proportion to the food consumed than he ever did at any previous stage of his existence; but also, from becoming extra quality, he would be worth from 3*d.* to 6*d.* per stone additional.

It may be easily inferred that I prefer purchasing aged animals for feeding, and also to have them in good condition. Doubtless everything depends on the price, and whether you wish to sell early or late in spring or in summer. As a rule, I am against the feeding of stirks, as I think it pays better to feed them during winter on straw and a few pounds of cake, or upon chopped straw mixed with pulped Turnips, and to have them grazed during summer and fed off the following autumn. They come out after this treatment famous animals at Christmas or in January, when good beef often sells at a high price. However, many excellent judges of stock will tell you they are better paid with stirks than anything else. I think this principally arises from the long keep; from their being put on a steadily improved diet from September until May, June, or July. In the summer months, from their smaller size, they frequently fetch a higher price per stone than large cattle. It may be said also that we find cattle reared at home, and fed from the time they were calves, become fine quality, and attain to heavy weights even before they are two years old. Notwithstanding this I think it well worthy of consideration by feeders whether almost all cattle are not sent too soon to the butcher. Cattle grow steadily and increase in weight until they are at least four if not five years old. But the practice is not even to give them time to attain their natural size, but to force fat them as quickly as possible, and then off with them to the market. This last autumn I bought no cattle, on account of the plague, but I had a considerable number grazing. Instead of selling these animals at Christmas and during January I resolved to keep a lot of them until this month, and I never was better paid, or had animals that kept on so steadily improving. I am certain they made more progress in April than in any previous month. It sounds strange, but it may be true, that a larger return may be obtained from continuing to feed for some months longer a great deal more than one-half perhaps of all the cattle sent to the butcher, than by purchasing lean and unfed animals.

Turnips have been the great crop for cattle feeding in Scotland, and it is likely they will continue to be so; our climate is admirably adapted for their growth, and they can be raised more cheaply than any other crop for feeding purposes. Potatos, and Peas and Beans, are the only other crops grown on the farm which I think may be profitably used, by being converted into beef, more extensively than they are at present. No feeder, however, should sell grey corn of any kind. Mangel does not succeed as a crop very well in our northern latitude; we either want sun during the day, or our nights are too cold for them in five years out of seven; but even when you do get them, you seldom have the same weight per acre as you have of Swedish Turnips, and they are not more feeding unless you keep them until June or July, when they are seldom of much use, as cutting Grass may then be obtained abundantly. I think there is fully more feeding material per acre in an average crop of Potatos, or in Beans and Peas, than in Turnips, though I admit the latter are grown at less expense. My experience has led me to the conclusion that the largest profit is obtained by feeding with a mixture of all three crops. It has been calculated that an ox in good thriving condition will lay on 1 lb. of beef for every cwt. of Turnips he consumes. Of course this varies, but it is very near the truth. I may remark here that a supply of good fodder is absolutely necessary for the improvement of all cattle when feeding. The difference betwixt two lots of cattle, when one of them is supplied with good Oat straw, and the other with coarse Wheat straw, is most marked. The fact is, they will not eat coarse straw, or at least enough of it, so they gorge themselves with Turnips, which causes them to scour. As on many farms it is difficult to have a supply of good fodder at all times, I may mention the plan I adopt, which is to allow daily all feeding cattle one or two pounds of meal made from grey corn of every description, and sometimes Bean-meal. This is mixed up with a large quantity of cropped straw or Wheat chaff, and allowed to soak in water for 12 hours. When the animals are fed in the morning, the tubs are filled to be ready for the evening. A handful or two of salt is sprinkled amongst the feed, and it is greedily eaten, and renders the animals almost independent of straw. This is the way I invariably give meal to cattle, and for feeding animals it is a better and cheaper plan than pulping the roots and mixing them with straw. I have already stated that 1 cwt. of Turnips produces 1 lb. of beef. The late Mr. Howden, in his report on feeding cattle, printed in the fourth volume of the "Transactions of the Highland Society" (new series), states that it took nearly 100 lb. of Turnips for every additional lb. of live weight the animals made, while less than 39 lb. of Potato produced the same result. I will assume the proportion to be as four is to ten, and I contend that four tons of Potatos are as easily grown as ten tons of Turnips. The chief thing against the Potatos is the expense of seed; but on the other hand there is less carriage with Potatos, and you can have a crop of winter Wheat in place of Barley, as must generally be taken after Turnips. But when you feed with a mixture of the two roots you enhance the value of both, and the animals make greater and more rapid progress than when confined to either singly. With regard to Bean-meal, I am not sure that it has been very accurately ascertained how much of it is required to produce a pound of beef; my own experience leads me to believe it takes nearly 7 lb., or say 9 lb. of beef per bushel, which gives 72 lb. of beef per quarter of Beans. Linseed-cake makes a better finish for animals than Bean-meal; they handle more nicely, and have a more glossy coat; Bean-meal makes a better tallowed animal; the Linseed-cake lays the fat more on the outside. When Potatos and Beans are used along with Turnips for feeding stock, the account for Linseed-cake may be comparatively small, and there is a certainty that you are using an article with which no adulteration has been attempted; at the same time I

have always found the free use of Linseed-cake to pay handsomely for the last six weeks or two months of feeding. My practice is to sow either white or yellow Turnips early, so that they may be ready for use soon in September. Sometimes a few Turnips are given up that time to cattle on Grass in fields, but I prefer giving them in the courts with second-crop cut Grass. When supplied at first with cut Grass, the cattle may be allowed as many Turnips as they will eat; but if they have only inferior straw as fodder, the quantity must be limited to prevent disorder. Feeding with chopped straw and meal may be begun in a short time, and 2 or 3 lb. each per day of Linseed-cake should be added when the animals are beginning to get into fair order. I generally begin to give small Potatos in November, say 1 stone per day, doubling the quantity in two or three weeks. This weight of Potatos sensibly diminishes the consumption of Turnips; but when 42 lb. are given it will reduce the Turnips eaten nearly one-half. Four stones of Potatos with good fodder will fatten an animal; but with corn and cake in addition, cattle arrive at maturity as quickly as with almost any feeding that can be given. I do not suppose that I have told you anything new, or that my practice and opinions are not amenable to question and criticism, while I trust in the discussion to follow I may receive some practical hints that might be of advantage.

MR. JOHN WILSON, EDINGTON MAINS.

In offering a contribution to this discussion, I shall restrict myself to remarks on the feeding of sheep, and these shall have reference for the most part to my own experience during the past winter and spring. My position last autumn was this—the prevalence of cattle plague having deterred me from buying in as usual a lot of store cattle, to break down my straw and provide for the stocking of my pastures in the ensuing season, I endeavoured to accomplish both these ends by wintering an extra number of ewes and hoggs. My Turnip crop was much under an average both in weight and quality, so that from the first it was evident that it would have to be largely supplemented by other food, in order to bring the flock through the winter in good condition. I happened to have an abundant supply of excellent hay, consisting partly of first and second cuttings of Clover and Rye-Grass, and partly of a mixture of Oats and Vetches mown when green. As soon as the hoggs were put on to Turnips they got a daily supply of dry food, consisting of a small allowance of cake or grain, and as much chopped hay and straw as they would eat. After a short training, I found that they ate at the rate of a four-bushel sackful to each 40 hoggs daily. Early in December I began to slice the Turnips for all my hoggs, and being thus better able to regulate the allowance of food, I soon after restricted the whole of my store hoggs to one good feed of Turnips in the day, and along with that half a pound per head of cake or grain, or a mixture of both, and as much of the chopped fodder already referred to as they would eat. They had at the same time access to water, of which they drank freely. By doling out the Turnips in this way I had enough to serve until the third week of April, when the whole of my hoggs were put to Grass in excellent condition. My ewes were kept in the pastures in the usual way until near the end of the year, when they began to receive a very small daily allowance of Turnips spread out on the Grass land; and at night they were brought into the vacant cattle yards, where they got an evening and morning feed of Oat's sheaf hay cut into chaff, with cotton-cake at the rate of half a pound each per diem. Care was taken to keep the yards clean and dry by spreading over them a thin coating of straw daily; to have such a number of feeding-troughs as would prevent crowding and crushing; and to have water always at their command. On this treatment the ewes kept in excellent health and condition, and at 20th March, when lambing began, they were found to have an unusually good supply of milk. I found, as others have done, that there is no practical difficulty in converting straw into dung by means of sheep.

The past winter's experience has also confirmed me in the opinion, to which that of previous years had been gradually contributing, that it is highly expedient to give to sheep when feeding on Turnips a much larger allowance of dry fodder than has hitherto been our usual practice in Scotland. And it seems to me decidedly better to cut the fodder into half-inch chaff, and give it in troughs, than to give it whole in racks. By the former plan hay and Oat straw, in a proportion that is thought best, can be cut up together, and if properly administered will be eaten clean up, whereas I never see whole fodder given in racks without much littering and waste. Several years ago I procured a number of covered troughs, which I find useful in protecting the chaff from rain, especially at the beginning of the season, before the sheep have learned to eat it up quickly. It is unnecessary to urge the propriety of giving cake or grain to sheep along with Turnips, as the practice is now all but universal. I shall not attempt to discuss the relative values of the various farinaceous feeding stuffs now in use. My own practice is to select those substances which, taking both price and quality into account, seem likely to yield the largest feeding power for the money spent upon them. I have mentioned that a portion of the fodder used by my stock during the past season consisted of hay made from Oats and Vetches. These were grown together in about equal proportions, and the crop was mown whenever the Oats were fairly in ear. It was grown on soft moory land, where grain crops almost invariably fail from *slaying*. Clover and Grass seeds having been sown along with the Oats and Vetches, I was careful to remove the hay in a very few days after mowing, and to complete the drying of it elsewhere. I did this lest the young seeds should suffer from the haycocks standing too long upon them. The ground on which this crop of Vetch hay grew is now as well planted a piece of seed as any farmer need desire to have. Some people consider it better practice to sow the small seeds without any other crop on such soils as I am now referring to. I find, however, that the shade of the Oats and Vetches favours the regular germination of the small seeds; and that, taking the season through, I can keep a larger head of stock by taking the hay crop than by omitting it. The mowing machine has rendered practicable a plan of economising food which I am glad to see several farmers adopting. We all know that, whenever we have warm growing weather about the end of May, the Rye-grass in our pastures shoots so rapidly that it is impossible with the ordinary stock of the farm to eat it down fast enough, and so by-and-by the fields are covered with unsightly windle straw, to the grief of the farmer, and the damage of his grazings. People do indeed talk about buying steers to eat down their Rye-grass; but then the steers always have wits enough to grip to the bottom and take the best that is going, and so the windle straw is left all the same. Now if a mowing machine be swept over such pastures while the seed stems are still succulent, and the mowings be collected by a horse rake, a good deal of useful fodder will be secured which otherwise would be worse than wasted, and the grazing being cleared of seed-stems and *talp* will be cleaner and more wholesome for the remainder of the season.

MR. CLAY, WINFIELD.

[After reading the above paper in Mr. Wilson's absence (we regret to learn, owing to ill-health), Mr. Clay, of Winfield, said:—] I fully concur in all that is said in this paper, as it represents the opinions of our Berwickshire system regarding stock feeding, &c. I know there are many counties that surpass us for the feeding of cattle, but for sheep I think we can compete with the most of them. We do not give our attention so much to the feeding of cattle, as we look upon them as a necessary evil. The only point that I would remark upon is the great benefit we derive from feeding sheep with Tares on our heavy land. The months of July, August, and September are months when we are heavily stocked, and often when we have least Grass, so that the stock is often damaged before going to Turnips. Now, the Tare system meets that difficulty, as they come in to supply that green food at a season when one can get nothing else that stock does so well on. I have practised it for many years with success and profit, and for old sheep or lambs there is no food you can give them that they thrive and fatten so well on. The Tares may be eaten through hurdles on the land they are grown upon, or cut and led into a Grass field. The latter mode I prefer, as you are enabled to keep a large number in a Grass field; then you are enabled to get all your other fields cleaned for weaning lambs, &c. I have had as many as 400 on one field of 20 acres. With a liberal supply of cake you may even increase the number, always keeping in mind that there must be fresh water in the field, as sheep at that season and fed in this way drink a good deal. Tares consumed in that way will eat to about 5*l*. per acre, at a moderate rate per week. The mode that I follow in growing the Tares is—I make about 20 acres every year, sowing them at three different times, always having them green and fresh. Farming, as I do, on the fourth shift, I grow the Tares on land that would fall to be seeds. Say you have a 10-acre field—I do not sow off 20 acres of it, so that I have it for Tares, when the other part is hay for soiling horses and cattle. Then, when the same field comes round four years after, I make the hay-break Tares, which give the eight years between Clover—the only mode to secure the good old Red Clover, so valuable for soiling cattle and horses. Now, when corn farming is so unprofitable, it is our duty to turn our attention to stock feeding, and to find out the best ways and means to manufacture beef and mutton for the million. I have no doubt, with the rapid growth of our town population, it will take us all our time with the rapid consumption, and this rise of wages will still go to increase the demand.

MR. WILLIAM MCOMBIE, TILLYFOUR.

As my friend Mr. Stevenson and some other members of the Chamber of Agriculture have expressed a desire that I should read a paper on my experience as a feeder of cattle, I have, with some hesitation, put together a few notes of my experience. I trust the Chamber will overlook the somewhat egotistical form into which I have been led in referring to the subject of dealing in cattle. My father and my grandfather were dealers in cattle. My father carried on a very extensive business; he had dealings with several of the most eminent feeders in East Lothian; among these were the late Adam Bogue, Linplum, with John Rennie of Phantassie, and Mr. Walker, Ferrygate, &c. I cannot tell you how much I hold in reverence the memory of the late Adam Bogue; I regard Mr. Bogue as having been one of the finest specimens of a kind-hearted gentleman I have ever met. It would be difficult for me to say how highly I honour the memory of other friends of my father and of myself in East Lothian. I may mention William Brodie, John Brodie, William Kerr, John Slate, Archibald Skirving, and Mr. Broadwood, farmers all eminent as feeders of stock. My father had his chief business connection with East Lothian, but he had also a connection with Mid-Lothian, the county of Fife, and a large trade with England. At one of the Michaelmas Trysts of Falkirk he sold 1500 cattle. He wished to give all the members of his family a good education. I was kept at school, and was afterwards two years at college; but to this day I regret my inattention when at school. My father was very unwilling that I should follow his business, knowing that it was a very precarious one: but what could he do with me? I would do nothing else, and he was obliged to yield. I worked on the farm for years, when not away at the fairs, with the servants, and had their diet. I cut two harvests, and during the season took charge of the cattle. My first speculation was a 12*l*. park. I had a partner, an excellent man, who had been a servant to my father for 20 years. It was a good year, and we divided 15*l*. of profit. This gave me encouragement. I yearly increased my speculations, and I gradually got into my father's business at the Falkirk markets and Hallow Fair. My father was very indulgent, and sent me away to a fair when a very young man, and gave me authority to buy, and money to pay for half-a-dozen of beasts. I exceeded my commission and bought three little lots of beasts—about 15. The owners trusted me the money I was short. I drove them home myself—about 16 miles. I was very proud of my drove. My father examined them next morning, and remarked "They have not the countenance of beasts." I went away very much chagrined. This was about my first appearance as a buyer of cattle, and some of the beasts I remember to this day.

There is no better way to teach a young man than to put him to market without assistance. If a man cannot back himself he is unfit for the trade of a butcher, a jobber, or grazier. My father retired with a good name, and I retained his old customers. It was only on one occasion that Adam Bogue bought a beast from any dealer except from my father or me. He declared he was no gainer by the transaction. He purchased 120 cattle yearly. The late Mr. Broadwood, whose memory I also revere, always bought about 80 beasts at the Michaelmas. I put up the number and the sire he wanted, and he bought them from me and my father for many years. He bought them middle-sized three and four year olds, and never would go beyond 11*l*. per head. The highest figure at that time for feeding cattle at Falkirk was about 13*l*. On Tuesday morning he came to my cattle and inspected them first, and asked their price, and to such a customer as Mr. Broadwood I asked close. To some parties it is necessary to give halter. He went away and examined other dealers' cattle, but always came back in about an hour, and I think I never missed him. He was a good judge, and did not require any assistance; he came alone. I had several dealings with Mr. Broadwood's son, but only occasionally, and he did not stick so close to me as his father. I also retained the friendship of Robert Walker, the Messrs. Brodie, Archibald Skirving, and Mr. Broadwood. I secured for myself the friendship of Mr. Buist, of the late William Kerr, the late John Slate, and John Dudgeon, Almondhill. My father and I always had about the best cattle at Falkirk. There was a great trade with Cumberland at the Michaelmas Tryst for horned Aberdeen cattle. The cattle were sent from Cumberland to Barnet in spring, and sold off the Marshes fat in July and August. My best 60 generally commanded the highest price. The late Mr. Wm. Thom was my great opponent in the horned cattle trade, and beat me sometimes, all I could do. When we saw it for our interest we went in company, and attended all the great fairs in the north; and when we joined we secured a good proportion of the best cattle. Our grazing cattle were always sold separately. Mr. Thom will be remembered by not a few in this room; he was a giant as to strength; an honester man never lived; perhaps a little strong in his manner, but of great ability and perseverance. The company were not very regular book-keepers; our accounts got confused. At the wind-up at Hallow Fair, as we had the accounts of the Falkirks likewise to settle, we worked at them for days, and the longer we worked the more confused they became. To this day I do not know who had the balance in his favour. For the future we resolved to act separately. I was a bad Hallow Fair for large cattle. I have doubled stirks at Hallow Fair. I have bought stirks from 2*l*. to 4*l*., and, to use an Aberdeen expression, I have turned them heels over their heads. But I never could take a shilling of profit out of large cattle. Mr. Thom and I had unfortunately left over 60 very large cattle unsold from the Michaelmas. A respected member of this Chamber will recollect them. Many of them had cost 13*l*. and 14*l*. in Aberdeenshire. Mr. Thom had the selling of them. He had just one offerer in the shape of three gentlemen—one from East-Lothian, one from Fife, and one from Perth, who likewise joined. They were sold the next day at 12*l*. 5*s*. a head. After the bargain was struck, the gentlemen requested Mr. Thom to divide them. I recollect his answer, viz., "Well, gentlemen, you have been good and great friends for two days, it would be a great pity for me to quarrel with you now." He gave a natural look in the face to his customers. Mr. Thom, who was thoroughly up, turned upon his heel and went away. I divided the beasts for the gentlemen, and to divide a lot of beasts equally is not such an easy matter as some might suppose. I sent for many years 60 horned cattle in spring to Mr. Buist, Tynninghame. They were grazed in Tynninghame Park, and he also required other 40 or 60 during the season for house feeding. I only gave up the commission business when I could carry it out no longer to my own satisfaction and to the advantage of my employers. There was not after I went to the Falkirk markets a white beast to be seen for years; but by-and-by Irish-bred cattle appeared, and then the Shorthorns. The business of dealing in north-country cattle came to be worthless. I bade Falkirk adieu, and turned my attention entirely to the rearing and fattening of cattle at home. I gave up the fascinating business of a lean cattle jobber; I saw it was done for, and I have never regretted my resolution. The lean cattle trade was difficult to manage; it was most dangerous. Many a day when attending Hallow Fair, I have got up by 1 or 2 o'clock in the morning, breakfasted, and not tasted

food till 6 o'clock at night. The weather was so bad at one Hallow Fair that man and beast were up to the knees in mud. I had my beasts standing near one of the gates. Mr. Archibald Skirving never got further than my cattle. He bought 40, sent them away, and returned home. He bade me good morning, saying, "I would not like to be in your place to-day." I have stood many a bad Hallow Fair, but I think the worst was about 20 years ago. I never was so much in want of assistance from my friends. The price of cattle had fallen very much after the Michaelmas Tryst. Turnips were bad in East-Lothian. I had been on a visit to Mr. Buist, and met Mr. Kerr, Mr. Slate, Mr. Walker, &c. Both buyers and sellers anticipated a bad Hallow Fair, and it turned out the worst I ever saw. Hallow Fair is generally either a very good or a very bad market. Well, Tuesday came, and with it a storm of wind and rain; it was the worst market day I ever stood. You could hardly know the colour of the cattle. They were standing to their bellies in a stubble field. This Chamber should represent to the magistrates the injustice to the dealers of allowing Hallow Fair to be held in any field but a lea one. My friends got to the market; there were Mr. Buist; Mr. Walker, Ferrygate; Mr. Kerr, Mr. Slate, and one or two more. They gave my cattle what examination it was possible to give cattle in such a stormy day; out of about 200 cattle they wanted about 170. Mr. Walker said to me—"I think you might give us a glass of brandy." We retired to a tent. We did not move for an hour and a-half, as one wanted 40, another 30, another 20, &c. It took a good deal of time to talk over the different lots. At last we rose. I had, while seated, drawn them as to the price as far as they would come. The weather was dreadful. We were to part. I was very unwilling, and they were not very anxious to face the storm. I was in the middle of my customers, and did what I could, no doubt, to get an advance on their offers. When all was over, I gave the accustomed clap of the dealer on the hand (which must be known to most of the gentlemen here) all round, and I did not see them again till night, except Mr. William Kerr, who with a struggle got the length of my remaining 30 beasts, and bought 10. I think I hear the triumphant howls of the men to this day when they started the nine score of cattle for their destinations, one lot after another, through the lots of the astonished dealers, whose cattle at that hour I believe were never priced. There were few sold on the first day. I could not sell my 20 remaining cattle, and never could even get a bid for them. Of all the good turns my friends did for me this was the best. I came out with a small profit. The losses sustained by other parties at the market were heavy. A great many cattle were sent further south, and returned. One respectable dealer told me that no one had ever asked the price of his cattle, and coolly added—"I have taken Turnips from ——— and sent the cattle home." I never lost a shilling in East-Lothian, or by a bad debt as a lean cattle dealer.

1st, As to the method of selecting the cattle best adapted for paying a rent:—To be a good judge of store cattle is exceedingly difficult. We have many judges of fat cattle among our farmers and butchers; we have a few good judges of breeding stock; our really good judges of store cattle are exceedingly few. A judge of store cattle ought to be able to say at a glance how much the animal will improve, how much additional value you can put upon it, or upon good, or indifferent, land and on Turnips in three, six, or 12 months. Except a grazier is able to do this, he is working in the dark, and can never obtain eminence in his profession. Since I had the half of the 12*l*. park I have bought and grazed store cattle for 45 years. No one has been able to put upon paper a clear definition, that can be understood by the reader, of the characteristics of a good store beast. It is only practice and a natural gift that can enable any one to master the subject. There are a few rules, however, that the buyer of store cattle should be acquainted with. You ought to know how they have been kept for the previous six months. If you do not know this, your keep may be entirely thrown away. I make it an almost universal rule (and I have never departed from the rule except with a loss), that I will graze no cattle except those that have been kept in the open brawyard, and have been fed exclusively on Turnips and straw. If you can get them off Yellow Turnips it will be decidedly to your advantage. I have seen this proved by dividing 20 beasts, one-half kept on Yellow Turnips, and one-half upon Swedes. The beasts had full Turnips. The cattle on the Swedes shot far ahead in the straw-yard of those upon the Yellows. But when taken up from Grass the cattle fed upon the Yellows were equal to those fed on the Swedes. They were grazed together. The difference of improvement in different lots of cattle must have often struck you. If you put upon Grass cattle that have been fed through the winter upon cake, corn, brewers' wash, grains, or Potatos, and kept in hot byres or close strawyards, and look to them to pay a rent, they will soon make a poor man of you. This mode of feeding is unnatural. Before the animals begin to improve, three months will have passed. If you buy half-fat cattle kept close in byres or strawyards, and put them to Grass in April or the first two weeks of May, and cold stormy weather sets in, with no covering to defend them, they will astonish you some morning. They will fall off so much that you can scarcely believe they are the beasts you bought. Thus you not only lose all your Grass, but the beasts will be lighter at the end of three months than when you put them into your field. I must not be misunderstood. I do not mean to say that a few weeks of a little cake or corn will ruin a beast for grazing. But you may depend upon it that the less artificial food they get during winter the better. When kept upon the food I have specified for months and months they are perfectly unfit for grazing. I regard cake as the safest substitute for Turnips and corn; Potatos, brewers' wash, and grain are the worst. But my ambition is to graze a bullock that has never been forced, and has never tasted cake, corn, or Potatos.

The store cattle I winter for grazing are kept in open strawyards, with a covering for bad weather, with as dry a bed as the quantity of straw will permit. This is indispensable for the thriving of the cattle. They receive as many Turnips as they can eat. You must always keep beasts progressing; if you do not, they will never pay you. My store cattle never see cake, corn, or Potatos. I would rather throw Potatos to the dunghill than give them to a store bullock. I would give them to my fatting bullocks. If I can get the number of bullocks for grazing that I want, I will not lose one mouthful of Grass upon them. They will not go on, however, without proper care and superintendence; it requires a practised eye. If a grazier has a number of fields and many cattle, to carry out the treatment of his cattle properly, shifting and fresh Grass once in 10 or 14 days should, if possible, be adopted. This has always been my practice. In one day I have observed a marked difference in the improvement of animals after the shift. The grazier must always consider the quality of his Grass land, and buy cattle adapted for it. It would be very bad policy to buy fine cattle for poor or middling lands. You must always keep in view how the cattle have been kept. If they have been improperly kept for your purpose, their size, whether large or small, will not save you from loss. If the cattle are kept on cake, corn, Potatos, or brewers' wash, or grain during the previous winter, it will be ruin to the graziers. You must not think that I wish you to buy lean half-starved beasts. What I wish you to understand is, that you must keep the cattle always full of flesh, and as a breeder (the subject of breeding, I am aware, is not upon the card for discussion, I shall encroach upon it as little as possible) you must be careful not to lose the calf flesh. If you do so by starving the animal at any time of his growth, you lose the cream—the covering of flesh so much prized by all our best retail butchers. Where do all the scraggy bad-fleshed beasts come from that we see daily in our fat markets, and what is the cause of their scragginess? It is because they have been stinted and starved at some period of their growth. If you once lose the calf flesh you will never regain it. You may get a great deal of tallow internally by high feeding, but you will never again make the animal one that will be prized by the great retail butcher. Our Aberdeen working bullocks carry little good meat. Drought as well as starvation takes off the flesh. They are generally only fit for ship beef. I will now make a few observations as to the breeds of cattle best adapted for paying a rent. If cattle do not pay a rent they are worthless to us.

I have grazed the pure Aberdeen and Angus, the Aberdeen and north country crosses, the Highland, the Galloways, and what is termed in Angus the south country cattle, the Dutch, and the Jutland. Except the two latter all the others have got a fair trial. I am aware that the merits of the pure Aberdeen and Angus form a difficult and delicate subject for me to deal with. I know that my friends the breeders of Short-horns will mark my statements. But I am here to-day for the purpose of laying before you my experience, and I trust that I have divested myself of prejudice as much as possible. If you can get store cattle of the Aberdeen and Angus breed out of our best herds, I believe no other breed of cattle will pay the grazier more money in the North for the same value of keep. But there is a race of starved vermin which is known by some in the North by the name of "Highland hummlies," which I consider the worst of all breeds. No keep will move them much. At the top of these I must place those with the brown ridge along the back. You can make them older, but you will have more ability than I ever had if you can make them much bigger. Keep is entirely thrown away upon such animals. As regards good Aberdeen and north country crosses, they are rent payers. He would be very prejudiced indeed who would not acknowledge their merits. I graze more cross-bred cattle than pure bred Polled. The Highlanders on our land are unfitted for paying a rent; they are of such a restless disposition that they are unsuitable for stall feeding, however well they are adapted for grazing purposes in certain localities and under certain conditions. But, I repeat, for stall-feeding they are unsuitable; confinement is unnatural to their disposition. They will graze fairly, but I beg of you not to attempt to tie them to the stall. The last Highlanders I attempted to feed were bought at a cheap time. In the month of June they were most beautiful animals. They grazed fairly. I tied them up. They broke loose now and again, and ran three miles off to the glen where they were grazed. There was one of them that his keeper never dared go near to. The stall had to be cleaned out with a long crook. They consumed few Turnips, and did not pay a sixpence for what Turnips they did consume. But no other description of cattle, however, is so beautiful for noblemen's and gentlemen's parks.

Galloway cattle have also had a fair trial with me. I was in the habit of buying for years from one of the most eminent judges of store Galloways in Britain—Captain Kennedy, of Bennane—a lot of Galloway cattle. He selected them generally when stirks from all the eminent breeders of Galloway cattle, and bought generally all the prize stirks at the different shows. Captain Kennedy would not send a bad Galloway on his manors. The Galloway has many and great qualifications. If we except the small Highlander, on poor land they are unrivalled. Captain Kennedy's cattle always paid me; they were grazed on a 100-acre park of poor land. The land was so poor that our Aberdeens could not subsist upon it. I had to break it up for cropping. If I had not been obliged to do this, I should have never liked to have missed Captain Kennedy's Galloways. Although the Galloways are such good cattle to graze—and this goes to prove the truth of my remarks as to the forcing system, the Galloways at Glenapp being wintered out—they are not so easily finished as our Aberdeen and Angus or cross-bred cattle. They have too much thickness of skin and hair, too much timber in their legs; they are too thick in their tails, for being very fast feeders it is difficult to make them ripe. You can bring them to be three-quarters fat, but it is difficult to give them the last dip. If, however, you do so, there is no other breed worth more by the pound weight than a first-class Galloway. As to what we term the south country cattle, I have also given them a trial. My experience is that they are great beasts to grow—that they consume an immense deal of food, but that they are difficult to finish; and when finished they are very indifferent sellers in the London market. They generally carry a deal of offal along with them; but to those who have patience and keep them for many months, they may pay for keep. I have had a few German and Jutland cattle through my hands, but not sufficient numbers to enable me to say anything about them worthy of your notice. After trying all the breeds of cattle I have specified, I have come to the conclusion that the Aberdeen and Angus Polled, and the Aberdeen and north country crosses are the only cattle adapted under ordinary circumstances in the north of Scotland for paying a rent. Our cross-bred cattle, and especially the south country cattle, are greater consumers of food than the pure Aberdeens. This part of the subject has never got the consideration it deserves. When the cross and south country cattle are two or three years old, and when the day lengthens out, they consume a fearful quantity of food. The age of cattle ought also to be taken into consideration. No doubt a young two-year-old will grow more than a three-year-old, and for a long keep may pay as well. But I have been always partial to aged cattle, and if you want a quick clearance, age is of great consequence. The great retail London butchers are not partial to "the two teeths," as they call them; and I have seen them on the great Christmas day examining the mouths of cattle before they would buy them. They die badly as to internal fat, and are generally light on the forerib. I have always given a preference to aged cattle, as they get sooner fat, are deep on the forerib, and require less cake to finish them. Aged cattle, however, are now difficult to be had, and every year they will be scarcer with the present demand for beef.

A perfect breeding or feeding animal should have a fine expression of countenance—I could point it out, but it is difficult to put upon paper. It should be mild, serene, and expressive. Should be fine in the bone, with clean muzzle, a tail like a rat's, and not ewe-necked; short on the legs. He should have a small well-put-on head, prominent eye, a skin not too thick nor too thin; he should be covered with fine silky hair—to the touch like a lady's glove; he should have a good belly to hold his meat; he should be straight-backed, well ribbed up, and well ribbed home; his hook bones should not be too wide apart. A wide hooked animal, especially a cow after calving, always has a vacancy between the hook and the tail, and a want of the most valuable part of the carcase. I detest to see hooks too wide apart; they should correspond with the other proportions of the body. A level line should run from the hook to the tail. He should be well set in at the tail, free of patchiness there and all over, with deep thighs, that the butcher may get his second round and prominent brisket deep in the fore-rib. His outline ought to be such that if a tape is stretched from the fore-shoulder to the thigh, and from the shoulder along the back to the extremity there, the line should lie close, with no vacancies; and without a void, the line should fill from the hook to the tail. From the shoulder-blade to the head should be well filled up—as we say, good in the neck vein. I am aware that the preceding remarks, as to the quality and proportions a beast should possess, must be very unsatisfactory to you, as they are to myself; scarcely any one animal has possessed them all, and to look for the half of them in a good commercial beast would be vain. I have consulted no writer upon the subject; they are set down, and not in good order, just as they struck me at the time. Thick legs, thick tails, and deep necks, with thick skin and bristly hair, always point to sluggish feeders. In cold weather, in the month of May, the old silky coat of the straw-yard bullock is of great advantage. If we could get the qualities and proportions I have specified in animals, it would not be difficult to make them fat. It would be difficult only to make them lean, when once in condition. A high standing, want of ribbing-up and ribbing home, with the tucked-up flank, always denote a worthless feeder. You must all have observed how difficult it is to bring such cattle into a state for killing. It will take a deal of cake and corn to make them ripe. A great many can never be made more than fresh: it is only a waste of time and money to keep them on.

I have adverted to the way cattle should be treated in winter as stores. The earlier you can put cattle upon Grass so much the better. Cattle never forget an early bite of new Grass, and it is wonderful what improvement a good strawyard bullock will make in four or five weeks at the first of the season. If kept on straw and Turnips alone in winter, he may add a third or at least a fourth to his live weight. But much depends on the weather. I have never known cattle

make much improvement in April, or even up to the 12th of May: because the weather is so unsteady, and the cold nights when they are exposed in the fields take off the condition the Grass puts on. The grazier will find it of great advantage to house his cattle at night during this season. In Aberdeenshire the 10th of May is about the earliest period cattle should be put to Grass. Where there is new Grass, first year, it is a most difficult matter to get the full advantage of it. There is no other Grass to be compared with it for putting on beef in Aberdeenshire. You must be careful at the first of the season, if much rain fall, not to allow the cattle to remain on the young Grass. They must be shifted immediately, and no one can get the proper advantage of such Grass who is deprived of the power of shifting the cattle into a park of older Grass till the land again becomes firm for the cattle. I have seen a small field of new Grass in the month of May or the beginning of June utterly ruined in one night, when heavily stocked with cattle. When wet and cold the cattle wander about the whole night, and in the morning the fields are little better than ploughed land. In fact the fields so injured will never recover until broken up again.

In regard to my own farms, I cut scarcely any hay. I pasture almost all my new Grass, and the moment the cattle's feet begin to injure the Grass, they are removed. If cattle are changed to an old Grass field, so much the better: but they will be safe on second or third year's Grass, provided the land is naturally dry. By the 1st July, the new Grass land gets consolidated, and you are safe. New Grass fields are bad to manage in another respect. The Grass comes very rapidly about the 10th June, and if you are not a very good judge of what you are about, it will get away in a few days, become too rank, and will lose its feeding qualities during the remainder of the season. By the middle of July it will be nothing but withered herbage. Young Grass ought to be well eaten down, and then relieved for two or three weeks, then return. The cattle and the Grass will be as sweet as before. It requires practice to know the number of cattle, and the proper time to put on these cattle to secure the full benefits of new Grass. Three days' miscalculation may cause a heavy loss. I have been bit so often, and found the difficulty so great, that I fear to extend my observations on this part of the subject, when I am addressing gentlemen many of whom make their young Grass into hay, or sell the Grass to the cowfeeders. The pasturing of new Grass, in which the farmers of Aberdeenshire and the north of Scotland have a deep interest, may not apply to many other parts of Scotland.

I come now to the way cattle should be treated after being taken from their pastures, and put on Turnips. The earlier you put them up, the sooner they will be ready for the butcher. I shall state the method I adopt. I sow annually from 12 to 16 acres of Tares, and about the 1st of July, save a proportion of the new Grass full of Red Clover, and from the 1st to the 20th August both Tares and Clover are fit for the cattle. I have for many years fed from 300 to 400 cattle, and if I was not to take them up in time, I could pay no rent at all. A week's house feeding in August, September, and October, is as good as three weeks in the dead of winter. I begin to put the cattle into the yards from the first to the middle of August, drafting the largest cattle intended for the great Christmas market. This drafting gives a great relief to the Grass parks, and leaves abundance to the cattle in the fields. During the months of August, September, and October, cattle do best in the yards, the byres being too hot; but when the cold weather sets in there is no way where many cattle are kept that they will do as well as at the stall. You cannot get loose boxes for 80 to 100 cattle on one farm. I generally buy my store cattle in Morayshire. They have been kept in the straw-yard, and loosely tied. When the cattle are tied up on my farms, a rope is thrown over the neck of the bullock, the other end of the rope is taken round the stake, two men are put upon it, and overhaul the bullock to his place. When tightened up to the stall, the chain is attached to the neck, and the beast is fast. We can tie up 50 beasts in five hours in this way. When tied you must keep a man with a switch to keep up the bullocks. If you did not do this you would soon have every one of them loose again. They require to be carefully watched the first night, and in three days they get quite accustomed to their confinement, except in the case of some very wild beast. I never lost a bullock by this method of tying up. This system is like other systems; it requires trained hands to practise it.

I never give feeding cattle unripe green Tares, they must be three parts ripe before being cut. I mix the Tares when they are sown with a third of White Peas and a third of Oats. When these parts ripe, especially the White Peas, they are very good feeding. The fresh Clover given along with Tares, Peas, &c., forms a capital mixture. I sow a proportion of Yellow Aberdeen Turnips early to succeed the Tares and Clover. I find the soft varieties are more apt to run to seed when sown early than Yellow Turnips. In a week or 10 days after the first lot of cattle is taken up from Grass, a second lot is taken up. This is a further relief to the pastures, and the cattle left in the fields thrive better. This taking up continues every week or 10 days to the end of September, when other lots are taken up. At this period all feeding cattle ought to be under cover that are intended to be fattened during the succeeding winter. The stronger cattle are drafted, and the lesser ones left until the last cull is put under cover. It would be no use to attempt to feed cattle, except you can command a staff of experienced men to charge of them. However faithful he must have a taste and a strong liking to cattle—they must be his hobby. Even with men of the greatest experience the difference in the thriving of the different lots upon the same keep is great. They must not be oppressed with having too many in charge, or else it would be the loss of the owner. From August till November a man can take care of 30 cattle very well, or a few more, if the cattle are tied; but when the day gets short, 20 to 25 is as many as a man can feed, to do them justice. Good cattlemen are invaluable. They must not only know what to give the cattle, but the great secret, especially when cattle are forced up for show purposes, is to know what not to give them. An inexperienced man amongst a lot of feeding cattle must be a great loss to his employer. Like everything else it cannot be learned in a day—the cattle-man must be always learning. To speak of myself, I can only say that for as long as I have traded in cattle, have studied their treatment, have considered their symmetry, I am learning something new every other day. In regard to the treatment of cattle when put upon Tares or cut Clover, there is no danger; but with Turnips an ignorant man may injure the cattle in one week so much that they may not recover it during the season. The cattle must be gradually brought on, giving them few Turnips at first, and increasing the quantity daily. In 10 to 14 days they may get a full supply of Turnips. When improperly treated the cattle scour, they hove, the stomach getting deranged. It is a long time before they recover, and some never do well. We cure hove generally by repeated doses of salts, sulphur, and ginger. An accidental beast will hove under the best treatment, but if you find a lot of them blown up every day it is time to change their keeper. In cattle that are forced for exhibition, hove is the first warning generally that the constitution can do no more. I have seen cases so obstinate that they would swell upon hay or straw, without Turnips. Putting the animal out to Grass for a couple of months will generally renovate the constitution, remove the tendency to hove, and after being taken up from Grass, with a man in charge that knows what to give and what not to give, the animals may go on for a few months longer, and with great attention may at last prove a winner. There are some animals that any amount of forcing will not derange their digestive organs, but they are very few.

Cattle feeding in the stall should be kept as clean, and their beds should be as well shaken up, as that of the hunter or race horse. I change the feeding cattle from Tares and Clover on to Aberdeen Yellow Turnips, and afterwards to Swedes, if possible by the middle of October. I do not like soft Turnips for feeding cattle. The cattle that I intend for the great Christmas market have at first from 2 to 4 lb. of cake a day by the first of November. In a week or two I increase the cake to at least 4 lb. a-day, and give a feed of bruised Oats or Barley, which I continue up to the 12th or 14th of December, when they leave for the Christmas market. I apportion the cake to the condition of the different animals, and some of the leanest cattle get the double of others that are riper. The cattle being under the stall gives you this in your power, which you could not have in the straw-yard. When 10 or 20 beasts in the straw-yard stand together, the strongest takes the greatest share, and those very often the animals that least require it. I consider the stall a great advantage over the straw-yard in this respect, as you can give each beast what you wish him to have. I point out to my men the quantity of cake and corn I wish every beast to receive. You must have all observed the inequality of the improvement of cattle in the straw-yard when 10, 15, or 20 beasts are fed together. I have seen the best beast in a lot when put up the worst when taken out. The first three weeks the cattle are put upon cake along with their Turnips they will put on as much meat as they will do with an equal quantity of cake for the next five weeks. It is absolutely necessary to increase the quantity of cake and corn weekly, to ensure a steady improvement; and if cattle are forced on cake and corn for two or three months in my opinion it will pay no one. To give unlimited quantities for years, and to say it will pay, is preposterous. To give fat cattle the finishing dip, cake and corn, given in moderation and with skill, for six weeks before the cattle are sent to the fat market, will pay the feeder. To give cattle cake and corn for more than two months will never pay the feeder in Aberdeenshire. This is no doubt a bold assertion, but I believe it to be correct. The cake and corn given to cattle day by day loses its effect, till at last you bring the beast almost to a standstill, and week after week you can perceive little improvement. The cake, and especially corn, appear to injure their constitution; Grass, Turnips, and straw or hay is their only healthy food. For commercial cattle and for commercial purposes two months is the utmost limit that cake and corn will pay the Aberdeenshire feeder. There can be no substitute for Grass, straw, and Turnips, except for a very limited period. In times of scarcity, and to give the last dip to fat cattle, they are valuable auxiliaries. I have kept on a favourite show bullock for a year, thinking I would improve him, and gave him everything he would take, and when that day twelvemonths came round he was worse than a twelve-month before. You can only torture nature so far, and if you force a yearling bullock, he will never come to the size that he will do if kept on common fare. If you wish to bring a bullock to size for exhibition, give him as much Grass and Turnips as he can eat. Begin to force only when he is three years old, and by the time he is four years he will not only be a neater but a larger animal than if he had been forced; forcing in youth deteriorates the symmetry of the animal as well as diminishes the size. I speak only of Aberdeen and Angus cattle; but I believe the breeders of Highlanders are well aware of this fact. I am not speaking of pounds, shillings, and pence, or of the profit to the farmer, for who would think of keeping beasts bred to himself older than rising three? Calves dropped early should go to the fat market at the age of two years.

A word as to show bullocks. I believe they are the most unprofitable speculation an agriculturist can interfere with. To keep a show bullock as he ought to be kept will cost from 12*s.* to 15*s.* a week, which amounts to about 40*l.* a year. The method I adopt as to using cake and corn is the following:—On the different farms where I feed the cattle I put a fourth part of their number only upon cake and corn at one time, and six weeks (which is about my limit of time for cake and corn, &c., paying the feeder) before they are to be sent to the fat market. When the six weeks are expired they are sent away, another fourth part of the original number take their place, and get their six weeks cake. When they leave, the other cattle in succession get the same treatment. When Turnips are plentiful, the system works very well. The cattle draw beautifully, week by week, from the different farms, and come out very ripe. I may mention that almost all the cattle I graze are generally kept during the previous winter upon as many Turnips as they can eat, and are in high condition when put to Grass. I am confident that in the south of Scotland—where there is more corn and less Grass land—this method would not be suitable. Large bills for cake are not easily paid, and when paid swallow up our profits. When cattle are fed almost exclusively upon the produce of the farm, the feeders know what they are about, but this method of feeding requires time and patience, and there is a long outlay of capital; but if the system is adopted, and judiciously managed, upon medium or high-lying and low-rented land, the cattle treated as above ought to pay the rent, and leave a fair profit to the feeder. There is no doubt that in the north, and especially in Aberdeenshire, there is a rage for fine cattle; and on my part it has almost amounted to a "craze." I would have been a richer man to-day if I had not been so fastidious in my selections; but I cannot endure to look at, and never will tolerate, a bad beast on my land. The gentlemen I buy from know my weakness, and they say if they are anxious to sell we must let M'Combie have a "pull." Many are the lots of beasts I have bought and culled, and I had to pay for it. Sellers have served me right. Still there is a fatality follows me that I fear it is hopeless now to endeavour to get over. A good bullock will always be a good one, and will easily be made ripe—requiring a little cake or corn—and come right out at last. I have adopted the following system in the selection of the cattle I have wintered. I have bought the best lots I could find during the summer, fit for wintering and keeping on to the following Christmas. I have culled the worst of the different lots; I have fed the culls and wintered the tops: by this method I secured a lot of wintering cattle for the great Christmas market of the ensuing year, without one bad or indifferent beast among them. The price I have obtained for several years, with the exception of the culls of my winterers, has been 35*l.* a head. In Aberdeenshire I consider that a large bullock ought to pay 25*s.* to 30*s.* a-year for keep if he is properly treated. We often get less, and sometimes a little more, owing in some measure to how the cattle are bought, also to the price of beef at the time, the season of the year the cattle are bought, and the time they are sold. Before we were threatened with the cattle plague I always made a point of buying my beasts early in the season, beginning in January and buying monthly up to May. I had thus a chance of the best lots, whereas if I deferred making my selections the best lots went into other hands; but the cattle plague has put me sadly about, and my cattle may make a poor appearance next winter—the M.X.C.'s, as they are called (which is my brand) must be fewer in number and not of such equal quality as in previous years. I wintered 40 store cattle, and I have bought several other lots of cattle, but I have not above one-half of my usual number of feeding cattle on hand. Midsummer-purchased cattle have never paid me much. The improvement of cattle in the season is always the best. With the cattle plague came a panic. The plague was amongst us several times; it was within five miles of my stock. I bought 830 sheep—animals I know as much about as they know about me. I have ploughed more land than usual, and I intend to make some hay. I have got into a large stock of breeding cattle.

FOREST ECONOMY.

IN reading, for the first time, the works of some of our old authors, as Evelyn's "Sylva," the mind is almost intuitively led to inquire if landowners now-a-days are making as much of their woods as they once did? But it cannot be that the sun has all this while been going backwards on the dial of the forester, and therefore second considerations arise to account for the changes which have taken place in the economy of things. Our country people, for example, have lost their acorn teeth, and so have the pigs that used to fatten in the forest. "Hearts of Oak" has almost lost half its musical charm, while everywhere throughout our manufacturing districts the ear tingles with the ceaseless reverberation of the hammering processes in force in the substitution of iron for the produce of our woodlands. Still the forester's budget continues to occupy no second-rate place in the office of the landowner, and to all appearance will do so to the end of time. Indeed, few estate topics engage more of a landed proprietor's time and attention than the management and produce of his woods, and the grand question of questions that just now lies at the bottom of the whole matter is the improvement of that management and the turning of this produce to a better account. Can this be done?

Timber, bark, and brushwood may be said to be the natural produce of land under wood. It will no doubt be said by way of exception to this that much timber is grown in hedgerows, but the economy of the practice is becoming more and more questionable, so that it may with greater propriety be considered rather the

exception than the rule when examined in the light of the future. Again, many parts about the mansions of landowners are thickly ornamented with fine trees, which are handed down from one generation to another rather as heir-looms than as profit-yielding produce of the land. And, lastly, most woods are used as game preserves, and no little value is sometimes put upon them in this respect; while a few plantations and forests are open and yield pasturage for deer, sheep, cattle and sheep, often of a very diversified quality. All these things, therefore, require to be taken into account before a landowner can form a just estimate of what he makes of his land under wood.

Some soils and situations are doubtless better adapted for certain kinds of trees than others, while almost all soils are susceptible of much improvement for timber growing. In practice, generally speaking, perhaps less attention is paid to either of these propositions than good management and profit demand; the too common rule being to grow all sorts of trees the owner has a fancy for on whatever soil he may have, and at the lowest possible expense for planting, enclosing, thinning, &c. No doubt a very rapid growth is objectionable, especially of hard wood, such as the Oak, which strikes its roots deep in the soil, so that in many cases trenching and such like expensive improvement-rather do harm than good, the money thus spent being worse than thrown away. But the argument, although good in some cases, is in others often improperly used—for too rapid growth of the Oak on deeply trenched land being effected not by the trenching, but by what is termed "nursing," *i. e.*, the planting of other trees thickly around the young Oak, so as to shelter and force it up in a confined weakening atmosphere like a hothouse plant. There are no doubt exposed stormy situations where a certain amount of shelter may be advisable even in the growth of the Oak, especially for the first few years; but if the land is naturally adapted for its growth, the task from the very commencement which the intelligent forester has to perform is to retard as much as possible a too rapid growth, without injuring in any way its natural development in other respects. In short, to produce finely grained, close timber of large dimensions in a rich soil, a slow uniform annual growth for a long period of years is essentially necessary; and to obtain such desiderata the tree must have a finely formed large head with an abundance of leaf, and be supplied with plenty of sun, light, and free air, so as properly to elaborate the sap to form healthy layers of new wood and bark between the old wood and bark, and to preserve at the same time the roots in a similar state of health and development.

For a similar reason the ground around young trees should be kept clean and free from weeds, Grass, and undergrowth of any kind, so as to afford the free access of the sunlight and atmosphere so essentially necessary to a healthy vitality and organisation of structure.

It follows, without premising further, that no little skill and judgment are required to determine what improvements are necessary and practicable in preparing land for the profitable growth of this or that kind of timber. In the carrying out of such improvements, landowners and their practical men are perhaps too liable to overlook the connection they have with the price of the timber when it appears in the market in competition with foreign timber, which is always of a selected and saleable quality, or other more successful examples of home growth. Much of this no doubt arises from the length of the period between seed time and harvest, so to speak, in the growth of a crop of wood, but the commercial question, if overlooked in the early period of the growth of the Oak or any other kind of tree, will eventually speak for itself, and therefore the more prudent plan is to make it the alpha and omega of the whole matter, as it were—for in point of fact such in reality is its true position. The farmer who grows an inferior quality of corn or cattle on good land, and then grumbles at the low price and general losses sustained by following such a practice, is only laughed at; and the landowner who grows bad timber when good might be produced, and then grumbles at the preference given to foreign timber expressly selected to meet the demands of the English market, is exactly in a similar position.

The future, as compared with the past and present, is not against the growth of home timber, but the contrary, if proper attention is paid to quality as above. At present there is no doubt a large importation of foreign timber of every kind, which to all appearance will be continued for an indefinite period to come. But as the exporting countries fill up in population, as they are all fast doing, their own home demand and consumption will increase in such a manner as to keep up the price to at least fully its present level, the probability being in favour of higher prices. Our own consumption, in spite of the extension of iron manufacture, is also increasing. Such being the facts of the case, the inference in favour of the future is manifest, provided always proper attention is paid to quality. On the contrary, an inferior quality of timber is annually becoming less and less saleable in the English market; not so much from competition with foreign timber, as with iron and the expense of labour, for its durability will not cover this latter (the expense of labour) in utilising it, whatever, almost, may be the purpose to which it is applied, granting that the user had it for nothing. Indeed, from a commercial point of view, it may not inaptly be said that the large amount of soft unhealthy grown, or, in plain English, diseased timber now in the market, both of home and foreign growth, but particularly of the former, all sorts having to be sold, is enhancing the value of the best and more durable qualities of wood. Hence the growing importance of the maxim—either grow good timber or none at all.

For one to sow and another to reap is not a very encouraging practice, whatever may be the pecuniary prospects of the harvest; and such is virtually the practice of growing Oak timber. Indeed few fell and sell timber of any kind of their own planting, even the more rapid-growing trees that attain to early maturity. Still the work of planting must be prosecuted to keep up the productive value of estates, for if landowners cut down all they sow on the one hand, they are in duty bound to plant young ones on the other hand. And the grand practical desideratum is to get the thinnings and brush-wood of young plantations to cover as much of the current expenses as possible. Much will always be said by sight-seeing people in favour of hedge-row timber and ornamental trees in parks, and no doubt sacrifices will continue to be made in both these respects; but it must, nevertheless, be borne in mind in these utilitarian times, that the old practice of growing timber to rot in hedges and parks is liable to be superseded by something more rational, because more profitable; for the ornamentation of parks and estates is a living or continuous work, otherwise ornamental timber will die out, leaving estates without ornament. In other words, to keep up the ornamental beauty or sylvan embellishment of landed estates, young trees ought annually to be planted, in order to take the place of those whose tap roots and branches begin to show unmistakeable signs of decay—and under an enlightened system of management the young trees ought always to be more ornamental than the old ones, so that the propriety, or rather need of sacrificing the pecuniary value both of the bark and of the timber of the Oak, or of any other kinds of trees whose barks possess a marketable value, would cease to exist for the mere sake of ornament. Indeed, were practice with science to go hand in hand with duty and interest, the contrary practice would become the rule—when rotting trees would cease to disfigure so many parks and hedges as they now do, for no other reason than the bad taste and indolence of their owners.

There is obviously a period in the lifetime of an Oak tree when its bark and timber possess maximum values, but it is not always at this period that they are sent to market. On the contrary, it has too frequently happened that the intrinsic value of both is so seriously sacrificed as hardly to leave tangible data for estimating the loss thus sustained. If the wood of a rotten tree is worth little, the probability is that its bark is worthless. So long as the circulation of the sap continues in a healthy state the bark may maintain its value, but the moment the organs of circulation become impaired and the sap ceases to flow, nominally the bark then begins to depreciate in quantity, quality, and value.

Bark being chiefly used in the manufacture of leather, its money value depends upon the percentage of tannin it contains. Most barks yield this principle, but the bark of the Oak in greatest abundance. The bark of some large Willows, however, must be mentioned as an exception, while Birch bark is preferred for nets and cordage. This percentage is very different at different seasons of the year, being greater in spring than in autumn, least in winter, greatest when the buds begin to open, and less in a cold spring than in a mild temperate one. The layers next the wood yield the largest proportion of tannin; the epidermis, or outer bark, affords very little; that of rough old barks almost nothing; the intervening, or middle portion, a medium quantity.

The current bark season, now commencing, must, upon the whole, be acknowledged a favourable one. No doubt some districts, owing to the low temperature experienced, will prove an exception, but the general rule nevertheless embraces a large area of the country.

The bark harvest, like the other harvest seasons, is doubtless an interesting one to those engaged in it, but not more so, we venture to aver, if so much, as the importance of the occasion requires. This mostly arises from the tanning principle, that upon which its value depends, being liable to undergo chemical change during the drying and stacking of the bark; granting that the trees have been felled, and the bark removed at the proper nick of time, so as to secure the maximum percentage of tannin—no easy matter to determine in districts where the weather is variable and unsettled. Into the details of such a comprehensive practice as the current bark harvest involves, our limits prevent us going; suffice it to say, that routine at the best is a dangerous rule, and in no harvest field more so than in the one in question. Tan when separated from the bark is a brown substance. One practical maxim therefore is to preserve the brown colour of the inner bark, where this tanning principle chiefly resides. To effect this the inner bark must be kept dry and free from a stagnant atmosphere, as both these induce chemical change. There is little tan in the outside, so that a shower upon it does comparatively no harm if it is lying at a proper angle, all rough outsides being placed either almost vertically, or thatched with smooth surfaces so as to carry off water. It follows that in moist wet weather bark requires to be shifted with every change of the wind to effect ventilation. How seldom is this efficiently done! On the other hand in dry blustering weather the too rapid drying of the inner bark does harm. Hence the opposite practice, and the necessity of unwearied attention and watchfulness, whatever weather may be experienced. Of the thinnings of plantations and underwood generally almost nothing requires to be said. At present they realise little to landowners. Columella and the old Roman writers mention that the leaves and spray of trees were regularly harvested every year as provender for cattle, and upon which they set a very high value. To a limited extent the practice has come down to our own times, but it has almost wholly lost its economical popularity.

The propriety of allowing this old practice to get almost wholly into desuetude as it has done, is beginning to be seriously called in question. Some agriculturists, for example, of a long, varied, and successful experience, are of opinion that the old Roman practice can be greatly improved; that the leaves, spray, and bark of full-grown trees and of thinnings (poisonous trees excepted), if properly harvested, can be ground into meal and so mixed with the feeding materials of modern times as greatly to enhance their dietetic value by correcting their abnormal qualities; that if thus carried out the practice would greatly improve the health of cattle by doing away with the growing prevalence of a predisposition to disease so prominently exemplified in our improved breeds at the present time relative to rinderpest, lung disease, foot-and-mouth disease, small-pox in sheep, flesh worm in pigs, and so on; and that landowners ought to derive a vastly increasing revenue from this branch of forestry. Much to the benefit of their tenantry many bushy plants, and much underwood not now grown in this country, might be introduced and grown with profit as feeding stuffs for cattle. The old practice of giving such provender alone is highly objectionable in many respects. But into the antiquated nature of old practices it would be superfluous to go. The modern question is to extend the economy of our present sylvan resources, and this obviously seems sufficiently promising to merit experimental investigation. *W. B.*

Home Correspondence.

Cattle Statistics.—The returns just published as to the number of cattle in the kingdom must be taken as only an approximation to the truth, because many farmers of the smaller class (and it may be, some of the larger) refused to give evidence on the subject, and returned the Government papers blank, alleging as their reason for so doing that the whole thing was a scheme to entrap them into a statement which would certainly be turned against them in the shape of additional taxation "before they were much older," for, rightly or wrongly—wisely or ignorantly, these men firmly believe that every act of the Legislature having reference to them is meant to assist in their downfall. *C.*

Societies.

SOCIETY OF ENGINEERS: *The Craigintinny Sewage Meadows.*—The following extract is made from a paper by Mr. G. King, read last year before this Society:—From a report on the Craigintinny Meadows made by Mr. William Lee in 1851, at the instance of the General Board of Health, it appears that the Filliseide Old Meadows, containing 53*a.* 3*r.* 9½*p.*, cost 500*l.*; the New Meadows, containing 96*a.* 0*r.* 3½*p.*, cost 1300*l.*; the Sea Meadows, containing 40*a.* 3*r.* 11½*p.*, cost 700*l.*; and the Engine Meadows, comprising 59*a.* 3*r.* 16½*p.*, cost 2000*l.*; making a total of lands irrigated 250*a.* 2*r.* 2½*p.*, and a total of money expended in so doing, 4500*l.*

It will be seen that the cost of forming the Engine Meadows was 33*l.* 6*s.* 8*d.* per acre. This includes the cost of conveying the water to the engine, and the cost of the engine itself—the former 100*l.* and the latter 250*l.*—the actual cost of forming the ground was, therefore, 12*l.* 10*s.* per acre. There are two watermen employed, one by day and another by night, one being always on duty. There are never more than 10 to 15 acres under irrigation at a time—the whole is divided into districts which are operated upon in succession. It occupies about 21 days to go the entire round of the irrigation. The first part is then commenced with again, and so go the rounds of the irrigation during the summer months. In the winter the irrigations are only applied occasionally, making in all about 60 days irrigation out of 365. About half the City of Edinburgh, but by far the most densely populated part, having from 80,000 to 90,000 inhabitants, discharges its sewage in the direction of the Craigintinny estate, and the average quantity of sewage water flowing is estimated by Mr. Lee at 220 cubic feet per minute. The following table will show the approximate quantity of water flowing, and the quantity actually applied in the irrigations during the 224 days it is in operation:—Per day, 316,800 cubic feet = 9360 tons weight; per year, 115,711,200 cubic feet = 3,418,740 tons weight. Calling the part irrigated 250 acres, gives as follows per acre:—Per year, 462,845 cubic feet = 13,675 tons weight. Quantity actually applied in irrigation per 224 days:—284,047 cubic feet = 8392 tons weight.

The large quantity of water flowing as compared with the number of acres irrigated, giving 8392 tons weight per acre per annum, or about 80 inches in depth, without allowing for storm water, and what runs to waste in the 130 days the irrigations are suspended, is clearly much more than is required for irrigation. In many parts the ground is exceedingly soft and yielding, but there is a firm road, not irrigated, to each rouping lot. All these roads (except the main stone farm roads), as well as the floating and rouping trenches, are measured in as appendages to the lots to which they adjoin, so that no land is lost to the proprietor on account of those conveniences.

Mr. Lee estimates the annual expenses of applying the water to the old meadows at 4*l.* for the 224 days irrigated, and the annual working expenses of the Engine Meadows at 117*l.* 12*s.* The latter, of course, includes the working of the engine, the waterman's labour, and other incidental expenses. This is calculated at 10*s.* per 12 hours, with coals at 6*s.* per ton; but as the engine works night and day, it is 1*l.* per 24 hours. It raises about 500 gallons per minute, by means of two pumps of 15 inches diameter. This gives 1*l.* 19*s.* 2½*d.* per acre as the cost of applying the water by steam power, and 5*s.* 0½*d.* per acre by gravitation.

Next, as to the results obtained by the application.

The cut of the Grass is let annually by public roup or auction. In 1859 the roup took place on the 31st of March, and the cutting commenced on the following day, with very good crops. The effect of the Grass on the cattle is very marked and highly favourable. The meadows increase in richness, and, consequently, in value, every year; the Grass not only improves in quality, but gradually becomes thicker; five or six good crops are cut in the course of the season; five weeks is sufficient time to allow between each cut; if too long a period elapses between the cuttings the Grass becomes lodged and rotted on the ground, and if cut in that state is much longer in starting again. In some of the best of the old meadows 80 tons per acre have been cut in the course of one season; an acre of such Grass will keep eight or ten cows through the summer, and the prices obtained in 1859 ran from 20*l.* to 35*l.* per imperial acre for the old meadows collectively.

In 1860, owing to severe weather, the first roup of the Craigintinny Meadows did not take place until the 28th of April, a fortnight later than had ever been before, and a month later than in 1859. Even then there were large patches where the Grass was cut last, and had not sprouted again to cover the ground before the first severe frost set in on the 20th of October; where vitality seemed entirely destroyed the ground was in these patches covered with a crust of dead fog without a living blade of Grass upon it. The lots not being all equally forward it was determined to have a second roup of the later lots; the few first lots were, therefore, taken promiscuously here and there amongst those intended for the second roup. It appeared these lots had not been cut so immediately before the severe frost set in, consequently the ground was not covered and protected from the effects of the frost.

Having disposed of these odd lots, they commenced with the Sea Meadows below the Leith turnpike road. Lots 1 and 2 are very much acted upon by the sea, as they commence at the end of the sea-wall built by the railway company, and will soon apparently be washed away. These lots were, on that account, not offered. Lots 3 and 4 are similarly affected, but not to the same extent. These two lots now form one, and were let at a comparatively low price—18*l.* per acre. Lots 5 to 63, which comprise the whole of the Sea Meadows, ran pretty regular, ranging in price from 20*l.* per acre, the lowest, to 37*l.*, the highest. They next proceeded with the Upper Sea Meadows, running from Lots 64 to 81; there were four lots which had suffered very much from the frost, and were reserved for the second roup; the other lots ranged from 22*l.* 5*s.*, the lowest, to 40*l.* 5*s.*, the highest. Burniward's Meadows, consisting of nine lots, ranged from 28*l.* 15*s.*, the lowest, to 33*l.* 10*s.*, the highest. Fillieside Old Meadows, east side of Burn, from No. 30 to 45, excluding four damaged lots reserved for the second roup, ranged from 22*l.* 15*s.*, the lowest, to 36*l.* 5*s.*, the highest. Fillieside Old Meadows, west of Burn, comprising Lots 1 to 29, averaged rather more per acre than those east of Burn. The Fillieside Braes, the Upper Fillieside and Lock Strand Meadows, realised a great advance per acre above any of the others. This may be attributed to its being better land in nature, and better formed, being all in pane and gutter, with a good fall; there was not a failing patch, the Grass was splendid, and quite fit to cut; several lots made over 10*l.* per acre, and the three portions averaged over 35*l.* per acre. It was a subject of remark that, although the roup was a month later than the year before, the Grass had let at from 2*l.* to 3*l.* per acre more, showing either a gradually increasing quantity, and consequent value per acre, or else an increased demand, requiring, if possible, an increased area under irrigation.

The second roup took place on the 18th of May; but the effect of the first were still visible, and probably a great many of the lots would not regain their former vigour during the summer. To guard against a recurrence the time for cutting the Grass is limited, by the conditions of sale, to the 10th of October; and under no pretence whatever is it to exceed that time. Previously to the year 1860 the time for discontinuing the cutting was 15th October, and then a few days of grace were allowed to the 20th October, the very day on which the severe frost of 1859 commenced.

The lots rouped were as follows:—Blackside Meadows, 26; Upper Sea, 3; Southside Bank, 2; Fillieside Garden, 1; Craigintinny, 16; Wheatfield, 4; Fillieside East, 4; Triangular Lot, 1—total number of lots, 57.

These lots averaged a little over 25*l.* per acre, which, to the seller, is probably less than the year before; but to the purchasers more. 1860, from May 18th to October 10th, equal 20 weeks 2 days; 1859, from April 18th to October 20th, equal 26 weeks 4 days.

1*l.* 4*s.* 7¾*d.* per acre per week—20 weeks 2 days, equal 25*l.* per acre. 1*l.* 4*s.* 7¾*d.* per acre per week—26 weeks 4 days, equal 32*l.* 14*s.* 10½*d.* per acre—probably more than the average of 1859. It will be observed that nearly all the lots reserved for the second roup were upon the heavy clay land, in the centre of the irrigations, showing clearly that clay soil is much more injuriously affected by severe frost, and later in the spring growth than lighter soils, but as the summer advances it produces crops equally heavy if not more so.

When the branch of the North British (at that time the Dalkeith) Railway was made in the year 1834, a jury awarded that the railway company should pay 640*l.* per Scotch acre for the land taken in going through the Sea Meadows, which they assessed at 32 years' purchase, on an annual value of 20*l.* per acre; there was no severance, as the railway ran alongside the turnpike road the whole of the way. Taking that as a datum, and taking the annual value at 20*l.* 3*s.* 6¾*d.* per imperial acre, the 190*a.* 2*r.* 36¾*p.* at the present time represents a value of 932*l.* 17*s.* 1*d.* per acre, or 177,867*l.*; and assuming again that the annual value of the land before it was irrigated was 5*l.* per imperial acre (quite a high estimate for it altogether at that time), would represent a value of 160*l.* per acre, or 30,506*l.*, which, deducted from the former, leaves a balance as the increased value of the land by irrigation of 147,361*l.*, and that by an outlay of 2500*l.*; and it is somewhat remarkable that the railway company, requiring about four Scotch acres at 640*l.* per acre, or 2560*l.*, actually paid for the whole of the irrigations. It appears that Mr. Miller, the proprietor of the meadows, would have given the railway company the land they required upon condition of their carrying the railway along the outside by the sea, as the railway works would have sheltered the meadows from the sea, but this they refused, as they would have had to construct a sea-wall about a mile in length; but it is probable they would have made a better bargain by accepting the offer, as they had to pay for a heavy lawsuit as well as for the land.

The Engine Meadows are not nearly so productive as the older meadows. For this there are various reasons. In the first place they have only been made 10 years, and have not, therefore, had time for the irrigation to develope its effects, and the sewage having to be pumped by steam power, the land probably does not get so much as it would if it ran over by gravitation, and the carrier having to run a long distance nearly upon a level, causes the heavier particles of the sewage to fall before it reaches its destination; the sewage is, therefore, weaker. And again, in forming the ground, the due care was not taken to keep the best soil at the surface. In the Fillieside and the Sea Meadows, where it was all sand, that precaution was not necessary. The same may be said of the Blackside Meadows, which were all clay; but in the Engine Meadows, where there was a good top soil with a gravelly hungry subsoil, the case is widely different. Another reason which operates seriously against the Engine Meadows is, they had been shallow drained with tiles, and in places where the soil has been taken away, the water gets into the drains before it has done much good to the land. But another, and perhaps stronger reason than any, is that too much was attempted at once, as the land requires more water the first few years than it does after it has been well dosed with it. Had 30 acres have been taken instead of 60, they would have been brought into working order, and the other 30 could then have been operated upon.

Mr. Brice has very judiciously broken up 25 acres of it, which will enable him to cultivate and enrich the weak parts where the soil was removed; and he can weak parts where the soil was removed; and he can alternately lay down with Italian Rye-grass, which is more profitable for two seasons than old meadows; while this is going on he will be enabled to do as much for the 35 acres of meadow as he could before for the 60 acres, and when that is sufficiently enriched, he will be able to do the same for the remaining 25 acres. It takes some time to bring meadows irrigated with town sewage up to their maximum production—they continue increasing in richness every year for a long time before they reach that point; for instance, the Sea Meadows in 1850 only averaged about 17*l.* per acre, whereas in 1860 they realised 27*l.* 13*s.* 6¾*d.* per acre.

The time occupied in going the entire round of the irrigation is about 22 days, this is repeated about 10 times in the course of the year, or about 224 days are occupied in irrigating; out of the 22 days it requires six days to irrigate the 35*a.* 0*r.* 30½*p.* of the Engine Meadows at present under irrigation. This being repeated 10 times, takes 60 days, or 60*l.*, to irrigate the 35*a.* 0*r.* 30½*p.*, or 1*l.* 14*s.* 1*d.* per acre, nearly seven times as much as the Old Meadows cost by gravitation, a circumstance rather unfavourable for employing steam-power where it can be avoided, unless upon a large scale.

The rouping of the Engine Meadows did not take place until the first week in June, when the prices realised averaged a fraction over 16*l.* per acre, which, allowing for the shortness of the time—from the beginning of June to the 10th of October, little more than four months, and that after the first and most valuable part of the season was over—was not a bad price.

Taking the Engine Meadows at present under irrigation at 35*a.* 0*r.* 30½*p.*, and the price per acre 16*l.*, the results of the letting will be as follows:—

No. of Lots.	Name.	Quantities.			Price per acre.			Total amounts.		
		a.	*r.*	*p.*	£	*s.*	*d.*	£	*s.*	*d.*
10	South Side Bank East	5	3	38¾						
10	Do. do. do. West	6	1	19½						
21	Do. do. do. do.	13	1	4½						
12	Wheatfield New ..	8	2	19						
53		35	0	30½	16	0	0	563	0	0
	Average of Old Meadows.	190	2	26¾	29	5	6¾	5566	5	7½
	Total amounts	225	3	17½				6129	5	7½

Assuming the foregoing data to estimate the value of the irrigation on the Engine Meadows, which, as the part at the time in plough was to be laid down with Italian Rye-grass that season, is put at the quantity formed for irrigation by the engine, namely, 59*a.* 3*r.* 16½*p.*, at 5*l.* per acre, or 30,604*l.*, and, taking again the value at 5*l.* per acre before irrigated, represents a value of 512*l.* per acre, or 30,604*l.*, which deducted from the former, leaves an increased value by the irrigation of 25,044*l.*, amply sufficient to justify an outlay of 2000*l.*

The results obtained by the application of town sewage to these meadows are now fairly ascertained, and the facts and statistics clearly show that the late Mr. Miller, the proprietor, realised the sum of 172,905*l.* by an outlay of 1500*l.* in putting under irrigation 250*a.* 2*r.* 2¾*p.* of his land with a portion of the sewage of Edinburgh. It must be borne in mind that upon the irrigated lands no buildings are required, consequently no expenses arise from repair, insurances, &c. It is also worthy of remark that no account has been taken of the benefits conferred upon the arable portion of the estate by the application of immense quantities of sediment manure collected annually out of the large carriers during the winter.

OUEB: *April 26.—Summer Grazing of Sheep.*—Mr Rigby read a paper on this subject. Colonel CHOLMONDELEY, who occupied the Chair, said:—No farmer in Cheshire would venture to buy horned stock again till the country was perfectly free from the plague. They must, therefore, look to the future as to how the Grass was to be cultivated. This was a question that it would not do to put off. Now, it appeared to him there was only one possible way of answering it, and that was in the one word, Sheep. If they were near a large town, where they could obtain manure at a cheap rate, then he did not say that the breaking up of land would not pay best. He was sure of this, that, whenever they broke up land, they must, in the first instance, go to the stock to obtain the manure to enable them to cultivate the land. If they had not that they must go to something to make manure, and the only way of doing that was sheep. Now, as regarded sheep, he had gone in for sheep to a certain extent ever since he undertook farming on his small farm. He had kept sheep, and he must say, if he had been obliged to give up any part of his farming, he would rather have given up anything than sheep. They always gave them something in return. In the first place they got the clip, then they got the lamb, and finally they got the carcase. The sheep gives the clip and the lamb, and at the same time goes on improving in the market, because a sheep taken at four or five years old into the market would be worth more then than when they were younger. There were many parts of Cheshire, no doubt, suitable for sheep farming, but still there were parts where a breeding flock would answer very well. Then, again, there were other parts in which a flying flock, to stay a few months, where the land was too good to keep farming on for them, and yet they did not sufficiently know the qualities of the land in Cheshire to tell for which the flocks were suitable, but they all knew the character of the soil of their own lands, and when they took to sheep farming they had the option of doing either one thing or the other. He believed that breeding sheep would pay very well. Then, again, there were pigs, and the more they could go in for them the better. He also considered a flock of geese and turkeys to be desirable, although a small thing, but all those small things added up, and as there would be a great deal of corn and grain to spare, a flock might be fed with much advantage.

Mr. RIGBY said:—The summer grazing of sheep may seem to be a simple matter to many men. What can be easier than to open the gates and allow the flock to range where they will? Our pastures are not likely to be over-stocked this season, and we need not be very particular which fields they are in, or how they get into them. But I believe there is a right way and a wrong way of acting in this matter, as in most others; a good way and a better, and speaking comparatively, a better still, and I think we shall all be agreed that it will be well for us to proceed in the best way we know of.

The Class of Sheep wherewith to Stock is not an unimportant matter. There is not much danger of our buying any special breed because they are cheap just now, for all are alike dear to buy, but there may be some danger of purchasing poor starved animals, because they can be had at a low figure. It is important for us to bear in mind that a grazier's profit or loss consists largely in the cost of feeding. A hard growing, lean favoured animal may be made fat in time, but in the process he may consume so much food as will place a considerable sum to his debit on the balance-sheet, and we must guard against purchasing a class of sheep which will occupy our pastures all summer and come out at its close to be sold at about the same price they cost. Of course there is more aptitude to fatten in some breeds than in others; and where it is intended to form a breeding flock for next season it will be well to keep the matter in view now, but as a rule our purchases at this time should be made for quick returns in wool, lamb, and mutton, and in making them we should be diligent in endeavouring to ascertain that they are free from such diseases as scab, rot, or foot-and-mouth disease, and that they have a lively and healthy look. It may, and will be difficult for those whose attention has been wholly confined to horned cattle to exercise their judgment at first with the same accuracy upon sheep; but a little practice will render it easy. The eye should be the chief agent in estimating their value. The practised eye soon concludes, "They look like growers," or "they seem stocken and hard feeders," and as a rule results will harmonise with such first impressions; on no account would I buy a lot of sheep of which I had the latter impression, although they were to be purchased very low. I would lay it down, therefore, as a leading principle, that whatever breed we buy—Lincolns, Shropshires, Leicesters, Scotch, Irish, or Welsh, and whether ewes and lambs, shearlings or older wethers, that they should carry such appearances of health and vigour as to produce the conviction of their adaptation to our purpose.

The Adaptation of our Pastures to our Purchases is another point which must be considered carefully. It would be folly to buy three-parts fat Lincoln wethers to place on poor clay soils; or half-starved low bred Irish or Scotch to put upon the fat pastures of good soil land, well drained, and boned. The latter course might be less disastrous than the other, but in neither would the utmost wisdom be displayed. Good pasture land, Clover roots, or seeds, would be turned to best account by being stocked with the larger and better class of sheep, and as a rule should be used chiefly for feeding purposes. Notwithstanding the early maturity which has been induced by good breeding, there must be a certain space of time occupied in the

growth of bone and frame, which might be done as profitably upon poorer pastures, and with better nett results. Sheep are active foragers, and there is probably no pasturage where they will not find the means of livelihood and growth, and for the first 12 or 18 months they would do as well in these respects as on better herbage. True they would not be as fresh in condition as they would be if they had run in the best, but they would grow fat more quickly after the change, and would have been grown to this period at less cost. Good sheep lands, and the better class of pastures, should be devoted, therefore, to the growth of fat lambs sucking on their dams, or to the feeding of fair-sized sheep, which should never be less than half fat when placed thereon. The poorer kind of pastures can never complete the requisite feeding unless aided by artificial food, and these I would recommend to stock with young sheep under one year old, or poor sheep, to be partially fed, and then sold off to a more fortunate neighbour whose lands would carry them on to perfection. I would also suggest that the sheep on all farms should be divided into different lots, and classified together according to their several degrees of fatness, and that they should be regularly changed from field to field in due rotation. The best and fattest first, say for three days ewes and lambs next after them, and then one fresh class of wethers or barren ewes, for three days more, and then nine days' rest. Sheep are fond of change, and this course will gratify them more than being constantly penned in one field, although it contains an abundance of Grass; and it will also conduce to a more regular and even pasturage, as the latter class coming in immediately after the two first will be compelled to take such herbage as is left them, and being less particular will eat on spots and patches of coarser herbage than their more luxurious comrades would notice. In any case we shall find it very difficult to maintain regular pasturage all over our fields now that we are debarred from stocking with cattle, but some similar course to this will aid in doing so better than indiscriminate mingling together.

Good Shepherding.—The successful summer grazing of sheep will also very much depend upon good management. On placing a newly purchased lot of lean sheep upon succulent Clover Grass seeds, many of them will commence to scour, and if not carefully watched will soon sink in condition and often die, and it will be found a good practice to allow them to depasture on such Grasses, at first for a few hours in the day only (after the dew or rain has been dried up), and drive them into some old pasture land for the night; and it would be an additional advantage, and pay well for the outlay, where it is intended to make early mutton, to feed them with a small quantity of corn, such as Oats, Peas, or Beans, say 1 lb. each per day at the same time. I prefer these cereals to oilcake, because they act more as astringents in the stomach, and counteract the laxative effects of early green food, and chemists tell us they are richer in the constituents of flesh and muscle, which is what young and lean sheep first require. Oilcake, I think, is more useful and more economically used after they become three-parts fat. If scouring continues, notwithstanding these precautions, a little medicine should be given in flour or starch gruel, or much condition will soon be lost, and for this purpose I have found Day & Hewitt's gaseous fluid the best corrective I have tried. I am not fond of giving medicine to any animals, and much prefer leaving Nature to correct simple ailments herself, by stopping all food and giving the stomach rest, or helping her by change of diet and additional care. Nor have I any purpose to serve by recommending the medicinal preparations of this firm, but I have derived so much advantage the last two years from the contents of the medicine chest they supply, that I can recommend it strongly as a most valuable auxiliary to stock keepers of all kinds, but especially to shepherds. With the medicines they give plain directions for use, which any man may understand, and which I think will place him in a good position to deal satisfactorily with most of the diseases to which sheep are liable. Another matter which will conduce to the health and growth of sheep is to place rock-salt in their pastures, so that they may have free access to it at all times, and partake of it as freely or as sparingly as their instinct directs. Salt we know is good for all animals, as is proved by their fondness for food in which it abounds naturally, or in which it is mixed artificially; it acts chiefly, we are told, as a stimulant or tonic to the stomach, and enters freely into the constitution of the blood, and in the case of sheep it is not unlikely that its regular use would counteract the fatal effects of rot, which in wet seasons and on our undrained clay lands, must always be very serious. The rot, we all know, proceeds from the liver being in a diseased state, caused, it is thought, by the introduction into the stomach of the ova, or eggs of some insect that abounds in wet seasons, and deposits its eggs among the Grass on which they feed. These eggs being quickened in the stomach, yield the flat, dirty looking little reptiles called flukes, which we always find in the liver of rotted sheep. Now, as salt is always fatal to this kind of insect life, it must follow, I think, that its regular use will prove a good antidote against the development of this disease, or at least render it less fatal; and I would prefer giving it in this form to dosing them with it, as some recommend, or mixing it in their corn, as they will naturally take as much as they require, and are not so likely to take too much or too little as we should be to give it if left to our judgment. The good shepherding of which I have spoken will also be severely tested by the "fly" and the "foot rot." Of these two the latter is always the most tedious to cure, as its attacks continue through the year, and are equally bad in wet weather and dry, and during the heat of summer and the cold of winter. The attacks of "fly" are only prevalent in the summer and early autumn, and are most frequent in warm showery weather, and in a humid state of atmosphere, and I fancy we shall be plagued with it in Cheshire more than in any other county, from the flat character of our lands, and our excessive rainfall. Although not a disease, strictly speaking, yet the adage that "prevention is better than cure" is equally applicable, and the best preventive I know is to keep the animals clean about the tail, and to dip them in water impregnated with some well-tried sheep-dipping composition. Lambs should be dipped about a fortnight after their dams have been shorn, and the directions which accompany the preparation used, should be implicitly followed in every particular, or serious results may follow. In about a month or six weeks after shearing, older sheep should be dipped, and if the season be bad, as was last summer, dip a second time, in six weeks or two months after; but let the mixture be considerably weaker. There is a fly powder which is made by chemists, to dust all over the wool, much used, and well spoken of in many places; or a similar one may be made by the mixture of sulphur and Hellebore root powder, but my own experience of its efficacy is, that it is less valuable and less to be depended upon than dipping. I need not describe the mode of clearing the maggots out of the fleece. Turpentine is often used, but it should always be diluted. Hot water, just below scalding heat, is also good; but the best thing I have found is diluted spirits of tar. Any of these things should be used sparingly—not to kill the maggots, for none of them do this, but to disturb, and facilitate the cleaning, and in all bad cases, a second examination should be made the next day. I may be wrong, but I have an apprehension that the long-woolled breeds of sheep will suffer more from this than the short-woolled; as a rule, they are of a grosser habit, and lay more fat on the body and outerside of the carcase, which induces greater waste in perspiration, and presents more temptation to the instincts of the fly, and from the length of their wool its attack is less easy of detection; it will be well for those who are intending to form good breeding flocks to watch this point closely during the summer. Foot-rot, the other trouble to the flock I spoke of, prevails most among sheep of sluggish and docile habits, and in low-lands, or during a dropping season, when Grass grows fast, and is always wet. Sometimes it appears in the foot, between the claws, sometimes it encircles the hoof-top, and sometimes it commences at the bottom and ascends under the outer rim of the foot, and it is only amenable to hot, caustic appliances. Muriatic acid and butyr of antimony are the best liquid applications. As an ointment, vitriol and lard, burnt alum, gunpowder, and lard, &c., are much used. For bad cases, where the hoof is soft and loose all round, and the foot discharging freely, a mixture of Stockholm tar and salt applied as a poultice is the best remedy. There are many preparations sold for its cure, all more or less valuable, no doubt, but after trying most of these, I have found an ointment, made from a receipt given me by a Wiltshire shepherd, the best remedy I have used, and which is made as follows:—3 oz. litharge, 6 oz. verdigris, 3 oz. blue vitriol, 3 oz. burnt alum, 1½ lb. honey, all to be mixed together and well boiled until the different ingredients are well dissolved. In all cases the knife must be freely used to pare away all the loose hoof, and cut down to the quick. It is of little use applying any remedy on the surface; follow the disease closely with the knife and get before it. if possible, and then two or three dressings, each alternate day, will make a cure.

Profits.—There is another question which would perhaps be more to our purpose to discuss if it could be satisfactorily answered in the affirmative. Will the summer grazing of sheep pay if they are bought at present prices? "Well, you see, sir," is the answer of hope, mingled with fear, "that depends." Depends on what? Well, it depends on the exercise of good judgment in purchasing; on the skill displayed in pasturing; on the management; on their escape from fatal epidemics; and last, though not least, on the price at which they are are sold again. If it were not for the unusual character of our position as totally bereft of data on which to calculate, I would say it depended chiefly on the first, for it is a maxim of business, "if a thing is well bought it is half sold." But who knows what may transpire before the selling time comes round? If things remain pretty much as they are, I am free to say I see no reason why sheep should not pay, and pay well. Dear as they are as stores, they are also relatively as high as mutton, and unless some circumstances arise to yield consumers a large supply in the market, these proportions will not change for worse; while, on the other hand, if such supply be curtailed ever so little, the advantage will be in our favour as shepherds. Should the devastating cattle plague insinuate itself into Ireland for instance, our ports would be largely and properly closed against her exports of beef, and a greater consumption of home-grown mutton must necessarily follow, and in that case our hope of remuneration would become brighter and more confident. One of the chief things the occupants of clay farms have to dread is to be left with a lot of half-fat sheep on their hands when the rains of next autumn and winter descend; with gutters filled full, and so wide that the sheep have to leap to get across them, no dry lairs nor any Turnips, and perhaps a hard necessity to make up the rent or other sum of money, it will be most difficult to sell to profit, and it will behove such farmers to keep a good look-out ahead, and mind what they do in the present. The old mode of meeting payments by taking extreme care at home, making as much cheese as possible, and selling it for as good a price as could be got, is quite removed from us, and for the future (the immediate future at least) the successful Cheshire farmer must become more a man of business, watchful of markets, observant of passing events, and quick in decision of purpose. It is not likely that the late cheese-maker will become all at once a perfect judge of the weight of his clip of wool, or of its value, or of the nett dead weight of carcase, or of the various other matters connected with shepherding, but he must train himself to these duties, and make experiments and comparisons to obtain accurate results.

Farm Memoranda.

CHAPEL BRAMPTON, NORTHAMPTON: *Cross Breeding.*—In 1850, a gentleman in the Midland Counties,* an extensive occupier of land, a first-rate judge and experienced breeder of Short-horn stock, determined on establishing a distinct breed by engrafting the Short-horn blood on some of the other pure races. After a careful deliberation, the West Highlander was selected as the most suitable for the purpose. The West Highlander, as found in his native glens of Argyleshire, with his broad chest, springing rib, and capacious trunk, possesses in a high degree the external characteristics indicative of a robust constitution, and a disposition to fatten readily and rapidly. Ten carefully selected cows were purchased, some at Falkirk, others from well-known breeders in Argyleshire. They were all of a red colour, inclining to the lighter or yellow shade, and had the orange tinge of the inside of the ears and skin, so much valued in many pure breeds, as indicating a kindly disposition. They were all put to a pure-bred Short-horn bull, and, after having produced their second calf, were fattened off or otherwise disposed of. Of their offspring the steers were all fed off at from 2½ to 3 years of age, but the heifers were put to the best Short-horn bulls that could be procured, either bred by, or descended from, the herds of Lord Spencer, Sir Charles Knightley, Joseph Robinson, of Clifton, or of that of the late Mr. Richard Booth. It was an interesting study in itself to watch the effect of the cross with the different bulls, and it was remarked that the Booth blood always left the clearest impression. In some cases it was difficult even for a practised eye to distinguish the second cross from a pure Short-horn; but invariably the last traces of their mountain origin were to be detected in the length and thickness of the horns, width of the forehead, and shortness of nose or distance from the eyes to the muzzle. The original cows, like all mountain breeds in a semi-wild state, were shallow milkers, though the milk was of a very superior quality. As the produce receded from the Scot and merged in the Short-horn, the quantity of milk increased with each cross, yet retained much of the quality of the original dam.

First Cross, Short-horn and West Highland.—The first cross is inferior in size to that between the Short-horn and Aberdeen or polled Angus, and some of the other large breeds, but for disposition to fatten economically and quality of meat is surpassed by none. As practical illustrations of those capabilities I may mention several cases as occurring under my own observation. Just previous to the great Christmas market of 1859, eight of the steers, then under three years old, were sold at 33*l.* per head to Mr. John Allday, now of the firm of Morgan & Allday, salesmen, New Cattle Market. Those beasts had received no extra indulgence, but were kept during the winter in the usual way in the open yards along with other store cattle of the same age. During the winter of 1858 their principal food was Barley-straw and straw-chaff, with a small admixture of hay, and one bushel per head per diem of cut roots. They went out to Grass on the 20th of May, 1859, on an ordinary pasture, where they remained till the 29th of October without any extra food: at this date they were put into the stalls, from whence, about the 15th of December, they were taken direct to the great market. In the stalls their daily allowance of food was 1 bushel of cut Swedes, 8 lb. of Linseed cake, 6 lb. of meal—half Bean, half Barley; they were much admired, and were pronounced to be equal in quality to anything on offer that day. We had not an opportunity of ascertaining their exact weights; they were, however, estimated by good judges to average from 125 to 130 stones of 8 lb. each.

Second Cross: History of One Steer.—To one steer having two crosses of Short-horn blood more attention was devoted, and a correct account was kept of every particular of food, weight, &c.; though this was by no means an isolated case, for others of the same class made equally good animals. This steer was calved April 28, 1858, was allowed to suck his dam for 12 weeks; he was then weaned, and treated as others of the same age. During the winter of 1858-59, in addition to the usual allowance of Swedes, hay, and cut chaff, he had 3 lb. per diem of good Linseed-cake. About the middle of May, 1859, he, with others of the same age, was put into a second-rate old pasture, where he remained to the end of September, living on Grass alone; he was then put into a box, and received daily 4 lb. of Linseed-cake and 1 bushel of cut roots, with plenty of cut-straw chaff, and a small modicum of hay. On the 1st of March, 1860, the quantity of cake was increased to 6 lb., and 6 lb. of meal, Bean and Barley, were added. He was sold for 30*l.* on the 8th of June, 1860, to a butcher in a neighbouring village, and weighed, when dressed, 115 stones of 8 lb., being then under 26 months of age.

A promising animal, with three crosses of Short-horn blood, was saved as a bull, being of a fashionable roan colour, and good in all his points; he was sold at 10 months old for 30*l.* to a farmer in the neighbourhood, who keeps a small herd of well-bred Short-horn cows. The cross has so far been successful: the calves look promising, are well shaped, with abundance of flesh, and plenty of hair. Another of the fourth cross, saved as a bull, is a promising animal of his age, but he is still under a year old; his quality, colour, and

* John Beasley, Esq., Chapel Brampton, Northampton.

general appearance are those of a pure-bred Short-horn, from which he can scarcely be distinguished. The cows and heifers have all been regular breeders, and the total number of calves reared from this family considerably exceeds a hundred, although about four years ago they were visited by pleuro-pneumonia, and a number of the best animals, in spite of every effort, succumbed to the disease.

Without a single exception the stock bred has been free from any approach to black even in the muzzle, which has been invariably of a light or flesh-colour—a distinguishing mark of a thrifty animal.

The first and second crosses were principally red roans, with a few blood-reds. It is, however, remarkable, that of the first cross a considerable number were white, or white with red ears; all the bulls used have been either red, red and white, or dark roan.

The first and second cross retain much of the wild and restless habits so characteristic of the Highlander; and it is not until they become more closely related to the Short-horn that they acquire his docile habits.

Cows and heifers from this herd have been exhibited from time to time at the local cattle shows, and have carried off prizes when competing with pure-bred stock. Steers and oxen have in like manner taken prizes in the classes for fat beasts—a steer, having two crosses of Short-horn, took first honours, both at Birmingham and London, in the same year. *Mr. G. Murray, in the English Agricultural Society's Journal.*

Miscellaneous.

Colonial Grasses.—I send you a number of the *Agricultural Gazette* of 8th July last, containing an article on the subject of Grasses, supplied by a friend. I hope, therefore, you will be able to find a corner for it, as I should like to see your welcome broad sheet conveying information on rural affairs as well as on matters of state. The subject of Grasses, also, is one of vast importance to a new pastoral country such as this, and hitherto has not received a tithe of the attention which it merits, as, without disparaging in the least our two standard varieties of White Clover and Rye-grass, which for eight months of the year form an excellent herbage for all our domestic animals (though Nature herself sows these plants very sparingly in a rich English meadow), still something better is required for winter forage, the trying season of our flocks—two conditions being essential to have healthy sheep, one, that the animal should have a variety of plants to feed upon, the greater the better; the other, that those plants which are required for winter feed should have their herbage thoroughly matured and ripened by the previous summer's sun, and be of such a nature as will stand up against the driving wind and rain of our winter months, such, for instance, as the Pony Grass mentioned in the article, with our two present excellent winter Grasses, Timothy and Cocksfoot. No dependence should be placed on the watery growth of our winter climate; containing as it does almost no nutriment, it only serves to keep the bowels of the young animals in a constant state of irritation. The intelligent writer of the article suggests a very good way to bring about the examination and introduction of better Grasses, and I trust that some of our leading men, both here and in Australia, will direct their attention to the subject ere long. *Correspondent of Wanganui Chronicle (New Zealand), Dec. 9, 1865.*

Calendar of Operations.

JUNE.—*Clovers and Grasses* may be mown this month for hay. They are laid in swathes by the scythe, at a cost of from 2*s.* to 3*s.* per acre, according to the crop: the swathes are turned over as soon as dry on the top, and next day, if the weather continue dry, they may be broken into small cocks, which on the following day are to be reversed, and towards evening may be thrown several together in larger cocks, where they may remain for a day or two, until ready to carry; they are then to be thrown over after the dew is off in the morning, and carried in the course of the day to the large rick, which should be built near the place of its consumption. In July, when the Rye-grass seed is to be harvested, the hay should be bound up in small sheaves, after lying a day or two in the swathe, according to the state of the weather; and placed in shocks of 10 or 12 sheaves each, taking care in binding the sheaves to turn the exposed and drier portions of the hay inmost. In Scotland and Ireland it may be advisable to put hood-sheaves on the shocks to keep out rain—especially if the weather be unsettled at the time. Clovers differ from the Grasses in the very fragile and brittle nature of their leaves when dry, which will fall off and be lost, to the injury of the hay, if it receives too much tossing about in the making. If the hay cannot be well made for the weather, it may be put up in alternate layers with the remains of last year's ricks, or with Oat-straw, without chance of injury by heating. In any case it is advisable to throw salt over the hay as it is being ricked, at the rate of about 10 or 12 lb. per ton. *Sainfoin* hay may be made next month in the same way. The winter-sown Vetches will be consumed towards the end of the month: the land they grew upon may be all sown with Turnips. Spring Vetches will be ready for use in the beginning of June.

Grass Lands.—This is a peculiar month to the grazier: his pastures need to be well watched, and to be stocked accordingly. If the season is warm and genial, his pastures will frequently grow with such rapidity as to destroy a great portion of their nutritive value; he must, in that case, crowd on all the stock it will in any way carry, and must ease it in the best way he can devise afterwards. It is a provident plan on any farm to allow some one field to take its course, and become a sort of "make-shift;" if the season should subsequently become dry, and pastures decline, this field is the resource upon which to fall back, and ease the other pastures.

Live Stock.—Horses will be hard at work now, and supposing them to have been properly attended to, will have maintained their strength on a full allowance of Oats and green food.

Cattle ought to be thriving on the Clovers, Vetches, &c., brought to them, assisted, as these are, by the daily allowance of oil-cake, or Bean and Linseed-meal, given with them. Where the soiling system is not followed, all stock will now be at Grass, and though needing constant attention both from master and shepherd, there is little requiring notice here. It is necessary to relieve the fields by turns, as stock take to the pasturage with increased relish after even a week's rest. It is especially needful to have a field prepared in this way for the lambs when newly weaned.

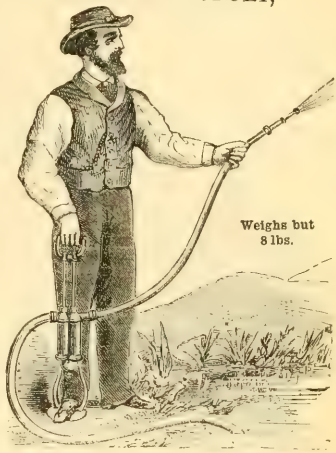
Sheep must be washed and shorn early this month. Large sheep may be shorn for 4*s.* per score; or, of course, less, provided their meals be supplied to the shearers, which is the common practice. They should be well washed a few days before shearing. The shepherd must look after them closely during June and following months, as the fly will be active among them. Sheep have been destroyed before now by not more than 12 hours of the undisturbed ravages of a "blow" of maggots. The shepherd should have a "mercury stone" to rub into the places where the sheep has been struck; or a dilute solution of arsenic may be applied after the maggots have been dislodged by him. The little black fly will, in almost all districts, but particularly in a woody one, be very troublesome to the heads and flanks of the sheep. Water, strongly mixed with assafœtida, very thinly mixed white paint, or their own or cows' dung thickly besmeared, are good appliances and preventives; the dung is best for the head, forming a slight cover for a time. The lambs must all be dipped in a prepared mixture of arsenic, soft soap, and assafœtida, about three days after the ewes are shorn, the ticks being then nearly all in the fleeces of the lambs. A mixture consisting of 1 lb. of arsenic, 2 lb. soft soap, and 4 oz. of assafœtida in 20 gallons of water, will be very effective. Some of the summer fatting sheep will now be fit for market.

Dairy Farm.—This may be considered the height of the season for dairy produce. Immediately after the change of food from hay to Grass, the milk was poor, and a much larger quantity was required to make the same weight of cheese. Now, at least 20 gallons less of milk will make a cwt. of best cheese, than was required a month ago. Towards the end of this month hay-making commences, and if any Clover is grown, that is cut at the end of July. The cows should have as frequent a change of pasture as possible; the amount of milk will be increased by change, even though the change be not always for the better. In hot days, when the cattle are teased by the gad-fly, they should be brought up to the sheds during the day, where they should receive an abundant supply of Rye-grass, or newly cut meadow Grass. The cows are put to the bull in this and the following month. Cheese-making is now at its height. The spring cheeses should be carefully attended to, kept clear of mites by rubbing a little sweet oil over them, and regularly turned; they lie best on a plaster floor, and should at first be slightly covered. The temperature of the cheese-room should be kept at 60° Fahr.; this is best done by hanging wet clothes near the windows or doors. Although hay-making commences in June, the great bulk is made in July; and, as on the good or unfavourable weather now, and also on the good or bad management of the farmer, depends entirely the good or bad condition of the cows during winter, that month is thus, of course, one of great importance. Half the farm is usually mown, as it requires about as many acres of hay to keep a given number of cattle through the winter, as it does acres of Grass to keep the same number through the summer. As soon as a field is cleared of the hay, the cows are immediately turned into it for a day or two, as a considerable quantity of Grass is left by the mower near the hedges, in cases where they are wide and irregular. By the end of July the early mown fields will (provided the weather has been propitious) be found to contain good after-Grass. This is greatly valued, as the cows always increase their milk on this food. Through the summer, single Gloucester cheese is ready for consumption at about two months old; consequently the first made will soon be fit for the factor; it is generally sold as soon as possible, as the loss of weight by keeping is very considerable. During this and the foregoing months the cows have access to the bull; this is done either by allowing the bull to run with the cows, in which case he should be tied up at night; or, which is the best and safest plan, he may be tied up, and the cows brought to him. In this, as in the other hot months, great attention must be paid to keeping the milk. For this purpose, the dairy should be kept as low in temperature as possible. The milk, as soon as drawn, should be cooled, by placing the pails in cold spring water; as otherwise it is apt to sour in a very short time in electrical states of the atmosphere. The greatest care, too, should be taken that the dairy be kept perfectly clean—that no meat be placed in it—that no drains open near it—and that the dairy manager remain in it no longer than is really necessary. If milk should sour, a small quantity of carbonate of soda may be added, and well mixed, to check the souring process and re-dissolve the partially formed curd. And it is a good plan to dissolve a little carbonate of soda in the water with which the dairy utensils are washed.

Notices to Correspondents.

TOP-DRESSINGS: *D. P.* The earthen compost with 10 or 12 bushels of bone dust per acre will bring up Clovers; the same with one cwt. of nitrate of soda, and two or three cwts. of guano, will promote the luxuriant growth of the Grasses.

THE HYDROPULT,



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The Price "Complete" as above, includes 21 feet Suction and 3 feet Delivery Hose, Galvanised Wire Strainer, Rose and Small Jet.

THE HYDROPULT
is invaluable for use in the
GARDEN for
WATERING BEDS,
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CAUTION.

IMPORTANT TO THE PUBLIC.—The extensive sale of the Hydropult has excited the cupidity of so-called respectable, but in reality unprincipled Manufacturers, who are now pairing on the Public worthless imitations of the Hydropult, and through their connections are enabled to place said devices on exhibition, and for sale, in many of the principal Ironmongery and Seed Establishments throughout the city and provinces. These devices resemble in many respects the Hydropult in appearance, and are calculated to deceive the unsuspecting. The Proprietor therefore issues this Caution, and respectfully intimates that parties wishing to purchase the Hydropult should examine the machine offered for sale, and see if it has attached thereto a label, with the following words:—"The Hydropult, Voss's Patent, manufactured only by GRIFFITHS & BROWITT, Birmingham. CHARLES POMEROY BUTTON, Proprietor, 142 and 143, Cheapside, London." Unless this label is attached, the Machine is not the Hydropult.

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IMPERIAL BUTTER COOLER.

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USEFUL, ORNAMENTAL, UNIQUE.

The novelty and utility of this Invention consists in a Revolving Cover, so constructed that by turning the knob on either side of the Basin, it can be covered or uncovered instantly; the lid disappearing into a receptacle or false bottom, thus not only having the lid ready for instant use, but obviating the necessity of its removal from the table. The Butter Cooler can be used for a Sugar Basin.

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WM. CUTBUSH AND SON are now sending out SEED of their superb PRIMULA SINENSIS FIMBRIATA, which has for many years given great satisfaction.

The Gardeners' Chronicle of the 6th of January, in Notices to Correspondents, says:—"The blooms sent are remarkably fine, richly-coloured, full, and deeply fringed; they are evidently the produce of a capital strain."

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And other choice sorts, cheaper by the bushel, carriage free

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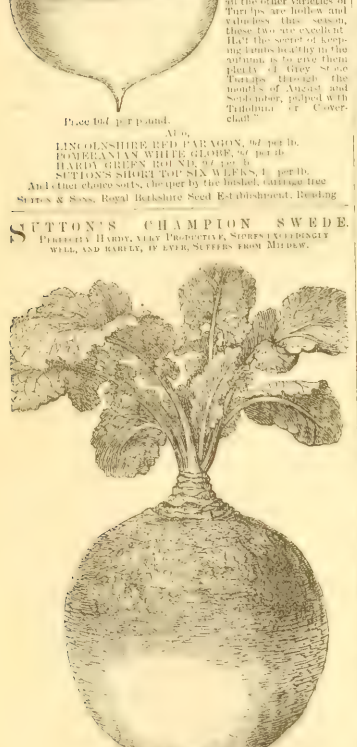
PERFECTLY HARDY, VERY PRODUCTIVE, STORES EXCEEDINGLY WELL, AND BARELY, IF EVER, SUFFERS FROM MILDEW.



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The Manures manufactured by J. B. LAWES for the present season of 1866 are now ready for delivery at his Factories, at the following prices, per Ton:—

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RED SPIDER	GREEN AND BLACK FLY	ANTS
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Without many bad seasons the Grape Vine or Tree, by using

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Plagues of the Garden.—Aphis Wash.

SIMPLE AND SAFE REMEDY. By using the

APHIS WASH, these Pests of the Garden, together with Scale, Caterpillars, Slugs, Earwigs, &c., are immediately destroyed. Leaves no stain, but strengthens the Trees or Plants.

Extract from the "Gardeners' Chronicle," 20th January, 1866:—

"Since the time when we received a sample of it, Aphis Wash, produced at the City Soap Works, Milton Street, London, E.C., we have had ample opportunity of experimental trial. This having been done, we are enabled to report favourably of the results. Among other things it was also applied to various Cattle, Mammals, and Caterpillars infested by red spider, and a single application proved effectual for their destruction."

Extract from "The Gardeners' Magazine," 3d March, 1866:—

"It is a matter of import now that the Aphis Wash of the City Soap Works, Milton Street, London, E.C., should be noticed in these columns, and as a matter of fact there is nothing to equal the Aphis Wash for the purpose it is intended to serve."

Extract from a letter by WILLIAM HOWARD, Esq., F.R.H.S., in "Gardener's Magazine," of July 1, 1865.

Extract from a letter by G. GLENNY, Esq., *Fulham*

"You will see by Lloyd's of Saturday, that I have strongly recommended it (the Aphis Wash). I have also mentioned it to several gardeners."

Extract from a letter by Mr. J. F. CHAPMAN, *Sanderstead, June 1st, 1865*:—

"I have tried it upon different plants with perfect success. I find many plants in our stove badly affected with red spider, but have washed every plant with the liquid, as you direct, and I verily believe not one red spider remains."

Extract from Mr. SIDNEY FELD, *The Gardens, St. Leonard's Lodge, near Horsham, February 16, 1866*:—

"I am able to report most favourably on the result of my trials of your Aphis Wash; it is a thing I have long felt the loss of. I like it very much, as it is free from any other washes, for it will all pass through the syringe without any trouble. From other experiments I made, the result has been a perfect success, and for fruit trees it will be a first-rate wash."

Messrs. Goins have received a great many valuable testimonials from private and amateur gardeners, and have liberty to refer to Mr. Eyles, of Messrs. Low & Sons' Nurseries, Upper Clapton, who during the past autumn (1865) carried out a series of careful and thorough experiments with the Aphis Wash.

Sold by Chemists and others, in 1s. bottles, and 2s. 6d. a gallon, with full directions for use.

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Red Spider

Magnified.

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(LIMITED).

GISHURST COMPOUND,

whether used against Insects and Mildew, on Growing Plants, or as Winter Dressing on Trees at rest, should be dissolved 48 hours before use. This gets rid of smell, and if the Solution be decanted, prevents any staining of foliage. A strength of from 1 to 2 oz. to the gallon of water is recommended for growing Plants; one from 4 to 16 oz. for Trees at rest.

Sold Retail by Nurserymen and Seedsmen, in boxes, 1s., 3s., and 10s. 6d. each.

CLIFF'S ANTISEPTIC FLUID,

Manufactured by F. C. CLIFF & Co., Manchester.

A preparation of Carbolic Acid suitable for Sheep Dipping, Washing Cattle, &c. Has 3d Reg. of the Cattle Plague Commission. For further particulars apply to

R. COLEMAN & SON, Agents, 161, Leadenhall Street, London, E.C.

LONG'S "DIPPING" for TICK in SHEEP.

LONG'S "SPECIFIC" for SCAB in SHEEP.

LONG'S "MAGGOT LOTION" for SHEARED STOCK by the FLY

Well-known, effective, Non-poisonous.

Wholesale by S. & E. RANSOME & Co., Essex Street, Strand, W.C.

Retail Agents in all parts

Cattle Plague.

BAKER'S PREVENTIVE MEDICINE,

COST 1d. a DAY.

An infallible Preventive

In Moderate, Handsome, Ready Used.

Boon to Breeders of Milch Cows.

Invaluable in Fattening Cattle.

C. M. BAKER, Member R.V.C. of Surgeons, has been eminently successful in the treatment of the Cattle Plague, and the Medicine he now offers will secure Farmers Perfect Immunity from this Scourge.

Testimonials and full Particulars post free.

Sold by all Chemists and Druggists throughout the Kingdom, in Tins, 5s. 6d., 10s. 6d., and 20s. each, with full instructions. This Medicine is extensively used for Horses, Sheep, and Pigs.

Lesser Doses.—P. Stand of Street, Blackfriar-Road, S.

COCOA-NUT REFUSE

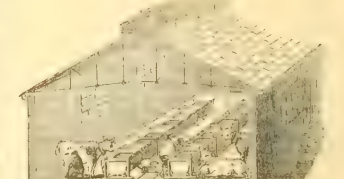
is becoming scarce, the old receipts will soon be gone. Now sold in bags, 1 for 2s., 10 for 18s., 50 for 85s., 90 for 165s., 180 for £6.

Compence allowed for each bag returned carriage paid

A Railway Truck-load (not in bags), 40s.

Postage Stamps or Post-office Order, payable to J. BRAHAM & Co., Kingston-on-Thames, S.W.

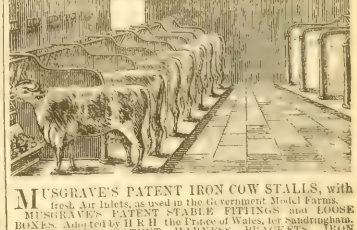
COTTAM'S PATENT PORTABLE UNITED COW FITTINGS.



Their advantages are—Portability, not Fixtures, removable at pleasure, no Woodwork or Partitions to impede Ventilation or breed Vermin, Hay Rack dispensed with as unnecessary, increased width and depth of bowling Troughs, Water Cocks, and Patent Drop Cover to prevent over dosing. Cleanly, durable, and impervious to infection, being all of iron. Price of Fittings per Cow, £6.

Prospectuses free of COTTAM & Co., Iron Works, 2, Winsley Street (opposite the Pantheon), Oxford Street, London, W., where the above are exhibited, together with several important Improvements in Stable Fittings just secured by Patent.

Future Safety from Rinderpest.



MUSGRAVE'S PATENT IRON COW STALLS, with

fresh Air Inlets, as used in the Government Model Farms.

MUSGRAVES' PATENT STABLE FITTINGS and LOOSE BOXES, Adopted by H.R.H. the Prince of Wales, for Sandringham.

MUSGRAVES' PATENT HARNESS BRACKETS, IRON PIGGERIES, and DOG KENNELS.

MUSGRAVES' PATENT SLOW-COMBUSTION STOVE, Employed by the Ecclesiastical Commissioners.

THE PATENT IRON COW STALLS and AIR INLETS are perfect in their arrangements for Feeding and Ventilation; every part being of iron they are indestructible, inexpensive, very compact, cleanly, and healthful for the animal. Should distemper occur, if the iron work be painted and the walls washed with lime, they can neither harbour nor communicate contagion. This system in fact is found to be the only true SCIENTIFIC AND ECONOMICAL PLAN OF FEEDING.

Priced Engravings of all these Inventions will be sent free on application to MUSGRAVE BROTHERS, Ann Street Iron Works, Belfast.

SMITH, BECK, AND BECK'S GREENHOUSE and HOTBED THERMOMETERS.—These Instruments are of the very best construction, and at moderate prices.
31, Cornhill, E.C.

E. T. ARCHER'S "FRIGI DOMO." — Patronised by her Majesty the Queen, the Duke of Northumberland for Syon House, his Grace the Duke of Devonshire for Chiswick Gardens, Professor Lindley for the Horticultural Society, Sir Joseph Paxton for the Crystal Palace, Royal Zoological Society, &c.
PROTECTION from COLD WINDS and MORNING FROSTS.
"FRIGI DOMO," a Canvas made of patent prepared Hair and Wool, a perfect non-conductor of Heat and Cold, keeping, wherever it is applied, a fixed temperature. It is adapted for all horticultural and floricultural purposes, for preserving Fruits and Flowers from the scorching rays of the sun, from wind, from attacks of insects, and from morning frosts. To be had in any required lengths.
Two yards wide . . . . . 1s. 9d. per yard run.
Four yards wide . . . . . 3s. 6d. per yard.
An improved make, 2 yards wide . . 1s. 9d. per yard.
An improved make, 3 yards wide . . 2s. 3d. per yard run.
Also "Frigi Domo" Netting, 2 yards wide, 1s. 6d. per yard run
ELISHA THOMAS ARCHER, Whole and Sole Manufacturer, 7, Great Trinity Lane, Cannon Street, City, and of all Nurserymen and Seedsmen throughout the kingdom.
"It is much cheaper than Mats as a covering."

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(LIMITED).
GARDEN HOSE and FITTINGS.
London Warehouse: 56, Cannon Street West, E.C.
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Rest and be Thankful.
THE MOST COMFORTABLE, GRACEFUL, AND CHEAPEST
GARDEN SEATS
ARE THE
'OXFORD,' the 'CAMBRIDGE,' and the 'WARWICK.'
Carriage Paid to any Railway Station.
Illustrated Lists from the Manufacturers,
WEATHERHEAD, WALTERS, & Co., Derby.

EARTH CLOSETS AND COMMODES.
(Moule's Patent.)
NO UNWHOLESOME CESSPOOLS.
NO BAD SMELLS.
NO WATER PIPES TO GET OUT OF ORDER.
THE BEST NIGHT COMMODES.
MAY BE APPLIED TO ANY CLOSET.
A VALUABLE MANURE SAVED.
THE EARTH CLOSETS WERE IN USE IN THE CLOAK ROOMS
AT THE
INTERNATIONAL HORTICULTURAL EXHIBITION, KENSINGTON.
"The most feasible plan for the utilisation of night soil is that brought forward by the Rev. Henry Moule, of Fordington Vicarage, Dorset."—*John Wilson, Edington Mains.*
WHITE AND CO., 29, BEDFORD STREET, STRAND, W.C.,
Where Prospectuses may be obtained, and the Closets inspected.

NOTICE.
MESSRS. CUMMING & EDMONDS
Take this opportunity of returning their grateful thanks to the Nobility, Gentry, and Public generally, for the very great support they have received since their commencement in Business, and to inform them they have now taken more Commodious Premises, at the LILLIE BRIDGE, RICHMOND ROAD, BROMPTON, where they have erected STEAM-POWER MACHINERY, and will, in consequence, be able to execute any orders they may be favoured with in the shortest possible time. Messrs. C. & E. beg to draw attention to their
NEW PATENT TUBULAR ARCHED SADDLE BOILERS,
Which have given such universal satisfaction wherever they have been fixed, Gardeners of the greatest experience speaking in the highest terms of them.
Designs and Estimates of every kind of Horticultural Building and Hot-water Apparatus may be obtained on application free of charge.
CUMMING AND EDMONDS,
CONSERVATORY ARCHITECTS, HORTICULTURAL BUILDERS, and HOT-WATER APPARATUS MANUFACTURERS.
STAMFORD BRIDGE, FULHAM ROAD, BROMPTON, S.W.; and at
LILLIE BRIDGE, RICHMOND ROAD, BROMPTON, S.W.

THE LEICESTER
(NEW DESIGNED AND PATENTED)
ORNAMENTAL FLOWER VASES OR BASKETS.
MANUFACTURED BY
HUNT & PICKERING,
HORTICULTURAL AND AGRICULTURAL IMPLEMENT WORKS, LEICESTER.
Exhibited with marked success at the International Flower Show, Kensington; and in the Gallery of the Agricultural Hall, Islington, during the Horse Show.
These Vases or Baskets are composed of a series of ornamental branches, affixed to a capital or centre ring, mounted on suitable brackets and hexagon base, without the aid of screws, rivets, &c.; so simple in construction that any one may in a few minutes put it together, making it a beautiful Centre-piece or Flower Basket, either for the Lawn in Summer or the Conservatory in Winter. Painted any colour to order.

The great advantage of the Open Vase over the solid cast-iron or "Terra Cotta," is the perfect drainage and continual circulation of the atmosphere through every part, giving greater vitality to the growth of the plants. The mode of filling is simply to cut a few feet of thin Turf or Moss, and lay the same with the Grass outwards, throw in the soil, and plant the Flowers according to taste.
Illustrated Price Lists of the various sized Vases.
The LEICESTER GARDEN SEAT, TABLES, and RUSTIC SEATS, sent free on application.

Universal Microscope. Price £5 5s.
SMITH, BECK, AND BECK,
31, Cornhill, E.C.; late 6, Coleman Street.
*** Catalogues sent on receipt of 6 postage stamps.

VASES, STATUES, FOUNTAIN BASINS, FLOWER-POTS, &c., in TERRA COTTA and FINE STONE WARE, warranted to stand frost, by JOHN N. BLASHFIELD, Stamford, Lincolnshire. Applications for Drawings and Prices will receive attention.

FOUNTAIN JETS.

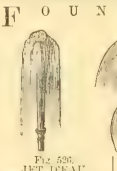



Fig. 520. JET D'EAU. 18 inches, 5s. 6d.; 24 do., 8s. 9d.; 36 do., 16s. 6d.

Fig. 521. DOME and CONVOLVULUS. 17s.

Fig. 525. DOME. 8s. 6d.

Fig. 523. CONVOLVULUS, 8s. 6d.

Fig. 524. BARKER'S MILL. 11s.

Fig. 522. WIRE BASKET with BALL. 10 inch, 10s. 6d.; 12 inch, 17s. 6d.; 14 inch, 18s. 6d.
Connecting Screws to all the above Jets, 1s. 6d. extra.
Branch Pipe for raising up Jets 1 foot high, 5s. 6d.
A Tap is inserted to be fixed in the Pipe to regulate the supply of Water to Fountain Jets
J. TENNANT & SONS, Manufacturers, Warwick Lane, Newgate Street, London, E.C.

Sales by Auction.

The Last City Sale of Plants this Season.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, at 38 and 39, Gracechurch Street, City, E.C., on THURSDAY, June 7, at 1 o'Clock precisely, a choice Assortment of GREENHOUSE PLANTS, including fine Azalea indica, Show and Fancy Pelargoniums, Scarlet and Variegated Geraniums, Roses in pots, Hardy Climbers, &c., with a variety of Ornamental Plants for Bedding.
On view the Morning of Sale. Catalogues had at the Rooms as above, and of the Auctioneers & Valuers, Leytonstone, N.E.

Clearance Sale, Hampstead Road.

IMPORTANT TO GENTLEMEN, NURSERYMEN, BUILDERS, AND OTHERS.
MESSRS. PROTHEROE AND MORRIS have received instructions to submit for unreserved SALE by AUCTION, at their Auction Mart, Nursery, opposite the Chalk Farm Station on the North London Railway, on MONDAY, June 18, the remaining GREENHOUSE and BEDDING PLANTS; also the Erection of 8 Greenhouses, 1 Oriental Iron Roof Conservatory, Thousands of feet of Hot-water Piping, Boilers, large quantities of Bricks, York Paving, Flues, Seed Drawers, Counters, Desks, Flower Pots, and numerous other effects.
May be viewed prior to the Sale. Catalogues may be had at the Nursery; and of the Auctioneers and Valuers, American Nurseries, Leytonstone, N.E.

Important Sale of Plants at Claremont, Surrey.

BY ORDER OF THE TRUSTEES OF HIS MAJESTY THE LATE KING OF THE BELGIANS.
MR. J. C. STEVENS begs to announce that he has been honored with instructions to prepare for SALE by AUCTION, at Claremont Gardens, Esher, Surrey, on MONDAY, June 4, and following days, at 12 o'Clock precisely each day, without reserve, by order of the Trustees of his Majesty the late King of the Belgians, the Choice and Select Collection of STOVE, GREENHOUSE, and ORNAMENTAL-FOLIAGED PLANTS, consisting of fine Specimen Palms, Camellias, Orange Trees, Indian Azaleas, Rhododendrons, Ericas, Epacrids, Acacias, Pot Roses, Draceenas, Caladiums, Alocasias, Crotons, Cyanophyllums, Marantas, Begonias, Caladiums, Anthuriums, Gloxinias, Achimenes, Pinetrees, Pteroms, Oxalobiums, Cytisus, Cinerarias in pots, Leschenaultias, French Geraniums, &c.; and a large assortment of Bedding-out Plants, Fruiting and Succession Pines, Vines, &c.
On view the Friday and Saturday prior, and Mornings of Sale, and Catalogues had of Mr. J. C. STEVENS, Horticultural Auctioneer and Valuer, 38, King Street, Covent Garden, London, W.C.

Exeter, Devon.

FREEHOLD LAND, WITH RESIDENCE; ROCKERELL VILLA AND NURSERY GROUNDS, THE PROPERTY OF THE LATE MR VEITCH.
THESE celebrated GROUNDS, with the excellent DWELLING-HOUSE and numerous other Buildings, will be offered for SALE by AUCTION, on the Premises, on TUESDAY, June 12 next, at 3 o'Clock in the afternoon precisely. The property will first be put up in One Lot, and if not sold will be immediately offered in Five Lots.
The House, which has been recently built of Limestone, in the Elizabethan Style, and is in excellent repair, is approached from a handsome entrance Lodge and Carriage Drive, and is surrounded by fine Shrubberies and Pleasure Grounds, constituting a most Substantial and Comfortable Residence; it comprises Entrance Hall, Study, Dining, Drawing, and Breakfast Rooms, Waiter's Closets, Kitchen, Cook Kitchen, Pantry, and other Domestic Offices, ample Cellarage underneath, Two Staircases, Four best Bed Rooms, two Dressing, and two Servants' Rooms, Closets, &c., the whole replete with Bells, Pumps, Hot and Cold Water, and Coal Houses, Stables, Coach Houses, and Offices. The plan of the building has been so arranged as to admit of enlargement at a trifling expense.
Possible purchasers of Residence Grounds will find a very substantial and comfortable 12-roomed Dwelling House, lately occupied by Mr Veitch, jun., with Workshops attached, a Gardener's Cottage and Stable, and excellent Counting-houses, with numerous other Stables, Sheds, Lofts, and other Buildings, long ranges of Brick Walling, a Magnificent Camellia House, Ornamental Temple, Ponds, &c.
The Grounds, which comprise about 24 Acres, and were most tastefully laid out by the late Mr Veitch at an enormous expense, are, with the existing buildings, admirably adapted for an important Gentleman's Residence, the Ground is interspersed with noble Specimens of Rare and Ornamental Trees and Shrubs, Walks, Fish Ponds, &c. Should the property not be sold in One Lot, the Lottings will be so arranged as to present beautiful sites for the erection of Detached Villas, for which there is now a great demand in the neighbourhood.
The Land is situated in the parish of Heavitree, within one mile of the City of Exeter, it is of first-rate quality, has a southern aspect, commands beautiful and extensive views, is approached by excellent roads, and is plentifully supplied with water. It is within the Parliamentary borough of the City of Exeter, but is exempt from all its local rates and taxes. Immediate Possession may be had.
Particulars and Plans of the Lottings may be obtained of Messrs. GIDLEY & HEAD, Solicitors; or of Messrs. DYMOND & SONS, Surveyors, Exeter.

SHANKS' PATENT LAWN MOWERS FOR 1866.

PATRONIZED ON FIVE SEPARATE OCCASIONS DURING THE SEASON OF 1864 BY

HER MAJESTY THE QUEEN,

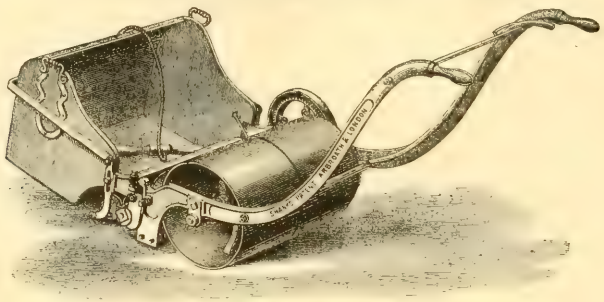
AND ONCE BY HIS MAJESTY THE KING OF SAXONY;

AGAIN ON FOUR SEPARATE OCCASIONS DURING THE SEASON OF 1865 BY HER MAJESTY THE QUEEN;

ONCE BY HIS MAJESTY THE KING OF HOLLAND;

AND ONCE BY HIS MAJESTY THE KING OF PRUSSIA.

EVERY MACHINE WARRANTED.



IF NOT APPROVED OF, CAN BE AT ONCE RETURNED.

PATENT HAND MACHINE.

APRIL, 1866.—ANOTHER 42-INCH HORSE MACHINE HAS JUST BEEN ORDERED FOR

THE ROYAL GARDENS AT KEW.

A. SHANKS AND SON HAVE TO INTIMATE THAT THEIR

MACHINES ARE THE ONLY LAWN MOWERS USED IN THE ROYAL GARDENS AT KEW.

These are the only Machines that can be depended on to give lasting satisfaction.

THESE ARE THE ONLY MACHINES THAT WILL MOW PROPERLY WHEN THE GRASS IS WET.

THESE ARE THE ONLY MACHINES THAT DELIVER THE GRASS WITHOUT STOPPING, THUS SAVING AN IMMENSE AMOUNT OF LABOUR.

SHANKS' PATENT LAWN MOWERS are the only Machines that have been in operation in Her Majesty's Gardens for a quarter of a century, and they are in daily use in all the Public and Principal Gardens in the Kingdom.

A. SHANKS AND SON have now ready for delivery a large Stock of their celebrated LAWN MOWERS. The Machines have been manufactured by skilled workmen of the best materials, and by the aid of the most improved Machinery.

A. S. AND SON have been particularly careful that the advantages in point of durability and simplicity of construction which have always been a peculiarity of their Machines should still remain, and that no improvement be introduced which has merely novelty to recommend it.

SHANKS' PATENT LAWN MOWERS for 1866 are unrivalled for simplicity of construction, ease of working, and durability.

PRICES, including Carriage to any Railway Station or Shipping Port in the Kingdom.

SHANKS' NEW PATENT HAND MACHINE.

Width of Cutter		Easily Worked.	Silent Movement.
10-inch Machine	£3 10 0	*By a Lady*	4s. extra.
12-inch Machine	4 10 0		
14-inch Machine	5 10 0	*By a Boy*	

Width of Cutter.		Easily Worked.	Silent Movement.
16-inch Machine	£6 10 0	*By a Man or Two Boys*	4s. extra.
19-inch Machine	7 12 6	*By a Man and Boy*	
22-inch Machine	8 7 6	*By Two Men* ..	7s. 6d. extra.
24-inch Machine	8 17 6		

SHANKS' NEW PATENT PONY and DONKEY MACHINE.

Width of Cutter.		If with Patent Delivering Apparatus.
25-inch Machine	£12 10 0	25s. extra.
28-inch Machine	14 10 0	30s. ,,
30-inch Machine	15 15 0	30s. ,,

Silent Movement, 12s. 6d. extra; Boots for Pony, 21s. per set;
Ditto for Donkey, 16s. per set.

SHANKS' NEW PATENT HORSE MACHINE.

Width of Cutter.		If with Patent Delivering Apparatus
30-inch Machine	£19 0 0	30s. extra.
36-inch Machine	22 0 0	30s. ,,
42-inch Machine	26 0 0	40s. ,,
48-inch Machine	28 0 0	40s. ,,

Silent Movement, 20s. extra; Boots for Horse's Feet, 24s. per set.

*** ORDERS EXECUTED ON THE DAY THEY ARE RECEIVED.

ALEXANDER SHANKS AND SON, DENS IRON WORKS, ARBROATH.
LONDON OFFICE and SHOW ROOMS: 27, LEADENHALL STREET, E.C.
PARIS OFFICE and SHOW ROOMS: 56, BOULEVARD HAUSSMANN.

A. S. & SON *keep a stock of all sizes of Machines at their London and Paris Establishments, from which Orders are executed on the day they are received.*

☞ 27, *Leadenhall Street is the only place in London where intending purchasers of Lawn Mowers can choose from a stock of from* 150 *to* 200 *Machines. All sizes kept there, whether for Horse, Pony, or Hand Power.*

Editorial Communications should be addressed to "The Editor," Advertisements and Business Letters to "The Publisher," at the Office, 41, Wellington Street, Covent Garden, London, W.C.
Printed by WILLIAM BRADBURY, of 13, Upper Woburn Place, in the Parish of St. Pancras, in the Co. of Middlesex, and FREDERICK MULLETT EVANS, of No 11, Bouverie Street, in the Precinct of Whitefriars, City of London, Printers, at their Office, Lombard Street, Precinct of Whitefriars, City of London, and Published by them at the Office, No. 41, Wellington Street, Parish of St. Paul's, Covent Garden, in the said Co.—SATURDAY, June 2, 1866.

THE GARDENERS' CHRONICLE

AND

AGRICULTURAL GAZETTE.

A Newspaper of Rural Economy and General News.

No. 23.—1866.] SATURDAY, JUNE 9. {Price Fivepence. STAMPED EDITION, *6d.*

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ROYAL HORTICULTURAL SOCIETY.—The EXHIBITIONS will be HELD on THURSDAYS, viz.: SUMMER EXHIBITION, June 14; and the ROSE SHOW, June 28. Schedules may be had on application. Admission on June 14 by Fellows' privileged Tickets, to be bought prior to the day, *2s. 6d.*; Public, *3s. 6d.*; or on the Day, *5s.*; on June 28, subject to same regulations, *3s. 6d.*, *5s.*, or *7s. 6d.* Buuds at 3.30.

ROYAL HORTICULTURAL SOCIETY.—Messrs. WATERER AND GODFREY'S magnificent display of RHODODENDRONS (which are now in their greatest beauty), under the Great Tent, is NOW OPEN. Admission this day *2s. 6d.* Band of Royal Horse Guards at 4 P.M.

CRYSTAL PALACE.—GREAT ROSE SHOW SATURDAY, 23d JUNE. Schedules may be had on application to I. WILKINSON, Superintendent.

UNITED HORTICULTURAL BENEFIT and PROVIDENT SOCIETY.—The FIRST MEETING for the PROPOSAL of MEMBERS will be held at the Green Dragon Hotel, Bishopsgate Street, E.C., on MONDAY, June 11, at 7 P.M.

Applications for Rules, &c., to be made to WILLIAM HEALE, 14, George Terrace, Brook Street, Upper Clapton, N.E.

BOSTON FLORAL and HORTICULTURAL SOCIETY.—The FIRST EXHIBITION will be held in Major Hopkins' Park on THURSDAY, June 21.

For Schedules, &c., apply to the Honorary Secretaries, Mr. W. H. BAILES, Solicitor, Boston; Mr. ION COCKS, West Skirbeck Nursery, Boston.

BIRMINGHAM ROSE SHOW THURSDAY and FRIDAY, July 6th and 6th. For Prize Lists, apply to Mr. A. FREWER, Sec., Queen Chambers, Cherry Street, Birmingham.

FAVERSHAM HORTICULTURAL SOCIETY (in Union with the Royal Horticultural Society).—The FOURTH ANNUAL EXHIBITION of FLOWERS, &c., will be held at the Faversham Institute, on WEDNESDAY, 5 September 6.

Prizes Open to All England.

*Dahlias, 24 varieties, 1st Prize, £2 10*s.*; 2d, £1 10*s.*; 3d, £1.
*Roses, 24 varieties, in bunches of three trusses, 1st, £3; 2d, £2; 3d, £1.
*Gladiolus, single spike, 12 varieties, 1st, £1; 2d, 10*s.*; 3d, 10*s.*
*Verbenas, three trusses, 24 varieties, 1st, £1; 2d, 15*s.*; 3d, 10*s.*
*Stove and Greenhouse Plants, 6 varieties, 1st, £3; 2d, £2; 3d, £1.
† Extensive Prize, 2*s.* each Class marked *, open to Nurserymen's Gardeners only.

Judges—Messrs. HOLMES (Hackney), and CUTBUSH (Highgate).

FRED. W. MOSS, Hon. Secretary, Faversham.

Through the liberality of the Directors of the London, Chatham, and Dover Railway, Plants, &c., for Exhibition will be conveyed back from the Faversham Station free of charge.

THE GARDENERS' ROYAL BENEVOLENT INSTITUTION (Instituted 1838), for providing Pensions for Aged and Infirm Gardeners and their Widows, with Horticultural pursuits.—The TWENTY-THIRD ANNIVERSARY FESTIVAL in aid of the funds of this Institution, will take place at the LONDON TAVERN, Bishopsgate Street, London, on WEDNESDAY, June 27.

SIR C. WENTWORTH DILKE, Bart., M.P., in the Chair.

EDWD. ROGER CUTLER, Secretary.

14, Tavistock Row, Covent Garden, W.C.

New Double Pyrethrums.

JOHN SALTER'S Collection of these beautiful Summer Flowers is NOW in BLOOM, as also the HERBACEOUS PEONIES and IRIS GERMANICA.

The Gardens are open every day, except Sunday.

Verealles Nursery, Willian Street, Vale Place, Hammersmith, W.

(Near Kensington Railway Station.)

WANTED, a few dozen TAGETES SIGNATA PUMILA, strong plants. Apply, giving price, quantity, &c., to F. G. GODWIN, Seedsman, Sheffield.

Orchids

TO BE SOLD, PHALÆNOPSIS SCHILLERIANA, 2 plants, one very fine; PHALÆNOPSIS AMABILIS; CATTLEYA BULBOSA, flowering plant; LÆLIA ELEGANS, 2 plants; ODONTOGLOSSUM PESCATOREI, small, 3 growths; ODONTOGLOSSUM CERVANTESII, CATTLEYA WAGNERI, 3 growths, from the original plant. Price 30 guineas.

Address, H. E., Messrs. Tuting & Co., Castle Street, Liverpool.

Cineraria Seed, from Prize Flowers.

FAND A. SMITH, The Nurseries, Dulwich, S., in offering the above have much satisfaction in referring to the high position which their flowers have now for some years sustained. During the present season they have received the only Certificates awarded to Seedlings of this year, one of which, specially named "Perfection," is decidedly the finest Cineraria yet raised.

New Seed, saved from their superb collection, is now offered at 1*s.*, 2*s. 6d.*, and 5*s.* per packet, and may be obtained from them direct, or from most of the leading Nurserymen and Seedsmen throughout the Kingdom. None is genuine unless in their own sealed packets.

Chrysanthemums.

FIRST PRIZES STOKE NEWINGTON AND GUILDHALL, 1865.

ADAM FORSYTH begs to inform the Public that he is now sending out his large COLLECTION of CHRYSANTHEMUMS, at 6*s.* per dozen, including Attraction, Eve, Golden ball, Golden Dr. Brock, Hercules, King of Denmark, Lady Carey, Mr. Brunless, Mr. Wynes, Mrs. Raines, Pink Pearl, Prince of Wales, Sam Weller, Venus, Virgin Queen, &c.

CATALOGUES for one stamp.

Brunswick Nursery, Stoke Newington, N.

Genuine Garden Seeds.

WM. CUTBUSH AND SON'S DESCRIPTIVE PRICED CATALOGUE of SEEDS, which contains everything New and Old worth growing, can be had post free on application.

Highgate, N.

Genuine Garden and Agricultural Seeds.

JAMES CARTER AND CO., SEED FARMERS, MERCHANTS, AND NURSERYMEN, 237 and 238, High Holborn, London, W.C.

SEEDS for the GARDEN and FARM, all saved from the finest selected stocks.

DESCRIPTIVE PRICED LISTS free on application.

BUTLER & MCCULLOCH, Covent Garden Market, W.C.

JAMES FAIRHEAD AND SON, SEED GROWERS and MERCHANTS, 7, Borough Market, London, S.E.

New and Genuine AGRICULTURAL, GARDEN, and FLOWER SEEDS. Special prices and advantageous offers on application.

J. IVERY AND SON beg to announce their NEW PRICED DESCRIPTIVE CATALOGUES of AZALEA INDICA, and NO. 10, HARDY BRITISH FERNS. Dorking.—June 9.

J. IVERY AND SON beg to announce that their DESCRIPTIVE PRICED CATALOGUES of AZALEA INDICA, HARDY BRITISH FERNS, ROSES, CONIFERÆ, GRAPE VINES, and SEEDS, may be had on application at their Dorking Nurseries.

TRANSPLANTED RHODODENDRONS.—4-year-old Hybrids saved from the choicest Crimson, White, and Claret-coloured sorts, 12*s. 6d.* per 100, or 1000 for £5.

RICHARD SMITH, Nurseryman, Worcester.

MAURICE YOUNG'S DESCRIPTIVE LIST of Conifers, New and Rare Hardy Plants, Ornamental Trees and Shrubs, Rhododendrons, Japanese Novelties, Forest Trees, and Roses, forwarded on application.

Milford Nurseries, near Godalming, Surrey.

New Orchid and General Plant Catalogue.

B. S. WILLIAMS' NEW PLANT CATALOGUE, containing many really good novelties, and carefully selected LISTS of STOVE, GREENHOUSE, and HARDY PLANTS, is now ready and will be forwarded post free to all applicants.

Victoria and Paradise Nurseries, Holloway, London, N.

British Fern Catalogue.

ROBERT SIM can now send, post free for six postage stamps, Part I. (British Ferns and their varieties, 30 pages, including prices of Hardy Exotic Ferns) of his NEW and PRICED DESCRIPTIVE CATALOGUE of BRITISH and EXOTIC FERNS, No. 7.

**** Part II. (Exotic Ferns) will be issued as early as possible.

Foot's Cray Nursery, S.E.

RAYNBIRD, CALDECOTT, BAWTREE, DOWLING, AND COMPANY, Limited,

CORN, SEED, MANURE, AND CAKE MERCHANTS,

Address, 89, Seed Market, Mark Lane, E.C.; or Basingstoke.

Samples and Prices Post free on application. Prize Medals, 1851, for Wheat; 1862, for Essex Red Clover Seed and Seeds.

CASTLE KENNEDY FIG.—Plants of the above may now be had at 10*s.* 6*d.* and 21*s.* each; the usual discount to the Trade. PETER LAWSON & SON, Edinburgh and London.

WEDDING BOUQUETS, EPERGNES FILLED. Tables Decorated, Conservatories Furnished, by C. ELWIN & CO., 9, Park Terrace, Regent's Park.

Roses in Pots.

PAUL AND SON, in addition to the NEW ROSES of 1866, can offer the finest TEA-SCENTED NOISETTES and best HYBRID PERPETUAL ROSES, in pots, for Planting during present and next month.

Cheshunt Nurseries, N.

New Seeds of 1866 now ready.

DOBSON'S UNRIVALLED CALCEOLARIA, 1*s.* 6*d.*, 2*s.* 6*d.*, 3*s.* 6*d.*, and 5*s.* Annual sale 5000 packets.

DOBSON'S UNEQUALLED CINERARIA, 1*s.*, 2*s.* 6*d.*, and 5*s.*

DOBSON'S SUPERB PRIMULA, 1*s.*, 2*s.* 6*d.*, and 5*s.*

These Seeds are second to none in the United Kingdom.

DOBSON & SONS, Seed Merchants, Isleworth, W.

BAKER'S PRIZE CALCEOLARIAS.—The First Prize was awarded at the International Horticultural and Botanical Congress, Royal Horticultural Society's Four Days' Show, Royal Botanic Flower Show, and Crystal Palace Flower Show, to plants raised from this seed. It is the finest strain of Calceolaria in existence. 2*s. 6d.*, 3*s. 6d.*, and 5*s.* 6*d.* per packet.

Choice PRIMULA, 1*s.* and 2*s. 6d.* per packet.

Choice CINERARIA, 1*s.* and 2*s. 6d.* per packet.

BARR & SUGDEN, 12, King Street, Covent Garden, London, W.C.

Primula Cineraria.

WM. CUTBUSH AND SON are now sending out SEED of their superb PRIMULA SINENSIS FIMBRIATA, which has for many years given great satisfaction.

The *Gardeners' Chronicle* of the 6th of January, in Notices to Correspondents, says:—"The blooms sent are remarkably fine, richly coloured, full and densely fringed; they are evidently the produce of a capital strain."

The *Journal of Horticulture* of the 23d of January, says that:—"The finest and richest coloured Chinese Primulas we have yet seen are those raised by Messrs. Cuthbush & Son."

Sealed packets, 2*s. 6d.* and 5*s. 6d.* each.

CINERARIA, from finest named varieties, per packet, 2*s. 6d.* and 3*s. 6d.* each.

Highgate Nurseries, London, N.

Prize Calceolaria, &c.

BUTLER AND MCCULLOCH beg to offer Seed of the above, saved only from flowers of great beauty, 1*s.* and 2*s. 6d.* p. pkt.

CINERARIA (JAMES'), extra choice, 1*s.* and 2*s. 6d.* per packet.

PRIMULA (JAMES'), extra choice, 1*s.* and 2*s. 6d.* per packet.

COVENT GARDEN INTERMEDIATE STOCK (True), 1*s.* and 2*s. 6d.* per packet.

PURPLE WHITE INTERMEDIATE STOCK, 1*s.* and 2*s. 6d.* p. pkt.

All packets of Flower Seeds sent post paid.

BUTLER & MCCULLOCH, Covent Garden Market, W.C.!

IVIES.—The best varieties of the Gold and Silver-striped section to name, in pots, well adapted for edging or making a nice bordering for Bedding Plants, 9*d.* each; per doz. 8*s.*

FUCHSIAS.—Good Double and Single varieties in 60-pots, to name, well suited for centres of beds, 6*d.* each; per dozen, 5*s.*

VERBENAS.—Scarlet, Purple, and White, of the leading bedding varieties, in pots, 2*s. 6d.* per dozen; per 100, 18*s.*

LOBELIA ERINUS SPECIOSA, in pots, 2*s. 6d.* per dozen.

IVY REGNERIANA.—The best green-leaved variety: good plants in pots, 1*s.* each; per dozen, 10*s.*

A. GODWIN & SON, The Nurseries, Ashbourne.

Early Sheep Feed—Mustard and Rape.

SUTTON and SONS can supply good new Seed of the above at very moderate prices, which may be had on application.

SUTTON & SONS, Seed Merchants, Reading.

ENGLISH LONG-STALKED RAPE SEED. The Subscribers have the above on hand.

Sample and price on application.

E. P. DIXON & SON, Seed Merchants, Hull.

True Essex Dwarf Rape Seed.

E. P. DIXON AND SON, The Yorkshire Seed Establishment, 67, Queen Street, Hull, have a few quarters of the above to spare. Price on application.

English-saved Sowing Rape Seed.

CHARLES SHARPE AND CO. have the above to offer, of fine quality. Sample and prices forwarded on application. Seed Warehouse, Sleaford.

BRUSSELS SPROUTS PLANTS.—Wanted, 100,000, to be delivered at once. State quantity and lowest price.

HY. CLARKE & SONS, 39, King Street, Covent Garden, W.C.

CABBAGE PLANTS.—Strong DRUMHEAD, Autumn-sown, extra fine. Price on application to H. & R. STIRZAKER, Skerton Nurseries, Lancaster.

CABBAGE PLANTS.—Strong Drumheads for Cattle, Early kinds, Battersea and Nonpareil, 3*s.* per 1000.

W. YIRRO & SON, Worcester House, Guildford, Surrey.

To the Trade and Others.—An excellent Stock.

STRATTON GREEN ROUND TURNIP SEED, 1865 growth. Pronounced by some to be the best English Turnip grown. Cash price, per bushel, 16*s.*; per lb., 6*d.*

EARLY SIX-WEEK TURNIP, 6*d.* per lb.

A remittance or reference requested from unknown correspondents.

FRED. GEE, Seed Merchant and Grower, Biggleswade, Bedfordshire.

Now Ready for Planting.

EXCELLENT CABBAGE PLANTS, Spring-sown.—SCOTCH DRUMHEAD, EARLY DWARF NONPAREIL; ENFIELD MARKET. Cash price, 2*s. 6d.* per 1000.

DRUMHEAD SAVOY PLANTS, an excellent stock, 4*s.* per 1000

GREEN CURLED SAVOY do., and a variety of other plants.

A remittance or reference requested from unknown correspondents

FRED. GEE, Seed Merchant and Grower, Biggleswade, Bedfordshire.

Brighton and Sussex Seed Warehouse.

EDWARD CARPENTER'S MIXTURES of PERMANENT GRASS and CLOVER SEEDS.—Best quality, 36*s.* per acre (2 bushels light seeds, and 12 lb. Clovers and small seeds per acre).—See testimonials in Catalogue.

EDWARD CARPENTER'S RENOVATING MIXTURES for Improving Old Pastures.

PRICED CATALOGUES of KITCHEN GARDEN, FLOWER, and FARM SEEDS now ready.

EDWARD CARPENTER, Seed Merchant and Grower, 96, St. James's Street, Brighton.

REBECCA, the finest BEDDING GERANIUM ever raised. Plants ready in May, price 5*s.* each.

See WM. PAUL'S SPRING CATALOGUE.

PAUL'S Nurseries, Waltham Cross, London, N.

Mrs. Pollock Geranium.

THOMAS J. BOOTH has still to offer a few hundreds to the Trade only, at 75*s.* per 100, strong plants. Retail price on application. Rainhill Nursery, Prescot.

MRS. POLLOCK GERANIUMS, 12*s.*, 15*s.*, and 24*s.* per doz.; SCARLET and VARIEGATED GERANIUMS, VERBENAS, CALCEOLARIAS, FUCHSIAS, PETUNIAS, LOBELIAS, KONIGAS, &c., £1 the 100, 50 for 10*s. 6d.* NEW DESCRIPTIVE PRICED CATALOGUE now ready and free on application.

W. HOOPER, Nurseryman, Seedsman, &c., New Wandsworth, S.W.

BEATON'S GERANIUMS, at Reduced Prices.—Old Indian Yellow, Donald Beaton, Orange Nosegay, Scarlet Gem, Princess Beatrice, and Variegated Nosegay, 6*s.* each, per dozen, not less than six of a sort. Fulgens, Pillar of Beauty, and Waltham Seedling, 1*s.* 6*d.* each, 12*s.* per doz. Any Hogg, 1*s. 6d.* each, 15*s.* per doz. Alexandra, 2*s.* each, 18*s.* per doz. For other sorts see separate Advertisement.

WM. PAUL, Paul's Nurseries, Waltham Cross, London, N.

Bedding Plants, Bedding Plants.

JAMES HOLDER can supply VERBENAS, SCARLET and VARIEGATED GERANIUMS, DAHLIAS, CALCEOLARIAS, FUCHSIAS, PETUNIAS, LOBELIAS, GAZANIAS, KONIGAS, CUPHEAS, &c. Eight dozen for 20*s.*, or four dozen for 10*s. 6d.*, hampers and package included.

Crown Nursery, Reading, Berks.

Bedding Plants, Bedding Plants.

GEO. MCRAE AND CO. beg to offer to the public strong Plants of the following at 2*s. 6d.* per dozen:—Geraniums Stella Nosegay, Tom Thumb, Rouie de Feu, Crystal Palace Scarlet, Frontaux Rose, Carmine Nosegay, Princess of Prussia, Rosy Queen, and Tom Thumb's Master. Calceolaria aurea floribunda, Heliotropes, Verbenas, Lobelias, Dahlias, Fuchsias, Ivesine Hardeti, &c.

BIJOU (variegated) GERANIUM, 3*s. 6d.* per doz., autumn-struck.

All orders of £1 and upwards packed and sent carriage free to any Railway Station. Terms, Regular Nursery, Bow, E.

PETER DRUMMOND AND CO. (late J. SCOTT), Preston Road Nursery, Yeovil, Somerset, have to offer to intending purchasers upwards of 200,000 BEDDING-OUT FLOWER GARDEN PLANTS, including all the leading varieties of Dahlias, Fuchsias, Geraniums, Heliotropes, Lantanas, Lobelias, Petunias, Salvias, Verbenas, &c. And all kinds of Frosted and Variegated-leaved Plants suitable for the Decoration of the Flower Garden, at unprecedented low prices. CATALOGUES free on application.

Also SEEDS of every description for the FARM and GARDEN, of the best quality, at moderate prices.

Please address as above.

J. LINDEN'S SUPPLEMENT to his CATALOGUE is now published, and contains several of the new Plants which attracted so much attention at the late GREAT INTERNATIONAL HORTICULTURAL EXHIBITION. Among the many species now offered for the first time, are—

ANTHURIUM REGALE, 42*s.*; extra strong, 105*s.*

MARANTA LINDENI, the extraordinary transparent species, regular size, 21*s.*; extra strong, 105*s.*

MARANTA ROSEO-PICTA, 42*s.*; extra strong, 105*s.*

PASSIFLORA MACROCARPA, bearing fruit of 3 lb. weight.

" HELLEBORIFOLIA, very fine species. Both at 12*s. 6d.* each.

Catalogues can be obtained free by post on application to J. L.'s Agents—Messrs. R. SILBERRAD & SONS, 5, Harp Lane, Great Tower Street; or direct from the Royal Zoological and Horticultural Gardens, Brussels.

New Variegated Bedding Plant.

CARTER'S STRIPED-LEAVED JAPANESE MAIZE.

A First-class Certificate was awarded at the International Horticultural Show, and a Second Prize at the Crystal Palace Late Show. This truly handsome foliaged plant should be in every Flower Garden. Price per packet 1s. and 2s. 6d.

JAMES CARTER & Co., 237 & 238, High Holborn, W.C.

Just Published, post free 12 Stamps

(GRATIS to CUSTOMERS),

CARTER'S NEW BOOK on BEDDING PLANTS

Containing Original Articles on the Artistic Arrangement of Bedding Beads, and 12 Illustrations of Original Designs for Flower Beds, besides Cultural Memoranda of all

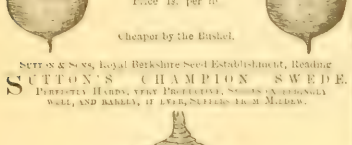
JAMES CARTER & Co., 237 & 238, High Holborn, W.C.

CARTER'S SUPERB STRAINS of CALCEOLARIA CINERARIA, and CALCEOLARIA HERBACEOUS.

Each 5s. per packet. Strong plants, 9s. per doz.

JAMES CARTER & Co., 237 and 238, High Holborn, W.C.

The Forwardest Turnip known is



SUTTON'S SHORT-TOP SIX WEEKS.

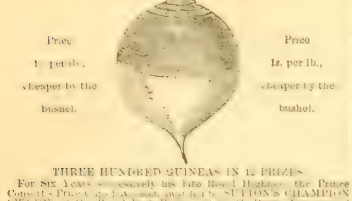
Price 1s. per lb.

Cheaper by the Bushel.

SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

SUTTON'S CHAMPION SWEDE.

PERFECTLY HARDY, VERY PRODUCTIVE, SOUND IN ROTTENLY WELL, AND KEEPS, IF EVER, SWEETLY TILL MARCH.



Price 1s. per lb., cheaper by the bushel.

Price 1s. per lb., cheaper by the bushel.

THREE HUNDRED GUINEAS IN 12 PRIZES.

For SIX Years successively the late Royal Highness the Prince Consort's Prizes for Mangel were won by SUTTON'S CHAMPION SWEDES at the Royal East Kents and South Berks Agricultural Societies, and many other valuable Prizes in various parts of the Kingdom.

From Mr. Lapper, Bayford, the Right Hon. Lord Panmure.

"The Champion Swedes he sent Lord Panmure's purchasers of whom are far superior to any there we have grown. I can confidently say that were many tons per acre heavier than any Short Swedes being cut on Lord Panmure's farm."

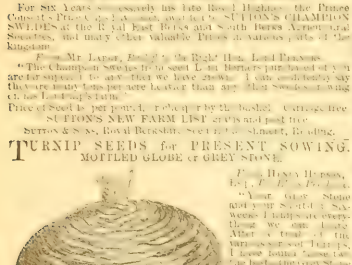
Price of Seed as per pound, reduced by the bushel. Carriage free.

SUTTON'S NEW FARM LIST gratis and post free.

SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

TURNIP SEEDS for PRESENT SOWING.

MOTTLED GLOBE or GREY STONE.



From Henry Hopkins, Esq., Tor Hill, Torquay.

"Your Grey Stone and your Scarlet Six-weeks Turnips were, I believe, the best in the county. After a trial of the two sorts we have taken the Scarlet Six-weeks for early planting, and the Grey Stone for late planting. Whatever may be the fancy varieties of Turnips are brought out, and whatever their value this season, these two are excellent. Half the secret of keeping lambs healthy in the autumn is to give them plenty of Grey Stone Turnips through the months of August and September, pulled with The Crown of Coverdale."

Price 1s. 6d. per pound.

Also,

SUTTON'S IMPERIAL GREEN GLOBE, 8d. per lb.

LINCOLNSHIRE RED PARAGON, 8d. per lb.

POMERANIAN WHITE GLOBE, 8d. per lb.

HARDY GREEN ROUND, 8d. per lb.

SUTTON'S SHORT-TOP SIX WEEKS, 1s. per lb.

And other choice sorts, cheaper by the bushel, carriage free.

SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

Greenhouse, Hardy and Stove Plants; Agricultural, Flower, and Vegetable Seeds, &c.

ROBERT PARKER invites inspection of his Collection of the above-named, which have been selected with the greatest care. All plants are clean and healthy, and are offered at reasonable prices. Descriptive and Priced Catalogues are published, and will be forwarded to applicants.

EXETER NURSERY, Tooting, Surrey, S.

Novelties, Novelties.

JAMES GARAWAY AND CO., Durdham Down Nurseries, Bristol, offer the Three undermentioned NEW SEEDLING GERANIUMS as not only Novelties but decided acquisitions:—

TRICOLOR SECTION.

QUEEN of TRICOLORS.—This variety surpasses in beauty the well-known Mrs. Pollock, from which it is raised, the clear dark zone of the same shade but much more vivid, and, hence a great improvement, the green colour does not project itself beyond the zone. The flowers are produced in abundance, and are scarlet in a large and of good shape.

Well-established Plants will be supplied the last week in June, at 21s. each. Four sent when Three are ordered.

CLOSE OR OPEN SECTION.

BRONZE QUEEN.—A variety raised from cloth of gold, with foliage of same colour, but with the addition of a dark bronze zone distinctly marked: of good dwarf habit, free to set with and very effective, well adapted for bedding; flowers scarlet rose, produced in good-sized trusses.

Price 7s. 6d. each. Four sent when Three are ordered.

NOSEGAY SECTION.

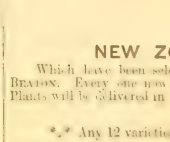
LATRICIANE.—A distinct Nosegay of compact habit, with extra fine trusses of purplish crimson flowers, which, elevated on stiff flower stems, presents a very fine effect. A fine plant for the back or second row of a rubbish border or centre of bed, this will be found a very attractive acquisition.

Price 5s. each. Four sent when Three are ordered.

Prices to the Trade on application.

JAS. GARAWAY & Co.'s SPRING CATALOGUE, containing Priced Lists of Show and Greenhouse Plants, Ferns, and Bedding-out Plants is now ready, and will be forwarded post free on application.

JAS. GARAWAY & Co., Durdham Down Nurseries, Bristol.



COCOA-NUT REFUSE

is becoming scarce, the old reserves will soon be gone. Now 1 cwt. bags, 1 for 2s., 10 for 16s., 20 for 30s., 50 for 65s., 100 for £6.

Evergreens covered for each bag returned carriage-paid.

A Railway Truckload sent in barely 6s.

Postage Stamps or Post-office Orders, payable to J. BARNHAM & Co., Kingston-on-Thames, S.W.

Destroy your Insect Pests.

PRESERVE YOUR PLANTS and TREES.

YOU MAY EASILY DESTROY ALL PLANT PESTS,

RED SPIDER	GREEN and BLACK	ANTS
MEALY BUG	FLY	SCALE
THRIPS	AMERICAN BLIGHT	MILDEW,

Without injury to the most delicate Plant or Tree, by using FOWLER'S GARDENERS' INSECTICIDE, pronounced by all who have used it to be far superior to any other remedy. One trial will prove its efficacy. Testimonials free on receipt of application.

Price 1s. 6d., 3s. 6d., and 10s. per Tin. Orders amounting to 20s. carriage paid. Agents required.

GEO. & THOMAS FOWLER, North Street, Brighton.

Plagues of the Garden.—Aphis Wash.

SIMPLE AND SAFE REMEDY.—Destroying the

APHIS WASH, these Pests of the Garden, together with Scale, Caterpillars, Slugs, Earwigs, &c., are immediately destroyed. Leaves not stain, but strengthens the Trees or Plants.

Extract from the "Gardeners' Chronicle," 19th August, 1865 :—

"Some time since we received a sample of an Aphis Wash, prepared by the City Soap Works, with a request that it might be submitted to experimental trial. This having been done, we are enabled to report favourably of the results. Among other things it was also applied to various Vines, Marantas, and Palmaceous infested by red spider, and a single application proved effectual for their destruction."

Extract from "Gardener's Magazine," 3rd March, 1866 :—

"It is a matter of importance that the Aphis Wash of the City Soap Works should be brought prominently under the notice of gardeners, and as a matter of fact there is no doubt so efficient an Aphis Wash for the purpose it is said to be."

See also Article "Common Hibbard, Esq., F.R.H.S., in "Gardeners' Magazine," of July, 1866.

Testimonial from G. GLENNY, Esq., *Finchley.*

"You will see by the Gardeners' Chronicle, that I have publicly recommended the Aphis Wash. I have since mentioned it to several gardeners."

From Mr. J. F. CHAPMAN, *Sandhurst, Kent, Aug. 7th, 1865.*—

"I have tried it upon different plants with perfect success. I had many plants badly affected with red spider, but have washed every plant with the liquid, as you direct, and I verily believe not a red spider is left alive."

From Mr. SIDNEY POND, *The Gardener, St. Leonard's Lodge, near Horsham, February 16, 1866.*—

"I am able to report most favourably on the result of my trial of your Aphis Wash; it is a thing I have long left in hopes of. I like it very much, for it is free from any poisonous ingredient, and will all pass through the syringe without any trouble. From other experiments I made, the result has been a perfect success, and for fruit trees it will be a favourable wash."

Messrs. Garaway have received a great many valuable testimonials from practical and skilled gardeners, and have liberty to refer to Mr. Fyfe, of Messrs. Low & Sons' Nurseries, Upper Clapton, who uses it on all his bedding plants, and after a series of careful and thorough experiments with the "Aphis Wash."

Sold by Chemists and others, in 1s. bottles, and 2s. 6d. a gallon, with full directions for use.

Wholesale at the City Soap Works, Milton Street, London, E.C.

SCARLET GERANIUMS (BEATON'S RACE).

WILLIAM PAUL

(SON and Successor to the late A. PAUL.)

HAS TO OFFER THE FOLLOWING

NEW ZONALE AND HYBRID NOSEGAY GERANIUMS,

Which have been selected from several Thousand Seedlings, raised from the stock of the late Mr. DONALD BEATON. Every one now offered is believed to be in advance of or distinct from all pre-existing kinds. The Plants will be delivered in rotation, as far as the stock will allow.

Group 1.—Bedding Varieties.

*** Any 12 varieties from this and the two following Groups may be selected by the purchaser for £2 2s.

BANNERET.—Flowers crimson, scarlet, and purple shaded, very bright and beautiful; habit vigorous. Price 3s. 6d. each.

FAIRY QUEEN.—Rose purple; a large smooth flower, very distinct and effective. Price 2s. 6d. each.

MINSTRELS.—A peculiar and pleasing shade of crimson, somewhat in the way of Lord Palmerston, but brighter in colour and broader in the pet. Price 2s. 6d. each.

MONTE ROSA.—A dark rose purple, pleasing colour, large truss, very fine. Price 2s. each.

NIMROD.—A dark, good, white eye, large flower and truss, robust and bright habit. Price 2s. 6d. each.

PHŒNIX.—Quite a new and striking character, the colour of which is described. Price 2s. each.

Group 2.—Varieties especially recommended for Growing in Pots or Vases.

BRIDE.—Flowers white, with large crimson eye, of fine shape and substance; a first-class variety for pot culture. Price 3s. 6d. each.

CARDINAL.—Flowers dark orange scarlet, fine shape, substance, colour and habit, this is in advance of any scarlet variety yet raised. Price 2s. each.

CELESTIAL.—Flowers rose lake, with fiery spot on upper petals, these centres blush purple, resembling the "Cactus specie sessilis," large white eye, true in colour, and very beautiful. Price 5s. each.

DIAMOND.—Fine scarlet purple centre, white eye, flowers profusely, habit good, distinct. Price 3s. 6d. each.

DRYAD.—Beautifully rosy pink, fine shape and truss. Price 3s. 6d. each. 15s. per dozen.

NAIAD.—Flowers purple, scarlet top; pleasing and distinct. Price 2s. 6d. each.

PRINCE OF ORANGE.—Orange-scarlet, very bright, great substance, good habit and profuse bloomer. Price 3s. 6d. each.

PEACH NOSEGAY.—Flowers deep bright peach colour, very free bloomer, splendid truss, plain leaf, first-rate and distinct. Price 5s.

REBECCA.—Cherry colour, fine truss, dwarf compact habit, very good; a distinct bedding Geranium yet raised. First-class Certificate. Price 5s. each.

ST. GEORGE.—Dark chestnut, shaded with blackish crimson, quite unique, very free and effective, an entirely new colour among Pelargoniums. First-class Certificate. Price 5s. each.

SALMON NOSEGAY.—Flowers pure salmon, large truss, good. First-class Certificate. Price 3s. 6d. each.

SIR J. PAXTON.—Flowers true fiery red, very bright, fine large truss, a most useful variety for bedding. Price 3s. each.

WOOD NYMPH.—Salmon pink, large and fine. Price 3s. 6d. each.

LORD CHANCELLOR.—Salmon pink, white eye, perfect shape, very free, fine habit. Price 2s. 6d. each.

POET LAUREATE.—Rosy purple, top petals orange scarlet, yellowish eye, perfect shape. Price 2s. 6d. each.

TIARA.—Flowers scarlet crimson suffused with purple, good truss, very free, fine habit; quite distinct from any yet raised, and very lovely. Price 2s. each.

Group 3.—Miniature or Pompon Varieties.

WALTHAM LILAC.—Flowers true lilac, very profuse; a new and desirable colour, excellent for massing. Price 5s. each.

ZEPHYR.—Flowers light purple top, petals rose colour; stands the rain, and is an well, very dwarf and free. Price 3s. 6d. each.

Group 4.—Bedding Varieties sent from these Nurseries Last Year.

Many of them have received First-class Certificates from the Royal Horticultural and Royal Botanic Societies of London, and those marked thus *** have been awarded the highest marks of merit in the Royal Horticultural Society's Trial Ground at Chiswick. Now Ready. Autumn-struck Plants.

*** ALEXANDRA.—Magenta. Price 2s. 6d. each, 24s. per dozen.

*** AMY HOSKER.—Bright purplish rose. Price 2s. each; 18s. per doz.

*** BEATON'S INDIAN YELLOW.—Orange scarlet and last with yellow. Price 1s. 6d. each; 15s. per doz.

BLACK KNIGHT.—Dark crimson. Price 1s. 6d. each; 12s. per dozen.

DONALD BEATON.—Clear orange scarlet. Price 1s. 6d. each; 15s. per dozen.

*** DUCHESS.—Soft rosy lake. Price 2s. each; 18s. per dozen.

FULGENS.—Vivid scarlet. Price 2s. 6d. each.

*** GLOWWORM.—Magenta crimson flushed with scarlet. Price 2s. 6d. each; 24s. per dozen.

MAGENTA QUEEN.—Magenta. Price 3s. 6d. each.

The above Set of 16 varieties, One Plant of each, 24s.

SPRING CATALOGUE, with full descriptions of these and other Plants, Free by Post.

The usual discount to the Trade.

IMPORTANT.—All Letters should be Addressed

WILLIAM PAUL (the Christian name in full), WALTHAM CROSS, LONDON, N.

To Fruit and Rose Growers.

STANDEN'S GARDENERS' and AMATEURS' FRIEND, a compound of the richest Fertilising Phosphates, and the most valuable of all Manures for Vines and other Fruit Trees, Roses, Azaleas, and New Holland Plants, also Chrysanthemums, Dahlias, Geraniums, &c. Sample Canisters, 1s. and 2s. 6d.; Bags, 5s. 6d., 7s. and 13s. No. 1 for all Hard-wooded Plants, No. 2 for all Soft-wooded Plants. Now sold by most Nurserymen and Seedsmen. For List of Agents see Advertisements in *Gardeners' Chronicle* for March and April.

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GISHURST COMPOUND, whether used against Insects and Mildew, on Growing Plants, or as Winter Dressing on Trees at rest, should be dissolved 18 hours before use. This gets rid of insect, and if the Solution be decanted, prevents any staining of foliage. A strength of from 1 to 2 oz. to the gallon of water is recommended for growing Plants; one from 4 to 16 oz. for Trees at rest.

Sold Retail by Nurserymen and Seedsmen, in boxes, 1s., 2s., and 4s. 6d. each.

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PRICE'S PATENT CANDLE COMPANY (LIMITED).

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W. J. HOLLANDS, IRON MERCHANT, 71, Bankside, London, S.E.

HOT WATER PIPES, from Stock, per yard—2-inch, 1s. 2d.; 3-inch, 1s. 10d.; 4-inch, 2s. 8d.; Bends, from Stock, 1s. 3d., 2s. 6d., and 4s. each. THROTTLE VALVES, 1s., 1s. 6d., and 2s. each. Other Connexions at equally low prices, and all goods of best brass manufacture. Estimates given, and orders by post punctually attended to the same day.

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HOT-WATER PIPES, at Wholesale Prices, with Elbows, Syphons, Tee Pipes, and every other connection; Wrought and Cast-Iron Boilers, Saddle, Conical, Cylindrical, Tubular, and Upright, from 24s. each. Improved Boilers and Pipes, Stands for the wall and for hot-water, &c., each. Valves from 1s. 6d. each. Patent Valves, Lever and Furnace Doors, Furnace Bars, Supply Cisterns, and Cocks. Every description of Smith's Work.

Mr. LYSAGHT WHITE'S Iron Wharf, Upper Ground Street, Blackfriars Bridge, London, S. Price List on application.

CRANSTON'S PATENT BUILDINGS for HORTICULTURE.

"Dry Glazing without Putty."

"Glass without Laps."

"Ventilation without Moving Lights."

Highly Commended by the Royal Horticultural Society, South Kensington.

Plans and Estimates free on application. Descriptive Book Fully Illustrated, post free for 2s. stamps, from the Author and Patentee, JAMES CRANSTON, Architect, Birmingham.

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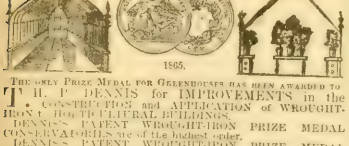
Greenhouses—Heating Apparatus.



THE ONLY PRIZE MEDAL FOR GREENHOUSES HAS BEEN AWARDED TO T. H. P. DENNIS for IMPROVEMENTS in the CONSTRUCTION and APPLICATION of WROUGHT-IRON HORTICULTURAL BUILDINGS.

DENNIS'S PATENT WROUGHT-IRON PRIZE MEDAL CONSERVATORIES are of the highest order.

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DENNIS'S PATENT WROUGHT-IRON PRIZE MEDAL ORCHID HOUSES and STOVES, with double-glazed roofs, are a complete arrangement.

DENNIS'S PATENT WROUGHT-IRON PRIZE MEDAL ORCHARD HOUSES (as supplied to Mr. Rivers), induce perfect symmetry and fruiting result.

DENNIS'S PATENT WROUGHT-IRON PRIZE MEDAL GERANIUM and PLANT HOUSES, are thoroughly ventilated and admit a maximum degree of light.

DENNIS'S PATENT WROUGHT-IRON PRIZE MEDAL CUCUMBER and MELON HOUSES are specially arranged and heated upon T. H. P. D.'s improved system.

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DENNIS'S PATENT PRIZE MEDAL FORCING HOUSES are eminently superior for all early work.

DENNIS'S PATENT WROUGHT-IRON PRIZE MEDAL STRAWBERRY HOUSES admit a complete flood of air and light.

The above Patent Houses can be glazed with or without putty.

These Houses are now protected by three Royal Letters Patent, and from the complete adjustment of their constructional parts will be used favourably with Wood Structures in point of cost.

Designs and Estimates prepared for single or complete ranges of Houses in Wood or Iron.

Illustrated Catalogues on application to the Patentee,

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HOTHOUSES for the MILLION.—Medal, 1862.

INVENTED BY THE LATE SIR JOSEPH PAXTON.

ILLUSTRATED PRICE LISTS will be sent on application to Messrs. HERBAM & MORTON, 7, Pall Mall East, London, S.W.

Also, a HANDBOOK of VINE and FRUIT TREE CULTIVATION, price 1s.; post free, 1s. 1d.

HOT-WATER APPARATUS, of every description, fixed complete in any part of the country, or the materials, viz., Boilers, Pipes, &c., delivered to any Station.

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J. JONES & SONS, 6, Bankside, Southwark, London, S.E.

GREENHOUSES, 12 feet by 13, £50; 21 feet by 13, £28; 12½ feet by 10, £15, glazed ready for fixing. A Handsome CONSERVATORY, 35 feet by 19, £120. Estimates for any branch in the line, in iron or wood.

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Established 20 Years.

Greenhouses, &c.

JOSEPH SMITH, New Road, Hammersmith, W., begs to offer several well-constructed GREENHOUSES, of good Yellow Deal, and 21-oz. Glass.

SPAN	24 ft. by 9 ft. 7 in.	£21
,,	22 ft. 8 in. by 10 ft. 9 in.	28
,,	22 ft. by 10 ft.	30
LEAN-TO	21 ft. 6 in. by 13 ft.	21
,,	25 ft. by 12 ft. 7 in.	27
,,	35 ft. by 12 ft. 7 in. (Curvilinear)	37
,,	15 ft. by 11 ft.	20

Also Twenty 4-ft. 6-in. by 3-ft. span Lights, 1¼ thick, for £11; and Eleven 6 ft. by 4 ft. 7 in. for £15.

MELON FRAMES of an improved make in Stock, warranted good materials.

Estimates for Heating chemically on Hot-Water Apparatus.

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MESSRS. CROGGON AND CO., PATENT FELT MANUFACTURERS, &c., have REMOVED their LONDON BUSINESS from 2, Bowgate Hill to more extensive Premises, being

{ 63, New Earl Street, } Canton Street West,
{ 34, Bread Street, } London, E.C.

Horticultural Glass Warehouse, 87, Bishopsgate Street Without, London, E.C.

THOMAS MILLINGTON begs to refer to his new Priced LIST of PRICES, published on the 1st of June last, or on application at above address.

Glass for Garden Purposes.

JAMES PHILLIPS AND CO. beg to submit their prices as follows:—

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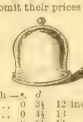

	Each—s.	d.		Each—s.	d.
2 inches in diameter	.. 0	3½	12 inches in diameter	.. 1	0
3 ,, ,,	.. 0	4½	14 ,, ,,	.. 2	0
4 ,, ,,	.. 0	6½	14 ,, ,,	.. 2	6
5 ,, ,,	.. 0	6½	15 ,, ,,	.. 3	0
6 ,, ,,	.. 0	8	16 ,, ,,	.. 3	6
7 ,, ,,	.. 0	10	17 ,, ,,	.. 4	0
8 ,, ,,	.. 1	0	18 ,, ,,	.. 5	0
9 ,, ,,	.. 1	2	19 ,, ,,	.. 6	0
10 ,, ,,	.. 1	4	20 ,, ,,	.. 7	0
11 ,, ,,	.. 1	6			

BEE GLASSES, with Conical or Flat Tops.

	Each—s.	d.		Each—s.	d.
4 inches in diameter	.. 0	7	9 inches in diameter	.. 1	8
5 ,, ,,	.. 0	8	10 ,, ,,	.. 2	0
6 ,, ,,	.. 0	10	11 ,, ,,	.. 2	6
7 ,, ,,	.. 0	12	12 ,, ,,	.. 3	0
8 ,, ,,	.. 1	4			

CUCUMBER GLASSES.

	Each—s.	d.		Each—s.	d.
24 inches long	.. 1	2	12 inches long	.. 1	4
22 ,, ,,	.. 1	0	14 ,, ,,	.. 1	2
20 ,, ,,	.. 1	8	15 ,, ,,	.. 1	0
18 ,, ,,	.. 1	6			

Made to 0.7 Gauge.

HAND GLASSES, WITH OPEN TOPS.

	Each—s.	d.		Each—s.	d.
4 inches	..	6	8 inches	..	9
5 ,,	..	6	9 ,,	..	10
6 ,,	..	7	10 ,,	..	11
7 ,,	..	8	12 ,,	..	12

Packed in Hay Crates with Iron Bands.

SHEET and ROUGH PLATE GLASS, SLATES of all sizes, BRITISH PLATE, PATENT PLATE, ROLLED PLATE CROWN, SHEET, HORTICULTURAL, ORNAMENTAL, COLOURED, and every description of GLASS, of the best Manufacture, at the lowest terms. Lowest prices and estimates forwarded on application to

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EARTH CLOSETS AND COMMODES.

(Moule's Patent.)

NO UNWHOLESOME CESSPOOLS.
NO BAD SMELLS.
NO WATER PIPES TO GET OUT OF ORDER.

THE BEST NIGHT COMMODES.
MAY BE APPLIED TO ANY CLOSET.
A VALUABLE MANURE SAVED.

THE EARTH CLOSETS WERE IN USE IN THE CLOAK ROOMS AT THE

INTERNATIONAL HORTICULTURAL EXHIBITION, KENSINGTON.

"The most feasible plan for the utilisation of night-soil is that brought forward by the Rev. Henry Moule, of Fordington Vicarage, Dorset."—*John Wilson, Islington Mews.*

WHITE AND CO., 29, BEDFORD STREET, STRAND, W.C.,

Where Prospectuses may be obtained, and the Closets inspected.

THE LEICESTER

(NEW DESIGNED AND PATENTED)

ORNAMENTAL FLOWER VASES OR BASKETS.

MANUFACTURED BY

HUNT & PICKERING,

HORTICULTURAL AND AGRICULTURAL IMPLEMENT WORKS, LEICESTER.

Exhibited with marked success at the International Flower Show, Kensington; and in the Gallery of the Agricultural Hall, Islington, during the Horse Show.

These Vases or Baskets are composed of a series of ornamental branches, affixed to a capital or centre ring, mounted on suitable brackets and hexagon base, without the aid of screws, rivets, &c.; so simple in construction that any one may in a few minutes put it together, making it a beautiful Centre-piece or Flower Basket, either for the Lawn in Summer or the Conservatory in Winter. Painted any colour to order.

The great advantage of the Open Vase over the solid cast iron or "Terra Cotta," is the perfect drainage and continual circulation of the atmosphere through every part, giving greater vitality to the growth of the plants. The mode of filling is simply to cut a few feet of thin Turf or Moss, and lay the same with the Grass outwards, throw in the soil, and plant the Flowers according to taste.

☞ *Illustrated Price Lists of the various sized Vases.*

The LEICESTER GARDEN SEAT, TABLES, and RUSTIC SEATS, sent free on application.

ADIANTUM FARLEYENSE, True.

ROBERT T. VEITCH

HAS MUCH PLEASURE IN OFFERING FOR THE FIRST TIME TO THE PUBLIC

THIS VERY HANDSOME VIGOROUS-GROWING STOVE FERN,

SO UNIVERSALLY ADMIRED AT THE LATE INTERNATIONAL EXHIBITION.

This Adiantum was introduced from Barbadoes by Thomas Daniels, Esq., Stoodleigh, Tiverton.

Plants will be ready in July next at 42s. each. Usual allowance to the Trade.

Orders are now being booked, and will be executed in rotation as received.

NURSERY: NEW NORTH ROAD, N.; SEED WAREHOUSE: 54, HIGH STREET, EXETER.

ROYAL BOTANIC SOCIETY,

REGENT'S PARK.

THE SECOND EXHIBITION of PLANTS, FLOWERS, and FRUIT,

WEDNESDAY, JUNE 6.

LIST OF AWARDS.

MEDIUM GOLD MEDAL.

Mr B Peed, Gr to Mrs Tredwell, St John's Lodge, Norwood, for 10 Stove and Greenhouse Plants
Mr C Penny, Gr. to H H Gibbs, Esq., St. Dunstan's, Regent's Park, for 10 Exotic Orchids
Mr E P Frances, Nurseryman, Hertford, for 10 Roses in pots

GOLD MEDAL.

Mr. J. Wheeler, Gr. to J. Phillpott, Esq., Stamford Hill, for 16 Stove and Greenhouse Plants
Mr O. Rhodes, Nurseryman, Sydenham Park, Kent, for 8 Stove and Greenhouse Plants
Mr. D Donald, Gr. to J. G. Barclay, Esq., Knott's Green, Leyton, for 8 Stove and Greenhouse Plants
Mr O Rhodes, for 8 Cape Heaths
Mr B. Peed, Gr. for 8 Cape Heaths
Mr. W Wilson, Gr to W. Marshall, Esq., Clay Hill, Enfield, for 10 Exotic Orchids
Mr. J. Wiggins, Gr to W Beck, Esq., Worton Cottage, Isleworth, for 8 Exotic Orchids
Messrs Paul & Son, Nurserymen, Cheshunt, Herts, for 10 Roses in pots

LARGE SILVER GILT MEDAL.

Mr W Kemp, Gr. to Earl Percy, Albury Park, Guildford, Surrey, for 10 Stove and Greenhouse Plants
Messrs J & C Lee, Nurserymen, Hammersmith, for 8 Stove and Greenhouse Plants
Mr S M Carson, Gr. to W R G Farmer, Esq., Norwuch Park, Cheam, Surrey, for 8 Stove and Greenhouse Plants
Mr C. Smith, Gr. to A. Anderson, Esq., The Grove, Norwood, for 6 Stove and Greenhouse Plants
Messrs T. Jackson & Son, Nurserymen, Kingston, Surrey, for 8 Cape Heaths
Mr. J Wheeler, Gr., for 8 Cape Heaths
Mr. S. M. Carson, Gr., for 6 Greenhouse Azaleas
Messrs S Glendinning, Nurserymen, Chiswick, for 6 Greenhouse Azaleas
Mr. R. Bullen, Gr. to A. Turner, Esq., Bowbridge House, Leicester, for
Mr. B. S. Williams, Nurseryman, Holloway, for 6 Exotic Orchids
Mr. G. Young, Gr. to W. H. Stone, Esq., Leigh Park, Havant, for 8 Exotic Orchids
Mr. B. S. Williams, for 10 Foliage Plants
Mr. B. S. Williams, for 12 Exotic Ferns
Mr. H. Barnard, Gr. to J. W. Taylor, Esq., River House, Woodberry Downs, Stoke Newington, for 12 Exotic Ferns
Mr T Terry, Gr to S. G. Fuller, Esq., Toungstury, Ware, Herts, for 6 Roses in pots
Mr. J. Weston, Gr. to D Martineau, Esq., Clapham Park, for 6 Fuchsias
Mr. C. Turner, Nurseryman, Slough, for 9 Pelargoniums
Mr. T. Bailey, Gr. to T. T. Drake, Esq., Amersham, Bucks, for 9 Pelargoniums

LARGE SILVER MEDAL

Messrs. S. Glendinning & Son, for 8 Stove and Greenhouse Plants
Mr. W. Kaile, Gr. to Earl Lovelace, East Horsley Towers, Ripley, Surrey, for 8 Stove and Greenhouse Plants
Mr. A Wilkie, Gr., Oak Lodge, Addison Road, W., for
Mr. B. S. Williams, for 6 Foliage Plants
Mr. J. Ward, Gr. to F. J Wilkins, Esq., Leyton, Essex, for 6 Cape Heaths
Mr. J. Fraser, Nurseryman, Leyton, Essex, for 9 Pelargoniums
Mr. W. Nye, Gr. to E. B. Foster, Esq., Clewer Manor, Windsor, Berks, for 9 Pelargoniums
Mr. C. Turner, for 6 Fancy Pelargoniums
Mr. T. Bailey, Gr., for 6 Fancy Pelargoniums

SILVER GILT MEDAL

Mr. G Wheeler, Gr. to Sir F. H Goldsmid, Bart., Regent's Park, for 10 Stove and Greenhouse Plants
Mr. B. S. Williams, for 6 Stove and Greenhouse Plants
Mr. W. Cole, Gr. to R. H. Page, Esq., Beckenham Place, Kent
Mr. A. Ingram, Gr. to J J Bandy, Esq., Reading, for 6 Stove and Greenhouse Plants
Mr. G. Young, Gr., for 10 Foliage Plants
Mr. W. Taylor, Gr. to J. Yates, Esq., Lauderdale House, Highgate, for
Mr. W. Taylor, Gr., for 12 Exotic Ferns
Mr. G. Young, Gr., for 12 Exotic Ferns
Mr. H. Cannell, Nurseryman, Woolwich, for 6 Fuchsias
Messrs. J. Dobson & Son, Nurserymen, Isleworth, for 9 Pelargoniums
Mr J. Ward, Gr., for 9 Pelargoniums
Mr J Fraser, for 6 Fancy Pelargoniums
Mr. D. Donald, Gr., for 6 Fancy Pelargoniums
Mr. G. Wheeler, Gr., for 6 Greenhouse Azaleas
Messrs. J & C Lee, for 6 Greenhouse Azaleas
Mr. J. Robson, Gr. to G. Cooper, Esq., Coburg Road, Old Kent Road, for 10 Exotic Orchids
Messrs J. & C Lee, for 6 Exotic Orchids
Mr B Peed, Gr., for 8 Exotic Orchids
Messrs. Paul & Son, Nurserymen, Cheshunt, for 25 Cut Roses
Mr. J. Hollingworth, Esq., Maidstone, for 25 Cut Roses
Mr. G. Westland, Gr. to Lord Belper, Kingston Hall, Derby, for Providence Pine
Mr. W. Miller, Gr. to Earl Craven, Coombe Abbey, Coventry, for Queen Pine
Mr. J. Douglass, Gr. to F. Whitburn, Esq., Loxford Hall, Ilford, for Pine-apple
Mr. J. Meredith, Garston, near Liverpool, for Black Hamburgh Grapes
Mr. D. Clement, Market Gardener, Chase Side, Barnet, for Black Hamburgh Grapes
Mr. W. Meads, Gr. to R. Currie, Esq., Minley Manor, Farnborough, for Black Prince Grapes
Mr. W. Hill, Gr. to R. Sneyd, Esq., Keele Hall, Staffordshire, for Black Prince Grapes

SILVER GILT MEDAL.

Mr. G. Osborne, Kay's Nursery, Finchley, for White Muscadine
Mr. J. Allport, Gr. to J. Akroyd, Esq., Doddington Park, Cheshire, for Frontignan Grapes
Mr. C. Turner, for Dish of Grapes
Mr. N. Taylor, Gr. to C. A. Hanbury, Esq., Belmont, Barnet, for Dish of Peaches
Mr. C. Turner, for Dish of Peaches
Messrs J. Veitch & Sons, Nurserymen, Chelsea, for Group of Newand Rare Plants
Mr. O Rhodes, for Group of Stove and Greenhouse Plants

SILVER MEDAL.

Mr. J. Ward, Gr., for 6 Stove and Greenhouse Plants
Mr. W. Kemp, Gr., for 8 Cape Heaths
Mr. G. Young, Gr., for 6 Cape Heaths
Mr. W. Young, Gr. to R. Barclay, Highgate, for 10 Foliage Plants
Mr. D. Donald, Gr., for 6 Foliage Plants
Mr W Young, for 12 Exotic Ferns
Mr C Smith, Gr., for 6 Greenhouse Azaleas
Mr C Rhodes, for 6 Greenhouse Azaleas
Mr. T Page, Gr. to W Leaf, Esq., Park Hill, Streatham, for 10 Exotic Orchids
Messrs T Jackson & Son, for 6 Exotic Orchids
Mr. J. Willcock, Gr. to Dr. Pattison, St. John's Wood, for 8 Exotic Orchids
Mr. J. Wiggins, Gr., for 9 Pelargoniums
Mr. J. Weir, Gr. to Mrs. Hodgson, The Elms, Hampstead, for 6 Fine Pelargoniums
Mr J. Mitchell, Nurseryman, Maresfield, for 25 Cut Roses
Mr J Barnes, Gr. to Lady Rolle, Bicton, Exeter, for Queen Pine
Mr J. Povey, Gr. to Rev. J. Thorneycroft, Congleton, for Pine-apple
Mr C. Allen, Gr to Capt. Glegg, Withington Hall, Congleton, Cheshire, for Black Hamburgh Grapes
Mr. J. Allport, Gr., for Black Prince Grapes
Mr W. Hill, Gr., for Muscadine Grapes
Mr. Bannerman, Gr. to Lord Bagot, Blithfield, Staffordshire, for Frontignan Grapes
Mr. C. Tansley, Gr. to A. Moss, Esq., Chadwell Heath, for Dish of Grapes
Mr G Sage, Gr. to Earl Brownlow, Ashridge, for Dish of Peaches
Mr W Lynn, Gr. to Lord Boston, Hedsor, Maidenhead, for Dish of Nectarines
Mr B S Williams, for Collection of Agaves
Mr J. Fraser, for 9 Zonale Pelargoniums

SMALL SILVER MEDAL.

Messrs F & A Smith, Nurserymen, Dulwich, for 6 Cape Heaths
Mr W Wilson, Gr. to Lord Rendlesham, for 6 Greenhouse Azaleas
Messrs W Cutbush & Son, Nurserymen, Highgate, for 6 Azaleas
Mr W Bull, Nurseryman, Chelsea, for 6 Exotic Orchids
Mr R Parker, Nurseryman, Tooting, for 6 Exotic Orchids
Mr H. Ingram, Gr., for 8 Exotic Orchids
Mr J. Wheeler, Gr., for 8 Exotic Orchids
Messrs Downie, Laird, & Laing, Nurserymen, Sydenham, for 24 Pansies
Mr J. Fraser, Gr. to J. Hope, Esq., Murrayfield, Edinburgh, for 24 Pansies
Mr J. Mitchell, for 24 Roses
Messrs J Ivery & Son, Nurserymen, Dorking, for Collection of Hardy Ferns
Messrs. Lee & Son, for 12 British Ferns
Messrs. W. Cutbush & Son, for 3 Hanging Baskets
Mr G. Jones, Gr. to Lady Mill, Mottesfont Abbey, Romsey, for Queen Pine
Mr. A. Taylor, Gr. to H. C. M. Ingram, Esq., Temple Newsom, Leeds, for Pine Apple
Mr E. Sage, Gr. to Earl Howe, Atherstone, for Green-fleshed Melon
Mr W. Lynn, for Green-fleshed Melon
Mr J Overthouse, Gr. to Viscount Eversley, Heckfield, for Green-fleshed Melon
Mr J. Leaf, Gr. to the Duke of Newcastle, Clumber, for Scarlet-fleshed Melon
Mr W Meads, Gr., for Black Hamburgh Grapes
Mr G. Osborne, for Black Hamburgh Grapes
Mr. M. Henderson, Gr. to Sir G. H. Beaumont, Bart., Coleorton Hall, Ashby-de-la-Zouch, Leicester, for Black Prince Grapes
Mr T. Bailey, Gr., for Muscadine Grapes
Mr M. Henderson, Gr., for Frontignan Grapes
Mr W. Coles, Gr., for Dish of Grapes
Mr J. Tasker, Gr., for Dish of Peaches
Mr W. Whitaker, Gr. to Lord Crewe, Crewe Hall, Cheshire, for Dish of Peaches
Mr C. Ibbs, Gr., for Dish of Nectarines
Messrs T Jackson & Son, for Black Cherries
Mr J McIndoe, Gr. to C. Child, Esq., Bromley Palace, for 4 Dishes of Strawberries

BRONZE MEDAL

Mr. H. Hooper, Nurseryman, Wilcombe Hill, Bath, for 36 Pansies
Mr. E. F. Kingston, The Barracks, Bath, for 24 Pansies
Messrs. Paul & Son, for 24 Roses
Mr. G. Maund, Gr. to Earl Macclesfield, Hedsor, for Paulownia imperialis
Mr. B. S. Williams, for Collection of Anaectochilus
Mr. W. Kemp, Gr., for Dish of Nectarines
Mr. J. Carr, Gr. to P. L. Hinds, Esq., Byfleet, Surrey, for Green-fleshed Melon
Mr. T. Bailey, Gr., for Scarlet-fleshed Melon
Mr. S. Evans, Gr. to C. N. Newdegate, Esq., Nuneaton, for Dish of Peaches
Mr W Hill, Gr., for Dish of Nectarines
Mr. S Evans, Gr., for Dish of Nectarines
Mr R. Wilson, Nurseryman, Warwick, for Black Cherries
Mr R. Wilson, Warwick, for White Cherries
Mr. C. Turner, for 2 Dishes of Strawberries
Mr W. Allen, Gr to E. J. G. Hopwood, Esq., Manchester, for Collection of Peaches

BRONZE MEDAL.

Mr. D. Clement, for 12lb of Grapes
Mr. A. Fowler, Gr. to Earl Stair, Castle Kennedy, Stranraer, for Dish of Figs
Mr. M. Henderson, Gr., for Box of Grapes
Mr. C. Allen, Gr., for Box of Nectarines

CERTIFICATE.

Mr. E. F. Kingston, for 12 Pinks
Mr. C. Turner, for 24 Roses
Mr. R Parker, for Amaryllis Holfordi
Messrs. Paul & Son, for Collection of Herbaceous Plants
Messrs. E. G Henderson & Son, for Variegate l Meadow Grass
Messrs. J. Carter & Co., Holborn, for Ornithogalum thyrsoides album
Messrs. E. G. Henderson & Son, for Biandfordia nobilis grandiflora
Mr. W. Lynn, Gr., for Black Cherries
Mr. A. Johnson, Gr. to the Marquis of Aylesbury, Savernake Forest, for 2 Dishes of Strawberries
Mr. J. Thomas, Gr., for 1 Dish of Strawberries
Mr. G. Jones, Gr., for 1 Dish of Figs
Mr. S. Evans, Gr., for Dish of Peaches

FIRST-CLASS CERTIFICATE OF MERIT.

Mr. C. Turner, for Pelargonium Duchess of Sutherland
Mr. W. Paul, for Pelargonium Sir Joseph Paxton
Mr. W. Paul, for Pelargonium Crimson Queen
Mr. W. Paul, for Pelargonium St George
Mr. W Watson, for Pelargonium Excelsior
Mr. C. Turner, for Pelargonium Sylva
Mr. C. Turner, for Pelargonium Tormentor
Mr. G. W. Hoyle, for Pelargonium Lord Lyon
Mr. G. W. Hoyle, for Pelargonium Favourite
Mr. G. W. Hoyle, for Pelargonium Rustic
Mr. W. Nye, Gr., for Pelargonium Milton
Mr. W. Nye, Gr., for Pelargonium Negress
Mr. W. Nye, Gr., for Pelargonium Unicon
Messrs. E. G Henderson & Son, for Pelargonium Lady Cullum
Messrs E. G Henderson & Son, for Pelargonium Gloire de Nancy
Mr. R. Parker, for Nothochlæna cretacea
Mr. R. Parker, for Pleopeltis incurvata
Messrs. J. Veitch & Son, for Begonia Pearcii
Messrs. J. Veitch & Son, for Nepenthes hybrida maculata
Messrs J Veitch & Son, for Maranta tubispatha
Messrs. J. Veitch, Son, & Son, for Maranta roseo-picta
Messrs. J. Veitch & Son, for Amaranthus species
Messrs. J. Veitch & Son, for Areca Verschaffeltii
Messrs. J Veitch & Son, for Abocasia gigantea
Messrs. J. Veitch & Son, for Dæmina fimbriata
Messrs. J. Veitch & Son, for Acer sp. (a), Japan
Messrs. J. Veitch & Son, for Acer sp. (b), Japan
Messrs. J. Veitch & Son, for Acer sp. (c), Japan
Messrs. J. Veitch & Son, for Retinospora plumosa
Messrs. J. Veitch & Son, for Lycopodium species
Messrs. J. Veitch & Son, for Gymnogramma Laucheana Thompson
Messrs. J. Veitch & Son, for Retinospora Veitchii
Messrs. J. Veitch & Son, for Retinospra filicoides
Messrs. E. G. Henderson & Son, for Striped-leaved Japanese Maize
Mr. G. Jackman, for Clematis magnifica
Mr. G. Jackman, for Clematis Alexandra
Mr. G. Jackman, for Clematis veluina purpurea
Mr W. Bull, for Tetramalia elegans
Mr. W. Bull, for Nephrodium molle ramosissimum
Mr W. Bull, for Nephrodium molle c nfluens
Mr W. Bull, for Nephrodium molle densum
Mr. W. Bull, for Amorphophallus nobilis
Mr. W. Bull, for Coprosma Baueriana variegata
Mr W. Bull, for Zamia cycadsifolia
Mr. W. Bull, for Cycas plumosa
Mr. W. Bull, for Eranthemum argyroneurum
Mr W. Bull, for Athyrium proliferum
Mr. W. Bull, for Verschaffeltia splendida
Mr. W. Bull, for Chamærops melanocantha
Mr. W. Bull, for Pteris flabellata a-censonis
Mr. W. Bull, for Litobrochia unvulnata
Mr. W. Bull, for Zea Caragua variegata
Mr. W. Bull, for Samyda nobilis
Mr. W. Bull, for Athyrium Filix-fœmina pulchrum
Mr. W. Bull, for Athyrium Filix-fœm. elegans
Mr. W. Bull, for Athyrium Filix-fœm. reversum
Messrs. J. Ivery & Son, for Athyrium Filix-fœm. lanceolatum
Messrs. J. Ivery & Son, for Athyrium Filix-fœm. formoso-cristatum
Messrs. J. Ivery & Son, for Lastrea Filix-mas Ingrami
Messrs. J. Ivery & Son, for Lastrea Filix-mas abbreviata cristata
Messrs. J. Ivery & Son, for Aspienium Trichomanes Moulei
Mr. B. S. Williams, for Calamus Imperatrice Marie

SECOND-CLASS CERTIFICATE OF MERIT.

Messrs. E. G. Henderson & Son, for Dianthus Queteri
Messrs J. Veitch & Son, for Athyrium latifolium
Messrs J. Veitch & Son, for Coleus Gibsoni
Messrs J. Veitch & Son, for Dieffenbachia Weiri
Messrs J. Veitch & Son, for Acineta species
Messrs. J. Veitch & Son, for Amaryllis Queen of the Netherlands
Messrs. E. G. Henderson & Son, for Fuchsia fulgens multiflora
Messrs. E. G. Henderson & Son, for Astelma lanata, in bloom
Mr. W. Bull, for Urospatha spectabilis
Mr. W. Bull, for Urospatha splendens
Mr. W. Bull, for Ophiopogon spicata fol. arg. marginata
Mr. W. Bull, for Litobrochia tripartita
Mr. Thompson, Ipswich, for Fenstemon glaber
Mr. B. S. Williams, for Dieffenbachia Weiri
Mr. B. S. Williams, for Hymatodes glauca
Mr. B. S. Williams, for Aiternanthera spathulata
Mr. B. S. Williams, for Alternanthera sessilis amœna
Mr. B. S. Williams, for Dieffenbachia grandiflora
Messrs. J. Ivery & Son, for Athyrium Filix-fœm. pterophorum

Notice.

NEW HARDY CLIMBERS.

CLEMATIS PRINCE of WALES.—Large flowers of a rich deep violet purple, with red bars down the centre of each sepal. Botanical Certificate. 21s. each.

CLEMATIS RUBELLA.—Very fine rich velvety claret; stamens pale green. First-class Certificate. 21s. each.

The usual allowance to the Trade, and a List of Firms will be advertised at a later period.

See Proceedings of Royal Horticultural Society's Scientific Meetings, June 27, 1865, page 124, where James Bateman, Esq., called attention to a few prominent objects, of which the following is an extract referring to the above Clematises:—

"In the room you will notice an exhibition of Clematises, all of which are of a most magnificent type. Nothing can be more beautiful than these Clematises See what fine large blue and purple petals they have, shining in some cases with metallic tints like the flowers of certain Ipomœas. They are varieties raised by those most successful hybridisers—Messrs. JACKMAN, of Woking, who will have the honour of introducing quite a new race of Clematises, which I believe will be 'amongst the best, if not the very best ornaments' for all out-of-door walls, &c."

Messrs. GEORGE JACKMAN & SON have much pleasure in informing the Public that they shall be in a position to send out the above two New Clematises in the coming Autumn (1866)

Orders will be taken now, and the Plants will be forwarded strictly in rotation. Woking Nursery, Surrey.

ROBERT PARKER begs to announce that he can supply good healthy PLANTS of the undernamed at prices quoted ...

	Each.	
	s.	d.
AGAVE LONGÆVA	5	0
ARALIA HETEROMORPHA	7	6
CLERODENDRON BALFOURII	7	6
FRANCISCEA CALYCINA	10	6
RHODODENDRON COUNTESS of HADDINGTON	7	6
SKIMMIA OBLATA	21	0
TACSONIA VAN-VOLXEMII	2	6
AMARYLLIS, Hybrid Seedlings from the finest named varieties ... per doz.	30	0
DRACÆNA AUSTRALIS	42	0
EPIPHYLLUM RUNSELLIANUM and TRUNCATUM— Hybrids, finest varieties, worked on Pereskia	30	0
GARDENIA RADICANS MAJOR	30	0
GOODYERA PUBESCENS	18	0
GYNERIUM ARGENTEUM	12	0
ORCHIDS, of sorts, from	60	0
PTERIS SERRULATA	30	0
RHODODENDRON JAVANICUM	30	0
TRITOMA GRANDIS	18	0
TRITOMA UVARIA GLAUCESCENS	12	0

PRICED and DESCRIPTIVE CATALOGUES of BULBS, PLANTS, and SEEDS, are published and will be forwarded to applicants. Exotic Nursery, Tooting, Surrey, S.

JOHN KERNAN, AGRICULTURAL and HORTICULTURAL SEEDSMAN, 4, Russell Street, Covent Garden, W.C., recommends for present sowing the following AGRICULTURAL TURNIPS at per lb., the seed he now offers having been grown by some of the first farmers in the country by contract for him from his own stock.

SKIRVING'S IMPROVED SWEDE, 6d. per lb.
MATSON'S PURPLE-TOP SWEDE, 6d. per lb.
PURPLE-TOP YELLOW BULLOCK SWEDE, 6d. per lb.
GREEN ROUND TURNIP, for early autumn feeding, 6d. per lb.
WHITE ROUND TURNIP, for early autumn feeding, 6d. per lb.
RED NORFOLK TURNIP, for early autumn feeding, 6d. per lb.
GREY STONE TURNIP, 6d. per lb.
YELLOW and GREEN TANKARD TURNIP, 6d. per lb.
OXHEART TURNIP, 6d. per lb.
DALE'S HYBRID TURNIP, 6d. per lb.
YELLOW GLOBE MANGEL WURZEL
LONG RED MANGEL WURZEL
LONG YELLOW MANGEL WURZEL

He also can strongly recommend his—

ALTRINGHAM CARROT	IMPORTED ITALIAN RYE-GRASS
DRUMHEAD CABBAGE	PACEY'S RYE-GRASS, with all the
KOHL RABI	other Permanent Grasses.

Pure Ammonia-fixed genuine PERUVIAN GUANO.

All the more showy FLOWER SEEDS, which can now be sown with safety out of doors to make a greater display in the autumn than those raised in a frame heretofore.

Also a choice variety of BEDDING PLANTS.

NAMED DAHLIAS of sorts, 6s. to 12s. per dozen.

The Gardeners' Chronicle.

SATURDAY, JUNE 9, 1866.

MEETINGS FOR THE ENSUING WEEK.

WEDNESDAY,	June 13	Meteorological	8 P.M.
THURSDAY,	— 14	Royal Horticultural Special Prize Show at South Kensington	2 P.M.
SATURDAY,	— 16	Royal Horticultural (Weekly Show) at South Kensington	2 P.M.

THERE is a curious Arad, XANTHOSOMA APPENDICULATUM, which appears very generally to produce two additional laminæ from the midrib on the under side, and a similar phenomenon often takes place in an Indian species of Ficus, which was pointed out to us by Dr. J. H. CARTER. A still more curious instance has just occurred in a CABBAGE PLANT, the midrib of whose leaves produces several distinct pairs of laminæ on the upper side, as if several leaves had become confluent, the upper side of the new lamina always coinciding with the upper side of that which is opposite to it. These laminæ are often broken up, and the portion of the midrib which accompanies the division assumes the form of a tendril or stem, frequently becoming cup-shaped above, and strongly reminding one of what commonly takes place in double Primroses.

A close examination shows that there is no soldering of contiguous leaves. The number of vascular bundles on the lower convex side of the petiole does not differ from that in normal leaves on the same plant, the number in different plants, or in different leaves of the same plant, often varying considerably; and, what is still more important, the secondary and tertiary ribs of the leaves are almost equally inclined to become proliferous. It is worthy, however, of remark that there are bundles of vessels on the upper side of the midrib corresponding with the divisions, and even down to the very base of the leaf-stalk, though there are none in normal leaves; but we have very generally observed such bundles to be developed where prolification takes place, as for example in the common Celery leaves when broken. The case is in point of fact rather a strict case of what French botanists call "dédoublement," unlining, than one of fusion, for the circumstance of the smaller veins having the same tendency forbids us to entertain the notion of any fusion with the leaves of an axillary bud.

The case appears to us to throw considerable light on some forms of double or monstrous flowers. It has long been found impossible to refer all these to the development of axillary buds or transformation of organs. Indeed we have heard a first-rate botanist observe that he was almost tired of monstrous flowers, as they often taught too much or too little, and some forms must, we think, be referred rather to the development of adventitious buds or axes. If however in any case a process like that in our Cabbage leaves comes into play, we have another point for consideration, and one which may prove of some importance. A close examination of double Primroses has convinced us that something of this kind must take place there, and with this instance before us we shall enter with fresh interest on the subject.

It should be observed that the veins of the new as well as the old laminæ have a tendency to be equally proliferous. The presence of abundant vascular bundles suggests the propriety of trying whether plants may not be raised from these proliferous midribs, and accordingly we shall try, as far as our moderate appliances permit, whether this be possible.

It should in conclusion be stated that an approach to the case before us is figured by M. DE CANDOLLE in the quarto Transactions of the Horticultural Society, in his paper on Brassica. The present however goes much farther, and is especially interesting from the malformation not being confined to the midrib. It has been suggested that seed should be saved of the single plant in which it occurred, and measures will be taken to secure this object. *M. J. B.*

——WE may remind our fair readers that the LADIES' PRIZES for in-door plant-culture, given by the proprietors of this Journal, will be competed for at the Special Show in the Royal Horticultural Society's garden at South Kensington, on Thursday next. The conditions will be found at p. 1130 of our last year's Volume, and in brief are these:—The competition is amongst ladies only, managing their own plants. The plants are to be suitable for drawing-room decoration, and must have been grown in a room for at least *six weeks* before the Show, having been during the whole time under the management of the exhibitor, *without professional assistance*. The length of time during which they have thus been cultivated *must be stated* on a ticket attached to the plants, and will be taken into account in awarding the prizes. Flowering-plants and foliage-plants will stand on equal terms, the awards being given for the best cultivation. Finally, the plants may have been grown in pots or baskets, or other contrivances suitable for drawing-rooms, *glass cases excepted*.

—— A contemporary, we perceive, thinks it would have been better had the JUDGES AT THE INTERNATIONAL SHOW been less numerous, and allowed more time to carry out their very arduous duties. Perhaps it might, though we confess that, looking to the generally satisfactory verdicts that were given, we are by no means sure the work would have been better done under different conditions. Indeed we rather incline to think that, with competent judges, such as were collected together on this occasion, a truer decision would be generally arrived at under the influence of moderate pressure than if time had been allowed them to become sentimental over the decisions. But so far as the International was concerned, there was no choice. At the time the arrangements were made, it was thought a great feat to have secured even a few days' show, and under the circumstances more than half of one of these was all that could possibly be spared for arrangement and judging. Another time the case will be different. It has now been demonstrated that shows may be continued for—say a week—with scarcely any damage to the plants, and exhibitors as well as managers, indeed all parties concerned, may find it to their advantage hereafter to have more time allotted both for staging and judging, as may well be done when the exhibition is to last for several days.

—— Not a word too much has been said in praise of the new yellow ROSE MARECHAL NEIL. It had been shown in a very beautiful state on many previous occasions, but three blooms which appeared the other day in Messrs. PAUL & SON'S stand at the Regent's Park Exhibition, were superb—*magnifique*, as our neighbours would say. They were ample as to their size, brilliant as to their colouring, and exquisite as to their fashioning. No rosarian should be contented till he has got this Rose—true, and succeeded in growing it to meet the description we have now given of it.

—— In the last number of the "Revue Horticole" is given a coloured plate, and also some woodcuts illustrative of PACHIRA ALBA (Carolinea). This handsome tree, it appears, produced ripe seed in the stove of M. DOUMET, and these seeds had two or in some cases three embryo plants in them—generally distinct, but sometimes partially fused together. In the Journal above referred to, it is also stated that M. IVOY, of Bordeaux, has succeeded in growing young plants from the seeds of Cedrus Deodara produced in France.

—— We learn with satisfaction that attempts are being made to induce a LOVE OF FLOWERS and PLANT-GROWING among young people belonging to the working classes in Ireland. In Nelson Lane School, Dublin, which is open on Sunday mornings and Tuesday evenings, and established for boys and girls in situations, or fit for such by age, a flower show is to be held on the 13th of August next, at which prizes are to be given for Annuals in flower, Pelargoniums, Ferns, and other plants, and also for Nosegays. The entrance fee is to be one penny, and the prizes are to consist of handsome plants.

—— The very useful INDEX OF AWARDS made by the Floral Committee of the Royal Horticultural Society, which has recently been printed in the Society's Proceedings, has, we understand, been separately issued for the convenience of those to whom ready reference to such a list will be useful. As containing all the awards made from the establishment of the Committee till the end of last year, it will give a clue to the best of the new plants and garden varieties which have appeared during the past six years. It may be obtained for seven postage stamps, on application to the Assistant-Secretary, at the Offices of the Society, South Kensington.

—— A seedling AUCUBA in the nursery of M. NARCISSE GAUJARD, of Ghent, has, according to the "Illustration Horticole," produced this spring a panicle of flowers, every one of which were hermaphrodite. It is singular that hermaphrodite flowers should never have been observed before, but now that at least one plant is known to produce perfect flowers, we may hope that this valuable property will be perpetuated.

—— M. ANDRÉ, in the "Revue Horticole," in describing a fine HYBRID CANNA (Deputé Hénon), takes occasion to express his opinion, formed after six years of study and experiment, that of the 60 or 80 species described by authors, not more than five can really be accepted as distinct, viz., C. indica, glauca, flaccida, iridiflora, and liliiflora; and that even some of these may be reduced to a common type. From this paucity of species, M. ANDRÉ concludes that although susceptible of further improvement, we must not hope for anything very different from what we have already by the crossing of these plants.

THE LATE WILLIAM HENRY HARVEY, M.D., F.R.S. & L.S., M.R.I.A.,

PROFESSOR OF BOTANY IN THE UNIVERSITY OF DUBLIN, ETC. ETC. ETC.

WILLIAM H. HARVEY was born of Quaker parents on the 5th February, 1811, at Summerville, near Limerick, the residence of his father Joseph M. Harvey, for many years a highly respected and influential merchant in that city.

From a very early period he manifested an ardent love of plants; and the fact of his father's family frequently spending a portion of the summer at the sea-side, generally at Miltown Malbay, on the coast of Clare, Ireland, afforded him great opportunity for the indulgence of his taste for natural history. This bold and picturesque coast, open to the mighty roll of the Atlantic, abounded in those marine plants which in after life became his special study. The rudiments of knowledge then acquired, resulted in forming him some years later into the most eminent Algologist of his day.

In the year 1824 he was sent to Ballitore School, in the County of Kildare, then conducted by Mr. James White, a man of talent and learning, who encouraged young Harvey in his tastes and pursuits, giving him at the same time an excellent general education.

For some years after leaving school he was engaged in his father's house of business at Limerick, but Natural History absorbed all his spare time and nearly all his energies. His holidays were devoted to excursions and collecting, and he rapidly acquired a thorough acquaintance with plants, especially the Algæ and Mosses of South-western Ireland, and made considerable advances in Entomology and Conchology. Interesting discoveries soon rewarded his exertions and stimulated his zeal. Amongst these one was of a new fresh-water shell in the mountains of Killarney, and another of two new habitats for the rare and beautiful Moss, Hookeria lætevirens. This last discovery led, in 1831, first to a correspondence with the late Sir W. Hooker, and speedily to an attachment which amounted to filial affection for that illustrious and kindly patron of every aspiring botanist. Encouraged by Sir W. Hooker, he sought to devote himself exclusively to science, and made various attempts to obtain a situation or employment abroad that would have permitted of this. For several years this object was frustrated, and, indeed, was only eventually attained under the following singularly sorrowful circumstances. The late Lord Monteagle, then Mr. Spring Rice, a great friend of the Harvey family, had then in his gift the lucrative post of Colonial Treasurer of the Cape of Good Hope, which he intended to present to young Harvey; but unfortunately, by some accident, the appointment was made out in the name of his elder brother, a married man with a large family and thriving business: immediately after this, Mr. Rice, owing to a change of Ministry, retired from office. Great efforts were made to set the matter right with the succeeding Ministry, but in vain; and it was thought best for all parties that the elder brother should accept the appointment, and take the young botanist with him, and thus give him the opportunity of distinguishing himself in that rich field for botanical research. The brother, with his family and our friend, sailed in 1835, and had hardly

got settled in the colony when the health of the former gave way suddenly, and it being obvious that he could never resume his duties, application was made at once that his brother should be appointed his successor, and take up the duties of his office on the spot. The answer not arriving, the whole party left the Cape for England early in 1836, when the brother died on the passage.

On their arrival in England in June, 1836, Mr. Harvey found that his appointment as his brother's successor had already been sent to the Cape, and thither he followed it in August of the same year, and remained till 1839. During these three years he worked intensely hard at his office all day, but spent his mornings in collecting, and his nights at his books and microscopes, till his health breaking down he was compelled to return to Europe in May of that year.

During this period, besides making many discoveries in flowering plants, Mosses, and Algæ, he sent home numerous papers illustrated by beautiful drawings and analyses of plants, which were published by Sir W. Hooker; and he found time to prepare and publish his excellent "Genera of South African Plants," the materials for which were all examined and redescribed by himself.

In July, 1840, he sailed for the third time for the Cape of Good Hope, where intense application and over exertion in botanical pursuits again brought on severe disease, and he was compelled to return to England in 1841, and ultimately to resign his colonial appointment.

After this he appears to have spent a short time in his brother's house of business; but mercantile pursuits had never any charm for him, and in 1843 he became a candidate for the post of Keeper of the Herbarium of Trinity College, Dublin, vacated by the death of Coulter, the Californian and Mexican traveller. Harvey offering at the same time his beautiful herbarium, consisting of upwards of 10,000 species, to the College. The Professorship of Botany fell vacant at the same time, and the College having determined to unite the two offices, Harvey became a candidate for both, and in spite of powerful opposition, and the fact that a medical degree of the College was a *sine qua non*, he all but carried the day, the College having given him the honorary degree of M.D. to obviate this latter objection. After a good deal of debate it was at last settled that the Professorship should be separate from the Curatorship, the former being given to Dr. Allman, the present distinguished Professor of Natural History in Edinburgh, and the Curatorship to Dr. Harvey, with a salary of 150*l.* per annum and rooms, an arrangement that perfectly satisfied, and indeed, as he said himself, pleased him.

From this time forth his whole energies were devoted to the prosecution of botanical science. With characteristic conscientiousness he first set himself to arrange and distribute the entire mineralogical collections of his predecessor, to arrange the herbarium, and make all ready for the furtherance of science. For several subsequent years he devoted himself chiefly to Algæ, and latterly, at the urgent desire of his friends at Kew, he undertook the "Flora Capensis," which occupied most of the latter years of his life.

In 1847 he became a candidate for, and obtained, the Professorship of Botany in the Royal Dublin Society, vacant by the death of that Dr Litton to whose modest merits he paid the kindly tributes of dedicating the beautiful South African plant, Littonia modesta. This office he retained until 1852, when it was united under a correlative Institution the Museum of Irish Industry, under the direction of the Science and Art Department of the Committee of Privy Council on Education.

In the year 1849 he received a joint invitation from the Smithsonian Institution at Washington, and the Harvard University at Cambridge, U.S., to visit the United States, and under their auspices to deliver courses of botanical lectures at these and kindred Institutions, and also to undertake the arrangement and classification of a large collection of plants in possession of the former. He complied with the proposal, and having performed these services, and visited Canada and the southern shores of Florida in pursuit of his favourite Algæ, he returned home in the year 1850, after an absence of about nine months, to resume his duties in the University of Dublin.

His great zeal and enthusiasm inspiring him with a wish for a wider field of labour in pursuit of science, he applied to the University for liberty to make a voyage round the globe, chiefly with the object of making himself acquainted with marine plants in their native habitats, and to collect objects of natural history for the herbarium and museum of Trinity College. His wish was granted, and under the auspices of the University he started by the Indian mail in the year 1853 for Ceylon and Australia. He visited the east, south, and west coasts of Australia and Van Diemen's Land; and on his return from the latter to Sydney, finding that some Methodist missionaries were about to visit in the "John Wesley," a small vessel belonging to the mission, the various islands in the Southern Pacific, touching at New Zealand, he solicited liberty to accompany them, which was kindly granted, and in June 1855 they sailed for Auckland *en route* for the Feejee and Friendly Islands.

He was much interested in the natural history of the various islands they visited, and he entered with much sympathy and zeal into the labours of these devoted men amongst the savage and ferocious natives His interest and feeling in the promotion of their benevolent objects was made most useful, as by his graphic and very interesting letters, addressed thence to his friends in this country, and destined for public information, he was mainly the cause of an organisation denominated "The Medical Aid Society," for the purpose of providing the missionaries with supplies of useful medicines suitable for the prevalent diseases of these now greatly improved regions. He retained through the rest of his life a lively interest and cherished remembrance of this portion of his travels.

From the Feejee Islands he returned to Sydney, whence he made a voyage to Valparaiso, where his health again gave way; thence he passed north, and crossed the Isthmus of Panama, returning by the West India Mail to England in October 1856, after having expended three years in this scientific voyage round the world.

On his return to Dublin, in 1856, the Professorship of Botany became vacant through the appointment of his friend Dr. Allman to the chair of Zoology in the University of Edinburgh, and the post was conferred upon him and retained till his death.

The following is a list of Dr. Harvey's principal works. It does not include the numerous papers communicated to various Botanical periodicals, and especially to Hooker's Journal of Botany, the Linnean Society, Royal Irish Academy, Dublin Natural History Society, and sundry systematic works of his botanical correspondents and friends.

In the year 1838 he prepared and published at the Cape of Good Hope his first important botanical work, "The Genera of South African Plants." The "Manual of British Algæ" was brought out in London, 1841; the "Phycologia Britannica" in 1846—1851, 4 vols., and in London same years, 3 vols.; "Nereis Australis, or Algæ of the Southern Ocean," London, 1847; "The Sea-side Book," London, 1849; "Phycologia Australica," London, 1858—1863, 5 vols.; "Flora Capensis, being a Systematic Description of the Plants of the Cape Colony, Caffraria, and Port Natal," in conjunction with Dr. P. W. Sonder, Dublin, 1859 to 1865, Vol. I. to III.; "Index Generum Algarum, or a Systematic Catalogue of the Genera of Algæ," London, 1860; "Nereis Boreali Americana, or Contributions to a History of the Marine Algæ of North America," contained in Volumes III., V., and X. of the Smithsonian contributions to knowledge, published in the United States in 1852. He also wrote a small work of a theological character denominated "Charles and Josiah, or Friendly Conversations between a Churchman and a Quaker," London, 1862. He contributed moreover many excellent articles to botanical periodical literature, as well as writing occasional pamphlets on scientific subjects. In the years 1847 and in 1852 he made tours in Switzerland.

He wrote with remarkable rapidity and precision, and his manuscripts for the press needed but slight alterations of any kind from their first draft. Not only are all the pictorial illustrations of his numerous works the productions of his own pencil, and drawn with the utmost fidelity and care, but they were also lithographed on the stone by himself.

His disposition was genial, generous, and kind, and his entire absence of literary jealousy, and his deference to the feelings of others, endeared him to his own social circle, and gained and retained for him the friendship and respect of all those with whom he came in contact, causing him to be as much loved for the goodness of his heart as he was admired for the intelligence and genius he displayed in his numerous scientific works.

In early life he had the advantage of a careful and garden education, and in mature years he evinced the constant and prevailing influence of deep religious feelings, and a reverence for sacred things. He adopted the tenets of the Church of England from conviction, and was a strict observer of her ordinances. Possessing a warm and imaginative mind, he was an ardent admirer of the higher order of poetry, and some of his own poetic compositions, which are very varied in character, manifest considerable power.

In the year 1861 he was married to Miss Phelps, daughter of Mr. James Phelps, of Limerick, and in the same year had a severe attack of hæmorrhage of the lungs, the first certain symptom of the fatal disease which ultimately caused his death. Until, however, the last two years it interfered but little with his botanical pursuits and labours. An increased frequency in his cough then rendered the exertion of sustained speaking in lecturing too great a strain on his voice, and he had, in 1865, to resign this department of his office to others, and to confine his attention more exclusively to the preparation of his works for the press.

For about two months before his death he resided at Torquay, in Devonshire, when it was expected that the geniality and equability of temperature of this pleasant and healthful situation might be of some service in modifying the symptoms of the disease. In this, however, his friends were doomed to disappointment; he gradually became weaker and weaker, and on Tuesday, the 15th May, 1866, at the age of 55 years, he quietly breathed his last, at the residence of Lady Hooker, the widow of his long attached friend Sir William J. Hooker, surrounded by kind and anxious relatives and friends; and was buried in the cemetery at Torquay on Saturday, the 19th May, 1866.

Thus has passed from amongst us a kind and good man, an admirable member of society, and a botanist of the first order.

THE LATE DR. ROBERT KAYE GREVILLE.

ANOTHER eminent name swells the already unprecedented list of British botanists who have been called away within the last 18 months, viz., that of Dr. Robert Kaye Greville, of Edinburgh, a man long highly distinguished for his researches and works on Cryptogamic Botany, and the associate author with the late Sir W. J. Hooker, of the "Icones Filicum."

Dr. Greville, who died on the 4th inst. at Edinburgh, where he had resided nearly all his life, in his 72d year, of inflammation of the lungs, was a man of great and varied accomplishments, a beautiful artist (botanical and landscape), and an ardent lover of British shells, insects, Crustaceæ, and Diatomaceæ. He formed in all the departments of Natural History, as well as in Botany, most beautiful and complete collections. He was, moreover, a zealous philanthropist, and devoted much time to and held various public posts as an early promoter of the anti-slavery cause, and later of the temperance societies and sabbatarian movements.

As a botanical author, Dr. Greville is principally distinguished for his "Scottish Cryptogamic Flora," a beautiful work in 6 vols., 8vo, illustrated with 360 plates, published in 1823-8. He is also author of a "Flora Edinensis," published in 1824, and of a pretty work on British Sea-weeds, "Algæ Britannicæ," published in 1830. His contributions to the "Icones Filicum" were principally confined to the illustrations of that magnificent work. His botanical collections were acquired some years ago for the Herbarium at the Royal Botanic Gardens, Edinburgh, and his entomological by the University Museum. Dr. Greville was educated originally for the medical profession, but having private means, he neither took his degree nor practised. The honorary degree of LL.D. was conferred upon him by the University of Glasgow; he was an early member of the Wernerian Society, and later of the Royal Society of Edinburgh.

CLIVEDEN IN 1866.

HAVING revelled among the beauties of spring gardening as practised at Cliveden a few months ago (p. 435, 1865), I did not think that this year's visit would afford any fresh interest, but the fact is, the subject is inexhaustible, and therefore I return to it with pleasure. It is nearly a month later than the date of my '65 visit, and in consequence some things are better—others past. The Silene is a more vivid sheet of pure warm rose; the wood Forget-me-Not is of a deeper blue; the Tulips are gone, except some half-faded blooms of the double red kinds; the Saponaria is in full beauty; the double Saxifrage is a mass of creamy white; the Honesty is gone; and the "sub-tropical plants" are beginning to fill the place of the beautiful hardy spring flowers; but the woods are still full of wild spring beauty, the great flower garden is as attractive as ever, the "Duke's garden" has every little bed ablaze with light of some kind, and the Hawthorn is in blossom, with the brightly-flowered Judas tree.

Were I to adjudicate upon the merits of the various spring flowers employed, I should decide that Myosotis sylvatica and Silene pendula were "equal firsts." However, it would be a source of regret that the rules of flower-shows did not admit of half-a-dozen 1st prizes, so that the double red and white Daisies, and the several kinds of Pansies might be included. For intrinsic beauty as well as charming effect, the Pansies should come in first, while their fragrance is surely worthy of a point or two! How is it that "everybody," including some of the most careful "bodies" among our seedsmen, purports to sell Myosotis arvensis but omits to name the beautiful M. sylvatica—the kind that is grown here with such good result? It is to be hoped that nobody grows the comparatively miserable M. arvensis, and imagines himself in a position to pronounce an opinion on the plant used at Cliveden. As a bedding plant it is truly beautiful in the full sun, and a point more beautiful when the bed happens to be in a half-shaded position along those high-wooded walks; but it is here and there, scattered in the woods, that its true loveliness is seen, and therefore what I would particularly recommend is that gardeners and others should try and establish it in woods and shrubberies, for I know no plant more worthy of the honour. Few but the British botanist who has gathered it wild know what a lovely thing is the wood Forget-me-not. Of all the lowland kinds we know, most of us are apt to give the palm to the water Myosote, but once sylvatica is seen in a good state it cannot fail to be a greater favourite. In the woods here it is perennial; in the spring garden it is of course treated as an annual.

Here in the "Duke's garden," where variety is found much more profusely than in the "great garden," Saxifraga granulata plena was a mass of creamy beauty, so dense and profuse that it was impossible to see through the inflorescence to the stems in looking down. A distinct little bed was covered by Arabis lucida, variegated with about 12 largish dots of Alternanthera spathulata placed within it. There is a new blue Pansy, a richer blue than the old; and numerous bijou beds of tastefully intermixed Pansies, Nemophila, Daisies, &c., which space forbids me to particularise; but there is one too good to be passed by, and that is crossed by diagonal lines of Aubrietia grandiflora, the angles being filled by white and red Daisies, the whole in free growth and vivid flower, which indeed is true of all the beds in the place. The Honesty, so much used here in the centres of beds and vases of vases, has passed away in the open flower garden, though it may yet be seen in a half wild state near the river on the chalk banks, and its place in the beds and baskets is now occupied by Pelargoniums, trained in pyramidal fashion. The wavy border at the bottom of the terrace wall is this year as attractive as ever; but the circular bed that surrounds the Deodar on the raised Grass mound in the courtyard, on the north side of the mansion, has this season quite surpassed itself, and looks a very gem, embracing the graceful Cedar, itself surrounded by a belt of glistening Ivy, and placed in an emerald setting of bright green Grass. There is Grass between the young Deodar and the bed, which is planted with diamonds of Pansies in the centre, yellow and blue alternately, the upper half circles being planted with white Daisies, the lower with red. As the bed is on sloping ground, the eye catches it at a distance coming up the great avenue of Limes on the north side, and the effect is of the most exquisite kind from the windows, the court-yard, or any point from

which the quadrangle is visible. Outside, the Grass slopes to a belt of Ivy; then again Grass, and finally the gravel of the courtyard.

Nature rarely permits fertile ground to be bare at any season, and in this Mr. Fleming imitates her as closely as is possible—his flower beds are never bare. The workmen have just been rooting up hundreds of Polyanthuses, Primroses, &c., from those well-shaded beds in the Pavilion walk, and filling them with "sub-tropical plants" in variety, each bed being as far as possible different from its neighbour. Here occurs a bed of Pteris and other Ferns, with Aralias rising out of it, and a graceful though not large Latania, plunged in the Grass a little way in front; next comes half a dozen plants of Ferdinanda, the bed being planted with many scores of Gladioli, which will look nobly when full of brilliancy in the autumn under the great leaves—the bed is raised slightly, and its front edge paved with white flints, so as to allow the line of Isolepis gracilis that is planted immediately behind them to show itself to advantage. A little further on through the high wood, and the shrubs recede again to allow space for a mass of endlessly varied and richly-coloured Polyanthuses and Primroses, with a Seaforthia plunged in front of them—the Polyanthuses to be succeeded in a day or two by mixed stove and greenhouse Ferns, which do well in the open air in summer, and so with Nicotianas and Myosotis, Wigandias and Wallflowers—a delightful mixture of vegetation. One bed in an open glade was remarkable—four specimens of Acer Negundo variegata, rather tall and well-grown; then beneath them, in the centre, a square of Centaurea gymnocarpa, with lines of Perilla running from its four corners to the edge of the circle, the angles being filled with Gazania.

There can be no doubt that spring gardening properly carried out is superior to any other, even considered as regards colour alone; and such being the case, the day cannot be far distant when our gardens shall be as remarkable for beauty in April and May as they are at present for bare earth at that season. No gardens or woods could be more lovely than these have been for many weeks, yet there is scarcely a plant employed which is not as cheap as the common Wallflower. *W. R.*

ABSTRACTS OF PAPERS PRESENTED TO THE BOTANICAL CONGRESS.

THE TEMPERATURE OF WATER, AND ITS EFFECTS UPON PLANT CULTIVATION.

By JAMES ARNOTT, Esq., Meadow Bank.

CULTIVATORS in general are not over zealous in taking cognisance of the relative temperature that exists between water and air in any given house, and yet upon each, in a great measure, depends the exuberance of the plants. Many scarcely recognise the importance of making adequate provision for water heated, at least, to the same temperature as the atmosphere. It is not sufficient to have cisterns dug out under the ground floor, and made water-tight by the various methods in practice, to produce a temperature sufficiently high. Unless the hot-water pipes actually run through or under them, I have found by repeated experiments, especially in tropical houses, that a difference ranging from 5° to 10°, Fahrenheit's scale, exists between the temperature of the air and that of the water. I can scarcely conceive anything more prejudicial in the whole routine of plant culture, having a tendency to chill and paralyse root-action, than frequent waterings at such a dissimilar temperature. It is bad enough under any circumstances, but when we come to practise upon valuable tropical Orchids, the injury becomes, after a time, irreparable.

Why should this be so? Is it owing to the conservative tendencies of an initiatory practice? Numbers, certainly, do seem disinclined to move out of the groove into which they settled down in the early days of their practice, while others have been bold enough to strike out of the beaten course, and oftimes, too, not without success. Curiously enough, it has long been a custom to furnish bottom-heat for Pines, and even Melons and Cucumbers, arranging the beds in such a way as to be from 5° to 10° higher than that of the surface, and good results have invariably followed. Tepid water has always been in request by our foremost Pine growers, and formed one of the recommendations in every calendar of operations. Indeed, were any one to question the merits of the system as a whole, a hundred voices at least would be lifted up against him. Innovations make slow progress; for it is only a modern practice looking into the geothermal state of Vine borders, and furnishing either by chambers or aërated passages an auxiliary means of preserving and dispensing heat to the roots. No one, unless he be a bigot, will venture to challenge or gainsay the good to be derived by the adoption of such a system. Any little dispute that has arisen as to the efficacy of heated Vine borders is traceable to individuals resident in localities having subsoils such as sand or chalk, which have greater power of retaining heat and parting with superfluous moisture than other subsoils, and therefore have less need of artificial appliances. And how, I would ask, is it that the practice is not universally carried out? why is it not followed to a legitimate issue? If we have unmistakable proof of an improved cultivation in every advance made in accordance with a system, we may be certain that it is an innovation of the right stamp, worthy of imitation and adoption.

So far as the practical gardener is concerned, there are no plants under cultivation that merit a more undivided attention, whether we look to their variety, the geographical range over which they extend, or above and beyond all, their monetary value, than the Orchidaceæ. Every little scrap of information, from reliable sources is gathered up and noted down with an avidity only known to Orchidophilists and Orchiculturists. The physiological structure of the plants is so peculiar, so different to that of every other form of vegetation, as to render them pointedly interesting to every naturalist. That they are capable of resisting far more fatigue than any other plants is well known, and yet it requires the highest degree of cultural skill to maintain a collection generally in a healthy state. They are also liable to diseases quite foreign to other plants, and, in this respect, approach a step closer to the animal kingdom.

In the course of experience and experiment over a large and varied collection, I have found tangible benefits to accrue from studying the thermal condition of the compost in which the plants grow.

I may state that it is no haphazard conjecture that I am about to propound, but a simple statement of facts evolved during a ten years' practice upon an Orchidaceous collection. In the former period, although I managed to grow the temperate species quite satisfactorily enough, I could not manage the great subdivision of Vandeæ at all well. I found, especially in the case of Saccolabiums, Phalænopsids, and some of the more tender Aerides, the most discomfiting opposition. The fine fleshy roots which had been emitted during the growing season, and which had been introduced into the pots, pans, or baskets, as the case might be, at the season of repotting, were on the next examination a mass of rottenness; in many instances very few of the roots under ground escaped unscathed. What was the consequence? The lower leaves became yellow, dropped off one by one, and left me and the plant at the end of the season in pretty much the same condition as at the beginning. This was mortifying enough, especially as the compost was physically and chemically good enough, as I have ultimately proved. Wherein, then, lay the defect? It was in the watering of the plants with water taken from an underground cistern, which, on a series of thermometrical experiments have shown me, was cooler by 7° to 10° than the atmosphere. "Necessity is the mother of invention," and when I began to reflect upon the advantages of bottom-heat to Pines, Vines, and stove plants, I set about to effect a reformation. I shrugged my shoulders and shook my head at the very idea of a tan or sand-bed in an Orchid house, as being a resort for an army of cockroaches (Blatta orientalis) that could never be successfully overcome, and that would be a plague among the plants scarcely less devastating than the locusts of old. I resolved that the water should be increased in temperature, and with that view ordered hot water to be drawn from the boilers and mixed with the colder water drawn from the cistern until it was never less than 10°—it might be sometimes so high as 20°—warmer than the atmosphere of the house about to be watered.

The effect, in a few months, quite exceeded my most sanguine anticipations. The vigour of the plants increased, the quality and quantity of the bloom was greatly superior, and when the season of repotting came round, the roots embedded in the compost, instead of being all but universally putrid, were generally healthy. I have now, for upwards of two years, carried out the above plan in integrity, not only in tropical but in "cool" Orchid-houses, with marked success. The impregnation of iron in the water drawn from the boilers, instead of being attended with any depreciating influence as some would have us to take upon credit, on the contrary appears to be productive of good.

Every gardener is a meteorologist, almost by compulsion; and yet there are probably not half a dozen cultivators in England that ever took the trouble to gauge the temperature of water about to be used either out of the water-butt or the syringe. Men in charge, under the principal, although obedient, are not always reflective and pains-taking, and unless positive orders be given that water at such a temperature *must* be used, a good deal will be distributed at random.

In order that there may be no misunderstanding or doubt as to the theory I wish to inculcate and to be applied, allow me to reiterate that all pot plants as a rule ought to have water at the root at least 5° warmer than the atmosphere in which they live, and that tropical Orchids will prosper all the better with a minimum variation of 10°; that is to say, if all other conditions of treatment are skilfully met, a corresponding degree of vigour will be maintained. Much the best system I have seen in practice, recognising the value of bottom-heat, without plunging material, is that applied in one of Mr. Day's tropical houses at Tottenham. Along the centre of the house, instead of two ranges of 4-inch piping, there is a trough-like cistern, narrow at bottom and widening out towards top, somewhat in the form of a feeding-box for horses on a large scale. This is connected with the boiler by pipes in the usual way, and circulation is constantly taking place. The top is so arranged as to be open or shut at pleasure, and by this means an excellent steady heat, either moist or dry, is dispersed over the roots of such plants as are immediately over its surface. I need scarcely say that Mr. Day's Saccolabiums, Aerides, and such like plants, in a medium of this kind, under Mr. Stone's cultural care, are indicative of high health and vigour. Mr. Williams, the well-known "Benjamin" of his many years of 4-inch piping, there is a trough-like "Paradise," pricked his ears and was all attention while I was divulging quietly my "watering" practice. He appeared to be agreeably surprised, and intimated to me that he never grew Orchids before or since equal to those under his charge at Hoddesdon, and his water tanks were in connection with the hot-water pipes. This surely goes a certain way to prove the soundness of the theory, on the "lateral extension" principle.

Lastly, we all know and fear the ravages of spot; we look with the greatest concern upon the insidious way in which it works itself over a collection of Orchideæ, and oftimes disfigures for life the appearance of many valuable plants. I unhesitatingly pronounce that there seems to be no absolute cure for some of the more aggravated forms of it; but beyond question skilful treatment will in a great measure prevent it. There are a variety of conditions that must be observed before any cultivator can command success; but in all my experience I have never been able to count upon it with the same certainty—I have never been able to claim immunity from the inroads of spot in the same satisfactory manner, until after I had reduced the "watering" theory to every-day practice.

Home Correspondence.

Transmission of Seeds to the Tropics.—As it may interest some of your readers who propose either taking or sending oily seeds abroad, especially to the tropics, I subjoin a short extract from a letter just received from the Neilgherries, detailing the result of an experiment of the kind. The writer having asked my advice as to the best mode of packing such seeds, writes to inform me of his success:—"I brought the Walnuts, Filberts, and Acorns here packed in earth, but it was so dry when opened it appeared like sand. I watered it, and in 10 days had shoots to the Walnuts 3 inches in length; the acorns also had long shoots, and yesterday one of the Filberts burst out; so that the earth mode of conveyance is a success." The germinating seeds have been liberally distributed among several gardens, where they are likely to be well taken care of, and, let us hope, will find a suitable soil and climate in their new country. *Robert Wight, Grazeley.*

The Marton Oak.—Some of your readers may be interested in the following statement from a late issue of the *Manchester Examiner*:—"At the little village of Marton, a few miles north of Congleton, there stands an Oak tree of such gigantic dimensions as to entitle it to a greater fame than hitherto it has obtained, and to raise the question whether it is not of greater circumference than any other English tree. The Cowthorpe Oak, near Wetherby, in Yorkshire, has generally been considered to be the largest, its circumference at 3 feet above the ground being given in Hunter's "Evelyn's Silva" as 48 feet. I have twice measured the Marton Oak, and found the circumference, at about 2 feet above the ground, to be 49 feet; at about 5 feet 6 inches high to be 41 feet 6 inches; and the smallest circumference at about 7 feet high to be 37 feet. These measurements were obtained by stretching a cord around the tree, but its dimensions when in full vigour must have been very considerably greater, as the trunk is there so much decayed that a person can walk through it in two directions. The hollow cavity in the trunk is about 9 feet 6 inches diameter, and it may serve to convey some idea of the enormous proportions of the tree to mention that when I first saw it eight years ago, it served as a receptacle for an ordinary sized plough and a large cask, with ample space to walk round them. Notwithstanding the very decayed state of the trunk there is still abundance of vitality in it, and at the present time the boughs are covered with leaves as large and numerous as those of any Oak tree I have seen this spring. It stands on the estate of Mr. Davenport of Capesthorne, and is well-known in the neighbourhood, the villagers being naturally very proud of it, but I have never seen any notice of it in any book treating of forest trees. It is most desirable that photographs of it should be taken from different points of view, especially as it cannot be expected that it can very long survive the effects of decay and storm. It is stated on the authority of Mr. South that an Oak tree 47 feet in circumference must be at least 1500 years old. If any of your readers can give reliable information as to the size and present condition of the Cowthorpe Oak, or of any others of very large dimensions, it would be interesting to compare them with those given above. There is, or was, a very large one at Winfarthing, in Norfolk, but I have no accurate sizes of it." *S. M.*

Plants in Crinoline.—May I suggest, through your columns, that in the next great Exhibition of Flowers there should be, as at Madame Tussaud's, a Chamber of Horrors, to which all crinoline-loving plants, Azaleas in particular, should be relegated. *Ethic Clapham.*

Peach and Nectarine Failure.—"A Six Years' Subscriber" (see p. 517) complains of having lost his crop of Peaches and Nectarines, and asks the opinion of your correspondents as to the cause of his failure. I have experienced a similar failure this season, and the sole cause of the bloom falling off I attribute to the clouds of aphis which infested our trees last September, and stripped them of their leaves before the wood and buds were thoroughly ripe. The failure is general in this part of the country (South Yorkshire). Peaches and Nectarines that were forced have not suffered so much as late ones, because the wood was nearly ripe before the aphis made its appearance; but all under glass, and on walls that did not ripen their fruit till September, have severely suffered, and as the fruit was ripe at the time, nothing could be done in the way of fumigating or syringing for fear of damaging the crop. *Ordo, Doncaster.*

Garden Plans.—Your general observations under this head (see p. 512) will probably, to a certain extent, be favourably received by your readers; a better selection of subjects might surely have been given, and probably, if this part of the general scheme had been as well managed as the Plant and Flower Show, a very different result would have been attained, and attracted more competitors. The taste in landscape gardening, with the exception of a few established rules, differs very much; it is therefore not difficult to point out the different styles practised by professional men, and it is but rare to find a dozen people having the same views of approval of the systems of planning public gardens as now carried out. You say there was a confusion of ideas and want of talent in the planning of the Royal Horticultural Society's Garden at South Kensington, and that there is not anything very striking produced. I believe I am

not singular in differing from you on that point. A public garden with such an extended staircase, and rows of polite Poplars bowing to the company, surely possesses at least some remarkable features. For more effectually inducing professional and other gardeners to give their notions of design in regard to landscape gardening, a plan might, I think, be set apart at one or two of the more important public exhibitions of plants, for designs, leaving it to the designer to select his own form of outline, the extent and scale to be shown as well as references. The designs should not be for competition or reward. A professional man of good practice would not probably put in a design; but many practical and amateur gardeners who possess good taste in landscape gardening would probably be glad of the opportunity of exhibiting their views of laying out either a flower or vegetable garden, forcing houses, &c., and park-like grounds, without incurring the criticism of the public journalist. *E. B.*

Broccoli.—I send you some heads of Cattell's Eclipse Broccoli, the sort which gained me the first prize at the late International Horticultural Exhibition at South Kensington. The large head weighs 11½ lb., but those the size of a peck measure are quite as large as the cooks can conveniently place whole upon the table. I send a couple of small ones, that you may see. I shall be enabled to cut Broccoli in a week or ten days hence, by which time Cauliflowers will be coming in plentifully. *John Cattell, Westerham, Kent.* [The heads in question were good in colour, tender, and excellent.]

Wild Garlic and Ant Hills.—I should be glad of any information as to the best mode of getting rid of this, and also of ant-hills. Can any of your correspondents assist me? *An Old Subscriber.*

Paulovnia imperialis.—It may be worth noticing that the Paulownia imperialis has flowered for the first time in the Botanic Garden, Oxford, within the last few days. The same tree has produced a profusion of fine flowers also in a garden belonging to Mr. Rymer in the same neighbourhood. *C. Daubeny.*

Societies.

ROYAL HORTICULTURAL: *June* 5.—The Bishop of Winchester in the chair. After the election of new members and the affiliation of one or two Societies, the usual announcement of awards was made.

Mr. Andrew Murray then offered a few remarks respecting the reproduction of bark on a peeled Laurel branch furnished by Mr. Pearson, gr. to — Childe, Esq., Kinlet, near Bewdley. The wood in this instance had been wholly deprived of its bark for upwards of 2 feet in length, and yet, contrary to the opinion of the late T. A. Knight and other vegetable physiologists, it not only continued to live, but gradually covered itself again with new bark. This, it was said, it would probably have been unable to do if the season had been dry or if the tree had stood in an exposed situation, but as both conditions were exactly contrary, a deposit of new bark made in the usual way all over the peeled surface was the result.

Mr. Bateman then presented his "challenge" medal—a handsome gold one—to Mr. Veitch, who had won it by an overwhelming majority of marks. It was offered to any exhibitor who might get the greatest number of Certificates at the Society's fortnightly meetings during two years in succession, one condition being that the winner of it would not be allowed to compete for a second until somebody else had won one. Mr. Veitch, after alluding in complimentary terms to the Tuesday lecturets given by the late Dr. Lindley in Regent Street in days gone by, said that he was of opinion nothing contributed so much to the welfare of the Society as its fortnightly meetings, and added that although debarred from obtaining Mr. Bateman's challenge medal for the next two years at least, he would nevertheless give them, as he had always done, his hearty support, and that when it again became eligible for him to compete for the medal in question, of which he was proud, he should be among the first to enter into the contest.

The Rev. M. J. Berkeley then offered a few remarks on the different subjects exhibited. The trunk of an Oak tree in his own neighbourhood, he said, partially barked, had not only produced new bark but also new wood from the ends of the medullary rays. A Sikkim Rhododendron, sent to the last meeting to be named, was stated on this occasion to be R. Blandfordianum of Hooker. Seedlings of that kind were said to be very variable, and this variety, as well as R. cinnabarinum, was stated to be undoubtedly poisonous. Alluding to Marantas, that called tubispatha was stated to be a species of Calathea, which has been recently figured in the "Botanical Magazine." Areca Verschaffeltii, it was observed had a triangular stem, a singular circumstance among Palms. A Cyrtanthus from Mr. Bull was stated to be C. obliquus, a handsome Cape bulb, figured many years ago in the "Botanical Magazine." A singular dwarf-growing hybrid Nepenthes from Messrs. Veitch next received attention, as did also an orange and red-coloured Amaranthaceous plant from the New Hebrides, shown by the same firm. This, it was remarked, might possibly prove to be some species of Celosia. Allusion was then made to a handsome variety of Portugal Laurel, furnished by Messrs. Osborn under the name of Prunus lusitanica var. azorica. It has larger and finer flowers and better leaves than those of the ordinary Portugal Laurel, to which it is equal in hardiness, and it is said to blossom freely in a comparatively small state. After directing attention to a small Cotoneaster, allied to C. microphylla, attention was drawn to some beautiful Japanese Maples, with leaves of different colours and forms, from Messrs. Veitch. The genus Acer, Mr. Berkeley stated, was not so much grown as it should be, seeing that it comprises some of our most ornamental trees. Some charming species of this genus exist in the garden of the Society at Chiswick, and with the view of making them better known, it has been determined to propagate them for distribution. Allusion was then made to a branch of Silver Fir from Major Peach, of Bristol, on which was a peculiar growth very different from that of the ordinary branch, and the leaves of which became deciduous. This was stated to be caused by a minute parasitic Fungus, very rare in England, but common in the Black Forest in Germany. Attention was next drawn to some singular appendages on the leaves of a Cabbage, a full account of which will be found in another column.

Mr. Bateman then made some remarks on the Wellingtonia gigantea, of which beautiful photographs, illustrating its appearance in its native valleys in California, were exhibited. A section of the bark of that Mammoth tree from Mr. Veitch was also shown. It was upwards of a foot in thickness, and in general appearance did not look unlike a cake of gingerbread. In the course of his observations on the Wellingtonia, Mr. Bateman took the opportunity of rectifying an unfair imputation which had been cast upon it by Dr. Daubeny, into which that gentleman had been led by Mr. Bateman himself. One spring morning Mr. Bateman found his Wellingtonias, as he thought, in a state of hopeless paralysis, as Dr. Daubeny was then collecting information in reference to this tree, the fact just named was communicated to him, and by Dr. D. transferred to our columns (see p. 987, 1864). The trees, however, perfectly recovered, and since then nothing has occurred to impair their character in any respect. Mr. Bateman then referred to Jonesia Asoca, magnificent flowering specimens of which were exhibited by Mr. Taplin, gr. to the Duke of Devonshire at Chatsworth, who showed a few weeks ago flowering examples of Amherstia nobilis. The Jonesia, named in compliment to Sir W. Jones, the famous Oriental scholar, belongs to the same family as the Amherstia, and was found growing in company with it by Dr. Wallich, who pronounced it to be scarcely second in beauty to that fine tree. It has large, glossy, pale green, pinnated leaves, and terminal clusters of flowers, not unlike those of an orange-scarlet Ixora. Seeds of it were first sent to the Liverpool Botanic Garden by Dr. Carey, and it has been figured long ago in the "Botanical Magazine." It was described by Dr. Roxburgh, and there is also a figure of it in Rheede's "Hortus Malabaricus." Royle moreover speaks of its beauty in terms of the highest praise. In short it and the Amherstia are two of the the finest trees belonging to the Asiatic Flora. Mr. Bateman next alluded to a species of Camoensia, met with by Dr. Welwitsch in Africa, having flowers a foot long, milk white in colour, edged with gold, a representation of which will be found in the Transactions of the Linnean Society. This is reported to be a vigorous growing climber of singular beauty; a hope was therefore expressed that through some of our enterprising nurserymen seeds or plants of it might soon be imported to this country. Orchids next came under consideration. Among them was a cut spike of Anguloa Clowesii, with two blossoms on it; Mr. Anderson, the skilful gardener at Meadow Bank, from whom it came, considers that all that is necessary in order to multiply the flowers on spikes of this or any other Orchid is to give them good cultivation. Blooms of the rare Dendrobium infundibulum, white stained in the throat with Roman red, were also exhibited; as were likewise Odontoglossum maculatum, O. Reichenheimii, and others. From Mr. Bateman's garden came the charming Dendrobium Wardianum, which has been said to be identical with D. Falconeri, but which is in reality very different from that species.

Orchids, said Mr. Bateman, had done much to please the eye and little to satisfy the palate; but he had much pleasure in stating that on this occasion all present would have an opportunity of tasting Orchid tea, of which numbers availed themselves, and we believe that we are right in stating that very few liked it. Of this preparation some account will be found at p. 315. It is made of the leaves of Angræcum fragrans, and is sold by Bousquin, of Paris, who gives along with it a circular highly eulogistic of its good qualities. It is called Faham in the Isle of Réunion, whence it comes, and where the Creoles are said to have long used it; it is also said to be in use in the Mauritius. To make it palatable it requires milk and spirits in small quantity, particularly rum. Notwithstanding these recommendations, however, it will probably be long before it engages much attention in this country.

Cigars made of Orchids, encased in Tobacco-leaves, were shown from the Museum of the Royal Gardens, Kew.

June 5 (*Floral Committee*).—Messrs. Veitch furnished a beautiful assemblage of fine plants on this occasion, among which were some valuable Orchids, including Cattleya M'Morlandi, a kind in the way of Mossiæ, having a large amount of orange in the lip; of other plants they had a singular Lycopodium from the Solomon Isles, with long stems clothed with Fir-like foliage, and divided at the top into many tails or rather branchlets; the handsome Bornean Alocasia gigantea, with sagittate leaves flushed and veined with silver; the Epacris-like Darwinia fimbriata, from Western Australia, with drooping rosy bells; Gymnogramma Laucheana Thompsoni, a tasselled gold Fern; Maranta roseo-picta, with deep green shining leaves zoned with pink when young and with white when old; Kæmpferia Roscoeana, with pretty Maranta-like leaves; and Palicourea discolor with handsome foliage, having a silvery midrib. The collection likewise contained various fine Japanese Retinosporas, especially R. obtusa aurea variegata and densa, the last a deep green Fern-like leaved kind; three Amaryllids; the Chilian Athyrium latifolium, a new Coleus called Gibsoni, from New Caledonia, with lively green leaves blotched and veined with chocolate; and a variety of Pampas Grass with variegated leaves, altogether a magnificent group, to which a special Certificate was deservedly awarded. From Messrs. Osborn came cut specimens of various hardy flowering shrubs, among which were Rhododendrons, Magnolias, the yellow-blossomed Caragana pygmæa, and other useful ornamental plants. Blooms of Rhododendron Falconeri were furnished by Mr. Munro, gr. to J. Ames, Esq., Clevelands, Lyme Regis. Of this some account will be found at p. 517. From the Rev. T. Medland, Steyning Rectory, Sussex, came handsome cut specimens of Paulownia imperialis, an account of which will be found at p. 517. The Rev. G. Cheere, Papworth, had Giant Mignonette and Zonal Pelargoniums; and from Mr. Green, gr. to W. Wilson Saunders, Esq., came an interesting little group of Arads. From Mr. Bull came several new Ferns, to which Certificates were awarded. Among them were Nephrodium molle confluens, N. m. densum, N. m. ramosissimum, the Indian Athyrium proliferum, and A. F.-f. pulchrum, all fine kinds; also the silvery-veined Eranthemum argyroneurum, to which a First-class Certificate was awarded; the handsome Terminalia elegans, with long narrow leaves having a red midrib, from Madagascar; and other fine plants. From the garden of the Society came various potfuls of the pretty little Oxalis rosea; the useful Saxifraga tricolor, a kind with more red in the leaves than sarmentosa; Maranta coccinea, the white-blossomed Eranthemum tuberculatum, and other plants.

June 5 (*Fruit Committee*).—Mr. Miller, gr. to Lord Craven, at Combe Abbey, exhibited two excellent Queen Pine-apples, each weighing nearly 5 lb., the produce of 19 months growth. From Mr. Bradly, gr. to Mrs. Norton, Elton Manor, Notts, came specimens of Sir Joseph Paxton Strawberry, a fine-looking kind, which is stated to be a good forcer.

ROYAL BOTANIC: *June* 6 (*Second Great Show*).—This was in all respects a magnificent exhibition, and although the day was cold, and threatened occasionally to rain, there was a considerable attendance of visitors.

Stove and Greenhouse Plants.—Among these we noticed some beautiful specimens of Rhynchospermum jasminoides, and of the even more fragrant and certainly more showy Stephanotis floribunda; also examples of Statice Holfordi and profusa, both useful kinds; various Boronias, Eriostemons, and Pimeleas; Chorozemas in good condition, especially C. Henchmanni; Epacris pulchella, with long spikes of minute snow-white blossoms; Allamandas of different kinds, Genetyllis tulipifera, charming bushes of the old-fashioned but still useful Dracophyllum gracile, the rosy-blossomed Adenandra fragrans, Heaths, Everlastings, Coleonema rubrum, the well-known Combretum purpureum, Clerodendron Thomsonæ, and its much handsomer variety Balfourii, both with striking scarlet and snowy-white inflorescence; Acrophyllum venosum, with nearly every shoot furnished with handsome whorls of creamy-coloured blossoms, but in few instances with good terminal red leaves, in which much of the beauty of the plant resides; the showy Ixora coccinea, Mussænda frondosa, with showy white bracts and small yellow blossoms; the charming Pleroma elegans, with violet-purple blossoms, each as large as a crown-piece; Hoya bella, with numerous drooping clusters of waxy white and red blossoms; the really useful free-flowering Tetratheca ericifolia, Aotus gracillima, with long graceful stems, clothed all round for upwards of a foot in length, with bright yellow flowers, and other equally fine plants.

Awards.—10: 1, Mr. Peed; 2, Mr. J. Wheeler; 3, Mr. Kemp; 4, Mr. G. Wheeler. 8: 1, Mr. Rhodes; 2, Messrs. Lee; 3, Mr. Glendinning; 4, Mr. Williams. 8 (Amateurs): 1, Mr. Donald; 2, Mr. Carson; 3, Mr. Kaile; 4, Mr. Coles. 6: 1, Mr. C. Smith; 2, Mr. Wilkie; 3, Mr. Ingram; 4, Mr. Ward.

Fine-foliaged Plants.—Among these were some fine things. Palms were represented by Latania borbonica, the large fan-shaped leaves of which seemed to attract much attention. There were also Chamærops humilis, and one or two other kinds. Of variegated Aloe-leaved Yuccas we noticed some fine plants, as well of Pandanus elegantissimus, a really handsome kind of Screw Pine. Of Rush-like foliage Bonapartea filifera furnished an example. Among Alocasias the best was certainly a plant of A. Lowii in Mr. Williams' collection. This had leaves of the brightest green, boldly veined with white, and measuring nearly 2 feet in length and 1 foot in width. Of A. metallica there was also a charming example. The orange-ribbed Sedge-leaved Cordyline indivisa was well represented, as were also Dracæna indivisa, the noble-looking Theophrasta imperialis, and the smaller-growing, and not nearly so handsome, T. macrophylla. Of Bilbergias, Cycas, Dion edule, Zamias, Encephalartos, and similar hard-leaved plants, we noticed some fine specimens, especially from Mr. Yates, of Highgate; and, skilfully associated as they were with other fine plants, they made by no means an ineffective appearance. Aralias, Rhopalas, and variegated New Zealand Flax had their admirers, as had also the beautiful Caladium Chantinii, and Maranta zebrina. Foremost amongst singular-leaved plants was Philodendron pertusum, the large deep-green slashed and curiously cut leaves meeting with a host of admirers; and Beaucarnea glauca elegans, with long narrow bluish-green foliage, also seemed, and deservedly, to be a favourite.

Awards.—10: 1, Mr. Williams; 2, Mr. Young, gr. to H. Stone, Esq.; 3, Mr. Young, gr. to R. Barclay, Esq. 6: 1, Mr. Williams; 2, Mr. Taylor; 3, Mr. Donald.

Ferns.—These being mostly large and in beautiful condition, filled up shady recesses with excellent effect. As regards kinds they did not seem to differ from those mentioned in former reports. Hardy British sorts were furnished in great variety and beauty by Messrs. Ivery, of Dorking.

Awards.—Exotic kinds, 12: 1, Mr. Barnard; equal 2, Mr. Young, gr. to W. H. Stone, Esq., and Mr. Taylor; 3, Mr. Young, gr. to R. Barclay, Esq. 12 (Nurserymen): 1, Mr. Williams. British, 12: 1, Messrs. Ivery: 2, Mr. Kemp.

Orchids.—Among these the greatest novelty was undoubtedly Oncidium Marshallianum, a remarkably fine kind from the Organ Mountains, named specifically in compliment to Mr. Marshall, of Enfield, by whom it was shown. Its blossoms, which are of large size, are of a clear bright yellow, ornamented near the centre or eye with rich cinnamon brown. When better established and more profusely flowered, it will doubtless prove one of the handsomest of all Oncidiums. Among Dendrobiums we noticed the showy D. formosum giganteum, with large pure white flowers stained with orange; D. Parishii; the charming dark spotted, rich orange-flowered D. clavatum, and others. Odontoglossums consisted of the charming O. Pescatorei; O. cordatum, with two fine spikes of flowers; O. citrosmum, with delicate white blossoms flushed with pink; and a finely flowered plant of the singular-looking O. nævium. Lælia purpurata and Brysiana, a kind very much like it, were shown in good condition by several exhibitors. Among Cattleyas were some fine masses of Mossiæ; and Cypripediums of different sorts, including a fine plant of the long-tailed C. caudatum, were numerous. The genera Aerides and Vanda were represented by several well-grown and beautifully-flowered species. Among Phalænopsids was the rare P. Luddemanniana, from Mr. Penny, with nine well-coloured blossoms. Saccolabiums were confined to small plants of S. præmorsum and the orange-scarlet S. curvifolium. The yellow Anguloa Clowesii was shown in good condition, as was also the old fashioned Phaius Wallichii. Of Cyrtochilum stellatum, a plant now seldom seen, a finely-bloomed specimen was furnished by Mr. Rhodes, of Sydenham; and the well-known Epidendrum phœniceum, sometimes called Hanburianum, came from Mr. Parker, of Tooting.

Awards.—10: 1, Mr. Penny; 2, Mr. Wilson; 3, Mr. Bullen; 4, Mr. Robson; 5, Mr. Page. 6: 1, Mr. Williams; 2, Messrs. Lee; 3, Messrs. Jackson; equal 4, Mr. Bull and Mr. Parker. 8: 1, Mr. Wiggins; 2, Mr. Young, gr. to W. H. Stone, Esq.; 3, Mr. Peed; 4, Mr. Wilcock.

Roses.—Though good for the season, those shown in pots were by no means so fine as they were last month, and we missed on this occasion one or two of the principal exhibitors of this Queen of flowers. From Mr. Francis and Messrs. Paul & Son came good groups, and in the Amateurs' Class Mr. Terry furnished some well-bloomed plants. Of cut flowers we can speak in higher terms of praise. Among these were some magnificent blooms of the new Tea Rose Marechal Neil, a glorious acquisition, which seems to improve in beauty as the season advances. These came from Messrs. Paul & Son, who had very fine specimens of it, from Mr. Mitchell, and others. Mr. Mitchell likewise showed other cut Roses in fine condition, as did also Messrs. Paul & Son, and Mr. Hollingworth, of Maidstone.

Awards.—In pots, 10: 1, Mr. Francis; 2, Messrs. Paul & Son. 6: 1, Mr. Terry. Cut blooms, 25: 1, Messrs. Paul & Son; 2, Mr. Mitchell. (Amateurs): 1, Mr. Hollingworth. 24: 1, Mr. Mitchell; 2, Messrs. Paul & Son; 3, Mr. Turner.

Azaleas.—Though some fine plants of these were shown on this occasion, it was abundantly evident that the glorious "mountains of bloom" of which all spoke in terms of admiration in May, were fast fading away. Messrs. Glendinning, of Turnham Green, and Mr. Carson, of Cheam, still had, however, very effective examples, especially of lateritia, variegata, Gledstanesii, and one or two other kinds; and in other collections we also noticed some tolerably good plants.

Awards.—6: 1, Messrs. Glendinning; 2, Messrs. Lee; 3, Mr. Rhodes; 4, Messrs. Cutbush. (Amateurs): 1, Mr. Carson; 2, Mr. G. Wheeler.

Heaths.—These were shown in beautiful condition, both as regards growth and bloom. Among them were some fine examples of the different varieties of tricolor, of which t. Wilsoni is one of the best. Westphalingia, a bright crimson kind, was likewise well represented, as were also other well-known sorts.

Awards.—9: 1, Mr. Rhodes; 2, Messrs. Jackson. 8: 1, Mr. Peed; 2, Mr. J. Wheeler; 3, Mr. G. Wheeler; 4, Mr. Kemp. 6: 1, Mr. Ward; 2, Mr. Ingram; 3, Mr. Young, gr. to W. H. Stone, Esq.; 4, Messrs. F. & A. Smith.

Pelargoniums.—These were wonderfully well grown and flowered, and were deservedly much admired, especially Mr. Bailey's nine plants from Shardeloes, which were matchless examples of skilful cultivation. They consisted of Spotted Gem, Flora, Lord Clyde, Ariel, Lady Canning, Madlle. Patti, Nestor, Golden Hue, and Desdemona, From Mr. Nye, gr. to E. B. Foster, Esq., who had also very fine plants, came among others a very large Desdemona, Sir C. Campbell, Spotted Gem, Fairest of the Fair, Lord Clyde, Rose Celestial, and Garibaldi. Mr. Turner furnished Lord Clyde,

Fair Rosamond, Conflagration, Desdemona, Beacon, Imperatrice, Fairest of the Fair, Viola, Matilde, Patti. In collections from Messrs. Fraser were Desdemona, Lord Clyde, Sanspareil, Rose Celestial, and Imperatrice. In collections of Fancy kinds Mr. Turner had Edith, Roi des Fantasies, Lucy, Undine, and Miss-in-her-Teens. From Messrs. Fraser came Delicatum, Celestial, Arabella Goodard, Miss-in-her-Teens, Roi des Fantasies, and Godfrey Turner. Mr. Bailey furnished Marionette, Crystal Beauty, Countess Waldegrave, Delicatum, Lady Craven, and Lucy.

Awards.—1, Mr. Bailey; 2, Mr. Nye; 3, Mr. Ward; 4, Mr. Wiggins. (Nurserymen): 1, Mr. Turner; 2, Messrs. Fraser; 3, Messrs. Dobson. Fancies, 6: 1, Mr. Turner; 2, Messrs. Fraser. (Amateurs): 1, Mr. Parker; 2, Mr. Donald; 3, Mr. Weir.

Fuchsias.—Two well-grown collections of these were shown, one by Mr. Weston, gr. to D. Mantineau, Esq., Clapham Park; the other by Mr. Cannell, Woolwich.

New Plants.—Of these Messrs. Veitch had a large and extremely interesting collection, the more important of which are noticed in another column; the same may also be said of those furnished by Mr. Bull. Mr. Jackman had three handsome varieties of Clematis, named respectively Magnifica, Alexandra, and Velutina purpurea, all fine dark violet-purple kinds, especially Magnifica, the petals of which are barred with Turkey-red. To Messrs. Ivery were awarded various certificates for hardy Ferns, most of which have already been noticed in our columns. Mr. Williams had a new species of Calamus, which promises to be an acquisition, also two kinds of Alternanthera and Dieffenbachia. From Mr. Thompson, of Ipswich, came a violet-purple-blossomed Fenidium, called Mr. Barker's Seedling. Mr. Heaps had Micrantha, a Javanese species with fine bold foliage; and Nothochlæna cretacea, a useful-looking small Silver Fern.

Florists' Flowers.—Foremost among these was an extremely interesting collection of Nosegay and other Pelargoniums from Mr. Wm. Paul, from among which Sir Joseph Paxton, Crimson Queen, and St. George, were selected by the judges and awarded First-class Certificates. Messrs. E. G. Henderson also had a fine group of tricolor and variegated-leaved sorts, as had also Messrs. Carter. From Mr. Turner and Mr. Hoyle came various seedlings, among which Duchess of Southerland, Sylvia, Tormentor, Lord Lyon, Favourite, and Rustic, received First-class Certificates; and a similar mark of distinction was conferred on Milton, Negress, and Unison, from Mr. Nye, gr. to E. B. Foster, Esq. Mr. Watson received a First-class Certificate for Pelargonium Excelsior, a fine scarlet-flowered variety. From Messrs. E. G. Henderson came Gloire de Nancy, a scarlet double-flowered sort, to which a First-class Certificate was given; and they also received a similar award for Lady Culham, a tricolor-leaved kind.

Miscellaneous Subjects.—Among these was a beautiful white-striped Amaryllis named Holfordii, from Mr. Parker; and Messrs. Veitch also showed a pretty Amaryllis called Queen of the Netherlands. Mr. Williams had an interesting collection of Aloes, most of which were noticed in our report of the late great International Show. From Messrs. E. G. Henderson came a fine collection of hardy fine-leaved and other plants, among which basketfuls of the variegated variety of Cynosurus cristatus were greatly admired. They had also the orange-blossomed Blandfordia nobilis grandiflora, a fine showy bulbous plant, and a pretty kind of Dianthus called Queteri. Messrs. Carter had a handsome Ornithogalum thyrsoides album. Pansies came from Messrs. Downie Laird & Laing, Mr. Fraser, Mr. Hooper, and Mr. Kingston. A fine basketful of Paulownia imperialis was sent by Mr. Masters, gr. to Lord Hothfield; and blooms of Balsams and plants of Anectochilus by Mr. Williams. Messrs. Cutbush had three nice hanging baskets tastefully filled with flowers.

Fine apples.—Various beautifully-grown and well-ripened Queens were shown by Mr. Miller, gr. to Lord Ashburton, Combe Abbey, some of which weighed only a few ounces under 6 lb., and none of them less than 4 lb. From Mr. Barnes, of Bicton, also came a Queen weighing 3¾ lb., and another was furnished by Mr. Jones, gr. to Lady Mills, Romsey. From Mr. Douglas, gr. to Mr. Milburn, Esq., Alford, came a Smooth-leaved Cayenne, weighing 5¼ lb. Mr. Taylor, gr. to H. E. M. Ingram, Esq., Temple Newsom, near Leeds, sent a Black Prince weighing 7¾ lb.; and another, 6 lb., came from the Earl of Thornyeroft. A Providence weighing 7¼ lb. was furnished by Mr. Westland, gr. to Lord Belper, Kingston Hall, Derby.

Awards.—Providence: 1, Mr. Westland. Queen: 1, Mr. Miller; 2, Mr. Barnes; 3, Mr. Jones. Any sort: 1, Mr. Douglas 2, Rev. J. Thornycroft; 3, Mr. Taylor.

Grapes.—Beautifully-finished bunches of Black Hamburgh came from Mr. Meredith, of Garston, near Liverpool. Mr. Clements, East Barnet, had also fine fruit of the same variety, as had also Mr. Allen, gr. to Captain Glegg; Mr. Osborne, Finchley; and Mr. Meads, Minley Manor, near Farnborough. Other excellent samples of Black Hamburgh came from Mr. Miller, Combe Abbey; Mr. Turner, Slough; Mr. Allport, Doddington Hall; and Mr. Wallis, gr. to J. Dixon, Esq. In Black Princes the contest laid between Mr. Hill, Keele Hall, and Mr. Meads, between whom the "honours" were equally divided. Mr. Montgomery Henderson also showed good bunches in this class, as did also Mr. Lynn, gr. to Lord Boston. From Mr. Allport came good samples of West's St. Peter's, and Black Frontignan. Grizzly Frontignan came from Mr. Bannerman, gr. to Lord Bagot, Ridgeley, and Mr. M. Henderson. Buckland Sweetwater was shown by Mr. Osborn, Mr. Hill, and Mr. Bailey; and White Muscadine, unripe, by Mr. M. Henderson. Chasselas Musqué, in good condition, came from Mr. Meads; Golden Hamburgh from Mr. Coles, gr. to R. H. Page, Esq.; and good Muscats by Mr. Turner, and Mr. Fleming, gr. to A. Moss, Esq. Unripe but good bunches of this variety also came from Mr. Horwood, gr. to G. Turnbull, Esq., Bromley.

Awards.—Black Hamburgh: equal 1, Mr. Meredith and Mr. Clements; 2, Mr. Allen; equal 3, Mr. Osborn and Mr. Meads. Black Prince: equal 1, Mr. Hill and Mr. Meads; 2, Mr. Allport; 3, Mr. M. Henderson. Buckland Sweetwater: 1, Mr. Osborn; 2, Mr. Hill; 3, Mr. Bailey. Frontignans: 1, Mr. Allport; 2, Mr. Bannerman; 3, Mr. M. Henderson. Muscats: 1, Mr. Turner: 2, Mr. Tansley; 3, Mr. Coles.

Peaches.—These consisted chiefly of Royal George and Grosse Mignonne, of which fine fruit came from Mr. Taylor, gr. to C. A. Hanbury, Esq., East Barnet; Mr. Sage, gr. to Earl Brownlow; Mr. Whitaker, gr. to Lord Crewe; and Mr. Tegg, gr. to the Duke of Newcastle, at Clumber, also showed good dishes of Peaches.

Awards.—1, Mr. Taylor; 2, Mr. Sage; equal 3, Mr. Whitaker and Mr. Tegg; 4, Mr. Evans.

Nectarines.—These were for the most part well-coloured, but somewhat small. The best was a dish of Hunt's Tawny, from Mr. Turner, Slough; and Mr. Lynn, gardener to Lord Boston, sent good fruit of Violette Hâtive.

Awards.—1, Mr. Turner; 2, Mr. Lynn; 3, Mr. Allen; equal 4, Mr. Hill and Mr. Evans.

Melons.—The best were Meredith's Hybrid Green-fleshed, Combe Abbey Hybrid, Queen Emma, a seedling from Meredith's Cashmere, Tegg's Hybrid Scarlet, and Gem.

Awards.—Green-fleshed: equal 1st, Mr. Sage, gr. to Earl Howe, and Mr. Dwerrihouse. Scarlet: 1, Mr. Tegg; 2, Mr. Bailey.

Cherries.—Good May Dukes came from Messrs. Jackson, of Kingston, and Mr. Wilson, Warwick. White sorts were not good. Examples of Frogmore Early Forcing came from an open east wall.

Awards.—1, Messrs. Jackson; 2, Mr. Wilson; 3, Mr. Lynn. White: 1, withheld; 2, Mr. Wilson.

Strawberries.—These were large and well ripened. Amongst them were Empresse Eugénie, Sir C. Napier, Sir J. Paxton, Marguerite, and British Queen.

Awards.—1, Mr. Meindoe; 2, Mr. Turner; 3, Mr. Johnson.

Miscellaneous Fruits.—Among these were baskets of Grapes, from Mr. M. Henderson, Mr. Clements, and Mr. Wallis; Citrons from Mr. Elliott, gardener to Lady Palmer, Leicester; a boxful of Nectarines from Mr. Allen; fine fruit of the Castle Kennedy Fig from Mr. Fowler; and of Lee's Perpetual Fig, from Mr. Jones, gardener to Lady Mill.

Rhododendron Exhibitions.—These grand floral displays, now in perfection in the gardens of the Royal Horticultural Society at South Kensington, and in that of the Royal Botanic Society in Regent's Park, contain most of the finer kinds of Hardy Rhododendrons in cultivation, and are therefore well worth a visit.

Among newer kinds at South Kensington, contributed by Messrs. Waterer & Godfrey, of Knaphill, the most striking are Lady Clermont and H. W. Sargent, both bright high-coloured varieties; Alexander Dancer, bright rose; Mrs. Milner and Francis Dickson, rich crimson scarlet; Lady Armstrong, brilliant rose; Charles Bagley, cherry red; Mrs. John Clutton, white; Mrs. R. S. Holford, salmony crimson; Stella, pale rose, and Mrs. Bovill, bright crimson. Among older sorts Alarm and Lady Eleanor Cathcart still occupy a prominent position.

Among new kinds at Regent's Park, furnished by Mr. John Waterer, of Bagshot, we noticed Alexander Adie, Raphael, Sir James Clark, SirWm. Armstrong, and Lady Peel, all shades of rose and crimson; Duchess of Sutherland, blush; Mrs. Milner, Sidney Herbert, bright carmine; Joseph Whitworth, lake; and Sir Robert Peel, brilliant rosy crimson. Other high coloured sorts not yet open are reported to be real acquisitions. Conspicuous among the older sorts are Bylsianum, white bordered with crimson, in the way of Concessum; Brayanum, a most effective Rhododendron; and many others of all shades of colour, which when viewed *en masse* produce a striking and brilliant effect.

GLASGOW AND WEST OF SCOTLAND HORTICULTURAL: *June 6.*—This, the second great Show of the season, took place in the Glasgow City Hall and adjacent apartments. It was beyond question the finest plant exhibition that has yet taken place, and, notwithstanding the recent great success of the International, had much in it to interest the novice and critic. As usual the Hall was filled with a brilliant assemblage of promenaders; and financially speaking, it was also a great success. In fact, no provincial exhibition in this country is so largely patronised as this, which says a very great deal for the citizens of Glasgow, and places the Society in a position of almost unparalleled prosperity.

The great prize of the day was for a table, not less than 25 feet by 6 feet, of the most meritorious plants. Three competitors took the field in strength, each with miscellaneous assortments, reflecting the highest credit on the gentlemen who owned them, and the gardeners who staged and arranged them. If there was any fault at all, it was evidently in the anxiety to excel by cramming many valuable and well-cultivated specimens too closely together. First and foremost was the collection from Mr. David Bethell, gr. to Mr. Mann, the Duke of Hamilton, Hamilton palace, who has for three successive seasons obtained the premier award. In this collection stood prominently out three Tree Ferns—Dicksonia antarctica, Cibotium Schiedei, in fine condition, and C. Schiedei; and two magnificent specimens—variegated and angustifolium. Such plants as Dracophyllum gracile, Acrophyllum venosum, Chorozema Chandleri, Ixora alba and Cole's seedling, which is a pale shade of vermilion, and not a bad thing in this colour; Pimelea spectabilis, Boronia verticillata, Bougainvillea glabra, Stephanotis floribunda, Allamanda cathartica, and Anthurium magnificum were plants meriting extra notice for culture and condition; and other things, such as Cattleya Mossiæ, Lælia purpurata, Phalænopsis grandiflora and amabilis, Dendrobium nobile, Calosanthes nivalis, several good Ericas, Dendrobium nobile, Kalosanthes coccinea, Boronias of sorts, Gloxinias, &c., were also in very good order.

Mr. Dickson, gr. to Thomas Coats, Esq., Fergasile, Paisley, had also a very excellent table, very well arranged, and containing many fine specimen plants. It also comprised Tree Ferns—a Dicksonia, and a good Alsophila elegans; also a fine Latania borbonica; Oncidium sphacelatum in mass; a Cypripedium barbatum, with upwards of 60 flowers; several varieties of Anœctochilus, the best of which was Lowii a nice dark-coloured variety; Ixoras, several very well-managed Heaths, comprising perspicua nana and coccinea minor—two real gems, and the comparatively new Spenceriana, which is an acquisition among the free-growing sorts. There was also a very fine Saccolabium retusum, with four spikes, each of which had a large; a good plant of the fine old Rondeletia speciosa, several Vandas, a good Pimelea mirabilis, Acrophyllum venosum, Cordyline indivisa, Alocasia macrorhiza and Lowii, a good Vinca alba, and a handsome Sobralia with three flowers. This was a much better collection than Mr. Dickson's was last season, the plants being both better grown and better bloomed.

Mr. Murray, gr. to David Tod, Esq., of Partick, who is a young exhibitor in the great collections, gave promise of meeting the great exhibitors with spirit. His collection was a very noticeable one, amongst which Tree Ferns, the most prominent of which was the handsome Cyathea medullaris, a noble Lælia purpurata, Dendrobium tortile, the pretty Lycaste Deppei, Oncidium sphacelatum, a fine bearded Lady's Slipper, a nice piece of Lælia cinnabarina, the rare Brassavola Digbyana, with its fringed labellum; a fine piece of Clerodendron infortunatum, a handsome plant of Acalea Model, several capitally-managed Heaths, of which Candoleana, tricolor, perspicua nana, and others, were good samples; the beautiful Ixora amboynensis, loaded with capitate heads of bloom; Allamanda, Phlodendron pertusum, several Gloxinias, and other things.

By far the most interesting collection of novelties and rarities came from Mr. Kirk, gr. to W. C. Paterson, Esq., Ashville, Partickhill, including the six Orchids which carried off the silver medal, namely, Cattleya Mossiæ, in fine, indeed, graced the banks of the International tent. Saccolabium curvifolium, with two fine spikes; a good Dendrobium tortile roseum; a splendid Odontoglossum nævium majus, with four spikes, the largest of which bore 17 flowers; a fine sample of Cattleya Warneri—a glorious Cattleya, quite 7½ inches across, and the colour almost indescribable; and a fine piece of Aerides Lindleyanum, branched with two spikes. In this gentleman's general collection was a very fine Aerides roseum, with four branched spikes; several Phalænopsis amabilis; Saccolabium retusum; several sorts of Vanda suavis and tricolor, one of them particularly good; one or two varieties of Oncidium crispum, than which there is not a more distinct or beautiful thing in commerce; a very fine piece of the rare and beautiful Aerides Schröderi; several Cattleya Mossiæ and Aclandiæ; the ineffective Angulos uniflora; a fine Clematis lanuginosa, backed up with several varieties of Tree Ferns and statuary, with the orchestra in the background—agroupso imposing as to entrance visitors, and render inspection a most difficult matter. On either side of this collection was a miscellaneous assortment from Gustin & Maleas, Nurserymen, who had several sorts of Geraniums and Azaleas, Heaths, and "foliage" plants, among which were distributed several nice plants of dwarf Conifers, including Thuja aurea, which had a most pleasing effect. From Mr. Methven, gr. to Archibald Campbell, Esq., of Blythswood, came some very good specimen Azaleas in fine flower, one or two good plants of Aphelexis, several nice Heaths, of which perspicua nana and coccinea minor formed the chief ingredients, and a very well-managed Statice Rabiana.

From Mr. Clark, Royal Botanic Garden, came several, many interesting plants, including several seedlings from Java, for which Mr. Clark has already had a special award. Second among them were several sorts of the never-failing Polystichum Filix-fœmina, of which Frizellie deparomorphum, with handsome tasselled fronds, and another one, as yet unnamed, with handsome broad deep-green fronds; Onychium lucidum, like the lasting Onanda regalis, the pretty basket plant, Drosera binata, with long small stems, one or two Sarracenias, and Araucaria excelsa, formed part.

Smith & Symons had several Wardian cases handsomely ornamented in the interior, and very chastely filled with groups of foliage plants and Ferns, with a few small but ornamental pot guards, which looked extremely pretty, and rivetted the attention of ladies more particularly. Peter Mackenzie, Gordon Street, had a miscellaneous assortment of hard wooded greenhouse plants and some other things, such as House, which made a very effective table. Mr William Martin, Greenlaw, Paisley, had also a very nice table, conspicuous among which were several well flowered plants of Statice Holfordii and others in very small pots. In the smaller division of flowering plants, Mr. James Forbes, gr. to Beecham, and Mr. Walker, gr. to Hill, Cessnock, Mr. Meadie, Cathcart; and Mr. Boyd, gr., Easterhill, had a prominent place among numerous competitors, having good plants of several sorts of Everlastings, Heaths, Azaleas, the old Æschynanthus Paxtoni, a very pretty object when well done, Torenia asiatica, covered with blue flowers, Schizanthus formosa, Pimeleas of sorts, and some Liliums. Azaleas and Heaths were not in such good force as we have seen on former occasions.

Pelargoniums were not equal to former displays, the best coming from Mr. D. McBride, Hazlewood, and Mr. Glass, gr. to R. Addie, Esq., of View Park, Bothwell. A very fine assortment of variegated-foliaged plants, comprising 50 sorts, arranged in an undulating chain as a background for the stands of Pansies, was contributed by Mr. Campbell, gr. to W. S. Crawford, Esq., Castlemilk.

Ferns were as usual well represented. Among them were Gymnogramma lanata, several sorts of Adiantum, including pedatum, trapeziforme, and formosum; one or two sorts of Davallia, Davallia, the more prominent of which was Davallia novæ zelandiæ, which is really new in its way; Blechnum corcovadense, and Goniophlebium appendiculatum. A nice lot of Leptopteris superba came from Mr. R. Allan, Bridge of Allan.

Amateurs had very creditable collections; the chief plants in which were dahlias and Pansies, with Ferns, Achimenes, Gloxinias, Roses, Cacti, and such like, some of them having even a few hard-wooded New Holland plants in good trim.

Florists' flowers were also well represented, Pansies being probably the chief in interest among the *summa*. Mr. Wm. Keir, Easterhill, had a very fine stand, including the Duke of Dombrain, Count Cavour, Jessie Dalzell, Mary Lamb, Emily Lyle, Cupid, C. W. R. Ramsay, Mrs. James Dunlop, Miss E. Cochrane, Beautiful Star, Lady Matheson, Perfection, Beatrice, Invincible, Frances Low, Mrs. Hopkins, Miss Stewart, James Wilson, Linda, Lady Constance Grosvenor, and Lord Byron as fancy Pansies. Messrs. Downie Laird & Laing had a very beautiful collection, the best among which was Prince of Wales; Mrs. R. Dean, white and deep purple blotch. The novelty; Thomas Downie, bronzy red, and blackish purple blotch; Lord Belper, Duke of Edinburgh, and Alice Grey effective; Lady Montgomery, Ninian Niven, fine form, heavily pencilled; Mrs. George Wilson, and several interesting seedlings. Tulips were very briskly competed for, no less than 24 stands being entered, the best by far coming from an amateur, Mr. Wm. Keir, who had Bella Donna, Lord Lyon, Sir C. McMillan, 67, Virginia Street. The finest of them were Queen of Sheba, Prince of Wales, Lord Denman, Sarah Ann, Midland Beauty, Vicar of Radford, Prime Superb, Anastasia, Don Sella, Glory of Abingdon, Queen of the North, Maid of Orleans (a very pretty thing), Magnum Bonum, Polyphemus, Aglaia, Heroine, &c.

Rhododendrons in trusses were largely exhibited from various quarters, the largest and best lot coming from Mr. G. M. Butler, Greenock, with an assortment of upwards of 50 varieties, the best of which were Gloire de Belgique, Cunard, Sappho, Fanny, Nereus, Perryanum, Phelim, Lucidum, Prince Arthur, and numerous finely-formed seedlings. Bouquets were, as usual, in great numbers, the best of them being somewhat formal and squatty, which the fronds of several Maiden-hair Ferns greatly relieved.

Fruit was only feebly represented. Mr. Colquhoun, Argyle Arcade, had nine very handsome Queens, weighing in the aggregate 30 lb., along with several baskets of Strawberries, and some very luscious French Plums—the name of the variety could not be ascertained. In the amateurs' division, Mr. Weir, who had Oscar Strawberry in splendid trim, both in pots and as cut samples, 50 of which weighed 2 lb. Along with these were about a dozen varieties of Cucumbers, the longest of which measured 30 inches, an immense bulk, those were nicely packed in a box filled with Sphagnum. Grapes were generally unripe; the best black ones came from Mr. Campbell, gr., Mauldslie Castle, and Mr. Storrie, gr., Tillichewan; while in whites, which were represented by Frontignan and some others, Mr. M'Cunnachie, Cameron House, took the first place. A basket of well-kept Apples and Pears was furnished by Mr. Ramsay, gr. to the Marquis of Bute, Mount Stuart. Mr. Fowler, gr. to the Earl of Stair, Castle Kennedy, had fine samples of the Fig bearing that name.

Vegetables made a very good display, and were in forward condition, considering the climate—Potatos, Carrots, Turnips, and such like, in very good order for table. Rhubarb was of enormous dimensions, and there were no less than 20 exhibitors. Mr. Robert Wilson, gr., Walkinshaw; and Mr. Storrie, gr., Tillichewan Castle, were the most successful. Mr. Dobbie, Renfrew, had a very fine sample of a new Parsley, a fine crisp-looking sort, under the name of "Russian Parsley," and which is likely to find some favour.

Mr. Campbell, Secretary, and Mr. Miller, Treasurer, were untiring in their exertions to make both exhibitors and the public comfortable; while the arrangement of the Show, which devolved upon Mr. Thomas Grainger and his assistants, was of a very satisfactory character.

ZOOLOGICAL OF LONDON: *May 22.*—Dr. Gray in the chair. Mr. Sclater made some remarks on a rare American monkey from Demerara (Pithecia leucocephala) lately presented to the Society by Mr. W. H. Barton.—A communication was read from Mr. T. C. Johnson, describing a new species of Berycoid fishes from Madeira, proposed to be called Trachichthys Darwinii.—A paper was read by Mr. H. Adams, describing 15 new species of shells from Formosa, collected by R. Swinhoe, Esq.—Dr. Gray read some notes upon the specimens of tortoises from South America in the collection of the British Museum. He also made some remarks on the specimens of porcupine (Hystrix) in the Gardens of the Society and in the British Museum, and pointed out the characters of a supposed new species of this genus living in the Society's Gardens.

which he proposed to call Acanthion Grotei, after Mr. A. Grote, by whom the specimen in question had been presented to the Museum.—A communication was read from Professor A. Newton, on the species of birds of the Madagascarian genus Berniera of Bonaparte.—Mr. Sclater exhibited and made remarks on six new Passerine birds from America belonging to the sub-order Oscines.—Mr. Flower exhibited some insects captured in the Atlantic on board the ship Hotspur, about 360 miles from land.

Notices of Books.

Pinaceæ: being a Handbook of the Firs and Pines. By Senilis. London. Published for the Author by Hatchard & Co.

One general cry ascends from the botanical world just now, that it may be saved from the infliction of all unnecessary increase to the already overwhelming mountain of synonyms. Professor De Candolle appeals to the nurserymen to abstain from giving names with Latin terminations to their floral novelties; Professor Koch passes for some plan of co-operative action by which the incubus may be diminished, reduced to order, or at all events not increased; and here comes before us a modest man, disguised in a garb of science, ignorant or regardless of the general appeal, ignorant or regardless of the universal law among naturalists, that every man's name takes precedence according to priority—ignorant or regardless too of the common principles of honesty which forbid us to take from another what belongs to him, and proposes to do away with such names as do not please him, and to substitute new ones which are more to his taste. Sequoia (Wellingtonia) gigantea is to be Gigantabies Wellingtoniana, Pseudolarix Kæmpferi is to be Larix amabilis, Taxodium is to be Cupressinnata, Fitzroya Cupressoides, Cunninghamia sinensis is to be Raxopitys Cunninghamii, Salisburia adiantifolia to become Pterophyllus Salisburyi nees, Saxegothea conspicua to become Sarmataxus Albertiana, and so on.

Some of the names are changed in this book without any kind of intimation, and the change is only to be found out by intuition or by missing an old favourite, and then turning to the Appendix, in which the synonyms are collected.

In other cases the author condescends to explain the reasons for the change. For instance, the cause of altering Pseudolarix Kæmpferi is thus given. "That Abies, Cedrus, and Larix have more or less specific affinity no sane person disputes; but as decency and gallantry alike should prompt us to courtesy, I do not insult beauty with such a barbarous appellation as Pseudolarix Kæmpferi! for although the theorists say it is *in posse*, I say *in esse* it is a Larch, and a lovely one it is: hence my present address to it is Larix amabilis."

Who the theorists may be to whom he refers we do not know; the only one we can suppose he alludes to is Mr. Gordon, who named it Pseudolarix. We think our author might have spoken a little more kindly of Mr. Gordon's creation, seeing that he has transferred the whole of his synonymy of Roezl's Mexican Pines, right and wrong, bodily into his Appendix, without a single word of acknowledgment or recognition, and has largely, and equally without discrimination, drawn truth and error from his pages. We never liked the name Pseudolarix (although we had no objection to Kæmpferi, for Kæmpfer well deserved the remembrance), but when we see it fall under the hands of this author, we are apt to exclaim with Meg Merrilies, "God bless us—it's an awfu' ward; I wished him ill, but no sic a downfa' as a' that neither." Lindley, if we mistake not, fell foul of the name long ago, and Mr. Gordon now learns practically—

"If one should be a prey, how much the better
To fall before the lion than the wolf."

But our author must have a fling at Lindley, too. Let us see how this learned pundit kicks up his heels at the bookman.

Gigantabies is proposed as the name for the Mammoth tree, because it is, "if not the giant of the vegetable kingdom, at least the giant of the Firs; hence my name Gigantabies; and as I have dared to re-christen this big tree, I must needs give my reason for so doing. Wellingtonia gigantea is at best but the gigantic Wellington, and a lamentable misnomer for such a mammoth of a tree, and a compliment servilely paid to so great and good a man as the departed hero of Waterloo. That he was great the world knows, and history is not likely to forget; but that he was a corporeal giant I never fancied, though I never doubted that he was indeed a mental one; much less would one believe him to have been a tree. As, however, Firs are matter not mind, I treat of them in a materialistic way; and knowing well that the chieftain of the chiefs in battle, the man of men,"—and so on for six or eight lines more of high-sounding adjectives about Wellington—"had he, I say, been consulted upon this *casus belli*—Wellingtonia gigantea *v.* Gigantabies Wellingtoniana, he would have decided in favour of the latter appellation for this tree; and so methinks will all my readers of the practical and common-sense class. Be that as it may, however, this naming of trees seems from the modern *modus operandi* to favour the idea that that which we call 'a Rose by any other name would smell as sweet,' which being so, it may be inferred that the mammoth Fir by any other name would grow as big; for our American cousins call it Americanus giganteus [do they?] and Washingtonia americana; such nomenclature of the vegetable kingdom is pardonable, and may induce a smile in the land of 'shoddy' and 'oil springs,' where they 'beat creation out of time,' but that Wellingtonia gigantea should be tolerated by such a utilitarian people, so thoroughly practical, and so professedly learned as the British, seems a little paradoxical; for such latinising of a tree into a man, or a man into a tree, or the egregious blunder of canonising a departed hero into a giant who never was one, could scarcely have been perpetrated, unless the hyperbolic author of such a caricature was in the mental mood where pedantry is rampant; for methinks that Gigantabies Wellingtonia (Wellington's Giant Fir) is not only more euphonical, but more in keeping with that oft-despised virtue, common sense; and more consonant with my ideas of the great and good, or the true and beautiful. The naming species or varieties of trees after men or women, or as a complimentary tribute to a departed hero, I can perfectly understand and fully appreciate; but to behold science as it were dethroned, and not unlike a sycophant crouching on flattery's footstool, and language prostituted in such servile truckling of generic titles, which I consider the highest attributes, nay, the natural birthright, heaven's own gift; and this alike with all names of genera, whether of the animal, vegetable, or mineral kingdoms—such trafficking in generic names I cannot appreciate."

Excellent! why, this is the best foolery when all is done. The Knight could not have done it more natural, nor Sir Toby with a better grace. Wellingtonia gigantea is sycophantic crouching, servile truckling, and prostituted language, while Gigantabies Wellingtoniana is in keeping with common sense, and great and good and true and beautiful. And why? because the compliment is paid in the one case through the genus, and the other through the species; and generic titles are the highest attributes, the natural birthright, &c.! Is not the reason satisfactory? But what if, notwithstanding the opinion of Senilis, the general belief now entertained by men of science should prove well founded—that genera do not exist in Nature, but are merely artificial aids contrived by man to assist the memory. What a sad thing it would be if by any correction of his notion of the value of genera he should find himself on the side of the servile, sycophantic, and truckling, instead of being great and good and true and beautiful. One thing, moreover, is plain—that in any view, if we were to be guided by this gentleman, the whole cognominal or complimentary nomenclature, either of botanists or of zoologists, must be revised, for desiring to keep clear of confusion as much as possible, in attaching such names botanists have generally (although not always) confined themselves to paying their compliment through the genus, and zoologists through the species. Both cannot be right; and how are the "lamentable misnomers" of all the generic complimentary names to be remedied, if they should have an individual interpretation, as Wellingtonia gigantea, "the gigantic Wellington." Our Latin is too common-place to produce that meaning; it only gives us "the gigantic species of the tree named after Wellington." But, like Dogberry, "learned Constable is too cunning to be understood." Besides, he is not his craft's master he takes upon himself to teach as Latin, and makes a great parade of his learning in his book; lugs in a few Hebrew roots; tells us that Greek is "my most cherished language" (page 25); speaks of Pliny as "my oracle (p. 130); talks of "Columella, Dioscorides, Hesiod, Homer, Pliny, Apuleius, and Virgil," as familiarly as maids of 13 do of puppy dogs; and in addition goes the length of suggesting an amendment on Lindley's Latinity, "Gigantabies Wellingtoniana," says he, "Wellington's Giant Fir, ycleped Wellingtonia gigantea, the gigantic Wellington. It should at least have been gigantica." (note, p. 3). Should it be so? Let Senilis turn to his Latin Dictionary again—there he will find the word giganteus, but no gigaticus.

We have not time to go over in any detail another feature which runs through the book, and which consists chiefly in the old sin of giving new names for old things, and escaping trouble and difficulty by shirking it. He gives what he supposes a new system of "Technicalities used in classification and nomenclature." In this "SD (sub-division)" is equivalent to the present division known as a family; "Section" to the present genus; "Prototype" (the author's meaning is type, but apparently not knowing the true meaning of prototype he has misapplied it)—is equivalent to what is called by botanists the type or typical species; "Species" is a species; "Quasi species" contains those species which are difficult of definition, and which are all thus easily shelved; and so on. Instead of working out the Mexican group Pseudo-strobus, and separating the true species from the false, they are all disposed of at once without trouble or examination as quasi species of Strobus. This however is a blunder in the working of his own machinery. He should have made them quasi-species of Pseudo-strobus, which is a well-defined section perfectly distinct from Strobus.

The truth is, the author is not qualified for writing a book upon Conifers. The reader can judge of his literary qualifications from the verbose ungrammatical sentences which we have above quoted. His qualifications for dealing with the subject he has chosen are still less. He appears to be unacquainted with the very elements of Botany and Physiology; seems not to have the most distant idea of the principles on which, by the labours of many minds of the highest talent, the present system of systematic botany has been based; does not know what has been already done, what has been already proposed and rejected by general consent, and why. He has, apparently, in his present condition no one qualification which suits him for such a work. Ireland for the Irish! may be very good heraldry, but ignorance for the ignorant is carrying partisanship too far. We have no desire to be unduly severe, even where excessive bumptiousness invites repression. Our author has some qualifications, which, kept under due restraint, may lead him to better things. We may say to him with [Ben Jonson, or some other author of that stamp,—

"Thou hast the gift of impudence—be thankful
Every man has not the like talent."

That he is not without talent for observation, we see even in his blunders. He rejects for instance the term Coniferæ for the family, as being not wholly true, some having no cones, and takes Pinaceæ as in some fanciful way, through the linguistic affinities of the word, representing something rich, fat, or resinous, and seems to suppose he has made a discovery. Let him, before he presumes to teach others, learn by study what systems have been proposed, and why the terebinthine character which, we presume, is what he means, not the mere resin-bearing quality which is shared by a large portion of the vegetable kingdom, has not been used. We have not space to teach him here. Let him cultivate the talent and practice of observation—abstain from taking for granted, and repeating as his own, what is said by other authors—verify everything—believe what no one says until he has verified it himself—and only speak of what he has seen himself. We should not then care so much for his grammar or composition.

If he comes before us again, chastened by that knowledge of his own ignorance which will be the first step in the way to knowledge, with his mind matured by study, and his experience genuine and self-acquired, he will find that we shall then be as ready to admit his merits as we are now to criticise his faults.

The Toilet and Cosmetic Arts, &c. By Arnold J. Cooley. London: Hardwicke. Pp. 804.

Here is a thick volume of information on the best means of keeping up appearances, preserving health, &c. The author gives his readers an insight into the "toilet" as performed in the Garden of Eden, and when, as a consequence of the Fall, more attention was paid to the subject of dress. Then it was that fashion had its birth, and so the reader will find herein an historical sketch of the toilet as practised by the Jews, the Assyrians, the Greeks, the Romans, and other nations of antiquity. Modern nations, civilised and uncivilised, are also passed in review as to their outward appearance. Then follows a dissertation on beauty, and a *resumé* of the opinions of many of those who have written on the subject, the author ranging himself under the banners of Mr. Hay. The chapters to which we have referred form a lengthy introduction to the more practical parts of the book, which treat of the preservation of personal appearance, not only by ablutions, the use of cosmetics, and the like, but also by the use of suitable and becoming attire. The reader may herein learn how to paint a black eye, and how to select a necktace.

The latter portion of the volume is entirely taken up with numerous formulæ and recipes which will be of service to druggists, and those who, like the Vicar of Wakefield's daughters, care to make their own washes. The author's remarks on quack medicines and much be-puffed cosmetics, &c., are very judicious, and to the point. A copious index will facilitate the researches of the inquirer into these matters, and we have said enough to show that the general reader may get a great deal of amusement and no little information, out of this in many ways curious book.

BOOKS RECEIVED.—*A Dictionary of Geography, &c.* By J. R. M'Culloch. New edition, carefully revised by Frederick Martin. London: 1866. Longmans. The publishers have done good service by issuing a new edition of this comprehensive work, rendered the more necessary from the great strides geographical knowledge has made of late years, and the great changes in the boundaries of nations that have taken place since the first edition was published.—*Self Help*, by Samuel Smiles (Murray), a revised edition of a very popular book, but one which has too many plums in proportion to the flour.—*Our Social Bees.* Second Series, by Andrew Wynter, M.D. (Hardwicke). Like its predecessors, this is a book of pleasant gossip upon a great variety of subjects, from the Thames Embankment to the flesh-worm disease.—*A Practical Dictionary of the German and English Languages*, by the Rev. W. L. Blackley, M.A., and C. M. Friedlander, M.D. (Longmans). A handy volume written for the use of English students, "whose special wants are carefully kept in view." The editors state that the features which they have specially aimed at in the compilation of this book have been conciseness of style, facility of reference, distinction of meaning, and accuracy of idiom.

Florists' Flowers.

THE varieties of PELARGONIUM of the inquinans and zonal sections—we beg pardon of those of our friends who *will* think the word Geranium so much better for these races, though it isn't true—these Pelargoniums, we say, possess a new source of interest, now that it has been found that they will yield us good DOUBLE FLOWERS. So it is argued by M. Emile Chaté in a recent number of *L'Horticulteur Français*, from which we glean some of the annexed particulars.

The first Pelargonium with perfectly double flowers was raised, he observes, in 1859, by M. Martial de Chanflourd, of Clermont Ferrand, a distinguished amateur, after whom it is named, and who had already in 1855 obtained the variety known under the name of Auguste Ferrier. This latter variety had remained for nearly 10 years in the garden in Clermont without its merit being appreciated. In Auguste Ferrier, however, the doubling is not so fully developed as in Martial de Chanflourd, but the colouring is more brilliant, and the blossoms more abundant; and as it produces good seeds, it has become the parent of numerous varieties, of which Martial de Chanflourd is one. The Triomphe de Gergovia, supposed to be a new acquisition, proved to be nothing more than Auguste Ferrier with the name altered.

Since the appearance of the foregoing sorts, continues M. Chaté, M. Louis Van Houtte has introduced a new kind (Ranunculiflora plenissima), similar at first sight to Martial de Chanflourd, but presenting appreciable differences; the flowers being more abundant, the

colour paler, and the shape more perfect. M. Lemoine has also obtained a new double variety, Gloire de Nancy, which in M. Chatè's opinion surpasses all that have preceded it. In this, which was the result of crossing Madame de Chamillard with Beauté de Suresne, the flowers are full and well formed, though not more abundant than in other sorts.

From the variety Auguste Ferrier, which flowers luxuriantly, and yields good seeds, M. Chatè has obtained a plant with flowers of a fleshy-pink colour, in which, though the doubling is not considerable, it is expected that the seeds will be numerous, and that their produce will yield novel and interesting results. An impulse has been given, and it only remains that it should be as energetically followed up. This done, we shall no doubt in a few years possess Pelargoniums with double flowers, the plants as floriferous and the colours as varied as in the single varieties. We may add that Gloire de Nancy was shown in fine condition at the Royal Botanic Society's Show last Wednesday, and that its heads of flowers bear much resemblance to those of the double scarlet Lychnis.

The Apiary.

THE STEWARTON SYSTEM.—In your impression of May 12, p. 458, Mr. S. Bevan Fox gives a detailed account of the Stewarton hives, and desires further information about them. I beg, therefore, to correct a few errors into which he has fallen, and to give a general outline of their management. The Stewarton hive is not one that everybody will succeed with: bees have nothing to learn, but man has much; therefore it requires a great amount of apiarian skill to be fully successful with them. Having had considerable experience with Stewarton hives, as well as most other kinds, I have no hesitation in saying, that where honey is the only object, they are for the adept the very best hives that can be used. On the other hand they are not at all suited for the novice.

The Stewarton hive is composed of from four to eight boxes; the body boxes are furnished with nine bars, each 1¼ inch broad, with a space between of ⅜ of an inch, approximating pretty closely to the natural formation of the combs. The honey box has only seven bars, for the purpose of obtaining more massive combs. There is also a shallow eke, which is used to great advantage, both as regards wintering a strong stock, and as a great means of inducing the bees to take to the honey box, by removing it and putting on a honey box when the hive gets quite full, and the honey season commences. A fourth or fifth box should be added whenever the honey box is well begun, the bars being furnished with guide combs, or with narrow strips of the wax sheets.

Mr. S. B. Fox falls into an error when he says the contents of the main body of these hives are seldom removed; for upon an average a stock of bees in the Stewarton hive will produce 100 lb. of honey—about from 40 lb. to 50 lb. in supers, the rest from the body boxes. This is by no means the exception but the rule. Another error is that he does not consider the width and number of bars to be of much consequence. It is of the utmost importance to have the bars of a proper width, and to see that the combs are built regularly on them, so that there be no combs built transversely. It is known that the queen does not venture to the outside combs, so much as at the ends, so that when the combs are straight, in her peregrinations she is not so apt to get into the honey box. He also falls into another error in stating that when the honey box is nearly filled, another box may be added between it and the stock box. This would be in a great measure cutting the bees to undo what they have already done; at all events it takes away what would be stored in the super for the purpose of building comb in the one placed between, and unless the weather be fine, it incurs the risk of the honey being stinted down. It is, doubtless, best to encourage the building of honey-combs above, and to carry on of breeding below; for that purpose the super should be kept close to the body of the hive, and breeding encouraged below by adding boxes underneath. We may in our practice differ a little in this respect from our southern friends, who are favoured with more honey-gathering weather; but as it is the case with us that there are only three months in the year that bees gather honey, and out of that three months there are seldom more than three weeks abundant, and very rarely are we favoured with more than 10 days, it will be seen that the apiarian has to use every means to enable him to be successful.

Mr. Fox also asks, "Why divide the body boxes in any way?" It is necessary in our system of management to have these hives formed of shallow boxes. Doubtless for the stock hive in winter a single box would be well enough; but then, when the depriving comes on, we must either take all or none, thus destroying many combs that would be very useful were they in shallow boxes. When nadering is necessary with a deep hive, it would be the cause of too much comb being added to the body of the hive at one time, thus depriving the super and preventing its being filled. The drawing of the slides may be made easy by running a hot iron over the top of the hive.
Wm. Thomson, Blantyre.

Hiving Bees.—Last year I put a second swarm of bees into a Woodbury bar hive, which appeared to be doing well up to the 10th of August, when I left home for a fortnight; on my return I found that the bees had forsaken their hive, which was about three parts filled with comb, and containing a fair quantity of pollen, but no honey. Now, I am anxious to put the earliest swarm I can obtain into this same hive, and I am desirous of knowing if I should cut away all the comb containing any pollen, or hive them into it just as it is. I may state that the hive and the combs are perfectly clean and sweet. At the same time may I further trouble you to give me the name of a good work on bees. *A Young Amateur.* [Provided the combs are constructed parallel to the bars, as you state that they are quite clean and sweet, by all means make use of them, and give the bees of the new swarm the benefit. See also that there are no signs of the wax moth having committed its ravages among the combs. In hiving the swarm into this box of combs, the best plan is to secure the bees first in a common straw hive. In the evening, having laid a cloth on the ground and placed a couple of sticks in the middle, dash out the bees, and carefully put the box over them, letting the edges rest on the sticks. The bees will very soon ascend into the hive, which must be stood on its intended permanent position the same night. Or with frame hives, you may in the day time, as soon as the bees have settled in the common hive, remove the cover and knock them out on top of the frames. They will quickly descend among the combs, and even before they are all gone down, the cover must be replaced by gently sliding it over the hive, taking care that no bees are crushed. The box should be on its proper stand prior to this operation. The best book on bees in our opinion is Langstroth's "Hive and Honey Bee," Saxton & Co., New York. It can be obtained in London, probably through Messrs. Neighbour. This work, as it treats chiefly on the management of bees in frame hives, would be well suited for your purposes.]

Garden Memoranda.

W. C. PATERSON'S, ESQ., ASHVILLE, GLASGOW.—This gentleman's collection, a portion of which is periodically exhibited at the Glasgow Show, is well worthy of notice and inspection. Mr. Paterson is one among the select band of commercial gentlemen who spend a considerable portion of spare time in watching the development of those floral treasures which require no little money in the first instance to obtain, and unremitting care and skill on the part of the gardener to induce a healthy and otherwise satisfactory state of growth. I of course refer to Orchids, which at Ashville have now almost altogether usurped the place of what was once a miscellaneous collection. There are four houses devoted to their cultivation—one for the East Indian genera, two for the intermediate section, which comprises a numerous body, and one for what is technically termed the cool section. In the East India house the following plants, remarkable for good cultivation, are noticeable:—Dendrobium Falconeri, Cattleya superba, Aerides roseum superbum, Angræcum sesquipedale, and Vanda Lowii. The Dendrobium, which has young growths 30 inches long, and from 6 to 8 others apparently growing away as rampant as Couch Grass, is in an oblong wooden basket suspended in a vertical position. The plant is growing in Sphagnum, and so far as my experience and observation goes, is unique. The Cattleya superba is on a bare block of wood, and although others do equally well in pot baskets in some places, the condition of this plant testifies that there is no arbitrary rule for ensuring successful culture. The Aerides has numerous branched spikes, some of which will quite measure 30 inches, which is more the exception than the rule with this hardy-growing sort. It appears to me to be one of those species that will not luxuriate so successfully by being disturbed in the process of repotting, and my convictions become stronger when I am told that that example has not been repotted for four years at least. The Angræcum is quite a large specimen, having some 24 leaves, and when in bloom had four racemes, with some 14 or 15 flowers in the aggregate—a noble example of a highly interesting and decorative plant, which can be certificated as one of easy culture. The Vanda, or Renanthera Lowii, is a vigorous plant, but it wants age to bring it up to the stately growth of either Mr. Rucker's or Mr. Warner's famous plant. It is one, too, which does not like transplanting, and when done must be with care. Other samples of Vanda are good; especially promising is Hookeriana, the inflorescence of which we all long to see. Phalænopsids are not quite so vigorous; neither are Saccolabiums, if we except a very fine retusum, and also a good curvifolium.

In the intermediate houses the most prominent plants are Vanda cœrulea, growing in a wooden basket of good size, without a speck to mar its beauty, and flowering periodically, having as many as 16 flowers to the raceme. A very fine seed pod is in the process of ripening—a cross between it and Roxburghii; and if Orchid seeds would germinate freely, there undoubtedly would be some interesting hybrids, in this instance, to look forward to. Dendrobium lituiflorum is another plant that rivets attention, having five young growths the very pink of perfection, and such flowers!—the colour, size, and formation so positively lovely, as but for the money and its rarity (for there are some trashy varieties of this sort) would enlist half the growers of the kingdom with its charms. D. Dalhousianum is capitally represented, and Mr. Paterson has been in luck with varieties, not one of which, albeit, is bad, but some are more than twice as good as others. It appears to succeed best in moderate heat. Cypripedium Lowii, one of the most handsome of the Ladies' Slippers, has four young growths, with foliage 18 inches long, a fine plant; so is also the more rare and even more beautiful caudatum, in the shape of an imported plant with four breaks, with older foliage resuming its wonted state of chlorophyll. Epidendrum cnemidophorum, with stems 8 feet long, some of them showing their blooming sheaths at an advanced stage, as well as Trichopilia suavis in fine bulk and variety; a seedling Cattleya in the way of Mr. Veitch's Brabantiæ; a noble example of an extra fine form of the bearded Lady's Slipper; the charming Epidendrum prismatocarpum, than which a more elegant thing is scarcely to be had; several good pots of Pleione lagenaria, and the more rare and much more beautiful maculata; Odontoglossum citro-mum, which seems to do all the better with a little more heat than its co-species; a large specimen of the charming Cologyne cristata; and the comparatively neglected but highly interesting Maxillaria tenuifolia, with its densely spotted sepals and petals, and yellow and brown prominent labellum. Pendrobium anosmum has growths 3 feet long which have flowered freely, and seems to do best suspended in baskets from the roof, the long pendent racemes being both striking and beautiful.

In the Odontoglossum house there are several nice plants, first and foremost among which is O. maximum majus. This is beyond question the most striking variety I have ever seen, completely excelling anything in the way of racemes that has ever come under my observation. The pseudobulbs are large, but still not much larger than the commoner species, which seldom yields above nine flowers in the raceme, but here we have several, on the best of which I counted 17 bloom-buds. This is a prodigy indeed, and we need have no hesitation in subscribing it major to comparison with the common herd. There is also a good variety of O. Uro-Skinneri well-grown; the rare O. triumphans is also here in good health, having fine pale-green ovate bulbs, with the russety specks and spots peculiar to an exuberant Pescatorei. O. Alexandræ or Bluntii has produced a raceme with seven flowers, which is the largest number yet chronicled of that novelty, which may be induced in time to yield 15 flowers to the raceme. Many varieties occur among this and its co-species Pescatorei, the colours ranging from pure white up to some of the pale tints of rose, with spotting occurring frequently over the surface of both labellum and petals. O. Phalænopsis is growing away nicely, and so are many of the imported plants that have been recently added to the collection. A very fine specimen of Lælia cinnabarina is here showing numerous racemes. There are several fine samples of Lycaste Skinneri, which is now becoming nearly as numerous as to its varieties as our show Pelargoniums. The cool treatment in all these plants is working a wonderful reformation; and what with the beauty of the inflorescence, and its duration, and the cool temperature in which they can grow (so agreeable to most ladies and gentlemen), they are fast attaining a popularity which, it may be predicted will not be of an evanescent character. The real Orchid amateur is an enthusiast of a peculiar kind. All rank and dignity of position, cold formality and aristocratic stiffness, is thrown off, and gentleman and gardener fraternise for the time being, discussing the merits of a cultural system and cultural requirements; and by this means the profession and the craft is slowly bettering its position. I promise gardener or amateur a hearty welcome from Mr. Paterson; and his gardener, Mr. Kirk, although not professionally trained to the culture of Orchids, is working himself up very satisfactorily indeed.

Besides Orchids there is a greenhouse and Vinery filled with some nice plants, the more prominent of which is a very fine Lapageria rosea on an umbrella-formed trellis, a fine sample of a pretty Rhododendron Veitchii, several well-managed Azaleas, some Heaths and miscellaneous plants, among which are several Amaryllids. *J. A.*

Miscellaneous.

Horticulture and Botany at the late Congress.—Now that the Horticultural and Botanical Congress, after a brilliant and unprecedented success, is fairly brought to a satisfactory close, it may be well to record a few thoughts and reminiscences regarding the magnificent display of flowers there made, and the two scientific meetings of botanists held at the South Kensington Museum, during the last 10 days. Plants and flowers assist so largely in all architectural ornament, whether carved or painted, that all architects and artists must be interested in a display like the one just now so honourably brought to an end. The Exhibition was full of objects appealing direct to the artist; here certainly were to be seen the harmony and contrast of colour complete, and the perfection of form, graceful or rugged. To go through a list of the plants possessing special claims to artistic beauty would occupy too much space here; they might be arranged, however, in several classes, many possessing regular or geometric beauty of outline, as the Lilies, Heaths, &c.; others irregular or eccentric beauty, as the Orchids; some depending altogether on the classic smoothness and gracefulness of their lines, as the Palms and Ferns; whilst a fourth, as in many of the Pines, Hollies, &c., rested their claims entirely on their equally beautiful, rested their claims entirely on their equally beautiful, though more irregular curves and acuter lines, vieing in beauty with any other objects in the building. The colouring of the leaves and flowers would, too, admit of a similar artificial arrangement, some arresting the attention by the sudden contrast displayed by deep purple or almost black markings on the faintest yellow petal, or the perfectly white spots or reticulations on a deep green or intensely brown leaf. Whilst some contrasts were bold and sudden, other arrangements of colour were equally soft and delicate, the various shades of purple and yellow, and orange and blue, being perfect studies of harmony and beauty. Amongst the plants with coloured leaves, no other could compete with the Caladiums, possessing large arrow-head-shaped leaves coloured with carmine and green, and frequently spotted or marbled with white; after these came the leaves of the Begonias, irregular in shape, crumpled and hairy in surface, and marbled, blotted, and variegated in colour, with bronze-browns, greens, and whites, in the most harmonious manner. For brilliancy of colour, every one must have noticed, displayed near the Orchids, the flower of the Arum-like plant, Anthurium Scherzerianum, flame-like and twisted in outline, and scarlet-vermilion in colour, but so intense, brilliant, and prismatic in hue, that the vermilion of art looked like a clod of earth beside it,

Amongst smaller flowers possessing the highest beauty, and harmony of the most brilliant colours, we specially noticed some cut flowers of Tulips, Roses, and Pansies, each separate flower being a study in itself, but altogether unapproached and unapproachable by any art. The horticulturists, British and foreign, no doubt did their very best to bring together their newest and most beautiful flowers; the various groups of Azaleas, Roses, Lilies, and Orchids, in certain parts of the Exhibition, formed such a perfect blaze of colour, that the fortunate beholder must ever remember the sight. For many years past England has been pre-eminent for its great and unparalleled success in the practice of horticulture, far distancing foreign competitors in the production of flowers, fruit, and vegetables; but as regards botany the case is different, for this country has long been under the imputation of producing very few sound and original botanists. The chasm between horticulture and botany is unfortunately very great, the former dealing with plants as cultivated in greenhouses and gardens, stimulated artificially to an unusual and often unnatural or monstrous growth, whilst the latter deals nearly exclusively with plants in a normal and natural condition, or as found wild, and especially with the structure, physiology, morphology, nature, and affinities of plants. Next to producing a plant comprised of brilliant flowers alone, with no leaves, or a tree with fruit preponderating in a similar manner, one of the greatest delights of the horticulturist is in the production of abnormal varieties, or by peculiar treatment giving a plant an attack of vegetable measles, or of sending it into a permanent botanical fit—in the first instance, it acquires variegated foliage (so fashionable now); and in the second, the leaves or fronds become unnaturally contorted, twisted, and lacerated. To make these growths permanent is an object of high ambition with nurserymen; in the late Exhibition there was an abundance of examples of both. In a state of nature all flowers are single, and in this condition only is it possible to comprehend their structure (and we might almost say beauty); but who does not know that the professional plant-grower uses every effort to produce plants with double flowers? In this condition the essential organs for the reproduction of the plant are metamorphosed into coloured petals, and the flower, when the doubling is perfect, is invariably barren. All these efforts of horticulturists are opposed to the direct study of botany; hence it is we have so many plant-growers who are no botanists, and botanists who care nothing whatever for the practice of horticulture. One of the lecturers at the Congress (himself a curator of a garden) previously to making known a discovery of his of treating Orchids with hot water instead of cold, which had had the greatest success, candidly confessed that gardeners obtained their knowledge of the treatment of plants generally by hard-earned experience, and not by acquired scientific knowledge of the nature of the plants themselves. On the termination of the description, a gentleman, well acquainted with Brazilian flora, remarked that, in the habitats of Orchids in Brazil, the rain-drops were always uniformly hot; thus showing the lecturer had only artificially applied the natural treatment, of which he was previously ignorant. The lectures delivered at the two meetings of the Congress were given by various botanists, British and foreign, in their own language, and comprised facts regarding the practice of horticulture, as well as the reading of papers embracing the geographical distribution and uses of plants, and morphological and structural botany, discussions following each paper. The Congress will long be remembered as a happy and instructive holiday by all who took part in it; many there recognised their old friends of "long ago," after separation for many years by miles of land and sea; and many were the personal acquaintances made there for the first time by horticulturists and botanists who only knew each other previously by name and reputation. Long may good feeling and friendly scientific emulation last between country and country to draw men nearer together by such pleasant bonds. *Builder.*

Sale of Plants at the late Great International Exhibition.—The following are the prices realised by some of the lots sold on this occasion by Mr. Stevens:—Three specimen Hollies from Mr. W. Paul fetched 2*l.* 8*s.* and 2*l.* 10*s.*; a specimen Taxus cheshuntensis and T. Dovastoni, 3*l.*; Thuja gigantea and aurea, 4*l.* From Mr. Fraser, Lea Bridge, Azalea Etoile de Gand, 2½ feet by 2, and A. laterita, 4 feet by 2½, 3*l.*; A. Perryana, 4 feet by 2½, and A. laterita, 3½ feet by 2½, 3*l.* Pleroma elegans, 4 feet by 3½, 1*l.* 11*s.* From Mr. Turner, Slough: Thujopsis borealis, 1*l.* 16*s.*; Picea Nordmanniana, 4*l.*; Pseudolarix Kæmpferi and Retinospora obtusa, 3*l.* 17*s.* 6*d.* From Mr. Watson, St. Albans, Dicksonia squarrosa, 5*l.*; Cyathea dealbata, 8*l.* 10*s.*; C. Smithii, 1*l.*; Hymenophyllum cristatum, 5*l.*; H. dilatatum, 4*l.* 4*s.*; H. scabrum, 5*l.* 5*s.*; H. demissum, 5*l.*; H. flexuosum, 5*l.* 10*s.* From Messrs. Jackman & Son: Ilex dipyrena, 3½ feet, and I. Watereriana, 5 feet, 3*l.* 12*s.* 6*d.*; Phillyrea angustifolia, 3½ feet, and P. ilicifolia, 5 feet, 1*l.* 12*s.*; Arbutus Unedo, 5 feet, 1*l.* 14*s.*; and lots of 25 choice Rhododendrons from 2*l.* 10*s.* to 3*l.* 5*s.* From Mr. Standish, Ascot: Rhododendrons Nelsoni and Prince Arthur, 5*l.* 10*s.*; General Cabrera and Star of England, 3*l.* 5*s.*; other lots of two, 1*l.* 12*s.* to 1*l.* 17*s.* From Messrs. Lane, a large specimen Azalea alba melior, 2*l.* 6*s.*; Criterion, 4 feet high, and Chelsoni, 2*l.*; two Chelsoni, 2*l.* 10*s.*; two Madame A. Verschaffelt, 2*l.*; standards of Chelsoni and Roi Leopold, 1*l.* 10*s.* each. From M. Jean Verschaffelt, Ghent: Agave Ousselghemiana, 2*l.*; A. americana medio-picta, 1*l.* 10*s.*; A. univittata, 1*l.* 12*s.*; A. schidigera, 1*l.*; A. coccinea, 1*l.* 16*s.*; A. filifera longifolia, 2*l.*; A. Ghiesbreghii, 2*l.* 2*s.*; A. species Jalapa, 2*l.* 4*s.*; A. filifera, 1*l.* 10*s.*; A. chloracantha, 1*l.* 5*s.*; A. americana fol. var., 1*l.* 10*s.*; A. xalapensis, 1*l.* 5*s.*; A. virginica, 2*l.*; A. stenophylla, 2*l.*; Dasylirium serratum, 1*l.* 10*s.*; Bonapartea gracilis, 1*l.* 10*s.*; a fine specimen Yucca aloifolia variegata, 2*l.* 8*s.* From Messrs Ivery & Son: Azalea petuniæflora, 3*l.*; Empress Eugenie and Madame Michel, 2*l.* each. From M. Alfred Bleu, 18, Route d'Italie, Paris: New Caladiums, obtained from seed; Alphonse Karr, 6*l.* 6*s.*; Baron de Rothschild, 1*l.* 15*s.*; Charles Verdier, 8*l.*; Dr. Lindley, 1*l.*; Edouard Morean, 1*l.* 16*s.*; Impératrice Eugenie, 12*l.*; Isidore Leroy, 6*l.*; Ketcleerii, 6*l.*; Napoleon III., 8*l.* 8*s.*; Prince Imperial, 8*l.*; Reine Victoria, 12*l.*; Rossini, 6*l.*

The Potato of Norway.—The red long Potato is almost unknown in Norway. The only variety cultivated is yellow and round. It is invariably put on the table at every repast. Nothing is more relishing or more savoury than the Potato of Norway. It is too good for a Potato. In no part of Europe has its equal been found for flavour, a natural consequence of perfect health. It is the Potato of our ancestors, that of the good Parmentier; and when we compare it with those which are now in commerce, it is difficult to resist making an effort in the hope of benefiting mankind. The Norwegian Potato is essentially hardy; it could not be otherwise in a latitude which is the same as that of Siberia, in a most rigorous climate, where it is exposed to great variations of temperature, and to the influences of snow, winds, late frosts, and frequently heavy rains, and in a subsoil absolutely impermeable. That which we call in France inclement, is for it fine weather. All is relative; our winter is its spring. Transplanted to our climate, it would certainly be circumstanced as a Frenchman from the North would be in Italy; and we know that the greater part of cultivated species of vegetables, especially the cereals imported from northern regions, are infinitely more vigorous and more productive in temperate climates. The same influences give opposite results in the case of plants from tropical countries which we attempt to acclimatise here. In the first case vitality increases, in the second case it diminishes. *Annuaire des Engrais.*

Calendar of Operations.

(For the ensuing week.)

SHIFTING where necessary must now receive attention. A compost, consisting of three-parts fibrous peat, in a lumpy state, one part free turfy loam, and a little silver sand, will suit most kinds of hard-wooded plants, with the exception of Heaths, which succeed best in peat without any admixture except that of a little silver sand. In potting take care to secure thorough drainage, over which may be placed a little broken or pounded charcoal.

FLOWER GARDEN AND PLANT HOUSES.

Now is the time to encourage rapid and sturdy growth in young hard-wooded plants. A constant stopping of gross shoots will be necessary, in order to equalise the distribution of sap and encourage the lower parts of the plant to develope themselves. Out of doors, early bulbs now ripening, if turning yellow, should be taken up, or the greater portion of their leaves trimmed away. Verbenas, Petunias, and such things should be frequently pegged down where it is requisite to cover the surface of the beds speedily.

AURICULAS.—Let these now occupy a cool shady situation. Green-fly, to which they are subject, must be kept in check. If infested, remove the plants to a pit, in order that they may be effectually fumigated.

BALSAMS AND COCKSCOMBS.—These must now be encouraged to grow freely, giving them a little weak liquid manure occasionally, and accommodating them with larger pots as they may require them.

CAMELLIAS.—Keep these close, moist, and warm, until their growth is completed, when more air and less moisture should be given in order to cause them to form flower-buds.

CARNATIONS AND PICOTEES.—Let the main shoots of these now be carefully tied to neat stakes. Remove dead leaves, and top-dress with fresh sweet soil. Destroy greenfly.

CINERARIAS.—Cut down such as are out of flower to within 2 or 3 inches of the surface. Stir and top-dress with light soil. A north aspect is the best at this season. Take cuttings as soon as they can be had for early flowering plants.

DAHLIAS.—Keep these regularly and well watered, and secure them to stakes as they advance in growth.

GLOBE AMARANTHUS.—These may receive the same treatment as Balsams and Cockscombs.

HEATHS AND EPACRISES.—Many kinds may now be transferred to pits and frames, where they will thrive better, during the summer months shading them from the hot sun; any done blooming should be cut back slightly, to insure a bushy habit, and kept in a shady place till they commence to grow. Removing the young and early-blooming stock to frames will permit plants in the Heath-house to stand thin.

HOLLYHOCKS.—Give these a good watering, and then mulch afterwards, giving them a good soaking once or twice a week according to the weather. Tie the plants to strong stakes.

PANSIES.—Propagate these whenever cuttings can be obtained. They strike best on a shady border under small hand-glasses.

PELARGONIUMS.—Plants in flower will require to be carefully shaded. Water freely every morning, and give as much air as possible in order to dispel stagnant moisture accumulated during night and dull weather. Stake and neatly tie the later flowering plants. Seedlings should now be selected, discarding any which are not decided improvement on known kinds.

ROSES.—These are now showing their blossoms, which will be much improved by liquid manuring; mulching, too, in dry seasons is very beneficial. If the preservation of the early flowers is desirable, the Rose maggot must be closely looked after; the green-fly, too, should be kept down, and where mildew shows itself, first syringe with tobacco-water for green-fly, and then dust with sulphur vivum; a tin pepper-box is a cheap and efficient duster. Roses in pots will require attention in regard to watering; the syringe is best if clear rain-water is at hand, and the blossoms not too much expanded.

TULIPS.—Uncover all out of bloom, but protect from heavy rains, which might be injurious.

FORCING GARDEN.

FIGS.—Give abundance of water or liquid manure, if in pots or tubs.

MELONS.—Set shy sorts, and sprinkle frequently to keep off red spider.

MUSHROOMS.—Let old beds be examined as soon as they begin to go out of bearing. If, upon removing the soil, the dung appears decayed or exhausted, the bed should be immediately renovated; but if, as often happens, the beds are found in good order, solid, and full of spawn, they should be watered moderately with tepid water, if they are found to require it, and in a day or two afterwards the surface should be covered with 2 or 3 inches of loamy soil. In hot weather the house should be kept as cool as possible, without throwing it open; in order to assist in effecting this, the paths and walls should be sprinkled frequently with cold water, and the evaporation allowed to escape at the top. Continue to collect horse-droppings, and let them be stored up to make new beds, or to renovate old ones.

PEACHES.—Give frequent waterings to these in their last swelling; continue to pinch luxuriant shoots, and to use the syringe liberally.

PINES.—In shifting, let great attention be paid to having complete drainage; no after-management will compensate for the omission of this. Take care to thin growing stock in due time, giving abundance of room to plants approaching the fruiting period. Pines swelling fruit will now enjoy liberal waterings of clear liquid manure once a week, with fine syringings occasionally, more especially between their stems.

VINES.—Grapes just colouring should be assisted by a high temperature during this fine weather, accompanied, however, by an abundance of air; a moderate amount of fire-heat should be provided should the weather become wet or cold.

HARDY FRUIT AND KITCHEN GARDEN.

Give the wood of Peaches a thorough thinning; don't reserve a shoot more than is wanted for next year. This, and keeping down insects, is the way to obtain success.

CELERY.—Take advantage of showery weather, should it occur, to prick out young plants.

PEAS.—Sow for succession as may be required.

RIDGE CUCUMBERS.—These, Gourds, and Vegetable Marrows may be planted now; the first two in the usual way on prepared beds of rich soil, with the temporary protection of hand-lights; the last in vacant places where proper stations for vigorous growth can be secured.

STATE OF THE WEATHER AT CHISWICK, NEAR LONDON, For the Week ending June 6, 1866, as observed at the Horticultural Gardens.

May and June	Moon's Age.	Barometer. Max	Barometer. Min	Temperature of the Air. Max.	Temperature of the Air. Min	Temperature of the Air. Mean	Temperature of the Earth 1 foot deep.	Temperature of the Earth 2 feet deep.	Wind	Rain.
Thurs. 31	17	29.693	29.639	69	52	60.5	56	53	S.E.	1.35
Friday 1	18	29.755	29.678	74	42	58	56	54	N.E.	.02
Satur. 2	19	29.838	29.810	80	40	60	58	54	S.	.00
Sunday 3	20	29.814	29.775	85	48	66.5	59	55	S.W.	.46
Mon. 4	21	29.824	29.799	76	44	60	61	56	S.W.	1.02
Tues. 5	22	29.891	29.849	69	47	58	60	55	S.	.02
Wed. 6	23	29.876	29.802	73	43	57.5	61	57	S.W.	.00
Average		29.815	29.775	74.7	45.6	60.1	58.7	55.4		2.87

May 31—Overcast, showery in evening, excessively heavy, constant rain at night.

June 1—Fine, partially clouded, very fine throughout.
— 2—Very fine, masses of snow white clouds in bright blue sky; fine.
— 3—Overcast, hot, very fine, heavy rain at night.
— 4—Clear and warm, cloudy, showery, very heavy rain at night.
— 5—Fine, cloudy, overcast, showery.
— 6—Overcast, cloudy, fine in afternoon, and at night.

Mean temperature of the week, 2·4-5th deg. above the average.

STATE OF THE WEATHER AT CHISWICK,

During the last 40 years, for the ensuing Week, ending June 16, 1866

June.	Average Temp. from 40 Years.	Average Rain.	Mean Temp.	No. of Years in which it Rained	Greatest Quantity of Rain	Prevailing Winds. N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.
Sunday 10	71.3	0.72	59.2	19	0.95 in.	1	1	2	3	2	4	8	8
Mon. 11	71.4	0.56	59.6	19	0.47	1	1	2	2	2	6	11	6
Tues. 12	70.9	0.61	58.5	19	0.78	1	1	3	2	1	7	13	4
Wed. 13	72.0	0.57	59.4	19	0.58	1	1	3	6	1	2	12	10
Thurs. 14	72.5	0.57	59.8	19	0.75	1	1	2	1	1	7	11	9
Friday 15	72.9	0.85	60.7	17	0.38	1	1	0	7	2	7	10	3
Satur. 16	72.7	0.88	60.7	17	0.46	1	2	4	8	1	10	1	4

The highest temperature during the above period occurred on the 12th and 13th, 1862—therm. 90 deg., and the lowest on the 11th, 1863 and 15th, 1850—therm. 30 deg.

Notices to Correspondents.

GARDENERS' CHRONICLE PRIZES: *A Lady Exhibitor* asks, in reference to these prizes, whether it is consistent with the rule "that there shall be no professional assistance given to exhibitors" that the members of a nurseryman's family should be eligible to compete for them, it being utterly impossible that a young lady living with her father, who is a grower for sale, should not have his advice and assistance. We think, with our correspondent, that competition under such suspicious circumstances, is not allowable.

GAS LIQUOR: *N.* If you will take our advice, don't. The fumes from the ammoniacal liquor of gas works and those from fermenting stable manure are very different. If you wish to apply ammonia to the atmosphere, try some purer form of it than is afforded by gas liquor, such as carbonate or muriate of ammonia in a very weak solution.

GREENHOUSE CREEPER: *Old Subscriber.* Some of the varieties of Tropæolum Lobbianum would best answer your purpose, and of these young plants can be obtained at any nursery.

NAMES OF PLANTS: *Anon.* Viola montana.—*W. S.* 1, Oncidea sensibilis; 2, Platyloma falcatum.

PASSIFLORA MACROCARPA SPLENDENS: *J. H.* Received.

THE LATE INTERNATIONAL EXHIBITION: *F. G.* Your letter shall be laid before the Committee.

THE PATENT NITRO-PHOSPHATE or BLOOD MANURE COMPANY, LIMITED, Manufacturers of ODAMSITE PATENT BLOOD MANURE for CORN and ROOTS. ODAMSS SUPERPHOSPHATE of LIME and DISSOLVED BONES.

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Edward Bell, 46, Mincing Lane.
Richard Hunt, Stanstead Abbot, Herts.
Thomas Knight, Edmonton, Middlesex.
Robert Leeds, West Lexham, Norfolk.
George Savile, Ingthorpe, near Stamford
Samuel Jonas, Chinshall Grange, Essex.
Charles Penman, 23, Essex Street, Strand.
Thomas Webb, Hildersham, Cambridgeshire.
Jonas Webb, Melton Ross, Lincolnshire.

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Auditor—J. Carter Jonas, Cambridge.
Secretary—E. MACADAM.

This Company was originally formed by, and is under the Direction of Agriculturists, circumstances that have justly earned for it another Title, viz.:—"THE TENANT FARMERS' MANURE COMPANY."

Its Members are Cultivators of upwards of 60,000 Acres of Land, which has been for years under management of the Manures of their own Manufacture. The Consumer, therefore, has the best Guarantee for the genuineness and efficacy of the Manures manufactured by this Company.

A Prospectus will be forwarded on application to the Secretary, or may be had of the local Agents. C. T. MACADAM, Secretary.

Chief Offices, 109, Fenchurch Street, London, E.C.

THE LONDON MANURE COMPANY
(ESTABLISHED 1840),
Have now ready for delivery dry fine condition,
CORN MANURE, for Spring Use
DISSOLVED BONES, for Dressing Pasture Lands
SUPERPHOSPHATES of LIME
PREPARED GUANO
MANGEL and POTATO MANURES
Also Genuine PERUVIAN GUANO, and NITRATE of SODA, ex Dock Warehouse; SULPHATE of AMMONIA, FISHERY SALT, &c. E. PURSER, Secretary.
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LAWES' MANURES.
The Manures manufactured by J. B. LAWES for the present season of 1866 are now ready for delivery at his Factories, at the following prices, per ton:—

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LAWES' PATENT TURNIP MANURE, and BONE SUPERPHOSPHATE of LIME	6 6 0
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These Manures can be obtained of Mr. LAWES, or through the appointed Agents in all parts of the United Kingdom, at prices varying according to cost of carriage.

Genuine Peruvian Guano direct from the Importers. Nitrate of Soda, Sulphate of Ammonia, and other Chemical Manures.

American and other Cakes at market prices.

Address, JOHN BENNET LAWES, 1, Adelaide Place, London Bridge, E.C.; and 22, Eden Quay, Dublin.

PALM-NUT MEAL, Manufactured by ALEXANDER M. SMITH & Co., Kent Street Mills, Liverpool.
£7 a Ton free to Rail or Boat in Liverpool.
£7 10s. delivered to Rail in Bristol.
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In Bags containing 2 cwt. each, branded AMS. L
"This valuable Meal, containing above 20 per cent. of fatty matter, is recommended as an economical food to mix with bone-pyrings."—(See Dr. Voelcker, R. A. S. E. Journal, Vol. 1, 2d Series, page 176).

For further particulars and Analysis apply to Messrs. SMITH, or their Agents, Messrs. HUMPHRIES & Co., Bristol.

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Important to Agriculturists.

THE BEST LINSEED, bruised and properly ground into meal under heavy edge stones, is unquestionably the only suitable food that can be profitably used for mixing with the ordinary meal or any home-grown produce to make it superior for feeding or fattening purposes to the best Linseed Cake.

LINSEED MEAL, guaranteed genuine, made from the best Calcutta and Bombay Seed, containing from 35 to 40 per cent. of oil, and equal in effect and nutritive value to nearly three times its weight of the best Linseed Cake, is supplied in bags containing 56lb. at 10s., and 112lbs. at 20s., on receipt of order and a remittance, by RICHARD HORNSBY & SONS, Lincoln Mills, Hedge-on-Thames.

CLIFF'S ANTISEPTIC FLUID,
Manufactured by F. C. CALVERT & Co., Manchester.
A preparation of Carbolic Acid suitable for Sheep Dipping, Washing Cattle, &c. *Vide* 3d Report of the Cattle Plague Commission. For further particulars apply to
R. COLEMAN & SON, Agents, 150, Leadenhall Street, London, E.C.

LONG'S "DIPPING" for TICK in SHEEP.
LONG'S "SPECIFIC" for SCAB in SHEEP.
LONG'S "MAGGOT LOTION" for SHEEP STRUCK by the FLY
Well-known, effective, NOT-poisonous.
Wholesale—S. & E. RANSOME & Co., Essex Street, Strand, W.C.
Retail Agents in all parts.

GARDEN BORDER EDGING TILES, in great variety of patterns and material, the lighter sorts being especially suited for KITCHEN GARDENS, as they harbour no Slugs and Insects, take up little room, and once put down incur no further labour and expense, as do "Box" Edgings, consequently being much cheaper.

GARDEN VASES, FOUNTAINS, &c., in Artificial Stone, of great durability, and in great variety of design.

F. & G. ROSHER, Manufacturers, Upper Ground Street, Blackfriars, S.; Queen's Road West, Chelsea, S.W.; and Kingston Road, Kingsland, N.E.

Sole London Agents for FOXLEY'S PATENT GARDEN WALL BRICKS. Illustrated Price Lists free by post. The Trade supplied.

ORNAMENTAL PAVING TILES for Conservatories, Halls, Corridors, Balconies, &c., as cheap and durable as Stone, in blue, red, and buff colours, and capable of forming a variety of designs.

Also TESSELATED PAVEMENTS of more enriched designs than the above.

WHITE GLAZED TILES, for Lining Walls of Dairies, Larders, Kitchen Ranges, Baths, &c. Grooved and other Stable Paving Bricks of great durability, Dutch and Adamantine Clinkers, Wall Copings, Red and Stoneware Drain Pipes, Slates, Cements, &c.

To be obtained of F. & G. ROSHER, at their Premises as above.

SILVER SAND (REIGATE, best quality), at the above addresses—14s. per Ton, or 1s. 3d. per Bushel; 2s. per Ton extra for delivery within three miles, and to any London Railway or Wharf. Quantities of 4 Tons, 1s. per Ton less.

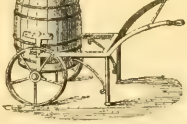
FLINTS, BRICK BURRS or CLINKERS, for Rockeries or Grotto Work. F. & G. ROSHER.—Addresses see above.
N.B. Orders promptly executed by Railway.

AGRICULTURAL IMPLEMENTS.—Steam Engines, Threshing Machines, Pumps, Carts, Ploughs, Harrows, Reaping Machines, Garden Engines, Lawn Mowers, Garden Rollers, Churns, Garden Tools, &c. Improved Wire Netting. Delivered carriage free. Price Lists per post.
BURGESS & KEY, 95, Newgate Street, London, E.C.
Works, Brentwood, Essex

FOWLER'S PATENT STEAM PLOUGH and CULTIVATOR may be seen at Work in every Agricultural County in England. For particulars apply to JOHN FOWLER & Co., 28, Cornhill, London, E.C.; and Steam Plough Works, Leeds.

FOR SALE, a 12-horse set of FOWLER'S PATENT STEAM PLOUGHING MACHINERY complete, including 12-horse Steam Engine, 14-Furrow Patent Balance Plough, and Patent Balance Scarifier, with all the necessary working parts complete. The above is nearly new. For price apply to
WALLIS, HASLAM, & STEVENS, Engineers, Brainsgtoke.

THE IMPROVED LEATHER DRIVING STRAPS for MACHINERY are stronger, more durable, drive better, and cost less than other kinds of Driving Belts. SPECIAL STRAPS for PORTABLE ENGINES. Price Lists free by post.
TURNER'S Patent Strap and Hose Company.
Manufactory: Atmill Works, Greenfield, near Manchester.
Warehouse: 81, Mark Lane, London, E.C.
Mr. H. FERRABEE, Agent.



POWERFUL GARDEN ENGINE, suitable for the above, price 45s.
IMPROVED WATER and LIQUID MANURE CARTS.
Catalogues on application.
Manufactured by W. S. BOULTON, Rose Lane Iron Works, Norwich.

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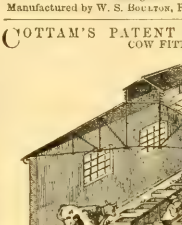
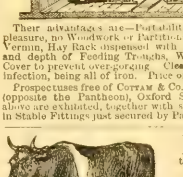


Their advantages are—Portability, and Fixtures, removable at pleasure, no Woodwork or Partitions to impede Ventilation or breed Vermin, Hay Rack supplied with an unnecessary increased width and depth of Feeding Troughs, Water Cistern, and Patent Drop Cover to prevent over-gorging. Cleanly, durable, and impervious to Infection, being all of iron. Price of Fittings per Cow, 45s.

Prospectuses free of COTTAM & Co., Iron Works, 2, Stanley Street (opposite the Pantheon), Oxford Street, London, W., where the above are exhibited, together with several important Improvements in Stable Fittings just secured by Patent.



BRITTANY COWS.
The only breed of Cattle that have escaped the Rinderpest.
The nobility, gentry, and others are respectfully informed that they can be supplied with the above beautiful and profitable Little Animals (calved and down calved), in any number, at the shortest notice. The great success and encouragement which have attended the efforts of the importer, in introducing the pure breed of this useful and hardy Cow into the country, has induced him to extend his connection abroad, by appointing experienced Agents throughout Brittany, and he is now enabled to offer the public a constant supply of the choicest stock that can be obtained, at prices which defy all competition. The low cost, together with the high milking qualities of this Breed, render them of great value to the cottager, as well as the fancy stock-keeper and dairyman.

YOUNG BULLS always on sale. BRITTANY SHEEP, 25s. each.
ALDERNEY and GUERNSEY COWS and HEIFERS supplied to description, as to age, colour, and time of calving.
Apply to the Agents of the Exporter, Messrs. ROBERTSON & Co., 38, Crutched Friars, London, E.C.

Drainage of Land.

MR. C. F. HUMBERT, F.G.S., of Watford, Herts, and formerly Senior Surveyor to the Tithe Commission, a Land Surveyor and Land Agent, more than established in practice, undertakes Works of Drainage either at a contract price, or to lay out and overlook the same at a commission of 5s. per acre; and he has at his command a staff of experienced workmen. His custom is to charge merely the expenses, unlimited in amount, for the preliminary Survey and Estimate where the works are not carried out.

THE LANDS IMPROVEMENT COMPANY.
Incorporated by Special Act of Parliament in 1853.
Right Hon. Lord NAAS, M.P., Chairman.
To LANDOWNERS, THE CLERGY, ESTATE AGENTS, SURVEYORS, &c., IN ENGLAND and WALES, AND IN SCOTLAND.

The Company's operations are unlimited in amount, for the following works of Agricultural Improvement, the whole outlay and expenses in all cases being liquidated by a rent-charge for 25 years.

1. Drainage, Embanking, and Warping, Embanking, Inclosing, Clearing, Reclamation, Planting, for any beneficial purpose, Engines or Machinery for Drainage or Irrigation.
2. Farm Roads, Tramways and Railroads for agricultural or farming purposes.
3. Jetties or Landing places on the sea-coast or on the banks of navigable rivers or lakes.
4. The Erection of Farm Houses, Labourers' Cottages, and other Buildings required for Farm purposes, and the improvement of and additions to Farm Houses and other buildings for Farm purposes.

Landowners assessed under the provisions of any Act of Parliament, Royal Charter, or Commission in respect of any public or general works of drainage or other improvements, may borrow their proportionate share of the cost, and charge the same with the expenses on the lands improved.

The Company will also negotiate the Rent-charges obtained by Landowners under the Improvement of Land Act, 1864, in respect of their Subscription of Shares in a Railway or Canal Company.

No investigation of title is required, and the Company being of a strictly financial character, do not interfere with the plans and execution of the Works, which are controlled only by the Government Enclosure Commissioners.

Apply to FRANCIS B. MAULE, Esq., Secretary, 3, Parliament Street, London, S.W.

THE GENERAL LAND DRAINAGE and IMPROVEMENT COMPANY. Offices, 22, Whitehall Place.
Under this Company's Act Tenants for Life, Trustees, Mortgagees, Guardians, Committees of Incompetent Persons, Bankrupt Lessees, Corporations, Ecclesiastical or Municipal, Incumbents, and Estate Trustees, &c., may effect the following Land Improvements, and charge the outlay and expenses on the estate improved, by way of rentcharge, to be paid by half-yearly instalments, viz.:—

1. All works of Drainage, Irrigation, Warping, and Embankment.
2. The Erection of Farmhouses, Cottages for Agricultural Labourers, and all kinds of Farm Buildings.
3. The Construction of Roads.
4. The Grubbing and Clearing of old Woodlands, Enclosing, Fencing, and Reclaiming Land.

The Owner of Estates, not limited, who may be desirous to avail the expense or inconvenience of a Legal Mortgage, may also charge their Estates with an Outlay in Improvements under the simple and inexpensive process of the Company's Act.

The Term of Years for the Rentcharge is fixed by the Landowner, so as to adapt the amount of Annual Payment to the circumstances of the Tenants.

No Investigation of Title being required, and the Charge not being affected by Encumbrances, no Legal Expenses are incurred.

The Arrangements for Effecting Improvements are threefold:—

No. 1. The Works may be Designed and Executed entirely by the Landowner's Agent, and the Company employed only to supply the Loan and conduct the matter through all the official Forms for Charging the Outlay on the Estate.

No. 2. The Company will supply Plans, Specifications, and Estimates for any Improvements to be executed by the Landowner's Agents under No. 1. In case of disputes the Landowner will be solely under the control of the Enclosure Commissioners.

No. 3. The Company will undertake the entire responsibility of the Improvements, prepare the Plans, execute the Works, and levy a charge on the Estate the actual amount expended, with their Commission thereon, approved by the Enclosure Commissioners.

Landowners may thus obtain what assistance they require from the Company, and no more, in effecting the objects in view.

Works of Drainage and other Improvements are also executed on Commission for Landowners, who merely require the skill and experience of the Company's Officers and a Staff in constant practice.

Applications to be addressed to WILLIAM CLIFFORD, the Secretary, at the Office of the Company, 22, Whitehall Place, London, S.W.

ESSEX AGRICULTURAL ASSOCIATION, 1866.—
POULTRY, GAME, FLOWER, and FRUIT SHOWS will be held at EPPING in the County of Essex, on TUESDAY, July 17, 1866, in conjunction with the Annual Exhibition of the Essex Agricultural Association. The Prize Lists, which are upon a most liberal scale, may be had on application to the Secretary on forwarding a stamped envelope with address.

ENTRIES for the POULTRY SHOW will positively CLOSE on JUNE 30th next. Early applications are particularly requested.
Epping, May 19. By Order, JOHN W. WISE, Secretary.

THE BIRMINGHAM HORSE SHOW, 1866.—The FIRST GRAT EXHIBITION of HORSES, PONIES, CARRIAGES, HARNESS, SADDLERY, &c., will be held in BINGLEY HALL, BIRMINGHAM, on TUESDAY, WEDNESDAY, and THURSDAY, July 10, 11, and 12, when Prizes to the amount of £250 will be awarded.

President—The Right Hon. Lord WENSLOCK.
Vice-President: The MAYOR of BIRMINGHAM
JOHN B. LATCHETT, Secretary.

Prize Lists and Certificates of Entry are now ready.

The Galleries will be reserved for the exhibition of Carriages, Harness, Saddlery, Horse Clothing, Stable Fittings, &c. Particulars of the terms for space may be obtained from the Secretary.

The ENTRIES CLOSE on THURSDAY, June 21.
JOHN B. LATCHETT, Secretary.
Offices, Stephenson Chambers, New Street, Birmingham.

The Agricultural Gazette.

SATURDAY, JUNE 9, 1866.

TWENTY acres of agricultural machinery, and forty or more of land in Rye and Clover stubble on which to try a few of them—these, with the usual exhibitions of paintings and of art manufactures, of poultry, flowers, and dogs, have constituted this year at Salisbury the attractions of the annual meeting of the Bath and West of England Society. The weather has been unpropitious, and they have been insufficient to attract the usual crowd of spectators. Indeed, the attractiveness of these annual gatherings, so far as they are agricultural, depends, after all, chiefly on their live stock department. It is there that the farmer sees his own handiwork; it is there that the skill which he can either emulate or exhibit is displayed; and it is in this accordingly that he takes pride. And the implement exhibitors are the first to find this out. If their customers do not come, they may as well have staid at home. There never was in Salisbury so large and fine a display of agricultural machinery, but never, we are told, were sales so few.

Ten years ago, at the English Agricultural Society's meeting here, there was a great show of farm implements, and a grand attempt at steam ploughing, both by stationary and traction engines; the mowing machine also was introduced, and was tried across the rough ground of the neighbouring water-meadows. The usual show, however, was very inferior there to what it is this year; and all the unusual part of it was regarded as experimental, and indeed, was little else. The conditions imposed upon the steam ploughing very nearly drove poor FOWLER out of his mind; COLLINSON HALL came to grief with his apparatus at an awkward turning of the road; and great as was the implement department at that time, the greatest success of the whole meeting, and that probably which lives most in the memory 10 years after the event, was the splendid Shorthorn bull exhibited by Mr. STIRLING, of Keir. Now we have no Shorthorn or other live stock; but steam-ploughing and mowing machinery are no longer experimental, and no longer in the leading strings of the Society. Both operations are done perfectly by many different manufacturers; and the whole thing is so usual, and so much a part of regular

farm routine, that at most a few hundreds of spectators are attracted by them. But, indeed, during the early part of the week there was a great lack of spectators everywhere. The show of Horses has been extremely defective. Excepting the agricultural classes, and in particular the stallions shown for heavy draught and for general farm work, where a good and level standard of quality was exhibited by classes of about eight and ten respectively, the display was not worthy of a great provincial Society.

To the Implement department reference is made in more detail elsewhere. The other sections of the Show—those peculiar to the Society—appeared to us to be hardly in their usual force. The Horticultural Show has been very good, the Poultry tolerable, and the Dogs, as usual, very interesting, though not very numerous. There could not, however, be a greater contrast, on the whole, to the meeting of last year. Hereford probably was put upon its mettle by the refusal of its invitation to the Royal Agricultural Society of England; but Hereford cattle and Shropshire sheep, and summer weather and overflowing yards, and even the hearty civic welcome—these were all of them in very striking contrast to the experience of the past week at Salisbury.

IT is better to work and fail than do nothing—better, like the Bath and West of England Society, even at great cost, to show that you are alive and full of pluck and energy, "working and learning," according to its motto, even though you do not with your working succeed in teaching anything but your own indomitable resolution and activity. And therefore we think the Provincial Society has been wiser than the National Society in maintaining its annual show, so far as it could, notwithstanding the cattle plague. Certainly the inaction of the latter brings into prominent relief the lamentable fact that its annual show is really the only display of life and usefulness it makes. This ought not to be, for there are many opportunities of usefulness of which it might avail itself.

Why does not the Royal Agricultural Society of England for example have such papers read before its weekly meetings as we are every week reporting at the meetings of our local clubs? What capital papers on the meat manufacture have been lately read before the London Farmers' Club, and before the Edinburgh Chamber of Agriculture. How full of detailed instruction are the speeches of Mr. M'COMBIE of Tillyfour, of Mr. JOHN WILSON of Edington Mains, of Mr. GEORGE HOPE of Fenton Barns, of Mr. ROBERT SMITH of South Molton. What excellent instruction, in a clever witty setting, was given the other day on Potato culture before the East Lothian Farmers' Club. How prompt the action of some of the Cheshire Farmers' Clubs in the face of the great disaster which has befallen that county, and what an excellent address was given at Over the other day on sheep and corn farming as the alternative before the dairy farmers there. At Wenlock, too, where Mr. MECHI's experience and advice on green crop culture were related—at Cirencester, where Mr. EDMONDS, of Lechlade, gave one of the best lectures on live stock management that was ever heard; where Professor WRIGHTSON, of the Agricultural College, gave an instructive account of the green crop cultivation of Northumberland; and where Mr. ALGERNON CLARKE has lately been telling the Cotswold farmers about Lincoln sheep, there has been no lack of proof that there is ample ability of the kind required, if only it were enlisted and directed. Let the Royal Agricultural Society enlist it and direct it; and, while its activity and usefulness would increase its membership, we should thus have, through the best channel that exists, all that experience and good judgment can afford for the guidance and assistance of agriculturists in every varying emergency. It was only the other day that Mr. PIPER laid before the Hungerford Farmers' Club the various uses to which local Agricultural Societies and a Chamber of Agriculture which would connect them all, might be put. Many of these uses are unquestionably realised already. But the question we would urge is why the failure should be so complete when the Royal Agricultural Society puts its hand to anything of this kind.

The papers we have referred to are better than anything that their Journal at great cost sends round to the members of the Society. They are more alive to the existing difficulties of the farmer—fuller of explicit and detailed instruction—altogether more appreciative of the circumstances in which the farmer is placed, and therefore more immediately interesting and instructive.

Take, by way of contrast to them, Mr. HERBERT'S paper, read the other day in Hanover Square, on the Dead-meat Trade. In the first place the subject itself is the mere echo of the difficulty in which Rinderpest has placed the farmer. There is an enormous and increasing demand for meat, and there is no difficulty in selling fat meat if you have got it. Any experience bearing upon its cheaper and more abundant production is most valuable, and would be greedily received. The disposal of the meat after it has been fed, is a matter especially interesting to towns where it is consumed, and only indirectly and in a much less degree to the country where it is grown. It is the cheapening and facilitating of the manufacture of the meat, not the regulation of its sale, that is the matter of first importance to the agriculturist. So much for the choice of the subject—then as to its treatment. Mr. HERBERT is better qualified, we imagine, than any man in the country to treat such a subject exhaustively; but during the five or ten minutes over which his short paper extended, we heard literally nothing but the statement that no alteration of the existing trade is possible. This, too, in the face of the fact that the trade is altering every day, and that the London meat market is getting rapidly into a dead lock of confusion by the quick increase of a trade which is thus declared by its chief exponent in the country to be beset by difficulties almost unconquerable. If Lord CATHCART, and Mr. HOLLAND, and Mr. THOMPSON had not come to the rescue, the whole thing would have been ridiculous; and indeed we do not hesitate to say, that as representing the Royal Agricultural Society of England, the spectacle of these great men paying compliments to one another with reference to the quantity of valuable information which had been that day communicated and was being collected on this subject, in a room with not a dozen members present, nor, so far as we remember, a single tenant-farmer among them, was nothing less than a farce.

The weekly meetings of the Society evidently need to be reorganised. The subjects should be chosen by those who are in the habit of mixing with farmers and learning what they are interested in and talking about from week to week. We strongly advise the authorities to take into their counsels Mr. ARKELL of Swindon, who criticised their conduct on the cattle plague the other day so well or Mr. CORBET, the Secretary of the London Farmers' Club, which seems under his guidance generally to do the right thing at the right time.

Perhaps they would do well to follow the example of that Club, and offer an honorary premium for essays on the subjects selected for discussion. A piece of plate or medal would be valued more than a sum of money by some of those whose services are most desirable—at any rate the committee who have the conduct of these weekly meetings ought to have ample funds at their disposal, and services should be purchased if they cannot be otherwise obtained.

THE DEAD MEAT MARKET.

[The following is Mr. Herbert's paper on this subject, read before the Royal Agricultural Society of England last week.]

THE long-agitated question whether it is possible to furnish the metropolis with adequate supplies of meat for consumption without the aid of a live-stock market evidently requires a solution at the hands of practical men. On the one hand, it has been argued that there would not be the slightest difficulty in providing for the wants of nearly 3,000,000 of people by means of slaughter in the provinces; and, further, that many of the difficulties which surround the live-meat question would be got rid of. There are so many interests involved in the question before us, that I purpose entering into a few details bearing upon a matter which affects the interests of the consuming classes. In the first place, let us see whether it is possible, at all periods of the year, to furnish the metropolis with, say 1,500,000 additional carcases of sheep, and 250,000 additional carcases of beasts, irrespective of lambs, calves, and pigs, in a wholesome and saleable condition? The numbers I have here quoted represent the average supplies of live stock annually disposed of in the great Metropolitan Cattle Market. It is well known that the graziers themselves have little or no accommodation on their respective farms for slaughtering cattle; so that it would be found necessary to erect in the neighbourhood of large towns abattoirs of no small dimension to prepare the meat for transmission per railway. If we take the Norfolk season, we should find that about 12,000 beasts would be killed at Norwich during the first six months of the year. Colchester and other towns would require abattoirs for a portion of the Essex breeds; whilst during the last six months, the slaughtering of stock would be chiefly carried on near Lincoln, Peterborough, &c. The difficulties in this respect would not be great; but we have to consider two important points—as regards the conveyance of the meat to London, and the cost of carriage. Nay, more, we must not forget to consider how and upon what terms the offal is to be disposed of, possibly in localities in which there is very little demand for it. It is well known, notwithstanding the amount of competition between the various companies, that the charges for the conveyance of dead meat to London exceed those for live stock by nearly or quite two-thirds. During the period that the movement of live stock to London was prohibited, those charges, which, of course, entered into the retail price, were severely felt by the consumers. There would, of course, be no difficulty for the great lines in carrying any quantity of meat: but who does not know that country-killed qualities invariably sell at low quotations compared with those realised for meat slaughtered in the metropolis, notwithstanding that qualities are equal? Besides, other objections might be easily urged against the proposed system. Naturally, the grazier would have imposed upon him a great additional amount of trouble. He would require honesty of purpose on the part of those to whom he would intrust his stock; he would require separate accounts of the weight of each carcase, and the price at which the offal was disposed of. Again, he would have to run the risk of violent fluctuations in the value of meat in the dead markets, and of absolute losses from the carcases arriving in the metropolis in warm weather in bad condition. But how is the offal to be disposed of? Additional tanneries, soap-works, and boiling-houses would be necessary in the vicinity of large towns, and the organisation of a system which would be highly expensive. You may have the offal in various localities; but how can it be consumed? Admitting that a portion of it were used on the spot for local purposes—what is to become of the remainder? In London it is easily disposed of: hence, agents would be despatched from the metropolis to purchase tough fat, hides, skins, &c.; and, owing to the heavy railway charges, they could only offer miserably low prices for them. But it may be said that the proposed system has long worked well in Scotland, Yorkshire, and the West of England, from whence we have long drawn very large quantities of dead-meat for consumption in the metropolis. But it must be understood that the offal in Scotland, Yorkshire, and the West of England is readily used up. Most of the wool and hides produced in Scotland are converted into use; whilst in the West of England, nearly the whole of the supplies of pork are converted into bacon, hams, and lard for London consumption. Nay, more, the immense importations of pigs into Bristol from Ireland are slaughtered for the same purpose. With all these objections before us, it is possible, with the necessary facilities in London for the sale of dead-meat, to supply London from distant localities with an adequate supply of meat. But this can only be done in cold weather, or say during six months of the year. During the rest of the season, a live-meat market would be indispensably necessary, or we should have an amount of loss which would far exceed that sustained by the cattle plague.

Earl CATHCART felt very much indebted to Mr. Herbert for his observations, and thought it must be satisfactory to the meeting to have had the discussion opened by a man of such practical knowledge, and who had written so much on the subject. It appeared to him that the real question raised by Mr. Herbert was as to the method of the meat markets. They might not be lose sight of the fact that, long before the cattle plague was thought of, the idea was entertained that, in consequence of the introduction of steam and railway conveyance, great alterations would take place in the dead-meat markets of large towns. Such alterations might be made with safety, and it was desirable, in the first place, was the great increase which had marked the progress of the population, and the limited extent of the area of this country, and which had necessitated very considerable importations from abroad. There were about twenty millions of people in England and Wales, and by the last Cattle Census that the number of cattle within those limits was under four millions. Therefore, if the cattle in this country were divided amongst the population, there would be about one-fifth of an ox, or beast, for each person; so that, if we were dependent for meat upon England and Wales alone, that number of beasts would not hold out for a month. Hence, our great reliance was upon large imports from abroad—a state of things which must tend very much to increase the dead meat markets, because it would be unsafe, owing to the existence of the cattle plague on the Continent, to have foreign beasts travelling through the country on our railways, without a system of quarantine; and, rather than have quarantine, the establishment of abattoirs and slaughter-houses at the ports of debarcation would be preferred, where the foreign cattle might be slaughtered and sent to London as the foreign cattle might be slaughtered and sent to London as dead meat. With regard to what Mr. Herbert had said respecting offal, he had himself witnessed the difficulty experienced in large meat markets of transporting offal. It was packed in baskets, and sent in a most disgusting state; but there was no reason why improved vans should not be constructed, in which the offal might be hung up and be supplied with a free circulation of air, so that it might arrive at its destination in fair condition. Something had been said about railway charges, and he really thought it was unjust proceeding to make capital out of what was a public calamity by charging higher rates for the carriage of dead meat than for the carriage of live. He was willing, however, to attribute this to the possible circumstance that new arrangements had not yet got into working order, and he had assumed that the rate for the conveyance of dead meat would be in proportion to that for live, when the thing had been more fully developed. With respect to the statement that country-killed meat did not look so well as that which was slaughtered in London, he would observe that the "look" was not everything. "The proof of the pudding was in the eating," and he questioned much whether the London polished meat—that was to say, meat that was polished up with warm water, grease, and other stuff, just as an old apple-woman at a stall polished her fruit every morning—was really so good as the country meat. But there was no doubt that the system of polishing and other niceties and refinements which were so well understood in London would also become familiar in the country as soon as it was discovered that it was worth while to resort to it. In alluding to the difficulty there was in negotiating prices, Mr. Herbert had left out of account the service which the telegraph might render. It was hardly possible to over-rate the

importance of its agency in reference to this matter, and a practical man had informed him that they were perpetually telegraphing from Newgate Market with regard to the supply of dead meat. A telegram was sent down, say to Aberdeen; and the cattle, which were all ready for slaughtering, were at once despatched and sent off by railway. There was no time, therefore, connected with the London market and the circumstance connected with the subject of offal. It was that beef fat was regularly sent on its travels into other lands, and when it came back it was not in its original shape, but as tallow.

Mr. HERBERT remarked that it was purchased in London by the Dutch, and, being carried into Holland it was there converted into butter and tallow, and in that form was returned to London.

Earl CATHCART: That was an agreeable piece of information to impart to the consumers of butter. Moreover, if they knew how the "greasy beef of old England" was poured into Newgate Market, he did not think they would relish it as they did now. Mr. Herbert had referred to the subject of competition; and he believed that all the authorities were agreed that a central metropolitan market must be established, because of the necessity for having the means of regulating prices. If there were many meat markets prices might greatly vary, and the competition which was essential for the regulation of the prices of meat be reduced. All authorities, then, were pretty well agreed as to the necessity for a central market; and another reason why it was so additional reason why abattoirs or slaughter houses should be established within tolerable distances of town for the summer supply; for it could not be altogether depended upon from distant counties, though it might from the home counties. The Commissioners had further stated that they had been informed by the trade that the farmer would be induced by steam carriage to learn to slaughter, pack, and consign. Again, they also said that 40 years previously there were only 13 salesmen in Newgate Market, and that in 1840 they had increased to 200. This showed the great development of the meat trade in consequence of the use of steam carriage. Formerly, it appeared, the home counties only could send dead meat into the London market; but in 1849 much of it came from Scotland, as it did now; and they added a fact which he was glad to acquaint with before reading their report, and it increased his sense of the inadequacy of Newgate Market—that the area of that market was only 2 rods and 45 perches. When one considered the enormous quantity of dead meat that was sent into Newgate Market, all packed and piled up, it was scarcely possible to conceive the amount of confusion presented there. Vans and carts were crammed into a street only 16 feet in width, where one could not pass another, and there they were unpacked in the midst of crowds of purchasers. The Commissioners in their report likewise adverted to the primitive manner in which the meat was carried on their shoulders in contact with their heads and faces, and the dirty handling to which the carcases were subjected. They spoke besides of the quantity of meat which was spoiled for want of air, and space to hang it in. Then there was the interesting fact with regard to the gradual extension and rapid rise of the dead meat traffic, which appeared in one of the numbers of the "Quarterly Review" in the year 1854, and to which he would direct attention, as the information it contained had struck him with great force. The article in question was much upon the report of the Commission already referred to. At that time it stated there were 36,487 tons of dead meat annually pitched into London; that the Eastern Counties Railway supplied 10,398 tons, and the Great Western 13,152 tons, and that the Eastern Counties in one Christmas week sent to Newgate Market 1000 tons of dead meat. It went on to state that the annual value of the meat consumed in London was upwards of 14,000,000*l.* sterling; and reference was made to the importance of railway arrangements for the transport of dead meat, so as not to injure it, as the next passage to which the report of the Committee of the House of Commons, which sat in 1856. That report contained much interesting evidence with respect to the metropolitan meat market, which he had not had time to go into thoroughly; but he would just take a brief glance at it and other things. It mentioned the single road leading to Newgate Market, that only one carriage could pass at a time, and the complete blocking up of the approaches by vans and carts. It then proceeded to say that steam had given a remarkable impulse to the trade in dead meat in Scotland and Ireland, and that all salesmen agreed that the trade in dead meat would increase and become the principal source of supply. This, it would be observed, was in the year 1856; and of course before the cattle plague was thought of. In the next place, the report went on to state that the importance of establishing a central market for the metropolis, of giving facilities in such a central market for the disposal of the offal among the poor people who required it, and also the essential importance of competition regulating the price of meat. The committee also said that the question was simply for them to take the London dead meat market, if properly managed, would create anything like unwholesomeness in its vicinity. There was always something to be learned from our neighbours across the Channel, and he should like to quote the opinion of one of those gentlemen, chief headed, sharp eyed Englishman that had ever travelled—he meant Sir Edmund Head. A few years ago, namely, in 1852, Sir Edmund published an interesting and popular book, with the title of "A Faggot of French Sticks." In one of the chapters, the author described a visit which he had made to the abattoirs and pig-slaughtering establishments in Paris, and a conversation which he held with the chef of the latter, in the course of which the chef stated the principle by which pig-killing was regulated. "Sir," said he, "in Paris no one has a right to kill a pig." And that, it appeared, was the principle upon which the whole thing hinged. The killing was all done at the Government establishments. The Paris abattoirs were established by the Emperor Napoleon the First. There were five of them for cattle, outside the walls. They were built like cavalry barracks, and the dimensions of one of them were in length 380 yards by 150 yards in breadth. Arrangements existed for the immediate preparation of the blood for the purposes of commerce, and for disposing of the entrails. There were also a trigery and melting houses, and even when the weather was exceedingly hot, there were ice-making shells. All the arrangements for treating the cattle were of a most merciful kind. There was no barking of dogs, no hallooing of men, no feverish excitement. An abundant supply of water for slushing was provided. There was no pawing with hot hands, and no bad meat was allowed to be sent away for sausages. Then the author, moralising upon all this, exclaimed, How different was this to the manner in which they dealt with the roast beef of Old England in Newgate Market! If Sir Edmund had been with him (Lord Cathcart) on a recent occasion when he spent a whole night in Newgate Market, he fancied he would have used language still more forcible and emphatic. Another remarkable circumstance which Sir Edmund Head did not refer to, but which was mentioned in the "Journal of the Statistical Society," was that the introduction of horse-flesh into Paris having been forbidden, a large contraband trade in it sprang up, which increased to such an extent that the authorities were at length obliged to legalise the introduction of horse flesh for consumption as human food. Another important fact was that the duty on the introduction of fresh meat duty the consumption of meat in Paris was correctly ascertained. This, however, could not be done in London, where there were no similar means for arriving at such knowledge. The information derived from this source in Paris showed that great fluctuations were experienced in the rate of consumption of meat in different years, which was to be traced probably to fluctuations in the general trade of the country, and in the command which the people possessed over the necessaries of life and matters of that kind. But whatever might be the cause, there was no doubt that the consumption of meat in the large towns of France was subject to extreme variations. It appeared from the "Journal of the Statistical Society" that the consumption in Paris during the year 1847 was 150 lb. of meat per head of the population, exclusive of game and poultry; in 1848, it was 97 lb.; in 1849, 120 lb.; and in 1850, it was 158 lb. These figures exhibited a very considerable fluctuation in the consumption of animal food; but if the mass consumed were taken, instead of the rate per head of the population, the fluctuation would appear to be still greater. Most members of Parliament, he presumed, had received a copy of an interesting pamphlet relating to city improvements. By the map which was appended to that pamphlet, it would be seen that the new arrangements for the proposed metropolitan dead meat market at Smithfield were as convenient as they could well be made. There was a railway, however, to the blockading difficulty. Nevertheless, it was so important to have a central market, that whatever the difficulties and drawbacks, they would be of much less consequence than the evil attendant upon having several markets distributed over the town. He had, however, to say that, having received a copy of an interesting pamphlet relating to city improvements. By the map which was appended to that pamphlet, it would be seen that the new arrangements for the proposed metropolitan dead meat market at Smithfield were as convenient as they could well be made. There was a railway, however, to the blockading difficulty. Nevertheless, it was so important to have a central market, that whatever the difficulties and drawbacks, they would be of much less consequence than the evil attendant upon having several markets distributed over the town. He had, however, to say that, having received a copy of an interesting pamphlet relating to city improvements, and if they did not at present feel inclined to do that, then he would recommend them to follow his example and spend a night in Newgate Market, which he thought might act as a spur to their languid energies, and prompt them to use a little more vigorous exertion. He had to say that, therefore, as to a close, he would only further refer to the important recommendation contained in the concluding portion of the third and last report of the Cattle Plague Commissioners. From all he had observed, he was convinced that that recommendation was perfectly right. He was glad to find the noble Duke was his hearty concurrence. They said that now was the time to carry out the changes which were required in the supply of meat to large towns, when great alterations might be made without being attended by anticipated inconveniences; and it might be anticipated that slaughter-houses should in time be transferred from towns to suburban points on lines of railway, to the ultimate benefit of both customer and butcher. Then they ended by saying that the cattle plague, though in itself a great calamity, had undoubtedly put a stop to much that was cruel and pernicious, and had, as all hoped, that that happy state of things might be lasting.

Mr. FLEET said: A fact had been mentioned to him by a leading grazier, which he could not understand. A large Norfolk grazier told that gentleman that in the spring he could only make 8*s.* per stone of meat, but was bringing up to London dead, while meat of the same quality in the London live meat market would readily have made 6*s.* per stone.

Mr. HOLLAND, M.P., observed that it must be a result of the change of system.

Mr. FLEET said the impression which he received from what that gentleman said was, not that farmers were likely to slaughter on their own farms, but that abattoirs would be established in the environs of London, and animals would at all events travel to the vicinity of railway stations on their own legs.

Mr. HOLLAND, M.P., reverting to the fact alluded to by Mr. Frere, namely, the variation of price as between one kind of meat and another, repeated his belief that it depended on the change of system. No doubt, however, in course of time —When the dead meat system had become thoroughly established, and when, as the noble Earl who had just spoken anticipated would soon be the case, a system of telegraphic arrangements had been established, by means of which it would be ascertained how much meat was required in a certain district or town, the question of price would be easily enough to be set right. He should have liked very much to enter into several points involved in the subject; but, as the noble Earl had remarked, a committee, of which he (Mr. Holland) was a member, was at that moment prosecuting its inquiries. It was a question which deeply affected the farmer, and equally so foreign, but home animals also the question of quarantine, the mode in which animals were brought into this country, and the mode of their transit from place to place; and he regretted that they had not in Parliament the valuable assistance of their colleague, Mr. Clay. That would be the only course, if it would be very inconvenient, and contrary to rule, for a member of a parliamentary committee to state to a meeting, or in any way to make use of the evidence taken by that committee, before the inquiry was closed and the report made; and he could not, therefore, say what were the views regarding information which he might otherwise have given on the subject. He could only say that he believed the results of the inquiry would be most valuable that people would be astonished to see with what facilities a change might be made as regarded the supply of meat to London. One system was one thing, another; the new system being, too, far more efficient, far more effectual, far more valuable, far more healthy, and far more civilised than the old one.

The CHAIRMAN (Mr. H. S. Thompson), in summing up the discussion, said: Lord Cathcart had alluded to the changes made by railway companies for the conveyance of dead meat since the breaking out of the cattle plague. Now he (the Chairman) thought that a great deal of what had been said in the way of complaint on the subject was due to a want of consideration of the difference between a wholesale and a retail one. They might rest assured that their northern brethren very well understood their own interest, and that if the farmers and cattle-dealers of Aberdeenshire and the districts around it were satisfied with the cattle-traffic by railway, both as regarded the charges made for conveyance and the state of the meat when it reached its destination, there could be no great reason for complaint. It might fairly be assumed, he thought, that after a time the charges for the conveyance of dead meat would not be such as to prevent the trade from being carried on profitably. He must also compared the charge for conveying a live animal with the charge for conveying a dead animal. He forgot that when animals were conveyed alive there were eight or ten in the same truck; whereas, under the existing state of things, the railway company had to convey one carcase, or it might be a quarter of a carcase. It would be impossible for the company to provide carrying power for so small a quantity, sent to a station as it were hap-hazard, or to charge the same in proportion, for such a quantity, as was charged when a whole truck was hired and as many cattle were put into it as it would contain. It was not fair, he repeated, to compare retail with wholesale charges; but he might remark, that if it should be found necessary, in order to supply the wants of the country, that dead meat should be conveyed on already increased scale, the charges would no doubt be adjusted to the altered state of things. Farmers would soon find out how to obtain the benefit of wholesale charges. He, for one, felt much obliged to the gentlemen who had taken part in the discussion. Lord Cathcart seemed to have collected a great deal of information on several points which might be usefully discussed; and no doubt both his lordship's remarks and those of Mr. Herbert would be published in the Society's Journal.

THE CATTLE PLAGUE.

The following returns were issued on June 1.

These returns do not profess to give the total number of cases which have occurred in Great Britain, but only those which have been ascertained from information received at the office from inspectors. Columns 1 only record the cases reported as having commenced during the weeks indicated by the headings; "back" cases being added to columns 2.

Census Divisions.	1 Number Attacked. Week ending May 19.	1 Number Attacked. Week ending May 26.	2 Result of Reported Cases from Commencement of Disease. Attacked.	Killed.	Died.	Recovered.	Unaccounted for.
Metrop. ..	5	4	7,875	3,398	3,709	318	450
S. Eastern .	—	2	4,856	1,684	2,537	465	170
S. Midland .	202	149	20,240	8,257	10,067	1,537	387
Eastern ..	73	49	11,928	5,318	4,831	788	396
S. Western .	1	3	1,750	652	820	207	71
W. Midland.	216	196	14,235	5,762	6,079	1,498	992
N. Midland.	378	246	18,396	10,489	6,248	1,218	541
N. Western .	701	342	67,906	21,615	34,955	7,591	3,749
Yorkshire .	144	93	34,339	7,907	18,346	5,053	2,033
NorthernCo.	42	58	8,567	4,892	2,613	974	118
Monmouth. & Wales ..	48	42	8,187	1,045	5,790	1,053	299
Scotland ..	53	32	46,754	6,160	28,082	10,701	1,811
	1,932	1,267	244,455	76,832	124,073	32,283	11,267

NOTE.—4 Inspectors who reported cases last week have not reported in time for this return—viz., for the county of Chester, 1; Lincoln, 2; and Flint, 1.

These Inspectors returned 34 cases last week.

THE ROYAL VETERINARY COLLEGE.

ANNUAL REPORT OF THE GOVERNORS TO THE COUNCIL OF THE ROYAL AGRICULTURAL SOCIETY. [Extending to the 31st December, 1865, and received by the Society on the 26th May, 1866.]

SINCE their last Annual Report the Governors of the Royal Veterinary College have observed with deep solicitude the cloud which has gathered over the prospects of the agriculturists of this country through the outbreak of the cattle plague, and they sympathise with the Council in lamenting this national calamity. Before, however, referring in a more especial manner to this subject, they would direct the attention of the Council to some matters of importance, but of more special interest as connected with the alliance between the two Institutions.

The Governors have seen with much satisfaction that their efforts to render the College increasingly useful to the agricultural community have met with a ready response, and that the Members of the Society and agriculturists generally have co-operated with the veterinary profession in furnishing to the Institution a largely increased number of morbid specimens, and by communications relating to disease in cattle, sheep, and pigs. Every opportunity has been taken by the Professors of utilising these for the benefit of the pupils. Agriculturists from all parts of the country have visited the College to obtain information relative to the diseases of their cattle, and have acknowledged the benefit they have derived from the advice which has been given.

The lectures, pathological demonstrations, and clinical instructions have been regularly pursued, and the attention of the pupils to these branches of their studies has been such as to give the greatest satisfaction to the professors. Compared with the preceding and many other years the number of the pupils has increased, a fact which augurs well for the future, especially when it is borne in mind that the governors, with the view to raise the general tone of the profession, had determined that each pupil should undergo a matriculatory examination.

The number of pupils who entered the classes during the year is 63, and of those, the number who passed the examination of the Royal College of Veterinary Surgeons is 47.

No material alteration has been made in the system of education which has hitherto been found to work so well; the same number of lectures have been regularly delivered, and the students have been required to devote their time and attention fully to their studies, including as these do, besides cattle pathology, the anatomy, physiology, and pathology of the horse, veterinary surgery, chemistry, materia medica, toxicology, &c.

Provision is made for examinations, and for the reading of essays and discussion of medical subjects by the pupils themselves at the weekly meetings of the Veterinary Medical Association.

A gradual increase in the number of qualified practitioners is thus provided to meet the requirements of stock owners. The location of veterinary surgeons in districts hitherto occupied by farriers cannot fail to be of great advantage to the country by the bringing of medical science into daily operation, as applied to the diseases of all domesticated animals.

Apart from the cattle plague, disease has not been very rife among bovine animals. The epizootic affections, known as the mouth-and-foot disease, and the lung disease, with which we have long been familiar, have prevailed in some districts, but not in a very malignant form. The latter has consequently been fewer from the latter malady than heretofore, since the disease has been more amenable to medicinal treatment and agents.

Owing to the short hay crop, and the almost total failure of the Turnip crop in 1864, having been followed by a long winter and cold spring, farmers experienced the greatest difficulty in providing sufficient keep for their stock; many animals, particularly young sheep, suffered severely. Numerous deaths consequently took place from diseases traceable to ungenial weather and insufficient nutriment. Among the deaths from these causes were several singular cases of poisoning, arising from the animals browsing upon some of the evergreen trees and shrubs. In different parts of the country numerous cattle were lost from feeding on Yew; as many as 40 deer are said to have died in the Duke of Beaufort's park at Badminton, from this cause—the boughs of the Yew trees having been brought within their reach by the weight of the snow. Three flocks of sheep are also recorded as having been poisoned by eating the leaves of Rhododendron ponticum. One of these cases occurred in Hampshire, the second in Kent, and the third in Berkshire. Among other sources of injury to cattle, one of a very exceptional character may be mentioned—the poisoning of a considerable number of animals by being pastured in fields in which rifle butts are erected; lead-spray from the bullets, smashed against the targets, was taken up with the Grass, and has been found to have lain in the stomachs of these animals for many weeks, undergoing solution in the gastric and intestinal juices, and to have thus destroyed the animals by a process of slow poisoning.

Facts of this kind cannot be too extensively known among farmers, in order to the prevention of a recurrence of the mischief arising from them.

In the month of June the small-pox of sheep suddenly made its appearance among a flock of ewes and lambs on the Sussex Downs, near to Newhaven, and as no foreign sheep had been imported at Newhaven, or had been known to have been in the neighbourhood, the origin of the disease could not be fully ascertained; it was probably occasioned by the large importations of foreign wool which were then taking place into the port of Newhaven. Much of this wool on arrival was found to be packed in torn bags, and consequently portions of it were often scattered about. The sheep affected by the disease were at the time of their infection in pasture grounds by the side of the railway, and were thus exposed to the probability of infection from this cause. By some persons, however, the outbreak is believed to be traceable to the fact that an infected sheep had been thrown overboard from an importing vessel, the body of which had floated up the river. A drowned sheep was found, but there is no evidence to show how it came into the river, or whether it was affected with the disease.

Early information was received of the outbreak, and every precaution was adopted under the personal superintendence of the Professor of Cattle Pathology to prevent the spread of the malady, and lessen its devastating effects. Two flocks only were attacked, and although these numbered nearly 1000 sheep, only about 100 of them were lost.

The great event of the year has undoubtedly been the outbreak of the cattle plague. This terrible disease was first observed among the London dairies on June 27th, but its true nature was not suspected. On July 3rd it was recognised by Professor Simonds, who was then consulted by the veterinary surgeon in attendance, and immediately brought the matter to the knowledge of the Government. From that time the disease continued to spread, and reached such fearful proportions as to require the enactment of the most stringent legislative measures.

The officers of this College have been unremitting in their efforts to assist in arresting the progress of the disease, and from the very commencement have applied themselves early and late to the adoption of means likely to be of service. The Governors considered that exertion to meet this emergency was the primary duty of this Institution, and that no reasonable expense should be spared in search of remedies, if such should be discernible, at all events in the recommendation of methods for preventing the extension of the disease. With this view they erected a number of loose boxes, in a separate yard, and afforded means to keep up a continued supply of plague-stricken animals for treatment and experiment.

It cannot be said that any marked success has yet attended the medical treatment, still the experience which has been gained of the pathology of the disease is considerable, and the knowledge thus propagated has been of great value in arresting the progress of this murrain.

Many questions in connection with the pathology of cattle plague and the liability of its extension to other animals have been warmly debated, and none more so than the susceptibility of sheep to infection. To remove all doubt on this point a series of experiments was adopted at the College, some results of which the Governors subjoin, as extracted from the Report made by Prof. Varnell and Assistant Prof. Pritchard to the Royal Commission.

EXPERIMENTS WITH SHEEP.

October 14.—One sheep (a hogget) was inoculated with matter taken from the eye of an ox affected with the plague. On the 20th it showed marked symptoms of the disease, and died on the 23d. No treatment.

October 14.—One sheep (a hogget) was inoculated with matter taken from the nostrils of one of Mr. Harvey's sheep from Crown Point, Norwich. On the 20th it showed well-marked signs of the disease, and died on the 23d. No treatment.

October 14.—One sheep (a hogget) was inoculated with matter taken from the nose of the same sheep as in No. 2, and on the 20th it evinced symptoms of the disease. It died on the 30th. This sheep was submitted to treatment.

October 14.—One sheep (a hogget) was inoculated with matter taken from the eye of an ox affected with the plague. This sheep was submitted to treatment and recovered.

October 19.—Two sheep (hoggets) were placed in a shed with a cow affected with the plague. On the 23d both sheep became affected with the disease, and on the 31st they died. No treatment.

October 6.—Two sheep (hoggets) were placed in a shed, in which a cow had died the day before from the plague. The disease did not declare itself in these two sheep until the 26th. One of them died on the 30th, and the other lingered on until the 19th of November.

November 14.—One sheep (hogget) was inoculated with matter taken from the vagina of a cow labouring under the plague. It died on the 15th, about 24 hours after being inoculated. It can hardly be imagined that this sheep died from the effects of the disease through inoculation, yet it is remarkable that every part of the mucous tracts, both alimentary and respiratory, indicated faint blushes of redness precisely in those places in which they are almost invariably found in true cases of cattle plague. This sheep had been suffering from diarrhœa for some time previously, but had quite recovered, and at the time it was inoculated appeared to be very healthy.

These experiments must be considered not only as proving the liability of sheep to cattle plague, but also as establishing the fact of the ready transmission of the disease from sheep to cattle and from cattle to sheep. Other experiments were also adopted having for their object the elucidation of other points in connection with the pathology of the plague. These are extracted from the same report.

EXPERIMENTS UPON CATTLE.

No. 1.—The first case of cattle plague admitted into the College Infirmary was on the 13th of July. The cow was brought from Mrs. Nichol's dairy at Islington, and exhibited well-marked symptoms of the disease. No treatment was adopted, and she died on the 17th. When this cow was first brought to the College she was placed in an open loose box, and, as an experiment, the first tried, a healthy cow, was placed with her in the same box. This second cow took the disease, from which she died.

No. 2. September 19th.—A black and white calf about four months old was placed in a box with a sheep, which the day before had been in contact with a cow affected with the cattle plague. On the 8th of October the calf showed symptoms of having the disease in a very serious form, and on the 10th it died. No treatment was tried in this case.

No. 3. October 2d.—A red and white calf about five months old was placed in a shed with four sheep which had taken the disease from inoculation. On the 27th the calf showed symptoms of having taken the disease. On the 31st it died.

No. 4. October 20.—A black and white heifer about two years old was inoculated with the virus taken from the nostrils of a cow affected with the plague. No effect.

November 14th.—Inoculated the same heifer with matter taken from the nostrils of a Dutch cow labouring under the cattle plague. No effect. Thus this heifer has taken the disease in a very intense degree. This heifer has resisted the effects of both inoculation and exposure to infection up to the present time, viz., December 25.

No. 5. October 20.—A black and white Dutch cow, which had recovered from a mild attack of the disease, was inoculated with matter taken from the nostrils of a cow affected with cattle plague. No effect.

No. 6. December 6.—A red calf about five months old was inoculated with matter taken from the eye of a cow labouring under cattle plague. On the 11th, being the fifth day after inoculation, symptoms of the disease were manifest. It died on the 15th. This calf was treated.

No. 7. December 6.—Inoculated a red calf about five months old with matter taken from the eye of a cow affected with the plague. On the 12th, i. e., six days after the inoculation, it showed symptoms of the disease, and died on the 17th. This case was treated.

No. 8. December 11.—A red and white calf, about six months old, was placed in an infected box in which a cow had died the day before. On the 18th it showed symptoms of the disease, and died on the 22d. This calf was put under treatment.

TREATMENT BY HYDROPATHY.

About the middle of September, two cows affected with the cattle plague were treated on the following plan:—

No 1.—After the body had been well douched with cold water, the animal was immediately wrapped in wet sheets, over which oiled clothing was placed, and the whole closely secured by bandages. Even before the operation was completed, the cow became partially unconscious, and laid down, in which position she remained for half an hour. In a short time her skin became quite warm, after which again a good up for about an hour, when it was found that considerable perspiration was produced. The wrappers were now removed, her body well rubbed, and again completely covered with dry rugs. Some gruel was also given her, and in about half an hour the following draught was administered: tincture of opium, one ounce; tincture of camphor, one ounce; water, one ounce.

On the following day the symptoms were much aggravated. The douche and wet sheets were again used, with nearly the same effects as before. The medicine was also repeated. From this period the cow rapidly became worse, and died on the third day after her admission.

No. 2.—The results of treatment in this case were similar to those in No. 1, and need not be repeated. These cases were the only ones treated on the hydropathic principle, and although no termination was not satisfactory, we are nevertheless inclined to think that a modified form of this treatment might prove to be advantageous.

CASES THAT HAVE RECOVERED.

No. 1. Italian Cow.—A large Italian cow in good condition was also admitted into the Infirmary, affected with the cattle plague. The symptoms were not intense, but they were well marked. The treatment consisted of saline laxative and diuretic medicines, with a free use of the bicarbonate of potash. As soon as the fever subsided she had some diffusible stimulants, and light succulent food was allowed her, and her body was well clothed.

No. 2. A Dutch Cow.—A very mild case; still the symptoms were sufficiently defined to enable the Inspector who sent her to the College, to assert that she was affected with the plague. The secretion of milk was suspended, she refused her food, the lining membrane of the vulva was heightened in colour, and she had diarrhœa. Some saline medicine, and afterwards brandy, was given in gruel. On the third day after her admission the cow gave evidence of returning health, but in about a week or 10 days from this time the joints of her hind limbs, particularly of one limb, became inflamed. The treatment consisted in the exhibition of mild laxatives, and the application of fomentations to the inflamed joints. A week after being thus treated she was so far recovered that she was returned to her owner.

No. 3. A Dutch Cow.—This case was sent to the College by an Inspector as a case of cattle plague. The symptoms were very slight; saline laxative medicine, succulent food, and the usual good nursing, was all the treatment she received. In a week from the time of her being admitted she was convalescent. This cow came into the infirmary in September, and still remains there. She has been exposed to the influence of infection from all the cows that have since been in the College, and has also been twice inoculated with the matter taken from cows affected with the plague in its most virulent form, but has completely resisted the influence of both.

No. 4. Dutch Cow.—This case was considered by the Inspector to be a very mild one on its arrival at the Infirmary we noticed that the animal had diarrhœa. The colour of the mucous membrane was heightened; the secretion of milk was arrested, but she did not wholly refuse her food. Some medicine forwarded to the College from the Continent was given her. We are not aware of what it consisted, or whether it exerted any power in arresting the progress of the disease. At any rate the cow recovered, as we in fact anticipated would be the case from the first.

Among other experiments to test the value of prophylactic agents the following were had recourse to:—Four young heifers were made to take daily doses of three ounces of sulphite of soda in the water given them to drink. Five days from the commencement of their taking the agent one of them contracted cattle plague, and died on the third day afterwards. The second also fell ill with the disease, taking the sulphite for 10 days, and speedily sank from the attack.

Some experiments of vaccinating cattle were likewise adopted. The particulars of some of these are given in an addendum to the Report before alluded to, and here transcribed in full. They are thus described by Professor Varnell:—

Being desirous that the experiments of vaccination and counter proofs should be efficiently carried out, I invited the co-operation of Professor Simonds, believing, and I trust correctly, that the conclusion we should arrive at would be of greater value in the estimation of the public than if simply conducted by myself. I may further add that Professor Simonds was the more desirous of assisting me, since it is his special province in the Veterinary College to investigate the diseases of cattle.

For the purpose of ascertaining the value of vaccination in cattle plague, an opportunity we did not expect offered itself, through which we were enabled to obtain two successfully vaccinated cattle.

Mr. Acton, Esq., M.R.C.S., with his usual desire to facilitate inquiries into the nature of the diseases of the lower animals, immediately on the subject of vaccination being mooted, at once consented to vaccinate all the bovine animals on his farm. For this purpose we procured for his use a sufficient number of the fully-charged points from the National Vaccine Institution.

On the 7th of January he vaccinated 17 animals of various ages. Of this number seven only took; some of them, however, were more effectually vaccinated than the rest. Two of the seven animals were selected by Mr. Acton as suitable for the object for their experiments. These was an Alderney cow, giving a fair amount of milk. She had three well-marked vesicles on the vulva, two on one side and one on the other. The other animal was a half-bred Alderney heifer. She had but one vesicle on the vulva; still she was considered to be effectually vaccinated. On her arrival at the College a crust had begun to form over the scat of the puncture.

No animals could have been more suitable for the experiments we required than were these two. They had come from a farm quite free from the cattle plague, and were vaccinated by Mr. Acton himself.

EXPERIMENTS.

No. 1. January 8.—A healthy "bud," about six months old, was vaccinated with some vaccine lymph taken from the arm of a child. No effect.

No. 2. January 8.—A healthy "bud," about five or six months old, was vaccinated with vaccine lymph as above. In this case it took on the fifth day. There was a blush of redness around three of the punctures, two on one side of the No. and one on the other, and the skin was slightly tumefied. On the ninth day the tumefaction and redness had increased and imperfect vesicles formed, after which the punctures scabbed over, and the usual characteristic phenomena followed. On the 7th of February, 30 days after vaccination, this "bud," although not purposely exposed, became affected with the cattle plague, and died on the 11th, four days after the disease had declared itself.

No. 3. January 20.—The Alderney cow which had been vaccinated by Mr. Acton, and had now recovered, was placed for 20 hours in a loose box with a "bud" affected with cattle plague. On the 26th the cow showed symptoms of the plague, but in a milder form than usual. On the third day, however, after the disease had declared itself, it assumed the usual severity, and on the 2d of February she died.

No. 4. January 24. The black and white half-bred Alderney heifer, also successfully vaccinated by Mr. Acton, was inoculated with matter taken from the eye of the "bud" alluded to in No. 3. On the 25th this heifer showed premonitory symptoms of the plague, and on the 30th became well marked. This case was unusually severe, the disease ran its course very quickly, and the heifer died on the 30th.

INOCULATION WITH RINDERPEST VIRUS FROM A SHEEP.

No. 5. January 13.—Inoculated a "bud" about five months old with matter taken from the eye of a sheep affected with the plague; this matter, being diluted with six times its weight of milk, was, by means of a few threads of wool, placed under the skin, on one side of the vulva. On the 18th the animal showed symptoms of the plague. On the 20th it was placed in a box with the heifer No. 3, and on the 21st it died.

INOCULATION WITH HUMAN VARIOLA.

No. 6. January 7.—A healthy "bud," about five months old, was inoculated on each side of the vulva by three punctures, and scarifications with lymph taken from a man affected with small-pox. No effect.

No. 7. January 7.—A healthy "bud," six months old, was inoculated with lymph taken from a man affected with small-pox, the same as above. No effect.

Note.—The "buds" Nos. 5, 6, and 7 were all re-vaccinated with lymph, taken from vesicles on the vulva of the Alderney cow of Mr. Acton, but without any effect in either instance.

The experiments we have produced by us on vaccination are but few, still we feel that they conclusively prove the inefficiency of vaccination as a preventive against cattle plague. The poison of this disease being received into the system after vaccination, both by direct inoculation and also by infection, it does not produce its effects with as much intensity and certainty of destruction to life as though the animals had never been vaccinated at all.

The period of incubation, the symptoms, mode of death, and the *post mortem* appearances were the same in character as those we have so often witnessed.

(Signed) GEORGE VARNELL.

The Governors have entered into the foregoing details of some of the attempts to treat the cattle plague, and of some experiments, in order to show to the Council of the Royal Agricultural Society, and to the Society generally, that although they were never sanguine that a remedy for this disease, when it has once possessed animals, would be discovered, since the information which they had received with respect to

the malignity of this disease from the countries on the Continent, where it has been for years prevalent, forbade any confident anticipation of so fortunate a result, they have nevertheless encouraged persevering attempts to treat the disease, and experiments as to its nature, for three reasons:—

1st, because they considered it their duty to promote the advancement of veterinary science in all its departments.

2dly, because they considered it their duty to extend the knowledge of this disease among the veterinary profession throughout the United Kingdom, to the vast majority of whom it was inevitably unknown, owing to the freedom of this country from its ravages for more than 100 years, and its last appearance having occurred when the study of veterinary science was in its infancy; and

3dly, because they considered it their duty to co-operate with the Royal Agricultural Society and with the Government, by every means in their power, towards informing the nation of the calamity which has befallen them, and in demonstrating the necessity for those prophylactic and preventive measures, upon the prompt resort to which the only reliable means of safety has been found.

The Governors felt that they had for the above purposes, or might furnish, means for testing the disease and the modes of treatment, whether prophylactic or preventive, which science or discovery might suggest, and of thus affording earlier opportunity for deciding which of these might be worthy of attention than could otherwise have been available.

The Governors have reason to believe that the exertions of the professors and officers of this Institution, aided by the most advanced and intelligent of the students, have largely contributed to these objects. They have every reason to be satisfied with the zeal, perseverance, and professional knowledge manifested by the professors and officers of the Institution under their guidance, and trust that the same feeling prevails among the Council, whom they have the honour to address.

In conclusion, the Governors would express their hope that it may please the Great Disposer of events to mitigate the infliction of this calamity, and to permit the exertions which have been and are being made by the Royal Veterinary College, by the Royal Agricultural Society, by the Legislature, and by the Government, such a measure of success, as may at no distant period relieve the agriculturists of this country and the nation from the loss and danger to which, during the last eight months, they have been exposed.

C. N. Newdegate, Chairman, May 23.

THE BATH AND WEST OF ENGLAND SOCIETY.

[The following short history of the career of this Society is taken from the columns of the *Salisbury and Winchester Journal* of Wednesday last.]

IT was originally established in the city of Bath, on the 8th of September, 1777, under the title of "The Bath Society for the Encouragement of Agriculture, Arts, Manufactures, and Commerce, within the counties of Somerset, Wilts, Gloucester, and Dorset, and the city and county of Bristol." One of the first steps taken by its promoters, after the Society was duly organised under the superintendence of a president, a vice-president, and several committees of direction, was to draw up a series of questions on matters relating to agriculture, and forward them to the high sheriffs of every county in England with requests for information, and the information thus obtained was published with other matter in their first Journal in the year 1780. The Earl of Ilchester was elected president, and Mr. Edmund Rack secretary, and one of the earliest important points of interest connected with agriculture appears to have been the system of "setting Wheat," and a prize of 10*l.* was awarded to Mr. Bethell, of Weston, for setting 10 acres. A model farm was established, whereon experiments were carefully tried and watched before their adoption was recommended to the world, and the earliest announcement of their exhibition of implements was that of a drill plough in 1778, which it was stated "had been tried by the agricultural committee and found to deliver the grain with great exactness and regularity." This modest announcement of a single plough will strikingly contrast with the many hundreds of the most improved agricultural implements and machinery which, through the exertions of the Society, will challenge the attention of visitors in the Salisbury show-yard. Contagious diseases amongst cattle, and the rot in sheep, engaged their early attention, and directions for prevention were published in the Society's Journal. A disease in Potatos of a similar kind to that which has of late years proved of so serious a nature, formed another subject, but no specific remedy was published. The establishment of schools of husbandry for the education of farmers' sons was advocated as early as 1780, by the Rev. W. Lamport, of Honiton. His essay thereon appears in the first of the Society's Journals, and for it a premium of 20 guineas was awarded. Thus this subject, which is now receiving so much attention at the hands of the Royal Agricultural Society of England, was brought prominently before the world 85 years ago by the Bath and West of England Society. The first prize for stock ever awarded by the Society was in 1787, to Mr. John Young for the best ram, and the same year Mr. Thomas Beevan drew the attention of the Society to the cultivation of Mangel Wurzel, and various and interesting are the many opinions recorded in their Journals upon different subjects, and reports of the numerous prejudices which an improved system of cultivation, improved machinery and implements, and the introduction of different kinds of crops had to contend with.

The disastrous winter of 1794, and the increasing value of both Wheat and meat, appear to have stimulated the Society to increase their exertions, and thus we find several prizes awarded for cattle, together with the result of different experiments with sheep; and in 1797 prizes were offered for sheep, wool, the cultivation of Turnips, the invention and manufacturing of drills, threshing and winnowing machines. The manufacturing of woollen cloths also appeared to engross their attention, and in 1801 his Grace the Duke of Bedford received a premium of 5 guineas for a piece of uniform—white kerseymere manufactured from his own wool.

In 1780, on the resignation of the Earl of Ilchester, the first president of the Society, he was succeeded by the Earl of Ailesbury, who continued to hold that office until the year 1798, when he was succeeded by the Duke of Bedford, who, during his brief tenure of office, very materially contributed to the reputation and utility of the Society. The Duke died at Woburn, in 1802, at the comparatively early age of 37; and his memory was perpetuated by the institution of a gold medal bearing his name, which for some years was bestowed by the Society as a premium for some agricultural improvement. It is mentioned among the traditions of the Society that the essay by the late Mr. John Benett, of Pyt House—formerly one of the members for Wiltshire—which gained this prize 46 years ago, led to a very important correspondence between the author and the celebrated Archdeacon Coxe, on the subject of Tithe Commutation, and it is stated that the views then advocated by Mr. Benett, and endorsed by the Society, were very nearly identical with those which have since been adopted in a well-known Act of the Imperial Legislature. To the Duke of Bedford succeeded Sir Benjamin Hobhouse; and for many years the chair was filled by the late Marquis of Lansdowne, who was succeeded as president by Lord Portman.

From the death of many of its original promoters, and from other causes, the Society greatly diminished, and about 16 years ago its early dissolution was threatened. In 1850, Mr. T. D. Acland, the present member for North Devon, in order to raise the character of the Society, addressed a letter on the subject to Sir William Miles, M.P., in which he started a proposal for the establishment of annual agricultural meetings, to be held successively in different towns of the West of England. In this letter he expressed a desire that some steps should be taken to perpetuate and diffuse more widely in the Western Counties the benefits which the Royal Agricultural Society confers on England at large, and of which a remarkable illustration had recently been furnished by its meeting at Exeter, in July, 1850. The result of this correspondence was an amalgamation of the Bath with the Devon Agricultural Society under the present title of "The Bath and West of England Society," and in 1852 the newly formed Society held its first meeting at Taunton, under the presidency of Lord Portman. The meeting proved more successful than even its most sanguine promoters anticipated. The entries of stock numbered 238, and of implements 100. The first of a new series of volumes, edited by Mr. T. D. Acland, was published, and from that period until the present the Society has continued to progress, and has now attained a national importance second only to the Royal Agricultural Society.

In 1853 the annual meeting was held at Plymouth, under the presidency of Sir T. D. Acland. At this meeting there were 488 head of live stock, and 540 implements. From the poultry show held at Plymouth, under the direction and at the pecuniary risk of Mr. Jonathan Gray, the Society derived the sum of 282*l.* 16*s.*

In 1854 the annual meeting was held at Bath; Mr. (now Sir W.) Miles, M.P., presided. The total number of live stock exhibited was 587, and of implements, 711. As the proceeds of the Bath exhibition of poultry, Mr. Jonathan Gray had the satisfaction of presenting 458*l.* as a donation to the Society's funds. This success induced the adoption of an annual exhibition of poultry in connection with the Show.

In 1855 the meeting was at Tiverton, under the presidency of the late Earl Fortescue. The entries of live stock at this meeting were 588, and of implements 1067; while, as stated in the annual report, "every year shows improvement in the skill of the mechanics, and in the quality and practical character of their work." At this meeting the convenient and ingeniously-constructed shedding, invented by Mr. Jonathan Gray, was first erected by that gentleman, and placed at the Society's disposal.

In 1856 the annual meeting was at Yeovil; President, Mr. C. A. Moody, M.P. Of live stock there were 519 head, and the implements were 1038 in number.

In 1857 the Society met at Newton Abbott, under the presidency of Lord Courtenay, afterwards Earl of Devon. The number of live stock exhibited was 599, and of implements 1127. This was the last meeting at which prizes for agricultural implements were awarded, and ever since their discontinuance the implement department has increased in importance and extent.

In 1858 the annual meeting was held at Cardiff, when the Earl of Devon again presided. Of live stock there were 686 entries, and of implements, 960. At this meeting prizes were offered for specimens of Welsh woollen manufactures; but the response was not so general and satisfactory as to create a very favourable impression as to the effect of such appeals or excitements to manufacturing industry.

In 1859 the annual meeting was held at Barnstaple; president, Mr. J. Sillifant, of Coombe. The number of live stock exhibited was 599, and of implements, 1127. A new feature at this meeting was the Arts Department, which also owes its existence to Mr. Acland, who not only suggested but most energetically and laboriously worked out the details of that department, which has also year by year increased in importance until it now forms one of the most attractive features of the annual exhibition.

In 1860 the annual meeting was held at Dorchester, and was presided over by the late Lord Rivers. The number of cattle was 599, including five entries from the late Prince Consort's farms. The number of implements was 1453, including 29 machines in motion. The meeting, apart from the unpropitious weather, was the most remarkable which up to that time had been held by the Society.

In 1861 the annual meeting was held at Truro, Mr. J. W. Buller, M.P., presiding. The number of live stock exhibited was 419, and of implements, 1121. This was a very pleasant and satisfactory meeting.

In 1862 the show was held at Wells, and was presided over by Mr. T. Dyke Acland, D.C.L. The number of live stock exhibited was 419, and of implements, 1160, including the largest collection of steam ploughs and cultivators and implements at work which the Society had ever had. The show was greatly marred through the unfavourable weather.

In 1863 the annual meeting was held at Exeter, when the Marquis of Bath acted as president. There were 141 exhibitors of stock, 567 head of stock, and 1813 implements. At this show the open judging was first adopted, and was not proved to be attended with any practical inconvenience.

In 1864 the annual meeting was held at Bristol, where Earl Fortescue presided. The number of animals exhibited was 776; of implements there were 3000 entries, including the names of 170 exhibitors. This was the first meeting at which specimens of Honiton lace were displayed, there being 53 contributors to this department. The lace sent in was excellent: and the Council, upon the motion of Mr. Herbert Williams, voted that a sum of 60*l.* be offered in prizes for Honiton lace at the next Show.

In 1865 the meeting was held at Hereford, under the presidency of Lord Taunton. The total number of animals exhibited was 837. In the implement department there were 144 exhibitors. The principal feature in the arts manufactures' department was the display of Honiton lace. A robe, valued at 330 guineas, cost price, of a beautiful Honeysuckle pattern, and manufactured especially for the Queen, by persons residing at Honiton and Sidmouth, was the centre of interest in the fine arts department.

[A report of the meeting of this Society during the present week is given in another page.]

Home Correspondence.

Wool.—Every flock-master is inquiring about the probabilities of the price of wool for the ensuing season. It is one of the chief topics in every country market; no one, however, appears qualified to give any definite opinion upon it. One says the wool trade is, and will be ruled by the price of Cotton; another says the money market will have the greatest influence; another says the prospect of an European war has a disastrous effect; another that the manufacturers have but few customers, and these give low prices. Others say we have a good deal of old wool in the country yet; others, again, that there is no demand for British wools on the Continent, and that vast quantities of short wools are coming in from abroad, and particularly from our own colonies; and, again, that we have a very bad home trade; and to finish the whole category of causes, wind up by saying that we have a large stock of new wool, which from the necessities of growers must come into the market immediately. These are named as some of the true and various causes why wool has retrograded in price, and may be expected to remain lower in price than for the past three years. Undoubtedly these combined are the principal causes of the decline in price; but it is not likely to be permanent. Already there is a bright prospect of a speedy relief from almost every difficulty. The stoppage of so many large monetary establishments could not fail to exert a most ruinous effect upon the wool, as upon most other trades, but the wise measures pursued by Government and the Bank of England have nearly quieted that panic and its attendant difficulties. Money is daily becoming cheaper; discounting is no longer at a discount. The rate of discount is easier and money more plentiful. A little more patience, and the money market will soon be right again. Take the prospects of war: thanks to the advancement of knowledge, civilisation, and the arts and blessings of peace and good government, such prospects assume a much more satisfactory aspect. Look at the growing prosperity of the leading nations of Europe. It would be the height of folly for them lightly to permit subordinate Powers to embroil the whole of Europe in a war about trifles. What a glorious and benevolent movement is afloat instead—just as it should be. Like sensible people, so are the nations: they are to meet and "talk the thing over, and if possible settle the differences amicably, but if not, they will say, "You shall not fight."* Take cotton: well, it has seen the lowest point, and is evidently rallying in the cotton market with very favourable prospects. Take the stock of wool: of old wool it is unquestionably in short supply, and what we have is in the hands of the wool staplers, bought in at high prices. These buyers cannot, nor will not, part with it at very reduced prices. They cannot at present replace it, and before such an opportunity occurs, the present demur in the trade will pass away; it is but temporary. The demand for new wools is considerable, but sellers do not give way. I don't know of a single sale at the time I am writing (June 4), and the stock cannot be a full one. Thousands of acres are laid in for meadow, instead of being depastured by sheep, and much grazing land is not fully stocked, owing to the rinderpest causing such an

* We fear our correspondent's expectations have been dashed by subsequent intelligence.

advance in the price of sheep. As to the home trade and influx of short wools I place against that the universally increasing demand for our woollen manufactures in every quarter of the globe. British woollen goods are finding their way amongst uncivilised tribes, and nations that a few years ago were ignorant of their existence, are now importing them in large quantities. It is only a question of time: British wools, and especially British long wools, will always command a high price. *O. F.*

Societies.

ROYAL AGRICULTURAL OF ENGLAND.

MONTHLY COUNCIL: *Wednesday, June* 6, 1866.—Present—Lord Tredegar, President, in the Chair; the Earl of Shrewsbury, the Earl of Powis, Lord Berners, Lord Feversham, Lord Portman, Lord Walsingham, Major-General the Hon. A. N. Hood, Sir Watkin W. Wynn, Bart., M.P., Mr. Barnett, Mr. Bowly, Colonel Challoner, Mr. Clayden, Mr. Dent, M.P., Mr. Druce, Mr. Brandreth Gibbs, Mr. Holland, M.P., Mr. Hutton, Mr. Jonas, Colonel Kingscote, M.P., Mr. Lawes, Mr. Lawrence, Mr. Robert Smith, Mr. H. S. Thompson, Mr. Torr, Sir T. Western, Bart., M.P. Mr. Wells, Mr. Jacob Wilson, Mr. Frere, and Dr. Voelcker.

The following new members were elected:—

Aldous, James Arthur, Lingwood, Norwich
Alexander, Wm. Lancaster, [illegible]
Ball, William, Rothwell, Kettering
[illegible]
[illegible]
Dewing, Rev. [illegible]
Paterson, Henry, Normanton Hill, Loughborough
Piggott, [illegible], Midhurst, Sussex
Robbins, Harry, [illegible], Oxon.
Walker, James Robert, [illegible], York

FINANCES.—Major-General the Hon. A. N. Hood presented the report of the Committee, from which it appeared that the Secretary's receipts during the past month had been examined by the Committee, and by Messrs. Quilter, Ball & Co., the Society's accountants, and were found correct. The balance in the hands of the bankers on May 31 was 2258*l*. 13*s*. 10*d*., against which cheques were drawn for 923*l*. 19*s*. 5*d*.

DISCUSSIONS.—The following arrangements for the weekly meetings of the Council were announced:—Wednesday, June 13, "Cattle Statistics and Cattle Insurance," to be opened by Dr. Torr. Wednesday, June 20, "How far in certain districts Sheep Stock may be advantageously [illegible] Cattle," to be opened by Mr. Torr.

VETERINARY.—The report of the Governors of the Royal Veterinary College, extending to the 31st December, 1865, and received by the Secretary on the 26th May, was read. For some of the leading points adverted to in the report, see p. 547:—

CHEMICAL.—Mr. Wells announced that the following papers are in course of preparation for the Journal: 1. Report of visits in conjunction with Mr. Coleman to Mr. Ruck's farm in Wiltshire, and on the improvement of the Grass-land there; 2. On Clover experiments.

HOUSE.—Major-General the Hon. A. N. Hood reported that the Committee recommended that the wages of the porter (W. Mann) be increased to 1*l*. 3*s*. per week, for which sum he shall provide the necessary assistance in the house work. With reference to a letter received from the Secretary asking for increased accommodation for his family, the Committee recommended an improvement in the house, for which they will direct a plan, specification, and estimate to be prepared and laid before the Council. It appeared also desirable that an additional Committee-room and a larger and more convenient Council-room should be added if practicable, for which plans and estimates should be prepared, and the Committee be empowered to take such steps as they may think requisite, and submit them to the further consideration of the Council in July. This report was adopted.

STEAM CULTIVATION.—Mr. Thompson reported the recommendations of the Committee:—1st. That the inspection shall commence as early in August as the state of the harvest will permit. 2d. That after due consideration of the 188 replies sent in to the first circular, it appears that three Inspection Committees will be required, and that each Committee will be occupied for a month in visiting the selected farms. That each Committee shall consist of three members, one of whom shall act as secretary and reporter. Members of Council shall be furnished by the Secretary with such information as shall enable them to join the Inspection Committees when visiting their district.

The report of the United States Department of Agriculture on the rinderpest, forwarded by the Foreign Office, was received; and a letter from the Paris Universal Exhibition, 1867, requesting the Council, in conjunction with the Royal Highland Society and the Royal Agricultural Society of Ireland, to undertake the duty of allotting to the various manufacturers of agricultural implements, machinery, &c., the space set apart by the Imperial Commission for this class of objects; to which the Council acceded, and nominated a committee consisting of Mr. Amos, Mr. Druce, Mr. Brandreth Gibbs, Mr. Wren Hoskyns, Mr. Thompson, and Mr. Torr, to assist in carrying out the allotment.

BATH AND WEST OF ENGLAND SOCIETY.

SALISBURY.—A first-rate exhibition of agricultural machinery, and a very fair trial of many of them under favourable circumstances, are the leading features of the Salisbury meeting. The Horse Show, which, excepting Poultry and Dogs, is the only livestock department, does not come up to expectation. The other usual parts of the Bath Society's annual show—its display of pictures, art manufactures, and flowers—have to take a larger share than usual of the general attractiveness. But the weather, especially of the early part of the week, having been unfavourable, they have failed to draw the usual number of spectators. Some misunderstanding with or of the Mayor seems to have hindered the public spirit of the city from displaying the usual show of welcome, but failing evergreens and arches, the streets were decked with flags.

The Horse Classes have included only 75 entries of agricultural horses, hunters, hacks, and ponies. Of these the first classes were decidedly the best. A very fair Class of Heavy Draft Stallions included Mr. Fowle's dark brown "Benicia Boy," which took the first prize; Mr. Churches' black marked with white "Champion," a heavy black horse with neat small head; and several others, very fat and heavy, some of them clumsy animals. The Class of Stallions for General Farm Work was a very good one indeed. Mr. Badham's "Chester Emperor," a very showy Suffolk horse, with extraordinary crest, which has received some 30 prizes during the past two years, is here without any distinction. Sir E. Kerrison's chesnut, as good a Suffolk as any in the Class, is only commended. The 1st prize goes to Mr. Gibbs' "Sampson," and the 2d to Mr. Hitchcock's "Albert," a very compact and well-made chesnut stallion, which has before received the prizes both of this Society and of the Royal Agricultural Society of England. In the Class of Mares and Foals, Mr. Fowle, of Lavington, and Mr. Hibberd, of Chippenham, receive prizes; and in the other agricultural classes Mr. Holland, M.P., Lord Radnor, and the Rev. H. G. Baily, of Swindon, are distinguished. The four-year-old Hunters, a small class, are the only other prominent features of the Show, a few capital horses being exhibited, Mr. Luxton's "Prior" carrying off the 1st prize. Mr. Rawlence's chesnut pony "Apricot" and two or three others redeem the Pony Classes from inferiority.

The following is the Prize List in the Horse Classes:—

HORSES FOR AGRICULTURAL PURPOSES.

Class 1. For the best Stallion [illegible], suitable for Heavy Draft.—1st, Mr. William Fowle, Market Lavington, Devizes; 2d, Mr. [illegible], Somerset.

GENERAL FARM WORK.

Class [illegible] For the best Stallion [illegible].—1st, Mr. Edward Gibbs, Chatterton [illegible], Wilts; 2d, Mr. Henry Hitchcock, [illegible]

Class [illegible] For the best [illegible] for Light Draft.—1st, Mr. William [illegible], Manor Farm, [illegible], Marlborough, Wilts; 2d, Mr. [illegible], [illegible], Somerset [illegible]

Class [illegible] For the best Mare and Foal [illegible].—1st, Mr. William [illegible], Devizes, Wilts; 2d, Mr. [illegible] Wilts.

[illegible]

[illegible], Wilts; [illegible] Bedford [illegible] Hitchworth.

Class 7. For the best [illegible] Agricultural Horse [illegible] years old, having been in the possession of the [illegible] Mr. [illegible] Holland, M.P., [illegible]bleton Hall, Evesham, Gloucestershire.

HUNTERS.

Class [illegible] For the best [illegible] Stallion calculated to get Weight-carrying Hunters.—[illegible] Mr. [illegible] Woodgate, Culmstock, Wellington, Somerset; 2d, Mr. Robert George Luxton, Brushford, North Devon.

Class 9. For the Mare best calculated to produce Weight-carrying Hunters.—Mr. Robert N. Hooper, Llansannor Court, [illegible]

Class [illegible]. For the best Mare or Gelding [illegible].—1st, Mr. Robert George Luxton, Brushford, Wembworthy, North Devon; 2d, Mr. George [illegible], Tiverton, Devon; [illegible] Nicholas Heygate, Buckland, Leominster, [illegible]

Class 11. For the best Filly or Gelding, foaled in 1863.—1st, Captain Edward Nicholas Heygate, Buckland, Leominster, Hereford; 2d, Mr. John Woodcock, Netherhampton, Salisbury, Wilts.

Class 12. For the best Colt or Filly, foaled in 1860.—1st, Mr. Robert Cozens, Manor Farm, Filton, Shepton Mallet; 2d, Mr. John Webb King, West Everley, Marlborough, Wiltshire.

HACKS.

Class 12. For the best Mare or Gelding, not more than [illegible] not less than [illegible].—1st, [illegible] of Lea, Milton House, Salisbury, Wilts; 2d, Mr. Richard Milward, Thurgarton Priory, Southwell, Notts.

PONIES.

Class 15. For the best Mare or Gelding.—Mr. James Rawlence, Bulbridge, Salisbury, Wilts.

[illegible]

Class 17. For the best Pony, bred in the New Forest, under 14 hands, of any age.—1st, Mr. William Taunton, Redlynch, Salisbury, Wilts; 2d, Mr. William Reynolds Neave, Fordingbridge, Salisbury.

Class 19. For the best pair of Ponies.—Mr. William Reynolds Neave, Fordingbridge, Salisbury.

The judges of the several departments were as follow:—Agricultural horses: Mr. Lovibond, Bridgwater; Mr. Watts, Blandford. Hunters, hacks and ponies: Mr. Henry Corbet, Central Farmers' Club, London; Mr. Thurnall, Royston. Poultry: Mr. Hewett, Birmingham; Mr. Challoner, Chesterfield. Pigeons: Mr. Harrison Weir, London; Mr. Tegetmeier, London.

As regards the other departments of the "live stock" of the farm, there is a very fair show of birds, and many very interesting but scantily-filled classes of dogs. In the tent of the former the Spanish and Dorking classes are very good. The Game and Hamburg classes are first-rate. We have not room for the prize list, but Lady Holmesdale, Mr. Lingwood, of Needham Market; Mr. Chase, of Birmingham; Mr. Stephens, of Walsall; Mr. Roberts, of Preston; Mr Pares, of Guildford; Mr. Cruwys, Messrs. Matthews, Bertram, Hanks, Pittis, Beldon, &c., are among the prize takers; and from Ireland, Yorkshire, Lancashire, the Eastern Counties, and many other districts, specimens are sent. It is the best Poultry Show the Society has exhibited.

The Trial Grounds were conveniently situated close to the yards, including about 40 acres of light land, hard and dry however, in Clover, Clover-stubble and Rye. And on these, in properly allotted pieces, ploughs and steam-cultivators, mowing and reaping machines, received a very satisfactory trial. Howard's plough made, as usual, first-rate work, so good that one did not know which way the furrow-slice was laid. His "digging" plough, with finger-shaped arrangement in place of mould-board, had not land adapted to show the quality of its work. Eddy's pulveriser plough, which employs two shares and mould-boards to take the work piecemeal, burying the upper surface and throwing the lower half of the slice roughly over all, makes a good fallow at one operation.

In the steam cultivated field Fowler & Co. showed their single (nominal) 8 horse-power apparatus, with moving anchor, both at plough and with the cultivator —the former turning a 6 or 7-inch furrow very satisfactorily, the latter tearing up the Clover stubble and moving the whole to a depth of 5 or 6 inches in 6-feet widths.

Mr. Howard showed his plough and cultivator at work, drawn by Clayton & Shuttleworth's 10 horse-power engine. The ploughing was perfectly laid, the furrow-slices being neatly cut, and the work thorough. The 3-tined cultivator, too, was making excellent work. Messrs. Tasker & Son of Andover showed Fowler's digging apparatus and Smith's cultivator at work, the former throwing about the land in the most thorough manner, the latter paring and scuffling effectually a very hard Clover stubble, and making capital work. They were driven by their patent windlass, which is a very ingenious contrivance, enabling the stoppage, reversal, or any other movement of the tool while the engine is going at full speed, the whole being entirely under the control of the windlassman.

In an adjoining field mowers were exhibited by Hornsby, Samuelson, Picksly & Co., Brigham & Co., and others. The superiority lay with Hornsby and Samuelson in the Clover field, where the tools of Messrs. Brigham & Picksly failed. The best work here was done by Hornsby. We did not see his machine in the meadow Grass, where a very light crop and considerable unevenness of ground tested the machines severely. Mr. Wood's American reaper made the best work of any that we saw, but the cutting was not close enough in many of the cases to satisfy the spectators; and when the excuse was given that the crop was too light to be dealt with by machines, the rejoinder was that it was a much better crop than one-half at least of the spectators had at home.

There was a capital trial and exhibition of reaping machines in a piece of upstanding light Rye, and Hornsby's swathe-cutter, Samuelson's one-horse hand delivering machine, and Crosskill's with its enormous width of cut, were undoubtedly the best machines on the land. Neither here nor in the yards were Messrs. Burgess & Key's reapers and mowers exhibited, so that the trial cannot be considered a complete one. Messrs. Hornsby's tools do, however, gain a great step in public opinion by their undoubted success in the absence of their rivals. Samuelson's one-horse reaper, with the slatted dropping platform and double length of oscillation in the cutting knife, is a capital tool. Among other novelties in the Turnip field was Holmes' revolving fork, which seems an ingenious contrivance, without, however, any special utility; and Howard's double drill, having the useful power of being *set* against the sides of a narrow ridge, as well as of dealing with a flat interval.

In the yard were collected one of the best and largest displays of agricultural machinery that has ever been collected by this, or indeed any other Society. The long array of 60 chimneys, from as many portable engines, in the department of machinery in motion, was a very striking sight. Some of the stands, that of Tasker, of Andover, for example, were in themselves a full display of the machinery of the farm and implement makers from all parts of the kingdom have contributed of their manufactures. From Ayrshire in the north to Kent and Lincoln in the east, the whole force of the English agricultural machine manufacture was assembled in the show-yard of this western city. The Irish manufacturers, too, were represented. We must take a leisurely walk with the reader through the stands next week, though comparatively few novelties will attract our attention. Rowland's small portable steam-engine with parallel motion instead of slide bars for the guidance of its piston rod, may be called an old-fashioned novelty. Messrs. Tasker's ingenious windlass for steam cultivation, Messrs. Hawke & Spence's chain delivering instead of cup delivering drills, Messrs. Holmes' revolving drill forks, Mr. Howard's drill harrows, and sundry small domestic ingenuities, including a machine for shelling peas, exhaust the list.

The Seedsmen have sent a capital exhibition. Messrs. Sutton and Messrs. Carter never had better stands. Mr. Raynbird's exhibition of grain samples in the straw against a dark ground, which shows them off, is most effective. In manure and cattle food merchants display their wares. The yard is unusually well filled, and deserves a better throng of lookers-on than it received in the early part of the week.

Reviews.

Relations of Master and Servant, and their Duties to each other. By John Dawson, Farm Labourer, Finchhill, Gartley. (*Banffshire Journal.*)

This is an essay published in the county paper, after having received the prize offered by Mr. Stewart, of Laithers, Banffshire, to farm labourers for the best essay on the relations in which they and their employers stand to one another.

We make the following extracts:—

1. *The present Relationship of Master and Servant.* —Nothing shows more clearly the state of feeling between the two parties than the conversation either has about the other. Masters complain that their servants are thoughtless and careless: servants are also very apt to rail at their master 'behind his back.' And

generally they speak of him in a very contemptuous manner, and always as a person from whom they have much to fear. The question naturally occurs—What are the reasons that there is a worse feeling between master and servant in the present day than there was 60 years ago? I may just notice a few of these in passing. But as these more properly come under another head of this essay, I shall here notice them very briefly. The farmers of the present day have shot far ahead of what they were 60 years ago. They are better educated, more refined and polished in their manners, and have, as it were, risen a grade in society. Servants have also improved, but not in the same ratio as their masters. The former have improved more in scholastic education than in refinement of manners: the latter have advanced in both. In short, masters have taken on a good deal of the polish of the gentleman; while servants still retain a fair sprinkling of those rough unpolished manners for which, as a class, they have ever been characterised. There is thus socially a wider breach between them than there was in the days of old, and it has been fully taken advantage of. Masters, aware of their higher position in the social scale, look down almost with contempt on those who till their ground. They consider it degrading to men in their station to speak with them unless to command or reprove. Servants, in their turn, naturally look with distrust (not to mention a worse feeling) on those who consider them of so little importance. I have often heard them remarking—and with some truth I believe—that their masters show more care and respect for their cattle than for them. And having a strong instinctive feeling that they are of more value than many cattle, it is but natural they should look with a jealous eye on those who consider them of less. But, lest I be misunderstood, it will be necessary here to state that these remarks can only be applied, in their full extent, to a particular class of farmers. There is another class of them, and, I am happy to say, a pretty numerous one in our northern counties, that cannot be accused of being unfamiliar with or of undervaluing their servants. These are generally to be found among our middle-sized farmers: men that generally know well what it is to work, and how much to require of others. They are undoubtedly in the background, as well as others, with house accommodation and other things essential to the comfort and contentment of their servants, which mars the good feeling between them; but, as a rule, there is more contentment and good feeling to be found on our middle-sized than on our larger farms.

2. *The relations that ought to exist between Master and Servant* may be summed up in a very few words. The one party is entirely dependent on the other. Their interests are inseparable. Masters cannot get on without servants, nor servants without masters. If a master's affairs are not prospering, he is not able to give such good wages to his servants; and if these are not careful and trustworthy, his affairs cannot prosper. Seeing, therefore, their well-being is so closely interwoven together, it is certainly the interest of each party to endeavour to promote the welfare of the other, and that this end may be obtained, they must live happily and contentedly together. They must unite heart in hand. They must each be as studious to advance the well-being of the other as his own. Every master should study to promote the comfort and happiness of his servants to the utmost. Every servant should be as anxious about, and as careful of, his master's interest as he could be of his own. In short, both parties should live together as members of one happy family, each labouring as assiduously to promote the well-being of the whole as if they were all partners in the farm, or all the happy sons of one happy father, at whose decease the property would be equally shared among them.

3. *How good relations may be established.*—Let the master who would live on good terms with his servants be more social and familiar with them. I say master, not because I would lay all the cause of ill-feeling on his back, but because it is chiefly to him we must look for the remedy. Servants cannot be supposed to make those advances to a master that he could do to them—that would simply be impertinence. Besides, I am not sure but masters have contributed, in the largest degree to this ill-feeling, simply by their unsocial and haughty bearing towards their servants. And if this is the case, which I am bold to say it is, then it would be but justice the master should make the first advances. Further still, granting that both parties are equally to blame, masters, as moving in the higher station, and being of superior education and intelligence, should be the first to hold out the right hand of fellowship.

I say, therefore, as a first step to a better feeling between the two parties, the master must be more free and familiar with his servants. Let him enter freely into conversation with them, and ever have a kindly word when he meets them. 'Kind words are worth much, and cost little.' Let him show them he really cares for and respects them. Let him talk freely to them about his crops and cattle—how this kind of crop and of manure best suits such and such a field—what kind of cattle or crops pay him best—in short, anything by which he could interest and instruct them, but especially about anything relating to their own profession. In this manner, he will not only gain the love and esteem of his servants, and teach them the mysteries of farming, so that they may be able to rise in their profession, but will, at the same time, induce them to take an interest in everything about the farm. Let him, also, spend occasionally a half-hour with them in the kitchen or bothy, engaging in free and homely conversations, entering freely into all their harmless pastimes and amusements, and making himself as familiar with them as if he were a brother servant. His presence there would at first no doubt be considered as a restraint; but this would soon disappear, and he would be treated as a very welcome visitor. Nor let him omit to stimulate them to the improvement of their minds. Let him borrow and lend books and newspapers with them, and give them every facility for reading and acquiring information. Let him also urge upon them the necessity of being moral and religious, for without these they will not serve him aright, from proper motives. But let him follow these simple and easily performed directions, and he will do more to gain the esteem and goodwill of his servants than though he should give them three days every week as holidays. Everything else he can give to make them comfortable may be considered as their right, but familiarity towards them is his own to give or to withhold.

4. *The Hiring System.*—Before master and servant live happily and contentedly together, there must be another system of engaging introduced. The present system only suits bad servants and bad masters. In the feeing markets, masters and servants are seldom equally yoked together. The good master may get the bad servant, and the good servant may go to the bad master. And if master and servant have not both something of the same disposition, they can never go on smoothly together. The register offices seem an excellent substitute for markets, were they but more patronised and rightly conducted. But wherever servants are engaged, there could be a great deal more discrimination used in selecting them than there is at present. It is sheer nonsense in masters to lament and bewail the bad feeling their servants have towards them, when they go to the markets and engage them with much more laxity and carelessness than if they were buying a horse. Experience certainly teaches them that they cannot go to the middle of a market and draw out well-behaving men by mere chance. If they really want good servants—men that will serve them honestly, faithfully, and peaceably—they must inquire strictly into their characters before engaging them. Let them even use that care and discrimination they do while buying a horse, and matters will be somewhat amended, but let it ever be borne in mind that one evil-disposed servant about a farm will often corrupt all the others, especially if these are young and inexperienced. Good and well-behaving servants are often made to bear, or at least made sharers of, the fault of their wicked neighbour, and frequently are they if they can leave the farm where they have such a one for a companion without a stain upon their characters.

Farm Memoranda.

THE DAIRY FARM OF A SCOTTISH TENANT FARMER.—"From 1851 this farming experience dates. Since then I have given it very close and unremitting personal attention indeed to all the details of the management of a large farming establishment. We have practically endeavoured to act simply upon the following principles, that—to maintain health, the requirements are pure air, pure water, proper food in proper quantities, rest and exercise in due proportion, and light.

"To avoid disease, the things to be guarded against are—bad air; bad water; improper food, or improper quantities of it; over exertion; extremes of temperature; and specific contagion.

"Since 1851 the arrangements of our farms have varied. For many years the number of dairy cattle was above 100—never for a great many years under 60; at present about 70, well-bred Ayrshire cows, with about eight or ten pure Alderneys. As the chief part of the milk goes away as sweet-milk, by contract, all the year round to Edinburgh to an hospital, it is necessary always to have three-fourths of the cows in milk, and one-half of them in full milk, summer and winter.

"During these 15 years we have only had three deaths amongst our cattle, and these three were from accidental causes more than from regular disease, and from accidents which the greatest care and precautions cannot always prevent.

"So much for the losses by death during a period of 15 years, out of above 300 cows and cattle we have had through our hands.

"Our exemption from disease has been equally remarkable. The cases of actual disease have been only two, viz.—

"No. 1. A case of milk fever, complicated with a tendency to inflammation of the lungs. The cow recovered, and did well for several years after this illness.

"No. 2. One very distinct and well-marked case of foot-and-mouth murrain in a fine young premium cow, contracted from neighbouring animals by contagion while out at summer grazing. She recovered perfectly (it was in 1863), and is one of our best cows now. By careful precautions, no other cow took it, although we brought her home, but not near the other cows.

"These are the only cases of serious illness our byres have shown during these 15 years; and if I add a few slight attacks of feverishness from chills, or constitutional peculiarities of the cows affected, which have yielded in a few days to careful nursing, and the advice for which we have to thank that eminent veterinary professor, Professor Dick, of Edinburgh, I have stated the whole of our experience of disease and deaths here since first engaging in dairy farming. Glad should I be if none of my fellow farmers had ever suffered more, or if succeeding years keep down our loss to so small an amount; and as I cannot help believing that, under Providence, it is chiefly to the system of management that we owe this singular exemption from loss and disease, I will now proceed to state as clearly and simply as I can, what that management is, premising that there is nothing in it pretending to be new or original, or that may not be universally and easily followed.

"We have byres of stone and lime, and byres built entirely of wood. Of the two, we rather give the preference to the byres of wood. The small interstices between the boards seem somehow to secure a better and more perfect ventilation than can be attained by any mere windows or apertures. They are much more quickly and easily put up, are much cheaper, and, with proper precautions, quite as safe from fire. They should be well tarred on the outside every year or two years, which preserves the wood, and acts as an antiseptic. They are paved with common bricks, and have wide gutters behind the cows, which are flushed with clean water daily, and, as well as the pavement, washed and kept very clean. Sawdust is thickly sprinkled behind the cows, which conduces to cleanliness, and all manure and offensive matter is removed daily at once to the field next intended for green crop, keeping the air sweet and pure around the byres, and saving much time and labour in spring when the manure is required for the land-heap. Simple arrangements for the freest possible ventilation are carefully looked to, and no hay-lofts or other obstructions are permitted in the roofs of the byres, which are lofty and airy—with all precautions, however, against exposure of the cows to cold draughts of air, or chills from currents. Eighteen cows is the greatest number in one byre, and we prefer eight or ten. Each cow is fastened by a very pliable chain to a smooth wooden stake, up and down which, by a ring, the chain slides easily, so as to give the animals as much freedom and ease as possible, and generally two cows stand together.

"The interiors of all the byres are thoroughly white-washed with fresh quicklime, at all times frequently, but during the prevalence of any epidemic, twice and thrice a week; and Condy's disinfecting fluid (permanganate of potash), and Sir W. Burnett's disinfecting fluid, are very freely sprinkled about the gutters, the byres, and the attendants.

"Each cow has a glazed fire-clay trough, fastened in before her, to feed out of, which is easily kept thoroughly clean. From the end of October until the end of April the cows are all kept entirely in the house.

"In May, if the weather is fine and free from easterly winds, they are allowed to go out, a few at a time, those that stand together, into a sheltered field near the byres, where there are posts to rub themselves upon, and a running stream where they can drink. They are left out for a few hours daily, to accustom them gradually to the change to the open air—all violent and sudden changes being dangerous.

"From the first of June, if the weather is fine, they are out all day, and after the first few days, all night; and this is the plan until the 1st of October.

"During midsummer, if the sun is very fierce and flies troublesome, the cows are brought into the byres at mid-day, and kept there quiet, and as cool as possible, till after the afternoon milking, which is over by four o'clock (to suit the train), when they are taken quietly and gently out again to their several pastures, till the next morning.

"After the 1st of October, if the weather gets cold at nights, in like manner the cows are kept in after the afternoon milking (getting cut Grass in the house), and are put out after the morning milking—the great object at all seasons being to avoid exposure to extremes of temperature, to chills from cold, rains, dews, or hoar frosts in autumn, or to excitement from hot sun or flies in summer.

"At half-past five in the morning every cow gets a small foddering of hay, 3 lb. weight. While they are eating this, the byres are cleaned, and the cows are milked.

"At half-past seven A.M. a feed of pulped Turnips and cut straw mixed, 6 lb. weight, is given to each cow, with a little salt amongst it.

"At nine A.M. a full drink of water and small foddering of hay or straw, about 3 lb. While they are eating this, the cows are all thoroughly brushed and combed all over.

"At half-past ten A.M. all the cows in full milk get a mash composed of 2 lb. hashed Oats, or Bean-meal, 2 lb. bran, and 1 lb. oilcake, with a large tablespoonful of salt, the whole put into a half pail of boiling water till thoroughly softened and mixed. It is then cooled to 70 with a little cold water, and given to each cow in full milk.

"To insure the above mixture, and at the same hour, all the cows are offered a drink of fresh spring water, and a foddering of hay or straw, 3 lb. weight, is given, sprinkled with salt and water. Then they are shut up quiet, and allowed to rest undisturbed till two P.M. Previous to shutting up the byres, they are all looked over and cleaned out. By shutting up the byres, it is not meant that plenty of fresh air is not admitted—merely that the cows are left thoroughly undisturbed, and to chew their cud.

"At two P.M. a feed of pulped Turnips and cut straw, 6 lb. weight, with a little salt, and a very small foddering of hay after the above. A drink of cold water is then offered, followed by a small foddering of hay or straw. During the time they are eating this, the byres are cleaned out thoroughly.

"At four P.M. they are milked, after which they are littered down, and left to rest till eight P.M., when they receive a foddering of hay or straw, 3 lb., and are left to rest. All the cows in full milk are offered a drink of water at this hour, when they are all left quiet for the night. But the person in charge looks over the byres at eleven P.M., to be sure that all is well, disturbing the cows as little as possible.

"While the cows are pastured out, no extra feeding whatever is given during the height of the Grass.

"After the Grass declines in September and October, any thin cow, milking heavily, may get a mash of 1 or 2 lb. of Oatmeal and bran, or oilcake daily; but these are the exceptions.

"In October, when they come in at nights, they get a few White Turnips and a little foddering of straw or meadow hay. Salt is given to the cows all the year round, in one way or other—in drinks, or sprinkled on

fodder or somehow—2 or 3 oz. to each cow daily, and is of the utmost importance to their good health and condition.

"It may not be out of place to mention here that the milk has to go in a cart one mile from the byres to the station here, then by railway 60 miles to Edinburgh, and in a cab one mile to the hospital from the Edinburgh Station. At first we had some difficulty in getting it to carry perfectly sweet all through the summer; at times it turned sour on the journey in a way we could see no reason for. At last, after much observation and consideration, we made a tank 2 feet deep, filled with cold, running, pure spring water, constantly flowing. As soon as each pitcher for the train was filled with the milk warm from the cow, it was plunged in the cold water of this tank up nearly to the neck, and allowed to remain there for half an hour or so with the lid open and not corked. This lowered the temperature of the milk several degrees; and all froth being carefully skimmed off by the head cowman, the pitchers filled quite full, carefully corked, and the lids shut and locked, no more trouble was ever had with the milk carrying—it goes all right in all weathers. The pitchers are of tin, and carry two, three, and four gallons each. The water tank is close beside the principal byre, and quite under the eye of the head man; so no one can tamper with the milk even if inclined to do so; but I am happy to say none of our people here would wish to do so." [*Abridged from an admirable lately published pamphlet on the Management of Farm Stock in Health and Disease, and more especially of Dairy Cows. To which are added Practical Suggestions, &c.* By A Scottish Tenant Farmer. W. Blackwood & Sons.]

Miscellaneous.

Agriculture in France.—The Emperor of France has determined on a minute and careful examination of the agricultural condition of that country. A commission of the most extensive character is being organised to conduct the investigation. A central committee will sit in Paris, and sub-committees will operate in the several districts, collecting local information and communicating the same to the central body. The scope of the inquiry will be on a scale of proportionate vastness. The commission is instructed to "compare the present state of landed property with the past;" to "appreciate the conditions of production;" to "draw up estimates of profit and loss;" to "take account of progress realised and yet to be made;" to "examine into existing markets, and open new ones;" to "settle the difficulties with which farmers have to contend, and the means of obviating them." If these objects are efficiently pursued, even though no practical results should immediately follow, the Emperor will have secured the grateful confidence of a large and important section of his subjects; and in due time the marvellous prosperity which has been so long enjoyed by the manufacturing and trading parts of the population of France will begin to be shared by the agricultural body, which body, by the way, has made less progress in France during the last quarter of a century than in any country in Europe.

Belgium and Holland and Great Britain.—The population of Belgium and Holland is, in round numbers, about 8,000,000 persons. The entire area is about 17,000,000 acres. It becomes a simple sum of proportion. If 17,000,000 acres (the area of Belgium and Holland) can support 8,000,000 persons (the population of those countries), how many ought 77,000,000 acres (the area of the United Kingdom) to support? The answer is easily arrived at: it is 36,000,000. This exceeds by nearly five millions the population of the British empire, whereas the land of the United Kingdom only produces food for 20,000,000 of its people, and instead of increasing in productiveness, its supplies of corn and meat appear to be falling off. The subject is a large one, and deserves a greater degree of attention than it has received from the British public. *The Food Supplies of Western Europe, by Joseph Fisher.*

Calendar of Operations.

JUNE: *Hay-making.*—This, in early districts and on irrigated fields for meadow hay, and everywhere for the Clover and Sainfoin crops, is one chief occupation of the month of June. The cost of mowing, haymaking, and building in rick, excluding the labour of the farm-horses in the process, may be put upon an average at 10*s.* an acre, for which the whole work will be undertaken on contract. Of course, however, it is more or less according to the weather, and consequent length and labour of the process. The more costly the work of making hay, the worse of course is the result. Bad hay costs most, and is worth least. Every improvement of farm management by which the extent of Grass land mown for hay may be diminished is therefore to be welcomed. Cattle, if kept through the winter otherwise than on hay, will consume the whole produce of our Grass lands in the field during the summer season, when there is less waste in the process of feeding, and when milk, one main produce of our Grass fields, can be most profitably converted. The use of the root pulper, to which reference is elsewhere made in this Calendar, enables the greater consumption of straw in the feeding-house during winter, and so dispenses in great measure with the need of hay, and there can be no doubt that less hay is year by year being made. The process is, however, laborious and costly enough, as well as sufficiently expensive, to render any cheapening of it that may be possible extremely desirable. And by horse-drawn mowing machines, and hay-tedders, and horse-rakes, we have certainly a very material improvement of the old style of management.

There is no recent addition to agricultural machinery of which a more uniformly good report is given than we everywhere receive of the mowing machine. Of a later date, and having to deal with a more succulent, and often a more tangled produce than the reaper, it has, nevertheless, at once leaped into almost universal favour, and is everywhere admitted to do its work better than the scythe. Burgess & Key's mower, Wood's mower, Mr. Samuelson of Banbury, Hornsby's of Grantham (and there are many others less well known), all do admirable work. Having officiated in the judgment of these rival implements when competing for the prizes offered by our great Agricultural Societies, and being often present at their competition before others, we can speak with confidence of the great difficulty of placing them upon the scale of merit; and where the work is in ordinary cases done by all of them better than it is done by hand, the choice will be determined rather by facility of purchase than by any other circumstance. There is a large collection of evidence, all indicating the great advantage of the mower whether in rapid or in difficult harvest weather, published in the 9th volume of the Bath and West of England Agricultural Society's Journal. We quote the letters of two of that Society's correspondents. Mr. Harrison, of Frocester Court, Gloucestershire, says:—

"I have used Wood's mower of 1860. It is an excellent implement, and the work done by it is equal to any done with the scythe. It is a simple machine, well designed, and easily managed, but I think too slightly constructed. As to efficiency, a better machine could not be wished. In fine hay-making weather, from the Grass being at once tedded and exposed, the labour of hay-making is prodigiously diminished, and with the aid of the hay-making machine and horse-rake, the chief manual labour consists in gathering it together and securing it in the rick. In catching weather the farmer is much more independent of the weather, as with the knowledge that he can cut down 8 or 10 acres, or even more, per day, he ceases mowing till the weather promises to be fine. Last year (1860) was exceptional, and, excepting the fine fortnight at the beginning of July, it was impossible to make really good hay in our district; but to show the importance of the mowing machine, I know that on more than one estate where they were used, and plenty of hands could be drawn for the occasion from the estate to assist at the haymaking, the whole of the hay was secured during the fine weather in first-rate order."

Of Burgess & Key's mower, Mr. Horswell, of Tavistock, says:—

"It answered admirably, and though the season was very bad, I never saved hay in better condition, or with so little labour. During the eight days' uninterrupted fine weather in July (the only fine weather for the season), when men could be scarcely obtained, and for the mere labour of cutting 8*s.* or 10*s.* per acre had to be paid, I got in 56 acres with the aid of the mower, haytedder, and hay-gatherer—(the cost of manual labour in getting it ready to be carried did not exceed 1*s.* per acre), and it had no rain upon it whatever—and there were 24 acres besides with very little damage, all secured before the heavy rains set in. Without the aid of machinery, 20 or 30 out of the 80 acres would be the most that I could have possibly saved in good condition. Where the surface is moderately even, we can set the machine so low as to cut 4 or 5 cwt. of hay per acre more than the best men can do in the ordinary way. Since I have availed myself of the machinery that there is to aid the agriculturist, I can comfortably complete my harvesting with the labourers regularly employed on the farm."

These letters are conclusive testimony to the value of the machine upon the farm at this time of the year. It and the hay-tedder have certainly wonderfully diminished the labour and anxiety of the Grass-land farmer in the summer months. And they have saved his pocket, too, not merely by the larger quantity of good hay he can make, but by the direct saving of wages hitherto paid in the harvest field, which will not be paid for the more efficient tillage of plough land crops.

The cost of hay-making varies exceedingly, according to the quantity of the crop and the nature of the weather. I have in Gloucestershire let hundreds of acres at 10*s.* an acre for mowing, and making, and pitching to the waggon. And 10*s.* with beer, is a common price for ordinary crops; such a contract is, however, a complete speculation on the part of those who undertake it; they will do well, and make good hay, if the weather suits them; but they will do ill, and make bad hay, if the weather is against them. Among the heavy crops of well-manured Middlesex farms, a guinea to 25*s.* and even 30*s.* are sometimes paid for making hay.

As to the practical details of hay-making it is necessary to add that, whether mown by hand or horse, Clover mown for hay must not be shaken abroad. The swathes are turned the second or third day, and, perhaps, again turned the fourth or fifth day after cutting. They are then put in small cocks, and carried with as little rough shaking as possible, so as to retain the leaf unbroken. This rule applies also to the making of Sainfoin hay.

Notices to Correspondents.

FAILING BARLEY AND OAT CROPS: *Rusticus.* The failure arises apparently not only from wire-worm, but from a starved condition of the plants. They ought to have been more forward in their growth by this time, possibly the soil is in poor condition, and the drought of May has been too much for the plants in this stage of their growth.

GUANO: *M. A.* Guano, if genuine, should not weigh more than 70 to 72 lb. per bushel. By drying and burning Peruvian guano should lose from 35 to 60 per cent. of its weight. Its ash should be white, and should dissolve readily, and without effervescence, in dilute muriatic acid, leaving insoluble residue, which should not amount to more than 2 per cent of the weight of the guano. Mixed with quick-lime it should give a strong ammoniacal odour.

Garden Netting.

JOHN EDGINGTON AND CO. supply GARDEN NETTING at 1½*d.* per square yard. 200 yards and upwards carriage free. COTTON NETTING and GRIM CANVAS of every description. TULIP COVERS and GREENHOUSE SHADES, SUN BLINDS, &c. MARQUEES, TENTS, and FLAGS, for Fêtes, Flower Shows, &c.

JOHN EDGINGTON & Co., 48, Long Lane, Smithfield, E.C.; and 18, Piccadilly, W.

NETTING for FRUIT TREES, SEED BEDS, RIPE STRAWBERRIES, &c.—TANNED NETTING, for protecting the above from Frost, Blight, Birds, &c., 2 yards wide, 3*d.* per yard, or 100 yards 20*s.*; 4 yards wide, 4*d.* per yard, or 50 yards 20*s.* NEW TANNED NETTING, suited for any of the above purposes, or as a Fence for Fowls, 2 yards wide, 6*d.* per yard; 4 yards wide, 1*s.* per yard; 4 inch mesh, 4 yards wide, 1*s.* 6*d.* per yard.

Can be had in any quantity of EATON & DELLER, 6 and 7, Crooked Lane, London Bridge, E.C.

150,000 YARDS of GARDEN NETTING in Stock, 1½*d.* per square yard, Carriage Free in quantities of 250, 500, or 1000 yards. F. E. & Co. are the only large holders of Netting in England, which enables them to execute orders to any extent on the day received. Be particular—

FREDERICK EDGINGTON & Co., Marquee, Tent, Rick-cloth, and Flag Manufacturers, Thomas Street, Old Kent Road, London, S.E.

Iron Hurdles, Fencing, and Gates.

COTTAM'S HURDLES are made in the best manner of superior Wrought Iron. SHEEP HURDLES, from 4*s.*; CATTLE HURDLES, from 4*s.* 11*d.* each; CONTINUOUS FENCE, from 6*d.* per foot; FIELD GATES, from 25*s.* each. Illustrated Price List on application.

ENTRANCE GATES, RAILING, and IRON WORK of every description. Designs and Estimates free of

COTTAM & Co.,
No. 2, Winsley Street
(opposite the Pantheon),
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GALVANISED WIRE CABLE STRAND FENCING, for FARMS, PARKS, and GARDENS.
The ORIGINAL INVENTORS and MANUFACTURERS.

The CHEAPEST, STRONGEST, and NEATEST FENCING in USE
THOUSANDS of MILES of this FENCING have been SUPPLIED by us at home and abroad. It sustains no injury by being trespassed upon.

Price, with five lines of Strand and Iron-pronged Standards, and one straining post, stay and screw bolts to every 120 yards, 1*s.* per yard.
Five lines of Cable Strand and Staples for wooden posts, 6*d.* per yard
HURDLES, HURDLES, HURDLES, 1*s.* 9*d.* to 3*s.* 9*d.* per yard.
CONTINUOUS IRON FENCING, GATES of all kinds.
PATENT STRAINING PILLARS, &c.
GALVANISED WIRE NETTING for POULTRY, &c.
GALVANISED SWING WATER BARROWS.
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GALVANISED IRON PUMPS.
LAWN MOWERS, GARDEN ROLLERS.
ASPHALTE ROOFING FELT, 1*d.* per square foot.

MOTLEY & GREEN,
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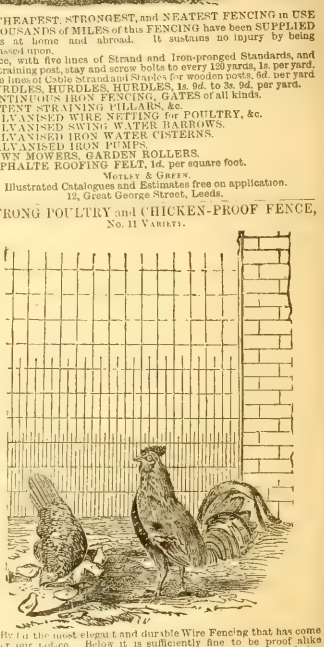
12, Great George Street, Leeds.

STRONG POULTRY and CHICKEN-PROOF FENCE, No. 11 VARIETY.



"By far the most elegant and durable Wire Fencing that has come under our notice. Below it is sufficiently fine to be proof alike against the ingress of Rats and the egress of Chickens; and, being spiked above, it affords no resting place for the Fowls, who consequently do not attempt to fly over it."—*Poultry Book.*

PRICES PER YARD.

3 feet high,	1*s.* 6*d.*	Japanned;	1*s.* 10*d.*	Galvanised.	
4	"	1 11	"	2 4	"
5	"	2 3	"	2 9	"
6	"	2 8	"	3 0	"

C. & C.'s New Illustrated Catalogue will shortly be ready. It will contain descriptions of the above, and other Iron and Wire Fences for Parks, Farms, Gardens, Game Preserves, Poultry Courts, &c.; also of Iron Gates, Iron Hurdles, Economical Wire Netting and Roofing Felt.

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E. T. ARCHER'S "FRIGI DOMO."—Patronised by her Majesty the Queen, the Duke of Northumberland for Syon House, his Grace the Duke of Devonshire for Chiswick Gardens, Professor Lindley for the Horticultural Society, Sir Joseph Paxton for the Crystal Palace, Royal Zoological Society, &c.

PROTECTION from COLD WINDS and MORNING FROSTS.

"FRIGI DOMO," a Canvas made of patent prepared Hair and Wool, a perfect non-conductor of Heat and Cold, keeping, wherever it is applied, a fixed temperature. It is adapted for all horticultural and floricultural purposes, for preserving Fruits and Flowers from the scorching rays of the sun, from wind, from attacks of insects, and from morning frosts. To be had in any required lengths.

Two yards wide	.. .. ..	1*s.* 9*d.* per yard run.
Four yards wide	.. .. ..	3*s.* 6*d.* per yard.
An improved make, 2 yards wide ..		1*s.* 9*d.* per yard.
An improved make, 3 yards wide ..		2*s.* 8*d.* per yard run.

Also "Frigi Domo" Netting, 2 yards wide, 1*s.* 6*d.* per yard run.

ELISHA THOMAS ARCHER, Whole and Sole Manufacturer, 7, Great Trinity Lane, Cannon Street, City, and of all Nurserymen and Seedsmen throughout the kingdom.

"It is much cheaper than Mats as a covering."

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GARDEN ENGINES, SUCTION PUMPS, SYRINGES, &c., &c.,

WAS AWARDED BY THE JUDGES TO

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*** *Descriptions Post Free, on application.*

GRAY'S OVAL TUBULAR BOILER.

INTERNATIONAL EXHIBITION, CLASS IX., No. 2119.

Mr. GRAY begs to call the attention of the Nobility, Gentry, Nurserymen, Gardeners, &c., to his

NEW OVAL TUBULAR BOILER,

acknowledged by practical judges to be a great improvement on every form of Tubular Boiler yet introduced. It has proved itself superior to all other Boilers for quickness of action and economy of Fuel, doing its work with one-third less the amount required by any other.

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"The upright form of Boiler is usually made on a circular plan, but the oval form given to Mr. GRAY's variety of it is said to be preferable in consequence of its bringing the tubes in closer contact with the fire. The usual form of a furnace being a parallelogram rather than a square, it seems feasible that the Boilers on the oval plan should bring the tubes more completely within range of the burning fuel; and this being so, the change, though a slight one, is no doubt an improvement."

They are made of all sizes, which, with prices, may be had on application.

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Rest and be Thankful.

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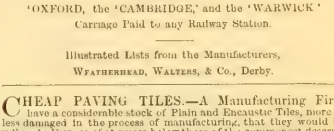

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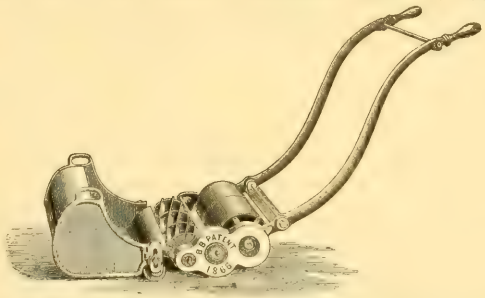

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MAY BE AT ONCE RETURNED.

J. B. BROWN AND CO. beg to mention, that having executed their numerous orders for the NEW PATENT B B LAWN MOWER up to the present time, with most unqualified satisfaction, they are now actively executing further orders for the present season,—and, owing to the large number of orders already received and constantly coming in, it is most important that orders for delivery this season should be sent in *as early as possible.*

The Machine combines all the latest improvements in Lawn Mowing Machines, being simple in construction, very light, silent in movement, easily worked, and so strong and durable as to be literally unbreakable,—an all-important feature in Machines of this class; the ordinary cast-iron being entirely done away with, and malleable iron substituted, in all breakable parts, and every part being accurately numbered and made to standard gauges. The workmanship and finish are also of a superior character; the entire Machine being quite equal to a revolution, so to speak, in Lawn Mowers. The Machines are all guaranteed to give perfect satisfaction in every respect.

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PRICES—Including Carriage to any Railway Station or Shipping Port in England, with the necessary Tools and Directions for use.

10-inch Machine	£3 10 0	*Easily Worked by a Boy.*
12-inch Machine	4 10 0	
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16-inch Machine	6 10 0	*Ditto by a Man.*
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20-inch Machine	8 0 0	*Ditto by Two Men.*
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42-inch Machine	£28 10 0	*Drawn by a Horse.*
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30-inch Machine	£17 10 0	*Drawn by a Pony.*
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New Improved Horse, Pony, and Donkey Boots, wholly of Leather, as follows:—Horse Boots, 24*s.*; Pony Boots, 21*s.*; Donkey Boots, 16*s.* per set.

*** *Every Machine sent out is warranted to give ample satisfaction, and, if not approved of, may be at once returned.*

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AGAIN ON FOUR SEPARATE OCCASIONS DURING THE SEASON OF 1865 BY HER MAJESTY THE QUEEN;

ONCE BY HIS MAJESTY THE KING OF HOLLAND;

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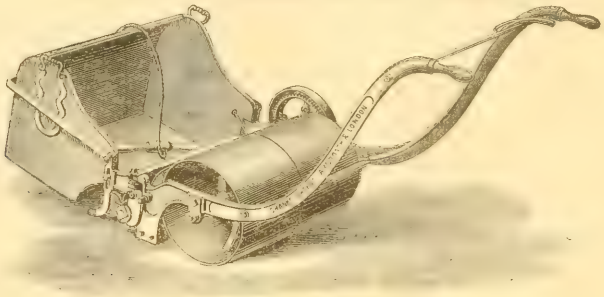
EVERY MACHINE WARRANTED.



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APRIL, 1866.—ANOTHER 42-INCH HORSE MACHINE HAS JUST BEEN ORDERED FOR

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A. SHANKS AND SON HAVE TO INTIMATE THAT THEIR

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These are the only Machines that can be depended on to give lasting satisfaction.

THESE ARE THE ONLY MACHINES THAT WILL MOW PROPERLY WHEN THE GRASS IS WET.

THESE ARE THE ONLY MACHINES THAT DELIVER THE GRASS WITHOUT STOPPING, THUS SAVING AN IMMENSE AMOUNT OF LABOUR.

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A. SHANKS AND SON have now ready for delivery a large Stock of their celebrated LAWN MOWERS. The Machines have been manufactured by skilled workmen of the best materials, and by the aid of the most improved Machinery.

A. S. AND SON have been particularly careful that the advantages in point of durability and simplicity of construction which have always been a peculiarity of their Machines should still remain, and that no improvement be introduced which has merely novelty to recommend it.

SHANKS' PATENT LAWN MOWERS for 1866 are unrivalled for simplicity of construction, ease of working, and durability.

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Width of Cutter		Easily Worked	Silent Movement.
10-inch Machine	£3 10 0	*By a Lady*	4s. extra.
12-inch Machine	4 10 0		
14-inch Machine	5 10 0	*By a Boy*	

Width of Cutter.		Easily Worked	Silent Movement.
16-inch Machine	£6 10 0	*By a Man or Two Boys*	4s. extra.
19-inch Machine	7 12 6	*By a Man and Boy*	
22-inch Machine	8 7 6	*By Two Men* ..	7s. 6d. extra.
24-inch Machine	8 17 6		

SHANKS' NEW PATENT PONY and DONKEY MACHINE.

Width of Cutter.		If with Patent Delivering Apparatus.
25-inch Machine	£12 10 0	25s. extra.
28-inch Machine	14 10 0	30s. ,,
30-inch Machine	15 15 0	30s. ,,

Silent Movement, 12s. 6d. extra; Boots for Pony, 21s. per set;
Ditto for Donkey, 16s. per set.

SHANKS' NEW PATENT HORSE MACHINE.

Width of Cutter.		If with Patent Delivering Apparatus
30-inch Machine	£19 0 0	30s. extra.
36-inch Machine	22 0 0	30s. ,,
42-inch Machine	26 0 0	40s. ,,
48-inch Machine	28 0 0	40s. ,,

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HAVE WON

50 ALL ENGLAND CHAMPION PRIZES IN LESS THAN A YEAR AND A HALF

AND FOUR OUT OF FIVE FIRST PRIZES AT THE LAST ROYAL SHOW AGAINST MOST SEVERE COMPETITION.

THEY ARE STRONG. LIGHT IN DRAUGHT. SIMPLE. ECONOMICAL.

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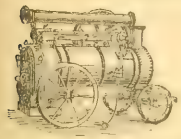

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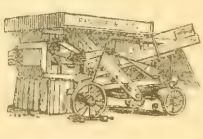

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THE BEST HORSE RAKES at the LOWEST PRICES.

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Are prepared to supply their best HORSE RAKES, with Steel Teeth, at the following extremely low prices:—

RAKE marked A, will rake 7 feet, extreme width 8 feet, Steel Teeth .. £7
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PATENT BALANCE RAKE, to be worked by a Boy who rides on the Rake.—This Rake does more work, and at less cost, than can be done with Rakes after which the Driver walks. This Rake, marked E, will rake 7½ feet, extreme width 9 feet, Steel Teeth, £9.

Delivery, Free to any Railway Station in England. Payment, Cash on delivery.
If the Rake is not approved, it may be returned within a week, Carriage Paid to London.

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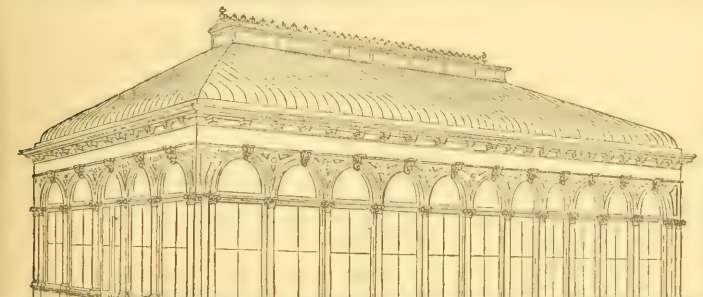

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FOUNTAIN JETS.

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Fig. 531. DOME and CONVOLVULUS. 17s.

Fig. 532. DOME. 8s. 6d.

Fig. 533. CONVOLVULUS, 8s. 6d.

Fig. 534. BARKER'S MILL. 11s.

Fig. 535. WIRE BASKET with BALL. 16 in., 16s. 6d.; 20 in., 17s. 6d.; 24 in., 18s. 6d.

Connecting Screws to all the above Jets, 1s. 6d. extra.
Branch Pipe for raising up Jets 1 foot high, 1s. 6d.

A Tap is required to be fixed in the Pipe to regulate the supply of Water for Fountain Jets.

J. TYLER & SONS, Manufacturers, Warwick Lane, Newgate Street, London, E.C.

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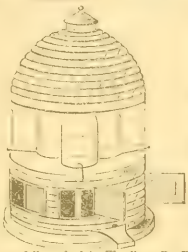
PRIZE MEDAL AND HONOURABLE MENTION AWARDED TO GEORGE NEIGHBOUR & SONS, FOR BEE HIVES AND HONEY AT THE VARIOUS EXHIBITIONS.



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Price complete .. £1 15 0
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THE LIGURIAN OR ITALIAN ALP BEE, being much in demand at the present time, we are in a position to supply Stocks of these rare Bees carefully packed in Woodbury Bar-Frame Hives, so as to travel with comparatively no risk of damage.

ENGLISH BEES.—Stocks and Swarms may be obtained as heretofore.

A newly-arranged CATALOGUE of other Improved Hives, with Drawings and Prices, sent in receipt of two stamps.

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AGENTS—Liverpool: James Coldbeck, 12, Clayton Square. Manchester: J. Wilson, 50, King Street. Birmingham: J. H. Cottrell, 15, Joist Row. Dublin: Cole, 108, Grafton Street. Edinburgh: Bryce, 5, Hanover Street. Glasgow: Austin & M'Vean, 16, Buchanan Street.

TO BE LET, at Upper Norwood, on 60 Years' Lease, TWO ACRES of GRASS LAND, suitable for a Nursery Garden. There is a considerable South Frontage. The Soil is good, the Land undulating and easily drained, and it is protected on the South-east and West by trees.

Apply to the Gardener, The Mount, Upper Norwood.

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To GARDENERS, NURSERYMEN, FLORISTS, AND OTHERS.

TO BE LET, an OLD ESTABLISHED BUSINESS as a NURSERYMAN and FLORIST, with Greenhouses, Peach Houses, &c.; every convenience for carrying on an extensive business, with good dwelling-house attached; the whole can be taken at a moderate rental amount.

For particulars apply to W. KIRKHAM & SON, Estate Agents, 129, Western Road, Brighton, or to Mr. STARR, Nurseryman, &c., Park Street, Bradford.

Battleshall Farm, Stapleford Abbots, Essex.

TO BE LET, by Tender, by order of the Honorable Charles Gore, Esq., Commissioner in charge of His Majesty's Land Revenue in England, on LEASE, for a term of 11 years, BATTLESHALL FARM, containing about 250 Acres (of which about 150 Acres are Grass Land), and situate at Stapleford Abbots, six miles from Romford. There is a large Farm-house and good Buildings.

Tenders will be received on or before Monday, the 18th inst., addressed to the Receiver of the Land Revenue, 1, Whitehall Place, Westminster, S.W. Particulars and Forms of Tender may be had on application to Mr. JOHN CLUTTON, 9, Whitehall Place, where also a Plan of the Farm and a Draft of the Lease are deposited for inspection.

Sales by Auction.

Upper Holloway.

2000 Bushels of CUT-LEAVED PLANTS.

MESSRS. PROTHEROE and MORRIS are instructed by Mr. JOHN P. ALLEN, Jun., to SELL by AUCTION on the Premises, St. John's Nursery, John Street, Upper Holloway, N., on FRIDAY, June 1, at 12 for 1 o'clock, about 2000 BEDDING and GREENHOUSE PLANTS, consisting of 1000 fine Geraniums, and Pelargoniums, Iresine Lindenii, Verbenas, Calceolarias, Heliotropes, Lobelias, Petunias, and a large variety of other Bedding Plants, &c.

May be viewed prior to the Sale. Catalogues may be had on the Premises; and of the Auctioneers and Valuers, Leytonstone, N.

Clearance Sale, Hampstead Road.

IMPORTANT TO GENTLEMEN, NURSERYMEN, BUILDERS, AND OTHERS.

MESSRS. PROTHEROE AND MORRIS have received instructions to submit for unreserved SALE by AUCTION, at the Eschol Nursery, opposite the Chalk Farm Station on the North London Railway, on MONDAY, June 18, the remaining GREENHOUSE and BEDDING PLANTS; also the Erection of 8 Greenhouses, 1 Circular Iron Roof Conservatory, Thousands of feet of Hot-water Piping, Boilers, large Quantities of Bricks, York Paving, Flues, Seed Drawers, Counters, Desks, Flower Pots, and numerous other effects.

May be viewed prior to the Sale. Catalogues may be had at the Nursery; and of the Auctioneers and Valuers, American Nurseries, Leytonstone, N.E.

WILLIAM S. BURTON,

GENERAL FURNISHING IRONMONGER,

BY APPOINTMENT TO HIS ROYAL HIGHNESS THE PRINCE OF WALES,

SENDS A CATALOGUE GRATIS AND POST PAID.

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TWENTY LARGE SHOW ROOMS,

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THE PERFECT SUBSTITUTE FOR SILVER, THE REAL NICKEL SILVER,

Introduced more than 25 years ago by WILLIAM S. BURTON, when Plated by the Patent process of Messrs. Elkington & Co., is beyond all comparison the very best article next to Sterling Silver that can be employed as such, either usefully or ornamentally, as by no possible test can it be distinguished from real Silver.

A small useful set, guaranteed of first quality for finish and durability, as follows:—

	Fiddle or Old Silver Pattern.			Bead Pattern			Thread Pattern.			King's or Shell and Thread.		
	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.
12 Table Forks	1	12	0	2	0	0	2	4	0	2	10	0
12 Table Spoons	1	13	0	2	0	0	2	4	0	2	10	0
12 Dessert Forks	1	4	0	1	10	0	1	12	0	1	15	0
12 Dessert Spoons	1	4	0	1	10	0	1	12	0	1	15	0
12 Tea Spoons	0	16	0	1	0	0	1	2	0	1	5	0
6 Egg Spoons, gilt bowls	0	10	0	0	12	0	0	12	0	0	13	6
2 Sauce Ladles	0	6	0	0	8	0	0	8	0	0	9	0
1 Gravy Spoon	0	6	6	0	9	0	0	10	0	0	11	0
2 Salt Spoons, gilt bowls	0	3	4	0	4	0	0	4	0	0	4	6
1 Mustard Spoon, gilt bowl	0	1	8	0	2	0	0	2	0	0	2	3
1 Pair of Sugar Tongs	0	2	6	0	3	6	0	3	6	0	4	0
1 Pair of Fish Carvers	1	4	0	1	10	0	1	10	0	1	10	0
1 Butter Knife	0	2	6	0	4	0	0	5	6	0	6	0
1 Soup Ladle	0	10	0	0	12	0	0	16	0	0	17	0
1 Sugar Sifter	0	3	3	0	4	6	0	4	6	0	5	0
Total	9	19	9	12	9	0	13	9	6	14	17	3

Any article to be had singly at the same prices. An Oak Chest to contain the above, and a relative number of Knives, &c., £2 15*s.*; Tea and Coffee Sets, Dish Covers and Corner Dishes, Cruet and Liqueur Frames, &c., at proportionate prices. All kinds of Replating done by the Patent process.

CUTLERY, WARRANTED.

The most varied assortment of TABLE CUTLERY in the World, all warranted, is on sale at WILLIAM S. BURTON'S, at prices that are remunerative only because of the largeness of the sales.

Ivory Handles.	Table Knives, per dozen.		Dessert Knives, per dozen.		Carvers, per pair.	
	s.	*d.*	*s.*	*d.*	*s.*	*d.*
3¼-inch Ivory Handles	12	6	10	0	4	9
3½-inch fine Ivory Handles	17	0	13	0	5	6
4-inch Ivory Balance Handles	19	0	15	0	5	6
4-inch fine Ivory Handles	27	0	20	0	8	0
4-inch finest African Ivory Handles	34	0	27	0	12	0
Ditto, with Silver Ferules	42	0	35	0	13	6
Ditto, Carved Handles, Silver Ferules	55	0	45	0	18	6
Nickel Electro-Silver Handles	25	0	19	0	7	6
Silver Handles of any pattern	84	0	54	0	21	0
BONE and HORN HANDLES.—KNIVES and FORKS, per dozen.						
White Bone Handles	11	0	8	6	2	6
Ditto Balance Handles	25	0	17	0	4	6
Black Horn, Rimmed Shoulders	17	0	11	0	4	0
Ditto, very strong, Riveted Handles	12	0	9	6	3	0

The largest stock in existence of Plated Dessert Knives and Forks, and of the new Plated Fish-eating Knives and Forks and Carvers.

TEA URNS, OF LONDON MAKE ONLY.

The largest assortment of London-made TEA URNS in the world (including all the recent novelties, many of which are Registered), is on Sale at WILLIAM S. BURTON'S, from 30*s.* to £6.

FENDERS, STOVES, FIRE IRONS, AND CHIMNEY PIECES.

Buyers of the above are requested, before finally deciding, to visit WILLIAM S. BURTON'S SHOW ROOMS. They contain such an assortment of Fenders, Stoves, Ranges, Chimney Pieces, Fire Irons, and General Ironmongery, as cannot be approached elsewhere, either for variety, novelty, beauty of design, or exquisiteness of workmanship. Bright Stoves, with Ormolu Ornaments, £3 8*s.* to £33 10*s.*; Bronzed Fenders with Standards, 7*s.* to £5 12*s.*; Steel Fenders, £3 3*s.* to £11; Ditto, with rich Ormolu Ornaments, from £3 3*s.* to £18; Chimney Pieces, from £1 8*s.* to £100; Fire Irons, from 3*s.* 3*d.* the set to £4 4*s.* The Burton and all other Patent Stoves, with radiating Hearth Plates.

BEDSTEADS, BEDDING, AND FURNITURE.

WILLIAM S. BURTON'S STOCK on SHOW of IRON and BRASS BEDSTEADS and CHILDREN'S COTS, stands unrivalled either for extent or moderateness of price. He also supplies Bedding, manufactured on the premises, and Bed Hangings, of guaranteed quality.

PATENT IRON BEDSTEADS,

Fitted with Dovetail Joints and Patent Sacking on Castors, from 11*s.* to £1 4*s.* Ornamental Iron and Brass Bedsteads in great variety, from £1 4*s.* to £45 5*s.*

FURNITURE.

In Complete Suites for Bed-room of Mahogany, Birch, Fancy Woods, Polished and Japanned Deal, always on show. These are made by WILLIAM S. BURTON, at his Manufactory, 84, Newman Street, and every article is guaranteed. China Toilet Ware in great variety, from 3*s.* 6*d.* the set of five pieces.

CLOCKS, CANDELABRA, BRONZES, AND LAMPS.

WILLIAM S. BURTON invites inspection of his Stock of these, displayed in two large Show Rooms. Each article is of guaranteed quality, and some are objects of pure vertu, the productions of the first Manufacturers of Paris, from whom WILLIAM S. BURTON imports them direct.

CLOCKS, from 7*s.* 6*d.* to £45.
CANDELABRA, from 13*s.* 6*d.* to £16 10*s.* per pair.
BRONZES, from 18*s.* to £16 16*s.*
LAMPS, MODERATEUR, from 6*s.* to £9.
PURE COLZA OIL, 4*s.* 3*d.* per gallon.

BATHS AND TOILET WARE.

WILLIAM S. BURTON has ONE LARGE SHOW ROOM devoted exclusively to the DISPLAY of BATHS and TOILET WARE. The stock of each is at once the largest, newest, and most varied ever submitted to the Public, and marked at prices proportionate with those that have tended to make this Establishment the most distinguished in this country. PORTABLE SHOWERS, 7*s.* 6*d.*; PILLAR SHOWERS, £3 to £5 12*s.*; NURSERY, 15*s.* to 32*s.*; SPONGING, 9*s.* 6*d.* to 32*s.*; HIP, 13*s.* 3*d.* to 31*s.* 6*d.* A large assortment of GAS FURNACE, HOT and COLD PLUNGE, VAPOUR and CAMP SHOWER BATHS. TOILET WARE in great variety, from 15*s.* 6*d.* to 45*s.* the set of three.

PAPIER MACHE AND IRON TEA TRAYS.

An assortment of TEA TRAYS and WAITERS, wholly unprecedented, whether as to extent, variety, or novelty.

NEW OVAL PAPIER MACHÉ TRAYS, per set of three, from 20*s.* to 10 Guineas.
Ditto IRON ditto, from 10*s.* to 4 Guineas.
CONVEX-SHAPE ditto, from 7*s.* 6*d.*
ROUND and GOTHIC WAITERS, CAKE and BREAD BASKETS, equally low.

Editorial Communications should be addressed to "The Editor." Advertisements and Business Letters to "The Publisher," at the Office, 41, Wellington Street, Covent Garden, London, W.C.
Printed by WILLIAM BRADBURY, of 13, Upper Woburn Place, in the Parish of St. Pancras, in the Co. of Middlesex, and FREDERICK MULLETT EVANS, of No. 11, Bouverie Street, in the Precinct of Whitefriars, City of London, Printers, at their Office, Lombard Street, Precinct of Whitefriars, City of London, and Published by them at the Office, No. 41, Wellington Street, Parish of St. Paul's, Covent Garden, in the said Co.—SATURDAY, June 9, 1866.

THE GARDENERS' CHRONICLE
AND
AGRICULTURAL GAZETTE.

A Newspaper of Rural Economy and General News.

No. 24.—1866.] SATURDAY, JUNE 16. {Price Fivepence, STAMPED EDITION, 6d.

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ROYAL HORTICULTURAL SOCIETY.—A GREAT ROSE SHOW, and LAST EXHIBITION of the SEASON, on THURSDAY, June 28. Bands of the 1st Life Guards and Royal Horse Guards. Tickets (bought before the day), Fellows' Friends, 3*s.* 6*d.*; Public, 6*s.*; or on the day, 7*s.* 6*d.*

ROYAL HORTICULTURAL SOCIETY, SOUTH KENSINGTON.

Notice.—A MEETING of the FRUIT and FLORAL COMMITTEES will be HELD on TUESDAY NEXT, June 19, at 11 o'Clock.

ROYAL HORTICULTURAL SOCIETY.—Messrs WATERER AND GODFREY'S magnificent DISPLAY of RHODODENDRONS, under the Great Tent, is NOW OPEN. Admission this day 2*s.* 6*d.* Band of the Royal Horse Guards at 3.30.

ROYAL BOTANIC SOCIETY'S GARDENS, REGENT'S PARK.—The LAST EXHIBITION of PLANTS, FLOWERS, and FRUIT, this season, will take place on WEDNESDAY, July 4. Tickets to be obtained at the Gardens, and of the Society's Clerk, Austin's Ticket Office, St. James's Hall, or on Vouchers from Fellows of the Society, price 5*s.*, or on the day of exhibition, 7*s.* 6*d.* each. Gates open at 2 o'clock. Bands will play from 2 till 7 o'clock.

The following Awards were omitted in last week's Advertisement:—
Messrs W. G. Henderson & Sons, Nurserymen, Wellington Road, St. John's Wood.—A Silver Medal for collection of Variegated Plants.
Messrs. E. G. Henderson & Sons—A Bronze Medal for 12 Variegated Geraniums.

CRYSTAL PALACE.—GREAT ROSE SHOW.
NOTICE TO EXHIBITORS.—Certificates of Entry should be at once forwarded to WILLIAM WILLOUGHBY, Superintendent.

BOSTON FLORAL and HORTICULTURAL SOCIETY.—The FIRST EXHIBITION will be held in Major Hopkins' Park on THURSDAY, June 21.
For Schedules, &c., apply to the Honorary Secretaries, Mr. W. H. Bailes, Solicitor, Boston; Mr. Iox Cocks, West Skirbeck Nursery, Boston.

MANCHESTER BOTANICAL and HORTICULTURAL SOCIETY.—The SECOND GENERAL EXHIBITION of FRUITS, PLANTS, and FLOWERS, will be held at The Gardens, Old Trafford, on SATURDAY, July 28, SUNDAY, July 29 and 30. Schedules, and any further information, may be obtained from the undersigned. By Order Bruce Findlay, Curator.
Botanic Gardens, Manchester.

HORTICULTURAL SOCIETY of LIVERPOOL.—FIRST GREAT EXHIBITION of ROSES, ORCHIDS, FERNS, &c., JULY 3 and 4, in ST. GEORGE'S HALL. The following, and other liberal Prizes, will be awarded.

72 CUT ROSES, distinct (Nurserymen), 1 Truss, £8, £6, £4.
24 " " " 3 Trusses, £6, £4, £2.
24 " " " 3 Trusses, £3, £2, £1.
24 " " " 3 Trusses, £3, £2, £1.
18 " " (Amateurs), 1 Truss, £4, £3, £2.
18 " " " 1 Truss, £3, £2 6*s.*, £1 10*s.*
12 " " " 3 Trusses, £3, £2 6*s.*, £1 10*s.*
10 EXOTIC ORCHIDS (Open), £10, £7, £5.
6 " (Amateurs), £6, £4, £2.
18 " FERNS (Open), £8, £6, £4.
12 " " £6, £4, £2.
3 TREE FERNS " £3, £2, £1.
Collection of HARDY FERNS, species and varieties, not less than 24, £5, £3, £2.
12 ORNAMENTAL FOLIAGE PLANTS (Open), £5, £3, £2.
Liberal Prizes will be awarded to Plants of Merit. The Hall is close to the London and North Western Railway Station.
For Schedules and every information apply to Robt. W. Ker, Hon. Sec., 4, Basnett Street, Liverpool.

BIRMINGHAM ROSE SHOW, JULY 5 and 6.—For Prize Lists, apply to Mr. A. Forrest, Sec., Cherry Street, Birmingham. Entries Close June 29.

THE GARDENERS' ROYAL BENEVOLENT INSTITUTION (Instituted 1838), for providing Pensions for Aged and infirm Gardeners and others connected with Horticultural pursuits.—The TWENTY-THIRD ANNIVERSARY FESTIVAL in aid of the funds of this Institution, will take place at the LONDON TAVERN, Bishopsgate Street, London, on WEDNESDAY, June 27.
Sir C. Wentworth Dilke, Bart., M.P., in the Chair.
Edwd. Roger Cutler, Secretary.
14, Tavistock Row, Covent Garden, W.C.

New Double Pyrethrums.

JOHN SALTER'S Collection of these beautiful Summer Flowers is NOW in BLOOM, as also the HERBACEOUS PEONIES and IRIS GERMANICA.
The Gardens are open every day, except Sunday.
Versailles Nursery, William Street, Vale Place, Hammersmith, W.
(Near Kensington Railway Station.)

Bedding Plants, Bedding Plants.

JAMES HOLDER can supply VERBENAS, SCARLET and VARIEGATED GERANIUMS, DAHLIAS, CALCEOLARIAS, FUCHSIAS, PETUNIAS, LOBELIAS, GAZANIAS, KONIGAS, CUPHEAS, &c. Eight dozen for 20*s.*, or four dozen for 10*s.* 6*d.*, hampers and package included.
Crown Nursery, Reading, Berks.

Genuine Garden and Agricultural Seeds.

JAMES CARTER AND CO., Seed Farmers, Merchants, and Nurserymen, 237 and 238, High Holborn, London, W.C.

SEEDS for the GARDEN and FARM, all saved from the finest selected stocks.
DESCRIPTIVE PRICED LISTS free on application.
Butler & McCulloch, Covent Garden Market, W.C.

JAMES FAIRHEAD AND SON, Seed Growers and Merchants, 7, Borough Market, London, S.E.
New and Genuine AGRICULTURAL, GARDEN, and FLOWER SEEDS. Special prices and advantageous offers on application.

J. IVERY AND SON beg to announce their NEW PRICED DESCRIPTIVE CATALOGUES of AZALEA INDICA, and No. 10, HARDY BRITISH FERNS.
Working.—June 9.

J. IVERY AND SON beg to announce that their DESCRIPTIVE PRICED CATALOGUES of AZALEA INDICA, HARDY BRITISH FERNS, ROSES, CONIFERÆ, GRAPE VINES, and SEEDS, may be had on application at their Dorking Nursery.

TRANSPLANTED RHODODENDRONS.—4-year-old Hybrids saved from the choicest Crimson, White, and Claret-coloured sorts, 12*s.* 6*d.* per 100, or 1000 for £5.
Richard Smith, Nurseryman, Worcester.

MAURICE YOUNG'S DESCRIPTIVE LIST of Conifers, New and Rare Hardy Plants, Ornamental Trees and Shrubs, Rhododendrons, Picturesque Novelties, Forest Trees, and Roses, forwarded on application.
Milford Nurseries, near Godalming, Surrey.

New Orchid and General Plant Catalogue.

B. S. WILLIAMS' NEW PLANT CATALOGUE, containing many thousand lots of the most carefully selected LISTS of STOVE, GREENHOUSE, and HARDY PLANTS, is now ready and will be forwarded post free to all applicants.
Victoria and Paradise Nurseries, Holloway, London, N.

British Fern Catalogue.

ROBERT SIM can now send, post free for six postage stamps, Part I. (British Ferns and their varieties, 36 pages, including prices of Hardy Exotic Ferns) of his NEW and PRICED DESCRIPTIVE CATALOGUE of BRITISH and EXOTIC FERNS, No. 7.
**** Part II. (Exotic Ferns) will be issued as early as possible.
Fool's Cray Nursery, S.E.

RAYNBIRD, CALDECOTT, BAWTREE, DOWLING, AND CHAMPION, 7, Limited,
Corn, Seed, Manure, and Oilcake Merchants,
Address, 89, Seed Market, Mark Lane, E.C.; or Basingstoke.
Samples and Prices Post free on application. Prize Medals, 1851, for Wheat; 1862, for "Excellent Seed Corn and Seeds.

The Verbenas of 1866.

PHILIP LADDS is now sending out the above in 48 varieties, introduced by Messrs. Henderson, Turner, Keynes, and Methven, at 9*s.* per dozen, package included.
Nursery, Bexley Heath, Kent.

Now in Bloom, and admired by all who see them.

FUCHSIAS ARTISTIC and LORD HOLMESDALE.—Extract from the Report of the United Horticultural Society's Meeting, on Tuesday, the 5th inst., *vide* "Gardeners' Magazine" on Artistic:—
"The habit excellent. It is a pleasing flower, and sure to be effective, especially on account of the stout substance and elegant disposition of the sepals."
Testimonials and full description, with price, sent on application.
George Fay, Manor Nursery, Manor Lane, Lee, Kent, S.E.

NEW TRICOLOR-LEAVED PELARGONIUMS.—The beautiful Collection of TRICOLOURED GERANIUMS, exhibited at NAFURIAN, the great Grand International Shows by Messrs. F. & A. Smith, may now be had of every day (Sundays excepted), at the Dulwich Nurseries, S. The Lower Norwood Station, Crystal Palace Line, and the Dulwich Station of the Chathan and Dover main line, are both within a few minutes walk of the Nurseries.
A DESCRIPTIVE LIST will be forwarded on application.

Chrysanthemums.

First Prizes Stoke Newington and Guildhall, 1865.
ADAM FORSYTH begs to inform the Public that he is now sending out his large COLLECTION of CHRYSANTHEMUMS, at 6*s.* per dozen, including Attraction, Eve, Golden Ball, Golden Dr. Brock, Hercules, King of Denmark, Lady Carey, Mr. Bruneen, Mr. Wynes, Mrs. Raines, Pink Pearl, Prince of Wales, Sam Weller, Venus, Virgin Queen, &c.
CATALOGUES free on one stamp.
Brunswick Nursery, Stoke Newington, N.

PETER DRUMMOND AND CO. (late J. Scott), Preston Road Nursery, Yeovil, Somerset, have to offer to Intending purchasers upwards of 200,000 BEDDING-OUT FLOWER GARDEN PLANTS, including all the leading varieties of Dahlias, Fuchsias, Geraniums, Heliotropes, Lantanas, Lobelias, Petunias, Salvias, Verbenas, &c. And all kinds of Frosted and Variegated-leaved Plants suitable for the decoration of the Flower Garden, at unprecedented low prices. CATALOGUES free on application.
Also SEEDS of every description for the FARM and GARDEN, of the best quality, at moderate prices.
Please address as above.

WANTED, two dozen strong WATER LILIES, of sorts.
Robt. F. Darby, The Nurseries, Cirencester.

Clove Picotee Layers.

FOR SALE, about 70 dozen of good CLOVE PICOTEE LAYERS.—Apply to
W. Rudergall, 3, Earl's Court Road, Old Brompton, S.W.

To Nurserymen and Others.

FOR SALE, 80 Plants of CYPRIPEDIUM INSIGNE, at 24*s.* per dozen.
50 Plants of CYPRIPEDIUM BARBATUM, in many varieties, at 30*s.* per dozen.
50 Plants of GARDENIAS ITALIA UNITA, at 45*s.* per dozen.
J. Aldred, Bridge Street, Kilburn, N.W.

IVIES.—The best varieties of the Gold and Silver-striped section to name, in pots, well adapted for edging or making a nice bordering for Bedding Plants, 9*d.* each; per doz. 8*s.*
FUCHSIAS.—Good Double and Single varieties in 60-pots, to name, well suited for centres of beds, 6*d.* each; per dozen, 5*s.*
VERBENAS.—Scarlet, Purple, and White, of the leading bedding varieties, in pots, 2*s.* 6*d.* per dozen; per 100, 18*s.*
LOBELIA ERINUS SPECIOSA, in pots, 2*s.* 6*d.* per dozen.
IVY REGNERIANA.—The best green-leaved variety: good plants in pots, 1*s.* each; per dozen, 10*s.*
A. Godwin & Son, The Nurseries, Ashbourne.

REBECCA, the finest BEDDING GERANIUM ever raised. Plants ready in May, price 6*s.* each.
See WM. PAUL'S SPRING CATALOGUE.
Paul's Nurseries, Waltham Cross, London, N.

BEATON'S GERANIUMS, at Reduced Prices.
Indian Yellow, Donald Beaton, Orange Nosegay, Scarlet Gem, Princess Liechtenstein, and Salamander, 1*s.* each, 9*s.* per dozen, not less than six of a sort. Fulgens, Pillar of Beauty, and Waltham Seedling, 1*s.* 6*d.* each, 12*s.* per doz. Amy Hogg, 1*s.* 6*d.* each, 15*s.* per doz. Alexandra, 2*s.* each, 18*s.* per doz. For other sorts see separate Advertisement.
Wm. Paul, Paul's Nurseries, Waltham Cross, London, N.

BARR'S PRIZE CALCEOLARIAS.—The First Prize was awarded at the International Horticultural and Botanical Congress, Royal Horticultural Society's Flower Show, Royal Botanic Flower Show, and Crystal Palace Flower Show, to plants raised from this seed. It is the finest strain of Calceolaria in existence. 2*s.* 6*d.*, 3*s.* 6*d.*, and 5*s.* 6*d.* per packet.
Choice PRIMULA, 1*s.* and 2*s.* 6*d.* per packet.
Choice CINERARIA, 1*s.* and 2*s.* 6*d.* per packet.
Barr & Sugden, 12, King Street, Covent Garden, London, W.C.

Prize Calceolaria, &c.

BUTLER AND McCULLOCH beg to offer Seed of the above, saved only from Prize Flowers of great beauty, 1*s.* and 2*s.* 6*d.* p. pkt.
CINERARIA (James's), extra choice, 1*s.* and 2*s.* 6*d.* per packet.
PRIMULA (James's), extra choice, 1*s.* and 2*s.* 6*d.* per packet.
COVENT GARDEN INTERMEDIATE STOCK (true), 1*s.* and 2*s.* 6*d.* per packet.
PURPLE WHITE INTERMEDIATE STOCK, 1*s.* and 2*s.* 6*d.* p. pkt.
All packets of FLOWER SEED sent post paid.
Butler & McCulloch, Covent Garden Market, W.C.

New Seeds of 1866 now ready.

DOBSON'S UNRIVALLED CALCEOLARIA, 1*s.* 6*d.*, 2*s.* 6*d.*, 3*s.* 6*d.*, and 5*s.* Annual sale 5000 packets.
DOBSON'S UNRIVALLED CINERARIA, 1*s.*, 2*s.* 6*d.*, and 5*s.*
DOBSON'S SUPERB PRIMULA, 1*s.*, 2*s.* 6*d.*, and 5*s.*
These Seeds are second to none in the United Kingdom.
Dobson & Sons, Seed Merchants, Isleworth, W.

Primula Cineraria.

WM. CUTBUSH AND SON are now sending out SEED of their superb PRIMULA SINENSIS FIMBRIATA, which has for many years given great satisfaction.
The *Gardeners' Chronicle* of the 6th of January, in Notices to Correspondents, says:—"The Primula sent out is a valuable fine, richly coloured, full and densely fringed; they are evidently the produce of a capital strain."
The *Journal of Horticulture* of the 23rd of January, says that:—"The finest and richest-coloured Chinese Primulas we have yet seen are those raised by Messrs. Cutbush & Son."
Sealed packets, 2*s.* 6*d.* and 5*s.* 6*d.* each.
CINERARIA, from finest named varieties, per packet, 2*s.* 6*d.* and 3*s.* 6*d.* each.
Highgate Nurseries, London, N

Roses in Pots.

PAUL AND SON, in addition to the NEW ROSES of 1866, can offer fine Plants of the finest TEA-SCENTED NOISETTES and best HYBRID PERPETUAL ROSES, in pots, for Planting during present and next month.
Old Cheshunt Nurseries, N.

CASTLE KENNEDY FIG.—Plants of the above may now be had at 10*s.* 6*d.* and 21 each; or the usual discount to the Trade. Peter Lawson & Son, Edinburgh and London.

To Pine Growers.

WANTED, about 60 Fruiting and Succession Plants (QUEENS and JAMAICAS).—They must be guaranteed healthy and free from scale. Address, stating price, &c., to
Mr. Burgess, Goldsworth Hall, Woking, Surrey.

Greenhouse, Hardy and Stove Plants; Agricultural, Flower, and Vegetable Seeds, &c.

ROBERT PARKER invites inspection of his Collections of the above-named, which have been selected with the greatest care. All plants are clean and healthy, and are offered at reasonable prices. Descriptive and Priced Catalogues are published, and will be forwarded to applicants.
Exotic Nursery, Tooting, Surrey, S.

Early Sheep Feed—Mustard and Rape.

SUTTON AND SONS can supply good new Seed of the above at very moderate prices, which may be had on application
Sutton & Sons, Seed Merchants, Reading.

To Growers of Rape Seed.

WANTED, a good SAMPLE of the above. Send lowest Trade Price with Sample to
E. R., 9, Norfolk Street, Strand, London, W.C.

CABBAGE PLANTS.—Strong DRUMHEAD, Autumn-sown, extra fine. Price on application to
H. & R. Stibbaren, Skerton Nurseries, Lancaster.

CABBAGE PLANTS.—Strong Drumheads for Cattle, Early kinds, Battersea and Nonpareil, 3*s.* per 1000.
W. Virgo & Son, Womersh Nursery, Guildford, Surrey.

FOR SALE, SWEDISH TURNIP SEED, grown 1865, from selected roots, of the original Ruta-baga, or Green Poll Swedish Turnip. Price 6*d.* per lb.
Apply to the grower, Thos. A. Jarvis, Higher Bolberry, near Kingsbridge, Devon.
All Orders to be accompanied by a remittance.

To the Trade and Others.—An excellent Stock.

STRATTON GREEN ROUND TURNIP SEED, 1865 growth. Pronounced by some to be the best English Turnips grown. Cash price, per bushel, 16*s.*; per lb., 6*d.*
EARLY SIX-WEEK TURNIP, 4*d.* per lb.
A remittance or reference requested from unknown correspondents.
Fred. Gee, Seed Merchant and Grower, Biggleswade, Bedfordshire.

Now Ready for Planting.

EXCELLENT CABBAGE PLANTS, Spring-sown.—SCOTCH DRUMHEAD, true; EARLY DWARF NONPAREIL; ENFIELD MARKET. Cash price, 2*s.* 6*d.* per 1000.
DRUMHEAD SAVOY PLANTS, an excellent stock, 4*s.* per 1000.
EDWARD CURLED SAVOY do., and a variety of other plants.
A remittance or reference requested from unknown correspondents.
Fred. Gee, Seed Merchant and Grower, Biggleswade, Bedfordshire.

Brighton and Sussex Seed Warehouse.

EDWARD CARPENTER'S MIXTURES of PERMANENT GRASSES and CLOVER SEEDS.—Best quality, 36*s.* per acre (2 bushels light seeds, and 12 lb. Clovers and small seeds per acre).—See testimonials in Catalogue.
Edward Carpenter's RENOVATING MIXTURES for Improving Old Pastures.
PRICED CATALOGUES of KITCHEN GARDEN, FLOWER, and FARM SEEDS now ready.
Edward C. Carpenter, Seed Merchant and Grower, 96, St. James's Street, Brighton.

Horticultural Glass Warehouse, 87, Bishopsgate Street Without, London, E.C.

THOMAS MILLINGTON begs to refer to his new reduced LIST OF PRICES, published on the 2d of June last, or on application if above address.

Glass for Garden Purposes.

JAMES PHILLIPS AND CO. beg to submit their prices as follows:—

PROPAGATING GLASSES.

Each.—	s.	d.				s.	d.
2 inches in diameter	..	1	0	12 inches in diameter	..	1	9
3 " "	..	1	3	13 " "	..	2	0
4 " "	..	0	9	14 " "	..	2	3
5 " "	..	0	10	15 " "	..	2	6
6 " "	..	0	8	16 " "	..	3	0
7 " "	..	0	10	17 " "	..	4	0
8 " "	..	1	1	18 " "	..	5	0
9 " "	..	1	2	19 " "	..	6	0
10 " "	..	1	3	20 " "	..	7	0
11 " "	..	1	6				

BELL GLASSES, with Domed or Flat Tops.

Each.—	s.	d.		Each.—	s.	d.
4 inches in diameter	..	0	6	9 inches in diameter	..	1	6
5 " "	..	0	8	10 " "	..	2	0
6 " "	..	0	10	11 " "	..	2	6
7 " "	..	1	1	12 " "	..	3	0
8 " "	..	1	4				

CYLINDER GLASSES.

Each.—	s.	d.		Each.—	s.	d.
12 inches long	..	2	0	16 inches long	..	1	4
13 " "	..	1	10	18 " "	..	1	7
14 " "	..	1	12	20 " "	..	1	10
15 " "	..	1	6				

Made to any length.

HAND GLASSES, WITH OPEN TOPS.

Each.—	s.	d.		Each.—	s.	d.
12 inches	..	6	6	18 inches	..	9	6
14 "	..	7	6	20 "	..	10	6
16 "	..	8	6	22 "	..	11	6
				24 "	..	12	6

Painted and Glazed with 16oz. Sheet Glass.

SHEET and ROUGH PLATE GLASS, SLATES of all SIZES BRITISH PLATE, PATENT PLATE, ROLLED PLATE, CROWN, SHEET, HORTICULTURAL, ORNAMENTAL, COLOURED, and every description of GLASS, of the best Manufacture, at the lowest terms. Lists of Prices posted on receipt of application to JAMES PHILLIPS AND CO., 14, Basinghall Street, Wellclose Square, E.C.

Rest and be Thankful.

The most Comfortable, Graceful, and Cheapest

GARDEN SEATS

are the

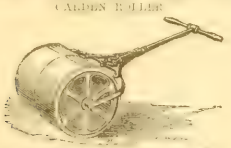
"OXFORD, the "CAMBRIDGE," and the "WARWICK."

Carriage Paid to any Railway Station

Illustrated Lists free from the Manufacturers,

Wm. Cox and Son, Wardwick, Derby.

GREEN'S IMPROVED NEW PATENT GARDEN ROLLER.



Last year I had many testimonials, but this year I have not had one. They are here and there, and are from persons in the city, affording no other information, and the roller is deservedly much admired. I cannot, therefore, state anything for Waghorn's truths left by their Rollers.

From 22 inches	to 25 inches,	£7	10	0
" 24 "	" 26 "	8	10	0
" 26 "	" 27 "	9	10	0
" 16 "	" 17 "	2	15	0

Prices for Rollers fitted with Shafts suitable for Pony or Horse Power, Boxes applicable.

Delivered carriage paid to all the principal Railway Stations and Shipping Ports in England.

Thomas Green & Son, Smithfield Iron Works, Leeds 54 and 55, Blackburn Road, Leeds, S., and 19, Idol Lane, London.

N.B. All Orders executed in the order they are received.

PRIZE MEDALS AWARDED TO GREEN'S PATENT LAWN MOWERS.

INTERNATIONAL EXHIBITION, LONDON, 1862.
INTERNATIONAL EXHIBITION, BERLIN, 1865.

Illustrated Lawn Mowers have proved to be the best, and have received every Prize that has been given in all cases of Competition.

Sold by all respectable Ironmongers, Seedsmen, &c., in the Kingdom. Illustrated Price Lists free on application.

AGRICULTURAL and HORTICULTURAL IMPLEMENTS and MACHINES of every description.

IMPROVED IRON STABLE FITTINGS.

HURDLES of every description, IRON and WIRE FENCING, Palisading, Entrance and Field Gates, Plain and Galvanised Wire Netting.

GREEN'S PATENT LAWN MOWERS and GARDEN ROLLERS.

Garden Engines, Syringes, Water Barrows, Ornamental Garden Chairs, Tables, and Hand Glass Vases, &c.

IRON and WIRE GARDEN SEATS, in great variety.

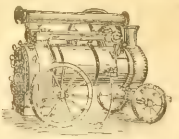
Wrought Iron Hurdles, Wrenching and Thatching Machines.

IMPROVED SAW MILLING MACHINES and PULLEYS.

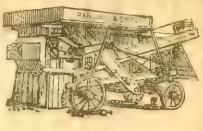
Illustrated Catalogues sent free on application.

Thomas Green & Son, Smithfield Iron Works, Leeds.

Show Rooms and Warehouses, Cattle Market, North Street, Leeds; also at Bridge Road, Lambeth, S.; and 19, Idol Lane, London.



RANSOMES & SIMS



HAVE GREATLY REDUCED THE PRICES OF THEIR

STEAM-THRESHING MACHINERY,

WHICH IS THE BEST AND CHEAPEST MADE.

ENGINES and MACHINES constantly kept in Stock.

Catalogues and Testimonials free on application. An examination solicited.

RANSOMES AND SIMS, ORWELL WORKS, IPSWICH.

AWARDED the following PRIZES:—Royal Agricultural Society, 1841, 1842, 1852, 1854, 1855; Royal Agricultural Society, Ireland, 1854, 1855; Paris, 1856; Rouen, 1856; Vienna, 1857; Pesth, 1857; Amsterdam, 1857, Rotterdam, 1858; Brussels, 1858; Schwerin, 1861; St. Petersburg, 1861; Bourges, 1862; Longford, Tasmania, 1862; London, 1862; Ballarat, Victoria, 1862; Lille, 1863; Hamburgh, 1863; Greisswald, 1863; Alipore, India, 1864; Stettin, 1865; Dresden, 1865; Cologne, 1865.

RANSOMES' PRIZE PLOUGHS

HAVE

WON

50 ALL ENGLAND CHAMPION PRIZES

IN LESS THAN A YEAR AND A HALF.

AND FOUR OUT OF FIVE FIRST PRIZES AT THE LAST ROYAL SHOW AGAINST MOST SEVERE COMPETITION.

THEY ARE STRONG. LIGHT IN DRAUGHT. SIMPLE. ECONOMICAL.

Sold by all the principal Implement Dealers.

Full particulars on application to

RANSOMES AND SIMS, ORWELL WORKS, IPSWICH.

NOTICE.

MESSRS. CUMMING & EDMONDS

Take this opportunity of returning their grateful thanks to the Nobility, Gentry, and Public generally, for the very great support they have received since their commencement in Business, and to inform them they have now taken more Commodious Premises, at the LILLIE BRIDGE, RICHMOND ROAD, BROMPTON, where they have erected STEAM-POWER MACHINERY, and will, in consequence, be able to execute any orders they may be favoured with in the shortest possible time. Messrs. C. & E. beg to draw attention to their

NEW PATENT TUBULAR ARCHED SADDLE BOILERS,

Which have given such universal satisfaction wherever they have been fixed, Gardeners of the greatest experience speaking in the highest terms of them.

Designs and Estimates of every kind of Horticultural Building and Hot-water Apparatus may be obtained on application free of charge.

CUMMING AND EDMONDS,

CONSERVATORY ARCHITECTS, HORTICULTURAL BUILDERS, and HOT-WATER APPARATUS MANUFACTURERS,

STAMFORD BRIDGE, FULHAM ROAD, BROMPTON, S.W.; and at

LILLIE BRIDGE, RICHMOND ROAD, BROMPTON, S.W.

THE LEICESTER

(NEW DESIGNED AND PATENTED)

ORNAMENTAL FLOWER VASES OR BASKETS.

MANUFACTURED BY

HUNT & PICKERING,

HORTICULTURAL AND AGRICULTURAL IMPLEMENT WORKS, LEICESTER.

Exhibited with marked success at the International Flower Show, Kensington; and in the Gallery of the Agricultural Hall, Islington, during the Horse Show.

These Vases or Baskets are composed of a series of ornamental branches, affixed to a capital or centre ring, mounted on suitable brackets and hexagon base, without the aid of screws, rivets, &c.; so simple in construction that any one may in a few minutes put it together, making it a beautiful Centre-piece or Flower Basket, either for the Lawn in Summer or the Conservatory in Winter. Painted any colour to order.

The great advantage of the Open Vase over the solid cast iron or "Terra Cotta," is the perfect drainage and continual circulation of the atmosphere through every part, giving greater vitality to the growth of the plants. The mode of filling is simply to cut a few feet of thin Turf or Moss, and lay the same with the Grass outwards, throw in the soil, and plant the Flowers according to taste.

☞ *Illustrated Price Lists of the various sized Vases.*

The LEICESTER GARDEN SEAT, TABLES, and RUSTIC SEATS, sent free on application.

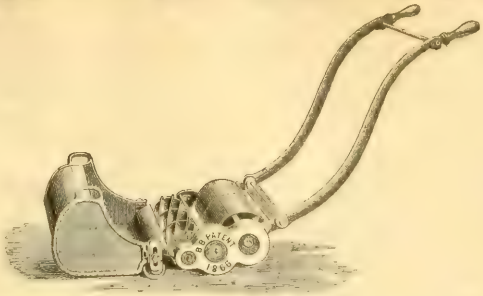
J. B. BROWN & CO.'S NEW PATENT B B LAWN MOWER.

PATENTEES AND SOLE MANUFACTURERS,

J. B. BROWN & CO.,

148, UPPER THAMES STREET,

LONDON, E.C.



GUARANTEED TO GIVE

PERFECT SATISFACTION,

AND IF NOT APPROVED OF

MAY BE AT ONCE RETURNED.

J. B. BROWN AND CO. beg to mention, that having executed their numerous orders for the NEW PATENT B B LAWN MOWER up to the present time, with most unqualified satisfaction, they are now actively executing further orders for the present season,—and, owing to the large number of orders already received and constantly coming in, it is most important that orders for delivery this season should be sent in *as early as possible*.

The Machine combines all the latest improvements in Lawn Mowing Machines, being simple in construction, very light, silent in movement, easily worked, and so strong and durable as to be literally unbreakable,—an all-important feature in Machines of this class; the ordinary cast-iron being entirely done away with, and malleable iron substituted, in all breakable parts, and every part being accurately numbered and made to standard gauges. The workmanship and finish are also of a superior character; the entire Machine being quite equal to a revolution, so to speak, in Lawn Mowers. The Machines are all guaranteed to give perfect satisfaction in every respect.

The NEW B B PATENT LAWN MOWER is Manufactured by J. B. BROWN AND CO. on their own Premises in London, under their personal superintendence.

PATENT B B HAND MACHINE.

PRICES—Including Carriage to any Railway Station or Shipping Port in England, with the necessary Tools and Directions for use.

10-inch Machine	£3 10 0	*Easily Worked by a Boy.*
12-inch Machine	4 10 0	
14-inch Machine	5 10 0	
16-inch Machine	6 10 0	*Ditto by a Man.*
18-inch Machine	£7 10 0	*Easily Worked by a Man.*
20-inch Machine	8 0 0	
22-inch Machine	8 10 0	*Ditto by Two Men.*
24-inch Machine	9 0 0	

PATENT B B HORSE MACHINE.

PRICES—Complete, without extras, including Carriage to any Railway Station or Shipping Port in England, with the necessary Tools and Directions for use.

42-inch Machine	£28 10 0	*Drawn by a Horse.*
36-inch Machine	24 10 0	
30-inch Machine	21 10 0	*By a Horse or Strong Pony.*

PATENT B B PONY and DONKEY MACHINE.

PRICES—Complete, without extras, including Carriage to any Railway Station or Shipping Port in England, with the necessary Tools and Directions for use.

30-inch Machine	£17 10 0	*Drawn by a Pony.*
28-inch Machine	16 10 0	
25-inch Machine	14 10 0	*Drawn by a Donkey.*

New Improved Horse, Pony, and Donkey Boots, wholly of Leather, as follows:—Horse Boots, 24*s.*; Pony Boots, 21*s.*; Donkey Boots, 16*s.* per set.

*** *Every Machine sent out is warranted to give ample satisfaction, and, if not approved of, may be at once returned.*

J. B. BROWN AND CO., OFFICES, 18, CANNON STREET, CITY, LONDON, E.C.

WAREHOUSE and MANUFACTORY, 148, UPPER THAMES STREET, E.C.

OPPOSITE the CITY of LONDON BREWERY, and close to the LONDON BRIDGE STEAM BOAT PIERS.

SHANKS' PATENT LAWN MOWERS FOR 1866.

PATRONIZED ON FIVE SEPARATE OCCASIONS DURING THE SEASON OF 1864 BY

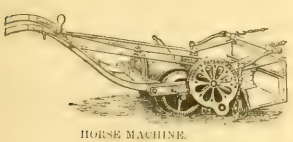
HER MAJESTY THE QUEEN,

AND ONCE BY HIS MAJESTY THE KING OF SAXONY;

AGAIN ON FOUR SEPARATE OCCASIONS DURING THE SEASON OF 1865 BY HER MAJESTY THE QUEEN

ONCE BY HIS MAJESTY THE KING OF HOLLAND;

AND ONCE BY HIS MAJESTY THE KING OF PRUSSIA.



HORSE MACHINE.

PONY MACHINE.

HAND MACHINE.

JUNE, 1866.—ANOTHER 42-INCH HORSE MACHINE HAS JUST BEEN SUPPLIED TO

THE ROYAL GARDENS AT KEW.

PRICES, including Carriage to any Railway Station or Shipping Port in the Kingdom.

SHANKS' NEW PATENT HAND MACHINE.

Width of Cutter.		Easily Worked.	Silent Movement.
10-inch Machine	£3 10 0	*By a Lady*	4*s.* extra.
12-inch Machine	4 10 0		
14-inch Machine	5 10 0	*By a Boy*	

Width of Cutter.		Easily Worked.	Silent Movement
16-inch Machine	£6 10 0	*By a Man or Two Boys*	4*s.* extra.
19-inch Machine	7 12 6	*By a Man and Boy*	
22-inch Machine	8 7 6	*By Two Men* ..	7*s.* 6*d.* extra.
24-inch Machine	8 17 6		

SHANKS' NEW PATENT PONY and DONKEY MACHINE.

Width of Cutter.		If with Patent Delivering Apparatus.
25-inch Machine	£12 10 0	.. .. 25*s.* extra.
28-inch Machine	14 10 0	.. .. 30*s.* ,,
30-inch Machine	15 15 0	.. .. 30*s.* ,,

Silent Movement, 12*s.* 6*d.* extra; Boots for Pony, 21*s.* per set;
Ditto for Donkey, 16*s.* per set.

SHANKS' NEW PATENT HORSE MACHINE.

Width of Cutter.		If with Patent Delivering Apparatus
30-inch Machine	£19 0 0	.. .. 30*s.* extra.
36-inch Machine	22 0 0	.. .. 30*s.* ,,
42-inch Machine	26 0 0	.. .. 40*s.* ,,
48-inch Machine	28 0 0	.. .. 40*s.* ,,

Silent Movement, 20*s.* extra; Boots for Horse's Feet, 24*s.* per set.

Every Machine warranted to give ample satisfaction, and if not approved of can be at once returned.

ALEXANDER SHANKS AND SON, DENS IRON WORKS, ARBROATH.

LONDON OFFICE and SHOW ROOMS: 27, LEADENHALL STREET, E.C.

PARIS OFFICE and SHOW ROOMS: 56, BOULEVARD HAUSSMANN.

A. S. & SON *keep a stock of all sizes of Machines at their London and Paris Establishments, from which Orders are executed on the day they are received.*

☞ *27, Leadenhall Street is the only place in London where intending purchasers of Lawn Mowers can choose from a stock of from 150 to 200 Machines. All sizes kept there, whether for Horse, Pony, or Hand Power.*

WEDDING BOUQUETS, EPERGNES FILLED. Tables Decorated, Conservatories Furnished, by C. ELWIN & Co., 9, Park Terrace, Regent's Park

DRAWING-ROOM PLANT CASES.—The beautiful Gem Plant Cases, &c., introduced by BANN & SIMMS, and exhibited before the Prince and Princess of Wales, and awarded Prizes by the Royal Horticultural Society, International Horticultural and Botanical Congress, &c. An Illustrated Priced Sheet of these Cases, with directions for their management, now ready, and can be had free on application to

BANN & SIMMS, 12, King Street, Covent Garden, W.C.

TREE and PLANT LABELS.—10,000 Cloth punched assorted Labels, for 3s.; delivered free in London on receipt of a Post-office Order or stamps for the amount.

Address, JOHN FRASER & Co., West Road Works, Boston, Lincolnsh

F. A. HAAGE, JUN.'S, WOOD GARDEN STICKS and TALLIES (commended by the Royal Horticultural Society).—The above can now be had of all sizes, Wholesale, of BETHAM & BLACKITH, Coal Quay, Lower Thames Street, London, E.C.; and Retail, of the principal Seedsmen and Florists.

Price Lists on application.

Caution to Gardeners.—When you ask for SAYNOR AND COOKE'S WARRANTED PRIZE PRUNING and BUDDING KNIVES, see that you get them. Observe the mark SAYNOR, also the corporate mark OBTAIN WARRANTED, without which none are genuine.

S. & C. regret having to caution Gardeners and others, but are compelled to do so, in consequence of an imitation, of common quality, having been sold for the genuine article, and which has caused many complaints to be made to them of Knives which were not of their make, all of which are warranted both by sellers and makers.

S. & C.'s Pruning and Budding Knives are the best and the cheapest in the market.

PARK IN WORKS, Sheffield. Established upwards of 125 years.

To Fruit and Rose Growers.

STANDEN'S GARDENERS' and AMATEURS' FRIEND, a compound of the richest Fertilising Phosphates, and the most valuable Gas Manures for Vines and other Fruit Trees, Roses, Azaleas, and New Holland Plants, New Conservatories, Dahlias, Gerardiums, &c. Sample Canisters, 1s. and 2s. 6d.; Bags, 5s. 6d., 10s. 6d., and 21s. per Cwt. Hand-book for Fruit, Rose, and Soil-wooded Plants. Now ready for 1866. Nurserymen and Seedsmen. For List of Agents see Advertisements in *Gardeners' Chronicle* for March and April.

BANN & SIMMS, 12, King Street, Covent Garden, W.C.

GENUINE LAING'S STRONG TOBACCO PAPER made from pure Tobacco Juice. Numerous testimonials as to genuineness, &c. 1s. per lb.

SAMUEL MAY, Seedsman, 189, Wade Lane, Leeds

Red Spider. Mealy Bug.

GISBURST COMPOUND, whether used as Dip, Wash, or Garden Syringe, or as Winter Dressing on Trees at rest, should be diluted with soft water before use. This gets rid of vermin, and if the Solution be deodorised, prevents any shrinking of foliage. A Strength of Rum 1 to 200 to the gallon of water is recommended for growing Plants; about 4 to 6 oz. for Trees at rest.

Sold Retail by Nurserymen and Seedsmen, in Boxes, 1s., 3s., and 10s. 6d. each.

Wholesale by PRICE'S PATENT CANDLE COMPANY (LIMITED).

Plagues of the Garden.—Aphis Wash.

SIMPLE AND SAFE REMEDY.—By using the APHIS WASH, these Pests of the Garden, together with Scale, Caterpillars, Slugs, Earwigs, &c., are immediately destroyed. Leaves no stain, but strengthens the Trees or Plants.

Extract from the "Gardeners' Chronicle," 19th August, 1865.—"Some time ago we received a sample of an Aphis Wash, prepared at the City Soap Works, with a request that it might be submitted to experimental trial. This having been done, we are enabled to report favourably of the results. Among other things it was applied to various Cannas, Marantas, and Calceolarias infested by red spider, and a single application proved effectual for their destruction."

Extract from "Gardener's Magazine," 24 March, 1866.—"It is a matter of importance that the Aphis Wash of the City Soap Works resulted from a proposal made in these columns, and as a matter of fact there is nothing to equal the Aphis Wash for the purpose it is intended to serve."

See also article by SHIRLEY HIBBERD, Esq., F.R.H.S., in "Gardener's Magazine," of July 1, 1865.

From a Letter from GUNNY, Esq., *Pitlam.*

"You will see by Lloyd's Standard, that I have publicly recommended it (the Aphis Wash). I have also mentioned it to several gardeners."

From a Letter from MR. J. F. CHAPMAN, *Sunderland, Aug. 5th, 1865.*—"I have tried it upon different plants with perfect success. I had many plants in my stove badly affected with red spider, but have washed every plant with the liquid, as you direct, and I verily believe not one red spider remains."

From MR. SIDNEY FORD, *The Gardens, St. Leonard's Lodge, near Horsham, February 9, 1866.*—

"I am able to report most favourably on the result of my trials of your Aphis Wash; it is a thing I have long felt the loss of, and it very much, as it is not like many other washes, for it will all pass through the syringe without any trouble. From other experiments I made, the dust has been a perfect success, and the fruit trees it will be a first-rate wash."

Messrs. GIBBS have received a great many valuable testimonials from practical and amateur gardeners, and have liberty to refer to Mr. Eyles, of Messrs. Low & Son's Nurseries, Upper Clapton, who during the past autumn (1865), carried out a series of careful and thorough experiments with the "Aphis Wash."

Sold by Chemists and others, in 1s. bottles, and 2s. 6d. a gallon, with full directions for use.

Wholesale at the City Soap Works, Milton Street, London, E.C.

Destroy your Insect Pests.

PRESERVE YOUR PLANTS and TREES.

YOU MAY EASILY DESTROY ALL PLANT PESTS,

RED SPIDER	GREEN AND BLACK	ANTS
MEALY BUG	FLY	SCALE
THRIP	AMERICAN BLIGHT	MILDEW,

Without injury to the most delicate Plant or Tree, by using FOWLER'S GARDENERS' INSECTICIDE, pronounced by all who have used it to be far superior to any other remedy. One trial will prove its efficacy. Testimonials forwarded on application.

Price 1s. 6d., 2s., 3s. 6d., and 10s. per Tin. Orders amounting to 15s. carriage paid. Agents required.

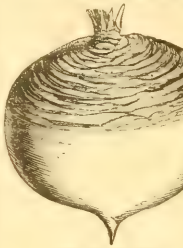
GEO. & THOMAS FOWLER, North Street, Brighton.

COCOA-NUT REFUSE is becoming scarce, the old reserves will soon be gone. Now sold in bags, 1 for 2s., 10 for 16s., 20 for 30s., 50 for 68s., 100 for £6.

Fourpence allowed for each bag returned carriage-paid.

A Railway Truck-load (not in bags), 40s.

Postage Stamps or Post-office Order, payable to J. BARNHAM & Co., Kingston-on-Thames, S.W.



TURNIP SEEDS for PRESENT SOWING.

MOTTLED GLOBE or GREY STONE

From HENRY HUDSON, Esq., *The Vines, Preston.*

"Your Grey Stone and your Short-top Six-weeks Turnips are everything we can desire. After a trial of the various sorts of Turnips, I have found these two the best—the Grey Stone for early planting, and the Six-weeks for late planting. Whilst almost all the other varieties of Turnips are hollow and valueless this season, these two are excellent. Half the secret of keeping bulbs healthy in the autumn is to plant them [illegible] of Grey Stone Turnips through the middle of August and September, topped with Tankard or Cover-coat."

Price 10d. per pound.

Also,

SUTTON'S IMPERIAL GREEN GLOBE, 9d. per lb.
LINCOLNSHIRE RED PARAGON, 9d. per lb.
PEARL or SNOWBALL WHITE GLOBE, 9d. per lb.
HARDY GREEN BOWL, 9d. per lb.
SUTTON'S SHORT-TOP SIX WEEKS, 1s. per lb.

And other choice sorts, packed by the basket, carriage free.

SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

International Horticultural Exhibition 1866.

DOBSON'S PRIZE CALCEOLARIAS.

NOTICE.

In consequence of the immense demand for our celebrated and Prize Calceolaria Seed from persons who saw the collection exhibited by us from the opening to the close, we are compelled respectfully to beg that those who honour us with their patronage will give plain full address, so as to prevent mistakes. We have now several letters with stamps enclosed from persons who have given insufficient addresses, hence delay. Those who do not receive the Seed by return of post will understand the reason.

New Seed of 1866 now ready. Sealed packets 1s. 6d., 2s. 6d., 3s. 6d., and 5s., saved from 500 distinct flowers.

Seed emanating from our strain take 1st and 2d prizes all over the world. Annual Sale 6000 packets. 150 Agents now selling for us.

DOBSON & SONS, Seed Merchants, Isleworth, W.

SUTTON'S CHAMPION SWEDE,

PERFECTLY HARDY, VERY PRODUCTIVE, STORES EXCEEDINGLY WELL, AND BARELY, IF EVER, SUFFERS FROM MILDEW.

Price 1s. per lb., cheaper by the bushel.

Price 1s. per lb., cheaper by the bushel.

THREE HUNDRED GUINEAS IN 12 PRIZES.

FOR SIX YEARS successively has the Royal Highness the Prince Consort's Prize Cups have been awarded to SUTTON'S CHAMPION SWEDES at the Royal East Berks and South Berks Agricultural Societies, and many other valuable Prizes in various parts of the kingdom.

From MR. LARGE, *Intield to the Right Hon. Lord Berners*

"The Champion Swedes from seed Lord Berners purchased of you are far superior to any others we have grown. I can confidently say they are many tons per acre heavier than any other Swedes growing on his Lordship's farm."

Price of Seed 1s. per pound, or cheaper by the bushel. Carriage free

SUTTON'S NEW FARM LIST gratis and post free.

SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

The Best Swede for Late Sowing

IS

THE IMPROVED HARDY WHITE

(SUTTON'S Selected Stock),

Price 1s. per lb., or cheaper by the bushel.

Carriage free.

SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

The Forwardest Turnip known is

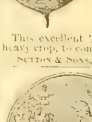
SUTTON'S SHORT-TOP SIX WEEKS.

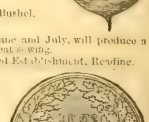
Price 1s. per lb.

Cheaper by the Bushel.

This excellent Turnip, if sown in June and July, will produce a heavy crop, to come all in time for Wheat sowing.

SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.



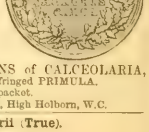


Just Published, post free 12 Stamps

(GRATIS TO CUSTOMERS),

CARTER'S NEW BOOK on BEDDING PLANTS, Containing Original Articles on the Artistic Arrangement of Bedding Plants; and 120 Illustrations of Geometrical Designs for Flower Beds, besides other useful and original matter.

JAMES CARTER & Co., 237 & 238, High Holborn, W.C.



CARTER'S SUPERB STRAINS of CALCEOLARIA, CINERARIA, and Carmine-fringed PRIMULA.

Each 2s. 6d. per packet.

JAMES CARTER & Co., 237 and 238, High Holborn, W.C.

Bromus Schræderii (True).

MESSRS. JAMES VEITCH AND SONS have just received in excellent condition, direct from Australia, a Consignment of SEED of the above valuable forage plant, and have great pleasure in offering it at 3s. 6d. per lb.

Special prices per Bushel or Cwt. on application.

Royal Exotic Nursery, King's Road, Chelsea, S.W.

Novelties, Novelties.

JAMES GARAWAY AND CO., Durdham Down Nurseries, Bristol, offer the Three undermentioned NEW SEEDLING GERANIUMS as not only Novelties but decided acquisitions:—

TRICOLOR SECTION.

QUEEN of TRICOLORS.—This variety surpasses in beauty the well-known Mrs. Pollock, from which it is a seedling; the colours are of the same shade but much more vivid, and, being a great improvement, the green colour does not project itself beyond the zone. The flowers are produced in abundance, and are scarlet in colour and of good shape.

Well-established Plants will be supplied the last week in June, at 21s. each. Four sent when Three are ordered.

CLOTH OF GOLD SECTION.

BRONZE QUEEN.—A variety raised from Cloth of Gold, with foliage of same colour, but with the addition of a dark bronze zone distinctly marked; of good dwarf habit, free in growth and very effective, well adapted for bedding; flowers scarlet cerise, produced in good-sized trusses.

Price 7s. 6d. each. Four sent when Three are ordered.

NOSEGAY SECTION.

L'AFRICAINE.—A hybrid Nosegay of compact habit, with extra fine trusses of purplish crimson flowers, which, elevated on stiff flower stems, produce a very fine effect. As a plant for the back or second row of a ribbon border or centre of bed, this will be found a very attractive acquisition.

Price 3s. each. Four sent when Three are ordered.

Prices on the Trade on application.

JAS. GARAWAY & Co.'s SPRING CATALOGUE, containing Priced Lists of Stove and Greenhouse Plants, Ferns, and Bedding-out Plants, is now ready, and will be forwarded post free on application.

JAS. GARAWAY & Co., Durdham Down Nurseries, Bristol.

ADIANTUM FARLEYENSE, True.

ROBERT T. VEITCH

HAS MUCH PLEASURE IN OFFERING FOR THE FIRST TIME TO THE PUBLIC

THIS VERY HANDSOME VIGOROUS-GROWING STOVE FERN,

SO UNIVERSALLY ADMIRED AT THE LATE INTERNATIONAL EXHIBITION.

This Adiantum was introduced from Barbadoes by Thomas Daniels, Esq., Stoodleigh, Tiverton.

Plants will be ready in July next at 42s. each. Usual allowance to the Trade.

☞ *Orders are now being booked, and will be executed in rotation as received.*

NURSERY: NEW NORTH ROAD, N.; SEED WAREHOUSE: 54, HIGH STREET, EXETER.

ROYAL HORTICULTURAL SOCIETY, SOUTH KENSINGTON.

SPECIAL SHOW, THURSDAY, June 14, 1866.

PRIZES OFFERED BY HIS GRACE THE DUKE OF BUCCLEUCH, PRESIDENT OF THE SOCIETY.

CLASS 1.—For the best 9 Plants sent out in 1865, £9.

1st Prize, Messrs. J. Veitch & Sons, Chelsea, £9.

2d, Mr. Wm. Bull, Chelsea, £4 10s.

CLASS 2.—For the best 9 Plants sent out in 1864 and 1865, £5.

1st, Mr. B. S. Williams, Paradise and Victoria Nurseries, Holloway, £5.

2d, Messrs. Veitch & Sons, £2 10s.

Extra, Mr. Wm. Bull, £1 10s.

CLASS 3.—For the best 36 Roses, single trusses, including Roses sent out in 1864 and 1865. The number of new Roses exhibited will be taken into consideration in determining the Prize, £6.

1st, Mr. C. Turner, Royal Nurseries, Slough, £6.

2d, Messrs. Paul & Son, Cheshunt, £3.

CLASS 4.—For the best Collection of New Roses of 1864 and 1865, £5.

1st, Messrs. Paul & Son, £5.

2d, Mr. C. Turner, £2 10s.

PRIZE OFFERED BY MR. W. WILSON SAUNDERS, F.R.S., MEMBER OF COUNCIL AND SECRETARY.

CLASS 5.—For the Best Collection of Healthy, Well-grown, Exotic, Economic Plants, such as the following: Tea (two or three varieties), Sugar, Coffee, Cotton (several varieties), Cocoa, Indigo, Gutta Percha, Rice, Cinchona, Jute, Black Pepper, Nutmeg, Clove, Palm, Arrowroot, Ginger, Cardamom, Vanilla, Allspice. £10.

1st, Mr. W. Bull, £10.

PRIZE OFFERED BY THE LADY DOROTHY NEVILL, FELLOW OF THE SOCIETY.

CLASS 6.—For the best 10 Specimens of Exotic Ferns, £10.

1st, Mr. B. S. Williams, £10.

2d, Mr. Wm. Bull, £6.

Extra do., Mr. C. Walton, East Acton, W., £2.

PRIZE OFFERED BY MAJOR R. TREVOR CLARKE, MEMBER OF COUNCIL.

CLASS 7.—For the best Collection of Bromeliads, £5.

1st, Mr. B. S. Williams, £5.

PRIZE OFFERED BY DR. ROBERT HOGG, F.L.S., FELLOW OF THE SOCIETY.

CLASS 8.—For the best Collection of Sub-Tropical Fruits grown in this country, such as Loquat, Pomegranates, Shaddocks, Oranges, Citrons, Dates, Cape Gooseberry, Guava, &c., £5.

PRIZE OFFERED BY MR. W. WILSON SAUNDERS, F.R.S., MEMBER OF COUNCIL AND SECRETARY.

CLASS 9.—For the best Collection of Tropical Fruits grown in this country, £10.

PRIZE OFFERED BY MR. G. F. WILSON, F.R.S., MEMBER OF COUNCIL.

CLASS 10.—For the best 12 Strawberries in pots, grown in an orchard house, £5.

PRIZE OFFERED BY MR. ALEXANDER SCRUTTON, FELLOW OF THE SOCIETY.

CLASS 11.—For the best 12 Fuchsias, for Room Culture, in Glass Shades and Wardian Cases (such as Tydæa, Hymenophyllums and Trichomanes), £5.

The 2d and 3d prizes in the above Classes, and the extra prizes in the Miscellaneous Class have been awarded by the Society.

LADIES' PRIZES FOR INDOOR PLANTS BY THE PROPRIETORS OF "THE GARDENERS' CHRONICLE."

CLASS 12.—Three Prizes for Ornamental Plants Cultivated by Ladies, £10, £7, £3.

1st, Mrs. Donbrain, Deal, for an Adiantum cuneatum, £10.

2d, Mrs. Marshall, Enfield, for Dracæna amabilis, £7.

3d, Miss Fisher, 375, City Road, for Davallia canariensis, £3.

MISCELLANEOUS.

Extra, Mr. J. Burley, Albert Nursery, Pembridge Place, Bayswater, for a Collection of Palms and Dracænas, £1 10s.

EXTRA, Messrs. Barr & Sugden, Covent Garden, for a Group of Plant Cases, £1.

EXTRA, Mr. C. Turner, for a Collection of Pinks, 15s.

The Gardeners' Chronicle.

SATURDAY, JUNE 16, 1866.

MEETINGS FOR THE ENSUING WEEK

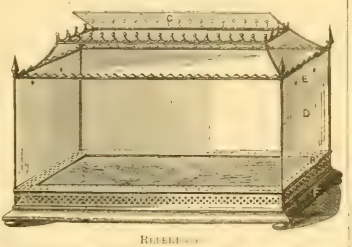
TUESDAY,	June 19	Royal Horticultural Floral and Fruit Committees, at South Kensington	11 A.M.
		Ditto (Scientific Discussion)	4 P.M.
THURSDAY,	— 21	Linnæan	3 P.M.
		Zoological	1 P.M.
SATURDAY,	— 23	Royal Horticultural (Weekly Show) at South Kensington	2 P.M.
		Crystal Palace Rose Show	3 P.M.

WE are glad to have the opportunity to lay before our readers some practical suggestions towards improvements in the construction of WARDIAN CASES, with which we were some time since favoured by our friend Mr. ATKINS, of Painswick, but which the press of matter incidental to the Great Exhibition has prevented us from publishing sooner. We need not stop to enlarge on the many advantages which this happy thought of Mr. WARD's has conferred on the importers and cultivators of choice plants. Suffice it to say, that our gardens have been greatly enriched by the use which has been made of these cases in the importation of novelties, and the taste for plant culture has been indefinitely extended by the facilities which have been given for the successful growth of pet plants even within our dwelling houses.

The error which has been made in respect to the use of these cases by many persons who would adopt any means of ensuring success, is that of supposing that a Wardian Case must always be a *close* case, and hence have resulted two evils—the presence of stagnant moisture at one time, and excessive heat at another, according as exterior or interior conditions may have affected the enclosed atmosphere. These evils have of course been observed by every intelligent owner of a Wardian Case, and they have been remedied more or less effectually through the treatment which has been followed out; but we think the mode in which Mr. ATKINS has overcome them a very excellent one, and one which may be explained with advantage. The accompanying cut will serve to render Mr. ATKINS's remarks, which follow, more readily understood.

"Fern and plant cases," observes our correspondent, "as usually constructed, have always been to me rather eyesores than objects of beauty or pleasure, from the fact of the plants frequently growing weakly, and appearing *drawn* from the effects of the confined atmosphere, the glass being also very frequently obscured by the condensed vapour, so as to give but a very imperfect view of the contents, and the soil becoming green and sour for want of a circulation of air.

"These reasons induced me to seek a remedy, or at least a palliation of those evils, and to a considerable extent I have succeeded. I had cases made on the plan of which a sketch and description is now given. They have been in use some few years, and answer admirably. The Ferns and other plants thrive well, and one nearly filled with Trichomanes radicans is in great beauty. I have little doubt that Anœctochilus and kindred plants requiring a moist and still atmosphere would do well in them.



REFERENCE.

A. Pierced zinc outer case, containing the pan, which rests on it and inner case of soil pan.

B. Pierced zinc inside, covering space between the outer case and side of the soil pan, 2 to 3 inches wide, according to size of case.

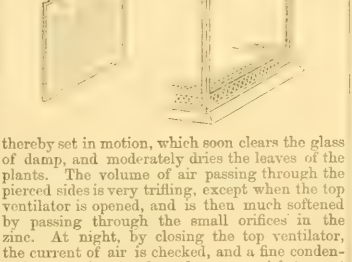
C. Top ventilator, 4 inches wide, the whole length of the top.

D. Lift glass: this should be set in frames of zinc and should run in a groove from the top, instead of cords, which are seldom well made, and apt to get out of order.

E. Holes for silk cord, to raise the glass ends by when required: these would be better replaced by two fall rings.

F. Vent for superfluous drainage after watering, to be stopped with cork or plug when not in use.

"I generally open the top ventilator either partially or wholly (according to circumstances) in the day time, usually finding about an inch or so quite sufficient. A gentle current of air is



thereby set in motion, which soon clears the glass of damp, and moderately dries the leaves of the plants. The volume of air passing through the pierced sides is very trifling, except when the top ventilator is opened, and is then much softened by passing through the small orifices in the zinc. At night, by closing the top ventilator, the current of air is checked, and a fine condensation of moisture takes place, so genial to most plants. Opening the doors of the cases made on the usual plan, without the means of obtaining a gentle current of air from the bottom of the case to the top, does not answer the purpose so effectually, and admits too large a volume of air and much dust, which the pierced zinc in a great measure excludes.

"Perfect drainage being absolutely necessary for the successful cultivation of plants in cases, I have a pierced zinc bottom to the soil pan or case, the holes in which should be not less than $\frac{1}{8}$th or $\frac{1}{4}$th of an inch in diameter, or they will be very liable to get closed up by soil filtering through the drainage. This bottom is strongly supported about $\frac{1}{2}$ to $\frac{3}{4}$ of an inch clear above the outer case, to carry off superfluous water, and a short tube is inserted in the middle at one end of the lower case, level with or slightly below its surface, by which means any spare water is readily passed off, a cork or small plug stopping it when not needed for use. Over the pierced zinc bottom a layer of moderate-sized crocks or small stones should be placed, about one inch deep, and on these the soil for the plants. The inner tray bottom would be better on a slight incline from the opposite end towards the one in which the drain-pipe is placed to secure more perfect drainage. The soil tray or pan and its under supports should be made sufficiently strong to carry the weight of its contents without straining. From the bottom of the outside case to the top ledge supporting the glass I generally allow about 4$\frac{1}{2}$ inches.

"A modification of my case may be applied with advantage, though not so effectually, to the glass shade or bell-glass cases, by having the stands with perforated zinc all round, and as there cannot be ventilation from the top," the orifices in the zinc should be larger.

"Of course plants grown in these improved cases will require rather more frequent waterings, so much more moisture being carried off by evaporation than under the old method."

Referring to the accompanying engraving, Mr. ATKINS observes:—"The general idea is correctly represented, but the four corners are scarcely represented sufficiently stout. They require to be tolerably strong, as the base of the frame supporting the glass is somewhat weakened by being pierced. The two dots in each end glass, which represent the holes suggested for the insertion of silk cord to draw them up by when required, are rather too low down; they should be near the top edge. But I think it an improvement to have the end plates of glass set in a light zinc frame or casing to run down in a groove from the top of the case, and then there can be two fall or drop rings on the top of each for the purpose of raising them, as shown in the detached figures—thereby obviating the necessity of drilling the glass, which is somewhat difficult, and rendering it less liable to break than if let down alone. About the middle of the lower rim of the exterior case a small opening or short tube of about $\frac{1}{2}$ to $\frac{3}{4}$ inch diameter, on a level with the inside of the outer case, should be inserted, to let off superfluous water after watering. This, when not required for use, may be stopped with a plug or cork; it need project but very little beyond the lower rim—only just enough to prevent the escaping water from dribbling under the case. I think pierced zinc all along the two sides would be quite sufficient, and perhaps preferable to having it on all four sides, on account of the strength of the case."

WHAT is to be done about the NAMES OF PLANTS? The burden of them has become intolerable. Botanists, amateurs, horticulturists, all complain of the multitude of names, their uncouthness, and their length. The great reform that LINNÆUS carried, and which commanded general admiration by its simplicity and its utility, seems likely to be set aside by the ever-increasing legion of names with which we are now afflicted.

It is not only the botanists who have to answer for this—the horticulturists are as bad or worse. Look for instance at the catalogue of the recent International Exhibition—look at the names bestowed on garden varieties of Hollies, of Aucubas, of Ferns, and other plants. Really the diagnostic sentences of BAUHIN or TOURNEFORT, DILLENIUS or RUDBECK, were often shorter, and generally speaking far preferable in accuracy and appropriateness to the turgid, verbose designations with which our lists now teem.

How are we to remedy this state of things? Establish a board of botanical nomenclature, say some. Set up a court of appeal composed of competent persons, who should act as referees! Appoint an assessor to collate and revise the publications of the learned and the unlearned! Excellent suggestions these, no doubt; would we could consider them feasible. Would not the board of nomenclature be likely to fail ingloriously like the Peace Conference? The PRESIDENT of the Botanical Congress pleads in the interest of Botany that horticultural varieties should *not* have Latin names, or at least not such as may mislead the student. How is the PRESIDENT's request likely to be received when we find a member of the Congress as urgently pleading for the adoption of such names in the case of kitchen garden plants? Let each plant have its generic and its specific name according to LINNÆUS' plan, so much extolled by all botanists, and even by outsiders like the late Dr. WHEWELL. This is excellent in theory, but in practice do we not find

[illegible] small [illegible] with [illegible]

that the botanists have bestowed on the unlucky plants as many aliases as ever were possessed by the most arrant rogue that ever won a ticket-of-leave? That, so far as botanists go, this multiplication of synonyms proceeds from a good and proper motive for the most part, is, of course, beyond question. There are certain rules known to and acted on by all botanists, and the aim of which is to promote knowledge and to eliminate error. But very often this elimination of error is a process similar in its consequences to the mending a kettle by an itinerant tinker, who, while filling up one hole, contrives to make one or two more—by accident or design, as the case may be.

If botanists, with a code of rules to guide them, and which is admitted to be excellent in itself, add daily to the intricacies of nomenclature, owing to the imperfection of their materials, or to the inevitable differences of opinion among themselves, to say nothing of possible errors of discrimination or judgment—if we [are obliged from force of circumstances to respect the dicta of the botanists, even when they increase the bewildering multiplicity and intricacy of our plant nomenclature, we are by no means obliged to take any heed of those who, by acknowledging no rules save those of their own convenience, unfitted by any previous study, sometimes with an audacity only equalled by their ignorance, make "confusion worse confounded," by the promulgation of names with a look of science about them, but which are as worthless and as mischievous in their way, as the veriest base coin ever uttered by a forger. The board of nomenclature, should it be established, need not waste time over such matters.

That some of the disputed points in nomenclature may be fitly and profitably discussed at a Botanical Congress was shown at the recent meeting in the Raphael Room, when owing mainly to the representations of M. WEDDELL, the name Chinchona was abandoned by one of its adherents in favour of the name sanctioned by priority, authority, and custom, viz. Cinchona. Let Professor KOCH rejoice over another instance of the good that may be effected towards the reform of plant nomenclature, by ventilating the subject at a Congress.

PERHAPS there is no one subject in the whole range of Horticultural business proceedings which has so direct and important a bearing on the present and future of Horticulture as the appointment of JUDGES AT OUR FLOWER SHOWS. From their decisions there is no appeal. Presuming that they are honestly and judiciously given, the honest and skilful exhibitors are rewarded, and the firm standing ground of such is made firmer, and they are encouraged to persevere. By this, horticulture may be said to profit. If, however, as we fear, the reverse of this may sometimes happen, and the thousand and one little tricks, by the employment of which the best "jockey" wins, should ever dominate, growers who cannot or will not "jockey" will be discouraged and driven off the field. By this horticulture would suffer.

It is to preclude and prevent such a contingency that we are tempted to consider this question.

As to the selection of judges, then, it is the business of those with whom the responsibility of their appointment rests to know, of their own knowledge, the "men of the time," without appeal to any second party, exhibitors or others. It is manifest that if the exhibitor has the power or opportunity of influencing the appointment of the judges, he thereby obtains an unfair advantage, not merely by the appointment of his own friends, but further by knowing their particular views and prejudices, by which he can work in accordance with the one and avoid the other. But our judges should not only be chosen free from the trammels of patronage—they should also be men of unswerving integrity, as free as possible from fear and prejudice, and, at the least, on a level with their time. Beyond this, we would secure as far as practicable men of taste as well as of honesty and knowledge, and as a guarantee for many minor but necessary qualifications, men of position, and such as have had the advantages of an early and liberal education.

If we were called on to state in brief the necessary qualifications for a judge at a flower show, we should say honesty, knowledge, taste, and the *faculty of reasoning*. The latter is of high importance, as it sometimes, nay often, happens that there are many and various points absent or present in the contending objects which require classifying, and nicely balancing the one with or against the other, in order to ascertain their relative value and weight. A judge *should be able* to give, not to the public, but to the proper authorities, clear and decided reasons for the decisions he arrives at. If our observation serves us correctly, it is from the absence of this latter qualification rather than any other cause, that questionable decisions are sometimes given. We have seen decisions fair enough on the face of them which would not, in our judgment, bear the crucial test of reasoning. We have known judges admit this, and plead in extenuation "the want of sufficient time," thereby acknowledging their decisions to have been based on a *coup d'œil* of the objects of years' labour, rather than on a strict and searching examination of their many and various merits. The *best dressed* wins. Surely this is a superficial judgment, and an encouragement to the "jockey" rather than to the cultivator. We hope to resume this subject hereafter.

SOME years ago we published in the third volume of the "Kew Garden Miscellany," a very beautiful FUNGUS, gathered by Mr. SPRUCE on the leaves of some unknown plant at Pará, in Brazil, which produced the most lovely patterns upon the foliage. These spots were in all probability produced by the Fungus, but where no parasites are present, spots produced by other causes sometimes assume the most curious forms. We have lately received a Vine leaf, which was quite a beautiful object, probably from the mere effect of radiation on the unequally developed parenchym; and we have now the leaf of a Cucumber,* in which the spots assume the shape of islands, with frequent bays and creeks, the promontories being always more or less rounded. Sometimes these mimic islands are arranged in the most elegant groups. With these Cucumber leaves were those of a Melon with similar spots, only less elegant, while in some Vine leaves sent with them the spots were all confined to the edge and assumed no particular pattern. In every case it was clear, when the leaves which were sent in different cases for comparison were held up to the light, that there were certain patches in which the parenchym was very imperfectly developed; and we doubt not that the spots were due to the effect of radiation during some cold night on the leaves, the peculiar form of the spots depending probably upon some mysterious cause similar to that which induced the elegant forms in Dipazea Mappa.

As to the question what it was that made these particular parts more subject to injury from radiation or drops of water resting on the leaves, it is probably impossible to determine. The nicest analysis of the soil, which appears to be perfectly good, might fail to detect anything wrong, and yet there may be some subtle element in it which may produce injury. Certain it is that plants which are in a bad state of health in one soil or air may perfectly recover in another, exactly as change of air and diet effects a rapid cure in many maladies to which man is subject. Some years since we had Hyacinths, Tulips, and Narcissus Tazetta sent us in a high state of disease. All were planted in common garden soil, and all have been perfectly healthy ever since. It is mortifying not to be able to assign a positive cause for these attacks, but the vegetable pathologist is merely in the same condition as pathologists of a higher order, who are often obliged either to confess or conceal their ignorance. *M. J. B.*

—— We understand that on the occasion of the auspicious event which took place at Kew on Tuesday last, the Messrs. VEITCH & SONS, of Chelsea, had the honour of presenting, by special permission of her Royal Highness, the PRINCESS MARY'S BRIDAL BOUQUET. The bouquet was composed of ORANGE blossoms, Phalænopsis, Odontoglossum pulchellum, Burlingtonia, Calanthe, Stephanotis, white Roses, &c., and was tastefully decorated with Honiton lace.

—— All who are in any way interested in NATURAL SCIENCE, will hear with great satisfaction of the recognition it has met with within the last few days at the venerable University of Oxford. Among those whom the University has delighted to honour with its Doctorate are—Professor ALPHONSE DE CANDOLLE, the President of the Botanical Congress; Dr. HOOKER, the Director of the Royal Gardens, Kew; Professor WILLIAM THOMSON, of Glasgow, and Professor PHILLIPS, the veteran geologist.

—— We may remind our readers that the annual festival of the GARDENERS' ROYAL BENEVOLENT INSTITUTION takes place at the London Tavern on the 27th inst. We also direct attention to a letter in another column (see p. 565) from an old and tried friend of the charity.

—— We hear that the Meadow Bank collection of ORCHIDS is to furnish to the South Kensington scientific meeting on Tuesday next, a cut spike of Odontoglossum Pescatorei, bearing upwards of 60 flowers, and which has been in blossom for the last 13 weeks.

* It may be well to remark to "C. W. M." from whom our specimens were sent, that the Cucumber leaves are perforated in every direction, probably by thrips, which has, however, nothing to do with the malady.

New Plants.

335. OSBECKIA RUBICUNDA, *Arnott in Hook. Comp. Bot. Mag.* vol. 2, p. 309.

A handsome Melastomaceous undershrub, native of Ceylon, whence it has been received by the Messrs. Veitch. It is clothed with bristly hairs, and has oblong oval acute 3—5-nerved leaves. The flowers are terminal on very short stalks, solitary or aggregate; calyx tube cup-shaped or somewhat urceolate, thickly beset with stalked peltate scales, which are deeply divided into a number of linear, radiating, pink subdivisions; segments of the limb lanceolate, ciliated; corolla 2 in. across, of 5 obovate or roundish deep purple petals; stamens 10, equal; anthers bright yellow, oblong lanceolate, opening by a single pore at the top, and provided with two small auricles at the base; style curved, flattened, somewhat club-shaped; stigma elliptical terminal; ovary villose.

A very handsome flowering plant, recalling in appearance the species of Pleroma, but the stamens are equal. The peculiar calycine scales, together with the purple flowers and yellow anthers, give the flowers a very rich appearance. *M. T. M.*

PET PLANTS.—THE SOUTHERNWOOD.

THE Southernwood (Artemisia Abrotanum) bears the names of Lad's-love, Old Man, *cum multis aliis*. There is a homely charm about this tiny bush which endears it to every one, and its various names have been household words among rich and poor throughout Christendom for centuries. From its merits alone it has kept its ground against all comers. Being a native of the south of Europe, it has travelled northwards, or rather its sweetness has caused it to be carried to every district, hall, and cottage in town and country. You see it in the neat patch of mixed flower garden in front of the labourer's cottage, and the toy garden in the crowded town has a hapless bush of ill-used Southernwood, struggling with soot and sunshine, to keep a green leaf in view of the country-bred matron who despairs of seeing her native place again, but dwells upon the ideal beauty of wold and lea as she looks upon this quaint old-fashioned pet. In some parts of Scotland it is usual to carry a nosegay to church, and the venerable spinster may be seen with the Book in hand by way of foundation, and the snow-white pocket handkerchief neatly folded over that, and the sprig of Southernwood, fresh gathered, on the top, with more or less of other garden gear, as the season of the year and state of the garden will admit. Southernwood, from its sweet scent and feathery foliage, is admirably adapted for setting off gay flowers to advantage when used as a back to a nosegay, and for more than two-thirds of the year this supply may be depended upon. I should be glad to know how the plant came to be called Ouverinqie in Scotland.

If we compare the business habits of this fragrant feathery bush, and the long signal service it renders, we shall see the advantage it has over many of the other denizens of the flower garden. The Myrtle is infinitely its superior, but the Myrtle, though sweet and beautiful, is tender, and must be housed to keep it alive in any of the midland and northern countries. The Rose, that universal favourite, is hardy in habit and gorgeous in flower, and not only deliciously sweet-scented, but having the property of retaining that sweetness for years among the dry petals that adorned its head in the heyday of its beauty; but for many a day the Rose plant is without a leaf, and ekc without a flower, for it is not like Tom Moore's "silvery Almond-flower, that blooms on a leafless bough," and the leafless twigs of the Rose, moreover, have an angry look about them, and are not fit to be touched, being armed with prickles to irritate, but by no means adapted to please. How different from drawing the hand over the green feathery head of the Southernwood for the fragrance of its homely perfume!

The first order that I got in my first situation in England was an order from my noble employer to propagate this plant, and when I was taken round the garden to see it, I could not help complimenting her ladyship on the fine specimens of Southernwood that had got prominent places therein. In the race after rare plants, young men frequently despise plants of merit, merely because they are common. Easily propagated by cuttings, a stock of Southernwood may very soon be got up, and if there be any gay flowers to back up, this fine green mantle thrown around them will be found very useful, for there is often a terrible baldness and want of foliage to be seen in gardens gay with masses of brightly-coloured flowers.

There is a species of gardening which, for want of any definite term to express it, I may call toy gardening. It has nothing to do with order, or even with common sense, for the plants are grown, or rather exist, by innate force; delved up in the middle of summer, and transplanted when in flower, they eventually recover, and, biding their time, bloom in some out-of-the-way nook, and are all the better for the old stone wall or overhanging bush that seems to be smothering them—any plant requiring good sunlight, air, or attention could not hold out against the odds for a fortnight. In a densely-populated place the prowling of cats at night would break down anything tender or herbaceous, but the stiff shrubby style of Southernwood fits it for such toy gardening. In a flower-pot the plant looks very

well; and in a box by a window among other plants the fair foliage and homely fragrance of this old pet, are not to be despised. *Mem. Foresth.*

WATERING.

LET no one imagine that watering is an easy matter, for next in importance to first-class planting comes first-class watering, and the greatest horticultural skill is wanted to decide when we should water a plant, and when we should leave it alone. By a marvellous provision of Nature the Pine-apple plant collects a great deal of its supply of water in its channeled leaves; and the leaves are thus enabled to drink from their own sockets, just as cut flowers are supplied from the vase of water wherein their stalks are immersed. The Pine-apple plant, confined as it is in a pot, and placed of necessity between two fires—an artificial heat equal to that of a tropical sun above and the heat of the bark bed beneath—requires an amount of judgment in the watering which would appear tedious were I to detail it. The truth of the matter is, that when the plant is not watered it may generally be said that it is not fed, for the feeders are little sponges, and all plants may be said to be suckled.

Again, the Grape Vine is supplied from a great depth in the earth, where moist rich soil has been artificially placed by way of Vine border. The quantity of water supplied to a Grape Vine with a large head of foliage during its growing season, in the forms of vapour and watering, is scarcely to be credited, for when the wooden gangways and the surface of the soil inside the Vinery are kept constantly wetted, so as to yield vapour, and when all the lower brickwork, pipes, &c., are also moistened for the same purpose, and the soil wherein the roots are buried is kept soundly watered, it would take a tank of water a yard deep and as large as the Vinery in its ground plan, to grow a crop of Grapes. It is in the supply of moisture that the prize Grape grower hits the nail on the head, by having fermenting materials in the Vinery continually giving out moisture as well as ammonia in the early stages of forcing. When the Vine gives out a sweet smell like Mignonette you know that it is in flower, and it only requires one good syringing over the pollen masses at this time to ruin the crop of Grapes, for, although wetting the foliage and adding vapour may be of the greatest service to keep down the ravages of red spider, &c., this is not the time for such rough handlings; and further on, when the fruit nearly ripe, the flavour of the fruit may be completely spoiled by over-watering the Vine.

Almost all the artificial aid we can give to plants and cuttings, beyond controlling the temperature, consists in watering. Hence the skilful propagator puts a glass over his cuttings to prevent evaporation, or in other words to keep the leaves constantly watered, immersing at the same time the lower end of the cutting in moist sand, for whilst the sand admits water to permeate freely through its bulk, it is the last thing to retain water in stagnation. The cutting is therefore kept well watered at the top as well as at the bottom, but woe to the luckless wight who shall either add to or diminish from this accurate point of watering. Damping off is destruction, and dryness is death. In spring, summer, and autumn, whilst the sun has power, the watering of cuttings hanging between life and death may be managed with ordinary care; but when they have to go through the trying time of winter, between the dry fire heat on the one hand, and the dark damp days on the other, and supplied with artificial watering in no homœopathic doses, it will be more good hap than good management if they survive at all.

No statement can be given as to what is to be considered as watering enough. Seeds, seedlings, cuttings, and all plants in active growth and forming tissue, should be kept moist. That is the only practical rule. One can only point out what should be done, and leave the rest to good sense and a kindly feeling for the welfare of the plants under his charge on the part of the gardener. *F. M.*

THEORY AND PRACTICE OF VENTILATION.

No. VII.

(*Continued from p.* 446).

IN the "Philosophical Transactions" of 1803, Mr. Knight adduces various experiments in confirmation of the effect of wind or motion on the circulation of the sap, and the consequent formation of wood. They are so strikingly decisive as to deserve quotation here:—"Early in the spring of 1801 I selected a number of seedling young Apple trees, whose stems were about 1 inch in diameter, and whose height between the roots and first branches was between 6 and 7 feet. These trees stood about 8 feet from each other, and of course a free passage for the wind to act on each tree was afforded. By means of stakes and bandages of hay, not so tightly bound as to impede the progress of any fluid within the trees, I nearly deprived the roots and lower parts of the stems of several trees of all motion to the height of 3 feet from the ground, leaving the upper part of the stems and branches in the natural state. In the succeeding summer, much new wood accumulated in the parts which were kept in motion by the wind, but the lower parts of the stems and roots increased very little in size. Removing the bandages from one of these trees in the following winter, I fixed a stake in the ground, about 10 feet distant from the tree, on the east side of it, and I attached the tree to the stake at the height of 6 feet, by means of a slender pole about 12 feet long; thus leaving the tree at liberty to move towards the north and south, or more properly in the segment of a circle, of which the pole formed a radius, but in no other direction. Thus circumstanced, the diameter of the tree from north to south in that part of the stem that was most exercised by the wind exceeded that in the opposite direction in the following autumn, in the proportion of 13 to 11."

Mr. Knight, following up the subject in the "Horticultural Transactions" (ii., n. s., p. 24), remarks, that "The branches of all trees, during much the larger portion of the periods in which they continue to live, are in their natural situations kept in continual motion by the action of wind upon them; and of this motion their stems and superficial roots partake, whenever the gales of wind are even moderately strong: and I have shown, in the 'Philosophical Transactions,' that the forms of all large and old trees must have been much modified by this agent. The motions of the circulating fluids, and sap of the tree, are also greatly influenced and governed by the said whenever any part of the root, the stem, or the branches of a tree are bent by winds, or other agents, an additional quantity of alburnum is there deposited; and the form of the tree becomes necessarily well adapted to its situation, whether that be exposed or sheltered. If exposed to frequent and strong agitation, its stem and branches will be short and rigid, and its superficial roots will be large and strong: and if sheltered, its growth will be in every part more feeble and slender. I have much reason to believe, upon the evidence of subsequent experiments, that the widely extended branches of large timber trees would be wholly incapable of supporting their foliage when wetted with rain, if the proportions of their parts were not to be extensively changed and their strength greatly augmented by the operation of winds upon them during their previous growth. Exercise, therefore, appears to be productive of somewhat analogous effects upon vegetable and upon animal life, and to be nearly as essential to the growth of large trees as to that of animals.

"Whenever the branches of a tree are bound to a wall, they wholly lose the kind of exercise above described, which Nature obviously intended them to receive, and many ill consequences generally follow: not however to the same extent nor precisely of the same kind, to trees of different species and habits. When a Standard Plum or Peach tree is permitted to take its natural form of growth, its sap flows freely and most abundantly to the extremities of its branches, and it continues to flow freely through the same branches during the whole life of the tree; but when the branches are bound to a wall, and are no longer agitated by winds, each branch becomes in a few years what Duhamel calls 'usee,' that is, debilitated and sapless, owing apparently to its being no longer properly pervious to the ascending sap. The obstruction to the ascent of this causes luxuriant shoots to spring from the lower parts of the tree; and these are in succession made to occupy the places of the debilitated older branches by the process which the gardener calls 'cutting in.'

"The Vine alone amongst fruit trees appears capable of being bound and trained to a great distance upon a wall without sustaining any injury, its sap continuing to flow freely and abundantly to its very distant branches. Owing to a peculiarity of structure and habit, which is confined to those species of trees from which Nature has withheld the power of supporting their own branches, the alburnum of all plants of this habit is (as far as I have had opportunities of observing) excessively light or porous, and not being intended by Nature to support its own weight, or that of any part of the foliage of the tree, it does not acquire with age any increased solidity, like that of trees of a different habit, and on this account probably it never, how long soever deprived of exercise, loses in any degree its power of transmitting the ascending sap. The alburnum of these trees, which Nature has caused to support themselves without external aid, becomes annually more firm and solid, and consequently less well adapted to afford a passage to the ascending sap, and as heart wood it is totally impervious to that fluid. Whenever the branches of such trees are wholly deprived of exercise too rapid an increase of the solidity of the alburnum probably takes place, and it in consequence ceases to be capable of properly executing its office."

In the "Horticultural Transactions" for 1822 (iv., p. 1.), Mr. Knight describes the manner in which the effects of wind may be artificially produced. He observes that "the forms of the stems of trees and shrubs which grow under glass are generally found much more slender and weak than those of other plants of the same species, which grow in the open air; often to such an extent as to render necessary the unsightly appendage of supports or props; and, in many of those species which are cultivated for ornament only, to destroy the relative proportions requisite to constitute beauty. These defects may be traced to a concurrence of causes: to the shade necessarily given by the roof of the house, to the injudicious application of high temperature at periods when light cannot be obtained, and to the too close contiguity of plants to each other; but chiefly to the total absence of the motion which is naturally given by winds. Adverting to the experiments already given, he states that they satisfactorily prove, that if the stems, or branches, or roots of a tree be in any part bent by the action of winds, an increased quantity of alburnum will be, in such parts, generated; by which means additional strength will be given wherever it is requisite to preserve the tree, in any situation where art or accident may have placed it. Hence the insulated tree upon the mountain necessarily acquires the short and sturdy form best adapted to enable it to brave with impunity the fury of the storm, and long and slender stems are as necessarily confined to more sheltered situations.

"I have subsequently ascertained that the hand of the gardener can readily do, within the forcing-house, all that is beneficially done by winds out of it; and I am perfectly confident that not only the beauty but the health also of the tree is improved by being given the form and proportion which Nature intended it to receive. To effect this the stem should be bent in every direction nearly as far as can be done without danger of breaking it; but how frequently this must be done, to produce the requisite effect, I am not at present prepared to say; having in all my experiments been rather endeavouring to discover the utmost degree of strength which could be given, than the degree which would simply prove beneficial to the plant. I have, however, some reason to believe, that the operation need not be in any case repeated more often than once in eight or 10 days, and that only during the periods in which the stems and branches are increasing in bulk.

"The extent to which the diameter of the stem of a plant, comparatively with its length, may be increased by the means above mentioned, is probably much greater than will easily be credited. A Dahlia plant of a year old, and growing in a pot, in the forcing-house which I usually devote to experiments, presented, in the spring of 1817, a stem, which at half its height from the mould exceeded an inch in diameter when it was only 22 inches high; though the experiment was made in April and May, and of course before the sun had nearly acquired its full powers, and under glass of by no means good quality. But both myself and my gardener had frequent occasion to enter the house; and neither of us, I believe, ever passed the plant without bending it; which ultimately became an operation which required very considerable force. The Dahlia is not, however, one of those plants which can receive benefit by this mode of treatment; for the excessive strength of the stem would only expose the soft and succulent branches to more certain destruction upon the plant being removed into the open air; and I mention the result of the experiment merely to illustrate the effects of the process I have recommended."

The late Dr. Lindley, adverting to some of these experiments in his "Theory of Horticulture," remarks that if "the effect of motion is to increase the quantity of wood in a plant, it is evident that ventilation, which causes motion, must tend to produce as healthy action in the plants exposed to it; and such a state must also be favourable to the development of those secretions upon which the organisation of flowers, the setting of fruit, and the elaboration of colour, odour, flavour, &c., so much depend."

It is scarcely possible to over-estimate the weighty importance of this sentence. Combined with the careful experiments of Knight, it may be held to settle the question in favour of creating an artificial wind in plant houses. It will not only enlarge the bulk, but improve the quality of our produce. Practical experience comes to confirm science and philosophical experiment in this matter. Most gardeners know too much of the difficulty of setting very early forced fruits. The pale colour of flowers and comparative insipidity of very early fruit may arise as much or more from the still atmosphere in which they are grown as from the paucity of light in winter or early spring. It is probable that motion is quite as important an aid to the elaboration of healthy secretions as the solar rays themselves. Careful observations on the growth of plant in sheltered situations in the open air seem to prove this. The more shelter we give them, independent of the direct shade that the shelter often involves. The vexed question of the best quality of timber—slow or fast growers, is mainly determined by the effect of wind, in compacting together and perfecting vegetable tissues. Site, soil, and climate being the same, that timber will be the best and most durable that has been the most freely exposed during its growth to all winds moving at a less velocity than 25 miles per hour. Beyond that speed the force of wind may become a hindrance rather than aid to healthy growth. *D. T. Fish.*

(*To be continued.*)

EUPHORBIAS.

VEGETABLE poisonous juices are numerous and interesting, and none more so than those of the natural family Euphorbiaceæ, for in this order, numbering between 3000 and 4000 species, the presence of poisonous juices is one of its chief characters. Some of these juices are officinal, but out of so large a family the economic applications of them are not so numerous as one might expect. Among them Caoutchouc is perhaps the most valuable, but as a medicinal agent the resin or gum known as Euphorbium is the only one recognised by us, and this is probably furnished by several species. The natives of the countries in which the plants in question grow, use them either for poisoning their arrows or as fish poisons, that is, for poisoning streams or ponds for the purpose of capturing the fish. What we know of these poisonous milky juices is that they are for the most part exceedingly virulent.

The Euphorbiaceæ have a wide geographical range, being found in all four quarters of the globe, but they are most abundant near the Equator. The genus Euphorbia itself is widely distributed, and is also very abundant in South Africa, Teneriffe, the Canary Islands, &c. The plants are very variable in form and habit, many of them being so much like the Cactus tribe as scarcely to be distinguished from it by an ordinary observer. Were it not for their flowers, their succulent, columnar, spiny stems might well be mistaken for those of Cacti. Where many plants of these two families are grouped together, as in the great succulent house at Kew, the effect produced is both striking and peculiar, furnishing us with some idea of what their appearances is in their native countries.

The species in cultivation in this country are doubtless well known to your readers. In most of them there is an abundant flow of milky juice upon the least fracture of the skin or bark. A piece of the stem of Euphorbia grandidens, about 5 feet long, and from 2 to 3 inches in diameter, was placed in a very dry and

warm room, where it remained for more than a year before the whole of the juice had disappeared. When fresh the milk would flow from it most abundantly, even if the stem in question was only slightly pricked with a pin. When dry, the thin bark or rind stood upon the wood like a coat several sizes too large.

Though green and succulent in its fresh state, the inner wood is really tolerably hard, as may be seen on examining a dried stem after the milk has evaporated. The outer fleshy and the inner woody portions, however, do not pass into one another like the duramen and alburnum of most dicotyledonous stems; in a cross section of the Euphorbia a distinct line is seen between the two. The nourishing sap in its ascent seems to be perfectly inert, from the fact that the natives of the Canaries tear off the outer portion of the stem of E. canariensis, and suck the moisture from the inner, while on its return journey downward it is found to have become converted into an acrid milky juice.

The following account of the extreme virulence of the poisonous juice of a species of Euphorbia is from a letter of a traveller in South Africa. "I walked into the mountains with one of my boys to take some of the milk of the poison Euphorbia. Notwithstanding the greatest caution I imposed upon him, he allowed a thorn to prick his hand on which he had some of the milk. No blood came from the wound, but he soon began to feel excruciating pains, which increased, and in four or five days time he had to be carried in a waggon, and I became alarmed at the symptoms of pain and sickly feelings that presented themselves. Wherever he had scratched himself blisters arose, although I had taken the precaution to see him wash his hands immediately. It was evidently a very narrow escape for him. I did not know what medicines to give him, but gave him the usual remedies. I think his life was saved by the juice not getting properly or plentifully into his blood." *John R. Jackson.*

ABSTRACTS OF PAPERS PRESENTED TO THE BOTANICAL CONGRESS.

GARDEN DRAINAGE.

By EDWARD CARROLL, Albert Training Institution, Glasnevin.

I BELIEVE that in no country is land drainage better understood than in England; yet no adequate provision is made to guard against the drains being choked or stopped by the roots of plants, oxide of iron, carbonate of lime, or other sedimentary matters.

If therefore I am able, as I hope I am, to show that by a very simple and inexpensive means they can be averted, at all events to a long, I had almost said an indefinite period, the wonder amongst practical horticulturists will be that such simple means have not been adopted, in gardens more especially, long ago.

It is a well-ascertained fact that the roots of not only perennial plants, whether delicate or robust in their growth, but of annuals, tender or robust, have all a tendency to descend to a great depth in search of moisture when not attainable at a higher source. Of this—shall I call it law of Nature—I could quote innumerable examples as coming under my own notice, of trees growing on high rocks, and the top of high walls, and of various other crops growing not alone on dry open, but on stiff lands when fissured in dry weather, in search of moisture. This every practical gardener, who had ever "repotted" a plant, can well understand, from having found the roots of such plants descend below the potsherd draining materials at the bottom, entwining themselves in each other round the bottom angles of the pot, and in many cases descending still farther, out through the hole in the bottom, to find the moisture, if any, supplied under it.

In the year 1828 I had occasion to take up the pipes employed to convey water to a gentleman's residence, the pipes having become completely filled by the roots of trees growing in the vicinity of the water passage. This process had to be annually performed. In relaying the pipes I found it necessary to vary the direction at one particular part of the line, and in doing so had to lay the pipes over the angle of old walls, dry built foundation. The year after, when taking up the pipes as usual, I found them all stopped as formerly wherever laid on the same solid impervious subsoil; whereas those placed over the porous old wall foundation were quite free from such obstruction, the roots in that particular part having descended into the open rubble stone-work instead of forcing themselves, as they did in all other parts, in through the merest pores of the pipes as well as through tain cemented joinings.

Having left that locality soon after, I never thought more on the matter until land drainage by earthen pipes became pretty general in Ireland, and having like many others suffered much inconvenience by such stoppages, my early chance discovery flashed across my mind, and whenever I found I could conveniently do so, I had a porous material composed either of broken stones, coarse gravel, or coarse peat charcoal, placed under the ordinary drainage pipes, into which roots not only descended from the sides of the drain, but actually out of the pipes by their joinings, whenever such roots happened to enter the pipes themselves, which was seldom.

To facilitate such descent, or rather to prevent the possibility of their remaining any considerable time in the pipes, should they enter them by any chance, as well as to prevent the accumulation of any other matter obstructive of the water's passage, I have designed a form of drainage-pipe calculated to obviate the evil. I have calculated the probable weight of such pipes and their supporters when ready to be laid down in the drains, and believe that both combined will be found less than those of ordinary pipes and thin collars of similar capacity.

By adopting this form of pipes and supporters no other material need be used as an auxiliary, were it not necessary to have a support under the pipes between those supporters the ends rest upon, otherwise they would break down under the superincumbent weight, which in most cases would be considerable. As it may not in all cases be convenient to have broken stones, coarse gravel, or other porous imperishable materials to place under the pipes as a central support, I have designed additional side supporters to sustain the pipes between the end supporters. In no case do I consider it necessary that what is called "the bore" of the pipe should be of large dimensions, as the object and office of such pipe in this case should be more for the conveyance of air than for the passage of water, whose passage should be through the end supporters and space under the pipes. Such pipes effect a double purpose—that of a more perfect aeration and a thoroughly safe drainage.

The height of the supporters or depth of drainage space must of course depend upon such a variety of circumstances, and be subject to so many conditions to be known but to the scientific or practical operator in each respective case, that it would be little short of a waste of time in the present instance were I to seek to go more into detail. One thing I may observe—that whatever the depth of drain may be, its width at bottom should be reduced to the very narrowest space consistent with convenience; for it is a well-known fact that the narrower the space on which water has to flow, the more perfectly will it clear its passage; and I think it is equally well known to practical gardeners as it is to scientific vegetable physiologists that the roots of plants in the bottom of a narrow and rapidly flowing stream will have a less tendency to rise to the surface than they would were it wider and more sluggish. Further, I believe it is well known that when the water ceases to flow in drains, especially in dry weather, such roots descend still lower in search of that moisture denied them in the drain, then so fully dried up by the action of the air in the pipes, and from which the roots invariably seek as it were to escape.

COOL VINERY ORCHIDS.

By ROBERT WARNER, Broomfield.

It is now about 10 years since I bought several lots of imported Lycaste Skinneri. They were placed in a Cucumber house, that being the only hothouse I then had. They began to push out young shoots; and soon after this an old Orchid grower called, and when he had seen them he remarked, "Ah! they look as though they meant growing well, but in three years not a bit will be left; no one can keep them long."

I immediately concluded that if they did not live long in great heat, it could not be right to continue the old plan. They were removed into a Vinery where the Vines were young and thin, considerable quantities of water were given frequently to their roots, and to the surprise of all they flourished remarkably well, and continued to increase and flower, until about two years since the late Dr. Lindley pronounced his opinion that longer and broader leaves and finer flowers had never before been seen in England.

In an evil hour for them they were divided, and not having so much attention paid to them as formerly, from my collection having become much more extensive, they felt the effect much, but are now recovering, and will soon be as strong as ever.

This was one of the first, if not the very first, successful experiment in growing Orchids of this species cooler than under the ordinary treatment. The following extract will show the opinion of a competent judge who inspected them:—

"In one division were gathered what Mr. Warner more especially calls his 'cool vinery Orchids.' This is a low span-roofed house like the rest, covered with Vines bearing a capital crop of Grapes, and with the leaves so trained as just to screen the plants without the use of blinds. It has a fixed roof, with a few side ventilators; and the rule adopted, as we were told, is 40° minimum in winter, and in summer as much natural heat as the seasons affords, with ventilation. In this house Lycaste Skinneri was revelling, its leaves a yard long; Odontoglots had formed pseudobulbs half as large again as those of imported plants; Arpophyllums were in sturdy vigour; and Pleiones, which had been flowering some time since, presented a perfect picture of healthy foliage."

After my first year's experience with Lycaste Skinneri, other Lycastes were tried, and did equally well; also Odontoglossum grande, pulchellum, &c. next Arpophyllums, and lastly Pleione lagenaria and various others, including Cattleyas. All did well under the shade of the Vines in summer, but I could not recommend Cattleyas to remain during winter at the same low temperature which is sufficient for Odontoglossums and Lycastes.

It is not, however, desirable at the present time to describe too minutely the treatment of what are now called cool Orchids. Suffice it to say that in my opinion there are very few Orchids but feel the beneficial effects of warm fresh air and the sun's rays, especially if the latter are made to pass through Grape leaves. This remark is chiefly intended to apply to their growing season.

Temperature in winter, 45° to 50° Fahr., sometimes lower if frost is severe, but never below 40°, even at night. Summer temperature varies according to the weather outside. Plenty of fresh air is admitted when the days are fine and warm, entering by front sashes through perforated zinc, and passing directly over the foliage of the Orchids.

As a rule, artificial heat is dispensed with on warm spring, summer, and autumn days; but at these seasons, if the weather is cloudy or cold, a little fire-heat is given to dry up the moisture occasioned by watering the plants. The annual value of the Grapes usually amounts to half the cost of erecting the house.

Thus many Orchids may be grown well, and at little cost, for two different crops are produced out of one simple house, the one being beautiful flowers to please the eye in the winter and spring months; and the other, such fruit as no one would refuse to partake of in the early autumn.

Home Correspondence.

Garden Designs at the International Exhibition.—As a professional man and an exhibitor at the late International Exhibition in the classes for designs for a villa garden and a gentleman's private grounds, I feel bound to answer the unjust remarks of your correspondent (p. 512) respecting the designs exhibited by me. "To be unconditionally and unwarrantably found fault with, is better than being damned with faint praise." It may seem singularly bold on my part to assert that I not only consider your correspondent lacks in some measure the necessary artistic taste, but that he neither understands the principle of perspective, nor the essential points in landscape gardening as applied to the picturesque. The article of your correspondent has a tendency to imply that the fact of the awards being offered was in truth a farce, when he says "a professional man could not be expected to compete for 10*l*." Allow me to state that a man who felt his power, but was unknown to the world, would gladly seize such an opportunity for making himself known, without any regard for the amount of prizes offered. It is ridiculous to suppose that the time and labour expended on my five-acre design for a villa garden could be recompensed by a paltry 5*l*. If it is a consideration of the prize money that induces first-class talent to compete, the Committee of the International Exhibition are in fault for having selected men who could not have understood what was required to give out "such comprehensive but still vague plans for competition." Certainly I agree with your correspondent that no professional man would be induced to waste his time on a design for 10*l*.; but I did not contend for the bare money, and as there were no plans superior, I feel that I was entitled to the first prizes in the two classes in which I competed. I own I was very disappointed with the plans and designs sent in, as I considered I should have an opportunity of seeing something superior, and from the first landscape gardeners of the day. I own to feeling great surprise at not being fairly beaten. I should have been content to have come in a good third against any real merit; but there was nothing in the designs offered worth contending against. I have asserted that your correspondent does not understand perspective, and this fact is evident, or he would not call my drawing for 5 acres undetermined in extent, and as requiring 50 acres to carry out the effect. The undetermined extent shown is the chief merit in the design, while at the same time it is strictly in accordance with the scale named, and requires no ground plan to lay out the 5 acres. The part your correspondent kindly condescends to notice as a redeeming point, was not "unintentional," as he insinuates, as every part was carefully studied and laid out; indeed, on referring to the first draft of the design, which I have by me as a pen-and-ink sketch, I find the very points he mentions made particularly conspicuous. Unfortunately I rubbed out the lines of the scale, which might have helped your correspondent to understand that it would not require 50 acres to realise my design. If such an inconsistency existed, why award a prize at all? Perhaps your correspondent has recklessly stepped out of his path, to combat or to criticise one whom he fancies is ignorant of his work. It is a pity your correspondent did not furnish an example as a standard of excellence for earnest workers to aspire to, and further—it is a pity that any one should attempt to criticise what they evidently do not understand. As I have been complimented on the completeness of my designs by gentlemen of sound practical judgment and unbiassed opinion, I feel it my duty to defend my work in the face of such gross misrepresentation. *Thomas J. Caparn, King's Road; and 60, Castle Terrace, Newark-on-Trent.* [We have inserted this letter to avoid any misinterpretation, and have a few words to say in answer to it. Mr. Caparn puts forward three causes for complaint:—First, in not having found himself in competition with the first talent of the day; secondly, in the judges' awards; and thirdly, in that portion of our report which referred to himself. It is not compulsory upon us to defend more than ourselves, but Mr. Caparn must be aware that those who enjoy the privilege of being classed among the first landscape gardeners have little to gain in the way of distinction; and even if they had, one of the consequences of their position is that their time is so fully occupied as to render it impossible for them to devote it to competition, and especially to drawings of theoretical value, and without any practical consequence. The Executive Committee no doubt did their best to select a jury whose position as landscape gardeners entitled them to adjudicate upon the drawings exhibited; and it does seem rather a bold step on the part of Mr. Caparn to assert in opposition to their opinions that he has been unjustly deprived of two first prizes. On referring the third point to our Reporter, he writes, "I feel with Mr. Caparn that I am unjustly criticised. I am charged with ignorance of perspective, insomuch as I fail to apply to a drawing a scale, which as Mr. Caparn naively remarks, was wanting. I must plead guilty to ignorance of any scale that is applicable to landscape generally, other than that obtained by the introduction of buildings, trees, or figures; and as Mr. Caparn claims as a merit that the extent of his design was undetermined, I am curious to know what scale other than those mentioned could have been applied to it. I can only add that Mr. Caparn's design, if carried out within a space of 5 acres, would be a model of natural scenery on an absurdly small scale, and as an exemplification of natural scenery adapted to landscape gardening, a very

bad one, as the introduction of the Cedar of Lebanon and the Deodar (and in the lengthy letter of Mr. Caparn I can find no explanation of this) effectually marred the vista, while the irregularities of the pond were only fitted for a sheet of water of considerable extent. Hence the false notion conveyed through the means of perspective.]

Ground Vineries.—Blessings on the man who invented them!—such to-day was my involuntary paraphrase of Sancho's immortal saying, when looking at my Vines, so healthy and so productive, under these humble structures. It is not I fear so generally known as it ought to be, that to Dr. Samuel Newington, of Ticehurst, Sussex, we owe these most invaluable structures, so cheap, and yet so efficient. One of my Vines—the Trentham Black—now occupies five 7-feet lengths (35 feet), and has on every spur from one to three bunches, 110 in all; it bore last year a very large crop, but it seems never to exhaust itself. Another Vine—the Black Hamburgh—has run through three lengths, and shows about 70 bunches; another Vine, General Della Marmora, occupies the same length, and shows about the same number. This large produce is certainly extraordinary when one looks at the simplicity of the whole affair. The glazed ridges, 30 inches wide at base, are on bricks, placed endwise, with four or five inches between each for ventilation, which is so complete that no syringing and really no care, except thinning the berries and stopping the shoots, is required. No red spider or mildew has ever visited my Vines, and I think with much pleasure how capable these ground Vineries are of giving to the owner or occupier of a very small garden a plentiful supply of well-ripened Grapes of superior kinds. My Vines alluded to are growing under the glass ridges first invented, 30 inches wide at base, and with bars, but it should be generally known that an improved method of making them is to have them 3 feet wide and without bars. Thus made they have a light agreeable look, and the Vine, which should run along in the centre, has more room. These barless ground Vineries are now made by Mr. J. Rivett, Builder, Stratford, Essex, at a very moderate cost, somewhere about 12*s.* each, painted and glazed. This at the present increased price of glass does not seem extravagant, particularly when it is considered that my Trentham Black Vine, which will bring to perfection this season, when they are thinned, at least 75 bunches of Grapes, is growing in a Vinery 35 feet long, at a cost of 3*l.* There are many Vineries of much higher pretensions, and that have been erected at 20 times the cost, that will not give equal produce. I ought to add that the soil in which the Vines I have alluded to are growing had no particular preparation; it is a calcareous sandy loam, and was dressed with manure to a thickness of three or four inches, which was well mixed in digging it to a depth of two feet; they have had no manure since, neither has the soil been stirred. Vines in some soils seem to flourish in compact unstirred borders, of which more anon. *T. R.*

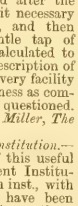
Plant Nomenclature.—In the name of common sense, and, may I not add, in the name of gardeners, why should we be eternally afflicted with a multiplicity of new names? As they say here, we "are bothered entirely." Our employers expect us to tell them the names of plants when we are asked, but they do not expect us to inflict on them a long homily of barbarous Latin. Supposing I were asked the name of Wellingtonia; what would my employer say, if I replied, Americanus giganteus, or Washingtonia americana, or Wellingtonia gigantea, or Gigantabies Wellingtoniana? He would very likely say, or think that botany had grown and one effect would be that it would be a very long time before I was asked the name of another plant. This tampering with the names of plants is most reprehensible; it is a perfect scare-crow, keeping many away from the study of what would otherwise be a delightful science. In my humble opinion, the cases are very few where a name requires to be changed; the only cases being, where a plant has been referred to a wrong genus, or a wrong species. A name, at best, is but an arbitrary invention for the diagnosis of species. Let us have specific distinctions by all means; but let the marks by which they are known be as simple, as permanent, and as universal as possible. When a species is defined, let the name by which it is known be as universal and as permanent as the species itself. All true botanists should unite like one man to attain this result; and they should set their faces like adamant against useless and perplexing innovations. I am sure that I am only giving expression to the feelings of every intelligent gardener in Britain in thus advocating a uniform nomenclature. Let me also say a word about nurserymen giving fine Latin names to garden varieties. This practice has prevailed for the last few years to a most pernicious extent. I might, for example, go to a nursery to look for the Male Shield Fern; and I might find 50 varieties, all with Latin names, and perhaps not be able to procure the original species among them all. To a tyro in botany nothing can be more perplexing; and, let me add, nothing tends more to retard the study of botany among the masses. *J. Douglas, Kilkea Castle.*

Air in Motion in Plant Houses.—Permit me to thank Mr. Mills for his suggestion; a similar mode to the one he adverts to will be noticed in my forthcoming letters. I have not yet concluded the subject; but the great International Show and my own diversion concerning gardeners have hitherto interrupted my articles on ventilation. I quite agree with Mr. Mills, that sooner or later (and the sooner the better) an air disturber of some sort will be considered as necessary an accompaniment to a plant house, as a stoke hole or a cistern. *D. T. Fish.*

Laburnum sports.—I have in my garden what is considered by some to be an extraordinary freak of Nature, viz., a Laburnum tree with flowers of three different colours and kinds on it; the greatest part of the tree consists of the ordinary yellow blossoms, the next largest portion is pink, and the smallest part lilac. The yellow part bears seed in the ordinary way, but neither of the other two bear any. The colours are not confined to the same branches in successive years, but break out on different parts of the tree and upon some of the branches; it runs thus, pink, yellow, pink. It has been neither budded nor grafted, and is viewed with astonishment by many persons who reckon themselves competent to discover how the production has been caused. *G. N. D., Abbey Cottage, St. Albans.* [Such sports are not uncommon. The third is what is called C. Adami, a form which is supposed to be the result of "working" Cytisus purpureus on the common Laburnum; it arises from the cells of the first and second becoming, by some accident of growth, naturally grafted together. We hope to give some further account of this curious freak of Nature soon.]

Pansies and Daisies.—What an interesting bed these make! Distinct colours of each would look well, but I prefer a mixture. Seedlings answer well for massing, or for the purpose of forming lines. Dean's strain of Pansies is admirably adapted for spring work. We sow our Pansies early in spring; as soon as they can be handled we prick them off into boxes, harden them, and then plant them out in March. Daisies can be treated in the same way. There is a stock of suitable kinds. The better plan in the case of Pansies is to put in cuttings in some shady place in Autumn, allowing them to remain in their quarters until they are required for planting. Daisies are readily propagated by divisions of the roots; each small piece soon makes a good plant, if placed in some rich soil in a rather shady position. At planting time these will lift with large balls, and commence blooming at once. *John Edlington, Hylton Park, Sunderland.*

Garden Wall-eyes.—Where can the best description of staple be procured for insertion into a garden wall, to tie branches of fruit trees to, it being understood that it is an improvement on the old plan of nailing with list? *R. T. T.* [We have made inquiries as to the 'wall-studs" used at Trentham, and learn from Mr. Stevens that he finds they are much surpassed by the "wall-eyes" represented in the annexed figure, which are procurable of Messrs. Matterson, Huxley, & Watson, Cross Cheaping, Coventry. For the pattern of these, and for the following remarks, we have to thank Mr. Miller;—"The garden wall-eye (of which the annexed is a representation) has been extensively used on the walls which were built during the formation of the new gardens here. These eyes can be had of any reasonable length, but those most suited to our walls are 1½ inch long, which I had cast and galvanised to suit our purpose. The nails are best put in the wall when it is being built, for then the mortar is soft. If inserted after the mortar has set and become hard, we find it necessary to make a hole with a small punch, and then insert the eye, and fasten with a gentle tap of a hammer. The eye being cast, is not calculated to stand much rough usage. We find this description of nail answer admirably. The loop affords every facility to fasten the bast to, and the greater neatness as compared with the shred system cannot be questioned. These eyes cost us 5*d.* per pound. *Wm. Miller, The Gardens, Combe Abbey.*



Dinner of the Gardeners' Benevolent Institution.—The annual dinner in aid of the funds of this useful charity, "The Gardeners' Royal Benevolent Institution," is to take place this year on the 27th inst., with Sir Wentworth Dilke, in the chair. I have been a frequent attendant at these pleasant meetings, and have been struck with the great feature of the entertainment—as it surely ought to be on such an occasion—the beautiful display of fruit and flowers at the dessert. There is, however, generally very great difficulty in obtaining fruit sufficient for the requirements of the guests. This ought not to be the case. The charity is for the benefit of respectable gardeners, who from sickness or misfortune have fallen into poverty in their old age, and I can hardly think that noblemen and gentlemen would refuse to their gardeners in their prosperity, the privilege, on such an occasion, of aiding the good cause by a contribution of what would be so valuable to it, viz., some fruit for the dessert—a bunch or two of Grapes, or half a dozen Peaches would hardly be felt in a large establishment, but would be highly valued at this festival. Every year there are many kind and liberal employers who allow their gardeners to give of their abundance, and I fancy it only requires to be generally known that there is often a deficiency, and in the cause of such a charity we shall find there will be no lack. *An Old Subscriber.*

Peaches.—Mr. Rivers has frequently told us, that if we shut up our orchard-houses a little before sunset, the blossoms will damp off; but that if we admit air throughout the night, fruit will set abundantly. My experience has fully confirmed this statement. *C. W.*

Foreign Correspondence.

Tar-producing Trees of Queensland.—A paper on this subject (says the *Queensland Daily Guardian*) was read a short time ago at one of the sittings of the Queensland Philosophical Society.

The subject appears to have occupied no small attention of the Imperial Government, as touching a very serious decrease in an item of British import commerce, viz., the manufacture and exportation of those valuable commodities, resin, turpentine, tar, &c., all of which are extensively used throughout the continent of Europe, as well as the colonies of Australia.

That immense profits would accrue from the production and exportation of these sources of commerce can be proved; we need only refer to a circular despatch recently addressed by the Secretary of State for the Colonies, to his Excellency the Governor of Queensland, in which attention is called to an alarming decrease in the quantities of these articles imported into Great Britain since the commencement of the civil war in America; from the Southern States, of which country large supplies were formerly derived.

It will be shown by comparison to what extent the importation of these articles has decreased; also, in what proportion their relative value has been enhanced consequent on that decrease; and it will be clearly suggestive that the time has now arrived when the enterprising colonist would profit by turning his attention to this very important branch of colonial industry.

When we discover that in 1859 these imports amounted to 1,143,452 cwt., in value 470,447*l.*, while in 1863 they only amounted to 412,781 cwt., at the same time possessing the higher value of 560,289*l.*; we at once perceive that the increased value has been nearly 330 per cent., gross aggregate, within a period of four years—thereby showing a net increase in the value of these products of about 82 per cent. per annum.

It is, therefore, obvious that if these productions would pay in 1859, when they were less than one-third their present value, they must pay considerably more than three-fold now, particularly when we consider the increased demand, which must necessarily yield returns proportionately handsome.

Another reason why the colonist could now turn his attention profitably to this matter, is the fact, that the sources from which large supplies of resin, tar, &c., have formerly been obtained, are crippled from local causes, to such an extent that even under the most favourable circumstances years must elapse before they can hope to regain their past position, so as to enable them to export again largely, during which time the demands for these articles in the European markets remain the same, if not increasing, which must consequently cause their value to remain proportionably high.

In Queensland there is no difficulty in obtaining the necessary timber for this purpose, inasmuch as both coniferous and resiniferous trees grow abundantly through our scrubs and forest lands, in almost a thousand varieties, from which sufficient quantities for export purposes, of wood, tar and resin may be obtained. The scrubs of Queensland abound with Pine trees, from which a large percentage of Pine tar may be produced; also a species of Callitris, which, with prudence, might be made to yield a profitable supply.

Again, unlike the southern colonies, we have in Queensland large tracts of country covered with the Grass tree, which also, with proper management, would produce largely the same article; and numbers of other trees will, with very little distillation, yield tar, and though perhaps not identical with, or so good as the wood tar which is produced from Coniferous trees, yet it may be used with advantage for many purposes as a substitute, and with almost the same results, as Stockholm and other tars.

We have also in Queensland great quantities of the Eucalypti, of a very superior description, which would yield more or less tar; and although it is rather of a peculiar kind, it produces generally a very large percentage, and we are persuaded that in time it will be found as good and as useful as any that can be produced from the best of coniferous trees which grow.

Though we may not be able, perhaps, to obtain resin equal to that of the Fir trees of Canada, yet we have in the forests of Queensland resiniferous trees of many varieties, capable, we may presume, of producing resin to an almost unlimited extent; it requires only the practical test to prove this, and the industrious colonist, if successful, would meet the reward due to the merits of his enterprise and courage.

Societies.

ROYAL HORTICULTURAL: *June* 14 (*Special Show for competition for Prizes offered by Parkes, the Society adding Second Prizes in case of the subjoined Classes*). Though accompanied by much display, this was by no means an uninteresting exhibition, and the day being tolerably fine, there was a fair attendance of Fellows and their friends.

President's Prize for the best 9 *Plants sent out in* 1865.—This was obtained by Messrs. Veitch, who furnished a panful of Alternanthera amabilis, a dwarf-growing, rather robust bronzy-leaved plant; the silvery-veined Peperomia maculosa, Achantum colpodes, and Gymnogramma flexuosa, Verschaffeltia splendida, a fine looking species of Palm; Dieffenbachia Weirl, with dark-coloured leaves mottled with pea green, a Juniper from the North of China, Retinospora squarrosa, with green-edged deep chocolate-coloured leaves; and Dracæna nigrescens, a very dark-coloured species in the way of D. ferrea. From Mr. Bull, who also showed in this class, came Verschaffeltia splendida, Dracæna nigrescens, Sauraia sarapiginsis, a strong-growing plant with rough Cinchona like leaves; Aucuba japonica fœmina elegans, a handsome variety with leaves boldly splashed and mottled with creamy yellow; Coprosma Baueriana, with comparatively small obovate leaves prettily variegated with creamy yellow; the singularly handsome Terminalia elegans, with long narrow leaves, having conspicuous reddish brown midribs, the singular Cycas phumosa, Asplenium myriophyllum, a charming small leaved species, and the white variegated variety of Selaginella Martensii.

President's Prize for the best 9 *Plants sent out in* 1864-5.—This was awarded to Mr. Williams, of Holloway, for an interesting collection in which were Anthurium scherzerianum, and magnificum alias cordifolium; Variegated Pampas Grass, Calamus Imperatrice Marie, a gracefully growing small Palm, the white stemmed Dieffenbachia Barraquiniana, Variegated New Zealand Flax, Dracæna Cooperi, Phalænopsis Luddemanniana, with 9 blooms on it, and Agave schidigera. From Messrs. Veitch came Lilium auratum in a semibouble condition; Dracena Cooperi, and nigrescens, Dieffenbachia Weirl, Cypripedium Pearcei, with little pale green tailed flowers, Anthurium cordifolium and scherzerianum, Gymnogramma Pearcei, Prammopitys elegans, and the beautiful glossy deep green Pandanus ornatus. Mr. Bull furnished Maranta Van

den Heckei, Dracæna Cooperi, Pandanus ornatus, Anthurium cordifolium, [illegible] a large green-leaved [illegible], the white variegated variety of [illegible] [illegible] Zalesia Wagneri and [illegible].

Roses: [illegible].—This was won by Mr. Turner, but neither in this nor in Messrs. Paul & Son's collection, to which was awarded the President's prize for new varieties of 1864-5, were the blooms, as a whole, in good condition. Among Mr. Turner's, the best were Gloire de Dijon, Olivier Delhomme, Mrs. Wood, Victor Verdier, Leopold Hausberg, a fine shaded rosy crimson, Souvenir de Malmaison, Charles Lefebvre, and Maurice Bernardin. From Messrs. Paul came a boxful of Princess Mary of Cambridge, which when about half blown, the state in which Messrs. Paul's blooms were shown, has a pretty appearance. From Messrs. Paul also came Madame Victor Verdier, Prince Camille de Rohan, Madame Furtado, and Exposition de Brie, violet-shaded dark crimson. From Mr. Turner came a charming boxful of Madame Victor Verdier, a glowing crimson-coloured kind. Among others from the same grower were Joseph Fiala, shaded purplish-crimson; Madlle. A. Halphen, well spoken of by Mr. Radclyffe in another column; James Veitch, very distinct in colour, but not on this occasion in good condition; Rev. H. Dombrain; and Docteur Andry, the last a good rosy crimson.

Mr. W. Bull's [illegible] Plants.—For this Mr. Bull, who was the only competitor, furnished the following collection, viz.:—

- Alligator Pear (Persea gratissima), from the West Indies.
- Allspice (Eugenia Pimenta), also from the West Indies.
- Arnatto Dye Plant (Bixa Orellana), from Tropical America.
- Arrowroot (Maranta arundinacea), from South America.
- Balsam of Peru (Myroxylon Pereiræ), from Peru.
- Bamboo Cane (Bambusa arundinacea), from India.
- [illegible], from Tropical America.
- Betel Pepper (Piper Betle), from the East Indies.
- Black Pepper (Piper nigrum), also from the East Indies.
- Black Tea (Thea Bohea), from China.
- Cabbage Palm (Euterpe oleracea), from Brazil.
- [illegible], from the East Indies.
- [illegible], from China.
- [illegible], from Tropical America.
- Cinnamon Tree (Cinnamomum verum), from Ceylon.
- Clove Tree (Caryophyllus aromaticus), from Moluccas.
- Coffee (Coffea arabica), from Yemen.
- Contrayerva Root (Dorstenia Contrayerva), from S. America.
- Cotton Tree (Gossypium herbaceum), from the East Indies.
- Croton Oil Plant (Croton Cascarilla), from South America.
- Cubeba Pepper (Piper Cubeba vera), from West Tropical Africa.
- Date (Phœnix dactylifera), from the Levant.
- Gamboge (Xanthochymus pictorius), from the East Indies.
- Ginger (Zingiber officinale), also from the East Indies.
- [illegible], from the West Indies.
- Green Tea (Thea viridis), from China.
- [illegible], from Tropical America.
- Gutta Percha Tree (Isonandra Gutta).
- India Rubber (Ficus elastica), from the East Indies.
- [illegible], from Brazil.
- Jalap (Ipomœa Jalapa), from Mexico.
- [illegible].
- [illegible].
- [illegible].
- Mango (Mangifera indica), from the East Indies.
- [illegible].
- Manilla Hemp (Musa textilis), from the Philippine Islands.
- Mastic Tree (Schinus Molle), from Peru.
- Maté (Ilex paraguayensis).
- Nutmeg (Myristica moschata), from the East Indies.
- [illegible].
- [illegible], from Brazil.
- Papaw Tree (Carica Papaya), from both Indies.
- Paraguay Tea (Ilex paraguayensis), from Brazil.
- Patchouli Scent Plant (Pogostemon Patchouli).
- [illegible], from Tropical America.
- Rice (Oryza sativa), from Egypt.
- Sarsaparilla (Smilax Sarsaparilla), from North America.
- Soap Berry Tree (Sapindus Saponaria), from the West Indies.
- Sugar Cane (Saccharum officinarum), from India.
- [illegible], from the East Indies.
- Sweet Potato (Batatas edulis), also from the East Indies.
- Sweet Sop (Anona squamosa), from Tropical America.
- Tallow Tree (Stillingia sebifera), from China.
- [illegible], from Madagascar.
- Vanilla (Vanilla aromatica), from South America.
- Violet Sugar Cane (Saccharum violaceum), from the West Indies.

[illegible].—This was awarded to Mr. Williams, of Holloway, who contributed beautiful specimens of [illegible] and antarctica, [illegible], with very handsome [illegible], Woodwardia [illegible] Nidus, with bright green shining leaves, measuring from 3 to 4 feet in length and some 8 inches in width; and Gleichenia semivestita, altogether an excellent group. From Mr. Bull came Dicksonia antarctica and cinnamomea, Alsophila excelsa and australis, Cyathea medullaris and dealbata, the handsome Marattia elegans, Cibotium princeps, and Gleichenia microphylla and semivestita. Mr. Chas. Walton, Manor House, East Acton, contributed various species of Adiantum, [illegible], and the beautifully red variegated P. tricolor; also Woodwardia radicans, and the shining hard-leaved Cyrtomium falcatum. His plant of Adiantum Capillus-Veneris was a remarkable example of good cultivation; and A. cuneatum scarcely less so.

[illegible].—The only competitor for this was Mr. Williams, in whose interesting collection we noticed two kinds of Hechtia, graceful-growing plants, with glossy leaves, curving outwards from the centre; a variegated variety of Pine Apple; Guzmannia grandis, with [illegible] colour; various species of Nidularium among which Meyendorffii was one of the handsomest; and Puya recurvata, with grass-green leaves.

[illegible].—In these there was a fair amount of competition. The 1st prize of [illegible] was awarded to Mrs. Dombrain, of Deal, for a well-grown and extremely healthy-looking Maiden-hair Fern (Adiantum [illegible]) which [illegible] sitting-room for a period of two years. To Mrs. Marshall, [illegible] stated to have been kept in a sitting-room for five years. The third prize of 3*l.* was awarded to Miss Fisher, 375, City Road, for a dense little tuft of Hare's-foot Fern, which it was stated, had been kept in a room for no less than nine years. Among other plants sent in for competition were Dracæna grandis, six weeks in a room, Raphis humilis, ten weeks, and Rhynchospermum jasminoides, 6 weeks, all from Miss Williams, Sutton House, Highgate. Lady Adeliza Norman, Campden Hill, Kensington, furnished variegated Japanese Honeysuckle (Lonicera aureo-reticulata) and Maurandya Barclayana intertwined together over a balloon-shaped trellis. Viscountess [illegible] Dracæna Cooperi and Aspidistra lurida variegata, all of which had been kept in a London drawing-room since the beginning of April last. From Mrs. Hill, [illegible], came two plants of Begonia insignis, which had been kept in a north window 15 months; and an unusually fine plant of Richardia (Calla) æthiopica, which had been indoors six months. Mrs. Hooke, Fulham, had Cypripedium barbatum majus with six flowers on it; this was stated to have been in a drawing-room seven weeks. From Miss Baring, Surbiton, came a Begonia in the way of Rex, which had been six weeks in-doors; and Mrs. Wyatt, Upper Tooting, had a Japanese Honeysuckle on a flat trellis, which was stated to have been in-doors for a similar number of weeks. Miss Bannerman, Upper Tooting, had a window screen. It consisted of German Ivy, trained over a wire trellis, the base of which was ornamented with Roses and other cut flowers and Ferns.

[illegible] the Society's Garden.—Among these we noticed Ficus Cooperi in fruit, Sugar Cane, Paraguay Tea, Candle tree (Stillingia sebifera), Lemon Grass (Andropogon Schœnanthus), the leaves of which when bruised emit an agreeable fragrance; Chocolate tree, Jatropha angulata, Gamboge (Xanthochymus pictorius), a plant with long leathery leaves, like those of a Ficus; Tobacco, the Alligator Pear, Ginger, Oranges, Balsam of Peru, Betel and Black Pepper, and Peruvian bark.

[illegible].—Among these were [illegible] and variegated-leaved Pelargoniums, [illegible] Stella [illegible] Nancy, [illegible] plant suitable for edging; varieties of [illegible] [illegible] lonia margaritacea and various handsome-leaved Marantas from Mr. Bull; variegated Orchids, extremely well grown and in beautiful condition, from Mr. Williams; a group of plants from Mr. Burley, Bayswater, consisting of Palms, Dracænas, [illegible] Majesty from Mr. Barnes, of Camberwell, Verbena Shakespeare, a fine [illegible] in the way of Foxhunter, but larger, from Messrs. Perkins, of Coventry; Pinks from the Rev. G. Cheere and Mr. Turner, who also had a dwarf early flowering double kind, stated to be suitable for [illegible]. From Mr. [illegible], of Ipswich, came Erigeron [illegible] perennial from the Rocky Mountains, plentifully furnished with little round heads of greenish yellow blossoms; also Pentstemon glaber, a violet and rosy purple kind, which has been noticed in previous reports. From Mr. Salter [illegible] almost as various in colour and handsome as Asters or Chrysanthemums, German Irises, and beautiful herbaceous Pæonies of different colours, for which as well as for the Pyrethrums an extra award was given. Messrs. Jackman, of Woking, had finely flowered plants of his beautiful Clematises Jackmani, rubella, Alexandra, velutina purpurea, and magnifica. [illegible] came from Messrs. [illegible] [illegible] Messrs. [illegible] [illegible] Mr. Fowler.

[illegible] Mr. Green, of [illegible] [illegible] Mr. [illegible] [illegible] Mr. Howard [illegible] [illegible] specimen of Equisetum sylvaticum. Messrs. Roberts & Co. had samples of their improved tobacco tissue for fumigating, a preparation which they say is more powerful than anything of the kind at present in use.

[illegible].—The [illegible] [illegible] superior to any Exhibition the Society has had, but in the opinion of many eminent gardeners, it was one of the finest exhibitions ever seen out of London. The show grounds are prettily situated in the Aire Valley, near to Kirkstall Abbey, and the extent of canvas was somewhat startling, the Exhibition itself occupying nine spacious tents, in addition to monster tents for refreshments. The large circular tent, which formed a centre from which the others radiated, was filled with a grand lot of stove and greenhouse plants, and in the class for 12, Mr. Baines, gr. to H. Micholls, Esq., Manchester, and Mrs. Cole & Sons, of Manchester, were placed equal 1st. Two finer twelves have never been seen. In Mr. Baines's lot were magnificent plants of Genetyllis tulipifera, Acrophyllum venosum, Ixora coccinea, Erica oblata, Ixora javanica, and Erica Cavendishiana. In Mrs. Cole & Sons' lot were also extremely fine examples of Ixora amboynensis, 4 ft. through at least, and loaded with flowers; the new and really fine Dipladenia amabilis, Erica Cavendishiana and depressa, Bougainvillea glabra, and a grand Pimelea mirabilis, 5 ft. through. In the same class Mr. Stewart, gr. to W. H. Broadley, Esq., showed fine plants of Pimelea spectabilis and Hendersonii. In the class for 6 Stove and Greenhouse plants there was a very close run between Mr. Richards, gr. to Lord Londesborough, and Mr. Houghton, gr. to T. Kendal, Esq., Manchester; both were very fine lots, and the 1st prize fell to Mr. Richards, but it was a hard race. In this lot we noticed a wonderfully fine plant of Prostanthera lasianthus, a plant not sufficiently known; Erica Cavendishiana, Erica ventricosa coccinea minor, and Aphelexis macrantha purpurea, all fine. Mr. Houghton's lot contained superb examples of Epacris grandiflora, Allamanda grandiflora, Ixora javanica, Leschenaultia biloba major, Franciscea confertiflora, and Phœnocoma prolifera. A stiffness in the tying-in of some of these plants told against them.

Space cannot be spared to give a lengthened account of the Show, but the plant department throughout was well filled by a lot of good plants. Mr. Baines had, amongst many others, very fine examples of Sarracenias, Dasylirion acrotrichum, and Gleichenia Speluncæ and flabellata. One of the finest plants [illegible] Mr. Broadley's gardener. Ornamental plants were good, and a few good Orchids were shown. Here the competition rested chiefly between Mr. Micholls' gardener and the Rev. W. Richmond, Leeds, the former being 1st for six plants and single specimen, and Mr. Richmond 2d; and in the class for three Orchids, Mr. [illegible] Cattleya Mossiæ, Lælia purpurata, Oncidium crispum grandiflorum, Vanda tricolor, Oncidium ampliatum majus, [illegible], Dendrobium formosum giganteum and Phalænopsis grandiflora. There was a fine lot of Ferns, and some very fine Ericas from Mr. Baines, Mr. Richards, and Mrs. Cole & Sons, who took these positions as prize winners in this class. In the first lot were very fine specimens of ventricosa coccinea minor, tricolor Leeana, and Candolleana; and Mr. Richards had odorata alba, very fine. Roses in pots were superior to what has generally been seen in Leeds, and those from Messrs. Lane & Son were much admired for size, freshness, and quality. Mr. C. J. Perry, of Birmingham, also showed well in this class. The Pelargoniums were very numerous, and almost filled one very large tent. In these classes Mr. May, Bedale Nurseries, Mr. G. Edward, Mr. C. J. Perry, and Mr. Wright, gr. to G. Talbot, Esq., occupied the higher position. Many Zonal varieties were shown, and they deserve every encouragement at exhibitions. The 1st prize lot, sent by Mr. R. J. Ellershaw's gardener, were exceedingly well managed.

In the class for New and Rare Plants there was not a spirited competition. Pandanus ornatus, from Mr. W. Dean, was awarded the 1st prize, and a new Dieffenbachia from Mr. Liversedge, the 2d prize. Mr. Dean sent an extremely fine well-bloomed Clianthus Dampieri, a plant which is much easier to grow than many believe. Messrs. Lane & Son sent some capital pot Vines, and a fine collection of Rhododendron flowers. Messrs. Kearsley & Son had an extensive collection of Agaves, Yuccas, &c., and we regret space will not allow of further mention of many things deserving it.

Roses formed the great feature of the cut flower department of the show, and they were fine, especially those from Messrs. Lane & Son and Mr. George Edward, York, who beat Messrs. Lane & Son in one class. Mr. C. J. Perry also had some fine stands.

[illegible] praise must be awarded to the fruit exhibition, for there was a good display of really fine fruit. Five collections were shown, and all good lots. The 1st prize fell to Mr. Gray, gr. to the Earl of Zetland; and the 2d and 3d to Mr. [illegible] and Mr. Allen, gr. to [illegible]. Some tasteless Pines were shown, and the prizes were awarded in the following order:—Mr. Taylor, gr. to H. C. Meynell Ingram, Esq., for a very fine Smooth-leaved Cayenne; Mr. Nicholls, gr. to Titus Salt, Esq.; and Mr. Batger, gr. to John Golt, Esq. Two very fine fruits of Black Prince were shown, and some capital Grapes and Peaches. Amongst Strawberries in pots were six well-grown plants of President, and a very fine kind it is for pots. These were in very small pots, and in first-class condition, and were sent by Mr. C. J. Perry. One tent was devoted entirely to dinner table decorations, and a quantity of Fern stands, and drawing-room and dining table plant stands, and other fancy articles, of which Mr. W. Dean sent a lot. Prizes were awarded for the three most tastefully arranged dinner tables, and a strong competition was brought out, and these, combined with the display of designs for the dinner table, drawing room, and the various fancy things alluded to, made up a most attractive display. The first day was unfortunately very unfavourable; still there was a large attendance, and on the second day more than 25,000 persons visited the exhibition.

[illegible].—The amalgamation of the Caledonian and Edinburgh Horticultural Societies seems to have given an impetus to both exhibitors of plants and fruit. The Music Hall has never at this season been so creditably filled with specimens of horticultural skill as on the occasion of the Show held on Wednesday, and we have seldom been called upon to record at a summer exhibition [illegible] till next week.

Notices of Books.

A Selection of the Eatable Funguses of Great Britain. Edited by R. Hogg, LL.D., F.L.S., and G. W. Johnson, F.R.H.S., and Illustrated by W. G. Smith. 8vo. pp. viii. and [illegible] Col. pl. xxiv.

There can be no doubt that an increasing respect for a much despised class of plants is prevalent in this country. Treatises on Fungi are far from being unsaleable, especially if they have something of a popular character, though we can scarcely expect that a study confessedly so difficult should commend itself where a royal road is expected to lead to every branch of science.

It is well, however, that those who speculate on the esculent qualities of Fungi should have a slight foundation of science, for though experience will at length lead to good results, that experience must be bought, and sometimes at the expense of a good deal of suffering, if not of positive danger. Mere accordance of form and size, for example, will prove but sorry guides. Agaricus fertilis (Pers.) agrees somewhat in these respects with Agaricus giganteus, but is really not closely related. When the former was unfortunately mistaken for the latter and eaten, it gave rise to a severe illness. A knowledge of the fact that the most trustworthy divisions of the extensive genus Agaricus are derived from the colour of the spores, would have shown at once that the pink-spored A. fertilis could not be synonymous with the white-spored A. giganteus, and proper caution would have been exercised.

We are rejoiced, therefore, to see that in the useful volume before us a short and easy introduction is given which may be completely mastered in an hour or two, affording at once some general notions of a very interesting group, and laying a foundation of sound and useful knowledge, which may readily be put in practice.

The object of the volume is to give trustworthy figures of some of the more prominent and valuable species of eatable Fungi. Of all it can scarcely be urged too strongly that the specimens gathered for use should be perfectly sound, and free from the slightest symptoms of decay. If decomposition has commenced, we need not be surprised if species which are esteemed wholesome should act as putrefactive ferments, and consequently as poisons.

The species selected for illustration are nine Agarics, one Coprinus, one Cortinarius, one Lactarius, three Russulæ, one Cantharellus, three Boleti, one Fistulina, one Hydnum, one Sparassis, one Lycoperdon, and one Morel. The Truffle is strangely omitted. The figures are by Mr. Smith, whose drawings have been much admired, and who is preparing a series on a large scale of the British species of esculent Fungi for the South Kensington Museum. We have room for a few notes only on some of the species figured.

The first subject of illustration is Agaricus rubescens, certainly one of the very commonest of our Fungi, and at the same time one which is consumed by experts only. As it is equally good for ketchup and stewing, it is highly desirable that a knowledge of its merits should be more wisely diffused. Coprinus comatus as it

very soon passes into an inky fluid, must be eaten when very young, but in that state is pronounced as one of the most delicious of Fungi. It sometimes occurs in rich pastures in great profusion, and is very easily recognised. The Russulæ comprise some excellent species, but attention must be paid to the colour of the spores, and the nature of the flesh when fresh, whether mild or acrid. The species figured as Cortinarius violaceus is certainly not the true species, which has no coppery tint, but is villoso-squamose. It has a curious musky smell, and is probably not esculent. The illustration is clearly taken from one of the group Phlegmacium, and is probably C. purpurascens, or some nearly allied species. Lactarius deliciosus is an excellent species, and if attention is paid to the colour of the milk, which from orange passes into green, no mistake can be made. L. Volemnus is too rare to make it of much consequence, though undoubtedly wholesome. Few Fungi are better than Hydnum repandum when properly dressed. It ought however to be cut in slices and steeped in boiling water for a short time before cooking, as there is an acrid principle in it, which should be removed.

An entertaining account is given of cooking Agaricus ostreatus under a bell-glass by a gardener. It is possible however that as he gathered his specimens on Elm he got hold of Ag. ulmarius instead of the true species, though Dr. Badham is said to have found it on that tree. Those however who would try Agaricus ostreatus, must not, like Dr. Badham's village schoolmaster, mistake for it a pink-spored species, A. euosmos, or he may suffer for his error.

The volume concludes with a figure of Sparassis crispa, one of the best and handsomest of Fungi. At present it has occurred in two places only—the Rev. G. H. Sawyer having found it in Berkshire, and Admiral Mitford at Didlington, near Brandon, where the specimens were truly magnificent, and attracted much notice at the horticultural meeting where they were exhibited.

We cordially recommend the volume to the notice of our readers, who certainly will not be disappointed at making a copy of it their own.

Florists' Flowers.

THE suburbs of the metropolis abound in private gardens, in which the happy possessor is enabled to find some relaxation from the fatigue of business; in many cases having some favourite flowers, in the growth of which he aims to excel. In the northern suburbs the collections of Orchids of John Day, Esq.; Ambrose Basset, Esq.; and William Marshall, Esq.; are well known to all cultivators, and at this season many gems are to be found in their greatest beauty. I endeavour, if possible, during each spring, while the splendid AZALEAS, for which the garden of A. Basset, Esq., is famed, are fully in bloom, to spend some little time admiring their rich and varied colours. Perhaps here will be found the greatest number of distinct varieties cultivated as specimens in any garden in the kingdom, many of the plants, moreover, being double the size of those usually seen at our great exhibitions: and nothing can be more beautiful in appearance than the two houses devoted to their culture, especially when arranged in the artistic manner for which Mr. Baker is famed. The various kinds are so staged, and the colours so nicely blended, that no painting or words can describe the charming effect they produce; they must be seen to be appreciated, and nothing gives Mr. Basset greater pleasure than to hear from Mr. Baker he has had visitors to inspect the gardens and houses. In addition to the Azaleas, there are the Orchids to be seen, and also the Roses—such Roses, too! that one could linger for hours admiring the quantity, quality, and fragrance. These three (*i. e.*, Azaleas, Orchids, and Roses in pots) are the especial features of the garden.

Amongst the Azaleas is the original plant of coronata, still one of the most showy, and here the colour is very brilliant. Petunistborn is very fine, in fact, grand; why this is not oftener exhibited I cannot imagine, as it is of exquisite shape, and so distinct in colour. exquisita is large-flowered and splendidly marked; Murryana is very fine; Sir Henry Havelock is a deep rosy pink, finely marked on the upper part; Flower of the Day is white, flaked with crimson, very fine; Alba magna is white striped with violet, and one of the most distinct; extrani, rosy pink, and Holfordii are both good; Duc de Nassau is purplish rose, with immense flowers; Duchesse de Nassau, deep red flushed with purple, nicely spotted, large and showy; Alexander II., white striped and flaked with crimson, the edges frilled: this is one of the most beautiful sorts, and should be in every collection, however small, as also should the four named just above it.

I have so many names in my note book that to describe them would take too much space, and I will therefore only say that Chelsoni, Criterion, Symmetry, Madame A. Verschaffelt, and Gledstanesii were in extra fine condition, the colours very bright, and the flowers large and of good substance.

Then, again, there was Brilliant, an orange scarlet, finely spotted; Rubens, an immense flower, deep scarlet; Souvenir de l'Exposition, a fine shade of mauve, very attractive and distinct; sinensis, one of the finest plants in the country, the flowers of better shape and deeper in colour than most of the plants seen—this is the best variety, and is scarce; perfecta elegans, a very fine orange scarlet brighter than Perryana; Mars, by far the finest of the orange scarlets, finely spotted; Beauty of Reigate, a gem, of fine shape, white splashed with crimson; Leopold Premier, large and showy rosy pink, finely blotched; and Louise Von Baden, which keeps its position as the finest of the whites.

Of double and semi-double varieties, first and foremost stands Flag of Truce; nothing can be more beautiful than this when well grown. Hermine is also a beautiful variety, second only to the preceding. Comte de Hainault, is a deep pink. Glory of Sunning Hill is a well known showy sort. Bernhard Andrea is a deep purple, very double, rich and distinct in colour, and a very free bloomer.

These are only a portion of the varieties cultivated, and such as I considered the most desirable; many are of course old and well-known kinds, as they however stand their ground, the names may be useful to persons wishing to make a selection, and all being so good they cannot err. The new varieties I have seen this season must not be compared with them. Out of some 40 varieties —novelties, President Humann was the most promising, but the colour fades in a day or two and leaves the blossom, of a dead leaden hue, anything but desirable in an Azalea. *William Beale.*

ROSES.—Madlle. Amelie Halphen, one of the five crimson Roses that I recommended of last year's novelties, is now out, and is very beautiful. It is fine in colour, circular in outline, sufficiently full, and beautifully seriated in its petals, which have smooth edges. The other crimson Roses recommended by me were Duchesse de Caylus, Rushton Radclyffe, Madame Moreau, and General d'Hautpoult. The last is at Rushton; the others will soon bloom here. The first was first-rate last year. The second, supposed to be a bad grower, grew well, and bloomed abundantly and continuously at Rushton; in this stronger land it is growing still better. My plants were budded plants. The complainants no doubt had grafted plants. Some sorts will do nothing when grafted, but will do altogether well as budded Roses. Madame Moreau is a magnificent crimson Rose, with short inner petals, and is deeply cupped. General d'Hautpoult, though not large, is a globular, and lovely crimson. Glory of Waltham did not bloom till very late last season. I believe it will be an acquisition. It will probably supersede Sir J. Paxton as a pole Rose.

The International Roses.—Seldom has been a finer pot-rose sight than that which appeared at the late International Exhibition. Foreigners and English could not have been otherwise than amazed and delighted. The best of the Roses new to me were Marechal Neil, Monsieur Boncenne, alba rosea, Xavier Olibo, and alba mutabilis. The best specimen pot-plant, in my opinion, was Mr. W. Paul's Madlle. Willermoz. Among Standard Roses from Mr. Turner was a first-rate bloom of Olivier Delhomme, not forgetting its companion Senateur Vaisse.

Among cut Roses, Mr. Mitchell's M. Neils, and Mr. Hollingsworth's Adams, were the masterpiece trebles. Mr. Turner's and Mr. W. Paul's pot plants of two Roses that I have so often recommended, namely, Madame Victor Verdier and Pierre Notting, had some of the best blooms in the exhibition. Speaking of single specimen blooms in crimson, the best were Mr. Turner's Monsieur Boncenne and Olivier Delhomme, and Mr. W. Paul's Pierre Notting. In dark crimson Mr. G. Paul's Xavier Olibo was the A 1. Looking at a whole plant in crimson, Madame Victor Verdier, I think, was the best, but the blooms were not on the whole quite full enough to be perfect. The two plants I refer to belonged to Mr. W. Paul and Mr. Turner. Among the non-nurserymen's Roses, I specially admired Mr. Terry's. In fact, the Roses were so good and grand it is almost invidious to specify.

Lastly, the St. Martin's Hall dinner. The speeches were good, and the singing most beautiful. Some of the "audience" during some of the speeches were not quite subordinate. It was, however, a very exciting day, which must be the apology. *W. F. Radclyffe, Oxford Fitzpaine.*

The Apiary.

THE STEWARTON SYSTEM.—I am obliged to Mr. Thomson for his courteous reply to my remarks on the Ayrshire or Stewarton hive. I am sorry to find that he does not consider this hive adapted for general use, and that it is unsuited to the novice in the art and mysteries of bee-keeping. If I do not greatly mistake, the Stewarton system has been spoken of and written about by various persons, as almost, if not quite, the simplest and best that can be adopted. On the strength of these favourable opinions, I have strongly recommended these hives to inquirers after a simple and efficient plan for profitable bee-keeping, at the same time admitting that my own personal experience with regard to their use has been very limited.

To the experienced apiarian there is certainly nothing very complicated or difficult in the course of manipulation described by Mr. Thomson. No one can expect to succeed with bees, under any system of management, who cannot readily perform all that he states to be necessary with respect to the Stewarton arrangement. But to the timid operator, who may keep bees for pleasure rather than profit, it is plain that the system of management requisite in these hives is not at all suited. This class of persons forms the majority of amateur bee-keepers, and few among them would venture to raise a pile of boxes crowded to repletion with bees on the top of an empty box. And as this perilous ordeal may have to be gone through several times in the course of the season, I shall in future hesitate to recommend the Stewarton hive indiscriminately to all apiarians, whether advanced and practical, or the reverse.

I am sorry to have been in error in stating that a second honey box is inserted between the first super and the stock. This may not be the Stewarton mode, but it is one which has proved very productive with me. From one stock three years in succession I obtained supers of 50 lb., 75 lb., and 54 lb. of the purest honeycomb; other hives have given me supers of 54 lb. and 63 lb., to say nothing of those below 50 lb. The hives chiefly used by me are large-sized frame hives, which are never raised on an eke, as I should strongly deprecate for my own harvest the production of however large a quantity of honey in the ordinary breeding combs of a hive. I much prefer obtaining from 30 lb. to 50 lb. of pure honey in supers, to having a harvest of 100 lb., the greater proportion of which has been stored in combs which have been used for brood. Yet, considered as a question of profit, it is probable that the advantage would lie on the side of the Stewarton arrangement.

But if only one of the compartments is to be employed as a super, and all additional room be afforded underneath the main body of the hive, how can so large a quantity of honey as 40 lb. or 50 lb. of pure white combs, be obtained from supers? Only, I presume, by a fresh super being given on the removal of the one first filled. With so much space afforded below, I should imagine the bees would refuse to work in a fresh box placed on the top, although they would complete one in which considerable progress had already been made. I once obtained a fine super of 40 lb. by adding an empty box on the top of a super nearly filled, but usually bees manifest considerable reluctance to work in this way.

I have always understood that when additional room is given below, in the way of ekes or nadirs, there is a great tendency in the bees to construct drone combs. If this be the fact, how about constituting such nadirs into body boxes by the removal of the original main portion of the hive? Affixing pieces of *worker*-celled comb as guides will not always prove effectual in preventing the construction of drone combs, the transition from worker to drone cells being so easily accomplished.

Notwithstanding the opinion expressed by Mr. Thomson, as to the unadvisability of raising the first given super on a second inserted between it and the stock, I should still be inclined in my own practice to do so, using only a very shallow box, having for the second super neither top nor bars, so that the combs may be continued down, forming in fact one box. This is the plan I have usually adopted; with what success I have mentioned before. For any additional room required I should raise the whole tier of boxes on ekes, as recommended by Mr. Thomson. *S. Bevan Fox.*

SUPERS *v.* EKES.—It is difficult to say what may be the reason why bees refuse to work in a super. The population of the hive may be deficient, as until the hive is filled almost to overflowing with bees, they will not ascend in any sufficient numbers to commence comb building. Again, as you suggest, that the bees do not appear so numerous as they were, your hive may have sent off a swarm without your being aware of it. Should this be the case, your chances of obtaining a well filled super are small indeed, although in very good seasons such instances may occur. Last autumn I obtained from a hive that had swarmed, a fine super of 54 lb. In this super, when full, one box was about half filled when the swarm issued. The best advice we can give you, is to attach some small pieces of clean worker-celled comb in your super, if of glass, to cover it up with thick wrappings, not only to exclude light, but to obviate the ill effects of variations of temperature. Do not ventilate your glass or super; when nearly filled with combs, if too hot and crowded, give additional room below the stock, or increase the capacity of your super by the insertion of a shallow eke between it and the stock hive.

Garden Memoranda.

BICTON.—In your last year's volume (p. 1183) some account was given of the ornamental departments connected with this fine place. Let me now say something about the kitchen garden.

Ginger is cultivated here with great success. Little bits of it are potted very early in spring, brought forward on a shelf in one of the forcing houses or pits, and then early in summer they are planted out over a slight hotbed in an old pit or frame, on which the lights are kept all the summer. It grows very large, and is well-flavoured, in fact, it is considered better than that which is bought. The vegetable department is not large—not more than four acres—but a great deal is got out of it, and in texture the ground is like a heap of mixed loamy compost, in consequence of perpetual trenching, of which Mr. Barnes is so fond. "Trenching all the ground once a year!" What an amount of labour that must look to those with whom trenching is rarity at any time. But it is not only trenching once a year that is practised at Bicton, but trenching for every crop that is put in; so that some parts of the garden are in reality trenched three times a year. The result is that the crops never at any time lack nourishment or moisture—even in the hottest summer weather the roots go down into the free rich earth, and thus the strong sun, instead of dwarfing and starving the plants, and thus developing woody tissue, does them nothing but good.

A considerable portion of the ground for winter crops—Lettuces, early Cabbages, Spinach, &c.—is every year thrown into gently rounded beds, 12 feet wide, running from north to south. This is a practice of which Mr. Barnes is very fond, and which, as seen with him, seems to produce useful results. The variety of surface which these beds present is their best feature, in a very hard winter the crop on one side may be cut off or injured, while on the other it may remain safe. The frost is thawed off one side before the sun can play on it. The size to which some things grow in this deeply tilled soil would hardly be believed. In the case of Peas it is not over advantageous in point of staking and gathering, as new modes of performing these operations are sometimes necessary. If they grew so big generally, Pea-stilts as well as Pea-stakes would be necessary items in the neighbourhood of the tool-shed. Spinach and Cauliflowers, &c., may be had here every day in the year. In old times stones used to be removed from the ground so assiduously that hardly a pebble was left. Mr. Barnes has had therefore to bring all he could of them back again.

Brassicas and out-door plants generally like the

climate, but slugs are even more enamoured of it, and finding things in general tender and juicy they breed very fast. Special pains are therefore taken to keep them from becoming out of proportion to their food. A few handfuls of grains are laid about here and there in any place in which they are likely to eat too much; the men go round with lamps late at night and very early in the morning, with bags of lime, which they sprinkle over the grains or rather over the slugs, as they are very fond of the grains for a change, and cover the little heaps in great numbers when the slaughtering season begins.

The edgings for a kitchen garden are usually important considerations. The best and neatest, as well as cheapest and cleanest I have yet seen are in this kitchen garden. They are made of large flattened sea-pebbles sunk in the ground several inches on their edges. Edgings of these have all the advantages of those made of tiles, without their expense or disadvantages. If, in the case of a stone edging, a cart or other entrance is wished to be made in it, it can be done and made up again in a few minutes without requiring any nicety, while there is no annoyance from breakage or knocking out of place. These home-made stone edgings look much better too and more pleasing than those of tiles. Besides these, there is nothing better on the whole than box, much as it has been calumniated. Flints would do in neighbourhoods where such stones could not be found, and there are few places where an equally good substitute could not be had. One advantage which dead edgings have over living ones is that the walks can be salted with impunity at any time.

Pine-apples are grown here in the open air from May until October, and ripen fruit regularly every year. They are put out in May, just after flowering has taken place. The pots are placed in the bottom of a deeply sunk trench; each pot is set on three bricks, and has a bed of rich leaf-mould below it, into which the Pines root. The trench itself affords perfect shelter, and the spot is surrounded by a high thick hedge at a little distance, which of course tends to make all very snug and warm. Pines thus situated stand a great deal more frost than some bedding-plants would do. Pelargoniums get touched while the Pines are uninjured. They are about 18 months' old when put out. Of last year's batch six perfectly ripened fruit were shown at the Royal Botanic Society's exhibition early in July, each weighing from 3 to 4 lb., and larger fruit were ripened later in the season. Six Queens were cut last October, weighing together 26 lb. The practice therefore is far from being so fanciful as some might imagine.

Respecting Apricots, Mr. Barnes has taken a hint from the farmers, and ceased to some extent to make them so rigidly neat and closely spurred as of old. He thinks that the Apricot never thrives well under that treatment, but that on the contrary, it has a tendency to produce canker. He as well as others have observed plentiful crops of Apricots, and regular crops, too, on the gable ends and fronts of some old farmhouses, and similar places where the thatch forms a well-projecting eave, or gutters carry away the rain and drip, and where no pruning or nailing or training is attempted—nothing but a few rough wooden pegs driven in to keep up an old rope or pole to prevent the tree from being borne down by wind or heavy crops of fruit. He and others have seen such trees laden with fruit to an extraordinary degree compared with the general result of the mathematical and rigid mode of treatment in general use. Since he has adopted the pinching and rubbing out a portion of superfluous young shoots, and left off the annual pruning, except for the purpose of removing old spurs and dead material, and then nailing easily without straining or bending the wood—all is short-jointedness, abundance of blossom bud, and more fruit in "one year than there used to be in three."

As regards Mushrooms, the system of growing them here differs from that in common use, inasmuch as less care in the preparation of the droppings, &c., is observed. The beds are made with manure almost fresh from the stables, mixed with about half garden earth; they are generally ready to use at once, and there are abundance of Mushrooms all the year round. The beds are made on the floors of sheds, the stable dung and soil being wheeled in fresh, and with it a quantity of soil; the earth and droppings are thoroughly intermixed and then well pressed. If in five or six days the bed shows any tendency to become "too strong" it is again shaken up, a little more soil added, and the whole rammed firmly into position again. There is no chance of such beds burning or becoming too moist. They bear Mushrooms of the finest and heaviest kind, and continue to do so for many months. After the beds have been some time in bearing, and are beginning to get dry, they are watered with clear weak liquid manure water, made only from sheep, deer, or cow dung: no chimney soot or lime is used for this purpose.

At the head of the kitchen garden is a fine range of glass-houses devoted to Grape and Strawberry growing, and forcing generally, the most remarkable house being one devoted to the Fig. It is about 90 feet long, and very well managed. It is a lean-to, with an arched covered way from one end to the other, and a few feet in front kept free for a front walk, and for a bench on which to grow Strawberries in wooden boxes. The trees were in the first case planted against the back wall, but growing very freely away from it the arched trellis was made, and is now completely covered. It is pleasant for those who delight in Figs to walk along underneath and gather the well-flavoured fruit, for they are grown indoors to secure superior flavour. At Arundel and thereabouts they grow fine Figs on standard trees, but probably, though warm and moist, Bicton is not dry enough to do that. Such are the differences we observe even in the southern half of this little island!

To do justice to Mr. Barnes' indoor Pine growing would require a special article, for he has in the course of his life made a real advance in the culture of that fruit. The Smooth-leaved Cayenne is perhaps Mr. Barnes' most favourite sort; it is solid, crisp, and juicy at all times of the year if well grown; it is easy to start into fruit, and furnishes a nice-sized fruit, say from 4 to 8 lb. It is necessary to get the true variety, as a poor kind (the Green Havannah) sometimes passes for it. The Queen, however, is as much admired as it is elsewhere. Mr. Barnes never uses any manure in the soil for his Pines, unless a little charcoal and soot may be called manure. He nearly always propagates from suckers. He gives abundance of air; the succession plants are grown in rough frames, with their sides made of any sort of home-made wooden material, rough boughs, &c., outside of which are placed some boughs to prevent the lining material falling in on the plants through the insterstices. There is, as may be supposed, a free circulation of heat and ammonia. The plunging material is placed on a couple of feet of branches, &c. The frames are covered in winter with light thatched very inexpensive lath frames. The greater portion of the plants gets but one shift from the succession pit to that for fruiting them in. Between the removal from the succession pit and the flowering state the plants are washed down freely every sunny afternoon, with clear manure from an engine, and with soot-water at intervals, and the same after the flowering with plenty of air day and night. The fruiting-pit is a fine span-roofed one, 77 feet long by 17 wide, with north and south aspect, and contains seven divisions. The bottom or top heat can be regulated to a nicety by valves in the sides; the plunging materials rest on slate slabs which cover the bottom chamber in which are hot-water pipes, as also over the plunging material around the sides. A shelf goes all the way round, which is most useful for Kidney Beans at all times when they cannot be had out-of-doors, and beneath it a perforated pipe to supply humidity at pleasure. The plants are never shaded, Mr. Barnes not thinking it a wise plan when the sun does come out in these realms to run with mats and intercept its rays. *W. R.*

Miscellaneous.

Imports of Onions.—It seems scarcely credible that a country like England should pay to foreigners in one year a sum nearly equal to half a million sterling for such an item as Onions. It appears, however, by the latest statistical issue of the Board of Trade, that Holland sent 2,980,852 bushels; Belgium, 115,143 bushels; France, 106,666 bushels; Portugal 102,969 bushels; and various other countries 13,321 bushels. The total actual value being set down at 390,937*l.*, the average prices varying from 5*s.* 11*d.* to 17*s.* 10*d.* per bushel; the former having reference to the produce of Portugal, the latter to that of Belgium. *Public Opinion.*

Calendar of Operations.

(*For the ensuing week.*)

As unusual activity appears to exist in the insect world in some places, see that sickly or badly-rooted specimens, if any, are kept free from red spider; also that young stock is not allowed to suffer from want of pot room, and during bright weather attend carefully to watering, giving weak liquid manure to all plants in free growth that are likely to be benefited by it. Such stove plants as may have been removed to conservatories or greenhouses when in bloom should be replaced in heat as soon as their beauty is over, in order to permit their young wood to get ripened before short days set in.

FLOWER GARDEN AND PLANT HOUSES.

Out of doors trimming, staking, and pegging down must be well followed up where neatness and order are essential. See that sufficiently strong stakes are applied to plants with heavy foliage. Keep Roses as much as possible free from insects, and if time can be spared, dead blooms should be removed.

AZALEAS.—Shift any of the young growing plants that require more pot room; give plenty of air; shade in hot weather, and syringe daily. Set plants that have done growing out of doors, in some airy situation—to rest and harden their wood.

CAMELLIAS.—Plants on which the bloom buds are forward, and that do not require shifting, may be set out of doors in a shaded situation. Shift all that require it. Syringe daily in hot weather.

POINSETTIA PULCHERRIMA.—This is so much admired during the winter months, that too much care can scarcely be bestowed on it. Plants of it may now or soon be partially dried off preparatory to their being cut down. As soon as the young shoots have fairly started again, let the plants be taken out of their pots, their balls reduced, and repotted in the same sized pots as before. When the latter are filled with roots, a last shift into 9-inch pots may be given. They may then be placed in a cold pit, and kept close for a short time, after which air may be freely admitted until the beginning of September, when they should be replaced in the stove. The great point is to get the wood well ripened; that secured, a fine display of large brilliantly-coloured floral leaves may with confidence be expected.

FORCING GARDEN.

MELONS.—In the case of fruit ripening, a dry airy temperature must be kept up to ensure high flavour. Keep the shoots of succession crops thin, pinching off in time all extraneous growth. In watering great caution is necessary; where the fruit is approaching maturity cover the surface of the bed with flat tiles or slates to prevent evaporation.

PEACHES AND NECTARINES.—Suspend a net underneath the trees to catch the fruit, should any fall between the periods of gathering. It is better, however, to look them over frequently, as they should not be allowed to hang on the tree till they get so ripe.

PINES.—Air should now be given liberally to young stock. The plants should not, however, be exposed to drying winds by giving back and front air while the temperature is below the average, for that would not serve the end in view; but a moderate circulation should be secured whenever the weather is favourable. This, with careful attention to the state of the roots, keeping the bottom heat regular, the soil in a nice healthy state as to moisture, and giving a liberal supply of manure water to such as are well rooted, will be found much more conducive to robust growth than exposing the plants too freely, which would probably check and throw them into fruit prematurely.

VINES.—See that bunches for use late in the season are severely thinned, and also that the crop left is not too heavy in proportion to the strength of the Vines. Where the fruit is swelling be careful to maintain a moist state of the atmosphere, and give every possible attention to the roots, keeping the border in a healthy state as to moisture, and if watering is found necessary use good strong manure water. Give abundance of air where the fruit is colouring, and do not allow plants in pots to remain in the house to cause damp. Where the fruit is ripe and expected to hang for some time, the atmosphere of the house should be kept as cool as possible; but a little fire heat will probably be necessary occasionally in order to keep the atmosphere dry.

HARDY FRUIT AND KITCHEN GARDEN.

Thin and stop the young shoots of all trained fruit trees, and make thinnings of Peaches and Nectarines, of course leaving the heaviest crop on the most vigorous trees and strongest branches. As a general rule, no two fruit should be left together. Plums of the large kinds, as well as the finer sorts of Pears, should also be thinned if the crop is too heavy. Young Peach and Apricot trees, when making over-vigorous leaders, should have the points of the branches shortened, to encourage them to make other shoots less vigorous, and of a fruitful character; this will obviate the necessity of shortening them back at the winter pruning.

LETTUCES.—These are everywhere very fine. Continues to plant out from early sowings, and to keep up successional crops.

PEAS.—A sowing or two of these should now be made.

SCARLET RUNNERS.—If not already done, sow at once for a main crop; also a good breadth of French Beans.

STRAWBERRIES.—These will require attention. Layer the runners intended for pot culture early, as well as those required for making new plantations. All spare runners should be cut away, and the plants kept free from weeds.

STATE OF THE WEATHER AT CHISWICK, NEAR LONDON,
For the Week ending June 13, 1866, as observed at the Horticultural Gardens.

June.	Month's Age	Barometer. Max.	Barometer. Min.	Temperature of the Air. Max.	Temperature of the Air. Min	Temperature of the Air. Mean	Temperature of the Earth 1 foot deep.	Temperature of the Earth 2 feet deep.	Wind.	Rain.
Thurs. 7	24	30.116	30.075	75	52	63.5	61	57	S.W.	00
Friday 8	25	30.289	30.171	84	50	67.0	61½	57½	S.W.	00
Satur. 9	26	30.211	30.084	84	50	67.0	61½	57½	S.	00
Sunday 10	27	30.018	29.970	83	53	68.0	61	58	S.W.	00
Mon. 11	28	30.067	29.984	74	47	60.5	60	58	S.W.	00
Tues. 12	●	29.871	29.552	66	44	55.0	62	58½	S.W.	04
Wed. 13	1	29.750	29.556	62	49	55.0	61	58	W.	18
Average		30.008	29.856	74.5	53.7	59.1	61.8	57.7		22

June 7—Very fine throughout.
— 8—Very fine with clouds; hot sun at intervals, fine at night.
— 9—Very fine, cloudy and warm at night.
— 10—Very fine; hot and dry with hot sun; fine at night.
— 11—Very fine, fine with hot sun; cloudy.
— 12—Overcast; densely clouded; showery.
— 13—Heavy clouds, rather boisterous; rain; cloudy at night; rain.
Mean temperature of the week, 1.10th deg. above the average.

STATE OF THE WEATHER AT CHISWICK,
During the last 16 years, for the ensuing Week, ending June 23, 1866.

June.	Average Highest Temp.	Average Lowest Temp.	Mean Temp.	No. of Years in which it Rained	Greatest Quantity of Rain.	Prevailing Winds. N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.
Sunday..17	73.0	47.6	60.3	22	0.80 in.	2	5	4	1	7	11	6	5
Mon. ..18	72.4	49.7	61.0	20	0.84	1	4	3	2	6	6	11	3
Tues. ..19	72.4	48.2	59.7	21	0.63	2	4	3	4	15	7	3	
Wed. ..20	72.4	48.6	60.5	18	0.66	1	5	5	2	6	12	3	2
Thurs. ..21	74.1	50.5	62.3	16	0.54		1	2	2	2	9	4	1
Friday ..22	73.6	49.3	61.5	16	0.51		1	4	2	1	2	17	
Satur. ..23	72.4	47.3	59.9	16	0.44		1	2	4	1	3	8	6

The highest temperature during the above period occurred on the 19th and 22d, 1846—therm. 89 deg.; and the lowest on the 20th, 1869—therm. 30 deg.

Notices to Correspondents.

BOOKS.—*J. Celadon.* We do not reply to questions privately. Lindley's "Theory of Horticulture," and Thompson's "Gardeners' Assistant," will probably supply the information you seek.

BROCCOLI.—*Wm. Pitt.* Your new late White is excellent, and well worthy of recommendation.

EARLY PEAS.—*Edward Carpenter.* As another trial is in progress at Chiswick, we must decline to publish your communication at present.

EUCHARIS AMAZONICA.—*W. Tweed.* The Eucharis amazonica or grandiflora, for they appear to be the same, was first introduced into this country from Belgium about 12 years since.

FORTUNE'S YELLOW ROSE.—*W.S.* This Rose is by no means a shy bloomer, but produces its flowers very abundantly if allowed to run freely, and otherwise treated like a Tea Rose. In a small conservatory at Chiswick it produces hundreds of blossoms every year.

NAMES OF PLANTS.—*B. C. L.* Galanga tomentosa.—*J. Butler.* Hypochœris radicata.—*Rev.* The leaves sent look like those of Pittosporum undulatum, but it is impossible to say with certainty from such fragments.—*R. P.* Abutilon vitifolium.—*Marcus.* 1, Anemidictyon Phyllitidis; 2 and 3, a comparative; 4, Schizaniella apus var.—*H. G. S.* Both Lagenaria japonica.—*Constant Reader.* It is impossible to name such scraps; 2 is perhaps Iberis sempervirens; 3, Clematis montana.

WHITE SALE.—*L. M. N.* If your Pine plants are much affected by this pest, the best thing you can do is to burn them, and start afresh with clean plants and clean houses. The start afresh with clean plants and clean houses. The insects may, however, be got rid of by persevering attention. The favourite remedy is a very moist and hot atmosphere, kept charged with the steam from fermenting stable dung.

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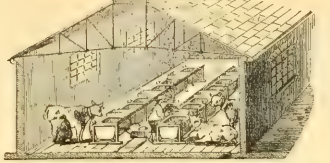
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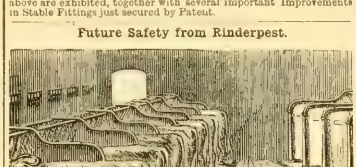
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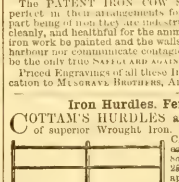
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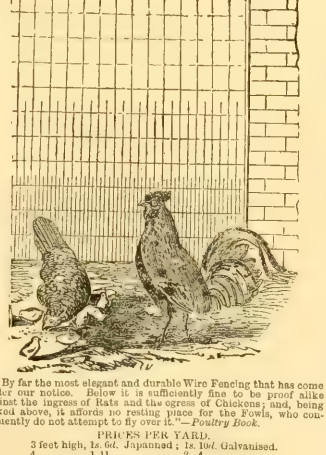
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3 feet high,	1s. 6d.	Japanned;	1s. 10d.	Galvanised.	
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The Company advances money, unlimited in amount, for the following works of Agricultural Improvement, the whole cost, by and expenses in all cases being liquidated by a rent-charge for 25 years.
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No investigation of title is required, and the Company being of a strictly financial character, do not interfere with the plans and execution of the Works, which are controlled only by the Government Enclosure Commissioners.
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ESSEX AGRICULTURAL ASSOCIATION, 1866.—POULTRY, GAME, FLOWER, and FRUIT SHOWS will be held at EPPING in the County of Essex, on TUESDAY, July 17, 1866, in conjunction with the Annual Exhibition of the Essex Agricultural Association. The Prize Lists, which are upon a most liberal scale, may be had on application to the Secretary on forwarding a stamped envelope with address.
ENTRIES for the POULTRY SHOW will positively CLOSE on JUNE 25 next. Early applications are particularly requested.
Epping, May 19. By Order, JOHN W. WINDUS, Secretary.

THE BIRMINGHAM HORSE SHOW, 1866.—The FIRST GREAT EXHIBITION of HORSES, PONIES, CARRIAGES, HARNESS, SADDLERY, &c., will be held in BINGLEY HALL, BIRMINGHAM, on TUESDAY, WEDNESDAY, and THURSDAY, July 10, 11, and 12, when Prizes to the amount of £350 will be awarded.
President: The Right Hon. Lord WENLOCK.
Vice-President: The MAYOR of BIRMINGHAM.
Prize Lists and Certificates of Entry are now ready.
Entry Galleries will be reserved for the exhibition of Carriages, Harness, Saddlery, Horse Clothing, Stable Fittings, &c. Particulars of the terms for space may be obtain d from the Secretary.
The ENTRIES CLOSE on THURSDAY, June 21.
JOHN B. LATHALL, Secretary.
Offices, Stephenson Chambers, New Street, Birmingham.

The Agricultural Gazette.
SATURDAY, JUNE 16, 1866.

THE same paper which last week criticised the past arrangements for the weekly Council meetings of the Royal Agricultural Society of England announced two very excellent subjects for discussion at the meetings about to take place. One of them was introduced last Wednesday by Dr. FARR.

The idea which prevailed so generally shortly after the outbreak of the cattle plague, and which Sir J. KAY-SHUTTLEWORTH developed with so much urgency and such skill, was again brought under our attention. It was pointed out that a loss of the kind which has befallen us owes its severity solely to its exceptional character. Although it may be said to ruin where it falls, yet it has fallen on only 2500 herds out of 285,301, and the deaths have been hardly more than 5 per cent. of the whole number of cattle in the country.

This, then, is evidently a case for mutual insurance. If every cattle owner in the country had paid 10*s.* a head upon his stock, 2,000,000*l.* would have been raised—enough to pay 10*l.* a head over all the losses that have been reported. It is possible, indeed, that under such circumstances a much larger number of cases would have been reported, and that we should have found the disease to have really been much more destructive than the Government returns declare, but a contribution of double this amount would not have ruined any one, whereas the actual losses by the plague have ruined very many. In Cheshire, in particular, where, as we were once told by one who was driving his herd of 40 or 50 to the milking, "the farmer is nothing without the cow," there are very many tenants who have lost their all. Had they been members of the National Mutual Insurance Society, they, and all the cattle owners in the country, would have lost only the 5 per cent., which would have been necessary, as it has proved, to insure the whole.

A lesson of the kind we have received ought to produce immediate fruit. The National Insurance Society ought to be constituted at once. Let the English Agricultural Society nominate the governing body for this end of the island; let the Highland Society similarly give names for the other; and let the Irish Agricultural Society name the members for Ireland; and under the Veterinary department

of the Privy Council office let the thing be urged upon stock-owners all over the country. A premium of 1s. per month on all animals over 5*l.* in value will, it is believed, insure 10*l.* on the death of such animals by disease. Let no person having cattle uninsured have a claim under any circumstances to compensation from the public rates. Let landlords for their own protection insist on the insurance of the stock upon their lands. Under these encouragements it is probable that at least half the stock in the country, worth 77,000,000*l.*, will be insured, producing 3,000,000*l.*, enough to cover ordinary and even extraordinary risks. This is the plan. Of course it is capable of hostile criticism, and this it received; but for a report of the discussion which followed the reading of the paper we refer to another page.

The last meeting of the Imperial Agricultural Society held at Vienna was in 1857, when a sort of international character was given to it by an invitation to the makers of agricultural machines and implements of other countries to send their manufactures for exhibition; and certain inducements in the shape of medals, &c., were offered. Since that time, the Society, like our own, has held its gatherings annually in different localities of the Empire, until the present year, when it decided to hold its meeting in Vienna, in the Kaiser-stadt, and again to ask for the presence of the engineers and machinists of foreign countries to take part in the exhibition. Additional importance was given to the meeting by an application from the Austrian Government to our own to be officially represented on the occasion. This, after some correspondence with the Royal Agricultural Society, was acceded to, and Prof. Wilson, of Edinburgh, was directed to proceed to Vienna to report upon the exhibition generally.

In a vast country like Austria, comprising such varieties of soils, climates, and even nationalities, one would naturally expect to see agriculture, both as regards its live stock, and its husbandry, present many features, differing from each other, and differing more widely still from what we at home are accustomed to. Such was probably one of the first impressions of a stranger visiting the exhibition; and a feeling of disappointment was the consequence. Although a second visit and a better acquaintance with the requirements and capabilities of the country did, no doubt, tend to dispel some of the impressions at first formed, still the feeling remained, that the exhibition, whether of stock or of machines and implements, was hardly equal to what might have been expected from a country possessing such vast agricultural resources as Austria. The circumstances under which the meeting was held were no doubt exceptional, and militated greatly against it. A considerable percentage of both stock and implements entered for exhibition could not be forwarded, the whole force of the railways being absorbed in the transport of war material, while the hurried arming and moving of so many thousands of men taken from the country districts gave rise to thoughts and actions widely differing from those of a peaceful agricultural exhibition. The weather too for the first 10 days was miserably cold and cheerless. This added to the general depression against which the meeting had to contend.

The situation selected for the Exhibition was an excellent one—in the Prater, and within a mile and a half of the centre of the city. Cattle, sheep, horses, pigs, dogs, poultry, and fish were exhibited, though not all at the same time. The cattle were exhibited with the sheep and swine during the first five days. These were removed, and then the horses and poultry were shown during four days. The dogs came last, and remained for two whole days at the head of the exhibition. The Cattle classes comprised crosses of every variety, as well as pure breeds, of which there were several possessing excellent points, and offering great inducements for care and attention in breeding, in order to the improvement of their already considerable excellence for meat and dairy produce; while the large white Hungarian oxen, with wide-spreading horns, were without a rival for draft and general tillage purposes. The crosses with the Swiss and Dutch breeds seemed to be those most favoured. Some good specimens of both were exhibited. Short-horns and S. horn crosses were in a small minority, the Archduke Albrecht sending the only representatives, in the shape of a 2-year old bull, a couple of heifers, and a single cross with a native breed. The Sheep were not so largely represented as the cattle, as the Merino is the breed which still monopolises public attention, to the exclusion of other far more profitable breeds. Of these there were some excellent specimens on the ground; indeed, the care and attention of the farmer seem to be concentrated on the sheep, hence the other stock and implements are poor and neglected. The condition of the sheep testifies to far more interest being taken by their owners than would otherwise have been expected. Here blood and purity of race appear as much valued as they were unheeded in the cattle classes, and with the exception of a few Southdowns, and Southdown crosses of an inferior description, nothing but Merinos of various breeds were to be seen. The Pig pens were few in number, and owed their quality entirely to the English blood which occupied them; all that were worth notice were either imported or bred from imported stock. The native pig formed an admirable standard for comparison with them. Its ungainly proportions ought to induce the pig-breeding districts to shorten the legs and enlarge the carcases of their stock as speedily as possible.

The Horses attracted, as they always do when exhibited, a large share of attention. With the exception of some spotted and pied ponies, which are peculiar to Gallicia, there were no pure native breeds shown. By far the best specimens were exhibited by the Imperial breeding establishments, in all of which English blood gave their stamp of value. The Gallician ponies were chubby, well-boned animals, evidently sluggish, but possessing, it is said, hardiness of constitution, with great powers of endurance.

The Poultry section needs only the passing remark, that the very second-rate specimens exhibited by our enterprising proprietors appeared in quality, and well-nigh in numbers, to outweigh the rest of the exhibition.

The exhibition of Fish and the appliances for their propagation, was very interesting, and attracted considerable attention from all classes. Specimens of the various fish of the Empire were shown in large tubs and tanks constructed for the purpose, into which fresh water was constantly poured from an ornamental fountain, round which the receptacles were arranged. Trout, salmon, schiall (?), sturgeon, pike, carp, and fishes unknown in English waters were there to be seen in various stages of discomfort—the sickly and the dead being each day replaced by more vigorous representatives. The hatching apparatus we are now quite familiar with at home. In the zoological gardens we may see it far better illustrated.

The Dogs also attracted great attention. They were divided into three principal classes: 1, Sporting Dogs; 2, Useful Dogs; 3, Fancy Dogs. These again were subdivided, so as to separate the different breeds as far as practicable. There were some general specimens of the larger dogs, the Newfoundlands and the wolf and watch dogs. The latter, however, in almost every case, were disfigured by the ears being cropped round off at their base, or by having the tail shortened.

The usual monstrosities were met with in the Pet-dog class. Some of the smallest were rendered even smaller by a fanciful shaving off of the hair. The effects of this operation were shown, in more than one instance, on the bodies of some poor Skye terriers who had the misfortune of expatriation added to their other body discomforts.

The Implement department was the only part of the exhibition into which the international element was admitted. But few countries responded to the invitation. France and Belgium were represented respectively by a single exhibitor. No exhibitor from the states of the Zollverein could stand comparison for a moment with the engines and machines of John Garrett, and very few were present to try it. The main body of the foreign exhibitors came from this country, but these again were far stronger both in names and in implements in the catalogue than on the ground. Of our leading establishments Ransome and Howard's put in no appearance at all, while Clayton & Shuttleworth, Garrett's, the Reading Company, Marshall's, Hornsby, Ficksley & Sims, Robey & Co., Boby, and a few others, creditably upheld the mechanical and technical skill of our agricultural engineers and implement makers.

The display of machines and implements by Austrian exhibitors was extremely good, all the leading makers having followed as closely as they could English models. Their chief merit appeared to consist in the correctness of their imitation; there was no attempt to pass them off as native patterns, but they were all offered for sale as copies of the machines of the different makers whose names they bore. Great disappointment was caused to all the leading exhibitors, certainly to our own, in finding that no arrangements had been made for anything like a trial, competitive or otherwise. This was a great mistake, and a great injustice to their own manufacturers. The opportunity was thus lost of giving a lesson by means of friendly comparisons, which ought not to have been lost, and which would have been more fraught with future good to Austrian agriculture than any encouragement in the shape of medals and honorary commendations that could be conferred.

The stir and bustle, the business anxiety of both buyers and sellers, and the thronging numbers that crowd through the rows of machines and implements at our own great shows, were not noticeable here; indeed, at no period of the meeting, was any special attention excited, save when the ponderous traction engines steamed up and down the inclosure. How far the results of the meeting have satisfied the exhibitors must be determined by their individual success; and if this be measured by the sales they made, or the markets they opened up for future trade, the Vienna meeting will, in all probability, be remembered by those who incurred the heavy expense of attending it with widely different feelings from the Hamburg, and, indeed, other great meetings which have already been held in that part of the Continent.

CATTLE STATISTICS AND CATTLE INSURANCE.

At the Ordinary meeting of the Royal Agricultural Society held on Wednesday last at their rooms in Hanover Square, Mr. Hutton presiding,

It was announced that Mr. William Little was the successful competitor for the prize offered for an essay on the Improvement of Waste Lands.

Dr Farr, F.R.S., then proceeded to read his paper upon "Cattle Statistics and Cattle Insurance," which after stating that agricultural stock was insured against fire, while the live stock in the hands of half a million holders, and worth 140 millions sterling, was entirely uninsured against destruction by disease, proceeded to refer to the subject of the Cattle Plague. The rinderpest reached England in June last, and as it was sweeping away whole herds of cattle in the agricultural districts it excited the greatest alarm. The first thing required under these circumstances was to stop the panic and inspire confidence, in order to give time for the adoption of judicious measures to check the plague and save the stock owner from ruin, by distributing the loss over the whole of the cattle of the country. No adequate data however existed for determining the mortality. In England there was no account of the numbers of cattle in the country, nor could there be found any trace of an attempt to ascertain the details of pleuro-pneumonia, foot-and-mouth, or epizootic disease. It was suggested that the only way to meet the losses by the rinderpest was by a system of national assurance, and that led to his drawing up a paper which he sent to the Government. He did not propose to discuss the scientific principles and difficulties of a national insurance, but to confine himself to how insurance on live stock could be effected well and safely upon the voluntary principle. When the plague was raging it was evident that it could only be met by a rate spread over all cattle in the country; and a rate of 8*s.* 6*d.* a head in Great Britain would have paid all the losses of which there was any record. But such a rate could only have been levied by the Government. They had now for the first time a statistical statement of live stock from the Privy Council, and it showed that the attacks of rinderpest were every week subsiding. By the cattle plague return prepared by Mr. Clode, it appeared that down to May, 1866, the disease had visited 25,968 farms, sheds, or other places in which there were 438,000 cattle, so that every herd would contain nearly 17 head of cattle. On the improbable assumption that small and large herds were equally liable to attacks, and applying the above proportion to the 4,738,000 head of cattle in the island, there were 283,301 separate herds, of which 2500 suffered more or less from the plague, and 257,000 sustained no reported loss. So that it would seem that out of 11 10 had escaped. Suppose a farmer lost his whole stock by rinderpest or pleuro-pneumonia in a parish where there were ten farmers under one landlord, he might appeal to his neighbours, who, supposing he had lost 90*l.* worth of stock, would be able to replace the loss by a subscription of 9*l.* apiece, or he might appeal to his landlord; but if he had paid 10*s.* into an insurance fund, he would recover his loss as a matter of right. Taking 4,738,000 as the number of cattle in Great Britain, the deaths from rinderpest had been in the proportion of one to three of those that were attacked. The loss had fallen upon the cattle owners with cruel inequality, and in proof he quoted from the cases furnished by the inspectors, instances of dairymen and small stockowners in Wandsworth, Wimbledon, Kentish Town, Peckham, Bromley, Millwall, Plum-

stead, and Finsbury, who had lost all their cattle by the disease, so that the average of loss gave no idea of the amount of suffering inflicted. It had been computed that one-fourth of the cattle were slaughtered or died every year, and the mortality by disease in ordinary years was from 3 to 5 per cent. The statement to May, 1865, gave the following:—Cattle killed for market, 1,000,000; died of common diseases, 200,000; of rinderpest, 210,000; but these figures were only conjectural, the great agricultural interest having hitherto been greatly neglected in regard to agricultural statistics. They showed, however the magnitude of the question of cattle insurance. The loss of farm stock by fire did not perhaps exceed 30*s.* per 1000*l.*, and the rate of insurance was 5*s.* per cent., or 2*l.* 10*s.* per 1000*l.* If the loss of cattle by disease was 4*l.* per cent., and in times of rinderpest 8*l.* per cent., that was enormous as compared with the loss of stock by fire. Cattle had a most delicate organisation, they encountered greater risks from hundreds of causes than farm stock did from fire, and insurance was equally required in the one case as in the other, for the security alike of the landlord and tenant. In addition to the loss of cattle which certain owners had sustained, the whole of the owners had been subjected to risks which could scarcely be estimated at a lower figure than 2,100,000*l.* of direct loss, and one of the advantages of insurance would be that some of the most vexatious of those restrictions might on calm consideration be remitted. According to Mr. Clode's return there were 960 cases of disease last week, of which 250 were in Cheshire; and other counties, including Bucks, Oxford, Norfolk, Stafford, Lancashire, Flint, and Perth, were still suffering more or less. He did not think the disease would disappear, his opinion being, from the experience of Austria and other countries, where greater restrictions were enforced than were or could be enforced in this country, that we should be subject to eruptions of the disease as we were to outbreaks of common epidemics. The plan he had drawn up and submitted to the Government was one by which the whole live stock of the country might have been insured by Government upon the voluntary principle. To establish such a Society, the first thing necessary was that noblemen and gentlemen interested in agriculture should subscribe to a guarantee fund, on the plan adopted at the Great Exhibition, and he proposed that Government should subscribe an equivalent amount, engaging to advance money for preliminary expenses at a moderate rate of interest. The guarantee fund was intended only to make advances or loans, and the subscriptions were to be called for by instalments only in cases of necessity. He did not think it would be called for at all, but something of the kind must be done to give confidence to the farmers. It might be convenient to commence operations in London by a Council of Management, nominated by the Royal Agricultural Society, and similar Councils might be constituted in Scotland by the Highland Society, and in Ireland by the Royal Agricultural Improvement Society. Insurance was as much required in Scotland as in England, and was equally necessary in the present state of the cattle market. The next point was that an appeal should be addressed forthwith by the Statistical Department of the Privy Council to all the principal stock owners of the kingdom, requesting their concurrence in a system of strictly mutual insurance, to be maintained by the payment of adequate premiums. The concurrent stock owners would then be requested to send in classified lists of their stock and its value in prepared forms to the Statistical Department. He was aware that nearly all the societies that had attempted this kind of insurance were extinct or in the Winding-up Court, and he had been told by some of the leading men in the insurance world that they did not do this sort of business, because experience had shown that it would not yield a profit. Some extraordinary encouragement was therefore required to induce the agricultural interest to commence the system of live stock insurance. One of the first things was to be sure that the premium was sufficiently high to cover the risk, and he had come to the conclusion that 1*s.* per month would insure 10*l.* on a healthy beast exposed to ordinary risks and under good arrangements. In counties afflicted with future plagues, rinderpest, or pleuro-pneumonia, the premium would not exceed 2*s.* a month, and that only for a limited period. The 1*s.* a month might be commuted into an annual payment of 11*s.* No beast worth less than 5*l.* should be insured. The policy might be transferred on the sale of cattle being registered. Horses and sheep might be insured upon terms to be agreed upon. The premiums, after providing a reserve fund for times of plague, to be adjusted on the experience of the Society, to be calculated by an actuary to meet equitably the various risks on different animals at different ages. Payment of premiums to be made through the Post Office. All payments on policies to be made on the authority of a specially-appointed officer in every county, acting under the inspection of the committee. The accounts to be duly audited and published annually, with a digest of the returns and report made by the actuary, to be appointed by the Home Office. The publication in that way of authenticated facts would throw light upon the causes of cattle disease. All cattle imported diseased should pay adequate premiums, and if healthy receive policies covering a term of one month or more; the premium in such cases to be collected by the officers of her Majesty's Customs, and paid by them on account of the Society into the Bank of England. No person having cattle uninsured should under any circumstances receive compensation from any public rate. Landlords, for their own protection, might insist upon the insurance of stock, and clauses might be inserted to that effect in the leases or covenants. Under these encouragements it was probable that half the live stock in the kingdom would be insured, and the sum would nearly equal the 77,000,000*l.* of agricultural stock insured, which was not half the value of the agricultural stock of the country. This would give an amount of 2,000,000*l.* or 3,000,000*l.*, which would be sufficient to cover all losses and expenses, and whatever profits might accrue should be divided among the insured upon the mutual principle.

In reply to Dr. CRISP—

Dr. FARR said he should propose to include all diseases in the insurance, or otherwise the system must break down in consequence of the difficulty of distinguishing diseases.

Dr. CRISP said the data upon which Dr. Farr's plan was based were necessarily so imperfect that it was impossible to draw anything like positive or even approximate conclusions from them. He believed the loss from rinderpest was nearer 500,000 than 210,000. Dr. Farr's scheme was, in his opinion, entirely impracticable, and the only plan, in his opinion, was for the Government to take the matter in hand, and establish a national insurance, instead of trusting to companies or voluntary contributions. He did not agree that half the cattle owners would join this insurance company, for experience in Norfolk, Cheshire, and other counties, proved that not one-fourth or one-fifth had joined the societies which had been established. He ridiculed the statement of Mr. Bruce in the House of Commons, in reply to Sir J. Jervoise, that pleuro-pneumonia was a chronic disease, and asked what success they could expect when they were to shape their course according to the dicta of men so monstrously ignorant? The first thing to be done was to have good veterinary colleges established in England, Ireland, and Scotland; for at present nine-tenths of the men who attended to the diseases of cattle had received no proper education, and were incompetent to give certificates. When they had an agricultural university and a proper college of veterinary surgeons they might be able to devise a plan to meet these cases which might be carried out effectually. In the returns for the seven weeks ending the 6th of June, it was stated that 18,000 cattle died and 2000 recovered, and yet it was supposed that they were adopting the stamped-out system.

Mr. TORR concurred that the "stamping-out" system had lost much of its efficiency by not being strictly acted upon, and that they ought never to have heard of any cases of cure after the measure was taken, which the farmers forced upon the Government. In many cases the Act of Valuation had been evaded, and very often by the very persons who sought it. With regard to Dr. Farr's plan, nothing of a voluntary character had as yet had the slightest chance of existence. He had letters from farmers in Silesia, where the cattle plague appeared periodically every few years, and it was astounding to find how small a sum in the shape of a head-tax paid into a Government fund had there been sufficient to cover the losses. They want a system of statistics well carried out, and a head tax upon every animal so small in amount that no one would object to it. This should be paid into a fund, and then let the rest of the remuneration come from the public. A system under which one man insured his cattle while another did not must be wrong in principle, and the failure of the voluntary system had been sufficiently proved in the breaking down of the three or four large companies which had already been established for the insurance of cattle. If he took good care of his stock, and his neighbour did not, it was not likely he would be such a fool as to go into an insurance company from which the profits would go to cover the losses occasioned by his neighbour's neglect. The head tax he would suggest would be at the rate of a shilling a year, payable at Lady Day and Michaelmas, and he would insure foreign cattle by never letting them go further than the slaughter house, unless they were proved to be perfectly healthy. The plan of a small head tax was approved by Lord Spencer.

Mr. ALDERMAN PIX considered that they were at the present moment enjoying the benefit of a very wise compulsory insurance, the premium to be paid not being ascertained till the animal was dead, or on the point of death, which was perhaps the very best time for valuing it. The plan of Parliament and the Government was, in his opinion, the wisest to adhere to under such an emergency as they were now suffering from, and he should be sorry to relinquish the present method of compensation for loss for one which was to be based upon any scheme whatever of voluntary insurance. Whether in times of quiet, when things were restored to their normal condition, a voluntary system might be expedient, was a matter which would require consideration. With 160 head of beasts he was able to reduce his losses from something like 10 a year to five, and he was afraid that such a scheme as that suggested by Dr. Farr would make men less inclined to devote themselves to the cure of diseases. He considered, too, that a guarantee fund of the nature suggested would place noblemen and county gentlemen in a very invidious position. He should be sorry to see such a plan adopted to the loss of the vantage-ground which they had in the Government measure.

Mr. FINLEY DUN, while agreeing with many of the observations of Dr. Farr, should regret if it were to go forth that the cattle plague had any affinity with the ordinary epidemic diseases. The spread of rinderpest depended upon contagion alone, and it was upon the knowledge of that fact that the Government had endeavoured to stamp it out. When it was said that the number of cases was reduced to something under 1000, it must be remembered that only 50 weeks ago there were no cases at all in this country, or only a very few, and therefore there must be no relaxation in the care bestowed in order to cast out the disease entirely.

Mr. THOMPSON observed that the chances of forming an Agricultural Insurance Company only existed while the plague continued, and therefore they had a better chance of forming a Society of this sort now than they would perhaps have a few months hence. Men who had lost largely would not be inclined to embark fresh capital in the purchase of cattle unless they could insure against a repetition of loss; and if a farmer could not purchase stock, he must give up his farm and a great deal of the capital he had expended upon it. He admitted that there were great difficulties in the way of an insurance company of this description; but with the great object before them he believed all obstacles would vanish, and he hoped the Council of the Society would take the matter into their consideration.

Mr. W. CLODE said that none of the arguments which had been brought forward in the discussion interfered with the principle advocated by Dr. Farr, and matters of detail could only be decided upon after further consideration. Before any system of insurance was established they must have some groundwork upon which a good scale of premiums could be based. They were lamentably ignorant of the disease to which cattle were ordinarily subject. They knew that pleuro-pneumonia prevailed to a large extent, but they did not know to what extent, and if proper statistics were prepared they would, he believed, disclose some startling facts, and furnish the groundwork upon which a system of insurance might be established. The Carlisle and Northampton tables of human life were very defective, and the country owed a debt of gratitude to Dr. Farr for a life table on the broadest foundation. They had, however, nothing of the kind with regard to animals, and it was hardly creditable that they should remain in their present state of ignorance. This Society would do great good by advocating a system of full and accurate cattle statistics, upon which alone anything like a satisfactory plan of insurance could be based.

Sir G. JENKINSON referred to the statistics collected by Mr. Holland as showing that no insurance company for cattle could ever stand against a severe epidemic. All who had experience of tenant farmers knew how lethargic they were except under panic. In such a panic they were all ready to insure directly, but when the panic passed away the proportion which would insure their stock would be scarcely one in a hundred. Another great difficulty was in the identification of the animals insured arising from the constant change of stock.

The CHAIRMAN proposed a vote of thanks to Dr. Farr for his paper, which showed how deeply and carefully he had gone into the subject. It was one of the most difficult he could imagine, and for his own part he should not venture, as they stood at present, to urge its consideration upon the Council. A great deal more information was wanted before they could venture to recommend any plan of the kind suggested.

Mr. TORR, in seconding the motion, observed that Dr. Farr's plan was not suggested with a view to any immediate steps being taken, but that when the rinderpest disappeared farmers might have something before them to replace their present protection.

The motion having been carried, Dr. FARR briefly acknowledged the compliment, and the proceedings terminated.

THE CATTLE PLAGUE.

The following returns were issued on June 8.

These returns do not profess to give the total number of cases which have occurred in Great Britain, but only those which have been ascertained from information received at the office from inspectors. Columns 1 only record the cases reported as having commenced during the weeks indicated by the headings; "back" cases being added to columns 2.

Census Divisions.	1 Number Attacked		2 Result of Reported Cases from Commencement of Disease.				
	Week ending May 26.	Week ending June 2.	Attacked.	Killed.	Died.	Recovered.	Unrecruited Est.
Metrop. ..	4	8	7,883	3,442	3,712	318	451
S. Eastern .	2	2	4,858	1,685	2,558	465	170
S. Midland .	140	143	20,382	8,391	10,000	1,538	387
Eastern Co.	49	37	11,865	5,448	4,842	488	297
S. Western .	6	6	1,750	669	822	207	71
W. Midland .	196	133	23,140	7,365	6,000	1,000	910
N. Midland .	216	150	18,501	10,784	6,251	1,718	541
N. Western .	333	311	60,175	22,500	21,500	7,008	3,722
Yorkshire .	93	76	31,129	11,741	18,345	5,043	2,365
Northern Co.	58	33	8,609	4,899	2,613	974	118
Monmouth. & Wales .	42	25	8,212	1,067	5,791	1,054	297
Scotland ..	32	24	16,808	6,214	28,084	10,702	1,808
	1,207	960	246,612	78,918	124,114	32,373	11,237

NOTE.—6 Inspectors who reported cases last week have not reported in time for this return—viz., for the county of Bucks, 1; Cumberland, 1; Lincoln, 1; Stafford, 1; for the Metropolis, 1; and for Scotland, 1.

These Inspectors returned 181 cases last week.

TENURE AND IMPROVEMENT OF LAND.

[The following is the speech of Mr. C. S. Read, M.P., in the House of Commons, on the motion on the 17th inst., for the consideration of the Irish Tenant Right Bill.]

MR. CLARE SEWELL READ said he believed that he was the only member of the House who derived his income entirely from the occupation of land, and it would naturally be assumed, therefore, that his sympathies were with the tenant farmers. He was rejoiced to hear that there was to be a just and generous measure introduced, which was to settle the grievances and the wrongs of the Irish tenantry. He

could claim no personal knowledge of the agriculture of Ireland, but having in his younger days passed a few years in South Wales, he knew something about reclaiming bogs, the cultivation of hill sides, building stone walls, and constructing rude farm buildings. He understood that what was called tenant right in England—viz., compensation for the expenditure of artificial food and manures, and the application of lime, chalk, clay, and mineral manure—was not applicable to Ireland, and these being only transient improvements were generally paid cheerfully by the incoming tenant, required no notice from either party, and were seldom objected to by the landlord. The object of the Bill, he took it, was to give security to the tenant in cases where everything was done by him and nothing by the landlord. It was a gross injustice that a man who had drained and enclosed and built upon a farm should soon after be called upon to pay an advanced rent or be ejected; but how was this to be remedied? Some said that no tenant should be so foolish as to trust such an earthen vessel as an Irish Landlord without a lease; while others maintain that a tenant should never be ejected from a farm as long as he paid the original rent. The Bill did not go quite so far as that, but its tendency was in that direction, for it provided that a tenant should enjoy the farm for 31 years before paying an additional rent, and that if he spent 5*l.* per acre on the improvement of the land he should be entitled at the end of 25 or 30 years to be recouped every farthing if the improvement was as good as when it was first made. There were some improvements in which this was the case, such as the removal of large boulder stones, good pipe draining, and the raising of fences. Now, his opinion was, that if a tenant occupied a farm for such a length of time as to reimburse himself, with moderate profit and fair interest, for the capital he had expended on it, the landlord should at the expiration of that period come into the full enjoyment and possession of it, and he contended that for most agricultural purposes 21 years were amply sufficient. But this Bill repudiated such views, and in the case of reclaiming bogs and erecting farm buildings, extended the compensation to 41 years, without any graduated schedule, the full extent of which would be illustrated by supposing a tenant to judiciously spend 50*l.* in reclaiming 10 acres of bog this year, he could even in the year 1905—supposing his work were in good order—claim the whole of his 50*l.* from the landlord. Some part of his own county, a hundred years ago, was a mere heath or rabbit warren, but in consequence of the land having been let on 21 years' leases it had been enormously improved in value, and the rents had increased 200 per cent, and was now occupied by a prosperous and contented tenantry; and the honourable member for Dublin city had just shown how a 19 years' lease in Scotland had, to the mutual satisfaction of both landlord and tenant, raised the value of the land from 15*s.* to 50*s.* an acre, which destroyed many of his sable arguments in favour of the Bill. The Irish landlords were now called upon to pay for improvements which, whether efficient or inefficient, might altogether interfere with their plans for a general improvement of the property. It was no safeguard to the landlord that he should only be called upon to pay the increased value of the property. The hon. member for Westminster was wrong when he said the valuer in assessing the compensation would regard the improvements as they bore upon the value of the whole of the landlord's estate, whereas he, on the other hand, believed that the valuer would only look to the benefit the improvements might confer upon the particular farm occupied by the tenant. It was easy to understand that improvements which might be beneficial to a particular plot of land might be inconvenient if not detrimental to the estate at large. The late Mr. Pusey had introduced three moderate measures into that House on this subject, which embodied the very reasonable principle that if a tenant with the consent of his landlord erected a building, &c., he should at the expiration of his tenancy be paid compensation, which advantage, with others of a similar nature, had been already secured to the Irish tenantry; but Mr. Pusey's Bills were rejected in another place, and therefore he was sure that the present measure had no chance of being carried through Parliament. He contended that if a tenant would build upon the property of another without or it might be against the owner's consent, surely justice would be satisfied by enabling him to sell and remove his buildings. The last clause in the Bill partly abolished the law of distress, and, if passed, a similar clause would be necessary for England and Scotland. It would be absolutely impossible to maintain the law of distress in England and the law of hypothec in Scotland after passing such a measure as that before them. The abolition of the law of distress would be hailed by the wealthy portion of the country with delight, as they believed that under the present system the landlord had a preference over the general creditors. They believed that the landlord often passed over a responsible man in order to let his land to a man of straw who offered a larger rent, and that he did so because he felt sure of getting his rent. But in the event of such a change taking place, land could not be let upon the same terms as at present, as the landlord would be compelled to enforce the payment of his rent before, instead of after, it was due, and in times of calamity he would not be able to grant his tenants the indulgence he could safely offer them under the existing system. But the proposal of the Government would inflict all the hardship of the existing law without conferring any of the benefits of total repeal. The general creditor would be deluded into the idea that the landlord had no preferential claim, and the owner might still prefer the man of small means, as he knew he could at any time retain the power of distress by entering into a written agreement to that effect with his tenant. It was said that the real object of the Bill was to compel landlords to grant written agreements to their tenants, and to abolish the law of distress; but if that were so, he should object to such changes being effected by a side wind, instead of being boldly carried as substantive measures. He regretted that he had not been able to consult with his hon. gentleman as to the legal interpretation of some clauses of the Bill, but he had had the advantage of going through the Act with his hon friend the member for Lanbthgowshire (who represented the Scotch tenantry as much as he did the farmers of his own county), and found that he was still more decidedly hostile to some of its provisions. Therefore, believing the Government measure to be dangerous in principle and faulty in detail, he was reluctantly compelled to record his vote against the second reading of the Bill.

THIRD REPORT OF THE CATTLE PLAGUE COMMISSIONERS.

[We give in an abridged form the 3d Report of the Royal Commissioners.]

The preparation of this Report has, from its nature, devolved mainly on the medical members of the Commission, and their colleagues necessarily rely on them for the soundness of the views expressed in it on questions of medicine, chemistry, and physiology.

1. SYMPTOMS AND COURSE OF THE DISEASE.

We were anxious to ascertain, in the first place, what are the earliest signs which can be relied on in indicating the existence of the disease. As to this point, the inquiries set on foot in this country, first by Professor Gamgee and then by Dr. Sanderson, establish this fact, that a rise of temperature precedes any other symptoms. Within a period ranging from 36 to 48 hours after an animal has taken the cattle plague by inoculation the natural temperature rises from 102° Fahr., or a little above, to 106°, or even 105°. This occurs at a time when the animal appears to be in no way ill. It follows therefore that the length of the morbidity period, that is, of the time when the disease is hatching in the body, is less than was supposed. The disease can be detected at least two days earlier than has been hitherto believed, and the duration assigned to the meditative period must be reduced by that time.

This discovery has practical importance. It may an ought to lead to an earlier separation of sick from sound animals, and may also render it possible to shorten the period of quarantine.

Two days after the prescribed rise of temperature has begun, the next sign occurs, namely, a peculiar condition of the eruption, on the lining membrane of the mouth. It resembles at first sight the appearance in the foot and mouth disease, but can readily be distinguished from it by a practised eye. Dr Sanderson has found it in every case examined by him, and more recent evidence has been adduced to raise the disease from this sign alone. It has been stated, however, that in rare instances it has been absent. Almost simultaneously there occurs a very distinctive appearance on the mucous membrane of the vagina. It appears that one or other of these signs is very rarely absent. The following table illustrates the connection with the duration of temperature, the symptoms of the disease can be made with certainty.

On the day following the appearance of the eruption, or about 2 hours after the first elevation of the temperature, another change has been observed to take place. The appetite flags, and to ruminate irregularly. Even at this time, however, the pulse rate is unaltered. On the following day, the fourth from the first rise of the temperature, the animal for the first time shows marked symptoms of illness, and is obviously ailing. This, therefore, the earliest commencement, is usually considered by experienced observers as the beginning of the disease.

The seriousness of this over night is obvious, not only on account of the great importance of the earliest possible separation of the sick from the healthy, but because the very earliest recognition of the disease is essential, if a remedy is to be discovered, for it is within the last four days that any remedy is most likely to be effectual.

After the fourth day is over the constitution is thoroughly invaded. Then clearly marked symptoms—the drooping head, the hanging ears, the distressed look, the failing pulse, the oppressed breathing, the discharge from the eyes, nose, and mouth, the crapfish of the skin, the foetid breath, and the other well known signs of the disease.

During the sixth day there is a great diminution of the contractile force of the heart and voluntary muscles, the pulse becomes very feeble and thready, the respiratory movements are modified, and the animal sometimes shows such weakness in the limbs that it has even been thought that some special paralytic affection existed in the hinder extremities. The temperature now rapidly falls, and signs of a great diminution in the normal chemical changes in the body appear.

Death usually occurs on the following or seventh day from the first perceptible elevation of temperature.

Although this is given as the typical course of disease, there are great deviations from it, some animals live a longer, many a much shorter time, and the severity and sequence of the symptoms vary considerably.

The causes leading to these symptoms, or, in other words, the reasons why these alterations from health occur, may be thus stated in a concise form. The first of all is a morbid state of the blood. Coincident with the first elevation of temperature, and, of course, long before there is the least outward appearance of ill health, the blood of an animal which has taken the cattle plague contains the agent which can at once plague another animal of other words, the earliest fact which can be made out after infection is, that the blood contains the poison of the disease, so that serum obtained from it will give the disease by inoculation. This fact, ascertained by Dr. Sanderson, is the most important pathological discovery yet made in cattle plague. It is pregnant with consequences in medical doctrine, for though the existence of a similar fact has been long suspected in several human diseases it has never been proved in any. So material, indeed is it, that we must dwell on it for a moment. The poison contained in a minute portion of the mucous discharge from the eyes and mouth of an animal ill with cattle plague, if placed in the blood of a healthy animal, increases so fast that in less than 48 hours, perhaps in a far shorter time, the whole mass of blood, weighing many pounds, is infected, and every small drop of the blood contains enough poison to give the disease to another animal. This at once accounts for the rapid spread of the cattle plague. The agent is multiplied to a large amount in a very short space of time. How soon after the poison is put into the blood the animal becomes capable of giving the disease by natural infection to other animals, is not determined; possibly not until those parts of the body which can give off products to the air become impregnated with the poison. At what time the blood and the textures cease to be able to give the disease, is also not determined; nor, when the poison mixed with mucus or with serum is exposed to the air, can a definite time be named when its energy is destroyed.*

* When carefully protected the mucous discharges have occasionally retained their power of giving the disease by inoculation for no less a time than seven months, according to Professor Jessen of Dorpat. Ravitsch also has kept the poison for seven months.

As far as we can judge, the elevation of temperature, or (to use the usual medical term) the fever begins when the poison has infected the whole mass of blood, or within from about 40 to 60 hours after its first entrance into the system. At the same time the chemical changes in the body are augmented, and one of the ultimate products of disintegrated tissue, urea, beginning to be formed in larger quantity. Soon afterwards (the time cannot be stated with precision) the blood is otherwise altered, the amount of fibrine is largely increased, the amount of water is lessened, and possibly the physical condition of the albumen may be altered, if we may judge from the change which it undergoes when subject to the coagulability of the albumen of the muscles. According to Dr. Beale, the proportion of soluble substances is also largely increased.

The next phenomenon which can be observed is an alteration in the circulation. Almost everywhere, but more especially on the mucous surfaces and on the skin, there occur on the third or fourth day local congestions varying in size and intensity. In many places obstructions occur, and coagulations of blood in the capillaries, and in some cases the blood becomes quite stagnant.

A great increase of granular matter is found to take place both within and outside of the vessels of the affected parts. The capillary vessels themselves are greatly enlarged, and the spaces between them lessened or even obliterated. At the same time a considerable nutritive alteration goes on in the mucous membrane and skin, which leads to very rapid and imperfect growth of many of the cellular elements, and this is followed by a rapid disintegration and detachment in the form of discharges. As that portion of the mucous membrane which is most essential for the digestion of food is most affected, the appetite soon fails, rumination ceases, and large accumulations of undigested fodder are met with in the first stomach. In many cases the villi of the small intestine are so destroyed, that even if food were taken it would scarcely be absorbed in sufficient quantity to maintain life, and hence the rapid exhaustion, failure of the heart's action, depression of the animal heat, and general sinking of the powers. In some cases, when the process is more superficial, the membrane recovers its former structure, and that rapidly, and it is curious to find that one affected part may be healing while another is just beginning to break down.

When, as sometimes happens, the mucous membrane most affected by the congestion is that of the lungs, the phenomena are not less severe, indeed, the disease is sometimes even more quickly fatal. A slight cough is soon followed by laboured breathing, which rapidly increases, and quite quickly the difficulty becomes so great that some of the air vesicles are broken, and the air passes into the cellular tissue between the lobules, and from this it reaches even the subcutaneous textures of the back. This is believed by Dr. Bristowe and Dr. Simon to be the cause of the emphysema which they fully describe.

Reviewing this train of symptoms, it appears that the amount of fever, that is, the extent of the rise of temperature, does not constitute the danger of the disease; in some of the Scandinavian cases the temperature was higher in beasts which recovered than in others which died. The true measure of the danger should rather, it seems, be sought in the changes in the nutrition of the digestive or respiratory mucous membranes, or in the failure in muscular contractility. This latter point in addition to the changes in the blood, may be borne though whether it as entirely so we are not prepared to say.

Whatever may be the cause of these very general congestions and nutritive alterations, the remarkable fact obtains that poison is given off from the skin, from the mucous membrane, and hence at this period the beast is most highly infectious. The matter runs down the hide to the floor or woodwork, and when dry may be carried as dust in the air, and infect other beasts when received on the absorbing surfaces of the eyes, nose, mouth, lungs, or stomach.

2. NATURE OF THE DISEASE.

Since it is certain that the cause of the disease is actually contained in the mucous discharges, and in the blood, and probably in the textures, of a beast ill with cattle plague, inasmuch as a healthy animal can be inoculated with these substances at any time, and the poison can, as experience shows, be carried, if need be, hundreds of miles in portions of these substances, it might be supposed that there would be no difficulty in separating and demonstrating the virus itself.

Dr. Beale has examined portions of infected blood textures and mucous discharges with the highest magnifying powers that exist, namely, 1-50th of an inch focal adjustment. With such power, particles of even 1-100,000th of an inch in diameter, having any distinct character, would not be passed over. But he has found no definitely formed substance that can certainly be said to be the cause of the disease. He finds only a great increase of granular matter, but no new appearance decidedly characteristic of the disease. Possibly this granular matter may be the poison; possibly again it may exist in particles of definite form, and of a size still smaller than 1-100,000th of an inch, but which might be perceived if it were possible to construct instruments of still higher magnifying powers; more probably it is matter of a kind which is and will always be undiscoverable by the microscope. The peculiar entozoon-like bodies (Rainey's corpuscles) which are found so frequently in the muscular tissue of animals dead with cattle plague are not peculiar to this disease, and may be absent in it. They cannot therefore be the poison.

As the microscope fails us, we turn to chemistry to detect the substance, but chemistry has not hitherto separated the poison, and we do not know what it is, or how it acts upon the body. An examination of the air vitiated by the disease is described in the report of Dr. Angus Smith. Chemistry has as yet found in cattle plague no complex albuminoid matter in a state of rapid chemical change capable of communicating infection to the albumen of the serum of the blood and of the textures in cattle.

Hence it is only by its effects on the living body that the poison can be identified. In this it resembles other animal poisons which affect animals and man.* From the modes of their propagation, and from the fact that animal poisons in general has been in an intermediate between the diseases they produce and fermentation. But, as Dr Angus Smith's report shows, the chemistry of the various kinds of fermentation is at present in a state of great uncertainty, and the different views of Liebig and Pasteur still offer questions for discussion. The action which takes place in these diseases may be very different from that of any ordinary fermentation.

inoculation for no less a time than seven months, according to Professor Jessen of Dorpat. Ravitsch also has kept the poison for seven months.

* The word poison, as applied to the cause of cattle plague, is used in the general medical meaning. Unlike a chemical, corrosive, or irritant poison, it requires a second condition to be present, for it does not act unless certain favouring conditions also exist. The terms "germ" or "growth" are used because no better expressions can be found. They seem to imply an independent living existence of the poison, and on this point our knowledge is not yet sufficiently definite. Care must be taken that the terms used do not lead to erroneous conclusions.

Whatever be the nature of the action, the poison certainly requires a peculiar condition in the body before it can act; thus it can multiply in the body of a bovine animal, or of a sheep, goat, deer, or gazelle, whilst we have no satisfactory proof that it is communicable to non-ruminants.

Where the poison can act it increases rapidly, and causes a disease similar to that in the animal from which it was taken, whereas if placed in the body of a man, horse, or dog, it produces no such effect. It follows that in the first named animals there is some special condition or aptitude wanting in the others.

But even in different species of animals, all of which are susceptible, the internal conditions are evidently not quite similar. The sheep and goat take the disease less easily than the ox. The disease also is in general less virulent, the symptoms and the post-mortem appearances being slighter, and the mortality less.

Further, the virus, in passing through the body of an animal, usually renders it insusceptible of another attack. In all these respects this poison resembles several other animal poisons.

If we desire to place the cattle plague in some recognised class of diseases, we must range it under the zymotic class, as formed by Dr. Farr. The maladies to which it has the closest alliance are the so-called exanthematous or cruptive fevers; its relation to the different members of this order will be found fully discussed in Dr. Murchison's and Dr. Bristowe's reports.

3. Origin and Propagation of the Disease.

To answer the question, what should be done to limit the progress of the disease, or to prevent its return, we ought to know how it originated here, and the conditions of its propagation.

If, for example, the cattle plague has spontaneously originated in this country from the way in which our cattle have been housed or fed, we might hope to show how such conditions act, and how they can be avoided. If it originates in some wave of poisonous air which spreads over the country, and, after having a regular period of flow, has a succeeding period of ebb and disappearance, we must be content with bearing what no care can foresee and no art control. If, however, the plague has been introduced among our herds by the arrival from infected places of cattle already diseased, and if it spreads entirely by contagion, it is obvious that means may be used which, if applied strictly and carefully, will be effectual to prevent its return.

We have been able to find no evidence of a spontaneous origin in England. The first known cases were all in animals collected from different parts of England and Holland, brought to the Metropolitan Market on one particular day, the 19th of June; they were purchased by different dairymen, and then taken to five sheds in different parts of London, namely, in Islington, Hackney, Lambeth, and Paddington. In all these sheds no cattle plague in the parts of England whence these cattle came, and none in sheds to which they were taken, and as the length of the incubation period, as well as the absence of any probable cause, negatives the idea of a spontaneous origination simultaneously in these five sheds, the conclusion becomes almost irresistible that the cattle must have caught the disease while standing for sale in the Metropolitan Market. . . The Austrian and Prussian veterinary surgeons declare that, whatever may be the origin of the disease in other countries, it is always brought by diseased cattle to them. . . .

It is an important question, to what distance the poison may be active when carried in the air. Professor Roll of Vienna speaks of its spreading from one animal for 20 or 30 paces, and of its being carried by currents of air to a much greater distance, but the precise distance he does not undertake to determine. At the Royal Veterinary College on three occasions beasts kept about 20 yards from diseased animals did not suffer for three weeks. A sheep was then moved into an infected shed and took the disease. On the other hand, at the Albert Veterinary College three animals kept 25 yards from some sick beasts took the disease; but then, although great care was taken to prevent carriage of infection, it is impossible to be quite certain that there was no direct transport. A distance of 100 or 200 yards in some cases appears to have given immunity, while other beasts have been affected, and presumably through the air, at a longer distance. Possibly it may drift under special circumstances, as in hollows or valleys, with an unusually still air, whereas in an open country, and with a rapidly moving air, it may be soon so much diluted and oxidised as to be innocuous. No distance can be specified as sufficient to ensure safety; as a matter of prudence the greatest possible distance should be placed between sick and healthy herds. Where farms are small, and the homesteads near together, the disease spreads faster, as might be expected, than where they are scattered over a wider surface.

The influence of varieties of soil on the spread of the disease seems not to be marked, and there is no evidence that meteorological conditions produce a decided effect. In winter the increased crowding together of cattle may make the disease more fatal, whilst in summer the movement of animals may extend it more widely. Differences of elevation may be important. In Yorkshire, which was selected by Mr. Williams for examination in this respect as a large county with great varieties of surface, and where the plague had been severe, it appears to have adhered almost entirely to the low lands and the dales, and not a single outbreak is recorded at a height of 1000 feet.* In several counties—Norfolk, Suffolk, Staffordshire, and Buckinghamshire—the disease has been observed to be more severe, if not more prevalent, in marshy and low-lying districts.

With regard to sanitary conditions, such as the amount of cubic space and ventilation in cattle sheds, the contamination of the air by the products of decomposing manure, and the supply of pure or impure water, the facts observed may be briefly thus summed up:—

There can be no doubt that overcrowding, or what is the same thing, deficient ventilation, and the custom of retaining the manure within or close to cattle sheds, cause the plague to spread faster and to be more fatal. The action is probably two-fold; the poison is less diluted, so that animals receive it in larger quantities, and they are at the same time in a worse condition to withstand it. The supply of impure water also appears to increase the fatality, but we have not yet been able to satisfy ourselves that the virus is actually taken in with the drinking water, although such a mode of communication is not improbable.

Although important as influencing the spread of the poison when introduced, unfavourable sanitary conditions are subsidiary; they neither produce the poison, nor can the best sanitary condition be relied upon to exclude it. In some of the worst cowsheds in London the plague has not yet penetrated; in some of the best it has swept the stock entirely away.†

We adhere then to the opinion we formerly expressed, that the true mode of preventing the spread of the cattle plague is to treat it as an entirely contagious disease. We believe this expresses the whole truth; but if it be not so, if some other conditions, of which we know nothing, favour or restrict its spread, this does not remove our obligation to act on what is ascertained with certainty.

4. Disinfection.

Disinfection, in the sense in which the word is used here, implies the destruction of an animal poison, in whatever way it is accomplished. To find a perfect disinfectant for the cattle plague poison would be to stop the disease at once. We have naturally been very desirous of discovering a substance with such a power; but much more evidence is necessary before we can venture to affirm that success has been obtained.

In the first instance we requested Dr. Angus Smith to undertake this subject, with a view of seeing what chemical agent would be best suited for the purpose. Subsequently, at his suggestion, Mr. Crookes, was asked to carry on various practical trials which might test the efficacy of two agents which Dr. Angus Smith had reported to us as likely to be useful.

We refer to the reports of these two gentlemen for an explanation of the present doctrines of infection, and an enumeration of the different substances which may be used to destroy the poison.

On examining these different agents it is soon found that the number of those which can be employed with advantage is limited.

Since the poison is constantly given off in discharges flowing from diseased surfaces, and since it may be suspended like impalpable dust in the air, it becomes necessary that any disinfectant should act immediately both on the discharges and on the air. No disinfectant can be efficacious if its action is intermittent, or if it does not act on both sources of danger.

It is evident, indeed, that the poison ought to be destroyed at the very moment of evolution or discharge. Every minute during which it remains active increases the danger. The disinfectant must therefore not only be both fixed and volatile, but so cheap and easily used as to be continually in action, and it must of course be innocuous to cattle and men.

A large number of substances which can be used in many other cases as disinfectants must be put aside, as not meeting these necessary conditions. Compounds of iron, zinc, lead, manganese, arsenic, sodium, lime, or charcoal powder, and many other substances, want the volatile disinfecting power; iodine, bromine, nitrous acid, and some other bodies are too dear, or evanescently volatile, or are injurious to the cattle.

On full consideration, it appears that the choice must lie between chlorine, ozone, sulphur, and the tar acids (carbolic and cresylic). Two of these bodies, viz., chlorine, in the shape of chloride of lime and the tar acids, have the great advantage of being both liquid and aeriform; they can be at once added to discharges, and constantly diffused in the air.

All these four substances—chlorine, ozone, sulphurous acid, and the tar acids—have been practically tested, either in England, in the Continent, and there is considerable evidence that they all actually do destroy the cattle plague poison. Their precise mode of action is still uncertain. Chlorine and ozone act, no doubt, as powerful oxidisers, converting animal poisons into simple and innocuous substances. Sulphurous acid probably destroys the virus by its strong antiseptic powers. The tar acids, according to the experiments of Mr. Crookes, neither interrupt nor accelerate oxidation, but they act most powerfully in arresting all kinds of fermentative and putrefactive changes, and annihilate with the greatest certainty that power of life.

After a full consideration of the relative merits of the four disinfectants, and after some practical trials, Mr. Crookes arrived at the conclusion that the most powerful, and at the same time most simple, process of disinfection would be to use the tar acids, which are both liquid and aeriform disinfectants, and sulphur in the form of sulphurous acid, as additional and occasional agency. In our first report we recommended both these agents in a state of combination; the best mode of using them in a free state will be found detailed in Mr. Crookes's report, and the instructions which we furnished to your Majesty's Government in February last, and which will be found in the appendix.

The general result of the experiments on disinfection with carbolic acid and sulphur is certainly very encouraging. For the details of these experiments, which have been careful and searching, we refer to Mr. Crookes's report. It is of course most desirable that no false hopes should be raised, for we have seen but too many instances in which a rude disappointment has utterly crushed what seemed reasonable expectations. Under the circumstances the account of what has been done without seeing that a fair case has been made out for a large and systematic trial of these measures. They must, however, be fairly tried; they must be used with perseverance and energy; not grudgingly or insufficiently, as has sometimes been the case, but with the determination to keep the disinfectant in presence of the poison everywhere and constantly, so that every particle of virus may be, without fail, subjected to its action.

For the reason stated in Mr. Crookes's report, it appears that chloride of lime is inferior to the combined use of carbolic and sulphurous acids. But there is no doubt of the efficacy of this agent, and in certain circumstances, as for the washing of railway trucks, it may be employed in addition to boiling water or steam.

It is very desirable that the use of carbolic acid should become general throughout the country in uninfected as well as in infected districts. There is little doubt that even were there no danger from the cattle plague, the great purifying effect of this substance on the air of cattle sheds would contribute greatly to the health of the animals.

5. Substitution of a Milder Disease.—Inoculation and Vaccination.

The substitution of a mild for a fatal disease, as of cowpox for human smallpox, has naturally been hoped for in cattle plague.

It will be seen in the report of Dr. Sanderson, and appears also from experiments tried at the Royal Veterinary College, that the vaccine virus, whether taken direct from cows, or after passing through the human body, has no effect on cattle plague; and that human smallpox and the virus of the smallpox of sheep (variola ovina) have likewise no influence. The virus of cattle plague, after transmission through the bodies of sheep and goats, returned into the body of an ox, is found to have lost none of its intensity. Repeated transmission of the virus through cattle weakens its power, but in no very sensible degree. At present the vehicle of the poison, whether it be blood, serum or mucous discharge, appears also to influence its action very little if at all, while more dilution has no effect whatever. In fact, all attempts either to weaken the power of the cattle plague poison or to find another agent which might make the system of the ox insusceptible to it have entirely failed.

6 Treatment.

The cattle plague varies greatly in its severity and fatality.

In some instances it has assumed a mild type, whilst in others it has killed 95 per cent. of the cattle attacked. No satisfactory explanation of this difference can be given. A consequence of it is, that the comparison of different modes of treatment in different places is thereby rendered exceedingly difficult.

Returns of the results of treatment in nearly 10,000 cases have been obtained, by means of circulars, by the officers of the Veterinary Department. Out of these it appears that the total proportion of reported recoveries, according to the tabular statement prepared by Mr. Williams, was 26.256 per cent., and that they were nearly the same under every kind of treatment.

Mode of Treatment.	Total Number treated that Recovered or Died.	Per-centage. Recovered.	Died.
Antiphlogistic ..	958	27.453	72.547
Tonic and stimulant	2301	25.858	74.142
Antiseptic ..	2353	26.360	73.631
Special ..	1173	25.831	74.169
Total	6787	26.256	73.744

On these returns the secretary observes:—

"The information conveyed by these returns must, however, be taken with great caution, as of the 9708 cases treated, after deducting those 'killed' and those 'remaining,' the average of those recovered amounts to more than 26 per cent., a result which far exceeds the experience of independent authorities, who have investigated the results of treatment both in cases under their own care, and also under the care of the appointed inspectors. In attempting to reconcile this anomaly, it must be born in mind that a natural tendency exists to exaggerate, even unconsciously, the effects of a favourite system of treatment; and further, that in the zeal for subjecting cases to treatment at the earliest moment, animals have often been selected which are at the time free from the disease, and probably remain so for a considerable period, in fact so long as to cause them to be returned as cases of recovery. These are not mere suggestions, but statements based upon the results of numbers of modes of treatment which have been looked into by the medical officers of this department. In nearly every instance where an investigation took place of a method of treatment reported to be very successful, it has been found either that the animals had not been suffering from the disease, that they were still labouring under it, or, if the visit occurred some time after the reported recoveries, that they succumbed to the disease, with the usual percentage of loss, at a later period."

Little reliance, therefore, can be placed on the proportion of recoveries claimed by these returns. The material point is, that with the widest differences in the modes of treatment, there is hardly any difference in the alleged results; and the natural inference is, that the various drugs employed have produced little or no effect.

(To be Continued.)

THE IMPLEMENT YARD AT SALISBURY.

Messrs. Tasker & Sons, Andover, exhibit a very large collection of machinery, including three, four, six, eight, and ten-horse power portable steam engines; single and treble blast portable finishing and threshing machines; two and four-horse power portable threshing machines; 12-horse power traction engine; windlass for steam cultivation, and wrought-iron cultivator for steam power. Hayes's patent straw elevator; chaff-cutting machines; American grist mills, also for bruising and crushing Barley, Oats, Wheat, or Rape. Linseed cake, and splitting Beans or Peas; chaff-cutting machines for horse, water, or steam power; shepherd's house, or portable granary, made of corrugated galvanised iron, on a strong timber frame; portable drill, harvesting machine; scarifiers; drills; horse hoes; haymaking and winnowing machines; troughs; barrow and sack holders; lawn mowers, rollers, and land pressers, liquid manure carts, &c.

Messrs. Hornsby & Sons, Grantham.—Eight-horse power portable steam engine; corn and seed reaping, shaking, and finishing dressing machine; swathe self delivery, new semi-manual side sheaf delivery, and one-horse back delivery reapers; mowers and combined mowers and reapers; 10-row corn and seed drill; disc Turnip cutters and pulpers; ploughs; winding machines, &c.

Messrs. Marshall, Sons & Co., Gainsborough. Five, eight, and nine-horse power portable steam engines; threshing and finishing dressing machines, and circular saw benches.

The Reading Iron Works (Limited), Reading.—Portable and fixed steam engines; harvesting machines; grinding mills; hay machine; circular saw bench; horse rakes; grain crushing and oilcake mills; horse gear; patent roller and cloderusher; chaff cutters; Grass seed broadcast sowing machine, &c.

Messrs. Clayton, Shuttleworth, & Co., Lincoln.—Portable steam engines; traction engine; threshing and complete finishing and chaff elevating machines, and portable straw elevator.

Mr. E. Humphries, Pershore.—Portable steam engine, and threshing machine.

Messrs. P. & H. P. Gibbons, Wantage, Berkshire.—Portable steam engines, and threshing machines.

Messrs. Holmes & Son, Norwich.—Portable steam engine, thressing machine, saw table, drills, Everett's rotary harrow or forking machine.

Messrs. Wallis, Haslam, & Steevens, Basingstoke.—Portable steam engines, threshing machines, 20 feet angular delivery straw elevator, corn blowing, winnowing, and dressing machines; oilcake crusher, ploughs, drags, harrows, and drills; horse hoes; scarifiers and land pressers, drills, horse hoe, scarifiers, &c.

Mr. C. Powis, London.—Mortising, tenoning, and boring machines.

Messrs. Riches & Watts, Norwich.—Steam engine, and the "Eureka" and "American" grist mills.

Messrs. Pickaley, Sims, & Co., Leigh, Lancashire.—Vertical steam engine, bone mills, Oat, Bean, and Indian Corn crushers and mills; chaff cutters, oilcake mills, Turnip cutters, pulpers, and also two-horse rakers.

Messrs. Brown & May, Devizes.—Portable steam-engines; traction engine, for ploughing, threshing, and sawing; and threshing machine.

Messrs. Ruston, Proctor, & Co., Lincoln.—Portable steam engines; threshing, dressing, and finishing machines; circular-saw benches; flour mill; and double-delivery centrifugal pump.

Mr. R. Maynard, Whittlesford.—Six-horse portable steam engine; portable sifting chaff engine, with spare riddle.

Messrs. Ransomes & Sons, Ipswich.—Portable steam engine;

* Report prepared by the Secretary of the Veterinary Department for the information of the Privy Council, p. 35.

† Although the evidence which has been placed before us shows that the condition of the London cowhouses has been very much improved of late years, chiefly by the exertions of the Metropolitan Officers of Health, it is yet certain that a better system of licensing ought to be adopted. Sanitary regulations are not uniform, are sometimes irregularly enforced, and can only be carried out by threatening opposition to the renewal of the license. In all parts of the metropolis the keeper of a cowshed should be subjected to the same rules, and he should be called on to show, before he obtains his license, that he is prepared to fulfil the rules. There is still much needed to be done in the way of securing a larger cubic space, more thorough ventilation and drainage, earlier removal of manure, and better supply of pure water.

threshing machine, ploughs, whippletrees, and harrows, mills for Beans, Oats and oilcake [illegible] sieves, [illegible] mill, turnip cutters and pulper, chaff engine, &c.

Messrs. Barrows & Carmichael, Banbury.—Portable steam engine, threshing and winnowing machine, and [illegible] grist mill.

Messrs. Robey & Co., Lincoln.—Steam engine, and threshing, shaking, and dressing machine.

Mr. Plenty, Newbury.—Portable steam engine, threshing and dressing machine, shepherd's house, liquid manure cart, sheep and cattle troughs, [illegible]

Mr. Holman, London.—Set of [illegible] soil pressure [illegible], differential pulley blocks, pumping engines.

Mr. Wilkins, Ipswich.—Portable [illegible] engine, and combined corn grinding mill or chaff cutter.

Messrs. Ashby & Jeffery, Stamford.—Portable [illegible], threshing and [illegible] machine, [illegible] chaff cutting machine, haymaking machine, horse rakes, chaff cutter, [illegible] pulper, rotating and chain harrows.

Messrs. Pratt, [illegible], & Harvey, Devizes.—Portable steam engine, semi-portable vertical steam engine, portable combined threshing machine, soda-water machine.

Mr. Andrews, Melksham.—Three-and-a-half-horse power portable steam engine, chaff machines; compound action mill, to do every kind of crushing and grinding; horse rake, haymaking machine, [illegible] cheese press, cheese-making apparatus, improved curd mill.

Messrs. Ingram & Phillips, Fordingbridge.—Portable steam engine and horizontal steam engine.

Messrs. Fox, Walker, & Co., Bristol.—Portable engine and horizontal engine.

Messrs. Fowler & Co., Leeds and London.—Eight-horse power set of steam ploughing machinery, with plough, anchors, rope porters, and steel rope complete; and a five-tined cultivator.

Mr. Hindley, Bourton.—Portable steam engine, horizontal [illegible] steam engine, threshing machine, cider press and mill, single and double cheese presses, iron ploughs, harrows, cultivator, and smut machine.

Mr. Underhill, Newport, Salop.—Portable steam engine, traction engine, portable threshing, [illegible] and [illegible] machine, elevator, Barley horner, and Wheat cleaner, cultivators, ridging plough, harrows, horse rake, Turnip drills, grubber, horse hoe, sheep rack on wheels, sheep trough, and [illegible]

Messrs. Amies, Barford, & Co., Peterborough.—Portable steam engine, American grinding mills, portable farmers' steaming apparatus for feeding purposes, cylinder mill, an assortment of wrought and cast iron water ballasting and cylinder garden rollers of various diameters, and improved outfall pipe for land drains.

The West of England Engineering and Coker Canvas Company (Limited), Martock.—Portable steam engine, scutching machine, Flax breaker, and Flax seeding machines, plant [illegible] wheels.

Messrs. E. R. & F. Turner, Ipswich.—Portable steam engines, threshing and dressing machines, combined mills for crushing or bruising Linseed, Oats, &c., American grist and grinding mills, and oilcake breakers.

Messrs. Garrett & Sons, Saxmundham.—[illegible] engines, threshing, dressing, and finishing machines, drills, [illegible] and threshing [illegible] machines.

Messrs. Aveling & Porter, Rochester.—Eight and ten-horse power [illegible] engine for agricultural purposes [illegible] [illegible] rope porters for [illegible] cultivation.

Messrs. Tuxford & Sons, Boston.—[illegible] with [illegible] [illegible]

Messrs. [illegible] & [illegible], [illegible].—Pair of 14 horse ploughing [illegible] [illegible] plough; combined steam ridging and subsoil [illegible] [illegible] [illegible] haymaking machines.

Messrs. Samuelson & Co., Britannia Works, Banbury.—Self-raking reaper, [illegible] "Eclipse" reaping machines; combined [illegible] [illegible] [illegible] cutter, and double [illegible] and double action Turnip cutters, root pulpers, and double-action haymaking machine.

Mr. [illegible] [illegible] [illegible] cart.

Messrs. Coleman & Morton, Chelmsford.—Cultivators, Hanson's potato digger, water cart, self-adjusting rope porter.

Messrs. Wightman & Denning, Chard.—Haymaking machines, horse rake, corn and pulse bruisers, apple mill and [illegible] [illegible] horse power.

Mr. Silvester, London.—Weighing machines, improved [illegible] [illegible]

Mr. Dodge, London.—Indiarubber vulcanised machine band, [illegible] hose.

Messrs. [illegible] & [illegible].—[illegible] [illegible]

Messrs. [illegible] & Co., London.—[illegible]

Messrs. Freeman & [illegible], Manchester.—[illegible]

Mr. Gardiner, Gloucester.—French runner, mill, and bed stones.

Messrs. Priest & Woolnough, Kingston-on-Thames.—Lever corn drills for different widths, and drills for Turnips and manure on the flat and ridge; manure distributor, Grass-seed drill, and lever and light land horse hoes.

Messrs. Carson & Toone, Warminster.—Chaff-cutting engines, improved Turnip cutters, horse hoes, cheese presses, safety horse gear, rollers, scarifier, and ploughs.

Messrs. Milford & Son, Cullompton.—Horse carts and waggons.

Messrs. Patterson & Co. (Limited), Beverley.—Farmers mill, suitable for bruising, splitting, and grinding grain [illegible]

Messrs. [illegible] [illegible] reaping machine, and two-horse Grass mower.

Messrs. [illegible] [illegible] shapes.

Mr. [illegible] [illegible] and mowing machine, one-horse reaping machine, and two-horse Grass mowing machine.

Mr. [illegible] [illegible] iron windows.

The Beverley Iron & Waggon Co., Beverley.—Two and three horse reaping machines, with double self acting swathe delivery, one horse carts, of various strengths; liquid manure [illegible] water cart, portable pump, and pair horse waggon to carry 3 tons.

Mr. Bly, Bury St. Edmunds.—Corn dressing machines, self-cleaning corn screens, double-action haymaking machines, Barley aveller, and broken-barley extractor.

Messrs. R. and J. Reeves, Westbury.—Five row liquid manure and seed drills, manure and corn drill, lever and small occupation corn drills, broadcast corn and manure distributors, horse hoes, iron ploughs, tubular whippletrees, horse rake, water cart, safety chaff cutters, corn screen, Thistle destroyer.

Mr. Baker, Wisbeach.—Combined blowing and dressing machines, for cleaning all kinds of grain.

Mr. Woods, London.—Two Grass-mowing machines, Grass mower, with reaping attachment; two one-horse reaping machines, and revolving, self-raking, side-delivery reaping machines.

Messrs. A. & T. Fry, Bristol.—Carts, reaping and mowing machines, American horse rakes.

Messrs. Day, Son, & Hewitt, London.—Stock breeder's medicine chest.

Mr. Kittner, Lincoln.—Corn dressing mill, [illegible]

Mr. Purrett, Weston-super-Mare.—Improved cider-colouring.

Messrs. Wilton & Sons, [illegible].—[illegible]

Messrs. Roberts & Son, Bridgwater.—[illegible] waggonettes, dog carts, &c.

Mr. Rowland, Salisbury.—Mash tun and patent washing machine.

Mr. Bentall, Maldon, Essex.—Chaff cutters, root pulpers, Turnip cutters for sheep and cattle, oatcake mills, Oat and Bean kibblers, cultivator, and subsoil plough.

Mr. Milford, Thorverton, Devon.—Pair horse waggons, one horse carts.

Messrs. J. & T. Young, Ayr.—Two horse power double driving wheel reaping and mowing machine, one horse power combined reaping and mowing machine, double drills, Turnip and Mangel sowing machine, double and single cheese press, and improved curd mill.

Mr. Lyon, London.—Machine for shelling Green Pease and Broad Beans, machines for cutting and mincing meat.

Messrs. Hawke & [illegible].—[illegible] horse hoe, 11 and 13-coulter chain and corn drills, delivering by chains [illegible] machines, and improved hay-making machine.

Mr. Wyatt, Salisbury.—Waggon and cart.

Messrs. Spong & Co., London.—Sausage and general mincing machine.

The [illegible] Rubber [illegible] Company, London.—Vulcanised India-rubber sheets, belting, hose.

Mr. [illegible], London.—Rick cloths and hay sheets of various dimensions.

Messrs. Simpson & Son, Melksham.—Cheese platform, [illegible]

Messrs. [illegible].—[illegible] eradicators, and grubbers, horse hoes, and chain harrows.

Mr. Nicholson, Newark.—Haymaking machines, horse rakes, and oilcake crushers, garden roller, sack lifter, and weighing machine [illegible]

Messrs. Kendell, J. & T. H., Blandford, Dorset.—Waggons, cart, drills, ploughs, land presser, horse hoe, Turnip thinner, [illegible]

Mr. Smith, [illegible].—[illegible]

Mr. [illegible].—[illegible]

Mr. Sawney, Beverley.—Winnowing and blowing machines.

Messrs. [illegible].—[illegible] harrows, horse rakes, and chaff cutter.

Messrs. [illegible].—[illegible] and wrought iron hurdles for sheep.

Messrs. [illegible].—[illegible] exhibiting Sealy's patent treble channelled roofing.

Messrs. Bradford & Co., London and Manchester.—Vertical steam-engine, patent "Vowel" washing, wringing, and mangling machine.

Messrs. Keynes & Co., Salisbury.—Turnery and brushes for household and other purposes.

Messrs. [illegible].—[illegible] cottage, skeleton, and Cobbett stoves, grates, &c.

Mr. James, Cheltenham.—Liquid manure distributor, &c.

Mr. [illegible], Salisbury.—Waggonette [illegible]

Messrs. Brown & Co., Bridgwater.—A collection of roofing tiles, draining and water pipes, &c.

Messrs. Barber & Co., Liverpool.—Combined reaping and mowing machine, [illegible]

Messrs. Musgrave Brothers, Belfast.—Full-sized horse stalls with patent fittings, with an assortment of stable furniture; [illegible] cattle troughs, &c.

Mr. Parham, Bath.—Six-wire galvanized stand, ornamental continuous fencing, entrance gates, of wrought iron; tent, verandah, garden seats, [illegible]

Messrs. Richmond & Chandler, Manchester.—Chaff cutters, [illegible]

Mr. Kiddle, Salisbury.—[illegible] waggon, [illegible] and improved one-horse cart.

Messrs. Green & Son, London and Dublin.—Lawn mowing, rollers and [illegible]

Messrs. [illegible] & Son, Bath.—Open-fire kitchen ranges for [illegible]

Mr. Brenton, Cornwall.—Reaping machines, sheep rack, [illegible]

Mr. [illegible].—[illegible] machine and [illegible]

Mr. Leake, London.—Razor strops, knife and fork cleaners, [illegible] sausage machine.

Mr. Harris, Shaftesbury, Dorset.—Ploughs, chaff cutters, and harrows.

Messrs. Browne Brothers, Lyme Regis.—Open or closed cooking apparatus, steaming apparatus, kitchen ranges, &c.

Messrs. Ball & Sons, Rothwell.—Ploughs, horse rake, iron scuffler, harrows, carts, waggons, and horse hoes.

Mr. W. Wood, London.—Edge tool sharpeners.

Mr. Milford, Kenn, Exeter.—Tipping waggon, carts, and lifting jacks.

The St. Pancras Iron Works, London.—Wrought-iron and other stable fittings and furniture, stable ventilators, iron [illegible]

Messrs. [illegible] & Co., Worcester.—[illegible]

[illegible]

Mr. Day, Bridgwater.—Double roller Apple mill with stone, [illegible]

Mr. Cullingford, Stratford.—Net of various widths and mesh, and galvanized iron wire netting.

Messrs. Clarke & Son, Brackley.—Adjustable scythes.

Mr. Jones, Gloucester.—Composition for waterproofing.

Mr. Pierce, London.—Wrought iron galvanized cattle and [illegible] cattle pans, corn bins.

Messrs. Tomlinson & Hayward, Lincoln.—Butter-powder for improving the quality of butter, &c.

Mr. Maunder, Ottery St. Mary.—Reaping machine and haymaking machine.

Mr. Marshall, Upton Pyne.—Waggon, two-horse cart, &c.

Mr. Hutchings, Exmouth.—Light sociable, landau, waggonette, &c.

Messrs. Hill & Smith, Brierly Hill.—Lengths of patent continuous sheep and ox fence, &c.

Messrs. Turner & Bishop, Leighton Buzzard, Bedfordshire.—Corn and seed drills, land press for corn, Turnip, and manure drills, grinding mills, cultivators, threshing machines, &c.

Messrs. Greening & Co., Manchester.—Machine made iron-wire fence, cattle, sheep, poultry, and game fence; galvanised hexagon and diamond pattern netting, &c.

Mr. Kent, London.—Rotary knife cleaning machines of various sizes; carpet sweepers, compound action churns, &c.

Mr. Gillion, Taunton.—Prize open fire kitchen ranges and steaming apparatus, &c.

Mr. Johnston, London.—Butter churns, &c.

Mr. Wen, London.—Washing, wringing, and mangling machines, patent egg whisks and domestic wine presses, &c.

Mr. Whitmee, London.—Chaff cutting machines, Oat, Bean, corn, and Linseed crushers, corn grinding mills and corn millstones, flour dressing machines, &c.

Mr. Wade, London.—Hay fork, clothes wringer, and domestic [illegible]

Messrs. Smith Brothers, Trapstone.—Haymakers, horse rake, steerage corn drills; grist, oilcake, and Bean mills.

Mr. Spencer, London.—Roller and clod crusher and lever [illegible]

Mr. Parnell, Exeter.—Gig and cart harness, saddles, &c.

Messrs. Newnham & Son, Bath.—"Bath Waggonette," light "Brougham," &c.

Messrs. C. H. & S. Pemm, Salisbury.—Ornamental iron and bronzed garden tables, &c.

Mr. Eddy, Kenford.—Two-wheel pulverised single and double action iron ploughs; horse hoe, horse rake, iron drags, harrows, &c.

Messrs. Barnard, Bishop, & Barnard, Norwich.—Noiseless lawn mowers; wrought-iron folding chairs; galvanised wire netting.

Messrs. Cottam & Co., London.—Cow fitting, enamelled mangers and harness brackets, &c.

Messrs. R. & E. Vezey, Bath.—Victoria, cab phaeton, &c.

Messrs. Day & Sons, Shavington.—Flockmasters' medicine chests.

Messrs. Whitehead, Preston.—Hand and steam power drain pipe, tile, and brick making machines.

Messrs. Sutton & Sons, Reading.—Large collection of horticultural and agricultural seeds.

Messrs. Carter & Co., London.—Samples of mixed and natural Grasses in cases and pots, and agricultural seeds.

Messrs. Eversfield, Caldecott, Rawtree, Dowling & Co. (Limited), London.—Collection of specimens in sheaf, and samples of Wheat, Barley, Oats, Grasses, and Roots.

Mr. Roach, Dudley.—[illegible] feed [illegible]

Messrs. [illegible] & Co., Belfast.—Drain pipe and tile machine, root pulpers, linseed cake mills, chaff cutting machines, rakes and hoes; harrows; wheel ploughs; scuffers.

Mr. Rollins, London.—American and revolving horse rakes; wheel jacks.

Messrs. Page, Morchard Bishop.—Reaping machines.

Mr. Ireland, Manchester.—Churns.

Mr. Tapham, London.—Sausage making and mincing machine.

Mr. Sainty, Lynn.—Combined corn drill and horse hoe.

Mr. [illegible].—Patent irrigator.

Mr. Cook, Salisbury.—Bricks.

Mr. [illegible], Exeter.—One and 2 horse reaping machines.

Messrs. [illegible] & Sons, Dublin and Cork.—Specimens of fence for folding sheep.

Home Correspondence.

Sewage Irrigation.—The information conveyed in a recent impression of the *Gardeners' Chronicle* can hardly fail, I think, to disabuse the minds of those whose information on the subject of sewage irrigation is imperfect of all apprehension as to the unhealthiness of the process. The report of the Rivers Commissioners is so conclusive on this point that the subject may be considered at rest, there being in truth no ground whatever to apprehend danger or even inconvenience from the application of sewage to Grass land. In the whole of the evidence given before the Rivers Commissioners during their investigation here, there was but one disapproving voice, the proprietor of which, however, entirely failed to adduce a single fact of importance in support of his argument; and although the commissioners on this witness's account alone convened a special meeting at Norwood to discuss his evidence, not a single case of illness could be attributed to the influence of the irrigation fields at that or any other place. There is a prevailing impression, resting, I believe, on very slender foundation, that fresh water irrigation is productive of miasmatous exhalations, and is consequently prejudicial to health; but this objection cannot have any application to the process of sewage irrigation. The fresh-water process is not unusually carried on by warping or drowning the land, and the whole area under irrigation remains for a considerable time in a stagnant condition. It is not so, however, with the sewage process, all the solid matter is first extracted by filtration, and then the comparatively clear and almost inodorous liquid is passed over the land. The surface being inclined, in order that the water may run freely away, there is no stagnation whatever. Should it be urged that there is danger to health in exposing a closely inhabited district to the influence of so much decomposable organic matter, the obvious reply is that the sewage is applied almost immediately after it leaves the houses, and before any decomposition has had time to set in; and furthermore, almost every particle of organic matter is taken up and assimilated before the water leaves the land. So perfect is the process that the water passing away from the irrigation fields here is considerably purer as regards organic principles than much of the drinking water supplied to the metropolis. It is interesting and satisfactory to know that the pollution of our rivers will ere long be entirely stopped. There is no doubt that the recommendation of the Rivers Commissioners will become law, and already we have the first fruits in the form of the Thames Pollution Act, which provides that after the month of March, 1867, no unpurified sewage or refuse shall be allowed to pass into the Thames, or into any of its tributaries within three miles of where they discharge themselves into that stream. It is, I think, a remark-

able fact that agriculturists, a class of gentlemen who, as a rule, are ready to adopt improved methods of cultivation, are so sceptical as to the advantages of irrigation. The only conclusion is, that there is some reigning misapprehension either as regards the healthiness or the profit attending the process, on both of which points there is ample and conclusive evidence. *Arthur Jacob, Town Hall, Croydon, June 12.*

Last Harvest in Germany.—The following notes upon the last harvest in Saxony may be of some interest, especially at a time when all the peaceful arts and agriculture of the Continent are menaced with general confusion:—"The harvest of 1865, in Saxony, is statistically proved to be a bad one, the hill country (Lusatia) alone having been favoured with comparatively good weather. Saxony, therefore, was to a greater extent than usual an importer of corn, competing with Prussia, in which the harvest was but three-quarters of an average, for the supply that poured in unaccustomed masses from the Prussian and Austrian provinces. There is, perhaps, no more remarkable fact in the history of the German corn trade in 1865, than that for several weeks of autumn the carrying powers of railways running from south to north were taxed beyond all previous experience in forwarding immense supplies of Wheat and Rye. Thousands of bags of corn lay for weeks in the goods station of the Leipsic-Dresden railway waiting for transport, and it is related of one single house in Berlin that it contracted for the delivery of Hungarian corn alone for the sum of 500,000*l*. It is owing to this great importation, as well as to the surplus of previous good harvests, that prices of agricultural produce have remained at quotations the lowness of which is a bitter source of complaint on the part of farmers. The reasons why the harvest in Saxony and Prussia was bad can be summed up in a few words. The year 1865 was the last of a long series in which dryness was a conspicuous feature. For two seasons no water has been seen to flow from the pipes of the well-drained Saxon fields. Heavy falls of snow in March caused a rapid inundation in April, and probably saturated the porous strata which underlie the bearing earth, but did not penetrate the upper crust of loam. Great heat supervened, accompanied by winds, and corn of all kinds shot up into a thin straw, forming short and ill-shaped ears, and the burning rays of July dried up the underwood green. Rape was unable to gather the necessary sustenance. Clover and Grass withered, and the Saxon landscape assumed a parched and desolate aspect. A plague of caterpillars ravaged the gardens and fields, eating up the Cabbage and Turnip crop. Potatos alone, and Beet in part, gave a fair yield, but not before the want of hay and green food had forced many a peasant to throw the Barley intended for the payment of his rent into the manger, and to sell his cows and draught oxen at low prices. It is probable that the straw and hay famine greatly favoured the exportation of cattle, and gave a new impulse to a traffic which assumed greater proportions as the rinderpest in Holland and in England made its lamentable progress. The rinderpest notes traps has been visible in Saxony, nor have any measures been found necessary for preventing its invasion, though stringent regulations exist, and can be enforced in case of need. To sum up results, we should note that Rape was two-thirds ploughed up, and the rest yielded but half an average; Wheat, short in straw, was far below an average harvest; Rye still more unfavourable; Barley and Oats a little better, especially in straw; Peas and Vetches an average; Potatos plentiful and good; Clover and hay were exactly half the usual crops. *John R. Jackson.*

The Journal of the Agricultural Society of England.—You have congratulated the country on the accession of Mr. H. S. Thompson to the presidency of the Royal Agricultural Society of England, and it would illbecome me to say a word in detraction of the compliment. I cannot, however, endorse it, though I fully appreciate Mr. Thompson's good intentions. I must judge him by his management of the "Journal," than which nothing can be more injurious to the interests of agriculture, nor more repulsive to contributors who could and would advance it were great judgment and liberality to prevail. So prejudicial has the conduct of the "Journal" been to the communication of useful information, that amongst practical men the opinion prevails that the best way of "burking" a good idea is to let it appear in the "Journal;" for however valuable the matter, there is sure to be so much that is heavy, technical, and "hobby-horsical" in the same journal, that the pages remain uncut of all contributions alike, let the value of particular articles be what it may. Nothing is so much to be regretted as this bad management, which has brought the character of the Society to the lowest grade of utility, and it is the general opinion of those outside the council chamber that Mr. Thompson is the cause of it, as the power of the editor is *nil*. It would give satisfaction to your readers if you would explain upon what grounds you rest the favourable anticipations you have expressed as to the presidency. *A Constant Reader.*

Societies.

HIGHLAND AND AGRICULTURAL.—At the Half-Yearly General Meeting of the Highland and Agricultural Society held last week, Lord Belhaven and Stenton, K.T., presiding, the following minute was adopted:—

THE SECRETARYSHIP.

"The Directors cannot report to the Society the steps which it has been necessary for them to take for filling up the office of secretary without desiring to record their sense of the great loss the Society has sustained by the death of Mr. Macduff of Bonhard, who was so recently appointed to that office. Mr. Macduff had been for several years an ordinary Director of the Society, and all interested in its proceedings are aware of the zeal, ability, and discretion which he brought to the conduct of its affairs, and will participate in the deep regret which his premature death has occasioned to a wide circle of friends and acquaintance."

The Directors had unanimously appointed as secretary Mr. Fletcher Norton Menzies, a gentleman who, besides the knowledge the Directors had of his qualifications for the office, had this recommendation, that on the occasion of Mr. Macduff's election, Mr. Menzies stood second on the list of candidates, and received very influential and important support.

POSTPONEMENT OF SHOWS IN 1866-7.

Mr. KINLOCH moved that the show which was arranged to be held at Glasgow in the summer of 1866, and at Dundee in the summer of 1867, stand respectively postponed for one year. It would, however, be for next general meeting in January to determine whether the state of the country, or rather the state of the cattle plague would permit of arrangements being prosecuted for holding the show in Glasgow in the summer of 1867.

The motion was unanimously agreed to.

AGRICULTURAL EDUCATION.

Mr. WALKER, of Bowland, reported that the examinations took place on the 7th of March last, when two students were found entitled to the Society's agricultural certificates and diplomas viz. R. H. Goddard, Newcastle-on-Tyne, and G. Y. Wall, jun., Durham. Both educated at the Royal Agricultural College, Cirencester. The two prizes annually allowed to the students who pass the best and second best examinations in the agricultural class in the University of Edinburgh were this year awarded by Professor Wilson to 1st, Francis Moffat Hobbaue, Edinburgh; 2d, David Carswell, Rathillet, Fifeshire.

CHEMICAL DEPARTMENT.

Professor ANDERSON had observed some curious points connected with the supply of Peruvian guano, this year. It was generally under the average. Several cargoes contained masses of saline matter, and small stones and sand to the extent of five, ten, and even more per cent.—a very unusual occurrence. Several cases of very flagrant adulteration had also occurred.

VETERINARY COLLEGE.

Sir A. G. MAITLAND said, I am certain I express the feelings of every member of this great Society when I say that every one regrets the loss that the Highland Society has sustained by the death of Professor Dick. I would say further that he was the first educated person in Scotland who made the attempt to rescue from darkness and obscurity Veterinary Science; and I am sure we will take the entire public with us in our expression of regret. There was such an excellent article recently about Professor Dick in the *North British Review*, that I will not take up your time by following his career, but I may state, lest some should not have read that article, that Professor Dick came to Edinburgh, as I do. He opened the first class-room in Edinburgh in a small room in Niddry Street, but so little success had he that the first year he had only one pupil. But those who knew the character of the good professor knew that he was a man who could not be easily set aside from the path on which he had commenced his career. From Niddry Street he removed to the Caltou Convening Rooms in 1825, and thence he removed to the Hall opened in Clyde Street in 1833. The fact was, that his success had been such that year after year the first men in Edinburgh acted as examiners of his students. I am sure the Society will enter on its minutes its respect for how it has sustained by the death of Professor Dick. The next subject I would lay before you is the Bill which has been brought into Parliament by Mr Holland. The directors were this meeting to petition against the Bill, and appoint a standing committee to be named to watch over its progress in Parliament.

Mr. HOPE, Fentonbarns, explained that it appeared to him, from reading the Bill, that no one holding a veterinarian's certificate of the Highland Society could call himself a veterinary surgeon that being a distinction which was reserved for the Veterinary College in England. He did not think it was doing justice to those who held certificates of the Highland Society if they allowed the Bill to pass unopposed. He thought they should petition against it. A committee had been appointed to inquire into the propriety of obtaining a Charter for a College in Scotland, and a number of individuals in London at present endeavouring to secure that object.

The SECRETARY said that he had received a letter from Mr. Duncan M'Laren, M.P., intimating that Mr. Holland had withdrawn the Bill. He might mention that Mr. Hall Maxwell had carried on correspondence in connection with this subject, and on his suggestion, he (the secretary) had called a meeting of the directors, but all he had to produce was this letter of Mr. M'Laren's, which prevented their being able to take up the subject.

CULTIVATION BY STEAM.

The Marquis of TWEEDDALE, in submitting the report of the committee appointed to report on the progress of steam cultivation as carried on in East Lothian, said that specimens of instruments employed by the most experienced manufacturers had been in operation during last autumn and the spring of the season with the exception of one belonging to Mr. Henderson, of Longniddry, which had been working since the middle of March last. It was the intention of the directors to extend the period of observation in steam cultivation to the whole year, in order that they might have an opportunity of examining the different modes of stirring the soil, as well as the instruments that had been brought into use and had been employed since steam had been brought so much into use in agriculture. It would be one of the great objects of this committee to inform those that wished to engage in steam cultivation all the secrets necessary to be known in regard to it. They would have an opportunity of showing the expense of the engines, of the apparatus, of the tear and wear, and the number of men to work it, and all the other contingencies; as also the amount of labour that could be performed within a specified time. The following is the report:—"On the 7th of February last the directors appointed the following committee to report on the various systems of cultivating by steam;—The Marquis of Tweeddale, K.T., Chairman; Professor Macquorn Rankine, Consulting Engineer to the Society; Mr. Gibson, Woolmet, Chairman of the Machinery Committee; Mr. Slight, Curator of Machinery; Sir Thomas Buchan Hepburn, Bart.; Mr. Henry Stephens; Mr. Gray, Southfield; Mr. Mylne, Niddrie Mains. On the 19th and 20th March the committee inspected the machine in operation on the following farms in East Lothian:—Terrygate (Mr. Sadler's), Fowler's single-engine; Castle Mains (Mr. Todd's), do.; Quencuston Bank (Mr. Begbie); Fenton Barns (Mr. Hope), Howard's; Drem (Mr. Reid), Coleman's. And on the 4th of May the committee inspected Fowler's double-engine at work on Mr. Henderson's farm of Markle in the same county. A set of queries to be answered by the manufacturer and the farmer has been issued to the parties now using steam ploughs or cultivators in England, Scotland, and Ireland. Many of the farmers have already given most elaborate answers, though the returns of the schedules is not due till the 2d of July."

The committee was re-appointed.

THE PRIVY COUNCIL REGULATIONS ABOUT SHEEP.

Mr. GOODLETT called attention to the fact that by the Privy Council regulations regarding the removal of sheep, there was very serious inconvenience in the county of Forfar. No sheep could be removed within 10 miles of an infected place, and these infected places being spread at intervals all over the county of Forfar, it was impossible to remove sheep at all. He could not send his sheep to a Grass park a mile off without breaking the law. So urgent was the case that he thought the directors should be instructed by the meeting to represent to Government that the regulations should be so altered that it would be in the power of parties to move sheep from a place not infected to another place not infected, with the permission of the local authority. The present restriction was the more unreasonable, as cattle, which were chiefly subject to the disease, could be removed though within a mile of infection. The proposal that the meeting should petition to have part of the 47th section of orders struck out, prohibiting the removal of sheep within 10 miles of infection.

Mr. CAMPBELL SWINTON said there could be no doubt that the words complained of in that 47th section were allowed to remain by inadvertence. The section was intended to apply only to one district of Scotland, and was put in to prevent sheep coming back from winter quarters to the south of Scotland, without the permission of the local authorities. That had, however, been afterwards provided for by the insertion of the 49th clause, and the 47th was allowed to remain, by inadvertence.

Mr SWAN complained that, although they had now no diseased animals in the county, the regulations had been made more stringent instead of being relaxed.

ROYAL AGRICULTURAL OF IRELAND.—At the half-yearly meeting of the members of the Society, the Earl of Erne in the chair, Captain Thornhill read the half-yearly report, of which the following is an extract:—

"Since the last general meeting a special meeting of the Society was called for the purpose of considering the necessity of establishing a cattle insurance company, to encourage the owners of cattle dying by the cattle plague, or being killed to stamp out the disease, should it unfortunately visit this country. In pursuance of the notice issued, the meeting took place, but owing to the subject having been discussed in Parliament in the interval of the 14 days' notice, which according to the 5th rule should be given, the meeting, according to your 21st rule, was debarred considering the subject.

"In consequence of alleged cases of rinderpest having manifested themselves at Dromara, in the county of Down, towards the end of April, the cattle plague committee of your Council was called together on the 16th May instant, and adopted certain resolutions calling upon the executive to direct that Drs. Kelly and Foot might be associated with Professor Ferguson, for the purpose of making a *post mortem* examination of any animals that might subsequently be attacked.

"Annexed is the report of the analyses made by Professor Apjohn for the members of your Society for the last 12 months.

"*Report of Professor Apjohn, Chemist to the Society.*

"During the half-year ending with January, 1866, I find that 19 analyses were completed and reported upon. The subject of one of these was a good Peruvian guano; six were damaged guanos; three were superphosphates; three were manures of a saline nature; three were linseed cakes; one a sample of kelp; one an Indian corn; and one a water plant which has been brought to this country from Canada, and which has manifested in some districts to such a degree as to prove a considerable nuisance.

"The damaged guanos were originally of good quality, but had their respective values considerably reduced by contact with water.

"The Linseed cakes were also good, and the same may be said of the superphosphates, which had an average money value of about 9*l.* 2*s.* per ton.

"The chemical work done in my laboratory for the Society is always less from July to January than from January to July; but I may observe that it augments from year to year, and that its increase has been unusually great since January last; in fact, so considerable, that should it continue I fear it will be scarcely possible for me to perform, under the existing arrangement, the work which I have undertaken for the Society. Since February last I have made 14 analyses for one member of the Society, and for a second eight.

"In the reports which I make of the results of my experiments I am in the habit of giving, not only the per-centage composition of the matters analysed, but also their money value, and this latter information is, I believe, very acceptable to some members of the Society. It is right, however, it should be known that the values of the proximate constituents of manures, though subject to variation, are treated by me as constants, and that, therefore, the money values which I give are not always absolutely correct. Notwithstanding this drawback, they give with exactness the relative values, and show with precision how much one variety of manure may be considered to exceed or fall short of another in fertilising influence. To correct in every instance the constants used, according to the prices of the day, would be nearly impracticable, and, I may add, unnecessary for putting the farmer in possession of such information as would enable him to understand the real value of the manures which he may desire to purchase.—I am, dear sir, faithfully yours,

"JAMES APJOHN."

Mr. ROYSE said he thought that it was a matter for consideration whether an exhibition for horses, sheep, implements, and pigs, should not be held early in the month of September, on the same principle as the horse show was held by the Royal Dublin Society. By doing so it would afford a great many members who usually supported them in holding their shows an opportunity of exhibiting and purchasing. He, therefore, thought the Society should suggest to the Council to take the matter into their consideration.

Mr. PHIPPERSON H. in seconding the motion, said he knew from his own experience that once they allowed the excitement to cease, for however short a time, they would find their subscriptions rapidly diminishing. No danger could be apprehended of bringing the rinderpest into the country when they excluded bovine animals from the show.

After prolonged discussion the report was adopted unanimously.

Mr. BLAND, Q.C., said if the Royal Agricultural Society lay dormant in 1866, when the Government had withdrawn its grant to the Royal Dublin Society for agricultural purposes, the existence of that Society would not be endangered; and, therefore, he would suggest to the Council the necessity of giving increased encouragement to local societies, by granting larger sums for the growth of better corn and Mangu crops. He would move the adoption of the following resolution:—

"That inasmuch as no cattle show, under the auspices of the Royal Agricultural Society, is to be held in the year 1866, that the incoming Council should take into their consideration the propriety of giving increased encouragement to the growth of green crops in Ireland, so far as the funds of the Society may be available, leaving the mode and manner of such encouragement to the incoming Council, either through the influence of local societies or otherwise."

Mr. WADE, in order to remove any erroneous impressions, desired to state that the sum they would have on hands this year, by not holding a show, would be little more than 300*l.*, and, therefore, it should not be supposed by the public in general that all the funds expended on the large agricultural shows which they held, amounting to 2000*l.* or 3000*l.*, were saved by not holding the show. The gross sum they saved by not holding the show this year was 350*l.*

The resolution was put to the meeting, and on a division being taken, was carried by a considerable majority.

Lord CROFTON said the expenses that might accrue from inspection of the green crops might be obviated very much by means of the local societies.

BATH AND WEST OF ENGLAND.—The following is the annual report of the Council to the General Meeting:—

The Council have the gratification to report a considerable accession of new members since the last annual meeting. There are now upon the list 66 governors, 58 life members, and 984 members—total, 1141; being an increase of 68 new members, allowance being made for deaths and resignations. The financial statement, made up to 31st December last, has been printed and circulated among the members. The Society's funds (property remains the same as last year, namely 923*l.* 7*s.* Consols. The value of the plant, after making allowance for depreciation, is 289*l.* 3*s.* 11*d.*, and there is an increase in the balance of 51*l.* 2*s.* 4*d.* As emergencies seriously affecting the Society's funds may occasionally arise, it is obviously important to maintain an ample reserve fund, and this object can be most effectually attained by a systematic endeavour to increase the number of life and annual members. The district comprised within the sphere of the Society's operations has not been altogether free from that terrible scourge the cattle plague, but as compared with other parts of England there has not been many cases. As early as August last the Council appointed a committee to collect and disseminate information on the subject. A circular inviting attention to the importance of establishing Mutual Cattle Protection Associations within a prescribed area was sent to all the chairmen and clerks of Boards of Guardians in the counties of Devon, Somerset, Cornwall, Dorset, Wilts, and Gloucester. Handbills containing suggestions to stock-owners were at the same time distributed, and every effort was made to rouse the attention of the public to a question so vital importance to producers and consumers. The Council have the satisfaction to know that the steps thus taken by the Society were approved by the Government. The Council, prior to the meeting of Parliament, addressed a memorial to the Lords of the Privy Council on the desirability of regulating the traffic of cattle and the temporary suspension of fairs and markets. Similar representations were addressed to the Lord Lieutenants of the several counties, and it is believed that much good was thereby effected. As a practical corollary to this recommendation, the Council had to determine whether the meeting announced to be held at Salisbury in 1866 should be altogether abandoned or limited to an exhibition of horses, poultry, agricultural implements, works of art, and horticultural specimens. After an interchange of communication between the Council and the Salisbury Local Committee, the latter alternative was adopted, and the Council refer with pride and satisfaction to the remarkable display of agricultural implements, quite unparalleled at any former meeting of this Society. The show of horses, though not so large as anticipated, considering the amount of the prize money offered in regard to the classes for agricultural purposes, is superior to that of any former exhibition, and but for a misunderstanding as to the time for closing the entries, the class of thorough-bred stallions would have been larger and more complete. The Poultry Show is one of great excellence, an interesting feature being the exhibition of a number of birds of a peculiar French breed, suitable for farm purposes. In the arts exhibition a decided improvement is perceptible. The horticultural tent is well filled with plants and flowers. Among the examples of Honiton lace, there are several of great excellence. It will be for the annual meeting to determine where the meeting for 1867 shall be held. During the year the offices of secretary, so long and so ably filled by Mr. Henry H. John Mudle, have been discharged by him in consequence of the increasing magnitude of the Society's operations. In recognition of his services the Council have conferred upon him the distinction of honorary secretary, and recommend that he be elected an honorary life member of the Society. The complimentary duties of secretary and librarian are now this charged by Mr. Josiah Goodwin. Mr. Sydney Hodges having resigned his appointment as curator of the arts department, a redistribution of the duties performed by the steward has taken place. Mr. R. R. M. Daw, as hon. secretary, will continue to give such valuable aid to the department that the office of curator has been abolished. To the Right Rev. the Lord Bishop of Salisbury, the Worshipful the Mayor, the members of the local committee, and the hon. local secretary (Mr. C. M. Lee), the Council desire to return their best thanks for the valuable aid which they have received the Society. The Council further desire to express their best thanks to the directors and principal officers of the railway companies that have afforded facilities of transit in connection with the Salisbury meeting. The Council recommend that the Right Hon. Thomas Henry Sutton be requested to accept the office of president for the ensuing year. The Council recommend that the Right Hon. Lord Portman and Lord Paget, M.P., of Cranmore Hall, in the county of Somerset, be elected vice presidents, and that to supply the vacancies occurring in the Council through the retirement by rotation of the following members, viz.:—For the Eastern Division—Clement Bush, Weston, Bath; J. H. Cotterell, Bath; T. Danger, Huntshall, Bridgwater; T. Duckham, Baysham Court, Ross; John Gray, Kingweston, Somerset; Graham Hall, Bath; James Hole, Knowle, Dunston; J. L. Knollys, Pitchard Court, Taunton; Gabriel Stone, Poole, Brent Knowle, West-super-Mare; H. Robertson, Over Stowey, Bridgwater; Herbert William, Stinsford, Dorchester; and J. Webb King, West Everley, Marlborough. For the Western Division—Robert Brent, M.D., Woodbury, Exeter; John Tanner Davey, Rose Ash, Southmolton; John Daw, Exeter; R. R. M. Daw, Exeter; John Fry, Woodgate, Wellington, Somerset; Charles Gordon, Wiscombe Park, Honiton; W. R. Hicks, Westheath, Colmin; George Langdon, Ashford, Barnstaple; Robert May, Rewe, Exeter; John W. Sillifant, The Cottage, Ottery St. Mary. Without reference to districts—James Hole, Knowle, Dunstan; J. E. Knollys, Fitzhead Court, Taunton; E. U. Vidal, Cornborough, Bideford; Edward Bridges, Willyams, Nanskivel, St. Columb.

[It was resolved that the General Meeting for 1867 be held at Salisbury.]

Farm Memoranda.

WEST SUSSEX: *June 4.*—Perhaps there are few that can remember such a backward, unpromising season as this. There is at present no appearance of one-third of a meadow-hay crop. We have not had much live stock to feed the meadows, and expected to make a good deal of hay, and so have it cheap and plentiful, but such will not be the case, and we are not likely to have straw as a substitute, for that can hardly be half a crop; the Wheat is now coming in ear, and is short and wiry, and whatever the weather may be, we shall not get more than half our usual bulk, most likely less. Oats and Barley are so backward that no idea can well be formed of what they will be, but the prospect is very bad at present.

Altogether the present appearance of the crops on all the low coast land is bad in the extreme. It is not quite so unpromising on the chalk, but there it is not up to the mark. The cause is no doubt the cold nights, with so prevalent east winds. We have had little rain for the past month, and the drying winds have left little moisture in the land. The past winter was so wet that the supply of straw was more than usually reduced, and it will next winter be scarce and dear.

Peas look pretty well, and Potatoes, though backward, look healthy, and all crops are comparatively clean. Work is well advanced; Mangel is mostly up, and there are some Swedes sown.

We have been free from the cattle plague for a long time, and as great care is taken to prevent the removal of cattle without due inquiry, it is to be hoped that it will not find its way here again. Our market is not open to cattle, but is fairly supplied with sheep, lambs, and pigs; mutton has lately come down in value, and lean sheep and pigs are very dear.

Clover cutting will soon begin, and there will be a good deal done with the machines, as hands are getting much scarcer, and unfortunately the crops are short, and well adapted for machine-cutting. Regular wages hereabout are 12*s.* for labourers, and 14*s.* for carters and shepherds. *G. S.*

Miscellaneous.

Cottages.—At a recent meeting of the Royal Dublin Society, Dr. Mapother read a paper on this subject, concluding thus:—"I will sum up in a very few words what I hope for as necessary to improve the dwellings of the poor, and thereby raise immensely the standard of public health—1st. The constitution of a central controlling authority for local government and sanitary improvement. 2d. The enactment of a comprehensive building code; the passing of local acts, being expensive, is often avoided. 3d. That our sanitary laws should be compulsory in case of flagrant neglect; the permission to act is now very generally construed as permission not to act. 4th. A generally diffused desire on the part of employers and landowners to provide for the healthful wants of their dependents, and they will grow according as our nation prospers, and according as the masses are educated in the knowledge of the laws which regulate the well-being of their own bodies. That the subject I have thus so imperfectly submitted to you is closely connected with our prosperity cannot be more forcibly expressed than in the words of the Devon Commissioners, which are painted in large letters over the entrance of our Agricultural Museum —'While the dwellings of the general body of the people are surrounded by the elements of disease, and are damp, cold, dirty, and comfortless within, so long will the country be destitute of even the semblance of general prosperity.'"

Calendar of Operations.

JUNE: *The Turnip Fly.* In the month of June the earlier sown Turnips will be brairding, and liable to all those evils which it suffers in that stage of its growth. The chief one of all is the attack of the Turnip fly, and there are various ways proposed as a remedy. Perhaps the most satisfactory method of meeting the case is that described by Mr. Fisher Hobbs a few years ago before the Royal Agricultural Society of England. He said:—

"I have no new theory to expound, but would only describe the result of my practice, and the policy of carrying out certain principles which have long been known and admitted, but not sufficiently observed. My remarks on the cultivation of the crop are intended to apply more to the Swede Turnip than to any other varieties which are generally grown after green crops, but the great work of destruction by the fly is applicable alike to both. As 'prevention is better than cure,' I shall commence with the preparation of the land, assuming that this has been thoroughly underdrained wherever requisite. 1st. I consider that autumnal cultivation is essentially necessary by broad-sharing for the destruction of weeds and insects, as well as for the aeration of the soil. 2d. Deep ploughing should follow, and subsoiling if required, and it is frequently my practice during the early part of winter to carry on to the land intended for a root crop the unfermented manure direct from the yards or sheds, and at once plough it in; but not a particle must be suffered to be seen on the surface; this I believe to be important, for if not attended to, the undecayed portion of the manure becomes a receptacle, and subsequently a nursery for insects. 3d. At the commencement of spring it is most desirable, as soon as the state of the land will permit, to apply the harrows and roller, especially the former. I believe that more good may be done towards the destruction of insects of various kinds at that period than at any other throughout the year. Afterwards scarify, harrow, and roll until the land is in a pulverised state, and for a fortnight or three weeks before the time for drilling let the land remain like a seed bed, so as to attract moisture, to allow vegetation for the seeds of weeds and for insects to deposit their larvæ; this is frequently termed 'purging' the land. I need not refer to the common mode of applying the fermented or partly rotted farm-yard manure for the Turnip crop, except to state that it ought at once to be ploughed in, and the seed deposited immediately. 4th. At the time of drilling the seed it is best for the land to be ploughed (but some prefer scarifying only), and the seed to be immediately deposited. This is so important that I have frequently known total failures from the neglect of so doing. There is another point which I would strongly recommend, viz., in dry and sunny weather to plough and sow early in the morning and late in the afternoon, but never during the heat of the day. I know an instance where the most signal success has for several years attended this mode of operation, and where the manager has never failed to secure a plant, although he is one of the old school, and still sows the seed broadcast with his own hand. This can be confirmed by several large farmers in the neighbourhood, who, strange to say, notwithstanding the example thus placed before them, continue to incur an amount of loss from having to sow two or three times, simply from the obstinacy and prejudice with which they continue to adhere to the customary working hours for their horses and men. 5th. At the time of depositing the seed it is my invariable practice to use some description of artificial manure, generally superphosphate of lime, and I likewise add about 30 bushels per acre, made from hedge trimmings, weeds, &c., collected upon the land at different periods throughout the year. The roller may now be used with great advantage, before, and sometimes after the drilling. In dry weather I strongly recommend the application of the liquid manure drill. 6th. Before or immediately the young plants appear, the horse hoe should be resorted to for the purpose of destroying the ova or larvæ of the insects to prevent their coming to maturity. When once the plant is well up, the roller may sometimes be applied with much benefit, as it tends still further to disturb the insect tribe, as well as to retain moisture for the young plant, and to consolidate the farm-yard manure where lately applied. At this period the plant requires frequent watching throughout the day, and if the enemy shows itself in any force set to work quickly to accomplish its annihilation.

"Having described to you briefly my mode of prevention, I will now proceed to give you the cure, which is simply by the application of one or more 'top-dressings.' I have tried various experiments, steeping the seed, and top-dressings for upwards of 30 years; but

though sometimes successful, I could not depend on any of them until I adopted my present system; and I think it is only fair that I should state that I derived the chief features as to the use of this top-dressing from my late bailiff, Mr. O. Hawkins, who came to me some nine years since with an especial recommendation on this point; in fact, he himself engaged to secure the Turnip plant from the ravages of the fly; adding, that he was willing to give up his situation immediately if he could not do so. I can only add, that for eight years, during the whole time he was with me, he fulfilled all he promised in this respect. The following is Mr. Hawkins' recipe for a top-dressing:—One bushel of white gas-ashes, fresh from the gas-house, one bushel of fresh lime from the kiln, 6 lb. of sulphur, and 10 lb. of soot, well mixed together and got to as fine a powder as possible, so that it may adhere to the young plant. The above is sufficient for two acres when drilled at 27 inches. It should be applied very early in the morning, when the dew is on the leaf—a broadcast machine being the most expeditious mode of distributing it, or it may be sprinkled with the hand carefully over the rows. If the fly continue troublesome, the process should be repeated; by this means 200 or 220 acres of Turnips, Swedes, and Rape have been grown on my farms annually for eight or nine years without a rod of ground losing plants. The above is a strong dressing to be used when the fly is very numerous, and has never failed when applied at night. Numerous experiments have been tried, and amongst them I recommend the following in ordinary cases, and intend to use it during the present season if necessary:—14 lb. of sulphur, 1 bushel of fresh lime, and 2 bushels of road scrapings per acre, mixed together for a few days before it is used, and applied at night, either by means of a small drill, or strewed along the rows by hand. I have known sulphur mixed with water applied in a liquid state by means of water-carts during the night, and the horse hoe immediately following the water-cart. This has succeeded admirably. In consequence of the dryness of the climate in my neighbourhood (the rainfall being on the average only about 16 inches annually), I usually sow on the flat; but the dressings above-named are equally applicable to crops sown on the ridge. I would strongly impress the necessity of frequently applying the horse hoe. I am induced, from the results of my experience, to conclude that by care and attention the Turnip plant may be as effectually and as certainly freed from the ravages of the fly as seed Wheat has been for upwards of the last 20 years from smut and other destructive Fungi."

Notices to Correspondents.

OATS: *C. S.* Thirty-eight pounds a bushel indicates a very poor and chaffy sample. Oats will generally weigh 41 lbs. or 42 lbs. a bushel; and a very good sample will weigh 44 lbs. or 47 lbs. The so-called Canadian Oats sometimes weigh 46 lbs. to 48 lbs.

MILK: *J. Mackenzie, M.D.* Milk drawn when cows are cool and quiet will keep sweet at least 24 hours after milking, "in an average description of milkhouse, well ventilated, and with a window to the north, and with every care as to cleanliness." If, under these circumstances, it is very frequently acid in 18 or 20 hours, it must be because the cows were heated or driven, or milked when not in mid-day.

THE HOP FLY: *A Hop Grower* says, "In looking over some back numbers of your Gazette, I find several articles on Hop blights. Can any of your correspondents name or supply a remedy for preventing, or if not preventing, for killing the Hop flea and Hop fly when they do come, if they can, they will benefit a large class of industrious cultivators."

WHEAT AS FOOD FOR STOCK: *Old Subscriber.* In reply to your inquiry, we extract from p. 1021, from volume for 1864, the following account of Mr. Frere's experience:—"I boil daily a large copper full of Wheat, mix it with cut Barley straw; let the mixture stand a few hours, then add nearly an equal quantity of Wheat or Barley as meal, and serve it out to my sheep, young an old, to my cows, and cattle of all ages. The stock receive a very few pounds of Turnip or Cabbage in addition, and a little Cotton-cake, but are now no Linseed-cake on the farm. About 10 gallons of water are required to each bushel of Wheat. The mixture, which must be stirred, takes about one hour before it boils, and is left boiling slowly for about half an hour more, till all the grains are burst. The gravy, i. e., the water not absorbed by the Wheat, is poured over the chaff heap, and gives it in some measure the warmth and fragrance of steamed food. The meal added afterwards adheres to the wet chaff and takes up the superfluous moisture. I will specify the food given to the hoggets, because practical men may have a special misgiving as to its fitness for young sheep. This lot, 240 head, has daily 1 bushel of boiled Wheat and 64 lb. of meal, half Wheat, half Barley. With this, even in the warmest days of September, they ate 6 sacks, or about 1¼ cwt. of cut straw. They have also 56 lb. of Cotton-cake, and 15 bushels of hard early-sown white Turnips, besides running for one or two hours over a bare Clover lea. When they lose this run they will have a few more roots—say 5 to 10 bushels. They have been on this food nearly a month, and the shepherd considers they are doing better than when they had Linseed-cake, and therefore asked to have boiled Wheat instead of cake for his ewes. The cost is less than for Linseed-cake.

The Wheat (or its equivalent in Barley) at 4*s.* 6*d.* per bushel costs per week £3 3 0
The Cotton-cake 1 1 0
£4 4 0

Or about 4*d.* per head per week.

As to the Barley chaff, I cut with Maynard's chaff-cutter at least 8 tons per day; allowing 28*s.* for the steam engine, cutter, and two men (the letting price), 14*s.* for labour, and 6*s.* for coals and water, the cutting costs 1*s.* per ton, or about 3½*d.* per cwt. When the ewes and wether hoggets are parted, the latter will probably have an increase of corn. These (Downs) are expected to be ripe for the butcher, and to weigh 10 stone, as soon as they are shorn. These hoggets were all in good condition, and had without any drawback picked up all the Barley on the stubbles before they were put on to this diet. There is of course a right and a wrong way of bringing them to it, which, if the farmer cannot discern for himself, he can hardly be taught. The ewes (300) have boiled Wheat and straw chaff, without the addition of meal. The bullocks get 2 stone of boiled Wheat, 2 stones of Wheat or Barley meal, and 2 stone of Cotton-cake per head per week, costing together 5*s.* 6*d.* The milch cows in full profit have 3 stones of boiled Wheat and meal, and 1½ stone of Cotton-cake. The young stock have similar food. The pigs also have boiled Wheat and meal."

THE HYDROPULT,

An Invention for Throwing Water by Hand Power.
(SECURED BY ROYAL LETTERS PATENT).

PRICE LIST.

	£	*s.*	*d.*
COMPLETE WITH BRASS CYLINDERS AND JAPANNED STIRRUP	1	12	6
COMPLETE WITH BRASS CYLINDERS AND COPPER STIRRUP	2	2	0

The Price "Complete" as above, includes 2¼ feet Suction and 3 feet Delivery Hose, Galvanised Wire Strainer, Rose and Small Jet.

THE HYDROPULT
is invaluable for use in the
GARDEN for
WATERING BEDS,
SPRINKLING PLANTS,
DROWNING OUT INSECTS,
CLEANSING TREES FROM SMUTS,
DRESSING WITH LIQUID MANURE,
&c. &c.

CAUTION.

IMPORTANT TO THE PUBLIC.—The extensive sale of the Hydropult has excited the cupidity of a so-called respectable, but in reality unprincipled Manufacturers, who are now palming on the Public worthless imitations of the Hydropult, and through their connections are enabled to place said devices on exhibition, and for sale, in many of the principal Ironmongery and Seed Establishments throughout the city and provinces. Those devices resemble in many respects the Hydropult in appearance, and are calculated to deceive the unsuspecting. The Proprietor therefore issues this Caution, and respectfully intimates that parties wishing to purchase the Hydropult should examine the machine offered for sale, and see if it has attached thereto a label, with the following words:—"The Hydropult, Vose's Patent, manufactured only by GRIFFITHS & BROWITT, Birmingham. CHARLES POMEROY BUTTON, Proprietor, 142 and 143, Cheapside, London." Unless this label is attached, the Machine is not the Hydropult.

Prospectuses, with Testimonials, on application.

HYDROPULT SHOW ROOM, 142 & 143, CHEAPSIDE, LONDON.

IMPERIAL BUTTER COOLER.

SECURED BY ROYAL LETTERS PATENT.

USEFUL, ORNAMENTAL, UNIQUE.

The novelty and utility of this Invention consists in a Revolving Cover, so constructed that by turning the knob on either side of the Basin, it can be covered or uncovered instantly; the lid disappearing into a receptacle or false bottom, thus not only having the lid ready for instant use, but obviating the necessity of its removal from the table. The Butter Cooler can be used for a Sugar Basin.

Price, in white metal, electro-plated, £2 2*s.*

CHARLES POMEROY BUTTON,
142 and 143, Cheapside, London, E.C.

Notice of Removal.

MESSRS. CROGGON AND CO., PATENT FELT MANUFACTURERS, &c., have REMOVED their LONDON BUSINESS from 2, Dowgate Hill to more extensive Premises, being { 63, New Earl Street, } Cannon Street West,
{ 34, Bread Street, } London, E.C.

SWING WATER BARROW.—This is the best and cheapest article yet introduced for use in Gardens, Farm Yards, &c. The Water may be dipped out, or the Tub tilted and poured out, or by merely raising the Handle it can be placed on the ground, and the Frame detached. To hold about 20 or 30 gallons, price 42*s.* Carriage paid to any station on Great Eastern Line.

POWERFUL GARDEN ENGINE, suitable for the above, price 45*s.*
IMPROVED WATER and LIQUID MANURE CARTS.
Catalogues on application.
Manufactured by W. S. BOULTON, Rose Lane Iron Works, Norwich.

NETTING for FRUIT TREES, SEED BEDS, RIPE STRAWBERRIES, &c.—TANNED NETTING, for protecting the above from Frost, Blight, Birds, &c., 2 yards wide, 3*d.* per yard, or 100 yards, 20*s.*; 4 yards wide, 4½*d.* per yard, or 30 yards 20*s.* NEW TANNED NETTING, suited for any of the above purposes, or as a Fence for Fowls, 2 yards wide, 6*d.* per yard; 4 yards wide, 1*s.* per yard; 1-inch mesh, 4 yards wide, 1*s.* 6*d.* per yard.
Can be had in any quantity of EATON & DELLER, 6 and 7, Crooked Lane, London Bridge, E.C.

Garden Netting.

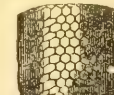
JOHN EDGINGTON AND CO. supply GARDEN NETTING at 1½*d.* per square yard. 200 yards and upwards carriage free. COTTON NETTING and SCRIM CANVAS of every description. TULIP COVERS and GREENHOUSE SHADES, SUN BLINDS, &c. MARQUEES, TENTS, and FLAGS, for Fêtes, Flower Shows, &c.
JOHN EDGINGTON & Co., 48, Long Lane, Smithfield, E.C.; and 18, Piccadilly, W.

TANNED GARDEN NETTING for preserving Seed Beds, Fruits, Strawberries, from Frost, Blight, Birds, &c., and as a Fence for Fowls, &c. 1 yard wide, 1½*d.*; 2 yards, 3*d.*; 3 yards, 4½*d.*; and 4 yards, 6*d.* per yard run in any quantity, may be had at CHAS. WRIGHT'S, 376, Strand, W.C.
VARNISHED FLOWER STICKS:—1 foot, 3*d.*; 1½, 4*d.*; 2, 5*d.*; 2½, 6*d.*; 3, 10*d.*; 4, 1*s.* 6*d.* per dozen. DAHLIA do., per dozen:—3 ft., 1*s.* 6*d.*; 4, 2*s.*; 5, 3*s.*; 6, 3*s.* 6*d.* An allowance to Nurserymen.

150,000 YARDS of GARDEN NETTING in Stock, 1½*d.* per square yard, Carriage Free in quantities of 250, 500, or 1000 yards. F. E. & Co. are the only large holders of Netting in England, which enables them to execute orders to any extent on the day received. By particular—
FRANCIS EDGINGTON & CO., Marquee, Tent, Rick-cloth, and Flag Manufacturers, Thomas Street, Old Kent Road, London, S.E.

W. S. UNDERHILL'S NEW PATENT IRON FENCE for GARDENS, LAWNS, &c.
Manufactory: Newport, Salop.
Warranted the strongest and most durable Fence ever offered at corresponding prices. It is easily repaired if broken from accidents, can be rolled up most compactly when not in use, is admirably adapted for exportation, and can be had of any height and mesh required, at prices from 4*d.* to 1*s.* 6*d.* per yard and upwards.
For further particulars apply at the Manufactory; or of the London Agent, Mr. R. WINDER, 18, Abingdon Street, Westminster, S.W.

GALVANISED WIRE NETTING.



PRICES of NETTING, 24 INCHES HIGH.

Size of Mesh.	Proof against	Light, per Yard.	Medium, per Yard.	Strong, per Yard.	Extra strong per Yard.
2½ inch	Hares, Dogs, Poultry, &c.	3½*d.*	4½*d.*	5½*d.*	6½*d.*
2 inch	All kinds of Game ..	3½*d.*	4½*d.*	5½*d.*	7*d.*
1½ inch	Small Rabbits, Hares, &c.	4½*d.*	5½*d.*	6½*d.*	9*d.*
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100 Yards and upwards Carriage Free.
GALVANISED IRON WATER CISTERNS.
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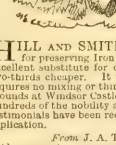
LAWN MOWERS, GARDEN ROLLERS.
ASPHALTE ROOFING FELT, 1*d.* per square foot.
HURDLES, HURDLES, HURDLES, 1*s.* 9*d.* to 3*s.* 9*d.* per yard.
MOZELEY & GREEN.
Illustrated Catalogues and Estimates free on application.
12, Great George Street, Leeds.

Oil Paint no longer Necessary.



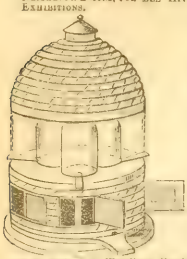
HILL AND SMITH'S PATENT BLACK VARNISH for preserving Iron Work, Wood, or Stone. This Varnish is an excellent substitute for oil paint on all out-door work, and is fully two-thirds cheaper. It may be applied by an ordinary labourer, requires no mixing or thinning, and is used cold. It is used in the grounds at Windsor Castle, Kew Gardens, and at the seats of many hundreds of the nobility and gentry, from whom the most flattering testimonials have been received, which HILL & SMITH will forward on application.

From J. A. TAYLOR, Esq., *Streatham Court.*
"In answer to your inquiries, I beg to inform you I find your Black Varnish an excellent substitute for oil paint upon iron and wood out of doors, and have found the iron Harrow with apparatus essential in applying the Varnish to lines of fencing. I can strongly recommend the Black Varnish for all out-door work as superior to anything I have yet used for the purpose, and it can be applied with great economy by careful labourers."

Sold in casks of about 30 gallons each, at 1*s.* 6*d.* per gallon, at the Manufactory, or 1*s.* 8*d.* per gallon paid to any Station in the kingdom.
Apply to HILL & SMITH, Brierly Hill Iron Works, near Dudley, and 22, Cannon Street West, E.C., from whom only it can be obtained.

Bee Hives.

PRIZE MEDAL AND HONOURABLE MENTION AWARDED TO GEORGE NEIGHBOUR & SONS, FOR BEE HIVES AND HONEY AT THE VARIOUS EXHIBITIONS.



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Price complete ... £1 1 0
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THE LIGURIAN or ITALIAN ALP BEE being much in repute at the present time, we are in a position to supply Stocks of the pure bee, carefully packed in Woodbury Bar-frame Hives, so as to travel with comparatively no risk of damage.

ENGLISH BEES.—Stocks and Swarms may be obtained as heretofore.

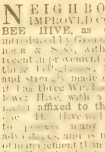
A newly-arranged CATALOGUE of other Improved Hives, with Drawings and Prices, sent on receipt of One Stamp.

Address, GEO. NEIGHBOUR & SONS, 127, High Holborn, W.C., or 149, Regent Street, W. (close to Argyll Street), London, W.

AGENTS.—Liverpool: James Cuthbert, 14, Clayton Square; Manchester: J. Webster, 20, King Street; Birmingham: J. H. Cottrell, 15, Bull Ring. Dublin: Edmeston, Eustace, 10, Dame Street. Glasgow: Austin & McAssan, 16, Buchanan Street.

RICK CLOTHS, New and Second-hand, with Poles, Pulleys, &c., complete.

A Price List post free on application.



A Show Pavilion Erection to be had, 2, Duke Street, London Bridge, E.C. No order, Exhibition.

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JOSEPH SMITH ... Road, Huddersfield, W. Yorks, ... to the several ... solicited to GREENHOUSES, ... and Yellow Deal, and ...

PLAN ... £4
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Also Lately ... Deal, Hothouse, ... £14; ... Excellent ... by ... £4

MELON FRAMES ... Improved Iron Sashes, with ... Illustrations ...

Estimates for Heating, Greenhouses, ... Boilers, Apparatus, &c.

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For samples and prices apply to
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Portable Engines.

CLAYTON, SHUTTLEWORTH, AND CO. beg to announce that they have made a considerable REDUCTION in the PRICE of their PORTABLE STEAM ENGINES.

Revised Catalogues will be sent on application to CLAYTON, SHUTTLEWORTH, & Co., Lincoln; or 78, Lombard Street, London, E.C.

AGRICULTURAL IMPLEMENTS.—Steam Engines, Threshing Machines, Pumps, Carts, Ploughs, Harrows, Reaping Machines, Garden Engines, Lawn Mowers, Garden Rollers, Cobbles, Rabbit Tools, &c. Improved Wire Netting. Delivered carriage free. Price Lists per post.

BURGESS & KEY, 95, Newgate Street, London, E.C.
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FOWLER'S PATENT STEAM PLOUGH and CULTIVATOR may be seen at Work in every Agricultural County in England. For particulars apply to JOHN FOWLER & Co., 28, Cornhill, London, E.C.; and Steam Plough Works, Leeds.

FOR SALE, a 12-horse set of FOWLER'S PATENT STEAM PLOUGHING MACHINERY complete, including 8-horse Steam Engine, 4-Furrow Patent Balance Plough, and Patent Balance Scuffler, with all the requisite working parts complete. The above is nearly new. For price apply to WELLS, HASTAM, & STEVENS, Engineers, Basingstoke.

THE IMPROVED LEATHER DRIVING STRAPS for MACHINERY are stronger, more durable, drive better, and are less than other kinds of Driving Straps. SPECIAL STRAPS for PORTABLE ENGINES. Price Lists free by post.

TURNER'S Patent Strap and Hose Company.
Manufactory: Atmit Works, Greenfield, near Manchester.
Warehouse: 31, Mark Lane, London, E.C.
MR. H. FERRABEE, Agent.

JOHN WARNER & SONS, LONDON, MANUFACTURERS.

J. WARNER AND SONS

Have much improved the construction of their

GARDEN ENGINES

in some important particulars for this Season.

They may be obtained of the Trade generally throughout the Kingdom at the following prices:—

No. 547. WARNER'S best ENGINES, in Wood Tubs, and fitted with WARNER'S Registered Spreaders—

21 Gallons.	£6	10	0
14 ,,	5	10	0

No. 547A. WARNER'S strong ENGINES, in Galvanised Iron Tubs, well painted—

10 Gallons,	£2	19	0
16 ,,	3	14	0
24 ,,	4	19	0
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No. 579½. WARNER'S WATER BARROWS, thoroughly Galvanised and well painted—

20 Gallons,	£2	2	0
30 ,,	2	13	0
38 ,,	3	17	0
50 ,,	5	12	0

The 50-Gallon Barrow is made extra strong throughout, and fitted with handle for two men.

No. 568½, AMERICAN ENGINE, is now well known and appreciated. It throws a continuous stream, and is complete in itself. £2 2s.

SYRINGES in great variety, from 7s. 6d. to 18s. 6d.

The DISC SYRINGE, No. 557A, will recommend itself by the ease with which it is filled, and non-liability to get out of order. Price 9s.

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WARNER'S AQUAJECT

Is recommended to the notice of Horticulturists as possessing the following advantages:—It is simple in construction, portable, and easily worked. It throws a continuous stream, and is low in price.

The Aquaject, 30s.

Ditto small size, 18s.

WARNER'S 6-Gallon GARDEN ENGINE, of Galvanised Iron and well painted, fitted with Brass Air-vessel, Branch Pipe, and WARNER'S Registered Spreader, 60s. Light, portable, and easily worked by a lady or child.

No. 35. WARNER'S IRON PUMPS for Wells, not exceeding 25 feet in depth—2½-in., 28s. 6d.; 3-in., 41s.; 3½-in., 46s.; short barrel do., 21s.

No. 36. IRON FORCE PUMPS for raising water above their level, or Watering Yards, Gardens, &c., through hose—2½-in., 59s.; 3-in., 65s.; 3½-in., 77s.; 4-in., 89s.

No. 36½. FORCE PUMP on BARROW, recommended for its great portability and simplicity of construction. £5 10s.

No. 42. WARNER'S PORTABLE PUMPS on Folding Legs, are of a superior construction.

Price 55s.; Rubber Suction, 2s. 1½d. per ft.

No. 597A. BRANCH PIPES with Cocks and Rose—½-in., 3s.; ¾-in., 4s.; 1-in., 5s.

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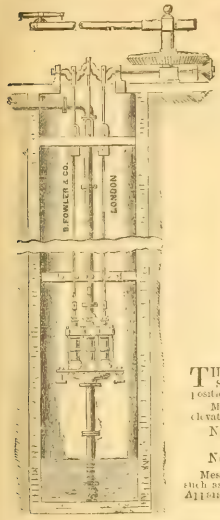
RUBBER HOSE in all sizes.

FOUNTAIN JETS in great variety, from 3s. 6d. to 25s.



37.

CLINTON & OWENS

(LATE BENJAMIN FOWLER & CO.)

MANUFACTURERS OF

PUMPS AND HYDRAULIC MACHINERY,

WHITEFRIARS STREET, FLEET STREET, LONDON, E.C.

THE LANDSCAPE SKETCH shows an adaptation of THE IMPROVED HYDRAULIC RAM. This is a simple Self-acting Machine, suited for raising a Supply of Water for use in Public and Private Establishments. Its adoption is not confined to positions as shown, but it is suited for any situation where a Fall can be obtained from a Stream, Brook, or Spring.

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No. 37. IMPROVED TREBLE BARREL PUMPS with HORSE GEARING for Raising Water from DEEP WELLS for the supply of MANSIONS and PUBLIC BUILDINGS.

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Messrs. Clinton & Owens Manufacture and Erect every description of Engineer's Work required in Public or Private Establishments such as Pumps for any purpose on the largest or smallest scale, Steam Engines, Water Wheels, Turbines, Warming and Drying Apparatus, Lifts, Gas Works and Fittings. Estimates furnished from Plans or on inspection of position.

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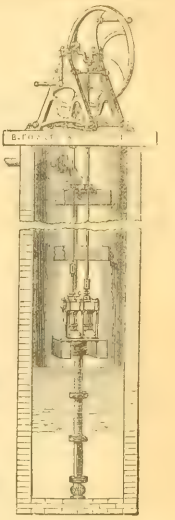

28*a*.

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IMPROVED RAKES, with Side Levers and Steel Teeth, to Rake 7 feet, £7; or 8 feet, £8.

PATENT BALANCE RAKE, with Steel Teeth; Driver Rides; to Rake 7½ feet, £9.

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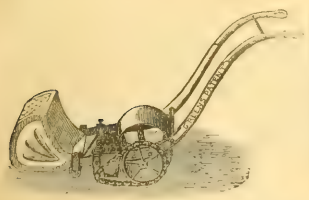

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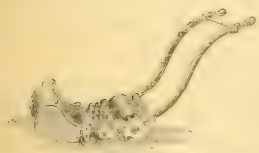

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10-inch Machine .. £3 10 0	*Easily worked by a Boy.*	18-inch Machine .. £7 10 0	*Easily worked by a Man*
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Every Machine sent out is warranted to give ample satisfaction, and if not approved of may be at once returned.

*** It is most important that orders for delivery this season should be sent in as early as possible.

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Universal Microscope. Price £5 5s.

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FARMS TO LET, of from 300 to 600 ACRES of SOUND CORN and STOCK LAND, of easy access by the South Western Railway.

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Battleshall Farm, Stapleford Abbots, Essex.

TO BE LET, by Tender, by order of the Honourable Charles Gore, the Commissioners in the service of Her Majesty's Land Revenue in England, on LEASE, for a term of 11 years, BATTLESHALL FARM, containing about 250 Acres (of which nearly 138 Acres are Grass Land), and situate at Stapleford Abbotts, and 3 miles from Romford. There is a large Farmhouse and good Buildings.

Tenders will be received at the Office, Maughan, the 18th inst., addressed to the Honourable Charles Gore, 1, Whitehall Place, Westminster, S.W. Particulars and Printed Forms may be had on application to Mr. JOHN CLUTTON, 3, Whitehall Place, where also a Plan of the Farm and a Draft of the Lease are deposited for inspection.

To Nurserymen and Florists.

TO BE DISPOSED OF, a good ESTABLISHED BUSINESS in the above Line, in a thriving Town in one of the Midland Counties. There is a good assortment of Fruit Trees, Hardy Shrubs, Conifers, Roses, &c., good Plant Houses, Pits and Frames, and large bearing Vinery. Immediate possession may be had, the In-coming Tenant taking the Stock, Houses, &c., at a Valuation.

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Letters addressed to A. B., Nurseryman, *Gardeners' Chronicle* Office, W.C., will receive attention.

Sales by Auction.

Importations of Orchids, from New Grenada;

THE FINE, SHOW MEXICAN ODONTOGLOSSUM, CRISPUM, ALBA, LUTEO-PURPUREUM, JAPAN, &c.

MR. J. C. STEVENS will SELL by AUCTION at his Great Rooms, 38, King Street, Covent Garden, W.C., on FRIDAY, June 22, at half-past 12 o'Clock precisely, 16 Cases of ODONTOGLOSSUMS, and ORCHIDS, &c., from New Grenada; chiefly Odontoglossum Cordatum, from Assam; Dendrobes, and Aërides, from Moulmein; and three Wardian Cases of Male Aucubas, from Japan.

On view the Morning of Sale; and Catalogues had.

Clearance Sale, Hampstead Road.

IMPORTANT TO GENTLEMEN, NURSERYMEN, BUILDERS, AND OTHERS.

MESSRS. PROTHEROE AND MORRIS have received instructions to submit for unreserved SALE by AUCTION, at the Ischel Nursery, opposite the Chalk Farm Station on the North London Railway, on MONDAY, June 18, the remaining GREENHOUSE and BEDDING PLANTS; also the Erections of 8 Greenhouses, 1 Circular Iron Roof Conservatory, Thousands of feet of Hot-water Piping, Boilers, large quantities of Bricks, York Paving, Flues, Seed Drawers, Counters, Desks, Flower Pots, and numerous other effects.

May be viewed prior to the Sale. Catalogues may be had at the Nursery; and of the Auctioneers and Valuers, American Nurseries, Leyton stone, N.E.

CONSERVATORIES, GREENHOUSES, FRAMES.

THE ONLY PAINT THAT SUCCESSFULLY STANDS UPON THE ABOVE TRYING WORK IS

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TRADE MARK.

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White	30s.
Light Stone	
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Cream Colour	
Light Portland Stone	
Drab or Portland Do.	
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Bright Red	26s.
Dark Do.	
Chocolate Colour	
Black	
Purple Brown	
Bright Green	42s.
Deep Green	
Blue	

The Anti-Corrosion Paint is now used extensively for all kinds of

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and has been proved, after a practical test of 70 years, to surpass any other Paint. It is applicable to Wooden Houses, Farm, and other Out-Buildings, Park Fencing, Gates, &c.: also Iron Roofing, and every description of Iron Work, while for

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ANY PERSON CAN LAY IT ON.

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CAUTION.—All Casks bear the Trade Mark, or are not Genuine.

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Extract of a Letter from His Excellency Baron BRUNOW, *Russian Ambassador, to the Russian Consul General in London.*

"In 1841 Mr. WALTER CARSON, Anti-Corrosion Paint Manufacturer, furnished the Imperial Ministry of War with 10 Casks of Dry Paint. Those Colours, after a trial of 10 years, have given the most satisfactory results. They were used for painting Gun Carriages."

CONSERVATORIES.

Mr. THOMAS WALKER, *Nurseryman, North Cottingham, Newark.—May 3, 1866.*
"I am very pleased with the Paint for standing the weather on the houses, and recommend it to all. I consider it to be the best article I ever used for the purpose of preserving the wood and fastening the glass. There is no other Paint like it for standing."

B. HAIGH ALLEN, Esq., *The Priory, Clifford, Hereford.—April 20, 1866.*
"Mr. Allen is very much pleased with the Paint he had in 1863-4. The hothouses look as well as when first painted—it does not crack or peel off in the way common paint does when exposed to strong sun, and is much more durable."

J. ELCOMBE & SON, *Nurseries, Romsey.—February 7, 1866.*
"We can strongly recommend your Paint."

Mr. HUGH MONTGOMERY, *Gardener to the* Most Hon. The MARQUIS of ELY, *Loftus Hall, Fethard, Ireland. —May 26, 1866.*
"Your Paints are the greatest acquisition. I have been for many years using whitelead, and must certainly say that your Paint is far superior."

SPECIAL.

The Rev. JOHN BYNG, *Boxford Rectory, Colchester.—May 27, 1866.*
"I only want to Paint 3 or 4 gates now. Some of the same I painted with your Anti-Corrosion Lead Colour, about 10 or 12 years ago. The barn too I painted about the same time is beginning to attract attention from lasting so well."

Captain DROUGHT, *Curgins, Tulsh, Roscommon, Ireland.—January 12, 1866.*
"The Paint has given the greatest satisfaction both from the facility of applying it, and the way it has stood the severe weather—on wood, stone, and iron."

G. DOWKER, Esq., *Stourmouth House, Wingham, Kent.—September 5, 1865.*
"I have used your Anti-Corrosion for about 14 years, and can testify to its durability."

H. J. TUCKER, Esq., *Leigh Court, Taunton.—November 17, 1865.*
"The Paint answered very nicely for stables, and in the spring I shall use more."

From WILLIAM SCOT, Esq., *of Craigmuie, Moniaive, by Dumfries.*
"The painter, a good professional man, now admits that your Ant.-Corrosion Paint is excellent for all the purposes indicated in your advertisement; and I may add, that the tinted Paints, which I have used for plaster walls inside, have stood without a blemish for these 5 or 6 years."

GENERAL.

The Rev. WILLIAM GILL, *Hertingfordbury Rectory, near Hertford.—June 11, 1866.*
"I like the Paint much and shall want some more."

JOHN T. ORD, Esq., *Fornham House, Bury St. Edmunds.—January 22, 1866*
"I find your Paint answer better than any other."

And again May 28, 1866.
"I am so satisfied with your Paint that I will thank you to send me, &c."

The Rev. E. PEACOCK, *Road Hill Parsonage, near Bath.—April 10, 1866.*
"The Rev. E. Peacock having found the Paint he obtained in 1862 stand very well, would thank Messrs Carson to send him, &c."

Major HALLIDAY, *Medsted House, Alton, Hants.—December 23, 1865.*
"I like it very much."

JAMES PHILLIPPS, Esq., *Brynywyn, Ross, Herefordshire.—October 12, 1865.*
"I am very pleased with the Paint, which is most effectual and durable."

From the Rev. T. B. WRIGHT, *Broughton Rectory, Brigg, Lincolnshire.*
"The Paint gives great satisfaction. Among other things, I used it in painting the lights of a Greenhouse, the wood of which, from exposure to the sun, had become in places much cracked. The Paint filled up the cracks, and remains, apparently, as hard as stone, effectually keeping out the wet; it has also been most useful in keeping the panes of glass in their place, and preventing them being shaken out, by the putty falling out."

From the Rev. R. F. MEREDITH, *Sewcombe Rectory, Yeovil.*
"My gardener, after 25 years experience, states it to be the most lasting Paint he has ever met with, for out-door work, and quite superior to White Lead for the outside of hothouses."

From Sir EDWIN SCUDAMORE STANHOPE, Bart., *Holme Lacy, Hereford.*
"I have been in the habit of using your Anti-Corrosion Paint for out-door work for upwards of 10 years, and have found it stand remarkably well, both on wood and iron; and if you think my testimony of any service, you are at liberty to add it to that of others."

From JOHN CRIDLAND, Esq., *East Hoathly, Sussex.*
"I have now used your Anti-Corrosion Paint rather more than 10, or I think 12 years, and am convinced that it is very superior to any other Paint, particularly for out-door work and farm purposes. I can safely say, it has saved me a great deal of repairs, as also expense, by using it on the wood-work of my Barns, &c.

Editorial Communications should be addressed to "The Editor;" Advertisements and Business Letters to "The Publisher," at the Office, 41, Wellington Street, Covent Garden, London, W.C.
Printed by WILLIAM HEADDEAY, of 13, Upper Woburn Place, in the Parish of St. Pancras, in the Co. of Middlesex, and FREDERICK MULLETT EVANS, of No. 11, Bouverie Street, in the Precinct of Whitefriars, City of London, Printers, at their Office, Lombard Street, Precinct of Whitefriars, City of London, and Published by them at the Office, No. 41, Wellington Street, Parish of St. Paul's, Covent Garden, in the said Co.—SATURDAY, June 16, 1866.

THE GARDENERS' CHRONICLE

AND

AGRICULTURAL GAZETTE.

A Newspaper of Rural Economy and General News.

No. 25.—1866.] SATURDAY, JUNE 23. {Price Fivepence. STAMPED EDITION, 6d.

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ROYAL HORTICULTURAL SOCIETY.—GREAT ROSE SHOW, and LAST EXHIBITION of the SEASON on THURSDAY next, June 28, in the Gardens of the 1st Life Guards and Royal Horse Guards. Tickets (bought before the day), Fellows' Friends, 3s. 6d.; Public, 5s.; or on the day, 7s. 6d

ROYAL BOTANIC SOCIETY'S GARDENS, REGENT'S PARK.—The LAST EXHIBITION of PLANTS, FLOWERS, and FRUIT will take place on WEDNESDAY, July 4. Tickets to be obtained at the Gardens, and of the Society's Clerk, at Austin's Ticket Office, St. James's Hall, by Vouchers from Fellows of the Society, price 6s., or on the day of exhibition, 7s. 6d. each. Gates open at 2 o'clock. Bands will play from 2 till 7 o'clock.

BRIGHTON and SUSSEX FLORICULTURAL and HORTICULTURAL SOCIETY.

THE THIRTEENTH ANNUAL SUMMER EXHIBITION will be held, by permission of the Town Council, on the Pavilion Lawn, and in the entire suite of splendid decorated rooms of the Royal Pavilion, on WEDNESDAY and THURSDAY, June 27 and 28, and the AUTUMN SHOW, on Tuesday, September 12 and 13, on the same grand scale as in former years.

Schedules of Prizes can be had on application to the Secretary, 96, St. James's Street, or E. Sharp, Esq., Superintendent of the Exhibitions, Queen's Graperies, Park Street, Brighton.

June 23. EDWARD CARPENTER, Secretary.

MANCHESTER BOTANICAL and HORTICULTURAL SOCIETY.—The SECOND GENERAL EXHIBITION of FRUITS, PLANTS, and FLOWERS, will be held at the Gardens, Old Trafford, on FRIDAY and SATURDAY, June 29 and 30. Schedules, and any further information, may be obtained from the undersigned. By Order BRUCE FINDLAY, Curator.

Botanic Gardens, Manchester.

HORTICULTURAL SOCIETY of LIVERPOOL. FIRST GREAT EXHIBITION of ROSES, ORCHIDS, FERNS, &c., JULY 3 and 4, in ST GEORGE'S HALL. The following and other liberal Prizes, with Silver Cups, will be offered:—

72 CUT ROSES, distinct (Nurserymen), 1 Truss, £8, £6, £4.
48 " " 3 Trusses, £6, £4, £2.
24 " " 3 Trusses, £3, £2, £1.
24 " " 1 Truss, £3, £2, £1.
24 " (Amateurs), 1 Truss, £4, £3, £2.
18 " " 1 Truss, £3, £2 5s., £1 10s.
12 " " 3 Trusses, £3, £2 5s., £1 10s.
10 EXOTIC ORCHIDS (Open), £10, £7, £5
6 " (Amateurs), £6, £4, £2.
24 " FERNS (Open), £5, £3, £2.
12 " " £3, £2, £1.
3 TREE FERNS " £4, £3, £2.
Collection of HARDY FERNS, species and varieties, not less than 24, £5, £3, £2.

12 ORNAMENTAL FOLIAGE PLANTS (Open), £5, £3, £2.

Liberal Prizes will be awarded to Plants of Merit. The Hall is close to the London and North Western Railway Station.

For Schedules and every information apply to ROBT. W. KER, Hon. Sec., 4, Basnett Street, Liverpool.

BIRMINGHAM ROSE SHOW, JULY 5 and 6.—For Prize Lists, apply to ALEXANDER FORREST, Sec., Cherry Street, Birmingham. Entries Close on Tuesday, June 26.

RUGBY HORTICULTURAL and COTTAGE GARDENERS' SOCIETY.

President—The Rev. Dr. TEMPLE.

The ANNUAL SHOW, open to all England, will take place at Rugby, on THURSDAY, July 12, when Prizes will be offered—

In Class 5 for Plants, Fruit, Cut Flowers and Vegetables, and a Silver Cup, value £7, One Prize of £5, Four Prizes of £3, Three Prizes of £2, and Four Prizes of £1. Other Prizes, and Three Prizes of 10s., 5s., and 2s. 6d. for the best Single Rose.

In Class 4 for Plants and Cut Flowers, and Six Prizes of £2, £1, 10s., and 5s. for Roses.

In Class 3 for Plants, Fruit, Cut Flowers and Vegetables, and 4 prizes of 15s., 10s., 5s., 2s. 6d., for Roses.

In Class 2 for Plants, Fruit, Cut Flowers, and Vegetables, and 10 prizes for Roses.

Entries to be made on or before July 5.

Schedules of Prizes and further particulars may be obtained on application to JOHN S. SAVAGE, or WM. MASON, Hon. Secs., Rugby.

Rugby, June 20.

BRITISH ASSOCIATION FLORAL FETE, NOTTINGHAM PARK, AUGUST 23 and 24.

Above £300 to be awarded in Prizes, and Special Certificates given to the Winners in the Head Classes.

The Declaration for Exhibitors as regards Classes and Space Closes on July 1, the names of the Selected Plants received up to July 31.

The Midland and Great Northern Railway will convey Plants to and fro for a single fare. Catalogues may be had on application.

By Order. E. J. LOWE, Floral Secretary.

Highfield House, near Nottingham.

COMPLIMENTARY FLORAL FETE at NOTTINGHAM, AUGUST 27 and 28, in Honour of the British Association Meeting.

President—Dr. J. D. HOOKER, F.R.S., &c.

About £250 in Prizes for Stove, Greenhouse, and Ornamental-foliaged Plants, Orchids and Ferns. Upwards of £30 in Fruit Prizes. Nearly £30 in Cut Flower Prizes and Special Certificates of Merit.

A Catalogue of the Award of Prizes will be printed. Exhibitors to declare before July 1. Schedules may be had of the Exhibition Secretary, E. J. LOWE, Esq., of Highfield House, near Nottingham.

THE GARDENERS' ROYAL BENEVOLENT INSTITUTION (Instituted 1838), for providing Pensions for Aged and Infirm Gardeners and others connected with Horticultural pursuits.—The TWENTY-THIRD ANNIVERSARY FESTIVAL in aid of the funds of this Institution, will take place at the LONDON TAVERN, Bishopsgate Street, London, on WEDNESDAY, June 27 Sir C. WENTWORTH DILKE, Bart., M.P., in the Chair.

EDWD. ROGER CUTLER, Secretary.

14, Tav stock Row, Covent Garden, W.C.

GARDENERS' ROYAL BENEVOLENT INSTITUTION.—The Friends of MARGARET MITCHINSON are anxious to correct an error which appears to have been made in the Circular issued in her behalf. She is very aged and infirm, and when asked was understood to say her late Husband had Subscribed Eleven Years—the Polling Paper just issued says Seven Years. They apologise to the Subscribers for this unintentional mistake, and solicit in her favour on the ground that her late Husband SUBSCRIBED SEVEN YEARS, that she is SEVENTY-THREE YEARS OF AGE, very infirm, and partially blind, and that this is her SEVENTH APPLICATION to the Society.

SEEDS for the GARDEN and FARM, all saved from the finest selected stocks.

DESCRIPTIVE PRICED LISTS free on application.

BUTLER & MCCULLOCH, Covent Garden Market, W.C.

JAMES FAIRHEAD AND SON, SEED GROWERS and MERCHANTS, 7, Borough Market, London, S.E.

Now and Genuine AGRICULTURAL, GARDEN, and FLOWER SEEDS. Special prices and advantageous offers on application.

J. IVERY AND SON beg to announce their NEW PRICED DESCRIPTIVE CATALOGUES of AZALEA INDICA, and No 10, HARDY BRITISH FERNS.

Dorking.—June 9.

J. IVERY AND SON beg to announce that their DESCRIPTIVE PRICED CATALOGUES of AZALEA INDICA, HARDY BRITISH FERNS, ROSES, CONIFERÆ, GRAPE VINES, and SEEDS, may be had on application at their Dorking Nursery.

New Orchid and General Plant Catalogue.

B. S. WILLIAMS' NEW PLANT CATALOGUE, containing many really good novelties, and carefully selected LISTS of STOVE, GREENHOUSE, and HARDY PLANTS, is now ready and will be forwarded post free to all applicants.

Victoria and Paradise Nurseries, Holloway, London, N.

British Fern Catalogue.

ROBERT SIM can Rend, post free for six postage stamps, Part I. (British Ferns and their varieties, 36 pages, including prices of Hardy Exotic Ferns) of his NEW and PRICED DESCRIPTIVE CATALOGUE of BRITISH and EXOTIC FERNS, No. 7.

*** Part II. (Exotic Ferns) will be issued as early as possible. Foot's Cray Nursery, S.E.

RAYNBIRD, CALDECOTT, BAWTREE, DOWLING, and COMPANY, Limited,

CORN, SEED, AND FLOWER, MERCHANTS,

Address, 89, Seed Market, Mark Lane, E.C.; or Basingstoke.

Samples and Prices Post free on application. Prize Medals, 1851, for Wheat; 1862, for Excellent Seed Corn and Seeds.

Genuine Garden and Agricultural Seeds.

JAMES E. TEED AND CO., SEED FARMERS, MERCHANTS, AND NURSERYMEN, 237 & 238, High Holborn, London, W.C.

Specimen Show Pelargoniums.

WANTED, PLANTS of the above.—Apply, stating price, sorts, height, and diameter, to MR. DINGWALL, Market Place, Boston.

New Zonale and Nosegay Pelargoniums.

MESSRS. HENDERSON AND A. SMITH, The Nurseries, Dulwich, S., beg to introduce their extensive Collections of the above are now in Flower, and with their splendid TRICOLOURED VARIETIES will well repay a visit of inspection, which they respectfully solicit.

The Nurseries are near the Dulwich Station of the Chatham and Dover Railway, and the Lower Norwood Station, Crystal Palace Line, and are open daily (Sundays excepted).

Prize Cineraria Seed.

MESSRS. F. AND A. SMITH, The Nurseries, Dulwich, S., beg to offer NEW SEED of the above, saved from their unrivalled Collection, and of the finest quality.

1s., 2s 6d., and 5s per pkt.

CHOICE STRAINS of SEED of PRIMULA, CALCEOLARIA, and CINERARIA.

WILLIAMS' SUPERB PRIMULA, 2s. 6d., 3s. 6d., and 5s. per pkt., red, white, and mixed.

JAMES' SUPERB CALCEOLARIA, 3s. 6d. and 5s. per pkt.

WEATHERILL'S EXTRA CHOICE CINERARIA, 3s. 6d. and 5s. per pkt.

B. S. WILLIAMS, Victoria and Paradise Nurseries, Holloway, London.

BARR'S CALCEOLARIA, CINERARIA, PRIMULA, STOCKS, MYOSOTIS, &c.

CALCEOLARIA, very choice, 2s. 6d. per packet; CINERARIA, very choice, 1s. and 2s. 6d. per packet; PRIMULA, very choice, 1s. and 2s. 6d. per packet; SCARLET, PURPLE, and WHITE INTERMEDIATE STOCKS, for Spring blooming, very fine, each variety 1s. per packet; BRILLIANT DWARF ROCKET, for Spring blooming, 6d. per packet; MYOSOTIS SYLVATICA, for Spring blooming, 6d. and 1s. per packet; Collections of PERENNIAL SEEDS, 5s. 6d., 10s. 6d., and 21s.

BARR & SUGDEN, 12, King Street, Covent Garden, London, W.C.

Chrysanthemums.

FIRST PRIZES STOKE NEWINGTON AND GUILDHALL, 1865.

ADAM FORSYTH begs to inform the Public that he is now sending out his large COLLECTION of CHRYSANTHEMUMS, at 6s. per dozen, including Attraction, Eos, Golden Ball, Golden Dr. Brock, Hercules, Judge of Denmark, Lady Carey, Mr. Brunlees, Mr. Wyness, Mrs. Raines, Pink Pearl, Prince of Wales, Sam Weller, Venus, Virgin, and Queen.

CATALOGUES for one stamp.

Brunswick Nursery, Stoke Newington, N.

PETER DRUMMOND AND CO. (late J. SCOTT), Preston Road Nursery, Yeovil, Somerset, have to offer to intending purchasers upwards of 200,000 BEDDING-OUT FLOWER GARDEN PLANTS, including all the leading varieties of Dahlias, Fuchsias, Geraniums, Heliotropes, Lantanas, Lobelias, Petunias, Salvias, Verbenas, &c. And all kinds of Fronted and Variegated-leaved Plants suitable for the Decoration of the Flower Garden, at unprecedented low prices. CATALOGUES free on application.

Also SEEDS of every description for the FARM and GARDEN, of the best quality, at moderate prices.

Please address as above.

Roses in Pots.

PAUL AND SON, in addition to the NEW ROSES of 1866, can offer fine Plants of the finest TEA-SCENTED NOISETTES and best HYBRID PERPETUAL ROSES, in pots, for Planting during present and next month.

Old Cheshunt Nurseries, N.

Roses in Bloom.

JAMES MITCHELL has the honour of informing his kind patrons, his magnificent COLLECTION is now in FINE BLOOM. Felt Down Nurseries, Maresfield, Sussex.

The London, Brighton, and South-coast Railway. Two-and-a-half miles from the Uckfield Station.

Vines and Pines.

THOMAS J. BOOTH begs to offer the above in variety, strong, for immediate planting; also,

BLACK JAMAICA PINES, Fruiting and Succession. Price on application. Rainhill Nursery, Rainhill, Lancashire

CASTLE KENNEDY FIG.—Plants of the above may now be had at 10s. 6d and 21s. each; the usual discount to the Trade. PETER LAWSON & SON, Edinburgh and London.

To Pine Growers.

WANTED, about 60 Fruiting and Succession Plants (QUEENS and JAMAICAS).—They must be guaranteed healthy and free from scale.—Address, stating price, &c., to MR. BURGESS, Gaddesby Hall, Melton Mowbray.

WEDDING BOUQUETS, EPERGNES FILLED. Tables Decorated, Conservatories Furnished, by C. EWIN & CO., 9, Park Terrace, Regent's Park.

MAURICE YOUNG'S DESCRIPTIVE LIST of Conifers, New and Rare Hardy Plants, Ornamental Trees and Shrubs, Rhododendrons, Japanese Novelties, Forest Trees, and Roses, forwarded on application.

Milford Nurseries, near Godalming, Surrey.

New Verbenas of 1866.

PHILIP LADDIS is now sending out strong plants in Thumb Pots of the above new Varieties, introduced by Messrs. Henderson, Turner, and Keynes, at 9s. per dozen. METHVEN'S CRIMSON KING 6s. per dozen, package included. The usual discount to the Trade.

Nursery, Bexley Heath, Kent

FINE SPECIMEN and HALF SPECIMEN HARDWOODED and ORNAMENTAL FOLIAGE STOVE and GREENHOUSE PLANTS.—Exhibitors and gentlemen furnishing Conservatories are invited to inspect a choice Collection of the above, which is large and in very fine healthy condition. Prices moderate.

T. JACKSON & SON, Nursery, Kingston, Surrey.

New Seedlings.

H. CONNELL would be glad if any one possessing the above, either in FUCHSIAS, VERBENAS, PETUNIAS, MIMULUS, LOBELIAS, or any other Soft-wooded Plant that is really distinct and good, would communicate the same to him, who will either purchase or send them out on the most reasonable terms.

Fuchsia Nursery, Wordsley.

REBECCA, the finest BEDDING GERANIUM ever raised Plants ready in May, price 5s. each.

See WM. PAUL'S SPRING CATALOGUE.

PAUL'S Nurseries, Waltham Cross, London, N.

BEATON'S GERANIUMS, at Reduced Prices.—Indian Yellow, Donald Beaton, Orange Nosegay, Scarlet Gem, Princess Lichtenstein, and Salamander, 1s. each, 9s. per dozen, not less than six of a sort. Fulgens, Pillar of Beauty, and Waltham Seedling, 1s. 6d. each, 15s. per doz. Amy Hogg, 1s. 6d. each, 15s. per doz. Alexandra, 2s. each, 18s. per doz. For other sorts see separate Advertisement.

WM. PAUL, Paul's Nurseries, Waltham Cross, London, N.

Greenhouse, Hardy and Stove Plants; Agricultural, Flower, and Vegetable Seeds, &c.

ROBERT PARKER invites inspection of his Collections of the above-named, which have been selected with the greatest care. All plants are clean and healthy, and are at most reasonable prices. Descriptive and Priced Catalogues are published, and will be forwarded to applicants.

Exotic Nursery, Tooting, Surrey, S.

Early Sheep Feed—Mustard and Rape.

SUTTON AND SONS can supply good new Seed of the above at very moderate prices, which may be had on application. Seed Warehouses, Reading.

To Growers of Rape Seed.

WANTED, a good SAMPLE of the above. Send lowest Trade Price with Sample to E. R., 9, Norfolk Street, Strand, London, W.C.

CABBAGE PLANTS.—Strong DRUMHEAD, Autumn-sown, extra fine. Price on application to H. & R. SHERAKER, Sherston Nursery, Lancaster.

CABBAGE PLANTS.—Strong Drumheads for Cattle, Early kinds, Battersea and Nonpareil, 3s. per 1000.

W. VIRGO & SON, Wonersh Nursery, Guildford, Surrey.

FOR SALE, SWEDISH TURNIP SEED, grown 1865, from selected roots, of the original Ruta-baga, or Green Foll Swedish Turnip. Price 3s. per quart.

Apply to the grower, THOS. A. JARVIS, Higher Bolberry, near Kingsbridge, Devon All Orders to be accompanied by a remittance

To the Trade and Others.—An excellent Stock.

STRATTON GREEN ROUND TURNIP SEED, 1865 growth. Pronounced by some to be the best English Turnips grown. Cash price, per bushel, 10s.; per lb., 6d.

EARLY SIX-WEEK TURNIP, 8d per lb.

A remittance or reference requested from unknown correspondents

FRED. GIE, Seed Merchant and Grower, Biggleswade, Bedfordshire.

Now Ready for Planting.

EXCELLENT CABBAGE PLANTS, Spring-sown.—SCOTCH DRUMHEAD, true; EARLY DWARF NONPAREIL; ENFIELD MARKET. Cash price, 2s. 6d. per 1000.

DRUMHEAD SAVOY PLANTS, an excellent stock, 4s. per 1000.

GREEN CURLED SAVOY do., and a variety of other plants.

A remittance or reference requested from unknown correspondents.

PETER LAING, Seed Merchant and Grower, Biggleswade, Bedfordshire.

The Best Substitute for Swedes.

SUTTON'S PURPLE-TOP YELLOW HYBRID TURNIP, 1s. per lb.

YELLOW TANKARD TURNIP, 1s. per lb.

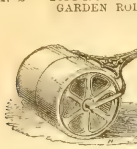
DRUMHEAD'S PURPLE-TOP BULLOCK'S HEART (NEW) TURNIP, 1s. 6d. per lb.

Or cheaper by the bushel, carriage free.

These Turnips, if sown in July and August, will produce a crop scarcely inferior in quality or quantity to swedes sown in June.

SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

GREEN'S IMPROVED NEW PATENT GARDEN ROLLER



The above Rollers possess many advantages over all others. They are made in two parts, and are free to revolve on the axis, affording greater facilities for turning, and the outer edges are rounded off or turned inwards, thus avoiding the unsightly marks left by other Rollers.

Diameter, 30 inches; Length	22 inches,	£7	10	0
,,	24 ,,	,,	26	,,	4	10	0
,,	29 ,,	,,	22	,,	7	10	0
,,	16 ,,	,,	17	,,	2	15	0

Prices for Rollers fitted with Shafts suitable for Pony or Horse Power, free on application.

Delivered carriage paid to all the principal Railway Stations and Shipping Ports in England.

THOMAS GREEN & SON, Smithfield Iron Works, Leeds. 54 and 55, Blackfriars Road, London, S.; and 19, Eden Quay, Dublin.

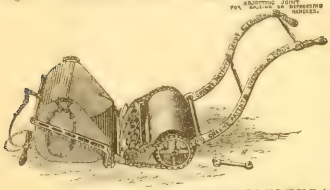
N.B. All Orders executed on the day they are received.

PRIZE MEDALS AWARDED to GREEN'S PATENT LAWN MOWERS.

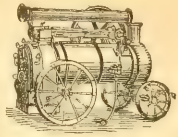
INTERNATIONAL EXHIBITION, LONDON, 1862.
INTERNATIONAL EXHIBITION, DUBLIN, 1865.

The above Lawn Mowers have proved to be the best, and have carried off every Prize that has been given in all cases of Competition.

Sold by all respectable Ironmongers, Seedsmen, &c., in the Kingdom. Illustrated Price Lists free on application.



AGRICULTURAL and HORTICULTURAL IMPLEMENTS and MACHINES of every description.
IMPROVED IRON STABLE FITTINGS.
HURDLES and CONTINUOUS IRON and WIRE FENCING.
Palisading Entrance and Field Gates. Plain and Galvanised Wire Netting
GREEN'S PATENT LAWN MOWERS and GARDEN ROLLERS.
Garden Engines, Syringes, Water Barrows, Ornamental Garden Seats, Chairs, Tables, Iron Fountains, Vases, &c
IRON and BRASS BEDSTEADS, a great variety.
Washing, Wringing, and Mangling Machines.
IMPROVED SAUSAGE MACHINES and FILLERS.
Separate Illustrated Price Lists free on application
THOMAS GREEN & SON, Smithfield Iron Works, Leeds.
Show Rooms opposite the Smithfield Cattle Market, North Street, Leeds; 54 and 55, Blackfriars Road, London, S.; and 19, Eden Quay, Dublin



RANSOMES & SIMS

HAVE GREATLY REDUCED THE PRICES OF THEIR

STEAM-THRESHING MACHINERY,

WHICH IS THE BEST AND CHEAPEST MADE.

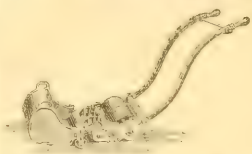
ENGINES and MACHINES constantly kept in Stock.

Catalogues and Testimonials free on application. An examination solicited.

RANSOMES AND SIMS, ORWELL WORKS, IPSWICH.

AWARDED the following PRIZES.—Royal Agricultural Society, 1841, 1842, 1852, 1854, 1855; Royal Agricultural Society, Ireland, 1854, 1855; Paris, 1856; Rouen, 1856; Vienna, 1857; Pesth, 1857; Amsterdam, 1857, Rotterdam, 1858; Brussels, 1858; Schwerin, 1861; St. Petersburg, 1861; Bourges, 1862; Longford, Tasmania, 1862; London, 1862; Ballarat, Victoria, 1862; Lille, 1863; Hamburgh, 1863; Greisswald, 1863; Alipore, India, 1864; Stettin, 1865; Dresden, 1865; Cologne, 1865.

J. B. BROWN & CO.'S NEW PATENT B B LAWN MOWER.



PATENTED AND MANUFACTURED BY

J. B. BROWN & CO.,

148, UPPER THAMES STREET, LONDON, E.C.

GUARANTEED TO GIVE PERFECT SATISFACTION,

AND, IF NOT APPROVED OF,

MAY BE AT ONCE RETURNED.

This New BB PATENT LAWN MOWER is Manufactured by Messrs. BROWN & Co., on their own Premises in London, under their personal superintendence. It is worked by means of Geared or Toothed Wheels, is quite noiseless, and is guaranteed to give perfect satisfaction in every respect.

PRICES—including Carriage to any Railway Station or Shipping Port in England.

10-inch Machine ..	£3	10	0	*Easily worked by a Boy.*	18-inch Machine ..	£7	10	0	*Easily worked by a Man*
12-inch Machine ..	4	10	0		20-inch Machine ..	8	0	0	
14-inch Machine ..	5	10	0		22-inch Machine ..	8	10	0	*Ditto by Two Men.*
16-inch Machine ..	6	10	0	*Ditto by a Man.*	24-inch Machine ..	9	0	0	

Every Machine sent out is warranted to give ample satisfaction, and if not approved of may be at once returned.

*** It is most important that orders for delivery this season should be sent in as early as possible.

J. B. BROWN AND CO., OFFICES, 18, CANNON STREET, CITY, LONDON, E.C.

WAREHOUSE (where Machines are kept in Stock), 148, UPPER THAMES STREET, E.C.

Opposite the City of London Brewery, and close to the London Bridge Steam Boat Piers.

SHANKS' PATENT LAWN MOWERS FOR 1866.

PATRONIZED ON FIVE SEPARATE OCCASIONS DURING THE SEASON OF 1864 BY

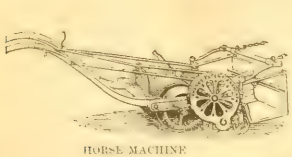
HER MAJESTY THE QUEEN,

AND ONCE BY HIS MAJESTY THE KING OF SAXONY;

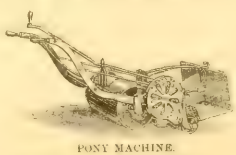
AGAIN ON FOUR SEPARATE OCCASIONS DURING THE SEASON OF 1865 BY HER MAJESTY THE QUEEN

ONCE BY HIS MAJESTY THE KING OF HOLLAND;

AND ONCE BY HIS MAJESTY THE KING OF PRUSSIA.



HORSE MACHINE



PONY MACHINE.

HAND MACHINE.

JUNE, 1866.—ANOTHER 42-INCH HORSE MACHINE HAS JUST BEEN SUPPLIED TO

THE ROYAL GARDENS AT KEW.

PRICES, including Carriage to any Railway Station or Shipping Port in the Kingdom.

SHANKS' NEW PATENT HAND MACHINE.

Width of Cutter		Easily Worked.	Silent Movement.
10-inch Machine	£3 10 0	*By a Lady*	4s. extra.
12-inch Machine	4 10 0		
14-inch Machine	5 10 0	*By a Boy*	

Width of Cutter.		Easily Worked.	Silent Movement.
16-inch Machine	£6 10 0	*By a Man or Two Boys*	4s. extra.
19-inch Machine	7 12 6	*By a Man and Boy*	
22-inch Machine	8 7 6	*By Two Men* ..	7s. 6d. extra.
24-inch Machine	8 17 6		

SHANKS' NEW PATENT PONY and DONKEY MACHINE.

Width of Cutter.		If with Patent Delivering Apparatus.
25-inch Machine	£12 10 0	2s. extra.
28-inch Machine	14 10 0	30s. ,,
30-inch Machine	15 15 0	30s. ,,

Silent Movement, 12s. 6d. extra; Boots for Pony, 21s. per set;
Ditto for Donkey, 16s. per set.

SHANKS' NEW PATENT HORSE MACHINE.

Width of Cutter.		If with Patent Delivering Apparatus.
30-inch Machine	£19 0 0	30s. extra.
36-inch Machine	22 0 0	30s. ,,
42-inch Machine	26 0 0	40s. ,,
48-inch Machine	28 0 0	40s. ,,

Silent Movement, 20s. extra; Boots for Horse's Feet, 24s. per set.

Every Machine warranted to give ample satisfaction, and if not approved of can be at once returned.

ALEXANDER SHANKS AND SON, DENS IRON WORKS, ARBROATH.
LONDON OFFICE and SHOW ROOMS: 27, LEADENHALL STREET, E.C.
PARIS OFFICE and SHOW ROOMS: 56, BOULEVARD HAUSSMANN.

A. S. & SON *keep a stock of all sizes of Machines at their London and Paris Establishments, from which Orders are executed on the day they are received.*
☞ 27, *Leadenhall Street is the only place in London where intending purchasers of Lawn Mowers can choose from a stock of from* 150 *to* 200 *Machines. All sizes kept there, whether for Horse, Pony, or Hand Power.*

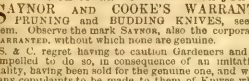
Caution to Gardeners.—When you ask for SAYNOR AND COOKE'S WARRANTED PRIZE PRUNING AND BUDDING KNIVES, see that you get them. Observe the mark SAYNOR, also the corporate mark OBTAIN WARRANTED, without which none are genuine.

S. & C. regret having to caution Gardeners and others, but are compelled to do so, in consequence of an imitation, of common quality, having been sold for the genuine one, and which has caused many complaints to come to them of Knives which were not of their make, all of which are warranted both by sellers and makers.

S. & C.'s Pruning and Budding Knives are the best and the cheapest in the market.

Paxton Works, Sheffield. Established upwards of 125 years.

By Royal Letters Patent.



WELLS' PORTABLE FOLDING GROUND VINERY, for Growing and Ripening Grapes without artificial heat. Awarded a SILVER MEDAL at the International Exposition of Horticulture held at Nice, April 1865.

Drawings and instructions for their management post free.

Agents:—H. J. EDWARDS, 25, Bishopsgate Within, E.C.; and J. R. TAXTON, Nurseryman, Epsom, Surrey.

CHEAP PAVING TILES.—A Manufacturing Firm have a considerable stock of Plain and Encaustic Tiles, more or less damaged in the process of manufacturing, that they would be willing to Dispose of at prices below those of the commonest description of Paving materials. To Landed Proprietors they would be invaluable for the Floors of Cottages, Farm Houses, &c., and would be supplied at a very low rate.

Address M., Post Office, Broseley.

VASES, STATUES, FOUNTAIN BASINS, FLOWER-POTS, &c., in TERRA COTTA and FINE STONE WARE, warranted to stand frost, by JOHN N. BLANKFIELD, Stamford, Lincolnshire. Applications for Drawings and Prices will receive attention.

FOUNTAIN JETS.

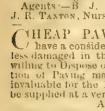


Fig. 530. JET D'EAU. 18 holes, 5s. 6d.; 24 do., 8s. 9d.; 30 do., 6s. 6d.

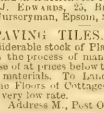


Fig. 531. DOME and CONVOLVULUS. 17s.

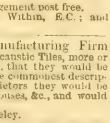


Fig. 525. DOME. 8s. 6d.

Fig. 529. CONVOLVULUS. 8s. 6d.

Fig. 521. BARKER'S MILL. 11s.

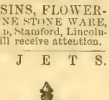


Fig. 522. WIRE BASKET with BALL 10 ins., 16s. 6d.; 12 ins., 17s. 6d.; 14 ins., 18s. 6d.

Connecting Screws to all the above Jets, 1s. 6d. extra.

Branch Pipe for raising up Jets 1 foot high, 5s. 6d.

A Tap is required to be fixed in the Pipe to regulate the supply of Water to Fountain Jets.

J. TYLOR & SONS, Manufacturers, Warwick Lane, Newgate Street, London, E.C.

GARDEN BORDER EDGING TILES, in great variety of patterns and material, the planer sorts being especially suited for KITCHEN GARDENS, as they harbour no Slugs and Insects, take up little room, and once put down incur no further labour and expense, as do "grown" Edgings, consequently being much cheaper.

GARDEN VASES, FOUNTAINS, &c., in Artificial Stone, of great durability, and in great variety of design.

F. & G. ROSHER, Manufacturers, Upper Ground Street, Blackfriars, S.; Queen's Road West, Chelsea, S.W.; Kingsland Road, Kingsland, N.E.

Sole London Agents for FOXLEY'S PATENT GARDEN WALL BRICKS. Illustrated Price Lists free by post. No Trade supplied.

ORNAMENTAL PAVING TILES for Conservatories, Halls, Corridors, Balconies, &c., as cheap and durable as Stone, in blue, red, and buff colours, and capable of forming a variety of designs.

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WHITE GLAZED TILES, for Lining Walls of Dairies, Larders, Kitchen Rances, Baths, &c. Grooved and other Stable Paving Bricks of great durability, Dutch and Adamantine Clinkers, Wall Copings, Tiled and Stoneware Drain Pipes, Gullies, Quoins, &c.

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SILVER SAND (REIGATE, best quality), at the above addresses—14s. per Ton, or 1s. 3d. per Bushel; 2s. per Ton extra for delivery within three miles, and to any London Railway or Wharf. Quantities of 4 Tons, 1s. per Ton less.

PLANTS, QUICK RUBBISH, and STONKERS, for Rockeries or Grotto Work. F. & G. ROSHER.—Addresses see above.

N.B. Orders promptly executed by Railway.

E. T. ARCHER'S "FRIGI DOMO." — Patronised by her Majesty the Queen, the Duke of Northumberland for Syon House, his Grace the Duke of Devonshire for Chiswick Gardens, Professor Lindley for the Horticultural Society, Sir Joseph Paxton for the Crystal Palace, Royal Zoological Society, &c.

PROTECTION from the SCORCHING RAYS of the SUN.

"FRIGI DOMO," a Canvas made of patent prepared Hair and Wool, a perfect non-conductor of Heat and Cold, keeping, wherever it is applied, a fixed temperature. It is adapted for all horticultural and horticultural purposes, for preserving Fruits and Flowers from the scorching rays of the sun, from wet, from attacks of insects, and from morning frosts. To be had in any required lengths.

Two yards wide .. .. 1s. 9d. per yard run.
Four yards wide .. .. 3s. 6d. per yard.
An improved make, 2 yards wide .. 1s. 9d. per yard.
An improved make, 4 yards wide .. 2s. 8d. per yard run.

Also "Frigi Domo" Netting, 2 yards wide, 1s. 6d. per yard run.

ELISHA THOMAS ARCHER, Whole and Sole Manufacturer, 7, Great Trinity Lane, Cannon Street, City, and of all Nurserymen and Seedsmen throughout the kingdom.

"It is much cheaper than Mats as a covering."

HOTHOUSES for the MILLION.—Medal, 1862. INVENTED BY THE LATE SIR JOSEPH PAXTON.

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HOT-WATER PIPES, at Wholesale Prices, with Elbows, Syphons, Tee Pipes, and every other connection; Wrought and Cast Iron Boilers, Saddle, Conical, Cylinder, Tubular, and Elliptic, from 24s. each. Improved Boilers and Iron Stands to use without brickwork, 60s. each. Valves from 10s. 6d. each. Patent Valves, Stoppers, Furnace Doors, Furnace Bars, Supply Cisterns, and Castings of every description in stock, at

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HOT WATER PIPES, from Stock, per yard:—2 inch, 1s. 2d.; 3-inch, 1s. 10d.; and 4-inch, 2s. 4d. BENDS, from Stock, 1s. 6d., 2s. 6d., and 3s. each. THROTTLE VALVES, 10s., 15s. and 14s. each. Other Connexions at equally low prices, and all goods of first-class manufacture. Estimates given, and orders by post punctually attended to the same day.

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JOSEPH SMITH, New Road, Hammersmith, W., begs to offer several well-constructed GREENHOUSES, of good Yellow Deal, and 21-oz. Glass:—

SPAN	—24 ft. by 9 ft. 7 in.	£24
,,	22 ft. 8 in. by 10 ft. 9 in.. ..	26
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LEAN-TO	—21 ft. 6 in. by 13 ft.. ..	24
,,	25 ft. by 12 ft. 7 in. ..	37
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Also Twenty 4 ft. 6 in. by 3 ft. 3 in. Lights, 1¼ thick, for £14; and Eleven 5 ft. by 4 ft. 2 in., for £13.

MELON FRAMES of an improved make in Stock, warranted of good materials.

Estimates for Heating effectually by Hot-Water Apparatus.

CRANSTON'S PATENT BUILDINGS for HORTICULTURE.

"Dry Glazing without Putty."
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"Ventilation without Moving Lights."

Highly Commended by the Royal Horticultural Society, South Kensington

Plans and Estimates free on application. Descriptive Book fully illustrated, post free for 26 stamps, from the Author and Patentee, JAMES CRANSTON, Architect, Birmingham.

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THE ONLY PRIZE MEDAL FOR GREENHOUSES HAS BEEN AWARDED TO T. H. P. DENNIS for IMPROVEMENTS in the CONSTRUCTION and CULTIVATION of WROUGHT-IRON for HORTICULTURAL BUILDINGS.

DENNISS PATENT WROUGHT-IRON PRIZE MEDAL CONSERVATORIES are of the finest order.

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DENNISS PATENT WROUGHT-IRON PRIZE MEDAL STRAWBERRY HOUSES admit a complete flood of air and light.

The above Patent Houses can be glazed with or without putty.

These Houses are now protected by three Royal Letters Patent, and from the complete adjustment of their constructional parts will vie most favourably with Wood Structures in point of cost.

Designs and Estimates prepared for single or complete ranges of Houses in Wood or Iron.

Illustrated Catalogues on application to the Patentee,

T. H. P. DENNIS, Horticultural Builder and Hot-Water Engineer, Chelmsford.

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GENERAL HORTICULTURAL BUILDER,
Knotty Ash, near Liverpool.

Reference permitted to the Nobility and Gentry throughout Great Britain and Ireland.

HOT-WATER APPARATUS, of every description, fixed complete in any part of the country, or the materials, viz., Boilers, Pipes, &c., delivered to any Station.

Estimates on application.

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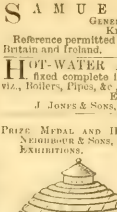
PRIZE MEDAL AND HONOURABLE MENTION AWARDED TO GEORGE NEIGHBOUR & SONS, FOR BEE HIVES AND HONEY AT THE VARIOUS EXHIBITIONS.



NEIGHBOUR'S IMPROVED COTTAGE BEE HIVE, as originally introduced by GEORGE NEIGHBOURS & SONS, with all the recent improvements, working three bell-glasses; is neatly and strongly made of straw; it has three Windows in the lower Hive, with a Thermometer affixed to the centre one. This Hive will be found to possess many practical advantages, and is more easy of management than any other Bee Hive that has been introduced.

Price complete .. £1 15 0
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THE LIGURIAN or ITALIAN ALP BEE being much in repute at the present time, we are in a position to supply Stocks of the pure race carefully packed in Woodbury Bar-Frame Hives, so as to travel with comparatively no risk of damage.

ENGLISH BEES.—Stocks and Swarms may be obtained as heretofore.

A newly-arranged CATALOGUE of other Improved Hives, with Drawings and Prices, sent on receipt of two stamps.

Address, GEO. NEIGHBOUR & SONS, 127, High Holborn, W.C.; or 149, Regent Street, London, W.

AGENTS:—Liverpool: James Cuthbert, 12, Clayton Square. Manchester: J. Wilson, 60, King Street. Birmingham: J. H. Cottrell, 15, Bull Ring. Dublin: Edmondson Brothers, 10, Dame Street. Glasgow: Austin & M'Askan, 16, Buchanan Street.

GENUINE EXTRA STRONG TOBACCO PAPER made from pure Tobacco Juice. Numerous testimonials as to genuineness, &c. 1s. per lb.

SAMUEL MAY, Seedsman, 180, Wade Lane, Leeds.

By Royal Letters Patent.

TOBACCO TISSUE for DESTROYING RED SPIDER, MEALY BUG, THRIP, and other INSECTS.

Manufactured from Tobacco rolled into Sheets, which will consume without the assistance of blowing, and will not injure the most tender plants. It will be found more economical and very superior to the article generally used.

Sold in 1-lb. packages and upwards, price 3s. 6d. per lb., by Messrs ROBERTS & SONS, Tobacco Manufacturers, 61, St. John Street, Clerkenwell, London; and by all Seedsmen and Nurserymen.

Destroy your Insect Pests.

PRESERVE YOUR PLANTS and TREES.

YOU MAY EASILY DESTROY ALL PLANT PESTS,

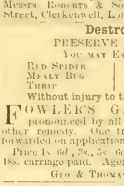
RED SPIDER	GREEN AND BLACK	ANTS
MEALY BUG	FLY	SCALE
THRIP	AMERICAN BLIGHT	MILDEW,

Without injury to the most delicate Plant or Tree, by using

FOWLER'S GARDENERS' INSECTICIDE, pronounced by all who have used it to be far superior to any other remedy. One trial will prove its efficacy. Testimonials forwarded on application.

Price 1s. 6d., 2s., 5s. 6d., and 10s. per Tin. Orders amounting to 18s. carriage paid. Agents required

GEO. & THOMAS FOWLER, North Street, Brighton.



GISBURST COMPOUND, whether used against Insects and Mildew, on Growing Plants, or as Winter Dressing on Trees at rest, should be dissolved 48 hours before use. This gets rid of smell, and if the Solution be decanted, prevents any staining of foliage. A sfrength of from 1 to 2 oz. to the gallon of water is recommended for growing Plants; one from 4 to 16 oz. for Trees at rest.

Sold Retail by Nurserymen and Seedsmen, in boxes, 1s., 3s., and 10s. 6d. each.

Red Spider — Magnified.

Wholesale by PRICE'S PATENT CANDLE COMPANY (LIMITED).

Plagues of the Garden. Aphis Wash.

SIMPLE AND SAFE REMEDY.—By using the

APHIS WASH, these Pests of the Garden, together with Scale, Caterpillars, Slugs, Earwigs, &c., are immediately destroyed. Leaves not foul, but strengthens the Trees or Plants.

Extract from the "Gardeners' Chronicle," 19th August, 1865:—

"Some time since we received a sample of an Aphis Wash, prepared at the City Soap Works, with a request that it might be submitted to experimental trials. This having been done, we are enabled to report favourably of the results. Among other things it was also applied to various Cactuses, Marantas, and Calanthus infested by red spider, and a single application proved effectual for their destruction."

Extract from "Gardener's Magazine," 25th March, 1866:—

"It is a matter of importance that the Aphis Wash of the City Soap Works is now brought within the reach of gardeners, and as a matter of fact there is nothing to equal the Aphis Wash for the purpose it is intended to serve."

See also article by SAMUEL HIBBERD, Esq., F.R.H.S., in "Gardener's Magazine," of July 1, 1865.

From a Letter from G. GLENNY, Esq., *Fulham.*

"You will see by Lloyd's of Saturday, that I have publicly recommended it (the Aphis Wash). I have also mentioned it to several gardeners."

From a Letter from Mr. J. P. CHAPMAN, *Sunderland, Aug. 3d, 1865:*—

"I have tried it upon different plants with perfect success. I had many plants in my stove badly affected with red spider, but have washed every plant with the liquid, as you direct, and I verily believe not one red spider remains."

From Mr. SIDNEY FORD, *The Gardens, St. Leonard's Lodge, near Horsham, February 16, 1866:*—

"I am able to report most favourably as the result of my trials of your Aphis Wash; it has thing I have long felt the loss of. I like it very much, as it is not like many other washes, for it will all pass through the syringe without any trouble. From other experiments I made, the result has been a perfect success, and for fruit trees it will be a first rate wash."

Messrs. Grass have received a great many valuable testimonials from practical and amateur gardeners, and have liberty to refer to Mr. Eyles, of Messrs. Low & Son's Nurseries, Upper Clapton, who during the past autumn (1865), carried out a series of careful and thorough experiments with the "Aphis Wash."

Sold by Chemists and others, in 1s. bottles, and 2s. 6d. a gallon, with full directions for use.

Wholesale at the City Soap Works, Milton Street, London, E.C.

TAN GRATIS, in the immediate neighbourhood of Covent Garden Market.—Apply to
WM. ESSEX & SONS, 58, Stanhope Street, Care Market, W.C.

COCOA-NUT REFUSE is becoming scarce, the old reserves will soon be gone. Now sold in bags, 1 for 2s., 10 for 16s., 20 for 30s., 50 for 65s., 100 for £6.

Fourpence allowed for each bag returned carriage-paid.

A Railway Truck-load (not in bags), 40s.

Postage Stamps or Post-office Order, payable to J. BARSHAM & Co., Kingston-on-Thames, S.W.

EDWIN COOLING has still to offer in Strong Plants—
ATRIPLEX PURPUREA VARIEGATA, beautiful hardy plants, 6s. per doz.
CENTAUREA CANDIDISSIMA, 6s. per doz.
GERANIUM, CRYSTAL PALACE SCARLET, MR. WHITBY, and HELEN LINDSAY, 4s. per doz.
GERANIUM (NOSEGAY), CYBISTER, MONITOR, &c., 6s. per doz.
GERANIUM (VARIEGATED), ALMA, BIJOU, FLOWER of SPRING, LADY PLYMOUTH, 4s. to 6s. per doz.
GERANIUM (VARIEGATED), METEOR, BURNING BUSH, ARGUS, &c., 9s. to 12s. per doz.
GERANIUM (VARIEGATED), MRS POLLOCK, 12s. to 18s. per dozen
IRESINE HERBSTI, 4s. per doz.
Mile Ash Nurseries, Derby.

SPECIMEN ORNAMENTAL FOLIAGE PLANTS.

Anthurium magnificum (6 vars.)	Dracæna ferrea variegata
,, leuconeurum [foliam]	Ella guineensis macrocarpa
,, Augustinianum	Latania borbonica
Alocasia Lowi (6 crowns)	Maranta regalis, 2 plants
,, zebrina	,, zebrina
,, metallica	Monstera deliciosa
Cyanophyllum magnificum	Theophrasta imperialis, very fine
Cycas circinalis	Sphærogyne latifolia [plant
Croton variegatum	Pandanus utilis

J. MORSE begs to offer the above (as he is giving up their cultivation at very moderate prices; some at little more than their original cost. They are all clean, in fine possible health, and fit for immediate exhibition. The sizes and all particulars will be given on application. If the whole are taken, they will be sold for 20 guineas
JOHN MORSE, The Nurseries, Dursley, Gloucestershire.

Novelties, Novelties.

JAMES GARAWAY AND CO., Durdham Down Nurseries, Bristol, offer the Three undermentioned NEW SEEDLING GERANIUMS as not only Novelties but decided acquisitions:—

TRICOLOR SECTION.

QUEEN of TRICOLORS.—This variety surpasses in beauty the well-known Mrs. Pollock, from which it is a seedling; the colours are of the same shade but much more vivid, and, being a great improvement, the green colour does not project itself beyond the zone. The flowers are produced in abundance, and are scarlet in colour and of good shape.

Well-established Plants will be supplied the last week in June, at 21s. each. Four sent when Three are ordered.

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BRONZE QUEEN.—A variety raised from Cloth of Gold, with foliage of same colour, but with the addition of a dark bronze zone distinctly marked; of good dwarf habit, free in growth and very effective, well adapted for bedding; flowers scarlet corise, produced in good-sized trusses

Price 7s. 6d. each. Four sent when Three are ordered.

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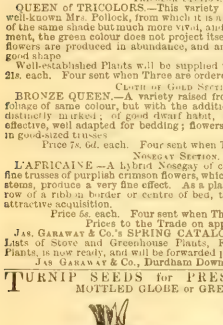
L'AFRICAINE.—A hybrid Nosegay of compact habit, with extra fine trusses of purplish crimson flowers, which, elevated on stiff flower stems, produce a very fine effect. As a plant for the back or second row or a ribbon border or centre of bed, this will be found a very attractive acquisition.

Price 5s. each. Four sent when Three are ordered.

Prices to the Trade on application.

JAS. GARAWAY & CO.'S SPRING CATALOGUE, containing Priced Lists of Stove and Greenhouse Plants, Ferns, and Bedding-out Plants, is now ready, and will be forwarded post free on application.
JAS GARAWAY & Co., Durdham Down Nurseries, Bristol.

TURNIP SEEDS for PRESENT SOWING.
MOTTLED GLOBE or GREY STONE.



From HENRY HUDSON, Esq., *The Elms, Pershore.*

"Your Grey Stone and your Short-top Six-weeks Turnips are everything we can desire. After a trial of the various sorts of Turnips, I have found these two the best—the Grey Stone for early planting, and the Six-weeks for late planting. Whilst almost all the other varieties of Turnips are hollow and valueless this season, these two are excellent. Half the secret of keeping lambs healthy in the autumn is to give them plenty of Grey Stone Turnips through the months of August and September, pulped with Tritolium or Clover-chaff."

Price 10d. per pound.

Also,
SUTTON'S IMPERIAL GREEN GLOBE, 9d. per lb.
LINCOLNSHIRE RED PARAGON, 9d. per lb.
POMERANIAN WHITE GLOBE, 9d. per lb.
HARDY GREEN ROUND, 9d. per lb.
SUTTON'S SHORT-TOP SIX WEEKS, 1s. per lb.
And other choice sorts, cheaper by the bushel, carriage free.
SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

Just Published, post free 12 Stamps
(GRATIS TO CUSTOMERS),

CARTER'S NEW BOOK on BEDDING PLANTS. Containing Original Articles on the Artistic Arrangement of Bedding Plants; and 120 Illustrations of Geometrical Designs for Flower Beds, besides other useful and original matter.
JAMES CARTER & Co., 237 & 238, High Holborn, W.C.

Seeds for Present Sowing.

JAMES CARTER AND CO. are now offering New Seed of the undermentioned, the quality of which cannot be surpassed, the seed being saved from plants which have taken Prizes at all the principal London Flower Shows.

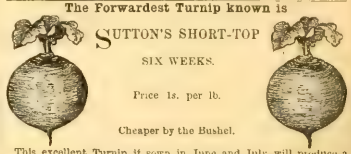
CARTER'S PRIZE CALCEOLARIA, 2s. 6d. per packet.
CARTER'S PRIZE CINERARIA, 2s. 6d. per packet.
CARTER'S PRIZE-FRINGED CHINESE PRIMULA, 2s. 6d. per packet.

The above forwarded on receipt of postage stamps.
JAMES CARTER & Co., 237 and 238, High Holborn, W.C.

The Best Swede for Late Sowing
IS
THE IMPROVED HARDY WHITE
(SUTTON'S Selected Stock),
Price 1s. per lb., or cheaper by the bushel.
Carriage free.

SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

The Forwardest Turnip known is



SUTTON'S SHORT-TOP SIX WEEKS.
Price 1s. per lb.
Cheaper by the Bushel.

This excellent Turnip, if sown in June and July, will produce a heavy crop, to come off in time for Wheat sowing.
SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

To Fruit and Rose Growers.

STANDEN'S GARDENERS' and AMATEURS' FRIEND, a compound of the richest Fertilising Phosphates, and the most valuable of all Manures for Vines and other Fruit Trees, Roses, Azaleas, and New Holland Plants, also Chrysanthemums, Dahlias, Geraniums, &c. Sample Canisters, 1s. and 2s. 6d.; Bags, 5s. 6d., 10s. 6d., and 21s. No. 1 for all Hard-wooded Plants; No. 2 for all Soft-wooded Plants. Now sold by most Nurserymen and Seedsmen. For List of Agents see Advertisements in *Gardeners' Chronicle* for March and April.
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ESTABLISHMENT FOR THE INTRODUCTION OF NEW PLANTS,

ROYAL ZOOLOGICAL and HORTICULTURAL GARDENS, BRUSSELS, BELGIUM.

ONE HUNDRED QUITE NEW AND FINE ORCHIDS,

Belonging to the most favourite genera, recently discovered and introduced by M. LINDEN'S Collectors. Among them are many new and splendid CATTLEYAS and LÆLIAS, such as the glorious CATTLEYA MAXIMA (true), and LÆLIA WALLISII. Upwards of 25 new and magnificent kinds of ODONTOGLOSSUM, and an equal number of large flowering ONCIDIUMS, &c., suitable for cool treatment.

Arads.

ALOCASIA	CALADIUM	DIEFFENBACHIA
ANTHURIUM	COLOCASIA	PHILODENDRON, &c

Bromeliads.
One of the largest Collections of these plants.

Economical and Medicinal Plants.
This Collection contains many new and rare plants useful for the Colonies.

Fine Foliaged and Ornamental Plants,
Such as ARALIA, DIDYMOPANAX, OREOPANAX, PARATROPIA, and SCIADOPHYLLUM, upwards of 20 quite new species; new CYANOPHYLLUMS and SPHÆROGYNES, RHOPALAS and THEOPHRASTAS, in great quantities

Herbaceous and Tree Ferns.
The largest Collection in Europe; the Tree Ferns are represented by 7s distinct species.

Marantas.
All the best varieties and upwards of 30 quite new species.

Palms, Cycads, Zamias Pandani.
This Collection is very extensive and contains upwards of 50 quite new species.

Tropical Fruit Trees.
The most complete Collection in Europe, and many new and delicious fruits of the greatest interest for the Colonies.

STOVE and GREENHOUSE PLANTS. Several NEW CONIFERS from North Japan, &c., &c.

NEW AND BEAUTIFUL PLANTS FOR 1866.

JOHN J. LINDEN

HAS THE PLEASURE TO OFFER NOW FOR THE FIRST TIME

THE FOLLOWING FIRST-RATE NOVELTIES,

SEVERAL OF WHICH FORMED PART OF HIS PRIZE LOTS AT THE GREAT INTERNATIONAL SHOW.

For description see M. LINDEN'S NEW CATALOGUE, which will be forwarded Post Free on application to Messrs. SILBERRAD & SON, 5, Harp Lane, Great Tower Street, London, E.C.

Anthurium regale (Lind.).
Price—First Size, 84s. each; Regular Size, 42s. each.

Aphelandra ornata (Anderson).
Price 21s. each.

Calathea (Maranta) Lindeniana (Wall.).
Price—Extra Strong Plants, 84s. each; Smaller, 42s. each.

Dimorphanthus Mandshuricus (Rupr.).
A most ornamental hardy Araliad from the Amoor River. This noble plant, with leaves 3 yards in length and 2 in breadth, produces a very grand effect. Price 21s. each.

Maranta rosea-picta (Lind.).
Price—First Size Plants, 84s. each; Smaller, 42s. each.

Passiflora helleborifolia (Wall.).
Price 12s. 6d. each.

Passiflora macrocarpa (Wall.).
Very robust species, bearing fruits of 8 lbs. weight.
Price 12s. 6d. each.

Rhopala aurea and serratifolia.
Two fine and elegant new species from extra-tropical Brazils.
Price 21s. each.

The Plants will be delivered free in London.

BRUSSELS ROYAL ZOOLOGICAL and HORTICULTURAL GARDENS.—June 23.

ADIANTUM FARLEYENSE, True.

ROBERT T. VEITCH

HAS MUCH PLEASURE IN OFFERING FOR THE FIRST TIME TO THE PUBLIC

THIS VERY HANDSOME VIGOROUS-GROWING STOVE FERN,

SO UNIVERSALLY ADMIRED AT THE LATE INTERNATIONAL EXHIBITION

This Adiantum was introduced from Barbadoes by Thomas Daniels, Esq., Stoodleigh, Tiverton.

Plants will be ready in July next at 42s. each. Usual allowance to the Trade.

☞ *Orders are now being booked, and will be executed in rotation as received.*

NURSERY: NEW NORTH ROAD, N.; SEED WAREHOUSE: 54, HIGH STREET, EXETER.

Bromus Schraederii (True).

MESSRS. JAMES VEITCH AND SONS have just received in excellent condition, direct from Australia, a Consignment of SEED of the above valuable forage plant, and have great pleasure in offering it at 3s. 6d. per lb.

Special prices per Bushel or Cwt. on application.

Royal Exotic Nursery, King's Road, Chelsea, S.W.

Brighton and Sussex Seed Warehouse.

EDWARD CARPENTER'S MIXTURES of PERMANENT GRASS and CLOVER SEEDS.—Best quality, 36s. per acre (2 bushels light seeds, and 12 lb. Clovers and small seeds per acre).—See testimonials in Catalogue.

EDWARD CARPENTER'S RENOVATING MIXTURES for Improving Old Pastures.

PRICED CATALOGUES of KITCHEN GARDEN, FLOWER, and FARM SEEDS now ready.

EDWARD CARPENTER, Seed Merchant and Grower, 96, St. James's Street, Brighton.

Notice.

NEW HARDY CLIMBERS.

CLEMATIS PRINCE of WALES.—Large flowers of a rich deep violet purple, with red bars down the centre of each sepal. First-class Certificate. 21s. each.

CLEMATIS RUBELLA.—Very fine rich velvety claret; stamens pale green. First-class Certificate. 21s. each.

The usual allowance to the Trade, and a List of Firms will be advertised at a later period.

See Proceedings of Royal Horticultural Society's Scientific Meetings, June 27, 1865, page 124, where James Bateman, Esq., called attention to a few plants, amongst other objects, of which the following is an extract referring to the above Clematises:—

"In the room you will notice an exhibition of Clematises, all of which are of a most magnificent type. Nothing can be more beautiful than these Clematises. See what fine large blue and purple petals they have, shining in some cases with metallic tints like the flowers of certain Lycaenes. They are varieties raised by those most successful hybridisers—Messrs JACKMAN, of Woking, who will have the honour of introducing quite a new race of Clematises, which I believe will be 'amongst the best, if not the very best ornaments' for all out-door walls, &c."

Messrs. GEORGE JACKMAN & SON have much pleasure in informing the Public that they shall be in a position to send out the above two New Clematises in the coming Autumn (1866).

Orders will be taken now, and the Plants will be forwarded strictly in rotation.

Woking Nursery, Surrey.

Bedding Plants, Bedding Plants.

GEO. MCRAE AND CO. beg to offer to the public strong Plants of the following at 2s. 6d. per dozen:—Geranium Nosegay, Scarlet Defiance, Punch, Belle de Feu, Crystal Palace Scarlet, Trentham Rose, Carmine Nosegay, Princess of Prussia, Rose Queen, and Tom Thumb's Master. Calceolaria aurea floribunda, Heliotropes, Verbenas, Lobelias, Dahlias, Fuchsias, Iresine Herbstii, &c.

BIJOU (variegated) GERANIUM, 3s. per dozen, autumn-struck.

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WM. CUTBUSH AND SON are now sending out SEED of their superb PRIMULA SINENSIS FIMBRIATA, which has for many years given great satisfaction.

The *Gardeners' Chronicle* of the 6th of January, in Notices to Correspondents, says:—"The blooms sent are remarkably fine, richly coloured, full and densely fringed; they are evidently the produce of a capital strain."

The *Journal of Horticulture* of the 23rd of January, says that:—"The finest and richest coloured Chinese Primulas we have yet seen are those raised by Messrs. Cutbush & Son."

Sealed packets, 2s. 6d. and 5s. 6d. each

CINERARIA, from finest named varieties, per packet, 2s. 6d. and 3s. 6d. each. Highgate Nurseries, London, N.

The Gardeners' Chronicle.

SATURDAY, JUNE 23, 1866.

MEETINGS FOR THE ENSUING WEEK.

TUESDAY,	June 26	Zoological	8½ P.M.
THURSDAY,	— 28	Royal Horticultural (Rose Show), at South Kensington	2 P.M.
SATURDAY,	— 30	Royal Horticultural (Weekly Show), at South Kensington	2 P.M.

WE have already on two occasions noticed the "FUNGORUM CARPOLOGIA" of the brothers TULASNE, one of the most beautiful and important publications of the day, and we have now to call attention to the third, and unhappily the concluding part, which is in every respect equal to those which have already appeared. Though FRIES and others had suspected that the same species of Fungus assumed not only very different forms but totally different fructification, this was in most cases rather the result of tact than of positive inquiry; but the TULASNES have demonstrated the fact, and have shown, that as a great reduction of genera was formerly made by the elimination of mycelia and imperfectly developed forms, a still greater reduction must ultimately result from the assigning these secondary, tertiary, or multiple forms to their proper species. There have been a few labourers in the same direction, amongst whom DE BARY deserves a first place, but no one has laboured like the TULASNES, or persistently carried out the requisite researches in every direction. We regret the more that they have announced a cessation from their labours, because what they have done amongst the moulds, in referring many of them as mere bearers of conidia (a sort of secondary fruit to Sphæriaceæ), would lead us to expect still more startling results. It is quite certain that many of them are mere subsidiary forms of what are apparently very slightly related species, and it is very probable that of those which are really autonomous, there are two or more very distinct forms of fructification, a matter which is by no means of small importance as regards the part which they take in fermentation. Indeed, in one or two instances, as in Ascophora elegans, two kinds of fruit grow on the same thread. It is also greatly to be desired that we should have some more definite view respecting the species which attend or produce cutaneous affections, especially since an authority like ERASMUS WILSON has declared that the supposed Fungi are mere abnormal cellular developments, a notion to which no practised mycologist will very readily subscribe.

One of the most interesting matters in a more popular point of view which is broached in the work is the development of Peziza tuberosa. This Fungus always grows from an irregular black-coated tuberous body, and uniformly where some species of Anemone, as the common Wood Anemone, abounds. It has been therefore asserted that the tuberous bodies were the roots of the Anemone, a notion which could not be received by any one who compared the structure of the two. The bodies were clearly of a fungoid nature, and were, in fact, in structure like the genus Sclerotium, the species of which have long been exploded as not autonomous. The tuberous bodies were merely the winter or resting state of the Fungus. It has now, however, been ascertained that the Sclerotium is formed with the diseased roots of the Anemone, so that the Fungus really is a parasite on the Anemone, the Sclerotium being formed at the expense of its tissues.

There is one view, however, of our authors to which we cannot accede. A Fungus was long since published by SOWERBY under the name of Sphæria clavata, which occurs occasionally in Fir-woods, as in the neighbourhood of Bristol, where it has been gathered in tolerable abundance by Mr. BROOME. Our authors assert that the supposed fruit of this Fungus is not the real fruit of the Club-shaped Fungus, but a species of Hypocrea parasitic on Clavaria Ligula, Schœff. If the species of Clavaria in question were a British species, we should have less hesitation in acceding to this view, but no specimen has yet been gathered with the fruit of a Clavaria or which was not furnished with perithecia. The specimens figured in the work were forwarded to the Messrs. TULASNE in a living state from Somersetshire by Mr. BROOME, so that the matter must for the present be regarded as mere theory, though the form is certainly abnormal.

It is remarkable, on the other hand, that several of the moulds, which are secondary forms of more perfect Fungi, are very common in the mucedinous state, but extremely rare with perfect fruit. Nothing, for example, is more generally diffused than the yellow mould which attacks Boleti, yet nothing is more rare than the perfect form. As a confirmation of this startling fact we may mention that Mr. BROOME has lately discovered the perfect form of Epochnium fungorum, which is one of our commonest Fungi, on Corticium læve, in its sporiferous state.

On comparing the results of our authors' labours on Fungi and Lichens, it can scarcely escape notice how very closely related Lichens are to Fungi, and that they clearly form merely divisions of one great alliance, a view which has not generally been adopted, though we believe it to be perfectly just.

In conclusion we ought to observe that the work has been thought in France of such great importance that an especial report of it was presented to the Botanical Society of France by Count JAUBERT. In this he calls especial attention, not only to its general scientific merits, but to the religious and strictly philosophic tone which pervades it, and to its correct and elegant Latinity, in which respect the only rival is the classical ENDLICHER, who is justly esteemed in this respect as the Coryphæus of botanists. *M. J. B.*

THERE is, we have already said, no doubt that if the JUDGES AT OUR FLOWER SHOWS could be allowed more time to work out their decisions, unsound conclusions would be less frequent. Those who have been accustomed to act in the capacity of censors at a Horticultural Exhibition will doubtless recall instances in which some knotty point has arisen which required *time* as well as attention and patience to disentangle it; but there was full work before them for all the time at their disposal. What was to be done? They could not pause to untie this knot, for while doing so another would be tying! They have had no alternative but to draw the sword, rudely sever the knot, and proceed.

This, we say, is under the existing state of things the only alternative. But is it satisfactory? We think not, and for that reason we venture to suggest a remedy. Let the objects exhibited at our great shows be placed ready for the judges by—say 2 o'clock on the day previous to the opening. This would give the judges ample time, free from the hindrance caused by distinguished visitors coming in before the hour of opening, and free from the prospective pressure of the opening hour. The only limit to the examination of the objects exhibited would be the close of daylight. Indeed their labour need not necessarily end here. Matters requiring discussion or mature thought might be calmly and quietly discussed onward till settled.

Let us consider how far this would affect exhibitors, who are entitled to the fullest consideration in any new arrangement that may be made. It would certainly add something to their expenses, but it would not increase their labour. The plants must under any circumstances be conveyed to and fro. To those who live within 20 miles of London (as most of our great exhibitors do), it would involve the necessity of leaving home on the morning instead of on the evening preceding the day of the show. One night on the road would thus be avoided. But even were the expenses and disadvantages of exhibitors far greater than we conceive them to be, we submit that they would be cheaply purchased by the greater certainty of a full and just recognition of their claims.

One word more to exhibitors. We should be sorry to think that our flower shows, grand as they are, have reached a point beyond which there is no hope of improvement. It will have been gathered from the preceding remarks that we hold the very reverse of this. The objects are no doubt to some extent grown and set up to meet the approval of the judges; they are therefore remotely, if not directly, responsible for the conceits and shortcomings, as well as for the grandeur and beauties of our shows. Let them discourage the former, and we venture to say they would gradually disappear. Now, it follows that if the judges of the future should be selected in accordance with our suggestions, the exhibitors of the future must rise to their level, or fall into the rear. The great fault of our present shows is to our mind the trim, exact, and distorted appearance of many of the specimens. They are "made up" to an ideal—often to our view a very false ideal—rather than aided and encouraged in a natural development. We would rely less on Art and more on Nature. Azaleas in crinoline; squat Roses with a tight "choke" round their necks, made to look the spectators hard in the face, but deprived of every vestige of grace, the natural attribute of the Queen of Flowers; military plebs who are thought to be well dressed because tightly dressed—such would hardly hold their own against Nature's beauties with men of a refined and cultivated taste—qualities which, we maintain, we have a right to look for in our judges. We do not object to Art. We admit its necessity. But let us have high art; art that does not "o'erstep the modesty of Nature," but developes the beautiful in sympathy with, rather than diverts or perverts Nature, in slavish obedience to a baseless empiricism.

—— Those who have witnessed the Rhododendron Shows of the metropolis, or have had the advantage to inspect an American garden in the country, will admit that while these fine evergreens take the first place in such a garden, the effect is heightened in a marvellous degree by the introduction of the bright-coloured HARDY AZALEAS. The general fault of these latter plants is that their blossoms are small, and are produced rather too early to fit in well with the Rhododendrons, while the fact of their earliness brings out another disadvantage, namely, that they are almost or quite leafless when in blossom. We were much gratified, a few days ago, to find at the Knaphill Nursery of Messrs. Waterer & Godfrey, that special attention has for some years been directed to the remedying of these very evils, and with the most satisfactory results, some of the seedlings which were then in bloom, and which had been obtained by crossing and intercrossing, aided by the pollen of Azalea sinensis, being remarkable improvements on the older forms, especially as regards the important decorative qualities of size of blossom and lateness of flowering. In some instances the flowers were nearly as large as those of a Pontic Rhododendron, while the colours were brilliant and varied, and the breadth of the segments so much increased as to give that most important quality, good form. Many of the new sorts were blooming freely, at the same time as the bulk of the hardy Rhododendrons for which this nursery is specially famous, and several others were only at the time of our visit in the bud state, and would, as far as we could judge, last out the very latest of the Rhododendrons. We have no doubt that these late-blooming hardy Azaleas, which are various in colour—white primrose, yellow, orange copper, red, and rose of various shades—will become in great request for planting American beds in pleasure-

grounds, when they become better known and are procurable. One or two double flowered sorts, which were noticed in the same collection, were particularly interesting from the apparent persistency of their blossoms.

—— The Birmingham Rose Show, one of the best, if not the best, provincial meeting of its kind, takes place this year on the 5th and 6th of July. The prize list differs in but few particulars from that of former years. The most important alteration is the reduction of 96 to 72 varieties in the nurserymen's class, a decided change for the better, and one which might, we think, be advantageously carried further in the same direction. The class for 24 varieties reserved for nurserymen resident in the counties of Warwick, Worcester, or Stafford only, will no doubt form a very important feature in this Midland Rose Congress, and to local residents must be particularly interesting and instructive, affording the very best information as to what varieties have proved themselves adapted for general cultivation in the district represented. One class, we observe, is for the best basket or vase of Roses and Rose foliage, and another for the best hand-bouquet, also of Roses and their foliage. Bouquets have hitherto always been too large and formal; and therefore with a view to render them smaller and less crowded, the schedule intimates that it is essential they should be suitable for the hand, and suggests the free use of Noisette, Moss, and Tea-scented Roses in a just opening condition. This suggestion may do something towards spreading an improved taste in bouquet making.

—— We have from time to time referred to the Sportive character of the Indian Azalea, and called attention to the fact that some of our best varieties have had their origin in a freak of Nature. A fresh instance of this sportiveness was shown the other day at South Kensington. Mr. W. Barnes there exhibited a variety of Azalea which he purposes to designate Her Majesty. It is, we believe, a sport from Madame Miellez, or some of the forms closely allied to that fine old sort, and in quality, therefore, as well as in name, takes the very highest rank. The flowers are of the full average size, and of excellent form and substance; and the colour is a soft lilac-tinted blush, white at the margin, densely spotted with crimson in the upper part, and marked with variable stripes, or sometimes broadish bars of deep rosy purple. Its high quality, as regards the flower itself, and this novelty of marking, will make it an acquisition in any collection of these showy plants.

NOTES ON CONIFERS.—No. III.

As we ascend from the coal formations through the different strata until we reach our own times, the character of both animal and vegetable life comes nearer and nearer to that which now exists—not that this can be said to be due to any impossible gradation, but by a succession of perks, or steps, which although sufficiently well-defined and distinct when looked at in detail, may still in the abstract be styled gradual.

As it is with other organisms, so it is with Conifers. The earlier the strata the greater the uniformity in species over the world—more especially those parts of it which were connected together, and we infer that an uninterrupted communication once existed between Europe and Australia, because throughout almost the whole of the Secondary epoch, down to the Eocene in the Tertiary, a type of organisms existed in the then Europe whose nearest allies are only now to be found in Australia. In Mammals the Marsupial type, if it did not alone exist (which many facts suggest as probable), was at least most prevalent. In Molluscs the Tridacnæ, of which living examples are now found alone in the Australian seas, was plentiful in the European seas; and so similar was the flora of Europe to that now in Australia that it supplied the materials and suggested the subject of Prof. Unger's well-known lecture styled "New Holland in Europe." The fossil Conifers found in the secondary strata of Britain were of the same character as the other vegetation, Araucarias of the Norfolk Island type being one of the most striking and commonest features.

At the close of the Eocene epoch a great change seems to have taken place. Europe became separated from New Holland, and a new flora and fauna (the Miocene) superseded the Australian type. It was what may be called the Californian type, and extended both over Europe and America, and probably also over Asia; an immense amount of materials has put both of these positions beyond question. The Conifers supply good illustrations of this, and as an illustration is at all times worth a score of arguments, we give one bearing upon each.

Our readers know that the number of leaves in the sheath furnishes a good character for dividing the Pines. The species which have three leaves in the sheath compose a well-marked section, which is now mainly confined to North America. Their geographical distribution is as follows, leaving out Australia, Africa, and South America, which it is unnecessary to take into account, they possessing no Pines at all:—

Europe	0
Canary Islands	1
North America (west side)	4
Ditto (east side)	1
Mexico	3
North of the Southern Slope of the Himalayas	2
China	2
Philippine Islands	1

This distribution is perfectly capable of explanation, and we shall presently submit to the reader our ideas of the course of events which have given rise to it. In the meantime we merely draw attention to the fact that there are 20 three-leaved Pines in the northern part of the American continent against six found anywhere else. These three-leaved species have all a

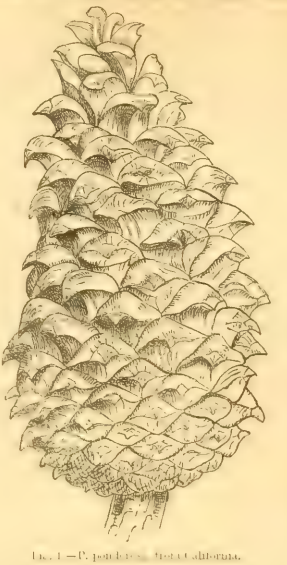

Fig. 1.—Pinus ponderosa, from California.

peculiar facies, and similar cones with more or less prominent prickles or hooks on each scale. See Fig. 1.

Fig. 2 shows the cone of Pinus Aquensis (Pine of Aquitaine we suppose), a species of which remains have been found by M. Saporta in the Tertiary marly limestones in the south-east of France, and figured by him in the "Annales des Sciences," 4th ser., vol. xviii., p. 214. No one can, we think, have any doubt that this belongs to the same group as Pinus ponderosa.

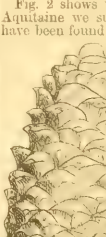

Fig. 2.—Pinus Aquensis, Tertiary, south of France.

The occurrence of these two so nearly allied species, the fossil one in France and the living one in California, strongly suggests a former connection in some way between these countries. A still stronger one is supplied by the genus Sequoia, one species of which, Sequoia Langsdorffii, has left traces of its existence in the Miocene time in Europe, in the American Polar regions, and in California; and the Sequoia sempervirens, which still exists as one of the most characteristic trees in California, is so closely allied to that extinct species that fossil remains of the former found in the Miocene strata, near Vancouver's Island, have been supposed to belong to the latter. The reader may judge for himself. The graphotype, Fig. 3, represents a twig

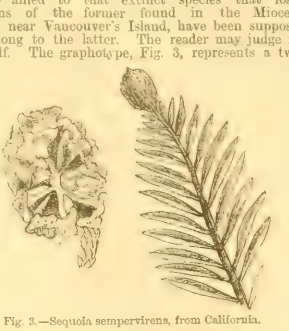

Fig. 3.—Sequoia sempervirens, from California.

of the normal form of Sequoia sempervirens; Fig. 4, that of S. Langsdorffii from Switzerland: and Fig. 5 of the same, brought by Sir John Richardson from Tertiary deposits near the mouth of the Mackenzie River.

Fig. 4.—Sequoia Langsdorffii, from Switzerland.

If these were solitary instances they might be explained away, but on the contrary they represent the general character of the distribution of the Miocene flora of the Northern Hemisphere.

Fig. 5.—Sequoia Langsdorffii, from Mackenzie River.

These and other facts of a similar nature led Unger and Heer to the belief in a Miocene Atlantis, that is, a continuation of the European Continent to America. This hypothesis has not in this country met with the favour which we think it deserves. Sir Charles Lyell is unable to accept it, although he does not absolutely reject it; Prof. Oliver controverts it on botanical grounds, and on the whole the extent of geological changes which it presupposes has seemed too great to obtain for it general acceptance. Notwithstanding this, we confess that we consider a land communication during the Miocene epoch between Europe and America to be absolutely essential to explain the facts relating both to the extinct faunas and floras of these countries, although that communication may not have lain exactly in the line supposed by Unger. It can scarcely be disputed (indeed it is generally admitted) that Europe at a former period extended westwards at least as far as the Canary Islands and Azores, and in these a number of plants of the type characteristic of California and the south of North America still remain; and we believe we are able to prove that the extension went as far south as St. Helena.

When that connection between North America and Europe existed, the same fauna and flora extended over both, and the explanation of the distribution of their present faunas and floras is to be sought for in the course of events which have taken place since then. The distribution of Conifers is similar to that of other families, and the same explanation ought to apply to all. An explanation which we consider satisfactory is given in a work on "Geographical Distribution," the first volume of which

Some of our readers may care to be informed that the above figures have been engraved by the new process of Graphotype, and as we have tried it, they may perhaps like to know our opinion of its usefulness. There are three grounds on which it claims to be an improvement. The first is the greater rapidity with which the work may be done. There can be no doubt as to this. Figs. 1 and 2, for example, would probably take a good wood engraver two days to cut. They were drawn on the spot, or rather painted with the proper ink, on the chalk block in about three hours; and considering that they are the work of an amateur, and that it is our first experiment with the new tools, it is reasonable to suppose that a better artist, and one accustomed to the tools, would turn them out much quicker. The next point to go to the Graphotype Company to get the chalk lines cut out, which is a simple and rapid process, and then the block is stereotyped. If everything is ready, so that no delay take place in waiting, we should say that these figures might be done in three days from the first touch of the pencil to the last squeeze of the printing press. Practically we have not found it so, because the Graphotype Company have so much more to do than they can overtake that we bid fair to wait a fortnight to get the finished block stereotyped, but by-and-by this should be remedied. The next advantage is cheapness. As the material costs next to nothing, and the time necessary is also next to nothing, the cost, or actual outlay, should be little more than the artist's charge for drawing and the expense of stereotyping. The Company therefore have it in their power to make the price very low, but of course they will naturally wish to make the most they can of it, and the public may expect the price to be fixed at just so much less than the cost of wood engraving as will turn the scale in favour of graphotype, and no more. We think this is a reasonable inference, not only from human nature and the details above-mentioned, but from the Company dwelling upon the next advantage as the main ground on which they recommend their invention, viz., that it secures for the engraving an actual fac-simile of the design of the artist; that no block-headed engraving cutter can spoil it, and by the improvements of the manipulator, every touch of the artist is preserved. We doubt how far this benefit will be secured. In the first place, it is not as if the artist made his design with his usual tools. The draftsman has to lay aside his pencil and take a fine camel-hair brush, cut away until the pencil part is limited to about a dozen of hairs, and to paint with this. No doubt the ink is delightful to work with, so free, so flowing, and so liquid, that it is wholly free from the worst evil of lithographic painting or writing; but it is a new tool and a new medium, and it would be absurd to expect the same results from working with it which would be produced by an artist working with the tool to which he is accustomed. The pencil artist is accustomed to, and requires a substance to draw on, presenting some resistance. The graphotype brush bends with the slightest impulse. Before his work can be as good as it was of yore, he must learn a new manipulation. That he will do so, and that his talents will then produce as fine results as before, is very probable, although not certain. We are informed that only artists take readily to it, that an hour's practice being all that they find necessary to give them as great facility as in drawing upon wood, and the impression of many seems to be that the effect is superior. The effect to our mind, however, produced by a graphotype block is certainly not the same as that by a wooden, and we do not like it so well. Neither can the style of work itself, that is, the fineness and delicacy of execution, ever come up to the best class of wood engraving, because it must always be stereotyped, and in wood engraving the best class of work ceases to be so as soon as it is stereotyped, the process of stereotyping destroying the sharpness of the lines and filling up small spaces. To us it appears that it is the naturalist who will chiefly profit by the new process. His drawings, more than those of any one else, are apt to be distorted by the engraver. There is nothing conventional in his work—it is all facts. Every line should be in its place, of its proper length, and of its proper thickness. The engraver (until taught) never troubles himself with these details; he tries to give the effect; and the naturalist is often driven to despair when he finds the effect given by adding to the number of the joints or segments, more than Nature gave, or by the introduction of forms which she never knew. He may now protect himself from this, although at the cost probably of inferior execution and uglier pictures, but if there are any blunders, he will have no one to blame for them but himself.

is just published.* As few of our readers may probably yet have seen it, we shall quote the passage containing the explanation to which we refer.

First let us take this general principle along with us:

"The glacial epoch, when it arrived and advanced southwards, must have operated in two ways—it must either have killed, or transformed into something else, all those species of plants and animals which were subjected to its influence. It is also possible that it may have driven before it, at a respectful distance, all those which escaped its influence, and which migrated southward, carrying their climate with them."

Next let us consider the local or geographical effect of this influence:—

"When the glacial epoch was at its height, ice covered the whole of North America, as far south as the north of Georgia and Texas (see Map 4†)—that, as is proved by the tertiary deposits to the south of them, being the then southern termination of the North American continent—and the ice there ran into the sea in mighty glaciers. In its progress south it must, of course, have driven every plant or animal before it, making a clean sweep of all life wherever it came; and wherever it rested, covering the land as it did, for thousands and thousands of years (whether intermittently or not), it must have left the surface a *tabula rasa* for the reception of new impressions. Where there was an extension of land before it, as in the south-west corner of North America, the plants and animals would take refuge in it. Where there was no extension of land, and the glacier ice terminated in the sea, of course every living thing would be annihilated.

"In Europe, on the other hand, although the drift or glacial ice did not reach so far south as in America, nor, perhaps, the general mass of glaciers run into the Mediterranean Sea, we shall find, if we inquire a little, that it was in a still worse case than North America. The latter had an outlet; but we shall presently see that Europe had none.

"Let the reader figure on a map the extent of the land in Europe covered by the glacial ice (shown in Map 4). Then let him lay down its tertiary and quaternary beds (shown in Map 3). They, of course, represent at least some of the water previous to that period—they are the site of the seas in which these beds were deposited. Next, let him remember that at that epoch the general level of Europe and Asia was considerably lower than it is now. The Saharan sea was united with the Mediterranean and the Black Sea, and the Black Sea with the Caspian.

"Sir Roderick Murchison and M. de Verneuil consider that another sea as large as the Mediterranean, and several hundred feet in depth, existed about the south of the Caspian during the pliocene epoch (that is, the commencement of the glacial epoch). It is, therefore, no very unreasonable surmise that the level of Europe from the longitude of the western termination of the Sahara to the longitude of the Caspian Sea, was 100 fathoms lower than it is now. If the reader will add from Map 2 the portions of Europe, which in that case would be under water, to the other two (the limits of glacial action and tertiary deposits), he will find that Europe has all but disappeared. In addition to this, however, the sandy plains in the centre of Germany stretching with interruptions from the Danube to the Baltic, show every appearance of having been recently under water. If we reckon them also as submerged at that epoch, then Europe, east of the Atlantic, will be practically almost blotted out from the map. [The exceptions would be part of Spain, Sicily, and the Azores and Canary Isles, and in these, and almost nowhere else in Europe, we find species either allied to what we know of the past Miocene or present southern fauna and flora of North America.]

"Life in North America being by the glacial cold driven into Mexico, and in Europe almost entirely extirpated, and the communication with North America cut off, except at an extreme point which lay at the greatest distance from the surviving focus of life in each country respectively, viz., as regards America in the extreme north-east, while all the surviving life was crowded into the extreme south-west; and as regards Europe, while the nearest point whence life could be drawn was probably the south-east of Asia, it is plain that neither of the continents could help the other: America could receive European colonists, and Europe American, only after they had each been re-peopled from some other source.

"In the first place, as to Europe, it is plain that it must have drawn its new inhabitants almost entirely from Asia; the Sahara still subsisted as a sea, although, perhaps, diminished in size, and cut it off from Africa; and accordingly no trace of the fauna or flora of Africa proper is to be found in Europe. There was, therefore, no place except Asia on which it could draw (any slight remnants of the Miocene flora which are still to be found in Europe were doubtless preserved in those parts of the South of Europe which existed as islands beyond the reach of the ice of the glacial epoch); and, in accordance with this, we find that the flora and fauna of Europe and Asia are essentially the same. It is to be expected that in such an immense tract of country climatal variations must have arisen since then; and we can distinguish three sub-provinces (which may be called respectively the Scandinavian, the Mediterranean, and the East, or Mongolo-Siberian), but essentially the whole of Asia north of the line of the Himalayas and Europe is of one type. When we come to trace the spread of particular species of plants and animals, I have been surprised to find how happily this view explains many seeming anomalies, which have puzzled naturalists to account for, such as the distribution of the Cedars, the Silver Firs, many of the mammals, and, in fact, of every class of organic life in Europe and Northern Asia.

"As to America, the whole of its pre-existing flora and fauna having been crowded into the north-west of Mexico and Central America, that is the source from which it must have been restored. On the retreat of the ice the flora, of course, would follow it step by step; but its starting-point being west of the dividing ridge or backbone of America, or, what is probably more to the purpose, west of the tertiary sea which lay in the line of the Missouri and Mackenzie Rivers, and thus being penned in between the Pacific and these barriers, it would flow up in strength into California and Oregon, and only such a portion of it as might be able to cross the ridge or sea would succeed in making good its footing on the eastern side of North America.

"I conceive that the Missouri sea must have been the more important obstacle of the two; because the place where that sea lay is to this day the limiting boundary between various species inhabiting the country to the east and west of it. That sea, however, was interrupted near the south, and by that interruption Eastern America doubtless received many of its species. The sea appears to have run up straight to the Arctic Ocean in the line of the Mackenzie River; but I have a strong expectation that it will be found, when the regions to the north of Vancouver's Island are thoroughly examined, that this sea had another communication with the Pacific perhaps not very far north of or on the site of the tertiary beds near that island, which acted as a barrier isolating the strip of land which lies along the coast of the Pacific between the mountains and the sea."

This, however, leads to another question which we shall not enter upon. It is discussed at length in the work referred to.

The point which we wish here to bring out is the explanation why we find no species of Pines of the Californian type in Europe, although before the glacial epoch they were plentiful there; why one is still found in the Canary Islands, and why a few are found in the Himalayas and Eastern Asia. It is too large a question to take every item in detail, but the explanation we have offered shows how the glacial cold removed them all from Europe, while the former connection of that continent with the Canary Islands and their position beyond the influence of the glacial cold show how one has survived there, and how similar causes have preserved one or two in the South-east of Asia.

A similar course of reasoning applies to all other European Miocene species whose nearest allies still subsist in the south and west of North America. The Miocene flora found its chief places of refuge in the south-west of North America and the south-east of Northern Asia. Europe was re-peopled from the latter, and as the source was distant, so have the variations been considerable. *A. M.*

* The Geographical Distribution of Animals and Plants. By Andrew Murray. Vol. I. Mammals. Day & Son.

† The maps referred to in the geographical portion of the general maps in the work referred to. They are, 1, a Map showing the effect of an Elevation of 600 feet on the Configuration of Land and Sea; 2, a Map showing the effect of a Depression to the same extent; 3, a Map showing approximately the Tertiary and Quaternary formations throughout the world; 4, a Map showing approximately the places where marks of Glacial action have been observed; 5, a Map showing approximately the Rising and Falling Land at the present day.

PET PLANTS.—THE LAVENDER.

THE Lavender (Lavandula vera) is one of the sweetest plants in cultivation. The sober grey colour of its leaves and their slender make contrast finely with the heavier foliage and deeper green of other plants usually to be found in gardens; and its blue flowers are not only sweet but conspicuous for their beauty, as it is a free-flowering plant, and the spikes are well carried up, so that you cannot see a leaf as you look over it, only a mass of azure.

The late Duchess of Northumberland had her private flower garden at Syon House hedged about with Lavender. One man had charge of this special garden of select pets, and the very hedge had to be sweet and handsome, otherwise it could not have been there. My principal reason for writing this notice is to call attention to the uses of plants; they have their duties and may not be misplaced with impunity, for unless they are adapted to the end in view, generally and particularly, the design is inferior.

The Lavender, like many other plants, has to be seen *en masse* to get at its value as an ornamental plant. It used to be grown about Mitcham, near London, for its use in pharmacy, &c., and I well recollect my astonishment at the waves of this "azure field," when I saw and smelt the effect of an acre of Lavender. When grown as a hedge-row it has a dove-colour look, for you see the blue of its flowers and the sea-green or grey of its leaves at the same time. The fragrance of its flowers is well known and duly appreciated by rich and poor. The plants are cheap, and cuttings strike freely; and there are few situations where the Lavender will not grow and flower freely. *Alex. Forsyth.*

CAMELLIA CULTURE.—No. I.

THE demand for flowers, and in fact for anything connected with the vegetable kingdom which has beauty or interest wherewith to fascinate a plant-loving community, is so extraordinarily progressive in its character, as to astonish even practical gardeners themselves. The rage for novelty is increasing—I had almost said to an alarming extent; for when we look to the multitudinous varieties of florists' flowers, chiefly the work of cross-breeding, that are ushered in, and offered to the public at comparatively high prices year by year, one can scarcely be held blameable for expressing a doubt if they all prove acquisitions. We are, however, met with the rejoinder that floral taste is extravagant, and that novelty is demanded and must be supplied. That the sources of supply are apparently inexhaustible is beyond doubt, for, not to speak of fortuitous seedlings, or those that are the results of cross-breeding or hybridisation in our own country, the whole civilised world is ransacked for genera and species; and in no other quarter do these gatherings find a readier market than in this little island of our ours, which, although forming but a speck on the map of Europe, possesses citizens unparalleled for energy and application, who allocate a portion of their wealth towards the cultivation of fruit and flowers, and vie with each other in many ways in stimulating the progress of horticulture.

Old-fashioned flowers, in this onward progress, are by many persons in great measure ignored; and it is certainly not a very singular circumstance to see some self-important horticulturist, in these days, shrugging his shoulders, and looking on, or speaking of, with imperturbable coldness, places that have not "new plants," or Orchids, or the more rare forms of such families as Camellias, Azaleas, &c., to boast of. Amid all, however, one thing, is beyond doubt, that Camellias have lost none of their popularity, and it will be a long time, should the search ever be successful, before either China or Japan will yield up a flower that will eclipse or even rival this favourite. One can scarcely picture the grandeur of the Old White when associated with all the interesting Japanese plants that have recently found their way to this country, whether we admire the snowy whiteness of its inflorescence, the finely imbricated form of its flowers, or the broad dark green shining foliage with which the plant is adorned; and while we thus pay homage to its beauty in a wild state, we are compelled to admit its regal sway in our conservatories and greenhouses at home. All our vaunted skill in "cross-breeding" and careful selection in reproduction, has failed to yield us a single example out of a numerous progeny, that will rival the old white as a decorative plant. For purity of colour, for size, and for a profusion and constancy of bloom it has no equal. In point of form, if we adopt the canon of the florist, it has been excelled by such sorts as Lavinia Maggi, Jenny Lind, Wilderii, La Maestosa, and some others; but there is not a single pure white in the market that yet can be considered its equal, and this is no slight meed of praise. True, perfectly double flowers cannot reproduce seedlings, and the old White and Lady Hume's Blush, both of exotic origin, are of that order; so that we have had to make up our leeway from such types as the old Waratah, Double-striped, Chandleri, and such like; but there is not a semi-double white either of native or exotic origin of that purity of strain to justify any sanguine anticipations as to improving the quality of the whites. This is really the hitch that practical men have had to do battle against; and although such sorts as Donkelaari, Double-striped, and Chandleri have been known to produce pale coloured, and even in one instance, within my own knowledge, a pure white seedling, the progeny in most cases has not been sufficiently distinct, and in that solitary instance only of ordinary properties.

In every other colour, however, there is a decided move in advance, although the representatives of some shades are somewhat limited. In "stripes" and "mottles" we have a goodly host introduced, and many of them of unexceptionable character, of which not a few crop up to my recollection at the present moment; but if there is one more than another that might be called the "pink of perfection" for its vigorous and ball shrubby habit, and its double imbricated flowers of crimson and pink and white, barred like a huge Carnation, it is Lavinia Maggi. Rose colour is splendidly represented in Valtevaredo, Storyi, and Sacco nova; while in crimson we have Reine des Fleurs (there are two varieties under this name, the one a deep-shaded crimson, of large size and first-rate formation; the other a carmine, and white, of medium size, but not nearly so good in point of quality as the former); and Mathotiana, a very large sized flower of imbricated form, but pointed in the petals. Amongst the mixed multitude we have decided gains in Bonomiana, Queen of Beauties, Mrs. Abby Wilder, a flower of great substance, Countess of Derby, Cup of Beauty; the white variety of Mathotiana, Princess Frederick William, and others.

Simple and easy as the cultivation of the Camellia appears to be and undoubtedly is in the hands of those who have studied its physiological character, and shaped their practice accordingly, there are no end of complaints, especially among that vast multitude who grow a miscellaneous collection of plants in one house for their gratification, as to their want of success in its management. This may occur from a variety of causes. No greenhouse decorative plant in cultivation will withstand a greater amount of extremes of heat and cold, which, of itself, renders this plant invaluable; indeed it might be almost pronounced invulnerable to the sort of drudgery that plants must sustain in a house entrusted to the supervision of the "man of all work." Constant complaints are, however, ringing in one's ears of "buds dropping." "It is so provoking and annoying to have been looking forward all the season to the expansion of these flower-buds, when now that we have scarcely a flower in our greenhouse, off they drop, one by one, and the plants, too, quite in a healthy state. Pray can you tell me the cause and what is the remedy?" To the initiated in the practice of horticulture such a state of matters does appear anomalous and inexplicable. Bud dropping, I say, is clearly an index of mismanagement during the routine of cultivation; and if people were content with health and growth without bloom, it would be gross mismanagement and carelessness indeed that would induce failure of every other kind. It must be understood however that certain conditions must be complied with at the outset; for if the plant is sickly to begin with, the roots encompassing an impervious and uncongenial soil, with possibly insufficient

drainage, no after attention, however judicious and skilful, could counteract such serious evils. One of the constant recurring commands emanating from the head-quarters of the gardening fraternity is, with reference to fruit, "See that the wood is thoroughly ripened;" and depend upon it, it is one of the golden rules of practice. I would promulgate a parallel in this wise with reference to the Camellia: "see that there is, during the growing season, sufficient heat and moisture to induce early and properly developed buds." This is the greatest point for any tyro in Camellia culture to notice, and to act upon. More failures occur by an infringement of this than from nearly all the occult causes put together. Inattention to watering, in allowing the plants statedly to become too dry, is another fertile cause of mischief. If both these points are intelligently acted up to, success is almost a matter of certainty.

Such are some of the more apparent causes which, although not materially destroying the vitality of the plant, bring on a cessation of sap-circulation sufficient to detach bud from shoot; but as the soil itself, its physical condition, and the regular routine of management are more or less immediately concerned in successful cultivation, the solution of the whole question will be more satisfactorily dealt with by looking into each in detail. *A.*

ABSTRACT OF PAPERS PRESENTED TO THE BOTANICAL CONGRESS.

ON THE PREPARATORY FORMATION OF TRAINED WALL FRUIT TREES.

By WM. EARLEY, Gardener, Dipswell, Welwyn.

THE way in which young trees of this description are prepared in infancy for the grower is not only derogatory to longevity, and opposed to a uniformly good even-balanced growth, but is a system causing waste of valuable room, besides being the opposite of that necessary for the production of fruitful wood. The main object of the vendor it is needless to affirm is the attainment of the most robust growth possible at every stage, more especially upon that of the season preceding the date at which the trees are ready to be sent out. Thus in robustness of growth and apparent good health, there may be little to find fault with. When the trees come into the hands of growers, the first step taken with the view of assisting the more or less injured roots, and of bringing the plant into proper training, is to reduce the needlessly wasted strong sappy shoots to something less than a third of their growth during the previous season. The knife, whose injudicious use had injured the growth of the bud of one summer, by severing it through close down to the very basis of the original bud, must be again used to sever in twain the last season's growth, to be again repeated the following winter; for whether when the trees get into the fruiter's hands, the knife be used sparingly of decisively, the past practice will exhibit itself in the emission of a few strong shoots only from the apex of each branch cut in. And a close observant practitioner only knows how these strong woody shoots will elongate, even with the most determined pinching back as they appear. The more obvious consequence of inducing this gross young wood in a tree is seen in the circle of non-fruiting wood formed around and over the base of the worked part—"a waste of valuable room." Independently, however, of wasted space, the severing of these strong growths with the knife causes the heart to die back to a far greater extent than may be imagined by those who may not have given their study to this subject. This is too often the case, commencing some 2 or 3 inches below where the bud and stock form a juncture, through the original growth still remaining of the bud's first growth, and even onward through the separating point of the several shoots, to where they were severed the second season.

A young tree as described, however harshly operated upon, loses none of its growing capabilities for the time being. Indeed, Peach and Nectarine trees of this description, the decayed parts of which I have minutely chiselled and gouged away, leaving a large cavity in the enlarged part which mostly notes the original juncture of stock and bud, following its ramifications away down into the stock, and up each of the original now vigorous growths—trees thus treated, have grown twice as much as healthy and perfect ones in the same house with equal advantages have done. The wood they produced, however, has been ill-matured, devoid of flower-buds, and worse than useless; as at any moment in the following season one of the best placed portions may be seen to be hanging its leaves, the whole shoot drooping with a little sun, and dying away.

It is a well-known fact that the best and most observant fruit growers of our time, either bud their own or procure maiden plants, with the upper portions of which they form their tree.

"The knife-man," says Mr. Rivers, "I trust belongs to a past age. In former days he was a man who employed a sharp knife, and a blunt intellect."

In lieu therefore of the practice I have described, and its attendant consequences, my suggestion is that a system of summer pinching be entered upon. Let the primary bud as it shoots forth from the stock be so pinched back as to secure a trio or so of well-fixed divisional shoots. If requisite keep these stumpy and well matured as they advance in growth, by another pinching; still selecting the bud which breaks nearest the base of the plant, and that alone upon each shoot so pinched, to furnish the autumn formed plant of three or four small woody shoots.

The following spring, instead of starting again with a cut stump of a few inches elevated upon the stock, we are prepared with the bud having three or more divisional shoots well matured. If necessary the tips of these may be taken off without any great injury; let us then choose five well-placed sub-divisional shoots, which, by the aid of pinching, may be kept well in hand during the summer; thus, in the following autumn, we shall have a healthy and sound nucleus for an after tree of merit, in one whole season's less time than is necessary under the present system. A plant at this stage with three long shoots only, under the present system, requires to be again cut close, for the purpose of multiplying the number and strength for the following season, when, if not disposed of, a multiplication of the evils recounted takes place, as the whole is generally again severed in twain close down to the base. These strong periodical shoots form at the base roots of relative strength for their support, deranging the whole system of surface rooting, an operation highly essential to successful after-culture, and only attainable through a moderated (by pinching back) summer's growth.

ON A CERTAIN PHENOMENON OF HYBRIDISM OBSERVED IN THE GENUS MATTHIOLA.

By MAJOR TREVOR CLARKE.

I ALWAYS eagerly watch for any symptom of change in the appearance of seeds contained in such fruits as have been fertilised by other than their own pollen. About 10 years ago I took in hand the genus Matthiola, mainly for the purpose of improving it for garden purposes by cross-breeding, and of trying at the same time if any light could be thrown upon the subject of doubleness in flowers. Our large red-flowered biennial Garden Stock (Cocardeau of the French) bears seeds of a light brown uniform tint; while in the case of the purple branching Queen Stock, a distinct race near the normal M. incana, they are of a violet black. Blossoms of the red Cocardeau having been fertilised by the pollen of the purple kind, the ripened pods were examined, and found to contain about 50 per cent. of black seeds. The black and brown seeds contained in one pod were then sown in separate pots, and my satisfaction may be imagined when I saw the young plants from the brown seed coming up with green stems, while those from the black were strongly tinged with purple. The latter plants produced blossoms of a rich purple scarcely tinted with red, while the former scarcely differed in habit and not at all in colour from the red seed-bearing parent. Repeated infusions of red or Cocardeau blood only seemed to deepen and enrich the colour, and it was not until after many generations of crossing that a really red purple was obtained.

Now, were the red seedlings pure emanations from the mother parent, unaffected by the foreign pollen? I think not, for at the same period I raised plants from the little annual glabrous-leaved Stock of the nurserymen by the pollen of the large sort above mentioned. The effect was that one-half of the seedlings were glabrous or Wallflower-leaved, and the rest rough like the male parent; no intermediate form occurring, that is as far as texture of leaf was concerned, but the glabrous seedlings were no longer miniature stocks, being of tall and strong habit. In this case also succeeding generations raised from rough-leaved individuals produced a per-centage of glabrous plants. The converse was not observed, and I think did not occur.

Home Correspondence.

Weather in Scotland.—The weather is quite unprecedented for this advanced period of the season. The thermometer has been gradually falling for the last week, ranging between 34° and 40°, until last night the minimum was 30°, injuring many of the tender bedding plants, such as Perilla, which is killed to the ground at Meadow Bank. Considerable breadths of Potatos have been more or less injured, many of the haulms blackened, and, curiously enough, not a few of them side by side all but uninjured. [These sorts are worth looking after.] *James Anderson, Meadow Bank, June 19th.*

Garden-wall Nails.—The annexed is a representation of the kind of nails we use here, and which I think are superior to eyes, inasmuch as they are much stronger, you can drive them into a good hard brick, and you can tie the branches to them as quickly as you could to eyes. Being perfectly round, there are no sharp angles to injure the young wood. *William Dodds, Ashton Court, Bower Ashton, near Bristol.*

Sports in the Beech.—A sport in the Beech somewhat similar in character to that of the Laburnum described by your correspondent "G. N. D." (see p. 565) may perhaps be worth recording. In the garden of Mr. W. De Crowdson, of Helme Lodge, near Kendal, an old specimen of the Fern-leaved Beech puts forth occasional branches, bearing foliage of the common form. Here and there is a leaf somewhat intermediate in character, but the individual boughs bearing the two forms of foliage are for the most part well marked and distinct. I enclose fragments of each variety. *George Maw.* [Similar deviations are not uncommon in the varieties of Beech. We have seen a branch of Salix babylonica annularis bearing flat leaves in one portion and curled leaves at another part. EDS.]

Tragopogon porrifolius.—A correspondent of your journal, now deceased (Mr. Thomas Clark, Halesleigh, Bridgwater), gave to me some years ago seeds of Tragopogon porrifolius (purple), which he had found growing on the railway slopes near a station (Yatton, I think), on the Bristol and Exeter Railway. Having now lost the stock, and not seeing the seed mentioned in any seedsman's catalogue, I shall be much obliged to any of your correspondents who will, at the proper time kindly supply me with a small quantity of seed. *G. E. Frere, Roydon Hall, Diss.*

Cowthorpe Oak (see p. 539).—I measured this Oak last week, and found it to be of the following dimensions. Its circumference at the surface of the ground is 55 ft. 6 in., and at 3 ft. from the ground it measures 45 ft. round. The span of the branches is 77 ft., the height about 30 ft., and the greatest diameter inside (the tree being hollow), 14 ft. The girth was obtained by stretching a tape measure round the tree without following the outline of the trunk. In one place the tree is split from top to bottom, and overlaps, and at others it has lost much of its bark, which doubtless accounts for the circumference being less than that given by Mr. Hunter. I should also mention, that besides the loss of bark and the overlapping of the trunk, there are three or four large openings, varying from 18 inches to 4 feet in width, which of course help to reduce the size as compared with the original dimensions. It is said that the tree once covered an acre of ground. There are still a great many healthy branches on it. *Thos Jones, Ribston Hall, Wetherby, Yorkshire.*

Lilium auratum.—We have now a fine plant of this Lily in full bloom, and not having seen or heard of one with so many flowers on it from one bulb, I think it deserving of notice. I bought it from Mr. Turner, of Slough, in the autumn of 1864. Last year it sent up one flower stem, which produced six flowers. This year it has three flower stems, the highest of which measures 2 feet 9 inches. One stem has 17 flowers on it, another 14, and another 11. A small shoot by the side of one of the others produces one flower, making in all 43 large and perfect blooms. *Wm. Dodds, The Gardens, Ashton Court, Bower Ashton, near Bristol.*

Lonicera aureo-reticulata.—This truly beautiful hardy climber is now in full bloom in my garden, and as I have never heard of it having flowered in the open air in this country before, it occurred to me that many who, like myself, have cultivated it only for its lovely foliage, will be glad to learn that it does bloom. The scent is delicious, and the plant flowers freely. It is growing against a south wall, and has never had the least protection during the three years it has been planted. *J. B. Saunders, The Laurels, Taunton.*

Seed Steep v. Birds.—Can any of your readers enlighten me as to the substance which some nurserymen use for steeping their Coniferous seeds in before sowing them, and which, I believe, effectually secures them against the ravages of birds? It adheres to the shell of the seed which comes up with the plant, and has very much the appearance of red lead. Any information, not only as to the substance used, but also as respects the mode of application, will, I am sure, be most thankfully received by all gardeners and nurserymen, the latter of whom are put to much expense every spring in keeping people for weeks watching their seed beds. I am told that those who use this wish to keep it a profound secret, which is surely altogether at variance with the scientific advancement and liberal spirit of the age. It is difficult to understand how any one could possibly derive gratification from the failure of his neighbour's crops. *Inquirer.*

Peaches at Rushton.—The Peaches, wood, and foliage, my servant says, are beautiful. I am going to nail them once more, in a day or so. In this district, wherever I have been, the wall fruit, both under and outside the glass, with the exception of Apricots, is "nil." Red spider spoiled the leaves, the wood became unhealthy, and the blooms dropped. Syringing twice a day, at 11 and 3, placing the syringe close to the wall, and counter-syringing in the same position, is the best and surest cure for red spider and other pests. They were "infinitely infinite" last year, but I quickly got rid of them. The trees bore last year 503; this year I left on 377. They are now about the size of pigeons' eggs. Add 377 to 4563, and we see the result of 10 years. The trees, whose united years are almost 130, are most vigorous, and full of bearing wood. I do not think 377 will be on the trees at gathering time. Some of the Peaches look pinched. *W. F. Radclyffe.*

Passiflora macrocarpa splendens.—I was glad to hear Mr. Bateman call attention, at the Horticultural Society's meeting on Tuesday last, to the extraordinary "Passiflora macrocarpa splendens" that a Mr. Hullett is offering at 5*l.* a plant, and respecting which further information is greatly required. But I wish Mr. Bateman had also mentioned the "Passiflora Hullettii" now on sale by one of our nurserymen, and spoken of as a very desirable fruit, for on this subject, too, we need to be enlightened. *Hortulanus.* [A specimen of P. macrocarpa splendens has been received by us from the importer, and has been forwarded to Chiswick, where its merits will be tested. The plant with a similar name is advertised by Mr. Linden, but its price is moderate, and the weight of the fruit only half that of the P. macrocarpa splendens. *Nous verrons.* EDS.]

The late Mr. Donald Beaton.—"A. M.'s" remarks in reference to Conifers, and the late Mr. Charles M'Intosh having a story about every plant, brings so forcibly to my mind the extrordinary gifts in this way of my late lamented friend Mr. Donald Beaton, that I cannot resist stating it in honour of his memory. He was a complete cyclopædia of science, philosophy, gossip, sound sense, and chaff. In his hey-day of pleasure and pride at Shrubland, in his retirement at Surbiton, on his great field days at the shows, and as an entertaining writer to the last, Donald was ever the same. He knew everything that was to be known, not only about bulbs (in which he was one of the greatest authorities), but about all trees and flowers and bushes, from the Cedar of Lebanon to the Hyssop. Ask about any plant; in a moment he could tell who found it, where it came from, its botanical, medical or utilitarian peculiarities, its ornamental character, its treatment, who sent it out "40 years ago," and where it was to be found at that moment;

or more likely still, he would take you to some part of the garden, and show you the identical plant, and tell who sent it to him, why it was there, and what new and unexpected purposes it was to be used for. I honestly confess I have learned more from old Donald on a long day at Shrubland than I have done for a twelve-month before or after. On these occasions, as soon as I reached Shrubland, I gave myself body and soul up to Donald, sat at his feet, and I think I never found him so rich and transcendently full of matter as under these circumstances. He never tired of inspiring the fulness into my young mind, and I will revere his name for it while I live. I found that the great secret of Mr. Beaton's knowledge was that he saw everything. In going through his grounds, not a leaf, or flower, or bird, scarcely an insect escaped him. If our young men would resemble Beaton or M'Intosh, they must keep their eyes wide open, and retain the knowledge that the eye conveys to the mind. *D. T. Fish.*

Mildew on Roses.—I should feel much obliged if any of your correspondents would answer the following questions:—I have planted a cold house with Tea Roses, and mildew has just made its appearance, though the foliage generally is most healthy. I should like to know first the cause of mildew on Rose leaves? *i. e.*, whether they have been kept too moist or too dry; and secondly, what is the best remedy? I have applied sulphur, and I hope with success; but would not a very weak solution of corrosive sublimate answer, as I suppose that is most antagonistic to Fungoid growth. If so, about what strength should it be used? *A very Old Subscriber.*

Culture of Early Peas out of doors.—I have had good dishes of Peas at an early period, and as I consider such to be an acquisition I will briefly state my mode of culture, which is both simple and certain. About 20th or the 25th of January I have a number of boxes made, 3 feet long 15 inches wide and 8 inches deep, with lath bottoms, leaving ½ inch spaces between the laths; 4 inches of leaf soil, not too much rotted, are placed in each box. Upon this is put 2 inches of soil, which can't be too poor, and upon that the Peas are sown not too thickly, and 2 inches more of poor soil are added by way of covering. A good watering is given. The boxes are then placed in a cold house or pit. As soon as the Peas are up air is given freely on all favourable occasions; on mild days they may even be placed out of doors, but they should be taken in at night. About the 15th or the 20th of March they will be ready for transplanting. I then choose a well sheltered spot on a south border, and as the ground is dug the Peas are planted, 4 feet apart from row to row, in well chopped drills from 6 to 8 inches deep; the soil is well broken and placed carefully about the roots, so as to form a ridge. Each row is then well screened with small Fir boughs, so as to protect the plants from cutting winds and frost. From Peas thus treated I have gathered good dishes on the 20th May. Sutton's Ringleader is with me the best and earliest for this description of culture. The leaf soil not only acts as drainage, but the roots are more easily disentangled from it than if the boxes were filled wholly with soil. Poor soil prevents rotting at the base should the Peas get too wet. I have stated the distance to be 4 feet row from row, as I have a row of Cauliflowers planted between each row of Peas; otherwise 3 feet would be quite sufficient. *Charles Squires, Heywood, Westbury, Wilts.*

Southernwood (*Artemisia Abrotanum*).—The name of this plant in the languages of the south of Europe, where it is considered to be indigenous, is Abrotans in Italian, Spanish, and Portuguese; Armoise, Auronne, or Aurone, Citronelle, Garderobe, in French. To none of these, however, can the name, Overingie, about which Mr. Forsyth enquires, be referred. It has that name in Aberdeenshire, and on the east coast, north of the river Dee. It may have come from the Dutch, Overeen, to agree, agreed, agreeing; Vereenigen, to unite, to form a union. Mr. Forsyth will perhaps find this humble shrub has been used as a preliminary to important social negotiations. And it is not only agreeable, as he has pleasantly shown, but it is really useful; for one of its French synonyms, Garderobe, has, doubtless, been given on account of its preserving clothes from moths." ||

Foreign Correspondence.

PALACE GARDENS, GAZEEREH, CAIRO, EGYPT, *April* 19, 1866: *Peaches and Apricots.*—There are some things connected with the Peach and Apricot well deserving of attention. Will it be believed that I have Peach trees in my garden, which within the space of two and three years have been raised from seed, and are now bearing fruit, not in small quantities, but very abundantly? I cannot as yet speak of the quality of the fruit, but from present appearances, I am warranted in entertaining the most favourable expectations regarding it.

Of the native Peaches I cannot speak in terms of commendation. Some of them, however, are passable, and in hot weather they are not ungrateful to the palate. They are about the same size as Peaches in England; and even taking into consideration the superior bulk of the tree in this country, the proportion of fruit is greater than at home.

In the cultivation of the Peach and Apricot here we have no need of hothouses or other artificial means. All that is requisite is, from time to time, to cut out the superfluous wood. In England, gardeners often find that Art is everything. Here it is the reverse; Nature is everything.

I am not aware that any one has ever been able to say that, at home, he had noticed the Peach retaining its leaves during the winter season; here it is a common occurrence. Indeed the Peach, so far as I have observed, might almost be classed among evergreen trees. In this description I do not include the Apricot which annually sheds its leaves. Like the Peach, however, its produces abundant crops. Its fruit is small and rather dry, not rich in flavour, but much used in making preserves.

Both Peach and Apricot trees are healthy and vigorous, and are but seldom, indeed rarely, affected with aphis, caterpillar, or mildew.

The European varieties of both Peach and Apricot do well here for a time. For a few years the fruit is good, and the crops are abundant. But if the rise of water should be such as to warrant us to call it a full Nile, great damage results to the roots from the soaked condition of the soil. The trees are soon observed to become unhealthy and to gum, and as a natural consequence to die soon. From this cause, indeed, I have cut down from time to time, young healthy and promising trees in considerable numbers.

In a previous letter (see p. 341) I made reference to the rapid growth of fruit trees in this country. As a further proof of what I then stated I may mention that in the spring of last year I transplanted a number of seedling Peach trees, even after they had started into leaf, and I am happy to say that in no single instance has there been a failure. These trees are now bearing fruit plentifully. *James Hardie.*

MELBOURNE, *March* 26: *Ficus vesca.*—This noble evergreen Fig-tree, vernacularly known as the cluster Fig, and described in the *Journal de Botanique Neerlandaise* for 1861, merits general attention. As an umbrageous avenue tree it deserves a place next to Ficus Sycomorus, and might be chosen to overshade roads and walks in the Mediterranean region and other countries of warmer climes. The fruit, which is produced in large clusters from the stems, is edible, though inferior in quality to that of the ordinary Fig. Ficus vesca is readily raised from seeds, and large numbers of young trees are thus reared for avenues through the metropolitan reserves at Melbourne. The tree was first alluded to by the unfortunate Dr. Leichhardt, and subsequently seen and named by Dr. F. Mueller. It is a native of Queensland, and especially frequent on the Burdekin River. *F. Mueller.*

Minarum bifforum, or Scleranthus bifforus.—This has stood the drought of a dreadful season much better than Spergula pilifera. In the Botanic Garden of Melbourne it has been most successfully adopted for edging. It forms a very close lovely verdent turf. From Tasmania, where the plant is more readily accessible than in Victoria, it might be obtained most easily. The Minarum being found up to the glacier regions of Australia, Tasmania, and New Zealand, would not succumb under a Lapponian winter. The plant might therefore even be naturalised in Polar Europe. *F. Mueller.*

Tracing Exploring Parties.—We have received (says the *Australasian*) the following memorandum from Dr. Mueller:—

The difficulty of following the tracks of explorers is acknowledged to be great, especially where, as in most journeys through the Australian continent, heavy-wheeled vehicles cannot be employed, and hence the traces of the travellers are with celerity obliterated. The means of indicating exploring lines have hitherto been limited to marking trees, and these marks are often passed unobserved in close proximity to the spot by the most vigilant searcher. It has occurred to me that by sowing seeds of rapidly growing plants of marked character in many localities during the progress of an expedition, its lines might be more readily indicated than by any other method. If, for instance, the seeds of Acacia lophantha (the so-called Cape Wattle) were chosen for the purpose, the feathery foliage of the bushy trees would be recognised subsequently at several miles' distance as indicative of the presence of the traveller who selected this particular plant for marking his route. About 220 seeds will weigh one ounce. Approximately, 100 seeds would suffice, on an average, to raise here and there, at a distance of a few miles, some of the plants along one day's exploring march. Hence, less than 10lb. of the seed would supply to an explorer the means of indicating the lines of his field operations for fully a year, assuming that 3000 miles of country are traversed during that time. If, however, ¼ cwt. of such seeds were scattered or planted along the line of a year's exploration, how many groups of this Acacia might then be established? The soaking of the seeds in water might always be effected at the nightly bivouacs, and the sowing be made at almost any spot, since Acacia lophantha resists even the most severe drought. It would, moreover, when subsequently sprung up, in many places afford shady resting-places where now only bare treeless plains or desert wastes exist. Several other kinds of seeds might be selected for similar purposes, every explorer choosing his own tree to establish the indications of his march.

We have received (says the same authority) a communication from Dr. Mueller, intimating that the Queen has been pleased to contribute 100*l.*, and the Geographical Society of London, 200*l.*, towards the Leichhardt Search Fund.

Societies.

ROYAL HORTICULTURAL: *June* 19 (*Scientific Meeting*)—S. Rucker, Esq., in the chair. After the election of five new members, and the affiliation of one society, the usual announcement of awards was made, and the Rev. M. J. Berkeley offered a few remarks on the different subjects exhibited. After alluding to a form of Portugal Laurel shown at the last meeting by Messrs Osborn under the name of Prunus lusitanica var. azorica, which was stated to grow with wonderful luxuriance, not only in the Azores, but also in the Canary Islands and in Madeira, attention was directed to a Cotoneaster from the same firm, which was said on the last occasion to be allied to C. microphylla, but which was now stated to be a form of C. rotundifolia, a species even more hardy than C. microphylla itself. Concerning a Dieffenbachia from the Society's Garden, since exhibited as D. Weiri, it was mentioned that, contrary to the usual structure of Dieffenbachias, the spathe in which the flower spike is enveloped was, on being opened, found to contain a multitude of other spathes. In working with this genus of Aroids all the species of which are inhabitants of tropical South America and the West Indian Islands, it was remarked that much care is necessary in order to guard the operator from injury, owing to the poisonous acrid properties which belong to it. To D. seguina the name of Dumb Cane has been given in the West Indies, in consequence of its fleshy canaliculate stems rendering speechless for a time any person who may happen to bite them, the juice causing the mouth to swell, and thus preventing articulation even for several days. The lips or eyes must therefore not be rubbed while handling such plants. In reference to variegated Maize, plants of which were shown from the Society's Garden, it was stated that, as with other variegated plants, seedlings from it did not all come variegated, on the contrary some came variegated, others wholly green. The curious Ceylon Nepenthes from Messrs. Veitch, it was said that it reminded one of Aristolochia Clematitis, a plant alluded to at the last meeting as having been figured by De Candolle in the Transactions of the Society, and at the ends of the midrib of the leaves of which are curious pitcher-like appendages. Of the Liliaceous genus Ophiopogon from China and Japan one plant was exhibited—viz. O. Jaburan variegatus, a form of O. spicatus. From Mr. Thompson, of Ipswich, came Eriogonum umbellatum, bearing multitudes of globular heads of small greenish yellow blossoms. The near relation of this to Polygonum was pointed out, as were also some particulars as to which it differed from that genus. Sundews (Drosera), of which several were shown by Messrs. Veitch, next received attention. Three species of these curious plants are, it was said, indigenous to Britain; but of foreign species there are a great many. Of these shown one, not named, appeared to be D. spathulata. The others were D. capensis, and dichotoma, the latter a very singular-looking kind. Of D. gigantea, a Swan River species, it was remarked that it dyed paper in which it was pressed a beautiful magenta colour, which when treated with ammonia became clear yellow. It was hoped that the pressed leaves of this dye-yielding property might some day be utilised. A species of Jussiæa, a tropical water plant nearly related to the Evening Primrose next engaged attention, as did also Ionopsidium acaule, a little Cruciferous Portuguese annual, nearly stemless, which was stated to be extremely useful for covering bare ground about plants out of doors, and even in pots or pans to be by no means unattractive on account of the great profusion in which its little lilac starry flowers are produced. Fremontia californica, cut specimens of which were shown in flower from Messrs. Veitch, next received due consideration. This remarkable and really beautiful Californian bush belongs to the Natural Order Sterculiaceæ, and along with the Hand plant (Cheirostemon) of Mexico, differs from others in that group in the flowers having no petals; the stamens are united into a column in the centre of the flower, which are large, saucer shaped, and of a bright glossy yellow. It was mentioned that another genus, in which there is little beauty, belonging to quite a different Natural Order, also bore the name Fremontia. After alluding to one or two plants belonging to Orders allied to that to which the Fremontia is placed, Mr. Berkeley proceeded to notice a handsome leaved shrub shown by Mr. Bull under the name of Samyda nobilis, but which, it was thought, might possibly turn out to be some species of Theobroma. The pretty Asplenium leptophyllum from Mr. Bull, and a fine bush of Osmunda regalis cristata from Messrs. Osborne next came under notice, as did also examples of double Pyrethrum blooms from Mr. Salter, which were stated to equal in beauty our China Asters and Chrysanthemums. The only drawback belonging to them is their somewhat straggling habit, a fault, however, which Mr. Salter, we believe, is endeavouring to correct by saving seeds from only the dwarfest and best kinds.

Mr. Bateman, alluding to the Fremontia, said that it was a most welcome addition to hardy trees or shrubs with yellow blossoms, the number of which in cultivation is at present but limited. Though a great rarity in this country, he stated that it was by no means new to science. A single plant of it was imported some 15 years ago by the Horticultural Society, in whose hands it obstinately refused to yield to any of the means usually adopted for increasing plants; the specimen in question, therefore, remained unique in the gardens at Chiswick until the Society fell into difficulties, when it was sold to Messrs. E. G. Henderson for some 30*l.* or 40*l.* Propagators in that establishment also failed to propagate it, and although over kindness to it, it died. To Messrs. Veitch belongs the honour of reintroducing it, seeds of it obtained from the Rocky Mountains having not only vegetated and grown freely with them, but also flowered against a wall out of doors in their beautiful nursery at Coombe Wood, where it has proved itself to be perfectly hardy. The leaves in the specimens exhibited were comparatively small, and in shape not unlike those of the Shamrock; but in its native country they grow nearly as large as Fig leaves, and which indeed they somewhat resemble: Torrey is, moreover, reported to have discovered the Fremontia as having the appearance of a Fig. It was first discovered by Colonel Frémont, in one of his Californian expeditions in the northern part of the Sierra Nevada, where it is said to form a deciduous bush some 10 ft. in height. After alluding to its being named in compliment to Colonel Frémont, and also to the subject of naming other plants after individuals, as well as in connection with the euphonising or adding native names, as in the case of Jonesia Asoca, Mr. Bateman produced specimens of the little hairy trailer named Linnæa borealis, by Gronovius, in honour of the great Swedish botanist, Linnæus, who himself selected it as the most appropriate plant to bear his name, and with whom it was an especial favourite, clothing as it does shady copses and other damp rocky places in his native country with an elegant evergreen drapery, intermixed with little fragrant delicate pink, bell-shaped blossoms. This little plant has also been found in Scotland and in the north of England, but increases so rapidly that from a few pieces enclosed in a small tin box, Mr. Bateman said, enough might be raised to stock a large garden. Attention was then directed to the graceful, elegant, and especially long drooping spike of Odontoglossum Pescatorei, furnished from Glasgow by Mr. Anderson, gardener to Thomas Dawson, Esq., of Meadow Bank, near Glasgow. It had no fewer than 60 blossoms on it, all in perfection, the first of which opened on the 18th of March, and they promised last in beauty for a considerable time yet to come. For dinner-table decoration, wedding bouquets, or the ornamentation of ladies' hair, nothing, it was said, could be more appropriate or enduring than this fine Orchid. Mr. Bateman, indeed, expressed satisfaction at the increased use which is now being made of Orchids for indoor decoration, and alluded in terms of praise to an epergne which he had lately seen on a dinner table, ornamented with a single species of Saccolabium, the long and pendant spikes of which hung down with a beauty and gracefulness which was truly effective. He was also pleased, he said, to find that the charming bouquet which H.R.H. the Princess Mary of Cambridge carried on her wedding day consisted mainly of Orchids. After a suitable compliment paid to Mr. Anderson for the luxuriance and beauty which he manages to infuse into his plants, Mr. Bateman proceeded to notice some other Orchids which were shown on this occasion, and especially a magnificent specimen of Lælia purparata, contributed by the chairman, who also exhibited some charming varieties of Cattleya labiata, named C. labiata Warneri,

Notices of Books.

Ferns: British and Foreign; their History, Organography, Classification, and Enumeration, a Treatise on their Cultivation &c. By John Smith, A.L.S. Acad. Sci. Nat. Cur. Soc., Ex-Curator of the Royal Botanic Gardens, Kew. London: Robert Hardwicke. Small 8vo., pp. 412.

Mr Smith has long been known as one of the best informed pteridologists of this country, his very valuable paper on the classification of Ferns having been published exactly a quarter of a century ago. Since that time he has continued to be a laborious student of these interesting and fascinating plants, both in the herbarium and the garden, and the very extensive and valuable collection of living examples at Kew, which were under his charge till very recently, must have afforded him more than usual facilities for mastering the difficulties which avowedly beset the acquisition of more than a superficial knowledge of the genera and species of Ferns.

The foundation of the book now before us was a little volume entitled a "Catalogue of Cultivated Ferns," published about 10 years since, the precursor of that being a still more restricted catalogue issued about 10 years previously. The catalogue in question has here been amplified by the addition of the numerous species which have since found their way into our collections, and by the introduction under each genus of a succinct illustration, showing its venation and fructification. Besides this, there is given a brief history of the introduction of exotic Ferns from the earliest records to the present time; an explanation of the principal organs and the terms used in describing them; remarks on their classification, and an alphabetical list of the generic names accompanied by their derivations. There is moreover a very full index of species and their synonyms.

The first chapter, that on the introduction of exotic Ferns, is a very interesting one, and as it is based on personal knowledge of the subject at least extending back as far as 1852, it may no doubt be regarded as reliable. According to Mr Smith's statistics, over 900 species of Ferns are cultivated at the present time in the various public and private gardens of this country, and of these by far the larger portion has been introduced within the last quarter of a century. Taking the Hortus Kewensis as a starting point, the number of garden Ferns introduced previous to 1813 was 83, the first having been Cystopteris fragilis and Adiantum pedatum, both brought from Virginia in 1628 by John Tradescant the younger. The records for many years after the date of the Hortus Kewensis, those of the Hortus Britannicus, for example are too incorrect to be of any value, but Mr Smith estimates that the Messrs Loddiges, to whom we owe the greater part of the novelties introduced during this period, cultivated in 1825 about 100 good species of exotic Ferns. Between 1813 and 1850, when the first recent catalogue of Kew Ferns appeared, no reliable list was published in this country, but several were brought out on the Continent, Link in 1841 mentioning 238 species. In 1846, the year of Mr. Smith's first classified list, the species were grown at Kew, and as very few were to be found not in that collection, this number may be taken as fairly representing the number cultivated in British gardens at that time. In 1857, the number recorded was 560, and since that time the constantly increasing demand for Ferns consequent on their wide-spread cultivation, has greatly stimulated the introduction of novelties, and our collections it is estimated have increased at the rate of about 50 species annually.

In regard to classification, Mr. Smith proposes for the suborder Polypodineæ, two divisions Eremobrya, which includes his groups Oleandreæ, Davallieæ, and Polypodieæ, and Desmobrya, which includes Acrostichee, Gymnogrammeæ, Pteropteridee, Pteridee, Blechneæ, Aspleniee, Dicksoniee, and Cyatheæ. The remaining suborders are of very limited extent.

We cannot always agree with Mr. Smith as regards the limits of his genera or their sequence, nor is he himself at all times consistent. As an illustration of this we may quote the separation of Schizolepis from Gonipteris, although the differences between these two are much slighter than those between Asplenium and Athyrium for example, which he unites. On the whole, however, the generic groups adopted are natural ones, whether recorded as genera, subgenera, or sections, the different value given to such groups by different authors being, as has often been remarked, rather a question of words than of facts.

In a hurried glance over the list of species we have noticed some errors which it would be well to correct when an opportunity offers. Thus, Lomaropsis heterophylla is included both in that genus and in Stenochlæna, with the contrite species of which latter it has, we think, no affinity; and under Scolopendrium we were at first somewhat puzzled to find some dozen or more varieties of Lady Fern, which had strayed from their proper place several pages off. Among rectifications of nomenclature it may be noted that Mr Smith pronounces the Cibotium princeps, now so often seen at exhibitions, to be a species of Cyathea. His Lomaria tigrina from the Chatham Islands, is the Lomaria dura published by us some time since, and before the appearance of this book. The beautiful native Fern called Athyrium Filix-fœmina plumosum he calls Phegopteris plumosa, a change to which we cannot subscribe.

We can, however, heartily recommend this book as comprising a very useful classified list of garden

Ferns, and as containing much valuable information concerning the history, habits, and culture of these charming plants.

The *Wayside Flower, or Gleanings from Rock and Field towards Rome* by Sonia Bellairs (London: Smith, Elder & Co.) gives an interesting account of an Italian tour, with a record of gatherings by the way, chiefly in the shape of flowers. But here surely is some illusion on the part of the fair traveller, which throws a doubt over her identifications of the plants about which she writes. "In Florence," she remarks "I met with the Petunia nyctaginiflora or Petunia tree. The blossoms are of the effect like, with a grey tinge, they hang in drooping masses and have a most delicious scent. The tree is as large as a moderate-sized Apple tree and is most graceful-looking. The description reads much more like that of some Datura than of Petunia nyctaginiflora, which, as everybody knows, is a white-flowered herb of humble stature. . . . Among the new plants, of which diagnoses are recently published in the 37th number of *De Mueller's Fragmenta* are a Dryandyon, with opposite leaves; a Conesia, with toliferous bracteal spikes; an Asperula, with opposite not whorled leaves; a Cassinia with one-flowered capitula, and Scyphiphora hydrophylacea the latter from Cape York. Graphidium, and 64 specimen (the latter on the authority of Miquel) are introduced as Australian plants: two new proteaceous genera Carducchia and Darlingia are also fully described. — *Index to the Foreign Scientific Periodicals contained in the Free Public Library of the Patent Office* is the title under which the Commissioners of Patents have issued the first number of a publication that promises to be very useful. It comprises merely a translation into English of the table of contents of several of the most important foreign scientific periodicals, commencing from the beginning of the present year. The number before us is a small quarto of eight pages and is chiefly devoted to physical and mechanical science though we find also the titles of papers published in the Comptes Rendus, &c. Annales de Sciences Naturelles, &c. The proceeds of the publication, we understand, are to be devoted to charitable purposes, and we trust the plan may be extended so as to include a greater number of periodicals. It is proposed to publish the Index fortnightly.

Florists' Flowers.

ROSES.—I have already commented upon Mr Bennett's garden and deem myself safe for Azaleas but also for Roses and Orchids. The two latter houses formerly devoted to Orchids I found on a recent visit occupied by Roses in pots and such a Rose garden as Mr Bennett's would be were houses devoted to Roses. On the plants of Louis Mapon, Wm. Warner, Paul and Charles Lefebvre, not forgetting our old favourite Comte de Hero, Lefebvre appears and is eminently adapted for pot culture, the protection afforded by glass enabling the delicate texture of the flowers to develop without being injured as it usually is when a bloom opens in June. Madame Willermoz was the gem of the collection, some hundred blooms open at once and what is required for exhibition, and how generally for the long so generally staged of specs. President was magnificent—such colour and size! For pot culture it cannot be surpassed, but as exhibitors will not be long out at an exhibition in good character as the blooms seem to be of all stages, only a few opening at the same time. Charles Lefebvre is however in my opinion the Rose of all Roses, and if I only grew one it should be Charles Lefebvre. Comte de Hero was in her best trim above a hundred blooms clean and neat as if only just emerged from a bath of dew. Many of the plants in these houses were about high, and of a proportionate diameter at the base, the flowers filling the air with their fragrance.

The principal portion of the collection consists of old and well-known kinds, adapted for pot culture; Mr. Bassett adding many new varieties that are likely to become useful for this purpose. Amongst the most prominent were Madame Victor Verdier, Comtesse Jaqueminot, Souvenir d'un Ami, Madame Knorr, Madame de St Joseph very beautiful highly perfumed Souvenir Vaseo, second only to Charles Lefebvre, Victor Verdier, very grand, much superior to Jules Margottin fine habit and free. Madame Damaizin, Vicomtesse de Cazes, beautiful in colour, surpassed, however by Maréchal Niel and if the Maréchal is so free a bloomer as La Vicomtesse nothing will be so telling in a collection; La Brilliante, beautiful in the bud Francois Lacharme, Duc de Caze, fine rich dark colour, but thin; John Hopper, extra fine; Souvenir de la Reine d'Angleterre of immense size, Napoleon one of the oldest Teas but still good and distinct, Comtesse de Chabrillant, of exquisite form, Madame Campbell d'Islay, shape of La Reine, but beautifully mottled; and Paul Perras, as usual very showy and free.

There were duplicates of many of the the foregoing and also a large number of other kinds that were not so attractive, although, as all Roses are, very beautiful. Amongst the more modern kinds Pierre Notting, Madame Alfred de Rougemont, blush; Gabriel de Peronny, and Prince Camille de Rohan, were very conspicuous from their distinct colours. Paul Ricaut, usually so fine under glass was here very poor indeed several plants being so out of character, that had it not been for the foliage, one would have thought some error had been made. No doubt with the Rose, as with other flowers, certain seasons suit certain varieties; hence the necessity of collections.

In one of the houses with the Roses was a fine specimen of Orchis foliosa, with 22 spikes of flowers; and amongst other plants Rhododendron Dalhousiæ, nicely in flower. Weigela hortensis nivea was also covered with blossoms and is very telling when forced or flowered under glass as well as a great acquisition among our hardy flowering shrubs. Last, but not least by any means, were nice varieties of Rhododendron arreum, their soft delicate colours telling admirably when associated with the more brilliant Azalea. The whole of the houses and plant were in nice order and remarkably clean. Mr Baker evidently using every exertion to keep his plants in a condition creditable both to himself and his employer. *William Heale.*

The Apiary.

BEE CULTURE *Here.*—A few years ago Mr. Langstroth, an American apiarian and author of one of the best works on the subject that has ever appeared, invented a hive which affords very great facilities for observation and manipulation. Moveable frames, adjusted with great accuracy, so as to be readily available in any other hive similarly constructed, constitute the chief value of his invention. To this may be added a rectification of the measurements of bee and distances between them: spaces between the frames and the interior surfaces of the box combined with other improvements calculated to increase the product and of honey and wax. With the form of most theoretical queen-rearing hardly worth noticing, I pass over his bees so far as the manipulation of he body by carrying out a system of artificial swarming and the prevention of natural swarming, accompanying the bees to work in and confine in the locations afforded for the removal of superfluous honeycombs, or the transfer of united stocks from a populous county to strengthen and build up a weaker one. These and notes I have taken since I have had bees [illegible] To the apiarian who adopts the principle and thoroughly works it out in a proper manner, confinement of the superior to every other system will be eminently and [illegible] manifest. Notwithstanding, however, I feel to the movable framed hives to be the very best for all purposes [illegible] I cannot recommend them.

To [illegible] Langstroth's hive [illegible] to our tastes. On the perusal of "The Honey Bee," I was however at once convinced of the merits of the system in the hands of practical men; and I set to work and brought out a modification of the Langstroth hive, altered to suit my own ideas of dimensions as already carried out in my own bee-house, and in some other minor details. Mr. Woodbury closely followed in the same path, and adopted the system, but also modified according to his views, to approximate as much as might be to the size and form of the bar hives previously in use in his apiary. Mr. Woodbury kindly placed his improved frame hive at the disposal of the public, and of hive manufacturers, to make and bring out on their own account. As these hives have been largely manufactured and distributed, I will describe them first; and although in some respects I may prefer my own arrangement, yet as I consider uniformity of adoption to be very important, as are also the facilities afforded for obtaining every part made to a nicety, I would strongly recommend any bee-keepers who may feel themselves competent to undertake their management, to purchase their hives, in the first instance, at least, direct from the manufacturers. From the pattern thus obtained other hives, can be made. An original bar and frame should be marked and set aside specially for a pattern, as, if the frames made sub-sequently are taken up indiscriminately for the purpose, the measurements will soon be found to vary very considerably. Complete exactness must be aimed at in boxes, bars and frames, notches for the reception of the latter, and distances between each. Certain manufacturers have constructed and recommended what they style an improved Woodbury hive. Mr. Pettitt, of Dover, sends out a form of this hive differing from the original in certain details of arrangement, which may possess some merit and commend themselves to the tastes of some bee-keepers; but I must give the preference to the bar and frame hive as originally brought out by Messrs. Neighbour, and still distributed largely by them. Having taken up so much space in these preliminary remarks I must defer until next week, a more detailed description of it. *S. Bevan Fox.*

SWARMING.—I have a strong stock of bees in a common straw hive, which just a week ago commenced clustering out thickly. To-day they are out in an immense mass over the outside. One or two of the days since they, began to do this, have been favourable for swarming, nevertheless they have not taken advantage of them. Should this unusual weather continue what would you advise me to do? My object is to fill a Stewarton with their first swarm, but I am afraid that a continuance of unfavourable weather, or the disinclination [illegible] may prevent them from issuing at all. They were very busy and populous up to the time this clustering out began so that I think the queen must be all right. *A. B.*

Bees will frequently cluster out in large numbers from a hive a considerable time before the swarm may go off. No sure conclusion can be arrived at from the state of things as to the time a swarm may be expected. It is a sign that the population of the hive is sufficient, but that the queen is not ready, either from there being no royal cells in a sufficiently advanced state or some other cause. I think it may occasionally happen from the first batch of royal cells being destroyed, owing to the retardation of the swarm by the rolling in of unpropitious weather at the critical time; or it may arise from the hive making an attempt to swarm, and the old queen becoming lost through inability to fly. Again the original queen may die these being at the time no royal cells in any stage of progress. At least no time would elapse before a queen would be ready to assume the sovereignty. The probability is that a swarm would then issue, but it is still very possible that the young princess might be permitted to wreak her vengeance on her still helpless sisters, in which case no swarm at all would be sent off. The appears to be the reason why hives frequently "hang out" all the summer without swarming.

Should the state of affairs continue we should not hesitate to hive an artificial swarm. If you have a second hive from which you can obtain some bees, you cannot do better than follow the directions given at p. 567 of our present volume: but if you can draw on the resources of only one hive, proceed as follows. In the middle of a fine day remove the hive to a short distance from its stand; invert it in a pail, placing an empty straw hive over it. Wrap a long narrow cloth around the junction, and fasten securely. An empty hive must be placed on the old stand to amuse the bees returning from the fields. Having driven all the bees out of the hive replace the latter on its stand, and remove the swarm to its destined locality. If you do not care much about the prospects of the old hive, you may, prior to doing the above, put down the swarm for a few minutes on the original site, and obtain a large accession of numbers. In about five minutes change the hives, replacing the swarm with the old stock as before stated. Those bees which have collected in the decoy hive, and those still on the wing, together with some that will leave the swarm and return to their former situation will be a sufficient population with the addition of the young bees emerging from their cells, to insure the hatching of all the brood and the continuous prosperity of the hive.

Another plan is to proceed as before and to drive all the bees out. Put the swarm on the original stand [illegible] commencing [illegible] the old stock with the bees [illegible] a short [illegible] kitchen. Towards evening of the following day remove this hive to a new stand. The chief difficulty in this operation is to know the exact number of bees left behind in the old hive. A little discretion must be exercised in the [illegible] and also in removing the bees again, should the hive appear overstocked, and the bees and unite to the first swarm. All the brood will have been hatched out, and perhaps most of the cells filled with honey.

Garden Memoranda.

DAVID TOD, ESQ., BROOMHOUSE, PARTICK. This gentleman's residence is situated on table land overlooking the Clyde, commanding in aspect, and sufficiently suburban to be comparatively rid of the smoke issuing from the tall chimneys of the numerous public works in the immediate vicinity of Glasgow. It is one of those neatly kept artistic little places which are springing up mushroom-like contiguous to all large cities; and its proprietor, who is one of the partners of a great ship-building firm, is passionately fond of plants and flowers of all descriptions. The garden, which is in the form of a series of terraces, is, as has been stated, comparatively small, but the glass accommodation is considerable. Besides two nice Vineries there are three Orchid houses, two conservatories, a large stove, and a good-sized Heath house.

The Heaths are remarkably well managed, clean, neatly staked and in the best of health. They comprise such sorts as the common or Mossii major, which is a much stronger growing and larger variety than the one commonly bearing that name; the handsome Speciosum, which besides being a good sort is of a nice sturdy habit; several varieties of tricolor, including the free blooming and handsome dumosa, as fine point of herrigonea in capsule form, which is more the exception than the rule; the pretty Devoniana; retorta major, still a first-rate late autumn Heath; Adonisea and the handsome the best of which is Turnbullii; several ventricosas, the best of which are alba and Bothwelliana, and one or two of the vestita breed.

In the Conservatories there was a very good Lygea Cavendishiana, several Tree Ferns of sorts, including the noble Alsophila excelsa, Cyathea medullaris with its fine silvery-looking fronds spreading out nobly; a particularly well-grown plant of Cyathea medullaris, with its broad and dark luxuriant fronds; also an excellently-managed plant of Cordyline indivisa, which is rapidly dying off in collections, and seemingly a little difficult to manage. Besides these and a miscellaneous assortment of the usually growing Australian and New Holland Plants. All these plants of the larger dimensions were seen to advantage being arranged in a large bed, which is of immense service in the centre of any conservatory.

In the Stove House were plants of the following in great vigour—the Variegated Pine, of faultless symmetry, and quite at home in the great heat to which it was subjected; Aralia pulchra, 6 ft. high, in beautiful leafage; Sphærogyne latifolia, 5 feet in height, and clothed with foliage to the bottom, a most handsome object of the Cyanophyllum and not so unwieldy in its proportions; the handsome Cissus discolor, and the curious and interesting Philodendron pertusum, with foliage forming almost a complete and perfect circular outline, but divided up into parts, and perforated with holes, in such a way as to make the general onlooker doubt whether such a freak was natural. Crotons of sorts were also well represented, being by no means handsome and decorative, which the eye will scarce weary

to look upon, is the drooping linear-leaved angustifolium, which was here in fine health. Several varieties of Caladium were in fine condition, the best among which is undoubtedly Belleymei; the great rage for these and Begonias is somewhat abated, and although they may be tolerated in a collection, they become like everything else that is common and of easy culture, a butt for everyone to pelt at, and pooh pooh. Allamanda grandiflora, cathartica, and Schottii were well grown, seeming to revel with luxuriance in the close moist heat, and exposed in the sunniest spots of the house, as they ought to be. Ixoras were particularly free from insects, and the leaves entire and showing from insects, and the leaves entire and showing abundance of bloom. Really this is something worth while, for not half-a-dozen cultivators in a hundred can manage this plant well. Mr. Murray, the gardener, seems not to overpot his plants, and I do not think he often syringes them overhead, which may partly account for his success. There was a good example of that very useful decorative plant Rhopala corcovadensis. Clerodendron Thomsonæ and Balfourii were also in a mass of bloom, and we have not a more useful or yet a more ornamental acquisition in our plant stoves. After one sees the increased size of the individual blooms and calyces of the latter it is scarcely worth while caring much for the former, for in all other respects they are identical.

The Orchid collection is increasing fast, and Scotland, which all but ignored the cultivation of that tribe a few years ago, will soon make itself notable in that respect, owing to so many of her sons imbibing Orchidomania. It requires, however, some years to get up a collection to excite general attention, for the small bits of plants that are sold, until they have had several years' growth, are scarcely noticeable. The general public, who are not connoisseurs, begin to look askance at enthusiasts admiring a single raceme of flowers; and if they are told the value of a plant, they shrug their shoulders and smile incredulously. A good bloomed Rose tree, or a finely-flowered Azalea, is to them, and to the general body of cultivators, too, a far finer spectacle. Mr. Tod, however, much as he admires his Camellias, Azaleas, Heaths, and the grosser examples of the plant stove, has a particular leaning to Orchidaceæ; and he has a capital friend to edge him on, in his next door neighbour Mr. Paterson, who has bidden adieu almost to everything else but his selection of Orchids. Although he is a great enthusiast, along with his friend Mr. Tod, he never will be won over to admire a general botanical collection like Mr. Wilson Saunders, or Mr. Dawson, of Meadowbank. Mr. Tod's collection is becoming extensive, and comprises most of the showy Orchids in cultivation, including some good Vandas: among them fusco-viridis, which had been sold to him for cristata, and a fine plant it is, but not worth shillings for guineas in comparison. It has a small flower, with greenish-white sepals and petals, and an ovate labellum cream colour, with dense brownish crimson spotting. There was a very good plant of Cypripedium Lowii, with two racemes, each three-flowered, which is very good culture. Oncidium sphacelatum was finely bloomed. Disa grandiflora was promising well, and not in a very cold house either. Among them were grouped some of the choicer Ferns, which produced a good effect. Chief among them were Cheilanthes lendigera, Gymnogramma Laucheana, very well grown; the beautiful Adiantum formosum, the equally pretty Goniophlebium appendiculatum, and Davallia bullata, a very handsome dwarf Fern. There were also several good pots of Lilium auratum, which has not yet been produced at its best, and several other good things.

The Vineries were showing nice crops of Grapes, and apparently doing service as general houses. Mr. Tod is ably seconded in his efforts to excel by his intelligent gardener Mr. Murray. *J. A.*

A. BASSETT'S, ESQ., STAMFORD HILL.—Since my last visit, the Orchids have been removed to the kitchen garden, where they occupy three houses, two being new erections. In the Cattleya house, Cattleyas, Lælias, Oncidiums, &c., were in robust health, a fine lot of C. Mossiæ being in bloom, the flowers on the various plants being all distinct in colour or marking; some elegantly feathered and pencilled, and measuring 8½ inches across, they also varied considerably in form. C. Aclandiæ especially attracted attention, the petals being nearly 5 inches across, and the labellum 1¾ inches, beautifully barred and striped; it is a very fine variety. C. citrina, was nicely in bloom, its deep lemon-yellow flowers telling to advantage; Trichopilia crispa, with 23 fine flowers; Lælia purpurata, Oncidium crispum, Epidendrums, Oncidium bifolium and O. ampliatum majus, Sobralia macrantha splendens, and Broughtonia sanguinea were also nicely in flower, the spikes being very fine. This house is divided by a glass partition, one portion being kept a little warmer. In this warm compartment were some fine Cypripediums, also Vanda teres, Dendrobium Parishii, just coming into flower, and various other Dendrobes and Cypripediums. Associated with these were some fine examples of Caladiums, the colouring of the foliage being very brilliant, more so than is usual.

In the East Indian house, the first plants that attracted notice were the Phalænopsis Schilleriana, amabilis, and grandiflora, showing such vigour and bearing such splendid foliage that it was a treat to be enabled to admire them; such plants I had never before seen. Amongst Aerides, two plants of A. Lindleyanum were very fine, as also was A. odoratum cornutum; A. virens, from Moulmein, with immense spikes, one of the finest of Orchids, and a very free grower and bloomer; A. affine superbum, several specimens, all the spikes having long lateral branches; A. Lobbii, maculosum, and maculosum superbum, the last very rare; several specimens of A. Fieldingii; two immense spikes, finely branched, of A. Larpentæ and roseum. Several spikes not yet out of Saccolabium retusum, guttatum, and guttatum Holfordii, all fine; Saccolabium curvifolium, with two spikes, 8 inches long, and finely coloured; a Vanda suavis had also five fine spikes. I never remember seeing the collection look so well or to better advantage, for none of the plants having been exhibited, the flowers were particularly fresh and bright, even those whose beauty was on the wane. *W. H.*

TITNESS PARK, SUNNINGHILL, BERKS, THE RESIDENCE OF LORD ANNERLEY.—Immediately after the departure of their Royal Highnesses the Prince and Princess of Wales, who stayed here during the Ascot race week, the gardener, Mr. Ogston, conducted me through the pleasure grounds. The first thing which attracted my attention was a beautiful ribbon border; following the walk, I ascended some steps leading to the terrace, from which there is a magnificent view of the valley below and of Windsor Great Park in the distance, with Bellevue and the Flag Staff in front. I then entered a large conservatory on my right, in which are four splendid Orange trees, from which the gardener informed me he had cut great quantities of blossom. On the opposite side is a fine cluster of Camellias, together with Pelargoniums, Azaleas, and other flowering plants suitable for different seasons, rendering this house a charming retreat at all times of the year. Passing along the broad walk in front of the house, we have on our right a pretty arrangement of flower beds. Another conservatory filled with flowering plants was then arrived at, in which some of the Azaleas are from 5 to 6 ft. high, and as much through. In the kitchen garden everything is in excellent condition. In an early Vinery is a most promising crop of Grapes, which, as regards size and colour are all that could be desired; the other Vineries also contain good crops. In another division were Strawberries in pots. While the Prince and Princess of Wales were here, Mr. Standish furnished them with two beautiful trees, one Abies Albertiana, and the other Wellingtonia gigantea, which the Prince and Princess planted in commemoration of their visit to Titness Park. *H. W.*

Calendar of Operations.

(*For the ensuing week.*)

Stove plants which are in a growing state should now be supplied with the maximum amount of heat and moisture, in order that they may the sooner complete their growth, and have a longer period to ripen it in. Water should be freely and frequently sprinkled on every evaporating surface, with a view to counteract the drying effects of abundant ventilation. Incessant exertions must be made to keep insects in check, particularly red spider. The blooming season of many plants may be retarded by pinching off the earliest flowers, thereby husbanding their strength and inducing them to make a longer season of growth.

FLOWER GARDEN AND PLANT HOUSES.

Out of doors the most pressing work at present will be that of high keeping. Walks should be in good order, lawns neatly mown, and flower-beds well attended to, particularly as regards the regulation of shoots of vigorously growing plants.

CALCEOLARIAS.—Shrubby kinds that have flowered may be cut back, and placed in a cool place, partly shaded, to make cuttings.

CINERARIAS.—Those that were cut down early will now be throwing up suckers. Take cuttings, as soon as ready, and insert them in small pots in a nice sandy compost; place them in a cool frame or under a hand-glass; keep them close, and sprinkle occasionally to prevent flagging; pot off as soon as rooted into a light compost of two parts loam and one leaf-mould, sand being liberally added.

DAHLIAS.—Constant attendance to securing the young plants from wind, and watering when dry, is all that will have to be done for a few weeks. Both the thinning of the side shoots and mulching the plants with rotten manure will, however, have to be attended to at once. Commence destroying earwigs before there are blooms for them to disfigure.

PANSIES.—Take off young cuttings as they are obtainable, and strike them under small glasses in a shady situation.

PINKS.—Water copiously when required during the time the buds are swelling; weak liquid manure may be applied beneficially.

PELARGONIUMS.—Many of the finest kinds are probably still in perfection, and it is most desirable that shading should be attended to carefully, for one sunny day may injure the flowers beyond hope of remedy. It is equally desirable that the atmosphere of the house should be kept cool.

FORCING GARDEN.

CUCUMBERS.—Pay great attention to thinning and regulating the shoots; go over them at least twice a week, as they soon get crowded if neglected a few days. Guard against red spider, by syringing the plants and frequently sprinkling every part of the house. Attend to plants in frames. Keep linings well made up; earth up, peg out, and train shoots of growing plants. Water when necessary.

MELONS.—Keep up the top temperature, and a bottom heat of 85°, as well as a moderately moist atmosphere to the successional plants, and give occasional waterings. Those plants which are ripening their crops will require less water and a drier atmosphere. If it be desired to obtain another crop from them, care must be taken that the soil does not become too dry; water should be given to the under portion of the soil, by means of holes made with a tin tube.

PEACHES.—Use the syringe freely to keep down the red spider, and tobacco smoke to destroy thrips. The foliage must be kept healthy, to ensure success in the crops of this and future seasons. Should mildew make its appearance in the late house, dust the plants with sulphur immediately.

PINES.—When the bottom-heat is declining, it may be recruited by surfacing the beds with a few inches of new tan; as, independently of its own fermenting power, it absorbs a considerable quantity of heat from the sun, and attracts the roots to the surface, where they revel among the new material. In addition to these advantages it checks evaporation, economises labour in watering, and keeps the roots in a more equable state of moisture during hot weather. The syringe must be freely used every fine afternoon, and the pits shut close for an hour or two, to compensate the plants for the loss they sustain by evaporation during the day.

VINES.—Let late Vines be supplied with a sufficient amount of heat and moisture to keep them growing at a healthy rate.

HARDY FRUIT AND KITCHEN GARDEN.

Persevere in the system of gradually removing all superfluous shoots from wall fruit trees, and in order that the proper balance between the crop and the capability of producing it may be maintained, it will be necessary to disbud more or less severely according as the trees are vigorous or weakly; for example, vigorous trees, full of life, and evidently having a vast accumulation of sap, must have an outlet, or else there will be a risk of obtaining only strong unfruitful wood. Stop and thin therefore with great caution.

CABBAGE.—Sow now for Coleworts. The Rosette is one of the best.

CELERY.—Earth up this as it requires it, selecting a dry day for the operation.

ENDIVE.—Sow now for a full crop.

POTATOS.—Let these be earthed up as they require it, using a three-pronged hack instead of a sharp draw hoe, which it is a common practice to use, although it is liable to cut off the young strings which lie near the surface of the ground. The soil should be drawn from the centre of the space between the ridges.

WINTER GREENS.—See that Brussels Sprouts, Savoys, and Broccoli for autumn use are got in. The main plantings, however, to stand through the winter will be better deferred for some time yet.

STATE OF THE WEATHER AT CHISWICK, NEAR LONDON,

For the Week ending June 20, 1866, as observed at the Horticultural Gardens

June	Month's Rain	Barometer.	Temperature. Of the Air			Of the Earth 1 Foot deep	Of the Earth 2 feet deep	Wind		Rain.
		Max.	Min.	Max.	Min	Mean				
Thurs 14	2	29·961	29·920	72	41	56.5	60	57½	S W	01
Friday 15	3	29·946	29·820	73	42	57.5	60	57	S	01
Satur. 16	3	29·782	29·699	71	37	54.5	61	57	W	16
Sunday 17	5	29·739	29·544	66	39	52.5	60	57	N.W.	05
Mon 18	6	29·652	29·493	61	47	54.0	60	57	W.	09
Tues 19	7	29·681	29·610	67	44	55.5	59½	56½	W.	02
Wed 20	8	30·014	29·930	72	49	60.5	59	56½	S W.	01
Average .		29·815	29·679	68·7	41·3	55·0	59·9	56·9		35

June 14—Partially overcast, very fine with light clouds, cool at night

— 15—Overcast, fine, slight rain

— 16—Fine, with clouds, rather boisterous, overcast; rain at night

— 17—Cold and boisterous, with dusky and white clouds, fine; cold at night

— 18—Cold rain, boisterous and showery, rain at night.

— 19—Masses of white clouds, rather boisterous, fine; nearly freezing at night

— 20—Cloudy, masses of white clouds, fine, cloudy

Mean temperature of the week, 5½ deg. below the average.

STATE OF THE WEATHER AT CHISWICK,

During the last 40 years, for the ensuing Week, ending June 30, 1866

June.	Average Highest Temp.	Average Lowest Temp.	Mean Temp.	No. of Years in which it Rained	Greatest Quantity of Rain	Prevailing Winds.							
						N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.
Sunday 24	73·7	49·3	61·5	15	0·72 in.	1	3	1	1	3	15	10	4
Mon. 25	73·2	49·1	61·1	20	0·72	—	2	0	2	5	15	6	4
Tues. 26	73·7	49·6	61·6	20	0·69	1	3	5	2	2	11	10	3
Wed. 27	72·0	48·1	60·0	14	0·61	2	2	1	2	1	17	9	1
Thurs 28	74·3	49·4	61·8	18	0·65	3	2	7	1	3	12	6	6
Friday 29	72·7	48·8	60·7	12	0·42	3	4	3	1	—	16	7	6
Satur. 30	74·3	49·3	61·8	14	0·47	1	2	4	1	4	11	7	7

The highest temperature during the above period occurred on the 30th 1862—therm. 91 deg.; and the lowest on the 28th, 1862, 30th, 1863, and 26th, 1864—therm 34 deg.

Notices to Correspondents.

COLUMBINES: *W. B.* The colours of your seedlings are generally too dull to admit of their taking so high a position among decorative plants as the best of the older sorts, such as A. glandulosa, A. alpina, and the better forms of the common A. vulgaris. A. Skinneri appears to have been one of the parents, and to have given them their dull coppery hue.

EXHIBITION PLANTS: *C.* Supposing the two collections to be equally well grown, No. 2 would have some slight advantage over No. 1: the Gloxinia and Diplacus being of less value as ornamental plants than any two subjects in No. 1.

FERN CASE: *Anon.* The Fern case, a diagram of which appeared in our last week's impression, was made by Messrs. James Phillips & Co., of 180, Bishopsgate Street Without, under the direction of Mr. Atkins, of Painswick.

MONSTROUS ROSE-BUDS: *A W, Feltham.* Your Rose-buds are the subject of median proliferation, a very common but always interesting occurrence, in which the central portion of the flower produces new flower buds in the place of the seed vessels. The change in question is more common in some seasons than in others.

NAMES OF PLANTS: *B H.* 1, Prunus Padus; 2 and 3, Not recognisable; 4, Polystichum aculeatum lobatum; 5, Osmunda regalis.—*John.* Phlladelphus coronarius.—*P D.* Polygonum Bistorta.—*J F, Clevedon.* Spheraleea umbellata, figured in the "Botanical Register" as Malva umbellata. It is a native of Mexico.—*A & N.* This is Oncidium Baueri, or pictum, or altissimum, or sphacelatum, or one of the innumerable herd of yellow Oncidia, which are probably not really distinct, but which at all events cannot be identified by means of a single flower. The habit of the plant, flower-spike, pseudobulbs, and leaves must all be seen or known before a definite answer can be given.—*G.* Cytisus scssilifolius.—*J W.* Clematis florida.—*Geo Storey.* The weed sent is Spergula arvensis; but this cannot have anything to do with "poisoning" the Mangel Wurzel, the cause of their going off must be attributed to the depredations of some insect.

PELARGONIUM SPOT: *W G.* Authorities are not agreed as to the cause of spot in Pelargoniums. We believe that the fault is in the roots. At one time they are allowed to get too dry, and then they have an overflow of water.

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YOUNG BULLS always on sale. BRITTANY SHEEP, 25s. each. ALDERNEY and GUERNSEY COWS and HEIFERS supplied to description, as to age, colour, and time of calving.

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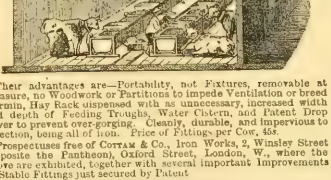

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To hold	Each.
30 gallons,	20s. 0d.
50 gallons,	24s. 0d.
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100 gallons,	38s. 6d.
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With Lid and Brass Tap.

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HURDLES, HURDLES, HURDLES, 1s. 9d. to 3s. 9d. per yard.
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GALVANISED IRON PUMPS.
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LAWN MOWERS, GARDEN ROLLERS.
ASPHALTE ROOFING FELT, 1d. per square foot.
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PRICES PER YARD.

3 feet high,	1s. 6d.	Japanned;	1s. 10d.	Galvanised.
4 "	1 11	"	2 4	"
5 "	2 3	"	2 9	"
6 "	2 6	"	3 0	"

G. & Co.'s New Illustrated Catalogue will shortly be ready. It will contain descriptions of the above, and other Iron and Wire Fences for Parks, Farms, Gardens, Game Preserves, Poultry Courts, &c.; also of Iron Gates, Iron Hurdles, Economical Wire Netting and Roofing Felt.

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FOWLER'S PATENT STEAM PLOUGH and CULTIVATOR will may be seen at Work in every Agricultural County in England. For particulars apply to JOHN FOWLER & Co., 28, Cornhill, London, E.C.; and Steam Plough Works, Leeds.

FOR SALE, a 12-horse set of FOWLER'S PATENT STEAM PLOUGHING MACHINERY complete, including 12-horse Steam Engine, 4-Furrow Fitent Balance Plough, and Patent Balance Scarifier, with all the necessary working parts complete. The above is nearly new. For price apply to WALLIS, HASLAM, & STEVENS, Engineers, Basingstoke.

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Right Hon. Lord NAAS, M.P., Chairman.

To LANDOWNERS, the CLERGY, ESTATE AGENTS, SURVEYORS, &c., IN ENGLAND AND WALES, AND IN SCOTLAND.

The Company advances money, unlimited in amount, for the following works of Agricultural Improvement, the whole outlay and expenses in all cases being liquidated by a rentcharge for 25 years.

1. Drainage, Irrigation, and Warping, Embanking, Inclosing, Clearing, Reclamation, Planting, for any beneficial purpose, Engines or Machinery for Drainage or Irrigation.
2. Farm Roads, Tramways and Railroads for agricultural or farming purposes.
3. Jetties or Landing places on the sea-coast or on the banks or in navigable rivers or lakes.
4. The Erection of Farm Houses, Labourers' Cottages, and other Buildings required for Farm purposes, and the improvement of and additions to Farm Houses and other buildings for Farm purposes.

Landowners assessed under the provisions of any Act of Parliament, Royal Charter, or Commission in respect of any public or general works of Drainage or other improvements, may borrow their proportionate share of the cost, and charge the same with the expenses on the lands improved.

The Company will also negotiate the Rent-charges obtained by Landowners under the Improvement of Land Act, 1864, in respect of their Subscription of Shares in the Railway of Virtual Company.

No investigation of title is required, and the Company being of a strictly financial character, do not interfere with the plans and execution of the Works, which are controlled only by the Government Enclosure Commissioners.

Apply to FRANCIS B. MAULE, Esq., Secretary, 3, Parliament Street, London, S.W.

THE GENERAL LAND DRAINAGE and IMPROVEMENT COMPANY. Offices, 22, Whitehall Place.

Under this Company's Act Owners of Estates for life, Trustees, Mortgagees, Guardians, Committees of Incompetent Persons, Beneficial Lessees, Corporations (Ecclesiastical or Municipal), Incumbents, Charitable Trustees, &c., may effect the following Land Improvements, and charge the outlay and expenses on the estate improved, by way of rentcharge, to be paid by half-yearly instalments, viz.:—

1. All works of Drainage, Irrigation, Warping, and Embankment.
2. The Erection of Farmhouses, Cottages for Agricultural Labourers, and all kinds of Farm Buildings.
3. The Construction of Roads.
4. The Grubbing and Clearing of old Woodlands, Enclosing, Fencing, and Reclaiming Land.

The owners of Estates, not entailed, who may be desirous to avoid the expense or inconvenience of a Legal Mortgage, may also charge their Estates with an Outlay in Improvements under the simple and inexpensive process of the Company's Act.

The Term of Years for the Rentcharge is fixed by the Landowner, so as to adapt the amount of Annual Payment to the circumstances of the Tenants.

No Investigation of Title being required, and the Charge not being affected by Encumbrances, no Legal Expenses are incurred.

The Arrangements for Effecting Improvements are threefold —

No. 1. The Works may be Designed and Executed entirely by the Landowner's Agent, and the Company employed only to supply the Loan and conduct the matter through all the official Forms for Charging the Outlay on the Estate.

No. 2. The Company will supply Plans, Specifications, and Estimates for any Improvements to be executed by the Landowner's Agent as under No. 1. In each of these cases the Landowner will be solely under the control of the Enclosure Commissioners.

No. 3. The Company will undertake the entire responsibility of the Improvements, prepare the Plans, execute the Works, and finally charge on the Estate the actual amount expended, with their Commission thereon, approved by the Enclosure Commissioners.

Landowners may thus obtain what assistance they require from the Company, and no more, in effecting the objects in view.

Works of Drainage and other Improvements are also executed on Commission for Landowners, who merely require the skill and experience of the Company's Officers and a Staff in constant practice.

Applications to be addressed, The Secretary, at the Office of the Company, 22, Whitehall Place, London, S.W.

ESSEX AGRICULTURAL ASSOCIATION, 1866.—POULTRY, GAME, FLOWER, and FRUIT SHOWS will be held at EPPING in the County of Essex, on TUESDAY, July 17, 1866, in conjunction with the Annual Exhibition of the Essex Agricultural Association. The Prize Schedule may be had on liberal scale, may be had on application to the Secretary on forwarding a stamped envelope with address.

ENTRIES for the POULTRY SHOW will positively CLOSE on JUNE 25 next. Early applications are particularly requested.

Epping, May 19. By Order, JOHN W. WINDUS, Secretary.

The Agricultural Gazette.

SATURDAY, JUNE 23, 1866.

At a time when the Hanover Square Commission for the investigation of the existing agricultural experience of steam power in field cultivation is about to commence its labours, it may be desirable to call attention to one illustration of the advantages of deep and thorough tillage which everywhere strikes the eye of the traveller just now. What is the difference in this particular of the slopes upon the sides of the embankments and the cuttings respectively on our lines of railway? It is the very material taken from the cutting of which the neighbouring embankment is constructed. The material left is the very same as that which has been removed. Excepting one important point, the surfaces of the embankment and the cutting are as much alike as are the once close sides of an opened chasm. So far as the substance of their subsoil is concerned, the sloping surfaces of the railway embankment, and of the cutting close at hand, are identical. Then, as to the soil of each; before either is begun the surface soil is in every case removed, thrown back, and used to cover the slope that is subsequently formed. In the case of the cutting, it all lies at the top of the slope that is immediately laid bare, and thus has every chance of being evenly spread over all of it. In the case of the embankment, when that is finished, the earth to be used in finishing off the surface lies at the bottom of the

slope, and there is the less chance of its being evenly distributed. Here, then, are two cases for comparison, identical as regards the composition of the subsoil and its drainage, and differing, if at all, only as regards the character and thickness of their surface soil, in favour of the embankment. The only material distinction between the two lies in the broken-up condition of the under bed upon which the soil of the embankment is spread. The material in the one case is in its natural unmoved state, while in the other it has been crushed, "smashed up," as thoroughly commingled as if it had been steam cultivated. Well, now compare the produce of the two. Those Grassy slopes are everywhere being mowed just now. A wet spring and summer have tended to raise the Grass produce of all kinds of land to a common standard, and thus to diminish the differences of such produce which appear in drought. But we should be inclined, nevertheless, to put the whole case of the superiority of steam cultivation upon the difference which the mowers of our railway slopes are just now experiencing in the weight of Grass upon their cuttings and embankments. Let railway travellers, however, judge for themselves as they go by. It is a large company that has thus the opportunity of a most instructive lesson—a moving company too, so that any impression thus received gets at once sown broadcast everywhere. We venture to express the confident belief that wherever cuttings and embankments follow one another in a line crossing a stiff clay country, the superiority of the Grass produce of the embankments over that of the cuttings close at hand, will be found, in spite of the probable superiority of the soil-covering of the latter, a conclusive argument in favour of the deep and thorough tillage, which only steam-power can effectually accomplish.

THE education scheme of the English Agricultural Society is, our readers are aware, about to be prosecuted for another year; and country boys—the sons of members, indeed, whether they be farmers or not—are again to be stimulated in their school career by the rewards of the Royal Agricultural Society of England. The urgency of the Hanover Square authorities seems especially brought to bear upon the study of "pure mathematics;" and, as one of the education committee has declared, if they could only see all country boys thoroughly versed in the first two books of EUCLID before leaving school, they would be satisfied. Now, a very curious illustration of a man's versatility under varying circumstances, and thus of the worthlessness of the guidance on which in any one of his moods he may insist, has recently been given by a leading member of the Hanover Square Committee, as we may now pronounce him to be, seeing that Mr. HOLLAND has resigned his position as its chairman. In the recent debate on Mr. CLAY's motion, to confer the franchise on all men who can pass a certain educational test, Mr. ACLAND is reported to have said in its disparagement:—"That test was to be an examination of a purely abstract kind—not an examination as to real knowledge or practical skill—not a proof that a man had done or could do anything beyond working a sum."

But what then becomes of the authority to whom the Council of the English Agricultural Society are clinging in their efforts to carry out the seventh object specified in their Charter? Surely a more complete answer to the assertions about "pure mathematics," as the proper aim and end of an agricultural Society, was never given. If to "read, write, and do a sum" be no proof of a "seven pounder's" intelligence, of what use is the educational test of the Royal Agricultural Society to make even a learned farmer? It is no enemy, on general grounds, of the so-called fancy franchise who has thus condemned it; and, above all, it is no unbeliever in "pure mathematics," as the grand stimulant and guarantee of intellectual rank or progress who has spoken. It is Mr. ACLAND, a great advocate of the fancy franchise, the man who would be satisfied if only the rising generation of farmers were thoroughly versed in the two first books of EUCLID (a very desirable thing for them no doubt), to whose matured opinions we are referring.

It appears to us that the Educational Committee of the English Agricultural Society is in this position:—Called for by Mr. HOLLAND, who has done more for English agricultural education than any other man in the country, it has all along refused the guidance of its practical, laborious and patient chairman, who after a couple of years of unavailing effort to keep it in the agricultural groove, has at length retired; and it has preferred a leadership whose momentum has been due to velocity rather than to weight—whose impulsive urgency, persistent enough no doubt in Hanover Square, has yet shown itself sufficiently erratic elsewhere to throw grave doubts on its trustworthiness anywhere. We assert, without fear of contradiction, that English agriculturists trust the well-proved judgment on this subject of the chairman, whom constant opposition has at length expelled. His life-long labours in the work of agricultural education are the trustworty guarantee on which this preference rests. They altogether repudiate the idea that the warm-hearted energetic English gentleman, who comes hot from labours in connection with general education in Universities and on Royal Commissions, is a safe or proper guide in these matters for a strictly professional Society like the Royal Agricultural Society of England.

FARM PROFITS.

THERE is one important point upon which the majority of farmers and myself have never agreed, and probably never shall agree, and that is whether my farming pays a profit on the farm capital invested. Of course many landlords taking their cue from their tenants think as they do. I make no complaint of this. On the other hand, there is a comparatively small but most important agricultural minority who know and admit that my farming does pay, in fact, that it must pay, judging from the soundness of the principles upon which it is based. This minority is composed of practical men—intelligent, inquiring, honest and calculating,—who throw aside antiquated prejudices, and seek for and rely upon obvious and visible results, men who test theories by comparative experiments on a sufficient but unimportant scale, and then verify or disprove them. I do not expect my statements of facts to be believed by the general mass. It would be unreasonable to do so, because I know that many, who would not impute falsehood to me, believe that I am deceived by my men or my bailiff, and that I am personally ignorant of the true state of the case. They do not, or will not, believe that for more than 25 years I have watched closely every operation in agriculture, with a view to compare various practices, and thus deduce a preferable and correct result. In fact, I may safely assert I have done so for 40 years, but most probably during the last 25 years; while I have done this, I have also endeavoured to discover and trace the *causes* of successful results; and here I must pay my tribute of respect, admiration, and gratitude to those men of science who have, for the first time, illuminated the hitherto dark path of agricultural progress, and prevented that unprofitable stumbling which has cast away millions of agricultural capital in needless and fruitless experiments.

But of what use is that bright light of science to those who will not avail themselves of it, but prefer the darkness of antiquated prejudices and local self-satisfaction? There is one very important reason why it is inconvenient to believe in agricultural amendment. Improvement in agriculture can only be carried out by an increased outlay of capital, or, failing that, by a considerable diminution in the extent of holding either as landlord or tenant. The pride of proprietorship rebels against this diminution of area, and the same feeling, aided by doubts as to the profit of increased investments, acts in degree upon the tenant. Besides, there is nothing as a rule more undefined and various than the most profitable amount of acreable capital required for profitable farming. Both landlords and tenants are quite "at sea" on this subject, and yet this is perhaps one of the most vital questions affecting profit.

It is not at all uncommon for poor farms in poor neighbourhoods to be taken with a capital of 2*l.* or less per acre, and I believe that the average capital of the United Kingdom is under 4*l.* per acre. The result is a miserable gross produce of probably 3*l.* 12*s.* per acre.

How can such tenants compete successfully with others investing from 9*l.* to 15*l.* per acre on the same description of soil, and getting a gross return of 10*l.* to 12*l.*? The rent, tythes, rates, seed, horse-labour and manual labour become increased on the small investment from 100 to 300 per cent. The result is a gradual wasting away of capital, the poverty of the tenants reacting on the landlord, and causing diminished rents; for we know that low rents and bad farming generally go hand in hand.

I see so many instances where this over-holding and diminutive produce absorb the tenant's capital and send him to the world penniless that it is quite afflicting. A bad season, like the present, upon a poor, unimproved and ill-farmed heavy clay farm, will mulct the tenant of 20*s.* to 40*s.* per acre. I know in one case near me, that in 1861 and 1862 the tenant lost 1500*l.* on 500 acres in two years' holding, and quitted his farm a ruined man.

I may in some future paper trace the causes of loss to noblemen and gentlemen who attempt to farm their own land and cannot make it pay. The production of maximum crops must be our sheet anchor. These can only be produced by a sufficiency of capital and practical knowledge.

Recent statistics have shown that we have (in cattle, sheep, and pigs, reduced to sheep) only about one sheep per acre—that is also the manure of one sheep per acre—in the United Kingdom.

Can we then wonder at the smallness of the crops, or the necessity for foreign imports of meat and bread?

We have no statistics of poultry; but it is evidently equally as deficient as our meat supply—for we import *daily* from abroad one million of eggs!

The quantity of corn we produce is evidently dependent on the quantity of meat we make, for the farmer who increases his meat production will in the same ratio increase his supply of manure—the one thing wanting to increase our, at present, small crops of grain.

Where water and manure are available, the advantages of irrigation by hose and jet are too apparent to admit of a doubt or question. On the 31st of May I carted 15 tons of fine Italian Rye-grass hay, the produce of 5 acres, producing a value of 14*l.* to 15*l.* per acre, from poor land. This very field produced a crop of Barley last year.

It may be useful to state how we make this heavy crop of Grass into good hay. The horse-hay shaker follows the mowers, and keeps the Grass flying through the air from the moment it is cut. It is not cocked the first evening. The second day it is again shaken until evening, and then cocked before the dew falls. The third day it is pulled down from the cocks, and again shaken all day. It is then loaded on numerous carts and waggons, and left to heat a few days, and then stacked. Thus in three days and two nights the crop was cut, made, and carted. To make good Rye-grass it should be "got up" green. It is the greatest possible mistake to let it run to seed, or to leave it exposed long on the swathe or rake row. The cost of cutting was 3*s.* per acre, or 1*s.* per ton of hay. Italian Rye-grass hay, sewaged and well made, surpasses Clover or any other hay in real value. For such very heavy crops of Grass, two horses should be attached to the hay-shaker, and it should be set to revolve more rapidly than for ordinary crops.

After again irrigating, some portion of the field which was mowed earlier for soiling has again thrown up a crop nearly a yard high, and yet there are people to be found who say this will not pay!

The fact is, that much of the odium of sewage irrigation has arisen from bungling machinery, ill arranged and miscalculated.

For six long days of 12 working hours our pumps have been putting on 120 gallons per minute of water, mixed with manure, salt, and about ¾ of a ton of guano, at the following cost:—

	£	s.	d.
Steam-engine, 6-horse power	1	10	0
Carting Manure from Midden	0	9	0
Use of Pumps	0	15	0
Attendance (one man 6 days)	1	10	0
	£4	4	0

A considerable amount of grinding, chaff-cutting, &c., was done, and should go in diminution of the above charge and against wear and tear of machinery.

Quantity of land irrigated 9½ acres.

	£	s.	d.
Expenses as above	4	4	0
2 Tons of Peruvian guano	10	0	0
Salt, 1 ton	1	4	0
	£15	8	0

So here is an expense of some 30*s.* per acre to produce at least one ton more of hay, worth 4*l.* to 5*l.* The contrast between the portions not irrigated that could not be reached by our jet, and those irrigated, should bring conviction to the most doubtful. I am decidedly of opinion that the hose-and-jet distribution is to be preferred where there is not natural gravitation, or where water is scarce. It renders unnecessary the very heavy expense of levelling or preparing land. *J. Meehi. Triptree, June 13.*

P.S. No doubt some agriculturists are aware that it has been proved before the House of Commons Committee that 1000 tons of sewage or water may be raised 300 feet at a cost of 13*s.* to 14*s.*

THIRD REPORT OF THE CATTLE PLAGUE COMMISSIONERS.

[We gave further extracts in continuation and conclusion of the publication began last week.]

TREATMENT OF THE DISEASE.

From the experiments on treatment undertaken at our desire by Professor Varnell and Mr. Pritchard of the Royal Veterinary College, no satisfactory results were obtained.

The number of experiments made by different persons has no fixed limit, and great care must be taken before any one remedy has been recommended, declared infallible, doubted, and discarded, and the general result is such as has been deduced from the returns quoted below.

But although, as respects the value of drugs, the evidence is mainly negative, that is not the case as to diet. The information obtained by the Edinburgh Cattle Plague Committee shows that by judicious feeding with soft mashes of digestible food, the proportion of recoveries has been considerably and in some places very largely increased. This is consistent with the pathology of the disease. In fact out of 533 cases reported, 140 recovered, or per cent. recovered, and 393 or about 62 per cent. died. The result appears still more striking when the beasts are divided into two groups, according as they belonged to large or small stocks.

	Large Stocks—10 to 80 Cows.		Small Stocks—under 10 Cows.	
Number	Percentage.		Number	Percentage.
	Recovered.	Died.		Recovered.	Died.

Thus the favourable nature of the Scotch results is largely dependent on the smallness of the stocks. In small stocks fewer beasts are ill at once, hence there is less concentration of the poison. There is less crowding of the sick beasts; and, the supply of labour being relatively greater in small herds, a

sick beast receives much more nursing and careful feeding than in large ones.

The success represented by 38 per cent. of cures was in fact entirely owing to feeding, as appears from an analysis which the Edinburgh Committee have made of the dietary in 813 cases of cattle plague.

Kind of Dieting.	No. of Cattle	Recoveries p. cent
1. Cottagers' cattle, generally fed on mashed food	95	73.7
2. Large stocks, where dry food was often given during convalescence	107	57.5
3. Cattle treated with mixed food of mashes and hay	306	22.2
4. Cattle fed with dry food, and treated medically with drugs	310	13.5

The influence of a proper choice of food is here paramount; as to the drugs, with the exception of some remedial means to treat urgent symptoms and ammoniacas a diffusible stimulant, the Edinburgh Committee do not recommend them.

If we add always reckoning 73.7 per cent. of recoveries the cattle plague would lose its terrors, but this cannot be anticipated as a general result. The number of cases indeed is far too small to serve as a safe basis of calculation.

It does not appear that any advantage is to be obtained by giving large quantities of stimulants.

In some districts a very considerable number of relapses have occurred. That is, animals apparently convalescent and which had commenced again to ruminate and to give good milk have then again become ill with some of the symptoms of cattle plague and have died. This has occurred four and even six weeks after the first attack. The cause in almost all, if not in all, cases, is simply improper dealings, and indigestible food has been given in too great quantity, and this has lead to the fatal result.

It may be thought that the experience of this fatal winter has produced but small result, if this regulation of the diet is all that we can recommend. But the value is great of negative as well as of positive knowledge. There can be no question that powerful drugs of all kinds greatly heighten the mortality of cattle plague. It is an important step to recognise that strong remedies are ill others the most unsuited to this disease. Perfect cleanliness, ample ventilation, constant diet [illegible] the virus and the cattle, by far seeds, and the most nourishing food that can be given with the least possible tax on the digestive organs, are the measures which our present experience sanctions for the treatment of the disease.

With regard to drugs, we yet [illegible] may be that this may arise from the mode in which drugs have been employed. Dr. Sanderson's experiments have taught us that the only chance of cure by drugs will lie in stopping the development of the poison, and thus limiting the nutritive changes that cause the congestion. Maintaining the blood in a pure state, the disease will be hopeless of doing good by drugs is passed. It is possible, we wish we could say it is probable, that by placing an agent in the blood at an early stage the morbid process may be controlled or the growth of the poison stopped.

The sulphites and the tar acids have been thus used with the hope of arresting the changes which are going on in the blood in the commencement of cattle plague. Hitherto, certainly, the experiments which have been made in this direction have produced no very favourable results, but they are not sufficiently numerous to establish any certain conclusion. Mr. Crookes has injected diluted carbolic acid into the veins in considerable quantity, in one experiment as much as 156 grains. The animals did not suffer, and in two or three cases there was decided improvement. On others the result was not decisive; and it is probable that in several of the experiments the disease was too far advanced for a fair trial. He has also injected sulphate and bisulphate of soda into the blood of eight animals, in quantities of more than an ounce. In three cases, again, the disease was directly arrested. Four days old, which is probably too late for a successful trial. The treatment did no good.

Dr. Sanderson has also performed experiments with injections of bisulphite of soda into the veins. The result of his experiments is, however, not favourable. Four beasts were treated by injection of one drachm of bisulphite of soda into the veins two or three times a day; one by injection into the veins, combined with administration of the bisulphite by the mouth; one by the latter method only. In the first three the animals recovered, but the next in two cases ran their course as usual, and ended fatally at the usual time. The fourth case was a mild one, and the animal recovered. Dr. Sanderson is satisfied that the drug exercises no influence on the progress of the disease.

The plan of giving the sulphites by the mouth has been also tried by Professor Varnell without any good effect.

Another disinfecting agent, chlorine, has been used as a remedy by Dr. Angus Smith and others. The result of Dr. Angus Smith's experiments was not favourable. Probably the most important part of the treatment, for experience has shown that no reliance can be placed on the drugs alone.

The inhalation of chloroform has been tried, and we have lately received favourable accounts of it. A very large experience, however, would be necessary in order to form a correct estimate of its value. It would further experiments on the effect of drugs be made, that of the inhalation of chloriform might be tested and ascertained.

It would be useless to enumerate other modes of treatment which have been suggested, but which offer no prospect of success. We must close this section of our report with the admission, that in this as in other countries no drug has been found which can be recommended as either an antidote or a palliative.

FUTURE PRECAUTIONS.

We have not yet referred to the progress of the disease since the date of our second report. It has been remarkable and instructive. It will be remembered that there was a very rapid increase in the number of attacks at the end of November and the beginning of December, 1865. The reported attacks rose from 3610 and 3826 in the weeks ending November 25th and December 2nd, to 7350 and 6764 in the two following weeks. The number of attacks then increased weekly, until in the week ending February 17th, 1866, no less than 13,000* fresh attacks were reported.

* It must be observed that these figures, and those which we see no reason to doubt that the lessened rate of progress during the last two months is substantially due to the new repressive measures, viz., slaughter, stoppage of cattle traffic on railways, increased restriction of movement on common roads, and more complete measures of isolation and disinfection. In proof that the measures of isolation and slaughter were the effectual agents, we select the statistical returns from the counties of Yorkshire and Cheshire. The Act authorising slaughter came into force on the 20th February, and, as will be seen, the diminution in the number of attacks in successive weeks was not only coincident with the action of the new measures, but runs a course parallel to the operation of the most important of these measures—slaughter.

Week ending.			Yorkshire. Fresh Attacks	Yorkshire. Killed.	Cheshire. Fresh Attacks	Cheshire. Killed.
Before the Act.	January	6	2098	28	1481	14
	..	13	1508	48	2217	13
	..	20	1314	40	3547	9
	..	27	2034	36	5448	7
	February	3	1426	24	3095	3
	..	10	1457	17	4071	11
	..	17	1866	51	4379	8
After the Act.	..	24	1369	277	3071	446
	March	3	1193	739	1273	855
	..	10	811	883	1827	1514
	..	17	969	972	1389	1151
	..	24	683	659	1271	1104
	..	31	534	517	755	660
	April	7	338	330	868	707

At the same time these figures show that the slaughter of diseased animals has been enforced with different degrees of stringency in different counties, it appears to have been more systematically done in Yorkshire than in Cheshire; in the latter county, indeed, in no single week has the number of animals killed been equal to that. In fact, taking the six weeks ending March 31, there were 10,157 animals attacked, and only 7241 slaughtered. So that, if these returns are correct, 4457 diseased animals were left in Cheshire to spread contagion. Or, omitting the first week after the passing of the Act, there were in the five weeks ending March 31, 1232 diseased beasts left unslaughtered out of 6516 attacks. In Yorkshire, in the same five weeks, there were 451 left unslaughtered out of 4226 attacks. The Act has, therefore, been more fully carried out in Yorkshire than in Cheshire, the result in neither county perfectly.

Again, taking the reported numbers of attacks, deaths, and recoveries for the whole island, we find that they stand as follows:—

Week ending.	Attacked.	Died.	Recovered.
March 3	7040	3271	2102
.. 10	6518	1185	1151
.. 17	6261	779	1044
.. 24	4761	318	546
.. 31	3956	134	394
April 7	3361	121	282
.. 14	2823	108	354
.. 21	2823	93	210
Total	37,515	6029	6083

Within these eight weeks more than 12,000 diseased animals appear to have escaped the operation of the Act.

The very principle of stoppage by slaughter is to make the killing follow immediately on the attack. If there be any delay—if treatment be resorted to and killing be delayed till hope of recovery is lost—the object of slaughter is frustrated.

As it is, the disease has been limited and partially arrested even by this imperfect enforcement of the Act. But we fear that the limitation will stop short of the complete suppression which must be sought, if it is to be utterly stamped out. To do this effectually demands unsparing strictness, as well as unremitting watchfulness. Too much stress, we must add, cannot be laid on the enforcement of disinfection. How long the poison may retain its virus in sheds, yards, or in manure, fodder, or other things, which may have been left undestroyed, cannot be known. The history of the attacks of cattle plague in the last century shows that, though the disease may be repressed in the country generally, or be apparently wholly extirpated in particular localities, it again breaks out where there has been any laxity in disinfecting the places where it at one time prevailed. Unless rigid and systematic means of disinfection are adopted throughout the country, there is much reason to fear that there will be many local outbreaks, which, if not immediately stamped out, may become general. Even with the most vigilant of local authorities, and a general supervision of them by the Government, must be exercised to prevent the reappearance of the disease in districts from which it has departed.

With a view to the future, it is essential that the re-introduction of the disease from abroad be guarded against. In our second report we recommended to your Majesty that foreign cattle should be slaughtered at the port of disembarkation, or, if sold for store purposes, should be placed in quarantine. We believe that the whole system of cattle transport should be revised; that good landing-places, and sheds, in which the cattle may be properly housed, tended, and inspected, should at once be constructed at the ports where cattle arrive; and that the trade in foreign cattle, which has grown of late years to such vast proportions, should be subjected to proper regulations.

We believe further that it is now the time to carry out fully and permanently the changes required in the mode in which meat is supplied to our large towns. Considerable alterations have taken place already, and these have not been attended with the inconvenience which was attributed. We would gladly see an inquiry instituted without delay, to determine whether slaughter-houses might not be transferred from all our large towns to suburban points on the lines of railways. A few large slaughter-houses, properly arranged on public principles, and provided with pastures and sheds where the cattle could rest, would take the place of the innumerable ill-kept and ill-tended places which exist in all large towns. The change would eventually benefit alike the customer and the butcher, while the saving of pain and torture to the animals themselves would be immeasurable. The cattle plague has been a great calamity, but it has put a stop, for a time at least, to much that was cruel and pernicious in operation; we trust that this wholesome effect will be lasting, and that it will pave the way for more extensive reforms.

(Signed) HENRY BENCE JONES.
SPENCER. RICHARD QUAIN.
CRANBORNE. E. A. PARKES.
ROBERT LOWE. THOS. WORMALD.
LYON PLAYFAIR. ROBERT CEELY.
CLARE SEWELL READ. CHARLES SPOONER.
MOUNTAGUE BERNARD. 1st May, 1866.

follow, are taken from the weekly returns, and will probably receive some corrections in the return for the quarter. The "back cases" reported in the week ending February 17th exceed 5000

"BOS LOCUTUS EST."

AND if so, what thoughts probably broke forth in his blatant utterances? "I am of Bates' blood," he may have said: "this pink rosette on my horn proclaims me the champion beauty of my class, and I am sold for 500 guineas." And when you look at his massive symmetry, his fine bone, and docile eye; when you feel his silky coat and pliant skin, detecting in his *physique* all the qualities of kindly feeding, early maturity, and flesh that is a delicacy for an epicure, you have before you an embodied result and representative of the progress of modern husbandry. The farmer calls breeding a "science," and indeed, the principles which govern the selection of male and female, to eliminate defects in form or constitution, to give fixity of type, or to secure the most valuable qualities in crossing, have been established by men of genius upon the conclusions of a world-wide experience. The practice of the art, too, in which so little depends upon mere weights and measurements, demands an aptitude of perception by the eye and hand, a judgment trained by long observation, and a knowledge acquired by diligent study, that should place the skilful breeder among men of vast professional attainments.

But it is not the breeder alone who has given us the modern ox—transformed from the old ponderous beast, with big ungainly skeleton, good for labour at the plough, but incapable of hiding itself within one thick barrel of beef, and with a coarse dermal covering telling of indisposition to fatten and of a fibrous grain of meat. The Shorthorns would have remained a few herds of handsome cattle on the banks of the Tees, the Hereford white-faces would have grazed but their own watered vales, the ruddy Devons would have been seen only on the moist uplands of their native county, the shaggy huge-horned Highlanders would have been sheltered only under the cairns and scaurs of their lofty moors, and the cattle of Britain at large would still have been unrefined wasteful consumers and mean in the market shambles, had not rapid improvements remodelled the whole of our tillage, feeding, and general farm management. So that our "Bos," with his proud lineage, his Showyard honours and costly value, might be answered very well by some agricultural machine,—distinguished, like himself, with a badge of competitive triumph. Speaking for rural mechanics, it might say, "We till and cleanse the soil; we sow and promote the growth of crops that you may eat; we harvest, thresh, and prepare your provender; we crush and pulp and cook your food; all with a before-unknown expedition and economy. Through our manifold facilities it is that the husbandman can rear and feed his beeves of the loaded rib, his muttons of the fat back and fleshy thigh, and his porkers almost clean of offal; and all on lands where but half the number of animals could have been raised without our aid, and those of a ruder build and coarser quality." And (pursuing the idea of a Showyard colloquy) voices might come also from some stall of roots and cereals, of feeding stuffs and artificial fertilisers,—"Your noble herds and thriving flocks live and multiply upon the ailment we furnish; and in vain would be the skill of the breeder, aided by all his tools and engines, unless we provided concentrated nutriment manufactured in English mills, or imported in vast quantities from abroad." we grave; "in no root-crops and forage-crops developed from seed with a pedigree, improved for generations in vigour and thrifty growth, and forced by Transatlantic and other hand-tillages which the farmer scatters on his fields from a bag." In fact, while simultaneous advancement has marked all the different departments of agriculture—so that its recent literature, whether in the journal, the magazine, the prize essay, or the bulky cyclopædia, presents us with histories of improvement in animals, vegetables, mechanism, and systems of management, unsurpassed by those of any other industry—the grand result of all appears in our augmented production of meat, with its subordinate accessories of milk, butter, cheese, and wool. Figures in support of this statement are, unfortunately, not forthcoming: rural statistics have yet to be collected. But the case, as we have put it, will be assented to by every one who is acquainted with husbandry in any quarter of this kingdom, from the Turnip fields of Norfolk to the fat pasturages of Ireland, and from the downs of Sussex or the uplands of Devon to the cattle grounds of Aberdeen or the Western Highlands. Mr. John Chalmers Morton, in a paper at the Society of Arts, 1863, summed up the progress of 20 years as follows:—"Owing to liberal and vigorous cultivation, we grow more tons of cattle food per acre; and to this, with the increased precocity of our cattle, sheep, and pigs, and the enormous extension of better bred stock, we owe our augmented meat production. Our sheep are now ready for the butcher at 14 months old; our cattle at 24 and 30 months old. Formerly it never at least two years of feeding to make a smaller carcase of mutton, and at least three or four years' feeding to make a smaller carcase of beef. A thousand sheep upon a farm in March or April now mean something like 500 ewes in the lambing fold, and 500 sheep ready for market. Formerly, they meant not more than 300 ready for slaughtering, and those animals of smaller weight. And this great increase in the meat produce from a given head of stock is witnessed as much in pork and beef as in mutton. All the important breeds of cattle, sheep, and pigs have improved and increased in numbers during this period of 20 years. Mr. Strafford receives entries for his Herd-book from four times the number of Short-horn breeders; and the influence of this, the dominant breed of cattle, in crossing the general stock of the country, has wonderfully increased. Mr. Duckham and Mr. Tanner Davy report no falling off in the number and quality of the more local breeds of Hereford and Devon. Both Down and

Long-woolled sheep, and especially the latter, have made great strides, both as to increase of numbers and physical improvement; and much more general interest is taken in the improvement of the breeds of swine."

Since our corn markets were opened to easy shipments from every virgin prairie and rich river valley to be found in either hemisphere, the rudest ploughs under a genial sky can compete successfully with our best tillage implements—working, as these do, upon land that is daily becoming dearer; and while a rise of only a few shillings per quarter at Mark Lane is sufficient to invite any number of cargoes of Wheat and flour, remunerative grain crops are of quite problematical attainment by the British farmer. Heavy freightage, however, and the risk and difficulty of long voyages, deliver our home producers from a similarly close competition with graziers of all the cheap natural pastures of the old and new worlds; and despite every attempt at displacing British meat by *charqui* and flesh preserved and packed in all forms, notwithstanding a large importation of live animals and dead pork and bacon, our agriculturists are depending upon their live stock as their mainstay. They have devoted all but the finest Grass lands to tillage, because arable husbandry can feed more mouths per acre than simple grazing can do; and even the straw crops interposed between crops of roots and green forage are grown almost as much for the byre and foldyard as for the merchant's granary. A striking index of our position, an evidence that the British farmer commands the meat markets of his country, appears in the fact that a great rise in prices has been inadequate to call in foreign supplies on a scale at all proportioned to the vast imports of corn. Twenty years ago the best fat Hereford oxen were sold for little more than 5*d.* per pound; latterly (and excluding the factitious prices of the last year), they have realised one-half more. Mutton, too, has risen in the same time from 6*d.* to 8*d.* and more than this per pound. Our population has been rapidly swelling; the dietary of the toiling millions has been approaching more and more closely to that of the comfortable classes that live on meat at every meal; so that there must necessarily be an immensely increased consumption of flesh during the last 20 years. Nevertheless, we know that foreign cattle, sheep, swine, and foreign bacon and beef, have not materially contributed to the supply. While our importation of bread-corn and barrels of flour now amounts to tenfold what it was a few years ago, the number of neat cattle annually imported has shown no tendency to increase until within the last two years. Thus the average for the four years 1847-50 was 64,590; for the next four years it was 104,791; for the next four it was 90,697; in 1859 the number was 85,677; in 1860 it was 104,569; in 1861 it was 107,096; in 1862 it was 97,837; in 1863 it was 150,898; in 1864 it was 231,733; and judging from the first nine months of 1865, the importation of this last year somewhat exceeded that of 1864. Sheep have been sent to us in fluctuating, though generally increasing quantity. Thus, the yearly average for the four years 1847-50, was 136,816; for the next four years it was 218,688; for the next four it was 167,347; in 1859 it was 250,580; in 1860 it was 320,219; in 1861 it was 312,923; in 1862 it was 299,472; in 1863 it was 430,788; in 1864 it was 496,243; and in 1865 the number is much larger, the first nine months having brought in 507,209. That these imports of oxen, bulls, cows, calves, sheep, and lambs constitute an extremely small proportion of the animals slaughtered in Great Britain for beef, veal, and mutton, appears when we compare them with the number sold in the metropolitan market alone. In 1863 we imported 150,898 head of neat cattle; there were exhibited in the metropolitan market during that year 319,670, or double the number. We imported in 1863, of sheep and lambs, 430,788: the number exhibited at the metropolitan market was 1,389,142, or more than three times the number. In 1864 we imported 231,733 beasts; there were exhibited in the said market 343,775. We imported in that year 496,243 sheep and lambs: there were exhibited at the market 1,392,144. Hence we see that our home producers supply all but a mere fractional part of the animal food consumed by the nation, although our cattle trade is freely open to foreign competition, and notwithstanding that high prices have presented every temptation to importers.

From this view of the agricultural "situation" we can realise the magnitude of the interests involved in a destruction of our cattle by the Plague. The sweeping off of immense numbers of animals, the obliteration of hundreds of fine herds, the imminent peril which threatens all the horned stock in the kingdom, have not simply affected the prospects of graziers who might henceforth "turn their attention" to corn-growing; but, on the contrary, the entire husbandry of the British Isles is placed in jeopardy. The sole resource of the farmer is now attacked; and losing his cattle, he is deprived of his right arm—of one-half the strength by which alone he has survived the pressure of foreign competition. *British Quarterly Review.*

THE VALUE OF CHEMISTRY TO AGRICULTURE.

[The following paper, by H. S. Thompson, Esq., President Elect of the Royal Agricultural Society of England, was written twenty years ago, and published then in connection with a proposal to give instruction in Chemistry at the York Yeoman School.]

WHEN any one endeavours to show that the practice of agriculture ought to be in accordance with the principles of chemistry, he is immediately met by the question, "What has chemistry ever done for agriculture?" If I were to put the question, "Of what use were railways to the ancient Britons?" I should expect, if I received any answer at all, to be saluted with "None at all, you blockhead! how should they, they were never tried!" Now this is precisely the answer, and the only answer, that ought to be made to the former question. Chemistry has been (comparatively speaking) of no use to farmers, because it has never been tried. It is true that general rules have been laid down by chemists who were no farmers, which rules have generally been found inadmissible in practice,* and experiments have been made by farmers who were no chemists, which, for want of sufficient accuracy, have produced few results of importance, and on these grounds we are told that it is of no use attempting to make chemists of farmers. Lest this should be thought an overstatement, I will take a case in point, and it shall be one with which the public are tolerably familiar, at any rate by name, viz., the construction of tanks and the use of liquid manure. Chemists were aware that in the drainage from farmyards, which was generally allowed to run to waste, there existed a certain quantity of ammonia, or matters which by their decomposition would form ammonia; they were also aware that ammonia was indispensable to the growth of our cultivated crops; accordingly they issue their fiat. "Let tanks be made to collect this drainage, and let their contents be applied to the growing crops." What was the result? A certain number of gentlemen and leading farmers adopted the recommendation. If we could collect their opinions of the tank system, what would be their purport? The following statements which have been made to me would, I think, be a fair sample of them. One says that his tank has greatly increased his crops of hay and improved his pastures, and in short has answered admirably; another, that he did not apply the tank-water to any of his crops, but that he had found it of great value in forming compost heaps, and generally improving the quality of his manure; a third, that the tank was useless, and that he never could observe any effect from the use of its contents. In short, the most conflicting opinions prevail respecting tanks, even amongst those who have tried them, and as a natural consequence, they are not brought into general use.

Now it appears to me desirable to investigate the cause of this failure, as being intimately connected with the subject we are considering, and the first question which suggests itself is, Were the chemists wrong in giving this recommendation, or the farmers to blame for not at once adopting it? Neither the one nor the other. The chemists were strictly correct in their statements, and the farmers prudent in not incurring expense, until they were tolerably sure of a profitable return. The mischief in this and many similar cases has arisen from the want of agricultural chemists on the one hand, men whose business it should be to adapt the dicta of science to the requirements of agriculture, and on the other hand, to the want of farmers possessing a sufficient knowledge of chemistry, to prevent their falling into gross errors, in carrying out the recommendations of their scientific guides and pioneers. In the above-mentioned case of "tanks," had there been but a few clever chemists, whose professional services had been secured to agriculture, instead of the bare assertion that ammonia was lost and tanks should be made, we should have had close calculations of the average amount of loss, and its money value, per score or hundred head of cattle, where the construction of the farmyard was thoroughly faulty. Other statements also would have been given respecting the best construction of tanks, the proper season for applying the liquid manure, the expense of the implements and labour required, with other details too tedious to mention, which would have enabled any intelligent farmer to calculate for himself the probable profit and loss of the whole undertaking. On the other hand, had farmers possessed the most elementary knowledge of chemistry, some "rough and ready" test of the strength of the tank-water (such as neutralisation with a known quantity of dilute acid) might safely have been recommended to them, and would have saved the expense and disappointment experienced by many an owner of an ill-managed tank, who has carefully watered his fields with slightly discoloured rain-water, believing all the time that it was a potent fertiliser because it came out of the tank. In short, the recommendations of chemists would then have been made in a practical form, and the farmers would have perceived that there were good grounds for the advice given. They would, therefore, have generally adopted it, and understanding what they were doing, would have avoided the numerous errors and consequent failures into which, whilst groping their way in the dark, they have unavoidably fallen.

Having thus briefly pointed out the importance of instruction in agricultural chemistry to the cultivators of the soil, I will still more briefly allude to its value in a national point of view.

At the present time of scarcity and high prices no argument are required to prove the importance of increasing the productiveness of our soil to the utmost extent of our means; and with this end in view, the first question that suggests itself is, What is it that prevents our increasing indefinitely the quantity of corn that we raise? When we have brought our land into a high state of fertility, so that in a favourable season it will produce five or even six quarters of Wheat per acre, what is there to prevent our going further and raising double that quantity? If a farmer were asked this question, he would answer:—"If you make your land too rich, the corn won't stand;" and that this is the case, every one who has tried high farming has found out to his cost;—the corn is laid flat, and spoils.

* There are some few exceptions to this, as to other general rules. Professor Johnston's writings are eminently practical, and it would be the height of ingratitude not to express our acknowledgments for the contributions made to agricultural science by such men as Professors Liebig, Playfair, Daubeny, &c., more especially as they have received no encouragement from the agricultural world to devote their time and talents to their service.

The next step, then, is to ascertain why it is that, on a given quantity of land, the number of stems cannot be increased beyond a certain limit, without diminishing their strength? This is purely a chemical question. The substance which gives stiffness to the straw is a real glass slowly elaborated by the exposure of the soil to the action of the atmosphere, and neither chemists nor farmers have yet discovered any method of materially hastening the process. Accordingly, the greater the number of stems per acre, the less of this glassy coating there is for each; and we soon reach a point beyond which if we seek to pass, the straw becomes too weak to preserve its erect position, and is laid flat by the first heavy shower. We can increase almost without limit the vigour and luxuriance of the plant by administering large doses of ammonia; we can furnish it with an abundant supply of materials for the full development of the ear by a liberal application of the phosphates; and up to the time of blooming nothing can appear more promising than a crop so treated; but as soon as the ear begins to fill, the stem begins to fail, and a moderate gale is then sufficient to dash all our hopes to the ground. It is something, however, to have cleared the way by ascertaining precisely what is required. We know the materials of which this soluble glass is composed; we can manufacture it without difficulty in our laboratories, and the only point yet undiscovered is, in what form this substance, or its component parts, can be made available to the growing plant. There is no reason to think this problem more difficult than many others which have been quickly solved when once the public became aware of their importance; but one great drawback to the progress of scientific agriculture is, that experiments can only be made once a year. There is but one way of getting over this difficulty, viz., by many different parties trying the same experiments the same year. In this way an experiment may be repeated sufficiently often to give confidence in its results, without any loss of time. This remedy is in our own hands. There exists a numerous body of occupiers of land, placed in a great variety of circumstances as regards soil and climate, all deeply interested in the result of such inquiries, but at present disqualified from taking any part in their investigation, in consequence of the deficiencies of their education.

It appears, then, most desirable to raise the standard of the education of our yeomen, and thus to furnish them with a basis of sound knowledge on which they may safely raise any superstructure of future acquirement. One or two facts have also been brought forward (specimens, unfortunately, of a too numerous class), to show the importance of teaching them at any rate the alphabet of science, whereby those who are disposed to join in the great march of improvement, may have a right direction given to their endeavours; and even the tardy ones, who are unable or unwilling to cast their mite of information into the treasury of knowledge, may be enabled to read of, and understand, the discoveries of others. Surely these may, without exaggeration, be termed great national objects, thoroughly justifying the present appeal for assistance, and deserving of far more general support than they have hitherto received.

[We need add nothing to this conclusive demonstration of the necessity, in order to the extension and fuller application of agricultural chemistry, of conferring a knowledge of chemistry on those who are to practice agriculture. Chemists, without a knowledge of farming, cannot be expected to do it much good; farmers, without a knowledge of chemistry, are almost as unable to improve their art; it is that man alone who unites the knowledge of both, who can perceive the relative bearings of the science and the art, so as to apply the truths of the one in the improvement of the other. We should be glad to learn what success has attended the attempt to give scientific instruction at the York school.]

A SPANISH VIEW OF THE RINDERPEST.

THOUGH the rinderpest has spread its ravages through so many countries, Spain still appears to be free from it. The last consul's report from Cadiz, laid before Parliament a few day's since, contains the following interesting matter. It ought to be a reason of great thankfulness in Spain that the rinderpest has not attacked their cattle. There seems to have been no well authenticated case up to now (April 1866). Were it to reach Spain it would probably sweep away most of the cattle. There would be a great deal of talking; and local boards, each with its own views, would make stringent laws and regulations, many of them judicious; but the peasants would not obey them, and there would be no system in carrying them out. At Cordova, there is a veterinary association, which has been established there for many years. Instruction is given in skilful treatment of cattle, &c., to all who attend their college. The chief professor there, Don José de Prado y Guillen, is a diligent and most intelligent student, full of earnest love of his art; he has written me an interesting memoir respecting his views upon the rinderpest (views formed on his experience of Spanish cattle), and also a notice regarding the treatment of the bovine race throughout the peninsula, of which the following note is a partial translation, and, in effect, a *précis*:—

"The dreadful cattle plague, which is ravaging England and Germany, has not attacked the large herds of these animals in Spain. It never has done so in its present rinderpest form, for, on consulting the numerous essays of our old Spanish veterinary surgeons, we find that though intimately acquainted with all the Spanish cattle diseases, they do not either directly or indirectly tell of it, showing that they did not know it; but our modern veterinary authors have given good translations from German and Russian medicinal works on the subject; therefore we quite understand

what it is, and can safely assert that the rinderpest has never yet been seen in any part of the Iberian peninsula. The cattle epidemics, which have raged some time from 1709 till now, have all assumed quite a different character, and the absence of the present cattle plague from Spain is thus a most interesting subject and question. Why has it never visited us?

"I fully believe that the chief reason is, that we rarely, and in very small numbers, import any foreign cattle into Spain. There is comparatively little beef eaten throughout the country; more is produced than is consumed. Our exportation, especially from the north and Gallicia, is considerable; and in truth our cattle importation is nil. The Gallicia and Asturias cattle find their way to France and to England, but none come thence to us. I fully believe that, from the power of contagion which is so strong in the real rinderpest, if one ox with any trace of that disease in him had been imported into Spain, and had come into contact with cattle of this country, the epidemic would have spread, just as happened at Padua, in Italy, in 1711, from a diseased ox (coming from Dalmatia) being introduced into the estates of Count Borromeo, and thus causing the fearful murrain which at that time almost ruined the pastoral wealth of the north of Italy. We are in hopes that the peculiar topographic character and configuration of our country may stand in the way of the production of the disease in Spain. Up to this time this, in addition to non-importation of cattle, has been in our favour; and if we compare the local condition of the places where, according to the opinion of most veterinary writers, the rinderpest is spontaneously produced (*i. e.*, in the morasses and lagoons of Tartary and some parts of central Europe), with the position and circumstances of our country, we shall find them to be in direct opposition to each other. Many medical writers have traced cholera-morbus to the fetid and poisonous effluvia from the swamps and sunderbunds of the Ganges, and thus we veterinary students are constrained to accuse the wide marshes of Russia, Poland, and Hungary, of being the birth-place of rinderpest. All the contagious cattle diseases known since 1709 have either spread from that focus of infection, or been similar to the maladies so prevailing there. The Governments and people of the rest of Europe should carefully direct their attention to this fact, and so much the more because hitherto it has seemed that the present disease is far more easy to prevent and keep off than cure. Were the disease to break out in Spain, isolation of suspected cattle, and careful separation of the healthy suspected, and diseased cattle would be the first means that we should adopt; but the cattle of the three different categories ought to be kept at a distance from each other, not only separated. I am at present doubtful of the success of any means of cure if the rinderpest takes strong hold of an animal, that is, during the first period of its breaking out. In fact, we should try to treat it here as endemic, epidemic, and highly contagious, all at once, and at first we should certainly, in any locality, deal with it as incurable, and try to stamp it out. If it continued to spread we should be guided by circumstances, and by its greater or weaker virulence.

"*Note on Cattle Rearing in Spain.*—Our system of cattle rearing may be reduced to two fundamental principles: first, the open-air system at all hours and seasons; and secondly, the double system, viz., half the year housed; the other half in the open pastures. Constant stabling of cattle is never practised, not even in Gallicia, where they stall much more than here in Andalusia. The large herds of cows destined for breeding are kept in the south of Spain on the first system, open air pasturing at all times. These animals never enter stables or places of shelter, they live continually in the pasture grounds, which are uncultivated meadows and hillsides, covering a great extent of country. They feed on the herbage and plants which are the natural produce of the earth, and their food thus depends on the seasons, on the scarcity or abundance of the pasture, and on the fertility or barrenness of the soil they are on. Nothing is provided for them by man, either in winter or summer. If there be enough for them to graze on they live; if not, they die. These cattle have no dwellings or artificial places of shelter; they endure the rigour and the variations of the seasons entirely in the open air. They are exposed to cold, frost, snow, and (in summer) to a burning sun, with no other protection than what a bush, tree, or rock can afford them. During the autumn, winter, and spring months they are generally kept in the pasture grounds of the sierras, on the brows and spurs of the mountains, because these pasture grounds are more sheltered than those on the coast or table-land. In the summer they go to the wide unfenced stubble lands of the plains and vegas near the coast, and wherever there is table-land, if good watering places, especially running streams and rivers, are also found near. During the heats of summer they are most liable to common cattle ailments, and the cowherds require to be doubly careful at this season of the year. They make the cattle feed during the night, and early in the morning turn them into a species of fold or rough pen, where the animals lie down to chew the cud, and rest till about 9 or 10 A.M., at which hour they are again allowed to pasture. During the greatest heat of the day (12 to 4) they are never driven or allowed to go for food to a great distance; in July, August, and September, this would be attended with risk of spleen-congestion, sometimes very fatal in summer. During the other season there is no danger of this kind, and the only care taken is that they go from one district of pasturage to another, as plenty or scarcity dictate. This is a rude system, and although, at first sight, it appears economical, is not so, but is expensive, and sometimes prejudicial to the cattle. Its only advantage is, that no outlay of money is involved, except the cowherd's wages and the rent (or value) of the pasture grounds. Its difficulties and disadvantages are, first, this system can only answer in the least inhabited parts of Andalusia, where, from want of labourers, there is of necessity a wide extent of uncultivated land; and, secondly, by it the cattle are often obliged to endure great privations and want of food during drought and scanty seasons, they fall away in health, become weak and consumptive, *i. e.*, easily overpowered with any trifling malady (or accident), and sometimes die in great numbers; the owner thus suffering loss from want of precaution in procuring other food besides natural pasture. During the winter also the storms of wind and snow kill many valuable cattle; besides this, by this system, the cows are not prolific, and they breed irregularly. The increase, therefore, is small (in comparison with that obtained by other systems), and it is calculated that only one-third part of the cows in a herd calve during the year. Thus the total number of heads of cattle produced under this (open air) system, is far from what could be expected. These cows are not employed in any other way, and never work, nor are they milked for yield of milk or butter, &c.; but it is also to be acknowledged that, unless in the height of summer and very depth of winter, these herds seem to suffer little from occasional disease or ordinary sickness. The system gives them a sort of hardihood and power of resisting privations (I may almost call it abstemiousness, or, Spanish, sobriedad), which frequently stands them in good stead. It is a necessary consequence of the want, or the sparseness, of population in Spain, a fact too little considered by all Spaniards.

"To a certain extent this open air system is followed in the Castiles, La Mancha, Aragon, Navarre, &c., whilst in the Asturias, Gallicia, and part of Catalonia, where land and landed property is much divided and subdivided, and where the climate is sometimes very cold, this system would not do at all, and is not practised. Were it modified and improved in the south of Spain it might retain some of its crude and natural advantages, but, alas, we Andalusians are devoted to our primitive and accustomed routine, and have not yet punished, and cannot boast of half the fine herds of cattle and of pastoral wealth which we might do if we were wiser.

"Ever since our *régime* and form of government was changed in 1833, when the large sales of the national and clerical properties placed a great many of the then pasture grounds and uncultivated lands (which till then had been inalienable estates) into the hands of private individuals, and when impulse was given to private interests, and from the price of corn and grain these lands began to be cultivated, the herds of cattle have not increased as they ought to have done, and as I hope they will do, as we improve our knowledge and our treatment of the different breeds of horned cattle.

"We now come to the second system of rearing and treating cattle throughout Spain, viz., part of the year housed, and part in open pastures. During winter, and indeed from the first days of autumn, the cattle intended for exportation or for work are always housed at night in sheds or semi-open stalls. In Gallicia they are regularly stabled whenever it is cold. In Andalusia the peasants obstinately adhere to making these cow-houses or sheds far too open. The animals derive certainly some shelter from the rigour of the atmosphere; but their food gets wet with rain, and often they refuse to eat it in consequence, and thus become ill and weak, and liable to disease. The peasants are stupid and obstinate about this, and give as their reason, that if there is a shelter immediately above the cattle (afforded by a roof) the sides cannot admit too much air. It is singular how they persist in this view.

"In the middle of Spain and in the northern provinces the houses for cattle are, on the whole, well and carefully built, with windows and openings for air; but the animals never suffer from the rain or snow beating upon them or their food. These cattle are often worked, and they are much more attended to than the semi-wild herds in our beautiful province. It is supposed to improve the northern cattle (intended for exportation) to make them labour regularly and moderately at the plough and with the cart.

"In the spring the cattle in most districts of Spain leave off going into the houses or sheds, and live and feed on the uncultivated portions of the large farms; a third portion of which is sown every year, the other two-thirds remain uncultivated or "fallow," and then the oxen intended for labour (and the market, &c.) graze. This rotation system, as regards "fallowing," is pursued with considerable regularity throughout Spain. After the harvests are reaped, the stubble lands, on which grow also some herbage and green weeds, afford abundant pasture; and the cattle graze these districts very advantageously. They produce largely the Wheat-grass (Triticum repens), which is considered nutritious and wholesome. This second system (mixed) of treating our cattle keeps them more directly under the management of the man under whose care they are, and thus it is only when there is abundance of food in the fields that they are not supplied with it in their stalls. The cattle thus brought up are, of course, many fewer in number than under the first detailed system; they suffer fewer privations, and are much finer looking. But most of the cattle in Spain are born under the wild system of perpetual open-air pasture. I think that the second system is brought to most perfection in the provinces of Gallicia and the Asturias. There they are also housed carefully during the heats of summer, so as to avoid distress from flies and insects. The cattle are cleaned carefully, and groomed, and are also clothed during the rigorous nights of cold winter. They are more prolific than in Andalusia; their milk is more abundant and nourishing, and their flesh is esteemed even in England and at Madrid.* Experiments made occasionally to cross the Spanish breed of cattle with the Durham have not hitherto been successful. But, in my opinion, improvements in obtaining a variety of breeds of cattle are greatly to be desired."

Professor Prado has thus offered his views as regards the absence (hitherto) of the rinderpest in Spain. I think that he, and all who study the subject, would object to the high feeding with oilcake, &c., as practised in England, for cattle in a southern country and climate. Objection might also be taken to the rich rank pasture often produced by the stimulating quality of manure. A Spanish farmer once told me that all animal manure injured the Grass in its wholesome quality for the first two years after such manure was used, and that it inevitably imparted deleterious qualities to the herbage, and to the cattle who fed on it. "Too much animal manure," said he, "induces scrofula in the animals who eat the Grass or vegetables forced by it; and also in those who eat the Wheat grown on such lands!" This remark was gavely made by a reflecting serious man, and it struck me as curious in these days of (in England) forcing our soils into richness by all manner of fearful abominations, instead of consenting ourselves with draining, irrigation, and the old-fashioned top-dressing of leaves and lime. There may be some common sense in the Spaniard's idea, that the artificial produce of putrid animal manure will partake of its rottenness.

As to the cattle plague, there being no importation (to speak of) from other countries of either sheep or cattle, we may be permitted to hope that Spain will escape it. The general idea seems to be here that, if it does arrive, it ought just at first to be met with the most vigorous and rigorous stamping out, and that then isolation and non-intercourse and entire separation are the best modes of combating the evil. A clever article appeared lately in a Seville paper on the origin of the rinderpest and its effects. It attributed the original disease in the Russian steppes to starvation, and poisonous inoculation by flies from the putrid bodies of the dead (starved) cattle; in Germany to the filthy state in which cattle are kept there, to stall-feeding and over working, and to permitting the cattle to feed on decayed refuse vegetables; in England to over care and over feeding, producing a habit of body which predisposes to infection of every kind, and (like the Andalusian farmer before quoted) to the "rich food of English pastures reeking with animal manure." These worthy Spaniards may be mistaken in this, and may set too much value on simple unstimulated pasture and food for cattle; but perhaps they may be right up to a certain point. *J. N. J.*

* No "artificial" food, such as boiled roots or oilcake, is ever given to cattle in Spain.

THE CATTLE PLAGUE.

The following returns were issued on June 15.

These returns do not profess to give the total number of cases which have occurred in Great Britain, but only those which have been ascertained from information received at the office from inspectors. Columns 1 only record the cases reported as having commenced during the weeks indicated by the headings; "back" cases being added to columns 2.

Census Divisions.	1 Number Attacked. Week ending June 2.	1 Number Attacked. Week ending June 9.	2 Result of Reported Cases from Commencement of Disease. Attacked.	Killed.	Died.	Recovered.	Unaccounted for.
Metrop. ..	8	10	7,893	3,412	3,712	318	451
S. Eastern .	2	5	4,863	1,687	2,538	465	173
S. Midland .	143	99	20,492	8,498	10,068	1,539	387
Eastern Co.	37	21	11,386	5,367	4,834	788	397
S. Western .	6	—	1,756	656	822*	207	71
W. Midland.	135	96	14,505	5,996	6,090	1,511*	908
N. Midland.	170	111	18,732	10,710	6,258	1,218	546
N. Western.	311	546	70,233	23,591	35,000	7,944	3,698
Yorkshire .	76	40	34,470	7,820	18,340	5,931	2,961
Northern Co.	53	21	8,622	4,917	2,613	974	118
Monmouth. & Wales .	25	46	3,232	1,110	5,791	1,054	297
Scotland ..	24	12	46,821	6,227	28,085	10,706	1,803
	960	987	248,025	79,997	124,160	32,658	11,210

NOTE.—3 Inspectors who reported cases last week have not reported in time for this return—viz., for the county of Lancaster, 1; Lincoln, 1; and for the Metropolis, 1.

These Inspectors reported 14 cases last week.

Home Correspondence.

The war with Weeds.—The hoe is "the Farmer's Friend"—the weeds his enemies. Let those who doubt this take a survey of our corn fields at this particular moment, and they will soon be convinced. Surely there never was such a growth of weeds as this year. A very wet and mild winter appears almost to have created them, and where the hoe has been neglected they choke and top the corn, and will diminish the Wheat crop to an extent that may well alarm us. It appears to have rained Docks, Thistles, Black Grass, Charlock, "Hard Hack," and a number of other "corn enemies." Clovers, like Wheat, a poor crop, are sadly infested. A wet spring prevented the usual early hoeing, and has thrown the work "all of a heap." Even with the use of Garrett's horse-hoe and a resolute force of hand hoers I have only just been able to master my enemies. Where there has been neglect or a false economy in this matter of hoeing, I see very disastrous results. Even though thus late, much per acre is paid for hoeing; labour, too, is dear and scarce. Formerly women for weeding abounded

at 8*d*. per day: now they are not to be had, for trouser-making at 1*s*. per pair pays them much better, and just now hundreds in this neighbourhood are more profitably engaged in picking Peas for the London market. Railways have enabled us to raise a supply for the Londoners. When I was in Londonderry I found that there, and among the mountains of Donegal, a supply of shirts was made for the good folks of London; thanks to the rail, steam, and penny postage. Altogether I do not see a good prospect this year for the poor stiff clay farmer, especially as regards Wheat and Clover. Grass, too, is light, and expenses heavy. Wool is following "King Cotton" in his descent from his throne. Our harvest cannot be a very early one. We have, however, one comfort, and that is "dear meat." *J. J. Mechi, June* 13. P.S. Those who have this spring omitted to hoe out the weeds from their Clover and Grass fields will find a sad diminution in the quality and quantity of their hay crop.

Crops of 1866.—The period of the year has arrived when an idea may be formed of the probable character of our grain crops; and, in accordance with a practice of long standing, I beg to send you the impression made on my mind on this important subject after a careful inspection of the crops now growing on a wide extent of country. We had a cold ungenial spring, not only in the north, but also in those southern counties where milder weather is expected to prevail, and in consequence there is less difference in the growth of our various field crops than is usual at this season; in fact, with the exception of a few patches of Tares and some Rye-grass, the crops, as far south as London are not perceptibly earlier than those on the best portions of the northern counties, while in ordinary years we have been in the habit of thinking that harvest in those southern counties preceded us nearly a fortnight. Wheat always thrives best in a dry spring; this year its progress has been much retarded by wet and cold. The general crop, however, has not suffered so much in colour as has frequently been the case; in many places this is, no doubt, the consequence of thorough drainage. Oats, Barley, Beans, and Peas have all come up fairly. Potatos have been extensively planted, but the general field crop is only just getting above ground, therefore all we can say about it is that the plants have come up regularly and well. Mangels and Carrots are up earlier and with a stronger braird than they have shown for several years. Early sown Swede Turnips were nearly all destroyed by the fly directly after they came up. In most cases that land has been sown over again, and the general sowing of Swedes and yellows has just been completed. During the last fortnight there has fallen a great deal of rain over much of England, though not in each district at the same time or to the same extent. The air has mostly been warm, and it is very delightful to see the improvement in growth and colour shown by trees and crops everywhere. I think the prospect for good root crops is better than we have had for many years. It is too early to give a positive or reliable opinion about harvest, but I think we may reasonably hope for an average, though we cannot have a great Wheat crop; while looking at the state of the crops now, and considering the time of the year, I think we cannot possibly have an early harvest. *H. J. Turner, Richmond, Yorkshire, June* 14.

Sewage Irrigation.—The following are the figures which Mr. King's paper, read last year before the Society of Engineers, gives as a summary of the extent of meadows thus irrigated near Edinburgh, with the returns from each in 1860. It is right to add this to the statement of your Croydon correspondent last week, that it may appear that this mode of utilising town water is not only harmless but profitable:—

	Quantities.	Price per acre.	Total amounts.
	A. R. P.	£. s. d.	£. s. d.
Craigintinny Meadows.			
Old Meadows	100 2 26	20 2 10	2006 6 8
Engine do. ..	45 0 32	16 0 0	63 0 0
Lochend Meadows.			
North Burn ..	8 0 0	40 0 0	320 0 0
Remainder of ditto	22 0 0	27 10 8	605 5 0
Italian Rye-grass	3 0 0	24 16 3	80 8 0
Grange Meadows.			
Lots 1 to 11	3 2 11½	35 10 0	127 1 1½
Lots 12 to 34	10 0 17½	17 11 1	177 0 8½
Lots 35 to 39	2 3 30	29 5 0	87 10 11½
Dairy Meadows.			
Part of Dairy ..	4 0 0	30 0 0	120 0 0
39 lots in other parts ..	21 0 0	22 11 7½	474 4 1½
Part East of Granton branch	22 0 0	25 0 0	550 0 0
Reserved lots, Dairy ..	5 0 0	40 0 0	200 0 0
Do. in Rose Bank ..	8 0 0	40 0 0	320 0 0
Quarry Holes Meadows.			
All in one lot ..	8 0 0	30 0 0	240 0 0
Bonnington Road Meadows.			
In different lots ..	4 0 0	24 0 0	96 0 0
Total ..	347 1 36½	27 5 6¼	9529 17 4¾

"In carrying out the foregoing summary it must not be understood as representing the exact amount of money made in each individual case; it is merely the averages, carefully taken, and probably approximating very near to the fact. In order to ascertain how near the averages approximate, the exact amount of money made by the roupings of three different parts of the Craigintinny Meadows was taken—namely, the Sea Meadows, the Fillieside east of burn, and the Burniwards Meadows—which amounted, together, to 1940*l*. 6*s*. 4½*d*.; and the average amounts of those three portions, as will be seen by the table, is 1941*l*. 19*s*. 1¼*d*. According to this result it may fairly be presumed that the averages will not be far from the facts. It appears, from the aforesaid summary, that the total quantity of land at present under irrigation with the town sewage, is 347a. 1r. 36½p.; that the total average of the money made by the roupings or sales of the Grass amounts to 9529*l*. 17*s*. 4¾*d*.; and that the average per acre, upon the whole of the meadows, is 27*l*. 8*s*. 6¼*d*. Taking these sums at 32 years' purchase, as in the former case, the average value per acre of the land is 877*l*. 12*s*. 8*d*., and the total amount of capital represented is 304,955*l*. 16*s*. 8*d*.; and, taking the value, irrespective of irrigation, at 5*l*. per acre per annum, gives a value of 160*l*. per acre, and an amount of capital represented by 55,600*l*., which, taken from the former, leaves 249,355*l*. 16*s*. 8*d*. as the amount of capital represented by the irrigations. These figures show plainly that a quarter of a million of money, or at least money's worth, has been made of a portion only of the sewage of Edinburgh, and that every acre of land under its influence produces ten times the amount of the average of agricultural land in the country." *M. S.*

Italian Rye-grass.—Two and a half bushels is sufficient of good, well-ripened seed; but much of the seed which is sold is soft and thin, having been cut before fully ripe, because of its tendency to shed in the field more than other Rye-grasses do; and of such seed a larger quantity will be required per acre. Much disappointment has been experienced by those who have sown only a bushel or less per acre, which they have supposed to be sufficient, because they have only sown thus much of common Rye-grass. A smaller quantity per acre will suffice if White Clover, or Yellow Trefoil (Medicago lupulina) be sown with it; but it is best to sow Italian Rye-grass alone, and sow thickly. One exception may be made, however, in favour of sowing (in August) Trifolium incarnatum with Italian Rye-grass, which will generally produce a large crop of both; although the T. incarnatum sown alone under similar circumstances in other respects might fail, or suffer severely from slugs or frost. I have also observed repeatedly that this mixed crop will be forwarder in the spring (the Trifolium as well as the Italian Rye-grass) than the Trifolium crop alone; and I infer that the Rye-grass is a valuable shelter for the young Trifolium. The best month for seed time is August, but it may also be sown with safety and profit during the months of March, April, May, and June. Also the first or second week of September, but not later, as it should be well established before the winter. If sown in August it may be cut very early in next spring, and I have known it cut in November. Whether with or without a crop: much best without, as it grows so rapidly that by the time the corn is fit to cut the Rye-grass is as high as the corn, and injures it, especially if a showery summer and a catching harvest, frequently preventing the corn becoming dry enough to be carried before rain falls again. I will add a word as to manuring. Liquid manure is best, and it should be applied at least as often as it is cut; and much depends upon its application as soon as possible after the scythe, before the sun has scorched the wounds produced by the scythe. *M. H. Sutton, Reading.*

A new smock frock and buttons (what a lubberly dress!) is awarded by some of our local county agricultural societies to the shepherd who rears the greatest number of lambs: the rule is that it is a feat to rear a lamb per ewe, and the prizeman rarely numbers more than 23 or 24 to the score of ewes. The masters are to blame for this shortcoming. It is hardly credible that ewes should be so poorly fed in the season and again at lambing time. I was never satisfied until I got over 30 lambs to the score, and never said much about it. *Cor.*

Farmers' Clubs.

MIDLAND. *Land Drainage and Water Supply.*—Last week Mr. BAILEY DENTON read a paper on this subject. He commenced with a reference to the increase of population in manufacturing over agricultural districts, pointing out Warwickshire and Herefordshire as examples, and said that one of the most important questions of the day was, not how the population of large towns—which are strong because they are concentrated—should be supplied with water, but how those small communities and scattered bodies, who are weak because they are scattered, should have any water at all during periods of drought. In the west midland counties the proportion of the rainfall, upon which the perennial or summer supply of our rivers depended, was between 4 and 5 ins. annually; but when meteorological conditions accidentally concurred to reduce the quantity, the flow of our rivers was reduced accordingly. As the population increased, with the liquid refuse from towns and villages flowing into them in some way, and their diminution by the abstraction of water, they would become more and more polluted. One inch of rainfall on each acre of surface is equal to one hundred tons, or 22,622 gallons—sufficient to serve three people with 20 gallons a day for a year. The county of Warwick contains 563,946 acres, and has a population of 561,855 souls; and Stafford 728,468 acres, and 746,943 souls, making a total of 1,292,414 acres, and 1,308,798 souls. The counties of Lincoln and Norfolk contained 3,129,758 acres, and a population of 847,044. Thus in this district there was one acre of surface to each unit of population; while in the purely agricultural districts specified there was as much as four acres to each person. If he was right in taking 4 inches as the average discharge from the land, there was a perennial supply to the rivers of 18 times as much as the whole population would require for use at an average of 20 gallons each. Although that might at first sight seem ample, they must remember it represented an average, and this was dangerous data, and it was for times of scarcity and drought they must provide; and knowing that what had occurred might occur again, of sufferings from want of water, and the progress of trades and manufactures, they would agree with him that they could not long continue to draw upon the rivers without restriction, and would see how important it was to look the future in the face, and make provision for it. Mr. Denton then pointed out that if the supply of water was to be improved it must not be by lessening the perennial supply, but by collecting and preserving some portion of the rainfall, which was now lost in floods or vapour, either for direct use or for compensating the rivers for what we took out of them. It would be seen that the greater the extent of surface upon which to operate, the more facile the means of obtaining what was wanted; and seeing that the time was come, or near at hand, when each district must look at home for its supply of water—*i. e.*, that the proportion of a water-shed must depend upon the rain that falls, and the rivers that run within it, he thought they would agree with him the subject was worthy of their serious attention. This town occupied a central position in the new red sandstone formation, which contained a greater proportion of wet land than any other geological formation in England. It owed its saturated condition of surface not to the preponderance of clay land, but to the physical characteristics which marked its soils and outlines and attended its position. He referred to the alternation of beds of free soil with clays and marls; the mixture of these earths in all sorts of disorder, and the comparatively level or gently undulating character of the surface existing in immediate proximity to higher grounds which, from the outcrops of strata, threw down the rainfall upon their less elevated neighbours. It was these features which suggested the means of providing a constant water supply to small towns and villages which were located in the formation, and which rendered the new red sandstone especially interesting to the engineer, who would make drainage the vehicle of supply. Systematic drainage, devised with proper regard to geological features, might be made the means of discharging for profitable use that water which was either evaporated for want of drainage, or thrown to waste for want of united action when drainage was being carried out. In instances of his own operations he had been enabled to apply the water of drainage to profitable purposes, and he was aware of several good illustrations where it had been turned to account; but this had only been managed where it could be done without an outlay beyond what was essential for the drainage of the land itself; for where the cost of drainage was charged upon a farm tenantry, every means were used, and ought to be used, to keep the cost down. Thus it was that every extra expense to gain incidental benefits, such as water supply, however beneficial the result might be to villages and cottages, was naturally resisted by those upon whom the repayment of cost would fall. He was conducting the drainage on the estates of Lord Cholmondeley and Lord Combermere, where the drains had thrown out a constant flow of water in various parts, and they had created a number of springs which ran in summer as well as in winter, some of which had been applied on the estates. The authorities of the town of Nantwich were desirous of appropriating two of those drainage springs to augment the water supply of the town, and the conviction that such utilisation might become frequent, if not general, throughout the new red sandstone formation was a reason of his addressing them that day. Mr. Denton spoke of the scarcity of water in the midland counties, which had been particularly severe during the last two summers, and expressed his strong conviction that the present disregard of the water economy of our country was a national disgrace. Although the quantity of water evoporated from the surface was reduced by drainage, and the source of rainfall thereby proportionably weakened, the result was to augment in its aggregate quantity the discharge into the rivers. If the general effect of under-drainage was to increase, in an irregular manner, the water supply, there were points bearing upon our water economy which should have a tendency to governing the mode in which the works are carried out. It should be understood that the rate at which water was discharged from the land depended upon the nature of the drainage works. In under-drainage it depended upon the number of drains put into the soil; and in certain soils, if a greater number were adopted than were absolutely necessary for setting the water in motion, not only did they operate to the serious derangement of the river systems, but to the detriment of the productive powers of the land itself. Much land of a free character was being drained by a uniform system of parallel drains, which if differently treated would be capable of advantageously sustaining, instead of injuriously deranging, the water supply, and this, too, with a better effect on the productive quality of the land itself. These remarks applied to under-drainage. Mr. Denton proceeded to show how the water of drainage might be collected and stored in reservoirs for use in small towns and villages, premising that in many parts of Staffordshire and Warwickshire it would be quite within the pale of capability to combine several towns or villages into one district of supply, which would allow of the reservoirs being sufficiently large and deep to secure better water than could be obtained from smaller ones. Mr. Denton entered into calculations to show that a village of 400 inhabitants could be supplied at a total outlay of 415*l*. Assuming the number of houses or cottages to be 100, it followed that the cost per person would be 1*l*. 0*s*. 9*d*., and the cost per house 4*l*. 3*s*. If the cost were charged upon the houses, and the money were borrowed to do the work, it would be repaid by instalments, with interest, in 30 years at 6½ per cent., and the annual sum would amount to 26*l*., or a charge upon each house of not quite 5*s*. 3*d*. per annum. Of course it was assumed that there was land above the village that required drainage and would supply the required water, and that the reservoir should be so much above the village that by means of iron pipes, with

stand pipes and taps, the water could be delivered down the street at convenient places for the use of the poor. He did not affect that the making of small reservoirs was altogether free from objection. He fearlessly stated, however, as the result of many years' experience, that the suggestion was practicable and tangible; and that if carried out it would be a great boon to a large part of our rural population. If the necessity of supplying our villages with water was once fully admitted, there would be plenty of means found of improving upon the suggestions he had made. No one who understood the matter could think that small and comparatively shallow reservoirs would be equally good with large and deep ones; but, at the same time, those who were locally acquainted with the destitute condition of many of our villages, and the fact that a large proportion of our farm labourers now drank the water of existing small ponds and surface ditches, would agree that to collect the pure water of under drainage in winter, and supply it to the cottages through pipes from a reservoir, properly made and protected, would be a very great improvement, and quite worthy of legislative support.

Mr. CHAWNER said Mr Denton had gone a little beyond the real object of the meeting, which was to consider how to drain land. He did not dwell much on that part of the subject, believing, as he did, that no general rules could be laid down, and that soil, situation, and other circumstances of a locality must all be taken into account. But he had told them how to consume the water they derived from their land—that in carrying the water away from their land they believed they were getting rid of an evil, when in reality, they were not only getting rid of an evil from the land as regarded its capability of producing crops, but they were actually throwing away what would be a blessing to all who wanted water, which people did in every possible direction. When they drained the water from their farms they did not care what became of it, but Mr. Denton showed them how they should utilise that water; how they should avail themselves of it, and enable their neighbours and themselves wonderfully to benefit by their previous labours. He thought they owed a great debt of gratitude to Mr. Denton for bringing that particular branch of the subject under their notice.

Mr. BRAWN said with regard to draining land for agricultural purposes, speaking from his own experience, there was nothing like going to a fair and reasonable depth. He had practised draining to some extent, and he never found any satisfactory results from drains of less than 3 feet. He had tried 2 feet, and he believed he might just as well have put the money into the cart rut's; but he had tried 3 feet 6 inches and 4 feet with good results.

Mr. MASFEN said Mr. Denton had referred to country villages where the supply of water to the cottages was derived from ditches. He (Mr. Masfen) was happy to say that his experience did not furnish him with an instance of such a state of things. Property had its duties as well as its rights, and he believed that in most places that duty had not gone unattended to. If the case was as Mr. Denton had stated it, they might hope it was special to the eastern counties where that gentleman resided.

KELSO: *The Best Method of Treating Lambs after Weaning Time.*—At a late meeting of this Club a discussion took place on this question.

Mr. MUNRO said—This, you all know, is a critical time to our lambs, as by mismanagement a great loss may be sustained. If they get a check at this time, it takes a long period and a good deal of feeding before they recover the lost ground; and if kept on unsuitable food, death may cause a serious decimation of their numbers. So far as my observation goes, almost the only plan to take with them is to give them a change to a fresh pasture, and, if possible, to young Grass, and to watch them carefully, so as to mark in its early stages any tendency to purging, which, if allowed to go on, if it does not kill them, reduces them rapidly in condition. On purging being noticed, the lambs should be removed, if on young Grass, to a clean field of older Grass, and *vice versa*. I also think anything further can be done, though sometimes benefit follows the administration of oil and laudanum, or an occasional feed of corn, if they can be induced to eat it. This year I have lost a few by a disease which has much the appearance of quarter-ill, when the discoloration does not come to the outside. It is not the lambs that are purged that are thus affected. They are carried off rapidly. After taking off the skin, the flesh appears sound enough; but when cut into, it is quite black, especially the hind quarters. This, I have no doubt, is brought on by the rapid growth Grass forced forward by the warm weather following the rain we had at the beginning of harvest. In trying to show how this change of pasturage of lambs may be most easily effected, the different circumstances under which farms are managed must be taken into account. The different systems may be divided generally into three classes:—1st, those farms on which merely the stock of grey sheep bought in yearly, say at St. Boswell's Fair, and which are sold off nearly altogether before another lot is purchased; 2d, Those on which a full stock of ewes are kept, and merely the ewe lambs to renew the flock; and 3d, Those keeping a stock of breeding ewes, and also their own lambs. With regard to the first, they have the least trouble in finding food suitable for the young stock. The greater part of their last year's purchase will have been sent to market before the season again comes round, when they have to buy in for another winter. Their fields will be clean, and not overgrown with aftermath. The lambs should do well at once, any weakly ones or cases of scouring being removed to the hay field, and after harvest to the stubbles. Those who follow the second system of farming have rather more difficulty in carrying their lambs from weaning to Turnips. Their fields, from the time that the lambs are sold off, are very lightly stocked, and the foggage is ready. After that is consumed, the Barley stubbles are available, and the longer the lambs are kept going forward on Grass there is not only a saving of Turnips, but they do not so soon lose their teeth, and are able to break the Turnips for themselves to a later period in spring. Under the third system, the greatest difficulty is found in keeping the lands thriving, as the same stock is on the lands that has been there all summer. The best plan, I think, is to take grain sown down without a crop or a foggage after hay in addition to the farmer's own. If these cannot be procured, a bill grazing may be taken for a few weeks, which, although it may not put much condition on the lambs, gives at least clean food in the meantime, and allows the Grass on which they have been weaned to clean and freshen. Another plan that might be tried on farms with small fields is to teach the lambs to eat cake before they are weaned. This might, I think, be done (although I never saw it tried), by allowing the ewes to come to boxes at first, and then gradually and quietly keeping them back. The quantity allowed to lambs would require to be increased after weaning. A fourth class might also be made from those who sell part of their lambs, and feed a considerable number; but their management cannot differ in any degree from that of other classes, with slight modifications to suit varied circumstances.

The Chairman, Mr. PURVES, said the management of lambs was one of the most difficult things they had to deal with, and there were more deaths at the early age of weaning time than all the rest of the time a sheep lived. His opinion was that sheep stock bred on whinstone land should be put on red freestone, heavy clay, or limestone. If they remained on the farm on which they were bred, they would go to wreck and ruin. After about a month or six weeks they came home to their regular pastures in a good healthy condition, resulting from the change. He considered also that giving the lambs a supply of cake was a very excellent thing. They should be taught to eat it when early lambed—a week after birth in fact—which would make them eat it after they were weaned, and which would improve them a hundred per cent. A person who kept all his lambs was often in a difficulty to find food for them after they came home from the summering. This year, he (the Chairman) had tried another plan. He had some 20 acres of Tares, upon which he put his lambs, and they soon took to the eating of them out of the ricks. This was the first year he had tried them, and in a year like this, when they had a superabundance of Grass, Tares were far more preferable than heavy Clover. With this kind of feeding, out of 23 scores he had this season only one lamb dead. If they could only keep the rush from their lambs, they would go on well, but with it they went fast to ruin. He would advise those who had farms of 500 acres to sow about 20 acres of Tares for the use of their lambs. Such had been his experience this year, and he intended to carry it on.

Mr. ROBERTSON, jun., Ladyrig, said that on the whole he agreed with the remarks of the Chairman. Upon the farm of Ladyrig there had been no death among lambs to speak of this year, but those that did occur he attributed to the overgrowth of Grass proving too strong. They usually put their lambs on foggage for some hours a day. After the foggage was done they were turned on to stubble. The symptoms of the disease which had proved so fatal among their lambs were nearly the same as those described by Mr. Munro. Some of them had a slight rush and some of them had none. They died very soon after being taken ill, sometimes in less than an hour, and swelled after death to an immense extent. He had lately caused the shepherd to put a piece of rock-salt into each field, and since then no deaths had taken place; but whether the salt had been the means of stopping the mortality he was not prepared to say.

Mr. BURN (Ednam West Mains) differed a little from the opinions expressed by the Chairman. He knew that people sent away their lambs, and succeeded in saving a great many; but at the same time it might be questioned if they gained much by sending them away because they lost a great deal in condition. For his part he preferred to keep his lambs at home, and he thought he could save their lives too. He thought it of great importance to teach them to eat cake at an early stage. If they could manage to allow the lambs, but not the ewes, to get into another field than that in which they were pastured, and have cake placed in the field on which the lambs could feed without the mothers getting at it—he did not think it beneficial that the ewes should get cake—it would be found an excellent way of getting them to eat it early. He was also in favour of putting lambs early on Turnips; but whenever they intended to change their kind of food, they should always do so by degrees—always, as it were, preparing them some time beforehand for what they were coming to.

Reviews.

A Description of the Estates of San Jorge and Guayavo, in the Banda Oriental, or Republic of the Uruguay. London: S. Straker & Sons, Bishopsgate Street, Within.

This pamphlet contains reports from local agents of the estates of Mr. T. Fair in the republic of Uruguay. We extract from it the following description of sheep farming in that country:—

"The land occupied by the Guayavo, or sheep establishment, is about 80 square miles, and on this area there are about 54,000 sheep, not including, say, 12,000 lambs of the present April lambing, and about 4000 head of cattle, besides a few breed mares. These cattle are kept at three out-stations, and the sheep at 27 out-stations. At the head station are kept both cattle and sheep; here also are the deposits for wool and various stores, convenient pens for working the sheep, enclosures, paddocks, &c., for growing winter food for the fine ram-breeding stock, kept always under shelter during bad weather by night, and during the heat of the day in summer.

"The breed of sheep is from Saxon merino rams and ewes of the country, and originally brought from Buenos Ayres, producing a fine strong useful clothing wool. South Down blood is also strongly predominant in certain flocks, and crossed more or less with the merino breeds, gives a very profitable wool.

"The ewes of each class of wool and age are kept in separate flocks of about 1500, and have two lambings in the year, one in April and a supplementary lambing in September and early in October. Lambs that fall in summer are scorched by the sun, frequently die, and never thrive well; and a winter lambing is rendered hazardous by the severe storms sometimes experienced in these latitudes.

"The wethers are kept in flocks of 4000, one flock reaching to 6000, and as much as possible according to their ages. the maiden ewes are kept in flocks of from 1600 to 2400, and according to quality of wool.

"Each flock is distinguished by its particular earmark, and is as nearly as possible equal throughout, in point of age and class of wool in the animals composing it. They are, as a rule, herded by shepherds at 3*l.* per month, with small rations. The shepherd's duty is to take the sheep out to graze at sunrise in summer, and when the frost is off the Grass in winter, take care of them during the day, that they may not mix with neighbouring flocks, lose lambs, or otherwise stray; and at nightfall to bring them to their 'rodeo,' and take care that they do not move away during the night. There are also enclosures at many out-stations to shut the sheep up in, in case of a stormy night, when it is hardly possible for a man to stand against the wind and rain, much less keep sheep from driving before the storm; in which case lambs may be lost, the whole flock get mixed with another, or many sheep might even be drowned in many of the numerous water-courses, that rise with great rapidity in heavy rains.

"Some flocks are tended on a partnership system; half the flock or one-third the flock belonging to the shepherd, who takes care of the whole, and is free of rent for his own share; or by giving the shepherd a share of the wool and increase. These flocks are taken charge of under contracts of generally three years' duration, during which term ewes, wethers, maiden ewes, &c., all run together.

"Many arguments may be adduced in favour of as well as against the 'half' system; the 'one-third' system, is decidedly cheap, and affords a start in life to hard-working poor immigrants, who have saved a little money; but the share of increase and wool, usually one-third, allotted to the shepherd on the last system is expensive, even though the shepherd has certain expenses to pay.

"In March, immediately before lambing commences, the young stock of the past year, separated by class and ear mark, is formed into new flocks, and sent away to new stations. The ewe flocks are thoroughly overhauled, any sheep found astray out of their flocks are sent back again, and perhaps a few old ewes parted from sundry flocks, and sent to the old ewe station. The flocks are all counted, and the ovine year commences.

"During lambing the shepherds have to be more careful than ever, and the flocks are constantly inspected by the manager or his 'capataz;' at the end of about five weeks lambing is over; and then the lambs are cut, ear-marked, and tail-docked. The ear-marking is so managed that there may be about 1600 ewe-lambs of equal wool with the same mark, to form a future breeding flock; taking care that no two contiguous flocks have their lambs marked in the same way, as in case of a mixture whilst the lambs were still sucking; many lambs might be weaned before their time, their mothers remaining in one flock, and themselves in the other. The same care is requisite with the wether lambs, though there is no occasion to attend so much to class of wool in these, though, of course, the more nearly equal in wool they are, the less work is there for the classifier at shearing-time.

"About the beginning of winter scab generally commences to show itself, and the sheep are immediately dipped in one of the many solutions recommended for the cure of this disease, which, however, in these countries, never attains the virulency of the Australian scab, being probably a much milder form of the disease. If sheep be kept in good condition, not too much shut in the fold at night, scab will have but little effect on them; wet weather always brings out the first symptoms of it. No other diseases occur worth mentioning. Occasionally foot-rot is seen, but to a much considerable extent, and is easily checked. A sheep or two in the young flocks may die from eating poisonous herb, and a mild form of catarrh is sometimes to be seen in the ram breeding flock, but very slightly affects the general health of the animal. No healthier country for sheep, probably, could be found on the face of the whole world than is the Banda Oriental—what is required is improvement of the breed, to give the wool a greater length of staple; increased care, especially in 'getting up' the wool at shearing; and the eradication, as far as practicable, of 'burrs:' and the Banda wool should sell for fully as much as Colonial wool, to which it is similar, and nearly equal; but it has got a bad name, and deservedly so, from the quantities of wool sent from this country, full of grease, dirt and burrs. On but very few stations do the sheep washed before shearing; and many are the sheep washed no attention to cutting burrs, and keeping the sheep clean, and free from scab.

"Shearing commences about the 1st of October. The sheep are washed about five days, more or less, taking the weather into consideration, before shearing, by simply swimming them twice for a few yards up stream; the second time of immersion they are compelled to rub against one another in a sort of pen made in the stream, and come out after the second dip perfectly clean. They are then carefully pastured, and kept away from muddy or dusty places until they are shorn, when they are sent back to their own stations.

"At shearing, the sheep are driven into small paved pens, caught one by one, and tied down in the shearing-barn, where there may be from 50 shearers or upwards at

work; the wool is quickly taken off—a man shearing up to 80 in the day, and a woman nearly as many, though they perhaps do not average more than 45 per day. The shearer receives a ticket for the fleece, worth one penny; the wool is lifted by boys and carried to the table, where it is tied in fleeces, and should be classified; from the table it is passed into separate divisions for the various classes of wool, or flocks from which the wool is shorn; and thence it is handed into the wool-press, whence it emerges in neat bales of about 420 lbs. of washed wool. The bales are stored in the wool-deposit, behind the press, and capable of containing 300 bales, and are then sent off to Monte Video in carts carrying seven bales each. The total expenses of washing, shearing, baling, and carting, together with the many incidental expenses of night-watching, driving, and shearing operations, amount to about 2½*d.* per head; and each sheep averages about 2½ lb. of washed wool, about 57 per cent. of which is merino.

"The carriage to town is a large item of expense; but before many months are passed there may be commencements of railways in the Banda Oriental.

"The great lack is a market for fat wethers; but an apparatus for steaming these is now being erected at the Guayavo; and refined mutton tallow and washed sheepskins, free of burr, can very easily be capitalised.

"It is well known that droughts do not affect sheep nearly so much as cattle, for they graze so much more closely; and the roots of the old herbage, and the little shoots of Grass sent up by a day's rain, or even a shower, are sufficient to maintain them in reasonable condition, though naturally a severe drought tells on them, both as regards their own condition, and milk for the lambs. It is, however, requisite that water should be within easy reach of each flock. The present flocks of the Guayavo are all on the banks of permanent streams, but on many parts of San Jorge land it would probably be necessary to dig wells, and draw water for the sheep as in Buenos Ayres, should such parts ever be stocked with sheep. For such reasons as this, it would frequently be found advisable to retain cattle that can travel long distances for water, in certain parts, even though the interest for land returned by cattle be less than that returned by sheep.

"Cattle too, may probably increase in value, as new methods of preserving the meat are being put into practice, and the meat thus preserved is finding a good market in England. The present prices for cattle may be said to be, more or less, as follows: fat bullocks, 30*s.*; fat cows, 22*s.*; fat heifers, 14*s.*; and cattle for breeding, mixed, about 10*s.* Wethers may be worth, half-woolled, 5*s.*; picked breeding-ewes, 18*s.*; and mixed flocks, about 9*s.* to 10*s.*, according to quality.

"These prices, especially the cattle, are very variable, depending on the condition of the cattle and the state of the markets, and in the matter of sheep, on the breed, quantity of wool at time of delivery, &c. &c. It is to be hoped that considerably more than 14*s.* per head will be realised from Guayavo wethers after the establishment of the steaming apparatus.

"A great future is before the Banda Oriental; what is wanted principally is immigration, heads and hands."

Farm Memoranda.

WILHELMINA-POLDER, NEAR GOES, HOLLAND.—Between the two arms of the Scheld, at the confluence of the Zuidvliet, de Wytvliet, the Sloe and the Schenge, and bounded by the old Bevelaunden and Walcheren, there arose, more than a thousand years ago, from the deposit of these rivers, an alluvium, which formed the isle of Wolfaartsdyk, and between that of Wilhelmina-polder. By means of the embankments around the Wilhelmina-polder, the isle of Wolfaartsdyk was joined to the isle of South Beveland. These two, with Wilhelmina-polder, now form but one island. In the year 1808 a plan was projected for the embankments around the alluvium, which now forms the Wilhelmina-polder. In 1809 this alluvium was sold by auction at Amsterdam on condition that the embankments should be made according to the projected plan, which included the making of a canal from Goes, through the new grounds, to the Scheld, for which Goes was to pay them 33,333*l.* 6*s.* 8*d.*

The grounds were bought for 54,166*l.* 13*s.* 4*d.* by a company in Rotterdam, consisting of 23 members, and the director of which was Willem Suermandt. The embankments cost 41,666*l.* 13*s.* 4*d.*, and were made without any particular accidents, and by their means 4155 acres of land were secured from the waves, and have since been under the direction of one person as one large farm. One member of the Society, Walter Jacob van den Bosch, a merchant of Rotterdam, and formerly Consul of Denmark in that place, undertook in the year 1813 the very difficult task of managing the newly-acquired grounds. He was obliged for that purpose to leave Rotterdam and came to reside at Goes, where he lived till 1836. The first inhabitants of the Wilhelmina-polder had chosen their abode at the end of the Goes Canal, but some houses were afterwards built about the middle of the polder, and a bridge was made over the canal, which divided the lands; this was the first origin of Wilhelmina-dorp. In 1817 and 1820 two madder manufactories were erected, one on each side of the canal. In 1821 J. G. J. van den Bosch, eldest son of W. J. van den Bosch, came to live at the new village. The number of houses in the village amounts to 68 at present, and in 1840 a calico manufactory was added to them.

The whole polder is divided into five farms, each having a large sheep-fold belonging to it. In 1823 the inhabitants of Wilhelmina-dorp received the funds necessary for building a school-room and a house for the schoolmaster; in 1825 these buildings were finished, and on the 2nd January, 1826 the school was opened.

In 1836 Mr. G. J. van den Bosch died, and was buried in the burial-ground in the new polder. His eldest son, who succeeded him in his labours, undertook what had been his father's greatest wish, to procure the inhabitants of the new village the blessings of a church and pastor, as till that time they had been obliged to go to church to a village about an hour's distance, which proved very burdensome to old people in case of unfavourable weather.

To these memoranda we add that the son of this Mr. W. J. van den Bosch has now, in his turn, succeeded to the management of this large estate, which may be fairly described as one of the example farms of Europe, and we add from his account the following agricultural details of its management:—"There are about 2990 acres in regular cultivation; the rest is wood, pasture, &c. Of this 2825 are of a clayey description, some heavy clay, but never so stiff as in some parts of England, and always a sandy subsoil at various depths. About 150 acres are sandy and poor altogether (old sandbanks on which no alluvial clay was deposited). There are 6 farms, and on each 14 work-horses, with 1 old one for extra use, making 90; besides about 20 young horses, as we rear them ourselves. During part of the year, 18 pairs, or 36 hired horses, are also employed. There are on each farm 5 ploughmen, young and unmarried men; they live with the bailiff, and get besides their food and board—the first ploughman 12*l.*, the second 9*l.* 6*s.* 8*d.*, the third 8*l.* 16*s.* 8*d.*, the fourth 6*l.* 13*s.* 4*d.*, and the fifth 5*l.* 5*s.* They are hired for nine months, from March to December. Generally the horse-work goes on till the middle of December. During winter till March or till the end of February there is nothing to do; but some carrying of straw, of corn, and such like. Besides the 5 ploughmen living on the farm, there are during nine months or less, 2 labourers for the remaining 2 teams (each man works here generally 2 horses in a team, also in carrying, for which light waggons are used). For rolling, mostly 1 horse is used; also 1 horse for light harrowing. In winter there remain 2 or 3 ploughmen on each farm, for taking care of horses and cattle. For this they get 36*s.* on each farm, besides food and board. The labourers (not hired ploughmen) get 8*s.* 4*d.* in the week and nothing else. Sometimes boys are employed, chiefly in spring, to work the horse for extra use; they receive 1*s.* per day, without food. Other labourers working the horses, as in December and in the winter, get 1*s.* 3*d.* per day. Sometimes in summer in fallow-work, or during November, 2 ploughmen will work with 3 horses each for deep ploughing; then sometimes we can spare one of the two aforesaid labourers.

"The food of the horses is as follows: during about two and a half months in winter, when they do not work, different kinds of straw, chiefly of Beans and Oats, and a little bit of hay. When they begin to work, a little more hay, besides 11 bushels of Beans and 11 bushels of Oats per week, for the 14 horses on each farm. In May this food is gradually stopped, as they go to pasture.

"In June, July, August, till mid-September, they receive during the day, cut Red Clover, whilst they are always in pasture during the night. And besides this, they receive on each farm in summer 70 bushels of Beans and Oats together. At middle September feeding of Carrots is beginning, and the horses receive besides 25 bushels Oats or Beans per week, on each farm. In October they do not go to pasture any longer; instead they get a little hay, if possible, and the allowance of Carrots is increased to three-quarters of a cwt. per horse per day, and Oats the same as before. November the same as October. In December the feeding of Oats and Carrots is gradually stopped and again changed for different kinds of straw. The Carrots are always cut or pulped, and mixed with chaff of Wheat or cut straw, and given after Oats. Horse-work is severest in autumn, not only for ploughing, but also for carrying Madder and roots.

"Young horses get, till they are 1 year old, 1 bushel Oats per week, besides hay and Clover in summer. When they get older, they do not get Oats any more, but they go to pasture for the whole summer, and in winter they receive some cut Mangels and hay.

"As to the cost of food, it was:—

12*l.* per horse on an average per year, from			1831–1840
9*l.* 16*s.*	,,	,,	1841–1850
9*l.* 5*s.*	,,	,,	1850–1860

From 1831 to 1840 more Beans and Oats were given than the quantities mentioned. So during the last 20 years, the cost of food was about 10*l.* per horse. In your country it is at least twice as much. All is taken into account, except the straw as when the horses have taken the best of it, it is partly used as litter.

"Now as to other expenses, I can give you the following account, being the annual averages of ten years:—

	£	s.	d.
Wages and food of the men working the horses	750	2	0
Farrier and drugs	14	19	9
Shoes	15	14	0
Mending implements, purchase of implements, and latticess-maker, &c.	370	11	10
Cost of food of the horses	1079	12	5
	2231	0	0

	£	s.	d.
Purchase of horses (sometimes still necessary)	33	15	0
Value of horses at the beginning of the year	1168	7	0
	1202	2	0
Sold old horses	14	1	8
Value at the end of the year	1162	18	4
	1177	0	0
	25	2	0
Total	2256	2	0
Value of the work done by the horses	2363	1	9
Profit	4158	19	0

"This profit is realised notwithstanding that for ploughing the horses are credited with only 4*s.* per acre; for ploughing with three horses, only 5*s.* 6*d.* per acre is placed to their account; for harrowing about 1*s.* 6*d.* per acre; light harrowing about 11*d.* per acre; rolling 8*d.* to 11*d.* per acre; carrying crops in harvest time 4*s.* 8*d.* per acre; carrying Madder, roots, and corn, &c., 6*s.* 8*d.* per day, in winter 5*s.* per day. We hire men with horses and implements for these prices.

"Now to the questions about the doings of the horses during the course of the year. The 2825 acres of clayey soil are cultivated according to the following rotation:—1st year, Peas; 2d, Wheat; 3d, Mangels, dunged with 10 tons farmyard manure and 2 cwts. guano and bones per acre; 4th, Beans, dunged with 16 tons of manure per acre; 5th, Wheat; 6th, Oats, with Clover and Grass; 7th, Clover; 8th, fallow, dunged on some lands with 14 tons manure per acre; 9th, winter Barley, the stubbles with 20 tons manure per acre; 10th, madder; 11th, madder; 12, madder, dug when two and a half years old; 13th, Peas; 14th, Wheat, with Clover; 15th, Clover; 16th, Oats; 17th, Mangels, Turnips, Potatos, and Carrots, dunged as the third year; 18th, Beans, dunged as the 4th year; 19th, Wheat, with Clover and Grass seeds; 20th, pasture; 21st, pasture.

"You see every year of each crop we have 135 acres, or 22 or 23 acres on each farm per annum. The 150 acres of sandy soil have the following system of cropping: 1st, Turnips; 2d, Chevalier Barley; 3d, Clover; 4th, Rye; 5th, Potatos; 6th, Beans; 7th, Rye: Turnips, Potatos, and Beans are manured. The depth of ploughings (we have the improved American eagle ploughs) varies from 2½ to 6 inches with two horses, and from 8 to 12 inches with three horses."

(To be Continued.)

Miscellaneous.

Mutual Insurance. — The county of Chester has suffered more from the cattle plague than any other part of the country, the number of cattle killed and died in that county exceeding that of all Scotland and Wales. Cheshire has done nothing to cause the plague; it was imported from abroad, in supplying the great commercial cities with foreign cattle. It is therefore unjust to impose on Cheshire a rate estimated at from 5*s.* to 10*s.* in the pound, because it accidentally happens to have nearly all its cattle slaughtered for the benefit of the rest of the kingdom. The compensation only extends to half the value of the cattle slaughtered, so that the owner has to bear not only the loss of half his cattle, but to pay veterinary and other expenses, amounting, in the whole, to an enormous sum. Such a heavy rate on a limited district necessarily makes the misfortune greater, and the ruin more complete. The injustice is twofold; for the farmer first bears the loss of half the value of his cattle, and then by the cattle rate he pays his quota of the burden on the full assessable value of his farm—only when utterly ruined is he excused the rate. The stamping out of the disease not only benefits the owners of healthy stock throughout the kingdom, but also the general public as consumers of meat; for if the disease be not abated, the price of meat will become excessive. The one grand inference to be drawn here can only be in favour of some system of mutual or more general insurance, while we regret to see that the Commissioners, in their third and highly illustrated Report, have not gone deeper into this important branch of the subject. In glancing at the laws and regulations of other countries, they only incidentally touch on such means "as making pecuniary compensation to owners of animals slaughtered"—"cases in which compensation is to be paid"—"the measure of compensation, which may be the whole, four-fifths, two-thirds, one-half, one-third, of the sound value of the beast destroyed"—"the fund on which compensation is charged, which may be local or general, and may be raised from the stockowners as a class, or from the public." All this is very material, and it would be exceedingly useful to have a digest of such information at once prepared upon authority.—*Mark Lane Express.*

Co-operative Farms.—The following remarks were made by Mr. Wm. Lawson, of Brayton Co-operative Farm, near Carlisle, at a recent meeting in Manchester:—"I have come to tell you a little about what we have been doing in Cumberland with regard to co-operation in the cultivation of the land. I have said to the workpeople in my employment that I will give them one-tenth of the profits of my establishment this year. When I began to farm, four years ago, it seemed to me, from what information I could get in England, Scotland, and Wales, that labour was the difficult point to deal with; that was evidently the great point of attack; and that if we could get the labourer to do right, we could realise the greatest amount of profit from the land. So I thought, as Mr. Briggs thought, that when I went to the people and said I would co-operate with them, that I would divide part of my profits with them, they would jump at the offer, and that we should carry all before us. But my astonishment was as great as Mr. Briggs's, when I found that they seemed to care nothing at all about it. I tried for some time—I talked to them, but it seemed to produce no effect upon them. Two years ago I called up 11 of the workers, and told them we would discuss a certain question; the question was—'Is it desirable that the workers on this farm should be direct partakers of its proceeds?' I explained to them what was the meaning of the question, and I told them something about what had been done in Suffolk, on the farms owned by Mr. Gurdon, who, as long ago as 1831, gave leave to about 30 labourers to occupy a farm as tenants; and he lent them money to cultivate the farm, without making them pay interest for it at first. They got on very well, and the farm is a joint-stock

one to this day. I have visited these co-operative farms, and, really, the effects have been great and glorious. Well, I told my people about this, and I said that in two days they should have the opportunity of voting by ballot upon the question. You know that agricultural labourers are not exactly like the inhabitants of Manchester; they are not, perhaps, so independent; and they may be thought generally to speak very much as their employers would wish them to speak. Well, what was the result? When they voted, I put a bottle with a ticket upon it with the word 'Co-operation,' and upon another bottle I put a ticket labelled, 'Every man for himself.' I did not wish to make the best of my case; I wanted their unbiassed opinion. What was the result with those 11 people? Actually, 10 of them voted for 'Every man for himself,' and only one put into the 'Co-operation' bottle! Well, the thing was gone for the time; but last year we brought another scheme before them—a scheme which Mr. Pitman was good enough to put into 'The Co-operator' at the time (Oct. 1865). This plan proposed to share the proceeds on certain specified terms. We called a public meeting, and asked the whole of the people, whether labourers or inhabitants of the village, if the plan were to be adopted or not, and we voted by ballot. If I remember rightly, there were 53 voters; 47 voted for the plan, and 6 voted against it. The next thing was to bring forward a plain statement of figures, to show exactly what capital was invested in the concern, and to make a clear statement as to what I demanded as the capitalist, and what would go to them as labourers. As soon as the figures were brought before them, they were dull as ditch-water! they would have nothing to do with it; they would not come to our meetings; and therefore, though they had voted in favour of this plan, I said—'Well, you don't seem to care anything about it, but we will put it to the vote again.' How many voted that time? Only eight people voted, and five of them voted in favour of the plan that it was right, and three that it was wrong. But almost all those people lived in the manager's house, so I thought very little of the result; and I said again—'I resign the arrangement.' So we went on another year. This year we proposed a different plan. We did not go to the people and put it to the ballot at all, because it seemed to us that we could co-operate with one, and that if the majority were against us we could co-operate with the minority. So we offered to the minority or the majority, just as they liked; we offered co-operation to all comers. I said—I will give one-tenth of the profits of my establishment to the workers. That is the plan we now adopt. I will not keep you any longer, only to say that Messrs. Greening & Co., Limited, have my very best wishes, and I hope the concern will go on and prosper.' *The Co-operative*, p. 1, 1866.

Moles v. Insects.—A scientific contemporary relates the following for the benefit of mole-killers and others who wish to disturb the order of Nature. A municipal council in the State of Zurich took it into its head to be very zealous in talpacide, when M. Weber, a naturalist, intervened, and imparted to the council the results of many experiments. He carefully examined the stomachs of fifteen moles caught in different localities, and discovered no vestige of roots or plants, but abundant evidence of earth-worms. He shut up several moles in a box with sods of turf and a smaller case of grubs and earth-worms. In nine days two moles ate 341 white worms, 193 earth-worms, 25 caterpillars, and an entire mouse. He then placed meat cut small with vegetables. The moles ate the former and left the latter; then he gave them vegetables only,—in twenty-four hours they were dead of starvation. We commend this to the British farmer, especially if he be not a valiant member of a Sparrow Club. *Athenæum.*

Notices to Correspondents.

ASPHALTE: *A B.* Take five or six bushels of broken flints, about ½-inch size. If five bushels, add one bushel of gravel stones, all the dirt carefully sifted out; spread on a wooden board with side ledges, pour gas-tar on little by little, turning over the stones with a shovel until every stone is wet with tar, but leaving no surplus tar. It cannot be too often turned. Add one bushel sharp sand, or enough to make the mixture of the consistence of thick pudding, turning it over as before. Lime may be mixed with the sand if thoroughly slaked and powdered, but not otherwise. The ground on which the mixture is to be laid should be carefully levelled; then lay on the mixture from three to six inches thick; spread a little sand over it, to prevent it sticking to the trowel, and roll it down with a heavy iron roller. Where tar may ooze up to the surface, spread a little sand to absorb it. If too much sand is used, or any not wetted by tar, a hole is the consequence. It should not be used for a month, and should be rolled every day until hard. It is impenetrable, and cools at most 1*s.* per yard superficial. 6*l.* or 7*l.* per barrel of 15 gallons, and broken flints 1½*d.* or 2*d.* per bushel.

DRAINAGE: *X Y.* The sole operating cause in land drainage is the weight of the water; a deep drain is more efficient than a shallow one, just because a greater weight of water is thus pressing its way out of the exit hole.

TIMBER DUTIES: *H W C.* The latest edition we have of the British Tariff gives the following list of duties:—Wood and timber hewn, and lath-wood, the load, 1*s.*; Sawn or split, planed or dressed, 1*s.*; firewood, not exceeding 3 feet in length, 1*s.*; teak, and wood for shipbuilding purposes, 1*s.*; mahogany, hard wood, beef wood, cedar, ebony, king wood, lignum vitæ, maple, New Zealand wood, olive wood, purple wood, rose wood, satin wood, Santamaria wood, speckled wood, sweet wood, tulip wood, walnut wood, zebra wood, furniture wood unenumerated, not being ash, beech, birch, elm, oak, and wainscoat, the ton, 1*s*; staves, not exceeding 72 inches in length, nor 7 inches in breadth, nor 3½ inches in thickness (except staves for herring barrels), the load, 1*s.* The following drawbacks allowed on exportation to foreign parts of the several descriptions of wood and timber, whether foreign or colonial, hereinafter mentioned, viz.: wood and timber, hewn, and lath-wood, 1*s.*; sawn or split, planed or dressed, 2*s.*; teak and wood for shipbuilding purposes, 1*s.*; mahogany, hard wood, or furniture wood, per ton, 1*s.*; staves not exceeding 72 inches in length, nor 7 inches in breadth, nor 3½ inches in thickness (except staves for herring barrels), the load, 1*s.* We will state next week if any alterations have since been made.

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AND FOUR OUT OF FIVE FIRST PRIZES AT THE LAST ROYAL SHOW AGAINST MOST SEVERE COMPETITION

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THE LEICESTER

(NEW DESIGNED AND PATENTED)

ORNAMENTAL FLOWER VASES OR BASKETS.

MANUFACTURED BY

HUNT & PICKERING,

HORTICULTURAL AND AGRICULTURAL IMPLEMENT WORKS, LEICESTER.

Exhibited with marked success at the International Flower Show, Kensington; and in the Gallery of the Agricultural Hall, Islington, during the Horse Show.

These Vases or Baskets are composed of a series of ornamental branches, affixed to a capital or centre ring, mounted on suitable brackets and hexagon base, without the aid of screws, rivets, &c.; so simple in construction that any one may in a few minutes put it together, making it a beautiful Centre-piece or Flower Basket, either for the Lawn in Summer or the Conservatory in Winter. Painted any colour to order.

The great advantage of the Open Vase over the solid cast iron or "Terra Cotta," is the perfect drainage and continual circulation of the atmosphere through every part, giving greater vitality to the growth of the plants. The mode of filling is simply to cut a few feet of thin Turf or Moss, and lay the same with the Grass outwards, throw in the soil, and plant the Flowers according to taste.

☞ *Illustrated Price Lists of the various sized Vases.*

The LEICESTER GARDEN SEAT, TABLES, and RUSTIC SEATS, sent free on application.

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ENGLISH SHEET GLASS.

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	16-ounce.	21-ounce.
Best	5¾*d.*	7¼*d.*
Seconds	4¾*d.*	5¾*d.*
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HORTICULTURAL GLASS,

Stock Sizes, 16-ounce.

In 100 feet Boxes. Boxes included.

11 by 9, 12 by 9, 13 by 9, 14 by 9	4ths.	3rds.	2ds.
12 „ 10, 13 „ 10, 14 „ 10, 15 „ 10	12*s.* 6*d.*	14*s.* 6*d.*	16*s.* 0*d.*
13 „ 11, 14 „ 11 „ „			
14 „ 12, 15 „ 12, 15 „ 11, 16 „ 11			
18 „ 12, 19 „ 12, 16 „ 12, 17 „ 12			
16 „ 13, 17 „ 13, 20 „ 12, 21 „ 14			
19 „ 13, 20 „ 13, 18 „ 13 „	14*s.* 0*d.*	16*s.* 0*d.*	17*s.* 6*d.*
16 „ 14, 17 „ 14, 21 „ 13 „			
19 „ 14, 20 „ 14, 18 „ 14 „			

16 to 17 oz. to the foot.

FOREIGN SHEET GLASS.

In Cases for cutting up, in Sizes as Manufactured.

	16-oz., 200 ft.	16-oz., 300 ft.	21-oz., 200 ft.
	£ *s.* *d.*	£ *s.* *d.*	£ *s.* *d.*
Best ..	..	..	..
Seconds ..	2 14 0	4 1 0	..
Thirds ..	..	2 10 0	2 10 0
Fourths ..	..	2 0 0	2 0 0

GLASS FOR ORCHARD HOUSES,

As supplied by us to Mr. Rivers, to the Royal Horticultural Society, and to most of the Nobility, Clergy, and Gentlemen of the United Kingdom.

Each Box contains 100 feet. The prices only apply to the sizes stated.

Squares 20 by 12, 20 by 13, 20 by 14, 20 by 15.

	16 oz. to the foot.	21 oz.
Fourth quality	14*s.* 0*d.*	18*s.* 6*d.*
Third quality	16*s.* 0*d.*	21*s.* 6*d.*
Seconds	17*s.* 6*d.*	25*s.* 0*d.*
English	19*s.* 0*d.*	26*s.* 0*d.*

The above prices include the Boxes, which are not returnable.

SMALL SHEET SQUARES.

In 100 feet Boxes.

6 by 4 .. 6½ by 4½ .. 7 by 5 .. 7½ by 5½	8 „ 6 .. 8½ „ 6½ .. 9 „ 7 .. 9½ „ 7½	12*s.*6*d.*
10 „ 8 .. 10½ „ 8½		13*s.*6*d.*

Boxes 2*s.* each, returnable at full price.

HARTLEY'S PATENT ROUGH PLATE GLASS.

Packed in Boxes of 50 feet each.

6 by 4 and 6½ by 4½	10*s.* 6*d.* per box.
7 „ 5 „ 7½ „ 5½	12*s.* 0*d.* „
8 „ 6 „ 8½ „ 6½	13*s.* 6*d.* „
9 „ 7 „ 9½ „ 7½ and 10 by 8 ..	15*s.* 0*d.* „

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SWING WATER BARROW.—This is the best and cheapest article yet introduced for use in Gardens, Farm Yards, &c. The Water may be dipped out, or the Tub fitted and pointed out, or by merely raising the Handle it can be placed on the ground, and the Fittings detached. To hold about 30 or 36 gallons, price 42s. Carriage paid to any Railway on Great Eastern Line

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GARDEN HOSE and FITTINGS.
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INTERNATIONAL EXHIBITION, CLASS IX., No. 2119.

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NEW OVAL TUBULAR BOILER,

acknowledged by practical judges to be a great improvement on every form of Tubular Boiler yet introduced. It has proved itself superior to all other Boilers for quickness of action and economy of Fuel, doing its work with one-third less the amount required by any other.

Extract from Report in Gardeners' Chronicle *of International Exhibition, May 24, page* 476.

"The upright form of Boiler is usually made on a circular plan, but the oval form given to Mr GRAY's variety of it is said to be preferable in consequence of its bringing the tubes in closer contact with the fire. The usual form of a furnace being a parallelogram rather than a square, it seems feasible that the Boilers on the oval plan should bring the tubes more completely within range of the burning fuel; and this being so, the change, though a slight one, is no doubt an improvement."

They are made of all sizes, which, with prices, may be had on application.

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No. 547. WARNER'S best ENGINES, in Wood Tubs, and fitted with WARNER'S Registered Spreaders—

24 Gallons,	£6	10	0
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The 50-Gallon Barrow is made extra strong throughout, and fitted with handle for two men.

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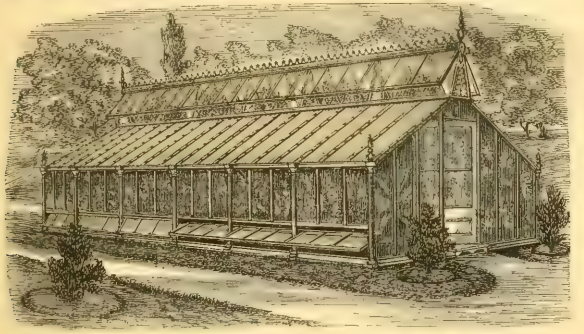

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MESSRS. SANDERS, FREWER, AND CO. beg to call special attention to the high value of these great improvements in the VENTILATION, &c., of HORTICULTURAL ERECTIONS, which are also applicable to all WOODEN HOUSES, as well as to CHURCHES, RAILWAY STATIONS, PUBLIC BUILDINGS, MANUFACTORIES, &c.; and have received the highest recommendation from many of the first Horticulturists and practical men of the United Kingdom.

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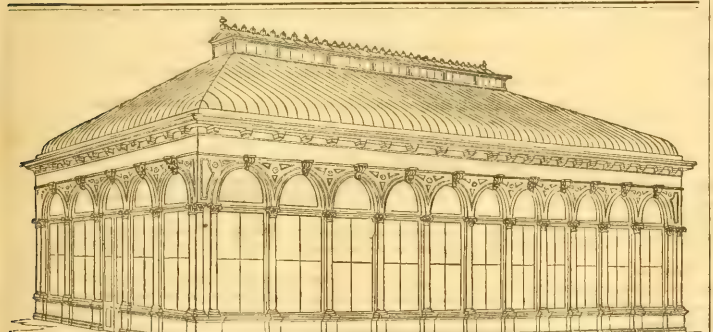

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Can be had in any quantity of EATON & DILLER, 6 and 7, Crooked Lane, London Bridge, E.C.

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HILL AND SMITH'S PATENT BLACK VARNISH for preserving Iron Work, Wood, or Stone. This Varnish is an excellent substitute for oil paint on all out-door work, and is fully two-thirds cheaper. It may be applied by an ordinary labourer, requires no mixing or thinning, and is used cold. It is used in the grounds at Windsor Castle, Kew Gardens, and at the seats of many hundreds of the nobility and gentry, from whom the most flattering testimonials have been received, which HILL & SMITH will forward on application.

From CHAS. E. B. SMEDLEY, Esq., *The Grange, near Boston.*
"I have much pleasure in giving you a reply to your inquiries about the Black Varnish I have had from you for the last two years. It has answered my expectations fully, and as far as I am able to judge, it is the best material for preserving iron fencing, gates, and other wood work exposed to thesair; and I can with safety recommend it as the best and cheapest article that is yet out. Wishing you every success."
Sold in casks of about 30 gallons each, at 1s. 6d. per gallon, at the Manufactory, or 1s. 8d. per gallon paid to any Station in the kingdom.
Apply to HILL & SMITH, Brierly Hill Iron Works, near Dudley, and 22, Cannon Street West, E.C., from whom only it can be obtained.

BATHS and TOILET WARE.—WILLIAM S. BURTON has NEW LARGE SHOW ROOMS erected exclusively for the display of BATHS and TOILET WARE. The stock of each is at once the largest, newest, and most varied ever submitted to the public, and marked at prices proportionate to those that have tended to make his establishment the most distinguished in this country. Portable Showers, 7s. 6d.; Pillar Showers, £1 to £5 12s.; Nursery, 15s. to 32s.; Sponging, 14s. to 32s.; Hip, 14s. to 34s. 6d. A large assortment of Gas Pumice, Hot and Cold Plunge, Vapour, and Camp Shower Baths. Toilet Ware in great variety, from 1s. 6d. to 45s. the set of three.

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Patent Iron Bedsteads, fitted with dovetail joints and patent sacking, from 12s. each. Ornamental Iron and Brass Bedsteads in great variety, from £1 4s. to £25.
Complete suites of Bedroom Furniture in mahogany, fancy woods, polished and japanned deal, always on show. These are made by WILLIAM S. BURTON, at his Manufactory, 84, Newman Street, and every article is guaranteed. China Toilet Ware in great variety, from 4s. the set of five pieces.

WILLIAM S. BURTON, GENERAL FURNISHING IRONMONGER by appointment to H.R.H. the Prince of WALES, sends a Catalogue gratis and post paid. It contains upwards of 600 Illustrations of his unlimited Stock of Sterling Silver and Electro Plate, Nickel Silver, and Britannia Metal Goods, Dish Covers, Hot-water Dishes, Stoves, Fenders, Marble Chimney pieces, Kitchen Ranges, Lamps, Gaseliers, Tea Trays, Urns, and Kettles, Clocks, Table Cutlery, Baths, Toilet Ware, Turnery, Iron and Brass Bedsteads, Bedding, Bedroom Cabinet Furniture, &c., with Lists of Prices, and Plans of the Twenty large Show Rooms, at 39, Oxford Street, W.; 1, 1a, 2, 3, and 4, Newman Street; 4, 5, and 6, Perry's Place; and 1, Newman Yard, London, W.

Hants.

FARMS TO LET, of from 300 to 600 ACRES of SECOND CORN and STOCK LAND, of easy access by the South Western Railway.
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Brighton, Sussex.

To GARDENERS, NURSERYMEN, FLORISTS, AND OTHERS.
TO BE LET, an OLD ESTABLISHED BUSINESS of a NURSERYMAN and FLORIST, with Graperies, Peach Houses, &c.; every convenience for carrying on an extensive business, with good Seed and Jobbing trade attached; the whole can be taken at a valuation or a fixed amount.
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TO BE DISPOSED OF, a good ESTABLISHED BUSINESS in the above Line, in a thriving town in one of the Midland Counties. There is a good assortment of Fruit Trees, Hardy Shrubs, Conifers, Roses, &c., good Plant Houses, Pits and Frames, and large bearing Vinery. Immediate possession may be had, the in-coming Tenant taking the Stock, Houses, &c., at a Valuation.
Apply, by letter only, to X. Y. Z., *Gardeners' Chronicle* Office, 41, Wellington Street, Covent Garden, London, W.C.

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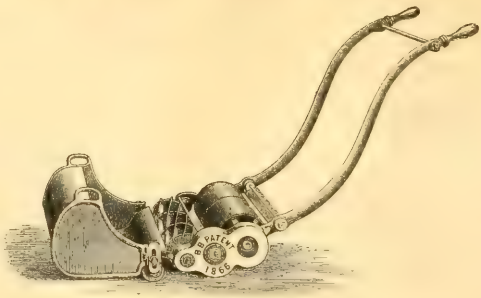
PATENTEES AND SOLE MANUFACTURERS,

J. B. BROWN & CO.,

148, UPPER THAMES STREET,

LONDON, E.C.



GUARANTEED TO GIVE

PERFECT SATISFACTION,

AND IF NOT APPROVED OF

MAY BE AT ONCE RETURNED

This NEW PATENT LAWN MOWER combines all the latest improvements in Lawn Mowing Machines, being simple in construction, very light, silent in movement, easily worked, and so strong and durable as to be literally unbreakable,—an all-important feature in Machines of this class; the ordinary cast-iron being entirely done away with, and malleable iron substituted in all breakable parts, and every part being numbered and accurately made to standard gauges. The workmanship and finish are also of a superior character; the entire Machine being quite equal to a revolution, so to speak, in Lawn Mowers. The Machines are all guaranteed to give perfect satisfaction in every respect.

The NEW B B PATENT LAWN MOWER is Manufactured by J. B. BROWN AND CO. on their own Premises in London, under their personal superintendence.

PATENT B B HAND MACHINE.

PRICES—Including Carriage to any Railway Station or Shipping Port in England, with the necessary Tools and Directions for use.

10-inch Machine	£3 10 0	*Easily Worked by a Boy.*
12-inch Machine	4 10 0	
14-inch Machine	5 10 0	
16-inch Machine	6 10 0	*Ditto by a Man.*
18-inch Machine	£7 10 0	*Easily Worked by a Man*
20-inch Machine	8 0 0	
22-inch Machine	8 10 0	*Ditto by Two Men.*
24-inch Machine	9 0 0	

PATENT B B HORSE MACHINE.

PRICES—Complete, without extras, including Carriage to any Railway Station or Shipping Port in England, with the necessary Tools and Directions for use.

48-inch Machine	£32 10 0	*Drawn by a Horse.*
42-inch Machine	28 10 0	
36-inch Machine	24 10 0	
30-inch Machine	21 10 0	*Drawn by a Horse.*

PATENT B B PONY and DONKEY MACHINE.

PRICES—Complete, without extras, including Carriage to any Railway Station or Shipping Port in England, with the necessary Tools and Directions for use.

30-inch Machine	£17 10 0	*Drawn by a Pony.*
28-inch Machine	16 10 0	
26-inch Machine	14 10 0	*Drawn by a Donkey.*

*** *Every Machine sent out is warranted to give ample satisfaction, and, if not approved of, may be at once returned.*

The NEW PATENT B B LAWN MOWER has already been patronized by Her Majesty the QUEEN, for the Royal Gardens at Windsor Castle, Osborne, and Hampton Court; by His Royal Highness the PRINCE of WALES, for Sandringham; and by His Grace the Duke of SOMERSET, the Right Hon. the Earl of DERBY, the Right Hon. the Earl of CHARLEMONT, and numbers of the principal Nobility and chief Landed Proprietors in the Kingdom. This Machine has also been selected by Merchants for the execution of their orders for export to the Continent, and to Egypt, India, Australia, Natal, and other countries, and by a large number of the most respectable Business Firms in various parts of England, Scotland, and Ireland, and also abroad, many of whom have applied for special Agencies, and are now ordering Machines for immediate delivery.

TESTIMONIALS.

From the Rev. FRANCIS G. WILSON, *Sympson, Fenny-Stratford.—April* 23, 1866.

"I enclose your account, together with a post-office order for the amount. I have tried your B B Lawn Mower in both wet and fine weather, and am satisfied it is the best I have seen at work. It does its work best in dry weather, but it will also work when the Grass is wet."

From W. B. TEECE, Esq., *The Priory, Shrewsbury.—May* 14, 1866.

"I received your B B Machine on Saturday last, and liked it very much. A friend of mine saw it, and was so much pleased with it that he prevailed on me to let him have it and order another one for myself, so I shall feel obliged by your sending me a similar one as soon as you can."

From Mr. JOSEPH TERRELL, *Gardener, Langton Rectory, Spilsby, Lincoln.—June* 19, 1866.

"I have great pleasure in stating that the B B Lawn Mower you forwarded for the Rev. H. Watson in April, has been regularly worked, and I am well satisfied with it. It does its work well, and is much lighter in draught than most of our neighbours' mowers are."

From the Rev. A. C. HAVILAND, *St. John's College, Cambridge.—May* 29, 1866.

"The Mowing Machine (a 24-inch for the College Grounds) has been in use for several days, and it acts very well."

From J. B. GIFFORD, Esq., *Holywood Hill, Chard, Somerset.—May* 16, 1866.

"The Mowing Machine came duly to hand, and I am very much pleased with it."

From the Hon. F. ASHBURNHAM, *Sherrfold Park, Frant, Sussex.—March* 7, 1866.

"My gardener was very well satisfied with the working of the B B Mowing Machine."

From Mrs. PRICE, *Hagley Villa, Lugwardine, Hereford.—August* 18, 1865.

"I have much pleasure in informing you that the Mowing Machine (a 14-inch B B) I ordered from you at the Bath and West of England Meeting, held in Hereford, has in every respect given the greatest satisfaction, and I am very much pleased with it."

From W. H. APPERLEY, Esq., *Withington, near Hereford.—August* 14, 1865.

"The New B B Lawn Mower I purchased of you has now been frequently used by my gardener, and he is perfectly satisfied with it. It does its work well. I shall feel pleasure in recommending your Machines."

From GEORGE MCRAE, Esq., *Mitcham Common, Surrey.—September* 27, 1865.

"I am very pleased with the Lawn Mower I had from you (a 14-inch B B Machine). It is certainly the most compact one I ever saw, and does its work well."

J. B. BROWN AND CO., OFFICES, 18, CANNON STREET, CITY, LONDON, E.C.

(Nearly OPPOSITE ST. SWITHIN'S LANE and "LONDON STONE," and near LONDON BRIDGE).

WAREHOUSE and MANUFACTORY, 148, UPPER THAMES STREET, E.C.

OPPOSITE the CITY of LONDON BREWERY, and close to the LONDON BRIDGE STEAM BOAT PIERS.

Editorial Communications should be addressed to "The Editor." Advertisements and Business Letters to "The Publisher," at the Office, 41, Wellington Street, Covent Garden, London, W.C.
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THE GARDENERS' CHRONICLE
AND
AGRICULTURAL GAZETTE.

A Newspaper of Rural Economy and General News.

No. 26.—1866.] SATURDAY, JUNE 30. {Price Fivepence. STAMPED EDITION, 6d.

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ROYAL HORTICULTURAL SOCIETY, SOUTH KENSINGTON.

NOTICE.—A MEETING of the FRUIT and FLORAL COMMITTEES will be HELD on TUESDAY NEXT, July 3, at 11 o'Clock.

JAMES EASON, Esq., will LECTURE on the Sweet Juvenca at 3.

ROYAL BOTANIC SOCIETY'S GARDENS, Regent's Park.—The LAST EXHIBITION this Season of PLANTS, FLOWERS, and FRUIT, WEDNESDAY NEXT, July 4. Tickets to be obtained at the Gardens, and of the Society's Clerk, at Austin's Ticket Office, St. Dunstan's Hall, by Vouchers from Fellows of the Society, price 5s., and on the day of exhibition, 7s. 6d. each. Gates open at 2 o'clock. Bands will play from 2 till 7 o'clock.

HORTICULTURAL SOCIETY of LIVERPOOL. FIRST GREAT EXHIBITION of ROSES, ORCHIDS, FERNS, on JULY 3 and 4, in ST. GEORGE'S HALL. The following, and other liberal Prizes, will be awarded.

72 CUT ROSES, distinct (Nurserymen), 1 Truss, £8, £6, £4.
48 " " " 3 Trusses, £6, £4, £2.
24 " " " 3 Trusses, £3, £2, £1.
24 " " " 1 Truss, £3, £2, £1.
24 " " (Amateurs), 1 Truss, £4, £3, £2.
18 " " " 3 Trusses, £3, £2 10s., £1 10s.
12 " " " 3 Trusses, £3, £2 5s., £1 10s.
10 EXOTIC ORCHIDS (Open), £10, £7, £5.
6 " " " £6, £4, £2.
18 " FERNS (Open), £8, £6, £4.
12 " " £6, £4, £2.
3 TREE FERNS " £4, £3, £2. [£3, £2.
Collection of HARDY FERNS, species and vars., not less than 24, £5,
12 ORNAMENTAL FOLIAGE PLANTS (Open), £5, £3, £2.

Liberal Prizes will be awarded to Florists' Flowers. The Hall is close to the London and North Western Railway Station.

For Schedules and every information apply to ROBT. W. KER, Hon. Sec., 4 Bennett Street, Liverpool.

BIRMINGHAM ROSE SHOW, THURSDAY NEXT, and FRIDAY, July 5 and 6. Prize Lists and Forms of Entry may be had of Mr. A. FORREST, Queen Chambers, Cherry Street, Birmingham. Entries closed on June 29.

RUGBY HORTICULTURAL and COTTAGE GARDENERS' SOCIETY.

Established 1861. Patron, The Right Hon. the Earl of Craven.

The ANNUAL SHOW, open to all England, will take place at Rugby, on THURSDAY, July 12, when Prizes will be offered—

In Class 1 for Plants, Fruit, Cut Flowers and Vegetables, and a Silver Cup, value £7, One Prize of £5, Two Prizes of £3, Three Prizes of £2, and Four Prizes of £1 for Roses, and Three Prizes of 10s., 5s., and 2s. 6d. for the best Single Rose.

In Class 4 for Plants and Cut Flowers, and Six Prizes of £2, £1, 10s., and 5s. for Roses.

In Class 3 for Plants, Fruit, Cut Flowers and Vegetables, and 6 prizes of 15s., 10s., 5s., 2s. 6d., for Roses.

In Classes 1 & 2 for Plants, Fruit, Cut Flowers, and Vegetables, and 10 prizes for Roses.

Entries to be made on or before July 5.

Schedules of Prizes and further particulars may be obtained on application to JOHN S. SAVAGE, or WM. MASON, Hon. Secs., Rugby.

GARDENERS' ROYAL BENEVOLENT INSTITUTION.—The Friends of MARGARET MITCHINSON have received from the Secretary a note expressing his extreme regret that the error as to the number of Subscriptions paid by her Husband was made in Copying the Polling Paper; [and instead of Seven, it should have been a Subscription for Ten Years.

Proxies to assist her in this, her Seventh Application, will be received by Messrs. P. LAWSON & SON at Edinburgh or London; and Messrs. NUTTING & SON, Barbican, London, E.C.

Roses.

PAUL and SON'S ROSES are NOW in BLOOM at the "Old" Cheshunt Nurseries.
Every hour by Rail from Bishopsgate to Cheshunt.

Roses in Bloom.

WM. PAUL'S ROSES are NOW in FULL BLOOM. Inspection respectfully invited. Trains almost hourly from Shoreditch to WALTHAM STATION.
PAUL'S NURSERIES, Waltham Cross, N.

Roses.

JOHN CRANSTON begs to announce that his fine Collection of ROSES (extending over many Acres) is NOW in FULL BLOOM.
Nurseries, King's Acre, near Hereford.

WM. WOOD and SON have the honour of announcing that their Collection of ROSES is NOW COMING into BLOOM, and will continue in great beauty during the Rose season.
The Nurseries are distant three miles from the Uckfield Station of the London and Brighton Railway.

Roses in Bloom.

JAMES MITCHELL has the honour of informing his kind patrons, that his magnificent COLLECTION is now in FINE BLOOM. Pitt Down Nurseries, Maresfield, Sussex.
The London, Brighton, and South-coast Railway. Two-and-a-half miles from the Uckfield Station.

WEDDING BOUQUETS, EPERGNES FILLED. Tables Decorated, Conservatories Furnished, by C. ELWIN & CO., 9, Park Terrace, Regent's Park.

Roses in Pots.

PAUL and SON, in addition to the NEW ROSES of 1866, can offer fine Plants of the finest TEA-SCENTED NOISETTE and best HYBRID PERPETUAL ROSES, in pots, for Planting during present and next month.
Old Cheshunt Nurseries, N.

Genuine Garden and Agricultural Seeds.

JAMES CARTER AND CO., SEED FARMERS, MERCHANTS, and NURSERYMEN, 237 & 238, High Holborn, London, W.C.

JAMES FAIRHEAD and SON, SEED GROWERS and MERCHANTS, 7, Borough Market, London, S.E.
New and Genuine AGRICULTURAL, GARDEN, and FLOWER SEEDS. Special prices and advantageous offers on application.

J. IVERY AND SON beg to announce their NEW PRICED DESCRIPTIVE CATALOGUES of AZALEA INDICA, and No. 10, HARDY BRITISH FERNS.
Dorking.—June 30.

J. IVERY and SON beg to announce that their DESCRIPTIVE PRICED CATALOGUES of AZALEA INDICA, HARDY BRITISH FERNS, ROSES, CONIFERÆ, GRAPE VINES, and SEEDS, may be had on application at their Dorking Nursery.

British Fern Catalogue.

ROBERT SIM can now send, post free for six postage stamps, Part I. (British Ferns and their varieties, 36 pages, including prices of Hardy Exotic Ferns) of his NEW and PRICED DESCRIPTIVE CATALOGUE of BRITISH and EXOTIC FERNS, No. 7.
*** Part II. (Exotic Ferns) will be issued as early as possible.
Foot's Cray Nursery, S.E.

RAYNBIRD, CALDECOTT, BAWTREE, DOWLING, AND COMPANY, Limited.
CORN, SEED, MANURE, and OILCAKE MERCHANTS,
Address, 69, Seed Market, Mark Lane, E.C.; or Basingstoke.
Samples and Prices Post free on application. Prize Medals, 1851, for Wheat; 1862, for "Excellent Seed Corn and Seeds.

MAURICE YOUNG'S DESCRIPTIVE LIST of Conifers, New and Rare Hardy Plants, Ornamental Trees and Shrubs, Rhododendrons, Japanese Novelties, Forest Trees, and Roses, forwarded on application.
Milford Nurseries, near Godalming, Surrey.

FINE SPECIMEN and HALF-SPECIMEN HARDY-WOODED and ORNAMENTAL FOLIAGE STOVE and GREENHOUSE PLANTS.—Hilton Hall, gentleman furnishing Conservatories are invited to inspect our Collection of the above, which is large and in very fine healthy condition. Prices moderate.
T. JACKSON & SON, Nursery, Kingston, Surrey.

BEDDING PLANTS.—Scarlet Pelargonium Stocks at reduced prices.—Verbenas, Heliotropes, Lobelias (cuttings), Geranium Stella Nosegay, Variegated, of sorts, Paul's "Beaton's Race," &c.
PONSFORD & SON, Loughborough Park Nurseries, Brixton, Surrey, S.

REBECCA, the finest BEDDING GERANIUM ever raised. Plants ready in May, price 5s. each.
See WM. PAUL'S SPRING CATALOGUE.
PAUL'S Nurseries, Waltham Cross, London, N.

Greenhouse, Hardy and Stove Plants; Agricultural, Flower, and Vegetable Seeds, &c.

ROBERT PARKER invites inspection of his COLLECTIONS of the above-named, which have been selected with the greatest care. All the Plants are clean and healthy, and are offered at reasonable prices. Descriptive and Priced Catalogues are published, and will be forwarded to applicants.
Exotic Nursery, Tooting, Surrey, S.

BARR'S CALCEOLARIA, CINERARIA, PRIMULA, and HOUSE PLANTS.

CALCEOLARIA, very choice, 2s. 6d. per packet; CINERARIA, very choice, 1s. and 2s. 6d. per packet; PRIMULA, very choice, 1s. and 2s. 6d. per packet; SCARLET, PURPLE, and WHITE INTERMEDIATE STOCKS, for Spring bloming, very fine, each variety 1s. per packet; SCARLET, PURPLE, and WHITE IMPERIAL STOCKS, for Spring blooming, each variety 1s. per pkt.; MYOSOTIS SYLVATICA, for Spring blooming, 1s. per packet; Collections of PERENNIALS, 2s. 6d., 3s. 6d., 5s. 6d. to 21s.
BARR & SUDDEN, 12, KING STREET, Covent Garden, London, W.C.

Primula Cineraria.

WM. CUTBUSH and SON are now sending out SEED of their superb PRIMULA SINENSIS FIMBRIATA, which has for many years given great satisfaction.
The *Gardeners' Chronicle* of the 6th of January, in Notices to Correspondents, says:—"The blossoms are remarkably fine, richly coloured, full and densely fringed; they are evidently the produce of a capital strain."
The *Journal of Horticulture* of the 23d of January, says that:—"The finest and richest coloured Chinese Primulas we have yet seen are those raised by Messrs. Cutbush & Son."
Sealed packets, 2s. 6d. and 5s. 6d. each.
CINERARIA, from choice varieties, per packet, 2s. 6d. and 3s. 6d. each.
Highgate Nurseries, London, N.

Novelties, Novelties.

JAMES GARAWAY AND CO., Durdham Down Nurseries, Bristol, offer the Three undermentioned NEW SEEDLING GERANIUMS as not only Novelties but decided acquisitions:—

TRICOLOR SECTION.

QUEEN OF TRICOLORS.—This variety surpasses in beauty the well-known Mrs. Pollock, from which it is a seedling; the colours are of the same shade but much more vivid, and, being a great improvement, the green colour does not project itself beyond the zone. The flowers are produced in abundance, and are scarlet in colour and of good shape.
Well-established Plants will be supplied the last week in June, at 21s. each. Four sent when Three are ordered.

CLOTH OF GOLD SECTION.

BRONZE QUEEN.—A variety raised from Cloth of Gold, with foliage of same colour, but with the addition of a dark bronze zone distinctly marked; of good dwarf habit, free in growth and very effective, well adapted for bedding; flowers scarlet cerise, produced in good-sized trusses.
Price 7s. 6d. each. Four sent when Three are ordered.

NOSEGAY SECTION.

LAFRICAINE.—A hybrid Nosegay of compact habit, with extra fine trusses of purplish crimson flowers, while, elevated on stiff flower stems, produce a very fine effect. As a plant for the back or second row of a ribbon border or centre of bed, this will be found a very attractive acquisition.
Price 5s. each. Four sent when Three are ordered.
Prices to the Trade on application.
JAS. GARAWAY & CO.'s SPRING CATALOGUE, containing Priced Lists of Stove and Greenhouse Plants, Ferns, and Bedding-out Plants, is now ready, and will be forwarded post free on application.
JAS. GARAWAY & CO., Durdham Down Nurseries, Bristol.

New Orchid and General Plant Catalogue.

B. S. WILLIAMS' NEW PLANT CATALOGUE, containing many really good novelties, and carefully selected LISTS of STOVE, GREENHOUSE, and HARDY PLANTS, is now ready and will be forwarded post free to all applicants.
Victoria and Paradise Nurseries, Holloway, London, N.

First-class Seeds.

DOBSON'S PRIZE CALCEOLARIA, 1s. 6d., 2s. 6d., 3s. 6d., 5s.
DOBSON'S PRIZE CINERARIA, 1s., 2s. 6d., 5s.
DOBSON'S PRIZE PRIMULA, 1s., 2s. 6d., 5s.
For Testimonials see page 608 of this week's *Gardeners' Chronicle*.
DOBSON & SONS, Seed Merchants, Isleworth, W.

CASTLE KENNEDY FIG.—Plants of the above may now be had at 10s. 6d. and 21s. each; the usual discount to the Trade. PETER LAWSON & SON, Edinburgh and London.

To Pine Growers.

WANTED, about 60 Fruiting and Succession Plants (QUEENS and JAMAICAS).—They must be guaranteed healthy and free from scale.—Address, stating price, &c., to
Mr. BURGESS, Guddesby Hall, Melton Mowbray.

Chrysanthemums.

FIRST PRIZES STOKE NEWINGTON and GUILDHALL, 1865.

ADAM FORSYTH begs to inform the Public that he is now sending out his large COLLECTION of CHRYSANTHEMUMS, at 6s. per dozen, including Carnation, Eve, Golden Ball, Golden Dr. Brock, Hercules, King of Denmark, Lady Carey, Mr. Brunlees, Mr. Wyness, Mrs. Raines, Pink Pearl, Prince of Wales, Sam Weller, Venus, Virgin Queen, &c.
CATALOGUES for one stamp.
Brunswick Nursery, Stoke Newington, N.

Orchis maculata superba.

OSBORN and SONS are now taking orders for this beautiful hardy TERRESTRIAL ORCHID, for which a First-class Certificate was awarded at the 18th of June, by the Floral Committee of the Royal Horticultural Society. It is of vigorous habit, 1½ to 2 feet high, has leaves transversely marked with very dark stripes, and a dense spike of spotted rose-coloured flowers 6 inches long. Price 5s. each, to be delivered in autumn.
Fulham Nursery, London, S.W.

New "White" Lobelia.

MARTIN and SON, NURSERYMEN, 7, Market Place, Hull, can yet supply a few hundreds of the above NEW "WHITE" LOBELIA MISS MURPHY. The stock is good, one mass of bloom, and a compact habit. Nothing can equal it for a white edging, or for beds. £5 per 100, 12s. per dozen. We could give numerous Testimonials, but think the following sufficient:—

"June 26, 1866.

"Have the goodness to forward, as early as possible, 100 more of your new White Lobelia Miss Murphy. We have it now in bloom and have a quantity ordered. It is certainly a very good thing.

"Yours obediently, J. DOBSON & SON, Isleworth.

"To Messrs. MARTIN, 7, Market Place, Hull."

PETER DRUMMOND and CO. (late J. SCOTT), Preston Road Nursery, Yeovil, Somerset, have to offer to intending purchasers upwards of 200,000 BEDDING-OUT FLOWER GARDEN PLANTS, including all the leading varieties of Dahlias, Fuchsias, Geraniums, Heliotropes, Lantanas, Lobelias, Petunias, Salvias, Verbenas, &c. And all kinds of Variegated and Variegated-leaved Plants suitable for the Decoration of the Flower Garden, at unprecedented low prices. CATALOGUES free on application.
Also SEEDS of every description for the FARM and GARDEN, of the best quality, at moderate prices.
Please address as above.

CABBAGE PLANTS.—Strong Drumheads for Cattle, Early kinds, Battersea and Nonpareil, 3s. per 1000.
W. VIRGO & SON, Wonersh Nursery, Guildford, Surrey.

FOR SALE, SWEDISH TURNIP SEED, grown 1865, from selected Bulbs, of the original Ruta-baga, or Green Poll Swedish Turnip. Price 3s. per quart.
Apply to the grower, THOS. A. JARVIS, Higher Bolberry, near Kingsbridge, Devon. All Orders to be accompanied by a remittance

To the Trade and Others.—An excellent Stock.

STRATTON'S GREEN ROUND TURNIP SEED, 1865 growth. Pronounced by all who have tried it to be the best English Turnips grown. Cash price, per bushel, 16s.; per lb., 6d.
EARLY SIX-WEEK TURNIP, 8d. per lb.
A remittance or reference requested from unknown correspondents
FRED. GEE, Seed Merchant and Grower, Biggleswade, Bedfordshire

Now Ready for Planting.

EXCELLENT CABBAGE PLANTS, Spring-sown,—SCOTCH DRUMHEAD, true; EARLY DWARF NONPAREIL, ENFIELD MARKET. Cash price, 2s. 6d. per 1000.
DRUMHEAD SAVOY PLANTS, same kinds and stock, 2s. per 1000.
GREEN CURLED SAVOY do., and a variety of other plants.
A remittance or reference requested from unknown correspondents.
FRED. GEE, Seed Merchant and Grower, Biggleswade, Bedfordshire.

The Best Substitute for Swedes.

SUTTON'S PURPLE-TOP YELLOW HYBRID TURNIP, 1s. per lb.
YELLOW TANKARD TURNIP, 1s. per lb.
SUTTON'S PURPLE-TOP BULLOCK'S HEART (NEW) TURNIP, 1s. per lb.
Or cheaper by the bushel, carriage free.
These Turnips, if sown in July and August, will produce a crop scarcely inferior in quality or quantity to Swedes sown in June.
SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

Turnip Seeds for Present Sowing.

CHEAPER BY THE BUSHEL.

SUTTON'S LINCOLNSHIRE RED PARAGON, a particularly free-growing Turnip, very large, and of excellent feeding properties, 9d. per lb.
GREY-STONE or MOTTLED GLOBE, 10d. per lb.
SUTTON'S IMPERIAL GREEN GLOBE, 9d. per lb.
PUMERANIAN WHITE GLOBE, 9d. per lb.
HARDY GREEN ROUND, 9d. per lb.
SUTTON'S SHORT-TOP SIX WEEKS, 1s. per lb.
And other choice sorts, cheaper by the bushel, carriage free.
SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

Brighton and Sussex Seed Warehouse.

EDWARD CARPENTER'S MIXTURES of PERMANENT GRASS and CLOVER SEEDS.—Best quality, 30s. per acre (2 bushels light seeds, and 12 lb. Clovers and small seeds per acre).—See testimonials in Catalogue.
EDWARD CARPENTER'S RENOVATING MIXTURES for Improving Old Pastures.
PRICED CATALOGUES of KITCHEN GARDEN, FLOWER, and FARM SEEDS now ready.
EDWARD CARPENTER, Seed Merchant and Grower, 96, St. James' Street, Brighton.

Horticultural Glass Warehouse, 87, Bishopsgate Street Without, London, E.C.

THOMAS MILLINGTON begs to refer to his new reduced LIST of PRICES, published on the 24 of June last, or on application at above address.

GARDEN ENGINES, Syringes, Lawn Mowers, Rollers, Tiffany, Terra Cottas, Nettings, Fern Cases, Bee Glasses, Cucumber Tubes, Fern Shades, &c.
The Garden Repository, 32, James Street, Covent Garden, W.C.

TREE and PLANT LABELS.—10,000 Cloth punched assorted Labels, for 3s.; delivered free in London on receipt of a Post-office Order or stamps for the amount.
Address, JOHN FISHER & Co., West Road Works, Boston, Lincolnsh.

F. A. HAAGE, JUN.'S, WOOD GARDEN STICKS and TALLIES (Commended by the Royal Horticultural Society).—The above can now be had of all sizes, Wholesale, of BEDDAM & BARGATH, Co.'s Quay, Lower Thames Street, London, E.C.; and Retail of the principal Seedsmen and Florists.
Price Lists on application.

FOUNTAIN JETS.

Fig. 626.
JET D'EAU.
18s. 6d., 36s. 6d.; 24do., 3s. 9d., 36 do., 6s. 6d.

Fig. 551.
DOME and CONVOLVULUS.
17s.

Fig. 625.
DOME.
8s. 6d.

Fig. 502.
CONVOLVULUS,
8s. 6d.

Fig. 521.
BARKER'S MILL.
11s.

Fig. 522.
WIRE BASKET with BALL
10ins., 1os. 6d., 12ins., 17s. 6d.; 14ins., 18s. 6d.

Connecting Screws to all the above Jets, 1s. 6d. extra.
Branch Pipe for rising up Jets 1 foot high, 5s. 6d.
A Tap is required to be fixed in the Pipe to regulate the supply of Water to Fountain Jets.
J. TYLOR & SONS, Manufacturers, Warwick Lane, Newgate Street, London, E.C.

VASES, STATUES, FOUNTAIN BASINS, FLOWER-POTS, &c., in TERRA COTTA and FINE STONE WARE, warranted to stand frost, by JOHN N. BLASHFIELD, Stamford, Lincolnshire. Applications for Drawings and Prices will receive attention.

CHEAP PAVING TILES.—A Manufacturing Firm have a considerable stock of Plain and Encaustic Tiles, more or less damaged in the process of manufacturing, that they would be willing to dispose of at prices below the cost of the commonest description of Paving materials. To Landed Proprietors they would be invaluable for the Floors of Cottages, Farm Houses, &c., and would be supplied at a very low rate.
Address M., Post Office, Broseley.

GARDEN BORDER EDGING TILES, in great variety of patterns and material, the planer sorts being especially suited for KITCHEN GARDENS, as they harbour no Slugs and Insects, take up little room, and once put down need no further labour and expense, as do "grown" Edgings, consequently being much cheaper.
GARDEN VASES, FOUNTAINS, &c., in Artificial Stone, of great durability, and in great variety of design.
F. & G. ROSHER, Manufacturers, Upper Ground Street, Blackfriars, S.; Queens Road West, Chelsea, S.W.; Kingsland Road, Kingsland, N.E.

Sole London Agents for FOXLEY'S PATENT GARDEN WALL BRICKS. Illustrated Price Lists free by post. The Trade supplied.

ORNAMENTAL PAVING TILES for Conservatories, Halls, Corridors, Balconies, &c., as cheap and durable as Stone, in blue, red, and buff colours, and capable of forming a variety of designs.
Also TESSELATED PAVEMENTS of more enriched designs than the above.
WHITE GLAZED TILES, for Lining Walls of Dairies, Larders, Kitchen Ranges, Baths, &c. Grooved and other Stable Paving Bricks of great durability, Dutch and Adamantine Clinkers, Wall Copings, Red and Stoneware Drain Pipes, Slates, Cements, &c.
To be obtained of F. & G. ROSHER, at their Premises as above.

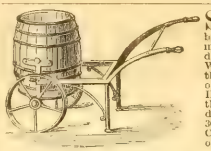
SILVER SAND (REIGATE, best quality), at the above addresses—16s. per Ton, or 1s. 3d. per Bushel; 2s. per Ton extra for delivery within three miles, and to any London Railway or Wharf. Quantities of 4 Tons, 1s. per Ton less.
FLINTS, BRICK BURRS, or CLINKERS, for Rockeries or Grotto Work. F. & G. ROSHER.—Addresses see above.
N.B. Orders promptly executed by Railway.

HOT-WATER APPARATUS, of every description, fixed complete in any part of the country, or the materials, viz., Boilers, Pipes, &c., delivered to any Station.
Estimates on application.
J. JONES & SONS, 6, Bankside, Southwark, London, S.E.

RICK CLOTHS, New and Second-hand, with Poles, Pulleys, &c., complete.
A Price List post free on application.

Address BENJAMIN EDGINGTON (only), 2, Duke Street, London Bridge, E.C. No other Establishment.

Card.
SAMUEL N. McGERROW,
GENERAL HORTICULTURAL BUILDER,
Knotty Ash, near Liverpool.
Reference permitted to the Nobility and Gentry throughout Great Britain and Ireland.



SWING WATER BARROW.—This is the best and cheapest article yet introduced for use in Gardens, Farm Yards, &c. The Water may be dipped out, or the Tub tilted and poured out, or by merely raising the Handle it can be placed on the ground, and the Frame detached. To hold about 30 or 36 gallons, price 42s. Carriage paid to any station on Great Eastern Line.

POWERFUL GARDEN ENGINE, suitable for the above, price 45s.
IMPROVED WATER and LIQUID MANURE CARTS.
Catalogues on application.
Manufactured by W. S. BOULTON, Rose Lane Iron Works, Norwich.

NOTICE.

MESSRS. CUMMING & EDMONDS

Take this opportunity of returning their grateful thanks to the Nobility, Gentry, and Public generally, for the very great support they have received since their commencement in Business, and to inform them they have now taken more Commodious Premises, at the LILLIE BRIDGE, RICHMOND ROAD, BROMPTON, where they have erected STEAM-POWER MACHINERY, and will, in consequence, be able to execute any orders they may be favoured with in the shortest possible time. Messrs. C. & E. beg to draw attention to their

NEW PATENT TUBULAR ARCHED SADDLE BOILERS,

Which have given such universal satisfaction wherever they have been fixed, Gardeners of the greatest experience speaking in the highest terms of them.

Designs and Estimates of every kind of Horticultural Building and Hot-water Apparatus may be obtained on application free of charge.

CUMMING AND EDMONDS,
CONSERVATORY ARCHITECTS, HORTICULTURAL BUILDERS, and HOT-WATER APPARATUS MANUFACTURERS,
STAMFORD BRIDGE, FULHAM ROAD, BROMPTON, S.W.; and at
LILLIE BRIDGE, RICHMOND ROAD, BROMPTON, S.W.

THE LEICESTER
(NEW DESIGNED AND PATENTED)
ORNAMENTAL FLOWER VASES OR BASKETS.
MANUFACTURED BY
HUNT & PICKERING,
HORTICULTURAL AND AGRICULTURAL IMPLEMENT WORKS, LEICESTER.

Exhibited with marked success at the International Flower Show, Kensington; and in the Gallery of the Agricultural Hall, Islington, during the Horse Show.

These Vases or Baskets are composed of a series of ornamental branches, affixed to a capital or centre ring, mounted on suitable brackets and hexagon base, without the aid of screws, rivets, &c.; so simple in construction that any one may in a few minutes put it together, making it a beautiful Centre-piece or Flower Basket, either for the Lawn in Summer or the Conservatory in Winter. Painted any colour to order.

The great advantage of the Open Vase over the solid cast iron or "Terra Cotta," is the perfect drainage and continual circulation of the atmosphere through every part, giving greater vitality to the growth of the plants. The mode of filling is simply to cut a few feet of thin Turf or Moss, and lay the same with the Grass outwards, throw in the soil, and plant the Flowers according to taste.

☞ *Illustrated Price Lists of the various sized Vases.*
The LEICESTER GARDEN SEAT, TABLES, and RUSTIC SEATS, sent free on application.
LONDON AGENTS: MESSRS. DRAY, TAYLOR, & CO., ADELAIDE PLACE, LONDON BRIDGE.

ADIANTUM FARLEYENSE, True.

ROBERT T. VEITCH

HAS MUCH PLEASURE IN OFFERING FOR THE FIRST TIME TO THE PUBLIC

THIS VERY HANDSOME VIGOROUS-GROWING STOVE FERN,

SO UNIVERSALLY ADMIRED AT THE LATE INTERNATIONAL EXHIBITION.

This Adiantum was introduced from Barbadoes by Thomas Daniels, Esq., Stoodleigh, Tiverton.

Plants will be ready in July next at 42s. each. Usual allowance to the Trade.

☞ *Orders are now being booked, and will be executed in rotation as received.*

NURSERY: NEW NORTH ROAD, N.; SEED WAREHOUSE: 54, HIGH STREET, EXETER.

SHANKS' PATENT LAWN MOWERS FOR 1866.

PATRONIZED ON FIVE SEPARATE OCCASIONS DURING THE SEASON OF 1864 BY

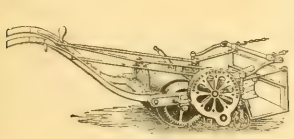
HER MAJESTY THE QUEEN,

AND ONCE BY HIS MAJESTY THE KING OF SAXONY;

AGAIN ON FOUR SEPARATE OCCASIONS DURING THE SEASON OF 1865 BY HER MAJESTY THE QUEEN

ONCE BY HIS MAJESTY THE KING OF HOLLAND;

AND ONCE BY HIS MAJESTY THE KING OF PRUSSIA.



HORSE MACHINE.

PONY MACHINE.

HAND MACHINE.

JUNE, 1866.—ANOTHER 42-INCH HORSE MACHINE HAS JUST BEEN SUPPLIED TO

THE ROYAL GARDENS AT KEW.

PRICES, including Carriage to any Railway Station or Shipping Port in the Kingdom.

SHANKS' NEW PATENT HAND MACHINE.

Width of Cutter.	Easily Worked.	Silent Movement.
10-inch Machine £3 10 0	*By a Lady*	4*s.* extra.
12-inch Machine 4 10 0		
14-inch Machine 5 10 0	*By a Boy*	

Width of Cutter.	Easily Worked.	Silent Movement.
16-inch Machine £6 10 0	*By a Man or Two Boys*	4*s.* extra.
19-inch Machine 7 12 6	*By a Man and Boy*	
22-inch Machine 8 7 6	*By Two Men* ..	7*s.* 6*d.* extra.
24-inch Machine 8 17 6		

SHANKS' NEW PATENT PONY and DONKEY MACHINE.

Width of Cutter.	If with Patent Delivering Apparatus.
25-inch Machine £12 10 0	.. .. 25*s.* extra.
28-inch Machine 14 10 0	.. .. 30*s.* ,,
30-inch Machine 15 15 0	.. .. 30*s.* ,,

Silent Movement, 12*s.* 6*d.* extra; Boots for Pony, 21*s.* per set;
Ditto for Donkey, 16*s.* per set.

SHANKS' NEW PATENT HORSE MACHINE.

Width of Cutter.	If with Patent Delivering Apparatus.
30-inch Machine £19 0 0	.. .. 30*s.* extra.
36-inch Machine 22 0 0	.. .. 30*s.* ,,
42-inch Machine 26 0 0	.. .. 40*s.* ,,
48-inch Machine 28 0 0	.. .. 40*s.* ,,

Silent Movement, 20*s.* extra; Boots for Horse's Feet, 24*s.* per set.

Every Machine warranted to give ample satisfaction, and if not approved of can be at once returned.

ALEXANDER SHANKS AND SON, DENS IRON WORKS, ARBROATH.
LONDON OFFICE and SHOW ROOMS: 27, LEADENHALL STREET, E.C.
PARIS OFFICE and SHOW ROOMS: 56, BOULEVARD HAUSSMANN.

A. S. & SON *keep a stock of all sizes of Machines at their London and Paris Establishments, from which Orders are executed on the day they are received.*
☞ 27, *Leadenhall Street is the only place in London where intending purchasers of Lawn Mowers can choose from a stock of from 150 to 200 Machines. All sizes kept there, whether for Horse, Pony, or Hand Power.*

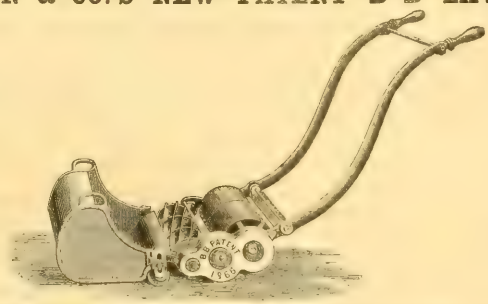
J. B. BROWN & CO.'S NEW PATENT B B LAWN MOWER.

PATENTEES AND SOLE MANUFACTURERS,

J. B. BROWN & CO.,

148, UPPER THAMES STREET,

LONDON, E.C.



GUARANTEED TO GIVE

PERFECT SATISFACTION,

AND IF NOT APPROVED OF

MAY BE AT ONCE RETURNED.

☞ J. B. BROWN AND CO. have pleasure in mentioning that their B B LAWN MOWER ordered for the Gardens of Windsor Castle has given so much satisfaction, that another B B MACHINE of a larger size has just been ordered—June 26.

The Machine combines all the latest improvements in Lawn Mowing Machines, being simple in construction, very light, silent in movement, easily worked, and so strong and durable as to be literally unbreakable,—an all-important feature in Machines of this class; the ordinary cast-iron being entirely done away with, and malleable iron substituted, in all breakable parts, and every part being accurately numbered and made to standard gauges. The workmanship and finish are also of a superior character, the entire Machine being quite equal to a revolution, so to speak, in Lawn Mowers. The Machines are all guaranteed to give perfect satisfaction in every respect.

The NEW B B PATENT LAWN MOWER is Manufactured by J. B. BROWN AND CO. on their own Premises in London, under their personal superintendence.

PATENT B B HAND MACHINE.

PRICES—Including Carriage to any Railway Station or Shipping Port in England, with the necessary Tools and Directions for use.

10-inch Machine £3 10 0	*Easily Worked by a Boy.*
12-inch Machine 4 10 0	
14-inch Machine 5 10 0	
16-inch Machine 6 10 0	*Ditto by a Man.*

18-inch Machine £7 10 0	*Easily Worked by a Man.*
20-inch Machine 8 0 0	
22-inch Machine 8 10 0	*Ditto by Two Men.*
24-inch Machine 9 0 0	

PATENT B B HORSE MACHINE.

PRICES—Complete, without extras, including Carriage to any Railway Station or Shipping Port in England, with the necessary Tools and Directions for use.

48-inch Machine £32 10 0	*Drawn by a Horse.*
42-inch Machine 28 10 0	
36-inch Machine 24 10 0	
30-inch Machine 21 10 0	*Drawn by a Horse.*

PATENT B B PONY and DONKEY MACHINE.

PRICES—Complete, without extras, including Carriage to any Railway Station or Shipping Port in England, with the necessary Tools and Directions for use.

30-inch Machine £17 10 0	*Drawn by a Pony.*
28-inch Machine 16 10 0	
26-inch Machine 14 10 0	*Drawn by a Donkey.*

New Improved Horse, Pony, and Donkey Boots, wholly of Leather, as follows:—Horse Boots, 24*s.*; Pony Boots, 21*s.*; Donkey Boots, 16*s.* per set.

*** *Every Machine sent out is warranted to give ample satisfaction, and, if not approved of, may be at once returned.*

J. B. BROWN AND CO., OFFICES, 18, CANNON STREET, CITY, LONDON, E.C.
WAREHOUSE and MANUFACTORY, 148, UPPER THAMES STREET, E.C.
OPPOSITE the CITY of LONDON BREWERY, and close to the LONDON BRIDGE STEAM BOAT PIERS.

The Best Swede for Late Sowing

is

THE IMPROVED HARDY WHITE

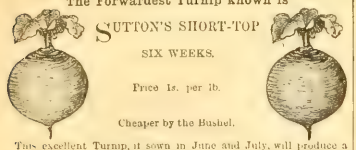
(SUTTON'S Selected Stock),

Price 1s. per lb., or cheaper by the bushel.

Carriage free.

SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

The Forwardest Turnip known is



SUTTON'S SHORT-TOP SIX WEEKS.

Price 1s. per lb.

Cheaper by the Bushel.

This excellent Turnip, if sown in June and July, will produce a heavy crop, to come off in time for Wheat sowing.

SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

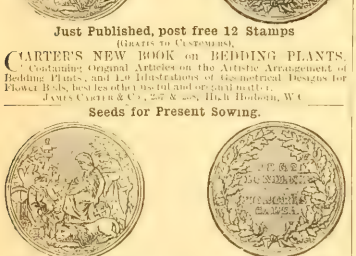
Just Published, post free 12 Stamps

(GRATIS TO CUSTOMERS),

CARTER'S NEW BOOK on BEDDING PLANTS. Containing Original Articles on the Artistic Arrangement of Bedding Plants, and 120 Illustrations of Geometrical Designs for Flower Beds, best lessthe useful and original matter.

JAMES CARTER & CO., 237 & 238, High Holborn, W.C.

Seeds for Present Sowing.



JAMES CARTER AND CO. are now offering New Seed of the undermentioned, the quality of which cannot be surpassed, the seed having been saved from plants which have taken Prizes at all the principal London Flower Shows.

CARTER'S PRIZE CALCEOLARIA, 2s. 6d. per packet

CARTER'S PRIZE CINERARIA, 2s. 6d. per packet.

CARTER'S PRIZE FRINGED CHINESE PRIMULA, 2s. 6d. per packet.

The above forwarded on receipt of postage stamps

JAMES CARTER & Co., 237 and 238, High Holborn, W.C.

To Fruit and Rose Growers.

STANDEN'S GARDENERS' and AMATEURS' FRIEND, a compound of the richest Fertilising Phosphates, and the most valuable of all Manures for Vines and other Fruit Trees, Roses, Azalées, and New Holland Plants; also Chrysanthemums, Dahlias, Geraniums, &c. Sample Canisters, 1s. and 2s. 6d.; Bags, 5s. 6d., 10s. 6d., and 21s. No 1 for all Hard-wooded Plants; No 2 for all Soft-wooded Plants. Sold by the most Nurserymen and Seedsmen. For List of Agents see Advertisements in the Gardeners' Chronicle for March and April.

BARR & SUGDEN, 12, King Street, Covent Garden, W.C.

SHAWS TIFFANY,

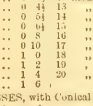
For samples and prices apply to

J. SHAW & Co., 29, Oxford Street, Manchester.

Glass for Garden Purposes.

JAMES PHILLIPS AND CO. beg to submit their prices as follows:—

PROPAGATING GLASSES.



Each.—	s.	d.		Each.—	s.	d.
2 inches in diameter ..	0	3½	12 inches in diameter ..	1	0	
3 ,, ,, ..	0	4½	13 ,, ,, ..	2	0	
4 ,, ,, ..	0	5½	14 ,, ,, ..	2	6	
5 ,, ,, ..	0	6½	15 ,, ,, ..	3	0	
6 ,, ,, ..	0	8	16 ,, ,, ..	3	6	
7 ,, ,, ..	0	10	17 ,, ,, ..	4	0	
8 ,, ,, ..	1	0	18 ,, ,, ..	5	0	
9 ,, ,, ..	1	2	20 ,, ,, ..	6	0	
10 ,, ,, ..	1	4	20 ,, ,, ..	7	0	
11 ,, ,, ..	1	6				

BEE GLASSES, with Conical or Flat Tops.

Each.—	s.	d.		Each.—	s.	d.
4 inches in diameter ..	0	6	9 inches in diameter ..	1	8	
5 ,, ,, ..	0	8	10 ,, ,, ..	2	0	
6 ,, ,, ..	0	10	11 ,, ,, ..	2	6	
7 ,, ,, ..	1	1	12 ,, ,, ..	3	0	
8 ,, ,, ..	1	4				

CUCUMBER GLASSES.

Each.—	s.	d.		Each.—	s.	d.
24 inches long ..	2	8	16 inches long ..	1	4	
22 ,, ,, ..	1	10	14 ,, ,, ..	1	2	
20 ,, ,, ..	1	8	12 ,, ,, ..	1	0	
18 ,, ,, ..	1	6				

Made to any length.

HAND GLASSES, WITH OPEN TOPS.

Each.—	s.	d.		Each.—	s.	d.
12 inches ..	6	6	18 inches ..	9	6	
14 ,, ..	7	6	22 ,, ..	10	0	
16 ,, ..	8	6	24 ,, ..	11	6	
				12	6	

Painted and Glazed with 16-oz. Sheet Glass,

SHEET and ROUGH PLATE GLASS, SLATES of all sizes; BRITISH PLATE, PATENT PLATE, ROLLED PLATE, CROWN, SHEET, HORTICULTURAL, ORNAMENTAL, COLOURED, and every description of GLASS, of the best Manufacture, at the lowest terms. Lists of prices and estimates forwarded on application to

JAMES PHILLIPS & Co., 150, Bishopsgate Street Without, E.C.

DOBSON'S PRIZE CALCEOLARIAS

FOR QUALITY, VARIETY, HABIT, AND GENERAL GOOD PROPERTIES ARE UNEQUALLED IN THE WORLD.

During the last Fifteen Years we have taken more First and Second Prizes for Calceolarias at the Metropolitan Exhibitions than any other Firm in the United Kingdom.

NEW SEED, growth of 1866, is now ready, saved from 500 varieties. The majority of dwarf habit, being not more than 8 inches high when in full bloom.

Sealed packets, with directions for sowing and growing, 1s. 6d., 2s. 6d., 3s. 6d. and 5s.

UNSOLICITED TESTIMONIALS.

From NORMAN MACLEOD, Esq., *Dalvey, near Forres, N.B.*—*June 24, 1866.*

"Dear Sir,—The Dobson's Calceolarias are now in all their glory at Dalvey, and the admiration of all who have seen them. My gardener Mr. Berry is so delighted with his magnificent plants, that he has requested me to send you a few of the flowers for your inspection. When convenient send Mr. Berry his annual packet of seed."

From Mr. W. GRAY, *Nursery, Gainsboro.*—*June* 12, 1866.

"Gentlemen, will you please send by return of post Calceolaria similar to that I had last year, which turned out very good."

From Mrs. J. K NEALE, *Horsey Vicarage. June* 15, 1866.

"Sir,—I have taken the liberty of sending you some blossoms of Calceolarias grown from seed I had of you last September. They produce from three to seven large trusses of fine flowers on each plant, and far superior to any I lately saw at the Flower Show, Regent's Park."

From Mrs. TRIMMER, *Bury Court, Bentley, near Farnham.*—

June 11, 1866.

"Mrs. Trimmer has had her Calceolaria and Cineraria Seeds of Messrs. Dobson some years, the last year's gave her great satisfaction."

From Mr. T. PIERPOINT, 126, *Bridge Street, Warrington*

"Gentlemen, your Seeds are giving the most complete satisfaction."

From J. LANDALL, Esq., *Castle Hill, Abergavenny*

"Gentlemen, the plants of Calceolarias, Cinerarias, and Primulas, raised from the seed you sent me last year, are now in bloom and very beautiful."

From Messrs. J. WOODS & SON, *Nursery, Woodbridge.*

"Gentlemen, please send us a packet of your best Calceolaria Seed That we have previously had of you has given us good satisfaction."

From Mr. J. WORTHINGTON, *Gr., Northcote, Westburyon-Trym, Bristol*

"I am happy to say that the Primula Seed you sent me last year proved most excellent; all who saw them pronounced them to be the best they had seen."

From THOMAS INGLE, Esq., M.D., *Emsworth, Hants.*

"I tested your Calceolaria Seeds against many acknowledged good growers, and came off *facile secundus.*"

From Mrs BROWN, *North Hill House, Plymouth.*

"Mrs. Brown will thank Messrs. Dobson & Son to send her a packet of Calceolaria Seed at 1s. 6d. She is pleased to say those sent last year were very good."

From Mr. W. KNIGHT, *Floral Nursery, Hailsham, near Hurst Green, Sussex.*

"Gentlemen, I enclose 10s. in postage stamps, and would thank you to send me a few packets of your best Primula and Calceolaria Seed, as it has always proved good in every way, and you are quite at liberty to use my name at any time to say they surpass everything I have ever had."

From Mr G. COUSINS, *Gr., Coombe Bank, Weston-super-Mare.*

"Please send me a packet of Calceolaria Seed. Your seed that you sent me last year was first-class."

From Messrs. JAMES HUNTER & Co., 29, *Clare Street, Bristol.*

"Please send us value of enclosed in 1s 6d. packets of your finest Calceolaria Seed. That we had from you last season turned out splendid."

From Mr. B. K BLISS, *Nursery, Massachusetts, America.*

"Gentlemen, I notice your advertisement in a late Number of the *Gardeners' Chronicle*, and having been much pleased with Seed heretofore received from your establishment, I now enclose a draft on London for £3 sterling, for which please send me the following Seeds of the choicest strain, Calceolaria, Cineraria, and Primula."

From J. O. SCOTT, Esq., *The Manor House, Ham, S.W.*

"I saw many plants of your Calceolarias at Kew, and was much struck with the beauty of the varieties. I shall be glad if you will send me a 2s. 6d. packet."

One Hundred and Fifty of the Leading Firms have their supplies direct from us.

ANNUAL SALE UPWARDS OF FIVE THOUSAND PACKETS.

Dobson's Prize Cineraria, 1s., 2s. 6d., and 5s., sealed packets.
Dobson's Prize Primula, 1s., 2s. 6d., and 5s., sealed packets.

The Trade supplied on advantageous terms.

DOBSON AND SONS, SEED MERCHANTS, ISLEWORTH, W.

J. LINDEN'S

ESTABLISHMENT FOR THE INTRODUCTION OF NEW PLANTS,

ROYAL ZOOLOGICAL and HORTICULTURAL GARDENS, BRUSSELS, BELGIUM.

ONE HUNDRED QUITE NEW AND FINE ORCHIDS,

Belonging to the most favourite Genera, recently discovered and introduced by M. LINDEN'S Collectors. Among them are new AGANISIA, BATEMANIA, BURLINGTONIA, CYPRIPEDIUM, HELCIA, fine LYCASTE and MAXILLARIA, crimson-flowered MESOSPINIDIUM, many new and splendid CATTLEYAS and LÆLIAS, such as the glorious CATTLEYA MAXIMA (true), CATTLEYA QUADRICOLOR and RUCKERI, and LÆLIA WALLISII. Upwards of 25 new and magnificent kinds of ODONTOGLOSSUM, and an equal number of large flowering ONCIDIUMS, &c., suitable for cool treatment.

Arads.

ALOCASIA | CALADIUM | DIEFFENBACHIA
ANTHURIUM | COLOCASIA | PHILODENDRON, &c

Bromeliads.

One of the largest Collections of these plants.

Economical and Medicinal Plants.

This Collection contains many new and rare plants useful for the Colonies.

Fine Foliaged and Ornamental Plants,

Such as ARALIA, DIDYMOPANAX, OREOPANAX, PARATROPIA, and SCIADOPHYLLUM, upwards of 30 quite new species; new CYANOPHYLLUMS and SPHALROGYNES, RHOPALAS and THEOPHRASTAS, in great quantities.

Herbaceous and Tree Ferns.

The largest Collection in Europe; the Tree Ferns are represented by 78 distinct species.

Marantas.

All the best varieties, and upwards of 30 quite new species

Palms, Cycads, Zamias, Pandani.

This Collection is very extensive, and contains upwards of 50 quite new species.

Tropical Fruit Trees.

The most complete Collection in Europe, and many new and delicious fruits of the greatest interest for the Colonies.

STOVE and GREENHOUSE PLANTS. Several NEW CONIFERS from North Japan, &c., &c.

CATALOGUES will be forwarded by Messrs. SILBERRAD AND SON, 5, Harp Lane, Great Tower Street, on application.

☞ *Usual discount to the Trade.*

NEW AND BEAUTIFUL PLANTS FOR 1866.

JOHN J. LINDEN

HAS THE PLEASURE TO OFFER NOW FOR THE FIRST TIME

THE FOLLOWING FIRST-RATE NOVELTIES,

SEVERAL OF WHICH FORMED PART OF HIS PRIZE LOTS AT THE GREAT INTERNATIONAL SHOW.

For description see M. LINDEN'S NEW CATALOGUE, which will be forwarded Post Free on application to Messrs. SILBERRAD & SON, 5, Harp Lane, Great Tower Street, London, E.C.

Anthurium regale (Lind.).
Price—First Size, 84s. each; Regular Size, 42s. each.

Aphelandra ornata (Anderson).
Price 21s. each.

Calathea (Maranta) Lindeniana (Wall.).
Price—Extra strong Plants, 84s. each; Smaller, 42s. each.

Dimorphanthus Mandshuricus (Rupr.).
A most ornamental hardy Araliad from the Amoor River. This noble plant, with fronds 3 yards in length and 2 in breadth, produces a very grand effect. Price 21s. each.

Maranta roseo-picta (Lind.).
Price—First Size Plants, 84s. each; Smaller, 42s. each.

Passiflora helleborifolia (Wall.).
Price 12s. 6d. each.

Passiflora macrocarpa (Wall.).
Very robust species, bearing fruits of 8 lb. weight.
Price 12s. 6d. each.

Rhopala aurea and serratifolia.
Two fine and elegant new species from extra-tropical Brazils.
Price 21s. each.

The Plants will be delivered free in London.

☞ *Usual discount to the Trade.*

BRUSSELS ROYAL ZOOLOGICAL and HORTICULTURAL GARDENS.

ROYAL HORTICULTURAL SOCIETY, SOUTH KENSINGTON.

GREAT ROSE SHOW, THURSDAY, June 28.

AWARDS OF THE JUDGES.

CUT ROSES.

CLASS 1.—72 kinds 1 truss of each. (Nurserymen.)
1st Prize, Mr. B. R. Cant, St. John Street Nursery, Colchester, £6.
Equal 1st, Messrs. Paul & Son, the Old Nurseries, Cheshunt, £6.
2d, Mr. John Keynes, Salisbury, £4.
3d, Messrs. E. P. Francis & Co., Nurserymen, Hertford, £3.

CLASS 2.—48 kinds. 3 trusses of each. (Nurserymen.)
1st, Mr. Charles Turner, The Royal Nurseries, Slough, £6.
2d, Mr. John Keynes, £4. | 3d, Messrs. E. P. Francis & Co., £3
4th, Messrs. Paul & Son, £2.

CLASS 3.—24 kinds. 3 trusses of each. Hybrid Perpetuals only. (Nurserymen.)
1st, Mr. B. R. Cant, £4. | 3d, Mr. Charles Turner, £2.
2d, Messrs. Paul & Son, £3. | 4th, Mr. John Keynes, £1.
Commended, E. P. Francis & Co.

CLASS 4.—24 kinds. 1 truss of each. (Nurserymen.)
1st, Mr. Charles Turner, £3.
2d, Mr. B. R. Cant, £2.
3d, Messrs. Paul & Son, £1.
4th, Mr. John Keynes, 10s.

CLASS 5.—48 kinds. 1 truss of each. (Amateurs)
1st, Mr. John Thos. Hedge, Reed Hall, Colchester, £6 [£4.
2d, Mr. Wm. Ingle, Gr. to C. G. Round, Esq., Birch Hall, Colchester,
Equal 2d, Mr. A. Moffatt, Gr. to Mrs. Maynard, Easton Lodge, Essex.
3d, Ditto.

CLASS 6.—36 kinds. 1 truss of each (Amateurs.)
1st, Mr. Wm. Ingle, £5. | 2d, Mr. Thos. Hedge, £4.
3d, Mr. Jas. Chard, £3.
Equal 3d, Mr. Richard Marcham, Gr. to E. Oates, Esq., Bydorp House, Hanwell, £3.
4th, Dr. Cooper, The Limes, Slough, £2.

CLASS 7.—24 kinds 1 truss of each. (Amateurs.)
1st, R. B. Postans, Esq., Brentwood, Essex, £4.
2d, Mr. May, Gr. to C. M. Worthington, Esq., Caversham Priory, Reading, £3.
Equal 2d, Mr. Jno. Dennis, Gr. to — Hayward, Esq., Folkington, Hurst Green, £3.
3d, Mr. Wm. Plester, Gr. to Mrs. Rush, Elsenham Hall, Stansted, £2.
Equal 3d, Rev. Canon Fisher, Salisbury, £2.
4th, Rev. W. Knox Child, Rectory House, Little Easton, Essex, £1.

CLASS 8.—12 kinds 1 truss of each. (Amateurs.)
1st, Rev. V. Knox Child, £3. | 2d, R. B. Postans, Esq., £2.
3d, Mr. John Dennis, Gr. to — Hayward, Esq., Folkington, Hurst Green, £1.
4th, Mr. Wm. Plester, 10s.

CLASS 9.—18 NEW ROSES of 1864 and 1865, single trusses, distinct kinds. (Open)
1st, Messrs. Paul & Son, £2.
2d, Mr. Jas. Fraser, Lea Bridge Road, £1 10s.
3d, Mr. John Keynes, £1. | 4th, Mr. R. B. Cant, 15s.

CLASS 10.—12 trusses of any new kind of 1864. (Open.)
d, Messrs. Paul & Son, £1.

CLASS 11.—12 trusses of any other new kind. (Open.)
1st, Mr. B. R. Cant, £1 10s. | 2d, Mr. John Keynes, £1.
3d, Messrs. Paul & Son, 10s.

CLASS 12.—12 YELLOW ROSES (single trusses), not less than 6 kinds. (Open.)
1st, Mr. John Thomas Hedge, £1 10s.

CLASS 13.—For the best exhibition of YELLOW ROSES, of any one or more kinds, not less than 24 trusses. (Open.)
1st, Mr. J. T. Hedge, £3. | 2d, Messrs. Paul & Son, £2.

CLASS 14.—12 TEA-SCENTED and NOISETTE ROSES (single trusses). (Amateurs.)
1st, Mr. Wm. Ingle, £2.
2d, Mr. May, £1 10s. | 3d, Mr. J. T. Hedge, £1.

CLASS 15.—12 TEA-SCENTED & NOISETTE ROSES, single trusses. (Nurserymen.)
1st, Messrs. Paul & Son, £1 10s.
2d, Mr. B. R. Cant, £1. | 3d, Mr. J. Keynes, 15s.

CLASS 16. 12 TEA-SCENTED & NOISETTE ROSES, distinct kinds, single flowers. (Open.)
1st, Mr. B. R. Cant, £1 10s.
2d, Mr J. T. Hedge, £1. | 3d, Mr J Keynes, 15s.

CLASS 17.—DECORATED BASKET or VASE of ROSES. (Open.)
1st, Mr. G. Marlow, Gr. to J. Wigan, Esq., Cromwell House, Morlake, £3.
2d, Mr. J. T. Hedge, £2.
3d, Mr. Wm. Soder, Gr. to A. Hanbury, Esq., Howe Hatch, Brentwood, £1.

CLASS 18.—6 BOUQUETS of ROSES. 6 distinct kinds, 5 trusses to each Bouquet. Each Bouquet to be shown separately, in a Hyacinth Glass or somewhat similar stand (Open)
1st, Mr. James Chard, £3.
2d, Messrs. E. P. Francis & Co., £2. | 3d, Mr. J. T. Hedge, £1.

CLASS 19.—6 MOSS ROSES, distinct kinds. (Open)
1st, Messrs. Paul & Son, £1.

CLASS 20.—24 ROSES, not less than 10 distinct kinds, in pots not exceeding 8 inches in diameter. (Open.)
1st, Mr. Charles Turner, £6. | 2d, Messrs. Paul & Son, £4.
3d, Mr. Wm. Paul, Paul's Nurseries, Waltham Cross, £4.

CLASS 21.—24 NEW ROSES, not less than 10 distinct kinds, in pots not exceeding 8 inches in diameter. (Open.)
1st, Messrs Paul & Son, £6. | 2d, Mr. Wm Paul, £4.

The Gardeners' Chronicle.

SATURDAY, JUNE 30, 1866.

MEETINGS FOR THE ENSUING WEEK.

MONDAY,	July 2—	Entomological	7 P.M.
TUESDAY,	— 3	Royal Horticultural (Floral and Fruit Committee) at South Kensington	11 A.M.
		Ditto (Scientific Discussion)	3 P.M.
WEDNESDAY,	— 4	Royal Botanic Third Great Exhibition	2 P.M.
SATURDAY,	— 7	Royal Horticultural Weekly Show, at South Kensington	2 P.M.

POETS and romancists have been pleased to consider the heart as the seat of the soul. Anatomists have rather leant to the idea that in the brain was to be sought the carnal abode of the mysterious essence. Some, or rather one, and as we think only one, allocated the soul a resting place in a certain little gland not much bigger than a pin's head, placed at the under side of the brain and filled with—sand. Was the philosopher indulging in irony when he propounded this notion? Whether or no, with us Englishmen there is an intimate connection between the stomach and those generous impulses supposed to flow from the soul. We need not here go into anatomical detail to prove the proximity of the heart to the stomach, or the intimate telegraphic relation between those organs and the brain. We all know from daily experience, that if one of these "centres" becomes disorganised, all the rest suffer; and that all is well if the three are in proper working order. Hence our English custom of dining together upon every possible occasion has really much that may be said in its favour, as appears to be pretty well understood by the managers of charitable institutions and the like. Let the reader glance over Mr. HERBERT FRY's list of the Charities of London, and make a computation as to the number of those which appeal to the sympathies of their supporters through the medium of a "Festival." We suspect the number would be very large, nay, we almost imagine that the financial condition of any given charity might almost be estimated by the occurrence or non-occurrence of an annual dinner.

We congratulate the managers of the ROYAL GARDENERS' BENEVOLENT INSTITUTION then on the occasion of their dinner; and we share the complacency they must feel at the seasonable donation to their funds which results from the financial success of the late International Horticultural Exhibition. Moreover, we earnestly hope that the annual subscription list may increase from year to year, so that the benefits of this most useful Institution may be proportionately extended. It has been a matter of comment and regret that so few comparatively of the class to whom the Institution might naturally look for support, contribute towards its funds. Gardeners should look upon this as *their own* Institution, and support it accordingly. Help and sympathy from outsiders are all very desirable, but unless they be accompanied by symptoms of "self-help," it is certain that sooner or later the wheels will get fixed in the mire, and HERCULES will look on with a careless eye.

For this reason, then, while we wish all possible prosperity to the Institution, and trust that its scope of usefulness will be continually progressive, in a ratio proportionate to the demands upon it, we cannot echo Alderman MECHI's regret in its entirety, that the whole of the surplus of the late International Horticultural Exhibition was not devoted to this charity, as we believe there are other objects to which it might be applied, and which would indirectly and in course of time do more to raise the position of the working gardener, and avert the evils of poverty, than even so excellent a Society as the Royal Gardeners' Benevolent Institution.

RESUMING our remarks upon PINE CULTURE in England, we affirm that the prevailing fault has been that the majority of growers have maintained a much larger stock of succession plants than was necessary to supply the fruiting plants annually required, and hence, from over-crowding, the young plants lost the vigour necessary to a superior result, and the production of fine fruit was an exception rather than a general rule of cultivation. We all know the consequences of etiolation. If plants are crowded together and drawn up from crowding, and the consequent want of light and air, they inevitably receive a constitutional check, from which they can only be recovered by time and proper treatment. This rule does not apply to the Pine-apple only, but to every plant growing in the garden. A loss of constitutional vigour in a plant can only be renewed by treatment and circumstances directly opposite to those which have led to the inferior result. Hence crowding is a great evil, and hence also those cultivators of the Pine are the most successful who grow very few more succession plants than they require to carry into the fruiting state.

The rule with many Pine growers has been to crowd the largest number of young plants into the smallest possible space, and this is done by some cultivators at the present time. This used to be especially the case through the winter, and what between the plants being crowded and drawn up through the winter, and having their roots cut close off in the spring, it was no wonder that a large proportion of them at times started prematurely into fruit. Hence the argument for maintaining a large stock to replace the "starters," and hence cause and effect were alike militating against the object of the cultivator.

Now the most successful growers proceed upon an entirely different plan: they thin out the suckers upon the parent plant in their young state, so as to allow not more than one or at the most two to grow to maturity, and these are not taken off and baked in the sun or upon a hot flue until almost destitute of sap, as they used to be, but they are carefully separated from the plant, and, after being trimmed and denuded of the small scaly leaves which envelope the base, they are potted into suitable soil, and placed under circumstances where, by shading when necessary, and maintaining a moist atmosphere, the evaporation of the juices of the plant is prevented until such time as roots are formed, and the young plant is in a condition to take care of itself. All this time little or no water is given to the soil, but by gentle dewings of the plant with the syringe, and damping the paths and walls, sufficient moisture is maintained in the atmosphere to prevent any drain upon the resources of the plant. When the young roots have progressed to the sides of the pots, a little tepid water is given, and then the plant may be said to have attained its individuality, and to have commenced a separate and distinct existence.

Upon this start, and upon the young plant being encouraged to grow in the most healthy and robust manner, depend the ultimate success that will crown the production of fruit. No check must be sustained, no forcing must be attempted; but the young plants must be encouraged to grow in the most natural manner by having a due supply of heat, air, and moisture, in the growing season, and by maintaining throughout the growth just sufficient bottom-heat to encourage gentle progress and prevent the roots sustaining any check at any time. Grown on in this way there is no reason why strong healthy suckers started early in June should not make beautiful fruiting plants for next year, instead of being two, and sometimes three years, as is sometimes the case.

In Pine growing one fact must not be lost sight of. It is not the largest plant that always produces the finest fruit, but, on the contrary, it is not unusual to see large plants producing comparatively very inferior fruit. And why is this? Just because the conditions necessary to secure the fullest development of the plant, and the storing up of that organisable material, the true sap of the plant, have not been carried out, and hence it is not there to form the fruit. You have growth but not quality—substance but not maturity; and thus it is impossible to attain the best results. This is especially the case with gardeners who are obliged to grow Pines in houses that are large and lofty, and without the means of maintaining that sort of moist sub-tropical atmosphere, with a free circulation of air at all times, failing which it is impossible to obtain a natural growth.

"From the time the suckers are potted," observes Mr. DAVID THOMSON (whose excellent treatise we referred to on a former occasion), "the great object is to obtain a compact *hardy growth*, as one of the principal points of future success, and which will enable the plants to go through the rigours of winter with impunity. This is dependent chiefly upon full exposure to light, a good supply of air without draught, and a moderate amount of heat and moisture both at the roots and in the air." This is just the treatment that any of our great plant growers would recommend for growing an Ixora, a Rondeletia, or any other stove plant; they know they cannot succeed without giving plenty of room to their plants, so as to mature the wood and form the flower buds: neither must a Pine-grower expect to succeed unless he observes Nature's teachings in the same manner.

Grow a plant steadily on with the amount of care and forethought recommended by Mr. THOMSON, and its fruiting at the time required is almost as much a matter of certainty as the blooming of a Pelargonium, or any other common plant, because the end is attained—maturation of the plant is complete. Crowd them together, as is the general rule, force by the power of heat, manure, and moisture, the usual soft spongy growth, and the time of fruiting will not only be exceedingly doubtful, but the fruit, when you get it, will be of a small and very inferior character.

We doubt not the time will yet arrive when Pine growers, like plant growers, will discover the propriety of giving the young plants plenty of room, not allowing them to more than touch at any season of their growth; and when they do that, results much superior to any yet attained may be insured.

A friend of ours who is desirous of utilising the waste power of his steam engine is about to undertake the growth of Pines in the centre of a Midland town, and surrounded by business premises of all kinds. He proposes to form a vault and board it over, cutting out at the proper distances circular holes of sufficient dimensions to take fruiting pots of a good size. Into the vault, by the means of gas-tubing perforated at

certain distances, sufficient waste steam will be thrown to maintain the necessary bottom heat, while a separate arrangement will be provided for atmospheric heat. Already Cucumbers have been grown in this house in the most complete and satisfactory manner, and we see no reason why Pines should not be equally well managed. Each young plant will have full fruiting space at the time of planting, and with a good command of heat and proper attention we see no reason why the experiment may not be crowned with success. Pine-growing "up-stairs" will be a novelty which one of these days we hope to direct our readers to go and see.

—— WE understand that Mr. BULL has received from Panama a number of plants of the curious CANDLE TREE, Parmentiera cerifera, whose fruits are described as being sometimes 4 feet in length, and in appearance like a wax candle, so that the forests in which these trees grow remind the traveller of a chandler's shop!

—— WE are glad to hear that Mr. W. H. BAXTER, the able Curator of the Oxford Botanic Garden, has been appointed Curator of the UNIVERSITY NEW PARK, and hopes to be able to form an arboretum there. This would be a most desirable addition to the Botanic Garden, which is too restricted in space to allow of the formation of a good collection of trees within its own boundaries.

—— M. PAUL REINSCH, in the "Bulletin de la Société Impériale des Naturalistes de Moscou," tom. xxxviii., n. 3, has recently published some remarks on CYCLOSIS, or the circulation of the juices in individual cells. The author has observed this local circulation in the hairs of the leaves of the common Housleek, Sempervivum tectorum, in the youngest cells of Nitella syncarpa, the root-cells of Frog-bit, Hydrocharis morsus ranæ, and the cells of Closterium lunula. Three varieties of cyclosis are described, viz., the rotatory, confined to one portion of the cell; the circulatory, which sweeps round the inner surface of the cell-wall; and the rotato-circulatory, which is a combination of the two preceding. The rate of motion is variable, and is accelerated by a rise, and retarded by a fall in temperature.

—— Collectors and lovers of MOSSES will be glad to learn that Messrs. SULLIVANT and LESQUEREUX, the well-known American Cryptogamic botanists, have published a second and greatly enlarged edition of their "Musci Boreali Americani," containing no less than 536 species or varieties, among which are many novelties from California, the Rocky Mountains, &c.

—— Professor BREWER, in a recent number of "Silliman's Journal," gives some interesting details as to the existence of living PLANTS in the HOT SALINE SPRINGS of California. The plants observed occurred in the geysers or steam vents, which have a temperature as high, in some cases, as 207° F. The plants, which consist of low one-celled Algæ, exist most abundantly in springs of the temperature of 125° to 140° F., but exist also in water as hot as 200° F.

—— MR. PEEK, of Wimbledon House, offers four PRIZES for ESSAYS on the PRESERVATION OF COMMONS in the neighbourhood of the metropolis. The particulars are subjoined:—

"Two Prizes will be given for Essays dealing with the sanitary and moral aspects of the question, namely, 50*l.* for the best and 25*l.* for the second-best Essay. The committees should discuss the necessity of preserving these open spaces in the midst of a vast and growing population for purposes of health and recreation, their importance for the Volunteer movement, for athletic sports, and for the study of Natural History, and generally should treat any other topics which may occur to the writer, as illustrating their value to the Metropolis; explaining their present condition, and whether it is desirable that anything, and what, should be done to improve it.

"Two Prizes will be given for an Essay dealing with the legal and historical aspects of the question, 100*l.* for the best and 50*l.* for the second-best Essay.

"Very great uncertainty prevails as to the legal rights of Commoners and Lords of the Manor, and it is believed that the latter have been considerably exaggerated. The competitors should trace the origin of these rights from an early period, explaining their original significance and the duties which devolved on Lords of Manors, the nature of their courts, and their relations with their tenants in early times, stating what, in the opinion of the writer, is the true relation of the Lord of the Manor to the tenants and the public, and his duty with reference to the rights held by him over the waste-lands of his manor, having regard to the altered circumstances of modern times: the writer should consider generally the question how far the public now possess, or ever had, a right to have conferred on it, rights to the enjoyment of land for purposes of recreation. The writer should state the principles which have guided the Legislature in the past, and which, in his opinion, ought to guide them in the future, with reference to the enclosure of Commons, the disquisitions of the agricultural districts from those near large towns, adverting especially to the Statute of Merton and stating its present legal effect, having regard to the provisions of the general Enclosure Acts of recent times. The writer should also explain the causes of the decay of Commoners' rights in waste-lands situate near large towns, and whether legislation can justly be applied, and, if so, in what manner, to prevent the Lord of the Manor taking the private advantage to himself of the lapse of the commoners rights owing to increased population. The writer should sum up the leading features of the questions involved in the subjects indicated, and state what changes in the law would be desirable and, in his opinion, justifiable, in the interest of the public, with a view to the preservation of Commons, especially those near large towns, without doing violence to the rights of private property.

"Essays to be sent in to Mr. A. LANKESTER, Commons Preservation Society, 29, Parliament Street, on or before the 1st October, 1866, each Essay being distinguished by a Motto, and the same motto being placed on an envelope containing the name of the Author. The envelopes marked by the mottos of the unsuccessful Essays will be burnt unopened, and the Essays themselves will be returned to the writers on their applying within a month from the time of the decision.

"The Essays are, if possible, not to exceed the following lengths:—namely, for the first Essay 35 pages, and for the second Essay 75 pages, without appendix, of the size of the 'Edinburgh Review.'

"But the Author may add an Appendix to his Essay, containing any matter, exclusively of reference, to illustrate his Essay.

"The Copyright of the successful Essays to belong to Mr. PEEK, with liberty to him to publish them as he may seem fit, either with or without the Appendix, if any.

"The Right Hon. W. COWPER, M.P., GEORGE SHAW LEFEVRE, Esq., M.P., CHARLES BUXTON, Esq., M.P., JOSEPH BURRELL, Esq., JOSEPH TOYNBEE, Esq., F.R.S., and JOHN MURRAY, Esq., have kindly consented to act as judges of the Essays and to award the Prizes. 29, *Parliament Street, Westminster*—*June*, 1866."

—— The Programme of a great HORTICULTURAL EXHIBITION to be held at LIÈGE, Belgium, on the 15th, 16th, 17th, and 18th of July, is before us. The Exhibition is to form part of the festive ceremonial consequent on the visit of the KING and QUEEN of Belgium to Liège. There are 113 classes, so arranged as to secure great variety and picturesque effect.

—— The TESTIMONIAL presented by the Rose growers of England to the Rev. S. REYNOLDS HOLE, in acknowledgment of his exertions in connection with the establishment and maintenance of the National Rose Show, was most appropriately presented to that gentleman at a dinner to which he was invited, at Anderton's Hotel, on Thursday last, after the Rose Show in the Royal Horticultural Gardens at South Kensington. The testimonial consisted of a handsome silver urn.

THE STRAWBERRY.

OF all the fruits which we possess, there is not one so perfectly within our power to cultivate as the Strawberry. Let us first of all examine pretty closely the extraordinary habits of the plant. Take, for instance, the Strawberry-runner; see it leave the parent plant and set out for fresh pastures, its first bound being from 10 to 15 inches; there a stand is made, and the light runner bores its way into the hard earth, and we soon find it firmly rooted and having a crown and leaves above ground. When this is accomplished, off it bounds again to a like distance to plant another colony. Any one can see in this systematic layering by Nature that the best way of cultivating Strawberries is to make fresh plantations of them every year, and to give each plant space enough to perfect its circle, and this has been found in practice to be the best way, and has for many years been the only way of getting plants for forcing as well as for general out-of-door planting by our most successful growers. In the state of Nature a rich dry hedgebank is the habitat of the Strawberry, and I would beg this to be borne in mind by young gardeners, as it is one of Nature's lessons, which we cannot afford to despise, for it points to a very important item in our Strawberry culture, for without dryness the flavour of the fruit will be inferior; and hence it follows that on level ground deep cultivation is indispensable; and where the soil is rich enough, sloping ground and even steep banks suit admirably.

The high price that Strawberries fetch in the market tells plainly enough that the supply is too limited for the demand. Who would not eat Strawberries if they were cheap enough? and it would wonderfully add to the health of most families, if each member had only one London punnet of fresh Strawberries per day for about 40 days every year. Most gentlemen's gardens are deficient of fruit, and it takes a long series of years and much capital and good management to keep that link of the service in good working order, as most gardeners have found to their cost; but the young gardener may console himself with regard to this one article, that if he gets over the first year of his engagement he will have no difficulty in presenting a bold front with his Strawberry crop the second season. When I commenced gardening, I found the Strawberry season lasted only some three or four weeks. However large the plantations, they only gave a glut for the time, and then succeeded a famine. Some 30 years ago Lord and Lady Mansfield gave magnificent entertainments at their seat, Caen Wood, near London, under the title of "Strawberry parties." All the leading varieties were grown, and I have seen 112 lb. of Strawberry fruit sent to table there in one day, and this was made up of several varieties variously dished, for some were gathered in clusters or heads, like the Polyanthus, and were dished standing on their legs as they had grown; and others according to their merits, some for size and others for flavour, one enhancing the value of the other by the contrast.

What would some of our show cultivators think of their masters requiring 1 cwt. of Strawberries for table in one day? In my own practice I have for more than six weeks supplied Strawberries to table at the rate of a bushel per day, and without forcing have supplied good dishes of Strawberries daily for three months by cultivating the late-fruiting sorts and the Alpine, for the Alpine, raised from seed and kindly treated, renders good service in return, and under good cultivation is far from being the diminutive elf-like thing it appears nodding as a weed in the hedgebank; but as this concerns only the professional gardener, who has known the Alpine Strawberry from his boyhood, and how to make the best of it, I will pass on to the garden varieties propagated by layers, which layers should be got early, that is to say, the runners should be laid out and encouraged as soon as they show themselves, in order to secure strong flowering crowns for next year.

Great care is necessary in transplanting to preserve the roots, not only from being broken or bruised, but also from being dried. There is scarcely any form of out-of-door transplanting that can be well done without puddle, and thousands of pounds are sacrificed annually by plant cultivators for want of what the sacred penman so graphically describes as "slime of the earth," finely-mixed and finely-broken by the agency of water. Mud is invaluable to the nurseryman transplanting young stock, and to most others whose business it is to get plants to change their places, and therefore I balled every plant as it was got up in mud made of clay and cowdung. When the plants have been balled in this way, you can carry on the work regardless of the weather, for the plants will be maintained moist and in good health for a week after planting, and seldom require any watering. I planted the Strawberry plants on ridges to allow litter between the ridges; these ridges or drills should not be less than 24 inches from centre to centre, and 30 inches is preferable where land is not scarce, and good plants should stand 9 inches from plant to plant in the row. The style of cultivation should be such as that the plantation should at no time require watering. The tales of manure-water for Strawberries show a clumsy style, and such a disregard of cleanliness that one could hardly trust such an advocate with a watering can in a Strawberry quarter, for fear of his using it when the fruit had formed or was ripening. If the ground intended for Strawberries is well trenched, at least one foot deep, and plenty of clay and manure is added during the process, there will be no need of watering, and the more sunshine they get, the better will be the quality of the fruit.

In order that some disabled gardeners or the like should be encouraged to try to obtain a livelihood by growing Strawberries for sale, I may mention that at Exeter, and also at some other railway stations during the season, the fruit is sold in pretty little round punnets, with a handle across, which are of course sold along with it; and when I made the calculation of what a quarter of an acre of land would produce in Strawberry growing, the fruit being sold at the price which these realised, it would have been an excellent provision for a poor man's family for the whole year; and if he were worth anything at begging, he might have begged all the plants without any one being the poorer for his share. A pint of ripe Strawberries for a shilling to a first-class passenger, basket and all, neat and clean, benefits the buyer as well as the seller, and even at half that price 50*l.* a year could be got off the 40 poles of ground, so that, after paying all costs, there would be 15*s.* per week for the family, even if they had no other means.

Let no one imagine that the cultivation of fruit or the profits to be obtained are understood. In Devon the orchard has frequently paid the rent and left the whole produce of the farm free as profit. In Staffordshire, in the valley of the Churnet, the hedgerows growing Damson trees have often paid the rent of the farm; and if it be not as few will deny, that gardeners as a body are far behind the spirit of the age in the cultivation of fruit, it is not likely that farmers and small holders of land are better instructed. The London Strawberry basket with its paper cover, like a nightcap in disguise, tells such an antique tale as would be sufficient of itself to condemn the whole system, being so ill adapted to the end in view. Were such a thing to be introduced now, how people would stare, and wonder who had been mad enough to make such a caricature; but in the case of Raspberries brought to Manchester market and elsewhere, we have an article used even worse than the London punnet, for the fruit is gathered without the core, and one quart is put upon a Cabbage leaf, and you may think yourself lucky if you get one half safely home without their being bruised, and the juice staining your clothes. It is therefore high time that something should be done not only to make fruit cheap and plentiful, but also to put growers into the way of packing their produce for market. Look at the picture on the handsome box of dried French Plums, and learn a lesson. Unless the hawking of the fruit for sale be first understood, no one should risk growing it, for it is the end that crowns the work.

Peat soils generally are not suitable for Strawberries unless heavily marled or clayed, but most other good corn land will grow this native fruit freely. It is a disgrace to the land we live in to see so little fruit in it. Strawberries at least we can grow. *Alex. Forsyth.*

THEORY AND PRACTICE OF VENTILATION.
No. VIII.

(*Continued from page* 563.)

THE foregoing experiments, and the facts which they establish, having proved the utility of wind as an aid to culture, I proceed to the practical question of how it is to be produced in our plant houses. During warm weather the answer to this is simple enough. The external air may be, and generally is, admitted in sufficient quantity to produce a gentle breeze. But the problem now before us is, how to agitate, disturb, or circulate with sufficient power or speed the internal atmosphere of plant houses so as to secure the mechanical force of wind without admitting the cold outside air. I at once admit that this is a work of great difficulty. The difficulties are also inherent to the nature of the case, and not accidental. Within a very limited range we want to preserve an equable temperature of say from 55° to 65°. It will at once be obvious to the readers of these papers that the greater we keep the atmosphere at any given heat the greater will be the difficulty of moving it. Supposing the roof of the house to be double glazed, or covered with some slow conducting substance, and the heating apparatus to be distributed pretty equally over the house, nearly a stagnant atmosphere must be the result. The density and elasticity of the air would counterpoise each other, and being all warmed alike, there would be no disturbing agency to cause motion. Not that the air would be perfectly at rest—its intense sensitiveness to heat would render that impossible. But it would circulate so slowly that its mechanical force on plant life would be *nil*.

Such being the conditions of atmospheric rest, we have only to reverse them to secure motion. Doubtless,

as far as the circulation of the internal air of our hothouses is concerned, single glazing and uncovered glass roofs are the best. The colder the roof and the greater the disparity between its temperature and the volume of air with which the house is filled, the more rapidly will the air within circulate, and *vice versâ*. Disparities of heating surface and consequent difference of temperature in different parts of the same house will also facilitate motion throughout the entire volume of its atmosphere. Unfortunately, however, for the object I am now advocating, we are compelled to avoid any great extremes of temperature on other and perhaps even more important grounds. To secure a rapid circulation of air by such means alone, part of our plants would be in danger of being roasted, while the others were being chilled. We desire uniformity rather than variety of temperature in our plant houses. And were this otherwise, neither a cold roof nor an irregular distribution of heating surface could of themselves act with sufficient force to produce a sensible wind. For this purpose other mechanical contrivances must be adopted. Much might be done by dividing the area of the house with temporary or permanent screens into two or more distinct compartments. In coal mines with only one shaft, it is found that by dividing the shaft an upward and downward current can be established and maintained in the same opening. On a similar principle, if a screen is erected, on the back of a stage say, within four or five feet from the back of the house, leaving a foot clear of the ground, and the same distance from the roof, a rapid flow of warm air will pass over the top space, and a return current of cold air flow under the bottom. The barrier, by dividing the air, intensifies the force, and gives definiteness to the direction of the currents. Without a screen there would be an infinite number of minute currents, which would neutralise their force by expending it upon each other at the nearest point of contact. By a skilful disposition of screens all these small currents of air are utilised and combined, and their aggregate momentum creates a constant draught or wind. The gross motion of the air may not be much increased, but the character of the motion is changed. Without a screen the air may be said to circulate on the short passage principle, from ground to roof possibly, or not so far as that. Unless journeying at immense velocities the distance is too short to give it force or power. Screens lengthen the range of the currents of air sufficiently to develope their momentum or force. When these currents are once set in motion they are not altogether dependent on the power that set them going. The motion has a tendency to perpetuate itself. The inertia or opposing currents of air are to a great extent overcome by the sweep of the air in motion, just as less steam suffices to keep an engine going than is necessary to start it at first. The screens must not be multiplied to excess or they will have less power. For permanent screens the best material is thin galvanised iron, zinc, or glass; thick canvas does well for temporary purposes. To be efficient screens must be air-tight. The only objection to their use is their expense and unsightliness. The first would be counterbalanced by their utility, and the last might be remedied in various ways. Generally it would not be necessary to use them except in cultural or forcing houses, and in these ornament gives place to utility. If used in show-houses they could be made of glass, or painted of a dark colour and made otherwise ornamental. As to their efficiency in circulating the air there can be no doubt whatever. Every doorway of a heated room affords an illustration of their power. The side walls may be termed screens, and the open door is the opening left for the egress and ingress of air. The common experiment of holding a lighted candle at different elevations in the vacant space illustrates the force and direction of the air currents. By contracting the space by blocking up the doorway itself, except a few inches at the bottom, the strength of the current will be increased. Concentration of the area of the current accelerates its velocity, as the power that would have otherwise been diffused throughout a larger volume of air is then brought to bear upon a smaller one. For the purpose we have now in view, the vigorous circulation of the air, without the introduction of fresh supplies, a small volume moving at a high velocity will be more efficient than a larger one, at a lower rate of speed. The screens should be so arranged as to height, &c., as to bring the full force of the wind that they create to bear upon the plants. In some cases it may be necessary to fix part of the screen on the roof, and have the opening lower down. In others, supposing the heating apparatus to be in front of the house, a wide shelf or other contrivance may be required to keep the heat from at once rushing up to and expending its force upon the glass. Practical skill will soon determine the direction of the currents, and insure that the plants, whether on stage or trellis, are placed fully in the artificial and general wind thus created. In ordinary ventilation the first condition of cultural success is to avoid draughts; in this the one and only object is to secure their strengthening, bracing power.

Neither will the most skilful disposition of screens always secure sufficient wind for our purposes. Other modes of agitating or circulating the air will have to be adopted. One of the most obvious of these is the use of large fans. But they may be said to disturb rather than circulate the air, and, excepting in special cases, it is difficult to procure a cheap and constant motive power to work them. Where the one-boiler system is adopted, and the chimney is near at hand and of sufficient area to drive a smoke jack, fans might easily be kept in motion by the ascending heat and smoke. I know a fine range of glass in Scotland heated by steam from an engine at the back of the houses, where steam power could easily and cheaply work fans, or drive any other mechanical contrivance for producing wind. In the absence of such facilities, the capricious and inconstant aid of the external wind could be invoked; or weights could be used, to be wound up like a clock. However, I do not think very highly of fans for this purpose, although they are the oldest mode of ventilation with which we are acquainted, and solve the most difficult ventilating problem in the world—that of keeping a common bee-hive sweet and pure, though in that case the bees' wings do much more than I purpose doing with fans here. They drive out the impure, and draw in the pure air by one and the same process. And that is a function that fans may more usefully perform than merely to agitate the internal air and produce a partial wind. That process, however, involves a loss of heat and a change of air, which, as will be afterwards shown, can be better done in plant-houses by other means. *D. T. Fish.*

(To be Continued.)

THE GARDENERS' ROYAL BENEVOLENT INSTITUTION.

THE 23d anniversary festival of this Institution took place on Wednesday evening last at the London Tavern, Sir C. Wentworth Dilke, Bart., M.P., in the chair. The large room of the London Tavern presented a magnificent appearance, both in respect to its show of plate and flowers, which were judiciously arranged. The flowers lent to decorate the room were in vast profusion, and were contributed by Messrs. Turner, Lee, Fraser, Williams, and others. The ornaments were lent gratuitously by Messrs. Howell & James. The gallery contained a number of ladies.

The CHAIRMAN rose, amidst tremendous cheering, to propose the "Health of the Queen," which was followed by the National Anthem. He then gave the "Prince and Princess of Wales and Royal Family," and in doing so alluded, in a very feeling manner, to the great benefits horticulture had derived from the many works and great exertions of the late Prince Consort in furthering the ends of horticulture. The toast having been received with the usual cheers, the Chairman then gave the toast of the "Army and Navy and Volunteers," which was duly responded to. He then proposed the toast of the evening. The Institution was one which ought to be supported by the public at large, and especially by the gardeners, but he was informed that it was not supported as it should be. He would like to see the working gardener on an equality with the intelligent artisan; but that was far from being the case now, as whatever the education of the working gardener might be, his pay was small and his work great. Gentlemen having gardens, and good gardens to attend to, sometimes offered as a remuneration to a competent man a sum ridiculously small. Thus he thought that the prosperity of the working gardeners really depended more upon the wealthy classes than did that of the other artisans. For all that, however, subscriptions were required from all gardeners, and these would materially assist in relieving them in their old age, and otherwise help to provide for them in illness; they also had another advantage in subscribing, viz., that he who had subscribed the longest time would have the first chance of assistance when required. With reference to gardeners who were badly paid—a class of men with respect to whom he differed from Mr. Fish—he thought that the supply must exceed the demand, and that being the case the wages must necessarily be low; as labourers were engaged at 12*s.* per week he thought they would always find a difficulty, as the men of 30*s.* a week were refused in favour of the men at 18*s.* In 1847 the donations to the funds of this Society fell to one-third of the usual sum, and it now fell to those present to repair that loss. About a year since a certain number of those now present attended a meeting for the purpose of inaugurating an International Horticultural Exhibition; they persevered in the work in spite of obstacles, and held a magnificent show at South Kensington. It was a speculation, but they entered into it, and it was said that 9000*l.* would pay the expenses, though they had felt little fear if the expenses did not exceed 12,000*l.* The result of the whole was entire success, the Committee having netted over 3000*l.* profit, one-third of which they proposed to give to this Society. The great International Horticultural Exhibition had enclosed a cheque for 1000*l.*—he hoped that those present would make up the amount to the sum of 2000*l.* He concluded by proposing "The Gardeners' Royal Benevolent Institution," which was drunk with enthusiasm.

Mr. BEANDRETH T. GIBBS then proposed the health of the Chairman, and alluded to the great services Sir C. Wentworth Dilke had rendered to the Society by his great endeavours to forward the interests of horticulture.

The toast of "Long Life and Success to the Chairman" was drunk with enthusiasm.

Sir C. W. DILKE, in returning thanks, said that he did not know whether they would indict him as a public nuisance for troubling them so often, but still he felt that he must trouble them again, and further allude to the alleged effects of the salmon and cucumber on the after-dinner subscriptions of gentlemen for benevolent objects. He could tell those present that gentlemen who gave so largely, as some had done that night, were real friends to this Society. But there were other real friends, among them those who subscribed large sums from year to year—those were the great friends to whom the Society would have to look for its principal support. As far as he was concerned, he could only say that whenever, and in any way in which he could assist them, they might command his services. Next year they would have Sir R. Peel as their Chairman, and he hoped that they would give him the reception which he deserved. He then proposed the health of the Treasurer, Mr. Wrench.

Mr. WRENCH, in returning thanks, was glad to remark that on such occasions it was customary to have only three figures to the subscription total, but all present would be glad to see that on this occasion it had increased to four.

Mr. GEO. GODWIN then proposed the health of Dr. Hogg, the Rev. Mr. Dix, and Professor Bentley, which having been responded to, those gentlemen returned thanks.

Mr. Cutler's (the Secretary) health was proposed by the Chairman, and met with enthusiastic response.

Mr. Alderman MECHI, in proposing a toast, said he considered himself an old friend of theirs, and had occupied their chair in 1857. He had also been accused of being a truant in consequence of his joining the Agricultural Benevolent Society, and he was sure that they would be glad to hear that the Society he had mentioned had 5000*l.* a year, and something besides for their widows and children. They had all heard Sir C. W. Dilke, and they, as well as he, knew that he was a great advocate of Horticulture. At the late Show there had been 3000*l.* profits, and 1000*l.* had been given to the Gardeners' Society, but he did not see the reason why the whole 3000*l.* should not have been given. He then proposed the healths of Messrs. Veitch and Child, and concluded by calling attention to the superior skill of the men now employed in the seed and nursery trade in their knowledge of seeds, more particularly the Grasses, which was of the greatest use to all agriculturists.

Messrs. VEITCH and CHILD returned thanks on behalf of the nursery and seed trade, to which the Society is under very deep obligation.

The CHAIRMAN, in proposing "The Ladies," made some remarks on the flower shows given by private nurserymen. He thought that all such shows should be under the supervision of some Society.

Mr. JOHN GOULD VEITCH having returned thanks for the ladies, the festivities came to an end.

Mr. Loveday made an efficient toast-master, and the songs were well rendered by Miss Julia Elton, Mr. W. H. Cummings, Mr. Young, and Mr. Lewis Thomas; Mr. Henry Thomas very ably presided at the pianoforte. The dinner was served by Mr. Chater.

We understand that the donations amounted to about 250*l.*, exclusive of the 1000*l.* presented by the Executive Committee of the International Horticultural Exhibition.

ABSTRACT OF PAPERS PRESENTED TO THE BOTANICAL CONGRESS.

ON THE SPORTING OF PELARGONIUMS AND OTHER PLANTS.

By J. WHITE, Hurstwood Park, Burnley.

THE tendency to sport in the Pelargonium is highly developed in the following kinds, namely, Flower of the Day, Brilliant, and lastly, Mrs. Pollock. The first was distributed to the public some 14 or 15 years ago by the Messrs. J. & C. Lee, and from the very first year of its appearance up to the present time I have noticed green sports frequently breaking out from it; a fact which goes to prove that the variety called Flower of the Day was originally a sport, and was not produced direct from seed. The constant habit of sporting in this plant shows, in my opinion, that its original parent was a green variety, probably Cerise Unique. The same propensity to sport is often met with in Brilliant; and lastly, Mrs. Pollock will often produce sports of a dark green colour, with a deep bronzy zone, showing that it was originally only a common plain Horse-shoe kind.

Let me now state what I think may be set down as one of the causes which induce this curious phenomenon.

Three years ago some Pelargonium plants were placed in a little house used for hybridising purposes. This house was properly constructed and placed in a position where it was not fully exposed to the direct rays of the sun; and where it had the advantage, when necessary, of the heat from a fire at the back of the wall, which formed the back of the house. My object in placing the house in this aspect was to obviate the necessity for giving air as much as possible whilst the plants were undergoing the process of fertilisation, and every care was taken to prevent any distribution of pollen in the house, but after all my care I found, during the following spring, after the seeds were sown and had in due course produced plants, that some adverse agency had been at work, and that I must have overlooked or neglected some important point, for the greater portion of the plants had come quite contrary to what I had anticipated, for instead of being, as I expected they would have been from the parents used, beautifully variegated, the majority of them produced plants with green or dark-zoned foliage, with here and there a sport breaking out from the side of the stem. On looking about for the cause, I came to the conclusion that the small perforated zinc ventilators, which were put in different parts of the house for admitting air and excluding all kinds of insects, had not been covered over so as to prevent a current of air from passing in whilst the work of fertilisation was going on, and that pollen from some other plants that were standing near must have been dispersed by the air, and that particles of it must have come in contact with the flowers just at the time I had been fertilising them. This struck me as being the probable cause of the seedling plants sporting so constantly as they did. The following year, for the purpose of testing the truth of this idea, I subjected the same plants to precisely the same treatment, and was sure the house was very much charged with pollen at the time I fertilised the plants, for a strong breeze was blowing at the time, and there was a great deal of ripe pollen on other plants standing in the vicinity of those I had been operating on; and when the seeds had germinated, and the plants

were sufficiently developed, it was evident that the same phenomena had occurred again. The same thing, too, occurred again this year, in precisely the same way, and under the same conditions; whilst plants of the same kinds that had been fertilised, and every care taken to prevent any pollen coming in contact with them after they had been operated on, have produced plants in accordance with the parents used, and no sports in any instance have occurred.

These facts have led me to the conclusion that a plant, if mixed pollen be used in fertilising it, will produce sports, more or less, as the case may be, and according to the state of the air at the time fertilisation is taking place. If the air is very much charged with electricity there will be a greater per centage of plants with a tendency to sport, but if there be little or no electricity at the time, seedlings like the female parent will predominate.

With regard to the production of variegated plants, my opinion is that the more delicate kinds are not perpetuated from seed, but by propagating the sports. The small seedling plants of almost every kind of variegated plant are so extremely delicate in texture that they perish in a few days after the seeds have germinated.

It frequently happens that one side of the seedling plant will come variegated whilst the opposite side will be quite green, and in most instances the variegation breaks out in that part of the stem of the plant just at or a little above the position of the seed leaves; if the variegated portion of the plant is not too delicate, I have found by pinching the green part gradually away, that the variegated portion will predominate as the plant grows, and in a short time will assume the mastery over the green portion; this operation, however, must be performed very gradually, by picking or cutting away portions of the green leaves by degrees; the plant may then be perpetuated, and the work of propagation may be commenced as soon as the plant has sufficient strength to bear decapitating.

To further illustrate the difficulty of perpetuating variegated plants from seed, I may mention that three years ago I found a plant of the common Groundsel (Senecio vulgaris) beautifully variegated. I at once took means to prevent birds from taking the seed, and the plant from suffering any injury. I also frequently watched, so that I might secure all the seed, thinking I should be able to perpetuate it, and by fertilising the double garden varieties with it the following year, should be able to produce a new and very handsome variegated bedding plant; but I was doomed to disappointment. In the spring following the seeds were sown, and tended with every care, and I believe nearly every seed grew, but not one lived more than three days after their appearance above the surface of the soil. Another variegated plant appeared the same year, namely, a form of the common Celery (Apium graveolens), which became also beautifully variegated. The seed was carefully preserved till the following year, when it was sown, and produced plants, the leaves of which were as white as milk. These lived till they had made the second pair of leaves, when they also died.

The Verbena has been long and deservedly looked upon as one of the most useful plants in cultivation for flower-garden decoration. The plant being an especial favourite with me, I have for many years been trying a series of experiments in cross-breeding and hybridising it, and four years ago I succeeded in producing a hybrid—the variety now known by the name of Velvet Cushion; this was, I believe, the first hybrid Verbena ever produced. It was obtained by crossing the old Verbena venosa with the garden varieties. For two years I could not get any seed from the plant; but other garden varieties that had been fertilised with the pollen from Velvet Cushion seeded very freely, and produced from 10 to 15 per cent. of plants of a similar suffruticose habit, with flowers of the same shape and substance, and of various shades of colour. Last year I gathered seeds from plants of Velvet Cushion growing in the open ground; there were other plants of the ordinary kinds of Verbenas, such as Purple King, &c., growing near them. These seeds have produced but very few of the Cushion varieties; some are exactly like Purple King, both in habit and colour; the only difference at present perceptible is the elongation of the truss; some have produced scarlet flowers, others plum, pink, and, in fact, nearly every shade of colour to be found in the Verbena. This I attribute to the Humming-bird moth, Macroglossa stellatarum, which was very plentiful last summer, and seemed particularly fond of hovering over and sipping the sweets from Velvet Cushion. I frequently saw as many as from 10 to 15 of these moths at one time on a small bed.

Plants of Velvet Cushion carefully fertilised have this spring produced some extraordinary forms, some with flowers of immense size, others with small neat habits and lilliputian flowers. These are from Velvet Cushion, fertilised with the pollen of Maonettii Princess Victoria, a most valuable plant for bedding purposes, which I obtained two years ago, by crossing Velvet Cushion with Maonettii l'Impératrice Elizabeth; the beautiful Scarlet Cushion was produced at the same time by crossing Velvet Cushion with the pollen of Fox-hunter. Velvet Cushion has produced more than 15 distinct forms of the Verbena this season of an intermediate section between the Cushion varieties and the Maonettiis. Then again the plants of the common kinds have produced the most out-of-the-way shades of colour from what they have ever done before with me.

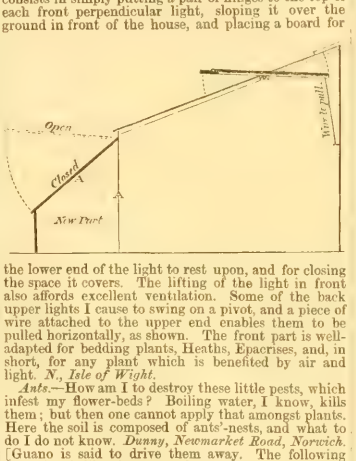
The produce of some crimson flowers have been shades of blue, violet, mauve, pink, rose, lilac, purple, &c. One plant in particular has produced almost every known shade of colour; this was a beautiful striped variety I raised last year, and as it was a flower of great promise, I fertilised it with pollen from a variety of the best flowers I had; three of the florets on each truss were fertilised with the same kind of pollen, and care was taken that a clean brush was used for every sort of pollen. My idea was that it would produce striped flowers in great abundance; but in this I have been deceived, for not a single striped flower has it produced, whilst flowers of the other varieties fertilised with the pollen of the striped one have produced many very fine stripes.

There is no plant I ever heard of so sportive and changeable in the character of its flowers, nor any plant I ever knew so liable to transformations as the Verbena. One of the most extraordinary instances is the following:—a flower of the Princess Victoria (Maonettii) was fertilised with the pollen taken from the Scarlet Cushion, with the view of its producing a Scarlet Maonettii, instead of which it has produced a plant with foliage very similar to Purple King, and a flower as large as Foxhunter, and nearly of the same colour.

Home Correspondence.

Regular-flowered Calceolaria.—I forward a sketch of the natural size of a monstrous Calceolaria bloom, of which three specimens, almost identical in shape and size, made their appearance on a plant in my greenhouse, each occupying the same positions in the centre of the flower branches in three different parts of the plant. In the specimen figured the calyx is normal and four-lobed, but in one of the blooms the calyx was only three-lobed, one of the lobes being slightly notched at its extremity. One also differed in having the opening at the apex of the balloon-like flower quite straight, whereas in the others it was trilobed. There is no other orifice than the one at the extremity. There is no trace of stamens in the specimen figured, but in another there was a very slight elevation within the corolla near the base. The pistil is rather more slender than in the normal flowers. They were coloured yellow with chocolate spots, as in the ordinary blooms. *J. O. Westwood, Oxford.* [Similar instances have been figured at various times in our columns. They are interesting as showing how a usually very irregular flower may become regular; in this case by the equal rate of growth of all its component parts. As in the Pelargonium, it is the central flower of the truss that is most often affected. EDS.]

How to Enlarge a Greenhouse.—The accompanying plan shows how the capacity of a greenhouse may be cheaply and beneficially increased. I have had a similar alteration made in one I found here, and I have constructed several since on the same plan. It consists in simply putting a pair of hinges to the top of each front perpendicular light, sloping it over the ground in front of the house, and placing a board for



the lower end of the light to rest upon, and for closing the space it covers. The lifting of the light in front also affords excellent ventilation. Some of the back upper lights I cause to swing on a pivot, and a piece of wire attached to the upper end enables them to be pulled horizontally, as shown. The front part is well-adapted for bedding plants, Heaths, Epacrises, and, in short, for any plant which is benefited by air and light. *N., Isle of Wight.*

Ants.—How am I to destroy these little pests, which infest my flower-beds? Boiling water, I know, kills them; but then one cannot apply that amongst plants. Here the soil is composed of ants'-nests, and what to do I do not know. *Dunny, Newmarket Road, Norwich.* [Guano is said to drive them away. The following decoction is likewise reported to be a cure for them, viz., 4 oz. of Quassia chips boiled for 10 minutes in a gallon of water, dissolving in the liquid while cooling 4 oz. of soft soap. This is not only said to kill ants, but also aphides. Some recommend trapping them with dead small birds, and others say that a solution of chloride of lime and water will prove a cure for them.]

How Varieties Originate.—In February last, at Mentone (South France), I had a root of Anemone pavonina, Lois., transplanted while in flower, and this treatment, together with exposure to a hot sun and want of sufficient moisture, induced a curious change in the last expanded blossom. The normal flowers which this plant had previously produced had broad scarlet sepals with a straw-coloured ring at the base; but this latest flower, which was a small bud at the time of removal, was one-third smaller than those that preceded it, and had its sepals rose-coloured below and yellowish-white above. This form closely resembled some of the many varieties which abound at Cannes, though quite wanting at Mentone, and which link the scarlet Anemone pavonina, Lois., to the magenta-coloured A. stellata, Lam. *J. Traherne Moggridge.*

Alternanthera spathulata, A. sessilis amœna, and Teleianthera ficoidea versicolor.—Since I showed these plants at the Great International Exhibition at South Kensington, I have received so many letters respecting their habit, size, height, comparative hardiness, where they can be procured, &c., that I fear all have not received the information required; and as I still continue to receive letters on the same subject, the following remarks, I trust, will set the matter at rest:—I received one plant of each of the above last autumn from Mr. Williams, of Holloway, and I was so pleased with their appearance, that I determined at once to work up a stock, which I have done. I have bedded out about 2000 plants, and if I mistake not, they will prove one of the greatest boons to the flower garden that have appeared for some time, rivalling the Iresine. My predictions respecting the last-named plant give me every confidence. I was the first to recommend it for flower garden decoration, and although I have had many hard battles to fight in its interest, I believe I may safely say that I have come off more than a conqueror; if further proof with regard to its usefulness and beauty is required, I may state that over 5000 plants of it are bedded out here this season. Alternanthera spathulata, a Brazilian plant, is very close and compact, and will be found a beautiful subject for edgings or ribbon borders. I have a specimen of it 20 inches in diameter, that scarcely exceeds 5 inches in height. It is a delightful little plant, and a free grower. It has been bedded out about three weeks, and has withstood 5° of frost without injury. Its colours vary with the situation in which it is placed, the prevailing tints being pink and green and maroon. Of A. sessilis amœna, another Brazilian plant, I have not so large a stock as of spathulata. It is a much stiffer grower than spathulata, and appears to spread out close to the ground. This is likewise a suitable plant for edgings. The foliage is much larger than that of spathulata, while the plant itself does not with me at present exceed 5 inches in height, and it could be pegged down almost flat. This was planted out at the same time as the other, and like it, sustained no injury from frost. Teleianthera ficoidea versicolor, an Indian plant, is a much taller grower than either of those just named; my largest plant of it is 2 feet in diameter and 1 foot in height; its colour differs from that of the Alternantheras, and the plant altogether is sure to attract attention. Its foliage is much larger and rounder than that of the Alternantheras; in habit the plant is upright and strong; in some situations the colour is pink and maroon, but, like the others, it varies much in different aspects. All the above, I imagine, will bear full exposure to the sun, and will grow freely either in a dry or moist situation. The Teleianthera also was bedded out with the others, and like them has received no injury from frost. I have two circular beds planted as follows, viz., Alternanthera spathulata in the first row, A. sessilis amœna in the second, the centre being filled with Teleianthera ficoidea versicolor; and, if I am not mistaken, these beds will be the gems of the season here, notwithstanding the tens of thousands of other plants used for bedding and bordering at Osberton. They are already very attractive and much admired. Now is just the time to plant without risk, and I trust many will give these favourites of mine a fair trial. Do not let them, like the Iresine, be condemned on account of mismanagement, and an unfavourable summer. All the above are easily propagated, and are quick growers. *Edward Bennett, gr. to G. S. Foljambe, Esq., Osberton Hall, Worksop, Notts.*

Southernwood and Lavender.—In Perthshire and other parts of Scotland the former of these plants is called Apple Ringy. It is quite possible, but hardly likely, that this is a corruption of Ouveringie. I should be glad of information concerning the origin of the names of Southernwood and Lad's-love. It used to be common for lads and lasses to give and accept small pieces, as an expression of their tenderest feelings. Possibly this custom originated in its undoubted sweetness, or it may have grown out of the desire for union, which your correspondent shows the Dutch name signifies. If the latter, "Lad's-love" may have occupied, and might again assume, a very important place in negotiating the most delicate and important social arrangements. I can verify all that Mr. Forsyth says about the perfume and beauty of Lavender. It was held in the highest esteem by the first lady I had the honour of serving. It must be seen in a mass to be thoroughly appreciated. A border, 8 feet wide and 30 feet long, covered with a dense carpet of Lavender, cut down to within a foot of the ground, every year after gathering the flowers, is a sight not easily forgotten. Treated in this way the flowering continues through the greater part of the summer. Last season I met with what is termed French Lavender. It is perfectly hardy, much more dwarf, and with larger flowers than the common sort. The lady to whose judgment I have submitted it, says it is deficient in sweetness. The perfume is certainly different from that of the common one, but it is a peculiar and very beautiful plant, continuing to flower for months, and has a rare effect. I enclose a specimen, and will supply Mr. Forsyth or any of your readers with cuttings with pleasure. I also send a branch of another Lavender which I have grown for several seasons in pots. The flowers are small and poor, but the foliage is very neat and beautiful for mixing in bouquets of flowers. I have not yet proved whether it is hardy. The perfume seems very similar to my French Lavender, and both lack the true flavour of the common Lavandula Spica. *D. T. Fish.* [The French Lavender is Lavandula Stœchas; the other is L. dentata.]

Arum Dracunculus.—This is scarce in gardens in this locality. I planted a moderate-sized bed of it four years ago, and every season I have had plenty of its purple spathes, which this year are unusually fine, six or seven being unfolded every morning in succession. This plant is common in the southern parts of Europe. In England it is perfectly hardy, and is easily propagated, yet, generally speaking, it will not thrive here. The soil being gravelly, it begins to decay just before its period of blooming. *William Whale, Egham.*

Night-blowing Cereus.—I have a plant of this on which 38 blossoms have been all open at one time; the

sight was really most splendid. *R. Hanbury, Poles, Ware.*

Moles.—My garden is terribly infested with these pests. Can any one tell me how I can get rid of them? I have tried traps without avail. Is there any means of poisoning them? *Jno. Read, Finchley.*

Large Figs.—On the 14th inst. I exhibited at the Royal Horticultural Society's Gardens, South Kensington, a dish containing six fruit of the Castle Kennedy Fig, weighing 2 lb. 6 oz., which on account of their large size and handsome appearance were much admired. In collecting a dish to send to the Earl of Stair, at Oxenford Castle, on the 23d inst., the two heaviest fruit weighed 9¾ oz. and 8 oz., being the two largest Figs I have ever seen or heard of. When this Fig is allowed to hang till it is so ripe as to be scarcely able to carry its own weight, it becomes considerably darker in colour than it has generally been shown, and is certainly not only the most handsome Fig in cultivation, but also one of the most delicious and fine-flavoured of all the varieties of Figs. *Archibald Fowler.*

Seed Sleep v. *Birds.*—Your correspondent "Inquirer" (see p. 588) will find that by soaking his seeds with red lead he will make them perfectly bird-proof. I have for several years used it for my Radish, Broccoli, Cabbage, &c., and have always found it effectual. The way in which I use it is to take a flower saucer, in which I put the seed—say one ounce; I then add about a teaspoonful of red lead, and as much water as will just make it sufficiently wet to mix together. The seed soon soaks up this small quantity of water, and in a very short time is dry enough to sow. I have never known this steep to injure the vitality of the seed, and it has saved me a great deal of labour and anxiety as to keeping my seed beds safe. *D. Uphill, Moreton Garden, Dorchester.*

Cypripedium spectabile.—This exquisitely beautiful plant is not generally considered to be hardy, consequently it is very seldom met with in collections of herbaceous plants. That it is perfectly hardy, however, when grown in suitable soil is an indisputable fact. Last week, when visiting a gentleman's garden in this neighbourhood, I saw a stool of it, which had been growing in the same spot for five or six years without ever having received the slightest protection. It was in full bloom when I saw it, and had upwards of 20 fully-expanded, perfectly developed flowers, and certainly was a beautiful object, worth travelling a long way to see. It is planted in pure peat soil. I may mention that the garden in which it grew is in a cold locality, in the immediate proximity of a moor. Are such specimens as that just described often seen? *M. Todd, Kilmarnock, N. B.*

Societies.

LINNEAN: *March* 15.—G. Bentham, Esq., President, in the chair. J. G. Goorge, Esq., and Col. C. Shelley were elected Fellows. The following papers were read:—1. *Account of a Lusus Naturæ, a double-headed Water Snails*, by Dr. Shortt.—2. *Descriptions of six New Species of simple-fronded Hamous pholiaceæ*, by J. G. Baker, Esq.—3. *Lichenes Amazonici et Andini*, by the Rev. W. A. Leighton.

April 5.—G. Bentham, Esq., President, in the chair. J. G. Baker, Esq., C. Garner, M.D., and H. Lee, Esq., were elected Fellows, and Mr. F. Edward as an Associate The following were the papers read:—1. *On a new British Fungus*, by the Rev. M. J. Berkeley.—2. *On some undescribed Species of Bombay Plants*, communicated by J. E. Wright.—3. *Note on the presence of Stamens within the Ovaries of Banksia dissimilofolia*, by Dr. Masters.

April 19.—G. Bentham, Esq., President, in the chair. Sir C. Bunbury exhibited a cone of Wellingtonia gigantea, produced in the second autumn after planting, both in the autumn of 1865, on a tree planted only two years previously, and now scarcely 3 feet high. Male flowers had not been found on any plant of the same species at Barton. Mr. Gurney exhibited several eggs of the cuun, laid within the last few weeks. Mr. W. Robinson was elected a Fellow. The following papers were read:—1. *Notes on the Structure of Myrtaceæ*, by the President. The chief part of this valuable paper was devoted to remarks on the stability or instability of the several characters afforded by the various parts of the flower and fruit in the classification of the order in the several nations undertaken in preparing the new Genera Plantarum and the Flora of Australia.—2. *On the Structure of Indigofera as apparently affording facilities for Intercrossing of distinct flowers*, by the Rev. G. Henslow.—3. *List of Diurnal Lepidoptera, recently collected by Mr. Whitely in Madeira, North Japan*, by A. G. Butler, Esq.; communicated by W. Carruthers, Esq.

May 3.—G. Bentham, Esq., President, in the chair. G. F. Angus, Esq., and W. Matchwick, Esq., were elected Fellows; and Dr. N. Pringsheim and Dr. W. F. Schimper as Foreign Members. A letter from Dr. Masters, referring to the exhibition by Sir C. Bunbury at the previous meeting, of cones of Sequoia (Wellingtonia) gigantea, and calling attention to the fact that cones of that species had been formed in this country, and recorded in the *Gardeners' Chronicle* so far back as 1858, was read. The following papers were also read:—1. *A Monograph of the recent British Ostracoda*, by G. S. Brady, Esq.; communicated by Dr. Sclater.—2. *On the Otolithes of Fish, and their value as a test in studying recent and fossil species*, by F. T. Higgins, Esq.; communicated by G. Busk, Esq.—3. *Remarks on the cranium, and dental characters of the existing species of Hyæna*, by G. Busk, Esq.

May 24 (*Anniversary*).—G. Bentham, Esq., President, in the chair. The Treasurer read a general statement of the Society's accounts, from which it appeared that the balance in favour of the Society on the year's account was 213*l.* 12*s.* 4*d.* The Secretary reported that since the last anniversary the Society had lost by death 18 fellows, 1 foreign member, and 2 associates, and by withdrawal 5 fellows; while 33 new fellows, 2 foreign members, and 1 associate had been elected. At the ballot which ensued the Rev. H. Clark, D. Hanbury, Esq., G. MacLeay, Esq., A. Newton, Esq., and F. P. Pascoe, Esq., were removed from the Council; and the following were elected in their places:—J. W. Dunning, Esq.; R. Hudson, Esq.; J. G. Jeffreys, Esq.; Col. Munro, and W. Carruthers, Esq. The following officers were then re-elected, namely:—G. Bentham, Esq., President; W. Wilson Saunders, Esq., Treasurer; and G. Busk, Esq., and F. Currey, Esq., Secretaries. After the reading of the President's address, it was moved by M. De Candolle and unanimously resolved that the thanks of the Society be given to the President for his excellent address, and that he be requested to allow it to be printed; and on the motion of Mr. Saunders a similar resolution was adopted respecting the obituary notices prepared by the Secretary.

June 7.—G. Bentham, Esq., President, in the Chair. J. J. Bennett, Esq., Dr. J. D. Hooker, Sir John Lubbock, and W. W. Saunders, Esq., were nominated Vice-Presidents for the ensuing year. J. E. Saunders, Esq., was elected a Fellow. The following papers were read:—1. *On Myostoma, a new Genus of Burmanniaceæ*, by John Miers, Esq. This was a Brazilian plant, forming a third genus of the tribe Thismieæ, and its chief peculiarity was described as consisting in the shape and condition of the three inner segments of the border of the perianth, which do not open in the usual manner, but remain constantly closed, for which reason the name of Myostoma (from μυω, to close, and στομα, a mouth) has been given to it. —2. *On a new Genus of Compositæ (Mutisiaceæ) from India*, by Dr. T. Thomson.—3. *Notes on the Aroideæ cultivated in Kew*, and 4, *Observations on New Zealand Lichens*, by Dr. W. L. Lindsay —5. *On the Surface Fauna of Mid Ocean: No. 2, Foraminifera*, by Major Owen.—6. *Characters of some undescribed Asturo-exas Lepidoptera*, by F. Walker, Esq.

June 21.—G. Bentham, Esq., President, in the chair. Dr. Herman Becher, Rev. Dr. Bleasdale, and Wentworth W. Buller, Esq., were elected Fellows. E. J. L. Simmonds, Esq., exhibited a small collection of insects, chiefly Coleoptera, formed by himself in Tropical West Africa. Dr. Trimen exhibited living plants of a new British Lemna (*L. arrhiza*, W.), gathered by him in a pond at Staines. The following papers were read:—1. *Sertum Angolense*, by Dr. Welwitsch. This paper, to which the first part of the new volume of the Society's Transactions is to be devoted, contained descriptions of several new genera, *e.g.*, Cyperaceæ: Cyperolepis; Rubiaceæ: Corynanthe; Labiatæ: Alvesia; Sesameæ: Sesamothamnus; Cucurbitaceæ: Acanthosicyos and Corallocarpus; Passifloraceæ: Machodea; Apocyneæ: Adenopsis; Sterculiaceæ: Octolobus; Burseraceæ: Paivæa; and Rosaceæ: Myrothamnus. It will be illustrated by 24 drawings of the most remarkable of the plants by Fitch. Amongst those exhibited was the very remarkable Cucurbit Acanthosicyos, with much the aspect of a Sabsola; and Machodea, a Passifloraceous plant with fusiform roots, short erect stems, and long linear lanceolate leaves. —2. *On Cortical Vascular Rings and their Origin*, by Dr. Sigerson. This paper described the appearances presented by a section of a Lime tree, in which the liber was disposed in a series of cuneate rays.—3. *Note on the presence of four Cotyledons*, by Dr. Sigerson. The case referred to was that of a young twin seedling of the Sycamore.—4. *Remarks on the Formation of the Root socket of Lobocast sogbellarum*, by Dr. Sigerson. The author was led by the examination of bulbs of Allium ascalonicum to conclude that these sockets were formed by the roots pushing outwards and including between them and the axis a kind of funnel-parenchyma united together round the roots, and continuous with the sheath or rhizothek. He concludes that the bowl formed in this way is pierced by the roots, and is separable from them in one piece, that the first formed roots becoming less and less important, the bowl gradually loses its attachment, and that the slight movement of resilience or play which is described to occur may be a primary cause of the separation between roots and sheath.—5. *Observations on Dr. Lindsay's note on Arthonia matteoparmelia*: also 6, *Hypochnoid or Line and Hedraior of Fungi*, both communicated by the Rev. Dr. Lindsay; and 7, *Notes on some of the smaller Crustaceans: on the habits of the Hesperiadæ*, by Thomas Edward, Esq.—8. *On the Liquid Insects of the West Indian Gasteropoda*, by J. Scott, Esq.; communicated by Albert Hogg, Esq.—9. *On the Longicornes of Australia, with a list of all the described species*, by F. P. Pascoe, Esq.

CRYSTAL PALACE ROSE SHOW: *June* 23.—This was not equal to its predecessors in the number of the blooms staged as a whole were fine from being perfect, a circumstance doubtless owing to the comparatively cold and even frosty nights which we have lately experienced, and to the heavy rains and thunderstorms with which the south has been visited.

In the class for Nurserymen of Surrey or Salisbury was successful in obtaining the 1st prize with a stand containing, among others, Madame Charles Wood, Comtesse de Chabrillant, Cloth of Gold, La Reine, Xavier Olibo, dark-shaded crimson scarlet; Pierre Notting, violet-shaded crimson; Marguérite de St. Amand, rose; Triomphe de Rennes, Prince Camille de Rohan, Madame Rivers, Maurice Bernardin, Souvenir de William Wood, a very dark kind, which as shown greatly resembled Prince Camille de Rohan; Vicomte Vigier, Gloire de Dijon, Victor Verdier, Mdlle. Annie Wastie, light rose, with deep rose centre with pink; Gloire de Vitry, Kate Hausburg, and Maréchal Niel, the last a universal favourite, specimens of which appeared in almost every stand. From Messrs. Paul & Son, who also showed in this class, came excellent blooms of Charles Lefebvre, Pierre Notting, Maurice Bernardin, Comtesse de Chabrillant, François Louvat, Xavier Olibo, Duke of Wellington, Alphonse Damaizin, Gloire de Dijon, Duc de Rohan, Vicomte Vigier, Alba rosea, Admiral La Peyrouse, Madame C. Crapelet, Madame C. Joigneaux, Madame Cillat, Prince Camille de Rohan, Maurice Bernardin, Charles Wood, Beauty of Waltham, and last but not least, Maréchal Niel. Mr. Mitchell, Piltdown, Maresfield, had among others fine examples of John Hopper, Julie Mansais, Madame C. Wood, Hippolyte Flandrin, large and full; Souvenir d'Elise, Maréchal Niel, Gloire de Dijon, Madame C. Crapelet, Madame Cillat, Comtesse de Sansal, General Jacqueminot, and Madame Rivers. From Mr. Turner, Slough, came among others, Leopold Premier, Madame Maurin, Comte Cavour, Duc Decazes, Madame D. Domville, Princess of Wales, Blairii No. 2, Charles Lefebvre, and Souvenir de Malmaison, a richer variety with a darker tone, backed by rosy crimson outer petals.

Awards.—9*s*: 1, Mr. Keynes; 2, Messrs. Paul & Son; 3, Mr. Mitchell; 4, Mr. Turner; 5, Messrs. Francis & Co.

In the class of 48 varieties, three trusses, Mr. Keynes again took the 1st prize with Victor Verdier, Maréchal Niel, Madame Sertot, Madame Charles Wood, Madame Moreau, Souvenir de William, Pierre Notting, Marguerite de St. Amand, Vicomte Vigier, Maurice Bernardin, Centifolia rosea, all of unusually large size. From Messrs. Paul & Son the most remarkable were Maurice Bernardin, Olivier Delhomme, Charles Lefebvre, Jean Bridanne, François Louvat, Comtesse de Chabrillant, Prince Camille de Rohan, Beauty of Waltham, Princess Mary of Cambridge, Madame Rivers, Xavier Olibo, Madame C. Crapelet, Lafontaine, Mathurin Regnier, and Maréchal Niel. Mr. Mitchell and Mr. Turner also had good stands; and that of Messrs. Francis & Sons also showed were remarkable for the quantity of buds with which they were accompanied, and which gave them a more natural appearance than if they had been, as is usual, deprived of them.

Awards.—48: 1, Mr. Keynes; 2, Messrs. Paul & Son; 3, Mr. Mitchell; 4, Mr. Turner; 5, Messrs. Francis & Co.

In the class of 24 varieties we noticed good trusses of most of the varieties shown in the preceding class. Among others Paul Ricaut, Louise de Savoie, Prince Henri de Pays Bas, Anna de Diesbach, Devoniensis, and Charles Lefebvre were particularly good.

Awards.—24: 1, Mr. Keynes; 2, Mr. Turner; 3, Messrs. Paul & Son; 4, Messrs. Francis; 5, Mr. Fraser.

In the class of 24 varieties, single trusses, and in that of 12 varieties, were fine blooms of Souvenir de Malmaison, Maréchal Niel, Madame Vidot, Devoniensis, Gloire de Dijon, Madame Maurin, Charles Lefebvre, Madame Damaizin, John Hopper, and Mrs. Rivers; also Madame Moreau, Marguerite de St Amand, Achille Gonod, and Belle Normande.

Awards.—24: 1, Mr. Keynes; 2, Mr. Turner; 3, Mr. Walker, Thame. 12: 1, Mr. Keynes; 2, Mr. Turner; 3, Messrs. Francis; 4, Mr. Walker.

In the class of 36 varieties, one truss of each (Amateurs), Mr. J. T. Hedge, Reed Hall, Colchester, had fine examples of General Jacqueminot, Le Rhone, Mathurin Regnier, Beauty of Waltham, Cloth of Gold, and Maréchal Niel; Mr. Chard, Salisbury, furnished Madame C. Wood, in beautiful condition; and John Hopper, large and fine. In other stands were good examples of Madame Victor Verdier, Emilie Dubo (beautiful bright rose), Comtesse de Courcy, Triomphe de Caen, Prince Camille de Rohan, Princess of Wales, Madame Bravy, Maurice Bernardin, and Niphetos.

Awards.—36: 1, Mr. Hedge; 2, Mr. Chard; 3, Mr. Moffat; 4, Mr. Wright; 5, Dr. Cooper.

In other classes we observed good examples of Senateur Vaisse, L'Enfant Trouvé, Charles Lawson, Madame Boll, Pauline Lanzezeur, Le Rhone, Céline Forestier, Comte de Nanteuil, Madame Boutin, Souvenir d'un Ami, Caroline de Sansal, Olivier Delhomme, Madame Vidot, Comtesse de Chabrillant, Charles Lefebvre, Mdlle. Annie Wastie, Maurice Bernardin, and others.

Awards.—24: 1, Mr. Moffat; 2, Mr. Hedge; 3, Mr. Chard; 4, Mr. Stoddart, gr. to J. G. Rebow, Esq., M.P.; 5, Mr. Mercer, Hapsburgh; extra, Mr. Wright. 18: 1, Mr. Hedge; 2, Mr. Moffat; 3, Mr. Dennis, gr. to H. S. Hayward, Esq.; 4, Mr. Chard; extra, Mr. Ingle. 12: 1, Rev. V. Knox Child; 2, Mr. Hedge; 3, Mr. Ingle; 4, Mr. Dennis; extra, Mr. W. Lacey, gr. to C. S. Mortimer, Esq.

New Roses were not in sufficiently good condition to enable us to offer any decided opinion as to their merits. The best came from Messrs. Paul & Son, who had among others Paul de la Meilleray, vermilion; Xavier Olibo, crimson scarlet, ornamented with a deep shade of velvety black, altogether a very promising kind: Princess Mary of Cambridge, Madame Charles Verschaffelt, lilac-shaded rose; Marie Bonnaire, and Baronne de Maynard, both white Hybrid Perpetuals, which we hope yet to see in better condition; Michel Bonnet, a Bourbon in the way of Jules Margottin; Exposition de Brie, a promising crimson scarlet; Frederick Bibord, a nice violet-shaded crimson sized crimson; Comtesse de Cogniss mentioned in terms of praise by our correspondent Mr Radclyffe in another column. La Duchesse de Morny, violet shaded rosy purple; Fisher Holmes, velvety deep violet shaded crimson; Prudence Besson and Maréchal Soubeyran, both large and showy, but as shown somewhat loose. From Mr. Keynes came, among others, Leopold Premier, violet-shaded rose nicely pencilled with carmine, compact and good: Charles Margottin, purplish red, full; Madame Moreau, large and showy; Joseph Fiala, large and full violet-shaded crimson; Marguérite de St. Amand, rose pink shading off to pale rose at the points of the petals, large and full; George Prince, Baronne Peletan de Kinkelin, and Mdlle. Amélie Halphen, Dr. Andry, and Madame Victor Verdier, all various kinds of crimson more or less shaded with violet; Louis Van Houtte, violet shaded purple: Triomphe de la Terre de Roses, and Achille Gonod, both large, loose, but showy rosy crimsons; Centifolia rosea, large rose; Belle Normande, large rosy lilac; and Kate Hausburg, large bright crimson. Among yellows the best by far was Maréchal Niel, which is also reported to be in fine condition at Eynsford.

Vases of Roses contained for the most part of March's stands filled with Roses and Ferns, the slender upright glass stems supporting the top vase being in more than one instance partly concealed beneath the pretty golden-veined foliage of Acanthus Candelabula. Mr. Mitchell, C. S. Round, Esq., Colchester, was 1st; in this the stem was ornamented with gold-variegated-leaved Jasmine, and Maiden-hair Fern was introduced among the blooms in the top vase; Mr. Hedge was 2d; and Mr. Marlow, gr. to J. Wigan, Esq., Standish, 3d; Mr. March was 4th. Messrs. Carter & Co. contributed some neat hanging-baskets decorated with Selaginellas, and filled with Roses, Dracænas, and Cordyline indivisa; baskets were also shown by Messrs. Cutbush and by the Crystal Palace Company. The latter exhibited a small basket made of wickerwork, the basket suspended by a wicker chain from a tripod of the same material. Other baskets were supported on small green-painted tripods. By far the most effective exhibition in this way was the Leicester Vase, some 7 to 8 feet in diameter, formed of moveable ribs, filled with Roses and Ferns. This was filled with a row of Coleus Verschaffeltii, then with Geraniums, Mignonette, and Hydrangeas, the whole surmounted by a tall pyramidal Fuchsia in the centre.

Roses in pots were not in good condition. The best 25, came from Messrs. Paul & Son, Mr. Turner being 2d, and Messrs. Francis 3d. Messrs. Paul & Son also received a 1st prize for the best 12 sent out in 1865.

Among miscellaneous subjects were Variegated Maize and several pretty tricolor-leaved and Zonal Pelargoniums, from Messrs. Carter. Messrs. Veitch, Laird, & Laing exhibited Wiltshire Lass, a remarkably fine pink variety of Pelargonium, which has already been noticed by us; fancy and bedding Pansies; an unnamed Zonal Pelargonium with leaves 5 inches across, pale green, marked with a bronzy zone; and Stanstead Rival, with very large salmon-scarlet pips. Mr. Smith, Long Wittenham, exhibited a Delphinium called Smithii, with large deep blue flowers, having a white eye; Mr. Brown, Sudbury, had Invincible Sweet Pea, a fine kind; and some pretty early-flowering Gladioli, the best being of which Insignis, rich salmon, pitched on three petals with bright violet; Eclipse, pink and white; and Incomparabilis, cream and violet-crimson.

ROYAL HORTICULTURAL: *June* 24 (*Rose Show*).—This, with which the National Rose Show was also incorporated, was good as a whole, and has been remarkable considering the unfavourable condition of the weather for a fine display of Roses. From among the large amount of blooms staged we have only selected the most approved sorts, and such as were shown in good character.

In collections of 72 kinds the best came from Messrs. Paul & Son, Cheshunt, and Mr. Cant, of Colchester. Messrs. Paul had good blooms of Olivier Delhomme, crimson: Madame William Paul, purplish crimson; the glorious yellow Tea Rose Marechal Niel; John Hopper, a variety which has been shown in better condition than usual this season; Princess Mary of Cambridge, pink, with a paler shade towards the extremities of the petals; Xavier Olibo, a new deep velvety shaded crimson, beautiful when about half-blown; Madame Boll, rose; Gloire de Santenay, rosy crimson; Rusilion Radclyffe, a useful crimson kind; Prince de Porcia, crimson scarlet; and Souvenir d'Elise, large and beautiful. From Mr. Cant came Madame de Canrobert, blush; Comtesse de Chabrillant, large and fine; Maréchal Niel, Madame Clara Wood, bright crimson scarlet; Duc de Rohan, shaded rosy crimson; Devoniensis, in charming condition; Madame Victor Verdier and Victor Verdier, both excellent; Marguérite de St. Amand, not unlike Princess Mary of Cambridge in colour; Xavier Olibo, and Niphetos. Mr. Keynes, of Salisbury, furnished good blooms of Centifolia roses, rose shading off to lilac; Madame Sertot, white; François Lacharme, bright rosy crimson; Triomphe de Rennes, yellow, beautiful when nearly half-blown; Baron A. de Rothschild, brilliant crimson scarlet; Pierre Notting, beautiful violet-shaded purplish crimson; Mdlle. Bonnaire,

white, tinged in the centre with pink; Duchesse de Caylus, bright crimson, quite a first class kind; John Hopper; and Maréchal Niel. In Mr. Francis's collection and also in those of others were likewise some good blooms.

Awards.—72: equal 1, Messrs. Paul & Son and Mr. Cant; 2, Mr. Keynes; 3, Messrs. Francis.

In stands of 48 blooms, three trusses of each, Messrs. Paul & Son had beautiful examples of Xavier Olibo, Olivier Delhomme, Le Rhone, fine shaded velvety crimson scarlet; Virginal, white, with a slight tinge of pink in the centre; François Lacharme; Eugène Verdier, a very dark velvety-shaded sort; Marguérite de St. Amand, John Hopper, and Baron Gonella, salmon-rose. From Mr. Keynes came Pierre Notting, Laurent Descourt, in the way of Pierre Notting, but even more heavily shaded with violet; Devoniensis; La Tour de Crouy, salmon-rose, large and fine; Madame Clemence Joigneaux, violet shaded rose; Gloire de Dijon, Victor Verdier, Duc de Rohan, Maréchal Niel, Maréchal Vaillant, crimson; Madame Caillat, lilac shaded crimson; F. Lacharme, Beauty of Waltham, Cloth of Gold, Madame Furtado, in fine condition; Madame Charles Wood, an excellent bright rosy-crimson; John Hopper, and Triomphe de Rennes. In the collections of Messrs. Francis and Turner, both of whom showed in this class, we noticed Coupe d'Hébé, Comtesse de Chabrillant, Beauty of Waltham, Joseph Fiala, Duchesse de Caylus, Anna Diesbach, large full rose; Alba rosea, one of the most beautiful of all light-coloured Roses; Charles Lefebvre, La Reine, Jules Margottin, Dr. Andry, a good crimson; General Castellane, rosy crimson; Madame Vidot; Prince of Wales, rosy crimson; Maurice Bernardin, and La Brillante.

Awards.—48: 1, Mr. C. Turner; 2, Mr. Keynes; 3, Messrs. Francis; 4, Messrs. Paul & Son.

In the class of 24 varieties, three trusses of each, the best exhibition came from Mr. Cant, among whose blooms were good examples of Marie Baumann, bright rosy crimson, large and full; F. Lacharme; Prince Camille de Rohan, dark shaded crimson; La Brillante, bright crimson scarlet; Mr. Rivers, and Mdlle. Bonnaire. From Messrs. Paul & Son came Queen Victoria, large delicate blush; Olivier Delhomme, and La Ville de St. Denis, rose, large and full. Mr. Turner contributed, among others, good blooms of Senateur Vaisse, La Reine, Marguérite de St. Amand, Maurice Bernardin, bright crimson; La Tour de Crouy, Jules Margottin, and Comtesse de Chabrillant. Mr. Keynes had Baron A. de Rothschild, fiery crimson scarlet; Madame Clémence Joigneaux, violet-shaded rose; Joseph Fiala, fine violet-shaded crimson scarlet; Madame C. Wood, and Madame Furtado in the shape of three pretty buds. Messrs. Francis's stand contained blooms of Prince Impérial, a large peach coloured variety, John Hopper, and others.

Awards.—24: 1, Mr. Cant; 2, Messrs. Paul & Son; 3, Mr. Turner; 4, Mr. Keynes; Commended, Messrs. Francis.

In the class of 24 kinds, one truss of each, the best came from Mr. Turner, who had beautiful examples of Le Rhone, Duchesse de Caylus, Madame Furtado, Josephine Guyot, crimson; Madame C. Wood, Gloire de Dijon, Devoniensis, Madame Victor Verdier, Jules Margottin, and La Reine. Messrs. Paul & Son had, among others, Devoniensis, Le Rhone, Rubens, Marie Baumann, and Victor Verdier. From Messrs. Paul & Son came Baron A. de Rothschild, Sénateur Vaisse, Maréchal Vaillant, Madame Furtado, Princess Mary of Cambridge, Alphonse Damaizin, Wm. Griffiths, an old but still good Rose, and Lælia, the last a peach coloured kind of large size. Mr. Keynes contributed Maréchal Niel, Comtesse de Chabrillant, John Hopper, Madame C. Wood, Charles Lefebvre, and Eugène Desgaches, the last a beautifully coloured sort.

Awards.—24: 1, Mr. Turner; 2, Mr. Cant; 3, Messrs. Paul & Son; 4, Mr. Keynes.

Amateurs' classes were well supported. In that of 48 varieties, 1 truss of each, the best came from Mr. Hedge, Reed Hall, Colchester, who had fine blooms of Pierre Notting, F. Lacharme, Madame C. Wood, La Boule d'Or, which in the bud state is beautiful; Marie Baumann, William Griffiths, Madame Villermoz, Souvenir d'Elise Varden, creamy white, tinged with fawn in the centre; four fine blooms of Cloth of Gold; Madame Bravy, creamy white; Anna Diesbach; and Mathurin Regnier. From Mr. Moffatt, gr. to the Hon. Mrs. Maynard, came Souvenir de la Malmaison, Beauty of Waltham, Charles Lefebvre, Gloire de Dijon, Devoniensis, Empéreur de Maroc, a very dark kind; Madame Boll, rose, large and full; and Impératrice Eugénie, small blush. Mr. Ingle, gr. to C. G. Round, Esq., Colchester, contributed Souvenir d'Elise, Eugène Desgaches, both beautiful when about half blown; Devoniensis, Mrs. Rivers, Madame Victor Verdier, George Paul, crimson; Madame Knorr, lilac with a darker coloured centre; Caroline de Sansal, Maurice Bernardin, and Lord Macaulay, the last a dark shaded crimson. Mr. Hollingworth, Maidstone, furnished Madame Victor Verdier, Spotted Queen, a carnation striped peach coloured sort, and others in good condition; and from Mr. Chard, gr. to Sir F. H. Bathurst, Bart., Salisbury, came Joseph Fiala, L'Enfant Trouvé, one of the best of the pale yellow sorts; Rev. H. Dombrain, Comtesse Chabrillant, and others.

Awards.—48: 1, Mr. Hedge; equal 2, Mr. Moffatt and Mr. Ingle; 3, Mr. Hollingworth; 4, Mr. Chard.

In the Class of 36 kinds, the best blooms were furnished by Mr. Ingle, who had among others Madame Boutin, crimson; Beauty of Waltham, Madame Bravy, Madame Furtado, Prince Léon, still a good old Rose; and Mrs. Rivers. Mr. Hedge contributed Louise Magnan, one of the best of the pale coloured Hybrid Perpetuals, Cloth of Gold, Souvenir d'Elise Varden, Comtesse de Chabrillant, Anna Diesbach, Chas. Lawson, which earlier in the season is one of the very best of pot Roses; and Madame Bravy. From Mr. Marcham, gr. to E. Oates, Esq., Hanwell, and Mr. Chard, came Oriflamme de St. Louis, brilliant crimson scarlet, and other fine kinds. Dr. Cooper, Slough, had General Jacqueminot and François Louvat, in excellent condition.

Awards.—36: 1, Mr. Ingle; 2, Mr. Hedge; equal 3, Mr. Chard and Mr. Marcham; 4, Dr. Cooper.

In the Class of 24 kinds the best blooms came from Mr. Postans, Brentwood, who had among others Madame Zoutmans, white; Triomphe de Caen, velvety crimson scarlet; Charles Lefebvre, Madame Boll, L'Esmeralda, rosy crimson; F. Lacharme; Prince Camille de Rohan and Empéreur de Maroc, both very dark kinds; and Olivier Delhomme. From Mr. Dennis, Folkington, came Bougère, Cloth of Gold, and Madame Maurin, a white Tea Rose. Mr. May, gr. to C. N. Worthington, Esq., Caversham Priory, sent Lord Macaulay in good condition, also Devoniensis, and others. The Rev. Canon Fisher, Salisbury, and Mr. Plester, Elsenham Hall, both had good exhibitions, as had also the Rev. V. Knox Child, Little Easton. In these stands we noticed Cloth of Gold and La Ville de St. Denis in unusually good condition.

Awards.—24: 1, Mr. Postans; equal 2, Mr. May and Mr. Dennis; equal 3, Mr. Plester and the Rev. Canon Fisher; 4, Rev. V. K. Child.

Among exhibitions of 12 kinds the best came from the Rev. V. K. Child, who had Cloth of Gold, Gloire de Dijon, Chas. Lefebvre, and Madame Bravy, in beautiful condition. Among Mr. Postans' best blooms were John Hopper, Marie Baumann, Victor Verdier, and Chas. Lefebvre. From Mr. Soder, Mr. Dennis, and Mr. Plester came Sénateur Vaisse, Jules Margottin, Chas. Lefebvre, and Auguste Mie, in great perfection.

Awards.—12: 1, Rev. V. K. Child; 2, Mr. Postans; 3, Mr. Dennis; 4, Mr. Plester.

Among new Roses, the best appeared to be Chas. Rouillard, lilac, with a rosy centre; Alfred Colomb, bright cherry, large and full; Madame Fillion, light pink, with inner shade of rose, a very double medium-sized sort; Marguérite de St. Amand, a large silvery pink kind, which has been noticed already in our columns; Josephine de Beauharnais, a promising kind; Xavier Olibo, deep velvety crimson; and the glorious yellow Tea Maréchal Niel.

Awards.—18: 1, Messrs. Paul & Son; 2, Mr. John Fraser; 3, Mr. Keynes; 4, Mr. Cant.

In the Class of 12 Trusses of any new kind of 1864 no 1st prize was awarded; but Messrs. Paul & Son received a 2d prize for blooms of Marguerite de St. Amand, a large peach-coloured sort with a rosy centre. In the Class of 12 Trusses of any other new kind a 1st prize was given to Mr. Cant, who showed the last-named variety. Mr. Keynes received a 2d prize for Madame Moreau, a handsome crimson kind, but rather too flat; and to Pierre Notting, from Messrs. Paul & Son, a 3d prize was awarded.

In the class of Yellow Roses the best came from Mr. Hedge, who had L'Enfant Trouvé, in charming condition; Narcisse, La Boule d'Or, Triomphe de Rennes, Cloth of Gold, and Céline Forestier.

In other exhibitions of yellow Roses Mr. Hedge was also 1st with Narcisse, Smith's Yellow, Cloth of Gold, Mélanie Oger, and L'Enfant Trouvé. To Messrs. Paul & Son was awarded a second prize for Vicomtesse Decazes, Auguste Vacher, Louise de Savoie, Gloire de Dijon, Madame Falcot, Céline Forestier, and Madame William.

In the class of Tea-scented Noisette Roses, single trusses, the best came from Mr. Ingle, who had Eugène Desgaches, Devoniensis, Madame Bravy, Madame Leauville, salmon-rose; La Boule d'Or, Gloire de Dijon, Triomphe de Rennes, Gloire de Bordeaux, Comtesse Ouvaroff, Souvenir d'un Ami, and Josephine Malton. Mr. May and Mr. Hedge also showed in this class, the prizes being awarded in the order in which the names stand. Among Nurserymen Messrs. Paul & Son received the 1st prize for Devoniensis, Souvenir d'un Ami, Louise de Savoie, Gloire de Dijon, Madame Villermoz, Vicomtesse Decazes, Homer, Souvenir d'Elise, Alba rosea, President, Céline Forestier, and Comte de Paris. Mr. Cant and Mr. Keynes received 1st and 2d prizes for collections in which were fine blooms of Maréchal Niel, Devoniensis, and America.

In the class of Tea-scented and Noisette Roses, distinct kinds, single flowers, the 1st prize was awarded to Mr. Cant, in whose collection were good blooms of Triomphe de Rennes, Céline Forestier, Niphetos, Madame Villermoz, and Souvenir d'Elise. Mr. Hedge and Mr. Keynes also showed in this class.

Vases of Roses were nearly the same as those shown at the Crystal Palace. The best came from Mr. Marlow, gr. to J. Wigan, Esq., Mortlake; Mr. Hedge had the next in point of merit; and a third came from Mr. Soder, gr. to O. Hanbury, Esq., Brentwood.

Bouquets of Roses were shown for the most part in Hyacinth glasses, and some of them were very pretty. The 1st prize was, however, awarded to a clumsy-looking set in tin vases covered with Moss.

The best collection of Moss Roses came from Messrs. Paul & Son. Among them were the White Bath, Crested Moss, and others; but we missed the good old common Moss, than which few are greater favourites.

Roses in pots in a small state were beautifully in flower; but in the end of June exhibitions of this kind are comparatively ineffective. Among new kinds the best were Rushton Radclyffe, Madame Victor Verdier, Centifolia rosea, Pierre Notting, Alpaide Rotalier, Belle Normande, Mdlle. Amélie Halphen, Madame A Verschaffelt, Maréchal Niel, Madame de Canrobert, and Semiramis. These, however, we hope still to meet with in better condition.

In a collection of plants from Mr. Bull were some nice examples of Lilium auratum in flower. Mr. Bird, gr. to the Hon. A. F. Ashley, Epping, had 36 sorts of Hunt's Sweet Williams. Pinks came from Mr. Turner and Mr. Bragg; and from Mr. Hooper, Bath, came Pansies, Pinks, Carnations, and Phloxes. Messrs. Barr & Sugden, and Messrs. Carter had some charming examples of Fern Cases. The latter also showed a fine sample of Laxton's Early Prolific Pea, in some of the pods of which were as many as 11 peas.

GREAT YORK HORTICULTURAL EXHIBITION.—The Eighth Annual Exhibition took place at York on the 13th and 14th inst. These exhibitions are now looked forward to with so much interest, and such liberal prizes are offered, that a good exhibition is certain to be the result. Such was the case on this occasion, and the very handsome building erected in the Borsham grounds for the Art Industrial Exhibition soon to be opened, was well filled with plants, fruits, and flowers.

In the class for 12 Stove and Greenhouse Plants, Mrs. Cole & Sons and Mr. Baines, gr. to H. Micholls, Esq., both of Manchester, were pitted against each other with two very fine lots, but the 1st prize justly fell to Mrs. Cole & Sons. In this lot were very fine examples of Erica Candolleana, Dipladenia amabilis, Aphelexis macrantha purpurea, and Bougainvillea glabra. Mr. Baines had in his lot a very fine Erica obbata, superbly bloomed, Genetyllis tulipifera, and a very fine Erica tricolor Leeana. In the class for 6 Stove and Greenhouse Plants there was a very keen competition, the three prizes falling respectively to Mr. Baines, Mr. Richards, Grimstone Park, and Mr. Davidson, gr. to J. Y. Yarborough, Esq., and the last-named exhibitor also took the 1st prize for a Specimen Greenhouse Plant, with one of the best grown and bloomed examples of Phœnocoma prolifera Barnesii ever seen, the colour being very bright indeed. Some very fine ornamental-foliaged plants were shown, and for 12 plants Mr. Baines was 1st, in whose lot were an extra fine Anæctochilus xanthophyllus, and a Sarracenia purpurea 3 feet through. Mr. Broadley, gr. to Wm. Stewart, Esq., was a good 2d; and his beautifully coloured Croton pictum was worth seeing. Some capital Ferns were shown, both exotic and British. Mr. Baines, of Manchester, had some fine Exotics, including two superb Gleichenias, and a grand plant of the graceful Davallia tenuifolia; whilst Mr. Lazenby, gr. to Joseph Buckle, Esq., York, and Mr. Baines, of the Museum Gardens, York, showed some beautiful things, amongst them Todea superba, the rare Trichomanes angustatum, and a pretty lot of Hardy Ferns, Mr. Lazenby taking 1st prizes. A few good Cape Heaths were shown, the first six from Mr. Richards being specially well grown. The Pelargoniums from Mr. May, of Bedale, were very fine; and those from Henry Steward, Esq., York, were really fine and well grown. Mr. Edwards also exhibited in these classes.

Bedding and Zonal Pelargoniums are very much encouraged here, and have an attractive appearance, the most noticeable amongst them being Italia Unita and Sunset, which showed up well amongst the greener-leaved kinds. Beauté de Suresnes, and the Rev. H. Dombrain, are both superb trussing kinds, and Striking is one of the finest of all. There was a class for 20 Bedding Plants, and these were grown in broad pots or pans, and made a very pretty group. Some good Fuchsias were shown. Messrs. Backhouse & Son contributed a new variegated Rose, Moss Jean de Montfort, with the leaves distinctly blotched with gold; this for a variegated Rose was as good as could be wished for.

In the classes for New Plants, Pandanus ornatus was placed 1st. For new Ferns, 1st, Microlepia scabra, a noble Fern from the Museum Gardens; 2d, Athyrium Filix fœm. var. Victoriæ, from Mr. Lazenby. A few good Orchids were shown, and in this class Mr. Baines, of Manchester, was placed 1st, for six and three Orchids, and amongst them were good examples of Oncidium luridum guttatum, Vanda Lowii, and Lælia purpurata. The Rev. W. Richmond, Leeds, was 2d in each class, his best being Oncidium crispum grandiflorum, and Vanda tricolor. Mr Baines, of the Museum Gardens, contributed the very curious Philodendron imbricatum, and a beautiful group of Alpine plants, consisting of Saxifraga Cotyledon, S. Ægilops, S. cymbidium, Saponaria ocymoides, Potentilla tridentata, Ranunculus uniflorus, Sempervivum stoloniferum, Primula mollis, Stylidium fasciculare, Lilium tenuifolium, Achillea Clavennæ, and Isolepis gracilis. These were tastefully arranged in a rustic stand, fitted up with masses of Cork tree bark, with Ivy trained over it. May the time soon come when these little gems will be more sought for!

Roses formed the chief feature of the cut flower department, the chief competitors being Mr. John Keynes, Salisbury, and Messrs. Paul & Son, Cheshunt. Mr. Keynes was 1st for 48 blooms, 2d for 36, and 1st for 24 blooms, some of the best being Maréchal Niel, Mdlle. Amélie Halphen, Monte Cristo, King's Acre, Monsieur Pontbriant, Marguérite de St. Amand, Comtesse de Paris, Madame Caillat, and Auguste Rivière. Messrs. Paul & Son stood 2d for 48 blooms, 1st for 36, and 2d for 24, and in these stands were fine blooms of Princess Mary of Cambridge, beautiful in bud; Achille Gonod, a superb Maréchal Niel, André Leroy d'Angers, Cleostine, fine; Madame Julie Daran, and Maréchal Vaillant. Mr. George Edward was 3d for 24 blooms. A class for 12 White and Yellow Roses, three blooms of each, nor less than six kinds, brought out two lots, Messrs. Paul & Son being 1st with Devoniensis, Gloire de Dijon, Louise de Savoie, Niphetos, Auguste Vacher, Narcisse, Alba Rosea, Harrisoni, Céline Forestier, Madame Falcot, and Madame Alfred de Rougemont, which is a very pale pink. Mr. Keynes had Louise de Savoie, Devoniensis, Souvenir de la Malmaison, Gloire de Dijon, Madame Sertot, Boule d'Or, Triomphe de Rennes, American, Cloth of Gold, Niphetos, Maréchal Niel, and Mdlle. Bonnaire.

A very fine lot of Verbena blooms were shown, the chief exhibitors being Mr Edward, Mr. Nelson, and W. Dove, Esq., all of York. Mr Baines, of the Museum Gardens, contributed a very pretty group of Pyrethrum flowers, and they well deserve the attention of amateurs, for rapid improvement could soon be effected. Mr. Featherstone, gr. to Thomas Butler, Esq., Leeds, took the 1st prize for a group of wild flowers, which were very tastefully arranged, and was deservedly admired. Mr. Featherstone was also awarded the 2d prize for a dinner-table decoration, Mr. Kingston, of Brough, being placed 1st.

Two fine Vines in pots from Miss Broadley's garden, and Mr. Richards obtained 1st and 2d. Mr. Richards and Mr. Gray, gr. to the Earl of Zetland, were placed 1st and 2d for fine trays of fruit; and for two bunches of Black Hamburgh, Mr. Meredith, of Garston, was 1st; Mr. Thomson, gr. to J. Cliff, Esq., Wortley, near Leeds, 2d; and Mr. J. Wallis, gr. to J. Dixon, Esq., Congleton, 3d. There were six other exhibitors in this class, and we have never seen a finer batch at any exhibition. In white Grapes, Buckland Sweetwater, exhibited by Mr. Kirk, gr. to Viscount Halifax, was 1st; Golden Hamburgh, from Mr. Meredith, 2d; and White Frontignan, from Mr. Gray, gr. to the Earl of Zetland, 3d. Mr. Taylor, of Temple Newsam, near Leeds, took the 1st prize for Pine-apples with a grand Black Prince; and Mr. Jefferson, gr. to J. Garside, Esq., Worksop, was 2d. Some very fine Peaches were shown, and a dish of Vanillas from Mr. Bennett, gr. to G. S. Foljambe, Esq., Worksop, received an extra prize.

In a pecuniary point of view, also, the exhibition was a success, notwithstanding the unfavourable weather of the first day. York Show is known to be always a great show, and the people will go from far and near, and over 800*l*. was, we hear, taken in shillings during the second day.

The Committee deserve great credit for their anxiety that everything should be done honestly and well, and everything that can be done for the success of the fete is done at York. Mr. Wilson, the secretary, as well as every member of the Committee, work hard to insure success. Mr. B. S. Williams was one of the judges, and was so much pleased with the Show that he gives 10*l*. next year as a first prize for Orchids.

THE SCOTTISH PANSY SOCIETY held its annual exhibition on the 13th inst. in an adjoining room to that in which the Royal Caledonian Horticultural Exhibition (see p. 590) was held, and although it lacked somewhat of the patronage of bygone years, it is far from being an effete institution. Many of the old members support it both by purse and person vigorously. The premier stands show no falling off as to the cultivation of this peculiarly-favourite northern flower.

The chief honours among nurserymen were divided between Messrs. Downie & Co., and Messrs. Dickson & Co. The best 24 were Mr. J. White, J. B. Downie, Invincible, Imperial Prince, Cupid, John Elstin, General Young, Chancellor, Mary Lamb, Wm. Speirs, George Wilson, Miss Williamson, Peeress, Princess of Wales, Eclat, John Downie, Countess of Rosslyn, Miss Muir, Lady L. Dundas, Miss E. Cochrane, Andrew Smith, Lavinia, which was the best light ground; Cherub, best yellow self; and Alex. McNab, which was the best dark, and also the best Pansy in the room. Dickson & Co. had, besides those not named, Ossian, Snowflake, General Lee, Prince of Prussia, Milton, Waverley, Emblem, Chancellor, Perfection, and several seedlings, along with George Wilson, which was best yellow ground, and Haddon, which was the best straw self in the room.

In the class for 18, Messrs. Duncan, Glencorse; John Fraser, Belmont; and George Wilson, Dunse; were placed in the order in which they are named, the first named having much the finest finished, although the smallest blooms. Eclat, General Young, Cupid, Mrs. Williamson, Mary Lamb, Lady L. Dundas, and Imperial Prince were very fine. In the class for 12, Charles Watson, Esq., Dunse; Mr. John Beveridge, Bonnington; and Mr. James Fergie, Dunse; were placed in the order given. In the class for six, Mr. Fergie had fine blooms of Andrew Smith, Lady L. Dundas, which was the best white ground among gardeners or amateurs, and J. Graham, George Wilson, and Lavinia, which was an extra fine bloom. Mr. Hugh Adair had also a good stand, including Eclat, which was best dark self, and Cherub, which was best yellow.

Not the least interesting feature in connection with the joint exhibition was the presentation of a very handsome writing desk, surmounted with silver, and a handsome and appropriate inscription, to Mr. Wm. Young, the secretary, who has also laboured long and faithfully as secretary for the "Edinburgh Horticultural" without fee or reward, and to whom the members of both Societies paid a warm tribute for his indefatigable exertions for promoting so disinterestedly the cause of horticulture.

ENTOMOLOGICAL: *June* 4.—Sir John Lubbock, Bart., President, in the chair. Dr. Wallace sent a Note on the brilliant colours of the larvæ of the Ailantus silkworm, which had been insufficiently represented in the plate published in the Transactions of the Society, in consequence of the specimens having been sent from a distance, which had destroyed the beautiful bloom with which they are covered. He also made some observations on the new Oak silkworm, Saturnia yama-mai. Professor Brayley communicated an extract from a report made by Mr. Consul Zohrab to the Foreign Office on the trade of Burdiansk, recording the ill-effects produced by the bite of a large black spider, which appeared amongst the Wheat at

harvest time, and had bitten more than 300 persons; this bite was followed by a hard white spot, which, when cauterised, produced a fresh wound. Ordinarily the spider fed on locusts. Mr. M'Lachlan exhibited the cocoon of a caddice-fly, of the genus Lemnophilus, the larva of which had fixed it on a Rush, which had gradually grown to the height of 2 feet above the water, whereby the inclosed pupa became dried up; showing a fault in the instinct of the larva not often met with in the insect tribes. Mr. Pascoe exhibited some remarkable nidrous beetles collected in Western Australia by the Rev. G. Bedford, of Freemantle, chiefly in ants' nests. Professor Westwood exhibited drawings and read descriptions of several new species of Goliath beetles from tropical Africa, chiefly from the collections of J. Aspinall Turner, Esq., and Louis Mueschler. Mr. Stainton exhibited specimens of a small moth, Gelechia leucomelanella, which he had reared from galls found upon Gypsophila Struthium at Mentone in the spring. Mr. C. A. Wilson, of Adelaide, in South Australia, sent some notes on the Buprestidæ of New South Wales.

Notices of Books.

A Manual of Weather-casts and Storm Prognostics on Land and Sea. By Andrew Steinmetz. Routledge. Pp. 207.

In this little volume are accumulated a great number of facts, and perhaps a few fancies, upon a subject of great importance to us all, but one in which tillers of the soil in all degrees are particularly interested. Every gardener is more or less of a meteorologist, and it is much to be regretted that more of them do not tabulate their observations, or render them in some way useful to their fellow labourers. To many the sight of ruled columns, an array of figures, and all the painful detail of mean, maxima, minima, &c., are sufficiently repulsive; all the more so when we have to arrive at these details it is necessary to be punctual in one's attendance at the thermometer, barometer, rain-gauge, &c., at 8 A.M. or 6 P.M., or whatever hour the latter may be in meteorological computation. To such may be recommended the observation of floral barometers. The expansion and closing of flowers, upon which Linnæus laid some stress, has been too lightly considered in subsequent times—has been treated too much in the light of a toy not deserving of serious attention. That this is not just we were some years since convinced when observing the times at which the several species of Nymphæa closed or opened in the aquarium—and what effect a cloudy or a sunny day had upon these processes. Nymphæa blanda is worthy of attention in this respect, but in truth almost any of the Water Lilies might give valuable indications if attentively watched. The common Pimpernel, Anagallis arvensis, is an exceedingly good indicator of approaching rain, as every school-boy knows; but as neither Water Lilies nor Pimpernels are always in bloom, it is to be wished that observers would notice the effects of the varying condition of the atmosphere on leaves. That something is to be learnt therefrom we are convinced, from the merely superficial observation of the leaves of the Rhododendron.

But the gardener or the agriculturist has it in his power not only to foretell with some degree of accuracy the coming weather, but he can to a certain extent secure what he wishes; he can become a rain-maker more potent than any "noble savage" looked up to by his compatriots on account of his supposed power of drawing water from the sky. By man's agency the climate of the Island of Ascension, of parts of Brazil, of Nicaragua, nay, of parts nearer home, such as the Landes, the Frisches Haf near Königsberg, has been materially modified. It is, however, quite unnecessary to dilate upon the advantages to the plant cultivator, be he agriculturist or horticulturist, of paying some attention to meteorology, and the observations useful to him may be made so easily, and with so little expenditure of time or labour, that it is surprising more is not done in this way. Speaking, for instance, of the rainfall of any district, Alphonse de Candolle (than whom there is no man better entitled to speak on such a subject) says that for the purposes of the cultivator the simple observation of the number of days per year upon which rain, little or more, falls, at any given station, is more valuable, and more trustworthy, than the more elaborate record furnished by the study of the rain-gauge.

Would-be weather prophets will find the elements of their craft popularly and agreeably explained in the little volume before us.

BOOKS RECEIVED.—The fourth annual edition of the *Royal Guide to the London Charities*, by Herbert Fry (Hardwicke) is an alphabetical list of such charities and public institutions as are wholly or in part dependent on public subscription.——We are glad to welcome a second edition of Colonel Greenwood's clever book, *Rain and Rivers* (Longmans), disfigured though it be by a too flippant style, and a too liberal infusion of personalities.——*The Country House: a Collection of Useful Information and Receipts*, by I. E. B. C. (Cox), is a very miscellaneous assemblage of "receipts" that have appeared from time to time in the columns of the *Field*. The compiler does not often tell us what his practical experience of the "facts and useful hints" has been—which, for instance, of the eleven or more remedies for chilblains he prefers. Some of the recommendations seem obscure, and are not always safe; for instance, we should strongly object, even when suffering from sciatica, to "inject creasote and morphia under the skin where the constant gnawing pain is most troublesome." No one we should hope would be foolish enough to act upon such advice. Should this "collection" reach a second edition it is to be hoped that it will be very carefully revised, especially in those portions relating to "ills and evils," otherwise it will certainly be better to

> "' * ' bear those ills we have,
> Than fly to others that we know not of."

Florists' Flowers.

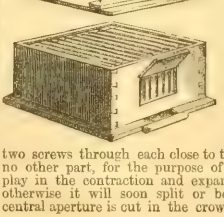
ROSES.—Duchesse de Caylus has now bloomed; she is quite first-rate: she will be found to be the best Rose of the year. I sent a flower of it to the Rev. Mr. Price, my clergyman, who pronounced it to be a most beautiful Rose. It is globular, perfect in outline, quite full to the centre, clear crimson, fixed in colour, a good lasting flower, and of great substance of petal. Rushton Radclyffe is also out, and very good. The shoots from the base of the plants are from 16 to 20 inches long, with fine foliage. The petals are not so stout (though of fair substance) as those of the former; but it has these good qualities: it is an abundant and constant bloomer through the season; it is always full to the centre, and of correct outline, the petals being always orderly; it never refuses in any weather to open; nor have I ever seen an unshapely bloom.

The Duke of Wellington, rich crimson, darker shaded, is first-rate as a bloom, but I fear it is not a good grower. Maréchal Niel has never done well with me, either on a Briar or on the Manetti. It appears to be from the Cloth of Gold, and suited more to a conservatory than out of doors—time will show. It is now raining, and I shall take up my Manetti plant of it, and put it in front of my little Grapery. All yellow Roses like extreme heat, plenty of manure, and lots of water. My servant, who is parish clerk, and goes home for Sunday, says the Roses at Rushton are abundant, and very fine; that Maréchal Niel is doing the worst of the standards; and that the new Roses of last year are no great "shakes." He still sticks to Charles Lefebvre, Sénateur Vaisse, and "Old Jewels" (Jules Margottin). *W. F. Radclyffe.*

ROSE PESTS.—I have hitherto been of opinion that this year Roses had escaped their usual number of enemies, seeing that mildew and aphides are comparatively scarce, but I am sorry to say that another pest, viz., the Rose maggot, is this season more plentiful among my Roses than ever I remember to have seen it. It may be found at the top of luxuriant shoots, into which it burrows a few inches, entirely destroying the fine blooms which such shoots invariably produce later in the season. I have to-day spent several hours in destroying this grub, which can be easily detected at the ends of the shoots, which will either have a half dead and stunted appearance, or a small dark deposit similar to black snuff will be perceptible on them; in either case a maggot is sure to be there. As catching and killing is the only remedy, I find that a pair of scissors is the most handy tool to use in the work of destruction. Beginning at the top of the shoot, the operator should give about three or four snips, at distances of about half an inch apart, as far as the inside gallery or hole is perceptible, and he will soon find that the grub has been cut; this is the quickest and most effectual method of getting rid of the evil with which I am acquainted. My Standard Roses are not nearly so much damaged by maggot as those pegged down, the luxuriant shoots on which, now about 3 feet high, have suffered terribly. I have this day killed many hundreds if not thousands of the grub in question. *Chas. Jas. Perry, Castle Bromwich, June 25.*

The Apiary.

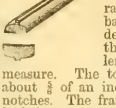
BEE CULTURE: HIVES.—The Woodbury bar and frame hive is either of wood or straw, 14½ inches square by 9 inches deep in the clear—inside measure. The sides are dovetailed together, if wood is used as the material of the hive, in addition to which, to prevent the possibility of any giving away, long narrow gimblet holes, ½ inches deep, are bored at each corner through the joints, endeavouring to make them meet in the centre. Pins of iron wire, of 3 inches in length, are driven in at each corner. A rabbet, ½ inch deep, is cut out inside from the top of the back and front sides of the box. Notches for the frames, ⅜ inch wide, by ¼ inch deep, are sunk in the rabbetted portion, so that when the top-board is in place, there will be exactly ⅜ inch space between it and the tops of the frames. A window is usually cut out at the back. This may be of any length, to suit the taste of the owner; but whatever the dimensions chosen, should be regulated by the frames and the interspaces, so that the two sides of the aperture may permit of so many frames and their outside interspaces being visible. The usual size is 7½ inches long by 4 inches high, which allows of five frames and six interspaces being exposed to view. If care is not taken in this apparently insignificant matter, the appearance of the interior from the back window is greatly spoiled, although at any time the appearance of the interior of a frame hive is but little inviting. In the engraving, the window, for purposes of illustration, is represented as situated in the front, but it is better to have it at the back. The top board is of inch stuff, keyed on the upper surface by two cross pieces 2 inches wide by 1¼ inch thick. If made in two pieces, let the joints be ploughed and tongued; after driving in the cross pieces, drive in two screws through each close to the junction and in no other part, for the purpose of allowing sufficient play in the contraction and expansion of the wood, otherwise it will soon split or become warped. A central aperture is cut in the crown-board for feeding and occasional ventilation; this is covered when not in use by a round block of wood.



The floor-board is of 1" inch stuff, 17½ inches square; strongly keyed on the under side. An entrance way 4 inches wide by ⅜ of an inch deep, is cut out of the upper side of the floor-board on a level until within the hive, when it gradually slopes away to nothing towards the centre. A small alighting board is attached in front of the entrance.

The frames for this hive are 10 in number, and may be constructed as simple solid frames, or with the addition of the loose bars, as shown opposite. This latter adaptation is an invention due entirely to Mr. Woodbury, and is of exceeding utility in the hands of experienced apiarians.

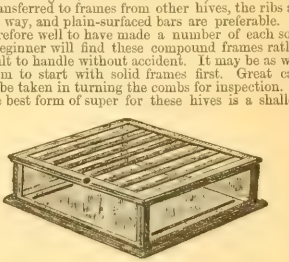
I have adopted it almost entirely throughout my apiary. By means of the compound frames, the bars are available either for the framed stock hives, or for bar-supers; as well as for small nucleus boxes for the raising of artificial swarms adapted for bars only. The solid frame is made of deal, ⅞ of an inch wide by ⅜ of an inch thick when planed; is 13 inches in length by 7½ inches deep, inside measure. The top bar is carried beyond the frame about ⅜ of an inch, the projecting ends resting in notches. The frame when in position will be ⅜ of an inch from any part of the interior, with the exception of where it rests. This arrangement affords a free passage for the bees all round their works; and facilitates the manipulation of the frames.



The compound frame is similar to the one just described, with the exception of the top bar being moveable. The bar is 13½ inches long, an eighth of an inch at each end resting in rabbets ⅜ of an inch deep. The projections at the upper sides of the frame for its support in the notches cut in the box, are fastened on by means of glue and copper brads. This, the weakest part of the frame, is frequently liable to give way. I have, with great advantage, substituted a dovetail, which, with the addition of copper brads, greatly increases its stability.

Again, there is another improvement to be noticed in the formation of the bar. A narrow rib, about ⅛ of an inch each way, is added to the centre of the lower surface. This is usually formed in the solid by taking wood ⅛ an inch thick and cutting away the superfluous material. The chief object of this ribbed bar is induce the bees to construct straight combs, though I am bound to confess that it does not always answer the purpose intended. I have found a rib of ⅛ or ⅜ of an inch wide by ⅛ inch deep to be more efficacious. Previous to use, the rib is slightly coated with melted wax. When guide combs are attached, or when combs are transferred to frames from other hives, the ribs are in the way, and plain-surfaced bars are preferable. It is therefore well to have made a number of each sort. The beginner will find these compound frames rather difficult to handle without accident. It may be as well for him to start with solid frames first. Great care must be taken in turning the combs for inspection.

The best form of super for these hives is a shallow glass box, 13 inches square by 6 inches deep, fitted with seven or eight of the same bars as are used with the frames. Or simple boxes, made of ⅞ inch deal, of the same dimensions, will be found equally useful. In the engraving opposite, the super is shown with its adapter, a thin board barely ⅜ inch thick, the same size as the cover for which it is substituted. A slit of 11 inches or 12 inches in length, by ½ inch wide, is cut in the adapter on each of the two sides of the hive, just within the diameter of the super. By giving side communication only, it is supposed that the queen is not so likely to ascend into the upper story. The super, if of glass, must be wrapped with cloths in addition to the protection afforded by the outer case. Pieces of clean worker guide-combs must be attached to the bars. Any other size or form of super may be used, but the apertures for communication must be regulated accordingly. These hives are also beautifully made in straw. A square wooden frame is first put together, and the straw sides, formed by an ingenious process into very solid panels, are subsequently inserted. Mr. Woodbury prefers these as domiciles for the winter quarters of his bees. The top is also of straw let into a wooden frame. Windows are not usually made in the straw hives, but can be added if preferred.



Protection from the weather is afforded by the outer case and roof, constructed in three divisions, as shown in a former Number, at page 391. The lowest position is of half-inch stuff, about 11 inches deep by 17⅜ inches diameter, inside measure. Attached on the outside of the bottom of the four sides, with the exception of a space cut away for the entrance, is a 2-inch moulding, so fixed as to be let down easily over the edges of the floor-board, thus effectually preventing the admission of any wet. Small pins of wood are fixed underneath at the four corners to prevent the crushing of bees. A space is cut away in front to permit of ingress and egress. The roof fits down easily over the case. A second division is added when a super is being worked, or when feeding is carried on, the roof fitting either equally well. Ventilation is afforded by long slits cut

away under the eaves of the roof. The cases are well painted, but no part of the hive itself must be touched with paint.

A single Woodbury or frame hive in an apiary will not be found of any very great advantage. To reap the full benefi. of this system of bee-keeping, no other hive should be used in the apiary. There should always be at hand an extra supply of hives and the various accompaniments, not omitting a large number of spare bars and frames. No straight pieces of worker comb, if in good condition, should ever be thrown away. All can be made available by means of the bars or frames. Having adopted the principle to its fullest extent, I can speak most favourably of the BAR AND FRAME HIVE. *S. Bevan Fox.*

Garden Memoranda.

MR. SALTER'S PYRETHRUMS.—Until very lately these have been in charming condition in Mr. Salter's establishment at Hammersmith; but the very hot weather which we are now experiencing has driven them nearly out of bloom. Among the few still remaining the following are the best, viz., Mont Blanc, white, and dwarf in habit; Virgo Maria, large white; Alfred Salter, rose, large, and very double; Annie Holborn, white with lilac blush centre; Barral, purplish crimson; Carneum plenum, large blush; Carminatum plenum, carmine; Eximium, bright red; Fascination, shaded pink; Floribundum plenum, rosy-pink, a vigorous grower and profuse bloomer; Fulgens plenissimum, large bright red; Galathée, rose, changing to lilac; Gustave Heitz, rose, with a bronzy tinge in the centre; Herman Steinger, rose; Imbricatum plenum, carmine: Iveryanum, rose, apparently dwarf in habit, and early; Lady Blanche, blush tinged lilac, and very double; Madame Billiard, rosy tinted white, round and good in form; Madame Munier, large rose; Mrs. Dix, pink shaded blush, and excellent in form; Rev. J. Dix, rosy pink; Andromeda, rosy pink; Nemesis, showy deep rose, but not very compact; Paul Journu, delicate pink with pale centre; Princess Alexandra, large white; Prince of Wales, carmine; Prince Napoleon, crimson; Purpureum plenum, reddish purple; Roseum album, rosy pink with pale centre; Rose Perfection, clear rose; Princess Mary, blush, with a sulphur centre; Versailles Defiance, rosy lilac, and Wilhelm Kramper, dark rose, changing to lilac. These have all fine Ranunculus-like flowers, the only fault of which is that they are at present as a whole too much alike, and that the plants which produce them are a little too leggy. Planted among herbaceous Pæonies, of which Mr. Salter has a fine collection, or other plants of that description, they have, however, a dressy and gay appearance from the middle of May up to the present time; they must, therefore, be regarded as acquisitions of no inconsiderable value.

In addition to the Pyrethrums, Mr. Salter's glass-houses are at present gay with Zonal and Nosegay Pelargoniums of wonderful beauty. Out of doors Giant Fennel may be worth naming, forming as it does a conspicuous object in shrubbery borders, where its branching spikes of orange-yellow blossoms reach a height of some 8 or 10 feet.

Miscellaneous.

African Climate and Vegetation.—At the end of the hot season everything is dry and dusty; the atmosphere is loaded with blue haze, and very sultry. After the rains begin, the face of the country changes with surprising rapidity for the better. Though we have not the moist hothouse-like atmosphere of the west coast, fresh green herbage quickly springs up over the hillsand dales so lately parched and brown. The air becomes cleared of the smoky-looking haze, and one sees to great distances with ease; the landscape is bathed in a perfect flood of light, and a delightful sense of freshness is given from everything in the morning before the glare of noon overpowers the eye. On asking one of the Bechuanas once what he understood by the word used for "holiness" (boitsépho)? he answered, "When copious showers have descended during the night, and all the earth, and leaves, and cattle are washed clean, and the sun rising shows a drop of dew on every blade of Grass, and the air breathes fresh—that is holiness." The young foliage of several trees, more especially on the highlands, comes out brown, pale red, or pink, like the hues of autumnal leaves in England; and as the leaves increase in size they change to a pleasant fresh light green; bright white, scarlet, pink, and yellow flowers are everywhere; and some few of dark crimson, like those of the Kigelia, give warmth of colouring to Nature's garden. Many trees, such as the Scarlet Erythrina, attract the eye by the beauty of their blossoms. The white full bloom of the Baobab, coming at times before the rains, and the small and delicate flowers of other trees, grouped into rich clusters, deck the forest. Myriads of wild bees are busy from morning till night. Some of the Acacias possess a peculiar attraction for one species of beetle; while the Palm allures others to congregate on its ample leaves. Insects of all sorts are now in full force; brilliant butterflies flit from flower to flower, and, with the charming little sun birds, which represent the humming birds of America and the West Indies, never seem to tire. At the north-eastern end of a marsh, and about three miles from the river, commences a great forest of Palm trees (Borassus æthiopum). It extends many miles, and at one point comes close to the river. The grey trunks and green tops of this immense mass of trees give a pleasing tone of colour to the view. The mountain range, which rises close behind the Palms, is generally of a cheerful green, and has many trees, with patches of a lighter tint among them, as if spots of land had once been cultivated. The sharp angular rocks and dells on its sides have the appearance of a huge crystal broken; and this is so often the case in Africa, that one can guess pretty nearly at sight whether a range is of the old crystalline rocks or not. The Borassus, though not an oil-bearing Palm, is a useful tree. The fibrous pulp round the large nuts is of a sweet fruity taste, and is eaten by men and elephants. The natives bury the nuts until the kernels begin to sprout; when dug up and broken, the inside resembles coarse Potatos, and is prized in times of scarcity as nutritious food. During several months of the year, Palm-wine, or sura, is obtained in large quantities; when fresh it is a pleasant drink, somewhat like champagne, and not at all intoxicating, though after standing a few hours it becomes highly so. Sticks a foot long are driven into notches in the hard outside of the tree—the inside being soft or hollow—to serve as a ladder; the top of the fruit-shoot is cut off, and the sap, pouring out at the fresh wound, is caught in an earthen pot which is hung at the point. A thin slice is taken off the end to open the pores, and make the juice flow every time the owner ascends to empty the pot. Temporary huts are erected in the forest, and men and boys remain by their respective trees day and night, the nuts, fish, and wine being their sole food. The Portuguese use the Palm-wine as yeast, and it makes bread so light that it melts in the mouth like froth. *Livingstone's Zambesi and its Tributaries.*

Japanese Pears.—The emissaries of the Dutch Company never failed to admire in their journeys to the court of Yeddo the large Pears exposed in the shops, and perfectly preserved even in July. Some even are kept for a longer period (8 to 10 months). This Pear tree was originally imported from China a long while ago, and is distinguishable from our varieties by its large nearly round fruits, which are on very long stalks, and have a coarse brownish speckled rind, while the flesh, though succulent, is harsh, more acid and rough than sugary. Some of them are early, of smaller size, and are eaten at once in the summer time as refreshing fruits; but it is the large autumn Pears which, in consequence of their acid and rough properties, can be preserved for so long a time, and are very suitable for baking, &c., excelling in this particular all our late Pears. *Von Siebold's Catalogue Raisonné.*

Orchids.—At a late sale of these at Stevens', a Saccolabium, unknown, said to be the finest mass perhaps ever imported of the genus, fetched the large sum of 50*l.*! A second "very fine plant" of it realised 14*l.*, and a third, "with two shoots," 8*l.* Some 240 lots fetched altogether 402*l.* 18*s.* 6*d.*

Calendar of Operations.

(*For the ensuing week.*)

MANY of the hardier kinds of greenhouse plants may now be set out of doors. It is a mistake, however, to place them in too shady a situation; but it is essential that the pots be protected from the sun. They should be plunged in beds of sifted coal-ashes; take care also to place them far enough apart to ensure a free circulation of air amongst the plants.

FLOWER GARDEN AND PLANT HOUSES.

Close and frequent inspection will now be required if anything like success with bedded-out plants is to be attained this season. This is a good time for grafting or inarching Oranges, Camellias, Azaleas, choice Rhododendrons, &c. Until a junction is effected, the plants should be plunged in a close moist heat, rather stronger than that required for growing them in, and they should be carefully shaded.

ACHIMENES.—Keep up successions of these as long as possible. While growing, they like a warm moist atmosphere; but during their flowering season they do perfectly well in a comparatively cool and dry situation, such as a close greenhouse or conservatory. As regards soil, light turfy loam, peat, leaf-mould, thoroughly decayed cow-dung, and silver sand suits them perfectly.

AMARYLLIS.—These deserve more than ordinary attention. They succeed perfectly in any light tolerably rich soil, in which there is a good proportion of fibry loam. Twenty-four sized pots suit them best. Plants in smaller pots should therefore be carefully moved into the size just named.

ANNUALS.—Kinds intended for autumn flowering should be thinned out or transplanted, before they crowd one another, and become too weak to support themselves.

CARNATIONS, &c.—Few plants are more generally useful than the hardier kinds of Carnations, Picotees, and Cloves. If pipings of them are taken off about this season, or say a little later, they sometimes strike as freely as Pinks; but the operation will be more certain to succeed if the handlights are set on a slight hotbed, or the pots plunged in a frame where there is a gentle bottom-heat. Points which require special attention are, that the cuttings be taken not later, on any account, than the expanding of the first flower; and that they be carefully shaded from every ray of sunshine. The most certain method of propagating them is by layers; but it is equally important that it should be done early, as the plants root sooner, and thereby become better established before winter.

CHINESE PRIMULAS.—Old plants of these should soon be shaken carefully out of the old soil, repotted in light sweet compost, moderately rich, and placed in a warm frame for a few days, till they have begun to produce roots into the new soil, after which they must be removed to a position near the glass in a cold frame, and kept close till the plants are thoroughly re-established. These plants succeed best in moderate-sized pots.

PELARGONIUMS.—While these are in bloom it is most desirable that shading should be attended to carefully, for one sunny day may injure the flowers beyond hope of remedy. It is equally desirable that the atmosphere of the house should be kept cool.

FORCING GARDEN.

PEACHES.—Admit a free circulation of air through all the houses during dry fine weather; but where the fruit is just ripening, ventilation during the night and in damp weather should be effected by means of the front lights, keeping the top sashes closed to prevent cold dews from settling on the fruit. The foliage in the early houses should be kept in a healthy state as long as possible by syringing and guarding against insect depredations.

PINES.—Having selected, to meet the demand in winter, those plants which are now showing or flowering, and those which shortly promise to follow their example, a portion of the strongest and best rooted of those remaining should be picked out to succeed them; these should be potted immediately if they require it, and grown on steadily without any check; any of the smaller plants which are in immediate need of potting should also be attended to. Keep up an uninterrupted succession by planting a few suckers occasionally in a brisk bottom-heat. Where the planting-out system is practised, there is no difficulty in keeping up the succession if all vacancies are filled up as they occur with the best plants selected from among the successions.

VINES.—Where crops are swelling let the state of the borders be frequently examined. If the soil is too dry, let the surface be carefully loosened with a fork, and watered with liquid manure. Examine the bunches of swelling crops, thin crowded clusters, and remove small berries.

HARDY FRUIT AND KITCHEN GARDEN.

Water growing crops freely with liquid manure; this is the best time of year to make use of it, and with the addition of the rains which we are now experiencing, improved growth may be expected to be the result.

CELERY.—Now that rain has come, plant out for the main crop.

LETTUCES.—Successions of these must be kept up as required.

TURNIPS.—A good breadth of these may now be sown.

WATER-CRESSES.—A supply of these for autumn and winter may be easily obtained by planting some strong young tops, about 4 inches long, in a line at the foot of a north wall. The cuttings should be of pieces which have protruding roots from the joints. Water-cresses will grow freely in such a situation; and in many places where there are no artificial beds, and where natural ones are a considerable distance off, these will be found useful.

STATE OF THE WEATHER AT CHISWICK, NEAR LONDON, For the Week ending June 27, 1866, as observed at the Horticultural Gardens

June.	Moon's Age.	Barometer.		Temperature.					Wind	Rain.
				Of the Air.			Of the Earth			
		Max	Min	Max.	Min.	Mean	1 foot deep.	2 feet deep.		
Thurs. 21	9	29·889	29·809	82	53	67·5	69	57	S W	.84
Friday 22	10	29·995	29·846	78	42	60·0	59½	57½	S W	.00
Satur. 23	11	30·102	30·078	81	46	63·5	60	59	S.E.	.00
Sunday 24	12	30·156	30·127	76	42	59·0	60	59½	E.	.00
Mon. 25	13	30·110	29·962	76	50	63·0	63	59½	N E	.00
Tues. 26	14	30·017	29·942	82	49	65·0	65	59½	E.	.00
Wed. 27	15	29·907	29·869	86	55	70.5	65	60	N.E.	.02
Average .		30·024	29·948	80·1	48·6	64·3	61·8	58·8		.86

June 21—Very fine and hot, thunder, much lightning and heavy rain.
— 22—Cloudy, very fine, with white clouds in bright blue sky, very fine
— 23—Very fine, hot sun, hazy at night
— 24—Very fine throughout, cool at night.
— 25—Slight haze, overcast, very fine.
— 26—Very fine, hot sun, clouds in masses; warm at night.
— 27—Cloudless and very fine, thunder and lightning with little rain, and some hail

Mean temperature of the week, 3½ deg. above the average.

STATE OF THE WEATHER AT CHISWICK,

During the last 40 years for the ensuing Week, ending July 7, 1866

July.	Average Temp.	Average Rain.	Mean Temp.	No. of Years in which it Rained.	Greatest Quantity of Rain.	Prevailing Winds.							
						N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.
Sunday.. 1	74·8	51	62·9	18	1·18 in.	3	5	5	4	4	11	7	8
Mon. .. 2	73·8	49	62·3	15	0·22	2	5	4	2	3	5	11	9
Tues. .. 3	74·4	50·2	62·3	17	0·78	–	6	2	1	3	13	10	5
Wed. .. 4	76·0	50·4	63·2	13	0·33	–	2	4	1	9	12	10	2
Thurs. .. 5	75·6	50·8	64·1	15	0·59	1	1	5	7	11	9	3	
Friday .. 6	76·4	51·4	63·9	18	0·48	1	1	4	2	6	15	7	4
Satur. .. 7	75·7	51·1	63·4	21	0·91	–	4	4	3	8	14	6	2

The highest temperature during the above period occurred on the 5th 1852—therm. 97 deg., and the lowest on the 7th, 1864—therm. 33 deg.

Notices to Correspondents.

NAMES OF PLANTS: *A H R.* Briza maxima.—*G B.* Escallonia macrantha.—*M. J.* Cuphea micropetala.—*C.* 2, Broussonettia papyrifera.—*P.* 1, Epilobium montanum; 2, insufficient: perhaps Davallia novæ zelandiæ; 3, Cardamine hirsuta; 4, Cystopteris fragilis var. Dickieana.—*R Cooper.* Plocpeltis Billardieri.—*F C.* Your Epidendrum is very near E. patens, perhaps not really distinguishable, but we are not aware that E. patens has ever been found in Trinidad.

PELARGONIUMS: *T R, Flazley.* Your seedlings are pretty and well suited for home decoration, but are not equal to others already in cultivation.

ILLUMINATING: *Alpha.* This has a white star set in a field of rich purple, and appears to be wonderfully constant in character. Good examples of it were exhibited at the last exhibition in the Royal Botanic Garden, Regent's Park, by Mr. Clarke, of Brixton Hill.

RHODODENDRONS: *J. L.* R. catawbiense, which occurs on the high mountains of Virginia and Carolina, particularly on the head waters of the Catawba River, was introduced in 1809. R. ponticum comes from Asia Minor, and was introduced in 1763. R. maximum, from the mountains of North America, along shaded watercourses, from Canada to Carolina, was introduced in 1736. R. arboreum was introduced in 1820.

ROSES: *H S.* Your Roses are sprouting from the centre of the flowers. The cause is not known with certainty. It does not follow because they do so this year that they will do the same next year. At any rate we doubt whether you will mend matters by giving them manure water. *M J B.*

COMMUNICATIONS RECEIVED.—D. M., Glasnevin.—J. T. M.—Dr. Hasskarl, Cleves.—W. Robinson.—J. Anderson.—E. Carroll.—W. Swaile.—R. Craig.—J. Hardie.

THE PATENT NITRO-PHOSPHATE or BLOOD MANURE COMPANY, LIMITED, Manufacturers of ODAMS'S PATENT BLOOD MANURE for CORN and ROOTS. ODAMS'S SUPERPHOSPHATE of LIME and DISSOLVED BONES.

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Directors.

Chairman—JOHN CHAMBERS, Littlebury, Essex

Deputy-Chairman—JOHN COLLINS, Argyle House, Holloway.
Edward Bell, 48, Marine Parade, Brighton.
Richard Hunt, Stanstead Abbot, Herts.
Thomas Knight, Edmonton, Middlesex.
Robert Leeds, West Lexham, Norfolk.
George Sawle, Hornchurch, near Stamford
Samuel Jones, Chrishall Grange, Essex.
Charles Dorman, 23, Essex Street, Strand.
Thomas Webb, Hilderstham, Cambridgeshire.
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Bankers—Messrs. Barnetts Hoares & Co., Lombard Street
Solicitors—Messrs. Kingsford & Dorman, 23, Essex Street, Strand
Auditor—J. Carter Jonas, Cambridge.

Secretary—C. T. MACADAM.

This Company was originally formed by, and is under the Direction of Agriculturists, circumstances that have justly earned for it another Title, viz.:—"THE TENANT FARMERS' MANURE COMPANY."

Its Members are Cultivators of upwards of 50,000 Acres of Land, which has been for years under the experience of the Manures of their own Manufacture. The Consumer, therefore, has the best Guarantee for the genuineness and efficacy of the Manures manufactured by this Company.

A Prospectus will be forwarded on application to the Secretary, or may be had of the local Agents. C. T. MACADAM, Secretary.

Chief Offices, 109, Fenchurch Street, London, E.C.

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PROCTOR and RYLAND'S PREPARED BONE MANURES for TURNIPS, GRASS, WHEAT, BARLEY, OATS, POTATOS, &c. and their BONE SUPERPHOSPHATE of LIME are the best prepared and cheapest Manures offered to the Public.

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Have now ready for delivery in dry fine condition,
COMMON MANURE, for Spring Use
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The Manures manufactured by J. B. LAWES for the present season of 1866 are now ready for delivery at his Factories, at the following prices, per ton:—

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LAWES' PATENT TURNIP MANURE, and BONE SUPERPHOSPHATE of LIME	6	6	0
LAWES' SUPERPHOSPHATE of LIME from BURNT BONE or MINERAL PHOSPHATES	5	5	0
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CONCENTRATED CORN and GRASS MANURE	12	0	0

These Manures can be obtained of Mr. LAWES, or through the appointed Agents in all parts of the United Kingdom, at prices varying according to cost of carriage.

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American and other Cakes at market prices.

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COCOA-NUT REFUSE is becoming scarce, the old reserves will soon be gone. Now sold in bags, 1 for 2s., 10 for 16s., 20 for 30s., 50 for 66s., 100 for £6.

Fourpence allowed for each bag returned carriage-paid.

A Railway Truck-load (not in bags), 40s.

Postage Stamps or Post-office Order, payable to J. BARSHAM & Co., Kingston-on-Thames, S.W.

Important to Agriculturists.

THE BEST LINSEED, bruised and properly ground into meal under heavy edge stones, is unquestionably the only suitable food that can be profitably used for mixing with the ordinary meal or any home grown grains to make it superior for feeding or fattening purposes to the best Linseed Cake.

LINSEED MEAL, guaranteed genuine, made from the best Calcutta and Bombay Seed, containing from 38 to 40 per cent. of oil, and equal in effect and nutritive value to nearly three times its weight of the best Linseed Cake, is supplied in bags containing 56 lb. at 10s., and 112 lbs. at 20s., on receipt of order and a remittance, by RICHARD BERNSTEIN, Linseed Mills, Henley-on-Thames.

CLIFF'S ANTISEPTIC FLUID, Manufactured by F. C. CALVERT & Co., Manchester.

A preparation of Carbolic Acid suitable for Sheep Dipping, Washing Cattle, &c. *Vide* 3d Report of the Cattle Plague Commission. For further particulars apply to

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BAKER'S PREVENTIVE MEDICINE, COST 1d. A DAY.

An Infallible Preventive.
Inexpensive, Harmless, Easily Used.
Promotes Secretions in Milch Cows.
Available in Fattening Cattle

C. M. BAKER, M.R.C.V.S., has been eminently successful in his treatment of the Cattle Plague, and the Medicine he now offers will secure Farmers Perfect Immunity from this Scourge.

Testimonials and full Particulars post free.

Sold by all Chemists and Druggists throughout the kingdom, in Tins, 2s. 6d., 5s., 10s., and 20s. each, with full instructions. This Medicine is also extremely beneficial for Horses, Sheep, and Pigs.

LONDON DEPOT: 49, Stamford Street, Blackfriars Road, S.

Important Reduction in the Prices of Portable Engines for 1866.

CLAYTON, SHUTTLEWORTH AND CO., ENGINEERS, Manufacturers of Portable and Fixed Steam Engines, Machinery for Pumping, Hoisting, Grinding, Sawing, &c.; Engines for Steam Cultivation, Self-moving Engines for Common Roads and Agricultural Purposes generally.

Stamp End Works, Lincoln; and 78, Lombard Street, London; also at Lowengasse No. 44, Landstrasse, Vienna; and Gegenuber dem Bahnhof, Pesth.

Descriptive, Illustrated, and Priced Catalogues Free per Post. Special Drawings when required. The best Steam Threshing Machinery made.

FOWLER'S PATENT STEAM PLOUGH and CULTIVATOR may be SEEN at WORK in every Agricultural County in England.

For particulars apply to JOHN FOWLER & Co., 28, Cornhill, London, E.C.; and the Steam Plough Works, Leeds.

FOR SALE, a 12-horse set of FOWLER'S PATENT STEAM PLOUGHING MACHINERY complete, including 12-horse Steam Engine, 4-Furrow Patent Balance Plough, and Patent Balance Scarifier, with all the necessary working parts complete. The above is nearly new. For price apply to

WALLIS, HASLAM, & STEVENS, Engineers, Basingstoke.

AGRICULTURAL IMPLEMENTS.—Steam Engines, Threshing Machines, Pumps, Carts, Ploughs, Harrows, Reaping Machines, Garden Engines, Lawn Mowers, Garden Rollers, Churns, Garden Tools, &c. Improved Wire Netting. Delivered carriage free. Price Lists per post.

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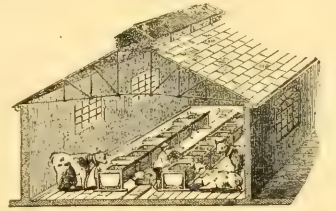
THE IMPROVED LEATHER DRIVING STRAPS for MACHINERY are stronger, more durable, drive better, and cost less than other kinds of Driving Belts. SPECIAL STRAPS for PORTABLE ENGINES. Price Lists free by post.

TURNER'S Patent Strap and Hose Company.
Manufactory: Armit Works, Greenfield, near Manchester.
Warehouse: 81, Mark Lane, London, E.C.
MR. H. FERRABEE, Agent.

COTTAM'S PATENT PORTABLE UNITED COW FITTINGS.



Their advantages are—Portability, not Fixtures, removable at pleasure, no Woodwork or Partitions to impede Ventilation or breed Vermin, Hay Rack dispensed with as unnecessary, increased width and depth of Feeding Troughs, Water Cistern, and Patent Drop Cover to prevent over-gorging. Cleanly, durable, and impervious to infection, being all of iron. Price of Fittings per Cow, 45s.

Prospectuses free of COTTAM & Co., Iron Works, 2, Winsley Street (opposite the Pantheon), Oxford Street, London, W., where the above are exhibited, together with several important Improvements in Stable Fittings just secured by Patent.

Future Safety from Rinderpest.

MUSGRAVE'S PATENT IRON COW STALLS, with fresh Air Inlets, as used in the Government Model Farms.

MUSGRAVE'S PATENT STABLE FITTINGS and LOOSE BOXES. Adopted by H.R.H. the Prince of Wales, for Sandringham.

MUSGRAVE'S PATENT HARNESS BRACKETS, IRON PIGGERIES, and DOG KENNELS.

MUSGRAVE'S PATENT SLOW-COMBUSTION STOVE. Employed by the Ecclesiastical Commissioners.

The PATENT IRON COW STALLS and AIR INLETS are perfect in their arrangements for Feeding and Ventilation; every part being of iron they are indestructible, inexpensive, very compact, cleanly, and healthful for the animal. Should distemper occur, if the iron work be painted and the walls washed with lime, they can neither harbour nor communicate contagion. This system in fact is found to be the only true SAFEGUARD AGAINST THE SPREAD OF EPIDEMIC.

Priced Engravings of all these Inventions will be sent free on application to MUSGRAVE BROTHERS, Ann Street Iron Works, Belfast.

LAND DRAINAGE, FARM BUILDINGS, and LABOURERS' COTTAGES.—These several works can be executed, and the cost borrowed and charged on landed property. Landowners can have Plans and Specifications of the best and cheapest character prepared to meet the specialities of each case, and in conformity with the Act of Parliament, so that they can, if desirable, execute the work by their own Agents.—Apply to Mr. BAILEY DENTON, 22, Whitehall Place, Westminster, S.W.

Drainage of Land.

MR. C. F. HUMBERT, F.G.S., of Watford, Herts, and formerly Senior Surveyor to the Tithe Commission, a Land Surveyor and Land Agent, more than 20 years established in practice, undertakes Works of Drainage with or without a contract price, or to lay out and overlook the same at a commission of 5s. per acre; and he has at his command a staff of experienced workmen. His custom is to charge merely the expenses out of pocket in making the preliminary Survey and Estimate where the works are not carried out.

THE LANDS IMPROVEMENT COMPANY. Incorporated by Special Act of Parliament in 1853. Right Hon. Lord NAAS, M.P., Chairman.

TO LANDOWNERS, THE CLERGY, ESTATE AGENTS, SURVEYORS, &C., IN ENGLAND AND WALES, AND IN SCOTLAND.

The Company advances money, unlimited in amount, for the following works of Agricultural Improvement, the whole outlay and expenses in all cases being included by a rentcharge for 25 years.

1. Drainage, Irrigation, and Warping, Embanking, Inclosing, Clearing, Reclamation, Planting, for any beneficial purpose, Engines or Machinery for Drainage or Irrigation.
2. Farm Roads, Tramways and Railroads for agricultural or farming purposes.
3. Jetties on shoaling places on the sea-coast or on the banks of navigable rivers or lakes.
4. The Erection of Farm Houses, Labourers' Cottages, and other Buildings required for Farm purposes, and the improvement of and additions to Farm Houses and other Buildings for Farm purposes.

Landowners assessed under the provisions of any Act of Parliament, Royal Charter, or Commission in respect of any public or general works of Drainage or other improvements, may borrow their proportionate share of the cost, and charge the same with the expenses on the lands improved.

The Company will also negotiate the Rent-charges obtained by Landowners under the Improvement of Land Act, 1864, in respect of their Subscription of Shares in a Railway or Canal Company.

No investigation of title is required, and the Company being of a strictly financial character, do not interfere with the plans and execution of the Works, which are controlled only by the Government Enclosure Commissioners.

Apply to FRANCIS B. MAULE, Esq., Secretary, 3, Parliament Street, London, S.W.

THE SUFFOLK AGRICULTURAL SOCIETY'S MEETING at BURY ST. EDMUND'S.

Patron, The Right Hon. The EARL of STRADBROKE.
President—SIR E. C. KERRISON, Bart., M.P.

GRAND EXHIBITION of SUFFOLK HORSES, HUNTERS, PIGS, and SHEEP; also a POULTRY SHOW; and FLOWER and FRUIT SHOW, Open to All England.

Exhibition of Agricultural Implements and Machinery in Motion.

Nine Silver Cups and several valuable Money Prizes, will be competed for. Also a Practical Exhibition of Steam Ploughing by Messrs. Fowler & Co., and others; and several Horse Ploughing Matches (open to the Agricultural Labourers of All England), will take place on a Field near the Town, when several Money Prizes and one Silver Watch and Chain (offered by the Town of Bury St. Edmund's) will be competed for.

By permission of Colonel Frazer, V.C., the splendid Band of the 11th Hussars (under the direction of Mr. Fitzpatrick, Bandmaster), is engaged for the two following days, viz.:—Thursday and Friday, July 5 and 6, on which Excursion Trains will run from all the principal Stations on the Great Eastern Railway.

The Town Committee of Bury St. Edmund's, with the Mayor (H. Le Grice, Esq.), have engaged, on behalf of the Town, the whole of the Abbey Grounds and Fields adjoining, and have made such arrangements that the Public may not only be enabled to view the whole of the above Exhibition for one Fee (with the exception of the Ploughing Matches), to be paid at the Abbey Gate.

PROGRAMME.—Chief Entrance, the Abbey Gate, Angel Inn.

Thursday, July 5, open at 8 o'clock, admission 1s.; after 9 o'clock, 6d.—Private View of Flower and Fruit Show, and the whole of the Abbey Grounds and Show Grounds adjoining.

Friday, July 6, before 11 o'clock, admission 2s. 6d.; from 11 to 1.30, 1s.; after 1.30, 6d.—The whole of the Exhibition open to the Public, viz., Grand Show of Suffolk Horses and Hunters, Pigs, Sheep, Poultry Show, Flower and Fruit Show, and Abbey Grounds.

PROGRAMME of Steam and Horse Ploughing, in a Field on the Rougham Road, Bury St. Edmund's.

Thursday, July 5.—Admission to Plough Field, 6d. Fixing Steam Ploughing Tackle about 9 in the morning. Horse Ploughing Matches to commence at 10 in the morning.

Friday, July 6.—Admission to Plough Field, 6d. Steam Ploughing and Horse Ploughing Matches to commence at 7 in the morning.

J. L. BUTT, Local Secretary, Bury St. Edmund's.

BIRMINGHAM HORSE SHOW, 1866.—The FIRST GREAT EXHIBITION of HORSES, PONIES, CARRIAGES, HARNESS, SADDLERY, STABLE FITTINGS, &c., will be held in BINGLEY HALL on TUESDAY, WEDNESDAY, and THURSDAY, July 10, 11, and 12.

Admission, on Tuesday, from 9 till 1, to witness the Judging, 5s.; after that hour, 2s. 6d. On Wednesday and Thursday, 1s.

The Horses will be Tried daily in the Ring. Nearly FOUR HUNDRED HORSES are entered.

For Special Railway Arrangements see the Advertisements and Bills of the several Companies.

There will be a limited number of Special Seats Reserved in the best situations for witnessing the Judging and Trial of Horses, which will be charged 2s. 6d. each, and these may be secured by previous application to the Secretary. J. B. LYTHALL, Secretary.

Offices, Stephenson Chambers, New Street, Birmingham.

ESSEX AGRICULTURAL SOCIETY, 1866.—*President*—J. W. PERRY WATLINGTON, Esq.

NOTICE.—The ANNUAL EXHIBITION of the above ASSOCIATION will be held this year at EPPING, on TUESDAY, July 17

On the same day, in conjunction therewith, POULTRY, GAME, RABBIT, PIGEON, and CANARY SHOWS, and a HORTICULTURAL FLOWER and FLORAL FETE will also be held.

The Prizes for the Poultry Show, which are upon a most liberal scale, amount in the aggregate to £85. For the Horticultural Show to £100.

The magnificent Band of the Grenadier Guards and of the Royal Artillery will be in attendance throughout the day; the former will also play at the ANNUAL DINNER, which will take place in the newly-erected Town Hall, in the High Street. The services of eminent Professional Vocalists have also been secured.

The Show upon the whole will, it is anticipated, equal, if not surpass, that of any previous year.

The Entries for both the Poultry and Floral Shows will positively Close on July 2. Exhibitors are therefore earnestly requested to lose no time in applying to the Secretary, who will supply the necessary Forms and furnish such information as may be required.

By Order, JOHN W. WINDUS, Secretary to Local Committee.

Epping, June 30.

The Agricultural Gazette.

SATURDAY, JUNE 30, 1866.

MEETINGS FOR THE ENSUING WEEK.

WEDNESDAY, July 4	—	Agricultural Society of England.—Noon
THURSDAY, " 5	—	Suffolk Agricultural Society, at Bury
FRIDAY, " 6	—	St Edmund's.

BARRING an occasional thunder storm, we are enjoying a splendid haymaking time; and if anything can help the Wheat crop over the disastrous effects of a cold wet March and April, it will be the extremely fine season during which it is now in bloom. The recent rains after a cold dry May have been welcome for all succulent growth. Grass and Mangel Wurzel and Turnips have greatly benefited by them; and the effects of a few hundred tons per acre of water falling upon the hide-bound soil illustrate and explain the results which all visitors to the recent Show at Salisbury may have seen of the many thousand tons per acre which are poured over Grass lands there during winter. We then saw a heavy crop ready to cut, equal in weight to the ordinary hay crop of a first-rate dry meadow, the land having already yielded a larger crop before to ewes and lambs folded over it in April and May. Mr. COMBES, of Tisbury, near Salisbury, who is the great authority on Wiltshire irrigation, informs us that a square hurdle, *i. e.* about four square yards, is the average daily allowance for a ewe and lamb; putting their consumption at 24 lb., we have a crop of upwards of 12 tons of Grass per acre, and this is taken before the early June haymaking, which represents almost as much more. This is the result of an enormous flooding with water. It is the practice to lay on as much water as possible in a thin flowing sheet during November and December. The watering goes on more or less during winter, and even in the severest frosts the Grass will grow under the ice. We are quoting Mr. COMBES' statement. In January, as a general rule, it is held to be advisable to water five days in six—in February about three days in four, and at the beginning of March every other day. Consider

what quantity this represents. When in full flow the water runs on at the rate of 2 or 3 tons per acre per minute, 150 tons an hour, 30,000 tons and more every day. No doubt enormous growths of Grass, greater than are known in any ordinary water meadows, are obtained from 6000 to 10,000 tons per acre yearly in the case of sewage water. The clear spring water which is said to produce the best effect in Wiltshire may be as pure as one can imagine it welling from the chalk, but 30,000 tons poured daily over every acre for nearly 100 days must contain more food for plants than even 10,000 tons of sewage per annum,—food enough to account for the luxuriant growth it produces, however small the percentage of food for plants it may contain.

Mr. COMBES has ascertained by repeated cuttings and weighings that the total growth of Grass during the year in a well-managed water meadow, may be as much as 40 tons per acre. This was taken by frequent mowings throughout 12 months; but the ordinary practice is to feed off in April and early May, to mow in the middle of June, in some cases to take a second crop for hay in August, and thereafter to graze with cattle and horses, keeping the land perfectly dry during autumn, and feeding it bare before the first November flooding. The four streams which meet near Salisbury are utilised in this way over about 9000 acres of land, and probably 300,000 to 400,000 tons of Grass are thus produced, worth 200,000*l.*, or upwards of 20*l.* per acre to the occupiers, and enabling a most advantageous management of the farms to which they belong. According to Mr. COMBES, the spring Grass of a 20-acre meadow fed with sheep will keep 400 couples during seven weeks in April and May. During this time this flock is used to fold 15 to 20 acres of arable land. This meadow will then in two cuttings give at least 60 tons of hay; and thus there is annually put on the arable land 15 acres of spring folding and 60 tons or more of hay, thus enabling the farmer to dispense with the growing of 20 acres of Turnips and 25 acres or more of field Grass, or to increase the number of his sheep stock on a farm of 400 or 500 acres at least 12 per cent. In one instance given by Mr. COMBES, 277 couples were kept 33 days and 11 cows 26 days with less than 10 lb. of hay per day per cow, on a meadow of 13¾ acres. After which there was cut from the same meadow at least two tons per acre, the aftermath being fed by cows and horses.

When the Turnip crop fails, the spring Grass becomes most valuable; but even in ordinary years 6*l.* and 7*l.* per acre is given for the first folding over the land before the June hay crop is grown. And it is as enabling a cheaper and more efficient management of the land that the addition of 30 or 40 acres of water meadow to a large farmer becomes so important. It is becoming more and more the practice to modify the four-course system of cropping by taking two green crops in successive years, and thereafter to take Wheat and Barley in succession. You thus have a superior second green crop, a cheaply manured soil for Wheat, and a Barley crop of better quality. But such a practice is impossible, unless there be the means which water-meadows give of providing a sufficient hay crop outside the arable land. Formerly the Turnips could not be fed off in time for the Barley crop, and the supply of manure was deficient for the Wheat crop. Now, the Turnip crop can be fed off just as it is convenient; it is followed by a second summer green crop, so that the land is in capital condition for the Wheat—the Wheat stubble can receive a good winter fallow for the Barley, and there is again ample time to make use of autumn cultivation for the succeeding root crop.

All these advantages, with the additional one of utilising in the growth of market garden crops the manure which will be thus produced, will we hope ultimately follow the practice of watering with sewage near large towns. We cannot indeed put on 100 to 150 tons an hour per acre all the winter through. But 3000 to 5000 tons of the drainage water of our towns contain as much food for plants as 100 times that quantity of spring water from the chalk. And when 20 or 30 acres out of every 200-acre farm near London, Manchester, &c., are devoted to the growth of Grass under sewage, the 1200 to 1500 tons of cow food thus produced will yield a most efficient dung heap for conversion into Cabbages, Potatos, Onions, and other valuable crops for town consumption. The cheapest possible manuring for the rest of the land will follow this liquid manuring of a portion of it; and, costly as the manuring of that portion will be, yet the direct profits of cow feeding will be considerable, and the indirect advantage to the whole farm will be even greater than under the ordinary management of a Wiltshire farm they are found to be.

MR. CLODE, the Superintendent of the Statistical Office in connection with the Cattle Plague returns, informs us in his last weekly report that the disease has now completed the 52d week of its prevalence, and during the year nearly a quarter of a million (248,965) of attacks have been officially reported, 80,590 cattle are stated to have been killed, 124,187 to have died, 32,989 to have recovered, and in 11,192 cases the results have not been specified. In addition to the foregoing, 51,343 cattle exposed to risk have been slaughtered while free from disease. In the aggregate more than 50 (50.5) in every 1000 of the ordinary stock of cattle in Great Britain have been attacked, and to every 1000 attacks, whose results have been reported, 861 animals perished.

The epidemic has also extended to a considerable number of sheep, and since the commencement 4463 are officially reported to have been attacked; of these 4002 died or were killed, and 461 recovered or were unaccounted for.

During the week ended 16th June, 533 attacks were reported to have occurred in Great Britain; viz., 488 in England, 27 in Wales, and 18 in Scotland. The number of attacks, viz., 533, shows a decrease of 454 on the previous return.

Correcting the total, by adding an average of attacks commencing during the week, but which may be subsequently reported, the number for the week will be 666.

Great as are the losses which in the aggregate have been suffered, last week's report is most encouraging, and we hope that the disease, whether it is to be a constant or continually recurring malady amongst our stock or not, is now, for the present at least, leaving us. It is lamentable to find that nearly one-half of the attacks still belong to the county of Cheshire, where no fewer than 24 fresh places were attacked during the past week, making a total of 5123 "places" in that county which have been infected during the year, where nearly 100,000 head of cattle existed, of which 65,252 have been attacked, and only 7822 have recovered. One-eighth part of the whole national disaster appears to have fallen on this one county. Surely this is a case which calls for national assistance.

WATER FOR SHEEP.

UNFORTUNATELY animals have not the power of speech, or they would tell us their wants and their feelings, and so prevent much loss and damage. The proper supply of water to our animals, either in their food, or directly, is a matter of much importance, and greatly dependent, as to quantity, on a variety of circumstances. It requires no conjuror to show that milk-giving animals require much more water or succulent food than growing or fattening animals. I have had from 24 to 30 quarts per day of milk from a large Short-horn cow in full milk, and this is, of course, nearly all water. Such an animal must require a proportional quantity of water to supply this and the additional vapour given off in respiration, perspiration, and evacuation. The same remark applies to an ewe in full milk, or other breeding animals. The normal quantity of water in Grass at a particular season may be taken as a proper ordinary supply, and no doubt the instinct of the milk-giving animal would lead it to avail of the extra wetted or bedewed Grass immediately before sunrise, or at all events before the dew had been dispersed. The percentage of water in natural Grasses varies according to the period of their flowering. Those that flower early in the spring contain most water. According to Way's admirable treatise on Grasses in the Royal Agricultural Society's Journal, vol. ii., page 533, those that flowered contain of water—

	Per cent.
In May	79
Early in June	72
Late in June	66
Early in July	62

The average of the four periods being 70 per cent. of water or 7 lb. or pints of water to 3 lb. of dry food. Nature has therefore provided us with a tolerably safe scale, having regard also to the dew of the morning for milk-giving animals, or an extra supply of water.

Now, we must never forget that on the modern principle of feeding with cake, corn, or other dry substances, we deviate from a natural course, and must therefore restore the equilibrium by supplies of water, even where animals are on Grass; and we should also, when too much rain falls, have regard to correcting the excess of moisture by proportions of dry food.

Again, in the hot dry months of July, August, and September, it is irrational and injurious not to provide a proper supply of water for your sheep as well as cattle; great and unprofitable omissions are too common in this matter of water for sheep. Early this spring (in April) my ewes with lambs were upon Italian Rye-grass, and as the lambs increased in size I saw that there was a loss of flesh in the ewes. As there were frequent showers, we thought it could not be for want of water, but we tried it, and found at once that the absence of water was the cause of their loss in condition. They were having cake, corn, and hay-chaff, in addition to the Grass.

When fattening sheep are on Clover in a hot July and August, having cake in addition, they will drink very much water, and will not thrive without it. I am not sure that some farmers are not in danger under Mr. Martin's Act, in very hot weather.

With fresh-drawn Turnips or Mangels, or Turnips with tops in the fields, we have an excessive supply of moisture, about 88 to 90 per cent.

A singular case of living without water occurred a few years since in the parish of Cressing Temple, about 10 miles from my farm; a horse that was treading Barley in the body of the barn was left there all night, and was nowhere to be found the next morning, although diligent search was made for him. This was in harvest time. On the Christmas morning following the ploughmen heard a neighing in the barn, and for the first time it occurred to them that although the bay was well filled with Barley the horse had slipped down between the boarded side of the barn and the Barley, which, being unthreshed, closed over him. So it was, for on cutting a way through they found the horse as plump and as sleek as a mole. He had eaten his way and cleared a considerable space. The foolish ploughmen, concluding that he must be very thirsty, most indiscreetly allowed him to go down to the pond and drink his fill, which resulted in his death.

This may appear to some a very doubtful story, but we need not so much wonder when it is known that dry or marked grain contains 11 per cent. of water, and the straw nearly 12 per cent., so that with every 88 pounds or pints of dry corn, the horse had 11 to 12 lb. or pints of water. The case I have quoted is well known and authenticated. *J. J. Mechi, Tiptree, June* 18.

THE INCREASING MORTALITY OF CATTLE.

FOR some time past the "denaturalisation" of ourselves and our domestic animals has been a subject of discussion in the medical world. In plain English, farmers are not so robust and healthy as they once were [Oh!], and this is also true of horses, horned cattle, sheep, and pigs. On all topics doctors are said to differ, and it would appear that on "the quality of vitality" in man and beast, they, as usual, are much divided, not as to the fact itself, but as to its cause. Of the increase of mortality they are unanimous, but when we come to the more practical question of how that increase is produced, they are divided.

Confining our observations to what is being said about cattle, one party, for example, attribute the increase of mortality to denaturalisation by an unnatural system of breeding, feeding, and fattening; "early maturity and a disposition to fatten" being considered by this party indications of denaturalisation or a lower state of vitality. In other words there is a greater per-centage of mortality amongst our improved breeds forced forward to early maturity and an extra degree of fatness than there was amongst stock prior to the adoption of this new-fangled forcing system of management. [We recommend our correspondent to read the account of artificial treatment and its results on a Scotch dairy farm in a previous number of this Paper. ED.] On the other hand the second party wholly acquit this forcing system of stock management of any blame in the matter, the real cause of the increase of mortality being the importation of foreign diseases, directly and indirectly—directly by the importation of foreign cattle labouring under the various kinds of murrain and other contagious diseases now prevalent amongst stock, and indirectly by the importation of the seeds of such diseases along with foreign corn and other articles under modern free-trade measures. That is to say, since the adoption of free-trade measures, the opening up of this country and of the Continent of Europe by railways, and of the whole world by steamboat communication, and the vastly increased intercourse amongst nations and interchange of produce that have followed, the mortality amongst our cattle has increased fourfold, no less than 50 per cent. of this increase being due to the importation of pleuro-pneumonia alone.

The "Lancet" of March 24, in a leading paragraph on this topic, says—"The quality of vitality seems to be a subject of discussion amongst veterinarians as well as amongst ourselves. They (veterinarians) are divided as to whether cattle, as fed and treated now-a-days, are as healthy and sound as they were before the free-trade measures. We are often reminded of the plaintive lamentations over the doings of free-trade, of Addison's fine old Tory foxhunter, who was of opinion that there had been no fine weather since the Revolution. Still we must face the facts of this free-trade time as compared with the preceding, and one of these is a greatly increased mortality amongst cattle. Prior to 1842, Professor Gamgee states, in a letter to the *Pall Mall Gazette*, the mortality amongst stock in this country never exceeded two per cent., if ever it attained that figure; since then the mortality has doubled and quadrupled. The question is, is this due to the degeneration in the stock arising from the present remarkable system of feeding or rather fattening them, or to other causes? Prof. Gamgee unhesitatingly acquits the present system of feeding cattle of any blame in the matter, and attributes the increased mortality to contagious plagues, for the most part imported. Fifty per cent. of this increased mortality has been due to one single imported disease, pleuro-pneumonia. The other fatal plagues are

the foot-and-mouth disease, small-pox in sheep, and rinderpest. One good result of the cattle plague will be to convince our statesmen of the necessity of measures for preventing the importation of these diseases. Agreeing in the main with Professor Gamgee as to the cause of the increased mortality of stock, we should be more disposed than he seems to be to question the wisdom of fattening our cattle to the extent of the present fashion."

There is doubtless much truth on both sides of this controversy, and also much apparent diversity that may be reconciled when the facts of the case are clearly seen and understood. Veterinarians and those who join them in attributing the increase of mortality solely to the importation of contagious diseases appear to overlook predisposing causes to catch such contagious maladies, or the greater liability of stock produced under the unnatural forcing system of management now generally practised. Both systems of stock management are still practised in this country and on the Continent of Europe, but the former (the forcing system) has since the opening up of the country by railways and steam communication since 1842 become greatly more fashionable than the latter; more especially as to the extension of the improved Short-horn breed by crossing and otherwise, with a view to obtain early maturity and an increase of weight, and a greater development of milking properties in milch cows. Something similar has taken place in improved Herefords and Devons and their respective crosses, and likewise in all our improved breeds of sheep and their crosses. Now the Royal Commission informs us that the statistics of rinderpest, as given by those who tendered to them their evidence, prove the per centage of mortality to be much greater amongst stock of this class as compared with the percentage of mortality amongst our older and more hardy and healthy breeds of horned cattle. And if our improved breeds are thus greatly more predisposed to catch the contagious poison of rinderpest than are our older and less fashionable breeds under a different system of management, we aver that our improved breeds are equally predisposed to pleuro-pneumonia, if not in a greater degree than are our old-fashioned native stock.

Something, however, more closely connected with the modern fashionable practice of breeding, rearing, and fattening our improved breeds, and their greater predisposition to catch contagious diseases affecting the organs of circulation requires to be said, than is contained in the above general observations. Those farmers, for example, who have had a successful experience in the management of our improved breeds must be familiar with the difficulty of breeding from the best forms of symmetry, owing to their liability to run to fat if fully and properly fed.

Young heifers, which must necessarily have a full allowance to promote their growth, get so excessively fat as to become literally barren; or if farmers succeed in keeping them in rude health below the non-productive point, they may get one calf, but the probability is that the next season they must be sent to the shambles. Now what is the practical effect of the working of this practice in the production of breeding stock in reference to their predisposition to catch contagious diseases, such as pleuro-pneumonia and rinderpest? Evidently to increase the predisposing cause and consequently the percentage of mortality, for the milch cows selected and kept on as breeding stock, together with their progeny, are of a type much more liable to lung disease and cattle plague than are the more robust and healthy thus prematurely drafted out and sent to the shambles. All breeds of cattle appear to be subject to the disease; but the more highly-bred the animal, the sooner, generally speaking, it succumbs. English stock, compared with foreign breeds, seem to have less power of resistance. Of the Dutch it has been observed in this country, that although perhaps not less liable to be attacked than other varieties, they survive the first attack longer, and more of them recover. Animals in good condition, says another observer, resist the longest; but if they become diseased, the disease runs its course in them more rapidly. To the practical reader who has been an observer of the cases themselves, the soundness of this conclusion and its application to the question at issue will appear manifest. Indeed any other conclusion would be unreasonable. In its support we might quote the symmetry and low vitality of the dairy stock of the capital; the dairy and breeding stock of Cheshire,* and of various other places where the mortality of rinderpest has been the greatest, were it necessary.

A conclusion, the same in substance, may be deduced from well-known physiological data. Thus it is a well-authenticated fact, that an extra development of fatty matter to the system is opposed in the growth of healthy nerve and muscle, and that the fluids of such animals are also in an abnormal state. This is conspicuously exemplified on butchers' stalls who purchase such animals. So long as they are increasing in fat they may show outbursts of liveliness and activity, but it is soon over, and followed by a reactionary state of greater than usual dulness and depression of spirits. They are bad drove cattle, many of them being wholly unfit for the road. And the muscles of the heart, as also those of the circulation generally, are in as low a state of vitality as are those of locomotion, and often in a more degenerate state; and this is true in whatever state of fatness the animals are in. Indeed in store cattle badly fed, and in milch cows stimulated by improper food to give large quantities of milk, such as the dairy cows of the capital, this degenerate quality of vitality is prominently low. In short, the owners of such stock are but too familiar with their physical inaction, languid circulation, &c.

From a pathological point of view we arrive at exactly the same conclusion. Obesity is an hereditary disease, and there cannot be a doubt that it prevails to a very large extent in all our improved breeds; and that it is produced by the forcing *alias* fashionable system of feeding now practised. "In man," Dr. Copland says, "it generally is attended by a weak languid circulation, weak digestion, with craving appetite; defective secretions and excretions, with accumulation to active mental or physical exertion," and the reader will have no difficulty in applying this diagnosis to obese cattle. Although animals may increase rapidly in fat and in weight generally, yet in lean meat they may be decreasing. Thus (quoting from the "Cyclopædia of Practical Medicine"):—"There is reason to believe that in many cases the fatty substance encroaches on the nutrition of other structures. In very fat subjects, both in man and the lower animals, the fibres of the muscles are often interspersed with depositions of fat, sometimes to such a degree that the latter constitutes the greater part of what once was muscle, and the remaining fibres are commonly softer and paler than is natural. All the muscles are liable to this change, and those of the heart amongst the rest; the consequence necessarily is a diminution of their contractile power." Hence the languid circulation and low state of vitality. On the other hand, if the animal is in a lean state, its low dejected appearance is equally remarkable, while it is liable in a greater degree to skin and lung diseases, &c., than when in the other extreme of this hereditary complaint. In short, obesity is a cachexial disease in which the solids and fluids are in a depraved and vitiated state. When slaughtered the meat of such animals becomes rapidly tainted and unfit for human food. Hence the practical conclusion that when inoculated with any poisonous matter when in a live state the upshot must be fatal in a higher degree than were the live meat in a healthy sound state, while it must also be more liable to catch infection. [There is no more life-like energetic vigorous animal, nor one with greater appearance of activity, than a young bull or heifer of the *Duchess* family of Shorthorns—one of the most closely bred families and most distinguished for early maturity. Ed.]

From these observations it will be seen that the increase of mortality amongst cattle cannot fairly be attributed wholly to the importation of contagious diseases from the continent of Europe and other places, a very great part of it being due to an increase in the predisposing cause at home. This country has frequently been visited with malignant contagious diseases amongst live stock, but up to a very recent date very little was known as to the true character of such diseases. There cannot be a doubt that rinderpest was one of them, but pathological data are wanting to justify any one arriving at the conclusion that all the other diseases to which cattle are now subject, did not then exist; and never were imported into this country prior to 1842. And besides this objection, the absence of anything like reliable agricultural statistics renders it impossible to arrive at a just conclusion relative to the actual per centage of mortality. All such conclusions, therefore, are haphazard jumping in the dark, and hardly merit a general interpretation which otherwise might be conceded as an hypothesis or as a distant approximation. But in the case under consideration, the hypothesis of an exclusive importation is so objectionable as to render it unworthy of a hearing, practically speaking. If it is our duty to prohibit by every means in our power the importation of contagious diseases, as unquestionably it is, it is also our interest in a greater degree to cultivate a higher standard of health at home, so as to keep down the predisposing cause to a minimum, thereby preventing the propagation and spread of contagion. So long as contagious diseases exist amongst cattle in other countries from which we import agricultural and other produce largely, the prohibition of the importation of such diseases will be impossible, strictly speaking; and in our present state of knowledge it cannot possibly be said that rinderpest, pleuro-pneumonia, and mouth-and-foot disease in horned cattle, and small-pox in sheep, are not now equally indigenous to England as to any part of the continent of Europe, and as ready to burst out afresh when the primary cause is attended by the predisposing cause. All that can safely be said on this head is, that rinderpest has hitherto been peculiar to Southern Russia, where the mismanagement of cattle equally prevails; but that does not disprove the contrary, for it rather suggests to England to improve her own fashionable system of stock management. *W. B.*

* The dairy stock of Cheshire are not so highly bred as at all to assist the author to his conclusions.

RINDERPEST.

[A discourse, on the then existing aspect of the Cattle Plague, was spoken by Earl Cathcart in the early spring before the Royal Agricultural Society of England, and we drew attention to it at the time. But a full report not having appeared as we had anticipated in the late issue of the Society's Journal, we now give the statement *in extenso*, as the most suggestive and instructive and useful of the many lectures which have been delivered on this subject during the past 12 months.]

AT the weekly meeting of the Council of the Royal Agricultural Society, held at the Society's House, Hanover Square, Mr. William Wells, of Holme Wood, Peterborough, in the chair, Earl Cathcart delivered an able and interesting address "On the Present Aspect of the Cattle Plague, and the Practical Working of the Cattle Diseases Prevention Act, 1866."

Earl CATHCART said: There is a great difference between a call to duty and a mere volunteer performance. In the present instance I have been asked to treat this matter by the Journal Committee, and I gave my consent because I considered that they were the best judges of my qualifications for the task, and I was glad of the opportunity to show my appreciation of the Society and my regard for many of its members. For these reasons, then, I undertook the duty. The first thing I found, however, was a lion in my path, and that lion was the Charter of the Society, which directs that no politics should be talked here. Well, as I have no strong political predilections, and there are no party interests involved in the question, the lion at all events need not be dreaded by me. This is a question of rents, trades depending upon rents, and employment depending upon trades; and there is the action and the reaction always going on which makes one class dependent upon the prosperity of another. Again, we must bear in mind that the English are a carnivorous people. Cæsar himself, when he spoke of the British, said, "*Lacte et carne vivant*"—on flesh and milk they live; and that is about true to the present day. But we must remember that millions in this country live from hand to mouth, and that the immediate effect of home slaughter is to deprive the poor in towns of the offal which they largely consume. There are numbers of people who never taste flesh meat at all, and not uncommonly a Sunday dinner is a pennyworth of sheep's brains. Another important question which arises here is that of the supply of milk. Now the supply of milk has always been short in this country, and that supply is materially shortened at the present moment, the English labourer having upon an average only one-fourth of what his fellow labourer gets in Scotland and in Ireland. Again, we have to consider the enormous infantile death-rate in this country; the dearness of milk preventing its being used in the nourishment of children, and causing the substitution for it of a nasty sugar soap. That, supplemented by the demon opium, which is used to much too great an extent, the natural result, as you read in the register of deaths, is physical debility from the birth. And you will observe in the streets, in hospitals, in gaols, in lunatic asylums, persons with enlarged bones, and swollen glands, all suggesting the effects of deficient nutrition. These, and a hundred other considerations, lead us to concur with the writer in 1747, who said, in regard to the cattle plague question of that day, "Whatever concerns the good of mankind ought to be the object of every man's care and protection." The plague nearly concerns us all, and especially the indigent. There are two or three further introductory considerations before we come to the two main questions set apart for discussion this day. The first of these is that we in this country are a law-loving people, and it cannot be right for public companies or for any in high position to say that they will evade the law. Nothing has more struck me during the progress of this cattle plague in the midst of an infected district, than the great obedience which the poor have paid to the necessarily most severe and restrictive orders. There were now, as there were throughout the last visitation, and there will be throughout this, those who continually cry, "peace, peace, when there is no peace." There is also a great danger from the single thread of inquiry people. I will explain what I mean in this way. Those who are accustomed to study human nature in courts of law are aware how numerous the people are who seize a single thread of an inquiry, and depend upon that single thread until it snaps. Whereas if we desire to take a strong pull at any question, we grasp all the threads and twist them together into a very cable of proof.

The first of the two questions appointed for to-day's discussion is the present aspect of the cattle plague. A little cloud rose out of the sea, small like a man's hand, but the signs of the times were not read. Nevertheless, there was a still small warning voice of the veterinary surgeons, who, as Mr. Barron observes in his report on the cattle plague in Belgium, presented to the English Parliament, were consistent from the first. Authority waited for public opinion, and public opinion waited for authority, and hence our present position. Then at the present we stumbled over the want of agricultural statistics; that is the national stock-taking, or rather the most important part of national stock-taking. It is a singular fact that has been proved, that whilst there is an objection to agricultural statistics amongst the farmers of England, there is none whatever amongst the farmers of Scotland. What makes this difference between the two countries separated only by the river Tweed? I can suggest no other consideration than this: that at one time tithes in England were collected in kind, whereas in Scotland there has always been a rent charge; that is the only distinction that I can draw between the two. But, such is the feeling at this moment, that if the Government would strike whilst the iron was hot—if they would call in the assistance of the Board of Trade, I believe they could easily carry a bill upon the subject that would be heartily welcomed by the whole agricultural community. There are three authorities that I have consulted as to the amount of horned stock in this country. There is first, Mr. Maclean at one extreme, the greater; there is next, Mr. Morton, as the least extreme; and then there is Mr. Lavergne as the mean. I shall take Mr. Lavergne's calculation as to the horned cattle of Great Britain, which he states amounts to somewhere about 6,000,000 in round numbers. It appears from the Government returns, that by means of the plague we have got through (lost) 210,000 head. But from my own personal observation I know that the Government returns do not adequately represent the actual losses. There are understatements. There are panic slaughters, which are not returned. There are also great losses for breeding purposes. And how much of the fruit of the labours since 1775 of the Bakewells, the Collingses, the Booths, and the Towneleys! Quantities of unripe meat are brought into the market, as I have seen myself; and taking all these things together, I say that it is not an

over estimate to double (the 210,000, and to put down 420 000 as the total losses we have sustained. In other words, something like one-fifteenth of the whole of the stock in the country. You will observe that I am speaking of Great Britain, not England alone. I do not think that is over the mark; yet in cases of defence it is always better to weigh the enemy mightier than he seems. This loss would be bad enough even if the incidents were equal, but the blow has fallen with a crushing weight upon certain districts. Cheshire, for example, most heavily punished by the great plague in the last century, is said now to have lost from one-half to two-thirds of its horned stock. Next comes the question, and this is the all-important question—Where is the disease to end? If the sapling produces such bitter fruit, what may we expect from the tree? Then as to the probable continuance of the plague. There are some 22,000 places where the plague has been, and those plague spots are dotted pretty nearly all over the fair face of Britain. Infected hay conveyed infection after four months' exposure to air. That fact I take from the German report. Hung laid out in the autumn and frozen in the winter conveyed infection in the spring. Clothes or sacks laid upon cattle also conveyed infection. There have been numerous bad and insufficient burials, with the probability of the bones being dug up or exhumed.

All that Bolingbroke, or Arnold, or Kingsley could say on the advantage to men of action of the study of history may be summed up in a single phrase: "Dead men open living men's eyes." Let us therefore turn to that long neglected voice from the grave, the "Gentleman's Magazine," from 1715 to 1757. In February 1746, the second year of the great plague, Dr. Brokesby wrote:—"One beast goes; all sooner or later go. (The plague) will probably abate in a short time. . . . As an exotic plant—flourish, dwindle, and die." On the 12th of March an Order in Council says, "If not timely prevented, it (the plague) will end in the destruction of all cattle." In 1747, the third year of the great plague, the Council says the same thing, and complain of the apathy of the local authorities, and again it is said that the disease has lived through all the seasons. In 1748, the fourth year of the great plague, the disease had broken out afresh in several places, that is to say it had returned to several places. In 1749, the fifth year of the great plague, it is "all over England." In December of that year the Council say, "it rages with a malignity and violence little short of the first outbreak." In 1750, the sixth year of the great plague, in the month of November it is recorded that the justices have great difficulty in enforcing the Orders. They have also great difficulty from gentlemen who hope all things, who fear all things, and who believe all things. How curious is the tendency of history to repeat itself! Grass is spotting on the ground for want of mouths to eat it, cows will buy hay; farms there are no rents; stalls are fouled; and then comes this observation—"It is a great pity they had not killed each beast." In 1751, the seventh year of the great plague, the disease showed itself in Yorkshire, Westmoreland, Lancashire, Wilts, Monmouthshire, Gloucestershire, Dorset, Bristol, and again in London, as well as in other places. In 1752, the eighth year of the great plague, the cattle are being shot by order of the quarter sessions, and paid for out of the county stock (or rate), and so on to the very end; and at the very end is this curious and suggestive record, "A never-failing remedy has been discovered by E. Venables Vernon, Esq."

We have also further important evidence in Mr. Barron's most valuable and suggestive report on the cattle plague in Holland and Belgium, to which I have already alluded. From that we learn that the disease in Holland was imported from England in the month of July; that it came from the metropolitan market; that they left the matter too much to the local authorities; that they sent tainted cattle to the market; and that the disease spread far and wide. Holland, then, became completely overrun, whilst the population were impatient of restrictions, and even resisted them by force. Tainted meat, or meat repulsive to the eye, was openly sold. The country was in a deplorable condition. The disease is not likely to be rooted out for years to come, and the land has gone down to one-half its value, that is half its rental value, I presume. Contrast with this what has been done in the neighbouring country of Belgium. The Belgians at once closed their frontier, and stamped out the disease with signal success. They said, the only way to kill the disease in the germ. They took an inventory of stock, a thing which we ought to have done. They had recourse to the system of home slaughter. All imports of ruminants were forbidden. The thing is stifled in the germ. The minister stimulates his subordinates. He says, "In such a calamity as this every one must do his duty, and do it with devotion; and, above all, we depend upon the zeal of the local authorities, and their sense of the grave responsibility which weighs upon them." Then Mr. Barron says that they had fresh outbreaks from markets in spite of all their inspectors; but they were stamped out; and in this work the authorities had active and zealous agents in their veterinary corps. Then the disease broke out in sheep, of which they lost 112. But the courage of the minister saved the country. Professors Gamgee and Simonds, Mr. Barron says, were derided at first; but the teaching of events is irresistible. As far as our own experience is concerned, we must remember that it is as narrow as history is boundless. The experience of nations and of ages has recorded facts for our guidance; and the knowledge of the future depends upon our knowledge of the past. Take all that has been said on this subject together, and in connection with the present state of Britain, and say, is there any early prospect of a cessation of this grievous visitation?

We now come to the subject of sheep, which there is a great and natural desire to purchase just now. Disinfecting the fleeces will not disinfect the live sheep. Professor Seifman's experience in the centre of Europe is that, in contact, sheep do not invariably take the disease, but that they are most clearly liable to it, and that 20 per cent. usually recover. It is important to observe that a writer in 1747 says that the disease is propagated in the wool of sheep. I believe there is now a decided opinion, arrived at tardily, that sheep are liable to infection, and that there have been cases all over England and Scotland. It is curious to observe, however, that two great authorities in Edinburgh, the Cattle Plague Committee and the Farmers' Club, are divided on the subject, and in the House of Commons an opinion was expressed in favour of it on one night, and an opinion against it on another night. There is no difference of opinion amongst medical men, I believe; and Professor Simonds has assured me that he has no doubt whatever that sheep are liable to the plague. This is a very important matter indeed, because the transit of sheep must immediately be considered, and the present is the lambing season, when changes of tenancy are going on, and farms have to be restocked.

We come now to the practical working of the Cattle Diseases Act of the present session of Parliament. That is the second question in to-day's discussion. The proverb welcomes it—"Better late than never." It may be convenient, perhaps, to take the various points suggested by the Act in their natural order, and afterwards consider the effects of the Act as shown by the Government returns; premising, however, these considerations. The Act must be supplemented by further imperial and local measures. At the same time it must be borne in mind that the cord must not be stretched too tightly; stretch it too tightly, and it will break. And here I would say a word or two respecting Mr. Hunt and his Bill. That measure is not now before Parliament, so that it is not a lion in my path. But I may be allowed to express my regret that the offspring was not so fortunate as its parent was energetic. We must further bear in mind that, henceforward, there will be almost daily and hourly necessities for interference of one kind and another by legislation and other means. To come to the Act, however—the first point is that which relates to the local authority. All through the great plague of 1747-57 there were complaints of apathy and laxity. The next subject is that of joint committees. Committees were formed during the great plague. In Poland we find from Parliamentary records that farming gentlemen were associated there with the departmental authorities with very great advantage. We come now to inspectors. The inspectors have been too much decried here, although they are the hinge upon which the Act turns. They are upheld in Belgium, and ought to be encouraged and educated to their work here. The police, I should be satisfied. Then with regard to certificates and licences, there appears to be an unwholesome belief in them, and they tend to be about as valuable as American greenbacks. In a great jurisdiction within a thousand miles of where I live a circular has been issued upon this subject showing that the disease has actually been spread in consequence of the laxity with which licences and certificates have been granted. In 1749 the evidence in the "Gentleman's Magazine" shows that certificates completely broke down; and in May of the year 1750 it became necessary to impose a fine of 20*l.* upon justices, clergymen, and others who issued wrongful certificates. My own opinion is, and I have the concurrence of some of the most experienced and able justices, that licences ought to be issued in petty sessions by two justices; that it is the most disagreeable of duties that one can be exposed to in his own house when friends and neighbours come for certificates; and I believe that the best and most able justices in the country would prefer that these licences and certificates should, if possible, be granted in petty sessions.

We come now to consider the next point, which is slaughter; and here again I must be permitted to refer to the evidence contained in the "Gentleman's Magazine." In October, 1745, they said that the disease was incurable. Again it was said, kill diseased beasts immediately; it is the only means of preservation. In November they say, "killing out is generally approved of;" and I observe that the same arguments were used then as now about knocking murrain patients on the head, and there were even better arguments than are now used to show that the disease is not infectious or contagious. The Commission for Middlesex say—"If any person refuses to have his sick cows killed and buried in hopes they may recover, or other pretence, they are not to have the allowance." In 1747, the third year of the great plague, experience shows that nothing can contribute so effectually to prevent the spreading of the disease as killing the cattle when the disease first appears upon them, before it begins to be infectious and communicates itself to the rest of the herd—so it is an absolute necessity. In 1750, the sixth year of the great plague, it is observed that cattle were not killed soon enough to be useful—which means for the killing to be useful. Then Virgil and Columella are quoted upon the desirableness of killing diseased beasts; and I take it that from Virgil down to Professor Simonds all the great authorities have held pretty much the same view upon that point. In the same year (1750) there is a record that in quarter sessions in Cheshire it was observed that such as began to kill as soon as the distemper appeared lost very few; and they speak of the wretched condition where faith is put in medicines, and letting the disease take its course. In the records of the same quarter sessions there are instances of success in slaughtering out in many counties and places. Then it is said about killing again, "regard the sound: to save one or two you risk many. If the farmer at Elton had killed his cattle, Cheshire might have been saved; 6000 then dead." Next I find this question—Do you think there is no cure? The answer is, "None. Everything has been tried in vain. Some remedies appeared at first to answer, but on further trial they failed. My own cattle I would kill at once, rather than endanger the sound, and foul my premises and fodder." To the question, what right the Government had to order killing, the answer is the maxim of law that a man may not do with his own that which will hurt another's. In 1752, the eighth year of the great plague, the disease, as appears by orders in sessions, was in Somersetshire, where 20 cattle were shot by order of the clerk of the peace, in the month of May. There were other slaughters and payments of a like nature ordered.

We come now to consider the subject of convalescents. Public opinion at first was alive to slaughtering out, but hardly to the slaughter of convalescents. The old writers at the time of the great plague say doctoring leads to the spread of the disease. Lancisi, a great Italian writer upon this subject, says that cures spread the disease. So that it would seem that animals which have "suffered many things from many physicians, generally die in the long run."

I come next to the important question of compensation. If there is to be nursing of diseased animals, then compensation will break down, because the very object of compensation is that diseased animals should be slaughtered as soon as they are attacked. But if they are to be nursed, and doctored, and are then killed, compensation is clearly paid for nothing. During the great plague, compensation was called by its right name, "premium;" that is a better name than compensation, for the fact is that it was a bonus on killing for the good of society. One-half the value was then paid, and compensation broke down, because the money came from the Treasury, and there was no local interest or power of observation to prevent frauds. Forty shillings was then the value of half a cow. Afterwards they came to the county stock or rate, and it is presumed that the payments from the county stock having been made with greater local knowledge, frauds were thereby prevented.

This brings me to the next point—viz., checks against fraud. Publicity is in my judgment everything—the very soul of justice. Then there should be weekly accounts, and in healthy districts by all means let them have a previous inventory of the cattle; thus there would be no disputes as to value afterwards. I believe that if we had done that in the first instance we should have saved ourselves a great deal of trouble. I have seen a doctrine set forth that the interests of the ratepayer, because he pays rates, is greater than that of the veterinary inspector. Now, I hold that in emergencies we should place confidence in responsible persons who are devoted to their duties; and as the inspector is liable to dismissal if he does not properly discharge his duty, he has a greater pecuniary interest than any ratepayer, because where the ratepayer pays 1*l.* of rates, the inspector receives, perhaps, 50*l.* or 100*l.* of salary. In this country it is true policy to have the best men you can get as inspectors, and to educate them well for the discharge of their duties, for their services will be required for some time at least; and if you want a man to respect himself and do his duty, you must first show him respect.

A very important matter comes next for our consideration, and that is the subject of disinfection. I think we are greatly indebted to the commission for the suggestions which they have published on this head, and which have been exceedingly useful in practice. We should remember that a very little leaven leaveneth a great mass, and that the disinfection of premises is a difficult matter, requiring some special knowledge. Previous to our meeting to-day I ventured to say something to our friends here about carbolic acid, but I was informed that there was nothing to be said about disinfectants, for there was only one—namely, chloride of lime. I am sure, however, that great good might be done by the use of carbolic acid, and I would suggest that it should be kept in the different police stations, as the smaller farmers will not get it for themselves; the same has been done in the North Riding of Yorkshire. Whilst referring to this matter I would remark that the country is very much indebted to Mr. Crookes, F.R.S., for his investigations. I believe there is great danger—and this is confirmed by the experience of Poland—to be apprehended from hides and skins, which should be received with as much suspicion as live stock themselves. This danger from hides and skins weighs heavily upon a particular class—namely, the tanners; and I cannot help thinking that Mr. Crookes would do good and patriotic service if he would point out how hides and skins may be made safe, and at the same time fit for the process of tanning.

I pass on now to notice the movement of stock in connection with fairs and markets. In the third year of the great plague the disease spread from the London market, and throughout that period it was always returning and breaking out again in places where it had been before. But no doubt there must be for breeding and market purposes, and for the stocking of farms, some regulated movement of live stock.

The county rate is the next point, relative to which all I have to say is, that during the great plague a precedent was established for the payment of compensation out of what is called the county stock or rate.

Let us now contemplate the attacks as shown by the Government returns, in other words, the results of the practical working of the Act, so far as we can gather them from the Government veterinary reports. I find that in the week ending Feb. 17, the disease appeared to have reached its climax. The attacks

in that week were in round numbers something like 13,000. In the next week, ending February 24, they had fallen to 10,000. In the following week, ending March 3, there was a further fall to 7310; and in the week ending March 10, which is the last return, I hear they were 6518; but here there is rather a fallacy, because back cases are not recorded. Taking the back cases, however, the numbers would be for the four weeks respectively 18,000, 11,000, 9000, and 7000. But, I think we should have a more sensitive and satisfactory test, perhaps, in the number of fresh centres, as showing the working of the Act. In the first of the four weeks I have referred to, these were 995, in the second week 712, in the third week 602, and in the fourth week, ending the 10th of March, 581. Again, there were killed of diseased animals 864 in the first week, 1641 in the second week, 4674 in the third week, and 5587 in the last week. All the English counties appear to have carried out the law more or less effectually; but undoubtedly there are four Scotch counties that have been altogether slack, as you may gather from the returns. After all the exceptional stringency there is still perhaps ground for disappointment as to the past, and warning as to the future. Sanguine persons who do not regard the past expected far more; as usual, they did not make due allowance for the various disturbing influences which so clog all human affairs. If it be considered that the means employed were so exceptionally stringent that they can never be had recourse to again, there is ground for disappointment, that during the last week the disease should have extended to 581 new centres. In that, I repeat, there is ground for both disappointment and warning. In Poland the German newspapers publish favourable articles, in order to influence the markets, and in England too often the wish as to the stoppage of the plague has been the "parent of the thought."

We will now turn for a moment to the consideration of the milder type argument. From the evidence contained in the "Gentleman's Magazine," I gather that the disease was most severe in frost and in winter, and there is nothing whatever to show in the whole of the records of the great plague that the disease was in any degree of a milder type in the twelfth year of the plague than it was in the first. They were obliged to have recourse to slaughter at last as at first, and cures were just as unusual.

I proceed now to notice the last point in the Act, namely, the movement of stock. When the railways are opened, as undoubtedly they must be opened to a certain extent, great precautions will be necessary. Without due care they may be the means of propagating the infection, and inspection is of little use or security where the disease is latent. Precautions are now taken with regard to the conveyance of lucifer matches, gunpowder, and other combustibles on railways, and companies must treat cattle pretty much as they do other articles which are liable to conflagration. Something has been said about the Government taking upon itself the cleansing of railway trucks; but the province of Government probably would be not to undertake any such duties, but to see that the railway companies do their own work effectually in that respect.

We come now to an important subject—dead meat markets. That system undoubtedly might be much extended, and in cool weather there appears to be little difficulty in driving the butcher to the ox. There is also little practical difficulty, as I have seen from observation, in slaughtering on farms, and there is little danger in slaughtering there. There are in England 68,000 butchers and meat salesmen who have no doubt been greatly inconvenienced; and I fear that, for some reason or other, there is very little sympathy between the butchers and the farmers. Now the state of Newgate Market is most interesting to the public. The state of that market is —as I can testify from personal observation, having spent a night there—a disgrace to our civilisation. Ten million pounds of meat per week come into that market, that being double the quantity that was sent before the plague. This is interesting to the public. All are interested: from those who eat the dishes made from the gouged ears of lambs, which I saw, or the fat from a cow-calf's udder, to the poor man's dinner of cooked bullock's liver. Conceive this place at four o'clock in the morning, flaring with gas-lights, a great bee-hive of a place, like a number of Wardour Streets rolled up together, jammed up with meat of all kinds instead of furniture; saw-dust scattered about in all directions; sides of beef walking in on four legs—that is, carried in by two men. This market is positively jammed with meat, and men, and baskets, and vans. The proper idea of a great central meat market for the metropolis is that of a large covered space, with spacious span roofs, the lightest possible pillars, convenient side-walks for pedestrians, and a tramway for the conveyance of the meat. There were at Newgate Market, on the night to which I allude, large quantities of clearly unripe meat, and some meat which looked very musty and flabby. But the great crying evil of the present system of slaughtering in the country is that the poor are deprived of the offal on which so many live. The offal is often sold at a loss of one-third. Small quantities of it are brought up to London in baskets, and conveyed in such a manner as to be absolutely disgusting. When I speak of offal, I allude to hearts, livers, and plucks. The next question is whether veal ought not to be given up. And here I am reminded of a saying which is of universal application in all the relations of life, namely, that "where the carcase is, there will the eagles be gathered together;" that is to say, there is a tendency in cases of calamity to make capital out of it. The railway companies are said to charge three times as much for carcases as for live beasts, although a truck will carry twice as many of the former as of the latter. In favour of the poor, therefore, there should be some provision for the convenient carriage of offal by means of some kind of travelling larder. On the occasion of my visit to Newgate Market the meat generally appeared to be in fair condition. Dead meat comes from abroad, and Mr. Barron says that the 112 Belgian sheep suspected of having the plague were sent to England as mutton. Let us hope that due care will be taken, and that we shall not hear of death in the pot. There is a curious record in the "Gentleman's Magazine" that during the great plague the experiment of feeding on diseased meat was tried in Flanders on some condemned soldiers, and that they ate it with impunity.

Dr Cuse.—Yes, I myself have positively eaten plenty of it, and there is not the slightest harm in it

Earl Cathcart.—But perhaps it is a slow poison? (Laughter.)

We will now go on to the live meat market at Islington. That is a magnificent market. You see there Spanish cattle with long horns, and white and black Dutch and French cattle, and Monday last witnessed the unparalleled fact that the market was nearly as full as it was prior to the breaking out of the plague, nearly every one of the animals being a foreigner. It is a strange circumstance, and well worthy of note, that on Monday there were 1160 foreign cattle in the market, or very nearly as many beasts as there were previous to the stoppage of the movement of English stock. There is one thing should be observed as affecting agriculturists, and that is, the cruelty of sending clipped sheep up to market in March and April. There they were, standing in the cold morning air, shivering dreadfully. It is curious to observe that within eight years the foreign imports have risen from 300 head a week to 12,000 or 13,000.

We are now brought to what at a previous meeting I ventured to say is the great turning point in all these discussions, that turning point lying in the word *confidence*. Now, the six millions of cattle, 20 millions of sheep, three millions of pigs in Great Britain, all liable to an imported infectious disease, are surely worth caring for. They are the food of the people. I, for one, freely admit all the difficulties of legislating and administering the law in relation to this matter. What I mean by confidence is this. We want imperial authorities to perceive the danger and to see as safely through it. We don't want any limited liability; we want a responsible Government Committee, a Board constituted with due regard to a division of labour, with the check and spur of fixed responsibility. It is not enough to have two or three right hon. gentlemen who may chance to gather together. This responsible Board or committee—and this is an important point if you look back to past history—must be "instant in season and out of season," must "reprove, rebuke, and exhort with all long suffering." Their orders must be plain and clear. The records in the "Gentleman's Magazine" show that in 1745 and 1747 there were great complaints owing to the obscurity of the orders that were issued at that period. The people could not understand them, and consequently they were not obeyed. In all these measures we must carry the people with us. We want a sensitive, respective central Government, and an active local administration, working together rapidly and hand in hand. The duty of the central authority should be interference, partly dictatorial, partly suggestive, the object being to benefit by their superior information and their command of skill and talent, to compliment local exertion, to give confidence and protection against undue competition, to intervene so as to give effect to the general wish—in short, to carry out the maxim of law laid down by Lord Coke—"Persons"—I would say countries and boroughs—"may not do with their own that which may injure another's;" that is, you must use your own so as not to hurt your neighbour. The wish for central Government to bear in mind that energy and self-dependence may be impaired by the absence of help; that much must be left to local knowledge and local interest, and to direct interest in the result; that a little competition and emulation may be better than the strictest conformity; and that, on the other hand, now, as during the great plague, quarter sessional orders, when they are very diverse, create distress, and local authorities cannot prevent a laxity in one county which is dangerous to others. Now upon this point we have the example of Aberdeenshire and Kincardineshire. In Aberdeenshire they kill out, or have killed out, at a voluntary expense; in Kincardineshire they are nursing. The local authorities cannot impose quarantine on imports and other general and necessary restrictions. The disease must be fought in every district, and there is no safety while it smoulders or lurks in any corner of the island. In fact, one may say, using the expressive figure of Mrs. Partington sweeping out the sea with her mop. I should like to say a word or two on the subject of sympathy, and speak "a word in season to them that are weary." I can say for myself, as a landowner, acting as a justice, and living in the country, that it is absolutely depressing to one's feelings to live in the midst of such misery. I myself have not suffered much, but on coming out of church on Sunday afternoon, I have heard guns going off in various directions, every shot representing the death of a miserable cow. Well, then, as to the farmers, this visitation will entirely break down many of them. They were words of true pathos which a farmer addressed to me, and he was a fine manly fellow, who had done many a kindly action: "This will take the kick out of my gallop for many a long year." Then, as to the labourers—I mean the flower of the agricultural labourers, men who have saved a little money, and who, having got a little property themselves, know how to appreciate their master's losses. These are the people who are suffering most, and they are well entitled to our sympathy. The labourers to whom I allude were the owners of cows. They have lost, perhaps, in a day the fruit of the saving of years; they have lost that which was perhaps essential to the future well-being of the children around them; they have sustained a loss which they may never recover. The most pathetic ballad in the English, or in any other language—such, at least, it is said to be on good authority, whether in ancient or in modern times—is the ballad written by Lady Ann Lindsay, "Auld Robin Gray." When she had described all the miseries that she thought could be inflicted on poor people, she turned round to her young sister and asked what additional aggravation there could be? Upon which the sister called out—"Steal the cow." Here, then, we have, as we often have, a reality far more pathetic than any tale of fiction. Gentlemen, I am very much obliged to you for having "lent me your ears," as Shakspeare says, for so long a time. But before concluding I have a word or two to say on the subject of divinity. It is in evidence that on one morning early in August last one or two hundred cattle that were known to be diseased were sent out of the Metropolitan Market simply because there was no one who had the moral courage or the authority to prevent such a state of things. Again, I say that the strong man Samson, when he caught 300 foxes, tied firebrands to their tails, and sent them through the corn fields, did not adopt a more certain way than this to spread disaster. And I believe it to be a manly, an English, and a Christian sentiment, to say that when we have each of us the consciousness of having done our very best, or at all events having tried to do our very best, to stop the plague, then is the time when we might most properly approach the heavenly throne to ask the aid of Him who is the Great Alleiver.

THE CATTLE PLAGUE.

The following returns were issued on June 22:—

These returns do not profess to give the total number of cases which have occurred in Great Britain, but only those which have been ascertained from information received at the office from inspectors. Columns 1 only record the cases reported as having commenced during the weeks indicated by the headings; "back" cases being added to columns 2.

Census Divisions.	1 Number Attacked. Week ending June 9.	1 Number Attacked. Week ending June 16.	2 Result of Reported Cases from Commencement of Disease. Attacked.	Killed.	Died.	Recovered.	Unaccounted for.
Metrop. ..	10	3	7,896	3,416	3,712	318	450
S. Eastern .	3	10	4,874	2,709	2,538	467	170
S. Midland .	99	60	20,545	8,534	10,068	1,940	496
Eastern Co.	21	9	11,395	5,373	4,837	789	596
S. Western .	—	—	1,756	656	822	207	71
W. Midland .	96	117	14,626	6,115	6,091	1,512	908
N. Midland .	111	67	18,800	10,733	6,265	1,218	584
N. Western .	196	190	70,815	23,848	35,013	8,267	3,687
Yorkshire .	40	53	34,140	7,862	18,350	5,936	2,362
Northern Co.	21	9	8,631	4,926	2,613	974	118
Monmouth. & Wales .	36	27	8,279	1,134	5,791	1,057	297
Scotland ..	12	18	46,839	6,243	28,087	10,706	1,803
	987	554	248,965	80,597	124,187	32,989	11,192

Note.—Inspectors who reported cases last week have not reported in time for the return, viz., for Bucks, 1; Chester, 1; Cumberland, 1; Lancaster, 2; Leicester, 1; and Lincoln, 2.

These Inspectors reported less cases last week.

Home Correspondence.

The Beneficial Results of Deeper Cultivation by Trench Ploughing.—Baron Liebig very justly says that our hard or cold stiff heavy soils, although chemically fertile, are physically barren, owing to the impediments offered to the free spreading of the roots—the absence in fact of friability. The cohesion of the particles is intense, especially after such a mild wet winter and spring. This is especially the case with undrained and shallow-ploughed clays. The only remedy for this physical disability is the ample introduction of farm-yard manure by deeply trench ploughing. All this is best done in dry weather, when air is freely introduced between the rough and separated masses. One of the main causes of the bad Wheat crops this year on cold stiff clays is the absence of hard winter frosts. The expansion of the frozen water in the clay shatters, loosens, and separates the particles, leaving it in spring like an ash heap. The absence of any such frosts in the past winter has been a great calamity for heavy-land farmers. In June last year, as fast as we cleared off our Tare crop, the land was heavily manured and trench ploughed, the ordinary plough going deeply with three horses, another plough, without the breast or mould-board, drawn by three strong horses, following in the track of the first plough, furrow by furrow. We then had a good crop of Cabbage, and after the Cabbage both the Oats and Barley promise well. The fact is that this breaking up of the subsoil facilitates the passage of air and water to the drains, and causes the crops to thrive in spite of weather. But ah! Mr. Mechi, does it pay? Well, now, that is just the very thing it does do, and the absence of such deep cultivation is one principal cause of the wretched and weedy crops that meet the eye in every direction on the cold hungry clays. The longer I live the more and more am I convinced that shallow cultivation is a radical and unprofitable error, entailing serious loss on British agriculture. I exempt, of course, from my remarks all loose and too friable soils, which rather require compression. *J. J. Mechi, Tiptree, June 15.*

Land Drainage and Fertility.—The Scripture description of rich productive land—that "it drinketh

water of the rain of heaven," shows that land to be rich must drink up all the rain that falls on it, none must be allowed to run off, or remain stagnant upon it; thus the land must be in such a porous state as will enable it to receive all the rain as it falls from the clouds that it may sink through it; and it must be observed that the earth, to be productive, must under all circumstances be able to "drink the water of the rain of heaven;" it must at all times be in such a state, it must never be glutted, or gorged, with more than it can readily digest or discharge into the drains below. The land, therefore, to be productive, must have either naturally or artificially the power of letting the rain-water pass through the active soil and subsoil into a porous stratum below the reach of the roots of the plant, to be carried off by drains if not in the natural way by a pervious subsoil. There can be no injury done to the active soil by an excess of the rain of heaven falling on it if it can at all times drink it in, for it brings with it the means of most luxuriant vegetation. To improve any soil, particularly a clay soil, it must be first perfectly drained; no step taken in the cultivation of it will be efficient until it be perfectly drained; the superabundant moisture and the stagnant water must be discharged before the soil can be properly cultivated, so as to enable it to put forth its natural productiveness. Heat, light, air, and moisture are required to give luxuriant growth to plants; these stimulate the vital process, cause the fermentation and preparation of the food in the soil, and convey it to the various organs of the plant; and as the rain acquires in its fall the temperature of the atmosphere, it imparts its heat to the soil as it descends through the active soil into the subsoil. But when the rain which is given to us to enrich our soil cannot pass through it, it either remains in it or on its surface, and becomes stagnant; it is then most injurious to vegetation, it prevents the sun's rays from having a heating effect on the soil, for the heat is absorbed as the redundant water is being evaporated, the surrounding air is cooled down during the time the water is undergoing the process of evaporation, and the earth is colder than when the sun began to shine upon it; and thus it is that wet land is always colder than dry land. If the water cannot sink into the land, but runs off in open furrows, then the good which might have been secured is frustrated by the indolence or ignorance of the husbandman; the heat which would have been transmitted to the soil from the sun is lost, and the fertilising matter which came in the rain from the clouds, as well as that which is washed in by surface-drains by the running water, is carried away to the river.—*J. M.*

Calf-rearing.—The following particulars are gleaned from a paper read before the Ballymahon Farmers' Club, Westmeath:—"In the month of November, 1860, when I commenced, I purchased three springers, which I fed highly for that purpose—the great groundwork for feeding calves. I then bought 10 calves in Dublin, and cows' own made 13. The treatment they received was as follows:—I gave them for the first month 20 quarts of milk in the morning, and 18 in the evening, to which was added very thin Linseed meal. Each calf got 2 quarts at each meal, and at 2 o'clock the Linseed meal with 12 eggs well beaten up, and a little milk, was again given, in 2 quarts to each also. Second month they got milk, Linseed meal, and Indian meal stirabout, cold. Third month they got milk stirabout, and boiled Potatoes cold: they also got daily some kind hay and five or six sheaves of Oats. After the third month they got no more milk. I then purchased 25 lambs, twins, from the gentry about me, and three more calves. The lambs I fed on milk—the calves as above. I purchased the lambs about the first week in March, and weaned them about the first week in June. I then purchased in Smithfield eight more calves, and fed them on the meal and stirabout, as before, until I brought them to perfection, and afterwards sold them, when three years old, at 13*l.* apiece. I only lost two of that batch. I proceeded similarly since each year, and have been successful last year. I got in Mullingar 12*l.* apiece for two and a-half year-olds, and 16*l.* for some kept over to this year as springers. You saw me get 24*l.* 11*s.* apiece for my 23 lambs in last fair of Athlone, reared last year. The lowest I ever got was 9*l.* for hoggets. I also got at the March fair of Killavalley 10*l.* apiece for 2-year-olds. The plan I adopt is,—first to prepare my shed in October by making a small cut in the centre to receive the water, I then cover the floor with rough hurdles made by my labourers, under which I place small sticks leading across to the cut, in order to receive the filtered water from the calves, over which I place plenty of litter to keep them dry and warm. I also put a small rack at the end to hold hay, and I keep the room well ventilated. I then buy half a cwt. of bran, half a stone of second flour, and half a stone of Indian meal, add two handfuls of salt, and mix all well together. I then place two quarts of this ingredient in a deep crock every morning, and throw a kettle full of boiling water on it, stir it well, and cover it close until evening, when it will come out like thick paste. I also boil one quart of Flax-seed (three acres of which I generally sow and ripple every year) in 8 or 10 quarts of water until it bursts, and mix all together with 5 or 6 quarts of milk at each meal, and feed my calves; in the evening the same process is adopted for next morning. When I take in young calves I give them all the new milk for the first fortnight, two quarts in the morning, two in the evening, and one in the middle of the day: second fortnight, half milk and half ingredients as above. Should diarrhœa appear I immediately change the diet, stop giving all artificial food, give 10 oz. castor oil to remove the irritable matter, then give three times a day some boiled milk with as much prepared chalk as could cover a shilling, and some ginger infused in the milk, or a handful of the leaves of the herb called Mullin, which I propagate for that purpose, boiled in the milk, and which I find most effective, as I never lost a calf by diarrhœa. When a calf takes a pain, and kicks like in convulsions, I give two cloves of garlic bruised in a print of butter, and repeat the dose, if necessary, till well; or give half a glass of spirits of turpentine infused in milk. When a calf is affected with vermin, as white calves often are, I rub him all over with a solution of sour buttermilk and salt on a dry day; do the same in three days after, when the eggs or nits come to perfection, and the cure will be effectual. I feed my calves out in winter on dry upland, well sheltered, with a small shed attached in case of rain, and a crib full of hay every night; I find they thrive better than housed. As to blackleg, I believe there is no cure when it sets in; but the best preventive is to bleed, make a seton in the dewlap or hind quarters, about 1 inch long, then thrust in the finger to its full length, and insert a small piece of hellebore, or pounded garlic and gunpowder, or a bit of blistering ointment: close up the wound and leave it so. I never had blackleg, as my land produces quantities of the herb Yarrow, which is a great sweetener and preventive. I generally get from 5*l.* 10*s.* to 7*l.* for my yearlings, and have 10 this moment as good as any in this neighbourhood.

Advantageous Mode of Growing Winter Tares.—We usually drill with 2 bushels of winter Tares half a peck each of winter Oats and Wheat, which help to keep the Tares from becoming laid and rotten below. Our Tares this year are grown on a Barley stubble, where much Barley shelled out. When the Tares came up, they were crowded by the self-sown Barley which "stood," owing to the mild winter, and it was predicted that the crop of Tares would be ruined by the Barley; quite the reverse of all this has happened. We have a fine crop of Barley, Tares, Wheat, and Oats, nearly 4 feet high, immensely thick and upstanding, but rolling heavily in the wind. The Barley approaches ripeness, the Wheat and Oats coming only into ear. The mass is cut, brought home, and passed through the chaff-cutter, giving such nutritious food (corn, straw, and green food combined), that although my horses are very hard worked by subsoiling and deep ploughing, they are in full flesh and condition, though they get nothing but this food. The cutting up fine is all important, for, without this, half at least of the food would be uneaten. The cost of mowing and cutting up by hand is 8*d.* per horse per week; by steam-power, 1½*d.* per horse per week. In either case it pays well. I must here be permitted to condemn most severely, as a very unprofitable practice, the usual mode of giving long uncut food to horses or cattle. The contrast in the condition of the animals so treated is striking and convincing. I ought to say that the Tares are supported vertically, and are now in flower, overtopping the Wheat and Barley. Every portion is available as food, instead of rotting on the ground. After Tares we manure heavily, trench-plough deeply, and get an abundant Cabbage crop, followed in the spring by a full crop of Oats or Barley. *J. J. Mechi, Tiptree, June 15.* What a contrast these Tares present when compared with the light crops of upland Grass!

Farmers' Clubs.

HEREFORDSHIRE CHAMBER OF AGRICULTURE.—We learn from the *Hereford Times* that at a large agricultural meeting held in Hereford last week, it was determined to organise a County Chamber of Agriculture. Mr. DUCKHAM, of Bayshan Court, who lately presided at the meeting for the establishment of a Central Chamber of Agriculture, opened the proceedings, and referred in succession to the Anti-Malt Tax meetings and the great Cattle Plague Conference, in illustration of the need of some means of urging agricultural questions on the attention of Government. We quote the following passages on other topics included in his address:—

1. *The present System of the Game-laws* is one which I think bears excessively on the farmers of England. It is estimated that damage to the extent of 10 millions is done by game every year in this nation. I don't think there is a farmer in this room, in the county, or in the kingdom, but what would gladly see his landlord come and have a good day's sport over his farm; but when it goes to the wholesale destruction of crops, when the hopes of the farmer are all blighted and the capital which he has invested in the soil completely destroyed, then I think it becomes a great national question with which sport has nothing to do, because it is a great loss to the nation, and that merely for the gratification of a few days' *battuing*. I believe that the game-law is a question which is worthy of the serious consideration of Chambers of Agriculture, both central and local. I am sure it would be for the interest of the landed proprietor to turn his attention more to agriculture and to the improvement of his estate, and to give security for the capital invested, rather than destroy the produce in the manner in which it unfortunately is being destroyed throughout the length and breadth of the country. The destruction of game, I have said, is estimated at ten millions; and I consider the loss to the nation to be ten millions more every year in the restricted energies of the farmer. And yet here we are sending out 35 millions sterling a year for food for the nation.

2. *As to the Stamping out of the Cattle Disease*, we see that during the last week, in consequence of the lax manner in which the law is carried out, the disease has been increasing. There are persons who would wish us to believe that it is dying out, but it is not so; there being during the past week nearly a thousand cases. This time 12 months one animal was sufficient to disseminate the disease all over the land, now we have nearly a thousand; yet, although the law says kill as soon as diseased, the Government in their weekly official report give a column for "recoveries." If the law were carried out, this could not be so; and the very fact of their giving a column for "recoveries" shows that they wink at the breach of the law. Thus we see the necessity of some organisation amongst agriculturists, of some machinery being set in motion more than exists at present, in order that this direful disease may be checked, so that we may once more have free markets to which we can bring our stock.

3. In London, one of the grand points we entertained was not only the establishment of district chambers of agriculture throughout the kingdom, but also to urge upon the Government the formation of a board of agriculture and the appointment of a minister of agriculture, through whom the wants of the agricultural interest might be made known to the Government. There are many questions of serious moment worthy the earnest consideration of chambers of agriculture; such, for instance, as weights and measures, corn averages, rating, and turnpike-roads; but as I have already trespassed so much on your time and I fear exhausted your patience, and as other gentlemen more competent than I am will speak on matters of detail, I will conclude by proposing the resolution:—"That in the opinion of this meeting the agricultural interests of this kingdom are materially suffering from the want of a proper organisation."

This, with the subsequent resolutions, was passed unanimously.

Captain PATESHALL proposed the next resolution—"That in order to meet that want it is considered desirable that chambers of agriculture should be established throughout the kingdom, to co-operate with the Central Chamber of Agriculture in London." He should, he said, have preferred some one more largely interested in agriculture than himself, some 800 or 1000-acre man rather than a 200-acre man, to have moved this resolution; but whether as one interested in practical agriculture, or as a landed proprietor, he had much pleasure in taking part in the proceedings, for he thought the subject for consideration was one which affected all parties who were interested in the land of this country, whatever his relation might be to it, whether that of occupier or proprietor.

Mr. BRADSTOCK proposed—"That a Herefordshire Chamber of Agriculture be established, consisting of chairman, vice-chairman, committee, secretary, and members, being subscribers of not less than 10*s.* per annum." He was well aware that there were some who doubted the possibility of effecting an organisation sufficiently perfect and powerful to influence the proceedings of the present or future Parliaments; but, as far as he was able to judge, he did not see any reasonable cause for such apprehension, for the result of contested elections had clearly proved that the two great political parties were so closely balanced that the additional number of two or three hundred voters, members of a Chamber of Agriculture, could at any time, in any county, decide the contest in favour of the candidate they determined to support.

Mr. RICHARD DAVIES seconded the resolution, and said: One subject of great importance which would shortly come before them was the turnpike gates. The present Act he thought expired in February next, and he was not aware that any steps had been taken by the Commissioners to have the Act extended. If that were so, the natural consequence would be that the repair of the turnpikes would fall upon the parishes which the roads traversed; but every one, he thought, would admit that it would be a manifest act of injustice if the maintenance of those roads which were national benefits and for the convenience of all parties, should be thrown upon the parishes, in addition to the maintenance of the bye and parish roads. There was another matter in which he had for a long time felt great interest—an equalisation of the weights and measures by which produce is sold throughout the country. They would recollect that when there was an attempt made to break through the old 10-gallon measure in this county a great deal of ill-feeling was brought to bear upon it; and that Government spent a vast deal of money in commissions of inquiry into the various customs that prevailed in reference to selling by measure, after which they decided upon a measure of capacity called the "imperial bushel," and declared that sale by any other measure would be illegal, but they left out altogether the practice of selling by weight. Thus the bushel of 62 lb. at Hereford was equal to 38 quarts at Shrewsbury, 84 at Chester, and 100 lb. across the Mersey at Liverpool, and so varying throughout the kingdom. How, therefore, was it possible that the tithe averages could be properly regulated with such a confusion of weights, whose very names was almost legion? There was another important question which had not been touched upon, viz., the sole charge of the poor rate upon landed proprietors and occupiers. The money wealth of the country was now almost boundless, and why should funded property be exempted from the contribution of a single farthing to the maintenance of the poor? If a Chamber of Agriculture were established, they could discuss those and other matters, and by well ventilating them arrive at fair and just conclusions—also make their opinions known, felt, and acted upon if they were just; if they were not just, they would very naturally and properly fall to the ground.

Mr. W. H. APPERLEY proposed a resolution appointing the Mayor chairman and Mr. Duckham vice-chairman of the Chamber of Agriculture, with a long list of committee-men; such committee to be empowered to form a code of rules and make arrangements for the organisation of the Chamber.

The question of appointing a Secretary was deferred.

We add that "the Central Chamber of Agriculture," which has its temporary offices at Wakefield, is under the presidency of Mr. Albert Pell, of Northampton, and the vice-presidency of Mr. R. Jasper Moore, M.P. for South Shropshire. On the Council, as names known in this district, are Mr. J. Baldwin, of Luddington; Mr. Duckham; Mr. E. Holland, M.P.; and

Mr. J. B. Lythall, of Birmingham. The second resolution passed at the meeting at the Salisbury Hotel on the 20th ult. Mr. Buckham in the chair, at which the Central Chamber was established, runs thus:—"That the object of the Central Chamber of Agriculture shall be to take cognisance of and to support or oppose any measures which are calculated to affect the agricultural interests."

HUNGERFORD: *How Farmers' Clubs may be Utilised.*—Mr. J. H. PIPER, of the *North Wilts Herald*, read the last paper of the season before the Hungerford Farmers' Club, on the Utilisation of Farmers' Clubs. The following are extracts:—

In the metropolis should be established what may be termed an associated club, which might be the London Central Farmers' Club re-organised. Every country club should become a member of the associated institution; the president and secretary of each country association—with a fixed number of members if desired—should form the representation of the country clubs, and noblemen and gentlemen interested in agriculture might be vice-presidents. The vast amount of power scattered amongst these isolated clubs would be collected, shaped, and organised—utilised, in fact, for public purposes. Had such machinery been in existence when the cattle plague made its appearance in this country, the disease would, one may fairly presume, have been extinguished ere this. The agricultural community doubtless, the Government hesitated, farmers in one county were favourable to one view of the case, while agriculturists in another suggested an opposite course. One journal proposed a particular line of action, a newspaper of opposite politics propounded an idea totally different. In the face of all this nothing was done. The cattle plague spread with a virulence and rapidity only too painful to remember; thousands of pounds worth of valuable stock were swept away; prosperous farmers were reduced to indigence; and the whole economy of agriculture disarranged. I cannot help feeling that had some system of organisation existed, action would have been taken long before the Government did interfere, and the wise policy of slaughtering and compensation, and proclaiming infected districts, put into practice before the disease had obtained such power. Let me briefly indicate how this might have been done. A meeting of the central association might have been convened at a short notice, and of course it would have been attended by representatives from the whole of the clubs in the country. Something like an approximative view of the feelings of the agricultural body might be obtained from such a gathering, and a series of propositions and questions might have been agreed upon. Within a week of the date of the central meeting the secretary of every country club could have made a return to the central authority as to the manner in which the propositions had been received. Armed with this information and authority, a deputation might have waited upon the Government, and had before them what may be truly called the opinions of the agricultural portion of the country—those most closely interested in the question. The same principle might be adopted in reference to the malt tax, and any other question which directly affects agriculturists, and upon which there is a diversity of opinion. The commercial community are enabled to bring to bear great influence upon the Government, and they often succeed in obtaining concessions which the agricultural body, powerful as it is, would at present be unable to possess. Let me quote just one instance in support of what I mean. In the beginning of last year Mr. Gladstone, as you are no doubt aware, proposed a remission of the tea duties in his budget, and the reduced duty was to come into force within a very short time of the introduction of the financial statement. The Chancellor's intentions were not known until within a very brief period of the introduction of the budget, and even up to the very eve of the financial statement being made it was a question whether tea could receive any consideration—the income tax being deemed a likelier impost to be dealt with. The effect of this comparatively sudden change in the law awakened the wholesale dealers to the fact that their stock on hand, upon which the whole duty had been paid, would have to be sold at a reduced rate after the date on which the remission was to take place. Representations were immediately made to the Government that the "trade" had been taken by surprise, and that it was but a simple act of justice to suspend the operation of the remission until a reasonable time had elapsed, so that stocks on which the whole duty had been paid might be reduced. The Chancellor replied in effect that these changes could not be made without some inconvenience, and that while he regretted loss would be entailed upon some merchants, he was unable to do anything. This reply, however, did not quiet the energetic merchants. The chambers of commerce, the trade protection associations—indeed, every commercial organisation—were set to work, and resulted in such a powerful influence being brought to bear, that the Chancellor finally gave way, and fixed the date of remission to some time posterior to that originally named by him. These facts are sufficient, I think, to show the importance of organisation, while it illustrates the system of united action for which I have been contending.

Why Farmers' Clubs should be Utilised.—In the present day business may be compared to a race; the competitors being handicapped, so to speak, with certain conditions and restrictions. It is, therefore, the object of every man to carry as little weight as possible; in other words, to remove as many burdens and restrictions as possible from his branch of trade. Thus, we find persons connected with commerce ever on the alert to ascertain how far the incidence of any particular tax may affect them, and to what extent their interests would suffer by any legislation relating to trade. While, however, this is done—and done, by the way, often with great advantage to their interests—the farming community do not take part in the struggle. Yet, considering their business, they would appear to be the most interested. Let us look for a moment at the operations of farming. Among persons of superficial information the notion is, that farming is a ready-money business; the farmer simply takes his grain to market, obtains ready money, and really has no books to keep, his banking account being quite sufficient to indicate his in-comings and out-goings. So much for the popular theory. Let us consider for a moment the actual fact. The farmer has first to prepare his land; meanwhile he pays weekly wages to his labourers; he has to purchase manure, and knowing how keen is the competition among artificial manure makers, we can quite understand that they do not give long credit. He has next to buy his seed, for which he pays cash, or takes a short credit. The seed being sown he has to watch it, perform much labour in hoeing, weeding, &c., until his crop is ready, and then—not as a matter of course, but provided the season has been propitious—he reaps his crop, which he has to thresh, keep in his store to dry, and carry to market. Thus it will be seen that from the time of commencing operations, to the period the produce is conveyed to market, nearly twelve months have elapsed, during the whole of which time wages, wear and tear of machinery, seed, manure, and last, though not least, rent, have had to be provided for before the ready money of the public imagination reaches the farmer's pocket. This does not apply solely to the produce of the soil, but in rearing stock there is the same anxiety, the same lapse of time between the birth of animals and their fitness for market, and the same expense. This is not all. Great as may be the expenditure, many the anxieties, painful the difficulties of the farmer, all his calculations may be overthrown by a wet season, a visitation of blight, or a prolonged drought. His corn may not pay for the labour bestowed on it. Wet weather may destroy his lambs wholesale, and an epidemic sweep off his horned stock by the score. It may be said that I have been drawing an exaggerated picture, but I venture to appeal to those present, who are all practical men, whether these disasters may not occur at any time, and whether they do not often happen. Only two days ago an illustration of this came to my notice. I heard a farmer say, that in consequence of the wet season before and at lambing time this year, he had lost 300*l.*—that is to say, the lambs that had died and others that were "ricketty" would, after deducting all cost, have produced him 300*l.* had they been reared. How different is the position of the mercantile man. It is true there may be disasters in trade, goods may be a drug in the market, but the extent of this evil is ascertainable, and while there is a decline in prices the manufacturer does not lose the whole produce of his labour. He has still his goods to keep until the markets improve, or should a sale be necessary he does but lose the difference between a good and dull market—although, of course, that often represents a large sum. He is not dependent upon weather, upon epidemics, and the many contingencies attaching to a business pursued in the open air in a climate so variable as that of England. Yet the commercial community, as I have shown, may be safely described as possessing powers and privileges which have placed them upon the most favourable footing as to competition and success in business. I do not consider the commercial body possessed of any privileges which they have not legitimately gained, and I shall presently attempt to show that the same opportunity exists for agriculturists to make their power and influence felt. There has scarcely been a time more favourable than the present for asserting the claims of agriculturists; and disastrous as have been the results of the cattle plague, that scourge will not have visited us altogether in vain if it succeeds in producing unity among agriculturists, and determination to enforce their claims. Great as was the loss of manufacturers by the cotton famine, their disaster was not to be compared with that which has fallen upon the farmer. The cessation of trade compelled them to live upon capital, but their plant and machinery, though unused, yet remained to them. The cattle plague has swept away from many a farmer—and especially in the ill-fated county of Cheshire—both capital and stock-in-trade, leaving them bankrupt in purse and spirit. Indeed, the losses of cattle do not fully represent the injury which this disaster has caused to farming. Notwithstanding the injury produced by the death of cattle, agriculturists could not move their stock unless with much trouble and many negociations as to certificate, and they were compelled, as a kind of finish to their disaster, to pay the expenses of obtaining permits for the removal of animals from one part of their farm to another—expenses which might with propriety have been borne by the Government. How different would this have been with some of the powerful trade interests in the country. I remember some years since Mr. Gladstone wished to impose a tax upon certain documents relating to commerce in the shape of affixing a stamp. The exact nature of the impost I do not remember, but I do recollect that urgent representations were made by commercial men to the Chancellor to the effect that affixing this stamp and observing forms necessary to complete the measure he wished to carry out seriously hindered trade and prevented the quick transmission of documents, bills of lading, &c., through the custom houses. The result you will readily anticipate—the Chancellor gave way. I think I have said sufficient to show that the agricultural community might form an organisation, and I feel that it requires little from me to point out why such should be established. The duty of the farming interest is quite clear—they must agitate until they obtain what they desire; they must not, however, be half-hearted in the attempt, nor must the enthusiastic few take the lead, unsupported by the many. The Board of Trade protects the commerce of the country, regulates the railway traffic, preserves the free navigation of rivers, and inspects public works in order to prevent anything like monopoly. Why, then, should agriculture be overlooked? It is not that agriculturists form an insignificant portion of the industry, capital, and integrity of the country, for the returns which are made from time to time to Parliament show how vast is the wealth among the landed interest, and those connected with them. One of the most conspicuous means of obtaining the end would, I think, be the institution of farmers' clubs throughout the country. This would elicit the opinions of farmers themselves, and the clubs might be made to act upon representatives of agricultural constituencies, who in their turn would be able, knowing that they were supported by the agriculturists, to speak and act with authority in Parliament. The success of such a movement I consider certain, if the necessary energy be applied. The intelligence, high principle, vigorous character, the sterling worth of the vast body of men who cultivate the soil of England, entitle them at least to fair consideration, and a claim to be placed upon the proper footing in what may be truly termed the battle of life. It is not that this class lack the ability to make themselves heard and felt, but unhappily their power has been dissipated and isolated rather than collected and concentrated. Hence many of the dissensions, hence much of the apparent apathy, hence what is called by certain persons "the satisfaction of the farmer with things as they are." Now is the time to show that the popular notions of agriculture are like many other popular ideas, very fallacious, and the opportunity now presents itself for vindicating the characters of a class of men who may be truly called the back-bone of the country. A determined effort once made, and agriculturists would find that a different state of things would be the natural consequence.

Farm Memoranda.

WILHELMINA-POLDER, NEAR GOES, HOLLAND.—In continuation of our report of this farm, begun last week, we quote Mr. Van den Bosch's statement further:—

"Now as to the number of ploughings, harrowings, and rollings each crop receives. The pasture, in the autumn of the 21st year, is broken with two ploughings, the second following the first in the same furrow, at a depth of 8 inches. 1st year: in spring, harrowing, drilling of Peas, one light harrowing, and one rolling; ploughing of stubbles, one harrowing, one ploughing or cultivating, two harrowings, one ploughing, one harrowing, drilling of Wheat, one harrowing. (Sometimes we have no opportunity for ploughing thrice, then it is done twice). 2d year: one rolling of Wheat (then worked with hand rakes, better than harrowing); stubbles ploughed, two harrowings, one ploughing with three horses, at 10 inches. 3d, Mangels; harrowings, sometimes one cultivating (Coley cultivator); one rolling, ploughing of ridges, manuring, splitting the ridges, drilling, one rolling; horse-hoeing during summer; in autumn one ploughing at 6 inches. 4th, Beans, harrowing and ploughing in Beans and manure, one or two rollings and harrowings; ploughing of stubble, &c., for Wheat, the same as the first year. 5th, Wheat, in spring, the same as the second year; in autumn, one ploughing of stubbles, two harrowings, one ploughing with two horses, 8 inches. 6th, Oats; harrowing, drilling of Oats, one harrowing; sometimes one rolling, according to circumstances; light harrowing, with one horse, after the small seeds are sown, or else hand-raking. 7th, Clover. 8th, Fallow; one ploughing of Clover in the autumn before, or if the Clover is needed for sheep in autumn, this is done in spring of the 8th year. Then two harrowings in spring; one ploughing at 6 inches; two harrowings; one ploughing with three horses, at 8 inches; two harrowings; one ploughing with three horses at 10 inches; two harrowings on light soils ploughing in of manure at 5 inches, afterwards one ploughing at 10 inches, then one harrowing and drilling); one ploughing at 6 inches; one harrowing and drilling of winter Barley; one harrowing. 9th, Winter Barley, one rolling; and hand-raking, one ploughing of stubbles and manure at 5 inches, one harrowing and one ploughing at 10 or 12 inches. 10th, Madder; in spring, harrowing, cultivating, two harrowings, one rolling, ploughing of ridges, one rolling, and one light harrowing before planting the Madder; horse-hoeing during summer and in autumn, covering the ridges with a plough constructed for the purpose. 11th, Madder; horse-hoeing and covering. 12th, horse-hoeing, and as in harvesting the Madder in autumn the fields are dug with spades at 3 feet, no horse labour is further bestowed upon it. 13th, Peas; in spring as the first year; in autumn for Wheat, as the first and the fourth years. 14th, Wheat; in spring the same as the second and fifth years, and hand-raking of Clover seed. 15th, Clover; in autumn breaking up of Clover as the 21st year. 16th, Oats; in spring as the sixth year, one ploughing of stubbles, two harrowings, one ploughing at 10 inches. 17th, Mangels, Turnips, and Potatos; the same as the third year. 18th, Beans; the same as the fourth year. 19th, Wheat; in spring the same as the 14th year. 20th and 21st, pasture, sometimes rolling of compost. The 150 acres sandy soil are cultivated in a similar manner, but we do not plough deep there. We also grow Flax sometimes.

"The weight of manure carried is about 10,000 tons per annum. As to the distance, the farmeries are situated about in the midst of their 500 acres. The manure is carried from the steadings to the fields. About 300 tons of manure of the 10,000 is bought at Goes: the distance from there to the fields is various, but often four miles and more. We do not use any quantity of artificial manure. The weight of crops carried to the ricks I am sure I could not tell exactly, it varies so very much. The weight of roots will be 12 to 25 tons per acre; of Madder 7 tons per acre. Roots are carried to the steadings; Madder to the village to the kilns for drying. Average distance of the

farms to the village, two miles. All the corn to be sold is brought from the farms to the boat at the canal of our village; the distance two miles or more.

"Horses do not carry much hay here, but a good deal of straw to different sheep-yards and cattle-yards. Produce of Wheat on an average, 38 bushels per acre; of winter Barley, 70 bushels per acre; of Chevalier and summer Barley, 50 bushels per acre; of Oats, 60 bushels per acre; of Rye, 36 bushels per acre; of Beans, 36 bushels per acre; of Peas, 33 bushels per acre.

"The horses during summer are fetched from the pastures early in the morning. They set to work from half-past three till eight o'clock. Then they are taken to the stables, where eat Clover is given to them. Some of them will do little jobs from nine to twelve o'clock, as horse-hoeing, fetching of mown Clover, &c. At half-past one they set to work again till six o'clock in the evening, when they are brought back to the pastures. In spring and autumn they begin to work at half-past five and continue till ten; or from dawn till about eleven; in the afternoon always the same, from half-past one till six o'clock, or till it is getting dark. So generally they work nine hours per day. During harvest, of course, they work as long per day as is needed. In winter, when they have nothing to do, they are allowed once or twice a day to run in the yards, behind the stables. They are brushed and cleaned in the forenoon.

"A usual day's work at ploughing will be different. Light ploughing 2 acres; ploughing at 5 or 6 inches 1¼ acres. Deep ploughing, 1 acre per day. Ploughing of ridges 3 acres per day. Harrowing very different; say 4 acres per day for good harrowing, light harrowing more per day.

"I believe I have now answered all your questions. Perhaps these particulars of a large continental farm may be interesting for English readers. You see our horses do a good deal, and they are cheap as regards food. You will agree with me that steam cultivation therefore could not be profitable here."

The reader will agree with us in thinking that the above report does possess great interest for English readers. The following rough estimate is derived from Mr. Van den Bosch's statement of the labour involved in the cultivation of the farm:—

Crops.	Average.	Ploughing. Deep.	Ploughing. Ordinary.	Ploughing. Harrowing.	Cultivating.	Rolling.	Drilling.	Horse-hoeing.	Dung, &c., Carted. Tons	Dung, &c., Carted. Miles.	Produce, &c., Carted. Tons.	Produce, &c., Carted. Miles	Tons Carried One Mile.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.					
Peas	135	135	270	540	..	270	135	..	..	..	..	..	..
Wheat	135	135	270	1350	..	135	135	..	..	..	..	..	..
Mangel	135	135	270	1080	135	135	..	270	10000	1	4000	1	14000
Beans	135	135	135	540	..	270	..	..	..	..	..	..	..
Wheat	135	135	270	1350	..	135	135	..	..	..	3000	2	6000
Oats	135	135	135	540	..	135	135	..	..	..	..	..	..
Clover	135	..	..	135	..	135	..	..	..	..	..	..	..
Fallow	135	270	540	1215	..	..	..	..	..	..	..	..	..
Winter Barley	135	..	..	270	..	135	135	..	..	..	..	..	..
Madder	135	135	270	540	135	135	..	270	..	..	..	..	..
Madder	135	..	..	..	..	..	..	270	..	..	..	..	..
Madder	135	..	..	..	..	..	..	270	..	..	..	..	..
Peas	135	..	270	540	..	270	135	..	..	..	..	..	..
Wheat	135	135	270	1350	..	135	135	..	..	..	..	..	..
Clover	135	..	..	135	..	..	..	..	..	..	..	..	..
Oats	135	135	135	540	..	135	135	..	..	..	..	..	..
Mangels, &c.	135	135	270	1080	135	135	..	270	..	..	..	..	..
Beans	135	135	135	540	..	270	..	..	..	..	..	..	..
Wheat	135	135	270	1350	..	135	135	..	..	..	..	..	..
Pasture	135	..	..	..	..	..	..	..	..	..	..	..	..
Pasture	135	..	..	..	..	..	..	..	..	..	..	..	..
Turnips	23	23	46	92	..	23	..	..	..	..	..	..	..
Chevalier Barley	23	..	23	92	..	23	23	..	..	..	..	..	..
Clover	23	..	..	23	..	..	..	..	..	..	..	..	..
Rye	23	23	23	92	..	23	23	..	..	..	..	..	..
Potatoes	23	23	23	138	..	23	..	23	..	..	..	..	..
Beans	23	23	23	138	..	23	23	23	..	..	..	..	..
Rye	23	23	23	92	..	23	23	..	..	..	..	..	..
	2995	3071	13662	495	2703	1307	1296		Add for weight of carts going to and fro				20000
Miles walked per acre	..	8	10	14	3	2	2	3					20000
	..	16040	36710	17657	1215	5490	2614	4158					44000
Cwt. of draught	..	7	4	3	4	2	3	2	10 per cent. for draught of				88000 cwts.
	..	80200	146840	54231	4860	10842	7842	8316					

To these particulars must be added a great deal for casual employment—on so large a farm certainly equal to the labour of six horses throughout the year, or 600 days of a pair, calculated as at ploughing, or about 20,000 cwt. drawn (= lifted) 1 mile. The whole labour of the farm thus amounts to about 410,000 cwt. drawn (= lifted) one mile in the year. If the time of labour of the horses be put at 1800 hours per annum, which is quite as much as it is, considering their long winter's holiday, this corresponds to nearly 2,245,000 lb. drawn (= lifted) one foot per minute during work hours. Now, besides the 90 horses whose labour contributes to this result, Mr. Van den Bosch tells me that his hired horse-labour amounts to about 170 or 180 days of 18 teams, or 36 horses; and this is equal to the addition of at least 30 horses per annum to the power, and about 1020*l.* annually to the cost of the horse-labour of the farm. If, then, this performance be divided among 120 horses instead of 90, it will amount to 18,700 lb. per horse drawn (= lifted) 1 foot per minute during work hours—a result curiously near those which have been already reached in the case of English farms. The whole work on this farm being 410,000 cwt. drawn (= lifted) 1 mile per annum, is equal to 164,000 cwt. drawn (= lifted) 2½ miles in that time, or 91 cwt. drawn (= lifted) 2½ miles per hour during working hours per annum. Now on this farm the cost of horse-labour is 2236*l.* 2*s.* 9*d.* for home management, and 1020*l.* for hired labour, in all about 3260*l.*, or 35*s.* 6*d.* per hour. The cost of horse-labour on this farm thus comes to about 4*d.* per cwt. drawn (= lifted) 2½ miles in an hour.

This is considerably less than we pay for the same thing in England, though it is by no means certain that Mr. Van den Bosch is right in supposing that steam-power would not be cheaper than horse-power even in Holland.

WESTER ROSS: *June* 25.—In the North of Scotland we had the last two years very dry, and the crops were very short, so much so that at the present time a handfull of straw could not be found at many a homestead; and this season bids fair to be a similar one, and if so, it will be all the worse from the complete exhaustion of the previous stock. Our winter having been dry and mild, all the autumn-sown Wheat had a most promising appearance in spring, and all anticipated an uncommonly heavy crop. Seldom, indeed, did our Wheat crop look so well as this year. But with long-continued east wind, with frost at night, and now with considerable drought, it has very much lost its dark colour, and perhaps its over-heavy appearance. Much of it will yet be sufficiently well-strawed, but on the whole it now appears much thinner than it promised. The stalks have become small and wiry, and the ear greatly shorter than we would desire. With suitable weather for filling and ripening, its yield might yet be an average one. Oats and Barley started well, and on good soil still retain a dark and promising colour, but being much later sown, and far less advanced than Wheat, they are much more easily affected with drought. The crops on the lighter soils are losing colour and rapidly giving way, whilst on all soils they are speedily getting into ear, and without immediate and abundant rain will be alarmingly short. Within these ten days we have had repeated and pretty heavy showers, but the ground is so dry that in a short time it is scarcely known where they fell. The crops are now so far advanced that let the weather be what it may they must be light. Neither will the crop of hay material aid the straw, for except where the soil is low-lying and heavy the crop is affected by the drought. Potatos are looking well nearly everywhere, and even with continued drought would suffer little. Last year, with all the drought we had, Potatos were an abundant crop, and the quality unusually good. A larger breadth of Swedes was sown this year in the north than perhaps was ever sown before, but much of them is in a very unsatisfactory condition. Some of them brairded, and were eaten with fly; others brairded very unequally, but with transplanting may have the blanks filled up, whilst nearly all the strong clayey fields have not brairded at all. Some of these fields have been harrowed down, furrowed up, and resown, with little prospect, however, of having braird in the mean time. Farmers have been put to their wits' end to know what to do. In the north we are seldom troubled with this sort of thing, and when it comes we put up with it very ill. Turnip sowing is now all but completed. Our pastures as yet have stood out well, and with the great heat we have lately had there has been rapid growth. The lighter soils are now however beginning to fade, and with a short continuance of this weather Grass generally would wither away. In the north we have been greatly favoured by being permitted to escape the cattle disease. True, in winter and spring we suffered somewhat from glutted markets, and unremunerating prices for fat; but since the Muir of Ord market was begun, prices for all kinds of stock have been high, whilst for fat the price has been exorbitant and astonishing.

Miscellaneous.

The Game Question.—It has been recently stated in several newspapers (and we presume correctly stated, because no denial has been published) that the following remarkable circular has been issued by the Earl of Denbigh to his tenants:—

"As complaints have been made to me of the damage done by rabbits in the cultivated parts of my property, and I am anxious to meet the wishes of my tenants as far as possible, I have arranged with my keeper to destroy the rabbits as far as he can on arable land; and, in order to ensure this being attended to satisfactorily, I have ordered that two appointed rabbit-catchers shall be at the disposition of the tenants from February 15 till the beginning of the breeding season, on the following terms:—The tenants shall have full leave to ferret all the hedgerows adjoining arable land on the farms (except covert hedges) as often as they like during that period, using neither dog nor gun, but only purse nets over the burrows. All the rabbits so caught by each tenant shall be kept by him, he paying the wages of the rabbit-catcher so long as he employs him. No tenant is to ferret without being accompanied by the rabbit-catcher. In consideration of this concession I expect my tenants will strictly preserve for me all other game. As frequent complaints have been made of self-hunting dogs being seen on the property, I have given orders to my keepers to destroy all such found hunting; and I request each tenant to tie or shut up any dog he may have at such times as he is not actually with his master, and to use every endeavour to prevent him from hunting when accompanying him.

"Newnham Paddocks, April, 1866." "DENBIGH."

Now we give the Earl of Denbigh credit for the best intentions in proposing such an arrangement to his tenants, and it is only because we feel that such a proposal would never have been made by a landlord who understood the feeling of the tenant-farmers of England on this question that we venture, as tenant-farmers, to make a few remarks upon it. As it is matter for congratulation when a landlord shows a sincere desire to place the game question on a footing satisfactory to his tenants as well as to himself, so it is matter of regret when a proposal emanates from a landlord which shows his misconception of the feelings and views of the great body of the tenant-farmers of England. So long as the landlords and tenants approach this subject from such different points of view, it appears hopeless to expect that private arrangements will do much towards the settlement of the question. A proposal which satisfies a just complaint, but which carries with it the loss of self-respect to the tenants, is hardly likely to lead to satisfactory results. Let us consider for a moment what the Earl of Denbigh offers. The rabbits may be destroyed, but on what terms? Two rabbit-catchers will be at the disposal of the tenants, and nothing is to be done except in company with them; neither dog nor gun is to be used. Is it likely to be agreeable to the earl's tenants to be under the control of these rabbit-catchers? Is it flattering to the tenants that so little confidence should be placed in them? We cannot but regret that so injudicious a plan should have suggested itself, and we feel it right that we should place on record our protest against it. When the landlords have ceased to wish for an excess of game on their farm, and are content to rely more on the good feeling of their tenants than upon the vigilance of their gamekeepers for such a moderate stock as will satisfy the desires of the true sportsman, the difficulties of the game question, at all events as between landlord and tenant, will be materially lessened; and a better understanding will take place of the disputes and silent dissatisfaction which now prevail. [Published, with many signatures, in the *Times*.

Calendar of Operations.

JULY.—Peas are ready for harvesting during this month. They are mown, or cut with hook and crook into bundles, and left to dry, being turned daily till ready to carry.

The winter-sown crop of Beans will also be ripe by the end of July. They may be let to reapers to cut, tie, and stook, at from 7*s.* to 8*s.* per acre, according to the crop. They are generally "bagged," as it is termed, by a heavy hook, which is struck at the standing corn in successive blows, driving a yard depth of it up against the crop, across perhaps half the width of a ridge, and then employed to gather that which has been cut into a sheaf, which is laid on a band of straw, or of Bean stalks, previously prepared. The Beans may thus be for a few days, till ready to be tied and shocked. The crop may be cut as soon as the attachment of the seed inside the pod, connecting it with the plant, has withered. This will be before the stalk is dead, and so much the better, for leafy Bean straw is good fodder.

Rye that may have been left for seed will be ready for the sickle.

Carrots and Parsnips may receive their last horse-hoeing or deep hand-hoeing in this month; and children should be employed to go over each row, singling plants that have been left double, and pulling young plants that have appeared since the first hoeing.

Mangel Wurzel and Turnips must be horse-hoed at intervals during this month.

Rape should be hoed as soon as sufficiently high not to be covered during the operation, and then it should be set out as Turnips are, excepting that, in "singling," two or even three plants may be left together. You may continue sowing it during this month.

Flax is to be pulled as soon as ready, which is generally by the end of this month, before the seed bolls have ripened. The seed may be separated by rippling in the field at once, or after the Flax has dried in shock, or after remaining in the rick all winter. Rape or autumn Turnips may be grown on Flax stubble after the removal of the crop.

Tares, Lucerne, and Clover continue to furnish abundant keep for stock.

The end of this month will give rather slack work for the horses, which may, therefore, be employed in hauling lime, &c., if any is needed, for spreading over the stubbles after harvest. Draining tiles, too, may be fetched and stored away for use in autumn. This month also affords a convenient opportunity for cleaning out rivers and ditches, as the weather is generally sufficiently warm to permit the workmen to stand amongst water and mud without injury.

Pastures will require thinning considerably this

month, except on cool subsoils. Aftermath must not be stocked until fairly grown.

Towards the end of the month, the labour of the horses being easier, their allowance of Oats may be diminished.

Dairy management continues. Hay-making gives full employment out of doors.

The Dairy.—Care should be taken during the warm weather of this month that the cows should be in pastures with convenient shade, or their constant uneasiness from the teasing of flies hinders their feeding, and their becoming so heated from running has a very injurious effect on the milk, which is less in quantity, very soon becomes sour after being taken from the cows, and does not yield nearly so much produce, and hence considerable loss arises. If the herd be brought into yards to be milked they should have the shade of cool sheds, or the operation of milking is very tedious from the cows not standing, and often much milk is spilt from the awkward moving of the cows, and the whole is not taken from them, which it is sometimes under these circumstances almost impossible to do. This on every account should be avoided, for the milk that comes last is the richest, and besides, if the cows are not clean milked, there will be a gradual diminution of the milk perceptible daily; for these reasons the greatest care should be taken that the cows are clean milked. A sufficient number of milkers should be provided to allow the cows to remain only one hour in the yard; eight is about the proper number for a good milker to do well within the hour. If a sufficient number are milked to employ a man to carry in the milk to the dairy, it has been found to save much trouble; this man, with yoke and buckets, should go round to collect from each milker as his pail becomes nearly full, and so lighten each one's load to carry from cow to cow, and prevent their individual journeys from the yard during the milking hour; by this means the milk is taken to the tub or vat in a much more equal temperature than if longer exposed to the heated atmosphere in the pails; and such a precaution has been found to act well on the cheese and butter produced from it. When the cows have to be pastured far from the homestead, it is sometimes desirable to milk them in the field, for a drive along a hot road exposed to the sun does as great harm to their milk as racing about the fields when exposed to the sun. A vessel is then taken on wheels drawn by the milkers or a horse, according to convenience, and this should be left to stand in a cool spot, and be taken home steadily with as little shaking as may be.

The cows should get a change of Grass once a week, even if to no better pasture; they are found to feed better and keep more settled than if left longer in one field. A good supply of fresh good water for them is indispensable for their doing well and yielding a quantity of milk.

The weaning calves may now be gradually, according to their age, doing without milk, meal, or linseed, if good pasture is provided for them by day, and they are brought into yards at night, then getting some Italian Rye-grass given to them, which they will readily eat, and if a small quantity of dry hay or Clover is supplied before they go out in the morning they will generally eat a little before they get any other food; and this is found very beneficial. The moisture from the Grass and Italian Rye-grass at night is found quite sufficient without water, to which they should not be allowed unrestrained access, or they drink to excess, and much harm is the result. Of course the Linseed or Oatmeal and skim milk may be continued to them with advantage, but they will grow strong without it at this age. Calves, to be kept in an improving condition, and to come out ready for the butcher towards the beginning or middle of their third year, should have a pound of Wheat daily allowed them in the field during their first summer.

Notices to Correspondents.

AGREEMENTS FOR COTTAGES: *Cor.* We have failed to find the agreements to which you refer.

CHEESE: *An old Subscriber.* The following are receipts for cream cheese and Bath cheese, the one a rich and the other an ordinary curd:—*Cream cheese*: take a quart of cream, or, if not cream very rich, add thereto one pint of new milk; warm it in hot water till it is about the heat of milk from the cow, add rennet (a table-spoonful), let it stand till thick, then break it slightly with a spoon, and place it in the frame in which you have previously put a fine canvas cloth, press it slightly with a weight, let it stand a few hours, then put a finer cloth in the frame; a little powdered salt may be put over the cloth. It will be fit for use in a day or two. *Bath cheese*: to one gallon of new milk add two quarts of cold spring water, rennet sufficient to turn it (not hard); take it gently out with the skimming dish and lay it in the vat until full; put a weight upon it, and apply dry cloths for a day or two when turned out on a plate with another over it, and turned occasionally. They are ready in about a fortnight.

HORSE-HOOF PARINGS: *Cor.* You can apply to Mr. Ross, of 1, Grove Street, Walworth. If the measure he sells as hoof parings be what it professes to be, we cannot doubt that it is worth his charge for it. Analyses show that it contains a large quantity of fertilizing material.

LAYING DOWN LAND TO GRASS: *Beverly.* Till the land, and get it clean and in good heart, and then some time in March, weather, cart on a lot of bits of turf from a good pasture, 3 inches square or so; spread them and tread them in their place right side up, one in every square foot. Roll the land, and cart on some compost, and spread it out of the cart, and then sow some Grass seeds, and bush harrow and roll them in: it will sooner be a pasture thus than in any other way, and 1 acre of good pasture may be made four. If, however, you should resolve to sow and depend on seed alone, you had better use the following mixture for your stiff land, and sow a thin crop of Barley with it:—Aira cæspitosa lutescens, 1 lb.; Alopecurus pratensis, 2 lb.; Arrhenatherum avenaceum, 2 lb.; Dactylis glomerata, 3 lb.; Festuca duriuscula, 2 lb.; F. heterophylla, 2 lb.; F. elatior, 2 lb.; F. loliacea, 2 lb.; F. pratensis, 2 lb.; Lolium italicum, 3 lb.; L. perenne, 5 lb.; Phleum pratense, 2 lb.; Poa nemoralis, 2 lb.; P. trivialis, 2 lb.; Trifolium pratense perenne, 3 lb.; T. repens, 4 lb.: in all, per acre, 39 lb.

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SAYNOR AND COOKE'S WARRANTED PRIZE PRUNING and BUDDING KNIVES, see that you get them. Observe the mark SAYNOR, also the corporate mark OBTAIN WARRANTED, without which none are genuine.
S. & C.'s recret having to caution Gardeners and others, but are compelled to do so, in consequence of an imitation, of common quality, having been sold for the genuine one, and which has caused many complaints to be made to them of Knives which were not of their make, all of which are warranted both by Sellers and Makers.
S. & C.'s Pruning and Budding Knives are the best and the cheapest in the market.
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Patronised by Her Majesty The Queen, the Duke of Northumberland for Syon House, His Grace the Duke of Devonshire for Chiswick Gardens, Professor Lindley for the Horticultural Society, Sir Joseph Paxton for the Crystal Palace, Royal Zoological Society, &c.
PROTECTION from the SCORCHING RAYS of the SUN.
"FRIGI DOMO," a Canvas made of Patent prepared Hair and Wool, a perfect Non-conductor of Heat and Cold, keeping, wherever it is applied, a fixed temperature. It is adapted for all Horticultural and Floricultural purposes, for Preserving Fruits and Flowers from the Scorching Rays of the Sun, from Wind, from Attacks of Insects, and from Morning Frosts. To be had in any required lengths.
Two yards wide .. .. 1s. 9d. per yard run.
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An improved make, 2 yards wide .. 1s. 9d. per yard.
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"It is much cheaper than Mats as a covering."

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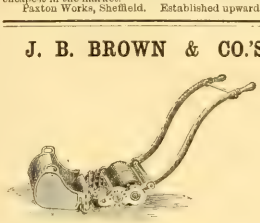

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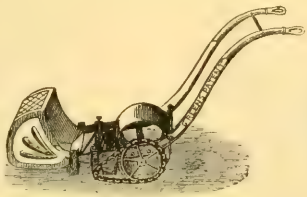

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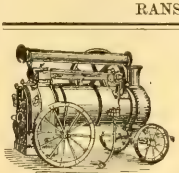

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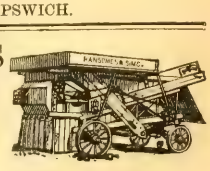

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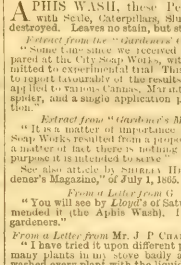

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See also article, by SHIRLEY HIBBERD, Esq., F.R.H.S., in "Gardener's Magazine," of July 1, 1865.
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"You will see by *Lloyd's* of Saturday, that I have publicly recommended it (the Aphis Wash). I have also mentioned it to several gardeners."
From a Letter from Mr. J. P. CHAPMAN, *Sunderland, Aug 3d, 1865.*—
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TO BE LET, an OLD-ESTABLISHED NURSERY GARDEN, in a populous and thriving Rock Ferry. The Garden contains about 5 Acres of Land, and has a good House upon it. It is situated about two miles from Birkenhead, and within a few minutes' walk of a Railway Station, as the New Rock Ferry and New Ferry Piers, and is surrounded by Gentlemen's Country Residences.
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The Premises only may apply by letter to FLORA, care of Messrs. Cowell & Gurney, Solicitors, 21, Abchurch Lane, London, E.C.

To be Disposed of, the Royal Nurseries, Great Yarmouth.

MR. J. C. STEVENS has received instructions from Messrs. Tovell, of the Royal Nurseries, Great Yarmouth, who are retiring from business, to offer for SALE, by Private Contract, the LEASE and GOODWILL of their well-known BUSINESS, which has been established upwards of 50 years, and is commanding a very extensive trade, the Stock of HARDY and GREENHOUSE PLANTS, consisting of Camellias, Azaleas, Epacris, Ericas, New Holland Plants, Ferns, Bedding Stuff, &c. The NURSERY comprises a superb collection of Carnations, Picotees, and Pinks, and an extensive and valuable stock of Grafted Roses, to which this Nursery has a first-class reputation. Also a large assortment of Conifers, Ornamental Shrubs, and General Nursery Stock. The above also comprise the usual Sheds, Stables, &c., and is within a few minutes' walk of two Railway Stations and Steamboats, which afford an easy communication to all parts of the United Kingdom and the Continent. The Stock, &c., may be taken at a Valuation, or, as agreed. Immediate possession could be given.
For further particulars apply to Mr J. C. STEVENS, Horticultural Auctioneer and Valuer, 38, King Street, Covent Garden, who can strongly recommend the before-mentioned concern

Sales by Auction.

Importation of Rare Orchids from India, Mexico, and Central America, by Order of G. U. Skinner, Esq.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on FRIDAY, July 6, at half-past 12 o'Clock precisely, specified examples of a NEW VANDA or ARIDES, and some more Plants of the fine ANGRÆCUM sesquipedale, and a perfectly NEW DENDROBIUM of a dwarf habit, CYPRIPEDIUM CONCOLOR, &c. Also some very rare ODONTOGLOTS, and many others, full particulars of which will appear in the Catalogues.

Important Sale of Established Orchids.

MR. J. C. STEVENS begs to announce that he has received instructions from W. C. Paterson, Esq., of Glasgow, to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., without reserve, on TUESDAY, July 24, and following day, at half-past 12 o'Clock precisely each day, in consequence of change of residence, the whole of the valuable and extensive collection of ORCHIDS, comprising examples in bloom of them and specimens of all the most kinds in cultivation. More detailed particulars in next Advertisement.
On view the Morning of Sale, and Catalogues had.

Biddenham, near Bedford.

MR. STRAFFORD will offer for SALE by AUCTION, without any reserve, on FRIDAY, July 27, being the day of the Biddenham Annual Sheep Sale, SEVEN PURE-BRED SHORT-HORNED BULLS, the property of Mr Charles Howard, which are by Second Duke of Thorndale 17,775, and Fifth Grand Duke 18,879, from well descended Cows. There has been no case of Cattle Plague within several miles of Mr Howard's Farm.
LUNCHEON at 1 o'Clock, ready to commence immediately afterwards. Biddenham is about a Mile and a half from Bedford, where conveyances will meet the trains.
Catalogues, with Pedigrees, may be had on application to Mr. STRAFFORD, Auctioneer, Queen Square, London, N.W.; or of Mr. CHARLES HOWARD, Biddenham, near Bedford.

Biddenham Annual Sale.

MR. CHARLES HOWARD will offer for PUBLIC COMPETITION, on FRIDAY, July 27, 60 OXFORDSHIRE DOWN SHEARLING and RAM-LAMBS, and 15 OXFORDSHIRE DOWN SHEARLING EWES, from his well known Flock.
LUNCHEON at 1 o'Clock, Sale to commence immediately afterwards. Biddenham is about a Mile and a half from Bedford, where conveyances will meet the trains.
Mr. HENRY PULLEY, Auctioneer.

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WONDERFUL APPLICATION OF THE PRINCIPLE OF OSCILLATION.

FOR THE GARDEN, CONSERVATORY, AND NURSERY.

Entirely "Self-acting," the operator requiring no assistance whatever, and so easy of motion that a Child can propel itself to any desired altitude without the slightest danger of accident. It has been pronounced a marvel of ingenious mechanism, and cannot fail to become a necessary adjunct to every well-appointed Garden and Nursery, while for Invalids it will be hailed as a means of recreation and hygienic exercise never before offered them. They are very easily fitted up in any ordinary-sized room, and can be attached to the ceiling by means of a few common iron bolts. The only instructions necessary for the use of this invention are, that the person upon being seated simply presses the feet against the footboard, which will at once set the Chair in motion.

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TRADE MARK—"AERIAL CHAIR."—TERMS CASH.

All Orders must be accompanied with a City Reference or Remittance to

CHARLES POMEROY BUTTON, Nos. 142 & 143, CHEAPSIDE, LONDON, E.C.

Editorial Communications should be addressed to "The Editor." Advertisements and Business Letters to "The Publisher," at the Office, 11, Wellington Street, Covent Garden, London, W.C.
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THE GARDENERS' CHRONICLE AND AGRICULTURAL GAZETTE.

A Newspaper of Rural Economy and General News.

No. 27.—1866.] SATURDAY, JULY 7. {Price Fivepence, Stamped Edition, 6d

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UNITED HORTICULTURAL SOCIETY.—The MONTHLY MEETINGS for the present year will be HELD the SECOND MONDAY in each month, at the Green Dragon Hotel, Bishopsgate Street, E.C. Commencing at 7 o'clock P.M.

UNITED HORTICULTURAL BENEFIT and PROVIDENT SOCIETY.—The NEXT MEETING for the admission of Members will be HELD at the Green Dragon Hotel, Bishopsgate St., E.C., on MONDAY EVENING, July 9, at 7 o'clock. Copies of Rules and any further information to be obtained of

WILLIAM HEALE, *Sec. pro tem.*
14, George Terrace, Brook Street, Upper Clapton, N.E.

Notice.

CUTTINGS of NEW VARIEGATED GERANIUMS, and other Seedlings not yet sent out, having been STOLEN on two occasions within the last fortnight, E. G. HENDERSON & SON offer a REWARD of £10 to any one giving them notice of the Thief, or the party holding the same in possession, and £50 on Conviction of the Thief.

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Sample and Prices Post free on application. Prize Medals, 1851, for Wheat: 1862, for "Excellent Seed Corn and Seeds.

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IVERY AND SON beg to announce their NEW PRICED DESCRIPTIVE CATALOGUES of AZALEA INDICA, and HARDY BRITISH FERNS.
Dorking.—July 7.

IVERY AND SON beg to announce that their DESCRIPTIVE PRICED CATALOGUES of AZALEA INDICA, HARDY BRITISH FERNS, ROSES, CONIFERÆ, GRAPE VINES, and SEEDS, may be had on application at their Dorking Nursery.

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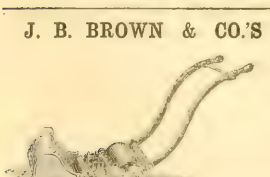

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This New B B PATENT LAWN MOWER is Manufactured by Messrs. Brown & Co., on their own Premises in London, under their personal superintendence. It is worked by means of Geared or Toothed Wheels, is quite noiseless, and is guaranteed to give perfect satisfaction in every respect.

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10-inch Machine ..	£3 10 0	*Easily worked by a Boy.*	18-inch Machine ..	£7 10 0	*Easily worked by a Man*
12-inch Machine ..	4 10 0		20-inch Machine ..	8 0 0	
14-inch Machine ..	5 10 0		22-inch Machine ..	8 10 0	*Ditto by Two Men.*
16-inch Machine ..	6 10 0	*Ditto by a Man.*	24-inch Machine ..	9 0 0	

Every Machine sent out is warranted to give ample satisfaction, and if not approved of may be at once returned.

J. B. BROWN AND CO., OFFICES, 90 (late 18), CANNON STREET, CITY, LONDON, E.C.

WAREHOUSE and MANUFACTORY, 148, UPPER THAMES STREET, E.C.

Opposite the City of London Brewery, and close to the London Bridge Steam Boat Piers.

COCOA-NUT REFUSE is becoming SCARCE, the old reserves will soon be gone. Now sold in bags, 1 for 2s., 10 for 16s., 20 for 30s., 50 for 66s., 100 for £6.

Fourpence allowed for each bag returned carriage-paid.

A Railway Truck-load (not in bags), 40s.

Postage Stamps or Post-office Order, payable to J. BARSHAM & Co., Kingston-on-Thames, S.W.

GENUINE EXTRA STRONG TOBACCO PAPER made from pure Tobacco Juice. Numerous testimonials as to genuineness, &c. 1s. per lb.

SAMUEL MAY, Seedsman, 189, Wade Lane, Leeds.

TOBACCO TISSUE.—As Exhibited at the International Horticultural Exhibition.—For DESTROYING MEALY BUG, RED SPIDER, THRIP, and other insects. Will burn without the assistance of blowing, and not injure the most tender Plants

Sold in 1 lb packages, and upwards, price 3s. 6d. per lb., by Messrs. Romaers & Sons, Tobacco Manufacturers, 64, St John Street, Clerkenwell, E.C., and by all Seedsmen and Nurserymen.

Copies of Testimonials forwarded on application.

Destroy your Insect Pests.

PRESERVE YOUR PLANTS and TREES.

YOU MAY EASILY DESTROY ALL PLANT PESTS,

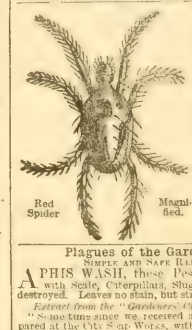
RED SPIDER	GREEN AND BLACK FLY	ANTS
MEALY BUG		SCALE
THRIP	AMERICAN BLIGHT	MILDEW,

Without injury to the most delicate Plant or Tree, by using

FOWLER'S GARDENER'S INSECTICIDE,

pronounced by all who have used it to be far superior to any other remedy. One trial will prove its efficacy. Testimonials forwarded on application. Price 1s. 6d., 3s., 5s. 6d., and 10s. per Tin.

GEO. & THOMAS FOWLER, North Street, Brighton; and of HOOPER & Co., Covent Garden Market, W.C.



Red Spider — Magnified.

GISHURST COMPOUND, whether used against Insects and Mildew, on Growing Plants, or as Winter Dressing on Trees at rest, should be dissolved 48 hours before use. This gets rid of smell, and if the Solution be decanted, prevents any staining of foliage. A strength of from 1 to 2 oz. to the gallon of water is recommended for growing Plants; one from 4 to 16 oz. for Trees at rest.

Sold Retail by Nurserymen and Seedsmen, in boxes, 1s., 3s., and 10s. 6d. each.

Wholesale by

PRICE'S PATENT CANDLE COMPANY (LIMITED).

Plagues of the Garden. Aphis Wash.

SIMPLE AND SURE REMEDY.—By using the

APHIS WASH, these Pests of the Garden, together with Scale, Caterpillar, Slugs, Earwigs, &c., are immediately destroyed. Leaves no stain, but strengthens the Trees or Plants.

Extract from the "Gardener's Chronicle," 19th August, 1865:—

"Some time since we received a sample of an Aphis Wash, prepared at the City Soap Works, with a request that it might be submitted to experimental trial. This having been done, we are enabled to report favourably of the results. Among other things it was also applied to various Cannas, Marantas, and Caladiums infested by red spider, and a single application proved effectual for their destruction."

Extract from "Gardener's Magazine," 3d March, 1866:—

"It is a matter of importance that the Aphis Wash of the City Soap Works, resulted from a proposal made in these columns, and as a matter of fact there is nothing to equal the Aphis Wash for the purpose it is intended to serve."

See also article by CHARLES HERBERD, Esq., F.R.H.S., in "Gardener's Magazine," of July 1, 1865.

From a Letter from G. GLENNY, Esq., *Fulham.*

"You will see by *Lloyd's* of Saturday, that I have publicly recommended it (the Aphis Wash). I have also mentioned it to several gardeners."

From a Letter from Mr. J. P. CHAPMAN, *Shinderland, Aug. 24, 1865:—*

"I have tried it upon different plants with perfect success. I had many plants in my stove badly infested with red spider, but have washed every plant with the liquid, as you direct, and I verily believe not one red spider remains."

From Mr. SIDNEY FORD, *The Gardens, St. Leonard's Lodge, near Horsham, February 16, 1866:—*

"I am able to report most favourably on the result of my trials of your Aphis Wash; it is a thing I have long felt the loss of. Like it very much, as it is not like many other washes, for it will all pass through the syringe without any trouble. From other experiments I made, the result has been a perfect success, and for fruit trees it will be a first-rate wash."

Messrs. GIBBS have received a great many valuable testimonials from practical and amateur gardeners, and have liberty to refer to Mr. Eyles, of Messrs. Low & Son's Nurseries, Upper Clapton, who during the past autumn (1865), carried out a series of careful and thorough experiments with the "Aphis Wash."

Sold by Chemists and others, in 1s. bottles, and 2s. 6d. a gallon, with full directions for use.

Wholesale at the City Soap Works, Milton Street, London, E.C.

CRANSTON'S PATENT BUILDINGS for HORTICULTURE.

"Dry Glazing without Putty."
"Glass without Laps."
"Ventilation without Moving Lights."

Highly Commended by the Royal Horticultural Society, South Kensington.

Plans and Estimates free on application. Descriptive Book fully illustrated, post free for 20 stamps, from the Author and Patentee, JAMES CRANSTON, Architect, Birmingham.

Works, Highgate Street, Birmingham.

HENRY J. GROWTAGE, Manager, 1, Temple Row West, Birmingham.

THE LEICESTER

(NEW DESIGNED AND PATENTED)

ORNAMENTAL FLOWER VASES OR BASKETS.

MANUFACTURED BY

HUNT & PICKERING,

HORTICULTURAL AND AGRICULTURAL IMPLEMENT WORKS, LEICESTER.

Exhibited with marked success at the International Flower Show, Kensington; and in the Gallery of the Agricultural Hall, Islington, during the Horse Show.

These Vases or Baskets are composed of a series of ornamental branches, affixed to a capital or centre ring, mounted on suitable brackets and hexagon base, without the aid of screws, rivets, &c.; so simple in construction that any one may in a few minutes put it together, making it a beautiful Centre-piece or Flower Basket, either for the Lawn in Summer or the Conservatory in Winter. Painted any colour to order.

The great advantage of the Open Vase over the solid cast iron or "Terra Cotta," is the perfect drainage and continual circulation of the atmosphere through every part, giving greater vitality to the growth of the plants. The mode of filling is simply to cut a few feet of thin Turf or Moss, and lay the same with the Grass outwards, throw in the soil, and plant the Flowers according to taste.

☞ *Illustrated Price Lists of the various sized Vases.*

The LEICESTER GARDEN SEAT, TABLES, and RUSTIC SEATS, sent free on application.

LONDON AGENTS: MESSRS. DRAY, TAYLOR, & CO., ADELAIDE PLACE, LONDON BRIDGE.

GRAY'S OVAL TUBULAR BOILER.

INTERNATIONAL EXHIBITION, CLASS IX., No. 2119.

MR. GRAY begs to call the attention of the Nobility, Gentry, Nurserymen, Gardeners, &c., to his

NEW OVAL TUBULAR BOILER,

Acknowledged by practical judges to be a great improvement on every form of Tubular Boiler yet introduced. It has proved itself superior to all other Boilers for quickness of action and economy of Fuel, doing its work with one-third less the amount required by any other.

Extract from Report in GARDENERS' CHRONICLE *of International Exhibition, May 24, 1862, page 476.*

"The upright form of Boiler is usually made on a circular plan, but the oval form given to Mr. GRAY'S variety of it is said to be preferable in consequence of its bringing the tubes more completely within range of the burning fuel; and this being so, the change, though a slight one, rather than a square, it seems feasible that the Boilers on the oval plan should bring the tubes more completely within range of the burning fuel; and this being so, the change, though a slight one, is no doubt an improvement."

☞ *They are made of all sizes, which, with prices, may be had on application*

JAMES GRAY, HORTICULTURAL WORKS,
DANVERS STREET, PAULTON'S SQUARE, KING'S ROAD, CHELSEA, S.W.

Great International Horticultural Exhibition 1866.

FIRST AND ONLY PRIZE AWARDED TO

BEARD'S PATENT METALLIC NON-CONDUCTING GLASS HOUSES

Perfect System of Ventilation and Glazing.

Manufactured by Messrs. SANDERS, FRIMLEY, & Co., Victoria Horticultural Works, Bury St. Edmund's.

See large Advertisement in *Gardeners' Chronicle* of June 24, 1866.

GARDEN BORDER EDGING TILES, in great variety of patterns and material, the planer sorts being especially suited for KITCHEN GARDENS, as they harbour no Slugs and Insects, take up little room, and once put down incur no further labour and expense, as do "grown" Edgings, consequently being much cheaper.

GARDEN VASES, FOUNTAINS, &c., in Artificial Stone, of great durability, and in great variety of design.

F. & G. ROSHER, Manufacturers, Upper Ground Street, Blackfriars, S.; Queen's Road West, Chelsea, S.W.; Kingsland Road, Kingsland, N.E.

Sole London Agents to FOXLEY'S PATENT GARDEN WALL BRICKS. Illustrated Price Lists free by post. The Trade supplied.

ORNAMENTAL PAVING TILES for Conservatories, Halls, Corridors, Balconies, &c., as cheap and durable as Stone, in blue, red, and buff colours, and capable of forming a variety of designs.

Also TESSELATED PAVEMENTS of more enriched designs than the above.

WHITE GLAZED TILES, for Lining Walls of Dairies, Larders, Kitchen Ranges, Baths, &c. Grooved and other Stable Paving Bricks of great durability, Dutch and Adamantine Clinkers, Wall Copings, Red and Stoneware Drain Pipes, Slates, Cements, &c.

To be obtained of F. & G. ROSHER, at their Premises as above.

SILVER SAND (REIGATE, best quality), at the above addresses 14s. per Ton, or 1s. 3d. per Bushel; 2s. per Ton extra for delivery within three miles, and to any London Railway or Wharf. Quantities of 4 Tons, 1s. per Ton less.

FLINTS, BRICK BURRS or CLINKERS, for Rockeries or Grotto Work. F. & G. ROSHER.—Addresses see above.

N.B. Orders promptly executed by Railway.

FOUNTAIN JETS.

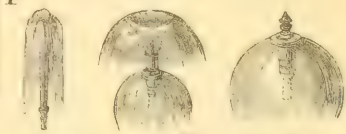


Fig. 528. JET D'EAU. 18 holes, 5s. 6d.; 24 do., 7s. 9d.; 30 do., 9s. 6d.

Fig. 531. DOME and CONVOLVULUS. 17s.

Fig. 525. DOME. 8s. 6d.

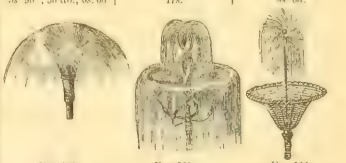


Fig. 529. CONVOLVULUS, 8s. 6d.

Fig. 521. BARKER'S MILL. 11s.

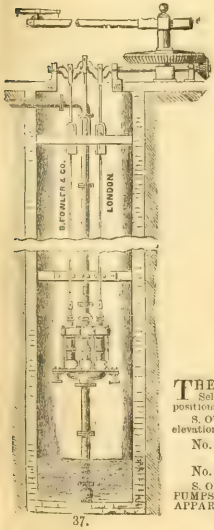
Fig. 522. WIRE BASKET with BALL. 10 ins., 16s. 6d.; 12 ins., 17s. 6d.; 14 ins., 18s. 6d.

Connecting Screws to all the above Jets, 1s. 6d. extra.

Branch Pipe for raising up Jets 1 foot high, 8s. 6d.

A Tap is required to be fixed in the Pipe to regulate the supply of Water to Fountain Jets.

J. TYLOR & SONS, Manufacturers, Warwick Lane, Newgate Street, London, E.C.



37.

S. OWENS & CO.

(LATE CLINTON AND OWENS),

MANUFACTURERS OF

PUMPS and HYDRAULIC MACHINERY,

WHITEFRIARS STREET, LONDON, E.C.

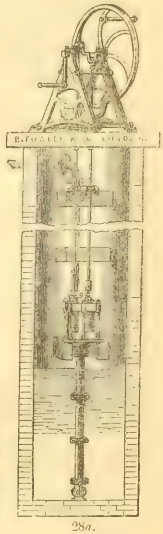
THE LANDSCAPE SKETCH shows an adaptation of THE IMPROVED HYDRAULIC RAM. This is a simple Self acting Machine, suited for raising a Supply of Water for use in Public and Private Establishments. Its adoption is not confined to positions as shown, but it is suited for any situation where a Fall can be obtained from a Stream, Brook, or Spring.

S. OWENS AND CO. have fixed a great many in various parts of the country for raising from 600 to 6000 or more Gallons per day to elevations varying from 30 to 300 feet, and forcing through Main Pipes 50 yards to several miles in length.

No. 37. IMPROVED TREBLE BARREL PUMPS, with HORSE GEARING for Raising Water from DEEP WELLS, for the supply of MANSIONS and PUBLIC BUILDINGS.

No. 28*a*. DOUBLE BARREL PUMPS for HAND-POWER for similar purposes.

S. OWENS AND CO. Manufacture and Erect every description of Engineer's Work required in Public or Private Establishments, such as PUMPS for any purpose on the largest or smallest scale, STEAM ENGINES, WATER WHEELS, TURBINES, WARMING and DRYING APPARATUS, BATHS, GAS WORKS and FITTINGS. Estimates furnished from Plans or on inspection of position.



28*a*.

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ADIANTUM FARLEYENSE, True.

ROBERT T. VEITCH

HAS MUCH PLEASURE IN OFFERING FOR THE FIRST TIME TO THE PUBLIC

THIS VERY HANDSOME VIGOROUS-GROWING STOVE FERN,

SO UNIVERSALLY ADMIRED AT THE LATE INTERNATIONAL EXHIBITION.

This Adiantum was introduced from Barbadoes by Thomas Daniels, Esq., Stoodleigh, Tiverton.

Plants now ready at 42s. each. Usual allowance to the Trade.

☞ *Orders are now being booked, and will be executed in rotation as received.*

NURSERY: NEW NORTH ROAD, N.; SEED WAREHOUSE: 54, HIGH STREET, EXETER.

ROYAL BOTANIC SOCIETY,

REGENT'S PARK.

THE LAST EXHIBITION of PLANTS, FLOWERS, and FRUIT, WEDNESDAY, JULY 4.

LIST OF AWARDS.

MEDIUM GOLD MEDAL.

Mr. B Peed, Gr. to Mrs. Trolwell, St John's Lodge, Lower Norwood, for 10 Stove and Greenhouse Plants

Mr R. Bullen, Gr. to A. Turner, Esq., Bowbridge House, Leicester, for 10 Exotic Orchids

GOLD MEDAL.

Mr. J. Wheeler, Gr. to J. Phillpott, Esq., Stamford Hill, for 10 Stove and Greenhouse Plants

Mr. O. Rhodes, Nurseryman, Sydenham Park, Kent, for 8 Stove and Greenhouse Plants

Mr. W. Kaile, Gr. to Earl of Lovelace, East Horsley Towers, Ripley, Surrey, for 8 Stove and Greenhouse Plants

Messrs. T. Jackson & Son, Nurserymen, Kingston, for 8 Cape Heaths

Mr. B. Peed, Gr., for 8 Cape Heaths

Mr. J. Wiggins, Gr. to W. Beck, Esq., Worton Cottage, Isleworth, for 8 Exotic Orchids

Mr. B. S. Williams, Nurseryman, Holloway, for 10 Foliage Plants

Mr W. Taylor, Gr. to J. Yates, Esq., Lauderdale House, Highgate, for 10 Foliage Plants

Mr. T. Rawbone, Gr. to C. M. Campbell, Esq., Ashbourne, Derbyshire, for Collection of Fruits

LARGE SILVER GILT MEDAL.

Mr. B. S. Williams, for 8 Stove and Greenhouse Plants

Mr. G. Wheeler, Gr. to Sir F. H. Goldsmid, Bart., Regent's Park, for 8 Stove and Greenhouse Plants

Mr J. Ward, Gr. to F. J. Wilkins, Esq., Leyton, Essex, for 6 Stove and Greenhouse Plants

Mr. O. Rhodes, Nurseryman, Sydenham Park, Kent, for 8 Cape Heaths

Mr. J. Wud, Gr., for 8 Cape Heaths

Mr. R. Peed, Gr., for 10 Ex. for Orchids

Mr. B. S. Williams, Nurseryman, Holloway, for 6 Exotic Orchids

Mr. J. Cooper, Alpha House, Coburg Road, Old Kent Road, for 8 Exotic Orchids

Mr. J. Brockwell, Gr. to Mr. Henery, Edmonton, for 6 Fuchsias

Mr. J. Fraser, Nurseryman, Leyton, Essex, for 9 Pelargoniums

Mr. W. Nye, Gr. to E. B. Foster, Esq., Clewer Manor, Windsor, Berks, for 9 Pelargoniums

Mr. D. Windsor, Gr. to J. R. Ravenhill, Esq., Forest, Walthamstow, for 6 Scarlet Pelargoniums

Messrs. Glendinning, Nurserymen, Chiswick, for 10 Foliage Plants

Mr. W. Gill, Gr. to Mrs. Beaufoy, Lambeth, for 10 Foliage Plants

Mr. W. Taylor, Gr., for 12 Exotic Ferns

Mr. B. S. Williams, for 12 Exotic Ferns

Mr. J. Meredith, Garston, near Liverpool, for 3 Dishes of Grapes, distinct kinds

Mr. E. Robinson, Gr. to R. Benyon, Esq., Englefield Green, Reading, for Collection of Fruit

LARGE SILVER MEDAL.

Mr. R. Baxendine, Nursery, Guildford, for 8 Stove and Greenhouse Plants

Mr. A. Ingram, Gr. to J. J. Blandy, Esq., Reading, for 6 Stove and Greenhouse Plants

Mr. J. Ward, Gr., for 9 Pelargoniums

Mr. J. Fraser, for 9 Fancy Pelargoniums

Mr. J. Fraser, for 6 Pelargoniums

Mr. B. S. Williams, for 6 Stove and Greenhouse Plants

Mr. C. Turner, for Collection of Fruit

Mr. J. Hannan, Gr. to C. Crawshay, Esq., Cyfarthfa Castle, Merthyr Tydvil, for 4 Pine-apples

SILVER GILT MEDAL.

Messrs. S. Glendinning & Sons, Nurserymen, Chiswick

Mr A. Wilkie, Gr., Oak Lodge, Kensington, for 6 Stove and Greenhouse Plants

Messrs. F. & A. Smith, Nurserymen, Dulwich, for 8 Cape Heaths

Mr. J. Wheeler, Gr., for 8 Cape Heaths

Mr. A. Ingram, Gr., for 8 Cape Heaths

Mr. J. Burley, Nurseryman, Bayswater, for 10 Foliage Plants

Mr. W. Young, Gr. to R. Barclay, Esq., West Hill, Highgate, for 10 Foliage Plants

Mr. W. Taylor, Gr. to J. Yates, Esq., Lauderdale House, Highgate, for 6 Foliage Plants

Mr. H. Barnard, Gr. to J. W. Taylor, Esq., River House, Stoke Newington, for 12 Exotic Ferns

Mr R. Parker, Nurseryman, Tooting, for 6 Exotic Orchids

Mr. J. Bill, Gr. to R. Hanbury, Esq., Poles, Ware, Herts, for 8 Exotic Orchids

Mr. J. Weston, Gr. to D. Martineau, Esq., Clapham Park, for 6 Fuchsias

Mr. J. Wiggins, Gr., for Pelargoniums

Mr. J. Catlin, Gr. to Mrs. Lermitte, Finchley, for 6 Scarlet Pelargoniums

Mr. C. Turner, for 50 Roses

Mr. W. Ingle, Gr. to C. Round, Esq., Birch Hall, Colchester, for 25 Roses

Mr. J. Meredith, Garston, Liverpool, for 12 lb. of Grapes

Mr. D. Clement, Chase Side, East Barnet, for Black Hamburgh Grapes

Mr. J. Meredith, for Black Hamburgh Grapes

Mr. R. Turnbull, Gr. to the Duke of Marlborough, Blenheim, for Black Prince Grapes

Mr C. Turner, for Muscat Grapes

Mr. T. Record, Gr. to Lieut.-Colonel Loyd, Hawkhurst, Kent, for Dish of Grapes

Mr. C. Allen, Gr. to Captain Clegg, Withington Hall, Chelford, for 4 Dishes of Peaches and Nectarines

Mr. T Young, Gr. to C. Crawshay, Esq., Aberaman Park, Glamorgan, for Collection of Pines

SILVER MEDAL.

Mr. W. Kemp, Gr. to Earl Percy, Albury Park, Guildford, Surrey, for 10 Stove and Greenhouse Plants

Mr. O. Rhodes, for 10 Foliage Plants

Mr H. Barnard, Gr., for 6 Foliage Plants

Mr. W. Young, Gr., for 12 Exotic Ferns

Mr. O. Rhodes, for 6 Exotic Orchids

SILVER GILT MEDAL.

Mr. J. Wheeler, Gr., for 8 Exotic Orchids

Mr. W. H. Rice, Gr. to J. Stretton, Oak Lodge, Clapham, for 6 Fuchsias

Mr. J. Wiggins, Gr., for 6 Fancy Pelargoniums

Mr. J. Haws, Gr. to J. A. Noble, Esq., Finchley, for 6 Scarlet Pelargoniums

Mr. J. Wiggins, Gr., for 6 Pelargoniums

Messrs. Paul & Son, for 50 Roses

Mr H. Sawkins, Gr. to J. Smith, Esq., for 2 Dishes of Peaches and Nectarines

Mr J. Harwood, Gr., for 4 Dishes of Grapes

Mr. W. Bull, for Collection of Medicinal Plants

Mr J. W. Chard, Claremont Park, Sydenham, for 25 Roses

Mr G. Masters, Gr. to Earl Macclesfield, Shirburne Castle, Totsworth, Oxon, for 4 Dishes of Peaches and Nectarines

Mr. W. Miller, Gr. to Earl Craven, for 2 Dishes of Peaches

Mr J. Harwood, Gr. to J. H. Turnbull, Esq., Rookery Down, Kent, for 2 Dishes of Peaches and Nectarines

Mr. W. Miller, Gr., for Collection of Fruit

Mr. G. Young, Gr. to W. H. Stone, Esq., Havant, for Collection of Pines

Mr G. Miles, Gr. to Lord Somerset, Wycombe, for Collection of Pines

Mr J. Haddan, Gr., for Providence Pine

Mr G. Brooks, Gr. to J. L. Ley, Esq., Dillington Park, Ilminster, Somerset, for 1 Pine-apple

Mr. G. Ward, Gr. to F. W. Miller, Esq., Bishop's Stortford, for 1 Queen Pine

Mr. G. Osborne, Finchley, for 3 Dishes of Grapes

Mr. E. Sage, Gr. to Earl Howe, Gopsall Hall, Atherstone, for 3 Dishes of Grapes

Mr. C. Squires, Gr. to H. C. Ludlow, Esq., Heywood House, Westbury, Wilts, for Black Hamburgh Grapes

Mr. E. Sage, Gr., for Black Prince Grapes

Mr. D. Pizzie, Gr. to T. Edwards, Esq., Fulmer, Bucks, for Muscat Grapes

Mr. W. Lynn, Gr. to Lord Boston, for Dish of Grapes

Mr. G. Ward, Gr., for 12 Queen Pines

Messrs. J. Veitch & Sons, for Collection of New and Rare Plants

SMALL SILVER MEDAL.

Mr. J. Widcock, Gr. to Dr. Pattison, St. John's Wood, for 8 Exotic Orchids

Mr. E. Logan, Gr. to C. Kelley, Esq., East End, Finchley, for 6 Scarlet Pelargoniums

Mr C. Turner, for 24 Pinks

Messrs. Downie, Laird, & Laing, for 50 Pansies

Mr. D. Pizzie, Gr., for 12 Pinks

Mr. J. Fraser, for 50 Roses

J. Hollingworth, Esq., for 25 Roses

Mr. C. Turner, for 24 Roses

Mr. C. Masters, Gr., for 2 Dishes of Peaches and Nectarines

Mr. J. Widdowson, Gr. to C. Barnes, Esq., Rickmansworth, Herts, for 4 Dishes of Strawberries

Mr. Turnbull, Gr., for Collection of Fruit

Mr. T. Young, Gr., for Providence Pine

Mr. R. H. Smith, Gr. to H. Walker, Esq., Calderston, Liverpool, for 1 Pine-apple

Mr. J. Weir, Gr. to Mrs. Hodgson, Hampstead, for Green-fleshed Melon

Mr. W. Miller, Gr., for Green-fleshed Melon

Mr. J. Weir, Gr. to Mrs. Hodgson, Hampstead, for Scarlet-fleshed Melon

Mr W. Birse, Gr. to J. Lermitte, Esq., Finchley, for Queen Pine

Mr C. Parsey, Gr. to C. Moss, Esq., for 12 lb. of Grapes

Mr. J. Pople, West Molesey, for Black Hamburgh Grapes

Mr. G. Osborne, for Black Hamburgh Grapes

Mr. J. Aitpott, Gr. to H. Akroyd, Esq., Southwick, Chesnire, for Black Prince Grapes

Mr D. Clement, for Muscat Grapes

Mr M. Henderson, Gr. to Sir G. H. Beaumont, Bart., for Dish of Grapes

Mr. J. Meredith, for Large Bunch of Grapes

Mr. G. Osborne, for Basket of Peaches

Mr. C. Turner, for Collection of Cherries

Mr. R. Parker, for Collection of New and Rare Plants

Mr. H. Hooper, Nurseryman, Bath, for Collection of Cloves and Picotees

BRONZE MEDAL.

Mr W. Kemp, Gr., for 12 British Ferns

Mr W. Kaile, Gr., for 12 British Ferns

Mr. H. Hooper, for 24 Pinks

Mr. H. Hooper, for 36 Pansies

Mr. E. O. Kingston, Bath, Somerset, for 12 Pinks

Mr. W. Ingle, Gr., for 24 Roses

J. C. Perry, Esq., near Birmingham, for 24 Verbenas

Mr. G. Sage, Gr. to Earl Brownlow, Ashridge, for Collection of Fruit

Mr. J. Elston, Gr. to S. Lawrence, Esq., Clapham Park, for Protrusion Pine

Mr. W. Gardener, Gr. to E. O. Shirley, Esq., Stratford-on-Avon, for 1 Pine-apple

Mr. C. Ross, Gr. to E. Eyre, Esq., Newbury, for Green-fleshed Melon

Mr. T. Record, Gr., for Green-fleshed Melon

Mr. C. Goldsmith, Gr. to Sir W. Farquhar, for Scarlet-fleshed Melon

Mr. W. Beech, Gr. to J. Alcock, Esq., Epsom, for Scarlet-fleshed Melon

Mr. T. Young, Gr. to C. Bailey, Esq., for Queen Pine

Mr. R. Turnbull, Gr., for 3 Dishes of Grapes

Mr. C. Tansley, for 3 Dishes of Grapes

Mr. J. Wallis, Gr. to J. Dixon, Esq., Congleton, for Black Hamburgh Grapes

Mr. T. Speed, Gr. to Sir E. Walker, Mansfield, for Black Hamburgh Grapes

Mr. O. Goldsmith, Gr., for Black Prince Grapes

Mr. R. Turnbull, Gr., for 4 Dishes of Peaches and Nectarines

Mr. T. Jackson, for 4 Dishes of Peaches and Nectarines

Mr. W. Beech, Gr., for 2 Dishes of Peaches and Nectarines

BRONZE MEDAL

Mr. C. Allen, Gr., for 2 Dishes of Peaches and Nectarines

Mr. J. McIndoe, Gr. to C. Child, Esq., Bromley, Kent, for Dish of Pines

Mr. G. Miles, Gr. to Lord Carrington, Bucks, for Dish of Figs

Mr. C. Turner, for Black Cherries

Mr. J. Widdowson, Gr., for White Cherries

Mr. C. Turner, for 4 Dishes of Strawberries

CERTIFICATE

Mr T. Button, Curston, near Bristol, for 12 Pinks

Mr. J. Marlow, Gr. to J. Mixsell, Esq., Morthake, for 24 Roses

Mr J. Pople, for 12 lb. of Grapes

Mr J. Hudson, Gr., for 12 lb. of Grapes

Mr G. Cowan, for 12 lb. of Grapes

Mr. G. Masters, Gr., for Black Hamburgh Grapes

Mr W. Henderson, Gr., for Black Hamburgh Grapes

Mr W. Davies, Gr. to W. Baker, Esq., for 1 Queen Pines

Mr. W. Henderson, Gr., for Box of Nectarines

Mr J. Harwood, Gr., for 2 Dishes of Strawberries

Mr G. Masters, Gr., for 2 Dishes of Peaches

Mr A. Ingram, Gr., for Dish of Plums

Mr. E. Robinson, Gr., for Dish of Figs

Mr. T. Blake, Gr. to E. Green, Esq., Ware, for Dish of Figs

Mr. J. Hill, Gr., for Black Cherries

Mr. C. Turner, for White Cherries

Mr. J. Hill, Gr., for White Cherries

Mr. F. Lydiard, Bathseaston, Bath, for 4 Dishes of Strawberries

Mr. J. McIndoe, Gr., for 4 Dishes of Strawberries

Mr. T. Bailey, Gr. to T. T. Drake, Esq., for Providence Pine

Mr. J. Deville, Gr. to Major Martin, for Providence Pine

Mr G. Jones, Gr. to Lady Mill, for Providence Pine

Mr. T. Speed, Gr., for Providence Pine

Mr W. Kemp, Gr. to E. H. Benthall, Esq., for 1 Pine-apple

Mr W. Cole, Gr. to — Page, Esq., for Queen Pine

Mr. W. Davies, Gr., for Queen Pine

Mr. W. Kemp, Gr., for Queen Pine

Messrs. Hooper & Co., Covent Garden, for Collection of Annuals

Messrs. S. Glendinning, for 6 Anæctochilus

Messrs. S. Glendinning, for 12 Gesneras

FIRST-CLASS CERTIFICATE OF MERIT.

Messrs J. Veitch & Sons, for Drosera capensis

Messrs. J. Veitch & Sons, for Maranta Lindeni

Messrs J. Veitch & Sons, for Nepenthes lanata

Messrs J. Veitch & Sons, for Lomaria dura

Messrs J. Veitch & Sons, for Nicrembergia species

Messrs J. Veitch & Sons, for Dracæna species

Messrs. J. Veitch & Sons, for Lomaria gibba var. Belli

Messrs J. Veitch & Sons, for Davallia alpina (Borneo)

Messrs J. Veitch & Sons, for Davallia parrula (Borneo)

Messrs. J. Veitch & Sons, for Acalypha tricolor

Messrs J. Veitch & Sons, for Lomaria chiata

Mr. W. Bull, for Maranta Lindeni

Mr. W. Bull, for Athyrium Goringianum pictum

Mr. W. Bull, for Rogiera gratissima

Mr. W. Bull, for Peperomia Sandolia

Mr. W. Bull, for Latania rubra

Mr. W. Bull, for Panamans Porteanus

Mr. W. Bull, for Pandanus fulgosus

Mr. W. Bull, for Achantum velutinum

Messrs. Waterer & Godfrey, for Cupressus Lawsoniana argentea

Mr R. Parker, for Goodyer i pubescens intermedia

Mr R. Parker, for Statice Bonduelia

Messrs. Backhouse & Son, for Dipladenia amabilis

Messrs. J. Ivery & Son, for Athyrium Filix-femina pulcherrimum

Messrs T. Jackson, for Peperomia arbolia

Mr. B. S. Williams, for Lomaria dura

Mr. B. S. Williams, for Achantum species

Messrs. E. G. Henderson & Son, for Caladium Napoleon III

Messrs. J. Dobson & Son, for Lobelia (Erinus) Miss Murphy

Mr. J. Watson, for Pelargonium Miss Watson

Mr. J. Watson, for Pelargonium Miss Dix

Messrs. F. & A. Smith, for Pelargonium Sunbeam

Messrs. F. & A. Smith, for Pelargonium Charmer

Messrs. F. & A. Smith, for Pelargonium Glorious

Messrs. F. & A. Smith, for Pelargonium Diadem

Mr. G. Smith, for Pelargonium Le Grand

Mr. Tierbuck, for Pelargonium Emily Moreland

Mr. C. Turner, for Pelargonium Lady Constance Grosvenor

Mr. C. Turner, for Pelargonium International

Mr. W. Paul, for Pelargonium Nimrod

Mr. W. Paul, for Pelargonium Waltham Gem

Mr. W. Paul, for Pelargonium St. George

Mr. W. Paul, for Pelargonium Rebecca

Mr. W. Paul, for Pelargonium Sir J. Paxton

C. J. Perry, Esq., for Verbena Auricula

C. J. Perry, Esq., for Verbena Harry Law

SECOND-CLASS CERTIFICATE OF MERIT

Messrs. J. Veitch & Son, for Nepenthes sp (Borneo)

Messrs. J. Veitch & Son, for Nepenthes sp. (Ceylon)

Messrs. J. Veitch & Son, for Sphærogyne sp. (Bolivia)

Mr. W. Bull, for Cinchona nobilis

Mr. W. Bull, for Philodendron bipinnatifidum

Mr. W. Bull, for Panax grandiflora var.

Mr. W. Bull, for Echeveria atropurpurea

Messrs. J. Ivery & Son, for Polystichum lachinatum truncatum

Mr. B. S. Williams, for Limnocharis cultrata

Mr. J. Fraser, for Lilium auratum candidum

Messrs. Downie, Laird, & Laing, for Pansy Imperial Blue

Mr. W. Paul, for Pelargonium Scarlet Dwarf

Mr. W. Paul, for Pelargonium Cardinal

Messrs. F. & A. Smith, for Pelargonium Vandyke

Messrs. F. & A. Smith, for Pelargonium Mrs. Charles Berry

Messrs. F. & A. Smith, for Pelargonium Conqueror

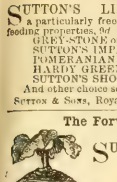
Messrs. F. & A. Smith, for Pelargonium Magnificent

Messrs. F. & A. Smith, for Pelargonium Scarlet Dwarf

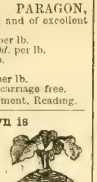
Turnip Seeds for Present Sowing.
CHEAPER BY THE BUSHEL.

SUTTON'S LINCOLNSHIRE RED PARAGON, a particularly free-growing Turnip, very large, and of excellent feeding properties, 9*d.* per lb.
GREY-STONE or MOTTLED GLOBE, 10*d.* per lb.
SUTTON'S IMPERIAL GREEN GLOBE, 9*d.* per lb.
POMERANIAN WHITE GLOBE, 9*d.* per lb.
HARDY GREEN ROUND, 9*d.* per lb.
SUTTON'S SHORT-TOP SIX WEEKS, 1*s.* per lb.
And other choice sorts, cheaper by the bushel, carriage free.
SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

The Forwardest Turnip known is



SUTTON'S SHORT-TOP
SIX WEEKS.



Price 1*s.* per lb.

Cheaper by the Bushel.

This excellent Turnip, if sown in June and July, will produce a heavy crop, to come off in time for Wheat sowing.
SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

The Best Swede for Late Sowing
IS
THE IMPROVED HARDY WHITE
(SUTTON'S Selected Stock),
Price 1*s.* per lb., or cheaper by the bushel.
Carriage free.

SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

The Best Substitute for Swedes.
SUTTON'S PURPLE-TOP YELLOW HYBRID TURNIP, 1*s.* per lb.
YELLOW TANKARD TURNIP, 1*s.* per lb.
SUTTON'S PURPLE-TOP BULLOCK'S HEART (NEW) TURNIP, 1*s.* 6*d.* per lb.
Or cheaper by the bushel, carriage free.
These Turnips, if sown in July and August, will produce a crop scarcely inferior in quality or quantity to Swedes sown in June.
SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

Just Published, post free 12 Stamps
(GRATIS TO CUSTOMERS),
CARTER'S NEW BOOK on BEDDING PLANTS, Containing Original Articles on the Artistic Arrangement of Bedding Plants; and 120 Illustrations of Geometrical Designs for lower Beds, besides other useful and original matter.
JAMES CARTER & CO., 237 & 238, High Holborn, W.C.

Seeds for Present Sowing.

JAMES CARTER AND CO. are now offering New Seed of the undermined, the quality of which cannot be surpassed, the seed being saved from plants which have taken Prizes at all the principal London Flower Shows.
CARTER'S PRIZE CALCEOLARIA, 2*s.* 6*d.* per packet.
CARTER'S PRIZE CINERARIA, 2*s.* 6*d.* per packet.
CARTER'S PRIZE FRINGED CHINESE PRIMULA, 2*s.* 6*d.* per packet.
The above forwarded on receipt of postage stamps.
JAMES CARTER & CO., 237 and 238, High Holborn, W.C.

Primula Cineraria.
WM. CUTBUSH AND SON are now sending out SEED of their superb PRIMULA SINENSIS FIMBRIATA, which has for many years given great satisfaction.
The *Gardeners' Chronicle* of the 6th of January, in Notices to Correspondents, says: "The blooms sent are remarkably fine, richly coloured, full and densely fringed; they are evidently the product of a capital strain."
The *Journal of Horticulture* of the 23d of January, says that:—"The finest and richest coloured Chinese Primulas we have yet seen are those raised by Messrs. Cutbush & Son."
Sealed packets, 2*s.* 6*d.* and 5*s.* 6*d.* each
CINERARIA, from finest named varieties, per packet, 2*s.* 6*d.* and 5*s.* 6*d.* each. Highgate Nurseries, London, N.

Notice.
NEW HARDY CLIMBERS.
CLEMATIS PRINCE of WALES.—Large flowers of a rich deep violet purple, with red bars down the centre of each sepal. First-class Certificate. 21*s.* each.
CLEMATIS RUBELLA.—Very fine rich velvety claret; stamens pale green. First-class Certificate. 21*s.* each
The usual allowance to the Trade, and a List of Firms will be advertised at a later period.
See Proceedings of Royal Horticultural Society's Scientific Meetings, June 27, 1866, page 124, where James Bateman, Esq., called attention to a few prominent objects, of which the following is an extract referring to the above Clematises:
"In the room you will notice an exhibition of Clematises, all of which are of a most magnificent type. Nothing can be more beautiful than these Clematises. See what fine large blue and purple petals they have, shining in some cases with metallic tints like the flowers of certain Ipomœas. They are varieties raised by those most successful hybridisers—Messrs. JACKMAN, of Woking, who will have the honour of introducing quite a new race of Clematises, which I believe will be amongst the best, if not the very best ornaments for all out-of-door walls, &c."
Messrs. GEORGE JACKMAN & SON have much pleasure in informing the Public that they shall be in a position to send out the above two New Clematises in the coming Autumn Planting.
Orders will be taken now, and the Plants will be forwarded strictly in rotation. Woking Nursery, Surrey.

British Fern Catalogue.
ROBERT SIM can now send, post free for six postage stamps, Part I. (British Ferns and their varieties, 36 pages, including prices of Hardy Exotic Ferns of his NEW and PRICED DESCRIPTIVE CATALOGUE of BRITISH and EXOTIC FERNS, No. 7.
*** Part II. (Exotic Ferns) will be issued as early as possible.
Foot's Cray Nursery, S.E.

A. STANSFIELD AND SONS, NURSERYMEN, &c., Todmorden, will be glad to forward their GENERAL FERN CATALOGUE No. 7 to any address for three penny postage stamps. In the British Section ample directions are given for the successful culture of the different species. A List of Collections of British and also of Exotic Ferns at special rates will accompany each copy of the Catalogue. Gratis and post free to all previous purchasers of Ferns.

NEW BRITISH PLANT—TEUCRIUM SCORODONIA CRISPUM.—This beautiful variety of the Wood Sage is now being sent out for the first time. It differs from the species in the leaves being uniform and prettily waved or crisped on the edges. Nice Plants, 3*s.* 6*d.* each.
NEW NORTH AMERICAN FERN—POLYSTICHUM ACROSTICHOIDES SUBBIPINNATUM (Moore).—Very handsome, 5*s.* each. The usual discount to the Trade.
ABM. STANSFIELD & SONS, Nurserymen, &c., Todmorden and Manchester. Letters to be addressed "Todmorden."

A Quarter of a Million of Fruit Trees.
THOMAS WARNER begs to inform intending Planters and the Trade, that his Nurseries, which occupy upwards of 70 acres, contain the above, in addition to a most extensive stock of Evergreens, Ornamental Trees, Roses, &c. All in a high state of cultivation. An inspection is respectfully invited
CATALOGUES, Wholesale and Retail, ready in October.
The Nurseries, Leicester Abbey, 1¼ mile from the Midland Railway Station.

PETER DRUMMOND AND CO. (late J. SCOTT), Preston Road Nursery, Yeovil, Somerset, have to offer to intending purchasers upwards of 500,000 SPRING-OUT FLOWER GARDEN PLANTS, including all the leading varieties of Dahlias, Fuchsias, Geraniums, Heliotropes, Lantanas, Lobelias, Petunias, Salvias, Verbenas, &c. And all kinds of Frosted and Variegated-leaved Plants suitable for the Decoration of the Flower Garden, at unprecedented low prices. CATALOGUES free on application.
Also SEEDS of every description for the FARM and GARDEN, of the best quality, at moderate prices.
Please address as above.

CALADIUMS! CALADIUMS!—The following 12 well-established Plants will be sent to any address on receipt of Post-office Order for 10*s.*, payable to J. C. PADMAN, Boston Spa, Yorkshire:—

Chantini	pictum	bicolor superba
Bellevmei	picturatum	splendens
Troubetskoi	argyrites	Mafida
Wighti	bicolor	exaltissima violacea

First-class Seeds.
DOBSON'S PRIZE CALCEOLARIA, 1*s.* 6*d.*, 2*s.* 6*d.*, 3*s.* 6*d.*, 5*s.*
DOBSON'S PRIZE CINERARIA, 1*s.*, 2*s.* 6*d.*, 5*s.*
DOBSON'S PRIZE PRIMULA, 1*s.*, 2*s.* 6*d.*, 5*s.*
For Testimonials see page 606 of last week's *Gardeners' Chronicle*.
DOBSON & SONS, Seed Merchants, Isleworth, W.

International Prize Calceolaria.
EDWIN COOLING has the pleasure to offer Seed saved from the superb Collection of HERBACEOUS CALCEOLARIAS exhibited by Mr. James, Gardener to W. F. Watson, Esq., at the International Horticultural Exhibition, and which were awarded the First Prize. These Calceolarias are the admiration of all who saw them, being quite unsurpassed for good habit; size of bloom, and beauty of marking. The Seed is now ready for delivery, in packets of 2*s.* 6*d.* and 5*s.* each.
Also CINERARIA, PRIMULA, and PELARGONIUM, extra fine quality, 2*s.* 6*d.* per packet, all post free.
EDWIN COOLING, Seed Merchant, Derby.

BARR'S CALCEOLARIA, CINERARIA, PRIMULA, STOCKS, MYOSOTIS, &c.
CALCEOLARIA, very choice, 2*s.* 6*d.* per packet; CINERARIA, very choice, 1*s.* and 2*s.* 6*d.* per packet; PRIMULA, very choice, 1*s.* and 2*s.* 6*d.* per packet; STOCK, DWARF PURPLE, and WHITE INTERMEDIATE STOCKS, for Spring blooming, very fine, each variety 1*s.* per packet; SCARLET, PURPLE, and WHITE IMPERIAL STOCKS, for forcing or bedding, each variety 1*s.* per pkt.; MYOSOTIS SYLVATICA, for Spring blooming, 6*d.* and 1*s.* per packet; Collections of PERENNIALS, 2*s.* 6*d.*, 3*s.*, 5*s.*, 7*s.* 6*d.* to 21*s.*
BARR & SUGDEN, 12, King Street, Covent Garden, London, W.C.

The Gardeners' Chronicle.
SATURDAY, JULY 7, 1866.

MEETING FOR THE ENSUING WEEK.

SATURDAY, July 14 { Royal Horticultural (Weekly Show), at South Kensington .. .. 2 P.M.

THE great GAS COMPANIES are surely to be pitied! If they plant their elegant reservoirs in the midst of a crowded population an explosion does occasionally take place, to the great terror and injury of the neighbouring populace. Of course such a catastrophe *ought* not to have occurred. Gas making is quite safe if proper precautions be taken, so is gunpowder making, but no one would wish to have a powder mill next door to him. Gas pipes, too, are apt to leak. Of course they ought not to do so, and no doubt it is very effeminate to turn up our noses as we pass by the black and stinking soil, thrown up whenever there's something wrong with the main. To gas makers the perfume is doubtless agreeable, nay it is said to be wholesome, so much so that one of the latest fashions in physic consists in sending children with hooping-cough to the gas-works, that they may inhale the sweet and health-giving vapours, and so get cured of their distressing complaint. But what if the disinterested and enlightened gas manufacturers take their factories into the suburbs? Should an explosion take place there, only a few poor people's cottages will be unroofed, and as to the smell, why there are so many there already that the addition of a new one would only add variety. Besides, cannot the retort houses and metres be placed close by some park or open space where they would not interfere with the people's comfort, and only a few trees and shrubs be despoiled of their leaves, or a few struggling sickly herbs get coated with a layer of soot? Or if the great light-giving machinery be placed close to some market-garden, and the proprietor be ruined, who would dream of comparing the injury sustained by the Cabbage grower with the advantage to be reaped by the public or by the gas company?

Our concern, however, in this place lies rather with the effect of coal-gas on plants than with the question whether or not it is right to establish gas-works either in the midst of great cities, or close to public parks, or in Cabbage gardens. These, though all important, are for our present purpose merely secondary matters. Gas has become more than a luxury, it is a necessity, and even quiet little places in the country are glad enough to get gas, however much they may dislike the process by which it is manufactured. This being the case, the question arises, can we not have the benefit of gas without its disadvantages? or to confine ourselves within our own limits, we may ask the question whether the admitted injurious effects of coal-gas on vegetation are inevitable and irremediable? We may ask the chemist or the gas manufacturer whether it be not possible to have gas of sufficient illuminating power, or even of greater intensity than it now is, without having our plants poisoned or killed outright.

We know at least of some gas-works on whose walls cluster Roses, and around whose chimney the Virginian Creeper throws its grasping tendrils, so that it would seem that there are circumstances which permit of the growth of plants even in such unlikely spots. Observers who would investigate this matter would do great service to plant-growers and to gas-makers. Professor E. MORREN, aided by his colleague in the chair of chemistry at Liège, has lately been instituting some experiments on this point, the results of which were given at the recent Botanical Congress, and which will hereafter be published in its Proceedings.

In the meantime, we may state that the general conclusion at which the learned Professor arrived is, that coal gas, so long as it is free from sulphurous acid gas, is not injurious to plants; but if the gas be produced from coal having much pyrites in its composition, and in consequence if it be charged with sulphurous vapours, then it becomes most pernicious. If, then, the gas can be freed from these destructive vapours, we shall have little cause to complain of its effects as far as the health of plants is concerned.

EVERY year offers something new in the shape of DISEASE IN OUR VINERIES. Indeed a large volume might be written upon the various maladies to which the Grape-Vine is subject. In what may be called artificial cultivation, that is within shelter, a large portion of the different forms of disease, both in the leaves and fruit, arises from the bad condition of the roots, which is often induced by their being planted outside of the house, and therefore subjected to a totally different temperature from the main body of the Vine within. It is very probable that the pot-culture of Vines will some day be carried to a far greater extent than at present, as it has the advantage of ensuring a good condition of the roots, so far as that can be secured by a judicious administration or retention of moisture. The advantages of such a system may now be witnessed at Chiswick, on a large scale, where a whole house is devoted to it. There is now a most abundant crop, so abundant that it has been necessary to cut off a large quantity of bunches from eyes which were set only last February twelvemonth, the shoots of which ran up the rafters, like those of older plants.

The occasion for these remarks is afforded by a specimen of Grapes just forwarded to us. The stalks of the bunches are more or less withered, and a large portion of the Grapes shrivelled and reduced to the form of raisins, without, however, the slightest sweetness, and in general without any appearance of mould. This however, or an incipient decay, would scarcely be worthy of remark, as it so commonly occurs where the roots are unhealthy, were it not for the curious circumstance, that in a great many of the berries decay has commenced, and the decayed portion has then completely dried up, and is distinguished from the sound portion by a clearly defined rigid margin. In some cases decay has commenced a second, or even a third time, and then the whole berry has withered. This seems clearly to point out that it is to the roots,

and to the action of alternate drought and moisture, that we must look for the immediate cause of the peculiar features of the malady.

In all these cases there is a very low state of vitality, and the tissues are liable in consequence to decomposition when the conditions which sustain life are only just maintained, and therefore momentarily liable to derangement. A curious matter, in a contrary direction, has lately been pointed out to us by Mr. BARRON, in which sterility seems to arise from too great activity in the elaboration of sap. It is well-known that little gummy exusions often appear on the bunches, probably from an effort of the plant to get rid of exuberant matter, as in the analogous exusion of manna in hot weather. Occasionally, however, it is the stigma which throws it off, on the top of which it forms a little globule, and in consequence the pollen does not act properly, and the fruit fails. Whether this observation is new or not, it is well worth the attention of all Grape growers, and will account probably for many cases in which particular Vines, though producing flowers abundantly, seldom set their fruit properly. *M. J. B.*

—— WE understand that the PRINCESS HELENA'S BRIDAL BOUQUET was, by special permission, presented by Messrs. VEITCH & SONS, of the Royal Exotic Nursery, Chelsea. It was composed of Orange blossoms, Myrtle, choice Orchidaceous flowers, Gardenias, Stephanotis, &c., and was most elegantly trimmed with real Honiton lace to match the dress. The Myrtle was sent from Osborne by command of HER MAJESTY, and was taken from plants propagated from that used in the Bridal Bouquet of H.R.H. THE CROWN PRINCESS of PRUSSIA.

—— It is very curious to watch the progress which the golden-rayed JAPAN LILY, Lilium auratum, is making towards becoming DOUBLE. Last year, on more than one occasion, we saw the three outer stamens more or less completely replaced by petals; this year we have seen several blossoms in which all six stamens have been replaced by petals, and one flower forwarded to us by the Messrs. VEITCH presented an indication that we may expect ere long to find the pistil in the guise of the petals, as in the flower in question it was already broken up into its component parts. It is worthy of remark, too, how the typical number of parts is adhered to in these aberrant flowers. The normal number of parts in a true Lily is 15; six segments to the perianth, six stamens, and three carpels to the pistil. Now in one of Messrs. VEITCH'S flowers there were only five segments to the perianth, but the pistil had four carpels, and so the number 15 was not exceeded. This fine plant seems to vary in all sorts of ways. Mr. JOHN FRASER has one in which all the usual spots are obliterated, leaving only the golden band on the white ground.

—— At the last meeting of the Natural History Society of Dublin, the subject of SULPHUR SHOWERS was revived in consequence of a letter from Mr. R. A. DUKE, C.E., recording the occurrence of large quantities of a fine-grained yellow powder, on three or four occasions, after a night's rain, in the neighbourhood of Templehouse, county of Sligo. It was strewed in considerable quantities on walks, roads, &c., and Grass, as was shown by its sticking to the nostrils of horses and cows grazing. It fell also on the roofs of houses. This yellow rain-dust was first observed on the 6th of May, and fell afterwards on four occasions, of which the last was the 17th of May. The Rev. Dr. HAUGHTON examined it chemically, and found 16 parts of sulphur in 1050 parts of yellow powder, omitting clayey particles. This result proved that it could not be regarded as sulphur. Under the microscope it presented the appearance of agglutinated masses, composed of spherical particles, sometimes containing only two or three, and sometimes a score, of single particles. Mr. DUKE, and others, considered the yellow dust to be composed of insects' eggs. Mr. PORTE suggested that this yellow dust might, on examination, prove to be the pollen of Fir trees.

—— A set of Fifteen PHOTOGRAPHS of the late International Horticultural Exhibition has been published by Messrs. CUNDALL & FLEMING. The airy foliage of the Ferns is particularly well rendered in them. Several views were also taken by Mr. VERNON HEATH, and are published by DAY & SON.

—— We regret to have to announce the DEATH, on Sunday last, July 1st, at the age of 63, of Mr. WILLIAM COCK, of Chiswick. Mr. COCK was one of the early supporters of Horticultural Exhibitions in this country, and a pioneer in the successful treatment which has been realised in the case of the Pelargonium especially, and as such his name is entitled to the grateful remembrance of those who in these later days have reaped the benefit of lessons which he did much to impress on the public mind. We are glad to be able to add the following particulars which have been obligingly sent to us by one of his intimate friends and neighbours:—

"Mr. COCK was one of the earliest and also one of the most successful contributors to the first shows of the Horticultural Society at Chiswick, the contemporary of GREEN and BARNES, and others whose names have long been household words amongst exhibitors. His favourite flower was the Pelargonium, and those who remember the Exhibitions that were held in the Society's Garden at Chiswick about the year 1835, will not have forgotten the handsome and well-managed specimens which were shown by Mr. COCK. His were invariably the plants that carried off the 1st prizes, although his friend Mr. CATLEUGH sometimes ran him hard. He had a correct eye, and good taste, and no one in his day knew better than he what constituted a good Pelargonium flower.

"He was also a most successful cultivator of the Balsam. Some specimens exhibited by him about the date already mentioned were wonderful examples of high cultivation. Four plants only could be pressed into a large van. Each plant measured 6 feet in height, and as much in diameter, one only having been grown in a light. No one would have more vividly remembered these extraordinary specimens of high cultivation, or would have more readily chronicled them while lamenting his loss, than the late Dr. LINDLEY, for he thought highly of Mr. COCK'S skill as a grower.

"Of late years Mr. COCK had given up the cultivation of his former favourites, and spent his leisure time in growing Camellias, Epacrises, seedling scarlet Pelargoniums, &c. His habits were of the most retiring kind, and his charity to his poorer neighbours of the most liberal but unostentatious character. He was indeed a true friend to his neighbours, and will be missed by many—by none more than myself. *C. Edmonds, Chiswick House, July 4.*"

—— The foreign journals bring us the intelligence of the premature DEATH of M. MARIUS PORTE, by whom many valuable plants have been introduced into European gardens. This sad event took place at Manilla on the 16th of January last, and appears to have been brought about by fatigue which had been experienced during a long journey in the interior of Luzon. It is in connection with Brazilian and Philippine Island plants that M. PORTE'S name, which adds another inscription to the roll of the martyrs to science, will be more especially remembered.

NEW GARDEN FERNS.

ATHYRIUM LATIFOLIUM. *Presl, Tent. Pter.* t. 3, fig. 1.

Fronds ovate, membranaceous, bipinnate, pinnæ subopposite, linear oblong; pinnules sessile, oblong, pinnatifid the lower ovate, the upper oblong, all with obovate mucronulate segment; secondary rachis winged, soft mucronet, stipes purplish, scm transparent, caudex short, erect, and scaly.

This Fern appears to be very little known. Sir W. Hooker speaks of it as "found in Chili, according to Presl, repeated by Sturm, but no one else recognises such a species from that country." Nevertheless it has been introduced from thence by Messrs. Veitch's collector, Mr. Pearce, and is represented with sufficient accuracy by Presl in the figure and description quoted. Though having the texture and fructification of Athyrium Filix-fœmina, it is abundantly distinct, not only in structure, but in its much smaller size (it being some 6 or 8 inches only in height), and on the whole bears more the aspect of a dense Asplenium lanceolatum than of a Lady Fern; while from the Athyrium latifolium of the Lake District (a var. of the common Lady Fern) it is altogether dissimilar. Its fronds are of annual duration only.

LOMARIA LECHLERI, *M.*

Fronds numerous, arching, pinnatifid, 1 ft. long, elongate lanceolate, rachis and caudex naked, chaffy, dark brown, rigid texture; segments about an inch in length, oblong, bluntish or acute, slightly falcate, closely set with a narrow space, the upper ones diminishing into the terminated apex, the lower shortened into rounded or reniform lobes; veins forked, club-shaped at the apices, which form a series of curved processes within the edge; sori in double rows, fertile fronds central, taller, with longer narrow segments, which are distinct below, but in the upper part from the decurrent bases of the pinnæ in both directions appear to be united by a fertile wing; sori submarginal; indusium thin, membranaceous, transversely wrinkled and denticulate; stipes about 2 inches long, bearing a few broadish scales while young, until it exceeds nearly at the top, bearing a dense spreading crown of fronds, and producing slender scaly runners, thicker than a straw, and bearing solitary fronds at intervals.

Among the Ferns which the Messrs. Veitch have had the good fortune to introduce from Chili, occur at least two species which appear to have a close affinity with Lomaria blechnoides—a plant, which from Bory's too brief description it is not easy to identify. That which we refer to Bory's species, was distributed by Mr. Veitch some four or five years since, and is a dwarfish evergreen rigid Fern, with spreading fronds 6 or 8 inches long, the sterile and fertile ones being of about the same stature; and otherwise agreeing exactly with the few particulars Bory has recorded of his plant. The other species, which has this season for the first time produced fertile fronds, differs altogether in its erect, not creeping or climbing, caudex; in its larger size generally, the sterile fronds being at least a foot long; and especially in the much taller fertile fronds, which rise considerably above the sterile ones. The plant is identical with Lechler's Chilian specimens referred by Dr. Mettenius to L. blechnoides (and they certainly bear considerable resemblance to our European Blechnum), but it does not accord with Bory's account, in which it is expressly stated that the fronds are equal, and in which the caudex is said to be scandant. We therefore attach to it the name of one of the collectors by whom it was gathered, and who has done good service to botany in obtaining materials for the study of this class of plants.

The aspect of the plant now under notice is somewhat like that of a very rigid erect form of L. lanceolata, but the texture of the fronds, as well as the size and form of the fertile ones, with diminishing pinnæ up to the apex, show it to be distinct; while from L. aspera, another allied Chilian plant, it is distinguished by the different character of the sarmenta, which in L. Lechleri are rhizomiform, bearing fronds at intervals, and in L. aspera are frondose, with a proliferous apex. The surface also, though harsh to the touch, wants the asperities which have suggested the name of that species. It is a fine evergreen hardy greenhouse Fern, and has been obtained from Chili by Messrs. Veitch. The fronds spread into a head of 18 or 20 inches diameter, and reach from 1 foot to 18 inches in height. *T. M.*

NOTES ON CONIFERS.—No. IV.

THE result of the geological revolutions and geographical mutations of which we have spoken has been to throw the plants and animals of the whole world into certain districts, which are characterised by the presence or predominance of certain forms. According to our view, there are four great regions so distinguished, each of which again is separable into two or three smaller provinces. They are, 1, the Australian region, consisting of three parts, viz., Australia, New Guinea, and Polynesia; 2, the Africano-Indian region, divisible into Africa south of the Sahara, and the Indo-Malayan district; 3, Europe, and Asia north of the Himalayan range, including the north of Africa and the Sahara, and the circumpolar portion of North America, divisible into the Scandinavian, the Mediterranean, and the Siberian districts, of the latter of which the Polar-American district forms a minor subdivision; and 4, America, divisible into North America and South America.

It is perhaps premature to say that this distribution applies to all the branches of the animal kingdom. We have not yet worked it out in detail in all of them. But we speak with much confidence of the results in those of the mammals and birds, and believe that it will also be found to apply to the other branches of zoology, and to botany as well. In Conifers it certainly does. A cursory glance at their geographical distribution shows approximately the following proportions inhabiting the different regions.

	Supposed species.	General
1. European-Asiatic region:—		
Europe	46	7
Asia north of southern slopes of Himalayas ..	74	19
2. American region:—		
N. America, north of Panama	104	11
S. America	18	3
3. Africano-Indian region —		
Africa, south of Sahara	8	2
Indo-Malayan region ..	14	7
4. Australian region, ..	56	10

It is thus obvious that the present metropolis of the Conifers is the northern hemisphere, and if we compare the materials of which the family consists in the northern, with those which compose it in the southern, we arrive at the conclusion that the northern is almost entirely composed of genera which belong to the type of the Miocene epoch, while the southern is composed of genera which belong to the type of the Eocene epoch.

To the northern hemisphere belong all the Pines and Firs. There are said to be two Pines, one from the lofty mountains of Sumatra, and the other from the Philippine Islands. More information about these is required, but supposing there to be no mistake, they are at best exceptions proving that the glacial epoch had made itself felt as far as the equator—not necessarily that ice had spread as far, but that the climate had been modified to an extent that admitted of a Pine growing in equatorial latitudes, and that Sumatra and the Philippines had then been united to the main land—both presumptions which we know already to be more than probable, and almost capable of proof by independent facts. We have already referred to the abundance of true Pines in the Miocene strata. We know of none before that time. The Conifers which previously existed were Araucarias, Dammari, and Podocarpi. We have ample evidence of the existence of many species of these from the Trias downwards, but they cease in the Miocene, that is the Miocene of Europe. But although extinguished there by the mutations of land and water or other geological causes at the time that the Eocene epoch came to an end in Europe, they survived in the Southern Hemisphere. The country of Araucarias is Australia, Brazil, Chili, and some of the Polynesian or neighbouring Islands. The Dammaras are from New Zealand and the Indo-Malayan district, and a very noteworthy circumstance regarding these northern and southern species is that with one or two exceptions the development of their seeds is upon a different principle from those of the northern species. The seed, instead of being attached at a base and growing towards the point of the cone, is attached at the top and hangs downwards. Link long ago proposed on this ground to separate the Dammara, Araucaria, and Cunninghamia from the Abietinæ, and although not adopted to the extent which he proposed of making them a separate family, this has been universally adopted in classification as a minor group, and with only one or two exceptions the character marks out a geographical limit. The imbricated cone-bearing genera of the Southern Hemisphere are Araucaria, Arthrotaxis, and Dammara, and they all have this character. Three other genera have it—Cunninghamia, Sciadopitys, and Sequoia; the two former are from Japan, and may perhaps be due to an extension of the southern type northwards from the Malayan district.

Sequoia is in a different position—a genuine and most characteristic Miocene form—and its presence in its modern native locality, California, may perhaps be accounted for, by supposing it to be a genus which had been derived from Eocene blood, and had escaped

In this no account is taken of Roezl's Mexican species, which although numbering upwards of 100, do not exceed six or eight true species.

† Reckoning Pinus, Abies, Larix, Cedrus, and Picea as distinct; Cupressus, Chamæcyparis, and Retinospora as one.

the extinction of the Flora of that epoch which extended to most of the lands in the North, on the advent of the Miocene epoch.

The Cypress section of Conifers gives a similar result; the wide of the Southern Hemisphere genera being separated from the rest by well-defined characters, to which only one exception occurs.

The Yews tell the same tale. The Podocarpi, which are the southern form of this section of the Conifers, are (with the exception of five out of upwards of 30 species, which we may suppose to have spread northwards from Java and Borneo to China and Japan) all either from South America, Australia, the Indo-Malayan region, or Africa.

But one or two remarkable features are to be noticed in the distribution of these Southern Hemisphere Conifers. In the first place, as compared with those in the Northern Hemisphere, their numbers are few. The total number of Southern is about 100 as against 250 in the Northern; but taking each country separately the disproportion is still more extraordinary. South America has 18 against upwards of 100 in North America, or against 120 in Europe and North Asia. The Africano-Indian region 23 against the same, and Australia and Polynesia 56.

In the next place, although the Africano-Indian region has 23, of which Africa proper supplies only nine, these nine consist entirely either of species of Podocarpus or of Widdringtonia, a genus something like a Juniper, peculiar to South Africa and Madagascar. One remarkable coincidence in nominal distribution is that although all but one of the genera allied to Widdringtonia are from the Southern Hemisphere (Frenela and Actinostrobus from New Holland, and Libocedrus from Chili and New Zealand); that one (Callitris) comes from Mount Atlas and Barbary and the parts of Africa north of the Sahara. Now nothing can be better established in geographical distribution than that the North of Africa, both zoologically and botanically, belongs to the Mediterranean district of Europe. The desert of the Sahara was at no distant geological period a sea which had for a long period separated Africa south of it from the land to the north, and, as is stated in the work on Geographical Distribution to which I have already referred, "the boundary line between them lies not on the north of the Sahara, as has been supposed by some, nor yet in the middle, but along its southern margin. Its inhabitants, although many of them are peculiar to itself, are decidedly of northern forms. Species of hedgehog, jerboa, the northern type of shrews, weasels, &c., all indicate a northern affinity. It would appear that on the Sahara being raised from the bottom of the sea into its present position, it had been colonised from the north rather than from the south, and this is quite in accordance with the present geology of the country. No one, now-a-days, will imagine that the bed of the Sahara was all raised simultaneously—at one shot as it were. It must have been by degrees; and as the seat of elevation is shown by the inclination of the strata along the southern flanks of Mount Atlas to have been in that range, it follows that the first part of the desert raised would be that nearest to it, the north, and the last the south; hence the Saharan Lake or Sea would be always diminished from the north, and the last remnants of it would be that most to the south; so, too, the colonisation would always be from the north until the whole elevation was completed. Then it would no doubt be open to the animals from the south to enter it too; but they would find the ground already occupied by animals fitted for the conditions of life in the desert, and in the struggle for life would be defeated."*

Now the fact of Callitris, a form allied to Widdringtonia, being found in North Africa, would at first sight seem to militate against the position above laid down; but it is impossible to set aside hundreds of instances proving the contrary, merely because of one or two facts difficult of explanation. But the same explanation which we have offered for the presence of Sequoia in the Miocene epoch, and down to the present time, would equally apply here. From the presence of its congeners in the Southern Hemisphere we would assume its ancestors to have been of the Eocene type, and that they escaped the extinction of that type which took place in Europe at the close of that epoch, and its descendants (specific descendants) have survived to the present day.

The presence of Podocarpus and of Widdringtonia in South Africa also, both of the Eocene type, may be accounted for by an ancient connection between South-west Australia and the Cape of Good Hope. Dr. Joseph Hooker, in the Introduction to the "Flora of Australia" (p. xlii.), mentions various botanical facts confirmative and indicative of an ancient communication between South-west Australia and South Africa, and remarks: "There is another way of viewing the whole question, but one so purely speculative that I hesitate to put it forward. It is that the antecedents of the peculiar Australian Flora may have inhabited an area to the westward of the present Australian Continent, and that the curious analogies which the latter presents with the South African Flora, and which are so much more conspicuous in the South-west quarter, may be connected with such a prior state of things."

The sole fruit of that connection, so far as Conifers and Africa are concerned, is however a very limited number of Podocarpi and Widdringtonias, all rare, and small as regards the quantity of individuals. No Pine (deducting one said to have been found in Abyssinia, which is debateable land, whether African or European); no Fir—nothing bearing what in ordinary parlance we should call a cone, has ever been found in Africa proper. Although we call Yews and Junipers Conifers, we do so only conventionally, on account of their identity of organisation in other respects with the true cone-bearers; literally they are berry and galbulæ-bearers, not cone-bearers, the berries and galbulæ being however merely modified cones.

But when we say that no Conifers (except the sprinkling of Podocarpi and Widdringtonias on the south-east coast), and that no cone-bearing tree at all has ever been found in Africa proper, the reader will stop us and remind us of Welwitschia mirabilis. We had not forgotten it, but we have arrived at the conclusion that it is not a Conifer at all, and in no respect related to Conifers.

We shall state our reasons for this opinion in another number. *A. M.*

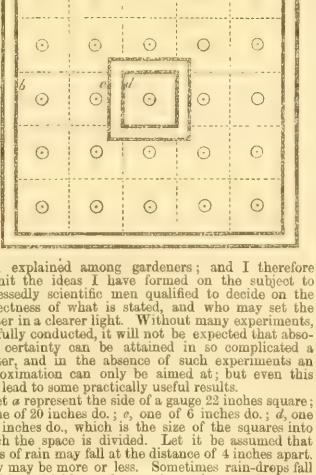
* Geographical Distribution of Mammals. By Andrew Murray. P. 394. Day & Son. 1866.

RAIN GAUGES.

RAIN gauges are now very numerous all over the country, their indications being of considerable importance in matters connected with various improvements. By reference to them we are made aware, approximately, of the quantity of rain which falls in a given time on any locality, and hence can provide sufficient outlet and drainage for superfluous moisture; or, on the other hand, we can provide for a supply of water in such places as are liable to be deficient of it in dry seasons.

In order that a correct return may be obtained, it is necessary that the instruments should be accurate, as I believe they generally are; but, although their dimensions may be correct to measure, and the scale of their indexes graduated to correspond exactly with reference to the areas of their receivers, yet it is an acknowledged fact that in general, and on the average, large gauges give a larger return of rainfall than small ones do, notwithstanding due allowance is made for their respective capacities. A 6-inch gauge presents a surface of 36 square inches, whilst that of a 12-inch gauge is 144 square inches, or four times as much as the 6-inch gauge; the former should therefore collect four times as much rainfall as the latter, but on the average it indicates more than that proportion. Both returns cannot therefore be correct, one or the other must be at fault, and the question is, what is the cause of the discrepancy? It may arise from one gauge showing too much or too little, or from both deviating from the truth. Whether, then, is the large or small most liable to be in error?

The annexed diagram has been prepared with the view of assisting in the endeavour to detect the cause of the discrepancy, which as far as I am aware has not



been explained among gardeners; and I therefore submit the ideas I have formed on the subject to professedly scientific men qualified to decide on the correctness of what is stated, and who may set the matter in a clearer light. Without many experiments, carefully conducted, it will not be expected that absolute certainty can be attained in so complicated a matter, and in the absence of such experiments an approximation can only be aimed at; but even this may lead to some practically useful results.

Let *a* represent the side of a gauge 22 inches square; *b*, one of 20 inches do.; *c*, one of 6 inches do.; *d*, one of 4 inches do., which is the size of the squares into which the space is divided. Let it be assumed that drops of rain may fall at the distance of 4 inches apart. They may be more or less. Sometimes rain-drops fall small but thickly, and sometimes they are large but few and far between. For the sake of easier explanation I have selected the distance of 4 inches, and about this distance I have observed drops occasionally to fall, as may be seen when they come from a great height and fall on the surface of still water, or a dusty road, or on new cloth, or any other glossy fabric where the spots remain till one can mark their places. To arrive, then, at the general cause of discrepancy, let the distance average 4 inches, which will allow one drop for every 4 inches square all over the field or area in which the gauges may be placed—a large fall if repeated every one, two, three, or four seconds. Their returns should correspond with this quantity under the circumstances stated. At this rate there should be one drop in each of the small squares into which the area of the receiver is divided, and no more. There will accordingly be one in the 4-inch gauge, and only one in the 6-inch gauge; there will be 25 in the 20-inch gauge, and it will be seen that no more than this can be admitted into the receiver of the 22-inch gauge, if the condition of the drops being 4 inches apart be maintained.

The 6-inch gauge with an area of 36 square inches does not give a return corresponding with what falls on the average all over the field; that is 1 on every 16 square inches, instead of which it gives but 1 on 36 square inches. This is a deficiency amounting to 125 per cent.

The 22-inch gauge receives only 25 drops instead of 30½ due to its area. The deficiency in this case is 36–30½=5½, or 21 per cent. of the correct return.

According to the conditions assumed, both these gauges give results less than the true quantity. It should however be observed at the same time that although both are in error, the larger gauge is least so, in the proportion of 21 to 125. The error of the smaller in this instance is very nearly six times that of the larger. From this it appears that on the average, all other circumstances being the same, a large gauge is preferable to a small one, within certain limits; for, if too large, inconveniences may arise as regards loss by evaporation, &c.

The cause whereby results different from each other and from the truth are given by rain gauges, must arise from some receivers embracing more space due to intervals and fewer drops, than others.

There is a space to which no rain drops belong; such may be termed space between drops, or interpluvial space. It contributes nothing towards the amount of water indicated by the gauge. It would be impossible to say how much of the area of a receiver is occupied by such space, but it must exist in all cases to a greater or less extent, and that in proportion to the distance between the rain drops.

If the receiver of a gauge be of such dimensions as to comprise the number of drops due to its area, as is the case with *b* and *d*, its return will be correct; but if its area comprise too large a portion of interpluvial space, its return will be deficient, as is the case with *a* and *c*, in which the spaces, 2 inches wide immediately within their margins, are interpluvial; and hence the deficient discrepancies of these.

All this leads to the conclusion that the discrepancies which prevail amongst rain gauges are mainly owing to more or less of interpluvial space being included within their dimensions; and that a large gauge is less affected from this cause than a small one, and, on the average, must be more correct. This cause can only affect the receiver and its returns as far as the width of the interpluvial space from the sides is concerned. If the receiver is circular, this space would form a ring the area of which would, of course, bear a greater or less proportion to the total area according to the greater or less diameter of the receiver, consequently any error of deficiency arising from the circumferential ring of a gauge of, say, 20 inches diameter would affect the whole area and the indicator of the gauge but little compared to what would result from a similarly deficient ring of a circle only 6 inches in diameter. This any one can easily prove, and the proof may be adduced in support of the conclusion that small gauges are liable to give more deficient returns than large ones.

It may however be said that although the above may be correct, yet rain-drops fall too promiscuously for occupying positions so geometrically uniform as is represented in the diagram. That there must be space such as we have designated interpluvial is certain; but whether more or less of it may be included within the receiver is uncertain. The distance between the drops determines the limits of its greatest amount, and it may vary from that amount, say 4, to nothing; the mean would then be 2 as represented by *a b*, or *c d*. It is the same width in both these cases, but the amount of interpluvial space is, for *a b*, in the proportion of 84 on an area of 484, whilst that of *c d* is 20 on an area of 36. From this it appears that however promiscuously the rain may fall, small gauges receive a less proportion of rain than those of larger dimensions.

AN EXCURSION: BOTANICAL AND HORTICULTURAL.

IT has been my good fortune to pass recently, fresh from the greatest of horticultural exhibitions, through some of the most interesting and excellent of the gardens of England, including a few that have not been altered by man since before the days when the ancient inhabitants of Britain first tickled the earth with a pointed stick with a view to a scanty crop; and perhaps a few words about the trip may not be without interest to your readers.

First, then, of the Hull Botanic Garden, which was the first I had the honour to review in your pages, and of which more need not be said now than that it is in a prosperous condition, under the management of Mr. Niven, and contains the richest collection of Alpines, &c., that has ever been brought together in a British botanic garden, and that I hope the day is not far distant when the gradually improving finances may warrant the making of a new garden in a situation less exposed to the bad influences of smut, &c., and where the other departments may be as well attended to as the Alpines now are. Mr. Niven was away plant hunting in Teesdale, and though I "saw" the plants, it was very different to looking over them with their guardian.

Thence to York, and to Mr. Baines, to see the beautiful grounds of the Museum, which now contains the skeleton of that wonderful bird the Dinornis, recently brought from New Zealand, whose leg and thigh bones are stronger than those of a horse, and colossal compared to those of full-grown lions and tigers in adjoining cases; and to the great Yorkshire gala or flower-show which was held in the building now in course of erection for the coming Industrial Exhibition at York. The show was good, but like most of its class presented no new or noticeable feature. I understand the entertainment was varied in the afternoon by negro melodies, &c., but having to see a great many new Alpines at Messrs. Backhouse's nurseries, I did not wait for that delightful interlude.

Lovers of Alpine plants and the like will be glad to learn that the York collection has increased wonderfully of late, that the demand for them has risen within

the past couple of years to quite an unexpected ratio. and that there is every prospect that many of the gems of the most exquisite of all known plants, and which have never before been grown successfully in England, will, ere long, be seen in perfection in our gardens. As an instance of the increased demand, in addition to the quantity of Hepatica angulosa that has been already sent out, there are now in the nursery nearly 2000 recently imported plants, and other fine things are cultivated in unusual numbers. The rockwork is by far the most interesting object I have ever met with in a garden or out of one, and notwithstanding the numbers of choice plants, from Orchids to Androsaces, that now flourish on it, there are upwards of 200 new and very rare kinds that have not yet been planted out. Nearly 50 flowers of the English Cypripedium grew together on a stony bank, and the reader will admit that such a sight repaid me for the visit, even if there had not been another plant on this beautiful and naturally made rockwork. But what is that holding out abundance of deep blue flowers from those vertical and moist chinks many feet above the Trichomanes rive? It is the Irish Pinguicula, by which you have to carefully pass on the side of the rocks to little ledges nearly covered with Myosotis alpicola, in full flower at 2 inches high. If the visitor looks beyond this spot into the shrubs, &c., that back up this part, he may see Mutisia decurrens crawling over and through them, not merely existing, but running freely about, and soon to flower. But ere I reached that spot I felt to some extent alarmed by meeting with a Saxifrage which is as far before pyramidalis as that is before one of the small species of the encrusted section; pyramidalis is usually considered the king of the Saxifragas, but the true S. longifolia (not that of the Continental gardens) has rosettes of leaves from 6 to 9 inches across, and beautifully graduated to the jutting panicle rising in the centre, of a reddish colour, and which eventually flowers a dense pyramid, like a fox's brush. The new Hepatica makes very large leaves, and grows freely in shady places in spongy light loam. The collection of Androsaces is very remarkable, some of them—helvetica to wit—among the neatest and smallest of flowering plants, and worth growing for that alone, even if each little crown did not furnish its flowers. It is quite useless attempting to give an idea in this paper of the value of many of the recent additions here, but when I state that among them, and not yet mentioned in the catalogues, are such things as a free-growing Arabis, with deep rose flowers, likely to be most useful along with the old white-flowering species; a Saponaria, as dwarf and more compact than Spergula pilifera; those exquisite and large fringed Gentians, whose portraits in illustrated works are all we have had an opportunity of admiring; and a dwarf hardy Polygala, with flowers as large as those of the greenhouse species, I may have succeeded in explaining to those who know Alpines, and those who do not, that the collection is of extraordinary importance and promise for the horticulture.

To succeed with these Alpines it is essential that a different course of treatment be pursued to any that has yet been practised in our gardens, though this system is much simpler and more beautiful in its results. It is to be feared that the greater number of Alpines sold are lost from an ignorance as to their wants. In botanic gardens, where they are grown, they are arranged in the ugliest of all ways, or placed in frames where the gardening public can see only a modicum of their beauty. There is nothing that would be so great an improvement in this way as well made and nicely arranged rockworks in our national gardens, covered with an intermingled vegetation of the choicest Alpines, but there is no such thing in existence at present in any botanic garden in the United Kingdom. Where are the Alpines at Kew? or in our other great botanical establishments? In frames and obscure pits, which they require about as much as young Gooseberry bushes do. Can any human being imagine anything more beautiful than a piece of rocky ground covered by sheets of such things as Dianthus alpinus, Silene alpestris, Primula ciliata and nivalis, Gentiana verna and others, mingled here and there with Aubrietias and crimson Saxifrage, and perennially interesting from the presence of bloom and beauty at all seasons, and not by the vegetation which usually covers "rockwork" in this country? With a view of helping forward the beautification of our gardens during the sweetest months of the year, I propose to devote a paper to the culture of Alpines, detailing the very best kinds, and therefore dismiss the subject for the present. A word however to state that for the sake of supplying constant moisture at the root to such things as Gentiana bavarica, Messrs. Backhouse have constructed perforated pipes over several of the beds in which their enormous stock of young Alpines is arranged, and here and there along these a drop falls upon a bit of crock, and then soaks down through the sand in which the pots are arranged, so that the most fastidious are humoured. Hepatica angulosa should be planted in a shady position in light, deep, or spongy earth. It is a grand plant, when well grown in such. I have more than once seen it in a dwarf and sunburnt state in pots, frames, &c.

Another change, and a reluctant one, from this Alpine collection, which I should advise every lover of plants to see in spring or early summer if possible, but if not it will be found interesting at Christmas. This time we seek the Alpines wild, and your correspondent, with Mr. James Backhouse, jun., and Mr. R. Farmer, settles down in the Lake District for a week. Here I saw Primula farinosa, Potentilla alpestris, Saxifraga oppositifolia and hypnoides, Hymenophyllums, and a lot of comparatively rare plants wild for the first time, thanks to the kind and excellent guidance of Mr. Backhouse. First we had a long climb up to the northern slopes of Helvellyn, high up in a stony, craggy, lonely region, chiefly characterised by the presence of a purely alpine vegetation, and by the absence of a regular dinner hour. Such scrambling over shale and holding on by rocks, up among the clouds, and occasionally looking down on one! But the view over Ullswater is grand; the higher slopes of the mountain are for four miles clothed with Silene acaulis, almost covered with its pretty flowers. How we did enjoy it! Those who know not the plant will understand that when I describe it as forming firm, dense, bright green, moss-like tufts, dotted over with reddish-purple, Dianthus-like flowers, scarcely elevated above the leaves. Here and there a pale variety, and occasionally a fine deeply-coloured form enlivened the mass. For a thousand feet up and down did this lovely little Alpine plant turn the crumbling and awful mountain sides into beauty. Torn by snow, and hail, and cold rain-storms year after year, it is as green as a freshly-planted Spergula patch; while far beneath the mountain side is naked, for the lowland plants have ceased to climb, in consequence of the cold. A pair of peregrine falcons had built their nest on a high and inaccessible cliff, and screamed about our heads as we crawled up on hands and knees in some places, and with this exception we were the only warm-blooded animals within sight. We had several long and interesting journeys, but I shall only allude to the last, which was in quest of the rare and beautiful Lychnis alpina, of which Mr. Bentham says: "In Britain, only known on the summit of Little Kilrannock, a mountain in Forfarshire." We found it, too, and in quantity, in the neighbourhood of Keswick, which is not in Forfarshire, but in Cumberland. Mr. Backhouse visited the spot 18 years ago, but this time we found it in even greater abundance, and in a different gorge to that he had first seen it in. It is on the face of a dry crumbling crag, quite 500 feet long, and of great height, and generally in such a position that extermination is impossible, at least till such times as travelling botanists are provided with wings. We obtained plenty, both in flower and out. It seems a larger and more showy plant than that grown as L. alpina. In some places, where the rocks overhung, we noticed it in full health, where a drop of rain could scarcely ever fall. It is a very lonely glen where those high crags are, and some of the gorges, though deep, are not much wider than a chimney, so that in climbing one could lay hands on both sides. This was in some cases a comfort, as things now and then looked dangerous, and I was many times indebted to Mr. Backhouse, who is a safe mountain-climber, as to where to place my feet.

It rained all the time we stopped in the Lake District, except when it "snawed whiles" and poured down big hailstones. On the afternoon of the 16th of June some of the higher mountains were covered with snow, and a striking sight it was to see as we drove to Ambleside from the direction of Keswick, the lower summits being free from it, and the country green of course. Going up the gorge in which the Lychnis was so abundant, we noticed a quantity of bones, wings, &c., in one spot, and looking up saw a large nest seated on a ledge. It proved to be that of the great buzzard, and contained two young ones, large though only in the downy stage. By climbing a little higher up on the top of the opposite side of the gorge, we could look right into the nest, which must have been placed here from the complete loneliness of the spot, and therefore there is the less fear of this very rare plant being exterminated.

From the heights of Helvellyn, with its tufts of Silene acaulis and Cerastium alpinum, to the fine forcing and kitchen gardens of Crewe Hall, now rebuilding, with its fine ornamental water and geometrical gardens, to the great and varied interest of the gardens at Biddulph Grange, the Orchids and fine fruit houses at Knypersly, and to the magnificent flower and fruit gardens at Trentham, may seem a sudden transition, but to me I need not say it was a delightful one. Messrs. Stephens, Whitaker, Stanton, and Sherratt respectively gave me every guidance and every explanation that I could desire concerning the excellent gardens which they superintend, and for this I cannot be too grateful, as what after all can one glean by visiting a great garden unless accompanied and enlightened upon novel points and plans by its manager? Can I presume to describe any part of those famous gardens in this limited space? Of course it is impossible; but I may say that the Ouvirandra displays a larger and cleaner growth at Crewe than I have seen it elsewhere, and that Mr. Whitaker considers it to dislike shallow water and vicissitudes of temperature, to which it is subjected when grown in pans.

Biddulph has been described in full in your columns by Mr. Kemp, and therefore there is the less need for me to refer to those features which are most worthy of repetition, but I learnt a good deal about the growth of a few favourite plants, particularly Trillium grandiflorum, which was much larger than I had seen it elsewhere. It is impossible to overpraise the great beauty of this flower when well grown, and it is one which every person taking interest in outdoor gardening should endeavour to establish. At Biddulph there are large and luxuriant bushes of it, more than 2 feet high, and I hardly required to be told how much the worthy and tasteful owner appreciated it. I hope to tell how to grow it best, in a short paper on a few neglected plants of equal beauty. The gardens were alight with the glorious foaming colour of the numerous and thriving plantations of the best kinds of hardy Rhododendrons; and the walls of some of the gardens were richly festooned with the saucer-like flowers of the large-flowering Clematis, which are grown to perfection not only here but elsewhere, by covering the ground with a thick mulching of short manure; and if the aspect of that is not to be tolerated in a well-kept flower garden, it may be covered with an inch of soil and dibbled over with Asters, or the like, which will enjoy the position as much as the Clematis. It is much to be wished that these truly noble hardy climbers should be seen in a good state oftener than at present. At Knypersly is kept in charge of Mr. Sherratt, the collection of Orchids, of which we all know so much through the medium of the scientific meetings of the Royal Horticultural Society. None the less interesting to me was the sight of what is perhaps on the whole the most useful, well, and economically constructed, and withal ornamental Vinery I have yet met with, and of which I may again speak.

The first, and by no means the least agreeable aspect of Trentham was the large and well-built superintendent's house, and one great range of rooms and offices in which the young men live. I was pleased to find that anxious as the able and active superintendent is to improve and revivify all departments of this truly noble place, he has not forgotten what many would appear to have done—that the making of men is a higher duty than that of perfecting the garden, the factory, or the machine; and accordingly he has heightened, ventilated, and much improved their rooms; they have the luxury of a bath, and other conveniences which must greatly tend to improve the life and the mind of the journeyman gardener.

I have a firm impression that the money frequently spent in the raising and removal of masses of earth in gardens is in nine cases out of ten money thrown away, and that if the same sums were spent in judicious planting, the result would be far more satisfactory. Standing in the comparatively level but magnificent pleasure grounds, suffused with roseate lines, as if the natural home of the Rhododendron, but everywhere varied by pyramidal evergreens and specimens of fine old trees, with wide breadths of smooth turf stretching down to the grey water, and a fresh picture and effect gained by moving 10 steps in any direction, I had this notion fully confirmed. Loudon, speaking of Trentham, says, "Great expense has lately been incurred on the house, and a fine mausoleum built opposite the entrance gate from the designs of Tatham; but nothing will ever render this place truly grand." Where in England are there grounds more "truly grand" than those of Trentham, looking towards the water? And the geometrical garden, designed by Sir C. Barry, might surely teach us what is best in that way. It produces all the effect that is claimed for the best examples of that style, and yet offers to the eye nothing suggestive of brick yards, or cemeteries, or wall-paper, or that highly interesting section of the New Road that lies between Tottenham Court Road and Trinity Church. Its gradations are easy, its breadth and proportions admirable; and if the critical eye detects a little over-crowding of the beds near the mansion, it is a detail that may be altered in a week, and at trifling expense. Space prevents me speaking further of Trentham, which indeed I saw but imperfectly, from want of time and from going there when preparations for the reception of the Prince of Wales were in progress; however, I hope to spend a week in the neighbourhood, so famous for great fruit and forcing gardens, ere long, it is the less necessary; but I may say that everything which skill and perseverance can do is being done to make Trentham worthy of its old name and a fit representative of our present rapidly advancing horticulture. A new and highly suitable drawing-room screen, composed of yellow and white Thunbergias, was shown to me. The yellow and white flowers and close trailing stems had covered the trellis to a height of 5 to 6 feet. It seemed a great improvement on Ivy, &c., and was a mass of bloom. They are of course grown in narrow pans, and placed in the drawing-room when well up the rods, and in full flower.

As many of your readers set a high value on vivid effect, I may say that a very long Ivy-edged border here, planted with Papaver bracteatum, and in full bloom, would please and perhaps astound some of them. *W. R.*

Home Correspondence.

Calceolaria Failure.—Perhaps some of your readers can oblige me with an explanation of the cause of my yellow Calceolarias failing as they are doing this year. They were planted out about three weeks ago, and did very well until quite lately, when many of them have withered and died, in spite of watering and every other care bestowed on them. Is it likely that the heat is too great for them on a lawn with a gentle slope to the south? Those on the east of the lawn have done better, but some of them are just beginning to fail. *C. D., Woodeaton.*

Lilium auratum.—I am of opinion that as yet we know but little of the magnificence of this Lily, which I imagine in a year or two will assume a character never before anticipated. In the autumn of 1863 I purchased a small bulb of it of Messrs. Veitch, of Chelsea, which in the following year grew 2 ft. 9 in. in height, and produced 1 flower. Last season it reached a height of 6 ft. 6 in., and furnished 7 fine flowers; and now it has just set 32 flower buds upon a stem 8 ft. 4 in. in height, which girths at the base 3 in. Its leaves about halfway up the stem measure from tip to tip 22 in. *Wm. Cross, Gr. to the Right Hon. Louisa Lady Ashburton, Melchet Park, Romsey, Hants.*

Zonal Pelargonium Eaters.—Can any of your correspondents say what eats the petals of our specimen in-door Zonal Pelargoniums? The light-coloured kinds only seem to suffer, while scarlets appear to escape wholly uninjured. Comparatively large semi-circular pieces are removed from the tips of the petals, which are thus greatly disfigured. Can this be the work of the Rosecutter Bee, or what? *C. W.*

Eucharis grandiflora.—The large plants exhibited at the International Horticultural Exhibition on the 22d May last, by James Brand, Esq., Bedford Hill House, Balham, are now throwing up a greater number of flower spikes than when shown, and will be in full flower in the course of 10 or 12 days. The removal

from the stove temperature has caused them to be nearly three weeks later than they would have been, for a small plant which always flowered at the same time, and has not been removed, is now in full flower. They are supplied with the contents of a couple of large watering-pots of clear liquid manure every other day, and are well syringed with clear tepid water several times a day. Some of the bulbs are always at rest so as to keep up a succession. I should say they would do well in pots or tubs standing in a tank. They are always found close to water in their native country. *W. Howard, Bedford Hill, Balham.*

Ants.—I fear that "Dunny's" extreme case (p. 612) may require an extreme remedy. If the soil of her flower beds consists of ants'-nests, the soil itself must be removed before the ants can be annihilated. Scalding or burning the whole mass of earth would answer the same purpose; but this in many cases would be more difficult than removal, and perhaps the simplest mode would be to take the earth clean out to a depth of 1 foot or 18 inches, or more if the ants were found to have penetrated deeper, which, however, will seldom be found to be the case. The ant-earth could be carted into sewage tanks, or conveyed to the farm or poultry-yard, or to woods furnished with game, to be either converted into manure or cleansed by the keen claws and eyes and voracious maws of poultry or partridges. Meanwhile the sides of the empty beds, to the full depth that they have been excavated, should be painted over with a thick coat of boiling hot coal-tar. This dressing will give a good account of any stray ants hanging about the sides, and will form an efficient barrier to any underground communication between the old soil that has not been removed, and the flower-beds that have. Leaving this tar a day or two to dry, fresh clean earth, free of ants and their eggs, must be provided for filling up the beds. Having guarded against subterranean communication, care must be taken that the ants are not permitted to walk from the infected to the clean new earth over the surface. An ant-proof barrier is wanted. What is it to be? Wire netting? if admissible this is expensive, and is difficult to find fine enough in texture for our purpose. Bricks? no; walls will never do in flower-gardens, and an ant can climb the highest in an incredibly short time. Guano? Yes; I have never known it to fail. Properly applied, and of good quality, an ant will sooner die than pass over it. Sprinkle all round the edges of the new beds with dry guano; leave it for one day and night in this state; then sprinkle it night and morning with a syringe or fine-rosed watering pot. Under this treatment it emits the most pungent odour, and acquires somewhat of the consistence of birdlime. I never could make out whether the stickiness or the smell were most offensive to the ants; but what I have frequently proved is that one or other, or both, or something else in the guano, is obnoxious enough to drive them off. Neither do they seem to die of a touch, or of the stinging aroma of the guano, but they completely disappear, which will suit your correspondent as well. Bad as her case is, and especially as my extreme remedy cannot be applied till the autumn, if the beds are furnished with flowers, I would strongly recommend a trial of the guano remedy. She need not fear repeating the dose, if she does not give it too strong. Nearly all flowers will not only bear, but enjoy a thin sprinkling over the whole of the surface of the ground—and this will suffice for the ants. When the guano has lain a week or so on the surface it can be washed in with water. Of course to derive the full strength from the guano as a manure, it should be either applied in a liquid state, or washed in at once. In houses especially, but out-of-doors as well, the above mode of applying guano is scarcely more effectual as an antidote to ants, than it is useful as food for the leaves, stems, fruit, and flowers of plants. *H. F.*

——Two years ago we found that a colony of the large black Carpenter Ant (Formica fuliginosa) had established itself in our greenhouse. As great injury might be done in a short time to the timber of the building by these insects, we spared no pains, and tried many ways to exterminate them, but unsuccessfully, until we poured a solution of soft soap in water upon them, and upon the places they travelled over; and by its means in time, by carefully getting every place we could trace them to soaked with this mixture, we quite got rid of them. We put 2 lb. of soft soap in a large watering-pot, with some quarts of water, stirred it well, and left it to settle. We poured off the thin part of this mixture upon the ants, and added fresh water instead, from time to time, till all the soap was dissolved. *S. M. O., Sedbury Park, July 2.*

Iresine Herbstii in Hyde Park.—It is perhaps hardly fair to judge of this plant at this early period, but assuredly in Hyde Park it looks dingy enough at present, and gives no promise of being better. Coleus and Amaranthus are both far superior to it. A couple of beds of Rhubarb in the Park are magnificent; compared with these the Castor Oils and Sub-tropicals look poor and spindly. Will not some one soon try a bed of Dandelions? *Londoner.*

Pelargonium Sports.—I enclose two blooms from the same seedling. The plant did not show flowers, and was cut down last autumn, and there are now three strong stems, two showing splashed flowers, no two alike; the other, equally vigorous stemmed, with similar foliage, shows only the common white-blotched upper petalled variety. I have hybridised Pelargoniums for more than 20 years, but never met with such a sport before. I had a named splashed variety two or three years since, but the colours were far fainter, and not equal to this seedling; many of the blooms are far more brilliant and striking. I have had a very curious double white Geranium, sent me in flower. Not a single bloom manifested any disposition to form seed; those that have since opened I have touched with pollen from various plants, and seed vessels have formed in every instance, and are steadily progressing. Will they be doubles? An experienced hybridiser named to me that double Fuchsias hybridised into each other would not throw double flowers, but must have the pollen from single flowers. I have about 600 from doubles on both sides, and as yet none have failed to give me full doubles of very fair promise. *Thomas Ingle, M.D.* [The striped or splashed flowers are very curious. By all means propagate from the branches which bear them, and obtain seeds also, if possible.]

Judging.—I like your remarks on judging. The great difficulty, however, with judges is that with all classes novelty tends too much to warp the judgment. This was my difficulty with my coadjutors at the International. The best thing I have ever seen on judging is an excellent article in the Proceedings of the Royal Horticultural Society. *Censor.*

International Exhibition and Congress.—I should much like to see the Congress papers, an abstract of the dinner and luncheon speeches, and your own description of the Show, with an abridgment of the remarks of the general press, all collected and bound into a handy volume, as a souvenir of the Great International of 1866. *F.* [A volume of "Proceedings" is in preparation. Eds.]

Fertilisation of Antirrhinums.—I have been amusing myself watching the operations of humble bees on some Antirrhinums. They alight on the lower lip, press down the palate, rapidly thrust their proboscises to the base of the flower, and while so engaged their hairy backs brush out the pollen upon the stigma. Some of the pollen they carry away with them. When a bee comes to a misshapen flower, which is not uncommon on Antirrhinums, he seems "bothered intirely," as the petals are so twisted and increased in number that he cannot get at the interior of the flower, and perchance if he could, he would not find much, for in these flowers the nectary is very small. *Antirrhinum.*

Cypripedium spectabile.—In addition to the note by Mr. Todd (see p. 613) respecting this fine hardy herbaceous perennial, I have to state that I have had it growing in the herbaceous plant collection here for the last half dozen years without the slightest protection in winter. It grows strong and healthy, and flowers freely. I may further add that I have seen it invariably grown in peat, but from further observation I find it to succeed best in a rather damp and sheltered situation in good free garden soil, amply supplied with leaf-mould and very old manure. The border here where it stands is partially shaded and exposed to the north-east. It has flowered beautifully this season. *J. Lothian, Campbeltown, N.B.*

Lycaste Deppei.—I have a plant of this Lycaste with 12 spikes, and on one spike there are two flowers. Not having seen a specimen of it in this condition before, and as branching spikes and double flowers have given rise to some discussion lately, the mere mention of the fact may perhaps not be without interest. *W. Swan, Gardener to J. Jones, Whalley Range, Manchester.*

Garden Rakes.—"If I might be permitted to blow my own trumpet, I should say that I was by far the best tool or implement for "earthing up" by hand, but I should be still better if I was made of steel, and a little longer in the teeth. I am, sir, your obedient and useful servant, *A 20-inch Garden Rake.*"

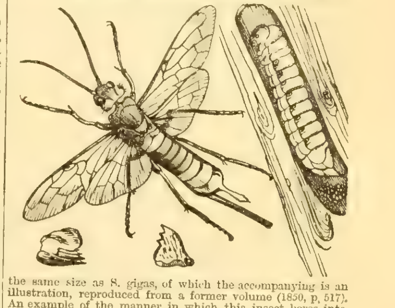
Moles.—I would recommend Mr. Read (see p. 613) to try my plan of destroying moles. In the first place, find out their principal run, which will be from a hedge or plantation to his garden, and in this place the traps. I find this to be a sure way of catching them. They always use this run about 8 A.M., noon, and about 4 P.M. If he will stand still on the ground which they visit at the times just named, he will soon see them burrowing in the ground; he should then dig them out. *R. Hawkins, Seaham.*

Societies.

Royal Horticultural: *July 3 (Scientific Meeting).*—The Viscount Sandon in the chair. The awards made by the Floral and Fruit Committees having been announced, and several candidates elected Fellows, the Rev. M. J. Berkeley proceeded to offer a few remarks on the different subjects exhibited. After alluding to an Eriogonum shown at the last meeting by Mr. Thompson of Ipswich, and to a hardy trailing Nierembergia from Tucuman, with soft lilac flowers resembling those of N. filicaulis, furnished on the present occasion by Messrs. Veitch, attention was directed to Acalypha tricolor, from the New Hebrides, a Euphorbiaceous plant of considerable beauty; its leaves are copper-coloured, splashed and streaked with orange red, and in other respects its appearance indicates little of the natural order to which it belongs. In addition to the Acalypha, two species of Davallia and Lomaria ciliata, all from Messrs. Veitch, next came under notice. The last, it was said, though at present small, was in reality a Tree Fern. Attention was then directed to the structure of the leaf of Stenochlæna tenuifolia, an Acrostichaceous Fern from the Society's garden. In this it was mentioned that the pinnæ have a marginal gland, or nerve, near the base on the upper edge, and that the veins form narrow costal areoles, from which parallel forked veins run out to the margin. Concerning Æsculus indica and Æsculus californica, both handsome Chestnuts, which come into bloom after all others are over, notes were read from the "Botanical Magazine," in which both are figured. They form hardy, moderate-sized trees of considerable beauty; of the last, it was stated that it is somewhat difficult to cultivate. Some remarks were then made in reference to diseased Grapes, a full account of which will be found in another column (p. 633).

Mr. Bateman said: Before he made any observations on the works of Nature he would direct attention to an artificial process by which leaves, whole Ferns, Seaweeds, &c., may be impressed and burnt into china, a clever invention, for which we are indebted to Mr. Cox, of the Royal Polytechnic Institution in Regent Street, by whom specimens of the art were shown. By Mr. Cox's "Ceramic Petalocaust Process" as it is called, the characteristic outline and venation of foliage, and even the forms and gay colours of feathers and other natural objects, are indelibly burnt in upon the surface of every description of china at, it is said, less cost than that of the usual pictorial patterns, while in truthfulness and beauty the representations are faultless. This process resembles that of nature-printing on paper, magnificent illustrations of which were produced a few years ago by Mr. Henry Bradbury. Here, said Mr. Bateman, we have a fund of enjoyment, as ladies may now have their Fern sets for lovers of that interesting class of plants, or Seaweed sets when it is wished to entertain some gallant tar, just as they now have their Fuchsia and Rose sets. A coloured plate of the beautiful Camoensia met with by Dr. Welwitsch in Africa (see p. 540) was next exhibited, and a hope expressed that as efforts were being made to obtain it, it might not be long before it was introduced into this country. A spike of Gunnera scabra, a hardy herbaceous plant, with leaves much larger than those of any Rhubarb, now occupied attention. This plant, it was said, was somewhat slow of increase, but it was mentioned that on account of the size and beauty of its leaves, it well deserved much more extensive cultivation than it has hitherto received. A specimen of it may be seen in what is called the herbaceous garden at Kew. Blooms of the Tulip tree, together with others of a fine variety of it, called Liriodendron tulipiferum obtusilobum, at present in great beauty in the Society's garden, now came under notice. After allusion to a fine avenue of Tulip trees at Dresden, it was remarked that in its power of enduring the smoky atmosphere of towns it would probably be found to be a rival to the Plane. In reference to Orchids, Mr. Bateman said that in his collection was a Promenæa citrina, one pseudo bulb of which had produced two flowers of different colours, one being bright yellow, the other pure white. He was unacquainted with a similar case; but he recollected Mr. Clowes once showing him a Miltonia, from opposite sides of a pseudobulb of which issued flowers of different sizes. In short, it was difficult to say, he added, where the pranks of this curious race of plants might end. Cut specimens of Orchids were shown by W. W. Buller, Esq., and it was stated that at the next meeting that gentleman would probably have something to say in reference to the cultivation of Orchids and double glazing. From Mr. Anderson, gr. to T. Dawson, Esq., Meadow Bank, Glasgow, came cut flowers of Orchids, and among them a beautiful variety of Dendrobium in the way of densiflorum, bicolor, or Griffithii. With respect to Cattleyas, Mr. Anderson asked where C. Mossiæ ended and C. labiata began. That question had been answered a year or two ago. C. quadricolor, Wagneri, and Warneri, were well-marked varieties of the same species, which went beyond Guatemala all through the Isthmus of Panama, till in the form of C. labiata it ended in Brazil. To Pescatorea cerina, a Huntleya-like plant with bright yellow blossoms from Messrs. Veitch, attention was next directed. Of this a woodcut illustration had been given some years ago by Dr. Lindley; but no coloured plate of it has as yet been published. It has been named in compliment to M. Pescatore, one of the most enthusiastic lovers of Orchids which the French empire ever produced, and rivalled only by Consul Schiller among the Germans. In connection with Angræcum caudatum, a cut specimen of which was shown to the meeting, Mr. Bateman remarked that about this time last year he had the honour of naming an Angræcum after Capt. Grant, one of the discoverers of the source of the Nile. He now had to direct attention to another, named after the distinguished traveller M. du Chaillu, in commemoration of his discoveries in West Africa, the country of the hideous gorilla. This, it was said, formed no unimportant rival to the A. caudatum of Sierra Leone. After the last meeting, Professor Owen showed Mr. Bateman a Cyrtanthus bearing umbels of glowing crimson scarlet flowers, and a plant of it now exhibited still gave indications of considerable beauty. This was said to have been sent to Professor Owen by Mr. Bain, the discoverer of the strange Dicynodonts, or two-fanged Reptiles of South Africa (fossils of the Trias period), and was stated to have been found in the Karoos, or ravines of a mountain range about 800 miles north of Cape Town, and at an elevation of 1000 feet above the sea. In summer it succeeds out of doors in this country, but in winter it requires the protection of a greenhouse. The plant shown was presented to the Society, for which a vote of thanks was given to Professor Owen.

Mr. Bateman next directed attention to Sirex juvencus, a timber-boring Beetle, bearing some resemblance to and about



the same size as S. gigas, of which the accompanying is an illustration, reproduced from a former volume (1850, p. 517). An example of the manner in which this insect bores into wood was furnished in the shape of a piece of dead Larch tree felled by G. C. Antrobus, Esq., Eaton Hall, Cheshire. It is well known, said Mr. Bateman, that all races of trees have their peculiar insect pests. We all know how destructive Scolytus destructor is to Elms, and how about this time of the year the Hylurgus piniperda bores up the centre of the young shoots of Pine trees, causing them to snap off on the occurrence of the first gale of wind. These pests confine their depredations to live trees; but Sirex juvencus is even more to be dreaded. Curtis many years ago stated that the Sirices appear to be most destructive to dead trees and timber, which is not surprising when it is stated that the eggs are deposited by hundreds, and that the maggots when full grown are about 1½ inch in length. S. juvencus made its appearance during July, August, and September in Fir groves in Norfolk, Suffolk, Hants, and Yorkshire; specimens of it were shown to Mr. Curtis by the Hon. Charles Harris, who detected it in Fir plantations at Heron Court, the seat of Lord Malmesbury. "With us," said Mr. Harris, "at the age of 20 the Fir trees die to a great extent. The summer of 1825 and 1826 was peculiarly destructive to them, from its intense heat and drought, and I am certain that I never saw any trace of a Sirex except on dead trees. The smell of the turpentine would fully account for this, and the only spot where we could detect the Sirex in a standing plantation of shorter trees was on some dead stumps that had evidently been overgrown. From this it appears that the mischief arises from allowing dead trees to remain standing or lying about; and timber ought to be well examined before it is employed in building, "for," said Mr. Curtis, "I understand that considerable numbers of the males have been taken flying about the tower of York Minster, no doubt seeking the females which were issuing from the timbers that supported the roof, and which would be of course greatly weakened by the continued operations of the larvæ, as well as rendered more

combustible by the multitude of passages and the quantity of dust which they create." Singularly enough, said Mr. Bateman, Mr. Curtis' prediction as to fire was soon verified, for in 1829, very shortly after the above was written, York Minster was the scene of conflagration. Mr. Bateman had only become acquainted with this Sirex about this time last year, and he said it was marvellous that, after the exposure for nearly a quarter of a century its evil deeds had never been proclaimed. Mr. A. Murray, it was said, had heard that it had made its appearance with Mr. Thomson, of Banchory House, Aberdeenshire. Mr. Buller said he had seen this Sirex for years in Devonshire, where it seemed to confine its operations to wood either wholly dead or decaying. Palings and Larch posts were attacked by it, but he had not seen it on live trees. Mr. Bateman stated that it appeared only to make its appearance after very hot summers, and that when detected every possible means should be used to extirpate it.

July 3 (Floral Committee).—A specimen of Lilium auratum, remarkable for the close manner in which the blooms were set on the head of a fine spike, was shown by Mr. Brewer, gr. to — Terry, Esq., Fulham. From Messrs. Osborn came six well grown and finely flowered Cape Heaths, consisting of Savileana, ventricosa, Bothwelliana, tricolor impressa and Holfordii, Parmentieri rosea, and Aitoni turgida. Messrs. Lee also contributed one or two Heaths. Mr. Wm. Paul furnished a variegated-leaved variety of Hibiscus syriacus, and various fine scarlet Pelargoniums, among which Nimrod, a peculiar orange scarlet, each head forming quite a bouquet in itself, was distinguished by a First-class Certificate. From Messrs. Veitch came, in addition to the plants mentioned above, a singular-looking Bornean Pitcher plant; also the fine Nepenthes lanata; Lomaria dura, with shining rich green coriaceous leaves, L. zamiæfolia; the New Caledonian L. ciliata and L. Bellii, both fine kinds, the latter a variety of L. gibba; the Bornean Davallia alpina, and D. parvula, the last peculiarly handsome on account of its close compact growth and small charmingly divided leaves; a very fine specimen of Blandfordia nobilis, with some dozen or more spikes of orange blossoms issuing from its among its rush like leaves; Alocasia gigantea, a fine kind, a Bolivian Sphærogyne, with handsome foliage; and cut specimens of the beautiful Dipladenia amabilis, with flowers of larger size, and far richer in colour than those of D. crassinoda; while the foliage and mode of growth partakes somewhat of the character of those of D. splendens. To this, as well as to many of the plants just named, First-class Certificates were awarded. Of Dipladenia amabilis, the plant just alluded to, a magnificently-flowered specimen came from Messrs. Backhouse, of York, and when seen in the condition in which this was shown few plants indeed are handsomer, its numerous round, bright, rich rosy crimson blossoms, rendering it the subject of general admiration. The same exhibitors had also a good plant of Lælia purpurata, a variety with the petals striped.

From Messrs. Stuart & Mein came a Statice, in the way of Holfordi, but apparently dwarfer. Mr. Watson, of St. Albans, received a First-class Certificate for Pelargoniums Mrs. Dix, scarlet, and Miss Watson, rosy salmon, both belonging to the golden three-coloured-leaved section. From Messrs. E. G. Henderson came the pretty Orchis maculata superba, Allamanda Schottii Hendersoni, a Caladium named Napoleon III., with handsome leaves prettily barred and splashed with red; and several variegated leaved Pelargoniums, among which Lucy Grieve and Lady Cullum were conspicuous. From Mr. Keeler, Dulwich, came one or two Zonal Pelargoniums. Mr. Buchanan had a panful of wild plants found about Hampstead. Among them were Maianthemum bifolium, in flower; Drosera rotundifolia, Hydrocotyle vulgaris, in bloom; Bird's-foot Trefoil, some Carices, and other interesting native plants. From the Garden of the Society came a fine bush, or rather little tree, of the white-blossomed Rhododendron Jenkinsii or Nuttallii, the handsome rosy mottled-leaved Hibiscus Cooperi, Odontoglossum Lindleyanum, Rhodanthe Manglesii, and that red allied species of Cassia, Maranta, Dracænas, Sphærogyne latifolia, Alocasia macrorhiza variegata, a little ornamental Grass (Agrostis pulchella), Dieffenbachia Baraquiniana, the singular-looking Rubus called Gircondiana, the variegated variety of Sedum Sieboldii, a variegated Acacia, with leaves not unlike those of some variegated Pteris, and other plants. Mr. Bateman received a First-class Certificate for a Scarlet Nosegay Pelargonium, with fine trusses of flowers standing well up above the foliage, on which there is a slight dark zone. This was called King of Nosegays.

July 3 (Fruit Committee).—To a fine-looking Strawberry named Dr. Hogg, from Mr. Turner, of Slough, a First-class Certificate was awarded. It belongs to the British Queen class, but, unlike the British Queen, it colours regularly all over, and it is said to be very hardy, and a great bearer. It was raised by Mr. Bradley, the originator of Oscar, and one or two other good kinds. A Strawberry named Denbigh Seedling, sent by Mr. Oldham, of Wrexham, a large conical kind, on being tasted proved too acid to merit recommendation. Sir Watkin, a conical dark fruit, a cross between Sir Harry and Black Prince, was also shown, but it did not meet with commendation. From the Society's Garden came Vicomtesse Hericart de Thury, a variety that should be better known than it is, for it is extremely hardy, of good flavour, and as a cropper is surpassed by none now in cultivation. Of La Constante, fruit of which was shown, favourable reports have already been given in our columns. It is well suited for edgings, as it produces few or no runners. Among others were Sir Charles Napier and Reeves' Eclipse. The last was stated to be more valuable for forcing than for out-door cultivation. Indoors it has a rich Pine flavour; but in the open air it is not so good. From Mr. Keeler, Dulwich, came British Queen. Some Peaches shown were balloted for among the ladies present.

ROYAL BOTANIC: *July 4 (Third Great Show).*—This, the last great exhibition of the season held under the auspices of this Society, took place on Wednesday last, and as far as fine plants and excellent fruit were concerned, it was perfectly successful, Pine-apples and Black Grapes especially being wonderfully fine; but the weather was unfavourable, heavy showers falling at intervals during the whole of the morning. As fruit formed, as it always does in July, the principal feature of the display, we will take that first.

Collections.—Of these there were several. That to which the Society's Gold Medal was awarded came from Mr. Rawbone, gr. to C. M. Campbell, Esq., Ashbourn, Derbyshire. It contained finely coloured Black Hamburgh Grapes, three bunches of which weighed together $7\frac{1}{2}$ lb., Golden Hamburgh Grapes unripe, but nearly of equal weight, a Queen Pine-apple weighing $4\frac{1}{2}$ lb., Trentham Hybrid Melon, Royal George Peaches, and Elruge Nectarines, and Keens' Seedling Strawberries. A collection from Mr. Robinson, gr. to R. Benyon, Esq., Englefield House, Reading, stood next in point of merit. It contained a Queen Pine-apple, Golden and Black Hamburgh Grapes, Gross Mignonne Peaches, Elruge Nectarines, President Strawberries, Brown Turkey Figs, Golden Perfection Melon, and Bowman's Early May Duke Cherries. Mr. Turner, Royal Nursery, Slough, from whom also came a collection, had a Queen Pine-apple, Black Hamburgh, and Buckland Sweetwater Grapes, the last unripe; Violette Hâtive Peaches, Elruge Nectarines, Premier Melon, and the new seedling Strawberry called Dr. Hogg, of which a favourable report is given above. From Mr. Miller, gr. to Lord Craven, Combe Abbey, came a nice collection, in which were six handsome finely ripened Queen Pine-apples, excellent Muscat Grapes, but unripe; beautiful Black Hamburgh Grapes, two Melons, Peaches, Nectarines, and Strawberries. Mr. Turnbull, gr. to the Duke of Marlborough, at Blenheim, furnished a Queen Pine-apple, two dishes of Grapes, two dishes of Strawberries, Peaches, Nectarines, May Duke, and Bigarreau Cherries. From Mr. Sage, gr. to Earl Brownlow, at Ashridge, came a Pine-apple, good Black Hamburgh Grapes, Peaches, Nectarines, Melons, Cherries, Strawberries, and Figs.

Awards.—1, Mr. Rawbone; 2, Mr. Robinson; 3, Mr. Turner; 4, Mr. Miller; 5, Mr. Turnbull; 6, Mr. Sage.

Pine-apples.—These were not only numerous, but as a whole indicated a considerable improvement in point of weight on fruits of the same kind shown at previous exhibitions. The best four fruits came from Mr. Hannan, gr. to C. Crawshay, Esq., Cyfarthfa Castle, Merthyr Tydvil, who had two Providences, weighing respectively 8 lb. and 9 lb.; and two Black Jamaicas, 2 lb. 12 oz., and 3 lb. Mr. Young, gr. to C. Bailey, Esq., Aberarnan, had two Providences, the heaviest of which was 7 lb. 6 oz., and two well-ripened Queens, 4 lb. 6 oz. and 4 lb. 2 oz. Mr. Miles, gr. to Lord Carrington, Wycombe Abbey, had two Smooth-leaved Cayennes, one of which was 5 lb. 10 oz.; a Prickly Cayenne, 4 lb. 6 oz., and an Enville, $4\frac{1}{2}$ lb. The best Providence, a fine fruit weighing 10 lb., but a little misshapen, came from Mr. Hannan. Mr. Young had another, handsomer in form, but more than a pound less in weight, while a trifle lighter still were fruits from Mr. Elstone, gr. to S. Lawrence, Esq., Putney Park; Mr. Deville, Ashbourne; Mr. Bailey, gr. to T. T. Drake, Esq., Shardeloes; Mr. Speed, gr. to Sir E. Walker, Bart., Bury Hill, Mansfield; and Mr. Gill, gr. to Mrs. Beaufoy, South Lambeth. A wonderfully fine Queen, weighing no less than 7 lb. 6 oz., was exhibited by Mr. Ward, gr. to F. N. Miller, Esq., Bishop's Stortford. This nearly equals the famous French Queen from Meudon, which in 1846 weighed 8 lb., and which is one of the heaviest Queens yet on record. Mr. Ward had also 12 Queens, all beautiful fruits, the united weights of which were 63 lb. Mr. Birse, gr. to J. Lermitte, Esq., Finchley, had a Queen weighing 5 lb. 4 oz. Mr. Holliday, gr. to H. Walmsley, Esq., Acton, furnished a well-ripened Queen, as did also Mr. Drewitt, The Denbies, Dorking; Mr. Kemp, gr. to Earl Percy; and Mr. Coles, gr. to R. H. Page, Esq., Beckenham. Of other varieties Mr. Smith, gr. to H. Walker, Esq., Calderstone, had a nicely ripened Black Jamaica; Mr. Kemp, a Black Antigua; and Mr. Gardiner, gr. to E. Shirley, Esq., Eatington, a Black Jamaica.

Awards.—4 Fruits: 1, Mr. Hannan; 2, Mr. Young; equal 3, Mr. Miles and Mr. Young, gr. to W. H. Stone, Esq. Providence: 1, Mr. Hannan; 2, Mr. Young, gr. to C. Bailey, Esq.; 3, Mr. Elstone. Queen: 1, Mr. Ward; 2, Mr. Birse; 3, Mr. Young. Any sort: 1, withheld; 2, Mr. Smith; 3, Mr. Gardiner.

Grapes.—Of these there were some 200 bunches, exclusive of those shown in baskets, of which there were nine. In the Class of three dishes the Black Grapes from Mr. Meredith, of Garston, near Liverpool, stood out in bold relief from all others with which they were associated, being not only large both in bunch and berry, but wonderfully well coloured and covered with a beautiful bloom; they consisted of Black Hamburgh, Black Prince, and Trentham Black. From Mr. Osborne, Finchley, came Buckland Sweetwater, nicely ripened; Muscat of Alexandria, unripe; and Black Hamburgh. Mr. Horwood, gr. to G. H. Turnbull, Esq., Rookery Down, Kent, contributed Black Hamburgh, Black Prince, and very small bunches of Muscat. From Mr. Tansley, gr. to A. Moss, Esq., Chadwell Heath, came Cannon Hall Muscat and Muscat of Alexandria, and Black Hamburgh, the last somewhat deficient in colour. From Mr. Sage, gr. to Earl Howe, Atherstone, came Black Prince, Buckland Sweetwater, and Black Hamburgh, all in good condition. Mr. M. Henderson, gr. to Sir George Beaumont, Bart., Coleorton, furnished good Black Hamburgh, White Muscadine, and Champion Hamburgh, the last with amber coloured berries as large as Plums. From Mr. Turnbull, gr. to the Duke of Marlborough, came good Black Prince, Muscat of Alexandria, unripe, and Black Hamburgh. In the class of baskets of Grapes the best came from Mr. Meredith, who had very finely-coloured and well-grown Black Hamburgh. From Mr. M. Henderson came the same variety; Mr. Tansley showed Cannon Hall Muscat. Mr. Hannan contributed Black Hamburgh, rubbed a little, but good examples of skilful cultivation. Muscats came from Mr. Osborne, and Black Hamburgh from Mr. Pople, West Moulsey. In the class of three bunches, excellent Black Hamburghs, both as regards colour and bloom, were shown by Mr. Meredith. Mr. Clements, East Barnet, had also equally good specimens of the same variety. Very good Black Hamburghs also came from Mr. Squires, gr. to H. Ludlow, Esq., Heywood, Westbury; Mr. Osborne, Mr. Pople, and Mr. Speed, Bury Hill. Those from the last-named exhibitor especially, though small, were well coloured. Mr. M. Henderson also showed Black Hamburghs, as did likewise Mr. Wadds, gr. to J. Dixon, Esq., Astle Park, Congleton, and Mr. Rawbone. In the class of Black Prince Grapes, beautiful examples came from Mr. Turnbull, gr. to the Duke of Marlborough, at Blenheim; and fine bunches of the same variety from Mr. Sage, gr. to Earl Howe. Mr. Goldsmith, gr. to Sir W. Farquhar, Bart., Dorking, also showed Black Prince, as did likewise Mr. Allen, gr. to E. J. Hopwood, Esq., Manchester, whose centre bunch was at least 16 inches in length, but the other two were much smaller, and they were altogether somewhat deficient in colour. From this class we missed the usually fine contributions of Mr. Hill, gr. to R. Sneyd, Esq., Keele Hall, Staffordshire, and Mr. Meads, gr. to R. Currie, Esq., Minley Manor, Farnborough, neither of whom showed on this occasion. From Mr. Allport, gr. to H. Akroyd, Esq., Doddington Hall, Nantwich, came most beautiful bunches of West's St. Peter's, in the cultivation of which he is always most successful. Muscats, with the exception of three bunches from Mr. Turner, of Slough, were green and unripe. Mr. Turner's were, however, all that could be desired, possessing as they did that peculiar rich golden colour in which the beauty of this Grape when in perfection consists. To these was deservedly awarded the 1st prize. The next three bunches in point of merit came from Mr. Pizzie, gr. to F. Edwards, Esq., Pitkeridge, Bucks; and Mr. Clements also had three good bunches, but unripe. Among other White Grapes we noticed three bunches of Marchioness of Hastings weighing together 8 lb. 3 oz., from Mr. Record, gr. to Col. Loyd, Hawkhurst, Kent; fine bunches of Buckland Sweetwater, but unripe, from Mr. Lynn, gr. to Lord Boston, Hedsor; White Muscadine from Mr. M. Henderson; Grizzly Frontignan from Mr. Beasley, Twyford Abbey, Acton; and Golden Hamburgh from Mr. Hyde, gr. to C. Bowles, Esq., Waltham Cross. The last, though of good size, were not ripe. A single bunch of Black Hamburgh came from Mr. Meredith, weighing no less than 7 lb. 5 oz. It was perfectly coloured, and in all respects worthy of Mr. Meredith's high reputation as a Grape grower.

Awards.—3 dishes: 1, Mr. Meredith; 2, withheld; equal 3, Mr. Osborne, Mr. Sage, and Mr. Horwood. 12 lb.: 1, Mr. Meredith; 2, Mr. Tansley: equal 3, Mr. Henderson, Mr. Hannan, Mr. Pople, and Mr. Osborne. Single dish: equal 1, Mr. Meredith and Mr. Clements; 2, Mr. Squires; equal 3, Mr. Pople and Mr. Osborne; 4, Mr. Speed. Black Prince: 1, Mr. Turnbull; 2, Mr. Sage; 3, Mr. Goldsmith. Muscats: 1, Mr. Turner; 2, Mr. Pizzie; 3, Mr. Clements. Any dish: 1, Mr. Record; 2, Mr. Lynn; 3, Mr. Henderson.

Peaches and Nectarines.—Considerably the best fruit shown under this head were dishes of Royal Charlotte and Violette Hâtive Peaches from Mr. Sawkins, gr. to A. Smith, Esq., Bramfield, Herts; these were large and fine, and extremely well ripened. From Mr. Horwood, gr. to G. Turnbull, Esq., came good examples of Royal George and Galande Peaches, the last large and well coloured. Mr. Miller, gr. to the Earl of Craven, Combe Abbey, furnished finely coloured Violette Hâtive Nectarines, and also handsome Violette Hâtive Peaches. From Mr. Allen, gr. to Captain Glegg, Withington Hall, Congleton, came Brugnon and Scarlet Nectarines. Mr. Beech, gr. to T. Allcock, Esq., Epsom, had Gross Mignonne and Royal George Peaches. From Mr. Masters, gr. to the Earl of Macclesfield, came Elruge Nectarines and Royal George Peaches, and the same varieties were also furnished by Mr. Sage, gr. to Earl Brownlow. In the class of four dishes the best came from Mr. Allen, gr. to Captain Glegg, whose fruit consisted of Bellegarde and Noblesse Peaches, and Brugnon and Scarlet Nectarines. Mr. Masters stood next in point of merit with examples of Elruge and Violette Hâtive Nectarines, and Royal George and Early Grosse Mignonne Peaches. From Messrs. Jackson, Kingston, came Vermash and Elruge Nectarines, and Royal George and Noblesse Peaches. Equally good Royal George and Bellegarde Peaches, and Elruge and Downton Nectarines, also came from Mr. Turnbull, gr. to the Duke of Marlborough. Mr. Young, gr. to W. H. Stone, Esq., likewise showed in this class.

Awards.—4 dishes: 1, Mr. Allen; 2, Mr. Masters; 3, Mr. Young; equal 4, Mr. Turnbull and Messrs. Jackson. 2 dishes: 1, Mr. Sawkins; equal 2, Mr. Miller and Mr. Horwood; equal 3, Mr. Allen and Mr. Beech; 4, Mr. Masters.

Melons.—These were tolerably numerous. In the green-fleshed class the best were Combe Abbey Hybrid, from Mr. Miller, gr. to Lord Craven; a Hybrid Cashmere from Mr. Weir, gr. to Mrs. Hodgson, Hampstead; Golden Perfection from Mr. Ross, gr. to Col. Eyre, Welford Park; and Conqueror of Europe, from Mr. Record, gr. to Col. Loyd, Hawkhurst. Among Scarlet-fleshed sorts the best were Windsor Prize Improved from Mr. Weir, and Scarlet Gem from Mr. Beasley, Twyford Abbey, and from Mr. Goldsmith, gr. to Sir W. Farquhar, Bart., Polesden, Dorking.

Awards.—Green-fleshed: equal 1, Mr. Miller and Mr. Weir; equal 2, Mr. Ross and Mr. Record. Scarlet-fleshed: 1, Mr. Weir; equal 2, Mr. Goldsmith and Mr. Beech.

Strawberries.—The best four dishes were furnished by Mr. Widdowson, gr. to J. H. Barnes, Esq., Rickmansworth, who showed Empress Eugénie, Sir Charles Napier, President, and Oscar, all large and fine. From Mr. Turner, Slough, came Dr. Hogg, Leon de St. Lannier (a large Cockscomb-shaped fruit), Sir Joseph Paxton, and Sir C. Napier. Mr. McIndoe, gr. to Coles Child, Esq., Bromley, exhibited Comte de Paris, Marguerite, Empress Eugénie, and President. Mr. Lydiard, Batheaston, sent British Queen, Sir C. Napier, Sir J. Paxton, and Comte de Paris. From Mr. Hayward, Chobham, came two fine basketsful of Kitley's Goliath; and Mr. Bailey, Shardeloes, had a seedling named Princess Mary, of which he gives a good account.

Awards.—4 dishes: 1, Mr. Widdowson; 2, Mr. Turner; 3, Mr. McIndoe; 4, Mr. Lydiard.

Plums.—These were confined to two dishes. One from Mr. McIndoe consisted of a French variety, named De Galopine. Mr. Ingram, gr. to J. J. Blandy, Esq., Reading, had Victoria.

Figs.—Very fine fruit of the Brown Turkey came from Mr. Miles, gr. to Lord Carrington. The same variety was also shown by Mr. Robinson; and Mr. Blake, gr. to L. Green, Esq., Ware, had Bouyssotte Blanche.

Cherries.—Black Circassian, large and fine, came from Mr. Turner, Slough. Mr. Hill, gr. to R. Hanbury, Esq., The Poles, Hertfordshire, had Black Tartarian. Among white varieties, the best were dishes of Bigarreau from Mr. Widdowson and Mr. Turner, of Slough. Mr. Hill had Elton. From Mr. Turner also came a collection, in which were Black Eagle, Circassian, May Duke, Black Tartarian, Elton, Bigarreau, and Werder's Early Black.

Miscellaneous Fruit.—A dish of Raspberries came from Mr. Marcham, Drayton House, Ealing. Mr. Ross, Welford Park, had two dishes of French Crab Apples of last year's growth, still perfectly sound and good; also a dish of Warrington Gooseberry, small, but good. Grosse Mignonne Peaches came from Mr. Osborn, and Elruge and Violette Hâtive Nectarines from Mr. M. Henderson. Mr. Fraser, Lea Bridge, had well-cropped fruit trees in pots.

Stove and Greenhouse Plants.—Collections of these were furnished in considerable numbers, and in good condition considering the season. Foremost among the different plants of which they consisted was a noble specimen of Willow-leaved Ixora from Mr. Peed, gr. to Mrs. Tredwell, of Norwood. This was literally covered with rich orange-salmon blossoms, in compact heads, each of which measured between 7 and 8 inches across. The same exhibitor had also good examples of Allamanda grandiflora, Dracophyllum gracile, and others. Kalosanthes coccinea, from Mr. Rhodes, of Sydenham, was another plant remarkable for fine growth and beauty; it formed a ball some 3 feet in diameter, literally covered with rich crimson scarlet blossoms. Of the old-fashioned Phænocoma prolifera, and its variety called Barnesii, we noticed well bloomed examples in different collections. Pleroma elegans, another autumn-blooming plant of great beauty, was also shown in tolerably good condition, as was likewise the pretty Clerodendron Thomsonæ. Among Statices we noticed macrophylla and profusa finely in bloom; and from Mr. Parker, of Tooting, came a new kind named floribunda, which promises to be a valuable addition to this useful race of plants. Bignonia grandiflora, of which we noticed an example, when grown in a pot, and well bloomed, is thus was, forms a good associate for Allamandas, Dipladenias, Bougainvillea glabra, Stephanotis, Rhynchospermum jasminoides, and plants of that description. Of Erythrina crista galli, a plant now seldom seen at exhibitions, we observed a well-flowered specimen from Mr. Williams.

Awards.—10: 1, Mr. Peed; 2, Mr. Wheeler. 8: 1, Mr. Rhodes; 2, Mr. Wiliams; 3, Mr. Baxendine; 4, Mr. Glendinning. 8: Amateurs: 1, Mr. Kaile; 2, Mr. G. Wheeler. 6: 1, Mr. Ward, 2, Mr. Ingram; 3, Mr. Wilkie; 4, Mr. Kemp.

Fine-foliaged Stove and Greenhouse Plants.—Among these we noticed little of which mention has not been made in previous reports. Among them were the Date Palm, the Oil Palm, and others, Rhopalas, Encephalartos, Zamias, Macrozamias, Cycas, Dion edule, Latania borbonica, Alocasia Lowii, remarkably fine; A. macrorhiza variegata, Dracænas, variegated Aloe-leaved Yuccas, and plants of that description; also Cordylines, Variegated New Zealand Flax, a useful plant; Marantas, Sphærogyne latifolia, Pandanus elegantissimus, Philodendron crinipes, with singular-looking mossy leaf stalks; Caladiums, and Tree Ferns.

Awards.—10: 1, Mr. Williams; 2, Messrs. Glendinning; 3, Mr. Burley. 10 (Amateurs): 1, Mr. Taylor; 2, Mr. Gill; 3, Mr. Young. 6: 1, Mr. Taylor; 2, Mr. Barnard.

Ferns.—These filled up shady recesses with excellent effect. The exotic species were large and handsome; and among hardy kinds were some extremely pretty varieties from Messrs. Ivery, of Dorking. Most of them have, however, been already noticed in our columns.

Awards.—12: 1, Mr. Williams. 12 (Amateurs): 1, Mr. Taylor; 2, Mr. Barnard; 3, Mr. Young.

Orchids.—These were neither numerous nor, with one or two exceptions, very remarkable either for fine growth or beauty. The exceptions were Trichopilia crispa, loaded with rosy red flowers, from Mr. Bullen, gr. to A. Turner, Esq., Leicester, who had also some good Aerides, Lady's Slippers, the beautiful Cattleya superba, and Saccolabium Blumei majus, the last with five fine spikes of bloom. From Mr.

Williams, of Holloway, came some extremely well managed plants, and in other collections we noticed the larger varieties of Epidendrum vitellinum, Odontoglossum cordatum, and bastilabium, the last with six branching flower-spikes, Vanda Batemani, the handsome Lælia purpurata, Calanthe Masuca, Phalænopsis Lueddemanniana, Cypripedium Stuarti, in excellent condition, Cattleya Wagneri in pale-flowered handsome sort, and the old-fashioned rosy-purple-flowered Brougliania sanguinea.

Azaleas.—10: 1, Mr. Bullen; 2, withheld; 3, Mr. Reed; 4: 1, Mr. Williams; 2, Mr. Parker; 3, Mr. Rhodes. 8: 1, Mr. Wiggins; 2, Mr. Cooper; 3, Mr. Hill; 4, Mr. J. Wheeler; 5, Mr. Williams.

Rose Bushes.—These were for the most part finely in flower, and formed by no means the most unattractive feature of the show. Among them were the beautiful Pimpinellifera rosea, Sevilana, loaded with little nearly round rosy-red blossoms, different varieties of triedor and centifolia, Turnbullii and Alboni magnifica, both with double fawn-coloured flowers, Fortuniana bicolor, crimson tipped with white, odorata, a fine well known kind; jubata rubra, Mussoni major, Fairrieana, Exoniana, a good white kind; exinia, depressa, pumpilacea major, and nobilis, the last a reddish-buff flowered sort.

Verbenas.—1, Messrs. Jackson; 2, Mr. Rhodes; 3, Messrs. F. & A. Smith. 8 (Amateurs): 1, Mr. Peed; 2, Mr. Ward; equal 3, Mr. Ingram and Mr. Wheeler.

Fuchsias.—Some of the collections of these were extremely well grown and flowered. Among dark varieties we noticed good examples of Sir Colin Campbell, Lord of the Isles, and Sensation; among light sorts were Willsiana, Lady Maude Blake, Venus Blandey, and Shelley; and among kinds with white corollas, the best were Madame Cornelissen and Conspicua.

Annuals.—6: 1, Mr. Brockwell; 2, Mr. Weston; 3, Mr. Filce.

Pelargoniums.—These were good; but we missed from among them the fine plants usually forwarded by Messrs. Veitch, Sherebrooke and Mr. Turner, neither of whom exhibited on this occasion. Mr. Nye, gr. to E. Foster, Esq., had large and fine specimens of Fairest of the Fair, Perfita, Mademoiselle Patti, International, Lord Clyde, Stapleford Gem, Fair Rosamund, Lord Chancellor, and Pericles. Mr. Fraser, Box Bridge, furnished Emmeline, Paxtoni, Beauton, Matilda Patti, Beckwithii, Carnelians, and others in good condition; and in the class of six variegated Mr. Wiggins, gr. to W. Beck, Esq., had good plants of John Hoyle, Purpurea Picta, Alpium formosum, Exhibition, and Isabel, of Fancy varieties. Mr. Bullen had six fine specimens of Zoe, Unique, Lord Russell, Helen Hiboe, and Acme. Among Scarlets, the best came from Mr. Wardsor, Waltham stow, who contributed Sir Robert Peel and Prime Minister, scarlet; Virgo Maria, white; Princess and Eugénie Mezard, salmon; and Highgate Rival, salmony scarlet, all dwarf well-managed varieties.

Ivy-leaves.—1, Mr. Fraser, 9 (Amateurs); 1, Mr. Nye; 2, Mr. Ward; 3, Mr. Wiggins. 6 (Cactus): 1, Mr. Fraser. 6 (Scarlets): 1, Mr. Wheeler; 2, Mr. Catlin; 3, Mr. Hawes; 4, Mr. Logan. Varieties of 1864: 1, Mr. Peed; 2, Mr. Wiggins.

Roses.—Small specimens of these were shown in pots by Messrs. Paul & Son in good condition, and excellent cut blooms came from Messrs. Lucie, Chard, Hollingsworth, Turner, and others. Among these we remarked Wm. Griffiths, Souvenir Vaisse, Glorie de Dijon, Beauty of Waltham, Gloire de Santenay, Comtesse de Rohan, Maurice Bernardin, Madame Bravy, Duchesse d'Orléans, and Souvenir de la Malmaison, all in excellent condition.

Hoses.—30: 1, Mr. Turner; 2, Messrs. Paul & Son; 3, Mr. Fraser. 25 (Amateurs): 1, Mr. Lucie; 2, Mr. Chard; 3, Mr. Hollingsworth. 24: 1, Mr. Turner; 2, Mr. Lucie; 3, Mr. Marlow.

New Plants.—Conspicuous among these was Messrs Rucker, house's Dipladenia amabilis, mentioned in another column. From Messrs. Glendinning came Geonema Donckelaari, which can hardly be called new, and Mr. Turner, gr. to Chesney, had a fine example of the new hybrida of Clerodendron, among which one named Lady Georgiana Fullerton, of a pale shade of lilac, was large and showy. Mr. Fraser had a spotless variety of Lilium auratum, called candidum, which may form a good companion for the variegated. Mr. Bull furnished, among other plants, examples of Pandanus Intisitiana, a pale green Cranium like plant; Regnelia gracilima, with pinkish white heads of rich, scent flowers; Maranta Lindeni, Veitchii, atropurpurea, a bright red leaved sort; Dipteranthus Duperreyanus, Hookeriana, Achimenes Admiration, Pandanus Pothemus, slender leaved kind; a variegated variety of Phajus grandifolius, Lælania rubra, with bronzy tinged foliage; Cinderella nobilis, a robust species, with large handsome leaves, Philodendron lapinatubense, and Alsophila Gaudichaudiana, with bronze-hued fronds, and Asplenium Goudichaudi. From Messrs. Veitch came a pretty species of Sphærogyne from Bolivia, the true Peperomia aubolia, Davallia alpina and parvula, Lomaria ciliata, Belli, and dura, elsewhere alluded to; an elegant Adiantum, the handsome Maranta Lindeni, Pteris Wimsetti, and Alternanthera versicolor, a fine foliaged plant, and the singular looking Dioscea cæpitosa. Messrs. Veitch also showed the Nuremburgia multiflora in another column, the handsome leaved Begonia Pearcei, and Rubus spectabilis aureus, with its handsome foliage tipped with gold. For specimen blooms, as well as for the plants mentioned above from Mr. Bull and others, Certificates were awarded. A white Lobelia from Messrs. Dobson, a variety of L. Erinus, named Miss Murphy, looked as if it would make a valuable bedding plant.

Seedling Pelargoniums.—The following zonal and three ivy-leaved Pelargoniums, raised by Mr. Fraser, Box Bridge, received Certificates, viz., Vanrykei, rosy salmon, Sunbeam, scarlet; Mrs. Charles Barry, scarlet, with reddish brown zone on the leaves; Diadem and Charmer, both bright orange scarlets, glorious, deep scarlet, Scarlet Dwarf, orange scarlet; Sunbeam, scarlet, large and fine, and Mrs. Fraser, rosy salmon, with broad dark zone on the leaves. From Mr. Turnbull, Luton, came a zonal scarlet Pelargonium, named Emily Rosebud, to which a First-class Certificate was awarded. Mr Wats, an organ showed Mrs. Dix and Miss Watson, and received First-class Certificates for the plants. From Mr. Savage, Guildford, a fine Scarlet Nosegay, for which a First-class Certificate was awarded. From Mr. Wm. Paul came various Zonal and Nosegay Pelargoniums, from among which Nimrod, Walthamstow, Cardinal, St. George, Rebecca, Sir J. Paxton, and Scarlet Dwarf were selected for Certificates. From Mr. Turner came Inconstant, a handsome crimson scarlet zonal, and Lady Constance Grosvenor, a fine scarlet Nosegay, to both of which First class Certificates were given. Similar marks of distinction were conferred on two fine Verbenas, named Amicula and Harry Law, from Mr. Perry, of Castle Bromwich. T. Messes. Downie Laird & Laing was awarded a Second-class Certificate for their Pansy called Imperial Blue, which promises to be a fine kind for bedding purposes.

Miscellaneous Subjects.—Among these were some Amaryllis from Messrs. Glendinning; twenty plants of the glaucous variety of Agapanthus Lewisianus called Campanulatus. Watere A. Godfrey; Yucca candicularis, freely in bloom; a handsome red and white-striped Anemylus and other plants from Mr. Parker; various Annuals from Messrs. Hooper, of Covent Garden; Pinks from Mr. Turner, and Pansies, Clove Carnations, and Pinks were also furnished by other growers.

BIRMINGHAM ROSE SHOW.—This exhibition was decidedly the best that has been yet held in Birmingham, the classes being well filled throughout, and the blooms uniformly good. In the Nurserymen's Class for 72 varieties, Messrs. Paul & Son were first with a very fine stand, containing excellent blooms of Maréchal Niel, Madame C. Wood, Comtesse de Paris, Duc de Rohan, La Duchesse de Morny, Triomphe de Rennes, Alfred Colomb, Senateur Vaisse, Madame Boutin, and Seedling, 11. Mr. Cranston's stand had fine specimens of Laurent Descourt, Madame Rival, Senateur Vaisse, Madame Emain, Madame C. Crapelet, Peter Lawson, Madame C. Wood, Prince Henri des Pays Bas, Louis Van Houtte, and Alfred de Rougemont. Mr. Cant's collection contained good blooms of Vicomte Vigier, Wille Amelie Halphen, Charles Lefebvre, Dr. Andry, Duc de Wellington, Mrs. John Laing, Madame Boutin, and Reine l'Etoffe. Mr. John Keynes had good examples of Pierre Notting, Gloire de Vitry, Princess of Wales, Beauty of Waltham, Madame C. Wood, Centifolia rosea, Oriflamme de St. Louis, Kings Acre, and Souvenir Dijonnaise.

Amateurs.—1, Mr. Paul; 2, Mr. John Cranston; 3, Mr. B. R. Cant; 4, Mr. John Keynes.

In 48 varieties, three trusses of each, Mr. John Keynes was 1st with a beautiful stand, in which were fine blooms of Madame Berteux Dorville, Madame Vidal, Laurent Descourt, Lord Macaulay, Maréchal Niel, Belle Normande, Madame C. Verdier, Prince Henri des Pays Bas, Madame Vaibel, and Michel Bonnet. Messrs. Paul & Son had good specimens of Victor Verdier, Jean Lambert, Centifolia rosea, François Louvat, Duchesse de Morny, Louise Margottin, Souvenir d'Elise, and Senateur Vaisse.

Amateurs.—1, Mr. John Keynes; 2, Messrs. Paul & Son.

In the collections of 24 varieties, the best were Xavier Olibo, Maréchal Vaillant, Madame Furtado, Gloire de Santenay, Mons. Pontbriant, Kate Hausburg, Lord Clyde, and Maurice Bernardin.

Amateurs.—Collection of 24 in three: 1, Mr. B. R. Cant; 2, Mr. John Keynes; 3, Mr. John Cranston; 4, Mr. Draycott, Humberstone. Collection of 24 single trusses: 1, Mr. John Keynes; 2, Mr. B. R. Cant; 3, Mr. John Cranston; 4, Mr. Jas. Parker.

In the less limited to nurserymen resident in the counties of Warwick, Worcester, or Stafford, some highly creditable stands were shown.

Amateurs.—Collection of 24: 1, Messrs. Perkins & Son, Coventry; 2, Mr. Jas. Parker, Rugby; 3d, Mr. R. H. Vertegans, Edgbaston. Collection of 12: 1, Mr. Jas. Parker, Rugby; 2, Messrs. Perkins & Son; 3d, Mr. R. H. Vertegans.

The Amateurs were strongly represented, the competition being a great treat, and the collections of Messrs. Paul's cut blooms of Madame Clara Crapelet, Madame C. Wood, Lelia, Madame Victor Verdier, La Duchesse de Morny, Prince Camille de Rohan, André Leroy d'Angers, John Hopper, Maréchal Vaillant, Madame Clemence Joigneaux, Pierre Notting, Sénateur Vaisse, Charles Lefebvre, Gen. Jacqueminot, Madame Julie Daran, Madame Emain, Devoniensis, and La Reine.

Amateurs.—Collection of 36: 1, Mr. S. Evans, Arbury; 2d, Mr. C. J. Perry, Castle Bromwich; equal 3, Mr. W. Brown, Elmdon, and Mr. Thorneycroft, Floors; 4, Mr. C. R. Palmer, Hereford. Collection of 24: 1, Rev. P. M. Smythe, Solihull; 2, Mr. Joseph Stratton, Manningford; 3, Mr. Thorneycroft; 4, Mr. E. Hunt, Leicester.

Collections of 18 in trusses of three were very effective, and very fine specimens being put up, among which were Andre Leroy d'Angers, Mme. Lelia Lemoine, Mme. Victor Verdier, Charles Lefebvre, Alphonse Belin, Comtesse de Chabrillant, and Madame Julie Daran.

Amateurs.—1, Mr. C. J. Perry; 2, Mr. S. Evans; 3, Mr. F. Hunt.

In 12 varieties, single trusses, the awards were: 1st, Mr. Joseph Stratton; 2d, Mr. Samuel Evans; 3d, Mr. W. Brown; 4th, Rev. P. M. Smythe.

A class was provided for amateurs resident within 15 miles of Birmingham, in which were fine stands of cut flowers.

Awards.—Collection of 12: 1, Mr. C. Cooper, Moseley; 2, Mr. G. Dymond, King's Heath; 3, Mr. W. B. Mapplebeck, Moseley. Collection of 6: 1, Mr. C. Cooper; 2, Mr. John Arnold, Moseley; 3, Mr. G. P. Wragge, Edgbaston; 4, Mr. W. J. Fowler, Edgbaston.

In the class for New Roses there was a strong competition, and some fine Roses were exhibited. Messrs. Paul & Son were placed 1st with 24 blooms, the finest of which were Seedling, No. 1, a very fine Rose Mille. Annie Hopper, Madame Victor Verdier, Alfred Colomb, Madame Desiree Bonville, a fine shaped Rose, and Seedling, No. 2. Mme. Baptiste Desportes, Duchesse de Caylus, and Duchesse de Morny. These are all fine, so also are the following in Mr. Cant's stand, which took the 2d prize, viz. — Kate Hausburg, Xavier Olibo, Josephine le Bonhomme, Marie Baumann, and Augusta Rungeade. The 3d prize was awarded to Mr. Draycott, his stand Gabriel de Peyronny, Xavier Olibo, Duchesse de Caylus, Madame Vershaffelt, Josephine de Beauharnais, and Baron Pelletan de Kuntzheim, all very fine kinds.

In the class for Grass blooms of any new Rose, Mr. Keynes was placed 1st with six most superb blooms of Alphonse Rodolier, which elicited the admiration of every person. Messrs. Paul & Son were 2d with Madame Victor Verdier, a capital Rose, full and of fine form; and the 3d prize was given to Mr. B. R. Cant for Duke of Wellington, rather an uncertain Rose, but pretty in color.

Awards.—Collection of new Roses, not exceeding 24 varieties: 1, Messrs. Paul & Son; 2, Mr. B. R. Cant; 3, Mr. John Keynes; 4, Mr. William Draycott. Collection of 6 trusses of a new Rose: 1, Mr. John Keynes; 2, Messrs. Paul & Son; 3, Mr. B. R. Cant.

Prizes were also awarded to vases of Roses and Hand Bouquets, of which there was a pleasing display.

Mr. Bailey, nurseryman, Rugby, sent a capital lot of Roses in different classes, and Mr. Sage, of 10, Paul Howe, Coppull Hall, also sent a fine stand of R. Cant not having entered in proper time they were disqualified for taking prizes in the classes they were intended for, but extra prizes were awarded to each. Messrs. F. & A. Dickson, of Chester, were also too late in entering, but were awarded an extra prize.

Messrs. F. & A. Smith, Dulwich, sent a collection of variegated Pelargoniums, to the 1st of which, King of Tricolors, a First-class Certificate was awarded.

Messrs. Collyer & Roberts had specimens of their Tobacco tissue.

Notices of Books.

Garden Architecture and Landscape Gardening. By J. A. Hughes. Longmans. 8vo., with 194 woodcuts. Many are the works to aid in forming taste, and which also aid in the department of landscape gardening in its general scope, or in its peculiar phases, but few of these come professedly from architects, and treat of the architectural side of the question. Before us however is a work to assist the landscape gardener in architectural matters, and which is calculated to be of great service to those who are employed to decorate the grounds about mansions with appropriate accessories.

There are few places in which, owing to differences of levels, &c., steps do not become a positive necessity; and as they are often designed by those more conversant with gardening than with the principles of construction, so we are not surprised at the frequent want of success. The work before us will prove eminently useful in this department, because it not only gives instances of incorrect treatment, but also shows the manner in which such inaccuracy may be avoided.

On the subject of terraces, and especially on their near or distant approach to the mansion, we cordially agree with Mr. Hughes, that too narrow a terrace gives a house an unstable appearance, and more, that it will not allow those on it to obtain a proper view of the house itself. We know an instance where there is a descending line from the terrace to a railway in the valley, which occupies the middle ground, and is the only point of view from which any number of persons could see the mansion. The first terrace looks so small that the house seems to have no foundation. Indeed, there is no appropriateness in this treatment except in the case of fortresses and works of defence, which the terrace all the more useful for the purpose intended—a widely different one from that of gardening.

Perhaps, as a whole, Mr. Hughes advises more balustrade work than would be agreeable, but in the disposition of the piers he is correct in not placing one central to a view, either from a walk or a window.

The remarks on the approaches to bridges are good—for nothing is more unpleasant than to find oneself confronted with a return wall at the very point where the paving narrows; and the author has shown how by the use of dry arches, such obstacles may be prevented, and has also given a sketch of a low wall and iron supports to a bar of iron that obviates the same defect.

We cannot agree with him in his preference for stucco to stone, although we have read no writer more in earnest on this point; and we are fully of opinion, that if all the precautions are used that he deems essential, that it will cost at first as much as stone, and in its decay how different are the effects of the two materials!

The description of the difference of styles in landscape gardening is concise and good, but presenting no accumulation of facts beyond what other writers have essayed. As a work on landscape gardening only, it by no means embodies what may be found in other works, but we can conscientiously recommend it to our readers for the valuable advice that is given in the application of buildings and ornaments to the decoration of the plains of the landscape gardener.

The Apiary.

BEES.—I have a stock which swarmed in the first week of June. The swarm is working busily, and until the last week the original stock had also been very active; but now the bees cluster about the outside of the hive and on the floor-board, and seem very idle, although some of them fly about. I have seen during the last week more dead bees out than usual. I don't know what to do. I fancy they must be idle on account of having filled the hive, and that I shall get no good from them, as unfortunately the bees are in the common old-fashioned straw hive, without any arrangement for supers or side boxes. Would it be well to fumigate them some cool evening when we may find them within the hive, and then add a side box by cutting a hole in the side of this hive, or would it be practicable to put on a super, giving communication by means of a hole made in the top of the hive? I do not like to lose all the honey the bees might be making all summer. Do you think there is any chance of their throwing off a second swarm or cast? *A Young Apiarian, Warwick.*

It is possible that your stock hive has no queen, which occasionally happens after swarming. If the bees carry in considerable quantities of pollen, we should ascribe their listlessness to another cause. The hive may be almost full of honey, with little room for the queen to lay her eggs. Unless your district is a late one for honey harvest, a super put on now would not be of much use, except to obtain a few empty combs, available for next season. We have in such cases adopted with great advantage the plan of raising the stock hive on an eke. You may have made a narrow ring of straw about 5 or 6 inches deep, of the same diameter as the stock, without top or bottom, on which the stock hive is to be raised. This in the autumn is separated by a wire, and the eke removed. Or, what we should prefer, would be to have made an octagon box about 13 or 14 inches diameter inside, or nearly the size of the hive, by 5 or 6 inches deep. To this should be fitted eight or nine bars according to the width of the box. The stock hive is to be lifted on to the eke, three or four small wedges being first applied to prevent crushing the bees. These are carefully removed one at a time. It is best to fix on small bits of worker-celled comb to the bars. A second eke may be given if necessary.

The eke is removed in autumn, having first drawn a wire through above the bars. Any clean comb is preserved for another year, and is often most helpful to the bees. When a hive swarms it is seldom that any supply of honey can be obtained except by the sacrifice of the entire stock, and most bee-keepers have to be satisfied with that amount of increase. There is little probability of a second swarm being thrown off after so long an interval.

BEE-HIVES.—I much regret if, in consequence of hurried writing, I have been the means of underrating my former letter, that is, practical apiarians may

succeed with these hives, but novices will not; in many cases neither will, that is when they receive these hives without full information as regards their practical working. This is very often the case, these hives being made and sent out by parties who are not themselves bee-masters; they only know that there are such things as bees, and are therefore unable to give instructions. On the other hand, where judicious information is given, they are then hives of easy management. From what I have personally proved, and now stated respecting them, Mr S. B. Fox may still safely recommend them as cheap, simple, and efficient. Mr. Fox is certainly correct when he says there is nothing complicated or difficult in their management; still, if it were necessary, I could point to many blunders that have been made both by the practical apiarian and the novice, which were ludicrous and amusing, but as my object is to inform rather than criticise, I will pass on. It is true that it is sometimes not an easy task to raise a hive for the purpose of nadiring, though, when heavy, a pleasant one.

I regret that I have deprecated the mode of supering advocated by Mr. Fox, as I have myself been successful in a similar way; but we must abide by what is most adapted for the thorough working of the Stewarton hive. It is quite a different thing to raise the super already on, and interpose a shallow eke, from inserting a second full-sized super. It is quite customary with us to add a second super on the top of the one already partly filled; in that case we draw all the slides of the first super.

But Mr. Fox must be supposed to be quite at sea, when he considers the greater portion of the 100 lb. to be second or even third-class honeycomb. Our supers are only classed A 1, when we obtain them free from drone-celled comb and brood of all kinds, and having a fine finish below, and which I am afraid will not be the case unless nadirs are used, as when the bees are thwarted in building drone combs below, they inevitably construct them in the super. I am also certain, where nadirs are used, the harvest is much greater; by their addition more room is afforded for storing honey when abundant, and the quality of the super is also greatly improved. It is certainly better to have a few drone combs in the nadir than in the super, and better far to have them there than in the stock hive. I commonly use nadirs with frame hives to great advantage, because where supers only are used, the bees are in most cases sure to swarm, which is a great loss to a storyfied hive; whereas, when nadired in time, it is seldom a swarm will be thrown off, and work is carried on with far more alacrity than when the bees are kept crammed in the stock hive and super. I doubt not but Mr. Fox's plan answers his purpose and locality well, but I assure him that his mode would not be always successful with us, because, as I have already said, he may be favoured with a longer and more abundant honey season than we are. While I am writing this (the 26th June), honey boxes are just being put on, while the storyfied hives are full in four and five boxes. With all that, there never has been enough honey harvest to risk putting the supers on; they would only have been spoiled by being mixed with all kinds of honey, so as to be no better than the stock boxes. We have not yet only had two fine days; the hives in that time have risen in weight 10 to 15 lb. Should the weather continue fine we expect them to increase upon an average 7 or 8 lb. each day. The highest increase I have on record is 29 lb. in three days, although I am credibly informed of some rising 33 lb. in that time. I hope then that our contemporaries will see the advantage of supering to obtain honey of the finest quality, also the advantage of nadiring in time to prevent swarming and allowing plenty of room, and a ready receptacle when room is abundant, and that it is no disadvantage to allow nature to take its course in bringing forward a few drones in the lower boxes. *Wm. Thomson, Blantyre.*

Miscellaneous.

Japanese Oaks.—The Japanese Oaks with persistent leathery leaves approach the tropical Oaks, and those with deciduous, dentate, and sinuous leaves resemble those of Europe and America. Some might be acclimatised in southern latitudes, or be included in our orangeries or winter gardens. Quercus glauca and Q. cuspidata bear edible acorns, which have the flavour of sweet chesnuts. The deciduous leaved Q. dentata is the tree on which the caterpillars called yama-maye, and whose silk is so much esteemed, feed. *Von Siebold's Catalogue Raisonné.*

Light.—Professor Roscoe has recently made known some facts he has discovered on the chemical intensity of direct sunlight, and the diffused light from other parts of the sky. It has been found that the chemical action of the direct rays of the sun is, as a rule, far less powerful than the action of the diffused rays. By suspending finely-divided sulphur in water, Professor Roscoe showed that the direct rays from a source of light were transmitted of a red colour, whilst the reflected rays were blue. Experiments were made with photographic paper of a given degree of sensitiveness, exposed to the sun's light, but with one part shaded from the direct rays. It was thus ascertained that in Manchester the diffused light of the atmosphere had nearly the same effect in darkening the photographic paper as the direct rays of the sun, the difference being not more than 8 per cent. At Kew Observatory, a similar result, but with rather greater difference in degree, was obtained; and even at Para, situated about one degree south of the equator, the effect of the direct light of the sun was not more than double that of the diffused rays of the atmosphere. These comparative experiments were made when the sun had attained the same degree of altitude, for it is found that the chemical effects of the sun's rays increase with its altitude, and on a bright day at Kew the increase and diminution of effect from the time of the sun's rising to its setting forms a nearly regular curve. At Para, however, the chemical effects have been found to vary very suddenly in the middle of the day. The experiments made near the equator have contradicted the received opinion that the chemical power of the sun's rays is less there than in northern latitudes. *Public Opinion.*

Mangoes.—The Mango tree grows luxuriantly above Lupata, and furnishes a grateful shade. Its delicious fruit is superior to that on the coast. For weeks the natives who have charge of the Mangoes live entirely on the fruit, and, as some trees bear in November and some in March, while the main crop comes between, fruit in abundance may easily be obtained during four months of the year; but no native can be induced to plant a Mango. A wide-spread superstition has become riveted in the native mind, that if any one plants this tree he will soon die. The Makololo, like other natives, were very fond of the fruit, but when told to take up some Mango stones on their return, and plant them in their own country—they, too, having become deeply imbued with the belief that it was a suicidal act to do so—replied, "they did not wish to die too soon." There is also a superstition even among the native Portuguese of Tette that if a man plants Coffee he will never afterwards be happy; they drink it, however, and seem the happier for it. *Livingstone's Zambesi and its Tributaries.*

Calendar of Operations.

(*For the ensuing week.*)

It need scarcely be repeated that a garden can afford but little enjoyment unless good cultivation and cleanliness form its chief characteristics. Roses covered with aphides, Cabbages spoiled by caterpillars, Gooseberry bushes stripped of their foliage by similar means, are matters of but too common occurrence. What possible enjoyment, then, can be derived from such gardening? To reap pleasure, and profit likewise, such things must not be permitted to exist; ordinary attention, combined with a little perseverance, will soon overcome the ravages of such pests. The first evidence of the presence of our foes ought to put us on the alert, and perhaps there is no more effectual or better remedy than hand-picking. In a few hours, in the early stage of the evil, by careful picking, one person will do as much as 10 will when the mischief is permitted to exist for only a few days. Distributing freshly slacked lime over the soil will also, to some extent at least, check the migratory movements of caterpillars. Red spider is another of the enemies which deface the foliage of many plants, and particularly those against walls with projecting coping. Although this is not so easily discovered with the naked eye as a caterpillar, it is nevertheless a more destructive and more unconquerable opponent. Still, if it is taken in time, it can also be subdued, and even expelled. Water and sulphur are the only known practical subjugators. If these are applied early and sedulously, no red spider can exist under their influence. Indeed, where it can be applied with impunity through a powerful syringe or garden engine, water alone will completely subdue this tiny pest.

FLOWER GARDEN AND PLANT HOUSES.

Mow, sweep, and roll lawns, and tie or peg down half-hardy plants as they advance in growth. Do not allow any of these to extend themselves outwardly so far as to injure edgings, whether of Box or turf; and in cleaning shrub masses, where herbaceous plants or annuals have been planted or sown in vacant places, take care that the latter are not injured by the encroachments of quick-growing plants. Any annuals or other half-hardy plants, whose season of beauty is past, should be immediately removed, and their place supplied from the reserve garden, planting sufficiently close to produce at once a full display.

DAHLIAS.—Give these weak liquid manure, and with a small three-pronged fork occasionally stir the surface of the soil. If the plants are required to produce flowers for exhibition, it will be advisable to disbud early, if the variety is at all under-sized, but when the variety is large and coarse, fewer buds should be removed.

POLYANTHUSES.—Should the weather continue wet, these plants may be parted. Do not use a knife in the operation, the ivory handle of a budding-knife will be found a suitable instrument. When planted out in a shady suitable situation, do not let them want for moisture; and a temporary screen will prove highly beneficial till the plants are established.

ROSES.—These should be again gone over, removing all gross shoots that are not likely to flower this season, as well as dead flowers, and shoots which have done flowering. Young strong growths of autumn-flowering Roses in masses should be pegged down; and those of the summer-flowering kinds, as the Moss, Provence, or Gallica varieties, should be layered; the whole surface of the beds should be forked over, and if a good soaking of liquid manure can be given, its effect will be very apparent in the greater permanency of the colours, and in the lengthened period of blooming.

FORCING GARDEN.

MELONS.—Let fruit that is ripening have as much air as possible, and take care that the roots of plants in a less forward state experience no check from want of sufficient heat or water. Earth up plants for succession, and keep them clear of all superfluous shoots.

PINES.—If the heating apparatus of any of the houses in which these are grown is defective, or even doubtful, warm summer weather should be taken advantage of for making the necessary alterations. It is annoying enough to have the state of things disturbed at any time, but this is not equal to the vexation arising from an old boiler bursting, or a set of pipes or tanks giving way, in the middle of winter; especially when due forethought and careful observation would have prevented the catastrophe. Withhold water from plants which are ripening their fruit. Examine the soil in which plants in other stages are growing frequently, in order to see that the constant syringings do not make it too wet, and thereby endanger the health of the roots. Do not, on the other hand, allow them to suffer from want of moisture, either about the roots or in the atmosphere; and let them be supplied with a bottom heat of 85°.

VINES.—The most important thing at present is to keep red spider in check; where this has been properly attended to during the last three months, and where syringing was not continued too long, the bloom will be unimpured, and the appearance of the fruit will by this be considerably enhanced; besides which, the plants are in a much better condition to perform the functions necessary for ensuring a good crop next season. Let this be kept in view during the rest of the autumn, as it is still more essential that the foliage of late Vines should be kept in the highest health to the latest period possible. Attend, when necessary, to the watering of inside borders, and of those on the outside which may be covered with tarpaulin or other material. A slight mulching of decayed leaves or dung is very useful during summer.

HARDY FRUIT AND KITCHEN GARDEN.

Remove superfluous wood from wall trees, and keep insects in check. In the kitchen garden push forward all kinds of planting while the weather is showery and the soil in good condition for the operation. Liquid manure will be found very useful now; applications of this, together with deep stirring of the ground among growing crops with a fork, is a sure way of realising the best results.

CHERRIES.—Net these, in order to keep them from birds.

STRAWBERRIES.—These must be layered, in order to get plants for forcing or for forming new plantations, as soon as runners can be obtained for that purpose.

WINTER GREENS.—Take advantage of showery weather to plant out Broccoli, Savoys, Cabbages, Cottagers' Kail, and other winter Greens.

STATE OF THE WEATHER AT CHISWICK, NEAR LONDON.

For the Week ending July 4, 1866, as observed at the Horticultural Gardens.

June and July	Moon's Age	Barometer		Temperature.					Wind	Rain.
				of the Air			of the Earth 1 foot deep	2 feet deep		
		Max	Min	Max.	Min.	Mean				
		in.	in.	deg.	deg.	deg.	deg.	deg.		in.
Thurs 28	○	29·951	29·914	85	54	70·5	66	61	N W	·00
Friday 29		29·864	29·761	83	50	66·5	67	61	N E	·00
Satur 30	18	29·809	29·679	83	52	68·5	66	62	E	·16
Sunday 1	19	29·691	29·595	82	49	65·5	66	62	E	·14
Mon 2	20	29·691	29·627	82	47	64·5	65	62	W	·01
Tues 3	21	29·766	29·733	66	46	56·0	65	63	W	·16
Wed 4	22	29·854	29·801	69	47	58·0	64	61	W	·15
Average		29·671	29·561	75·5	49·1	62·0	65·0	61·6		1·12

June 28—Hazy and very fine throughout.
— 29—Overcast, very fine; rain at night.
— 30—Dry; slight haze; violent thunder-storm, with much purple light at night.
July 1—Rain; showery; fine at night.
— 2—Fine with numerous low masses of white clouds, cold and windy.
— 3—White and dusky clouds; showery; rain at night.
— 4—Showery, but at intervals sunny and wet in the night.
Mean temperature of the week, 1·1 degree above the average.

STATE OF THE WEATHER AT CHISWICK,

During the last 40 years, for the ensuing Week, ending July 11, 1866.

July.	Average Temperature of the Week.	Average Temperature of the Week.	Mean Temperature of the Week.	No. of Years on which the Quantity of Rain was Ascertained.	Greatest Quantity of Rain.	Prevailing Winds.						
						N.	N.E.	E.	S.E.	S.	S.W.	W.
	deg.	deg.	deg.		in.							
Sunday . 8	74·9	49·8	62·8	19	0·48	in.	3	5	2	2	1	9
Mon . . 9	74·8	49·6	62·7	18	0·82	4	3	1	1	3	1	7
Tues . . 10	74·7	49·4	62·5	16	0·78	1	2	3	2	4	1	8
Wed . . 11	74·5	50·5	62·7	14	1·07	2	1	5	1	5	1	6
Thurs . . 12	74·4	50·3	62·4	14	0·97	2	1	2	1	5	2	7
Friday . 13	74·2	50·2	62·2	14	0·92	—	4	6	—	3	2	4
Satur . . 14	74·0	50·5	62·2	14	0·64	—	4	4	1	0	4	4

The highest temperature during the above period occurred on the 14th, 1857—therm. 94 deg., and the lowest on the 9th, 1863—therm. 33 deg.

Notices to Correspondents.

CYTISUS SESSILIFOLIUS: *G.* We doubt if this handsome shrub can be grown up so as to form handsome standard specimens on its own stems. It must be grafted or budded on the Laburnum, and should be worked carefully, as they are very liable to canker at the junction, and the way just when they are about to become valuable.

INSECTS. *L. & M. S. P.* The larvæ which came out of the caterpillar of the Tiger moth are those of one of the parasitic two-winged flies, forming the genus called Tachinides (fam. Muscidæ). We believe the species is Tachina Curvarum. *W.*

LORD CLYDE STRAWBERRY. *T.* A French correspondent writes that this Strawberry has been much overpraised, and that it is nothing but the old Fragaria grandiflora, Ananassa, or Ananas de la Halle. He is desirous of learning the opinion of our English Strawberry growers as to the merits of this variety.

NAMES OF FRUITS. *J. C.* Your Apple was so much damaged that we cannot identify it.

NAMES OF PLANTS. *G. F.* 1, Begonia Dregei.—*Lubrol.* 1, Hypericum Androsæmum; 2, Weigelia rosea; 3, Anthericum Liliago; 4, Lastrea cristata.—*P. C.* Chenostoma polifolioides. The very similar "Hard Plant" of the Mexicans, and formerly worshipped by them on account of the hardness of the plant, although now much neglected, but of late separated into the "fingers" and used for soap with other flowers.—*S.* Your plant is not a Centaurea, but Rudbeckia purpurea.—*C. M.* Vaccinium hirtum, Thunbergii, Rapanea laxa.—*J. J.* Cornus macrophylla.

PELARGONIUM *J. J. Olde.* Senior Wrangler is a very fine variety of the tricolor zoned section, with golden margins. In its size and variegated zone it comes nearest to Mrs. Pollock, but in the sample sent there is considerably more yellow, and the zone is brighter.

SEEDLING PINKS: *S. A. Morris.* Of the flowers sent, Nos. 1 and 3 possess the good properties of smoothness of edge and evenness of marking, but they are too small. No. 1, crimson laced, is the best; No. 3, purple laced, is also promising. If under good treatment they will produce larger blooms, equally good, they would be worth growing.

COMMUNICATIONS RECEIVED.—R. H. W. M.—Adolphus H. Kent (next week).—B. S. Williams (thanks).—J. Paton.

THE LONDON MANURE COMPANY
(ESTABLISHED 1840).
Have now ready for delivery in dry fine condition,
CORN MANURE, for Spring Use
DISSOLVED BONES, for Dressing Pasture Lands
SUPERPHOSPHATES OF LIME
PREPARED GUANO
MANGEL and POTATO MANURES
Also Genuine PERUVIAN GUANO, and NITRATE of SODA, ex Dock Warehouse; SULPHATE of AMMONIA, FISHERY SALT, &c
E. PURSER, Secretary.
Offices, 116, Fenchurch Street, E.C.

LAWES' MANURES.
The Manures manufactured by J. B. LAWES for the present season of 1866 are now ready for delivery at his Factories, at the following prices, per ton:—

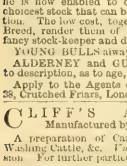
	£ s. d.
LAWES' PATENT TURNIP MANURE, and BONE SUPERPHOSPHATE of LIME	6 0 0
LAWES' SUPERPHOSPHATE of LIME from BURNT BONE or MINERAL PHOSPHATES	5 5 0
LAWES' WHEAT, BARLEY, GRASS, and MANGEL MANURES	8 0 0
CONCENTRATED CORN and GRASS MANURE	12 0 0

These Manures can be obtained of Mr. LAWES, or through the appointed Agents in all parts of the United Kingdom, at prices varying according to cost of carriage.
Genuine Peruvian Guano direct from the Importers. Nitrate of Soda, Sulphate of Ammonia, and other Chemical Manures.
American and other Cakes at market prices.
Address, JOHN BENNET LAWES, 1, Adelaide Place, London Bridge, E.C.; and 22, Eden Quay, Dublin.

THE PATENT NITRO-PHOSPHATE or BLOOD MANURE COMPANY, LIMITED, Manufacturers of ODAMS'S PATENT BLOOD MANURE for CORN and ROOTS. ODAMS'S SUPERPHOSPHATE of LIME and DISSOLVED BONES.
Chief Offices—109, Fenchurch Street, London, E.C. Western Counties Branch: Queen Street, Exeter. Irish Branch: 40, Westmoreland Street, Dublin.
Directors.
Chairman—JOHN CLARKSON, Attleburv, Essex.
Deputy-Chairman—JOHN COLLINS, Argyle House, Holloway.
Edward Bell, 48, Marine Parade, Brighton.
Richard Hunt, Stansted Abbot, Herts.
Thomas Knight, Edmonton, Middlesex.
Robert Leeds, West Lexham, Norfolk.
George Savile, Ingthorpe, near Stamford
Samuel Jonas, Christall Grange, Essex.
Charles Dorman, 23, Essex Street, Strand.
Thomas Webb, Hildersham, Cambridgeshire.
Jonas Webb, Sheldon Ross, Lincolnshire.
Managing Director—JAMES ODAMS.
Bankers—Messrs. Barnetts Hoares & Co., Lombard Street
Solicitors—Messrs. Kingsford & Dorman, 75, Essex Street, Strand
Auditor—J. Cates Jonas, Cambridge.
Secretary—C. T. MACADAM

This Company was originally formed by, and is under the Direction of Agriculturists, upon the principle that its profits earned from it under their own Manufacture. The Consumer, therefore, has the best Guarantee for the genuineness and efficacy of the Manures manufactured by this Company.
A Prospectus will be forwarded on application to the Secretary, or may be had of the local Agents.
Chief Offices, 109, Fenchurch Street, London, E.C.

PALM-NUT MEAL, Manufactured by ALEXANDER M. SMITH & Co., Kent Street Mills, Liverpool.
£7 5s. from the Rail at Liverpool.
£7 10s. delivered to Rail in Bristol.
£7 12s. delivered to Rail in London
In Bags containing 2 cwt. each, branded
"This valuable Meal, containing above 20 per cent. of fatty matter, is recommended as an economical food to mix with home-grown produce." (See Dr Voelcker, R. A. S. E. Journal, Vol 1, 2d Series, page 170).
For further particulars and Analysis apply to Messrs. SMITH, or their Agents, Messrs. HUMPHRIES & Co., Bristol.
JOHN COLEMAN, Easrick, York.
London Agency: 150, Leadenhall Street, E.C.



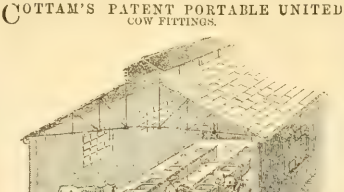
BRITTANY COWS.
The only breed of Cattle that have escaped the Rinderpest.
The nobility, gentry, and others are respectfully informed that they can be supplied with the above beautiful and profitable Little Animals (calved and down calving), in any number, at the shortest notice. The great success and encouragement which have attended the efforts of the importer, in introducing the pure breed of this useful and hardy Cow into the country, has induced him to extend his connection abroad, by appointing experienced Agents throughout Brittany, and he is now enabled to offer the public a constant supply of the choicest stock that can be obtained, at prices which defy all competition. The low cost, together with the high milking qualities of this Breed, render them of great value to the cottager, as well as the fancy stock-keeper and dairyman.
YOUNG BULLS always on sale. BRITTANY SHEEP, 25s. each.
ALDERNEY and GUERNSEY COWS and HEIFERS supplied to description, as to age, colour, and time of calving.
Apply to the Agents of the Exporter, Messrs. ROBERTSON & Co., 28, Crutched Friars, London, E.C.

CLIFF'S ANTISEPTIC FLUID, Manufactured by F. C. CLIFFT & Co., Manchester.
A preparation of Carbolic Acid suitable for Sheep Dipping, Washing Cattle, &c. *Vide* 3d Report of the Cattle Plague Commission. For further particulars apply to
R. COLEMAN & SON, Agents, 150, Leadenhall Street, London, E.C.

Silver Medal and Cup, 1863, awarded for

JAMES'S FIRST PRIZE MANURE CART, which has been awarded 20 PRIZES. Is now fitted up to answer for LIQUID MANURE, for supplying the STEAM PLOUGH, for WATERING STREETS, or for a FIRE ENGINE. Nearly 300 already sold.
Washing.
The last great improvement in Washing Machines is in JAMES'S new Patent PRIZE WASHING, WRINGING, and MANGLING MACHINES, awarded several FIRST PRIZES. Will Wash 20 shirts in 20 Minutes, with much less injury than with the hand. More than 300 Sold.
Address I. JAMES, Tivoli Works, Cheltenham.

COTTAM'S PATENT PORTABLE UNITED COW FITTINGS.



Their advantages are—Portability, not Fixtures, removable at pleasure, no Woodwork or Partitions to impede Ventilation or breed Vermin, Hay Rack dispensed with as unnecessary, increased width and depth of Feeding Troughs, Water Cistern, and Patent Drop Cover to prevent over-gorging. Cleanly, durable, and impervious to infection, being all of iron. Price of Fittings per Cow, 45s.
Prospectuses free of COTTAM & Co., Iron Works, 2, Winsley Street (opposite the Pantheon), Oxford Street, London, W., where the above are exhibited, together with several important Improvements in Stable Fittings just secured by Patent.

Oil Paint no longer Necessary.

HILL AND SMITH'S PATENT BLACK VARNISH for preserving Iron Work, Wood, or Stone. This Varnish is an excellent substitute for oil paint on all out-door work, and is fully two-thirds cheaper. It may be applied by an ordinary labourer, requires no mixing or thinning, and is used cold. It is used in the grounds at Windsor Castle, Kew Gardens, and at the seats of many hundreds of the nobility and gentry, from whom the most flattering testimonials have been received, which HILL & SMITH will forward on application.
From ROBT RAIKES, Esq., *East Dale, near Brough, Yorkshire.*
"I have used your Black Varnish for park pailings and consider it to be the most durable and best thing of the kind I have ever seen. I think it might be applied with still greater advantage to iron fencing instead of paint, and it is my intention so to employ it in future."
Sold in casks of about 50 gallons each, at 1s. 6d. per gallon, at the Manufactory, or 1s. 8d. per gallon paid to any Station in the kingdom.
Apply to HILL & SMITH, Brierly Hill Iron Works, near Dudley, and 22, Cannon Street West, E.C., from whom only it can be obtained

THE LANDS IMPROVEMENT COMPANY.
Incorporated by Special Act of Parliament in 1853.
Right Hon. Lord NAAS, M.P., Chairman.
To LANDOWNERS, THE CLERGY, ESTATE AGENTS, SURVEYORS, &c., IN ENGLAND AND WALES, AND IN SCOTLAND.
The Company advances money, unlimited in amount, for the following works of Agricultural improvement, the whole outlay and expenses in all cases being liquidated by a rent-charge for 25 years.
1. Drainage, Irrigation, and Warping, Embanking, Inclosing, Clearing, Reclamation, Planting, for any beneficial purpose, Engines or Machinery for Drainage or Irrigation.
2. Farm Roads, Tramways and Railroads for agricultural or farming purposes.
3. Jetties or Landing places on the sea-coast or on the banks of navigable rivers or lakes.
4. The Erection of Farm Houses, Labourers' Cottages, and other Buildings required for Farm purposes, and the improvement of and additions to Farm Houses and other buildings for Farm purposes.

Landowners assessed under the provisions of any Act of Parliament, Royal Charter, or Commission in respect of any public or general works of drainage, or other improvement, may borrow their proportionate share of the cost, and charge the same with the expenses on the lands improved.
The Company will also negotiate the Rent-charges obtained by Landowners under the Improvement of Land Act, 1864, in respect of their Subscription of Shares in a Railway or Canal Company.
No investigation of title is required, and the Company being of a strictly financial character, do not interfere with the plans and execution of the Works, which are controlled only by the Government Enclosure Commissioners.
Apply to FRANCIS B. MAULE, Esq., Secretary, 3, Parliament Street, London, S.W.

THE GENERAL LAND DRAINAGE and IMPROVEMENT COMPANY. Offices, 22, Whitehall Place.
Under this Company's Act Tenants for Life, Trustees, Mortgagees, Guardians, Committees of Incompetent Persons, Beneficial Lessees, Corporations (Ecclesiastical or Municipal), Incumbents, Charitable Trustees, &c., may effect the following Land Improvements, and charge the outlay and expenses on the estate improved, by way of rentcharge, to be paid by half-yearly instalments, viz.:—
1. All works of Drainage, Irrigation, Warping, and Embankment.
2. The Erection of Farmhouses, Cottages for Agricultural Labourers, and all kinds of Farm Buildings.
3. The Construction of Roads.
4. The Grubbing and Clearing of old Woodlands, Enclosing, Fencing, and Reclaiming Land.

The owners of Estates, not entailed, who may be desirous to avoid the expense or inconvenience of a Legal Mortgage, may also charge their Estates with an Outlay in Improvements under the simple and inexpensive process of the Company's Act.
The Term of Years for the Rentcharge is fixed by the Landowner, so as to adapt the amount of Annual Payment to the circumstances of the Tenants.
No Investigation of Title being required, and the Charge not being affected by Incumbrances, no Legal Expenses are incurred
The Arrangements for effecting Improvements are threefold —
No 1. The Works may be Designed and Executed entirely by the Landowner's Agent, and the Company employed only to supply the Loan and control the matter through all the official Forms for Charging the Outlay on the Estate.
No. 2. The Company will supply Plans, Specifications, and Estimates for any Improvement to be executed by the Landowner's Agent as under No. 1. In each of these cases the Landowner will be solely under the control of the Enclosure Commissioners.
No. 3. The Company will undertake the entire responsibility of the Improvements, prepare the Plans, execute the Works, and finally charge on the Estate the actual amount expended, with their Commission thereon, approved by the Enclosure Commissioners.
Landowners may thus obtain what assistance they require from the Company, and no more, in effecting the objects in view.
Works of Drainage and other Improvements are now executed on Commission for Landowners, who merely require the skill and experience of the Company's Officers and a Staff in constant practice.
Applications to be addressed to WILLIAM CLIFFORD, the Secretary, at the Office of the Company, 22, Whitehall Place, London, S.W.

ESSEX AGRICULTURAL SOCIETY, 1866.—
President—J. W. PERRY WATLINGTON, Esq.
NOTICE—The ANNUAL EXHIBITION of the above ASSOCIATION will be held this year at EPPING, on TUESDAY, July 17
On the same day, in conjunction therewith, POULTRY, GAME, RABBIT, PIGEON, and CANARY SHOWS, and a HORTICULTURAL SHOW and FLORAL FETE will also be held
The Prizes for the Poultry Show, which are upon a most liberal scale, amount in the aggregate to £85. For the Horticultural Show to £100
The magnificent Band of the Grenadier Guards and the Royal Artillery will be in attendance throughout the day; the former will also play at the ANNUAL DINNER, which will take place in the newly-erected Town Hall, in the High Street. The services of eminent Professional Vocalists have also been secured.
The Show upon the whole will, it is anticipated, equal, if not surpass, that of any previous year.
The Entries for both the Poultry and Floral Shows will positively Close on July 2. Exhibitors are therefore earnestly requested to lose no time in applying to the Secretary, who will supply the necessary Forms and furnish such information as may be required
By Order, JOHN W. WINDUS, Secretary to Local Committee
Epping, June 30.

BIRMINGHAM HORSE SHOW, 1866.—The FIRST GREAT EXHIBITION of HORSES, PONIES, CARRIAGES, HARNESS, SADDLERY, STABLE FITTINGS, &c., will be held in BINGLEY HALL on TUESDAY, WEDNESDAY, and THURSDAY, July 10, 11, and 12.
Admission, on Tuesday, from 9 till 1, to witness the Judging, 5*s.*; after that hour, 2*s.* 6*d.* On Wednesday and Thursday, 1*s.*
The Horses will be Tried daily in the Ring. Nearly FOUR HUNDRED HORSES are entered.
For Special Railway Arrangements see the Advertisements and Bills of the several Companies.
There will be a limited number of Special Seats Reserved in the best situations for witnessing the Jumping and Trial of Horses, which will be charged 2*s.* 6*d.* each, and these may be secured by previous application to the Secretary.
J. B. LOVELL, Secretary.
Offices, Stephenson Chambers, New Street, Birmingham.

ROYAL AGRICULTURAL COLLEGE, CIRENCESTER
Incorporated by Charter, granted by her Majesty in Council, March 27, 1845, for the purpose of affording a PRACTICAL and SCIENTIFIC AGRICULTURAL EDUCATION to STUDENTS from all parts of the kingdom.
For particulars and forms of application, apply to the PRINCIPAL.

The Agricultural Gazette.
SATURDAY, JULY 7, 1866.

MEETING FOR THE ENSUING WEEK.

TUESDAY, (July 10	
WEDNESDAY, " 11	Horse Show at Bingley Hall, Birmingham
THURSDAY, " 12	

THE conviction of an experienced man, though he have no definite account of his experience by which to defend it, is doubtless preferable to the most elaborate figures of a careful observer, who does not help the third place of decimals to convey his accuracy, has yet dealt with his subject only once. And this is especially the case in connection with agricultural questions; for in these that which is true is often far enough from being the truth. The experience of one season, however carefully recorded, is here a very imperfect guide, and the conviction which gradually arises alone is trustworthy. Hence, Mr. TORR's opinions, given the other day before the Royal Agricultural Society, may be trusted, however imperfect his defence of them. His address given in another column cannot be taken as the charge of a judge; but every reliance may be placed upon it as the verdict of a most unexceptionable jury.
Though however it does not spoil, certainly it does not help our belief in him that he should give no reason for his faith. He had not prepared a paper, for he had no respect for paper-farming. But that, however good a reason it might be for altogether holding his tongue, was no reason at all for a spoken in preference to a written address. Being shut up in a room he had to depend on words; there were no fields, or flocks, or herds in sight whose appearance might illustrate the opinions he had to express. These had to be conveyed to the sense of hearing only—and greater accuracy and definiteness would have been attained—and we should have doubtless learnt more about the circumstances out of which they had arisen—and we should have known more of the limits within which they are held by Mr. TORR himself, if he had condescended to put the statement which conveyed them, in more detail on paper.
A good farmer once gave a favourable opinion of a certain manure for Grass land; and it was doubtless trustworthy enough, notwithstanding that all he could say in defence of it was, that though the manure had been applied "very thin" per acre, his man had reported after mowing a "little bit" of the crop, that there was a "tidyish bite for a small donkey." Such a statement was quite as much "paper farming" as if he had been able to report that there was "half a cwt. of Grass on 10 square yards of land," but the latter would certainly have been the more conclusive and satisfactory. And it would have helped to point the discourse which Mr. TORR delivered had he condescended, notwithstanding his contempt for paper farming, to relate in accurate detail some of his own expe-

rience on which his opinion on the subject of sheep against cattle, as the more profitable converter of the green food of the farm, had gradually arisen. No one has had an opportunity of observing more accurately or under more favourable circumstances. The owner of one of the best herds and one of the best flocks in the kingdom no doubt knows, and he ought to have given us his knowledge as well as his mere belief.;

It is on clayey and unsound lands that the difficulty arises. Every one knows that on chalky stony soils a flock is very superior to a herd; the tenants of stiff lands and grazing grounds are those who are placed in a difficulty by the risks which the cattle plague has interposed. But even on such lands as those there is ample experience of the fitness of sheep as a profitable converter of Grass and green crops. We might quote the experience of Mr. Campbell, of Buscot, in proof of this, though he gets rid of his difficulties by sending his large flocks during winter on to neighbouring dry land farms. But if his experience be considered ineligible, there is abundant proof elsewhere. Mr. Randall, of Chadbury, near Evesham, occupies 400 acres of stiff clay arable land, besides 100 acres of Grass land. He has altered and improved it by land drainage, steam cultivation, and clay burning, but it is a stiff clay soil still. On this farm he keeps a breeding flock of the largest and heaviest fleeced Shropshire sheep we have ever seen; and except his draught breeding ewes, and excepting 30 or 40 shearling rams, if that be an exception, everything he sells is fattened. The sheep are folded only during summer; they are fed in yards during winter; and the most successful yard-feeding we have ever seen was at Chadbury. They are folded during summer on Vetches, Cabbages, Rye-grass, Clover, and early Turnips, and during winter they come home to yards, old barns, and other shedding for Swedes, and Mangel Wurzel, and hay, besides cake and meal and corn. The yards are covered every fortnight or thereabouts with a layer of burned earth, receiving straw as it fouls for a week or two, until ready for another layer of clay ashes. The sheep were perfectly sound when we saw them early one February, and the whole digs out a mass of very rich manure, the best possible both as to its mechanical effect and as to its composition for the clay soils which are to receive it.

The most conclusive report however that has ever yet appeared on the alternative of sheep or cattle as profitable convertors of winter food was given some years ago by Mr. Ruston, of South Lincolnshire, before the London Farmers' Club. Five years ago he could say that he had tried sheep in yards for five years, and then he was feeding 600 or 700 sheep in the same way, and he gave us what Mr. Torr has not given us—an elaborate account of his experience and returns, deducing a profit of 13s. a head for sheep, six of which consumed no more than one ox, on which the average return for the same food would be only 30s. Other authorities could be quoted: and Mr. Delf, of Great Bentley, Colchester; Mr. Martin, of Wamlheet; Mr. Fryer, of Chatteris; and others—(for the Farmers' Club seems to have the power which the Royal Agricultural Society wants, of inducing practical men to come forward with their personal experience on these subjects)—united on that occasion to corroborate Mr. Ruston's statement. This is pretty fairly represented in the following extract from his paper:—

"Take a case where 30s. per head has been realised for the natural food consumed during the months that cattle have been in the yards—one bullock will return as much profit as two and a half sheep, or a trifle over, and will yet have cost as much keeping as six sheep. The figures will stand thus—Profit on one bullock, 1*l.* 10*s.*; profit on six sheep, which have consumed the same amount of food, and made the same amount of manure, 3*l.* 18*s.* Excess of profit on sheep, other things being equal, 2*l.* 18*s.* The sheep calculations are all based upon the figures contained in the tables to which I have just invited your attention, where it appears that 377 sheep paid 244*l.* 19*s.* for the natural food consumed in the yards, including all losses. This year I have, as before stated, upwards of 600 sheep in yards. To simplify the matter, say that I have 600 sheep exactly. These are consuming the food and making the manure that 100 bullocks would consume and make. Taking 1*l.* 10*s.* per head as the profit on 100 bullocks, and 3*l.* 18*s.* the profit on the sheep—and I think the latter is quite as likely to be realised this year as the former—what is my position? Why, instead of getting 150*l.* for the food consumed by 600 sheep, I get 390*l.*, which simply puts 240*l.* in my pocket, and emboldens me to stand here and argue in favour of sheep as manure manufacturers."

Fortunately for us Mr. Ruston was not afraid, as Mr. Torr seems to have been, of being laughed at as a paper farmer, and thus we have his detailed experience as well as his opinion on which to rely. But the experience of the fens, which is given by the former, tallies very well with the opinion of the wolds given by Mr. Torr when he said that for every 2*l.* returned by his cattle for their food, 5*l.* had been repaid him by his sheep. And both agree with the experience upon Mr. Randall's clay land farm in the west.

It is with very sincere regret that we have to announce the death of Mr. Richard Garrett, of Leiston. The record of his long and useful services, agricultural and social, is published in another column. We have in him another example of the honours and success with which industry, integrity, and philanthropy are crowned. The son of a merely local agricultural machine maker, he made his own name and the Leiston Works known all over the world, he contributed largely to the success of the National Agricultural Society, he helped to make Suffolk a leading county in the great educational movement of the day, he had long won the love and respect of crowds of friends, and he has died, at a comparatively early age, Deputy Lieutenant of his native county.

We have also to lament the death of Mr. Raymond Barker, one of the most laborious members of the Council of the Royal Agricultural Society of England, to whom he has left a most praiseworthy example of patient and persistent attention to the duties which belong to their position. From the very outset of the Society's career, until extreme old age forbade him, he was constant in his attention to its interests.

THE PECK OF WHEAT PER ACRE.

Year by year I become more and more convinced of the immense damage done to the British farmer by an over-sowing of seed. The question is one much less important as a saving of seed than as a preventive of damage to and diminution of the growing crop. I have proved this by a simple experiment, and every farmer can, at small cost, bring to his own mind a proof of the proper quantity of seed to be sown according to his soil, climate, and circumstances.

This is the third year that I have tried the experiment of half a peck on half an acre, in the middle of a field where my usual quantity of 4 pecks is sown. The former results have been recorded: the peck an acre having yielded 7 quarters 2 bushels per acre of fine Wheat, and was the best yield on the field.

The experiments have been perfectly fair ones, the Wheat being all put in at one time, and under the same circumstances in every respect except quantity. The thin-sown was dibbled in, one kernel in a hole about 6 inches by 4. The rest of the field was this year drilled with 4½ pecks per acre. The experiments for three years have been on Clover ley, once mowed for hay, and then folded with sheep, eating cake, &c.

The thin-sown came up with single joints, and looked all the winter and early spring like a bare fallow, especially at a distance on the hill side it looked as though the four stetches had not been sown. So very wet and unfavourable were the winter and spring, that we thought this third year the thin-sown could not come to a crop. But slowly and surely it advanced and has at length become the best crop on the field, undistinguishable from the rest except by its superior height and the largeness of the ears. It will of course be tested by threshing. I have no doubt it will, as on former occasions, yield more weight of straw as well as more corn than the rest of the field. I expect it will give about 5 quarters per acre. This is not a good yielding year on our stiff non-calcareous soils. It has astonished many who have watched its progress, and made many converts. Thin sowers must be content to hear from all who see their thin-sown crops during the early stages of their growth that they must prove a failure. These three years' experiments have given me perfect confidence in thin sowing under like circumstances; and I shall practise it gradually on a more extended scale as a safe and profitable investment. I think that the proper term for thin sowing should be sufficient sowing.

I will endeavour by illustration to show how really unreasonable and injurious our general quantity sown must be. According to Mr. Caird and general estimates the quantity of grain sown (Wheat, Oats, Barley, &c), equals one-ninth of the produce, so that we get (taking the whole kingdom) 9 kernels for each one sown. An average ear of Wheat, Barley, and Oats would have 40 kernels, therefore we only get a fifth of an ear for each kernel!

Now I will defy any one who puts into the soil a perfect kernel of grain to produce so little as nine grains, or about the one-fifth part of an ear. The probability is, especially in the case of Wheat, that if a space of 3 to 5 inches intervenes between that and the next kernel, the increase will be from 200 to 300 instead of 9. Many of mine have produced 600; how is it then that we arrive at the present miserable return of 9 for 1? Those who observe Nature's operations will soon receive a reply. By our system of 2 to 4 bushels per acre the kernels are crowded together, the young fibres are pushed forth, and fight with each other for the small available portion of soil. The result is many wounds, many deaths, and plenty of cripples among the few survivors, whose diminutive development gives evidence of the severity of the deadly struggle. The crop that came up thick as a Grass field soon becomes thin and weakly. The reverse of all this takes place with thin-sowing, as the roots ramify and extend without meeting hungry and numerous competitors.

Baron Liebig justly says that the greatest enemy that a Wheat plant can have is another Wheat plant. This alone is a sufficient explanation. Many farmers say "we don't like a thin Wheat crop;" drawing their conclusions from the cases where the crop had become thin in consequence of over-crowding. So far as my experience goes, the grains are finer in size and quality, the straw more brilliant and glassy, and more free from blight or mildew than the thick-sown. There is more weight of straw per acre.

But see what benefits the young Grass or Clover plants derive from thin-sowing. They thrive, having air and light, in the thin-sown, while the thick-sown and poor, soft-strawed laid crop smothers and destroys them.

A neighbour of mine who farms well got so angry at losing his Clover plant among his Oats that he was determined to have a Clover crop at the cost of his Oats, so he only sowed one bushel instead of four, and to his great surprise (but not to mine) he had the best crop of Oats he ever grew, and an ample Clover plant besides. Of course, in speaking of thin-sowing, I assume that the drill is used and the seed thus properly deposited.

I use the blower to my seed corn, so as to have only heavy perfect seeds—9-10ths of which at least will vegetate.

It is really distressing to be told, as I have been lately, that "we always sow broadcast 7 bushels of Oats per acre and 4 bushels on Wheat." Supposing 10 animals were placed in a luxuriant pasture, which would keep in good condition 10 animals for three months, at first all would go well, but long before the three months had elapsed there would be plenty of deaths and a few cripples left. So it is with thick sowing.
J. A. Mechi, July 2.

THE CATTLE PLAGUE.

The following returns were issued on June 29:—

These returns do not profess to give the total number of cases which have occurred in Great Britain, but only those which have been ascertained from information received at the office from inspectors. Columns 1 only record the cases reported as having commenced during the weeks indicated by the headings; "back" cases being added to columns 2.

Counties Divisions.	1 Number Attacked.		2 Result of Reported Cases from Commencement of Disease.				
	Week ending June 16.	Week ending June 23.	Attacked.	Killed.	Died.	Recovered.	Uncertified for.
Midland ..	5	5	7,201	3,420	3,713	318	450
S. Eastern ..	16	14	4,878	1,703	2,088	403	171
N. Midland ..	59	60	20,511	8,616	10,010	1,540	586
Eastern Co.	9	10	11,115	5,378	4,819	789	396
S. Western ..	—	—	1,178	608	509	96	71
W. Midland ..	117	94	13,060	6,145	6,002	1,546	906
N. Midland ..	62	39	18,961	10,852	6,296	1,278	535
N. Western ..	199	295	41,096	24,066	10,016	2,744	1,945
Yorkshire ..	33	17	34,526	7,878	18,340	5,996	2,562
Northern Co.	9	2	8,654	4,928	2,643	974	118
Monmouth. & Wales ..	27	7	8,286	1,141	5,791	1,057	297
Scotland ..	18	17	46,854	6,257	28,087	10,760	1,804
	544	465	240,453	81,046	124,197	29,938	11,151

Note.—7 inspectors who reported cases last week have not reported in time for this return viz., for the county of Oxford, 1; Lincoln, 4; Chester, 1; and Salop, 1.

These Inspectors reported 22 cases last week.

SHEEP VERSUS CATTLE.

[The following is a report of the address given by Mr. W. Torr of Aylsey, Great Grimsby, at a recent meeting of the English Agricultural Society.]

Mr. Torr said: Allow me to observe that I take for my motto the old Dutch proverb, "The sheep wears a golden fool," and that it is not my intention to read what may be termed "a paper" respecting it, inasmuch as I entertain strong objections to everything in the shape of paper farming. I shall merely start some points generally in favour of Sheep *v.* Cattle (if you like to call it so) for your consideration and discussion. I will not go into any description of the different breeds of sheep, nor draw any invidious comparison between the Leicester and the Lincoln, the Southdown, the Shropshire, and the improved Oxford, believing, as I do, that an intelligent farmer should know what suits his own mode of farming and occupation best. It is extremely difficult to distinguish the various improved breeds, and far more than even the breeders themselves can determine where one tribe ends and another begins. I therefore disclaim any prejudice in favour of a real good pure-bred Leicester, of substance and constitution, further than he seems to have done great service wherever he has gone amongst the long-wools of the nation, whilst, as far as I have seen, nothing has done aught but harm to this Bakewell breed itself. It is my sacred resolve, there-

fore, to keep the Aylesby flock pure, as it has been now for something like 80 years.

I think it must be evident to the commonest observer that at the present moment, when that awful scourge the cattle plague has devastated many districts of the kingdom, and almost denuded the land of the live stock population, it is worthy of paramount consideration, how that stock is to be replaced. Cattle are of slow growth—you cannot expect any great increase for years to come in breeding—say you want a three-years-old, that is four years hence, and then only a limited issue, so many females have been swept off the homesteads. Of course every endeavour will be made by breeders to increase their stock—and so it should be; at the same time I hold an opinion, confirmed by practical experience, that on all second-rate Grass lands, sheep have been, and can be made, far more profitable than cattle, and in the improved state of such lands by draining, &c., sheep can now flourish and do well, where in former times it would have been folly to have placed them. There is not a greater improvement in farming than an allowance of oilcake to grazing sheep. I have used oilcake largely both for cattle and sheep on first-rate land, and sold bullocks last year under four-years-old at 45*l.* each from Grass. Mind you, the land was worth over 100*l.* per acre, and the beasts had 8 lb. of oilcake per day—and they paid well for their summer grazing. This system only applies, perhaps, to feeding off the cattle or sheep more quickly, and on real good pastures. On second-rate land young steers are grazed, without the oilcake, mixed with sheep. Now it is here that a vast improvement may be made simply by increasing the number of sheep and lessening the number of cattle—thus, say instead of having one steer on two acres, and two sheep per acre, we put one steer on four acres, and four to six sheep per acre, and give the sheep oilcake. This opens a large field, and in all tolerably dry districts it can be done to greater profit, and will eventually be found more so than the absurd process of taking up land, because it does not improve. Why, how can it do so if farmers won't do anything to it? This I know too well is often the case in my own immediate neighbourhood. The next, and, perhaps, a greater necessity, is the keeping of sheep on the cold strong lands of England, supposing such lands have been, or must be, well drained, without which it is useless to suggest any improvement of the sort. The drains on Grass land need more expense, and going equally as deep and more close even than tillage, which has other advantages besides percolation and atmospheric influence from cultivation, especially the steam ploughing, that the Grass evidently has not. When the water is thoroughly taken out of Grass land, and you dress with almost anything, say common Wheat chaff, cut straw, lime and salt, or, better still, a few crushed and rotten bones, and plenty of sheep put on, with oilcake, the change is magical, as I could show you on many a score of acres in my own occupation. This management befitting almost all the second and third-rate Grass lands, I aver that now is the golden opportunity for putting this great, I may say national, experiment in practice—fewer cattle and more sheep, and larger remuneration for the tenant. I have not had very great experience myself in keeping a large number of sheep on cold clay lands, because my farming does not represent that. I shall, therefore, refer to the practice of Mr. Charles Randall, who carries it out better than any one I know, and I shall speak of his experience, and tell you how things are done on the estate of the Duke of Annaple, at Claubury, near Worcester. 1st, As applied to Grass land exclusively; 2d, Where there is some arable land, or where some of the Grass land may be broken up.

I shall assume that it is strong land, because you do not want to tell people how to grow food for sheep upon light land. As to the first—I believe there is no mode of sheep farming practicable but to buy in ewes, sell off the lambs, fat as many as can be made so, as stores the rest, then feed off as many of the ewes as are too old or otherwise unfitted to breed again. Lambs cannot be wintered with any certainty of success upon Grass land, more especially where that Grass land has been thickly stocked with sheep during the previous summer. Assuming, then, that this is to be the sort of sheep management adopted, the question is how to keep the greatest number in the most profitable manner—or, in other words, how to make the most money per acre by them. Three-fourths of the should be kept entirely free from stock, from the end of October—by which time the rams will be taken from the ewes, until the lambing begins. Upon the other fourth the ewes will be wintered, hurdling it over as a green crop, at the rate of about one quarter of an acre per day to 100 ewes, and giving with it sufficient hay cut into chaff to keep them in condition. When near to lambing, ½ lb. of oilcake each per day should be given; or, if the Grass land is poor, this may be advantageously done throughout the winter as regards the condition both of the land and sheep. The land upon which the ewes have been thus wintered should then be mown. As the ewes drop their lambs, they are turned into the fresh pastures, continuing the daily ½ lb. of cake with a little hay chaff. When about a month old, the lambs will begin to try to join the ewes at the troughs, and then a small piece of the field should be hurdled off, and a little oilcake and chaff placed in low troughs, the lambs having access to them by means of a "lamb-gate," viz., a hurdle with upright revolving bars, 9 inches apart. As the lambs take to the cake, the allowance to the ewes will be reduced, so that the ½ lb. per ewe will not be exceeded for ewe and lamb together. In this way one-third more ewes and lambs may be kept upon the same land than could be maintained in good condition without assistance. A larger proportion of the lambs will be ready early for the butcher, making the best price, and such as do not get fit to kill will pay for their cake in being strong healthy stores. Every grazier knows that such lambs will go on and thrive with little risk or loss; while he equally well knows that little stunted scouring lambs are dear at any price. The ewes will be in forward condition, and may soon go to the butcher, making room for a new lot; and the land will, by this consumption of cake, gradually and certainly become capable of keeping a greater stock. The chief objection to this kind of sheep-farming is the necessity to buy in annually fresh ewes; for, be it remembered, they are not sold for their good qualities—they are either old, or ill formed, have lost a quarter, or are otherwise bad sucklers.

To obviate this objection I take the second proposition:—If there is no arable land, break up some of the Grass land—the worst—breed and feed off the wethers at a year old, and the draft ewes, keeping on the ewe lambs for stock. The management of the ewes and lambs will still be much the same up to the middle of June, after which time the lambs must depend upon the produce of the arable land. They cannot be made to do well after they are weaned upon the pastures where they have been kept with the ewes. Assuming, then, the worst—that the land in tillage is clay, the crops to be grown upon half of it (the other half alternately being Wheat) will be Mangels, Cabbages, Kohl Rabi, and Vetches. These crops may with certainty be grown upon clay land, where it is always difficult, and sometimes quite impossible, to grow Swedes or Turnips. In the northern portion of the kingdom, where the climate is more favourable to the latter crops and less so to Mangels, the one would be substituted for the other. At present we leave the men of the "far north" to take care of themselves, as they are well able to do. The Vetches will be useful to put the yearling ewes upon, and the old ones when their lambs are weaned, and should be eaten through iron hurdles. While this crop is being got through the present will get fresh, the best of them for the draft ewes to be fed off, the others to carry the stock ewes till tupped. Of Kohl Rabi a few acres should be grown and stored as Mangels, *i. e.* with their roots and crowns left on and covered with soil only, and kept until a fortnight before the ewes begin to lamb. These pulped and mixed with chaff will greatly improve the milk, and should be continued after the ewes have yeaned, and abundance of Grass makes them no longer necessary. Early Cabbages planted in October upon Wheat stubble well manured will be ready when the lambs are weaned, and with them must be given some hay-chaff, and to the wether lambs ½ lb. of cake; some cut Mangel of the previous year (for these may be kept till July) may also be added, and will make the Cabbages last out as long as may be necessary. The Late York and Drumhead Cabbages will succeed the early ones, and carry on the lambs until it is time to plough up the land for Wheat, and put the lambs to Mangels. This should be done in yards; the roots being pulped and mixed with Wheat chaff, and Wheat straw cut into chaff. If a little hay can be spared to mix therewith the better, but it is not essential. It is quite necessary, however, that the feeding sheep should have cake or corn (the former the better), and hay chaff mixed with it. Malt coombs and bran are useful additions, where they can be bought at 5*l.* per ton. In this way all the Wheat straw that is not required for cutting into chaff will be converted into good manure; and in order to economise the straw it is well to cover the yards 1 foot and the shedding 2 feet thick with burnt soil. It will very rarely happen upon a farm such as we are assuming that clay cannot be found to burn. There is usually plenty of such raw material to be obtained from road sides, hedge and ditch banks, borders, &c. The portion of this with which the open yard is bottomed will absorb the urine, and improve the quality, while it increases the quantity of the dung-heap, and that which goes dry, as it should do, into the shed must be turned as often as required until it becomes so saturated with dung and urine that turning no longer provides dry bedding for the sheep. It is desirable, then, where practicable, to cover these ashes over with fresh ones, but this cannot always be done. Carting upon that sort of land in winter is a question of frost or no frost—but it is not material beyond the saving of straw. If fresh ashes cannot be obtained, straw must be used upon the old ones. When the feeding is over they are useful, mixed with superphosphate, to apply by the drill to the green crops. It must not be supposed that the sheds necessary for this purpose are expensive erections. A thatched roof upon posts 5 feet high, the spaces between the posts on the north side being filled in with two rows of wattled hurdles, one on each side of the posts, and rammed between with straw, is all that is required. Such is the practical experience of Mr. Randall with a large flock of sheep in a very cold clay soil, a soil that is a good deal below the average of land which may be termed sheep land. Of course, I need hardly say he has not a large number of cattle; but he has from 600 to 800 feeding sheep.

Here let me put on what I call the crowning point of wool, now the staple, not only in a mill but on a farm. Sheep, as it were, standing still, grow wool; and at anything like late prices of this article, grown under a certain zone of latitude, it is doubtful whether a wether could not be more than self-supporting, by yielding annually his fleece, and pay a profit two succeeding summers. This I advance not against early return and maturity, but would choose this last in support of sheep under the most favourable circumstances. For example, a friend of mine, who has had 18 sheep of me during the past 18 years, and has engaged the 19th ram to put on his old, time-honoured Lincoln flock, realised at the April fair of Lincoln 57*l.* each for 200 hoggets, barring a tenner for luck, left to markets, &c. Well, now you have here, say three hoggets, making 15*l.*, *versus* a very good year-and-half old steer, or in many counties two years old. Just, for one moment, see the great disparagement, and a large margin to spare. Referring to use of artificials: these hoggets of course had all they liked, and a little more, in their feeding troughs: my bullocks had not quite their till. Still, I breed adult, the profit is on the improved Lincolns, and not on the Shorthorns, or any of the other cattle tribes. I was going to say something about the soil on which wool grows best. On my own farm I find that I can grow better wool on some portions of it than on others. In the south of our county, about Spilsby and that part of Lincolnshire, wool grows in a most extraordinary manner. If you go further north, say as far as Fifeshire, or further south than the English Channel, the quality of the wool falls off. It then becomes hair or moss. The valuable line lustre wool is pretty nearly confined to a few degrees of latitude, not only in England, but nearly all over the world. So that the space being limited, there is little or no danger of wool ever glutting the market any more. The present unjust warfare, however, is against its price; but hence and away with that. Wool will ever bear a great value; and even if 800 sheep be kept where 600 were kept formerly, there are 800 men, and far more, perhaps, in comparison with the 600, who now wear a good broadcloth coat instead of a miserable fustian, and so it will continue to be. And let me add the stern reality to the outer man, that the inner man tends to a mutton chop against a high price of roast beef, for reasons that the Inland Revenue could explain.

Now to reply to objections before I hear them. The foremost of these will be, no doubt, "What will you do with your straw?" This applies to a large portion of England where it has ever been considered that a man farms best by having most cattle to consume the straw and convert it into manure, and by being, generally speaking, a large sheep farmer as well. Take the east of England as an illustration. But to the question—"What will you do with your straw?" I cannot tell you *in toto*, but I can show you in part; and as many men are of many parts, I hope other men will try to find out more than I have done. To keep all my cart horses on straw, or preciously near so, as fodder; and they are in the stable or fold yards 365 days in the year. I have at present about 60 consuming 1 peck of crushed corn or sprouted Barley, and 2 lb. of oil-cake daily. I have no sick horses—not 1 per cent. They live too long, and won't die; so I kill them for the kennels at Brocklesby. I am no horse dealer, and know less than nothing of that crafty craft; but I do know that one of the big blots of bad farming is the turning out of cart horses on Grass lands. Not even steam cultivation or aught else can remedy the harm occasioned by this folly or mismanagement. A tremendous lot of straw can most advantageously be got quit of in this way. Next, as I have said—and perhaps to many it is a new saying—cart all your chaff from the threshing machine on your Grass lands at any time, and in any quantity, as may be convenient, and the early worm will ever be conveniently hard by to help to fertilise. Further, in case of a repletion of straw, I believe that a large quantity might be cut into chaff and placed between the ridges of turnips at the ordinary width of 27 inches apart, where it would act as an absorbent of all urine, &c., from sheep cultivation when the sheep are eating it off, on farms where no Grass land can be had. I have done some in this way, though not to a great extent. But you may apply an immense quantity of chaff to Grass lands, and that with wonderfully good effects. At all events such may be the source of destroying in a good form some big stacks of old straw. Some may think this a wild suggestion who have never been bothered with too much chaff. Only, don't burn it, and give your neighbours the benefit of the smoke. Surely many will criticise these conceits as they may be called, and say, "Why not sell the straw?" Near to a town this may do; but the landlord has a good right to see, although "straw is only straw," that a poor farm is not made still poorer by waste. Nothing can be advanced too largely on root crops, either on the lightest or heaviest soils, care being taken that all the produce, or as near as may be, is returned to those soils. Hence I have ever argued that this is the best position for placing manures in. To conclude: what I maintain is, that all farming should hold sacred the indestructibility of matter. The world weighs now, as philosophers tell us, to an ounce what it did when Adam was a farmer. A cigar smoked, if all could be again collected, would be the exact weight of the pennyworth of tobacco. So, even in ancient times, when Carthage was the granary of Rome, and the marshes afforded food for man, instead of pestilence, they would have never been exhausted, I venture to assert, if the broad principles of this, my conservative attempt to prove that Britain may help herself, even under the present direful dispensation of Providence, were acted upon in the manner I have now suggested.

Discussion.

Mr. Freke professed to be a sheep farmer, and he farmed dry land. It had been his study to increase the sheep, and he believed his flock was half as large again as that which he took them over. It was imagined was the utmost number that the farm could possibly carry. He had a sheep walk which was formerly restricted to 11 score ewes, but he kept upwards of 15 score. He did that by growing more root crops and in connection with that his object was to develope autumn cultivation and to put the manure on to his roots, taking it out partly in the winter. There was another object connected with that. Of the increased roots half must be drawn to a dry sound layer, provided for the consuming of those roots which were grown close by it. With the increased stock of sheep, and especially large one encountered what would always be an obstacle to those who tried to go fast over the road of improvement; he referred to the evil that arose from overstocking. And here, if he might digress for a moment, it would be to caution those who thought that they could substitute a large for a small stock of poultry at this moment with advantage, forgetting the evil of the land becoming tainted. In order to keep a larger number of sheep, he naturally had recourse to a larger consumption of straw as well as of corn. With him the best

straw was Barley straw. He would remark, steam might be applied to their cutters with great advantage, inasmuch as when it was used the straw was much shorter and softer, and sheep required shorter and finer straw than oxen. Instead of growing 10 acres of Wheat and 100 of Barley, he grew 40 acres of Barley and 40 of Wheat. Thus he had only 60 acres of Wheat to put in in the autumn, and both these crops and the fallow-work, which under the old system had to be executed in appropriate in the autumn to the Wheat, were now used in growing the root crops. Mangels, Kohl Rabi, and early Rape, for the last sowing. There was too much manure for Swedes, and Kohl Rabi had made better way than Swedes in ordinary seasons. He had grown 40 acres of Oats and had no other grain but Wheat. They would be subject to the ordinary roots, and from one fourth to one third of the root crop would be drawn off and fed upon, yet there layer, even, perhaps, by Younger sheep, during October, November, and December. At the end of November or beginning of December there was as much as a depth as might be, and it would be worked fine before the winter frosts came. It would be in that state during the month of January, probably while the manure was being carted on for the Mangel in the time of frost; and after it had been pulverized by the winter frosts, it would be ploughed to 2 inches deep; and then it would lie again for three or four weeks, to get quite fine before the time for Barley sowing arrived. In that way he had succeeded in obtaining two pieces of fine Barley as he had ever seen in his neighbourhood. Of that 100 acres of Barley, third off, this alone was consumed and eaten by the animals; it certainly was last year. Their stock of straw was so short that they were compelled to thresh the Barley rather fast, the straw being eaten up very rapidly. The one drawback which he found was this, that on the drier parts of the land the straw manure had a special value for the Turnip crop as a source of moisture. In the recent dry years he had found that White Turnips, when they were put in with straw manure in July, were able to stand drought; while those which had had artificial manure, though they came up well, died off. This alone he was inclined to attribute to the very fair supply of water which was gradually drawn up from below, after the ploughing in of from 8 to 10 tons of straw manure, three-fourths of which were composed of water. There was one other purpose for which straw manure was especially useful, viz., the growth of Wheat on light lands. The one element in the straw produced on light lands which they did not seem able thus far to displace satisfactorily was potash. He was sorry to say that, so far as his experience had gone, he had not found potash in any artificial form which would serve as a substitute for that potash in yard-made straw manure. He had undertaken fairly to trace the modifications which he had made on his farm in so far as they bore on the subject under consideration. Of course with the increase of sheep feeding and the eating of the straw on the land, a decrease in the number of bullocks in the yard was a natural and necessary consequence, and he would therefore hardly touched on that point; but the drawback connected with the change of system was, that he still wanted straw for his Turnip crops on his light land and for his Wheat also on such land. If the soil were a less stiff clay he might not perhaps want any yard-made straw manure at all.

Mr. Dent said there could be no doubt that in a large portion of the Wolds of Lincolnshire and Yorkshire the idea prevailed that farmers could not get straw-yard manure unless they used plenty of cake to make it. He thought there could it be doubted that, owing to the losses recently sustained, there would in many cases be great difficulty in procuring bullocks to make the straw into manure? There had, indeed, been great difficulty even in the last winter. Then came the question how far that was a loss that might attach to such sheep. He was inclined to think that, in many of the districts where such large quantities of Turnips were, cows had not a rab leaf for too many Turnips, and far too little straw. His own experience of his own lock of sheep was, that the fewer Turnips the cows had after having received Grass, the better they were, and the better they did altogether; and the same remark applied to the lambs. The disadvantages of keeping breeding ewes in a yard, and turning them out for a portion of the day, giving them pulped roots mixed with straw and dry meal, was, he thought, limited to a very small extent last winter; and for his own part he thought that would lead to a solution of the difficulty of keeping a breeding flock on strong land where there was very little Grass. On his farm he had never found a superfluity of straw, or more than he could conveniently use, and at times he would gladly have used more than he had with advantage. As regarded cart horses, he had adopted Mr. Torr's plan. He never thought of turning them out to Grass, and he believed that that was one of the greatest mistakes a farmer could make, as nothing scarcely did Grass land more harm. There had been many battles and arguments with farmers on that subject. They said that Tares were very expensive to grow, but he did not himself believe that. His plan was very much the same as that which Mr. Torr had spoken of. He gave chopped straw all the winter, open and close, and Tares and Beans in this time of year plenty of Tares, and an allowance of corn and chopped dry meat. He was speaking only of farm horses. He had always considered sheep and bullocks far preferable to horses. To have hoggets, carrying on their backs fleeces which could be got off in the month of May, was far better than to have horses, from which no profit could be got until they were three or four years old. As regarded Mr. Torr's idea of using chaff on Grass lands, he wished to say that he had seen a little of that tried with very good results. Almost anything, in fact, was better on Grass land than sweet food. But he did not himself see any great objection to allowing straw to be sold, provided the landlord saw that compensation was made in the manure that was purchased. He thought that on the class of farms where there was a superfluity of straw, and the landlord might be asked to allow a sufficient quantity of good Linseed cake or good artificial manure bought to replace the straw, the sale of straw was not so objectionable as some landlords and some land agents had seemed to think, especially in the neighbourhood of towns, where straw fetched a high price. With regard to Mr. Torr's respecting Mr. Randall's management of sheep was very valuable, and he (Mr. Dent) was surprised that after the system was placed before the members of the Society by Mr. Randall himself, it was not carried further by the strong-land farmers than it had been hitherto. He would suggest the idea to the Chairman, that Mr. Randall's increased quantities of both cattle and sheep by keeping cattle in the summer in yards, and so freeing the Grass lands for the ewes and lambs. As to the difficulty of keeping lambs on Grass lands in winter, he would remark that he had seen some lambs in that position and wearing soft wool, and though there had been very heavy losses when he left the country, the results did not appear to him satisfactory. The animals had a poor, weakly, unhealthy look, and his experience was, that the system was not satisfactory, either as regarded the produce of wool, or the growth of the animals. In conclusion, he would remark that Mr. Torr's lecture was one from which a great deal might be learnt.

Sir George Jenkinson, M.P., would like to know why Mr. Frere did not recommend straw manure for clay land. His experience was that although you might possibly grow—he had done so himself—as strong and as good a crop of Mangel with artificial manures, such as superphosphate and guano, mixed in proper quantities, yet on very stiff clay soils straw manures opened out the clay, and tended to make it more friable in future years. Straw manure opened the pores, so to speak, more than artificial manures, especially if the crops were fed off on the clay. He had a very strong opinion against the advisability of feeding off Grass with sheep on stout land, both ewing that, by treading down, the animal caused a good deal of loss. That brought him to another question. He would ask Mr. Dent what kind of Grass it was on which he had observed that lambs could not be wintered well. For his part, he had always applied universally, and if his own experience was that of others who farmed clay land were to be guided upon it fell was that they could not keep lambs anywhere. His own of Jenkinson's experience in keeping lambs on clay land last winter was the reverse of that. He had root crops but in a tremendous proportion. Lord Ducie's stock had fallen off in his own experience was similar, and he said he was glad it was nothing less than madness to attempt to keep lambs on clay lands during such a winter as the last. There again they came to the question of cake and corn, and he (Sir G. Jenkinson) considered that if tenants were allowed to sell straw, the means of keeping winter stock in the yard were thereby diminished. He would ask Mr. Dent what evil he had found to arise from wintering lambs on dry Grass land, giving them corn and chaff. He (Sir George) thought that was the best way to put it against Mr. Dent's—was, that that was the best way of wintering lambs. He had tried it in yards, he had tried it on the plough; and the result of his experience, which had come through his pocket, was, that the safest way of wintering sheep was to winter them in yards, with chaff and cake and corn, not giving the ewes any roots at all till after the spaning time. That was, he believed, the safest general rule, though it might be deviated from, according to the district.

Mr. Wells said he had lately changed his farm. Five or six years ago he lived in Kent; he now had a farm in Huntingdonshire; and nothing was clearer to his mind than that in some districts it was not profitable to have a breeding flock, while in others it answered. He had always maintained—and he thought it was capable of proof—that a breeding flock, if it could be kept, was more lucrative than any other. When he was in Kent he determined to have one; but the result of a trial, five or six years ago, was so unsatisfactory that he was forced to adopt the advice of his bailiff—sell off the lambs (on Mr. Randall's plan) in the autumn, and buy fresh ones. Since he had been in Huntingdonshire he had not had much breeding experience, and therefore it was rather early to talk about the matter; but he thought he could carry out a breeding flock successfully. His neighbours kept excellent flocks of Lincs Leicester sheep, and he hoped to do the same. He mentioned this to explain why Mr. Frere's heavy clay soils it was fighting against nature to try to force a breeding flock.

The Chairman, Lord Feversham, had great pleasure in moving a vote of thanks to Mr. Torr for his kindness in coming from Cambridge to address the meeting. He expected a lecture on this subject. There were a few remarks which he should like to make, but it was unnecessary to trespass upon their time at any length, especially as the subject turned chiefly upon heavy lands, in which he had not had much practice or experience. Still he found that it was generally advantageous to keep up a good breeding flock of sheep. In fact, he had two different kinds—Southdowns and Leicesters, and he found both useful—the latter for wool, and the former for mutton. He concurred in the observation of Mr. Torr that the lambs were better off in the yard than on the land, and in good condition was to feed them thoroughly—all the while when in the fields, and he could not agree with Mr. Dent in the advisability of keeping breeding cattle in yards during the summer. He thought it was far more economical to the health of the animals that they should be out in the open air in accordance with Nature that they should have Grass early in the season. Indeed, he believed that it was greatly owing to the last two seasons being very dry ones that the cattle disease had prevailed so extensively, although he admitted at the same time that it had been somewhat materially checked in some parts of the country if due precaution had been taken in the first instance. It was a remarkable fact that the Irish breeds of cattle, the pedigree herds as they were termed, had been entirely free from the pestilence. He could answer for his own, for they had been exclusively on many years, that they had been entirely free from the disease; and he should be extremely sorry, whilst agreeing that sheep were of the utmost importance to cultivate, improve, and increase in quantity, if, in consequence of such an increase, the cattle of the country were to be diminished. He knew perfectly well that sheep did improve the land, and were more profitable to the farmers. At the same time it was of great importance to maintain our best breeds of cattle; and he believed that the more farmers had the opportunity of crossing their cows with the bull of certain breeds, better and more profitable they would find it to be, and the more certain to be the continued fertility of the land. The meeting was greatly indebted to Mr. Torr, and he had much pleasure in proposing a vote of thanks to that gentleman for his lecture.

Mr. Jas. Read, in seconding the motion, remarked that Sir George Jenkinson did not think that he had recommended the indiscriminate sale of straw on farms, but he had no idea whatever of the kind. All he had said was, that he considered the objection to the sale of straw had been carried further than was necessary, and that in certain districts where large quantities of straw were produced, it was not the disadvantageous to the landlord or the tenant to sell the straw, provided it was replaced by oilcake or other artificials. With regard to keeping lambs upon Grass lands, he had tried the plan two winters—once during nearly the whole of the winter, and another time up to the middle of December—and found an evident deterioration, and that the animals were not nearly so good as the wether lambs which had been put upon Turnips. Perhaps they had not quite so good keep; but even giving them a fair allowance of corn and cake on the Grass land they did not do so well as the wether lambs. From that conclusion, therefore, that there was nothing like putting them on Rape and Turnips as soon as he could; for they continued well throughout the summer. As to keeping up breeding stock, where there was a short supply of straw, they might grow Tares and green crops for the feeding of beasts.

Mr. Torr, in acknowledging the compliment, said he had studiously avoided making any reference to the absence of rinderpest from large herds like his own, conceiving that it was for him to speak in terms of exultation on such a subject, because they could not be regarded as totally exempt from attack. The only reasonable ground which he could discover for their escape thus far was, that the short-horn breeders of England had carefully abstained from dealing in cattle during the existence of the plague. For his own part, indeed, he had not purchased a single animal since the month of August last. The breeders had shut up all their bulls, and as their herds were extremely valuable, perhaps they had spent more money in the adoption of measures for their protection. He would suggest in the consideration of Mr. Read, with respect to keeping cattle in yards during a portion of the summer. Instead of taking them up, as he used to do, in the middle of November, or even December, nearly all his steers were in his yards in September. They were not now turned out, as was formerly the practice, in the winter, for days and shut up at nights, but remained in the foldyards until the middle of May. Thus the store cattle were placed under a better system of management during four months more at least in the year. Twenty-five years ago he had seen the whole of the North Riding of Yorkshire covered with cattle throughout the entire winter; but of late years that practice had gradually given way, and it was undoubtedly a very great improvement. With regard to horses, he was of opinion that horses should have a loose box, not exactly in stables, but in yards with one, three or two sides of the surface covered in, and with air at the back to through them. Of three of his had a very large number, and he found that, in the case of such stock, they throve far better than in stables. He cut horses, myself, supplied with oat straw and Tares, and cleaned only well, and the system was a very great improvement. A good deal of chaff was given to horses; almost entirely on spouted Barley; and with spouted Barley and oilcake he found he could do without oat hay. His great object was to get him cake in the ears, and for that purpose spouted Barley was the best thing in the summer months, when they had no Mangolds to give. In the winter, however, it was rather difficult to get the Barley to sprout. A word or two as to the use of oilcake. His practice was for one boy to attend to four horses. Each boy was supplied with 8 lb. of cake per day dissolved in five or six buckets of water, and every feed of chaff given to the horse was saturated with the mixture. The result was that the animal ate his straw with a keener relish, and colic, as it was termed, which, in reality, meant obstruction of the bowels, was thereby effectually prevented. In winter, a few Turnips and a little rock salt were very good. As to the question of 4 sheep v. 1 cattle, he might state that last year he wintered over 3000 sheep as against 300 head of cattle; and his experience was that for every 2l. he got from the cattle, he realised 5l. by the sheep. The fact was that sheep were always returning money, no matter what the time of year.

Home Correspondence.

Copper in Cheese, &c.—The detection of copper in cheese by Dr. Voelcker suggests many questions for discussion. As the oxides of this metal unite with acids, forming a class of highly deleterious and poisonous salts, it consequently follows that culinary utensils ought not to be made of it; for although the acetate and the sulphate are admitted into the list of the Materia Medica, their "internal exhibition ought to be altogether discontinued," (as Dr. Thomson justly observes) owing to their "dangerous" and "hazardous" character. Copper utensils in a dairy or kitchen are highly objectionable. Even a copper tea-kettle has become an intolerable eye-sore to every thinking person, for although kept as bright as burnished gold, copper vessels are acted upon by the acids of the atmosphere, milk, water, fruits, and vegetables, and thus less or more mix with our dietary the poisonous salts now being detected by chemists, and loudly complained of by the medical profession. Those who use copper utensils in their dairies will be ferreted out and exposed. The question, who uses copper dairy utensils, and who does not, is doubtless a delicate one. It is to be hoped that the former is the exception, and the latter the rule, generally speaking, in all our cheese-making districts. The poisonous salts of copper may, however, be derived from two other sources besides that of the dairy utensils, viz., from the substances used in the processes of curdling, colouring, and seasoning of the milk and cheese; or from the food consumed by the milch cows. And lastly, since the salts of copper exist in the soil to such an extent, it may adhere to the roots of Mangels, Swedes, and other plants of this kind, consequently they must be taken into the stomachs of milch cows, and therefore find their way to the milk and cheese. It is an established fact in physiology that noxious principles of this kind taken into the stomachs of animals giving milk are apt to be secreted in their milk. This is the reason why the milk is so easily affected by the quality of the food. Thus, when milch cows eat Dyer's-broom (Genista tinctoria), a bitter plant common in some meadows, their milk, butter, and cheese is bitter. Even when grazing on the pastures cows pull up much of the Grass by the roots, and may thus ingest the salts of copper in the extensive dairy districts of Cheshire, Gloucester, and Wilts, where such have been applied to the land along with top-dressings and artificial manures. There are other dietetic sources from whence milch cows may obtain the copper found in the cheese made from their milk, as brewers' grains, distillers' wash, and the water they drink. What has been said, is hoped, will be sufficient to convey to the reader the necessity of a searching inquiry being made into the whole of the details of dairy husbandry; And this, too, is not all; for if copper is present in the food of fattening and store cattle, it must be highly injurious to their general health, and equally detrimental to the quality of the butcher-meat sent to the shambles, while the balance sheet of the farmer must be similarly affected. *B.* [Sour milk will no doubt dissolve copper, and the curd made in brass or copper vessels may be thereby injured and injurious; but that the milk derived from a consumption of oilcake, or from dirty Mangels in which chemists have detected copper, can be injured or injurious owing to the copper it thus derives, seems to us absurd.]

Wiltshire and other Labourers.—Since all the Wiltshire labourers I ever met with would command the respect of first-class workmen in any county in the United Kingdom, I cannot but feel surprised at the remarks about the debilitated condition of farm labourers in the West of England. When employed in 1856 in a garden in Worcestershire, near Tewkesbury, the land steward paid the garden hands for working overtime in the evenings at haymaking. I do not remember ever being in such a fix, in the way of working, as a native of Worcestershire and one of Wiltshire placed a native of Aberdeenshire and myself when forking hay on to a rick. The former were forking it from the ground on to a platform, and the latter on to the rick. My then fellow-workman had to change his shirt, which was saturated with perspiration. I have before quoted the statement of a Wiltshire labourer, that he and his wife were as comfortable in the Frome district on 7*s.* a-week and the perquisites peculiar to the West of England, as he was in Bucking-

hamshire on 14s. of cash, without house or any other perquisite. The secret of comparative comfort and misery is found in the fact that too many English farmers are compelled to treat their regular staff of workpeople as casuals, which practically prohibits well-disposed employers, so circumstanced, from evincing the interest they take in meritorious services. A good cow, a good supply of Potatos, the liberty to feed pigs, and being located in good houses at a convenient nearness to the farm-steading, are labourers' elements of success. I adduce the scale of payment in Roxburghshire as a proof of it.

The subjoined tabular account gives the market value to farmers of the Potato land and the grain part of payment I have based my calculations on the fiars struck last spring at Jedburgh by a sworn jury The farmers have a profit of 1*l.* 5*s.* off the 1500 yards. For example, Mr. Ayres, Ormiston Mains, has an annual sale of Potatos by public roup, some of which were sold last autumn for less than 1*s.* a score of yards. I know of a party who had 11 score for 8*s.* 6*d.*, and another lot of 13 score for 12*s.* Mr. Arras delivers the Potatos to purchasers residing in Jedburgh and Ancrum, and to others within a radius of say six miles. The purchasers are at the expense of digging the Potatos and putting them into sacks ready for lifting into the carts. Some farmers give each hind only 5*l.* of sheep-money, 5*l.* as a substitute for a cow's keep, and 48 bushels of Barley and the other items named. It is positively preposterous gentlemen farmers attempting to make the public believe that the earnings of a hind and several of his family are a hind's nett wages. I deduct six shillings a week from the gross total for the bondager's board, and also to meet all contingencies connected with the hind's expenses of walking from Kelso parish to Lauder fair for a "maiden," and to pay for the loss of four and five days' work at each term, and for the bondager's broken time throughout the year. Hind's wages for the years ending May 25th, 1864 and 1865 :—

100 stones of oatmeal, at 1*s.* 4*d.*		£6 13	4
18 bushels of Barley, at 11*s.* 5*d.* per quarter		2 14	6½
6 bushels of Peas, at 5*s.*		1 10	0
1500 lineal yards of Potato drills, at 1*s.* a score		3 15	0
Money substitute for a cow's keep		6 0	0
Sheep money		5 0	0
Food for 24 days in harvest		0 16	0
A hind's wages are, house and garden free, coals carted, the liberty to feed a pig, and			£26 8 10½
Supposed earnings of bondager to the hind :—			
Say 12 days in harvest, at 2*s.* 10½*d.*		1 14	0
223 days at 1*s.*		11 3	0
78 days at 10½*d.*		3 5	0
			16 2 0
Market value to farmers of gross total paid to hind			42 10 10½
And the perquisites named.			
Cost to hind of the bondager's contract :—			
Bondager's wages		13 0	0
Board for 50 weeks, at 5*s.*		12 10	0
For lodging, washing, and incidental expenses		2 12	0
			28 2 0
			£14 8 10½

The average prices of grain in Roxburghshire make the aggregate gross total for the year ending May 25, 1866, equal to 13*l.* 16*s.* 10½*d.*, a house and garden free, the cartage of coals, and liberty to feed a pig. Aware that 6*s.* a week is too high an estimate of the cost to a hind of a bondager's board, lodging, and washing, I put that sum against the farmer to meet the losses to the hind through his bondager not working full time; *e.g.*, it requires the bondager to earn 16*l.* 2*s.* to make the aggregate gross total equal to 12*l.* 10*s.* 10½*d.* and the perquisites named. Contrast this with the notorious fact that an intelligent farm steward showed me a list of the yearly earnings of the bondagers for 12 years, the highest of which did not amount to 13*l.* a year. In short, as a general rule, the bondagers did not earn more than their wages—12*l.* to 13*l.* a year, and each of too many hinds had to give his bondager her board and washing off about 26*l.* a year. I refer to this local custom in the south-east of Scotland and Northumberland to show the comparative comfort of a good many families who receive less for their labours on Tweedside than the same class in Wiltshire, the latter of which is held up as the "worst paid county in the kingdom." It is a notorious fact that too many "favourably circumstanced" hinds have only equal to 26*l.* a year for supporting a wife and family, together with the two able-bodied farm labourers—the hind and his male or female bondager—for a twelvemonth! It is the holding up to the public the united earnings of two labourers for a twelvemonth as one man's wages, that puts the yearly earnings of a single labourer in the West of England in such an unfavourable light. An editorial statement in your Paper some years ago shows that farmers in the West of England are victims of circumstances. The fact is that farmers have no choice of this particular machine. They cannot, if they would, enploy only a few and feed them well. Those in any parish have to maintain all in that parish, either in the field or in the workhouse, and in some populous parts, if they were to be fed in order to their efficiency, as Prof. J. Wilson recommends, they would eat up the whole produce of the land." *Thomas Waugh Rutherford, Forest Field, Kelso, N.B.* [Mr. Rutherford has for many years done good service by pointing out the great evils of the Bondager system in the southern counties of Scotland.]

Sewage and Italian Rye-grass.—In laying down land with Italian Rye-grass it is scarcely possible to have it in too high condition. The system followed at Lochend is one year with early Potatos, and two years with Italian Rye-grass. The land is very liberally manured for the Potato crop; they are generally lifted and sold in July and August. The land after the removal of the Potato crop is carefully ploughed, leaving as few open furrows as possible. Harrow and roll after ploughing, making the surface quite even with a fine tilth previous to seed sowing. They sow foreign seed, which cannot be equally distributed through any yet invented machine, owing to its pluffy and adhesive nature, and after a good deal of annoyance with ill sowing for two or three seasons, they have adopted the following plan. After the ground has been prepared as above described, a man with a wheelbarrow marks it off into stripes 9 feet wide two ways, making the surface of the ground to resemble a draught-board; it is then sown both ways, which distributes the seed regularly over the surface of the ground; light harrows are then applied, finishing with the roller. This system answers the end remarkably well, giving an equal quantity of seed all over the ground, and leaving a smooth regular surface, with no impediments in the way of the scythe. Italian Rye-grass is a rapid-growing greedy-feeding plant, and if fed with an abundance of solid and liquid manure, there is no other description of Grass can come near it for a bulky yield—so much so, that in one instance recorded at Lochend, when it was sown upon land in very high condition with an abundant supply of sewage, the increase upon the plant was 48 inches in 45 days, or about an inch and a sixteenth every 24 hours. Horses as well as horned cattle thrive well upon it; for the former it should be allowed to harden, with a considerable portion of the seed-stem seen previous to cutting, and when it is used for dairy cows the yield of milk is more if the Grass is given soft, and the most suitable time to cut is just when the seed stem begins to show itself. *T.*

Societies.

ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

MONTHLY COUNCIL: *Wednesday, July 4, 1866.*—Present, Lord Walsingham, Vice-President, in the Chair; the Earl of Powis, the Earl of Shrewsbury and Talbot, Lord Chesham, the Right Hon. the Speaker, Major-General the Hon. A. N. Hood, Sir A. K. Macdonald, Bart., Mr. Acland, M.P., Mr. Amos, Mr. Bowly, Mr. Cantrell, Colonel Challoner, Mr. Clayden, Mr. Dent, M.P., Mr. Druce, Mr. Brandreth Gibbs, Mr. Jonas, Colonel Kingscote, M.P., Mr. Lawrence, Mr. Pain, Mr. Randell, Mr. Sanday, Mr. Shuttleworth, Mr. Robert Smith, Mr. Torr, Mr. Thompson, Mr. Turner, Mr. Wells, Mr. J. Wilson, Mr. Frere, and Dr. Voelcker.

The following New Members were elected :—

Day, Thomas, 22, Dorset Street, London, W.
Hanbury, Osgood, jun., Howe Hatch, Brentwood.
Knight, Josiah, Millwich, Stone, Staffordshire.
Little, William, Fieldree, Chester-le-Street.
Wentworth, Geoffrey Hawksworth, Woolley Park, near Wakefield.

FINANCES.—Major-General the Hon. A. N. Hood, Chairman, presented the report, from which it appeared that the Secretary's receipts during the past month had been duly examined by the Committee and by Messrs. Quilter, Ball, & Co., the Society's accountants, and found correct. The balance in the hands of the bankers on the 30th June was 1702*l.* 0*s.* 11*d.* The quarterly statement of subscriptions and arrears to 30th June, and the quarterly cash account, were laid on the table. The Committee recommended that with regard to those members in arrear of their subscriptions for 1864 and 1862, amounting to 55*l.*, the solicitors to the Society, Messrs. Garrard & James, be instructed to take such measures as they may think necessary, to recover the amounts due. They had to report that they have received the deed of security duly executed by the Secretary and his sureties for the due performance of his duties. An estimate of the receipts and expenditure for the current year, exclusive of the sum already voted, 500*l.*, for the Steam Cultivation Inquiry, was submitted for the consideration of the Council. This report was adopted.

PRIZE ESSAYS.—Mr. Thompson, Chairman of the Journal Committee, announced the awards of the judges, and the motto papers having been opened by the Chairman, the names of the successful competitors were declared as follows :—

Class I. Farming of Leicestershire.—The prize of 50*l.* to W. J. Moscrop, Esq., Kirkleatham, Redcar, Yorkshire. The papers bearing the mottoes "The cattle are grazing", and "Labor omnia vincit" were Commended.

Class II. Farming of Worcestershire.—The prize of 50*l.* to Clement Cadle, Esq., Land Agent, Gloucester.

Class III. Town Dairies.—The competing essays are not considered worthy of the prize.

Class IV. Mountain Breeds of Sheep.—The prize of 20*l.* to H. H. Dixon, Esq., 10, Kensington Square, W. The paper bearing the motto "Soil and climate modify all animals" was Highly Commended, and "Mountaineer" Commended.

Class VII. The Use to a Farmer of a Magnifying Glass.—The prize of 15*l.* to K. Bridgman, Esq., 69, St. Giles' Street, Norwich.

STEAM CULTIVATION. Mr. Thompson stated that the Committee recommended that members of the Inspection Committee (not acting as reporters) shall receive two guineas per diem each and their travelling expenses, not including hotel bills. The Committee were of opinion that this inquiry cannot be completed satisfactorily for the sum of 500*l.*, voted by the Council for this purpose, and recommended that they should be authorised to expend a sum not exceeding 1000*l.*, though they considered it probable that the whole of that amount may not be required. It was then moved by Mr. Wells, seconded by Mr. Lawrence, and carried, that the Steam Cultivation Committee have power to spend, if necessary, an additional sum not exceeding 500*l.*

EDUCATION.—The Committee having received from the examiners in Mechanics and Chemistry applied to Agriculture the marks obtained by the candidates entered for the special prizes at the recent Oxford Local Examinations, have awarded the following prizes, viz. :—

I. MECHANICS APPLIED TO AGRICULTURE.

F. B. Kingdon, R. A. Coll., Cirencester ..	.. £5
H. R. Goddard, R. A. Coll., Cirencester ..	.. 4
T. J. Elliott, R. A. Coll., Cirencester ..	.. 3
J. L. Waldon, West Buckland	.. 3

II. CHEMISTRY APPLIED TO AGRICULTURE.

F. B. Kingdon, R. A. Coll., Cirencester ..	.. £5
J. L. Waldon, West Buckland	.. 4
H. R. Goddard, R. A. Coll., Cirencester ..	.. 4

I. The Committee have resolved to offer the following principal prizes at the ensuing Cambridge Local Examinations in December, 1866 :—

1. To prizes for Candidates who answer papers to be set in Mechanics and Chemistry as applied to Agriculture. Open to Juniors and Seniors who have passed the Preliminary Examination as above, and also to any young men not exceeding 25 years of age (duly recommended).

Mechanics applied to Agriculture	.. £10
Chemistry applied to Agriculture	.. £10

	Senior.	Junior.
Candidate who obtains a Certificate, regard being had to his place in the General Class List ..	£5	£5
Candidates having passed the previous Examination, distinguished in—		
Pure Mathematics	5	5
Mixed Mathematics	5	5
Chemistry	5	5
Zoology	5	5
Geology	5	5
Botany	5	5

and that 30*l.* be distributed in Secondary Prizes of 2*l.* each among such of the candidates in the several classes as the Committee may judge most deserving.

II. The Committee further report that the number entered for the Society's prizes at the Oxford Local Examinations, which took place in June last, was only 45, whereas the number entered at the Cambridge examinations in December, 1865, was 120. Under these circumstances they consider that it would be better to have only one examination in the year, and to try the experiment of giving, in addition to the ordinary prizes, certain Senior and Junior Scholarships limited to the sons of tenant-farmers, or of owners, if not exceeding 500 acres, occupying their own land. They recommend, therefore, the Council to authorise them to offer 1 Senior Scholarship of 50*l.*, and 4 Junior Scholarships of 20*l.*, to be competed for at the ensuing Cambridge Local Examinations in December, 1866.

That the Senior Scholarship shall only be given on condition that the scholar spend a year with a practical agriculturist, to be approved by the Education Committee, or at one of the Agricultural Colleges, such as Cirencester, Glasnevin, or the Agricultural Department at Edinburgh, and that the money shall not be paid until a testimonial as to good conduct and industry be produced, at the end of the year of scholarship, from the body or person under whom the scholar has studied.

That the Junior Scholarships shall only be given upon condition that the scholar spend a year at a school to be approved by the Education Committee, and that the money shall not be paid until a testimonial as to good conduct and industry be produced at the end of the year of scholarship from the person under whom the scholar has studied.

HOUSE.—Major-General the Hon. A. N. Hood presented a rough plan of the proposed alterations and additions to the Society's house, but on the motion of Mr. Randell, seconded by Mr. Pain, that the matter be referred back to the House Committee, with power to consult Mr. Fowler or any other architect, and to prepare alternative detailed plans and estimates for the execution of the work before the Council in August, the adjournment of the consideration of the report was carried.

On the motion of Major-General the Hon. A. N. Hood, seconded by Colonel Challoner, the grant of 200*l.* to the Royal Veterinary College for the current year was renewed.

The election of a Member of Council in the room of Mr. Hamond, resigned, was deferred at the suggestion of Mr. Thompson, who moved that a committee be appointed to consider and report to the next Monthly Council whether in their opinion it is desirable that any change should be made in the present mode of filling up vacancies in the Council, and that the existing vacancies shall not be filled up until the report of the committee has been received. The motion was seconded by General Hood, and carried, and the following committee was nominated :—Earl of Cathcart, Earl of Powis, Lord Vernon, Lord Walsingham, The Speaker, Major-Gen. the Hon. A. N. Hood, Sir J. Johnstone, Bart., M.P.; Mr. Clayden, Mr. Dent, M.P.; Mr. Druce, Mr. Holland, M.P.; Mr. Randell, Mr. Thompson, Mr. Torr, Mr. Owen Wallis, Mr. Jacob Wilson.

On the motion of Mr. Dent, M.P., seconded by Mr. Torr, the loan of the Society's small dynamometer was granted to the Yorkshire Agricultural Society for the trial of mowing machines now going on in that county.

The following extract from a letter of Mr. Haymans Hye, British Vice-Consul at Ghent, dated June 21, was received from Her Majesty's Secretary of State for Foreign Affairs, for which the thanks of the Council were accorded.

"The new system of treating Flax consists in planting Elm trees round the ponds or along the ditches in which the Flax is rotted; when the leaves fall they are gathered and thrown into the water, where of course they decay, which impregnates the water, and gives the Flax a more even colour (as it is called, silvery blue), and renders the fibre softer and silky. When the ponds and ditches become almost dry they carefully take out the first layer of mud, and place it in heaps on the sides, which is again thrown into the water when the rotting season returns, and thus repeated every year. As colour and softness increases its value so

considerably, and as the method of producing those qualities appears so simple, the information given by Mr. Raymans Hye may perhaps be of much interest."

Suffolk Agricultural.—*Bury St. Edmunds, July 5.*—This was the town fixed upon by the Suffolk Agricultural Association for their annual meeting for the present year, and it was arranged that the Show should be held on Friday. The inhabitants of the town determined that the meeting should go off with as much *éclat* as possible, and that, though they could not extend the show of horses and other live stock to two days (the Society having decided that it should be limited to one), they would offer every inducement in their power to agricultural and other visitors to spend two days at Bury instead of one. Accordingly a fund was subscribed, part of which was devoted to a Flower Show, and another part to prizes for ploughing matches open to *bonâ fide* agricultural labourers from any part of England, and to a trial of steam ploughs to come off on Thursday. Mr. G. H. Nunn, Eldo House, granted the use of a field for the ploughing matches. It was a Trifolium stubble, very suitable for the purpose, undulating but not too hilly, the soil gravelly, and, owing to the rain, in a better state than might have been expected. The Committee originally made three classes of ploughmen —one for men, another for lads under 20, and the third for boys under 16; but whilst there were upwards of 50 entries in the 1st class, there were scarcely any in the 2d, and none in the 3d, and the Committee therefore determined to merge them all into one. Nearly 50 men, from all parts of Suffolk, and a few from Essex and Cambridgeshire, set to work with several different descriptions of ploughs, a few old-fashioned wheel-ploughs, a few foot ploughs, some by Howard, but the great majority by Ransomes & Sims. After a very sharp competition the 1st prize was taken by George Arbon, Hengrave; 2d, by George Brunning, Barnham; 3d, Nathan Hambling, Westley; 4th, Richard Spalding, Hengrave; 5th, Samuel Rush, Tattingstone; 6th, William Bokenham, Ixworth; 7th, J. Woodward, Fordham; 8th, George Blake, Fornham; 9th, Robert Hunt, Rougham; 10th, George Birtle, Timworth; 11th, George Alderton, Rougham. All the winners, with the exception of Robert Hunt (who had a Hornsby fixed Ransomes' plough), A consolation match afterwards took place, and there was to be a champion match on Friday. The trial of steam cultivators was between a set of Fowler's, one by Burrell, of Thetford, on Fowler's principle, and a plough belonging to Mr. E. Greene, M.P., the engine by Burrell and the cultivating apparatus by Howard. It appeared that for breaking the land Fowler's had the advantage, and for simply cleaning, Howard's. The flower show was good. There is every prospect of a good show of horses, sheep, and pigs on Friday, and the number of implements on the ground is large.

Fordington, Dorchester.—*Cottages and Gardens.*—This was a paper read at the Anniversary Meeting of the Fordington Friendly Society, by the Rev. Henry Moule, Vicar of Fordington. We extract a few passages:—

Existing Condition.—The hardships, the misery, the evils of every variety, to which in consequence of the nature, the condition, and the extravagant rent of houses and rooms the working classes in this parish and town are subjected, have always appeared to me peculiarly great and distressing, and during the last few years they have certainly been increasing. It is known to not a few of you that during the 37 years that I have had the charge of this parish, this subject has been to me one of deep and painful interest. And I can truly say that the desire to relieve such a state of things and to benefit my fellow men has been, under God, the great motive impelling me in all my observations and experiments in sanitary and physical matters (and these have not been few), leading me on to discoveries and inventions, two or three of which will prove very instrumental in effecting the vast improvement which I am about to propose in the dwellings of the working classes. In a cottage not more than 10 feet square I have known for a long time two families to dwell, each family consisting of the two parents and three children (and in the one family the mother lay in the one room for many weeks till she died): and the rent to be paid for this cottage is 2*s.* 4*d.* or 2*s.* 6*d.* a week. In another, 12 feet square, for which 2*s.* 7*d.* is paid, I have known a man and his wife and five children live, together with two, and sometimes four lodgers. You may see a family of eight or nine persons living in two rooms, one on the ground floor, the other above it; beyond the ground floor there is not a single inch of accommodation; and for this, out of perhaps 18*s.* earnings a week, 3*s.* 6*d.* must be paid. The out-door pauper, perhaps an aged widow, receives as her weekly support, 2*s.* and a loaf. She has to pay 1*s.*, 1*s.* 6*d.*, or 1*s.* 9*d.* a week for her one room.

Means of Improvement.—After long and careful consideration of the subject, I have arrived at the following conclusions:—1st, the Real proprietor of this estate of the Duchy of Cornwall, and persons of the upper and middle classes, may, in conjunction with efforts on the part of the working classes, do much; but without such union of effort they can do next to nothing; 2dly, the working classes, even if they should be alone in the effort, can work out for themselves an effectual remedy; but that the moral influence of such an effort on their part, and the benefits resulting from it to other classes of society, as well as their own, would be so great, that they would not for any length of time be allowed to stand alone. And although I may appear sanguine and presumptuous in the statement, I have no hesitation in expressing my full conviction that the results of such a combined effort as that to which I invite my fellow-townsmen, and my fellow-countrymen, would, with God's blessing on it, exceed both in a physical, economical, moral, and even spiritual point of view, anything that in this way has ever yet been effected.

The scheme of which I speak has its main foundation in these two principles: First, in increasing the value of the cottage—its value, however, not merely to the owner, but to the occupier; and secondly, in providing the occupier with an additional source to that of his weekly earnings from which to pay his rent. At present there is no fair proportion between the value of the house or cottage, and the rent to be paid for it: nor is there any fair proportion between the rent and the means of paying it. For a cottage that did not cost the owner 60*l.*, 40*l.*, or even 30*l.*, a rent of 8*l.* or 6*l.* is most extravagant; and most extravagant also is the payment of 20 or even 25 per cent. of a man's earnings for rent. Men with 18*s.* a week have to pay 3*s.* 6*d.* and 4*s.*; a labourer with 10*s.* a week has to give 2*s.* 6*d.* for his cottage.

I propose rather to increase the value and capabilities of the dwelling, and so in some cases to increase their rent. But at the same time I would afford in the premises to be rented an additional source of income to the cottager. I would furnish the mechanic and labourer, or rather I would have him furnish himself, with a cottage containing two living rooms and three bed-rooms, together with due accommodation for cleanliness and decency. And with such a cottage I confidently assert that any mechanic or labourer in this town, who is in ordinary health and strength, and who with proper spirit will rise to meet these frightful evils, may furnish himself. The remedy for such evils cannot be a work of gratuitous charity; it must be a matter of business. The money expended must pay a fair good interest. But observe that of this the working man will have his full share and benefit.

I will suppose the rent to be 10*l.* a year; it may perhaps be less. But then in addition to the five rooms, and these most economically arranged, I propose that there shall be attached to each cottage so much ground and such appliances as shall enable a sober and industrious man of any class to pay that rent, or to get out of the buildings and ground in produce for his family a full equivalent. So that, for instance, a man who now has to pay out of his earnings 2*s.* 6*d.* rent, would even in paying 4*s.* a week for a cottage ten times better than that he has at present, really save his 2*s.* 6*d.* His rent would be increased 1*s.*, but his income would be increased in greater proportion.

Profits of Gardens.—Every cottage ought to have at least one-tenth of an acre attached to it. It would be better to have one-eighth of an acre. Now I have a plan by which a cottage, such as I have before mentioned, may be built for 125*l.*, or say eight for 1000*l.* And the economy of their arrangement shall be such that with one fire or kitchen range, and at a cost of no more fuel than 1 cwt. of coal a week, the cooking may be done for a family of from five to ten persons, the baking, and the washing and ironing. Moreover, by means of that one fire every room, when wished, may be warmed. Good ventilation can be secured in every room. And when the heat of the fire is not required to warm the rooms, it may be used to warm an outer shed, to serve either as a washing and drying shed, or with great advantage and economy as a hen-house, or, for that which to many a shopman and mechanic might be a great object, a small greenhouse.

Now, from the eighth of an acre attached to each cottage, together with such drying shed, hen-house, or greenhouse, a sober and industrious man, with a very little instruction as to the best things to cultivate, might easily pay a rent of 10*l.* a year, or 4*s.* a week, without deducting anything from his wages.

The Capital Required.—But, you ask, where will you get the money with which thus to build cottages with gardens so attached to them? And if you can get the money, where will you find the land?

As to the money, it must in the first instance at least come from the working classes themselves. Don't be startled at this—they can raise it if they choose. And if they raise it, and if the money thus raised be found to pay good interest (as it certainly will), then they will soon get more from other classes. Cottage property of the kind I propose will be found as good and as safe an investment as other house property. And then as to the land, if 400 or 500 men will ask for it, and offer for it a fair price or a good ground rent, I cannot think that the Council of his Royal Highness the Prince of Wales would advise him to refuse it. If, however, they should so advise his Royal Highness, railroads and the Union Settlement Act open a wide field for us. We are no longer tied to the immediate neighbourhood.

I have said that the money in the first instance must come from the working classes; and I will now show you how it may be raised. Call to mind the fact I once put before you, that from 12,000*l.* to 15,000*l.* a year are spent by the working classes of this town in beer and spirits, and most of this in public-houses, and very much of it on Saturday nights; so that by large numbers of men God's day is in consequence profaned and His worship neglected. Now, from such a fund as this could not 2000*l.* or even 4000*l.* a-year be easily drawn? Would any great amount of self-denial be required to do this? No; let there be a little reflection, a little resolution, and a little prayer to God, and the work is easy. Only let the mechanic and labourer look seriously at the misery, the evil, and the sin involved in the annual expenditure of 12,000*l.* or 15,000*l.* in such a way, and consider at the same time the countless benefits which with God's blessing would result from turning even such a portion of it into the channel I propose, and I do believe that numbers will resolve in God's strength immediately to take steps for raising from 2000*l.* to 4000*l.* a-year. And mark this, that while so seeking thus to improve their dwellings, they would be forming a permanent property and a true Savings' Bank for the working man.

Let it be done then in some such way as this. Let a Company be formed with as many shares as may be taken at 2*l.* 12*s.* or 3*l.* a share, to be paid, if wished, in weekly payments of 1*s.* 2*d.* If 400 of these shares be taken, eight or 10 cottages a year might be built. But 800 shares would raise only 400*l.* more than the smaller of the two sums I have mentioned above, and by annually raising such a sum as this we might look in this town for the relief of 100 persons a year from the misery and the evil under which they are suffering.

But now it is of no use to build good cottages unless we can get good tenants—without them the interest will not be paid, and money will not be invested. To secure such tenants, therefore, and still more, to enable us to look with some confidence for that blessing from on high, without which nothing can prosper, there should be these two qualifications required in all tenants and shareholders. First, they should undertake to "remember the Sabbath-day to keep it holy," and regularly to attend the worship of God. Secondly, they should undertake to separate entirely from the public-house. To some these qualifications may appear too low; to others they will appear too high and too strict. I can only say to such that without these qualifications I would not venture one shilling in such a scheme; with them I should have all the confidence that I have already expressed. Instead of meeting together to waste time and money and to encourage each other in evil, let men meet together at one time to worship God, at another to promote their own welfare, and that of their families and neighbours, and evil and sin would receive a mighty check, while thus in the very first effort an impulse beyond all calculation would be given to social, moral, and religious improvements.

Reviews.

Observations suggested by the Cattle Plague about Witchcraft, Credulity, Superstition, Parliamentary Reform, and other matters. By H. Strickland Constable, Wassand, Hull. Dalton & Lucy, 28, Cockspur Street. Pp. 99.

Third Report of the Commissioners appointed to inquire into the Origin and Nature, &c., of the Cattle Plague. With an Appendix. Eyre & Spottiswoode.

We place these publications together, although no contrast can be greater than that which they present. The latter is a most elaborate treatise, in which nine of the most accomplished and experienced students of its subject have combined their labours, so that probably no question ever received more exhaustive treatment and discussion. The former is the "agreeable rattle" of a clever man who knows nothing about the subject—what the duodenum is he has not the least notion—but who apparently knows a good deal of the past history of superstition, and who seems to think that he proves the folly of Mr. Gamgee's opinions by tying them up in the same bundle with a lot of undoubted absurdities, of which he gives a list. He makes especial merriment over the idea of contagion:—

"Mr. Gamgee says, as we all know, that this cattle plague is never taken spontaneously. I say it is. I say I know half-a-dozen instances within five miles of my own house, some of them my own tenants, where there had been no communication, and therefore no contagion, and yet the plague broke out. Oh, but (our Professor would say) the air carried it, or a dog, or a cat, or a bird, or a rat. But if this is called an argument, I will prove the same about anything whatever. Broken knees in horses, for instance. Suppose I choose to assert, that broken knees can only be taken by contagion, Mr. Gamgee would doubtless bring several instances to show the contrary. I say these instances prove nothing; because the air will carry 'tumbling down' in horses, any distance almost, and insects carry it, and dogs are known by everybody to carry it constantly. The proof is absolutely as complete in the one case as the other."

And again on the absurdity not only of contagion but of the idea that giving a scientific term to anything which is unintelligible adds anything to knowledge:—

"Probably all these names have had for their origin the endeavour to hide ignorance, and this would account for our giving them in these cases, but not to the different internal disorders of a watch or a steam-engine, for these latter we can take to pieces, understand, mend and put together again; but if we could not do so, and a watch went badly, I have no doubt whatever that we should say, it had got that terrible disease, 'horologiumpest.' This would at once satisfy us like children when told the mere name of a thing, and prevent our having to say we do not understand what is wrong; and at the same time it would (a thing the human mind craves) set our imaginations, our credulity, and superstitions free to theorise about it, and say that 'horologiumpest' was a fearful disorder to which watches are subject; that one watch never takes it except by contagion from another; that the salubrity of the English climate is such, that the disease is never taken in this country spontaneously, but that it is always imported direct from Geneva—the proof of this being that watches in Geneva are notoriously known to be often afflicted with the disease, and that large numbers are always being imported into England. Furthermore we should say, that keeping the watch clean and treating it well, though desirable things enough in themselves, can do nothing towards preventing this terrible complaint, and that the only real measure is, immediately a watch is observed to go wrong, to stamp upon it until it has ceased to tick, and then bury the fragments in the ground, the chain and key to be either buried with it or carefully disinfected with carbolic acid."

We give the history of the author's six Alderney cows:—

"I have six Alderney cows, the most tender of all kinds. Ever since last November they have been

out in a field day and night. It is now the end of May. During all this time they have been in perfect condition, and giving as much milk as ever. They had a comfortable open shed to go into if they liked. My cowman told me the other day that not one of them has ever gone into it the whole winter. It has been a remarkably wet, stormy winter, and the thermometer has some nights been at 16° below freezing point. The plague has been all round me. The way I do is this. I go and spend half an hour in the sheds of some farmer whose beasts are dying all round me. Then I come home, and immediately visit my cows in the field. They are very tame; so I first look which way the wind is blowing, and then I go to the windward side of one of the cows, so that none of the emanations may be lost, and stroke its head for a considerable period. I have not succeeded hitherto in imparting the disease, and I am sadly afraid my endeavours to do so would only lead to disappointment, however long I might continue them, or however often I might repeat them. Now I know perfectly well what Messrs. Gamgee & Co. would say here, for they have said it before in similar cases. They would say, 'the cows are Alderney cows, and therefore all this proves nothing.' It is like the elder Mr. Weller, when his son consults him how he should end his valentine. 'I could end with a verse,' he says, 'what do you think?'

"'I don't like it, Sam,' answered Mr. Weller. 'I never know'd a respectable coachman as wrote poetry 'cept one, and he was only a Cambervell man, so that proves nothin.'"

The reader will find a great deal more of the same amusing anecdotical discussion of the subject, which will leave him, we should hope, with his opinions unaltered, but with the feeling that he has spent an hour very pleasantly in the perusal of the pamphlet.

The Blue-book, whose title succeeds that of Mr. Constable's essay, is a work of a very different sort.

In addition to the final report of the Commissioners, the substance of which has already appeared in our columns, it contains an appendix including reports by Dr. Sanderson on the Nature, &c., of the Disease; by Dr. Marcet on the Chemical Pathology of it; by Dr. Murchison on its General Pathology; by Dr. Bristowe on the Morbid Anatomy of the Disease; by Dr. Beale, a report of Microscopic Researches; by Dr. Angus Smith on Disinfection and Ventilation; by Mr. Crookes on the Application of Disinfectants; and by Messrs. Varnell & Pritchard on Treatment. The whole is illustrated by wonderfully fine coloured lithographs. The work seems to us to be a perfectly exhaustive treatise, which ought to be carefully studied by all interested in the preservation of cattle from the disease. We quote a passage from Dr. Angus Smith's report on disinfectants:—

"According to the principles laid down the air must be treated, and where there is no disease there is only a secondary use in treating anything besides the air.

"Several cow-houses have been treated with carbolic acid with very excellent results. The mode I have seen first to remove from the floor the mass of manure which too often adheres to it; secondly, to sprinkle the floor with strong carbolic or cresylic acid. Next to wash the walls, beams, and rafters, and all that is visible in the cowhouse, with lime, in which is put some carbolic acid, 1 to 50 of the water used, or with strong carbolic acid alone. Next, to make a solution, containing 1 of carbolic or cresylic acid to 100 of water, or perhaps still better, 60 of water, and to water the yard and fold until the whole place smells strongly of the acid. Only a few farms have been treated in this way so far as I know, but in each it has been successful.

"It may be well to give the cattle a little of the weak solution of carbolic acid, but this has not been so fully tried as the external use. The washing of the mouth and entire animal with the weak solution may be attended with good results, especially in the early stage of disease; but I know nothing of cure, and speak only hopefully of prevention. The animal seem to have an instinct for disinfection, and lick substances touched with this acid. They must not be allowed to drink it, as when strong, as already said, it blisters the skin, and especially the mouth and tongue.

"We may use other methods. The first and fourth may even be used together, but not with the second.

"2d. Chlorine may be used to fill the atmosphere as completely as carbolic acid was used. It is a refreshing gas in minute quantities, and good accounts of cases of cattle plague prevention by it have been heard of.

"An excellent way to make it is to mix about 1 lb. or more, according to the size of the space, of chloride of lime, with 1½ lb. of potash alum, or of alum cake well pounded. Ammonia alum will not do. The chlorine is given off gradually. Another plan, recommended by Mr. Stone, of Manchester, is to throw a crystal of chlorate of potash into a dish of muriatic acid, when it gradually dissolves and gives off chlorine. (I would add some other suggestions sent by Mr. Stone, but I believe he will make his own ideas public.) The amount must be regulated by the sense of smell. There must be a distinct odour in the cowhouses. A difficulty occurs here. Carbolic acid and cresylic acid can be used in-doors and out of doors, and it is difficult to remove the smell; this chlorine fumigation is not so easily transferred, and it is not clear how to fumigate well the yard and the fold as well as the large masses of manure lying in the fold with any vapours but those first mentioned. For very impure places muriatic acid and black oxide of manganese may be used.

"3d. Muriatic acid may be used to fumigate. There is much to be said in its favour. It is not so hurtful as it appears to be; it is a little irritating at first. It is best made by throwing common salt on vitriol. The same difficulty occurs as with chlorine; it is not easy to fumigate the yard with it.

"4th. Sulphurous acid is made by burning sulphur. This is an easy matter. After all the senses must regulate the amount both for the cattle and those employed about them. Sulphur may be thrown on a shovelful of coals; or Mr. Stone's method for chlorine may be imitated, and crystals of sulphite of soda thrown into weak muriatic acid.

"In revising this, I may add, it may be considered as proved that taracids have a powerful effect in resisting the commencement of the disease. Even then, however, persons must be careful not to go direct from an infected animal to touch a sound one."

It is proper to add Dr. Smith's note to his report:—

"It has been supposed that I had an interest in McDougall's powder; my connection ceased before it brought any return. I never was partner. I had the pleasure of doing much with Mr. McDougall towards showing the use of carbolic acid, and my experience then gained caused me to be consulted in the present case. Mr. McDougall and I took different courses, and he has, I believe, done much good service; but he has not explained to me his other patents fully; they were taken out quite unknown to me, and his soap was first shown me by one of the Cattle Plague Commissioners. The soap seems to me to contain carbolic acid and soda; if so, I can say that it is a very excellent mixture. I am perfectly free, and able to speak without bias on the subject."

Farm Memoranda.

SMETHWICK HALL, BRERETON, CHESHIRE: *Disinfection by Carbolic Acid*.—This farm is in the centre of one of the most affected localities in England. The stock consists of 73 animals; 45 milch cows, kept in houses which have been regularly disinfected since December last; and 15 two-year-old heifers, and 13 yearling calves, kept in fields and open sheds. To these latter no disinfectant whatever has been used, owing to the impossibility of applying it satisfactorily to animals in the open air.

The disease prevailed very severely all round, but no case occurred at Mr. Lowe's farm until February, when one of the 45 milch cows showed signs of illness. Immediate investigation was made, and it was found that one of the cowmen, on the previous day, had attended a *post-mortem* examination of some diseased beasts, and having come directly to Mr. Lowe's houses, afterwards had milked some of the cows. The man was of course discharged instantly. The succeeding day, February 20th, the first cow that the man had milked on the day of the *post-mortem*, refused her food, and all the symptoms of the plague rapidly appeared. Two others in the same house were afterwards attacked, one of which recovered almost immediately: the other was killed as a matter of precaution. A fourth case then occurred in another shed. On inquiry, I found that the first, third, and fourth cows were those which had been milked by the discharged man. The second case occurring in the same shed with the first and third, was evidently either developed from them, or was a case of infection brought from the calves mentioned below. These four cases are all that have occurred amongst the 45 milch cows in the disinfected sheds. Up to the present date the rest are perfectly well. Their health indeed, seems to be improved by the carbolic acid. The cows are very fond of it, and lick it from the woodwork or walls whenever they have an opportunity.

Previous to his discharge, and on the morning of that day, the same man was employed in preparing food for, and feeding, the unprotected Lowhers and 13 calves. A few days after the disease developed itself amongst them, and in a fortnight they were all dead.

A crucial experiment has, therefore, been tried at this farm on the grandest scale. It was, indeed, supplied by accident, but it is none the less satisfactory and decisive. Although it far surpasses in magnitude any trial which an experimentalist dare institute, it fulfils every condition which could be demanded by the most rigid investigator. A farm is chosen in the very hotbed of cattle plague. The cattle on it are divided into two lots, 45 being placed in disinfected houses, and 28 in undisinfected open sheds. The disease is brought into each lot on the same day, by direct inoculation of the virus. Of the disinfected animals, only those actually inoculated fall a prey, whilst of those which are not protected by disinfection the whole are rapidly swept off.

It is scarcely possible to say anything which will add to the satisfactory nature of these results; but I may mention that of the 10 farms immediately surrounding Mr. Lowe's, seven have lost the whole of their stock (amounting to 215), whilst on the remaining three the plague is gradually spreading through the herds.

Accident has carried this grand experiment a step further with the most striking results. A few weeks ago the remainder of Mr. Lowe's 45 disinfected animals were turned out to Grass, and at the same time were removed from the protecting influence of the carbolic acid. Within a few days the plague attacked and killed the whole of them. The complete proof of the value of carbolic disinfection which has been afforded at this farm is cheaply purchased at the loss of all Mr. Lowe's stock. *Report by Mr. Crookes on Disinfection to the Cattle Plague Commission.*

Miscellaneous.

Birmingham Horse Show for July 10, 11, 12.—The liberal prize list was issued in May last, and the popularity of the management, the exertions which have been made to secure the co-operation of the exhibitors, the favourable central situation of Birmingham, and the great number of horses bred in the Midlands to supply the wants of the manufacturing districts, have raised the entries far beyond the most sanguine hopes of the promoters, and in excess of any horse show previously held in England. The managers have been enabled to provide accommodation for 371. The class of thoroughbred stallions will include representatives from several of the leading breeding studs of the kingdom, and the five classes devoted to hunters show a total entry of nearly 120. To use sporting phraseology, in no single class is there a walk over, and in but one solitary instance is the competition reduced to match, whilst throughout the whole prize list, with the exception of two or three agricultural classes, the fields will be very large; for some of the stakes there will probably be 30 starters. Arrangements have been made with Mrs. Beverley (an accomplished horsewoman, whose exploits in the hunting field in the Quorn and Pytchley countries have earned her a high reputation) to show the ladies' hunters and hacks. The judging will be in public, commencing at nine on Tuesday morning, and will be highly attractive, the whole of the horses having to be shown in the ring, and in the hunting classes, tried over fences, and in several other classes they will be ridden or driven in harness, as most suitable.—*Birmingham Gazette.*

—— WE have to lament the death of several well-known and distinguished men during the past few weeks—Mr. Richard Garrett, aged 59, on June 26—Mr. Raymond Barker, aged 88, on June 23—and Mr. Charles Stokes of Kingston, on June 16.

—— Richard Garrett was born at Leiston on February 1st, 1807. His father and grandfather before him conducted there a business which was destined afterwards to assume world-wide operations. He bore the weight of responsibility very early—at a time when most young men are beginning to be initiated into business, he was already conducting and enlarging that of the Leiston firm. When an opening presented itself, he threw himself into it with an ardour of enterprise which could not be surpassed. At comparatively an early age his labours, which had brought him wealth, had also begun to tell upon his constitution, and he left the more immediate superintendence of his immense trade about ten years since to his sons. He had, however, then invested capital in connection with some relations in a new firm in London, and the success of the Camden Brewery within a few years of its formation justified the expectations which his sagacity had formed of it. As a public character his career was very remarkable. No movement in the county could be started for the general good without his throwing himself heartily into it, both with money and labour; no calamity could happen without his being the originator or the cordial supporter of an effort for the relief of the sufferer. Many a family, who would have been well-nigh ruined by the cattle plague, has had to trace to his promptly setting forth a plan of help, commencement of succour, and effectual escape from a ruinous loss. Anything for the benefit of the agricultural classes could reckon upon his most earnest help. Among the public movements which first enlisted his interest was the Royal Agricultural Society of England in its earliest days, and he was one of the first exhibitors at its annual meeting; afterwards he was elected, for many years in succession, as one of the members of the Council, and no one took a more active part in its useful operations. The Smithfield Club also found him a most earnest supporter; he was among the first who promoted and supported its exhibition of agricultural machinery, and with others he projected the Agricultural Hall in Islington, in which its meetings have latterly been held. The Agricultural Benevolent Institution engaged his sympathies, and it was a high pleasure to him, after long canvas, and even paying the subscriptions of many others, to see a less fortunate neighbour secure of a small provision for his declining years. The number of subscribers who owe their connection with the Society to his untiring influence is very large. The same remark may be applied to the Idiot Asylum at Colchester; and among other public movements which owe much to him as their originator was the formation of the East Suffolk Railway. On the formation of the volunteer force he was among the first to promote the movement; he looked on the safe and quiet condition of England as the foundation, not only of his personal success, but of all the prosperity which has distinguished this country, and therefore he felt it to be the duty of every man who valued this state of things loyally and vigorously to uphold it. The country will not easily forget the first great volunteer *fête* in Carlton Park, in September, 1861, when the nobility and leading men of the county, from the Lord-Lieutenant downwards, met a thousand volunteers at the first county review, and dined together afterwards in a large marquee which he had erected in this park. The crowning effort of his life was, perhaps, his association with the committee of the Framlingham Middle-class College. To his liberality was owing the gift of 5000*l.* and a porter's lodge; while the nave of a chapel was erected by his munificence, and several thousands of pounds were contributed by friends and gentlemen whom he had induced to befriend the rising institution. Those who laboured with him can bear witness to the unceasing toil which he ushered in the movement and preceded every committee meeting. If at any committee his opinion always carried weight, it was not merely because of the solidity of his judgment, but because the previous days had been spent in correspondence, journeys, and investigations, which paved the way for an effective decision. He had for many years the great honour of enjoying the entire confidence of the Lord-Lieutenant of the county. His Lordship, in his effort to forward every good movement, has lived to save Suffolk from being proverbially behind in the race, so that it now assumes a foremost rank amongst the counties whose resources are for the most part agricultural. For this purpose Lord Stradbroke deigned to invite throughout, and to accept, unasked, the counsel

of one who, in his business capacity, was well versed in the condition of the county; and thus within the last few years honours came thickly upon Richard Garrett. His main reward consisted in seeing the increased prosperity of Suffolk and the advancement of others; but when he received at the hands of Lord Stradbroke, as her Majesty's representative, the position of a magistrate, and afterwards his commission of deputy-lieutenant, he could not fail to set a high value on such honours; in this capacity he was presented at Court, and never was the privilege given to one who had done more to promote loyalty in his native county. In England, as well as abroad, if he found himself in the foremost rank it was not from preference, but because the active man gets the brunt of the battle. It is not for us to intrude into the domain where the intensity of bereavement is proportionate to the strength of the ties which had united a most large-hearted father to a happy and attached family. On Tuesday night, June 26th, he expired in the simple faith of a Christian.

—— Thomas Raymond Barker died on the 23d ult. at his residence at Hambleden, near Henley-on-Thames, at the venerable age of 88. He was a younger son of John Raymond Barker, Esq., of Fairford Park, Gloucestershire, where the family has been seated for many generations, and where it is now represented by a nephew of the deceased. Mr. Raymond Barker was originally a Commoner of Oriel, and was thence elected a Fellow of Merton College, in this University, and he was one of about seven surviving gentlemen in England who graduated in the last century. He was an urbane and an unselfish man, devoting his time and fortune, for many years past, to the advocacy and aid of religious societies and benevolent objects, as well as to public business. Living near the border of the two counties, he was a distinguished magistrate of Buckinghamshire and Oxfordshire. And his valuable services to the Royal Agricultural Society will long be remembered. *Oxford Journal.*

—— Charles Stokes, of Kingston, died on the 16th ult. For something like half a century he was among the foremost men of his time in improving agriculture and the breeding of stock. As an eminent farmer, the county at large owes to his efforts a deep debt of gratitude. His efforts and his example in themselves did wonders; and as a leading member of the Royal Agricultural Society, of the Smithfield Club, the Farmers' Club, and of various kindred associations, the value of Mr. Stokes's long services can scarcely be over-estimated. His advice and friendly interposition were eagerly sought in his own neighbourhood, and his loss will be generally felt over a wide district. Though 80 years of age, Mr. Stokes was hale and hearty, and regular in the discharge of all those duties which he had taken upon himself, until within a week or two of his death. Among others of his public services, we may mention that for many years he was Chairman of the Shardlow Board of Guardians, and as such a true and consistent friend to the poor, as well as being a just guardian of the ratepayers' interests. *Derby Mercury.*

The Farmer is the great middleman between poverty and wealth, between labour and capital, between the many and the few. In the hour of distress the battle always falls back upon him. According to the constitution he is a responsible man. The landlord is comparatively unknown to the law, whether he lives abroad all his days and is never heard of, or resides in the heart of his property, he may be equally a nonentity. In respect of that property he has scarcely one legal obligation. He is a sleeping partner in the concern, but of course no partner at all. The tenant is looked upon as the universal paymaster. In half-an-hour's walk from almost every market-place in the kingdom you find yourself under the sway of these powerful and responsible potentates. Once among green fields and hedgerows, and the tenant farmer is your immediate superior. The road you are riding upon, the ditch you leap over, and the bridge you cross, are maintained by him. If you damage a fence it is his—the cattle are his—the labourers are in his pay. He greatly assists in keeping the carpenter's bench, the saw pit, and the forge at work—the village shop and the village public houses are chiefly supported by his servants and labourers. If profits fail, he has to draw on his capital to keep things going; if wages are reduced, he has to bear the odium; if dissatisfaction spreads, his ricks are burned; when he can no longer pay wages, he must still pay rates. If there are widows, or orphans, or old men, or cripples, or sick, or vagrants, the tenant farmer must maintain them; if they die without friends, he must bury them. I am not forgetting that land occupied for agricultural purposes is not more than half the real property of this island—in many respects land has an importance and responsibility beyond its pecuniary estimate—from land is the first start of our prosperity, and in land is the last refuge of our social statistics. Who is so competent and rightful an authority, in matters of domestic finance, as the tenant farmer, and who is more entitled to be represented, as directly and honestly, and truly, as can be—and yet, lamentable as it really is, and must appear, in May, 1866, we have no minister of agriculture, no department to whom we could appeal under special circumstances, and from whom the agriculturist could at once receive attention. How many slaughtered animals would now be grazing on rich pastures, and producing food for man, that now lie buried in the ground, under orders from the veterinary inspector. If there had been an authority to act when the cattle plague first appeared in this country, how many animals would be living that are now dead, how many homes would be now occupied, with happy faces, that are now desolate—how many rich pastures that remain unstocked would be seen with living animals; how many families that would have been basking in sunshine, under the genial rays of a father's heart, are now scattered helpless over the land, and their guide passed to a lunatic asylum! *Captain Horsell before the Swindon Farmers' Club.*

Calendar of Operations.

JULY: *Haymaking.*—Some years ago (1861) a correspondent of the *Agricultural Gazette* complained that among the costs of making ten acres of hay near London, his bailiff had charged 3*l.* 8*s.* 6*d.* worth of beer. The charge was preposterous—a gallon of beer per acre during mowing, and as much during haymaking, is a liberal allowance; while in good weather the whole cost of mowing, and making, and ricking, exclusive of horse labour, ought not to exceed 10*s.* per acre. Another correspondent, however, expressed his surprise at this estimate:—Having 400 acres to secure, he could never get it done much under 30*s.* an acre, with the aid of haymaking machines and horse rakes, but not mowing machines. He had this year let 150 acres for 23*s.* an acre, and had found horses, carters, and machines, and it did not pay the contractor.

Now in answer to this it may be repeated, that 10*s.* per acre is the cost at which the cutting and making of large quantities of hay in Gloucestershire is often let, barring only the employment of the farm teams in carrying it; but the cost no doubt varies both with the crop and the wage of the locality. When 2*s.* and beer is a satisfactory wage, and one ton per acre a satisfactory crop, haymaking must cost less than where 3*s.* with beer and a couple of loads per acre are the wage and crop respectively.

The following is information recently received on this point from Gloucestershire farmers:—(1) The first occupies a dairy farm of two or three hundred acres in the Vale of Berkeley. He has "no accurate account of what it has cost" him in any one year for haymaking, but he states what he "considers it has cost per acre annually." He always mows from 100 to 120 acres a year, and generally lets his Grass "to mow and make, at 8*s.* an acre, with a horse and hay tedder to go over it once." Without this machine he must give 9*s.* at least, and he considers it costs him 2*s.* an acre for beer and cider in addition to this, and then 2*s.* more for his men to stack it away, making with the machine 12*s.* an acre, and without it 13*s.* an acre. This does not include thatch, "for which probably 1*s.* an acre more must be charged." We know this farm perfectly, and know its tenant to be one of the best dairy farmers of the district.

(2) Mr. Harrison, of Frocester Court, who occupies one of the best dairy farms in Gloucestershire, extending over about 500 acres of the rich calcareous loam stretching from the oolitic hills into the Vale of Gloucester, has been kind enough to give the following particulars of his experience during the last ten years in the cost of haymaking:—

In 1851 the whole cost in manual labour, *i. e.*, mowing, making, carrying, ricking, thatching, over 123 acres, was 7*s.* 6*d.* per acre. In 1852 the cost over exactly the same extent was 8*s.* 8*d.* per acre.

In 1856 the whole cost of mowing and making (including some acres of clover), "thatching and all," was 8*s.* an acre over 145 acres. In 1857 the whole cost over 154 acres was 6*l.*, or about 8*s.* an acre.

In 1859 the mowing machine was used in addition to the hay tedder and horse rake, and the whole cost of manual labour in mowing, making, carrying, ricking, and thatching 170 acres, was only 6*s.* an acre. The quantity of beer and cider consumed is about two gallons per acre during the whole process; but of course it and every other item of the cost varies immensely with the weather. Where that is difficult the process is correspondingly tedious and expensive. But the figures given state accurately the whole cost incurred in the years which have been named. The following particulars of crops and labour may be added. The weight of hay per acre on this farm is put at from 20 to 30 cwt. per acre. The same men all the year round are employed, and extra hands (excepting a few women) are rarely engaged at haymaking time. The men have the same wages as at other periods of the year, viz., from 11*s.* to 12*s.* a week. Cider is given to them in addition during this harvest work. From 8*s.* to 10*s.* an acre is the ordinary rate of the neighbourhood for contracts to mow and make hay; but the plan is not generally approved of. If the weather be fine it can be made for less, and if not, the persons engaged to make it for you are rarely a sufficiently large party to make the most of the favourable intervals, and the hay is spoiled. In the case of two seasons whose details have been supplied, the labour of making 145 and 154 acres respectively lasted between mowing and thatching from June 14 till August 1, and from June 5 till August 7, respectively. The cost of mowing has been generally 2*s.* 6*d.* per acre, with 9*d.* extra for beer and cider.

It must be added that, in the case of Frocester Court Farm, a large quantity of the hay is placed in barns, which saves the cost of thatch.

Notices to Correspondents.

OPEN BOTTOMED FRONTS.—*Scrub.* The following are Mr. Mechi's directions.—*Open Bottoms.* The boards must be 4 inches wide, 2⅜ inches apart, inch openings. *Sides, and Pans.* 3 inches wide, ¼ inch thick, ¼ inch openings. Cross pieces to which the planks are nailed about 2 feet apart. The planks may be rather thinner and narrower, but my experience tells me they are better as above. I suspended a great stream with heavy bullocks. I have at present, on leases, no calves (1¼ inch openings), 30 bullocks, 150 pigs, 100 sheep. Oak, or hard wood is preferable to Fir.

WEED SEEDS.—*A W.* Your plant is the Anthyllis vulneraria, Lady's Fingers, the seed is that of Ranunculus arvensis, Corn Crowfoot, sometimes called Hungerweed. It belongs to a poisonous family, and though we have no experience of its powers, we should be much afraid to use it for feeding purposes. Much better burn it, as if thrown in the yard for the fowls to pick out the corn, it will ultimately get to the manure heap, and thus a mischievous weed may be sown on the farm. *B.*

THE HYDROPULT,

Weighs but 8 lbs.

An Invention for Throwing Water by Hand Power.

(SECURED BY ROYAL LETTERS PATENT).

PRICE LIST.

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COMPLETE WITH BRASS CYLINDERS AND JAPANNED STIRRUP	1	12	6
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The Price "Complete" as above, includes 2½ feet Suction and 3 feet Delivery Hose, Galvanised Wire Strainer, Hose and Small Jet.

THE HYDROPULT

is invaluable for use in the GARDEN for

WATERING BEDS,
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DROWNING OUT INSECTS,
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CAUTION.

IMPORTANT TO THE PUBLIC.—The extensive sale of the Hydropult has excited the cupidity of so-called respectable, but in reality unprincipled Manufacturers, who are now pubming on the Public worthless imitations of the Hydropult, and through their connections are enabled to place said devices on exhibition, and for sale, in many of the principal Ironmongery and Seed Establishments throughout the city and provinces. These devices resemble in many respects the Hydropult in appearance, and are calculated to deceive the unsuspecting. The Inventor therefore issues this Caution, and respectfully intimates that parties wishing to purchase the Hydropult should examine the machine offered for sale, and see if it has attached thereto a label, with the following words—"The Hydropult, Yoke's Patent, manufactured only by GRIFFITHS & BROWETT, Birmingham. Charles Pomeroy Button, Proprietor, 142 and 143, Cheapside, London." Unless this label is attached, the Machine is not the Hydropult.

Prospectuses, with Testimonials, on application.

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USEFUL, ORNAMENTAL, UNIQUE.

The novelty and utility of this Invention consists in a Revolving Cover, so constructed that by turning the knob on either side of the Basin, it can be covered or uncovered instantly, the lid disappearing into a receptacle or false bottom, thus not only having the lid ready for instant use, but obviating the necessity of its removal from the table. The Butter Cooler can be used for a Sugar Basin.

Price, in white metal, electro-plated, £2 2*s.*

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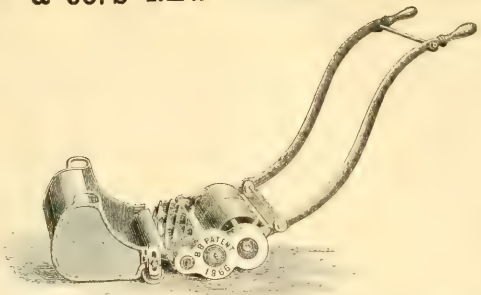

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PERFECT SATISFACTION,

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☞ J. B. BROWN AND CO. have pleasure in mentioning that their B B LAWN MOWER ordered for the Gardens of Windsor Castle has given so much satisfaction, that another B B MACHINE of a larger size [a 24-inch Machine] has just been ordered. A Second B Machine this Season [a 24-inch] has also been just supplied, by order, for the Gardens of His Royal Highness the Prince of Wales at Sandringham—June 26.

The Machine combines all the latest improvements in Lawn Mowing Machines, being simple in construction, very light, silent in movement, easily worked, and so strong and durable as to be literally unbreakable,—an all-important feature in Machines of this class; the ordinary cast-iron being entirely done away with, and malleable iron substituted, in all breakable parts, and every part being accurately numbered and made to standard gauges. The workmanship and finish are also of a superior character, the entire Machine being quite equal to a revolution, so to speak, in Lawn Mowers. The Machines are all guaranteed to give perfect satisfaction in every respect.

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PATENT B B HAND MACHINE.

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10-inch Machine £3 10 0	*Easily Worked by a Boy.*	
12-inch Machine 4 10 0		
14-inch Machine 5 10 0		
16-inch Machine 6 10 0	*Ditto by a Man.*	
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42-inch Machine 28 10 0		
36-inch Machine 24 10 0		
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New Improved Horse, Pony, and Donkey Boots, wholly of Leather, as follows:—Horse Boots, 24*s.*; Pony Boots, 21*s.*; Donkey Boots, 16*s.* per set.

*** *Every Machine sent out is warranted to give ample satisfaction, and, if not approved of, may be at once returned.*

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HER MAJESTY THE QUEEN,

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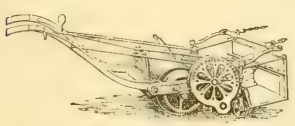
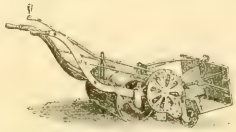
AGAIN ON FOUR SEPARATE OCCASIONS DURING THE SEASON OF 1865 BY HER MAJESTY THE QUEEN

ONCE BY HIS MAJESTY THE KING OF HOLLAND;

AND ONCE BY HIS MAJESTY THE KING OF PRUSSIA.



HORSE MACHINE.



PONY MACHINE.

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PRICES, including Carriage to any Railway Station or Shipping Port in the Kingdom.

SHANKS' NEW PATENT HAND MACHINE.

Width of Cutter.		Easily Worked.	Silent Movement.
10-inch Machine	£3 10 0	*By a Lady*	4*s.* extra.
12-inch Machine	4 10 0		
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Width of Cutter.		Easily Worked	Silent Movement
16-inch Machine	£6 10 0	*By a Man or Two Boys*	4*s.* extra.
19-inch Machine	7 12 6	*By a Man and Boy*	
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Width of Cutter.		If with Patent Delivering Apparatus.
25-inch Machine	£12 10 0	.. .. 25*s.* extra.
28-inch Machine	14 10 0	.. .. 30*s.* ,,
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Silent Movement, 12*s.* 6*d.* extra; Boots for Pony, 21*s.* per set;
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36-inch Machine	22 0 0	.. .. 30*s.* ,,
42-inch Machine	26 0 0	.. .. 40*s.* ,,
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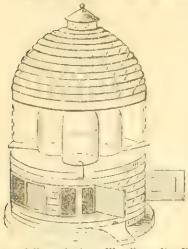

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JAMES PHILLIPS AND CO. beg to submit their REDUCED PRICES as follows:—

GLASS for ORCHARD HOUSES.

As supplied by them to Mr Rivers, to the Royal Horticultural Society, and to most of the Nobility, Clergy, and Gentlemen of the United Kingdom.

Every Box contains 100 feet. The prices only apply to the sizes stated.

Squares 20 by 12, 20 by 14, 20 by 15.

	Price to the foot.	21 oz.
Fourth quality	14s. 6d.	18s. 6d.
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					4ths.	5ths.	6ths.
11 by 9	12 by 9	13 by 9	14 by 9	15 by 9	s. d.	s. d.	s. d.
12 „ 10	13 „ 10	14 „ 10	15 „ 10	16 „ 10	12 6	11 6	10 6
13 „ 11	14 „ 11	..	..	..			
14 „ 12	15 „ 12	15 „ 11	16 „ 11	..			
18 „ 12	19 „ 12	16 „ 12	17 „ 12	..			
16 „ 13	17 „ 13	20 „ 12	21 „ 11	..			
19 „ 13	20 „ 13	18 „ 13	..	..	14 0	15 0	17 6
16 „ 14	17 „ 14	21 „ 13	..	..	16 to 17 6, to the trade.		
19 „ 14	20 „ 14	18 „ 14	..	..			

These are prices inclusive the Boxes, which are not returnable.

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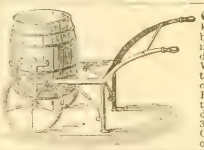

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in some important particulars for this Season.

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24 Gallons,	£6 10 0
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10 Gallons,	£2 15 0
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No. 36. IRON FORCE PUMPS for raising water above their level, or Watering Yards, Gardens, &c., through hose—2½-in., 59s.; 3-in., 65s.; 3½-in., 77s.; 4-in., 89s.

No. 36½. FORCE PUMP on BARROW, recommended for its great portability and simplicity of construction. £5 10s.

No. 42. WARNER'S PORTABLE PUMPS on Folding Legs, are of a superior construction.

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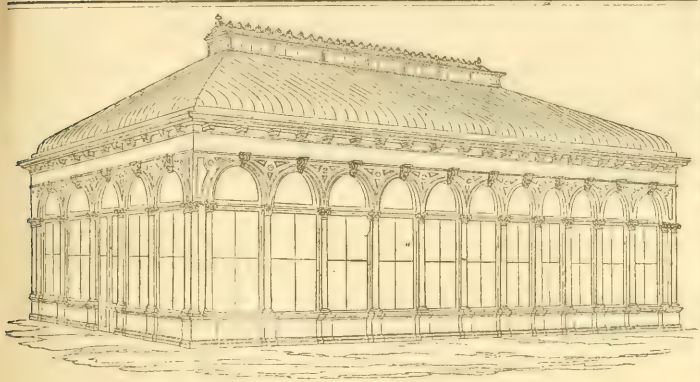

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To Nurserymen, Gardeners, and Florists.

TO BE DISPOSED OF, by PRIVATE CONTRACT, in consequence of the death of one of the Firm, the STOCK, GOODWILL, &c., of a well-established NURSERY BUSINESS, with a first-class connection of upwards of 30 years standing, in one of the most important and fashionable Seaside Towns of England. It consists of about 64 Acres of Land in a high state of cultivation, three Greenhouses, three Propagating houses, and 11 Pits, all well stocked with Saleable Stuff, Specimens, Epacris, Erices, Azaleas, New Holland Plants, Ferns, Bedding Stuff, &c. The Nursery comprises a superb Collection of Camellias, Pæonies, Palms, and Pinks, and an extensive and unrivalled stock of Gladioli, for which this Nursery has a first-class reputation. Also a large assortment of Coniferæ, Ornamental Shrubs, and General Nursery Stock. The above also comprise the usual Sheds, Stables, &c., and is within a few minutes' walk of two Railway Stations and Steamboats, affording easy communication to all parts of England and the Continent. The Stock to be taken by Valuation, or as agreed, and any *bona fide* communication will meet with attention. Immediate possession could be given.

Principals only may apply by letter to FLORA, care of Messrs. Cowdell & Grundy, Solicitors, 21, Abchurch Lane, London, E.C.

To Horticulturists and Florists.

TO BE LET, situate within 15 miles of London, a capital GARDEN, having about 1000 yards of WALLING, 10 to 12 feet high, several FORCING HOUSES, comprising in length about 200 feet, and 70 PITS 200 feet. There is a good though small DWELLING HOUSE, Gardeners' Cottages, and Sheds and all necessary Outbuildings. The whole, comprising about 6 Acres, is in excellent order and condition, and early possession may be had.

Mr. NORTHCROFT, Estate Agent, Kingston-on-Thames, is authorised to give orders for viewing to those persons only who may be desirous of renting, and who on making application for such orders give satisfactory references of their respectability.

To be Disposed of, the Royal Nurseries, Great Yarmouth.

MR. J. C. STEVENS has received instructions from Mr. Jas. Youell, of the Royal Nurseries, Great Yarmouth, who are retiring from business, to offer for SALE, by Private Contract, the LEASE and GOODWILL of their well-known BUSINESS, which has been established upwards of 20 years, and comprising a very extensive Stock, the Stock of HARDY and GREENHOUSE PLANTS, consisting of Camellias, Azaleas, Epacris, Ericas, New Holland Plants, Ferns, Bedding Stuff, &c. The NURSERY comprises a superb collection of Carnations, Picotees, and Pinks, and an extensive and unrivalled stock of Gladioli, for which this Nursery has a first-class reputation. Also a large assortment of Coniferæ, Ornamental Shrubs, and General Nursery Stock. The above also comprise the usual Sheds, Stables, &c., and is within a few minutes' walk of two Railway Stations and Steamboats, affording easy communication to all parts of England and the Continent. The Stock, &c., may be taken at a Liberal Valuation, or, as agreed. Immediate possession could be given.

For further particulars apply to Mr. J. C. STEVENS, Horticultural Auctioneer and Valuer, 38, King Street, Covent Garden, who can strongly recommend the above to be re-mentioned esteem.

Sales by Auction.

SALE THIS DAY AT HALF-PAST 12 O'CLOCK PRECISELY.

Importation of Orchids from the Rio Negro.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on SATURDAY, July 7, at half-past 12 o'clock precisely, by instruction of Mr. J. Linden, of Brussels, a valuable Collection of IMPORTED ORCHIDS from the Rio Negro, comprising many choice varieties. Also a small Importation of Orchids from Assam, and another from Mexico.

On view the Morning of Sale, and Catalogues had.

Importation of Orchids from New Grenada, and

THREE CASES FROM MELBOURNE IN FINE CONDITION.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY, July 10, at half-past 12 o'clock precisely, an importation of 50 CASES of VALUABLE ORCHIDS, consisting of ODONTOGLOSSUMS, EPIDENDRUMS, ONCIDIUMS, and other Orchids just arrived in splendid condition from New Grenada. Also about 60 fine Tree Ferns, including Dicksonia antarctica, Alsophila australis, and other varieties just arrived from Melbourne.

On view the Morning of Sale, and Catalogues had.

Important Sale of Established Orchids.

MR. J. C. STEVENS begs to announce that he has received instructions from W. C. Paterson, Esq., of Glasgow, to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., without reserve, on THURSDAY and FRIDAY, July 19 and 20, at half-past 12 o'clock precisely each day, in consequence of change of residence, the whole of the valuable and extensive collection of ORCHIDS, comprising examples, many of them large specimens, of all the finest kinds in cultivation. More detailed particulars in next Advertisement.

On view the Morning of Sale, and Catalogues had.

Highly Important Sale of Established Orchids.

MR. J. C. STEVENS begs to announce that the following is a list of some of the principal ORCHIDS in Mr. W. C. Paterson's well known Collection, and which will be SOLD by AUCTION on THURSDAY and FRIDAY, July 19 and 20, at the Auction Rooms, 38, King Street, Covent Garden W.C.:—

Acanthophippium	Miltonia Regnelli
" Boxallii	Odontoglossum Alexandræ
" Lawrenceanum	" de Vos' Hallii
" Limbyanum	" Cervantesii
" Lobbii	" cuspidatum
" Sanderi	" cordatum
Angræcum sesquipedale	" Dawsonii
Cattleya Bowringiana	" Hallii
" Eldorado	" Lemoinianum
" Forbesii	" nebulosum
" maxima	" pulchellum var. New Grenada
" Rucker	" Pescatorei
" superba	" Phalænopsis
" Warneri	" roseum
" Warscewiczii (white)	" triumphans
Cœlogyne cristata	Oncidium Barkeri
Cypripedium barbatum superbum	" Triumphans
" caudatum	Oncidium Baueri
" concolor	" cucullatum
" Dayanum	" haematochilum
" Lowii	" Lanceanum superbum
" Sedenii	" sarcodes
" Spicerianum	Phalænopsis amabilis
" venustum	" cornu-cervi
Dendrobium Dalhousieanum	" Luddemanniana
" Devonianum	" Schilleriana
" Farmeri	Saccolabium blumei
" densiflorum	" curvifolium
" Ruttiforum	" guttatum
" Lowii	" Johnsoni
" macrophyllum giganteum	" violaceum
" Mooreanum	Trichopilia crispa
" pinnatiferum gigantenm	" suavis
Epidendrum cinnabarinum	" Turrialbæ
" prismatocarpum	Uropedium Lindenii
Lælia autumnalis grandiflora	Vanda Batemanni
" cinnabarina	" cærulea
" elegans	" suavis alba
" flava	" Sanderiana
" Lawrenceana	" insignis
" new sp.	" Lowii
" purpurata	" Sanderiana (Veitch)
Masdevallia veitchiana	" tricolor Hallii
Matelea picturata	" &c., &c.
" Lindleyi (albino)	

On view the Morning of Sale, and Catalogues had.

PRELIMINARY ADVERTISEMENT.

Elmham Hall, Norfolk.

SALE OF SOUTHDOWN SHEEP AND NORFOLK RED POLLED CATTLE.

MESSRS. J. AND E. BROCK are honoured with instructions from the Right Hon. Lord Sondes, to submit to PUBLIC COMPETITION on THURSDAY, September 6, his ANNUAL DRAFT of SOUTHDOWN SHEEP and NORFOLK RED POLLED CATTLE, comprising—

50 SHEARLING EWES

50 " SHEARLING SHEEP

100 EWE LAMBS

100 WETHER LAMBS

30 SHEARLING and 12 SHEAR RAMS, which will be Let on the "Ratisbon Plan."

29 BLOODERED IN-CALF HEIFERS and YEARLING BULLS.

The Southdown Flock has been established upwards of 30 years. Rams from the Flocks of the late Jonas Webb and Henry Overman have been used, and hitherto some of the best Rams from the Flocks of Messrs. Heasman, the Earl of Radnor, and Sir Wm. Throckmorton, and the Elmham Herd of Red Polled Cattle is believed to be one of the oldest in the Kingdom.

Particulars will be given in future Papers, and upon application to Mr. PEARSON, or of the Auctioneers, at their Offices, Oxwick, Fakenham.

HOTHOUSES FOR THE MILLION,

AWARDED A PRIZE MEDAL, 1862.

INVENTED AND PATENTED BY THE LATE SIR JOSEPH PAXTON.

MANUFACTORIES: { LONDON; NEWTON in CARTMEL, LANCASHIRE; GLOUCESTER; COVENTRY; PAISLEY; and ABERDEEN.

COMBINE SIMPLICITY, CHEAPNESS, AND DURABILITY.

FULFIL ALL THE REQUIREMENTS OF HORTICULTURE.

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"Nothing can be more easy than to build them, nothing more simple than to remove them."—*Daily News, May* 22, 1862.

"We do not know in what other way so much interesting amusement, pleasant exercise, and luxurious profit, can be obtained as these 'Hothouses for the Million' are calculated to afford."—*Bell's Weekly Messenger, August* 23, 1862.

SELECTED TESTIMONIALS.

"Grosvenor House, May 19, 1863.

"The Marquis of Westminster writes, in reply to Mr. Hereman's note, to say that he has much pleasure in informing him that the Glass Houses for Peaches, &c., which he constructed for him in Dorset, 1860, have fully answered their purpose, and prove very satisfactory."

"Killarney Gardens, February 1, 1866.

"Gentlemen,—I have pleasure in giving you my report in favour of your excellent Hothouses

"In the range erected January, 1865, I had fine Peaches and Nectarines last August, and my trees have every appearance of an abundant crop this year. With the new sashes you lately supplied, the range is now 232 feet in length, and I consider it a most useful addition to these gardens. Your Houses have many advantages; they are light in appearance, and effectually exclude wet with the small slips; the ventilation is excellent, and readily opened with the machinery. They are easily erected and very cheap, and have given perfect satisfaction. I shall feel a pleasure in recommending them.—I am, &c.,

"MESSRS. HEREMAN & MORTON." "GEORGE BREEZE [Gardener to Viscount Castlerosse]."

"Inverary Gardens, May 21, 1863.

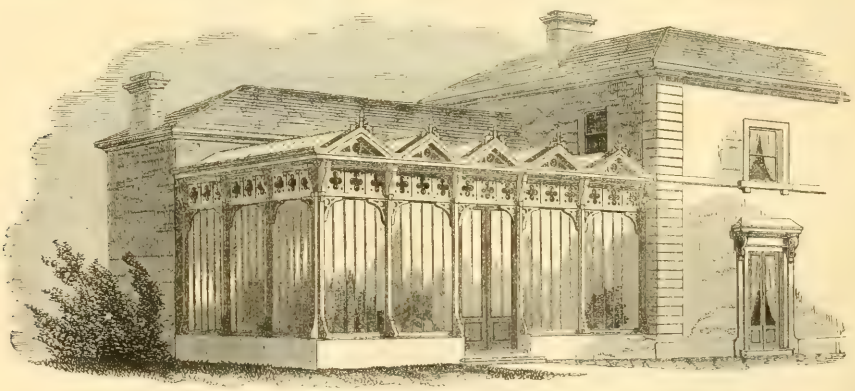
"Dear Sir,—I have much pleasure in bearing testimony to the efficiency of the Lean-to Glass Houses which you erected here for covering in Peach and Fig trees. Although our wall is 17 feet high, the fruit sets regularly over the whole surface, and, with the command of ventilation these houses have, fruit can be forwarded or retarded at pleasure.—I remain, &c.,

"MR. S. HEREMAN." "JOHN CAIE [Gardener to His Grace the Duke of Argyll]"

"Kingfield House, Carlisle, January 27, 1866.

"Gentlemen,—To the Lean-to Vinery supplied by you in October, 1861, Mr. Ewart wishes to add three more sashes and ventilators. As we commence to force about the middle of February, you will much oblige by having them forwarded without delay. I am glad to say the Vinery gives great satisfaction, has been very successful, and gave extraordinary good crops for the last three seasons, and *each* of the last two crops I am sure would pay for the house. I must also add that the quality of wood and workmanship was far above my expectations.—I am, &c.,

"MESSRS. HEREMAN & CO." "MARTIN SUTHERLAND [Gardener to J. Ewart, Esq.]."



View of Ridge and Furrow-roofed Conservatory, 30 feet by 15, and 15 feet high to Cornice, attached to a Plain Mansion.

☞ *Plans prepared to suit different styles of Mansions, and to special dimensions.*

ILLUSTRATED CIRCULARS with LISTS of PRICES of the PATENT ROOFS, also ESTIMATES for HEATING APPARATUS, ORNAMENTAL CONSERVATORIES, GREENHOUSES, &c., to Special Designs, can be had on application to

MESSRS. HEREMAN AND MORTON, 7, PALL MALL EAST, LONDON, S.W.

The SECOND EDITION of A HANDBOOK of VINE and FRUIT TREE CULTIVATION, as adapted to the above Patent Hothouses, containing Illustrations, Hints for Heating Houses, and General Directions for Cultivation, &c., may be had of Mr. HEREMAN, price 1*s.*; post free, 1*s.* 1*d.*

"The portion of the Book devoted especially to the Cultivation of Fruits will be found particularly valuable to Amateurs, and there are few Gardeners, however practical they may be, but may gain some hints from it which may be of infinite service."—*Floral World, August*, 1863.

Editorial Communications should be addressed to "The Editor." Advertisements and Business Letters to "The Publisher," at the Office, 11, Wellington Street, Covent Garden, London, W.C.
Printed by WILLIAM BRADBURY, of 13, Upper Woburn Place, in the Parish of St. Pancras, in the Co. of Middlesex, and FREDERICK MULLETT EVANS, of No. 11, Bouverie Street, in the Precinct of Whitefriars, City of London, Printers, at their Office, Lombard Street, Precinct of Whitefriars, City of London, and Published by them at the Office, No. 11, Wellington Street, Parish of St. Paul's, Covent Garden, in the said Co.—SATURDAY, July 7, 1866.

THE GARDENERS' CHRONICLE
AND
AGRICULTURAL GAZETTE.

A Newspaper of Rural Economy and General News.

No. 28.—1866.] SATURDAY, JULY 14. {Price Fivepence. STAMPED EDITION, 6d.

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ROYAL HORTICULTURAL SOCIETY, SOUTH KENSINGTON.

NOTICE.—A MEETING of the FRUIT and FLORAL COMMITTEES will be held on TUESDAY NEXT, July 17, at 11 o'Clock. Mr. WENTWORTH BULLER, F.R.H.S., will deliver a LECTURE on the Method of Growing Orchids, and the Effect of Double Glazed Houses on their Growth, at 3 o'Clock.

Band of the Royal Horse Guards. Admission 2s. 6d.

Genuine Garden and Agricultural Seeds.

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New and Genuine AGRICULTURAL, GARDEN, and FLOWER SEEDS. Special prices and advantageous offers on application.

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CHARLES TURNER has healthy young Plants ready of all the leading kinds, which if planted at once will ensure a crop of fruit next season.

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VINES, from EYES.—Extra strong well-ripened Canes of all the best sorts. Prices, &c., on application.

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REBECCA, the finest BEDDING GERANIUM ever raised. Plants ready in May, price 5s. each.

See WM. PAUL'S SPRING CATALOGUE.

PAUL'S Nurseries, Waltham Cross, London, N.

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H. BOYCE begs to inform his Friends and the Public that he still has some fine PLANTS in 32-pots, well adapted for stock or decoration. Free by Parcel Post, 12s. per dozen.

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Pink Seed.

STUART AND MEIN are at present supplying the above, saved by Mr. Keynes, Salisbury, from his celebrated collection of named Show Flowers. Price per packet, 1s. 6d. and 2s. 6d.

Kelso, N.B.

J. IVERY AND SON beg to announce that their DESCRIPTIVE PRICED CATALOGUES of AZALEA INDICA, HARDY BRITISH FERNS, ROSES, CONIFERÆ, GRAPE VINES, and SEEDS, may be had on application at their Dorking Nursery.

FINE SPECIMEN and HALF-SPECIMEN HARDWOODED and ORNAMENTAL FOLIAGE STOVE and GREENHOUSE PLANTS.—Exhibitors and gentlemen furnishing Conservatories are invited to inspect our Collection of the above, which is large and in very fine healthy condition. Prices moderate.

T. JACKSON & SON, Nursery, Kingston, Surrey.

MAURICE YOUNG'S DESCRIPTIVE LIST of Conifers, New and Rare Hardy Plants, Ornamental Trees and Shrubs, Rhododendrons, Japanese Novelties, Forest Trees, and Roses, forwarded on application.

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B. S. WILLIAMS' NEW PLANT CATALOGUE, containing many really good novelties, and carefully selected LISTS of STOVE, GREENHOUSE, and HARDY PLANTS, is now ready and will be forwarded post free to all applicants.

Victoria and Paradise Nurseries, Holloway, London, N.

WANTED, SMALL YELLOW, or commonly called STRAW-COLOURED HYACINTHS. Send particulars and price per bushel to B. Beney, Clapham Road Nursery, Stockwell, S.

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GENUINE NEW TURNIP, 1866 growth. EX. CABBAGE, SAVOY, and other Plants still on offer, which for price and quality cannot be surpassed.

FRED. GEE, Seed Merchant and Grower, Biggleswade, Bedfordshire.

Greenhouse, Hardy and Stove Plants; Agricultural, Flower, and Vegetable Seeds, &c.

ROBERT PARKER invites inspection of his Collections of the above-named, which have been selected with the greatest care. All plants are clean and healthy, and are offered at reasonable prices. Descriptive and Priced Catalogues are published, and will be forwarded to applicants.

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Roses in Bloom.

WM. PAUL'S ROSES are NOW in FULL BLOOM. Inspection respectfully invited. Trains almost hourly from Shoreditch to WALTHAM Station.

PAUL'S Nurseries, Waltham Cross, N.

Roses.

JOHN CRANSTON begs to announce that his fine Collection of ROSES (extending over many Acres) is NOW in FULL BLOOM.

Nurseries, King's Acre, near Hereford.

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The London, Brighton, and South-coast Railway. Two-and-a-half miles from the Uckfield Station.

Roses.

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Every hour by Rail from Bishopsgate to Cheshunt.

Roses in Pots.

PAUL AND SON, in addition to the NEW ROSES of 1866, can offer fine Plants of the finest TEA-SCENTED NOISETTES and best HYBRID PERPETUAL ROSES, in pots, for Planting during present and next month.

Old Cheshunt Nurseries, N.

Lea Bridge Road Nurseries, London, N.E.

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DOBSON'S PRIZE CALCEOLARIA. See *Gardeners' Chronicle*, June 30, page 608.

First-class Seeds.

DOBSON'S PRIZE CALCEOLARIA, 1s. 6d., 2s. 6d., 3s. 6d., 5s.

DOBSON'S PRIZE CINERARIA, 1s., 2s. 6d., 5s.

DOBSON'S PRIZE PRIMULA, 1s., 2s. 6d., 5s.

For Testimonials see page 608 of *Gardeners' Chronicle* June 30.

DOBSON & SONS, Seed Merchants, Isleworth, W.

RAYNBIRD, CALDECOTT, BAWTREE, DOWLING, AND COMPANY, Limited,

CORN, SEED, MANURE, AND OILCAKE MERCHANTS,

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Samples and Prices Post free on application. Prize Medals, 1851, for Wheat; 1862, for "Excellent Seed Corn and Seeds."

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Established 1812.

PROCTOR and RYLAND'S PREPARED BONE MANURES for TURNIPS, GRASS, WHEAT, BARLEY, OATS, POTATOS, &c. and their BONE SUPERPHOSPHATE of LIME are the best prepared and cheapest Manures offered to the Public.

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Works—Birmingham, Warwick, Bristol, and Chester.

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LAWES' PATENT TURNIP MANURE, and BONE SUPERPHOSPHATE of LIME	6	6	0
LAWES' SUPERPHOSPHATE of LIME from BURNT BONE and GENERAL PHOSPHATES ..	5	5	0
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These Manures can be obtained of Mr. LAWES, or through the appointed Agents in all parts of the United Kingdom, at prices varying according to cost of carriage.

Genuine Peruvian Guano direct from the Importers. Nitrate of Soda, Sulphate of Ammonia, and other Chemical Manures.

American and other Cakes at market prices.

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THE LONDON MANURE COMPANY (ESTABLISHED 1840),

Have now ready for delivery in dry fine condition,

CORN MANURE, for Spring Use

DISSOLVED BONES, for Dressing Pasture Lands.

SUPERPHOSPHATES of LIME.

PREPARED GUANO

MANGEL and POTATO MANURES

Also Genuine PERUVIAN GUANO, and NITRATE of SODA, ex Dock Warehouse; SULPHATE of AMMONIA, FISHERY SALT, &c. E. PURSER, Secretary.

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TO BE SOLD, a nearly NEW GREENHOUSE, of the best Red Pine, and Glazed with Plate Glass, 28 feet by 11 feet 6 inches. For further particulars and price apply to Mr. CHARLES MARSHALL, Plumber, Butchery Street, Lincoln.

HOT-WATER APPARATUS, of every description, fixed complete in any part of the country, or the materials, viz., Boilers, Pipes, &c., delivered to any Station.

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HOT-WATER PIPES, at Wholesale Prices, with Elbows, Syphons, Tee Pipes, and every other connection; Wrought and Cast-iron Boilers, Saddle, Conical, Cylinder, TUBULAR, and Elliptic, from 24s. each. Improved Boilers and Iron Stands to use without brick work, 60s. each. Valves from 10s. 6d. each. Patent Valves, Improved Furnace Doors, Furnace Bars, Supply Cisterns, and Castings of every description in stock, at

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Address, JOHN FISHER & CO., West Road Works, Boston, Lincolnsh.

GARDEN ENGINES, Syringes, Lawn Mowers, Rollers, Tiffany, Terra Cottas, Netting, Fern Cases, Bee Glasses, Cucumber Tubes, Fern Shades, &c.

The Garden Repository, 20, James Street, Covent Garden, W.C.

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FOWLER'S PATENT STEAM PLOUGH and VARIOUS CULTIVATOR may be SEEN at WORK in every Agricultural County in England.

For particulars apply to JOHN FOWLER & Co., 28, Cornhill, London, E.C.; and Steam Plough Works, Leeds.

AGRICULTURAL IMPLEMENTS.—Steam Engines, Reaping and Threshing Machines, Harvest Waggons and Carts, Cultivators, Ploughs, Harrows, Drill Machines, Corn Mills, Lawn Mowers, Garden Rollers, Water Barrows, and Horticultural Tools of every description; Corn Bins, Wire Netting, Churns, Forks, &c.

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Larger sizes in proportion. Liberal discount allowed to the Trade.

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"FRIGI DOMO," a Canvas made of Patent prepared Hair and Wool, a perfect Non-conductor of Heat and Cold, keeping, wherever it is applied, a fixed temperature. It is adapted for all Horticultural and Floricultural purposes, for Preserving Fruits and Flowers from the Scorching Rays of the Sun, from Wind, from Attacks of Insects, and from Mormax Frosts. To be had in any required lengths.

Two yards wide	1s. 9d. per yard run
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An improved make, 2 yards wide ..	3s. 9d. per yard.
An improved make, 3 yards wide ..	2s. 8d. per yard run. Also

"FRIGI DOMO" NETTING, 2 yards wide, 1s. 6d. per yard run.

ELISHA THOMAS ARCHER, Whole and Sole Manufacturer, 7, Great Trinity Lane, Cannon Street, City, E.C., and of all Nurserymen and Seedsmen throughout the Kingdom.

"It is much cheaper than Mats as a covering"

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EDWIN COOLING has the pleasure to offer Seed saved from the superb Collection of HERBACEOUS CALCEOLARIAS exhibited by Messrs. Cutbush at the International Exhibition, and which were awarded the First Prize. These Calceolarias were the admiration of all who saw them, being quite unsurpassed for good habit, size of bloom, and beauty of marking. The Seed is now ready for delivery, in packets at 2s. 6d. and 5s. each.

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Edwin Cooling, Seed Merchant, Derby.

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CINERARIA, from finest named varieties, per packet, 2s. 6d. and 5s. 6d. each.

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Orchis maculata superba.

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BUTLER AND McCULLOCH beg to offer Seed of the above, saved only from flowers of great beauty, 1s. & 2s. 6d. per pkt.

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COVENT GARDEN INTERMEDIATE STOCK (True), 1s. and 2s. 6d. per packet.

PURPLE WHITE INTERMEDIATE STOCK, 1s. and 2s. 6d. p. pkt.

All packets of Flower Seeds sent post paid.

BUTLER & MCCULLOCH, Covent Garden Market, W.C.

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ROBERT SIM can now send, post free for six postage stamps, Part I. (British Ferns and their varieties, 36 pages, including prices of Hardy Exotic Ferns) of his NEW and PRICED DESCRIPTIVE CATALOGUE of BRITISH and EXOTIC FERNS, No. 7.

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Chantini	pictum	bicolor superba
Bellemet	picturatum	,, splendens
Troubetskoi	argyrites	Malfaia
Wightii	bicolor	exaltissima violacea.

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100 CAMELLIAS, with flower buds, £5.
100 ,, ,, £6
100 ,, ,, stronger plants, £8.
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100 ,, ,, stronger plants, £6.

AMARYLLIS.

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JAMES GARAWAY AND CO., DURDHAM DOWN NURSERIES, BRISTOL.

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HAS THE PLEASURE TO OFFER NOW FOR THE FIRST TIME

THE FOLLOWING FIRST-RATE NOVELTIES,

SEVERAL OF WHICH FORMED PART OF HIS PRIZE LOTS AT THE GREAT INTERNATIONAL SHOW.

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Price—First Size, 84s. each; Regular Size, 42s. each.

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A most ornamental hardy Araliad from the Amoor River. This noble plant, with fronds 3 yards in length and 2 in breadth, produces a very grand effect. Price 21s. each.

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Price—First Size Plants, 84s. each; Smaller, 42s. each.

Passiflora helleborifolia (Wall.).
Price 12s. 6d. each.

Passiflora macrocarpa (Wall.).
Very robust species, bearing fruits of 8 lb. weight.
Price 12s. 6d. each.

Rhopala aurea and serratifolia.
Two fine and elegant new species from extra-tropical Brazils.
Price 21s. each.

The Plants will be delivered free in London. *Usual discount to the Trade.*

BRUSSELS ROYAL ZOOLOGICAL and HORTICULTURAL GARDENS.

J. LINDEN'S

ESTABLISHMENT FOR THE INTRODUCTION OF NEW PLANTS,

ROYAL ZOOLOGICAL and HORTICULTURAL GARDENS, BRUSSELS, BELGIUM.

ONE HUNDRED QUITE NEW AND FINE ORCHIDS,

Belonging to the most favourite Genera, recently discovered and introduced by M. LINDEN'S Collectors. Among them are new ACANTHUS, BATEMANIA, BURLINGTONIA, CYPRIPEDIUM, HELICIA, fine LYCASTE and MAXILLARIA, crimson-flowered MESOSPINIDIUM, many new and splendid CATTLEYAS and LELIAS, such as the glorious CATTLEYA MAXIMA (true), CATTLEYA QUADRICOLOR and RUCKERI, and LELIA WALLISII. Upwards of 25 new and magnificent kinds of ODONTOGLOSSUM, and an equal number of large flowering ONCIDIUMS, &c., suitable for cool treatment.

Arads.
ALOCASIA ANTHURIUM | CALADIUM COLOCASIA | DIEFFENBACHIA PHILODENDRON, &c.

Bromeliads.
One of the largest Collections of these plants.

Economical and Medicinal Plants.
This Collection contains many new and rare plants useful for the Colonies.

Fine Foliaged and Ornamental Plants,
Such as ARALIA, DIDYMOPANAX, OREOPANAX, PARATROPIA, and SCIADOPHYLLUM, upwards of 20 quite new species; new CYANOPHYLLUMS and SPILÆROGYNES, RHOPALAS and THEOPHRASTAS, in great quantities.

Herbaceous and Tree Ferns.
The largest Collection in Europe; the Tree Ferns are represented by 75 distinct species.

Marantas.
All the best varieties, and upwards of 30 quite new species.

Palms, Cycads, Zamias, Pandani.
This Collection is very extensive, and contains upwards of 50 quite new species.

Tropical Fruit Trees.
The most complete Collection in Europe, and many new and delicious fruits of the greatest interest for the Colonies.

STOVE and GREENHOUSE PLANTS. Several NEW CONIFERS from North Japan, &c., &c.

CATALOGUES will be forwarded by Messrs. SILBERRAD AND SON, 5, Harp Lane, Great Tower Street, on application.

Usual discount to the Trade.

New Hardy Clematises.

GEORGE JACKMAN AND SON respectfully invite an inspection of their Collection of SEEDLING CLEMATIS, which is NOW in FLOWER, and will continue all the Autumn. This Collection contains new and fine varieties that are quite equal to those secured, viz.:—Jackmanii, rubro-violacea, Fortunei, Prince of Wales, Princess of Wales, rosea-bella, and velutina purpurea, each being awarded First-class Certificates by Royal Horticultural or Botanic Societies in London.

Woking Nurseries, Surrey.

NEW BRITISH PLANT—TEUCRIUM SCORODONIA VARIEGATUM. This beautiful variety of the Wood Sage is now being sent out for the first time. It differs from the species in the leaves being rounder and prettily waved or crisped on the edges. Price 1s. each.

NEW NORTH AMERICAN FERN—POLYSTICHUM ACROSTICHOIDES SUBPINNATUM (Moore) — Very handsome, as each. The usual discount to the Trade.

ABEL STANSFIELD & SONS, Nurserymen, &c., Todmorden and Manchester. Letters to be addressed "Todmorden."

THOMAS S. WARE offers SEEDLING PLANTS of the following, at 10s. per 100; 5000 for 20s., package included:—Alyssum saxatile; Lychnis, Scarlet; Lupinus polyphyllus, Lobbii; Pentstemon, Mixed; Antirrhinum, Mixed; Scarlet Geraniums, Mixed flowers; Canterbury Bells, White, Blue, and Double Blue; Rose Campion, Sweet William, Dianthus Diadematus, Double, Mixed, Spotted, and White.

Hale Farm Nursery, Tottenham, Middlesex, N.

PETER DRUMMOND AND CO. (late J. SCOTT), Preston Road Nursery, Yeovil, Somerset, have to offer to intending purchasers upwards of 200,000 BEDDING OUT FLOWER GARDEN PLANTS, including all the leading varieties of Dahlias, Fuchsias, Calceolarias, Pentstemons, Petunias, Lobelias, Petunias, Salvias, Verbenas, &c. And all kinds of Variegated and Variegated-leaved Plants suitable for the Decoration of the Flower Garden, at unprecedented low prices. Descriptive LISTS free on application.

Also SEEDS of every description under the FARM and GARDEN, of the best quality, at moderate prices.

Please address as above.

Brighton and Sussex Seed Warehouse.

EDWARD CARPENTER'S MIXTURES of PERMANENT GRASS and CLOVER SEEDS—Best quality, 36s. per acre; Roshula, light sandy, and 12 lb. Clovers and small seeds per acre.—See testimonials in Catalogue.

Edward Carpenter's RENOVATING MIXTURES for Improving Old Pastures.

PRICED CATALOGUES of KITCHEN GARDEN, FLOWER, and FARM SEEDS took wash.

EDWARD CARPENTER, Seed Merchant and Grower, 96, St. James's Street, Brighton.

Choice Zonal Geraniums Cheap.

W. NORTH having supplied stock of the above, begs to offer good Plants at 6s. (or W. N.'s own selection, 5s.) per dozen, including packing. List of other Plants free for one stamp.

Post Office Orders payable at Lee. A remittance required from unknown correspondents.

Manor Lane Nursery, Lee, Kent, S.E.

New White Lobelia Miss Murphy.

FIRST-CLASS CERTIFICATE ROYAL BOTANIC SOCIETY, July 4, 1866.
,, York, June 15, 1866.

MARTIN AND SON, 7, Market Place, Hull, can yet supply a few hundreds of this very distinct and abundant blooming WHITE LOBELIA, in extra strong plants, at £5 per 100, or 2s. 6d. per dozen, each plant covering from 6 to 8 inches. 500 Numerous testimonials could be given, but they think that of Messrs. Dobson & Sons, of Isleworth, quite sufficient:—

"June 26, 1866.

"Have the goodness to forward as early as possible 100 more of your new white Lobelia Miss Murphy; we have it now in bloom, and have a quantity ordered. It is certainly a very good thing.

"To Messrs. Martin & Son, 7, Market Place, Hull."

The Gardeners' Chronicle.

SATURDAY, JULY 14, 1866.

MEETINGS FOR THE ENSUING WEEK.

TUESDAY July 17 { Royal Horticultural Floral Committee ... 11 A.M. / Botanic Committee ... 2 P.M. / Drill—Scientific Department ... ... 3 P.M.

SATURDAY, — 21 { Royal Horticultural Weekly Show, at South Kensington ... ... 2 P.M.

THOUGH the importance of SUMMER PRUNING in the case of stone fruits, whether grown on walls or in orchard houses, is fully acknowledged in theory, the evidence of one's senses shows that it is not always carried out in practice to an extent which would be beneficial, or with the promptitude which is desirable in a matter of such vital importance to the health of the trees. Hence we are glad to welcome an addition to the gardener's library in the shape of a little pocket volume,* in which, besides much other seasonable information, we find that under the designation of "close pruning," as applied to the Peach tree, this subject is very clearly and forcibly discussed; and we welcome it the more readily, inasmuch as a reference to the chapters devoted to the branch of the subject at which we have hinted, will, we have no doubt, usefully refresh the memories of experienced men, while it cannot but prove extremely instructive to those who are still to be classed amongst the learners.

Though not a novelty, it is within comparatively few years that much attention has been devoted to this subject of Close Pruning or Summer-stopping, which is the same thing: but it has been systematised by certain French cultivators, especially by M. GRIN, of Chartres, who recommends that the young shoots should be pinched back to two leaves, so as to form short spurs, which year after year bear fruits of equal size in every part of the tree. While admitting that good crops are sometimes obtained by long pruning, yet, M. GRIN observes, "nine out of ten fail because they do not possess the constant practice and special science required for such a style of pruning. Some eight or ten successive operations are required in long pruning, all requiring an exact appreciation, which does not,"

* The Modern Peach Pruner. By the Rev. P. C. BERNARD, Author of "[illegible]." [illegible] 1866. 171, Fleet Street.

he says, "belong to the generality of gardeners. On the other hand, close pruning has the immense advantages of simplicity and economy of time and money. There are no tedious tyings-in of the summer or winter wood;" and what is, perhaps, of more importance, "there are few or no amputations of important branches, and this alone constitutes an appreciable gain," for every amputation, however well performed, causes a perturbation in the economy of the tree.

It is obvious that in carrying out this system of pruning, everything depends on the operation being performed at the right moment, and on its being repeated from time to time as may be required, a too sudden check on the one hand, or a too much extended development on the other, being alike destructive of that balance of growth, on the securing of which, the chief merit of the system may be said to rest. Hence, at the season when young growth is active in trees of this character, very close attention and very prompt action are imperative.

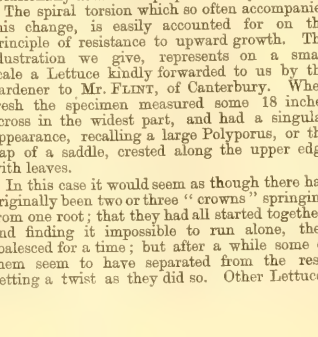
We have already mentioned that the young shoots are to be pinched in to two well-developed leaves, the two or three budless leaves at the base not being counted. This is the general rule which M. GRIN lays down. The time for this first pinching—varying, of course with season and locality—is usually in May, when the young shoots have made about 4 inches of growth. At the second pinching, which takes place when the growth which springs from the axils of the two leaves is about 2 inches in length, the second growth is removed altogether, so as not to favour the production of a strong shoot, which its presence would do, but to direct the whole action of the sap to the nourishment of eyes at the base of the spur. M. GRIN'S system, it must be remembered, has been perfected in the climate of France, and the experience of his expounder, the author of the book we have mentioned, has been gained in the favoured island of Guernsey. A modification of the severe treatment we have indicated, would therefore, it might be supposed, be necessary in our moister and less illuminated climate.

And such M. BRÉHAUT and other experienced fruit growers have found to be the case, the results of the experience of this gentleman being summed up in these words:—"The safest, the most profitable, and the simplest way is to make the first summer-stopping of the shoots at four leaves, as soon as at least six full-sized leaves are developed. These four good leaves will each have a bud or buds in their axils, and there is now length enough in this shoot to satisfy any pruner; for if these four buds are not to bear, where does the long pruner expect his fruit to be? And if they are to bear, what need is there for more growth beyond these than is sufficient, as in the Vine, to nourish the fruit?" When the second growth from this has made four leaves it is reduced to two, and if after this the lower buds are prominent and well-formed, the third growth is to be reduced to one leaf as soon as two are made. If, however, at the time of regulating the second growth, the buds do not appear to be swelling favourably, the shoot is to be cut below the point of junction of the first and second growth, in order to concentrate anew the summer sap, and to develope the lower buds without causing them to burst. This plan, it is stated, is almost sure to succeed.

We turn for a moment in conclusion, to notice a system of leaf-pinching which M. GRIN has explained in the "Revue Horticole." It is applied especially to those strong shoots verging towards "gourmands," which make lateral growth, and are apt to push away their lowest buds too far from the main shoot. When such buds are close home, the shoots may be turned to good account in the formation of a tree, and the way to secure this, according to M. GRIN, is to pinch back the leaves. Such lateral shoots always have as their precursors a pair of small leaves close in the axil of the principal one. If these axillary leaves, just at the right moment, when they have grown perhaps an inch, or rather more in length, have their tops pinched off to the extent of about one-third of their length, the sudden arrest of the sap results in the formation of two or more buds near the main shoot, instead of their being carried outwards by the rapid extension of the free-growing lateral. An easy remedy this, for what would otherwise result in a blemish to the tree.†

HARDLY any malformation is more common among plants than is that peculiar flattened riband-like condition of the stem that is called by botanists FASCIATION. Were we to note down all the plants mentioned in the text books as subject occasionally to this irregularity of growth, we should occupy some columns. It seems to be as common in woody plants as it is in herbaceous ones. There are few who are accustomed to use their eyes but must have seen it in the Ash, whose branches, when so affected, become flattened and crooked at the end, so that one of VIRGIL'S shepherds might have used such a branch for a crook, or a cunning mediæval artificer taken one as a model for a bishop's pastoral staff. The Cotoneaster is another woody plant that is very frequently affected in this way; while among herbaceous plants the Antirrhinum, the Cowslip, and the Asparagus may be cited as peculiarly liable to this change. It might be supposed that the soft quickly-growing stems of herbaceous plants would be more often affected in this way than the harder slower-growing branches of a tree or shrub, and at first sight this would appear to be the case, but when the comparative numbers of the two descriptions of plants are taken into consideration, it will be found, we think, that this fasciation occurs quite as often in the one group as in the other. There is, however this difference—an important one too: in the case of an herbaceous plant it is the main stem or the principal branches at least which are so affected, but in the case of a tree or shrub it is the smaller branches that are affected, so that the plant is not so much distorted as in the former instance. The inference of course in either case would be that it is the younger, softer tissues which lend themselves most readily to this irregularity of growth.

The general opinion is that this appearance is due to the joining together, Siamese twin fashion, of several branches, but MOQUIN TANDON, the great authority in such matters, gave it as his opinion that in most instances there was no increased number of, or fusion of branches, but



simply an abnormal flattening out of one branch, such as happened in the spike of the Peperomia alluded to at p. 459; but although unquestionably some of the cases that we meet with may be referred to the latter category, yet we cannot but think that in the majority of cases the explanation as given above is the correct one. This condition occurs so often in some plants as to be almost the normal state, *e. g.* Sedum cristatum, Celosia, &c., and how much it may be increased by art, let the Cockscomb prove.

LINNÆUS thought that the condition might be artificially produced by forcing a number of young growing branches to pass through a narrow space. But as the condition occurs so often when no such obstacle exists, and as moreover the presence of such an impediment by no means necessarily causes the change in question, we must look for other reasons than those laid down by the great Swedish botanist. Certain it is that the condition once established, may occasionally at least be perpetuated by seed.

The spiral torsion which so often accompanies this change, is easily accounted for on the principle of resistance to upward growth. The illustration we give, represents on a small scale a Lettuce kindly forwarded to us by the gardener to Mr. FLINT, of Canterbury. When fresh the specimen measured some 18 inches across in the widest part, and had a singular appearance, recalling a large Polyporus, or the flap of a saddle, crested along the upper edge with leaves.

In this case it would seem as though there had originally been two or three "crowns" springing from one root; that they had all started together, and finding it impossible to run alone, they coalesced for a time; but after a while some of them seem to have separated from the rest, getting a twist as they did so. Other Lettuces in the same bed are wholly unaffected, so that the eccentricity would here seem to be inborn, and not dependent on external circumstances.

WE have recently received a piece of CHEESE covered with bright yellow and olive-green mould, with a request that we would name the Fungi, especially the former one, and say whether it is poisonous. Now the latter request is a responsibility which we should not like to take upon ourselves, though an instance has occurred, where a species of rose-spored Agaric was mistaken for one with white spores, and brought on when eaten rather a severe illness, in which we were made responsible, whether we would or no, for not having stated whether it was poisonous, or even indicated that it was suspicious, We shall not however in this case venture an opinion, but content ourselves with stating that the olive-green Fungus is Aspergillus glaucus, the common blue mould of cheese, and that the other is a form of Eurotium herbariorum, at least so considered by FRIES, though it has somewhat the air of a distinct species. We may also add a few remarks which will put our correspondent in a position to judge for himself.

It is well-known that certain kinds of provisions when mouldy are extremely poisonous. One or two cases have been frequently reported in which the consumption of a peculiar kind of rolled bacon and dried sausages has been followed by extensive gangrene. It is however very uncertain whether the mischief was due to the mould, or to a peculiar state of decomposition in the provisions themselves. The reports on these cases are very imperfect, and before much can be inferred from them, it is necessary to know not only what the Fungi were with which they were infected, but the precise condition of the provisions in question.

The cheese before us has nothing unpleasant about it as far as regards the small portion sent, either in taste or smell, and when the horrible condition is considered in which a great deal of French cheese not only comes into the market but appears at table, where it is always covered with a bell-glass till wanted, lest the smell should become intolerable, we should not, on very slight grounds, suspect that poison lurks in the viand. We believe that cheese infested with Torula sporendonema, which becomes in consequence of a bright brick-red, is constantly eaten with impunity. It is, however, much more common on the moist kinds of cheese on the Continent, than on our own drier kinds. The growth of the Aspergillus is artificially favoured in the case of Stilton cheese, in which portions infested with the Fungus are carefully inserted with a cheese taster. We should not, therefore, very readily believe in cheese being unwholesome, merely because attacked by these ubiquitous parasites.

It may not be uninteresting to remark, that the Fungus communicates a bright lemon tint to the paper in which it is placed, which calls to mind a similar circumstance in the little bright orange-coloured Truffle, Hydnangium carotæcolor. We take this opportunity also of remarking that Balsamia platyspora, a minute Truffle, with a very peculiar scent, has lately occurred in Northamptonshire under some Beech trees, where it was detected from its being greedily scratched up by squirrels. *M. J. B.*

—— WE extract the following remarks on the late INTERNATIONAL HORTICULTURAL EXHIBITION from the "Revue Horticole":—"The Rose is one of our [French] national glories. Nearly all the varieties at present cultivated in Europe originated in France and bear French names. It is fortunate for us that we have this consolation, for we must confess that our neighbours have in this matter read us a lesson. We have given them the rod for them to beat us with!" On the other hand, with reference to PELARGONIUMS, the writer considers that his countrymen owe nothing to the English, as the French can produce, in as short a time, as fine plants as in England. As to AZALEAS, it is said that such successful culture of these plants is not to be expected in France, owing, the writer thinks, to inferiority of soil and to the different quality of the water Our greenhouse and stove plants, especially the Arads, also excited the writer's admiration. We shall probably have to make other citations from this report, which is not yet concluded. The "Belgique Horticole," like the "Revue Horticole," criticises the arrangement of the central vista, which should have been more open, and complains of the want of a sufficiently extensive general *coup d'œil*. Like his French colleague, the writer in the Belgian journal pays homage to the Roses, and enters a passing protest against the system of torturing Azaleas, Pelargoniums, &c., by the too rigid arrangements now in vogue. At the same time he admits that our plants have a freshness of aspect and a healthy green look which is

wanting on the Continent. It will be a matter of satisfaction for the Committee, and the supporters of the Exhibition and Congress to know that both one and the other are spoken of by the foreign journals as having surpassed in attraction and interest anything that has been done before, while the heartiness of the welcome accorded to our recent guests has evidently produced a most favourable impression. This week the Volunteers have been following in the steps of the horticulturists in acts of international courtesy.

—— Some time ago Mr. EARLEY forwarded to us a TULIP (Le Candeur), which from press of other affairs we were then only able to examine superficially, but on closer scrutiny we find it to be interesting to horticulturists, as a four-headed Tulip would be an acquisition to bulb growers. Here are four fully developed blossoms proceeding from one bulb and apparently from one stalk, which however shows traces of its compound nature here and there, and is invested by nine or ten leaves, the lowermost of which almost completely encircles the stem. The interest of this flower in a physiological point of view is very great, to make which apparent we must call attention to the ordinary course of growth in a Tulip. A Tulip bulb in the spring has under ordinary circumstances a central flower stem with a single flower, and encircled at its base by four or five fleshy scales, nestling in the axils of some of which are placed the rudimentary bulbs for the next season's growth, so that there are at least two generations—the parent bulb which produces the flower, and the offshoots intended for another season's growth. Now in the Tulip before us, if we are correct in our interpretation, the young people have been endeavouring to emulate their parents and to produce their flowers during their first season, and they have succeeded, but they will have to pay the penalty by a shorter life, and by the inability to produce new bulbs in their turn. The arrangement of the leaves and the grooves and other indications of coalescence on the stalk bear out the view we have taken of the formation of this Tulip.

—— Through the exertions of Mr. CONSUL SWINHOE a granite MONUMENT has been erected at Amoy, China, to the memory of Mr. RICHARD OLDHAM, an assiduous botanical collector in Japan, Formosa, &c.. The "Journal of Botany" gives a copy of the inscription, written by Dr. HANCE, as follows:—"In memoriam RICARDI OLDHAM, qui Manchuriæ, Coreæ, Japoniæ oris, insulæque Formosæ virgineis sylvis, botanices causa summo cum successu sedulo perlustratis, hic tandem gravi valetudine oppressus multisque fractus laboribus fato succubuit die 13 Novembris, 1864, anno ætatis suæ 26, hocce monimentum posuerunt amici. 'Tempore autem suo metemus non deficientes' (Pauli Epist. ad Galat. vi. 9)."

—— Once upon a time ARAUCARIAS must have been INDIGENOUS to BRITAIN. Mr. CARRUTHERS, in a recent number of the "Geological Magazine," figures a cone of A. sphærocarpa from the lower oolite of Somersetshire, and alludes to another found in Ashdown Forest.

—— We must not fail to notice the publication of two important FRENCH PUBLICATIONS relating to Botany and Horticulture, viz., the "Elements of Botany," by M. DUCHARTRE; and the second volume of Messrs. DECAISNE and NAUDIN'S "Manuel de l'Amateur des Jardins." Of these we hope soon to render an account.

— Dr. HOOKER was elected a corresponding member of the French Académie des Sciences in the section of Botany, on the 18th of June last, having obtained 32 out of 37 votes. The other candidates were M. DE BARY, of Fribourg; M. GASPARINI, of Naples; Dr. ASA GRAY, of Cambridge, Massachusetts; M. PARLATORE, of Florence; M. PRINGSHEIM, of Jena. The Editor of *Les Mondes* observes: "We have been greatly surprised not to find on the list the name of M. GOEPPERT, of Breslau, who has made the Botanic Garden of that town a perfect model—one which ought to be imitated everywhere."

STRAWBERRY GROWING IN KENT.

IN Kent hundreds of acres are devoted to the growth of this fruit, and sometimes in one year a forest is converted into a Strawberry plain. In the latter case the labour connected with establishing a plantation of Strawberries is great. First, the axe has to be used, the large timber becoming the property of the landlord; then the mattock has to be applied to grub up the underwood, which is a complete thicket, and much of this is burnt on the ground. When duly prepared, the land is planted with Strawberries, an operation which generally takes place in the autumn. The distance of 2 ft. 6 in. is allowed between the rows, and 1 foot 6 inches between the plants. This leaves a clear space round the latter, and, owing doubtless to not over-crowding, the plants are seldom higher than 6 inches, and bear enormous crops. Some growers keep their ground so clean that a barrow-load of weeds could not be picked off a dozen acres. Before the fruit begins to ripen, straw is neatly placed round the plants; if it is long, it is cut. After all the fruit is gathered, the straw is raked off when dry, and stacked for another year; half-decayed dung is also used, and put on early in the spring, but the supply is too limited for its use to be general, and straw, especially when new, has a decidedly better appearance.

The plants are renewed every four or five years. The sorts chiefly grown are Eleanor, Goliath, Alice, Elton Pine, British Queen, and Sir Charles Napier. Alice is becoming a favourite. Another variety called Count is highly spoken of; this I believe to be Comte de Paris.

In my rambles I was curious enough to inquire who grubbed up woods and planted Strawberries in their place? To this I could not get a satisfactory answer, but I was informed that Strawberries proved the better crop. At first only a few square yards were converted, now there is a colony of Strawberry growers, and in some instances the land has been under Strawberries eight or nine years at least. What strikes one most is the variableness of the soil—one soil contains about 40 per cent. clay, another patch may be termed sandy loam, and a barrow-load of stones might be picked off a few square yards. Another kind I noticed to be much impregnated with humus or peat. A handful taken up and pressed presented an appearance like that of the ball of a plant potted in half loam and peat, with a mixture of sand; and I think I shall not err if I say that it contained 50 per cent. of peat. As regards crops, their difference in appearance is not great; those on the first-mentioned soil appeared the best.

Many will doubtless be anxious to know if this branch of horticulture pays. Your correspondent Mr. Forsyth's calculation would perhaps not be far off the mark if the growers could sell all at the first railway station, but the produce has to be conveyed to London, a distance of 16 or 17 miles, and sold wholesale; yet Strawberry-growing pays. In the first place cultivators pay the gatherers 25*s.* per week, and a great boon to the working man these Strawberry grounds are. An owner of 50 acres perhaps employs from 25 to 30 persons, chiefly men, for two or three months, while a farmer with an equal amount of land would employ no more than two or three, paying them about 15*s.* per week. Strawberry growers no doubt find themselves pretty well repaid, for it was hinted to me that the owner of about 50 acres had cleared 1500*l.* last year.

Some might surmise that the past week being so showery would be detrimental to the Strawberry grower, but it is quite the reverse. The rain has caused the fruit to swell to a great size; the flavour however is deteriorated, but as they are sold by measure, size is to the grower's advantage. All the fruit stands out from the leaves, and is gathered at all times, unless it is really too wet for the men to stand out; if left a week ungathered only few would decay. If an order is given for a large quantity for preserving, of course in that case the weather is studied a little.

I find that some of the growers have planted Filberts amongst the Strawberries. These stand about 10 feet apart. They are probably actual owners of land that do this, or otherwise hold it on lease. This again will prove very profitable, and when the ground has got tired of its burden of Strawberries, the Filberts will be in good bearing order to take their place. Fine orchards might be formed in this way, but as in most cases the land is liable at any time to be taken from the tenant, he would not as a rule incur that expense. *W. P. R., Holwood, Bromley, Kent.*

A CHAPTER ON MOLES.

As these are very troublesome in many gardens, I trust a few remarks upon them may be generally acceptable to your readers. Mr. Read (see p. 613) is not the only one who has failed in trapping them. I therefore have the more pleasure in propounding a new mode of destruction, which cannot be better expressed than in the London street cry of "Catch 'em alive, oh!" Neither is this so difficult as might be imagined. Armed with a knowledge of the mole's habits and modes of working, a spade, a keen eye, a light tread, patience and dexterity, victory over the mole becomes almost certain. The house of the mole consists of a kind of fortress or citadel of two stories in height. It is generally found in a sheltered and secure position. Between the basement and upper story there are various openings, affording ready means of escape in case of attack or alarm. Proceeding from the mole's castle, at generally nearly right angles from each other, are two main roads; along these all moles must travel that enter the house. They may be termed turnpikes, and the toll exacted from all travellers is, that if they meet another mole they must either back into the nearest siding, or pay for their courage or temerity the heavy penalty of their life; for these royal roads are never made wide enough to allow of two moles passing each other. From these main thoroughfares, other 'country' roads diverge in all directions. These lead to, and also largely constitute, the mole's hunting grounds. Ordinary moles under ordinary circumstances are often content with these runs for weeks, or, it may be, months; hence it often happens that after a number of mole hills appear, no more are made for a long period. But unfortunately the mole is a pugnacious, voracious, and somewhat volatile little velvet gentleman. There are also amorous, ambitious, and simply and entirely mischievous moles. From sheer love of fight, gluttony, flirtation, acquisition of new territory, or mischief, many moles are at the most unseasonable and inconvenient times and places, constantly employed in extending their lines. It is these moles that I propose exterminating. Irrespect the quiet old mole that goes his usual round through the grounds he has formed by his labour and skill, pounces upon, skins and eats his delicious dinner of worms, and then retires to sleep, or creeps forth beneath the pale moon to his sweet dessert of snails off the dewy Grass. But these others—well, we want to get them, that's all. To this end, we must attack them in their most vulnerable point—that is, in their new territories—where they are weak, isolated, with only one mode of retreat. Necessity also compels them in these to give visible intimation of their presence. There goes the mole a few inches, seldom more than a foot, below the surface, making a new line, either for food, love, or empire; here also stands a man, spade in hand, ready to throw him out, and it seems a mockery of our strength and skill to doubt which side should gain the victory. Yet the chances in a first encounter would be that the mole would escape. His senses of smell and hearing are most acute. He also moves when chased or frightened with amazing rapidity. The first condition of success is a careful, light, tip-toe approach; the next is that he must be attacked in the rear; the third, that you must pierce right down through the run; and the last, that you must dig faster than the mole, and beat him in a fair race of speed. The satisfactory result will be that the mole will be in your hands, dead with fright, or killed (for they are very easily killed) with your firm eager grasp.

I should be glad to learn what your readers think of my recipe for catching them alive. I can vouch that it is perfectly successful, and not bad sport. It is almost as exciting as an encounter with a 16-lb. salmon or a gallop after the hounds. My first hunt of this kind was without spade or any tool whatever. I attacked the mole with my fingers, and their eager length and energy beat him in his own sphere, and grasped his life out in the excitement of victory. But will the game always show? and what proportion of blank hours may be expected? Well, not many. I don't think that even "Goldy" knew it, and possibly our modern naturalists may laugh at my theory now; but old John, my East Suffolk labourer, who first instructed me how to catch moles alive, knew perfectly well that the troublesome moles worked only once every four hours; 4, 8, and 12 o'clock, A.M. and P.M., were their times to a minute. John was prepared for all accidents, for he always declared that if they did not come they *ought* to have done so, and that the reason they did not was either "that they had eaten too much last time, that they had met another mole, that they were fighting, courting, or had young, or very likely a hawk or owl had picked him up last night, master." Let those laugh that win. I boldly affirm that John was in the main right. Moles, though their times of working are largely determined by the character of the soil, changes of weather, conditions of their food supply, breeding times, &c., will generally be found engaged in the acquisition of new territories about the times here given. All my own hunts have taken place about noon. I advise Mr. Read to try that time, and to begin at once. Showery weather is most favourable, as during rain the moles work much nearer the surface than they do in dry weather or in winter. The reason of this is doubtless twofold—the food is nearer the top and the mole is fond of water.

One word in reference to Mr. Read's failure in trapping. It requires a thorough knowledge of their runs to succeed in this. It is useless to set traps except in their main pathways. The roads through the hunting grounds inosculate with each other in all directions, and if the mole sniffs the slightest danger, he at once takes another path and avoids the trap. In his royal roads it is different—he is almost compelled to pass through these on his outward and inward journeys. He has also run in these so long that he rushes along with the greatest confidence. Should he have any fear, the difficulty of making a new main road is great, and the chances are that he would sniff round, then brave the danger, and so get caught.

These royal roads are larger than the others, and are much broader. They may generally be distinguished, when found, by the absence of hills. Thus their great highways are shielded from observation, and hence they generally escape the intrusion of the tyro. This accounts for the general failure of amateur trapping.

There is yet another mode of destroying moles—that is, in a young state in the nest. The nests are generally formed of moss, roots of trees, or grasses, and are distinct and often distant from the domicile. They are not always surmounted by a hillock, but when they are it is much larger, and generally occupies a central position among the others. The young moles are produced in April, and from that till the end of June is the best period for digging them out. From four to six will be found in a nest, five being an average number. Of course, when the moles are wise enough to leave their nest without the large hillock, this mode of extermination is hopeless. My decided opinion is that for excitement, certainty, despatch, and success, there is no mode equal to "catching 'em alive, oh!" Whether all, or any, or what proportion ought to be destroyed in the interests of cultivators, is altogether another question, which might usefully be discussed on a future occasion. It is obvious that they must be speedily, and, if possible, irrevocably destroyed in a flower garden. *D. T. Fish.*

PERUVIAN CINCHONAS.

WE have been favoured with the following letter for publication relating to the Cinchona:—

"I was glad to see from your letter that the seeds had turned out a success. I was in Peru during some three years, in daily contact with the Cascarilleros (as the quinine bark collectors are called) of both Peru and Bolivia. I always found the Cascarilleros ready to assist in anything I wanted. I went with them on their bark-hunting expeditions far into the interior, and made a collection of plants, leaves, &c., to bring home to Europe, which, however, were all lost in the siege of La Paz in 1863, when our house was completely sacked, being close to the part of the town entered by the besiegers. I only saved the bag of seeds, which, luckily, was in my portmanteau with clothes, and which, fortunately, are from the district considered as the finest Cascarilla of Bolivia; the bark from that part (the head waters of the river Beni) fetching a far higher price than any other in South America, at least so the best China bark merchants assure me.

"As I had not sufficient knowledge of the trees myself, for there are various species of this tree growing everywhere, I trusted to some Indian Cascarilleros whom I knew, and think they did not deceive me when they assured me that this was the finest sort; the seeds were collected in 1861, in the forests on the east

side of the river Massiri, in the province of Laricaja, lat. 14½° S., long. 70½° W. The Massiri is a tributary of the Beni, a principal branch of the Madera arm of the Amazon, and inhabited by the Takana Indians, from whom I received much kindness. They live exclusively along the river, their principal food being fish and monkeys, though some of the nearer ones, as at Huanay, have Maize and Sugar-cane. Cotton, both white and Nankeen, grows everywhere in abundance wild, as a perennial shrub or tree; quality excellent and nearly equal to Sea Island, as I have had them tested in Manchester. They are very clever in making woven articles of this cotton.

"The bark tree is not found along the rivers, but at from 1000 to 4000 feet higher up, either in single trees or small clumps amongst the other trees, easily recognisable by the particular green colour of the leaves, and the Cascarilleros find out the trees by ascending lofty trees or hills, and paying attention to this fact, otherwise the undergrowth of these immense virgin forests would render it impossible to find them. I, with others to assist me, have been half a day cutting a way to one of these clumps. The climate is everywhere intensely hot and moist, and the fevers deadly, especially in the rainy season; the mortality, as may be expected, very great. All the rivers abound in gold; I believe as rich as California. A friend of mine, Don Laurento Villamel, took 1200 oz. of gold (23½ carat) out of about an area of 30 feet square on the river bed.

"I always was in excellent health, which I attribute to being always at work on foot, hunting or pounding the rocks with a hammer. Still I often took three grains of sulphate of quinine in the morning. *David Forbes.*" [We learn from Mr. Howard, the eminent quinologist, that a plant reared from one of the seeds above alluded to proves to be a new and probably valuable kind of Calisaya—the "verde," of which an account was given in Mr. Howard's important communication on the Cinchona barks read at the recent Botanical Congress. EDS.]

THEORY AND PRACTICE OF VENTILATION.

No. IX.

(Continued from p. 611.)

I PROCEED to notice other, and I think better modes of creating an artificial wind (or an equivalent for it) than either screens or fans. If such winds are to become general, they must be easily produced, and as much as possible self-produced. The air itself should be made to provide the line of rails, rolling stock, and motive power for its own conveyance. It does so over the wide field of Nature, and the science and wisdom of men should be able to compel it to do as much for him in the narrow domain of Art. Motion and rest, and the conditions that govern each, are understood; therefore we ought to be able to call into activity or moderate the force of either or both at will. There for instance, in this forcing-house, is a stagnant atmosphere that we wish to move. Heat and cold are also close at hand, but circumstances forbid us making use of either to any great extreme. The external air, for instance, must be excluded. Motion can only be imparted to this volume of air by destroying the balance between its elasticity and density that keeps it at rest. The means at our disposal for destroying this balance is the addition of heat. A connection must be established between the greatest amount of heat that we can safely give, and the utmost amount of cold that we can wisely introduce. The relation between caloric and the want of it must be clearly and definitely arranged. In Nature these things arrange themselves, but in the artificial state of a hothouse atmosphere, where we want a model of Nature's great circulation on the smallest possible scale, and lack some of her most important machinery, we must first of all secure the necessary conditions. These conditions consist in securing sufficient disturbing force and in determining the direction of the circulation; in other words, we have only to see that the hot air and the cold go where we wish them to go. The two extremes must be made to act and react upon each other. Our ordinary modes of heating by hot-water fail in creating sufficient extremes of temperature to cause much wind. Good and efficient in maintaining a regular temperature, it is hardly possible that they could be equally so in creating such an irregularity as to form the basis of a rapid and constant circulation. Leaving these as they are, I think it is possible to supplement them by a hot air current that will answer our purpose. In nearly all modes of heating there is a great waste of heat up the chimney. Some of this might readily be utilised; a cast-iron pipe with one end opening into a cold air drain running along near the bottom of the back wall of the house, could be led up the chimney; its upper end being conducted into the house near the top. By this means a strong current of hot air would be poured into the house. The expulsion of this hot air would draw up the cold, and a vigorous circulation be produced. The upper end of the pipe should be bent into a drain or pipe with several openings, and these openings protected by shields of iron to prevent the hot blast proceeding straight forward against tender leaves. It would be seldom that the air would be heated in such a pipe to 300°, and I believe below this temperature its chemical properties would not be materially altered. Such an arrangement would not only secure a good circulation but economise fuel. Another mode of accomplishing the same object is to lead the flue from the chimney along in the back wall flush with the house, cold air drains from the floor of the house, leading into a chamber above the flue, ensuring circulation as above. Or the whole furnace, flues and boiler, could be enclosed with brickwork or strong iron, having a hot air chamber around them on the principle of a Cockle stove. (See figure, p. 659.) The air could readily be admitted from this chamber to any part of the house, and the cold air from any or every part of the house be conveyed back in drains to be reheated. In some cases drains might be dispensed with, and an opening at the bottom of the chamber, for the admission of the cold air, would suffice. The one point of consequence is to see that the hot air has free egress from, and the cold air equally free ingress to, the chamber. It is also desirable to guard against an excess of heat and of dryness in the air admitted. The Polmaise system of a wet blanket over the orifice for the admission of the hot blast may often be absolutely necessary—nearly always desirable; in fact the mode I am now advocating is simply a supplementary Polmaise for ventilating purposes. For the rapid motion imparted to the air no mode of heating equals the Polmaise. When I visited that famous Vinery 14 years ago the whole of the leaves were in a quiver: I should think the air was bounding off the hot plate through the wet blanket at the rate of 25 miles an hour. The atmosphere had a freshness about it and a bracing effect, that I have never experienced in any other house. The size, consistence, and greenness of the leaves, and superior quality of the fruit, alike proclaimed that they enjoyed the breeze. The only fault I could discover in that admirable mode of heating and aërating, was that the supply of air for the furnace was drawn from the house itself; this, while it doubtless quickened the draught, deteriorated the atmosphere. Elsewhere the cold drains have terminated in the hot chamber, and the fire been furnished with oxygen from the external air, and it has answered admirably. The plans of Polmaise-heating, given in your Volume for 1846, illustrate the plan here suggested for creating an artificial wind in our houses. Perhaps the most perfect of these plans is the one reproduced below. It develops to the full extent the mechanical force of the air.

It will be observed that in the experiments of Mr. Knight, he states that the hand of the gardener can accomplish nearly all that can be done by the wind. He recognised the fact that if a plant is violently moved back and forward by their mechanical force, the result is the same, or nearly so, as if the wind had driven it. In many cases it may be easier to move plants through the air than move the air over them; but with the extraordinary extension of gardening since Mr. Knight's time, and the numberless demands upon the time of gardeners which that extension involves,

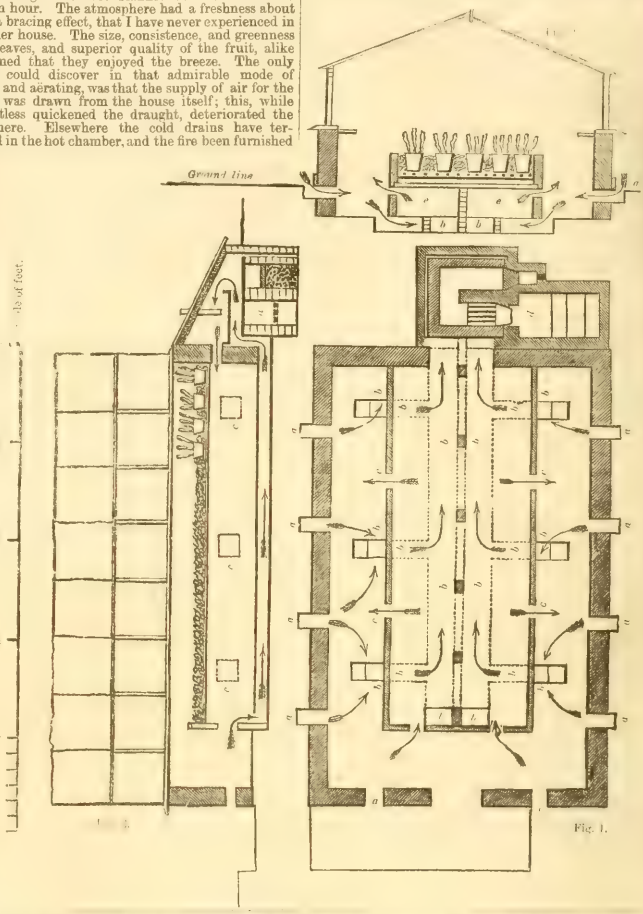


Fig. 1.

Fig. 1. Plan of house, showing a, a, air entrances, cold air drains, hot air chamber, and entrances for air into the house, with furnace, chimney, and direction of currents. a, a, cold air entrances covered at pleasure with a horizontal lid outside the house; b, b, cold air drains, covered at pleasure with sliding covers made of slate; c, c, entrances for hot air into the house, which may likewise be covered at pleasure with doors sliding along the face of the pit; d, furnace.

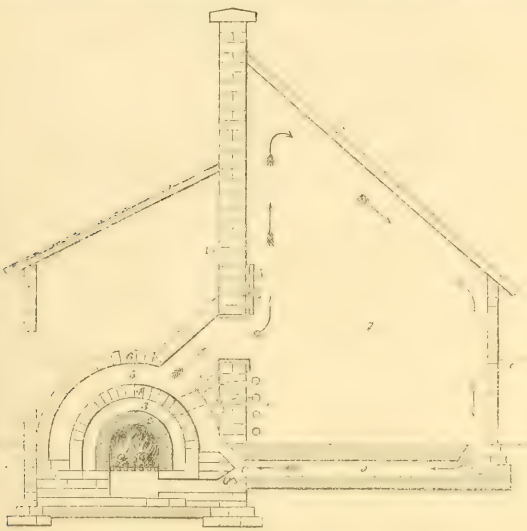
Fig. 2. Section of house, showing bottom heat chamber, cold air drains, and direction of the currents; a, entrance for cold air; b, cold air drains; c, bottom heat chamber.

Fig. 3. Longitudinal section of house, showing hot air chamber, furnace built of Stourbridge brick and surrounded with 2 inches of sand, and covered over with a half-inch iron plate in three widths; the cistern is made of iron, 4 inches deep, in two divisions, and fed through a pipe from above; the roof has a cavity to be filled with sawdust, to prevent the escape of heat; e, entrance for hot air; d, furnace.

it seems hopeless to move plants by hand as he suggests. Still, even that is possible for choice specimens, where the air cannot be readily moved. And it is astonishing how much persevering enthusiasm can accomplish in this way. The best Grapes I have ever grown had on an average two hours' motion, and food from several basketsfull of partially decomposed dung every evening, until they began to colour. The time was devoted to shaking the Vine rods, and presenting fresh surfaces of the dung to the air. From these experiments I came to the conclusion that Vines thrive best with motion. And it is not difficult to impart it to them. It is only necessary to suspend their trellises on chains and give them a thrust with the hand every time they are passed, or a vibratory motion could be imparted by wind, steam, smoke, or lever power. Even plant stages, if not too heavy, and carefully balanced, would be easily moved in the same manner. Strawberry shelves, choice Orchids, &c., are often suspended now, and a slight force of any kind would keep them in frequent motion. It is neither necessary nor desirable that the motion should be constant. The nearer we can approach to Nature in this, as in most other things, the better. In the weighty words of Dr. Lindley, "What right have we to imagine that the breeze, the storm, the hurricane even, are phenomena caused by the Almighty for no sufficient reason? That such disturbances of the elements are incidents either harmless or destructive, but of no moment in the economy of the Universe? That the world would be as well, nay better, without them? Do we not, on the contrary, know that every part of the system of the Universe is dependent on some other part? That there is not an evil of whatever magnitude that has not its counterpoise? And that, regarded as a whole, each natural phenomenon is of indispensable necessity to the free operation of others?" In fact, it is an axiom in gardening that we approach perfection in proportion to our exact imitation of the means which Nature takes to attain her ends. Every great failure has arisen from our not being able to read the book spread open before

us; every advance has been caused by partial interpretations of the mysterious truths which it explains. All the phases of air heating, of air damping, of lighting, of potting, of training, are but so many examples of this. And all our present deficiencies will, by degrees, disappear under a more correct appreciation of natural truths.

As the matter now stands, we heat well, we build well, we light well, we damp well, but we do nothing to keep the air in motion. That is the next point to be looked to with anxiety, for we may depend upon its being one of the cardinal points of successful cultivation. How indeed can we imagine that the eternal shifting of the air and fluctuations of temperature and variations of moisture to which Nature exposes plants all over the world, are unimportant to them, and may be dispensed with, without prejudice to their health. "The importance of this aeration, or internal circulation of air," the Doctor elsewhere remarked, "cannot be over-estimated. It is the one thing which now requires to be secured in order to render our artificial climate natural. A man's reason might indeed tell him that a plant condemned to pass its life in a still atmosphere is like nothing so much as a criminal set fast in an everlasting pillory. In order to secure motion in the vegetable kingdom, currents of air are made to do the work of the muscles, limbs, and volition of animals." The mere mechanical effect of the motion not only assists the propulsion of the sap, but enables plants to exhale more water and absorb more food than they could do in a state of rest. This will be adverted to in future papers. I close this chapter by reminding your readers that the aeration here spoken of is not ventilation in the popular sense of the word. It does not provide for the admission of fresh air—that will be amply provided for hereafter. My object here



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1. Furnace; 2. boiler; 3. flues; 4. tube brick or tiles (on closing flues); 5. hot air chamber, opening into house; 6. covering of ditto; 7. house; 8. door to shut out the hot air blast at pleasure; 9. cold air drain, returning to the furnace or the hot air chamber through an opening at c at pleasure; 10. back wall, with chimney from furnace running up against it; 11. position of the hot-water pipes. To derive the full amount of benefit from the hot air blast, the pipes should run along the back of the house; otherwise the heat arising from the flow pipes in front would neutralise the force of the current of hot air from the chamber, and by a counterpoise of force produce

has been simply to show how we may bring the physical properties of the atmosphere to expend their mechanical force in the perfecting of plant life, growth, and produce, in our glass houses. *D. T. Fish.*

JAPANESE MAPLES.

FEW recent introductions in the way of hardy trees are so promising as the variegated Maples introduced from Japan. Considerable confusion appears to exist as to the proper nomenclature of some of these varieties, and hence we have thought it might be useful to translate the descriptions given in Von Siebold's "Catalogue Raisonné."

Acer dissectum, Thbg., var. *rubrum*, Sieb.—Leaves palmate, their five lobes confluent at the base, linear, sharply serrated, red.

A. dissectum, var. *sanguineum*, Sieb.—Leaves palmate, divided to the base; lobes stalked, pinnatifid, of a blood-red colour.

A. japonicum, Thbg., var. *petiolis viridibus*.—Leaves cordate at the base, orbicular, palmately 9—13 lobed, the anterior lobes of equal length, the posterior ones short, all unequally and doubly serrated.

A. japonicum, var. *Meikets*, Sieb.—Leaves orbicular, palmately cut; lobes lanceolate, doubly serrated, the posterior ones one-third smaller than the others.

A. palmatum, Thb., var. *carneum*, Sieb.—Leaves palmate, deeply five-lobed; lobes linear lanceolate acuminate, entire, flesh-coloured.

A. palmatum, var. *reticulatum*, Sieb.—Leaves palmately five-lobed, veins white netted.

A. palmatum, var. *roseo-marginatum*, Sieb.—Leaves palmately five-lobed; lobes confluent at the base, linear-lanceolate, setoso-dentate, acuminate, rose-coloured at the margins.

A. palmatum, var. *rubescens*, Sieb.—Leaves rounded at the base, palmately five-lobed; lobes lanceolate, acuminate, unequally dentate, reddish.

A. palmatum, var. *rubro-acuminatum*, Sieb.—Leaves truncate at the base, palmate; posterior lobes horizontal, anterior lobes lanceolate, unequally and acutely serrate, with a prolonged red point.

A. palmatum, var. *sanguineum*, Sieb. — Leaves palmately five-lobed; posterior lobes horizontal, auriculate at the base, anterior lobes linear lanceolate, coarsely serrated towards the point, blood red.

A. pictum, Thbg., var. *viride*, Sieb.—Leaves orbicular, truncate at the base, seven-lobed; posterior lobes linear, slightly sickle-shaped, anterior ones oblong deltoid acuminate entire, bright green. This is the wild form of a variegated form described by Thunberg as A. pictum.

A. septemlobum, Thbg., var. *Thunbergii*, Sieb.—Leaves seven-lobed, the five anterior lobes palmate, acuminate, ovate lanceolate, distinct at the base, sharply doubly serrate, posterior lobes slender, reflexed.

A. septemlobum, var. *Koempferi*, Sieb.—Leaves seven-lobed, the anterior ones confluent at the base, lanceolate, acuminate, coarsely duplicato-serrate, the posterior ones shorter, and spreading.

Home Correspondence.

Fertilisation of Rhododendron.—Systematic botanists, ever on the look-out to find some tangible and constant characters by means of which they may discriminate one so-called species from another, are apt to overlook variations in colour, spots, and the like, and so long as they admit their schemes to be arbitrary and artificial, no harm arises; but, in a physiological point of view, these differences in colour, these spots, may be of great consequence, though in themselves of little worth. Mr. Darwin deserves great thanks at least for this, that he has pointed out in many cases the uses of "small things," too insignificant to attract the attention of "hay-making botanists" in herbaria. Now for the Pontic Rhododendron: the uppermost petal is somewhat larger than the rest, stands boldly out at the back of the flower, and is marked with spots; the stamens and style are bent downwards, while the anthers are curved upwards, and open by two little holes at the top. Now, when Master Humble-bee comes, he makes straight for the upper spotted petal; arrived there he dips his snout deep into the recesses at the upper side of the flower above the stamens, quickly exhausts the supply to be found there, and in his exit brushes out the pollen from the holes at the top of the anther on to the stigma, placed just beneath the stamens in the most convenient position for the reception of the pollen. If the anthers opened in the usual way by a long chink, the pollen would not be so easily brushed out, but by the pores at the top, and the upturned position of the anther, the greatest facilities are secured for effecting the due distribution of the flower. *Antirrhinum.*

Tradescantia Fraseriana.—I observe that this Tradescantia is ascertained as a new plant. However it became when it has been introduced to this country more than 50 years, and was known in commerce many years ago? *E. W., Epsom.* [When a plant has been lost and re-introduced, it is in the position of a novelty, though not strictly new. EDS.

Orchis latifolia maculata superba. This fine Orchis was found many years ago on a wet bog at the side of Kilmarnock, and was grown as a thing there in the gardens of the cottagers of the Village. Where it was found, unheeded and unnamed, I cannot say; but during the last two or three years this in excellence as a hardy border plant has been recognised. It has been examined by most of the botanists in the locality, who don't all agree as to its being a mere variety of maculata, some inclining to believe it a distinct species, but from the close resemblance which it bears to maculata we named it some years ago superba on the ground, that from the common one of that name it is. The spikes sent are not so large as we have sometimes grown them, on account of the plants from which they were taken not being thoroughly established. It has been seen in this neighbourhood with a spike of bloom 9 inches in length. *Dreghorn, Ayrshire, Kilmarnock.*

Mr. Boswell Syme reports that this plant seems to be the true O. latifolia, the plant commonly so called being figured under this name in 'English Botany' being O. incarnata. It is a noble hardy perennial, remarkable for its deep colour, and dense spike. EDS.

Pentstemon glaber.—After P. speciosus, this is the best of all the hardy early-blooming species, much better than P. grandiflorus, which has been over-estimated, and which is also more difficult to preserve than P. glaber. It is true that the blossoms of this latter resemble those of P. speciosus, the fact being that that plant is one form of P. glaber, the species itself being very variable. But the habit of the two is very distinct, and dwarfness and compactness of growth are good qualities which generally [illegible] recommendation. *W. T.*—P. glaber is a beautiful hardy perennial, its dwarf habit being a great recommendation. The flowers themselves are very much like those of P. speciosus, and that is no slight praise. EDS.

Cucumbers, Vines, and Melons.—I am much obliged for the remarks you made in your Paper of June 16 in reference to the Cucumber leaves, &c., which I sent you, but I am sorry that you cannot refer me to a cause or cure for the mischief. You kindly draw my attention to the Cucumber leaves being pierced by something like thrips. It would be hard for me to say that there are no thrips in the house, but there are certainly not many. Since I sent you the leaves, I believe that I have found out the cause of non-productiveness in reference to the Cucumbers and Melons. Such is the nature of our water here, that lead cisterns are positively of no use, as they soon become pierced with thousands of little holes. About the middle of December last [illegible] S o'clock in the evening, it was discovered that nearly all the water was out of the pipes, and that something serious was the matter. The fire was pulled out from the boiler, and the houses (Ormson's) were protected as much as possible. Three hands were set to work to discover the cause, when it was found that the return pipe, which is laid with the flow along the garden walk for a different departure, was [illegible] On opening the trench cleared more fully in which the pipes are laid, I found that by some means the bottom or return pipe had got half burged in sand and that it was as rotten as paper, whilst the other portions were as good as the last day they were put down. Water by some means had got in, either from the surface or by means of some leaky joint, and kept the sand moist. After the pipes were repaired, I had them gas-tarred while very hot, and left them exposed for some time. I was very careful not to put them in the houses; the fumes, however (although not strong enough to be smelt), had got into the Cucumber and Melon houses. This I had protected, and in two days I could see the Melons looked better, and began to set their fruit. The Cucumbers also gradually recovered. May not this impure air have been the cause of destroying the respiratory organs, and causing the leaves to look as if pierced by thrips? But nothing of the kind could possibly get into the Vinery in which the Vine leaves are affected, as it is heated by pipes from another boiler (Weeks's) not so painted. *C. W. M.*

Calceolaria Failure (see p. 636). The plan I have adopted for keeping my plants healthy for several years with great success is as follows:—I dip the plants just before planting in Gishurst Compound, mixed in the proportion of two ounces to a gallon of water. This clears them of thrips, green fly, &c. I pick off all bloom and bloom buds at the time of planting, in order that they may get well rooted before they are allowed to flower. I plant in rich soil, or if poor I mulch the bed or ribbon border with very short spent hotbed manure. I water once a week in very hot dry weather. I would just add that as fast as one set of bloom goes off it should be removed to make room for new blossoms and prevent the plants from making an attempt to perfect seed, which will sometimes kill them later in the season. *C. Dunnick, Nurseryman, Rodes.*

Batrachium Lunaria, or Cumana Monnaycat.—I have not heard of this having been discovered in this neighbourhood. It is recorded in a botanical work to have been found on Chobham Common, where the military camp was held a few years ago, but as yet I have not been able to find it there. It certainly is not a common plant, and its smallness and location would render it difficult to be found. Should any of your readers have observed it there, I should feel obliged by their indicating the spot in which it grows, in order

that I may have the gratification of obtaining it. *Wm. Whale, Egham.*

Watering Pots.—Can any of your correspondents tell me where is to be procured a long-spouted watering pot, called the "Norfolk Horticultural Water-pot." It is a patented one, with a spring in the handle, which, by a wire connection, forces (at will) a piston or plug into the nose, thereby lessening the rush of water. I have found this exceedingly useful for many years for watering potted plants, and cannot, after many inquiries, find out the maker or seller. *E. J. H.*

[Those who have this pot to sell should advertise it.]

Root Fungus.—Some years ago I planted several Deodars, one of which, owing to its graceful growth, was a particular favourite. About two years since a change came over this tree; its growth was checked, and in vain I looked out for some cause. A year had passed away before I discovered in the trunk near the ground, signs of Fungus, the bark showing white cracks. The cause of decay was now evident; still I allowed it to remain another year, until this spring, when I cut it down, and my object now is to describe the state in which I found the stem and the roots. The evil had not spread far into the trunk, and had only given a sickly hue to the leaves, but every root appeared to be dead, and under the bark of the root, where we look for the whitening, or young wood, there was the Fungus, presenting exactly the appearance of white paint, and which kept for two months its whiteness unchanged. As near this Deodar a fine Pinus excelsa was growing, I was very particular in clearing away all the affected roots of the Deodar, and in doing so I came upon the healthy roots of other trees. I mention this to show that we must not suppose that the diseased roots of one tree always infect another, which is further proved every day in our woods, where the roots of trees cut down often show fungoid growths, without causing universal disease. *T. C. B.* [It is impossible to name mycelia, and they do not always produce the perfect plant. A Cupressus macrocarpa in our garden was killed exactly in the same way; the mycelium presented precisely the same appearance, but has never made any other progress to enable us to determine to what species or genus it belongs. It is no more possible to say why one tree is attacked by mycelium, while another close at hand escapes, than it is to account for the strange escapes which persons often have when exposed to infection. Such mysteries seem almost incapable of solution. *M. J. B.*]

Maréchal Niel Rose.—This Rose has been shown so many times this season and has been so universally admired, that I am induced to ask those who have had it in their stands whether any of them have bloomed it out of doors. From four dwarf worked plants I have had but one greenish yellow flower bud, and that did not open. Now, gentlemen, do not all speak or write at once—who has bloomed M. Niel without the aid of heat or glass? *John Hopper, Canterbury.*

Horticulturists v. *Botanists.*—I begin to think that horticulturists will in time "take the shine" out of botanists merely because the former are more unanimous. With botanists it is a maxim "to agree to differ." W. A. discovers a new species, and gives it a name. B. says it cannot belong to the genus in which it is placed, for with the aid of a powerful glass he has discovered three small bristles on each alternate petal, nearly at the tip. C. then comes in, and says both are wrong, and that the bristles are hairs, and moreover that they are to be found on every petal—not at the tip, but nearly in the centre. This is not perhaps a true picture, but it is as the old lady said, "very like." When I look over botanical lists (and particularly over the works of dear old Loudon) where varieties without end are made into species, I seem to wish that all could be changed, and that some competent person would take the matter in hand. I fear, however, that it is like our old rubric—not to be touched, for fear. We horticulturists have no fear, for if any mode of culture does not prove sound we at once abandon it, and it is forgotten. With botany it is very different—a genus incorrectly named sticks in our gizzards for a lifetime. Seriously, I believe that horticulture will take much higher rank than it has hitherto done. I have thought so ever since the Congress. *R.*

White-flowered Variegated Ivy-leaved Pelargoniums.—In your report of the Rose Show at Birmingham (see p. 639), you have omitted all mention of a white-flowered variegated Ivy-leaved Pelargonium, which was much admired, and to which a First-class Certificate was awarded. There were only two First-class Certificates awarded by the judges, one for Messrs. F. & A. Smith's Pelargonium King of Tricolors, and the other to my Ivy-leaved L'Elegante just alluded to, which as a decorative plant, either for beds, vases, hanging baskets, or similar purposes, will doubtless prove an acquisition. The plant exhibited was about 18 inches in height and about the same in diameter, and it was covered with flowers. *W. Cunningham, Nurseryman, Burton-on-Trent.*

Pine-apples.—In that part of your report of the Royal Botanic Society's exhibition which relates to Pine-apples, you say (p. 638) that Mr. W. Kemp, gr. to Earl Percy, produced a well-ripened Queen, also a Black Antigua. These fruits were not, however, shown by the grower just named, but by me, and I obtained two Certificates for them. *Wm. Kemp, Gardener to E. H. Bentall, Esq., Heybridge, Maldon.*

Tapioca.—What is this, and where does it come from? Doubtless many who might be able to answer the last question would be utterly at a loss as to the first. Commercial men, for instance, are for the most part acquainted with the countries which produce the several articles in which they trade, if they do not know the sources from whence they are derived. To say that Tapioca is the produce of a plant, or perhaps two plants, bearing the names of Manihot utilissima and M. Aipi, would only be vague information. These species of Manihot are common in Brazil and Peru. They are shrubby plants, growing some 6 or 8 feet high, and having leaves, which are deeply divided into seven lobes or parts, and placed on long slender stalks. It is the root, however, which is the valuable portion of the plant. This is thick and fleshy in both species, frequently weighing 30 or 40 lb. The first of these, the Manihot utilissima, is called the Bitter Cassava; and the second, the Manihot Aipi, the Sweet Cassava. Though the root of the Bitter Cassava contains a large amount of highly poisonous juice, it is still much valued as an article of food, the fluid being effectually removed in the process of preparation. This is done by grating the root on a large grater made of some soft wood, and studded with small sharp pieces of stone. By this process the whole root is reduced to a pulp, which is carefully washed and strained by pressure in a long cylindrical basket-like strainer. The mass is then taken out, and made into cakes of various forms. The washings and pressure remove the venomous juice, and the heat in the process of baking dissipates any poison that might still remain. In this way the Brazilians obtain a wholesome and at the same time a most important food product from a highly poisonous root. Nor are the natives alone benefited by this plant. The finest quality of the tapioca of our shops is obtained from these same roots. Genuine Rio tapioca, indeed, is a very pure form of starch, which is deposited by the expressed poisonous juice and washings of the Cassava meal. It is prepared for trade by granulating it upon hot plates. It is imported from Bahia and Rio Janeiro, and its value and uses are well known to most people. The importance of tapioca has been the means of a spurious kind being brought into the market. This is made from Potato starch, and bears a strong resemblance to the genuine article. At one time a belief was prevalent that the musical boxes, which we all know are made of a black horn-like material, were compressed or moulded Potato pulp. These boxes are, in fact, made of horn reduced to a powder and then heated, and while soft compressed in a mould. Formerly, however, snuff-boxes were imported from Germany which were called "Potato boxes," and were supposed to be made of Potato pulp, but these were really made of a coarse kind of papier maché. None of these boxes are now imported. *John R. Jackson.*

Societies.

REIGATE ROSE ASSOCIATION.—Well-deserved and graceful as was the handsome testimonial presented to the Rev. S. R. Hole on the day of the National Rose Show at South Kensington, in acknowledgment of his exertions in establishing, or rather founding, the first Show, a still stronger appreciation may be seen in the uniform success that has attended the Rose Show since the first establishment, and not the National Rose Show only, but those at the Crystal Palace and at Birmingham, which have, as it were, sprung from the first-named. Nor is there any appearance of the great interest felt in these exhibitions being transitory, as has in time past befallen those of other flowers, *e. g.* the Pulip, but, on the contrary, the interest is increasing and extending in all directions, and betokens a permanency for the love of the Rose and its culture which has never yet been accorded to any other flower.

It is my agreeable duty now to report the first Exhibition of the Reigate Association for the cultivation of the Rose. Although late in the spring before the Association was formed by the exertions of the worthy and respected President, W. Wilson Saunders, Esq., assisted by Bushley Britton, Esq., and an Acting Committee of gentlemen who have directed their attention to Rose culture, the members, their friends, and other visitors had the satisfaction of inspecting a beautiful and interesting display.

The Show was held in the Public Hall, Reigate, on Saturday, June 30. The hall is a new and spacious edifice, well adapted for floral exhibitions, while the simple but effective arrangements of Saturday brought out to the best advantage what was occupied by two parallel tables containing the stands of the members for competition, the sides by similar tables, on which were placed many beautiful plants to be presently noticed, with fine boxes of Roses brought by nurserymen, not for competition, but kindly contributed by them to adorn and bring the Show effective. To Messrs. Paul, of Cheshunt; Mr. Mitchell, of Piltdown, Sussex; Messrs. Ivery & Son, of Dorking; and Mr. John Cattell, of Westerham, the best thanks of the Association are due for their readiness in bringing their collections, which so much contributed to the general interest and pleasure of the visitors to the Hall on the occasion.

Before noticing the awards, and distinguishing the best flowers exhibited, a subject was shown which may or may not, according as future experiments shall prove, exercise some influence on Rose culture: this was a Briar from the Himalaya Mountains, exhibited by W. W. Saunders, Esq. It is of a height of about 4 ft. in length was one mass of white bloom in bunches (corymbs) of eight or ten together. It is quite new to this country, of beautiful foliage and flowers, and of itself worthy of cultivation. It is also perfectly hardy, and of vigorous growth, hence the probability of its being suitable for stocks.

With a view of inducing as great a competition as possible among the members, the schedules were arranged into classes and groups of 24, 18, 12, 9, 6, 3 and 1 varieties, thus offering an opportunity for those possessing few plants to enter the lists. By this arrangement a great number of stands were exhibited, and the quality of the flowers in them was better than if a larger number of blooms had been required.

The following are some of the awards:—

Class 1. Group 1.—24 varieties of any kinds: 1, Dr. Sargant; in this stand were good blooms of Maréchal Vaillant, Chabrillant, Victor Verdier, John Hopper, Queen Victoria; 2, Mr. A. H. Kent, with Chabrillant, Madame Willermoz, Madame Knorr, Beauty of Waltham, Maréchal Vaillant, Souvenir de la Reine d'Angleterre; 3, Mr. Byass.

Group 2.—18 varieties of any kinds: 1, Mr. John Sargant; 2, Miss Laing.

Group 3.—12 varieties of any kinds: 1, Dr. Sargant; 2, Mr. W. W. Saunders; 3, Miss Laing; equal, Mr. R. C. Baxter.

Group 4.—6 of any kinds: 1, Rev. H. Gosse; 2, Mr. R. C. Baxter; 3, Rev. H. Jones.

Tea Roses, 12 varieties: 1, Mr. Wollaston; in this collection were good blooms of Maréchal Niel, President, Souvenir d'Elise, and Narcisse.

Of the Roses exhibited by nurserymen, not for competition, there were many truly noble blooms, fully equalling those previously shown at the Crystal Palace and Kensington.

In the collection of Messrs. Paul & Son, which consisted chiefly of new kinds, the most remarkable were "Madame Victor Verdier, John Hopper, *Alfred Colombe, Alphonse Damaizin, Gabriel Peyronny, Charles Trouillard, *Marguérite de St. Amand, *Duchesse de Caylus, *Xavier Olibo, *Duke of Wellington, Louise Margottin, François Louvat, *Princess Mary of Cambridge, Cantiflola rosea, *Maréchal Niel, *Pierre Notting, *Madlle. Marguérite Dombrain, Belle Normandie, Caravannes de Niames, Gloire de Duchet. As some of the preceding names are probably new to many of your readers, I have marked with an asterisk those that have either been lately proved, or likely to prove first-class Roses in every point.

In the large and well-assorted collection of Mr. Mitchell, the most conspicuously fine blooms were Maréchal Niel, Celine Gonod (Bourbon), *Achille Gonod, Victor Verdier, *Leopold Hausburgh, Claude Million, Queen Victoria, *General d'Hautpoult, Cecile de Chabrillant, Madame Furtado, Pierre Notting, Duchesse d'Orléans, Maréchal Vaillant, La Ville de St. Denis, Louise de Savoie, Devoniensis, &c.

In Mr. Cattell's boxes were Madame Moreau, Josephine Beauharnais, Souvenir de la Malmaison, Sir William Griffiths, Victor Verdier, H. Laurentius, Mrs. Rivers, Madame Julie Daran, Eugène Lebrun (now rarely seen), Beauty of Westerham, a seedling of Mr. Cattell's own raising, a very fragrant and free-blooming variety.

Among the fine-foliaged plants the collection of hardy Ferns of Messrs. Ivery & Sons, of Dorking, must not be overlooked; indeed it always attracts attention wherever shown, as the frequent mention of them, and always in terms of approbation, in these columns proves. As new varieties are obtained every year, there seems to be no limit to the change of form of which these beautiful plants are susceptible, and though, botanically speaking, these changes are considered monstrosities, they are monstrosities that are looked upon with pleasure and admiration by the scientific observer as by the general public, and the great variety and fine culture proclaim distinctly the perseverance and skill of the growers. The following are among the most beautiful of the Ferns exhibited at Reigate, being chiefly Athyriums or Lady Ferns: Athyrium Filix-femina Applebyanum, Barnesii, bifidodes, grandiceps, cristatum, Filix-femina, Fieldiæ, Frizelliæ, grandiceps, Iveryanum, multiceps, Vernonia, and plumosum; Blechnum Spicant strictum; Lastrea Filix-mas cristata and F.-m. Ingramii, Osmunda regalis cristata, Polystichum attenuato-cristatum, P. angulare proliferum, P. a. proliferum Wollastoni, Scolopendrium vulgare crispum, S. v. undulatum lobatum, and many others. In the centre of these were many fine spikes of the Foxglove (Digitalis), very distinct and beautifully spotted, all of them well worth cultivation.

By Mr. Cattell, of Westerham, were shown in addition to the Roses: two plants of the curious Raphanus caudatus, 4 feet high; Abies Menziesii pendula, a very graceful Conifer, suitable for a lawn plant (it is a pendulous variation of the well-known Picea pectinata); Thuja orientalis, a weeping variety of the Chinese Arbor-vitæ; Quercus purpurea, a purple-leaved Oak; and Q. filicifolia, a remarkable variety with Fern-like foliage, very beautiful and distinct.

The following plants were sent by Mr. W. Wilson Saunders, of Hillfield, Reigate: Remusatia vivipara, Anthurium magnificum, Cycas revoluta, Homalonema album, H. purpureum, Alocasia zebrina, Bactris flavispina, Curculigo sumatrana, Maranta variegata, and many others.

By Mr. Simpson, of Reigate Hill, well-grown specimens of Sphærogyne latifolia, Cissus discolor, Aerides odoratum, Caladium Schmidtzii, Begonias in variety, and many others.

At 6 o'clock in the evening the Show was opened free to the operatives and working men of the town and their families, who availed themselves of the privilege in great numbers. The lively interest shown by them during their inspection proved that this regulation of the Committee was duly appreciated by them. The cut flowers were afterwards distributed among those present. *A. H. K.*

LIVERPOOL ROSE SHOW: *July 3 and* 4.—Liverpool is a go ahead place for flower shows, and is evidently in earnest in such matters. Its Spring Exhibitions of Hyacinths and other plants are second to none, and its Autumn Shows for Chrysanthemums and Fruits are worth looking at. The very plucky Committee, with Mr. Tyerman of the Botanic Gardens at its head, and the energetic Mr. R. W. Ker at its tail, as Secretary, took it into their heads that they would this year "go in" for Roses, for a change, and they accordingly put out a liberal schedule, and announced a two days' show as the first rate display. It proved a most praiseworthy beginning; and that father of the Rose Shows, the Rev. S. Reynolds Hole, seemed pleased with it, and was a strong exhibitor in some classes—a judge in others.

In the class for 72 Roses, the 1st prize fell to Mr. Cranston, Hereford, in whose lot were very fine blooms of Dr. Andry, Marguérite de St. Amand, Souvenir de Charles Montault, King's Acre, Admiral Lapeyrouse, Madame Caillot, quite a gem; a superb bloom of Laurent Descourt; Marcella, valuable as a good light Rose, and very fine blooms of Clement Nivard, Madame Julie Daran, Auguste Rivière, Sophie Coquerelle, a very fine Rose; and Madame Charles Wood, very fine indeed. Messrs. Paul & Son, who came in 2d, had Beauty of Waltham, Belle Normandie, Professor Koch, Maréchal Niel, very fine indeed; Madlle. Marguérite Dombrain, very fine; Anna de Diesbach, very fine indeed; Madame Amélie Halphen, Mrs. C. Wood, Madame Caillot, Lord Herbert, Madame Devreux Demille, Alfred Colomb, Catharine Guillot, Claude Million, and Paul Desgrand, all superb blooms. In Mr. Cant's lot there were splendid blooms of Madame Charles Wood, a fine Rose; Madame Boutin, Peter Lawson, a rich scarlet flower, Madlle. Elise Vilmorin, Anna de Diesbach (this kind was fine everywhere), Comtesse de Paris, Maurice Bernardin, and Josephine Beauharnais, a fine light Rose.

We give a list of the principal awards, and the following kinds were amongst the finest shown. By Mr. Cant:—Duke of Wellington, a pretty and promising kind; Madame Julie Daran, Souvenir d'un Ami, Devoniensis, Madame Willermoz, Charles Lefebvre, Dr. Andry, Marguérite de St. Amand, Madame Caillot, Maréchal Vaillant, Lord Herbert, and Comte de Paris. By Messrs. Lane & Son:—Lord Clyde, Vulcan, Souvenir de Lady Eardley, Lœla, Pierre Notting, Anna de Diesbach, Jean Goujon, La Fontaine, Marquis de Foucault, Model of Perfection. By Messrs. Campbell & Sons:—Fine blooms of Charles Margottin, Madame Willermoz, Paul Moreaux, Madame Chas. Wood, and Moire. By Messrs. Paul & Son:—Beauty of Waltham, La Reine, Olivier Delhomme, Madame Vidot, La Fontaine, Mrs. Charles Wood, Baron Anselm de Rothschild, Comtesse de Chabrillant, Alpaide de Rotalier, Gloire de Santenay, Maréchal Vaillant, Comtesse de Serenye, Céline Forestier, François Touvais, Sénateur Vaisse, John Hopper, Madame Caillot, Alfred de Rougemont, Maurice Bernardin, Queen Victoria, very fine indeed; Madame Clemence Joigneaux, Duc de Rohan, Charles Lefebvre, and Comte de Nanteuil. The rest were very fine.

In the class for new Roses there were but two competitors, and the 1st prize fell to Messrs. Paul & Son for a fine collection, the best of which were Princess Mary of Cambridge, in good character; Maillet, Bertha Levêque, a little deeper in colour than Duchess of Orleans; Belle Normandie, another very fine light Rose; Marcella, a grand new Rose, soft flesh tinted with salmon; Monsieur Boncenne, rich shaded violet and crimson, extra fine; Duchesse de Medina Cœli, Duchesse de Caylus, Madame Amélie Halphen, a first-class Rose of last year; and Madlle. Marguérite Dombrain, a fine Rose, of a different shade of colour to Belle Normandie. Mr. Cant obtained the 2d prize with a good lot, the most striking of

which were Dr. Andry, Duchesse de Medina Cœli, Marguérite de St. Amand, Duke of Wellington, and Comte de Paris.

The Amateurs showed remarkably well, and Mr. Hole's and Mr. Evans's two lots of 24's were really fine. Mr. Perry also showed a very fine six and twelve. The best blooms in Mr. Hole's lot were Charles Lefebvre, a very fine Souvenir d'un Ami, Lord Raglan, La Ville de St. Denis, Madame Willermoz, Marechal Vaillant, Madame Bravy, Madame Bell, Madame Masson, Comtesse de Chabrillant, General Jacqueminot, Louis Van Houtte, Mrs. Rivers, Gloire de Dijon, François Lacharme, Madame Domage, La Brillante, Souvenir de la Malmaison, Anna de Diesbach, Souvenir de Comte Cavour, Madame Knorr, Beauty of Waltham, William Griffiths, Cardinal Patrizzi, Victor Verdier, Madame Boutin, and Caroline de Sansal. In Mr. Evans's stands were fine blooms of William Griffiths, General Jacqueminot, Gloire de Vitry, Lord Raglan, Anna de Diesbach, Deuil de Prince Albert, a very beautiful bloom of Madame Clemence Joigneaux, Madame Willermoz, Charles Lefebvre, Madame Bravy, Vicomte Vigier, Souvenir de la Malmaison, Souvenir d'un Ami, Senateur Reveil, a very fine Marguerite de St. Amand, John Hopper, Auguste Mie, Victor Verdier, Comtesse de Chabrillant, Beauty of Waltham, Madame Furtado, Duchesse de Caylus, Louise Magnan, Madame Victor Verdier, Anna de Diesbach, Gloire de Bordeaux, William Pitzer, Madame Charles Crapelet, and Smith's Yellow Noisette. Mr. Perry had very fine blooms of Madame Julie Daran, Madame Joigneaux, John Hopper, Souvenir d'Elise, Sénateur Vaisse, Prince Camille de Rohan, Laurent Descourt, Madame Emain, and Charles Lefebvre.

Upon the bank devoted to the stove and greenhouse plants we noticed a very interesting group of ornamental plants from Messrs. Dickson & Sons, of Chester, consisting chiefly of Japanese novelties, many of which will evidently be acquisitions to our collections in this country. Among the British Ferns, Mrs. Hadwen, Messrs. Stansfield & Son, of Todmorden, and Mr. C. Rylance, made effective displays, and the very large collection from Todmorden contained many rare and fine things. Mr. Armstrong also contributed a very rich collection of hardy Ferns. The plants exhibited by Mr. Baines, gr. to H. Micholls, Esq., were remarkably fine; and Mr. Stevenson, Timperly, showed a splendid Clematis Jackmanni, a perfectly hardy creeper, and a Bougainvillea glabra. Mr. B. S. Williams sent a large collection of plants, including some very fine Tree Ferns, the rare and exceedingly striking Anthurium Scherzerianum, with its peculiar-shaped brilliant scarlet flower; also a beautifully variegated form of the Pampas Grass, some fine groups of Anæctochili, and many other rare things. Mr. Baines contributed a remarkable group of Pitcher Plants. The ornamental plants and foreign Ferns were both rich and numerous, and there were some magnificent specimens of the rarest kinds. Mr. B. S. Williams obtained the 1st prize for 10 Orchids, which included Aerides Lobbii, A. Fieldingii, A. affine superbum, a very fine Saccolabium Holfordii, Vanda suavis, and Cypripedium Veitchii. Amongst a lot of Ferns from Mr. Williams were fine examples of Hymenophyllum demissum, Alsophila species, very distinct and fine, Lindsæa Lowii, Todea superba, and Lomaria gibba. Mr. Armstrong, gr. to Mrs. Hadwen, had some very fine Gleichenias and a Todea pellucida, and Mr. Baines a lot of grand Ferns. Messrs. F. & A. Smith contributed a group of variegated Zonal Geraniums, the most remarkable of which was a very bright leaved specimen, appropriately named King of Tricolors, to which a First class Certificate was awarded.

Two exceedingly fine Queen Peaches and a fine Melon were shown by Mr. Smith, gr. to Mr. H. Walker, of Calderstones, and Mr. Meredith, of The Vineyard, Garston, sent three large bunches of black superbly coloured Hamburgh Grapes.

The following is the list of principal prizes:—*Nurserymen.*—72 Cut Roses, one truss.—1, Mr. J. Cranston, Hereford; 2, Messrs. Paul & Son, Cheshunt; 3, Mr. B. R. Cant, Colchester; 4, Messrs. A. Campbell & Sons, Dublin; 5, Messrs. F. & A. Dickson & Sons, Chester. 48 Cut Roses, three trusses.—1, Messrs. Lane & Son, Berkhampstead; 2, Messrs. A. Campbell & Son; 3, Mr. Charles Rylance, Ormskirk. 24 Cut Roses, three trusses.—1, Messrs. Paul & Son; 2, Mr. Cranston; 3, Mr. John Williams, Wallasey. 24 Cut Roses, one truss each.—1, Mr. Cant; 2, Messrs. A. Campbell & Sons; 3, Mr. Williams. *Amateurs.*—24 Cut Roses, distinct, one truss.—1, Rev. S. Reynolds Hole, Caunton Manor, Newark; 2, Mr. S. Evans, gr. to Mr. C. N. Newdegate, M.P., Arbury; 3, Mr. Charles J. Perry, Birmingham. 18 Cut Roses, distinct, one truss.—1, Mr. S. Evans; 2, Rev. S. Reynolds Hole; 3, Mr. C. J. Perry. 12 Cut Roses, distinct, three trusses.—1, Mr. C. J. Perry; 2 and 3, Mr. Evans. 12 Cut Roses, distinct, one truss.—1, Rev. S. Reynolds Hole; 2, Mr. S. Evans; 3, Mr. Thomas Griffiths, The Laurels, Oxton. Six Cut Roses, distinct, one truss.—1, Mr. C. J. Perry; 2, Mr. T. Griffiths; 3, Mr. Evans. Collection of New Roses, sent out 1864-5 (open to all).—1, Messrs. Paul & Son, Cheshunt; 2, Mr. B. R. Cant, Colchester. 10 Exotic Orchids, distinct.—1, Mr. B. S. Williams, Holloway; 2, Mr. Stevenson, Timperly. 3 Exotic Orchids, distinct.—1, Mr. Baines, gr. to Horatio L. Micholls, Esq., Bowdon; 2, Mr. Leadbetter, gr. to Mr. R. D. Holt, Edge Lane. 18 Exotic Ferns, distinct.—1, Mr. Armstrong, gr. to Mrs. Hadwen; 2, Mr. B. S. Williams. 12 Exotic Ferns, distinct.—1, Mr. Baines; 2, Mr. Smith, gr. to Mr. James Bland; 3, Mr. Armstrong. 6 Exotic Ferns, distinct.—1, Mr. Stevenson. 1 exotic Fern.—1, Mr. Leadbetter; 2, Mr. Smith; 3, Mr. White, gr. to Mr. T. F. Ashe. 3 Tree Ferns, stems not less than 2 feet, distinct.—1, Mr. B. S. Williams. 1 Tree Fern.—1, Mr. B. S. Williams; 2, Mr. Baines. 12 Ornamental Foliage Plants, distinct.—1, Mr. Baines; 2, Mr. B. S. Williams; 3, Mr. Smith, gr. to Mr. Hy. Walker, Calderstones. 6 Ornamental Foliage Plants, distinct.—1, Mr. Stevenson; 2, Mr. Baines.

MANCHESTER HORTICULTURAL: *June* 29 *and* 30.—This, the second great show of the season of this Society, was held in the Botanic Garden. The first day was in all respects favourable; on the second the weather was fine until four o'clock, after which rain fell. The Show, as far as miscellaneous plants were concerned, was good, but its distinguishing feature was the Orchids, of which in no place is such a show to be seen, except in London. It is only when Orchids are shown as they are here, that their beauties can be properly appreciated. The Garden was in excellent condition, and the bedding plants as gay as we sometimes see them later in the season. The exhibition was held in a large house built on purpose for such displays, and a capital place it is for them; it is well shaded, and the plants in it had a highly effective appearance, the two days' show having no bad effect on them. The floors were kept moist, so that there was no dust to spoil either foliage or flowers, an important matter which in general receives too little attention.

In the class of 12 Orchids, Mr. Toll, gr. to J. A. Turner, Esq., had the best collection; it contained a splendid plant of Saccolabium guttatum giganteum, some 2 feet in height, and having several spikes on it 18 inches in length; the showy Lælia purpurata, with six spikes; Vanda tricolor, 5 feet in height, with two spikes; Cypripedium barbatum superbum, 2 feet in height, with wonderfully fine flowers; also the seldom seen Barkeria spectabilis, which few can grow; Cattleya Wagneri, with three fine spikes of delicate white flowers; the rare Cattleya Walkeriana, and others. Mr. Mitchell, gr. to Dr. Ainsworth, had the next collection in point of merit; it contained beautiful specimens of Lælia purpurata, the best Phalænopsis grandiflora in the show, also Aerides Schröderi, A. Lobbii, charmingly coloured; Cattleya Aclandiæ, and Saccolabium præmorsum, all in excellent condition. Mr. Stevenson, who was 3d, had a splendid plant of Saccolabium præmorsum, bearing 13 flower spikes, some of them 18 inches in length, Aerides odoratum, with 30 spikes; Cattleya Aclandiæ on a block, with 11 flowers, and Dendrobium clavatum, with beautiful bright orange yellow flowers.

In the class of 8 Orchids, J. A. Turner, Esq., was 1st with a noble plant of Vanda suavis, 6 ft. in height, and well-bloomed; an Anguloa, a most interesting plant, with eight white spotted flowers; Saccolabium curvifolium, with orange-coloured blossoms; and others. Dr. Ainsworth was 2d with splendid plants of Aerides Larpentæ, A. Veitchii, Cattleya Mossiæ, with fine flowers; Phalænopsis grandiflora; and others. In groups of 6 Orchids, Mr. J. A. Turner was also 1st with a beautiful plant of Barkeria melanocaulon, with 4 spikes 2 ft. in length; Oncidium crispum grandiflorum; the rare Odontoglossum nævium majus, and Saccolabium guttatum, with three fine flower spikes. J. Collings, gr. to — Fernley, Esq., showed a magnificent plant of Saccolabium Holfordianum; also the rare Vanda teres Andersoni, which has a finer flower than V. teres; Aerides Lobbii, and the now seldom seen Oncidium Lanceanum. Dr. Ainsworth had good plants of Cypripedium Veitchii, with fine flowers, Cattleya citrina, and Aerides Larpentæ. Mr. Fellon, gr. to C. Baker, Esq., exhibited Aerides Lobbii, Calanthe veratrifolia, and Vanda tricolor. In the class of single specimen Orchids, Mr. J. A. Turner was 1st with a noble example of Saccolabium præmorsum. Mr. McLean, gr. to — Willert, Esq., was 2d with a beautiful plant of Lælia purpurata, another specimen of which was also shown by Mr. Houghton, gr. to — Kendal, Esq.

Stove and greenhouse plants, though not numerous, were good. In the class of 6 plants, Mr. Houghton, gr. to — Kendal, Esq., was 1st with splendidly-grown plants of Phœnocoma proliferum, 6 ft. high and 4 ft. through; an equally good Erica Fairrieana; Cordyline indivisa, with splendid foliage; and Croton variegatum. Mr. Stevenson was 2d with a magnificent plant of Allamanda grandiflora, bearing no fewer than 300 flowers; Ixora amboinensis, with 100 heads of showy blossoms; and Theophrasta imperialis, with large shiny green leaves. Mr. Kelland, gr. to — Hobson, Esq., showed a grand plant of Cordyline indivisa 6 ft. in height; Genetyllis tulipifera in great beauty, the beautiful Statice Holfordii, and a fine plant of Aerides odoratum. The best specimen Tree Fern came from Mr. Hobson, who had a well-grown Dicksonia antarctica. To Mrs. Cole & Son, who had Ixora coccinea with 30 heads of bloom, was awarded the 1st prize for the best specimen stove plant. Mr. Kendal had a fine plant of Bougainvillea glabra. In the class of specimen greenhouse plants, Mrs. Cole & Son were 1st with a fine Phœnocoma proliferum; 2d, Mr. Kendal, with Erica Paxtoniana; 3d, Mr. Knowles, with Tetratheca verticillata. The best specimen Erica was E. obbata, from Mrs. Cole & Sons; Mr. Kendal was 2d with E. Candolleana.

A Miscellaneous Collection of Plants was shown by Mrs. Cole & Sons, in which were some fine examples of Erica Cavendishiana, Candolleana and Paxtoniana, Allamanda grandiflora, and others. Mr. Kellapd, gr. to — Hobson, Esq., produced a fine show of 6 Pelargoniums, for which an extra prize was awarded. Twelve Hardy Ferns were shown by Mrs. Cole & Sons. Six Pelargoniums, scarlet and variegated, came from Mr. Foulis; and Mr. Ely, Sale, produced a nice miscellaneous collection of scarlet Pelargoniums. Mr. Stafford, of Hyde, exhibited a splendid collection of Miscellaneous Stove and Greenhouse Plants, also some Tree Ferns. Mr. B. S. Williams of Holloway furnished a collection of 100 New and Rare Plants, also some fine Tree Ferns, which were arranged with good effect in the centre of the exhibition. Messrs. Lane & Son, of Great Berkhamstead, exhibited some fine Roses, for which they carried off three 1st prizes.

The show of Fruit was excellent, especially Grapes and Pine-apples. For 2 bunches of Black Grapes, the 1st prize was awarded to Mr. George Silcock. White Grapes were sent by T. A. Beadon, Esq. The best Pine-apples came from C. Bailey, Esq., M.P., South Wales, who had a Providence weighing 8 lb., and — Thornton, Esq., South Devon, who showed a Queen. Best Dish of Peaches, Mr. Dixon; and of Nectarines, — Hopwood, Esq. Vegetables were also shown in good condition. They were neatly arranged, and formed by no means the least important feature of the Show.

GLASGOW AND WEST OF SCOTLAND HORTICULTURAL: *July* 11.—The third great Show of the season, under the auspices of the Society, took place under very favourable circumstances, the day being all that could be desired, and the attendance as numerous as on former occasions. There were not the same handsome tables of plants that we are accustomed to see, partially owing to the advanced period of the season, but mainly owing to prizes not being offered for a miscellaneous display. The individual specimens were very good, but they failed to present a harmonious whole, owing to the gaps that occurred between plant and plant, and the want of handsome foliage intervening. The chief prize takers for twelve specimens were Mr. D. Mitchell, gr. to his Grace the Duke of Hamilton; Mr. Murray, gr. to W. D. Tod, Esq., Ironbank, Partick; and Mr. Dickson, gr. to Thomas Coats, Esq., Ferguslie House, Paisley. The two premier collections were well contested, Mr. Mitchell carrying off the palm by having a greater variety than Mr. Murray. Conspicuous among his lot stood out Dipladenia crassinoda, Erica ventricosa, Bothwelliana, and Candolleana; Dracophyllum gracile in fine trim, Ixora coccinea superba, and another variety of a deeper vermilion tint; several Pimeleas and Polygalas, with a handsome Vinca rosea. Mr. Murray had some excellently managed Heaths, which figure very conspicuously at the July shows, and hold a position almost unassailable when well managed. Ferruginea major, prægnans major, Aitoniana, and tricolor speciosa major, were finely grown and bloomed; so were Ixora aurantiaca superba and javanica, and one or two Vincas. Mr. Dickson had also some very well-grown Heaths and other plants.

Orchids came from Mr. Murray, including Sobralia macrantha with 6 blooms, a finely flowered specimen of a good variety of Rodriguezia secunda, an extra fine form of Phajus albus with large sepals and petals of very thick substance, and a fine orange lip; the charming Disa grandiflora, Cypripedium Veitchii, and Oncidium leucochilum.

Heaths were represented in considerable numbers, Mr. Murray being 1st, and Mr. D. Forbes, Beechwood, 2d, with creditable examples, among which we noticed a fine Massoni major, ampullacea, tricolor Wilsoni, and Savileana major.

Messrs. J. & R. Thyne exhibited a very fine table of plants placed in front of the orchestra, which was about the best arrangement in the way of flowers, flowering and foliage plants at this exhibition. Among them Cibotium Scheidei and princeps stood very prominently out, flanked by fine-flowered specimens of the splendid deep lemon-coloured Allamanda Hendersoni, which bids fair to eclipse from its great size and substance all the yellows; Dipladenia crassinoda, amabilis, and acuminata; Azalea Gledstanesii, still in good bloom; Ixora coccinea superba; Erica Parmentieri rosea, a very chaste short-tubed rose-coloured Heath; and mutabilis, another fine thing not often shown. All these flowering plants were interspersed with Alocasias of sorts, Ferns of sorts, Anthuriums, and Marantas, and several zonal-leaved Pelargoniums, the most conspicuous of which were Beauty of Oulton, Circlet, and the fiery-zoned Lucy Grieve. Peter McKenzie, Gordon Street, had also a table of miscellaneous plants, and a few choice bouquets. Mr. G. M. Butler, Caledonia Nursery, Greenock, also contributed a general assortment of plants, including some of the more recent Japanese novelties. Peter S. Robertson & Co., Edinburgh, had a very good example of Raphanus caudatus numerously podded. Mr. Clark, Royal Botanic Gardens, furnished a few Ferns and Orchids, including some of the most handsome forms of the Lady Fern which Mr. Clark usually contributes. Smith & Simons had variegated Strawberry plants, a cut specimen of Rhododendron Jenkinsii, a large fine flesh coloured flower, with the back of a roseate hue, and several pans of Roses.

Foliage plants came from Mr. Mitchell and Mr. Murray, comprising Dasylirion glaucum, Cordyline indivisa, Aralia pulchra, Rhopala corcovadense—all plants which figure prominently at the shows. In greenhouse and stove plants there were numerous entries, Messrs. Forbes, Beechwood; Walker, Merrylees; Boyd, Easterhill; and Inman, Altamont, taking conspicuous places. The best were Aphelexis purpurea macrantha, Cypripedium barbatum, a fine example of the rarely-seen Hoya bella, clothed with inflorescence as if it had being dipped in honey; the pretty violet coloured Torenia asiatica, good Heaths of sorts, and a very well-managed specimen of Oncidium flexuosum. By far the most interesting, however, under this section, was a magnificent specimen of Peristeria alata, with 15 spikes, each 6 feet long, and the flowers large and prominently showing the dove like rostellum and column. This was contributed by Mr. Dickson, Ferguslie, and well merited the special award which was voted to it.

Gloxinias were a good exhibition, especially those from Messrs. Joseph Fleming, gr. to J. C. Wakefield, Esq.; and Walker. The best were Roi Ferdinand, Wagneri, elegans, Apollo, Lady Grosvenor, and Model. Fuchsias came from Mr. McBride, gr. to R. Goodwin, Esq., Hazlewood, and from Mr. Wm. Boyd, gr. to T. Finlay, Esq., Easterhill, as well as from several others. Silver Swan, Catherine Hayes, Souvenir de Chiswick, Fair Oriana, and some more of the older sorts, yet stand well as specimen plants. Petunias and Bouquets, both "table" and "hand," made a gorgeous display.

Collections of cut flowers were also numerous; Pansies forming a leading feature, and shown in better condition than we have seen them in the West for some time, but in sorts not materially differing from those recorded in the notice of the Scottish Pansy Society. Pinks, especially those from Mr. Murray, Paisley Cemetery, were in fine order. The names of the best were Device, James Hogg, Elcho, Blondin, Victory, Dr. Maclean, Vesta, Delicata, Ernest, Emily, Mr. Hobbs, and Cardinal. Verbenas, Phloxes, and herbaceous cut flowers were numerous, and called forth eager competition without being particularly noteworthy. A very creditable display of numerous sorts, including a white Orchis latifolia, came from Dreghorn & Aitken, Nurserymen, Kilmarnock; and another, but not particularly interesting lot, came from Mr. Wm. Paterson, gr. to her Majesty at Balmoral.

Roses, as was to be expected, formed by far the most interesting feature under the cut flower section, although they were by no means either so good in character or kind as one might have anticipated. The best came from Belfast, from the Messrs. Dickson & Co., who had a very clean stand of blooms admirably arranged, comprising Anna Diesbach, Madame Moreau, Anna Alexieff, Victor Verdier, Madame Vidot, Madame C. Wood, Lælia, John Hopper, Eugène Appert, Duchesse d'Orleans, Turenne, Marguerite de St. Amand, General Jacqueminot, Madame Schmidt, Pierre Notting, Madame Bell, Monte Cristo, Madame Rivers, Senateur Vaisse, Sombreuil, Le Rhone, Gloire de Dijon, Marechal Vaillant, Caroline de Sansal, Celine Forestier, Olivier Delhomme, Duc de Cazes, Maréchal Niel, Comtesse de Chabrillant, Geant des Batailles, &c. Mr. Robert Muir, gr., Largs, and Mr. Alex. Baird, Brodick Castle, were the next most successful.

In "twenty-fours" and in trebles Mr. James Graham, gr. to Sir A. Islay Campbell, Garscube, took 1st position, and Mr. Wm. Niven, Helensburgh, obtained 1st prize for 12. The best blooms in these stands were General Jacqueminot, Gloire de Dijon, Paul Ricaut, Wm. Griffiths, Devoniensis, Maurice Bernardin, Madame Rivers, Anna Diesbach, Sénateur Vaisse, (which was the best bloom in the exhibition), Jules Margottin, La Brillante, Comte Cavour, François Arago, Lord Raglan, Wm. Jesse, Madame Clementine, Gloire de Dijon, and Comtesse Chabrillant.

We must not omit to note the splendid examples of Club Mosses from Mr. McBride, Hazlewood, which were each from 3 to 4 feet through, and faultlessly perfect; the sorts were cæsium, stoloniferum, and formosum. Achimenes were also well grown from Mr. Fleming; conspicuous among the lot was Dazzle, a very effective crimson in the way of Meteor. Longiflora major and Ambroise Verschaffelt were also good and striking varieties.

Fruit formed a good feature, and was largely contributed, but in the matter of Grapes was not so good in point of finish as might have been. Mr. McConnachie, gr., Cameron House, was first in both the Black and White classes, with Hamburgh in the one case and Buckland Sweetwater in the other, the latter particularly good in point of size of bunch and berry, but not highly finished. Mr. John Smith, Milliken House, had Golden Hamburgh, much better finished and in very good order. Mr. John Barnwell, Kilkerran, had good Black Hamburgh, so had Mr. Campbell, gr. to James Hozier, Esq., Mauldslie Castle.

There were special prizes for Pines, but good samples of Queens, in every way excellent in quality, came from Mr. Fowlis, Fordel House.

Peaches and Nectarines were numerous; Mr. Graham having very fine samples of Noblesse, and Mr. McMillan, gr. to Lord Blantyre, good Royal George and Noblesse. Cherries and other small fruits were well shown. Strawberries in particular demand special notice, from the number of dishes and variety shown. Sir Harry carried off the palm in all cases, and looked noble alongside of The Lady, concerning which so much has been said, and which, if well shown on this occasion, has only form to recommend it.

Mr. Barnwell exhibited 27 dishes, comprising Grapes of sorts; Peaches, one of which "grown in a pot," weighed 14 oz.—a large sample of the "Admirable" strain; Cherries, Strawberries, Currants, &c., with several of the Oulton Hybrid Melon, which, though small, is of exquisite flavour.

A new feature has been introduced into this Society's prize schedules by offering a Large Silver Medal for the best example of dinner-table decoration. The Medal was won by Mr. Mitchell with a large centre-piece, consisting of glass dishes in three tiers, on a suitable pedestal, so arranged as not to intercept the line of vision when sitting at table. The lower dish was filled chiefly with flowers and a few sprigs of Ferns, with the centre-dish consisting of Grapes, Cherries, and Strawberries, then more flowers and foliage, the whole being surmounted with a handsome Smooth Cayenne Pine weighing 6 lb. Then at cross corners were four dishes of Grapes, alternating with four vases of flowers, a very good arrangement, on a square of clean white paper. Mr. James Forbes, Beechwood, had a representation of the famous March glass dish and pedestal, wreathed with foliage and flowers, and four circular vases, also at cross corners, with some excellent Black Hamburgh Grapes and other fruit.

Vegetables occupied an immense space, and consisted of most sorts at present fit for table; Cucumbers themselves filling a good portion of the tables. A very fine collection of agricultural Grasses, in suitable condition for drying, was contributed by Messrs. Cross & Son, in all some 40 sorts, arranged on a semi-circular line on a piece of cotton stretched on a square frame, and standing like a picture on the wall; they attracted very general attention.

Amateurs, or that class which is better known in England

under the auspices of cottage gardeners, contended for no less than seventeen lots, and a number of amateurs under some other regulations cultivate flowers and vegetables.

ROYAL ST. HELIER'S, JERSEY, SHOW.—The exhibition held last week in connection with the Société Royale Agricole et Horticole Show was a magnificent display, and notwithstanding the frequent showers, there was a goodly number of visitors. Fetuniums and Pelargoniums, the two great attractions at this Show, were excellently represented from the gardens of Lady Cullum and the Rev. F. Cheere. In the class for Fuchsias, Mr. Bush, gr. to Lady Cullum, showed an extraordinary specimen, and was deservedly first in a numerously contested class. Very well grown, perhaps one of the largest specimens of the Fancy Pelargonium ever grown, but being somewhat past its best for this season, it had to succumb to a younger and fresher specimen. The specimens shown in 12-inch and 8-inch pots were equally noteworthy, being altogether models of successful cultivation. Of Pinks it is enough to say that they have seldom been so far surpassed, and in proof of this assertion we may say that it is admitted that the plants shown at the late International Exhibition at Kensington were not at all equal to them. Mr. Forsdick, gr. to Rev. F. Cheere, had the best 4 plants in 12-inch pots, and the best 4 plants in 8-inch pots. Mr. Bush had the best single specimen Zonal Pelargonium. The specimens in 12-inch pots, and this class of plants is deserving of great encouragement, being within the reach of few, were equally improved. The first prize was taken by Mr. Gracie, gr. to Rev. H. Le Bas; the second (silver) by Mr. Lonjon, gr. to G. A. Pattridge, Esq., of Bury. The Nosegay section was also well represented; the 1st prize was taken by Mr. Lane, gr. to C. Beard, Esq., of Bury. Petunias (double and single) were shown in excellent condition; immense improvements have been effected in this beautiful tribe of plants. Achimenes were shown in great perfection, the best being sent by Mr. Allen, gr. to Sir Chas. Bunbury, of Barton. In Gloxinias finer plants were perhaps never exhibited; the best were sent by Mr. Grieve, of Culford. Mr. Barrett, of the Cotton Lane Nursery, sent the best six Caladiums, examples of first-rate cultivation. In the collection of stove and greenhouse plants Mr. Lane took 1st prize, with six beautifully grown and healthy plants. In the collection from Mr. Fish, which obtained the 2d prize, were some finely-grown plants, including a fine specimen of Erica discolor, which would have secured for their owners 1st prizes at most provincial exhibitions. In Heaths, Mr. Frewer, of Stowmarket, took 1st, with very deserving plants. In a collection of Ferns Mr. Fish exhibited a splendid specimen of Alsophila australis, along with some fine golden varieties. Some beautiful plants of the Tricolor section (commonly known as Culford), attracted attention by the hues of their leaves; also a collection of tricolor Pelargoniums, which appeared to be admired. Amongst new and rare plants a Clematis took 1st prize, and a Gloxinia 2d.

Among cut flowers, the first to be mentioned is the Rose, which was well represented. But the battle is not always to the strong, for Mr. Nicol, gr. to Captain Powell, of Drinkstone, defeated Mr. Cant, of Colchester, who grows Roses by the acre. The homely but beautiful Sweet William is again becoming fashionable, and several beautiful varieties were shown. The finest was by the Rev. George Cheere, of Papworth, but was disqualified on account of inadvertent non-compliance with the regulations in showing. Zonal Pelargoniums were also shown as cut flowers, and were well-grown, and the best 6 were from Mr. Bush's garden. Mr. Fish exhibited a very remarkable truss of bloom of a variety called Hawkwise Pet, a crimson of extra primary size and remarkably compact, which was highly commended, and which may be destined to become famous as a bedding plant. Pinks were likewise well shown by Mr. Fish, as usual, and Mr. Bush's Roses were beautiful blooms, good, small or medium-sized Rose Pinks certainly.

We were glad to observe a large collection of fruit, though not for competition, exhibited by Mr. Spencer, gr. to the Marquis of Bristol, consisting of four different varieties of splendid Grapes, ten varieties of Strawberries, &c. Among the rare and fine plants were the Kaempferia and the curious Rattail Radish, and a new Gloxinia like a Sinningia, both exhibited by Mr. Grieve, and two variegated Fuchsias and a new Coleus, shown by Mr. Fish.

Mr. Lonjon, who had the largest glass houses which gained the first prize at the great International Horticultural Exhibition at Kensington, was exhibitor in the fruit and vegetable classes.

The principal prizetakers were as follows:—Mr. Allen, gr. to Sir E. Bunbury, Bart., best 6 plants, best Stove or Greenhouse; Mr. J. Bush, Soudan, Bury, best 6 Fancy Pelargoniums, best 6 Tricolors; Mr. Cant, florist, Colchester, best 12 Roses; Mr. J. Grieve, Bury, best 12 Pinks.—Mr. Fish, gr. to Lady Cullum, Barrowside, best 6 Tricolor Pelargoniums, best 6 Zonal Pelargoniums, best 6 Fancy Pelargoniums, best 6 French Pelargoniums in bloom, best 4 exotic Ferns, best 4 Lycopodiums, best 8 British Ferns, 6 (inch) best bunches of white Grapes.—Mr. Forsdick, gr. to the Rev. F. Cheere, Ingham, best 4 Fuchsias (12-inch), best 4 Pelargoniums (12-inch), best 4 ditto (8-inch), best specimen ditto, best 4 fancy Pelargoniums in bloom, best specimen ditto, best 4 French Pelargoniums in bloom, best specimen ditto, best 4 Tricolors, best 4 Petunias (double), Mr. K. Bodger, gr. to G. A. Pattridge, Esq., Bury, best 3 Verbenas.—Mr. Frewer, Nurseryman, Stowmarket, best specimen Erica, best 4 Ferns, best twelve cut flower best Hardy Herbaceous plants.—Mr. Bush, gr. to Sir E. Bunbury, Bart., Barton, best 6 Stove or Greenhouse Plants.—Mr. Mayhew, gr. to Rev. H. Tuite, Ixworth, best 6 Roses, best 6 Pinks, best 6 Verbenas.—Mrs. Reeve, Pakenham, best fancy Hand Bouquet.—Mr. H. Turner, Beech Hill Barry, best 6 White Grapes.—Lydia Pitts, Mr. Spalding, best Miscellaneous Bouquet, collection of Grapes and Strawberries.—Mr. Grieve, gr. to Rev. H. Bevan, Culford, best 6 Gloxinias.—Mr. Ward, gr. to Rev. H. Bevan, Culford, best 6 Zonal Pelargoniums.—Mr. H. Turner, Beech Hill, Bury, new hardy shrub, Deutzia crenata plena.

ROYAL WORCESTER HORTICULTURAL SOCIETY.—This Society held its first Show this season in the beautiful grounds of Dr. Hastings, Esq., the President, on which occasion a very numerous company, and the finest plant display, and the greatest success in carrying the conservatory, a building about 100 feet in length, the visitors must have been struck with the gaiety of the place, the whole length being a mass of flowering and fine-foliaged plants. In the marquee, which was well filled with the productions of the neighbourhood, might be seen large and well-flowered Pelargoniums, exhibited by Mr. Ward, gr. to E. Williams, Esq. Greenhouse plants and Cape Heaths were shown in abundance by Mr. Wheeler and Mr. Donald; and the cottagers were also well represented. Foremost amongst the latter might be mentioned Mrs. Reid, who had an excellent collection of fruits and vegetables. The National School children were awarded prizes for the best varieties of vegetables, and in this department, as well as in others, there was a keen competition. The band of the 2d Essex Rifle Volunteers enlivened the display with an appropriate selection of music, and although the weather was cloudy and wet, many of the ladies and gentlemen of the neighbourhood availed themselves of the opportunity of being present.

Among the principal prizetakers were Mr. Donald, gr. to J. G. Barclay, Esq.; Mr. Whieler, gr. to J. Phipps, Esq.; Mr. Crawley, gr. to J. Purdoe, Esq.; Mr. Winston, gr. to J. Rivers-hill, Esq.; Mr. Bidding, gr. to T. Millhard, Esq.; Mr. Sanford, gr. to T. Thomasset, Esq.; Mr. Danser, gr. to J. Carrey, Esq.; Mr. Stacey, gr. to C. Houghton, Esq.; M. A. Jones, Esq.; Mr. Chambers, gr. to H. Fowler, Esq.; Mr. Allman, and others.

Notices of Books.

British Ferns: An Introduction to the Study of the Ferns, Lycopods, and Equisets indigenous to the British Isles. By Margaret Plues. London: Lovell Reeve & Co. Small 8vo, pp. 281, with 16 coloured plates, and several woodcuts.

Though this book was not wanted, yet, compilation though it is, had it been put together with ordinary talent the popularity of its subject matter would have secured it a welcome from many readers. What its character really is on the score of merit, a few citations will best show. Opening at p. 73 we read, after learning that syringing is the best safeguard against the appearance of thrips and scale on greenhouse and hothouse Ferns: "When the insect called 'mealy-bug' appears there is no cure but fumigation"! Good news this, if only it were true, but unfortunately it is not true, so that some other cure must be sought. Again, as to derivations of names, we read at p. 56: "The genus Acrostichum derives its name from Greek words, meaning the commencement of a verse, and refers to the finely-cut foliage"!! It does no such thing, being derived from the Greek *acros* the summit, and *stichos* order, in allusion no doubt either to their being the highest order of Ferns on account of their universal sori, or to the fructification being produced at the summit of the frond, as is the case in the typical species. When writers go out of their way to eke out a book on one subject by gossipping largely about another, they should at least take care to be accurate. We quote another illustration from p. 206: "Burnet's Quillwort is a smaller plant than the common species; it grows on damp ground in southern climates, its only British habitat being in Guernsey;" and then only three or four lines further on it is said to grow abundantly in France, and we are told that few botanists visit the Lakes of Cumberland and Westmoreland without bringing away specimens!!! Of the 280 pages which the book contains, no less than 40 are devoted to very imperfect and unequal descriptive notes of a by no means first-rate selection of foreign hothouse and greenhouse Ferns; and 60 more are taken up by a list of habitats, which appear to be appropriated bodily from other well-known works on the same subject, some curious mistakes being made in copying. In reference to the local distribution of Pteris aquilina, which is said to occur in every province of the kingdom, no special habitats are given, but we are told that it flourishes "up to the height of 16,000 feet," so that it must be amongst the clouds, where we guess the authoress that sometimes found herself. There are the coloured plates, containing figures of 32 species, some of which, especially those of Woodsia ilvensis and Trichomanes radicans, are very indifferent representations of the plants. Indeed, to depict the latter plant seems to be beyond the skill of our best artists.

Vine Culture under Glass. By John Pearson. The Nurseries, Chilwell, near Nottingham. London: 171, Fleet Street. 12mo, pp. 32.

Without pretending to teach gardeners how to grow Grapes, Mr. Pearson here offers some very useful hints to amateurs, explaining briefly what in his opinion is the best form for a Vinery, how to make the borders, and what soil to use; how the border is to be managed, and how to treat the Vines themselves during the first, second, and third years. Descriptions of some of the best sorts of Grapes are added. Shanking is attributed to too many bunches being left on the Vine; to the roots being in an unhealthy state; to wet borders and deeply buried roots; to overstopping and preventing the formation of a sufficiency of healthy foliage; and to allowing the development of useless wood, and cutting it out in the green state. Pendergrass' sort being generally liable to shank, the remedy suggested is to graft on the strong-rooting Black Hamburgh. The book may be profitably consulted by any one interested in Vine growing.

The Botanical Magazine, No. 238, for June, contains figures of the following plants:—*Eulophia virens*, a grassy-leaved Orchid from India and Ceylon, with simple or branched scapes of not very showy flowers; the sepals and petals are yellowish-green, and the lip white with purple streaks.—*Scilla Cooperi*, a very pretty dwarf Cape bulb, with the habit and appearance of a Drimia, but differing in the two-ovuled cells of the ovary. The bulbs are purple, the leaves linear-lanceolate, 8 to 10 inches long, the scape shorter than the leaves, bearing a cylindrical raceme 2 to 3 inches long, of dark red purple flowers. It was introduced by Mr. Wilson Saunders.—*Cupressus Lawsoniana*, a beautiful evergreen tree now familiar in gardens. Dr. Hooker observes that the genus Chamæcyparis, to which the species has been referred, "is utterly futile, its only character, that of the scales bearing two instead of many ovules, as in most Cypresses, breaks down in the present species, whose ovules vary in number from two to four or even five or six." Dr. Hooker further remarks that if Gordon's identification of this plant with C. Boursieri is correct, this name may possibly have to replace that now so thoroughly associated with the plant. We may add that as the habit is so characteristic of C. Lawsoni, a figure should have been given to show that peculiarity.—*Warscewiczella relata*, a dwarf bulbless Orchid, imported by Messrs. Low & Co. from New Grenada; its leaves are broad and tufted, and its flowers solitary on the peduncles, which rise about half the height of the leaves. The flowers themselves are cream-coloured, the lip broad margined with rose-colour, and marked with deep purple lines towards the base; they are described as being agreeably fragrant, and produced at all seasons.—*Begonia geraniioides*, a small Port Natal species imported by Messrs. Backhouse & Son. It is dwarf, stemless, with orbicular-reniform obscurely-lobed radical leaves, and white flowers.—*Myrsiphyllum asparagoides*, a slender greenhouse creeper, introduced so long since as 1702, of which it is remarked that though now almost gone out of cultivation, it is "one of the most elegant greenhouse climbers that can well be found; nothing indeed can exceed the feathery lightness of the plant when well grown and flowered, and whether on account of its graceful habit, its flowering in mid-winter, the uniformity of its bright green foliage, and perfume of its pearly flowers, it is one of the plants best suited for table decoration and ornamentation generally hitherto introduced." It has lately been reintroduced by Mr. Wilson Saunders, from its native country, South Africa.

No. 259, for July, opens with a beautiful figure of *Meconopsis nepalensis*, a noble plant, originally discovered by Wallich in Nepal, and more recently by Dr. Hooker in the central dampest regions of the Sikkim Himalaya, where at elevations of 10,000 to 11,000 feet above the level of the sea it often ornaments the rank herbage that skirts the Pine forests. It is a robust simple or sparingly-branched herb (? biennial), 3 to 5 feet high, the stems often 1 to 2 inches in diameter at the base, the radical leaves sinuato-pinnatifid, and the flowers yellow, 2 to 3 inches in diameter, in an erect raceme.—*Polystachya pubescens*, a rather pretty Cape Orchid, with two or three-leaved fusiform pseudobulbs, and an erect spike of bright yellow flowers.—*Lobelia nicotianæfolia*, a tall stout herbaceous plant, 6 to 12 feet high, and remarkable for its large lanceolate leaves, and dense racemes of pale lilac blossoms. It was sent to Kew by the late Mr. Allan Black, and flowered in the temperate house in January last, attracting much attention from its striking inflorescence.—*Ancylogyne longiflora*, "one of the finest tropical Acanthaceæ ever introduced to this country, and one which cannot fail to be an important accession to our stoves." It was introduced by Messrs. Veitch & Sons through their collector, Mr. Pearce, and flowered with them in April last. It has four-angled stems, ovate-oblong or obovate-lanceolate leaves, and drooping elongated branched panicles of long cylindrical tubular deep magenta-purple flowers.—*Angræcum Chailluanum*, a species introduced from the Gaboon country by M. Du Chaillu. It is a small-growing plant, with broadish undulated leaves, and short racemes of moderate-sized narrow-petaled white flowers, having a slender flexuose spur, twice or thrice as long as the perianth.

Neerland's Plantentuin. The first five numbers of this Dutch work for the present year, now before us, show an improvement over those formerly issued in the execution of the plates. The subjects figured are:—*Platycodon autumnalis*, the P. grandiflorum of Lindley, a beautiful hardy herbaceous perennial, of which four varieties are shown, namely, with white and blue flowers, each colour both single and duplex.—*Desmodium penduliflorum*, a frutescent species introduced from Jedo by Siebold, and supposed to be of Japanese origin. It grows five or six feet high, has pendulous branches, trifoliolate leaves, and very abundant pendulous racemes of small purplish flowers.—*Ficus Suringarii*, an Amboyna species, with long-stalked cordate-acuminate serrated leaves, marked with red veins, the nodes of the stem being also stained with rosy red. It is compared with the F. subracemosa and variegata of Blume.—*Certhopetalum Pahudii*, a creeping-stemmed Java species, with compressed cylindrical pseudobulbs, terminated by a single elliptic-oblong leaf, and scapes supporting an umbel of from 8 to 12 large flowers of a pale brownish red spotted with deeper red, the sepals and petals being drawn out into long filiform points, the two petals parallel with the dorsal sepal, and the two lateral sepals parallel with the deeper-coloured ovate acuminate lip.—*Nephrolepis biserrata var. reticulata*.—*Curcuma oches picta*, a beautiful little one-leaved Java Orchid, with the leaf nervously reticulated, and the flower comparatively large sessile above the leaf, very curiously formed, and surrounded by five long slender bracts, which embrace the base of the ovary.—*Lampeocoecus Wallichii*, a Brazilian Bromeliaceæ, with lingulate leaves ventricosely concave at the base, and a narrow paniculate inflorescence, having red boat-shaped bracts, each supporting a few purplish flowers.

Flore des Serres. The last Part of this which has reached us, a double one (Nos. 179 and 180) contains several very well executed figures of choice plants, namely:—*Phalænopsis amabilis*.—*Phalænopsis rosea* (*equestris*).—*Sarmenta repens*.—*Ipomæa Horsfallia*.—*Selaginella* (*Lycopodium*) *Pearcei*, which Professor Reichenbach holds to be quite distinct from S. caricinuna, the latter being absolutely caespitose, with pubescent ovaries, while the former is stoloniferous and has glabrous ovaries.—*Hydrangea japonica rosea alba*, two forms, one with rosy carmine, the other with white flowers.—*Cratægus Oxyacantha Gumpperi bicolor*, a handsome German Hawthorn, supposed to have originated with M. P. J. Gumpper of Stuttgart, and having rosy-scarlet flowers with a white centre.—*Odontoglossum Blunti*, the fine spotted form which it is said Professor Reichenbach considers distinct from O. Alexandræ.—*Reinette Evagil*, the Evagil Pippin, a very handsome-looking yellow Apple.—*Azalea indica Roi des Beauties*, a semi-double deep rosy carmine with

white border, a sport from Hermine; Mr. Van Houtte remarks that the variety Alexander II. sported in a similar way, and of this sport a branch similar to some which he was disposed to multiply (secretly!) passed into the expert hands of a skilful rival, who propagated it hastily, and sent his plants to M. A. Verschaffelt, under the very appropriate name of Madame A. Verschaffelt, which has been generally adopted.—*Calathea Veitchiana* (2 plates), one of the most beautiful of the Marantads.—*Podophyllum Emodi*, an interesting hardy perennial occasionally met with in gardens. There is also a lithographed portrait of Dr. Lindley, taken from the figure given in our pages. The Editor does not seem to be aware that a handsome woodcut headed "Vestibule orne," was originally published in the "Gardeners' Magazine of Botany" (i. 68-69), and accompanied a paper entitled "A Plea for Pyramidal Pelargoniums," by the late Mr. McEwen, while gardener at Arundel Castle.

La Belgique Horticole. In the numbers for the present year occur, amongst others, figures of the following subjects:—*Dianthus hybridus multiflorus Emile Paré*, a variety with flesh-coloured flowers striped with carmine.—*Begonia Limminghiana*, said to be from Brazil and introduced by M. de Jonghe; it is a slender suffruticose plant with obliquely elliptic-ovate leaves, and abundant pendent corymbs of orange-coloured flowers.—*Binarrean de la Caserne*, a variety of Cherry with prodigious leaves (10 inches long by 6 broad) and yellow fruit dashed with red, and said to be of good quality.—*Selaginella Martensii variegata*, the very elegant variegated Lycopod with which Mr. Bull has made us familiar.—*Echinopsis Zuccarinii var. Rolandi*, a handsome long-tubed pink-flowered dwarf Cactus.—*Billbergia Glaziana*, the rather showy red-bracted purple-flowered species figured some time since in the "Botanical Magazine" as B. Wheatleii.—*Fredericia Gouræ*, a sort apparently very closely resembling the Black Hamburgh.—The *Technologist* for July, among other articles of interest, contains one on the vegetable fibres available for textile fabrics, a subject of very great importance. With such a profusion of fibre plants in our colonies and elsewhere, it seems strange that Flax and Cotton should still furnish the main supplies as far as fibres are concerned. The Editor contributes a short notice concerning the "Botany Bay or Grass-tree Gum," the product of several species of Xanthorrhœa. These plants are very characteristic of the scenery and vegetation of Australia. "It puts one in mind," says Mr. Simmonds, speaking of the Grass-tree, "of a tall black native, with a spear in his hand ornamented with a tuft of rushes. On the spear is found an excellent, clear, transparent gum; and from the lowest part of the tree oozes a black gum, which makes a powerful cement, used by the natives for fastening stone heads on their hammers." The resin, which it is stated may be obtained in inexhaustible quantities, "occurs in the centre of the stem, between the central core and the rind, the latter being formed of the bases of the leaves. Gas in great quantities, and of a high illuminating power, may be obtained from this resin.—In the *Quarterly Journal of Microscopical Science* is a paper of the late Dr. Greville on Diatomaceæ, which appears simultaneously with the biographical sketch of the deceased author. In the same number is a revised and condensed account of Dr. Beale's observations on the Cattle Plague, which are of the highest importance. From these researches it appears that the essence of the disease consists of active living particles or germinal matter, as Dr. Beale calls it, not developed in the tissues of the animal in the first instance, but introduced from without, and capable of rapid multiplication when once they have gained admission into the blood. These particles are so minute that they readily pass out of the blood-vessels into the adjoining tissues, and live and grow at their expense, not ceasing to grow even when the normal textures have ceased to exist. Mr. Beale's views have been corroborated by Mr. Crookes, who "from purely chemical investigation has proved that the active contagious substance is in a living state."—The Rev. G. Henslow, in the *Popular Science Review* for July, gives a summary of M. Naudin's researches on hybridisation, and takes the opportunity to suggest that those interested in the acclimatisation of plants should make experiments with a view of getting a half-hardy hybrid between a tender tropical plant and a hardy species. This has been already done in a few cases, and should be followed up. There are many other interesting papers in this number, but they do not fall within our scope. We may, however, mention, that a portrait of Professor Huxley forms a frontispiece, and has been printed by Woodbury's process of relief printing.—The last number of the *Journal of the Linnean Society* contains among other papers an important one by Dr. Welwitsch on the origin and geographical distribution of gum copal in Angola, the substance of which has already been given in our columns (p. 291).

The Apiary.

THE STEWARTON HIVE.—I have again to thank Mr. Thomson for a reply to my notice of the system of management followed in Ayrshire, and for further information on the subject. There are some points in his last letter on which I should like to make a few remarks. I have often thought the directions for management usually sent out with these hives to be remarkably meagre and unsatisfactory, so that it is to be little wondered at, that many failures and disappointments should have occurred. It is somewhat curious that from the few Stewarton hives which have come under my notice in this neighbourhood, not a pound of honey has been obtained in the supers. These hives, though ordered by my recommendation, have not been under my care. To faulty management doubtless must be ascribed the want of success. From my own single box arrangement of octagon hive with appropriate supers, I have frequently taken off large quantities of honey. Occasionally, but not invariably, I have used nadirs with these hives, but usually have succeeded in preventing the issue of swarms by increasing the capacity of the super accommodation when more room appeared to be necessary.

To prove to Mr. Thomson that by my plan of introducing a second box between the first one given and the stock, very fine supers may be obtained, I have at this present time an octagon glass box filled and ready to be removed, weighing between 70 lb. and 80 lb., exclusive of box. There are no bars or division board between the first box and its eke, the combs therefore are 15 inches in depth. They are perfectly pure and free from brood. It must be confessed however, that to remove these supers from the stocks, and to dislodge the bees, as well as the conveyance of the honey unbroken to distant parts for purposes of sale, are matters of no little difficulty, and I can well understand the preference which many would give to the smaller and more manageable boxes.

As regards the case or difficulty which may attend the raising of hives on nadirs, I do not wish to be supposed to claim any advantages in my system over the Stewarton. In either case good management, combined with some amount of courage, is necessary.

Mr. Thomson is quite correct in his assumption that locality and climate have much to do in the matter of bee-management. In the South of England our honey harvest usually commences early in May. It is at no time so abundant as it appears to be for a limited period in the best part of Scotland, but it lasts over a longer space of time. Our best honey supers are worked before the middle of June, and we should generally think the 26th of that month, the date mentioned by Mr. Thomson as the time their own supers were being put on, almost the end of the honey harvest, and time to be removing full ones. We have no great quantities of White Clover, and unless there is a honey dew, most of the other sources of prolific gathering will have been nearly exhausted by the end of June.

The tendency in bees to build drone-combs in supers varies exceedingly in different years. This present season I find more of it than I ever remember. I have also had to remove brood from three of the supers. This peculiarity may, I think, be accounted for partly by the fact that the majority of my hives in May were very full of last year's sealed honey, which contracted the space necessary for the queen's breeding. The increase in weight in three days, mentioned by Mr. Thomson, seems very extraordinary; although I have occasionally kept hives suspended to a Salter's balance during the summer, nothing like that has ever been shown by them.

With hives of the small size, which has ordinarily been supposed correct and sufficient, I can well understand that the nadiring system, in conjunction with supering, can be followed with great advantage, but I have hitherto imagined that with hives of the large internal capacity used in my apiary, there would always be ample room in the stock-boxes for breeding, and, with the supers, sufficient accommodation for all the bees without having to give additional room by nadirs. But from the disposition to swarm manifested by the majority of my hives this year, I am inclined to believe that I may have been mistaken. I intend, therefore, to be supplied with shallow nadirs for the large frame-hives before another season. *S. Bevan Fox.*

Enhancing Bee-heroes.—I observed a question in your columns (page 591) as to what is best to be done with a hive "that a week ago commenced clustering out thickly." The same thing has fallen under my notice, and I felt sure that it was caused by want of room doing great injury. To cure which a narrow ring, composed of four or five rounds cut from another hive, was quickly prepared; the hive was then gently raised from the stool by one person, while another placed the eke on the stool, the hive being then carefully lowered. The relief was at once accepted by the industrious little creatures, none of which attempted to sting. In the evening all apertures were carefully closed up, to save the time of the labourers. *A Lover of Bees.*

The cases in question are not exactly parallel, as in the one alluded to by "A. B." a swarm was much desired. You will probably have seen the reply to another correspondent last week, in which we also recommended the application of an eke formed of a few bands of straw. The chief difficulty is that by this means the hive remains permanently enlarged unless incantum cut through at the place of junction, when being let down on its stand, all the combs come in contact with the latter and are fastened to it. This is bad in many ways, but particularly in preventing easy removal of the hive from its floor-board, and also as proving a hindrance to the bees in their free access to all parts of the interior. It is on these accounts that we prefer the shallow octagon box supplied with bars, as, with their use, the bees seldom bring down their combs in contact with the bars, at any rate through their entire length. In Ireland these shallow straw ekes are as regularly sold as the hives themselves, being greatly used both for old stocks and swarms.]

Garden Memoranda.

DUPPLIN CASTLE.—That range of somewhat lofty hills, which extends westward from the junction of the rivers Tay and Earn, diminishing gradually in height until it is finally lost in the plain near the site of the early Pictish kingdom at Forteviot, the memory of which is now all that remains of its existence, protrudes a little abruptly to the south near its termination. On the depressed summit of one of its tops, in the angle thus formed, stands the magnificent Castle of Dupplin, the principal residence of the Earl of Kinnoul, the Lord Lieutenant of the great county of Perth, and nothing can exceed the grandeur of the situation on which it is placed. It is a modern erection of some 40 years since, and is one of Burn's finest works, a gem of beauty, superbly built, and having the exterior embellished with towers, balustrades, and other ornaments. The whole is of a pale red-coloured enduring sandstone, harmonising admirably with the surrounding scenery, which is nobly wooded and exceedingly rich and diversified, producing at once an impression of grandeur and cheerfulness, and its beauty is considerably enhanced by the summit of the hill having been levelled so as to form a broad platform on which the various approach roads unite on an ample parallelogram of gravel on the north or entrance side.

The park is of great extent, and irregular in form and surface, stretching out over the tops of the hills to the Perth and Glasgow roads, which are its northern boundary, and it is admirably wooded in that direction. A noble avenue cuts it across the middle from east to west, which is its greatest length, and from this the ground descends rapidly to the public road which skirts the river Earn on the south. Another broad avenue runs from south to north, the castle standing in a vast open space, and forming a centre to these vistas, which in many parts are margined with irregular masses and clumps of noble trees; multitudes, too, of remarkable single specimens of magnificent growth are scattered about. In these grounds a famous battle was fought in 1332.

A new carriage-drive in course of formation proceeds at right angles from the front of the Castle, over the rising ground towards Perth, which is distant something more than four miles, through an avenue of great width, formed by a vast mass of large Oaks on either side, amongst which some gigantic groups of Silver Firs, more than 100 feet in height, and remarkable examples of ancient Ash trees tower up occasionally, adding grandeur and variety to the scene. The Castle is approached from the Great Northern road on the east by a drive some two miles in length, before it reaches the park. The scenery on the left is of so magnificent a character that during the Royal progress to Dupplin in 1842 a walking pace was maintained some distance in order that her Majesty might more fully enjoy the enchanting view across the wide-spread fertile valley of Strathearn. The entrance to the park is by a neat gate and lodge, and the road is bordered for some distance on the right by Chilian Pine and Deodars, alternating with each other. A broad magnificent avenue of old Beech then commences, through which the road passes; the ground on the right hand rises somewhat rapidly, and that on the left declines rather precipitously in some places, and is clothed with noble trees, amidst which Sequoia sempervirens, Cupressus Lawsoniana, Wellingtonia gigantea, Cryptomeria japonica, Yews, and other interesting Conifers in great numbers are luxuriating among undergrowths of Rhododendron, Box, Berberis, Hollies, &c., and have a splendid appearance, being of a deeper green character than we usually see these beautiful trees assume. The road undulates as we proceed, until we arrive at a point which is the centre of an octagon of avenues formed by the same description of stately trees. As we pass along, the park becomes more open; the road crosses the new approach in front of the Castle, and proceeds onwards to the stables—a large mass of stone building, situated on the rising ground a short distance to the north-west of the entrance front. Another drive proceeds along the grand avenue westward to the extremity of the park, and then runs at some distance due north, bounded on the left by a row of Chilian Pines, which have however suffered severely from the effect of the winter of 1860-61; the situation too is bleak and much exposed. The drive is then led in a due west direction to the Glasgow road at some considerable distance onwards. The whole of the ground in this direction has recently been drained, cultivated, and then laid down in permanent pasture, and will no doubt soon be ornamented with planting suitable to this important extension of the already magnificent park.

The southern approach is about a mile in length, and leads from the Forteviot Station of the Caledonian Railway across the steep ascent of the ground in that direction, near the Castle; it is about to be diverted into a new line, so as to insure greater privacy to the pleasure grounds, and which, when completed, will be a very great improvement. Considerable alterations are also contemplated in all the roads west of the Castle, and which will no doubt be effected in due time. Lord Dupplin, on whom the management of the magnificent property has devolved, is an enthusiast in all that pertains to it—alike in the vast demesne as well as within the boundary of the park, and is a nobleman who brings taste of the highest order to the task. He is an admirable example of what the late Sir Uvedale Price always advocated, viz., "that any gentleman who wished to make his place what it ought to be, ought to study the subject of planting and laying out ground himself." His lordship however has the advantage of being materially aided in all these matters by Mr. Oswald, who has for a long series of years conducted with eminent success the whole of the improvements and gardening operations at this princely place. The Castle is supported by a terrace on the southern side, the turreted wall of which is nicely covered with Ivy, intermixed with Roses and other gay flowering climbers. On the opposite bank a little rill pours its waters into a rather deep chasm below, the banks on either side being partially covered with native plants, amongst which Rhododendrons and other shrubs produce a good effect. The terrace garden is on Grass, admirably laid out, its walks and beds being well proportioned, and the whole is somewhat sparsely interspersed with handsome vases. All the beds have a broad edging of the Cerastium tomentosum, whose silvery foliage contrasts nicely with the faultlessly arranged choice

flowering plants with which this beautiful garden is so richly adorned. The vases too were gorgeous at the time of my visit, with a fine display of gaudy flowers produced under the clear and cloudless sky of the early days of last September, the whole producing a chaste and fine effect.

Descending from the terrace-let us proceed on the opposite side, beyond the waterfall, to the depressed summit of a projecting hill, on the same level as the Castle terrace. This is of considerable extent, and contains some remarkable trees and shrubs, which are advantageously displayed on either side of a broad walk which runs round the hill. We noted some noble examples of the broad-leaved variety of Douglas Fir, as well as other beautiful forms of choice Conifers, all of which seem much at home in this elevated position. A common Yew was a very remarkable object: in form it was not unlike the summit of one of the Turkish or Moorish towers of the Pavilion at Brighton; it is 45 feet in circumference, dense and beautifully grown, the lower branches had been kept laid all round, hence its character. Associated with these were also a Weeping Ash and some nice specimens of Weeping Elm. The walk for some distance was lined on both sides with Irish Yews, which, however, would have been much more effective had some golden-headed varieties been also introduced. Masses of choice Rhododendrons, in bush and standard form, as well as other pleasing shrubs, were also distributed about effectively. On the south-eastern side is a bowling green with raised edges. From this elevated spot a charming scene presents itself—the whole of the delightful valley of Lower Strathearn is before us, to where its winding river is lost in the broad waters of the Firth, which laves the southern shore of the famous agricultural district of the Carse of Gowrie. On the left the well-clothed mountain, "the Hill of Moncrieffe," has a fine effect; on the right the Ochill range rises up in varied and beautiful forms, some of which are admirably clothed with dark Pine woods, and the plough has of late years passed over a large portion of the remainder—trenching has even been resorted to by some of the more spirited proprietors, and the whole has been liberally dressed with lime and artificial manure. The surface now shows a freshness and greenness that one is altogether unaccustomed to see on the chalky downs of the southern coasts of England. The result, too, has been of the most favourable kind, and may be described in the words of a neighbouring proprietor, the late "Laird of Condie," who said that "the space on which a single sheep formerly found a bare subsistence, now produces ample food for three."

On the north side of the Castle, and near the handsome mass of stable buildings, are some beautiful specimens of Conifer trees distributed about, amongst which we noticed Taxodium sempervirens, Wellingtonia gigantea, Picea Nordmanniana and Webbiana, and the broad-leaved variety of Douglas's Fir, green and beautiful. A singularly attractive specimen of Picea nobilis had grown more than 2 feet in each of the last five years since it was planted, and was remarkable for its glaucous and robust character. From the cascade in front of the Castle terrace a little rivulet meanders through a dell known as the "Den of Dupplin." A walk is led along its edge for some distance, passing through a narrow avenue of somewhat closely planted Larches; they are noble trees, more than 100 feet in height, and being destitute of branches almost to the top, present a singular appearance—a living wall of timber on either side, and passing onwards the little stream is crossed by a bridge somewhat grotesquely constructed. Here the walks diverge in many directions, and are canopied by stately trees, whose umbrageous shade affords a cool retreat from the summer's sun, as well as a most agreeable promenade amidst Ferns, Mosses, and other botanical riches with which these noble woods are abundantly adorned. *D.*

Miscellaneous.

Jubæa spectabilis.—I have obtained from Chili, with some difficulty, but with great success, a considerable quantity of seeds of a superb Palm-tree, the Cocoa-tree of Chili, otherwise called Jubæa spectabilis, larger and finer than the Date-tree, and above all, much more hardy, so much so that some young individuals, which have been growing for the last five or six years in the open air in the Botanic Garden at Montpellier, where the winter is far from being mild, have perfectly resisted, without any shelter, the snow and the frosts which have very badly treated the Olive trees. I regard this fine tree as adapted to all the region where the Olive tree ripens its fruits, and that it will become one of the finest ornaments for gardens, parks, railway stations, and public promenades. This will be its first service, but there should be still others, for in its native country it produces great quantities of fruit, which forms an important article of trade with Peru. These fruits are sweet drupes, of the size and colour of an Apricot, and are eaten in the natural state or preserved. The stone, easy to break, contains an oily kernel, which is much employed in Chili for the fattening of cattle. Lastly, by cutting the spadices a sweet sap may be obtained, which condenses itself into honey, and may be converted into an alcoholic drink. This, then, would be an interesting acquisition for horticulture, and to a certain point for agriculture in the south of France. The tree would succeed certainly in Corsica, an island which is admirably suited for making trials of the acclimatisation of exotic vegetables and animals. *M. Naudin in Les Mondes.*

Scientific Method.—Scientific method is no peculiar mystery, requiring a peculiar initiation. It is simply common sense, combined with uncommon courage, which includes common honesty and common patience; and if you will be brave, honest, patient, and rational, you will need no mystagogues to tell you what in science to believe and what not to believe; for you will be just as good judges of scientific facts and theories as those who assume the right of guiding your convictions. *Rev. C. Kingsley in Fraser's Magazine.*

"*Spiked Star of Bethlehem*" (*Ornithogalum pyrenaicum*).—In the neighbourhood of Bath it grows in such abundance that it is annually sold in the market as a vegetable, under the name of French Asparagus. The part eaten is the unexpanded flower-bud; the flavour is delicate, somewhat resembling common Asparagus, and as it is very cheap, about 2*d.* a bunch, I believe there is always a ready sale for it. This is about the proper season for it. I see by Withering's "Botany" that the neighbourhood of Bath has always produced this plant, as the edition of 1812 mentions it as growing in the same localities it now inhabits. *M. J. P., in Hardwicke's Science Gossip.*

The Baobab (*Adansonia digitata*).—The old Oaks in Sherwood Forest, when hollow, have the inside dead or rotten; but the Baobab, though stripped of its bark outside, and hollowed to a cavity inside, has the power of exuding new bark from its substance to both the outer and inner surfaces; so, a hut made like that in the Oak called the "Forest Queen" in Sherwood, would soon all be lined with bark. *Livingstone's Zambesi and its Tributaries.*

Calendar of Operations.

(*For the ensuing week.*)

EVERYTHING out of doors should now wear an appearance of perfect order and neatness, and this can only be effected and maintained by a systematic perseverance in going regularly and frequently over the whole outside department. Considerable attention is necessary to keep half-hardy plants in order at this season. Tall or straggling growths should be constantly shortened, and if this is done with taste the beds may be made regular and uniform, without being formal. Indoors the healthy state of plants during their season of rest, and the amount of accumulated energy for a new year's growth, depend very much on their management during summer and autumn. They must be gradually hardened by exposing them to an increased circulation of air, admitting all the light possible. We have frequently urged the necessity of thoroughly watering plants when they need it, in preference to giving a little and often, according to the too common practice. Let it be the rule, then, only to give water when it is required, and then to give plenty. These remarks apply more particularly to hard-wooded plants, which, to ripen their growth properly, require a longer season than those of a more herbaceous character. Remember the value of liquid manure for plants which are growing freely, and others which it is desirable to invigorate to the utmost.

FLOWER GARDEN AND PLANT HOUSES.

Plants bedded out are now coming fast into beauty. Take care, therefore, that Verbenas and similar plants are kept within proper bounds, and that weeds and decaying blooms are constantly removed as soon as they make their appearance.

AURICULAS.—Seedlings which were put out in pans or boxes will now have attained considerable size, and may be potted off singly. Let the soil used be good loam and leaf-mould well mixed, together with a little silver sand, and when potted let the plants be set in the shade until they have become somewhat established.

CHINESE PRIMULAS.—Old plants of these should now be shaken carefully out of the old soil, repotted in good light compost, moderately rich, and placed in a warm frame for a few days, till they have begun to produce roots, after which they must be removed to a position near the glass in a cold frame, and kept close till the plants are thoroughly re-established.

RANUNCULUSES.—It often happens that amateurs have seedlings, the roots of which are so thin and small as often to be overlooked in the soil. The way to lose none, is to get a fine wire sieve, into which a quantity of the soil containing the seedling roots should be put, then have a tub of water, in which place the sieve, moving it about in the water; by this means every particle of soil passes through, leaving the roots behind. It is but little trouble, and many fine sorts are thus saved, for it sometimes happens that the weakest are best.

FORCING GARDEN.

CUCUMBERS.—Continue to thin and regulate the shoots; go over them at least twice a week, as they soon get crowded if neglected a few days. Guard against red spider. Attend to plants in frames. Keep linings well made up, and train shoots of growing plants. Water when necessary.

PEACHES.—Where the fruit is ripe, ventilating during the night and in damp weather should be effected by means of the front lights, keeping the top sashes closed to prevent wet from settling on the fruit.

PINES.—A portion of the strongest and best rooted should now be picked out for succession; these should be potted immediately if they require it, and grown on steadily without any check; any of the smaller plants which are in immediate need of potting should also be attended to. Keep up an uninterrupted succession by planting a few suckers occasionally in a brisk bottom-heat.

VINES.—Let borders be frequently examined. Should the weather continue dry, let the surface be carefully loosened with a fork, and watered with weak liquid manure.

HARDY FRUIT AND KITCHEN GARDEN.

Water growing crops frequently with liquid manure; the showers which we have lately experienced are now producing a beneficial effect on all green crops. Suckers should be carefully removed from fruit trees of every description; it is not sufficient merely to cut them off level with the surface of the soil; such a mode of treatment only causes them to throw up a progeny ten times more numerous. To do the thing properly the soil should be pared away, the suckers traced back to their origin and carefully removed.

CELERY.—Give Celery crops one or two good waterings with liquid manure. Only those rows or beds which are intended for early use should be earthed up at present. With regard to the main crops, if the soil is at all heavy, this operation should be postponed until the plants have attained full size, when it may be finished off at once. This effects a considerable saving of time, and the Celery does not rot in winter. The same practice equally applies to Cardoons.

STRAWBERRIES.—Prepare ground for new plantations, and plant now as soon as convenient. Strawberries do best in a rather strong, rich, and deep soil. Where the soil is naturally light, improve it, therefore, by adding marl or strong loam with plenty of manure. Rows of Strawberries along the edges of walks look well, and are very convenient, as the fruit can be gathered without treading upon the ground, while late quarters are relieved and made available for crops which it is desirable to place a little further from the eye. The earliest plants produced by this year's runners should be selected, and in separating them from the parent plants, a few inches of the string should be retained to assist in fixing the plant in the ground. If they are planted on quarters, the rows should stand 2 feet apart each way. This will allow room for intermediate rows of Endive, Spinach, or dwarf York Cabbage this autumn, and the plants will require all the room next spring. By allowing plenty of room the fruit is finer, cleaner, and more abundant than when the plants are allowed to crowd one another, and entirely shade the surface.

STATE OF THE WEATHER AT CHISWICK, NEAR LONDON,
For the Week ending July 11, 1866, as observed at the Horticultural Gardens

July.	Mean's Height	Barometer.		Temperature. Of the Air.			Of the Earth 1 foot deep	2 feet deep	Wind	Rain
		Max	Min.	Max.	Min	Mean				
Thurs.	5	29.51	29.16	70	44	56.5	64	64	S W	03
Friday	6	29.68	29.55	73	49	61.5	66	66	W	49
Saturday	7	29.76	29.69	71	41	56.1	64	64	W	01
Sunday	8	29.81	29.81	68	55	61.5	64	64	S W	03
Mon.	9	29.80	29.75	70	51	60.5	64	64	S W	00
Tues.	10	29.76	29.68	77	53	65.0	65	64	S W	00
Wed	11	29.76	29.70	82	48	65.0	66	64	N E.	00
Average.		29.80	29.63	74.1	47.3	61.3	64.4	64.0		26

July 5—Masses of low white clouds, thunder-like clouds; slight rain
— 6—Heavy clouds, hail, with white clouds in deep blue sky; slight thunder
— 7—Cloudy, fine with clouds, cloudy, rather cold at night
— 8—Dismally overcast; overcast; slight rain
— 9—Very cold, fine, very fine, warm at night
— 10—Very fine, very hot and sunny, fine at night, fiery meteor in the evening
— 11—Very fine, dry uniform haze, hot sun, very fine.
Mean temperature of the week, 2 deg. below the average.

STATE OF THE WEATHER AT CHISWICK,
During the last 40 years, for the ensuing Week, ending July 21, 1866

July.	Average Highest Temperature	Average Lowest Temp.	Mean Temp.	No. of Years in which it Rained	Greatest Quantity of Rain	Prevailing Winds. N	N E	E	S E	S	S W	W	N W
Sunday..15	76.5	50.4	63.4	20	1.46 in.	1	4	4	—	5	18	6	2
Mon. ..16	75.9	49.6	62.7	16	1.60	2	3	6	—	2	19	7	1
Tues. ..17	76.2	51.3	63.7	15	0.58	1	2	3	4	1	8	8	3
Wed. ..18	75.9	50.4	63.1	18	1.22	1	1	4	1	1	10	8	5
Thurs. ..19	75.2	50.4	61.7	21	0.60	2	2	1	1	1	8	8	2
Friday ..20	75.9	50.4	61.6	22	0.72	1	1	3	—	2	9	12	2
Satur. ..21	75.7	50.7	63.2	18	0.54	1	2	4	1	1	8	11	3

The highest temperature during the above period occurred on the 17th, 1854—therm. 94 deg., and the lowest on the 18th, 1863—therm. 37 deg.

Notices to Correspondents.

ANTS ON LAWNS: *Sub.* Strewing guano over your lawn may possibly have the effect of clearing it of these troublesome little pests, and at the same time be productive of injuring, improve the Grass. Or some of the remedies given for ants (see p. 637) might doubtless be tried with advantage.

GARDENERS' ROYAL BENEVOLENT INSTITUTION: *R P.* Apply to the Secretary, Mr. E. R. Cutler, 14, Tavistock Street, Covent Garden.

GRAPES: *Constant Reader.* Your Grapes are affected with spot. It is not due to a Fungus. It occurs both in Vines planted in the house and on the outside, and probably depends on something wrong about the roots, but nothing certain is known on the subject. *M J B.*

INSECTS: *W A W.* The small white woolly insects on the under side of the leaves of the Lombardy Poplar are a species of Aphides, and the larva which has eaten them is that of a two-winged fly, one of the Syrphidæ, now in the pupa state.—*An Old Subscriber.* The gimlet-like holes in your Larch poles are made by one of the small xylophagous beetles, probably an Hylurgus, or perhaps an Anobium. Painting the poles with strong oil paint, mixed with turpentine, would, we think, prevent any future deposition of the eggs of the beetle.—*E G.* Your moths were completely spoiled in the transit, or rather in catching and preserving. We can only say that one of your moths at least belongs to a species of Depressaria, common in houses. *W.*

NAMES OF PLANTS: *Z. A.* 1, *Dahlia arborea*; 2, *Dondia candida*; 3, *Nephrodium* in the; 4, *Senecio Scharffiella*, not sent in a state to determine.—*R P.* 1, *Bidens viscida.*

PETROLEUM; *C J.* We have no experience of the use of petroleum as a remedy for turpentine in paint, but we should expect it to have a very deleterious effect upon the plants if used about plant houses of any kind.

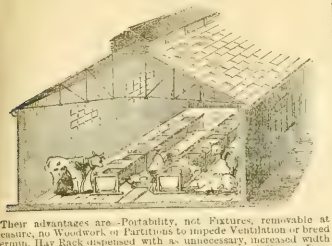
POTATOS, &c.: *H F Jones.* It is by no means uncommon for young tubers to sprout as yours have done, especially on the occurrence of hot moist weather after drought. As regards your Camellia leaves it is impossible to say what has befallen them without personal inspection on the spot. They look as if they had got sunburnt when wet, or had somehow or other got scalded.

ROSELLE: *T F.* This is the name given to Hibiscus Sabdariffa, the ripened calyces of which have a pleasant subacid flavour, and are used both in the East and West Indies for making a refreshing drink, as well as for tarts and jellies.

WOODLICE: *A P.* Try the effect of pouring boiling water into their retreats, taking care at the same time however not to injure the Mushrooms.

COMMUNICATIONS RECEIVED.—R. T C.—T. R.—W. Earley—A Fellow of the Royal Horticultural Society (next week).—C. D.—J. W.—W. Dean

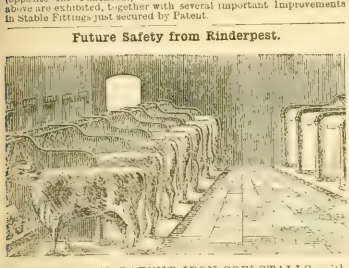
COTTAM'S PATENT PORTABLE UNITED COW FITTINGS.



Their advantages are:—Portability, not Fixtures, removable at pleasure, no Woodwork or Partitions to impede Ventilation or breed Vermin, Hay Rack suspensed with as unnecessary, increased width and depth of Feeding Troughs, Water Cistern, and Patent Drop Cover to prevent over-gorging. Cleanly, durable, and impervious to infection, being all of iron. Price of Fittings per Cow, 45s.

Prospectuses free of COTTAM & Co., Iron Works, 2, Wisley Street (opposite the Pantheon), Oxford Street, London, W, where the above are exhibited, together with several important Improvements in Stable Fittings just secured by Patent.

Future Safety from Rinderpest.



MUSGRAVE'S PATENT IRON COW STALLS, with fresh Air Inlets, as used in the Government Model Farms.

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Priced Engravings of all these Inventions will be sent free on application to MUSGRAVE BROTHERS, Ann Street Iron Works, Belfast.

COCOA-NUT REFUSE is becoming scarce, the old reserves will soon be gone. Now sold in bags, 1 for 2s., 10 for 18s., 20 for 30s., 50 for 68s., 100 for £6.

Fourpence allowed for each bag returned carriage-paid.

A Railway Truck-load (not in bags), 40s.

Postage Stamps or Post-office Order, payable to J. BARSHAM & Co., Kingston-on-Thames, S.W.

GISHURST COMPOUND, whether used against Insects and Mildew, on Growing Plants, or as Winter Dressing on Trees at rest, should be dissolved 48 hours before use. This gets rid of smell, and if the Solution be decanted, prevents any staining of foliage. A strength of from 1 to 2 oz. to the gallon of water is recommended for growing Plants; one from 4 to 16 oz. for Trees at rest.

Sold Retail by Nurserymen and Seedsmen, in boxes, 1s., 2s., and 10s. 6d. each.

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A preparation of Carbolic Acid suitable for Sheep Dipping, Washing Cattle, &c. *Vide* 3d Report of the Cattle Plague Commission. For further particulars apply to

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LONDON DEPOT: 49, Stamford Street, Blackfriars Road, S.

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Landowners assessed under the provisions of any Act of Parliament, Royal Charter, or Commission in respect of any public or general works of Drainage or other improvements, may borrow their proportionate share of the cost, and charge the same with the expenses on the lands improved.

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No investigation of title is required, and the Company being of a strictly financial character, do not interfere with the plans and execution of the Works, which are controlled only by the Government Enclosure Commissioners.

Apply to FRANCIS B. MAULE, Esq., Secretary, 3, Parliament Street, London, S.W.

ESSEX AGRICULTURAL SOCIETY, 1866.

President—J. W. PERRY WATLINGTON, Esq.

NOTICE.—The ANNUAL EXHIBITION of the above ASSOCIATION will be held (by kind permission) in EPPING, on TUESDAY, July 17.

On the same day, in conjunction therewith, POULTRY, GAME, RABBIT, PIGEON, and CANARY SHOWS, and a HORTICULTURAL SHOW and FLORAL FETE will also be held.

The Prizes for the Poultry Show, which are upon a most liberal scale, amount in the aggregate to £80. For the Horticultural Show to £100.

The magnificent Band of the Grenadier Guards and of the Royal Artillery will be in attendance throughout the day; the former will also play at the ANNUAL DINNER, which will take place in the newly-erected Town Hall, in the High Street. The services of eminent Professional Vocalists have also been secured.

The Show upon the whole will, it is anticipated, equal, if not surpass, that of any previous year.

The Entries for both the Poultry and Floral Shows will positively Close on July 2. Exhibitors are therefore earnestly requested to lose no time in applying to the Secretary, who will supply the necessary Forms and furnish such information as may be required.

By Order, JOHN W. WINDUS, Secretary to Local Committee

Epping, July 14.

The Agricultural Gazette.

SATURDAY, JULY 14, 1866.

MEETING FOR THE ENSUING WEEK.

TUESDAY, July 17.—Essex Agricultural Society, at Epping.

FARMER A. has been accustomed to winter 50 bullocks, besides a cow or two giving cream and butter for "the house," and milk for the baby's bottle. These animals, with roots and cake as part of their food, trod and ate down his straw into manure in open yards, excepting that minor proportion of straw which fed and bedded his working-horses, made his pigs comfortable, and chaffed his green-crop-eating sheep. But the rinderpest having put his cattle underground, left his premises (for anything he can tell) tainted and dangerous, and so frightened him that he dare not risk the purchase of another lot of lean or fresh stores, the question becomes serious—What is he to do next "back end" by way of getting his straw stacks converted into muck? To be shunted off his wonted life-long track in this fashion, is a sore tussle for Farmer A.; all his habits and prepossessions revolt against any other course than just trying more bullocks, to be caked and Turniped every morning, and foddered, and tended, and marketed at the old time, as heretofore. Yet, with the disease flying about, he knows very well how green he would be to lay out 700*l.* or 800*l.* in half-fed beef; and he has no alternative but to fall back upon some other manure-making agency. Anything outrageously novel, of course, would not be prudent; what can he do, therefore, better than make an experiment of yard-feeding sheep, which many men before him have practised to their satisfaction? His mind is accordingly made up; a portion of his present flock shall lie next winter upon straw instead of on their old-fashioned wet Turnip-fold; and he will buy in extra mutton and wool in autumn in place of hoofs and horns. Still, averse to staking all his luck upon one colour, he thinks it will be well to get, say ten or a dozen useful steers, and then yard-feed whatever number of sheep may possess the muck-working capability of 40 beasts.

It so happens that our friend has applied to us for advice; and the following is the substance of what we have to say to him:—Your farm premises are of an old-fashioned stamp, with ill-arranged buildings surrounding your open yards, which are wretchedly low, dished too hollow, and without any proper facility for drainage; and in a wet winter, as we have often witnessed, such a quantity of water collects in the lowest places that even bullocks up to their eyes in straw feel the mass "queechy" under their hoofs, and damp under their bellies when they lie down. So, we say, to pen a lot of sheep night and day upon 2 or 3 feet thickness of manure, sodden like a saturated sponge, would be about as foolish a blunder as you could make. We have tried sheep in a wet straw-yard once, and our experience warns us not to repeat the experiment.

But a straw-yard in the field is on a very different *footing*. You employ a portable engine and drum to do all your threshing; and there is no reason, therefore, why you should bring all your harvest to the homestead. Why not improvise a rick yard, say in a corner of that field which you told us would be "Potatoed" next year? Two pieces of white corn lie within a convenient distance for carting; what is still more favourable, your Swedes and Mangels are growing "next door," and your manure when made will be in the very field on which it is to be spread. Plenty of room will be required for the sheep (a cooped-up flock cannot thrive); and therefore we say—arrange another yard on the other side of your farm, where your fallow crop will want the manure next spring, and stock another field or two of white corn there. You will then have plenty of bedding "in position," and your Peas and Beans and Oats, and a portion of your Wheat, must go to the farmstead, to feed your horses, pigs, and the dozen steers, and to be ready for the chaff-cutter which is to chop up a large portion of the straw for the whole of your live-stock. According to Mr. RUSTON'S experience, six sheep make as much straw into manure as one bullock does; so that, instead of your 40 beasts, you must have 240 sheep; that is, 120 in each of your new field yards. We should say, lay out each yard about 25 yards square, and enclose it by haulm walls, because the manure is to accumulate probably 2 feet in height, and hurdles would neither be high enough nor yet soak up the drainings. You use a reaping-machine; but for the sake of the stubble cut one of your Wheat fields knee high with the sickle. The corn ricks and straw ricks must be placed so as to form shelter from the north and east (in your neighbourhood), and a main point in the management will be the daily, and in rainy weather twice daily littering or sprinkling over the yard with straw, tossed off the stack directly amongst the sheep, without any tedious and troublesome carting. The heaviest item in the bill of fare will, of course, be the roots. It has been found that, as a general rule, 100 sheep in yards consume one ton per day; hence you must provide for each yard of 120 sheep, about 7¼ tons per day. Say that your winter-feeding is to last fully five months, or say 160 days; then you will want 200 tons of roots at each yard, or 400 tons altogether. Do you grow on an average 20 tons per acre of white-fleshed Turnips, Swedes, and Mangel? If so, you have 20 acres of root crop to carry to your yards. Well, this is no very formidable operation. The shepherd's old horse and light cart could fetch the supply day by day; but, as you always cart the biggest portion of your Mangel crop and also a considerable share of the Swedes to your farmstead, and to the pastures where the lambing ewes are, you can just as well take them to your new yards—which, indeed, will be nearer to the growing crops. You have 20 acres of white-fleshed Turnips now in the ground; suppose that before winter you cart off alternate rows or alternate stripes, making half the crop carried away and half left behind to be pulled, sliced, and eaten out of troughs by sheep folded in the usual manner. Take half these roots to one of your sheep-yards and half to the other; thus you have 10 out of the 20 acres of roots required. You may cart five acres of Mangels, half to each yard, and "pit" or "grave" them close by where they will be wanted. As the season advances fetch five acres of Swedes, say a few loads at a time, when most convenient.

We should add that, with young sheep in the yards, probably a much smaller quantity of roots would suffice.

Which divisions of your flock are you to make prisoners in these yards? Decidedly not your wether tegs; nor, indeed, any male sheep whatever; for those who have had experience tell us that male sheep lying on a bedding of manure are very subject to an affection of the sheath or of the urinary organs, from which severe losses sometimes ensue. And as a matter of prudence, we should say, do not try the new scheme with

such valuables as your in-lamb ewes: they do well on the winter pastures, with roots and artificial food, and it would be folly to hazard next year's fall of lambs by adopting an unusual course. But from the breeding-flock you keep, you must have 140 to 160 ewe lambs; and in autumn you will most likely draft old ewes enough to make up nearly the requisite number for your yards. A few fatting ewes may be purchased to complete the 240 females.

Their feet will give you some trouble; but attend well to the frequent littering with dry straw, and for the sake of health let the sheep enjoy an hour's run anywhere, everyday if practicable. You will be surprised at the quantity of cut straw chaff they can eat, either mingled with pulped roots and moistened, and then dusted with meal. They will not want much drink; but let them have a water-trough accessible, and do not forget the ball of white salt in a tub and tray. *I. A. C.*

IT is to be regretted that law-makers when they make laws affecting agriculture do not take agriculturists into their councils; if they did it would prevent a fearful amount of blundering. Can any one name any past Act of Parliament which bore on agricultural matters which has not required to be amended half a dozen times before it became consistent with itself, uncomplicated, and within the bounds of common sense? A first Act of Parliament usually illustrates the round hole and square peg principle, and hence we soon require Act the second to amend the first, Act the third to amend the second, and so on, but like the mendings and re-mendings of an unskilled artist, the work is not perfect at last. In 1851 a short Act of 4 sections (14 & 15 Vict., c. 25) was passed, entitled "An Act to improve the law of landlord and tenant in relation to emblements, to tithe rent-charge left unpaid by an outgoing tenant," &c.

Let us look for a moment at section 1 in relation to emblements, and at section 4 in relation to the recovery of tithe left unpaid by the outgoing tenant.

The old law as regarded emblements was this. "Those who have an uncertain estate or interest in the land, which estate is determined either by the act of God or of the law, between the period of sowing and the severance of the crop, are entitled to emblements, or in other words, to the profits of the sown land."

Of old, those who sowed always reaped—the rule was, "Quiet sow, quiet mow." The new law, professing to "improve" the old one, says, when the lessee on whose life the tenancy depends dies, the tenant may continue in the occupation until the expiration of the then current year of his tenancy, and no longer; so that if the person on whose life the lands are held dies on the 20th of March, the entry being a Lady-day one, the tenant must turn out and quit on the 25th of the same month, that day being "the expiration of the current year of his tenancy," leaving behind him all his crops in the ground—his young Wheat, his Oats, which have come up a beautiful braird, his Beans and Peas breaking ground, his early Potatos, his Clovers and Grasses, just sown. The compensation principle existed in the old law, but is abolished in the new. Of course the reversioner, foreseeing the disastrous consequences of this wretched piece of legislation if carried out, may interpose his good offices in the matter, and may volunteer to avert the impending blow; he may assent to the occupier holding on at the same rent after the life drops, and it is best for all parties that an arrangement like this should take place. But this law leaves the occupier entirely at the reversioner's mercy; for the said law, though professing to protect the occupier and improve his position, and make him safer in it, is nevertheless so framed that the effect of it is completely to accomplish his overthrow.

Then if we look at section 4 of the same Act of Parliament we shall find it to be of the same blundering character. This section has reference to the recovery of tithe rent-charge left unpaid by an outgoing tenant, and no doubt the intention was good, namely, to enable the tithe-owner or succeeding tenant to overtake runaway defaulters of this kind, and compel them to pay the amount honestly and fairly due by them up to the day they left; but so far from this being the practical working of the measure, the law as it stands actually abets imposture, and affords facilities to an outgoing tenant to escape payment altogether, and so to cheat all persons concerned out of half a year's tithe. By the Tithe Commutation Act, the tithes when apportioned are payable half-yearly, either on the 1st January and 1st July, or 1st April and 1st October. This arrangement was in itself bad, and one evil always begets others, and the present case is no exception. A tenant's agreement with his landlord is usually for half-yearly payments at Lady Day and Michaelmas, or Midsummer and Christmas, his entry on the farm being at one or other of the times stated. This being the case, an out-going tenant can, if he is so minded, walk away leaving three or six months' tithe unpaid and unrecoverable, any law to the contrary notwithstanding. A tenant's time we shall say is up at Christmas, and the tithe is due a week afterwards. The tenant may linger on for this week if his landlord allows him, and he may remain in possession up to 11 o'clock at night on the 31st of the month, but if he is off before the small hours of the morning of the 1st January, no tithe can be demanded legally, though honestly and common-sensibly he owes for six months. The section under consideration was no doubt, as before remarked, framed to net these dishonest fish: but the legal net-maker, not being himself a fisherman, made the meshes too large, and so the expected prey escape. The Tithe Commutation Act says the tithes are due on such a day—the 14th and 15th Vict. says you cannot claim them until that day. Meantime—say the day preceding—the tenant vacates, and the tithe owner cannot recover. This is a specimen of modern law making, and was severely denounced by one of our County Court judges on a late occasion. Adjudicating on a case which had been brought before him, where a tenant had decamped at Christmas, leaving half a year's tithe unpaid, the learned judge is reported to have thus expressed himself, referring to the 14th and 15th Vict.:—"The words of the Act of Parliament are so very complicated as to be almost unintelligible, but after carefully considering the section, he did not think that under it tithes became payable until after they became due, and he did not feel that he could find for the plaintiffs with respect to that part. At the same time he must say that he never met with a more gross case of actual injustice. He thought that the Act of Parliament should be altered. It was a very hard case on the landlord, and he had no hesitation in saying that the defendant had cheated his landlord out of half a year's tithes." *C.*

THE STEAM PLOUGH.

[This was lately the subject of the following remarks by Mr E. Rack before the Cirencester Farmers' Club.]

STEAM culture has been tried for many years, but I think if we look back to the last seven it will answer the purpose for which we have met to-day. Commencing with the "direct system" of Mr. Fowler, I may remark that that consists in drawing the plough with a rope to the engine or with a rope from the engine to the anchor, and from the anchor back to the engine again. Then there is Smith and Howard's plan, which is termed the "roundabout," and with that system the rope is put round the field, the engine standing in one corner, and as the field is ploughed the plough gets nearer to the engine. There is another system, of which we know but little—it is called Halkett's "railway," and was thought something of eight or ten years ago. Mr. Halkett put his engine and machinery upon rails with the intention of cultivating the land between the rails, perhaps at a cost of 20*s.* per acre. But he went further than that. The "coulters" of the plough were made hollow, so that he could take liquid manures down these pipes and deposit them at the bottom of the soil that was stirred. The next system was Mr. Romaine's, or the "rotary." That plan was for the engine to travel over the land with a rotary machine underneath it, digging and stirring, and scratching as it went, till at length the land presented the appearance of innumerable mouse-scratchings, or, as was described by Mr. Wren Hoskyns, was reduced to perfect sawdust. Now, in looking over these four systems, I am bound to say there is none that can touch Fowler's in simplicity and direct work. There is no system so plain, so serviceable, so easily managed, so suitable to farms that I am acquainted with, or to any farms, as that of Mr. Fowler. The Smith, or "roundabout" system may do very well on a small scale, but when you come to a large piece of tough clay land you want a monster power, and with steam we possess a mighty agency that may be made very effective for good, if properly applied. Let it always be borne in mind that the more steam the more power, and the more power the more work and the more command over the land we occupy.

I have now done with the past, and in speaking of the present I may remark that the mode of steam culture adopted by myself is to have two 14-horse-power engines, with a rope to coil on the drum by machinery. This system has been looked upon with some doubt by farmers who knew nothing of the rope-coiling process. They thought it would be impossible to get the rope coiled on the drum without considerable wear, but it is now done by machinery in such a beautiful style that even cotton on a reel is not wound truer or better. Then many people objected to using two engines, because they thought that while one was standing still there was a loss, but there really is not the waste that some persons imagine, as one engine is "bottling" up the steam while the other is at work. With this system no horses are required for removing. When work is finished, the implements are attached to the engine, and away they go as fast as a man can walk. The present implements used are a plough, with harrow and presser attached, and with the plough you have a mould board, digging breast, and stirring breast. Another implement is the scarifier with harrow attached, the plough taking about 3 feet and the scarifier 6. There should also be at hand a set of heavy harrows that will take 12 feet. There is a great doubt amongst farmers as to the best system of land culture—whether it should be the plough or the scarifier. Discussion on that point is desirable.

With regard to expenditure, there are three points that will arise after the engine is purchased, viz., coals, water, and manual labour. Now, speaking of the first item, some people are under the impression that in a short time England will be run out of coals, and they speak of economising; but surely a mine of wealth like that ought not to be allowed to remain any longer in the bowels of the earth. I take it that if we had copper, iron, or any other mines, we should not allow the mineral to remain in the earth because we fancied it was coming to an end. My advice is—take up the coals and turn them into money as quickly as possible, resting assured that by the time they are exhausted we shall have something to take their place, and which will put us in a different position from that which we are now in. As to water, there may be some difficulty with regard to it on some farms, but one man and a horse can well supply two 14-horse-power engines with all the water they may require in a day, and coals also. With respect to manual labour, I regard that as a point which we have seriously to consider. Taking into account the great increase in the demand for that article of labour, the question arises whether in the future we shall have the same amount at our disposal that we formerly had; and here, I think, steam will come to our assistance very greatly. I believe that we shall have as much ploughing done by one man, with the aid of steam, as was done before by three men with horse or ox power.

Now I have no doubt you expect me to say that we, the leaders in steam culture, have had no troubles, but I assure you that those who first started this system of land cultivation have experienced many obstacles. They have had a great deal to undergo, but, fortunately, I think they have arrived at a point when they can console themselves with the reflection that their troubles are overcome. It strikes me very forcibly that the question we have to consider is—what do we cultivate for? What is the object sought to be accomplished? I take it that you want to aerate the soil and subsoil, and make them the store-room of atmospheric influences. Now, I ask you, is it the right way to put three or four horse power to plough in a lane, when it is known that every time such team crosses the field something like two tons have slid and trampled from one end of the land to the other, about every 10 inches in width? This must harden the ground, and every practical farmer must acknowledge that this appears a most clumsy and unlike process for obtaining tilth. The creating of a hardened floor beneath the soil, and above the subsoil, which in a great measure cuts off the connection between the two, is a real injury to fertility, and the destruction of this pan or indurated layer by steam ploughing is one of the greatest benefits of steam cultivation. The thorough drainage of clay soils is thus accomplished, and the material of the subsoil is added to the scanty supply of shallow soil which has hitherto fed our crops, and an immense increase of fertility is by this means obtained. It is not fair to make a comparison of the cost of one operation by steam power with a corresponding operation by horse power, because it will be apparent from the above remarks that steam culture is so far superior. I was of opinion that you could plough land with oxen free of cost, and that the oxen would generally pay the rent of the land they lived on by their improvement, but I believe now that if you can plough your land free of cost by oxen, I should be right in advising you to take to steam, for the superior manner in which the work is done by steam is sufficient to encourage any one to make the outlay.

It is not my intention to advocate any system that will not bear strict inspection into the balance sheet, for no system is worth mentioning unless it can be proved to be profitable. A tenant cannot be expected to embark in steam cultivation unless he has a proper holding. There are roads to be made, fences to be put straight, and fields enlarged, and it is not fair to expect a man to go to so great an outlay if he is only a yearly tenant, with a chance of being turned out of his occupation with a six months' notice to quit. The next thing to which I would direct your attention is that by steam culture you get your land into such a state as to constitute it good land. You get a deep surface soil, with a porous subsoil, so that the rain water will not in any way do it injury, nor the sun burn it up. This is the case with all lands under spade husbandry. Allotment lands under spade husbandry are of more value than lands alongside that are worked by the plough. It is not my intention to trouble the meeting with a long array of figures, but to confine myself to the cost of one day's work. You will be better able to arrive at a practical conclusion, as different farms have different soils, different labourers, and different management. With respect to the cost of one day, to plough 10 acres of stiff land you require one ton of coals, 16*s.*; two engine-men and ploughman, 10*s.*; water man, 2*s.*; oil, 2*s.*; and horse, 2*s.*;

making a total of 32s. for the day, and for this you will be able to plough any 10 acres of strong land in England. The above estimate is of course exclusive of the cost of the engine and the wear and tear. Respecting the wear and tear, I have come to the conclusion that it is reduced to the lowest possible amount. There is nothing but the rope and one or two small pulleys of little value that can wear out.

I think when steam comes to be more generally used and men are paid for the work done by the acre instead of by the day, it will be a great advantage to both parties. The improvement thus resulting to the labouring man is very considerable. He feels an interest with his master in the work of the day; emulation is encouraged, and a desire awakened to rise in the ranks; although, let me add, I have the same engineman and ploughman now that I had when I first adopted steam seven years ago. Then there was a great prejudice against steam ploughing by the labourers, but that is now quite overcome, and the fact is my people at the present time take as much interest in the success of the system as I do myself. To continue the results of my own experience I may remark that the steam horse never tires, and it may be found advisable to employ two sets of men. If you were behind with your work in any way, I hardly dare say what amount of labour you would be able to do in a week with two sets of men. But if you were not behind with your work, and had a steam engine, the question would arise whether you would let to hire. I think, with the present mode of having two engines, the moving being so easy and the wear and tear so slight, that you will find the system of letting to hire generally adopted. Then as to drainage, the land after steam culture drains very much better. I have a piece of land which had been drained 14 years, yet it lay quite wet under horse and ox culture, but since it has been cultivated by steam not a drop of water is to be seen on the surface, although no alteration has been made in the under drains. I can quote Mr. William Slatter, of Stratton, as having experienced the same thing in a field in his occupation. All land will be greatly improved by steam ploughing, but I wish particularly to draw your attention to its use on light land. It is on the light land of England that there will be the quickest returns, as by one operation you entirely change the nature of the soil. By breaking the pan and stirring the subsoil you prevent burning or frying up. The opinion I am about to express may be received by many present with considerable doubt, but I believe that Messrs. Slatter and Porter have proved Fowler's steam plough is the cheapest stone digger, and that steam ploughing has become quite practicable on the Cotswold hills. I perfectly recollect saying some time ago that I expected in a few years to see steam ploughing on the steepest stone declivities of the Cotswold Hills, and I believe that time has now arrived. One great advantage of steam culture is that when a day's work is finished there is no baiting, no harness to take off. The labourer makes the most of his time; he has not to walk in the morning first to the stable and then to the field, but he goes direct from his house to the field, and he returns direct to his home as soon as the work is done. The land works better, and you can get at it quicker after rain when steam ploughed than when horse ploughed, and if, as is stated, the rainfall here is 26 inches, it will seldom do any damage to land so managed. We are told by scientific men that no less than 3 cwt. of guano falls annually on every acre of land, and if we can keep the ground in such a state as to retain that valuable fertiliser, we shall have done much towards improving agriculture. Garden allotments seldom require draining in consequence of their superior spade cultivation. Superphosphates will act much better on strong land after being cultivated by steam than after horse-power, owing to the finer mith that is produced, but superphosphate on strong land left in a rough state will be no good, yet they will accomplish wonders after the soil has been worked to a fine surface. There is no better criterion of the capability of land to grow a crop than the size of the worms. If you have large worms, you will have large crops; and if small worms, small crops. Respecting the turn-over system, it must be borne in mind that the plough, from its wedge-like form, will turn over a greater amount of soil with less power than any other implement that has yet been brought out. The pace of the plough is of very great importance, but I would strongly recommend you not to plough too deeply or suddenly at first. Nearly all the land in England can be successfully cultivated by steam. If it is in ridges, it should be ploughed lengthways, and not levelled too quickly. Farmers who are inclined to embark in steam culture should take care to procure sufficient power. There is the same cost of manual labour with a small as with a large set, and the latter always gives you a chance of being well up with your work. My experience with steam has been considerable, and I assure you there is less risk with a steam engine than with horses. Drilling can be done in the same direction as the land is ploughed, and I have seen one-third more Wheat grown in the same field when it was drilled the same way as it was ploughed than when it was drilled across the furrow. Drilling, horse-hoeing, mowing, reaping, horse-raking, and carting can all be done better after the steam-plough than after the horse-plough, because there is no furrow; you lose no sheep on their backs in the furrow, and steam-ploughed land is much dryer and more healthy for them. Digging by steam is equal to digging by manual labour, because the subsoil is not pressed. With corn at a low price, if the English farmer is to maintain his position he must resort to the use of steam, as foreigners will be sure to do so. As I before stated, travelling with the engine is extremely simple, and I would soon trust my man with it as with a one-horse cart. I also repeat that, in my opinion, there is no system of steam culture equal to the direct system of Fowler. I have seen a great many tried, and that is the conclusion I have come to. I am no partizan, and would not advocate any system that I did not believe to be the best, the most economical, and the most serviceable. I am aware that many farmers would have used steam before, but they have been puzzled to know whose system to decide upon. Some have said "This is a very high-priced engine; I should like one at about 250*l.*, instead of 1000*l.*," but I believe that if you are to have your work done properly and well you must have one of Fowler's double set of engines of 14-horse power. You could do as much work with Fowler's set while Smith is fixing his tackle as Smith could do all day. In conclusion I have a word or two to say of the late Mr. Fowler, who was personally known to many of you. I believe there never was a gentleman in England of higher character than Mr. Fowler. He possessed a spirit that I have never seen surpassed, if ever equalled. When he made up his mind to embark in the undertaking to make steam cultivate land, he used an amount of energy that is seldom met with, and that, combined with the capital he employed, gave evidence of a fixed determination on his part not to be beaten. I believe his name will be handed down to posterity as the only steam inventor worthy of mention.

Mr. GREIG said: When Mr. Ruck was speaking of the advantages of steam culture, the question naturally presented itself to every thinking mind—if the benefits are so great, why is steam so seldom to be seen in this neighbourhood? He came from Lothian that morning, and during the whole line of railway he did not see one steam plough. How was this? It must be because a prophet has no honour in his own country. They started steam ploughing in this neighbourhood first—in the Swindon district, but the number of breakages and mishaps that occurred on the first introduction of steam ploughing in this district were the sole cause of the tardiness that had been manifested in the further adoption of that system of land cultivation. They all knew that when once a man was thoroughly convinced, it took twice as much to convince him afterwards as it did at first. As an illustration of that he might remark that formerly they sold 20 steam ploughs in Wiltshire to one in Lincolnshire; the case was now reversed, and they sold 20 in Lincolnshire to one in Wiltshire. In fact at that present time at least 20 engines were in operation for making a tour to go into Lincolnshire, where the land was easier of cultivation than in Wiltshire, thus proving that there was nothing wrong in the machinery, but that the delay evinced in the adoption of steam in this locality was attributable to the disappointments and prejudices occasioned by the great number of breakages in former times. Mr. Ruck's experience was simply this—he had pulled through, and was convinced that he was right. His impression was that by adopting steam cultivation they would have command of 40-horse power at any moment. When that power was standing it cost him 2*s.* per hour, and when at work 3*s.*, and it would enable them to get everything done in proper season and time. If the success of a crop depended on the operations being performed in time, was it not well that every farmer should have command of proper force? Then the expense of 5*s.* per hour would be saved by dispensing with one man. Last week Mr. Ruck had a 60-acre field to plough, and in five days at least 55 acres of it were done, only four persons being employed in the operations altogether. They as mechanics went about for labour and could not get it, and he was quite certain that if they could have passed there would have labour twice the value that it was now. If such was the case it was absolutely necessary that they should begin to think about steam ploughing, if the labourer was not to beat them. It was of very great importance after harvest that the land should be exposed to the atmosphere, and it was impossible to do this well and expeditiously without the agency of steam. Another point to be considered was this. When soil was cultivated by horse-power, two or three other operations were necessary which were not required with steam, as the land was left in a round state, and was not trodden, but in a properly pulverised state, rendering rollers, and clod-crush is up unnecessary. Speaking of the difficulties that formerly stood in the way of an adoption of Fowler's system, Mr. Greig remarked that they were now all to be entirely removed. The roads and bridges throughout were different, and they also experienced an obstacle with regard to the education of the agricultural labourer. This was a point he had watched from the commencement 7 years ago. He recollected when he came to Wiltshire first he had an engine which had wood bunkers, instead of travelling coal, and he got them to send wood to bunk to the men. Then could talk of nothing but beer. After going there, however, about two years he must say that the men entered properly into the spirit of the thing, and they spoke of nothing but their master's crops. With respect to forward cultivation system, he would say nothing in favour of it that it was easily managed, and was a great deal better than horse power. The speaker in conclusion thanked Mr. Ruck for his kind mention of the late Mr Fowler, with whom he was connected from the commencement of steam ploughing.

Mr. TIDY said he had observed that they had experienced no difficulty with their tackle, and he instanced a case where his machine had to work on a piece of land shaped like an orange cut in two, and it was expected by some persons that the engines would find their way into the river, but they went and did the work in a proper manner. They had worked 300 acres in two months. Mr. Ruck referred to the cost of oxen when at work, but he did not say what they cost when standing still. Respecting another remark made by that gentleman, he might say that they paid everything by the acre, and their men received so much per mile when travelling on the road.

Mr. EDMONDS, after remarking on the utility of the drag, stated that the management of land after it had been left by the steam plough was a matter that required attention, and should be carefully considered before the commencement of operations. They might use the steam plough judiciously, but it was possible, by neglecting the after management of the land, to fail to secure a good crop. Last year he ploughed a piece of land in autumn, scarified or dug it, and then in spring dragged it with a steam drag, and he had really a capital crop of Turnips; but in the two before that he pursued a different course, ploughing in spring and cultivating after that, and the crop was not so satisfactory. He had no hesitation in saying that both Wheat and root crops on he ery land were improved by steam operations, but then came the question—they had a great many moderate-sized farms of 300, 400, or 500 acres, and on what sized farm could a steam plough be used with profit to the occupier? It was quite certain that a man with 400 acres of arable land could not use two 14 horse power engines, and the question for them to consider was—what sized engine ought they to have on farms of small acreage, and on what sized holdings could steam ploughing be commenced with advantage? He did not much approve of hiring out, as, if there were several persons in treaty for the same engine, it would be impossible for all to get it at the proper time, and serious delay might be the consequence. If they had an 8 horse power engine on a moderate-sized farm, it could do their threshing and other steam work, and it might thus be used well and profitably.

Mr. BENNET urged farmers not to purchase very cheap coals for their engines.

Mr. GRIEG said the after management of land was a most important subject, and it had not yet been dealt with. He had a question under consideration, and providing the land was entirely cultivated by steam he could deal with it, but not if horses had trampled over it, as the plan he proposed was adaptable only to land which had been steam cultivated. It was a very unfortunate affair, but if it had been properly managed it might have succeeded. With regard to the item of coals, he was of opinion that if they got horses off their land entirely they would before long get to a point when fewer coals would do as much as ever did now. He believed that an engine costing 1000*l.* would be found to answer on a farm of 400 acres; as I wish to avoid building, he thought that a contract might be entered into by a number of small farmers, who should take care to bind themselves to get the machine at a certain time.

Mr. RUCK made a few observations in reply, remarking that whatever he had hitherto expended in adopting steam as a land cultivator he did not repent it, and there was no chance of his relinquishing the system. When land had been three or four years under steam cultivation, the expense and risk were greatly reduced, because the culture was so much more easy and effectual. He endorsed Mr. Greig's remark that ploughing by steam would cost nothing in consequence of the great increase of crops which it ensured. *Wilts Standard.*

THE CATTLE PLAGUE.

The following returns were issued on July 6:—

These returns do not profess to give the total number of cases which have occurred in Great Britain, but only those which have been ascertained from information received at the office from inspectors. Columns 1 only record the cases reported as having commenced during the weeks indicated by the headings; "back" cases being added to columns 2.

Census Divisions.	1 Number Attacked.		2 Result of Reported Cases from Commencement of Disease.			
	Week ending June 23.	Week ending June 30.	Attacked.	Killed.	Died.	Recovered.	Unrecovered for
Metrop. ..	5	—	7,981	3,420	3,713	318	450
S. Eastern .	4	—	4,578	1,704	2,598	466	171
S. Midland .	64	28	24,510	8,854	10,068	1,541	387
E. Midland .	10	8	14,414	5,386	4,849	789	396
S. Western .	—	—	1,758	658	822	207	71
W. Midland.	13	41	14,715	6,109	6,092	1,518	996
N. Midland.	59	39	18,895	10,861	6,368	1,218	548
N. Western .	295	142	71,951	23,744	35,018	9,389	3,601
Yorkshire .	17	7	24,533	7,884	18,351	5,946	2,362
Northern Co.	2	3	8,046	4,931	2,643	974	118
Monmouth. & Wales .	7	3	8,289	1,144	5,701	1,057	297
Scotland ..	15	3	46,857	6,260	28,087	10,707	1,803
	405	260	249,866	81,437	124,203	33,116	11,110

NOTE.—6 Inspectors who reported cases last week have not reported in time for this return—viz., for the county of Bucks, 1; Chester, 1; Lancaster, 1; York (West Riding), 1; York (East Riding), 1; and the Metropolis, 1.

These Inspectors reported 47 cases last week.

MEMORANDA ON LAND DRAINAGE.

1. In the first place arrange the whole plan for the whole estate before commencing a single field. Do not fritter away your means in laying one field after another dry on plans proper enough for each, but not well fitted to one another. This is especially good advice where a whole estate, comprising several farms, is taken in hand for improvement. The selection of an outfall, and the fitting it for its purpose, the removal of spring water, the order in which the work shall be done, which is determined by two considerations, viz.; 1st, the necessity of working from the final outfall upwards; and 2d, the possibility that water removed from one part may lay dry another; so that here, as opposed to the other consideration, the necessity may arise, or rather the propriety may be indicated, of draining a higher field first of that water which is thus hindered from re-appearing below—all these are, to use the words of the politician, not local, but imperial questions, needing attention in the first place. The arrangement of the plan for the whole estate should, in fact, be attended to before any of the work is commenced.

2. Next, get a permanent and sufficiently deep outfall, to allow, if possible, an easy fall from 4 feet below the lowest part of the land.

3. Remove all spring-water—tap all porous and water-logged beds—and in general provide, in the first place, for the removal of all the water which comes upon the and, or on any part of it, otherwise than directly from the clouds. To this end straighten all water-courses, leaving, however, as few open ditches as possible.

4. Lay drains in all habitual water-courses; humour and attend to the habits which the water of the estate has acquired, if you mean to obtain an immediate result. Let this, in the case of Grass lands with deep ridges and deep intervening furrows, go the length of inducing you to put drains in the furrows, however they may lead you, rather than up and down the slope in straight and parallel lines, with uniform intervals, disregarding the old ridge and furrow arrangement.

5. When all this has been done, then begin the drainage of the estate—field by field—the lowest first, and proceeding from the lowest part of each to the upper part. Dig a main drain with sufficient fall along the foot of the lowest field first, about 8 yards

or thereabout from the hedge, and 4 feet 6 inches deep or thereabout, *i. e.*, somewhat deeper than the drains which run into it, and wide enough in the bottom to take a 3 or 4-inch pipe—one large enough, at any rate, to take all the water which is likely to run in it.

6. Dig trial holes here and there across the face of the slope 4 feet deep, and try the effect of a single narrow drain, 4 feet deep, taken right up the slope in their midst; and learn from the distance at which this minor drain will empty these holes the intervals between your drains, which in each field you will adopt.

7. Your minor drains should be 4 feet deep, both for the sake of their permanence and efficiency, and for the sake of the greater quantity of earth per acre which will thus be fertilised for the use of plants. They must take a two-inch pipe up to near the top of each; a one-inch pipe will suffice at the upper end, where less water runs. They will be from 7 to 8 yards apart in homogeneous clays—10 to 12 yards apart in freer and more open soils; and any greater distance in rocky or gravelly sub-soils, which are unable to discharge their water naturally, but which a single deep drain will often lay dry for acres by the artificial outlet thus provided.

8. As to the way in which, when the method which any field requires has been determined on, the work is actually set out; it may suffice to mention that the place of each drain right down the slope should be pegged out, and (especially in the case of Grass lands) the line itself may then be opened up by the plough, which will, with horse labour, thus take out to its full width the first 6 or 8 inches of the depth. A working man of ordinary size can easily stand and work in a drain 3 feet deep, if it be a foot to 14 inches wide at top. He stands in such a drain, and takes out the remaining foot in depth, making a 4-foot drain without difficulty. In the case of a drainage match held some years ago before the Hertfordshire Agricultural Society, there were 17 sets of men at work, and the prizes went for drains 12 inches and 11½ inches wide at the top respectively. One drain was opened 4 feet deep, with only a 9-inch opening at top.

9. As to the cost of the work, earth capable of being lifted in masses by the grafting tool can be put into barrows for 2*d.* per cubic yard; and the difficulty of working in a narrow drain adds only this much to the cost, that the labour of cutting and lifting earth in making drains varies from only 2½*d.* to 2½*d.* per cubic yard. A 4-foot drain thus costs from 6*d.* to 8*d.* per rod for cutting it.

10. Let us here enumerate the items of cost per acre. If drains be 5 yards apart, 880 yards are needed per acre; if 8 yards apart, 605 yards per acre are needed; if 11 yards apart, 440 yards per acre will be required. If the mere cutting be 6*d.*, the cost of opening the drains will be 1*l.*, 2*l.* 15*s.*, and 2*l.* per acre; if it be 8*d.* per rod, the cost will be 5*l.* 6*s.* 8*d.*, 3*l.* 13*s.* 4*d.*, and 2*l.* 13*s.* 4*d.* per acre respectively. If the tiles used be 2-inch pipes, at 20*s.* per 1000, they will cost 50*s.*, 36*s.*, and 25*s.* per acre in these several cases. If collars be needed to connect the tiles, you must add one-half more on their account. Add some 5*s.* an acre for superintendence, and 1*d.* per perch for filling in the earth after laying the pipes; and you have as the cost of drainage 10*l.* to 8*l.* per acre, according to the quality of the work in near drainage, and 4*l.* 10*s.* to 6*l.* per acre, according to the character of the work in the wider drainage. The average cost under ordinary circumstances, including the extra cost of mains and outfalls, may be put at 5*l.* per imperial acre. There cannot be a doubt that, thus adding from 8 to 10 per cent. to the cost of the estate, they often result in an increase of 30 to 50 per cent. in its value. *J. C. M.*

AGRICULTURAL GANGS.

A STRANGER to those Eastern counties of England that spread the wide level of their fenny flats between Peterborough and the German Ocean might, as he passed along the turnpike road, be struck by the sight of a large body of lads and girls, in scanty and scarecrow attire, huddled together in a field, busily engaged in picking something from the ploughed land, and having their movements directed by a coarse-looking man, stick in hand. And the stranger might speculate, with some wonderment, as to the nature of the agricultural operation on which this singular band were engaged. If he is within earshot of them, he will be made disagreeably aware that this mixed band of children and grown-up young women and lads—from 30 to 50, perhaps, in number—do not toil in silent company, but enliven their labour with lewd songs, vile oaths, and filthy conversation. If the stranger should venture to approach this band, it will probably receive him with words and gestures of which it is scarcely vain to hope that the little children who join in their use are in ignorance of their vile significance. If, moreover, later in the afternoon, he should, unfortunately meet with one of these bands returning from their day's labour, shouting, singing, swearing, insulting passers-by, and taking with each other what might have been termed liberties, were not the whole a scene of unchecked lawlessness and unwholesome freedom—he may duly prepare himself to run a gauntlet of bad words and worse actions. Doubting, perhaps, whether he can be in a Christian country, with all its appliances of places of worship and education, he may be induced to inquire what *specialité* there may be in the soil of the Fen districts, that its cultivation should demand so great a sacrifice to the well-being of the rising generation in an agricultural community, and should entail upon certain counties a curse from which others are free, and which even Northumberland, in the full vigour of its bondagers, could scarcely parallel.

To such an inquiring stranger a farmer will reply that it is the system, and that they have always worked the land with it, and that they cannot do without it. If the stranger, in his persistent thirst for knowledge, should ask, "What system?" he will be told that it is the "gang system;" and that the band of children, lads, and young women whom he saw at work constituted "a gang;" and that the man—whom he might have been pardoned for taking to be a slave driver—was "the ganger," or gang-master, who was the only person with whom the farmer had to deal. And if the stranger, in the excess of his virtuous indignation, should venture to hint that the system, as a system, might be materially improved by its complete abolition, the farmer will excuse himself for supporting it by alleging that his arable land can be cleared of its twitch and obnoxious weeds more effectually by nimble human fingers than by any machine; and that this can be most rapidly and cheaply effected through the medium of the ganger, who, in the sparsely-populated districts of the Fen country, can at once collect from the surrounding parishes a staff of workers numerically competent to cleanse a large field of its twitch in a single day. And so the farmer makes his agreement with the ganger, and the ganger undertakes to do the work, and the farmer pays him for it when it is done; and there is an end of it so far as the farmer is concerned. He has nothing to do with the little children and the mixed sexes of the gang's constitution—that is the ganger's business and not his. If the ground is properly twitched, or the hoeing is thoroughly done, the farmer is satisfied; and to inquire too curiously into the moral behaviour of the band of workers employed by his *employé* would be a work of supererogation utterly foreign to the bovine disposition of the bucolical nature. And so the stranger returns from the Fen districts with a very low opinion as to their agricultural institutions.

And, certainly, the peculiar institution known as the gang system is altogether indefensible, and can only be amended by being obliterated from the face of Eastern England. It is an embodiment of all that is reprehensible in the training of the children of the agricultural poor. It saps their strength and stamina, no less than their morals and well-being; it paralyses the efforts made for their educational improvement; and it hands them over, body and soul, to a pernicious system which is a social ulcer and a disgrace to the boasted enlightenment of the 19th century. The system, as at present worked, depends entirely upon the gang-masters. Abolish them, and the system is annihilated. These gang-masters are usually in no higher social position than the persons whose children they enrol, and their principles are about on a par with their educational powers. Within a radius of 10 miles from their home they visit the various villages and collect the names of those who are willing to be employed in their gang. They then contract with the farmers, and set the gangs to their work. The members of the gang are entirely at the disposal of the gang-master, and must go when and where he pleases. It is within the knowledge of the writer of these lines that two girls, of the ages of 10 and 12 years, had to walk a distance of eight miles to their work, which began at eight in the morning, and lasted till five in the afternoon, when they had to plod their eight miles home. They did this daily for six weeks, and received sevenpence per day, their work for the greater part of the day being hoeing. A younger sister did it for one day, but was too knocked up to go a second time to so long a distance. Occasionally, when the work lies remote from the homes of the workers, a barn or other building is fitted up for their accommodation at night—an arrangement which only increases the evils of the system. Mixed gangs are more general than those in which the sexes are kept apart. Young married women are sometimes employed in a gang, but its members usually consist of children between the ages of five and 16, young men and women of a still riper age being also employed. The wages varying according to age; a child will receive threepence or fourpence per day; an adult 14 pence. Out of this they have to provide their own hoes, and, of course, their own food. Their contract being with the ganger, he is their only paymaster; he usually pays them at irregular intervals and at a public-house; and the Rev. Thos. Hutton, rector of Stilton, who read a very able paper on the subject at the Social Science meeting at York last year, says that the children may frequently be seen on a Saturday night as late as 10 o'clock, going from one beershop to another, in search of their driver for their week's wages. What such an arrangement leads to is not entirely left to our imagination, for the *Peterborough Advertiser* of Saturday, Nov. 4, records a case brought before the Fletton Bench on the previous Wednesday, which throws a strongly lurid light on the gross immorality of the gang system. It appears that a ganger named William Marshall, of Yaxley, who was a married man, and had been a gang-master for 24 years, was drinking on Saturday evening, Oct. 21, at an inn at Norman Cross, on the Great North Road, one mile from Stilton. With him were two of his gang girls, one of them, named Roult, being 16 years of age. They were all three very drunk, Roult being described as "almost mad drunk," the ganger having treated them "with liquors and old beer." The scene which followed, on a road on which there is still much traffic, baffles all attempt to describe it so as to make it presentable in our columns. With some difficulty Marshall was taken into custody, and, when brought before Lord Sherard and the Rev. G. Heathcote, charged with drunkenness and indecent conduct on the public road, he pleaded guilty, alleging "that he did what he was charged with while under the influence of liquor." The presiding magistrate had therefore nothing to do but to fine the ganger 1*l.* and 1*l.* 0*s.* 10*d.* costs, stigmatising the case "as one of the most disgraceful that had ever come into a petty sessions court."

Comment upon such a case would be superfluous, for of itself it speaks volumes. Previous newspaper paragraphs had told us that during the brief time allowed for the gang's dinner grown-up lads and girls would bathe together in one of the dykes or river drains, while the ganger looked approvingly on; and the statistical returns from the Fen districts had referred much of the illegitimacy that is there prevalent to the shameless licentiousness which must of very necessity spring up spontaneously from the gang system, and of the power exercised by the ganger over the girls in his employ; but we were scarcely prepared for so gross a case as that just mentioned as having occurred openly on one of the most famous turnpike roads in England. It is not to be wondered at that the Bishop of Ely, in his excellent and practical primary Visitation Charge, should have so forcibly spoken of the gang system and its pernicious effects on education and morals; and as the subject was brought by Lord Shaftesbury during the past session before the House of Lords, and has been referred to a Commission, which is even now engaged in making inquiry into the matter, it is to be hoped that it will not be suffered to drop—as was the case when it was brought before the notice of Parliament in 1843—but that it will be thoroughly investigated, and made the subject of such legislation as may prevent any further outrages upon public decency arising from the employment of mixed agricultural gangs. *London Review.*

THE PRESENT HIGH PRICES OF STOCK.

[The following is an abridgment of a paper read by Mr W. Scott, of Mossilee, before the Galashiels Farmers' Club.]

I SUPPOSE we may take it for granted that stock-farming has been paying well for the last two years, owing to the extraordinarily high prices which have been obtained for live stock and their products. But as people are apt to lose their usual caution, and run into wild speculations in times of extraordinary prosperity, little caring for the lessons of past experience, which should surely remind them of the dull times and misfortunes by which such periods have always been followed; so, just as a sort of corrective remedy to the excitement caused by the present high rates, we would do well to consider the important question, "Will the present prices continue?" Let us therefore proceed to consider some of the causes which have brought about this favourable state of things. The first cause is the scarcity of lean stock, there having been of late years great difficulty in getting any number of well-bred animals for feeding purposes. The fact remains till within these few years we stored their products have held quite a subordinate position in agricultural practice; and it is not long since the question, "Does feeding cattle pay?" was often discussed in our farmers' clubs, and settled in the negative. The grain crops, and in a few more favoured districts Potatos, were at that time the main products of the farm; and the small quantity of stock that was kept was only put up with because it enabled farmers to grow better crops of these remunerative articles, so that it is really no wonder they paid so little attention to their sheep and cattle, and sent so many of their calves to the butcher. This state of things has also been favoured by the want of keep through dry scorching summers, followed by some very severe winters—such, for instance, as that of 1860, when it is well known many of our hill farmers were nearly ruined by the loss of thousands both of lambs and old sheep. And then, again, there is the modern improvement of forcing forward all animals to maturity at a much earlier age than was done a few years ago, both sheep and cattle being now slaughtered at least one year younger than at that time. The next thing I would allude to, as conducing to these high rates, is the present prosperous state of our commerce and manufactures, and the consequent abundance of money in all classes of the community. The result of all this is, that there is such a demand for labour that wages have been raised very much, and our intelligent working-classes are now living in a state of comfort and prosperity, which can stand a very flattering comparison with the condition of similar ranks in other countries. The low price of grain should also be mentioned here; for, by giving the people a plentiful supply of cheap bread, they are enabled to spend the more on dear butcher-meat. Nor is this a mere empty theory, for most of the working-classes now sit down to dinner with a good supply of butcher-meat, and the best of everything which were luxuries almost unknown to them a few years ago, when wages and meat were low and bread dear; and it was only the other day a working man said to me, "It's expensive livin' in the toon the noo; flesh is awfu' dear; it's a blessin' the loaf 's sae cheap, or we could never afford to get a bite o' meat at a'." In such a statement as this of the reasons of the present high prices, we must not omit to mention the alarming disease which is now decimating our herds and ruining many farmers; for there is no doubt that the cattle plague has helped in more ways than one to raise the price of flesh meat, and it seems more than ever likely to have a still greater effect shortly. And there is still another reason which has sprung out of the last-mentioned case; but as that scourge concerns us as farmers, I will not enter into particulars, but merely refer you to a December number of *Punch*, where, as most of you will remember, he gives an account of "The real Rinderpest." And now, gentlemen, having thus briefly brought before your notice a few of the principal causes which have helped to bring about the present high prices, I will now go on to consider those and other circumstances more minutely, for the purpose of inquiring whether or not they are likely to continue to operate in such a way as to maintain the present favourable state of things.

The present Scarcity of Lean Stock.—The first of the causes mentioned was the scarcity of lean stock; and the reason of this was, that farmers have till lately been

paying comparatively little attention to the breeding and management of sheep and cattle. However, the case is altered now, the tide of prosperity runs in a different direction, and the production of grain, which had long been the mainstay of British farming, has now become nearly unprofitable, through the enormous importation from abroad. Farmers are now wisely turning their attention more to the management of live stock, and the animals which were lately considered only necessary nuisances—mere manure-making machines—and the feeding of which did not pay for the food consumed, are now by far the most remunerative products of the farm, and command a price in the market which would have been regarded as fabulous and impossible only a few years ago. In consequence of these high prices, farmers are now making great endeavours to increase the number of these useful animals—and all success to their efforts. If we look back through the last 20 years we shall find the same thing going on as energetically as now, though with a different view. The increased production of grain was at that time the farmer's great object, and no wonder; for corn was then very profitable, Wheat often bringing from 60*s.* to 80*s.* per qr., and the other cereals in proportion. And, as the natural consequence of these high prices, they paid most careful attention to the cultivation of these crops, and tried all plans to raise the fertility of their soil by more liberal applications of manure, and so on. This very time gave rise to many of the most important improvements which have raised the science of agriculture from the old jog-trot of drudgery and routine in which our grandfathers found and left it; among these may be mentioned the improved system of deep drainage, the introduction of guano and other artificial manures, and the consequent extended cultivation of green crops. Now it was that the threshing mill, the reaping machine, and all the long list of new implements came into use. They even turned to their own ends the mighty power of steam, which is destined to revolutionise all our farm economy, and to do as much for agriculture as it has done for manufactures. Not content with the land already under cultivation, they turned their longing eyes on the wild hillsides and the watery bogs which had lain till then in a state of nature, maintaining nothing but the wild curlew and plover, with, perhaps, a stray sheep here and there; and soon they changed the bleak moors into fertile fields, and covered them with luxuriant crops and numerous flocks of well-bred sheep. But I have no need to talk of reclamation and improvements on the banks of Gala Water; suffice it to tell that, urged on by their own inherent spirit of energy and the hope of high prices, the farmers of this and other countries paid so much attention to their grain crops that in a few years, as we all know only too well, the supply exceeded the demand, and so the prices fell below the cost of production. The same thing is going on now, as it ever has done, and ever will do, when the price of any one article gets high; and as we are just going through the same process, let us beware that our boasted enterprise and wild speculations allure us not into the same state of wreck and misfortune as that into which corn farmers were a few years ago plunged when the prices of grain fell from their high war rates to their natural level. But some of you may think it impossible this should ever occur, supposing that the number of live stock cannot be increased to such a degree. It has been stated that farmers are doing a great deal to forward this object; and let us now go on to consider how far they are likely to prove successful, and what room there exists for improvement. You know well that there is nothing easier than increasing the mere numbers of our stock; and the only difficulties that lie in the way worth our consideration are comprised in the questions—Is it possible to increase the quantity of food for stock? and, having done so, will it pay?

2. *Can we Keep more Stock?*—Keeping in mind that farmers are going into this matter with their whole heart, let us inquire how far they are likely to succeed in increasing the amount of their food for sheep and cattle. There is no opinion so much against progress, none so apt to make us settle down into self-complacency and sloth, as the deluding idea that we have attained perfection. It is an admitted fact that the science and practice of agriculture have made great progress of late years, and we are all proud to know that our times will be handed down to posterity as the brightest, earliest days of improvement; but still, taking the agriculture of England and Scotland as a whole, high farming is yet the exception, and not the rule, and in many parts of the country there still exists great room for improvement. Among them may be mentioned thorough drainage, which is an improvement of the first importance; for till this is done where really required, it is needless applying large quantities of lime or other manures, for they are only half lost. The great progress which has yet to be made in this matter will be more apparent when you recollect that there is the enormous extent of 21,000,000 acres of land still in want of this first step of improvement. Deeper cultivation is the next mode of improving our land and increasing the amount of our food for stock; and although the average depth of the cultivated soil of this country is generally estimated at 4 inches, yet the great advantage to be derived from deeper ploughing is now so well understood and acted on, that there is no doubt that in a few years this will be more than doubled. The principal advantage of this will be larger crops; but another consideration is, that when all this is carried out, our Grass and other crops will not be nearly so liable to be scorched and burned up in dry seasons, like 1864, and so our sheep and cattle will not be subjected, as they have lately been, to famine and drought every few years. A more liberal use of artificial manures and feeding stuffs would be a very direct and profitable mode of increasing the production of butcher-meat and wool; but improvement is much required here, for many farmers still scarcely believe in the use of these at all. And then, again, there are the twelve millions of acres of good land, fit for improvement by the plough, which, owing to certain hindering causes, are still in a state of nature. It is certainly most astonishing that such should be the case at this advanced stage of agricultural progress, and it shows very plainly that there is something to be done, with our whole system of the hypothec, game, and entail laws have already been so much discussed, and blamed with fettering and retarding the efforts of progress, that it is scarcely worth while saying more of these old remnants of feudalism here than that the sooner they are rectified, just the quicker will renewed improvement and prosperity come for landlord and tenant and the community at large. The amount of food annually lost to the country through the want of the cultivation of this enormous extent of land cannot be estimated in these dear times at less than forty millions of pounds—a large sum, certainly, to lose by our own want of energy and progress; and the worst of it all is, that the very want of that food sends us to other countries in search of supplies.

3. *The Prosperous State of our Commerce and Manufactures.*—We come now to consider the present prosperous state of our commerce and manufactures, and the present high wages of the working classes, which are great causes of the present high prices. Has this country to be favoured with a long continuation of the present prosperity? When we look back through the commercial history of the last 40 years, we find six similar seasons of great prosperity, all followed by their corresponding terms of hard times, dull trade, and disaster. The rule of supply and demand comes in here as well, and the present extraordinary desire for manufactured goods of all kinds is sure to be met by an increased supply. Take our own flourishing town of Galashiels as an example of this. Look at the improvements her energetic manufacturers have introduced, and most expensive machinery which they have put up. Think of the thousands of intelligent workers they have brought from all parts of the country, and their factories going night and day; and all with the object of producing the greatest possible quantity of their valuable manufactures. And knowing that the same thing is going on all through the country, can you doubt that all this must end in an increased supply and a satiated demand? The manufacturers of the Continent, and America too, are now making great progress; and the time is fast coming when they will not only supply their own wants, but compete with us in all the markets of the world, and then our manufactures will not be so much required. So that there is every chance of an increasing supply of all our high-priced manufactures being met by a lessening demand; and the consequence of all this must be less need of labour and lower wages, and so the great demand for our agricultural commodities among the middle and working classes will be very much checked.

Mr. Scott proceeded to discuss the influence of the cattle plague and of importations from Ireland and from foreign countries upon the probable maintenance of existing high prices. We add his remarks on the price of wool.]

The Price of Wool.—Wool has been the most profitable of all our farm produce for the last two years; and this was mainly owing to the scarcity of cotton, through the American war, and the opening up of new markets by treaties of commerce, and so on. The American war is over at last, and that unhappy country is now settling down into a renewed state of energetic prosperity; and one good result of that inhuman war will certainly be an increased supply of cotton from every country suitable for its production. Thus the price of it will be lowered also, and it will soon regain its place in the fickle favour of fashion, which, during the late scarcity, was usurped by articles of woollen manufacture. I have said that farmers are everywhere turning their attention more to the management of live stock, but this refers more especially to sheep, for the high price of wool has turned the balance in favour of sheep, wherever the position of the farmer gives him the power of choosing between them and cattle. The cattle plague has also helped greatly to encourage the keeping of sheep, both in this country and through the rest of Europe; and if that disease does continue much longer on this side of the wild steppes of Siberia, there is no doubt that sheep will, in a great measure, take the place of cattle, and then there is sure to be an over-supply of wool. And when the farmers of Australia and America begin to send us their butcher meat, then they will pay a great deal more attention to the breeding and management of their stock, and so they will be able to send us double the quantity of wool they are now doing. I have also alluded to the fact that there is little chance of our manufacturers being able to maintain their present high position in the markets of the world; if they go on as they are doing just now, the demand will soon be more than supplied, and then we shall have plenty of cheap cloth, as a matter of course, and cheap wool. Taking all these things into account, can we come to any other conclusion than that 60*s.* will soon be as much a thing of the past for a stone of wool (24 lb.) as it is now for a quarter of Wheat?

Concluding Remarks.—We have seen then that farmers are making great endeavours to raise both the number and quality of their stock, and that they have still plenty of room for doing so; we have seen the enormous quantities of these valuable animals which are now coming to our shores from all quarters. You have also taken with me a rapid survey of the present state of farming in the continental countries, and seen that they are just beginning the profitable business of feeding stock for our markets, and come to the conclusion that they are certain to send us a greatly increased number very soon. And you have heard that along with these larger supplies there is likely to come a lessened demand, caused either by the high price or commercial difficulties and dull trade. And having heard the whole circumstances of the case, we can surely come to no other conclusion than that our present prices are not likely to continue. This subject is doubly important at the present time, for really our affairs are in a very peculiar state just now. Farmers were just recovering from the effects of the losses of the late bad seasons and the ruinously low price of grain, when the cattle plague appeared with all its disheartening disasters—loss of stock and capital, which a rack-rented tenantry can ill afford. We are now threatened with yet another rise in the price of labour, which, in spite of all assertions to the contrary, has been steadily rising all through the last 20 years, and, taking all things into account, is nothing below the rate of remuneration in other unskilled departments. And along with rising wages there is now the falling prices of stock looming in the distance; and this is sure to be the worst loss of all, unless we look well ahead, as we are trying to do, and prepare in time for the coming change. It would have been well for our arable farmers had they done this a few years ago, when corn was selling at war prices. They would have seen from the records of the past, that when the price got so very high it was sure to fall. If they had examined the state of Continental farming, as we have done, they would have been better prepared for that overwhelming flood of foreign grain which was so soon to deluge their markets, bring down the prices, and plunge them into the hopeless abyss of poverty and ruin. We are all the better for being reminded of these dark days of our own history, for we are ever prone, in the bright sunshine of present success, to forget all the sad lessons of the past; and it is only by looking all the facts of the case sternly in the face that we can ever hope to escape from the coming return of the same sad disasters.

HOW TO MAKE THE MOST OF THE LAND.

CERTAIN soils are adapted for meadow and pasture, and their owner naturally concludes the most profitable system of husbandry is grazing, because it returns him the largest rent with the fewest outgoings. In this he is joined by his tenant, whose interest runs parallel to his own. Others, speaking from a different experience, owing to diversity of soil and circumstance, conclude in favour of arable husbandry, or it may be the mixed system of corn and cattle. If, on the other hand, we turn to the labouring population, they prefer small farms on the horticultural system, because that furnishes them with the most employment; while the manufacturing and commercial interests, if they receive a plentiful supply of cheap produce, are indifferent as to whether it is the growth of this country or of a foreign soil.

According to each of these views the problem is solved by self-interest. Thus, in the one case, whole farms, estates, and parishes have been thrown down to Grass, and the bulk of the labouring population, artisans, and others depending upon them, have had to find employment in another an exclusive system of corn-cropping having succeeded for a while, eventually finds either the land becoming exhausted, or else that the low price of foreign corn will not pay, or, as it very frequently happens, both these results are realised. A third party, to avoid such extremes, adopts the mean of corn and cattle, but they complain that the latter barely pay for their keep, [1] though fortunately, however, for this system, the manure turns the balance in its favour. The proposition of the labouring classes is equally at fault, for wherever it has been reduced to practice it is attended with the most pauperising results, while the commercial maxims of the fifth party would place the country in too great dependence upon a foreign soil.

But besides the above objections to this unscientific mode of solving so important a problem a still greater has to be told, viz., the obstruction thrown in the way of improved agriculture, to which the several plans are individually and collectively subject. In the case of some rich meadow and grazing ground no doubt much may be said in its favour, for long rents are paid to the landlord, and about equal sums realised as tenant's profit. On the other hand, however, we have professionally examined a large area of grazing land, which was high rented at 20*s.* per acre, and which, putting one year with the other, was not worth so much as this to the tenant. And if we inquire what amount of produce such lands would yield under steam culture and other improved systems of husbandry, the practical answer is annually becoming more and more against permanent Grass land. No doubt, over a large extent of the Grass land of England and Ireland, and also of the home "Grass parks" of Scotland, landowners are making more of the land than what they otherwise could do; but this under the most favourable view is only an excuse for following an antiquated system of management, involving a total absence of encouragement to management by which twice and thrice the value of produce could be produced to the country. Some of the Grass lands, for example, in the neighbourhood of London, as in the Essex marshes, rent perhaps as high as any in the kingdom; but in every case the adjoining lands under cultivation return four and five times the value of produce to the country, and consequently support a corresponding increased population. But the area of rich Grass land that brings in such long rents is small. The great breadth of permanent meadow and grazing grounds yield but a small return, and upon this a higher value is often placed than it is intrinsically worth, as for instance because they afford hay for winter keep or

pasturage for stock during summer, which otherwise would be unprovided for.

Exclusive corn farming, like that of stock farming is now out of date in this country, and therefore it would be wasting time to show the obstruction it throws in the way of general improvement and a source of industry and wealth to the nation.

The mixed system of corn and cattle is doubtless sound, but how seldom do we find it rendered to practice in accordance with science! Opinion is perhaps more diversified on this head than on any topic in farming. In short, the problem of the best mixed system has yet to be solved.

The labourer's proposition of more manual labour being applied to the land is diametrically opposed to the present progress of things, which is evidently more towards the employment of machine labour. At the same time it is proper to observe that the latter includes and involves in its ultimate result the employment of more manual labour directly and indirectly.

And lastly, the practical tendency of our large towns has evidently for a long time been to procure cheap foreign corn and exclusive cattle husbandry at home, which is in principle contrary to the progress of improved agriculture and their own best interests.

We have yet one element to notice, viz., the skill of the farmer. Money, muck, and machinery are invaluable elements, but how different are the results they produce under different degrees of skill? How often do we attribute great returns to the soil, climate, and systems of husbandry which really belong to the professional intelligence of the farmer? and, *vice versâ*, attribute shortcomings to the former which manifestly are due to the latter.

From these cursory observations it evidently follows that the practical solution of our problem, "how to make the most of the land," remains to be left free and unfettered, to be solved every man by himself in the circumstances under which he is placed. *W. B.*

LE JOURNAL DE L'AGRICULTURE.

[A new Parisian Agricultural Periodical.]

WILL you please to allow me by means of your Paper to inform the public that in consequence of a change of proprietors, I have this day ceased my connection with the *Journal de l'Agriculture Pratique*, which I edited during more than 17 years. I intend, notwithstanding to continue serving the cause of agriculture. For this purpose I have started, with the concurrence of a great many agriculturists, *Le Journal de l'Agriculture*, the first number of which is to be published in a short time. As I cannot address my readers in the Review, signed by my name during so long a time, I shall be sincerely grateful if you will be so kind as to announce my intention, and let agriculturists know that they are invited to send me their letters and communications, 82, Rue Notre-Dame des Champs, à Paris. *J. A. Barral, July 1, 1866.*

Home Correspondence.

Crops in Kent.—The late rains have been very beneficial to all crops. The Wheats that were thin on wet heavy lands, sands, and gravels, are astonishingly improved. All other lands are far beyond an average, and taken altogether, there will be a good average crop, far surpassing lodged crops which I have grown, not producing more than five sacks of Wheat per acre. I have not seen one acre of Wheat lodged. There is nothing alarming, as many have supposed. Barley will be above an average crop, Beans and Peas as well, and the few Oats promise a great crop; a great breadth of Sainfoin, Clover, and hay; in fact, we have a sufficiency of everything but beef—fruit in abundance, everything we can desire, nothing wrong but the profit. Last year I began to cut Wheat on the 24th of July, this year it may be a few days later. You may use my name as you please, I am 81 next month, and thank God as hard as steel, and live under one of the best men and best landlords in the world—Earl Cowper. I have 100 quarters of Turnip seeds to thresh. Every seed I can retail—but few men in England who can. I travel nearly all over England. In Lincolnshire they are splendid. *Robt. Hudson, Wingham.*

Crops in Berkshire.—I consider the Wheat crop in this neighbourhood as looking thin on the ground, very short in the straw, and I fear cannot reach an average crop. The Barley also is much the same, except a few forward-sown pieces. The Oats are short in the straw, but coming very corny. I think the corn, taking all crops, will yield less straw than we have had for some years. Our hay crops are also various, but quite an average quantity, and some well secured. Our root crops bid fair for a good crop. I should think reaping will commence the second week in August. *Thomas Owen, Clapton, Hungerford, July 11.*

Crops in Surrey (Wandsworth, near Guildford).—The appearance of the crops in this neighbourhood may be considered upon the whole satisfactory. Wheat may perhaps this year form an exception. It cannot be a good crop, that is certain, whatever the weather may be between this and harvest. I have not seen what I term a strong piece of Wheat anywhere, but some very bad fields, and extremely foul with weeds. The straw is weak and short, and a thin plant generally. I should put down the Wheat crop as being under average, and this farm generally responds to the character of the season. Barley, Oats and Peas are all promising well at present, the latter free from any blight, and well podded. Beans are not much grown. The Grass crop is good, and a portion well secured; some damage done by the last wet week. A good plant of Mangels, Swedes, and Turnips, but Mangel not likely to be so good as last year, which was far beyond anything I ever saw for weight per acre. The Hops are in a critical state, but I think are improving. *W. Simmonds, July 10.*

Crops in Hampshire (Southampton).—The Wheat crop promised badly a few weeks ago, but improved much with the warm forcing weather previous to the present rains; thin on the ground, but nearly an average crop. Barley a good average crop. Oats over average. Beans various, but under average; a small breadth. Peas, a small breadth sown; under average. Mangel not so good as last year. Swedes and Turnips—the early roots had in many instances to be sown again; but on the whole there is an excellent plant and a good promise. *W. C. Spooner, July 10.*

Covered Fat Stock Markets.—The contrast between the Metropolitan market and the neighbouring Agricultural Hall, where cattle are shown during the Christmas week, convinces every one that we must ultimately come to covered fat-stock markets in all our large towns. There cannot be a doubt of this, for the present system of open-air marketing is not only barbarous and out of date in its details, but attended with loss in every way both to the farmer and to the public. Now that cattle are house fed, groomed like horses, forced forward to early maturity, and conveyed to market by steamboats and railways, new demands arise. So long, however, as they were fattened in dark, confined houses, drivers and dealers accustomed to buy in the open market or grazing grounds could not form a proper estimate of animals until they were turned out to the straw yards or fold yard before the farmer could effect a sale. Hence the practical argument in favour of the old system of open-air sales—an argument that still holds good in too many cases, owing to the antiquated state of farm buildings, and the habits to which they give rise. There are, however, other principles in the farm management and marketing of cattle that are making progress besides the above one, involving protection from the inclemency of the weather, and its consequences, a less consumption of food in keeping up animal heat, with a greater weight of carcase from a given quantity of food consumed. Thus light, pure air, and a certain amount of exercise are essentially necessary to the health of animals, and the most profitable development of their bodies, so as to yield the largest weight of the best quality meat and wherever such desiderata are obtained, cattle can be seen indoors as well outside of the English farmer, cattle-salesman, or butcher, for example, ever thought of inventing the fat-stock of the Smithfield Club out of the Agricultural Hall in order to see it in proper pens to make satisfactory sales and purchases. In the metropolis the commerce of cattle, in the removal of the market from Smithfield to the more exposed situation of Copenhagen Fields, has been, unfortunately, from bad to worse, more especially as regards the interest of the farmer. This arises from the more elevated position of the market ground, and the want of shelter in bad weather, so that cattle are frozen during winter and scorched during summer. The case of heavy animals that are warm when tied up to the bars, may be more easily imagined than described. In other respects the details of management are as barbarous as they were several centuries ago. The public lairs are constructed on the principle of "blowing both hot and cold!" A greater contrast can hardly be pointed out than that which exists between the Agricultural Hall and the cattle lairs in question, the roof of the former being lofty and finely arched, while that of the latter is low and comparatively flat; a visit to both during the week of the Smithfield Club Show will soon decide the question. On meeting, in the Agricultural Hall, during a recent show, a cattle salesman who sells from 100 to 150 head of bullocks weekly, we put the question to him as to his own personal experience, and his reply may readily be anticipated. Every year, in short, is adding fresh testimony to the soundness of the conclusion that the new cattle market is a "big Corporation blunder," while the Agricultural Hall has already proved itself a complete success for the purpose for which it was created. *B.*

Insatiable ambassador.—Messrs. Lawson have sent us the following letter:—"You favoured me last spring with a present of Kidney Vetch seed, and I believe you will be glad to hear my account of it. I sat once sowed it in a 6-inch drill (extremely thin), but each seed appeared to produce a wide-spreading, many-stemmed plant, so that a much wider space would have been advantageous; however, notwithstanding a severe drought, it stood through last summer and the winter, and it is now grown well, and covered with a yellow blossom, as you will see by the specimen I enclose. I have begun mowing it this morning, and find it yields abundance of food, and the horses and other animals are very fond of it. I have ordered it to be then left, and, by the vigorous appearance of the root, I expect a good second mowing; I have reserved a little of the present crop to ripen its seed. I fear you will scarcely understand my description, but it (the Vetch) is new here, and very interesting, so I thought it due to you to forward a specimen, which you will observe is that one of the roots has produced no less than 36 stems. *M. A. Bidwell, Shirley House, Bournemouth, Norfolk, June 25.*

The specimen sent is full of bloom. We are now cutting a piece of Wheat down for fodder, with a wild Vetch and a yellow Trefoil, both native plants, as high as itself in the midst of it. There are better forage plants than Anthyllis in "Babington," and very much better in "Lawson."

Steam Cultivation.—A man may now walk from farm to farm on which steam power is employed in cultivating the land all over the country. If he mount his horse he may visit two or three such farms every day. The visitor to such farms does, as a general rule, it may be said, receive the assurance of the tenant that he is satisfied with his purchase; in the majority of cases, indeed, he is more than satisfied—he would not be on any account without it; in some few cases he is disappointed—the apparatus is more expensive than had been imagined, breakages and repairs have swelled the cost, the work done is hardly so much a day as had been promised; and in one or two cases out of several hundreds the plough or cultivator has been laid aside—"the time," it is declared, "has not yet come when steam cultivation is to answer," and the horse or ox labour of the farm has been resumed. What is to happen to bring about the time of successful steam culture in such cases is not generally clearly understood by those whose experience has been thus unfortunate. The apparatus requires improvement—the labourers want education—or, perhaps, the land needs laying out especially for the purpose. Meanwhile it is certain that land as difficult has been cheaply and efficiently worked by labourers as awkward elsewhere, and the very same power and apparatus have been used. The fact we believe to be that in the cases of failure and success respectively the difference has lain not so much in land or tool as in the master. Where success has been resolved upon, it has been attained. Where the responsibility has been undivided, and an anxiety that the tool shall answer has guided everything, Howard, Smith, and Fowler, all have done good work cheaply and successfully; and the instances of failure have, we believe, been almost wholly owing to faults of temper (either as to its tenacity or its evenness), or to the absence of an undivided interest in success. This last consideration interferes in the few cases in which two or three neighbouring occupiers of land have joined to purchase the apparatus, and it has resulted in the cases known to us in a much inferior degree of success. When a Company has been formed for purchasing and working the apparatus, there is another very serious source of injury and mischief in the damage received by long journeys to and fro in working on different farms for hire; and this has also interfered with the success of individual owners of the apparatus who depend for their returns on work done for hire. Wherever there is a sufficient extent of arable land laid out in fields of considerable size, the farmer should have a steam plough or cultivator for himself; and if he resolves that it shall succeed, and has patience and resolution enough to carry out his plans, he will not regret his purchase. His choice may depend on the extent of his farm or the amount of capital he cares to invest in his altered arrangements, but every one of them will succeed in his hands, as every one of them already has in those of many others. Perhaps the following may be stated as the usual experience. Fowler's 14-horse power engine ploughs 6 to 7 acres a day, and cultivates from 10 to 20. Howard's and Smith's, with a 10-horse power engine, cultivate 5 acres a day with a three-tined instrument, and 8 acres a day with the five-tined tool. The former ploughs as much per cent. as Fowler's does, and does it as well. The cost of labour is 8s. to 10s. a day for Fowler's apparatus, and 4s. to 5s. a day for Howard's and Smith's. The coals consumed amount to 12 to 16 cwt. in the case of Fowler's engine, from 8 to 10 cwt. in the case of Howard's and Smith's. The rope in use may be 1500 yards in length in the case of Fowler's, 1200 to 1500 in the case of Howard's and Smith's. The water-cart costs alike in both cases. The liability to breakage has proved less in the case of Smith's apparatus than in that of any other. Mr. Smith, too, a farmer, and knowing what the land required, got into a good groove from the very beginning. His tool and tackle were from the very beginning good, and have not been altered since. He has thus fewer dissatisfied clients perhaps than any one. Mr. Fowler, though on several farms his original apparatus is still successfully at work, has made successive improvements, and most of the implements originally purchased have had to undergo expensive alterations in order to bring them into the condition in which the apparatus is now sent out. That it is now the best apparatus for farms of large fields, well furnished with roads, cannot, we think, be doubted. For small farms and awkwardly-shaped fields, either Smith's or Howard's is the best. As Mr. Edmonds says, in one of the most extraordinary statements of work done by Fowler's apparatus which have yet been published, the chief hindrances are small fields and crooked fences. Except in special districts, therefore, the smaller apparatus is generally best fitted to the existing circumstances of the land, and Fowler's "tackle" becomes a premium on the improvements which are necessary to good and systematic agriculture. *J. C. M.*

Cockchafers.—On the 26th April, 1863, the woods in the central part of Wurtemburg were covered with foliage; but with the green leaves appeared the destructive cockchafers in such multitudes that the communities were obliged to pay persons employed to destroy them. This calamity was widely spread in many districts in the north of Germany; these voracious creatures completely stripped the trees of their foliage, as they did in Wurtemburg. Their vast multiplication may be attributed to the want of crows and other birds to destroy their larvæ in the fresh-ploughed fields. Birds of all kinds are much less numerous in Germany than in England, consequently the farmer suffers much from insects, mice, and other vermin. *M.D.*

Societies.

BIRMINGHAM HORSE SHOW.—Below we give the prize list of this—one of the largest and finest collections of Horses that have been of late brought together. No fewer than 323 entries, including a total number of about 370 horses, mares, and foals, competed in twenty classes, most of them well filled and worthy. A dozen thoroughbred stallions for getting weight-carrying hunters—26 of the hunters for which in Class I. sires are desired—27 hunters without restriction as to weight; 38 colts or fillies for hunting purposes (of two ages);

and 20 mares for breeding hunters, made up the entries in connection with that noblest of quadrupeds the English hunter—combining strength, spirit, speed, and endurance in the finest proportion.

Then come hacks, roadsters, and cobs, in which utility more than beauty is desired; there are 64 entries of these competing in three capital classes. Ladies' horses, a somewhat indefinite class, include 20 entries, and there are 71 in the various pony classes. Excepting the stallion class, agricultural horses are not so well represented as the other breeds. On the whole the management may be congratulated on a very successful inauguration of a new annual show in connection with the Midland Counties Agricultural Association.

The following is a list of the Prizes:—

HUNTERS.

CLASS 1. THOROUGH-BRED SIRES.—1st, 30*l.*, W. S. Cartwright, Esq., Newport. "Penarth." 2d, 15*l.*, Mr. T. J. Merrick. "Hur." 3d, 7*l.*, Mr. W. Gulliver, Swadcliffe, Banbury. "Neville."

CLASS 2. HUNTERS, EQUAL TO 15 STONE, FOUR YEARS OLD AND UPWARDS.—1st, 15*l.*, Mr. Thomas Sutton, Darlington. "Voyageur." 2d, 10*l.*, Thomas Gee, Esq., Wadhurst, Sussex. "Master of Arts." 3d, 5*l.*, Hugh J. Percy, Esq., Aspatria, Cumberland, "Ingleby."

CLASS 3. HUNTERS, WITHOUT CONDITION AS TO WEIGHT, FOUR YEARS OLD AND UPWARDS.—1st, 15*l.*, Mr. F. B. Jones, Hereford: 2d, 10*l.*, H. S. Lucy, Esq., Charlecote Park, Warwick. "Rural Dean:" 3d, 5*l.*, P. Hobson, Esq., Leamington.

EXTRA Prized 7*l.* in all.—Messrs. 2 and 3.—Mr. Daniel Sergeant, Long Itchington, Rugby, "Argus."

CLASS 4. THREE-YEAR-OLD COLTS OR FILLIES.—1st, 15*l.*, Mr. George Holmes, Beverley. "Tom:" 2d, 10*l.*, Mr. Anthony Harrison, Metchley: 3d, 5*l.*, Mr. Edward Wadlow, Much Wenlock.

CLASS 5. TWO-YEAR-OLD COLTS AND FILLIES.—1st, 15*l.*, Mr. John B. Booth, Killerby: 2d, 10*l.*, Mr. William D. Manning, Rotherstlorpe: 3d, 5*l.*, Mr. Thomas Easterson, Barnsley, Woodbridge, "Young Zuyder Zee."

CLASS 6. MARES AND FILLIES, up to 15*l.*, William Leech, Esq., Stalevbridge, "Jessy:" 2d, 10*l.*, Mr. E. Phillips, Bushbury Hill, "Lady Langford:" 3d, 5*l.*, Mr. John Tite, jun., Henley-in-Arden.

CARRIAGE HORSES.

CLASS 7. PAIRS OF GELDINGS OR MARES.—1st, 20*l.*, Thomas Avery, Esq., Edgbaston: 2d, 10*l.*, Sheppard, 21, 10*l.*, Captain J. Simpson Ballard, Cowbridge, "Chanticleer."

HACKS, ROADSTERS, AND COBS.

CLASS 8. NOT EXCEEDING 15¼ HANDS HIGH.—1st, 15*l.*, Hugh J. Percy, Esq., Aspatria: 2d, 10*l.*, Mr. Joseph Gilmans, jun., Birmingham, "Jenny Jones."

CLASS 9. FROM 14 TO 15 HANDS HIGH.—1st, 15*l.*, Mr. Lucas Webb, Ulceby, Lincolnshire, "Brunette:" 2d, 5*l.*, Howard Ashton, Esq., Prestwich, "Barmaid."

CLASS 10. UNDER 14 HANDS HIGH.—1st, 10*l.*, Captain J. S. Ballard, "Sturdy:" 2d, 5*l.*, Messrs. H. Norman & Sons, Aspatria.

LADIES' HORSES.

CLASS 11. HACKS OR ANY HEIGHT.—1st, 15*l.*, Major Quentin, Woodleigh, Cheltenham, "Knight Templar:" 2d, 5*l.*, George Holyoake, Esq., Shiffnal.

PONIES.

CLASS 12. PONIES UNDER 14 HANDS HIGH.—1st 10*l.*, Richard Milward, Esq., Thurgarton Priory, Southwell, "Lunette:" 2d, 5*l.*, Mr. Edwin Ludlow, Nechells Park Road, Birmingham, "Ranger."

CLASS 13. PONIES, UNDER 12 HANDS HIGH, TO CARRY CHILDREN.—1st, 5*l.*, Mr. Frederick Matthews, 170½, Unett Street, Birmingham, "Piebald:" 2d, 3*l.*, Mr. W. E. Wedge, Queen Street, Wolverhampton. "Fairy:" 3d, 2*l.*, Mr. Charles Collins, Selly Oak, Birmingham, "Tommy."

COB OR PONY SIRES.

CLASS 14.—1st, 10*l.*, John Manning, Esq., Welling borough, "British Statesman:" 2d, 5*l.*, Earl Dunraven, Emeworth, "Lucifer:" 3d, 2*l.*, Mr. David Grenfell, Bonvilston, Cowbridge, "The Ancient Briton."

DRAY HORSES.

CLASS 15. PAIRS OF GELDINGS OR MARES, FOUR YEARS OLD AND UPWARDS.—1st, 2*l.*, exhibitors, the Midland Railway Company Birmingham: 2d, 10*l.*, Mr. Robert Evans, Dowlestone Mill, Birmingham.

AGRICULTURAL HORSES.

CLASS 16. SIRES.—1st, 30*l.*, John Manning, Esq., Wellingborough, "Champion:" 2d, 15*l.*, Mr. William Wynn, Alcester, Warwickshire, "Sensation:" 3d, 5*l.*, Messrs. Yeomans Brothers, Pendrimore Hay, near Wolverhampton, "Black Prince."

CLASS 17. PAIR OF GELDINGS OR MARES, FOUR YEARS OLD AND UPWARDS.—1st, 20*l.*, Charles Wm. Brierley, Esq., Middleton, near Manchester: 2d, 10*l.*, Mr. George Graham, Yardley, near Birmingham: 3d, 5*l.*, Mr. William Henry Bull, Weoley, "Duke."

CLASS 18. MARES AND FOALS.—1st, 15*l.*, Sir Charles Isham, Bart., Lamport Hall, "Flower:" 2d, 10*l.*, Mr. Stephen Davis, Pershore, "Darby:" 3d, 5*l.*, Mr. Richard Madeley, Combe Fields, Coventry, "Darling."

CLASS 19. THREE-YEAR-OLD COLTS OR FILLIES.—1st, 15*l.*, Mr. J. Ewins Bennett, Rugby, "Blossom:" 2d, 5*l.*, Mr. William Wynn, Alcester, "Matchless."

CLASS 20. TWO-YEAR-OLD COLTS OR FILLIES.—1st, 15*l.*, Mr. Edmund Udall; 2d, 5*l.*, Mr. Robert Marples, Aston-upon-Trent, Derby. Commended: Frederick Nash, Esq.; Mr. W. Simpson, Stafford.

JUDGES.

CLASSES 1 to 6.—The Earl of Coventry, Crome Court, Worcester; J. R. Cookes, Esq., Woodhampton, Stourport; R. Fellowes, Esq., Bitteswell, Lutterworth.

CLASSES 7 to 14.—Mr. T. Keech, Milverton, Leamington; Mr. John Payne, Market Harborough; Mr. John Walker, Holywell, Halifax

CLASSES 15 to 20.—Mr. R. Doig, Lillingstone Hall, Bucks; Mr. R. J. Newton, Campsfield, Woodstock, Oxon; Mr. R. Swale, Rare-lon, Wolverhampton.

VETERINARY REFEREE.—Mr. E. Stanley, M.R.C.V.S., 35, Broad Street, Birmingham.

YORKSHIRE AGRICULTURAL.—The trial of mowing machines for the prizes of this Society took place last week with the following results:—

Samuelson	cut at the rate of 1 acre in	7¾ minutes.
Kearsley	"	50 "
Bamlett	"	54 "
Burgess & Key	"	54 "

Of these the Yorkshire machines are declared to have been decidedly superior: and the work of the judges (Messrs. Caldwell, Coleman, and Key) concluded with the following decision:—

1st prize, of 20*l.*, to A. C. Bamlett, of Thirsk. Price 20*l.*
2d prize to Henry Kearsley, of Ripon. Price 25*l.*
Highly Commended.—Burgess & Key, London. Price 18*l.*
Commended.—Samuelson & Co., Banbury. Price 18*l.* [illegible]

The following figures represent the relative power consumed by the several competing machines in cutting a given quantity of Grass. They are ascertained by Mr. Amos's dynamometer:—

Burgess & Key	80.3
Samuelson	82.0
Kearsley	90.2
Bamlett	93.6
Burgess and Bickerton	[illegible]
Cuthbert	120.9

Farmers' Clubs.

CIRENCESTER. *Lincoln Sheep.* At the fortnightly meeting of this Club, Mr. J. A. CLARKE, of Long Sutton, read a paper on this subject. He said:—Mr. Read, of Elkington, in his interesting history of the Cotswold sheep, adduces evidence that woollen cloth was manufactured at Gloucester by the Romans, and quotes a passage from the historian Tacitus (who lived in the first century of the Christian era), about the neatness and good order of the streets in Cirencester, so that "nothing was to be thrown out before the shops, except a fuller hung out his cloth to dry." Cloth, of course, implies wool, and from wool we naturally come to sheep; therefore there were sheep about Cirencester in those early times; and nobody in his senses can suppose they were anything but Cotswolds, fed in the "cotes" which gave name to the "wolds." No doubt they were noble and colossal as well as hardy animals, wearing the proud fore-locks of wool as they do now, and, for anything I know, yielding a fleece of 14 lb. to 20 lb.; breeding nothing else but twins to each ewe, and weighing at a year old some 30 lb. or 40 lb. the quarter! At any rate, if we choose so to imagine those muttons of Roman and Saxon breeds, nobody can bring us evidence to contradict us. Now, the Lincoln breed of sheep, of which I am to speak, have such antiquity on its side; or, if it has, documents to that effect are wanting. It has never figured on the pages of history. Cotswold breeders may discuss whether their favourite flocks originated from Roman importation (for Mr. Read considers that our ancestors, the ancient Britons, though wonderfully rural in their habits, and good sportsmen, were by no means pastoral), or whether the Cotswolds were introduced into Britain by Eleanora of Castile, Queen of Henry II.; and they may point to the commencement of the export trade in Cotswolds, when in the 15th century, King Edward IV. sent a number of Cotswold rams as a present to Henry of Castile, while another royal lot was shipped to John of Arragon to improve the Longwools of Spain. But our Lincoln sheep have no such classical relations to glorify them. All I can tell you of their origin is, that in the old times they were very ugly and very big: as with sheep so with people—"there are giants on the earth in those days." And having to paddle about in wet marshes, under an atmosphere of rain and fog, these knowing animals took care to wrap themselves well up in their thick greatcoats. You are aware that in the last century a third of Lincolnshire was a perfectly flat surface of peaty fen and salt marsh, several feet below the level of the ocean at high spring tides: the inhabitants were generally web-footed—at least the high-land dwellers used so to say of them; and the sheep had to make common cause with the Lincolnshire geese, and had to fraternise with the Lincolnshire wild fowl and the frogs, the croakers that Shakespeare calls "Lincolnshire bog-pipes." The climate has been completely altered since then by the embankment and drainage of the fens and marshes. You will find the most numerous flocks now upon the chalk "Wolds," and the oolite limestone "Heath" and "Cliff"—hills very much like the Cotswold range: but the breed is not a native of those dry and lofty uplands; in fact, the aboriginal natives of the Lincoln hills were rabbits, and the sheep folds displaced the warrens within the memory of people still living. The home of the heavy Lincoln sheep was on the lower undulating grounds, in the wide valleys, and more especially on the great plain of alluvial marshland in the county. Our ancient Fen sheep are described as "the longest-legged and largest carcased sheep of all others; and although their legs and bellies were for the most part void of wool, yet they carried more wool than any sheep whatsoever." The old Lincolns, such as my grandfather knew, were ungainly animals, with carcases long and thin, razor backs, legs thick and rough, bones large, pelts thick; and though attaining a great weight (mainly "live weight" I should fancy), were very deliberate in laying on flesh—in fact, they were "regular brutes;" as if they had been bred by some Anti-Bakewell (if you can fancy such a character) with a perverse love of clumsiness and slow feeding, and selected generation after generation, not with an eye for early mutton, but with a view to superphosphate and sheepskin, developing the skeleton and the hide! Their chief merit was their fleece, weighing 8 lb. to 16 lb., with a staple 10 to 18 inches in length. This long wool made the breed profitable to the lowland graziers, although covering such an unthrifty coarse-grained carcase of mutton. Now, however, Mr. Clarke observed, the Lincolns were vastly improved, not only with regard to size, but also as to wool; and he went on to say—A farmer at Leverington, near Wisbeach, grazed 219 Lincoln hoggets and 40 Lincoln shearlings, and the 259 fleeces weighed 117 tods, or an average of 12½ lb. per fleece. Mr. Plowright, near Spalding, whose fat sheep I have already referred to as attaining such great weights of mutton, had in that same year the following "tod bill"—of hogg and wether sheep, 690 "threes," 376 "twos," and 2 "ones," or 2824 fleeces, being about 11 lb. per fleece, and many of them had been shorn in spring off sheep sold to the butcher. Probably in ordinary breeding flocks, where the proportion of hogg wool is about one-third of the whole, the fleeces average 8½ lb. to 9 lb. each. As to individual animals, the weight of wool is sometimes very great. In 1862, a two-shear Lincoln ram, clipped by Mr. Bond, of Yarborough, yielded a fleece of 23¾ lb.; and though heavy fleeces are too commonly coarse in quality, this was as remarkable for length and fineness of staple as for actual weight. My father's prize ram at the Lincoln Royal Meeting of 1854 had clipped 51¾ lb. of wool in three years, an average of 17¼ lb. per fleece. Lincoln wool is in great request, from its peculiar properties of length, strength, and lustre and brightness. It is not requisite that the fibre should be very long; indeed it need not exceed some 6 inches in length to come under the designation of "lustre wool;" but the longer and stronger it is, providing it be bright, and not coarse, the more valuable it is. At Battersea Show my father and myself exhibited a hogget fleece on the back of the sheep, the length of staple of which averaged about 17 inches: the age was about 16 months. I have a lock or staple of wool from a ewe hogget which is 24 inches long, and another from a ewe, but of more than two years' growth, which is no less than 40 inches in length. You are aware that wool is classed by manufacturers in two general divisions. There are clothing wools and combing wools. The short wools for the most part belong to the clothing, and the long wools to the combing quality. The short wools are pre-eminent for their felting property, that is, the tendency of the fibres to adhere together, owing to the minute serrations (sometimes over 2000 in a lineal inch). When the wool has been carded, spun, and woven into woollen cloth, and is then put under the strokes of the fulling mill, this process of felting takes place. But long-wool, having fewer of the serrations upon its fibres, possesses the felting property in a minor degree, and it is called combing wool, because one of the first operations in manufacturing stuff and worsted goods from it is to pass the wool through heated iron combs, thus rendering the fibres smooth, and more like fibres of silk or cotton, without, however, losing the natural lustre. One main use for which our lustre wool is sought after is in the manufacture of "alpacas," "coburgs," and various fabrics composed of mixtures of cotton and wool: the gloss given by the wool is so admired, as to have become a great and fashion in materials for both gentlemen's paletots and ladies' dresses: and the weaver likes the wool because the microscopic saw-like teeth of the fibres take hold of the cotton in the process of weaving, and bind both together, making a sound and serviceable cloth. The product in thread or cloth from a fleece of wool is something astonishing. At Norwich, many years since, 39,200 yards, or 22¼ miles of thread, were spun from a single pound of wool; and 60 years ago a Miss Ives, at Spalding, spun 168,000 yards, or about 95¼ miles of woollen thread from a pound of wool, off a Lincoln ewe. But this seems nothing to the multiplication a fleece now undergoes at Bradford. From the manufacturer who generally buys my "clip," I obtained this bit of information. A 20 lb. Lincoln fleece, used as an admixture with cotton in the finest Alpaca fabrics, suffices for upwards of 12 "pieces," each piece of 42 yards in length; it might probably be extended to 16 pieces, or a total length of 672 yards, three feet in breadth. At 3*s.* a yard, the sum realised would be 100*l.*; and I suppose (though I am not much of a dress-maker), that the crinolines of 70 or 80 ladies are covered with products from a single fleece of wool. When we think of the hundreds of thousands of sheep clipped every season, it is a mystery where all the dresses can go to! I believe that in the production of this valuable lustre wool, Lincoln sheep have the pre-eminence both in weight and quality. Next in point of merit come the fleeces of the Cotswolds and Leicesters, and the Kent and Romney-Marsh wool third. Amongst the eminent breeders of the celebrated long-wool Lincolnshire sheep at the present time the following gentlemen may be named: Mr. Kirkham, Biscathorpe; Mr. Greetham, Stainfield; Mr. Wright, Nocton; Mr. Marshall, Branston; Mr. Battersby, Scothern; Mr. Walesby, Ranby; Mr. Kemp, Thurby; and Mr. Gilliatt, Martin.

NEWBURY. *Management of Grass Lands.* At a late meeting of this Club Mr. EVANS read a paper on this subject, from which we make the following extracts:—The day has gone by for farmers to trust for their chief returns to the barn door. Some say that a greater quantity of stock per acre can be kept on land under the plough than on old pasture land, but I contend that the largest number can be kept where you have a mixed farm, consisting of a proper proportion of Grass and arable land. (1) *The Improvement of our Present Pastures:* Efficient drainage, either natural or artificial, must, I think, come before everything else in the culture of our Grass lands, for when land is soddened with water for three parts of the year, to manure it is almost useless. You can only feed it for a short time, as the cattle spoil more Grass with their feet than they consume; and although you may grow a considerable quantity of Grass on some wet lands, still the quality is very inferior, and far less nutritious than it would be were these lands dry. Some I know have an objection to under-drain land, even though wet, which grows a fair quantity of Grass; this is, I think, because pasture land frequently after draining produces a less quantity of Grass, the coarser Grasses dying out before the finer ones have extended themselves sufficiently to take their places. Liberal manuring would obviate this. It will be found, too, that thoroughly drained land is drier and warmer in wet seasons, and more moist in dry ones than in undrained. Under-draining rests more with the landlord than with the tenant, and so hardly comes within the management of land; yet I maintain that where land requires under-draining it is almost useless to lime or marl, or in fact manure in any way whatever, and where the sound agreement and good feeling exist

between landlord and tenant which he advocated, there will be little difficulty in coming to a satisfactory conclusion on this matter. After under-draining, I am of opinion that liming, chalking, or marling would benefit most of our Grass lands, but of course such expense should be partially borne by the landlord, as most lands are permanently benefited thereby. Lime has a magical effect upon some pasture lands, which would not bring their produce to maturity under the most liberal supply of manure if applied alone. It has the property of absorbing moisture from the air, it exercises a mechanical action on the heavier soils; it supplies food to plants; it exercises a beneficial action on the organic matters, hastening the decomposition of vegetable remains in the soil; it has also a beneficial influence on the inorganic matters in the soil by setting free potash and soda, both substances highly necessary to the growth of plants; from 80 bushels to 320 bushels per acre are applied at shorter or longer intervals, according to the custom of the district. Whether put on as fresh lime, gas lime, or gypsum marl, or as common chalk, must depend more on the locality than on any great superiority of one over the other. Practically lime is a great sweetener of the herbage, and should be used more or less on all soils. Now, although I have been advocating draining and liming, these are only preliminary proceedings; and it will not do to stop at this point, but a proper course of manuring and feeding must follow. It is an old saying that "the use of lime without manure is sure to make the farmer poor," and I think we should find this correct with respect to Grass land as well as plough. I consider that the best manure you can use is that which is made in the yard (under cover, if possible), from well-fed stock; and this should be applied in the summer, on mowing grounds directly the hay has been carried, and on feeding lands when the Grass has been well fed out, and should be spread and well harrowed in at once, so as to spoil the after-Grass for as short a time as need be. In the summer the roots of the Grasses are in full vigour, and can at once assimilate the manure. In the winter they are dormant, so that it may be washed below the surface, and the coarser Grasses which root deeper reap the benefit of it at the expense of the finer ones. Of course, when it is not convenient to apply manure during the summer it is much better to put it on at any dry time in the winter than to leave the land unmanured. Small dressings of farmyard dung frequently applied are, I think, far preferable to larger ones at longer intervals. It is very rarely the case that enough farm-yard dung is made for the whole of the farm, and in consequence the pasture land has generally to go without. A remedy that it is a good plan to make compost heaps of all the vegetable refuse, mixed with road scrapings, earth from old banks, chalk, and whatever farmyard dung can be spared; over all these salt should be sown and the whole thoroughly turned and mixed together several times, adding, if possible, liquid manure at each turning; thus a very valuable manure may be made of substances which would otherwise be of little use. In addition to these, artificial manures may very often be advantageously applied. Bones, as we all know, have shown the most marked effect when used on some Grass lands. This is especially the case in Cheshire, Lancashire, and Yorkshire. I find that Cheshire is capable of keeping from 30 to 50 per cent. more stock now than could be kept 30 years ago, before the application of bones was so spiritedly resorted to. Guano and nitrate of soda may, I think, both be used with advantage in many instances. About five years ago I used both this manure and also superphosphate of lime on two Grass fields, together over 30 acres in extent, which we had not time to manure with farmyard dung. Both fields were divided into three strips—on No. 1, 2 cwt. of guano, on No. 2, 1½ cwt. of nitrate of soda, and on No. 3, 5 cwt. of superphosphate per acre were sown in April, and a wide belt crossing all three strips in both cases was left without any manure. Both fields were mown. The guano and nitrate of soda gave nearly the same increase of crops, quite 15 cwt. per acre more than when there was no manure, guano showing decidedly more in the aftermath, but the superphosphate apparently did no good at all, as we could not see where the belt without manure ran across the plot. The soil was an average clay that had been turf, drained some years before, and wanted to be drained again. To show the great influence that manuring has on the Grasses, I may mention that Mr. Lawes has for many successive years treated half-acre plots in the midst of a natural sward, each in a different way, and the result now is that these plots are as distinct as if they had been sown with different sorts of Grasses. We now come to the feeding of Grass land, and this is, I think, the most profitable and best way of treating it to as great an extent as possible. I am of opinion that we must feed hard with cattle as well; this will consolidate the surface, and keep the Clover and finer Grasses firmly rooted in the soil, otherwise they get thrown out of the ground during the winter, and Mosses frequently take their place. I also strongly recommend that all stock, whether grazing or dairy, should be given corn or cake to a greater or less extent, as may be requisite, while feeding on the land during the summer. This is the very best way of improving both the land and the stock; and if animals will pay for corn feeding in the winter, they surely will do so in the summer, when they can get all the rest of the food for themselves. Mr. Campbell, of Buscot Park, Berks, has carried out the practice of corn-feeding stock on Grass land most energetically, and this in addition to draining, artificial manuring, and sowing renovating mixtures of Grass seeds. Whether he will be repaid for the enormous outlay he has made in this way or not it is beyond me to say, but that he has wonderfully improved a great deal of the land I can testify, as I knew the estate well before, and have seen it many times since. I believe I am within the mark in saying that land there which formerly was not worth more than 10*s.* to 15*s.* per acre would now readily let at from 30*s.* to 40*s.* The plan which I first saw there, of giving the cattle their corn or cake in boxes about 14 in. square and 5 in. deep, putting one out in the field for each beast, is, I think, a very good one. Where you have sour feeding spots of Grass, it is a very good plan to sow salt over them; the cattle will then readily feed the roughest down, and it will soon become sweeter. Hard feeding will, I think, get rid of most weeds, and if care is taken to cut Thistles and Rattles, and eradicate Docks before they run to seed, we shall very soon have nothing but Clovers and true Grasses in our fields. On some farms I know the practice of fattening pigs on the Grass land is carried on during the summer with a most marvellous effect. The pigs are folded between hurdles about six in a lot, a wooden frame covered with thatched hurdles, to shade the pigs from the sun, is placed in each pen, and they have a fresh fold given them every day. The food is taken to the pigs three times a-day, ready mixed up, in a large barrel on wheels (similar to a churn), so that the man who feeds them has only to pull the barrel round till the opening is underneath for the food to run out into the troughs. I know that pigs fed in this way on the land do well, and the growth of Grass afterwards is something perfectly astonishing. Care must be taken to keep the pigs well ringed, to prevent their grubbing up the turf. Finally, as the easiest and best way of improving Grass land, I advocate making straw, or cake with roots, take the place of hay as much as possible during the winter, and feeding the Grass on the land in the summer, with corn and cake in addition; in this way a large quantity of stock per acre can be kept, and, which is another consideration, the great bother and expense of hay-making is got rid of to a very great extent.

2. *Of the Extension of Grass Lands.* I shall say very little, except that I think this would frequently be beneficial on farms consisting principally of arable land. It is an advantage to be able to make off in summer the beasts kept to consume the straw in the winter: and now that labour is getting so scarce, it is very difficult to get enough hands to properly cultivate a large tract of arable land, so I would recommend laying down to Grass such land as is difficult to work, or that will not carry sheep in the winter; also land lying off at some distance from the homestead; but these are only suggestions, and very much depend on the nature of the soil and other special circumstances. In conclusion, I quote from Mr. Smith on Grass lands—"Grass lands are by no means subject to so many vicissitudes as corn crops; the latter too frequently suffer from unfavourable seed times, bad harvests, and severe winters, while pastures may with comparative ease be regulated. If in a growing season there is more Grass than is required for the time, an additional haystack is never found to incommode the cattle in their winter quarters; while a lodged crop of corn rarely, if ever, recovers itself, and the farmer has no remedy at hand."

Mr. Hunt said that he thought those farmers who had a little Grass land were apt to disadvantage it. His own practice was to get all he could from his Grass lands, and put it on to the arable. He thought that actually speaking they did not give the Grass land that return which they ought. Mr. Evans had referred to the pasturing of meadow land, but unfortunately seeing the mesh in which Grass lands were cultivated in that district. The farmers did not make hay in the same ratio as they did in this county. They depended entirely upon grazing, and did not look after their hay crops. They only made a moderate quantity of hay, and that a very rank upon, as some places they had been in the habit of breaking up part of their fields, and sowing them with Vetches, Rye, and Oats. Straw was so valuable that they did not make sufficient manure to dress the lands. A friend of his in Cheshire dressed his land with 14 cwt. to the acre—which would seem to them to be a great deal, but he had had the opportunity of seeing the land after it had been thus dressed, and the Clover and Grass were as good as he could wish to see. The soil, however, was rather different to theirs.

Mr. Everett said that the experience he had ever conducted in Wales with regard to pasture land were those of Mr. Lawes, and reported in the 19th, 20th, and 24th volumes of the Royal Agricultural Journal. The general conclusion was that the most satisfactory results were obtained by a combination of artificial manure and farmyard manure, and superphosphate mixed together. Mr. Lawes found a better result from these than from applying farm yard manure alone, which was rather remarkable, as they looked upon farm yard manure as the best they could apply either to arable or pasture land. Mr Lawes did not, in the experiments above quoted, of manure containing large quantities of nitrogen alone, nor did he recommend the application of mineral manure alone.

The Chairman said that their district was not a grazing district, and there was very little land that could be planted with Grass to advantage. The meadows were completely burnt up in the dry season, and the only Grass that remained was the Couch Grass. Mr. Evans had referred to the pasturing of pigs on meadow land. He did not know what Mr. Evans's experience had been, but from his experience, the pigs would not consume the Grass. The application of ashes of burnt chalk lime would be very beneficial, and would sweeten the land and encourage the growth of Clover and Trefoil. He thought that where the land required it, draining was the keystone of all good farming. After that, the application of compost would conduce more to the growth of Grass than anything else that could be supplied. Liquid manure, well-diluted, was also good—five parts of liquid manure were very beneficial, but the difficulty was in the cartage; the expense of carrying this immense quantity of water on to the pasture land was more than it was worth. He believed that the best manure for Grass land was bones, applied once in three years. There was peculiarly a Turnip district, and by turning all their attention to this, they would do more good than in anything else. Turnips and cabbages should be cultivated on the heavy lands; whilst sheep-feeding was the most profitable and paying, he thought they should devote all their energies to the growing of Turnips. He would impress upon them all the necessity of cultivating Turnips as the mainstay of all good farming in that district.

Mr. S. Wentworth said that he came there more particularly to listen, although he had had a little experience in farming. He thought that they ought to rob the arable land to pay the Grass land, as the system of farming had entirely changed. It was all very well to feed the arable land when Wheat was higher, but now that the price of Wheat was so low, and stock higher, it would pay to do so; besides, the labour on pasture land, compared with the labour required on arable land, was comparatively trifling. He did not exactly agree with the Chairman, for the expense of growing Turnips was very great; hay was much better.

Reviews.

The Journal of Agriculture. Third Series. No. I., July, 1866. 150, Fleet Street, London.

This periodical is to appear at monthly intervals for the future. The present number contains a review of Gamgee on the Cattle Plague; an article by Mr. Rufz De Lavison on Cross Breeding; a paper on Mediæval Agriculture, reviewing Professor Rogers' History of Prices between 1259 and 1400; a discussion by the Old Norfolk Farmer on Imported food; an essay by Mr. Morrison on the Planting of Barren and Exposed Land; Agricultural and Statistical Returns; a Veterinarian Review; and an account of Agricultural Society Meetings during the quarter. On the whole it is hardly up to its usual standard of excellence.

We quote the following passage, extracted from Professor Rogers' book:—"The art of mediæval husbandry differs from that of later times by its deficiencies; the land was imperfectly drained, the working of the soil was shallow, the manures employed were limited to stable-dung, to lime or marl, and to sheep-dressing. Scanty as the crop was, it seems to have been very exhausting, for half the land, in ordinary cases, lay in fallow. Roots and artificial Grasses were unknown. Such crops as were obtained, scanty as they were in amount, were not procured except at large relative expense, and every notable addition to the wages of labour or the cost of production so greatly diminished the value of land as to cause a revolution in its tenure. The rent of land, since it rises and falls as the cost of production diminishes or increases, was very low, and could not be increased except by such improvements in the cost of agriculture as were very distant from the experience of that time,

"It is probable that, in such parts of England as were, for the resources of the 13th and 14th centuries, fully peopled, not much less land was regularly under the plough than at present. It is true that the system of fallows was necessarily practised; and it seems that when old pasture land of indifferent quality was broken up, it was exhausted for some time by a single crop, and was forthwith returned to pasture. But there is even now abundant evidence of ancient culture in lands which have, time out of mind, been used as pasture. Wherever ridge and furrow are seen in pasture, there the land has been, at some time or the other, under the plough; and, as is well known, the marks of such culture are exceedingly permanent—indeed, they can be effaced only at great cost. So, much land on the Southdowns, which has not borne grain crops in the memory of man, retains unmistakable traces of ancient cultivation. The exigencies of mediæval society left little ground which could be available for cultivation, for park, or pleasure, and upland pasture must have been of little value."

Miscellaneous.

Fish as Food.—The great importance of fish as an article of food may be clearly shown by a comparison of the total supply of fish and beef to London in the course of a single year. Neither in the case of fish nor of beef is it possible to give accurate statistics. But it has been roughly estimated that London consumes 300,000 fat cattle annually, which, at an average weight of 6 cwt. each, would amount to 90,000 tons of beef. At this moment there are between 800 and 900 trawl vessels engaged in supplying the London market with fish, and assuming the average annual take for each to be 90 tons, this would give a total of some 80,000 tons of trawled fish. This is irrespective of the vast quantities of herrings, sprats, shellfish, and of other descriptions of fish which are supplied by other modes of fishing. The weight of beef and of fish annually consumed in London is thus in no great disproportion. But the price is very different. The fisherman receives, on an average, little over 7*d.* a ton for his fish, prime and offal together,—the farmer is readily paid for his beef not less than 60*l.* a ton. But this disparity of price becomes the more remarkable when tested by the practical experience not of the producer but of the consumer. The buyer of fish in the West End of London finds that, on the average, his fish costs him more per pound weight than his beef or mutton. And when inquiry is made, the salesmen at Billingsgate readily admit that the retail dealer gets an enormous profit on the small quantity of fish he disposes of. It might be thought that the competition of trade would rectify any demand for excessive profit, but, in this case, it does not seem to have that effect. While the fishermen receive 3*d.* to 4*d.* a pound at Billingsgate for prime fish, the buyer is charged 1*s.*, 1*s.* 3*d.*, and 1*s.* 6*d.* a pound by the retailer. Some check might probably be put upon this extravagant rate of profit by a daily return inserted in the newspapers, and signed by the clerk of the market, of the wholesale prices of the various kinds of fish sold in Billingsgate. The evidence we have taken, coupled with the increasing scarcity and high price of butchers' meat, leaves no doubt in our minds that a great field for profitable enterprise is open for the application of increased capital and skill to the sea fisheries of the United Kingdom. Within the last two years, a single London company have increased their fishing fleet by ten sailing and two steam vessels, and are now building two more steamers. The same course is being followed by others, and though, by such means, the supply of fish to Billingsgate is constantly increasing, it fails to keep pace with the demand. The well-known fishing grounds in the North Sea are, even yet, only partially fished. The

Dogger Bank, which has an area of several hundred square miles, and is most prolific of fish, is to a great extent unworked by the trawlers, and new grounds are still being discovered where fish are found in great abundance. Between England and the Continent the average depth of the German Ocean is 90 feet. One-fifth of it is occupied by banks which are always being added to by the muddy deposits of the rivers of both countries. In extent they are equal to the superficial area of Ireland. To these banks the animals of the ocean chiefly resort, and this great and prolific field is free to the industry of all. The produce of the sea around our coasts bears a far higher proportion to that of the land than is generally imagined. The most frequented fishing grounds are much more prolific of food than the same extent of the richest land. Once in the year an acre of good land, carefully tilled, produces a ton of corn, or 2 or 3 cwt. of meat or cheese. The same area at the bottom of the sea on the best fishing grounds yields a greater weight of food to the persevering fishermen every week in the year. Five vessels belonging to the same owner, in a single night's fishing, brought in 17 tons weight of fish, an amount of wholesome food equal in weight to that of 50 cattle or 300 sheep. The ground which these vessels covered during the night's fishing could not have exceeded an area of 50 acres. When we consider the amount of care that has been bestowed on the improvement of agriculture, the national societies which are established for promoting it, and the scientific knowledge and engineering skill which have been enlisted in its aid, it seems strange that the sea fisheries have hitherto attracted so little of the public attention. There are few means of enterprise that present better chances of profit than our sea fisheries, and no object of greater utility could be named than the development of enterprise, skill, and mechanical ingenuity, which might be elicited by the periodical exhibitions and publications of an influential society especially devoted to the British fisheries. *Report of the Sea Fisheries Commission. J. Caird, Esq., Chairman.*

An Unexplained Outbreak of Cattle Plague.—A remarkable instance of cattle plague came under our notice this day (June 18th), which deserves, in our opinion, a place in the annals of veterinary medicine. Before relating the facts of the case, it will be better to state that the disease has been absent from this neighbourhood for many months, and we had trusted that the various Orders in Council respecting the moving of animals from place to place in the country would have entirely stopped its ravages. No doubt these precautions have been of great use, but in spite of them, and all that has been written and said on the subject of its never arising spontaneously, we this day witnessed a case on the premises of Mr. Palmer, of Reech Court Farm, near Dover, which would make us hesitate to speak positively on the point. Mr. Palmer informs us that no fresh stock had been on his premises for the past eight months; that his cattle had always been turned out on the Downs, close by the sea, being nearly two miles from any highway; and that they had never been off the farm, nor had any neighbouring farmer's stock been near them. As no disease has existed in this part of the country for such a length of time, we are totally at a loss to account for the outbreak. Our client has lost two animals, aged respectively 15 months and two years. The remaining animals at the time we write appear to be perfectly healthy. The symptoms and *post mortem* appearances we need not mention, as they were so marked that no duly qualified veterinary surgeon could possibly mistake them. We have made all possible inquiries respecting the cause of the outbreak, and cannot trace it even to a supposed case of contagion. We are firm believers in cattle plague being a most contagious disease, and until now have never seen a case which we could not trace to this cause. We may add that but few cattle are kept in the immediate neighbourhood, and none of them have been newly purchased. One object we have in view in sending this case is to ask if any of your readers can throw any light on its cause; and another, that of inducing them to publish analogous cases, if such should have come under their notice. *Messrs. Norfolk & Bulmer, M.R.C.V.S., Dover, in the Veterinarian.*

Calendar of Operations.

JULY: *Soiling Cattle.*—This practice is on most arable farms, especially where provision is made of crops near the feeding boxes and yards for carrying it out, a profitable method of increasing the store of manure upon the farm. Where Italian Rye-grass and Lucerne and Clover, liberally treated, are near the feeding-house, cattle can be fattened during the summer months more cheaply than during winter, with at least as great advantage to the fertility of the farm. The practice is very warmly advocated in the earlier editions of "Young's Farmers' Calendar," as follows:—

Enlightened farmers have in many districts adopted this system for horses, but still reject it for cattle; and it will probably take a century to render it as universal as it might be, most profitably. The objections to it are not of any importance; it has been argued that the expense is an object, and that cattle will not thrive so well, nor will cows give so much milk, as if fed in the field. That the expense is something cannot be denied, but that it amounts to anything considerable, is contrary to fact. Mr. Mure fed 240 fatting oxen in sheds through a whole summer by the mowing of one scythe; if the attendance upon the beasts be added to this amount, the whole will evidently come to a sum which, when divided either per head or per acre, will be so low as to do entirely away with this objection. As to the question of thriving, the assertion has been made, as far as it has come to my knowledge, without a trial, and is consequently mere theory. The beasts mentioned above were all sold fat at Smithfield, and did as well as similar beasts had done fed abroad in the most favourable seasons, and better than in any summer not remarkably favourable. I practised it for several years together very carefully for fatting cattle, weighing alive periodically, both while in stalls and when at Grass, and I found that in soiling they throve better than when abroad. If the world will reason upon every question of farming, they should do it without prejudice, and then their reason would, to my apprehension, agree with these facts. Every one knows how tormenting flies are to cattle when abroad; ride into a field in summer to look at stock, and where do you find them? Not feeding, but standing or resting under trees, in ponds, in rivers, and, if there is no better shelter, in ditches under brambles; in a word, anywhere but feeding in the open air. What they graze is in the morning and evening; and in many cases they lose in the heat of the day all they gain at those moments of their comfort. To this superiority we must add that of the main object, which is the dunghill; in one case this is accumulated in a degree even superior to what is effected in winter; in the other, it is scattered about the pastures, and nine-tenths of it carried away by the flies, or dried almost to a *caput mortuum* by the sun. The prodigious superiority of thus raising a large and very valuable dunghill in one case, and none at all in the other, ought to convince any reasonable man, that there is not a practice in husbandry so decidedly superior as this of soiling, were there not one other reason for it than what have already been produced.

Those farmers who have given particular attention to the state of farmyard manure, as it is made in winter and in summer, and to the efficacy of both, can scarcely have failed to remark that the superiority of the dung arising from any sort of stock in summer is very great to such as is made in winter from stock no better fed.

Cattle, when soiled upon any kind of good food, as Tares, Clover, Chicory, Lucerne, or Grass, make so large a quantity of urine as to demand the greatest quantity of litter; the degree of this moisture, in which their litter is kept, while the weather is hot, much assists a rapid fermentation. On the other hand, when I view the common spectacle of a large yard spread with a thin stratum of straw or stubble, and a parcel of lean straw-fed cows wandering about it, I see the most ingenious way of annihilating litter, without making dung, that the wit of man could have invented. Burning such straw upon the land before sowing Turnips, would be an application not inferior.

Cows thus managed are amongst the most unprofitable stock that can be kept on a farm. With the best food and management, their dung is inferior; but thus kept on a wide expanse of thin litter, well drenched in rain and snow, running to ponds and ditches, they destroy much, but give little.

There is, however, another fact of equal importance, that the food given in stalls or boxes goes so much farther than it will do when grazed where it grows; and when we recollect the old remark, that a beast feeds (or consumes) with five mouths, we shall not be surprised at this fact. A greater stock may thus be supported by the same farm, in one system, than there can be in the other.

Two circumstances demand attention, which, if neglected, will considerably lessen the benefit to be derived from soiling. The one is, to have a plentiful provision of litter; and the other, much care in feeding—to give the beasts but little at a time; if much be tumbled before them, it heats, they pick it over, and the waste may be great; and if a cart be left in the yard loaded, the contents heat, and then cattle will not eat it. A certain degree of care is necessary in everything; and in nothing more than in feeding all sorts of cattle. As to litter, it is an object of such importance, that provision for the system should be gradually made through the winter, if corn enough be not left for summer threshing to supply the beasts. All dry vegetable matter, capable of providing a dry lair in stalls or boxes, leaves, in woodland countries; Fern, dried peat, &c., should be thus collected against the summer months. An enterprising, vigilant farmer, when he has such an object as this in view, will exert every nerve to be prepared for a system the profit of which will depend so much on the care previously taken to be well provided with litter of some sort or other.

The first crops that will be ready for soiling are the Rye, Lucerne, and the Italian Rye-grass, and the Trifolium incarnatum; which may be supposed to last all the stock till the first-sown winter Tares are ready, when the Lucerne left uncut should be mown for hay. The second-sown winter Tares come next; then Clover, to be succeeded by the third sowing of Tares, and by the second growth of Italian Rye-grass and of Lucerne. After this come spring Tares, and the second growth of Clover; and the third cutting of Italian Rye-grass and of Lucerne may follow. If Chicory be applied to this use, for which it is well adapted, it will, on any good land, be mown thrice, and on very good soils four times. The quantity and value of the manure thus made will surprise those who have not witnessed it. Whether the stock be stalled or fed in boxes, or kept in well-littered yards, covered or open, in divisions, according to sort, size, age, fatness, value, or any other rule of separation, if they are fed carefully, have water at command, and are kept clean, all sorts will thrive to the farmer's satisfaction.

Notices to Correspondents.

GRASS: *A Constant Subscriber.* We recommend sowing Rape and feeding off, and then putting in seeds and Barley next spring. Grass seeds are, however, as likely to succeed sown by themselves in August or September as at any other time of the year.

PRIZE-LIST OF AGRICULTURAL SOCIETY: *F.* There is nothing for it but patience. It is impossible to say when the awards will be announced.

FOUNTAIN JETS.

Fig. 520. JET D'EAU. 18 holes, 5s. 6d.; 24 do., 5s. 9d.; 36 do., 6s. 6d.

Fig. 524. DOME and CONVOLVULUS. 17s.

Fig. 525. DOME. 8s. 6d.

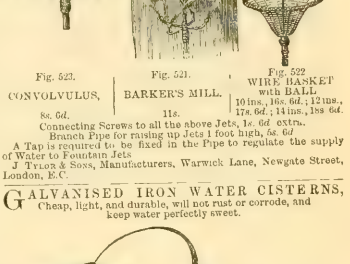


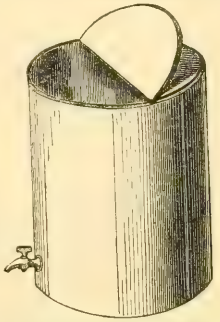
Fig. 523. CONVOLVULUS, 8s. 6d.

Fig. 521. BARKER'S MILL. 11s.

Fig. 522 WIRE BASKET with BALL 10 ins., 16s. 6d.; 12 ins., 17s. 6d.; 14 ins., 18s 6d.

Connecting Screws to all the above Jets, 1s. 6d extra.
Branch Pipe for raising up Jets 1 foot high, 5s. 6d
A Tap is required to be fixed in the Pipe to regulate the supply of Water to Fountain Jets
J. TYLOR & SONS, Manufacturers, Warwick Lane, Newgate Street, London, E.C.

GALVANISED IRON WATER CISTERNS,
Cheap, light, and durable, will not rust or corrode, and keep water perfectly sweet.



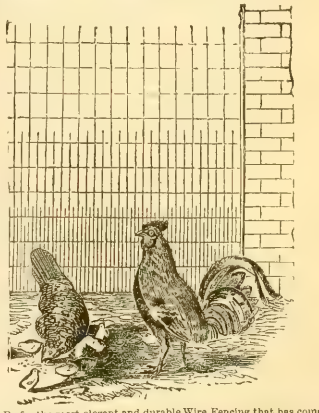
To hold	Each.
30 gallons,	20s 0d.
50 gallons,	24s. 0d.
80 gallons,	32s. 0d
100 gallons,	38s. 6d
125 gallons,	45s. 0d.
150 gallons,	49s. 0d.
200 gallons,	65s. 0d.
250 gallons,	73s. 0d.
300 gallons,	84s. 0d.

With Lid and Brass Tap.

GALVANISED WIRE STRAND CABLE FENCING.
GALVANISED IRON ROOFING.
IMPROVED GALVANISED WIRE NETTING.
HURDLES, HURDLES, HURDLES, 1s. 9d. to 3s. 9d. per yard.
PATENT STRAINING PILLARS, &c.
GALVANISED IRON PUMPS.
GALVANISED SWING WATER BARROWS.
LAWN MOWERS, GARDEN ROLLERS.
ASPHALTE ROOFING FELT, 1d. per square foot.

MOTLEY & GREEN.
Illustrated Catalogues and Estimates free on application.
12, Great George Street, Leeds.

STRONG POULTRY and CHICKEN-PROOF FENCE.
No. 11 VARIETY.



"By far the most elegant and durable Wire Fencing that has come under our notice. . . . Below it is sufficiently fine to be proof alike against the ingress of Rats and the egress of Chickens; and, being spiked above, it affords no resting place for the Fowls, who consequently do not attempt to fly over it."—*Poultry Book.*

PRICES PER YARD.

3 feet high,	1s. 6d.	Japanned;	1s. 10d.	Galvanised.	
4	,,	1 11	,,	2 4	,,
5	,,	2 3	,,	2 9	,,
6	,,	2 8	,,	3 0	

G. & Co.'s New Illustrated Catalogue will shortly be ready. It will contain descriptions of the above, and other Iron and Wire Fences for Parks, Farms, Gardens, Game Preserves, Poultry Courts, &c.; also of Iron Gates, Iron Hurdles, Economical Wire Netting and Roofing Felt.

GREENING & Co. (Limited), Victoria Iron and Wire Works, and 4, Warren Street, Manchester.

GARDEN BORDER EDGING TILES, in great variety of patterns and material, the cheaper sorts being especially suited for KITCHEN GARDENS, as they require no Stags, and Boards, take up little room, and change put from year to year without labour and cutting, as the "grass" edges frequently do, being much cleaner.

GARDEN VASES, FOUNTAINS, &c., in Artificial Stone, of great variety, and in most variety of design.

F. & G. Rosser, Manufacturers, Upper Ground Street, Blackfriars, S., Orange Road, West Cross, S.W., King's Road, Chelsea, S.W., and Kentish Town, N.E.

See Lancet, April 21st. FOXLEY'S PATENT CABLES WALL TRICKS. Illustrated Price Lists free by post. Two Stamps required.

ORNAMENTAL PAVING TILES for Conservatories, Halls, Corridors, Balconies, &c., as cheap and durable as Stone, in Blue, red, and Buff colours, and capable of forming a variety of designs.

Also TESSELATED PAVEMENTS of more enriched description than the above.

WHITE GLAZED TILES, for Lining Walls of Larders, Dairies, Kitchen Ranges, Baths, &c. Grooved and other Stable Paving Bricks of great durability, Dutch and Accidental Clinkers, Wall Copings, Red and Stoneware Drain Pipes, Soales, Cement, &c.

To be obtained of F. & G. Rosser, at their Premises as above.

SILVER SAND (REIGATE, best quality), of the above addresses—18s. per Ton, or 1s. 3d. per Bushel; 2s. per Ton extra for delivery within three miles, and to any London Railway or Wharf Quantities of 5 Tons, 2s. per Ton less.

FLINTS, BRICK BURNERS' CLINKERS, for Rockeries or Grotto Work. F. & G. Rosser.—Addresses see above.

N.B. Orders promptly executed by Railway.

Bee Hives.

FIRST MEDAL AND HONOURABLE MENTION AWARDED TO GEORGE NEIGHBOUR & SONS, FOR BEE HIVES AND HONEY AT THE VARIOUS EXHIBITIONS.

NEIGHBOUR'S IMPROVED COTTAGE BEE HIVE is composed of Materials of various Non-conducting & Non-absorbing qualities, which prevent the transmission of Heat, Cold, or Moisture, and thereby secure to the Bees within a Temperature under which they will be found to possess more than ordinary energy, and to be free from disease. The Combs are constructed on the most approved principle, and the Honey is stored in Glass Boxes, which, when filled, are removed, and a fresh supply substituted, the Bees not being disturbed. The Honey thus obtained is pure as the Comb from which it is taken, and is packed in Wood-fitted Bar-frame Hives, ready to travel with safety, and to remain for any length of time.

Price complete .. £1 15 0
Stand to ditto .. 0 10 6

THE LIGURIAN or ITALIAN ALP BEE, being much in request at the present time, we are in a position to supply Stocks of this pure race of Bees, and Swarms may be obtained as hereafter.

A neatly arranged CATALOGUE of other Improved Hives, with Drawings and Prices, sent on receipt of two stamps.

Address—Geo. Neighbour & Son, 127, High Holborn, W.C.; or 149, Regent Street, London, W.

AGENTS:—Liverpool—James Cuthbert, 12, Clayton Square. Manchester—J. Wilson, 50, King Street. Birmingham—J. H. Cottrell, 15, Bull Ring. Leeds—Edmondson & Co., 18, Duke Street. Glasgow—Arnott & M'Arthur, 16, Buchanan Street.

SHAW'S TIFFANY,

For samples and prices apply to J. Shaw & Co., 29, Oxford Street, Manchester.

SWING WATER BARROW.—This is the best and cheapest article yet introduced for use in Gardens, Parks, Lands, &c. The Water can be tapped out of the Tub into a Pail poured out, or by merely raising the Hose can be delivered at the same end the Frame detached. To hold about 20 or 30 gallons, price 42s. Carriage paid to any station on Great Eastern Line.

POWERFUL GARDEN ENGINE, suitable for the above, price 45s.

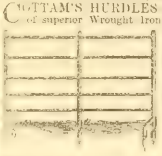
IMPROVED WATER and LIQUID MANURE CARTS.

Catalogues on application.

Manufactured by W. S. Boulton, Rose Lane Iron Works, Norwich.

Iron Hurdles, Fencing, and Gates.

COTTAM'S HURDLES are made in the best manner of superior Wrought Iron. SHEEP HURDLES, from 4s.; CATTLE HURDLES, from 4s. 11d. each; CONTINUOUS FIELD GATES, from 6d. per foot; YIELD GATES, from 25s. each. Illustrated Price List on application.



ENTRANCE GATES, RAILING, and IRON WORK of every description. Designs and Estimates free of

COTTAM & Co.,
No. 2, Winsley Street
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Oxford Street, London, W.

JOHN WARNER & SONS, LONDON, MANUFACTURERS.

J. WARNER AND SONS

Have much improved the construction of their

GARDEN ENGINES

in some important particulars for this Season.

They may be obtained of the Trade generally throughout the Kingdom at the following prices:—

No. 547. WARNER'S best ENGINES, in Wood Tubs, and fitted with WARNER'S Registered Spreaders—

24 Gallons,	£6	10	0
14 ,,	5	10	0

No. 547A. WARNER'S strong ENGINES, in Galvanised Iron Tubs, well painted—

10 Gallons,	£2	19	0
16 ,,	3	14	0
24 ,,	4	19	0
28 ,,	5	10	0

No. 579½. WARNER'S WATER BARROWS, thoroughly Galvanised and well painted—

20 Gallons,	£2	2	0
30 ,,	2	13	0
38 ,,	3	17	0
50 ,,	5	12	0

The 50-Gallon Barrow is made extra strong throughout, and fitted with handle for two men.

No. 568½, AMERICAN ENGINE, is now well known and appreciated. It throws a continuous stream, and is complete in itself. £2 2s.

SYRINGES in great variety, from 7s. 6d. to 18s. 6d.

The DISC SYRINGE, No. 557A, will recommend itself by the ease with which it is filled, and non-liability to get out of order. Price 9s.

DESCRIPTIVE PRICE LISTS forwarded on application.

WARNER'S AQUAJECT

Is recommended to the notice of Horticulturists as possessing the following advantages:—It is simple in construction, portable, and easily worked. It throws a continuous stream, and is low in price.

The Aquaject, 30s.

Ditto small size, 18s.

WARNER'S 6-Gallon GARDEN ENGINE, of Galvanised Iron and well painted, fitted with Brass Air-vessel, Branch Pipe, and WARNER'S Registered Spreader, 50s. Light, portable, and easily worked by a lady or child.

No. 35. WARNER'S IRON PUMPS for Wells, not exceeding 25 feet in depth—2¼-in., 28s. 6d.; 3-in., 41s.; 3½-in., 46s.; short barrel do., 21s.

No. 36. IRON FORCE PUMPS for raising water above their level, or Watering Yards, Gardens, &c., through hose—2¼-in., 59s.; 3-in., 65s.; 3½-in., 77s.; 4-in., 89s.

No. 36½. FORCE PUMP on BARROW, recommended for its great portability and simplicity of construction. £5 10s.

No. 42. WARNER'S PORTABLE PUMPS on Folding Legs, are of a superior construction.

Price 55s.; Rubber Suction, 2s. 11d. per ft.

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No. 599. TAPER BRANCH PIPES—½-in., 4s. 9d.; ⅝-in., 5s. 3d.; ¾-in., 6s.; 1-in., 7s.

RUBBER HOSE in all sizes.

FOUNTAIN JETS in great variety, from 3s. 6d. to 25s.

GREEN'S IMPROVED NEW PATENT GARDEN ROLLER.

The above Rollers are more durable and cheaper than all others. They are made in two parts, and are therefore on the axis, affording greater facilities for turning; and the cross-section of roll or turnest new ones, thus rendering the cast-iron marks out by other Rollers.

Diameter.	Length.	Price.
18 in.	30 in.	£10 0
24 "	36 "	12 0
30 "	36 "	14 0
36 "	36 "	15 0

Prices for Rollers, fitted with Shaft, suitable for Pony or Horse Power, free on board.

Delivered carriage paid to all the principal Railway Stations and Shipping Ports in England.

Thomas Green & Son, Smithfield Iron Works, Leeds, 51 and 55, Blackfriars Road, London, S.; and 19, Eden Quay, Dublin.

N.B. All Orders executed on the day they are received.

PRIZE MEDALS AWARDED to GREEN'S PATENT LAWN MOWERS.
INTERNATIONAL EXHIBITION, LONDON, 1862.
INTERNATIONAL EXHIBITION, DUBLIN, 1865.

The above Lawn Mowers have proved to be the best, and have carried off every Prize that has been given in all cases of Competition.

Sold by all respectable Ironmongers, Seedsmen, &c., in the Kingdom. Illustrated Price Lists free on application.

AGRICULTURAL and HORTICULTURAL IMPLEMENTS and MACHINES of every description.
IMPROVED IRON STABLE FITTINGS.
HURDLES and CONTINUOUS IRON and WIRE FENCING.
Palisading Entrance and Field Gates. Plain and Galvanised Wire Netting.
GREEN'S PATENT LAWN MOWERS and GARDEN ROLLERS.
Garden Engines, Syringes, Water Barrows, Ornamental Garden Seats, Chairs, Tables, Hand Propelling Vases, &c.
IRON and BRASS BEDSTEADS, in great Variety.
Washing Machines, and Mangling Machines.
IMPROVED CHAFF MACHINES and TILLERS.
Separate Illustrated Price Lists free on application to
Thomas Green & Son, Smithfield Iron Works, Leeds.
Show Rooms opposite the Station of Cattle Market, North Street, Leeds; 51 and 55, Blackfriars Road, London, S.; and 19, Eden Quay, Dublin.

SHANKS' PATENT LAWN MOWERS for 1866.—Patronised on five separate occasions during the Season of 1864 by Her Majesty the Queen, and once by his Majesty the King of Sweden; also on the occasion of the visits of the Sultan of Turkey by Her Majesty the Queen, the Sultan, the Prince of Wales, the Emperor of Russia, and the King of Prussia.

PLAIN MACHINE.

These are the only Lawn Mowers that work well every year without sharpening.

They are the only Lawn Mowers that work properly when the Grass is Wet.

These are the only Lawn Mowers that are used on the Lawns of the Royal Gardens.

Every Machine warranted, and if not approved of can be at once returned. Illustrated Price Lists sent free on application.

Alex. Shanks & Son, Distillers Works, Arbroath; and 37, Leaden hall Street, London, E.C.

37, Leadenhall Street is the only place in London where intending purchasers of Lawn Mowers can choose from a stock of from 200 to 300 Machines; all sizes kept there, whether for Horse, Pony, or Hand Power.

Oil Paint no longer Necessary.

HILL AND SMITH'S PATENT BLACK VARNISH for preserving Iron Work, Wood, or Stone. This Varnish is an excellent substitute for oil paint in all out-door work, and is only two thirds cheaper. It may be applied by an ordinary labourer, requires no machinery for thinning, and is used cold. It is used in Public establishments in Woolwich Dockyard, Kew Gardens, and at the seats of many noblemen of the highest nobility, from whom the most flattering testimonials have been received, which HILL & SMITH will forward on application.

From Messrs Br. Bell, *Southsea, Newtown Orchard.*

"I have much pleasure in saying I have known your Black Varnish to be used for some time by friends of mine, and they all speak highly of it, which has induced me to use it frequently. I have found you liberal. I have used both for iron and wood."

Sold in casks of about 30 gallons each, at 1s. 6d. per gallon, at the Manufactory, or less quantities by agents in the country.

Apply to Hill & Smith, Brass Founders, Iron Warehousemen, and Tin Plate Workers, Britannia Iron Works, Birmingham; at their Warehouse, 4, Cross Street, Manchester; and 76, Upper Thames Street, London, E.C., from whom every information can be obtained.

WANTED, a PARTNER in an Established Nursery, about three miles from London, where a good Business is carried on. An active Man, who would like a share in the Business and attend to the Books, with a Capital of £1500 to £2000, would find the wealth his object.—Address A. Z., Post Office, Hampstead, London, N.W.

WANTED, TWO or THREE ACRES of good LAND, for a Sample Ground (deep Loamy Soil preferred), with a House attached, to commence business in, and will have Rowlands of London, also Seeds to Stock it on coming Business to nothing into Charing Cross Station. Send full particulars, addressed A. B., Messrs Bird & Sudlow, 12, King Street, Covent Garden, W.C.

FARM WANTED, either to Rent or Purchase, from Fifty to Five HUNDRED ACRES of good LAND, Pasture and Arable, in quantities to suit the Purchaser. Must be Sound Land. The Farm must be about Eight Miles from Oxford, or Eight Miles from Abingdon, Berks, and have a Good Dwelling-house, Buildings, Fences, &c., or such sum to be named as may be agreed for the improvement of a suitable House and Buildings by the Tenant. Rent to be paid Quarterly, and a Lease for Twenty Years to be granted. Landowners or their own Agents only to apply. Address by letter M. R. A. S., Gardeners' Chronicle Office, 11, Wellington Street, Strand, W.C.

Hants.

FARMS TO LET, of from 300 to 600 ACRES of GOOD ARABLE and STOCK LAND, of easy access by the South Western Railway.

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TO BE LET, for a Term, a good STOCK and CORN FARM, near Winchester, consisting of 476 Acres of Arable, Grass, and Wood Land. May be entered upon immediately by taking Stock, Crops, &c., at a Valuation.

For further particulars apply to Mr. Joseph Blundell, Land Agent, &c., Barnsbury, Southampton.

TO BE LET, for a Term, a First-class FARM of 155 Acres, with good Residence, near Southampton. Immediate entry to a Tenant who will take the Land in Crop at Valuation. This is a Farm requiring a Practical Country Residence and valuable occupation, is an opportunity which seldom offers.

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To Nurserymen, Gardeners, and Florists.

TO BE DISPOSED OF, by Private Contract, in consequence of the death of one of the Firm, the STOCK, GOODWILL, &c., of a well-established NURSERY BUSINESS, with a first-class connection, of 50 Years' standing, in one of the most delightful and fashionable Sea-coast Towns in England. It consists of about 14 Acres of Land in a high state of cultivation, three Greenhouses, three Propagating Houses, and 11 Pits, and well stocked with a Good Stock of Soft, Greenhouse, and Hardy Plants, New Hollland Plants, Ferns, Bedding Stuff, &c. The Nursery comprises a superb Collection of Camellias, Pinetums, Pinks, and an extensive and thriving stock of Standard, Dwarf, and Pyramid Trees, and a first-class Fruit Trees, Roses, Evergreens, Deciduous Shrubs, Asparagus, &c., and the Plants, Cuttings, &c. The Nursery also comprises two Detached Shops, which are both within a few minutes' walk of two Railway Stations and Steamboats, affording easy communication to all parts of England and the Continent. The Stock to be taken by Valuation, or by agreement, and any other offer that may be made will meet with attention. Immediate possession could be given.

Further particulars may apply by letter to Messrs. Cordell & Grundy, Solicitors, 21, Abchurch Lane, London, E.C.

Oxfordshire Down Rams.

MR. DRUCE begs to inform his Friends and the Public that he has SEVENTY YEARLINGS to DISPOSE OF by Private Contract, and that he will be happy to show them at any time during the season.

Eynsham, Oxford.—July 14.

Sales by Auction.

Biddenham, near Bedford.

MR. STRAFFORD will offer for SALE by AUCTION, without the reserve, on FRIDAY, July 27, being the day of the Bedfordshire Annual Sheep Sale, SEVEN PURE-BRED SHORT-HORNED HEIFERS, the property of Mr Charles Howard, which are by Sir the Duke of Thorndale (17718), and Fifth Grand Duke (18870), from well-selected cows. There has been no case of Cattle Plague within seven miles of Mr Howard's Farm.

LUNCHEON at 1 o'Clock, sale to commence immediately afterwards. Biddenham is about a Mile and a half from Bedford, where conveyances will meet the trains.

Particulars may be had on application to Mr. Strafford, 13, Euston Square, London, N.W.; or of Mr Charles Howard, Biddenham, near Bedford.

Biddenham Annual Sale.

MR. CHARLES HOWARD will offer for PUBLIC COMPETITION, on FRIDAY, July 27, 60 OXFORDSHIRE DOWN SHEARLING and 2 two-tooth RAMS, also 60 OXFORDSHIRE DOWN SHEARLING EWES, from his well-known Flock.

LUNCHEON at 1 o'Clock, Sale to commence immediately afterwards, about a Mile and a Half from Bedford, where conveyances will meet the trains.

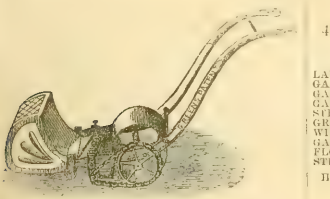
Mr. Hussey Pulley, Auctioneer.

Highly Important Sale of Established Orchids.

MR. J. C. STEVENS begs to announce that the following are a few of some of the principal ORCHIDS in Mr W. C. Paine's collection, which he has SOLD by AUCTION on THURSDAY and FRIDAY, July 19 and 20, at the Auction Rooms, No. , King Street, Covent Garden, W.C.

Aerides crispum	Masdevallia Backhouseana
" Lawrenceæ	" Chimæra
" Lobbii	" Harryana
" Limmingheanum	" leontoglossa
" Lowii	" Lindenii
" Schroederi	" ornithocephala
Angræcum sesquipedale	" Rossiana
Cattleya Bowringiana	" Veitchii
" Forbesii	" Wallisii
" Harrisoniæ	" Warscewiczii
" labiata	" Wendlandiana var.
" Mossiæ	" Wilsoni
" Skinneri	" Wilsoni, var.
" Warneri	" Wilsoni superba
" Warscewiczii Backhouseana	" Wilsoni, var. Backhouseana
Cypripedium barbatum	" Wilsoni, var. Measuresiana
" concolor	Odontoglossum Alexandræ
" Dayanum	" Andersonianum
" Druryi	" Cervantesii
" Lowii	" cirrhosum
" Spicerianum	" crispum
" villosum	" Insleayi
Dendrobium Dalhousieanum	" luteo-purpureum
" Devonianum	" Pescatorei
" Farmeri	" Rossii majus
" densiflorum	" Rossii rubescens
" thyrsiflorum	" triumphans
" Lowii	Oncidium ampliatum
" macrophyllum gigantenm	" concolor
" moniliforme	" crispum
" pendulum gigantenm	" Cucullatum
Epidendrum cochleophorum	" Forbesii
" prismatocarpum	" Lanceanum superbum
Lælia autumnalis grandiflora	" Marshallianum
" cinnabarina	" ornithorhynchum
" elegans	" pulchellum
" flava	" Rogersii
" Lawrenceana	" sphacelatum
" new sp.	" tigrinum
" purpurata	" varicosum
Maxillaria venusta	Phalænopsis amabilis
Miltonia cuneata	Trichopilia crispa
" Morelliana atrorubens	" suavis
	" Turnerana
	Uropedium Lindenii
	Vanda Batemanniana
	" cœrulea
	" cristata superba
	" Hookeriana
	" insignis
	" Lowii
	" suavis (Veitch's)
	" tricolor superba
	and &c.

On view the Mornings of Sale, and Catalogues had.



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46, KING WILLIAM ST., LONDON BRIDGE.

Horticultural Tools, &c.

LAWN MOWING MACHINES, with Patented Improvements, [10s., 7os.,
GARDEN BARROWS, Iron and Wood. [20s., 140s.
GARDEN ENGINES, Galvanised Iron. Prices 30s., 50s., 70s., 100s., 130s.
GARDEN ROLLERS, 24in., £2 2s.; 30in., £2 15s.; 36in., £3 3s.
STEEL DIGGING FORKS, SPADES, SCYTHES, &c.
GREENHOUSE SYRINGES and GARDEN ENGINES.
WIRE NETTING and ORNAMENTAL WIRE WORK.
GARDEN SEATS and CHAIRS.
FLOWER STANDS, Cast-Iron and Wire.
STRAINED WIRE FENCING and IRON HURDLES.

HOT-WATER FITTINGS for GREENHOUSES, CONSERVATORIES, FORCING PITS, &c.

Deane's New Illustrated Horticultural Catalogue post free on application.

ESTABLISHED A.D. 1700.

Lawn Mowers.
GREEN'S PATENT. | SAMUELSON'S PATENT.
SHANKS' PATENT. | BARNARD'S PATENT.

DEANE AND CO., 46, KING WILLIAM STREET, LONDON BRIDGE, E.C.

J. B. BROWN & CO.'S NEW PATENT B B LAWN MOWER.

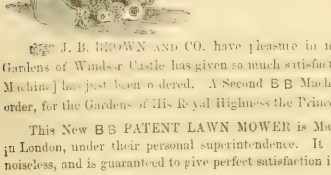
PATENTEES AND SOLE MANUFACTURERS,

J. B. BROWN & CO.,
148, UPPER THAMES STREET, LONDON, E.C.

GUARANTEED TO GIVE PERFECT SATISFACTION,

AND, IF NOT APPROVED OF,

MAY BE AT ONCE RETURNED.



The J. B. BROWN AND CO. have pleasure in mentioning that their B B LAWN MOWER ordered for the Gardens of Windsor Castle has given so much satisfaction, that another B B MACHINE of a larger size [a 22-inch Machine] has just been ordered. A Second B B Machine this Season [a 24-inch] has also been just supplied, by order, for the Gardens of His Royal Highness the Prince of Wales at Sandringham.—June 23.

This New B B PATENT LAWN MOWER is Manufactured by Messrs. Brown & Co., on their own Premises in London, under their personal superintendence. It is worked by means of Geared or Toothed Wheels, is quite noiseless, and is guaranteed to give perfect satisfaction in every respect.

PRICES—including Carriage to any Railway Station or Shipping Port in England.

10-inch Machine .. £3 10 0	*Easily worked by a Boy.*	18-inch Machine .. £7 10 0	*Easily worked by a Man*
12-inch Machine .. 4 10 0		20-inch Machine .. 8 0 0	*Ditto by Two Men.*
14-inch Machine .. 5 10 0		22-inch Machine .. 8 10 0	
16-inch Machine .. 6 10 0	*Ditto by a Man.*	24-inch Machine .. 9 0 0	

Every Machine sent out is warranted to give ample satisfaction, and if not approved of may be at once returned.

J. B. BROWN AND CO., OFFICES, 90 (late 18), CANNON STREET, CITY, LONDON, E.C.
WAREHOUSE and MANUFACTORY, 148, UPPER THAMES STREET, E.C.
Opposite the City of London Brewery, and close to the London Bridge Steam Boat Piers.

CONSERVATORIES, GREENHOUSES, FRAMES.

THE ONLY PAINT THAT SUCCESSFULLY STANDS UPON THE ABOVE TRYING WORK IS

CARSONS' ORIGINAL ANTI-CORROSION PAINT,

TRADE MARK.

ENTERED AT STATIONERS HALL.

PATRONIZED BY

THE BRITISH GOVERNMENT.
THE INDIAN GOVERNMENT.
THE RUSSIAN GOVERNMENT.
MOST of the NOBILITY and GENTRY.
RAILWAY and CANAL COMPANIES.
COLLIERIES, IRONMASTERS.

Also the LEADING HORTICULTURISTS.

TRADE MARK.

ENTERED AT STATIONERS HALL.

WHITE		Per Cwt.
LIGHT STONE		
BATH DO.		
CREAM COLOUR		30s.
LIGHT PORTLAND STONE		
DRAB OR PORTLAND DO		
OAK COLOUR		
LEAD COLOUR		26s.

BRIGHT RED		Per Cwt.
DARK DO.		
CHOCOLATE COLOUR		26s.
BLACK		
PURPLE BROWN		
BRIGHT GREEN		
DEEP GREEN		42s.
BLUE		

The Anti-Corrosion Paint is now used extensively for all kinds of

OUT-DOOR WORK,

and has been proved, after a practical test of 70 years, to surpass any other Paint. It is applicable to Wooden Houses, Farm, and other Out-Buildings, Park Fencing, Gates, &c.; also Iron Roofing, and every description of Iron Work, while for

PUBLIC EDIFICES, MANSIONS, VILLA RESIDENCES,

and every kind of Brick, Stone, Compo, &c., it is unrivalled, presenting the appearance of fine cut Stone, and will positively become harder than the same a few months after it is laid on. It is undoubtedly the only Paint that will stand on

CONSERVATORIES, GREENHOUSES, FRAMES, &c.,

and is in consequence largely used by the Nobility and Gentry, also most of the eminent Horticulturists, for such purposes.

The Anti-Corrosion is much lower in price, and lasts twice as long as the best White Lead; at the same time it is economical in application, as

ANY PERSON CAN LAY IT ON.

It is a Powder, requiring neither Grinding nor Tinting, and will keep any length of time.

Three Cwt. free to any Station in England, and most Ports of England, Ireland, and Scotland.

PATTERNS on application to

WALTER CARSON AND SONS, Removed to LA BELLE SAUVAGE YARD, LUDGATE HILL, LONDON,

Three doors East of London, Chatham, and Dover Railway new Viaduct.

CAUTION.—All Casks bear the Trade Mark, or are not Genuine.

TESTIMONIALS.

Extract of a Letter from His Excellency Baron BRUNOW, *Russian Ambassador, to the Russian Consul General in London.*

"In 1841 Mr WALTER CARSON, Anti Corrosion Paint Manufacturer, furnished the Imperial Ministry of War with 10 Casks of Dry Paint. Those Colours, after a trial of 10 years, have given the most satisfactory results. They were used for painting Gun Carriages."

CONSERVATORIES.

Mr. THOMAS WALKER, *Nurseryman, North Cottingham, Near A.—May 3, 1866.*
"I am very pleased with the Paint for standing the weather on the houses, and recommend it to all. I consider it to be the best article I ever used for the purpose of preserving the wood and fastening the glass. There is no other Paint like it for standing."

B. HAIGH ALLEN, Esq., *The Priory, Clifford, Hereford.—April 20, 1866.*
"Mr Allen is very much pleased with the Paint he had in 1863-4. The hothouses look as well as when first painted—it does not crack or peel off in the way common paint does when exposed to strong sun, and is much more durable."

J. ETCOMBE & SON, *Nurseries, Romsey.—February 7, 1866.*
"We can strongly recommend your Paint."

Mr HUGH MONTGOMERY, *Gardener to the* Most Hon. The MARQUIS of ELY, *Loftus Hall, Fethard, Ireland.—May 26, 1866.*
"Your Paints are the greatest acquisition. I have been for many years using White Lead, and must certainly say that your Paint is far superior."

SPECIAL.

The Rev. JOHN BYNG, *Boxford Rectory, Colchester.—May 27, 1866.*
"I only want to Paint 3 or 4 gates now. Some of the same I painted with your Anti-Corrosion Lead Colour, about 10 or 12 years ago. The barn too I painted about the same time is beginning to attract attention from lasting so well."

Captain DROUGHT, *Cargins, Tulsk, Roscommon, Ireland.—January 12, 1866.*
"The Paint has given the greatest satisfaction both from the facility of applying it, and the way it has stood the severe weather on wood, stone, and iron."

G. DOWZER, Esq., *Monarmouth House, Wingham, Kent.—September 5, 1865.*
"I have used your Anti-Corrosion for about 14 years, and can testify to its durability."

H. J. TUCKER, Esq., *Leigh Court, Taunton.—November 17, 1865.*
"The Paint answered very nicely for stables, and in the spring I shall use more."

From WILLIAM SCOT, Esq., *of Craigmuir, Monzievie, by Dunblane.*
"The painter, a good professional man, now admits that your Anti-Corrosion Paint is excellent for all the purposes indicated in your advertisement; and I may add, that the tinted Paints, which I have used for plaster walls inside, have stood without a blemish for these 5 or 6 years."

GENERAL.

The Rev. WILLIAM GILL, *Hertingfordbury Rectory, near Hertford.—June 11, 1866.*
"I like the Paint much and shall want some more."

JOHN T. ORD, Esq., *Foreham House, Bury St. Edmunds.—January 22, 1866.*
"I find your Paint answer better than any other."

And again May 28, 1866.
"I am so satisfied with your Paint that I will thank you to send me, &c."

The Rev. E. PEACOCK, *Road Hill Parsonage, near Bath.—April 10, 1866.*
"The Rev. E. Peacock having found the Paint he obtained in 1862 stand very well, would thank Messrs. Carson to send him, &c."

Major HALIDAY, *Medstead House, Alton, Hants.—December 23, 1865.*
"I like it very much."

JAMES PHILLIPPS, Esq., *Begmarsh, Ross, Herefordshire.—October 12, 1865.*
"I am very pleased with the Paint, which is most effectual and durable."

From the Rev. T. B. WRIGHT, *Broughton Rectory, Ormy, Lancashire.*
"The Paint gives great satisfaction. Among other things, I used it in painting the lights of a Greenhouse, the wood of which, from exposure to the sun, had become in places much cracked. The Paint filled up the cracks, and remains, apparently, as hard as stone, effectually keeping out the wet; it has also been most useful in keeping the panes of glass in their place, and preventing them being shaken out, by the putty falling out."

From the Rev. R. F. MEREDITH, *Sevenoaks Rectory, Yeovil.*
"My gardener, after 25 years' experience, states it to be the most lasting Paint he has ever met with for out-door work, and quite superior to White Lead for the outside of hothouses."

From Sir EDWYN SCUDAMORE STANHOPE, Bart., *Holme Lacy, Hereford.*
"I have been in the habit of using your Anti-Corrosion Paint for out-door work for upwards of 10 years, and have found it stand remarkably well, both on wood and iron; and if you think my testimony of any service, you are at liberty to add it to that of others."

From JOHN CRIDLAND, Esq., *East Hoathly, Sussex.*
"I have now used your Anti-Corrosion Paint rather more than 10, or I think 12 years, and am convinced that it is very superior to any other Paint, particularly for out-door work and farm purposes. I can safely say, it has saved me a great deal of repairs, as also expense, by using it on the wood-work of my Barns, &c."

Editorial Communications should be addressed to "The Editor." Advertisements and Business Letters to "The Publisher," at the Office, 41, Wellington Street, Covent Garden, London, W.C.
Printed by WILLIAM BRADBURY, of 13, Upper Woburn Place, in the Parish of St. Pancras, in the Co. of Middlesex, and FREDERICK MULLETT EVANS, of No. 11, Bouverie Street, in the Precinct of Whitefriars, City of London, Printers, at their Office, Lombard Street, Precinct of Whitefriars, City of London, and Published by them at the Office, No. 41, Wellington Street, Parish of St. Paul's, Covent Garden, in the said Co.—SATURDAY, July 14, 1866.

THE GARDENERS' CHRONICLE

AND

AGRICULTURAL GAZETTE.

A Newspaper of Rural Economy and General News.

No. 29.—1866.] SATURDAY, JULY 21. {Price Fivepence. {Stamped Edition, 6d.

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THE GARDENERS' ROYAL BENEVOLENT INSTITUTION.—At a General Meeting of the Subscribers to this Institution, held on the 11th inst., for the purpose of Electing Two Pensioners, it was Resolved,—"That in consequence of the recent accession of income by the annuities of Donations of £1000 from the Executive Committee of the International Horticultural Exhibition, Two Pensioners in addition to be placed on the List, and that the Two next highest on the Poll, after the Five for which the Voting Papers have been issued, be declared Pensioners."

The following was the result of the Ballot:—

CANDIDATES.

Name.	Age.	Votes.
Margaret Mitchinson	74	564
George Annabel	70	288
Thomas Smith	73	321
Elizabeth Judd	73	621
Thomas Willman	75	150
Catherine Brown	79	39
Alexander Crawford	74	523
William Hawes	67	1
William Major	67	29

The Meeting then declared Elizabeth Judd, Margaret Mitchinson, Alexander Crawford, and Thomas Smith duly Elected Pensioners of this Institution.

EDWARD R. CUTLER, Sec.

14, Tav stock Row, Covent Garden.

NOTICE.—All CLAIMS for EXPENSES by Exhibitors on the Executive Committee of the International Horticultural Exhibition, not yet made, are required to be sent in to the Secretary forthwith. Claims not presented on or before WEDNESDAY, the 25th instant, will not be admitted.

JAMES FAIRHEAD AND SON, Seed Growers and Merchants, 7, Borough Market, London, S.E.

New and Genuine AGRICULTURAL, GARDEN, and FLOWER SEEDS. Special prices and advantageous offers on application.

Genuine Garden and Agricultural Seeds.

JAMES CARTER AND CO., Seed Farmers, Merchants, and Nurserymen, 237 & 238, High Holborn, London, W.C.

RAYNBIRD, CALDECOTT, BAWTREE, DOWLING, AND COMPANY, Limited, Corn, Seed, Manure, and Oil-cake Merchants, Address, 89, Seed Market, Mark Lane, E.C.; or Basingstoke. Samples and Prices Post free on application. Prize Medals, 1851, for Wheat: 1862, for "Excellent Seed Corn and Seeds.

Greenhouse, Hardy and Stove Plants; Agricultural, Flower, and Vegetable Seeds, &c.

ROBERT PARKER invites inspection of his Collections of the above-named, which have been selected with the greatest care. All plants are clean and healthy, and are offered at reasonable prices. Descriptive and Priced Catalogues are published, and will be forwarded to applicants.

Exotic Nursery, Tooting, Surrey, S.

REBECCA, the finest BEDDING GERANIUM ever raised. Plants now ready, price 5s. each.

See Mr Parks's Spring Catalogue.

Paul's Nurseries, Waltham Cross, London, N.

FINE SPECIMEN and HALF-SPECIMEN HARDWOODED and ORNAMENTAL FOLIAGE STOVE and GREENHOUSE PLANTS.—Exhibitors and gentlemen furnishing Conservatories are invited to inspect our Collection of the above, which is large and in very fine healthy condition. Prices moderate.

T. Jackson & Son, Nursery, Kingston, Surrey.

Collinsia verna.

W. THOMPSON, Seedsman, Tavern Street, Ipswich, begs to state that NEW SEED of the above is now ready for distribution, price 6d. per packet. Trade prices may be learned on application.

N.B. An early autumnal sowing is absolutely essential.

ALTERNANTHERA SPATHULATA, most desirable Bedding Plant, 9s. to 12s. per dozen.

SPIRÆA JAPONICA, valuable for forcing, 3s. each, 24s. per dozen. Can be supplied after September 1 by

D. Frost, Florist, &c., Vine Nursery, Hopcroft Street, Slough, Bucks.

CERASUS LUSITANICA var. AZORICA.—Plants of this very superior variety of Portugal Laurel (in habit, flower, and hardiness), to which a First-class Certificate was awarded by the Royal Horticultural Society on the 5th June, will be ready for distribution the ensuing Autumn. 7s. 6d., and 10s. 6d. each

Osborn & Sons, Fulham Nursery, London, S.W.

NEW BRITISH PLANT—TEUCRIUM SCORODONIA CRISPUM.—This beautiful variety of the Wood Sage is now being sent out for the first time. It differs from the species in the leaves being reniform and prettily waved or crisped on the edges. Nice Plants, 5s. 6d. each.

NEW NORTH AMERICAN FERN—POLYSTICHUM ACROSTICHOIDES SUBPINNATUM (Moore).—Very handsome, 5s. each. The usual discount to the Trade.

Abm. Stansfield & Sons, Nurserymen, &c., Todmorden and Manchester. Letters to be addressed "Todmorden."

Roses in Bloom.

JAMES MITCHELL has the honour of informing his kind patrons that his magnificent COLLECTION is NOW in FINE BLOOM. Pitt Down Nurseries, Maresfield, Sussex.

The London, Brighton, and South-coast Railway. Two and a-half miles from the Uckfield Station.

Roses.

PAUL AND SON'S ROSES are NOW in BLOOM at the "Old" Cheshunt Nurseries.

Frequent Trains from Bishopsgate to Cheshunt.

Roses in Pots.

PAUL AND SON, in addition to the NEW ROSES of 1866, can offer fine Plants of the finest TEA-SCENTED NOISETTES and best HYBRID PERPETUAL ROSES, in pots, for Planting during the present and next month.

Old Cheshunt Nurseries, N.

Lea Bridge Road Nurseries, London, N.E.

JOHN FRASER respectfully invites an inspection of his Collection of ROSES, which he begs to announce are NOW in FLOWER. The Collection comprises many new and fine varieties. The Nurseries are about 5 miles from London, and are easily reached by Train on the Great Eastern Railway, to Lea Bridge Station.

Roses in Bloom.

WM. PAUL'S ROSES are NOW in FULL BLOOM. Inspection respectfully invited. Trains almost hourly from Shoreditch to Waltham Station.

Paul's Nurseries, Waltham Cross, N.

JEVERY AND SON having a few NOVELTIES now ready to send out, will be pleased to forward their PRICED DESCRIPTIVE CATALOGUE of AZALEA INDICA, and No. 10 HARDY BRITISH FERNS, which contain full particulars

Dorking Nursery

MAURICE YOUNG'S DESCRIPTIVE LIST of Conifers, New and Rare Hardy Plants, Ornamental Trees and Shrubs, Rhododendrons, Japanese Novelties, Forest Trees, and Roses, forwarded on application.

Milford Nurseries, near Godalming, Surrey,

DOBSON'S PRIZE CALCEOLARIA, See *Gardeners' Chronicle*, June 30, page 608.

First-class Seeds.

DOBSON'S PRIZE CALCEOLARIA, 1s. 6d., 2s. 6d., 3s. 6d., 5s.

DOBSON'S PRIZE PRIMULA, 1s., 2s. 6d., 5s.

DOBSON'S PRIZE PRIMULA, 1s., 2s. 6d., 5s.

For Testimonials see page 608 of *Gardeners' Chronicle*, June 30.

Dobson & Sons, Seed Merchants, Isleworth, W.

British Fern Catalogue.

ROBERT SIM can now send, post free for six postage stamps, Part II. (Ferns and their varieties, 36 pages, including prices of Hardy Exotic Ferns) of his NEW and PRICED DESCRIPTIVE CATALOGUE of BRITISH and EXOTIC FERNS, No. 7.

* * Part II. (Exotic Ferns) will be issued as early as possible.

Foot's Cray Nursery, S.E.

A. STANSFIELD AND SONS, Nurserymen, &c., Todmorden, will be glad to forward their GENERAL FERN CATALOGUE No. 7 to any address for three penny postage stamps. In the British Section are ample collections as given by the successful cultivator of the different species. A List of Selections of British and also of Exotic Ferns at special rates will accompany each copy of the Catalogue. Orders judiciously executed for previous purchasers of Ferns.

CALADIUMS! CALADIUMS!—The following 12 well-established Plants will be sent to any address on receipt of Post-office Order for 10s., payable to J. C. Padman, Boston Spa, Yorkshire:—

Chantini	pictum	bicolor superbum
Bellevuei	picturatum	— splendens
Troubetskoi	argyrites	Maffaia
Wightii	leuconeurum	Cuitlauzina violacea.

Hyacinths, and other Dutch Bulbs.

A. E. BARNAART, Vogelensang, Haarlem, begs to announce that his CATALOGUE of FLOWER ROOTS for 1866 has just appeared, and can be had post free on application.

N.B. Postage to Holland, 3d.

100,000 Camellias.

JOSEPH BAUMANN, Nurseryman, Ghent, Belgium, begs to offer

100	CAMELLIAS, with flower buds,	£5.
100	" "	£6
100	" " stronger plants,	£8.
	Free to the Custom House, London.	
100	CAMELLIAS, without buds, 1 year grafted,	£4.
100	" " 2 to 3 years' best sorts,	£5.
100	" " stronger plants,	£6.

New Petunias for 1866.

AMBROISE VERSCHAFFELT, Nurseryman, Ghent, Belgium, begs to announce that he is now sending out good Plants of all the best NEW PETUNIAS raised on the Continent, and which were sent out in 1866. This collection obtained the First Prize at the last Ghent June Show.

12 distinct varieties, 1s. 6d. each; 24 distinct varieties, 1s. each.

Every order will be sent to London Free of carriage and packing.

The Nurseries, Ghent, Belgium.

JEAN VERSCHAFFELT begs to inform his Friends and the Trade in general that his Stock of CAMELLIAS and INDIAN AZALEAS with buds will be particularly fine this season. To secure a first choice early orders are solicited. The prices will be as under:—

CAMELLIAS, with buds, fine named sorts, from £6 and upwards.

AZALEA INDICA, with buds, fine named sorts, from £5 and upwards.

A general detailed LIST will be sent on application. Address all letters to Jean Verschaffelt, 43, Rue de la Caverne, Ghent, Belgium.

N.B.—J. V. has much pleasure in stating that his Business will be transferred to his new Establishment about October next. Due notice will be given to all Correspondents.

LOUIS VAN HOUTTE offers for Sale the NEW LAUCUBAS, EUONYMUS, BAMBUSA, also a quite new species of ABIES (Abies numidica, Carrière), quite novel, not in the Trade. Discovered by M. Delanoy, Head Engineer of the French Army, on the summit of Mount Tabor, Algeria. The leaves are larger and stronger than those of A. Pinsapo, obtuse; the bluish tint of the whole plant is similar to that of Abies nobilis. Also a lot of CAMELLIAS, fine sorts, with buds; fine HYACINTHS, TULIPS, and CROCUS; the new PERUVIAN ALSTREMERIAS; and a lot of the very best variety of the DOUBLE-FLOWERING GERANIUM (RANUNCULIFLORUM PLENISSIMUM).

Fine HOT-HOUSE PLANTS, PALMS, PANDANUS, &c.

Louis Van Houtte's Establishment, Ghent, Belgium.

Prize Calceolaria, &c.

BUTLER AND McCULLOCH beg to offer Seed of the above, saved only from flowers of great beauty, 1s. & 2s. 6d. per pkt.

CINERARIA (DAISY), extra choice, 1s. and 2s. 6d. per packet

PRIMULA (DAISY), extra choice, 1s. and 2s. 6d. per packet.

COVENT GARDEN INTERMEDIATE STOCK (4 ft. to 5 ft.), 1s. and 2s. 6d. per packet.

PURPLE WHITE INTERMEDIATE STOCK, 1s. and 2s. 6d. per pkt.

All packets of Flower Seeds sent post paid

Butler & McCulloch, Covent Garden Market, W.C.

BARR'S CALCEOLARIA, CINERARIA, PRIMULA, STOCKS, MYOSOTIS, &c.

CALCEOLARIA, very choice, 2s. 6d. per packet; CINERARIA, very choice, 1s. and 2s. 6d. per packet; PRIMULA, very choice, 1s. and 2s. 6d. per packet; SCARLET, PURPLE, and WHITE INTERMEDIATE STOCKS, for Spring blooming, very fine, each variety 1s. per packet; SCARLET, PURPLE, and WHITE IMPERIAL STOCKS, for Spring blooming, each variety 1s. per pkt; MYOSOTIS SYLVATICA, for Spring blooming, 6d. and 1s. per packet; Collections of PERENNIALS, 2s. 6d., 5s. 6d., 7s. 6d., to 21s.

Barr & Sugden, 12, King Street, Covent Garden, London, W.C.

International Prize Calceolaria.

EDWIN COOLING has the pleasure to offer Seed saved from the superb Collection of HERBACEOUS CALCEOLARIAS exhibited at the International Horticultural Exhibition, and which were awarded the First Prize. These Calceolarias were the admiration of all who saw them, being quite unsurpassed for good habit, size of bloom, and beauty of marking. The Seed is now ready for delivery, in packets at 2s. 6d. and 5s. each.

Also CINERARIA, PRIMULA, and PELARGONIUM, extra fine quality, 2s. 6d. per packet, as post free.

Edwin Cooling, Seed Merchant, Derby.

New Hardy Clematises.

GEORGE JACKMAN, Woking, respectfully invite an inspection of their Collection of SEEDLING CLEMATIS, which is NOW in FLOWER, and will continue all the Autumn. This Collection contains new and fine varieties that are quite equal to the so-selected, viz., C. Jackmani, alba-coloured, rubella, Prince of Wales, Princess of Wales, magnifica, and venusta purpurea, each being awarded First-class Certificates by Royal Horticultural or Botanic Societies in London.

Woking Nursery, Surrey.

CASTLE KENNEDY FIG.—Plants of the above may now be had at 10s. 6d. and 21s. each; the usual discount to the Trade. Peter Lawson & Son, Edinburgh and London.

New Verbenas, 1866.

PHILIP LADDS is sending out strong Plants in Thumb Pots of the above, in 48 varieties, at 6s. per dozen, package included. The usual discount to the Trade.

Nursery, Bexley Heath, Kent, S.E.

JUBÆA SPECTABILIS vel COCOS CHILENSIS.—Fresh Seed of this superb, rare, half-hardy PALM (see notice in *Gardeners' Chronicle* of last Saturday, page 660) is offered by Hooper & Co., Covent Garden Market, London, W.C. Price, 5 Seeds for 2s. 6d.; 6 Seeds for 5s. Cheque in the Trade on application

Primula, Cineraria.

WM. CUTBUSH AND SON are now sending out SEED of their superb PRIMULA SINENSIS FIMBRIATA, which has for many years given great satisfaction.

The *Gardeners' Chronicle* of the 6th of January, in Notices to Correspondents, says, "Your Primulas are remarkably fine, richly coloured, full and densely fringed; they are evidently the produce of a capital strain."

The *Journal of Horticulture* of the 23d of January, says that:—"The finest and richest coloured Chinese Primulas we have yet seen are those raised by Messrs. Cutbush & Son.

Sealed packets, 2s. 6d. and 5s. 6d. each.

CINERARIA, from finest named varieties, per packet, 2s. 6d. and 3s. 6d. each. Highgate Nurseries, London, N.

ALOES for SALE.—A Pair of fine Aloes, in capital Vases, about 5 feet 6 inches through, and 3 feet 6 inches high.—For particulars of price, &c., apply to

Mr. Ward, Hatchford Gardens, Cobham, Surrey.

PETER DRUMMOND AND CO. (late J. Scott), Penton Road Nursery, Yeovil, Somerset, have still on hand a surplus stock of BEDDING PLANTS, including DAHLIAS in great variety; GERANIUMS, FUCHSIAS, LANTANAS, VERBENAS, &c., at moderate prices; also TURNIPS, and other Seeds of best quality and variety for present sowing.

Please address as above.

Paul's Nurseries, Waltham Cross, London, N.

SEEDS FOR PRESENT SOWING

WM. PAUL can confidently recommend the following first-class Seeds—PRIMULA, CINERARIA, CALCEOLARIA, HOLLYHOCK, from finest strains, 1s. to 2s. 6d. per packet; VIOLA CORNUTA; POLYANTHUS, splendid mixed, 1s. per packet.

WM. PAUL'S IMPROVED TELEGRAPH CUCUMBER, WALTHAM GREEN CURLED ENDIVE, BROCKET HALL LETTUCE, 1s. per packet. All other Seeds of best quality at moderate prices

CATALOGUE on application.

To the Trade and Others.

GENUINE NEW TURNIP, 1866 growth. Ex CABBAGE, SAVOY, and other Plants still on offer, which for price and quality cannot be surpassed.

Fred. Gee, Seed Merchant and Grower, Biggleswade, Bedfordshire.

Cabbage Seed for Present Sowing.

SUTTON AND SONS have a good stock of fresh Seed of the best kinds of CABBAGE for Farm and Garden.

LARGE DRUMHEAD CABBAGE, 2s. 6d. per lb.

ROBINSON'S DITTO ditto, 3s. 6d. per lb.

DRUMHEAD SAVOY, 3s. 6d. per lb

LONDON MARKET CABBAGE, 3s. 6d. per lb.

ENFIELD ditto ditto, 3s. 6d. per lb.,

and others.

SUTTON'S IMPERIAL CABBAGE, the finest and earliest for Spring use in the Garden, 8d. per oz. Cheaper by the pound or half pound.

Sutton & Sons, Royal Berkshire Seed Establishment, Reading.

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EDWARD CARPENTER'S MIXTURES of PERMANENT GRASS and CLOVER SEEDS.—Best quality, 28s. per acre (2 bushels mint seeds, and 12 lb. Clovers and small seeds per acre).—See testimonials in Catalogue.

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PRICED CATALOGUES of KITCHEN GARDEN, FLOWER, and FARM SEEDS now ready.

Edward Carpenter, Seed Merchant and Grower, 90, St. James's Street, Brighton.

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THE ONLY PAINT THAT SUCCESSFULLY STANDS UPON THE ABOVE TRYING WORK IS

CARSONS' ORIGINAL ANTI-CORROSION PAINT,

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IT IS EQUALLY ADAPTED FOR ALL DESCRIPTIONS OF EXTERNAL WORK.

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PATTERNS, PRICES, and TESTIMONIALS on application to

WALTER CARSON AND SONS, Removed to LA BELLE SAUVAGE YARD, LUDGATE HILL, LONDON,

Three doors East of London, Chatham, and Dover Railway new Viaduct.

CAUTION.—All Casks bear the Trade Mark, or are not Genuine.

JOHN WARNER & SONS, LONDON, MANUFACTURERS.

J. WARNER AND SONS

Have much improved the construction of their

GARDEN ENGINES

in some important particulars for this Season.

They may be obtained of the Trade generally throughout the Kingdom at the following prices:—

No. 547. WARNER'S best ENGINES, in Wood Tubs, and fitted with WARNER'S Registered Spreaders—

24 Gallons, £6 10 0
14 ,, 5 10 0

No. 547A. WARNER'S strong ENGINES, in Galvanised Iron Tubs, well painted—

10 Gallons, £2 19 0
16 ,, 3 14 0
24 ,, 4 19 0
28 ,, 5 10 0

No. 579½. WARNER'S WATER BARROWS, thoroughly Galvanised and well painted—

20 Gallons, £2 2 0
30 ,, 2 13 0
38 ,, 3 17 0
50 ,, 5 12 0

The 50-Gallon Barrow is made extra strong throughout, and fitted with handle for two men.

No. 568½, AMERICAN ENGINE, is now well known and appreciated. It throws a continuous stream, and is complete in itself. £2 2s.

SYRINGES in great variety, from 7s. 6d. to 18s. 6d.

The DISC SYRINGE, No. 557A, will recommend itself by the ease with which it is filled, and unobjectionably to get out of order. Price 4s.

DESCRIPTIVE PRICE LISTS forwarded on application.

WARNER'S **AQUAJECT**

Is recommended to the notice of Horticulturists as possessing the following advantages:—It is simple in construction, portable, and easily worked. It throws a continuous stream, and is low in price.

The Aquaject, 30s.

Ditto small size, 18s.

WARNER'S 6-Gallon GARDEN ENGINE, of Galvanised Iron and well painted, fitted with Brass Air-vessel, Branch Pipe, and WARNER'S Registered Spreader, 50s. Light, portable, and easily worked by a lady or child.

No. 35. WARNER'S IRON PUMPS for Wells, not exceeding 25 feet in depth — 2½-in., 28s. 6d.; 3-in., 41s.; 3½-in., 46s.; short barrel do., 21s.

No. 36. IRON FORCE PUMPS for raising water above their level, or Watering Yards, Gardens, &c., through hose—2½-in., 59s.; 3-in., 65s.; 3½-in., 77s.; 4-in., 89s.

No. 36½. FORCE PUMP on BARROW, recommended for its great portability and simplicity of construction. £5 10s.

No. 42. WARNER'S PORTABLE PUMPS on Folding Legs, are of a superior construction.

Price 55s.; Rubber Suction, 2s. 11d. per ft.

No. 597A. BRANCH PIPES with Cocks and Roses—½-in., 3s.; ¾-in., 4s.; 1-in., 5s.

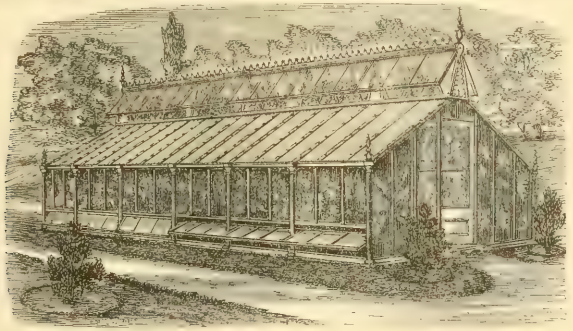
No. 599. TAPER BRANCH PIPES—½-in., 4s. 9d.; ¾-in., 5s. 3d.; ¾-in., 6s.; 1-in., 7s.

RUBBER HOSE in all sizes.

FOUNTAIN JETS in great variety, from 3s. 6d. to 25s.

BEARD'S PATENT.

GREAT INTERNATIONAL HORTICULTURAL EXHIBITION & BOTANICAL CONGRESS.



The FIRST and ONLY PRIZE given at the above EXHIBITION for the BEST METHOD of VENTILATION for PLANT STRUCTURES, was awarded to

MESSRS. SANDERS, FREWER, & CO.,

VICTORIA WORKS, BURY ST. EDMUNDS,

FOR THEIR MODEL OF

BEARD'S PATENT METALLIC NON-CONDUCTING GLASS HOUSES,

Showing the Patent System of perfect Ventilation and Patent Method of Glazing, whereby breakage from expansion and contraction is prevented, and facility given for immediate reparation by any ordinary labourer.

MESSRS. SANDERS, FREWER, AND CO. beg to call special attention to the high value of these great improvements in the VENTILATION, &c., of HORTICULTURAL ERECTIONS, which are also applicable to all WOODEN HOUSES, as well as to CHURCHES, RAILWAY STATIONS, PUBLIC BUILDINGS, MANUFACTORIES, &c.; and have received the highest recommendation from many of the first Horticulturists and practical men of the United Kingdom.

The system is invaluable also for AGRICULTURAL BUILDINGS, as by it abundant Light and Air can be obtained, and the Ventilation regulated to the utmost nicety in the Tops and Roofs of all Structures, where, as is well known, Impure Air constantly accumulates, and where the ordinary system of Ventilation is impracticable.

Full particulars and descriptions may be obtained on application to

MESSRS. SANDERS, FREWER, AND CO.,

VICTORIA HORTICULTURAL AND ENGINEERING WORKS, BURY ST. EDMUNDS.

HOTHOUSES for the MILLION.—Medal, 1862.

INVENTED BY THE LATE SIR JOSEPH PAXTON.

Manufactured in London; Newton in Cartmel, Lancashire; Gloucester; Coventry; Paisley, and Aberdeen

ILLUSTRATED PRICE LISTS will be sent on application to Messrs. HEWITT & MORTON, 7, Pall Mall East, London, S.W.

Also, a HANDBOOK of VINE and FRUIT TREE CULTIVATION, price 1s.; post free, 1s. 1d.

FOUNTAIN JETS.

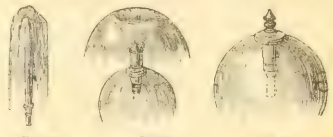


Fig. 526. JET D'EAU. 15 holes, 4s. 6d.; 24 do., 5s. 9d.; 36 do., 6s. 6d.

Fig. 524. DOME and CONVOLVULUS. 17s.

Fig. 525. DOME. 8s. 6d.

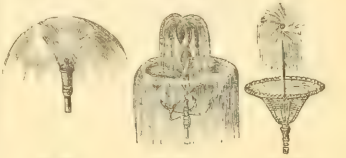


Fig. 526. CONVOLVULUS, 8s. 6d.

Fig. 521. BARKER'S MILL. 11s.

Fig. 522. WIRE BASKET with BALL. 10 ins., 10s. 6d.; 12 ins., 17s. 6d.; 14 ins., 18s. 6d.

Connecting Screws to all the above Jets, 1s. 6d. extra.

Branch Pipe for raising up Jets 1 foot high, 5s. 6d.

A Tap is required to be fixed in the Pipe to regulate the supply of Water to Fountain Jets.

J. TYLOR & SONS, Manufacturers, Warwick Lane, Newgate Street, London, E.C.

J. B. BROWN & CO.'S NEW PATENT B B LAWN MOWER.

PATENTEES AND SOLE MANUFACTURERS,

J. B. BROWN & CO.,

148, UPPER THAMES STREET,

LONDON, E.C.

GUARANTEED TO GIVE

PERFECT SATISFACTION,

AND IF NOT APPROVED OF

MAY BE AT ONCE RETURNED.

☞ J. B. BROWN AND CO. have pleasure in mentioning that their B B LAWN MOWER ordered for the Gardens of Windsor Castle has given so much satisfaction, that another B B MACHINE of a larger size [a 24-inch Machine] has just been ordered. A Second B B Machine this Season [a 24-inch] has also been just supplied, by order, for the Gardens of His Royal Highness the Prince of Wales at Sandringham.—June 26.

The Machine combines all the latest improvements in Lawn Mowing Machines, being simple in construction, very light, silent in movement, easily worked, and so strong and durable as to be literally unbreakable,—an all-important feature in Machines of this class; the ordinary cast-iron being entirely done away with, and malleable iron substituted, in all breakable parts, and every part being accurately numbered and made to standard gauges. The workmanship and finish are also of a superior character, the entire Machine being quite equal to a revolution, so to speak, in Lawn Mowers. The Machines are all guaranteed to give perfect satisfaction in every respect.

The NEW B B PATENT LAWN MOWER is Manufactured by J. B. BROWN AND CO. on their own Premises in London, under their personal superintendence.

PATENT B B HAND MACHINE.

PRICES—Including Carriage to any Railway Station or Shipping Port in England, with the necessary Tools and Directions for use.

10-inch Machine £3 10 0		
12-inch Machine 4 10 0	*Easily Worked by a Boy.*	
14-inch Machine 5 10 0		
16-inch Machine 6 10 0	*Ditto by a Man.*	
18-inch Machine £7 10 0	*Easily Worked by a Man.*	
20-inch Machine 8 0 0		
22-inch Machine 8 10 0	*Ditto by Two Men.*	
24-inch Machine 9 0 0		

PATENT B B HORSE MACHINE.

PRICES—Complete, without extras, including Carriage to any Railway Station or Shipping Port in England, with the necessary Tools and Directions for use.

48-inch Machine £32 10 0		
42-inch Machine 28 10 0	*Drawn by a Horse.*	
36-inch Machine 24 10 0		
30-inch Machine 21 10 0	*Drawn by a Horse.*	

PATENT B B PONY and DONKEY MACHINE.

PRICES—Complete, without extras, including Carriage to any Railway Station or Shipping Port in England, with the necessary Tools and Directions for use.

30-inch Machine £17 10 0		
28-inch Machine 16 10 0	*Drawn by a Pony.*	
26-inch Machine 14 10 0	*Drawn by a Donkey.*	

New Improved Horse, Pony, and Donkey Boots, wholly of Leather, as follows:—Horse Boots, 24s.; Pony Boots, 21s.; Donkey Boots, 16s. per set.

*** *Every Machine sent out is warranted to give ample satisfaction, and, if not approved of, may be at once returned.*

J. B. BROWN AND CO., OFFICES, 90 (late 18), CANNON STREET, CITY, LONDON, E.C.

WAREHOUSE and MANUFACTORY, 148, UPPER THAMES STREET, E.C.

OPPOSITE the CITY of LONDON BREWERY, and close to the LONDON BRIDGE STEAM BOAT PIERS.

SHANKS' PATENT LAWN MOWERS for 1866.—Patronised on five separate occasions during the Season of 1864 by Her Majesty the Queen, and once by his Majesty the King of Saxony; again on four separate occasions during the Season of 1865 by Her Majesty the Queen, once by His Majesty the King of Holland; and once by H.S.M. again the King of Prussia.

HAND MACHINE.

These are the only Lawn Mowers that will work for years without requiring repair.

These are the only Lawn Mowers that will Mow properly when the Grass is Wet

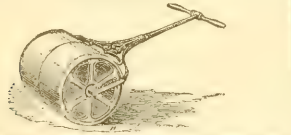
These are the only Lawn Mowers that are in use in all the Royal Gardens.

Every Machine warranted, and if not approved of can be at once returned. Illustrated Price Lists sent free on application.

Apply Shanks & Son, Deles Iron Works, Arbroath; and 37, Leadenhall Street, London, E.C.

37, Leadenhall Street is the only place in London where intending purchasers of Lawn Mowers can choose from a stock of from 150 to 200 Machines; all sizes kept there, whether for Horse, Pony, or Hand Power

GREEN'S IMPROVED NEW PATENT GARDEN ROLLER.



The above Rollers possess many advantages over all others. They are made in two parts, and are free to revolve on the axis, affording greater facilities of turning, and the outer edges are rounded off or sloped inwards, thus avoiding the unsightly marks left by other Rollers.

Diameter.	Length	
30 inches.	72 inches.	£7 10 0
24 ,,	72 ,,	6 10 0
30 ,,	60 ,,	5 10 0
16 ,,	36 ,,	2 15 0

Prices for Rollers fitted with Shafts suitable for Pony or Horse Power, free on application.

Delivered carriage paid to all the principal Railway Stations and Shipping Ports in England

Thomas Green & Son, Smithfield Iron Works, Leeds 54 and 55, Blackburn Road, London, S.; and 19, Eden Quay, Dublin

N.B. All Orders executed on the day they are received.

PRIZE MEDALS AWARDED to GREEN'S PATENT LAWN MOWERS.

INTERNATIONAL EXHIBITION, LONDON, 1862.
INTERNATIONAL EXHIBITION, DUBLIN, 1865.

The above Lawn Mowers have proved to be the best, and have carried off every Prize that has been given in all cases of Competition.

Sold by all respectable Ironmongers, Seedsmen, &c., in the Kingdom. Illustrated Price List free on application.

AGRICULTURAL and HORTICULTURAL IMPLEMENTS and MACHINES of every description.
IMPROVED IRON STABLE FITTINGS.
HURDLES and CONTINUOUS IRON RAIL WIRE FENCING.
Palisading Entrance and Field Gates. Plain and Galvanised Wire Netting.
GREEN'S PATENT LAWN MOWERS and GARDEN ROLLERS
Garden Engines, Syringes, Water Barrows, Ornamental Garden Seats, Chairs, Tables, Iron Fountains, Vases, &c.
IRON and BRASS BEDSTEADS, in great Variety.
Washing, Wringing, and Mangling Machines
IMPROVED SAUSAGE MACHINES and FILLERS.
Separate Illustrated Price Lists free on application.
Thomas Green & Son, Smithfield Iron Works, Leeds.
Show Room opposite the Smithfield Cattle Market, North Street, Leeds; 54 and 55, Blackburn Road, London, S.; and 19, Eden Quay, Dublin.

Oil Paint no longer Necessary.

HILL AND SMITH'S PATENT BLACK VARNISH for preserving Iron Work, Wood, or Stone. This Varnish is an excellent substitute for oil paint on all out-door work, and is fully two-thirds cheaper. It may be applied by an ordinary labourer, requires no mixing or thinning, and is used cold. It is used in the Grounds at Windsor Castle, Kew Gardens, and at the seats of many hundreds of the nobility and gentry, from whom the most flattering testimonials have been received, which HILL & SMITH will forward on application.

From the Right Hon. Lord GREYSTOKE, *Wood End, Thirsk.*

"Lord Greystoke has seen the Patent Black Varnish made by Messrs HILL & SMITH, applied with success, and has heard it highly recommended to persons who have tested it extensively

Sold in casks of about 30 gallons each, at 1s. 6d. per gallon, at the Manufactory, or 1s. 8d. per gallon paid to any Station in the kingdom.

Apply to HILL & SMITH, Brierley Hill Iron Works, near Dudley, and 22, Cannon Street West, E.C., from whom only it can be obtained

JAMES PHILLIPS AND CO. beg to submit their Resource Prices as follows:—

GLASS for ORCHARD HOUSES,

As supplied by them to Mr. Rivers, to the Royal Horticultural Society, and to most of the Nobility, Clergy, and Gentlemen of the United Kingdom.

Each Box contains 100 feet. The prices only apply to the sizes stated.

Squares 20 by 12, 20 by 13, 20 by 14, 20 by 15.

16 oz to the foot. 21 oz.

Fourth quality	14s. 6d.	18s. 6d.
Third ditto	16s. 6d.	21s. 6d.
Seconds	17s. 6d.	23s. 0d.
English	19s. 0d.	26s. 0d.

Stock sizes 16-oz., in 100 feet boxes, boxes included.

These prices only apply to thin sizes stated.

					4ths.	3rds.	2nds.
11 by 9	12 by 9	13 by 9	14 by 9		s. d.	s. d.	s. d.
12 ,, 10	13 ,, 10	14 ,, 10	15 ,, 10	}	12 6	14 6	16 0
13 ,, 11	14 ,, 11						
14 ,, 12	15 ,, 12	15 ,, 11	16 ,, 11				
18 ,, 12	19 ,, 12	16 ,, 12	17 ,, 12				
16 ,, 13	17 ,, 13	20 ,, 12	21 ,, 14				
19 ,, 13	20 ,, 13	18 ,, 13	,,		14 0	16 0	17 6
16 ,, 14	17 ,, 14	21 ,, 13	,,		16 to 17 oz. to the foot.		
19 ,, 14	20 ,, 14	18 ,, 14	,,				

The above prices include the Boxes, which are not returnable.

SMALL SHEET SQUARES.

18 Box feet Boxes.

6 by 4	6 by 5	7 by 5	7 by 6	12s. 6d.
8 by 6	8 by 8	9 by 7	9 by 8	
		10 by 7	10 by 8	13s. 6d.

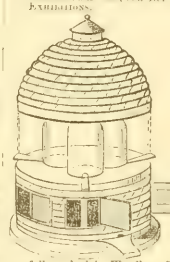
Boxes 2s. each, returnable at full price.

SHEET and ROUGH PLATE GLASS, SLATES of all sizes, BRITISH PLATE, PAVEMENT LIGHTS, ROLLED PLATE, CROWN, SHEET, HORTICULTURAL, ORNAMENTAL, COLOURED, and every description of GLASS, of the best Manufacture, at the lowest terms. Lists of prices and estimates forwarded on application to

JAMES PHILLIPS & Co., 180, Bishopsgate Street Without, E.C.

Bee Hives.

PRIZE MEDAL AND HONOURABLE MENTION AWARDED TO GEORGE NEIGHBOUR & SONS, FOR BEE HIVES AND HONEY AT THE VARIOUS EXHIBITIONS.



NEIGHBOUR'S IMPROVED COTTAGE BEE HIVE, as originally introduced by GEORGE NEIGHBOUR & SONS, with all the recent improvements, working three bell-glasses; is neatly and strongly made of straw; it has Three Windows in the lower Hive, with a Thermometer affixed to the centre one. This Hive will be found to possess many practical advantages, and is more easy of management than any other Bee Hive that has been introduced

Price complete .. £1 15 0
Stand for ditto .. 0 10 6

THE LIGURIAN or ITALIAN ALP BEE being much in repute at the present time, we are in a position to supply Stocks of the pure race carefully packed in Woodbury Bar-Frame Hives, so as to travel with comparatively no risk of damage.

ENGLISH BEES.—Stocks and Swarms may be obtained as heretofore.

A newly-arranged CATALOGUE of other Improved Hives, with Drawings and Prices, sent on receipt of two stamps.

Address, GEO. NEIGHBOUR & SONS, 127, High Holborn, W.C.; or 149, Regent Street, London, W

AGENTS:—Liverpool: James Cuthbert, 12, Clayton Square Manchester: J. Wilson, 56, King Street Birmingham: H. Cottrell, 15, Bull Ring Dublin: Edmondson Brothers, 10, Dame Street. Glasgow: Austin & M'Aslan, 16, Buchanan Street.

Tents for the Garden.

BENJAMIN EDGINGTON'S ILLUSTRATED CATALOGUE of MARQUEES and TENTS for CRICKET, CROQUET, ARCHERY, the LAWN, &c., sent free on post free on application. MARQUEES on Hire. Portable Lawn Rick CLOTHS, New and Second-hand; NETTING for Fruit Trees, &c. Be particular to address BENJAMIN EDGINGTON (only), 2, Duke Street, London Bridge, E.C. No other Establishment.

GARDEN BORDER EDGING TILES, in great variety of patterns and materials, the lower sorts being especially suited for KITCHEN GARDENS, as they bar out no Slugs and Insects, take up little room, and are very cheap; none but Slugs bar Labour and expense, as do "grown" Edgings, consequently being much cheaper.

GARDEN VASES, FOUNTAINS, &c., in Artificial Stone, of great durability, and in great variety of design.

F. & G. ROSSIER, Manufacturers, Upper Ground Street, Blackfriars, S.; Queen's Road West, Chelsea, S.W.; Ranelagh Road, Kingsland, N.E.

Sole London Agents for FOXLEY'S PATENT GARDEN WALL BRICKS. Illustrated Price Lists free by post. The Trade supplied.

ORNAMENTAL PAVING TILES for Conservatories, Halls, Corridors, Balconies, &c., as cheap and durable as Stone, in blue, red, and buff colours, and capable of forming a variety of designs.

Also TESSELATED PAVEMENTS of more enriched designs than the above

WHITE GLAZED TILES, for Lining Walls of Dairies, Larders, Kitchen Ranges, Baths, &c., Grooved and other Shaped Paving Bricks of great durability, Dutch and Adamantine Clinkers, Wall Copings, Red and Stoneware Drain Pipes, Slates, Cements, &c.

To be obtained of F. & G. ROSSIER, at their Premises as above.

SILVER SAND (REIGATE, best quality), at the above Addresses:—1s. 4d. per Ton, or 1s. 3d. per Bushel; 2s. per Ton extra for delivery within three miles, and to any London Railway or Wharf. Quantities of 4 Tons, 1s. per Ton less.

FLINTS, BRICK BURRS or CLINKERS, for Rockeries or Grotto Work. F. & G. ROSSIER.—Addresses see above.

N.B. Orders promptly executed by Railway.

For Present Sowing.

TRIFOLIUM INCARNATUM, Italian Crimson Clover
NEW LATE WHITE TRIFOLIUM
NEW LATE RED TRIFOLIUM
SUTTON'S IMPROVED ITALIAN RYE-GRASS.

SUTTON AND SONS are now harvesting, for delivery in a few days, very excellent Seed of the above. Prices are very moderate, and may be had post free on application.

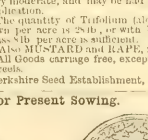
The quantity of Trifolium (alone) usually sown per acre is 28lb., or with Italian Rye-grass 8lb. per acre is sufficient.

Also MUSTARD and RAPE, now seed

All Goods carriage free, except very small parcels.

SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

Seeds for Present Sowing.



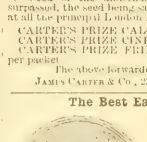
JAMES CARTER AND CO. are now offering New Seed of the undermained, the quality of which cannot be surpassed, the seed being saved from plants which have taken Prizes at all the principal London Flower Shows.

CARTER'S PRIZE CALCEOLARIA, 2s. 6d. per packet.
CARTER'S PRIZE CINERARIA, 2s. 6d. per packet
CARTER'S PRIZE FRINGED CHINESE PRIMULA, 2s. 6d. per packet

The above forwarded on receipt of postage stamps.

JAMES CARTER & Co., 237, 238, and 261, High Holborn, W.C.

The Best Early Pea for Late Crop.



JAMES CARTER AND CO can supply New Seed just harvested of their celebrated FIRST CROP PEA. *It sown at once it will produce a Crop this Season.* Price, per quart, 2s. 6d.

JAMES CARTER & Co., 237, 238, and 261, High Holborn, W.C.

COCOA-NUT REFUSE is becoming scarce, the old reserves will soon be gone. Now sold in bags, 1 for 2s., 10 for 18s., 20 for 30s., 50 for 68s., 100 for £6.

ourpence allowed for each bag returned carriage-paid.

A Railway Truck-load (not in bags), 40s

Postage Stamps or Post-office Order, payable to J. BARSHAM & Co., Kingston-on-Thames, S.W.

GENUINE TOBACCO PAPER at 10*d.* per lb. Terms Cash.

Mr. DODGSON, at Messrs. Jackson & Sons, 29, Lady Lane, Leeds.

GISHURST COMPOUND, whether used against Insects and Mildew, on Growing Plants, or as Winter Dressing on Trees at rest, should be dissolved 48 hours before use. This gets rid of smell, and if the Solution be decanted, prevents any staining of foliage. A strength of from 1 to 2 oz. to the gallon of water is recommended for growing Plants; one from 4 to 16 oz. for Trees at rest.

Sold Retail by Nurserymen and Seedsmen, in boxes, 1s., 2s., and 10s. 6d. each.

Red Spider — Magnified.

Wholesale by
PRICE'S PATENT CANDLE COMPANY (LIMITED).

Destroy your Insect Pests.

PRESERVE YOUR PLANTS and TREES.
YOU MAY EASILY DESTROY ALL PLANT PESTS,

RED SPIDER	GREEN AND BLACK FLY	ANTS
MEALY BUG	AMERICAN BLIGHT	SCALE
THRIP		MILDEW,

Without injury to the most delicate Plant or Tree, by using

FOWLER'S GARDENERS' INSECTICIDE, pronounced by all who have used it to be far superior to any other remedy. One trial will prove its efficacy. Testimonials forwarded on application. Price 1s. 6d., 3s., 5s. 6d., and 10s. per Tin.

GEO. & THOMAS FOWLER, North Street, Brighton; and of HOOPER & Co., Covent Garden Market, W.C.

AMARYLLIS.

JAMES GARAWAY & CO.,

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The Gardeners' Chronicle.

SATURDAY, JULY 21, 1866.

MEETING FOR THE ENSUING WEEK.

SATURDAY, July 28 { Royal Horticultural Society, Weekly Show), at South Kensington .. .. 2 P.M.

THE FLOWER SHOWS instituted amongst the LONDON POOR, of which we hear a good deal at this season of the year, are slowly but surely doing their beneficial work in helping forward the amelioration of the condition, and the improvement of the moral character of the lower classes of society, for whose especial benefit they were established. It is only about half-a-dozen years since the first of these shows, that of the Bloomsbury district, was originated by the Rev. S. HADDEN PARKES, and here, where the experience of the managers and the influence of the shows themselves have been the longest at work, the advance is both evident and encouraging. We are told in Mr. PARKES' book that in the early effort of 1860 the number of plants which were brought together from the courts and alleys of the Little Coram Street district, was only 94; while at the show of the present year, which took place on Tuesday last in the garden of the Foundling Hospital, no fewer than 1200 plants were brought forward for exhibition: a very gratifying evidence this of the value of perseverance in a good cause.

During the last few weeks flower shows of this character have been held in the several widely separated districts of Islington, of Westminster, and of Spitalfields (including 16 parishes), and now in that of Bloomsbury. We have ourselves witnessed some of them, and though we can hardly maintain that even the prize specimens could be called objects of advanced horticultural skill, yet we can honestly state that among them might be found examples showing unmistakable marks of careful and assiduous cultivation, and evidence of making the best of most disadvantageous circumstances. The spirit in which this movement has been carried on, as explained by Mr. PARKES in his little book called "Window Gardens for the Poor," accounts for such gratifying results. "I had noticed," he observes, "the care and attention which some of them (the London poor) bestowed upon a few window plants during the summer, and thought that this was an evidence of a latent taste which might be turned to better account. Then, too, I knew that many of them came from the country, and in their early days had been accustomed to green fields and pleasant flowers, and I thought that if we could only take them back in imagination to the homes of their childhood and the associates of their youth, we might be appealing to that which was purer and better in their nature."

And with the evidences of results such as we have mentioned, attending this work, we cannot but urge on those who can to lend a helping hand. There are many districts in which shows might be established if the very modest means required to carry them on were provided by those who themselves are blessed with enough and to spare; and it would itself act as an encouragement if the more favoured classes would take interest enough in the matter to visit the shows. One very useful mode of rendering assistance would be to provide the managers with a supply of young plants of uniform character to be distributed among those who were willing to enter the lists as competitors, these same plants being reproduced on the show day. Their state and progress would evince at once how much or how little care and skill had been brought to bear upon them. Such plants as Fuchsias, Balsams, Marigolds, and other free-growing subjects might be treated in this way. Another useful help might take the shape of disseminating plain practical information respecting the manner in which different common plants should be treated, which might readily be done by the agency of a small pamphlet written with this express object in view. There are besides many other ways in which help could be rendered. For example, the Edinburgh Working Men's Flower Show, which was only established last year, has already the nucleus of a permanent prize fund in the shape of 100*l.* given by the trustees of the late JOHN MACKENZIE, Esq., the interest of which is to be annually awarded under the name of the Mackenzie Prizes. Such substantial permanent support is most valuable in the case of an enterprise, which, being comparatively new, is on this ground liable to be viewed with suspicion by those who have not hitherto been led to reflect on or appreciate its advantages.

Reverting to the Bloomsbury Show, we may mention that the flowers for which prizes were given were Fuchsias, Pelargoniums, and Annuals, of each of which there was a very good display. The plants were ranged on benches in a large marquee, which was tastefully decorated. The exhibition began at 2 o'clock P.M. and closed at 8. There were three bands of music. Besides the exhibitors (among whom were many children) who had free admission to the Show, there was a large attendance of visitors, who amused themselves by inspecting the ingenious contrivances by which the cultivators of flowers had sought to enhance their claims — some by curiously constructed grottos, others by imitations of park entrances, garden walls, and so on. At 6 o'clock the Earl of SHAFTESBURY distributed the prizes and addressed the assemblage in terms of congratulation at the great and increasing success which had attended their efforts from year to year, and pointed out the beneficial tendency which the culture of flowers had on the mind and heart of man. He exhorted those who had obtained prizes not to relax in their endeavours to attain renewed success, and he encouraged those who had for the present failed, to take heart by adopting the practical suggestions which had been offered to them as to the best mode of rearing and cultivating their plants.

BEFORE we can arrive at any trustworthy conclusions as to the causes that operate in the production of DOUBLE FLOWERS, we must look a little more closely into the nature of these flowers. A. says they are the result of anything that enfeebles the plant; B., on the other hand, considers that they are the evidence of an over-vigorous condition; C. is of opinion that drought produces them; while D. attributes their formation to an unusual degree of moisture. Starvation and plethora, thirst and dropsy—these look rather incompatible at first sight, though in truth they are not so. It is quite possible for a plant or an animal to die of starvation in the midst of plenty, so that even on these grounds the discrepancies above alluded to are susceptible of explanation. Moreover, observers are far too apt to consider if they happen to find a plant with double flowers, living under certain circumstances, that it must be to the operation of those circumstances that the double condition is due. This we believe to be often a great fallacy, and consider that the cause, whatever it may be, is more remote. Mr. DARWIN, years ago in our columns, suggested the idea that these flowers were the result of some causes impairing fertility in the first instance, such impairment leading to the changes in question. But our concern at the moment lies rather with the structural peculiarities of double flowers than with the causes inducing them, for we cannot help thinking that much of the discrepancy between our supposed alphabetical friends before mentioned, may be reconciled by a more attentive consideration of structure. Those who endeavour to explain the formation of double flowers are too much in the habit of overlooking the fact, that there are several ways in which a flower may become double, and that a mere substitution of petals for stamens or for pistils, is not the only way in which the so-called "double flowers" arise.

An increased number of parts with, or in many cases without any alteration in the central organs of a flower, is a frequent mode of doubling, and it seems reasonable to suppose that the causes inducing modification of structure in the one case may be different from those resulting in the mere multiplication of the parts of the flower in the other. Again, the double appearance is in some cases simply due to the disjunction or rather to the lack of union of parts that, under ordinary circumstances, cohere one with another. Our excellent collaborateur M. J. B. inclines to think that in some cases, at least, double flowers may originate from a sort of plethora or hypertrophy, manifesting itself in the shape of excrescences from the petals, just as happens in the leaves of Cabbages sometimes, or as a constant occurrence in the leaf of that curious Arad, Xanthosoma appendiculatum. Now, without denying that this exuberant growth may and does occur in the petals as well as on the leaves, we yet incline to the opinion that in most of the cases where this change takes place in the petals it is due to an imperfect degree of substitution of petals for anthers; the apparent excrescence in that case being merely the detached front wall, so to speak, of the anther. The Crocuses described by us, p. 146, were of this nature, and some double Rhododendrons that we have lately examined show the change in question even more clearly. In some groups there seems to be a special mode of doubling, or rather, when their flowers become double, the process is attended by changes that do not ordinarily occur in other similar flowers. The extremely singular double Gloxinias are instances in point, so are Orchids, in which the doubling is apparently very generally associated with prolification, or the formation of supernumerary buds—as happens often enough in Roses, it is true, but then Roses do not usually present this appearance.

But even in the simplest and most common case—that in which the reproductive organs are supplanted by petals, there is much variation that may be of importance, with reference to the inducing cause. Sometimes, for instance, the whole stamen is changed, at other times, only the filament, or it may be that the filament is in its usual form and the anther is petaloid, or even the connective alone is developed in this guise. Again, a reference to the arrangement of the veins in the supernumerary petals, shows that these petals are the representatives now of the blade of the leaf, now of its stalk or sheath. Not to protract our remarks to an undue length, we pass over some other points in the structure of the so-called double flowers, but we have, we trust, said enough to show that any reasoning as to the nature of the cause that induces the formation of these horticultural pets, must be imperfect, if account be not taken of the kind of doubling, and the precise nature of the change.

— WE are glad to see that steps are being taken to improve the heretofore wretched, uncared-for appearance of the disused GRAVE-YARDS of our metropolis, which have been suffered to be a disgrace to our civilisation for too long a period. A correspondent writes as follows —"Nothing could be more offensive to the eye than the state of this burial ground (Bishopsgate two or three years ago. But recently a complete change has been effected; where dank straggling weeds once grew, and refuse of all kinds was deposited, now may be seen flower beds tastefully laid out." This change for the better has been carried out under the direction of Mr. HOLMES, of Frampton Park Nursery, Hackney, at the cost mainly of a right-minded and liberal inhabitant of the Ward of Bishopsgate, who shrinks from publicity.

— M. BALBIANI has lately presented a very remarkable paper to the French Academy upon the reproduction of the APHIDES. The number of destructive individuals which spring in the course of the summer from a single parent is to be put down at hundreds of thousands! The mode of reproduction has baffled the efforts of most naturalists to discover it. Professor OWEN calls it parthenogenesis; VON BÄR styles it pedogenesis; and M. DE QUATREFAGES gives it the name of generagenesis. But all these terms have failed to explain the true physiological import of the *genesis* of these insects. Professor HUXLEY thinks it is simply a process of budding, analogous to that of the hydra; but M. BALBIANI, in the memoir to which we allude, startles the scientific world by the assertion that Aphides are genuine hermaphrodites.

— We are glad to learn that Dr. SEEMANN has returned in good health from his journey to Central America. He brings with him some interesting plants from that region.

— From information which has been sent to us, it appears that the NOTTINGHAM FLORAL FETE, to be held on the occasion of the meeting of the British Association next month, is likely to be a first-class exhibition, the number of entries being very considerable. On analysis the number of plants entered in the various classes proves to be as follows:—Ferns, 1233; Flowering Plants, 214; Foliage Plants, 375; Soft-wooded Plants, 182; Fuchsias, 89; Pelargoniums, 200; Lycopods, 68; Lilies, 22; Japan Plants, 65; Orchids, 38; specimen Flowering Plants, 48; ditto, Foliage Plants, 44; ditto, Ferns, 19; Roses, 678 blooms; Dahlias, 360 blooms; Asters, 336 blooms; other Flowers, 137 blooms; Grapes, 136 bunches. It has been resolved that the Floral Fête shall be open for the gratuitous private view of members and associates of the British Association, from 1 P.M. till 3 P.M. on the 23d August, and from 10 A.M. to 11 A.M. on the 24th of August.

— The extensive and very interesting general collection of ZONAL PELARGONIUMS cultivated for trial at Chiswick is now in fine bloom, and well worthy of inspection by all who are interested in the selection;

of the best varieties for the ornamentation of their gardens. Stella still shines out pre-eminent in its colour and class; and the Rev. Joshua DIX is just now very brilliant among the scarlets.

New Plants.

336. ONCIDIUM MARSHALLIANUM.

Affine Oncidio pectorali, Lindl. Sepalo summo oblongo-spathulato, sepalis lateralibus deltoideo-lanceolatis basi latis bidilis, lobulis acutis, petalis ab unguebrevissimo panduratis cuneatis, limbo late crenulatis, labello basi brevissime auriculato, dein subangulato minute lobulato, unguine constricto, in lamina transversim unipluri dilatato, callo bases obcordatim respectante nec exunte, papulis gemmis utrinque juxta laminam postriformes, acbitis, alis columnæ quadrangulis, tabula infra stigmatica utrinque obtusangula.

Among the numerous Oncidia crispa introduced by Messrs. Low & Co. one has appeared which, as we hear, is quite like them as to bulb and leaves. The fine flowers are of a golden yellow, marked with maroon brown spots on the sepals and petals. It is near Oncidium pectorale, Lindl., but having consulted the type of that species in the Kew herbarium with great care, we feel quite satisfied that this one is sufficiently distinct. It has very narrow unguiculate sepals. The auricles of the lip are very prominent and quadrate. The callosity is quite different. Let us add that the famous Oncidium pectorale appears a poor thing, when compared with this brilliant species, which has flowered with W. Marshall, Esq., of Enfield, to whom it is dedicated. We are sorry to add that our studies of the original flowers prove the representation of Oncidium pectorale in the "Sertum Orchidaceum," t. 39, to be very careless and dangerous as far as science is concerned, though it makes a very agreeable artistic impression. Old-fashioned stiff and correct representations will help any one, but modern "composed" illustrations, drawn with "artistic skill," will confuse people, and will become day unanimously blamed. *H. G. Reichb. fil.*

NOTES ON CONIFERS.—No. V.

Welwitschia mirabilis.—We left off with the expression of our opinion that this extraordinary plant is neither a Conifer nor related to the Conifers. Before, however, we enter into a detail of the reasons on which our opinion is founded, or begin to discuss the kindred topics of the limits of the family of Conifers, and the order to which it belongs (which can scarcely be shunted out of view in "Notes upon Conifers"), we must bespeak the indulgence of our readers from every side.

In making our inquiry we shall reverse the course usually adopted. That has been, first, to prove or assume (the two are not synonymous, notwithstanding that in this argument they have been much too often dealt with as if they were) that there is a class of plants whose ovules are naked; next, to refer to that class all plants which have or are supposed to have such ovules; and this done, finally to set to work to discover the affinities between the plants so thrown together. If they can be discovered, good and well; if they cannot, *n'importe—tout pis pour les faits*.

Our course shall be first to inquire into the affinities of each genus which has been so referred to the Gymnogens, to eliminate all those which do not appear to be allied to each other or to the Conifers, the main type of the so-called Gymnogens; and lastly to see if all, or any, of which of such genera have naked ovules—a point on which our previous inquiries should enable us to pronounce at once.

By this means we shall escape from one of the disadvantages to which every one is subject who begins at the other end, and attacks the constitution of the whole class at once, viz., that if any particular character be absent in one member of the group, it can be referred to as present in another.

We begin with Welwitschia, both as the most remarkable, the most interesting, and the best worked out, Dr. Joseph Hooker's Monograph of it containing the amplest information on all points. And as in the course of our argument we shall have to dissent from several of his conclusions, we must at the outset be allowed to express in the strongest manner our sense of the learning and talent of that author. That we do not agree with all that he says, or adopt his views without qualification, in no respect detracts from the general admiration which we feel for himself and his works, and for none more than this Monograph. After we have done with Welwitschia, the task of discussing Gnetum and Ephedra, and of disposing of the supposed naked "ovules" of the Conifers, will be short and easy.

Welwitschia mirabilis is usually spoken of as a Conifer, or so closely allied to that family as to be almost one. This, however, is merely a careless conversational manner of speaking. Its claim is an alliance with the Conifers only rests on its affinity to Ephedra. Dr. Hooker expressly so places it, and no higher. There are thus two things to be proved before it can be reckoned akin to the Conifers—one that it is allied to Ephedra, and the other that Ephedra is allied to them. Unless Ephedra be allied to that family, Welwitschia cannot be so; and even although Ephedra were, it may still be that Welwitschia itself is not connected with the latter. That is the business which we have now specially to consider—Is Welwitschia allied to Ephedra? Our own opinion is that, although there are some analogies between the two, Dr. Hooker has over-estimated both their weight and their number, and that in truth the two do not belong to the same group at all.

Our first objection to ranking it with Ephedra is founded on their geographical distribution. In the main, the distribution of Ephedræ is not very different from that of Conifers in general. Like them, it, or something marvellously like it, was in existence in the Miocene epoch, which something has been described under the name Ephedrites; one species, E. Sotzkianus of Heer, being apparently indistinguishable from the modern genus Ephedra. Like them, their metropolis is North Asia, Europe, and America. Like them, in the Old World they extend as far south as the Himalayas, and in the New, along the mountain ridges of the Andes south to the Straits of Magellan. Like them their representatives in South America are limited to a few species (about a dozen in all) in the cold regions. Like them they have a solitary representative in the Canary Isles, and another one or two in Africa, north of the Sahara. Unlike them, however, Ephedra is not found south of the Himalayas—a special difference which may rather be taken as a general coincidence—the occurrence of Conifers to the south of the Himalayas being of an exceptional nature, and chiefly representing a different type, the relics of a former (the Eocene) flora. Neither are any Ephedras at all to be found in Africa proper—not even a sprinkling in the south-east corner as the Podocarps and Widdringtonias in the case of Conifers.

Now, had Welwitschia been found in a country where Ephedras were abundant, or at least were known to occur, or which might be supposed to have been formerly connected with a land where they had once existed or were still known to exist, then it might have been said—"Here is a plant having a certain resemblance or analogy to Ephedra, in a land of Ephedras; the *à priori* argument, therefore, is in favour of its being an Ephedra." We do not admit that this would have been good logic, still, it would have had a superficial appearance of reason—

"'Tis so like sense 't will serve the turn as well."

But we have not even logic of that calibre here; what we have is the very reverse of this. It is—"Here is a plant supposed to resemble Ephedra in a country where no Ephedras exist; it must therefore in all probability be something not allied to them."

Dr. Hooker no doubt says that he considers Welwitschia to be "the South African representative" of the genus Ephedra, and if he weighed these words before using them, this must unquestionably mean that he considered that a former continuity must have existed between South Africa and some other country in which Ephedra is found; for we imagine that Dr. Hooker is too thorough a Darwinian to suppose the presence of representative forms possible on any other footing than ancient derivation from the form represented. Some people may believe in representative forms appearing through cosmical influences of climate or condition, but we (and we may take it for granted Dr. Hooker also) can see no foundation, either in fact or principle, for such an opinion. We know of no instance in which a representative form has ever been found in a land separate from that of the represented, unless the two countries had been united at some former period, or the species had been introduced either by man or other causes. No doubt all lands have originally derived their inhabitants from some ancient common source, but distinct forms have been developed out of them in new lands, and have formed subordinate or common or specific centres from which the representative forms of which we speak must again have taken their origin. No doubt, too, one or two extraordinary supposed deviations from this law have been recorded, such as the present, or such as the genus Solenodon, a shrew from Cuba, which has been thought by Prof. Peters, of Berlin, to be most nearly allied to the Centetida of Madagascar. But in every such instance we believe that it is a mistake on the part of the systematists who have mal-appreciated the affinities of the species, and referred them to orders and families to which they do not belong.

Welwitschia comes from Loando and the neighbouring districts in the interior of that part of the coast of south-western Africa, a country where no true Conifers exist. There neither Gnetum nor Ephedra occur; Gnetum being confined to the Indo-Malayan district and the north of S. America, and Ephedra, as already said, being Europeo-Asiatic and American (a combination of locality the origin of which we have already endeavoured to explain).

But state the case perfectly fairly, we must keep in view that although there is strong reason to believe that no communication existed between Africa south of the Sahara and Africa north of it until a very late geological period,* there are as strong grounds for holding that a communication at some ancient period did subsist between South Africa and the southern parts of South America.

We do not cite the Rhea, which there is little doubt is the South American representative of the ostrich; or the Podocarpi, species of which occur in both countries: because it might be said that their origin may have been drawn from Australia, where allied types of both occur. But there are other animals which occur in South America whose types are to be found only in South Africa, or *vice versâ*. As for instance some very remarkable types of insects found in the deserts of Cordova, which are representatives of the South African Atechuhi; or the Petromys typicus of South Africa, which is the representative there of the South American spiny rat; or the Angola Vulture Falcon, a representative of the South American carrion-feeding Polyborini.

Thus, were it not for the date at which the Ephedrites must have travelled down the Andes into South America being subsequent to the separation of South Africa and South America, we might have had to admit the possibility of Welwitschia having in that manner had a common origin with Ephedra. But that Ephedra did not travel south until the Glacial Epoch is confirmed by many probabilities; and others lead to the conviction that the dissolution of any connection which may have once existed between South America and Africa proper must have been simultaneous with the rise of the greater part of the South American continent from out of the sea; the coincidence of the elevation and depression of parallel bands of the crust of the earth rather deserving now to be treated as an established fact than a speculative hypothesis. It follows that in that direction no common starting place for Welwitschia from Ephedra can be looked for. It was equally shut off on the north from Europe by the Sahara, and from later India by the interruption which now exists between them—not to speak of Ephedra not existing south of the Himalayas.

Africa proper therefore remains beyond the reach of Ephedra on every side, and according to our view, it is consequently impossible that either Welwitschia can have been derived from it, or Ephedra from Welwitschia; and therefore it cannot be the representative genus of Ephedra in South Africa.

We dwell upon this point of distribution because we think it goes to the very root of the matter, and that its importance as an element in such inquiries is not sufficiently recognised. It is almost universally ignored, as if it were a matter of no moment. *A. M.*

* The presence of Dicotyledonous plants on the tops of the mountains of Fernando Noronha does not affect the question. It is clear that these could have reached that island by crossing the Sahara Sea. If the Miocene Atlantis reached as far south as St. Helena they might have reached those mountains by sprouting shrubs to the east after reaching a sufficiently meridional degree of latitude.

DOUBLE FLOWERS.

Is the appearance of double flowers in some plants, that is to say the partial or complete transformation of the sexual organs into petals, the result of high cultivation, or must the change in question be attributed to physico-climatical influences? In modern times the opinion has been repeatedly expressed that the double state is the result of culture; consequently it is the effect of a rich luxurious soil, care in the supply of water, frequent stirring up of the earth, and the application of liquid manures and other agents which are supposed to produce double flowers. This, however, according to our view, is not the cause of doubleness. In the first place we consider it necessary to direct attention to the cultivation of Stocks, in order to see in what way this is accomplished to obtain seeds from plants, the majority of which shall produce double flowers; and then we will adduce some phenomena which may perhaps serve as supports of our theory.

Stocks intended to supply seeds of the above-mentioned character are cultivated in pots, placed on stages, with arrangements to protect them from rain and dew. These plants are only furnished with just sufficient water for their preservation, causing a spare growth, and in consequence of this the flowers produce defective sexual organs.

The seeds from these plants are mostly of an abnormal shape, which is so striking that experienced cultivators are able to separate those which will furnish double flowers from those which will produce single ones. According to this it would appear that the starved state of the plants brought about by withholding water is the cause of their bearing seeds which produce flowers whose capability of generation is wanting through the change of the sexual organs into petals. How to explain the cause of this phenomenon more clearly, we maintain that water plays a double part in vegetation; in one of its constituents it furnishes an indispensable element, and then it also serves to convey the ingredients of the soil through the roots into the plant.

If a soil were ever so rich, but deficient in water, plants would not grow in it on hot days. In the absence of this root-function the leaves could not inhale from the air carbonic acid and ammonia—vegetation would be at a stand-still. Under such conditions we see that many cereals, Barley for instance, when only a few inches high, come into ear. The Potato produces imperfect stolons, but these, after the first soaking rain sets in, form tubers, which we had good opportunity of observing in the course of last summer on the well-cultivated estate of Schoenkirchen, when the roots were examined during the drought and after the rain.

The means by which we arrived at the conviction that double flowers are a consequence of dryness of soil and atmosphere, and not of a luxurious soil rich in nutritious matter, two phenomena on which we have bestowed attention, will serve to show.

Fifty years ago we saw Kerria japonica in a hothouse with single flowers. Twenty years later we met with it in several gardens, in the open air however, but always with double flowers. At this time we were assured that single-flowered plants were no more to be found in the whole of Europe, and those who were forming herbaria offered considerable sums for a branch of K. japonica with single flowers. We were requested to take the plant in hand for the purpose of inducing it to produce single flowers. We were advised to plant it out in a rich soil, which was done, but by chance the situation was sloping, consequently it did not retain moisture, and all the flowers produced for several years in succession were double. Shortly after the captain of an English ship again brought plants bearing normal flowers from Japan, which were soon spread over the Continent, and of which we received one plant. After three years all the young plants raised from cuttings were double-flowered.

In the year 1820 we several times visited a garden in the neighbourhood of Vienna, well known on account of its plant culture. The gardener there possessed an immense plant of Camellia japonica floribus simplicibus, and some small plants raised from this by cuttings, but no other variety of Camellia. He fertilised the flowers with their own pollen, harvested seeds, which he sowed, and the plants raised from them were placed in an extremely dry lofty conservatory, where, after some years, instead of producing single flowers they all

produced double ones. The seedlings and mother plant were planted in one and the same kind of earth, and some of the flowers on the old plant also showed an inclination to become double.

This, at that time, to us, enigmatical phenomenon, was kept in mind until we had an opportunity of instituting comparisons between the climates of Japan and China and our own, and we then concluded that in the case of a plant imported from thence and exposed to such different climatic influences, the origin of the greater or less imperfection of its sexual organs was probably owing to this change, as we had experienced in Kerria and Camellia; and that the sterility of many other exotic plants might be attributed to the same cause. The difference in the climatic relations of Japan and Europe is very considerable. In Japan, previous to the new growth of Kerria and Camellia, a rainy season of three months' duration occurs; in Europe, on the contrary, dry winds prevail, especially in the eastern part, where our plains are often transformed into deserts. Is it, therefore, remarkable that a plant introduced from Japan into Europe, exposed to the influences of this great diversity of climate, should produce imperfect sexual organs incapable of further propagating the plant from seeds? Double flowers are abnormal, and in this respect are looked upon by botanists with contempt. A rich soil, with the necessary amount of moisture, will never engender double flowers. *From Otto's Gartenzeitung*, 1866, p. 197.

PARAGUAY TEA.

AMONG plants useful to mankind, the Ilex paraguayensis holds an important rank. Some time ago I called attention to it in the Horticultural Society's Journal, but as that work does not come into the hands of the general public, I shall here give the popular history of the Tea-plant in question just as if nothing had been said of it before.

There is unquestionable evidence that the roasted leaves of three species of Holly have been used as tea, for the "black drink" of the Indians was got from the roasted leaves of Ilex Dahoon and Ilex dipyrena, and it was no doubt this example that first set the authorities at Paraguay to manufacture the Ilex of their own country into tea. Be that as it may, Paraguay tea is fairly established as a very superior drink, and we read of its being carried as far as Quito, and that the natives are said to be addicted to it, just as we speak of topers being addicted to their ale. The Paraguay Tea-plant will not endure the open air in any part of England, and may be seen indoors in most botanic gardens, but Ilex dipyrena is hardy enough in the southern counties of England. I grew it in Devon, and there is no difficulty in getting plants of it from Mr. Veitch, of Chelsea. To an ordinary observer this plant might be taken for an English Holly, but on closer examination it has a more elongated style of foliage, and fewer spines on the leaves, which are less curved than the leaves of the common Holly. It was the striking resemblance of the character and qualities of I. dipyrena to I. Aquifolium that first induced me to make experiments with the roasted leaves of both; and as the three species of Ilex had each in its locality been made into tea, I had not only the natural order on my side, but also the genus, for suspecting that our English Holly would not be found wanting in the same properties if properly treated.

Paraguay tea is prepared by roasting the leaves on the twigs. The twigs are cut off and suspended on strings over a fire in the open air, and it is said to be killing work for the natives that have to do it. A corn kiln would make short work of this leafy harvest if we had it to do in England. A slow oven roasted my samples nicely of a fine chocolate brown, the colour of a ripe Horse-chesnut; and no other preparation besides this is needed, so that tea, plucked from the bush, might be used in an hour as food. Ilex dipyrena and our English Holly, Ilex Aquifolium, are plants of similar style, and are not by any means of the same style or type as the Parsguay Ilex, which has a flat leaf, twice the size of our Holly; and instead of the wavy edge and every wave armed with a spine, the Paraguay Holly has its leaves beautifully indented on the edge, each tooth neatly curved inwards, like the teeth of a rending saw. The manufacture of Paraguay tea has been, and for aught we know to the contrary, is still, a Government monopoly. It is roasted somewhat like Coffee, and not simply dried in pans as Chinese Tea leaves are dried.

Owing to the peculiarly rich character of the foliage of our English Holly, it would have been eaten up by every gluttonous herbivorous animal that could get at it, if it had not brought its own fence along with it, and so well is it defended by a host of spears that the snails dare not rasp its foliage nor venture within its lines; and although the thick-skinned ass will browse the Gorse-bush, and make a meal of Thistles, he knows the needle-point of the Holly leaf to be too sharp for him. Now, there is perhaps nothing more difficult in botany than to render a reason for any given peculiarity in plants. One thing is certain, that in the plant now in question we should certainly have had few Hollies, if any, unless some extra guardian had been put on to preserve the young and truly tender seedling Holly. I recollect reading how spines were said to be formed in the Thorn tribe, and it was stated that the short spurs were cut short by autumn, and had to wind up and come to a point. What could they do else? As sensible spurs I think they did wisely; but in the Holly we see something so very like reason and benevolent design, that we had better not speculate upon the architect. The flowering department of most plants shows a finer character than usual, as if the leaves elaborated so far, but gave place to the arena of the flower; and when the richly-coloured corolla had, in its turn, elaborated its part, we find a miniature embryo true to the old pattern, but so admirably and skilfully wrapped up and rounded off that the seeds of immense forest trees, that is to say tiny trees wrapt up for transit, can be carried miles away from the parent tree by the wind, each seed having a wing provided by Nature in case of need. Now, when I look at the fine glossy pyramidal Holly in the adult state, and see the berries on the twig, I at once look for the state of the spines upon the leaves. The adult Ivy loses all its earlier propensities of emitting rootlets, and having leaves with some seven or eight points to each, it clings now no more, but stands dignified a globe-shaped bush, with an entire leaf and flowers and fruit, thereby propagating itself by a new order of things, and cuttings struck from flowering Ivy will often retain the upright character. I recollect a fine specimen on the lawn at Wrotham Park, the residence of Mr. Byng, M.P. for Middlesex, 30 years ago.

The English Holly sports into varieties readily, and in nothing is it more peculiar than in the odd arrangement of its spines. The spine of the Holly is certainly its forte, or rather, as we should say of a vain fellow, its weak point, for in the Hedgehog Holly we have the leaf stunted and bristled all over with tiny spines, so that both leaf and spine suffer by the change. The lower portion of a healthy plant of Holly will have leaves with from 7 to 13 spines, so arranged that both sides of the leaf are equally protected—hence the edge of the leaf is waved up and down; but I counted some hundreds of leaves in the transition state, with only one spine at the point of the leaf and perhaps two or only one on the leaf besides. These were, like the Ivy already spoken of, near to the flowering department, and towards the top the leaves of the Holly were entire leaves without a wave on their margin, and with no spear but at the point. Now, taking the browsing line, as landscape painters would call it, we should say cattle cannot reach so high as this, hence there is less need for spines; but it is, as I have said before, dangerous ground to give the reason for things being so in botany, and the Ivy, without any power to harm, would be cause to complain of such partiality being shown to the Holly.

The points of leaves and their hairs, and the points of Thorns, have other work to do than drive the snails and cattle away, and the first or barren stage is elaborated for its end by the means best adapted for that end. The Ivy, the Mushroom, the Jerusalem Artichoke, and the Potato have each of them two strings to their bow, and propagate perfect plants by two distinct methods, and that without any assistance from man; and although the Holly has ten times as many spines in the barren state as it has in the fruit-bearing state, its spines are no doubt wanted, as we shall see, for a far different end. Common wheaten straw pesters the paper makers with the flint it contains. Some plants will give silex enough to polish wood with like sand paper; the Palms and Grasses could not hold their own without tissues as tough as horn and hard as bone, and, in a word, they must have sand or flint in some shape—

"They will not live in other earth"—

and then they must have a power equal to the task of dissolving sand, and all this may be an electric battery, of which the points or conductors are above-board. The bark of the Holly yields bird-lime: the polish upon the Holly leaf is not surpassed by that on any leaf whatever. When the twig of Holly is dried, it will take fire with a match, and blaze with an amount of clear white flame that renders it quite dangerous to burn the Christmas decorations in the kitchen fire. When the Holly leaves are roasted for tea they give out a strong smell, not unlike that of coffee when roasted; and, as the proper roasting of coffee has so much to do with the flavour and wholesomeness of the beverage, so Holly tea, either underdone or charred, is unfit for use. The crumb of bread is baked and is still white, the crust of bread is baked and is brown, but the crumb and crust may be burnt to a black char, and be bread no longer. Holly tea should be roasted like the crust of bread.

I am obliged to use the Ivy as a handmaid to the Holly, and state that the finest sample of Ivy culture I ever saw was at Alderley, where the walls were clipped bare every year in March, every green leaf was carefully got off, and the new crop of leaves close to the wall were all of one age and one colour; and this fine English creeper could thus be kept in bounds, and had nothing of that character of ruin and neglect which seems to be associated with Ivy. Now, if the Holly is fleeced every year—shorn like the sheep—what of that? I counted 13 leaves upon one twig of last year's growth; and of course a series of twigs like that would be leafy enough for any bush. Again, we see the Holly hedges annually clipped, and the clippings wasted, yet the plant survives. In going towards Belper from Derby I saw men clipping a Holly hedge as high as a two-story house. These samples show that the plant will provide itself with leaves, and we may safely say that the chemical character of the Holly leaf is of no ordinary kind.

The climate of Paraguay would yield wine, cider, ale, and ardent spirits; but to give drink, to use the teetotaller's phrase, that would "cheer but not inebriate," the leaf of the Paraguay Holly had to be got, and right well has it done its work. Sugar is produced from the Sugar-cane, and the scientific manufacturer distinguishes this from "Grape sugar" by calling it "Cane sugar." Now, mark well the grand distinctions between these two, for they are inherent and unalterable. Grape sugar is sweet enough, but it will not crystallize; and when starch is converted into sugar it is called dextrine (from *dexter*, the right), because when tested by light it throws the rays to the right hand, whereas Cane (sugar) syrup throws the rays to the left hand, and this class of sugar or syrup will crystallize. The botanist will easily see that one is of the endogen and the other of the exogen breed. Palms yield sugar, and they too are endogens like the Sugar-cane.

But some one will say, why drag these items into the present article? It is just for these items that the article was written. In botany we see things doing what must be called impossibilities, for the fluids, forgetting their fixed laws, rise, and although we have a scientific name for this, yet the mystery stands as before. Again, we see a power, the electrical current, pass down from a church tower through a rod without any hole like a pipe, and we see all the points of leaves, hairs and spines on plants, the points of the leaves with their connecting midribs and ramifications, and we know that the electrical current is busy—we might almost hear the anvil ring with his constant hammering to build up tissue. The microscope shows a current of some kind making crystals of sugar out of syrup, and of salt out of brine by evaporation out of the "mother liquor," and the plants that bear resin have their peculiar character, their leaves have the glitter and the point, and any planteman sees their character at a glance. The sugar-bearing Grasses are also as marked as any class can be, and the mucilage that has made Hollies capable of yielding bird-lime must be a marked and peculiar character; and whether we wonder or not at the matter, there can be no doubt that the spear point of every Holly-leaf carries fire from heaven to elaborate its rich juices, travelling without a tube, and keeping truly to its track, just as the conducting rod from the church-tower wants neither tube nor trough to convey the dangerous current to the earth.

There is in botany, therefore, a style of foliage pointed for resin, a style too pointed for sugar and starch, and a style pointed for highly elaborated juices like that of the Holly; and if we doubted still, the Rose would render us some aid. The spineless Roses might as well be no Roses at all, for all the sweetness they ever bring, and the horridly spined Sweet Briar would help my theory out handsomely, for it has every leaf highly scented, and the Ilex paraguayensis seems to bear the same relationship to the spiny Hollies that the thinness or spineless Roses bear to our sweet-smelling spring ones, for we are always disappointed with the gaudy show of the China Rose when we find it void of sweetness; and as Ilex Dahoon and Ilex dipyrena are the elder brothers in the tea trade, I have been at some pains to show that their more valuable properties are in the Ilex Aquifolium, that is to say that the spiny-leaved Hollies are good for tea, although the Paraguay Holly is not adorned with spines.

The enormous extent to which this branch of industry may be carried, and the great benefit to society that must accrue from growing our own tea, must be obvious to every one; and although I may not live to see the benefit it may be to my fellow-men, I have great faith in the doctrine that if it is useful in the fine country on the Rio de la Plata, it may be worth a trial on the Tyne, the Severn, and the Thames. I long to see aged spinsters addicted to this sort of tea drinking. *Alex. Forsyth.*

ORCHIDS AND THEIR CULTIVATION.

No. XIII.

(*Continued from p.* 411).

THE next most important genus, under the order of arrangement I have elected, is Lycaste, and with it might be associated Maxillaria, two groups so intimately connected that botanists have some difficulty in placing the numerous species of which they are composed. Like Odontoglossa they belong to the great division of Vandeæ, and their geographical distribution, so far as temperature is concerned, does not materially differ. Indeed, for all practical purposes they may be grown in the same temperature as Odontoglots, with this reservation, which must be scrupulously observed, that at no time must the minimum be less than 42°, for while some sorts of the latter, as I think I have satisfactorily shown in previous papers, will even resist with impunity the lowest minimum above the freezing point, the constitution of any of the species or varieties of those under consideration will be proportionately affected as the temperature falls below the given minimum. It is absolutely necessary for the uninitiated in these matters to be well informed upon this point; for, as is well known among growers generally, Lycaste Skinneri will successfully withstand the difficulties of a drawing-room atmosphere, and remain in good health and inflorescence at least six weeks, which has been again and again proved by Mr. Skinner and others who have submitted the plant to a practical test. It is, therefore, just possible, knowing all this, that the novice might practise a little too much at random, and submit any or all of the species to a temperature-test sufficient to destroy vitality.

By far the most important among the group, in a decorative point of view, is L. Skinneri. Seven or eight years ago there were probably not many more than 100 living plants of any size in the country, but the later importations of Mr. Skinner and Messrs. Low, Veitch, and others have swelled the numbers to several thousands, and I don't know a single place where it is not cultivated satisfactorily in comparison to what it was when the numbers were limited. Mr. Warner, as he himself shows in his Congress paper, has been very successful in cultivating the species under the shade of the Vine in a moderate temperature, but to my certain knowledge younger growers of less experience, with nice pieces of imported plants to begin with, have fairly rivalled if not eclipsed the best of the Broomfield specimens. Not that I wish to underrate the importance and value of Mr. Warner's plants, which are generally in excellent condition, under the able superintendence of Mr. Blake, and include many varieties that can only be seen at Broomfield, but to show those who are entering with spirit into the

cultivation of this tribe that there is room for improvement even in the most famous collections."

An intimate acquaintance with the growth and inflorescence of this species leads me to know that if any one possesses say 50 plants or upwards, it is possible to have flowers all the year round. During the months of July, August, and September there may be only a few chance flowers, but sufficient of them to keep up an uninterrupted succession. In the remaining portion there is not the slightest difficulty, provided the plants be luxuriant. All this may be obtained, too, without having recourse to any precarious expedient. There is no such thing as forcing or retarding, in a gardening sense, required—at least, we have never adopted the plan, and we have not been without flowers for a twelvemonth at least. Plants keep growing away and forming pseudobulbs at different times, which in turn yield flowers, and I dare say, were one to mark the varieties, and allow them a stated periodical rest, they would bloom almost to a given day. During the three particular months specified, from observation, I am inclined to suppose the flowers to be more the wayward results of a lusty constitution, and therefore as much of an abnormal character as, and no more than, a two-flowered peduncle of the plant in question, of Cypripediums of sorts, of Angulosa, and such like, which are by no means uncommon occurences in the collections of the country, and go far to justify the opinion expressed by Dr. Masters at the Congress meeting, in opposition to that of such an accomplished Orchidologist as Professor Reichenbach, that he looked upon such things being obtained and obtainable through the agency of cultivation, while the learned Professor propounded that such things might be reckoned as monsters. Depend upon it, cultivation will work wonders with many Orchidaceous genera, and we need be no more surprised at results than we are at the marvellous success that Grape or Pine growing has come to in the hands of accomplished horticulturists. Botanists, therefore, would be more likely to be accurate in their conclusions were they enabled to compare well-grown specimens with their inflorescence, under the cultural care of horticulturists, whether here or on the Continent, with those dried flowers and flower-spikes in their herbaria of exotic growth.

But the most bewitching thing in connection with Lycaste Skinneri is the variety and blendings of colour of its flowers. No two varieties are at all similar—in fact there is more dissimilarity in this than in any other Orchid, which accounts for the favourable position it occupies in the estimation of even the sobered-down enthusiast. But let us examine one of the plants: pseudobulbs 5×3½ inches, with leaves 32 inches long by 6½ inches across; bulbs when in good health, plump, showing only a slight tendency to get furrowed; flowers generally on solitary peduncles, sometimes as many as 14 to the bulb, and occasionally producing a two-flowered peduncle; sepals forming the most prominent feature of the flower, broadly ovate, measuring about 3 inches long by 1½ and sometimes more across, varying in colour from violet up through the various shades of rose and crimson to pure white; petals folded together over the labellum and column, generally but not always higher-coloured than sepals, all of them showing prominent veins; labellum contracted in the middle and elliptic towards extremity, sometimes white and sometimes crimson, or of various paler and richer shades, with prominent lines running through the basal portion, and only interrupted by conspicuous calli which are in the form of a tongue planted in the centre of the labellum; substance of the flowers very thick and waxy, which renders them more artificial-like than real; and duration from six to eight weeks. Were this species to be allowed to get into the florist's domain, there is such nice formation in the sepals, petals and labellum of some of the sorts in opposition to others, and such a variety, that we should have our Glowworms, Stellas, Prince Teeks, Queen of Queens, &c.—a great multitude, and not unworthy of special recognition so long as we did not obliterate the surname of Skinneri from among them; for I too, horticulturist as I am, have a great respect for old landmarks and fixed nomenclature.

As to potting, soil, &c., the same compost in which Odontoglossums succeed so admirably, and which was treated upon at length at p. 1065, 1865, would grow them pretty well, but experience has proved that the introduction of a little more Sphagnum is attended with beneficial effects. The roots of Lycastes are not quite so succulent as Odontoglots, and accordingly they revel more at ease in a more elastic medium. They all seem to indulge pretty freely in the absorption of ammonia, which is introduced in the form of horse droppings, and washed down of course in the process of watering. If plants are rather under than over potted, weak manure waterings of any kind whether it be horse droppings, or guano, or anything else in a diluted form, and made up to a proper temperature, may be safely applied, say once a fortnight. During the summer months plants should never be allowed to become dry at the root, and frequent syringing overhead is attended with much benefit to the growing plants. The matured pseudobulbs are the best index possible for indicating vigour and proper treatment. If they assume a shrivelled appearance, and are full of irregular corrugations or wrinkles, there is something wrong, either in the atmosphere being too hot and dry, which is not an uncommon occurrence—the roots in an impervious sodden compost, with which they disagree, and are consequently unable to withstand the scorching heat of a summer day—or from the want of an adequate supply of water and something strengthening to invigorate their constitution; all these things not properly cared for are just so many infringements of a proper system, and so many obstacles in the way of promoting health and vigour. Potting may be carried on at any time requisite, but it is not necessary to repot healthy plants in the height of the growing season, for more harm than good would be gained thereby. If a plant is unhealthy and wants looking after, do it at once, and as a rule do it when the compost and the roots are rather dry. The best fixed time is from February to April, when all the stock should be looked over, and repotted into sizes suitable for maintaining vigour for one season at least. I do not recommend that pots should be filled halfway up with draining material for any of the members of the group. A few potsherds at bottom, and a safe filtering cover above, is all that is necessary; for the roots delight to warp themselves in and over the compost, which is less liable to extremes of drought in the growing season, and then permeate their way through the broken *débris*. In this sphagnum and compressed fibrous material no amount of water seems to induce a sodden condition; and this so thoroughly agrees with the plant, that when turned out of the pot you will see the exterior membrane of the roots coated over with the humus which the water has washed down after repeated doses, and the points of the roots bristling with indications of health and vigour. The leaves when in vigour ought to present no languid sickly hue unless when they are ripening, and the young growths absorbing the sap which once flowed rapidly into the channels of the pseudobulbs, which are now thoroughly consolidated, and exercising a minor part in the growth and inflorescence of the plant. *James Anderson, Meadow Bank.* [Professor Reichenbach's remarks above alluded to, refer more especially to the Ophrydeæ. EDS.]

* Mr Warner's plants have been divided up within the last few years, which accounts for them not progressing so rapidly.

Home Correspondence.

Gardeners' Wages.—In the excellent speech of Sir Wentworth Dilke at the anniversary dinner of the Gardeners' Royal Benevolent Institution (p. 611), your reporter has given us a rather obscure sentence, which I will assume to have been meant to read something as follows:—"With reference to gardeners, he could only say that he thought them a most badly paid class, but he could not, he feared, agree with the views put forth in the letters of Mr. Fish, that any outside efforts would raise their wages. It was simply a case of supply and demand, and circumstances favoured the supply. The constant absorption of the best men from the day-labourer rank of 12*s.* a week was likely to keep the supply beyond the demand; and as long as it was so, so long would wages be lower than, looking to the services rendered, they ought to be." I cannot quite understand what is the divergence of opinion between Sir Wentworth and myself. One of the chief reasons I assigned for low wages was excessive supply. I also promulgated three or four remedies for it—a restriction of the number of apprentices by raising their fees and qualifications; a widening of the areas of employment for journeymen; and an endeavour to make the condition of journeymen and foremen a permanent instead of merely a transitional one as at present. "These remedies, combined with a wise administration through the Central Registration Office (which I trust to see formed and worked by the Royal Horticultural Society), by which the reserved stock of gardeners would be distributed singly to where they were wanted, instead of rushing down upon each place in undisciplined masses as at present, would tend to pull up the evil of low wages by the roots." Sir Wentworth, moreover, seems to confound journeymen's and labourers' wages with those of master gardeners. What I contend for is simply this, that a journeyman gardener's labour is skilled labour, and ought to be paid for as such, the same as bricklayers', or carpenters'; and further, that the ultimate wages of master-gardeners are neither sufficient reward to the services they render in the language, nor any adequate compensation for the sacrifices of time and money which young men have had to make in the positions of apprentices, journeymen, or foremen, to qualify themselves for discharging the functions of masters. Neither can I admit that any efforts that the Royal Horticultural Society might make to raise gardeners' wages would be properly designated *outside* efforts. Gardeners, as all admit, constitute the very basis of horticulture, hence it becomes the first duty of a society formed and maintained for the express purpose of fostering horticultural science, to devote its energies to the improvement of its practitioners. At the present time the improvement most urgently demanded is an increase of pay rather than an extension of knowledge, for, as I have already stated in your columns, the great need of gardeners now is not higher qualifications, but a more liberal reward for the knowledge and skill that they have already invested in their business. The high position and representative character of the Horticultural Society places it in a very responsible position in reference to this question, for the public at large will insist upon measuring the value of horticulturists by the standard which it has set up. Neither do I think that wages will be generally advanced until it puts forth special efforts to attain so desirable an object, or at least sets a better example than that of paying its students, of whom it demands the highest qualifications, something like 10*s.* or 12*s.* nett weekly wages for their skilled labour, and then, after two years' instruction, turns them adrift heavily laden with honours, or bearing the heavy burden of failure, to struggle unhelped into the position of masters, in which they will have ten times the care and the work, but less wages than a common mechanic! No! it would not be an outside, but a specially and vitally inside matter, involving the usefulness, the prosperity, and perhaps the very existence of the Royal Horticultural Society itself, to devise a remedy for this state of things; for unless gardeners' wages are speedily and generally raised the quality of gardeners must decline, and with their declension comes the deterioration if not the degradation of horticulture. Neither are, nor ought gardeners' wages, as I have already shown, to be altogether dependent upon mere supply and demand. In all other cases quality exerts a powerful modifying influence in the determination of value. Is this great disturbing force to be considered as of no moment in the payment of gardeners? At least those who have set themselves, as the Horticultural Society have done, to improve their quality, should logically and commercially complete their task, by helping them to secure such an enhancement of price as their improved quality entitles them to receive. This is the more necessary in this case, as the chief holders of the supply of gardeners have no special or primary interest in obtaining full value for their services. As a rule too, gardeners themselves lack the necessary capital and independence so essential to profitable trading in the labour, or indeed any other market. Without these, men become the victims of circumstances, and are fortunate indeed if others do not make any gain out of their necessities. It is just here that an important authority like the Horticultural Society might come to our aid, and while taking care that the growing demand for better men was promptly and equitably met, would also see to it that the legitimate rights and just interests of the men that form the supply, were strictly upheld. I have already indicated how this might be done, and am persuaded that by no other service could the Society do more to promote the extension and improvement of horticulture. Allow me, in conclusion, to thank the Horticultural Society for giving the students at Chiswick more than was at first proposed; and respectfully to direct Sir Wentworth's attention to the Prize Essay and Central Registration schemes suggested by me in the *Gardeners' Chronicle* for March 3, p. 196. The Royal Horticultural Society, of which Sir Wentworth is so distinguished a member, has done well to instruct and certify gardeners; it will do better to extend both functions over a wider area; but it will do best of all if it will set the example and use its influence in favour of liberal wages, and establish its Central Registration Office, thus providing alike for well-attested merit, and those who employ it, "a fair field and no favour." *D. T. Fish.* [Our correspondent has, we may observe, correctly interpreted Sir Wentworth's meaning, which our reporter had not very happily rendered in the passage referred to. EDS.]

Iresine Herbstii.—Would some of your correspondents in various parts of the country kindly state how this plant looks with them now? As it is nearly the end of July, and as Coleus and Amaranthus have been beautiful for weeks—since they were put out in fact, it may not be too soon to inquire. How does it look in the west, in the north, and in Ireland? Doubtless many of your correspondents have employed it to a considerable extent from its being so highly recommended. We know its present appearance about London. *Amaranthus.*

Maréchal Niel Rose.—In reply to your correspondent "John Hopper," of Canterbury (see p. 660), as to who has bloomed this Rose without the aid of heat or glass, I beg to say that it has been flowered here without the assistance of either. The plants are young dwarf-worked ones, which had been sheltered during winter in a cold pit, and planted out in April. Their blooms far surpassed my expectations. Maréchal Niel is a fine stout variety, which bears flowers of a rich golden yellow, with not the least green in them, as is shown in Isabella Grey, and it has all the appearance of being a first-rate opener; it has also been bloomed here under glass, but not at all equal to what it is out of doors. I consider it to be the greatest acquisition in the way of Roses we have had for years. *John Charlton, Foreman to Mr. R. Holbrook, Rose Nurseries, Tunbridge Wells.*—In your correspondence with "John Hopper," of Salisbury, he can see 10 or 50 blooms of M. Niel now in full beauty. I have gathered every flower of this Rose from the open ground that I have shown this season, and they have never been fewer than from 15 to 20 blooms every show. M. Niel is now assuming its right colour, and it will doubtless be a wonderful autumn flower; every young shoot has bloom buds on it. I have more than 500 fine plants of it which were budded last July, and every one has stood the winter with me well; but I admit that we had little severe weather. Still I think M. Niel will prove more hardy than Cloth of Gold, which it resembles in habit. Why does not some enthusiast in cross breeding take yellows in hand, and cross yellow with yellow and white with white? I consider that the Rose as regards beauty of form is quite in its infancy. *John Keynes.*—[Twelve months ago I purchased a plant of Maréchal Niel of Mr. William Paul. This I cut down, and worked it on the Briar half standard high. In the spring they broke beautifully, each shoot showing flower at the points; one of these flowers was exhibited by my son at the Rose Show at South Kensington on the 28th of June. Finding the Maréchal so kind in opening his flower buds, I at once cut the whole of my plants back for buds, and I have this year worked upwards of a hundred on the Briar, as I find the Manetti stock quite unsuitable for this Rose for outdoor work. My plants that were cut back have again broken, each with about three shoots, and each again is showing flower buds. I would here tell your correspondent "John Hopper," that I think the Maréchal will prove a thorough good Rose, both for open-air culture and under glass. *H. Coppin, Stanton, Cranbrook.*

Botanical Congress.—I agree very much with the spirit of your correspondent "R.'s" remarks concerning the position which horticulturists may eventually hope to assume; and I may be permitted to state that the Botanical Congress, if it has done nothing else than bring together so many horticulturists and botanists, appears to me to have done in this very great service. Men of science and men of practice met in

such numbers as had never been known before, and many acquaintanceships were formed which will be lasting. Some horticulturists seem, now that the Congress is an historical fact, to be lamenting over the fact that the horticultural talent of the country was not more fully represented at such an auspicious period. I am one of those who think, in all earnestness, that a very favourable opportunity was afforded to British horticulturists to place upon record some little essay on any subject with which they happened to be most familiar. I hold it was the duty of all classes of British botanists and horticulturists to do the best they could, seeing that the Congress was their own affair. The more credit is therefore due to all who did come forward to represent the craft and calling, and that they need not be ashamed of their effusions the abstracts already published in your columns show. *G.*

Caladiums.—I find these to be most useful plants for window decoration. I have had one in my sitting-room window for these six weeks, and it is still fresh and healthy, although the room in question is airy enough, the doors and windows being generally open during the day, thus showing that the plant will stand draughts without injury. Plants for this purpose require to be grown in small pots, say 32-sized ones, and hardened off well before they are introduced to the quarters assigned them. C. atropurpureum is admirably adapted for window-work when nicely grown and not too large. *John Edlington, Wrotham Park, Barnet.*

Societies.

ROYAL HORTICULTURAL: *July* 17 (*Scientific Meeting*).—W. Wilson Saunders, Esq., in the chair. After the usual announcement of awards made by the Floral and Fruit Committees, the election of several Fellows, and the affiliation of one Society, viz., the Keevil District Floral and Horticultural, the Chairman, in complimentary terms, presented the Prince Consort's Gold Medal, value 25*l*., to Mr. Bull, Nurseryman, King's Road, Chelsea, for his contributions during 1865 to the Society's Saturday Shows, at which he had greatly distanced all other competitors. The Chairman also thanked Mr. Bull for the handsome exhibitions of new and rare plants which he has always furnished to the Society's fortnightly Tuesday meetings.

Mr. Bull, in reply, said that his duty that day was one of an agreeable and pleasing character. It was to return thanks for the presentation of an extremely handsome medal, which he should prize more than any award he had ever received, because it had been presented to him publicly by the Council of a Society which had done more to benefit horticulture, by increasing a taste and love for it, and extending a knowledge of it, then any other medium whatever. It was now, he said, many years since the Society had instituted flower shows at Chiswick, and it was not too much to say, that those shows had first given thousands a knowledge, not only of different classes of plants, but of the perfection and beauty to which they could be brought. That naturally increased and extended a taste and love for flowers and plants; but the Society had not stopped there, it had sent its collectors abroad to ransack forest and jungle, mountain and vale, in search of novelties, and had found floral treasures wherewith to gratify the taste it had created. In addition to that the Society had distributed a Journal among its Fellows which had diffused practical information on most subjects relating to horticulture. Those things are, he said, of the past, but what of the present? Why, the Society is still inducing a taste for horticulture. The exhibitions held at Chiswick were good, they had therefore been imitated, until now we have large floral displays too frequently, for they are nearly all thrust into two months of the year, till their numbers and similarity have become almost satiating. On this account the Horticultural Society, he said, had re-organised its Tuesday shows. These meetings, he added, as most people knew, are not new; the Society formerly held them under the guidance of that eminent botanist, the late Dr. Lindley. In the interest of horticulture the Council had thought it best to revive them, and now they are attaining an importance, and are watched with an interest, which cannot fail to be beneficial both to horticulture and to the Society; these Tuesday shows extend throughout the year, and by and through them, fruit and flowers for every season are brought not only before the Fellows but the public; hence, the culture of fruit and flowers for every season will be encouraged, and horticulture will be benefited accordingly. Looking at all these things as a horticulturist, he said he could not be otherwise than pleased at receiving the handsome medal in question, but there was, moreover, another reason why he should be proud of it, and that was that the Society had associated with it the name of one of whom all England is proud, one who was always connected with art and science, who was himself not only fond of horticulture, but was also President of this Society. Associated as it was then with the name of that great and good man—the Prince Consort, this medal would be to him, he said, a valued *souvenir* of his memory.

The Rev. Joshua Dix remarked, in reference to the Society's garden at Chiswick, that at present it was in unusually good condition, and well worth inspection, especially as regards the bedding-out Pelargoniums and fine-foliaged plants, both of which were in great beauty. Dr. Hogg confirmed what Mr. Dix had just stated, and added that, among other matters of interest, the Vines in fruit, not only in the great conservatory, but also in pits, together with the collections of Strawberries and Gooseberries now ripe, were not the least important.

The Rev. M. J. Berkeley said that a Nierembergia, exhibited by Messrs. Veitch at the last meeting, had been found to be new, and that it had been named, in compliment to the exhibitors, N. Veitchii. Another white-blossomed species of Nierembergia (N. rivularis), shown on this occasion, was also new, he said, to gardens; but he added that it had been figured long ago by Miers in his Illustrations of South American Plants. It is low-growing and free-flowering, and at every node are glandular spots, which have the peculiar property of emitting roots, by means of which the plant spreads out into large patches, and may in this way be increased indefinitely. The Acalypha tricolor, shown at the last meeting by Messrs. Veitch, Mr. Berkeley said, was known at one time under the name of Caturus hispidus, a plant belonging to the Spurgewort family, with long cat's-tail-like spikes of inflorescence, resembling those of Garrya elliptica. A robust-growing Bromeliaceous plant from Belize, shown by the Chairman, was stated to bear a strong resemblance to Æchmea Mertensii, but it differed from that species in having yellow blossoms instead of red, and also in having the flowers more sparsely set on the spike than in Æ. Mertensii. It was mentioned that this plant was epiphytal on the trunks of trees in dense forests in tropical America, where it could have plenty of heat and moisture. Of Cassia floribunda, shown at the last meeting, it was said that though little known here it was a favourite bedding plant on the Continent, where it passes under a variety of names. It was also remarked that it might be useful for a similar purpose in this country; but that one drawback belonging to it was, that it would be required to be wintered in a stove. It somewhat resembles C. Herbertiana; but its flowers are of a much richer and deeper yellow than those of that species. Concerning a variegated-leaved plant exhibited under the name of Dioscorea, it was observed that it could not possibly belong to that genus, all the species of which have quite a different nervation. The name Pteridophyllum given to another plant exhibited, it was stated was doubtless also a mistake, Pteridophyllum being a genus of Fumariaceæ. It was more likely, it was thought, to be Pteriphyllum. After alluding in terms of praise to Athyrium Goringianum pictum, from Mr. Bull, a fruit of the Momordica Charantia, an East Indian climbing Cucurbitaceous plant, came under notice. Of M Balsamina it was remarked that in Malaga, and other places in Spain, the fruit kept in oil is an excellent cure for cuts and other wounds.

Mr Berkeley added to what had already been said respecting bedded-out Pelargoniums at Chiswick, that as all the varieties belonging to each particular strain had been planted together, an opportunity not often met with was afforded of forming an opinion respecting their comparative merits, thus in this direction as well as in many others indicating the Society's utility.

The Chairman, alluding to a hybrid Pelargonium named grande odoratum that was shown by Messrs. E. G. Henderson with scented leaves, and flowers greatly superior to those usually found on the fragrant-leaved section of this genus, said that, as a cultivator of sweet-leaved Pelargoniums for many years, he was pleased to see the change in question, which he considered to be a great step in the right direction. It had always been a matter of regret with him that the beautiful blossoms of our ordinary show Pelargoniums had not been associated with sweet-scented foliage and graceful habit, and now he thought he saw in the plant in question the beginning of a race of Pelargoniums which would prove to be great acquisitions. It may be added that the Floral Committee, by way of encouraging the attempts of hybridisers in the direction just indicated, awarded Messrs. Henderson's plant a First-class Certificate.

Mr. Bateman directed attention to a handful of beautiful large bright orange blossoms of Mutisia decurrens, which he had brought with him from his garden in Cheshire, where he said the plant in question was flowering freely on a wall. With Messrs. Veitch, by whom this Mutisia had been introduced some years ago from the Chilian Andes, it had got through the winter at Exeter. With Mr. Bateman, in one of the most trying climates in England, it had also withstood the winter. It was therefore thought there could be no doubt that this extremely handsome wall plant would prove hardy in any part of the United Kingdom. Among Orchids, which next came under notice, were blooms of Cattleya citrina and of Anguloa eburnea from Mr. Anderson, gr. to T. Dawson, Esq., Meadow Bank, Glasgow. The first, Mr. Bateman said, was remarkable for two things, viz., its long vernacular name, which has already been given in our columns, and for its perseverance in keeping head downwards. Nothing could induce it to grow upright. As regards the Anguloa, the singular form of its blossoms was pointed out, on account of which, as well as for its beauty, it was stated to have elicited even the attention of Royalty itself. After a remark or two respecting Grobya Amherstiæ, a sombre-looking grassy-leaved Brazilian Orchid, named, generically, after Lord Grey, of Groby, and specifically in compliment to Lady Amherst, the genus Grammatophyllum next engaged Mr. Bateman's attention. To this genus, which is nearly related to Cymbidium, belong only a few species, but among these are some of the handsomest of Orchids. The stately Javanese G. speciosum has been called the Queen of Orchidaceous plants. In colour the flowers are bright yellow, spotted and blotched or barred with red. Rumphius has a figure of a Grammatophyllum, which is remarkable for the immense mass of roots which is attached to it, and it was stated that, according to that author, it was a most extraordinary plant, for on its blunt leaves he could trace fac-similes of letters belonging to various languages. I A O he was clearly able to make out; and Mr. Bateman added that it was well he had not discovered I O U. Be that as it may, however, it was mentioned that these characters had as yet wholly escaped the notice of modern botanists. Other legendary matters connected with the genus were also adverted to, after which attention was directed to G. Ellisii, a fine species discovered in Madagascar by the Rev. Mr. Ellis, and twice introduced into this country by that gentleman, the first importation of it having been lost. Of the plants belonging to the last introduction, Mr. Bateman had been fortunate enough to secure one. It grew vigorously with him, and about three weeks ago produced flowers, cut specimens of which were exhibited; and by attaching them to a plant of G. Ellisii, furnished by Messrs. Veitch, a correct idea of the beauty of this fine species was at once conveyed to the meeting. Madagascar, though so near Africa, was stated to be distinct from that country, as far as its Flora was concerned. He would, therefore, now touch at the Cape of Good Hope, in order to admire on Table Mountain the beauty of that magnificent terrestrial Orchid, the Disa grandiflora, which refused to flower in this country until Mr. Leach of Clapham first discovered how to induce it to furnish its charming blossoms. Since then others have flowered it, and a good example of it was shown on this occasion by Messrs. Veitch. Central Africa, fruitful in gorillas and other monsters, was then adverted to, and a cut specimen of a tailed Angræcum from it was shown to the meeting. This M. Du Chaillu, the celebrated African traveller, had not seen; but he had found another in the Gaboon country, to which his name had been given (see p. 662), and which was in every way worthy of that distinction.

M. Du Chaillu said that, although not a botanist, he had been a collector of objects of Natural History of every description, and that among other things he had made large collections of plants, most of which, however, he had unfortunately lost on their transit to Europe. Orchids, he said, were to be found in Africa chiefly near the coast; in the interior they were confined for the most part to trees of a hard-wooded character, growing on the banks of streams. During the dry season, which lasts about three months, they were nearly shrivelled up, but soon after the rainy season, which lasts about nine months, had set in, they began to grow luxuriantly and flower profusely, quite scenting the air with their fragrance. Among the plants lost were, he believed, some quite new to gardens. The Orchids he had seen were confined to a few genera, but those grew in large masses, and when in blossom had an appearance at once striking and beautiful. Many interesting Ferns, he added, also exist in Central Africa.

The Rev. Mr. Ellis said that when he was in Madagascar it was his custom to send natives into the interior to collect plants for him, and that what they brought to him he either kept or threw away, according as they were valuable, or otherwise. The accounts which these native collectors gave of colour were very conflicting, and he mentioned that none of their statements in that respect could be trusted. Madagascar, he said, had extremely well-defined zones as far as the distribution of plants was concerned. Angræcum sesquipedale he found in the lower and hottest districts, and even there, he said, it was by no means so abundant as A. superbum. A. sesquipedale seemed to select straggling trees along the edges of the forest for its habitation, and it grew most frequently on the driest parts of the trunks and branches of thinly-leaved trees, thereby indicating that it wanted plenty of light and air. The roots, he added, are not matted and succulent, like those of superbum, but fewer in number, long, and wiry. A life-sized figure of a flower of this species, together with an account of its discovery, may be found in our volume for 1857, p. 253; other matters relating to Mr. Ellis's last visit to Madagascar, and to the losses he had experienced in conveying his plants to Europe, also were alluded to; and he concluded by stating that in both Madagascar and Africa there was yet, he thought, a most fertile field for enterprise in the way of plant collecting.

July 17 (*Floral Committee*).—Mr. Perry, Castle Bromwich, furnished cut flowers of a number of extremely handsome Verbenas, chiefly seedlings of his own, to one or two of which First-class Certificates were awarded. Cut Verbenas also came from Messrs. Gill & Co., of Blandford. Messrs. Lee contributed an addition to red leaved plants in the shape of Amaranthus elegantissimus. From Messrs. Osborn came six beautifully flowered Heaths, consisting of Irbyana, semula, princeps coccinea, Candolleana, Massoni major, and infundibuliformis. From Mr. Macintosh, King Street, Hammersmith, came a rosy pink-flowered Pelargonium named Lady Palmerston, and extremely free-flowering dwarf plants of a double variety of the white Pyrethrum Parthenium; it was named P. P. flore-pleno compactum. Seedling Zonal Pelargoniums came from Mr. Trotman, of Isleworth, and from Messrs. Veitch a large and valuable collection of plants, among which were several choice Orchids, the rosy pink blossomed Rhododendron Princess Royal, and the pretty blush-flowered variety called Princess Alexandra; the white-blossomed Lapageria; an Aphelandra from Bolivia, with large handsome leaves conspicuously veined with yellow; a Nepenthes, with pitchers beautifully mottled with reddish brown; the fine-leaved Maranta Veitchii and other Marantas; Bertolonia guttata, with leaves covered with pink spots; Anthurium regale, a promising plant, the charming Chilian Fern, Lomaria Lechlerii (see p.), and a Polystichum from the same country, to both of which First-class Certificates were awarded; Æschynanthus Lobbianus, with bright scarlet blossoms issuing from chocolate-coloured sheaths; Pandanus Linnæi, and other plants, to several of which Certificates were awarded. From Messrs. E. G. Henderson came the double Scarlet Pelargonium called Gloire de Nancy, the tricolor leaved kind called Lady Cullum, and Desfontainea spinosa with Holly-like leaves and rich scarlet flowers tipped with yellow. The last was stated to have been flowered out o doors. From Mr. Mann, Brentwood, came various zonal seedling Pelargoniums, and some fine-leaved varieties of the same useful plant also came from the Society's Garden. Mr. Wm. Paul furnished Scarlet Dwarf, Waltham Nosegay, Dr. Hogg, Lilacinum, and other Pelargoniums, all fine kinds, most of which have already been described in our columns. From Mr. Bull came a large collection of plants, among which were fine specimens of Amorphophallus grandis, each with a spreading much-divided leaf on a mottled stalk some 5 feet in height; the true Latania rubra, from Madagascar, to which a First-class Certificate was awarded; the chocolate-coloured Echeveria atropurpurea; Tree and other Ferns; Golden-edged Aucubas; the beautiful little Pandanus ornatus; the large-leaved plant called Samyda nobilis; the variegated variety of Selaginella Martensii; the silvery-veined Eranthemum argyroneurum; the handsome leaved Maranta roseo picta, Bertolonia margaritacea, with leaves ornamented with small round white spots; Dracænas; the red-veined Terminalia elegans, a variegated Phaius; the singular looking Urospatha splendens, Lilium auratum, various new double-flowered Petunias, Retinospora leptoclada, Cycas Riuminiana, and other plants.

July 17 (*Fruit Committee*).—From Mr. Tillery, gr. to the Duke of Portland, at Welbeck, came fine specimens of Bellegarde Peaches and Elruge Nectarines; Bigarreau Napoleon, one of the handsomest of all white Cherries, and Sir Charles Napier, President, and Empress Eugénie Strawberries. Goodwin's Seedling Strawberry, a variety raised between the Elton and Fragraria lucida, was shown by Messrs. Backhouse. It was stated to be of considerable interest to horticulturists, not on account of its value in its present state, but because it might serve as a basis for further experiments in the way of hybridisation. From the garden of the Society came a collection of white Gooseberries, consisting of Speedwell, Old Ship, Two to One, Keepsake, Teaser, Alice Hawthorn, Highlander, Broom Girl, Rattler, Lord Wharncliffe, Thunder, Slave, Candidate, Long Yellow, Matchless, Leader, Mount Pleasant, and Green Overall. A variegated Cabbage came from Messrs. Gill & Co., and pods of Raphanus caudatus from Messrs. Stuart & Mein of Kelso.

ENTOMOLOGICAL: *July* 2.—Sir John Lubbock, Bart., President, in the Chair. Mr. Stainton exhibited a head of Typha latifolia, showing the manner in which the caterpillars of the small moth Laverna phragmitella feed within it. Also specimens of Gelechia leucomelanella (?), reared from galls found upon Gypsophila Saxifraga in the spring at Mentone.—Mr. Bond exhibited the rare Sesia philanthiformis, Dianthœcia cæsia, and several species of Phycita, one of which appeared to be undescribed, all from the Isle of Man, collected by Messrs. Hopley and Greening; also a fine series of Papilio Machaon, reared from the larvæ, all of extraordinary size.—Mr. Edward Saunders exhibited a series of Mexican butterflies collected by Mr. Bouchard, amongst which was a specimen of an Euterpe exhibiting the colours of the different sexes, the right side being white and the left yellow, with the ordinary dark markings.—Mr. Pascoe called attention to a paper by Mr. Müller in the "Zoologist," and read an extract from Von Tschudi's "Thierleben der Alpenwelt," relative to the action of insects settling or falling upon the snow at considerable heights in alpine situations, and upon the manner in which they then sink into it in consequence of the radiation of heat from their bodies, as stated by Mr. Pascoe in a former communication to the Society. Professor Brayley considered that this was the true cause of the phenomenon, and that it did not result from the presence of an increased amount of oxygen in the snow-water during the process of melting, as had been asserted by some writers. Professor Westwood instanced similar results produced by the falling of hive bees on snow in this country.—The President gave an account of some recent researches of M. Balbiani on the physiology of Aphides, in which, from the structure of the cells in the ovarian tubes, the author was disposed to consider that the common plant lice are truly hermaphrodites, by which the production of eggs and young for many generations without any sexual union might be accounted for.—Mr. Stainton gave an account of an epidemic which had broken out in the Rye in the neighbourhood of St. Étienne, caused, as was believed, by the attacks of the caterpillars of a small moth, Ochsenheimeria taurella, which gnaws through the stems below the ear, and not by its feeding on the flower of this cereal.—Some notes were read on the Caterpillars of the butterflies, Charaxes Jasius and Melitæa provencialis, observed in the South of France by the Rev. D. Timins. Mr. Stevens exhibited specimens of two species of Dorymocephalus from North India and China, and the Secretary communicated a note on the trade in Chinese Insect wax, from the *North China Herald*, in which it was stated that as much as five thousand hundredweight was annually exported from one port.

RUGBY ROSE SHOW: *July* 12.—This was held in conjunction with the Rugby Horticultural Society's Annual Flower Show, and a fine display of the queen of flowers it was; but, as the weather was excessively hot, the beauty of the blooms was greatly impaired before the visitors were admitted. A Silver Cup offered for the best 60 varieties was awarded to Messrs. Paul & Son, who showed fine specimens of Laurent Descourt,

Xavier Olibo, La Brillante, Pierre Notting, Alphonse Damaizin, Maréchal Niel, Leopold I., and Duc de Rohan. Mr Cant had beautiful blooms of Madame C. Crapelet, Madame Victor Verdier, Arles Dufour, Pierre Notting, and Baron Adolphe de Rothschild. Messrs Frances & Co.'s stand contained excellent flowers of Charles Lefebvre, Madame Oriod, Xavier Olibo, Comtesse de Chabrillant, and Triomphe de Rennes.

Awards.—Gr. 1, Messrs. Paul & Son; 2, Mr. B. R. Cant; 3, Messrs. Frances & Co. 4, Mr. W. Drought.

In collections of 36, Mr B. R. Cant was 1st, with fine examples of Duchesse de Caylus, Charles Lefebvre, Dr. Lindley, and Pierre Notting. Mr. Parker had good specimens of Professor Koch and Madame Hector Jacquin; and Messrs. Frances, Duc de Rohan, Louise Peyronny, Triomphe de Rennes, and Madame Crapelet.

Awards.—3, 1, Mr. B. R. Cant; 2, Mr. Jas. Parker; 3, Messrs. Frances & Co.

Collections of 24 varieties were nicely shown. In the various stands were fine blooms of Madame Rivers, Charles Lefebvre, Auguste Mie, Madame Fontaine, Maurice Bernardin, Duchesse de Caylus, Pierre Notting, Madame Domville, Sénateur Farre, Madame Gabriel Peyronny, Leopold I., Duc de Rohan, Souvenir de W. Wood, and Madame Freeman.

Awards.—24, 1, Messrs. Paul & Son; 2, Mr. B. R. Cant; 3, Mr. Jas. Parker.

New Roses formed a pleasing feature of the Show. Some fine specimens were staged of Duc de Wellington, Dr. Andry, Alpaide de Rotalier, Charlemagne, Madame Gustave Bonnett, Madame Marie Rady, Duchesse de Caylus, Pierre Notting, and Madame D. Domville.

Awards.—24, 1, Messrs. Paul & Son; 2, Mr. B. R. Cant; 3, Mr. Geo. Batley.

The prizes for the best single blooms were awarded as follows —1, Mr. B. R. Cant; 2, Mr. Jas. Parker; 3, Mr. Geo. Batley.

The Amateurs' Classes were well sustained, and nearly all the collections put up were good. Among them were beautiful flowers of Madame Bravy, Céline Forestier, Comtesse de Chabrillant, Sénateur Vaisse, Madame Rivers, John Hopper, Madame Clemence Joigneaux, Madame Boutin, Madame Boll, Beauty of Waltham, Charles Lawson, John Nasmyth, Gloire de Dijon, Charles Lefebvre, Madame Victor Verdier, and Madame Charles Wood.

Awards.—24: 1, Rev. S. R. Hole; 2, C. N. Newdegate, Esq., M.P.; 3, Mr. C. J. Perry. 12: 1, Mr. C. J. Perry; 2, C. N. Newdegate, Esq., M.P.; 3, Mr. H. Thorneycroft.

NOTTS HORTICULTURAL *July 5.*—The South Notts Horticultural Society, formerly the Caunton Floral and Cottage Gardening Association has this year held a very attractive Show on the Sconce Hills, and, profiting by their last years experience, has made its arrangements in every respect convenient and gratifying to the public. The improvement effected in the latter has led to the retrenchment of the Show, suggested in the first instance by Mr Newton, planned by Messrs Caparn and Crossley, and finally carried out by the former with artistic and charitable skill. Instead of the old-formed monotonous stage, with its dreary hangings of undoubtedly veiled the plants and flowers, who most effectively grouped upon the irregular surface of a sloping bank of sward, and presented the charming appearance of some favoured garden, in which every variety of plant was happily acclimatised, and which united the inmates of the stove and the conservatory with the hardier inhabitants of the parterre. It may be confidently said that a prettier Flower Show has not been seen out of London.

Passing to the component parts, the Roses, which extended the whole length of the tent, 160 feet, were the most attractive feature. These came from Lincolnshire, Leicestershire, and Northamptonshire as well as from Nottingham, and were shown in great beauty and perfection The best were exhibited by the Rev. S. Reynolds Hole; Mr. Draycott, nurseryman, of Leicester; and Mr. H. Morris, of Caunton, who won the three silver cups; but collections, hardly inferior, were brought by Mr. Laxton, of Stamford; G. Neville, Esq., of Stubton Rev. E. N. Pochin, Mr. Charlesworth, Mr. H. Merryweather, and others. The best blooms were Charles Lefebvre, a magnificent dark crimson, by all odds the handsomest; the King, and Beauty of Waltham; Maréchal Niel, a new Rose of a golden yellow hue; Duc de Rohan, a dark-complexioned brother of Sénateur Vaisse, and equally handsome; Prince Camille de Rohan, still darker, a rich glowing claret colour, but not so perfect in form as Charles Verdier, Marguerite de St. Amande, and extremely pretty, while deepening to pink in the centre, Madame Boutin, Comtesse Cecile de Chabrillant, Madame C. Wood, John Hopper, Francois Lacharme, Souvenir de Comte Cavour, Madame Furtado, Le Rhone, &c.

The collections of Stove and Greenhouse Plants, Ferns, Club mosses, Hardy annuals, Calceolarias, Fuchsias, bouquets and designs of Cut Flowers, Fruits and Vegetables, were brought in excellent order from the gardens of Kelham, Winkburn, Stubton, Caunton, Averham, Langford, Upton, Winthorpe, Beaconsfield, Collingham, &c. The plants were varied Foliage was a great addition to the Show; and the Bedding Pelargoniums, which are now the favourites among that class of plants, were much in advance of those exhibited last year. Fruit trees in pots, from the orchard-house of W. Newton, Esq., were in the most perfect health, and abundantly "set." Fruit, such Grapes, Peaches, and Strawberries (Sir Joseph Paxton among the latter, remarkably fine), were shown by Mr. Cousins with his usual success. Amateurs not employing a regular gardener contributed most creditably, especially in vegetables. Cottagers (for whom the prizes were originated) proved themselves to be skilled gardeners, both in flowers and vegetables, those from Collingham being remarkably fine; and the taste displayed by the children in the arrangement of wild flowers was very gratifying.

Mr. L. J. Caparn exhibited a design in landscape gardening which took the place at the Great International Exhibition, and which proves his capability in a large undertaking to be quite equal to his taste in arranging the minor details of a flower show.

BURY HORTICULTURAL *June 22.*—The summer fête of this Society was held at Formham Park, the residence of W. Gilstrap, Esq., High Sheriff of the County. The grounds are extensive, and have been greatly beautified lately at considerable expense, so that Nature and Art combined have rendered them most attractive and suitable for such meetings, and the visitors seemed almost as much to enjoy the promenade through the grounds as the fête itself.

The Show was a fine one, and the Committee must have had great difficulty in finding room for the several collections, in fact so rapidly have the floral treasures at the command of the Society increased, that unless the Rev. F. Cheere's suggestion of a crystal palace in the Botanic Gardens (a la Beard) is adopted, a new and larger tent will have to be provided.

Fruit was but scantily shown, though Strawberries and Cherries were abundant and of good quality. The best Cherries were exhibited by Mr. Grieve, from the fine orchard-house at Culford. The chief features of this summer Show are however the Fuchsias and Pelargoniums; those shown on this occasion being superior to anything of the kind seen at the Great International. The Fuchsias particularly were very finely grown and well bloomed, some being extraordinarily full of blossoms. The same may be said of the Pelargoniums, which were more numerous than usual. One plant of a fancy variety (Magnifica) from Hardwicke was of wonderful size and symmetry. Several new varieties were shown from the collection of C. Beard, Esq., and in the various classes, whether Show, French, or Fancy, the plants were remarkable for their abundance of bloom, health, and vigour. The plants with variegated, and also those with ornamental foliage were all brilliant. There was also a goodly group of "new or rare plants." In addition to those that gained prizes, we observed a fine example of the Lilium auratum from Japan, the curious Javanese Radish, the variegated Maize, &c. The Achimenes and Gloxinias were very fine, especially the latter, amongst which were some new and very charming varieties; and there were also some beautiful variegated double Petunias, from the Rev. F. Cheere. The stove and greenhouse plants, the exotic Ferns, Begonias, and Cockscombs were very creditable. Mr. Barrett's collection of Caladiums, for which prize, were particularly beautiful. Amongst the specimen plants, the Sphærogyne latifolia, shown by Mr. Nichol, gr. to T. H. Powell, Esq., Brunkstone, and the variegated Paper plant and the Cissus discolor from Hardwicke, were the most beautiful.

The Roses were glorious, and compelled the admiration of every visitor. Such forms, colours, and perfumes enthroned among green Moss have rarely, if ever, been seen before. The Queen of Flowers held high court at Formham, and the number of presentations was overwhelming. Part of the extreme richness of the Rose show was owing to the handsome prizes offered by the Rev. R. S. Fox, aided by those of E. Greene, Esq., M.P., all of which were well competed for. The principal honours were carried off by Mr B. R. Cant, of Colchester, a Rose grower of celebrity. The Verbenas, Pinks, Scarlet Pelargoniums, and Phloxes, were also conspicuous plants were well and abundantly shown. There were also several very pretty spikes of flowers of the Indian Chestnut, from that rich repository—the Arboretum at Barton. The trees were raised by Mr. Pettitt, from seeds gathered in the Himalayas by Colonel Bunbury, and flowered for the first time in this country at Barton a few years ago.

We were pleased to see (for the first time for many years) a collection of plants and cut flowers from the gardens of the Rev. E. R. Benyon, of Culford; amongst the former a very fine plant of Lucy Grieve Pelargonium, a still finer Seedling of 1866, several handsome Pelargoniums, some fine Lobelias, &c.

The prizes offered brought forth a pretty exhibition of table decorations. Three competitors contended—Mr. Fish, of Hardwicke; Mr. Nichol, gr. to T. H. Powell, Esq., of Drinkstone; and Mr. Foulger, gr. to G. Partridge, Esq., of Bury. Mr Nichol's consisted of one of the usual glasses of the usual shape; both top and base of which were prettily, but somewhat too compactly, arranged. Mr. Foulger showed a set of three glasses, nicely dressed with flowers. Mr. Fish's decoration consisted of a tall central vase, loosely dressed with Roses, with Fuchsias, Pelargoniums, and Maiden-hair Fern, gracefully dependent from it. The long stem was wreathed with Cissus discolor. At equal distances from the centre, three other vases were placed with a few choice trusses of Geranium, and some Maiden-hair Fern in each. The base was composed of Fern leaves, objective about 3 inches all round on the table cloth; over this base were placed a few stray flowers, Fern leaves, &c., and the interstices between were furnished with Grapes, Peaches, Figs, Strawberries, and Cherries. Mr. Fish's decoration gained the prize.

The Ladies' Hand Bouquets were numerous and of high merit. Out of about 30, only three were not worthy the acceptance of any lady.

The Cottagers' table was abundantly supplied with good vegetables and some very pretty flowers, together with an abundance of fine honey. The baskets of vegetables were very creditable, and show how much may be done by our rural population, if a little encouragement is given them.

Notices of Books.

The Genera of Plants. By R. A. Salisbury. *A Fragment.* (London: van Voorst. 8vo., pp. 143.)

Botanical science owes much to the labours of Dr. John Edward Gray, of the British Museum, and though for many years his occupations have led him to cultivate zoology more than botany, it cannot be said that he has ever forsaken his early love. The last of his services to the "amabilis scientia" consists in the giving to the botanical world the "fragment" that forms the subject of this notice, and which may truly be included among the curiosities of literature. Not by any means the least interesting portion of this volume is the preface in which Dr. Gray briefly alludes to the main facts of Salisbury's life, to his own connection with that impulsive botanist, and to the friendship between Salisbury and the late Dr. Burchell. Salisbury's manuscripts, it appears, came into the possession of the last-named gentleman, the well-known traveller in Africa and Brazil. At his decease in 1864, the manuscripts carrying out at least in part, the desires of "his kind and early friend," has selected a portion of the "Genera and early friend," has selected a portion of the "Genera and Plantarum" for publication, exactly in the state in which it was left by the author. In this way "a few bitter personal expressions, which perhaps it might have been desirable to expunge," are still included, though from the lapse of time "the writers attacked can no longer be hurt by their appearance." Detailed criticism of a work produced under such circumstances is unnecessary—the progress of Science has been so great that the attitude of affairs, so to speak, is very materially altered; nevertheless one can but admire the immense pains and careful elaboration bestowed by the author. There are numerous observations scattered throughout the Fragment here produced, which are of much interest, and testify to the author's keen perception. It matters comparatively little whether the subdivisions of a group be called orders, genera, or sections, provided that the distinctive characters that separate these groups be well defined and constant. We may have our own opinions as to the propriety of considering what most people call the *genus* Narcissus as an *order*, and of dividing it into 14 or 15 *genera*; but, provided the distinctions between these be trenchant, and, as the author himself says, "provided each species is placed where its most striking similitudes demand," it matters comparatively little what name we give to the subdivisions; and though opposed to the giving generic rank and generic nomenclature with the lavish hand of a Salisbury, we yet acknowledge that there is much truth in his remark, "that if every species admitted into a genus corresponded more strictly with the type in its organs of reproduction, ten times as many as are now established would make botany ten times more easy to learn, and ten times more delightful when learnt." We may admit so much without acceding to the practice of those who make a new genus out of the most trifling variations in structure. Salisbury was for some time Secretary to the Horticultural Society, and appears at all times to have studied living plants with much acumen. Speaking on this point, he says of Solander that he "preferred dried specimens, that he might not use characters liable to disappear in an herbarium, [and] fell into the error of describing Agapanthus with a regular corolla. Dryander, on the contrary, never trusted to a dried plant if he could see it living; and Jacquin has most happily expressed my ideas of what is necessary to a generic assemblage in the following lines, partly Ovid's:—

'Par cunctis facies, qualem decet esse sororum
Et diversa tamen eadem est gratia formæ,
Ut mox agnoscas, quâ sint de stirpe creatæ.'"

— The 13th edition of *Maunder's Biographical Treasury* (Longmans) has just been issued under the editorship of Mr. W. Cates. A volume that has run through so many editions need have little said in its favour, but the changes in the present issue are so numerous that they almost render the volume a new work. The notices are concise, agreeably written, and so far as we have seen, correct, and evidently posted up to the latest moment.——*A Smaller Dictionary of the Bible, for the Use of Schools and Young Persons.* By William Smith, LL.D. (Murray.) The larger Bible Dictionaries of Dr. Smith have been so favourably commented on, that it is only necessary to state that the present volume is a condensation from those more voluminous works, and is especially suited for the use of young persons in schools or otherwise. It is amply illustrated by woodcuts and maps.

CATALOGUES RECEIVED.—*B. S. Williams'* (Holloway) *General Catalogue of Plants*, a very full and carefully-prepared list, with a view of the interior of the large conservatory at the Victoria Nursery, and other illustrations.—*Waterer & Godfrey's* (Knaphill) *Catalogue of Conifers, Rhododendrons, &c.*, contains the particulars of their well-known choice collection of these valuable hardy plants, their habit and effective foliage are with them considered essential in a Rhododendron. —*Smith & Somers'* (Glasgow) *Dutch and other Flowering Bulbs*, a select list.—*F. & A. Smith's* (Dulwich) *New and Choice Plants* embraces many novelties, specially a large series of the new tricolor-zoned Pelargoniums, among them Jetty Lacy and King of Tricolors, which have met with public recognition.—*H. Laurentius'* (Leipsic) *Prix Courant*, a very complete and excellent classified list, including many choice and rare plants.—*H. Cannell's* (Woolwich) *Autumn Catalogue of Fuchsias, Verbenas, &c.*, embraces all the novelties offered during the last spring.—*G. Matthews'* (Dunedin) *Garden Calendar, with List of Seeds*, prepared after 16 years' experience of the climate of Otago, will be of much use to new settlers. The cultural directions are as antipodean to our notions of cropping as the locality is to our own; for instance, Seakale is to be covered in July to start it into growth, and December yields an abundance of Green Peas.

Florists' Flowers.

THE RANUNCULUS.—It is much to be regretted that this beautiful flower should become comparatively neglected, and it is indeed somewhat remarkable that a flower so perfect in its beauty, and presenting withal so much variety, should have lost ground among those who take interest in the cultivation of special subjects. But so it is. Formerly the florists of London, especially those of its eastern district, indulged largely in the culture of the Ranunculus, and the conversion of their gardens into building plots was a real loss to floriculture. Then again, many persons who have tried to grow the Ranunculus, have found it degenerate in quality and vigour. In such cases, no doubt some important point of treatment has been overlooked, and in the majority of London gardens it may be assumed that the most likely source of disappointment, fatal alike to the growth of all delicate florists' flowers, is want of proper drainage. No one who has seen the 'make up' of a London garden at the hands of a speculative builder, can wonder at the want of success which marks the attempt to cultivate choice flowers therein. Drainage, in the proper garden sense of the term, is unthought of, and consequent water is death to a delicate plant. There may indeed be gravelly soils which carry off the water and form a natural drainage, but there are also many gardens, even on gravelly soils, which do not permit of the perfect or speedy passage of superfluous water. Mr. Glenny, in one of his papers on this subject, has very sensibly remarked, that "there are those who smile at our endeavours to persuade them that the Ranunculus, which is so greedy for water, and requires so much, should fail in undrained ground because it is undrained, and set up their judgment against ours; but with great submission to their fancied knowledge, we know from actual experience that they are wrong and we are right. One of these gentlemen assures us, on actual experience, that he has followed our directions, well drained his bed, used the best loam from rotted turves, and done every thing we have said should be done to grow this flower, and yet he failed as much as he did in other parts of his garden. It is worth noticing how easily a man may deceive himself. We examined his bed; we found a foot and a half of excellent loam, and at the bottom of this a foot of brick rubbish, the natural soil being a stiff loam, very retentive, and as close as clay; and he maintained that there could not be a better drainage, because the excess of water would run down into the brick rubbish. The mistake was, that when it had run

there, it stopped there. The soil held water like a leaden cistern, and there was no outlet; so that there was, for the whole season, the accumulation of watering as well as of the rains; and the 'well-drained bed' was always full of stagnant water. Here was the grand secret. Drainage is getting rid of the water; all pretences that fail of this are useless, and brick rubbish is no better than any other rubbish, if the water is to lay in it. We attribute the failure of many things in many gardens to the stagnant water in the soil, and all make-shifts, all partial draining, is not so effective as draining the whole garden."

The culture of the Ranunculus must then be left alone if the ground is not effectually drained. The soil should be good loam from rotted turves with vegetable mould; and the dung used as an enrichment must be clean cow-dung, rotted into mould, for new cow-dung, though sometimes recommended, brings the fly and the maggot. If the growers not only around London but in the country would treat the Ranunculus fairly according to these hints, this most beautiful flower would once more become plentiful. *Zeta.*

The Apiary.

SWARMING.—On the 26th of April a hive in my possession threw off a very heavy swarm; on the 15th of May the same hive threw off a good cast; and on the 10th of June the swarm of the 26th of April threw off an exceedingly heavy maiden swarm (to my great disappointment, as the bees left a super a quarter full), which I was compelled to put into an ordinary straw hive, having none other at hand. A week ago I cut a hole in the top and put on a straw super. Will the honey in this hive and super be free from brood-comb, the swarm being a "maiden?" The cast of the 15th of May I put into a frame hive of my own construction; the frames running on grooves top and bottom, and drawing out behind. In this there does not appear to be any brood-comb at all. Is this usual with casts? Will you also kindly tell me what is the latest period at which it is advisable to put a swarm into an Ayrshire or Stewarton hive? *G.*

[Your swarm of the 26th of April was a remarkably early one. It is also singular the long interval (19 days), which elapsed between that and the appearance of the second swarm. It may be accounted for on the supposition that at the time of the issue of the first swarm royal cells had only just been commenced; or it is possible that none then existed, but were formed by the remaining bees in the same manner as if their queen had died suddenly.

You ought to know that the old queen always accompanies the swarm, therefore she left with the first swarm on the 26th of April, and again with the maiden swarm on the 10th of June. Your maiden swarm, therefore, contained eggs and brood within a few days of being hived. As you do not seem to have put on the super for some weeks after hiving, there is little probability of its being used for brood, unless the queen has insufficient room below. Where a super is put on a swarm it is best to give it in about a week after hiving, but we are often in the practice of removing the super from the stock which has swarmed, and giving it, within a very few days, to the swarm to finish. The season, and the strength and date of the swarm must all be considered, or the super may be obtained at the cost of the entire ruin of the stock-hive, unless copious feeding is resorted to.

The cast of the 15th May, if it contains, as you suppose, no brood comb, has either no queen, or an unimpregnated one. This is not usual with casts, but it may occasionally occur. If you can satisfy yourself that there is no brood, search for the queen, and, if any, destroy her. Insert some brood of suitable age and watch the result.

The proper time for stocking any hive varies according to the district. We should not in ordinary seasons care to keep any swarms domiciled in empty hives after the 12th of June. We often make artificial swarms later than this date, but then they are built up and strengthened by additions of brood and honeycombs. Please at some time to favour us with an account of your hive with the frames sliding in grooves, and how you find them act in manipulation. We confess to a prejudice against the principle, which we saw largely carried out among the foreign hives shown at the Great Exhibition in 1862.]

CLUSTERING OUT.—I discovered, before your answer to my inquiries arrived, that the bees clustering outside the hive had begun to build a comb under the straw hackle, so I cut a little piece out of the top of the hive, and tied on an adapter-board and super. I shall be anxious to see what the result will be. I think ours is rather a late honey district—at least I know our garden is late. I do not understand what you mean by putting a box inside the eke, if the hive be raised, or why the box should be octagon instead of circular. Why is it "seldom that any honey can be obtained from a hive which swarms, except by sacrificing the entire stock?" And if so, how are we ever to get honey from a common straw hive, as the bees almost always swarm in them, and sometimes cast, as the folks say hereabouts. Can a super be put on before swarming time without getting brood-combs instead of honey? *A Young Apiarian. Warwick.*

[It is not unusual for bees to build comb outside their hives. Had a super been supplied to them before, you might have been a great gainer; as it is, probably, the best period of the honey-harvest has been lost. There is nothing in our previous reply which could lead to the conclusion that the octagon box is put inside the straw eke; it is intended as a substitute for the eke. The only reason for the octagonal shape instead of round being recommended, is from its being of easier construction, and better adapted for loose bars. Honey can seldom be obtained in supers from a stock which sends off a swarm, because the hive is at first almost depopulated. It is true that in the course of a few days, owing to the numbers of young bees emerging from their cells, a vast increase takes place, but still for rapid super-filling a superabundant population must be present. The queen, you are aware, is a young one, and several weeks must elapse before any increase in numbers from her own brood can take place. As a general rule, honey can only be obtained from swarming hives, by sacrificing either the swarms or the old stocks. Supers should be given to old stocks before swarming time, taking care to give additional room when necessary, either in super accommodation or by nadirs below the stock.]

Garden Memoranda.

DUPPLIN CASTLE (*Continued from p. 663.*)—A magnificent drive leads from the Castle and grounds already described to the kitchen garden, which is situated a considerable distance onwards to the east, and although the turf is not of that fine close character peculiar to elevated regions on chalky soils, it is, however, well kept, and has an admirable effect, far superior to what could have been produced by a broad gravel road. The sides are bounded by trees of a very magnificent character, a considerable number of which are of the spiry-topped kinds, producing an effect of solemn solitary grandeur. Amongst them we noted many noble examples of the Norway Spruce, alike in masses and single specimens — these latter weep to the ground, and are perfect cones from bottom to top, and exquisitely beautiful. They are supposed to be the largest and most perfect specimens of the kind in the country. There are also some grotesque forms of the Scotch Pine, the deep dark foliage of which, and the green of the Oak and other round-headed trees, contrast admirably with the light tints and graceful forms of Larches which are scattered about. A well-defined variety of the Silver Cedar of Lebanon is a beautiful and attractive object. A Black Spruce is 80 feet in height, and is a very handsome and compactly-grown specimen. There are also many extraordinary examples of Walnut trees, and a Spanish Chesnut. A remarkable specimen of Silver Fir, growing near the margin of the drive, is more than 100 feet in height, and some 20 feet in girth—a very giant of its race; its wide-spread branches weep on the ground, and the tips of many of them have taken root and grown onward into trees. I have observed not only here, but at Dunkeld and elsewhere, that the most remarkable examples of Conifers, whether Larch, Silver, or Scotch Pines, are growing on sloping banks, and I have rarely found the former suffer from the disease called "pumping" in such situations, but on flat, undrained lands. Hollies and Yews find a congenial home amidst this noble assemblage, and have a fine effect. In the open spaces some of the more rare Coniferæ have been introduced. Of these I noticed a very handsome Wellingtonia gigantea, and Taxodium sempervirens in many thriving specimens; there were also several remarkable forms of Picea nobilis, lasiocarpa and Nordmanniana, as well as Araucaria imbricata and other desirable kinds, which gave interest and variety to this beautiful drive, which is joined on the right-hand side by a broad avenue, lined on either side with thriving plants of the beautiful and effective Silver Cedar of Mount Atlas.

At the eastern end of the main drive there is a flower garden in an enclosed space sloping to the south, at the northern end of which there is a greenhouse, span-roofed, some 60 ft. in length and 18 ft. in width. When we saw it, it was undergoing repairs, and the plants were in consequence placed out of doors on the shady side of a lofty wall; amongst them we found some very good well-grown plants of Camellias, Acacias, Epacris, Cytisus, Heaths, and many others of like character. The house stands on a rusticated terrace, and the borders were gay with gaudy-coloured flowers in the ribbon style. The garden below contained a few beds of simple form on the turf, which were filled in the mixed style with choice flowering plants; in the centre of one of these beds a fine plant of Araucaria excelsa was plunged, producing an admirable effect in contrast with some remarkable forms of evergreen and other trees distributed about. Cryptomeria japonica is a beautiful tree, full of cones, and weeping to the turf; the points of the branches rising up again in a perpendicular direction give it a most elegant and handsome appearance. It is delicate pale green colour, too, and that of a very handsome Swedish Juniper near at hand, assimilated admirably with a fine example of the Deodar Cedar. Associated with these were good specimens of Copper Beech and Weeping Elm, producing an excellent effect by the dissimilarity of their forms and colour. On the eastern side a wall is covered with climbing plants, amongst which we noted some beautiful Roses, enriched with the charming colours of Tropæolum, and contrasted with many examples of Cotoneaster, Ceanothus, and other everclothed creeping shrubs.

The kitchen garden contains an area of 10 acres, and is situated on the side of a steep hill on the eastern side of the flower garden; it is of a lengthened, irregular form, running from west to east, and is enclosed by lofty brick walls, that on the northern side curving outwards. The soil is of excellent quality, and well adapted alike for the cultivation of fruit and vegetables.

A broad walk extends the whole length of the garden, and is embellished on either side with gay flowering plants; in some places the ribbon style is adopted, and the beautiful silver-edged Arabis lucida and choice Verbenas are seen in contrast with the best varieties of Geraniums and Calceolarias, and these again diversified with rows of Perilla nankinensis, Ageratums, Heliotropes, &c. In other parts the borders are mingled with the choicest kinds of herbaceous plants and florists' flowers, amongst which Dahlias, Standard Roses, and Hollyhocks are liberally distributed, and these latter tower up like pinnacles, displaying to advantage their beautiful and attractive rosette flowers of almost every hue. Celosia pyramidalis, and the different varieties of that beautiful iridaceous bulb the Gladiolus, were most effective in aiding the grand display these lengthened and highly-ornamented borders produced. Another walk bisects the gardens longitudinally, and has a line of well-formed half-standard Apple trees on either side, which were loaded with a full crop of spotless fruit. Some of the other walks were bordered with Gooseberry and Currant bushes, many of the latter trained as standards, and they too were heavily laden with admirably grown fruit, which looked so cool and inviting. Immediately on entering from the flower garden there is situated on the left-hand side a "lean-to" house, of recent erection; it is 80 feet in length and 9 feet in breadth, having upright glass in front, which is opened and shut by a very simple contrivance; the upper portion of the roof is also raised for the purpose of aeration by machinery, and hot-water pipes are placed along the front for the purpose of heating the house when required. The floor is lowered down in front, in order to admit of a row of bush specimens of Fig trees to be planted out, and they are producing fruit in great abundance. The surface of the back wall is covered with Peach and Nectarine trees, which are making remarkable growth, and producing admirable specimens of fine fruit. A corridor separates this house from another of the same width, but of a greater length by 10 feet; it is not however heated, nor the floor lowered down in front as in the other. A row of Peach and Nectarine trees occupied the front of the structure in its entire length; they were in high health, and were covered with a fair crop of tolerably sized fruit, which however contrasted but indifferently with the magnificent examples which were produced from the same description of trees trained on the surface of the back wall, and it is therefore now Mr. Oswald's intention to transfer them to the free soil. The northern wall, as has already been noted, is of great length, and being curvilinear in form its southern aspect presents a most suitable and extended surface for training, and from the position of the garden being on the hill side, the broad border in front of the wall slopes very considerably to the terrace walk in front, thereby preventing any excess of moisture during the winter or rainy periods of the season. Trees here in this elevated position thrive well and produce heavy crops of fine fruit. A Turkey Apricot covers a space of wall 42 feet by 13 feet—a splendid example of good management, being covered with foliage to the very stem of the tree. Another large Moor Park Apricot tree had been moved two years since without missing a crop. Here, that king of fruits, Coe's Golden Drop Plum, ripens tolerably well, but it does not attain that golden hue and luscious flavour which it has when grown in a well-aerated orchard house. Greengages and other approved varieties of Plums were also present, and producing good crops. There were also good crops of Peaches and Nectarines finely coloured in this favourable position. Of Pears we observed good specimens of Marie Louise, Beurré Amanlis, Moorfowl Egg, Beurré Rance, Easter Beurré, and many others.

The forcing houses are situated in the middle of the garden, in a space inclosed by neatly trimmed Yew hedges. The first range is 100 feet in length and 10 feet in width, in two divisions, and contained excellent crops alike of Figs, Grapes, and Granadillas. The second range is 100 feet in length and 16 feet in width, and is in three divisions, the first of which is a Peach house, from which the fruit had been gathered. In this house some good examples of Camellias stood on the floor. The next two houses are devoted to the cultivation of Grapes, and in which there was an admirable crop of beautifully-coloured well-matured bunches alike of Black Hamburgh and Muscat varieties. There is also a range of Pine pits 100 feet in length and 15 feet wide, and these are chiefly used for fruiting plants, and which contained very good specimens of their respective kinds. There is a small geometrical flower garden in front of these glass erections, which was gay with choice flowering plants, in contrast with the broad-leaved Cerastium tomentosum, Centaurea ragusina, and other silver-foliaged plants, and had a very excellent effect. On the front walls of some of these pits Tomatos were trained, and producing excellent crops, which were just then approaching perfect ripeness. The pit ground is of considerable size; it is situated at the eastern end of the garden, and surrounded by lofty brick walls; it contains four ranges of tolerably wide pits, each 100 feet in length, which are used for the cultivation of succession Pines, Melons, Cucumbers, and the forcing of vegetables, flowers, &c., as well as the storing of plants, vast quantities of which are required for the summer ornamentation of this large garden and extensive grounds. The whole of the quarters in the kitchen garden were fully cropped, and producing vegetables of no ordinary character in the deep, well-cultivated soil of this excellent garden, which is at once so ample in dimensions, and free from shade, and placed, as it is, on the hill side, enjoys the full benefit of exposure to the southern sun. The whole of these extensive gardens and grounds were in the best style of keeping. The walks were smooth and agreeable to tread on, and the Grass everywhere was closely shaven.

On leaving this interesting place we were fortunate in getting ferried across the River Earn, whose waters are only separated by the public road from the southern wall of the kitchen garden, and as our way lay across some stubble fields (in which the shocks had not then been removed) for a mile or so before reaching the

main road, we had an opportunity of looking back to watch the last rays of the setting sun lingering on the towers of the Castle, and to see the deep broad shade of the massive woods thrown on the surface of the Park, in which a noble herd of West Highland cattle was grazing—a magnificent scene, which we beheld with the most pleasurable feelings. *D.*

Miscellaneous.

Cotoneaster and Jasmine.—The Cotoneaster almost rivals the Ivy in its suitability for covering unsightly objects. Planted at the top of a terrace wall, or sunk fence, a mass of rock or root-work, it will quickly cover it with its luxuriant foliage and brilliant berries; while, planted at the foot of a wall and trained systematically, it will in a very short time cover a large surface with its foliage and fruit. One of the prettiest sights we ever saw was in the early spring, some years back, upon a cottage in a small village in Worcestershire. Many readers, no doubt, know Jasminum nudiflorum, a yellow Jasmine introduced some 20 years back by Mr. Fortune from China; it blooms in February and March, the flowers being produced upon the naked branches. Upon the cottage in question the nude Jasmine had been wedded to Cotoneaster microphylla, and the branches being interwined, the naked flowers of the Jasmine had the advantage of contrast with the bright foliage and brilliant fruit of the Cotoneaster. Thus clothed, relieved, contrasted, and thrown out, the naked Jasmine had a truly charming appearance; and we look back upon that cottage as one of the sunny spots to which memory reverts with renewed pleasure. Here, reader, is a receipt for a new pleasure for your garden. Both plants are cheap, and will grow everywhere; while thus grouped, they are worthy of a panel in the spring garden at South Kensington, or the most aristocratic garden in the kingdom. *A. W.*

Asparagus Culture.—"A fair crop of heads must be left after four or five weeks' cutting, but not one head must be allowed to grow until you leave off cutting at the end of the fourth year."—This is one of those blunders which we frequently see handed down by unreasoning people from generation to generation, and is the prolific source of the blanks we frequently see in Asparagus beds, not only in market gardens, but also in those of private gentlemen, for whether the plants be weak or strong, it matters not—cut every stem must be, until the arbitrary rules of blind practice are satisfied; and the consequence is, the weak plants are so completely exhausted as not to have the power to produce another shoot. We all know, at least every gardener ought to know, that the largest tree in creation could be destroyed by a constant removal of the young foliage as fast as it was produced. It is the best system to eradicate deep-rooting weeds of all kinds; even Horse Radish, Bindweed, Couch, and Thistles must yield to the constant destruction of their foliage; and yet, to a certain extent, we pursue precisely the same system with one of our most delicate and useful vegetables. We know an instance where a gardener, who was acting under the directions of his employer, completely destroyed his Asparagus beds, by following the above-quoted directions too implicitly; for he cut every shoot throughout the season. The right plan to pursue is to cut every shoot for the first fortnight or three weeks; then, when the supply is plentiful, leave one or two of the strongest shoots to each plant, and continue cutting others so long as the Grass is fit for use, for after a month or five weeks' cutting it becomes stringy, a proof that it is time to leave off. After this destroy the very weak shoots, but leave sufficient strong ones thinly over the beds, and attached to each plant, to replace and store up for the succeeding season sufficient matter for the healthy action of the plants. It is not advisable, however, to crowd the plants: a few strong shoots to each plant, if properly exposed to light and air, will be superior to a multiplicity of small ones; and the small shoots, if they have not sufficient room, will be better removed than left to deprive the others of light and air. What with chopping the roots off every season, and exposing the perpendicular sides of the beds to the drying influence of the sun and air, and cutting every shoot until the plants cease to produce shoots fit for market, the Asparagus has but a poor time of it in our market gardens, and must be classed among the most ill-used of plants; but a better system of planting is gaining ground, and though the Grass may not be quite so early as where it is forced by the sun's rays impinging upon the perpendicular sides of the beds, it is quite certain it will be much superior in quality, and yield a larger supply. No doubt the drumstick quality of the London Asparagus, and its want of flavour, is attributable as much to the want of moisture, consequent upon the deep-bed system, as to its being so much blanched. Indeed, we have cut Asparagus in the Fens of Cambridgeshire perfectly white or blanched, and yet eatable and well flavoured for a length of 6 or 7 inches. *Nottinghamshire Guardian.*

Lilium giganteum.—A remarkably fine specimen of this stately Japan Lilly is now to be seen in flower out of doors—a rare occurrence in Scotland—in Messrs. Dickson & Co.'s Redbraes Nursery, opposite the Edinburgh and Leith Cemetery, on the Bonnington Road. The plant has stood out unprotected since the summer of 1862, and flowered first in 1863. The stem is 6 feet high, and measures at the base 8½ inches in circumference. There are in all 17 flowers, of a rich cream colour. They are 6½ inches in length, and across the mouth they measure 4½ inches, and the three inside petals are delicately marked with a rich rosy purple. The leaves of the plant measure 10 inches by 12. The flowers exhale a delicious odour, which is perceptible, especially in the evening, at a very considerable distance. *Scotsman.*

Eucalyptus Mahogany.—This tree, the Eucalypte Acajou of the French, commonly named in Australia Javva, whose vegetation is very rapid, and whose dimensions are colossal, could be acclimatised in the southern parts of the French empire, especially in Algeria, in Corsica, and even in the middle of France. Some planks have been found perfectly intact after having been for 17 years in the sea, whilst on the same point the timbers of a ship which had run aground were perforated by the worm-like teredos, which live in the water of the sea, where they devour ships, piers, and timber generally. *Les Mondes.*

Calendar of Operations.

(*For the ensuing week.*)

IF not already done, no time should be lost in putting all houses, pits, or frames in thorough repair before short days have arrived or bad weather has set in. Let all glazing be seen to at once; also painting where needed. Inside whitewashing, although manageable at all times, may likewise now be done. The repairing and cleansing of flues, where such still exist, will of course also suggest itself, and the examination of boilers or other apparatus where suspicion may rest should likewise be proceeded with forthwith.

FLOWER GARDEN AND PLANT HOUSES.

Out of doors tall plants may require additional staking and tying. Patches of early annuals will now be past their best, and should be removed, filling their places with plants from the reserve garden. Advantage should also be taken of any favourable weather to do many operations in the garden just named, such as thinning and transplanting young biennials and perennials, and any shrubs which may stand too close in their seedling beds.

CAMELLIAS.—The bloom-buds for next year will now be fairly set. Therefore gradually allow the plants more air, and by degrees inure them to out-door treatment.

CHRYSANTHEMUMS.—These should now be carefully attended to, or they will lose their lower leaves, by which the appearance of the plants will be spoiled, and the production of useless suckers encouraged.

DAHLIAS.—Trap earwigs, and remove all badly-formed buds as they appear.

PELARGONIUMS.—Cuttings may be taken of some of the best bedding varieties, as they will strike now, in the open ground, with greater freedom than they will at any time during the year if coddled up by bottom-heat; besides this the plants they produce are healthier, more robust, and form handsome specimens in a shorter space of time. Proceed by loosening the soil of a south border, and by mixing a little sand with it if required; afterwards insert the cuttings 3 inches apart, fastening them well with the thumb and fore-finger. If the weather continues dry, it may be necessary to water them occasionally; but, if possible, defer this till their bases are healed over. As soon as they have made a few fresh leaves, they can be taken up, potted into 3 and 4-inch pots, and placed for a few days in a close frame; after which they may be gradually exposed to sun and air.

RANUNCULUSES.—Beds from which the roots of these have been taken up, should be dug roughly, in order to sweeten the soil by exposure to sun and air. The roots themselves will of course be dry, and in safe quarters.

FORCING GARDEN.

MELONS.—Keep the bottom heat in dung frames as regular as possible, and endeavour to secure sufficient warmth from the linings to allow plenty of air to be given while the weather is fine. Water very cautiously, and only when a fresh supply is absolutely necessary, and then give enough to moisten the whole mass of soil.

PEACHES.—The wood will probably be ripe in the early house by this time. Give, therefore, all the air possible. Give trees from which the fruit has just been gathered a good washing with the engine to clear the foliage of dust.

PINES.—Plants intended to furnish the winter and spring supply of fruit must be treated with considerable care and judgment, in order to insure their showing at the proper time, or rather to do all that can be done to insure this, for the most experienced growers cannot always succeed in getting plants to fruit at the desired time. Continue to select the most promising plants, keeping them dry at the root, and fully exposed to light, so as to check their growth, and induce a comparative state of rest for a few weeks. Those that have well-matured their growth, if wanted to fruit at once, should be kept close and warm, affording them a brisk bottom heat, and properly moistening the soil about the roots. Those intended to supply ripe fruit late in spring, if not considered sufficiently strong, may be encouraged to grow freely for some time yet, as if these can be got to show in November they will be sufficiently early. Attend carefully to plants swelling their fruit, giving plenty of manure-water at the root, and keeping the atmosphere warm and moist. Attend to the watering of recently-potted stock, as if too much is given the fresh soil is apt to become sodden, and if too little the old ball becomes so dry that it is not easy to get it properly moist again; in either case the check which the roots sustain frequently throws the plants into fruit prematurely. Get all succession stock requiring more pot room shifted as soon as circumstances will allow, in order that it may be well established before winter.

VINES.—Should showery weather set in, it will be unfavourable for Grapes that are ripe and expected to hang in good condition for a long time; therefore where the borders are of a strong adhesive nature, it will be advisable to cover them with something to throw off heavy rain; where, however, the soil is of a light nature, and such that the water will drain through it freely, this will be unnecessary. Use gentle fires where fruit is colouring, with a moderate circulation of air, and on fine days too much air can hardly be given at this stage. In dull weather fire-heat will also be necessary where fruit is swelling.

HARDY FRUIT AND KITCHEN GARDEN.

Continue to fasten in young wood of wall trees, and to see that they are perfectly free from insects; also stop over-luxuriant shoots, and endeavour to secure a fair amount of bearing wood all over the tree. Gross shoots that were stopped early in the season may now or soon be divested of laterals. Keep the breast-wood on Pear and other wall or espalier trees closely stopped in.

CABBAGE.—Sow now some seed of the Enfield Market or some other sort for spring cutting. Plants for winter use may still be planted out.

SPINACH.—Sow a little Prickly now for use late in the season.

STATE OF THE WEATHER AT CHISWICK, NEAR LONDON, For the Week ending July 18, 1866, as observed at the Horticultural Gardens.

July.	Moon's Age	Barometer.		Temperature. Of the Air.			Of the Earth 1 foot deep.	Of the Earth 2 feet deep.	Wind.	Rain.
		Max.	Min.	Max.	Min	Mean				
Thurs. 12	●	30·183	30·072	89	53	71·0	68	62	S.	·00
Friday 13	1	30·044	29·920	84	52	68·0	68	62	S.W.	·00
Satur. 14	2	30·111	30·004	82	52	67·3	68	63	W.	·00
Sunday 15	3	30·126	30·040	82	52	67·0	68	63½	E.	·00
Mon. 16	4	30·095	30·003	74	53	63·5	68½	63	E.	·00
Tues. 17	5	30·022	29·963	71	51	57·5	68	63	E.	·00
Wed 18	6	30·040	29·924	76	42	59·0	66	63	E.	·00
AVERAGE .		30·087	30·015	81·3	49·0	63·1	67·8	62·7		·10

July 12—Slight fog, hot and dry, very fine at night.
— 13—Very hot, very fine throughout
— 14—Fine, with slight haze, hot, sun, dry air, fine.
— 15—Very fine, hazy, hot and dry, very fine
— 16—Slight haze, fine, very fine
— 17—Overcast, fine, overcast, rather cold at night.
— 18—Cool, very fine throughout.
Mean temperature of the week, 2 deg. above the average.

STATE OF THE WEATHER AT CHISWICK,
During the last 40 years for the ensuing Week, ending July 28, 1866.

July.	Average Highest Temp.	Average Lowest Temp.	Mean Temp.	No. of Years in which it Rained	Greatest Quantity of Rain.	Prevailing Winds. N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.
Sunday..22	74·3	51·5	62·4	23	1·37 in.	3	3	2	1	3	16	10	2
Mon ...23	74·1	51·8	62·9	20	0·70	1	6	5	2	3	3	6	4
Tues ...24	73·8	51·9	62·8	14	0·77	1	7	4	3	5	13	4	3
Wed ...25	74·1	49·4	61·7	12	0·36	1	5	6	3	1	2	11	12
Thurs ...26	73·9	50·2	62·4	19	1·22	2	2	5	2	5	14	7	4
Friday ...27	73·9	51·0	62·5	17	1·00	2	2	2	2	3	11	8	3
Satur ...28	73·3	51·0	62·0	19	1·39	2	3	3	4	1	11	2	1

The highest temperature during the above period occurred on the 25th, 1844—therm. 92 deg.; and the lowest on the 23d, 1863—therm. 34 deg.

Notices to Correspondents.

BELGIAN ARBORICULTURE, &c.: *M. Bastiaens.* We have not received the communications to which you allude.

BOOKS: *Lowdham.* Thompson's "Gardeners' Assistant" and Mollet's "Book of Gardening" are both, for general information, supplemented by such special treatises as W. Thomson on the Vine, D. Thomson on the Pine, Bréhaut's "Modern Peach Pruner," Rivers on Orchard Houses, McIntosh's "Greenhouse," Paul's "Rose Garden," and Williams on Orchids, together with an attentive and constant perusal of our columns.

BOTANICAL NOMENCLATURE AT THE LATE INTERNATIONAL EXHIBITION: *Senilis.* The compilers of the Catalogue are not answerable for any vagaries of nomenclature. The insertion of *Anthocercis* among Taxads was no doubt an error. The word "distinct" was, we presume, applied in a horticultural sense to indicate distinct garden varieties. Competent judges were appointed, and their decision on these points must be acceded to.

CAMELLIAS: *A Nineteen Years' Subscriber.* Our correspondent will in due time treat of that branch of the subject to which you refer; meanwhile you cannot err in procuring Contessa Lavinia Maggi, Eximia, Countess of Derby, Baron de Vriere, Comte de Gomer, Sarah Frost, Duchesse de Berri, Bicolor de la Reine, and Filippo Patroni.

DOSSINIA: *Kate.* It is the name of a beautiful little Bornean Orchid cultivated for the sake of its olive-green velvet-like leaves, the nerves and nervelets of which are of a paler colour, thus giving them a marbled appearance. The plant is sometimes called Macodes marmorata, and also Anoectochilus Lowii. It differs from Macodes in the absence of a bearded fringe to the lower part of the lip, as well as in the boat-shaped process of the column.

NAMES OF PLANTS: *P. M.* 1, Pentstemon atropurpureus; 2, P. ovatus; 3, P. Digitalis.—*P. F.* Aconitum Lycoctonum.—*I. P. M.* Lupinus luteus.—*P. Th.* Spanish arrowgrass. It indicates barren and neglected land, and has a strong hircine smell.

PLANTS FOR HOSPITAL WARDS: *F. R. H. S.* Many plants are available. There are those which make up the working men's allotments so beautifully established in many parts of London, as Scarlet Pelargoniums, Fuchsias, Balsams, Marigolds, Asters, Arum Lilies as they are called (Richardia æthiopica), Nettle Geranium (Coleus fruticosus), Balm of Gilead, Lavender, Cactuses, Echeveria, Mesembryanthemums, Musk (a capital window plant), German Ivy, Senecio mikanoides), Fairy Roses, &c. Then there are Hyacinths and Narcissi, Tulips, Crocuses, Begonias, Myrtles, Lycopodiums, the firmer-textured Ferns if shady, Cyclamens, &c. For winter there can be no doubt the berried Aucubas would do admirably if the pollen were attended to, and the pretty little Skimmia japonica, which prefers shade, would probably also answer.

POTATO DISEASE: *W.* It is far too late to offer a number of conjectures as to the cause of the Potato disease. It is as useless to deny its having existed, because in the fetid puccinie Peronospora infestans, as it is to reject the well-established fact that the Oidium is the perpetrator of the Grape mildew. Still we are happy to record anything in the shape of experiment, and are not therefore inclined to pass over a communication from Southampton, though it still clings to the old saws, of extremes of temperature, inefficient draining, a close-set surface which prevents circulation, or the contamination of the old set. Our correspondent however, under the impression that the disease arose from the decay of the set and surrounding fibres, amongst other causes, made the experiment of growing Potatos in 32-sized pots, and watering them well with a solution of fibres from healthy plants decomposed by being steeped in water. We are not surprised to hear that the produce was diseased, but it does not follow that the disease was the same as the well-known Potato murrain. The experiment is not however without its value, as it shows how easily mischief may be induced by the application of matter in a condition likely to produce putrefactive fermentation, even where the soil is free in other respects from anything likely to be injurious. *M. J. B.*

COMMUNICATIONS RECEIVED.—M. Weddell (with thanks).—Dr. Hasskarl.—J. T.

* * Double price will be given for Nos. 4 and 45 of last year.

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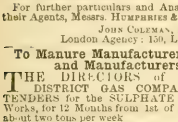
By order of the Board,
July 14. MAGNUS OHRN, Secretary.



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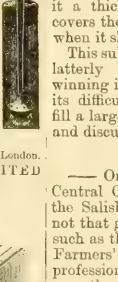

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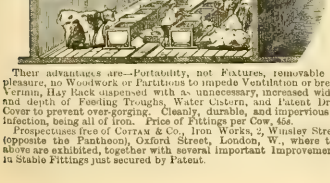

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The Agricultural Gazette.

SATURDAY, JULY 21, 1866.

AMONG the most interesting of the objects at the pretty Agricultural Show at Epping last Tuesday was a cart-load of Italian Rye-grass—the second cut this year of a crop sown in February last, and ascertained to weigh 13 tons per acre. The Grass was 25 inches long, and the previous cut had been taken 27 days before. It was grown on sheer sea-sand, watered with London sewage. Down at the northern outfall, near Barking, about an acre of the contractor's yard had been levelled and drained, and thereafter spread about 30 inches deep with sand brought up from the Maplin, below Shoeburyness, and over the surface there, sloping 1 in 100 in order to produce sufficient flow, water, drawn by a syphon from the sewer, has been directed at intervals, for the feeding of the young Grass sown in February last. Two cuts have now been taken, and the result is perfectly satisfactory, entirely corroborating all that had been predicted of the power of sewage and sea-sand to grow and feed up to *maturity* a plant of Italian Rye-grass.

Higher up the sewer, Mr. WESTWOOD, dealing with an exceedingly rough and poor bit of gravelly waste land, has been growing Italian Rye-grass under similar circumstances. The sewage is here laid on out of movable troughs connected in like manner with a syphon, and it has been somewhat unevenly distributed.

Owing to this, and also owing to the extremely patchy character of the land, the crop is uneven; but a third crop has already been cut here, weighing, where it is good, from 8 to 12 tons per acre, and yielding a capital return for the seed sown last September and October.

An elaborate report of this plot and of the whole question of sewage irrigation will be found in page 696, and is well worth perusal. Near this, on Mr. ADAMS's farm, a field of good land has been laid down with Italian Rye-grass, is being watered on the catch-water system of irrigation with sewage from the outfall, and will no doubt yield a maximum produce very shortly.

Lastly, the Metropolis Sewage Company, anxious that tenants of land along the line of their proposed sewer should be convinced of the wonderful power of sewage in the growth of Grass, have taken a farm in the neighbourhood of Barking, one-half of which is being laid out chiefly in beds as for water meadows, but also for the trial of every other known way of distributing the sewage. And over 30 or 40 acres of it a thick plant of Italian Rye-grass already covers the land, ready to be fed by the sewage when it shall arrive.

This subject, therefore, of which very little has latterly been heard, is nevertheless quietly winning its way towards a satisfactory solution of its difficulties, and we doubt not it will soon fill a larger space than ever in the expectations and discussion of the agricultural world.

—— On Wednesday last the first meeting of the Central Chamber of Agriculture took place at the Salisbury Hotel, Fleet Street. We doubt not that good service will be done by an agency such as this. By connecting the different local Farmers' Clubs it will not only be of that direct professional use which we have seen in the recently established relationship between the Society of Arts and the local mechanics' clubs of the country, but it will prove a powerful and efficient agency for bringing the agricultural will and influence of the country to bear upon the HOME SECRETARY whenever questions directly affecting agriculturists come up for Parliamentary discussion or political settlement.

The following is the report of the first meeting of the Council of the new Association:—

Mr. A. PELL, Hazelbeach Hill, Northampton, Chairman; Mr. R. J. MORE, M.P., Linley Hall, Shropshire, Vice-Chairman; Mr. C. CLAY, Walton, Wakefield, Secretary; Mr. E. HOLLAND, M.P., Evesham; Mr. C. S. READ, M.P., Norfolk; Mr. J. BIRDITT, of Warwickshire; Mr. T. CHANDLER, of Wilts; Mr. T. DUCKHAM, of Herefordshire; Mr. J. HEMSLEY, of Newark; Mr. W. E. LONG, of Kent; Mr. J. SMYTH, Surrey; and Mr. J. SMYTH, of Herts, were present. A code of rules for the Chamber was adopted, subject to the confirmation of the General Meeting, which is fixed to take place on the Wednesday in the week of the Smithfield Club Meeting in December next, at the Salisbury Hotel.

The first rule runs thus:—"The objects of the Chamber shall be to watch over all measures affecting the agricultural interest both in and out of Parliament, and to take such action thereon as may seem desirable for the benefit of agriculture." And in order to obtain that organisation so manifestly requisite for the promotion of the objects, and ascertain the sense of the agriculturists of the kingdom generally, it is provided that "local Chambers subscribing in advance 3*l*. per annum to the funds of the Central Chamber shall have the power of sending a deputed member to the meetings of the Council and an additional member for every further sum of 2*l*. subscribed. The annual subscription of 1*l*. constitutes a subscribing member, and the payment of 10*l*. a life member."

It was reported that local Chambers have been established in the counties of Wilts, Hereford, Gloucester, East and West Ridings of Yorkshire, Cumberland, and Northumberland; and that a meeting is about to be held in Shrewsbury for a similar object.

—— In another page there will be found some account of a flock in Norfolk which is believed to have been affected with the Rinderpest. We learn that outbreaks of the disease, or of a fatal affection resembling it, have lately been more frequent in the eastern counties. At Worlington, Suffolk; Great Wassingham Norfolk; in Cambridgeshire, and again last week near Islington, cows have been suffering from disease pronounced by Professor SIMONDS to be rinderpest. Of about 450 sheep and lambs at Great Wassingham, one-half are dead, and of upwards of 500 at East Walton nearly 200 are dead. It will be seen that Mr. WOODS, an experienced flockmaster, does not believe that this fatal disease is the incurable Rinderpest, and his letter seems to indicate that it has proved amenable to his treatment.

AARHUUS, in Jutland, was the district selected for the triennial meeting of the Royal Agricultural Society of Denmark—and it would have been difficult to have found another place within the now circumscribed range of Danish rule, so conveniently and so pleasantly situated for such a meeting. Jutland is a province so rarely visited by travellers, whether for pleasure or for business, that in all probability even the name of its principal town, Aarhuus, will fail to be recognised by most of those likely to be interested in the recent doings there. Yet a visit there could be made both with pleasure and profit by the intelligent and thoughtful farmer. The whole country is purely agricultural, and the energies of the people are devoted to the breeding of cattle and the manufacture of butter and cheese. These are matters which always interest the farming community;—just now, bearing as they do upon our recent losses, they possess more than ordinary claims on our attention, as it is from their stock that we may look for supplies, both of store cattle and of dairy produce, to supplement our deficiencies, or at all events help us through our present difficulties.

Aarhuus is beautifully situated on the shores of the Great Belt, which here form a bay of considerable extent. The town, containing some 12,000 to 14,000 inhabitants, gradually rises from the shore, and is backed by a higher range of hills, flanked on either side by woods of Beech trees, which creep down well-nigh to the water's edge. The harbour, with a depth of water sufficient for vessels of 800 to 1000 tons, lies towards the west extremity of the sea front. Crowded as it was with steamers, and decked with flags along its quays and piers, which were thronged with the townsfolk and their friends, it presented a very gay appearance as each successive vessel steamed in, bringing fresh contributions of visitors and other live stock to the Exhibition.

As at Vienna, an international character was given to the meeting by the admission of foreign implements and machines; and on the invitation of the Danish Government, Professor WILSON (of Edinburgh University), had been directed by the Foreign Office to proceed, after the close of the Vienna Exhibition, to Aarhuus, and act there in a similar capacity.

The Exhibition comprised the usual classes of live stock—cattle, horses, sheep, and swine; a collection of agricultural implements and machinery; samples of cereal and other agricultural products,—of butter and of cheese—and a

department for the fish and fisheries of the country. It commenced on Monday, June 25, and closed on Friday, June 29, the live stock being exhibited only on one day, Thursday, while the other departments remained open for inspection during the whole period.

The implements and machines were well exhibited in the large cavalry riding-house and exercising ground, which was inclosed with covered shedding for the occasion. Several of our leading firms were represented — CLAYTON & SHUTTLEWORTH, HOWARDS, HORNSBYS, PICKSLEY & SIMS, ROBY, and others contributed to the collection. Among the home-made implements there was nothing that needs special notice; many were imitations more or less of our own, and in all there was evidence of an improving spirit, and of good materials and good work. During the three or four days previous to the Exhibition various trials in the field were carried out by Prof. JÖRGENSEN, of the Agricultural High School at Copenhagen; and opportunities were afforded during the Exhibition for seeing the reapers, &c., at work.

The "butter and cheese" department was, as might be expected, largely represented. The skill and patience of the judges were well tested in going through the numerous samples submitted, and adjudicating their relative merits.

The "grain and seed" collection was on a limited scale, and the samples far too small to admit of any opinion being formed as to their real agricultural value. Neither was the "fishery" department a satisfactory exposition of what a sea-girt country like Denmark must be able to produce.

The great interest of the Exhibition seemed to be centred in the Cattle Show—the horses fairly sharing with the horned stock the attention of the visitors. The horse classes were arranged according to age, size, and suitability for light or heavy work; and all those which were selected by the judges as worthy of a prize, had to substantiate their claims to it by performing in harness in a satisfactory manner a certain distance with a certain weight of draught in a certain time. The classes were generally well represented, and some excellent specimens of horses for agricultural purposes were exhibited. Two Clydesdales exhibited by Mr. FORBES, of Stirling, excited by their substance and fine action, great attention.

The Jutland horse is generally a well-bred, good-shaped animal, from 15 to 16 hands high, rather heavy and sluggish in appearance, and suitable for road as well as agricultural work. The prevailing colours are bays and browns. Some years ago some English thorough-bred stallions were imported for improving their breed; and more recently Cleveland blood has been used for the same purpose, but in neither case were the results so satisfactory as was expected. They have no doubt, however, done some good, as many of the horses exhibited a great resemblance to the Yorkshire breed.

In the Cattle classes prominence was given to the breeds best adapted for dairy purposes, of which several excellent specimens were exhibited, both of the Jutland and of the Slesvig breeds. The Jutland dairy breed is small, chiefly of a black and white, or dun colour, not prepossessing in appearance, but presenting great inducements for improvement by judicious breeding or crossing with other suitable breeds. The Angel (Slesvig) breed is dark red in colour, small in size, but well shaped, with fine symmetrical heads and necks, and all the characteristics of good milkers. In one of the classes a bull with three cows and three heifers were shown in each lot. Specimens of fat stock were also exhibited. A little attention to the preparation of the stock generally for show, especially as regards cleanliness, would have materially improved their appearance. Many were too low in condition for even ordinary purposes.

The Sheep classes contained nothing which calls for special remark. The old Danish sheep is well-nigh displaced by the introduction of the Merino and English breeds. In some cases crosses have been effected, in others the new breeds have been substituted. This is a part of their farming to which more attention should be paid, as a proportion of sheep could be kept very advantageously on most of the dairy farms, in addition to their present stock.

The Swine classes were poorly represented, considering the large stock kept at the dairy farms throughout the country. In all, English blood—Yorkshire or Berkshire—gave the stamp of value to the respective pens.

The judges finished their awards on the day before the opening of the yard to the public. The prizes were distributed at a ceremonial held in the Tribune erected for the purpose, where the excellent and indefatigable President, Count HOLSTEIN-HOLSTEINBORG, surrounded by the members of the Committee and leading persons of the district, handed them with a few appropriate words to the fortunate recipients, who in each case (horses and cattle classes) were accompanied by the animals to which the prizes were awarded. A clear road was kept for the animals to pass to and from the Tribune, which gave the spectators good opportunity for seeing all the prize animals as they passed. Advantage was taken of the meeting of so many proprietors and farmers, to compare notes on other subjects than the respective merits of their herds and flocks. Two mornings were devoted to the discussion of questions bearing on the present and future welfare of their agriculture. The subjects selected showed the keen interest taken by the Society and the leading spirits in Denmark in the advance of its most important and most suitable industry. The only word of criticism that would be at all appropriate would refer to the number and variety of subjects for discussion, which appeared too numerous.

One of the most agreeable features of the Danish Agricultural Exhibitions is the excursions that are made to some of the large farms in the vicinity. In this instance, while one party went inland by the railway, others went east and west—by steamer and by carriages—to visit the fine farming and dairy establishments of Mr. SAXTORTH, at Vosmosgaard, and of Mr. DAHL, at Moesgaard, where they were received with a most lavish hospitality.

The Exhibition, which was a most satisfactory and successful one in all its bearings, received additional *éclat* from the visit of the KING, who was accompanied by the CZAROWICH, the Grand Duke ALEXIS, and the Crown Prince of DENMARK. HIS MAJESTY paid a graceful tribute to the objects of the meeting by the personal interest he took in each department, which he visited and thoroughly examined, notwithstanding the oppressive heat of the day. In the afternoon a dinner was given on board the Royal yacht, to which the President and leading members of committee and the representatives of Sweden and Great Britain were invited; after which HIS MAJESTY and his Imperial guests joined the visitors at Moesgaard, returning about midnight to their yacht, which shortly after left for Copenhagen under a display of rockets and Bengal lights from the fine Russian steam yacht of the CZAROWICH, and amid the hearty cheers and huzzas of his Jutland subjects.

This was the 10th of the triennial meetings of the Royal Danish Agricultural Society, and has surpassed all former ones in the number of visitors and the success which has attended its arrangements. The next meeting is appointed to be held at Copenhagen in 1869, and as this is also the centenary of the Society, no exertions will be spared to render it worthy of the occasion.

No doubt when Prof. WILSON'S report to the Government is published, we shall know more of the general agricultural condition of the country, and especially of its meat and milk producing capabilities; but be that as it may, we may safely promise an extremely interesting and economical excursion, with a kind and hospitable reception to any who, without waiting for the Report, are inclined to dispose of a fortnight's holiday and form their own opinions by a visit to the farms and farmers of Jutland and the Danish isles.

LIME AND FARM-YARD DUNG.

IT is perfectly well known that quicklime, and even carbonate of lime, expels the volatile ammonia from its saline combinations: for this reason no intelligent farmer will mix Peruvian guano, rotten dung, sulphate of ammonia, or other ammoniacal manures, with lime or chalk. Such a practice would inevitably lead to loss in the most valuable fertilising constituent, and is therefore justly condemned.

Lime in direct contact with moist ammoniacal matters, certainly causes the dissipation of ammonia, but its effect upon very dilute solutions of ammoniacal salts circulating in a soil is totally different; indeed so far from dissipating the ammonia, resulting from the decomposition of organic matters of the soil, or from fertilising agents applied to it, lime tends materially to preserve this important fertilising constituent, so that even heavy rains cannot wash out much of the saline ammoniacal compounds present in well-manured soils.

Wheat, Turnips, Barley, and, in fact, all crops, contain lime as an essential constituent; without it they cannot come to perfection. Some crops, like the leguminous tribe of plants, are much richer in lime than others; and as Barley is grown in great perfection on the chalky downs of Wilts and Hampshire, the idea may be entertained that the lime in chalky soils is peculiarly favourable to that crop; and, going a step further, it may be assumed that Barley removes more lime from the soil than is taken by either Wheat or Turnips, and therefore is more strikingly benefited than the latter crops by the application of a dressing of lime to soils deficient in it. This theory would at once appear to explain the facts recorded by Mr. Kidner; yet simple and reasonable as it may appear to be, it rests entirely on speculation, and receives no countenance from well-ascertained chemical facts.

Neither the ashes of Barley-grain, nor of straw, contain much lime. An average crop of 40 bushels, weighing 52 lb. per bushel, yields 2080 lb. of Barley-grain, and about 2600 lb. of straw; the mineral matters (ash) in 2080 lb. of Barley amount to 49 lb., and 2600 lb. of Barley-straw contain 159 lb. of ash.

According to the average composition of many Barley-ash analyses, an average crop of 40 bushels of Barley removes from an acre of land the following constituents:—

	In the Grain.	In Straw.	Total.
	lb.	lb.	lb.
Potash	9.68	29.25	38.93
Soda	1.92	1.08	3.00
Magnesia	4.20	6.57	10.77
Lime	1.26	12.85	14.11
Phosphoric acid	17.25	5.18	22.44
Sulphuric acid	.51	3.39	3.90
Silica	12.98	86.75	99.73
Oxides of iron	.37	3.88	3.84
Chloride of sodium	.23	11.05	11.28
	49.00	159.00	208.00

A crop of Barley thus takes only 11 lb. of lime from an acre of land; and as an average crop of Wheat removes about the same quantity, and Turnips much more, the fallacy of the preceding theory is at once demonstrated. The composition of the ashes of Barley, Wheat, and Turnips, shows plainly that the beneficial effect which a dressing of lime produced on Barley was not merely due to the supply of a necessary food-constituent; for if the lime had acted simply by supplying its deficiency in a direct way, it is difficult to see why the Wheat-crop derived no advantage from the liming. It appears to me, therefore, evident that it performed a special function, which remains to be explained. The apparent inefficacy of lime upon the preceding Turnip and Wheat-crops is readily accounted for. Taking it for granted that the Wheat, in the case before us, was not dunged, I apprehend that the lime-dressing was ineffective because it supplied only one mineral element, which it cannot be doubted existed already on the land in much larger quantities than the few pounds of lime which, as we have seen, enter into the composition of an average crop of Wheat.

I am fully aware that lime is often applied to Wheat with great advantage, but I believe a close examination of all the circumstances under which it produces a decidedly beneficial effect upon Wheat, would show that it acts favourably when the land has either been well dunged before, or retains a good deal of unconsumed organic manure applied to a previous crop, or sown, after breaking up the Clover-ley, a large amount of Clover-roots or Grasseeds remain in the land in an undecomposed state. In soils naturally porous the decomposition of these organic remains proceeds with sufficient rapidity, and the assistance of lime is not needed to develop from the Clover-roots organic and mineral food for the following Wheat-crop. But when the texture of the soil is close, the application of lime to the broken-up Clover-ley certainly hastens the decomposition of the organic matter, and sets at liberty and renders available mineral and nitrogenous food, which, as we know by experience, benefits in a special manner Wheat and cereal crops in general.

Under these conditions lime produces a very striking effect upon Wheat; but when the land is naturally porous, and already contains a fair amount of lime, or if it be out of condition and has not been previously manured, it will not benefit the farmer's pocket to rely entirely upon a dressing of lime or marl as a manure for his Wheat-crop. My own experience goes to show that lime is frequently used when money would be spent far more profitably in the purchase of natural or artificial manures; and that it is as often withheld from the land when it should be liberally supplied.

The Turnips which succeeded Wheat on Mr. Kidner's land, we are told, were well manured with farm-yard dung, and about 3 cwt. of superphosphate per acre. The amount of fertilising constituents in a moderate dressing of farm-yard manure, leaving unnoticed the additional 3 cwt. of superphosphate—a manure rich in lime—is very much greater than could be consumed by a crop of roots. Probably not one quarter of the manure applied to the land is consumed by the Turnip-crop, and consequently much is left for the benefit of the succeeding crop, provided the constitution of the soil is such as to oppose an effectual barrier to the dissolving action which long-continued showers of rain during the autumn and winter months exercise upon the soluble fertilising matters in the unconsumed manure.

Recent experiments have shown me that lime, under favourable circumstances, becomes a preserver of ammoniacal compounds in the soil, and plays likewise an active part in fixing soluble potash and phosphoric acid; in other words, that lime is instrumental in preserving in the land all the more valuable fertilising constituents of dung. In operating with various saline solutions upon soils of known composition, I found an appreciable amount of sulphate of ammonia in the liquid which passed through a soil deficient in lime, whilst the same saline solution on passing through a marly soil, rich in lime, did

not cause the elimination and loss of ammoniacal compounds which were retained in the marly soil. Thus, to mention only one instance: if a solution of sulphate of potash be passed through a soil deficient in lime, the sulphuric acid of the sulphate of potash passes away in the drainings, at least in part, in union with ammonia, whilst potash becomes fixed; but if the soil contains a fair proportion of lime, I find the sulphuric acid passes away in the drainage entirely in combination with lime, whilst potash, as well as ammonia, remain fixed in the soil.

My recent filtration-experiments thus show that it is not merely by supplying in a direct manner a deficient element of nutrition that lime acts beneficially, but because it preserves in the soil all the more valuable fertilising matters, which, like salts of potash or ammonia, filter rapidly through porous soils, unless a sufficient quantity of marl or lime has been previously applied to the land. By these means the bases of the more valuable saline soluble constituents of rotten dung or of guano are retained in the soil, whilst the acids filter through it in combination with lime. To sum up briefly, the reasons why lime showed such a remarkable effect upon the Barley, and not upon the preceding Turnips and Wheat, appear to me to be the following:—

1. No effect was produced by the dressing of lime upon Wheat, because such a dressing supplied only one mineral food-constituent, and farm-yard manure, or, at all events, a number of organic and mineral matters which are essential for bringing that crop to perfection, were required.

2. It produced no effect upon Turnips, because the dressing of farm-yard manure and superphosphate added much more plant-food than could be consumed. The roots grown on the limed portion, as well as those on the unlimed portion of the field, were supplied with a superabundance of food, and for this reason did as well on the limed as on the unlimed part of the field.

3. The Barley yielded a much better crop on the limed part of the field than on the unlimed, because the lime-dressing preserved the excess of manure, which was applied to the preceding Turnips on one part, and because less fertilising matter was left for the benefit of the Barley on the unlimed part of the field.

In conclusion, I beg again to direct attention to this special action of lime upon the constituents of farm-yard manure on the soil. In many cases the application of lime or marl to the land is truly a radical means of improving its condition. The improvement, however, should not stop here, but should be followed up by the liberal application of farm-yard manure or other fertilisers. Neither the farmer who is content to lime his land over and over to the exclusion of other manures, nor he who neglects this operation altogether on land deficient in lime, makes the most of the means at his command to raise good crops in the most profitable manner. The one fails to benefit himself by withholding farm-yard manure, guano, or other manures, when such are necessary; and the other sustains loss by wasting manures, which would be preserved in the land if proper attention were paid to liming, for which the land is often grateful for many years. *Dr. Voelcker in the Bath and West of England Society's Journal.*

TWELVE YEARS' COST OF STEAM CULTIVATION AT WOOLSTON.

THE following account of my cropping, &c., is taking from published reports, except for this year's crops. Those reports show that the whole of the crops have been good ones. As this year's crops have not been reported, it is right that I should give a detailed account of them. I will begin with the heavy land. No. 1 is a fine field of Wheat, thick on the ground, strong in straw, and well headed. No. 2 is a good field of Beans. It has received about 10 tons of ordinary farm-yard manure per acre. No. 3 is a good field of Beans. This field has had no manure whatever for this crop, nor for last year's Wheat crop; it had 10 tons per acre for the Bean crop two years ago. No. 4 is a fine field of Wheat, nearly as good as No. 1; no manure whatever has been used on these two fields for this year's crop, therefore their goodness is due to steam cultivation. They were smashed up dry and well last autumn, the rains following slackened their lumps like lime, and the drilling afterwards did heavily yet well. The Wheat came well, and looked well right through the winter and spring, never dagging once as those on heavy land did under horse culture. Why was this? It was because the land was open and free for the roots of Wheat to seek their food, whereas that under horse culture was bunged up right through the winter and spring. These are facts that the Royals want to know about. I will now go on to the light land. No. 1 is a fine field of Peas—I never saw a better. I must tell you that the heavy crop of Barley last year killed part of the Clover plant, therefore I determined on ploughing it up this spring and having it Peas. No. 2 is a fine field of Beans; No. 3 is a very good field of Wheat; No. 4 is an excellent field of Barley; No. 5 is a fine field of Swedes; and No. 6 is a good plant of Clover, self-sown, seeded from the crop fed off two years ago. It has kept from 50 to 80 sheep ever since the beginning of last April. There are 80 on it now, and there is plenty of keep. Let the horse farmer compare these facts with what he is doing under horse culture. Here is another fact for him to reflect over. My land is all clean; dead fallows, or even fallows of any kind, are not now needed. One smashing a year is enough to eradicate all kinds of filth on heavy land.

In explanation of the amounts at which the cost of the several operations is estimated, I take this record of my operations in 1866.

"About the middle of September I commenced breaking up with No. 3 three fields of Bean and Pea stubbles, containing 30 acres; these, including all the time taken for shifting, were completed in six days. The cost of labour and expenses was this: two men at 3*s.* 6*d.*; four men at 2*s.* 6*d.* each per day; one boy at 1*s.*, and one boy at 6*d.* per day; with 15 cwt. of coals, 1*l.* 18*s.* 3*d.*, and oil 5*s.* 9*d.* The sum of this is 7*l.* 15*s.* for the 30 acres, or 5*s.* 2*d.* per acre.

"As soon as this was furnished, my steam plough No. 2 was set to work to trench and subsoil my Wheat stubbles and place them in a convenient form to receive the full benefit of the winter weather. They consisted of 26 acres, and were completed in eight days and a half—an average of 3 acres per day, and at a cost of 8*s.* 8*d.* per acre, payment being at the same rate as before."

This shows clearly how the 5*s.* 2*d.* and 8*s.* 8*d.* per acre for steam operation are made up. Since that period my average per day has been greater, yet you see that I have not claimed or deducted it in the division of my day's working expenses. The 1*s.* 6*d.* per acre for wear and tear was then my estimate; my after practice convinces me that it was a fair estimate. I will now go on to the horse operations. Scuffling: four horses, a man and two boys, doing 8 acres per day for 16*s.*, or 2*s.* per acre. Subsoiling: four horses, a man and a boy for 16*s.*, doing 5 acres per day, or 3*s.* per acre. Ploughing: four horses, a man and a boy, 12*s.* per acre; three horses, a man and a boy, 10*s.* 6*d.* per acre; two horses and a man, 7*s.* per day. Ridge-ploughing: four horses, a man and two boys, doing 4 acres per day for 16*s.*, or 4*s.* per acre. *W. Smith, Woolston.*

HEAVY LAND.—No. 1.—8 ACRES.

Date.	Crop.	Steam ploughed.	Cost.	Wear and tear.	Scuffled.	Cost.	Sub soiled.	Cost.	Ploughed.	Cost.	Ridge Ploughed.	Cost.	Total.
			s. d.	*s. d.*		*s. d.*		*s. d.*		*s. d.*		*s. d.*	£ *s. d.*
1855	Beans	..	..	..	..	..	..	..	..	..	..	..	..
1856	Oats	1	5 2	1 6	..	..	2	6 0	..	..	..	..	0 12 8
1857	Clover	..	..	..	..	..	..	..	..	..	..	..	..
1858	Wheat	..	..	..	..	..	..	..	1	12 0	..	..	0 12 0
1859	Turnips	2	10 4	3 0	1	2 0	..	..	..	..	..	..	0 15 4
1860	Barley	1	5 2	1 6	1	2 0	..	..	..	..	..	..	0 8 8
1861	Beans	1	5 2	1 6	..	..	..	..	..	..	..	..	0 6 8
1862	Wheat	1	5 2	1 6	1	2 0	..	..	..	..	..	..	0 8 8
1863	Clover	..	..	..	..	..	..	..	..	..	..	..	..
1864	Barley	1	5 2	1 6	2	4 0	..	..	..	..	..	..	0 10 8
1865	Beans	1	5 2	1 6	..	..	..	..	..	..	..	..	0 6 8
1866	Wheat	1	5 2	1 6	..	..	..	..	..	..	..	..	0 6 8
	Cost per acre, 8*s.* per annum.							Total for 11 years				..	£4 8 0

No. 2.—8 ACRES.

1855	Wheat	..	..	..	..	..	..	..	..	..	..	..	..
1856	Beans	..	..	..	..	..	..	..	..	..	..	..	..
1857	Wheat	1	5 2	1 6	1	2 0	..	..	..	..	..	..	0 8 8
1858	Beans	1	8 8	1 6	..	..	1	3 0	..	..	..	..	0 13 2
1859	Wheat	1	5 2	1 6	1	2 0	..	..	..	..	..	..	0 8 8
1860	Turnips	1	5 2	1 6	..	..	1	3 0	..	..	1	4 0	0 13 8
1861	Barley	..	..	..	2	5 6	..	..	..	..	..	..	0 5 6
1862	Beans	1	5 2	1 6	..	..	..	..	..	..	..	..	0 6 8
1863	Wheat	Steam cultivated and drilled at one operation.											0 5 0
1864	Clover	..	..	..	..	..	..	..	..	..	..	..	..
1865	Barley	1	5 2	1 6	..	..	..	..	..	..	..	..	0 6 8
1866	Beans	1	5 2	1 6	..	..	..	..	..	..	..	..	0 6 8
	Cost per acre, 7*s.* 6*d.* per annum.							Total for 11 years				..	£3 14 8

No. 3.—12 ACRES.

1855	Oats	2	10 4	3 0	1	2 0	..	..	..	..	..	..	0 15 4
1856	Peas	1	5 2	1 6	2	4 0	..	..	..	..	..	..	0 10 8
1857	Barley	1	5 2	1 6	2	4 0	..	..	..	..	..	..	0 10 8
1858	Beans	1	5 2	1 6	1	2 0	..	..	..	..	..	..	0 8 8
1859	Wheat	1	5 2	1 6	1	2 0	..	..	..	..	..	..	0 8 8
1860	Beans	1	8 8	1 6	..	..	1	3 0	..	..	1	4 0	0 13 8
1861	Wheat	1	5 2	1 6	1	2 0	..	..	..	..	..	..	0 8 8
1862	Swedes	3	15 6	4 6	1	2 0	..	..	..	..	..	..	1 2 0
1863	Barley	Steam cultivated and drilled at one operation.											0 5 0
1864	Beans	1	5 2	1 6	..	..	..	..	..	..	..	..	0 6 8
1865	Wheat	Steam cultivated and drilled at one operation.											0 5 0
1866	Beans	1	5 2	1 6	..	..	..	..	..	..	..	..	0 6 8
	Cost per acre, 9*s.* 3*d.* per annum.							Total for 11 years				..	£5 1 2

No. 4.—10 ACRES.

1855	Beans	..	..	..	..	..	..	..	..	..	..	..	..
1856	Oats	..	..	..	..	..	..	..	..	..	..	..	..
1857	Beans	1	8 8	1 6	..	..	1	3 0	..	..	..	..	0 13 2
1858	Barley	1	5 2	1 6	2	4 0	..	..	..	..	..	..	0 10 8
1859	Beans	1	5 2	1 6	1	2 0	..	..	..	..	..	..	0 8 8
1860	Wheat	1	5 2	1 6	2	4 0	..	..	..	..	..	..	0 10 8
1861	Swedes	3	15 6	4 6	1	2 0	..	..	..	..	..	..	1 2 0
1862	Barley	Steam cultivated and drilled at one operation.											0 5 0
1863	Beans	1	5 2	1 6	and cross cultivated and drilled by steam, at a cost of 5*s.*								0 11 8
1864	Wheat	Steam cultivated and drilled at one operation.											0 5 0
1865	Beans	1	5 2	1 6	..	..	..	..	..	..	..	..	0 6 8
1866	Wheat	1	5 2	1 6	..	..	..	..	..	..	..	..	0 6 8
	Cost per acre, 10*s.* 3*d.* per annum.							Total average for 10 years				..	£5 2 2
	Yearly average per acre of four Fields, 8*s.* 9*d.*												

LIGHT LAND.—No. 1.—12 ACRES.

1855	Wheat	..	..	..	..	..	..	..	..	..	..	..	..
1856	Beans	1	5 2	1 6	..	..	..	..	..	..	..	..	0 6 8
1857	Wheat	1	5 2	1 6	2	4 0	..	..	..	..	..	..	0 10 8
1858	Roots	1	8 8	1 6	..	..	1	3 0	..	..	..	..	0 13 2
1859	Barley	..	..	..	2	4 0	..	..	..	..	1	4 0	0 8 0
1860	Clover	..	..	..	..	..	..	..	..	..	..	..	..
1861	Wheat	..	..	..	..	..	1	10 6	..	..	..	..	0 10 6
1862	Beans	1	5 2	1 6	Crossed and drilled by steam, at 7*s.*								0 13 8
1863	Wheat	Steam cultivated and drilled at once.											0 7 0
1864	Swedes	1	8 8	1 6	..	..	..	..	..	..	..	..	0 16 2
1865	Barley	..	..	..	2	4 0	..	..	..	..	..	..	0 4 0
1866	Peas	..	..	..	..	..	1	10 6	..	..	..	..	0 10 6
	Cost per acre, 8*s.* 7*d.* per annum.							Total for 11 years				..	£4 14 4

No. 2.—13 ACRES.

1855	Wheat	..	..	..	..	..	..	..	..	..	..	..	..
1856	Roots	1	5 2	1 6	3	6 0	..	..	..	..	..	..	0 12 0
1857	Wheat	..	..	..	2	4 0	..	..	..	..	..	..	0 4 0
1858	Clover	..	..	..	..	..	..	..	..	..	..	..	..
1859	Wheat	..	..	..	..	..	..	..	1	7 0	..	..	0 7 0
1860	Beans	1	5 2	1 6	..	..	1	3 0	..	..	1	4 0	0 13 8
1861	Wheat	1	5 2	1 6	1	2 0	..	..	..	..	..	..	0 8 8
1862	Roots	1	8 8	1 6	..	..	..	..	..	..	..	..	0 16 2
1863	Barley	Steam cultivated and drilled at once											0 7 0
1864	Clover	..	..	..	..	..	..	..	..	..	..	..	..
1865	Wheat	..	..	..	..	..	..	..	1	10 6	..	..	0 10 6
1866	Beans	1	5 2	1 6	..	..	..	..	..	..	..	..	0 6 8
	Cost per acre, 7*s.* 3*d.* per annum.							Total for 11 years				..	£3 19 8

No. 3.—11 ACRES.

1855	Beans	..	..	..	..	..	..	..	..	..	..	..	..
1856	Wheat	..	..	..	..	..	..	..	..	..	..	..	..
1857	Roots	1	5 2	1 6	3	6 0	..	..	..	..	..	..	0 12 8
1858	Barley	1	5 2	1 6	2	4 0	..	..	..	..	..	..	0 8 8
1859	Beans	1	8 8	1 6	..	..	1	3 0	..	..	..	..	0 13 2
1860	Wheat	1	5 2	1 6	1	2 0	..	..	..	..	..	..	0 8 8
1861	Beans	1	5 2	1 6	..	..	..	..	..	..	..	..	0 6 8
1862	Wheat	1	5 2	1 6	..	..	..	..	..	..	..	..	0 6 8
1863	Roots	1	8 8	1 6	..	..	..	..	..	..	..	..	0 16 2
1864	Barley	..	..	..	3	8 0	..	..	..	..	..	..	0 8 0
1865	Clover	..	..	..	..	..	..	..	..	..	..	..	..
1866	Wheat	..	..	..	..	..	..	..	1	10 6	..	..	0 10 6
	Cost per acre, 8*s.* 6*d.* per annum.							Total for 10 years				..	£4 5 2

No. 4.—12 ACRES.

Date.	Crop.	Steam Ploughed.	Cost.	Wear and Tear.	Scuffled.	Cost.	Soil-scuffled.	Cost.	Ploughed.	Cost.	Ridge Ploughed.	Cost.	Total.
		s. d.	s. d.		s. d.		s. d.		s. d.		s. d.		£ s. d.
1855	Clover	..	..	..	..	..	..	..	..	..	..	..	..
1856	Wheat	..	..	..	..	..	..	..	1	7 0	..	..	0 7 0
1857	Beans	..	1	8 8	1 6	..	1	3 0	..	..	..	..	0 13 2
1858	Wheat	..	1	5 2	1 6	1	2 0	..	..	..	..	..	0 8 8
1859	Roots	..	1	8 8	1 6	..	1	3 0	..	..	..	..	0 13 2
1860	Barley	..	..	..	..	3	8 0	..	..	..	..	..	0 8 0
1861	Clover	..	..	..	..	..	..	..	..	..	..	..	..
1862	Wheat	..	..	..	..	..	..	..	1	7 0	..	..	0 7 0
1863	Beans	..	1	5 2	1 6	..	..	..	..	..	..	..	0 6 8
1864	Wheat	..	Steam cultivated and drilled at once				..	..	..	..	..	..	0 7 0
1865	Swedes	..	1	8 8	1 6	..	..	..	..	..	..	..	0 13 2
1866	Barley	..	..	..	..	..	..	..	1	10 6	..	..	0 10 6

Cost per acre, 8s. 4d. per annum. Total for 11 years .. £4 11 4

No. 5.—12 ACRES.

1855	Barley	..	..	..	..	..	..	..	..	..	..	..	..
1856	Clover	..	..	..	..	..	..	..	..	..	..	..	..
1857	Wheat	..	..	..	..	..	..	..	1	7 0	..	..	0 7 0
1858	Beans	..	1	8 8	1 6	..	1	3 0	..	..	..	..	0 13 2
1859	Wheat	..	..	..	..	3	6 0	..	..	..	..	..	0 6 0
1860	Roots	..	1	8 8	1 6	..	..	..	..	..	1	4 0	0 14 2
1861	Barley	..	..	..	..	3	6 0	..	..	..	..	..	0 6 0
1862	Clover	..	..	..	..	..	..	..	..	..	..	..	..
1863	Wheat	..	..	..	..	..	..	..	1	7 0	..	..	0 7 0
1864	Beans	..	1	5 2	1 6	..	..	..	..	..	..	..	0 6 8
1865	Wheat	..	Steam cultivated and drilled at once				..	..	..	..	..	..	0 7 0
1866	Swedes	..	1	8 8	1 6	..	..	..	..	..	..	..	0 13 2

Cost per acre, 7s. 9d. per annum. Total for 10 years .. £3 17 1

No. 6.—14 ACRES.

1855	Beans	..	..	..	..	..	..	..	..	..	..	..	..
1856	Wheat	..	..	..	..	..	..	..	..	..	..	..	..
1857	Clover	..	..	..	..	..	..	..	..	..	..	..	..
1858	Wheat	..	1	5 2	1 6	2	4 0	..	..	..	..	..	0 10 8
1859	Oats	..	..	..	..	2	4 0	..	..	..	..	..	0 4 0
1860	Oats	..	..	..	..	2	4 0	..	..	..	..	..	0 4 0
1861	Swedes	..	1	5 2	1 6	..	8 0	..	..	..	1	4 0	0 19 8
1862	Barley	..	Steam cultivated and drilled at one operation.								..	..	0 7 0
1863	Clover	..	..	..	..	..	..	..	..	..	..	..	..
1864	Wheat	..	..	..	..	..	..	..	..	..	..	..	..
1865	Peas	..	..	..	..	..	..	..	1	10 6	..	..	0 10 6
1866	Clover	..	Self-sown.				..	..	1	10 6	..	..	0 10 6

Cost per acre, 7s. 9d. per annum. Yearly average per acre, 7s. 9d. Total for 10 years .. £3 1 4

APPEARANCE OF THE CROPS.

BERKSHIRE: *Coleshill, Highworth.*—Below I give you my judgment as to crops generally; upon the whole I consider it a very fruitful season, for which, as a nation, we cannot be too thankful:—Wheat, variable; thin on some soils, but promises an average crop. Barley, very promising; Oats also very good, slightly affected in spots by late spring frosts; Beans and Peas good; Mangel Wurzel, with a few exceptions, good; Swedes and Turnips, good plant, and promising well; hay, likely to have a fair crop. Some meadows have cut very light crops, injured by late frosts; but the rains have greatly helped the later fields, and a nice crop is now being secured. The weather is also magnificent, and greatly appreciated by those who have been much perplexed during the continuous rains, and had much injured. Potatos very promising. You shall have another day the cost of our haymaking for three years of different character as to weather, &c. We usually cut 260 acres. [Thanks.] *E. W. Moore, July* 16.

DUBLIN: *Albert Training Institution, Glasnevin.*—The weather in this country now is all that could be wished. The crops of all kinds are very fine, except those of the very early meadows, which suffered much by the drought in May, and the rains, so injurious to hay-making, in June and the early part of this month. Potatos, as well as other green crops, are looking most luxuriant; nor is there yet in the Potato the slightest symptom of disease, and should the weather, as it now bids to be, prove favourable during this month, never were there better signs of an abundant harvest. Doubts are still entertained of the existence of rinderpest; but whether it ever appeared in Ireland, certain it is, some, to the people, strange disease, has swept off hundreds of cattle in several places, of which not one word has been publicly said. Pigs are suffering to an alarming extent in several parts of the island; and to-day I saw a letter to my own servant, in which it is stated that her father has just recovered from an extraordinary description of small-pox, contracted, as was believed, from attending sheep which were so badly affected as to cause several deaths in the small flock of which he has charge. *Edward Carroll, July* 11.

EAST SUSSEX: *Folkington, Eastbourne.*—The present appearance of the crops in this part of East Sussex is anything but favourable. The Wheat is very thin, fine in the straw, with short ears, and although improved by the late rains, the yield will, in my opinion, be deficient to the extent of at least 8 bushels an acre. Oats and Barley will on the whole be considerably under an average crop; also Spring Beans; but Peas and Winter Beans are very good. Swedes and Turnips very promising. Mangel Wurzel (except when sown very early) in consequence of the long drought are a failure; we had not sufficient rain in this neighbourhood to bring up the seed until the last fortnight. Hay is very light, but there is now every prospect of plenty of Grass. Potatos look well, and I have not heard of any disease. From present appearances we shall have an early harvest. I should say reaping will begin here before the end of the month. Winter Oats are ripe. *H. S. Hayward, July* 14.

GLOUCESTERSHIRE: *Cotswolds.*—The weather within the last fortnight has been changeable; a good deal of rain has fallen, succeeded by very hot weather. The effect of this is (although the hay has suffered to some extent, yet the rainy weather has not been of that continuance to entirely spoil any) that the grain crops are, for the most part, progressing favourably. In the Vale district, owing to the protracted wet weather in the spring on the heavy clay soil, the promise of an average crop is doubtful indeed. The results cannot be satisfactory on this description of soil, and on the heavy loams the Wheat looks in many places patchy and uneven. On the Cotswolds the crop of Wheat presents a more uniform appearance, and gives promise of a better crop than for several seasons has been gathered from this district. Barley, though tolerably good in most cases, still in the Vale there is not rankness and luxuriance about as we sometimes at this season observe on the lowlands of this county; whilst on the hills this description of grain has the appearance of being an abundant crop. Beans are generally looking well, though some speak of blight having attacked some fields. Oats appear likely to give fully an average crop. The hay crop, a good deal of which is harvested, is complained of by those holding the heavy clays, and even by those who farm the generally productive Severn meadows, the wet weather of the spring having been too much for it; otherwise, on the other description of soils, the crop, particularly the seed hay on Cotteswolds, is good, and in many cases abundant, and ended without much injury. The "hit" of fruit seems "partial" in some places, but taking the prospects of cider-drinkers as a whole, we believe there will be more than enough. Everywhere we may describe the root crops as most promising, the only drawback to them being, as we hear in many places, the difficulty of getting them hoed, and with the moist and wet weather we have lately had, to these "sorry weeds grow apace," and if ever it was true that "you may see them grow," surely it is now. For many years we do not remember to have seen so much keep in the county, and the live stock is doing well, having nearly escaped the plague which in other counties has committed such destruction. In the lower part of the county, Henbury, near Thornbury, there were two cases announced last week of this terrible rinderpest, reminding us with no pleasant reminiscences of the fact as stated by Earl Cathcart, that when the cattle plague prevailed last century this county was one in which it raged in the seventh year after it had been in England. God forbid that it should now extend and make the havoc in the cattle of this country and ruin their owners, as it has done in other counties not very dissimilarly situated! Back in the spring a good deal of mortality occurred amongst the lambs on the hills, so much so that many have not half their usual number of lambs. Seldom do we recollect to have seen so little grain in the farmers' hands—it seems nearly all cleared out, and should we have a bad harvest, or should the war recommence, our county would not be well circumstanced. *R., July* 12.

NORFOLK: *North Wareham.*—As the season approaches when you collect information respecting harvest prospects, may I ask your agricultural readers to take the earliest opportunity of examining their Wheat crop. On the deep soils in this immediate locality the appearances were never more promising, but on close examination I never saw a greater deficiency: a fourth part of the ear is either blank, or the kernel destroyed by maggot. Possibly this may not be the case in our lighter soils, nor extend to other counties, hence my desire to obtain through the medium of your Journal general information on the subject. *An East Norfolk Farmer, July* 17.

SOUTH LINCOLNSHIRE: *Long Sutton.*—It is very desirable, and in many respects highly important, that the precise state of our various crops should be made known immediately preceding the harvest. It constitutes a guide for autumn procedure of many a man of business; and the information, if candidly given, is appreciated by all interested in agriculture, and by not a few connected with the commercial world. The prospect of a good supply of the necessaries of life for both man and beast has a great influence upon the whole business of the country. The whole community rejoices in the knowledge of abundance for the winter's supplies; and, so far as South Lincolnshire is to be depended upon, I am able, and have the pleasure, to give a good account. Wheat: a large breadth is under Wheat. On all the good loams and best managed lands the crops are magnificent. There is a full plant, a fine long ear, and filling satisfactorily. The long drought in May caused some apprehension relative to the ultimate fate of the crops on these lands, but the subsequent rains and fine weather have fully restored them. On the stiffer loams and clayey soils the crops are less hopeful. The injury done in May has not been much repaired by the late fine season. They still look thin, and as the ear is chiefly formed in an early stage, to be developed upon breaking out into ear, these crops denote the early formation to have been defective: it is short and not well filled. The season is peculiarly fine, and will therefore bring up every backward stem, so that a fair average crop may be fully depended upon, unless some unforeseen calamity shall assail it. Oats: the Oat crop in this district is not so extensively cultivated as in years gone by, the culture of Potatos having superseded it in a great degree. The crops, however, look very promising where they were got in early, and the late-sown have greatly improved. There will be a fair average crop, but it must not be depended upon for the county's supply, as I presume that nearly the whole will be consumed in the district in consequence of our farmers resorting to sheep for the fold-yard instead of cattle, the losses from rinderpest having been so fearful. Barley: there is a larger breadth of Barley sown than is usual, and at present it looks admirably, not too heavy or lodged, but giving promise of a large yield of good quality. Beans: the culture of Beans has greatly diminished throughout this district during the past 20 or 30 years, having given place to Peas. This year we have a full comparative breadth sown, and the crops are looking remarkably well. The podding is good, but not equal to some years. We have a few aphides about, but the crop is likely to be a full average one. Peas: we have a large breadth of Peas under crop. The flowering and podding have gone on satisfactorily, and in many crops they are filling so well that they might almost be said to be safe—if ever the Pea crop is safe till secured in the stack. The great drawback has been the difficulty in weeding. Nothing grew in May, and in June the weeds and flowers came at the same time. The crop looks like yielding a full average. Potatos: we have a large breadth under Potato culture. There never was greater difficulty experienced in putting in this crop, the soil becoming so hard and unmanageable. However, it was at length planted, and forwarded in one prospers were very doubtful. The heavy showers in the early part of June saved the crop. Nearly all the crops are backward, and many are not yet moulded up; Rocks, Red Regents, and other free-growing sorts look tolerably prosperous, but Flukes and late sorts require a beautiful season to bring them up to a good average. There is here and there a case of actual disease already manifest, and had the late showery weather continued, much loss would have resulted. The present beautiful season is salvation to the whole crop, but we anticipate a short crop; it cannot, I think, be a full average one. Mustard: Brown Mustard is extensively grown in this district. The crops are now looking well, and will, notwithstanding the drought in May, yield a good average produce. Turnip Seeds: we have more land under this crop than formerly. Swedes have podded well and are ripening fast. Common sorts are less hopeful, and for this most part the crop is reaped and ready for threshing. These seed crops will be under the average. Coleseed: there is somewhat less breadth of land under this crop, and reaping has commenced. It will yield a full average crop of good quality. Hay: our crops of Clover and meadow hay are exceedingly good, and we are securing them in excellent order. Grass lands full of Grass, and grazing rather roughly. Mangel: we have a large breadth sown this year. The early-sown never looked more promising; the late-sown are thin and irregular at present, but since the late rains have filled up tolerably well; a good average crop will be realised. Swedes: we have a capital plant of Swedes, and growing too fast for the hoers. Common Turnips are not yet up, but have gone in favourably. The same may be said of Coleseed. Taking the district altogether it has seldom presented a better prospect. *O. F.*

SUSSEX: *Linch, Midhurst.*—The Wheat crops in this neighbourhood are not at all good, they are decidedly under the average. On the best Wheat lands there is about half a crop of straw. Barley is very promising, over an average. Oats also good, above an average. Peas very good, above an average. Beans promising, but blighting. Hay an average; harvest not over and not good, the account of rain during the whole of last week, the fall being about 3 inches. Mangel Wurzel indifferent. Swedes and Turnips promising. *James Eames, July* 12.

WILTSHIRE: *Avebury, Calne.*—It is early to give an opinion on the growing crops, Wheat being so back ward; should the weather prove favourable from this time, Wheat, although thin on the land, will be an average crop. Barley, Oats, Beans, and Peas very promising to be good. My impression is, it will be a Turnip year. *Geo. Brown, July* 11.

THE CATTLE PLAGUE.

The following returns were issued on July 13:—

These returns do not profess to give the total number of cases which have occurred in Great Britain, but only those which have been ascertained from information received at the office from inspectors. Columns 1 only record the cases reported as having commenced during the weeks indicated by the headings; "back" cases being added to columns 2.

Census Divisions.	1 Number Attacked. Week ending June 30.	1 Number Attacked. Week ending July 7.	2 Result of Reported Cases from Commencement of Disease. Attacked.	Killed.	Died.	Recovered.	Unaccounted for.
Metropo. ..	—	5	7,008	3,427	3,713	318	450
S. Eastern .	1	1	4,880	1,705	2,559	165	171
S. Midland .	58	58	20,701	8,705	10,068	1,141	387
Eastern Co.	8	12	11,426	5,398	4,845	789	396
S. Western .	—	—	1,558	653	822	207	76
W. Midland.	41	67	14,791	6,275	6,093	1,048	975
N. Midland.	99	57	18,024	11,885	6,262	1,120	757
N. Western.	127	123	71,195	24,159	35,026	8,466	3,612
Yorkshire .	7	14	34,547	7,397	18,558	5,936	2,651
Northern Co.	3	—	8,066	4,073	2,614	974	118
Monmouth. & Wales .	3	5	8,294	1,119	5,791	1,057	297
Scotland ..	3	1	46,858	6,261	28,087	10,707	1,803
	260	343	240,216	81,750	124,217	33,118	11,111

Back Cases reported in the week ending July 7:—

Metropolitan District ..	2	North Midland Counties ..	2
South-Eastern Counties ..	1	North Western Counties ..	19
South Midland Counties ..	3		
Eastern Counties ..	1	Total ..	37
West Midland Counties ..	8		

The Return shows that 343 attacks were reported to have occurred during the week ended July 7, being an increase of 83 on the previous week.

Correcting the total by adding an estimated average of attacks commencing during the week, but which may be subsequently included under the heading "back cases," the number for the week will be 352.

Two Inspectors for the county of Cumberland, who reported three cases last week, have not reported in time for this return.

DORSETSHIRE.—Another outbreak of the plague has just made its appearance in the parish of Winterbourne Herringstone, a short distance from the town of Dorchester. It appears that about a week ago one of the extensive herd of dairy cows belonging to Mr. John Allan Pope, and herded by Mr. G. Waldron, dairyman, was observed to be ailing, and under the impression that no disease has yet appeared in the county at all, the assistance of a Mr Nash, of Dorchester, was called in, and the erroneous idea originally entertained was strengthened by his opinion that the animal was only suffering from "chill." The cow, however, continued to get worse, and died in a few days, while on Saturday last two more animals were attacked with similar symptoms, another on Sunday, and a fourth on Monday. On Saturday information was given to the proper authorities, and Messrs. Norris and Milligan, veterinarians, of Dorchester, with Superintendent Underwood, visited the farm. The three animals then ill were at once pronounced as suffering from rinderpest, an opinion which was confirmed by Mr. Redwood on the following Monday, and as the cows had been mingling with the whole of 50 others on the farm, the greatest alarm is entertained for the safety of the entire herd. The premises were placed under the surveillance of the county police, and in consequence of the scepticism of several cattle-owners as to the nature of the disease, Colonel Cox, as Inspector-General of cattle for the county, decided upon sending for a Government inspector as an additional corroboration of the opinion already expressed. Professor Simonds was telegraphed for, and arrived in Dorchester on Monday evening, and on the following morning he proceeded to the farm, where, in the presence of the veterinarians and the county authorities, he made a *post mortem* examination of one of the animals, and showed conclusively that it had succumbed to a most unmistakable attack of rinderpest. A meeting of the cattle plague committee was at once convened at the Shire Hall, Dorchester, and the parish of Winterbourne Herringstone was formally declared to be an infected place within the meaning of the Act. The magistrates also ordered two cows and a calf to be slaughtered, together with any animals which might manifest symptoms of the disease. The animals were accordingly destroyed, and although up to Wednesday evening no further cases were reported, yet the strictest watch is kept on the herd, and on the least appearance of the disease the animals will at once be killed.

WHEAT *VERSUS* STOCK AND GRASS.

THE following remarks may attract the attention of scientific agriculturists.

I have for well-nigh fifty years been intimately and very largely connected with land, and having been constantly called on to adjust the claims and study the interests of landlords and tenants, I have been much assisted in that duty by preserving a record of the prices of farm produce.

In transcribing an abridged extract from this register, I wish to direct your attention to the following facts:—

1st, That during the last forty years the price of oatmeal has averaged 38*s.* per load, or about 1*s.* 1½*d.* the old peck.

2d, That when meal bore a price of 35*s.* per load. Wheat averaged about 25*s.* per boll, or 50*s.* per qr. of 480 lb.

As these facts are borne out by the annexed table, I now request your attention to the great changes in the prices of all farm produce during the last 12 years.

Beef and mutton averaged 50*s.* per cwt. prior to 1850. The ruling price is now from 60*s.* to 63*s.* per cwt.

Ayrshire cheese for ten years prior to 1852 averaged 8*s.* 5½*d.* per tron stone; while for ten years prior to 1862 the tron stone of Ayrshire cheese (I take the prices from the sales of an extensive farmer in this vicinity) averaged 12*s.* 1*d.*

Pork in 1852 sold at 7*s.* 8½*d.* per tron stone; while the average of ten years ending in 1862 was 10*s.* 9½*d.* per tron stone.

Oatmeal for 10 years prior to 1850 (leaving out the two years of the Potato famine) averaged 29*s.* 4*d.* per load, and for the 12 years ending in 1862 the average price rose to 37*s.* 9*d.*

While each and all of the above kinds of farm produce have increased in price, we must turn our attention to the price of Wheat, which in our Ayrshire soil is the least remunerative, though by far the most expensive crop to the farmer.

Ten years prior to 1852 the average price of Wheat in this county was 43*s.* 10*d.* per qr.

Five years ending in 1857 the price rose to 57*s.* 9*d.* per qr.

Five years ending in 1862 it fell to an average of 49*s.* 8*d.* per qr.; while the last year it only produced the fiars price of 44*s.* per qr.

Were the causes which have latterly led to a fall in the price of Wheat of such a character as to induce us to anticipate their removal, we might wait patiently for the change; but I am morally convinced that we have much more reason to apprehend a continuous fall than any rise in this individual article of farm produce.

As the subject is one of much importance, allow me to explain my reasons in detail.

The last 10 years have added enormously to the manufactures of this country; every article required for the consumption of our operatives has risen in price, excepting Wheat; and I see no cause to anticipate that the same prices which have lately ruled our markets with regard to all other farm produce will not continue to be available, as it is evident that our manufacturing operatives must be fed; and that no farm produce but Wheat can be largely introduced to the injury of our farmers.

Wheat stands very differently, as we not only have extensive supplies from continental Europe, but we are extensively to heavy importations of flour from America.

On this last point it is necessary to keep in the present position of America.

Formerly, the Americans in the Northern States purchased largely from us, and their remittances were made in Cotton, Tobacco, &c. This system must now likely cease; and while the Northern States will require supplies of both money and manufactures from us, they will pay us in Wheat and Indian Corn, which are almost the only articles of produce at their command. It is true that we are already exposed to this; but when it is considered that the Western States can supply Wheat at Chicago at 5*s.* to 7*s.* per qr., it is evident that they will soon find some mode of cheapening the expense of transit to New York or to the place of export. Let us contrast the American Wheat husbandry with ours, and we shall find that, barring the expense of conveyance, we never can compete with their climate and their land in the growth of Wheat.

Our farmers cannot grow a crop of Wheat under the following expense:—

	£	s.	d.
1st year, green crop.—Farm manure per acre, 10 cubic yards, &c. &c.	7	0	0
Artificial manures and seed, say	1	15	0
Ploughing, weeding, &c.	3	5	0
2d crop, Wheat.—Ploughing, &c.	1	5	0
Seed Wheat and Ryegrass	1	10	0
Rent for green crop and Wheat 2 years	5	0	0
	£19	10	0

Against this our farmers have to place the entire loss of their green crop; and their only source of payment for the past and present years is from 4 to 6 qrs. of Wheat at 40*s.* to 45*s.*

In contrast to this, the American raises Wheat without rent, without green crop, and without any expense of horse work, as his horses are fed and kept without expense. In short, there is much reason to apprehend a still greater fall in the price of Wheat; and there is every inducement to farmers to take time by the forelock, when an eminent American author informs us, within the last three years, that the farmers in the Western States were burning grain in place of fuel, in consequence of the low prices of Wheat and Indian Corn.

Ayrshire has long been famed for its dairy and Dunlop cheese; and I would, with great deference, recommend that our farmers should reduce the extent of their ploughing and increase their dairies by a change of husbandry; and I throw out the following proposals for their consideration and adoption:—

1st. Let them retire from Wheat husbandry, and restrict their green crop so as merely to supply their milk cows and pigs during winter, and probably fatten off one or two aged cows.

2d. Let them restrict themselves to a sixth, seventh, or eighth shift rotation (the last being preferable), and I then think that the following system might be profitably followed out.

Let a sixth, seventh, or eighth of a farm be well top-dressed and broken up with a white crop.

Let one-half of this land be green-cropped the following year; and let the other half be top-dressed with 5 cwt. crushed bones per acre, and thereafter sown down with a second white crop.

Let the other half of this field be sown down the third year with a white crop, and thereafter let the whole field lie in pasture till it is again ripe for ploughing in the usual rotation of the farm.

If this plan were followed out with every field, it would ensure good Grass after a remunerative crop of Oats, and it would relieve a farmer of 40 per cent. of his present expense of horse labour and manual labour attending his green-crop husbandry.

I throw out these observations with no desire to dictate to our agriculturists, but from a great anxiety for the welfare and prosperity of a class of people on whom this country so much depends.

(Tables referred to.)

OATMEAL AND WHEAT. Decennial average of Ayrshire Fiars.

	Fiars. Oatmeal. s. d.	Wheat per 15st. 240 lb. £ s. d.
1820-1829, inclusive	16 11½	1 9 7½
1830-1839 ,, ...	17 5	1 5 5.
1840-1849 ,, ...	16 6½	1 3 10½
1850-1859	17 5	1 4 9.
1860-1862	18 9	1 2 10.

Leaving out 1845 and 1846 (the years of Potato famine), the average of the other 8 years ending 1849 was 14*s.* 8*d.*, or 29*s.* 4*d.* per load of Oatmeal.

AYRSHIRE CHEESE. Per Tron Stone.

Years.	Glasgow Market. s. d.	Sold in County. s. d.	Average County. s. d.
1825 to 1829, average ..	7 7½	7 9	
1830 to 1839, ...	8 8	8 8½	
1840 to 1849, ...	8 7	8 10½	
1849, ...	11 0	9 0	
1850, ...	7 0	7 6	8 4½
1851, ...	7 6	7 6	
1852, ...	7 6	7 6	
1853, ..	11 0	9 0	
1854, ..	10 0	9 0	
1855, ..	12 0	12 0	
1856, ...	13 0	12 0	
1857, ...	13 6	12 6	12 6
1858, ...	11 0	11 0	
1859, ..	11 0	11 0	
1860, ..	14 6	14 6	
1861, ..	11 6	11 6	
1862, ..	12 0	12 0	

PORK. Per Stone of 24 lb.

Year.	s. d.	Year.	s. d.
1852	7 8½	1858	.. 10 4
1853	.. 10 2½	1859	.. 10 5
1854	.. 10 4½	1860	.. 12 1½
1855	.. 10 6?	1861	.. 10 8½
1856	.. 11 10	1862	.. 9 2½
1857	.. 11 0	1863	.. 10 5

—*G., in the Scottish Farmer.*

MEMORANDA ON LAND DRAINAGE.—No. II.

IT is of comparatively little service to discuss on whom the burden of the improvement should fall; but it is better for the estate that the landlord should direct the drainage of it, and it is better for the tenant that he should employ his capital in farming than in expensive land improvement. If the former undertakes the work, then there can be no doubt that it is his interest to have the thing done thoroughly and permanently; and to this end he can, if necessary, borrow the money from some of the Drainage Companies, repaying it by an annual rent charge on the estate for such a term of years as may be considered right. Where the landlord does not undertake the work, and does not grant a lease for a term long enough to justify the tenant in undertaking it for himself, there will result one or other of those makeshifts in the way of drainage which are really, in the long run, as hindering improvement, more harm than good.

Thus, in Essex, the practice prevails, of cutting trenches 2 feet deep across the fall through the arable land at intervals of 6 or 8 yards, filling them with small fagots, and with the earth above these, at a cost of about 40*s.* an acre; and, no doubt, the operation pays. But it is nevertheless a singular illustration of the entire ignorance which in some quarters exists of the whole argument and practice of improved agriculture. The tenant, who is at this expense, no doubt finds the operation profitable, and that is enough for him, but close by he can see a much more efficient, and, considering its durability, a much cheaper style of draining in actual operation. He will have to repeat his fagots every 6 or 8 years; he pays his 2*l.* per acre every six years for the imperfect result which alone is possible in the case of such drainage—a result gradually dwindling to nothing. His neighbour, whose landlord has spent 5*l.* an acre in the permanent drainage of his land, pays 6*s.* or 8*s.* of increased rent each year for the doubly great and constant advantage which 4 feet drains at proper intervals have given. The land, too, at the end of any lengthened period, as 20 years, will in the one case be practically undrained, and in the other it retains all the increased fertility which an efficient drainage has conferred upon it.

In the former case a payment of 2*l.* per acre is needed every 6 or 8 years in perpetuity to secure such an imperfect result as shallow fagot drainage alone can give; and, in the other case, an annual payment of 6*s.* or 8*s.* an acre for 20 years will entirely release the property from any further charge on account of the original outlay, the effects of which will continue to be exhibited, free of charge, practically for ever.

Let us now turn to the land that is being drained. The farm is partly clay and partly sand. The fields are of irregular form, divided in some cases by wide and straggling hedge-rows containing trees. The tortuous water-courses, springs, and hedge-rows—irregular inclosures and sluggish outfall—these are almost all the difficulties with which the land-drainer has to contend.

The possibility was mentioned last week that lower fields may be laid dry by the drainage of the upper fields. This result may be sometimes foreseen by a

geological examination of the land—but it is an exceedingly exceptional case. Some years ago we saw the drainage of a farm lying on the edge of the chalk in Hertfordshire, where porous and clayey beds alternate very closely, the fields had been drained consecutively, commencing with the lowest part, and it certainly was the case that the main drain of a lower field which had run copiously for some weeks after execution was laid almost dry at once by a few drains conducted afterwards into two or three fields above it, which had the effect of tapping, as it were, a porous sub-soil full of water, whose only exit had till then been through the sub-soil into the fields below. This, however, obviously comes under the class of spring drainage. Large reservoirs of water making their escape with difficulty at the point of least resistance constitute the whole theory and explanation of springs; and they need to be tapped, as it were, and so furnished with an easy exit altogether independently of that which is the main object of the drainage of the land, namely, the passage of the rain water downwards just where it fell.

As a general rule, therefore, you commence operations at the lowest part of the farm the outfall or outfalls of the farm need to be first chosen and prepared. More than one is often needed; each should be made permanent and efficient. Mr. Bailey Denton has a very neat and clever arrangement for this purpose. His outfalls are bricked outlets, furnished with an iron gutter and hinged grating, permitting easy exit, and facilities for cleaning them but forbidding entrance to anything; ensuring permanence, and by the very appearance of them—which, however trivial it may seem, does bring forth practical fruit in the character of the labourers you employ—by the very appearance of them, cultivating whatever love for neatness and for finished work exists in any one who looks at them.

In the case of the farm under present drainage—with a single tortuous brook throughout it, in all probability only one outfall will be needed—or, at most, one on either side of the brook. The first step to take is to improve this water-course—its course should be straightened—for, independently of its after serving the purpose of a course for the water which your drains may pour into it—its ability to remove what water comes into it at its upper end where it first enters the farm, is a point of great importance as affecting the success of our drainage operations.

This indeed, as was stated last week, is our first object—to afford easy exit for whatever water comes on the land other than directly from the clouds. To this end we straighten the old water-courses, to this end we drain off all the spring water by deep conduits directed to the seat of each—to this end we lay drains in all old and accustomed ditches and water-courses—thus humouring whatever natural habit of movement the water of the farm may have acquired.

And it is proper to add that this advice to take water from all old water-courses would, in the case of old and high-ridged Grass lands, be taken from of advice to drain up the furrows, instead of on the plan of uniform parallel drains, laid out with no regard to the surface configuration of the land.

When all the spring drainage and the old channel drainage of the land, and whatever levelling of hedgerows, quarry holes, &c., may be needed, has been accomplished, then you go over the land and determine by reference to the structure of the sub-soil and to the tenacity of the soil—and, let us add, to the experience of your neighbours—the depth at which you shall place your drains, and the distance between them.

You lead your main drain from the outfall along the lower side of every field, placing in it at as great a depth down to 4 ft. or 4 ft. 6 ins., as your outfall will permit, tiles varying from 1 ins. to 2 ins. in internal diameter, according to the quantity of acreage whose drainage it has to receive. Then you had better dig at occasional intervals trial holes, as they may be called, at least 4 feet deep, here and there across the field, shoring up their sides in a simple way with strips of wood kept apart by short bits the width of the hole. They will soon fill with water if the land needs draining, and you will be able to judge by their effect upon the water of your first minor drains directly up the slope in their midst from the lower end of the main, what the interval for the regular drainage of the estate may be.

As a general rule, drains, 7 or 8 yards apart, at 4 feet deep in clays, and 12 to 14 yards apart at the same depth for more open soils, will be found efficient and sufficient. It is very true that a drain this depth will have more effect than one less deep will have, and to a greater distance from it, but the compensating principle of placing a deeper drain at wider intervals, in order to bring down the cost, tends to produce imperfect work. Choose a depth of 4 feet, on the ground that you thus secure as great a depth of soil and sub-soil rendered useful as ever agriculture is likely to require; let the size of the channel which each branch supplies be regulated by the rainfall of the district—and then let them be frequent and near enough to ensure a sufficiently rapid percolation. *J. C. M.*

CROFTERS, SMALL FARMERS, AND EMIGRATION.

IN a recent address Sir John M'Neill discussed the subject of emigration from the North-west Highlands and Islands of Scotland by Scotch labourers, whose social condition he describes to be such as necessitates emigration. His official employments and means of obtaining a thorough knowledge of the condition of the crofters and cotters of Scotland give great weight to the value of his opinions and suggestions, and he thus describes that numerous class of the population in the districts above mentioned:—

"The crofters hold a small piece of land from the proprietor at an average rent of 40 *s.* in one district, the produce of which is only capable of providing his family with food for six months. For subsistence for the other six months, of things and other expenses, he is entirely dependent upon his labour, unconnected with the cultivation of his croft. It is unsafe prudence to regard them as a class of small farmers, who are expected or supposed to get their living and to pay their rents from the produce of their crofts. They are truly labourers, living chiefly by the wages of labour, and holding lots for which they pay rent, not from the produce of the land but from wages. They cannot obtain employment in their own district, and consequently they go to any quarter where they can find work during the summer and autumn. It is not difficult to understand how we are startled every other year by crises of distress from the fluctuating population of these districts. The failure of their crops or of their fisheries is equivalent to the loss of their livelihood for a month of the year. Sir John M'Neill wisely suggests as a remedy for this evil employment from a source where employment cannot be obtained, and where they are always living on the land—starvation, to one where there is abundance of employment and no lack of food."

This representation of wretchedness in peasant life throughout a very extensive area in Scotland, is a reality which it is deplorable to contemplate; but it is very rarely exhibited in Ireland now, even in the west and north-west moors and mountains. I well remember, however, such a condition as frequent not only among the inhabitants of remote and hardly accessible districts, but even in localities where a very different state of peasant life might have been expected; and there yet are districts destitute of the employers of human labour, so neglected by the owners and occupiers from various causes, and in many instances so hopelessly unprofitable from infertility of soil or severity of climate, that labour there, except in draining and partially providing means of shelter, would be a waste of capital. Surely, then, the emigration of the ill-employed families which now drag a miserable existence in those ungenial places, cribbed in cold damp cabins, and with insufficient food and clothing, would be conducive to their welfare. It has been stated that there are fifteen hundred millions of acres of suitable colonial lands in the British possessions; and surely in such a vast range of unappropriated soil and fine climate available, those among us who cannot procure the necessaries of life at home, might find abroad pleasant places in which to dwell. To undertake the payment of a rack-rent for a cabin and a patch of land in this country, without any of the comforts and decencies of life, and often with its nuisances, while land may be purchased in fee from 2*s.* 6*d.* to 4*l.* per acre in one of the colonies, is folly if the choice and the means of departure be procurable. In the midland and eastern counties of Ireland, where soil and climate are favourable to cultivation, the necessity for emigration does not exist, and the advantage of it to a sufficiently employed population, with adequate wages, food, and clothing, is at least problematical, while to the employers of labour and those who are desirous to carry out agricultural improvements in thorough draining, &c., the emigration of labourers, if continuous, may prove a serious detriment.

The desire for emigration is very strong and prevalent, and now that the destroying warfare which has diminished population so fearfully in America has ceased, and the peaceful occupations of the farmer and wealthy immigrants are recommenced, the exodus of our surplus peasantry will proceed in an accelerated pace to a land where food is abundant and labour wage so much higher than in the old country!

Among the emigrating Irish people will be many more of the little farmers holding from 10 to 15 acres of land (of these some are now going to Buenos and Monte Video, and many to Australia) who will depart, and their little holdings will in several instances be consolidated by purchase (with permission of landlords) from adjoining farmers of the same class who have saved the means of obtaining additional land for tenancy. It may be presumed that industrious and saving men will become a more desirable and improving class of cultivators than those who preceded them. Consolidation so induced would be beneficial, but the emigration of the outgoing families is a necessary preparation. In Scotland as in Ireland there are advocates for multiplying the industrial population at home by affording employment. Some of the philanthropic gentlemen who have expended large sums on improvements in the far west of Ireland will wince if they read this paragraph respecting some Scotch improvers:—"They build new houses (for the crofters) with three rooms in each (this they certainly ought to do in almost any case requiring it), they drain, they plant, they make roads, they build, till in the course of four or five years they have all the estate and spent their spare cash, which was probably equal to the purchase money of the estate. So far all has gone on merrily. They look now for a return from their purchase and their improvements, and expect the crofters to pay their rents without their being asked for them, but they look in vain." If then cultivation under adverse conditions of soil and climate be unprofitable to the landowner, what is the course recommended for his adoption? That he should encourage the emigration of superabundant labourers for his own sake and theirs, and instead of trying to raise crops in unsuitable places, that he should improve his land to the utmost for meadow and pasture. That is the most judicious course there, for landlord, tenant, and labourer. And breeding Highland cattle will probably pay as well as breeding sheep in a moist climate, where the winters being mild, the cattle can lie out the greater part of the year. It is probable that in elevations of 400 feet and upwards above the level of the sea, and with precarious harvests, there is far more land under the plough than is profitable. Pastures manured would be found more beneficial than any corn growing under such circumstances. Even in a more favoured locality than that now under consideration, "more profit could be had out of a pair of Irish cows's jaws than from an acre of Wheat." We quote from a review of Sir J. M'Neill's address:—

"The proposal to maintain the population at its present numbers by retaining the croft and introducing an improved system of cultivation is as unsound in political economy as it would be inexpedient and unprofitable in practice, and proves that the advocates of such a plan have but little practical acquaintance with the subject. Crofts (labourers' small holdings of land) can only be recommended on an estate, and that but to a limited extent, as adjuncts to the large farms. The maintaining the croft system even under an improved system of cultivation, in the western islands, where a good harvest is an exception, would be only to render the people more miserable, and, as Sir John M'Neill says, 'to subject them to another process of painful transition.'"

The agriculturist in Ireland who rents from 4 to 10 statute acres is ordinarily a very poor cultivator and a needy man—he is a misogynist between the small farmer and the common labourer; if working for hire, steadily and liberally afforded, and with a comfortable dwelling, he would be better in his circumstances than if incumbered with a few acres which he is too poor to manage profitably, and with the responsibilities of rent-paying and incidental expenses from which the mere labourer is exempt. The emigration of such husbandmen and the consequent consolidation of small holdings in the hands of farmers ought not to be a subject of popular clamour. The mere approbation then of the emigration of a class of families under circumstances so unfavourable to themselves in Ireland, ought not to be identified with any practice of compulsory eviction for the mere purpose of effecting consolidations, which cannot be too strongly reprobated. The enlargement of little farms, when it can be accomplished to the advantage of all the parties concerned, is another thing. If from any of the causes now in operation the number of labourers in Ireland should be so diminished as to cause such a rise in wages as may afford to them the decent comforts of life, they will remain where they are. Inducements to remain in their native land are now required. Some certain benefits are loudly called for, such as convenient and weather-proof dwellings, with plots of land attached, in every district and on every farm throughout the country, and an assumption (I do not venture to demand equalisation altogether, under the existing social obstacles) of the Poor-law to that of England. Unless relief be extended to the destitute, infirm, sick, and aged labourers in their own dwellings, under the parallel circumstances in which it is generally afforded in England, the motives and necessity for emigration will be strengthened in the mind of the Irish labourer. *Martin Doyle.*

Home Correspondence.

"God sends a cruel Cow short horns."—The above quotation, Mr. Editor, is from William Shakspeare, sometime dramatist and poet, and in view of the recent destruction of numbers of the highly bred "Short horns" by rinderpest is somewhat singular. *J. F. R.*

Public Parks and Village Halls.—It has been observed that business is business, and I am ready to allow that business is becoming of greater importance every day, for there is nothing that is developing itself so rapidly at the present time in this country as business of every kind, and it is this extraordinary activity that prevails throughout the country that is establishing a new and far better position for the working classes, for the reason that every man's labour is wanted, let his calling be what it may, to aid and assist in keeping the different occupations of life in motion; and it being so is a reason why all kinds of labour must be more equally and well paid for. It cannot pay to allow any kind of occupation to lag behind for want of a sufficient amount of labour to carry it on, but more especially all labour relative to farming, for success in farming depends in a great measure upon having a sufficient amount of well-directed labour performed at the proper time, for seed time and harvest come and pass regardless of the farmer, so that the farmer must be ready to perform his work at the proper time, or the results will be against him; and in the present state of the labour market there is every prospect of the English farmer being obliged to pay a high rate of wages. It is to be regretted that so much of the time and money of the working classes is spent at the public-houses and beer-shops, and it is not always an uncomfortable home that causes men to frequent the beer shop, but every man who spends his time and money there is sure to make his home uncomfortable. Then should not other attractions be placed in their way, with a view to let them see that there are other and more permanent enjoyments of life than are to be found at the public-houses and beer-shops? Having this object in view, what better than the erection of public halls in every town and village throughout the country, and in doing so, let it be remembered that space is of more importance than ornament—such room as will enable the different classes of working men to group themselves together over their books, papers, or other amusements, that all may feel at their ease, free and independent from one another. A refreshment room should be near, and everything sold there should be over the counter only, giving no opportunity for them to congregate themselves together there, but yet make it unnecessary for them to go to the public-house or beer-shop for refreshment. *B. Ransley, Perrysfield Farm, Oxted, Surrey.*

Thunder v. *Milk.*—Will you have the goodness to help me, if you can, on the above subject? During the late stormy weather, when the atmosphere was full of electricity, my dairywoman had to throw away many, many gallons of milk, which turned to a thick jelly in the leads before it had been standing long enough to cool. I had some of it sent to my table which would not pour out of the jug at all. I thought immediately what a dreadful state the milk must be in which had to come to London by rail—perhaps a great many miles—to say nothing about the previous jolting in a cart to the station. I named the subject to a London milkman, who told me that he had suffered in his dairy, just as I had, in the case of his few cows which he had in London; but that the milk which came to

him by rail was not at all affected by the thunder, but had kept sweet and good many hours longer after he received it than his milk would. I have also heard private individuals say they had no difficulty with milk which they bought. What is put into the milk to prevent its curdling, and in what proportions? or how otherwise is the evil prevented, and will the treatment interfere with the product of butter, for mine is a butter dairy. *W. P.* [A little carbonate of soda would hinder milk souring and curdling. We will inquire further.]

Agricultural Education.—"Knowledge is power" in many respects. A certain amount of scholarship is necessary even for applying manure, and keeping farm accounts and memoranda in a systematic manner. And yet almost everything connected with the ordinary routine of farming appears so simple to practical men, that they do not consider it worth while making any special remarks to outsiders about the ordinary routine of duties. My late father acted as steward from 1843 till a few weeks before his death in 1855 on a farm rented by an amateur, who was 16 before he became a tenant farmer. That man was a native of a provincial town, and he made his money by acting as a cattle and sheep dealer. He allowed my father to superintend the details, but my father's proceedings appeared strange even to him—a man who had had extensive opportunities of observation while travelling about from farm to farm, and to Morpeth and other cattle and sheep markets. On the other hand the advantage of the salesman over the more field farmer is considerable, and practical men would benefit much by being able to deal for themselves with the difficulties connected with the buying and selling of cattle and sheep. I remember walking six miles on several occasions for a report of the London, Newcastle, and Edinburgh markets. On one occasion my father's master sold a lot of half-fat cattle at Christmas with a large profit for the short time he had kept them. The farmer who bought them kept them eight weeks, and had a difficult task in realising the purchase money. The weekly and fortnightly sales enable amateurs to dispose of their fat stock; but the purchasing at fairs still remains a difficulty to inexperienced hands, and also to a good many practical farmers who live to old age without acquiring the requisite tact for marketing. All our verbal and written lectures will not impart the tact which is developed by the every-day life on farms. The duties of the labourers and the farmer somehow amalgamate with each other. An intelligent farm labourer only requires money and a little polish to enable him to act the part of a gentleman farmer. I must confess that I have not any liking for agricultural colleges. There is the well-known desire of rustics to rush to towns for holidays, and of citizens to rush to the country, which ought to guide would-be dictators about education. Rustics require the refining influences of town society. Farmers' sons in Scotland generally go to the grammar schools in provincial towns to "finish off" their elementary education at the parish schools. A gentleman farmer's son and I sat next to each other on the same form at a parish school. But Englishmen are strangers to what unconsciously, as it were, bridges over the gulf that is supposed to exist between the different classes in Scotland. It is looked upon in England as degrading themselves to send their children to schools in the purely agricultural districts. Those who have access to Hanna's memoirs of Dr. Chalmers will observe that Dr. Chalmers referred to the fact that he got his elementary education at a school attended by the sons of the poor classes. *W.*

Societies.

NORFOLK: *Cattle Plague Committee.*—The *Norfolk Chronicle* gives the following communication from Mr. Woods of Merton, to the chairman of the committee on the alleged outbreak of rinderpest among sheep:—

SIR,—In consequence of its having been stated at the meeting of the committee last Saturday that Mr. Wellingham's sheep have been under the treatment I beg now to call attention to give the particulars of the case.

At the request of Mr. Wellingham I sent a person to Wilton, on the 24th of May to give his cows a dose of medicine, and this was done because they appeared unhealthy. It is stated had died (48 had been bled before) on the 23rd, and the 24th of May, and 20 at least from the disease with which they were then affected. I saw the cows on Monday the 28th of May, and then learnt that the disease first showed itself in March, and that a month previous to my seeing them the whole flock had been purged a great deal. I saw that much fine had been lost, for there was then great constipation of the bowels, sore mouths, and a thick slimy discharge from the nose, in many cases streaked with blood, and a watery discharge from the eyes, the whole flock appearing to be more or less affected. I advised the purging dose of medicine, rather stronger than the first, should be given immediately: and this was done on Tuesday, May the 29th. I also recommended that the sheep should not have so much succulent food, but, instead, some bran, crushed Oats, and good hay chaff, which had answered well in the bleeding and the bran and Oats were given, but, unfortunately, Mr. Wellingham had no hay, and therefore none was given.

Although several of the diseased sheep kept dying, still there appeared an improvement in the bulk of them; for on the 1st of June I saw them again, and found that the discharge from the nose and eyes had almost disappeared, and on the following day Mr. Wellingham wrote to me as follows:—

"I am glad to say I like the appearance of my sheep to-day very much more than I have done; there are no more dead, nor yet fresh cases with the ewes; two lambs have broken out with the scurvy, but I think only one will die. I am in hopes they will now make a beginning in long better."

Mr. Wellingham named the lambs because he was away from home when I went, and I had left a message with his shepherd, that unless he treated them also, he would soon lose a great number, as I could see they were falling down with the fever. On the 8th of June Mr. Wellingham sent me word that he purposed sending his ewes to marsh, and in my answer to him on the following day I said:—

"I look with great alarm at the note though I your contemplating sending your ewes to marsh, where I understand they can get what water they wish for. I strongly advise you not to think of it for a moment, for the chances are it might kill half your sheep. I hear you have put three ewes where they can get water, as a trial to see if it will hurt them. Now, if these three sheep were to escape, I should not think it sufficient to warrant the risk of putting all your flock to a similar trial, when, probably, many among them may be in a feverish state, and would suffer from it."

Notwithstanding the number of deaths given below, the bulk of the ewes were improving, and on the 12th of June Mr. Wellingham wrote as follows:—

"I have sent my shepherd over this morning. The ewes I consider much better, and I think the fever has almost left them. I should like, if you think it advisable, to give all my lambs a dose of your mixture to-morrow morning, as they are very sadly, and looking well, beneath that coarse wash, fed. Mr. Wellingham and his shepherd believed that the sheep were so far recovered that they would not suffer from getting to water, and from eating the Grass they were feeding upon, or from being sent to marsh. The result, however, proved otherwise, for on June the 20th Mr. Wellingham wrote as follows:—

"My flock of ewes are now dying by wholesale, from some cause I cannot account for."

The following figures from Mr. Wellingham's book will best show whether the doubts I had of the propriety of the ewes being put on the marsh ought to allow water as much as they wish for; but when they are in a feverish state, I have always found it most injurious to do so.

When I saw the lambs on the morning of the 14th June, I was much struck with their altered appearance since I had seen them on the 1st, and I then said that many would not recover. I told Mr. Wellingham I was fearful his loss must yet be considerable, as the disease had got so much hold of them. They appeared so, for I had a very experienced shepherd said from six to seven score would die. Only seven died in a shed of 40 the ewes were with the exception that numerous tape-worms were passed with the slimy evacuations.

All the lambs, except one or five dead, had a dose of the same which acted freely on the bowels. I gave directions for the feeding, and saw him again on the 23rd of June, when I found them all right, though the shepherd told me the loss had been very great; that morning, but when I looked at the lambs, I found it had been produced by their having been fed for three days on a rank-grown layer, which had been fed with sheep all the spring. I had requested that they might not be fed with this layer. They were not kept from it, and on the following morning there were only four fresh cases of purging, and the next morning only two.

From the 13th of June, the day they had the medicine, to the 4th of July, 43 lambs died, or 10 per cent at least, Mr. Wellingham adds, with confidence of recovery.

I saw the lambs yesterday, in company with one of your Committee, Thomas Barton, Esq., of Threxton, and found them, with a few exceptions, looking so well as could be desired. *Thomas Woods.*

MR. C. S. READ, M.P., asked Mr. Woods, who was present, whether that communication described the whole treatment of the sheep.

Mr. WOODS said it described the treatment with the exception of the sheep having been bled about the 5th of June. Perhaps the committee would allow him to explain why that was done. He was considerably pressed by many persons who were in favour of bleeding, to allow these sheep to be bled. He resisted the wish very much indeed, for he never allowed a sheep to be bled except in extreme cases, as he believed it to be injurious; but when such strong opinions were expressed by men of great practical experience, he felt he was incurring too great a responsibility by adhering too closely to his own opinion, and, therefore, sent a man early in the morning of the 5th of June to Mr. Wellingham, with instructions to see him before he went to Lynn market, and to bleed the sheep if he (Mr. Wellingham) thought it desirable to do so. By ten o'clock that same morning, however, he (Mr. Woods) felt that he had yielded too readily to the opinion of those persons who thought it would do good, and sent off a messenger with instructions to the first man, that if he had not yet seen Mr. Wellingham, he was to tell him on seeing him that Mr. Woods objected to the bleeding. The man had however already seen Mr. Wellingham, who remarked that he had determined on their being bled, and wished it to be done. Accordingly, when the second man had arrived, the animals had already been bled. He (Mr. Woods) thought the bleeding had done very little good or harm, because on the 12th Mr. Wellingham wrote that he believed the sheep to be much better, and that the fever had left them: and, moreover, the shepherd stated that they were quite well. That was all the treatment that he knew of his knowledge they had received.

Mr. READ asked whether, generally speaking, Mr. Woods would advise bleeding.

Mr. WOODS—Certainly not. I strongly advise that it should not be done as a general rule.

YORKSHIRE AGRICULTURAL.—*Trial of Grass Mowers.*—The following is the official report of the judges who awarded the prizes at the trial of Grass mowers last week:—

To the President of the Yorkshire Agricultural Society.

SIR,—I am requested by my colleagues, Messrs. Caldwell and Kay, to certify that after a complete and satisfactory trial of the mowing machines that appeared to compete for the premiums offered by the Yorkshire Society, we have awarded the prizes as follows, viz.:—1st prize to Mr. A. C. Bamlett, of Thirsk, for mower, price 26*l.*; 2d prize to Mr. Henry Kearsley, of Ripon, for mower, price 25*l.* We highly commend the new machine, price 18*l.*, exhibited by Messrs. Burgess & Key, of London; and commend the machine exhibited by Messrs. Samuelson & Co., of Banbury, price 18*l.* 18*s.* We beg to congratulate the Society upon the success of this trial, which was admitted by all the exhibitors to be the most satisfactory and complete of any that has taken place in this country. The excellent arrangements both as to the crops to be cut, the time of testing the machines, and the facilities afforded the judges in doing their work, are points to which we wish to draw attention. The great improvement that has been made in these machines caused close competition, and the work of all was most creditable, rendering our decision one of considerable difficulty. In coming to that decision, we were guided by closeness and evenness of cutting, a point of the first importance, strength and durability of machine, excellence of construction, and comparative draught, as determined by the dynamometer kindly lent by the Royal Agricultural Society. We have prepared tables showing these points, which, together with a detailed report, we shall be happy to forward after the conclusion of the implement trials in August, if the Society wish it. Only one haymaker was exhibited, by the Reading Iron Works Company. We had this tried, and consider it a strong, useful machine, quite deserving of the Society's prize, if eligible. *John Coleman.*

Reviews.

On the Management of Cattle in Health and Disease, &c. By Thompson Townsend. Virtue, Brothers, & Co.

The illustrations of this shilling book are spirited and clever. The West Highland bull is the ideal of an artist, and Rosa Bonheur's name is the guarantee of its excellence. The Bretonne cow is also very good. The Shorthorn steer is too long and has too small a head. The "South Devon" cow we do not recognise. Two-thirds of the book are on the diseases of cattle. The 34 pages which precede this part are filled with a very poor account of breeds, and fragments of dairy information and instruction in a medley of unclassified paragraphs. There ought to have been given an exacter account of our breeds of cattle, of their management, and their produce. The paragraph on "Feeding," no more than 14 lines, is as paltry and in many respects mistaken an account of a large and important subject as could anyhow be given. And many other sections of the whole might be similarly characterised. We extract one or two of the best bits:—

"*On Preserving Butter without Salt.*—Set the cream in a cool pan over the fire and melt it very gently, and heat it nearly to boiling point; extraction is thus made this heat to be attained when the reflection of the white of the eye is distinctly seen on the surface of the butter on looking down into the pan; all the watery particles are then evaporated, and the curd, of which a portion always remains in the butter, and is one cause of its becoming rancid, falls to the bottom. The clear butter is poured into an earthen vessel, and covered over with paper, and a bladder or piece of leather is tied over the jar to exclude the air; when cold, it very much resembles hog's lard; it may lose some of its flavour, but it is much superior to salt butter for culinary purposes, and especially for pastry."

"*General Remarks on the Dairy.*—The foregoing remarks will tend sufficiently to exhibit the various modes of managing dairy matters as at present observed in the more important dairy counties. It will be seen that cleanliness in every process connected with the management of milk and its products is of the first importance, and that without it neither butter nor cheese can be carried on so as to produce an article that will give satisfaction either to the dairy factor or the consumer.

"The practice, too common in many places, of making a larder a portion of the milk-house, cannot be too severely reprehended; and, what is nearly as bad, the more common practice still of having a number of cheeses undergoing the process of drying on the shelves. It is utterly impossible to keep milk sweet, especially in summer and autumn; where such things are permitted, it is productive of the worst effects upon the habits of the dairy maids, whose ideas of cleanliness under such circumstances will become exceedingly degenerated.

"Spilt milk should never be allowed to remain a moment longer than is necessary for its removal.

"The liberal use of water, cold in the summer and warm in the winter, is always to be commended; and in rinsing the milk-pans use a little common washing soda. The best dishes for holding milk are those made either of glass, tin, tinned iron, or well-glazed earthenware. Wood, lead, or zinc are all objectionable. All milk houses should have a northern aspect, and be well protected from the rays of the sun. A thorough draught near the ceiling, which can be controlled at will, is essential to keep the atmosphere always fresh. A stone table should occupy the centre of the milk-house for the basins to stand on. The table should be water-tight, and furnished also with a water-tight ledging, so that cold or warm water may be thrown round the basins when required; and finally, on this head we may say, that no food, either vegetable or animal, should be allowed to enter the milk-house—not even the cream jars should be admitted.

"A good mode of purifying the atmosphere of the milk-house is to dip cloths in a solution of chloride of lime, and then hang them up on cords from one corner to the other. In a similar way the temperature of the room may be kept low during hot weather. Cotton blinds kept moist in this way in the front of open windows are used in India as means of cooling the air of sitting rooms, and they might be easily introduced

here for the humbler purpose of cooling the air of the dairy or milk-room.

"The profit of a cow yielding 9 quarts daily for ten months, or 680 gallons annually, is thus estimated:—

	£	s.	d.
227 lb. of butter, at 10d.	9	18	7½
600 gallons of skimmed milk, at 1½d. ..	11	5	0
80 gallons of butter milk, at 2½d.	0	9	4½
Calf a week old	0	15	0
Total value of produce	22	8	0
Expenses of food	14	19	0½
Net profit of cow	7	8	11½

Farm Memoranda.

Mr. Westwood's Field at East Ham: *A Report on Sewage Irrigation.*—In investigating the best method of applying sewage to land, with a view to realising its maximum value, we should specially keep in view the danger of dogmatising on a question of this complex nature. When the works of the Metropolis Sewage Company are completed, and the sewage is most widely distributed, there may not, in the whole length of the culvert, be any two fields to which it will be applied, under precisely the same conditions of soil, subsoil, drainage, fall, and exposure. It is at least evident that, in a line of country of 42 miles in length, in a county presenting such a jumble of soils as Essex, the sewage will be applied to land under nearly every possible variety of conditions. We must not attempt, therefore, to lay down a fixed immutable law, and say that any particular number of tons per acre is the right quantity of sewage to use, and that no farmer shall take either more or less. We must rather seek to establish from our present knowledge and future experience, a sliding scale applicable to various soils and exposures, and then, after a careful examination of the conditions under which a farmer proposes to use the sewage, apply that sliding scale to the best of our judgment, making the best estimate we can to allow for any disturbing causes, of the effects of which we have had no actual experience.

We ought, however, to endeavour to establish one or two typical examples of what sewage *can* do, under the most favourable circumstances, that is to say, examples of maximum produce with minimum applications, in order that, by keeping these before us as standards of economy, and always endeavouring to work up to these experimental results, we may thus attain the maximum total result practically possible on a large scale. With a view again to estimate what sort of standard we ought to aim at, I cannot help regarding Mr. Westwood's ground (East Ham, by the sewer) as affording very useful data. His ground is subject to many drawbacks, and has been farmed in a very wretched dressing manner, but there is no doubt that off the only part of the upper plot which has had a fair chance, he has been cutting at the rate of 60 tons per acre per annum, at the least. This is clearly in one respect a guide to what sewage can do, but the two important questions remain to be answered—first, was this result obtained by an excessive, or by a moderate application? and secondly, can a still better result be shown under more favourable circumstances?

With regard to the first question, there are very different opinions, some considering that Westwood has been applying sewage at the rate of no less than 15,000 tons per acre per annum, and others estimating the quantity at very much less.

However, I dismiss the notion of the 15,000 tons as in the highest degree improbable for the following reasons:—

1. 15,000 tons is equal in round numbers to a perpendicular depth of water of 150 inches or 12½ feet.

2. It is a fact that whatever the quantity he may apply, Mr. Westwood only gives his Grass one dressing after each cutting, and the shortest time that has ever elapsed between two cuttings is something over 30 days.

3. If, therefore, he applied sewage at the rate of 15,000 tons per acre per annum, he must apply at least 1-12th of that quantity at each dressing.

4. But 15,000 tons is equal to 12½ feet, therefore 1-12th of 15,000 is equal to 1 foot and half an inch in perpendicular depth.

5. Now Westwood's ground (I am talking more particularly of the upper plot) is low, with no natural drainage, the ditches are carefully stopped up, all communication with the marsh ditches outside purposely cut off, and the water stands in the inner ditches within 2 or 3 inches of the surface. There is therefore no escape for the foot of liquid supposed to be applied, except in the very limited power of absorption possessed by the few inches of already moist ground above the level of the water in the ditches, and in the power of absorption and evaporation of the plants.

It seems to me, therefore, that no one can, after giving the matter any calm or serious consideration, entertain for a moment the notion that Westwood could possibly apply every month to his already waterlogged land no less than 1250 tons of liquid per acre, equal to 12½ inches, equal to half a year's rainfall over and above what may fall during each month, or an addition to the rainfall of the year of no less than the rain of six years—and this upon land from which there is no drainage or outlet.

As I have already remarked, it seems very desirable to ascertain positively the quantity of sewage which Westwood does, as a matter of fact, apply; but a brief consideration of the probabilities of the case may meanwhile be useful.

1. Westwood says himself that he applies 2½ to 3 inches each dressing, which is enough, he says, thoroughly to moisten the soil and roots; and if we consider the immense effects produced by only one inch of rain, we cannot deny that the soil and roots must be very thoroughly moistened by 2½ to 3 inches of sewage, applied to them direct, and not intercepted in any degree by leaves, &c.

2. This quantity of 2½ to 3 inches would appear to be nearly as much as the already moist nature of his land and the high level of the water in the ditches would allow of.

3. I learn that, calculating from the data furnished by the engineers as to the discharge through Westwood's pipes, a constant flow of six hours every day in the year would give a total yearly discharge upon the upper plot of 19,000 per acre. Consequently, in 12 hours' flow there would be a discharge of 104 tons per acre over 8 acres. Now, as Mr. Westwood's appliances are so imperfect, he is not able to irrigate at night; his day is therefore a day of 12 hours, and he says that he applies the sewage for from one to two days, according to the state of moisture of the land and the flow of the sewage. If then this flow of 104 tons per acre over 8 acres is concentrated over 4 acres at a time, as would appear to be the case, the discharge per acre would become 208 tons in the day of 12 hours, or about 2 inches. A dressing of one day per month would therefore give 2496 tons per annum, and an irrigation for two days a month would give 4160 tons, or 4 inches for each dressing, or a total in the year of 1992.

This latter figure I believe to be in excess of the truth; but even if we call the application 5000 tons, the result is a very brilliant one. Let us consider the result as if Mr. Westwood were an ordinary farmer, 25 miles from London, having no facilities for sending his milk to market, and being obliged therefore to use his Grass simply as a means of manufacturing manure for the rest of the farm, by breeding and fattening stock, making cheese, &c. Then, we must credit the account with another crop, that is with 70 tons of Grass, instead of 60, because his first crop was a month too late, owing to the heavy rains and bad drainage preventing the application of any sewage during the winter. Our farmer would get his first crop in the month of March, and his last in the end of October or beginning of November; unless, indeed, as in the case of Mr. Marriage last winter at Croydon, he never stopped cutting all the year through. Now to a farmer in a dry county, such as Essex, green food in the months of March, April, August, and September, is invaluable. I think, therefore, all will agree with me, that in taking 15*s.* per ton all the season through as the value of Grass weighed when free from all extraneous moisture owing to rain or dew, I am not taking an excessive price; and in estimating the produce per acre at 70 tons, I am basing my estimate upon measurements made of Westwood's Grass on a fine hot, breezy afternoon, when standing Grass was as dry as possible. We arrive, therefore, at the subjoined balance-sheet as the result to be obtained from each acre of land:—

Trial Balance Sheet.

	£	s.	d.
Dr.			
5000 tons of sewage at 1*d.*	20	16	0
Rent and rates	3	0	0
Cutting 7 crops, at 10*s.*	3	10	0
One third cost of sowing, &c.	1	0	0
Repairing gutters	0	10	0
Wages of waterman	0	16	0
Cutting Grass and carting to box	3	10	0
Profit to farmer	19	13	4
	52	5	0
Cr.			
By 70 tons of Grass, at 15*s.* per ton	52	10	0
	52	10	0

But it must be borne in mind that the profit to the farmer will in reality be much greater, because the manure produced, gratis so to say, by his cattle, will give him an increased return from all the rest of his farm, and a careful calculation of the quantities of food consumed shows that from 8 to 10 per cent. will be a most ample proportion of a farm to be devoted to growing Grass by sewage irrigation, as this quantity will support a sufficient number of stock to manufacture an ample supply of manure for the whole of the rest of the farm.

A further test of the value of the Grass may be found in the following calculation. The proportion of one ton of ordinary meadow hay to meadow Grass in the same dry state that I have described, Westwood's to have been in when measured, was I believe say 1 to 4. Let us add 25 per cent. of moisture to this, as the Rye-grass is more succulent than meadow Grass, then we should have 14 tons of Rye-grass hay, a quality which Mr. Marriage has never sold at less than 4*l.* per ton. This would give therefore a produce of 56*l.* per acre, and as in the first estimate we have allowed 1*s.* per ton of Grass, or 5*s.* per ton of hay, for "carting," if we add on 70*s.* per ton of hay we shall have 35*s.* per acre per crop for carting and making, which is most ample. This addition of 70*s.* would be 7*l.* on 14 tons. This would still leave a profit of 16*l.* 8*s.* 4*d.* to the farmer, irrespective as before of the large indirect profit from the increased produce of the rest of the farm; and I believe, taking into consideration the immense convenience and value to an Essex farmer of a good supply of farm-yard manure for his ordinary crops, that 20*s.* per ton would be a much fairer price to charge his general account with for the Grass than 15*s.* This would raise the value of the produce of an acre to 70*l.*, and show another 17*l.* 10*s.* of profit to the farmer, or 37*l.* 3*s.* 4*d.* in all. At present the Essex farmer can only keep a very limited number of cattle, and never knows what his position will be at the end of the summer. In a dry season he may be short of "keep" for even the few cattle that he has. In a wet year he will see an immense quantity of "keep" running to waste for want of cattle to eat it. But with sewage irrigation he is almost independent of weather and seasons. His cattle never can be run short of food, nor can the quantity of "keep" be so unexpectedly large as to take him by surprise, and find him unprepared with cattle to eat it.

The above balance-sheet, deduced from the results on Westwood's ground, is only intended as a step towards the standard of economy which we ought hereafter to attain to, and I have sketched it as being useful in the meanwhile to show us what to aim at. But I consider that our eventual standard of the economical application of sewage ought to show a very much finer result, and I will now to proceed to throw out a few suggestions as to the means of arriving at this higher standard.

1. In order to get the maximum growth of Grass during the season, we must endeavour to get the first crop at the earliest possible date. To effect this, the same proportion of sewage per month should be applied during winter as during summer; but, instead of being concentrated into one or two dressings per month, it ought to be divided into as many dressings as possible, so as to keep a thin film of sewage flowing through the Grass as constantly as possible. This produces a double effect, and besides protecting the roots from frost, exercises, like a light covering of straw or slight inundation with common water, a peculiar and somewhat mysterious effect in making Grass grow which has never been wholly accounted for. Thus, even with a cold winter and a backward spring, the first crop may, by skilful manipulation, be smuggled through, so to say, at a surprisingly early date, when ordinary pastures and meadows show scarcely any perceptible growth at all.

2. Keeping the same object in view, the site selected for our standard should face the south, and be protected from all cutting winds.

3. The quality of the soil, viewed with regard to its power of affording, from its own constituent parts, food to the Grass, is comparatively unimportant where anything like 5000 or 6000 tons of sewage is applied, because the crops must be produced with such rapidity that there is no time for the solid food contained in the soil to be assimilated by the plants, which moreover get as much food as they can consume out of the sewage, though where our wish is to minimise the quantity of sewage, then it is clear that the richer the land the better.

4. But although, where full dressings are used, the chemical analysis of the soil is of very little importance, the habitual state of moisture of the soil is of the very greatest importance. It is evident that where a succulent crop is forced on so rapidly as to be ready for the scythe in 30 days during the height of the growing season, it must have a constant supply of water as well as of manure. A Grass seed might be embedded for 1000 years in a perfectly dry soil, manured with a perfectly dry manure, and it would never fructify. It is only on the addition of water that the seed will swell and burst, and that decomposition be produced without which its food cannot be assimilated by its tender roots, and circulated as sap through its delicate organisation. Thus, 300 tons of sewage contain probably enough food for a heavy crop of Rye-grass; but if the Grass is growing on a very dry thirsty soil, with an open porous subsoil, and a clear fall, then, even if the roots and soil between them should be able to arrest the manure, yet the water would run rapidly away, and in hot weather the ground would be parched in less than 48 hours afterwards, under which circumstances, one important element of the sewage having been lost, nothing but comparative failure and disappointment could be looked for. The site selected should therefore be either where the ground from its situation is naturally moist, where the soil from its chemical and mechanical construction is more or less retentive, or where, as in the case of the Maplin Sands, the state of moisture is entirely under control, and may be regulated artificially according to the requirements of the plants.

5. The Grass should never be allowed to go to seed. This is most important, for it is in the nature of all Grasses and cereals to push up rank stalks again with surprising spontaneity until they have succeeded in the great end of their existence, namely, reproduction. But if they are allowed to go to seed, their vital energy is impaired, and they grow sluggishly afterwards.

6. The land should receive a very liberal allowance of seed, as the closer the plants grow the heavier would appear to be the crop, probably because not only are there more blades of Grass, but because there are more roots to intercept and retain the manure, and because there is a more efficient shade afforded to the soil, and consequently less evaporation and loss of water.

7. The ground should be laid out for irrigation at the least possible expense. The site selected should have a natural fall in one direction, namely towards the south, and, if possible, the natural surface should be disturbed except in the way of preparation for the seed, and the expense of making the carriers should not exceed 20*s.* or 30*s.* per acre.

8. The carriers should be rendered impervious by puddling or otherwise, so that there may be no waste of the sewage from its leaking through the subsoil, and so escaping beyond the reach of the roots. The sediment in the sewage itself will be of great assistance in preventing leakage.

9. The sewage should never be applied to any plants except to such as may be in a state of more or less maturity. To ensure this, the farmer should have two plots of land laid out for irrigation, and change the sewage from one to the other every three years, when the plants of Italian Rye-grass will be exhausted and require renewing. Then following a crop, say of Barley, the farmer should sow his reserve plot with Rye-grass in August, and thus have good strong plants ready to receive his sewage when he has irrigated the other plot for the last time in the end of September. There will be another advantage in this system, namely, that when the farmer breaks up a plot that

has been for three years under Grass, he will make an economy of farmyard manure.

Under such conditions as these above enumerated our standard of economy ought to show a return from the use of 5000 tons of not less than from 80 to 100 tons of Italian Rye-grass per acre per annum. It remains to be proved whether, having due regard to the proportionate return, 5000 tons per acre is the most advantageous quantity of sewage to apply, or whether a greater or less quantity would be more proportionately remunerative.

Having established our standard, we must measure all subsequent results by it, and endeavour as far as practicable to work up to it. In my opinion the Metropolis Sewage Company should take some half dozen farms at different points along the line of culvert, selecting sites for irrigation with due regard to the above conditions, and thus establishing so many practical schools for the instruction and convincing of the farmers. The Company should insist upon the farmers only applying the sewage to such spots and in such quantities as they may direct, and the farmers, having no experience of their own, will of course be very glad to benefit by that of the Company. The amount of sewage to be supplied to any one farm ought to be strictly limited to the quantity judged by the Company to be sufficient for 8 per cent. or 10 per cent. of the acreage, having of course due regard to the conditions of the land to which it is to be applied. In this way the risk of bad debts will be reduced; the farms will not become dairy farms, and therefore cannot compete to any very formidable extent with the Company's exclusively dairy farms on the Maplin Sands; and, lastly, there will be less danger of the landowner's fancying that they are going to run away with the best part of the profit on the sewage.

It should, in making any calculations as to the total realisable value of the sewage available, be kept in view that that value may be very materially increased by skilful chemical treatment. Pure sewage contains ammonia in excess of the wants of grass, or rather, there being in sewage a deficiency of phosphates, these last become the measure of its power of producing Grass, and the excess of ammonia over the proper proportion which it ought to bear to the phosphates is wasted. By supplying, therefore, this deficiency of phosphates, which can be done at a small cost by a solution, the excess of ammonia would be economised, and so the realisable value of the sewage increased. *X.*

Miscellaneous.

The Prince Consort's Farms.—Mr. J. Chalmers Morton has had the very great honour to receive from the Queen a gold medal in token of Her Majesty's approval of his Book on the Prince Consort's farms, and as a memorial of Her Majesty's acceptance of it and thanks for it.

Midland Agriculture.—A writer in the Journal of the English Society, describing the agricultural condition of a midland county, says of one district:—"Here, instead of the signs of industry and improvement, we see narrow winding lanes leading to nothing, and traversed by lean pigs and rough cattle; broad copse-like hedges, small and irregular fields of Couch, amidst which struggle the stalks of some smothered cereal; these, with gipsies' encampments, and the occasional sound of the poacher's gun from woods and thickets around, are the characteristics of the district, its soil, culture, and population." *Scottish Farmer.*

Calendar of Operations.

JULY.—*Oxen versus Horses.*—The economy of employing draught oxen in place of a certain proportion of the horses generally worked on the farm has long been advocated, and is in accordance with general practice over still a very considerable extent of arable land in this country. The following statement on the subject is from the pen of Mr. Ellman, of Landport, Sussex. He asks "whether it is economical to work oxen, not to supersede horses, but as an auxiliary in farming operations, calculating one horse to two oxen, and the following is his calculation:—

	£	s.	d.
"Value of a cart colt, at 2½ years old	31	10	0
At 3½ years it would be worth	36	15	0
At 4½ years it would be worth	42	0	0
Value of a pair of steers, 2½ years old	29	4	0
At 3½ years old	35	0	0
At 4½ years old	40	0	0
At 6 years old, when turned off to fatten ..	48	0	0

"I calculate the worth of the horse and oxen if sold at the time they would be most valuable for working. The keep of one horse I consider to cost as much as that of the two oxen, and the work performed equal. I say nothing as to oxen working in collars and harness like horses. It is not the custom so to work them in this county, and I consider it a great saving to work them in single or double yokes. We in Sussex work them in a double yoke, which with bows and irons costs about 20*s*. This lasts for many years, and the only cost is now and then a new bow, costing 1*s*. I know the double yoke looks unwieldy, but experiments have been made, and it has been proved that a pair of oxen in a double yoke can draw a greater weight than in any other way. My late father used to breed his own oxen, and every year bring them into work. The team consisted of 24. He considered that oxen should be kept as auxiliaries. They were never worked so as to be low in flesh, and of course their growth was not checked. By keeping them always in a good state, if anything happened to them they were put to fatten, and soon got fat. He worked at different times Sussex, Herefords, and Devons. Between the Sussex and Herefords there was not much difference, but the Devons were certainly more active. On the farms on the Southdowns it is very much the fashion now to work the Welsh cattle. They are very hardy, excellent workers, with good feet, a great desideratum amongst flints, and will live on very scanty food. It must never be forgotten that if anything happens to render a horse unfit for work he is almost valueless; whereas if an ox is lame he can be converted to a good purpose, and is soon made of value."

It is, however, only fair to add, in reference to the proofs of greater economy which every now and then re-appear in favour of ox labour, that the practice has nevertheless long been dying out, and the districts have been narrowing in which it still prevails.

The fact is, that farm operations are so linked together that the establishment of any sluggish element drags the whole affair. Oxen, notwithstanding their fitness for field work, and their economical performance of it under efficient management, are not so active as horses under equally good management, and the quicker agency has been gaining ground more rapidly, the more that time is valued and turned to account in ordinary farm management. Where a perfect organisation of labour prevails, and lads and men are made to feel the influence of activity and energy in their master, the maintenance of such a sluggish pace as is natural to the ox is impossible. The horse may become one half his former value, while the ox has been increasing in its market value, the former may have consumed twice the money's worth of food—but his work has been so much more valuable, both in itself and in its influence on the manual labour of the farm as well, that however possibly he may be superseded by the steam engine, he is not at all likely to be superseded in the field by the ox.

In fact, every year fewer acres are ploughed, fewer loads are carried by ox-labour, notwithstanding that every now and then an indignant remonstrance tries in vain to waken our farmers to the advantages they are most unaccountably allowing to slip from between their fingers. The truth is that, after all, farmers understand their business and their interests sufficiently well to make it altogether improbable that the gradual decadence of a once almost universal practice is the result either of ignorance or supineness.

Leisure time.—It is during this month, between hay and corn harvests, that the most convenient time occurs for no holiday. It is now that the annual meetings of our great agricultural societies occur; and as the first edition of Arthur Young's "Farmer's Calendar" says—

"If the young farmer has any friend, or confidential bailiff, that he can trust his farm to for ten days or a fortnight, let him now take his summer tour, to view farms in well-cultivated counties, and to introduce himself to the conversation of his intelligent brethren, from whom he will be sure to learn something useful. He cannot do better than be present at one of the public meetings of this month, as he will there meet with able cultivators from every part of the kingdom, and may learn where best to direct his steps, whatever may be his object; and this, let me remark, is no inconsiderable proof of the utility of those meetings.

"Were I to name one circumstance which has, in the last 20 years, advanced the husbandry of this country more than any other, I should fix on the practice of farmers taking their nags (to use an expression of Bakewell's) to what other people are doing. Men who confine their whole lives to one spot or vicinity necessarily contract a very limited range of thought. Their ideas flow so much in the same channel, and dwell on the same objects, that new ones, however useful, make too faint an impression; nor can they know what is doing by the best farmers, on soils perhaps exactly similar to their own. To take a ride for a fortnight through four or five hundred miles of country, with an eye scrutinising everything they see, and calling upon noted farmers to make inquiries about such objects as appear interesting, must necessarily give a new movement to their minds, a new spring to thought, and remove many prejudices. Two such journeys should be taken in a year—the summer one to illustrate the results of your practice, the winter one to explain the winter management of live stock, the important objects of the farm-yard, fattening beasts, sheep feeding in many branches, winter irrigation, and many other objects which are interesting. A farmer may take such a ride at the expense of as many guineas as he is days, and he will not find this money the most unproductive that he expends.

"Now also is the time for giving the labouring men a day's holiday, and a useful, wholesome thing it is to let the workers of the farm have a share in the enjoyments which a leisure time of year enables them to take. The following sentence, written by Mr. Caird, from Baldoon Mains, in Galloway, many years ago, will always well deserve perusal at this season of the year:—'I may mention that the men have been getting a day's holiday, and a beautiful day it fortunately was, as by the kind arrangements of our steam shipping company all the ploughmen and tradesmen of the country, with their wives and sweethearts, have an opportunity afforded them for a shilling each of taking a pleasure sail to the Isle of Man and back again, of which it is to be hoped very many will avail themselves. All the farmers who can look beyond their noses have given their men a day's leave of absence, convinced that they will be well repaid by the stock of good nature which the men will lay in during the pleasure trip.'"

Notices to Correspondents.

BARLEY: *J. R.* It is six-rowed Barley, Hordeum hexastichon.

POOR MOSSY GRASS ON CHALKY SOIL: *A B.* Keep feeding stock on it with hay and Turnips. That must ultimately improve it. Do not mow it for a season or two; and meanwhile apply towards winter 10 to 20 bushels of well rotted bone-dust mixed up (after rotting) with as large a quantity of earthy compost free from weed-seeds as you can get. Foddering cattle on the land is the best improvement you can give it, giving them cake along with hay or Turnips in winter and along with the pasture in summer.

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The Price "Complete" as above, includes 25 feet Suction and 25 feet Delivery Hose, Galvanised Wire Strainer, Rose and Small Jet.

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&c. &c.

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IMPORTANT TO THE PUBLIC.—The extensive sale of the Hydropult has excited the cupidity of so-called respectable, but in reality unprincipled Manufacturers, who are now pirating on the Public worthless imitations of the Hydropult, and through their connections are enabled to place said devices on exhibition, and for sale, in many of the principal Ironmongery and Seed Establishments throughout the city and provinces. These devices resemble in many respects the Hydropult in appearance, and are calculated to deceive the unsuspecting. The Proprietor therefore issues this Caution, and respectfully intimates that parties wishing to purchase the Hydropult should examine the machine offered for sale, and see if it has attached thereto a label, with the following words:—"The Hydropult, Vose's Patent, manufactured only by GRIFFITHS & BROWITT, Birmingham. CHARLES POMEROY BUTTON, Proprietor, 142 and 143, Cheapside, London." Unless this label is attached, the Machine is not the Hydropult.

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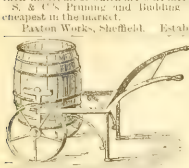

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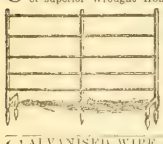

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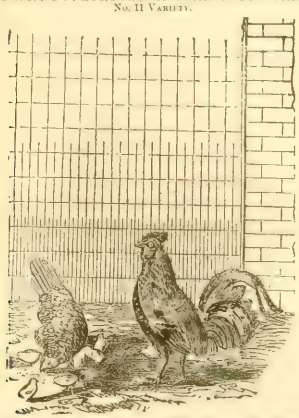

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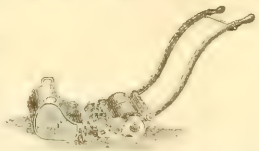

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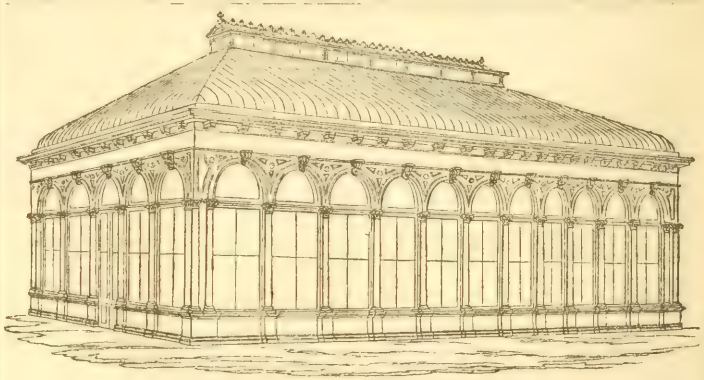

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TO BE DISPOSED OF, by Private Contract, in consequence of the death of one of the Firm, the STOCK, GOODWILL, &c., of a well-established NURSERY BUSINESS, with a first-class connection of 50 years' standing, in one of the most important and fashionable Sea-coast Towns of England. It consists of about 10 Acres of Land in a high state of cultivation, three Greenhouses, three Propagating-houses, and 11 Pits, all well stocked with Saleable Stuff, Camellias, Epacris, Ericas, Azaleas, New Holland Plants, Ferns, Bedding Stuff, &c. The Nursery comprises a superb Collection of Carnations, Picotees, Pinks, and an extensive and unrivalled stock of Gladioli, for which this Nursery has a first-class reputation. Also Fruit Trees, Roses, Evergreens, Deciduous Shrubs, Asparagus, &c., and the leading Conifers. The Nursery also comprises the usual Sheds, Stables, &c., and is within a few minutes' walk of two Railway Stations and Steamboats, affording easy communication to all parts of England and the Continent. The Stock to be taken by Valuation, or as agreed, and any *bona fide* communication will meet with attention. Immediate possession could be given.

Principals only may apply by letter to FLORA, care of Messrs. Cowdell & Grundy, Solicitors, 21, Abchurch Lane, London, E.C.

Exotic Nursery, Shepherd's Bush, W.

HOPGOOD'S OLD NURSERY. RETIRING FROM BUSINESS.

NOTICE.—GENUINE SALE AT THE ABOVE

TO BE SOLD by Private Contract, during this month, or SOLD by AUCTION in September or October next, of which due notice will be given, the whole of the undermentioned PLANTS and GREENHOUSE FITTINGS, consisting of the whole of the Houses, Pits, Frames, Hot-water Pipes as adapted to the Houses, Boilers, Bricks, Slates, Paving Stones, &c. The whole may be viewed.

500 Azalea indica, fine half specimens; also new and leading varieties
4000 fine young Azalea indica, in 8 pots
7000 Ericas, fine grown, in 8-pots, consisting of Willmoreæ, gracilis (autumnalis), hiemalis, Cavendishii, ventricosa, with other varieties
1000 fine young Camellias, of the leading varieties
2000 Acacia armata, fine strong plants
2000 Cytisus longe racemosus, fine strong plants
1000 Gardenia intermedia.

Also several thousand good strong Pelargoniums of all the leading varieties, together with a Collection of Stove and Greenhouse Plants.

Rectory Farm, Sarsden, Oxon.

TO BE SOLD by Private Contract, and if possible in One Lot, a Small but Choice HERD of PURE SHORTHORNS, amounting to upwards of Twenty. They are of various ages, in store condition, in regular course of Breeding, and in perfect health. The Cattle Plague has not approached their neighbourhood; Milking qualities have been specially regarded, and mark their character. Their Pedigrees refer to good and fashionable blood. As this Sale offers a rare opportunity to Gentlemen wishing to found a Herd of Shorthorns, and the number is limited to twenty, no warrant at Auction, they are at any time open to inspection within the space of one month from the date of this Advertisement, and will not be previously separated. If Sold, immediate Public Notice will be given; meanwhile application may be made for Catalogues and full information to Mr. M. SAVIDGE, Lodge Farm, Chipping Norton; or to Mr. STRAFFORD, 13, Euston Square, N.W.

Oxfordshire Down Rams.

MR. DRUCE begs to inform his Friends and the Public that he has about THIRTY SHEARLINGS to DISPOSE OF by Private Contract, and that he will be happy to show them at any time during the season.

Eynsham, Oxford.—July 21.

Sales by Auction.

Biddenham, near Bedford.

MR. STRAFFORD will offer for SALE by AUCTION, without any reserve, on FRIDAY, Aug. 3, being the day of the Biddenham Annual Sheep Sale, SEVEN PURE-BRED SHORTHORNED BULLS, the property of Mr. Charles Howard, which are by Second Duke of Thorndale (11748), and Fifth Grand Duke (19875), from well descended Cows. There has been no case of Cattle Plague within several miles of Mr. Howard's Farm.

LUNCHEON at 1 o'Clock, Sale to commence immediately afterwards. Biddenham is about a Mile and a half from Bedford, where conveyances will meet the trains.

Catalogues, with Pedigrees, may be had on application to Mr. STRAFFORD, 13, Euston Square, London, N.W.; or of Mr. CHARLES HOWARD, Biddenham, near Bedford.

Dumbleton, near Evesham.

IMPORTANT SALE OF SHORT-HORNED CATTLE.

MR. STRAFFORD has received instructions to SELL by AUCTION, without reserve, on WEDNESDAY, August 29, at the Culhalme Farm, Dumbleton, a valuable LOT of SHORT-HORNED CATTLE, consisting of about 50 Head of Bulls, Cows, and Heifers, the property of E. Hall Dare, Esq., M.P., of Dumbleton Hall, which are descended from some well-known and long-established Herds, during the last ten years the celebrated Bulls Duke of Cambridge (12,742), Master Butterfly 5th (14,921), and Lord Jersey (20,180) have been used.

The Young Stock are chiefly by the latter Bull, who is a Son of Captain Gunter's famous Seventh Duke of York (17,764).

Catalogues, with Pedigrees, may be had on application to Mr. STRAFFORD, 13, Euston Square, London, N.W.; or of Mr. C. G. CLARKE, at the Culhalme Farm, Dumbleton, near Evesham.

Biddenham Annual Sale.

MR. CHARLES HOWARD will offer for PUBLIC COMPETITION, on FRIDAY, July 27, 60 OXFORDSHIRE DOWN SHEARLING and a few older Rams; also 60 OXFORDSHIRE DOWN SHEARLING EWES, from his well-known Flock.

LUNCHEON at 1 o'Clock, Sale to commence immediately afterwards. Biddenham is about a Mile and a half from Bedford, where conveyances will meet the trains.

Mr. HENRY PEELEY, Auctioneer.

Imported Orchids.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on SATURDAY, July 28, at half-past 12 o'Clock precisely, a great variety of rare ORCHIDS, just imported by Mr. J. Linden, of Brussels.

On view the Morning of Sale, and Catalogues had.

Orchids.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, July 25, at half-past 12 o'Clock precisely, some fine established and imported ORCHIDS, including the following choice varieties:—

Acrides Lobbii	Oncidium leucochilum
,, nobile	,, cucullatum maculatum
,, quinquevulnerum	,, sarcodes
Cypripedium villosum	Odontoglossum Alexandræ
,, caudatum	,, Dawsoni
,, Veitchii	,, roseum
Cattleya Bassettii	Phalænopsis Luddemanniana
,, Wagneri	,, amabilis
,, Warscewiczii delicata	,, grandiflora
Saccolabium Dayi	Vanda Lowii
,, Blumei major	,, suavis
	,, species

And a large number of other choice species.

On view the Morning of Sale, and Catalogues had.

Established Orchids,

BEING DUPLICATES FROM TWO PRIVATE COLLECTIONS

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY, July 31, at half-past 12 o'Clock precisely, Choice established ORCHIDS, being Duplicates from the well-known Collection of Wentworth Buller, Esq., of Strete Raleigh, comprising fine plants of the following varieties:—

Dendrobium Veitchii	Odontoglossum Bluntii
,, Lowii	,, Alexandræ
,, bigibbum	,, luteo-purpureum
,, Cambridgeanum	,, gloriosum
,, infundibulum	,, cariniferum
Lælia majalis	,, Andersonianum
,, furfuracea	Saccolabium guttatum
Cattleya labiata	,, retusum
,, Mossiæ	Cymbidium
Oncidium nematochilum	,, curvifolium
Pleione lagenaria	Vanda suavis
,, Wallichii	&c. &c.

Also Duplicates from the Collection of a private Gentleman, including

Aerides Fieldingii	Lælia Boothiana
Cattleya Mossiæ	Dendrobium
Cypripedium Stonei	Oncidium
Phalænopsis amabilis	Cymbidium
,, grandiflora	Vanda cristata
&c.	&c

On view the Morning of Sale, and Catalogues had.

WILLIAM S. BURTON,

GENERAL FURNISHING IRONMONGER,

BY APPOINTMENT TO HIS ROYAL HIGHNESS THE PRINCE OF WALES,

SENDS A CATALOGUE GRATIS AND POST PAID.

It contains upwards of SIX HUNDRED ILLUSTRATIONS of his unrivalled STOCK of STERLING SILVER and ELECTRO PLATE, NICKEL SILVER and BRITANNIA METAL GOODS, DISH COVERS, HOT-WATER DISHES, STOVES, FENDERS, MARBLE CHIMNEY PIECES, KITCHEN RANGES, LAMPS, GASELIERS, TEA TRAYS, URNS and KETTLES, CLOCKS, TABLE CUTLERY, BATHS, TOILET WARE, TURNERY, IRON and BRASS BEDSTEADS, BEDDING, BED-ROOM CABINET FURNITURE, &c., with Lists of Prices, and Plans of the

TWENTY LARGE SHOW ROOMS,

At 39, OXFORD STREET; 1, 1A, 2, 3, & 4, NEWMAN STREET; 4, 5, & 6, PERRY'S PLACE; and 1, NEWMAN YARD, LONDON, W.

THE PERFECT SUBSTITUTE FOR SILVER, THE REAL NICKEL SILVER,

Introduced more than 25 years ago by WILLIAM S. BURTON, when Plated by the Patent process of Messrs. Elkington & Co., is beyond all comparison the very best article next to Sterling Silver that can be employed as such, either usefully or ornamentally, as by no possible test can it be distinguished from real Silver.

A small useful set, guaranteed of first quality for finish and durability, as follows:—

	Fiddle or Old Silver Pattern.			Reed Pattern.			Thread Pattern.			King's or Shell and Thread.		
	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.
12 Table Forks	1	13	0	2	0	0	2	4	0	2	10	0
12 Table Spoons	1	13	0	2	0	0	2	4	0	2	10	0
12 Dessert Forks	1	4	0	1	10	0	1	12	0	1	15	0
12 Dessert Spoons	1	4	0	1	10	0	1	12	0	1	15	0
12 Tea Spoons	0	16	0	1	0	0	1	2	0	1	5	0
6 Egg Spoons, gilt bowls	0	10	0	0	12	0	0	12	0	0	13	6
2 Sauce Ladles	0	6	0	0	8	0	0	8	0	0	9	0
1 Gravy Spoon	0	6	6	0	9	0	0	10	0	0	11	0
2 Salt Spoons, gilt bowls	0	3	4	0	4	0	0	4	0	0	4	6
1 Mustard Spoon, gilt bowl	0	1	8	0	2	0	0	2	0	0	2	3
1 Pair of Sugar Tongs	0	2	6	0	3	6	0	3	6	0	4	0
1 Pair of Fish Carvers	1	4	0	1	10	0	1	10	0	1	10	0
1 Butter Knife	0	2	6	0	4	0	0	5	6	0	6	0
1 Soup Ladle	0	10	6	0	12	0	0	16	0	0	17	0
1 Sugar Sifter	0	3	3	0	4	6	0	4	6	0	5	0
Total	9	19	9	12	9	0	13	9	6	14	17	3

Any article to be had singly at the same prices. An Oak Chest to contain the above, and a relative number of Knives, &c., £2 15*s.*; Tea and Coffee Sets, Dish Covers and Corner Dishes, Cruet and Liqueur Frames, &c., at proportionate prices. All kinds of Replating done by the Patent process.

FENDERS, STOVES, FIRE IRONS, AND CHIMNEY PIECES.

Buyers of the above are requested, before finally deciding, to visit WILLIAM S. BURTON'S SHOW ROOMS. They contain such an assortment of Fenders, Stoves, Ranges, Chimney Pieces, Fire Irons, and General Ironmongery, as cannot be approached elsewhere, either for variety, novelty, beauty of design, or exquisiteness of workmanship. Bright Stoves, with Ormolu Ornaments, £3 8*s.* to £33 10*s.*; Bronzed Fenders with Standards, 7*s.* to £5 12*s.*; Steel Fenders, £3 3*s.* to £11; Ditto, with rich Ormolu Ornaments, from £3 3*s.* to £18; Chimney Pieces, from £1 8*s.* to £100; Fire Irons, from 3*s.* 3*d.* the set to £4 4*s.* The Burton and all other Patent Stoves, with radiating Hearth Plates.

GASELIERS IN GLASS OR METAL.

The increased and increasing use of Gas in Private Houses has induced WILLIAM BURTON to collect from the various Manufacturers in Metal and Glass all that is new and choice in Brackets, Pendants, and Chandeliers, adapted to Offices, Passages, and Dwelling Rooms, as well as to have some designed expressly for him; these are ON SHOW over his TWENTY LARGE ROOMS, and present, for novelty, variety, and purity of taste, an unequalled assortment. They are marked in plain figures, at prices proportionate with those which have tended to make his Establishment the largest and most remarkable in the Kingdom, viz., from 12*s.* 6*d.* (two-light) to £23.

DISH COVERS AND HOT WATER DISHES,

in every variety, and of the newest and most recherché patterns, are on show at WILLIAM S. BURTON'S. Block Tin, 19*s.* the Set of Six; Elegant Modern Patterns, 35*s.* 6*d.* to 49*s.* 6*d.* the Set; Britannia Metal, with or without Silver-plated Handles, £3 2*s.* to £6 8*s.* the Set of Five; Electro-plated, £9 to £26 the Set of Four; Block Tin Hot Water Dishes, with Wells for Gravy, 12*s.* to 30*s.*; Britannia Metal, 22*s.* to 80*s.*; Electro-plated, on Nickel, full size, £9.

TEA URNS, OF LONDON MAKE ONLY.

The largest assortment of London-made TEA URNS in the world (including all the recent novelties, many of which are Registered), is on Sale at WILLIAM S. BURTON'S, from 30*s.* to £6.

PATENT IRON BEDSTEADS,

Fitted with Dovetail Joints and Patent Sacking on Castors, from 11*s.* to £1 4*s.* Ornamental Iron and Brass Bedsteads in great variety, from £1 4*s.* to £45 5*s.*

FURNITURE.

In Complete Suites for Bed-room of Mahogany, Birch, Fancy Woods, Polished and Japanned Deal, always on show. These are made by WILLIAM S. BURTON, at his Manufactory, 84, Newman Street, and every article is guaranteed. China Toilet Ware in great variety, from 3*s.* 6*d.* the set of five pieces.

BEDDING,

Manufactured on the Premises, and guaranteed by WILLIAM S. BURTON.

For Bedsteads, Wire.	4feet 6ins.			4feet 6 ins			5 feet.		
	£	s.	d.	£	s.	d.	£	s.	d.
Best Straw Palliasses	0	13	6	0	16	0	0	18	6
Best French Alva Mattresses	0	13	6	0	17	6	0	19	0
Best Cotton Flock Mattresses	0	18	6	1	2	6	1	6	6
Coloured Wool Mattresses	1	1	6	1	6	6	1	10	6
Best Brown Wool Mattresses	1	7	0	1	12	6	1	15	0
Best Brown ditto, extra thick	1	11	0	1	17	6	2	0	0
Good White Wool Mattresses	1	19	0	2	9	0	2	17	0
Extra Super ditto ditto	2	17	0	3	13	0	4	1	0
Good Horse Hair ditto	2	5	0	2	18	0	3	6	6
Extra Super do.	3	1	0	3	18	0	4	10	0
German Spring Hair Stuffing	3	8	6	4	4	0	4	18	0
Extra Super ditto	4	5	0	5	8	0	5	19	0
French Wool and Hair Mattress for use over Springs	2	17	0	3	15	0	4	7	0
Extra Super ditto ditto	3	11	0	4	9	0	5	0	0
Feather Beds, Poultry, in good Tick	1	16	0	2	7	0			
Ditto ditto Grey Goose, in Bordered Linen Tick	3	2	0	4	2	0	4	13	0
Ditto ditto Best White ditto in Best Linen	4	14	0	6	8	0	7	7	0

Feather Pillows, 3*s.* to 10*s.* 6*d.*; Bolsters, from 6*s.* to £1 9*s.* 6*d.*
Down Pillows, from 10*s.* 6*d.* to 17*s.* 6*d.*
Blankets, Counterpanes, and Sheets in every variety.

CUTLERY, WARRANTED.

The most varied assortment of TABLE CUTLERY in the World, all warranted, is on sale at WILLIAM S. BURTON'S, at prices that are remunerative only because of the largeness of the sales.

Ivory Handles.	Table Knives, per dozen		Dessert Knives, per dozen.		Carvers, per pair.	
	s.	d.	s.	d.	s.	d.
3½-inch Ivory Handles	12	6	10	0	4	0
3¾-inch fine Ivory Balance Handles	17	0	13	0	5	6
4-inch Ivory Balance Handles	19	0	15	0	5	6
4-inch fine Ivory Handles	28	0	20	6	8	0
4-inch finest African Ivory Handles	35	6	27	0	12	0
Ditto, with Silver Ferules	42	0	35	0	13	6
Ditto, Carved Handles, Silver Ferules	55	0	45	0	18	6
Nickel Electro-Silver Handles	25	0	19	0	7	6
Silver Handles of any pattern	84	0	54	0	21	0
BONE and HORN HANDLES.—KNIVES and FORKS, per dozen.						
White Bone Handles	11	0	8	6	2	6
Ditto Balance Handles	23	0	17	0	4	6
Black Horn, Rummed Shoulders	17	0	14	0	4	0
Ditto, very strong, Riveted Handles	12	0	9	6	3	0

The largest stock in existence of Plated Dessert Knives and Forks, and of the new Plated Fish-eating Knives and Forks and Carvers.

PAPIER MACHE AND IRON TEA TRAYS.

An assortment of TEA TRAYS and WAITERS, wholly unprecedented, whether as to extent, variety, or novelty.
NEW OVAL PAPIER MACHÉ TRAYS, per set of three, from 20*s.* to 10 Guineas.
Ditto IRON ditto, from 10*s.* to 4 Guineas.
CONVEX-SHAPE ditto, from 7*s.* 6*d.*

BATHS AND TOILET WARE.

WILLIAM S. BURTON has ONE LARGE SHOW ROOM devoted exclusively to the DISPLAY of BATHS and TOILET WARE. The stock of each is at once the largest, newest, and most varied ever submitted to the Public, and marked at prices proportionate with those that have tended to make his Establishment the most distinguished in this country. PORTABLE SHOWERS, 7*s.* 6*d.*; PILLAR SHOWERS, £3 to £5 12*s.*; NURSERY, 15*s.* to 32*s.*; SPONGING, 14*s.* to 32*s.*; HIP, 14*s.* to 31*s.* 6*d.* A large assortment of GAS FURNACE, HOT and COLD PLUNGE, VAPOUR and CAMP SHOWER BATHS. TOILET WARE in great variety, from 15*s.* 6*d.* to 45*s.* the set of three.

CLOCKS, CANDELABRA, BRONZES, AND LAMPS.

WILLIAM S. BURTON invites inspection of his Stock of these, displayed in two large Show Rooms. Each article is of guaranteed quality, and some are objects of pure vertu, the productions of the first Manufacturers of Paris, from whom WILLIAM S. BURTON imports them direct.

CLOCKS, from 7*s.* 6*d.* to £45.
CANDELABRA, from 13*s.* 6*d.* to £16 10*s.* per pair.
BRONZES, from 18*s.* to £16 16*s.*
LAMPS, MODERATEUR, from 6*s.* to £9.
PURE COLZA OIL, 4*s.* per gallon.

Editorial Communications should be addressed to "The Editor." Advertisements and Business Letters to "The Publisher," at the Office, 41, Wellington Street, Covent Garden, London, W.C.
Printed by WILLIAM BRADBURY, of 13, Upper Woburn Place, in the Parish of St. Pancras, in the Co. of Middlesex, and FREDERICK MULLETT EVANS, of No. 11, Bouverie Street, in the Precinct of Whitefriars, City of London, Printers, at their Office, Lombard Street, Precinct of Whitefriars, City of London, and Published by them at the Office, No. 41, Wellington Street, Parish of St. Paul's, Covent Garden, in the said Co.—SATURDAY, July 21, 1866.

THE GARDENERS' CHRONICLE
AND
AGRICULTURAL GAZETTE.

A Newspaper of Rural Economy and General News.

No. 30.—1866.] SATURDAY, JULY 28. {Price Fivepence. / Stamped Edition, 6d.

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Roses.

PAUL AND SON'S ROSES are NOW in BLOOM at the "Old" Cheshunt Nurseries.
Frequent Trains from Bishopsgate to Cheshunt.

Roses in Pots.

PAUL AND SON, in addition to the NEW ROSES of 1866, can offer fine Plants of the finest TEA-SCENTED NOISETTES and best HYBRID PERPETUAL ROSES, in pots, for Planting during the present and autumn.
Old Cheshunt Nurseries, N.

Lea Bridge Road Nurseries, London, N.E.

JOHN FRASER respectfully invites an inspection of his Collection of ROSES, which he begs to announce are NOW in FLOWER. The Collection contains many new and fine varieties. The Nurseries are about 5 miles from London, and are easily reached by Tram on the Great Eastern Railway, to Lea Bridge Station.

Roses in Bloom.

WM. PAUL'S ROSES are NOW in FULL BLOOM. Inspection respectfully invited. Trains almost hourly from Shoreditch to Waltham Station.
Paul's Nurseries, Waltham Cross, N.

Roses in Bloom.

JAMES MITCHELL has the honour of informing his kind patrons that his magnificent COLLECTION is NOW in FINE BLOOM. Full Down Nurseries, Mayfield, Sussex.
The London, Brighton, and South-coast Railway. Two and a-half miles from the Uckfield Station.

30,000 Roses in Bloom.

MESSRS. PROTHEROE AND MORRIS'S fine Collection of STANDARD and DWARF ROSES may now be seen in perfection. Twenty minutes ride only from Fenchurch or Bishopsgate Street Stations, from whence Trains leave frequently.
American Nurseries, Leytonstone, N.E., July 28.

Bourbon Rose, Souvenir de Malmaison.

WANTED, good strong Plants, in pots, of the above. Address W. Wood & Son, Maresfield, Uckfield, Sussex.

CASTLE KENNEDY FIG.—Plants of the above may now be had at 10s. 6d. and 21s. each; the usual discount to the Trade. Peter Lawson & Son, Edinburgh and London.

PINES for SALE.—Three dozen FRUITING QUEENS and others, all fine healthy plants. Also several beautiful MILKING SHORTHORNED COWS, all reared on the Premises. May be seen next week, when further particulars can be obtained.
Z. Y., Golder's Hill, North End, Hampstead, W.

REBECCA, the finest BEDDING GERANIUM ever raised. Plants now ready, price 5s. each.
See Wm Paul's SPRING CATALOGUE.
Paul's Nurseries, Waltham Cross, London, N.

CLIANTHUS DAMPIERI, VARS.—New Seed just received from Australia, including many striking and distinct Hybrids, the beautiful White crimson-edged, and the pure Scarlet. 2s. 6d. per packet of 12 seeds. Price for the Trade on application.
Cocker & Co., Covent Garden Market, London, W.C.

ALTERNANTHERA SPATHULATA, most desirable Bedding Plant, 9s. to 12s. per dozen.
SPIRÆA JAPONICA, valuable for forcing, 3s each, 24s. per dozen.
Can be supplied after September 1 by
D. Frost, Florist, &c., Wood Nursery, Hemproft Street, Slough, Bucks

JIVERY AND SON having a few NOVELTIES now ready to send out, will be pleased to forward their PRICED DESCRIPTIVE CATALOGUES of AZALEA INDICA, and No. 10 HARDY BRITISH FERNS, which contain full particulars.
Dorking Nursery.

British Fern Catalogue.

ROBERT SIM can now send, post free for six postage stamps, Part I. (British Ferns and their varieties, 36 pages, including prices of Hardy Exotic Ferns) of his NEW and PRICED DESCRIPTIVE CATALOGUE of BRITISH and EXOTIC FERNS, No. 7.
*** Part II. (Exotic Ferns) will be issued as early as possible.
Feock, Cray Nursery, S.E.

A. STANSFIELD AND SONS, NURSERYMEN, &c., Todmorden, will be glad to forward their GENERAL FERN CATALOGUE No. 7 to any address for three penny postage stamps, in the British Section ample directions are given for the successful culture of the different species; a full selection of British and also of Exotic Ferns at special rates will accompany each copy of the Catalogue. Gratis and post free to all previous purchasers of Ferns.

THE ROYAL BOUQUET BROMPTON MAJOR STOCK, in three distinct colours, viz., Scarlet, White, and Purple; is exceedingly double, and produces immense flowers on extraordinary large spikes of bloom. The present is the proper season for sowing it to bloom next spring. The Undersigned having purchased the entire stock of Seed of the above, and which has been carefully saved by an eminent Grower, begs to offer it in packets at 1s. each colour, or the three colours for 2s. 6d., free by post (remittances may be made in stamps).
Apply to F. W. Evans, 246, Old Kent Road, London, S.E.

Genuine Garden and Agricultural Seeds.

JAMES CARTER AND CO., Seed Farmers, Merchants, and Nurserymen, 237 & 238, High Holborn, London, W.C.

JAMES FAIRHEAD AND SON, Seed Growers and Merchants, 7, Borough Market, London, S.E.
New and Genuine AGRICULTURAL, GARDEN, and FLOWER SEEDS. Special prices and advantageous offers on application.

RAYNBIRD, CALDECOTT, BAWTREE, DOWLING, AND COMPANY, Limited,
Corn, Seed, Manure, and Oilcake Merchants,
Address, 89, Seed Market, Mark Lane, E.C.; or Basingstoke.
Samples and Prices Post free on application. Prize Medals, 1851, for Wheat; 1862, for "Excellent Seed Corn and Seeds.

Greenhouse, Hardy and Stove Plants; Agricultural, Flower, and Vegetable Seeds, &c.

ROBERT PARKER invites inspection of his 6 Collections of the above-named, which have been selected with the greatest care. All plants are clean and healthy, and are offered at reasonable prices. Descriptive and Priced Catalogues are published, and will be forwarded to applicants
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PETER DRUMMOND AND CO. (late J. Scott), Preston Road Nursery, Yeovil, Somerset, have still on hand a surplus stock of BEDDING PLANTS, including DAHLIAS in great variety; GERANIUMS, FUCHSIAS, LANTANAS, VERBENAS, &c., at moderate prices. Also TURNIP and other Seeds of best quality and variety for present sowing.
Please address as above.

New General Plant Catalogue.

B. S. WILLIAMS' NEW PLANT CATALOGUE, containing many really good novelties, and carefully selected LISTS of STOVE, GREENHOUSE, and HARDY PLANTS, is now ready and will be forwarded post free to all applicants.
Victoria and Paradise Nurseries, Holloway, London, N.

MAURICE YOUNG'S DESCRIPTIVE LIST of Conifers, New and Rare Hardy Plants, Ornamental Trees and Shrubs, Rhododendrons, Japanese Novelties, Forest Trees, and Roses, forwarded on application.
Milford Nurseries, near Godalming, Surrey,

FINE SPECIMEN and HALF-SPECIMEN HARDWOODED and ORNAMENTAL FOLIAGE STOVE and GREENHOUSE PLANTS.—Exhibitors and gentlemen furnishing Conservatories are invited to inspect our Collection of the above, which is large and in very fine healthy condition. Prices moderate.
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New Verbenas of 1866.

WM. KNIGHT has selected from the various raisers 30 distinct varieties of VERBENAS, which he now offers in good Plants for 15s., package included. Terms cash.
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WM. PAUL can confidently recommend the following first-class Seeds:—PRIMULA, CINERARIA, CALCEOLARIA, and HOLLYHOCK, from finest strains, 1s. 6d. to 2s. 6d. per packet; VIOLA CORNUTA; POLYANTHUS, splendid mixed, 1s. per packet.
Wm Paul's IMPROVED TELEGRAPH CUCUMBER, WALTHAM GREEN (CURLED) PARSLEY, BROCKET HALL LETTUCE, 1s. per packet. All other Seeds of best quality at moderate prices.
CATALOGUE on application.

New Hardy Clematises.

GEORGE JACKMAN AND SON respectfully invite an inspection of their Collection of SEEDLING CLEMATIS, which is now in FLOWER, and contains all the Autumn. This Collection contains new and fine varieties that are quite equal to those selected, viz., C. Jackmanni, rubro-violacea, rubella, Prince of Wales, Princess of Wales, and lanuginosa purpurea, each being awarded First-class Certificates by Royal Horticultural or Botanic Societies in London.
Woking Nursery, Surrey.

Primula, Cineraria.

WM. CUTBUSH AND SON now sending out SEED of their superb PRIMULA SINENSIS FIMBRIATA, which has for many years given great satisfaction.
The *Gardeners' Chronicle* of the 6th of January, in Notices to Correspondents, says:—"The blooms sent are remarkably fine, richly coloured, full and densely fringed; they are evidently the produce of a capital strain."
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CALCEOLARIA, from finest named varieties, per packet, 2s. 6d. and 3s. 6d. each.
CINERARIA, from finest named varieties, per packet, 2s. 6d. and 3s. 6d. each.
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SUTTON'S RENOVATING GRASSES SHOULD NOW BE SOWN.
8 to 12 lb. required per acre.
Price 10d. per lb., or cheaper by the cwt.
Sutton & Sons, Royal Berkshire Seed Establishment, Reading.

Cabbage Seed for Present Sowing.

SUTTON AND SONS have a good stock of fresh Seed of the best kinds of CABBAGE for Farm and Garden.
LARGE DRUMHEAD CABBAGE, 2s. 6d. per lb.
ROBINSON'S ditto ditto, 3s. 6d. per lb.
DRUMHEAD SAVOY, 3s. 6d. per lb.
LONDON MARKET CABBAGE, 3s. 6d. per lb.
ENFIELD ditto ditto, 3s. 6d. per lb.,
and others.
SUTTON'S IMPERIAL CABBAGE, the finest and earliest for Spring use in the Garden, 8d. per oz. Cheaper by the pound or half pound.
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GENUINE NEW TURNIP, 1866 growth. Ex. CABBAGE, SAVOY, and other Plants still on offer, which for price and quality cannot be surpassed.
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EDWARD CARPENTER'S MIXTURES of PERMANENT GRASS and CLOVER SEEDS.—Best quality, 36s. per acre (2 bushels light seeds, and 12 lb. Clovers and small seeds per acre).—See testimonials in Catalogue.
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SUTTON'S CHOICE FRINGED PRIMULA, 1s. and 2s. 6d. per pkt
Post free.
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DOBSON'S PRIZE CALCEOLARIA. See *Gardeners' Chronicle*, June 30, page 605

First-class Seeds.

DOBSON'S PRIZE CALCEOLARIA, 1s. 6d., 2s. 6d., 3s. 6d., 5s.
DOBSON'S PRIZE CINERARIA, 1s., 2s. 6d., 5s.
DOBSON'S PRIZE PRIMULA, 1s., 2s. 6d., 5s.
For Testimonials see page 608 of *Gardeners' Chronicle*, June 30.
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CALCEOLARIA SEED, from a very superior collection, obtained by many years' careful cultivation and crossing best flowers; habit dwarf, requiring no staking, covered with beautifully marked blossoms, pronounced by those who have seen them superior to any at the leading exhibitions in the country. A few packets of seed, 2s. 6d. and 5s., for stamps or order.
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BARR'S CALCEOLARIA, CINERARIA, PRIMULA, STOCKS, MYOSOTIS, &c.
CALCEOLARIA, very choice, 2s. 6d. per packet; CINERARIA, very choice, 1s. and 2s. 6d. per packet; PRIMULA, very choice, 1s. and 2s. 6d. per packet; CRIMSON AND WHITE INTERMEDIATE STOCKS, for Spring blooming, very fine, each variety 1s. per packet; SCARLET, PURPLE, and WHITE IMPERIAL STOCKS, for Spring blooming, each 6d. per pkt.; MYOSOTIS SYLVATICA, for Spring blooming, 6d. and 1s. per packet; Collections of PERENNIALS, 2s. 6d., 3s. 6d., 5s. 6d. to 21s.
Barr & Sugden, 12, King Street, Covent Garden, London, W.C

Prize Calceolaria, &c.

BUTLER AND MCCULLOCH beg to offer Seed of the above, saved only from the finest flowers, at 2s. 6d. per packet
CINERARIA (James's), extra choice, 1s. and 2s. 6d. per packet
PRIMULA (James's), extra choice, 1s. and 2s. 6d. per packet.
COVENT GARDEN INTERMEDIATE STOCK (True), 1s. and 2s. 6d. per packet
PURPLE WHITE INTERMEDIATE STOCK, 1s. and 2s. 6d. per pkt
All packets of Flower Seeds sent post paid.
Butler & McCulloch, Covent Garden Market, W.C

International Prize Calceolaria.

EDWIN COOLING has the pleasure to offer Seed saved from the superb Collection of HERBACEOUS CALCEOLARIAS exhibited at the International Horticultural Exhibition, and which were awarded the First Prize. These Calceolarias were the admiration of all who saw them, being quite unsurpassed for good habit, size of bloom, and beauty of marking. The Seed is now ready for delivery, in packets at 2s. 6d. and 5s. each
Also CINERARIA, PRIMULA, and PELARGONIUM, extra fine quality, 2s. 6d. per packet, all post free.
Edwin Cooling, Seed Merchant, Derby.

Orchis maculata superba.

OSBORN AND SONS are now taking orders for this beautiful hardy TERRESTRIAL ORCHID, which a First-class Certificate was awarded on the 19th of June by the Floral Committee of the Royal Horticultural Society. It is of vigorous habit, 1½ to 2 feet high, has leaves transversely marked with very dark stripes, and a dense spike of rose-coloured flowers 6 inches long. Price 5s. each, to be delivered in autumn.
Fulham Nursery, London, S.W.

Choice Flower Seeds.

HAMILTON AND WRIGHT, Seedsmen, Thornton Heath, London, S., will forward post free Seed of the following, all of which have been saved from the leading varieties in cultivation:—CALCEOLARIA, CINERARIA, PRIMULA SINENSIS FIMBRIATA, each 2s. 6d. per packet.
BULB CATALOGUE (in the Press), containing also a SELECT PRICED LIST of VEGETABLE and FLOWER SEEDS for Autumn Sowing, post free on application.

B. S. WILLIAMS, Victoria and Paradise Nurseries, Holloway, London, N.

CHOICE SEEDS.
PRIMULA (Williams's superb Strain).—The most noted strain of Primula in existence; same as supplied to nearly all the largest Gardens in England. In sealed packets, 1s., 2s. 6d., and 5s. 6d. each. Bearing genuine without B. S. Williams's name and address on the packet
CALCEOLARIA (James's Strain).—6s. and 3s. 6d. per packet
CINERARIA (Weatherill's extra choice strain).—This well-known Covent Garden strain to be had genuine only in sealed packets bearing B. S. Williams's name and address. Price 5s. and 3s. 6d. per packet.

WANTED, a few Thousand stout, strong CELERY PLANTS. State lowest cash price and quantity to offer.
Jno. Symes, Railway Hotel, Abergavenny, Monmouthshire.

Hyacinths, and other Dutch Bulbs.

A. E. BARNAART, Vogelensang, Haarlem, begs to announce that his CATALOGUE of FLOWER ROOTS for 1866 has just appeared, and can be had post free on application
N B Postage to Holland, 3d

New Petunias for 1866.

AMBROISE VERSCHAFFELT, Nurseryman, Ghent, Belgium, begs to announce that he is now sending out good Plants of all the best NEW PETUNIAS raised on the Continent, and which were sent out in 1866. This collection obtained the First Prize at the last Ghent June Show
12 distinct varieties, 1s. 6d. each; 24 distinct varieties, 1s. each
Every order will be sent to London free of carriage and packing.

AMBROISE VERSCHAFFELT, Nurseryman, Ghent, Belgium, begs to offer fine strong Plants for Bedding, of ALTERNANTHERA AMŒNA, at 9s. per dozen.
" SPATHULATA, at 9s. per dozen.
TELEIANTHERA VERSICOLOR, at 9s. per dozen
If a greater quantity is ordered, they will be supplied at a lower price. Package and carriage free to London.

Alsophila contaminans, &c.

A. VAN GEERT begs to offer fine Plants of ALSOPHILA CONTAMINANS, at 12s. 6d. each.
" EXCELSA, young plants, 24s. per dozen.
" AUSTRALIS, fine plants, 5s. each.
" LATEBROSA, 21s. each.
" VAN GEERTI, 42s. each.
N.B. CAMELLIAS and INDIAN AZALEAS, as usual fine stuff, well set for bloom, the first at £6 and upwards per 100, and the latter at £4 and £5 per 100.
CAMELLIAS, in best varieties, without bloom buds, at £4 per 100.
Horticultural Establishment, Ghent, Belgium.

HOT-WATER APPARATUS, of every description, fixed complete in any part of the country, or the materials, viz., Boilers, Pipes, &c., delivered to any Station.
Estimates on application.
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W. J. HOLLANDS, IRON MERCHANT, 4, Parkside, London, S.E.
HOT-WATER PIPES, Brass Stock, per yard—2-inch, 1s. 2d.; 3-inch, 1s. 7d.; 4-inch, 2s. 1d. BENDS, from Stock, 1s. 6d., 2s. 6d., and 3s. each. THROTTLE VALVES, 10s., 15s., and 18s. each. Other Connexions of equally low prices. And all goods of Cast Iron manufacture. Estimates given, and orders by post punctually attended to the same day.

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HOT-WATER PIPES, at Wholesale Prices, with Elbows, Syphons, Tee Pieces, and every other connexion; Wrought-iron Head Iron Bodies, Saddles, Cocks, Cylinder, Furnace and Ball Valves, Fire-bars, Iron Doors, Soot Doors, Stoves, &c., to use with or without tanks or cans. Valves from base of each Patent Valve Boiler, and Portable Boilers, Furnace Bars, Supply Cisterns, and Castings for any description in stock.—J.
Mr. LYNCH WHITE'S Iron Wharf, Upper Ground street, Blackfriars Bridge, London, S. Price Lists on application.

GREENHOUSES, 12 feet by 12 wide, £50; 21 feet by 10 wide, £45; 24 feet by 12 wide, £54; 30 feet by 12 wide, £64, glazed, ready for fixing. A range of Conservatory, 36 feet by 19, £120. Estimates for any branch of the Trade on Hollow Wood.
H. FOREMAN & Co., Tranmere, Hackney, N.E. Established 20 years.

TO BE SOLD, an ORCHARD HOUSE, nearly new, 50 feet by 15 feet, the contents, say 75 feet by 20 feet, the property of a Gentleman, consisting of 16 ORCHARD-HOUSE TREES, well grown and in fine condition.
Apply to E. COLLINS, Mile Ash Nurseries, Derby.

HOTHOUSES for the MILLION, invented by the late SIR JOSEPH PAXTON

Manufactories: London, Newton in Cartmel (Lancashire), Gloucester, Coventry, Aberdeen, and Paisley only.
Illustrated Circulars, with revised List of Prices, will be sent on receipt of application to Messrs. HOLLAMAN & MORRIS, Head Office, 7, Pall Mall East, London, S.W.

Tents for the Garden.

BENJAMIN EDGINGTON'S ILLUSTRATED CATALOGUE of MARQUEES and TENTS for CRICKET, CROQUET, ARCHERY, the LAWN, &c., forwarded post free on application. MARQUEES on Hire for Horticultural Shows; RICK CLOTHS, New and Second-hand; NETTING for Fruit Trees, &c.
Beg to call attention to their Registered Tent Bucket (sold only at their Offices, 8 STRAND and 106, NEW OXFORD STREET, LONDON, W.C.), 2, Duke Street, London Bridge, E.C. No other Establishment.

SWING WATER BARROW.—This is the best and cheapest article ever put on sale for use in Gardens, Orchards, &c. The Water may be shipped out, or the Tub tilted and poured out, or by merely raising the Handles it can be placed on the ground, and the Frame detached. To hold about 20 or 30 gallons, price 45s. Carriage paid to any station on Great Eastern Line

POWERFUL GARDEN ENGINE, suitable for the above, price 45s.
IMPROVED WATER and LIQUID MANURE CARTS
Catalogues on application
Manufactured by W. S. BOULTON, Ross Lane Iron Works, Norwich.

AGRICULTURAL IMPLEMENTS.—Steam Engines, Reaping and Threshing Machines, Harvest Waggons and Carts, Cultivators, Ploughs, Harrows, Chaff Cutters, Corn Mills, Lawn Mowers, Garden Rollers, Water Barrows, and Horticultural Tools of every description; Corn Bins, Wire Netting, Chairs, Forks, &c.
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Works, Brentwood, Essex.

THE IMPROVED LEATHER DRIVING STRAPS for MACHINERY are stronger, more durable, drive better, and cost less than other kinds of Driving Belts. SPECIAL STRAPS for PORTABLE ENGINES. Price Lists free by post.
TURNER'S Patent Strap and Hose Company
Manufactory: Arnott Works, Greenfield, near Manchester.
Warehouse: 81, Mark Lane, London, E.C.
Mr. H. FERRABEE, Agent.

E. T. ARCHER'S "FRIGI DOMO."
Patronised by Her Majesty The Queen, the Duke of Northumberland for Sion House, His Grace the Duke of Devonshire for Chiswick Gardens, Professor Lindley for the Horticultural Society, Sir Joseph Paxton for the Crystal Palace, Royal Zoological Society, &c.
PROTECTION from the SCORCHING RAYS of the SUN.
"FRIGI DOMO," a Canvas made of Patent pressed Hay and Wood, a perfect Non-conductor of Heat and Cold, keeping, wherever it is applied, a fixed temperature. It is adapted for all Horticultural and Economical purposes, for Preserving Fruit and Flowers from the Scorching Rays of the Sun, from Wind, from Attacks of Insects, and from Morning Frosts. To be had in any required lengths.

Two yards wide	1s. 9d. per yard run.
Four yards wide	3s. 6d. per yard.
An imported make, 2 yards wide	1s. 9d. per yard.
An improved make, 3 yards wide	2s. 8d. per yard run. Also

"FRIGI DOMO" NETTING, 2 yards wide, 1s. 6d. per yard run
ELISHA THOMAS ARCHER, Whole and Sole Manufacturer, 7, Great Trinity Lane, Cannon Street, City, E.C., and of all Nurserymen and Seedsmen throughout the Kingdom.
"It is much cheaper than Mats as a covering."

JOHN WARNER & SONS, LONDON, MANUFACTURERS.

J. WARNER AND SONS

Have much improved the construction of their

GARDEN ENGINES

in some important particulars for this Season.

They may be obtained of the Trade generally throughout the Kingdom at the following prices:—

No. 547. WARNER'S best ENGINES, in Wood Tubs, and fitted with WARNER'S Registered Spreaders—

24 Gallons,	£6	10	0
14 ,,	5	10	0

No. 547A. WARNER'S strong ENGINES, in Galvanised Iron Tubs, well painted—

10 Gallons,	£2	19	0
16 ,,	3	14	0
21 ,,	4	19	0
28 ,,	5	10	0

No. 579½. WARNER'S WATER BARROWS, thoroughly Galvanised and well painted—

20 Gallons,	£2	2	0
30 ,,	2	13	0
38 ,,	3	17	0
50 ,,	5	12	0

The 50-Gallon Barrow is made extra strong throughout, and fitted with handle for two men

No. 568½, AMERICAN ENGINE, is now well known and appreciated. It throws a continuous stream, and is complete in itself. £2 2s.

SYRINGES in great variety, from 7s. 6d. to 18s. 6d.

The DISC SYRINGE, No. 577, will recommend itself by the ease with which it is filled, and non-liability to get out of order. Price 9s.

WARNER'S AQUAJECT

Is recommended to the notice of Horticulturists as possessing the following advantages:—It is simple in construction, portable, and easily worked. It throws a continuous stream, and is low in price.

The Aquaject, 30s.
Ditto small size, 18s.

WARNER'S 6-Gallon GARDEN ENGINE, of Galvanised Iron and well painted, fitted with Brass Air-vessel, Branch Pipe, and WARNER'S Registered Spreader, 50s. Light, portable, and easily worked by a lady or child.

No. 35. WARNER'S IRON PUMPS for Wells, not exceeding 25 feet in depth—2½-in., 28s. 6d.; 3-in., 41s.; 3½-in., 46s.; short barrel do., 21s.

No. 36. IRON FORCE PUMPS for raising water above their level, or Watering Yards, Gardens, &c., through hose—2½-in., 59s.; 3-in., 65s.; 3½-in., 77s.; 4-in., 89s.

No. 36½. FORCE PUMP on BARROW, recommended for its great portability and simplicity of construction. £5 10s.

No. 42. WARNER'S PORTABLE PUMPS on Folding Legs, are of a superior construction.

Price 55s.; Rubber Suction, 2s. 11d. per ft.

No. 597A. BRANCH PIPES with Cocks and Roses—½-in., 3s.; ¾-in., 4s.; ¾-in., 5s.

No. 599. TAPER BRANCH PIPES—½-in., 4s. 9d.; ¾-in., 5s. 3d.; ¾-in., 6s.; 1-in., 7s.

RUBBER HOSE in all sizes.

FOUNTAIN JETS in great variety, from 3s. 6d. to 25s.

DESCRIPTIVE PRICE LISTS forwarded on application.

SHAW'S TIFFANY.
For samples and prices apply to
J. Shaw & Co., 29, Oxford Street, Manchester.

TREE and PLANT LABELS.—10,000 Cloth punched assorted Labels for 3ss ; delivered free in London on receipt of Order. Address,
John Fisher & Co., West Road Works, Boston, Lincolnshire

F. A. HAAGE, JUN'S., WOOD GARDEN STICKS and TALLIES (Commended by the Royal Horticultural Society) — The above can now be had of all sizes, Wholesale, of Bevan & Bucknall, Coles Quay, Lower Thames Street, London, E.C. ; and Retail of the principal Seedsmen and Florists.
Price Lists on application.

Caution to Gardeners.—When you ask for
SAYNOR AND COOKE'S WARRANTED PRUNING and BUDDING KNIVES, see that you get them. Observe the mark SAYNOR, also the corporate mark OBTAIN WARRANTED, with all of which note are genuine.
S. & C. regret having to caution Gardeners and others, but are compelled to do so, in consequence of an imitation, of common quality, having been sold for the genuine one, and which has caused many complaints to be made to them of Knives which were not of their make, all of which are warranted both by Sellers and Makers.
S. & C.'s Pruning and Budding Knives are the best and the cheapest in the market.
Paxton Works, Sheffield. Established upwards of 125 years.

THE LONDON MANURE COMPANY
(ESTABLISHED 1840),
Have now ready for delivery in dry fine condition,
CORN MANURE, for Spring Use
DISSOLVED BONES, for Dressing Pasture Lands
SUPERPHOSPHATES of LIME
PREPARED GUANO
MANGEL and POTATO MANURES
Also Genuine PERUVIAN GUANO, and NITRATE of SODA, ex Dock Warehouse; SULPHATE of AMMONIA, FISHERY SALT, &c. E. PURSER, Secretary.
Offices, 116, Fenchurch Street, E.C.

LAWES' MANURES.
The Manures manufactured by J. B. LAWES for the present season of 1866 are now ready for delivery at his Factories, at the following prices, per ton.—

	£	s.	d.
LAWES' PATENT TURNIP MANURE, and BONE SUPERPHOSPHATE of LIME	6	6	0
LAWES' SUPERPHOSPHATE of LIME from BURNT BONE or MINERAL PHOSPHATES	5	5	0
LAWES' WHEAT, BARLEY, GRASS, and MANGEL MANURES	8	0	0
CONCENTRATED CORN and GRASS MANURE	12	0	0

These Manures can be obtained of Mr. LAWES, or through the appointed Agents in all parts of the United Kingdom, at prices varying according to cost of carriage.
Genuine Peruvian Guano direct from the Importers. Nitrate of Soda, Sulphate of Ammonia, and other Chemical Manures.
American and other Cakes at market prices.
Address, JOHN BENNET LAWES, 1, Adelaide Place, London Bridge, E.C. ; and 32, Eden Quay, Dublin.

GENUINE TOBACCO PAPER at 10d. per lb
Terms Cash.
M. DODGSON, at Messrs Jackson & Sons, 29, Lady Lane, Leeds.

Destroy your Insect Pests.
PRESERVE YOUR PLANTS and TREES.
YOU MAY EASILY DESTROY ALL PLANT PESTS,

RED SPIDER	GREEN AND BLACK FLY	ANTS
MEALY BUG	SCALE	
THRIP	AMERICAN BLIGHT	MILDEW,

With out injury to the most delicate Plant or Tree, by using
FOWLER'S GARDENERS' INSECTICIDE,
Recommended by all who have used it to be far superior to all other remedies. One trial only is necessary to convince. To prevent disappointment, Price 1s. 6d., 3s. 6d., and 10s. per Tin.
Of G. & A. THOMAS FOWLER, 9, 10, Street, Brighton ; and of HOOPER & Co., Covent Garden Market, W.C.

100,000 Camellias.
JOSEPH BAUMANN, NURSERYMAN, Ghent, Belgium, begs to offer
100 CAMELLIAS, with flower buds, £5.
100 ,, ,, £6.
100 ,, ,, stronger plants, £8.
The following free to the Custom House, London :—
100 CAMELLIAS, without flower buds, 1 year grafted, £4.
100 ,, ,, 2 to 3 years' best sorts, £5.
100 ,, ,, stronger plants, £6

AMBROISE VERSCHAFFELT, NURSERYMAN, Ghent, Belgium, begs to offer—
Fine DOUBLE CAMELLIAS, without buds, in 100 varieties of first choice, figured in the four scrapbooks of Camellias, £5 10s. per 100.
Fine AZALEA INDICA, without buds, in 100 varieties, comprising all the best favourite blooms, £3 per 100.
Fine DOUBLE CAMELLIAS, full of flower buds, £6 per 100.
Fine AZALEA INDICA, full of flower buds, £5 per 100
N.B. To secure a good choice early orders are solicited.

The Nurseries, Ghent, Belgium.
JEAN VERSCHAFFELT begs to inform his Friends and the Trade in general that his stock of CAMELLIAS and INDIAN AZALEAS with buds will be particularly fine this season. To secure a first choice early orders are solicited. The prices will be as under :—
CAMELLIAS, with buds, fine named sorts, from £6 and upwards.
AZALEA INDICA, with buds, fine named sorts, from £5 and upwards.
A general detailed LIST will be sent on application. Address all letters to JEAN VERSCHAFFELT, 43, Rue de la Caverne, Ghent, Belgium.
N.B.—J. V. has much pleasure in stating that his Business will be transferred to his new Establishment about October next. Due notice will be given to all Correspondents.

COCOA-NUT REFUSE
is becoming scarce, the old reserves will soon be gone. Now sold in bags, 1 for 2s., 10 for 18s., 20 for 30s., 50 for 68s., 100 for £6.
Carriage allowed for each bag returned carriage-paid.
A Railway Truck-load (not in bags), 40s
Postage Stamps or Post-office Order, payable to J. BARSHAM & Co., Kingston-on-Thames, S.W.

Red Spider — Magnified.

GISHURST COMPOUND, whether used against Insects and Mildew, on Growing Plants, or as Winter Dressing on Trees at rest, should be dissolved 48 hours before use. This sets rid of smell, and if the Soapsud be decanted, prevents any staining of hothouse. A strength of from 1 to 250 in the garden of water is recommended for growing Plants; one from 1 to 100 for Trees at rest.
Sold Retail by Nurserymen and Seedsmen, in boxes, 1s., 3s., and 10s. 6d. each.
Wholesale by
PRICE'S PATENT CANDLE COMPANY (LIMITED).

For Present Sowing.

TRIFOLIUM INCARNATUM, Italian Clover, 1866 crop.
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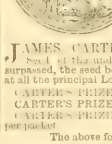
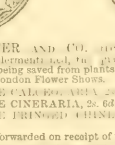
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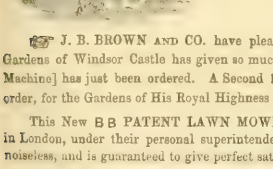

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The Gardeners' Chronicle.
SATURDAY, JULY 28, 1866.
MEETING FOR THE ENSUING WEEK
SATURDAY, AUG. 4 { Royal Horticultural, Weekly Show, at South Kensington .. .. 2 P.M.

THE very valuable and practical paper on ORCHARD-HOUSE CULTURE presented to the Botanical Congress by Mr. RIVERS deserves the attention not only of fruit-growers but also of physiologists, and all who concern themselves with plant life. In it occurs an expression which, parenthetical though it be, is too important to be passed over without comment. Alluding to orchard-houses, the writer says that the trees grown in them are "never at rest." Now, so much has been said as to the necessity for allowing plants a season of rest, that some have been led to consider absolute inactivity as synonymous with rest—have, as it were, confounded sleep with death. There is an occasional lull in the activity of all plants: now caused by cold, and under other circumstances by heat or drought; but the plant is still a living organism, and it would be as unwise to egg on a plant by the stimulus of heat, moisture, or manure at the time when naturally it would be comparatively inactive, as it would be to rouse a man who had been at work all day and make him work all night too. There is a time for all things—a time for giving water, a time for withholding it; a time for giving extra rations, a time for fasting; and these facts, well known though they may be, can never be too well known, and when they are put before horticulturists by one so experienced as Mr. RIVERS, they become of increased significance. In the resting season keep the plants dry: such is Mr. RIVERS' advice. An excess of moisture is most prejudicial. Now, if the plant were the mere log that some evidently consider it to be in the resting season, it would not much signify whether it were kept dry or not; but the truth of the matter is, that the roots, if not absolutely frozen, will and

do absorb at all times, and if they are allowed to do so to too great an extent and at a wrong time, the result must be an attack of dyspepsia, but if nourishment be given when it is most required, it will be easily digested—hence the advice to give extra food during the summer months. Again, as to the hard, firm soil which we are told that Peaches and Apricots love. Is not this to be accounted for on the same principles as root-pruning? Prevent the roots from running about too much, and the tendency to increase the quantity and quality of the fruit is fostered.

But while the operation of some general law is manifest in all these cases—to all at least who walk about with their eyes open, it is yet abundantly clear to every practical man that the law has to be modified, or rather the interpretation of the law has to be modified, to suit particular cases. Apricots, for instance, appear to require particular treatment. No manure is to be given them till the fruit is fully set. Can it be that if manure were given earlier the effect would be to cause too luxuriant growth of shoots or leaves at the expense of the fruit? But if so, why does not the same thing happen with Peaches and Nectarines? To say that there is a difference in constitution between the plants is simply to veil ignorance under a convenient cloak. Instead of thus putting a practical check to any real advance in theory or practice, the better plan is to keep the "reason why" constantly in mind; and if even the full explanation be not vouchsafed, it is impossible but that some valuable result must be obtained, and this on the time-honoured principle of shooting one arrow in a certain direction in order to find another that is lost.

OUR attention has recently been called to two cases of VEGETABLE PATHOLOGY which may be conveniently considered together. The first is that of a partial or perfect STERILITY in STRAWBERRIES, the receptacle in most instances being entirely devoid of succulence, and the plant reduced to the condition of a Potentilla. In many cases the achenes are quite hollow, while in some the fruit is perfect, but we have no doubt that impregnation had generally taken place in the first instance, and that, as is frequently the case in plants where numerous individuals are impregnated, the greater part have become abortive. We have nothing more than the flower-stalks with their trusses before us, and have had no opportunity of seeing the radical leaves, but as the upper leaves and bracts are distinguished by pallid dead patches, on some of which the Strawberry Leptothyrium is developed, it is very possible that all the spots may be the result of the imperfectly developed fungus, and that the weakly condition is due simply to this cause. Many crops are said to have suffered in the neighbourhood of Boston. Nothing of the kind, however, has occurred to ourselves, and we can, of course, only judge from the materials before us. It is possible that the general low nocturnal temperature of the season may have had something to do with it, especially in localities which are not much, if at all, above the level of the sea; but as the affection does not seem to be general, and it is confessedly a good Strawberry year, as far at least as the open-air crop is concerned, we are inclined to the first opinion. And even in the locality from whence our specimens were sent, it is said in our correspondent's communication, that "the crops in general are very good, but the exceptions have been in two or three gentlemen's gardens, where the whole of the fruit after flowering has dwindled, as in the samples inclosed."

It is often complained that Hautbois Strawberries will not fruit for want of a proper admixture of male and female plants; many plants, however, which bear well are hermaphrodite, and the evil we believe in most cases arises from the beds being taken possession of by a form in which the receptacle never becomes succulent, though the fruit is perfected. This, however, is a peculiarity distinguishing the particular form, though doubtless it is a disease as far as the interests of the horticulturist are concerned, and as a departure from the normal condition of the plant, since in the wild plant the receptacle is naturally succulent. It shows, however, how important distinctions may easily vanish, and affords an illustration of the instability of characters which seem to be most worthy of regard.

The other case is one of greater difficulty, and the cause is very obscure, but it is still worth mentioning. A great number of fine plants of VERBENA, extremely well rooted, have more or less entirely failed when planted out. Most of them have partially and some of them entirely withered. It is, of course, in the former case that one has the best chance of detecting the seat of mischief. The roots appear perfectly healthy, and as noxious matter in most instances refuses to enter deeply in any quantity from its injurious action on the spongelets, it is not exactly to that point one would look, while there is no indication of a bad condition about them. It appears, however, that the bark at the base of the plants, just where they are inserted in the ground, is decayed, and that it is from thence that the evil proceeds. It is very probable, therefore, that the disease was already established before the plants were placed in the ground, and that it arose from some early influence, which can alone be ascertained by the cultivators themselves. It is however of importance to ascertain the exact seat of mischief, as, when it is known, there may be some chance of finding a remedy for what is certainly a very common ailment. Frost at the surface of the soil would be quite sufficient to injure the bark slightly, though not sufficiently to cause speedy death, and the tissues when once affected might communicate infection to neighbouring tissues. Other causes might be indicated which might possibly come into play, but in the absence of positive information it is perhaps better to leave the case as it stands in the hands of persons capable of making correct observations. *M. J. B.*

WE know but very little at present as to the ACTION of WIND on plants. The effects of a gale or a hurricane are indeed pretty well understood, and the stunted distorted appearance of trees that grow or try to grow in exposed situations, such as on open downs near the sea, tells its tale pretty plainly; but still we are without any positive information as to the effects of more gentle blasts upon vegetation. We infer, rather than know for certain, that the motion of the boughs and of the leaves promotes the circulation of the juices of the plants, and quickens the passage of the gases out of or into the tissues of the leaf. KNIGHT, as has been stated in our columns, loosened his wall trees and let them blow about a little to get a little exercise; and recently Mr. HERBERT SPENCER has attributed no little share in the upward rise of the sap to the influence of the wind on the boughs and twigs of the plant.

There is a tendency ever increasing among thoughtful cultivators to imitate as far as may be in our plant houses the natural circumstances under which plants grow in their wild state. Thus Mr. ANDERSON, when recommending the other day at the Congress the use of warm water for Orchids, elicited the remark from a gentleman conversant with Brazil, that the rain in that country was warm when contrasted with the temperature of the atmosphere in the forests, and so in a similar manner the ventilation of plant houses is attracting attention. It cannot be right to keep plants that are naturally moved with every breath of air motionless, or comparatively so, in our stoves and greenhouses. But in devising means to remedy this state of things there are other matters to be considered than the mere mechanical methods of insuring either an agitation of the air within doors, or a more rapid passage of fresh air from without. For what purpose is the plant grown?—for foliage, for its flowers, or its fruit? What effect will an increased circulation of air have upon the formation of these several organs? These are questions to which it is not possible, in the present state of our knowledge, to give a satisfactory answer. Moreover, it is unlikely that any general rule can be laid down in this matter without necessitating the presence of so many exceptions, that the exceptional cases would outnumber those that were in accordance with the rule. Thus the internal structure of the plant, and the arrangements of its tissues, would have to be taken into consideration. In the great cyclone at Calcutta, when so many hundreds of noble trees were uprooted, or otherwise injured, the Cycads, the Palms and other Endogenous trees suffered but little. This was no doubt due in part to the firm anchorage afforded by their deeply penetrating roots, in part to their peculiar structure. Again, the huge leaves of the Musas, although torn to ribbons by the wind, do not appear to have their functions much impaired by the laceration, while the same amount of injury to the leaves of an Exogenous tree would effectually check its growth. The thickness of the epidermis, the number and size of the stomata or breathing pores, the amount of surface exposed by the leaves, the thickness and pliability and internal anatomy of the branches; all these, and many other points, would have to be considered if we would duly and accurately estimate the action of wind upon plants. It seems clear, then, that for the present each case must be tried on its own merits, or if that be not possible, we must pursue a middle course, and endeavour to carry out that maxim of good government, which bids us attempt to secure the greatest amount of happiness to the greatest number.

—— WE learn from Mr. THOMPSON that his plants of PENTSTEMON GRANDIFLORUS, now blooming in a strong loamy soil, prove it to be really a fine species, much superior in fact to what the remark at p. 659 would lead one to expect. Its stately habit, and the size of its flowers, no less than its rich deep colour, mark it as a first-class object amongst hardy perennials.

—— In the course of his recent researches on the STRUCTURE OF ANTHERS, M. CHATIN has determined the existence of a third membrane, a discovery which is of considerable interest to the botanical world. He states that numerous observations leave no doubt upon his mind of the existence of a membrane internal to the endothecium, or fibro-cellular membrane; and this is present in all anthers at a certain stage of their development. As to the localisation of fibre-cells in certain anthers, M. CHATIN concludes:—That fibre-cells are generally absent in anthers opening by pores; that they are defective in a certain number of anthers which dehisce longitudinally; and that in some plants whose stamens have undergone an arrest of development, if not morphologic, at least histologic, the absence of fibre-cells coincides with the incomplete evolution of the pollen.

—— One of the plants that excited the greatest amount of interest at the International Show was the PANDANUS with untwisted stem, shown under the name of Pandanus Veitchii. In a recent number of the "Revue Horticole" it is figured as Pandanus flabelliformis, and described as P. flagelliformis—the latter being evidently a typographical blunder. M. CARRIÈRE, speaking of the origin of the plant, says that there are two versions—one that it is a seedling of Pandanus utilis, the other that it is an accidental occurrence arising from an injury to the head of the plant, in consequence of which a new bud has been formed, whose leaves are arranged in two straight rows instead of being twisted spirally. A curious calculation is given by our esteemed French contemporary, according to which this Pandanus has about 27,000 teeth—900 on each of the 30 leaves it possessed at the time the computation was made.

—— We observe that the chief editorship of the REVUE HORTICOLE is now in the hands of M. CARRIÈRE.

—— The VINE FUNGUS has, we regret to hear, re-appeared in the Vineyards of many parts of France.

—— We are glad to see that the damage done by the recent incursion of the mob of London "roughs" in HYDE PARK to the flower beds, shrubs, &c., is comparatively trifling. There will, however, be plenty of work for the masons.

—— We understand that at the scientific meeting of the Royal Horticultural Society on Tuesday next, a blooming spike of VANDA LOWII, nearly 8 feet long, will be exhibited from the garden of EDWIN WRIGHT, Esq., Gravelly Hill, Birmingham.

THE AMARYLLIS.

THE soil for the Amaryllis should be sand, peat, and loam equally mixed, one part, and cow dung reduced to mould the other part, all well amalgamated and laid together for some time before being used. The bulbs should be thoroughly cleaned, and set half in the soil, half above. Whether it be the species or any of the thousand varieties from them, the treatment should be the same. They must be set in the stove, and the soil kept only moist; when they begin to throw up their flowers they will require more frequent watering, and if they produce leaf instead of bloom, the growth must be encouraged. When, however, the green leaves turn brown at the tip and indicate that their growth is completed, let them have no more water, but put them out of the way on some shelf in a cool part of the house, or they may even be turned into the greenhouse in the summer months.

Where a number of these bulbs are grown, some will always be found ready to bloom. Therefore, after they have rested awhile, and the leaves have died down, let them be cleaned and the surface of the soil stirred, and if their pots are small, let them be shifted whole into larger ones without disturbing the ball at all, but as yet give no water. They must be submitted to frequent examination, and when any are seen to be throwing up their flower-sheaths, they must be removed to the lightest part of the house, and water must be given them, for when they once move they grow rapidly; and on the steady attention to them, supplying water when they want it, and of the same temperature as the atmosphere of the house, depends the full development of the flowers in perfection. One of the most common but most brilliant bulbous flowers that go under the name, is Amarylliis formosissima, but this flower is like none of the family in appearance, though very dwarf and very beautiful.

The generality of the tribe seed freely, and thousands of new varieties have been raised from seed in this country. They should be sown in a seed-pan or flower-pot, in the soil mentioned above, and placed in the stove. When up they will require occasional watering, and no other attention that year, or until the foliage

dies down. They may then be potted for the next year, about four or five in a 48 or 5-inch pot, for the body of earth in these pots is more favourable to their growth than the small quantity each would get in a small pot if planted singly. Here they may grow once more until they indicate the finish of their season, when no more water must be given. At the next move they should be potted, one in a 3-inch, or large 60 pot, and until these pots fill with roots they need not be shifted again, but when they are, it should be done without disturbing the roots. When large enough they will occupy their full-sized pots and bloom, and such of them as are worth keeping should be preserved and labelled. Those are entirely worthless in which the flowers are nearly all green and coarse, with only a stripe or two of colour, and that not clear; and so are those which are very narrow and sharp pointed in the petals, with deep divisions. Too many such as these are already in cultivation. It need hardly be added that the seed should be saved from those only which are beautiful in themselves, for it is a tendency in choice flowers to produce many worse as well as some as good as themselves. *Cybister.*

THE CYPRIPEDIUM.

THE Cypripedium, or Lady's Slipper genus, is most remarkable for the lip of the flower having a very striking resemblance to a slipper. This is particularly apparent in C. Stonei, which has the most perfectly formed slipper of any of the species at present known.

C. insigne is a fine old Orchid, worthy of extensive cultivation on account of its free growth and its habit of flowering through the dull winter months. It continues in blossom from November to February, and each flower lasts about two months. In this plant the sepals and petals are greenish-yellow, the upper sepals being thickly spotted with purplish brown, deeply margined in the upper part with white, while the slipper is yellowish-brown. C. insigne Maulei is an improved variety, having more white in the upper sepal, and the spotting more intense. C. venustum is a very distinct neat species, the leaves pale green, beautifully mottled with dark velvety green, so that when kept clean it is very pretty as a foliage plant. It flowers about the same time or a little later than the former. The sepals are whitish, distinctly striped with green; the petals greenish at the base, running into bronze towards the points, with a few black spots; and the slipper bronzy yellow, conspicuously veined with green.

I look on the foregoing species as being invaluable where decorative plants are required. They should be grown for this object in 6 or 8-inch pots; the best compost is good mellow fibrous loam. The plants should be potted pretty firm, and the pots moderately drained. They will do well in a cool house rather near the glass, so that they have plenty of light, but they need a slight shade from the burning sun. They require a good supply of water during the summer months, and particularly when the pots are full of roots; and they should occasionally be watered with clear liquid manure-water. Even in winter they should never be allowed to get dry at the roots, particularly during the time of flowering.

The following are also very beautiful kinds, and well worth a place in the choicest collection, flowering as they do during the spring and summer months, with the exception of C. purpuratum, which flowers in the autumn.

C. barbatum nigrum	C. Lowii
C. barbatum grandiflorum	C. purpuratum
C. caudatum	C. Stonei
C. caudatum roseum	C. superbiens
C. hirsutissimum	C. superbiens Dayanum
C. Hookeræ	C. villosum

When grown in masses these plants make fine objects for exhibition purposes. The compost for them should be the top spit of good fibrous peat, with plenty of decayed vegetable matter in it, mixed with good fibrous mellow loam, and a little rough grit or sand. The pots should be well drained. They will do well at the warmest end of an intermediate house, or the coldest end of the East India house. They must have a good supply of water, particularly when established, and as they have no pseudobulbs, they should never be allowed to get dry. If large specimens they require examining frequently, that they do not get dry in the centre.

Altogether the Cypripediums are a very conspicuous set of Orchids. They vary very much in their forms, and the majority of them are exceedingly handsome. They moreover form a group very suitable to amateurs whose accommodation is limited, being compact in habit, free-flowering, and easily managed. *Thos. Brown, Exotic Nursery, Tooting.*

THE CORREA.

THE Correa is an old and was formerly a favourite greenhouse plant. C. alba has a small white but rather mean flower; C. pulchella has a larger brilliant orange scarlet, C. virens a pale green, and C. speciosa a crimson flower with green tips. These have been for many years as common as any greenhouse plants in cultivation, and no particular progress was made beyond producing them, as usual in neglected greenhouses, very large and very ugly; indeed of late years Correa alba has been regarded only as a stock to work better sorts on. C. rufa, with its rusty leaves and pale green flowers, was next introduced; and last, C. cardinalis, a bright red and green, the handsomest of them all, but unfortunately apt to be rather bare of leaves.

Mr. Milner, of Clapham, was the first in this country who successfully crossed the several species of Correa, and those who remember the noble specimen of Correa Milneri in 1838 or 1839 will be able to appreciate the greatest improvement of any that has been the result of crossing in this country. Correa Milneri was one of a hundred seedlings which among them possessed all the best features of the best old sorts. C. Milneri was a crimson scarlet or a scarlet crimson of rich texture, with flowers above the average size. It was, however, so experimentalised on that it was soon lost altogether. In the mean time a lot of the other seedlings got distributed, such as C. Lindleyana, C. Cavendishii, C. longiflora, C. grandiflora, C. rosea, C. bicolor—not the bicolor that was dirty red and dirty white, but the bicolor that was conspicuous for the brilliance of its crimson, the cleanness of its green tips, and the elegance of its habit. The plant became deservedly popular, and considering there is not a single greenhouse plant so truly beautiful from November till March, the most dreary time of the year, it is to be regretted that it does not more generally work its way into modern collections. I attribute this to a fact which cannot be gainsaid. The great bulk of plant-growers order their stocks from those specimens which figure at the exhibitions, consequently winter beauties are generally neglected, and conservatories comparatively bare of bloom; nobody thinks of what they do not see, and gardeners find quite a distinct business in providing for shows. Mr. Milner continued to raise seedlings, and as he left the neighbourhood of London to begin farming, where flowers would not be appreciated, the whole of the remainder went into the hands of the late Mr. Gaines, of Battersea, who named and sent out several, but the buyers of such plants were few—"more's the pity."

No conservatory ought to be without a dozen of the most striking varieties, for they are one mass of bloom during five or six of the barest months in the whole year; they are free growers, abundant bloomers, by no means tender enough to be hurt by a slight frost, want but little attention, are better without fire-heat than with it, and well repay us for the room, attention, and labour they require. Again, having taken to a sport, there is no saying to what end the improvements might be carried. Those who desire to raise seedlings should procure, in the first instance, half a dozen or a dozen of the best and most conspicuous sorts. Let them be grown in an ordinary greenhouse, close together, from November until they are completely out of flower. There will be found on some of them a pod or two of seed; take off the pods, dry them in the shade, and before they have been dry a week, sow them in pots.

The soil adapted for seedlings would be good for the largest plants, except that there is a watchfulness observed towards small things which is rarely carried through to larger ones. The Correa being naturally a well-formed shrubby plant wants very little care as to exciting composts; one-third loam, from the top 2 inches of a pasture, laid together and rotted with all the turf in it, and two-thirds good turfy peat, such as is adapted for Heaths—that full of partly decomposed fibre, which keeps the texture light and porous; these, well mixed together, repeatedly chirring it, and rubbing them through the half-inch meshes of a wire sieve, will be the best soil that can be used. Let a quantity of this be placed in a good-sized pot, the top made very level, and as solid as it will become by striking the bottom down upon the potting table; the seed may be sown as thinly as possible and evenly over the surface, a little of the soil put in a fine wire sieve, and as much small stuff sifted over the seed as will cover it and no more. Place the pot in the greenhouse, and although it ought not to be wet, take especial care that it never becomes thoroughly dry. Seed pans neglected a few hours at the critical moment when germination has begun, are sure to suffer; the drought would kill the seed, but in large pots the earth is a long time before it gets too dry, because of the greater body. In wetting the seed, do not fall into the common error of watering the top half-inch of soil, under the notion that a little water is sufficient for fine seed. You must water so gently that you must not disturb a grain of sand, for if you do you disturb the seed also. The best way to water all light seeds lightly covered is to dip a common clothes brush into a pail of water, hold the hairs upwards, and draw your hand along the hairs with a gentle pressure towards you. The water flies off in such small particles as will disturb nothing, and yet in such quantities as will soon wet the seed. If the seed is not allowed to dry after it is sown, in due time every seed germinates. By the time the young seedlings have made good leaves they must be pricked out, and the most effective way is in 60-sized pots, all round close to the edge of the pot and an inch apart. Fill these pots with the same sort of soil, knock the pots against the table to let the earth settle down a little, and with a piece of wood cut flat and a little pointed, like a knife, lift up the soil in the seedling pot, so as to release a few at a time without disturbing the roots. With the same instrument make small holes close to the side of the pot which the roots may touch, and close the soil upon them. The pots should then be put close together in the shady part of the house, and a hand-glass over them; the drainage of these small pots may be a lump of the peat, such as does not go through the sieve, or an inch thickness of moss, or a flattish piece of crock to go over the hole, and small pieces to fill up level round it. The watering of these newly-planted seedlings must be as carefully done as in the earlier stages. The plants while young will require continued shading, and it will not do until they are fairly established in their first pots, a single plant in a pot, to treat them as established plants. Although a sunny hour within its influence would bake the sides of the pot and burn up their roots, yet the warmth of the pot, the facility with which air can get down to their roots, and the moisture which the pot absorbs, and in turn supplies, are all favourable to the advancement of the young plant when kept from the full influence of the sun.

By the time the plants have made good growth and full roots they will be ready to take their places in the middle of the same sized pots which have hitherto accommodated half a dozen round the edges, and with drainage as before. In potting, carefully divide the ball into as many pieces as there are plants, and without disturbing each plant, place the root and soil together in the centre of the pot, fill up all round by poking down the compost with the fingers, but not too tight, adjust the plant so that it is no deeper in the soil than it was, water carefully without disturbing, and let them be placed under hand-glasses (although in the greenhouse) for three or four days. They may then be released from the hand-glasses first; next, placed on the shelves, where they can be shaded an hour or two through the hottest sun; and lastly, as they get better established, put upon any of the shelves near the glass, where they cannot be overlooked as to watering, or be otherwise neglected, and they will be done with, except for the ordinary attention that belongs to all plants, until their roots reach the edge or sides of the pot, and begin to get matted and cross each other all over the surface next the pot.

The plants will show whether they have made their first growth fairly and want a rest by one thing, which is unerring in all plants; while they are growing and want no rest the top leaves of each shoot are smaller, and the centre leaves smallest, but when these end leaves have grown nearly the colour and size of the others, and there are no young leaves opening, or rather the youngest have grown nearly to their size without others coming, the plant will be better for rest, that is, it may be placed in the coolest part of the greenhouse, have no more water than is just enough to preserve it from drying, and merely be watched until there is a movement in the fresh growth; then shift them all into pots a size larger, say from small sixties, which may be called 2½ inches across, to large sixties, which are 3½ in. across, or even to 48-sized pots, which are 4½ inches. But although large shifts, as they are called, which means a jump over one or two intermediate sizes, save trouble, they are not beneficial to the plants, and it is preferable to move them only one size at a time. Let the draining of these second-sized pots consist of crocks an inch in depth. Water them all as fast as they are changed from one pot to the other, and place them in the shade till the next day, when they may take their places on the shelves or out of doors, according to the season, as the case may be. After May they are better out of doors, on a hard bottom impervious to water and worms, because their roots cannot then strike into the soil, which causes an unnatural growth for the time, and a violent check in the end when they are returned to their winter quarters. If there is plenty of accommodation, a common garden frame and light in a northern aspect will be the best summer residence, but it is essential that the bottom be hard, and that water may not lay there nor sink into the earth, but run away altogether.

When the season's growth is over, there will be the same reason as before for giving rest by stinting the water and keeping the plants cool and light, especially if they are to be wintered in the greenhouse. They will in all probability the third season produce bloom; when, therefore, they start growth, let them be instantly repotted with the same kind of compost, in a size larger pot, and be treated as before during the growth, whether it be in the greenhouse or in the garden. They will now grow till they show bloom, or at least many of them will, and by the time they are to be moved to the greenhouse they will be in bloom, and continue so the whole winter, when all that are good for nothing, that is to say, all that do not equal those we have as to form and with new colours, or are not better in form and equal as to colour, should be thrown out. To multiply varieties by recognising trifling differences has been the bane of floriculture. Hundreds of flowers, so like each other that common observers cannot see the difference, are nevertheless cultivated for sale, and growers find no difference but the name. It is, therefore, of the highest consequence that everything that is not a manifest improvement upon what we possess already should be thrown away. Choice novelties may be propagated.

In the Correa we have for a universal stock C. alba, a robust and healthy species, growing freely, and for the most part greatly assisting any less robust kind that may be grafted or budded on it. The grafting of the Correa is easily performed. Shave a flat side to the stock, and a similar flat side to the piece intended to be grafted; bind these firmly together, so that the barks of both meet on one edge at least, and cover the join with grafting wax to keep out the air.

Propagation by cuttings is a very simple operation. Cut off the ends of shoots, when the plant has done growing, two joints long; let the under part be cut with a sharp knife close up to the joint. Prepare pots by filling them within half an inch of the top with the usual soil, laid very level, and half an inch of sand above. Press the bell-glass which is to be used as a cover on the sand, to mark how much space is available, and then thrust the cuttings through the sand, so as to touch the soil but not enter it. Water well to settle the sand close to the stems, and cover with the glass. Let the glass be wiped every morning, and be shaded during the hot sun. Generally speaking cuttings root freely, and the stocks of C. alba must be provided by cuttings. In rejecting seedlings, robust-growing ones may always be kept for stocks, although rejected as varieties; they are just as good as any to work others on, that is to say if they are strong growers.

The properties which constitute perfection in the Correa are these:—In habit they must be shrubby, short-jointed, that is, with close foliage, and branching horizontally. The leaves must be dark green, smooth on the surface. The flowering must be continuous, abundant, and distributed all over the plant. The flowers, must be tubular, but barrel-formed in preference to pinched in—the lower part bell-mouthed and reflexing; the outer surface of the same texture as the inside; the

edge without indentation; the barrel without corners, flutes, or ribs; the mouth two diameters of the neck, the length same as the leaf; the foot-stalk short; the flowers pendent. Selfs must be of the same colour inside and outside the flower. In variegated flowers, if there are two colours, the tube must be of one, and the neck and mouth of the other; if a third colour, it be confined to the lips only. The greater the contrast must the better, all the colours being bright, or rather dense, and the more abrupt the transition from one colour to another the better.

The Correa is capable of being vastly improved, and as a winter bloomer is worth the attempt. We have already some very decided colours, especially in C. cardinalis. G

ABSTRACTS OF PAPERS PRESENTED TO THE BOTANICAL CONGRESS.

THE CULTURE OF FRUIT IN UNHEATED GLASS STRUCTURES.

By Thomas Rivers, Sawbridgeworth.

As much experience has, within these few years, been acquired with respect to the most approved mode of erecting and planting Orchard-houses, I will endeavour to record some of the lessons that experience has taught.

With respect to the form of a glass structure to be called an Orchard-house, a term at first broached with diffidence, but now imbedded in our language, the span-roofed is most undoubtedly to be preferred. The width and height are of course a matter of taste, but the dimensions the most approved of are a width of 24 feet, height at sides 6 feet, height to apex of roof 15 feet; a house of this width is on the whole to be preferred to one of wider dimensions, only because it can be so thoroughly ventilated by side ventilators; still, increasing this to a width of 30 feet is not objectionable.

Houses of the above dimensions are adapted to large gardens, but smaller span-roofed houses are equally efficient, and capable of giving much pleasure and produce to the amateur cultivator of more limited means. A house 14 feet wide, 5½ feet in height at the sides, and 12 feet to the apex of the roof, is less costly, and nearly as well adapted to the cultivation of fruit. I say nearly only, because such houses do not possess perfect immunity from the severe frosts which often occur in England in the month of April, when the trees are in bloom, and sometimes require a pan of ignited charcoal to enable them to resist frost, while large houses retain such a large body of heated air, that frost in spring, to any injurious extent, seldom or never enters.

The striking peculiarity of these orchard-houses is their construction. The ancient and expensive form of building houses for the cultivation of fruit, viz., by sliding sashes and heavy rafters, is entirely departed from; they are built with fixed unbroken roofs; none of the useless and expensive methods of roof ventilation are resorted to: no rolling down of sashes "to give air" is necessary; the most thorough ventilation is given by the admission of air at the sides at a low level.

In a large house, 24 to 30 feet wide, and 6 feet in height at the sides, 2 feet in the centre of each side should be a shutter, either glazed or of wood, 2 feet below it either of boards or brickwork, and 2 feet above it of glass. The 2-feet openings on each side admit large volumes of cool air, which, when the sun shines, is rarified, and rapidly ascends to the roof, through the foliage of the trees, and makes its escape at a triangular aperture under the gable at each end; these apertures, in houses of the size above mentioned, should be 18 inches in depth. After years of experience, this simple mode of ventilation is found to be efficient. For span-roofed houses, 14 feet wide and 5½ feet high at the sides, a ventilating space 15 inches wide will be found amply sufficient, and a triangular aperture at each end, under the gable, 1 foot in depth, will give free egress to the heated air; these apertures are permanent, and left unglazed. In severe spring frosts, when the trees are in bloom, a temporary covering may be used with the houses 14 feet wide; with the larger houses it is never required.

A very recent improvement in the building of orchard-houses has originated here owing to a mistake. The builder had orders to place the rafters of a new house 400 feet long, at the usual distance (20 inches) apart; he placed them 24 inches apart, and as 21-oz. glass has been used, the effect is remarkably good, the admission of light is so abundant. The pieces of glass are 24 inches by 18 inches placed crosswise; the rafters neatly chamfered, are 4½ inches by 1½.

The most interesting of all fruits to English people are Peaches and Nectarines, and to these I will first devote some attention.

There are two methods of cultivating these fruits in orchard-houses, both equally favourable to their well-doing: one is to cultivate the trees in pots, the other to plant them in the borders of the houses. With the large houses the most eligible form of tree to plant in pots is the pyramidal: this most interesting form succeeds better in pots than when planted in the borders; the roots being confined, the shoots are not so gross as those on trees planted in the ground, the sap does not rush to the top so rapidly, leaving the lower branches in a weakly state: in fact, it seems more regularly distributed, so that for many years, a pyramidal Peach or Nectarine tree, in a pot from 15 to 18 inches in diameter, gradually increases in beauty, and by the simple operation of pinching all the young shoots formed during the summer, to two, three, or four leaves, a fruitful and beautiful pyramid, 10 feet or more in height, may be formed. Such trees, placed among others planted in the borders, are most ornamental, showing, as they will do if attended to, perfect cultivation. The health and fertility of such trees is kept up by giving them every season some fresh food in the shape of a rich compost formed of loam (if tenacious all the better) and manure, thoroughly decomposed, in equal quantities. This operation should be performed about the last week in October, by removing the surface soil—generally a network of fibrous roots—to a depth of 5 inches, and replacing it with fresh compost of the description just given. The most important matter connected with the culture of trees in pots, is keeping their roots dry during the winter months, so that they are not too much excited—they are never at rest—the shoots then become dry and ripe, and in a fit state to put forth their blossoms in spring, which, owing to the trees not being subjected to the great atmospheric changes incident to the open air in an English winter, they do with great vigour. To make success doubly sure, this dryness in the soil in the pots must be strictly attended to; the trees should be well watered when top dressed, and again before the middle of November; they may then, if in the large pots I have mentioned, remain without water till early in March, when the blossom buds begin to swell. Many failures in the pot culture of fruit trees have occurred from the fears entertained by cultivators that trees must always have their roots in a soil saturated with moisture—the great evil of our English climate, for if the roots of our fruit trees in the open air could be kept from the heavy rains of our winter months, we should have much greater success in the culture of the more delicate kinds of fruits.

Before I leave the subject of pot culture I must mention the necessity of giving the trees extra food during the summer months; the best done by placing on the surface of the mould in the pot a layer of some rich compost, about 3 inches in depth at the outside, and made concave round the stem of the tree, so as to retain water. This compost may be manure chopped into small pieces, and saturated with liquid manure, or horse droppings from the roads, and malt or kiln dust from a malt-house, equal quantities, also saturated with liquid manure; the latter compost is the most valuable surface-dressing ever invented, for not only do the roots of Peaches come to the surface to feed upon it, but Vines, if dressed with it, show extraordinary vigour. If a Vine in a pot has a dressing of it from 6 to 8 inches deep (this must of course be supported by pieces of slate stuck inside the rim), the roots ascend rapidly, and seem to devour it with avidity, so that by the autumn a mass of this compost on the surface of the soil in the pot, in which a Vine has been growing all the summer, will be found a complete mass of fibrous roots, hard and compact, the virtue of the compost being seemingly absorbed.

I have thus far endeavoured to give an outline of the pot culture of Peaches and Nectarines in unheated glass structures. The other method of cultivation by planting the trees in the borders, must next be considered: this is neither more nor less than planting a Peach garden, such as one would do in Italy, or in some of the States of North America—still, as a glass structure is of more value than a piece of uncovered ground, care must be taken that it is made the best of. There is a peculiar nature in most stone fruits, their love of a firm soil. A light, porous soil is generally fatal to the health of a Peach tree, at least in the gardens of Europe: how the light soils of Buenos Ayres and other parts of South America act on the constitution of the Peach tree, I am not able to say; I only know from report that the trees make good firewood.

In orchard-houses, I am now able to assert, with full confidence, that a firm border for Peach and Nectarine trees is a *sine qud non*; there is no sound prospect of success without it; and I may add, that if such a border is calcareous, or can be made so by mixing one square yard of chalk to 10 of the natural soil, so much the better for the fruit trees. In forming the borders, the soil should be refreshed with a slight dressing of manure, and then stirred to a depth of 20 inches—no other preparation is required; the trees should be planted in this rather shallow border, be heavily watered, and suffered to remain for a week; at the end of that time the entire border should be gone over with a rammer, and rammed firmly down; a wooden rammer, about half the weight of those used by the London paviors, will be found the best implement.

The border thus rammed and level, should remain solid, and never again be stirred, except being slightly pricked with a fork in spring—early in March—to admit water to the surface roots of the trees. After being watered, a slight dressing of rotten manure, about 1 inch in depth, should be laid on the surface of the solid soil, and no other disturbance of it should take place. So obnoxious is the disturbance of the soil to the roots of Peach and Nectarine trees, that I have seen in a house fine and well-grown half-standard trees quite bare of fruit, owing to the borders having been carefully dug 8 inches in depth in spring, every blossom having dropped without setting.

I see no reason why the principles here laid down should not be applicable to all soils and climates in which the cultivation of the trees just mentioned requires the assistance of glass. I will even go further, and fearlessly assert that their culture, when trained to walls, may be much benefited by solid undisturbed borders.

As far as I have experienced, there are many professional and amateur gardeners, who, although having succeeded in the culture of Peaches and Nectarines under glass, have yet failed in producing crops of Apricots, much to their regret, for of all stone-fruits the Apricot, when thoroughly ripened in an orchard-house, and in that state when the skin commences to shrivel, is the finest; so full of delicately-perfumed saccharine juice, so nutritive, and so digestible is it, that no fruit I have ever eaten can compare with it.

How great is the contrast between such fruit and those generally taken from walls, but seldom fully ripe: from those offered for sale on the Continent, and those imported thence; all hard, dry, and unwholesome.

The most curious fact relative to the culture of the Apricot in orchard-houses is a recent discovery that they require less care than any other kind of fruit; it is simply the "let alone" principle, and the avoidance of too much care. Their successful culture in pots, with this proviso, is soon told. Trees of three or four years' growth should be planted in pots 15 or 18 inches in diameter, in a compost of loam and manure; if the loam is not calcareous, the same proportion of chalk (one-tenth) as recommended for Peaches and Nectarines should be mixed with it. The compost should be rammed down firmly, but not too heavily—the blunt end of a stout stick will do very well. The trees should have no water after the middle of November till early in March, just as the blossom buds are swelling, and then only in small quantities.

As soon as the fruit is set, and about the size of small horse-beans, some rich dressing should be placed on the surface of the soil in the pots, and water given liberally; this treatment is adapted for trees potted in autumn. For trees established in pots, the following simple treatment has been found here perfectly successful. About the first week in November they should have a liberal supply of water; this cannot be given at once, but should be at intervals, say three times during one day; this is the last time of watering, and it should be done effectually. No top-dressing, as with Peaches and Nectarines, should take place, but the earth in the pots should be suffered to remain firm and undisturbed. About the first week in March, when the blossom buds begin to swell, the trees may have water, as directed for trees freshly potted; but now comes the peculiar treatment which has here been so successful; the surface of the soil must remain perfectly undisturbed until the fruit is fully set, and about the size of a small horse-bean; then, and not till then, should the tree have fresh food to nourish its crop of fruit—and this is done by carefully scraping off the surface soil to an inch in depth, so as not to injure the roots, and then placing on the surface a dressing of the rich compost named above; this should not be heaped up to the stem, but made concave, so as to retain water. The dressing should be 3 inches deep round the outside of the circle; if the weather be warm, the trees may have water daily, and the fruit will swell rapidly. I must add that this surface-dressing given, say early in May, must be repeated in June, and again in July; for the roots seem, as it were, to feed upon it—at any rate it disappears. If a tree should happen to have an extra full crop, it is a good practice to stick some pieces of slate inside the rim of the pot, so that more food, in the shape of additional coat of compost, may be given; this is, however, not to be recommended—it is better to thin the fruit more severely, so as not to distress the tree.

The most preferable form of trees to plant in large orchard-houses are standards with stems about 5 ft. in height; these may be planted 10 ft. apart. For cultivation in pots in such houses, pyramids, in pots 15 to 18 in. in diameter, are to be preferred; they soon make noble trees, and should be placed among the standards wherever an eligible space can be found. For smaller houses, half-standard trees, with stems about 3 ft. in height, should be planted in the borders, and bushes—round-headed trees on stems 1 ft. in height—cultivated in pots.

These descriptions of trees apply to Apricots, Peaches, and Nectarines.

With reference to the recommendation of a solid, undisturbed soil being so favourable to the Apricot, I may mention that some standard trees, standing in one of my houses in a stiff calcareous clay, the soil as hard as a well-trodden path, bear so abundantly that unless the fruit is thinned severely they would destroy themselves. There is nothing new in this liking of the Apricot tree for a solid unbroken soil, although it was discovered here by mere accident, viz., by some trees in pots being forgotten, and having no water or care till the fruit was set. It is, however, simply an old fact with a new face; for, since it has been practised here with trees under glass, I have recollected seeing in many of the cottage yards in Oxfordshire and elsewhere Apricot trees trained to the gable ends of cottages, flourishing and bearing most profusely, their roots being in some yards under a pavement, and in others under the common footpath of the family. It should never be forgotten by the cultivator that Apricot-trees in orchard-houses require abundance of air while in bloom, and that they will bear 3° or 4° of frost with impunity, while one night of confined moist air will make the blossoms drop without setting their fruit.

With respect to the construction of houses for the cultivation of Cherry trees, the small span-roofed house, 14 feet wide, will be found the most eligible, for one special reason—the cherry aphis can only be effectually kept under by tobacco smoke, and this can never be made sufficiently dense in large houses. The most eligible form of tree, either for planting in the borders or for pot culture, is the pyramidal. Some care is required in selecting the sorts, and the kind of stocks the trees are grafted on; the most compact-growing race, and that best adapted for the borders, is the May Duke. The following varieties of this class, Empress Eugénie, May Duke, Archduke, and Duchesse de Palluau, all form beautiful and fertile pyramids, easily kept in order by constantly pinching in the young shoots to three leaves during the summer. These kinds of Cherries require to be grafted on the Cerasus Mahaleb, which induces a dwarf compact habit.

The finer kinds of Bigarreau Cherries, which, when grafted on the common Cherry (Cerasus sylvestris), become, in orchards, such large trees, should be cultivated in pots, from 15 to 18 inches in diameter; and if their young shoots are pinched in to three leaves during the summer, they form most beautiful pyramids. If trees of this race are planted in the borders, their tendency to luxuriant growth must be checked by double grafting; this is done by budding or grafting some kind of Duke or Morello Cherry on the Mahaleb

Cherry, and then regrafting it with the kind of Bigarreau or Heart Cherry wished for; they soon form, when subjected to the summer pinching of their shoots as directed above, most fertile and beautiful trees; indeed, I know of no fruit trees more beautiful and desirable than pyramidal Cherries. When cultivated under glass, their fruit is brought to such perfection of ripeness as is seldom or never seen in the open air, at least, in England; besides this, the duration is so great, for the early kinds ripen the first week in June, and the late varieties continue in perfection till the end of August.

There are still a few kinds of fruit worthy of a passing notice, as being adapted to orchard-house culture. Among these the finer kinds of dessert Plums deserve attention. It is well known how liable to injury the blossoms of the Plum tree are from spring frosts, not only in England, but over a large portion of the Continent. By cultivating the trees, either as pyramids or half-standards, in orchard-houses, their blossoms set freely, and they bear abundantly. In the warmer parts of England the trees should be removed to some warm sheltered place in the open air to ripen their fruit, the flavour of which is then more racy; but in cool moist climates they may remain under glass, if the house is allowed to have abundance of air night and day till the fruit is ripe; the trees may then be placed out of doors till the commencement of November, and then be removed to the orchard-house, or their roots become too much saturated with the heavy autumnal rains.

Pear trees, of which we so often lose our crops by frost destroying their blossoms, may be subjected to exactly the same treatment as Plums. Pear trees grafted on Quince stocks are to be preferred for this mode of cultivation—they are so enormously fertile. The pyramidal form is most to be recommended for Pear trees, and the pinching in of the young shoots in summer, as directed for Cherries, is quite indispensable.

Knowing, as we all do, the hardy nature of the Apple, it seems almost an extravagant idea to recommend it as a tree to be cultivated under glass. Unless I had had experience, I should participate in this opinion; but after seeing and tasting the magnificent Apples I have gathered from trees in my Apple-tree house, I can safely say that the difference between a Golden Pippin of the old sort ripened on trees in my house, and those from trees in the open air, both in size, beauty, and flavour, can scarcely be realised; and the melting, juicy texture of some of the finer kinds of American Apples, such as the Melon Apple, the Northern Spy, the Primate, the Washington, and some others, is equally remarkable; the latter-named sort ripens in September, and when fully ripe its juice is nearly as abundant as that of the Peach, running down the knife when cut.

I have in this slight sketch endeavoured to give an idea of what may be done in temperate climates, in fruit culture under glass without artificial heat; and although some 16 years have passed since its advantages were shadowed forth, I can, with the most perfect confidence, say that it is still not only in its childhood, but in its babyhood. I feel, however, no hesitation in prophesying that, ere this century closes, orchard-houses will be as familiar to the eyes of Englishmen as the green fields, and that they will spread over all the temperate regions of the United States of America, where they are already numerous. With regard to the Continent of Europe, they will move more slowly; but as wealth and intelligence increase, they will to a surety be things well-known and highly prized, more particularly in Sweden, Norway, and the north of Europe generally.

THEORY AND PRACTICE OF VENTILATION.

No. X.

(Continued from p. 659.)

I COME now to treat of the air as plant food. Whatever is found in plants may be held to have constituted part of their food. It by no means follows, however, that it has been absorbed in the form in which it is found; nor that it will be found in the plant in the same state in which it was absorbed. The very reverse of this is generally the case. Plants can only absorb food in a liquid or gaseous form. No sooner do these enter the plant than its marvellous powers of transformation occupy themselves in changing these liquids and gases into solids. The ultimate result of the alimentary system of animals is the conversion of solids into liquids and gases; the chief function of the analogous processes in plants is the conversion of these into solids. The former tend to limit and destroy; the latter to augment and build up the mass of solid in the world. The contest between the two great types of life probably rages throughout the entire domain of solids; but the chosen battle-field of both is over the mass of carbon which is so essential to each that it may be said to constitute the raw material of all physical life. Carbon abounds in every variety of form and quality, from the diamond flashing on the brow of beauty, to the sugar that sweetens our tea. In its pure state as charcoal it may be pronounced indestructible and unchangeable; in other forms, such as carbonic acid gas, it is the embodiment of change itself. To-day it is a fragile flower; to-morrow it is a sturdy Oak. Down there it is piled up in blackness and darkness as coal; up yonder it is soaring in an invisible chariot beyond the clouds as gas. Now it is cleaving the deep sea as the keel of a ship, soon it may be lighting our streets. Everywhere, in one of its forms, it is the breath of death to animals; in the same state it is the bread of life to plants.

Comparing the carbon of the world to a mountain with its solid base resting on the earth, and its giddy top piercing through the heavens—from bottom to highest aerial peak it is studded thickly with workers. One band is engaged in levelling the mountain down by dispersing its solid particles through the air; another is equally busy in raising it higher, and adding to its solidity. Age after age the two processes have gone on, and the mountain continues the same; it furnishes supplies for both the vegetable and animal kingdoms, and suffers neither deterioration nor diminution. The animal kingdom goes on etherialising, and the vegetable solidifying carbon, and so nicely is the balance held between the two that the quantity and quality of carbon remains unaltered. The air is the battle-field in which this great contest over carbon is waged. It seldom or never changes its place or character without its ministry. It passes through it or is aided by it on its journeys from one state to another; hence, one of the first things in importance, although one of the smallest in volume, we meet with as we search the air for plant food is *carbon*.

Atmospheric air, as is well known, is composed of the two gases oxygen and nitrogen, in the proportion of one-fifth of the former to four-fifths of the latter. For the wisest purposes these two gases do not combine together. The air is formed by the mere mechanical mixture of them in the above proportions. Neither of their qualities is at all altered by their close contiguity in the air. The oxygen continues the same volatile irrepressible vital power in the air as it is every where else, and the nitrogen preserves its usual impassible and lethargic qualities. Although so lightly bound together that the oxygen is always trying and succeeds in getting away from its drowsy companion nitrogen, yet the above proportions between the two continue constant, and it is absolutely necessary that they should. Only let oxygen acquire more power and it would wrap the world in flames; increase the proportion of nitrogen, and the beating pulse of the world's life would be crushed to rest by its dead weight. Not only does the constitution of the atmosphere remain unchanged, but it allows other gases to pass through it without combining with or changing them. It is a speedy and safe parcels delivery carriage. And the parcels it conveys are absolutely of equal or greater value in our present subject than the great highway itself; for it is rather an extraordinary fact that neither of the gases that compose the atmosphere become plant food.

The elements of both the atmospheric gases are found in many plants, that of oxygen in all. But oxygen cannot in any sense be called food, and the nitrogen of plants is not thought to be obtained directly from the atmosphere. But in addition to these two great constituents of the air, many other things are found in it. The one of paramount importance is carbonic acid gas. This is always found in the air, and so constant is its presence that it would be termed a part of it, only its proportion is so small.

Philosophers have stated the quantity at from two parts in a thousand to 3, 8, and 10 parts, or 1 per cent. Reasoning from the magnitude of the work it performs, one would suppose that it must reach to something like 1 per cent.; but remembering the enormous volume of the entire atmosphere, 1-10th per cent. of carbonic acid gas would probably furnish carbon enough to supply all the wants of vegetable life. Its exact quantity is of little moment; its nature and functions are of vital importance. It is a combination of carbon and oxygen in the proportion of six parts of carbon to 16 of oxygen. It is one of the heaviest gases known. Taking the usual standard of dry air at 60°, and under a pressure of 30 inches mercury at 1.000, that of carbonic acid gas is 1.524. One hundred cubic inches of dry air under the above conditions weigh 31.000 grains. The same amount of carbonic acid gas weighs 47.262 grains. This gas extinguishes fire, and is fatal to animal life. It is readily absorbed by water. Water from which it has been recently expelled by boiling will take up its own volume of this gas, and much more if the ordinary pressure be increased. The quantity absorbed bears an exact ratio to the pressure applied, and on removing the pressure the greater part of the gas escapes, as we see on opening bottles of lemonade or champagne. Effervescing waters are merely pure waters more or less saturated with this gas by the aid of high pressure. Carbonic acid gas can also be converted into both the liquid and solid states, and in each condition possesses extraordinary properties. Although so much heavier than common air, and often found and proving fatal to life in deep wells, &c. on that account, yet it generally is equally diffused throughout the atmosphere to the highest altitudes hitherto reached by man. This arises partly from the expansive force of all gases, and perhaps, also, from a kind of electrical attraction or adhesive force which enables heavy gases to cling to and be borne up by the lighter ones. There is also another reason for the elevation and diffusion of carbonic acid gas. It is this: nearly if not all the sources of supply are warm. This can hardly be said of mineral springs and natural exhalations in certain parts of the earth; but even these, if flowing from deep sources, may be borne up into the air on the wings of terrestrial heat.

Generally speaking, heat is essential to the formation, and certainly powerfully aids in the distribution, of carbonic acid gas. Strong as is the affinity of oxygen for carbon, it cannot combine with it at very low temperatures. This is illustrated every time a fire is lighted. There is the wood, nearly pure carbon, surrounded with the air, with its complement of oxygen. The oxygen longs to devour it, but is held back by two invisible powers: one is the nitrogen, which holds it as with a bridle; the other is the low temperature of the carbonaceous wood. Raise the temperature of ever such a small quantity by applying the match or paper, and oxygen leaps forth like a beast of prey and consumes or rather changes the appearance and place of the remainder. The fire-king merely lifts the carbon up from the solid earth into the air, and changes it from a solid or liquid into an invisible gas. A similar transformation in the position and character of carbon is effected by the respiration of all animals. Oxygen gas enters our mouth, travels down our windpipes to our lungs, and, rendered daring by the warmth that it finds there, it darts like lightning through the thin membrane that enwraps these delicate organs, seizes a particle of carbon from the blood, and hurries it out in our breath into the air. A similar process is going on, with less force perhaps and activity, but with equal certainty, and may be even greater aggregate results, wherever animal or vegetable matter is undergoing decomposition. There is a striking analogy between these apparently different processes. Not only is the product of decomposition, combustion, and respiration alike, but they are all performed by the same agent. In each the carbon is liberated by heat, and the rapidity of its conversion from a solid into a gas by the ministry of oxygen is determined by the amount of caloric employed. Reflecting on the universality, activity, constancy, and force of these three great generators of carbonic acid gas, we see at once how a constant supply of it is maintained in the air.

Renewing our search for plant food, in the air we meet with quantities of vapour and water. But as these will be noticed under another section I only state here that most likely plants derive their hydrogen from decomposing water, which is a compound of hydrogen and oxygen. Hydrogen does not only constitute an important part of the sap of plants, but combined with carbon it forms the hydro-carbons, such as resins, camphor, turpentine, &c. Part of the phosphorus, sulphur, &c. found in plants, is probably taken up by them from the atmosphere; for just as everything that is soluble in water may generally be detected in that fluid, so every volatile and buoyant gas may be found in minute quantities in the air. And doubtless if there is anything in the air that plants require, their sensitive organs will discover and consume it. Another very important constituent of plant food remains to be noticed. More or less of ammonia is constantly present in the air. This gas is composed of 1 volume of nitrogen and 3 hydrogen. In the process of formation the four volumes are reduced to half their bulk, and measure only two. It is easily known by its pungent smell, and readily converted into a solid or liquid state. In the latter it is the spirits of hartshorn, in the former the smelling salts or carbonate of ammonia of commerce. Its density in a fluid state is a little more than half that of water, being 0.760, water 1.000. As a gas it is nearly as light again as air, weighing only 0.5983, that of air being unity. One hundred cubic inches of ammonia weigh 18.262 grains, air 31.000 grains. Its superior buoyancy to the air therefore enables it to rise freely into the atmosphere. Indeed it is so light and volatile that but for the fact of its extraordinary capacity or rather affinity for water, there would be great danger of its being altogether lost; but it is so readily soluble in water that at a temperature of 50° that water will condense more than 600 times its volume of ammonia. And the more it absorbs of it, the thinner the water becomes. Nine and a half per cent. of ammonia reduces the density of water from 1.0000 to 0.9692. At 32° per cent. the density is reduced to 0.8750. Heat is the great agent employed to disengage and diffuse ammonia; it is as essential to this, or nearly so, as it is to the formation and distribution of carbonic gas. Ammonia, however, cannot be formed by the direct union of its elements after they have both assumed the gaseous form; one of them, at least, must be in a nascent state.

Ammonia is found in every vegetable and most animal fluids; it is a constant constituent of soot, and is formed in large quantities in the manufacture of gas. It is supposed also to be disengaged by electrical action. It is prepared in various forms by the application of strong heat to the hoofs, horns, and bones of animals, and is constantly formed and liberated during the putrefaction of all organic substances containing nitrogen. These, as already stated, are composed of hydrogen, nitrogen, oxygen, and carbon, and when their elements are dispersed by the power of decay, the two former combine to form ammonia, the two latter carbonic acid gas. And thus chiefly, although also certainly partly by combustion, and probably to some extent too by respiration, the air is replenished with that ammonia which constitutes such an important element of the food of plants.

Independent of the direct nutriment it affords, it may exert an influence on the circulation of the sap, and the vexed question of colours, which no one seemed to have anticipated. Being an alkali it possesses the quality of turning vegetable blues green, and yellows brown, or reddish; but its volatility prevents these colours remaining permanent. But who shall say what its effects upon colour may be within the hidden, mysterious recesses of plant life, and the great laboratory of Nature? It is also quite possible that its power of rendering fluids thinner, as well as its volatile character, may secure a more vigorous circulation of the sap throughout the minute interstices of vegetable tissues. It is certain that ammonia is the chief source from which plants derive their nitrogen, and this alone constitutes it food of the highest importance to them. The high degree of solubility of ammonia causes a great proportion of it to be brought down in heavy rains, and doubtless part of this is absorbed by the roots of plants. But, on the other hand, its intense volatility and lightness cause it to rise from the surface almost before it touches the earth, and that delightful odour experienced after a thunder-storm is mainly owing to the escape of ammonia from the earth into the air. In its upward march it has to pass through myriads of watering hungry mouths, who tremble with delight and can almost be seen to grow larger as they feast upon this gas. We will not search the air further at present; else minute portions

of other food might be found. Neither will I stay here to show that the air helps plants to eat and assimilate their food, as well as provides them with a supply. *D. T. Fish.*

Home Correspondence.

Mildew.—I have often noticed such questions as these in your Paper, viz., what is mildew?—how can mildew be cured? I think I have had a very strong demonstration of the cause of mildew within the past 10 days, which have been 10 days of excessive heat and brilliant sunshine. I have a lot—about 100—of young Roses budded last year on Manetti stocks, and now they have luxuriant shoots from 2 to 3 feet long, as luxuriant as Osiers in an Osier bed; I never indeed saw anything of that kind so luxuriant. Well, last Tuesday evening we had an extraordinary fall in temperature, from above 70° to about 50°. I was out in the evening, and was very much struck by the great change. What has been the consequence to my Roses?—their luxuriant shoots and leaves are now as mildewy as old Pea haulm; and what is still more striking evidence that the cold caused it is this: that the tops of the shoots, the new young leaves which have pushed during the last three or four days, are quite clean, fresh and healthy. Surely then cold is at least one cause of mildew, through some check of the sap or injury of the circulation through the leaves. And what can cure such mildew? The evil is inflicted, and it is past remedy as regards the leaves in question. I know that many gardeners attribute Pea-mildew to dryness at the root, but the Roses just alluded to at least, are damp enough—well mulched; and I am quite certain the sudden fall of temperature on Tuesday evening caused their mildew. The temperature rose again on Wednesday morning, and has continued steady ever since. *W. M. R., Salop.*

Maréchal Niel Rose.—Mr. Keynes (see p. 684) seems to have furnished the key-note to the culture of this Rose. It will be, particularly in nurseries, essentially an autumn-blooming Rose. The first shoot from the bud runs away and often finishes without a bloom; then the eyes push into young shoots all the way down this primary branch, and all of them, or nearly all, bloom, the upper ones first. On some such number of plants as that named by Mr. Keynes, we had but 40 or 50 flowers on the first breaks, but now they are covered with buds in different stages of forwardness, and all without protection. This Rose will be most beautiful during the early autumn rainless months. If I may be allowed to give a word of command in reference to this Rose, for next February, to those who have old plants, it would be, "Gentlemen amateurs, sheath your pruning knives." *George Paul, Jun., Cheshunt.*—Will Maréchal Niel prove thoroughly suitable for out-of-door culture? To this question I say yes, in warm soils and warm climates of England. In cold soils and cold climates it will, I believe, prove uncertain, sometimes producing splendid blooms and sometimes pale hard buds, which will not develop into handsome flowers. Of all positions give me a south wall out of doors, and a plant on its own roots, which if carefully nurtured till it takes hold of the soil will quickly cover a considerable space and flower abundantly. The finest blooms of Maréchal Niel that I have yet seen were produced in a cool Rose-house here last May. The plant had made shoots more than 10 feet long the previous year. *William Paul, Waltham Cross, N.*

Fertilisation of Lobelia.—Bees alighting on the lower lip of the flowers march upward, directed in their course in some species by a white spot; they walk along a little valley, bounded by two eminences, and thrust their snouts into the depths of the flower, always passing beneath the anthers, and brushing the pollen out from them as they go, and carrying it with them on the back of their mesothorax, or, as we bipeds should say, on the middle of the back. In the next flower they go to they find the stigma protruding beyond the anthers, and thus adapted to receive the pollen from the insect's back as he wriggles himself into the honey cupboard. *Antirrhinum.*

Alpine Gardens.—Suppose a person fanatical enough to say, "I will lay out a neat little geometrical arrangement of beds in an isolated place, and plant it solely with dwarf and interesting Alpines." He could do it, and make it a thing of beauty too—a feature which would please every visitor. I have seen hundreds admire a rough approximation to such an arrangement. There is hardly any end to the plants which might be used in it. All the deep green and densely habited mossy Saxifragas, for instance, would come in well. And, by the way, those who wish to have a deep and refreshing green near their windows in winter should cause some of these to be planted as edgings or to cover low rockwork, &c. This would particularly apply to the small suburban gardens to be counted by thousands about London and all large towns and cities—to the great mass of houses everywhere, in fact. In most of these gardens the naked earth is conspicuous by its presence all the winter, and in many all the summer. Now, as more than one-half of them are nicely suited for the healthy growth of these most verdant of plants, it is, to say the least, a pity that there are not oftener refreshing glimpses of green. We will next go to the Sempervivums for our little Alpine parterre. In addition to S. californicum, there are many as hardy as Stonecrop, and very neat in habit—S. hirtum, on which bees gather abundantly when in flower, a bed of it being nearly covered with them at the flowering season; S. globiferum, a wonderfully neat dwarf plant, with a reddish tinge; and the interesting spider-webbed S. arachnoideum, which is quite hardy in the open air in London,—these would all work in well in the kind of thing I have hinted at, not to mention the old roof-percher, S. tectorum. Then would come in other Saxifragas, and a small host of Sedums in the glaucum way, and one or two of these would surely make edging plants, not to mention such tiny things as S. album, monregalense, dasyphyllum, sempervivoides, and Ewersii. This last would, I think, make a very neat edging, and the same may be said of others. Again, what could be prettier in a warm southern garden than edgings of such as S. brevifolium, dasyphyllum, and hispanicum round a dwarf and select arrangement? *W. R.*

Iresine Herbstii.—If your correspondent "Amaranthus" (see p. 684) would favour me with a call, he might see this Iresine in its true character, although I confess in rather a stunted condition, doubtless owing entirely to the severe weather it experienced after planting-out time, which was on the 24th of May. After being bedded-out a few days, some of the coldest winds I ever recollect in the month of May prevailed for a period of nine days together, with 2° of frost, which surely is amply sufficient to account for its being stunted. It is, however, doing well now, and I feel sure that it will prove a great acquisition to the flower garden, and bear favourable comparison with the Coleus, for it must be remembered that the Coleus will not thrive in many localities out of doors. The Iresine here is in a circular bed as follows:—Iresine first row, second and third Golden Chain, the centre being filled with Christine Pelargonium. *Thos. Simpson, gr. to the Rev. Thomas Mills, Stutton Rectory, Ipswich.*—We have several hundreds of Iresine planted out here in various beds and borders, and I must say it has donned the most rusty-looking garment I ever beheld, looking in fact as if it had kept bad hours, and caught two or three white frosts "early in the morning." With careful treatment however I do not despair of my young friend, who, I expect, in the autumn will come out in brighter colours; if not we shall be awfully "sold," and dismissal from service ever after must be the inevitable result. *F. N., Hants.*—Have any of your correspondents observed that there are two varieties of Iresine Herbstii in cultivation? My gardener procured two batches of cuttings from different parties. The plants from one lot have red stems and foliage; those from the other batch have dark stems, with dark leaves, which are veined with red. At present there seems to be no difference in general habit. *C.*

Pear-leaf Insects.—I have sent you a few specimens of an insect which I have observed on the upper sides of the leaves of our Pear trees; what are they? Apples are planted alternately with the Pears, but they are perfectly free from them. I have had the trees syringed with tobacco-water, which has made the insects quite uneasy. *P. L., Dunse.* [The black slimy insects devouring the parenchyme of your Pear leaves are the larvæ of a small black winged saw-fly, Selandria æthiops. They may be destroyed by powdering them with lime, or sprinkling them with lime or tobacco water. *W.*]

Skeleton Leaves.—It is stated (see p. 1011, 1865), on the authority of the "Chemical News," that for speedily dissecting leaves, they "should be boiled and then transferred to a solution of permanganate of potash," &c. No direction is given how to make the solution or the proper strength. I have tried it in several ways, but have failed. If any of your correspondents have tried and succeeded, I should be much obliged if they could tell me how to do the same. *Jane.*

Chinese Apple.—About two months ago a young lady returned from Italy, bringing with her the fruit of some plant which is eaten by way of dessert in Florence. She said it was called there the "Chinese Apple." It, however, bore no resemblance whatever to an Apple, but looked more like a dark smooth-skinned bulb, about the size of a full-grown Cob-nut, with nothing to recommend it as a dessert fruit. I sowed the seeds and have four plants growing. The leaves are very much like those of a seedling Apple, and the stem seems likely to become woody—the tallest is about 4 inches high. Can any of your correspondents tell me what the plant is, and how it should be treated? We are anxious to save it, on account of having brought it home. *Jane.*

Fragaria lucida.—I fear Fragaria lucida as a breeder will not do much for the improvement of our garden Strawberries. I raised many crosses by its agency some years ago, and recrossed these by the pollen of our best sorts. The plants were extremely vigorous and hardy; the fruit large and of a peculiar rich tint, unlike any other sort. They were dioecious. The drawbacks were these: each fruit stem bore one or perhaps two large fruit, the rest being very small, and the flavour, at least to my taste, though rich, was in all cases disagreeably earthy. I sent plants to the Horticultural Society's garden, where they were fruited by the Superintendent, who will perhaps inform you how they turned out there as to quality, &c. I found afterwards that I had been anticipated in this matter in America, where the plant had also been cross-bred. I hope, however, Messrs. Backhouse will have more perseverance than I had, and will succeed in getting rid of the objectionable flavour. No doubt the thing is to be done after a generation or two, breeding away from lucidum. *R. T. C.*

Economic Plants.—It is not always that the most noble plants or the most gaudy flowers find most admirers: novelty has much to do with the matter; and when that has worn off we frequently betake ourselves to our former favourites. To a lover of Nature's works the mere simplicity of some of our little wild flowers is a sufficient plea for their admiration. We are too apt to pass over the flowers of our fields because they are within our reach at any time, or perhaps because they lack novelty. Small size does not lessen the beauty or importance of plants. The Grass that clothes our fields is of infinitely more value than some of our large trees. The pretty white star-like flower of the common Chickweed (Stellaria media), is one of the many that make our roadsides interesting, though not glaringly attractive. To the Caryophyllaceæ too, to which the Stellaria belongs, we can point for many of our field and garden flowers, as Dianthus, Silene, Saponaria, Lychnis, Cerastium, and others. This order is composed chiefly of small plants or herbs. Some few have showy flowers, as the Carnation and Clove Pink; but the order is not marked by any very important properties or economic products. The saponaceous principle would seem to be mostly associated with it, even judging only from the common name of Soapwort or the botanical name of Saponaria. This, the Saponaria officinalis, is a well-known plant, opening its large clusters of pink flowers in July and August. The leaves were formerly used in washing, as a substitute for soap, for which purpose they were boiled and then bruised. They are said to have the power of effectually removing grease, and a decoction has also been used in medicine as one of the many reputed cures for rheumatism, gout, &c. Though the Chickweed, when boiled, is a wholesome pot herb, resembling Spinach in flavour, and though it is used by the peasantry in some parts for broths, &c., and cattle are likewise very fond of it, it is certainly not an important economic plant, nor is the Spurry (Spergula arvensis), and some few others that have reputed properties. But there is one plant, a member of this family, which the Turks seem to turn to some account; this is the Gypsophila paniculata. It grows some 2 or 3 feet in height, with small white flowers. The Turkish name of the plant is "Cheven," and from the roots they prepare an article of commerce, which they call "halva." The mode of preparing it is to cut the roots in pieces, which are reduced to a powder and boiled until it becomes a perfect jelly, which is sometimes flavoured with a little honey according to taste; the jelly is then poured into moulds of various forms or shapes, and turned out when cold as a confectioner would turn out calves-foot jelly in this country. The halva is about the consistence and colour of gingerbread. It is sold in all the Turkish markets, and fetches a price of about 2 francs per kilo, but the value varies according to the distance from which the root is brought. The plant grows more abundantly in Lycia than anywhere else. In its native state the root fetches in the country where it is produced, about 25 centimes the kilo. At Smyrna it will command a price of 45 centimes, and when dry as much as 60 centimes. A specimen of this peculiar product is in the museum at Kew, and judging from that, which appears to be a fair sample, we must say that "halva" has not much to recommend it either in appearance or taste. In appearance it is similar to very coarse and very wet brown sugar, and it has a most disagreeable, rank, soapy flavour. The Turks may be fond of it, but we fancy, with all the spices and seasoning imaginable, we Englishmen would be a considerable time before we could relish a dish of "halva." The people of Lycia also use the root for washing their clothes. Some pieces are cut up and put into the water, which upon being agitated soon produces a good lather, rendering the water very soft; from this the Greeks call it "Sermounire." *John Saxon.*

Importance of Peat.—If the views of Professor Schultz, as expressed to the meeting at the late Botanical Congress, can be borne out in practice as regards the use of all peats, he will have conferred such a benefit on all cultivators of the soil as no man has ever done before him, on the people of Ireland more especially, where we have in round numbers 3,000,000 acres of peat bogs, in depths varying from 6 inches to 60 feet, giving on an average a depth of 30 feet, varying in altitude from the sea's level at low-water mark to 1000 feet above that mark, higher than which few are now disposed to cultivate our bogs, notwithstanding that excellent green and cereal crops have been obtained at much higher elevations, and in peaty soils, or rather deep bogs when but half-reclaimed. I do not wish for a moment to enter on the more debatable scientific parts of the learned Professor's paper, but having had much practical experience in the reclamation of such bogs, and the use of their contents as manures, simple and compounded, I would, with the greatest deference, beg to express an opinion differing somewhat from the views put forward by Prof. Schultz, who says, "Owing to the quantity of nitrogen that peat contains, animal manure is rendered more or less needless, and we ought therefore to use it always in the cultivation of those plants for which any animal substances are unsuitable." Be it so. But may I ask, what are the agricultural or horticultural plants which such bogs are capable of producing, and "whose name is legion," to which "animal manures are unsuitable?" I certainly know not one such crop. On the contrary, my experience in the cultivation of such bogs, by no means very limited, and the experience of hundreds of others who have successfully reclaimed and cultivated them, leads me to believe that animal manures are indispensably necessary on such bogs to produce good crops, even on those Irish bogs that are richest in nitrogen. Neither do all, nor even many, if any at all, of our fine Irish bogs possess an adequate amount of "the classes of infusoria, polypes, worms, mollusca, crustacea, and insects," though they may be the "best represented which through their bulky development produce" enough of "the nitrogen in turf pits and turf itself," for the successful growth of our most valuable green, leguminous, and cereal crops. He says truly that "turf does not act so quickly as stable manure, because it decomposes more slowly," but untruly, at least so far as my experience goes, "it thereby becomes more efficacious" in soils to which stable manure is most desirable, and to which the very best peat would be worthless as a manure. In condemning Liebig's theories he says—"Liebig affirms that turf can only be considered as manure for plants if phosphate of lime be mixed up with it." Except as regards some rare plants, desirable under certain conditions to cultivate, I believe Liebig is right, and that turf does not "contain

in itself a sufficient quantity of this substance," and I fearlessly "say that Liebig's theory can be upheld in practice," to which I will add that "my experiments in adding bonedust to turf" have "given" much "better results than by using turf alone." In speaking thus I am considering our Irish turf, and by no means wishing to derogate from the merits of Professor Schultz's paper, as he may be quite right in regard to the turf he experimented with, whilst I believe I am right in regard to the different varieties of turf I experimented with. If we are both right in these respective cases, it is but another proof of the many we have, showing how very far from being universal is the industrial education of our most learned philosophers as well as that of our more practical men. And it further proves the great importance attached to such international exchange of opinions as that emanating from your late great Congress. Having said so much on Irish turf bogs, permit me to add a few more remarks on their importance as sources of supply to the many wants now felt by the British consumers of food, and of wealth to the nation at large as sources of production. Those who may have opportunities of consulting the parliamentary blue books of the English House of Commons, made up during the last half century, may be surprised on seeing the vast sums of money expended in making out the Irish bog reports—and with such comparatively valueless results. This arose, I should think, from the limited knowledge of those engaged on such commissions in regard to the practical working of such bogs, or rather, I should say, of those sciences that should guide them. This is the less to be wondered at, when we reflect on the extent to which science has become developed compared with its very limited sphere 50—nay 10 years ago. Until within the latter space of time, or at farthest a few years earlier, all that was known in a scientific point of view of the Irish bogs was their mere existence. The case is now quite different, their chemical composition being well known, though unfortunately but to a few—perhaps I might say but to one, or at most two. Such chemical knowledge being now available, what more is there required to develope the almost boundless resources of these tracts of waste but highly valuable bogs? There are three things at least wanting—capital, enterprise, and mechanical skill. England possesses all these requisites. Ireland, in as far at least as the reclamation of such bogs is concerned, may be said to possess too little of any one of the three, beyond this—a firm conviction that if ever the Irish bogs become reclaimed, such reclamation must be done by steam power, and with the very materials so abundantly found scattered through, surrounding, above, and below those very bogs themselves. This I can prepare to prove to the satisfaction of any intelligent, impartial inquirer, without the expectation of other fee or reward than a consciousness of having so far done my duty. *Edward Carroll, Glasnevin, Dublin.*

Seed Steeps v. *Birds.*—In reply to "Inquirer" (see p. 588), I beg to say that what he considers a secret in the use of the red matter he alludes to as a preventive of birds damaging seed beds, is no secret at all. It is nothing more nor less than what he rightly conjectures to be red lead moistened and mixed through the seeds before being sown, and adhering to the shell as he describes it. It is mixed in several ways before being applied; one way is with water, which is less effectual than with some sort of cheap oil. The latter causes the lead to adhere more firmly to the seed. But in using the oil and lead mixture it should be on seeds previously steeped in water, so to insure their having imbibed a sufficiency of moisture to superinduce vegetation, which would be retained by the impervious character of the coating for a longer time than it would be desirable. It is also an excellent material to be applied to Peas and other seeds subject to the attacks of mice when newly sown. I have often used it in both ways for the preservation of farm as well as of garden seeds against the attacks of both birds and mice. It has sometimes failed in securing full effects in the case of the former, but in the latter, never. *E. C.*

Paulownia imperialis.—Have any of your correspondents, who have had this plant in bloom, observed its fruiting this season? We have several plants producing seed rather freely—is there any probability of its ripening in this country? I inclose a pod of the seed from a spike which produced 12 or 14 blooms; there are three or four pods of the size I enclose. *John Overton, E. Holl Sandy's Rose Nurseries, Tunbridge Wells.* [Similar specimens have been sent us from Lymington. As they are already well advanced it is not improbable they will ripen if the season is propitious. EDS.]

Rubus leucodermis.—Is the fruit of the white-stemmed Bramble eatable? *Rubus.* [Yes, but it is too acid to be agreeable. EDS.]

Foreign Correspondence.

PALACE GARDENS, GAZEEREH, CAIRO, EGYPT, *May* 2, 1866: *Tropical Fruits.*—As a few remarks on the cultivation of these in Egypt may not be without interest, I beg to submit the following account of my own experience in regard to them.

I will begin with the Pomegranate (Punica Granatum), which is largely cultivated in this country, and succeeds admirably. It is generally raised from cuttings; it is deciduous, and partakes more of the character of a bush than a tree, being very full of twiggy branches. Upon these and on the points of the leading shoots the fruit is produced, and in order to procure it large and fine, it is necessary to thin out annually a quantity of the small wood during the winter season. The trees are in full blossom at present, and look fresh and beautiful, the flowers being of a bright scarlet tint, and very thick and fleshy: in fact, not unlike a single Camellia, but not quite so large. The fruit attains to a large size, measuring generally from 10 to 16 inches in circumference. The rind is thick, very astringent, and of a yellowish green colour, often streaked with red; it is sometimes used as medicine in cases of dysentery, and some other disorders. The pulp consists of seeds in layers, separated by a thin membrane. In some the seeds are of a dark blood colour, in others they assume a lighter shade of the same tint, but of course they differ in this respect, according to the variety, of which there are many. Being acid, the fruit is naturally very refreshing in hot weather, and when mixed with a little good old port wine and sugar, it is fit to set before a King.

I am rather surprised that the Pomegranate has not been more generally cultivated in England than it is, seeing that the same temperature would suit it which suits the Orange, and it could not fail to prove a pleasant and wholesome addition to the dessert. Like the Apple tree in this country, the Pomegranate is very subject to the attacks of a boring insect—a sort of white grub, with a black head, which eats its way into the core of the strong branches, thus causing considerable injury. Whilst ripening, the fruit is also subject to the attacks of a small grub, consequently at an early stage it is encased in a small bag, which we make from the leaves of the Date Palm. This precaution in a great measure saves the crop, which is generally very abundant; but I imagine that muslin bags, such as are used at home for the protection of Grapes, would be a great improvement upon the Palm leaves just named, and would at the same time afford more light to the fruit.

The Olive (Olea europea) is also grown to a considerable extent in this country, and flowers during the months of June and July. The trees have generally a clean stem from 2 to 4 feet from the ground. Most of those I have seen are from 12 to 20 feet high, and they produce excellent crops. The variety which is most esteemed and grown here, bears a green berry of an oblong form, and is much used for dinner purposes. It is always employed in a pickled state, and is eaten by many people for the purpose of inducing an appetite. Although harsh to the palate upon first acquaintance, yet by a little perseverance a taste for it is speedily acquired, and it is said to be good for promoting digestion. It is propagated from seeds, suckers, layers, and cuttings, but generally from suckers of some strong-growing variety, upon which the finer varieties are worked. The trees are afterwards planted out in rows, in the same manner as our orchards are at home. *James Hardie.*

Australian Mistleto.—Of several most handsome species of Loranthus, two, namely, Loranthus celastroides and L. pendulus, are so frequent in the vicinity of Melbourne as to prove very destructive to the Eucalypti. Such a fine large tree becomes disfigured by dead limbs through these parasites, if not checked in their growth. Indeed, it involves in the Melbourne Botanic Garden and its arboreta the exclusive labour of one man through several months of the year to destroy the Mistletoes, otherwise they would so copiously produce their berries as to be carried through the agency of birds over the whole plantations. Not only are Acaciæ, Eucalypti, Casuarinæ, Melaleucæ, Exocarpi, Banksiæ, and other native trees much infested by them, but also Virgilia capensis, Robinia Pseud-Acacia, Maple, and other fruit trees. *Ferd. Mueller.*

Societies.

BOTANICAL OF EDINBURGH: *June* 14.—Dr. A. Dickson, V.P., in the chair. Specimens of Paulownia imperialis which had flowered in the garden of the Earl of Haddington at Tynninghame, were presented by Lord Haddington's gardener, Mr. Lees. In regard to this plant Mr. Lees states:—"The Paulownia imperialis now in flower here was planted in its present site in the spring of 1855, then about 3 feet high. It is now 13 feet high, and the spread of branches at top is 15 feet. It is growing upon a rich light soil, nearly 3 feet, resting upon a deep bed of gravel. It has set flower buds frequently before this, but they always dropped off in spring. Several times I tried to preserve them by covering them with cotton wadding, but found it of no use, and I have little doubt that it is entirely owing to the fine dry autumn of last year that the flowers have come forward this spring." The following communications were read:—1. *Obituary Notice of Dr. Greville.* By Professor Balfour.——2. *On the Flora of Lynn and the Vicinity.* Part 1. Phanerogamia and Ferns. By Dr. J. Lowe. Compared with that of other counties, the flora of Norfolk is one of great richness, both numerically and in point of rare species. The large list of species is no doubt in some measure due to the researches of those illustrious men whom the county has produced—I mean Sir James Smith, Sir W. J. Hooker, and Dr. Lindley. The valuable list of flowering plants compiled for White's "History of Norfolk" in the last edition, comprises 1027 species and 40 varieties. This catalogue is still further extended in the more recent "Flora of Norfolk," by the Rev. R. Trimmer, one of the most complete county floras I have seen. To the above large number I have added upwards of 30 more, the Rubi and Salices being still very incomplete. The flora of the Lynn district, to which my remarks will be confined, embraces a very large proportion of this number. It is, moreover, very rich in cryptogams, and its fauna is equally prolific. This may be attributed to its peculiar formation, which, including chalk-hills, fen, moor, and sea-marshes, affords a habitat and sustenance to a great variety of animal and vegetable life. In the area under consideration—viz., about 18 miles from Lynn—we find that a line running nearly due north and south divides the marsh land on the west from the chalk on the east. To a line with the shore is an elevated plateau of chalk and lower greensand. Between this and the shore lie the salt marshes. Inland are numerous unenclosed commons, but these are rapidly decreasing before the plough. In the west or marsh district there is no great abundance of Plants rariores. Some there are however worthy of notice. First among these may be mentioned the beautiful Villarsia nymphæoides, which grows luxuriantly in the Ouse, near Hitgay, its elegant yellow flowers, dotted here and there amongst the floating leaves of equally elegant form, contrast well with the more massive Nuphar which grows around. Dr. Lowe then noticed the various plants which he had collected in Norfolk—among others Butomus umbellatus, Peucedanum palustre, Alyssum calycinum, Rumex pulcher, Oblone portulacoides and pedunculata, Setaria glauca, Statice caspica, Juncus acutus, Pyrola rotundifolia, Aceras anthropophora, Carex Pseudo-Cyperus, Tilæa muscosa, Lastrea Thelypteris and crestata, Filago spathulata, Orchis ustulata, Hernaria glabra, and Salsola kali.——Dr. Balfour noticed the discovery of Lepidium Draba, near Burnt Island, by Mr. J. G. Black, and exhibited specimens. He also noticed the discovery of Gnaphalium on the banks of the river Almond, in Perthshire, by the Rev. J. M. Bradshaw, and exhibited specimens. Mr. Mewburn placed on the table a small case of plants, just received from Dr. Mueller, of the Botanic Garden, Melbourne, and brought home by Dr. H. Madden. This case contained seven species of plants, viz.:—Poa ramigera, Sollera radicans, Wittsteinia vesiculosa, Goodenia amplexicaulis, Myriophyllum elatum, new to Australia, and Spelt Mimarum in a former issue (see p. 589) bulbosum, Eucalyptus Traversii, and Mesembryanthemum australe, all established in pots previous to being sent away. It is rarely that we see comparatively soft wooded plants brought home in such good condition, and in so simple a manner. The case was three days on the voyage, and the plants only once received water, but had occasionally sprinklings of fresh water over the cotton covering. This amateur case, which is easily lifted with one hand, was kept on deck during the voyage, and so placed that no salt water could reach it. It is thus constructed:—A rough unplaned old box, 13 inches long, 11 inches broad, and 6 inches deep, has two upright pieces of wood, 16 inches long and 2 inches broad, nailed, one in the centre of each end of the box, and a piece the same breadth and thickness nailed across the top, forming a ridge-appearance. A piece of thick calico of thick unbleached cotton is stretched, and firmly tacked down. The ends are likewise covered with the same material. It is certainly a great improvement on the old cumbrous earth cases requiring two or more men to lift them. From the great simplicity of this case, it can be brought home for nothing not more than 4*s.* or 5*s.* 6*d.* altogether, it will be found a great benefit to amateurs wishing to take out or bring home a few choice plants. The pots containing the plants fill the box, and are kept from moving by having a little damp moss introduced between them, and also over the surface of the pots. As in the ordinary Wardian cases, which are usually filled with soil, the plants are turned out of pots and planted in the earth, often only a few days before being sent away. In such instances no new roots can be formed. This would require a period of three or four months, whereas in the case of well established plants sent in pots, a few hours' notice previous to removal is all that is required. The light which the cotton allows to penetrate, and the air which reaches the plants through its fine meshes, seems to be more favourable for the preservation of delicate or soft wooded plants, both as regards colour and substance, than the ordinary heavy air-tight glazed Wardian cases, which not unfrequently prove injurious to tender plants, by causing them to become pale and much drawn up.* Such earth cases are very beneficial for all hard-wooded plants if previously established in them, and should be employed when the transmission of plants on a large scale is required; but for amateurs wishing to convey one or two pet plants, the small cotton-covered case will be found the most profitable.

EPPING HORTICULTURAL EXHIBITION: *July* 17. This was held in a field adjoining that in which the Essex Agricultural Society's Annual Show took place. The spot chosen for the purpose was in every way satisfactory: the tents were judiciously arranged upon rising ground, from which a capital view of the surrounding country could be obtained. The number of visitors who came from far and near to witness such a never-wearying sight as a "flower show" was surprising. The whole usually quiet town of Epping was all bustle and activity upon the occasion, and was thronged with vehicles of every description. Flags were flying in all directions, and the houses in many instances were prettily decorated with evergreens and flowers. It was the first show that had been held in Epping, and we hoped that it would not be the last, as after all expenses were paid there was a favourable balance in hand. As regards the Show itself it could not well have been prettier, the plants were good, and the same may be said of fruit. The Cut Roses from Messrs. Paul & Son, Cant, Fraser, and Marshall were magnificent. Plants in pots also from these were also satisfactory. Of the last no fewer than 30 were shown, by far the best of which came from — Arbuthnot, Esq., Enfield.

Great numbers of British plants were exhibited by the school children of Epping, a department which all provincial societies should undoubtedly encourage, infusing as it does into the young a taste for flowers. Great credit is due to the promoters of this Show for the manner in which it was carried out. At the entrance of the large tent were two most beautiful plants of Dracæna elegans; a pair of Cocos Weddelliana, with its rich dark foliage; upon the centre tables were four rows of stove and greenhouse plants, Ferns, and fine foliaged plants; the side tables were filled with Orchids, Pelargoniums, Achimenes, Gloxinias, Heaths, and a large collection of flowering and fine-foliaged plants. The latter came from Mr. Fraser, Lea Bridge. Mr. Williams, Holloway, also furnished a fine collection of Orchids, Ferns, and fine-foliaged plants, which were, however, not for competition. Associated with these were fine collections of cut Roses, of which Messrs. Paul & Son had a beautiful exhibition, not for competition.

Fruit occupied a smaller tent; another compartment was filled with fruit trees in pots from Mr. Fraser. British Ferns were shown by Mr. G. Lorrell, Chelmsford.

Among the principal prize-takers were—Mr. Wheeler, gr. to J. Philpotts, Esq., Stamford Hill; Mr. Ward, gr. to J. Wilkins, Esq., The Poplars; Mr. W. J. Carville, Esq., Mark Hall, Harlow; Mr. W. Young, gr., Highgate; Mr. H. Day, gr. to W. Whiteman, Esq., The Grove, Epping; Mr. G. Searle, The Nurseries, Chipping Ongar; Mr. W. Bones, gr., Havering; Mr. J. Huntley, gr., Moor Hall, Essex; Mr. Cant, Colchester; Mr. J. Fraser, Lea Bridge Road; Mr. Elliott, gr. to F. Soames, Esq., Waltham Abbey; R. W. Postans, Esq., Brentwood; Mr. B. Porter, gr. to the Hon. A. F. Ashley, Copt Hall, Epping; J. Marshall, Esq., Clay Hill, Enfield; — Arbuthnot, Esq., Clay Hill, Enfield; Mr. C. Gellibrand, Esq., Albyns, Romford; Mr. Jas. Ivey, gr. to Capt. Leask, High Beech, Waltham Abbey; Mr. Moss, The Mills, Chadwell Heath; C. E. Bailey, Esq., Coopersale Hall, Epping; Mr. Skilbeck, Enfield; Mr. Inglish, gr. to — Doubleday, Esq., Epping; Miss Clara Metcalfe, Epping; and Martin G. Nockolds, Esq. The last had a fine case of tricolor-leaved Pelargoniums.

SLEAFORD HORTICULTURAL SHOW: *July* 19.—This exhibition was in every respect superior to those of former years. It was held in three tents, placed in nearly a triangular form, the first being filled with stove and greenhouse plants, artistically arranged, considering the space, which was too small; the second tent was set apart for cut flowers and fruits, and at the end of this tent was a selection of Ferns, arranged in rock work, from Mr. F. Warwick; the next tent contained vegetables and cottagers' productions. Fourteen amateur stove and greenhouse plants, both as to number and beauty, were those from the gardens at Aswarby Park, which far surpassed anything of the kind ever seen in Sleaford before, and drew forth from the judges the expression that it richly deserved a prize of 20*l.* Among them we noticed Clerodendron Thomsonæ, with splendid red and white flowers, Kalosanthes, Allamandas, Rhynchospermum jasminoides, Clerodendron infortunatum, Hydrangeas, Caladium Chantinii and Belleymei, Croton angustifolium, Aloe sia macrorhiza variegata

Maranta zebrina, and others. The ten ornamental and fine-foliaged plants from the gardens of H. Chaplin, Esq., Clapham, were exceedingly beautiful, and received, as they deserved, a first prize; this collection included Erica [illegible] Stephanotis [illegible] Statice profusa, Swainsona [illegible] Rhynchospermum jasminoides, Clerodendron [illegible] [illegible] and Aphelexis [illegible] purpurea. From Lady Mary Hamilton's garden [illegible] came a fine selection of plants of this class, which attracted much attention. [illegible] of this class were not large, but those exhibited by Mr. F. [illegible] Esq., and T. [illegible] Esq., were magnificent specimens [illegible] of considerable height, and well furnished with flowers. There was a good display of Ferns, Lady Mary Hamilton and Sir T. Whichcote being the successful competitors in these classes. The show of Cockscombs, Begonias, Gloxinias, Verbenas, Pelargoniums, and Petunias was not large.

A second tent contained Cut Flowers, Fruit, &c. At its entrance was a fine collection of Zonal Pelargoniums from the nursery of Mr. F. Warwick, to which an extra prize was awarded; amongst them were Helen Lindsay, Snowball, Faust, Eve, Roi d'Italie, Madame Barre, Italia Unita, Golden Fleece, Mrs. Pollock, and Masterpiece. Hollyhocks were large [illegible] them were the fruit and seed pods of Cassia Fistula, from the East and West Indies, a remarkable production, shown by T. Jacobson, Esq. Passing thence, we came to the Roses, which were excellent, as were also the collections of Grasses and wild flowers. Fruits and flowers for decoration were nicely arranged. There was a paucity in horticultural designs, only one being shown, and to that only a second prize was awarded. The fruits exhibited were good, but we missed the Vines in pots usually shown by the Rev. O. Smith. The basket of fruit and flowers exhibited by Sir T. Whichcote, attracted considerable attention. In this tent we noticed the new Radish, Raphanus caudatus, shown by Lady Mary Hamilton, to which an extra prize was awarded. The last tent was devoted to vegetables and cottagers' productions, which were deservedly praised, and to do justice in this department the task of the judges was of no light character, where everything appeared so nicely balanced. For the prizes awarded on the occasion—a long list—we have no room.

Notices of Books.

Le Specie dei Cotoni, descritte da Filippo Parlatore. (The Species of Cotton, described by Philip Parlatore, &c.) Firenze, 1866, 4to, pp. 64. Atlas in folio, tab. colorat. vi.

Those who remember the extensive collections illustrative of the growth of Cotton in Italy, which were exhibited in the International Exhibition of 1862, will feel no surprise at the publication of a descriptive account of the various species of Gossypium by one of the foremost botanists of the Italian peninsula. It can hardly be doubted that whenever Peace again reigns over that fair land, Cotton culture will be resumed with increased vigour, and the work of Professor Parlatore will receive more attention at the hands of his fellow-countrymen than it is likely to do at the present moment. We in England have also an interest in Cotton, which the experience of the last few years has shown can hardly be exaggerated; but it is not for us in this place to enter into the statistics of Cotton culture. Let us confine ourselves to the subject matter of the book before us. The botanical history of the genus Gossypium affords an excellent illustration of the difficulties with which the scientific botanist has to contend, as well as of the conflicting interests of the botanist and the cultivator.

In many parts of Asia, in tropical Africa, in South America, in the Sandwich Islands, in Tahiti, one or more kinds of Cotton grow apparently quite in the wild state. In Australia an allied species also exists, and one which till lately was referred to the genus Gossypium.

How widely diffused is the cultivation of the same or other species of Cotton throughout the regions we have mentioned, our readers need hardly be told. This culture too is in many cases not a thing of yesterday, but has been practised from time immemorial. In the highlands in the interior of tropical Africa, Livingstone and Kirk found Cotton cultivated, which, judging from herbarium specimens, is very similar, if not quite identical, with the well-known Sea Island Cotton. From the same district the indefatigable travellers just mentioned have sent home specimens hardly, if at all, distinguishable from the Peruvian or Pernambuco Cotton. In the western part of Equatorial Africa, in addition to other kinds, the Tree Cotton (G. arboreum) is cultivated. Hence, then, without going into more detail, it will be obvious that, either wild or cultivated, several varieties of Cotton plant exist throughout wide regions of the globe, and that frequently the same variety may be found in widely-separated countries.

Now let us look at the botanical characteristics of these several varieties, and bear in mind that it is upon these said characteristics, their presence or absence, that the botanist has to found his discrimination of the various kinds, and to base his nomenclature of them. The characters, then, that have been supposed to be available for the distinction of the species are, among others these:—the duration of the plant, annual, biennial, or perennial; the more or less dense covering of hair, the lobation of the leaves, the form of the lobes, the number of glands on them, the segments of the involucre, the colour of the flowers or of the woolly covering of the seed, the distinctness or mutual adhesion of the seeds, the facility or difficulty with which the woolly covering of the seed can be removed, &c. Now, not one of the above so-called characters is constant. Gossypium herbaceum becomes shrubby, G. arboreum becomes herbaceous; the palmately lobed leaves are sometimes replaced by entire leaves; the glands of the leaves are sometimes present, at other times absent; little dependence can be placed on the form of the involucre, or the colour of the flower; the form of the capsule varies, and even the characters derived from the seeds, probably the best of any, cannot always be relied on. Thus Dr. Seemann, in the first part of the Flora Vitiensis, says that the species cultivated in these islands may readily be distinguished by the following *absolute* characters:—

Seeds closely adherent:—
G. peruvianum, or Kidney Cotton.
Seeds disconnected:—
Naked after the removal of the wool:
G. barbadense.
Mossy after the removal of the wool:
Moss greenish: G. arboreum.
Moss tawny: G. tomentosum.

We take it for granted that Dr. Seemann is right so far as the Fijian plants go; we have no materials ourselves on which to frame an opinion, but it is opposed to our experience of Cotton grown in other countries, and we can by no means attribute to the seeds the absolute characteristics that Dr. Seemann has done. The late Dr. Irving, who studied the species of Cotton grown in West Africa, and published an account of them in Hooker's "Journal of Botany," vol. 7, 1865, p. 298, speaks of the seeds of G. barbadense as "various." He describes three varieties: the first with black and naked seeds, perfectly free from "fuzz" or down, excepting a small fawn-coloured or greenish white tuft at one extremity; the second, whose seeds he describes as entirely covered with a closely adherent greenish grey or whitish "fuzz;" and the third, whose seeds resemble both the preceding, one-half [of each seed] perfectly clear, the other fuzz covered. Now, were it not for this third group, we might fancy that Dr. Irving had here confounded two or three species, and indeed among his dried specimens there are certainly two species; but it is nevertheless clear from the tenour of Dr. Irving's remarks, that he was quite aware of the existence of two or more species, and therefore in his description of the varieties of G. barbadense was not likely to have confounded other species with it. Moreover, he reports that the prevalent opinion is that the same seed will in time produce all the varieties he mentions, though he adds that he has never seen the different sorts of seed on the same plant. Again, in Dr. Royle's work on the culture of Cotton in India, it is expressly stated of American Cotton that the same Cotton seed planted in one Cotton field will give a black or naked seed, which when planted in a different soil and situation, will be prone to run into large Cotton with long bolls, and with seed tufted at the end with fuzz. Dr. Royle notes similar variations in India.

It is, therefore no matter for surprise that great diversity of opinion should exist as to the species of Cotton and the means of discriminating them. The "lumper," or, as he is more euphoniously styled now, the "consolidator!" finds it far more consonant with his notions to admit three or four species only, whence he supposes all the cultivated varieties to have sprung, while the "hair-splitter" may revel in the fine field that is presented to him for the exercise of his keen observation. So far as Botany is concerned, we undoubtedly think the consolidating plan is the best—the one most consistent with the present state of science, the one which presents least difficulties, and the one which affords the best explanation of the supposed origin and dispersion of each species. But for local purposes—for the interest of the cultivator—this condensing process is not so desirable; one particular variety—constant enough in certain localities or under a certain method of treatment, may be of great value to the practical cultivator, though in real truth it may, botanically speaking, be an unimportant variety. Is the cultivator then to be debarred from giving a name to his plant? Or is the botanist whose frame of mind, or in whom the accidents of position, or other circumstance, engender the conviction that such and such a form is of specific value, to be prevented from bestowing specific honours on the plants he studies with such observant zeal? No one would say that. But what is the result? An interminable synonymy—a nuisance not only from its cumbrousness and its extent, but also because from the very facts of the case, as we have tried to show, it is hardly possible that any two botanists can think alike on this matter, and so the attempt to unravel the synonymy is too often not only a failure, but it adds to the mischief. This being so, we are glad to see that in the treatise before us Professor Parlatore takes moderate views, and, unlike his fellow-countryman Todaro, does not raise to specific rank and *name* the numerous varying forms of this difficult genus.

Todaro enumerates 34 species; Bentham and Hooker set the number down as probably three. Parlatore describes six, exclusive of as many more "specie dubbie," and of one or two other Australian species now referred to the genus Sturtia.

Among the new species described by Parlatore is one that illustrates well the difficulties of synonymy. It is a plant found by Forster, Menzies, and others in the Sandwich Islands, and known in herbaria under Nuttall's manuscript name of G. tomentosum. Dr. Seemann recognises this name, and publishes it in his "Flora Vitiensis," but in the work before us it is published also by Parlatore as G. sandvicense. If the Italian Professor be the later of the two in bestowing the specific appellation, of course his name must be abandoned. Another plant described and figured in this work, one named by the author G. taitense, is a very distinct-looking species; but this, according to Seemann, who quotes Solander's long and superfluous description, is the true G. religiosum of Linnæus, while the plant figured by Parlatore under that name must, we presume, be referred to G. peruvianum of Cavanilles.

No mention is made in Parlatore's work of a singular and apparently very distinct little species found by Kotschy in Ethiopia, by Welwitsch in Angola, and by Waura in Benguela. Dr. Welwitsch, who gave this plant the manuscript name of G. microcarpum, considers it to be the only truly wild African species. It is certainly very distinct from any other species, but unluckily, though so distinct, it has already three names—the manuscript name of Welwitsch above alluded to, the published name of Waura, namely, G. anomalum; while Fenzl has given to the same plant the name of G. senarense!

Dr. Seemann, in the work above-mentioned, describes another species from the Sandwich Islands under the name of G. drynarioides; this is unknown to us, and as neither fruit nor seeds are described, it is difficult to form an opinion as to its validity. There is moreover in the British Museum a specimen of Pavon's from Mexico, which is again different from any species known to us in the peculiarly long tails to the leaf-lobes, and in the segments of the involucre, which are exactly like the leaf-lobes in miniature. Not to impose yet another name to the synonymy of this terrible genus, we pass this over without further comment, at least until the examination of the capsule and seeds give us the right to speak more authoritatively as to its affinities. Parlatore's six species, then, may probably be raised in number to eight or ten, without incurring the risk on the one side of associating things really distinct, or on the other of establishing a multitude of so-called specific forms, the discrimination between which is not possible to any one excepting to the specialist, and not always to him.

We have not alluded in this notice to the interesting researches of Major Clarke as to the hybridisation of these plants; the practical value of these experiments is obvious, and even in a strictly botanical point of view these researches are likely to be valuable, for instance, the discovery of the fact that the Indian and American species cannot be made to cross.

Florists' Flowers.

WHAT IS A FLORISTS' FLOWER?—This question seems to have perplexed some of your correspondents; and as none of them have yet given a satisfactory answer to it, I am induced to make a few remarks, with the hope that they may assist in elucidating the subject.

The word "Florist" seems to have been in use so long ago as the beginning of the seventeenth century, when it was used by Sir Henry Wotton, as meaning a cultivator of flowers in a general sense. It was soon afterwards used in a restricted sense, as meaning a cultivator of select flowers, which thence were styled "florists' flowers," in contradistinction to border flowers; extraordinary care and attention having been bestowed upon their culture, and certain points been agreed upon by their cultivators as necessary to perfection and to distinguish them from ordinary border flowers, which had received no such careful culture.

Mr. Loudon classes florists' flowers under the head of herbaceous plants, and states that "florists' flowers are so called as being flowers by way of eminence and because the principal sorts of them for a long time almost exclusively engaged the attention of the flower gardener. The Dutch, in this as in most other departments of gardening, were the first to bring it into notice; and more particularly by the great excellence to which they attained in the culture of florists' bulbs.

"Hence have been formed, by the common consent of florists, what are called canons of criticism, by which to estimate the properties of new varieties of established sorts of florists' flowers." He afterwards proceeds to describe a considerable number of herbaceous plants under the division of florists' flowers, among which are included: Hyacinth, Tulip, Ranunculus, Anemone, Crocus, Narcissus, Dahlia, Auricula, Polyanthus, Carnation, Pink, and Pansy. He mentions the criterion that has been agreed upon in estimating the qualities of each of the above-named flowers. The line which separates florists' flowers from border and other flowers is not very tangible, and will probably remain so and be fluctuating, as some plants are neglected and others taken into favour. Mr. Loudon also includes amongst florists' flowers—Iris, Gladiolus, Lily, Fritillaria, Ixia, Primrose, Chrysanthemum, and some others; but without stating any criterion peculiar to each, leaving them to be estimated on the general principles sanctioned by florists.

A florists' flower may therefore, I think, be defined as an herbaceous flower, capable of being grown in the open ground, that has received better cultivation than an ordinary border flower, and to estimate the properties of which certain criteria or canons have been agreed upon by florists. Thus are excluded from the class of florists' flowers, shrubs, greenhouse plants, and annuals, each of which belongs to a separate class of its own.

We are now better able to answer the question, "Is the Rose a florists' flower?" If the above definition is correct, this question must be answered in the negative—the Rose is not a florists' flower; being a shrub, its proper place is amongst "select shrubs," such as the Rhododendron, Azalea, &c., where it has accordingly been placed by Mr. Loudon, and whence the "Queen of Flowers" may look down as from a higher sphere, and survey the subjects of her floral kingdom. *A. T.* [We cannot altogether agree with "A. T." There is no good reason that we can see, for excluding plants of shrubby habit from the category of florists' flowers, and certainly none for excluding greenhouse plants, which require the shelter of glass only in a greater degree than the Auricula, one of the most unquestioned of florists' flowers. Eds.]

ROSES, NEW AND OLD.—The Roses of Herts have now become well known to all cultivators, the soil and the climate of that county being congenial to the growth of the plant and development of the flowers. Stiff, unctuous loam and heavy dews bring them out in the splendid condition seen at the many exhibitions of this beautiful and fragrant flower. Messrs. Paul & Son have this year been amongst the foremost in the prize lists, and any one who merely walks through the vast quantity cultivated by them cannot wonder at their success, the plants being healthy, clean, and most

vigorous, with blossoms showing above the ample foliage by hundreds of thousands. To the florist who, like myself, devotes himself carefully to find the qualities of form, substance, and other points necessary to constitute a new flower an acquisition to those already in cultivation, ample scope is given in such a collection to exercise his ideas of the beautiful.

The Roses sent out last spring first claim attention, and amongst them are some fine varieties. First in the list stands Alfred Colomb, a very deep bright red, large and full; one of the best, if not the best of the season. Other new sorts are:—Beatrix, carmine rose, a Bourbon, very pretty; Camille Bernardin, too flat; Charles Rouillard, beautiful light rose, fine form; Comte Alphonse de Sereye, bright clear red, tinted light purple, flat and loose; Exposition de Brie, fine bright scarlet, very large, full and fine form; Jean Cherpin, velvety purple, bright red centre, large and full; John Grier, deep bright rose, fine form; Josephine de Beauharnais, somewhat like Lælia, and probably will open better; Mademoiselle Marguérite Dombrain, too much like La Reine; President Mas, bright velvety red, globular and flat; Prudence Besson, reddish carmine, coarse; Prince de Porcia, bright shaded vermilion, large and full, fine form; Souvenir de Dr. Jamain, deep blackish crimson, not an acquisition; Sir William Rollisson, very dark red, a first-class flower. The other varieties of 1866 not named in this list, were not in bloom at the time of my visit.

In Bourbons, Jules César and Mdlle. Jenny Gay are two very nice distinct varieties; the former shaded cherry and rose, and the latter flesh white, shaded with rose.

Of Noisettes, Maréchal Niel takes pre-eminence. Nearly every lateral was showing a bud at the end of the shoot, proving that it is a fine autumn bloomer, and a true Noisette, partaking more of the character of Isabella Gray than any other. It is the finest yellow for exhibition we have, but for pot culture we want a yellow Madame Willermoz.

The Roses of 1865 were in great force. Duchesse de Caylus, carmine, extra shape; Xavier Olibo, shaded scarlet; Monsieur Boncenne, blackish velvety purple; and John Keynes, bright scarlet; with Marie Baumann, bright cherry red, the exact colour of Beauty of Westerham, only very double, of good size and fit for any stand—these five appeared to me to be the cream; although Baronne de Maynard, pure white, and Madame Gustave Bonnet, white shaded with carmine, will make two fine Roses for massing or beds, flowering most profusely.

Belle Normandie, Belle Rose, Charles Margottin, Dr. Andry, Madame Charles Verdier, Semiramis, and one or two others will soon be consigned to oblivion. I must not pass by, however, Princess Mary of Cambridge, a most beautiful variety, and for early flowering under glass quite a gem. Madame Ambroise Verschaffelt, rose shaded with lilac, is also a good useful flower. Charles Wood, Duke of Wellington, Duchesse de Medina Cœli, General d'Haultpoult, Madame Moreau, have some good properties, but I am afraid will not be A 1. Souvenir de William Wood, rich blackish purple, is a very good useful Rose, and has one great recommendation—it does not burn, like most of the dark Roses, but stands the sun well.

Of older Roses, first and foremost stands Madame Victor Verdier. This will be the universal favourite, taking the place of General Jacqueminot, and all of that colour; the plant is of fine habit, profuse in blooming, and carries fine foliage, while the colour is brilliant carmine, and the flowers of good shape; the petals are not equal in substance to Charles Lefebvre, it is, however, much freer as to growth and bloom.

Alpaide de Rotalier is not a good Rose; it is large, globular and flat, showy, but not a good exhibition variety. Alphonse Damaisin and Amiral Gravina were in their best form, and extra fine. Centifolia rosea is a pretty colour, but the young growth hides the flowers. Claude Million, deep violet crimson, fine colour, only a little flat. Eugène Verdier and Duc de Rohan, both high and rich colours, were very good. François Louvat, a large fine exhibition Rose, not much known, was very grand; crimson shaded with lilac. Leopold I., bright deep red, will be also a grand exhibition variety. Leopold Hausburg and La Phœcenne, two dark Roses, were very good. Lord Clyde and Lord Macaulay, both very fine. Madame Caillat, bright rosy red, one of the best of Hybrid Perpetuals. Madame Derreux Donville, light glacé rose, lined with white, a very useful and delicate variety. Pierre Notting, Mademoiselle Bonnaire, Madame Furtado, Madame Rivers, Prince Camille de Rohan, Comtesse de Chabrillant, and other well-known favourites, were in great force, and splendid blossoms met the eye at every turn. It would be tedious to enumerate one-half of the varieties in this collection, extending over several acres of ground, but no one should lose the opportunity of seeing the various kinds in bloom, as a selection made on the spot is far better than from any catalogue.

I had noted several Bourbons, Noisettes, &c., but as these are also autumnal bloomers, I hope to be able again to pay the Cheshunt Nurseries a visit, and note the best autumnal bloomers. All the Roses named, and not otherwise classed, are Hybrid Perpetuals, and will be found in the catalogues under that head. *William Heale, Upper Clapton.*

The Apiary.

STEWARTON HIVES.—Allow me to thank Mr. William Thomson, Blantyre, for the information which he has given concerning these hives in your impressions of June 9 and July 7. Being convinced of the value of anything in common use among so acute and industrious a people as the Scotch, I am determined on mastering the management of these hives if it be possible, and, therefore, I venture to ask him for a little more information upon one or two points.

Mr. Thomson says, "A fourth or fifth box should be added whenever the honey-box is well begun." Under what circumstances could the box added be the fifth? I understand that two boxes contain the stock in winter; these with the honey-box would be three; and the body-box to be put under when the latter is well begun would make four only. Certainly an empty box is sometimes placed beneath the stock in winter for ventilation, just as Mr. Thomson tells us the eke is to be used; but it appears unlikely that a body-box could be added beneath that empty one.

What is the meaning of the latter part of the sentence, "The queen does not venture on the outside combs, so much as at the ends," and would Mr. Thomson, under any circumstances, draw more than the two outside slides to give communication with the supers?

I presume super No. 1 is taken off altogether before putting on super, or honey box, No. 2.

Lastly, what is Mr. Thomson's opinion of the 9-inch deep Stewarton hives, which have been lately sent out by the Stewarton makers? They state that two of them constitute a set; one of them is in winter the stock, and the other is put beneath when a super (or honey box) is added. This management gives large additional room beneath all at once, and appears to be without the advantages of the shallow-box system; but the makers say that those who have used them prefer them. I think that it might be desirable for Mr. Thomson to tell us some of those amusing and ludicrous blunders in the management of Stewarton hives that he alluded to in his letter which appears in your Number of July the 7th, for the detail of mistakes is sometimes one of the best methods of informing others.

In this letter, as well as in that which appeared in your Paper of June 9th, Mr. Thomson speaks of an extraordinary number of boxes in the stock hive before the honey boxes are put on, saying, "the honey boxes are just being put on, while the storified hives are full in four and five boxes." If he would tell us when these are first added to the two in which (with an eke) the stock is wintered, and what the signs of their being wanted are, he would oblige *A Novice; but a determined One.*

SWARMING.—I am much obliged by your answers to my queries. I did not know it was an *invariable* rule that the old queen accompanied what is usually known as a maiden swarm. If so, I presume brood would be the consequence; but whence then does the honey from a maiden swarm (which is, I believe, called "virgin honey") derive its great value? I will send you the results of my grooved frame hive with pleasure later in the season. It is expensive to make, and would therefore only answer as an experimental hive. The back is made of a piece of plate-glass, also running in grooves cut in the floor-board and top, and by sliding it out at either side I can withdraw, partially or wholly, any of the bars on their grooves, having previously decided (by looking through the glass) which I wish to remove.

Will you please tell me about what amount of chloroform is necessary to stupify bees, and if a slight overdose will kill?

The cause of the delay between my swarm of the 26th April and the cast (19 days) was an uninterrupted spell of bad weather. *G.*

[There is no truth in the common notion that honey obtained from what are usually termed maiden swarms is of superior excellence, except inasmuch that honey-comb from swarms of the current year is much better and freer from brood and pollen than that which can usually be taken from stock hives of one or more seasons old. The comb at the top of a young hive is usually clean and pure, and *almost* equal to that obtained in a good super. But no honey from stock hives can equal in purity and delicacy that taken from a rapidly-filled super, which has been quite free from the intrusion of the queen. We do not like the administration of chloroform to bees in any form or quantity; it is a most dangerous agent for anæsthetic or stupifying purposes; in any quantity we believe it to be absolutely painful to the little insects. Some years ago we lost two splendid stocks by the use of chloroform, and determined never to try it again for such a purpose. Have you tried "DRIVING?"—there is nothing equal to it in bee-practice for subduing refractory bees.]

Garden Memoranda.

SANDRINGHAM, THE COUNTRY RESIDENCE OF HIS ROYAL HIGHNESS THE PRINCE OF WALES.—At the very outskirts of the county of Norfolk, and not many miles from the quaint-looking borough of Lyme Regis, lies the estate which the Prince of Wales has recently acquired. Its position is unexceptionable, receding, as it does, in bold undulations from the Wash, which bounds it on the one side, and presenting many picturesque features, common enough in rural scenery, which engage the attention and elicit the admiration of the lover of Nature. Unlike the breadths of country which border rivers and oceans, there is not here that fertility, agriculturally speaking, which one might have expected; for although there are some patches which indicate a high state of cultivation, they occur more like the green oases in the desert than as indicating a rich agricultural district. In a word, it is evident that the resources of the estate, in bygone years, have not been turned to good account, else there would have been less moorland surface tenanted with wild Heath—to say the least, somewhat more of natural pasturage; and why not, with such materials to work upon as a chalk and marly subsoil, with a crust of no inconsiderable depth of a loamy peat full of fibre, have made preparation for a yield of cereal crops, and a regular rotation of agricultural husbandry? The labourers are not few, and their hire—12*s.* a week—would be scouted by the London artisan as almost totally unfitted to keep body and soul together. We learned that before the Prince purchased the estate, 10*s.* per week was the general wage, and it was considered a godsend when his Royal Highness, through his several heads of departments, gave employment to not a few, thus opening up a source for the glut of labour. Most wonderful of all in civilised England, we were told that the Norfolk artisans are all but uneducated, that many of them can scarcely read, and that few, very few indeed, are capable of writing their own names—and this, too, within a hundred miles of the great centre of wealth, and the boasted educational institutions of the country!

Men of the class just mentioned are employed under Mr. Carmichael in trenching up the great breadths of waste land already referred to, preparing it for pasturage and plantations, several of which have been recently formed, and give high promise in a few years of affording capital shelter for game. One may see at a glance, from the extensive operations that have been recently going on in the way of forming plantations, and the method in practice with those which have been formed for years, that the Prince of Wales is a keen sportsman; and if proof were wanted, it is abundantly evident in the long lines of hencoop-like boxes where the breeding and rearing of pheasants is carried on to an unprecedented extent, and with a success which can only be attained by men who have a thorough practical knowledge of as well as an infinite delight in the work in which they are engaged. Road-making has been a heavy item in the formation of the estate, and might have presented almost insuperable difficulties in the way of cost, had there not been abundance of spar and other hard mineral deposits readily accessible. As it is, there has evidently been an extraordinary amount of work accomplished in a short time, else one might have looked for a more artistic finish in the shape of spacious grassy avenues on either side of the numerous drives, and more geometrical outlines—a matter to which Mr. Carmichael, in the multitude of his duties, will eventually turn his attention. The best of all white sand for glass-making is obtainable in this district, and in such quantity as to furnish an unlimited supply. For general horticultural purposes it could not be excelled, furnishing a suitable ingredient for rendering our soils for potting more porous, and less liable to become sodden.

Then as to the residence, it might be tolerated as a shooting box, but there is no princely or even baronial dignity about its exterior. In an architectural point of view it is sadly deficient—no style about it, and not even size to recommend it. It is situated, too, in about the least suitable and salubrious spot on the whole estate, and yet works are in progress for remodelling it. If the future King of England elects this as a summer and autumn residence, he will be very ill-advised indeed to remodel a sixth-rate house in a low-lying, ill-chosen position. The gates which bar the principal entrance are the famous Norwich gates, made by Bishop & Barnard, and which attracted so much notice at the Exhibition of 1862. They were presented by the county of Norfolk to his Royal Highness, and are of fine proportions and elaborate design. The Rose, the Thistle, and the Shamrock are very artistically wrought in, and so are the various coats of arms as representing the titles of this scion of royalty—Earl of Dublin, Baron Renfrew, Prince of Wales, Duke of Cornwall, Lord Chesterfield, Duke of Saxe-Coburg and Gotha, with the crown and shield in the centre, all beautifully executed. One could scarcely conceive anything more out of keeping with the narrow contracted approach, bordered with fine specimens of Limes, Chestnuts, and Elms, and the mansion to which it leads. In a quadrangle close by are specimens of choice Conifers planted by scions of Royalty and distinguished nobility, a thing which both Prince and Princess seem to take much delight in. The interest of the general visitor is at once awakened, and the attention rivetted by the conspicuous badge in front of each specimen, recording date and year of planting, with the name in full of the distinguished visitor who, "spade in hand," conducted the operation.

Confronting the mansion is a little flower garden laid out into a series of detached beds on Grass, which has a pleasing effect from the open balustrade, and the park scenery is not without interest. Although there are no remarkable specimens of aged trees, still there are sufficient to give a character to the landscape. Underwood, in the shape of Rhododendrons and Bay Laurels, is particularly vigorous, and bids fair not only to afford capital cover for game, but to become highly ornamental. At the time of our visit the woods were rich with the hues of Laburnum, Lilacs, and lots of Hawthorn, which is popularly termed "May." Numbers of nicely-designed Gothic structures are dotted conspicuously about, the largest and best of which is the residence recently erected for General Knollys. The Equerry has also a private detached residence, and keepers' and head gardeners' houses are all conspicuous, and after a uniform style. In construction they are unique, being built of black carr and brick, the latter forming the principal framework and outline, and the former introduced to make good the "skeleton." It must be a laborious job for the skilled artizan, the pieces are all so thin and wedge-like, and so bound together that, at a distance, they present much the appearance of a "drystone dyke"—a piece of masonry almost peculiar to the Highlands of Scotland, as forming a common boundary for roads, fields, &c. However, in the case of the carr, it will be found on examination that the pieces are bound together by mortar, chiefly on the inner surface. Were labour highly paid, and money an object, the construction of buildings with material of this description would be attended with considerable expense, for a London

bricklayer could easily go under double the ground with the material which he is in the habit of putting into use.

Retracing our steps towards the main approach, and repassing the famous entrance gates, we almost immediately confront the new gardens. *A.*

(To be Continued.)

Miscellaneous.

Sale of Orchids.—The following prices were realised for a few of the more important lots in a sale of established plants held the other day at Stevens's, viz.:—Odontoglossum nevium majus, 37*l.*; O. Phalænopsis, 17*l.*; O. triumphans, 14*l.*; O. Pescatorei, 10*l.* 10*s.*; Cypripedium Lowii, 21*l.*; C. caudatum, 16*l.*; C. superbum, 10*l.* 10*s.*; C. villosum, 9*l.* 9*s.*; C. barbatum giganteum, a similar sum; C. Dayanum, 7*l.*; Aerides Schröderi, with 13 leaves, 18*l.* 18*s.*; A. affine, 12*l.*; Angræcum sesquipedale, with 24 leaves, 17*l.*; Cattleya Warneri, 15*l.*; C. superba, 12*l.* 10*s.*; C. lobata, 10*l.*; Dendrobium Falconeri, 18*l.* 18*s.*; D. lituiflorum, 12*l.* 12*s.*; Lælia cinnabarina, 10*l.* 10*s.*; L. elegans, 8*l.* 8*s.*; Trichopilia crispa, 10*l.* 10*s.*; Uropedium Lindenii, 8*l.*; Saccolabium retusum, 8*l.* 10*s.*; Vanda Lowii, a similar sum; V. cærulea, 7*l.*; V. suavis, 7*l.*; V. Batemanni, 7*l.* 10*s.*; Cœlogyne cristata, 8*l.* 10*s.* Other lots, of which there were in all 436, fetched between 12*s.* and 6*l.* per lot. The sum realised for the whole sale, which lasted two days, was 1100*l.*

Transportation of Plants.—An Australian paper, the *Launceston Examiner*, states that there came in the ice-house with the salmon ova from England, arriving in Hobart Town in May, two bundles of Heather and a few shrubs, as an experiment, to try this plan of transportation. Upon the arrival of the 'Lincolnshire' these were sent over to Mr. Mitchell, of the Experimental Farm, who has reported upon them as follows:—"The six Apple trees and also the two species of Heath (vulgaris and ciliaris), three plants of each, sent out on the surface of the ice-bin along with the salmon ova, arrived here in the most perfect condition. Indeed there is not even a decayed leaf on the Heaths, and the whole of the plants are in a perfect health as if they had only been lifted out of the nursery on the day they were handed over to me."

Gooseberry Caterpillar.—Much has been written, and many directions have been given, as to the destruction of Gooseberry caterpillar; but I have never seen recommended the means that I have adopted with unfailing success for several years. This consists in dusting every bush as soon as a caterpillar makes its appearance with powdered white hellebore. I obtain it of a chemist at the trifling cost of 1*s.* 8*d.* per pound, which is sufficient for 50 bushes. It is very rare that there is any need to repeat the dose, as the caterpillars are found dead on or beneath the bushes the next day. The bushes should be dusted in dry weather, as rain is apt to wash much of the hellebore off the leaves. I apply it by means of a common sulphurator. Should any one try it, it will be found effectual. *J. S. S., in West of Scotland Horticultural Magazine.* [The use of fresh white hellebore powder has been frequently recommended in our pages for destroying Gooseberry caterpillar. It should be washed off the berries before they are eaten, as it is poisonous.]

The Preservation of Lemons.—I have for some time adopted a plan of securing fresh Lemon-juice at all seasons of the year, by the very simple process of varnishing Lemons with a solution of shellac in spirits of wine. As an experiment, I kept a Lemon many months in this way; and as Lemons unprotected from external moisture are prone to decay, and the juice to deteriorate, I quite believe I have discovered a very simple, inexpensive process, by which the medical profession can secure Lemons during the season of plenty, and lay up with a little care a store of fresh Lemon-juice for the feverish patient at all seasons of the year. To the housewife who desires to use the peel for flavouring, by simply kneading the elastic Lemons in the hands, the skin of shellac readily peels off, and leaves the rind quite unimpaired. *George Mee, in Pharmaceutical Journal.*

Snowdrops.—From a record kept of the flowering of the Snowdrop during the last 16 years, marking the date of the opening of the first bloom in each season, we find that during the year 1863 the first bloom was seen open towards the end of December. During 1851, 1852, 1853, 1854, 1858, 1859, 1860, 1861, 1862, 1864, 1865, and 1866, the first flowers were seen open in January, and mostly between the 8th and 24th; three years during the months of February, 1850, 1856, and 1857; while in 1855 it was the month of March before the first bloom appeared, owing to the frozen state of the ground under a coating of snow. *Farmer.*

Calendar of Operations.

(For the ensuing week.)

Now when bedding plants are nearly in perfection the principal points to which attention must be directed will be tying up or pegging down as may be necessary, and watering if the weather should be dry. Order and neatness must also be everywhere enforced. Grass lawns in most places look beautifully green, and must be kept constantly mown. Fruit trees are healthy, and as regards vegetables, wherever good cultivation has been carried on, they are excellent. Potatos especially have seldom been finer, and there is as yet little or no disease among them. Apricots are scarce, and Pears in some places are thin; but of other kinds of fruit there are fair crops.

FLOWER GARDEN AND PLANT HOUSES.

Let shading be used less frequently now than when the weather was dry and bright; plants ripening their growth have need of not only all the daylight they can get, but even moderate sunshine.

BEDDING PLANTS.—As soon as there is perfection a rough plan should be made of the arrangement of the flower beds, which should be numbered to suit an accompanying list of the names of the plants with which it is designed to fill them next year, and the quantity required for each bed. By compiling a summary from this list, accurate information is at once obtained of the quantity of plants which must be propagated, and by this simple means disappointment is prevented on the one hand, and waste of labour on the other. Pelargonium cuttings strike freely now in the open border; even Mrs. Pollock, Sunset, and other fine kinds may be propagated in this way in any quantity.

CARNATIONS AND PICOTEES.—Layering must now be proceeded with as rapidly as possible, it being a point of great importance to get the plants well rooted and established before placing them in their winter quarters. More of next year's success, as to fine healthy growth, &c., depends on attention to this matter, than many people are aware of. All seedling plants should be marked and layered, noting their various properties as to form, colour, texture, pod, &c.; should any seedling, otherwise fine, have serrated petals, it will be advisable to propagate it, as growing it in another situation may to a certain degree remedy this defect; even some of our best varieties will come occasionally (when poorly grown) very rough on the edge. As the blooms decay, extract the faded petals from the calyces.

ORCHIDS.—Kinds which have already made their growth and ripened it should be removed forthwith to a cool house. Great care should be taken not to excite such plants into a new growth at this time, as it is too late to get them properly matured, and the unseasonable draught upon the stored energies of the plants will materially interfere with their next production of flowers. Most kinds are, however, still growing freely.

PINKS.—Pipings in some cases will soon be ready for transplanting. If the situations ultimately intended for them are vacant, they may be planted in them at once; but if these places are occupied by something else, the young Pinks should be planted 4 inches apart, on reserve beds in an open situation, the soil of which should consist principally of light loam, to which has been added some charcoal dust; a little dung mixed with road drift and soot should also be added.

ROSES.—Cuttings of China and some other kinds may now be taken and planted in a close frame in a north aspect for three weeks or a month, until they are cicatrised at the base: they should then be taken carefully up, potted in thumb pots, and plunged in a gentle bottom heat. So treated they will make nice plants in a very short time, and if kept under slight protection during winter, will fill their pots with roots, and be ready for planting out in April or May.

FORCING GARDEN.

MELONS.—Plants swelling fruit should be kept moist, but avoid frequent waterings of the soil by giving good soakings.

PINES.—Maintain a high moist temperature, with abundance of ventilation, to plants which are swelling their fruit; and a rather drier atmosphere around those which are in flower. In all the stages except that last mentioned, use the syringe freely in fine weather. Take care that the bottom-heat does not get too strong for plants which have been recently potted or planted.

STRAWBERRIES.—Layers put down early may now be potted off; place them where they will receive partial shade until they get established. After that they may have full exposure to sunlight.

VINES.—When late crops have done stoning, the borders, both inside and out, should have a good soaking of liquid manure, to assist the swelling of the fruit. Vines on which the Grapes are just beginning to ripen should be gradually inured to a freer admission of air; and if it be desired to keep those which are quite ripe for any length of time, they should still have the advantage of a slight shading during bright weather.

HARDY FRUIT AND KITCHEN GARDEN.

Pinch or lay in shoots of wall trees, and gather all kinds of fruit as it becomes ripe.

CELERY.—This may still be planted. The principal secret in growing very tender and crisp Celery, irrespective of size, is to grow it very quickly by means of plenty of manure and moisture. Whether in rows or beds, the young plants will not succeed without plenty of water.

POTATOS.—Let early kinds be got up as soon as the tops are ripe enough; and let particular pains be taken to pick out all the tubers, as those left in the ground are afterwards often very troublesome.

SPINACH.—Sow some for autumn and early winter use in good rich ground, deeply trenched. Avoid in all cases thick sowing; the rows should stand about 16 inches apart, to allow a free passage between the rows for hoeing, cleaning, and gathering the crop. At the first gathering every other plant should be drawn out entirely, thus giving additional space to those which are to produce a later supply.

STATE OF THE WEATHER AT CHISWICK,
During the last 40 years for the ensuing Week, ending Aug. 4, 1866

July and August	Average Barometer at 9 A.M.	Average Temperature of the Air at 9 A.M.	Average Temperature of the Earth 1 foot deep at 9 A.M.	No. of Years on which it is Based	Greatest Quantity of Rain	Prevailing Winds.							
						N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.
Sunday 29	29·911	70·1	65·1	17	1·31 in.	4	5	4	1	4	13	3	4
Mon ... 30	29·911	70·3	65·8	16	0·88	4	5	3	2	1	12	5	3
Tues. ... 31	29·911	70·5	65·8	15	0·66	2	5	2	—	2	11	8	5
Wed ... 1	29·878	70·3	66·0	18	1·23	1	3	1	2	3	14	9	1
Thurs ... 2	29·878	70·1	66·0	19	1·01	1	4	1	3	—	8	15	5
Friday ... 3	29·878	70·0	66·2	20	0·75	4	4	5	2	4	10	6	1
Satur ... 4	29·878	69·8	66·3	17	0·83	2	3	4	3	1	17	5	2

The highest temperature during the above period occurred on the 2d, 1858—therm. 92 deg. and the lowest on the 2d, 1864—therm. 31 deg.

STATE OF THE WEATHER AT CHISWICK,
For the Week ending July 25, 1866, as observed at the Horticultural Gardens.

July.	Moon's Age	Barometer. Max	Barometer. Min	Temperature of the Air. Max.	Temperature of the Air. Min	Temperature of the Air. Mean	Temperature of the Earth 1 foot deep	Temperature of the Earth 2 feet deep	Wind	Rain.
Thurs 19	29	29·936	29·878	75	57	66·0	68	63	N.E.	·00
Friday 20	8	30·016	30·004	73	49	56·5	64½	62	E.	·00
Satur. 21	9	30·100	30·008	78	46	62·0	64	62	E.	·00
Sunday 22	10	30·116	30·000	79	50	67·0	65	62	E. to S.	·00
Mon ... 23	11	30·045	29·953	71	43	58·0	64	64½	N.E.	·00
Tues ... 24	12	30·083	29·971	67	50	58·5	64½	64	E.	·00
Wed ... 25	13	30·135	30·071	69	49	59·5	64	64	N.W.	·00
Average ...		30·068	30·017	71·7	49·4	57·1	64·5	61·8		·00

July 19—Clear, very fine, cold at night
" 20—Partially clouded, very fine, cool
" 21—Very fine throughout
" 22—Very fine, dry air, very fine, cold at night
" 23—Overcast, very fine throughout, with dry cool air
" 24—Hazy, overcast, cloudy, fine, overcast
" 25—Hazy clouds, overcast, fine, overcast, and cold at night

Notices to Correspondents.

APRICOTS IN POTS: *A C.* There is no material difficulty in the culture of Apricots in pots in orchard houses; only, like all such things, they must have proper attention. The whole secret of their culture in this manner, according to Mr. Rivers, who is no mean authority, is simply to give them plenty of ventilation whilst in bloom; a degree or two of frost would not injure them then. The *rationale* of this is, that when the orchard-house is kept close whilst the trees are in bloom there is so much moisture in the air that fertilisation cannot take place. Chalk in the soil used for potting, in the proportion of one-twelfth, or one-tenth, has been found very beneficial.

BEAN PODS: *H L.* Your pods are very curious. It seems to be a kind of variegation. We have seen nothing of the kind before. If the pods ripen, we should be very glad to have two or three seeds. *M J B.*

BOOKS: *A R.* Oliver's "Lessons in Elementary Botany."

BUCK'S-HORN OAK: *J P.* The celebrated Buck's-horn Oak of the forest of Alice Holt, was not uprooted by a gale, as has been stated, but fell on a calm day. The venerable tree at five feet from the ground measured 22 feet 7 inches in girth. There are two more of the veterans still in the Alice Holt Wood,—one, we believe, larger than that which has recently crumbled down.

EMPLOYMENT OF CAPITAL: *P P.* We must decline to give any advice upon this point.

GARDENER'S PRACTICE: *Fred.* If your present situation does not give you scope for improvement in certain departments of which your knowledge is deficient, you must make a change and get into another garden where you can get experience in these matters. But before you do so, we should advise you to use up the opportunities afforded in your present position, for it is easy to get out of, but not so easy to get into employment. The best London nurseries are good schools for learning plants. These are the points on which you ask our opinion, so far as we can decipher your hieroglyphics, but we are not sure we have succeeded, and we can give no more time to them. We recommend you to acquire a plain legible handwriting, and to abandon your present careless flourishing style, which is all but illegible.

GAS APPARATUS: *J Atkinson* inquires if any of our readers can inform him where he can be supplied with an apparatus to enable him to make his own gas, he living so far distant from his house that he cannot get gas laid on from the main.

HERBS: *A Young Housekeeper.* To preserve the different kinds of sweet herbs, the plants should be cut off close to the ground when the flower-buds appear, and hung up in a warm place, shaded from the sun, until they are perfectly dry. Each sort should then be put into a small box eight or ten inches long, five or six inches broad, and seven or eight inches deep, a board the size of the box inside is to be placed over the herbs, which by means of a screw press are to be pressed into cakes. These are afterwards to be wrapt in clean paper until required for use; and if kept in a dry place, they will retain their aroma for two or three years, and almost as perfect as when they were first gathered.

NAMES OF FRUIT: *Old Subscriber.* Your Grape is related to a variety known in France under an ugly name connected with the goat. Its flavour is indeed "peculiar," and certainly not agreeable.

NAMES OF PLANTS: *Michell & Co.* 1. Hypoxis sobolifera; 2, H. Rooperi; both previously introduced.—*An Old Subscriber.* Paulownia imperialis.—*G M.* 1, Epilobium hirsutum; 2, Lysimachia Nummularia; 3, Hieracium vulgare.—*A G.* Aloysia citriodora.—*E A G.* Platycodon chinense.—*Anon.* 1, Lastrea dilatata; 2, Athyrium Filix-fœmina.—*E P.* We cannot name varieties of florists' flowers.—*Cork.* 1, Phlomis fruticosa; 2, some Nepeta; 4, Salvia verbenacea; 40, Digitalis lutea.—*Ann.* The plant is probably a Solanum, and a stove wall, amongst Oranges and Lemons, is Asplenium Trichomanes.—*P C.* Funckia Sieboldiana.—*Eltham.* Comptonia asplenifolia.—*E H C.* 2, Rhus Cotinus. *E S.* Lysimachia vulgaris.—*Old Subscriber.* 1, Rhus Cotinus; 2, Cydonia japonica; the others not determinable without better specimens.—*J S.* Armeria vulgaris β alpina, Hopp.

ROSE LEAVES: *L H.* Your Rose-leaves have been attacked by the larva of the Rose Saw-fly, which has been peculiarly abundant this year. It is possible that more than one species may have been at work, for sometimes the grubs are solitary, sometimes much smaller and gregarious. *M J B.*

ROYAL BOTANIC SOCIETY.—The following omission occurred in the List of Awards made at the July Exhibition of this Society, viz.—To Messrs. J. Ivery & Son, Small Silver Medal for 12 British Ferns; First-class Certificate for Athyrium Filix-fœmina pulchellum, and not for Athyrium Filix-fœmina Victoriæ as recorded (ante p. 632).

SAGO PALM: *P G* states that he has a Sago Palm coming into flower, and wishes to know if the fruit is good to eat, and how often it has fruited in England. Does our correspondent really mean the Sago Palm (Sagus), or the much commoner Cycas, which is often erroneously so-called?

SEEDLING PELARGONIUMS: *Rush.* The leaf is showy, being bold and well-coloured, but we think not equal to others which have appeared this season. Its merit, however, will entirely depend on its habit. If it is as free as Mrs. Pollock, it will be an acquisition, as it has more bright red colouring; but all depends on this.—*E. Brooks.* Your seedling has no particular merit, nor is it any advance upon existing varieties. We cannot give replies privately.

STRAWBERRIES: *D M.* Your seedlings arrived bruised, and altogether in such bad condition that it is impossible for us to offer any opinion as to their merits. We would advise you to submit fresh specimens of them to the inspection of the Fruit Committee, at the Royal Horticultural Society's Garden, South Kensington, on Tuesday next.

VINE LEAVES: *Ebor.* The excrescences on your leaves are not the work of insects. They are very common, especially on Vines in pots, whose roots have occasionally been allowed to get quite dry. They are not, we believe, injurious, though they always make one suspicious that there is some defect either in the roots or the condition of the air which may ultimately be hurtful in another direction.

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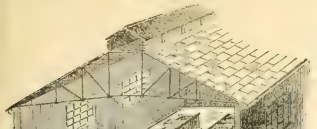

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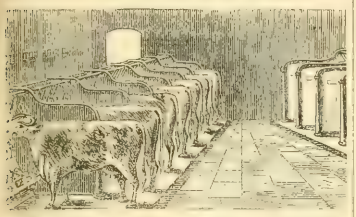

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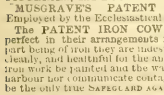

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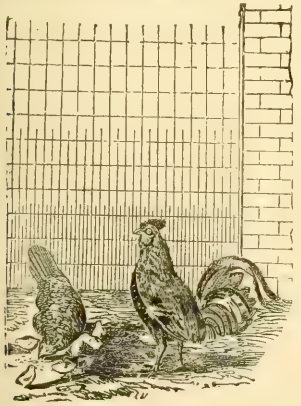

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The Agricultural Gazette.

SATURDAY, JULY 28, 1866.

THE landowner, as a mortal and an Englishman, must be open to the temptation of an investment that will pay handsomely, quickly, and without hazard; and if it can be shown by practical proof that certain ameliorations beyond the means of tenants can be effected on estates with a sure and speedy profit to the owners, then we shall witness that transformation of the agricultural surface of our island which alone can give free scope to a scientific husbandry. It may be well therefore to detail a case of remunerative land improvement, accomplished not by some enterprising occupier, who under a liberal covenant might rapidly augment the value of his landlord's property—not by any public company or body of corporate trustees, but by that soundest of all limited liability "concerns," the proprietor himself.

In the autumn of 1861, Mr. JOHN PROUT, a gentleman practically conversant with farming in Cornwall and in Canada, as well as with commercial business in London, purchased two farms near Sawbridgeworth, Herts. The land, comprising 450 acres of clay and strong loam upon a subsoil of drift clay and cretaceous gravel, was undrained, excepting partially by shallow thorn drains—extremely foul with root weeds, and so out of condition that the farewell Wheat crop of one outgoing tenant is declared not to have exceeded 12 to 16 bushels per acre. Drainage of course was the fundamental process in the amelioration; but the virtues of deep-laid pipes in drying, warming, and fructifying a heavy soil, form such an "old, old story," that we need not dwell here upon the precise mode adopted, the expense per acre, and the pecuniary benefit that is certain to accrue during all the long period that the drains will last. Everybody admits that the proper drainage of such land is sure to pay; what we have to particularise are certain other field improvements, concerning which an opposite opinion too commonly prevails.

The two holdings in one ring fence numbered no fewer than 51 inclosures, averaging not quite 9 acres each; and what with meandering watercourses, and straggling fences of a wildly picturesque description, those innumerable boundaries were of very awkward angular shape for expeditious cultivation, as well as wasteful of ground, injurious to cropping, and costly to keep in repair. By exchanges of plots with neighbouring owners the outside fence was made rectilinear and symmetrical; the bill, mattock, and spade attacked the formidable net-work of internal ("infernal" our note-book seems to have written it) hedges; the axe brought down the pride of scattered timber; and the spade, pick, and earth cart straightened watercourses, filled up old channels, and excavated clean-cut direct deep outfalls instead; while five straight new roads were struck across the old medley of inclosures, dividing the whole farm into seven spacious plots of a generally quadrilateral figure. The work is now complete; and Mr. PROUT having kindly opened his bailiff's books to our inspection, we are enabled to state how much has been the cost of the whole. Of bushy hedge-row, a length of 514 chains (that is, nearly 6½ miles) was stocked and the ditches alongside levelled in for an outlay of 155*l.* 12*s.* Now, observe how immediate is the profit to Mr. PROUT as owner of the soil. The abolished fences having averaged 7 yards in breadth (measuring between the extreme limits of the plough on both sides), an addition has been made to the estate of no less than 16 acres, now lying in strips in all directions across the large fields, open to every operation of good tillage and manuring. The cost price of the land in 1861 was 35*l.* per acre, every item of expense included; and therefore the 16 acres gained represent a value of 560*l.* The hedge roots were given to the labourers; the brushwood was either buried in drains or used for burning; but the 920 trees, consisting of Pollards and inferior timber, came in for gates, gateposts, and other stuff, estimated as worth altogether about 42*l.* Here, then, we have a present return of no less than 602*l.* for an expenditure of 155*l.* 12*s.* during four years.

But the advantage is also great to Mr. PROUT as occupier. Supposing it had been a tenant's investment (of course under a liberal as well as lasting tenure) he would have entered upon 16 acres rent free in perpetuity for the sum of (155*l.* 12*s.*, less 42*l.*) 113*l.* 12*s.* paid down; or at 25 years purchase, say 16 acres at a rental of 5*s.* 8*d.* per acre. Of greater advantage still is the increased produce upon the old area from the removal of nearly 6½ miles of fence, with its overshadowing of crops for many yards into each field, and its numerous harbour for weeds, birds, and vermin. In fact, this reclamation of waste ground by the simple demolition of useless fences, forms a striking example of safe and quick profit upon an easy outlay, sure to be imitated (one would think) over tens of thousands of acres now equally encumbered with sprawling hedgerows of wild shrubs and outgrown Quick. The earthwork of filling up old watercourses, cutting 130 chains length of new ones, and levelling in a few moats, ponds, and waste places, cost 155*l.* 12*s.*, reckoning 8*s.* per day for a pair of horses engaged in carting. The area of ground thus acquired is about 2½ acres, which, at 35*l.* an acre, leaves an outlay of 68*l.* 3*s.* as the cost of the improved outfalls for the drainage of the whole farm. However, if you choose to lump together all the expenses of the improvements, allowing nothing for the value of the new outlet for drain-water, the account will still show well in favour of agricultural progress. The total outlay in four years was 311*l.* 5*s.*, and the return—18½ acres of land at 35*l.*—647*l.* 10*s.*; add the wood, 42*l.*, making a total of 689*l.* 10*s.* The expense of the new Grass headland paths for the steam-ploughing engines does not materially alter these figures, for while 62 chains length of new Grass road has been laid down, 74 chains length of old road has been ploughed up and added to the arable ground.

The most remarkable success in this case of land improvement has now to be mentioned. The foul farm has been brought in four years into the cleanly condition of a well-kept garden, and during the last two years the whole has been ploughed and subsoiled 14 to 16 inches deep. When we visited the farms last November the whole of this year's Wheat seeding (223 acres) was finished, all the land for spring corn lay ready ploughed, and the land for roots was in the same forward state, requiring only the harrow and drill when sowing time should come, so that no heavy tillage of any description remained to be done until after the present harvest; and the perplexity of the manager was not—"How shall I be able to get through the spring and summer work due to a large arable clay farm?"—but "What new labour can I find to employ my men throughout the winter and spring?" The former occupiers are reported to have kept a score of horses at work in tilling but 5 inches deep. Mr. PROUT has done all his work with 10 horses and a 14 horse-power Fowler engine; and having entirely completed the reclamation, has now reduced his force of horse-flesh to only five good animals, which after spending half their time this summer doing nothing, will now cart the corn into ricks beside the field roads. They can manage this, because eight horses led the last harvest up to the homestead. The amazing reduction in tillage expenditure from having a thoroughly clean farm further appears from the fact that, in future, the engine too will have an easy time of it, as all its work will occupy only about a couple of months during the entire year. That Mr. PROUT has not spent a fortune in eradicating weeds and breaking up the soil to its present great depth of staple, is proved by the labour-book.

The cost of hand-labour, including the wages of the steam plough hands, the labour of stocking hedges, and of all the drainage, was for the first year 726*l.*, for the second 1142*l.*, the next 1020*l.*, and for 1865 up to the present time, 880*l.* The ordinary expense of 10 horses need not be stated in figures; but it is necessary to say what was the total cost of working the steam plough. The

hand-labour is included in the above amounts; the water-cart horse was one of the 10, and is now one of the five. The coals, at 16*s.* to 17*s.* per ton, cost in 1861-2, 144*l.*; in 1863, 86*l.*; in 1864-5, 165*l.*: altogether 365*l.* Oil, &c., cost 34*l.* in the four years. Repairs and the addition of improvements in the machinery cost 180*l.* in the four years. Interest and depreciation on 994*l.*, the prime cost of the apparatus, exclusive of rope, say at 12½ per cent. per annum, came to 476*l.* in the four years. Then we have the item of wire-rope worn out. The original 800 yards cost 84*l.*; 450 yards, added in two years' time, cost 47*l.* 5*s.*; and from personal inspection of this 1250 yards, we estimate the present value at one-third, or 43*l.* 15*s.*; thus leaving 87*l.* 10*s.* as the total expense of rope consumed during the four years. The entire outlay for steam work, then (besides the manual labour already included in the general account) is 1142*l.* 10*s.* in the four years.

Ten horses, in place of the engine, would have cost about the same; but they would have made up only the old force of 20 horses that kept the staple shallow and the crops foul. 20 horses, in lieu of the engine, would have cost double the money; but even if they could have cleaned the farm, it was utterly beyond their ability to deepen the 5-inch staple to treble its depth, and accomplish a light crumbly style of tillage, such as now enables the corn to be sown early in a pulverulent seed-bed, and green crops to grow where dead fallow reigned before.

That the steam tillage has developed inherent fertility in the soil appears from the fact, that almost all the white straw crop of 1864, and most of the roots too, together with 536 quarters of Wheat, and about 300 tons of the straw of 1863, were sold off the farm. The sale took place by public auction; and the excellent character of the yield may be judged of from the prices made. Thus 147 acres of Wheat with the straw as staked out upon the land, sold for an average of 9*l.* 1*s.* per acre; 73 acres of Barley, with the straw, sold for an average of 7*l.* 19*s.* per acre; and 29 acres of Oats sold for an average of 6*l.* 11*s.* per acre.

It is certainly not high manuring that has produced the good crops; for Mr. Prout has not applied more than 640*l.* worth of any purchased manure during the whole four years. And that a consumption of sheep and cattle food has had little share in the business is evident from the circumstance that, in 1863, Mr. Prout fattened only 58 oxen; in 1864 he kept only a single cow; and he never has farmed until the present season either a sheep or pig. The horses kept numbered but eight, as two of the 10 previously stated to have been employed represent the average of teams hired. The head of stock on the farms in November consisted of 14 bullocks feeding in barns and houses, one cow and calf, and five horses.

Dr. Voelcker's analysis shows the soil to possess a practically inexhaustible fund of fertility, though apparently of very ordinary quality, like vast areas of similar land in Great Britain; and Mr. Prout might probably pursue with advantage a garden management almost independent of rotations, live stock, and manuring. But his intended husbandry will prudently embrace the sheep feeding of a portion of the root crop, with probably a purchase of stable-manure from London in return for straw sold off. This is one of the most surprising examples yet seen of the virtue of deep steam tillage on a heavy soil, hitherto suffered to lie semi-utilised under a miserable yet costly system of shallow culture by draft animals. But the immediate lesson from the case is the certainty of profit to landowners from clearing away those vermin-filled banks and bird-infested scrub fences, which are now choking up thousands of fine farms, and obstructing the progress of the fructifying steam-drawn share. *I. A. C.*

APPEARANCE OF THE CROPS.

Cheshire.—The cereal crops as usual are of a varied character, according to the quality and management of the land. Those in good soils have a healthy appearance and give the promise of a good return; there are, of course, great exceptions, and where the seed was put in late, especially on stiff land, the crops are miserably poor, being thin on the ground and short in the straw; on the whole however they may be considered an average. Beans have been looking healthy, but on examination are found to be thin of pod, consequent, it is supposed, on the dry weather. Peas are not much grown, and, as a rule, may be considered poor. The hay crops, excepting on the hot dry land, are very good, and the weather for making is most favourable. The pastures are exceedingly luxuriant, and it is lamentable to witness large fields of beautiful herbage with less than a third of the stock they are capable of supporting; this deficiency has arisen entirely from the disastrous effects of the cattle plague, farmers fearing to replenish their dairy stocks, and being unwilling to purchase store sheep at the very high prices demanded for them. Mangels and Turnips appear to be doing well, but Potatos already show symptoms of disease. There is great dissatisfaction as regards the Cattle Plague Compensation Act; those who have lost their cattle before the Act and received no compensation, think it a great hardship to have to contribute to the relief of those who have lost them since the passing of the Act, and are to receive one-half their value. We may therefore consider the prospects of Cheshire farmers not very cheering. *W. P., July* 18.

Essex: *Tiptree, Kelvedon.*—So far as I have had an opportunity of judging, Wheat on the stiff, cold, collapsing, non-calcareous clays will be a very short crop, in many instances not more than one-half the abundant yield of last year. The very wet winter, a wet April, and freezing May rotted the fibres, and prevented the usual spring tillering. Many of the stems have rotted just where they issue from the crown of the root, and have fallen—root-fallen it is called. Others that stand erect have also rotted, and consequently the ears are unfilled. The wet April prevented hoeing, consequently the abundant growth of weeds, encouraged by the mild winter, have overpowered and much injured the Wheat crop, which is thin and foul. On the chalky clays and light soils the crops are much better than last year. The fine rains of June and subsequent brilliant sunshine have developed the Wheat kernels, and greatly encouraged the Oat and Barley crops; the latter will probably be quite an average. Peas are an abundant crop; Potatos good; Beans good, but somewhat injured by the "Collier;" Mangels, where properly attended to at an early period, will be good; but in many fields they are late, weedy, and consequently poor, as compared with last year; Turnips plant and promise well; Clovers were very indifferent on the heavy clays, especially where unhoed in the spring; Grass much improved by the June rains. We begin harvest on the 28th inst. The grain promises to be of first-rate quality, owing to the recent brilliant weather. It ripens kindly. *J. J. Mechi, July* 25.

Herefordshire: *Ross.*—The recent excessive heat has so forced on all our cereals that a harvest which a few short weeks since was anticipated to be a late one will now be moderately early. In some parts of the county the sickle will be called into use before the close of the month, and reaping will become general by the 6th of August. The great failure of the Clover plant during the past year tells its own tale in the Wheat crop of the present. The general Wheat crop will in consequence be a light one. The heaviest crops are to be found on land planted early, after Swedes and Turnips. Hitherto all crops are very free from blight, and the bright manner in which they are dying out leads to the expectation of an abundant yield in proportion to the straw, which is very far below an average in quantity. The cold wet February and March so retarded the planting of spring corn that in many parts of the county large breadths of Barley were not sufficiently forward to shade the land before the brilliant sun of the past three weeks came upon them; they are therefore almost valueless, and on lands where this crop was hurried in before the land became sufficiently dry and tilthy the yield will be unsatisfactory, the severe drought and frosts of May having seriously checked its growth, whilst the middle planting is likely to prove an abundant crop. This crop, like the Wheat, must be below an average. Oats are greatly improved. Beans and Peas are each good crops, and promise to yield considerably above an average. Hops are much benefited by the recent forcing weather, and large breadths which a few weeks since were considered past recovery will now yield something in return for the heavy expense that incurred in their cultivation. The Apple and Pear crop is very partial: many trees are dead and dying from the effects of blight, whilst, on the other hand, some orchards have abundant crops. In one district of the county the Potato disease has made its appearance in a virulent form. The Swede Turnips and Mangels are all in much need of rain, and although better than the past two years, they are in many parts a most unsatisfactory plant; the fly has been exceedingly destructive, and where there was a fair promise of plants, the wire-worm and grub appear determined to finish the work of destruction so determinedly commenced by the other pest. The hay and Clover crops have been secured in excellent condition, and where not spring-grazed they have proved above an average. *T. Duckham, Bonsham Court, Ross, July* 25.

Norfolk: *Weasenham, Brandon.*—I have pleasure in being able to tell you that I think the corn crops in our district promise well. Beets and Turnips are also good. *Henry Overman, July* 24.

Warwickshire: *Hilcot, Stratford-on-Avon.*—Owing to a very favourable blooming season, combined with several weeks of sunshine, the Wheat crop assumes a very promising appearance. On the strong good soils it buds fair to be a full crop, but on the thin gravel and sand, as well as on the wet clays, the straw is short and uneven. The early-sown Barley has grown vigorously, and is good; the later planted is much less in bulk, and has been unfavourably affected by the hot and dry weather. It is to be feared that some will become prematurely ripe, and that the grain will therefore be a thin sample. There is generally a luxuriant growth of Beans, but the blight to which this plant has become so subject has lately appeared upon it. The early Beans give promise of a pretty good yield, but the wet season prevented the main crop being planted as early as was desirable, and on all those sown after the usual time there is a deficiency of pods, many stems having no corn upon them. Peas are good, and are already being harvested. Mangels are a full plant; the warm weather suits them, and they grow rapidly. Early-sown Turnips were much injured by fly, but a tolerable plant in general; they begin to need rain badly. One crop of Grass was moderately good, and the hay well gathered. The pastures have been most luxuriant—fuller of white Clover and fine herbage than I ever saw them. The hot weather has now robbed them of their verdure, and they want rain. Potatos are a good crop, of excellent quality, but complaints are heard of the disease having appeared amongst them. *J. C. Adkins, July* 24.

Wilts: *Aldbourne, Hungerford, July* 20.—I inclose a report of the state of the crops in this locality so far as I can at present judge them. The Wheat has greatly improved since the warm weather, and is generally filling well. Notwithstanding the ears stand some way apart, I think, from their weighty appearance, we may anticipate close to an average crop. Barley is forward, and looks more promising than for many years past; it will be ripe nearly as soon as the Wheat. The latter, should this weather continue, will be fit to cut about the 8th of August. The Oats are, "corny," and likely to yield well. Mangel, Swedes, and Turnips are well planted, and a great breadth are hoed the first time. Sheep keep is very plentiful, which causes sheep stock to be very dear. Potatos are very luxuriant, and the disease has not yet shown itself. *Thos. Chandler.*

THE CATTLE PLAGUE.

The following returns were issued on July 20:—

These returns give the number of cases occurring in Great Britain which have been officially reported. Columns 1 only record the cases reported as having commenced during the weeks indicated by the headings; "back" cases being added to columns 2.

Census Divisions.	1 Number Attacked. Week ending July 7.	1 Number Attacked. Week ending July 14.	2 Result of Reported Cases from Commencement of Disease. Attacked.	Killed.	Died.	Recovered.	Unaccounted for.
Metrop. ..	0	1	7,999	7,427	8,714	318	450
S. Eastern .	1	—	4,886	1,705	3,029	465	171
S. Midland .	58	25	20,242	8,735	10,969	1,541	387
Eastern Co. .	12	10	11,445	5,366	4,848	789	399
S. Western .	17	17	1,775	672	825	207	71
W. Midland.	67	31	14,252	6,363	6,994	1,518	907
N. Midland .	27	38	18,071	10,931	6,270	1,223	547
N. Western .	125	143	71,913	24,906	25,028	8,455	3,524
Yorkshire ..	14	29	34,371	7,019	18,576	5,956	2,860
Northn'd&Co.	—	—	8,866	4,981	2,613	974	118
Monmouth. & Wales .	5	7	8,566	1,171	5,791	1,102	207
Scotland ..	1	2	40,850	6,202	28,088	10,707	1,803
	313	361	270,875	82,371	124,231	33,295	11,025

Particulars received in the week ending July 14:—

South Midland Counties ..	6	Monmouthshire and Wales	60
North Midland Counties ..	9		
North Western Counties ..	276	Total ..	355
Yorkshire	4		

The Return shows that 361 attacks were reported to have occurred during the week ended July 14, being a decrease of 100 the previous week.

Correcting the total by adding an estimated average of attacks occurring during the week but which may be subsequently included in the heading "back cases," the number for the week will be 544.

Two Inspectors who reported cases last week, have not reported in time for this return—viz., for the county of Lancaster, 1; and Cumberland, 1. These inspectors reported 12 cases last week.

MEMORANDA ON LAND DRAINAGE.—No. III.

As to the cost of these drains, of which we last week discussed the position and direction on the farm:—The cutting a 4-foot trench in an easily-cut and homogeneous sand or clay will cost from 1*d.* to 1½*d.* per lineal yard, or from 6*d.* to 8*d.* per rod. The placing the tiles and filling in the drain will cost from 1½*d.* to 2*d.* per rod. The drains are cut at four "spits" of the grafting tool, each spit being followed by the use of the shovel or scoop to lift the loosened surface, on which the drainer would otherwise stand. A good drainer in stiff clay soil makes really very beautiful work. The sides of the trench are perfectly true and straight, and the groove at bottom is exactly the right size for the tile. And when the fall is considerable, the tile is placed at once, leaving only 10 or 12 yards of the drain open at a time. Where land, however, is more nearly level, the drain must be opened up from end to end, or for a much longer distance, before the tiles are placed, in order that, either by the standing of the water in it, or by the use of the draining level, defects in the uniformity of the fall may be remedied before the drain tiles are placed. The tiles, simply cylindrical tubes, are placed end to end without any collar to unite them, except in the case of draining across quick-sand beds in their course, where they would be likely to sink out of the continuous line, or in the case of subsoils of very uneven texture, where an unequal sinking of the line of tubes might be feared. These tiles may be of one-inch bore at the top of each drain, increasing very soon to the two-inch size, as the quantity of water in the drains increases lower down. Their cost, varying a good deal in different districts, according to the price of coal and labour, will be about 10*s.* per 1000 per inch of bore—rather more than this in the larger sizes, being rather less than 20*s.* per 1000 of a two-inch size, rather more than 50*s.* per 1000 of a five-inch size.

It is needless discussing the merits of any other

material for filling drains. Tiles are really so much the best that, even when more costly, they should be used. They require a less trench to place them, and cost less to lead them, and are equally permanent. Broken stones are a cumbrous contrivance for obtaining an imperfect channel. And you had better cart pipe tiles for many miles than use stones broken on the spot.

The digging of the drains is of course contracted for; the pipe-laying is done by a foreman, or one who at any rate may be trusted not to place the pipes until the trench for them has been properly formed. The placing the pipes of the right size in the right quantity in heaps over the field is directed by the master before the work is commenced, as soon as by trial holes, and by examination of his own fields and his neighbour's, he is satisfied as to the plan which he shall adopt.

As to the quantity of superintendence the work may need, it may be mentioned that one Drainage Company with which we are acquainted employs one draining engineer, who inspects the estates which are placed in their hands, draws up a plan and estimate, and puts the plan, with maps, &c., into the hands of a head foreman; these are severed such foremen, and under each of them there are 60 or 70 men. A single foreman to 60 or 70 men is required for mere superintendence. He lays out the lines of the drains, and sees that they are properly executed, and that the tiles are properly laid.

Let us now refer to certain expedients which have been in use for diminishing the cost of drainage—these we shall do little more than name, believing that deep, and thorough, and efficient work, though costliest in the beginning, is cheapest in the end. There is (1) the use of fagots, and even of straw rope, in shallow drains, to which we have already referred as at most an expedient, only justifiable in the case of a tenancy at will, where the farmer dare not risk any considerable expenditure. (2.) There is plug drainage; when a shallow drain is cut, and the earth filled in and rammed down over a moveable core lying in the bottom of it, which is drawn on as the work proceeds, and thus leaves a passage. (3.) There is wedge-draining; when the third spit is taken out narrower than the preceding one, leaving a shoulder on either side, on which the clay lumps cut out in digging the second spit will rest, and so leave a vacant channel, which will act as a drain. (4.) The mole plough, worked by a capstan at the end of the drain, is drawn through pasture land at a depth of 2 feet or 30 inches with a good effect, which lasts for several years, and it is much used in the Vale of Gloucester. (5.) There is Mr. Fowler's modification of this, where a string of pipes is drawn in behind the "mole" of the plough, and so a permanent channel is exchanged for a short-lived one; and where the subsoil is of uniform texture, and the surface is of uniform slope, Mr. Fowler's plan is perfectly safe enough.

A word or two may be said on drain stoppages. They are due more often to the want of uniformity in the slope of the drain-channel, and to the consequent want of uniformity in the flow of the drainage water, than to any other cause. They arise either from ferruginous deposits, or from the roots of plants. The former case they are produced by the existence in the soil of iron in its lower state of oxidation, when it is capable of solution in water containing vegetable and other acids. It is in that state carried into the drains, and, meeting there with air, it absorbs an additional quantity of oxygen, and the insoluble peroxide of iron is formed. Of course it makes its appearance in extremely small particles, but these in sluggish places become attached to the pipe, and ultimately stop it altogether. The remedy is, in boggy and ferruginous soils, to lay the land dry for a year or two by open ditches, until, by the constant passage of rain and air throughout it, the whole becomes thoroughly peroxidised; then, afterwards, in forming the drains, to take care that they be of uniform slope, thus providing for a constant flow of the draining water. In addition to this, the use of the smallest pipe, consistent with the largest probable flow of water which it will have to carry, is the best, because in it, when the flow is little, it is spread in a narrow rill, and so able to transport whatever solid particles it may contain. As to stoppages by roots of plants, there is no remedy which does not involve the uselessness of the drain itself at the place where that remedy is applied. When a drain crosses under a hedge-row, it may be well to use long collars for the purpose of tightening the junctions where the roots might be expected to enter; but as a general rule deep drainage, and well-tilled land over it, which causes rain water to sink gradually into the land throughout, and not form any special pathways, as by cracks, &c., is a security against the stoppage of the channels by the roots of ordinary crops. This deep and thorough tillage is in itself a drainage operation where under-ground channels have been placed. If there be a pan below the ploughing, as there often is, it is the interposition of a nearly impervious floor to the passage of rain-water. When there is no such impervious floor, it is right to give drains full credit for ability to carry off all the rainfall: and we would not supplement any deficiencies which may become apparent by any attempt at surface drainage, but rather by additional under drains. Well-drained and deeply-tilled clay land may be safely left, and will be better left, flat—not in ridge and furrow.

The following is the judgment on this subject of a most competent judge and trustworthy observer, the late Mr. Paine, of Farnham. It is, in fact, an example taken from his own estate, which he quoted in a paper on this very subject. He said—"This land was unusually wet, and although it was thrown up in high narrow furrows of about 8 ft. wide, it was impassable for horses, excepting in the driest weather, when the ground baked up as hard as a brick. The seasons for sowing were frequently lost, as the land could not be got ready in time. Now the drains in this farm were put in at 4 and 4½ ft. in depth, and at distances varying from 15 to 30 ft., such as from the character of the soil I deemed sufficient, the surface soil not being of one uniform texture. After the draining was completed, I recommended the tenant to throw down all the high ridges, and lay the ground perfectly flat. He followed my advice, and the land has ever since been thoroughly dry, without indicating the necessity of returning any furrows. I walked over this farm during the wettest part of January; there was no water at all to be seen on the surface, and the ground under foot had become perfectly sound; though previous to the draining, after similar heavy rains, I have often seen on the inclined surfaces of the fields gullies washed out 2 and 3 ft. deep, and the flats of the fields were so rotten that a person could not walk on them without sinking over his shoes at every step."

As a last word on the material to be employed in drainage:—The imperfection of any other form of tile than that of the pipe for draining is shown in the condition in which most of the old drains taken up when the Regent's Park was drained some years ago were found—these were laid with horse-shoe tiles, and were choked by the soil having become pressed up into them, and not, as many have supposed, by the tiles having been squeezed into the ground. This squeezing up of clay into the cavities of drains has hitherto been a serious cause of their obstruction. Mr. Hewitt Davis says—"I have taken up drains formed of wood, brick, chalk, and stone, and laid carefully, into which the soil in the course of a few years has been pressed as tight and as hard as is the adjoining unbroken ground. The changes clay undergoes at different seasons—its expansion by water, and softened condition in winter, and the heavy pressure it is under at 3 or 4 ft. from the surface, at once explain how it is forced up into all cavities, and prove the immense superiority of the ordinary pipe tile." *J. C. M.*

WHAT CONSTITUTES GOOD MILK?

A VARIETY of conditions affect materially the quantity and quality of milk. Thus the season of the year and the amount and kind of food given to cows influence the yield and quality of their milk; again, the race or breed and size of the animal to a great extent affect the yield and quality of milk.

Generally speaking, small races, or small individuals of the larger races, give the richest milk from the same kind of food. Where good quality is the main object, Alderneys or Guernseys unquestionably are the cows that ought to be kept, for they give a richer cream than any other kind in common use in this country; but of course Alderneys are not the most profitable stock for cow-keepers in towns, with whom the Yorkshire cow, essentially a Short-horn, is the favourite breed, as it surpasses all others for the quantity of milk it yields. The milk, however, compared with that of the Alderney or Ayrshire cow, is more watery and less rich in butter, and therefore not well suited for dairies in which butter and cheese are made.

In the spring of the year, and the early part of summer, milk is more abundant, and the butter made from it of a finer flavour. As the season advances the supply diminishes, but becomes richer in butter. The influence of food on the quality of milk is very striking. A half-starved cow not only yields but little milk, but what it yields is miserably poor. On the other hand, the liberal supply of food, rich in nitrogenous and phosphatic elements of nutrition, tells directly on the milk.

Nothing, therefore, can be more injudicious than to stint dairy cows in food.

The finest flavoured milk and butter, I need hardly say, are produced by cows fed in summer entirely on the Grass of rich permanent pastures, and in winter on nothing else but hay made of fine short sweet Grass. Eleven or 12 lb. of Grass produce about 1 lb. of milk, or a ton of good hay produces as nearly as possible one hundred gallons of milk. Few persons, however, having the opportunity of keeping cows for their own use, can afford to feed them in winter entirely upon hay. Turnips, Mangels, meal, brewer's grains, hay, or oilcake, with more or less cut straw, in a great measure have to take the place of hay as a winter food.

Turnips give a disagreeable taste to the milk, and, moreover, produce very watery milk.

Mangels are less objectionable, but should not be given to milch cows without an allowance of 3 to 5 lb. of meal. Of all kinds of meal, none is equal in milk-producing qualities to Bean-meal—a fact which finds a ready explanation in the circumstance that Bean-meal contains as much as 28 per cent. of flesh-forming matters, or the same class of compounds to which the curd and albumen of milk belong, and that it is also rich in phosphates, or bone earth. Pea-meal or Egyptian Lentils closely resemble Bean-meal in composition, and may be used with equal advantage as an auxiliary and excellent food for milch cows. It is not a little remarkable that in leguminous seeds, which are always rich in flesh-forming matters, as well as in other articles of food, a large percentage of nitrogenous or flesh-forming compounds usually is associated with a large percentage of phosphates or bone earth. There exists thus naturally an admirable provision in food, specially adapted for milch cows, or young and growing stock, to supply the animal not only with the material of which the curd of milk, or the flesh of young stock consist, but likewise to supply bone materials, for which there is great demand when growing stock has to be maintained in a thriving state, or cows have to be kept in a condition in which they may be expected to yield much and good milk. Oil-cake produces much and rich milk, but seriously injures its quality by giving it a bad flavour.

Bran, on the other hand, is a good food for milk. Indeed, nothing can be better as an auxiliary winter food for milch cows than 4 lb. of bran made into a thin mash, to which should be added 4 lb. of Bean meal. Along with this about 25 lb. of Mangels, and about 15 lb. of hay, and 15 lb. of straw chaff, should be given per day to each cow.

Cows fed upon such a daily allowance of bran, Bean-meal, Mangels, hay, and straw chaff, during 10 winter months, yield much more milk of a superior flavour than cows fed upon Turnips and most other kinds of auxiliary food.

When brewers' grains can be obtained at a reasonable price they will be found one of the cheapest and best foods that can be given to milch cows. Brewers' grains, I find, are much more nutritious than their appearance seems to warrant. Even in the wet condition in which grains are obtained from breweries, a condition in which they hold from 75 to 77 per cent. of water, they contain a good deal of ready made fat and flesh-forming matters. When air dry, brewers' grains, I have recently discovered, contain from 7 to 8 per cent. of oil and fatty matter, and in round numbers 15 per cent. of nitrogenous matters, and in this state are more nutritious and a more useful food for milch-cows than Barley meal in the same state of dryness.

During the last 10 years I have made a great many milk analyses, from which I select a few for the purpose of illustrating the natural variations which may occur in the composition of equally genuine milk. The results are embodied in the following Table, showing the composition of four samples of genuine new milk obtained and analysed by myself in the country.

Composition of Four Samples of New Cow Milk.

	1.	2.	3.	4.
Water	87.20	87.40	89.95	90.70
Fatty matter (pure butter)	4.96	3.43	1.90	1.79
Sugar (curd) and a little albumen	3.66	3.12	2.54	2.81
Milk sugar	3.55	5.12	4.48	4.04
Mineral matter (ash)	1.13	.93	.64	.66
	100.00	100.00	100.00	100.00
Percentage of dry matters	12.80	12.60	10.05	9.30

The analyses of these four samples exhibit a wide range of variations, which I found in equally pure and genuine country milk. The first analysis represents the composition of a sample unusually rich in butter; No. 2 shows the composition of milk of average good qualities; the third of poor, and the last of very poor country milk. The richness of the first I ascribe to the extremely good pasture upon which the cows were fed at a season of the year when milk generally becomes richer in quality, but less in quantity—that is, in September and October up to November. The last sample was also September milk, produced on the Agricultural College Farm, Cirencester. The cows were then out in Grass, but the pasture was poor and overstocked, so that the daily growth of Grass furnished hardly enough food to meet the daily waste to which the animal frame is subject, and was then not calculated to meet an extra demand of materials for the formation of curd and butter. The poverty of this milk thus was evidently due to an insufficient supply of food.

It will be seen that the variations in the amounts of curd and milk-sugar in good and watery milk are far less striking than those in the amount of butter. A very good judgment of the quality of milk may therefore be formed from the amount of butter which it yields on churning, or from the amount of cream which it throws up on standing. Instruments, adapted for measuring the quality of cream thrown up by different samples of milk, are called creamometers. These instruments are simply graduated glass tubes, divided into 100 equal degrees, in which milk is poured up to the division marked 0, and is kept at rest for 12 hours. Although the creamometer does not furnish results which correctly represent the real amount of butter in different samples, it nevertheless affords a ready means of ascertaining whether milk is rich or unusually poor in butter—in other words, whether or not milk has been skimmed to a considerable extent. Good milk, of average quality, contains from 10½ to 11 per cent. of dry matter, and about 2½ per cent. of pure fat. It yields from 9 to 10 per cent. of cream. Naturally poor milk contains 90 or more per cent. of water, and less than 2 per cent. of pure fat, and yields only 6 to 8 per cent. of cream, or even less.

Experiments on a large scale have shown me that the thickest cream does by no means give most butter, and that the cream which rises from different kinds of milk often varies greatly in composition. The indications of the creamometer, therefore, are fallible when samples of milk produced under very different circumstances have to be tested. Milk sent by rail is necessarily subject to a good deal of agitation, and throws up less cream than that which has been less disturbed.

A great deal has been said and written about milk adulteration. Sheep's brains, starch paste, chalk, and other white substances, which are said—on what authority nobody has ever decided—to have been found in milk, only exist in the imagination of credulous or half-informed scientific men. It is difficult to understand where all the sheep's brains should come from, and how they could be amalgamated with milk, nor is it at all likely that chalk, a substance insoluble in water, and not easily kept in suspension, should be employed for adulterating milk. As a matter of fact I may state that I have examined many hundreds of samples of milk, and never found any chalk, nor any adulterating material except an extra quantity of water, and that I never met as yet with a chemist who has found any of the clumsy adulterations which popular treatises on food describe as having been detected in London milk.

The whole question of milk adulteration and means of detecting them, resolves itself into an inquiry into the character of good, bad, and watered or skimmed milk, and the mode of recognising these with expedition and precision.

As the result of my own experience, founded on the examination of many samples of milk produced under the most varied circumstances, and purposely adulterated with known quantities of water, I may state that milk may be considered rich when it contains from 12 to 12½ per cent. of solid matters, 3 to 3½ per cent. of which are pure fatty substances. If it contains more than 12½ per cent. of solid matter, and in this 4 per cent. or more fat, it is of extra rich quality. Such milk throws up 11 to 12 per cent. of cream in bulk on standing 12 hours at 62° F., and has a specific gravity varying from 1.028 to 1.030.

Good milk of fair average quality, as has been stated already, contains from 10½ to 11 per cent. of dry matter, and in this about 2½ per cent. of pure fat. It yields 9 to 10 per cent. of cream, and has a specific gravity of about 1.030.

Poor milk contains 90 per cent. or more water, and has a lower specific gravity than 1.027. Such milk yields not over 6 to 8 per cent. cream.

Skimmed milk throws up still less cream, has a bluer colour, and is more transparent, and when undiluted with water has a slightly higher specific gravity than new milk.

Good skimmed milk has a specific gravity of about 1.033; poor skimmed milk 1.028 to .030.

Milk purposely watered yields only 5 to 6 per cent. of cream, and invariably has a lower specific gravity than 1.025.

If milk is both skimmed and watered it yields less than 1 per cent. of cream, and possesses as low a specific gravity as 1.025 to 1.026.

A great many experiments have led me to the conclusion that within certain limits the specific gravity is the most trustworthy indicator of quality, and that for all practical purposes an ordinary hydrometer float, by means of which the gravity of liquids can be ascertained with precision, and a graduated glass tube, divided into 100 equal degrees, constitute the safest and readiest means for ascertaining the quality of milk so far as it is affected by the relative proportions of the normal milk constituents.

A set of such instruments or lactometers, one being a graduated glass tube for measuring the proportion of cream thrown up on standing, and the other a gravity float or hydrometer, with plain printed directions for use, can be obtained at the cost of a few shillings.

A few years ago I made some accurate gravity determinations of pure milk before and after skimming, and of samples mixed purposely with 10 to 50 per cent. of water, and as the results may be useful in comparing them with others, I give them in the subjoined table :—

SPECIFIC GRAVITY OF WATERED MILK.

	Specific Gravity at 62° F. before Skimming.	Specific Gravity at 62° F. after Skimming.
Pure milk	1.0034	1.0337
,, +10 per cent. water	1.0270	1.0308
,, +20 ,, ,,	1.0257	1.0265
,, +30 ,, ,,	1.0233	1.0248
,, +40 ,, ,,	1.0199	1.0208
,, +50 ,, ,,	1.0163	1.0175

Here follow analyses of milk from numerous localities in the richer and poorer districts of London, which show that the amount of cream bears a direct relation to the specific gravity of the milk. The author concludes from his researches that: "These facts afford a conclusive answer to the objection that no dependence can be placed on the gravity test. The fact is, cream, though lighter than skimmed milk, is denser than water, and any amount of water worth adding at all, can readily be detected in milk by the direct lowering of its normal specific gravity." *Dr. Voelcker in the Popular Science Review.*

STEAM CULTIVATION.

[The following is the preface to an essay on this subject written for the Bath and West of England Society.]

AGRICULTURISTS have reason to hope that steam, which is already an efficient and economical agent in other branches of industry, will eventually lead to highly satisfactory results in the cultivation of the soil. The great advantages to be obtained by the application of steam power to tillage must depend on the cheapness of the power both in first cost and in working; on the facility of procuring the power when most required, and also on the efficiency of the work performed. Speedy and complete as well as cheap pulverization of the soil ought to be the great objects aimed at by the agriculturist in applying steam power to tillage. When employed merely to partially pulverise or to grub and plough, the benefit arising from it is limited, and the economy of its use becomes in many cases doubtful. The area of a farmer's operations is limited to his farm, so that however much steam power he may possess, he may be no great gainer by using it to perform only one or two of those operations now done by horse power; but should steam power enable him to double or treble the produce on the same farm or area, then a large field is opened up for the profitable use of steam. It is clear that steam power is cheaper than that of horses, hence the more a farmer can do with it or keep it working, the greater becomes the advantage. If the farmer, then, cannot at pleasure (when his capital allows) like the merchant, extend the area of his transactions, the next best method is to make the pulverising of that limited surface more complete, so as to increase his crops, and secure larger profits. It is now generally understood that the better the tillage the greater the crop (other things being equal). It may then be taken for granted in the mean time, that if steam furnishes the farmer with the means of giving the desired degree of tilth to the soil, he will on that account secure greater productiveness and realise greater gain in the application of steam power to cultivation. The greater efficiency of steam in cultivating the soil does not arise simply from the greater cheapness of steam, its cheapness is enhanced by the facility of procuring it in greater abundance at the proper time, and also in the facility of its application. The agriculturist has not the whole year during which he can carry on his operations. The weather and seasons limit the periods of operation, so that the time in which the soil can be cultivated with the best advantage is often very short; and as horse-power cannot, as it were, be condensed into a short period, the work is frequently not done at all, or only very imperfectly. By steam, on the other hand, the farmer is enabled to bring a vast amount of power to bear on the soil when it is in the best state for working; nor is this unimportant, for when the soil is wrought at the proper time, it is not only better done, but requires less power to do it. The fact, too, in the use of steam, that there is no trampling of the soil, as in the case of horses, is an additional recommendation to its use in agriculture; but the agency of steam requires new implements for its use. The ends gained by the repeated operations of the team in ploughing, harrowing, grubbing, rolling, &c., must be combined as much as possible into one operation performed by one machine in its passage over the soil. This is needed to make steam power profitable. The more complete the pulverisation of the soil at one operation, the more the likelihood of profit. It is by the combining of processes that the manufacturer tries to cheapen the articles of production; and the results attained by him point out to the farmer the importance of following in his steps, as far as practicable.

We do not mean to bind the farmer to the necessity of at all times adopting the complete pulverising plan. We only advocate the importance of his being enabled to do so when he thinks it most advantageous. It has to be borne in mind also that chemical or atmospheric agencies assist the farmer as well as mechanical.* The atmosphere is a great tiller of the soil and helper of the husbandman, and it would be a great waste of power to do mechanically what may be effected by the cheap agency of Nature. Were it not for the advantages derived from the atmospheric agents, we would always adopt the plan of giving complete tilth to the soil at one operation. In order, however, to gain all the advantages, it is of importance to unite when possible both the mechanical and natural agents or processes. Now, fortunately, steam power affords the farmer better means to combine the natural or atmospheric and mechanical agents than he can obtain by using horse power. Horse power is a slow process, and leaves less time for the atmosphere to act; and for want of time the soil is often turned over by horses when not in the best state for being acted on by the atmosphere. By steam the farmer, in the proper season, and with great expedition, can put his land in a state fit to receive the atmospheric influences. By the use of steam he can have his land turned over before the unseasonable months of winter come on; and he can allow the winter to be fairly over, and the land in a good state for working, before he need begin his spring operations. We are not furnished with sufficient data to determine the exact amount of soil stirring or turning over which should be done in autumn, or how much left to atmospheric influence. The pulverising action of the atmosphere has been observed and taken advantage of by all great tillers of the soil. Gardeners who study the best methods of triturating the soil make great use of the atmosphere, and in order to do so they dig the soil in autumn in a rough and loose way, well known to gardeners. We are of opinion that the nearer the farmer comes to this method the better.

The machine we recommend is one that will enable the farmer to stir and turn over the soil to any practical depth, and also when he wishes to enable him to break it into that state of tilth suitable for the reception of the seed, and we would leave it to the farmer's judgment to determine the time and amount of comminution he should give the soil, whether in autumn or in spring, whether at the time of putting in the seed or previously. Thus it is plain that steam power, from the facility of combined action, enables the farmer to complete the breaking up of the soil in shorter time than by horse power, and consequently of gaining the advantage of having the soil exposed for a longer time to the action of the atmosphere. We do not consider it necessary to define or state minutely how much should be done mechanically, and how much left to natural agencies—a little more practice with steam power will be necessary in order to get more definite ideas on the matter. According to our mode of viewing steam power there is no great use in settling the matter. As we think no plan of steam culture deserving of general patronage unless it furnishes the farmer with the means of pulverising the soil to any extent, we hold that the machine, to bring out fairly the advantages of steam power, ought to combine the facility of being employed to partially break up the soil, such as ploughing, with equal facility to completely pulverise the soil, when the farmer wishes the soil to be put into that state. The machine ought to possess the power of turning over the soil, either wholly or partially, and also to effect the cleaning of the soil along with the operation of reducing it to a proper tilth. We shall see that the more efficiency that can be imparted to the machine at one operation, the more profitable is steam power likely to become. In short, we think it necessary, in order to carry out steam cultivation, that the operating implement should contain two distinct principles to be employed at pleasure, viz., the cutting wedge action of the plough to raise the soil from its natural bed and to turn it if necessary, and also the striking or revolving principle to impart the proper degree of comminution to the soil. The cutting, turning over wedge, and the revolving or striking principle are capable when properly combined and carried out to give complete tilth to the soil, and to stir it to any practical depth. But more of this in a subsequent part of the essay.

The great object then to be aimed at in the application of steam power to land culture is the speedy, cheap, and perfect pulverisation of the soil. It must be speedy in order to get the work done at the proper time. It must be cheap, or the advantage is lost. It must be thorough or perfect, in order that the greatest amount of profit may be realised by imparting greater fertility to the soil. The watch-words of steam cultivation ought then to be thorough, speedy, and cheap comminution of the soil. Unless these be kept steadily in view, steam cultivation is not likely to come into general use.

The mechanical means used, or which ought to be within the power of the farmer to use, should afford him facilities of either partially breaking up the soil, or imparting to it perfect pulverisation.

We add one general observation :—In applying steam power to land culture, the difficulty to be encountered and overcome is that of applying power to a constantly shifting point. The soil of a farm is spread over a considerable extent of surface, and as the soil cannot be brought to the cultivating machine, the machine must be brought to it. Like Mahomet, if the mountain will not come to the machine or power, the machine or power must go to it. The operations of a manufacturer are confined within a narrow space, his machinery is fixed, and the material is brought to it; but in cultivating the soil the machine must be constantly moving, and at the same time doing the duty of cultivation. All plans of steam culture have to encounter this difficulty.

* See Tull, Young, &c.

Home Correspondence.

Sheep v. *Bullocks.*—In your article of the 14th inst. the conversion of straw into manure by sheep instead of by bullocks, you mention two modes—the one in the yard, the other in a permanent fold in the field. To both of these plans there is the objection of the heavy carriage of dung from yard or fold to the field. Permit me to call the attention of your readers to an old-fashioned practice common in Wilts, Hants, and Sussex, called "muckle folding." Half-made manure or straw is carted to the field on which the sheep are nightly folded on fresh land. This mode is preferable to a permanent fold. The sheep lie evenly over the land, and all their dressing goes on the ground at once without waste, and the expense of carting is considerably reduced. One horse will cart out one ton of dry straw, while it will require nearly three horses to cart out the one ton of straw when converted into dung in the yard, together with the wet which it will have imbibed. Under the present system of threshing in the field there is often to be seen a large rick of straw in the very field which it is intended to manure for Mangels or Swedes in the spring. If this is spread evenly over the land, the sheep would be folded on it at night with their hay, corn chaff, or corn, and would be on the Turnip land during the day. This plan would be better for the sheep, and fair for the land if continued during a four years' course, and the carting of dung in the busy or dry seasons be saved. Straw chaffed into long lengths would be preferable to threshed straw whole. *One of your Constant Readers, and a Hill-country Farmer.*

Statistics of Lincolnshire.—The districts devoted to stock breeding and stock feeding are pretty generally distinct. But besides the bred stock, many head of Yorkshire, &c., cattle, and Norfolk, &c., sheep, are bought in. And on the other hand, a great many of the stock bred are sold in a store condition to go out of the county, to be fed in the fens of Cambridgeshire and other places. The Wolds and the Heath districts are the chief sheep-breeding localities; but the county might be subdivided very readily into breeding and feeding divisions. Of course not absolutely; for the breeders fatten off other animals besides their crones and drapes; the districts, however, might be defined in a general way. There would be three sorts of districts —breeding (hills), feeding (marshes and fens), and both combined (miscellaneous). The districts of large and small farms are not much intermingled. The light hilly land has the large farms, the alluvial the smaller. But while the former are unintermingled, the latter are, large and small, mixed up together. The wolds and heath range of Turnip land have exceedingly large properties as well as farms; on the contrary, in a portion of that part of the county called South Holland, there are a greater number of small freeholds than in any part of England; this might also be said of part of the north-western corner of the county called the Island of Axeholme, where the subdivision of the soil is almost of Irish comminution. If you wish to compare the produce of large with small holdings, you cannot find a better county than this. But then the inquiries must include even one-acre plots in its minute particularity. Of four and 10-acre farmers we have swarms: of 1000 and 2000-acre farmers we have lots and lots! The alluvium covered by peat may be easily demarked from that of clay, and, again, the clay alluvium may be bounded from the loamy marsh land; but all three sorts of land lie often in the same parish, so that if the statistic districts are to be mapped according to soils, a partition of parishes will occur. The line of partition between peat and other alluvium could be easily laid down on the map by the help of a few farmers or drainage surveyors in the different parishes through which it may run. Such a line would not be outrageously serrated in its contour, but it would need to have swellings or patches upon it to indicate what is called "skirt land," or mingled peat and clay. I believe that the

fens of Lincolnshire, Cambridgeshire, &c., have scarcely more extra-parochial land than is to be found in other counties. The fens used formerly to be open commons, but when drained and inclosed, became united to the bordering parishes. Every parish has its overseer, and then the registrars, who never let a birth or wedding, or death (no matter whether in extra-parochial places or not) escape their vigilance, could certainly find out every farmer (a class of comparatively limited number out of the general population), and get his return paper properly filled up. I suppose large gardens and allotments connected with cottages ought to be included. In the part of Lincolnshire called South Holland, there is a very minute subdivision of landed property and of holdings. On the heath and wolds is a very opposite state of things, large properties, large farms, so that (with breeding, four-course farming, and grazing) this county is well adapted as a sample of the whole kingdom. Lincolnshire is comprehended in 16 unions, varying from 9 to 88 parishes each; some of them also include a few parishes out of Leicestershire, Nottinghamshire, Yorkshire, Rutland, and Northamptonshire. There are 718 Lincolnshire parishes and townships all included in unions, and also several extra-parochial places which are not in any union. About 15,000 acres of Deeping Fen, between Spalding and Deeping, are extra-parochial, the remainder of this Fen (viz., about 15,000 acres) is included in the adjacent unions. In order to get the statistics of these ten or fifteen thousand extra-parochial acres, there must be a provision made for an exceptional case. The registrars could do all that is required; if not, there are plenty of first-rate farmers (and collectors of taxes), who would do just for that spot. Holland Fen, of 22,000 acres, is all included in unions, except a few small tracts that are extra-parochial; Eagle Woodhouse, near Lincoln, is extra-parochial, containing only 110 acres. Greenhill, near Gainsborough, is extra-parochial, containing only 400 acres, in two farms; Haugh, near Alford, is extra-parochial, 600 acres in one farm; Morton, near Lincoln, of 700 acres, is extra-parochial. Tupholme, near Wragby, of 1795 acres, is extra-parochial. There are a few very little spots, but all could easily be comprehended in the contiguous enumerating districts. *C. L. S.*

Cottage Building.—The article on "Agricultural Gangs" in your Paper of July 14, points out the urgent need of English farmers having the requisite number of cottages at a convenient nearness to the farm steadings. But that urgent need must be allowed to rest on its own merits. I beg to protest against would-be reformers writing as if ignorant of the truth that the heart is the source of evil. The same demoralising agents are at work in and around London that are at work in agricultural districts in any county. Little children are initiated in various forms of vice before they are old enough to be benefited by attendance at day schools; and I consider this ought to stagger a little those who denounce the employment of females in farming operations. The "gang," like the "bondager" system, relieves the farmers from the drudgery connected with collecting women, boys, and girls for field-work during the spring and summer months, which is the producing cause of farmers clinging so tenaciously to these grievances in their respective districts. As a general rule, farmers in the south-east of Scotland and Northumberland have their male labourers and their families located in houses at a convenient nearness to the farm steadings, which enables all the members of each household to get breakfast, dinner, and supper together. The comfortable condition of so many Scotch and Northumberland hinds is attributable to the plentiful supplies of milk, butter, cheese, bacon, and pickled pork, and each family all getting their meals together. The total want of houses on too many English farms practically prohibits the adoption of the Northumberland and South of Scotland relationship of master and servant. I fail to perceive that co-operative farming would add to the comforts of ploughmen without capital, since it requires a tenant farmer to have a capital of 10*l.* per acre for purchasing stock and implements, and to keep him afloat for two years after his taking possession of a farm. Would-be reformers do not know what they are talking and writing about when urging the co-operative farming principle. The exorbitant retail prices of beef, mutton, and bacon and ham prompt me to make this incidental reference to the co-operative principle. As a general rule, village ploughmen in England with their weekly wage of cash, have to pay retail price for every article of consumption; whereas ploughmen on Tweedside have plentiful supplies of milk, butter, cheese, bacon, and Potatos, for say 8*l.* 15*s.*,—5*l.* to 7*l.* for the cow's keep, and 3*l.* 15*s.* for 1500 yards of drills at 1*s.* a score. Pork-curers in this district bought in the carcases of pigs last winter at 6*s.* 9*d.* and 7*s.* a stone of 14 lb., and they are being retailed at present at 10*d.* a pound for the flitches, and 1*s.* a pound for the hams—handsome profits, with a large trade. The Tweedside relationship of master and servant keeps the married ploughmen out of the jaws of butchers and retailers of bacon, who ought to be treated as landsharks. Regretting to find so many farmers not treating the hinds' cows as they ought to do in the way of summer and winter feeding, I have headed this letter with "cottage building," to prove my statement in the *Agricultural Gazette* of July 7, that a good cow, a good supply of Potatos, the liberty to feed pigs, and the regular staff of labourers being located in good houses near to each farm steading, are the elements of success. Since so many are opposed to field work for women—which opposition I treat with ridicule—since the attending to the affairs of a household, milking a cow, making the butter and cheese, and feeding a pig or pigs, furnishes ample employment for a ploughman's wife, I consider the giving ploughmen a cow's keep and liberty to feed pigs to be that mode of the co-operative farming principle best adapted for a newly married couple, or a couple with a family who are not jointly possessed of 50*l.* or 60*l.* A great deal of misunderstanding is caused by jumbling up the effects of the culpable negligence of responsible persons in different positions in life, and ascribing the aggregate result to landowners and extensive tenant-farmers. For example, English landowners are responsible for the want of the requisite number of cottages; but tenant-farmers are solely responsible for the agricultural gang system; and neither landowners nor tenant-farmers are responsible for the conduct of those arrived at the years of discretion. After all that has been spoken and written about the need of cottages which would enable ploughmen and their wives to observe the proprieties of civilised life, I need not attempt to describe my feelings of disgust at coming unexpectedly a few weeks ago on several new cottages, only one story high, and only one apartment on the ground floor. It is too bad for aristocratic landowners and tenants in their respective spheres and capacities to persist in perpetuating the evils which are inseparably associated with families being huddled together in such substantial hovels. I consider that the names of those aristocrats and farmers who persist in building one-roomed cottages ought to be published. *T. W. Rutherford*, 22, *Forest Field, Kelso, N. B.*

Societies.

ABERDEEN.—*The Cattle Plague*.—The following are extracts from a lecture introductory to a course of lectures which are being delivered in the University of Aberdeen by Mr. T. F. Jamieson, Lecturer on Agriculture in that institution.

Nature of the Disease.—The disease is, in medical language, a sort of fever—an eruptive fever of a very malignant kind, and dreadfully contagious.

It belongs to the same class of diseases as scarlet fever, small pox, and measles. These diseases, as well as many others, are thought to be caused by something of a poisonous nature, which finds its way into the bodily system; but what the exact nature of the poison is, or how it is first generated, seems to be unknown. It would appear, however, that it is of a specific character, that is to say, each poison always produces the same disease, whether in humans, or in animals, for example, gives rise to small pox, that of measles to measles; the poison of the one always leads to the development of its own peculiar type of disease, just as Oats produce Oats, and Wheat Wheat.

After the poison is introduced into the body, it remains latent for some time, and a certain number of days elapse before anything very far wrong is observed with the animal. This is called the period of incubation, and varies in length with different fevers. With rinderpest the time of incubation is said to be usually seven or eight days—not less than five, and according to many veterinarians, never more than nine. During this period of incubation, the poisonous matter is spreading itself through the system. Then the external symptoms make their appearance, the animal rapidly becomes worse, and the disease gradually runs its course.

In small pox, scarlet fever, and typhus, which affect the human subject, nothing seems to check the progress. "For these diseases," says Dr. Simon, the medical officer of the Privy Council, "we have, properly speaking, no cure. Our treatment is purely expectant, dietetic, and palliative. They may be mangled by bad treatment at any time made worse no doubt. But their course is for a certain course, which we have no means at present of arresting; and each of them, notwithstanding the most skilful and discreet management, will be attended with a certain fatality." And so it seems to be with the cattle plague. The veterinarians of Germany, Austria, and Russia, who are said to stand high in their profession, and have had a long experience of the disease, do not profess to cure it. And all sorts of things have been tried here and elsewhere both by the medical faculty and the veterinarians, but as yet the disease bids defiance to the doctors. Nevertheless, we may anticipate that yet be found, Jenner, we know, triumphed over the small pox, where victory seemed just as hopeless.

Symptoms.—From the Third Report of the Cattle Plague Commission, we learn that the first indication of the disease that can be detected is a rise of temperature in the body of the animal, the blood is hotter, and the thermometer marks 102° to 104°, or even 105½° Fahr. The animal is at this time, to ordinary observation, in good health. The warmth of skin produced by this state of the blood soon gives way to a chilliness of the surface. In the course of two days an eruption makes its appearance on the mucous membrane of the mouth and other parts. On the fourth day the disease is fully developed, and on the seventh, after the rise of temperature we have mentioned, death often takes place.

One of the first outward symptoms that an ox has caught the rinderpest is a slight rising of its coat of hair, which loses its glossy appearance, and begins to stare a little. The animal also stops eating. These, of course, are symptoms by no means peculiar to this disease, but are of importance to note when an outbreak of it is apprehended. The beast then rapidly gets worse, a thin serum takes place between the eyes and nose, a red eruption is visible on the gums and inside of the lips, and a twitching of the muscles about the neck and shoulder may frequently be observed, accompanied at times by a more generally diffused shivering; there is often, also, a shaking of the head, as if the ears were tickled. The head hang down, the feet are drawn together, the back arched, and altogether the animal looks very miserable and dejected. It usually lies down as it gets worse, groans a good deal and coughs—but in a low and indistinct manner. At length diarrhœa generally sets in, which increases to a perfect dysenteric purging, and the animal dies in a few days—apparently from exhaustion, or collapse of the vital powers. Death frequently takes place on the third or fourth day after the external symptoms become manifest, sometimes even as early as the second; but, of course, the disease is occasionally more prolonged, and some of the animals recover.

The morbid appearances exhibited when the body is opened have been fully described by Professor Simonds and others. They are chiefly visible on the mucous membranes, or those lining the internal cavities of the body. The mouth and throat, the fourth stomach, and the intestines generally present indications of disease, while the liver and kidneys, the heart, lungs, and windpipe, may all have a comparatively healthy appearance. The flesh also seems generally little altered, and there is even evidence to show that it may be eaten with impunity.

As to the state of the blood, Dr. Smart, in his Fourth Report, 11th December, 1865, says:—"The water is deficient, the fibrine increased, and the salts diminished." And Dr. Andrew Wood, in the interim Report of the Medical Committee appointed by the Lord Provost and Magistrates of Edinburgh, says—"The blood is materially changed. It has a thick, black, tarry appearance. It sometimes coagulates, but oftener not."

One of the most characteristic appearances is that displayed by the lining of the fourth stomach, which is much reddened and congested.

In comparing the disease with those that affect the human subject, Dr. Smart says that it most resembles scarlatina or malignant scarlet fever.

The proportion of deaths is often as high as 90 per cent., and generally exceeds 60. In the Steppes the mortality is said not to be so great. Doubtless the symptoms of the disease, both external and internal, as well as its progress, duration, and degree of mortality, will be subject to a certain amount of variation in different cases. What seems rather curious, it has prevailed as deadly among some dairies and herds, where the house accommodation and general management were remarkably good, as it has done where circumstances were the reverse. Mrs. Nicholls' dairy in London, where it first attracted notice, is said by all to have been one of the best in that city. Professor Simonds says he never saw animals better managed, and yet she lost her whole stock, 93 in number.

The Commissioners, in their Third Report, say that overcrowding, bad ventilation, and impure water, cause the disease to spread faster and to be more fatal; but "they neither produce the poison, nor can the best sanitary conditions be relied on to exclude it. Into some of the worst cowsheds in London the plague has not yet penetrated; in some of the best it has swept the stock entirely away."

It is probable that the malady will prove most fatal where a number of diseased animals are congregated, as the poisonous effluvium in such cases must be more concentrated. Neither the weather nor the season of the year seem to have had any marked effect upon it in this country; it has raged on continuously during summer, autumn, and winter. All ruminating animals appear capable of taking it, but not to the same degree, and sheep in this country have been so little affected that there is still a doubt with many people whether they do actually take it at all, although our principal veterinary authorities seem to entertain no doubt that they do, but less readily than cattle.

It is the general opinion among veterinarians that cattle which recover from rinderpest rarely, if ever, experience a second attack.

It would seem that few cattle which are exposed to its contagion escape an attack; but I have met with no statement as to the average proportion that so escape. Mr. Bruce, of Millhill, has a cow which has never been attacked, although it was standing in a byre between two which were killed on account of the disease—a very good instance of the fact that the constitution of some individuals is proof against the contagion.

Best Mode of Arresting the Cattle Plague.—Experience shows that the best mode of arresting the progress of the rinderpest is to kill all infected animals upon the first manifestation of the disease.

If this is done promptly, the carcases immediately buried, and disinfecting measures used, a great part of the herd may be saved. The infected places should be isolated until the disease has quite disappeared. But if the disease is allowed to develop itself in an animal, the risk of contagion becomes much greater. Its breath, and the exhalations from its body, infect the air, while the dung and litter, and everything that has come in contact with it, form a speedy means of spreading the infection. Therefore, when the stock upon a farm is attacked, the diseased animals should be killed with the greatest despatch, and the carcases immediately buried to such a depth as to prevent all risk of dogs or other animals getting at the body. As to the remainder of the herd, those which are fat and fit for the butcher should also be slaughtered on the premises, and the carcases sent to market. Where the stock is a small one the best policy will be to have the whole killed at once, so as to thoroughly stamp out the disease. Where the herd is large, and the dairy extensive, and it assists partly of breeding cattle and young store beasts not fit for the butcher, then it will be an object to save as many of them as possible. These should be kept at as great a distance as practicable from all sources of infection, and be isolated as much as possible from each other, which will prevent contact with the diseased ones. During winter, when the animals are housed, this may be effected by removing them to the most distant part of the steading, and having a cattleman to attend them who should not go near the houses where disease has been.

The stock at Nether Hythie (in Aberdeenshire) was saved by promptly killing the first infected beast, and immediately removing the second to an isolated shed a few hundred yards distant from the steading, where it remained until the disease became fully developed; it was then slaughtered and buried. All the others escaped without infection.

Mr. Bruce, of Millhill, also managed to save his young stock. There was a stone and lime division between part of his cattle sheds. This wall, which had fortunately been carried close up to the roof and had no chink or opening in it, proved a barrier to the spread of the disease, and it had on a former occasion proved equally serviceable against the spread of the no less contagious foot-and-mouth disease. Mr. Bruce's stock, when first attacked, consisted of about 90 beasts, and was a very valuable one. Altogether 16 of them were attacked in succession, extending over a fortnight or six weeks' space. With the exception of the first two cases, in regard to which a little delay took place, owing to doubt as to the true nature of the disease, all were promptly slaughtered as soon as the symptoms became apparent. Had the first two been killed with equal promptitude it would appear that a larger proportion would have been saved. Mr. Bruce also made a vigorous use of disinfecting measures. The litter in the byres where disease showed itself was not removed, but saturated with chloride of lime and the doors nailed up.

Action in Aberdeenshire.—By such measures as these the pestilence was encountered wherever it made its appearance in Aberdeenshire, and was promptly and resolutely stamped out.

In some cases, where the stocks consisted of but a few animals, the whole were killed off at once. The conduct of the Local Committee of the Rinderpest Association in that county I look upon as a model worthy of imitation. The vigilance and intelligence with which they watched over the county deserve the utmost praise. It was a circumstance of much importance that we had the Royal Northern Agricultural Society in existence, which supplied a ready-made organisation to start with. By its influence both landowners and farmers were fortunately induced to levy upon themselves a voluntary rate in order to recompense those whose cattle had to be slaughtered, and to provide for watchers and other expenses of the Committee. This was promptly collected at the outset, and, humanly speaking, proved the salvation of the county. Sufficient compensation was thus offered to induce parties whose cattle were attacked to make the fact known, and to allow them to be killed for the general good. Sub-committees were appointed in every parish to watch over their own district and report to the central authority. These local committees valued the cattle that had to be killed, saw to all instructions being properly carried out, and exercised a general superintendence over their several parishes. In this way every corner of the county was kept under surveillance, and the foe held at bay

until the Act 29 Victoria, cap. 2, came into operation. This Act was, I think, upon the whole, a good one. Its chief defect has been the want of any provision for compelling the local authorities to take proper action. The amount of compensation allowed for animals which had been killed or destroyed was also too small to induce people to submit willingly to its operation, and that is the chief amendment on it required. Experience shows that for the present its most useful enactment is that of the disease the compensation of whose slaughter should be taken together should be such as to lead owners of cattle to report its presence as soon as it breaks out. The amount of compensation allowed by the Aberdeenshire Breeders' Association was two-thirds of the value of the animal. This was found to work well in practice.

The essential points of legislation and measure are to provide for the prompt detection of all diseased animals by isolation of infected districts, and the proper regulation of markets and of transit by road or rail. The machinery for carrying this into effect should be a local authority in each county, with sub-committees in every parish. In addition to this, there ought to be some effective supervision of the local authorities, either by means of a small central board, or a few commissioners, to ensure that the Act is not evaded. The local authority should have very full powers within its own county or burgh. It ought to have the regulation of all cattle traffic, and be able to prohibit the introduction of cattle from other counties, and also of everything likely to bring in disease. In short, it should be enabled to take all necessary steps for the extinction of the plague in its district, and for the prevention of its being introduced.

Principle of Taxation.—Strong objections have been made by some members of Parliament to the principle of taxation for the purpose of compensating those whose cattle are ordered to be killed.

This deadly plague, however, is, I think, rightly viewed as a national calamity. If not checked, we have every reason to believe that it would overrun the whole kingdom, and destroy from 60 to 90 per cent. of our cattle, and remain with us for an indefinite length of time. Such a calamity would soon be felt by every consumer of beef and of dairy produce, and ultimately tell severely on all ranks of the community. It is, therefore, the interest of all to arrest its progress as speedily as possible, and the practical question seems to be, what is the best mode of doing this? As long as the disease remains anywhere within the kingdom, the whole of the cattle in it are in danger. It is like a powder-magazine, safety against the kindred can be looked for until the last spark is extinguished. Now, all experience shows that the attempts at private isolation by individuals themselves only lead to the spread of the disease. Hope of recovery makes them averse to killing, and when it comes to the worst they carry on the trade in diseased cattle as secretly as possible, and also sell the skins of those that have died. Government must, therefore, interfere for the public good, and enforce those measures which experience has found best for extinguishing the plague. Those measures require the prompt slaughter and burial of all diseased animals, and often also the slaughter of others that have been in contact with them. Now, when a man is compelled to sacrifice his cattle for the general good, justice demands that he should be compensated for the sacrifice; and this compensation ought to be such as to induce him to take advantage of it, and not risk the penalty imposed upon attempts at concealment and evasion. When such is the organization in other countries, it seems to be—those for whose benefit the sacrifice has been made. Now, if no one but farmers and cattle-owners were interested in stopping this pestilence, then I could see some reason for saying that the burden of providing the funds should fall on them alone; but the interests of the whole, who are the community at large, are equally interested, I think it is clear enough that part of the expense should fall on them likewise. The payments to be made, it must be remembered, are not incurred merely for the purpose of indemnifying the farmer for the loss of his cattle, but for arresting the progress of the pestilence. That is the main object for which the tax is required, and what we must clearly keep in view. If the compensation had no other object than to reimburse individual farmers for loss of capital, arising from one of those accidents which all trades are more or less liable, the argument for imposing a tax for the purpose would fail. But that purpose could not stand for a moment. The object of the tax is not this, but to prevent a scarcity of beef, milk, and butter. As to the mode of levying the rate or tax that may be required, it has been found on former occasions that it is better to pay the compensation out of the general funds of the national purse, because a much better protection is thereby got against fraud and waste of the funds; and seeing that the administration of the Act is left to the county and burgh authorities, with great local powers in their several districts, a county and burgh rate would be the best mode for the purpose. The community, however, has a right to expect that Government should see to the Act being everywhere carried vigorously into effect, for unless this is done, the disease may be so disseminated as to cause the tax necessary for compensation to be quite intolerable, as will be the case in Cheshire. The stamping-out system should not be relaxed until the last vestige of the disease has disappeared, for to do so would be just as wise as to stop the putting out of a fire before it was thoroughly extinguished, and to leave the embers to smoulder and break out anew. A hope has sometimes been expressed that the disease may assume a milder type and cease to become formidable, or perhaps vanish altogether of its own accord. Many diseases *do* vary in their character, and there is nothing unreasonable in supposing that the cattle plague may have its local and natural variations. But we have no reason to expect that a milder form, if it did occur, would propagate the same mild type in other cases; and it would be a rash delusion, I fear, to trust to anything of the kind. As to the disease vanishing of itself, we know that it stayed for years in Britain in the middle ages, and now it seems to have been as deadly in the fifth year as in the first. I am not aware, in fact, that any kingdom has been able to get rid of it otherwise than by killing it out.

PEMBROKESHIRE: *Grass Lands.*—At a recent meeting of this Society, a paper by Mr. Bonar, on "The best method of laying down Grass lands," was read, from which we make the following extracts. He said—

This appears to me to be of more importance than any other agricultural question. For we may have a failure in our crop of Oats or Barley by grub or wireworm or any other local cause, or we may experience a poor return of Wheat, or the fly may take our Turnips, or the disease destroy our Potatos. To have any of these crops a failure would be, of course, a great loss to the farmer; but still, it is but one year's loss: another crop next year might redeem his loss. But should we, through carelessness in cultivation or manuring, or, what is quite as important, should we err in the selection of sound seeds, properly suited to our soils, and thus lose a crop of Grass, it is not only one year's loss, but a loss of many years to come. From my own experience, I have found that the most expensive system, when conducted with strict economy, is the most profitable in the end. A very respectable farmer in my neighbourhood told me, when discussing the different systems of farming and cropping, that the old system was the best that ever was, or would be. The old system of laying down Grass lands, or, rather, if I may use the expression, running the land down to Grass, is to go on with white crop after white crop in succession until the land is completely exhausted, and then Nature is left to provide the crop of Grass. Now, what is the result? Is it a crop of luxuriant, healthy, permanent pasture? No, it is only a mass of coarse herbage, with neither nourishment nor feeding properties in it. I will not say it is not permanent; it is too permanent, and that we shall find when we go to break it up again. It would take a good deal of time, trouble, and expense to extirpate such a mass, and in doing so we make the land so light that in a dry season we shall run a great risk in losing our next crop. There are many of my neighbouring farmers who would, at this season of the year, be very reluctant to change a stubble field with me, as they say they have got plenty of Grass in them for their cattle, while mine would starve a goat. But this only shows the two different systems of farming, and I shall leave every one to adopt the one that pays him best. But my first object is to clean the land (which I consider the best principle of farming); and everything I do not sow I consider to be a weed: and I think there is no other way of doing that properly without a fallow or a green crop. We may, in some seasons, under very favourable circumstances, be able to clean our stubble-fields in some measure for another white crop, and may cart or burn no end of Couch from it; but in a wet season we too often find it a failure. Although I consider myself no authority, yet I will give you my experience, and the manner in which I conduct this branch of husbandry, and leave the meeting to judge for themselves. I am a great advocate for deep ploughing, and more especially for stubble lands before green crops. This I do in the autumn and the early part of winter, instead of allowing my stock to make the land into mortar, and I invariably find that when this is done, and the surface completely buried, that a great portion of the weeds disappear before spring; and as I make it a rule not to grow two white crops in succession, it is seldom that I have any trouble of cleaning in spring, further than one ploughing and harrowing. If anything more is wanted, as the land has been properly stirred to its depth, I consider the grubber or scarifier to be a more efficient implement than any other, more especially in a dry spring, as there is often an error committed in exposing the soil too much to the elements. The Turnip crop will then be put down, and kept clean during the summer in the ordinary way. We must not allow the spring to be too far advanced before ploughing, as the effect of the atmosphere will go further in pulverising the soil than Cambridge's roller. It is absolutely necessary that we should have our land converted into a firm mould or seed-bed before sowing the Grass seeds; and if that cannot be obtained after harrowing in the Barley, we ought to roll before sowing the Grass seeds, then cover them slightly, and then roll again. There are many different opinions as to the best depth of cover at which certain Grasses and Clovers should be sown, but my opinion and experience is that the slighter the covering the better. There is a work published by Lawson, the seedsman, on the cultivated Grasses, which I would highly recommend to all who are connected with farming. It not only gives a full description of the various natural and artificial Grasses, but embraces all that is useful and interesting regarding their nature and habit, the particular soils for which they are adapted, and the peculiar circumstances under which their culture is necessary or desirable. I shall have occasion to make further reference to this; but, for the present, I might subjoin a table published in this work, to prove the best depth at which certain Grasses and Clovers should be sown, from one-fourth of an inch up to 3 inches. It is here shown that the greatest quantity of seeds germinate at one-quarter of an inch. This is one fact worth knowing among the many others it contains. It likewise shows us that we must have a fine mould or seed-bed. I would recommend the seed barrow, now in use, for sowing the seed, and more especially the Clover, as by using it we not only save a quantity of seed per acre, but distribute it more equally on the surface than can be done by hand. But before taking leave of this part of the subject, we must not overlook the use of lime. For my own part, I consider it to be one of the first and most essential manures applicable at this stage, as it has that powerful effect of acting upon all inert and irony substances, which abound in some soils, and which prove detrimental to healthy vegetation, and it dissolves all vegetable matters, and renders them available in the shape of easily assimilated food for plants.

I shall now come to that part of the subject—the seed, the kinds and quantities required for laying down Grass lands, either for alternate husbandry or permanent pasture. To give the whole series of tables contained in the valuable work before mentioned, comprehending all the variations of soils, altitudes, climates, and other circumstances which might present themselves in the course of practice, would be inexpedient, and almost impossible, and would far exceed the limits of a common lecture on agricultural pursuits. But I shall here class them in three divisions, viz., Grasses for light soil, for medium soil, and for heavy soil. The wet light soils, with respect to the Grasses suited to them, may be considered as approximating to the heavy soils, and a dry and heavy soils as approaching towards the light soils. The light embraces soils more or less of a sandy or gravelly nature; the heavy include clay and heavy loams; while the medium are to be regarded as an intermediate class, between these two extremes. The seed suited to them would be in these proportions:—

FOR ALTERNATE HUSBANDRY.

Names of Grasses	Light and Medium Soils.			Heavy Soils.		
	For one year's hay.	For one year's hay and one year's pasture.	For one year's hay and two years' pasture.	For one year's hay.	For one year's hay and one year's pasture.	For one year's hay and two years' pasture.
	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.
Rough Cocksfoot	—	—	—	3	2	2
Italian Rye-grass	9	9	5	9	9	9
Perennial Rye-grass	15	15	15	15	15	15
Yellow Clover, or Trefoil .	—	1	1	2	2	2
Timothy, or Catstail ..	1	2	1	2	2	2
Hybrid, or Alsike Clover .	1	2	1	2	2	2
Common Red Clover	8	4	1	8	4	4
Cow Grass	—	2	4	—	2	4
White, or Dutch Clover ..	2	4	4	2	4	4

FOR PERMANENT PASTURE.

Names of Grasses	Light Soils.		Medium Soils.		Heavy Soils.	
	With a crop.	Without a crop.	With a crop.	Without a crop.	With a crop.	Without a crop.
	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.
Meadow Foxtail	1½	1½	2	2	2½	2½
Sweet-scented Vernal ..	1½	1½	1½	1½	1½	1½
Rough Cocksfoot	3½	4	5	4	5	5
Hard Fescue	2	2	2	2	2	2½
Tall meadow Fescue ..	—	2	2	3½	2½	2½
Various leaved hard Fescue	—	2	2	3½	2½	3
Meadow Fescue	2	2	3½	3½	4	4
Red, or Creeping Fescue ..	2	2	—	—	—	—
Italian Rye-grass	6	7	8	8	9	9
Perennial Rye-grass ..	8	9	10	9	10	10
Timothy, or Catstail ..	1½	2	2	2½	3	3
Wood meadow Grass ..	1	1	1½	1½	1½	1½
Evergreen meadow Grass ..	1	1	1½	1½	1½	1½
Smooth stalked meadow Grass ..	1	1	—	—	—	—
Rough-stalked meadow Grass	—	—	2½	3	3	3
Yellowish Oat Grass ..	1	1	1	—	—	—
Common Birdsfoot Trefoil ..	½	½	½	—	—	—
Greater Birdsfoot Trefoil ..	—	—	½	½	½	½
Common yellow Clover ..	1	1	1	1	1½	1½
Hybrid, or Alsike Clover ..	1½	1½	2	2	2½	2½
Common Red Clover	—	—	1	1½	1½	1½
Cow Grass	—	—	—	—	—	—
White, or Dutch Clover ..	1	1	1	1	1	1

The quantities set down are for an imperial acre.

Judgment and discernment must, however, in many instances be exercised, both in regard to the kinds and to the qualities of seeds to be sown. Thus it may be expedient in peculiar cases to withdraw wholly or partly certain kinds of seeds, and to substitute others, especially where lands are known naturally to produce any particular sort, which, although desirable to a certain extent, may, when too predominant, prove rather detrimental to the crop than otherwise. It is also very material to keep in view the altitude, exposure, and any other peculiarities which may present themselves in the constitution of the land; as whether the soil or subsoil be naturally wet or dry, and whether it be of a calcareous, ferruginous, peaty, or other nature, at all likely to affect the growth of certain species or varieties of the Grasses, Clovers, and other plants recommended in the tables. But in this work we should find the qualities, the soils, and situations for which they are adapted. We have now come to the last point, but although last not the least—that is, the quality of the seeds. What will it avail us, after the expense of ploughing, manuring, sowing, seeding, and every other expense, if our seeds should turn out to be a failure? I do not say that such has been the case in many instances that have come under my notice, but I do say that in many cases I have observed them the next thing to a failure, and in some cases I should say worse than a failure, as they fill our fields with a host of invaders or usurpers which we had never bargained for. Professor Buckman tells us that an examination of 30 samples of Rye-grass and Clover shows that as many as 800,000 or 900,000 weed seeds are often found to be sown with a bushel of the crop seed. This is a fearful array of figures, explaining perfectly how it is that Clover and Grass are very greatly injured by weeds, and may be taken as evidence that the farmer sows the most part of his weed pests; they come with his seeds of various kinds; and in the case of the Clover crop, each seed sown subtracts from the sum of the Clover seed. But this is not all, as very many of the weeds grow so fast as to smother and kill, or at least so much weaken, that winter kills many of the Clovers in the vicinity of the weeds. Many weeds, too, seed the first year, and are succeeded in the next by an immense increase. These circumstances in a great measure would account for much of the so-called Clover sickness of the soil. It is then a matter of the first importance to have our seed from houses of known repute, as it is a common practice with unscrupulous seedsmen to mix old and dead seed with good. The book I have referred to tells us that Turnip seed of one year old will only germinate about 50 per cent., two years old about 30 per cent., four years old 15 per cent., eight years old 5 per cent. Others of course will be the same, so that we ought to be cautious, and when we purchase have our seeds separate, and as a trial sow a few of each in a flower-pot to prove them, and see how many will germinate, as there is so much spurious trash offered for sale that it would be better for us in some instances to pay the seedsman to keep them at home. We not only lose the crop we expect of them, but get one which will give us

trouble to get rid of. For my own part I find it cheapest to have the best articles at the highest price, and do from experience recommend it to others. I don't mean to say that our seedsmen are to be much blamed in this case, as they must keep goods equal to the demand; no, it is those who are so penny-wise and pound foolish as to have a cheap article and a cheap article only—and a large portion of our farmers are so; they are so pleased with getting an article a few pence cheaper than another would have cost, that they forget the necessary drawback which is in the inferiority of the article, and altogether forget this fact, that what costs less will be worth less. The cultivating, manuring, seeding, &c., of too great a portion of our Grass land is hardly an apology for it, and of such a system I have often said that it was neither done nor left alone. John Bull having but a small estate for the maintenance of his numerous family, which is crowded at the rate of 223 to the square mile, it is his duty to provide for his own, and apply all his powers to rendering this little property as productive as possible; for has it not been said that he that provideth not for his own and his own house is worse than an infidel?

Farmers' Clubs.

BALLYMAHON. *Pests of the Farm.*—The following is part of a paper read lately on this subject before the Ballymahon Farmers' Club: *Rooks.*—Is the rook injurious or beneficial to the agriculturist? Some practical men take one side of the question, and other practical men take the other. Each bring forward arguments that seem unanswerable until you hear the arguments of their opponents. The rook will take up the young plants of Potatos after they have sprouted for their own sake, being then in a sweet state, and not merely in search of any insects in them; it will pull up the young plants of Turnips to get at insects that may happen to be near their roots in the manure, and it is poor consolation to the farmer to be told that the plants were destroyed that insects might be captured. It will light upon laid corn of all kinds, and pick and scratch out much more than it can eat. It alights also on stooks, pulls out the ears and eats the grain. It will break into the heads of stacks to get at the grain. "All these are facts which I myself," says Stephens, "have observed of the rook, and they are sufficient to support the assertion that it is a destructive bird to the farm. At the same time the rook, in moderate numbers, would do no material injury to the fields; it is only when it is nourished in excessive numbers in large protected rookeries that it does sensible injury." In light soils, reclaimed bog or upland, rooks injure the Potato crop by picking out the sets in the early season, and the tubers in the later. The injury may be commenced in a field by only a few rooks, but if they be left for a few days undisturbed their numbers become largely increased, and then in the drilled crop, or that in narrow ridges, may be seen many holes bored by the beak, mould scraped down by the feet, and many Potatos torn out and left lying exposed on the surface, in addition to those that had been eaten on the spot or carried away by the birds, and dropped in the adjoining fields, where they are often to be seen. Let us now consider some of the rook's habits that are beneficial to the farmer. Grass land is sometimes frequented by numbers of rooks, which day after day pick it up in all directions, making it look as if it had been treated with a scarifier; but examine and try to discover what their object can be. Take a spade, turn over some of the Grass at which they have been pecking: the object of their search will be found in certain grubs, some large, very fat, half coiled, and lying on their sides, and some straight, moderately fat, and about the dimensions of a goose quill. These are two of the deadliest enemies of our gardens and Grass lands—the larvæ of the cockchaffer and of the crane fly or daddy-long-legs, as it is familiarly called. These two larvæ, pursuing their destructive labours unseen, and never appearing above the surface of the ground until they take their adult form, are far more formidable enemies than even the slug, the snail, and the caterpillar, creatures which can be detected and destroyed by man, but neither human eye nor touch can discover the subterranean larvæ as they silently consume the very life of the plants on which they feed, cutting away the tender rootlets, and causing a "blight," as it is called, to fall upon the herbage. Many an acre of Grass, many a fine crop of vegetables, has been blighted from no apparent cause; the plant ceases to grow, the leaves lose their fresh, healthy outline, they become weak and droop, the vivid green fades out of them, and changes to yellow; the edges crumple up, and the plant dies. There is no external sign of injury, and until the plant be uprooted and search made below, no destroyer is visible. But in the earth, or entangled in the roots of the dying plant, will be found an inconspicuous brownish, smooth-skinned, sharp-jawed grub, whose sleek condition shows the extent of its feeding, and whose cutting teeth have eaten away the sources of life. Hidden, however, as they are from human observation, they are not so from the keen senses of the rook. If a rook be shot while thus employed, the stomach will be found to contain a quantity of Grass root, together with a mass of substance which an inexperienced observer would not readily recognise, but which an entomologist sees at once to be composed of the remains of large larvæ, the hard, horny head and jaws remaining as proofs of its true nature. The Grass roots are mostly swallowed together with the grub that has entangled itself in their delicate fibres. The object of the rook is not to eat the roots, but to devour the grub that destroys them. The quantity of insects which a rook will carry home to its young is really surprising. In order to perform this task, and to avoid the inconvenience of repeated journeys to and from the fields, the rook has recourse to a plan similar to that which is followed by the swallow tribe when hunting for a like purpose. The gathered insects are not swallowed but are collected in the mouth, where they form a solid lump under the lower jaw, the skin of which is distensible like the cheeks of a man. When the bird has collected its full complement, and is flying home, this lump is discernible at some little distance, and has caused the popular but erroneous belief that a rook is furnished with a pouch at the root of the tongue. It cannot be denied that the rook does much damage to the crops, nor, on the other hand, can its good services to the crops be denied, and, as in other beings, we cannot expect unmixed good any more than such a quality can be expected from ourselves; let us therefore balance the good against the evil, and in our little court of justice follow the British maxims, that the accused is to be treated as innocent till he is proved to be guilty, and that in any doubtful case he is to have the benefit of the doubt. Thus let us judge of and act towards the rook, not trying to exterminate him, but check his depredations, and feel thankful for his benefits.

Various scare-crows are employed to protect the crops. Gunpowder is the most effectual means of scaring birds from the fields. An occasional shot does good, aided by the burning of gunpowder matches here and there, now and then, along the windward side of the field. These matches may be made of rags, or soft, thick paper, steeped in a solution of gunpowder and dried. It is said that one pound of sulphur mixed with gypsum and wood ashes, scattered on the ground as the corn is coming up, will protect an acre from the rooks. By the heat and action of the ashes the sulphur throws out sulphurous fumes. Another mode often used with success over Potatos is to have sticks in alternate rows firmly driven into the ground, and a stout string passed zigzag-wise from one stick to another, about a foot from the ground, and drawn tight. The common Hemp sold in balls for saddlers will answer. No feathers or streamers are required, as the rook is afraid of being entrapped, and will seldom venture within the angles enclosed by the strings.

The Wood Pigeon is considered more injurious than the rook, yet it is not without some good services. From its roosts in the larger branches of trees it issues at sunrise to search the open fields for its food—the seeds of Wheat, Barley, and Oats, Beans and Peas, also the seeds of some very bad weeds—the Field Mustard, Charlock, and Ragweed. It eats the leaves of Turnip, Cabbage, and Clover; picks up pulse and grain of all kinds from the sown fields, whenever it can find it exposed on the surface, but does little or no damage by scratching or digging up the seed. Wood pigeons are very injurious to the ripening corn, and will settle down upon it in dozens, whether it be lodged or not; in this they differ entirely from the rook, which never alights in standing corn. They have strong wings, and use them like flails in threshing out the grain, and thus cause much more loss than what they eat; they use their wings also in a similar way on the fruit trees in the garden, to obtain Gooseberries, &c., beyond their reach. In winter's severe weather they collect in large flocks, and do much injury to Turnips. Nearly 10,000 have been observed in a field of 12 acres. They are very shy and wary. In time of snow a hut covered with snow has been found a useful cover for the sportsman and his gun.

The Starling is an invaluable benefactor, picking up flies, beetles, and other insects that creep among the Grass or torment the cattle, and wonderfully keen in discovering and unearthing the subterranean grubs and larvæ.

The Sparrows, the finches, the linnets, and other small birds are, no doubt, at some periods very destructive to the crops, but there is equally little doubt that they destroy many of the enemies of the cultivated crops. Sparrows and other small birds feed largely on grain and Peas as the crops are ripening. They eat in spring a portion of the seed when scattered on the ground, and when Turnips, Cabbage, and Rape and other small seeds appear above the ground they suffer much injury from the little birds, and when these last crops are grown for seed they suffer largely from the linnets and other small birds, not only from the quantity eaten, but also from the larger amount shelled and dropped to the ground. In the garden the bullfinch especially is injurious to the buds of fruit trees, pulling to pieces the buds, which may be seen scattered in profusion on the ground beneath the Apple and the Gooseberry trees; yet it must be admitted that these small birds feed largely on the noxious insects in their threefold states of existence; they feed largely also on the seeds of weeds. The injuries committed by sparrows and other small birds have led some persons to consider them as enemies that should be exterminated, and the efforts to accomplish that object in some places have been too successful, as the inhabitants, and especially the farmers, of those districts afterwards found to their great loss. In the year 1861 petitions were presented to the French Senate asking that laws might be made for the protection of small birds. In some districts of France the birds had been killed to such an extent that some kinds of small birds had become extinct, and others very scarce; their eggs had been taken, the birds had been snared, and destroyed; the consequence was that the insects increased to such a destructive degree that the crops became very poor, the Vines, Olives, and even the tall, hardy trees all suffered. In exterminating the birds, man had exterminated his best friends. It has been said, "the birds can do without man, but man cannot do without the birds."

Some years ago many letters were written to the *Times*, the *Field*, and other newspapers on this subject. One writer from the vicinity of Liverpool says:—"Here there have been on the part of the farmers and cottagers great complaints made of the mischief done by small birds to corn fields and gardens. In vain did some hold the argument that these small robbers did as much good in destroying grubs and caterpillars as harm to Wheat and Currants. For the last two years the township has not only paid for dead sparrows, but so much a dozen for birds' eggs. I am afraid to say how many thousand dozen of eggs were taken and paid for, and, as I believe, mainly in consequence of this, we have this year such a plague of caterpillars and grubs as I never remember. I have had three women constantly employed picking our Gooseberry, Currant, and Apple trees. Our destruction of caterpillars has been by bushels. I feel so convinced that this plague was partly owing to the last two years' destruction of birds that in my grounds and in all the coverts I ordered the nests not to be molested. I enclose you the head of a sparrow shot this morning in my garden: this was done to test what food it took to its nest. I hope the head may reach you in the same state in which it was picked up, viz., with three green caterpillars and three daddy-long-legs in its beak. If in one journey from its nest it could collect as many, it is easy to guess how much may be done by them to clear trees. My trees from hand-picking are now pretty clear, but I am quite sure it would have been done better and cheaper by birds had they been let alone."

The green caterpillars mentioned in this letter were probably the larvæ of the small Cabbage butterfly, a most destructive species.

Another correspondent says that he found in the crop of a sparrow that he shot as it was coming out of his fruit trees no less than 20 green caterpillars and a number of aphides.

Sparrows and other small birds feed largely on the wireworm, the dark grey grubs of the gooseberry-fly, and other caterpillars, also on cockroaches and weevils, and even their seed-eating propensities do good to the cultivator in feeding on the seeds of Groundsel, Dandelion, and the Sow Thistle, all noxious weeds to our crops.

Considering the very great benefit the small birds confer upon us at other seasons of the year, they ought not to be killed, but rather driven away from the sprouting crops for a short time till the plants have attained sufficient size to lose their softness, and be no longer an attraction for the birds, and from the ripening crops the birds should be scared away, but not with gunpowder-club exterminating practice. Perhaps the most effectual way of driving away the small birds is to fire a few charges of shot among them occasionally; powder alone will not be sufficient. As a protection for garden vegetable and flower seeds, a solution of naphtha or asafœtida is useful. A tablespoonful of rectified naphtha, mixed with 2 gallons of water; water the ground after the seeds have been sown, and again when the plants first appear above ground, or steep a ball of woollen thread in naphtha, and strain it over the beds or rows of seed. Perhaps a very weak solution of gas-water may be useful for protecting rows of Peas. Mr. Wood used at each end of the drill a wooden arch fixed in the ground, with strong white thread passed back and forward, so as to form a continuous passage or tunnel; the birds are afraid of the threads, which have seemed to support the Peas in their early growth. A cat or hawk kept in the garden, or even the figure of a cat made of sheet-iron, the figure to be in a sitting posture, or a little windmill on top of a pole, driving a rattle, will for a time scare birds, but inanimate scare-birds are only temporary in their effects. Steeping the seeds, Turnip, Cabbage, &c., and drying them with sulphur, and other such modes, are found useful.

Farm Memoranda.

A TOUR IN ROMANIA (*translated from the Journal d'Agriculture Pratique*).—During a month's stay in Rome I made several trips into the surrounding country. Pastures and meadows extend in all directions, intersected by fields of splendid corn; but the land sown with corn cannot be estimated at more than one-sixth of the area.

A wet spring this year has imparted a vigorous growth to all the Grass lands, which carry goats and immense flocks of sheep. The sheep are of good shape, well fleshed, they die well, and the meat is generally good. But if one in this district after harvest and hay time, everything is scorched up by the glare of the southern sun. If the immense aqueducts which traverse Romania in all directions, could leave behind them water enough for irrigation, there would be a famous yield of green crops, but the water is all reserved for the wants of Rome, a city that boasts the most beautiful and the most plentiful fountains in the world.

I do not think the country would gain anything by a further division of the farms; the number of labourers would be insufficient for that system of farming, and probably the climate and the temperament of the people are an insurmountable objection to it.

On the 5th of April I again crossed the country from Rome to Civita Vecchia, and saw once more with renewed satisfaction the immense herds of big grey oxen, much like those of Switzerland, but without their enormous horns; droves of young horses and mules setting off at a gallop at the noise of the train, and dispersing over the pastures whose boundaries are lost in the horizon. These horses are generally good, and are in great demand at Rome for hired vehicles.

On quitting Leghorn the country and the system of management are the same, but the soil is drier. The sea is almost always within sight; groves of Cork trees border the road, but there is little corn growing, and no fruit trees except around the dwellings.

From Leghorn to Pistoja I traversed the most delightful and perhaps the best farmed district in Italy. The little duchy of Lucca, enclosed between the last buttresses of the Genoa Alps and the first slopes of the Apennines, is well cultivated and very productive. Wheat is grown everywhere; the meadows are irrigated, and level as a velvet carpet.

In the midst of this delightful verdure are rows of well-pruned Mulberries and of Vines supported by little Willows, the height of a man, and pruned to three branches in the head. All the hills are planted almost to their tops with terraces and groves of Olives, yielding the best oil of Italy. In addition to all this, the numerous villages, the well-kept residences and the dense population, are evidences of an agricultural country where the cultivators ought to be happy and enjoy the recompense of their labours.

From Pistoja to Bologna I was three hours crossing the Apennines at their greatest width, over an excellent line of railway, which passes through the mountain chains by 40 tunnels, with at least as many viaducts, and over numberless bridges spanning the mountain torrents. The Apennines are covered with Beech and Oak trees; at this season their leaves are decaying—not a green tree is to be seen, and the forest is stripped of all its clothing.

From Bologna to Modena, Parma, and Piacenza, we passed over the great central plain enclosed between the Apennine range on the west and the Adriatic on the east. The soil of this plain is good, limestone prevails, but the subsoil is sandy. The growth of corn prevails—corn always, corn everywhere. The fields are laid out in little narrow lands, as in Bresse and Charolais. At the present time (April) the furrows are filled with water, owing to the continued rains which we have had for the last 15 days, which have done much harm everywhere, injuring the corn crops and turning them yellow. Wet springs are very unfavourable to the strong soils with their stiff subsoil.

But that which has injured the corn has been favourable to the meadows; they are luxuriant, and give promise of a large crop. They are much less extensive than in Romania. I should not estimate them to occupy more than one-sixth of the land.

There is no fallow; land fresh broken up is sometimes sown with Maize or Potatos, but the extent is insignificant compared with the breadth in corn. Successive crops of corn are frequently grown on the same land, which is so strong that it is always productive.

The cereal crops, however, are not so fine here as in the neighbourhood of Florence and in Romania; they are hardly forwarder than in the east of France. The country north of the Apennines and Alps must necessarily have an average temperature lower than that enjoyed by the portion of Italy situated between the mountains and the Mediterranean. In fact the latter district, with its fine pasture land, which can be irrigated, its extensive breadths of corn, and its Vines stretching from tree to tree in luxuriant wreaths, ought to be the granary of Italy, and to export a considerable portion of its produce.

I have only been at Milan since yesterday, and cannot get a report on the agriculture. So beautiful a country is worthy of a separate description, which I shall be able to send to you after my excursion to the Lakes of Maggiore and Como. *Milan.*

WEST SUSSEX: *July* 21.—Harvest is now commencing, and Wheat will be a much better crop than we expected a month ago, but still it will be far below an average on the low lands. It is very thin on the ground, but the ears are good, and if we get it well in, the sample will be good. Peas are good.

Barley is generally very good, and Oats, though short in the straw, will be a fair crop. Mangel has not come on very fast, but is pretty regular. Swedes are also backward, but now do very well. Potatos have promised well, but have now got the disease coming among them. The weather has been very hot and dry, and the pastures are burning up, and feed will not be very abundant for the next few weeks.

Every kind of lean stock is still dear. Cattle are being moved about notwithstanding the plague restrictions. Dealers buy them for parties specially on commission, and it will be well that those empowered to grant certificates of removal be careful, or we shall soon have the disease spreading again.

Work is well advanced, and all are ready for harvest, but hands do not appear to be very plentiful; but there will be a good deal cut by machinery, as the crops are all standing up well. And perhaps, when steam cultivation becomes more general, and leases more reasonable, corn may be grown more frequently, and the crops, not so heavy, be better adapted for cutting by machinery, as in good Wheat land it is often impossible to use the reapers. *G. S.*

Miscellaneous.

Sulphur as a Disinfectant.—I need scarcely inform you that in Fife the plague has been both prevalent and fatal; but I am glad to say, that out of fully 20 homesteads, where strict sanitary measures and intelligent fumigation with sulphur fumes have been thoroughly and perseveringly attended to, there has been no case of fatal illness among cattle, from any cause whatever. Beyond these farms alluded to the fumigation has been practised at several, at which the disease subsequently appeared, and with the ordinary mortality; but upon inquiry I found that even decency, in regard to cleanliness, had been entirely ignored, and that altogether the system advocated had been but imperfectly put to a trial. Besides being useful as a preventive, sulphur, in virtue of the persistency with which it hangs about, will, doubtless, prove serviceable in limiting the spread of contagion: for a man's clothes, or an ox's hair, having been recently saturated with its fumes, vital cells could not be conveyed by either in a state fit for germination. Let me give you a case in point, or at least so far corroborative. A friend has two farms, the steadings of which are about 1200 yards apart, and, at the distant one, the plague appeared early in October in a very virulent form. The disease lingered until far on in December, and his loss has been little short of 30 head, old and young. Here he used no efficient means of prevention, as the official inspector disapproved; but at home he applied the sulphurous fumigation twice a-day, and generally conducted the operation in person. I have his authority for saying, that for weeks he was three or four times a-day among his diseased stock, touching them, and even assisting in the administration of medicines, and without taking any other precaution whatever, he went through his home byres without prejudice to any single occupant. The process is very simple:—A chafing-dish of red-hot cinders, a small crucible set into them, and a piece of sulphur-stick of the size of a man's thumb dropped into it, will fumigate a large byre in 20 minutes. Let me beg of your agricultural readers to give it a full and fair trial; and while I fervently trust that they may enjoy an immunity equal to many in this neighbourhood, I would urge upon them the necessity of strict sanitary observances, without which it is vain to hope for benefit from any recommendation whatever. One word more, and it is to the effect that if the sulphites are to be of any service, we have here their active principle, which can be administered to a score of cattle as easily as to one; and as it passes into the animal's lungs by inhalation, any one can understand that it will find more convenient access to its blood than if it entered through any other channel. I could quote many authorities for the rational soundness of the views which I have intruded upon you; but I will merely add, that I write mainly at the instigation of an honoured professional friend, who, now pre-eminent in another department, in his early life laid mankind under the deepest obligations to him, by his having been the first to discover that india-rubber was possessed of the property of rendering cloth waterproof. *James Dewar, M.D., of Kirkcaldy.*

A Farmer's Notions on the Labourer's Education.—Why has not every farmer his own thatcher? There is nothing so difficult in the art but that it may be easily learnt; but 'tis not every one who likes to find reeds and spars with which a novice might practise, and they depend on the district thatcher. Again, how useful on a farm is a man who has a knowledge of rough carpentry, and how many pounds a year might he save his master! But you may say, "It is very well to talk of the utility of such men, but how are we to get them?" Why, you must begin with the young children; you must educate them. But you may say, "What have reading, writing, and arithmetic to do with thatching, carpentry, hoeing, drilling, ploughing, and the host of other things on the farm?" True, they have very little to do with them, but every boy should learn them, and whilst he is obtaining a knowledge of these he should likewise study the various agricultural labours as well. Your village schools are not yet what they should be; but we are going on, on, on, towards what I suppose we shall have them in time, and that is, industrial schools. A philanthropic lady of Bridport, whose name will live for ages, though she now sleeps with the departed, some years since established an industrial school for girls in this town. Now, these girls are taught all the work of the house—cooking, cleaning, washing, ironing, baking, and a host of et-ceteras, besides a good English education. At 15 or 16 they are fitted for a situation as house servants, and many people have already obtained from that establishment what is now rare to be had—a good domestic servant. Now, we want similar institutions in country villages, for children of both sexes; and I am happy to say that there are many in England already, viz., at Henley-on-Thames, at Northampton, Gloucestershire, in Herefordshire, Warwickshire, and Worcestershire. I cannot find time to tell you exactly how these schools are worked, but I would refer you to vol. vi. of the Bath and West of England Society's Journal, where, in a paper written by "Spender and Isaac," the schools are fully described. It is all very well, gentlemen, to teach children to be moral, virtuous, and good Christians, but you must teach them something more—how to be good and expert workmen, and how best to do their duty in the sphere of life in which they may hereafter be placed. *Mr. Cox, at the Bridport Farmers' Club.*

Fattening Animals in a Hurry.—We have pointed out in former years the futility of attempts to lay heavy masses of flesh on poor cattle by stuffing them with rich food. Such attempts not only prove to be failures, but are always wasteful. The material consumed is nearly lost, the animals remain comparatively poor, and the owners are convinced that fattening animals for market "don't pay." It is perhaps well for the cause of good management that all neglected treatment of animals should result in loss to the owner. If he has starved his cattle, sheep, and pigs for a year or more, he cannot atone for it by sudden attempts to push them to fatness. On the contrary, the only true way is to see that growth continues without cessation, summer and winter, from the earliest period of their existence till they are finally sold in market. A single check given to this continued progress may arrest or retard it for months. Our own observations lead us to the opinion that the whole profits resulting from raising and fattening, when this continued progress is kept up by careful, regular, but not extravagant feeding, are at least triple the amount realised from early neglect and heavy feeding afterwards—and often the difference is many times greater than here stated. There is nothing that should be more strongly impressed on the mind of the young farmer who makes the feeding of animals a prominent part of his business, than the importance of keeping up an unremitting growth throughout the whole course of their existence. The most successful pork raiser with whom we are acquainted adheres strictly to this course; not only feeding his store pigs well and regularly through fall and winter, but commencing the fattening not merely in autumn, as is too commonly the case, but early in the spring. It is objected that this management is too expensive. This objection is urged by those who find two or three months only to consume more than they can afford. They feed heavily for a short time, but do not receive a corresponding return of increased flesh. "If two months' feeding," they inquire, "costs us so much money, how can we ever afford to continue it for two or three years?" It is very true they cannot, because the whole system they adopt is a profitless one. Fortunately it does not require heavy feeding to keep up the continued growing condition of animals. Here is a great error into which many have fallen, which we have endeavoured to correct. John Johnson made the remark some years ago that the copious feeding of grain or meal to cattle is no better than a moderate amount. We gave the statement some years ago of experiments performed by G. H. Chase, of Cayuga, who carefully weighed every week all his fattening animals. A daily supply of four quarts of Barley meal to a fine steer gave a weekly increase in weight averaging eighteen pounds. A neighbour advised him to "push" him, and eight quarts were accordingly fed daily. The weekly increase of flesh was less than when he received four quarts. The amount being increased to 12 quarts per day, he gained nothing at all. Several similar instances have come to our knowledge, and among others a fine animal was recently fed by a neighbour on a peck or more of rich meal per day. After thus urging on the fattening process, as he supposed, for several weeks, he was finally induced, and proved to be only a few pounds heavier than when purchased. The many bushels of feed which he had consumed, and the labour of attendance given him, literally went for nothing. Successful feeders, who prove all their experiments by weighing, have long since ascertained that animals in fine condition will lay on more flesh for the amount of food eaten than those of inferior character. Hence shrewd men will not purchase lean and raw-boned animals for fattening. This fact serves to establish the truth that all animals at all stages of growth should be kept fleshy. It need be scarcely necessary to remind any intelligent manager that the difference between attending to all the comforts of an animal by cleanliness, good wholesome food given regularly and in moderate quantity, and neglecting all these particulars, is simply the difference between those in fine healthy condition and such as are feeble and raw-boned. It may be laid down as true, feeble and raw-boned. It may be laid down as true, with scarcely an exception, that the farmer who carries on the business of fattening at a loss, is one who neglects at one time and over-feeds at another. *Country Gentleman (American).*

Calendar of Operations.

JULY.—*Early Harvesting.*—We repeat the publication of Mr. Hannam's experiments on this subject which have before appeared in our columns.

It would certainly at first appear that the farmer cannot be wrong in allowing his grain-crops to attain maturity—to become fully ripe: ancient practice, so far as it goes, would certainly justify him in doing so. And if by the period of maturity the time be meant when a plant has acquired its greatest value as an article of food, certainly this stage in the growth of every kind of crop ought to be attained before it is harvested; it is, however, by no means certain that maturity in this sense is not attained by our corn crops at an early period in the process of ripening; indeed, it may safely be asserted that grain has passed the period of perfection, and has begun to lose its value before it has become dead ripe. In support of this, the testimony of all nature may be urged that strength and vigour progress with growth only up to a certain period.

General reasoning, however, of this kind could never have been so influential with any farmer as to induce him to alter so important and time-sanctioned a practice as that of leaving grain to ripen thoroughly. And, practically speaking, the question remained undisturbed till Mr. J. Hannam, of Kirk-Deighton, near Wetherby, Yorkshire, in the "Quarterly Journal of Agriculture" for June, 1841, boldly asserted that the practice of allowing Wheat to become fully ripe was an injurious one. This assertion was based on the details of a careful and elaborate experiment made during the previous year, 1840. In 1841 Mr. Hannam continued his investigations on a still more extensive scale, and the results thoroughly corroborated his former conclusions. In September, 1842, the details were published in the "Quarterly Journal of Agriculture," and the question was discussed at length, the conclusion being that the best period for cutting Wheat is when it is raw, *i. e.*, from 10 to 14 days before it becomes thoroughly ripe.

Mr. Hannam's first experiment was executed in 1840. Three samples were cut, viz., respectively as follows:—

No. 1.	Green, cut on	August 4, 1840
2.	Raw	August 18
3.	Ripe	September 1

These were threshed and carried to market, when the following prices were put upon them:—

No. 1.	61s. per quarter
2.	64s. "
3.	62s. "

In 1841 a more extensive experiment was instituted; five samples of half a rood each were cut, viz.:—

No. 1.	Very green	August 12
2.	Green	August 19
3.	Raw	August 26
4.	Raw	August 30
5.	Ripe	September 9.

These samples were threshed, and the samples were as follow:—No 5 (ripe) was "bold, but coarse;" Nos. 1 and 2 (green), "fine in the skin, but small," and Nos. 3 and 4, "equal in boldness of grain to No. 5, and superior in clearness of skin," being "unexceptionable as a sample." This shrinking or drying of Nos. 1 and 2 proved that it was in those cases taken too early. The whole of the samples were shown at the annual show of the Wetherby Agricultural Society, September 22, 1841, when the superiority of the raw-cut grain

was confirmed by the judges, who awarded to it "an extra premium, with a high commendation of the sample No. 3, cut a fortnight before ripe."

Having in one trial ascertained the value of the samples by market, and afterwards by the opinion of a public meeting, in order to leave no loophole for doubt, Mr. Hannam determined to test their qualities at the mill. The gross quantity of each was ground and dressed by Mr. John Hardcastle, of Wetherby; and from the results the annexed Tables are compiled:—

No.	Grain. Quantity.	Grain. Weight.	Flour.	Pollard.	Bran.	Waste	Cut.
	bush.	st. lb.	st. lb.	st. lb.	st. lb.	lb.	
3	3	15 10	12 6	0 12	2 1	5	Raw
4	3 1/16	16 6	12 3	1 3	2 5	9	Do.
5	3 1/16	14 13	10 11	1 9	2 5	2	Ripe

Weight per bushel of

No.	Grain.	Flour.	Pollard.	Bran.
	lb.	lb.	lb.	lb.
3	62 9/16	49 1/2	3 1/2	8 1/2
4	62 7/16	46 3/16	4 5/16	8 5/16
5	59 1/2	43 1/4	6 1/2	9 1/4

Weight per cent. of

No.	Grain.	Flour.	Pollard.	Bran.
	lb.	lb.	lb.	lb.
3	100	80 1/4	5 1/2	13 3/4
4	100	77 1/2	7 1/4	14 3/4
5	100	72 1/2	11 1/4	15 1/4

"From this we see," says Mr. Hannam, "that the bushel of No. 3 gives more flour than the bushel of No 5 by 64 lb., showing a gain of 15¼ per cent. in weight of flour upon equal measures of grain, and of nearly 8 per cent. of flour in favour of No. 3 upon equal weights of Wheat."

The theory upon which Mr. Hannam explains these results is, that as the sugar in the green plant becomes changed into the starch of the Wheat, so if permitted to remain till fully ripe another change will take place, the starch becoming gradually converted into woody fibre; for it is a well-known chemical fact that sugar, starch, and fibre are composed of the same constituent elements, differing only in the quantity of water combined with their carbon.

This gradual change to woody fibre takes place in many vegetables as they ripen, and it is by taking this into account that we can explain the curious fact shown in the tables that the ripe Wheat contains 50 per cent. more "pollard," or "sharps," than the "raw cut grain." Hence it is no wonder that there should be less flour in the grain of the ripe Wheat.

Chalk and Marl.—Any leisure time in summer may be employed in digging marl and chalk, and carting it near where, before winter, it is to be spread broadcast on the land.

In tracts of waste lands, or sheep-walks and warrens let at 6*s.* or 7*s.* an acre, marl being discovered, and rendering such land capable of yielding good crops of Turnips, Clover, and all sorts of grain and pulse, the uncommon effect, and the amazing advantages made by it, have proved to be so striking that its use has spread fast. But, on the contrary, when marl is found under richer soils, enclosed countries (for instance, 30*s.* to 3*l.* an acre) the case is different; it will not make such an improvement as on the poorer lands, and, as great fortunes are not suddenly made by the use of it, the farmers in some districts will not be persuaded to use it with any spirit, possibly not at all. In that case, landlords should set the example, and show that the work will answer well.

Marl is of various sorts, and lies in various strata; in some places it is a soft, fat, soapy substance; in others it is hard as chalk, and then it is called stone marl; sometimes you find it white, sometimes grey; also blue, yellow, and a dark brown; and in some counties you have shell-marl. The depths at which it lies are various; sometimes only 3 ft. from the surface, at others 10 or 12, and in some places so deep that it will not answer to get it at all. The strata are also of different thickness, from 2 ft. to 12 ft. deep.

The best way of conveying it on to the land, if it does not lie very deep, is to open a sloping mouth, sinking the pit gradually, wide enough for a cart to drive in and out; and, when you come to the marl, to work it away circularly, and to keep the pit 10 or 15 ft. deep, by which means the expense of filling the cart will be much lessened.

When marl is not to be had, clay, in many places, is to be found at a moderate depth. This manure, though not possessed of all the properties by which marl is known, yet works wonderful improvements on many soils. In some light lands it has been preferred by many very good farmers to indifferent sorts of marl, and this preference has been the result of attentive experience.

But the great point concerning clay is not so much the comparison with marl, as the use of it where no marl is to be had. On all light sandy soils it should be used with a confidence of success, for the precedents of its good effects are so numerous that we cannot have a doubt of its excellence. About 60 or 70 loads an acre, at the same expense as of marl, will work an improvement great enough to show how much mistaken those men are who think nothing but the finest marls worthy of attention.

Chalk is a manure common in many parts of the kingdom, and this month is a very proper season for digging it. A distinction is here to be made between hard and soapy chalks. The latter ought always to be ranked among the marls, for such they really are; but the former are properly chalk, and of excellent use on many soils; they work a great improvement on light sands and light loams; they have in many places been used with great success on gravels; and on clayey loams and clays they do extremely well, mellowing them greatly, and bringing them into much better order for ploughing, and much earlier in the spring, which, on such soils, is always a matter of consequence. The expenses of this improvement are the same as the marl or clay, being sometimes dug and thrown directly into carts, and at others drawn up in buckets through shafts. These variations are not of such importance as to exclude the propriety of the improvement, even in the most expensive counties. I add the following particulars of the cost of the operations from Mr. Raynbird's paper on "Measure Work," in the eighth volume of the English Agricultural Society's Journal.

"By the process of marling I believe is to be understood what we in Suffolk denominate claying, and perhaps improperly so, for there is very little clay applied to the land that does not contain a large proportion of lime; and the general test as to the good quality of clay is the presence of small particles of chalk, or chalk-stones, as they are here termed. Notwithstanding this, I have used the term claying because it is so called in this county, and in order that I may not be misunderstood; but it must not be taken for granted that I mean real clay, but a mixture of clay and chalk, which ought properly to be termed marl.

"The application of marl or clay may be said to be general, both on heavy and light land. On heavy it is used on freshly broken-up pasture land, and mixed with farm-yard manure in the formation of compost heaps. On light soils its application is of course more extended, as it is here that the great benefits are derived by the improvement in the mechanical texture of the soil.

"The scouring of ditches on the heavy soil is carted to form bottoms for the farm-yard manure, with which it is mixed by turning, &c.

"On freshly broken-up land, clay and other soil is carted on to the amount of from 40 to 50 cubic yards per acre. The benefit derived from this is the better quality of the grain, and regularity of the crop. New land, whether it is naturally of an adhesive and retentive nature, or dry and sandy, or light and loose peaty soil, is found to produce a patchy crop of a bad quality of grain, which is corrected in a great measure by the application of marly clay. The excess of organic matter in the heavy soil gives it a looseness of texture which the clay corrects; the dry and loose texture of the sand is rendered more adhesive and retentive of moisture, and the peat is benefited by consolidation and the supply of inorganic matter.

"In first beginning to marl or clay a field, if no pits have been begun beforehand, it is usual to ascertain where the best material can be most conveniently raised for carting. This is done by digging down to ascertain the subsoil, and frequently the marly clay is found within a foot of the surface. The soil is now dug and filled into carts; the digging proceeds in a sloping direction downwards, so as to form a mouth to the pit of a gradual descent, for if very steep the horses are liable to be strained in drawing the loaded carts from the pit. As soon as a sufficient depth is obtained, the plan of operations is altered, for instead of picking and digging, they now proceed to make what are termed "falls," in a manner that is well known to all excavators; this is done by picking or undermining at the bottom for a sufficient distance along the side, and at the extremities of the undermined part, a perpendicular crevice is picked out from the top to the bottom. This having been completed, clay wedges shod with iron are driven in at top with a heavy mallet or beetle, and this being continued for a short time, the clay splits down perpendicularly. In this manner as much soil is 'raised' as will be filled into carts by three men in a day's work.

"The labour of filling clay is generally paid for by the cubic yard or load; for filling and spreading from 2½*d.* to 3*d.* per yard is paid. The work is sometimes done by men who contract at so much a yard (measuring the pit when the work is done) for filling, spreading, and carting, finding carts and horses; the price is about 7*d.* per yard if carted one furlong, 1*d.* being added for every additional furlong, but this has been already described in the report on Measure Work. Ten yards a-day is reckoned a fair day's work for one man."

It is only necessary to add that in the Fen districts of Lincolnshire much claying, where the peaty soil is deep, is done by digging deep trenches, at intervals of 11 yards or more, and spreading the contents over the surface, afterwards filling up these trenches with the peaty soil. This, however, is done before winter. The Midsummer work consists merely in digging and getting ready for autumnal use a store of the clay, marl, or chalk that is to be applied.

Notices to Correspondents.

BOOKS: *H C F.* We know no good cheap collection of plans of buildings for farms of small size. Such books are costly and cannot be published cheaply. A sight of MR. Bailey Denton's costly but superb book of actual examples would probably give you the information you desire.

MANURES. *H W C.* It is "food *minus* growth"—including in the latter term not only the portions of food actually built up in the growing body, but those particles which are expired in the process. Horses are generally better fed than cattle, therefore horse-dung should be better than cow-dung; and so it is for heavy soils, which are the better for its lighter and more open character. On light lands, however, horse-dung ought to be mixed with other manures, or rotted in compost before application.

PASTURE: *M A.* The seeds sent belong to the genus Alopecurus; but whether it be a rough variety of A. pratensis (Meadow Foxtail), or a distinct species, it is difficult to say from the seed alone.—*P.* The usual practice with regard to the droppings on the pastures is to knock them abroad when they have arrived at a certain degree of consistency. We believe that an old man and donkey cart might be usefully employed constantly during summer in collecting them and forming a heap, wherever there is extent and herd enough to give him work.

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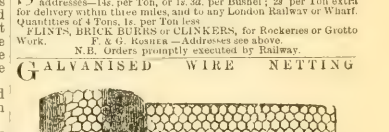

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2 inches in diameter ..	0	3½	12 inches in diameter ..	1	9	
3 ,, ,, ..	0	5	14 ,, ,, ..	2	3	
4 ,, ,, ..	0	6½	15 ,, ,, ..	2	6	
6 ,, ,, ..	0	9	16 ,, ,, ..	3	0	
7 ,, ,, ..	0	10	17 ,, ,, ..	3	6	
8 ,, ,, ..	1	0	18 ,, ,, ..	5	0	
9 ,, ,, ..	1	2	19 ,, ,, ..	6	0	
10 ,, ,, ..	1	3	20 ,, ,, ..	7	0	
11 ,, ,, ..	1	6				

BEE GLASSES, with Conical or Flat Top.

Each.	s.	d.		Each.	s.	d.
4 inches in diameter ..	0	6	9 inches in diameter ..	1	8	
6 ,, ,, ..	0	8	10 ,, ,, ..	2	0	
6 ,, ,, ..	0	10	11 ,, ,, ..	2	6	
7 ,, ,, ..	1	0	12 ,, ,, ..	3	0	
8 ,, ,, ..	1	4				

CUCUMBER GLASSES.

Each.	s.	d.		Each.	s.	d.
24 inches long ..	2	0	16 inches long ..	1	4	
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20 ,, ,, ..	1	8	12 ,, ,, ..	1	0	
18 ,, ,, ..	1	6				

Made to any length.

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Each.	s.	d.		Each.	s.	d.
12 inches ..	0	6	18 inches ..	2	6	
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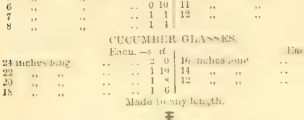

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Fig. 521. DOME and CONVOLVULUS. 12s.

Fig. 525. DOME. 8s. 6d.

Fig. 522. CONVOLVULUS, 5s. 6d.

Fig. 524. BARKER'S MILL. 12s.

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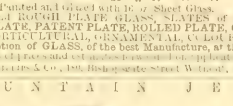

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36 ,,	17 ,,	2	15	0

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Catalogues with Pedigrees may be had on application to Mr. E. ARCHER, The Hermitage, Crayford, or of Mr. STRATFORD, 19, Euston Square, London, N.W.

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THE GARDENERS' CHRONICLE
AND
AGRICULTURAL GAZETTE.

A Newspaper of Rural Economy and General News.

No. 31.—1866.] SATURDAY, AUGUST 4. {Price Fivepence. (STAMPED EDITION, 6*d*.

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State of the Crops, 1866.

THE GARDENERS' CHRONICLE and AGRICULTURAL GAZETTE of SATURDAY, August 11, will contain full particulars of the STATE OF THE CROPS throughout the Country. Order of any Newsvendor. A Single Copy sent for Six Stamps.

ROYAL HORTICULTURAL SOCIETY, SOUTH KENSINGTON.

NOTICE.—A MEETING of the FRUIT and FLORAL COMMITTEES will be held on TUESDAY NEXT, Aug 7, at 11 o'Clock; LECTURE at 3.

CRYSTAL PALACE.—The GREAT AUTUMN SHOW of FRUIT and FLOWERS on WEDNESDAY and THURSDAY, September 5 and 6.

Schedules, with List of Prizes, may be had on application to I. WILKINSON, Superintendent, Crystal Palace.

BOSTON FLORAL and HORTICULTURAL SOCIETY (1869).—The FIRST GREAT AUTUMN SHOW of FLOWERS, FRUITS, and VEGETABLES will be held in MAJOR HOPKINS' PARK, on THURSDAY, August 9. Extra Prizes of £5 and £3 (subject to the Judges' discretion), will be given for the Best and Second Best Collections of 12 Stove and Foliage Plants.

The Boston Artillery Band will attend.

For Schedules, &c., apply to the Hon. Secs., Mr. W. H. BAILES, Solicitor, Boston; and Mr. Jos. COCKS, Stark Skirbeck Nursery, Boston.

Tickets of Admission, at 1 o'clock 2*s*., at 3 o'clock 1*s*., may be obtained of Mr R. M. DAWSON, Solicitor, Boston.

N B. It is particularly requested that intending Exhibitors give the notice required by Rule 4 with regard to Entries, for the Hon. Secretary's convenience.

LEEDS HORTICULTURAL SOCIETY.—The AUTUMN EXHIBITION of FLOWERS, FRUIT, &c., will be held in the TOWN HALL, SEPTEMBER 7 and 8.

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Schedules and Forms of Entry on application to JAMES BIDDELL, Secretary.

Note.—The Committee undertake to receive Boxes of Fruit and Cut Flowers for Exhibition, which will be carefully unpacked and exhibited, and returned to exhibitors immediately after the Show. The Boxes to be addressed to the Secretary.

GARDENERS' ROYAL BENEVOLENT INSTITUTION.—THOMAS SMITH, of Laurel Bank, Newtown, Malvern, begs most respectfully to tender his SINCERE THANKS to all Donors and Subscribers of the above Institution who Voted for his Interest at the last Election of Pensioners.

CAUTION to the TRADE.—A Person calling himself Mr. HOWARD, about 6 feet high, dark complexion, small eyes, and who has lost his front teeth, is Sending Parcels, Loads, &c., on the 27th and 28th ult., representing himself as TRAVELLER to Messrs. H. AND F. SHARPE, of Wisbech. A Warrant is now out for his apprehension.

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Collinsia verna.

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N.B. An early autumnal sowing is absolutely essential.

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GEORGE JACKMAN and SON respectfully invite an inspection of their Collection of SEEDLING CLEMATIS, which is NOW in FLOWER, and will continue all the Autumn. This Collection contains new and fine varieties that are quite equal to those selected, viz., C. Jackmanni, rubro-violacea, rubella, Prince of Wales, Princess of Wales, violacea, and azurea purpurea, each being awarded First-class Certificates by Royal Horticultural or Botanic Societies in London.

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DOBSON'S PRIMULA, 1*s*., 2*s*. 6*d*., 5*s*.

For Testimonials see page 699 of *Gardeners' Chronicle*, June 30.

DOBSON & SONS, Seed Merchants, Isleworth, W.

Prize Calceolaria, &c.

BUTLER AND McCULLOCH beg to offer Seed of the above, saved only from flowers of great beauty, 1*s*. & 2*s*. 6*d*. per pkt.

CINERARIA (JAMES's), choice, 1*s*. and 2*s*. 6*d*. per packet.

PRIMULA (JAMES's), extra choice, 1*s*. and 2*s*. 6*d*. per packet.

COVENT GARDEN INTERMEDIATE STOCK (True), 1*s*. and 2*s*. 6*d*. per packet.

PURPLE WHITE INTERMEDIATE STOCK, 1*s*. and 2*s*. 6*d*. p. pkt.

All packets of Flower Seeds sent post paid.

BUTLER & MCCULLOCH, Covent Garden Market, W.C.

BARR'S CALCEOLARIA, CINERARIA, PRIMULA, STOCKS, MYOSOTIS, &c.

CALCEOLARIA, very choice, 2*s*. 6*d*. per packet; CINERARIA, very choice, 1*s*. and 2*s*. 6*d*. per packet; PRIMULA, very choice, 1*s*. and 2*s*. 6*d*. per packet; SCARLET, PURPLE, and WHITE INTERMEDIATE STOCKS, for Spring blooming, very fine, each variety 1*s*. per packet; SCARLET, PURPLE, and WHITE IMPERIAL STOCKS, for Spring blooming, each variety 1*s*. per pkt.; MYOSOTIS SYLVATICA, for Spring blooming, 6*d*. and 1*s*. per packet; Collections of PERENNIALS, 2*s*. 6*d*., 5*s*., 10*s*. 6*d*., & 21*s*.

BARR & SUGDEN, 12, King Street, Covent Garden, London, W.C.

Hyacinths and other Flower Roots.

JOHN FRASER begs to intimate that his CATALOGUE of HYACINTHS, NARCISSI, TULIPS, &c., is now published, and may be had on application. DESCRIPTIVE LIST of the best kinds of STRAWBERRIES is also ready for distribution.

The Nurseries, Lea Bridge Road, London, N.E.

Hyacinths, and other Dutch Bulbs.

A. E. BARNAART, Vogelensang, Haarlem, begs to announce that his CATALOGUE of FLOWER ROOTS for 1866 has just appeared, and can be had post free on application.

N.B. Postage to Holland, 3*d*.

New Petunias for 1866.

AMBROISE VERSCHAFFELT, NURSERYMAN, Ghent, Belgium, begs to announce that he is now sending out good Plants of all the best NEW PETUNIAS raised on the Continent, and which are sent out in Europe. This collection obtained the First Prize at the last Ghent Juno Show.

12 distinct varieties, 1*s*. 6*d*. each | 24 distinct varieties, 1*s*. each.

Every order will be sent to London free of carriage and packing.

AMBROISE VERSCHAFFELT, NURSERYMAN, Ghent, Belgium, begs to offer fine strong Plants for Bedding, of

ALTERNANTHERA AMŒNA, at 5*s*. per dozen.

SPATHULATA, at 3*s*. per dozen.

TELEIANTHERA VERSICOLOR, at 9*s*. per dozen

If a greater quantity is ordered, they will be supplied at a lower price. Package and carriage free to London.

CUTHILL'S STRAWBERRY PLANTS, strong and fine for bearing, will be sent out on August 24, &c. The sorts lasted 60 days—from June 2 to the Tuesday after—and that he never could depend on a crop until he had mine. BLACK PRINCE, PRINCESS ROYAL, RICHARD II., HIGHLAND MARY, NEWTON SEEDLING, and LADY RINCE of WALES, per 100, each sort, 5*s*.; but if selected, 7*s*. 6*d*. Superior MUSHROOM SPAWN, 5*s*. 6*d*. per bushel: PRINCE ALBERT WINTER CUCUMBER, 1*s*. Pamphlets on Gardening, &c.

Post Office Orders payable on Camberwell Green.

JAMES CUTHILL, Denmark Hill, Camberwell, London, S.

CASTLE KENNEDY FIG.—Plants of the above may now be had at 10*s*. 6*d*. and 21*s*. each; the usual discount to the Trade.

PETER LAWSON & SON, Edinburgh and London

PINES.—To be Sold, a large quantity of very fine QUEEN PINE PLANTS, in all sizes, from Suckers to Fruiting, which never had Scale. Apply to

M. ROBINSON, Market Gardener, Page Green, Tottenham, N

REBECCA, the finest BEDDING GERANIUM ever raised. Plants now ready, price 5*s*. each.

Seed Wm. Paul's SPRING CATALOGUE.

PAUL'S Nurseries, Waltham Cross, London, N.

MAURICE YOUNG'S DESCRIPTIVE LIST of Conifers, New and Rare Hardy Plants, Ornamental Trees and Shrubs, Rhododendrons, Japanese Novelties, Forest Trees, and Roses, forwarded on application.

Milford Nurseries, near Godalming, Surrey.

FINE SPECIMEN and HALF-SPECIMEN HARDWOODED and ORNAMENTAL FOLIAGE STOVE and GREENHOUSE PLANTS.—Exhibitors and gentlemen furnishing Conservatories are invited to inspect our Collection of the above, which is large and in very fine condition. Prices moderate.

T. Jackson & Son, Nursery, Kingston, Surrey

ARAUCARIA EXCELSA for SALE. Two splendid Trees of the above, in pots, 12 feet high, and beautifully roped with branches, very handsome Plants for a Conservatory, to be Sold Cheap. Apply to

E. A., Glenmore House, Claremont Crescent, Surbiton, S.W.

Rhododendrons, &c.

JAMES CRAWFORD, High Beech, Essex, begs to offer for Sale a very superb Collection of the best hardy varieties, very handsomely selected from Messrs. Waterer's splendid stock, and lately from Mr John Fraser's far famed and unsurpassed Collection at the Lea Bridge Nursery.

JAMES CRAWFORD has a large Stock of STOVE and GREENHOUSE PLANTS, FERNS, &c., which he begs to offer on very reasonable terms.

High Beech, Essex.

JIVERY AND SON having a few NOVELTIES now ready to send out, will be pleased to forward their PRICED DESCRIPTIVE CATALOGUES of AZALEA INDICA, and No. 10 HARDY BRITISH FERNS, which contain full particulars.

Dorking Nursery.

A. STANSFIELD AND SONS, NURSERYMEN, &c., Todmorden, will be glad to forward their GENERAL FERN CATALOGUE No 7 to any address for three penny postage stamps. In the British section numerous varieties are given for the successful culture of the different species A List of Selections of British and also of Exotic Ferns at special rates will accompany each copy of the Catalogue. Grants and post free to all previous purchasers of Ferns.

British Ferns Catalogue.

ROBERT SIM will be happy to send, post free for six postage stamps, Part I. (British Ferns and their varieties, 36 pages, including prices of Hardy Exotic Ferns) of his NEW and PRICED DESCRIPTIVE CATALOGUE of BRITISH and EXOTIC FERNS, No. 7.

*** Part II. (Exotic Ferns) will be issued as early as possible.

FOOT'S CRAY Nursery, S.E.

PETER DRUMMOND AND CO. (late J. SCOTT), Preston Road Nursery, Yeovil, Somerset, have still on hand a surplus stock of BEDDING and GREENHOUSE FAMILIAS in great variety; GERANIUMS, FUCHSIAS, LANTANAS, VERBENAS, &c., at moderate prices; also TURNIP and other Seeds of best quality and variety for present sowing.

Please address as above.

SUTTON'S RENOVATING GRASSES SHOULD NOW BE SOWN.

8 to 12lb. required per acre

Price 8*d*. per lb., or cheaper by the cwt.

SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

Grass Seeds for Autumn Sowing.

SUTTON'S PERMANENT GRASS SEEDS FOR ALL SOILS.

Prices (according to quantity required and soils for which they are intended), may be had on application

SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

SUTTON'S IMPROVED ITALIAN RYE-GRASS, the BEST and MOST PRODUCTIVE in CULTIVATION.

SUTTON & SONS can supply New Seed of the above at 6*s*. per bu. hel, or cheaper in large quantities.

August and September are the best months for Sowing.

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Cabbage Seed for Present Sowing.

SUTTON AND SONS have a good STOCK of fresh Seed of the best kinds of CABBAGE for Farm and Garden.

LARGE DRUMHEAD CABBAGE, 2*s*. 6*d*. per lb.

ROBINSON'S ditto ditto, 3*s*. 6*d*. per lb.

DRUMHEAD SAVOY, 1*s*. 6*d*. per lb.

LONDON MARKET CABBAGE, 3*s*. 6*d*. per lb.

ENFIELD ditto ditto, 3*s*. 6*d*. per lb.,

and other

SUTTON'S IMPERIAL CABBAGE, the finest and earliest for Spring use in the Garden, 8*d*. per oz. Cheaper by the pound or half pound.

SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

To Farmers, Gardeners, and Others.

EXCELLENT PLANTS can still be supplied of the following:—

TRUE DWARF NONPAREIL CABBAGE, 2*s*. 6*d*. per 100

" ENFIELD MARKET CABBAGE, 2*s*. 6*d*. per 1000

" DRUMHEAD or SCOTCH CABBAGE, 2*s*. 6*d*. per 1000

" RED DUTCH CABBAGE, 5*s*. per 1000

" KNIGHT'S PROTECTING BROCCOLI, 8*s*. per 100

" WALCHEREN BROCCOLI, 12*s*. per 1000

" EARLY LONDON "FITCHE'S STOCK" CAULIFLOWER, 12*s*. per 1000

Early orders are earnestly requested.

EXCELLENT CABBAGE SEED of most varieties, which stocks cannot be excelled.

A Gentleman or Gardener can reap useful remunerative Correspondents.

FRED. GLE, Seed Merchant and Grower, Biggleswade, Bedfordshire.

BY HER MAJESTY'S ROYAL LETTERS PATENT.

ORMSON'S

NEW PATENT WROUGHT IRON MULTITUBULAR HOT-WATER BOILER.

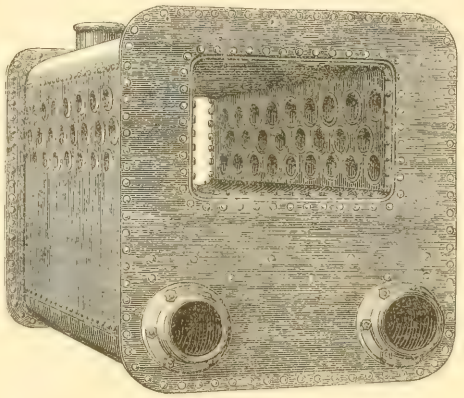
THE GREAT ADVANTAGES OF THIS BOILER ARE:—

1st. Being entirely of Wrought-Iron, its safety from leakage and cracks (from expansion or contraction), a danger to which all Cast-iron Boilers are more or less liable.

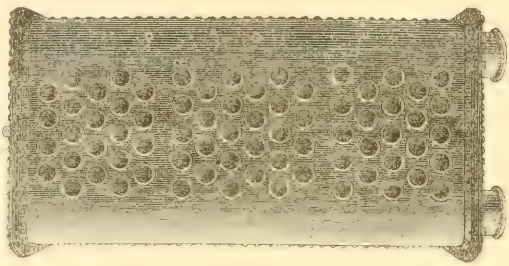
2d. An immensely increased surface exposed to the direct action of the fire, which passes through the tubes, thereby giving a wonderfully increased amount of power.

3d. A great saving in the consumption of fuel. Its facility for banking up the fire. Its peculiarly well-adapted construction for slow combustion, and burning many hours without attention, at a trifling expense.

4th. Its extraordinary power and safety for carrying out the One Boiler System, and small space and depth for setting.



ELEVATION.



UNDERSIDE OF BOILER AND PLAN OF TUBES.

One of these BOILERS Heated the GREAT ORCHID TENT, 560 feet long, and 40 feet wide, at the INTERNATIONAL HORTICULTURAL EXHIBITION, with a remarkably small quantity of fuel, and gave the greatest satisfaction. Was highly approved of by many Scientific Men and Practical Horticulturists.

The great Power, Economy, and Safe Working of these BOILERS has been thoroughly tested for the last 12 months at the Horticultural Gardens, Chiswick, where they may be seen in action, and also at other places in various parts of the country.

THEY ARE MADE OF VARIOUS SIZES. PRICES ON APPLICATION.

HENRY ORMSON.

TRULY grateful for the very liberal and kind patronage bestowed on him, begs most respectfully to inform the Nobility, Gentry, &c., that it is his determination to spare no pains to merit a continuance of their favours; and, that he may be enabled to execute his extensive and increasing orders punctually, and at the lowest possible cost (agreeably with the best materials and workmanship), he has erected a most complete set of Steam-Power Machines, peculiarly adapted for the purposes of his Trade.

H. O. begs to call attention to his superior manner of Erecting every description of Horticultural Building, and trusts—by unremitting personal attention to the details of his business, by using only the very best materials, by employing the most skilful and efficient workmen, and by the most moderate possible charges, to merit a continuance of the patronage so kindly and liberally bestowed on him for many years past.

In the **BUILDING DEPARTMENT** his object will be (having a practical knowledge of Horticultural Science), to adapt all Erections to the particular purposes for which they are required. He will devote equal attention to the plain, inexpensive, practical Erections of Pits, Orchard Houses, Green-houses, Vineries, &c., as to the more elaborate and architectural erections of Conservatories, Winter Gardens, &c., either in Wood or Iron.

The **HEATING DEPARTMENT** always receives his especial personal attention, and he feels justified in saying that in simplicity, safety, durability, and economy of fuel, combined with thorough effectiveness, his system cannot be surpassed.

Knowing the absolute necessity for well regulated and properly arranged Ventilation, he makes it a matter of first consideration.

H. O. having competent Draughtsmen and an efficient Office Staff, is prepared and will be happy to forward Plans, Estimates, and Specifications by post or otherwise, and to wait personally on any Ladies or Gentlemen who may desire to see him on their Grounds.

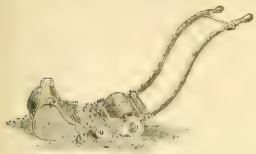
H. O. is also in the habit of furnishing Estimates, and building from Drawings prepared by Architects, and is kindly permitted to refer to many of the most eminent in the profession. He has also much pleasure in stating that he can refer to many of the Seats of the Nobility and Gentry in all parts of the kingdom, where he has been employed to build some of the finest and best arranged Glass structures known at the present time.

HENRY ORMSON, F.S.A.,

HORTICULTURAL BUILDER TO HER MAJESTY, AND HOT-WATER APPARATUS MANUFACTURER TO THE COMMISSIONERS OF HER MAJESTY'S ROYAL PALACES AND PUBLIC BUILDINGS, AND TO THE ROYAL HORTICULTURAL SOCIETY,

STANLEY BRIDGE, KING'S ROAD, CHELSEA, LONDON, S.W.

J. B. BROWN & CO.'S NEW PATENT B B LAWN MOWER.



PATENTEES AND SOLE MANUFACTURERS,

J. B. BROWN & CO.,

148, UPPER THAMES STREET, LONDON, E.C.

GUARANTEED TO GIVE PERFECT SATISFACTION,

AND, IF NOT APPROVED OF,

MAY BE AT ONCE RETURNED.

☞ J. B. BROWN AND CO. have pleasure in mentioning that their B B LAWN MOWER ordered for the Gardens of Windsor Castle has given so much satisfaction, that another B B MACHINE of a larger size [a 24-inch Machine] has just been ordered. A Second B B Machine this Season [a 24-inch] has also been just supplied, by order, for the Gardens of His Royal Highness the Prince of Wales at Sandringham.—June 26.

This New B B PATENT LAWN MOWER is Manufactured by Messrs. BROWN & Co., on their own Premises in London, under their personal superintendence. It is worked by means of Geared or Toothed Wheels, is quite noiseless, and is guaranteed to give perfect satisfaction in every respect.

PRICES—including Carriage to any Railway Station or Shipping Port in England.

10-inch Machine ..	£3 10 0	*Easily worked by a Boy.*	18-inch Machine ..	£7 10 0	*Easily worked by a Man*
12-inch Machine ..	4 10 0		20-inch Machine ..	8 0 0	
14-inch Machine ..	5 10 0		22-inch Machine ..	8 10 0	*Ditto by Two Men.*
16-inch Machine ..	6 10 0	*Ditto by a Man.*	24-inch Machine ..	9 0 0	

Every Machine sent out is warranted to give ample satisfaction, and if not approved of may be at once returned.

J. B. BROWN AND CO., OFFICES, 90 (late 18), CANNON STREET, CITY, LONDON, E.C.

WAREHOUSE and MANUFACTORY, 148, UPPER THAMES STREET, E.C.

Opposite the City of London Brewery, and close to the London Bridge Steam Boat Piers.

GRAY'S OVAL TUBULAR BOILER.

INTERNATIONAL EXHIBITION, Class IX., No. 2119.

MR. GRAY begs to call the attention of the Nobility, Gentry, Nurserymen, Gardeners, &c., to his

NEW OVAL TUBULAR BOILER,

Acknowledged by practical judges to be a great improvement on every form of Tubular Boiler yet introduced. It has proved itself superior to all other Boilers for quickness of action and economy of Fuel, doing its work with one-third less the amount required by any other.

Extract from Report in GARDENERS' CHRONICLE *of International Exhibition, May* 24, 1862, *page* 476.

"The upright form of Boiler is usually made on a circular plan, but the oval form given to Mr. Gray's variety of it is said to be preferable in consequence of its enlarging the tubes in closer contact with the fire. The usual form of a furnace being a parallelogram rather than a square, it seems feasible that the Boilers on the oval plan should bring the tubes more completely within range of the burning fuel; and this being so, the change, though a slight one, is no doubt an improvement."

☞ *They are made of all sizes, which, with prices, may be had on application.*

JAMES GRAY, HORTICULTURAL WORKS,
DANVERS STREET, PAULTON'S SQUARE, KING'S ROAD, CHELSEA, S.W.

Caution to Gardeners.—When you ask for SAYNOR AND COOKE'S WARRANTED PRIZE PRUNING and BUDDING KNIVES, see that you get them. Observe the mark SAYNOR, also the corporate mark OBTAIN WARRANTS, with all which none are genuine.

S. & C. feeling having to caution Gardeners and others, but are compelled to do so, in consequence of an imitation, of common quality, having been sold for the genuine ones, and which have caused many complaints to be made to them of Knives which were not of their make, all of which are warranted both by Sellers and Makers.

S. & C.'s Pruning and Budding Knives are the best and the cheapest in the market.

Paxton Works, Sheffield. Established upwards of 125 years.

Great International Horticultural Exhibition 1866.

FIRST AND ONLY PRIZE AWARDED TO BEARD'S PATENT METALLIC NON-CONDUCTING GLASS HOUSES.

Perfect System of Ventilation and Glazing.

Manufactured by Messrs. SANDERS, FROWD, & Co., Victoria Horticultural Works, Bury St. Edmunds.

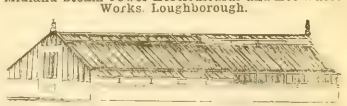
See large Advertisement in *Gardeners' Chronicle* of June 23, 1866.

West of England, Ireland, and Wales

VINCENT SKINNER (late Partner with J. WITLEY & Co.), HORTICULTURAL BUILDER and HOT-WATER APPARATUS MANUFACTURER, HEATING by the ONE-BOILER SYSTEM. Plans and Estimates on application.

VINCENT SKINNER, Stokes Croft, Bristol.

Midland Steam Power Horticultural and Hot Water Works, Loughborough.



T. G. MESSENGER, Midland Steam Power Horticultural Works, Loughborough, Hot-Water Apparatus and Valve Manufactory.

Honourable Mention awarded at the International Exhibition, 1862, and at the London Exhibition, 1865; also a First-class Certificate by the Royal Horticultural Society.

T. G. Messenger's Patentee of many important improvements in Buildings and Implements connected with Horticulture, and which meet with unqualified approbation, is prepared to give reference to hundreds of works entrusted to him and pronounced unsurpassed for the purpose for which they were constructed.

Any Horse of hard size can be fixed, with or without pulley.

The much-adopted Sash Bar Saddle, with or without putty

For the Houses so particularly interesting.

Houses are constructed on his Patented Ventilating principle to open the whole of back and sides as though the glass were entirely removed, at once passing the plants in the external atmosphere.

T. G. Messenger's Boiler possesses all the advantages of the Tubular and Saddle combined, has hollow fire-bars, requires but a shallow stoke-hole, and exposes as much surface to the direct action of the fire as can possibly be obtained, the whole of which can be easily cleaned, and it is an improved, but that out of upwards of 500 he has at work made upon the improved principle not one has cracked.

T. G. Messenger's Valve (single or double) is effective, simple, easy to work, and is durable as the pipe to which it is adapted.

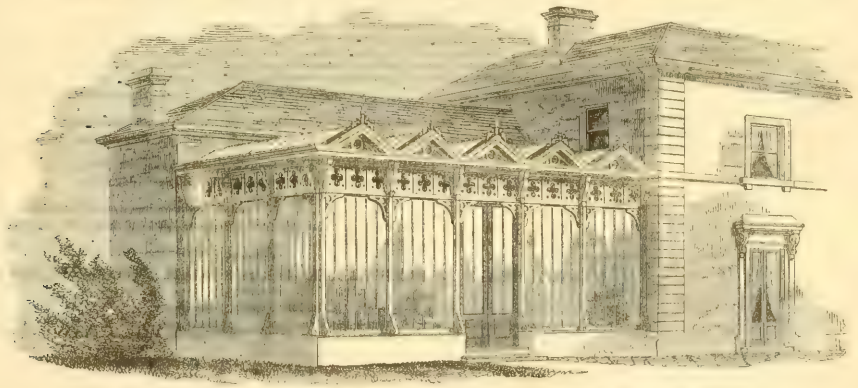
Designs and Estimates sent post for all kinds of Horticultural Works, and guaranteed to answer the purpose for which they may be intended.

GLASS HOUSES FOR HORTICULTURAL PURPOSES.

MANUFACTURED in LONDON; and at NEWTON in CARTMEL, LANCASHIRE; GLOUCESTER; COVENTRY; PAISLEY, and ABERDEEN,

By STEAM-POWER MACHINERY, of BEST MATERIALS, and at LOWEST PRICES.

EVERY DESCRIPTION of STRUCTURE DESIGNED, HEATED, and VENTILATED in the MOST EFFICIENT MANNER.



View of Ridge-and-Furrow-roofed Conservatory, 30 feet by 15, and 15 feet high, attached to a Plain Mansion.

Plans prepared for Conservatories suitable for particular Styles of Mansions or Special requirements, and Estimates given to carry out Special Designs and Specifications.

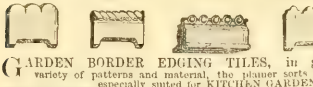
HEREMAN AND MORTON, 7, PALL MALL EAST, LONDON, S.W.,

PROPRIETORS and MANUFACTURERS of SIR JOSEPH PAXTON'S PATENT HOTHOUSES for the MILLION.

Illustrated Price Lists of which will be sent on application. Also,

A HANDBOOK OF VINE AND FRUIT TREE CULTIVATION,

Containing full information on these subjects, Views of Conservatories, &c., Hints for Heating, &c., will be sent post free for 13 Stamps.



GARDEN BORDER EDGING TILES, in great variety of patterns and material, the planer sorts being especially suited for KITCHEN GARDENS, as they harbour no Slugs and Insects, take up little room, and once put down incur no further labour and expense, as do "grown" Edgings, consequently being much cheaper.

GARDEN VASES, FOUNTAINS, &c., in Artificial Stone, of great durability, and in great variety of design.

F & G. ROSHER, Manufacturers, Upper Ground Street, Blackfriars, S.E.; Queen's Road West, Chelsea, S.W.; Kingsland Road, Kingsland, N.E.

Sole London Agents for FOXLEY'S PATENT GARDEN WALL BRICKS. Illustrated Price Lists free by post. The Trade supplied.

ORNAMENTAL PAVING TILES for Conservatories, Halls, Corridors, Balconies, &c., as cheap and durable as Stone, in blue, red, and buff colours, and capable of forming a variety of designs.

Also IMPERVIOUS PAVEMENTS of more enriched designs than the above.

WHITE GLAZED TILES, for Lining Walls of Dairies, Larders, Kitchen Ranges, Baths, &c., Grooved and other Stable Paving Bricks of great durability, Dutch and Adamantine Clinkers, Wall Copings, Red and Stoneware Drain Pipes, Slates, Cements, &c.

To be obtained of F & G. ROSHER, at their Premises as above.

SILVER SAND (REIGATE, best quality), at the above addresses—14s. per Ton, or 1s. 3d. per Bushel; 2s. per Ton extra for delivery within three miles, and to any London Railway or Wharf. Quantities of 4 Tons, 1s. per Ton less.

FLINTS, BRICK BURRS or CLINKERS, for Rockeries or Grotto Work. F. & G. ROSHER—Addresses as above.

N.B. Orders promptly executed by Railway.

THE LONDON MANURE COMPANY
(ESTABLISHED 1840),
Have now ready for delivery in dry fine condition,
CORN MANURE, for Spring Use
DISSOLVED BONES, for Dressing Pasture Lands
SUPERPHOSPHATES of LIME
PREPARED GUANO
MANGEL and POTATO MANURES
Also Genuine PERUVIAN GUANO, and NITRATE of SODA ex Dock Warehouse; SULPHATE of AMMONIA, FISHERY SALT, &c. E. PURSER, Secretary.
Offices, 116, Fenchurch Street, E.C.

LAWES' MANURES.
The Manures manufactured by J. B. LAWES for the present season of 1866 are now ready for delivery at his Factories, at the following prices, per ton:—

	£ s. d.
LAWES' PATENT TURNIP MANURE, and BONE SUPERPHOSPHATE of LIME	6 6 0
LAWES' SUPERPHOSPHATE of LIME from BURNT BONE or MINERAL PHOSPHATES	5 5 0
LAWES' WHEAT, BARLEY, GRASS, and MANGEL MANURES	8 0 0
CONCENTRATED CORN and GRASS MANURE	12 0 0

These Manures can be obtained of Mr. LAWES, or through the appointed Agents in all parts of the United Kingdom, at prices varying according to cost of carriage.

Genuine Peruvian Guano direct from the Importers. Nitrate of Soda, Sulphate of Ammonia, and other Chemical Manures.

American and other Cakes at market prices.

Address, JOHN BENNET LAWES, 1, Adelaide Place, London Bridge, E.C.; and 22, Eden Quay, Dublin.

PALM-NUT MEAL, Manufactured by ALEXANDER M. SMITH & Co., Kent Street Mills, Liverpool.
£7 a Ton free to Rail or Boat in Liverpool.
£7 10s. delivered to Rail in Bristol.
£7 12s. delivered to Rail in London. (AMS)
In Bags containing 2 cwt. each, branded L
"This valuable Meal, containing above 20 per cent. of fatty matter, is recommended as an economical food to mix with home-grown produce" (see Dr. Voelcker, R. A. S. E. Journal, Vol. I., 2d Series, page 176).

For further particulars and Analysis apply to Messrs. SMITH, or their Agents, Messrs. HUGHINS & Co., Bristol.
JOHN CORNEY & Co., Exeter, York.
London Agency: 160, Leadenhall Street, E.C.

TOBACCO TISSUE.—As Exhibited at the International Horticultural Exhibition.—For DESTROYING MEALY BUG, RED SPIDER, THRIP, and other Insects. Will burn without the assistance of blowing, and not injure the most tender Plants.

Sold in 1lb. packages, and upwards, price 3s. 6d. per lb., by Messrs. ROBERTS & SONS, Tobacco Manufacturers, 54, St. John Street, Clerkenwell, E.C., and by all Seedsmen and Nurserymen.

Copies of Testimonials forwarded on application.

COCOA-NUT REFUSE is becoming scarce, the old reserves will soon be gone. Now sold in bags, 1 for 2s., 10 for 16s., 20 for 30s., 50 for 66s., 100 for £6.

Fourpence allowed for each bag returned carriage-paid.

A Railway Truck-load (not in bags), 40s

Postage Stamps or Post-office Order, payable to J. BARSHAM & Co., Kingston-on-Thames, S.W.

GISHURST COMPOUND, whether used against Insects and Mildew, on Growing Plants, or as Winter Dressing on Trees at rest, should be dissolved 48 hours before use. This gets rid of smell, and if the Solution be decanted, prevents any staining of foliage. A strength of from 1 to 2 oz. to the gallon of water is recommended for growing Plants; one from 4 to 16 oz. for Trees at rest.

Sold Retail by Nurserymen and Seedsmen, in boxes, 1s., 3s., and 10s. 6d. each.

Red Spider — Magnified.

Wholesale by
PRICE'S PATENT
CANDLE COMPANY
(LIMITED).

Destroy your Insect Pests.
PRESERVE YOUR PLANTS and TREES.
You may EASILY DESTROY ALL PLANT PESTS,

RED SPIDER	GREEN and BLACK	ANTS
MEALY BUG	FLY	SCALE
THRIP	AMERICAN BLIGHT	MILDEW,

Without injury to the most delicate Plant or Tree, by using
FOWLER'S GARDENERS' INSECTICIDE, pronounced by all who have used it to be far superior to any other remedy. One trial will prove its efficacy. Testimonials forwarded on application. Price 1s. 6d., 3s., 6s. 6d., and 10s. per Tin.
GAD & THOMAS FOWLER, North Street, Brighton; and of HOOPER & Co., Covent Garden Market, W.C.

For Present Sowing.
TRIFOLIUM INCARNATUM, Italian Crimson Clover
NEW LATE RED TRIFOLIUM
SUTTON'S IMPROVED ITALIAN RYE-GRASS.

SUTTON AND SONS are now harvesting, for delivery in a few days, very excellent Seed of the above. Prices are very moderate, and may be had post free on application.

The quantity of Trifolium (alone) usually sown per acre is 28 lb., or with Italian Rye-grass 8 lb. per acre is sufficient.

Also MUSTARD and RAPE, new seed.

All Goods carriage free, except very small parcels.
SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

Brighton and Sussex Seed Warehouse.
EDWARD CARPENTER'S MIXTURES of PERMANENT GRASS and CLOVER SEEDS — Best quality, 36s. per acre (2 bushels light seeds, and 12 lb. Clovers and small seeds per acre).—See testimonials in Catalogue.
EDWARD CARPENTER'S RENOVATING MIXTURES for Improving Old Pastures.
PRICED CATALOGUES of KITCHEN GARDEN, FLOWER, and FARM SEEDS now ready.
EDWARD CARPENTER, Seed Merchant and Grower, 96, St. James's Street, Brighton.

JOHN KEARSLEY AND SONS, NURSERYMEN, Leeds, offer as under, all remarkably fine stuff:—

	Per Doz.		Per 100.
Dracæna terminalis	10s.	Azalea indica (in bud)	75s.
Scolopendrium corymbiferum	10s.	Solanum capsicastrum	25s.
Lycopodium lepidophyllum	12s.	Isolepis gracilis	30s.
" cæsiate	9s.	Sweet Bays (in pots)	25s.
Hypolepis distans	9s.	Rosemary (do.)	25s.
Cyperus alternifolius (large)	30s.	Red Cedars (do.)	25s.
Yucca filamentosa	6s.	Pomaderris (do.)	24s.
Eucharis amazonica (large)	24s.	Œnothera macrocarpa and taraxacifolia	25s.

Yucca aloefolia and variegata, each 10s. 6d. to 25s.

GENUINE TOBACCO PAPER at 10d. per lb. Terms Cash.
Mr. Dodgson, at Messrs. Jackson & Sons, 29, Lady Lane, Leeds.

Alsophila contaminans, &c.
A. VAN GEERT begs to offer fine Plants of
ALSOPHILA CONTAMINANS, at 12s. 6d. each.
" EXCELSA, young plants, 24s. per dozen.
" AUSTRALIS, fine plants, 5s. each.
" LATEBROSA, 21s. each.
" VAN GEERTI, 42s. each.
N.B. CAMELLIAS and INDIAN AZALEAS, as usual fine stuff, well set for bloom, the first at £6 and upwards per 100, and the latter at £4 and £6 per 100.
CAMELLIAS, in best varieties, without bloom buds, at £4 per 100.
Horticultural Establishment, Ghent, Belgium.

AMBROISE VERSCHAFFELT, NURSERYMAN, Ghent, Belgium, begs to offer—
Fine DOUBLE CAMELLIAS, without buds, in 100 varieties of first choice, figured in the Iconographie of Camellias, £3 10s. per 100.
Fine AZALEA INDICA, without buds, in 100 varieties, comprising all the best favourite blooms, £3 per 100.
Fine DOUBLE CAMELLIAS, full of flower buds, £6 per 100.
Fine AZALEA INDICA, full of flower buds, £5 per 100.
N.B. To secure a good choice, early orders are solicited.

100,000 Camellias.
JOSEPH BAUMANN, NURSERYMAN, Ghent, Belgium, begs to offer
100 CAMELLIAS, with flower buds, £5.
100 " " £6.
100 " " stronger plants, £8.
The following free to the Custom House, London:—
100 CAMELLIAS, without flower buds, 1 year grafted, £4.
100 " " 2 to 3 years' best sorts, £5.
100 " " stronger plants, £6.

50,000 Azalea indica, and 100,000 Rhododendrons,
GRAFTED PLANTS.
JOSEPH BAUMANN, NURSERYMAN, Ghent, Belgium, begs to offer the following, free to the Custom House, London:—
100 AZALEA INDICA, with flower buds, £4 to £5.
100 " " stronger plants, £6 to £8.
(They are all dwarf bushy heads and the best kinds.)
100 RHODODENDRONS, 1 year grafted, £4.
100 " 2 to 3 years, graft. 1, £8.
100 " stronger plants, £10.
100 " with flower buds, £8.
100 " with flower buds, larger plants, £12 to £18.
(They are all the best English and Belgian hardy sorts.)
All my finest Hardy Ghent Azaleas are already ordered for England.
CATALOGUE on application.

AMARYLLIS.

JAMES GARAWAY & CO.,
DURDHAM DOWN NURSERIES, BRISTOL,

Offer, from their unequalled stock of the above-named favourite flower, strong Bulbs of unnamed Seedlings and others that have bloomed with them during the two last seasons, at

5s., 7s. 6d., and 10s. 6d. each, or 50s., 80s., and 105s. per dozen.

JAMES GARAWAY AND CO.'S GENERAL BULB CATALOGUE for the coming season is in the Press, and when ready will be forwarded post free on application.

JAMES GARAWAY AND CO., DURDHAM DOWN NURSERIES, BRISTOL.

"THE LADY."

TO THE LOVERS OF FINE FRUIT.

It is 11 years since (as an Amateur) I introduced to the Public my SEEDLING STRAWBERRY SIR HARRY, which is now declared to be the most valuable variety at the present time in England, for, in a leading article in the *Gardeners' Chronicle* of June 24, 1865, alluding to the great failure of the Strawberry crop that year, it is stated that near Isleworth and Brentford, as well as the extensive tracts of land which once belonged to the Monastery of Syon, the failure is complete, and the only kind of Strawberry that bore a fine and abundant crop was the SIR HARRY, 'the name of which will become memorable.' Having for many years past turned my attention to the raising of Seedling Strawberries, of which I have yearly produced some hundreds, I feel convinced that the variety now being introduced will prove itself to be the finest one I have ever raised. Many First Prizes have been already awarded to it at Horticultural Exhibitions, for both Forced and other Fruit.

THE LADY ripens about the time of the British Queen, and continues fruiting a long time; is a great cropper, bearing a large handsome fruit of a salmon colour, tinged with crimson, and ripening to the very end. The seeds are small and few, the flesh is very juicy, and melts in the mouth; the flavour is between a Pine and a Melon, and is most delicious, with the highest perfume I have ever met with. The entire of the crop is of large size, no useless fruit being produced, and it is as good a forcer as the Sir Harry.—Yours, &c.,

August, 1866. RICHARD UNDERHILL, Sir Harry's Road, Edgbaston, Birmingham.

Plants are now ready to be sent out (in lots of not less than Twenty).

☞ *All applications must be accompanied by a Post Office Order on Birmingham, Postage Stamps, or Cash, to receive attention.*

PRICES of THE LADY, from July, 1866, to August, 1867:—

100	STRAWBERRY PLANTS	..	..	£3	7	6	40	STRAWBERRY PLANTS	..	.. £1 12 6
80	"	"	..	2	15	0	20	"	..	.. 1 0 0
60	"	"	..	2	5	0	Plants in Pots (not less than 10), 1s. 6d. each, package included.			

Mr. UNDERHILL'S TREATISE on the CULTIVATION of STRAWBERRIES, in English, French, or German, may be had through the Post, price 1s.

Address—
MR. RICHARD UNDERHILL, SIR HARRY'S ROAD, EDGBASTON, BIRMINGHAM.

TESTIMONIALS (*inter alia.*)

"The Cedars, Castle Bromwich, near Birmingham, July 3, 1865.
"DEAR SIR,—I am sorry I cannot accept your invitation to view your Strawberries on Wednesday next, having to attend at Regent's Park on that day. I thank you for the basket of your Seedling, The Lady, which is without doubt an excellent variety. The flavour is delicate and luscious, and quite distinct from any Strawberry I am acquainted with; the perfume is somewhat extraordinary. I took upon it as a desired acquisition. With best respects, I am, dear Sir, yours very truly, "CHAS. JAS. PERRY."
"RICHARD UNDERHILL, Esq."

"Mona Cottage, Edgbaston, July 27, 1865.
"DEAR SIR,—I do not know when I was better pleased than with a view of the beds of your Seedling Strawberry The Lady, the colour of the fruit was so right and lively, and the crop so large. As to the flavour it was most delicious, and exceeded any Melon I ever tasted, and reminded me much of the Pine Apple. When your Plants are ready please to let me know, for I must have some.—I remain, dear Sir, yours truly, "THOS. BURBIDGE."
"R. UNDERHILL, Esq."

At the Glasgow and West of Scotland Horticultural Society, an Extra Prize and First-class Certificate was awarded, July 11, 1866.

The Birmingham Daily Post, July 17, 1866.
"THE LADY STRAWBERRY.—We recorded on Saturday the judgment of Glasgow connoisseurs upon Mr. UNDERHILL'S new Strawberry. We are now in a position to record our own. We do not pretend to any large amount of technical knowledge on the subject, but we do lay claim to have eaten Strawberries of all kinds in our time, and having done so, our opinion is that The Lady is the most delicious fruit it has ever been our lap to taste."

The Midland Counties Herald, July 19, 1866.
"HORTICULTURE.—We have recently had an opportunity of inspecting some beds of The Lady Strawberry, raised by Mr. R. UNDERHILL, Sir Harry's Road, Edgbaston, and sent out by him last year. It is a free-growing prolific variety, and produces a fair sized berry, which ripens thoroughly, and in flavour is delicious and distinct."

N.B.—The SIR HARRY being now in general cultivation, Mr. UNDERHILL intends reserving for a few years Plants for those persons who may prefer having them direct and genuine from himself, spurious varieties having been so often substituted for the original.

The permanent prices of SIR HARRY for the future will be—20 (not less), 10s.; 40, 18s.; 60, £1 6s.; 80, £1 14s.; 100, £1 18s. Plants in pots (not less than 10), 1s. 3d. each, packages included.

New Turnip Seeds for Present Sowing.

SUTTON'S LINCOLNSHIRE RED PARAGON, 9d. per lb.

SUTTON'S IMPERIAL GREEN GLOBE, 9d. per lb.

SUTTON'S SHORT-TOP SIX WEEKS, 1s. per lb.

Cheaper by the bushel, carriage free.

Sutton & Sons,
By Royal Berkshire Seed Establishment, Reading

The Nurseries, Ghent, Belgium.

JEAN VERSCHAFFELT begs to inform his Friends and the Trade in general that his Stock of CAMELLIAS and INDIAN AZALEAS with buds will be particularly fine this season. To secure a first choice early orders are solicited. The prices will be as under:—

CAMELLIAS, with buds, fine named sorts, from £6 and upwards.
AZALEA INDICA, with buds, fine named sorts, from £3 and upwards.

A general detailed LIST will be sent on application. Address all letters to JEAN VERSCHAFFELT, 43, Rue de la Caverne, Ghent, Belgium.

N.B.—J. V. has much pleasure in stating that his Business will be transferred to his new Establishment about October next. Due notice will be given to all Correspondents.

CHOICE STOVE PLANTS for SALE, CHEAP.—A Gentleman about leaving the neighbourhood has authorised us to Dispose of his choice selection of Eighty Stove Plants, comprising the following:—

6 Achimenes	1 Centropogon	1 Eucharis
6 Allamandas	1 Cissus	1 Euphorbia
2 Aloasias	6 Crotons	5 Gardenias
1 Aphelandra	3 Dieffenbachias	12 Gloxinias
1 Bougainvillea	2 Dracænas	4 Ixoras
11 Caladiums	3 Echites	&c. &c.

The varieties are of the best, and all distinct.

The Plants are not over large, but handsome and healthy. Price of the Collection or part thereof may be had on application to DILLISTON & Co., Nurserymen, Sturmer, near Halstead, Essex.

Paul's Nurseries, Waltham Cross, London, N.

SEEDS FOR PRESENT SOWING

WM. PAUL can confidently recommend the following first-class Seeds:—PRIMULA, CINERARIA, CALCEOLARIA, and HOLLYHOCK, from finest strains, 1s. 6d. to 2s. 6d. per packet; VIOLA CORNUTA; POLYANTHUS, splendid mixed, 1s. per packet.

WM. PAUL'S IMPROVED TELEGRAPH CUCUMBER, WALTHAM GREEN CURLED ENDIVE, BROCKET HALL LETTUCE, 1s. per packet. All other Seeds of best quality at moderate prices. CATALOGUE on application.

B. S. WILLIAMS, Victoria and Paradise Nurseries, Holloway, London, N.

CHOICE SEEDS.

PRIMULA (Williams's superb Strain).—The most noted strain of Primula in existence, same as supplied to nearly all the largest Gardens in England. In sealed packets, at 5s., 3s. 6d., and 2s. 6d. each. None genuine without B. S. Williams's name and address on the packet.

CALCEOLARIA (James's Strain).—5s. and 3s. 6d. per packet.

CINERARIA (Weathered's extra choice strain).—This well-known Cobalt Garden strain to be had genuine only in sealed packets bearing B. S. Williams's name and address. Price 5s. and 3s. 6d. per packet.

The Gardeners' Chronicle.

SATURDAY, AUGUST 4, 1866.

MEETINGS FOR THE ENSUING WEEK.

Tuesday,	Aug 7	Royal Horticultural Floral and Fruit Committees, at South Kensington	11 A.M.
		Ditto (Scientific Discussion)	3 P.M.
Saturday,	— 11	Royal Horticultural Weekly Show), at South Kensington	2 P.M.

TALKING with some practical men not long since as to the origin of some of the Pelargoniums now so much in vogue, we were not a little surprised to hear so great difference of opinion as to the origin even of so well-known a plant as Mrs. Pollock. Is it a SPORT or a SEEDLING? We thought there was not much doubt as to this point, but we were mistaken. Where doctors differ, who shall decide? At any rate the point is a curious one, for many reasons.

It opens up for instance not only the interesting and complex questions connected with cross breeding and hybridism, but also suggests the inquiry whether sports may not in some instances owe their production to cross fertilisation. It does not always follow, as every hybridiser knows, that the offspring of a cross fertilisation is intermediate in character between its parents. It frequently is so, but very often it is something different. Now let us suppose an instance of the latter kind—a seedling the offspring of a cross resembling but little, if at all, its parents, and let us further suppose it to sport. Is it not likely, or at any rate possible, that that sport shall have more of the characters of the parent plants than the seedling itself? The reverse, we know, does frequently happen; the seedling is more or less intermediate between its parents, while a sport from that seedling repeats the character of one or other of its parents to the exclusion of the other, or it may be some remote ancestral form which is reproduced. This is just analogous to what happens with ourselves. Master JACKY may have his mother's eyes and his father's nose; but, on the other hand, he may resemble neither the one parent nor the other; or he may be the very image of his grandfather.

We hardly know what is meant by "mixed pollen;" the expression is sometimes used as though the pollen of two or more different flowers could exert an influence on the same stigma, and produce a sort of coalition offspring, embodying in the same seedling some of the peculiarities of all the parents. Such an inference is absurd enough, and quite opposed to all that we yet know of the action of the pollen. One pollen we constantly find in the experiments of careful hybridisers is "pre-potent;" it matters not, comparatively speaking, if other pollen be present or no, there is the one kind and one only that is efficient—the rest is valueless. And this non-efficiency may not arise from any absolute defect, but either because it was not suitable to that particular flower, or, if suitable, was applied at a wrong time, or after the successful application of some other pollen. The use of this very questionable expression—"mixed pollen"—is not the only thing by which practical men sometimes contrive to increase the obscurity of a naturally obscure subject. At present it is almost impossible to know without special information—and that is not always forthcoming—whether any given plant exhibited is a seedling variety, a cross-bred, a true hybrid, or a sport. We would especially urge upon all who interest themselves in this subject, to pay as much attention and care as to the accuracy of their records as they do to the experiments themselves. To increase the scientific character of this branch of horticulture, scrupulous accuracy in recording facts and disentangling them from mere opinions and fancies is imperative. As truth is stranger than fiction, so the interest attaching to a record such as we have mentioned, outweighs completely that belonging to the vague and imperfect notes of a carelessly conducted set of experiments. Who, for instance, could have guessed at the origin of the Pitmaston Orange Nectarine; or who would have supposed that in the fourth generation the Elruge Nectarine would produce a large and late Peach? Yet such is the history of "Lady Palmerston." Had Mr. RIVERS not kept a record, would he have believed his own eyes?

IN spite of the very great incumbrance that results from the MULTIPLICITY OF NAMES given to the same plant, the rules followed by botanists in assigning these names do lessen, to the student at least, a great deal of the embarrassment which an amateur, or one imperfectly acquainted with the usages of botanists, must feel. One of these rules is, that the name of a plant when printed shall have the name of its sponsor attached to it. If JONES describes a plant as new, and gives a name to it, that name is quoted in botanical books with JONES' initials, or an abbreviation of his name, appended to it. By accident, ROBINSON may have described, unknown to JONES, the same plant under another name, but this time it is ROBINSON whose initials are attached to the plant's name. Although it involves a loss of time and the risk of confusion, it is yet comparatively easy for the student who looks into this matter to see that JONES and ROBINSON were writing of the same plant; and if he make himself sure of this fact by a comparison of authentic specimens, or by other means, he adopts JONES' name as the one given first, and nothing but the discovery at some future time that JONES himself may have been forestalled, will induce him to adopt any other name than JONES'. True, for the sake of sparing others trouble, he cites ROBINSON'S name as a synonym, but still the rule of priority always holds good, and the advantage of this is so great that it is next to never wilfully infringed; or if it be so, without the fullest and most satisfactory reasons being assigned, no one is bound to take any notice of the infringement.

Now, if mere garden varieties are to have Latin names, and many such plants are already provided with them, it is essential that some means should be adopted to prevent the confusion that arises between the strictly botanical nomenclature, which, embarrassing as it is, is under definite rules—and the horticultural nomenclature, which owns no rule save that of the convenience of the moment. The practice which is adopted by some few horticulturists—comparatively few, we are glad to say—of giving Latin names to their novelties, without any consideration as to whether the plant has been named before, or without giving any details by which any one interested in the matter may ascertain the fact, is one that is open to as grave condemnation as is the change of established nomenclature without sufficient reason. But the evils of both these practices might be at any rate lessened by applying the word "*Hort.*" to the end of the name. Botanists already do this when treating of garden varieties, and if horticulturists would do the same, there would not then be so great an objection to the use of Latin names. The name of the horticulturist himself might readily be added, as indeed is commonly done in the case of florists' flowers, where English names alone are used; if Latin words must be employed, let the same plan be adopted—for instance, Azalea petuniæflora, as it now stands, is liable to mislead, but if it were written Azalea petuniæflora *Hort. Brown*, no such confusion could arise between the botanical and the horticultural student. Moreover, suppose a plant introduced for the first time into this country, new alike to botanical lists and horticultural catalogues. The horticulturist naturally wants a name for it at once; let one be given—a garden name with the "*Hort.*" appended to it. In due time the botanists would get hold of the plant, and no doubt a copious list of synonyms would soon be attached to it. The name accepted as correct at the time would perhaps be proved subsequently incorrect, and the botanists would have to pay the penalty of their imperfect knowledge by having to learn a new name with half a dozen synonyms; but the horticulturist would keep to his garden name as before—that would be unaffected by the progress of botany.

But it may be urged that another horticulturist may import the same plant, and on the same principle give it another name; the Maranta speciosa *Hort. Veitch* may, for instance, be the Maranta formosa *Hort. Bull*, and so would arise a confusion of names as great as any in botany, with the additional very serious complications that might arise in a mercantile point of view. A purchaser buying both the above-mentioned suppositious Marantas would not be over well pleased to find that they were different only in name. Again, it is obvious that in the hands of unscrupulous and dishonest persons, this practice might be adopted with the express object of deceiving the unwary. These objections, great as they are, might be overcome by some such organisation as the Horticultural Society already possesses in its Floral and Fruit Committees. Here is a permanent "board," such as Professor KOCH and Mr. SHIRLEY HIBBERD advocated in their respective communications to the Botanical Congress. As the great proportion of the real or supposed novelties of all kinds in the way of fruit or flowers or foliage come under the notice of these Committees, errors of garden nomenclature at any rate, might be rectified. It would be desirable that the Society should in all cases, where it was possible, be allowed to retain a plant or a dried specimen or some other evidence that might hereafter be referred to in case of dispute. We are not sanguine enough to suppose that no mistakes, no inconveniences would arise after the establishment of such a plan as we have hinted at; but we do think that much might be done by the Society and its Committees towards rectifying, collating, and reducing to order the chaos of plant nomenclature so far as gardens are concerned. The most serious difficulty that we see in the way arises from the often unavoidably imperfect condition in which plants are shown. Two Marantas, for instance, appear to be the same when the foliage alone is seen, but in flower or in fruit the two may differ considerably.

These are difficulties which create much of the synonymy of which botanists complain; at any rate the horticulturist would here have the best of it, for having the plants constantly under his eye, he could watch all the stages of its development, and if he chose, write its life history far better than the botanical collector or the closet botanist.

—— THE general programme of the INTERNATIONAL HORTICULTURAL EXHIBITION to be held in connexion with the PARIS EXHIBITION, is, we see, published in the "Revue Horticole" of August 1. We hasten to lay such of its contents as apply to our countrymen before our readers:—

Art. 1.—An International and Permanent Horticultural Exhibition will be held during the Universal Exhibition of 1867, from the 1st of April to the 31st October.

A garden of 50,000 square metres, in the Champ de Mars and adjoining the Exhibition, is specially allotted for this purpose. The objects exhibited will be placed according to their character in stoves, greenhouses, tents, galleries, or in the open air.

Art. 2.—Fourteen Sections (*concours*) will be established in succession from April 1 to October 31.

Every Exhibitor that the Committee of Reference [*Commission Consultative*, appointed by the Imperial Commission, shall admit to compete

in either of these Sections, shall be bound to leave his plants during the whole duration of the "Concours," which cannot exceed 15 days, and to provide for the care of his plants during their stay in the Exhibition. The cost of carriage of articles exhibited must be defrayed by the Exhibitor, but a reduction of 50 per cent. on the tariff will be granted by the Railway Companies of the French empire.

The Committee of Reference above alluded to consists of MM. Brongniart (Adolphe), Member of the Institute, *President*; Alphand, *Vice-President*; Barillet-Deschames, *Secretary*; Decaisne, Member of the Institute; Bouchard-Huzard, Hardy, Rivière (Auguste), Vilmorin (Henri).

Art. 3 (so far as it applies to other than French exhibitors).—Applications on the part of foreign horticulturists should be addressed to the committees appointed in connection with the Exhibition by each Government. The list of exhibitors admitted to the competition will be forwarded by each of the foreign committees one month before the opening of the "Concours" to the Councillor of State and Commissioner General. The list must comprise, in addition to the name of each exhibitor, the products he is desirous of showing, the conditions under which they should be shown [in stove, greenhouse, &c.], the space they will occupy, the number of baskets, groups or clumps, that the applicant proposes to occupy.

Art. 4.—The fourteen sections, alluded to in Art. 2, are as follows:—

First Section, open April 1, 1867.—Camellias, Conifers, Woody and Out-door Plants, Ericaceæ, Forced Fruit and Vegetables.

Second Section, open April 15.—Rhododendron arboreum, Forced Fruits, Hyacinths, and Greenhouse Plants.

Third Section, open May 1.—Orchids, Azalea indica, Tulips, Ornamental and Greenhouse Plants.

Fourth Section, open May 15.—Azalea indica and pontica, Rhododendrons, Orchids, and Ornamental Out-door Plants.

Fifth Section, open June 1.—Orchids, Roses, Pelargoniums, Ornamental and Kitchen Garden Plants.

Sixth Section, open June 15.—Pelargoniums, Roses, Orchids, and Fruits in season.

Seventh Section, open July 1.—Palms, Stove Plants, Annuals, Fruits in season.

Eighth Section, open July 15.—Arads, New Plants, Annuals, Fruits in season.

Ninth Section, open August 1.—Plants with Coloured Foliage, Gladiolus, Fuchsias, Fruits in season.

Tenth Section, open August 15.—Ornamental and Annual Plants, Ferns, and Fruits in season.

Eleventh Section, open September 1.—Kitchen Garden Plants, Ornamental Plants, Dahlias, and Fruits in season.

Twelfth Section, open September 15.—Dahlias, Miscellaneous Plants, and Fruits in season.

Thirteenth Section, open October 1.—Fruits (General Exhibition of), and Miscellaneous Plants.

Fourteenth Section, open October 15.—Trained Fruit Trees [General Exhibition].

A General and Detailed Programme of these 14 Sections will be published immediately.

Art. 5.—Exotic plants during the first two days of each "Concours" will be placed in the enclosure of the "Palais du Cristal," or Crystal Palace, raised in the centre of the garden of the Exhibition. They will afterwards be placed in the special stoves appropriated for them.

Art. 6.—A special section of the International Jury, composed of 24 members, 12 of whom are French, is established by the Imperial Commission, under the title of "Jury of the Group of Living Products and Specimens from Horticultural Establishments." In compliance with the suggestions of this jury, the Imperial Commission will nominate, five days before the opening of each section, an International Committee of Associate Jurors, chosen from among eminent French and foreign horticulturists. The function of these juries will be to adjudicate upon the merits of the objects exhibited in the first section opened after their nomination; to class these products according to their merit in four divisions, thus:—1st, 2d, and 3d Prizes and Honourable Mention. The work of the Juries will begin on the opening day of the section, and will be completed in two days. The announcement of the Prizes and Honourable Mentions awarded by the Jury will be immediately made public, and will be affixed to the objects deemed worthy of them. These Prizes and Certificates will not be awarded after each "Concours," but will be placed to the credit of the Exhibitor, as so many guarantees for the obtaining some one of the great Prizes which will be allotted and distributed at the close of the Universal Exhibition, in accordance with the recommendations of the International Jury.

Art. 7. The awards to be allotted by the International Jury of Awards for products of Agriculture, Horticulture, and Industry, are thus arranged by the decree of the Imperial Commission of Awards (*Commission Impériale sur les Récompenses*) of the 7th of June, 1866, approved by decree of the Emperor, June 9, 1866:—

Large prizes and awards of money to the total value of two hundred and fifty thousand francs (upwards of 10,000*l.*)

One hundred Gold Medals, each of the value of a thousand francs.

One thousand Silver Medals.

Three thousand Bronze Medals.

Five thousand Honourable Mention.

All the Medals have the same die.

A Superior Council (*Conseil Supérieur*) of 27 members, established by the same decree, and of which the President and Vice-President of the Jury of the Horticultural Division form part, is charged with the duty of allotting the awards above mentioned among the several groups of products exhibited. It will thus determine the total number of awards which will be allotted to the exhibitors of living products and specimens of horticulture.

Art. 8.—The Jury of the Horticultural Division will make on the 20th October, 1867, a general statement of the various prizes and certificates (mentions) awarded at the end of each section. After this statement, and reckoning the number and order of the prizes and certificates obtained by any one Exhibitor, the Jury of the division will award the great prizes, the awards of money, the medals of gold, silver, or bronze, placed at its disposition by the "*Conseil Supérieur*."

The diplomas will bear a record of the prizes and certificates gained by the prize-holder during the Exhibition. (Signed) Brongniart, *President of the Commission Consultative*.
Barillet-Deschames, *Secretary*.

We shall publish further details from time to time; in the meantime it is obvious that the idea is to establish a series of 14 distinct shows, each lasting for a fortnight—or rather 15 days, and it would seem that prizes will not be awarded in any one section by itself, but that they will be counted as so many good marks in the allocation of the general prizes at the close of the Exhibition.

—— We have already alluded to Professor Morren's theory of the incompatibility of Double Flowers with Variegated Leaves, the exceptions to which however are so numerous that we fear no general rule even can be laid down as to this matter. Mr. Jabez J. Chater, of Cambridge, furnishes us with some additional illustrations. He writes:—"I have now in bloom a spike of a double Hollyhock of a maroon colour, the foliage of which is variegated. When with my father at Saffron Walden I propagated a beautifully double-coloured variety, which also had variegated foliage, and succeeded in perpetuating it, having raised several plants. I am now propagating plants of the variety called Lady King, which has the foliage variegated with yellow. I can vouch for these as positive instances of double-flowering plants with variegated foliage. I entertain an idea of showing a spike of the former at Nottingham before the British Association, if I can keep it sufficiently long in bloom."

—— One of the distinctions between Rye-Grass (Lolium) and Wheat (Triticum) resides in the relative position that the spikelets bear to the main stem; in Triticum the spikelets are placed with their backs against the stem, in Lolium with one edge against it; but in a specimen of Rye-grass kindly forwarded to us by Mr. Douglas, Kilkea Castle, the arrangement is at least in part that of Triticum.

—— At the Royal Horticultural Society's meeting on Tuesday, August 7th, we are informed that Mr. W. Bull intends to exhibit a fine specimen of the curious Dove-flower, or El Spirito Santo, Peristeria elata. We regret that we were led into error by the use of the words "Tuesday next," in our last impression.

NEW GARDEN FERNS.

Adiantum farleyense, *Moore, Journ. Roy. Hort. Soc.*, n. s., i., 82; *Id., Proceedings Roy. Hort. Soc.*, i., xxxv., with figure.

Fronds [illegible] slightly glaucous beneath, rhomboid, the lower pair [illegible] of the upper pair of the same shape, but [illegible] of it; the distal side of the posterior margins [illegible], the anterior [illegible] the lobes dichotomously inciso-laciniate, with blunt entire (without serratures) segments, those of the fertile fronds smaller, rhomboid-oblong, slightly lobed; sori approximate, terminal on the lobes, oblong; indusium entire; stipes and rachides glossy ebeneous.

Stipes [illegible] in the large lobes, shining, brittle, with a shallow groove in front. Fronds of pendent habit, every [illegible] of a light green colour, somewhat glaucous beneath; the sterile more abundant than the fertile, densely leafy, their lamina about 20 inches long by 24 inches broad; the fertile with the pinnules smaller and less crowded. Pinnules chartaceo-membranaceous, petiolate, the terminal ones more or less cuneate at the base, articulated; the fertile about three quarters of an inch long, rhomboid-oblong, divided into shallow lobes along the anterior soriferous margins; the sterile larger and more crowded, 1½ inch long, dilatate rhomboid, the posterior margins recurvo-falcate, the anterior deeply lobate, the lobes inciso-laciniate in a dichotomous manner with the ultimate divisions linear, obtuse, and quite free from serratures. Sori numerous, crowded, oblong, variable in size, terminal on the shallow lobes; indusium oblong, entire. Rachides and petioles everywhere glossy ebeneous.

Though evidently related to A. tenerum, this beautiful novelty differs from it in the larger size of its pinnules, and in the regularly dichotomo-laciniate condition of the margin of the sterile pinnules, which are also entirely free from the small serratures which occur so distinctly on the sterile portions of the fronds of A. tenerum. To these differences may be added the dimorphous development of the plant—so entirely different are the elegantly-fringed sterile pinnules from the more contracted fertile ones. As a garden plant it is far more beautiful than either A. tenerum or A. trapeziforme, with which it has been compared. It is, in fact, one of the most graceful species yet known, of perhaps the most lovely genus of the pre-eminently lovely family of Ferns.

Adiantum farleyense was, I am informed, introduced to this country by T. D. Hill, Esq., of London, by whom it was received from his friend T. G. Briggs, Esq., of Barbados, West Indies. Mr. Brigg's residence in that island being called Farley Hill, the Fern has been christened as a memento. The magnificent specimen exhibited at S. Kensington [in 1865] was presented by him to Col. Miles, of Burton Hall, Malmesbury, to whose gardener, Mr. J. Green, I am indebted for the material whence the foregoing description has been derived. Mr. Green states that the sterile fronds are very numerous in comparison with the fertile ones, and that they are always deeply cut; moreover, that the young fronds are of a beautiful pink colour, which they retain until they acquire their full size. This variation in colour adds very greatly to the beauty of the plant.

Since the above was written I have learned that this Fern is a seedling raised at Farley Hill, by which I infer that it is of garden origin, and not *feræ naturæ*. It is probably, therefore, a well-marked sport of A. tenerum, or it may possibly be a hybrid between A. tenerum and A. trapeziforme, as it bears a certain degree of resemblance to both. *Moore, Journ. Royal Hort. Soc.*, i. 82.

NOTES ON CONIFERS.—No. VI.

Welwitschia mirabilis (*continued from p.* 682).—We have seen that so far as the parish register goes there is no warrant for believing Welwitschia to be a relative of Ephedra, their respective ancestors apparently never having come within the four corners of the same county. Let us now see what the plant itself says. Dr. Hooker thus sums up his conclusions regarding its place in the natural system:—

"Notwithstanding the form and structure of the trunk, the disposition of the vascular system, the hermaphrodite flowers, and the anomalous development of the embryo, this plant without doubt ranks among the Gnetaceæ near Ephedra, on account of the strobilaceous inflorescence, the binerved scales, the form of the perianth, and the stamens, the ovules, and the seeds entirely corresponding with the Gnetaceæ." It is therefore with Ephedra as its nearest ally that we must contrast the above characters. The first is the form and habit of the plant, thus described by Dr. Hooker:—

"The Welwitschia is a woody plant, said to attain a century in duration, with an obconic trunk about 2 feet long, of which a few inches rise above the soil, presenting the appearance of a flat two-lobed depressed mass, sometimes (according to Dr Welwitsch) attaining 14 feet in circumference, and looking like a round table. When full-grown it is dark brown, hard, and cracked over the whole surface (much like the burnt crust of a loaf of bread); the lower portion forms a stout tap root buried in the soil and branching downwards at the end. From deep grooves in the circumference of the depressed mass two enormous leaves are given off, each 6 feet long when full-grown, one corresponding to each lobe; these are quite flat, linear, very leathery, and split to the base into innumerable thongs that lie curling upon the surface of the soil. Its discoverer describes these same two leaves as being present from the earliest condition of the plant, and assures us that they are in fact developed from the two cotyledons of the seed, and are persistent, being replaced by no others. From the circumference of the tabular mass above, but close to the insertion of the leaves, spring stout dichotomously branched cymes, nearly a foot high, bearing small erect scarlet cones, which eventually become oblong, and attain the size of those of the common Spruce Fir. The scales of the cones are very closely imbricated, and contain, when young and still very small, solitary flowers, which in some cones are hermaphrodite (structurally but not functionally), in others female. The hermaphrodite flower consists of a perianth of four pieces, six monadelphous stamens with globose, 3-locular anthers, surrounding a central ovule, the integument of which is produced into a styliform sigmoid tube, terminated by a discoid apex. The female flower consists of a solitary erect ovule contained in a compressed utricular perianth. The mature cone is tetragonous, and contains a broad winged fruit in each scale."

The Ephedræ consist of leafless shrubs of small height, ramifying from the root into numerous divided branchlets, resembling those of Casuarina or Equisetum; these are woody, striated, and divided by articulated nodes, each node being surrounded by a short vaginate sheath, cleft more or less deeply into two opposite segments, which form the rudiments of leaves, and it is from the axils of these segments that other branchlets originate. The inflorescence is in the form of a short amentiform and often pedicellated spikelet arising out of the nodes, or at the termination of short axillary branchlets. The flowers are described by authors as either monœcious or dioecious. The probability seems to be that they are polygamo-monœcious. We shall notice the parts of the flower presently in contrasting them with those of Welwitschia, but as to the form and habit, it is clear that there is no resemblance between these two plants. Neither is there in structure nor in the disposition of the vascular system—both points, we need scarcely say, of the highest importance in the determination of affinities. By these the place of a multitude of plants is easily known. A glance at the structure of any plant tells us at once whether it belongs to the Monocotyledons or not; so with the Conifers; and various peculiarities characterise other groups. A great deal in every case may therefore be gathered from the structure of the timber. From Welwitschia, however, it is difficult to gather anything but negative information, as Dr. Hooker says "it is a remarkable and hitherto unique modification" of development referable to the exogenous plan. "It consists primarily of a thin elongated or cup-shaped stratum crossing the axis of the stock (to the surface of which it is parallel) just beneath the crown, and uniting the bases of the leaves. This gives origin to, secondly, an ascending system of definite isolated vascular bundles, which traverse the

crown and terminate in its ridges; and thirdly, to a descending system of bundles, which in the axis of the stock and root are collected into wedges, but elsewhere in the stock are for the most part definite and isolated, and lose themselves in its cambium layer."

The sections of the wood furnish a close homogeneous texture without scalariform reticulations, large vessels, medullary rays, or coniferous discs. It has clearly nothing whatever to do with that of Conifers. It has no relation to that of Ephedra, nor any resemblance to that of Gnetum. It will be unnecessary, therefore, to discuss its peculiarities.

The vascular system is very anomalous. The parenchyma is full of remarkable hard spicular cells more or less thickly covered with minute crystals, an arrangement which has no analogy to anything gymnospermatous.

The foliage is not less unique, confined to two perennial cotyledonous leaves usually broken up into strips like broad leathern thongs or blades of Fucus. Dr. Hooker says, "there is much in the permanent character, parallel nervation and anatomy of the leaf of Welwitschia which recalls the foliage of Dammara, Podocarpus, and many parallel-nerved Cycadeæ, and especially of those South African species of the latter order in which a layer of liber cells underlies the epidermis." In it the vascular bundles of the leaf, unlike those of most Monocotyledons (with the leaves of many of which there is a superficial and deceptive resemblance in texture) "nowhere anastomose nor communicate by lateral branches; whence each nerve represents a single independent vascular axis extending from the base to the apex of the leaf, or in Welwitschia from the axis of the trunk to the apex of the leaf. Such leaves," continues Dr. Hooker, "resemble more closely a series of parallel unnerved leaves united by cellular tissue than a foliar expansion of parenchyma traversed by one system of inosculating vessels; and the frequent presence of many linear cotyledons in these plants seems to favour this view, as does the mixed character of the foliage of Podocarpus, of which some species have unnerved and others many-nerved leaves. The numerous flower-buds along the periphery of the crown also further favour this view." We are not sure that we perfectly understand or correctly follow the application of the two last points; but as to the many linear cotyledons which characterise the Conifers, we may quote this other observation by Dr. Hooker as one on which we should wish to make a remark. He says:—"I have no evidence of the plant ever bearing more than two leaves, there is, however, no reason why more than this number should not be developed, for the embryo may occasionally be tri or poly-cotyledonous, as is the case with so many other Gymnosperms, including its near ally Ephedra."

This seems to be reasoning in a circle. "The plant may be polycotyledonous because it is a Gymnosperm; and it is a Gymnosperm because it is polycotyledonous." But the truth is that it is not polycotyledonous. Dr. Hooker tells us that it has only two small cotyledons, and, on the dark-looking corpuscules or secondary embryo sacs in the ovule. Now upon this point Brown says "that each of these opaque bodies terminating the trunk and branches of the funiculi (that is the corpuscules) are really rudimentary embryos, is proved by tracing them from their absolutely simple state to that in which the divisions of the lower extremity become visible, and those again into the perfect cotyledons." Consequently the presence of corpuscules and of several cotyledons are equivalent things.

No doubt Dr. Hooker says in the passage above quoted, that Ephedra is polycotyledonous; but as his remark to that effect is merely made incidentally and perhaps without sufficient consideration of the conclusions which must follow from the statement if well founded, we hope we shall not be considered captious if we do not at once accept his dictum as sufficient. We should indeed have done so if it were not opposed to our own observation, which however has been limited to two or three species. In all that we have examined we have found only two cotyledons. Mr. Miers, in his Monograph of the South American species, says nothing as to the number of the cotyledons. He simply says, "Cotyledones lineari-oblongæ, semiteretes, parallelim collaterales," &c. Endlicher, however, agrees with our observations, and says that the genus has only two—"Embryo cotyledonibus duabus oblongis;" and we therefore wish much that Dr. Hooker would re-examine this point. It occurs to us as possible that in saying that Ephedra has polycotyledonous seeds, Dr. Hooker may have reckoned both the terminal seeds as one, which would give four cotyledons, although this is not likely—or he may have met with an abnormal double or twin seed. In any view the point is obviously one of very considerable importance, on more grounds than its bearing on Welwitschia.

It is also to be observed on this point that while corpuscules or polyembryos are, so far as is yet known, found in the ovules of all Conifers and Cycads, and polycotyledons in all their seeds, none have been observed in Gnetum. Unlike Welwitschia and Ephedra it has been examined in the fresh state, and the ovule and its contents have been carefully figured, and no corpuscules appear in it, and in conformity with that fact it has only two cotyledons.

If, therefore, Dr. Hooker were right in interpreting the objects which he has figured as modified corpuscules or secondary embryo sacs, then the seed ought to have had more than two cotyledons. But we must confess that what he considers modified corpuscules rather impress us as being modified pollen tubes.

The truth seems to be that if Gnetum, Ephedra, and Welwitschia are to continue among the so-called Gymnosperms, the existence of corpuscules in the ovule must be struck out as one of the characters of that group.

There is another circumstance having relation to the structure which is against any connection existing either with Ephedra or Conifers. Welwitschia produces resin, which Ephedra does not, and it is not like the resin of Conifers. Fig. 1 is a rough sketch of a piece in Dr. Welwitsch's possession, which we have made from memory, and we think the reader will agree with us that it is more like a lump of "thick Plum-tree gum" than the terebinthine resin of a Conifer. Its appearance was quite that of such a gum as exudes from broad-leaved trees like the Plum.

Fig. 1.

The next point to be compared with Ephedra is the inflorescence. The hermaphrodite inflorescence of Welwitschia has no analogue in Ephedra, and we shall therefore reserve what we have to say upon it until we have contrasted the female inflorescence, which has some analogy. The first point in it in which Dr. Hooker sees a resemblance, is what he calls the strobilaceous inflorescence in both. To this term we cannot assent. Welwitschia has something like a cone, but it is not one. It is only a very distant imitation of one, and Ephedra has even less of a cone. It is a mere spikelet, with from four to six opposing persistent involucels. We adopt the remarks made by Mr. Miers on this point, in an excellent article on Ephedra, recently published in the Annals and Magazine of Natural History:—"The application of the term 'cone' to the flowering heads of Welwitschia and Ephedra is calculated to mislead many persons in regard to the affinity of the Gnetaceæ; for they bear little analogy to the cones of the Coniferæ. They are more properly spikelets, because they bear regular petaloid sessile flowers along a common axis, much after the manner of a spike of Plantago; and they offer more claims to this category than the spikelets of Myrica, the aments of Betula, or the spicated inflorescence of many other genera." Here, however, the reader may judge for himself. Fig. 2 represents the spikelet of Ephedra; Fig. 3, the female cone or strobilus of Welwitschia.

Fig. 2.

The appearance and growth of these female strobili of Welwitschia, and of the spikelets of Ephedra, too, is very different. We cannot help asking ourselves, what would have been the reply of Dr. Hooker, supposing we had taken him such a cone before the rest of Welwitschia was known, and, without any other information about it than could be gathered from the appearance of the cone, asked him where he would recommend us to look for its allies? We will

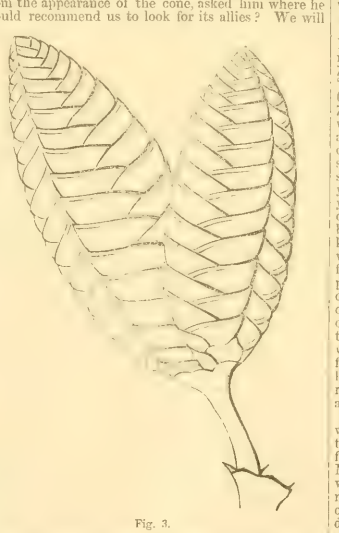


Fig. 3.

venture to say that it would not have been to Ephedra or the Conifers. We imagine it might very probably have been to the Acanthaceæ or the Urticaceæ, in which orders such a quasi-strobilaceous inflorescence is not uncommon, and some species of which also possess another character found in Welwitschia, viz., the dichotomous division and suppression of the internodes in the flowerstems. Dr. Hooker applies these as showing a resemblance to Gnetum, but it is equally found among the Acanthaceæ, and yet no one, we presume, would propose to class Welwitschia amongst them.

The character of the so-called strobilaceous inflorescence of Welwitschia seems to us especially against any affinity with the Conifers. The scales of the cone in Welwitschia are not disposed spirally, but are opposed to each other, decussating in alternate pairs, making the cone quadrangular, while in Conifers no character is more universally present and more marked than the spiral phyllotaxis or spiral disposition of every part of the plant.

The points in which this strobilus corresponds with the spikelet of Ephedra are chiefly the texture and nervation of the scales, and the position of the petals. But in Ephedra each two are joined together, while in Welwitschia this occurs only in the lower small pairs. The nervation and texture of the scale, and the position of the flower, are certainly similar in both, each scale being provided with a series of vessels forming a double nervure, and the florets in both being situate on or at its base; but in no view can this have much structural significance. Both occur in a multitude of other plants. *A. M.*

THE LATE MR. GRANT MILNE.

THE last mail from the West Coast of Africa brought the melancholy intelligence of the death of Mr. Grant Milne, who has been on the West Coast of Africa collecting objects of natural history, including plants, seeds, insects, shells, &c., since the end of 1862.

The Rev. Mr. Goldie, of Creek Town, states that Mr. Milne died there on the 30th of last month. It may be known to some of your readers, that Mr. Milne was employed as collector on board a vessel which was sent out for the purpose of making surveys among the islands in the South Seas, whence he sent home several good plants to England. After his return he remained for some time in charge of the collection of herbaceous plants in the Glasgow Botanic Garden, and, on his expressing a desire to go abroad a second time, the present curator, Mr. Clark, interested himself on Milne's behalf, and not only raised funds for his outfit, but also procured for him a free passage to Old Calabar. On his arrival in that malarious climate, he at once set to work collecting, but in doing so, he did not take the precautions necessary for the safety of his own health.

In the spring of 1864 he made an attempt to reach and explore the Qua mountains, when his progress was impeded by the hostile tribes he met on his way. The party reached the locality, but by that time they were deprived of everything they had, by paying tributes as they went along, when at last their lives were threatened if they did not immediately return. Having been despoiled of everything in the way of clothing, poor Milne had to make his way back in a nude state nearly 200 miles to the river. During the journey he and his party were obliged to travel by day, and sleep out without covering at night. On his arrival he was attacked with fever, which nearly proved fatal to him. After getting better, and recruiting his strength, he went to the Gaboon river, which he ascended to a considerable distance, and was close on the line of march taken by Du Chaillu, and only four days behind him. From the river he diverged to the interior, and reached a place which he calls "Cama," 150 miles to the southward of the Gaboon, whence he dates a letter on Dec. 22, 1864.

After leaving the Gaboon territory he went to Fernando Po, where he was 18 days encamped on the mountain there, at an elevation of between 6000 to 7000 feet. In a letter dated June 28, 1865, he states: "I had my camp pitched near a fresh-water stream on the mountain, at an elevation of between 6000 to 7000 feet, where I was exposed to dreadful tornados of wind and rain, through which I suffered much;" and adds, "Probably you might like to know what a collector's tent is like. If so, just fancy you see a temporary hut covered with leaves on one side, that nearest the mountain, and farther, that you see a few saplings laid crosswise, to raise you above the damp ground, so that the rain can run off your person. Fancy this as a sleeping place, with a block of wood for a pillow, and with a wet blanket to keep you warm. A peep outside shows dirty niggers with wet blankets round them, all huddling near a bad fire of green wood, bundles of wet dirty sacks, tin plates and cooking pans, old boots, insect nets, wet clothes hanging near the fire, bottles of insects, and a copy of Lindley's Vegetable Kingdom." "Such was my camp on the mountain of Fernando Po." It is hardly to be wondered at that on reaching the low ground he was again attacked with malignant fever, which was followed by severe dysentery, which together reduced him to almost a skeleton. As soon as possible he was removed to Old Calabar, for change of air and medical aid, where he rallied, but was long very weak.

On recovering from this illness, he left Calabar and went to Victoria, at the base of the Camaroon Mountains, which he ascended and was again attacked by fever, and remained ill until the 4th April, 1864, when Mr. Lauche, of Dublin, found him. This gentleman writes, dated 4th April, 1864—"I went round in the mail to Camaroons, and found little Milne nearly dead of dysentery, and very hard up. The doctor said if he did not get change of air he would not live another week, so I took him round in the mail to Calabar, where he is sure of comfort and good medical advice, and may yet pull through, though he is very far gone."

The poor fellow lingered on, getting gradually worse, until July; and thus another victim has fallen while prosecuting scientific researches in Western Africa. *D. M.*

ABSTRACTS OF PAPERS PRESENTED TO THE BOTANICAL CONGRESS.

ON RAISING PEACHES, NECTARINES, AND OTHER FRUITS FROM SEED.

By THOMAS ROGERS, SAWBRIDGEWORTH.

SOON after the introduction of Orchard-houses my attention was attracted by the facility with which young trees of Peaches and Nectarines could be made to bear fruit in pots. I at once determined to raise large numbers of trees from stones, and to carefully record the origin of each tree. Nearly, if not quite the first variety I took in hand was the White Nectarine, for I considered it as being in some degree one of the oldest of all trees of Nectarines. It is mentioned being mentioned in the "Paradisus Terrestris" of Parkinson, upwards of 200 years since. It originally came from

Asia, and probably from Northern Syria, the habitat of another kind of Nectarine equally distinct in character, the Stanwick. My first family of seedlings from the White Nectarine seemed, when the young trees blossomed, marvellously alike, and I began to look forward to another generation before I should find much change. I was, however, agreeably disappointed, for among my little family of quasi White Nectarine trees, I observed a large white Peach, which, although a Peach in appearance, had the racy brisk flavour of its parent. This remarkable production aroused my attention, and from the first fruit it produced the stones were taken and sown; several of the trees raised from them bore fruit when four years old; the greater number of them proved to be White Nectarines, thus returning to the nature of their grand-parent, the White Nectarine. Much, however, to my gratification, two among them produced Peaches, one about the size of the Noblesse Peach, and of the same colour, but ripening so early that in 1864, when its first fruit was presented to me on July 14th, quite ripe, I could scarcely believe it to be true, as the Red Nutmeg Peach was at that time quite hard; in 1865 its fruit ripened July 18th, and I then felt satisfied it was the earliest large Peach known. The other Peach, which made its appearance among the third generation from the White Nectarine, as above-mentioned, proved to be a large pale-coloured variety, ripening in the middle of September.

Both these kinds of Peaches retain the flavour of the race, being remarkably piquant and agreeable when well ripened. From the experience thus gained, I feel convinced that to the White Nectarine we owe those pale-skinned Peaches, the Noblesse, the Malta, and the White Magdalen, all remarkable for their brisk flavour, and equally so for retaining in the trees the peculiar character of the white Nectarine, producing large pale flowers irregular in their shapes.

My next essay to "breed in and in," so as to establish a race of Peaches, was with that large, handsome, but, in England, worthless clingstone Peach, the Pavie de Pompone. The first generation gave me one Peach producing large flowers like its parent, but with a melting rich flesh perfectly its converse. This was named Princess of Wales. Another seedling of this generation proved to be a small-flowered sort, its fruit of medium size, skin pale yellow, and flesh so sweet (without the usual bitter almond flavour of most Peaches) as to be too luscious. Here was at once a wide departure from the type in all respects, except the size of the flowers in Princess of Wales. Not at all "put out" by the vagaries of the first generation, and still hoping to raise a Peach as large as the Pavie de Pompone, with tender flesh, and, like that, a good keeper, so that in a well-managed fruit room good Peaches might be preserved till November, I selected some fine fruit of the Princess of Wales, sowed the stones, and "waited patiently," as I used to read in "Sternhold & Hopkins" when a little boy. One of the first of this third generation produced, in September, 1865, such late Peaches as never before gladdened my eyes. One fruit measured 12 inches in circumference, its flesh melting, but firm and rich. This I felt to be a great triumph, and as he was then happily with us, I named it Lord Palmerston.

That well-known Nectarine, the Pitmaston Orange, next attracted my attention. Mr. Williams, of Pitmaston, always stated that this was raised from the Elruge Nectarine, a variety so diametrically opposite in flowers and fruit, that I felt a strong wish to try and reproduce its parent, by going through two or three generations of seedlings. The first generation consisted of some 12 or 18 seedlings from the Pitmaston Nectarine, the parent tree growing in a pot in my orchard-house. I ought, perhaps, to have said that all my seedlings have been raised from fruit taken from my orchard-house trees, upwards of 100 varieties growing in a house 100 feet long and 24 feet wide. All the trees of this generation except one gave Orange Nectarines, like their parent: the trees also produced those large brilliant flowers peculiar to this sort. All except one, I have said, and this to me was a remarkable exception—it was a large crimson Peach, the tree producing small deep red flowers instead of those large brilliant ones borne by its brethren. I felt doubts, and concluded that a Peach stone must have been by accident planted with the Nectarine stones. To try and solve my doubts, I at once determined to take particular notice of this Peach, to sow its stones, and to watch carefully what they would bring. Out of about 20 trees raised from them, the greater part bore Peaches like their parent, the trees also producing small flowers; but, to my great satisfaction, two of them bore Orange Nectarines like their grand-parent, and the trees have the same large flowers; but the most remarkable fact in this experiment was, that two trees bore white-fleshed Nectarines, a little red at the stone, like the Elruge Nectarine, their great grand-parent, and the trees, like that variety, gave small flowers. Now, here was a strange and most interesting event in pomology. A white-fleshed Nectarine, the Elruge, with Mr. Williams had produced a seedling with orange-coloured flesh (the Pitmaston), that had in its turn produced here a large white-fleshed Peach, and stones from that Peach have produced trees with the characters of four generations, viz., the Elruge Nectarine, the Pitmaston Nectarine, the Peach (a child of the latter), and again the Pitmaston Orange Nectarine.

The Psalmist might well exclaim, "How wonderful are Thy works!" The horticulturist who thinks and works—they are too often far apart, that thinking and working—must feel those few words always uppermost, always rising. I must not leave that fertile source of interest, the Pitmaston Orange Nectarine, without adverting to one more curious fact. I have said that the greater portion of my first generation of seedlings from it were like the parent; there was one, however, which ripened ten days later, and had transparent flesh, so that it was named the Pine-apple Nectarine. I was interested in this sort, feeling that it was inclined to leave the characters of the type. I therefore raised a number of seedlings from it; they are young, being only four years old. Yet, one among them bore some fruit last year (1865), of a most remarkable character—a Peach of the largest size, with its skin green and beautifully marbled with red; its flesh of a pale, lemon colour, melting, and much like a Nectarine in flavour. This peculiar Peach ripened September 30, 1865, and was at once dedicated to Lady Palmerston.

There is a very old kind of Nectarine, known to pomologists as Fairchild's Early, a small yellow-fleshed sort, not larger than an Orleans Plum. Now, although this sort has been in cultivation for 150 years, yet no gardener seems ever to have thought of improving it by raising seedlings from it. As it is the earliest of all in Nectarines, and as a good, very early Nectarine is still lacking, I turned to it with much interest, and hoped to improve it in size and earliness, so as to create a new variety worthy of cultivation. My first generation consisted of some 10 or 12 young trees; they all bore fruit in due course, and were all like the parent in leaves, flowers, and fruit. The latter varied slightly in size, but on the whole they were neither more nor less than reproductions of the parent. I confess to some little disappointment, but, encouraged by the facility of inducing young trees to come into bearing in a comparatively short period, by cultivating them in pots in my orchard-house, I selected some fruit from the seedling trees, sowed their stones, and again looked forward to the result. In 1865 I was, as far as regards curiosity, greatly rewarded, for no two trees of this second generation produced fruit exactly alike. Some gave orange-coloured Peaches, one or two remarkably rich in flavour; some Orange Nectarines, as large as the Pitmaston, but quite different in flavour; and, most strange of all, some gave Peaches of medium size, with rosy cheeks and flesh white and melting, like that of the Noblesse Peach. I failed in my object in obtaining a very early kind of Nectarine, but at once some stones were selected, and trees of the third generation of Fairchild's Early Nectarine are now in full growth. One very remarkable fact attended this experiment: the trees, when in blossom in 1865, were all like their grand-parent, so that I was quite unprepared for the curious transformations I have above described. The following singular changes have taken place here:—The Roman Nectarine, a variety which has been under cultivation in England for 200 years, has produced from seed a nice bright-red melting Peach. George the Fourth Peach, an American sort, in the first generation gave a late green Nectarine. It is well known that American Peaches in their own country seldom or never produce Nectarines; it is doubtless owing to the trees being confined in a house, and standing very near together, that such remarkable changes have taken place here.

Among other curious gains that have occurred—too many to mention in detail—I may mention that a stone of Hunt's Tawny Nectarine has produced an early Peach, full-sized, and of the most delicious flavour, but without any yellow tinge in its flesh. This has the true Nectarine flavour, which I may add is very common to Peaches raised from Nectarines. The Royal George and Shanghai Peaches have produced melting Peaches, with deep yellow flesh. The Early York, from which a great number of seedling trees were raised, reproduced itself with but little variation, with one exception, which is a tree with round glands, consequently not liable to mildew. Its fruit is of the most exquisite flavour, and as early as its parent. The Hardwicke Nectarine, which has large flowers, was produced from it, a Peach of the most decided Nectarine flavour; moreover, the tree gives small flowers.

I have had some fine bearing trees of seedling Stanwick Nectarines, differing but slightly from their parent, for this sort adheres rigidly to its race for two or three generations they were growing in a house in which were some trees of the Elruge Nectarine. Some stones of the latter were sown, and as nearly as possible the sort was reproduced, but they were Elruge Nectarines with the Stanwick flavour. This is not a solitary instance of a new kind of fruit imparting some of its qualities to fruits raised from seed, without artificial impregnation. The bees, always very busy in orchard-houses, fertilise numerous flowers: hence the great variety in Peaches and Nectarines raised from the stones of trees growing in them. I must not omit to mention one more curious fact. The Balgowan Nectarine, a sort highly esteemed, has produced from seed a Peach rather small, but of the most delicious Nectarine-like flavour.

Apricots raised from the stones of trees grown in orchard-houses have not given, and cannot be expected to give, the immense variety that Peaches and Nectarines produce; still, out of some scores of seedlings, no two can be found exactly alike. The only beneficial variation that can be hoped for is in the time of ripening, so as to have varieties earlier and later than we have at present, for no Apricot can be of much higher excellence than the variety known as the Peach Apricot. Some progress has, however, been made; a seedling tree from the Red Madeleine, one of the oldest and earliest varieties known, has given fruit larger and equally early, and a seedling tree from that curious delicate-growing small Apricot, the Musch Musch, has given fruit much larger than its parent, and so full of delicious fragrant juice as to be, if possible, more grateful than the Peach Apricot. The Saint Ambroise, a variety rather early, has produced a seedling, the fruit on which ripened full a month later than any other kind; and, to conclude, the Large Red or Gros Rouge has given a seedling tree, the fruit of which ripened a full month before that produced by the parent tree. There is therefore some hope that in time a new race of Apricots may be produced, differing in quality and season from those at present under cultivation.

It will, I think, be seen that old varieties of fruits will reproduce themselves in an improved form if successive generations be raised from seed. My prevailing feeling is that of surprise that European, and more particularly English cultivators, have suffered many ages to pass without carrying out that which I have attempted: the idea seems to me so simple, and of such great interest. If all that I have done had been attempted a century ago, what progress would have been made in fruit culture! I ought, perhaps, to state, that in this paper, fearful of fatiguing the reader, I have given but a mere abstract of my experiments. A time may come, if life is spared, when I shall give more fully all that I have learned. I have a vague suspicion that our tender kinds of fruit, that blossom very early in spring, may be improved in hardiness by close attention to the form of the petals. Early in May of this year (1866) we had here 5° of frost; the weather was dry, and no injury seemed to have been done to the blossoms of some Cherry trees which I had under close observation; the germs were green, and the petals uninjured. I observed, however, that the extreme points of the pistils were killed from the petals being thrown back, fully expanded, so as to leave them exposed. The germs swelled, and I quite expected the fruit would come to perfection. Instead of this, however, all that were marked dropped off shortly afterwards. I confess to being disappointed in this, for I had calculated that complete fertilisation had taken place, and that no injury from a slight frost could then injure the fruit.

While making observations on these blossoms my attention was drawn to others, the petals of which were incurved, so as to protect the pistils; this slight protection preserved them from injury, and the fruit set healthily, and remained on the trees, swelling gradually, and bidding fair to ripen properly. On observing this, I could not help theorising, and asking myself the question—would it not be possible, by careful attention for a series of years, to originate varieties of fruits from seed, giving blossoms with large incurved petals, so as fully to protect the parts of fructification?

I have devoted many, many years to the raising of seedling fruits—have, as a matter of course, met with many disappointments, but also much gratification; there is, as I have found, much pleasure in watching, from year to year, the character of a seedling; it is true that, after much promise, there is often a failure, but with me it has always acted as an incitement to try again. At this moment I have hundreds of seedlings of all kinds of fruits, some from fertilised flowers, showing interesting features of cross-breeding, and many others raised from old and esteemed varieties; with my old hope partly fulfilled—that new varieties, with all the excellent qualities of the old, may and will be originated and, as it were, acclimatised, like the Early Prolific Plum and its descendants, which are neither more nor less than hardy varieties of the Précoce de Tours. It is, I fear, too true, that neither a Peach, Nectarine, or Apricot will ever be originated with blossoms fully capable of resisting our spring frosts, for even the common Sloe of our hedges succumbs to them; but it is quite probable that Peach trees, bearing fruit equal in quality to our old favourite the Grosse Mignonne Peach, will be produced of a more hardy nature than the old sort; in fact, I have more than one proof of this here. To obtain this result, only the most robust-growing seedlings from old varieties should be retained. Again, much improvement will yet take place in raising early and late varieties. I have reason to believe, from what I see daily, that large and rich-flavoured Cherries may be on our tables from early in June till the end of August; Plums from July till far in November; and Peaches, Nectarines, and Apricots in orchard-houses, from early in July till late in autumn. I may be accused of enthusiasm, but I look to the future for new races of fruits, with qualities far superior to the old, and the trees of so hardy a nature as to resist some of the unfavourable tendencies of our climate. I have formed this opinion on the solid basis of close observation during a lifetime devoted to the culture of fruit trees in all stages of their growth.

Home Correspondence.

Geranium Robertianum.—In a book called "A Winter in Algeria," which I was reading in the spring, I noted an observation that Geranium Robertianum was much used there as a cure for sprains and bruises, and was greatly similar to Arnica in its effects. Ever since my severe accident in May I have been almost a cripple from the extremely slow progress to recovery in my sprained and contused foot. The Herb Robert growing plentifully at this place, I determined to test its powers. The leaves were gathered, bruised in a mortar, and strained, and a bandage soaked in the juice applied to the foot and ankle nightly. It has certainly acted strongly and beneficially. This day, the fifth from the first application, I walked down a steep hill, botanised for an hour in some boggy land at the bottom, and walked up the hill again home. I do not readily jump to conclusions, but the action upon the œdematous swelling was unmistakeable. It is possible that strong vinegar might have done the same thing in the same stage of recovery; nevertheless, I recommend the trial to any of my brother botanists or gardeners who may have been placed in a like predicament. At any rate I can say, "Experto crede *Roberto*." *R. T. Clarke.*

Species of Cotton (see page 710).—I hold that it is impossible to distinguish the varieties of Cotton from an examination of dried plants alone. Those only who cultivate the plants and have them constantly under their eyes can satisfactorily discriminate between them. I incline to think that the colour of the flowers may prove of some value as a means of distinction. Taken in a peculiar and broad point of view, I should say there are not

more than two species. But fancy the havoc the application of this principle would make! My experiments in hybridising have hitherto been confined to the acute-lobed sorts of Berar Dacca and Assau; also with the [true] arboreum. The broad-lobed more herbaceous-habited common Indian Cotton, and which is much cultivated in Europe, comes a little nearer to the occidental type, and is under experiment this season. All the occidental forms hitherto operated on have interbred freely. Some splendid Cotton has been sent home from India, the produce of their seed, and which has been pronounced A 1 by the Manchester men. *R. T. C.*

Double-flowered Jasminum officinale.—I enclose you three flowers which are a sport from the common white Jasmine. I have put the sprig in as a cutting in order to preserve it if possible. Is this not a somewhat unusual occurrence? You will see they are perfectly double. I also enclose you a sprig from the same plant, in order that you may see from what variety it has sported. Is there in existence a double white hardy Jasmine? *H. Long.* [There is a variety recorded as having the flowers double, and as being very rare. We have never seen it. The ordinary Jasmine has but two stamens; but in your double-flowered sport there are four stamens, having, however, more of the appearance of petals than of stamens. Keep a watch on the parent, and on the sport. Eds.]

Anagallis cærulea.—I have recently found a small quantity of this brilliantly-coloured flower growing by the road-side about here. *J. Douglas, Kilkea Castle, Leinster.*

Flattened Stems.—One of the stalks of my Asparagus has grown about 4½ feet long, perfectly flat, 1 inch broad, and ⅛ of an inch thick; it is nearly of the same size throughout. The stalk is covered with short sprigs and blossoms. Is this unusual? Would the seed be worth preserving, should any form? About 10 feet from this plant a second is growing after the same fashion, but at present it is only about half the size of the one just described. *H. S.* [Fasciation is of very common occurrence in Asparagus.—Eds.]

Iresine Herbstii (see p. 708).—It is rather soon to set about determining the merits or demerits of this Iresine, which I am of opinion is far better adapted for the flower garden in autumn than when the sun is as powerful as it usually is in the early part of the season. My experience with it so far is satisfactory; here, on account of the variety it makes, it is regarded as an acquisition, for, as we bed out some 37,000 plants, it is very useful; but no kind of comparison can be formed between it and Coleus Verschaffeltii, as the latter is the admiration of every one who sees it, whereas the former is passed by without notice. Amaranthus is grown here by the thousand, and up to the present time is very beautiful, a condition in which it may continue for a few weeks longer. when I think the Iresine will begin to show off its colours to advantage. We shall then be able to judge whether those who condemned it, as they did so unmercifully last autumn, are right or wrong. *James Stewart, Nuneham Park, Oxford, Aug.* 1.—The remarks of your correspondeut "C." (see p. 708), in reference to two varieties of Iresine Herbstii, will, I believe, on close examination be found to be correct, if it is admitted that the Iresine and Achyranthes Verschaeltii are identical, as it will be remembered they were pronounced to be after the introduction of the latter. It is, however, just possible that the Achyranthes is distinct from the Iresine, although it so closely resembles it as to make any difference between them of little moment, as when viewed from a distance of say 30 feet, or even less, one cannot be distinguished from the other. It is certain that the Iresine presents the appearance described by your correspondent, but whether the circumstance arises from the cause just indicated or from a sporting character of the Iresine, I am unable to determine. *Thos. Simpson, Gardener to the Rev. Thomas Mills, Stutton Rectory, Ipswich.*

Armeria alpina.—I send you a specimen of a Statice or Armeria the specific name of which is unknown to me. It is probably a bright-coloured variety of what used to be called Statice Pseud-Armeria. It is usually grown in the Alpine frame. A friend at Bathgate, N.B., having no such convenience tried it in the open ground, and the soil and climate suiting, he has now 36 yards of it as an edging at the back of a narrow flower border, which in our Scotch fashion surrounds one of the square plots in his kitchen garden. In this position the plant is extremely effective as an edging. The place is high and cool, and the soil sandy and well drained. Can you assign it to its proper species? *J. S.* [It is Armeria alpina.]

Amaryllis Culture.—I cannot quite agree with "Cybister" on this subject. I differ from him as to soil, time, and mode of potting and general treatment. In reference to soil I have found nothing so good as sandy loam for these bulbs. For light loam one-third of silver or sharp road or river sand is sufficient. For heavy clayey loam one-half sand will not be too much. As to the time of potting, if I understand "Cybister" aright, he recommends potting the bulbs in a dormant state. From this I entirely dissent. The best time for potting is after the leaves have grown, say 3 inches. If carefully potted in that state it will add strength to the flower stems, and the greatest robustness to those which do not flower. The slight check which any may receive in the process may induce some also to flower that scarcely intended it. In that stage of growth the roots will also indicate to us, whether the plant requires more pot room or not. They will also at once strike into and extract the strength out of the fresh soil. Potted in a dormant state the compost is partially exhausted by repeated waterings before the roots grow much into it. In regard to the mode of potting, "Cybister" recommends that the bulbs be placed only half in the soil. It is better far to plunge them right up to the neck. Nothing enlarges the bulbs nor strengthens the flower-stems more than deep potting. Again, "Cybister" recommends the pots to be placed in a stove. Now, nothing stimulates the growth of Amaryllis like plunging the pots in a dung or tan-pit. They luxuriate under such treatment, throw up flowers of amazing size, and produce leaves of the length, breadth, and thickness of almost a Crinum amabile. In such quarters, in well-drained pots, and treated every other day to a watering of clear manure water, Amaryllises will far surpass any that can possibly be grown in ordinary stoves. Lastly, "Cybister" recommends drying them off in the coldest part of the house or even in a common greenhouse. This is the worst advice of all. To do them justice, they should enjoy the highest temperature in their dormant state. Only by such treatment can their blooming capacities be fully developed. In their native habitats they are almost roasted amid the burning sandy soils of a tropical dry season. And it is only by following in the footsteps of Nature that we can obtain that high maturity of bulb that lays the basis for such a profusion of blossom as can only reward perfect cultivation. It is also necessary to remember that the growing season of these bulbs is a rainy season, and that therefore they are great drinkers during their flowering and growing state. Further, their growth should be perfected as soon as possible after flowering, and instead of lingering about in a green state for months in a cool temperature, they should be put to rest as soon as may be after they are matured, and kept during the whole period of partial repose (they are never totally idle) in a high dry temperature of from 70° to 100° if possible. *Censor.*

Night Temperature at Osberton.—The following frosty nights, as registered by Negretti & Zambra's thermometer, placed facing the north, 3 feet 6 inches from the ground, occurred here during the past six months. April and May it will be noticed were remarkably cold, especially the latter, which has certainly been the coldest May ever registered here:—

Months.	No. of Frosty Nights.	Date.	Lowest Temperature.
January	21	6th inst.	17°
February ..	22	14th ,,	19°
March	23	5th ,,	18°
April	23	30th ,,	15°
May	28	4th ,,	18°
June	6	20th ,,	27°
July	4	18th ,,	28°

Number of frosty nights, 127.

During the past six months we have, therefore, had but 85 nights free from frost, independent of which the glass has often fallen to 33°. This, it must be admitted, is gardening under difficulties, and should such seasons continue, Mr. Ormson's "acre of glass" would, doubtless, be found to be a great acquisition. *Edwd. Bennett, Osberton Hall, Worksop, Notts.*

Orchard-house Culture.— It may seem almost presumptuous to criticise or find fault with so great an authority upon this subject as Mr. Rivers. However I venture to quote two passages from his valuable paper read at the Botanical Congress, and to ask for an explanation. Speaking of Peach and Nectarine trees in pots, Mr. Rivers says:—"The health and fertility of such trees is kept up by giving them every season some fresh food in the shape of rich compost formed of loam (if tenacious all the better) and manure thoroughly decomposed in equal quantities. This operation should be performed about the last week in October by removing the surface soil, generally a network of fibrous roots, to a depth of 5 inches, and replacing it with fresh compost of the description just given." Further on in the same paper, when adverting to the importance of a firm border for the same trees planted out in orchard houses, Mr. Rivers remarks, "So obnoxious is the disturbance of the soil to the roots of Peach and Nectarine trees, that I have seen in a house fine and well-grown half-standard trees quite bare of fruit, owing to the borders having been carefully dug 8 inches in depth in spring, every blossom having dropped without setting." Now, I wish to ask Mr. Rivers whether the 3 inches difference between 5, the depth recommended by him to be stirred, and 8 the depth actually moved, caused the fruit to fall? Or whether it fell because the ground stirred was a border and not the surface of a pot full of roots? The fact stated is so extraordinary, that it certainly demands a more explicit explanation. I have grown fruit trees both in pots and borders, and my experience in reference to fruit dropping is just the reverse of Mr. Rivers's. In pots they are constantly liable to drop; in borders, whether dug up or not, seldom or ever. So much is this the case, that except for the amusement of amateurs, and in very small houses, I disapprove of, and have given up the growth of fruit trees in pots. Planted out, the produce is generally finer and infinitely more certain. On three half-standard Peach and two Nectarine trees this season I have had over 100 dozen fine fruit. I have never yet seen an equal weight gathered from the same space in pots. These trees, which are now about eight years old, have never missed a crop except in 1860, and that I attributed to the sunless summer of 1859. There is one other point in Mr. Rivers's paper that does not agree with my own experience. I don't think that Peach and Nectarine trees will be grateful for the chalk. In this situation I am within 2 feet of the chalk, and these trees do worse with me on the walls than they have ever done before. I have ever found them thrive best on a sound, stiff, almost soapy clayey loam, resting on a cool bottom of clay or marl. On a subsoil of chalk or gravel, or with much of either in the soil, Peaches, Nectarines, and Apricots generally lack that vigorous stamina that denotes perfect health, secures fine fruit, and promotes longevity. The "ramming" system, too, had better be let alone, except on very soft spongy soils. Those of proper texture will speedily acquire sufficient solidity, and the roots attain the desired pressure without the risk of being torn asunder by such rough gate-post fixing. *D.*

Purple Laburnum.—I have a very fine specimen of this tree, which is the wonder of our neighbourhood. It has struck me that the tendency to revert into the common Laburnum may be owing, or at least aided, by the odd hybrid being generally worked on the Laburnum. It would be interesting to know whether it shows the same tendency when propagated by layers. *J. S.* [Can any of our readers throw any light on this question?—Eds.]

Correæ.—Can your correspondent "G." (see p. 705) give any account of a new species of Correa, stated to have been found on Mount Aberdeen, Gipps's Land, Victoria, and named by the discoverer, Dr. Mueller, Correa La Trobeana, in honour of the then Governor, Sir Charles La Trobe? Dr. M. says that it surpasses in beauty any of the tribe yet seen. I read of its having been found three or four years ago. *M. R.*

Seedling Jasmines.—A friend of mine has some seedling Jasmines, produced this year from seed ripened in the open air last season. Has such a fact, illustrative of the effect of two successive dry and warm summers, ever been placed on record before? *Isis.*

Rain Gauges.—I see an attempt at p. 635 of your Journal to solve the question why rain gauges receive a smaller proportionate quantity of rain when they are small than when they are of larger dimensions. I marvel greatly that any one who could put together a column and a half of letter-press, could not detect the fallacy which is the groundwork of the argument. In fact, there are three fallacies contained in the statement:—1. Is it a fact that small gauges receive less per square inch of area than large gauges? We want much more careful observation before we can accept this as a determined truth. I have in a steady and copious rain caught as much water, area for area, in a 3-inch glass funnel as in a 12-inch gauge. 2. Do the drops fall 4 inches apart in *all* showers? (I had almost said in *any*, except the beginning of a thunder storm.) 3. Who ever saw the drops fall on exactly the same spot, centre for centre, twice running? If it turns out to be a fact that on the whole large gauges receive more water than small, it will probably be found to depend upon the action of the wind. *J. S., Streatley Vicarage, July* 31.

Moles.—In a private letter just received from my brother, Mr. Robert Fish, of Putteridgebury, highly approving of my mode of catching moles alive, he says, "I can always set them adrift by placing tar in their runs." I hasten to place this teaser at the service of Mr. Read and others whose skill or patience may happen to be unduly exercised by the mode of extermination I have prescribed. *D. T. Fish.*

Cycas revoluta.—Cycas revoluta, called the Sago Palm in Rhind's "Vegetable Kingdom," was imported from China 126 years ago. The then Horticultural Society purchased a plant in 1837, and exhibited it in London. I wish to know how many times the Cycas revoluta has fruited in England. Can any of your readers tell me? *P. G.*

Foreign Correspondence.

Cotton in Egypt.—Perhaps some of your readers may be interested in knowing that the Cotton crops around the districts of Shoubra and Calahube are all looking well, and promise to yield more than the estimated produce. The plants have already attained the height of 5 and 6 feet, and are abundantly set with flowers and Cotton pods. I am glad to say that up to this period I have not seen any symptoms of the Cotton-grub, which proved so destructive to all plantations last year.

The weather for some weeks past has been unusually hot, the thermometer varying by day from 95° to 120°, and by night from 85° to 95°; some of the oldest Fallaheens who work under me, say, "they have never known a hotter season."

The Nile is now rising fast, and a better time is anxiously looked forward to, as the ascending and descending dews from this wonderful river prove so beneficial to all things, when spread over this dry and ancient land. I am also told that the Cotton crops on the Delta are looking remarkably healthy and well. *Wm. Chapman, Shoubra Gardens, near Cairo, July* 18.

Societies.

The Isle of Man Flower Show.—Everybody knows there is an Isle of Man, and where it is, but with the exception of those who reside in Lancashire and Yorkshire, how few have been there or know much about it! It is a favourite place of mine, and I go there as often as I can, for Liverpool is easily reached, and you can then go on board the Douglas, Snaefell, or that new and first-class boat, the Tynwald; and if the weather is not too rough, I don't know a pleasanter five hours or so on the water. The steamboat accommodation is first-class, and that is saying a great deal. Douglas is the chief place for inhabitants and visitors, and the bathing is good. During a short stay in July, I spent an hour or so in the bay rowing about, and as the water is perfectly clear and you can see to the bottom, I never enjoyed a more beautiful and novel sight than an hour's peep at that great aquarium of Nature—the sea—with its multitudinous forms of Seaweed, many of enormous size, and many of wondrous beauty. A bright sun reflected a clear light on the Seaweeds, and the effect produced was very far beyond my power of describing.

Close by Douglas is a very beautiful spot, the Nunnery grounds, in the occupation of J. C. Goldie Taubman, Esq., who generally throws his grounds and garden open to the public for the Flower Show, which by the by is the only Flower Show in the island. Here in these grounds is a fine old specimen of the Cork Tree, Evergreens, and Turkey Oaks of great size, and some good specimen Coniferæ, and very fine Portugal Laurels. There is a pretty and extensive flower garden, and a good wall of Pear trees.

The High Bailiff, Samuel Harris, Esq., has a charming little garden at Douglas, a *multum in parvo* place, and from the terrace, a descent through fine shrubs, huge Fuchsias, 20 to 30 feet high, rockeries, where the Osmunda regalis and other large Ferns abound, brings one to the lower garden and a bijou

croquet ground. Here are to be seen in the open ground enormous yellow Calceolarias, as big as Gooseberry bushes, which have been unprotected for four or five years.

The climate of the Island is very mild in winter, and equable as Dublin, Bath or Torquay.

The botanist has find plenty of work in the Island for it abounds with wild plants, and in June and in the early part of July they are in full beauty. There are several Ferns, and the Osmunda regalis and lordly Matchdhall Corn grow on the rocks on some parts of the coast. The meadows abound with Orchis and the Cotton Reed or Grass.

I had often heard of the Sea Kale growing wild amongst the rocks on the coast near the Calf of Man, and after a most enjoyable drive to Peel, a great herring-fishing place, and a stiff pull to the lighthouse, we got to the top of the cliff, and at the bottom, amongst the rocks, were great masses of Sea Kale sure enough. The journey down the cliff was a holding day was not the easiest, and not without danger; but to see the Sea Kale growing luxuriantly there amongst the rocks and pebbles, and frequently covered with water, well repaid the trouble of getting there and back. Everybody who visits the Island should make a point of visiting Peel and the old castle ruins, and above all its boundless, and I have creak with the old veteran. This forms a good drive, well to see another turn out, drive to Port Erin, a charming little spot, where there is a good hotel and a beautiful little bay. Mr. Milner regards, certainly the *safe* man of the Island, for have not his fire-safes made his name famous throughout the world? The tide out, and what an enjoyable stroll on the sands, picking up those lovely little moss-like Seaweeds of bright pink, green, and other colours. To see these is admire them, and then on round to Castletown and its House of Parliament for the Island, and its castle, where may I never be anything but a visitor, and then back to Douglas by the Speaker to the House of Keys—pretty places, which I hope some day to inspect, and then by the old Tynwald Hill, and between these places seeing the finest lot of window plants in cottage windows I have ever seen, or than can easily be seen. How the cottagers—chiefly fishermen—contrive to grow such beautiful plants in such queer windows, is a mystery to me. One thing is certain, they deserve immense credit for doing so, and I thoroughly enjoyed seeing them.

I was pleased with the Flower Show, for it was better than I expected it would be. Mr. Macdonald, the gardener at the Nunnery, showed a capital collection of fruits, and Mr. Hinton, gardener to the High Bailiff, showed some monstrous British Queen Strawberries; in fact, all the fine Strawberries were shown. Some of the best done Pelargoniums I have ever seen at a country show were those exhibited by Mr. Corbett, gr. to Captain Thelluson, neatly grown plants, with plenty of fine flowers; and Mr. Hinton had a good Lilium auratum, a well-bloomed plant of the pretty Mitraria coccinea, and some good Roses. Mr. Monroe, gr. to the Speaker, and Mr. Middleton, gr. to W. Beckwith, Esq., also exhibited capital Roses. Mr. Taggart, gr. to Deemster Drinkwater, was also a very successful exhibitor, and his Mona's Pride Potatoes were really fine. Mr. Thelluson, gr. to his Excellency the Governor, was also very successful. The cut flowers of Lilium auratum were very pretty, and a most beautifully grown and bloomed plant of Dendrobium [illegible] Mr. Spittall's Nursery Douglas, was very much admired. It had been grown finely, and its numerous blossoms were huge and [illegible] The ladies of the Island did not omit warm praise to the ladies, who exhibited so many charming bouquets of wild flowers, and what a pretty group they formed!—and who could help admiring the beautiful groups of the smaller Seaweeds, so tastefully arranged, and so beautiful in their natural colours.

The Committee deserve every encouragement from the gentry of the Island, for the standard of gardening in the Island will assuredly be raised by encouraging this Exhibition, and another year I hope there will be a marked improvement in the Stove and Greenhouse Plant department of the Exhibition. *W. D.*

Notices of Books.

A New Arrangement of Pharmaceutical Plants, &c. By Benjamin Clarke. Folio, pp. 39, tab. viii. London: Williams & Norgate, and Hardwicke.

He who sits down to draw up a new arrangement of flowering plants must needs be a bold man. If he be a mere bookworm, any arrangement he may propose, however neat it may appear on paper, will infallibly break down when tested in the work-room. If he be a working botanist, the field is so extensive that it is next to impossible that he can have that full, copious acquaintance with details, and that broad, comprehensive, yet discriminative grasp of facts, which are necessary for the construction of a new system of arranging the several groups of plants. Hence it is that there are so many exceptions to the best and most useful schemes of classification yet proposed—exceptions, too, which tempt the inexperienced to work out new schemes for themselves; schemes which, being generally founded on far too narrow a basis, and without a just idea of the relative importance of the means of discrimination relied on, fail to attract general attention, and soon pass into oblivion. When, however, a method of arranging the several natural groups is propounded by one, proved to be a keen observer of facts, and who is well known to have been patiently elaborating his system for many years, it is sure to command attention. On these grounds, as well as for their intrinsic merits, Mr. Clarke's tables and the accompanying observations will excite much interest among botanists. This is no place for entering upon any critical examination of Mr. Clarke's views, but we may briefly allude to one or two of the salient features in his proposed new arrangement. He lays very great stress upon the epigynous position of the stamens, considering that the plants characterised by this arrangement, form a group as distinct from the great mass of Exogens, as the latter are from Endogens. Jussieu considered the epigynous structure as less important than the apetalous, polypetalous, and gamopetalous sub-divisions, but these latter were speedily found to be comparatively of minor importance, and among those who have most insisted on the value of the epigynous structure must be mentioned the late Dr. Lindley, who in the "Nixus Plantarum," and more especially in the "Vegetable Kingdom," assigned to it a very high rank.

Another feature of Mr. Clarke's arrangement is the importance given to the disposition of the carpels, a point to which he is known to have paid very great attention—not more than it deserves, probably, but one open to this objection, that it is one not readily appreciated by the student or the amateur. This objection applies with even more force to the relative position of the raphe and of the other parts of the ovule. This may be very constant, it may possibly be significant of some at present obscure physiological diversities, it may be an hereditary conformation handed down throughout a long series of generations, on all of which accounts it would be valuable as a diagnostic mark, but it is a character which is not always easily made out, even by the accomplished botanist, and therefore on the score of practical convenience is likely to receive less attention than its intrinsic importance demands.

The reader will find in the introductory notes to Mr. Clarke's tables a great number of curious and valuable observations, which will supply much matter for consideration to the student. We are glad to see Mr. Clarke ranging himself among that gradually increasing number who consider that the differences between stem and leaf are not so absolute as is generally supposed; but, not wishing to plunge into transcendentalism in a notice of this kind, we spare our readers the infliction, and commend Mr. Clarke's important work to those interested in the study of botanical affinities.

The Journal of the Royal Horticultural Society of London.

Since our last notice of the new series of this publication two numbers have been issued, that for April illustrated by two plates representing as many species of the remarkably curious miniature Orchidaceous genus Chytroglossa; and that for July by a figure of a supposed hybrid Fern from Philadelphia. The species of Chytroglossa are of very diminutive stature, with distichous fascicled lanceolate leaves, and zigzag racemes of small but beautifully marked flowers, which in C. Marileoniæ are yellow, with two large blood-coloured spots and numerous specks on the lip; and in C. aurata are more orange-coloured, with numerous purple spots. Both are natives of Brazil. The Fern plate represents Asplenium ebenoides, a curious North American Fern, of which it is stated that only a single plant has been found, and which it has been supposed is a hybrid between Asplenium ebeneum and Camptosorus rhizophyllus. It has a pinnate frond with the apex caudate and viviparous, and the pinnæ unequally elongated and sometimes viviparous; but we fail to see the evidence of hybridity, the new Fern not only wanting the anastomosing venation, but the irregular distribution of sori characteristic of Camptosorus, in which latter respect the figure of Camptosorus given for comparison is faulty, the sori being rather closely placed in scolopendrioid pairs, over the whole under surface of the frond. Among the more interesting papers are Professor Schultz-Schultzenstein on the Nutritive Constituents of Water; Mr. Moore on Judging New Plants, Professor Reichenbach on the Genus Chytroglossa, Mr. R. Thompson on Peach and Nectarine trees at Chatsworth; Mr. Standish on Hybridising Fruits; and the Rev. M. J. Berkeley on two species of Rudgea. The latter consist of the fine stove shrub which has been exhibited under the name of Psychotria leuccophala, but which proves to be the Rudgea macrophylla of Bentham; and of the new Psychotria exhibited at the International Horticultural Show by M. Linden, to which the name Rudgea nivosa is given. There is also a short note on the state of Horticulture in Hungary, by Mr. Miles Berkeley, which we shall hereafter transfer to our columns.

Report of the Colonial Botanist for the Year 1865. Cape Town. Fol., pp. 119.

Last year we called the attention of our readers to the labours of the Colonial Botanist at the Cape of Good Hope, as illustrated in his Annual Report, presented to the Colonial Legislature (1865, p. 893)

That Report was devoted to the examination of a great number of matters important to the agriculturist, the horticulturist, and, indeed, to all in any way interested in the natural products of the Cape, and in the means of turning them to good account. The subjects treated of in the present Report are necessarily to a great extent similar to those which were referred to in the preceding one. There are, however, "annexures" on the Potato Disease, on Rust in Cereals, on Diseased Orange, Apple, Peach, and other trees, which embody a great deal of valuable information culled from the most trustworthy sources, and supplemented by sound practical observation, and which cannot fail to be of great service to the colonists and others most favourably placed as regards books or other sources of information. To such the classified table of contents, which we are glad to see has been adopted at our suggestion, will be a welcome feature.

Florists' Flowers.

The Stock.—Looking over very recently a large collection of Stocks, embracing all, or nearly all, the many divisions into which the German growers have arranged them, together with some raised from seeds of home growth, comprising together about a quarter of an acre in extent, I could not help being struck with the fact that many of these divisions are not worth cultivation, and also that of those that are, many of the so-called "colours" could be dispensed with. If I obtain a collection of German Stocks of 24 or 36 varieties, there are only three or four that can be termed distinct colours, and worthy of cultivation. For decorative purposes the large-flowering German Ten-week Stocks are among the best, and to these may be added a very distinct class, known as the Giant Ten-week, and also the Pyramidal Ten-week. The former of these has a branching habit, and is of vigorous and robust growth, throwing a profusion of flowers from each of the many shoots they give forth. The Pyramidal and Giant Ten-weeks are of taller growth, and produce close large spikes of flowers, the base of the pyramid being formed by the small lateral shoots. The Pyramidal class is more compact in regard to habit, and it does not grow so tall as the other. For exhibition purposes the two last are unrivalled, and so fine can they be produced when cultivated for show, that it is a matter for regret they are not subjects of exhibition when in bloom. The foregoing are summer-flowering varieties.

The autumn and winter-flowering kinds comprise the Cape, Brompton, Emperor, and Queen; but the difficulty of wintering them tends to restrict their growth. The Cape Stocks, known also as the Tree Stocks, are but little grown; the Emperor is a robust-growing Brompton; the Queen grows very much like the Brompton, but the under part of the leaves is woolly, and not smooth on both sides as those of the Brompton.

The Intermediate Stocks, both scarlet and white—the latter, however, being of taller growth—are for spring and early summer flowering, and where a good strain of the former colour can be obtained, similar in quality to that generally seen in Covent Garden Market, they are very valuable for decorative purposes. I have recently seen what may be termed an annual German Intermediate Stock that was selected from some dwarf Bouquet German varieties. It blooms later than the summer Stocks; the habit is very dwarf and vigorous, and the flowers are produced in profusion. The colour is bright crimson.

A great quantity of Stock seed is saved in England, and of as fine quality as any that can be imported. I have seen blossoms of the large-flowering German and Pyramidal Ten-weeks raised from seed harvested in England that could have held their own against the finest strains of German production, while the percentage of double flowers is invariably larger from home-saved than from imported seed.

To facilitate getting seed, and to secure for it full development, nearly or quite one-half of the seed spike should be removed. The plot of ground on which the plants are grown should be changed yearly. Entirely new ground, and especially newly-broken pasture land, produces remarkably fine flowers if other conditions are favourable.

The seed of summer-flowering Stocks, which are the most popular and also more generally grown, should be sown the end of March or April, in a cold frame, the soil of which has been well prepared, and raised near to the glass. Watering and ventilation are two important points, the latter especially, as mildew will sometimes devastate a crop of young plants. The ground to which they are to be transplanted should be trenched during the winter, and previously to planting out a good dressing of well-rotted manure should be forked in. Advantage should be taken of showery weather during which to transplant, and when this is done, frequent sprinklings should be given with a watering-pot to settle the fine roots. Manure-water can be advantageously applied when the plants are strong enough, especially if flowers should be required for the exhibition table.

The difficulty of wintering the Brompton Stocks operates to deter many from attempting their cultivation. Even in the case of an unusually mild winter like the last there was a great slaughter in many localities. The situation in which they are to grow should be high, dry, and well sheltered from cold and inclement winds, and rain as far as possible. When the work of transplantation is being done, great care should be observed that the plant be removed with good balls of earth. Some growers lay in their plants in a slanting direction, as they do Broccoli, at the commencement of the winter months, and by this means save many of them from destruction. Low and cold situations should be avoided, unless warmly sheltered, as excessive moisture is even more dangerous to the plants than hard frost. *Quo.*

The Apiary.

A Nut for the Scientific.—This has been a fine season for bees, which are extensively cultivated in Ayrshire and Galloway. In the neighbourhood of moors, particularly, they thrive well, and the Heather gives the honey a high and peculiar flavour. The old straw skep (hive) is still freely used; but the necessity it involves of suffocating the bees with sulphur to get the honey, has led to an increasing use of bee-boxes with compartments to enlarge the accommodation, prevent swarming, and enable the owner to withdraw part of the honey, leaving the bees uninjured. But, of course, this system requires a regular bee-house, inside which the boxes are set, with the entrance outside for the bees, and glass windows (with little wooden shutters) on the boxes, by which the progress of the bees can be watched inside the house. The famous Stewarton boxes are very suitable for this system, one being added over the other as the lower ones are filled, a slide opening an aperture to let the bees ascend to the empty box. We believe it was Mr. Higbet, Newton, formerly ironmonger, Ayr, who, ingenious in many things, invented a different form of box that suits very well. This is a centre box with two wings. The honey is never taken from the centre box; but as soon as the glass window behind shows it to be full, a slide pulled out lets the bees into one wing, and this filled, the slide in the other wing is opened, and the bees fill it. The honey in the first wing is then removed, and one wing always kept empty. There is a little trouble, as with the Stewarton boxes, in getting away the full box, for the bees don't willingly all leave it. Some experienced hands can sweep out the bees with a feather without being stung, but most bee-masters have a bee-proof dress with glass spectacles in front of the hood, that completely protects them at all points. Occasionally it has been tried to ley down the full box at some distance from the hive,

in the hope that the few bees in it would depart and join those in the hive; but these wonderful insects are not so silly; on the contrary, they summon all the bees from the hive, who in a few hours will carry back all the honey to the main hive. The advantage of these boxes is, that the bees, as long as they have spare room, never swarm. Indeed, we have a well-authenticated instance of a swarm that settled under the slates of a mansion house in Carrick, and having plenty of room amongst the joisting under the roof, defended their position against all comers for years; and when at last they were smoked out, the honey was actually lowered down in buckets! Some time ago it will be recollected that the Rev. Dr. Cumming took to Bee Culture, and wrote a good deal about it, which experienced English bee-masters pronounced to be as great "bosh" as his prophecies. Indeed the ways and workings of bees are mysterious enough to baffle the most scientific observers. There is no doubt much nonsense written about them. For instance, the queen is popularly known as a very "swell" individual, very much larger than the common bee, and of brighter and varied colours. This is very poetical, but quite incorrect. The queen bee is precisely the same colour as her subjects, is scarcely any larger, and can be distinguished from them only by being a little longer in the body. But there is sufficient of the marvellous about the bee kingdom without necessitating any romance. Take the act of swarming for instance—the highest flight of science, the electric telegraph, is simplicity itself compared with this extraordinary process. The first swarm from the straw skep usually alights on a bush or branch of a tree. Before swarming, however, some of them collect on the front board of the hive, to the edge of which about 20 or 30 of them cling; the others pass over them and hang on by each other in clusters till the ball is often as large as a man's two fists. When all is ready and the royal command is given, they all come pouring out in a stream as thick as man's wrist, and take a turn through the air. Suppose them to settle on a thorn 3 inches in circumference, their weight, for the cluster is as big as a boy's head, will bend the thorn stick nearly to the ground. Comparatively few of them have hold of the branch; the rest all hold on by each other. How can those who have hold bear the weight of the mass? How long would a man hold on by the branch of a tree, if the weight of 300 men were suddenly attached to him? And yet we suspect every bee with a hold sustains a much higher proportion of weight in the cluster below. This is one of many mysteries of Creation that mocks at human science. *Ayr Advertiser.*

[In the foregoing extract which has been sent to us for insertion, there are a few little matters which seem to call for some remark. The honey for which Ayrshire is so justly celebrated, is, we presume, not derived from the heather. Honey from that source is not generally much esteemed, though extremely useful for a late supply for winter consumption by the bees. The splendid boxes of comb sent from Ayrshire to the London markets are chiefly filled during the white Clover season.

We should be very glad to find the use of the old straw skep to be gradually decreasing in our district; there is no doubt that the system of management commonly pursued is a very unremunerative and wasteful one; but at the same time it is certain that the majority of bee-keepers among the poorer classes are really too deficient in intelligence to successfully adopt any other form of hive or mode of management. Of the Stewarton hives much has lately been written in the columns of this Paper.

The form of hive described as having been invented by Mr. Highet, seems to be nothing more than a modification of Nutt's principle. This has been tried largely in this country, with exceptional success, but has not been found to succeed. Hives on the collateral system of arrangement have been worked in our own apiary, both at the commencement of our bee-keeping career, and within the last year or two. While the storified hives adjoining have been supplying us with large supers of honey, the collateral hives, though equally populous, have been wholly unremunerative. Occasionally, however, bees in a Nutt's hive will do wonders. We have seen 112 lb., in two side boxes and a super, taken from one of them. Bees are certainly very uncertain and capricious little creatures; a mode of treatment which may one year prove remarkably successful, may, for many subsequent seasons, be a total failure. The writer of the article in the *Ayr Advertiser* is wrong in supposing that the proper way of managing this description of hive is to use only one side compartment at a time. The communication with the second wing is usually opened when the first side box is about three-quarters filled, otherwise there would be increased danger of swarming. It is a great mistake to assert that these boxes (however well managed) will succeed in preventing the bees from swarming. There is no certainty in this respect.

Bee dresses may be made without any glass spectacles. Large-meshed black net, or the inner stuff known by the ladies as tarlatan, made in the form of a bag or small sack, dropping over the hat, and long enough to tuck in under the collar of the coat or waistcoat, is all that is necessary, the vision being almost unobscured.

Freeing honey boxes from the bees is frequently a troublesome process; our supers being large enough when inverted, to permit of an ordinary straw hive being placed over them, we always drive out the bees either by tapping the super itself, or if of glass, drumming on a board or table on which it rests. Since adopting this plan we have experienced but little trouble.

Dr. Cumming's fallacies promulgated in his letters to the *Times*, were thoroughly replied to and exposed at the time of their appearance. As the writer of the article in the *Ayr Advertiser* says, "There is no doubt much nonsense written about bees—in fact much that is very poetical but quite incorrect." But does not he himself rather draw on his poetical fancy when he talks of the swarm issuing at the word of royal command? There is much in the whole act of swarming which seems uncertain and liable to be modified by accidental influences, but on that subject we cannot now enlarge.

A queen in the prime of life is a very different looking creature from a common bee. We have constantly noticed queens of the ordinary English species to be not only larger but of a most beautiful golden colour. The pure-bred queens of the Ligurian variety are frequently very beautiful, and of large size.

In the query which concludes the paper there is matter for a long chapter. The construction of the bee is one well adapted for the purpose of hanging in clusters and of supporting individually a great weight. The double hook attached to the feet, and the large roughly articulated joints of the legs, seem all designed for this intent. How many bees could be sustained by one is a problem not yet solved.]

Garden Memoranda.

Sandringham (*continued from p.* 712).—The selection of a garden site forms one of the most important considerations in garden architecture. There are so many correlative and countervailing claims ever forcing themselves upon one's contemplation that to hit upon a suitable spot is no easy matter. No person, certainly, is more capable of forming a correct estimate of what is really wanted, than a skilful and accomplished gardener. His whole life and the bent of his inclinations has been trained more or less to deal with matters of this kind. He requires to look to the natural position of the ground, to estimate any little engineering difficulties in the way, to study and select a favourable aspect, to mound the land, and eliminate the results. Besides all this, he must consider its relative position to the mansion, and, if possible, place it so as not to destroy the amenity of the pleasure grounds; while, to economise labour, he is compelled, from the large supplies which must be daily conveyed to the kitchen and the pantry, to limit the distance between the two to the lowest minimum. Mr. Carmichael in this respect has been exceedingly happy in his selection. The garden is situated in one of the most alluvial spots that could be found on the estate, and its proximity to the mansion is all that could be desired, while it is sufficiently shut out from the dress portion of the landscape. With the materials in hand in this chosen site he has been enabled to complete the formation of the garden, and the various quarters of ground of which it is composed, at a very trifling expenditure. The process of remodelling ground so as to produce a princely garden is no small one, and requires attention. There is, first, levelling to an uniform surface, then draining, then road and walk making, and last, but not least, the furnishing by some means or other of from 24 to 30 inches of good loamy soil for yielding satisfactory crops. Strange to say, in the corner of this parallelogram, which now forms a walled garden, measuring 900 feet in length and 420 feet in width, rested a mineral deposit of marl and chalk, sufficient not only to macadamise all the roads and walks in connection with the garden, but to manure the ground itself. The natural surface consisted of a good sandy loam of considerable depth, and what with the surplus soil taken from walks, roads, and other tributaries in connection with the formal divisions, and carted on the surface, increased the depth to an excellent tilth. The physical and chemical properties of the soil were completely revolutionised by the introduction and incorporation of the marl, which will tell a tale for years equal to any supply of farm-yard manure, and the crops amply testify the value of its presence now; although in the end I believe it will be a manure having a tendency to exhaust the soil. As a corrective it is an admirable ingredient, and if ever Mr. Carmichael had any doubts as to its efficacy, they have long since been dispelled. Like everything else, too much of any one ingredient may have a neutralising effect, as one of the quarters which, by way of experiment, had been over-dosed, refused to yield a healthy and vigorous vegetation. Any one contemplating or engaged in operations of a similar kind will at once see the importance and value of utilising a spot of this kind; as it is a question of saving so many hundred pounds on simple labour alone, and a far more satisfactory finish in the long run.

There is one very striking novelty in the laying out of these gardens which merits more than a passing notice, and which at once engages the attention of all who know anything about gardens and gardening. A broad carriage drive leads from the principal entrance gates, already noticed, up a straight avenue to the kitchen garden. Instead of stopping short here, as is often the case, it is continued right round the garden from the entrance gate on the west side, showing a fine bold sweep in a graceful line of curvature from the centre of both extremities. It is both novel and pleasing, striking at the root of our too formal squares and narrow walks, and the Princess of Wales is so appreciative of it that it forms a frequent resort when her Royal Highness is taking a carriage "outing." The only fault in the arrangement, if fault it be, is in the centre walk being rather out of proportion with this spacious drive, which is partly necessitated by the breadth of ground intervening, and the propriety of keeping to due proportions. The space is apportioned thus—40 feet for a wall border on each side; 15 feet for the carriage drive on either side; 100 feet on each side of an 8-feet centre walk for the quarters allotted to vegetables, which are 75 feet long, and give a spacious scope for cultural purposes. These quarters are divided up with narrow borders for fruit culture, and the trees, both Pears and Apples, are little models of adept cultivation. They are grown on the pyramid system with the branches tied down to hoops, and the leader not stopped until at least 12 feet high, something after the style adopted by the late George McEwen at Arundel, and which seems so far to have been successfully carried out by Mr. Carmichael. There can be little doubt but that the depression of the sap caused by this contortion will have a good effect in controlling a plethoric habit, and inducing more regular fruit-bud formation. Space, too, will be economised, and the gain will be in favour of an increased production and a greater variety. The trees here are planted 12 feet apart. The wall trees are equally well managed, great care and pains being evidently taken to set them on the "right road." Of course it is premature to speak upon the varieties selected, the position and site which each occupy, by way of anticipating success or failure. A very instructive chapter could be written upon that point two or three years hence. There can be only one opinion, however, as to management of training, &c., so far as it has gone (and it includes Peaches, Apricots, Plums, Cherries, and Pears, running over nearly 3000 feet of wall, lineal measure), and that is one of unqualified approval. The wall is 14 feet high, and is a very substantial and imposing one.

Turning our attention to the vegetable department there are a few things which are particularly noteworthy. Celery is so much in demand that it requires an acre of ground to supply the wants of the *cuisine* department. Among the many sorts put under trial none appears to give the same satisfaction at the Royal table as the Sandringham White, which is certainly a very clean crisp variety, blanched from 12 to 15 inches, and not a sort liable to "bolt" or run to seed prematurely. Other very good things in the way of Lettuces are the Stanstead Park and the Stirling Castle, which is a famous hardy sort, and completely beating out of court the Hardy Hammersmith, by being far more palatable both to look at and to prove. Mr. Carmichael sows from 20th of July to 1st of August, and has an unlimited supply till the first spring sowing makes its appearance. In passing a large breadth of Seakale, Mr. C. remarked that the proper forcing of that vegetable was not thoroughly understood, and that to have Seakale at its best it ought to be managed thus:—Take a quantity of spare soil, cover up to the depth of 12 inches as many beds or plants as are requisite, and then apply a thick covering of fermenting manure; the difference in the quality of the Kale from that forced after the usual methods is something remarkable. Asparagus was wonderfully luxuriant, growing in single rows, and not a bad plant observable, which is partly owing to the tilth and the process of cultivation to which it was subjected. The *modus operandi* at Sandringham is to sow a plantation every year, and transplant the following year, first trenching 3 feet deep, and planting 3 feet apart, manuring heavily with farmyard manure, which, as most practical men know, is a valuable auxiliary for promoting fertility and exuberance.

On the inside of the north wall stands a range of forcing-houses, either about or over 300 feet in length, which would be an imposing range in a small garden, but placed in the centre of a wall 900 feet long certainly looks dwarfed in its proportions. They are so constructed, however, that a wing on either side could be added, without destroying the grace and harmony of the whole. The range is much after the same style as that of the Duke of Hamilton's at Hamilton Palace, an engraving of which has already appeared in your columns. The wood, glass, and hot-water engraving we found on inquiry had been executed by the same enterprising builder, Mr. Jas. Gray, of Chelsea, and is a capital sample of work manship, plain and substantial, a capital sample of work manship, plain and substantial, the interior lacks nothing in the shape of convenience for Vine and Peach tree culture. There is no extravagance in the style of finishing the houses, but they bear the impress of durability, and are such as any nobleman or gentleman with due regard to economy might readily possess. The principal Vineries are 50 feet by 18 feet, easily managed with heating power, and presenting a surface capable of yielding a large return. The Vines have been planted thick with the view of cropping each alternate one before the resources of the permanent roots were called into full bearing play. Mr. Carmichael's management with regard to planting and pruning differs from what we are accustomed to see, and from considerable experience both in the northern and southern portion of the island his success entitles him to speak with confidence. His ideas and practice are clearly in favour of thick planting and close pruning of the principal rod, upon the plea, in the former case, that the more roots the better fruit, and that if the main rod is allowed too much play it is at the expense of the lower eyes, which he argues can never be so vigorous and fertile under any after management. According to Mr. Carmichael's plan it would take a Vine at least six years to be in full bearing order from bottom to top, whereas a very general practice is to attain this in three or at most four seasons. It will thus be seen that growers, however successful they may be, differ in detail, and that there is more than one royal road to prosperous culture. Vines and Peaches were in capital health, and full of promise. The method of ventilation is very complete both at top and bottom, plenty of air being admissible at all times. A very good mode is introduced here by way of auxiliary for admitting air at night. In the back wall over the hot-water pipes are set several ornamental cast-iron gratings, about 30 inches long by 14 wide, which communicate with a hollow vacuum in connection with the houses. To this vacuum are fitted wooden shutters, hinged and manufactured after the usual method, so that a greater or less ventilation and air circulation can be introduced among the Vines. The importance of some such contrivance as this for both early forcing and for "finishing up" can scarcely be overrated.

The garden offices, comprising tool sheds, fruit room, gardeners' lodge, Mushroom house, &c., are ranged along the back of the houses on the dark side of the north wall, as is usual about all garden establishments. They are plain, commodious, and comfortable. The Mushroom house has three good broad shelves at back, and two in front supported on ornamental cast-iron supports, and appears to suit the end for which it was constructed. It is heated by a single flow and return pipe with open evaporation troughs, and the pipes sunk in the centre of the passage, with an iron grating so as not to obstruct the passage upwards of heat and moisture. The fruit room is 50 feet long and about 15 feet wide, with a spacious open centre. Tiers of lattice work shelves surround the building. The fruit is covered with clean well "drawn" Wheat straw, which forms a capital non-conductor, warding off frost with very little fire-heat in winter, and controlling excessive evaporation in summer. There are also very commodious cellars for roots under ground, which preserve such things as Carrots, Beet, Parsnips, and such like, in better condition, and to a longer period than most other modes.

The next thing engaging our attention is a range of span-roofed Pine stoves; it comprises five houses on a square block of ground, each 80 feet long, making a handsome range of 400 feet. Such a range as this is capable of accommodating a very large stock, and every available space was occupied. The fruiting plants were making some excellent "shows," and comprised Queens, Smooth and Prickly Cayennes, Providence, Hurst House Seedling, and Enviles. Some of the plants were planted out into the border, and evidenced an unmistakable show of vigour. One or two handsome fruit of the White Providence were remarkable for symmetry, both of pips and crown, the fruit being eight pips deep, and quite six inches across, each a splendid centre piece or crown for "dinner-table decoration" purposes. Cayennes and Queens were equally praiseworthy. The succession stock promises to eclipse the present fruiting lot, and, judging from what is forthcoming now, we may have agreeable and sanguine anticipations of Mr. Carmichael's success as a Pine grower. The most delightful thing of all to see in a collection of this, or any other kind, is cleanliness, and the want of it in Pine growing has been fatal to more than one collection. It is all but impossible to get rid of scale once it puts in an appearance, and hence the lynx eye of the clever Pine grower when he is adding additional sorts to his collection.

But what of Strawberry forcing, when we are told that it requires 5000 pots to supply the Prince's table, before those out of doors are fit for use? Every available space in these Pine stoves was provided with shelves for their accommodation, and the fruit was hanging in rich clusters over the side of the pots—a beautiful spectacle, and a suggestive memento of the tale of the fox with the sour Grapes. The Prince's table had been continually and copiously supplied from the 18th of February. The sorts grown here with success may be named for the guidance of others in quest of information. The first and foremost in repute is Eclipse, a very handsome free-bearing sort, of exquisite flavour, and a decided beat, as Mr. Carmichael testified, upon Keens' Seedling, which is saying much. The flavour and colour are decidedly better, and it is said to be fully as good as an early forcer. Of course Keens' Seedling is also grown in quantity, which enables the experimenter to give a more accurate opinion. Premier is a capital sort, and used to be a favourite of Mr. McEwen, of Arundel, who was an authority in these matters; it is a very fine palatable fruit. President is also a noble variety; and Marguerite could scarcely be excelled for profusion of fruit and size of berry, but its flavour robs it of the character of general excellence. It no doubt will make an excellent market gardeners' Strawberry, like the Wizard, but an aristocratic appetite would be inclined to pass it aside. The Prince is very fond of the Hautbois, which is grown in quantity out of doors with success. A very good "wrinkle" for those interested in Strawberry culture is the Sandringham plan of planting out the runners off forced plants for an out-door crop, which gives a far more abundant yield. Indeed, Mr. C. finds the forced plants the following season give finer fruit and a larger crop than others of similar age not forced. French Beans were successfully forced in quantities in some of the spare divisions: so were also Cucumbers in the trellis immediately above them.

Pot plants are not much cultivated, owing to all the space at disposal being fully occupied with forcing fruits and vegetables. Some useful flowering Epacris and miscellaneous plants suitable for indoor decoration were growing away in a detached house, among which we particularly noticed and admired the double-flowering Deutzia (crenata flore-pleno). To sum up in a word, a very great deal has been accomplished in a very short time, and it is only due to Mr. Carmichael, who is a most anxious and energetic horticulturist, to acknowledge his general efficiency, to admire his stolid perseverance, and to express the writer's obligations for his general courtesy in detailing the operations, and showing the various works over which he has had the superintendence and control. *A.*

Miscellaneous.

Lime for Peaches.—The value of lime in the culture of the Peach, the Vine, and indeed all fruit trees, has not yet been fairly estimated. Lime appears in soils in the form of carbonate of lime, or chalk. Without the admixture of other substances essentially chalky soils are very unfertile. A chalky subsoil is unfavourable to fruit culture. Calcareous soils absorb moisture, and dry up with equal rapidity. Calcareous matter is, however, of the highest necessity in Peach culture. Its absence is at once perceived by the falling of the fruit at the period of stoning [?], because carbonate of lime constitutes a considerable portion of the stone. Sand and clay are the appropriate ingredients to mix with chalky soils, so as to render them more firm, yet permeable and fertile. Clay destroys the whiteness of the chalk, which is unfavourable to the due absorption of the sun's rays. An incident strongly corroborative of what has been advanced respecting the value of lime, occurred lately at Sawbridgeworth. The soil of that nursery is very largely mixed up with comminuted chalk: the water is therefore impregnated largely with carbonate of lime, and its effects on Peach trees and Vines in pots have this year been remarkable. The trees and Vines were copiously watered, and a thick deposit of lime was found adhering to the drainage. The roots were finely developed, while vigorous and healthy growth was visible everywhere. Other experiments have fully established the value of lime. The border for Peach trees should always have a good slope. Its width, for walls 10 feet high, should be about 5 feet, provided this space is never encroached on. A rich calcareous loam, of an unctuous texture, soft to the touch, made pervious to air and heat, is a favourable soil for the Peach. Manures should be gradually forked in, but the roots should be so near the surface that forking 3 inches deep would be dangerous. These Peach-borders should not be further disturbed save for weeding. Although thus near the surface, roots can be readily protected from the effects of evaporation during the summer by mulchings of litter, and, in the same way, from excessive cold. Calcareous matter (old lime rubbish, powdered oyster-shells, and broken bones), should be added to the extent of one-sixth of the soil. Manures composed of well-rotted vegetable refuse, intermixed with stable-droppings, allowed to stand for some time before using, and well turned fortnightly, with lime and soot intermixed, are excellent. *Bréhaut's Modern Peach Pruner.*

Calendar of Operations.

(*For the ensuing week.*)

In order to maintain a satisfactory amount of gaiety in the conservatory, a stock of succession plants must be kept up. Any, therefore, in pots, which it is desirable should be grown quickly, may now have a shift. It will not, however, be advisable to give them large pots at this season, as whatever wood they make must be ripened; and, as this shift will be all that will be required during the winter months, the drainage of the pots should be ample. When established, a free open situation should be selected for them, in order that any new growth made may be ripened.

FLOWER GARDEN AND PLANT HOUSES.

Every means must now be taken to keep turf, gravel, and edgings of all kinds as neat as possible, in order that no drawback to the complete keeping of the whole may occur; dead flowers should be picked off daily, and stray growths reduced within proper limits. Trailing and climbing plants should be frequently gone over, to keep them neatly though not too stiffly trained and secured against winds.

CINERARIAS.—Pot off such cuttings as are well rooted, and put in others for succession. Seedlings, if growing freely, may now receive a shift. Should mildew make its appearance sulphur the parts affected at once.

DAHLIAS.—Take care that the laterals of these are well staked out, and use every means to entrap earwigs.

PANSIES.—Rooted cuttings of these should now be ready. It will, therefore, be necessary to make beds for their reception. In doing this it is absolutely necessary that wireworms should be caught; therefore the compost should have repeated turnings; for these pests are as destructive to young Pansies as they are to Carnation layers.

PELARGONIUMS.—Continue to cut down old plants, and to pot off young ones as soon as they are sufficiently rooted for that purpose. Sow seed, as it ripens in shallow pans, which should be slightly shaded.

ROSES.—Remove dead flowers, and encourage the production of autumn blooms in the Perpetuals, by watering with liquid manure.

TULIPS.—Throw out the soil from the bed on to the paths, so that it may sweeten previously to being returned.

VERBENAS.—Go over beds of these frequently. Where the plants are still growing, pegging and training will involve considerable attention, removing decayed flowers, and cutting back such of the shoots as may incline to encroach upon the edging of the beds.

FORCING GARDEN.

PEACHES.—Wood ripening in regard to these must now receive attention, and means must be taken to forward it, as next year's success very much depends upon ripening being properly effected. Keep the foliage clean and free from insects, and endeavour to preserve it in health as long as possible.

PINES.—Plants growing in dung pits must be freely supplied with air to prevent their getting drawn, and they should also be kept near the glass and not allowed to stand too closely together, for strong robust plants need hardly be expected unless this is attended to, and weakly drawn ones seldom or never yield fine fruit. Give careful attention to such as are swelling; afford them plenty of warmth and moisture, and as much manure-water at the root as the soil will bear. Do not allow young stock in free growth in the succession pits to stand too closely together, nor to sustain any check through neglect in watering, or the want of pot room. Plants growing in beds of soil must also be carefully attended to with water, keeping the soil in a nice moist state. Where rapid growth is required keep as warm and moist as can be done without drawing the foliage, and give plenty of strong clear manure water at the root, and the plants will make rapid progress for the next two months.

VINES.—See that Vines from which the fruit has just been cut are free from insects, giving the foliage an occasional washing with the engine if red spider is at all troublesome; and use every precaution to keep the leaves in health as long as possible. Prevent the growth of laterals, which only shade and injure the principal foliage. Late Grapes colouring should be assisted with slight fires at night, especially Muscats. Thrips are frequently very troublesome in late Vineries where plants have been grown under the Vines, and where there is any reason to expect these, the foliage should be frequently examined closely; giving the house a heavy smoking as soon as they are perceived, and repeating this for two or three times at intervals of about a week. Shading the house the day after smoking where it can be done, so as to be able to keep it rather close, will render the cure more effectual; and if the pest is taken before it gets quite established, it will be easily got rid of by two or three smokings, but unless taken in time it is very difficult to eradicate.

HARDY FRUIT AND KITCHEN GARDEN.

Summer pruning and nailing in of the current year's wood will require following up.

CURRANTS, GOOSEBERRIES, AND RASPBERRIES.—Where time will permit these will be benefited by the wood of the present year's growth being thinned, leaving only sufficient to furnish next season's crop.

DECAYING CROPS.—Clear away the haulm, stumps, and refuse of crops directly they are over, burn them, and if the ground is not wanted dig the ashes in, and let the land remain till required. At this season, however, there is seldom ground to spare; for it should be remembered that the supply for several months of the next winter and spring will depend on the diligence now made use of, in planting out as large a supply of those kinds of vegetables most likely to be in demand as can possibly be found room for. Potatos and other crops soon coming off may therefore be interlined with any of the different kinds of Broccoli or Winter Greens; and where these are not sufficient, a quantity may be planted at one foot apart, to wait for ground as it comes in by the removal of other crops.

STRAWBERRIES.—The sooner new plantations of these are made now the better. They should have, if possible, a rich deep loamy soil, to which a good dressing of manure has been given. Remove runners from established plants, unless they are wanted for stock.

STATE OF THE WEATHER AT CHISWICK, NEAR LONDON,
For the Week ending Aug. 1, 1866, as observed at the Horticultural Gardens.

July and August.	Month's Age.	Barometer. Max	Barometer. Min	Temperature. Of the Air. Max.	Min	Mean	Of the Earth 1 foot deep	Of the Earth 2 feet deep	Wind	Rain.
Thurs 26	14	30.159	29.957	76	51	63.5	63	60½	S.W	06
Friday 27	15	29.846	29.668	71	47	59.0	63	61	S.W.	04
Satur 28	16	29.643	29.570	74	55	64.5	63	60	E	23
Sunday 29	17	29.846	29.569	71	44	57.5	61	60½	N.W	12
Mon 30	18	29.785	29.571	69	44	56.5	60	60	N.W.	00
Tues. 31	19	29.744	29.616	65	47	56.0	62	60	W.	13
Wed 1	20	29.879	29.749	75	53	64.0	60	59½	S.	08
Average .		30.812	2 685	71.1	48.0	59.5	62.5	60.1		66

July 25—Foggy, fine, cloudy, overcast at night, rain
— 27—Slight rain, fine, overcast at night
— 28—Very fine, exceedingly fine, rain at night
— 29—Overcast, very fine, rain condensed from S.E. wind by cold westerly wind
— 30—Some light clouds and cold N.W. wind, partially clouded and fine, cold at night
— 31—Cold rain, cloudy and showery, rain at night
Aug 1—Fine, cold and damp, very fine, overcast, rain.
Mean temperature of the week, 3½ deg. below the average

STATE OF THE WEATHER AT CHISWICK,
During the last 10 years for the ensuing Week, ending Aug. 11, 1866

August.	Average Temp. from 10 years	Average Temp. in 1866	Mean Temp	No. of Years in which it Rained	Greatest Quantity of Rain	Prevailing Winds. N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.
Sunday.. 5	74.3	51.3	62.8	18	0.88 in.	1	1	4	2	5	1	7	3
Monday.. 6	74.1	50.5	62.3	19	0.58	—	6	3	1	5	0	8	2
Tues .. 7	74.0	49.9	62.0	17	0.57	1	1	1	1	4	3	4	—
Wed .. 8	73.7	50.4	62.1	16	0.50	2	2	2	—	3	0	5	3
Thurs .. 9	73.5	49.9	62.2	15	0.56	2	2	1		3	0	8	1
Friday .. 10	73.4	50.7	62.1	15	0.67	1	2	2	2	2	0	8	1
Satur .. 11	73.8	50.6	62.2	18	0.78	1	1	3	1	0	0	11	1

The highest temperature during the above period occurred on the 10th, 1862—therm. 93 deg., and the lowest on the 11th, 1864—therm 34 deg.

Notices to Correspondents.

BELGIAN AND ENGLISH AGRICULTURE.—*M Bureaucrat.*—Your letter is too full of personalities for us to insert it.

CYPRIPEDIUMS.—*Fan.*—The remarks published last week apply wholly to tropical species of Lady's Slipper; but amongst the hardy herbaceous species of this genus there are some plants of equal beauty with those there mentioned, and of equal value as representatives of their particular class. C. spectabile may be mentioned as a well-known illustration.

NAMES OF PLANTS.—*A B.* Bromus sterilinus var. velutinus.—*A C.* 1, Asplenium marinum; you must be under some misconception if you imagine that this is a fungoid form of A. bulbiferum; 2, Nephrodium molle.—*R H.* Apocynum androsæmifolium.—*A K* 1, Phalaris canariensis; 2, Poa rigida; 3, Aunnophila arundinacea.—*B H C* When persons send Orchids to be named they ought to say from what country they come. Your Orchid is a species of Pilumna, and if from New Grenada is probably one of those described by Reichenbach in "Bonplandia." It has not been figured.—*W B* Your fine Brassia is certainly not B. verrucosa, which is a poor thing. It may be and probably is B. bruchiata, but the limits between the species surrounding B. macrostachia are not very distinct.—*Frances Tweedie.* Mandevilla suaveolens.—*J C S.* Datura Stramonium.—*Tilyard.* *a*, Clematis Hendersoni apparently; *b*, Acanthus spinosus; *c*, Calystegia pubescens.—*G K C.* Palmus acutifolius.—*T Bleazey.* 1, Apocynum androsæmifolium; 2, Selaginella denticulata; 3, Primula vulgaris.—*E G.* 1, Lysimachia Nummularia; 2, a Myosotis, not determinable without fruit; 3, Viola cornuta.—*E H.* *a*, Carex vulgaris; *b*, Carex vesicaria; *c*, Agrostis vulgaris; *d*, Poa nemoralis apparently, but the specimens are imperfect, and carelessly gathered.

NASTURTIUM *R Jodrell.* The flowers were completely dried up and colourless when they reached us.

SILKWORMS.—*C M F* writes: "Pray be so kind as to inform me, whether by giving Red Currant leaves as food to Silkworms you can produce red silk: I have heard it, but cannot credit it." We should think not; as well might you expect to get blue silk from feeding them on Blue-bells.

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COTTAM'S HURDLES are made in the best manner of superior Wrought Iron. SHEEP HURDLES, from 4s.; CATTLE HURDLES, from 4s. 11d each; CONTINUOUS FENCE, from 8d. per foot; FIELD GATES, from 25s. each. Illustrated Price List on application.

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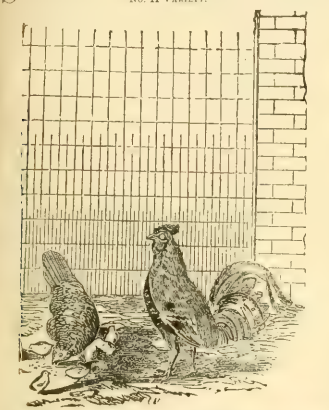
STRONG POULTRY and CHICKEN-PROOF FENCE.
No. 11 VARIETY.



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3 feet high,	1s. 6d.	Japanned;	1s. 10d.	Galvanised.	
4 "	1 11	"	2 4	"	
5 "	2 3	"	2 9	"	
6 "	2 6	"	3 0	"	

C. & Co's New Illustrated Catalogue will shortly be ready. It will contain descriptions of the above, and other Iron and Wire Fences for Park, Farm, Gardens, Game Preserves, Poultry Courts, &c.; also of Iron Gates, Iron Hurdles, Economical Wire Netting and Roofing Felt.

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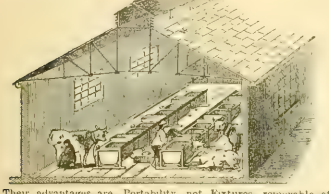

Their advantages are—Portability, not Fixtures, removable at pleasure, no Woodwork or Partitions to impede Ventilation or breed Vermin, Hay Rack dispensed with as unnecessary, increased width and depth of Feeding Troughs, Water Cistern, and Patent Iron Cover to prevent over-gorging. Cleanly, durable, and impervious to infection, being all of iron. Price of Fittings per Cow, 45s.

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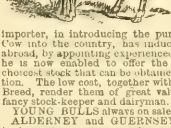

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State of the Crops, 1866.

THE GARDENERS' CHRONICLE and AGRICULTURAL GAZETTE of SATURDAY, August 11, will contain full particulars of the STATE of the CROPS throughout the country. Order of any Newsvendor. A Single Copy sent for Six Stamps.

The Agricultural Gazette.

SATURDAY, AUGUST 4, 1866.

MEETING FOR THE ENSUING WEEK.

WEDNESDAY, Aug. 8—Public taking		
THURSDAY, " 9—General Show	}	Yorkshire Agricultural
FRIDAY, " 10—Do., and Hound Show		Society, at York.

COMPARED with the proportions which the CATTLE PLAGUE had assumed a few months ago, its present position is reassuring. Sanguine prophets look upon its utter extinction as the work of a few weeks, but with every wish to encourage a hopeful spirit we cannot accept so satisfactory a prognostication without sundry misgivings.

The real test of the efficacy of the means that have lately been put in operation with such signal effect will be applied when farms are re-stocked and the restrictions upon cattle traffic have been removed; and it is not by exciting a feeling of over-weening confidence that success will be insured—rather, in the interests of the country, let us have an unreasonable alarm, which at least would prevent the adoption of ill-considered measures, the effects of which we should most certainly have to deplore.

We do not apprehend in the future those terrible consequences which have been witnessed during the past 12 months in England. A year's dearly bought experience is a costly thing that must be made to yield a good interest. When cattle plague first appeared in the London cowsheds, had we known then what we never question now, it might have been arrested there with comparatively slight loss; but before the nature of the affection had been publicly recognised, infected animals were sent by dozens into the market, and from thence into all parts of the country, carrying with them the germs of the pestilence, which never failed to become developed. Armed with our present knowledge nothing is so easy as to decide what might have been done with an almost absolute certainty of success. We have been taught how deadly the disease is when once it is allowed to progress, how useless all forms of medical treatment are, how subtile the infection which can be conveyed long distances upon an article of clothing or the hair of an animal, and how inefficient all known methods of disinfection prove to be, in the presence of the disease. All the results of the labours of scientific men who have devoted time and energy and vast experience to the study of this subject, are included in the maxim, that no system is effective in preventing the spread of the plague but the one which insists upon the slaughter of diseased and infected animals. That this conclusion does not yet meet with universal acceptance we are well aware, but what truth ever did? It is enough that those who have paid most attention to the matter are satisfied that no other course is effectual.

Whether or not we shall take advantage of the teachings of our own experience, we have the satisfaction of observing that other countries close at hand are not slow to avail themselves of its benefits. The investigations which have been made recently in Ireland and the Isle of Man are interesting in more points than one; suggesting to us, as they do, that a system of nearly continental severity is not only possible, but in reality easy of adoption, if not with the concurrence of the people, without any active opposition.

A few weeks back some cases of a fatal disease occurred among cattle in several parts of the Isle of Man, *post mortem* examinations were made by the veterinary inspector, who considered the morbid appearances to resemble those which he had seen in cattle that had died of plague in England. The Executive at once took action, drew cordons round all places where animals had died, stopped fairs and markets, ordered the slaughter of all cattle which presented symptoms of the disease supposed to be rinderpest, and then sent a request to England that a Government inspector might be directed to make an inquiry in order to decide the question of the nature of the affection.

All these energetic operations, it will be observed, were carried on in the face of a doubt; the disease was never absolutely certified to be Cattle Plague, and upon all the proclamations which were issued it was designated "a disease supposed to be rinderpest;" but, nevertheless, in what appears to us to be the spirit of a true political wisdom, everything was done pending the solution of the doubt, as though the existence of the cattle plague were a matter of certainty. No great blame might have fallen upon the authorities if they had taken immediate steps to ascertain whether the suspicion of cattle plague were well founded before they sanctioned restrictive measures and interrupted the course of trade, but being, as they were, fully alive to the tremendous consequences of neglect, should the disease prove to be the plague, they took the only course which under the circumstances was safe. In all such instances there are two ways equally open, and the selection depends upon the logical acumen of the person in authority. A certain disease suspected to be rinderpest may be that disease, and its ravages may be limited by the adoption of a certain line of action. On the other hand it may not be rinderpest, and no particular line of action may be necessary. No collateral circumstances can modify the question: every case of alleged outbreak of plague that has been, or shall be, must be dealt with on one of the two assumptions—either the disease is cattle plague or it is not, and upon the choice of the two methods of procedure, action or inaction, the interests of a county may hang. The immediate adoption of restrictive measures is certain to be successful, the opposite course may be a triumph for the authorities, who in a sceptical spirit have refused to act upon a suspicion, but it will amount to a terrific disaster for the county, if the suspicion should grow into a reality, and the very people who would be first to applaud a successful speculation upon probabilities, would not be tardy in condemning a miserable failure. On every ground of policy, expediency, and common sense, we hold it incumbent upon all who are concerned to act in the matter of suspected cattle plague as though no doubt of the true nature of the disease existed; let the doubt be resolved as early as possible, but meanwhile—action.

After a careful investigation it was ascertained that the disease among cattle in the Isle of Man was not rinderpest, but an affection which occurs on many pastures where the Grass is coarse and abundant, and even upon bare mountain land; certain modifications are apparent in different cases, but one invariable character of the disease is congestion of the leaves of the manyplies, and the collection of masses of hardened food between them. Sometimes this stomach is distended and excessively hard, the brain and nervous system become affected early in the disease, and the animal is either dull and half unconscious, or it becomes delirious. Some cases linger for three or four days, but very frequently death takes place in a few hours. One or two animals out of a herd may die, and the remainder escape. None of the symptoms during life are like those of cattle plague, excepting the loss of milk and the dull aspect. There is no rise of temperature, no discharge from the eyes, and no soreness of gums or palate, but the morbid appearances in the lungs, stomachs, and intestines, are remarkably like those of ordinary instances of

cattle plague, and naturally gave rise to a suspicion when they were first observed. The disease corresponds to that known in England as "Fardel bound," in the Isle of Man as "Drying up" or "Grass disease," and in Ireland as the "Dry murrain," or Grass staggers. It would not now be desirable to enter upon the consideration of its causes, nature, and treatment, but it may be remarked in passing that it is one of those affections that die out of a country under the influence of drainage and improvement in the cultivation of land.

In Ireland, as far back as last May, cases of cattle plague were reported, and the authorities at once, with commendable activity, adopted the system of cordons, and ordered the slaughter, not only of diseased animals, but of all those that had been in contact with them, with the natural result, the disease did not spread, and as an equally natural result, the fact of its not spreading was accepted as an evidence that it was not cattle plague; but we are glad to be able to record the fact that those even who were very sceptical as to the existence of plague approved of the adoption of those measures which were put in action in order to arrest its course. In obedience to a general wish for further investigation, notwithstanding that the disputed cases had been inspected by numerous medical and veterinary gentlemen who had examined cases in England and Scotland, an inquiry was ordered by the Cattle Plague Department of the Privy Council Office, and the result of the inquiry proves that the measures which had been successfully employed to prevent the extension of the disease were not too stringent or too quickly adopted. How cattle plague was conveyed to the north of Ireland may be a question not admitting of a positive answer—the fact of its having been carried in some way is proved by the fact of the disease having existed in precisely the same form as it did in England in the early months of the outbreak, when it was characterised by an amount of virulence which it has since to some extent lost. The abundant discharge from eyes and nostrils, and extensive loss of epithelium from the membrane of the mouth, in addition to the ordinary symptoms, were observed in all the cases which have been recently investigated in Ireland; and in the only instance where animals which had been in contact with a diseased one were kept alive for observation, the affection attacked them in turn, and at the end of a week four healthy beasts that had been near the first attacked, were dead or affected with cattle plague in its unmistakable form, and we need not tell our readers in England that when cattle plague is fully developed it does not require any great amount of expertness, and certainly not any special pathological knowledge, to enable an examiner to decide; any herdsman or drover who had been in an infected district would be competent to speak with certainty upon a fact that asserts its existence by such unquestionable evidence. Obscure cases do occur—cases in which the symptoms are so slight and so dubious that a review of all the facts bearing upon it is necessary before an opinion can be formed, and it is quite true that the cases in the Northern and Midland Counties of Ireland might have been of this nature. But it is certain that they were not, and it is also a fact that no person—professional or non-professional—who saw any of the cases, and who had previously seen cases of cattle plague elsewhere, hesitated to assert that the veritable rinderpest had obtained an entrance into the country, in spite of all the caution that had been exercised, but which did not and could not prevent the entrance of infected individuals coming from England or Scotland—and at present the outbreaks have occurred only in localities near to Scotland, as in the Drennan cases, a few miles from Belfast, or near to England, as in county Meath, about 22 miles from Dublin, and in the great line of cattle traffic.

Fortunately for the operation of the system which has been pursued in reference to cattle plague in Ireland, the disease has as yet appeared only among small herds, which were easily destroyed and buried. The last outbreak near Enfield occurred among a lot of seven head of stock, belonging to a jobber or cattle dealer. When the fact was reported, six days after the first case was seen, one animal had been buried, one was lying dead, and another was dying of the disease; and of the remaining three one was evidently unwell: all were at once slaughtered. It was ascertained that on the adjoining farm there were some cattle, about 12 in number, that had been in the next field when the first animal was attacked; and although the sick cattle had been taken away as soon as they were seen to be ill, it was at least probable that the neighbouring herd had not escaped the infection; they were accordingly taken in the cordon that was drawn round the place. On the sixth day after the slaughter of the infected cattle on the other farm, one of these animals was observed to be ailing; it was immediately placed in a shed by itself and rapidly became worse, and on the third day following it was found dying from the cattle plague. So soon as holes could be dug the whole of the remaining cattle on the farm were killed and buried. Since then, a period of nearly three weeks, no new cases have occurred, nor are there any stock in either of the infected districts that are known to have been in contact with an animal affected with plague.

It is something to have to point to a single illustration of the success of a system, and we are at least entitled to assert that cattle plague has been extirpated in the north of Ireland, by no novel agencies, but by the adoption of a plan the efficacy of which has been attested by all whose experience gives them a right to speak with authority. The value of these measures, however, is capable of much modification, and the certainty of success depends upon the application of them at the proper moment. What is most to be dreaded in any country is that passive opposition which tempts men to conceal the fact of a disease existing among their stock from fear, or more commonly from want of confidence in the judgment of the inspectors, or in obedience to that spirit of inaction which often seems to supply the place of a motive. Supposing that the opposite feeling existed, the immediate discovery of an outbreak of cattle plague would be followed by the immediate adoption of a certain course of action which has never been known absolutely to fail, and is generally perfectly successful. Concealment renders any attempt at prevention impossible until the disease makes itself known, as it will in time, in a manner that admits of no cavilling, and with a force that sets all our best efforts at defiance. The agriculturists of all countries have the alternative of leaving the Executive to deal with a conflagration, or assisting them to smother a spark.

Near the foot of the high land on which the northern suburbs of London are built, and upon its western side, three miles beyond Regent's Park, upon the Finchley Road, lies Golder's Green, which gives its name to Lord Granville's dairy farm. Facing south and west, almost wholly pasture covering the London clay, which is here as fertile as, under good management, a heavy stock of stall-fed beasts and London dung can make it; furnished, too, with a capital farm-house, and possessing admirable accommodation for upwards of 100 cows, there are 300 acres here as perfectly equipped as any tenant could desire for the purposes of the London milk supply; and the experience of Lord Granville and of his farm manager, Mr. Panter, may therefore be described as a very fair example of the kind of agriculture which a good suburban dairy farm presents.

The land was taken for its present tenant when his lordship was absent from this country as Ambassador Extraordinary on the occasion of the Russian Emperor's coronation; and there is a pleasant memorial of the date engraved upon the brass plate surrounding a flagstaff in the adjoining paddock, which bears the following inscription:—

"This Weathercock was presented May 1, 1857, to Granville George, Earl Granville, upon the occasion of his taking the farm at Golder's Green, by his affectionate friends—Arthur Hamilton, Sandys of Ardtullagh, Norman McDonald, Stanley, Holland, Canning, Charles Greville, Esther, Shuttleworth—as a token of their regard for him, and of their belief that whatever way the wind may blow he will always be found true."

The cow-houses on this farm, large, lofty, roomy, with ample ventilation, well drained, and planted on a knoll with the best possible aspect, filled too with a first-rate herd of 130 cows, were among the earliest to suffer an attack of the cattle plague. On July 13th of last year, five Dutch cows had been purchased at the Metropolitan Market and placed in quarantine a mile away; ten days afterwards they sickened one by one and died in spite of treatment. Every precaution, we are told, was taken to prevent the spread of infection—the men employed about the sick animals not being allowed to go among the healthy ones, and *vice versâ*; and moreover, having previously heard of the existence of the disease in the London cow-sheds, Mr. Panter had already adopted precautionary measures, such as a liberal daily use of chloride of lime—a dose of an ounce of nitre in half a pint of water apiece to the cows, and painting their noses with tar; but on August 8th, just this time last year, the disease showed itself in the best cowshed on the premises, and in one of the healthiest and best conditioned cows. She had been 10 months there and was now fat and ready for market; and no new stock had been introduced during the nine previous weeks. The disease confined itself to this one shed of 48 cows, till August 20, killing all—and it then broke out in an adjoining shed of 35 cows, taking two to four cows a day till all were dead but two, one of which was not attacked, and the other had recovered. In Mr. Panter's report upon the subject, dated Sept. 4, which Lord Granville subsequently published, it is stated that the shed at Child's Hill Farm, where the first five cows were attacked, was cleansed with disinfectants and washed with hot lime—12 fresh cows were purchased and placed in it, and these remained free from disease. It is also mentioned that a neighbour, situated midway between Golder's Green and that farm, had 23 cows lying in a field, and the plague having taken 20 of them, in three weeks he replaced them with new stock, which remained healthy, notwithstanding that owing to cow-dung still lying about, and a foot-path through the field, there was every chance of infection. We have now to add that these cows, thus placed in the very way of the disease, have remained perfectly free from it during the past winter and summer. Since the original outbreak, moreover, the home sheds, after every care in cleansing them, giving ample opportunity also to the cleansing influence of air and time, have been gradually replenished. The disease has never re-appeared in them, and they now contain 66 cows in full milk and perfect health, seven of which are the sole survivors of the fine herd of 130 which they contained this time last year. Mr. Panter does not believe in the existence of a specific poison imported from abroad and communicated by contagion as the origin of the plague. He has had to choose between the difficulty of supposing an outbreak from "natural causes" in the case of the best possible circumstances for health, and that of admitting its origin in contagion under the most careful quarantine, and he thinks the latter is the greater difficulty of the two.

The former difficulty is however now multiplied by a thousand histories as inexplicable as his own, where not only has disease attacked the best placed cows, but where health has been maintained under the very worst conditions; and we are thus shut up to the belief in specific contagion as alone able to account even for Lord Granville's experience.

The following are the leading particulars regarding the farm:—It is 340 acres in extent, of which about 300 are pasture. All this Grass land is mown twice. When the cow stalls are full, holding from 100 to 120 cows, about three-fourths of an acre are needed daily as cut forage carted home, and the whole land is twice cut over in this way between the end of April and the beginning of October; all that is fit for hay being, both in June and again a second time as "rowen" in August, mown and made. The remainder is grazed with sheep during the autumn months, 300 being purchased for this purpose in September, and sold at Christmas. There are thus about 600 loads of hay made annually, and of this nearly half is consumed upon the premises and one-half is sold. The produce of the land is thus (at an average yield of first and second cuts equal to 26 cwt. of hay per acre) about 3000 tons of Grass from the pasture land, (of which 1000 tons are sold as hay, leaving 2000 tons to be consumed), and probably 600 tons of Mangel Wurzel and Cabbages from the arable land, making 2600 tons of green food, either succulent or dried as hay, consumed per annum by 120 cows, which amounts to about 1¼ cwt. daily apiece (taking both Grass and hay into account). In addition to the produce of the farm, some 80 loads of straw per annum, and 150 quarters of grains per week, and probably 20 or 30 tons (2 to 3 cwt. a day upon an average) of Peas, Barley, and

pollards are purchased and consumed per annum. The cows receive 1¼ to 1½ bushel of grains in two meals daily—in winter they receive 15 lb. of hay and 30 lb. of Mangel Wurzel, and in summer Grass—about ¼ of an acre of a crop equal to 30 cwt. of hay, sufficing for 100 or 120 cows. In addition to this they receive 2 to 4 lb. of meal a day when in full milk, and again when their milk is shrinking rapidly, and when it is desired to fat them for the market. As soon as a cow shrinks to five quarts of milk a day, she is dried off and fattened, and in this way continual purchases of stock are being made to keep the houses full; 150 to 160 are annually purchased and sold to keep 120 cows in constant milk. Where the state of the market recommends it the cows are fattened up to nearly their original value when in full milk; at other times they are allowed to go sooner, and the original value is not realised. In two years of which Mr. Panter has been good enough to give us an account, the average price on purchase was 19*l.* 17*s.* and 19*l.* 18*s.* respectively; while the price obtained on sale was only 14*l.* 14*s.* and 13*l.* 14*s.* respectively. This, however, represents a much greater loss than usual, owing to the severity in these years of pleuro-pneumonia and the foot-and-mouth disease. On an adjoining dairy farm, in 1863-4, about 90 being continually in milk, the cows, kept a shorter time, and continually *fed* as well as milked, reached on sale within 1*l.* of their purchase price. But 153 were purchased and sold per annum to keep a stock of 90 good, so that they could not have been kept longer on an average than seven months each.

In 1862-3, upon the Golder's Green farm, 100 cows being daily milked upon an average throughout the year, the return for milk sold was 3900*l.*, or 39*l.* per stall. In 1864-5, 120 cows being kept, the return was 4900*l*, or upwards of 40*l.* per stall. In the latter year 164 cows had been bought for 3077*l.*, or 18*l.* 15*s.* a head, and 161 were sold for 2317*l.*, or 14*l.* 8*s.* apiece, being a loss of 760*l.* in all, equal to nearly 5*l.* per cow, more than 6*l.* per stall; and it must be borne in mind that the return stated above, amounting to nearly 40*l.* per stall per annum on an average, corresponds to only 30*l.* or thereabout per cow during the eight or nine months' feeding spent upon her. On the whole the return in 1864-5 may be stated at 4140*l.* for about 2600 tons of Grass, 80 loads of straw, 8000 quarters of grain, and 20 to 30 tons of meal and cake, a large expenditure on labour, and the use of a large amount of capital. The men employed upon the farm and in attendance on the cows correspond to one to every ten cows, and in addition to this there is the cost of hay-making, let at 25*s.* an acre, or thereabouts, and the cost of horse labour, including 13 or 14 horses in five or six teams. To the receipts from the cows must be added the proceeds, about 300*l.* per annum, from Wheat and Potatos grown on the arable land, and some 100*l.* or thereabouts realised from the sheep, together with the price of 200 or 300 loads of hay; and to the expenditure must be added a good deal of extra labour connected with harvest work upon the arable land. The reader will work out the calculation for himself. But keeping to the return in milk for the 2600 tons or thereabouts of Grass, both succulent and dried, consumed by the cows, we make the net profit, deducting rent at 3*l.* per acre, and 5 per cent. upon the probable capital employed, to be about 6*s.* or 7*s.* per ton of the Grass thus grown and consumed.

This subject, however, deserves a more detailed examination, and we shall return to it for the purpose of ascertaining what light it throws upon the probable returns from sewage in the growth of Grass.

SALES OF SHROPSHIRE SHEEP.

Three meetings—now regular annual institutions—have thus far passed off with every satisfaction to breeders. The high price of mutton and wool and the dread and hazard which attend herds of cattle on account of the rinderpest, have further stimulated the demand for sheep for breeding purposes. This applies both to breeding for immediate consumption and to the more skilled art which belongs to the production of flocks of such a character, that their issue, from their purity, will leave their distinctive marks on the ordinary flocks to which they may be put. Here we refer to the art of ram-breeding. If the Shropshire ram-breeders have not all succeeded in bringing out regularly a good percentage of first-class stock sheep, it is very clear they have all tried, and many of them may be proud of what they have done. But even now great care and judgment are needed to establish uniformity of character in some cases, and when this desirable trait has been attained, and fresh blood has to be introduced, to avoid the degenerating effect of in-and-in breeding, even more skill is required to preserve the family type which has been established.

The first of these sales was held on Wednesday, the 25th, at The Fosse, Leamington, Mr. Preece officiating As Mr. Horley has paid more attention to a large production of mutton of fine Down quality than he has of quantity of wool with an inferior quality of meat, he does not stand quite so well relatively just now, as the fleece at the present price of wool is a large consideration with all hand-to-mouth feeders and breeders. This however may, and probably will be changed before long, while it is quite certain that, unless the manufacturing prosperity of this country begins to rapidly decline, the price of mutton must increase. We can vary the character of our clothing, and bring raw material for it from the farther ends of the earth, but we cannot secure a superabundance of fine-flavoured juicy mutton. The prices of the 40 rams here let and sold averaged something under 13*l.* each. No. 1, by Duke of Newcastle, of which sire we shall have to speak more particularly below, made 19 guineas for Mr. Naylor, near Welshpool. Mr. Watson bought the 2d at 18 guineas. No. 21 made 17 guineas, and Captain Brown, Leicestershire, gave the highest price of the day, viz. 21 guineas for No. 29. The sale of rams was followed by the disposal of a few draught ewes, and when it is said that the prices for them ranged from 60*s.* to 95*s.* each, and averaged 72*s.*, we need not add that the stock sold, which, according to custom, was close by for the inspection of the company, was greatly admired by Mr. Horley's numerous friends and visitors.

The Yew Tree Farm (Penkridge) sale took place on Friday, the 28th, when Mr. C. R. Keeling was honoured with the numerous company which his genial nature as a neighbour and spirited character as a breeder regularly secure. Three years since Mr. Keeling and Mr. May, of Elford, ran each other hard for a strikingly handsome and well-formed black-faced sheep, the purchase of which eventually fell to the tenant of the Yew Tree Farm, at 71 guineas. The mark of this sheep is strongly fixed on his descendants, which, with the previous fine qualities of his flock, has caused the present working lessee to be sought for and wide, as well as in the more exclusive district of the Shropshires. Mr. Keeling's ewes are undoubtedly the most perfect flock that belong to this breed. They have quite as much quality of meat as ordinary Sock Southdowns, and they are the same size, on short straight legs, and the fat backs and rumps carried by the full-toothed and aged sheep, while their feed consists of but little more than Grass and Turnips from the poor land at the foot of Cannock Chace, clearly shows that their aptitude to fatten has likewise been sufficiently developed. Lovers of true form and otherwise fine character could spend many hours in admiring the many specimens which this small but select flock contains. Mr. Randall, of Chadbury, hired No. 1 (the only one which was let) for 20 guineas, and Mr. Randall also bought No. 4 at 13 guineas. The remainder made 30, 25, 21, and 22 guineas respectively, the lowest price being 9 guineas, and the average of the 30 was within a trifle of 16 guineas each. As Mr. Keeling has reduced his run by giving up a small off-hand farm, an unusual large draught of ewes was made this year, 100 having been offered. These sold at 72*s.* 6*d.* for the lowest, to 100*s.* each, averaging 82*s.* When it is considered these are the worst animals that can be picked out of a small flock, a fair idea may be formed of the estimation in which this flock is held by ram-breeders, as well as by feeding men. In addition to the above-named qualities, we cannot omit to say the uniformity of these sheep, together with their family likeness, commanded the admiration of the company as they lounged among them in the adjacent pastures.

It was at Mr. Coxon's, of Freeford, Lichfield, however, where substantial evidence was given this year of the advantages to be derived from a thoroughly good and fashionable sire. Duke of Newcastle, previously mentioned, was bought by Mr. Coxon at the Royal meeting at Newcastle, two years ago, when he was a shearling. His issue, consequently, are now coming into use. The reported price of this sheep was 80 guineas, and the general opinion of him at the time was that he was the best model of a Shropshire that has ever appeared. So much, too, has this been now confirmed, that the Freeford flock has nearly doubled in the average of the prices previously made. Duke of Newcastle was bred by Mr. Thornton, of Pitchford, Shrewsbury. This sheep this year is let, under a mutual arrangement as regards ewes, to Mr. Horley, The Fosse, the price being 40 guineas. Two of his descendants are let "out-and-out;" the first, Clipstone, to Mr. Evans, Uffington, for 45 guineas; the second, Conservative, at 26 guineas, to Mr. Wright, Stafford. Another has gone to the Compton Verney flock, at the price of 44 guineas. Mr. Allsop, near Worcester, took two, one at 47 guineas, the other at 27 guineas; while Captain Oliver, of Towcester, took one at 38 guineas. The number offered was 35, the average of the whole, let and sold, being 19*l.* 5*s.* The Duke of Newcastle had around him the goodly family, as regards sons, of 22. If a ram which has his quiver full of them be not happy within himself, he is, undoubtedly, in such a case as this, profitable to his owner, for these 22 realised 492*l.* 15*s.*, or an average of 22*l.* 7*s.* 6*d.* each.

At Shrewsbury on Tuesday and Wednesday last Mr. W. J. Preece held his great annual sale of nearly 200 rams and 800 breeding ewes of various ages. The former were described in the advertisements as "Grand Shropshire Rams," and the latter as "Superb Shropshire Ewes," and they were further spoken of with the highly scented flowers of speech for which the auctioneer is celebrated. There is no doubt but these sheep are of a very useful character, but considering the want of a fixity of type which the produce of a dozen flocks by as many little men present, and further, considering that no test performances can be made to certainty of purity of breed in any one instance, but that whatever merits the Shropshires possess were due to other breeds at some more or less remote period, it is going a little too far to set up these sheep as "incomparable" to Leicester, Southdown, or even improved Hants and Polled Norfolks. The best breeders of Shropshire themselves do not deny or attempt to disguise the palpable fact to a well-trained eye, that whatever there may be of incomparable excellence about these sheep is due to what was 50 years ago an accidental, hap-hazard, and indiscriminate mixture of Southdown, Leicester, Hants, Lincoln, and Cotswold. This was when Shropshire and Staffordshire had not only no superfluous stock of sheep, but not even enough to supply the demand in the expanding manufacturing districts, such as the Potteries and the coal and iron-working pits and furnaces. Then the farmers in these counties used regularly to go and buy at Southern, Midland, and Eastern fairs, and put different kinds to each other as taste, judgment, or convenience might suggest. There is no doubt but that Cannock Chace may lay claim to what may be accepted as an original breed of sheep, which was in form of carcase as near as possible like the leggy ranging blackfaced Norfolk sheep, a character which is now rapidly disappearing before the modern pressure for early maturing qualities, and the desire or necessity for quick returns. Many little lots of these sheep may be seen in the present day in their almost primitive character on the slopes and confines of Cannock Chace. The present excellencies of these sheep may be attributable to the judgment which some of the leading Shropshire and Staffordshire men have brought to bear on the mixtures of races, which is said to be so advantageous even to the human species. However this may be, there is no doubt but that the sheep in question, where care and skill have been bestowed on flocks, possess, for the time being, as many of the qualities regarding wool, fineness of flesh, hardiness and capacity for early maturity, as can be found in any breed. How far they will maintain their character remains for their owners to decide by the harmony of opinions and judgment which they may develope and practise.

There was nothing individually striking at Shrewsbury, and the fact that no Royal winners and show sheep for 1866 were on the ground left the public in a less state of excitement and curiosity than usual. Messrs. Crane had 26 rams in a very good form for work, the excessive fatness which in previous years had been conspicuous being now absent. The uniformity of size and character too on this occasion was greater. One ram was sold for Lord Chesham at 29 guineas, another to Mr. Price, Hesketh, at 30 guineas, Mr. Beckley, near Stafford, bought one at 21 guineas, and Mr. Keeling, the Yew Tree, one at 20 guineas. The average was about 14 guineas.

Mr. Henry Smith, Sutton Maddock, had 15 very neat sheep, but these are not so fashionable in form and colour as some inferior flocks, therefore the average of 12 guineas was beneath what might have been expected. Mr. Keary bought two at 12 and 17 guineas each for the Hon. E. Coke of Longton, near Derby.

Mr. Evans of Uffington had 16 useful sheep, which made fair prices. Mr. Meire's of Berrington, made good prices for stores. Mr. Sheldon, of Brailes House, Warwickshire, had five very compact smart and hardy sheep, sold at 22, 14, 25, 13, and 21 guineas respectively. Mr. Thornton, of Pitchford, who bred the Duke of Newcastle, had nothing this year out of the common run; but the elements of another Royal winner appear to be in his flock. Two years ago his small produce of 12 tups made nearly 30 guineas average, the highest on record relative to this breed. This year they made 24, 21, 20, down to 8½ guineas. Mr. Thomas Horton had 14 good thick sheep, but this flock has not preserved its former prize-taking character. However it possesses elements that will be one day fallen back upon. The average this year was the fair one of about 13 guineas. The other principal owners were Mr. Minor, Astley House, Shrewsbury; Mr. W. P. Bowen, Shrawardine Castle; Mr. T. Mansel, Adcott Hall. The Hon. and Rev. Noel Hill had a few sheep there of ordinary usefulness, and they made corresponding prices. The highest average came late in the day, and fell to the flock of Lady Willoughby de Broke. The leading prices of the 20 disposed of, three of which were let, were 31, 30, 28, and 20 guineas, the latter price occurring in three instances. The average was a little over 18*l.* each.

The ewes disposed of on Wednesday made very full prices. Lord Combermere, who appears to be starting a flock of this breed, and to be making a good beginning, bought one lot of the Messrs. Crane at 6*l.* 15*s.* each, and another lot of Mr. Evans, at 7*l.* 10*s.* each. Mr. Scot, of Burnley, Lancashire, bought a lot of the latter flock for 7*l.* each. Some other high prices were made, and even the inferior draught lots of ordinary breeders which are sent to this sale made extraordinary prices, which the above causes can only account for.

APPEARANCE OF THE CROPS.

Bedford: *Biddenham.*—I consider the crops in this neighbourhood promise an average yield; some of the dry land Barley is ripening prematurely, and, with all kinds of roots and pastures, wants a good rain *William Lancaster, July 27.*

Berks: *Abingdon.*—The growing crop of Wheat will shock very thin generally, though on the good deep loams it will be a full average of good quality. On all light lands and also cold clay lands it will be very indifferent, though the late fine weather has wonderfully improved the general aspect of the crop. Barley and Oats promise well. Beans and Peas

remarkably good. Roots look well. A good crop of hay has been well got in. Harvest is just about to commence generally. *J. Williams, Manor House, Sheppon.*

Bucks: *Loughton, Stony Stratford.*—In respect to the crops of north-west Bucks, they of course vary according to the nature of the soil, cultivation, &c., but a vast change for the better has taken place during the last few weeks. Owing to the wet winter and spring the Wheats cut a wretched appearance, and even now on the ill-drained clays they are, although improved, far from good. Wheat, average; Barley, under average; Oats, bad, under average; Beans, average, but much stricken by aphis; Peas, over average; Mangel, good; Turnips, good. *F. W. Bignell.*

Cambridgeshire: *Ely*—Wheat, a bulky crop generally; where laid too early, a good deal of blight and mildew; but where well out in the ear before going down, ripening bright and kind. The ear is good, and the fine dry weather of the last fortnight has helped it to fill well, and we now have the promise of a full average crop. The earliest will be ready for the sickle about the 1st of August. Barley: not very largely grown; crops generally good, but laid, especially where early sown. Oats: a good crop on most soils. We have every reason to expect an average yield. Polands getting fit to cut. Beans: bulky, a few are flowering again, which is prejudicial. The straw, considering its bulk, is very well podded. Peas: a good crop of straw, and the promise of an abundance of corn. Taking the whole of the cereal crops of this neighbourhood, we conceive there is the prospect of an average crop, and probably more, but our expectations have been so often falsified, that we feel modest in offering any very decided and dogmatic opinions, ere harvest commences, lest we should again be the medium of conveying erroneous views upon so important a subject as the results of an approaching harvest. But we think, nevertheless, that present appearances warrant the opinions we have expressed, and hope suitable weather will enable us to ingather as bountiful a harvest as we anticipate. *A. S. R., July 26.*

Gloucestershire: *Didmarton.*—I am glad to be able to report favourably of the crops in this neighbourhood, all of which have much improved during the last month. Winter Wheat, although not stout, is a more thick and regular plant than last year, and, as also the spring-sown, blossomed favourably, stands well, and is likely to yield a full average of good grain. Barley is generally very good and long in the ear, and over average. Oats rather short, and thin plant, but full eared; suppose nearly average. Beans fair; Peas well podded and good; Vetches same. Potatos good as yet, with slight reports of disease. Roots on the whole are very promising, but much trouble and expense to keep clean. Grass keeps good, and all stock, having a good supply of water, are doing well (this district, too, having been quite free from rinderpest); altogether, therefore, our farm stock generally have a fair prospect of getting well wintered, particularly if corn with straw is well harvested. Harvest is just announced with White Poland Oats and Peas, and Wheat will be ready in another week, the weather having been hot and dry the last three weeks. *Stiles Rich, July 27.*—*Evesham, Cullabine Farm, Dumbleton.*—The hay harvest is now brought to a close, it might have been earlier completed if mowing machines had been more generally used: the crop is a good one, and the greater part of it has been got in in good condition. The Wheat upon all the best farmed lands will be a good average crop. I began cutting yesterday with Samuelson's side-delivery machine. I have just left the field, and 21 acres are laid, having been cut in 19 hours, including men's rests for dinner and bait; four horses have been used. Barley promises to be a good crop, but I think on inspection it will be found to be a little caught in patches. Winter Beans are generally good, and are being cut, but have not been very largely planted. Spring Beans are good, light crops being the exception. I have heard some complaints of aphis, but I think the season was too far advanced before it made its appearance to materially affect the yields. Peas are the most abundant crop I have ever seen, although damaged in a few instances by the hail-storms in June. I harvested 16 acres on Monday and Tuesday, and am cutting the remaining portion. The cutting may now be considered general. Mangels are the most promising crops up to the present time that we have had for several years; the early planted Swedes are good, the later sown are suffering from drought, so are the Turnips also; and unless we have rain very soon there will be a poor crop. Stock of all kinds are healthy, and we are still, under God's blessing, free from plague. *Charles Gilbert Clarke, July 26.*

OUR COAL, FOOD, AND POPULATION IN 1966.

According to Mr. Jevons's estimates, our present consumption of coal (100 millions of tons annually) will be increased in 1966 to 3000 millions of tons, or thirty-fold larger than at present. This calculation implies that the necessary human labour in connection with the getting, distributing, and use of this enormously increased quantity shall be forthcoming when required. Will any of your readers kindly give me an estimate of how many of our population are now thus employed? I am induced to ask this question, because, according to reliable statistics, our population in 1966 will bear no relative proportion to the increase of coal predicted by Mr. Jevons, and it is singular that in the anxious legislational debate on this important subject no allusion was made to our probable population in 1966.

If I am right in my estimate, the population of the United Kingdom in 1966 will have only increased one time, or become doubled, while our coal is to be increased thirty times! Can this be so? I think not. The consumption of coal annually in London is about 5 millions of tons. If our London population should be double in 1966, would the consumption exceed 10 to 15 millions of tons? If it increased 30 times (Mr. Jevons's calculation), it would be 150 millions of tons. What an enormous increase of railroads and their accompaniments is implied by this increase alone! I am no believer in it, for it naturally implies that our shipping, railways, &c., should all likewise increase in due proportion.

According to Mr. Jevons, the present rate of growth in the production of coal is 3½ per cent. per annum. This, judging from the past, is an increasing rate of increase; not so with our population—that is a decreasing rate of increase. For instance, the annual rate of increase of population for England and Wales in the years 1841 to 1851 was 1.221 per cent.; 1851 to 1861, 1.131 per cent. The estimated population of England and Wales for 1966 is 38,015,462, or only an increase of one time, while our coal increase is estimated at 30 times. Surely there must be some discrepancy here, probably some over-estimate of our future coal consumption, or some under-estimate of our increase of population, although the latter is calculated from a very reliable source. I hope this subject will be well ventilated in your columns.

Great anxiety is expressed about our future supply of coal, but none as to our food. When I express my surprise at this, I am told "Oh! but we can always buy our food from foreigners." I reply, "and so you can coal."—"But it won't answer our purpose to buy coal. We want cheap coal."

Well, but don't you want cheap food? and cannot cheap food be produced in Great Britain? I maintain that it can, provided you take the same means to produce it, as you do to produce more cheap coal. That is by the investment of more capital and intelligence. Not that I expect that this will be rapidly done. Agriculture is too much shackled and trammelled by a variety of sentiments and circumstances to rank with trade, manufacture, and commerce, in material progress, but it may be useful to point to its shortcomings, and to stimulate to a more profitable state of things. I don't believe landowners or farmers are at all agreed as to the most profitable acreable capital to be invested by each of those interests to secure a cheap and profitable result.

Before Mr. Jevons's anticipations of an increased coal supply can be realised, untold millions of new capital must be invested in mine-sinking and machinery. So it ought to be with the production of our food; that cannot be increased without a considerable addition of invested capital on the part of landowners and tenants. What greater proof do we need than that, because we do not produce enough, the foreigner steps in to fill up the deficiency?

If as much food were produced generally in this kingdom as on my poor farm, and many others that I could name, we could not consume one-half of it. This is no exaggeration; but then in my case, and in many others, the capital employed is three-and-a-half to four times as great as the general average of the kingdom, and I repeat that it is mainly by the investment of a great additional capital in agriculture that we can hope to be able to feed our population abundantly and cheaply.

If this is true then, remove all obstacles and make the road free and open, so that capital may be tempted and invited to come that way. But what a vast field is that of agricultural investment on the part of landlord and tenant! The paltry increase of capital to the extent of 1*l.* per acre would amount to 60,000,000*l.*, while really there is scope for from 10 to 20 times that amount. The whole animal capital of the kingdom is only equal to one sheep per acre. An additional sheep per acre would add about 120,000,000*l.* to the farmers' capital.

When dealing with 60 millions of acres, every investment presents a gigantic total. It is easy to talk about 5*l.* an acre for drainage, 2*l.* per acre for a steam plough, 1*l.* per acre for guano, 5*l.* to 6*l.* per acre for covered yards, and no end of money for many other improvements, to say nothing of a readjustment of the forms of our farms, with a view to a business-like and profitable result. The task is a herculean one, and much of the land must pass into other hands, or become subject to new conditions, ere the necessary funds for agricultural amendment should be forthcoming.

How can the farmer with 4*l.* an acre capital (the average of the kingdom) compete successfully with the Norfolk or Lincolnshire or other good farmers who invest 16*l.* per acre capital? The result of such competition is a silent absorption of means or an infliction of pinching poverty. The same commercial law of supply and demand acts in corn as in Cotton, or any other merchandise.

We do not produce enough food for our population. The foreigner steps in and fills up the deficiency. In a superabundant harvest he sends us little; in a defective one we get from him large supplies. It is because we do not produce enough that he supplies us. We could produce more than enough if we chose to invest in food production a more ample capital and intelligence. We have plenty of both at command. I reiterate that it is a gross national error to loan our enormous profits to every poor foreign potentate when capital is required at home for the production of our food and employment of our labour.

How to bring it to bear, to tempt it and encourage it to flow to agriculture, is a question worthy the attention of all well-wishers to their country. It is certain that the more difficult it is to transfer land, the less prospect there is of its changing hands or receiving the fertilising influence of capital and intelligence.

I was very much struck with a statement made to me by a most intelligent American, a member of their parliament, who said—"We have merely to walk into our county register office, and in less than an hour we know all about the land we wish to buy as to mortgages or incumbrances, the buyer and seller appear, make the proper transfer, &c., and the whole thing is at once settled at an insignificant cost." So it is with our own public funds, where comfortable book-keepers arrange the matter between buyer and seller in a few minutes. The stockbroker charges 2*s.* 6*d.* per 100*l.*; in transferring land we pay 2*l.* 10*s.* per 100*l.*, and in addition a delay often of many months.

I must leave it to our longheads to arrange how all this is to be altered, which it certainly must be ere capital will abound in agriculture for the production of cheap and abundant food. *J. J. Mechi, Aug. 3.*

THE CATTLE PLAGUE.

The following returns were issued on July 27:—

This Return gives the number of cases occurring in Great Britain which have been officially reported to this Department. The divisions of England are those of the Census. Column 1 only records the cases reported as having commenced during the weeks indicated by the headings. All "back cases" are included in column 2.

Census Divisions.	1 Number Attacked.		2 Result of Reported Cases from Commencement of Disease.				
	Week ending July 14.	Week ending July 21.	Attacked.	Killed.	Died.	Recovered.	Unaccounted for.
Metrop. ..	1	—	7,969	3,427	3,714	318	450
S. Eastern .	—	—	4,880	1,705	2,939	466	171
S. Midland .	25	17	20,749	8,779	10,069	1,631	387
Eastern Co.	19	26	11,471	5,142	4,851	789	589
S. Western .	17	32	1,807	765	826	207	71
W. Midland.	31	31	14,854	6,754	6,995	1,510	995
N. Midland.	78	48	18,980	10,949	6,570	1,224	516
N. Western .	144	61	71,977	24,961	35,029	8,468	3,519
Yorkshire .	20	10	44,784	7,927	18,357	5,937	2,562
NorthernCo. & Monmouth.	—	—	8,046	4,941	2,613	974	118
Wales .	7	11	8,372	1,174	5,793	1,102	303
Scotland ..	2	1	46,861	6,263	28,088	10,707	1,803
	304	267	251,085	82,556	124,244	33,251	11,034

Back Cases reported in the week ending July 21:—North-Western Counties, 3.

The Return shows that 267 attacks were reported to have occurred during the week ended July 21, being a decrease of 97 on the previous week.

Correcting the total by adding an estimated average of attacks commencing during the week, but which may be subsequently included under the heading "back cases," the number for the week will be 281.

Three Inspectors who reported cases last week, have not reported in time for this return—viz., for the county of Buckingham, 2; and for Lincoln, 1. These inspectors reported 8 cases last week.

THE TRADE IN ANIMALS.

The Select Committee appointed to inquire into the manner in which the home and foreign trade in animals by sea and railroad is conducted, and to report what regulations, if any, should be enforced with a view of improving the treatment of animals in transit, and to prevent any introduction and spreading of infectious or contagious diseases among them, and who were instructed to inquire how far it is desirable to make any restraint or regulate the slaughter of animals in the metropolis and other populous places, have considered the matters referred to them, and have agreed to the following Report:—

Transit.

Foreign cattle and sheep are imported into England and Scotland from Spain, Portugal, France, Belgium, Holland, Schleswig, Denmark, and Sweden, and various parts of Europe. Cattle and sheep are also carried by sea from Orkney and Shetland to various ports in Scotland, and from Scotland and Ireland to England.

At present, cattle can only be landed at ports approved by the Customs' authorities. The chief ports for foreign cattle are—Liverpool, London, Harwich, Hull, Newcastle, Leith, and Granton; for Irish cattle, Glasgow, Silloth, Morecambe Bay, Liverpool, and Bristol. The Scotch cattle are chiefly taken to Liverpool and London.

The sea-borne cattle arrive generally in good condition. The vessels are, with some exceptions, specially fitted up for the purpose, and have divisions for every four or six animals, windsails or other means to secure ventilation, and in some cases shelter for the cattle in bad weather. Much however, still well-ventilated vessels appear to suffer from the want of a free current of air when these vessels are coming up the Thames, or are waiting for the tide to discharge their cargo, as at Newcastle, Hull, Bristol, and Leith, where the cattle cannot be landed at all stages of the tide.

The animals carried between decks are usually tied with their heads to the sides of the vessel, though the best mode is to tie them with their heads to the centre, because this latter method affords greater facility for feeding and watering, and for good ventilation; the Irish store cattle are brought over loose.

There is no rule respecting the numbers put on board, but, with the exception of some cases in the Irish and Bremen trade, the vessels do not appear to be overcrowded.

It is in evidence that in Ireland much injury arises to cattle from bad treatment received from drovers, and that cattle landed from Oporto and Spain arrive in a better state than those from Ireland.

In the voyage from Oporto each animal is allowed space to lie down, and is fed with compressed food and watered; in other cases the animals are packed close to one another so as to prevent their lying or being shaken down, and sometimes are neither fed nor watered until landed.

The animals are chiefly made to walk on and off board, and the practice of slinging is nearly abandoned.

It has always been the practice to cleanse the ships, more or less, after each voyage, and recently disinfectants have been used.

On the railways cattle are often overcrowded and badly treated, especially in Ireland, and are carried for 36 to 48 hours without being fed or watered.

It is bad for the cattle and troublesome to untruck them, while there is some difficulty in watering them while in a truck—a difficulty, however, which is not insuperable.

A journey, whether by sea or rail, causes cattle to deteriorate in value, and makes them feverish, and tends to produce, if it does not actually cause, the foot and-mouth disease. These evils are very much increased if cattle are ill-treated or not properly watered.

Since the recent Orders in Council the cattle-trucks appear to have been properly cleansed as far as is possible. Possibly the floors might be constructed so as to admit of a more thorough cleansing than is at present practicable.

Your Committee are of opinion that it should be made imperative upon all railway companies and steamboat proprietors who are engaged in the carriage of animals to thoroughly cleanse and disinfect the trucks, steamboats, and pens used by them after every journey or voyage, and that provision should be made under Government superintendence for the proper ventilation of all vessels employed in carrying cattle by sea, and also that similar provision should be made with respect to the vessels employed in carrying cattle from Ireland and Scotland.

The laws relating to cruelty to animals might be often enforced with advantage in the case of both vessels and railways.

Home Trade.

If London and other large towns could be supplied entirely with meat killed in the country, a great deal of the traffic in cattle, and consequently a great deal of the chance of spreading infectious diseases, would be avoided.

London and other large towns can, except in hot weather, be supplied to a great extent with dead meat from a distance; and frequently country-killed meat, though not so good looking, is better and keeps longer than town-killed meat.

At present the cost of sending carcases by rail is larger than that of sending live cattle; but, with proper arrangements, the cost of carriage might be diminished.

If animals are slaughtered in districts which are thinly peopled there is great difficulty in disposing of the offal, which does not bear the expense of carriage. It would be a loss to a farmer in such districts to be obliged to send his cattle to distant markets, dead instead of alive, and to the poor of London and large towns, who are great consumers of offal, and who would be deprived of it if those places were supplied by dead meat only.

The fear generally object to a dead meat system; they say that the supply is very irregular, and that prices are only kept from violent fluctuations by the live meat market.

Moreover, while admitting that the general demand is tolerably uniform, they say that their individual demand varies; that they can only meet this irregularity by buying cattle and keeping them alive in their own hairs to slaughter when required.

Many butchers and contractors who supply the suburbs of London are dependent for their meat on the metropolitan markets. If they were to suffer a great deal meat at these markets it would be impossible to supply meat in as good a condition as they do at present.

Your Committee are of opinion that it is not possible at present to dispense with a live meat market in the metropolis and other large towns.

Both in London and in the provincial towns butchers of the suburbs or neighbouring places have been in the habit of purchasing cattle in the live markets and removing them to their own premises, and keeping them there until required for slaughter. Those persons have suffered great inconvenience and very great expense by the recent prohibition of such removal, by the Orders in Council made in consequence of the cattle plague.

There does not seem to be any general desire permanently to restrain the general movement of cattle; and your Committee recommend that the Metropolitan Market should be confined to animals intended for immediate slaughter; and that all animals exhibited therein should be branded, and not allowed to be exhibited for sale in any other market, but should be slaughtered within 10 days, and that, subject to this regulation, the animals might be moved so as to allow butchers to take them to their own places and slaughter them.

Your Committee do not recommend that any permanent restrictions, other than those above suggested, should be placed on the house traffic in cattle. That they are of opinion that the wilful exposure for sale in a public market of animals suffering from infectious disorders, such as rinderpest, sheep-pox, pleuro-pneumonia, or glanders, or the knowingly driving such animals upon the public highways, or conveying them upon railway or boat, should be rendered an offence punishable in a summary manner, and if necessary a Bill to effect this should be introduced into Parliament.

The great inconvenience of cattle driving in the streets of London and other towns arises partly from cattle being driven to the live meat markets, and partly from cattle being driven from those markets to private slaughter-houses.

The live markets are not unhealthy in themselves, nor are slaughter houses, if properly kept, though they usually attract several trades which, in crowded localities, are injurious to public health.

The private slaughter-houses are occupied by two classes—the large butchers and retail butchers.

The large butchers kill animals for the purpose of selling them wholesale in the dead meat market. This slaughtering could be carried on at a public slaughter-house adjoining the live market as well as at private slaughter-houses; and if this were done the number of cattle driven through the streets would be very much reduced, and the noxious trades which are connected with them would be removed.

The slaughter-houses of the retail butchers stand on a different footing. The abolition would cause great hardship to many butchers who have slaughter-houses adjoining their shops, and can slaughter animals as they require them under their own superintendence.

For the public interest it would be advisable as far as practicable to adopt a system of public slaughter-houses, and in all cases slaughter-houses should be placed under regulations and proper inspection, as is the case at present in some of the provincial towns; and your Committee are of opinion that power should be given by a general Act to local authorities to acquire land for the erection of slaughter-houses, and to make regulations respecting them.

That the system of inspection at present existing in the city of London should be extended to the whole metropolitan district, although no entirely satisfactory inspection of meat can be carried out until all meat is killed in specified public slaughter-houses.

Foreign Trade.

The importation of foreign cattle is very important, for, as the home supply of cattle is reduced, the importation tends to keep down the price of meat, and it appears impossible to supply dead meat from foreign ports to any but a very small extent.

The introduction of disease is, to a great extent, prevented by the system of inspection, which makes importers careful to send sound animals. The inspection is at present carried out effectually, though the accommodation at some wharves is deficient.

Diseased animals are slaughtered, but the rest of the cargo is sold, except in cases of rinderpest, when the whole cargo is slaughtered. Store stock affected with foot-and-mouth disease are, in some cases, detained until cured.

Inspectors cannot discover undeveloped seeds of disease in an animal, and therefore, with the view of preventing the importation of disease from abroad, many persons are desirous of placing store cattle in quarantine, and of maintaining the present regulation as to slaughtering fat cattle at the port of discharge within four days from their arrival.

The compulsory slaughter of all foreign cattle at the port of discharge, under the recent Orders in Council, has prevented the importation of any store cattle or sheep (which was an increasing trade), much to the detriment of the Scotch farmers, who have been unable to stock their lands, and has diminished the importation of fat cattle, a trade which would otherwise have increased.

The temporary inconvenience of insufficient accommodation for slaughtering at the wharves could no doubt be removed, but the evil of causing a large amount of additional slaughtering in large towns, as Liverpool and Hull, is more difficult to deal with.

Compulsory slaughter at a port, like compulsory slaughter at a market, is more expensive to the butcher, hampers the trade, and will diminish the importation and raise the price to the consumer.

Your Committee recommend that all imported fat cattle should be subject to the same rule as English fat cattle when exposed in a market—that is to say, marked for slaughter within a week, and not allowed to be exposed in any other market.

That the Privy Council shall declare any country in which they have reason to believe the cattle plague is existing to be an infected country, and to prohibit the importation altogether of animals therefrom, or to declare that such importation shall only take place at certain ports, and that animals so imported shall not be taken into any market, but be slaughtered at the port within four days after being landed.

Besides the general question of slaughtering at the port of discharge, it was suggested that there might be a separate market for foreign fat stock in London close to the wharves, and that foreign stock might be excluded from the Metropolitan Market, or at least from the Cattle Market.

The plan would prevent the chance of introducing infection from foreign cattle into the Metropolitan Market, and would stop the inconvenience of driving cattle through the streets from Blackwall to Copenhagen Fields, many of which are brought back to Whitechapel.

It is objected to by Dr. Letheby, by several inspectors, and by nearly all the butchers and salesmen, who allege that the separation of the home and foreign markets would be inconvenient, would decrease the competition, and tend to diminish the importation, and increase the price, and would "give an unfair advantage to owners of English stock."

Although to some extent one class of butchers purchase foreign and another class English fat cattle, yet there are many who purchase both. The separation of the markets would exclude these men from one or the other market.

Such a separation of the two markets seems, therefore, undesirable. The evil of the cattle driving in the streets might be much diminished if the cattle were landed lower down the river than at present and brought up by rail, while this course would also bring the cattle in better condition and allow of better accommodation at the wharves.

The chance of infection will also be much diminished if the Metropolitan Market were made exclusively a fat meat market, as in that case all the cattle would be, according to our previous recommendation, killed within 10 days.

It seems desirable, where practicable, in large towns to separate the fat and store cattle-markets.

Any system of quarantine will require extensive accommodation at the port of arrival, and in some cases (as Liverpool and London) there may be difficulty in providing this.

The objections urged to any system of quarantine are the expense, the interference with trade, and the deterioration of the animal during the quarantine, while it is said that the animal might catch the disease from the place where it is quarantined. The expense would be small, act as a tax on importation, and if it did not stop importation altogether, would diminish it, and raise the price to the purchaser.

It is alleged, on the other hand, that a purchaser would gladly pay an increased price, as he would have a kind of warranty of the soundness of the animal; but it may be doubted whether the quarantine furnishes an adequate security that the animal is free from disease.

The only disease for which quarantine appears to be at all reasonable is the rinderpest.

Where countries like Spain or Denmark are not only free from rinderpest, but are not a channel for the exportation of cattle from infected inland countries, there seems to be no reason for a quarantine for cattle exported from them.

Your Committee are of opinion that a permanent department of the Council Office should be appointed to keep up communications with the Board of Customs and Her Majesty's Consuls abroad in order to have accurate accounts as to the existence or otherwise of cattle plague, upon whose recommendation the Council could, if they thought fit, order a quarantine or impose such restrictions upon the trade in animals as circumstances might appear to them to justify.

July 19, 1866.

Home Correspondence.

Weaning Time.—The months of July and August are generally chosen by sheep-breeders as the months in which to wean their lambs. It is the right time, undoubtedly. The summer pastures, downs, and seeds have done their best, and "begin to go off;" the Grass and Clover eddishes are growing favourably, and will soon be ready to stock. The ewes are losing their milk. The lambs are old enough and strong enough to take care of themselves, and their dams require rest, and time for their milk to be altogether dried up, so that they may recover condition before again being put to the ram. Both ewes and lambs require a change; the lambs a preparation for their winter's food, the ewes for taking the ram or a satisfactory gestation. Neither of these very desirable objects can be attained unless a reasonable time is given, and long experience teaches that four or five months is time long enough to rear the lamb, and two or three months is time quite short enough to prepare the ewe for the ram. This then is the proper weaning season. Weaning time is always a critical season for both ewe and lamb. It is indispensable to the prosperity of a breeding flock that the ewes during the time of suckling should be kept in a healthy and good suckling condition. For this purpose they should be kept upon the sweetest and best suckling pastures the farm will afford. They should have plenty of room to roam about, so that the lambs may pick up such varieties of natural Grass and herbage as instinct teaches them to choose for their better sustenance, as we know that the more pasture-room lambs have to wander over, the better they thrive. Fattening pastures are not good suckling pastures; on them the ewes will accumulate fat and decrease in their milking properties. The lamb "well summered is half-wintered." The ewe immediately after shearing will yield more milk, and as the lamb grows he requires more, and is constantly teasing the ewe and drawing the udder to the serious injury of the ewe, so that it soon becomes evident that in accordance with good management the lamb must be weaned, and every good breeder makes provision for it accordingly. It is a good practice to take the ewes from the lambs and to leave the lambs upon the pastures where they have been accustomed to graze. The pasture, owing to the absence of the ewes, will speedily improve, and the lambs rest more quietly about their old haunts. They are also saved the risk of any great change of food as Grass or Clover eddishes present. On these summer pastures they should remain for three or four weeks, provided they are fruitful and nutritious. If they become bare, or in any way innutritious, the lambs must be removed and put on to Clover or Grass eddishes; be that as it may, the stocking of these eddishes should not be deferred later than the third week in August, by which time they will be well grown, and the Clover ready to come into its second flowering, when it is sound and proper food for them. It is by no means good management to put them on young Clover or young seeds, or before the eddishes are sufficiently grown—the danger is from scouring and colic; cake or corn will do much to correct this tendency; but still the danger is great, and if young lambs are but once rendered unhealthy in the autumn, depend upon it a sorry wintering is the result. They must, if possible, be kept in a thriving state, and as the pastures decline, an allowance of cake or corn should be given. A small portion will cause them to hold in condition—3 or 4 ounces of good cake is an ample ration. As the eddishes lose their nutritious quality, preparation should be made to remove them to their winter keeping. Some of the stronger lambs may be drafted off to roam over the Turnip crop as weeders, or to pick out herbage here and there. In this way they often do well, and are thus gradually brought to eat the Turnips, and teach the remaining to do the same. Lambs will do exceedingly well upon young Clovers growing where the corn is reaped and the Clover is strong, but not where it is mown. The great thing is to provide for them sound good food, nothing too succulent or likely to cause scouring or looseness of body. The breeder's own judgment must be his guide in all these matters. *O. F.*

Continental Traffic.—The comparatively new line of communication between the Continent and England by the Great Eastern Railway *viâ* Harwich appears to be well patronised for the transmission of cattle from Antwerp, as the following extract from the report of Consul Grattan will show. "There has been a large and increasing export trade in cattle from this port, which was, however, considerably checked during the past year by the restrictions established by the Government consequent upon the breaking out of the cattle plague in Holland and France. Horned cattle having ceased to be admitted into Belgium since the Arrêté Royal of the 30th of August, 1865, the transit trade from Holland and Germany towards England became confined to sheep, of which large numbers were shipped in the steamers from Antwerp to London and Harwich. The Harwich line alone carried the following head of cattle, sheep, &c., during the year 1865, viz., bullocks, 6143; calves, 461; sheep, 121,448; pigs, 127. And a large number were also conveyed by the boats of the General Steam Navigation Company trading direct from this port to London. The importations of cattle from England into Belgium is very inconsiderable, consisting chiefly of animals introduced for breeding purposes." From Dunkirk we learn that not one instance of cattle disease has occurred in that arrondissement; the precautions adopted of stopping all movement of cattle, and the strict vigilance maintained by the local authorities, having been completely successful, although so near the frontiers of Belgium. The pork disease, which appeared at Lille, seems also to have made no further progress; and the supervision exercised at all the octrois prevented any diseased meat from being brought to sale, each being provided with microscopes, and a close inspection enjoined. *John R. Jackson.*

Societies.

ROYAL AGRICULTURAL OF ENGLAND.

Monthly Council: *Wednesday, August* 1, 1866.—Present, Mr. H. S. Thompson, President, in the chair; the Earl of Powis, the Earl of Shrewsbury and Talbot, Lord Chesham, Lord Vernon, Major-General the Hon. A. N. Hood, Sir Massy Lopes, Bart., M.P., Sir T. Western, Bart., M.P., Mr. Bowly, Mr. Cantrell, Colonel Challoner, Mr. Barnett, Mr. Brandreth Gibbs, Mr. Holland, M.P., Mr. Jonas, Mr. Randell, Mr. Rigden, Mr. Robert Smith, Mr. Wells, Professor Wilson, Mr. Frere, and Dr. Voelcker.

The following New Members were elected:—
Brown, Arthur H. C., Kingston Blount, Tetsworth.
Grantly, Lord, Wonersh Park, Guildford.
Greenwell, Thomas, 43, Old Elvet, Durham.
King, George, East Haddon, Northampton.
Vane, Sir Henry Ralph, M.P., Hutton Hall, Penrith.

Finance.—Major-General the Hon. A. N. Hood, Chairman of the Committee, presented the Report, from which it appeared that the Secretary's receipts during the past month had been examined by the Committee, and by Messrs. Quilter, Ball, & Co., the Society's auditors, and were found correct. The balance in the hands of the bankers on July 31 was 1825*l.* 0*s.* 1*d.* This Report was adopted.

Journal.—The following list of subjects was recommended for Prize Essays for 1867:—

1. County Essay, Huntingdonshire, 25*l.*
2. County Essay, Leicestershire, 25*l.*
3. Farming Customs and Covenants existing in England, 30*l.*
4. On the Result of Ploughing in Green Crops for Manure and the crops best adapted for the purpose, 15*l.*
5. Land Drainage and Improvement by loans from Government or Public Companies, 25*l.*

6. The Drainage of Grass as distinguished from Arable Land, 10*l*.

7. How far the Rearing and Management of Poultry on an ordinary farm are capable of improvement and profitable extension, 10*l*.

8. The best treatment of Affections of the Bladder amongst fattening Sheep and Lambs, 15*l*.

9. On the Latest Improvements in the Construction of Dwellings for the Labouring Classes, 20*l*.

10. Short History of Rise and Progress of Herefords, 25*l*.

11. Any other Agricultural Subject, 10*l*.

HOUSE.—Major-General the Hon. A. N. Hood reported that the Committee had received from Mr. Fowler, the architect, plans and estimates for the alterations as requested by the Council. They submitted Mr. Fowler's report, and it would be for the Council to determine to order what steps may be taken relative thereto. An amendment to the Report was moved by Mr. Randell and seconded by Mr. Holland, M.P., that there be no alteration made in the house, but this was negatived, three votes only being given for it. The adoption of the Report was then moved by Colonel Challoner, seconded by the Earl of Powis, and carried unanimously; the alterations to be made in accordance with the plan C, the whole to be carried out at once under the supervision of the House Committee at a cost not exceeding 870*l*., and the Council to be authorised to advance 500*l*. as the work proceeds.

STEAM CULTIVATION INQUIRY.—Lord Vernon, Chairman, stated that the Committee recommended that the following instructions be issued for the guidance of members of the Steam Cultivation Inspection Committees.

On receipt of instructions from the Council to visit any particular district, they will be furnished with—

1. A list of all the farms in the district where steam cultivation has been adopted.

2. A selection from the list of farms to be inspected, and the replies received by the Society from the owners of Steam Cultivation Implements to the schedule of questions addressed to them. Although the Inspecting Committees are not of course thereby precluded from inspecting a farm which is not on their list, on being satisfied that there are sufficient reasons for doing so, it must be their object to limit themselves as much as possible to the number of days allotted to the district assigned to them. In order that the time so applied, this they will be at liberty to adopt in regard to any of the selected farms which, from information received, they may consider to possess an especial interest, more particularly if distant from their main route. In either case they will be expected to report their reasons. Spare them reasons for omitting from the prescribed list.

3. The inquiry should be directed to the following points:—

i. The cost per acre, the depth, and manner, including the number of horses employed of each kind used.

ii. Any and if so, what, modifications of the machine and the amount of annually required stock of the implements or the engines, and the reasons.

iii. How far the adoption of steam cultivation has been assisted the drainage of strong lands, how far the employment of steam power has changed by the adoption of a different variation—more especially to what extent autumn cultivation has been introduced, the growth of green crops, and how far the productiveness of the soil has been increased by steam-cultivation.

iv. The comparative cost of working sites to which the motive power has been used for the purpose of steam-cultivation on or off the farm.

v. The number of days in which it has been used for other purposes on or off the farm, stating the nature of the work done, the daily cost and amount charged when taken on hire.

vi. The number of days lost by breakage and other causes.

vii. In the case of steam-ploughs, &c., let out for hire, to state what kind of wages are given to the driver and attendants, and the mode in which the cost of repairs of the apparatus.

viii. The consideration of the economical supply of water for steam cultivation.

ix. The economical mode of storing and forming roads and methods for steam cultivation.

4. In the exercise of the power thus given to the Inspection Committee of deviating from the list of selected farms, they are requested to keep prominently in mind that one of the main objects of the inquiry is to obtain information on the comparative value of the different descriptions of steam apparatus, the different systems of cultivation adopted, and especially their adaptation to large or small farms, and any other points which they may consider to be deserving of notice.

5. The Report of the Inspection Committee to be made within a month after the completion of the inspection of a district.

This Report was adopted.

The President presented the Report of the Committee on the best mode of filling vacancies in the Council:—

1. That a standing Committee shall be appointed, to be called the Committee of Selection.

2. That the Committee do consist of the President, the Chairmen of the Finance, Journal, Stock Prizes, Implement, Country Meeting, and Chemical Committees, with six other members to be elected by the Council.

3. That it shall be the duty of such Committee, previously to the periodical expiration of the term of appointment of the President and of those Members of Council who retire by rotation, and also on the occurrence of any casual vacancy in the office of President, Trustee, or Vice-President, or in the Council, to meet and report to the Council any circumstances which, in their opinion, ought to be considered at the time when such vacancy is filled up.

4. That all nominations of persons proposed to be elected to fill such vacancies shall be referred to the Committee.

5. That without attempting to establish any exact equality between the different districts into which the country is divided for the purposes of the Annual Meetings, the Committee shall endeavour to secure not less than three Members of Council from each such district in which 400 members of the Society reside.

6. That the Committee shall consider it an object of importance, that of the ordinary Members of Council as nearly as may be, one half shall consist of Urban Members.

7. That in filling up the vacancies which the Committee is to nominate, it shall not be done until Notice has been given to the Council generally, by the fact that in districts A and C there are [illegible] Members to be elected, and that each of these districts is at present represented by only two Members of Council.

This Report was received and adopted.

A letter from the Royal Veterinary College on the subject of experiments connected with the Cattle Plague, was referred to the Journal Committee.

An application from the Royal Hawaiian Agricultural Society, for a copy of the Society's Journal, was acceded to.

The Council having granted the usual leave of absence to the Staff, adjourned to their Monthly Meeting on the 7th November.

Farmers' Clubs.

NEWBURY: *The Food of Plants.*—At the last meeting of this Club for the present season a lecture was delivered by Mr. R. Warington, jun., of Cirencester College: the subject—The Food of Plants. The lecturer said he was sure he need not enlarge on the advantages agriculture was sure to gain from accepting the aid of science. Mechanics, animal and vegetable physiology, and geology were all rendering important assistance; from chemistry, however, most was to be expected, this science taking a wider range, embracing at the same time the subject of soil, manure, and the nutrition of crops and animals, and also possessing in the operations of chemical analysis a more certain and powerful means of research than the other sciences. All the results of chemistry were founded upon experiment; as careful experiments multiplied, the science grew, hence the great value to agricultural chemistry of such an establishment as that at Rothamsted.

The subject of the lecture could be only treated briefly. If we knew the chemical composition of a plant, we knew something about the food necessary to nourish it. A crop of Wheat yielding 30 bushels of corn will contain, besides water, about 1727 lb. of carbon, 1800 lb. of oxygen, 242 lb. of hydrogen, 49 lb. of nitrogen; and 98 lb. of incombustible matter, containing 11 lb. of lime, 53 lb. of magnesia, 33 lb. of potash, 19 lb. of phosphoric acid, and 98 lb. of silica, with small quantities of other substances. But from what sources did the Wheat plant obtain these ingredients? We knew that all the carbon (charcoal) was derived from a gas, carbonic acid, contained in the atmosphere and soil; that the oxygen and hydrogen were obtained from water; the nitrogen from either ammonia or nitric acid—substances present to a very small extent in both soil and atmosphere; the lime, potash, silica, and other incombustible ingredients we knew to be derived from the soil. These plant-foods were the same for all crops; with these in abundance, and suitable conditions of climate, &c., any crop could be grown. Plants had thus the wonderful power of producing such substances as starch, sugar, woody fibre, gluten, from a few simple gases, water, and the mineral rocks. The food of plants was in this respect a simple subject; when practically considered, however, it was not so. The farmer wanted to know what supply of food is afforded by Nature, and whether this was sufficient for his crops, and consequently what substances he should apply as manures. As there was always sufficient water to supply abundance of oxygen and hydrogen, we had only to consider what was the amount of carbon, nitrogen, and ash constituents furnished by Nature, and whether this supply is sufficient for the different crops. The quantity of carbon required by different crops was pretty uniform, amounting in most cases, for crops of tolerable luxuriance to nearly 1 ton per acre. The supply of carbonic acid in the atmosphere was, however, amply sufficient for this demand, excepting perhaps in the case of Turnips and other root crops, which seemed peculiarly benefited by manures yielding carbonic acid to the soil.

The quantity of nitrogen required by different crops varied greatly; roughly speaking, average crops of Wheat, Barley, Oats, and meadow hay would contain 50 lb., and crops of Beans, Clover, and Turnips, 100 lb. of nitrogen. A certain amount of nitrogen was supplied by rain, which in its passage through the atmosphere dissolved some of the ammonia and nitric acid there present. About 8 lb. of nitrogen per acre were found to be supplied by rain in the course of one year, the fall of rain being 22 inches; the amount would be somewhat larger in wet seasons. The soil also absorbed ammonia from the atmosphere, the amount being dependent on the nature of the soil and the extent of surface exposed by tillage. The beneficial effects of a bare fallow were in great part due to the absorption of ammonia which then took place. The extent to which plants are themselves capable of absorbing ammonia from the atmosphere was at present unknown, it must in many cases be but small.

Were all these sources of nitrogen taken together sufficient for the wants of crops? The amount thus furnished was not nearly sufficient for cereal crops when grown under ordinary circumstances. Wheat, Oats, or Barley can only be grown luxuriantly when the soil is enriched with nitrogen beyond the annual atmospheric supply; hence the value of nitrogenous manures, such as guano, nitrate of soda, and sulphate of ammonia. At Lois Weedon large crops of Wheat were grown without manure; alternate fallow with very deep tillage, utilising the nitrogen of the atmosphere to a far greater extent than was possible in ordinary practice. Turnips appeared to derive almost the whole of their nitrogen from the soil; the quantity supplied by the atmosphere was not nearly sufficient for a full Turnip crop. manures containing nitrogen did not, however, produce so striking an effect on Turnips as on cereal crops, since Turnips were better able to supply themselves from the soil than the cereals. Leguminous crops (Clover, Beans, Peas, &c.) obtained their nitrogen in a manner that was at present little understood. these crops contained large quantities of nitrogen, yet were scarcely benefited by nitrogenous manures. According to one view they obtained their nitrogen in the shape of nitric acid from the subsoil; another view ascribed to them a peculiar power of acquiring nitrogen from the atmosphere. The amount of incombustible substances, or ash constituents, at the disposal of a plant must depend on the composition of the soil. For want of time only two of these substances—potash, and phosphoric acid—could be considered; these were in some respects the most important of the ash constituents, and those which a soil was most likely to be deficient in. As a general rule, soils derived from primitive rocks were richer in potash, and soils formed from more recent deposits, richer in phosphoric acid. The amounts of potash and phosphoric acid required by average crops were in pounds per acre about as follows:—

	Wheat.	Barley.	Oats.	Beans.	Clover.	Turnips.
Potash ..	33	27	31	51	74	124
Phosphoric acid	14	19	10	28	16	25

The power of a plant to supply itself with potash and phosphoric acid from the soil must depend a good deal on the extent of its roots, and upon the length of its time of growth. Clover was perhaps of all crops the most favourably circumstanced in these respects, and Barley the least. Considerations of this kind did not however tell us the whole truth, and experiments on the effect of potash and phosphoric acid as manures did not always agree with these deductions; thus the Clover crop at Rothamsted was materially increased by potash, though this manure scarcely affected Turnips, a crop requiring even more potash than Clover. Turnips, again, were in the same experiment greatly benefited by phosphoric acid, though not containing less of this substance than Beans, which were scarcely increased by phosphates. Turnips were here a striking exception to the general rule. We had now seen illustrated in many ways the important fact, that each kind of crop has its peculiar strength and weakness—that it is much more able to supply itself with some parts of its necessary food than with others. In this truth, rightly understood, lay the whole theory of special manuring. The farmer, by special manures, sought to supply the particular substances that his crop would have most difficulty in procuring. To proceed successfully the farmer must know: 1st, what food constituents his crop will require; 2d, what is the previous history of the field; 3d, what is the composition of his manures.

A vote of thanks to Mr. Warington closed the short discussion which ensued upon the delivery of his interesting lecture.

Reviews.

The Quarterly Journal of Science. July, 1866. Churchill & Son.

The current number of this Quarterly periodical, besides its Chronicle of Progress in the various sciences, contains papers on most of the topics which have excited prominent interest in the scientific world during the past quarter. Thus Cholera, Coal Supply, Science and Crime, Prehistoric Remains, &c., form the subjects of very interesting papers. The Agricultural Chronicle refers to the Cattle Plague Reports of the Royal Commission, to the statistical tables published by the Board of Trade, to the Meat Supply and the Meat Manufacture, to Dr. Voelcker's Lectures on Agricultural Experiments, and to Professor Buckman's accounts of new Agricultural Plants.

On the Chemical Composition and Fertilising Value of the Sewage of Dublin. By Prof. C. A. Cameron, M.D., &c. R. McGee, 35, Lower Sackville Street, Dublin.

This pamphlet reproduces a paper lately read by Prof. Cameron before the Royal Dublin Society. The subject is occupying men's minds in Oxford, Norwich, and many other towns where the need is urgent of turning the town waste to agricultural account, in order both to reduce the river pollution and to obtain some return for the enormous expense of town drainage. And we therefore make no apology for extracting such passages as bear on the probability of the operation proving profitable.

"Sewage Purification.—Sewage.—I believe the fertilising value of sewage to be very great when applied under certain conditions. (*a*). The sewage of the old part of the city of Edinburgh has for a long period of time been employed for irrigating the lands and the Grass Farm of Mr Miller, at Craigentinny, for some years past has had its sewage entirely applied to the irrigation of its meadows. This farm consists of 240 acres of land, drained from the sea, and which at one time was let at £4 an acre. Over this farm the sewage arrived from a district inhabited by 80,000 souls is poured: nothing save Grass is grown; and the amount of the produce which it yields is annually obtained is almost incredible—three or four, and even more crops have been obtained in one year, and that too in a rigorous northern climate. The Craigentinny meadows are let to dairymen of Edinburgh at an average rent of £21 per acre. With respect to the disposal of its sewage, Edinburgh is far more favourably situated than any other large city in the empire; its site being much higher than the surface of the surrounding country, the mere force of gravity conducts its sewage to the meadows which it irrigates. Formerly about 2000 acres were irrigated by the Edinburgh sewage; but the spread of buildings, and other causes, have reduced that number by more than one-half.

(*b*). At Rugby, sewage has been applied to agricultural purposes for the last [illegible] Mr Bailey has undertaken to the whole of the sewage of the town, for which he pays a rent of 50 per annum. In 1861 a Royal Commission was appointed to report upon the sewage of Rugby. The report was to be to the effect as to the quantity and composition of Grass produced on land, a portion of which was to be [illegible] with sewage, and [illegible] portion to remain unmanured. Fifteen acres were divided into three equal parts, one of [illegible] on which cows were to be fed, another for [illegible] and the [illegible] to be mown. In 1861 the [illegible] divisions was further subdivided into [illegible] and [illegible] and the third received [illegible] particles of sewage.

Some of the results obtained are tabulated in the following Table :—

Produce given to Oxen.

	Sewage required per annum.	Actually applied to end of October.	Total Grass per acre.				Increase of Grass per 1000 tons of sewage.			
			tons	cwt	qrs.	lb.	tons	cwt	qrs.	lb.
1	—	—	9	[illegible]	3	5	—	—	—	—
2	3000	1872	14	16	3	8	2	19	1	7
3	[illegible]	4423	27	1	0	10	4	0	1	0
4	9000	61[illegible]	32	16	3	8	[illegible]	16	2	9

"On the Grass given to the milch cows the effects of the sewage were still more favourable, as will be seen in the following Table :—

Produce given to Milch Cows.

Sewage applied.	No. of weeks the produce kept a cow.	Gallons of milk per acre.	Value of milk at 8d. per gallon.	Value of milk from increased produce of 1000 tons sewage.
			£ s. d.	£ s. d.
0	19.0	321.0	10 14 [illegible]	[illegible]
1387	40.0	570.7	19 0 6	[illegible] 19 10
2804	58.8	820.4	27 6 11	[illegible] 16 8
122[illegible]	68.9	961.3	32 0 10	5 0 11

"In these trials it is shown that the application of sewage was attended by a very great increase in the produce of Grass. 'Deducting the value of the milk from the Grass of the unsewaged from that of each of the sewaged acres, reckoning it at 8d. per gallon, it appears that where about 1100 tons of sewage were applied, during the seven months, the produce calculated for each 1000 tons of sewage actually applied gave an increased amount of milk to the value of [illegible] 1s. 10d.; where twice that amount of sewage was applied, 5l. 1s. 8d.; and where three times the quantity, [illegible] 0s. 11d.' The value of the milk obtained from an acre of unsewaged Grass was only 10l. 14s. 3d., whilst from the most highly sewaged Grass the value of the milk amounted to no less than [illegible] 10l. The Rugby experiments, which were conducted under the direction of Mr. J. B. Lawes—so well known for his invaluable chemico-agricultural investigations—have been considered somewhat unsatisfactory, on the ground that the sewage was not always applied at the proper time; and Mr. Walker states that the fields were flooded to such an extent as to seriously deteriorate the quality of the herbage. Mr. Lawes admits that the experiments were in some respects so conducted that their results would not appear so favourable to the sewage as under proper conditions would have been the case; but still the great fact remains, that land abundantly sewaged is capable of producing three times as much milk as the same kind of land when unsewaged.

"(e). The sewage of the small town of Ashburton, in Devonshire, is distributed over the greater part of a valley which belongs to the town; the sewaged portion of the valley lets at the rate of [illegible] per acre, whilst the rent commanded by the unsewaged fields is only [illegible] per acre.

"(f). The sewage of Mansfield is poured over lands in the vicinity of the town, which in consequence have been raised in value from [illegible] per acre to 12l. per acre.

"(g). The sewage of [illegible], of Leicester, of Watford, and of two or three other towns, is applied to the useful purpose of fertilising the soil; and although [illegible] failures in some instances have arisen from futile attempts to concentrate the sewage or to distribute it over too wide an area, still in every case the [illegible] manurial power of the article is strikingly exhibited.

"(h). On the Continent the sewage of towns is in some places utilised on a large scale. Some time ago our Government appointed a commission, composed of Messrs. Way, Austin, and Southwood Smith, to draw up a report on the system of irrigation followed in the north of Italy. In this report it is stated that the sewage of the city of Milan is employed in irrigating about 4000 acres of land situated at a distance of a few miles from the city. Each acre receives annually about [illegible] tons of sewage in which are contained the egesta of 40 persons. This land possesses an extraordinary degree of fertility and becomes so charged with rich organic matter that its surface is periodically pared, and the parings used to manure other lands not so favourably circumstanced. A Dr. Chiappa has a farm of 350 acres near Milan, which is manured with the sewage of the city. The portion devoted to Grass contains 80 acres, yielding annually 22 tons of produce per acre. The Grass is partly made into hay, partly consumed in the green state, and is found sufficient to maintain 100 cows. It is calculated that the 9000 tons of sewage applied to each acre are equivalent to 4l. 8s. worth of well-decomposed manure; but it must be observed that the sewage of Milan is commingled with the water of the river Vettabbia, and is consequently more dilute than the sewage of Dublin. The conclusions at which these Commissioners arrived were chiefly as follows:—That the experience of the application of sewage in the neighbourhood of Milan affords a striking illustration of the immense advantage which the command of large quantities of mere water alone confers upon agriculture; that the fertilising virtues of the water are enormously increased by the addition of sewage, and by its temperature being raised by its passage through a town; that the health of the population of the districts manured with sewage is not worse than that of the population of regions in which pure water irrigation is carried on; that notwithstanding the elevated temperature of Italy, no disagreeably odorous emanations arise from the sewaged fields; and, finally, the Commissioners condemn in very decided terms the folly and extravagance of the British people, who by most expensive arrangements seek to get rid of a manure which ought to be equivalent to the annual exportation of many hundred thousand tons of guano.

"(g). With respect to the application of sewage derived from manufactories, public institutions, and the large establishments and villages, there is abundant evidence to show that the general results have been satisfactory. Alderman Mechi states that the use of sewage on his celebrated farm at Tiptree Hall proved highly productive and remunerative. The Earl of Essex has constantly employed sewage manure since, I believe, 1857, and with an extraordinary degree of success. This nobleman states that he has obtained from sewaged meadows the large produce of 46 tons per acre, whilst from the same quality of meadow, which had not been sewaged, the produce amounted only to from 7 to 8 tons. On the Earl of Essex's farm an application of 2[illegible] tons of sewage per acre of Mangels, produced a yield of 4[illegible] tons, or about double the average produced of that crop in England. Latterly the Earl has restricted the application of the sewage to Grass lands. Even in the case of market gardens the use of sewage has proved profitable. In the number of the *Irish Farmers' Gazette* for 27th August, 18[illegible], Mr. R. O. Pringle gives an interesting account of the results of the application of sewage at Mr. Niven's celebrated garden farm, Drumcondra, Co. Dublin. 'The system of liquid manure which has been adopted at this farm is very simple. At the upper end of the field there is a large tank, which is kept full of liquid manure of the best description derived from the High Park Reformatory. Before Mr. Niven got this portion of the ground all the sewage from that establishment was discharged into an open ditch, and was, in fact, a great nuisance, as well as likely to prove prejudicial to the health of the inmates. By an arrangement with the managers of the institution, Mr Niven was permitted to throw pipes across the old ditch and convey the sewage into his own tank; and some idea of its value will be gathered from the fact that the consumption of soap alone in the Reformatory is nearly a ton a week, producing an immense quantity of suds, which, with other materials, combine to form a most valuable manure.' At the time of Mr Pringle's visit there was a fine crop of Kemp Potatos which had been manured with sewage only, and which, up to 11th August, had furnished 11½ tons per acre, a considerable quantity still remaining in the ground. When we consider that market gardens require the largest supplies of manure, and that those in the neighbourhood of London sometimes receive 120 tons of natural manure per acre, I think the case of the garden farm at Drumcondra indisputably proves that sewage is capable of supplying the wants of every kind of crop. This morning I received a letter from Mr Niven, in which he states that he continues to use, in conjunction with a small proportion of stable manure, the sewage, and that he even applies it to fruit bearing trees. He says that the effects on the Vine and Peach trees are 'amazing.' Here, then, we have a nursery and market garden consisting of 30 acres maintained in the highest state of fertility by the sewage derived from a single establishment, the inmates of which do not exceed [illegible] in number.

"*The* [illegible] *Crops and Soils for Sewage.*—With respect to the kinds of crops to which sewage is most adapted, it appears to be admitted on all sides that the natural and artificial Grasses are those that have hitherto been most benefited by its application. There are, however, on record the results of experiments, which go far to prove that sewage may under certain circumstances be usefully applied on tillage farms. As a general rule the constituents of a manure are rendered more efficacious by dissolution in large quantities of water, because they are certain to be thereby equally distributed throughout the soil, and each of the plants they are intended to nourish will obtain its fair share.

"The advantages of using manure in the form of a dilute solution are clearly shown in Mr Ruston's paper in the 20th volume of the Journal of the Royal Agricultural Society of England. This gentleman obtained a large increase in all his crops—Grass, green and white—by simply applying the manure to each acre commingled with about 4000 lb. weight of water. As a general rule, however, I believe that town sewage, which is an excessively dilute solution of manure, cannot be employed to any great extent on tillage farms, more especially on those that are not thoroughly drained.

"Light or medium soils resting on a sandy subsoil will be found the best absorbents of sewage, although their power of retaining the fertilising ingredients is not so great as that of [illegible]. On [illegible] the chief fault of which is [illegible] the use of town sewage would [illegible] the reverse; the land would [illegible] the soil so cold and wet as to [illegible] plants. Land of any kind [illegible] constantly [illegible] of sewage [illegible] the long period [illegible] devoted to the [illegible] of the ground, [illegible] of the [illegible] is desirable, and during the ripening of the crop heat and a very moderate degree of humidity are necessary. It is clear, then, that cereal crops could only be benefited by very moderate doses of sewage applied at only certain periods of the year. [illegible] I believe that both [illegible] and green crops would [illegible] by its use; and if it were in a more concentrated condition than that derived from large towns is, it might be applied during by far the greater part of the year. The use of dilute sewage on tillage farms being therefore very restricted, it would be unwise to attempt to supply the tillage farmers of a wide area with the drainage of a city like Dublin. Gas companies often find it unprofitable to lay down pipes to certain districts remote from their works, although their commodity is sold at the rate of 4s. or [illegible] per thousand cubic feet. It would be still more unwise were sewage utilisation companies to attempt the laying down of pipes over a wide district in order to supply an article at the rate of only 1d. or 1½d. per ton. Grass lands are in a very different condition with respect to sewage; they are ready at almost any time for the reception of this manure, and their produce is, within certain limits, proportionate to the amount of sewage applied."

The following are Professor Cameron's results of analysis obtained when examining the sewage of Dublin :—

"*Composition and Value of the Sewage of Dublin.*—It is very difficult to arrive at an accurate knowledge of the composition of the sewage of a large city, owing to the many disturbing influences which affect it. The rainfall, the supply of water in each locality, the food of the inhabitants of the district, and the hour at which the article is collected, are all important points which must be taken into consideration in estimating the average value of a ton of sewage. Quite recently I have made an analysis of sewage, consisting of a mixture of no fewer than 40 samples, selected at different hours, during both day and night, from different sewers at their outlet into the river. I find on comparing the results of this analysis with those obtained in 18[illegible], that there exists a close agreement between them.

"According to the results obtained by my last analysis, 100 tons of the sewage of Dublin contain the following fertilising ingredients:—

"1st. In complete solution—

			£	s.	d.
Nitrogen ..	16.70 lb., at £70 per ton		0	10	3.77
Phosphoric acid	[illegible]	.. [illegible]	0	1	4.50
Salts of potash	5.12	.. 20	0	0	10.97
Salts of soda ..	16.6	.. 1	0	0	1.78
		Total,	£0	12	9.00

2d. Mechanically suspended—

			£	s.	d.
Nitrogen	[illegible] lb., at [illegible] per ton ..		0	1	6.60
Insoluble phosphate of lime	1.1	.. 8 ..	0	0	1.57
Organic matter	14.00	.. 0 1 ..	0	0	0.75
		Total,	£0	1	8.92
		Grand total,	£0	14	5.92

With respect to the amount of sewage annually produced in Dublin, I have made the following calculations:—The present supply of pipe water is about 9,500,000 gallons per day; the average daily rainfall over the sewered districts is about 3,700,000 gallons. The amount of sewage, therefore, which passes daily into the sewers is 13,200,000 gallons, or 5[illegible] tons (each equal to [illegible] lb.), which, at the rate of 14s. [illegible]d. per 100 tons, would have a money value of [illegible]. From these data it will be found that the sewage annually produced in Dublin amounts to 21,[illegible] tons (each [illegible] lb.), the money value of which is £[illegible] 1s. 1[illegible]d. I am aware that many persons will consider this estimate of the money value of the sewage of Dublin to be excessive, but I have simply placed the same value upon its various ingredients as I would if they entered into the composition of guano or of other artificial manures."

This, however, it is plain, is a fallacious guide to value. There are thousands of ounces of gold worth nearly 4l. an ounce, if it could be extracted, lying now distributed through quartz rock in such small proportions to the mass that it does not pay to extract; and it is quite possible that we may fail to extract with profit the full value of the nitrogen distributed through sewage in such dilute proportion. Dr. Cameron, however, goes on to say:—

"The value of the sewage of a town may be ascertained by other means than the analysis of the article. By determining the actual value of the egesta of an average unit of the population of a town, and by ascertaining the number of its inhabitants, a pretty close estimate of the value of its sewage (provided, of course, that all the waste matters pass into drains) may be formed. Unfortunately however, there are considerable differences of opinion as to the manurial value of the excrements of an individual, averaging all ages and both sexes. Dr. Hoffman and Mr. Witt estimate them at 10s. 10d. per annum, while Professor Anderson sets them down at 6s. Whilst agreeing with Professor Anderson as to the amounts of potash, phosphoric acid, and ammonia yielded by a unit of the population, I differ from him as to the prices which should be placed on some of these ingredients. Dr. Anderson states that an adult male excretes daily the following quantities of valuable matters:—

	In Urine.	In Fæces.
Nitrogen ..	214 grains	24 grains.
Equal to ammonia ..	260 ,,	29 ,,
Phosphoric acid ..	50 ,,	27 ,,
Potash ..	45 ,,	5 ,,

This gives for the total annual production:—

	lb.
Ammonia ..	15
Phosphoric acid ..	3.3
Potash ..	3

"On these substances the value of the whole depends; for though there are other constituents, their quantity is so small and their manurial importance so trifling, that they may be left out of consideration. If the valuable matters be taken at the price at which they are sold in guano, then the annual value will be:—

	£	s.	d.
15 lb. of ammonia, at 6d. ..	0	7	6
3.3 lb. of phosphoric acid, at 1½d. ..	0	0	5
3 lb. of potash, at 2½d. ..	0	0	7½
Total value ..	£0	8	6½

"This estimate, it will be noticed, applies to the excretions of the adult healthy male. Those of the female are less valuable by a fifth; and of children the amount and consequent value depends upon their age. In fact, the quantity goes on gradually increasing to the period of maturity, and then again diminishes when the bodily functions become less active towards the close of life. When the proper allowance is made for these (for which a rather elaborate calculation is required, into the details of which it is unnecessary to enter), it appears that the average value of the substances contained in the solid and liquid refuse for the whole population of both sexes and all ages is almost exactly two thirds of that above given, or, in round numbers, 6s. per head.

"From the above it will be seen that Dr. Anderson values ammonia at 56l. per ton, and phosphoric acid at 14l. per ton. I, however, value ammonia at 70l. per ton, and the soluble phosphoric acid in sewage at 40l. per ton. The soluble phosphoric acid in superphosphate of lime and other artificial manures is valued by chemists at a higher rate than this. I also place a value upon the soda salts and the organic matters. Attaching, therefore, a higher value to some of the ingredients of excrements than Dr. Anderson does, I consider the amount annually produced by each individual to be worth 8s. In 1861 the population of Dublin within the municipal boundaries amounted to 254,808. A great number of persons residing in the suburbs, but employed during the day in the city, are not included in the census. There are sewers from a few suburban places which empty themselves into the Liffey. We may assume, then, that the sewage of Dublin which flows into the Liffey contains the mixed excrements of 260,000 persons, worth, at 8s. per head, 104,000l. This sum is, however, far short of the amount which I have already stated I considered the sewage of Dublin to be worth, but the difference may partly be accounted for as follows. In 1862 there were within the municipal boundaries 7360 horses, 78 mules, 472 asses, 762 heads of horned cattle (including 602 milch cows), 773 sheep, 7358 pigs, and 1589 goats; total, 18,697 animals. The census of these animals was taken in summer, when the greater numbers of the horned stock belonging to the dairies were pastured in the rural districts. In winter the milch cows are more numerous in the city, and then liquid excrement no doubt improves the sewage as a manure. The quantity of liquid excrement formed by a cow is at least seven times greater than that voided by a man, and it is almost needless to remark that the egesta of a horse is much more valuable than that from a man. I am under the mark when I put down the average value of the manure produced from each of the animals above-mentioned at 1l. per annum or a total of 18,697l., which, added to the value of the human effete matter, makes up the sum of 122,697l. The soap suds, refuse parts of food, slops of all kinds from private dwellings, the excrements of thousands of dogs, cats, and birds, and the waste matters from manufactories, which find their way into the sewers, must be worth a large sum as manure. We must also take into account the ammonia and nitric acid which are carried down from the atmosphere into the soil, and are found in the sewage. Even the saline and organic matters contained in the pipe and drainage water, inconsiderable as their amount is when compared with the quantity of pure fluid, come to have no small value when millions of tons of water are dealt with. I venture to say that the potash, soda, and other fertilising matters contained in 24,000,000 tons of river water, undefiled with sewage, would, if valued at the same rate as if they were constituents of artificial manures, be worth a large sum.

"I have endeavoured to show that the estimate which I have made of the value of the sewage of Dublin, as deduced from the results of my analysis of that fluid, is not very much higher than the estimate based upon the assumed value of the egesta of the population, and other effete matter produced in towns. Any difference that may exist must be attributed to the difficulty of obtaining an average sample of the sewage, rather than to the value of the excrements being understated.

"*Probability of the Utilisation of the Sewage of London and Dublin.*—That the public are at length awakened to the fact that they have at their very doors sources of manure rivalling in extent the Guano Islands of Peru, is evident from the eagerness which capitalists have evinced to secure possession of the sewage of London.

"Dublin is somewhat more favourably situated with respect to the economic disposal of its sewage than London. It is nearer the coast, where the land best adapted for sewage operations is alone obtainable. I am opposed to the proposal so frequently made to lay down a system of pipes for the purpose of selling the sewage to farmers. The price obtained for the sewage, if indeed farmers could be persuaded to purchase the article, would not pay for the cost of its distribution. In fact, the use of sewage can only yield

very satisfactory returns when it is one of the means made use of in the formation of slob lands. At Lough Swilly several thousand acres have been reclaimed from the sea within a very recent period, and the operations have, wherever they were fully completed, realized a good profit. The rent of this slob land varies from 18*s.* to 2*l.* per acre, but some of it is very poor, owing to the want of manure. This is the kind of land which would drink up enormous quantities of sewage and produce correspondingly large crops. I understand that the Company who propose to apply the sewage of Dublin intend to effect the reclamation of about 2400 acres of sandy wastes, lying between the North Bull wall and Sutton, and to convert them into dairy farms. I believe this project contains all the elements of success. The reclamation of this slob land would be a profitable operation *per se*; but when every acre could, by the application of sewage, be rendered equal in productiveness to locaces of ordinary land, the operations must, in a pecuniary point of view, prove very remunerative. The only advantages which Edinburgh possesses over this city is that its sewage flows over the irrigated lands by the force of gravity alone. However, the cost of pumping the sewage of this city up to a height sufficient to give it a fall towards the North Bull would not be very great. The trials made with 25 Cornish steam pumping engines in 1851 showed that on the average the consumption of 1 cwt. of coal would, by means of one of these machines, raise 1,000,000 gallons of water a foot high. With these data I calculate that the whole of the Dublin sewage, amounting annually to 24,767,872 tons, could be raised to the height of 15 feet by the combustion of 2580 tons 12½ cwt. of coal, which, at 15*s.* per ton, would cost 1936*l.* 9*s.* 4*d.* This would be only 10 per cent. of the value of the sewage, and would not add 1*d.* to the cost of the dressing of each acre; but here I would remark that the quantity of sewage annually produced in Dublin is sufficient to heavily manure at least 5000 acres."

Farm Memoranda.

ARDROSS, THE PROPERTY OF A. MATHESON, ESQ., M.P.—Chance has placed before me Mr. Mackenzie's report on this property, which was published eight years ago by the Highland and Agricultural Society of Scotland, who presented a Gold Medal for the interesting information it conveys. Some of the local and general circumstances under which those extraordinary meliorations were undertaken 20 years ago, bear such close resemblance in many points to the present condition of numerous parts of Ireland—offering equal or greater opportunities for similar enterprise, that I cannot resist the inclination to notice them, even though so much time has lapsed since they have been accomplished, in the hope that Irish readers of the *Agricultural Gazette*, possessing at least some of the powers which Mr. Matheson has been blessed with, may be induced to do likewise. On looking into the "County Families of the United Empire," I learn that there is something of romantic interest involved in this case. The estate of Lochash was forfeited by political incidents several centuries ago by ancestors of Mr. Matheson. In early life this gentleman entered in commercial pursuits in China, where he acquired a large fortune. Subsequently he became member of Parliament for Inverness, a Director of the Bank of England, and one of the merchant princes of London. Fortunately for Ross-shire he had the privilege of purchasing his ancestral estate, on which he has wrought alterations which are suggestive of what might be effected in the wilds of Munster and Connaught by landlords of the Matheson type—even in very minor proportions. Are there no Irishmen who have realised in India or elsewhere—descendants of families who lost their estates by confiscation or hereditary impecuniosity? Are there none possessing the desire and financial means of reviving family names, and high social rank? And, to descend from imaginary ancestral dignities and associations, have we not many wealthy and good gentlemen of the high commercial class, gifted with that intelligence, clearness of perception, and vigour of action which so eminently distinguish the merchant character, who have only to purchase estates and imitate the labours of Mr. Matheson? We have indeed Mr. Guinness, and if he were a multipliable quantity, how greatly would the branch of Irish land improvement become extended. No doubt there are other capitalists, both with and without estates in Ireland, who are disposed to imitate his example in regard of rural ameliorations (or are even now in fellow-labour with him). May their number be increased!

A perusal of the Report, to which I am now about to allude in some details, would convince any one well acquainted with Ireland, that much of the waste or partially cultivated portion of it has at least the advantage of a milder climate and greater facility of intercourse with the leading markets of the United Empire, and generally better soil than Ardross possesses; and that the system which has succeeded in that district could not fail in Ireland, if pursued in the same orderly and well-arranged manner.

Ardross is enclosed by mountains, some of which are rugged and highly elevated, but affording much shelter generally; one on the south side is well wooded. The average height of the arable land is 550 feet above the sea level—the climate is cold and moist, and snow storms are severe (Ireland seldom contends with one of these). The soil of the improved land, which gradually rises above a river on whose margin the old mansion house stood, is a heavy and deep loam, resting on sandstone. When reclaiming operations commenced, the greater part of the land was covered with barren heaths. The tenantry held the land at will, in farms varying from 6 to 10 acres of arable land; and the number of individuals in those few families was in the aggregate 109 souls, although 11 of the 19 heads of houses were bachelors—a curious circumstance in a Celtic population, and without a parallel in Irish society of the same race and class. No Irish hovel was ever in a worse condition in all respects than the dwellings of the Ardross Highlanders. I need not transcribe in detail the familiar combinations of dirt, dampness, duck-pools at the door, and peat smoke. The cattle sheds were in every conceivable attitude except that of uprightness, the walls being neither straight nor perpendicular. As there had been no security of possession, or other encouragement to these small farmers, they had not attempted improvements which would not have been immediately remunerative; consequently the ground was never ploughed deeper than 3 inches, below which the subsoil was a mass of stones of all sizes, and the surface was encumbered with them also. "All the boulders were left, and these were capped (a striking instance of Celtic laziness) with the small stones which had been gathered from time to time off the land." The Potato crop was usually good. The cereal crops, Barley and Bere, scant and precarious, principally from the undrained state of the land, though capable of being rendered dry by a little labour. "The extensive pasture land in the valley was well sheltered with closely grown Birch wood and wild Willows, which afforded excellent shelter to roe deer and other game. It was in the interspersed pasture and Birch wood that the largest boulder stones were met with in the improvements." This accurately describes large tracts in Connaught, with the advantage in the latter case, it may be, of limestone in place of stone, worthless except for making fences and filling drains.

The former urgent necessity for drainage, and its beneficial effects, may be estimated from the fact that the site of the present garden was once a morass, in Irish expression a "shaking bog," which swallowed up horses and cattle, whose skeletons were dug up in the course of its drainage.

The new castle, its grounds and young woods, are very picturesquely described, and the drained morass is now "a garden, with its walls flue-heated, its hot-houses growing Oranges, and its flower-beds loading the air with its most delicate perfumes." The pleasure-grounds extend to 700 acres, with a river flowing through the middle, and walks 14 miles in length through the grounds. The proprietor has 1200 acres of arable land in his own hands, 800 of which in two farms of equal size are cultivated on the five-course shift. The Report states that in the course of nine years 2600 acres were improved by trenching, draining, and liming, 67 miles of stone fences, and 11 miles of wire-fencing, which is considered the best that can be constructed, 28 miles of road have been made, 3000 acres enclosed, new farm steadings erected, and a castle with all its adjuncts built! Barracks were erected to accommodate 200 workmen, and in addition to these there were generally as many more persons employed. Most of the draining, clearing, &c., was done, most satisfactorily, by contracts. The details given of the farm operations on the different fields are well worth the farmer's attention, and the planter will find much information from the Report in his department. The total cost of enclosing, planting, and draining of 3143 imperial acres amounted to nearly 90000*l.*

A very interesting and important part of the Report remains to be noticed, as a model for imitation by Irish landowners, who may find a superabundant or unsatisfactory tenantry on the properties which they desire to improve in a similar way. What did Mr. Matheson do with the 109 individuals (19 families) which he found on the estate at the time of purchase, and especially what became of the 11 bachelors (an exact cricket party)? Eight of them it would appear obtained wives, and a result of the arrangements made for the accommodation of the 19 families (and of some additional ones it must be assumed) was their increase within seven or eight years from 109 to 429. The method pursued was simple and easy. New farms were laid out, after careful mapping of the estate, for tenants who were in the way of the general plan; the object was to retain all the old tenants and to place them on good farms and with better houses, and the small holders (or crofters) being kindly and fairly dealt with, readily accepted the changes proposed. "It was found perfectly compatible to carry out the most extensive improvements without removing a single tenant or attempting to expatriate a peasantry of which any country might be proud."

In 1858 there were 23 tenants with farms varying from 30 to 300 acres, the greater portion holding from 30 to 60 acres, and of the class called crofters, occupying from 5 (in two cases less) to 20 acres, all the tenants got leases of 19 years. On the large farms there were six new houses and offices built with threshing machines—and suitable accommodations were provided on the smaller farms. I have not seen any report of the progressive improvements contemplated when the Report concluded—such as breaking up some large sheep farms into eight (comparatively) small farms, with from 20 to 40 acres of reclaimed arable land, and superior dwelling-houses and offices. The following passage contains such excellent matter that I solicit space for it from the kind Editor, to whose patience I have been often indebted:—

"The principle of gradation in all its relations commands our admiration, and it loses none of its beauty when exemplified in the well-laid-out forms of an extensive estate. It is surely very desirable that our well-to-do labourers should cherish the hope of one day being farmers on their own account; but to inspire them with such a hope small farms must exist, not in the undefined and unshapely state in which they are generally seen, but regularly and permanently laid out with their houses and steadings. They should be there as part of the permanent improvements and arrangements of the property. The farmer of from 200 to 400 acres will work in a scientific manner, and not only will he be able to afford, but he will possess the will, if he is a man of the right stamp, to test whatever improvements the agricultural chemist may suggest, and to keep stock of the first quality. These, found successful with him, will be adopted as far as circumstances permit, by his neighbour holding 20 or 100 acres. The small farmer or crofter can never afford to give 60 or 100 guineas for a bull calf; but if upon amicable terms with his big friend, he too will reap the advantages of so costly a purchase. Neither is it to be expected that he can purchase for seed the prize samples, but he will be gladly furnished with any quantity of its produce within a year or two, when grown by the large farmer and found profitable. On the other hand the crofters are those who supply the best class of young ploughmen and farm labourers. There is thus a great mutual advantage in having a due proportion of large and small farms in a country. It cannot, however, be expected that a large farmer of the class we have instanced will, or should be, so generous in his bearing towards his brethren of the other class as the proprietor himself, when he is interested in their welfare. It is when he himself is the leading agriculturist of his property that his small tenantry may reasonably expect to reap the greatest advantages in the manner we have indicated. It is when he introduces the first quality of stock and seeds to his own farm or farms that both will spread over his whole estate." *Martin Doyle.*

Miscellaneous.

The Cholera.—Water: All experience shows that water is a most common and most dangerous vehicle of cholera, and that it may actually convey the discharges of the sick to the stomachs of the population. Should cholera be imported into any of those towns and villages which drain into the upper Thames, there can be no doubt that London would be in great danger. Hence it will be expedient, as regards the supply of water:—

1. To communicate with Water Companies, urging them to make sure that no water is delivered into their mains which has not undergone filtration; to take double care in delivering their water clear, for it has been shown that the sediment is the most dangerous part of foul water; and to have their filtering beds thoroughly washed and cleansed from organic matter, before the first delivery of the water; next as to quantity. 2. A daily supply should be given to the courts inhabited by the poor, guarded by a "water waste preventer." 3. A supply on Sundays is absolutely necessary, for the greater washing and cooking on Sunday mornings, when working men are at home. 4. Besides as regards storage of water, the public must be cautioned as to the conditions of their water receptacles, which should be thoroughly cleansed. Drinking water ought not to be taken from butts or cisterns connected with water-closets. 5. All surface wells should be absolutely closed for drinking purposes.

Against the Spread of Cholera: Let us suppose that cholera is actually imported. This will probably be by some sea-faring person coming from an infected port or ship, or by some person bringing the disease with him from one of the outports. In order to stop the spread of cholera in houses—

1. It is absolutely necessary to decompose and get rid of the excretions of the patient, in all manners and in all places whither their influence can reach. *a.* Some disinfectant should be put into the vessels or receptacles in which the excretions are received before the vessels are used, or at all events before they are too foul. *b.* The closets and sinks should be treated in like manner, and be well flushed, and a little disinfectant be put into the chamber vessels after emptying them. *c.* The air of the sick chamber should be kept pure by free ventilation, and by sprinkling the floor with a little chloride of lime. *d.* The clothes, bed-clothes, and bedding, towels, and any other things contaminated with the discharges of the sick, should be disinfected. (See below, Disinfection and Disinfectants.) If possible, no one should take food in the sick chamber; certainly not without washing the hands. *e.* The points must be followed—the house drains be flushed with water and disinfectants; the gulleys by the street pavement be also flushed out with water and chloride of lime, and the ventilating openings of sewers in the middle of the streets be protected, if possible, by charcoal boxes. *f.* It is prevented that the drains of houses are efficient, and well trapped from the sewer and from the house. It will be too late to attend to this when the disease is within our doors. *g.* The areas, yards, basements, cellars, and all damp and dark places in which moisture can collect, or mould or mildew grow, should be thoroughly coated with quicklime and water. The rooms in which the sick person has been treated should be cleansed, together with the carpets, &c.

Disinfection and Disinfectants: For the disinfection of the discharges from the body, a solution of chloride of iron, or chloride of zinc (Sir W. Burnett's fluid) is the most powerful agent, and either should be used in the quantity of about a wineglassful on each occasion.

But for the disinfection of the atmosphere of a room chloride of lime is the best, in the proportion of a teacupful of chloride of lime to a gallon of water, kept in saucers or sprinkled over the room; or the same may be used as a wash to infected bedding and particular parts of the floor, &c.

[illegible] Disinfection of fecal matter, not only [illegible] cholera, but scarlet fever, measles, smallpox, and typhoid fever. No infected matter should be wasted at home, or in public or private hemdrics, without preliminary disinfection. The best disinfectant is dry heat, at 250° Fahrenheit, where it is possible, for woollen fabrics; linen should be boiled in water, or plunged into boiling water.

House-to-house Visitation (18 & 19 Vict., c. 116): In every parish or district the number of houses inhabited by the helpless dependent part of the population, and the number of the families, should be estimated, and arrangements made for house-to-house medical visitation. A sufficient number of assistants acting under the orders of the parochial medical officers should, at least once a-week, visit thoroughly every family in every such house. In this climate diarrhœa usually precedes cholera for some days; and this diarrhœa should be checked by appropriate medicines, which the visitor should carry in a portable form. All experience shows that the surest way to limit the ravages of cholera is to find out and treat at once every person whose bowels are in the least disturbed. The visitor may also distribute handbills, and give information as to disinfection, purification of water, &c. *General Measures of Precaution:* It is highly important that a sufficient number of sanitary inspectors be appointed at once, if necessary, so that an inspection of the houses of the helpless classes may be made once a fortnight, for the purpose of carrying out the ordinary means of precaution to the fullest extent; and even if no cholera visit us, the effect in diminishing diarrhœa

and fever will be great. Attention should be particularly directed to—

a. The state of closets, sinks, and dustbins. Even when the apparatus is in good order, and the water supply fair, closets in poor houses require to be daily flushed with water and chloride of lime to prevent them from being offensive. Sinks always require to be seen to, that they are not stopped up nor the trap displaced. Emptying of dust and lime whiting should also be attended to. *b.* Existence of rotten brick drains or cesspools. *c.* Underground dwellings inhabited contrary to law. *d.* Prompt legal proceedings should be taken against persons permitting nuisances on their premises. *e.* Each district board is recommended to ask its surveyor for a formal account of the state of the public sewers in his district.

Removal of Dust, &c.—In anticipation of a cholera outbreak, contracts made with dustmen and scavengers should provide for the more frequent removal of house refuse, and for the more efficient cleansing of streets. All refuse, dust, and dirt, ought to be looked upon as containing possible germs of disease, which may be lifted in vapour or blown about by the wind, and so be inhaled or swallowed. It would be wise economy this summer to have the streets kept more cleanly.

—From Memorandum issued by the Metropolitan Medical Officers to Vestries and District Boards in London.

Calendar of Operations.

August: *Winter Beans* sown the previous October ripen towards the end of July, and are generally ready to cut before the Wheat, or in the end of July. They are generally cut with the heavy hook, in the manner called "fagging," or "bagging," in which the workman, holding back the stalks with a stick, or merely with his left arm, levels a horizontal blow at the standing corn with the hook in his right, cutting close to the ground, and driving the cut stalks up against the standing crop a foot or more in depth, and, advancing across the ridge, cuts it back until a sheaf is ready for collection. He then gathers it together with his hook and left hand over his left foot as he walks backwards, and at length lifts it out on to a band laid for it before he commenced cutting it. This band in the case of Beans should be made of straw, brought to the reaper in the field, and twisted in readiness as he proceeds by a woman, who does this, and ties as fast as the crop is cut. When the crop is very short and scanty, it is sometimes pulled instead of being cut. It is well to cut Beans before they are dead and dry; the straw is of great use as fodder when it is cut while there is still sap in it.

Flax is pulled in July and August. The following instructions are given in an account of Belgian management, by Sir Donald Campbell, in the Highland Society's Transactions:—

When the Flax begins to get yellow at the bottom of the stem, it is time to pull it, if very fine Flax is desired, such as is made into thread for lace or very fine cambric; but then the seed will be of little or no value. It is, therefore, generally left standing until the capsules which contain the seed are fully grown, and the seed formed. Every Flax-grower judges for himself what is most profitable on the whole. The pulling then begins, which is done carefully by small handfuls at a time. These are laid upon the ground to dry, two and two, obliquely across each other. Fine weather is essential to this part of the operation. Soon after this they are collected in larger bundles, and placed with the root end on the ground, the bundles being slightly tied near the seed end; the other end is spread out, that the air may have access, and that the rain may not damage the Flax. When sufficiently dry they are tied more firmly in the middle, and stacked in long narrow stacks on the ground. These stacks are built as wide as the bundles are long, and about 8 or 9 ft. high, and 20 to 30 ft. long. If the field is extensive, several of these stacks are formed at regular distances; they are carefully thatched at top, and the ends, which are perpendicular, are kept up by means of strong poles driven into the ground. This is the method adopted by those who defer the steeping till another season. Some carry the Flax, as soon as it is dry, under a shed, and take off the seed by rippling, which is drawing the Flax through an iron comb fixed in a block of wood; the capsules, which are too large to pass between the teeth of the comb, are thus broken off, and fall into a basket, or on a cloth placed below. Sometimes, if the capsules are brittle, the seed is beaten out by means of a flat wooden bat, like a small cricket bat. The bundles are held by the root end, and the other end is laid on a board and turned round with the left hand, while the right hand with the bat breaks the capsules, and the Linseed falls on a cloth below. The Flax is then immediately steeped; but the most experienced Flax-steepers defer this operation till the next season. In this case it is put into barns, and the seed is beaten out at leisure during the winter. When Flax is housed, care must be taken that it is thoroughly dry; and if the seed is left on, which is an advantage to it, mice must be guarded against, for they are very fond of Linseed, and would soon give a Flemish account of the produce.

Notices to Correspondents.

Dorset Ewes: *Andrew Holt.* They will breed twice in the year, taking the ram very early after dropping their lambs in spring.

Millet: *A V.* Will any one give his experience of Millet as food for pigs?—it is capital for poultry.

Rape Cake and Beanmeal: *W B.* The following is a comparison of Rape cake and Beanmeal in the experience of a cow-keeping correspondent:—Having seen Rape cake strongly recommended for cows, I was induced to try it, but the results are unsatisfactory; several of my cows will not eat it at all; the cow I put on trial liked the Rape cake, had calved about three months, and is an average cow. She gave on Rape cake 3 lb. 12 oz. of butter. When 4 lb. of Beanmeal were substituted for 4 lb. of Rape cake, she gave 5 lb. 4 oz. of butter and 4 quarts 1 pint more milk. In addition to the cake or meal, I gave the cows 50 lb. a day of Turnips pulped up and mixed with hay and straw chaff; it is allowed to heat for 24 hours, and then given to the cows, who relish it extremely.

THE HYDROPULT,

An Invention for Throwing Water by Hand Power.

(Secured by Royal Letters Patent).

PRICE LIST.

	£	s.	d.
Complete with Brass Cylinders and Japanned Stirrup	1	12	6
Complete with Brass Cylinders and Copper Stirrup	2	2	0

The Price "Complete" as above, includes 25 feet Suction and 3 feet Delivery Hose, Galvanised Wire Strainer, Rose and Small Jet.

THE HYDROPULT

is invaluable for use in the

GARDEN for

WATERING BEDS,
SPRINKLING PLANTS,
DROWNING OUT INSECTS,
CLEANSING TREES FROM SMUTS,
DRESSING WITH LIQUID MANURE,
&c. &c.

CAUTION.

Important to the Public.—The extensive sale of the Hydropult has excited the cupidity of so-called respectable, but in reality unprincipled Manufacturers, who are now pirating on the Public worthless imitations of the Hydropult, and through their connections are enabled to place said devices on exhibition, and for sale, in many of the principal Ironmongery and Seed Establishments throughout the city and provinces. These devices resemble in many respects the Hydropult in appearance, and are calculated to deceive the unsuspecting. The Proprietor therefore invites this Caution, and respectfully intimates that parties wishing to purchase the Hydropult should examine the machine offered for sale, and see it has attached thereto a label, with the following words:—"The Hydropult, Vose's Patent, manufactured only by Griffiths & Browitt, Birmingham. Charles Pomeroy Button, Proprietor, 142 and 143, Cheapside, London." Unless this label is attached, the Machine is not the Hydropult.

Prospectuses, with Testimonials, on application.

HYDROPULT SHOW ROOM, 142 & 143, CHEAPSIDE, LONDON.

IMPERIAL BUTTER COOLER.

SECURED BY ROYAL LETTERS PATENT.

USEFUL, ORNAMENTAL, UNIQUE.

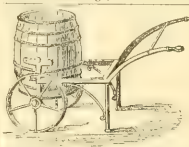
The novelty and utility of this Invention consists in a Revolving Cover, so constructed that by turning the knob on either side of the Basin, it can be covered or uncovered instantly; the lid disappearing into a receptacle or false bottom, thus not only having the lid ready for instant use, but obviating the necessity of its removal from the table. The Butter Cooler can be used for a Sugar Basin.

Price, in white metal, electro-plated, £2 2s.

CHARLES POMEROY BUTTON,
142 and 143, Cheapside, London, E.C.

NETTING for FRUIT TREES, SEED BEDS, RIPE STRAWBERRIES, &c.—TANNED NETTING, for protecting the above from Frost, Blight, Birds, &c., 2 yards wide, 3*d.* per yard, or 100 yards 20s.; 4 yards wide, 6*d.* per yard, or 50 yards 20s. NEW TANNED NETTING, suited for any of the above purposes, or as a Fence for Fowls, 2 yards wide, 6*d.* per yard; 4 yards wide, 1s. per yard; 1-inch mesh, 4 yards wide, 1s. 6*d.* per yard.

Can be had in any quantity of Eaton & Deller, 6 and 7, Crooked Lane, London Bridge, E.C.



SWING WATER BARROW.—This is the best and cheapest article yet introduced for use in Gardens, Farm Yards, &c. The Water may be supped out, or the Tub tilted and poured out, or by merely raising the Handle it can be placed on the ground, and the Frame detached. To hold about 30 or 36 gallons, price 42s. Carriage paid to any station on Great Eastern Line.

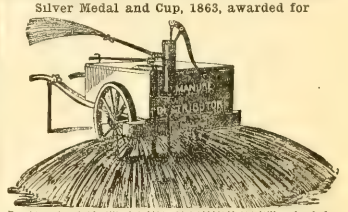
POWERFUL GARDEN ENGINE, suitable for the above, price 45s.

IMPROVED WATER and LIQUID MANURE CARTS.

Catalogues on application.

Manufactured by W. S. Bolton, Rose Lane Iron Works, Norwich.

Silver Medal and Cup, 1863, awarded for



JAMES'S FIRST PRIZE MANURE CART, which has been awarded 20 PRIZES. Is now fitted up to answer for LIQUID MANURE, for supplying the STEAM PLOUGH, for WATERING STREETS, or for a FIRE ENGINE. Nearly 300 already sold.

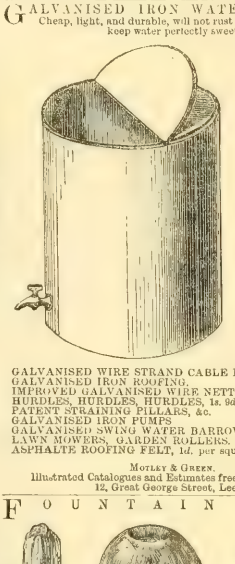
Washing.

The last great improvement in Washing Machines is in James's new Patent PRIZE WASHING, WRINGING, and MANGLING MACHINES, awarded several FIRST PRIZES. Will Wash 20 Shirts in 20 Minutes, with much less injury than with the hand. More than 300 Sold.

Address I. James, Tivoli Works, Cheltenham.

GALVANISED IRON WATER CISTERNS.

Cheap, light, and durable, will not rust or corrode, and keep water perfectly sweet.



To hold	Each.
30 gallons,	20s. 0d.
50 gallons,	21s. 0d.
80 gallons,	32s. 0d.
100 gallons,	38s. 0d.
125 gallons,	45s. 0d.
150 gallons,	40s. 0d.
200 gallons,	65s. 0d.
250 gallons,	73s. 0d.
300 gallons,	84s 0d.

With Lid and Brass Tap.

GALVANISED WIRE STRAND CABLE FENCING.
GALVANISED IRON ROOFING.
IMPROVED GALVANISED WIRE NETTING.
HURDLES, HURDLES, HURDLES, 1s. 9*d.* to 3s. 0*d.* per yard.
PATENT STRAINING PILLARS, &c.
GALVANISED IRON PUMPS
GALVANISED SWING WATER BARROWS.
LAWN MOWERS, GARDEN ROLLERS.
ASPHALTE ROOFING FELT, 1*d.* per square foot.

Mottley & Green.

Illustrated Catalogues and Estimates free on application.
12, Great George Street, Leeds.

FOUNTAIN JETS.

Fig. 526. JET D'EAU. 18 holes, 5s. 6d.; 24 do., 5s. 9d.; 30 do., 6s. 6d.

Fig. 531. DOME and CONVOLVULUS. 17s.

Fig. 525. DOME. 8s. 6d.

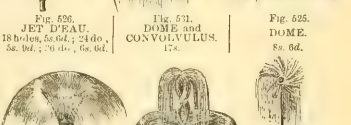


Fig. 522. CONVOLVULUS, 8s. 6d.

Fig. 521. BARKER'S MILL. 11s.

Fig. 522. WIRE BASKET with BALL 10 ins., 16s. 6d.; 12 ins., 17s. 6d.; 14 ins., 18s. 6d.

Connecting Screws to all the above Jets, 1s. 6d. extra.

Branch Pipe for raising up Jets 1 foot high, 5s. 6d.

A Tap is required to be fixed in the Pipe to regulate the supply of Water to Fountain Jets.

J. Tylor & Sons, Manufacturers, Warwick Lane, Newgate Street, London, E.C.

JAMES PHILLIPS AND CO.
beg to submit their REDUCED Prices as follows:—
GLASS for ORCHARD HOUSES.
As supplied by them to Mr. Rivers, to the Royal Horticultural Society, and to most of the Nobility, Clergy, and Gentlemen of the United Kingdom.
Each Box contains 100 feet. The prices only apply to the sizes stated
Squares 9 by 12, 9 by 13, 10 by 14, 10 by 15.

	16 oz. for the foot	21 oz.
Fourth quality	14s. 0d.	18s. 6d.
Third ditto	16s. 0d.	21s. 6d.
Seconds	17s. 6d.	23s. 0d.
English	19s. 0d.	26s. 0d.

Stock sizes, 16-oz., in 100 feet boxes, boxes included.
These prices only apply to the sizes stated

	4lbs.	3rds.	2nds
11 by 9	s. d.	s. d.	s. d.
12 „ 9	13 by 9 „ 10	14 by 9 „ 10	15 „ 10
13 „ 10	14 „ 10	15 „ 10	16 „ 11
13 „ 11	14 „ 11	15 „ 11	16 „ 11
14 „ 12	15 „ 12	16 „ 11	17 „ 12
16 „ 12	17 „ 12	18 „ 12	19 „ 13
16 „ 13	17 „ 13	20 „ 12	21 „ 14
19 „ 13	20 „ 13	21 „ 13	..
16 „ 14	17 „ 14	21 „ 14	..
19 „ 14	20 „ 14	18 „ 14	..

14 0 16 0 17 6
16 0 17 6 to the foot
The above prices include the Boxes, which are not returnable.
SMALL SHEET SQUARES.
In 100 feet Boxes

6 by 4	6 by 4	7 1/2 6	7 1/2 by 5	..	12s. 6d.
8 by 6	8 by 6	9 by 7	9 by 7		
		10 by 8	10 by 8		15s. 6d.

Boxes 2s. each, returnable at full price.
SHEET and ROUGH PLATE GLASS, SLATES of all sizes, BRITISH PLATE, PATENT PLATE, ROLLED PLATE, CROWN, SHEET, HORTICULTURAL, ORNAMENTAL, COLOURED, and every description of GLASS, of the best Manufacture, at the lowest terms. Lists of prices and estimates forwarded on application to
JAMES PHILLIPS & Co., 180, Bishopsgate Street Within, E.C.

GLASS for GARDEN PURPOSES, &c.—PROPAGATING GLASSES, BEE do., FERN do., CUCUMBER do., MILK PANS, SHEET GLASS, HARTLEY'S PATENT ROUGH PLATE GLASS, GLASS TILES and SLATES, and every description of Glass. Prices by post.
N.B.—100 feet sup. of SHEET GLASS, 7 inches by 6 inches, for 18s., box included.
THOS. P. TATE, 31, Holborn Hill, London, W.C.

Heating by Hot Water.
W. J. HOLLANDS, IRON MERCHANT, 31, Bath Street, London, E.C.
HOT-WATER PIPES, 10-in. Stock, per yard:—2-inch, 1s. 2d.; 3-inch, 1s. 10d.; 4-inch, 2s. 4d. BENDS, 10-in. Stock, 1s. 6d., 2s. 6d., and 4s. each. THROTTLE VALVES, 3-in., 4-in., and 6-in. each. Other Contractions of equally low prices, and all goods of first-class manufacture. Estimates given, and orders by post punctually attended to the same day.

Heating by Hot Water.
HOT-WATER PIPES, at Wholesale Prices, with Elbow, Syphon, Tee Pieces, and every other connection; Wrought and Cast-Iron Rollers, Solder, Conical Cylinder, Taps, and Fittings, from 2s. each. Angle and Return and Bed Stoves for use with set brickwork, 10s. each. Valves from 10s. 6d. each. Patent Valves, Iron and Furnace Doors, Furnace Bars, Sapply Cisterns, and Cast-Iron of every description cheap.
Mr LYNCH WHITE'S Iron Wharf, Upper Ground Street, Blackfriars Bridge, London, S. Price List on application.

GREENHOUSES, 42 feet by 13 wide, £90; 21 feet by 13 wide, £55. Carried to Railway, £45. Glazed, ready for painting, with Ventilating Sashes complete, 50s. per foot run. Estimates for any Garden in the United Kingdom.
H. LEEMAN, Wine Importer, Hackney, N.E. Established 1840.

TO BE SOLD, an ORCHARD HOUSE, 30 feet by 12, quite new, in first-rate condition, and fitted complete for the growth of a few Peaches; also about 60 ORCHARD-HOUSE TREES, well grown and in fine condition.
Apply to E. COOKSON, Mill Ash Nurseries, Derby.

HOT WATER PIPES and FITTINGS of the best description supplied by
BURY & POLLARD, 17, New Park Street, Southwark, London, S.E.

BURY AND POLLARD'S CONICAL BOILERS for HEATING by HOT WATER the Seats of Duke of Newcastle, Lord Belper, &c., at Viscount Sydney's replaced, after being 20 years in constant use. Apply as
17, New Park Street, Southwark, London, S.E.

HOT-WATER APPARATUS, of every description, fixed complete in any part of the country, or the materials, viz., Boilers, Pipes, &c., delivered to any station.
Estimates on application.
J. JONES & SONS, 6, Bankside, Southwark, London, S.E.

TO BE SOLD CHEAP, a first-class PLANT VAN. Length 15 feet, Width 7 feet 6 inches, Height 7 feet 6 inches.
For Prices, &c., apply to E. COOKSON, Derby.

E. T. ARCHER'S "FRIGI DOMO." Patronised by Her Majesty The Queen, the Duke of Northumberland for Syon House, His Grace the Duke of Devonshire for Chiswick Gardens, Professor Lindley, the Horticultural Society, and Joseph Paxton, the Crystal Palace, Head Gardeners, Gentry, &c.
PROTECTION from the SCORCHING RAYS of the SUN.
"FRIGI DOMO" is a Canvas sheet of Patent prepared Hair and Wool, with Netted Sides, and Top of Hair and Wool, serving, whenever required, to completely shade Plants in Pots, or Plants growing in the open ground, from the scorching Rays of the Sun, during Hot Days, and Flowers from the Cutting Rains of the Spring, Frosts, Mildew, Blight, Wind, Insects, and from Morning Frosts. To be used in any required lengths

Two yards wide	1s. 3d. per yard run.
Three yards wide	1s. 6d. per yard.
An improved make, 2 yards wide	1s. 4d. per yard.
An improved make, 3 yards wide	2s. 0d. per yard run.

"FRIGI DOMO" NETTING, 2 yards wide, ... per yard run.
Patent Frigi Domo Awning, White and Snow Mottled Paper, 7, Great Tower Street, London, E.C. Trade Price List on application.
Specimens can be sent for Inspection.
It is much cheaper than Mats as a covering.

JOHN WARNER & SONS, LONDON, MANUFACTURERS.

J. WARNER AND SONS

Have much improved the construction of their

GARDEN ENGINES

in some important particulars for this Season.

They may be obtained of the Trade generally throughout the Kingdom at the following prices:—

No. 547. WARNER'S best ENGINES, in Wood Tubs, and fitted with WARNER'S Registered Spreaders—

24 Gallons,	£6 10 0
14 „	5 10 0

No. 547A. WARNER'S strong ENGINES, in Galvanised Iron Tubs, well painted—

10 Gallons,	£2 19 0
16 „	3 14 0
24 „	4 19 0
28 „	5 10 0

No. 579½. WARNER'S WATER BARROWS, thoroughly Galvanised and well painted—

20 Gallons,	£2 2 0
30 „	2 13 0
38 „	3 17 0
50 „	5 12 0

The 50-Gallon Barrow is made extra strong throughout, and fitted with handle for two men.

No. 568½. AMERICAN ENGINE, is now well known and appreciated. It throws a continuous stream, and is complete in itself. £2 2s.

SYRINGES in great variety, from 7s. 6d. to 18s. 6d.

The DISC SYRINGE, No. 557A, will recommend itself by the ease with which it is filled, and non-liability to get out of order. Price 9s.

DESCRIPTIVE PRICE LISTS forwarded on application.

WARNER'S

AQUAJECT

Is recommended to the notice of Horticulturists as possessing the following advantages.—It is simple in construction, portable, and easily worked. It throws a continuous stream, and is low in price.

The Aquaject, 30s.

Ditto small size, 18s.

WARNER'S 6-Gallon GARDEN ENGINE, of Galvanised Iron and well painted, fitted with Brass Air-vessel, Branch Pipe, and WARNER'S Registered Spreader, 50s. Light, portable, and easily worked by a lady or child.

No. 35. WARNER'S IRON PUMPS for Wells, not exceeding 25 feet in depth—2¼-in., 28s. 6d., 3-in., 41s.; 3½-in., 46s.; short barrel do., 21s.

No. 36. IRON FORCE PUMPS for raising water above their level, or Watering Yards, Gardens, &c., through hose—2½-in., 39s.; 3-in., 65s.; 3½-in., 77s.; 4-in., 89s.

No. 36½. FORCE PUMP on BARROW, recommended for its great portability and simplicity of construction. £5 10s.

No. 42. WARNER'S PORTABLE PUMPS on Folding Legs, are of a superior construction.

Price 65s.; Rubber Suction, 2s. 11d. per ft.

No. 597A. BRANCH PIPES with Cocks and Roses—½-in., 3s.; ⅝-in., 4s.; ¾-in., 5s.

No. 599. TAPER BRANCH PIPES—½-in., 4s. 9d.; ⅝-in., 5s. 3d.; ¾-in., 6s.; 1-in., 7s.

RUBBER HOSE in all sizes.

FOUNTAIN JETS in great variety, from 3s. 6d. to 25s.

SHAW'S TIFFANY.
For samples and prices apply to
J. SHAW & Co., 29, Oxford Street, Manchester.

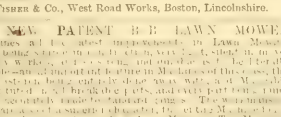
SHAW'S TIFFANY, from 8s. per piece, 20 yards long. GARDEN MATTING, 2 yards wide, 9d. per yard; in quantities of 100 yards and upwards at one penny. GARDEN ENGINES, &c. See Price List, sent free on application.
The Garden Repository, 32, James Street, Covent Garden, W.C.

F. A. HAAGE, JUN'S, WOOD GARDEN STICKS and TALLIES recommended by the Royal Horticultural Society. The above can now be had of all Nurserymen, Wednesday, of Bryan & Bleckam, Cow Cross, Lower Thames Street, London, E.C.; and Retail of the principal Seedsmen and Florist.
Price Lists on application.

TREE and PLANT LABELS.—10,000 Cloth punched assorted Labels for 3s.; delivered free in London on receipt of Order. Address,
JOHN FISHER & Co., West Road Works, Boston, Lincolnshire.

THE NEW PATENT B.B. LAWN MOWER combines all the latest improvements in Lawn Mowing Machines, being strong in construction, light in draught, and easy to work. Price £7 10s. Carriage paid on rail to any part of England. Illustrated Lists, with testimonials, sent free on application. The Machines are all constructed on correct principles, and guaranteed to give satisfaction in every respect.
J. B. BROOKS & Co., Patentees and Sole Manufacturers, 18, Upper Thames Street, E.C.

GREEN'S IMPROVED NEW PATENT GARDEN ROLLER

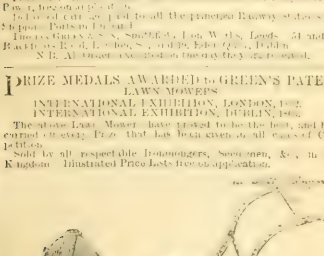


The above Rollers possess many advantages over all others. They are made in two parts, and are best to turn on the axis, allowing greater facilities for turning, and do not require such a large space as other turned barrels, thus avoiding the unsightly marks. Price of either Rollers.

Diameter.	Length.		
18 inches	26 inches	£4	10 0
20 "	22 "	3	10 0
24 "	27 "	4	15 0

Prices for Rollers fitted with Shafts suitable for Pony or Horse Power, on application.
Delivered free on rail to all the principal Railway Stations and Seaport Towns in England.
The late GREEN & SON, Smithfield, Leeds, Nos. 54 and 55, Boar Lane, Road, Leeds, and Bridge, Belfast, Dublin.
N.B. All orders executed on the day they are received.

PRIZE MEDALS AWARDED to GREEN'S PATENT LAWN MOWERS
INTERNATIONAL EXHIBITION, LONDON, 1862.
INTERNATIONAL EXHIBITION, DUBLIN, 1865.
The above Lawn Mower have proved to be the best, and have carried away Prize that has been given at all exhibitions of Competition.
Sold by all respectable Ironmongers, Seedsmen, &c., in the Kingdom. Illustrated Price Lists free on application.



HAND MACHINE.

These are the only Lawn Mowers that will work for years without requiring repair.
These are the only Lawn Mowers that will Mow properly when the Grass is Wet.
These are the only Lawn Mowers that are in use in ALL the Royal Gardens.
Every Machine warranted, and if not approved of can be at once returned. Illustrated Price Lists sent free on application.
ALEX. SHANKS & SON, Deans Iron Works, Arbroath; and 57, Leadenhall Street, London, E.C.
57, Leadenhall Street is the only place in London where intending purchasers of Lawn Mowers can choose from a stock of from 150 to 200 Machines; all sizes kept there, whether for Horse, Pony, or Hand Power.

SHANKS' PATENT LAWN MOWERS for 1866.—Patronised in the separate Courts during the Season by H.R.H. by Her Majesty the Queen, and since by his Majesty the King of Saxony (second to her only on the occasions during the Season of Ives by Her Majesty), Queen Sophia, His Majesty the King of Holland, and since by H.M. the King of Prussia.

THE QUARTERLY REVIEW, No. CCXXXIX., is Published THIS DAY.

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I. PERSONAL LIFE OF WELLINGTON.
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Editorial Communications should be addressed to "The Editor," Advertisements and Business Letters to "The Publisher," at the Office, 41, Wellington Street, Covent Garden, London, W.C.
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A Newspaper of Rural Economy and General News.

No. 32.—1866.] SATURDAY, AUGUST 11. {Price Fivepence. {Stamped Edition, 6d.

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Schedules, with Lists of Prizes, may be had on application to
I. Wilkinson, Superintendent, Crystal Palace.

BOSTON FLORAL and HORTICULTURAL SOCIETY (1866).—The FIRST GREAT AUTUMN SHOW of FLOWERS, FRUITS, and VEGETABLES will be held in MAJOR HOPKINS' PARK, on THURSDAY, August 30. Extra Prizes of £5 and £3 (subject to the Judges' discretion), will be given for the Best and Second Best Collection of 12 Stove and Foliage Plants.

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N.B. It is particularly requested that intending Exhibitors give the notice required by Rule 4 with regard to Entries, for the Hon Secretary's convenience.

ROYAL CALEDONIAN HORTICULTURAL SOCIETY (Incorporated by Royal Charter).—A GRAND AUTUMN COMPETITION and PROMENADE SHOW will be HELD in the Assembly Rooms and Music Hall, Georges Street, Edinburgh, on the 5th and 6th of September next. Prize Lists and Rules can be had post free on application to

Mr. Young, 33, South Bridge, Edinburgh.

LEEDS HORTICULTURAL SOCIETY.—The AUTUMN EXHIBITION of FLOWERS, FRUIT, &c., will be held in the TOWN HALL, SEPTEMBER 7 and 8.

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Schedules and Forms of Entry on application to James Birbeck, Secretary.

Note.—The Committee undertake to receive Boxes of Fruit and Cut Flowers for Exhibition, which will be carefully unpacked and exhibited, and returned to exhibitors immediately after the Show. The Boxes to be addressed to the Secretary.

UNITED HORTICULTURAL BENEFIT and PROVIDENT SOCIETY.—The Rules are now certified by John Tidd Pratt, Esq., and A. G. Finlaison, Esq., Actuary.

The NEXT MEETING for Admission of Members will be HELD at the Swan and Dragon Hotel, Bishopsgate Street, on MONDAY NEXT, August 13, at 8 P.M. Copies of Rules and any information may be obtained of William Heale, Sec. pro tem.

14, George Terrace, Brook Street, Upper Clapton, N.E.

RUGBY HORTICULTURAL and COTTAGE GARDENERS' SOCIETY.

The ANNUAL EXHIBITION of ROSES, FRUITS, PLANTS, and FLOWERS, for 1867, will be held at Rugby on THURSDAY, July 11, 1867. By order,

John N. Savage, } Honorary
Rugby, August 8. W. E. Mason, } Secretaries.

CAUTION to the TRADE.—A Person calling himself Mr. HOWARD, about 6 feet high, dark complexion, small eyes, and who has lost his front teeth, was at Headingley, near Leeds, on the 27th and 28th ult., representing himself as TRAVELLER to Messrs J. FAIRHEAD & SON, 7, Borough Market, London, S.E. A Warrant is now out for his apprehension.

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PETER DRUMMOND AND CO. (late J. Scott), Preston Road Nursery, Yeovil, Somerset, have still on hand a surplus stock of BEDDING PLANTS, including DAHLIAS in great variety; GERANIUMS, FUCHSIAS, LANTANAS, VERBENAS, &c., at moderate prices; also TURNIP and other Seeds of best quality and variety for present sowing.

Please address as above.

Hyacinths and other Flower Roots.

JOHN FRASER begs to intimate that his CATALOGUE of HYACINTHS, NARCISSI, TULIPS, &c., is now published, and may be had on application. A DESCRIPTIVE LIST of the best kinds of STRAWBERRIES is also ready for distribution.

The Nurseries, Lea Bridge Road, London, N.E.

Hyacinths and other Dutch Bulbs.

WM. CUTBUSH AND SON beg to acquaint their numerous Patrons that they have received their usual Consignment of Choice HYACINTHS, TULIPS, CROCUSES, &c.

PRICED DESCRIPTIVE CATALOGUE post free on application.

Highgate Nurseries, London, N.

Hyacinths, and other Dutch Bulbs.

A. E. BARNARD, Vogelzang, Haarlem, begs to announce that his CATALOGUE of FLOWER ROOTS for 1866 has just appeared, and can be had post free on application.

N.B. Postage to Holland, 3*d*.

Roses in Bloom.

WM. PAUL'S ROSES are NOW in FULL BLOOM. Inspection respectfully invited. Trains almost hourly from Shoreditch to Waltham Station.

Paul's Nurseries, Waltham Cross, N.

Roses in Bloom.

JAMES MITCHELL has the honour of informing his kind patrons that his magnificent COLLECTION is NOW in FINE BLOOM. Full Down Nurseries, Maresfield, Sussex.

The London, Brighton, and South-coast Railway. Two and a-half miles from the Uckfield Station.

JAMES CRAWFORD, High Beech, most respectfully begs to invite inspection of his select COLLECTION of ROSES. He has had for many years the pick of Messrs. Paul & Sons' first-rate stock; and lately of all the new and best sorts from Mr. Wm. Paul that he could let him have.

Roses.

PAUL and SON'S ROSES are NOW in BLOOM at the "Old" Cheshunt Nurseries.

Frequent Trains from Bishopsgate to Cheshunt.

The HOLLYHOCKS are also in BLOOM at Paul & Son's, Old Cheshunt Nurseries, N.

Lea Bridge Road Nurseries, London, N.E.

JOHN FRASER respectfully invites an inspection of his Collection of ROSES, which he begs to announce are NOW in FLOWER. The Collection is extremely new and fine varieties.

The Nurseries are about 5 miles from London, and are easily reached by Train on the Great Eastern Railway, to Lea Bridge Station.

New Tea Rose.

AMBROISE VERSCHAFFELT, Nurseryman, Ghent, Belgium, begs now to offer his new fine TEA ROSE, ISABELLE SPRUYT, figured in the July Number of the "Illustration Horticole." Fine strong plants, 8*s*. each.

New Verbenas of 1866.

WM. KNIGHT has selected from the various raisers 30 distinct varieties of VERBENAS, which he now offers in good Plants for 15*s*., package included. Terms cash.

Nursery, Hershaw, Sussex.

REBECCA, the finest BEDDING GERANIUM ever raised. Plants now ready, price 5*s*. each.

See WM. PAUL'S SPRING CATALOGUE.

Paul's Nurseries, Waltham Cross, London, N.

STOVE PLANTS.—A very choice Collection to be Disposed of. For particulars apply to Mr. Catchpool, *Bury and Norwich Post*, Bury St. Edmunds.

A Photograph of the Charming

NEW WHITE VIOLET (PERINUS) Miss MURPHY, free for seven stamps. Plants 1*s* each.

J. Dobson & Sons' Nursery, Isleworth, London, W.

PELARGONIUM SEED (Show and Fancy), saved exclusively from the very best and newest flowers 2*s*. 6*d*. & 5*s*. Dobson & Sons, Woodlands Nursery, Isleworth, London, W.

First-class Seeds.

DOBSON'S PRIZE CALCEOLARIA, in 6*d*., 2*s*. 6*d*., 5*s*.

DOBSON'S PRIZE CINERARIA, 1*s*., 2*s*. 6*d*., 5*s*.

DOBSON'S PRIZE PRIMULA, 1*s*., 2*s*. 6*d*., 5*s*.

For Testimonials see page 608 of *Gardeners' Chronicle*, June 30.

Dobson & Sons, Seed Merchants, Isleworth.

New Flower Seeds for Present Sowing.

SUTTON'S CHOICE CALCEOLARIA, in 1*s*. and 2*s*. 6*d*. per packet

SUTTON'S CHOICE CINERARIA, 1*s*. and 2*s*. 6*d*. per packet.

SUTTON'S CHOICE FRINGED PRIMULA, 1*s*. and 2*s*. 6*d*. per pkt.

Post free.

Sutton & Sons, Royal Berkshire Seed Establishment, Reading.

Rhododendrons, &c.

JAMES CRAWFORD, High Beech, Essex, begs to offer for Sale a very superb Collection of the best hardy varieties, very large selected Plants, Messrs. Fraser's splendid stock, and lately from Mr. John Fraser's far famed and unsurpassed Collection at the Lea Bridge Nursery.

To the Trade.

J. KELLETT begs to offer in strong Plants the undermentioned choice FERNS:—

GYMNOGRAMMA CHRYSOPHYLLA, 12*s*. per doz.; 7*5s*. per 100.

LAUCHEANA, 12*s*. per doz.; 7*5s*. per 100.

LOMARIA GIBBA, 24*s*. per doz.; 170*s*. per 100.

PTERIS RUBRO-NERVIA, 16*s*. per doz.; 100*s* per 100.

Green Lane Nurseries, Stockport.

MR. J. HILL, Nurseryman, Newmarket Road, Norwich, invites attention to his NEW SEEDLING FUCHSIA, THE NORFOLK HERO, remarkable for its strong growth, good habit, freedom of bloom, excellent colour, rich purple corolla (very double), and beautiful scarlet petals, and for the enormous size of the flowers, the largest than those of any Fuchsia yet produced. Fine Plants, in full bloom, 5*s*. each; good bushy Plants, 6 inches, 2*s*. 6*d*. each; or (package free) 6 for 12*s*., and 12 for £1.

New Fuchsias of 1866.

H. CANNELL is now sending out BANKS' and Henderson's set of 12, well-established and showing bloom, for 24*s*.; G. Smith's set of 2 for 4*s*.; W. Bull's set of 4 for 5*s*.; Mr. Fay's ARTISTIC and LORD HOLMESDALE for 3*s*. 6*d*.; M. A. Verschaffelt's set of 4 for 6*s*., package included. And well-rooted CUTTINGS of all the above at two-thirds the price quoted. Sent safe and free by post. Usual allowance to the Trade.

Fuchsia Nursery, Woolwich.

Strawberries.

CHARLES TURNER can supply all the leading kinds, DESCRIPTIVE CATALOGUE may be had on application.

The Royal Nurseries, Slough

NEW STRAWBERRY, DR. HOGG (BRADLEY).—Resembling British Queen, but very large, and a better grower than the Queen; one of the sweetest Strawberries known, and, like Sir J. Paxton and Oscar, by the same raiser, will become a favourite, and be generally grown. It received a First-class Certificate from the Royal Horticultural Society in 1864, and the same distinction by the Fruit Committee of the Royal Horticultural Society this Season; was exhibited in C. Turner's successful collection of four varieties of Strawberries, and also in his Collection of Fruit at the late Exhibition of the Royal Botanic Society. Price 2*s*.

Charles Turner, The Royal Nurseries, Slough

CUTHILL'S STRAWBERRY PLANTS, strong and fine for bearing, will be sent out on August 24, &c. The sorts best kept—from June 2. Dr. Lindley often said that he never could depend on a crop until he had mine. BLACK PRINCE, PRINCESS ROYAL, RICHARD II., HIGHLAND MARY, NEWTON SEEDLING, and LIFE PRINCE of WALES, 100 each sort, 5*s*.; but if selected, 7*s*. 6*d*. Superior MUSHROOM SPAWN, 5*s*. 6*d*. per bushel; PRINCE ALBERT WINTER CUCUMBER, 1*s*. Pamphlets on Gardening, &c.

Post Office Orders payable on Camberwell Green.

James Cuthill, Denmark Hill, Camberwell, London, S.

CASTLE KENNEDY FIG.—Plants of the above may now be had at 5*s*. 6*d*. and 21*s*. each; the usual discount to the Trade. Peter Lawson & Son, Edinburgh and London.

WANTED, SPANISH CHESNUTS, 6 feet high. State quantity and price per 1000.

James Dickson & Sons, the "Newton" Nurseries, Chester.

A Quarter of a Million of Fruit Trees.

THOMAS WARNER begs to inform intending Planters and the Trade, that his Nurseries, which occupy upwards of 30 acres, contain the above, in addition to a most extensive stock of Evergreens, Ornamental Trees, Roses, &c. All in a high state of cultivation. An inspection is respectfully invited.

CATALOGUES, Wholesale and Retail, ready in October.

The Nurseries, Leicester Abbey, 1½ mile from the Midland Railway Station.

FINE SPECIMEN and HALF-SPECIMEN HARD-WOODED and ORNAMENTAL FOLIAGE STOVE and GREENHOUSE PLANTS.—Exhibitors and gentlemen furnishing Conservatories are invited to inspect our Collection of the above, which is large and in very fine healthy condition. Prices moderate.

F. Jackson & Son, Nursery, Kingston, Surrey

ARAUCARIA EXCELSA for SALE.—Two splendid Trees of the above, in pots, 12 feet high, and beautifully formed with grand tops, very handsome Plants for a Conservatory, to be sold Cheap. Apply to

E. A., Glenmore House, Claremont Crescent, Surbiton, S.W.

CLIANTHUS DAMPIERI, VARS. New Seed just received from Australia, including many striking and distinct Hybrids, the beautiful White variety included, and the pure Scarlet 2*s*. 6*d*. per packet of 12 seeds. Price to the Trade on application

Hooper & Co., Covent Garden Market, London, W.C.

ALOES and ORCHIDS for SALE.—A Pair of fine ALOES in capital vases, 5 feet 6 inches high, by 6 feet through. ORCHIDS.—About 80 fine plants will be almost given away. Well worthy of notice by the Trade. Inspection respectfully solicited.

Further particulars on application to W. Wallis, Hatchford Gardens, Cobham, Surrey.

Orchis maculata superba.

OSBORN AND SONS are now taking orders for this beautiful hardy TERRESTRIAL ORCHID, for which a First-class Certificate was awarded on the 19th of June by the Floral Committee of the Royal Horticultural Society. It is of vigorous habit, 1½ to 2 feet high, has leaves transversely marked with very dark stripes, and a dense spike of spotted rose-coloured flowers 6 inches long. Price 5*s*. each, to be delivered in autumn.

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JAVERY AND SON having a few NOVELTIES now ready to send out, will be pleased to forward their PRICED DESCRIPTIVE CATALOGUES of AZALEA INDICA, and No. 10 HARDY BRITISH FERNS, which contain full particulars.

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A. STANSFIELD and SONS, Nurserymen, &c. Todmorden, will be glad to forward their GENERAL FERN CATALOGUE No. 7 to any address for three penny postage stamps. In the British Selection ample directions are given for the successful culture of the different species. A List of Selections of British and also of Exotic Ferns at special rates will accompany each copy of the Catalogue. Gratis and post free to purchasers of Ferns.

British Fern Catalogue.

ROBERT SIM can now send, post free for six postage stamps, Part I. (British Ferns and their varieties, 36 pages, including prices of Hardy Exotic Ferns) of his NEW and PRICED DESCRIPTIVE CATALOGUE of BRITISH and EXOTIC FERNS No. 7.

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Fern's Gray Nursery, S.E.

SUTTON'S RENOVATING GRASSES should NOW be SOWN.

1 to 1½ lb. required per acre.

Price 10*d*. per lb., or cheaper by the cwt.

Sutton & Sons, Royal Berkshire Seed Establishment, Reading.

Grass Seeds for Autumn Sowing.

SUTTON'S PERMANENT GRASS SEEDS FOR ALL SOILS.

Prices (according to quantity required and soils for which they are intended), may be had on application.

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SUTTON'S IMPROVED ITALIAN RYE-GRASS, the Best and Most Productive in Cultivation.

Sutton & Sons can supply New Seed of the above at 6*s*. per bushel, or cheaper in large quantities.

August and September are the best months for Sowing.

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Green Peas in October.

NEW SEED of SUTTON'S RINGLEADER PEA (growth of 1866), can now be supplied; and if sown before the 20th August, will produce a good crop during the present Autumn.

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FOR SALE, Three Tons of superior stock of ORANGE GLOBE MANGEL WURZEL SEED, true, Fisher Hobbs' Stocks, nett growth 1865.

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PROTECTION from the SCORCHING RAYS of the SUN.

"FRIGI DOMO," a Canvas made of Patent prepared Hair and Wool, a perfect Non-conductor of Heat and Cold, keeping, wherever it is applied, a fixed temperature. It is adapted for all Horticultural and Floricultural purposes, for Preserving Fruits and Flowers from the Scorching Rays of the Sun, from Wind, from Attacks of Insects, and from Morning Frosts. To be had in any required lengths.

Two yards wide .. .. 1s. 0d. per yard run.
Four yards wide .. .. 2s. 6d. per yard.
An improved make, 2 yards wide .. 1s. 9d. per yard.
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"FRIGI DOMO" NETTING, 2 yards wide, 1s. 6d. per yard run

ELSDEN, THOMAS, Whole and Sole Manufacturer, 7, Great Trinity Lane, Cannon Street, City, E.C., and of all Nurserymen and Seedsmen throughout the Kingdom

"It is much cheaper than Mats as a covering."

TO BE SOLD CHEAP, a first-class PLANT VAN. Length 15 feet, Width 7 feet 6 inches, Height 7 feet 6 inches.

For price, &c., apply to E. COOLING, Derby.

WM. SMITH, HOTHOUSE BUILDER, Turnham Green, late of Hammersmith, begs to inform the Public that he will be glad to make GREENHOUSES or HOTHOUSES, of good Yellow Deal, Glazed with 21-oz Glass, Painted three times, Fitted ready for fixing, of any size, at 1s. 6d. per foot Lineal. Also that he has ready for use 10 GREENHOUSE LIGHTS, 9 ft. 10 in. long by 4 ft. 8 in. wide, 21-oz glass, price 27s. Also several lots of smaller size; and a large Stock of 1, 2, 3, and 4 Light GARDEN FRAMES, made portable, kept in stock.

Estimates given for efficiently Heating by Hot Water in any part of the kingdom.

HOTHOUSES for the MILLION, invented by the late SIR JOSEPH PAXTON

Manufactured by LOCOCK, NEWTON & CATMUR (Lancashire), Gloucester, Coventry, Aberdeen, and Paisley only.

Illustrated Circulars, with revised List of Prices, will be sent on prepaid application to Messrs HEDGMAN & MORTON, Head Office, 7, Pall Mall East, London, S.W.

JAMES WATTS AND CO., HOTHOUSE BUILDERS and HOT-WATER APPARATUS MANUFACTURERS, 353, Old Kent Road, London, S.E.

200 CUCUMBER and MELON FRAMES and LIGHTS, all sizes, Glazed and Painted complete for immediate use, packed and sent to all parts of the Kingdom

Strong ZINC HAND GLASSES, all sizes

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HOT WATER PIPES and FITTINGS of the best description supplied by

HENRY & POLLARD, 17, New Park Street, Southwark, London, S.E.

BURY AND POLLARD'S CONICAL BOILERS for HEATING by HOT WATER fixed at Seats of Duke of Newcastle, Lord Belper, &c., at Viscount Sydney's replaced, after being 20 years in constant use. Apply at

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HOT-WATER APPARATUS, of every description, fixed complete in any part of the country, or the materials, viz., Boilers, Pipes, &c., delivered to any Station.

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HOT WATER PIPES, from Stock, per yard:—2-inch, 1s. 2d.; 3-inch, 1s. 10d.; 4-inch, 2s. 4d. BENDS, from Stock, 1s. 6d., 2s. 6d., and 3s. each. THROTTLE VALVES, 10s., 13s., and 14s. each. Other Connexions at equally low prices, and all goods of first-class manufacture. Estimates given, and orders by post punctually attended to the same day.

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HOT-WATER PIPES, at Wholesale Prices, with Elbows, Syphons, Tee Pipes, and every other Connection; Wrought and Cast-Iron Boilers, Saddle, Conical, Cylinder, Tubular, and Elliptic, from 24s. each. Improved Boilers and Iron Stands to use 9-inch brickwork, 6os. each. Valves from 10s. 6d. each. Patent Valves, Improved Furnace Doors, Furnace Bars, Supply Cisterns, and Castings of every description in stock, at

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J. WARNER AND SONS

Have much improved the construction of their

GARDEN ENGINES

in some important particulars for this Season.

They may be obtained of the Trade generally throughout the Kingdom at the following prices:—

No. 547. WARNER'S best ENGINES, in Wood Tubs, and fitted with WARNER'S Registered Spreaders—

24 Gallons,	£6	10	0
14 ,,	5	10	0

No. 547A. WARNER'S strong ENGINES, in Galvanised Iron Tubs, well painted—

10 Gallons,	£2	19	0
16 ,,	3	14	0
24 ,,	4	19	0
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No. 579½. WARNER'S WATER BARROWS, thoroughly Galvanised and well painted—

20 Gallons,	£2	2	0
30 ,,	2	13	0
38 ,,	3	17	0
50 ,,	5	12	0

The 50-Gallon Barrow is made extra strong throughout, and fitted with handle for two men.

No. 568½, AMERICAN ENGINE, is now well known and appreciated. It throws a continuous stream, and is complete in itself. £2 2s.

SYRINGES in great variety, from 7s. 6d. to 18s. 6d.

The DISC SYRINGE, No. 557A, will recommend itself by the ease with which it is filled, and non-liability to get out of order. Price 9s.

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Is recommended to the notice of Horticulturists as possessing the following advantages:—It is simple in construction, portable, and easily worked. It throws a continuous stream, and is low in price.

The Aquaject, 30s.

Ditto small size, 18s.

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No. 36. IRON FORCE PUMPS for raising water above their level, or Watering Yards, Gardens, &c., through hose—2½-in., 59s.; 3-in., 65s.; 3½-in., 77s.; 4-in., 89s.

No. 36½. FORCE PUMP on BARROW, recommended for its great portability and simplicity of construction. £5 10s.

No. 42. WARNER'S PORTABLE PUMPS on Folding Legs, are of a superior construction.

Price 65s.; Rubber Suction, 2s. 11d. per ft.

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No. 599. TAPER BRANCH PIPES—½-in., 4s. 9d.; ⅝-in., 5s. 3d.; ¾-in., 6s.; 1-in., 7s.

RUBBER HOSE in all sizes.

FOUNTAIN JETS in great variety, from 3s. 6d to 25s.

DESCRIPTIVE PRICE LISTS forwarded on application.

TREE and PLANT LABELS.—10,000 Cloth punched assorted Labels for 3s8. ; delivered free in London on receipt of Order. Address,

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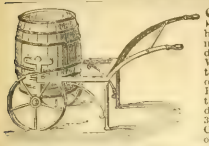

SWING WATER BARROW.—This is the best and cheapest article yet introduced for use in Gardens, Farm Yards, &c. The Water may be tipped out, or the Tub tilted and poured out, or by merely raising the Handle it can be placed on the ground, and the Frame detached. To hold about 30 or 36 gallons, price 42s. Carriage paid to any station on Great Eastern Line.

POWERFUL GARDEN ENGINE, suitable for the above, price 45s.

IMPROVED WATER and LIQUID MANURE CARTS.

Catalogues on application.

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GREEN'S IMPROVED NEW PATENT GARDEN ROLLER.

The above Rollers possess many advantages over all others They are made in two parts, and are free to revolve on the axis, affording greater facilities for turning, and the outer edges are rounded off or turned inwards, thus avoiding the unsightly marks left by other Rollers.

Diameter, 30 inches ; Length 32 inches,	£7	10	0
" 24 " " 26 "	4	10	0
" 20 " " 22 "	3	10	0
" 16 " " 17 "	2	15	0

Prices for Rollers fitted with Shafts suitable for Pony or Horse Power, free on application.

Delivered carriage paid to all the principal Railway Stations and Shipping Ports in England.

THOMAS GREEN & SON, Smithfield Iron Works, Leeds ; 54 and 55, Blackfriars Road, London, S. ; and 19, Eden Quay, Dublin.

N.B. All Orders executed on the day they are received.

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INTERNATIONAL EXHIBITION, LONDON, 1862.
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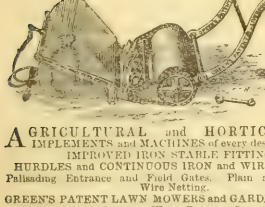
The above Lawn Mowers have proved to be the best, and have carried off every Prize that has been given in all cases of Competition.

Sold by all respectable Ironmongers, Seedsmen, &c., in the Kingdom. Illustrated Price Lists free on application.



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HURDLES and CONTINUOUS IRON and WIRE FENCING.

Palisading Entrance and Field Gates. Plain and Galvanised Wire Netting.

GREEN'S PATENT LAWN MOWERS and GARDEN ROLLERS.

Garden Engines, Syringes, Water Barrows, Ornamental Garden Seats, Chairs, Tables, Iron Fountains, Vases, &c.

IRON and BRASS BEDSTEADS, in great variety.

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For samples and prices apply to
J. SHAW & Co., 29, Oxford Street, Manchester.

SHAW'S TIFFANY, from 8s. per piece, 20 yards long. GARDEN NETTING, 2 yards wide, 3d. per yard run ; quantities of 100 yards and upwards sent carriage paid. GARDEN ENGINES, &c. ; for price, &c., see Warner's extended List.

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TO BE SOLD, an ORCHARD HOUSE, nearly new, and in first-rate condition, size 75 feet by 20 feet, the property of a Gentleman ; also about 30 ORCHARD-HOUSE TREES, well grown and in fine condition

Apply to E. COOLING, Mile Ash Nurseries, Derby.

GREENHOUSES, 42 feet by 13 wide, £50 ; 21 feet by 13 wide, £28 ; 124 feet by 10 wide, £15, Glazed, ready for fixing ; a handsome CONSERVATORY, 36 feet by 19, £120 Estimates for any branch in the line in Iron or Wood.

H. FREEMAN'S Works, Triangle, Hackney, N.E. Established 20 years.

FOUNTAIN JETS.

Fig. 526. JET D'EAU. 18 holes 3-16th ; 24do., 5s. 9d ; 36 do., 6s. 6d

Fig. 531. DOME and CONVOLUTUS. 17s.

Fig. 525. DOME. 8s 6d.

Fig. 523. CONVOLUTUS, 8s 6d.

Fig. 521. BARKER'S MILL. 11s.

Fig. 522 WIRE BASKET with BALL 10ins , 16s 6d ; 12ins , 17s 6d ; 14ins , 18s 6d

Connecting Screws to all the above Jets, 1s. 6d. each.

Branch Pipe for raising up Jets 1 foot high, 5s. 6d

A Tap is required to be fixed in the Pipe to regulate the supply of Water to Fountain Jets.

J. TYLOR & SONS, Manufacturers, Warwick Lane, Newgate Street, London, E.C.

SHANKS' PATENT LAWN MOWERS for 1866.—Patronised on five separate occasions during the Season of 1864 by Her Majesty the Queen, and once by his Majesty the King of Saxony ; again on four separate occasions during the Season of 1865 by Her Majesty the Queen ; once by His Majesty the King of Holland ; and once by His Majesty the King of Prussia

HAND MACHINE.

These are the only Lawn Mowers that will work for years without requiring repair.

These are the only Lawn Mowers that will Mow properly when the Grass is Wet.

These are the only Lawn Mowers that are in use in ALL the Royal Gardens.

Every Machine warranted, and if not approved of can be at once returned. Illustrated Price Lists sent free on application.

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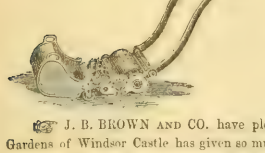

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AND, IF NOT APPROVED OF,

MAY BE AT ONCE RETURNED.

☞ J. B. BROWN AND CO. have pleasure in mentioning that their B B LAWN MOWER ordered for the Gardens of Windsor Castle has given so much satisfaction, that another B B MACHINE of a larger size [a 24-inch Machine] has just been ordered. A Second B B Machine this Season [a 24-inch] has also been just supplied, by order, for the Gardens of His Royal Highness the Prince of Wales at Sandringham.—June 26.

This New B B PATENT LAWN MOWER is Manufactured by Messrs. BROWN & Co., on their own Premises in London, under their personal superintendence. It is worked by means of Geared or Toothed Wheels, is quite noiseless, and is guaranteed to give perfect satisfaction in every respect.

PRICES—including Carriage to any Railway Station or Shipping Port in England.

10-inch Machine ..	£3	10	0	18-inch Machine ..	£7 10 0 *Easily worked by a Man*
12-inch Machine ..	4	10	0 *Easily worked by a Boy.*	20-inch Machine ..	8 0 0
14-inch Machine ..	5	10	0	22-inch Machine ..	8 10 0 *Ditto by Two Men.*
16-inch Machine ..	6	10	0 *Ditto by a Man.*	24-inch Machine ..	9 0 0

Every Machine sent out is warranted to give ample satisfaction, and if not approved of may be at once returned.

J. B. BROWN AND CO., OFFICES, 90 (late 18), CANNON STREET, CITY, LONDON, E.C.

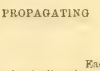
WAREHOUSE and MANUFACTORY, 148, UPPER THAMES STREET, E.C.

Opposite the City of London Brewery, and close to the London Bridge Steam Boat Piers.

Glass for Garden Purposes.

JAMES PHILLIPS AND CO. beg to submit their prices as follows:—

PROPAGATING GLASSES.



Each.—s. d.		Each.—s. d.
2 inches in diameter .. 0 3½	12 inches in diameter .. 1 3	
3 " " .. 0 4½	13 " " .. 2 0	
4 " " .. 0 5½	14 " " .. 2 0	
5 " " .. 0 6½	15 " " .. 2 6	
6 " " .. 0 8	16 " " .. 3 6	
7 " " .. 0 10	17 " " .. 4 0	
8 " " .. 1 0	18 " " .. 5 0	
9 " " .. 1 2	19 " " .. 6 0	
10 " " .. 1 4	20 " " .. 7 0	
11 " " .. 1 7		

BEE GLASSES, with Conical or Flat Tops.

Each.—s. d.		Each.—s. d.
4 inches in diameter .. 0 6	9 inches in diameter .. 1 8	
5 " " .. 0 8	10 " " .. 2 0	
6 " " .. 0 10	11 " " .. 2 6	
7 " " .. 1 1	12 " " .. 3 0	
8 " " .. 1 4		

CUCUMBER GLASSES.

Each.—s. d.		Each.—s. d.
24 inches long 2 0	16 inches long 1 4	
22 " " 1 10	14 " " 1 2	
20 " " 1 8	12 " " 1 0	
18 " " 1 6		

Made to any length.

HAND GLASSES,

WITH OPEN TOPS.

Each.—s. d.		Each.—s. d.
12 inches 6 6	18 inches 9 6	
14 " " 7 6	20 " " 10 6	
16 " " 8 6	22 " " 11 6	
	24 " " 12 6	

Painted and Glazed with 16oz. Sheet Glass.

SHEET and ROUGH PLATE GLASS, SLATES, of all sizes, BRITISH PLATE, PATENT PLATE, ROLLED PLATE, CROWN, SHEET, HORTICULTURAL, ORNAMENTAL, COLOURED, and every description of GLASS, of the best Manufacture, at the lowest terms. Lists of prices and estimates forwarded on application to

JAMES PHILLIPS & Co., 100, Bishopsgate Street Without, E.C.

GLASS for GARDEN PURPOSES, &c.—PROPAGATING GLASSES, BEE do., FERN do., CUCUMBER do., MILK PANS, SHEET GLASS, HARPLEY'S PATENT ROUGH PLATE GLASS, GLASS TILES and SLATES, and every description of Glass. Prices by post.

N B —10 feet sup. of SHEET GLASS, 7 inches by 5 inches, for 10s., box included

ROBT. P. TATE, 51, Holborn Hill, London, W.C

GARDEN BORDER EDGING TILES, in great variety of patterns and material, plainer sorts being especially suited for KITCHEN GARDENS, as they harbour no Slugs and Insects, take up little room, and once put down mean no further labour and expense, as do "grown" Edgings, consequently being much cheaper.

GARDEN VASES, FOUNTAINS, &c., in Artificial Stone, of great durability, and in great variety of design.

F. & G. ROBSON, Manufacturers, Upper Ground Street, Blackfriars, S. ; Queen's Road West, Chelsea, S.W. ; Kingsland Road, Kingsland, N.E.

Sole London Agents for TOXLEY'S PATENT GARDEN WALL BRICKS. Illustrated Price Lists free by post. The Trade supplied

ORNAMENTAL PAVING TILES for Conservatories, Halls, Corridors, Balconies, &c., as cheap and durable as Stone, in blue, red, and buff colours, and capable of forming a variety of designs.

Also TESSELATED PAVEMENTS of more enriched designs than the above

WHITE GLAZED TILES, for Lining Walls of Dairies, Larders, Kitchen Ranges, Baths, &c. Grooved and other Stable Paving Bricks of great durability, Dutch and Adamantine Clinkers, Wall Copings, Red and Stoneware Drain Pipes, Slates, Cements, &c.

To be obtained of F. & G. ROBSON, at their Premises as above.

SILVER SAND (REIGATE, best quality), at the above Addresses—14s. per Ton, or 1s. 3d. per Bushel ; 2s. per Ton extra for delivery within three miles, and to any London Railway or Wharf. Quantities of 4 Tons, 1s. per Ton less.

FLINTS, BRICK BURRS or CLINKERS, for Rockeries or Grotto Work. F. & G. ROBSON, Addresses as above.

N.B. Orders promptly executed by Railway.

Iron Hurdles, Fencing, and Gates.

COTTAM'S HURDLES are made in the best manner of superior Wrought Iron. SHEEP HURDLES, from 4s. ; CATTLE HURDLES, from 4s. 11d. each ; CONTINUOUS FENCE, from 8d. per foot ; FIELD GATES, from 25s. each. Illustrated Price List on application.

ENTRANCE GATES, RAILING, and IRON WORK of every description. Designs and Estimates free of

COTTAM & Co.,
No. 2, Wimsley Street
(opposite the Pantheon),
Oxford Street, London, W.

WJACKSON, UMBRELLA and STICK MAKER, 37, Brower Street, Regent Street, Original Manufacturer of the IMPROVED BLOW TUBES, invaluable to Gardeners and Naturalists, as they kill birds at a distance without injuring the plumage. Also his PARAGON DART, which will pert rate three sheets of Brass at 25 yards Tubes 7s., 10s. 6d. ; very superior finished, 12s. 6d. Darts, 6s. per dozen. Balls, 1s. per 100. Moulds, 2s. 6d. each. P O O payable at Brower Street, Regent Street. See Notes and Questions in *Field* of May 5 and July 28, 1866

Red Spider

Magnified.

GISBURST COMPOUND, whether used against Insects and Mildew, on Growing Plants, or as Winter Dressing on Trees at rest, should be dissolved 48 hours before use. This gets rid of smell, and if the Solution be decanted, prevents any staining of foliage. A strength of from 1 to 2 oz. to the gallon of water is recommended for growing Plants ; one from 4 to 16 oz. for Trees at rest.

Sold Retail by Nurserymen and Seedsmen, in boxes, 1s., 3s., and 10s. 6d. each.

Wholesale by
PRICE'S PATENT
CANDLE COMPANY
(LIMITED).

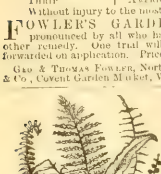
GENUINE TOBACCO PAPER at 10*d.* per lb. Terms Cash.
Mr Donoson, at Messrs Jackson & Sons, 20, Lady Lane, Leeds.

TOBACCO TISSUE.—As Exhibited at the International Horticultural Exhibition.—For DESTROYING MEALY BUG, RED SPIDER, THRIP, and other Insects. Will burn without the assistance of blowing, and not injure the most tender Plants.
Sold in 1 lb packages, and upwards, price 3*s* 6*d* per lb., by Messrs. ROBERTS & SONS, Tobacco Manufacturers, 51, St. John Street, Clerkenwell, E.C., and by all Seedsmen and Nurserymen.
Copies of Testimonials forwarded on application.

Destroy your Insect Pests.
PRESERVE YOUR PLANTS and TREES.
YOU MAY EASILY DESTROY ALL PLANT PESTS,

RED SPIDER	GREEN AND BLACK	ANTS
MEALY BUG	FLY	SCALE
THRIP	AMERICAN BLIGHT	MILDEW,

Without injury to the most delicate Plant or Tree, by using
FOWLER'S GARDENERS' INSECTICIDE,
pronounced by all who have used it to be far superior to any other remedy. One trial will prove its efficacy. Testimonials forwarded on application. Price 1*s.* 6*d.*, 3*s.* 6*d.*, and 10*s.* per Tin.
GEO. & THOMAS FOWLER, North Street, Brighton; and of HOOPER & Co., Covent Garden Market, W.C.



COCOA-NUT REFUSE
is becoming scarce, the old reserves will soon be gone. Now sold in bags, 1 for 2*s.*, 10 for 16*s.*, 20 for 30*s.*, 50 for 65*s.*, 100 for £6.
Fourpence allowed for each bag returned carriage-paid.
A Railway Truck-load (not in bags), 40*s.*
Postage Stamps or Post-office order, payable to J. BARNHAM & Co., Kingston-on-Thames, S.W.

LAWES' MANURES.
The Manures manufactured by J. B. LAWES for the present season of 1866 are now ready for delivery at his Factories, at the following prices, per ton:—

	£	*s*	*d*
LAWES' PATENT TURNIP MANURE, and BONE SUPERPHOSPHATE of LIME	6	6	0
LAWES' SUPERPHOSPHATE of LIME from BURNT BONE or MINERAL PHOSPHATES	5	5	0
LAWES' WHEAT, BARLEY, GRASS, and MANGEL MANURES	8	0	0
CONCENTRATED CORN and GRASS MANURE	12	0	0

These Manures can be obtained of MR. LAWES, or through the appointed Agents in all parts of the United Kingdom, at prices varying according to cost of carriage.
Genuine Peruvian Guano direct from the Importers. Nitrate of Soda, Sulphate of Ammonia, and other Chemical Manures.
American and other Cakes at market prices.
Address, JOHN BENNET LAWES, 1, Adelaide Place, London Bridge, E.C.; and 22, Eden Quay, Dublin.

THE LONDON MANURE COMPANY
(ESTABLISHED 1840).
Have now ready for delivery in dry fine condition,
CORN MANURE, for Spring Use
DISSOLVED BONES, for Dressing Pasture Lands
SUPERPHOSPHATES of LIME
PREPARED GUANO
MANGEL and POTATO MANURES
Also Genuine PERUVIAN GUANO, and NITRATE of SODA, ex Dock Warehouse; SULPHATE of AMMONIA, FISHERY SALT, &c. E. PURSER, Secretary.
Offices, 116, Fenchurch Street, E.C.

New Petunias for 1866.

AMBROISE VERSCHAFFELT, NURSERYMAN, Ghent, Belgium, begs to announce that he is now sending out good Plants of all the finest NEW PETUNIAS raised on the Continent, and which were sent out in 1866. This collection obtained the First Prize at the last Ghent June Show.
12 distinct varieties, 1*s.* 6*d.* each; 24 distinct varieties, 1*s.* each.
Every order will be sent to London free of carriage and packing.

AMBROISE VERSCHAFFELT, NURSERYMAN, Ghent, Belgium, begs to offer the strong Plants for Bedding, of
ALTERNANTHERA AMŒNA, at 9*s.* per dozen.
" SPATHULATA, at 9*s.* per dozen.
" TELEIANTHERA VERSICOLOR, at 9*s.* per dozen
If a greater quantity is ordered, they will be supplied at a lower price. Package and carriage free to London.

AMBROISE VERSCHAFFELT, NURSERYMAN, Ghent, Belgium, begs to offer—
Fine DOUBLE CAMELLIAS, without buds, in 100 varieties of first choice, figured in the Iconographie of Camellias, £3 10*s.* per 100.
Fine AZALEA INDICA, without buds, in 100 varieties, comprising all the best favourite blooms, £3 per 100.
Fine DOUBLE CAMELLIAS, full of flower buds, £6 per 100.
Fine AZALEA INDICA, full of flower buds, £5 per 100.
N.B. To secure a good choice, early orders are solicited.

Alsophila contaminans, &c

A. VAN GEERT begs to offer fine Plants of
ALSOPHILA CONTAMINANS, at 12*s.* 6*d.* each
" EXCELSA, young plants, 24*s.* per dozen.
" AUSTRALIS, fine plants, 5*s.* each
" LATEBROSA, 24*s.* each.
" VAN GEELTI, 42*s.* each.
N.B. CAMELLIAS and INDIAN AZALEAS, as usual fine stuff, well set for bloom, the first at 25 and upwards per 100, and the latter at 45 and 50 per 100.
CAMELLIAS, in best varieties, without bloom buds, at £4 per 100.
Fourth Thousand, price 1*s.*; post free, 13 stamps,
Horticultural Establishment, Ghent, Belgium.

JOSEPH BAUMANN, NURSERYMAN, Ghent, Belgium, offers the following:—

100 CORREA ALBA or SPECIOSA	£1	0	0
100 LILIUM LANCIFOLIUM ALBUM	2	0	0
100 " RUBRUM	2	0	0
100 ASCLEPIAS TUBEROSA	1	10	0
100 VIBURNUM MACROCEPHALUM	4	0	0
100 ILEX in sorts	3	0	0
100 GREVILLEA HILLII	4	0	0
100 GREVILLEA STOCKS	1	0	0
100 DEUTZIA CRENATA, fl. pl.	1	0	0
100 STRAWBERRIES DR. NICAISE	0	10	0

Carriage must be paid on above to London.

50,000 Azalea indica, and 100,000 Rhododendrons,
GRAFTED PLANTS.

JOSEPH BAUMANN, NURSERYMAN, Ghent, Belgium, begs to offer the following, free on board, to the Custom House, London:—
100 AZALEA INDICA, with flower buds, £4 to £5.
100 " stronger plants, £6 to £8
(They are all dwarf bushy heads and the best kinds.)
100 RHODODENDRONS, 1 year grafted, £4.
100 " 2 to 3 years, grafted, £8.
100 " stronger plants, £10.
100 " with flower buds, £8.
100 " with flower buds, larger plants, £12 to £18.
(They are all the best English and Belgian hardy sorts.)
All my finest Hardy Ghent Azaleas are already ordered for England
CATALOGUE on application

Paul's Nurseries, Waltham Cross, London, N.
SEEDS FOR PRESENT SOWING

WM. PAUL can confidently recommend the following first-class Seeds:—PRIMULA, CINERARIA, CALCEOLARIA, and HOLLYHOCK, from finest strains, 1*s.* 6*d.* to 2*s.* 6*d.* per packet; VIOLA CORNUTA; POLYANTHUS, splendid mixed, 1*s.* per packet.
WM. PAUL'S IMPROVED TELEGRAPH CUCUMBER, WALTHAM GREEN CURLED ENDIVE, BROCKET HALL LETTUCE, 1*s.* per packet. All other Seeds of best quality at moderate prices.
CATALOGUE on application.

New Hardy Clematises.

GEORGE JACKMAN AND SON respectfully invite an inspection of their Collection of SEEDLING CLEMATIS, which is NOW in FLOWER, and will continue all the Autumn. This Collection contains now and fine varieties, that are quite equal to those selected, viz., C. Jackmanni, rubro-violacea, rubella, Prince of Wales, Princess of Wales, magnifica, and velutina purpurea, each being awarded First-class Certificates by Royal Horticultural or Botanic Societies in London.
Woking Nursery, Surrey.

B. S. WILLIAMS,
Victoria and Paradise Nurseries, Holloway, London, N.
CHOICE SEEDS.
PRIMULA (WILLIAMS'S superb Strain).—The most noted strain of Primula in existence; same as supplied to nearly all the largest Gardens in England. In sealed packets, at 5*s.*, 3*s.* 6*d.*, and 2*s.* 6*d.* each. None genuine without B. S. WILLIAMS'S name and address on the packet.
CALCEOLARIA (James's Strain).—5*s.* and 3*s.* 6*d.* per packet.
CINERARIA (WILLIAMS'S extra choice strain).—This well-known Cottage Garden strain to be had exclusively in sealed packets bearing B. S. WILLIAMS'S name and address. Price 5*s.* and 3*s.* 6*d.* per packet.

Brighton and Sussex Seed Warehouse.

EDWARD CARPENTER'S MIXTURES of PERMANENT GRASS and CLOVER SEEDS.—Best quality, 56*s.* per acre; finished lawn seeds, and 12 lb. Clovers and small seeds per acre).—See testimonials in Catalogue
EDWARD CARPENTER'S RENOVATING MIXTURES for Improving Old Pastures.
PRICED CATALOGUES of KITCHEN GARDEN, FLOWER, and FARM SEEDS now ready.
EDWARD CARPENTER, Seed Merchant and Grower, 96, St. James's Street, Brighton.

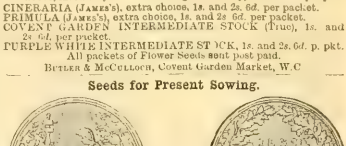
New or Rare Plants.

JAS. BACKHOUSE AND SON have now ready for distribution the following interesting Plants:—
SPARAXIS PULCHERRIMA.—"This most lovely Cape bulb" was figured and described in the "Botanical Magazine" for January of this year. The flowers are very large (1½ inch long), bell shaped, of a deep Magenta purple! Dr Hooker adds, "A more lovely and graceful plant, from its extremely tall and slender stems, and from the drooping flowers, cannot well be imagined." Its value is much increased by its being easy of cultivation in a cool greenhouse, where it flowers in the winter months. Price 10*s.* 6*d.* each.
HABRANTHUS FULGENS.—Figured in the above work under the name in March last, and formerly known as Phycella sp. nova? It was raised from seeds received from Chili, and is one of the most brilliant coloured bulbous plants which we know. Dr. Hooker speaks of it as "a truly magnificent plant, sent by Messrs. Backhouse, with the name of Habranthus fulgens." Flowered this year. The flowers are 4 to 5 inches across, bright scarlet, with a yellow tube, borne in clusters of five to seven on a stem. Price 10*s.* 6*d.*
MONOCHÆTUM (HABRANTHUS) MERIANI.—Figured in Curtis's "Botanical Magazine," t. 5566, and there spoken of as "an excess each pretty plant, deserving a place in every warm greenhouse." The flowers are very abundant, and of a bright rose colour, and the habit being of a dwarf compact character, an invaluable acquisition for the later months of the year. Price 6*s.*
DIPLADENIA AMABILIS.—We again call attention to this most beautiful Stove Climber, during the present season it has been exhibited at the meetings of the Royal Horticultural and Royal Botanic Societies, and in both instances a First-class Certificate was received It produces large, rose-coloured flowers, 3 inches across, for a considerable time; and being of good habit, it is an invaluable plant for home decoration or exhibition. Price 3*s.* 6*d.* and 5*s.* each
ADIANTUM CAYENNENSE.—A dense growing, fine-foliaged form, between *A. cardiochæna* and *A. cultratum*. It makes an excellent specimen, and has the advantage of keeping a bright green colour through the winter months. Price 21*s.*
ASPLENIUM ALTERNANS.—A new and possibly hardy Fern of great interest, from the high regions of Northern India and Chinese Tartary (?) inhabiting stony woods at 6000 ft. elevation. Fronds coriaceous, simulated, bi-pinnatifid, very opaque, about 9 inches long, bearing a general resemblance to Ceterach officinarum. 7*s.* 6*d.*
ASPLENIUM INEQUALE, VAR.—Elegant highly divided fronds, very green, and extremely interesting. First-class Certificate H.H.S. 3*s.* 6*d.* to 12*s.*
PELLÆA WRIGHTIANA.—This is a very distinct and striking species, of Adiantum-like fronds, finely sub-divided in the lower segments. First-class Certificate. 3*s.* 6*d.* to 10*s.* 6*d.*
INDIGOFERA FLORIBUNDA.—Although this plant has been introduced some years, its excellent merit seems to be little known. Not only is it one of the most beautiful of summer-flowering greenhouse plants, but equally beautiful as a hardy shrub. A plant has stood out in our Nursery for several years, living through the extreme frost of 1860, and is now 6 ft. high, extra 4 ft. through, and last summer was covered with a sheet of bright rose-coloured Pea-shaped flowers, exceedingly charming. As a greenhouse plant it is very effective, the deep green, fern-like foliage corresponding favorably with the profusion of bright lively flowers, but it is as a virtually new and most effective hardy plant that we now call attention to it. Nice plants, in pots, 2*s.* 6*d.* each; per dozen, 24*s.*
SCHIZOSTYLIS COCCINEA.—Having prepared a large stock of this much admired plant, we can offer them of blooming strength at 12*s.* per dozen. Flowering continuously through the autumn and winter months, its brilliant crimson flowers render it a chief ornament of any greenhouse, and amongst cut flowers it is most attractive
HEPATICA ANGULOSA.—This magnificent new species is fully twice the size of the common Blue Hepatica in all its parts. Flowers sky-blue, frequently as large as a crown piece. Ought to be in every garden. 5*s.* 6*d.*
SAXIFRAGA LONGIFOLIA VERA.—It has been our good fortune to receive several plants of this Queen of Saxifrages, as it may be truly termed, from its size and beauty combined. Its flowers form massive panicle pinnacles 1½ to 2 feet long, and 6 to 9 inches thick, rising from rosettes 6 or 8 inches across, of very narrow, glaucous (almost silvery) leaves, closely imbricated. Quite different from the plant ordinarily grown under this name as received from Continental nurseries. 2*s.* 6*d.* to 5*s.*
PRIMULA PURPUREA.—This fine Himalayan species resembles *P. denticulata* in appearance, but has very different leaves, a more robust habit, and larger and finer heads of flower. 2*s.* 6*d.* each; 24*s.* per dozen
A CATALOGUE of BULBS, including LISTS of STRAWBERRIES and useful WINTER DECORATIVE PLANTS, is just published, and will be forwarded upon application.
York Nurseries.

Prize Calceolaria, &c.

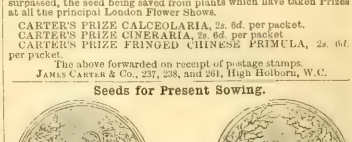
BUTLER AND MCCULLOCH beg to offer Seed of the above, saved only from flowers of great beauty, 1*s.* & 2*s.* 6*d.* per pkt.
CINERARIA (JAMES'S), extra choice, 1*s.* and 2*s.* 6*d.* per packet.
PRIMULA (JAMES'S), extra choice, 1*s.* and 2*s.* 6*d.* per packet.
COVENT GARDEN INTERMEDIATE STOCK (True), 1*s.* and 2*s.* 6*d.* per packet.
PURPLE WHITE INTERMEDIATE STOCK, 1*s.* and 2*s.* 6*d.* p. pkt.
All packets of Flower Seeds sent post paid.
BUTLER & MCCULLOCH, Covent Garden Market, W.C

Seeds for Present Sowing.



JAMES CARTER AND CO. are now offering New Seed of the undermentioned, the quality of which cannot be surpassed, the seed being saved from plants which have taken Prizes at all the principal London Flower Shows.
CARTER'S PRIZE CALCEOLARIA, 2*s.* 6*d.* per packet.
CARTER'S PRIZE CINERARIA, 2*s.* 6*d.* per packet.
CARTER'S PRIZE FRINGED CHINESE PRIMULA, 2*s.* 6*d.* per packet.
The above forwarded on receipt of postage stamps.
JAMES CARTER & CO., 237, 238, and 261, High Holborn, W.C.

Seeds for Present Sowing.



LOOK to YOUR GRASS LANDS. The months of August and September are the best in which to renovate Old, or Lay Down New Pastures.
JAMES CARTER & CO. offer their celebrated
RENOVATING MIXTURE at 10*d.* per lb. (sow 10 to 12 lb. per acre)
Also FINEST MIXED PERMANENT GRASSES and CLOVERS (free from weeds), mixed to suit all soils, at 36*s.* per acre.
ITALIAN RYE-GRASS (clean) | TRIFOLIUM INCARNATUM
STUBBLE TURNIP (new seed)
All of best quality. Price on application
JAMES CARTER & CO., 237 and 238, High Holborn, W.C.

For Present Sowing.

TRIFOLIUM INCARNATUM, Italian
Crimson Clover
NEW LATE RED TRIFOLIUM
SUTTON'S IMPROVED ITALIAN
RYE-GRASS.

SEEDSMEN BY APPOINTMENT Sutton AND Sons

SUTTON AND SONS are now so harvesting, for delivery in a few days, very excellent Seed of the above. Prices are very moderate, and may be had post free on application.
The quantity of Trifolium (alone) usually sown per acre is 28 lb., or with Italian Rye-grass 8 lb. per acre is sufficient.
Also MUSTARD and RAPE, new seed.
All Goods carriage free, except very small parcels.
SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

New Turnip Seeds for Present Sowing.

SUTTON'S LINCOLNSHIRE RED PARAGON, 9*d.* per lb.
SUTTON'S IMPERIAL GREEN GLOBE, 9*d.* per lb.
SUTTON'S SHORT-TOP SIX WEEKS, 9*d.* per lb.
Cheaper by the bushel, carriage free.
SUTTON & SONS,
Royal Berkshire Seed Establishment, Reading

Cabbage Seed for Present Sowing.

SUTTON AND SONS have a good stock of fresh Seed of the best kinds of CABBAGE for Farm and Garden.
LARGE DRUMHEAD CABBAGE, 2*s.* 6*d.* per lb.
ROBINSON'S MOSS-CURLED, 3*s.* 6*d.* per lb.
DRUMHEAD SAVOY, 3*s.* 6*d.* per lb.
LONDON MARKET CABBAGE, 3*s.* 6*d.* per lb.
ENFIELD ditto ditto, 3*s.* 6*d.* per lb.,
and others.
SUTTON'S IMPERIAL CABBAGE, the finest and earliest for Spring use in the Garden, 8*d.* per oz. Cheaper by the pound or half pound.
SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

To Farmers, Gardeners, and Others.

EXCELLENT PLANTS can still be supplied of the following:—
TRUE DWARF NONPAREIL CABBAGE, 2*s.* 6*d.* per 1000
" ENFIELD MARKET CABBAGE, 2*s.* 6*d.* per 1000
" DRUMHEAD or SCOTCH CABBAGE, 2*s.* per 1000
" RED DUTCH CABBAGE, 8*s.* per 1000
" KNIGHT'S PROTECTING BROCCOLI, 8*s.* per 1000
" WALCHEREN BROCCOLI, 12*s.* per 1000
" EARLY LONDON "FITCHE'S STOCK" CAULIFLOWER, 12*s.* per 1000.
EXCELLENT CABBAGE SEED of most varieties, which stocks cannot be excelled.
EXCELLENT RED and WHITE CELERY PLANTS, 1*s.* per 100.
EXCELLENT DRUMHEAD and GREEN CURLED SAVOY PLANTS, 4*s.* per 1000.
Early orders are earnestly requested.
A remittance or reference is requested from unknown Correspondents.
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BANBURY HORTICULTURAL SOCIETY.

Open Prizes.—1866

The TWENTIETH ANNUAL EXHIBITION of this Society is fixed for TUESDAY, August 28th, when, in addition to the usual number of Prizes to be competed for by Members, the following are offered, Open to all England, on payment of an Entrance Fee of 2s. 6d.

For the best 6 STOVE or GREENHOUSE PLANTS, either in Flower or Ornamental, of at least four different Genera, but not Fuchsias or Annuals. First Prize, £3; Second, £2.

For the best 24 DAHLIAS, 24 varieties. First Prize, £3; Second, £2.

For the best 18 HOLLYHOCKS, 2 Blooms of each. First Prize, £2; Second, £1.

For the best 12 varieties of VERBENAS (6 Trusses in a bunch). First Prize, £1; Second, 15s.

The Judges may withhold any prize if the production exhibited be not considered worthy.

Intending Exhibitors must give notice to the Secretary on or before SATURDAY, August 25th.

The Society will, if requested, convey the productions from and to the Rail Ways.

The Bands of H.M. 52d Regiment and the 3d Oxfordshire Rifle Volunteers, and the Orpheus Glee Union will perform on the grounds.

For further particulars apply to F. J. HARTLEY, Secretary.
57, High Street, Banbury.

The Gardeners' Chronicle.

SATURDAY, AUGUST 11, 1866.

MEETING FOR THE ENSUING WEEK.

SATURDAY, Aug. 18 { Royal Horticultural South Kensington Weekly Show), at .. .. 2 P.M.

As the time for BULB-PLANTING is again coming round with the revolving seasons, we take the opportunity to recommend a plan which has been described in a northern contemporary by our friend Mr. MCNAB, of Edinburgh. We allude to that of cultivating SNOWDROPS ON GRASS LAWNS; a method of treatment so simple and inexpensive, and as we are assured so successful, that no one need scruple to adopt it.

The Snowdrop is a general favourite, and its possession is within the reach of every class of individuals; but it not unfrequently happens that though every care is taken in planting the bulbs, they are not seen after the first season. This is disheartening, and may be accounted for by the bulbs being either eaten by mice or becoming rotten (which latter is a not uncommon occurrence when they are planted in borders of damp soil), or, more likely still, they may disappear from being dug down at the time the dressing of the borders takes place. The leaves of the Snowdrop decay in March or April, and shortly after this, the ground, being apparently vacant, is turned over for the insertion of summer-flowering plants, while towards autumn the ground is again dug, and the roots once more disturbed; so that when the blossoms appear they come up here and there, one by one, instead of in clusters, as they ought to do to be effective.

Mr. MCNAB'S remedy for this is the simple one to which we have alluded. He says:—"In order to grow the Snowdrop successfully, so as to enable it to retain its place undisturbed for a long series of years, insert the roots into Grass lawns. By this method they are completely out of the way of receiving injury—and in no other situation could they be put with more telling effect while in bloom—the roots better cared for, and less liable to rot during their nine months of apparently dormant condition. If this system were more generally adopted the flowers might be enjoyed for seven or eight weeks, according to the weather and the distance the roots were inserted into the earth." The method of procedure is to dibble holes into the Grass from 12 to 18 or 20 inches apart, according to the extent of the lawn to be planted, and at depths varying from 4 to 6 inches, and to drop one or sometimes two roots into each hole, the small plots in front of villa residences looking best when they are placed at the lesser distance apart.

Snowdrops, as Mr. MCNAB suggests, might "also be arranged round plant clumps when cut in Grass, keeping them at a uniform distance from the edge all round, say one row within a foot of the edge at 4 inches in depth, and another a foot or so apart at 6 inches in depth. By this method the shallow-planted bulbs will flower first and the deeper ones afterwards, thus securing a longer succession of them. Monograms, crests, and coronets, also figures of every description, may be represented on the Grass by dibbling the roots in an outline of the form required. As the season advances the leaves decay, and nothing is to be seen of them when the first cutting of the Grass takes place. To regulate any arrangement for having them in circular lines, or to represent letters or figures, a small piece of wood may be placed across the dibble at 4 or 6 inches from the bottom, so as to secure a uniform depth of hole while inserting it in the ground; but for all lawn purposes irregular depths will be preferable, in order to secure a succession."

"It is frequently surprising, when the ground becomes covered with snow early in winter and remains so for four or five weeks, to observe, on its disappearance, the lawns where roots were introduced covered with Snowdrops in full bloom, showing that provided the surface was not previously hardened with frost, they progress just as freely under a coating of snow as they would do in an ordinary mild atmosphere. Snowdrops, while in bloom, have been covered up with snow for four or five weeks, and on its disappearance were found to be as perfect as when first covered up, provided no frost existed in the ground when the snow came on. In such cases an elongation of the flowering stalk is the only difference observable. When long held back by a frozen surface, succeeded by a fall of snow, on a favourable change taking place they will come into bloom at once; but the duration of blooming in such cases is generally shortened. The facility with which so beautiful an effect can be produced leads us to hope that we shall soon see all our town squares and suburban Grass-plots studded with this most modest and interesting of all spring flowers."

Our advice then is, do not forget Snowdrops on lawns when the time for bulb-planting arrives.

THE following interesting account of what appears to be a VALUABLE MEDICINE was sent to us by Mr. F. CURREY, with a request that we would inform him to what genus and species of Fungi it belonged. This we were unable to do at the time, though we had seen imperfect specimens which were just in a sufficiently good state to show that it was a Polyporus. Mr. M. C. COOKE has since kindly allowed us to inspect the specimens from Pegu, which are in the India Museum, which have enabled us to draw up a character, and to indicate the closer affinities of the species. At the same time he was so good as to send us a copy of the Journal quoted below, which however contains nothing of note beyond a statement of cases. The constituents of the Fungus would probably prove on analysis to be very similar to those of the Polyporus officinalis, which is still sold in some of our herb shops, though excluded from the new Pharmacopœia. It is not mentioned by PEREIRA as an anthelmintic, but it might be well to try its virtues in this direction, though we have now such a valuable remedy in Santonine, that we scarcely stand in need of a new remedy, did it not sometimes happen that in particular cases one drug will succeed when another fails, as is confessedly the case with tonics.

Wa-mo (Bamboo Mushroom), or Than-mo (Worm Mushroom), are the Burmese names of a hitherto undetermined species of Polyporus, indigenous in the neighbourhood of Tavoy, in the Tenasserim Provinces, which is held in high esteem as an anthelmintic. Its supply is very limited. At Mergui, 80 miles south of Tavoy, though diligent search was made for it, it could be only occasionally obtained in small quantities in the Bazaar, at a high price. It was first brought into notice in 1840 by Dr. PACKMAN, (Madras Quarterly Med. Journ., vol. v. p. 146 *), and in that Journal are the details of four cases, three by Dr. RICHMOND and one by Dr. SHAW, which prove that its charcter as an anthelmintic, in cases of lumbrici, is worthy of further attention, It produces no sensible effect on the system, but if followed on the third morning by a purgative, the entozoa are expelled in a lifeless state, proving that the remedy has exercised a specific influence on them. Being without taste or smell, children take it readily. In case of the first dose not producing the desired effect it may be repeated at intervals of two or three days, and the quantity may be increased to three or even four drachms; no injurious effect appears to be produced, however large the dose (PACKMAN). It seems well worthy of further trial, though it is to be feared that it never could be obtained in sufficient quantity ever to come into general use.

Such is the account received from Mr. CURREY. The species is evidently very closely allied to Polyporus rufescens, of which there is a good figure in SOWERBY'S "English Fungi," tab. 90. Unfortunately, though pretty generally distributed, that species scarcely ever occurs in sufficient abundance to be available except to medical botanists, who may be inclined to give it a trial, and to whose attention we would certainly recommend it. The species, when once known, cannot be confounded with any other in our British Flora, and the figure is quite sufficient, if proper attention be paid to it, to prevent mistakes. As Polyporus officinalis sometimes acts violently and causes a good deal of pain, the Than-mo is certainly a preferable remedy, and it is very probable that P. rufescens on trial might prove equal to it.

The following are the characters of the species, so far as it is possible to give them from the dried specimens:—

Polyporus anthelminticus, n. s., stem rooting thick blunt lateral or excentric; pileus orbicular rugged pallid tomentose; hymenium dirty white; pores irregular middle-sized; orifice unequal toothed; substance soft, white.

Pileus 1½—2 inches across, sometimes very thin, sometimes thick.

On stems of Bamboo, sometimes when charred. Pegu.

In P. rufescens, the pileus is beautifully tinged with bright red-brown, and the pores, which are larger, are much sinuated and of a beautiful flesh-colour. As regards form, both species are equally variable. *M. J. B.*

* Remarks on the Use of a Vermifuge Remedy of the Burmese, called Than-mo or Wah-no. By Mr. Packman, with remarks and cases illustrative of its efficacy, by Messrs. Richmond and Shaw.

—— WE understand that it is intended to hold a NATIONAL HORTICULTURAL EXHIBITION next year during the first week of June, in the Botanical Gardens, Manchester. Schedules will shortly be ready for issue. The show, which is to remain open for a week, will take place under the auspices of the Manchester Botanical and Horticultural Society, and owes its origin to the great interest created throughout the country by the recent International Show at South Kensington.

—— The great ROSE SHOW at Brie-Comte-Robert, held on July 8 and 9, appears to have been a great success. From the *Comte Rendu*, which is before us, we find that no fewer than 78,000 Roses were shown. To give a list of the varieties exhibited would remind the reader of the catalogue of HOMER'S ships, but we may state that among the new seedlings one only was (with laudable discretion) awarded a 1st prize—one described by M. CARRIÈRE as having large double flowers of a rosy flesh colour. It is a seedling from Triomphe de l'Exposition, and has been named Madame la Comtesse de Jaucourt. In the address of M. CAMILLE BERNARDIN, the President of the "Société des Rosiéristes," are given some interesting statistics of Rose culture in this district of France.

—— Here is a hint for managers of FLOWER SHOWS. At the great Rose Show at Brie-Comte-Robert, above alluded to, the *Revue Horticole* says that Grass seed was sown on the slopes and beds some days before the exhibition, so as to form a sort of turf, on which were placed the glasses containing the Roses.

—— In reference to the recommendation in the American *Gardeners' Monthly*, to use KEROSENE OIL as a remedy against insects, Dr. LAWSON, in the Nova Scotia *Agriculturist*, suggests caution. The recommendation is to put about a tablespoonful of coal oil into a common garden water-pot of water, and to sprinkle this over the plants. It is especially recommended as a remedy against the Cabbage-fly, and will, it is said, instantly destroy the whole brood. Coal oil will also, it is stated, kill the scale insect; and it is added, there is no reason why it should not be in as general use as tobacco for killing aphides, &c. It is, however, remarked that any oil would be as good as coal oil. Dr. LAWSON'S comment on this remedy shows the necessity of taking care that too much of the oil should not be applied. He remarks:—"We knew a case of its being applied to a favourite Apple tree, of a large size, robust and healthy. The oil most effectually killed all the vermin, and the tree likewise."

—— We extract the following remarks of M. DE TERNISIEN in a recent number of the *Revue Horticole*, on the pruning and TRAINING OF THE AZALEA. M. DE TERNISIEN, in criticising some o the remarks of M. E. ANDRÉ on the late International Show, thus expresses himself:—"This writer (M. ANDRÉ) admired in London the Indian Azaleas pruned in pyramidal form, and prefers that arrangement to the hemispherical form generally seen in France. As to this point, I differ from him. I am of opinion that the rule of beauty should be laid down by man in accordance with the works of the great Architect of the universe. Now the Azalea in its natural state does not assume a pyramidal form, but forms large spreading bushes." Azaleas of this form may, adds M. DE TERNISIEN, be seen growing in the open air on the slopes of the hills near Cherbourg, where they never assume the pyramidal form, but form bushes 6 feet across 2 metres. Hundreds of specimens of different varieties may be seen thus left to themselves, whence M. DE TERNISIEN deems himself entitled to say, "Prune not your Azaleas;" let Nature model your plants, and the result will be satisfactory.

—— Mr. LLOYD, of Wandsworth, whose name wil be remembered in connection with the discovery of Lastrea uliginosa as a British plant, has favoured us with specimens of LYCOPODIUM COMPLANATUM,

gathered in Hampshire, in a locality which he regards as undoubtedly wild, namely, at Lower Wagner's Wells, near Bramshot. It was found by a woman named SARAH YOUNG, while occupied in cutting Heath for broom-making.

ORCHARD HOUSE CULTURE.

YOUR correspondent "D." (see p. 733) is quite in order in calling attention to the apparent discrepancy in the directions given by me for top-dressing, as the obscurity arises from my not having used the words fibrous roots, as distinguished from roots.

In giving the fresh food in October the soil is removed from the side of the pot to a depth of 4 or 5 inches; this is, if the trees have done their duty, a mass of apparently inert fibres, which seem to have eaten up the food given to them the preceding year. In doing this the roots, or rather rootlets, are left, forming a radiating mass from the stem of the tree. These roots and rootlets seem to be waiting for fresh food, for towards the end of the year they commence to push forth a new crop of fibres, and, to be a little figurative, to enjoy the fresh food given to them; this plan has now been practised here for 16 years, and has never failed. The *rationale* of the practice might give rise to some pleasant lines, but I confine myself to what has been done for many years with unvarying success.

With respect to trees planted in the borders of an orchard house, and for which I have recommended a solid surface, I can only say that the idea was induced by observation, and not by any process of reasoning. Wishing some years since to test the profitableness of different modes of culture—a subject I fear always on the surface of the English mind, perhaps too much so—I planted in the borders of one of my houses some half-standard Peach and Nectarine trees, thinking that I could control their growth by the annual operation of top-dressing, as applied to the trees in pots. I found, however, that although the trees blossomed freely and grew luxuriantly, not appearing to feel the root-pruning they had been subjected to, yet all or nearly all the blossoms dropped without setting their fruit. I happened about this time to see an orchard house in which were a great number of half-standard Peach trees planted in the borders. It was in April—the trees were in full bloom, and apparently in robust health. I observed, while looking at the beautiful trees, that the soil, a tenacious loam, in which they were growing had been deeply dug, as it was left purposely in a rough state "to admit sun and air to the roots of the trees." This did not then seem to me unsound reasoning. Observing my planted-out trees to drop their blossoms in that same season, I made it a point to visit in August the house alluded to above, and found literally no fruit on them, the blossoms having all dropped.

This induced me to look into the difference between top-dressing a Peach tree in a pot and root-pruning one planted in the ground. In the first, masses of effete fibrous roots are removed with the earth which they have exhausted of nutriment; in the second, the fibrous roots being at some distance from the stem, and much diffused, cannot be removed, and in digging or root-pruning too many of the roots and rootlets are ruptured. This will not affect the growth of the tree, for a Peach tree resembles a Willow in its free growth, even after the most severe root-pruning. It is quite another affair with its blossoms, so delicate is their organisation.

After thus observing the effect that deep digging and root-pruning had on the blossoms of Peach trees, I determined some few years since, perhaps three or four or five, to allow my planted-out trees to remain undisturbed in the solid calcareous border of loam they were in; the result is that they are in grand health and vigour, and bear abundance of fruit. One half-standard Violette Hâtive Nectarine gave last year upwards of 150 fruit, and is this season well laden. The difficulty with these solid border trees is to restrain their vigour, the pinching in (shortening), and pinching out (thinning) their young shoots is incessant, daily, almost hourly. Now, to an amateur, with an over-abundant stock of that peculiar article—to a young angler so charming—idle time, this is quite delightful, but to one with other work to do, it is not quite so much so. "D." says "I disapprove of and have given up the growth of fruit trees in pots." These are words of weight, if some name of weight had been given. [After 10 years' experience with trees in and out of pots I am now quite convinced that for the amateur of limited means, trees in pots, well managed, are the most eligible. For large houses, such as one in which my old potted trees are growing, I should have some of both; there is, as far as my experience has gone, nothing in fruit-tree culture to be compared with a well-managed pyramidal Peach tree, 10 feet high, in an 18-inch pot. I say a pot for this form of tree, because it cannot be well done when it is planted out, its lower branches are soon starved. My experience is at variance with that of "D." with regard to the dropping of Peaches from trees in pots; here they never drop. Again, my largest Peaches are invariably from trees in pots, and not from my trees planted out—why is this, it may be asked? I answer, because the trees in pots are growing in a compost highly eligible for them; they have a rich surface dressing of malt dust and horse droppings soaked in manure water, which their roots feed on, and which when consumed is replaced; and above all the pots stand on a clean hard surface, so that their roots are during the growing and ripening season in a temperature rivalling that of their native soil, and far superior to any other method of forming a perfect root climate without artificial heat. The truth is, that when trees are well cultivated in houses well adapted to them, the pot system of cultivating fruit trees in our English climate is the most perfect of all; it merely requires the exercise of sound gardening sense.

"D" seems, in his wish to make his system appear perfect, to ignore the fact that I have never mentioned a word respecting stone fruit trees flourishing on the chalk formation. Here we have abundance of chalk without what is called the chalk formation. Our clays, our loams, our sandy spots, are all calcareous; in the third and the last the chalk is finely comminuted, but there it is. Our water is also full of carbonate of lime, and if we can credit—I do fully—Prof. Schultzenstein, water contributes largely to the well-doing of plants, and "is the real staple of nourishment to them." The water used here is from the gravel drift, it is used in large quantities daily, often from 15,000 to 20,000 gallons. Now, when the weather is hot and dry, so much is wanted that there is no time to allow it to stand in the tank to get warm; it is therefore used as fast as it can be pumped, *i.e.* at the rate of 2000 gallons per hour. I have as a matter of course read much in books and papers written by gardeners of the ill effects of well water on plants and trees, particularly when not exposed to the air for a certain time before being used, and I have felt surprise that all descriptions of fruit trees should flourish here so remarkably. I have however for some years known that it is to chalk I owe so much, and so I again differ from your correspondent; and I now give the reason why I have said publicly "Give your stone fruit trees chalk." Again, with regard to the ramming question, I humbly, most humbly beg to differ from "D." The one great cause of failure in the pot culture of fruit trees is owing to the soil being loose in the pot—there is not enough substance to sustain life and health in the tree; by compression a comparatively small pot will contain sufficient earth to do so; without it, disease is sure to cripple or kill it. Why should I thus differ with a man who writes like "a man in authority?"

"The ramming system had better be let alone; the roots attain the desired pressure without the risk of being torn asunder by such rough gate-post fixing." The man who can tear roots asunder by ramming in compost with a blunt stick must have a most peculiar knack—it is simply impossible. Enough of this weak and most unwise tirade—I feel humbled by giving it notice; let it suffice that here, annually, are potted from 15,000 to 20,000 fruit trees of different kinds, in every pot the compost is firmly rammed down, and hundreds of persons who have seen them can testify that trees in more vigorous health cannot exist—such Apricot trees were never seen. Neither red spider nor any form of disease ever troubles us, and I may add never, for some 16 years, has given any trouble. This ought to give one confidence—it does so; and I repeat that for all kinds of fruit trees designed for orchard-house cultivation, or to be under temporary shelter in spring, there is no method equal to that of pot culture when carried out with gardening sense, which, like common sense, does not take kindly to some men's minds.

With regard to the soil of this parish of 7000 acres, I refer your readers to the description of Mr. Prout's farm (p. 713), and Dr. Voelcker's analysis (p. 714), in which he says it possesses "a practically inexhaustible fund of fertility." This I impute to its calcareous nature: for although we have in the parish "drifts" of clay (my house stands on a platform of it, 40 feet deep), yet within less than 100 yards the sand crops out, sand, gravel, loam, and moor earth, all, with the exception of the latter, are full of comminuted chalk, probably owing to the denudation, in times long past, of a series of chalk mountains to the N.W. So, in spite of the dictum of "D.," I shall adhere to my opinion that chalk is beneficial to all composts and soils that are used in fruit-tree culture. *T. R.*

NEW BEDDING VERBENAS.

I HAVE at length had the satisfaction of obtaining an entirely new race of Verbenas, and as I believe there is nothing like them at present in cultivation, I have for the purpose of distinguishing them from the Maonetti section, attached my own name to them. I have also obtained several other forms of the Verbena which illustrate the remarks I had made on the sportiveness and transformation of the Verbena, in the paper I presented to the Botanical Congress.

The first variety, *Willsii*, is a type of quite a new race. Although the plant is Lilliputian in size, the flowers are of fine form, rosy lilac, and borne in compact trusses above its neat ovate foliage. This variety was obtained by fertilising the flowers of one of the half-hybrid seedlings raised from Velvet Cushion, and Maonetti Erecta. The female parent was very much like the variety Arabella, the flowers of fine form and substance, and the truss very compact. The same plant has produced several distinct forms. Some take more after the male parent, whilst others are like the female, and many have not the slightest resemblance to either. The variety named Lucy is a seedling from the same cross, and shows the remarkable way in which the Verbena is transformed by fertilisation. Some of the seeds gathered from the same plant have produced various forms in the Cushion section, some having bluish shades of colour, others pink, purple, and crimson, but all take more or less after the parent first used, by which I was enabled to raise Velvet Cushion, namely Verbena venosa, by the elongation of the flower truss.

Willsii alba.—This is quite distinct from Willsii in the character of its foliage, which is very deeply palmatisect, and of a bright glossy green, presenting to the eye a beautiful mass of green foliage; the pretty white flowers, appearing as they do in great number above it, are shown off to great advantage. This variety was obtained by fertilising the variety named Welcome with a miniature white seedling. As there are so few plants with bright green foliage and white flowers fit for bedding purposes, this will prove a very welcome addition.

Willsii rosea is a seedling from the same parents as the above. The foliage of this is also very much divided, but is of a brownish tint. The plant possesses a very neat habit, in addition to which it has a pleasing shade of colour.

Willsii lilacina.—A very pretty cerise-shaded lilac; a new and pleasing shade of colour in the Verbena.

Willsii fulgens.—Another new and most desirable shade of colour in the Verbena; this I consider a great acquisition. This, with some of the other varieties, are now to be seen at Chiswick.

Willsii compacta.—A bright rosy lilac; fine for bedding purposes.

The following are seedlings from Maonetti Princess Victoria, and are distinct and desirable plants, all possessing different shades of colour from any of the varieties described above. These have been obtained by fertilising the flowers of Princess Victoria with pollen taken from some of the garden varieties possessing neat erect habits and distinct colours.

Maonetti Fulgent is a type of an intermediate section between the Maonettis and the garden varieties; it is exceedingly bright in colour, and is, I consider, an improvement on Princess Victoria.

Maonetti Distinction is of a valuable shade of claret, and has a clear white eye; the foliage is also distinct from any of the foregoing.

Maonetti Juliet is of a pleasing shade of purplish-lilac, and is a very profuse blooming variety.

I now come to the large-flowered bedding or exhibition section. How wonderfully the flowers in this section have been improved within the last 10 years, both in point of habit, size, and form of the flower, and general usefulness, the excellent varieties now in cultivation will prove. Could Mr. Pousette, the discoverer of the first Verbena introduced into this country, but look upon some of the varieties of the present day, which have sprung from V. Melindres, he would perhaps be more astonished than he was when Melindres, dazzling as it undoubtedly is, met his view during his travels in the neighbourhood of Buenos Ayres in the year 1826. Melindres was sent by him to J. Hawkins, Esq., of Bignon Park, where it flowered for the first time in the May of the year following. Verbena Melindres appears to have been the only Verbena known to English gardens from 1826 to 1837, when Verbena Tweediana made its appearance, and appears to have been very highly appreciated, as it is even now by many. Besides these varieties, no other Verbena made its appearance till the year 1838, when a paper of Verbena seed was sent from Buenos Ayres by Mr. Tweedie, from which were raised various shades of colours. No decided advance was however made in improving the flower till the year 1845, about which time a variety called Emma attracted attention, and soon after this a variety called Beauty Supreme was introduced. This was a decided advance in point of colour; but the habit of the plant was anything but good. In the year 1858 Welcome appeared. This variety possessed certainly a distinct shade of colour; but the habit was exceedingly bad, on which account I suppose no one has ever taken it in hand for cross-breeding purposes. About this time some of the best varieties appeared, among them General Simpson, Brillant de Vaisse, Géant des Batailles, &c.; and since then their name has been legion.

It was at this juncture that the idea presented itself to my mind that something might be attempted with a prospect of success by fertilising the flowers of V. venosa with the pollen of the garden varieties, for the purpose of imparting a greater degree of hardiness to the plants, and also for improving their habits. This I tried for several years without success; but at last I succeeded in ripening seed from a single pip of Verbena venosa, fertilised with pollen taken from one of the garden varieties. I obtained three seeds, only one of which vegetated. I had very great difficulty in growing the plant, and for two years after raising it, with all the coaxing I could use, it almost refused to grow. In the spring of the third year I was able to propagate it freely, and it turned out a most valuable variety. On the first opportunity that presented itself the flowers of this hybrid were fertilised with pollen of Verbena venosa, and in the following year I had the pleasure of securing several distinct hybrids from it, of various shades of colour, and all possessing the same stiffened habit, with lance-shaped leaves, and the same elongation of the flower truss, as seen in Velvet Cushion. One of these seedlings, which was of a bright rosy-lilac colour, I have since used for cross-breeding purposes, with some of the largest and best formed flowers to be found amongst the garden varieties, and the result has been some extraordinary flowers, both as regards form and size. One of these, which I propose calling *Goliath*, has the individual florets larger than a shilling. This, and some of the following varieties, in the hands of exhibitors, might be grown to an extraordinary size.

Another seedling from Ariel, fertilised with the pollen taken from Velvet Cushion, which I have named *Velvet Cushion Improved*, has flowers both larger and of greater substance; the habit is also stronger and more robust. This is a very fine variety.

Cerise Cushion is also a seedling from the same parents; the flowers of this variety are very large and brilliant in colour. This and the above varieties are well adapted for bedding purposes.

Hybrida is another seedling from the same parents; this takes rather more after the garden varieties in the character of its foliage, which is of a bright glossy-green; the flowers, however, belong to the Cushion section. They are of great substance, and borne in large compact upright trusses well above the foliage. The habit of the plant is also good.

Mr. Howsin is a chance seedling from Velvet Cushion—showing the extraordinary way in which the Verbena is transformed.

Surprise is one of the most extraordinary instances of transformation in the Verbena I have ever seen. It is the seedling from Maonetti Princess Victoria referred to in my paper to the Botanical Congress. A

flower of Princess Victoria (Maonetti) was fertilised with the pollen of Scarlet Cushion, with the view of its producing a scarlet Maonetti, instead of which it has produced a plant with foliage very similar to Purple King; it is, however, very distinct from that variety in its habit, which is prostrate. The plant grows close to the ground in a dense green mass, and the flowers are borne just above it, in large brilliant trusses. It is the most distinct in habit I have yet seen, and forms a beautiful green belt; the height from the top of the flower to the base of the plant is not more than 5 in., on which account it will prove a valuable addition to our plants for edging purposes. This variety has been sent to Chiswick this spring.

Salmonium is a seedling from Scarlet Cushion; of habit very similar to the above. It is a very distinct and beautiful variety. The plant produces large quantities of fine-shaped trusses of a rich salmon shade.

The two following are seedlings from the well-known variety called Purple King. They will serve further to illustrate what I have before stated with respect to the transformation of the Verbena.

Transcendent I consider one of the best bedding Verbenas I have ever raised. It is a seedling from Purple King, and has the exact habit of that variety, producing flowers in just the same abundance. It was obtained by fertilising a flower of Purple King the pollen of Scarlet Cushion.

Complete is also a seedling from Purple King. It has been obtained from that variety without fertilising the blooms. Some plants of a variety called Blue Bonnet were growing near the plant from which the seed was gathered; it is therefore very probable that this change in form and colour may be attributed to the Macroglossa stellatarum. It is one of the best formed Verbenas I have seen, and also possesses a very pleasing shade of colour, and has the same habit and style of growth as Purple King.

Wills's Crimson King is a seedling from Velvet Cushion, fertilised with the pollen taken from the well-known variety called Géant des Batailles. This is a half-hybrid, the flowers are of just the same form as Velvet Cushion, but of greater substance, and of a rich crimson shade of colour; this is a magnificent Verbena for bedding purposes.

Arabella is another seedling from Velvet Cushion; this variety is from seed gathered in the open ground.

Lilac Cushion is a valuable seedling from Velvet Cushion, possessing the same neat, almost suffruticose habit as that variety; it was obtained by fertilising the forms of Velvet Cushion with pollen taken from Helena, one of the Cushion varieties I raised two years ago; a most valuable variety for bedding purposes on account of its colour.

Burnley Beauty is another seedling from Purple King, having the exact habit and foliage of Purple King; a very free and valuable variety for bedding purposes. *J. Wills, Huntroyde Park.*

[The varieties of this new section of Verbena (Willsii) are of a very promising character as bedding plants, notwithstanding the comparatively small size of their flowers and flower trusses. EDS.]

RAIN GAUGES.

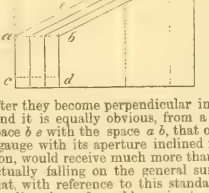
WITH reference to the question why small rain gauges receive a smaller proportionate quantity of rain than large ones, I observe that "J. S." at p. 735, enumerates three fallacies in some statements which were submitted on the subject at p. 635. These are pointed out in three questions, the first of which reads thus:—"Is it a fact that small gauges receive less per square inch of area than large gauges?" Such was my conviction, and I believed that it was a generally admitted fact, especially since the result of Mr. Lawes' experiments were made known (*Gard. Chron.*, 1853, p. 181), and corroborated by others made by "T. S. P." These scientific gentlemen were not likely to be so widely mistaken as to state from their observations so great discrepancies between the products of large and small gauges if such did not actually arise from the difference of size. Mr. Lawes spared no expense in investigating truth as regards matters relating to the improvement of the agriculture of the country. The weighing machine used in his experiments was of most excellent construction and workmanship; and though capable of balancing great weights, even tons, yet a few drops would turn the scale. He also employed highly scientific assistants. His large gauge had an area of 43.56 feet exposed as the receiver, being exactly the $\frac{1}{1000}$ part of an acre. The area of the small gauge was 19.635 inches. The surface exposed in the large gauge was to that of the small as 320 to 1. The large gauge indicated 38 per cent. more than the small one. Both stood in the middle of a 30-acre field, and about 2 feet above the surface of the ground.

At p. 198 (1853) "T. S. P.," a scientific gentleman writing from H.M. Dockyard, Pembroke, states that he had two funnel gauges, one 8 inches diameter and the other 5 inches diameter, both placed side by side on the same level. At the end of 11 months the 8-inch one had collected a depth of 40 inches and a half nearly; whilst the 5-inch one indicated a depth of $37\frac{5}{16}$ inches, the smaller gauge invariably showing less in every month per square inch of surface, than the larger one. From the results of so many experiments one may be justified in considering that the 1st question ought to be answered in the affirmative.

As to the 2d, "Do the drops fall 4 inches apart in all showers?" This, it will be seen by reference to p. 635, was only assumed for the sake of illustration; and for that purpose I am not aware that any particular distance is of much consequence provided both gauges are equally affected in proportion.

I come now to the 3d question, "Who ever saw the drops fall exactly on the same spot, centre for centre, twice running?" I stated, at p. 365, that "rain drops fall too promiscuously for occupying positions so geometrically uniform as is represented in the diagram." On the contrary, they often drive wildly, like wintry rain, and strike as it were at random, whether in the state of rain or that of hail, so that at times one's eyes are not secure for a twinkling, and the face has to be turned away. They follow no rule that can be laid down for them by rule and compass. They are, however, subject to two laws—one constant, that of gravitation; the other exceedingly variable, that of the force of the wind; and combination of the two compels them to move in an irregularly curved direction. Eddies will sometimes be formed, which may interfere more with the fall in a large receiver than in a small one. In windy weather, Mr. Lawes obtained in some instances a greater product from the small gauge than from the large one; but this was the exception, and not the rule, therefore some other cause must be looked for to account for the general discrepancy. I am not inclined to weary in finding out the truth, and in that cause I need not contradiction; on the contrary, I am glad that "J. S." has brought up the subject, as it will doubtless lead to further investigations and some useful results. In conclusion, "J. S." says, "If it turns out to be the fact that on the whole large gauges receive more than small [of course he means inch for inch of their areas, which is a very good mode of expressing their relative proportions], it will probably be found to depend on the action of the wind."

Differences in the returns of rain gauges have been treated on by Mr. Howard, in his excellent work "The Climate of London;" and as "J. S." appears inclined to attribute such differences to the action of the wind, it may be desirable to refer to the opinions of Mr. Howard and others who have studied the point. This will be best afforded by the following extract from "The Climate of London" (i., 98):—"By some, and among them a meteorologist of note in France, Flaugergues, it has been attributed wholly to the effect of the wind in giving an oblique direction to the streams of rain; in consequence of which, it is contended, the funnel or mouth of the gauge actually presents a smaller aperture, in proportion as the rain comes more obliquely: just as if we were to incline the funnel to one side under a rain falling vertically, in which case it is manifest that less and less rain would enter as it became more inclined, until in a perfectly horizontal position the whole would pass by to the ground. But in reply to this, it is said, and I think very justly, by Meickle (in "Thomson's Annals" for October, 1819), that in the case of rain falling with a wind, "the horizontal distance of the lines in which the rain falls is absolutely independent of their inclination, being accurately the same, where the wind runs steadily 60 miles an hour, as if it were a perfect calm." In "strictness (this writer further observes), the drops fall in curves:" but supposing them to pursue a right line, "it is plain, that a gauge of the width shown at *a b* will receive the drops, falling obliquely, just the same as after they become perpendicular in the calm, at *c d*." And it is equally obvious, from a comparison of the space *b e* with the space *a b*, that of rain so deflected, a gauge with its aperture inclined in a suitable direction, would receive much more than the quantity then actually falling on the general surface, consequently that, with reference to this standard, the aperture in the direction *a b* would receive too little.



"It appears, therefore, that no allowance is required in any position of the gauge as to height, for the simple obliquity of the whole body of a shower, the rain received by the entire horizontal surface included in its area (and of which the mouth of the funnel may be considered as a definite part), being the same whether the descent be oblique or vertical."

From the above it appears that the discrepancy observed in the products of large and small gauges does not depend on the action of the wind, unless in exceptional cases. The general cause, therefore, requires to be further investigated. Having answered, or attempted to answer, these questions relating to the subject, I may be allowed to ask one. As all space, within the limits of our atmosphere, is occupied with some substance or substances, the receivers of rain gauges must be so likewise. In them, what we have to do with is air and water, or we may term part of the area wet, part dry; the former would correspond to the interpluvial space, the latter to that which feeds the gauge. The question I wish to put is—what will be the effect on the products of the respective gauges when the wet portion of space exceeds the dry, and the contrary, and what when wet and dry are equal?

SECOND FLOWERING OF WISTARIA.

LEFT to itself, the Wistaria sinensis only flowers once in the season. During the summer a few flowers are, it is true, produced, but not in sufficient numbers to constitute a second season of bloom. This fact, however, shows us that by particular treatment the Wistaria may be made to bloom a second time, and that this treatment consists in favouring the development of those portions of the plant which produce summer blossoms, that is, of those short spurs the buds of which are crowded together and surrounded by leaves. Almost always on the shoots that have produced flowers, there is produced a vigorous leaf-bud which sometimes forms a shoot some yards in length. This shoot, as it produces leaves only, should be stopped, except in those cases where growth is required to fill up an uncovered space. If instead of allowing these shoots to be developed, they be pinched off in their first stage, the sap becomes concentrated at the base of the leaves, and causes the development of flower-buds in place of leaf-buds.

By operating in this manner continuously and carefully a second crop of blossoms may be obtained. *André Leroy, in Revue Horticole.*

ABSTRACTS OF PAPERS PRESENTED TO THE BOTANICAL CONGRESS.

ON THE CULTURE OF COLCHICUM BYZANTINUM.

By PROFESSOR H. LECOQ, CLERMONT.

COLCHICUM BYZANTINUM (Gawler) is a remarkable plant of which we will give an account, first, as to its culture, and then as to the use that may be made of it in the adornment of greenhouses and of rooms.

It grows wild in Greece, Turkey, Asia Minor, and probably in Persia. It seems to be spread over the East generally. The name of byzantinum is not the only one it has received. Salisbury mentions it as floribundum, which is well suited to it, and Frivalski has described it under the name of Colchicum orientale. It is a very vigorous plant, with large bulbs enveloped in brown scales, of which the outer one only, which falls off in shreds, should be removed.

All soils suit it, but it prefers light earth which has been manured at least a year or two before it is planted. Fresh manure is not at all suited to it. It is planted in borders in lines, or in quincunx about 4 inches in depth, and in our climate immediately after it has flowered, that is to say in September or October. Its treatment is the same as that employed for Tulips. Colchicum is much more hardy, however. We cultivate it in beds 3 or 4 feet square. It does not mind frost. In the month of February the leaves appear; they form a magnificent bouquet of smooth, shining leaves, resembling those of Veratrum, without their folds. The leaves fade (the time varying according to the temperature and dryness of the season) at the end of May or beginning of June. As they do not fall off of their own accord, it is as well to cut them off with a pair of scissors or a pruning knife; they should not be pulled off by the hand for fear of damaging the tube of the flowers.

The plant remains in a state of complete repose until the end of August or early part of September, then it flowers. The flowers are numerous, sometimes as many as 15 or 20 from each bulb, of a delicate reddish-lilac tint, the more vivid in colour according to the amount of light they have. There are always many flowers open at the same time, nevertheless their rapid succession is such that the period of flowering is prolonged at least over three weeks, or sometimes a month, when the plants are in a sheltered situation. The flowers resemble those of Colchicum autumnale, but are much larger. Like them their delicacy is extreme, and if they were cultivated only in the open air we should not recommend them. It is for greenhouses and rooms that Colchicum byzantinum is most interesting. Its large leaves confer so much vigour upon the bulb, by accumulating in it a perfect store of nourishment, sufficient for the development of the floral organs, that neither earth, water, nor the least trouble need be taken on its behalf.

The bulbs are taken up in July, or at least before they flower. They are cleaned and put away. Placed on their base on a shelf, chimney-piece, or cabinet, in a current of air or in a glass globe, they will flower without our being able to retard or accelerate their progress. The more light they have the deeper the colour will be, and the shorter the tube. This tube of the corolla has always a tendency to grow, because in a wild state the bulb being sometimes deeply planted in the soil, the tube has a long way to travel before it reaches the outer air. Thence arises this tendency to lengthen, but nothing is easier than to remedy this little defect. It is done by placing the bulbs in dry Moss. Watering them is quite unnecessary. Thus charming flower baskets which require no care may be obtained. Persons are always astonished to see this Colchicum flourishing in this way wherever it is placed, and we have taken advantage of this singular property to ornament greenhouses with it at a season of the year when they are usually unattractive. It is precisely when the Colchicums flower that the Lycopodiums which form the turf in winter gardens attain their fullest development. We place therefore in the turf several hundreds of Colchicum bulbs, some dispersed, some in groups, but all entirely concealed under the active growth of the Lycopods. There is nothing more curious than to follow day by day the progress of this improvised parterre. We forget all about them, till after a time some white buds appear timidly above the Grass. The tip is tinted, and they at length open. Flowers are dotted here and there, next morning there are more, every day adds to their number, and at length we enjoy a parterre of the most beautiful green imaginable, enamelled with these delicate flowers, which recompense us in the length of time they last, and by their freshness for the shelter they have received. Every year the Colchicums are planted thus in our little winter garden, and we feel sure no prettier sight could be offered to those who admire the luxuriance of Nature, or the harmony that should prevail in a flower garden. When the blossoms fade the bulbs are taken up, a large bed is prepared in the garden, and they are placed in the ground when they cease to bloom. The name of Colchicum byzantinum is not often seen in catalogues, but it would be more frequently met with if the ornamental purposes to which it is adapted were better known. Although we have cultivated it for many years, we have never procured seeds, and the bulb gives off very few bulbils; generally each bulb produces two, as in the Gladiolus, rarely three, so that this plant is increased in geometric proportion, doubling each year, 2, 4, 8, 16, 32, 64, 128, 256,

&c., so that any person who cultivates this plant for 20 years will get enough to stock several acres of land We leave to the amateurs of flowers the task of verifying our assertions, and the enjoyment of flower lawns in their winter gardens.

Home Correspondence.

Correa Latrobeana (see p. 733).—The proper name of this plant is C. Lawrenciana, *Hook.* It has had one or two other aliases, and has been figured under the name of C. ferruginea in Hooker's "Icones Plantarum," tab. 3; also in Maund's "Botanist," tab. 124. It differs from C. speciosa in its larger size, and in the circumstance that its filaments are all equal and not dilated. The plant seems to vary very much in size, and has had a different name to fit each gradation. *P.*

Mrs. Pollock—a Seedling.—Doubtless my friend and neighbour Mr. Grieve, of Culford Hall, the talented hybridiser and successful raiser of Mrs. Pollock, Italia Unita, Mrs. Benyon, Lucy Grieve, Lady Cullum, and many other fine varieties of Pelargonium, will inform you that Mrs. Pollock is a seedling. That need not, however, prevent me from confirming the fact. Mrs. Pollock came variegated from the first, and has always been the beautiful thing she is now. Although she is therefore no sport formed in the way of variegation, yet, singularly enough, a plant of her sported with me last season quite back to a green. There is not an atom of variegation about it, and Mr. Grieve says that most likely there never will be again. I mean to keep and increase the green stock, and see what comes of it. It certainly points to mixed blood somewhere; and Mr. Grieve will probably tell you that he generally uses one plain-leaved parent. One can readily understand the mixture of blood, but a "mixture of pollen" is doubtless unmixed nonsense. However, I had better "ca canny," as I don't profess to be an authority on this matter. Speaking of mixed blood reminds me of a very singular feature of Stella. I am not aware that the late Donald Beaton ever raised a variegated Geranium in his life. They were not in his Nosegay line, and I certainly never saw one at Surbiton. Yet I have not grown Stella through a single season without getting from one or other of the plants a good variegation, and I hear the same of it from other places. Generally these sports are good silver, almost identical with the one sent out by the Messrs. Henderson, of the Wellington Road, but one of mine has a tinge of gold in it. By the way, I am not at all sure whether Henderson's Variegated Stella was a sport or a seedling. I wish good old Donald was alive to give us the pedigree of Stella. Can any one throw any light upon it? It would be a singular physiological fact if with plain-leaved ancestors on both sides it should manifest such persistent tendencies to assume a bi- or tri-coloured garb. One thing at least is certain—the more Stellas of every colour the better; for, after trying every Nosegay, I still think Stella beats them all. *D. T. Fish, Hardwicke Gardens, Bury St. Edmunds, Aug.* 6.

Moles.—Can any of your readers inform me whether moles eat wire-worms? I don't think they do, as I have never found one in their stomachs, and think them rather too hard and dry for their somewhat delicate palate. Facts establishing or disproving the point will much oblige. *Enquirer.*

Oxalis Bowei.—I should be much obliged to any one who will be so kind as to look at his flowers of this Oxalis, and observe where the summits of the branching stigmas stand with respect to the two sets of anthers. In all my plants the stigmas stand close beneath the lower anthers; but I have good reason to believe that two other forms exist — one with the stigmas standing above both sets of anthers, and the other with the stigmas between the two sets. If any one has flowers in either of these latter states, that is long-styled or mid-styled, I should be grateful if he would send me a few rather young flowers wrapped up in tin-foil or oil-silk; for I should thus be enabled to fertilize my own flowers and obtain seed. *Charles Darwin, Down, Bromley, Kent.*

Cross-fertilising Papilionaceous Flowers.—All who have tried have found much difficulty in crossing papilionaceous flowers. Several years ago, Dr. Herbert remarked to me that with the exception of Erythrina no hybrids had been made in this great family. Gartner crossed 36 flowers of different varieties of the common Pea, and he did not get a single pod perfectly developed and with the full complement of seed; he crossed 10 flowers of Kidney Beans, and did not get a single pod. Some years ago I crossed the varieties of the Sweet Pea, and many more flowers dropped off unimpregnated than were fertilised. The difficulty arises from the anthers opening at so early an age that they must be removed long before the flower expands. After the operation the immature stigma is liable to exposure to the air; and it is difficult to judge when to apply the pollen. Moreover there is some reason to suspect that the stigma requires successive applications of pollen. To show the difficulty of fertilising papilionaceous flowers, I may mention that I lately removed all the pollen that I could with a soft brush from six recently expanded flowers of Lupinus pilosus protected from the visits of insects, and then applied pollen from a distinct individual of the same species. Although in this case there was no operation at an early age, yet five flowers out of the six dropped off unimpregnated. Had these flowers remained untouched, all, judging from the others, probably would have set, and the only difference would have been that their stigmas would have been surrounded by a mass of pollen as long as the flowers continued in bloom. This case is worth mentioning as showing how erroneous the belief is that fertilisation usually takes place in unopened flowers, in which the pollen is shed at an early age. These trials on the Lupines, and others formerly on Sweet Peas, led me to try the following plan. I rolled up thin paper into a cylinder, rather thinner than a knitting needle. I then tied a thread tight round, and cut off the cylinder beneath the thread, so that a little pipe closed at one end or cap, about the fifth of an inch in length, was left. This was easily filled with pollen from the keel-petal of any desired variety, and could then be placed on the pistil and secured below the stigma by being tied with a thread. I then castrated four flower-buds of the Sweet Pea, and placed on the young stigmas caps filled with pollen from another variety, and four fine pods were soon formed. I also fertilised eight castrated flowers of two species of Lupins with pollen from distinct plants of the same species, but from these I have got only four pods. I may add, that as an experiment I filled one of the little caps with pollen of Lathyrus grandiflorus and placed it on the stigma of a Sweet Pea (Lathyrus odoratus), and to my great surprise, considering how distinct these species are, a fine pod has been formed. I am certain no pollen could have been left in the flower of the Sweet Pea, as the anthers were removed whilst quite immature; and if these hybrid seeds grow, a curious hybrid will be produced. I should not have thought this plan of fertilising papilionaceous flowers worth mentioning had it not been applicable in all cases in which early castration is necessary, and likewise in certain cases mentioned by Gartner, in which the stigma requires, or is benefited by, successive applications of pollen. In all such cases some trouble would be saved and certainty gained by the use of the little caps filled with the desired kind of pollen. *Charles Darwin, Down, Bromley, Kent.*

Verbena officinalis.—I know at least two habitats for this plant in this locality; but it is doubtful whether in either of them the plant is truly indigenous. In one case there is a pretty extensive patch in a ditch near a cabin, the other case is a number of plants on the margin of a stream where farmers are in the habit of washing their sheep. Now, the peasants here had, if they have not now, a belief that there is a charm in Vervain to keep away witches. They used to put it over the door for this purpose. It may have been planted at the sheep pool to prevent drowning. The peasants know it by its proper English name—Vervain. The Verbena was regarded by the ancients in a superstitious light, as is evidenced by Pliny and other classical writers; and, in fact, the term Verbena was a generic appellation of all sacred leaves. Shakspeare also mentions Vervain among the many other wild flowers with which he was familiar. While on this subject, I may mention that I have the same thing to complain of as many other gardeners—the failure of many of the finer Verbenas. I do not think that frost has anything to do directly with the matter, as some that were planted out late, and had no frost, failed, as well as those planted out early. Purple King suffered more than any of the others. Some sorts are more delicate than others. Some of the old scarlet varieties seem to be particularly hardy. The plants of Purple King that I put out very late to supply vacancies are now growing pretty freely. I should be sorry to see this fine Verbena "go to the wall," as it is undoubtedly the king of purples. *J. Douglas, Kilkea Castle, Kildare.*

The Lady Strawberry.—Last autumn I received from Mr. Underhill, of Birmingham, some plants of his new seedling Strawberry called "The Lady," which was very highly spoken of, and said to be a great bearer and first-rate in flavour. The plants did well and produced a large crop of fruit; but I was quite disappointed with it, as it was sickly in colour, and possessed little or no flavour. I am aware that the sudden changes in the weather when the Strawberries were ripening were not favourable for them, but other varieties were very fine and the flavour excellent. I should much like to know how "The Lady" turned out with others who have grown it in different soils. *Henry Doubleday, Epping.*

Centaurea gymnocarpa.—What an elegant plant this is for a variety of purposes, both indoors and out! We have employed it out of doors rather extensively this season, and it has a charming appearance; it is not so white as ragusina, but it is far more graceful, so one quality is a set-off against the other. Gymnocarpa is easily managed, and a stock of it can be secured much easier than that of ragusina. It strikes freely, and may also be raised from seed; it is a most useful plant for decorative purposes, especially when grown as standards in smallish sized pots. In this state I have seen it as white as the other kind. *John Edlington.*

Mulberry-growing in London.—I gathered on the 2d inst. several excellent dishes of Mulberries in Charterhouse Garden, which is situated in the very heart of our great metropolis. The trees on which they grew are about 16 years old, and have a very healthy appearance. They have been well thinned, an operation which I imagine has had the effect of inducing them to ripen heavier crops this year than formerly. Beyond the thinning, which was unsparingly done, they have, however, had no mulching or other extra care. *H. Hammerton, Charterhouse.*

Pelargoniums.—We willingly give publicity to the following suggestions relating to what are now usually called Zonate Tricolor-leaved Pelargoniums, by Mr. Jabez J. Chater, of Cambridge, who is known as the raiser of some of our choice varieties. The suggestion for the classification of this and the kindred races of Pelargoniums is ingenious, and may prove to be practically useful. Our correspondent writes:—"These plants (the Pelargonium and its varieties) are particularly interesting to me. Besides Senior Wrangler, I have some others very beautiful. I am hybridising and getting new features into both leaf and flower. By-the-by, referring to a paper presented to the Botanical Congress by Mr. Wills on the sporting of Pelargoniums and other plants (this word 'sporting' I do not like), I cannot at all agree with his theory. I have obtained my seedlings by careful hybridisation, and all that is necessary is to watch till the pollen and stigma are in a fit state; that is, the latter must be perfect, fresh, and open, well-developed, and kept free from insects, and the former must be bright, clear, just burst, and from a well-defined and perfect anther. Under these circumstances apply the pollen, and the work is done. In many, numberless instances I have watched (it cannot be done without watching), and have seen the effect upon the flower. In the Pelargonium it will occasionally droop its head; in the Hollyhock, after impregnation, the sepals will gradually fade, and become marcescent. I think it erroneous *in toto* to speak of 'mixed pollen' in fertilising; it cannot be—one application either by artificial or natural means is all that one stigma can receive. Hence the inappropriateness of the cause of variation, or rather coloration, suggested by Mr. Wills. I find on referring to my notes that Senior Wrangler is no sport. It sprung up with variegated cotyledons, and proceeded from a zonate variety of good quality called Woodwardianum; while to other sources I can directly refer other seedlings of distinct coloration. Might not these many-coloured Pelargoniums with propriety be defined as 'Zonal Versicolors?' They are certainly more than tricolors, possessing at least four, and in many instances five, distinct colours. I would retain the term 'Zonal Tricolor,' and for this class would bring in foliage of a different style of marking. For instance, I have now specimens possessing leaves of a yellow or a very light green centre, surrounded by a zone of crimson, brown, &c., and then a margin of much darker green, actually reversing the order of such sorts as Mrs. Pollock; these I hope by-and-by to have fully developed. Another class, to be simply called 'Zonal,' should comprise all such as Adonis, Madame Vaucher, and the old horse-shoe varieties. 'Bicolors' would take up such as Bijou, Golden Chain, and such like. 'Unicolors' would be such as the plain-leaved, namely, Tom Thumb, Lady Middleton, &c. There are also plain yellow-leaved kinds, and perhaps by-and-by there will be copper or purple-leaved. I have a variety that will, I think, at some time answer for Perilla, and a yellow leaf for a pure yellow bed, removing the flowers. Shall we ever attain to a yellow-flowered variety? I anticipate such a result; moreover, I feel satisfied that ere long flowers beautifully striped, like a Carnation, will be the order of the day—I have some good indications of this. The beauty of the plant would be enhanced if a truss of pure white flowers, flaked with rose purple or pink, were borne above a glorious bouquet of Senior Wrangler foliage."

Economic Value of the Common Brake.—Amongst British Ferns none is so well known as the common Brake or Bracken (Pteris aquilina), and this is also the most important of all the British species in an economic point of view. This Brake, though not used at the present day to the extent it was formerly, is nevertheless much valued in many parts of the country for manuring land. At one time it was much in request as fodder for cattle, but it is rarely, if ever, now employed for that purpose. As a litter for horses, however, the fronds are still much used in neighbourhoods where they abound, and in some districts, in Monmouthshire for instance, the cottagers collect them during the summer months and burn them, preserving the ash, which is moistened sufficiently to enable it to be made into balls about the size of a cricket ball. These are afterwards dried, and are then ready for use for washing all kinds of clothing. They fetch in the market from 3*s.* to 4*s.* per 100. Since the general introduction of soda, however, the demand for them has considerably decreased. The use of this ash as a substitute for soap is attributable to the large amount of potash which it contains; indeed, it was used at one time for glass making. In some parts of Scotland the fronds of the Brake may still be seen as a thatch upon the roofs of cottages. Besides these uses, the creeping underground root or rhizome is said to contain much starch and mucilage, and to be highly nutritious. The author of the "Useful Plants of Great Britain," after bearing testimony to the nutritive properties of these rhizomes, gives the following formula for preparing them for use. They should be first roasted over a fire until the outer skin is charred, and then the fibres should be separated by beating; the starchy substance that remains tastes much like Oat-cake, but with a slight astringency that is not unpleasant. Few substances will keep off hunger during violent exertion better than the underground stem of the Brake thus prepared—a fact worth remembering by the rambler in uninhabited districts. *John R. Jackson.*

Raphanus caudatus.—I obtained 24 seeds of this new Radish, and I have been successful in raising 17 plants from them. Wishing to give them a trial both indoors and out, I selected nine of the strongest, and planted them in a Peach border which was made last winter. The soil was a rich rather sandy loam, to which was added some ½-inch of bones. In this they were planted, and they began to grow very strongly, and continued to do so until they were coming into flower, when suddenly they began to show signs of something being wrong with them; on being examined it was found that the roots were completely eaten away by a maggot about half an inch in length, with a white and black head. Out of the nine plants only three are left, all of which look badly; allow me, therefore, to inquire whether or not others have had anything of the sort happen to their plants. The 8-inch pots are all in excellent condition, bearing heavy crops, some of the pods are 3½ inches in length; the soil in which these are growing is rather different from that of the Peach border, being two parts loam, one leaf-mould, and the fourth part old Mushroom dung. I may add that I have one plant bearing very light green pods, while the others are all of a purplish colour. *James Stewart.*

—I should like much to know the condition in which

the pods of the Raphanus caudatus should be gathered for eating. I had some boiled just as the pods were changing from purple to yellow or green, but they were so stringy I could not eat them. *B.* [We understand they are good as a boiled vegetable when about half-grown, but we cannot speak from experience. Still younger they form an agreeable salad, with a very mild Radish-like flavour. Eds.]

Peach and Nectarine Setting.—As this is a good time to procure a hive of bees, no gentleman's garden in which there is fruit to set should be without them. I held a situation as gardener in Somerset (Cadbury House) 12 years ago, where I had charge of two large Peach-houses, which together measured 120 feet long and 15 feet wide. All the trees were planted out and trained on wire trellises. One wet cold spring, when the blossoms were expanding, I put a "pot" of bees into the early Peach-house, upon a pair of steps about 5 feet high. These bees I hoped would do their duty, and so they did in good style, for fruit set in clusters like Hazel-nuts; and be it remembered it is much easier to pick it off than to put it on. When the bees had done their work in one house I moved them into another. It is a mistake to give front air when Peach trees are in bloom, and very little should be given at top, especially in wet cold weather. Do not water nor syringe over-head, and about three or four days before the bees are put into the house give it a good smoking with tobacco, which will keep the trees clean until the fruit is nearly as large as Peas. Then the syringe may be again applied. In the outskirts of Bath I saw the other day an orchard house, I should think 200 feet long and 30 feet wide, in which was a capital crop of well-set fruit. I name this, as I am informed that in three out of every four orchard houses fruit this year is few and far between. In the house in question some of the trees are planted out and others are in pots, and consist of Peaches, Nectarines, Apricots, and Plums. I was informed that when they were in bloom a hive of bees had access to the house in which the fruit has set in thousands. Mr. Rivers does not tell us what kind of crops he has got in his orchard houses. Peaches and Nectarines, I have been told, are a failure this year. Let me recommend every one, therefore, who has fruit to set in seasons to come, both in and out of doors, to get bees, for what is the cost of obtaining them compared with losing some 40*l.* or 50*l.* worth of fruit? *G. L. Drummond, Highbridge Hill, near Bath.*

Successful Vine Growing.—There is at present a Black Hamburgh Vine in Mr. Kay's nursery, at Finchley, which for its age will bear comparison with any Vine in the country. It was planted in March, 1856, and is now bearing a crop consisting of 300 bunches of Grapes. The heaviest of these will weigh nearly 5 lb. each, and none less than 2 lb. This Vine is in a span-roofed house, 18 feet wide and 89 feet long, and carries all over what is called the rafter Vines, generally are, viz. up the rafter; on the contrary, it has five main branches, which run longitudinally at equal distances the whole length of the house. I would advise all interested in Grape growing to call and see this Vine, which is of itself worth a day's march to inspect. At the time I saw the house the Grapes were scarcely ripe at the coolest end, but some few bunches at the warm end were in perfection, and better fruit I have not seen this season. *John Edlington.*

Iresine Herbstii.—One of your correspondents (see p. 733) remarks, respecting this plant, that it is rather too soon to determine its merits or demerits. With me its demerits are palpable enough already, and if we must wait before its merits are visible, I say better be without it altogether. The main object with most flower gardeners is to secure as early a display as possible, which, as the longest of flower garden seasons are far too short, and of what advantage is it to have only reaches perfection a week or two before the rest of its associates are on the wane? The Iresine with me out of doors is a poor dingy affair, while Amaranthus melancholicus ruber is on the contrary a glorious plant, as visitors who have seen it here can testify. In pots under glass the Iresine has little to recommend it, and one gardener in this neighbourhood, with whom I am acquainted, was so thoroughly disappointed with it out of doors that he took it up, and planted something else in its place. *J. E., Herts.*

Cycas revoluta.—I observe that your correspondent "P. G." inquires (p. 733) how many times the Cycas revoluta has fruited in England? I beg to state that a large plant here, in my noble employer's Palm-house, has fruited seven times in about 25 years, and I think it is likely to fruit again in 1867. I recollect the late Dr. Lindley saying, about 30 years since, that he then thought the Cycas would fruit only once, and then it must be of considerable age. As to the necessity for age there can be no doubt; at least I myself have never seen a young plant in fruit. However, I will just mention a fact about which there can be no mistake, namely, that one could tell in a moment on seeing this noble plant—when well-grown it is noble and curious too—by looking at its stem whether it had fruited or not, for it retains for years around the stem the rings of narrow fronds that grow just under the head of beautiful vermilion-coloured fruit. The fruit is produced on very pretty buff-coloured flat fronds, which are beautifully soft and velvety, and from 10 to 13 or 14 inches in length, the basal of course the longest, and with from three to six fruit on each side, not placed opposite, but triangle-wise. The fruit are flat and oval, about the size in length and breadth of a moderate-sized Walnut; the flesh, as before stated, vermilion colour, the taste insipid, the stone inside of the size of a full-grown Almond, and of the same shape, while the kernel is of a soft nature, sweetish, but not of a very desirable flavour to feed on. Another fact I may as well relate. The first time of my fruiting it here—1841 and 1842 (for it lasts a year or more in fruit), it formed an immense crown-shaped head of fruit, 2 feet or more in diameter, tier above tier. I was very fond of looking at it when going round with my lantern of an evening, in order to watch its progress, and to observe if it had any enemies about. On one occasion, at the time it was in full perfection as to size and colour, I was upon the top of the steps (for there were steps permanently placed there while the plant was in fruit), and was gaping into its centre attentively, in order to see if there was any possibility of counting the number of fronds and fruit. The perfume was pleasant, and, I thought, very much like the scent from a rum puncheon just emptied. All at once I was seized with such a feeling of stupor that I reeled and could scarcely get down from the steps without falling, and afterwards I actually stumbled and reeled about for some time, and did not get rid of the stupor till I went to bed. This was a caution to me against looking too closely in future. *James Barnes, Bicton.*

Foreign Correspondence.

Prickly Pears and Mangos in Egypt.—As the Cactus Opuntia, or Prickly Pear, is now (June 8) in full fruit with us, allow me to make a few observations in regard to its use and cultivation. It is well known to be a native of America and Barbary, and it is now acclimatised in the south of Europe. It does exceedingly well in Egypt, and produces large crops, which form an item of considerable importance in the fruit markets during its season, which lasts generally about two months. The fruit is eagerly devoured by the natives, by whom it is considered very wholesome. I have eaten it often; at first I did not appreciate it, but, like many other acquired tastes, I have now come to like it. It appears about the middle of May on the tops of the branches, which are of a compressed form; the flower, which is of a yellow colour, is produced from the top of the fruit, which is Pear-shaped. I fancy we have got that variety called the Great Indian Fig, or Upright Prickly Pear. Our trees grow to the height of from 12 to 18 feet, and measure from 9 to 12 feet through the branches; the trunk often measures from 2 to 3 feet in circumference near the base. The skin of the fruit is covered with small spines in clusters, and the flesh is of a yellow colour, full of seeds, and has an agreeable sub-acid flavour.

The cultivation of the Cactus Opuntia is very simple. I have seen it growing luxuriantly on all soils and situations, by the sides of old walls, and in the richest loams; and in all cases the plant produces fruit in abundance. The only thing requiring attention is not to water too copiously, as it prefers a dry soil. At the time of the swelling of the fruit it however requires two or three good waterings. I am now speaking of it in the open ground, not in pots. The Cochineal (Coccus Cacti) has been introduced to this country, and has, I believe, been fairly tried upon the Cactus Opuntia, but without success. Our winters do not imagine proved too cold for it, and its cultivation was abandoned. The plant is cultivated now for its fruit alone; it has a very oriental appearance, and is grown extensively in every part of Egypt.

I may add that the Mangifera indica, or Mango, of which there are many varieties, succeeds well in Egypt. It forms a large spreading tree, and grows to the height of from 20 to 30 feet, the leaves being long, shining, and lanceolate. The flowers are produced at the extremities of the branches in bunches of a white colour, consequently the fruit is in clusters, but seldom more than four to six set on one branch. As those which set first seem to monopolise all the sap, consequently those that set later fall to the ground. The fruit is kidney-shaped, and when ripe is of a greenish-yellow colour. It is one of the most delicious fruits I ever tasted; the inside furnishes a yellow custard-like substance, strongly impregnated with a fine sharp turpentine flavour. In fact, I know of nothing to equal it, except the Pine-apple.

The fruit grows to a large size, sometimes as large as a man's fist, and inside is a large compressed stone, covered with a fibrous substance. It is considered very luscious and wholesome, and quantities of it are imported from India; but for my part I cannot understand why it is not more generally cultivated here, as the tree seems to grow freely, and to produce abundantly. The Indian fruit is now in the market here, while those which are under my care are not yet half swelled.

The tree is easily propagated by means of cuttings, layers, and seeds; the latter ought to be sown as soon as possible after they are taken from the fruit.

This fruit, I am sure, would be a great acquisition to the dessert in England; and I do not think it would be difficult to cultivate, seeing that you have such large commodious hothouses. The tree, which is ever-green, flowers here in the month of April, and seems to thrive well in any common garden soil. I should think a temperature of from 60° to 80° would suit it. It would require to be planted out in a border—if heated, so much the better. *James Hardie, Palace Gardens, Gazeereh, Cairo.*

Societies.

Royal Horticultural: *Aug. 7 (Scientific Meeting).*—J. Bateman, Esq., in the Chair. After the election of seven new members, and the affiliation of three Societies, the usual announcement of awards was made, and the Rev. M. J. Berkeley offered a few remarks on the different subjects exhibited. An Echmea was shown at the last meeting by Mr. Wilson Saunders, and was said to be very near Æ. Mertensii, but differing in the less spiny condition of the whitish, not reddish, flowers; after a careful search through the herbarium at Kew, it was found that no species approached it so nearly as E. pyramidalis, of which it was possibly a variety. In a collection of fruits shown at South Kensington in the autumn of 1864, from the garden of the Viceroy of Egypt, was the Hashish, the Arabian name of the narcotic Cannabis sativa. Of this Mr. Berkeley had 12 seeds, six of which when sown produced plants, but of these only one succeeded, and that was variegated, the rest were eaten off by slugs. This year six more have been raised, and they succeeded to be perfectly hardy, bushy, and handsome, and very much more dwarf than the common Hemp. The Hashish, owing to its hardiness and peculiar habit, will be prized for an ornamentable shrub by shrubbery borders, and for its narcotic qualities. Dr. Plespelti-meuryana and the dwarf New Zealand Arenaria cretacea, two valuable Ferns, attention was next directed, as well as to several species of Rhopala, which, when not too tall were stated to make handsome table plants. Of Orchideæ, a genus nearly related to Cypripedium was exhibited; but as shown it appeared to be little else than a botanical curiosity. Jussiæa linifolia, a yellow-blossomed tropical marsh plant nearly related to the Evening Primrose, next came under notice, as did also Bromelia pinguyn and graminegea, two remarkably handsome tropical trees, with long pinnate leaves, which when young hang gracefully down, giving the plants which bear them peculiarly interesting appearance. Of B. graminegea, Mr. Berkeley stated that the finest specimen he ever saw is in the garden of Sir Hugh Walpole, at Bodney Lodge, where the tree on which it grows has had to be three times enlarged in order to accommodate it. A specimen of Prickly Pear (Opuntia) with cochineal insect on it, was exhibited. This insect, although of great value in an economic point of view, it was stated, could not be successfully cultivated in this country, as in the case of New Spain, from which Cochineal insects are imported, they are scraped or brushed off the plants on which they grow into bags, killed by boiling water, and dried in the sun. Those are most valuable in the eyes of merchants which are plump of a peculiar mealy or silvery appearance, and which yield a brilliant crimson when rubbed to powder. A variety of Broussonetia papyrifera, with leaves beautifully variegated with white, was stated to be as hardy as the common Paper Mulberry, which is so called on account of its fibres being used by the Japanese and Chinese for making paper. In Otaheite and other South Sea Islands, the natives also manufacture a large portion of their clothing from its bark. Attention was then directed to a panful of New Zealand Arenæ now standing, a pretty looking botanical curiosity related to the Ferns, and formed into a singular-looking little Orchid, an Oncidium allied to O. abortivum, from Maraquita, some points belonging to the structure of the flowers of which were pointed out. A Hollyhock having a huge flat stem, consisting of a fusion of several flattened shoots joined together by their sides, was next adverted to. On the lower portion of this specimen the flowers would not pass muster as regards fine shape; but those nearer the apex were more perfect. It formed a good illustration of a malformation known as Fasciation, to which attention has lately been directed in our columns.

Mr. Bateman stated that among the Orchids exhibited were numerous novelties, all of which, however, laboured under the disadvantages which Orchids weak and newly imported experienced. Most of those shown by Messrs. Veitch would, in a few months' time, eventually, when better established, be found to carry off First and Second class Certificates, although none were justly awarded to them on this occasion. The first he would allude to was Vanda Batemani, so named in compliment to Lieut.-Col. Benson, Deputy Adjutant General of Artillery, an enthusiastic Orchid grower. The plant exhibited had only few flowers on it, but native specimens showed that it blossomed freely, and that it was a truly beautiful species. There was a remarkable Bolbophyllum, called reticulatum, from Borneo, in the room, the leaves of which looked as if they were covered all over with network; and a Dendrobium, provisionally named A. Arcei, from Central America, bearing large clusters of yellow flowers, different from those of any species yet in cultivation. Among other novelties was one from Mr. Bateman's own garden, called Cœlogyne corrugata, on account of the wrinkle-like appearance of the lip, and Oncidium ornithorhynchum. Among favourite old kinds, Lælia crispa was well represented by a spike, also from Mr. Bateman's garden, covered with a profusion of beautiful blossoms. Mr. Bateman said he had waited patiently 5 years for the flowering of a plant he had of this species, which when first imported was called Lælia crispa. As regarded freedom of blossoming, much, he believed, depended on the variety; some were easily induced to flower every year, while others, like the plant just adverted to, were very obstinate in that respect. As however the example of Lælia crispa presented to the Society for inspection, its Fellows, he said, might be certain that they had a free flowering variety. Peristeria elata, from Mr. Bull, next came under notice. This is known in Panama, by the name of Spirito Santo, the Holy Ghost or Dove plant, a name by which it is also well known in the West Indies, and in virtue of the resemblance of the column of the flower to a dove hovering with expanded wings, somewhat like the conventional dove seen in artistic representations of the Holy Ghost. This Peristeria first blossomed in England with Mr. Harrison, of Liverpool, in the year in which the Manchester and Liverpool Railway was opened, and there were few persons, Mr. Bateman said, possessing a love of flowers who did not avail themselves of that opportunity of getting to Liverpool to see this beautiful plant, and also of inspecting the rest of Mr. Harrison's then wonderful collection of Orchids. The plant in question, Mr. Bateman stated, belonged to the class of hot Orchids, which could only be successfully cultivated in very warm moist stoves. Another hot Orchid which when first introduced created a great sensation was Oncidium Lanceanum, the habitat of which was shown from Mr. Bateman's collection. Many years ago Mr. Bateman sent a botanical collector to Demerara, and on the banks of the Essequibo river he found a tree laden with this handsome Oncid, of which he took all he wanted. He then stripped the tree of the rest of the plants, and, having done, because he knew that Messrs. Low, of Clapton, had a collector on the same track, only a few days march behind him, who, if the plants had been allowed to remain, would have had an equal share in the prize. As to whether this proceeding was right or wrong some curious questions this evening did, it was, elicited. Mr. Bateman said, highly advantageous to himself, inasmuch as he became by it the sole possessor of the plant in this country, and on that account was enabled to make many exchanges which were of much benefit to his collection. Poor Culler, for that was the name of the collector in question, died two or three years ago; but Mr. Bateman added that his widow, a very respectable person, still lives at 22, Hereford Street, Lisson Grove, Paddington, and he thought that the fact of her being by no means in good circumstances might be worthy of the consideration of those who take an interest in plants. Among Orchids for distribution among the ladies present were handsome floral wreaths of the White Butterfly plant of Manilla, which Mr. Bateman termed the queen of bridal Orchids. These were furnished by Mr. Bolter, of Argyle Rudolph, Exeter, who said that a plant he had of this Phalænopsis had not been out of flower for two years, and during that time it had produced 32 spikes, of which as many as five were sometimes in flower at once. Alluding to Sobralia bicolor, a little inconspicuous-flowered Orchid from tropical America, Mr. Bateman remarked that Mr. Wilson Saunders had in contemplation the publication of a work in which all such Orchids as could not by means of gay flowers and handsome appearance make their way in the world, shall be figured—in short, a kind of refuge for all small-blossomed Orchids, on close examination, often by no means unattractive kinds. A charming useful of blooms of Allamanda was furnished by

Mr Bull for distribution; those who got them were, however, warned not to put them by any chance into their mouths as it was known that unpleasant consequences had sometimes attended the indiscriminate use of the pretty seeds of the catharine. A cut spike of Renanthera Lowii from the garden of Mr. Wright, of Birmingham, next came under notice. This is the most magnific nt, and certainly the most remarkable, species of the genus yet in this country. It is a native of Borneo, where it was found by Mr Hugh Low, in whose honour botanists it was first named Vanda Lowii. This species grows to a great height, and from near the top of its stem it sends out several long, slender pendulous flower spikes, often from 12 feet to 15 feet in length, clothed with innumerous waxy yellow and reddish brown blossoms of considerable size. The spike exhibited was some 7 or 8 feet in length, and it was ornamented with 30 handsome fully-developed flowers. The third two or three blossoms at the base of the spike differ from the rest not only in colour but also in being considerably less handsome than the others. This Renanthera has been in the country many years; but it was long before it produced flowers. Mr. Bateman mentioned having seen a plant of it in Mr. Rucker's garden at Wandsworth, with no fewer than 12 flower spikes at one time, which was the finest sight he had ever had the fortune to witness, a position in which they had a very remarkable and striking appearance. Grammatilus, the produce of Passiflora edulis, from Mr Bateman's establishment, next occupied attention. These were stated to be delicious in flavour. They are certainly one really large egg, with a thick, soft seed-bearing pulp of pleasant taste. Mr. Bateman then referred to the Grammatilus (Passiflora macrocarpa splendens) offered for sale by Mr. Hullett at a very high price, and mentioned his having received a letter, in which Mr. Hullett gave the testimony of the correspondent from whom he received the seeds, that the experiments sent to which the fruit attained. Mr. Bateman, however, recommended intending purchasers to wait until specimens of the fruit had actually been exhibited before the Fruit Committee who would, he was sure, be most happy to do them justice. He next called attention to a dish of the fruit of Cydonia from the Society's garden at Chiswick, and to a wretched little Rubus, the fruit of which seemed to be half Raspberry and half Blackberry. The plant was, however, stated to be very hardy, and to be excellent for planting in jungles or game preserves. Grapes called Buckland Sweetwater. Grapes on account of their high flavour, sometime like that of ripe Strawberries, next came under notice. It was doubtless some variety of American wild Grape, most of which have a foxy taste which is not generally liked. America, as is well known, has always been famous for its wild Vines, on account of which it was called the Vineyard of Wineland Vine-land from the Greenlanders, who were, it now turns out, acquainted with it long before its discovery by Columbus.

Mr. Barkley stated that in Switzerland the Isabella, also a Foxy Grape, had the flavour of a Raspberry rather than that of a Strawberry.

Aug. 7 (Floral Committee).—Mr. Parker showed on this occasion the first New Zealand Acorn above referred to, together with Pole-shoots, and a noble-looking Tree Fern; a white-flowered variety of Agapanthus umbellatus, the pretty hardy kind of Hydrangea known as Otaksa, one or two Dwarf Dahlias, Vallota purpurea, extinct, an extremely handsome tree-flowering Amaryllidaceous plant, the singular Dionæa muscipula, and other plants, to several of which First-class Certificates were awarded. From Messrs. Veitch came well bloomed specimens of the graceful and extremely handsomest of terrestrial Cape Orchids, Vanda Bensoni, and the Bollopsallina reichenbium alluded to above, also a blue-flowered variety of Ipomœa pandurata, Rhopalas of different kinds, Disanea ligustrifolia from Panama, Gymbostemma Notochlænoides, and other plants, with Ferns, some from Equador, with leaves varied with even brighter red than that of Cyrtochilum bufferdii. Thick masses of Cuphea, like looking Heath, the well-known Phlox Drummondi, in all its white-blossomed tints, the new Aster adscendens, stood before a drift of Gaillardia picta, the finest strain of which First and Second-class Certificates were awarded. Nasturtiums came from Mr Melville jun., Dalmeny Park, near Edinburgh. Mr Wills, jun., Heaton Park, near Prestwich, furnished various seedling Pelargoniums and Verbenas, conformed with large trusses of the latter, mixed with brown, the latter referred to at p. 741, especially V. Wilkinsiana and V. W. rosea, with leaves nicely divided and with blossoms delicately arranged on the spikes from those of ordinary varieties. From Messrs. E. G. Henderson came Adiantum cuneatum, Adiantum Victoria, and gay Pelargonium with rosy pink flowers and pearly plain leaves, the tricolor-leaved varieties called Lucy Grieve, Lady Cullum, and Countess of Tyrconnell and one or two Cala diums. Mr Thompson, Shirley, Southampton, exhibited a remarkable variety of Cineraria, the finely-cut variety of Rose Devonensis, which had 27 florets and buds upon it. Mr. Turner furnished beautiful, Nosegay Pelargoniums, the best of which were Duchess of Sutherland, bearing fine heads of bright deep rose-tinted flowers of great beauty, and Lady Constance Grosvenor, with large trusses of white, very like those of Stella Erica Murrayoides, with red flowers tipped with white, was shown by Messrs. Jackson, of Kingston, and from Mr. George Smith, of Hornsey, came a plain leaved scarlet Seedling Pelargonium, named Chancellor, and a pretty pink flowered one named Princess Alexandra, with leaves boldly edged with white. Messrs. Cutler & Co. exhibited specimens of the new white-striped Japanese Maize, a pretty blue and white Lobelia, named Attraction, and another very free flowering dwarf purple and white Aster called Beauty of Ronaldkirk, among the latter were beautiful examples of L. Speciosa white flushed with red, L. c. Richardsonii, Albo-purpurea, Nonpareil, P. Chater, pale yellow, Oldaia, Speciosa, but suffused with rose, and Attraction, all the varieties to which two or three Certificates were awarded. Messrs. Veitch also exhibited a beautiful variety of Lilium auratum, in which there was a much greater amount of colour than we have ever before seen in any other form of this fine Lily. Mr. Melville furnished large well grown pots of the drooping tuberl Begonia, Rex varieties. From the Society's garden came Nuttons magnificent, bearing flowers heeled over with a pretty lemon-coloured spathe; also various Orchids, Petunias, Lantanas, and other plants.

Aug. 7 (Floral Committee).—Mr. Cannell, gr. to H.R.H. the Prince of Wales, exhibited on this occasion a very fine Enville Pine-apple, weighing 7 lbs. 12 oz. Two seedling Black Grapes came from Mr. Mathison, Addington, and from Mr. Cox, Madresfield court, came a valuable oval-berried black Grape, the result of a cross between the Alicante and Muscat of Alexandria in that gentleman's vinery, one of the presumed parent was quite perceptible. From Mr. Keynes, of Salisbury, came the Strawberry Grape alluded to above. A seedling Gooseberry came from Mr Mindoe. From Mr. Gosling came a useful looking white Potato. Mr Neal, gr. to R. A. Cartwright, Esq., Edgcott, furnished specimens of Edgcott Second Early Potato, a clean-skinned white Kidney, of which we have spoken in favourable terms in former volumes.

Edinburgh Working Men's Flower Show.—The second Annual Exhibition of a Show exclusively instituted for promoting a taste for horticulture among the "Working Classes" was held in the Corn Exchange on the 25th ult. Organised as it was, and patronised as it is, by the leading gentlemen of the city, with the Lord Provost at their head, it has excited a lively interest among the citizens generally, an attribute in its infancy, has already been productive of good. No city in the empire, from its bracing atmosphere, is so well calculated for promoting window plant culture as "Modern Athens," and if there is a single flower-pot in a window to enable us to carry out here what Mr. Parkes and others have so successfully done in London. The trustees of John Mackenzie, Esq., invested 1867, as the commencement of a "Permanent Fund," which now may be said to have its permanency established—money flowing in freely from a variety of sources.

That the working men availed themselves of the several inducements held out the number of entries clearly show, their produce occupying the greater portion of five tables ranged along the hall. There were no less than 460 entries, 182 of which were contributed by competitors under 21 years of age. Prizes were awarded to 180 of these contributions, which show the character of rivalry displayed to obtain distinction. In order to show the universality of the undertaking, and that no trade or calling monopolised the prizes, we may state that among the competitors were the following:—Occupations:—Coachmaker's gas surveyor, baiter, leather dresser, sawyer, tobacco spinner, printer, plate layer, warehouseman, porter, joiner, church officer, cell orman, carrier, compositor, coach painter, shoemaker, letter-carrier, mukeeper, engine man, cardinal, mill-stone, and several others of lesser note, among females there were—white seam sewer, mulliner, lodging housekeeper, cook, &c. The classof articles exhibited were upon the whole praiseworthy. Fuchsias, from their general adaptability as window plants, largely predominated; Pelargoniums of the scarlet class were also a good exhibition, and among the others secured Myrtles, sweet scented Verbena, Mignonette, Musk, Tea-week Stocks, and several other things, many of them highly creditable—to a few, however, a good deal exhibited from confinement, owing to the want of the cultural facilities exhibited to others. Appended to this report though a desire to get the plants forged into bloom. Upwards of 5000 people visited the Show during the day, most of them coming indoors when the entrance fee was reduced to 1*d*.

The most interesting portion of the day's proceedings was the distribution of the prizes to the successful competitors by the Lord Advocate (in the unavoidable absence of the Lord Provost), who also gave a very appropriate address, in the course of which he truly said "We shall ultimately find that a new decoration will be added to our northern metropolis, the decoration of our lanes and garrets, and all those places which are hidden from the public eye, particularly as, among many things, to find especially our old familiar friends the Thistle and the Harebell collected here. I have been heard expression struck to find that John Haseltine, leather-dresser, has in his little garden at the Water of Leith cultivated no less than forty species of wild flowers, so that any soldier may be an amateur." Votes of thanks were heartily accorded to his lordship and to Mr. W. F. Drummond, Secretary. The Show continued open till 8 o'clock in the evening.

Notices of Books.

Elements de Botanique, etc., par P. Duchartre.

Elements of Botany. Paris Baillière, 8vo, pp. 636. Xylog. 411.

Few things are more difficult to write than a good text book. A man may be an eminent practical botanist, he may be well read in the literature of the subject, he may be a good lecturer and acquainted with the special wants of students, but for all that he may write a text-book which shall be too diffuse for convenient use as a student's book, or too meagre even as a guide to the beginner.

To illustrate this remark we have only to compare the titles of some of these works with their contents,—Outlines, Elements, Manuals, Handbooks, Class-books, Rudiments, Text-books, Introductions—we have them by the score; but few there are who, knowing these books, would be willing to state that as a whole, and disregarding certain exceptions, the works corresponded to their titles. The "Introduction" may be the most complete repertory of facts connected with the science up to the time of publication; the "Outlines" may be tolerably well filled in; the "Handbook" may be so bulky as to preclude its being comfortably borne in the hand. This too generally unfortunate selection of titles arises from one of two causes—either from the modesty of the author, or from a want of a due appreciation of the exact object for which the books are written. A book which is intended as a work of reference, an encyclopædia so to speak, should certainly have a different title, as it must have different treatment, from what would be appropriate in the case of a student's class-book, we might perhaps say "cram" book. We have been led to these remarks by the volume before us, and which we feel somewhat at a loss how to allocate. Its title would lead the reader to expect an elementary book, but it would be no compliment to the author to class it as such, while the purchaser would be inclined to think that he had more than he bargained for.

Apart from the question of title, we are glad to welcome M. Duchartre's work. With the exception of the elaborate work of Hofmeister, Sachs, and Du Bary, which is in progress, and covers slightly different ground from that occupied by the present volume, we have no good treatise showing the present state of morphological botany. Most of our text books, whether in French or English, are not sufficiently recent to comprise the results of the researches of botanists during the last few years; indeed, so far as English books go, they are for the most part mere copies one from another, and evince very little cognisance of what has been done in the way of original work, especially in France and Germany. Nor in truth have we a large body of philosophical botanists. Our own leaders, with the exception of Robert Brown, who was exceptional in every way, and, to a certain extent, Lindley, have devoted themselves mainly to systematic botany, doing in this excellent service; but at the same time necessarily tending to foster in the minds of the general public, who are too careless to inquire for themselves, the idea that botany consists merely in the classification and naming the plants that the energy and zeal of collectors in every part of the globe bring to light. There are, we will venture to say, among the general public very many persons who will, when zoology is spoken of, associate with it comparative anatomy, and the speculations it has given rise to, as to the plan upon which animals are constructed, while there are comparatively few who look upon botany as anything else than an uninviting mass of hard words and long names. How unjust this is the select few know. One reason for it, we believe, lies in the fact before mentioned, that our great botanists have been mainly systematists. And the observations that they have made on purely morphological matters are buried beneath such a mass of mere descriptive and diagnostic details, that they are virtually lost to the student, who may be interested in one branch of botany, but may not be particularly interested about the plants of the "Mexican Boundary Survey," or of the Viti Islands.

In France, while there has been no lack of men of first rank as systematists, there has been always a much larger infusion of morphologists; and we have but to take up the "Annales des Sciences," or the "Bulletin" of the French Botanical Society, to see how largely morphology enters into botanical studies. We imagine that the writings of the elder De Candolle, of Dunal, of Auguste Saint Hilaire, not to mention others, have had much to do in bringing this about. To return to the book before us, we may safely commend it as, so far as it goes, the most complete book we have. On almost every page we find evidence that the most recent of the French and German original publications have been consulted; and if we find fewer indications of a study of English writers, it results from the circumstance we have above alluded to. M. Duchartre, too, does not fail when opportunity serves to insist on the practical deductions that may be drawn in a cultural point of view. The present volume comprises the minute anatomy, the organography and physiology of the plant, with the exception of the fruit, which, together with a *resumé* of systematic botany and of the geographical distribution of plants, will be treated of in another volume.

Florists' Flowers.

Roses of 1866.—The keen frosts of the early mornings of May not only retarded, but perceptibly injured, the first blooms of the Rose. The quality of the flowers exhibited in June at the Crystal Palace, and at South Kensington, was consequently inferior; and although at the later exhibitions, at Liverpool, Birmingham, Rugby, and elsewhere, a marked improvement appeared in the size and brightness of the blooms, many of our best varieties were never seen, with a few rare exceptions, in their most perfect phase of beauty. The full magnificence of Charles Lefebvre, the glowing brilliancy of Senateur Vaisse, and Gloire de Santenay, the grand yet symmetrical amplitude of François Lacharme and Madame Furtado, the rosy freshness of our own English John Hopper, have been but sparsely realised. Others have gladdened us with all their welcome charms. Duc de Rohan and his princely kinsman, Victor Verdier and his lovely wife, Maréchal Vaillant and Mrs. Rivers (be not jealous of the Marshal, a friend of mine and Father of mine, for some day, if there's justice on earth, a better Rose than he shall bear the name of Thomas Rivers), Duc de Cazes and Anna de Diesbach, Jules Margottin and Louise Peyronney, Leopold the 1st and Beauty of Waltham, Madame Boutin and Souvenir de Comte Cavour, have a better recipe than Madame Rachel knows, of being "beautiful for ever," and never seem to fail. And the name of Madame Rachel, a pretty yellow Rose and hardy, reminds me that the Tea and Noisette varieties have been unusually good, and continue to be so, despite the heavy rains. Many an amateur has gazed with a thankful heart upon his first Maréchal Niel, that precious gift to Rose growers, which promises to our gardens a Cloth of Gold (yearned for as the roc's egg in the palace of Aladdin), and improved, not in the beauty of its flowers, for that cannot be, but in the certainty and generosity of its bloom. He has seen, moreover, in his Climbing Devoniensis another real acquisition to his Rosarium. In mine it made in its first season a shoot of 12 feet in length, and is now growing up a wall, like the famous fairy Bean-stalk. For mural decoration, pillars, and arches, for pegging down in beds, and probably as a stock for homogeneous Roses, it will be invaluable. If we cannot say—

> "O matre pulchrâ
> Filia pulchrior,"

we may affirm confidently that there is no degeneration in beauty, and that the daughter does not inherit the delicate constitution and consumptive tendencies of mamma. Older favourites have been more charming than ever, especially Souvenir d'un Ami, Madame Bravy, Madame Willermoz, Louise de Savoie, and the two Noisettes, Triomphe de Rennes, and Céline Forestier. The latter has this summer fully justified all the prophetic praises of Mr. John Standish, who was the first to exhibit and to eulogise this very lovely Rose. Amateurs have undue fears with regard to the Tea and Noisette Roses, and it is to be hoped that their present abundance will induce a more extensive cultivation. It is worth while to sustain some losses, that we may obtain, partially and occasionally, the presence of these refined and *recherché* flowers, and with some of them there is no risk. I have grown Souvenir d'un Ami, and the two Noisettes alluded to, for years, without any protection, and at some distance from a wall; and Triomphe

de Rennes, upon a low Briar, was one of the few survivors of that cruel frost which occurred on Christmas Eve, 1860, but which would have happened more appropriately some four days later, to wit, upon the Slaughter of the Innocents.

Recurring to the newer varieties, I have examined them very critically as a censor at three of the principal shows and in my own garden; and though I have not seen some of the candidates for honours, the results of my careful scrutiny among those which have been exhibited may be acceptable to amateurs. Not with an unmixed pleasure do I congratulate them on the arrival of younger beauties, for we older Rosarians must note with some sorrow, first the decadence, and then the disappearance of those who once owned our heart—just as one sighs, strolling in the Park, to recall that the fat ordinary Lady A. was once the elegant lovely Miss B., and that the grey-whiskered red-nosed party on the cob was erst a dandy in the Guards. But beautiful Miss C. gives us a smile, and merry Sir D. gives us a cigar, and we leave what was, for what is. So let it be now with the Roses. Indeed, what knight could stand with a rueful countenance, mournfully intoning the maudlin praises of his faded loves in the sunny presence of "sweet eighteen?" And what Rosarian will now weep and howl for his Alice Leroy or his Eulalie le Brun in the society of Anna de Diesbach? Who shall long for the Comtesse de Murinais as he gazes upon the Comtesse de Chabrillant? Who cares for Louise Puget in the place of Louise Peyronney? Who could pass the lattice of Beauty of Waltham to serenade the Beauty of Billiard?

The first happy occasion on which I met with Roses new to me was at that charming International Congress, ever to be remembered as the triumph of earnest workers over timid talkers, and of artistic taste over ancient ugliness. After one long anxious survey of the whole, and then a joyous thankful whisper, "How very beautiful!" after roving rapidly like—no, at 16 stone I really must not say like a butterfly—from flower to flower, I found myself drawn up, as usual, before a box of Roses; and that box, though not at the Opera, contained two beautiful young ladies, Marguérite Dombrain and Elizabeth Vigueron, whom I was admiring, and whose acquaintance I was resolving to cultivate, when my attention was ungallantly diverted to the magnificent costume and handsome features and form of a French gentleman in attendance. I have met him frequently since, and I have no hesitation in saying that Monsieur Boncenne is one of the very best of the novelties: a very rich velvety crimson, of good size, and excellent symmetry. I can only think of one other new Rose, which I might prefer to Monsieur Boncenne, and that is Marguérite de St. Amand. If not the fairest of the fair, this Rose is the newest of the new. She can laugh heartily, as I did, at young Mr. Paul's satirical "recipe for making new Roses: take a hundred General Jacqueminots, and call them—anything you like," for she has no affinity to that prolific warrior. Her style of beauty is that of Lady Stuart, Madame Rivers, Juno, and Blairii 2; but yet she is distinct from all. Pink and white in complexion, of ample but graceful form, glossy with health, Marguérite de St. Amand will take her place in our gardens and in our hearts (at all events in the button-holes near them) with the tranquil dignity of unchallenged worth. I must now mention, without further comment, the other novelties which I selected at the National, Liverpool, Rugby, and other Rose shows, as well worthy of a place in my Rosarium, viz., Charles Wood, Comtesse de Paris, Dr. Andry, Duke of Wellington, Duchesse de Caylus, Madame Moreau, Madame Charles Verdier, Madame Derreux Domville, Belle Normandie, Marcella, Eugène Verdier, and Alfred Colomb. There are several others highly commended, but I prefer to join Mr. Cranston in his verdict, "not proven," until the dubious bills of Messrs. Humbug and Hearsay are cashed before my very eyes. *S. R. H.*

STORING CALCEOLARIAS, VERBENAS, AND OTHER PLANTS.—Allow me to record my experience for the benefit of such of your readers as are interested in the propagation of the Calceolaria, Verbena, and other bedding plants, but who have no greenhouse into which to store their plants during winter. My store-houses for bedding plants consist of the window-sills of my dwelling-house, on which I store my Scarlet and Variegated-leaved Pelargoniums; and three small single-light frames and a pretty large double-light frame in which I store my Calceolarias, Verbenas, Lobelias, &c. My large double-light frame I give up to Calceolarias, lifted out of the beds on which they have been blooming during the summer, and which I find make splendid bedding plants the following summer. During severe frost I throw a covering over them, which I am careful not to remove till several days after the frost has taken its departure; and, in this way, I succeed in keeping them without the slightest difficulty, and without any loss. Such large two-year-old plants make a splendid back row in a ribbon border. I may also note, by the way, that in this same frame I succeed in keeping my Fuchsias as well. My experience is, that both Fuchsias and Calceolarias can stand a considerable amount of frost, provided they are covered up and kept dark for some days after the frost has gone. In one of my small frames I keep my autumn-struck Calceolarias. In the middle or end of August I gather up off my two-year-old plants such cuttings as they can spare, without paring them too much, and after preparing them as cuttings are generally prepared, I stick them in boxes, and place the boxes between the rows of Peas, where they take root most beautifully, so that when I begin to think of storing them, in the beginning of October, they have fine roots. The manner of storing them is as follows:—I take one of my frames and place it up against a wall facing the south, and commence shovelling into it a quantity of earth of the poorest quality I have; after which I take the Calceolarias out of their boxes, and plant them in rows in the frame, keeping the frame close for a few days until they become acquainted with their winter quarters, after which I admit air freely. Their only protection is an old top coat thrown over them during the winter; and of 150 plants thus stored last winter, 50 of which were Sultan, and the rest Aurea floribunda, I did not lose a single one.

And now about the storage of Verbenas in the frame specially set apart for them, and Lobelias, and other plants of a more tender order. Well, to tell the truth, it is only within the last two years that I have been successful, but I never was successful with cuttings. I could strike Verbenas well, but I could not keep them in a cold frame until I tried year-old plants. Let me give you the history of one plant up till the present day, and the large family which it has brought me. The plant in question was one of Miss Clayton, one of the best whites of the present day. Last year about this time it was growing in a thumb-pot, and I set it aside to make a pot plant of it, for the purpose of ornamenting my frames when they were cleared of their bedding stuff. I gave it a good sized pot, and was kind to it, and trained it nicely; and it rewarded me with a row of the most splendid Verbena trusses I ever saw, so that when I presented it at our exhibition in the beginning of August for the prize for the best trained Verbena, the judges would look at nothing but itself. It bloomed on nicely till the beginning of September, at which time I cut it back, and stopped the supplies of nourishment, notwithstanding which it struck out in all directions, and was a pattern of health when the storage day came round. Then I set myself to prepare the frame for its reception. It had a similar exposure to the Calceolaria frame, but I took some slabs and drove them in round about the frame, and about 9 inches from it. To these I nailed some slabs and old deals, and between them and the frame I packed in straw as tightly as possible, so as to make the frame proof against frost. I then put sawdust into the frame, and plunged in Miss Clayton, along with a number of her brothers and sisters and some Lobelias, seedling Calceolarias and Cinerarias, and a few strong plants of some of the finer varieties of Pelargoniums. Of course I had plenty of mats to throw over the frames during frost, and with very little care I succeeded in bringing all the plants through the winter. Had I then had a forcing-house I could have wrought wonders with my half-dozen Verbenas, but I was to be content with my frame. I put them into one of the frames in March, amongst bark, kept them pretty close, started them into growth, and off Miss Clayton I gathered 45 cuttings as my first crop. This first crop, however, is all I can calculate on, for before the second crop is ready for taking off, bedding-out time is upon me. I may say, that off a Lobelia, grown in a pot as a specimen plant last year, I gathered 50 cuttings, after which I separated the plant into 15 smaller plants. To me this seemed amazing. Indeed, before I had experience of the thing, I would have scarcely believed it possible. Of course all my cuttings were propagated in a frame heated with stable manure. Perhaps I am writing down some of the commonplace experiences of practical gardeners, but it is possible that some of your readers may, like myself, have little accommodation for the storage of plants, and to them these notes may be of service. *Clevesse, in West of Scotland Horticultural Magazine.*

The Apiary.

BROOD IN SUPERS.—Nearly all of my supers this year are unfinished, and contain large quantities of brood. The bees seem to have discontinued honey-gathering for the last two or three weeks; all the drones are being destroyed, and I fear there is no probability of any more work being done.

During the entire winter of last year, in two of my supers, breeding was carried on extensively; the bees, in fact, turning the supers into stock hives. I should say that the supers I generally use are large, being 13 inches square by 12 inches or 13 inches deep.

I see in your columns that Mr. Fox also has had cause to complain of the presence of brood in his supers. I should be obliged if he would kindly inform me what I had better do under the present circumstances, and whether there is any method by which the queens can be excluded from the upper stories. I have heard of narrow slits for communication only $\frac{1}{16}$th of an inch in width, being adopted by some makers; does this plan answer the purpose? I fancy that where the workers are capable of going, the queen could also pass. I should like to try some effectual means for preventing this in future. *J. B. S.*

[This season has been remarkable, at least in this district, the south-west of England, for the large number of supers which remain in an unfinished state. The weather has for a very long period, up to within the last week or so, been superb, and apparently of the best honey-storing character, nevertheless the bees almost entirely discontinued work about the 10th of July. This must be attributable to the extreme dryness, as otherwise the weather seemed all that could be desired for vigorous and rapid honey-storing. It is a great misfortune when the combs in supers remain unsealed, as the produce is of little advantage to any one. I usually in such cases appropriate what may be sealed, and allow the bees to rob the rest. After all the honey has been removed, the super is wrapped up and put aside for the following season, when the emptied combs will be of immense advantage. Do not put these combs away with the honey in them; it ferments or becomes candied, and the combs are spoiled for further use. I am sorry to say that some of my supers are in the same predicament, but as they are chiefly composed of two boxes, I can, by drawing a wire between them, obtain the upper division completely filled and sealed. This is better than nothing, though usually I succeed in getting both boxes quite filled. Every particle of white worker comb, after being cleared of honey, is carefully preserved.

With respect to the brood in the upper compartments, your best plan is to allow the young bees to hatch out prior to taking off the supers. These young bees are of great value, as they will live far on into the next season. There is frequently only one batch of brood, which when hatched out sufficiently early is replaced by honey. Whenever brood is discovered in any of my supers it is cut out with an unsparing hand, giving the bees the opportunity of repairing the damages. As this disturbance has usually the effect of driving down the queen, the bees are more likely to construct honey-combs in lieu of the brood-combs. This year, however, I have had a super which required a repetition of the severe treatment.

It is a great mistake to leave supers on the stocks through the winter. If any of yours still seem to be converted into stock hives, I should advise you to take the necessary steps to remedy the evil before the close of another month. Your supers are too large for placing on all at once, and would be far more likely to be useful if cut down to about half their depth. You can refer to what I have said in previous numbers on the subject of supers and my mode of working them.

I have seen the narrow communications for the purpose of excluding the queen and the drones, but I have never given them a trial. I believe you are correct as to the width recommended, viz., 1-56th of an inch. I have always thought the use of this contrivance rather calculated to retard rapid honey gathering, but cannot speak from actual experience. It seems likely that even if the queen were able, with little exertion, to force her body through the narrow aperture, she would be very much disinclined to try to do so; and that it would not be necessary to narrow the communication so as to be absolutely impassable, to prevent her making the endeavour to ascend. I have often intended to institute some experiments with regard to this subject, but having generally succeeded very well with the plan I have adopted and described in foregoing numbers, I have from time to time deferred the construction of the adapters necessary for carrying out this purpose. If any correspondent of the *Chronicle* has tried this arrangement, it would be well if he would give us the benefit of his experience. *S. Bevan Fox.*]

Garden Memoranda.

BERRYHILL, NEAR MAIDENHEAD, THE SEAT OF J. NOBLE, ESQ.—It was almost by accident that I dropped in here on the way to Cliveden and Dropmore, and without any intention of alluding to the most noteworthy features of the place; but it is so tastefully and beautifully laid out, and so well embellished with spring flowers, that doubtless a short allusion to the features best worthy of imitation would not be unacceptable to your readers. If gardens are worthy of description in proportion to the useful lessons they convey, this is surely entitled to notice, considered from point of design alone.

British horticulturists, and indeed intelligent Britons generally, are ardently devoted to the English or "natural" style of garden design; and it is not too much to suppose that if every city or town in these islands were embellished by a park or garden laid out on the opposite principle of making steps, stones, and statues, and pagodas, pedestals, pounded brick, and polychrome, ten times more conspicuous than the natural ornaments of a garden, it would not alter our love for the natural in garden design. And yet the taste lives under difficulties, not from opposition of other schools, but from the barbarous and strait-laced designs that are passed off as representative of this style. Who has not seen the "ornamental water," looking as if it had been designed after an antique pie-dish slightly bent in the baking? Who has not seen the undulating grounds that here and there go off at a tangent, as if the superintendent of a gang of railway navvies had now and then replaced the landscape-gardener for a few hours? Who has not witnessed the painful mixture of the geometrical and "English style" that is so common? It is of great importance to English horticulture that the most tasteful examples of what foreigners call the "English Garden," and the most correct principles of designing them, should be made known, and not only to horticulturists but to the public generally, for does not the future beauty of half the pleasantest tracts in the country depend largely upon the way they may be laid out? Although horticulture is at present in a wonderfully expanding and satisfactory state, there can be little doubt that if the country progresses at its present rate, the horticultural progress of the past generation will prove but small compared with that which the coming one may experience; and it is much to be desired that places laid out like Berryhill should be the rule, and not the exception, for such a garden is almost sure to lead its owner imperceptibly to a love of all that is beautiful in the art, and he can hardly err in taste while every walk and ground, and gently and naturally graduating slope, impressively teach that which is true.

Berryhill has been chiefly laid out by Mr. Marnock, and this is of itself sufficient to account for its beauty; but the designer had much to contend with. The ground itself was not distinguished by any natural beauties, the surroundings still less so, and therefore it is quite remarkable to see how gracefully the lake sweeps around the sloping banks and promontories and plantations of choice shrubs, with here and there a glint of well-constructed rockwork, fringed and speckled as it should be with native and other pretty rock plants, and not by the shrubs which frequently cover such. The secret of the charm of such a garden is that it annihilates monotony, and leaves you some-

thing to expect, something to anticipate, or something to seek for. Assuredly never have I seen the margins of water so much and so well diversified, without in a single inch diverging from the easy winding and gradation characteristic of Mr. Marnock's style. There is a quiet nook of water, turned in from the main body, in which the beautiful old "Lily of the Nile," as I first heard it called, is put out to flower for the summer under a Babylonian Willow; and there is another recess for the purpose of providing a luxurious prison for some kingfishers, and several such, all managed with equal taste and judgment. But it is in rounding the well-planted bendings that the gardening visitor finds most charm; he catches a glimpse of the crest of rich rosy and lilac Rhododendrons, across a clump of low evergreens, and anon a seam of rich Pansy colouring margining a shrubbery corner, and then—what is that peculiarly rich colour beyond? Aubrietia grandiflora and Phlox frondosa—both masses of flower, and grown in quantity. And that wide spread of rose away beyond the grazing land? That is afforded by a deeply-coloured rosy crimson variety of the common Thrift, to which it is as much superior for spring gardening as a good fat Pea is to the common Vetch. There are long regular edgings of it in the kitchen garden—thick with flower and flames of charming colour. Those who grow the common kind should discard it, and get this. The only thing that seemed objectionable in the management was a trimming-in of the host of fine shrubs planted about, in a way that somewhat interfered with their native beauty, and the floating about in the lake of very carpenter-like resting places for wild fowl.

Nearer to the house, spring gardening is well carried out by Mr. Roger, who proves conclusively that it is quite as practicable here as in the higher and warmer grounds of Cliveden. The fact is, there are many districts of both England and Ireland far more favourable to this kind of gardening than the neighbourhood of Maidenhead. I never saw anything more brilliant or more telling than the beds of Phlox setacea, Aubrietia grandiflora, and double red and white Daisies. They seemed from the dwarfness to bite the earth, and looked so singular from not rising above the Grass, and yet were so full of flower, that you could hardly put a finger between the blooms. The effect was quite distinct from that in Cliveden, where taller subjects come in for more favour for the great beds.

The kitchen garden and the houses, to which space forbids me sufficiently to allude, are as well arranged and constructed as the pleasure grounds or lake margins. There is a billiard-room also in the gardens, though not far removed from the house. Doubtless many would think such isolation desirable. Collinsia verna is very well grown here, and flowers the earliest. The foliage-plant or subtropical movement is in force here, and such things are somewhat extensively dotted about. There is also a remarkable rustic Fernery, with none whatever of the glass-house aspect about it, either inside or out. The kitchen garden is entered through a very high and novel arch of Weeping Beech. The centre of the arch is about 24 feet high, and the graceful hanging shoots make it a welcome ornament. There is a capital glass wall built by Gray, and all the houses are in the first style. The position usually occupied in kitchen gardens by a central "mixed" or other borders is here laid down a neat strip of Grass, in which small "promenade" beds are cut in spring well filled with early flowers, and in summer by bedding plants. Immediately behind these strips on each side, and cutting them off from the cropped ground, is a dwarf chain of good Roses, and the effect of the whole is capital. It is also well kept and cultivated, and quite a concise model of a kitchen and forcing grounds. There is a bit of nursery ground between the glass wall and the forcing-houses thrown into the usual nursery beds for propagating, sowing, and wintering of spring flowers and all sorts of things, and the way the beds were edged took my fancy very much. They were made of common sash iron an inch in thickness and 2 inches in depth, and are certainly the neatest and most permanent of all edgings for such a situation, and withal not expensive.

I should not close this without highly recommending Ceanothus floribundus, which was flowering here a profusion of rich blue. It had not been long obtained from Mr. Veitch, and yet covered the wall with beauty—a fine thing for association with the large-flowered Clematis montana, and the like. *W. R.*

Miscellaneous.

Application of Turnips in Dyeing.—The process of dyeing with indigo, though extremely simple in theory, is attended with difficulties in practice that demand the skill of an adroit and experienced workman. M. Leuchs, of Nuremberg, has so simplified the operation that it may now be performed with ease and certainty. He avails himself of the property possessed by *pectine* of changing insoluble blue into soluble white indigo. Fortunately, pectine is very plentiful, being found in large quantities in Pumpkins, Melons, &c., but most abundantly of all in Turnips. Nor is it required, for the purpose of dyeing, to separate it from the Turnips; it is only necessary to cut them up in small pieces, after which they are ready for use. Their efficiency, in this state, may be shown by a very simple and striking experiment. A small quantity of indigo, and a few drops of a solution of a caustic alkali, and then a little bit of Turnip, are to be placed in a tube closed at one end; after which, heat is to be applied. The indigo becomes, in a very short time, colourless and soluble. On the large scale, 100 parts, by weight, caustic ley, at a temperature of 75° Cent. (167° F), one part indigo, and five parts Turnips chopped very small, are used—the Turnips being put within a wire cage, which is suspended in the liquor. When all the ingredients have been added, the temperature is raised to the boiling point; and as soon as the indigo has become colourless, the solution is decanted off, and requires no further preparation for use in dyeing. About 5 per cent of the Turnips are left as a residue, which answers well in paper-making. At places where, during seasons when Turnips cannot be had, an essence extracted from them with water, under a pressure of two or three atmospheres, answers equally well—about four parts by weight of it being used for one part indigo. The employment either of the Turnips or their extract prevents that waste of indigo which is almost inseparable from the ordinary process. *Intellectual Observer.*

Calendar of Operations.

(*For the ensuing week.*)

As the summer proceeds take notes of the most effective plants for bedding purposes, and of their habits and peculiarities. One important point to be attended to in the selection of bedding plants is the proper balance between flower and foliage, and especially amongst the bright warm colours. The proper arrangement must also receive attention. This might indeed be carried beyond the parterre; for every clump of shrubs might be made to give evidence of good taste in the disposition of shades and colours. Many of the most showy herbaceous plants are now in beauty, and by studying the effect they produce in different situations it is more easy to decide where new plantations of them may be introduced with the greatest advantage.

FLOWER GARDEN AND PLANT HOUSES.

Do not allow any plants to remain in greenhouses or conservatories longer than they are ornamental; and those which have been grown as annuals, to serve merely for a season, should be thrown away when they cease to be useful; for, if kept beyond a certain stage, they only harbour insects.

AURICULAS.—These may now be repotted, using for the purpose moderately rich soil. After potting keep them in a close frame for a short time, gradually hardening them off by means of partial exposure until they are able to stand without any protection. Keep them free from green fly and dead leaves.

DAHLIAS.—Go over the plants regularly twice a week, removing all superfluous spray and buds. Naturally strong growing varieties must, however, be disbudded with care, as they require less attention in that respect than more weakly kinds. Tie the side shoots to stakes, and keep earwigs in check by trapping them in inverted pots with a little dry moss in the bottom of them, or with dry Bean-stalks, into which they will crawl, and may be destroyed every morning.

PELARGONIUMS.—When sufficiently broken let cut down plants be shaken out, and after having been disrooted let them be potted in as small pots as they can be got into. After potting they should be placed in a frame where they should be kept close for a time; when they have become fully established, dispense with shading, and during favourable weather give air freely.

PINKS.—As soon as well rooted let these be planted into beds previously prepared for them. Trap grubs, which are sometimes very destructive to the young plants about this season.

FORCING GARDEN.

MELONS.—Keep up a good bottom heat, or shanking and canker will be a natural consequence. Keep the plants sufficiently thin, to allow the air to circulate freely amongst the leaves, and to act upon the surface of the soil. Thin out weak shoots, and let all the fruit be properly supported upon some hard dry substance.

PEACHES.—As soon as the crop is entirely removed and the wood ripe any of the trees which exhibit too gross a tendency in their tops should be partially root pruned by forking down at a safe distance of 2 to 3 feet, according to the age of the tree, and shortening some of the strongest roots. Any tree which is very gross should be carefully undermined, to ascertain if any roots have descended into the subsoil. If such is found to be the case, they should, of course, be cut away; and to prevent a recurrence of the same, the tree should be lifted out entirely, and the bottom of the border made impervious by means of concrete. The trees should be frequently examined, to prevent the establishment of scale, red spider, or other insects. It is sometimes difficult to eradicate these pests entirely, but perseverance will do much.

PINES.—Give every encouragement to plants now showing and swelling. If the quantity of fruit which has already made its appearance is inadequate to meet the probable requirements during winter, water may for a short time be withheld from a portion of the plants which are fittest for fruiting. On the other hand carefully avoid any check to those which it is desirable to keep on in a growing state.

STRAWBERRIES.—The potting of these for forcing should be proceeded with as soon as the young plants have made sufficient roots to allow of their being transferred to pots with nice little balls of soil, which will adhere to them if taken carefully up with a curved trowel. This plan is preferable to laying them in small pots, as it saves time and pots, and succeeds perfectly. The soil for forcing Strawberries should be of rather a strong loamy nature, and have some well rotted cow or horse-dung added to it. Take pains to make the drainage very perfect, as it is necessary to give a considerable quantity of water during their growth through the autumn, and when they are being forced next season; and if the drainage is defective, the health of the plants must suffer.

HARDY FRUIT AND KITCHEN GARDEN.

Notwithstanding the rains which we have lately experienced, in gravelly localities it may be well to examine the state of the soil about the roots of Peaches, Apricots, and Figs, on open walls, especially of those which are carrying a crop of fruit; in many cases the ground will be found dry, particularly where overhanging copings are in use; and unless watered the trees will soon show evidence of the neglect, by casting some of their fruit, or by their diminutive size and absence of flavour. Means must now be taken to preserve wall fruit from the ravages of wasps, flies, &c., either by covering the fruit with some material to exclude these pests, or by entrapping the latter with something attractive and come-at-able. The latter mode of dealing with the enemy is preferable, as by covering the fruit with any opaque material it is screened from the sun, and thus deteriorated both in appearance and quality.

FRUITS.—Let the earlier varieties of Pears and Apples be carefully gathered as they ripen.

VEGETABLES.—Tripoli Onions for future transplanting should now be sown, and Endive for a late crop. Continue to make successional sowings of Cos Lettuce, and make the first sowing of Hammersmith Cabbage Lettuce to transplant into warm borders for late autumn use. The last sowing of Early Stone and White Globe Turnips should now be made. A considerable share of attention should now be directed towards securing an adequate supply of salads and other small matters for winter use. Chicory is one invaluable plant of which there should be no scarcity; and as it will do in spare nooks or corners, there need not be any difficulty made about want of room.

STATE OF THE WEATHER AT CHISWICK, NEAR LONDON.

For the Week ending Aug. 8, 1866, as observed at the Horticultural Gardens.

August	Mean Age	Barometer.		Temperature.					Wind	Rain
				Of the Air.			Of the Earth			
		Max.	Min.	Max.	Min	Mean	1 foot deep	2 feet deep		
Thurs.	2	29.946	29.881	74	49	61.5	63	59	W	04
Friday	3	30.017	29.953	74	45	59.5	63	59	W	00
Sat.	4	30.057	29.991	71	49	60	63	59	W	00
Sunday	5	29.976	29.903	74	49	55.5	63	60	N.W.	00
Mon.	6	30.017	29.951	66	50	58	63	60	S.W.	14
Tues.	7	29.870	29.778	67	50	58.5	63	59	S.W.	16
Wed.	8	29.968	29.918	70	45	57.5	61	59	S.W.	00
Average		29.979	29.903	70	48.4	58.2	64.7	59.3		0.72

Aug. 2—Rain almost throughout.
— 3—Dense fog and mist over the river at night.
— 4—Fine: rain at night from 9 to 10: water lands in deep low way.
— 5—Cloudy: fine, very fine at night, but rather cold.
— 6—Overcast: slight rain at night and cold boisterous, with rain at night.
— 7—Cloudy: boisterous and showery too at night.
— 8—Masses of dusky white clouds: showery and rather boisterous: rain at night.

Mean temperature of the week, 0.2 below the Average.

STATE OF THE WEATHER AT CHISWICK,

During the last 19 years, for the ensuing Week, ending Aug. 18, 1866

August	Average Highest Temp.	Average Lowest Temp.	Mean Temp.	No. of Years on which it Rained	Greatest Quantity of Rain	Prevailing Winds.						
						1 to 7 a.m.	7 to 2 p.m.	2 to 9 p.m.	9 to 12 p.m.			
Sunday 12	73.1	50.1	62.8	15	0.47 in.	1	2	2	6	11	9	4
Mon. 13	73.7	49.6	62.4	18	1.14	1	1	1	5	5	5	2
Tues. 14	73.4	50.6	62.6	16	0.73	1	1	1	5	5	5	2
Wed. 15	73.0	49.2	61.1	16	0.62	1	0	1	5	10	5	3
Thurs. 16	72.6	49.2	60.9	16	0.62	1	0	1	5	10	5	3
Friday 17	72.5	49.2	60.8	16	0.62	1	0	1	5	10	5	3
Satur. 18	72.2	48.8	60.5	15	1.08	1	0	3	4	9	8	1

The highest temperature during the above period occurred on the 14th, 1864—there 87.2°; and the lowest on the 14th, 1849—there 38.4°.

Notices to Correspondents.

Books: *M F P.* The only book we know which would supply what you want is Hogg's "Fruit Manual," and that can scarcely be called perfect, though, consisting as it does of five volumes, with very numerous plates, it is comparatively inexpensive in price. What you ask for, a good illustrated book on English and Foreign Ferns (not only those cultivated in hothouses, but especially hardy ones), at a moderate price," would be scarcely a possibility on account of its extent.

Diseased Melon Leaves: *A Constant Reader.* We cannot refer the appearances you describe to any known type of disease, such as gum, canker, or the attacks of insects, and are inclined to believe that the cause will be found in the soil or in the management. It may arise from the soil being too light, and largely mixed up with vegetable matter, such as decayed leaves, by which the growth of Fungi is encouraged; and when this reaches the roots of the Melons it may produce the withering and drying up of the leaves before that of the stems or fruit. Or, if it be new soil, carted, as you say, from a distance, the injury may be caused by grubs or weevils, which gnaw the roots in two, and the effects of which would be shown precisely in the way you describe. The only way in which we can conceive that management would conduce to produce the effects described would be by the using unfermented stable-litter, not sufficient, in which case a sudden exposure to some of the violent bursts of sunshine we have lately had would very soon produce such effects. We should advise you to examine your soil thoroughly, and to try the effects of growing them in stiff strong loam, taking especial care to prepare it some time beforehand by frequent turnings, and by picking out all grubs.

Plants [illegible]: *C.* This is a native of Terra del Fuego and elsewhere in the extreme south of America. We are making inquiry about the Cerasus. There are several of the polymorphous Japanese Acers in the collection you mention, so that it would be necessary to see the one referred to before a reply could be given. Probably you could obtain leaves on application.

Plants: *T. Y.* 1. Adiantum Pacotti. 2. Pteris [illegible] bi-pinnata.

Names of Plants: *E. Chester.* We are still unable to form any opinion respecting your seedling, as the colour had quite faded when your letter reached us.

Names of Plants: *J. B.* 1, Alopecurus agrestis; 2, Holcus lanatus; 3, Cynosurus cristatus; 4, Bromus mollis.—*C. T.* Corylopsis [illegible] Veitchii. The plant sent under the name of Celastrus scandens is neither more nor less than the old favourite Periploca græca.—*Primus C.* Some species of Magnolia. Probably from New Zealand.—*Reader.* Trachelium cœruleum.—*Senilia.* Possibly No. 3, although if so it differs somewhat from the normal specimens—certainly not of the others. Numbers 1 and 2 are Hirneolas; No. 4 [illegible].—*T. M. L.* 1, Calamagrostis, not determinable without flowering-heads; 2, Hypnum, Adiantum.—*T. B.* 1, Thelesperma filipendula.

Communications Received.—D. T. Fish.—J. W.—T. L.—C. D.—H. C.—R. Thompson.—James Barnes.—James Wilson.

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The Agricultural Gazette.

SATURDAY, AUGUST 11, 1866.

MOST of our pages are this week occupied by Reports of the current Harvest. It is necessary to warn our readers that the majority of these reports are already from six to eight days old, and to be intelligently read the character of the weather during the past week must be remembered. A gale has been sweeping over the greater part of the island, and a good deal of Wheat and Oats has thus been lost upon the ground in the midland counties. Besides this the weather has been generally wet, and this has no doubt aggravated the mischief already done by blight, of which we hear serious accounts in the badly laid Fen districts of Cambridgeshire and Lincolnshire. It will be seen, however, from the following Table that the returns are generally better than those we published last year.

The Wheat crop is undoubtedly below an average this year, but not so bad as in 1865; and most spring corn crops are pretty fair, the Pea crop in particular being very good.

The following is the Table of Returns:—

		Over Average.	Average.	Under Average.	Total.
Wheat	1865 ..	29	90	76	195
	1866 ..	21	96	63	180
Barley	1865 ..	28	112	40	180
	1866 ..	45	102	22	169
Oats	1865 ..	2	27	154	183
	1866 ..	29	84	60	173
Beans	1865 ..	4	58	64	126
	1866 ..	19	65	29	113
Peas	1865 ..	6	58	64	128
	1866 ..	47	59	3	109

To this we only add that, excepting certain Scottish counties, there is an unusually good promise of green crops in the country. The Potato crop also is at present good; and there has been a large crop of Grass, much of it badly made, but a large quantity of it also well secured.

WITH the barometer oscillating between 29 in. and 29.2, and a south-westerly wind to boot, farmers will look with some degree of apprehension on the prospects of the coming harvest. The weather at the present time is anything but inspiriting; and as corn is very generally almost fit to cut, there is great need for judgment and care in harvest operations.

The late high winds have laid and entangled a deal of corn, so that the work of reaping or mowing will be a matter of difficulty. Where the reaping machine can be employed, the advantages it confers will, at this "trying time," be manifest. What with high-priced labour and doubtful weather those who depend on the sickle and scythe will find themselves backward very frequently.

In agricultural labour it is much to be regretted that the "custom of the country" is such a dictating tyrant. Because "all the country" will not move out of a regular track, one of its farmers will not have the courage to adopt a line of his own or avail himself of what he has seen in other districts. We don't wish to see farmers altogether experimentalists, but a somewhat more general use of their reasoning faculty is very desirable.

This hay-time a farmer of our acquaintance foresaw ugly weather. He had been to visit Lancashire, and made a tour in Ireland. He saw in those places a system of hay-making very different from that of his own district. He saw the system both in use and in abuse. He had sufficient moral courage to ted his Clover and seeds, and even went so far as putting all his hay in "tramcocks," in opposition to the "custom of the country," and the result was that his hay was safely carried, whilst there were thousands of tons very badly saved all around. Now, in mentioning this particular instance, we must not be understood as advocating, for general adoption, this system of hay-making. The case is brought forward to show what may be done if we use our eyes and ears, discriminate between the right way and the wrong, and not be blindly wedded to the customs of our own immediate localities, for no better reason than that time immemorial has protested against innovation.

Should the weather continue for some time longer as it is at present, there is every reason to fear that a large proportion of the grain of the country will be spoiled. Care and promptitude will be more than ever requisite, and every means that experience or reason suggest for the efficient harvesting of our crops must be made use of. In some districts the system of carrying Oats and Barley unbound finds favour. It is a question in dispute whether this system is better than having corn bound in sheaves. In fine weather, and as the steam-threshing machine is now so generally used, there seems to be very little difference between the systems; but in showery weather corn can be better "handled," and advantage may be more readily taken of any fine spells when it is in sheaves.

Another matter in dispute is regarding the "hooding" of stooks or shocks. It seems to be pretty generally conceded that Oats and Barley are better uncovered when in the shock than otherwise, provided the weather be dry; but during rainy seasons the hood sheaves prevent the corn from getting wet, and when properly attended to no harm can arise from the practice of hooding shocks. During continuous rains it will be necessary to see that the grain under the hood sheaves is not kept covered up wet for many days, as if the shocks are left in this condition sprouting will be the consequence.

What we wish to draw particular attention to, is the practice of stacking corn in the field. In Ireland this plan is almost universally adopted, and the dampness of the climate seems to render it a necessity; but the Irish farmers make use of the system indiscriminately during wet and dry weather, and often suffer as much loss by its abuse in leaving the stacks too long in the field, as any gain that might accrue by the proper use of the system. Should the weather during harvest be showery, so that corn cannot be got thoroughly "seasoned," it may yet be fit for carrying in the shock and by making it into small round stacks containing about 300 sheaves; the stack having for its diameter a measure equal to twice the length of the sheaf; and it becomes ready for carrying without danger of heating or injury from the weather.

Care must be taken to have the sheaves always inclined downwards from the centre of the stack outwards, as if they are otherwise they serve to conduct the rain-water into the heart of the stack. The corn should be carried from these stacks on the first favourable opportunity, as if allowed to remain too long in the field a deal of damage arises from the bottoms of the stacks being in contact with the ground, and by the depredations of vermin. *C.*

AGRICULTURAL STATISTICS.

THE following letter and enclosure have been sent from the Home Secretary to the Lords-Lieutenant of counties:—

"Whitehall, July 20, 1866.

"Sir,—I have the honour to transmit to you the copy of a letter, with its enclosures, which has been addressed to this department by the Board of Trade; and I request that you will be so good as to cause the purport of it to be made known generally to the magistrates of your county.

"Her Majesty's Government have no doubt that you will concur with them in opinion that it is important to obtain with as much accuracy as possible the information which the Board of Trade is endeavouring to procure, and they trust that the county magistrates will readily give any assistance in their power towards the attainment of this object.—I have the honour to be, Sir, your obedient servant,

"S. H. WALPOLE."

The following is the enclosure referred to:—

"Office of Committee of Privy Council for Trade,

"Whitehall, 23d June, 1866.

"Sir,—I am directed by the Lords of the Committee of Privy Council for Trade to request that you will inform Secretary Sir George Grey, that as arrangements have been made by this department for the collection of returns of the extent of land in Great Britain under the various crops in the present year, my Lords are very desirous that the county magistrates in Great Britain should be again requested to afford the Government their valuable assistance in obtaining from the several occupiers of land information respecting the agriculture of the country. My Lords have already expressed their obligation to the magistrates for their co-operation in the collection of the live stock returns, which could not have been obtained in so complete a manner without the help and influence of the magistrates and other country gentlemen.

"The Board of Inland Revenue have undertaken the distribution and collection of the schedules prepared by the Board for the return of the acreage of crops; and my Lords trust that the officers employed upon this occasion will be able to carry out this inquiry as successfully, and with as little objection on the part of the occupiers, as the officers who were charged with the duty of collecting the returns relating to live stock.

"I beg to enclose, for the information of the magistrates, copies of the form of schedule which will be issued for the return of crops, and of the directions for the proper filling up of the schedule which will accompany it.

"The return will only be required from occupiers of, and above, 5 acres of land, and the schedules will bear the Post-office stamp for free transmission to and from the several occupiers.

"My lords trust that the magistrates will be good enough to endeavour to remove any prejudices upon the part of their tenants or other neighbouring occupiers against making a return of the extent of their crops, which is only required for public information, and will only be published in an aggregate for the counties, or other large divisions of the country.

"The occurrence of war in many of the corn exporting countries of Europe causes a knowledge of the producing capacity of the United Kingdom to be a matter of considerable interest at the present time.

"I have the honour to be, Sir,

"Your most obedient servant,

"The Under Secretary of State, "J. EMMERSON TENNENT.
Home Office."

The following further correspondence explains itself:—

"Kimmerghame, Dunse, July 12, 1866.

"Sir,—In reference to the schedules for return of acreage of crops recently issued from your department, a difficulty occurs which may have the effect of producing great incorrectness in regard to the extent of land under permanent pasture. In most parts of Scotland the custom extensively prevails of letting by auction or otherwise for the season Grass fields in the vicinity of mansion-houses. The proprietors of such fields and their tenants are at a loss to know whether they ought to be returned as in the occupation of the one party or of the other; and there is accordingly no small danger of their being returned in some cases by both parties, and in other cases by neither. To the obvious plan of requiring the return to be made by the tenant there is this objection, that when he is not the occupier of other lands in the neighbourhood, his name and residence must frequently be unknown to the person by whom the schedules are issued. On the other hand, if the return is intended to be made by the proprietor, care ought to be taken that the fields in question are not also returned by the tenant, who may have received a schedule applicable to other land, of which he has a more permanent occupation. An explanation by your department of what is expected in this matter would evidently greatly conduce to the accuracy of the returns.—I have the honour to be, Sir, your humble servant,

(Signed) "A. CAMPBELL SWINTON."

"To the Secretary of the Board of Trade."

"July 23, 1866.

"The Secretary to the Board of Trade presents his compliments to Mr. Campbell Swinton, and with reference to his letter of the 12th instant he begs to inform him that it is considered that land let or sub-let in the manner described by Mr. Swinton should be returned by the owner or permanent tenant, who may let or sub-let Grass land for grazing purposes. Instructions to this effect have been issued by the Board of Inland Revenue to their local officers. The Board of Trade are much obliged to Mr. Swinton for his communication upon this subject."

THE CATTLE PLAGUE.

CENSUS DIVISIONS.	1 Number Attacked.		2 Result of Reported Cases from Commencement of Disease.				
	Week ending July 21.	Week ending July 28.	Attacked.	Killed.	Died.	Recovered.	Unaccounted for.
Metrop. ..	—	1	7,910	3,428	3,714	318	450
S. Eastern .	17	—	4,893	1,767	2,539	173	171
Eastern Co.	26	42	20,792	8,794	10,070	1,541	387
Eastern Co.	26	12	11,483	5,444	4,851	789	399
S. Western .	32	27	1,834	729	827	207	71
W. Midland.	21	63	14,916	6,396	6,696	1,519	905
N. Midland.	18	18	11,897	10,066	6,271	1,754	646
N. Western.	60	30	72,940	25,012	33,037	8,472	3,519
Yorkshire .	10	12	34,594	7,937	18,358	5,938	2,361
Northern Co.	—	—	8,646	4,931	2,613	974	118
Monmouth. & Wales .	11	3	8,257	1,175	5,793	1,107	200
Scotland ..	1	—	46,861	6,263	28,088	10,707	1,803
	207	208	251,228	82,780	124,257	33,261	11,030

Back Cases reported in the week ending July 28:—South Midland Counties, 1; North Western Counties, 33; Yorkshire, 1.

The Return shows that 208 attacks were reported to have occurred during the week ended July 28, being an increase of 1 on the previous week.

Correcting the total by adding an estimated average of attacks communicating during the week, but which may be subsequently included under the heading "back cases," the number for the week will be 231.

Fresh outbreaks took place in 46 farms or places where cattle are kept; the number of such outbreaks in the previous week being 33.

Two Inspectors who reported cases last week have not reported in time for this return—viz., for the county of Chester, 1; and for the East Riding of York, 1. These Inspectors reported 2 cases last week.

REPORTS OF THE HARVEST.

FROM OUR OWN CORRESPONDENTS, AUGUST 4, 1866.

COUNTY.	WHEAT.	BARLEY.	OATS	BEANS.	PEAS.	POTATOS.	ROOT CROPS.	HAY.	WHEN WILL HARVEST BE GENERAL?	NAME AND ADDRESS
SCOTLAND.										
INVERNESS	Full average	Below average	Much below average	Few sown	Few sown	Good	Good	Light	Latter end of Aug.	Alex. Simpson, Seafield
BANFF	Average	Under average	One-third under average	....	....	Likely to be a fair crop	Very good	Very light	About three weeks	John Barclay, Braes of Enzie, Fochabers
ELGIN	An average crop light in the straw	An average crop	A very light crop; far below an average	None	None	Very fine appearance, but disease	Turnips an average; very fine crop	A very light crop	In about 10 days	Jas. Hamilton, Forres
ABERDEEN	None	Nearly an average	Below an average	None	None	Average	Look and promise to be good	Below an average	10th Sept.	William M'Combie, Tillyfour
	No Wheat cultivated in this district	About an average crop	Oats after lea nearly average; but after Turnips half a crop	....	....	A good average crop	Turnips promise well, on clay soils defective	....	From 4 to 5 weeks hence	James Cruickshank, Sittyton, Aberdeen
PERTH.....	Average	Nearly average	Under average	Very poor	....	Very promising	Turnips a full third above average	Light crop	From 20th to 25th Aug.	David Edie, Elliothead, Bridge of Earn
MORAY	About an average	Under average	Far under average	....	....	Very good	Very good	Very bad	About third week in Aug.	John Grigor, Nurseries, Forres
FIFE.....	Under average	Average	Under average	Average	....	Good	Bad	Light	Aug. 15 to 20.	Robert Russell, Pilmuir
	Average	Average	Very light	Average	....	Full average	Unpromising	Light	20th Aug.	Walter Veitch, Kinghorn
	Average	Under average	Under average	Under average; not podding well	None	Under average; late	Turnips under average; very blank	Under average	Last week of Aug.	John Morton, Lambiehe-thum, by St. Andrew's
	Average	Average	One-third under average	Average	Average	Average	Much under average	Under average	August 22	John Pitcairn, Kinnaird by Newburgh
STIRLING	Nearly an average, but much laid	About an average	Average, but below average	Scarcely an average	....	Good	Very light in clay land almost nil	About average	About 25th Aug.	Alex. Buchanan, Whitehouse Farm
	Full average	Good	Deficient; short in straw	Somewhat deficient; generally healthy	....	Generally good, rather deficient on clay soils	Turnips on dry fields good. On clay almost a failure	Fair crop	About end of August	W. Drummond & Sons, Stirling
HADDINGTON ..	Grain average; straw under average	Grain average; straw under average	Under average	Under average	....	Above average	Below average	Under average	Middle of Aug.	Patrick Shirref, Haddington
EDINBURGH.....	Sound through the ground; short of straw, and under an average produce	An average crop in the low district, in the high district under an average	Very short of straw; and under an average in produce in all this county	Not many sown, the crop over an average	None	Promise to be a good crop; and no appearance of disease as yet	Two first sowings of Turnip cut off by fly, for about an average	Three-fourths of average, with a poor prospect of a second crop	This week of Aug.	——, Dalkeith, N.B.
	A full average	A full average	Slightly under average; short in straw	A good crop	None grown in the district	A full crop, as yet perfectly healthy	Turnips nearly average	An average crop	About Sept. 1	James Hislop, Mid Calder
RENFREW.....	Average crop	Under average	Light crop	Average crop	. . .	Healthy and full crop, no disease	...	Light crop	In 3 weeks.	George Boyd, Renfrew.
AYR	Early sown average; spring sown under average	Light	Short of straw; about average	Considerably under average; a poor crop	None	Early Potatos plentiful and very well; late kinds healthy	Turnips looking but indifferent; Mangels [illegible]	Light	18th Aug.	Alex. W. Ralston, Lagg by Ayr
	Average	Average	Full average	Fair	. .	Good	Under average	Light	About Oct. 7 Sept.	William Orr, Beith
SELKIRK	Average	Under average	Much under average	None	None	Average	Average	One-third under average	First week of Sept.	James Stalker, Galashiels
PEEBLES	Good appearance, little grown	Light bold short straw	Very light	. . .	. . .	Late, much blighted by frost in places	Turnips indifferent; and [illegible] worst crop for years	Very light, but well got	End of Aug.	James Lyle, Innerleithen
ROXBURGH	Average; but very small breadth under crop	Nearly an average	Much below average; a very poor crop	Average	Average; very few sown in the district	Above average, promising a fair excellent crop	Very bad; the worst appearance for years	Two-thirds of a crop, but well secured	About Aug. 21	William Scott, Spylaw, Kelso
	Average	Under average	Under average	Under average	. .	Good	Inferior	Light crop	About Sept. 1.	Geo. Ballingale, Clarilaw, by Selkirk
BERWICK	Average; small breadth sown	Average	Under average	. . .	....	Average	Turnips under average on light land, and very bad on strong land	Very light crop	In first Aug.	George Logan, Humehall, by Stitchill
WIGTON	Good	....	Good; but light on very dry soils	....	....	Good	Rather late, but [illegible] fast	Light crop	About the 25th Aug.	A. H. M'Clean, Auchincad
ENGLAND.										
NORTHUMBERLAND	Decidedly below average	Nine-average crop	Average	Good crop	. . .	Average	Very good on [illegible] and in strong land	Fair crop	Early in Sept.	Jacob Wilson, Woodhorn Manor
* Inside land.	Full average	Average; short straw	Average; short straw	None	Good	Good	Very good	Light	About August 15	Thos. F. Dods, Anick Grange, Hexham
* Outside land.	Under average	Under average	Under average	None	Poor	Poor	Very poor	Light	End of Aug.	Ditto
	Not equal to last year's appearance	Average	Good	Few grown	Good	Promising	Backward	Light	Very late	John Gray, Lilywood House
	Average	Average	Very short and under average	....	....	Promising	Promising	Average	In a month	Marshall Stephenson, Foxstones
	Average	Under average	Under average	Few sown	Very few sown	Average	Average, but very bad elsewhere	Light	About Aug. 20	George Laing, Cornhill
CUMBERLAND ..	Full crop	Good	Thin light crop	None grown	Few grown	Rather backward, and badly in the [illegible]	Except Swedes all are very promising	Upon the whole, an average crop	About September 1	Richard Harrison, New Biggen, near Penrith
	Over average; much laid	Over average	Under average	Average	None sown	[illegible]	Looks like making a large crop	Under average	About Aug. 26	Thomas Gibbons, Burnrigg Nether Hall
	Average	Average	Short	None	None	Good	Depending on weather	Very good	Latter end of August	Thomas Wilson, Beauthorn, Ullswater
	Full average	Average	Average	....	....	Very good	Magnificent	Light	August 20	[illegible] South, The Luban, Penrith
WESTMORELAND	Generally good	Good	Full average	Good	None	Good to all appearance	Bad prospect; many failures	Full average crop	About Aug. 14 to 21	William Key, Casterton Hall, Kirkby-Lonsdale
	Very good	Light crop	Light crop	None	None	Average	Very good	Under average	Last week in August	Jonathan Robinson, Wreop, *viâ* Penrith
DURHAM	Very good	Good	Good; rather short	Good	Average	Very good	Generally good	Average	Middle of August	Robt. B. Dixon, Darlington
	Average	Average	Bad	None	Below an average	Good	Very promising except in stray [illegible]	Average	In a month	George Crofton, Kimblesworth
YORKSHIRE.....	Good	None	Good	Fair	None	Good	Good	Average in some parts, and others light	Middle of August	William Irvine 20, Cheapside, Halifax
	An average	Above an average	Not good	Good	Good	Good; not many grown	Very promising	Below average	About last week in Aug.	R. Bell, Layton Fields, Cahwell, Darlington (North Riding)
	Average crop; backward and lodged	Great crop; very much laid	Average crop	Beans great straw, but not very well cornel	Good crop	Good where forward, and free from disease	Backward, but will be pretty good	Great crop; well got	About August 12	John Grace, Swiss Cottage, Hessle, Hull
	Average	Full average	Scarcely an average	Average	Average	Very promising	Very promising	Average	Last week in August	H. J. Turner, Land Agent, Richmond

REPORTS OF THE HARVEST—(*Continued*).

COUNTY.	WHEAT.	BARLEY.	OATS.	BEANS.	PEAS.	POTATOS	ROOT CROPS.	HAY.	WHEN WILL HARVEST BE GENERAL?	NAME AND ADDRESS.
ENGLAND.										
YORKSHIRE	Good average	Good	Not so good as last year	Look well	Good	Forward planted look well	Promise well	Well got in	August 17	Thos. Taylor, Darrington
	Average	Good; much laid	Light	Fair	None grown	Promising	Very promising	Light; well got	August 14	Peter Stevenson, Rainton, Thirsk
	Scarcely an average	Very good	Good	Good	Good	Promising	Promising	Light; well got	Middle of August	Brady Nicholson, Sturton Grange, Garforth, Leeds
	A good average crop, and very promising	A full average crop	Very good	A fair crop, and free from filth	Very few grown	Very promising, and as yet free from disease	Turnips very promising since the rain. Swedes above average	A good average crop	....	Henry Briggs, Wakefield (West Riding)
	Little sown, and full one-third below average	Great order, and full average crop	Very light	Few sown, but very good	One-half the third lower average crop	Very promising, but late	Turnips full average	Full crop, and mostly well got	First week in September	John Outhwaite, Bainesse, Catterick
	Full average, but rather backward	The same	The same	Middling; below average	Fair	Suffered from dry rot; much below average	Rather back ward; promise to be good	A fair average	September 10	—, Whitby
	Under average, very much broken by storms	Good average crop, very much broken by storms	Very light	Average	...	Good	Turnips and Mangels very good	Heavy crops, and mostly well won	September 1	Thos. C. Heath, Wadsley
LANCASHIRE ...	About an average, or more	Full average	Full average	Few grown	Very few grown	About an average; very little disease	Promise fair	Under an average	About third week in August	Henry White, Warrington
	....	....	....	....	..	...	....	1-3d over in bulk; 4-5ths well harvested	Hay harvest was general about 12th ult.	George Story, Brunshawe House, Burnley, Lancaster
	....	....	....	....	....	Average crop, and looking very well	Very good, but extremely grown	Very good crops, and mostly got in	The hay harvest is over, and ready for a second crop	Robert Tweedale, Broadley Vale, near Rochdale
	Looks well, and must, if weather permit, be a good crop	A good crop; quite average	Average, altho' the weather has been too sharp	Much improved, and will make average	....	Look well, and a large breadth planted	Rather late, but look well generally	An abundant crop, and well got	Must be three weeks yet	Richard Robinson, Garstang
LINCOLNSHIRE ..	Average	Good	Average	Good	....	Good	Full plant, but late	Heavy	August 22	Croft Sharpley, Acthorpe, near Louth
	Very good	Good	Very good	Good	Good	Good	Variable	Great crop; well got	August 17	W. Fancourt, Asiackby
	Good	Good	Good	Above average	Above average	Above average	Promising to be good	Heavy average crop	A good crop	In a fortnight in future weeks	William Bell, Claxton; Jas. G. Dixon, Carlton
	Average crop, but the later fields will not be good in quality	A full crop; the rains must injure the quality	A short breadth, but good	Good	Full crop, injured by the weather			Swedes very partial; coleseed Tumips good		
	Heavy, many fields blighted	Heavy	Average	Very few grown	Very few grown	Very few grown	Declining	Good	About August 20	Francis Sewerby, Aylesby
	Much laid and damaged, but supposed full average	None	Very good	Very various; barely average	Good	Full crop; showing disease spreading rapidly	Promising	Good crop	Oct. 1st, the 4th; Wheat, 14th	Thomas Wilkin, Deeping St. Nicholas
	Scarcely an average	Good	An average	Good	Good	Good	Good	Good	About August 20	H. Dudding, Pardon House
	Over average, but much storm broken	Average, but damaged by wet	Average; lodged by storms	Average	Average, but foul with weeds; suffering now from wet.	Good crops, but signs of disease	Mangels average, some patchy; Swedes forward and good everywhere; Turnips growing well.	Abundant, and well harvested	August 15	John Algernon Clarke, Long Sutton
DERBYSHIRE	Average	....	Average	....	....	Good	Good	Very good	Middle of Aug.	John Parkin, Ibbridgelow
	....	....	Above Average	....	....	Very good; no disease	Very good	Average	September 10	Benjamin Sowdell, Hartington
NOTTS	Not good; in many places ripening prematurely	Good	Not good	But	Good	Good	Not good, but improving	Good	August 6 to 10	Wm. Chowler, jun., South Muskham
	Good	Good	Good	Very good	Fair	Good	Very good	Fair	August 6	Charles Paget, Ruddington Grange
* Loamy soils and good clays.	Very good; average	Good average	Average	Under average; much straw; badly podded	Very good average	Good	Average	Over average, and well got	About August 15	Charles Doncaster, Ridding's Hill
* Sandy soils and forest.	Light; under average	Average	Average	Not grown	Not grown	....	Very good	Under average	About August 15	Ditto
CHESHIRE	About average; full crops much laid by late rains, some plants of blight in the corn in some places	Very full on good land; on hot burning soils rather light, much laid, above an average	Not a very full crop, generally below an average	Healthy, and a full crop generally, but in many instances a deficiency of pod, consequent on dry weather	Early Peas injured by frost, and not very full on the ground; no disease	A fair crop, much improved by late rains; symptoms of disease	Mangels and Swedes very promising	Light on the upland; on the sound meadow land very good crops	Towards the end of the second week in August	William Pidin, Stapeley Hall Hall
	Promising; over an average	But little grown; not very good	Short in the straw; under an average	An average in appearance	None grown	Various; hardly an average	Mangels late and poor; Turnips fair, but rather late	Clovers pretty good; all other kinds light; well secured	About August 8	W. B. Burnham, Spital
	Good	Not much grown; good	Rather light, except on cool land	Good	None grown	Light crops generally, and healthy	Promise to be an abundant crop	Light generally	Middle of August	D. Reynolds Davies, Moreton Hall, Knutsford
SHROPSHIRE	Thin on the ground; rather under average	Average	Average	Under average	Average	Average	Bad on heavy strong land; good on light soils	Fair crop, and never better got	August 8	John Rawlings, Stoke, Tenbury, Salop
	Good yielding crop	Very good	Fair	....	Very good	Healthy	Plants very regular	Light, but very well harvested	About August 13	P. W. Bowen, Shrawardine
	Quality fine, but quantity under average. Was frost-bitten, and a good deal has only thrown up one stem	Good	Good	Very few grown generally, but more this season, in lieu of Turnips, in consequence of cattle plague, and	Same as Beans	Promising, but the old disease has within the last few days, since rain, shewn slightly in gardens	Turnips, our principal root crop, with a few exceptions, very promising	A heavy crop on water meadows, a light crop on the uplands; nearly all in excellent condition.	Middle of August	W. B. Green, Market Drayton
	The bulk of straw deficient, the ears fruitful; it cannot reach an average	Very good; a full average	Very deficient; far below an average	Not much grown in this district, crop very good	A full average	Owing to the late planting, the crop will be deficient	Not very promising	Except on irrigated meadows, a light crop; about half an average	August 20	Evan Davies, Patten, Much Wenlock
	Generally light crop of straw; ears kind and good, not average	Heavy crop of straw, will be a full average	Fair crop	Very good	Very good	Promising	Promising	Rather late, but well harvested	Middle of August	Richard Shirley, Bau cott Munslow
	Shaping White good and much planted	Average; breadth reduced	Tolerably good	Heavy where grown	Average, but generally very foul	Healthy at present	Live and promising	Good crops, and well harvested	Now, August 6	Henry Smith, Sutton Maddock, Shifnal
LEICESTERSHIRE	Good where laid up sound and dry at seed-time; very thin and blighted where deep-drained, and laid flat on old land; not average crop.	Good where sown early on suitable soil; indifferent when late on clay land; perhaps an average crop	Average crop	Not average; the top bloom not being filled through drought	Generally good	Good, if not injured by drought	Mangel good, Swede Turnip very indifferent through fly and drought: common Turnip now being sown	Seeds generally light; Hay good and well got	If fine weather, general after Aug. 15	Francis Spencer, Alma House, Claybrook Magna, Lutterworth

REPORTS OF THE HARVEST—(*Continued*).

COUNTY.	WHEAT.	BARLEY.	OATS.	BEANS.	PEAS	POTATOS.	ROOT CROPS.	HAY.	WHEN WILL HARVEST BE GENERAL?	NAME AND ADDRESS.
ENGLAND.										
LEICESTERSHIRE	Generally good	Very good	Good	Not much grown	Few grown	Look very well	Mangel good; Turnips generally indifferent	Abundant	Oats in 10 days; not general till three weeks	R. W. Croswell, Ravenstone, Ashby-de-la-Zouch
STAFFORDSHIRE	Scarcely an average	Good; full average	Under average	Good crop	Good crop	Promising	Turnips an average; Mangels under average	An average crop, well harvested	Aug. 6	Thomas Byrd, Mitton, Penkridge
NORFOLK	About average. Average in appearance; some blighted	Over average Good	Good Good	Under average Promise to be a good crop on heavy land	Good Good	Under average . . .	Good Good	Good Good	Aug. 13 About the middle of Aug.	W. Cubitt, Bacton Abbey John Hudson, Castle Acre Lodge
	About an average	About an average; ripening too soon in some places	Full average	....	Good	Good; disease has shown itself in places	Excellent	Very good	Aug. 7	——, Watton
	Partially blighted, on some soils more than others; but on the whole a good average	Good crop in bulk; promises a good yield of fine malting quality	A good crop in places; grain fine quality	Slightly attacked with lice; where free a fair crop	An abundant crop	Fair crop of good sound bulbs	Mangels much improved of late, only fair crop; Turnips grow rapidly, an average crop	Superabundance of meadow hay, Clover, and Trefoils, good	About Aug. 8	W. H. Taylor, Merchant Wymondham
	Good	Very good	Good average	Good	Above average	Good at present	Never more promising	Large crop and well secured	Aug. 9 to 10	Hugh Aylmer, West Dereham Abbey
	Fair average; a little complaint of blight, especially on the fen land	Average	Average	Average	Good	Disease becoming prevalent	Very promising	A great crop	In about 8 or 10 days	Thomas Brown, Denver, Downham
SUFFOLK	Short in the straw, but ears good	About average; rather light than not	Scarcely any grown	Good show for crop, and plenty of straw	Very good	Good; just begin to be diseased	Ago Average Mangels and Turnips	Very heavy crop, and in best cases got up in good order	About Aug. 6	Samuel G. Stearn, Brandeston, Wickham Market
	Below the average; slightly blighted; injured by the midge	Good on light and mixed soils; below average on good heavy land, very bad on inferior heavy land	But few grown; those few very good	Winter Beans good; spring Beans much injured by lice	A splendid crop, a few already harvested, and in an instance or two the land sown with Colesced	But few grown good; but the disease is making its appearance	Mangels splendid on light and mixed soils, a bad plant on heavy lands; Swedes and Turnips diseased	Upland hay good; clover hay fair; low meadow and marsh hay a heavy crop, but unsecured and injured	Aug. 15.	T. Chapman Whiting, Barsham, near Beccles
	Better quality than quantity; under average	A fair prospect, but a light crop upon the stiff soils	Good; but very few grown in this district	Partial	The best crop for many years	Good	Good	One of the largest crops ever grown	Aug. 13	Henry Edwards, Woodbridge
	Average and much improved	Average; much improved	None grown	Average; some lice	Above average	None grown for crop	Turnip taken by fly; Mangel promising	Over average; fine quality; well got	Aug. 10	George Edwards, Framlingham
HUNTINGDON ..	Under average	Average	Good	Good	Good	Average	Fair plant, requires rain	Good	Aug. 4	——, St. Ives
	Full average	Under average	Bad	Very good	Exceedingly good	Most promising	Backward	Very abundant	Aug. 6	Peter Purves, Brampton
NORTHAMPTON ..	Good; over average	Very good, much over average	Not average	Under average	Very good	About average; partially diseased	Various, and late	Good, and well got	Middle of Aug.	J. B. Smeeton, Cromwell House, Naseby
	Good	Average	Under average	Under average	Good	Good; but symptoms of disease	Backward; but promising well	Good; and well saved	Aug. 9	Peter Love, 15, St Giles Street, Northampton
WARWICKSHIRE	Very thin, little under average	Very good	Good	Good, but higher blighted	Good, but thin	Full crop in appearance	Very fair; promise well	Very good	Aug. 6	John Ford, Morton Hall
	Nearly an average	About an average, but late	None	Good crop of straw; badly corned	Good	Yield well; greatly diseased	Very promising	An average, most of it well gathered	Aug. 6 to 8	J. C. Adkins, Milcote
	Average	Average	Badly average	Under average	Good	....	Mangels good, Turnips various	Good	Aug. 12	J. H. Barlow, The Chase, Kenilworth
	Under average, thin	Average		Under average	Average	Good at present	Mangel and Swedes good plant; Turnips bad	Average	Aug. 6	William Gibbs, Alveston
	Not an average; thin and small in the ear	An average crop	Very good; not a great many grown	Good; an average crop	Good crop	Good; not much disease to be seen at present	Mangel Wurzel very good; Swedes backward	Quite an average crop, good crops of Clover and Rye-grasses	Not before Aug. 10	John Baldwin, Luddington
	A full crop, and promise a good yield	Very good crops	A fair average crop	Very indifferent	Very good	Very promising, and at present show no disease	Turnips very partial. Mangels very good	Very light crop, but well harvested	In about a fortnight	William Dester, Seckington
WORCESTER.....	Good	Good	Good	Good	Good	Early good, late ones in want of rain	Plant regular, badly in want of rain	Good; over an average	Next week	Joseph Matthews, Newland, Great Malvern
	Full average	Full average	Full average	Full average	Full average	Early sound, but small; late and as yet	Mangels good; Swedes improving; Turnips injured by fly	Uplands light, meadows good; well secured	Aug. 4	Henry Hudson, The Elms, near Pershore
CAMBRIDGESHIRE	Very good crop; rather too much laid, and where laid early unaltered	A heavy crop	A full average crop	A bulky crop of straw, and fairly podded	Both straw and corn good	Plenty of tops; dry weather and no rain wanted	Good	Heavy; large acreage	Aug. 7	Alfred S. Ruston, Aylesby House, Chatteris
HEREFORDSHIRE	Thin; not aver age	Good	Average	Under average	Average	Good	Very late	Light	Aug. 6	Dearman Edwards, Brinsop Court
	Under average	Average	Average	....	Average	Promising; no blight yet	Very promising	Average crop; well secured	2d week in Aug.	Henry Pride, The Cwm, near Monmouth
	Below an average quality; very late	O ran average	Average	Over an average	Over an average	Average	Deficient plant; suffering from want of rain	Average crop; well secured	August 6	T. Duckham, Baysham Court, Ross
MONMOUTH	Average	Under average	Good	Light	Good	Fair promise at present	Good; but suffering from want of rain	Light	About Aug. 4	Thos. Beckingham, May Hill
	Fine quality, and about an average	Above average, generally very heavy	Average	.	....	Look well	Very promising	Light crop; well ended	August 10	G. R. Greenhow-Relph, Beech Hill, near Usk
GLOUCESTERSHIRE	Not stout, but fair average	Very good; over average	Thin, but about average	Fair	Very good; well podded	Good as yet	Very good	Good crop, much well made	About Aug. 6	Stiles Rich, Didmarton
	Under average	Good	Average	Good	Average	Average	Promising	Good	2d week in Aug.	Giles Edmonds, Eastleach
	An average crop	Good	Fair	Blighted, bad	Good	Good	Inferior	Less than average	Peas now cutting; earliest Oats and Wheat by 2d Aug.	——, Bristol
	Average	Over average	Various	Good	Excellent	Good	Very promising	Capital, quantity and quality	Aug. 6	John F. Peacey, Winchcomb
	An average	Above average	An average	. ..	Moderate	....	Very promising	A good crop	About Aug. 1	J. M. Read, Elkstone
	Under average	Over average by present appearance	Nearly aver	....	....	Middling crop	Very fair and promising	Seeds very light; Grass above average	Middle of Aug.	John Wells, Hampnett, Northleach
	Straw short; barely average	Heavy crops; above average	Above average	About average	Above average	Promising for a large crop	The best for years past	On good warm soil a good crop, light on clays	Aug. 6	John Cobban, Whitfield, Berkeley

REPORTS OF THE HARVEST—(*Continued*).

COUNTY.	WHEAT.	BARLEY.	OATS.	BEANS.	PEAS.	POTATOS.	ROOT CROPS.	HAY.	WHEN WILL HARVEST BE GENERAL?	NAME AND ADDRESS.
ENGLAND.										
GLOUCESTERSHIRE	Scarcely promises to be an average crop	Looks very well; there is a prospect of a good crop	Are very promising; above an average crop	Present a very healthy appearance; we hope for a stout crop	A good crop	Free from disease; plants looking fresh and strong	A good plant of all kinds of roots; improved by rain	Has been an unusually good crop	August 11	Harry Rivington, College Farm, Cirencester*
	About 12½ per cent. below average of past four years	A full average crop	Barely an average; few planted	Rather under an average	Above an average	Very promising, if spared disease	A fair plant, but late from drought	About an average; pastures burnt up	About [August 10; nearly a week late	Wm. Woodward, Ash church, Tewkesbury
OXFORDSHIRE ..	Not average in quantity; many fields appear thin and the ears are shorter than usual, but being a favourable bloom, the quality will, I think, be good†	A very promising crop generally; likely to exceed the average of years in quantity, but quality will very much vary	Rather shorter in the straw than usual, but kind and well corned; the rough winds to-day will cause great waste where at all like ripe	Plenty of straw on most pieces; but not well podded	Good in general	Mostly looking well	A good plant generally, and much improved by the late rains; very promising for a full crop	A large breadth mown; good average crop in general; and a great portion never better secured on good land the crop was heavy of fine quality of Grasses	About the middle of next week in this district	George Garne, Churchill Heath, Chipping Norton
† Except on some light hill land, where a portion ripens prematurely; the late wind and rain will make it difficult to cut.	Very inferior	Generally good	A fair average crop	Very good on the strong land	Heavy crop of straw and well corned	Not yielding well, owing to the dry weather	A very good plant; late	Good crop	First week in Aug.	John Gillett, Oaklands, Charlbury
	Good on the lower soils; under average on the clay and hill lands	Above average	Under average	Good	Above average	Good at present	Full plant	Abundance and well secured	Commenced on the Oats and Peas Aug. 6	Matthew Savidge, Sarsden Lodge Farm
BUCKS.....	Good	Over average	Good	Very good	Good	Good; no blight yet	Very good	Heavy crop; mostly well secured	In a week	Edward Evans, Bovency Court, Windsor
	Thin on the ground, under average	Fair average	Good average	Considerable bulk; very little corn	Good	Good	Full average; Swedes rather backward	Excellent	About Aug. 10	John K. Fowler, Prebendal Farms, Aylesbury
	Under average	Under average	Under average	Average	Average	Few grown	Late and weak	Average	Aug. 9	William Smith, Woolston
	Average	Below average	Below average	Slightly blighted	Good	Good	Excellent	Abundant	Aug. 6.	W. G. Duncan, Bradwell
	Below average	Fair	Bad	Full straw; not well corned	Good	Look pretty well	Mangels good; Swedes promising	Good crops and well got	About Aug. 8	Alex. Fraser, Clayden, Winslow
BEDFORDSHIRE..	Average	Average	Good	Good; some blighted	Very good	Average	Good	Above average	Aug. 7	William Lavender, Biddenham
	Not average	Average	Average	Good	Good	Don't know	Good	Good	About Aug. 8	James Ross, The Hoo Park Farm, Luton
	Good, except on hot gravel and very poor clay soils	Good, except hot gravel and cold clay land	None	Very good	Very good	Very good	Good	Abundant	About Aug. 2 or 3	Thomas Edward Pawlett, Beeston
HERTS.....	The crop generally light; under average	The crop varies; not exceeding average	About average	The crop good; an average	Over average	Very few grown	Generally very promising	The first cut heavy, but very little afterwards	About Aug. 6	George Webb, Beaumont Hall, Redburne
	Barely average	Average	Full average	Average	Very good	Much complaint of disease	Very good	Very good	Aug. 6	John Bennet Lawes, Rothamstead
MIDDLESEX	Average	Average	Over average	Average	Average	Promising	Wurzel good; Swedes the same	Over average; well secured	Aug. 6	Thos. Hewett, Cranford, near Hounslow
ESSEX	Under average; short straw	Middling	Short straw; under average	Under average	Good	Good	Good	Good	Aug. 1	Collinson Hall, Navestock
	Under average	Average	Under average	Average	Over average	Average	Over average	Average	Aug. 1	J. J. Mechi, Tiptree Hall
	About average	Generally an average, but irregular	Good	Winter Beans above average.	Above average	Tolerably good	Well planted	Half got well; the rest injured	Aug. 6, weather permitting	A. Barfield, Dunmow
	Varies, nearly an average if the white blight does not increase	A fair average	Generally very good	The winter good; the spring have straw, and are podded when not affected with aphis	A good crop	Apparently good, if from this damp weather they do not catch the disease	Very promising	A large crop, the very early and the late well got; in the middle of harvest much spoiled	About Aug. 6	John Clayden, Littlebury, Saffron Walden
	Good; full average, well set	Good; average	Good; average	Not half a crop, from black bug	Good; much above average	Small, and partially diseased	Turnips a failure as yet; Mangels half a crop	Good, and abundant	Aug. 6	A. Hardy, sen., Maldon
	On strong clays defective, from 20 to 40 per cent.; on chalky marls good; on light gravelly soils fair (altogether I fear below average)	Promises fine quality and a good average	Good average crop	Hardly an average; damaged by black aphis	Early sorts good; later sorts blighted in upper blossoms	Look very promising; disease confined to wet shaded soils	Mangels late and defective in plant; Swedes much ravaged by fly; Turnips may be good	A good crop, badly got up till after the first week in July	July 30	Henry Dixon, Dorward's Hall, Witham
SURREY.	Not good, under an average	An average crop; but some pieces dying off prematurely ripe	An average	An average	Very good, over an average	A fair crop, some blighted	Generally good, but fears are entertained of the blacks	A heavy crop, and generally well secured	Wheat, Aug. 3 to 6; Barley, a week later	Edward Hilder, Woking
	Below average; light lands deficient; quality good	Average	Average	Nearly a failure; blighted	Average	Average, partially diseased	In general very deficient, good plant, but late	Clover good, well secured; second crop of Clover promises well	Aug. 6	William Willis, West Molesey
	Good average on light soils, but below average on wet clays	Fully an average	Above average	....	Good	Promising to be a good crop; symptoms of blight	Mangel various; Swedes, &c., backward	Good crop, but a good deal spoilt by rain	Aug. 5	James Arnot, Woodcote
BERKS.....	On strong and light soils poor; medium soils good; below average altogether	Average	Average	Very good	Average; but not much grown	Below average; diseased in many places	Mangels good; Swedes good	Very good	First week in Aug.	James Brebner, Norfolk Farm, Windsor Park
	Average, except on some light lands (which have a thin light crop)	Above average	Heavy crop	Full average	Full average	Full crop, but disease appearing in places	Mangel and Turnips good, but Swedes want rain	Heavy crops, except some high lands	By Aug. 10 or 12	Martin Hope Sutton, Reading
	Average	Above average	Rather below average	Above average	Much above average	Sound and good on dry soils, but diseased on stiff soils	Wurzel regular; Swedes generally good; Turnips good	Above average generally, but partially damaged by wet	July 30	W. Bulstrode, Mount Farm, Cookham Dean
	Good quality, under average 10 per cent. under average	Very good	Average	Above average	Average	Very good	Very good	Average, and well secured	Aug. 6	John Adnams, Thatcham
	Some Wheat is good, but more thin Wheat and less straw than for many years; cannot be average	Good	Good	Good	Good	Good	Good	Good	July 30	James Williams, Shippon Abingdon
		Very much improved, and more straw than was expected; some pieces not ripening a good colour; about an average	Very short in the straw, but some very good; about an average	Very few planted; promises to be a an average	Very good; full average	Very promising, but complaints are more common every day regarding the disease	Never a more general plant; injured by want of hoeing; and now by wireworm	A fair average cut, and mostly well secured	I began on the 1st; will be general the 6th	Thos. Owen, Clapton, Hungerford

* The above statement of the appearance of the crops applies strictly to my own farm; in most cases I believe it correct with regard to those of the neighbourhood, but I have not sufficiently noticed Beans, Potatos, and Hay to be able to give an opinion.

REPORTS OF THE HARVEST—(*Continued*).

COUNTY.	WHEAT.	BARLEY.	OATS.	BEANS.	PEAS.	POTATOS.	ROOT CROPS.	HAY.	WHEN WILL HARVEST BE GENERAL?	NAME AND ADDRESS.
ENGLAND.										
BERKS	Average	Full average	Very good	Good; patches of blight	Good	Good	Good	Fair crop; latter part well made	Aug. 8.	E. W. Moore, Coleshill
SOMERSET	At least 5 bush. per acre under average	Under an average	Good	Winter Beans good, spring Beans a failure	Good	Promising	Bad, particularly on heavy land	A light crop, well made	Now	Walter Farthing, Stowey Court, Bridgwater
	Good	Very good	Average	....	....	Generally good; disease appearing	Good, but late	Full crop and well saved	End of Aug.	John B. Collyns, Dulverton
WILTS	Good average crop	Over an average	Various; under average	Good average	Very good	Good; disease commenced in some places	Promising	Good crop, mostly well made	Aug. 2	Thos. Arkell, Pen Hill, Swindon
	With few exceptions bad	Good	Good	Promise well	Very good	Very good	Good	A good crop	Wheat by Aug. 10	——, Swindon
	Considerably under the average of the last 10 years; straw also very short	Very good	Very good	Very good	Very good	Pretty good	Pretty good, but want rain	Hay heavy, and got well, especially from water meadows	Aug. 7	John Combes, Tisbury
	Thin plant, well corned, average	Good, above average	Variable; much improved of late; qy. average	Good; over average	Good; above average	Promising, little apparent disease	Good; far better than of late years	Seeds good; meadow hay gathered late, but very fair crop	August 8	J. Lynch Fletcher, Charlton
	Not so good as usual	Average	Average	Rather blighted	Good	No disease as yet	Never better	Good, and well harvested	From Aug. 7 to 14	T. Pearce Brown, Burdcrop, Swindon
	Average	Above average	Average	Average	Above average	Above average	Good average	Average; good quality	August 6	Edmund Ruck, Castle Hill, Cricklade
	Short in the straw, ears well filled, but in some instances struck with blight	Generally good, but in places it is going off prematurely ripe	Good	Winter good; spring an average crop	Good	Fair crop; slightly diseased	Good plant; they want more rain	Good	By Aug. 3 or 4	James Rawlence, Bulbridge, Wilton, Salisbury
	An average crop, vastly improved during the last month	An average crop	A full average	....	Above an average	Very good; no disease at present	Promises for a full crop	The best crop we have had these 4 years	In about 3 weeks	J. A. Williams, Baydon
	A fair average	More than average	Average	Average	Full average	Good prospect	Good prospect	Full crop	In about a week	Geo. Brown, Avebury
KENT	A good average crop	Under an average, of inferior quality	One fifth over an average; quality good	About an average	Above an average	Look remarkably well at present	Very good	Over average; generally well secured	August 1	Wm. Manser, Dumpton, Ramsgate
	A good average, and mostly of excellent quality	A very partial uneven crop, under an average	Very good	Considerably above an average	The greatest crop for many years	Good, but small	Very good	Very good, with a good breadth	Aug. 1	Robert Matson, Wingham
	At plowstram in plant but ears well filled out	Very early sown Barley much blighted; later sown looking well	Generally over an average, though there are thin pieces	Short in straw and thin in plant, but well podded	Generally a good crop	No appearance of the blight at present	On the whole good	Good	About Aug. 8	Mark Sandford, Martin, near Dover
	Bad	..	Good	....	....	Good	Mangels good; wanting rain. Turnips late	Good	Next week	Edward Sheppard, North Park Farm, Lewisham
SUSSEX	Under average	Over average	Under average	Under average	Average	Very good, little or no blight as yet	Under average; late but very growing	Under average	About Aug. 10	John Brotherston, Robertsbridge
	2 or 3 sacks below average	Good; above average	Good	Average	Good, above average	Good, blighty	Good	Good; average	Now	James Eamos, Linch, Midhurst
	Below an average	Average	Average	....	....	Good	Early sown good, late sown bad	Average, but much of it damaged by rain	Aug. 1	Fred. F. Hallett, The Manor House, Brighton
	Thin; good in ear, but will not be equal to last year by fully one-fourth	Fair crop, but not much cultivated in this district	Straw in some places short, but in general well corned	Looking well promising a full average	A full crop, and plenty of haulm	Good, but a few patches blighted	Very promising where put in early	The thin soils light, but on clay a full average	About Aug. 6	Robert Sharpe, Courtlands, East Grinstead
	One quarter an acre under average	Average	Under average	Much under average	Average	Very good	Promising	Light crop; good quality	July 30	H. Scott Hayward, Folkington
HANTS	Under average	Average	Average	Good	Good	Good	Very good plant, but rain is required	Above average	Aug. 6	Hugh E. Raynbird, Basingstoke
	Deficient bulk; well kerned, under average	Promising; full average	Over average	Fair	Good average	Average; healthy at present	Good plant; wants rain	Average	August 4	John T. Twynam, Winchester
	Rare average	Over average	Average	Average	Over average	Over average	Over average	Average	August 2	Joseph Blundell, Bursledon
DORSET	Thin, but good	Good	Moderate	Good	Good	Good	Good	Moderate; well saved	Next week	John Furmedge, Langdon, Beaminster
	Under average, good	Over average	Full average	Not much grown	Over average	Sound, but small	Good plant; want rain	Rather light	Aug. 6	Robert Damen, Dorchester
	Average	Average	Average	Good	Good	Average	Average	Under average	Aug. 8	W. Voss, Corfe Castle
	Thin, good corn, straw rusted	Good crop	Good crop	None	Above average	Good	Good plant	Clover heavy; meadows light; made well	Aug. 3	T. H. Saunders, Watercombe Farm
	Under average, light in straw	Very good	Good	Good	Very good	Promising; but symptoms of disease in the stalks	Promising	Partially good	First week in Aug.	John Pope, Symondsbury
DEVON	Above average	Above average	Below average	None	None	Promising	Good	Good crop; saved well	About Aug. 10	Samuel Cornish, Kingsbridge
	Thin on the land, but well filled in the ear	An average crop	An average crop	Very few grown in this neighbourhood	An average crop	Disease appearing	Promise well	A light crop	In a few days	George Turner, Beacon Downes, Exeter
	Over average crop	Average crop; very good	Average crop, very good	...	...	Good	Very good	Heavy crop	Aug. 10	Lamoureux, Clark & Co.,
	Under average, a little rusted, and many black balled ears	An average crop	Straw light, ears good, but under average	None planted	None planted	Good crop, early one of an excellent quality	Promising	Well harvested, and an average crop	Next week	George Langdon, Ashford, Barnstaple
	Average	Average	Average	None grown	None grown	Diseased	Very good	Heavy crop, and well saved	Aug. 6	R. H. Watson, Dorsely, Totnes
	Full average	Average	One-third under average	....	....	Early good; later promising	Late; inferior so far	Half a crop; well saved	Aug. 6	P. Cowan, Tawstock Manor
	Variable, but promises an average crop	Early sown good, late sown moderate	Short straw, but promises a fair yield of grain	None grown	None grown	Promising, and free from disease	Turnips good; Mangels average	Very good, and well secured	In a fortnight	T. Benson, Tavistock
CORNWALL	Under average	Average	Over average	...	...	Average	Mangels good	Good	Aug. 6	T. Davey Simmons, Killigmoon
	Average, the rust is getting bad	Although the crop will amount to an average, there is more shot ears than usual	Above average	None	None	Good	Very good	Good; and well got	Aug. 6	Jno. Wills, Southpetherwyn, Launceston
WALES.										
CAERMARTHEN	Good average	Light crop	Good		....	Very good; no signs of disease	Looking well at present	Light crop	Partly commenced; in about 10 days	J. Burnell, Llanelly
	Average	Over average	Average		.	Good, blight appearing	Splendid	Average, where not grazed in spring	Aug. 6	John Muscott, jun., Laugharne

REPORTS OF THE HARVEST—(*Continued.*)

COUNTY.	WHEAT.	BARLEY.	OATS.	BEANS.	PEAS.	POTATOS.	ROOT CROPS.	HAY.	WHEN WILL HARVEST BE GENERAL?	NAME AND ADDRESS.
IRELAND.										
LONDONDERRY ..	Good	None	Short; under average	None	None	Looks well	Promising	Bad	Sept. 1	Charles Pollock, Farmhill, Magherafelt
COUNTY DOWN ..	Good average	Very scarce; but good	Very good	Excellent	Good	Excellent; no appearance of disease	Turnips good	Good	Sept. 1	William M'Cleery, Portaferry
KILDARE	Fully up to the average in the field	Promises to be more than the average	Fully up to the average	None	None	At present small and wanting rain	All root crops promise well	Better than it has been for the last four years	About Aug. 15	Richard W. Bagot, Fontstown Glebe
KILKENNY	Good	Average	Average	....	...	Good	Promises well	Good	Aug. 20	Patrick Grace, Uppercourt, Freshford
	Good	Average	Average		.....	Very good	Good	Average	Sept. 1	D. A. Milward, Gourian, Kilkenny
KERRY	Good	Good	Very good		. .	Promising	Good	Abundant crop	End of Aug.	John Creagh, Tarbert
	Good	None	Very good	....	....	Late, and therefore uncertain	Good	Very good	Sept. 10	John O'Sullivan, P.P. and V.G., Kenmare
TIPPERARY	Good	None	Good	None	None	Good	Good	Good	Aug. 20	William Ryall, Cashel
CORK	Good	Not grown	Good	Not grown	Not grown	Average; the blight beginning to make its appearance	Very good	Average	Middle of Aug.	James Byrne, Wallstown Castle, Shanballymore
	Good	Average; little grown	Average	....	....	Average, but late	Various; scarcely average	Good	25th August	Francis A. Twyname, Kanturk
	A magnificent crop here, but not of great breadth	A good crop, but not much growing here	Very fine, doing well, a good deal growing here	None	None	A fine crop; perfectly safe as Mungels good, yet; no blight here	Turnips and Mangels good, but not much	A very good crop	Not before the end of Aug.	D. Clanchy, Charleville

ON HARVESTING CORN.

[We publish Mr. Love's Essay on this subject, for which the prize of the English Agricultural Society was awarded.]

This being one of the most important works on the farm, has received much attention in every land and every climate; the variation of climate having had more to do in deciding the course pursued than any other consideration. If we commence our survey with the northern and western parts of the United Kingdom, where the greatest difficulties have to be encountered in consequence of the wet and changeable seasons there prevalent, we find the wary Scotchman and the impetuous Irish under the same atmospheric influences adopting the same modes of saving their corn.

In the rainy districts of the West of Scotland the plan of "rickling," or hand-held stacking, obtains, partly in consequence of the prevailing custom of returning to tillage after the land has for three or four years been laid down to pasture. Here the first corn crop, which is Oats, has generally a large quantity of Grass amongst it, to save which in good condition is of much importance; they take care, therefore, to cut low, either by scythe or hook, while dry, and to band the sheaves with the bands rather near the ears; these in fine weather are set up singly for a day or two, then they are collected and built into small round stacks, rather less in diameter at bottom than two lengths of the sheaves, and gradually tapering till finished at the top with one sheaf tied close to the butt, and put on with the ears down so as to thatch all the ears of those below. The builder stands on the ground at first and finishes with a short ladder. If the weather is wet and prearn us, the corn is "rickled" close up to the hook, scythe, or machines; the use of the sickle is almost unknown. Wet never penetrates these little stacks, because the sheaves lie elevated at the centre at an angle which becomes higher and higher until the last sheaf placed vertically makes a cap for the whole. These "rickles" contain from 100 to 150 sheaves, and cost about 2*d.* per 100 sheaves, or from 1*s.* to 2*s.* per acre for building. When the crop is stacked, before it has stood in the sheaf long enough to harden the grain, a triangle is always formed of three poles about 12 feet long, fastened together at the top. This is raised on the stands with the bottom ends about three feet apart; or, if stands or stables are not in use, then a stone or brushwood bottom is formed, with an opening leading to the triangle so as to admit free circulation of air; in this way the crop is kept sound the whole winter, and stacked from three to five yards in diameter, according to the condition of the corn, and thus the grain is preserved from heating and the straw from damage. In the western and midland counties of Ireland a similar system prevails, with this difference,—that there the crops are all reaped and built into very small stacks, and that in building the field stack, the builder kneels on the stack, which is objectionable, because the sheaves get packed too close, and the wind and air cannot permeate the stack freely.

About 30 years ago, John Love, Esq., of Oakfield, in the county Kildare, invented a plan of making round shocks, with 12 sheaves and four small head-sheaves, which, while they resisted the rain, permitted the wind to act on the whole mass; this contrivance consisted of two bars of ash, 6 inches in length by 1½ inch thick, and 7½ feet long, rounded at the ends for the hand to hold by; 24 inch round rods of iron, 4½ feet long, are fastened into the flat side of one of these ash bars, at about a foot from each end; corresponding holes being made in the other bar to receive the two rods, so that the bars can be drawn close together or slid apart at the will of the carriers. Along the inside of the said ash-bars project four iron teeth, 3 inches long, set 15 inches apart. The carriers set these bars wide enough apart for them to pass over the shock, and lower them to within two-thirds of the bottom; they then press the bars together, and the teeth enter into the shock, which is thus tightly grasped and lifted bodily on to fresh ground. With this simple contrivance two active men can, with a good crop, move shocks at 6*d.* per 100. When the shocks are few and far between it will cost more.

As we travel from the north of England southwards, or in Scotland from the west, eastwards, we find that these extra precautions die away, until even the practice of putting head-sheaves on the shocks gradually disappears, and the grain and straw are alike left to the mercy of the climate, which of course seldom does much damage, or the intelligence of the farmer would prompt him to adopt the same means as others to prevent the loss. Still there are occasional seasons, such as those of 1841, 1845, and 1860, in which the plan of making shocks well capped and secure would have saved a vast deal of both grain and straw, which as it was were bleached and damaged. With the present rage for cutting corn green, capping is found to retard the hardening of the grain, and may be dispensed with, if the sheaves, placed with the knots of the bands turned inwards, are made to straddle properly, the ears being well pressed home together, and each pair of sheaves in the shock so adjusted that they can stand alone unpropped, even if some of the other sheaves be removed.

Before entering into the expenses of the various operations of which this Essay must treat, it will be desirable to calculate the annual expense of keeping a farm horse. The keep may be thus estimated:—

	£	*s.*	*d.*
For 32 winter weeks—			
32 bushels of Oats, at 3*s.*	4	16	0
32 bushels of Beans, at 5*s.*	8	0	0
56 cwt. of Carrots, at 1*s.*	2	16	0
Wheat chaff gratis			
For 20 summer, &c., weeks—			
20 bushels of Beans, at 5*s.*	5	0	0
5 tons of Green Rye, Tares, Italian Rye, or Clover, equivalent to one ton of hay, at	5	0	0
Total for food	24	12	0
Blacksmith's bill, shoeing, and mending tires, &c., per annum	12	6	
Harness maker's, cutting, &c.	7	6	
Interest and tear and wear of harness, 10 per cent. upon 3*l.* 10*s.* ..	7	0	
	1	7	0
Insurance of life, with tear and wear on 31*l.*, the value of horse, at 10 per cent.	3	10	0
	£28	9	0
Tear, wear, and interest on machines, &c., for preparing land, 10 per cent. upon 12*l.* 10*s.* ..	0	3	0
	£28	12	0

Further, as to the rate to be charged for the use of a horse, this ought to vary with the demand for his service at different seasons. There are not more than 250 working days in the year in all. Of these—

	£	*s.*	*d.*
60 days for harvesting and seeds, charged at 3*s.*, will make	9	0	0
90 for manure carting, root harvesting, &c., at 2*s.* 6*d.*	11	5	0
100 days at slack time, charged at 1*s.* 8*d.* ..	8	6	8
	£28	11	8

—a sum which agrees with our estimate of the total cost of keeping a horse.

I shall now proceed to the consideration of my subject in reference to the various methods of harvesting practised in England, viz.: reaping high, reaping low, bagging, mowing, machine mowing, and machine reaping; in all of which I have had nearly 30 years' experience and close observation. For above 20 years I have been in the habit of taking the number of sheaves, of a given size, as the fairest and best test of the economy of those different systems, in all their bearings, as to cutting, carting, stacking, thatching, and threshing.

I find that a full crop of Wheat gives about the following number of sheaves per acre (of from 5 to 6 inches diameter):—when reaped high, 160; bagged, 180; mown, 200; machine reaped, 170; machine-mown, 180, for each foot in length of straw. Oats give about a fifth more; and Barley, when free from weeds, a third more, but on a light crop double.

We may take as our standard a crop of Wheat, one of about 40 bushels per acre, the straw of which will be about 5 feet long; this, if reaped 18 inches high will give 560 sheaves; which at the price of 1*s.* 2*d.* per 100, will cost 9*s.* 11*d.* per acre for reaping. The same reaped low, at 6 inches, gives 720 sheaves; and at the same rate, costs 12*s.* 7*d.* per acre.

Bagging should be done so as to leave a stubble 3 inches high, and will in the aforesaid crop produce 855 sheaves, which at 1*s.* 2*d.* per 100 cost 9*s.* 11½*d.* per acre. Mowing is done at about the same height as bagging, at the price of 10½*d.* per 100 sheaves; producing 950 sheaves, and therefore costing 8*s.* 3½*d.* per acre.

By machine-reaping I mean the work of such reaping-machines as by manual or mechanical power deliver the crop in parcels large enough for sheaves; such are Hussey's, McCormick's, Dray's, and others made on the same model by other makers. Among these Dray's stands foremost, which, with fair management, will cut an average of 8 acres a day, or 120 acres in 15 days, which will represent the average quantity cut in a season. The tear and wear of the implement must be distributed over that number of acres. If this be estimated at 20 per cent. on 30*l.* (the average cost of the reaper, including carriage and extras), the charge for the use of the implement amounts to 1*s.* per acre on these 120 acres. Three horses will also be required, at 3*s.* apiece per day; likewise two good labourers at 4*s.* each including beer, who take it in turns to drive and deliver the crop. These together cost 17*s.* for the 8 acres, or say 2*s.* per acre, which with 1*s.* for wear, &c., of machine, gives 3*s.* as the whole cost of machine cutting and laying in parcels ready for tying into sheaves. Our standard crop when thus harvested will produce about 810 sheaves, which for tying and shocking will cost 4½*d.* per hundred, or 3*s.* per acre; making, with 3*s.* for cutting, a total cost of 6*s.* per acre.

Bell's, Burgess and Key's, Lord Kinnaird's, Smith of Deanston, and Crosskill's, are all swathe-delivery or mowing machines, which ought to take a wide cut, or the swathe will be so thin that the cost of gathering runs away with much of the saving effected in cutting.*

The differences to be found in the reports of various persons who have used these machines, have arisen chiefly from the different management of their respective drivers, upon which both the increase in bulk of the straw cut, and in the cost of gathering and tying, has depended. Having used these machines more or less during the past nine years, I will now give an estimate of their expenses for a swathe of about 5 feet in width. These machines, with extras and carriage, will cost about 50*l.*; if we allow 10*l.* (or 20 per cent. on the prime cost) for wear and tear and for repairs, and assume that 150 acres is the extent which each will cut in an average season,—then 1*l.*, distributed over 150 acres will give 1*s.* 8*d.* per acre as the charge for the use of the implement; to this must be added the cost of men and horses. Now four horses at 3*s.* per day as before, and one man at 4*s.* including beer, making together 16*s.*, will cut 10 acres a day, so that the charge per acre for men and horses will come to 1*s.* 7*d.*, and the entire cost of cutting to 2*s.* 11*d.* The number of sheaves on our standard crop will be about 900, which for gathering, tying, and shocking, at 7½*d.* per hundred, cost about 5*s.* per acre, with about 3*s.* for cutting, about 8*s.* per acre in all. For upwards of 20 years I have put for cutting and carting my crops at per hundred sheaves, finding this the best criterion to go by, as the immense difference in the bulk of straw produced by difference of soils, as well as by high or low farming, renders any other standard defective.

(To be Continued.)

Home Correspondence.

Crops in Lincolnshire.—All kinds of cropping a full average. We never had them look better. Turnips and Potatos required the late rains, which have laid the corn crops, and must damage them to a certain extent. Now busy with the hay, and of course require sunny weather. Little or no harvest until September. *R. E. Duckering, Northorpe, Kirton Lindsay, Lincolnshire.*

Rats.—Last year I noticed one of your readers inquired if any person would acquaint him with the best mode of getting rid of rats, as he was very much infested with them in his corn stacks, where they destroyed a large quantity of corn. If your correspondent would set his stacks on cast-iron pillars, and take care that no ladder, prop, fork, or any other thing be left against the stack for the rats to get up, he will find when he takes his stacks down in the spring that there had been none in them. *R.*

Societies.

THE YORKSHIRE AGRICULTURAL SHOW AT YORK: *Aug. 6.—Visit of the Prince and Princess of Wales.*—The inhabitants, both gentle and plebeian, of this ancient city have done, and are doing, by night and by day, all they can to deserve the honour as well as profit attending a Royal visitation. This generation of citizens has not been favoured with such an occurrence to look forward to as they are now preparing for. Whether or not the Fine Arts and Industrial Exhibition, opened a few days since, was a part of the programme for the next few days, we have not been able to learn; but this highly creditable collection of specimens of the fine arts and industrial operations and productions, makes almost complete the round of

* From my experience in this description of machine, which began in 1854, I have come to the conclusion that the power is principally absorbed in driving the machinery and dividing the corn to be cut from that left standing, so that little extra force would be required for taking a foot or two more in width; and I have, therefore, urged on the makers the expediency of increasing the width, especially in the machines which are propelled, which, if made with an 8 feet wide cut, would give plenty of room for three horses working abreast. As we increase the width of swathe, we at the same time reduce the distance to be travelled by the horses in cutting, and the workmen in gathering and tying up, with a 4 feet width of cut the horses must travel $2\frac{1}{10}$ miles per acre, and the binders the same; while with an 8 foot width of cut the distance is only $1\frac{1}{80}$ mile, or half the distance, which will lower the expense of gathering and binding by at least 1*s.* per 100 sheaves.

provincial gatherings which has been here organised for Royal patronage and countenance, and for public instruction and amusement.

The Prince and Princess are expected early on Thursday. An arch to welcome them, decorated with flowers, evergreens, and mottos, and for illuminating, most tastily designed and executed, has been erected on the centre of the old bridge, along which at intervals there are poles for flags, and temporary pedestals for the reception of more ornamentation. Numerous other arches across streets and roads are being erected, while poles in the streets towards the Guildhall, where the Royal party will be conducted to luncheon with the Lord Mayor and Corporation, and in many other places, have been raised for decoration with flags, flowers, and evergreens. There is one drawback, however, to all this assumption of hospitality and rejoicing. The tradesmen and hotel-keepers, and all the various caterers for the mind as well as body, seem not only to be determined to recoup themselves for the paint they have used and the flags and flowers they intend to buy, but they seem desirous of making a great profit on their outlay. Charges of a guinea each for beds in most cases are excessive—nothing less than 5*s.* even to the exhibitors of machinery and of the other attractions which are the basis for bringing the large expected company together.

The agricultural show-yard is on this occasion situated on the race-course, and it is fitted up in the most complete manner we have ever seen—the Royal Society's yard not excepted. The shedding is considerable, and composed of boarded roofs in the open parts, and the same material as doors, shutters, and fronts, when they are closed. There are some hundreds of closed boxes for horses, which arrangement no doubt is the cause of the most excellent and large show of horses to which we shall have to especially refer below. The pig and sheep pens are also fitted with plain posts and boards, with doors for attendants and judges, amateur and professional, to enter. This is a vast improvement on the usual rigid and high iron-hurdle arrangements. The judging and show paddocks are also well railed in, and a great convenience is provided for showing horses that may be for sale, and a desiring purchaser may wish to see out of the box. This enclosure is about an acre in size, and the charge for entering is only 1*s.* for each horse. As no display or "showing off" of horses is allowed elsewhere, all danger from a crowd of visitors is avoided, and no complaint can be made either by owners or would-be critics and purchasers.

But there is an unusually conspicuous object, the description of which we have kept till last. This is the Royal saloon, which is situated at the end of the judging and show paddocks for the horses. On the opposite side are the kennels and show-court for the hounds. In the centre of the latter there is a flooring of flag-stones about 10 yards square. Thus the Yorkshiremen are doing all they can to gratify the love for old English sports which the Prince of Wales has shown in connection with horses and hounds. Here, however, the Prince has not alone had special consideration, for while the interior of the building is fitted up in as elegant a manner as an impromptu luncheon hall and ante-rooms can be, the roof is extended some seven or eight feet beyond the body of the building, beneath which ample galleries are constructed for the comfort and convenience of the Princess and her suite. As there is a gallery of this kind on each side for over-looking the whole show-ground, and the horses, hounds, and other animals may be brought close up for inspection, nothing is omitted that would make the place worthy of the occasion. The whole has a Swiss cottage-like appearance from every point of view.

The Show of Live Stock.—In the absence of cattle, from the fear of spreading the plague, the sheep stand first on the list, while among the sheep the Leicesters have the honour of first place. Class 1 consisted of a capital collection of 28 shearlings, Mr. Riley, of Beverley, showing six; Mr. Marris, of Ulleby, four; Mr. Stamper, of Oswaldkirk, four; Mr. John Borton, of Malton, eight: Mr. Cresswell, of Ashby-de-la-Zouch, five; and so on. The 1st prize went to Mr. Cresswell for a great and good sheep, with a full fleece; but in respect to this one it may be asked—where do Leicester traits now end and Lincolnshire characteristics begin? Mr. Borton took 2d and 3d, the former being an admirably even and fine sheep, and the latter equally good under the hand, but he was light in his hind quarters, and particularly so in his legs. Class 2, for aged rams, was composed of 20, the exhibitors in the former class being represented, Mr. Borton again having eight, while Mr. Wiley, of Brandsby, York; Mr. Simpson, of Wetherby; and Mr. Thomas, of Barnard Castle, and others, had specimens of their flocks. Mr. Borton here took the 1st, a decision which was correct in our opinion, but if so, it made the 1st decision in the Shearling Class most inconsistent. Pure Leicesters will become more and more valuable as the expediency of crossing becomes more freely practised. Therefore, it is clearly the duty of judges to be most scrupulous in watching for and disavowing impurities in classes that are set apart for the few remaining pure breeds. If this be not done we shall soon have nothing of a distinctive character to fall back upon for pulling mongrel breeding flocks into decent shape. Mr. Borton also took 2d and 3d prizes. The ewes were a short show, only five lots of 5 each being present, but Mr. Richard Lovel's (of Malton) 1st prize, bred by himself, were splendid ewes for size, form, and substance, and particularly for the fine lines, full eyes, and other features of their frontispiece. In Class 4, for "Gimmers" (shearlings), there were seven lots of five each, Mr. Borton being here 1st with a very handsome and well-grown lot. This was a good class.

In the Lincoln and other Long-woolled Sheep, the Lincoln beat the Cotswold, with the exception of two cases. Mr. J. W. Richardson's, of Kirton Lindsey, is a very capital Lincolnshire sheep, and he was awarded the 1st prize. So was the 2d, shown by Mr. Williams, of Newark; the 3d was a Cotswold from Lechlade, shown and bred by Mr. Tombs. Mr. Marshall, Branstone, Lincoln, took 2d in the Aged Ram Class with one of his enormously heavy sheep. Mr. Abrahams' 1st was a very neat one of the same Lincolnshire breed. There were five pens of five "gimmers," four Lincoln and one Cots., the latter breed taking 2d for five very fine ones from Mr. Tomb's flock, and the former (Lincoln) 1st and 3d.

In the Short-woolled Sheep, Lord Walsingham cleared off the 1st, 2d, and 3d prizes, against three of Mr. Waters' Southdowns; a fine heavy Shropshire sheep, shown by Mr. Horton, of Harnage Grange; a very neat good backed sheep of the same breed, shown by Mr. Mansell; and several others. In the aged class, Lord Walsingham again took 1st with a very capital sheep that was thick and full in all his quarters, and had it not been for a slight defect in the formation of his spine, a fault that is of no consequence except to the hypercritical, he, with his fine woolly head in addition, might have been described as a perfect sheep. Mr. Waters here took 2d against another good sheep of Mr. Horton's. Mr. Henry Smith, Sutton Maddock, had entered for both the above classes, but he did not show up. Lord Wenlock sent one, however, that did not do much credit to his stock. But in the "gimmers" Lord Wenlock took 1st and 3d with very neat and good, but not uniform pens of five each. If the shepherd had transposed one dark and grey-faced ewe, and a neater brown-faced one, the pens would have matched much better. Mr. Davies, of Knutsford, had a capital pen by Mr. Horton's highly-commended Newcastle Shearling, and these took the 2d prize.

The few Mountain Sheep, for which three prizes of 5*l.* were offered, were more curious than interesting on this ground, as we send English sheep to improve the Scotch, and, therefore, no good can come of bringing pure Scotch sheep to Yorkshire, except it be as extra stock for the amusement of lovers of curiosities in the form of long horns, shaggy fleeces, and a deal of length in legs and scraggs.

The Pigs were a small show as to numbers, for a county meeting, and particularly when that county is Yorkshire. The entries were 83, a few of which were not fulfilled; while, too, there were some excellent specimens both of the larger and smaller, and also of the intermediate breeds, there were many that were not first-class. In the sows of a large breed, the 1st prize sow was shown by Mr. Lackland, of Retford, and an extraordinary swine she was. Mr. Dyson, of Leeds, also sent an enormous sow, but she was somewhat coarse; and the 2d prize was given to Mr. Duckering, for a neater one. Mr. Sutton's 1st prize in Class 19 was a capital sow; but the remaining lots, although good in some cases, were not striking enough to require any special comment. There seems to be a field open here for our friends who breed the Berkshires, for there is as much size in the latter kind as most Yorkshiremen care for; and the London pork butchers say the best pigs and pork they get comes from a cross between the Berkshire and white breeds.

The award of prizes having been indicated in the above report, we are glad in the crowded state of our columns to postpone the actual prize list until next week.]

The Show of Horses was the most numerous and of the best character that we have ever had the pleasure of seeing together. The number of entries in all the classes was no less than 513, and very few were absent. The first position was assigned to thorough-bred Stallions for getting weight-carrying Hunters, the prizes being 50*l.* and 20*l.* The 1st prize was awarded to Sir George Cholmley, Bart., for Angelus, a bright chesnut of marvellously compact and muscular form; his thighs, rump, and loin being extraordinary for strength, while his shoulder displayed equal power. If he have a fault, it is in his legs being too fine for his body; but, looking at him as a horse for pairing with light-barrelled mares possessing ample bone and particularly good hocks and knees, this horse is everything that the most critical judge could desire. The 2d prize was awarded to Mr. Joseph Cassen, of Carlisle, for Motley, an old favourite, now 15 years of age; sire Touchstone, dam by Lanercost. He is a brown, with a long tightly-hooped barrel, possesses great power for one so highly bred, and his short head, with broad front and full affectionate eye, make him a great favourite with all lovers of high mettle, combined with power, speed, and gentleness. Mr. W. Vaughan's Cavendish was a very elegant and handsome bright bay. There were 25 in this class, and a grand show they made.

In Class 26, Stallions for getting Coach Horses, there were 24, some of which were very plain; but Yorkshire Lad, the 1st prize, shown by Mr. Johnson, of Brigham, was passable in appearance, and a very powerful bay with strong and clean black legs. The 2d prize, Candidate, shown by Mr. Holmes, of Newbiggin, was a very beautiful and symmetrical bay.

The Stallions for Roadsters were no less than 33, and a most excellent collection, as a whole, they were. The 1st prize, by name Norfolk Cob, was a good specimen of a class of animals that in most counties of this country are very few; he is short, with rounded cobby quarters, a fine firm action, and he rejoices in having a rat-tail, that the fine symmetry of his hind-quarters may be more conspicuous. The 2d prize, Pretender, is a lighter and longer, but very elegant, well-formed, fine-moving chestnut. Among the rest was Renovator, a beautiful and good-moving 4-year-old bay, fine in quality, in fact, a gentleman to look at all over; he was shown by Messrs. L. & J. Cockshott, Addingham, Leeds. Mr. Cook, of Driffield, sent Denmark, another 4-year-old chestnut, which was beautiful in his symmetrical proportions, compact in construction, and an admirable mover. Mr. Triffitt' Sir Edwin Landseer was also a most useful and attractive, short-backed, good-going black.

Three prizes of 20*l.*, 10*l.*, and 5*l.*, were given for Stallions for getting Agricultural Horses. The judges on this occasion had full faith in the good old rule:—"A stout body on wide standing legs, with not too much daylight about them." The 1st and 2d prizes were admirable examples of this character, the form of both being similar. Mr. Moffett's All Glory being a bay, with a beautifully rounded barrel and finely-turned quarters, on short strong legs, on the heels of which, however, there was more hair than admirers of the more genteel Suffolks would like; but to compare the two characters for usefulness, the hardiness of the constitution of All Glory appeared as though he could do twice the work, and look as well on half the quantity of food. We are Suffolk born and bred, and have no desire to foul our own nest; but in regard to the horses of our native county, we cannot but say they are very fine for gentlemen farmers, who take a pride in smart sleek teams, but where the business of farming is required to be done at a profit, we can only say that the sooner horses something like these Yorkshire animals are more freely introduced into the eastern counties, the more likely this is to accrue. Mr. Strickland's 2d, Lincolnshire, 8 years old, was a fine hardy brown, and almost every inch a good one. The 3d prize, England's Glory, 9 years old, was also admirable for compactness on short legs, and consequently for strength. Young England's Glory was another capital brown horse. In short this was a capital class, and as a display of agricultural horses it cannot have failed to have made a strong impression on the numerous and distant visitors who have been to this Show.

At the late hour when the judges terminated their duties to-day (Thursday), and the early hour at which the post leaves, it is impossible to do fair justice to the extraordinary collection of hunters, geldings, and fillies, and animals of all ages which have to-day been brought into the ring. The cart-horses in pairs, too, are excellent. All we will therefore say is, the 5-year old hunters (geldings or mares) up to 14 stone, were the finest class we ever saw together, numbering in all 26; while the same characters "up to 12 stone," were scarcely less inferior. But the most exciting and interesting class of all was for "Hunters, 6-year old and upwards, Geldings or Mares, by a thorough-bred Horse." Here there were 39 entries, with 37 present. The more striking feature of the result of the judging in this class, was the fact that Voyageur, a chestnut, with the finest action, and without the apparent fault when looked at off-hand, and which has been 1st at Darlington in 1864 as a 4-year-old, and this year as a 6-year-old—1st also at Carlisle and Stokeley in the former year, and this year at the Agricultural Hall, London, Bridlington, Driffield, Alnwick, and Bingley Hall, was here only among the select circle; the 1st and 2d prizes being given to other horses. The judges were nearly two hours over this class, and we repeatedly thought that, however we might have gratified our own taste, we should not have cared for having to brave public and private opinions where there was so much excellence to decide upon. The 1st prize is a bright bay, with great strength for one so well bred; and his action was faultless. The 2d prize was Hawk's Eye, a perfect mover, and as elegant and symmetrical as the most fastidious judge could desire. It was stated on the ground that this horse was sold last year to the Emperor of the French for 500 guineas, and has since been repurchased at 250 guineas by his previous and present owner. If the horse did not suit the Emperor it is pretty evident the fault was on the side of his Majesty, and not on that of the horse.

The following is the Prize List, and we add here the names of the judges in all the sections.

HORSES.

Stallions, Thorough-bred, for getting Weight-carrying Hunters.—Sir Geo. Cholmley, Bart., Howsham, York, 30*l.*, for Angelus; Jos. Casson, Burgh Sands, Carlisle, 20*l.*, for Motley.

Stallions for getting Coach Horses.—John Johnson, Brigham, Driffield, 20*l.*, for Prince Arthur; George Holmes, Newbiggin, Beverley, 10*l.*, for Candidate.

Stallions for Roadsters.—Joseph Whitwell Pease, M.P., Woodlands, Darlington, 20*l.*, for Norfolk Cob; William Stillborn, Darlington, 10*l.*, for Pretender.

Stallions for getting Agricultural Horses.—Robt L. Moffett, Gateshead, 20*l.*, for All Glory; Samuel Strickland, Tadcaster, 10*l.*, for Lincolnshire; Matthew Reed, Chester-le-Street, 5*l.*, for England's Glory.

Brood Mares for Breeding Hunters with Foals Sucking.—William T. Scarth, Darlington, 10*l.*, for Plucky; W. H. Clark, Hook House, Howden, 5*l.*, for Lady.

Brood Mares, for Breeding Coach Horses, with Foals Sucking.—Edward Robinson, Nafferton, Driffield, 10*l.*, for Rose; John Smith Tate, Budbrooke Park, Warwick, 5*l.*, for Katy.

Brood Mares for Breeding Roadsters, with Foals Sucking.—William Harper, Malton, 10*l.*, for Polly; Ann Cook, Pocklington, 5*l.*, for Favourite.

Brood Mares, for Breeding Agricultural Horses, with Foals Sucking.—David Goundrill, Howden, 10*l.*, for Damsel; George Linton, Bedale, 5*l.*, for Jewel.

Two-year-old Hunting Geldings.—John B. Booth, Killerby, Catterick, 10*l.*, for Bird of Passage; Henry Darley, York, 5*l.*, for Minor Canon.

Two-year-old Hunting Fillies.—William Vaughan, Darlington, 7*l.*; The Hon. W. E. Duncombe, M.P., Bedale, 3*l.*

Two-year-old Coaching Geldings.—John Appleyard, Selby, 10*l.*; John Reader, York, 5*l.*

Two-year-old Coaching Fillies.—Richard Myers, Helmsley, 7*l.*; Charles Tindall, Malton, 3*l.*, for Wild Flower.

Two-year-old Agricultural Geldings or Fillies.—William Cockshott, Addingham, Beverley, 7*l.*, for Trimmer; William Parker, Tadcaster, 3*l.*, for Diamond.

Three-year-old Hunting Geldings.—W. H. Clark, Hook House, Howden, 15*l.*, for The General; George Holmes, Beverley, 5*l.*, for Tom.

Three-year-old Hunting Fillies.—Richard Gillard, Hovingham, York, 10*l.*, for Eva; Robert Swann, Acomb Hall York, 5*l.*

Three-year-old Coaching Geldings.—Richard Nelson, Barton Hill House, York, 15*l.*; John Kirby, Stamford Bridge, 5*l.*

Three year-old Coaching Fillies.—R. Barker, Dunnington, York, 10*l.*; for Polly; John Jackson, Jun., Great Ayton, Northallerton, 5*l.*; for Cliff Lass.

Three-year-old Roadster, Geldings or Fillies.—William Major, Sledmere Grange, Malton, 7*l.*; for Miss Giles; James Ward, Bohemia, York, 3*l.*; for Grace Darling.

Three year old Agricultural Geldings or Fillies.—John Appleyard, Wistow, Selby, 10*l.*, for Grey Filly; Thomas Upton, Allerthorpe, Tadcaster, 5*l.*; for Rose.

Pairs of 4 year-old and upwards, Agricultural Geldings or Mares.—C. R. Jewitt, Brackenholme, Bowden, 10*l.*, for Tom; Samuel Thompson, Skipwith, Selby, 5*l.*, for Diamond.

Coaching Mares from 4 to 6 years old without a Foal.—George Richardson, Moor Town, Beverley, 10*l.*; Henry Moore, Beverley, Yorkshire, 5*l.*

Four year-old Hunting Geldings.—Thomas Gee, Dewhirst Lodge, Wadhurst, Sussex, 25*l.*, for Master of Arts; George Holmes, Newbegin, Beverley, 10*l.*, for Button.

Four year-old Hunting Fillies.—Thomas Brown, Barton-le Street, Malton, 25*l.*; Thomas B. Ireland, Tadcaster, 15*l.*, for Alice.

SPECIAL PRIZES FOR HORSES.

Pairs of 4-year-old Carriage Horses, to be shown in Harness.—Richard Smith, York, 10*l.*; Joseph Whitwell Pease, M.P., Woodlands, Darlington, 3*l.*, for Ashgill.

Five-year-old Hunters, Geldings or Mares, by a thoroughbred Horse, and up to 14 stones and upwards.—Henry Jewison, Raisthorpe, Driffield, 30*l.*; for Rose in Moor; Milham Hartley, Rokehill, Carlton, 20*l.*, for Templemore.

Five-year-old Hunters, Geldings, or Mares, by a thoroughbred Horse, and up to 12 stones and upwards.—Charles McCartney Swarbreck, Thirsk, 20*l.*, for The Falcon; George Ringrose, Flixton near Ganton, 10*l.*, for Canute.

Hunters, 6 years old and upwards, Geldings or Mares, by a thoroughbred Horse.—Jacob Smith, Humberston, Boroughbridge, 25*l.* for The Swell; Sir George O. Wombwell, Bart., Easingwold, 10*l.*, for Hawk's Eye.

Gentlemen's Hackneys, of any age or sex, up to 14 stones and upwards.—Charles Croskell, York, 20*l.*; Chas. Beart, Downham Market, 10*l.*, for Princess.

Gentleman's Hackneys of any age or sex, up to 12 stones and upwards.—Richard Milward, Thurgarton Priory, Southwell, 15*l.*, for British Queen; J. B. Barkworth, Willoughby, Hull, 5*l.*, for Cornice.

Ladies' Hackneys, of any Age or Sex.—W. B. Richardson, St. Mary's Lodge, York, 10*l.*, for Kitty; The Hon. Admiral Howard, Castle Howard, York, 5*l.*, for Columbia.

Ponies above 12 and not exceeding 14 hands high.—Edward Tranmer, East Harlsey, Northallerton, 10*l.*, for Viscount; Richard Milward, Southwell, 5*l.*, for Dunstan.

Ponies, not exceeding 12 hands high.—John W. Richardson, Kirton Lindsey, 7*l.*, for Uncle Tom; James Mitchelson, Pickering, 3*l.*, for Fanny.

Extra Stock.—Wm. Brigham, Beverley, Medal for half-bred Hunting Stallion, Wild Hero; Robert Schofield, Sand Hall, Howden, Medal for black Coach Horse.

JUDGES.

LONG WOOLLED SHEEP AND LARGE BREED PIGS.—William Bartholomew, Waddington Heath, Lincoln; William Sanday, Holme Pierrepoint, Nottingham; John Painter, Mount Verner Villa, Forest Road, Nottingham.

SHORT-WOOLLED SHEEP AND SMALL BREED PIGS.—Charles Randall, Chadbury, Evesham; William Rigden, Hove Farm, Brighton: Henry Fookes, Whitechurch, Blandford, Dorset.

HORSES: HUNTERS AND ROADSTERS.—E. M. Burbidge, Thorpe Arnold, Melton Mowbray; Nicol Milne, Faldonside, Melrose, N.B.; Samuel Slater, North Carlton, Lincoln.

HORSES: COACHING AND AGRICULTURAL.—Alexander Turnbull, Middle Ord, Berwick, N.B.; Charles M. Nainby, Barrowby Road, Grimsby; William Godson, Normanby-by-Stow, Gainsborough.

DAIRY PRODUCE.—Thomas Page Dickinson, Stockton-on-Tees; William Wilson, Coney Street, York.

WOOL.—Thomas Clayton, Stainley House, Ripley.

THE DAIRY PRODUCE AND WOOL TENT was very meagrely supplied. There were only six entries of cheese and 11 of butter, and some of these did not appear. The Nottinghamshire cheese was very good, and the Gainsborough 1st prize and the Elvington 2d prize butters were very fine. The wool consisted as usual of a few lots of picked fleeces, and were therefore but a small criterion of the general quality of the flock from which they came. Nevertheless, unless there was a good character of staple upon the backs of the male sheep, fleeces so fine as were here exhibited could not be procured. This is an important consideration. In the "hogg" long wools there were some great and fine fleeces; and in the "hogg" short wool the 1st prize was awarded to Mr. Mansell, for Shropshire fleeces, which is a sufficient answer to the opinion sometimes held, viz., that the wool of the Shropshires, and particularly Mr. Mansell's, is sometimes grey.

MACHINERY AND IMPLEMENTS.—The display in this department, considering this was only a country show, was enough to take a regular attendant at these meetings by surprise, and it evidently highly astonished less practised or non-professional visitors. The entry of exhibitors in the catalogue amounted to no less than 120! Many of these had several steam engines, with the machines which they are intended to drive; while, in addition to these larger articles, some of the more miscellaneous manufacturers and agents had upwards of 100 articles each. This unusually large exhibition was no doubt owing in a great measure to the Royal Society determining to have no show of machinery at Bury, because it was impracticable to have a show of cattle, in consequence of the rinderpest. This result, however, in addition to what we have said in regard to the horses, sheep, and pigs, will tend greatly to confirm the opinion of members who were in favour of a meeting at Bury without the cattle. But, with the exception of the great question of ploughing and cultivating by steam power, which the Royal Society is about to further test, there are now no farmers in the country who do not know where to find any implement or machine that they may require. Therefore it is a moot question whether the great expenses attending a Royal meeting have not been saved by implement makers without farmers losing anything in these critical times by not being led into temptation to purchase what they may perhaps shift well enough without. There are no startling novelties, and, so far as we have been able to inspect them, we have seen only a few new applications of tried principles. These, however, we cannot enter into a description of to-day, for reasons which we have sufficiently explained. Should we deem them worthy of special attention we will describe them in a supplementary notice next week, or at an early future occasion. The trials of reaping machines have been deferred a few days in consequence of the corn not having sufficiently matured for cutting.

On to-morrow (Friday) there are to be hounds, and a large flower show, in addition to the attractions previously referred to, and on Saturday a volunteer review. These we must reserve for a supplemental notice.

The competition in reaping machines and horse rakes has been finally appointed for Tuesday and Wednesday next at Heslington, near York.

Farm Memoranda.

FENTON BARNS AND FENTON DEEM, EAST LOTHIAN: *Employment.*—Among the farmers of the empire, with the combined system of tillage and Grass, the gentlemen of the Lothians stand A 1, and of these we will select Mr. George Hope, of Fenton Barns, with 670 acres, and Mr. Peter Handyside, of Fenton Deem, with a similar holding, as fair examples. Mr. Handyside, about 45 years ago, improved 100 acres of light moor land, producing blue Grass unfit to feed sheep or cattle, by ploughing it up and covering it with better soil, subsoiling 18 inches, taking a crop of Oats, and carting the clay over the light lands, so that they became in a few years equal to the best land on the farm, producing as much as 40*l.* per acre in Potatoes. In Mr. Handyside's farming—two-fifths are generally in Grass (half being two years, and half one year old), one-fifth Turnips and Potatos, for winter-keep of sheep or cattle; and two-fifths grain crops. On this farm a large quantity of oil-cake is used on the pasture and in the yard, the sheep getting 1 lb. daily, and cattle 5 lb. to 7 lb., by which means two flocks are turned out instead of one. A man and a pair of horses are kept to every 45 Scotch acres. They employ a steward, four labourers, besides ploughmen, 12 women in winter for four months, and 26 in summer cleaning the green crops. The women get 1*s.* per day. The rents could not be paid if the land was in Grass, nor would any employment be then given except to a couple of herds; a man and a boy are required in addition to look after the cattle in summer. The women are Irish or Highland, and do their work well. As to the manures, &c., the same is carried forward as on Mr. Hope's farm, described in the *North British Agriculturist* of the 20th June, which we recommend every proprietor and farmer to read. From it we extract that the farm of Fenton Barns, Haddingtonshire, consists of 670 acres under a lease of 21 years, the family being on the farm for 80 years. One-third consists of fertile loam, one-third of heavy clay of medium fertility, and one-third of yellow moorish sand on alluvial clay. All the farm has been drained and the ditches tiled, thus adding to the acreage of working land. In 1864 a stationary steam-engine of 10-horse power was bought at a cost of 650*l.*, with 2000 yards of wire-rope, which has done well, grubbing or cultivating seven acres per day and harrowing ten acres across. The grubber enters the soil to the depth of 8, 12, and 14 inches, as required. In the autumn of 1865, 103 acres of Wheat were sown in place of Potatos and Beans, 27 acres of the Bean land having been gone over twice, and 94 acres of stubbles grubbed. Since steam power was applied the Turnip crop has been got in early, and has been superior. The crops of the present year are—Potatos, 82 acres; Beans and Vetches, 33, growing in rows 16 in. apart; Turnips, 83 acres; Wheat, 126 acres; Barley, 88 acres; Oats, 54 acres; mixed Rye-grass and Clovers for cutting, 21 acres; pasture, 85 acres of young Grass depastured. Extent of second year's pasture, 50 acres; in permanent pasture, 3 acres; Turnip seed, 15 acres of Purple-top. Mr. Hope holds another farm, Dirleton, of 220 arable acres, and 500 of links and pasture, Bent chiefly growing on the links or sands. The sands are clayed at the rate of 200 carts per acre, and in this way 100 acres have been made fertile. On Dirleton farm the present crops are 31 acres of Potatos, 50 of Turnips, 38 of Barley, 9 of Wheat, 34 of Oats, 6 of Rye, the remainder in pasture, the land being grazed three years—the land being ploughed out of Grass for the Potato crop. The market produce of corn, beef, mutton, and wool has been doubled from the system of tillage compared with Grass. Number of farm servants on Fenton Barns, 19 by the year; at Dirleton, one shepherd, three ploughmen, and two corn men. On both are numbers of daily labourers, and 30 to 40 women and boys, the annual amount paid for wages on the two farms being 1850*l.*, or at the rate of 2*l.* for each acre cultivated. Besides the steam-engine, 13 pair of horses are kept. Cattle kept on Fenton Barns: one Short-horn bull, five cows for rearing calves, 12 cows belonging to the farm servants, 80 cattle fattened. Sheep (Leicester): Number of ewes, 110; and Cheviots, 180 to 200. One hundred tons corn and cake, and 200 quarters grain are consumed by the stock. Manures used this season: 50 tons Peruvian guano (750*l.* worth), seven tons nitrate of soda (120*l.*), 70 tons super-phosphate (180*l.*), or over 1300*l.* worth, besides manure from Edinburgh costing 2*s.* 3*d.* to 2*s.* 6*d.* per ton, and 1*d.* per ton per mile rail. Fifty or 60 tons of lime are annually brought to the farm, and mixed with weeds, road scrapings, &c. The annual outlay for feeding substances and manures exceeds 4*l.* per acre, and for the last 30 years 2*l.* per acre has been spent on every acre under cultivation. While we do not wish small farms turned into large, because small farmers are the bone and sinew of this country, we want our graziers who give no employment to follow the examples of Messrs. Handyside, Hope, and such gentlemen who pay annually in wages from 1700*l.* to 1800*l.*, instead of, as here, a couple of herds, with lower wages than the girls in Scotland cleaning the Turnips. *Sligo Independent.*

MERSE OF BERWICKSHIRE: *Aug.* 4.—At last we have got the long-wished-for rain, and rather too much of it, amounting to some 4 inches. Sunday's rain was steady and refreshing, though it laid much of the Barley flat; but Monday's storm broke down the stems of standing crops to some extent, and drowned the haycocks. The seeds were, with scarce an exception, close grazed up to the end of May, and the hay crop was small, of fine quality, and not suited to stand weather. A fine wind, however, has enabled to get it into fair condition again. It seems a dear article at 6*l.* a ton. Sheep breeding has extended considerably, and lambs are rather cheaper than last year. The poor appearance of the Swede crop, too, has its effect, and sheep are more wanted to consume a promising crop of White Turnips. Our best strong loams are all but a failure, while on light land the roots are late, but growing now, and may come to be as good as last year. But stock-feeding is a profitless job when the root crop won't do the most of it, as was found last winter. Peas and Vetches have done well this dry season; but Beans seem to have few pods on them. Wheat was remarkably well planted all winter, but got blanky in spring, and shot unequally. As for a blooming season, we never have any; but it does not matter. Where thin, some of the stalks are broken over, and will die. Four years ago a more violent gale reduced the yield of fallow Wheat (in this way) to 12 bushels. Barley is a strong crop, except where caught with April drought before sowing. It wants fine weather now, to preserve quality. Oats, on the contrary, are a standing crop all over, short of straw, and rather ragged from the ravages of grub in cold weather. We may have general harvest in three weeks. After so many dry summers straw is getting scarce, and the present crop will not increase the store, unless few cattle are kept. No more will be fed than will knock down the straw; for, in default of Swedes last spring, artificial food cost near 2*s.* a day in some instances, and beef at 8*d.* left no profit. *J. T.*

Miscellaneous.

Beet Sugar.—The astonishing progress made in late late years by Beetroot sugar is beginning to excite the greatest apprehension in the sugar-growing colonies. It is of the greatest interest to consider the different points that are likely to cause the preponderance of the Cane or of the Beet. In the first place, the Sugar-cane is a denizen of the tropics, where the condition of the weather at any given time can be counted upon with certainty. The Beet, on the other hand, grows in the temperate zone, where, although the inhabitants neither suffer from excessive heat nor excessive cold, the weather is almost always unsettled and more or less uncertain. The Beet, which is affected by too much rain or by too little, by unseasonable heat, by unexpected cold, or by too little or too much sunlight, is particularly uncertain in its growth, and the remarkable fluctuations in the crops during the last few years sufficiently establish this point. In 1859-60 the Beet crop amounted to 438,000 tons; in 1860-61 it amounted to only 366,826 tons; in 1861-62 it again rose to 404,411 tons; and in 1862-63 to 450,000 tons. The season 1863-64 was a bad one, and the return sank to 385,741 tons, from which it again rose in 1864-65 to 475,000 tons. This season it will probably amount to close on 600,000 tons. It must be remembered, in considering these very great fluctuations in returns, that, notwithstanding the extraordinary variation in yield, the breadth of land sown has steadily increased year by year, and that even the present season (the largest known) has been a favourable one only in France, while in Germany the weather was decidedly unfavourable, and in Russia so much so as to cause a failure of the crop. Although the best crops will probably continue to increase, and although in a generally favourable season much heavier returns may be looked for, there is certainly some comfort for cane planters in the fact of the great uncertainty of the European plant. The Beet owes its rapid spread over the Continent, in great measure, to its indirect use in agriculture. It gives a basis for the rotation of crops; its leaves and refuse are useful for cattle feeding and for manure. But, on the other hand, the indirect uses of the cane have never been tried, and its refuse, although full of saccharine matter, far from being made useful, is burnt. There is another advantage possessed by the Beet in its being produced in the very countries where the sugar is wanted—thus saving the costly freight from the tropics. It must be expected, if the present state of things continues, that in a very few years the Continent will draw its supplies entirely from the Beet; and although England has as yet made no sugar from it, yet the Beetroot grows and thrives from John o'Groat's to the Land's End, and a little more success on the Continent will cause the manufacture of native sugar to be introduced here. It remains to be seen whether cane sugar can recover the ground lost, but there can be little doubt, had proper use been made of their advantages, that the colonial planters would not have been so far behind in the race as they are at present. *Travers' Circular, quoted in the Journal of the Society of Arts.*

Calendar of Operations.

The Carrying of our Grain Crops, and the ricking them, is done differently in different districts. In the South the use of the two and three-horse waggon is almost universal. The Wheat is built in large round 40 and 50 qr. stacks, and thatched, and the Barley is put in Barns. The Oats are built either in stacks or barns. In a hurried harvest time it is also becoming general to build the corn in the fields where it grew,

and thresh it out there too by the use of the movable threshing machine and engine. In the North it is almost universal to build the grain crops in a stack-yard close by the farmery, where they can be carried in to be threshed by a fixed machine close by the granary; and it is usual to make small cylindrical stacks, holding from 20 to 30 sacks of grain apiece.

It is a useful practice to let a share of the corn-carrying by contract. And in the case of one-horse carts being used, one or two sets or companies of three hands—viz., a man to pitch in the field, and a lad to load on the cart, then a man to pitch from the cart to the rick—will take the labour of "leading" all the corn upon the farm, at the rate of from 10*d.* to 1*s.* 2*d.* per acre, according to the bulk of the crop.

They are, of course, kept going by carts being supplied to them, and by the corn being built out of their way as fast as they can pitch it. And for this purpose a man and boy, hired servants of the farm, are kept on the rick, and a boy is employed to bring the emptied cart back to the field, and to take the full one as soon as it is loaded and roped. Three carts suffice to keep a company going, provided the field be not more than 1000 yards from the rick.

The comparison of one-horse carts with waggons for the general use of the farm, and especially in harvest time, has long given rise to different opinions. This difference still exists, neither party yielding much to the other, although it has been proved over and over again, that the use of the long, wide, low-framed body on a pair of wheels, is more economical than that of the waggon in the harvest field, as that of the light one-horse cart is for taking dung to the fallow field.

Mr. Pusey spoke plainly on the subject in the eleventh volume of the English Agricultural Society's Journal. He said:—"There is a change which gives a great saving of horses, which has been proved to do so over and over again in this Journal, which might be used almost everywhere; but about which farmers have been, to say the least, rather slow. I mean, of course, the exchange of waggons for carts. In Northumberland light carts with a single horse are used for all farming purposes. In Bedfordshire they have light carts too. In the South we have well-made waggons; but with three horses. The Lincolnshire waggon is like a railway-truck on the broad gauge. I will not again describe the trial in which five of my horses with carts beat ten horses with waggons at Barley cart, the number of men being the same; but here is another trial which has just taken place, with the same numbers and the same issue, on the challenge of Sir John Thorold, at Grantham, this year.

"The trial was made on Tuesday August 27, in a field of mown Oats on Mr. Fisher's farm. The extent of the ground cleared is 12 acres: the crop was a heavy one, and the distance from the stack-yard is a mile and a quarter. On the way, the river Witham is crossed by a ford, and the approaches on either side are steep and almost frightful. As in the former case, the men and boys were equal on both sides, and the number of waggons and of carts on either side was five. The horses used in the carts were five, while those used in the waggons were ten. The time occupied in clearing the ground was four hours and three quarters. Both parties began and finished together, and it was found, by measurement of the stacks, that the carts had conveyed about two loads more than the waggons.

"The trial of last week proved favourable to carts on level and up-hill ground, while this day's result is equally favourable on both up-hill and down. In going down to the river, it was found necessary to lock a wheel of the waggons, and to arrange the horses so as to allow of an additional leader in going up; while the carts went straight on, without stop or change of circumstances.

"The saving of horses by the use of Northumberland carts, it is now quite clear, is one-half. What is the saving of outlay at the wheelwright's on entering a farm? I have obtained the prices of the old conveyances from a village wheelwright; they are as follows for a farm of 200 acres:—

Old System.	£	*s.*	*d.*
Three waggons, at 37*l.*	111	0	0
Four 3-horse dung carts, at 14*l.* ..	56	0	0
	£167	0	0
New System.			
Five 1-horse carts, at 11*l.* 10*s.*	£57	10	0

So that the new plan costs but one-third of the old-fashioned outlay. The carts are Busby's prize carts, suited for all purposes: easy for the horse, as the wheels are rightly made; easy for the labourer, as they are much lower than other carts; and wonderfully cheap, as they cost but 11*l.* each, while for my own I paid 18*l.* 18*s.* a few years ago. Here, indeed, since farmers have compared the two systems, no one buys waggons in stocking a farm; but those who have waggons do not like to buy a new set of carts. I should say they had better sell their waggons while they can, and if they cannot, make a bonfire of them. To use them still, is like running a stage-coach in these days between London and Bath."

Notices to Correspondents.

MILDEW: *M. A.* The mildew of the Berberry and that of the Wheat plant are not the same fungus. It is impossible that the former should produce the latter, but it is quite possible that the same circumstances should favour the production of both; and hence possibly has arisen the idea to which you refer.

VINEGAR: *Correspondent.* The following is a receipt:—Put to 10½ gallons of water 10 lb. of brown sugar, boil it gently till no scum is on the surface, taking what does arise off with a skimmer; put it into an open tub or pail to cool, and when quite so, add a tea cupful of yeast, to put it into a fermenting flow; in three days put it into a cask, filling about two thirds of it, which will cause it to acidify quicker. Place the cask in the sun, with the bung-hole open, covering it with a coarse piece of muslin to prevent flies from getting into the liquor.

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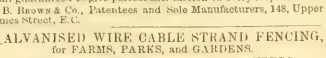

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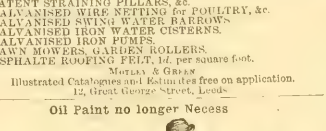

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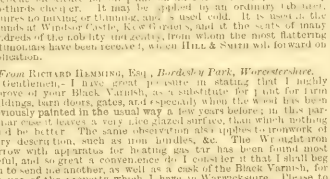

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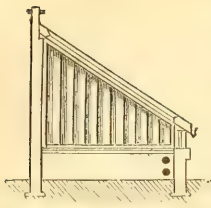

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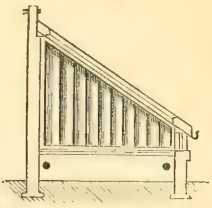

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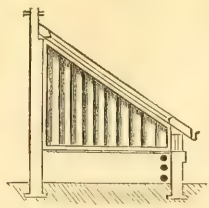

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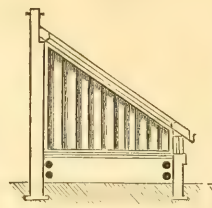

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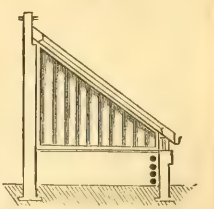

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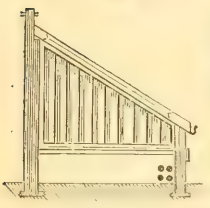

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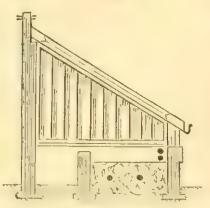

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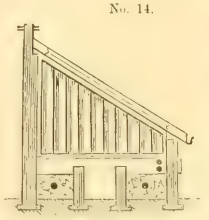

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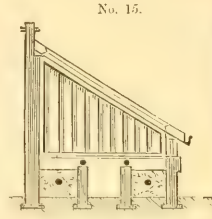

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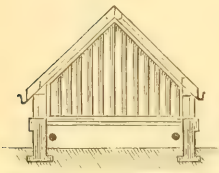

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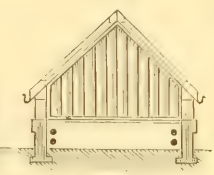

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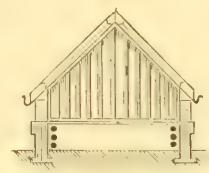

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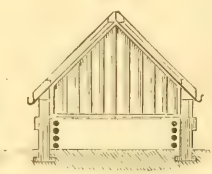

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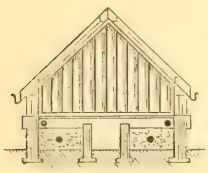

Size of House	Price.
20 by 10 feet	£15 0 0
30 ,, 12 ,,	21 0 0
40 ,, 15 ,,	25 0 0
50 ,, 15 ,,	29 0 0
60 ,, 15 ,,	33 0 0
70 ,, 15 ,,	37 0 0
80 ,, 15 ,,	41 0 0
100 ,, 15 ,,	45 0 0

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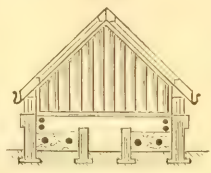
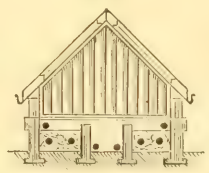


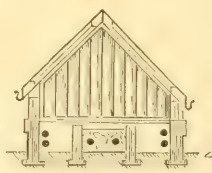
Price.
£25 0 0
32 0 0
38 10 0
44 10 0
51 10 0
58 0 0
65 0 0
72 0 0

No. 24.



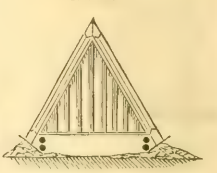
Price
£25 0 0
32 0 0
38 10 0
44 10 0
51 10 0
58 0 0
65 0 0
72 0 0

No. 25.



Price.
£18 10 0
25 0 0
30 0 0
35 0 0
40 0 0
45 0 0
50 0 0
55 0 0

No. 26.



Price.
£14 0 0
19 0 0
24 0 0
28 0 0
32 0 0
36 0 0
40 0 0
44 0 0

J. JONES & SONS will be happy to supply HOT-WATER APPARATUS for HOUSES according to any of the above Plans, delivered Free to any Station in England at the prices named, which include strong CAST-IRON CYLINDER or SADDLE BOILER, FURNACE DOORS, FIRE BARS, SOOT DOORS, CISTERN and DAMPER, 4-inch HOT-WATER PIPES and CONNECTIONS, all of the best quality; or will forward ESTIMATES for WORK erected complete, with WROUGHT or CAST-IRON BOILER of any sort, at a small addition to the above prices.

☞ *The Black Circles on Sections of Houses show the arrangement of Pipes.*

ILLUSTRATED CATALOGUES and further particulars Post Free on application to

J. JONES AND SONS, IRON MERCHANTS AND HORTICULTURAL ENGINEERS,
6, BANKSIDE, LONDON, S.E.

Editorial Communications should be addressed to "The Editor." Advertisements and Business Letters to "The Publisher," at the Office, 41, Wellington Street, Covent Garden, London, W.C.
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THE GARDENERS' CHRONICLE
AND
AGRICULTURAL GAZETTE.

A Newspaper of Rural Economy and General News.

No. 33.—1866.] SATURDAY, AUGUST 18. {Price Fivepence, Stamped Edition, 6d.

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ROYAL HORTICULTURAL SOCIETY, SOUTH KENSINGTON.

NOTICE.—A MEETING of the COUNCIL and FLORAL COMMITTEES will be held on TUESDAY NEXT, Aug. 21, at 11 o'Clock; LECTURE at 3 o'Clock.

CRYSTAL PALACE.—The GREAT AUTUMN SHOW of FRUIT and FLOWERS on WEDNESDAY and THURSDAY, September 5 and 6.

Schedules, with List of Prizes, may be had on application to
I. Wilkinson, Superintendent, Crystal Palace.

BRITISH ASSOCIATION FLORAL FETE, NOTTINGHAM PARK.

THURSDAY, FRIDAY, and SATURDAY, August 23, 24, and 25. Grenadier Guards Band, Robin Hood Rifle Band, South Notts Yeomanry Band, Sax-Tuba Band.

3000 PLANTS, exclusive of Fruit and Flowers, being entered for competition, forming the largest exhibition that has ever been held in the Midland Counties.

THURSDAY, 3 to 5 o'clock, 2s. 6d.; 5 to close, 1s. FRIDAY, 11 to 3, 1s.; 3 to close, 6d. SATURDAY, from 11 to 7, 6d.

☞ The Midland and Great Northern Railways will convey Passengers at a Single Fare each day from all Stations; and on Saturday, Special Trains will be run. For particulars see Railway Bills.

BOSTON FLORAL and HORTICULTURAL SOCIETY (1866).—The FIRST GREAT AUTUMN SHOW of FLOWERS, FRUITS, and VEGETABLES will be held in MAJOR HOPKINS' PARK, on THURSDAY, the 13th September. Prizes of £5 and £3 (subject to the Judges' discretion), will be given for the Best and Second Best Collections of 12 Stove and Foliage Plants.

The Boston Artillery Band will attend.

For Schedules, &c., apply to the Hon. Secs., Mr. W. H. Bailes, Solicitor, Boston; and Mr. Jos. Cocks, West Skirbeck Nursery, Boston.

Tickets of Admission, at 1/- each 2s., at 3 o'clock 1s., may be obtained of Mr. R. M. Dingle, 4, Market Place, Boston.

N.B. It is particularly requested that intending Exhibitors give the notice required by Rule 4 with regard to Entries, for the Hon. Secretary's convenience.

FLOWER SHOW, Meersbrook Park, near Sheffield.—In addition to other Prizes, the following will be offered at the Show, September 4. Open to all England.

DAHLIAS, 24 dissimilar blooms. 1st, 60s.; 2d, 40s.; 3d, 20s.; 4th, 10s.; entrance, 1s.

DAHLIAS, 12 dissimilar blooms. 1st, 20s.; 2d, 10s.; 3d, 5s.; entrance, 1s.

HOLLYHOCKS, 12 cut blooms, dissimilar. 1st, 20s.; 2d, 10s.; 3d, 5s.; entrance, 1s.

All applications for Entrance to this Class to be made to Mr. F. G. Goswin, Seedsman, Sheffield, the Secretary, by August 28.

ROYAL CALEDONIAN HORTICULTURAL SOCIETY (Incorporated by Royal Charter). GRAND AUTUMN COMPETITION and PROMENADE SHOW will be HELD in the Assembly Rooms and Music Hall, Georges Street, Edinburgh, on the 5th and 6th of September next. Prize Lists and Rules can be had post free on application to
Mr. Young, 33, South Bridge, Edinburgh.

MR. U. RAVENEL, of Aiken, South Carolina, will supply to prepare Collections of the PLANTS (PHŒNOGAMIC or CRYPTOGAMIA) of the Southern Provinces of the United States, on application for terms addressed as above. He would also undertake to COLLECT SEEDS of TREES and HARDY SHRUBS for the Spring.

The Rev. M. J. Berkeley, F.H.S., of King's Cliffe, Wansford, begs to recommend this Advertisement to Public Notice.

Genuine Garden and Agricultural Seeds.

JAMES CARTER AND CO., Seed Farmers, Merchants, and Nurserymen, 237 & 238, High Holborn, London, W.C.

Roses in Bloom.

JAMES MITCHELL has the honour of informing his kind patrons that his magnificent COLLECTION is NOW in FINE BLOOM. Pitt Down Nurseries, Maresfield, Sussex.

The London, Brighton, and South-coast Railway. Two and a-half miles from the Uckfield Station.

Roses.

PAUL AND SON'S ROSES are NOW in BLOOM at the "Old" Cheshunt Nurseries.

Frequent Trains Daily from Shoreditch to Cheshunt.

The HOLLYHOCKS are also in BLOOM at Paul & Son's, Old Cheshunt Nurseries, N.

Lea Bridge Road Nurseries, London, N.E.

JOHN FRASER respectfully invites an inspection of his Collection of ROSES, which he begs to announce are NOW in FLOWER. The Collection contains many new and fine varieties. The Nurseries are about 5 miles from London, and are easily reached by Train on the Great Eastern Railway, to Lea Bridge Station.

Roses in Bloom.

WM. PAUL'S ROSES are NOW in FULL BLOOM. Inspection respectfully invited. Trains almost hourly from Shoreditch to Waltham Station.

Paul's Nurseries, Waltham Cross, N.

New Tea Rose.

ABMROISE VERSCHAFFELIT, Nurseryman, Ghent, Belgium, begs now to offer his new fine TEA ROSE, ISABELLE SPRUNT, figured in the July Number of the "Illustration Horticole." Fine strong plants, 8s. each.

SUTTON'S AUTUMN CATALOGUE, now in the Press, will be shortly published, and forwarded gratis and post free on application.

Royal Berkshire Seed Establishment, Reading.

Notice.

60-PAGE CATALOGUE of NEW PLANTS of 1866 now ready, free for one stamp.

Wm. Dillistone, Munro Nursery, Noble Hedingham, Essex.

WM. CUTBUSH AND SON beg to say that their DESCRIPTIVE CATALOGUE of CHOICE HYACINTHS, TULIPS, CROCUSES, &c., is now ready, and can be had post free on application.

Highgate Nurseries London, N.

New General Plant Catalogue.

B. S. WILLIAMS' NEW PLANT CATALOGUE, containing many really good Novelties, and carefully selected LISTS of STOVE, GREENHOUSE, and HARDY PLANTS, is now ready and will be forwarded post free to all applicants.

Victoria and Paradise Nurseries, Holloway, London, N.

Dutch and other Flower Roots.

HAMILTON AND WRIGHT'S PRICED CATALOGUE of the above, containing also a SELECT LIST of VEGETABLE and FLOWER SEEDS for Autumn Sowing, post free on application. For free delivery of goods see Catalogue.

Surrey Seed Warehouse, Thornton Heath, London, S.

Hyacinths, Tulips, Crocuses, &c.

BUTLER AND McCULLOCH'S DESCRIPTIVE PRICED CATALOGUE of the above and other SPRING-FLOWERING BULBS will be ready the first week in September. Forwarded, post paid on application.

Covent Garden Market, W.C

Hyacinths, &c.

WM. PAUL'S SELECT LIST of HYACINTHS, EARLY TULIPS, and other SPRING-FLOWERING BULBS and PLANTS, is now ready and will be forwarded post free on application.

Paul's Nurseries and Seed Warehouse, Waltham Cross, London, N.

Hyacinths and other Flower Roots.

JOHN FRASER begs to intimate that his CATALOGUE of HYACINTHS, ARCISSI, TULIPS, &c., is now published, and may be had on application. A DESCRIPTIVE LIST of the best kinds of STRAWBERRIES is also ready for distribution.

The Nurseries, Lea Bridge Road, London, N.E.

Van Houtte's Nursery, Ghent, Belgium.

LOUIS VAN HOUTTE begs to announce that his BULB CATALOGUES are now ready, and will be forwarded post free on application to his London Agents, Messrs. R. Silberrad & Son, 5, Harp Lane, Great Tower Street, E.C.

Hyacinths, and other Dutch Bulbs.

E. BARNARD, Vegetable Street, Hunslow, begs to announce that his CATALOGUE of FLOWER ROOTS for 1866 has just appeared, and can be had post free on application.

N.B. Postage to Holland, 3d.

Catalogue of Plants.

A. VAN GEERT, Nurseryman, Ghent, Belgium, respectfully begs to announce that his NEW PRICED CATALOGUE may be obtained on application to Messrs. R. Silberrad, 5, Harp Lane, Tower Street, London, S.E.

A. V. G. wishes to inform the Public in general, that good plants are added gratis to every order to help the expenses of carriage.

IVERY AND SON having a few NOVELTIES now ready to send out, will be pleased to forward their PRICED DESCRIPTIVE CATALOGUES of AZALEA INDICA, and No. 10 HARDY BRITISH FERNS, which contain full particulars.

Dorking Nursery.

British Fern Catalogue.

ROBERT SIM can now send, post free for six postage stamps, Part. I. (British Ferns and their varieties, 36 pages, including price of Hardy Exotic Ferns) of NEW and PRICED DESCRIPTIVE CATALOGUE of BRITISH and EXOTIC FERNS No. 7.

*** Part II. (Exotic Ferns) will be issued as early as possible.

Foot's Cray Nursery, S.E.

VIOLETS, now ready and in first-rate condition for planting out for the coming season.—A large stock of all kinds of Violet Plants, including the GIANT, NEAPOLITAN, CRIMEA, DOUBLE BLUE, &c., &c.

LIST of PRICES on receipt of stamp for postage.

John Sydman, Violet Grower, Thornton Heath, Surrey, N.W.

CASTLE KENNEDY FIG.—Plants of the above may now be had at 10s. 6d. and 21s. each; the usual discount to the Trade. Peter Lawson & Son, Edinburgh and London.

Strawberries.

CHARLES TURNER can supply all the leading kinds, in good Plants.

DESCRIPTIVE CATALOGUE may be had on application.

The Royal Nurseries, Slough.

NEW STRAWBERRY, DR. HOGG (Bradley).—Resembling British Queen, but very large, and a better grower than the Queen; a cross between Strawberry Hunter and, like Sir J. Paxton and Oscar, by the same raiser, will become a favourite, and be generally grown. It received a First-class Certificate from the Royal Botanic Society in 1865, and the same distinction by the Fruit Committee of the Royal Horticultural Society this season; was exhibited in C. Turner's successful collection of four varieties of Strawberries, and also in the Collection of Fruit at the July Exhibition of the Royal Botanic Society. Price 21s. per 100.

Charles Turner, The Royal Nurseries, Slough.

CUTHILL'S STRAWBERRY PLANTS, strong and fine for bearing, will be sent out on August 20, &c. The sorts lasted 60 days—from June 2. Dr. Lindley often said that he never could depend on a crop until he had mine. BLACK PRINCE, PRINCESS ROYAL, RICHARD II., HIGHLAND MARY, NEWTON SEEDLING, and LATE PRINCE OF WALES, per 100, each sort, 5s.; but if selected, 7s. 6d. Superior MUSHROOM SPAWN, 5s. 6d. per bushel; PRINCE ALBERT WINTER CUCUMBER, 1s. Pamphlet on Cucumbers, &c.

Post Office Orders payable on Camberwell Green.

James Cuthill, Denmark Hill, Camberwell, London, S.

A Quarter of a Million of Fruit Trees.

THOMAS WARNER begs to inform intending Planters and the Trade, that his Nurseries, which occupy upwards of 70 acres, contain the above, in addition to a most extensive stock of Evergreens, Ornamental Trees, Roses, &c. All in a high state of cultivation. An inspection is respectfully invited.

CATALOGUES, Wholesale and Retail, ready in October.

The Nurseries, Leicester Abbey, ¼ mile from the Midland Railway Station.

REBECCA, the finest BEDDING GERANIUM ever raised. Plants now ready, price 5s. each.

See Wm. Paul's SPRING CATALOGUE.

Paul's Nurseries, Waltham Cross, London, N.

Botanic Nurseries, Biggleswade, Beds.

DOUBLE SCARLET GERANIUMS of Sorts, 2s. 6d. each, 24s. per doz. VARIEGATED CHRYSANTHEMUM, a fine plant for winter work, 9s. per doz. Cash from unknown correspondents.

Edward Shenton.

MRS. POLLOCK GERANIUM.—Strong Plants of the above, struck in the open ground, can be supplied by the 100 or 1000. They can be sent safely packed in Moss (as they are very strong plants and well rooted), which will save the carriage of pots. Also from 300 to 400 cut-back plants, very strong, some 2 and 3 years old, can be supplied by the doz. or 100. These can also be sent packed in Moss, as there is plenty of time for them to root before winter. They are splendid plants. Price on application to J. Scott, Nurseryman and Florist, Bathford, near Bath.

CHOICE GERANIUMS.—ITALIA UNITA, 30s. per dozen; SILVER STAR, the best silver-variegated ever offered, 2s. 6d. each.

Fine Plants of ALOCASIA METALLICA, 5s. each; ALOCASIA MACRORRHIZA VARIEGATA, 2s. each; PANETTIA BORBONICA, 1s., 6s. each.

CYANOPHYLLUM MAGNIFICUM, stock plants, 3 feet high, price on application. Terms cash.

J. Aldred, 22, Bridge Street, Kilburn, N.W.

PAUL AND SON'S HOLLYHOCK SEED, in 6s packets of 12 varieties, should be sown at once.

The Old Cheshunt Nurseries, N.

New Verbenas of 1866.

WM. KNIGHT has selected from the various raisers 30 distinct varieties of VERBENAS, which he now offers in good Plants for 15s., pack age included. Terms cash

Floral Nursery, Baldham, Surrey.

JAS. BACKHOUSE AND SON regret to say that they will be unable, from unforeseen causes, to send out Plants of LOBELIA CORONOPIFOLIA this season. Orders received will be executed as soon as possible.

York Nurseries, August 18.

To the Trade.

J. KELLETT begs to offer in strong Plants the undermentioned choice FERNS:

GYMNOGRAMMA CHRYSOPHYLLA, 12s. per doz.; 75s. per 100.
LAUCHEANA, 12s. per doz.; 75s. per 100.
LOMARIA GIBBA, 24s. per doz.; 150s. per 100.
PTERIS RUBRO-NERVIA, 15s. per doz.; 100s. per 100

Green Lane Nurseries, Stockport.

Fancy Tulips.

FOR SALE, a splendid Collection of FANCY TULIPS, consisting of above 800 Bulbs, in 220 varieties, all correctly named. Price £20. For particulars apply to

A. Van Geert, Nurseryman, Ghent, Belgium

JAMES FAIRHEAD AND SON, Seed Growers and Merchants, 7, Borough Market, London, S.E.

New and Genuine AGRICULTURAL, GARDEN, and FLOWER SEEDS. Special prices and advantageous others on application.

NEW HARDY RHODODENDRON, MICHAEL WATERER.—This Rhododendron has hitherto been exhibited under the name of ANNIHILATOR, but it will not come out under the above name. It is undoubtedly the most brilliant-coloured free hardy free-blooming Rhododendron yet offered.

Orders are now being taken for Plants to be sent out in the Autumn at 31s. 6d. each. The usual discount to the Trade.

John Waterer, Jun., American Nursery, Bagshot, Surrey

New Late White Trifolium.

SUTTON AND SONS can supply GOOD SEED of this useful variety of TRIFOLIUM. It should be sown during the latter weeks of August or the first week of September, and not less than 28 lb. per acre.—Reading, August 18.

SUTTON'S RENOVATING GRASSES SHOULD NOW BE SOWN.

8 to 12 lb. required per acre.

Price 10d. per lb., or cheaper by the cwt.

Sutton & Sons, Royal Berkshire Seed Establishment, Reading.

Grass Seeds for Autumn Sowing.

SUTTON'S PERMANENT GRASS SEEDS FOR ALL SOILS.

Prices (according to quantity required and soils for which they are intended), may be had on application.

Sutton & Sons, Royal Berkshire Seed Establishment, Reading.

FINE SPECIMEN and HALF-SPECIMEN HARDWOODED and ORNAMENTAL FOLIAGE STOVE and GREENHOUSE PLANTS.—Exhibitors and gentlemen furnishing Conservatories are invited to inspect our Collection of the above, which is large and in very fine health and moderate.

T. Jackson & Son, Nursery, Kingston, Surrey.

CERASUS LUSITANICA var. AZORICA.—Plants of this very superior variety of Portugal Laurel (in habit, flower, and hardiness), to which a First-class Certificate was awarded by the Royal Horticultural Society on the 5th June, will be ready for distribution the ensuing Autumn. 7s. 6d. and 10s. 6d. each.

Osborn & Sons, Fulham Nursery, London, S.W.

New Hardy Clematises.

GEORGE JACKMAN AND SON respectfully invite an inspection of their Collection of SEEDLING CLEMATIS, which is NOW in FLOWER, and will continue all the Autumn. This Collection contains new and fine varieties that are quite equal to those selected, viz., C. Jackmanni, rubro-violaceus, rubella, Prince of Wales, Princess of Wales, magnifica, and velutina purpurea, each being awarded First-class Certificates by Royal Horticultural or Botanic Societies in London.

Woking Nursery, Surrey.

Greenhouse, Hardy and Stove Plants; Agricultural, Flower, and Vegetable Seeds, &c.

ROBERT PARKER invites inspection of his Collections of the above-named, which have been selected with the greatest care. All plants are clean and healthy, and are offered at reasonable prices. Descriptive and Priced Catalogues are published, and will be forwarded to applicants.

Exotic Nursery, Tooting, Surrey, S.

PETER DRUMMOND AND CO. (late J. Scott), Preston Road Nursery, Yeovil, Somerset, have still on hand a surplus stock of BEDDING PLANTS, including DAHLIAS in great variety; GERANIUMS, FUCHSIAS, LANTANAS, VERBENAS, &c., at moderate prices; also TURNIP and other Seeds of best quality and variety for present sowing.

Please address as above.

BY HER MAJESTY'S ROYAL LETTERS PATENT.

ORMSON'S

NEW PATENT WROUGHT IRON MULTITUBULAR HOT-WATER BOILER.

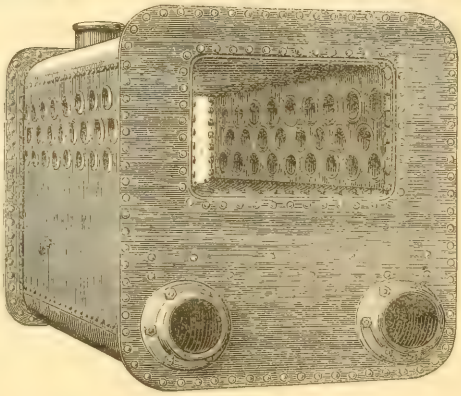
THE GREAT ADVANTAGES OF THIS BOILER ARE —

1st. Being entirely of Wrought-Iron, its safety from leakage and cracks (from expansion or contraction), a danger to which all Cast-Iron Boilers are more or less liable.

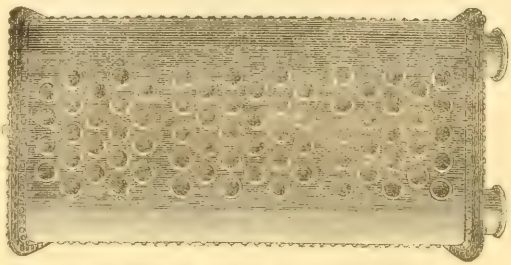
2d. An immensely increased surface exposed to the direct action of the fire, which passes through the tubes, thereby giving a wonderfully increased amount of power.

3d. A great saving in the consumption of fuel. Its facility for banking up the fire. Its peculiarly well-adapted construction for slow combustion, and burning many hours without attention, at a trifling expense.

4th. Its extraordinary power and safety for carrying out the One Boiler System, and small space and depth for setting.



ELEVATION.



UNDERSIDE OF BOILER AND PLAN OF TUBES.

One of these BOILERS Heated the GREAT ORCHID TENT, 500 feet long, and 40 feet wide, at the INTERNATIONAL HORTICULTURAL EXHIBITION, with a remarkably small quantity of fuel, and gave the greatest satisfaction. Was highly approved of by many Scientific Men and Practical Horticulturists.

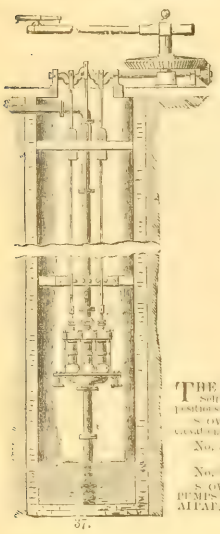
The great Power, Economy, and Safe Working of these BOILERS has been thoroughly tested for the last 12 months at the Horticultural Gardens, Chiswick, where they may be seen in action, and also at other places in various parts of the country.

THEY ARE MADE OF VARIOUS SIZES. PRICES ON APPLICATION.

HENRY ORMSON, F.S.A.,

HORTICULTURAL BUILDER TO HER MAJESTY, AND HOT-WATER APPARATUS MANUFACTURER TO THE COMMISSIONERS OF HER MAJESTY'S ROYAL PALACES AND PUBLIC BUILDINGS, AND TO THE ROYAL HORTICULTURAL SOCIETY,

STANLEY BRIDGE, KING'S ROAD, CHELSEA, LONDON, S.W.



37.

S. OWENS & CO.

(LATE CLINTON AND OWENS),

MANUFACTURERS OF

PUMPS and HYDRAULIC MACHINERY,

WHITEFRIARS STREET, LONDON, E.C.

THE LANDSCAPE SKETCH shows an application of THE IMPROVED HYDRAULIC RAM. This is a simple Self-acting Machine, suited for raising a supply of Water for use in Public and Private Establishments. Its adaptation is not confined to positions as shown, but is suited to many situations where a constant flow of water is available, as a Stream, Brook, or Spring.

S. OWENS and CO. have fixed a great many to various purposes the country for raising from one to 1000 or more Gallons per day to considerable heights from 30 to 300 feet, and to a distance of 1 to 2 Miles from the Spring, as to several parts of the Estate.

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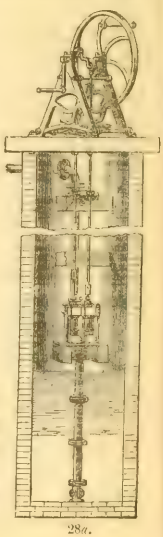

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Have much improved the construction of their

GARDEN **ENGINES**

in some important particulars for this Season.

They may be obtained of the Trade generally throughout the Kingdom at the following prices:—

No. 547. WARNER'S best ENGINES, in Wood Tubs, and fitted with WARNER'S Registered Spreaders—

24 Gallons,	£6	10	0
14 ,,	5	10	0

No. 547A. WARNER'S strong ENGINES, in Galvanised Iron Tubs, well painted—

10 Gallons,	£2	19	0
16 ,,	3	14	0
24 ,,	4	19	0
28 ,,	5	10	0

No. 579½. WARNER'S WATER BARROWS, thoroughly Galvanised and well painted—

20 Gallons,	£2	2	0
30 ,,	2	13	0
38 ,,	3	17	0
50 ,,	5	12	0

The 50-Gallon Barrow is made extra strong throughout, and fitted with handle for two men.

No. 568½, AMERICAN ENGINE, is now well known and appreciated. It throws a continuous stream, and is complete in itself. £2 2*s*.

SYRINGES in great variety, from 7*s*. 6*d*. to 18*s*. 6*d*.

The DISC SYRINGE, No. 557A, will recommend itself by the ease with which it is filled, and non-liability to get out of order. Price 9*s*.

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Is recommended to the notice of Horticulturists as possessing the following advantages:—It is simple in construction, portable, and easily worked. It throws a continuous stream, and is low in price.

The Aquaject, 30s.

Ditto small size, 18*s*.

WARNER'S 6-Gallon GARDEN ENGINE, of Galvanised Iron and well painted, fitted with Brass Air-vessel, Branch Pipe, and WARNER'S Registered Spreader, 50*s*. Light, portable, and easily worked by a lady or child.

No. 35. WARNER'S IRON PUMPS for Wells, not exceeding 25 feet in depth — 2½-in., 28*s*. 6*d*.; 3-in., 41*s*.; 3½-in., 46*s*.; short barrel do., 21*s*.

No. 36. IRON FORCE PUMPS for raising water above their level, or Watering Yards, Gardens, &c., through hose—2½-in., 59*s*.; 3-in., 65*s*.; 3½-in., 77*s*.; 4-in., 89*s*.

No. 36½. FORCE PUMP on BARROW, recommended for its great portability and simplicity of construction. £5 10*s*.

No. 42. WARNER'S PORTABLE PUMPS on Folding Legs, are of a superior construction.

Price 55*s*.; Rubber Suction, 2*s*. 11*d*. per ft.

No. 597A. BRANCH PIPES with Cocks and Roses—½-in., 3*s*.; ⅝-in., 4*s*.; ¾-in., 5*s*.

No. 599. TAPER BRANCH PIPES—½-in., 4*s*. 9*d*.; ⅝-in., 5*s*. 3*d*.; ¾-in., 6*s*.; 1-in., 7*s*.

RUBBER HOSE in all sizes.

FOUNTAIN JETS in great variety, from 3*s*. 6*d*. to 25*s*.

B. S. WILLIAMS, Victoria and Paradise Nurseries, Holloway, London, N.
CHOICE SEEDS.
PRIMULA (Williams's superb Strain).—The most noted strain of Primula in existence; same as supplied to nearly all the largest Gardens in England. In sealed packets, at 5s., 1s. 6d., and 2s. 6d. each. None genuine without B. S. Williams's name and address on the packet.
CALCEOLARIA (James's strain).—5s. and 2s. 6d. per packet.
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Prize Calceolaria, &c.
BUTLER AND McCULLOCH beg to offer Seed of the above, saved only from flowers of great beauty, 1s. & 2s. 6d. per pkt.
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PRIMULA (James's), extra choice, 1s. and 2s. 6d. per packet.
COVENT GARDEN INTERMEDIATE STOCK (True), 1s. and 2s. 6d. per packet. [1s. pkt.
PURPLE and WHITE INTERMEDIATE STOCK, 1s. and 2s. 6d.
All packets of Flower Seeds sent post paid.
Butler & McCulloch, Covent Garden Market, W.C.

RAYNBIRD, CALDECOTT, BAWTREE, DOWLING, AND COMPANY, Limited,
Corn, Seed, Manure, and Oilcake Merchants,
Address, 88, Seed Market, Mark Lane, E.C.; or Basingstoke.
Samples and Prices Post free on application. Prize Medals, 1851 for Wheat; 1862, for excellent Seed Corn and Seeds.

Brighton and Sussex Seed Warehouse.
EDWARD CARPENTER'S MIXTURES of PERMANENT GRASS and CLOVER SEEDS.—Best quality, one acre 2 bushels light seeds, and 12 lb. Clovers and small seeds per acre.—See testimonials in Catalogue.
Edw. and Carpenter's RENOVATING MIXTURES for Improving Old Pastures.
PRICED CATALOGUES of KITCHEN GARDEN, FLOWER, and FARM SEEDS now ready.
Edward Carpenter, Seed Merchant and Grower, 96, St. James's Street, Brighton.

New Petunias for 1866.
AMBROISE VERSCHAFFELT, Nurseryman, of Ghent, Belgium, begs to announce that he is now sending out good Plants of all the best NEW PETUNIAS raised in the Continent, and which were sent out in 1866. This collection obtained the First Prize at the last Ghent June Show.
12 distinct varieties, 1s. 6d. each ... 24 distinct varieties, 1s. each
Every order will be sent per London tree at carriage and packing

AMBROISE VERSCHAFFELT, Nurseryman, of Ghent, Belgium, begs to offer—
Fine DOUBLE CAMELLIAS, without buds, in 100 varieties of first choice, named in the Iconographie of Camellias, £12 10s. per 100
Fine AZALEA INDICA, with all buds, in 100 varieties, comprising all the best known blooms, £15 per 100
Fine DOUBLE CAMELLIAS, full of flower buds, £6 per 100.
Fine AZALEA INDICA, full of flower buds, £5 per 100.
N.B. To secure named choice, early orders are solicited.

JOSEPH BAUMANN, Nurseryman, Ghent, Belgium, offers the following:—
100 CORREA ALBA STOCKS ... £1 0 0
100 LILIUM LANCIFOLIUM ALBUM ... 2 0 0
100 ,, RUBRUM ... 2 0 0
100 ASCLEPIAS TUBEROSA ... 1 10 0
100 VIBURNUM MACROCEPHALUM ... 4 0 0
100 ILEX in sorts 3 0 0
100 GREVILLEA HILLII 4 0 0
100 GREVILLEA STOCKS 1 0 0
100 DEUTZIA CRENATA, fl. pl. 1 0 0
100 STRAWBERRIES DE NICAISE ... 0 10 0
Carriage must be paid on above to London.

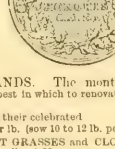
50,000 Azalea indica, and 100,000 Rhododendrons, Grafted Plants.
JOSEPH BAUMANN, Nurseryman, Ghent, Belgium, begs to offer the following, free to the Custom House, London:—
100 AZALEA INDICA, with flower buds, £4 to £5.
100 ,, stronger plants, £6 to £8
(They are all dwarf bushy heads and the best kinds.)
100 RHODODENDRONS, 1 year grafted, £4.
100 ,, 2 to 3 years, grafted, £8.
100 ,, stronger plants, £10.
100 ,, with flower buds, £8.
100 ,, with flower buds, larger plants, £12 to £18.
(They are all the best English and Belgian hardy sorts.)
All my finest Hardy Ghent Azaleas are already ordered for England.
CATALOGUE on application

GISHURST COMPOUND, whether used against Insects and Mildew, on Growing Plants, or as Winter Dressing on Trees at rest, should be dissolved 48 hours before use. This gets rid of smell, and if the Solution be decanted, prevents any staining of foliage. A strength of from 1 to 2 oz. to the gallon of water is recommended for growing Plants; one from 4 to 16 oz. for Trees at rest.
Sold Retail by Nurserymen and Seedsmen, in boxes, 1s., 2s., and 10s. 6d. each.
Wholesale by
PRICE'S PATENT CANDLE COMPANY (Limited).

Seeds for Present Sowing.

JAMES CARTER AND CO. are now offering New Seed of the undermentioned, the quality of which cannot be surpassed, the seed being saved from plants which have taken Prizes at all the principal London Flower Shows.
CARTER'S PRIZE CALCEOLARIA, 2s. 6d. per packet.
CARTER'S PRIZE CINERARIA, 2s. 6d. per packet.
CARTER'S PRIZE FRINGED CHINESE PRIMULA, 2s. 6d. per packet.
The above forwarded on receipt of postage stamps.
James Carter & Co., 237, 238, and 261, High Holborn, W.C.

Seeds for Present Sowing.


LOOK to YOUR GRASS LANDS. The months of August and September are the best in which to renovate Old, or Lay Down New Pastures.
James Carter & Co offer their celebrated
RENOVATING MIXTURE at 10d. per lb. (sow 10 to 12 lb. per acre)
Also FINEST MIXED PERMANENT GRASSES and CLOVERS (free from weeds), mixed to suit all soils, at 36s. per acre.
ITALIAN RYE GRASS (clean) | TRIFOLIUM INCARNATUM
STUBBLE TURNIP (new seed).
All of best quality. Price on application.
James Carter & Co., 237 and 238, High Holborn, W.C.

Cabbage Seed for Present Sowing.
SUTTON AND SONS have a good stock of fresh Seed of the best kinds of CABBAGE for Farm and Garden.
LARGE DRUMHEAD CABBAGE, 2s. 6d. per lb.
ROBINSON'S ditto ditto, 3s. 6d. per lb.
DRUMHEAD SAVOY, 3s. 6d. per lb.
LONDON MARKET CABBAGE, 3s. 6d. per lb.
ENFIELD ditto ditto, 3s. 6d. per lb.,
and others.
SUTTON'S IMPERIAL CABBAGE, the finest and earliest for Spring use in the Garden, 8d. per oz. Cheaper by the pound or half pound.
Sutton & Sons, Royal Berkshire Seed Establishment, Reading.

The Forwardest Turnip known is

SUTTON'S SHORT-TOP SIX WEEKS.
Price 1s. per lb.
Cheaper by the Bushel.

This excellent Turnip if sown now will produce a heavy crop, to come off in time for Wheat sowing.
Sutton & Sons, Royal Berkshire Seed Establishment, Reading.

SUTTON'S IMPROVED ITALIAN RYE-GRASS, the Best and Most Productive in Cultivation.
Sutton & Sons can supply New Seed of the above at 6s. per bushel, or cheaper in large quantities,
August and September are the best months for Sowing.
Sutton & Sons, Royal Berkshire Seed Establishment, Reading.

For Present Sowing.
TRIFOLIUM INCARNATUM, Italian Crimson Clover
NEW LATE RED TRIFOLIUM
SUTTON'S IMPROVED ITALIAN RYE-GRASS.
SUTTON AND SONS are now harvesting, for delivery in a few days, very excellent Seed of the above. Prices are very moderate, and may be had post free on application.
The quantity of Trifolium (alone) usually sown per acre is 28 lb., or with Italian Rye-grass 8 lb. per acre is sufficient.
Also MUSTARD and RAPE, now seed.
All Goods carriage free, except very small parcels
Sutton & Sons, Royal Berkshire Seed Establishment, Reading.

DUTCH FLOWER ROOTS.

JAMES VEITCH & SONS,
ROYAL EXOTIC NURSERY, CHELSEA, S.W.,
BEG TO ANNOUNCE THAT THEY HAVE RECEIVED THEIR
ANNUAL SUPPLY OF BULBOUS ROOTS FROM HOLLAND,
AND ARE PLEASED TO SAY THAT THEY ARE IN EXCELLENT CONDITION.
CATALOGUES are now ready, and will be forwarded post free on application.
J. V. AND SONS desire to impress upon those who patronise them the great advantage of giving them their orders early, as the successful Cultivation of Bulbs depends in a great measure upon their being planted early in the season.

AMARYLLIS.
JAMES GARAWAY & CO.,
DURDHAM DOWN NURSERIES, BRISTOL,
Offer, from their unequalled stock of the above-named favourite flower, strong Bulbs of unnamed Seedlings and others that have bloomed with them during the two last seasons, at
5s., 7s. 6d., and 10s. 6d. each, or 50s., 80s., and 105s. per dozen.
JAMES GARAWAY AND CO.'S GENERAL BULB CATALOGUE for the coming season is in the Press, and when ready will be forwarded post free on application.
JAMES GARAWAY AND CO., DURDHAM DOWN NURSERIES, BRISTOL.

VAN HOUTTE'S NURSERY, GHENT, BELGIUM.
CAMELLIAS.
LOUIS VAN HOUTTE, in returning thanks to his numerous Friends and Customers in Great Britain for the very liberal share of patronage accorded to him, begs to intimate that he is now prepared to execute orders for the above to any extent, feeling confident that his Stock, comprising all the most approved Varieties, and true to name, is this season in such a condition as to give the utmost satisfaction. They will all be sent in their pots, which will incur a trifle extra expense in packing, but give the parties the benefit of receiving their Plants in good condition, and prevent the dropping off of the flower buds. L. V. H. begs to offer them at the following prices:—

1 year's Grafted...	per 100	£3	0	0	2 and 3 years' Grafted, good vars., well set with buds,	per 100	£6	0	0
2 and 3 years' Grafted, without buds	,,	5	0	0	2 and 3 years' Grafted, best vars.,	,,	7	0	0

Names, size, and price of Specimen Plants will be sent on application.
CHINESE AZALEAS can be supplied in September. Advertisements will appear in proper season.
BULB CATALOGUES are now ready. CAMELLIA and AZALEA CATALOGUES will be published towards the end of the month, and may be had on application to
MESSRS. R. SILBERRAD AND SON, 5, HARP LANE, GREAT TOWER STREET, LONDON, E.C.

Paul's Nurseries, Waltham Cross, London, N.
SEEDS FOR PRESENT SOWING

WM. PAUL can confidently recommend the following first-class Seeds:—PRIMULA, CINERARIA, CALCEOLARIA, and HOLLYHOCK, from finest strains, 1s. 6d. to 2s. 6d. per packet; VIOLA CORNUTA; POLYANTHUS, splendid mixed, 1s. per packet.

We PAUL'S IMPROVED TELEGRAPH CUCUMBER, WALTHAM GREEN CURLED ENDIVE, BROCKET HALL LETTUCE, 1s. per packet. All other Seeds of best quality at moderate prices.
CATALOGUE on application.

BARR'S CALCEOLARIA, CINERARIA, PRIMULA, STOCKS, MYOSOTIS, &c.

CALCEOLARIA, very choice, 2s. 6d. per packet; CINERARIA, very choice, 1s. and 2s. 6d. per packet; PRIMULA, very choice, 1s. and 2s. 6d. per packet; SCARLET, PURPLE, and WHITE INTERMEDIATE STOCKS, for Spring blooming, very fine, each variety 1s. per packet; SCARLET, PURPLE, and WHITE IMPERIAL STOCKS, for Spring blooming, each variety 1s. per pkt.; MYOSOTIS SYLVATICA, for Spring blooming, 6d. and 1s. per packet; Collections of PERENNIALS, 2s. 6d., 3s. 6d., 5s. 6d., 10s. 6d. to 21s.

BARR & SUGDEN, 12, King Street, Covent Garden, London, W.C.

BANBURY HORTICULTURAL SOCIETY.
Open Prizes.—1866.

The TWENTIETH ANNUAL EXHIBITION of this Society is fixed for TUESDAY, August 28th, when, in addition to the usual number of Prizes to be competed for by Members, the following are offered, Open to all England, on payment of an Entrance Fee of 2s. 6d.

For the best 6 STOVE or GREENHOUSE PLANTS, either in Flower or Ornamental, of at least four different Genera, but not Specimens of Annuals. First Prize, £3; Second, £2.

For the best 24 DAHLIAS, 24 varieties. First Prize, £3; Second, £2.

For the best 18 HOLLYHOCKS, 2 Blooms of each. First Prize, £2; Second, £1.

For the best 12 varieties of VERBENAS, (3 Trusses in a bunch). First Prize, £1; Second, 15s.

The Judges may withhold any prize if the production exhibited be not considered worthy.

Intending Exhibitors must give notice to the Secretary on or before SATURDAY, August 25th.

The Society will, if requested, convey the productions from and to the Railways.

The Bands of H.M. 52d Regiment and the 3d Oxfordshire Rifle Volunteers, and the Orpheus Glee Union will perform on the grounds.

For further particulars, apply to E. J. HARTLEY, Secretary.
67, High Street, Banbury.

The Gardeners' Chronicle.
SATURDAY, AUGUST 18, 1866.

MEETINGS FOR THE ENSUING WEEK.

TUESDAY, Aug 21	Royal Horticultural (Floral and Fruit Committees, at South Kensington	11 A.M.
	Ditto (Scientific Discussion)	3 P.M.
SATURDAY, — 25	Royal Horticultural (Weekly Show), at South Kensington	2 P.M.

POTATOS, it is well known, are liable to be rendered more or less POISONOUS by an agency from which it is quite in our power effectually to protect them, and that is the ACTION OF LIGHT, and more especially the direct rays of the sun.

When the Potato disease was at its worst, and when in many instances only a small portion of the tuber was left in a partially sound state, it was found that if these diseased Potatos were boiled and mashed up, cows and pigs would feed upon them, although the mash contained portions tainted with disease, and not entirely free from rottenness; and when the unsound portions were separated from the sound the latter produced no deleterious effect, even when used as human food, thus fortunately proving that the Fungus which is now known to be the cause of the disease, was not a poisonous one, although very destructive to the substance of the Potato itself. The disease was long a mystery as to its cause, and the numerous experiments which have been tried to discover means to combat it effectually, seem to have been tried in vain.

But the action of light, while it does not destroy the substance of the Potato nor render it putrid and unsound, sadly changes its nature from being palatable to poisonous. This happens if we expose fine white-skinned and floury-fleshed Potatos to the action of light, and if they are clean washed the light will act with still greater effect, while direct solar light such as we often experience in bright autumn weather is even more conducive to the evil in question than diffused light. Exposed to bright sunshine the finest Potatos first acquire externally a yellowish tinge, then a greenish yellow, progressing to green, or purplish green, approaching the hue of the stem above ground; and whilst so changing it will be found on cutting the tuber that its flesh, though originally white, has become of a yellowish tinge throughout; and this it retains, even when boiled. But whilst this change of colour is taking place by the action of light, a bitter poisonous principle is being developed, which chemists call *Solanine*, from Solanum, the botanical name of the Potato genus. They state that it is VERY POISONOUS; in its highly concentrated state it would probably equal some of the most deadly vegetable poisons. At all events there can be no doubt that as it is found in the Potato acted upon by light it is very deleterious to health. It is asserted that there have been instances of pigs having died in consequence of eating much greened Potatos. We have, however, great faith in the instincts of animals, and can scarcely believe that they would eat anything that would prove so fatal, although when strongly urged by hunger they might partake of that which by instinct they would otherwise reject; and for the sake of obtaining some portion of nutritive matter might take along with it something which might prove deleterious. A horse will select wholesome herbage, and apparently feed indiscriminately on all that comes in his way; but he does no such thing; he will avoid and leave a single noxious leaf that may have sprung up amongst the wholesome mass of herbage.

Potatos, tainted with noxious properties by the action of light, should be avoided everywhere, and by all persons, rich and poor. They are easily known, either cooked or uncooked, by the yellow colour of their flesh, and by the peculiar bitter of the solanine principle which they acquire. This we cannot here describe, but we recommend any one who wishes to know it to take up some good sort of Potato, say an Ash-leaf Kidney, or any other good kind, and let the tuber be kept perfectly in the dark, or buried in the earth; let some of the same sort be exposed for several days to light till they cut yellow; if exposed to a strong sunlight the process will be accelerated. Then let these be cooked under the same conditions as those of the same sort taken up at the same time, but kept completely in the dark, both samples being cooked fairly in comparison, and the difference as well as the deleterious effects of light will be known better than words can describe.

It is needless to say how many are affected by this great evil. All classes are interested in doing away with it, and if all resolved to do so this result might easily be obtained; for it is not like making head against some monopoly. The remedy consists in this:—Let purchasers refuse to buy Potatos that they can see have been unduly exposed to light—which can be known from what has been above stated; and when the vendors find that it would be for their own interest to keep their store of tubers in the dark, they will certainly not fail to do so; and we shall all be benefited thereby. ||

WE publish below a letter on a subject of some interest as taken in connection with a notion which has been lately revived that the SPORES OF CRYPTOGAMS have something to do with CHOLERA. An abstract of Dr. SALISBURY'S observations will be found in the last number of the "Popular Science Review," p. 371, in which it is stated that microscopic plants are the causes of ague in the malarial districts of Ohio and Mississippi. Algæ, Fungi, Diatomaceæ, and Desmidiaceæ were found in the mucous secretions. The spores are said never to rise above 30 or 60 feet above the summit of the soil, and only in the night damps, the dry air being free. Diatomaceæ are generally present, but the other Cryptogamic spores are not found above the ague level.

As regards cholera, Dr. COWDELL some years since published an octavo volume on the fungous origin of cholera, and Lord SIDNEY GODOLPHIN OSBORNE stated in the "Household Words" that he had succeeded in obtaining fungous spores from the mouths of drains. Mr. JABEZ HOGG gives a figure of some of these in an article on Vegetable Parasites in No. XXI. of the "Quarterly Journal of Microscopical Science," and touches on the question "whether the poison-germs which produce the more alarming infectious diseases are of a fungoid nature," though he is not prepared to give a positive answer. The fact of fungous spores being observed in the ejections of yellow fever, does not appear to us at all conclusive as to their having anything to do with causing the disease, though, as in many other cases, it may aggravate it; still less does the fact of Fungus-spores being caught at the mouths of drains show their connection with cholera, for they are to be found everywhere, as appears from the direct observations of several microscopists, as also from the experiments of PASTEUR respecting spontaneous generation. That these spores, which are often identical with yeast globules, may produce strange effects, either by their development, or by the consequent fermentation, is a point which scarcely admits of denial. A case reported by LEHMANN, and quoted by Mr. HOGG in his memoir, is extremely suggestive:—

"If an emulsion of casein (the casein of Sweet Almonds) be mixed with a small quantity of amygdaline, and then introduced into the stomach of an animal, it very soon ferments, and the yeast fungus quickly changes the chemical constituents of the mass into the poisonous substance known as oil of Bitter Almonds, and thus destroys the life of the animal."

Though, however, we have a distinct perception of the mischief which may and does arise in many cases from the spores of Fungi, we do not think that there is any evidence to show that they have anything to do with the production of cholera. It is at least quite as likely that the cause should exist in some deleterious gas, as in vegetable parasites. Indeed, till the controversy as to the cause of death in cholera is settled, or whether the poison is taken in by the lungs or stomach, it seems impossible to arrive at any logical conclusion. The fact of death in cholera being in some instances so extremely rapid is much against the fungal theory, as sufficient time is not given for the development of the spores or any subsequent effects, for no one would, we think, contend that they are immediately poisonous.

As regards the origin of intermittent fever from the spores of Algæ, it is much easier to believe that marsh gases accompanying the Algæ are the cause of evil than the extremely minute Algæ spores. No one has yet shown that they are even able to induce fermentation, for it must be remembered that far the greater part of the organisms which are found in animals, if not all, which are usually referred to Algæ, are in truth of a fungoid nature. It is much to be regretted that even at the present day such terms as Torula, Puccinia, &c., should be used in a very different sense from that in which they are used by mycologists. Most of the vegetable parasites in animals are not autonomous plants, but mere mycelia or abnormal conditions of perfect Fungi. *M. J. B.*

The Origin of Intermittent Fevers from the Spores of Fresh-water Algæ.—Dr. HANSON, Professor of Botany in the University of Brussels, has written a letter on this subject (see "Journal de Medecine de Bruxelles," April, 1866) which is very interesting and valuable, as affording confirmatory evidence of this theory. From this letter it appears that the Cryptogamic origin of intermittent or marsh fevers was known empirically in Belgium, long before Dr SALISBURY published his work advocating the same views. Dr. HANSON quite coincides in opinion with Dr. S. as to the influence which the spores of the Algæ exercise in the genesis of these fevers.

"In 1845," says Dr H., "I studied at the University of Liège. Prof. CHARLES MORREN created in me such an amount of enthusiasm in the study of the fresh-water Algæ, that the windows and mantelpiece of my chamber were covered with plants filled with Vaucheria, Conferva, and Oscillatoria. My preceptor converse I with pleasure on my observations on these Algæ, and each time he said—'Take care; at the period of their fructification, the spores of these Algæ produce intermittent fevers.' As I cultivated my Algæ in pure water, and let it in the water of the marsh where I had collected them, I did not attach any importance to this remark. A month later, at the period of their fructification, I was taken with a shivering, my teeth chattered, and I had the fever, which lasted six weeks. I removed from Liège to Brussels, and recovered under the treatment of Dr. ALPHONSE LEGROS. Unfortwards saw Professor MORREN, and told him what had happened. 'You see,' said he, 'that I was right, and you are not the only one that I have seen attacked from a similar cause.'"

—— WE are glad to learn that the entries for the FLORAL FETE, to be held on Thursday next at Nottingham, in connection with the meeting of the British Association, are such that a fine show is certain, indeed it will be the largest that has ever taken place in the Midland Counties. While on this subject we may further note our satisfaction at finding that the authorities of the Royal Horticultural Society contemplate holding a country show next year in connection with the meeting of the Royal Agricultural Society. A great benefit to Horticulture may result from an efficient carrying out of this intention.

NEW GARDEN FERNS.

ADIANTUM VELUTINUM, *Moore*.

Fronds tall pentangular ovate, alternately branched, the lower branches quadripinnate; ultimate pinnules dimidiate-oblong, dorsely falcate, subacuminate or rounded at the apex, the lower margin entire, the upper lobed with the apex bluntly toothed, the upper gradually smaller, and the terminal one rhomboid-acuminate, quite obliquely reniform, almost confluent to the anterior margin of the pinnules, one rarely two occupying each lobe; indusia thickish prominent entire, superficial, oblong-linear as well as the sinus clothed the latter sparingly, and the latter more densely, especially on the upper surface, with fine white-brown crispy jointed hair-scales, which give the surface a light-coloured velvety appearance; caudex short, slowly creeping.

This noble species is remarkable for the tall stature of its much-branched ample supradecompound fronds, which attain from 3 to 4 feet in height, and also for the whitey-brown felt of coloured-like intricate hairs or hair-scales, which give quite a velvety appearance to the rachides, especially on the upper surface, and is also more or less evident over the surface of the stipes, which hence appears pale-coloured, though of the usual dark purplish-brown beneath. The stipes is furnished with a few brownish subulate scales at the very base. The posterior divisions of the branches of the frond are longer than those on the anterior side, and sometimes more compound. The ultimate pinnules are chartaceous in texture, about an inch in length, dimidiate, with the anterior base truncately rounded, curved backward at the base, and rounded or subacuminately produced and slightly falcate at the apex. The sori occupy nearly the whole width of the marginal lobes, and are oblong or reniform according to their length, usually one only but sometimes two occurring on the lobe. In the form of its pinnules and general character the plant has some resemblance to A. Wilesianum, but it is altogether more robust, and is

a fine addition to our stove Maiden-hair Ferns. It was introduced from Columbia by Mr. Linden, and is, we believe, now entirely in the hands of Mr. Bull, by whom it was shown at the late International Horticultural Exhibition.

ADIANTUM PROLIFERUM, *Moore.*

Fronds linear-lanceolate, strigillose on the upper surface, proliferous near the extremity of the rachis; bipinnate; pinnæ short-ovate-oblong; pinnules oblong-obtuse or nearly lobate, the lobes toothed, the lower sessile or slightly connected by a wing, the upper ones more or less confluent; sori central; stipes and rachides purplish.

A graceful evergreen Ceylon species, with pendent fronds a foot and a half long, of a narrow linear-lanceolate form, nearly equal in width throughout. The pinnæ are scarcely more than an inch in length, and have one or two separate pinnules at the base, and then become decurrent. The fronds bear young plants near the apex of the rachis, sometimes two or more on the same frond, and the upper surface is strigillose. It forms an elegant plant for suspending in a small fancy basket amongst Orchids, and of course requires stove temperature. It has been imported by Mr. Bull.

ADIANTUM LINDENI, *Moore.*

Fronds pentagonal, tripinnate; ultimate pinnules rather large, chartaceous, oblong, imbricate, obscurely falcate acuminate, the base truncate, the inner margin as well as the apex lobate, the lobes furnished with several blunt teeth; upper pinnuli decreasing in size, the terminal one elliptically lanceolate; sori solitary or oblong, more or less exindusiated, occupying a portion or the whole of the apex of the lobe; fructification sometimes attaining the pinnule's base; rachis somewhat velvety on the upper surface.

This elegant species of Maidenhair was introduced from the Amazons by M. Linden, to whom it is dedicated. We are indebted for our knowledge of it to Mr. Bull, by whom the stock has been acquired. It is one of the larger stove species, with the habit of A. Wilesianum and A. velutinum. The pinnules are large, rather distant, and distinctly lobed, the lobes being parallel and quite entire at the sides, and bluntly toothed along the apex; the pinnules are also remarkably acuminate, and measure an inch and a half in length. The rachis is smooth on the lower, and velvety on the upper surface. *T. M.*

NOTES ON CONIFERS.—No. VII.

Welwitschia mirabilis (continued from p. 734).—There are two things which I consider of importance to ascertain distinctly at this stage of the inquiry one, what organ the scale represents in Welwitschia as well as in Ephedra and Coniferæ; and the other, what organ the utricular envelope of the seed, called by Dr. Hooker the perianth, really is? It is surely a legitimate inference that if these three types belong to the same group, the parts which are apparently the same in each should also be actually the same; that the scale should represent the same organ in all three, and if the outer envelope of the seed be the perianth in Welwitschia, it should be so also in Conifers and Ephedra; or if these parts do not represent the same organ in all, then that the plants which differ do not belong to the same group as the others. Now first as to the scale. We trust presently (as soon as we have finished Welwitschia) to satisfy all unprejudiced men that in Conifers what is called the scale is the *ovule*. For our proof of that we must ask the reader to wait. While, on the contrary, it appears to us that in Welwitschia and Ephedra it is the bract. It cannot in them be the petal, because in the male cone the flower lying in the axil of the scale already possesses petals (Fig. 4), and although no petals appear in the female flower, it seems clear that if the scale is not a petal in the male flower it cannot be one in the female, because the scales in the two kinds of cones are too identical in appearance and structure to allow different functions to be ascribed to them. The scale lies outside the petal, and the only organs which we have to choose between, lying exterior to the petals, are a calyx or a bract. We prefer to think it a bract, but the point does not involve any important physiological question. The important point to which we have arrived is that the organ is the same in Ephedra and Welwitschia, but not the same in Conifers.

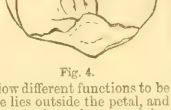


Fig. 4.

The significance of the next organ within it, in the female flower, is of more physiological import. Is it, as Dr. Hooker imagines, the perianth or floral envelope, or not? Reckoning from without inwards, it may be said that the perianth ought to be the next envelope after the scale, as it is in the male flower, but the cases are not parallel. If we are to find in the female flower all that occurs in the male flower, where are the stamens? The stamens and petals are very convertible, and if the one may be absent so may the other. We consider that both are absent here. And looking at the organ itself, it has no resemblance to a perianth, but a perfect resemblance to a not uncommon form of pericarp, a utricular achenium with a central seed, which indeed, remarkably enough, is a character strikingly developed in various plants of Angola. Its growth, too, both in time, manner, and continuance, is that of a pericarp, or seed vessel, not of a perianth. It runs its course of growth *simul et semel* and *pari passu* with the seed it contains. The petals or perianth in all other plants first blow and then cease growing before the seed and seed vessel begins to appear. These two continue to grow larger simultaneously until the seed is mature. But we know of no perianth which continues to increase in size *pari passu* with the seed; and we know of no pericarp which does not;—facts which make against the idea of this being a perianth and in favour of its being a pericarp, with which moreover the function it actually performs of inclosing the seed is more correspondent.

The chief coincidence between Welwitschia and Ephedra thus far, therefore, appears to be limited to the scale and position of the flower. In opposition to these, however, a mass of contradictions have to be taken into account. In Welwitschia each scale of the male strobilus bears a hermaphrodite flower, and each scale of the female strobilus a female flower. In Ephedra, on the other hand, there are only two seeds borne at the termination of the spikelet (Fig. 5)—and if Mr. Miers is right in his belief as to the true nature of the fructification, these are the produce of the only female florets in the spikelet, the remaining four scales in the lower part of it producing only male flowers. He says: "At the time I saw the living plants I was impressed with the idea that the inflorescence in Ephedra is monœcious; that the fruit-bearing spikelets are the same as those bearing male flowers, where the persistent involucels have increased in size, and many of them grown thicker, and from which the male florets have fallen away, leaving the solitary terminal female flower finally developed into two ripe carpels. I cannot now be certain of this fact, nor will I attempt to contradict the statement of botanists who consider the flowers to be dioecious; but appearances seem to favour my earlier conviction that the flowers are monœcious in the same spikelets, the terminal flower being developed at a much later period, as often occurs in Euphorbiaceæ. In support of this idea it may be remarked that the flowers in the male involucels are developed successively upwards at different periods; so that before the æstivation of the upper florets the lower ones have fallen away and their bracts have grown to two or three times their former size, thus resembling the empty imbricated involucels always found supporting the terminal pair of achenia in what are considered female spikelets. This fact may be seen in all herbarium specimens. The male flowers are constantly found detached, while the solitary female flower always forms the termination of the axis of the spike." There is no doubt that Mr Miers is right as regards herbarium specimens, notwithstanding that the figures in some works incorrectly represent the spikelet sometimes as bearing stamens on the terminal involucels. Mr Miers also quotes Kunth as stating that each axil in Ephedra monostachya produces a cluster of four spikelets, three of which consist of male florets, while the other contains two female flowers, and he refers to a specimen of Ephedra bracteata in the Hookerian Herbarium, where most of the ramifications have their floral branchlets terminated by ripe fruits, while in a lower part is another branchlet, charged with a spikelet of male flowers.

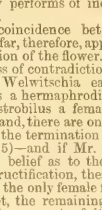


Fig. 5.

The female flower must then be very small when it is impregnated by the male, the stamens having all fallen off before the female reaches any size. In this smallness there is certainly a similarity between Ephedra and Welwitschia, although it is one that is shared by a multitude of plants, Conifers and others. Dr. Hooker says—"It is reasonable to suppose that impregnation is effected by insect agency, and that when the pollen is ready for transport the female cones are still very small, and the nucleus of their ovules is neither covered by the ovular integument nor by the perianth." The reader knows from what we have already said that we cannot agree with this last sentence. They may not be covered by what Dr. Hooker considers the ovular integument nor by the perianth and yet be covered by both. His conception of the meaning of the organs which he calls by these names may be wrong. Fig. 6 shows the scale and ovary in its earlier stage; Fig. 7, the ovary at a later stage.

Fig. 6.

If the envelope in question is not the perianth, but the pericarp, then it at once puts an end to any idea of Welwitschia being gymnospermatous; the meaning of gymnospermatous as opposed to angiospermatous being that the seeds in the latter are enclosed in a pericarp, while in the former they are not, but are naked.

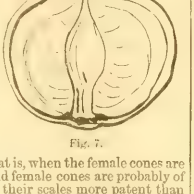


Fig. 7.

But to go on with our quotation. "At such a period," says he (that is, when the female cones are small), "the staminate and female cones are probably of about the same size, and their scales more patent than they afterwards are in the female. Such an arrangement, indeed, appears necessary; for it is obvious that after the ovular integument has assumed its styliform shape (which is long antecedent to any change taking place in the nucleus) it would be extremely difficult to introduce a single grain of pollen by any conceivable means to the apex of the nucleus," &c. The continued growth of this long styliform process certainly would render this extremely difficult; it is as fine as a hair, therefore we agree with Dr. Hooker that impregnation must take place at a very early period, when the female flower is very small; but we see no reason for importing insect agency into the process. Dr. Hooker, indeed, adds, "In connection with this subject I may mention that the nearly mature cones are often bored through and through after the manner of flower-buds attacked by larvæ, and that Cetoniadæ, a pollen-feeding group of Coleoptera, abound in the regions inhabited by Welwitschia." It is not given to every one to be *et rex et sutor bonus*—both a first-rate botanist and a good entomologist, therefore Dr. Hooker need not care although he be wrong here. Dr. Welwitsch informs us that there are few or no Cetoniadæ in the district where the Welwitschia grows, and Dr. Hooker has doubtless been misled by an observation of Mr. Monteiro, who probably meant to have said Melasomata, but used instead the word Cetoniadæ or Melolonthidæ, a kindred family; and independently of this we should still doubt their being pollen-feeders. We do not venture to give an absolute negative to the statement, as we do not well see how the fact could absolutely be ascertained, still we prefer the common belief that they feed upon honey in flowers and the juices of plants. In Brazil the Gymnetidæ (the South American form of Cetonia) come in crowds to feed on the juice of the Orange tree when it is wounded; the Pachnodæ do the same in Australia; and on the Gold Coast and the neighbouring districts of West Africa, where Cetoniæ *are* plentiful, the most successful mode of procuring Goliaths is to examine the troughs placed against the trees to collect Palm oil in, as the Goliaths come to feed upon the juice during the night, and in the morning are found half drowned in the troughs.

But to return to Welwitschia and its relations to Ephedra. Dr. Hooker considers that the character of the ovules and seeds of Welwitschia entirely corresponds with that of the Gnetaceæ—in some respects agreeing most with Ephedra, in others, most with Gnetum.

"The ovule of Welwitschia," says he, "entirely agrees with that of Ephedra, except in the discoid apex of the integument of the latter, which is oblong and obliquely truncate. The ovule of Gnetum again differs from that both of Ephedra and Welwitschia in having two integuments, of which the interior corresponds to the single one of the other genera, and as in these terminates in the styliform process. * * * The outer integument of the ovule of Gnetum is developed after the inner or styliform: but as nothing analogous to it exists in Welwitschia, I need not further allude to it here."

And again: "The general resemblance of the ovule to that of other Gymnosperms is very obvious, whether as regards the structure and position of the integument and its tubular prolongation or the large embryo-sac, so easily removed, in which the cell formation has commenced previous to impregnation."

The supposed coincidence between Ephedra and Welwitschia here relied on is not admitted by Mr. Miers, who says the seed (the ovule) of the former is covered by two integuments, but the point need not dwell upon, for, as Mr. Miers says, in speaking of the similarity of the suspensor of the ovule in Gnetum and Welwitschia, which is undoubtedly very great:—"We ought not to attach much importance to the mere circumstance of a suspensor as a proof of the close alliance of the Gnetaceæ with the Coniferæ and Cycadeaceæ, seeing that it is always diversified in the several genera, and different from that structure in those families." He also says elsewhere, "In regard to the remarkable growth of the tubillus in the Gnetaceæ I am able to cite two analogous instances in families of a much higher degree of organisation, where the mouth of the tegmen is produced into a long tubular expansion, showing that such expansion is in no way connected with the development of what have been held to be naked seeds." As to the presence or absence of a suspensor in Ephedra, he says, "In the seed of some species of Ephedra, where the summit of the inner integument below the micropylar gland is greatly attenuated, and often so much corrugated that it can be further lengthened by force, the upper portion of the albumen becomes also attenuated, and as it extends beyond the point of the radicle, and contracts an adherence with the gland, it looks almost like a short suspensor; but its texture shows that it is only a continuation of the albuminous mass, there being no trace of anything analogous to the suspensor described by Gaudichaud and Griffiths in Gnetum;" and afterwards, "I have again examined carefully the suspensor in Ephedra, and can discover no trace of those embryo-sac-bearing filaments which are found in Gnetum and Welwitschia." Lastly, the point on which the seed does not correspond with that of Ephedra are shared by numerous other families of plants, such as Styracæ, Olacaceæ, Helianthemum, &c. *A. M.*

OXALISES FOR WINTER BLOOMING.

MANY of the species of Oxalis are plants of a very ornamental character. Some of them are well adapted for winter blooming; indeed by a very little attention they may be had in bloom for a long time during the depth of winter. I venture, therefore, to offer a few suggestions respecting their treatment.

The latter part of August is a suitable time for getting a quantity of them potted. They should not be deferred later, as the plants will be weaker, and, consequently, will not bloom so well. The compost that suits the strong-growing kinds consists of three parts sandy loam, and one part coarse sand and charcoal. The weaker kinds are benefited by using, in addition, a quantity of peat and leaf-soil, in a rough state. After the bulbs are potted, they should be placed in a cold

pit, and water must be applied rather sparingly until they begin to grow freely; after which a good soaking of manure water occasionally will much improve the foliage, giving it a healthy, vigorous appearance, and will also prolong the flowering season to a considerable extent. When the plants begin to show bloom, they should be placed in the greenhouse, either on a shelf near the glass, or near the front of the house. They are much benefited by the heat of the stove, as it assists them to open their blossoms with more boldness. The pots which, for size, are most suitable for them, are the 48's and 32's—that is, 5 and 6-inch pots.

I have had, in the middle of January, blooming in the stove, two pots full of Oxalis versicolor, on one of which 97 blooms were expanded at one time, and on the other 84. On one plant of Oxalis Boweana there were over 100 blooms. Nothing could possibly have had a more charming appearance than they presented. The following kinds will be found very desirable for the purpose of winter blooming:—Oxalis Boweana, O. hirtella, O. pulchella, O. rubro-flava, O. geniculata, O. lepida, O. versicolor, and O. purpurea. *H. G.*

[One seldom sees these beautiful plants in cultivation now. They are well worth looking up again. Eds.]

HARD SOIL FOR FRUIT TREES.

Cultivators generally ought to be obliged to yourselves and Mr. Rivers for drawing special attention to this subject (see pp. 703, 706). Doubtless there is some secret connection between resistance offered to the extension of roots, and a fruitful top. Beyond this simple fact, established by frequent observation, our knowledge does not seem to extend. One of the likeliest means of solving the mysteries hidden beneath this fact, would be the multiplication of carefully-stated and well authenticated cases. To be of the slightest value, however, more must not be inferred from them than the facts themselves warrant. Mr. Rivers's case, for instance, does not demonstrate that the fruitfulness of the Apricot trees originated or was caused by the hard soil. The trees, says Mr. Rivers, "were forgotten, and had no water nor care till the fruit was set." Hence, of course, they escaped the 5-inch deep removal of old roots and soil previous to a new dressing, prescribed for the others—a deprivation, in the opinion of many, sufficient to throw off the whole crop. They had no water nor care till the fruit was set. Probably, then, an excess of water, and certainly an excess of care, often causes Apricots to drop. The negation of these things may have had more to do—I think they had—with the crop of fruit, than the hard earth.

The standard trees cited by Mr. Rivers, seem to afford a better proof of the benefit of hard soil. But one would require to see them before accepting their undoubted health and fruitfulness as proving anything of the kind. For, first, they were standards, the natural form of the tree; secondly, were they not freely and loosely grown, another condition of health and fertility? and thirdly, were they not sheltered from heavy rains and frosts, biting north-easters, and an excess of cold and wet at their roots? And are not all these so many guarantees for fruitfulness, independently of the well-beaten path beneath which their roots grew? The latter may have something, much, or everything to do with the fruitfulness, but it is, to say the least, unphilosophical to generalise so rapidly without further proof.

Mr. Rivers, however, offers further proof. He proceeds to cite the extraordinary fertility of the Apricot trees on cottage gable ends in Oxfordshire and elsewhere, whose roots are often under paved yards or the common footpath of the family, as a further to his own cases in favour of hard soil. Now it is easy to show that these trees prove other things besides this, and that probably they do not prove this at all. For first of all, such trees are frequently met with growing in constantly dug and deeply stirred soil. I have had for some years a monster tree of this kind, covering the end of a stable, under my own care. The produce was astounding, but it was constantly dug and cropped right up to the stem. Their fertility is chiefly if not altogether owing to the absence of pruning and training. The trees become, as it were, half standards, and sheltered by the heat of the gable end, further warmed by the chimney, and often also by a few boughs thrust among the branches, a crop is almost certain. But it would be well-nigh as logical to attribute this fruitfulness to the vibratory motion of the wind among the branches, as to the hard solid earth in which they frequently grow. In fact, as the former condition is constant, while the latter is inconstant, it would be much easier to prove that the fertility arose from the free sweep of the yielding air than from the resistance afforded by the hard earth. Be that as it may, in all the cases cited the verdict must be "not proven." And perhaps there is no living cultivator so eminently qualified to prove such a point as is Mr. Rivers. I trust therefore that he and others may be induced to collect fresh facts, and make more definite experiments, to clear up beyond all controversy the point, whether or not hard soil is an aid to fertility? Perhaps at the present time few things could be of more importance to the science of vegetable physiology and the practice of horticulture than the solution of this problem.

I agree with Mr. Rivers's conclusions, while thinking his data insufficient to establish them. Hence, partly, my anxiety for more facts. My experience does not confirm the opinion you express that the hard soil prevents the roots running about too much. It seems generally to have a contrary tendency. It does not curtail but extend the area of feeding ground. But it changes the character of the feeders, and probably also the quality of the food conveyed; especially the spunges or mouths of the roots are changed. Instead of the fleshy, flabby extremities that they often have in loose earth, they perforce by their mechanical compression become in hard soils a fine net-work of minute threads. Especially do they develope this tendency if they come into contact with stone, bricks, bones, or other impenetrable substances. They will often encase such things in a fine lace-like net-work of fibres, and hold it so tight that it cannot be extricated. It is in this minute subdivision of roots that I believe the germs of fruitfulness is laid. The food is sifted of its grossness, in the process of imbibition—and these finer samples when they reach the leaves are speedily elaborated into the delicate germs of fruit and flowers.

A similar transformation of root, form, and function, is effected by root pruning. Popularly the fruitfulness induced by this, is attributed to a mere diminution of the extent of root. That is only temporary, and is not the chief cause of the fruitfulness. Probably there may soon be a larger surface of roots than before, but their character is different. Instead of a few large tubes, we have a multitude of small fibres. Consequently the amount of food conveyed may be as great or greater than before, but its quality is changed, and it is collected nearer home. Instead of a few large tube-formed roots roaming forth to a distance in quest of crude food, that would be invariably expended in the development of wood only, the whole soil becomes filled with a fine network of feeders, which search out such food as is fitted for the production of fruit chiefly. This fruitfulness has its cause not in a reduction of volume, but in the improved quality of the sap, and the effect which that improvement cannot fail to exert on all the secretions of plants. This change in the roots runs through the entire plant. The stem, branches, leaves, and bark even, become modified in form, habit, size, and function by the power of compression, or obstruction rather, and the mutilation of roots.

I advance another thought upon this subject with great diffidence. It is this: that a firmly compressed root medium may enable the sap to flow with greater force or momentum by the mere mechanical pressure which it exerts upon their cellular tubes. This is something altogether distinct and different from the common energy of the vital principle that may be held to force or drain up the sap in ordinary cases. What I mean here is something analogous to the augmented power that the wheel of a railway carriage obtains as it bites the solid iron rail below. So perhaps may the hard earth bite or squeeze the cellular structure of the roots, affording the sap a mechanical leverage to force it powerfully to the extremities of the system.

From much careful observation I arrive at the conclusion that a full and comparatively sluggish current of sap is that most favourable to the formation of wood. And it is just also during the fatty plethoric state induced by such a supply of sap that flowers are most liable to drop off without setting. This large watery stream seems to flow past, lacking either the will or power to fix and strengthen them. The condition of the plant is altogether too loose and flabby to firmly fix the fruit in its place. The whole system needs bracing up. That brace may be given as braces generally at the base. By heavy compression or obstruction the supply of sap in the root is diminished, its quality refined, and its circulating force so much augmented, that it bounds forward into every flower, cements their union to the tree, and insures a set. As I have ventured to criticise Mr. Rivers' facts he will probably revenge himself by laughing at my theory of fertility; still it has more to recommend it than at first sight appears. In stone fruits, for instance, such as Peaches, Nectarines, and Apricots, the communication between the flower and the tree is very slight previous to the expansion of the flower. The channel of conveyance between the flower and branch, especially in the case of Apricots, is very minute. This alone might account for the greater difficulty of setting Apricots than Peaches. In fact, previous to setting, the flowers may be said to have had a season's independent existence on the stem. They were manufactured and packed up for use last year, and only a slight hold kept of them by the branch through the winter. They expand chiefly in virtue of their self-contained supplies of organisable matter. So far it matters little what the plant provides. But the crisis has now arrived. The change from an all but independent, to a thoroughly and entirely dependent existence, has come. As the floral envelope begins to wither, the stigma and ovary must be supported by the branch or die. Everything now depends upon the food provided. Suppose it is coarse and watery: Then it may be unable to penetrate these delicate organs; or it may come against them with such force as to drive them right off; or it may not have energy enough to reach so far. In all these cases there would be no fruit. But, on the other hand, the finely divided roots would convey them sap, that can pierce the smallest interstices of the most delicate organs—it would flow with force enough to reach every blossom, and its diminished volume would prevent it either passing clean past the blooms, or from driving them off with an ugly rush. No sooner is a free communication established between the embryo fruit and the branch, and a suitable supply of proper sap secured, than the crop is safe. Neither would it be anything so very marvellous if the crop was secured partly by mechanical agency. For it is well-known that the weight of the fruit itself speedily becomes a strong lever to draw the sap towards it. And if supplies of food can thus be drawn out of a living plant at one extremity by a mere weight, it certainly comes within the range of probability that they may be helped up and on at the other extremity by their pressure.

I place these thoughts before your readers as my humble contribution to the elucidation of a difficult and important subject, and invite facts and criticisms from all, and especially from our venerable father in orchard-house culture, Mr. Thomas Rivers, whose instructive paper. *D. T. Fish.*

THE CHINESE PRIMROSE.

The Chinese Primrose (Primula sinensis) is a plant of great beauty, and its value for decorative purposes in the conservatory or drawing-room, during the winter months, cannot be too highly estimated. Of the numerous varieties we now have, the single ones may be propagated by seeds; and the double ones by cuttings or offshoots, which latter require to be kept rather dry until they have struck root. The fine double varieties which have appeared within the last few years, are however, said to be unreproducable from seed.

For decorative purposes the high-coloured single varieties are perhaps the most useful. In order to obtain a succession of plants for this purpose, three or four sowings should be made from the beginning of July to the end of September. As soon as the seedlings have formed a pair of leaves, they may be potted in small thumbs, and afterwards progressively shifted till they are in pots of the required size, those of from 4 to 6 inches in diameter being generally found large enough. The soil for potting should consist of one-half sandy loam, and one-half leaf-soil, or leaf-soil and peat. The seeds may be raised in a slight hotbed, where the plants may remain until they are established in their first separate pots; they must then after proper hardening be removed to a cold frame, open day and night, and covered with glass only during violent rain. On the approach of frost, they may be removed to a cool, airy part of the greenhouse, where they must be kept as near as possible to the glass, as, without abundance of light and air, the flower-stems will be drawn, and the colours will be dull.

They require at all times plenty of water, and on this account the pots should be well drained to ensure its ready percolation, for few plants are more impatient of stagnant water about their roots than is the Chinese Primrose. Some growers recommend the plants being placed a little deeper in the pot at each shifting, but that is a bad practice generally speaking, being calculated to cause them to damp off at the neck.

By this treatment a succession of flowering plants may be maintained from November to May. Those with the largest flowers and finest colours only should be reserved for seed, the others being destroyed as soon as their beauty is past. Those intended for seed should be placed in a drier atmosphere and higher temperature than the greenhouse affords.

For the production of large specimens, either of the single or double varieties, healthy young plants in four-inch pots, with their roots just appearing at the outside of the ball, should be selected in the beginning of August. They may at once be transferred to pots a foot in diameter, prepared in the most careful manner, that is to say, they should have not less than 2 in. of large crocks in the bottom, and then a thin layer of fine pieces, which should be covered with the fibres of turf or peat. The soil may be the same in nature as before recommended, but the loam should be in large turfy pieces, and mixed with a third part of crocks and pieces of charcoal; the whole should be carefully placed in the pots, and mixed with pure but sharp sand in such a manner that veins of it may run right through the mass; the soil ought not to be pressed into the pots, but gently consolidated by shaking the pots, and lightly striking it down on the potting bench. The plants should have been well watered a short time previous to potting, and will not require a further supply for some days. They may be placed on a gentle hotbed until they begin to grow, but must not be allowed to remain longer than a week, when they must be removed to a cold frame, and elevated upon inverted pots until their leaves are on a level with the edges of the frame. Air must be increased gradually for a few days; afterwards the lights may be taken off for two or three hours, morning and evening, and during the middle of the day, and at night, tilted upon the side opposite the quarter from whence the wind blows. A slight shower in the morning or evening will be of benefit to them, but not more than will suffice to wet the leaves; nor must more than will suffice to wet the leaves; nor must heavy rain be allowed to fall upon them. During bright weather, slight syringings morning and evening may be given immediately before putting on the lights. They should not be too frequently watered, but, when water is given, it should be in such quantity as will thoroughly penetrate the soil, and run out at the bottom of the pots. The soil in the pots should be maintained in a condition to admit a free circulation both of air and water, so that, when water is given, it may quickly disappear from the surface, and make its way through the mass. They may remain in the frames until the weather becomes too cold for them, when they must be removed to the greenhouse or conservatory. *W. E.*

RADISHES.

Raphanus caudatus, the Rat-tailed Radish, was in my early days known as the Tree Radish from Java. It was specifically distinguished by producing a pod of greater length than the whole plant. This, if not strictly true, is at least an approximation to truth.

The plant found its way to England about the close of the long war in 1815 or 1816, and from that time to the present little has been heard of it. Mr. Bull again brought it under the notice of the trade, while the International Exhibition served to make it widely known to the public. The plants there exhibited were of the true kind. Seeds were presented to me by gentlemen connected with India, as well as from public societies. These I have carefully cultivated in pots in imitation of those so successfully grown by Mr. Bull. From an early period there seemed a difference in habit, and soon a few began to form flower stems, whilst the greater number of them showed only radical leaves. After a little while, those without a tendency to flower

began to show evident signs of thickening at the caudex.

At this time I planted many of them out in a well-prepared bed, and waited the result. Those that first showed signs for blossoming proved the correct sort; whereas the remaining assumed the forms of Turnips, some like the variety known as Tankard, being forced into the air like a Mangel Wurzel, assuming a red colour around the neck or collar, and being pure white below, both white and red being above the surface. These roots are fusiform. Some of the plants produced roots white and green, and of an irregular ovoid form, more like a Turnip than a Radish, but the root was tender and gently pungent to the palate, and one root was more than sufficient for a whole party. It is a good adjunct to a salad, but not better than a well-grown Turnip Radish.

As regards the true Rat-tail, as there are no edible roots, we must resort to the pods, which if plucked when about half grown are really very palatable indeed. In this stage the pods are juicy and succulent, and the liquor that is pressed out is particularly agreeable.

The originals of our Radishes seem to have come from China at an early date, for they were known in Queen Elizabeth's time, and are described by Gerarde, but evidently had been grown in other parts of Europe at a much earlier period. The Greeks, according to Theophrastus, Dioscorides, and Galen, highly esteemed them, so much so, that the votaries of Apollo offered a dish of Radishes of beaten gold; whereas Turnips were imitated and presented in lead, and Beet-root in silver.

Whilst speaking of the ancients I must not omit to state the superiority of their culture over us moderns; for Tragus tells of Radishes of 40 lb. weight, Amatus had seen some 60 lb., and Matthiolus assures us that he had seen them 100 lb. each! Thus a single root would be enough for the requirement of a whole army; but I believe that our modern gourmands would much prefer to tickle their appetites without quickly grown Radishes, though of puny dimensions, and in weight not exceeding one quarter to half an ounce, than with a slice of such monsters! To return to Gerarde, who, speaking of the virtues of the Radish, says, "They are eaten raw with bread instead of other foode; but being eaten after that maner, they yeeld verie little nourishment, and that faultie and ill; but for the most part they are used as a sawce with meate to procure appetite, and in that sort engender blood less faultie than eaten alone with bread only; but seeing that they be harder of digestion than meates, they are also many times troublesome to the stomacke; nevertheless they serve to distribute and disperse the nourishment, especially being taken after meat; and taken before meat they cause belchings and overthrowe of the stomacke." Gerarde mentions and figures four kinds of Radish. The first is evidently the stock from which our fusiform sorts have been obtained. The second that he calls the small garden Radish, is so very like a variety of white Turnip Radish that by its leaves as well as its root one would believe that the same kind has been in our gardens for nearly three centuries. The third is a Turnip-rooted kind of a larger character, but not quite identical with any now grown; whereas the fourth sort is undoubtedly our black Spanish Radish of the present time. It is from variation of this latter that those from India undoubtedly have sprung; and here I may say, that from whatever source the R. sativus sprang, they and many others are clearly traceable to the same stock, whilst as certainly as any distinction is made between species and varieties, the R. caudatus is one and distinct, and in no way specifically connected with those in ordinary cultivation.

Before leaving the subject, I may be pardoned for introducing these Radishes as subjects for the fine arts. The reader may smile; but take my word for it, I have seen a picture by Fitte, in which a bunch of these self-same white-skinned Black Radishes were introduced with marvellous effect to light up the left-hand corner of the picture, just as in another picture by the same artist the white belly of a duck is shown at the same place, and for a similar purpose, and with a similar intent. *William Masters, Canterbury.*

Home Correspondence.

Beggars in blonde.—I am a curate, receiving as the harvest of an expensive education, and as the reward of hard work and study, the magnificent income of 80*l.* per annum. Happily, I have some private means, and with a tiny house and corresponding establishment, I can afford to gratify my floral taste, to renovate my mind, and to refresh my weariness, in a very pretty garden. Reading most of the publications on horticulture, occasionally attending flower-shows, and visiting nurseries whenever I have the opportunity, I have made some progress in the gentle art, and am ahead of my less earnest neighbours in the possession of novelties, and in improved methods of cultivation. Indeed, I know that I have acquired the reputation of being (in the elegant diction of the day) "an awful swell at flowers;" and I find that acquirement, like all other mundane privileges, decidedly of a mixed character. I should say of it as Mrs. Nickleby said of the behaviour of one of her admirers, who would carve her name on the side of his pew during divine service, that it was "gratifying but embarrassing." The admiration is marked and flattering, but the *modus operandi* is open to objection. For example: I enjoy the hospitality of several large country mansions near to me; I go to dine at the Castle; Lady B. "would like to see my garden," and I, genially disposed by the old peer's claret, and anxious to make such a recognition of kindnesses as my feeble resources will permit, invite all the ladies to luncheon. They accept, applaudingly, and the little scheme is pronounced to be charming, except by my excellent but morose housekeeper, who hears it on my return with about the same amount of cheerfulness as a close-fisted father would one's request for money. "Of course I am aware that Thomas' livery is not comed home, that the carrier forgot to bring the lamb, and that butter is two and three." I awake on the morrow, anxious; but the garden is beautiful. White-robed chickens, a pigeon pie with a paste which shines like a Horse-chestnut jellies, and fruits and flowers appear on my small table, and two equipages, each about the size of my dining-room, appear on my gravel drive. The coachmen survey my residence with an expression of pleased surprise and curiosity, as a doll-house or model of some merit, and a footman seems as though he should never tire of assuring himself of the practicability of my knocker, and the loud reality of my bell. He stops at last to inspect my Thomas, who, of course, has caught the doormat with his foot, and comes through the open door and portico as if he proposed to take a header into the barouche. I breathe more freely when we are set down to lunch, and so does Thomas, audibly, standing upon Lady Caroline's lace flounces, with his dirtiest thumb two inches deep in trifle. At last the feast is over in Branksome Tower; sounds as of persons chaffing Thomas blend unpleasantly with our conversation; I say something about "Come into the garden, Maud," forgetting that the haughtiest and least accessible of my guests has the name in question, and we go forth. In vain I remark that the little greenhouse is really too narrow to admit ladies. They "must look at those Lilies," and at the first corner three pots of my most precious pets succumb to Lady Isabel's crinoline. Of course "it is of no consequence," and I am only too delighted to reply in the affirmative, when asked for a duplicate of that "delicious Fern," and a cutting of that "exquisite Geranium," for which I gave a guinea. Hence to the garden. My guests are charmed. They gaze so admiringly on my best Roses that I feel constrained to cut them. They compliment my taste; they take down the names of everything which is most beautiful. They leave me pleased, on the whole, with the day's proceeding, with them, with my garden, and myself. They leave in sunshine, but they come again in shade, shady; they come again in the form of gardeners, and in the form of letters, asking for buds and cuttings. The names which I gave so willingly, thinking that large orders were in store for my friends the nurserymen, are sent back with a request for the realities. To save a few shillings, people with large incomes will have a poor florist cut down his only plant to a stick. The rich man, with a thousand sheep, must have his neighbour's little ewe-lamb, and Ahab sighs for the few Vines of Naboth. Pray, Mr. Editor, *Chronicle* our grievance, and help us, by shaming into a less covetous mood these elegant brigands, these charming beggars. *A Country Curate.*

Raphanus caudatus.—I grew several plants of this in the past spring, and, like James Stewart (see p. 756), lost some through the attacks of a white maggot at the root. Mine were all in pots, some under glass and some plunged in an open garden. In a few cases I got rid of the maggots by immersing the pots in water for several hours, which drowned the maggots and did no harm to the plants. It is no doubt the larva of some dipterous insect. I have eaten the pod of this Radish in all stages of growth, and I consider it worthless, and I would not expend a farthing's worth of fuel in cooking it. I feel confident so leathery and tasteless a thing would never long for cooking. *Shirley Hibberd.*

——In the *Gardeners' Chronicle* (p. 757) I see a statement that some one has cooked pods of Raphanus caudatus and found them stringy. Herewith I send you two or three to try. They should be cooked and served on toast similar to Seakale. *W. Bull.* [These pods were about half grown; they boiled perfectly tender, and had a mild agreeable flavour. Eds.]

Mrs. Pollock, a Seedling.—Allow me to thank your correspondent Mr. Fish for his courteous remarks at p. 756 in reference to this subject, and to confirm his assertion, if that is necessary, that the Pelargonium Mrs. Pollock is a seedling and not a sport. I may further add, that although I have raised many variegated Pelargoniums, I am not aware that I have ever raised one from a sport. All were from seeds; and I believe the golden tricolor varieties may all claim Golden Chain as their ancestor, from which they derive their golden-coloured margins; their scarlet, crimson, or bronze zones being obtained from other sources. The silver-margined race, on the other hand, is descended from the variety called Flower of the Day; and it might now be interesting to know the origin of these two varieties, viz., Golden Chain and Flower of the Day, about both of which possibly some of your readers may be able to furnish information. The variety sent out by the Messrs. Henderson under the name of Stella variegata was also a seedling, and, although it may seem strange, it was in no way connected with the well-known variety named Stella, although it resembled very much the sports that have been obtained from that variety. Still it will be observed that the colour of the flower is quite distinct from them. I have long succeeded in producing varieties of Pelargoniums having golden tricolor foliage bearing bloom of all shades, from dark scarlet down to light pink; and I have looked to the production of a pure white, or Madame Vaucher truss, of bloom upon golden tricolor foliage as a "consummation devoutly to be wished for," and that I can now say has been accomplished, although it has been secured at the expense of a large amount of constitutional vigour, but that I believe can be rectified in the course of another generation or two. Botanists, I have heard, dread the operations of the hybridiser because they tend to create confusion, &c. Still, Nature seems to assist him in producing variety, and it may not be generally known to all of your readers that the bloom of a Geranium or Pelargonium, or in fact that of most hermaphrodite flowers, is seldom if ever fertilised by its own pollen, this being ripe and in most instances dispersed by the action of the atmosphere, or by the agency of insects, long before the stigma is sufficiently developed to recover its influence; consequently, when fertilisation does take place, it is effected by pollen from another flower. May not this therefore be considered to be a provision of Nature to induce the production of varieties? My idea as to how the "coloured Pelargoniums" ought to be classified is similar to that of Mr. Chater (see p. 756), and may possibly have the advantage of simplicity. Let us call them all variegated Pelargoniums, but divide them into four sections, viz., Golden tricolors (Mrs. Pollock as type, or, if Mr. Chater like it better, Senior Wrangler; Silver tricolors, Italia Unita as type; Golden-margined, type Golden Chain; Silver-margined, type Flower of the Day. The yellow "selfs," of which Golden Fleece may be taken as the type, can hardly be said to be variegated, and I should leave the term "zonal" to the green-leaved horse-shoe varieties. *P. Grieve, Culford.*

Beaton's Variegated Nosegay Pelargonium.—Allow me to inform Mr. Fish (see p. 756) that Mr. Beaton was the raiser of at least one variegated Pelargonium which is known as Beaton's Variegated Nosegay, a variety very attractive in colour, which is distinct from that of any other kind, and owing to this, as well as on account of the plant being stiff and compact in habit, it is a great favourite here. *Edwd. Bennett, Gr., Osberton, Worksop.* [The leaves of this variety are edged with white; the flowers are bright rosy crimson.]

Red Spider.—Mr. Rivers (see p. 754) tells us that neither red spider nor any form of disease ever disturbs him; and he adds, never for some 16 years has red spider given him any trouble. Therefore I am sure Mr. R. would greatly oblige many by giving his remedy for this pest. *An Improver.*

Mistleto on the Oak.—At Hackwood Park, near Basingstoke, there is a very fine Oak tree, on the thick branches of which is a considerable quantity of this parasite. In that neighbourhood the tree in question is called the "Druid's Oak." *William Denning, Bolton Hall, near Bedale.*

Rain Gauges.—In replying to the communication on this subject (see p. 755), I regret that I have not the volume for 1853 to refer to; but as far as my memory serves me, the two gauges with which observations were made in the Pembroke Dockyard were not side by side. The recent number which provoked my strictures is also unfortunately mislaid; but I proceed to remark:—1. That the selection of 4-inch spaces between the drops involves a material fallacy, as may be seen at once if you make the diagram, and suppose a series of gauges rising 2 inches in diameter at each step. 2. Notwithstanding the concession "that rain drops fall too promiscuously for occupying positions so geometrically uniform as is represented in the diagram," it seems that the whole argument proceeds on the hypothesis that they do so. For it is only on such an hypothesis that in a shower of any duration an unfair proportion would fall outside a small gauge and inside one a size larger. Nor can I doubt that this (erroneous) idea has taken possession of the writer, on reading the last paragraph in his answer (p. 775.) 3. I do not refer to any such action of the wind as that illustrated by the writer on p. 755; nor do I call in question the accuracy of Mr. Lawes' observations, or any others in which large gauges have received a larger proportion, area for area, than small. Only with the fact impressed on my memory that with a 3-inch glass funnel in a steady rain I have registered as much, area for area, as with a 10-inch gauge, I cannot accept at present any statement as conclusive, that a larger gauge enables us to approximate more truly to the amount of rainfall per acre, for this is of course what we all have in view. 4. The mode in which I conceive the wind to have a bearing on the question is not its regular but its irregular action. Every one must have noticed the volleys of rain drops which occasionally salute you in the neighbourhood of obstacles to the wind; this arises from the wind being turned against the main current, and carrying with it drops which coalesce into heavier and more numerous drops than in the normal shower. The action of the wind, then, that I spoke of is that arising from its meeting the mouth of the receiver. I cannot think it can be wholly without effect, and the question I would ask is this—Does it increase or diminish the quantity of water received? and is this effect greater in a large or a small gauge? *J. S., Streatley Vicarage, Aug.* 13.

Iresine Herbstii.—I wish that I were speaking *to* "J. E., Herts" (see p. 757), instead of writing *at* him. After giving him that heartiest of all welcomes, a gardener's, I should ask him to look out of my window, and he would say, I am sure, not only that he saw a very pretty garden, but that Iresine Herbstii was a chief contributor to its prettiness. Planted alternately with Mangles' Pelargonium, the rose-veined bronzy leaves contrasting admirably with the silvery foliage of its neighbour, it makes one of the most effective edgings which I have seen this season. It is also very attractive in a similar alternation with Cloth of Gold Pelargonium, and rings of it between Centaurea and Bijou Pelargonium have a charming appearance. I was inclined last year to "J. E.'s" condemnation, but determined, after seeing it in beauty elsewhere, to give it a further trial; and, by planting in rich soil, with a trowel-full of manure at the roots, I enjoy this season the reward of my patience. These plants of striking foliage are so very valuable in "bedding out," being effective from first to last, beautiful in sunshine, shower, and shade, and so easily and quickly multiplied, that I feel sure we ought to welcome Miss Iresine with admiring courtesy to our gardens; and that if "J. E." will entertain her with careful attention and a liberal diet, he will no longer upbraid her as "a poor dingy affair," but will cherish and honour her as a favourite guest. *S. E. H.*—Perhaps there never has been a bedding plant brought into

notice about which so much diversity of opinion has been expressed as about this. "And who is to decide when doctors differ so much?" For my own part I consider it to be one of the most useful plants that has been introduced into our gardens of late years. It is more hardy than either the Amaranthus melancholicus ruber or the Coleus Verschaffeltii; and it is quite as ornamental as either of them, and in some respects has the advantage of them, as it bears stopping, &c., with impunity. *P. Grieve, Culford.*—Like many other things, Iresine Herbstii is good under favourable circumstances, and *vice versâ*. On a border of strong heavy soil, with a west and north aspect, I have a ribbon border of some 120 yards in length, in which I have tried all the red and dark foliaged plants with which I have met, such as Beet, Coleus, Amaranthus, &c.; but for this particular place I give the preference to Iresine—every one who sees it admires it. In hot, dry situations, or in light, gravelly, burning soils I find that it does not succeed; but in good strong soil, in such situations as that I have indicated, it is found to be very satisfactory. *A. Dawson, Rood Ashton, Trowbridge.*

Artemisia vulgaris.—Are the merits of this plant as a cure for epilepsy sufficiently known? Has its curative power been fully tested? Having read of its wonderful efficacy in this respect some years ago, I ventured to recommend it to several people who were suffering from this dreadful malady, and in all cases with complete success. This I can vouch for. The mode of preparation is very simple. A handful, say half a pound, of the leaves and stems is put into a quart of beer—this is boiled down to a pint, and a wineglassful is taken night and morning; a dose is also taken when a fit is felt to be coming on. The plant is very abundant about the ditches in this country, and I suppose it is equally plentiful in England. It is now in full flower; those who wish to try it should lose no time in gathering and drying a portion of it for the winter. For the information of those who are not acquainted with this Artemisia, I may add that the leaf is extremely like that of the garden Chrysanthemum. Care should be taken to distinguish it from Wormwood, to which it is closely allied, and from which it differs in the upper side of the leaf being green, the smell not nearly so strong, nor the taste so bitter; in other respects the two plants, especially when young and in flower, bear considerable resemblance to each other. *J. Douglas, Kilkea Castle, Kildare.* [We suspect that the Artemisia is as good a *cure* for epilepsy as any other drug. Eds.]

Orchard-house Trees in Pots.—As the controversy about these has opened again, would it not be well if some of the advocates of this system would exhibit fruit thus produced at the forthcoming Crystal Palace or other large Shows, so as to put the merits or otherwise of this mode of fruit-growing to open test, against produce obtained in the ordinary way? The late International Exhibition, however rich in other departments, was certainly deficient in regard to the classes set apart for orchard-house fruits, of which there were only two or perhaps three entries; and though exhibitions of potted trees were good, their paucity in point of numbers would lead us to infer that but few fruit trees are cultivated in that way, or, if they are, few arrive at a condition fit for exhibition. This is unfortunate, for many who might be tempted to try this mode of fruit-growing, naturally look to some public proof of its merits. "T. R." says (see p. 754) that he pots 15,000 or 20,000 trees every year, that they never drop their fruit, and also that his largest Peaches are grown on trees in pots. On the other hand, "D." (see p. 733) seems to think that fruit so grown is very liable to drop. Who is right? The opinion of some unbiassed grower would do much to settle the question, while the forthcoming fruit exhibition at Sydenham might settle all doubts as to the quality of fruit grown in that way. I have for some years grown fruit in orchard-houses both on trees in pots and on bushes planted in the border; to the latter I have no hesitation in giving the preference, but I must say that my potted trees have not been pinched in so exactly as "T. R." recommends, otherwise, however, they have had pretty good treatment and, yet they drop the greatest part of their fruit, and that which does ripen contrasts unfavourably with that from trees planted-out; at p. 757, too, I see mention made of a similar result. In short, I cannot find anything said anywhere in praise of trees in pots except at a nursery, a fact surely anything but flattering to the system; and unless we have some more public proof of its merits than the mere praise of one or two enthusiasts, it will be unable to hold its ground. Being only a small grower myself, I cannot give so decisive an opinion in regard to it as I could wish, but I hope to see the dispute as to the respective qualities of fruit from trees in pots and that from trees in the open ground set at rest by a test which will put opinion out of the question; and if that from potted trees should win, then all honour to the pot system say I, but if not, let it take its place in accordance with the decision. *E.*

Black Tokay Grape, alias Alicante (Meredith).—About two years since I received from a lady, then residing near Torquay, a few berries of a large purple Grape, a sort which she said had been cultivated in the garden of a Devonshire friend for two or three generations under the above name, and which had the reputation of being the best late Grape known. I at once confessed my ignorance of its name, and requested a few cuttings, so that I might cultivate it. I have now several Vines in fruit, and find the sort to be identical with the Alicante, a name not very distinctive, as there are so many Alicante Grapes. I have four sorts under that name. As this Black Tokay has a robust habit, and leaves much like the White Tokay, it is just possible that they have a common Hungarian origin, and that they were introduced at the same period. At any rate, the old name, like that recently found out for the Muscat Hamburgh, is much more distinctive than its new one of Alicante. *T. R.*

Fruit Trees for the North.—As I intend to plant an orchard of Pears and Cherries this autumn, I should feel greatly obliged to any one who can tell me from experience the names of those varieties which are hardy enough to succeed in our northern climate. The place is situated in the south of Scotland, 40 miles inland, and 350 feet above sea level. The soil is a heavy loam, with a rotten rock subsoil. I should like especially to know if the Belle Agathe Cherry will ripen its fruit so far north. I have tried many of the finer kinds of Pears in my garden on the Quince stock, but with very poor success. I have planted them shallow on purpose to keep them out of the bad subsoil, and I attribute my failure more to the dryness than to the coldness of the climate, as after being parched by drought in summer they burst their buds when the ground gets soaked with rain in autumn. *B.* [It is most difficult to point out with accuracy the kinds of fruit likely to succeed in any particular locality, without some experience of its climate gained by observation. The following kinds of Pears and Cherries are however likely to succeed in the part of Scotland indicated. With regard to the Belle Agathe Cherry, which at Sawbridgeworth is just commencing to colour, and will not probably ripen till the beginning of October, it is difficult to judge if it will ever ripen so far north; it is however very hardy, and as the trees do not appear to be expensive, it is worthy of a trial. The following kinds of Cherries are hardy and of excellent quality, viz., Early Red Bigarreau, Werder's Early Black, Knight's Early Black, Ludwig's Bigarreau, Governor Wood, May Duke, Bohemian Black Bigarreau, Early Black Bigarreau, Elton, Black Hawk, Brant, Oceola, and Pontoi. Of Pears, the most suitable would be perhaps Summer Doyenné, Peach Pear, *Beurré d'Amanlis, Williams' Bon Chrétien, *Beurré Superfin, Autumn Nelis, *Beurré Hardy, *Louise Bonne, *Marie Louise d'Uccle, *Conseiller à la Cour, *Jersey Gratioli, *Doyenné du Comice, Huyshe's Victoria, Beurré Bachelier, Josephine de Malines, *Bergamot Esperen. Most of the above succeed well on the Quince stock; some should be tried on that stock and others on the Pear. Those marked thus * should be tried on the Quince.]

Hybrid Ferns.—I have just seen Mr. Berkeley's account of the supposed hybrid Fern, Asplenium ebenoides, in the Journal of the Royal Horticultural Society, and although I have never made any experiments on the hybridisation of Ferns, I may be allowed to doubt very much whether the plant in question is really a hybrid as supposed. Nor, indeed, do I see any such close resemblance to Camptosorus as might be expected in a hybrid. In Lowe's Ferns, vol. v., tab. 12 A, is an account of what I take to be the same Fern, under the name of Asplenium Hendersoni. *Daniel C. Eaton, Yale College.* [We believe this Asplenium was not proliferous like the American A. ebenioides. Eds.]

Chamæbatia foliolosa.—Will you tell me how to grow Chamæbatia? My plant is many years old, and never increases—rather grows less, and distresses me, as it is such a very pretty plant, if it would but grow well. *Hafodinos.* [See p. 652 of our volume for 1859. Probably your plant is being killed with kindness. We learn from Messrs. Veitch & Sons, by whom it was introduced, that they grow it in very sandy loam in an exposed situation, and occasionally give it a little water overhead. It is, they observe, one of those plants which make but few fibres, and therefore will not bear to be often disturbed.]

Orchard-house Culture.—I am more than content with the result of my criticism. It has given us nearly two columns more of valuable matter from Mr. Rivers. Now, however any of us may differ from him, we all honour him for his enthusiasm, and acknowledge that he can and does speak with authority. And it is just for this very reason that so many of us so eagerly read and so jealously watch his utterances, and should these ever prove wrong, or mistaken, of course their power of doing harm would be just in proportion to the weight of his authority. My object is fuller information, not criticism, else there are some parts of Mr. Rivers' letter rather tempting. I hope he will be pleased to learn that I perfectly agree with his ramming system, as now propounded; which is, however, a totally different affair to that which I animadverted upon in his Congress paper. Firm potting with a blunt stick is an excellent thing both for fruit trees and most other things; but ramming a "wet border in which young trees had only been planted a week with a rammer about half the weight of those used by the London paviors," as recommended at the Congress, is barbarity in culture, and with a vengeance, and not only might but must rupture the roots, and is, I repeat, on proper soils wholly unnecessary and retrograde practice. *D.*

Putrid Bones versus Vines.—I am in trouble respecting a new Vinery which I first planted in March, 1855. The Vines employed then failed. I planted again the same year in August, and that attempt to furnish my Vinery also failed; I planted again this year the first week in May, and the Vines then employed have not made 2 feet of wood all the season, and are looking miserable. The plants used on the first two occasions were purchased of a respectable nurseryman. Those planted in May last I struck from eyes myself in March, 1855; they were therefore one-year-old plants cut down; they had made 3 or 4 feet of wood before I planted them, and they were then in a vigorous state of growth. After planting they looked well for about three weeks; they then ceased to grow, and they have not done any good since. Two plants of the same batch were left in pots after planting; these I have grown on in pots, in the same house, and they have done altogether as well as those planted out have done badly. They have made good strong fruiting canes. This leads me to think that the cause of failure is in the border, which is well drained, and consists of about two-thirds loam and one-third rotten manure and rotten garden refuse, a few rocks of limestone, and about 3 cwt. of bones were also added. The bones were raw and in a fearfully stinking state, being as full as possible of maggots. I cannot attribute the failures to anything but to these. Am I right or wrong? And is it the stench from the bones which has polluted the soil, or have the maggots attacked the roots? What had I best do? *A. B.*

Cerasus lusitanica azorica.—Is the Cerasus lusitanica var. azorica, advertised by Messrs. Osborn, the same as C. lusitanica Hixa, mentioned in London's Arboretum, vol. ii. p. 714, and vol. iv. p. 2555? *P.* We cannot satisfy ourselves that the Cerasus in question is the C. lusitanica Hixa of London. In some respects it answers to the description, but one of its leading characters, that is, "the lowest teeth of the leaves glanded," does not appear to be developed more than we find occasionally in the common variety. In any case it is a very fine thing. Eds.]

The Lady Strawberry.—This has been grown here under every advantage as regards flavour, and the result was disappointment. Sir Harry, growing within 10 yards of it, was more than once tried against it, and the general opinion was that it did not excel that variety. Among new Strawberries tried here this season none surpassed in flavour Alice Nicholson, which fully bears out the character given of it by your correspondent Mr. Dean. *John Richardson, Southend Gardens, Darlington.*

Foreign Correspondence.

The Peach in New Zealand.—"We (*Lyttelton Times*, Feb. 3) have received from Mr. Swale, of the Avonside Botanical Gardens, Canterbury, a dozen Peaches grown by him. They are of a very large size and weight, and fully equal to any grown in England. They are of the sort known as the Royal George. These specimens show what can be done here for the cultivation of the Peach. The soil and climate of New Zealand are admirably adapted for this purpose, and it is a subject of regret that gardeners do not pay more attention than they have hitherto done to the culture of this fruit. The bright sunshine we enjoy here is eminently favourable to its growth. The gardeners and amateurs, in too many instances, are satisfied with Peaches, the ordinary production of the ground. Now, the climate is almost similar to that of their natural habitat, Persia, and with a little care and attention it is possible to raise Peaches equal to those grown on walls in England. The chief requisites are to thin out the crop, and by judicious pruning to admit a free circulation of light among the trees. By this means the fruit becomes larger and better flavoured." Mr. Swale adds that one dozen of these Royal George Peaches weighed 4½ lb. good weight, and that the average circumference of the fruit was 8⅔ inches. He moreover states that a Windsor Pear tree, about six years old, in an unfavourable season for Pears, produced a crop weighing within 4 lb. of 2 cwt. of good-sized fruit, a register having been kept of the weight each time any were picked for sale. The crop of the Windsor Pear does not ripen in New Zealand all at one time, and the fruit sells readily at 1*s.* per pound.

Horticultural Exhibition in New Zealand.—The Canterbury Horticultural Society held its final exhibition for the season on February 28. It was, I am sorry to say, not patronised by the public to the extent it merited on this occasion. The display of flowers far exceeded that of fruit and vegetables. This exhibition certainly surpassed its predecessors as regards the number, variety, and growth of the articles contributed.

Pot plants were shown in great profusion. Fuchsias were really magnificent; some of the plants being 5 feet high and as much through. They consisted of Sir Colin Campbell, Souvenir de Chiswick, Rose of Castille, Guiding Star, and some others; these formed the most attractive part of the show of flowers, and indeed there was little else in this department to arrest the attention of those accustomed to good flower shows. It may be added that these Fuchsias were the finest ever seen in the province, and fully equal to any ever exhibited at Chiswick in years gone by. Gloxinias, Achimenes, Gesnera zebrina, and Clerodendron fragrans were shown on this occasion for the first time; they were beautifully in flower and well cultivated. Humea elegans and Perilla nankinensis were not shown on this occasion; but stove plants seem to be creeping in to fill up their place, and I am looking forward to see Orchids amongst us at no very distant date. Marbled Hollands and Cockscombs were well represented, and are becoming fashionable plants at our exhibitions. They reminded me of those exhibited at Chiswick about the year 1840 by the late Mr. Wm. Cock; plants which no doubt will be fresh in the memory of many of your readers. We have not been able to come up to him yet in growing Pelargoniums to such a huge size as he did, nor do I think we ever shall. Our Pelargoniums are grown much smaller, and are more compact plants. We are not behind, however, in the growth of the Dutchie.

Of Ferns I noticed only one collection, which according to the schedule should have been 12 in number. Amongst them were Lomaria elongata, L. nigra, L. discolor, Asplenium bulbiferum, Cyathea dealbata, Dicksonia squarrosa, Phymatodes Billardieri, Cheilanthes tenuifolia, Leptopteris hymenophyllioides, and several others. They richly deserved the small prize (7*s.* 6*d.*) which was awarded them. This was the first collection of native Ferns, named, that has been exhibited in Christchurch. I was sorry not to find in the collection Asplenium Hookerianum, for it is pretty plentiful in our bushes. I noticed at this exhibition, in the shape of dried plants, a handsome species of Gleichenia, brought from our west-coast gold field. The taste for indigenous Ferns here is as yet quite in the bud state. While speaking of pot plants I must not forget to mention our Double Petunias, which, mixed with Fuchsias, had a pleasing effect. We have them of all shades and colours, with flowers like those of a double Dahlia or Hollyhock, and equal in size to a good Rose. We can grow bedding plants here well, and florists' flowers are not forgotten amongst us. We have progressed wonderfully in this way. Seeds of choice Verbenas, Petunias, &c., keep arriving every mail by post. Thanks to friends at home for sending them.

Owing to bad weather our Dahlia flowers were not so fine as usual; a good many were nevertheless exhibited. Roses, as is usual at this late season, were inferior in quality; what were

shown were of the Bourbon section. I never recollect having seen so poor a show of the "Queen of Flowers." Pansies were not good; I expected to have seen them not only shown better, but better grown, some spikes of very fine varieties of tuberous rooted much attention. Some of the new varieties of this gay flower arrive here every year about Dutch bulb season. Marigolds, both French and African, were shown somewhat meagrely; one or two blooms of each forming the best with notice. The hand bouquet exhibited was, to my thinking, faultless. Bouquets, both for table and hand, are improving with us. A collection of Helichrysums was exhibited for the first time, and was beautifully arranged.

Some of the fruits exhibited were fine and large, but little was said by the judges, to their praise. Dutchess of Black Hamburgh Grapes were a decided improvement on those of other years, they were larger, and decours heavier than their predecessors. They were, however, deficient in colour, having been cut too soon. We grow very many of these fine dooers here in better positions places, as well as Figs, which we could not do seven years ago. Peaches were well represented in the shape of the Royal George and other sorts. Apples were a great deal better represented than Pears; some of the Apples were of very large size. Three Water Melons were exhibited for the first time; they had been grown in the open air, and were of a good average size.

Exhibitors here as well as at home have an eye to profit as well as fame. At present fruit and vegetables form the back-bone of our exhibitions, and if our committee would offer prizes of sterling worth, it would not be long ere a great improvement in the productions would take place. The show of vegetables, which was highly creditable, bore evidence of the suitability of the soil and climate of Canterbury to produce not only our common esculents, but likewise those that are regarded as delicacies of the table.

I may mention that, in addition to the prizes awarded by the judges, a gold medal, manufactured of Canterbury gold, was exhibited during the day by one of the managing committee; this medal is to be presented as a prize to the gardener who shall have obtained the greatest number of prizes at three exhibitions of the Society. *William Swale, Assistant Botanic Garden, Christ Church, Canterbury, March 14, 1866.*

Societies.

BOTANICAL OF EDINBURGH. *July* 12.—Dr. Dickson in the chair. The following communications were read:—1. *On the Staminal Arrangements in some Species of Potentilla and on Nuttallia cerasiformis.* By the Chairman. The author gave the results of his examination of the staminal arrangements in about 20 species of Potentilla. He finds that these arrangements may be reduced under three heads or types—1st, Where there are 20 stamens—one superposed to each sepal, one to each petal, and 10 what may be termed parpetalous stamens, arranged one on either side of each petal. This is, apparently, by far the commonest arrangement in this genus, as indeed in the whole family Rosaceæ. 2d, Where there are 30 stamens, differing from the last by having three stamens instead of one in front of each sepal. This occurs in Potentilla hirta and allies. 3d, Where there are 25 stamens, these being arranged in five fascines extending from petal to petal, differing from the second type chiefly in the absence of oppositipetalous stamens. This occurs in P. fruticosa, P. rupestris, and probably also in P. glabra, P. arguta, &c. Dr. Dickson explained that although these types represented the average number of stamens in the species falling under them, yet the numbers were, to a certain extent, liable to vary in individual flowers, and more in some species than in others. He had accordingly prepared tables showing the manner of variation in those species where a tendency to vary was most marked. Dr. Dickson called attention to the staminal arrangement in Nuttallia cerasiformis, which, as is known, consists of only 15 stamens; pointing out that with the above-mentioned types this may be interestingly contrasted; thus, in Nuttallia there are no oppositisepalous stamens, while in type No. 1 there are both oppositisepalous and oppositipetalous stamens. 2. *Nuttallia and Stylobasium considered as Leguminous and Tuberous.* By W. Carruthers, Esq., British Museum. After referring to the fragmentary condition in which the remains of fossil plants generally occur, the author noticed the causes which interfered with a satisfactory determination of the coal plants, and the difficulty of identifying the different fragments of the same species. Consequently the various portions of the same organism not in actual contact, which exhibited different appearances, had been referred to different genera. Root, stem, branches, leaves, and fruit were each alike referred to different genus. As the result of continued observation, and the occasional discovery of more perfect specimens, this unavoidable multiplication of generic names is being reduced, and the scattered fragments united to form the complete plant. Lepidodendron and Sigillaria were two striking examples of this, and both genera were described in detail. Lepidodendron was restored as a tree like a huge Lycopodium cernuum. The trunk consisted of a large cellular pith, surrounded by a cylinder of wood of thickness varying according to the age of the plant. This was surrounded by a cylinder of cellular substance, traversed by numerous vascular bundles, which passed upwards and outwards, and, penetrating a second woody cylinder, terminated in the bases of the leaves which were immediately beyond. This singular arrangement had been ably determined by Mr. Binney from a large series of beautifully prepared specimens. The author showed that the arrangement of parts was similar in the trunks of some Cycadeaceæ, which presented a further resemblance in having their outer surface composed of the bases of the leaves, and so marked by a similar series of stigmata as in Lepidodendron. An examination of the minute tissue, however, showed that while this general resemblance existed between the two stems, there was no real affinity between the plants to which they belonged. Sigillaria, neglecting the annual rings, in wood was made up of disc bearing vascular tissue, was laid on in separable exogenous layers, and was traversed by no bullary rays, while, in Lepidodendron, the wood was entirely made up of scalariform tissue, without any trace of medullary ray. The author suggested as a probable conclusion that examination of the stem showed fossil plant to be cryptogamous, but having a stem with a structure more highly organised and more nearly approaching to that of phanerogamous plants than any known Cryptogam. This opinion was confirmed by an examination of the organs of fructification, which were shown to be strobili, bearing a single sporangium on the upper surface of each scale, as in Lepidostrobus, or several as in Flemingites. The sporangia contained both large and small spores, and are consequently more nearly allied to Rhizocarpeæ than to Lycopodiaceæ. The stem of Calamites was composed of a cylinder of scalariform tissue surrounding a large cellular pith. The author had been shown by Mr. Binney a beautifully preserved specimen showing the relation of the parts. The vascular tissue was developed from a series of equidistant parts around the pith, and sent off branches, both laterally, until they united in a continuous cylinder, fluted on the inner surface, and with the flutings filled with the cellular tissue of the pith. The early vascular bundles in the young shoots of exogenous plants have a similar structure, but they speedily unite to form a woody cylinder, with a clearly defined and smooth inner surface towards the pith. This early condition is, however, permanent in the stem of some arborescent species of Cactus—which in this respect closely resembles Calamites—but it is only a similarity in the arrangement of the parts without any true affinity, for the stems differ as much as Lepidodendron does from Cycas. The woody cylinder formed constrictions at regular intervals round the pith, as in some Articulatæ. The fruit of Calamites was a strobilus, the whorls of which were alternately barren and fertile. The barren whorls were of chaffy scales peculiarly arranged, while the whorls of spike resembled those of spike Equisetum, but more sporangia. Both genera—Lepidodendron and Calamites—were certainly Cryptogams, differing both in structure of stem and in the organs of fructification from each other, yet both agreeing in main characters with the vascular Cryptogamia; although having highly organised stems than exist in any known members of that class.—3. *Account of a Botanical Excursion to Portland and Jersey.* By Mr Sadler.—Professor Balfour stated that Dr. J. E. Gray notices, in a recent number of the "Journal of Botany," Phyllachidium pachellum as a freshwater Alga new to the English flora. This is not really the case. It may be new to England, but it was certainly found 13 years ago in Scotland. Mr. Lawson (at that time his assistant, and now Professor of Botany in Dalhousie College, Halifax, Nova Scotia) collected it in the summer of 1853, and Professor Balfour exhibited under the microscope specimens put up at that time by Mr. Lawson.—Mr. M'Nab exhibited a number of seedlings raised from spores of the Athyrium Filix-femina var. Victoriæ, the very few of the plants raised presenting a similar form of the parent variety, most of them assuming more or less the appearance of the ordinary crested variety. Many of them also approached the specific form. In connection also with this subject he gave a statement of the proportions of the following forms produced from spores of the following varieties:—Asplenium Trichomanes cristatum, 100 per cent. true; Lastrea Filix-mas cristata, 95; Athyrium Filix-femina cristatum, 90; Athyrium Filix-femina Frizelliæ, 70; Athyrium Filix-femina Victoriæ, 70; Lastrea Filix-mas, 50 cristatum, 5; Blechnum boreale cristatum, 2.—Mr. M'Nab exhibited a specimen of the wild Strawberry (Fragaria vesca), which was picked in flower six weeks ago by Miss Gibson-Craig of Hermiston for the purpose of making a drawing. The specimen was placed in a glass of water at a north window when only one bloom was expanded. It has recently produced a ripe Strawberry, and others are rapidly coming forward.—Mr. G. Lowe exhibited under the microscope some concretions taken from the intestines of a boy 13 years of age. They seemed to be formed of fine hairs, which surrounded the grains of starch on which the boy had been subsisting.—Sir W. Jardine, Bart., sent living specimens of Orobanche major, collected near Jardine Hall, Dumfriesshire, growing on the Broom.—S. Hutchison, Esq., Manthorpe Lodge, Grantham, sent a huge living plant of Inula Helenium.—Mr. Grierson presented a large section of the stem of a Larch, cut from a tree grown at Shaws, in the parish of Closeburn, Dumfriesshire. It was understood to be one of the first planted Larches in the district. The section was taken at 13 feet from the ground, and has about 120 annual rings of growth. Dr. Grierson also presented a specimen of Luzula niven, collected near Thornhill.

Notices of Books.

Fifth Annual Report of the Agri-Horticultural Society of Oudh. Lucknow. 1866.

There are several matters of interest in the little pamphlet issued under the auspices of the above Society, by Dr. Bonavia, many of which will hardly be very satisfactory to our English seed growers; for, says the reporter, the seeds, whether of flowers or vegetables, imported from England are by no means so satisfactory as those procured from America, in consequence of which he now derives his supplies from the latter country entirely. No explanation is vouchsafed as to the reasons for this, which we the more regret, as it is of importance to know to which of several possible causes the result is due, and it is hardly fair to English merchants to state the fact without comment.

Among the plants now "acclimatised" and producing their seeds year by year are specially mentioned Celery, Lettuce, Poppies, Hollyhocks, Verbenas, Indian Pinks, Clarkias, &c. Of these, many produce seedling varieties, double flowers, and the like. As to degeneration of Europæan plants in India, the writer denies such a process *in toto*, attributing the apparent cases of this kind to the variation by seed. It is impossible for all the seeds produced by one flower to develope plants exactly alike, says Dr. Bonavia, and the reasons he assigns are derived from the fact that "no two seeds can occupy the same place in the seed vessel, no two seed vessels the same place on the plant, consequently no two seeds can be exactly under the same conditions of nourishment, &c., during their development on the same plant. Again, it is next to impossible to place these seeds when sown under exactly similar conditions of soil, nourishment, moisture, air, heat, light, &c." Plants being thus so subject to variation from seed, the marvel is that the principle of inheritance is so strong as it is, in spite of these distur'bances."

Degeneration, he says the reporter, is not a fault of the seed, nor of the climate, but of the gardener, who by want of sufficient care and attention in cultivating and selecting seeds, or by insufficient prevention of undesirable cross fertilisation, allows of the perpetuation of degenerate varieties, and so brings discredit upon the plants or the climate, in oblivion that he is the principal defaulter himself. There are many interesting details which our space does not allow us to give, but some general remarks on the desirability of establishing gardens at the cantonments in India apply equally well to our own country. "Very few people," says the writer, "have yet grasped the idea of the immense influence of these little pleasures on the health of men. If men * * * would only learn the relation of mind to the other forces of the universe, they would not fail to see at once what influence beautiful trees, beautiful flowers, and the delight ensuing from the mere impression of such objects on the brain, have on health. There is no doubt that the higher classes of Europeans in this country keep their health better than the lower classes from having the means of procuring for themselves, in spite of their hard work, a proportion of little pleasures which keep their nervous system in a healthy state. * * * Food alone is not sufficient to keep the organs in a healthy state; and an hour's daily varied pleasure is cheaply bought at the sum requisite to keep a garden in a cheerful condition."

These words were written with special reference to the English in India, but they will apply almost equally well to their countrymen at home.

The *Botanical Magazine* for the present month contains figures of the following plants:—*Kleinia fulgens*, a glaucous succulent suffruticose plant, having branched stems, 2 to 3 feet high, obovate-oblong leaves, and small heads of vermilion-orange flowers; it has been introduced from Natal by W. Wilson Saunders, Esq.—*Fremontia californica*, a beautiful hardy Californian shrub, formerly introduced by the Horticultural Society, and lost, but now re-introduced by Messrs. Veitch & Sons. It is a deciduous shrub, attaining about 10 feet in height, with something the aspect of a Fig tree, having lobate cordate leaves, but also bearing a profusion of large golden yellow flowers, which clearly settled. "It was referred," observes Dr. Hooker, "to a new section of Bombaceæ (Fremontieæ) by its founder, and correctly placed along with the famous Hand-plant, Cheirostemon, and the stamens were described as five, with two-celled anthers. On the other hand certain considerations of affinity and structure induced Mr. Bentham and myself, following Dr. Torrey, to regard the apparently two-celled anthers of this plant and Cheirostemon as consisting of two confluent single-celled anthers—whence we referred both to the order Malvaceæ instead of Sterculiaceæ. I must confess, however, that after examining living specimens of Fremontia, I am inclined to refer the Fremontiæ back to Sterculiaceæ, placing it next to the tribe Sterculieæ." The golden-coloured flowers, two inches and a half in diameter, consist of the broadly campanulate five-lobed calyx.—*Fernandesia robusta*, a Guatemalan Orchid, with upright stems, distichous keeled acute closely imbricated leaves, and yellow flowers protruded singly from the axils of the upper leaves.—*Sempervivum Paivæ*, a Canary Island shrubby succulent plant, with spathulate leaves, and panicles of green flowers. It is dedicated to the Barão de Castello de Paiva, an unwearied patron of science.—*Sanchezia nobilis*, a beautiful Acanthaceous plant introduced from Ecuador by Messrs. Veitch & Sons, and flowered by them in June last. It is an erect plant, with obtusely tetragonous stems, large oblong-obovate leaves, and an erect terminal inflorescence, consisting "of numerous opposite bracteate fascicles of flowers, forming together a dense panicle most brilliantly coloured, the branches deep purple, the bracts quite red, and the corollas yellow." The bracts are large ovate obtuse; the corollas two inches long and cylindrical, slightly curved and contracted at the mouth. Dr. Hooker observes that the affinity of this plant with Ancylogyne is so close and obvious, that there can be little doubt the name Ancylogyne must be suppressed.—*Saccolabium ampullaceum*, an Indian Orchid, with erect racemes of bright rose-coloured flowers, than which nothing can be more charming.

Seemann's Journal of Botany for August has two plates of *Folicolous Sphæriæ*, belonging to the genera Venturia and Sphærella. Among the papers in this number occur some sensible remarks on Fern classification by Dr. Hance.

The *Floral Magazine* gives figures of the following:—*Pelargoniums*—*Lord Lyon* and *Favourite*, two fine varieties of Mr. Hoyle's breeding; *Rose, Margaret Dombrain*, a large globular rosy-pink flower, obtained from La Reine, and one of the best and most distinct varieties of the present season; *Azaleas*—*Charmer* and *Vivid*, the first a purple, the latter a bright red, both raised in Belgium, and now in the hands of Mr. Bull.

The *Florist and Pomologist* figures the fine creeper *Tacsonia Van-Volxemii*, of which we gave a representation some months since (p. 171).

With the present number of the *Technologist* a new series is commenced, printed in large type and on better paper. Other changes are made, so as to make the periodical a "Record of Science, its progress, literature, and practical applications." The number before us contains among its articles papers on the Needle Gun, the Atlantic Telegraph, the Laryngoscope, the Australian Wine Crop, and an abstract of Mr. Howard's communication to the Botanical Congress on the Cinchona barks.

Florists' Flowers.

WHAT IS A FLORISTS' FLOWER?—I observe that you cannot altogether accept the definition that I have given of a florists' flower, as you see no reason for excluding plants of a shrubby habit or greenhouse plants from the category of florists' flowers. I must, therefore, endeavour to state my reason for excluding these plants. Although the question at issue is of little practical importance, and the Rose would smell as sweet and retain her diadem as the Queen of Flowers whether called a "florists' flower" or a "select shrub," nevertheless, if, for the sake of convenience, flowers are to be arranged in sections, it is desirable that the limits of each section should be clearly defined.

Now, my reason for excluding shrubby and greenhouse plants from the section of florists' flowers is, that this section may be kept distinct from all others, and for the better effecting this object, that the limits assigned to it by the early floriculturists, who confined them to herbaceous plants, should not be departed from. Modern floriculturists have, however, extended these limits, by treating as florists' flowers shrubby and greenhouse plants, and have so removed the landmarks of the section, that its boundaries are now lost; insomuch that your correspondents have become so puzzled that they cry out in their perplexity "What *is* a florists' flower?" A writer in the "Gardeners' Magazine" in 1842 says, "Florists' flowers differ from wild flowers and border flowers in being so entirely changed by culture as no longer to resemble

their original type." He further says, "The early floriculturists considered as florists' flowers, changed herbaceous plants only, but florists of the present day admit not only suffruticose plants, as Pelargoniums and some Calceolarias, but also shrubs, as Roses and Camellias." But if any shrub and greenhouse plants are admitted, why, it may be asked, not admit all shrubs and greenhouse plants, that have received careful culture for the sake of their flowers? and if these are admitted, why not all cultivated flowering plants, from the humble Daisy to the majestic Victoria regia, and from the lowliest Heath to the "giant's nosegay," the magnificent Horse-chestnut. Florists' flowers used to be regarded as flowers adapted for cultivation by the peasant and the artisan during their hours of recreation, and not as the aristocratic denizens of the conservatory.

The Auricula to which you refer, although it has been so petted by the florist as to be sometimes protected by glass, cannot certainly be called a greenhouse plant, for it is one of the hardiest of plants, being a native of Alpine regions, and is a border flower as well as a florists' flower, and is indeed the very type of a florists' flower, agreeing in every particular with my definition, being "an herbaceous flower, capable of being grown in the open ground, that has received better cultivation than an ordinary border flower, and to estimate the qualities of which certain criteria or canons have been agreed upon by florists." *A. T.* [The Auricula as a "border-flower" is, we maintain, not a "florists' flower;" and in the latter form cannot be grown successfully without the aid of glass.]

The Apiary.

The Ligurian Bee.—Since the first introduction of the Ligurians into England I have had considerable experience with them, not only from having them in my own possession, but with unusual facilities for observing them in the apiaries of adjoining bee-keepers. I have endeavoured impartially to come to a definite conclusion as to their superiority or otherwise to the ordinary British species, known as Apis mellifica, or the brown bee of Europe. No one can have any doubt as to the superior claims to beauty of appearance which the Ligurians possess over their darker relatives. If this were their only claim to notice, I should still be inclined to keep them in preference, but this would hardly be a sufficient recommendation to the majority of bee-keepers, or an inducement to incur the considerable expense and trouble necessary to their establishment. The question will still arise—Are the Ligurians in any way superior to the common bees? In the first place we must dismiss the idea that they are of a different species; the first English apiarians are, I believe, agreed upon that point. They are merely a variety of the species. In what, then, can lie their supposed superiority? We all are aware of the difference in breeds of horses, cattle, &c., in which they are respectively only varieties of the species; yet some of these different varieties may and do exhibit many qualifications not possessed by others, which recommend them to notice. Some apiarians believe the Ligurians to be of a purer breed, and as far superior to the ordinary known bees as a thoroughbred Arabian is to a common European pack-horse, or as prize Short-horn or Devon cattle compared to the common herds of the Highland moors. After an experience of several years I am unable to endorse the views of these too enthusiastic admirers; but I am fully convinced that, taking everything into consideration, the Ligurians do bear the palm of excellence. I will sum up their qualities in a few words.

1. The queens are possessed of extraordinary fecundity. Their powers of breeding are immense, and if hives were kept only for their multiplication by swarms, there would be no doubt as to the superiority of the Ligurians.

2. These bees seem to be endued with the power of recovering from a state of great weakness or paucity of numbers under circumstances in which ordinary bees would succumb, or scarcely attain to average strength and prosperity by the close of summer. I have frequently had hives which in March and April were tenanted by such very small populations as would, in the case of black bees, have ensured their speedy breaking up and junction with other colonies, but with the Ligurians, by the middle of May these hives have been in a state of the utmost prosperity, with teeming numbers, sending out large swarms, or rapidly filling supers.

3. I believe these bees to be more active, having often remarked, where both varieties are kept in the same apiary, that the Ligurians are out at work an hour before and after the others, and frequently in weather which will induce the others to stay at home.

4. I have no doubt that pure-bred Ligurians are, as a rule, capable of being handled with greater ease. I have found a great difference in this respect in manipulating with frame hives for scientific purposes. On the contrary, hybridised bees seem frequently to be more viciously disposed when disturbed.

5. I am not prepared to say that Ligurians possess any superiority as honey gatherers. Probably, during any one season, taking one stock with another, more honey would be collected by them, but the requirements of the brood being greater, less honey might be stored. There is also this tendency to throw off swarms, which often causes disappointment in the attempt to obtain supers. This last season has proved an unfortunate one with me in this respect; the majority of my Ligurian super-working stocks having swarmed. When my bees consisted wholly of the ordinary variety, I was seldom troubled with swarms from well-managed depriving hives, but since having obtained the Ligurians, this undesired occurrence has frequently annoyed me. Nevertheless, by dint of extra care, and by returning swarms to the stocks, I have succeeded in obtaining larger supers of honey than ever previously rewarded my endeavours; my largest supers having been invariably taken from hives with more or less of Ligurian blood. Still I am free to confess that I have seen and heard of even larger harvests from the ordinary bees in other localities.

6. The difficulty of keeping the Ligurians pure is very great; in fact, the results of careful manipulation are frequently so disheartening, even to the advanced and enthusiastic apiarian, as to almost induce them to throw them up in disgust. To the less persevering I can only say that it would be a waste of time and money to attempt to establish them.

On the whole, then, I have come to the conclusion that, like many things which first excite attention and are cried up to the skies, the Ligurians are not equal to all that has been said in favour of them; but I also believe that the sum of comparative merit does lie in their favour. My apiary has been more productive and remunerative since I obtained them. Even with their tendency to throw off swarms, on the whole more honey has been secured. Swarms, though often undesired, are by no means unmitigated evils, and I generally accept them as benefits when they do come. To those apiarians who are willing to devote considerable attention and patience to their cultivation, and to able attention and patience to their cultivation, and to sacrifice for a time the resources of the apiary, I can say, obtain Ligurians by all means; but to those who may be unable or unwilling to do this, and who may imagine that they will succeed in establishing a pure race without this amount of trouble and care, I can only say that I fear both time and expense would be thrown away. *Apis.*

Garden Memoranda.

Messrs. Carter & Co.'s Seed Grounds, Dedham and St. Osyth, Essex.—A visit to these grounds is now looked forward to by the lovers of gay flowers as an annual floral treat, and the arrival of the day on which an inspection of them is to be made is frequently regarded with feelings something analogous to those of the pent-up urchins of our district parish schools when the morning dawns on which they are to have their yearly "run" into the country. Equally joyous with our young friends, though less clamorous, a small party of us started the other day from Shoreditch to Manningtree, to view the contents of these charming grounds, which, however, we were sorry to find a little past their best. Our visit had been delayed too long. Dedham, nevertheless, looked down upon from the high ground which surrounds it, and especially from Jupe's Hill, a new seed farm, has still the appearance of a gigantic patchwork counterpane set in a border of bright green and gold, so fresh and beautiful are still many of the compartments in which its rich floral treasures reside, while acres of Thyme, Marjoram, Hyssop, and other herbs, together with a large piece of Mignonette in full bloom in a field adjoining, cast over the whole a fragrance elsewhere unequalled.

African Marigolds, lemon and rich deep orange, large and showy, are grown here extensively, and for shrubbery borders and similar places it would be difficult to find more showy subjects of decoration, while the miniature dwarf French kinds are so compact and altogether such little gems as to entitle them to greater prominence. Plants of the latter, not more than 6 inches in height, literally represent bouquets of gaily-striped brown and golden yellow flowers. Mixed Petunias could not well be beaten in point of excellence or variety, while among selected kinds are some charming selfs and striped sorts in the way of Mrs. Ferguson. Of German Stocks 11 out of every 12 are perfectly double; they were not however past their best, but sufficient remained to show what they had been. Different varieties of the lovely Lobelia Erinus in large patches made a charming display, as did also the pretty pink and white varieties of Silene pendula. Nemesia versicolor, one of the finest of all annuals for pot culture, was in beautiful condition, each little compact tuft being in itself quite a bouquet of blossoms. The dark purple and white Sweet Scabious seemed to be special favourites with bees, and for that purpose, as well as for the use which may be made of them in bouquets, they deserve extensive cultivation in shrubbery borders. Of Œnotheras, especially of the stately free-flowering Œ. Lamarckiana, and of the dwarf, large, yellow-blossomed Œ. macrocarpa, we noticed many fine examples, as well as of the profuse-flowering blue and white varieties of Campanula carpatica. A synopsis of different kinds were just in perfection, and no one who has not seen them in quantity, as they may be found here, can have any adequate idea of their beauty. Of Antirrhinums there are not only bright crimson-scarlet kinds of great beauty, but also crimson and white and pure yellows intermixed, from which good varieties may be expected.

The various masses, each nearly an acre in extent, of Tom Thumb Nasturtiums, of themselves amply repay a journey of many miles to see. The great demand for them necessitates their being grown extensively, and the display which they make is one of the most brilliant description, equalling even that of the Scarlet Zonal Pelargonium itself, while for the price of one plant of the latter as many as 50 of the former may be purchased. To persons, therefore, as we have said on former occasions, who, having no means of wintering Pelargoniums, desire to possess a showy flower bed at a cheap rate, these Nasturtiums are a real boon. They may now be had of all shades of colour, from creamy white and bright golden yellow, pure or spotted in every petal with red, to rose and glowing scarlet, and some even are nearly black. Of high-coloured kinds one of the most attractive is King of Tom Thumbs, a new kind, with very dark foliage and intensely bright scarlet blossoms. Of Tropæolum aduncum (the Canary Creeper), both climbing on sticks and trailing on the ground, there are large plantations.

The compact dwarf-growing Saponaria calabrica marginata, with little pink blossoms narrowly-edged with white, and a pure white kind, occupy a considerable amount of space, as do also the various kinds of Godetias, two of the best of which are Lindleyana and the comparatively new light-coloured sort called The Bride. There is also a double variety, which is quite new and beautiful. Among Lupines, of which there are a great many, one of the prettiest is L. albo-coccineus, one half of the flower spike of which is purplish lilac, the other white. Of Viscarias, by far the best is V. oculata nana coccinea, a variety into which has been infused so large an amount of bright colour as to make it a rival for the Scarlet Linum itself. The beauty of the last was unfortunately over, but what remained of it—a large plantation—showed that it had not only produced flowers in the greatest profusion, but that every seed of it had grown, although they had been subjected to no steeping or other process, at one time considered necessary to induce germination. Eucharidium concinnum forms pretty bright rose-coloured clumps.

Among Annual Chrysanthemums are some beautiful double yellows and whites, and at the head of the single kinds still stands the lovely C. tricolor Burridgeanum. Of Sweet Peas, the best as regards brightness of colour is Brown's Invincible, which is a great improvement in that respect on the old Scarlet Sweet Pea. We also noticed a striped kind.

At nightfall the Cuban Datura ceratocaulon affords a glorious treat. During the day time its huge white blossoms are shut up, but on the approach of darkness they expand and yield a most agreeable odour. Each of the blooms measures quite 6 inches in diameter; even at night, therefore, they are not likely to be overlooked, and we feel sure that all who have grown this interesting plant once will not fail to do so again.

Anthemis purpurea, golden yellow, with purple on the under sides of the petals, is one of the most effective of mid-season Annuals, and to Clarkias, which are everybody's favourites, some beautiful additions have lately been made, especially to the integripetala section. Double-flowered Clarkias are now nearly as plentiful as single kinds. Of the beautiful Swan River Daisy (Brachycome iberidifolia) there are charming masses now in perfection, both of the blue and white sorts, and also of the two mixed together, a form in which they appear to most advantage. Of all dwarf annuals these are unquestionably the best, and therefore cannot be grown too extensively. Their seeds require to be sown in heat, and to be pricked out after all danger of frost is over.

At St. Osyth are grown both the dwarf Stock-flowered and dwarf Rocket Larkspurs, which have been very pretty this season, but their beauty is now over. Of these there are 10 distinct colours, all of which seemed uncommonly true to their kinds. A plantation of mixed varieties of Convolvulus major also formed an interesting sight, as did also a batch of Calandrinia discolor, covered with rosy blossoms each as large as those of the Japan Anemone. This is truly a showy Annual, with which few, we imagine, can be disappointed. Of the Convolvuluses one of the best is C. tricolor monstrosus, the flowers of which measure 2 ins. across; in colour they are of an intensely deep blue, with a bold white eye striped with orange yellow. We also noticed a double variety of Convolvulus minor. The Larkspurs above alluded to are divided from each other by plantations of Asters, which are just coming prettily into flower. Dunnett's extra fine dark crimson Candytuft occupies a space little less than two acres, indicating plainly enough in what kind of estimation this fine variety stands with the public. Nemophila (now in "cocks," like hay) has formed blue ribbons of, it may be said, miles in length. The dark-eyed, bright orange-blossomed Sanvitalia procumbens occupies about half an acre of ground; and nearly a similar amount of space is devoted to the new double-blossomed variety of this pretty creeping plant, which to rock gardens must be a real acquisition. Auricula-eyed Sweet Williams have been in beautiful condition, as have also been Gladioli, more especially those of the Gandavensis section, among which the most brilliant is still the well-known Brenchleyensis. With the beauty still the well-known Brenchleyensis. With the beauty of the little Clintonia pulchella everybody is acquainted, and also with that of the noble autumn-flowering Tritoma Uvaria grandiflora, which in these grounds is at present in great beauty. The Japanese Maize is likewise an "object of interest," as is also the beautiful orange-blossomed Tagetes pumila, in praise of which Mr. Bennett, of Osberton, has written so enthusiastically. Nycterinia selaginoides, a white and lilac-flowered dwarf plant, will prove useful where low-growing subjects are an acquisition; and of Whitlavia grandiflora we noticed both white and blue varieties. Belgian Pansies are grown here in abundance and in great variety, as are also mixed Carnations of great beauty. The old Centaurea invecucrata, with bright yellow flowers, might be added to border plants with advantage, as might also the Kitaibelia, and a sulphur-coloured Sunflower, all of which we saw here in perfection. Everlastings, charming plants for winter bouquets, are also cultivated in great variety; the utility of these for the purpose just indicated is now beginning to be pretty generally recognised.

The Vegetable department is even more extensive than that allotted to flowers, a fact which will be apparent when we state that of Celery alone some 10 acres are under that crop this year. The Peas called Beck's and M'Lean's Gem occupy between them 20 acres. Ten acres are devoted to Veitch's Perfection, and while speaking of Peas, we may mention that the Messrs. Carter have succeeded in raising a very dwarf variety from the sort known as Omar Pasha. It is one of the Fan Peas, does not reach more than from a foot to 18 inches in height, and is very prolific. It

will, therefore, be extremely useful in small gardens. M'Lean's Wonderful is also a good Pea. The merits of Carter's First Crop and other early varieties have already been fully discussed in our columns. Ten acres are set apart for Dwarf Drumhead Cabbage, and to Enfield Market and to other varieties, proportionate space is devoted. Carter's Early Frame Potato makes a good associate for the Pea just adverted to, for it has little or no top, and is very prolific. A new variety of Potato, stated to be a hybrid between the Ashleaf and the Fluke, and called "the Ashleaf Fluke," was growing in large quantities, and we were informed that it is a second early kind of great productiveness and good flavour. Among Broccolies are Snow's, which is well known to be one of the best of early winter varieties, Winter Imperial, Dalmeny, Maule's Late White, and Carter's Late Summer, which comes in in June. These are all fine kinds, which turn in in succession. Pine-apple, Carter's St. Osyth, and other Beets are largely cultivated, as are also Dunnett's Giant Brown Cos, Wheeler's Tom Thumb Cabbage, Hardy Hammersmith and Nonsuch Cabbage Lettuces, and Moore's Cream, and Custard Vegetable Marrows. Scarlet Runners are mixed with Parsley, of which Dunnett's Garnishing is a beautifully curled variety. Leeks consist of Musselburgh, Henry's Prize, and Ayton Castle, all good kinds. To the growth of an Olive-shaped scarlet Radish five acres are devoted.

Miscellaneous.

African Economic Plants.—Indigo, about 3 or 4 ft. high, grows in great luxuriance in the streets of Tette, and so does the Senna plant. The leaves are undistinguishable from those imported into England. We set the Makololo to collect specimens, but the natives objected to their doing so, though they themselves never make use of them. A small amount of first-rate Cotton is cultivated by the native population for the manufacture of a coarse cloth. In former times the Portuguese collected it at a cheap rate, and made use of it instead of the calico now imported to exchange for the Manica gold dust. A neighbouring tribe raises the Sugar-cane, and makes a little sugar; but they use most primitive wooden rollers, and having no skill in mixing lime with the extracted juice, the product is of course of very inferior quality. *Livingstone's Zambesi.*

Scientific Reverence.—There is a scientific reverence —a reverence of courage—which is surely one of the highest forms of reverence. That, namely, which so reveres every fact, that it dare not overlook or falsify it, seem it never so minute; which feels that because it is a fact, it cannot be minute, cannot be unimportant; that it must be a fact of God; a message from God; a voice of God, as Bacon has it, revealed in things; and which, therefore, just because it stands in solemn awe of such paltry facts as the scolopax feather in a snipe's pinion, or the jagged leaves which appear capriciously in certain Honeysuckles, believes that there is likely to be some deep and wide secret underlying them, which is worth years of thought to solve. That is reverence. A reverence which is growing, thank God, more and more common; which will produce, as it grows more common still, fruit which generations yet unborn shall bless. *Rev. C. Kingsley, in Fraser's Magazine.*

Forming a Peach Tree.—In forming a tree it is an error to trust to shortening back the branches at the winter pruning. A better mode would be, during the period of growth, to incline a too strong branch to a horizontal direction, and to tie up vertically a too weak branch. Of all the plans adopted for this purpose this is the simplest and the most efficacious. The weaker branch should also be allowed a greater freedom, so that the sun and air may have free access all around it. Any shoots on the weaker branch which are to be ultimately removed, should be allowed to remain on it as long as possible, to attract the sap to it. The more leaves thus left the more strength does the branch gain. The contrary practice, of course, should be applied to the too vigorous branch of the other wing. Fruits exhaust the branch, as they require much sap to nourish them; therefore, we should not leave too many on a weak branch, where, however, they generally soonest appear. By a combination of these simple means the equilibrium of the vegetation of the tree may be restored during the season of growth, leaving comparatively little to be done at the winter pruning. Considerable amputations always injure trees, however well performed. The modern school especially recognises this principle, which is so much aided by the summer-stopping of the shoots, that little or no shortening of the leading branches is ever required. We require all the growth a tree can make; and the object proposed by shortening-in the branches, often by fully one-third of their length, so as to make the lower eyes break, can and ought to be obtained by more natural means. If we take care of the fruitful shoots these will soon master the branch. The only use of the latter is to carry the former, and these should be especially attended to. If we wish to obtain fruitful shoots the branches must be left as long as possible. A contrary practice produces only excessively vigorous shoots, which are unfruitful. Trees only produce flower-buds when, after having acquired a certain development, the sap circulates more slowly. The forms which trained trees are made to assume, very much contribute to favour the production of flower-buds, by distributing the current of the sap into diverging lines, and avoiding all vertical lines. *Bréhant's Modern Peach Pruner.*

Calendar of Operations.

(For the ensuing week.)

Few autumn-blooming plants are more attractive than the different varieties of Lilium lancifolium. They come into bloom at a time when the beauty of New Holland plants is over, and when an actual scarcity of flowering plants exists, wherewith to decorate our conservatories and greenhouses. They produce a gorgeous display either in-doors or out; and as they are quite hardy they may even be liberally planted in the open border. In no establishment, therefore, can they be too plentiful. The cultivation of them in pots is by no means difficult. Immediately when the bulbs go to rest is the proper time to repot them. If large specimens for particular display are required, large pots may be employed, and half a dozen flowering bulbs placed in each pot. Rough peat, intermixed with a little loam and silver sand, is the best kind of soil for them. The pots should be well drained, and the crown of the bulb should be just covered with the soil. When potted they should be placed in a cold pit or frame, and where room under glass is an object in winter, they may even be plunged in the open air in coal ashes, in a manner similar to potted Hyacinths.

FLOWER GARDEN AND PLANT HOUSES.

Little shading may now be used; for plants ripening their growth have need of not only all the daylight they can get, but even moderate sunshine.

Cinerarias.—These will now want a cool shady situation; if mildew makes its appearance sulphur should be at once applied. The first-struck cuttings may require re-potting; also the first-sown seedlings for early bloom.

Hollyhocks.—In many places these are not blooming satisfactorily this season. Fine varieties of them may be propagated by means of eyes taken from the strong parts of this year's wood. In selecting them, care should be taken to choose those which have an incipient leaf-bud at the base of the leaf, and to reject those which are developing flower-buds only. The cuttings should be prepared by splitting and cutting the stems up into lengths, leaving about 2 inches below the bud, and paring away the pithy part; they should then be planted about 1 inch deep in a frame of very sandy soil, and carefully shaded; if they can have the advantage of a little bottom-heat, so much the better.

Orchids.—Kinds which have already made their growth and ripened it should be removed forthwith to a cool house. Care should be taken not to excite such plants into new growth at this time, as it is much too late to get it properly matured, and the unseasonable draught upon the stored energies of the plants will materially interfere with the next production of flowers.

Pansies.—Make beds for the reception of young plants. In doing this it is absolutely necessary that wireworms should be caught, therefore the compost should have repeated turnings; for these pests are very destructive to young Pansies.

Pelargoniums.—The propagation of all the best bedding varieties should now have a due share of attention. Ordinary kinds may be cut down according to the usual practice, and cuttings selected from the shoots so cut off; but with the fancy varieties a different course must be pursued; most of these produce such a profusion of flowers, that, if left to their ordinary course, it is almost impossible to obtain any proper shoots for cuttings. By picking off the flowers as they appear, and encouraging the growth of the plants by rich soil and liquid manure, the extreme points will make cuttings, and the young side shoots will produce them in abundance.

Roses.—Cuttings of China and some other kinds may now be taken and planted in a close cold frame in a north aspect for three weeks or a month, until they are cicatrised at the base; they should then be taken carefully up, potted in thumb pots, and plunged in a close warm frame with a gentle bottom-heat. So treated they will make nice plants in a short time, and if kept under slight protection during winter will fill their pots with roots, and be ready for planting out in April or May.

White Lilies.—These should be taken up and replanted once in two years, an operation which should be done as soon as the old stems are decayed. Beds for these plants should be made of rich loamy soil, containing a good portion of sand or burned clay, and charred refuse. In planting, a little sand should be laid above and below the bulbs.

FORCING GARDEN.

Cherries.—Endeavour by all means to keep the foliage healthy and clean as long as possible.

Melons.—Attend well to plants swelling late fruit. Avoid frequent waterings of the soil by giving good soakings.

Pines.—Maintain a high moist temperature, with abundance of ventilation, to plants which are swelling fruits; and a rather drier atmosphere around those which are in flower. In all the stages except that last mentioned use the syringe freely in fine weather; but, on dull days, depend almost entirely upon the evaporating troughs, and be careful to admit air, to prevent too great a condensation of moisture. If the syringe is used in excess during this month, it is liable to render the soil too wet for the healthy development of the plants. Take care that the bottom-heat does not get too strong for plants which have been recently potted or plunged.

Strawberries.—Pot off layers, and place them where they will receive partial shade. Shift established plants into fruiting pots at once, and place them on coal ashes fully exposed to the sun, supplying them liberally with water. Early in October plunge the pots to the rims in frames or pits. Give them full exposure in mild weather, but protect both from heavy rains and severe frosts. The beginning of January is as early as forcing can be started with safety.

Vines.—Houses in which the Grapes are just beginning to ripen should be gradually inured to a free admission of air; and if it be desired to keep for any length of time those which are quite ripe, they should still have the advantage of a slight shading should the weather become bright.

HARDY FRUIT AND KITCHEN GARDEN.

Continue to gather all kinds of fruit as it becomes ripe.

Celery.—This may still be planted. Some prefer what is called the Scotch plan, viz., beds of from 4 to 6 feet in width. These beds, which often succeed crops of Peas, are trenched two spits deep. The bottom spit receives plenty of raw manure or half-rotten leaves, and the top one old manure. The principal secret in growing very tender and crisp Celery, irrespective of size, is to grow it very quickly by means of plenty of manure and moisture. Whether in rows or beds, the young plants will not succeed without plenty of water.

Endive.—Transplant while the weather is favourable for operations of that kind.

Lettuces.—Still sow for succession, and transplant the produce of previous sowings.

Onions.—Lift crops of these when ripe, and carefully dry and store them.

Potatos.—Let early kinds be got up as soon as the tops are ripe; let the produce be sorted, and if of an approved kind let all the small and moderate-sized tubers be carefully preserved in dry sand or charcoal dust. Be at a little trouble also to test the different varieties, and do not allow your number of sorts to exceed half-a-dozen, selecting those only which are most liked at table, free croppers, early in coming to perfection, and least liable to be affected with disease. As soon as the Potatos are off plant Winter Greens on the same ground.

Spinach.—Sow some for late use in good rich ground, deeply trenched; if in rows they should stand about 16 inches apart, to allow a free passage between them for forking, cleaning, and gathering the crop. At the first gathering every other plant should be drawn out entirely, thus giving additional space to those which are to produce late supplies.

STATE OF THE WEATHER AT CHISWICK, NEAR LONDON,
For the Week ending Aug. 15, 1866, as observed at the Horticultural Gardens

August.	Month Age.	Barometer.		Temperature.					Wind	Rain.
				Of the Air			Of the Earth			
		Max	Min	Max.	Min.	Mean	1 foot deep	2 feet deep.		
Thurs 9	28	29.654	29.418	72	49	56.0	61	59	S W	.11
Friday 10	●	29.858	29.657	70	41	55.5	61	59	N W	.08
Satur 11	2	30.108	30.004	72	41	56.5	61	59	N	.02
Sunday 12	3	29.760	29.615	68	51	60.5	61	58	W	.10
Mon 13	4	29.892	29.846	71	52	61.5	62	59	W	.07
Tues 14	5	29.841	29.727	68	45	56.5	62	59	W.	.01
Wed 15	6	29.995	29.851	65	47	56.0	62	59	W.	.00
Average		29.896	29.691	69.7	46.8	58.2	61.4	58.9		.29

At page 756 read for Aver Max 29.851

Aug 9—Masses of dark clouds in deep blue sky, fine, rain at night.
— 10—Clear, low dusky and white clouds, overcast, rain, cold at night.
— 11 Fine, low white clouds, rain at night
— 12—Dull, fine rain, rain at night, drizzle in evening, wet, rain.
— 13—Overcast, very fine, overcast, slight rain
— 14 Dull, drizzle, overcast, very fine
— 15 Fair, cloudy at first, rain at night

Mean temperature of the week, 1 deg below the average
Mean temperature of the week, ending July 28, 3 deg below the average

STATE OF THE WEATHER AT CHISWICK,
During the last 10 years for the ensuing Week, ending Aug. 25, 1866

August.	Average Max. Temp.	Average Min. Temp.	Mean Temp.	No. of Years in which it Rained	Greatest Fall of Rain.	Prevailing Winds.						
						N.	N.E.	E.	S.E.	S.	S.W.	W.
Sunday..19	73.0	51.1	62.0	18	0.42 m.	2	1	1	2	3	11	4
Mon ..20	72.6	50.5	61.5	16	0.45	2	3	1	1	1	11	4
Tues. ..21	72.1	49.4	60.9	14	0.62	3	4	1	1	1	8	4
Wed ..22	71.6	49.1	60.6	13	0.67	3	4	1	1	1	8	3
Thurs ..23	71.7	49.3	60.5	20	0.95	2	4	1	1	3	10	4
Friday ..24	71.5	47.8	59.6	16	0.24	2	2	1	1	5	10	4
Satur ..25	71.2	47.7	59.4	17	0.37	2	2	1	1	5	10	5

The highest temperature during the above period occurred on the 29th, 1859—therm. 89 deg., and the lowest on the 21st, 1850—therm. 42 deg.

Notices to Correspondents.

Bull Hydrangeas. *Old Sub.* Dissolve half a pound of sulphate of iron in two gallons of water, and apply the solution a little at a time and frequently, till the effect is produced.

Bonsset *Z.* It is the name given to Eupatorium perfoliatum.

Deformed Begonia. *Bonsset and G.* Your flower was chiefly remarkable for the formation of a small supplementary and imperfect flowers in the axils of the ordinary sepals and petals, a sort of hen-and-chicken condition which gave great richness of appearance to the flower. The botanical interest was also great. You should try to perpetuate it if possible.

Names of Plants: *W F.* Cornus mascula.—*S & M.* Francoa ramosa.—*Iota* 1, Lustrea dilatata; 2, Nepeta Mussini; 3, Hypericum Andr sonianum, 4 and 5, uncertain; the first apparently a Spiræa, the second a Holly.—*Johnson* 1, Veronica longifolia var. media; 2 Potentilla nepalensis; 3, Potentilla argyrophylla.—*W L.* Your Grass was too far advanced, the florets having all fallen away.

Swartzwald. *and Sebastobar.* This name, which your neighbour found on consulting some herbalist's directions for medical purposes, belongs to the very common weed Polygonum Hydropiper, otherwise known as Water-pepper.

Thistle Galls: *T B.* These have been illustrated and described at p. 81 of our Volume for 1864. They are strictly a thickening of the stem or branch of the plant, which is continued at the farther extremity of the excrescence, the surface of which often throws out leaves. Sometimes these galls occur one after another along the twig, owing to the insect having moved a few inches after laying deposited some of its eggs. On cutting open the galls, which are hard and woody, a variable number of oval cells is formed within, each inhabited by a small white footless maggot, which produces a pretty small dipterous fly called *Mycrocephalus agrestis.*

Tradescantias. *H B.* The blooms sent are very showy, but do not present any appreciable novelty. Of the habit, which is all-important, we can of course form no opinion from the specimens sent. The deep crimson-scarlet is the best variety.

—Reading. The flowers you send are more curious than beautiful. The colour, a kind of golden-bronze, is uncommon, and we do not recollect to have seen it before amongst the many varieties of this plant, though something like it occurs amongst the dwarf kinds. If it keeps true it will be worth growing as a curiosity.

Communications Received.—Dr. Smith.—D. T. Fish.—W. P. A.—J. May.—J. Wells.—Hooper & Co.—E. Carrol.—J. Breen.—Isaac Dell.—Professor Koch.—J. G. Temple.—S. Bray.—W. P. R.

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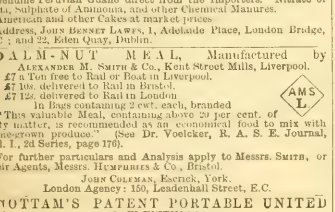

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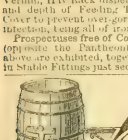

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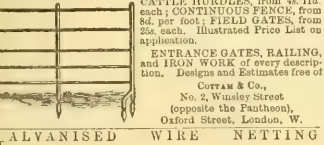

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Applications to be addressed to William Clifford, the Secretary, at the Office of the Company, 22, Whitehall Place, London, S.W

The Agricultural Gazette.

SATURDAY, AUGUST 18, 1866.

The restrictive measures laid by the Government upon the breeders and dealers of stock on account of the Cattle Plague have worked so effectually, that the disease may be hoped now to be gradually dying out. Upon breeding farms these measures have had their natural result; the increasing number of the animals has created an excess of stock, whilst those more unfortunate farmers whose cattle have been diseased and slain are completely cleared out. And the drought of two successive years having compelled many owners of cattle for want of keep to send their stock to market, has still further aggravated the deficiency. This uneven state of things has been met in the usual method, and now many sales of good stock are advertised. Mr. Strafford has advertised no less than eight, two of which have already taken place. One, indeed the first of the season, was held at Mr. Charles Howard's farm at Biddenham on the 27th of July (after the annual sheep sale), and consisted of seven valuable bulls, which made just over 40*l.* apiece; the other was the dispersion of the late Mr. Chas. Swaisland's herd at Crayford, Kent, on the 1st of this month. This stock, bred from that of Sir J. W. Lubbock and Mr. Morland, had won some prizes in the county, and at the Birmingham and Smithfield Club Shows. It comprised 45 animals, which made 1221*l.* 3*s.*, or an average of 27*l.* 2*s.* 9*d.* Of these, 29 cows and heifers, being all the females of the herd, made 317*l.* 1*s.* each; the highest prices varying from 40*l.* to 50*l.* Three of Mr. Strafford's remaining sales take place this month—Mr. R. Sharpe's, at Courtlands, and Mr. Watson Smyth's at Wadhurst, Sussex, on the 22d and 23d inst.; and a large part of Mr. Holland's herd at Dumbleton, Worcestershire, will be sold on the 29th inst.

The herd at Courtlands has been very successful during the years 1864 and 1865, and upwards of 30 prizes were obtained by it in 21 months. Mr. Sharpe, who originally bred Short-horns in Gloucestershire, began again on his return from Buenos Ayres, a few years since at Courtlands, and purchased some very capital animals at the late Mr. Jonas Webb's sale at Babraham; among them was *Miss Emily* (a great favourite and prize winner of Mr. Webb's), *British Queen*, and the celebrated bull Lord Chancellor (20,160), who was bought for 400 guineas, and afterwards won the 1st prize at the Royal Agricultural Society of England's Plymouth Meeting, and three other 1st prizes. *Miss Emily* has produced a very beautiful heifer by Englishman (19,701), called *English Emily* (which has also been a successful prize-taker) and two other bull calves. The celebrated herd of Mr. Anthony Maynard at Marton-le-Moor, from whose father Mr. Charles Colling purchased one of his best tribes, has also supplied Mr. Sharpe with some good specimens of the breed, and *Bonny Star*, of Bates's Wild Eyes strain, *Lady Richmond* and *Heiress*, with several calves from them, will be very attractive lots. The Catalogue altogether contains 38 cows and heifers and 11 bulls, including Lord Chancellor, from Babraham.

The Wadhurst sale, taking place the day after Mr. Sharpe's, offers 67 head of bulls, cows, and heifers, bred chiefly from the herds of the Marquis of Exeter, Mr. Colvin, and Mr. Beauford, of Bletsoe. The females have been crossed by Don Juan (15,896), a son of the distinguished Second Duke of Cambridge, from the J tribe. Touchstone (20,987), by Mr. Stewart Marjoribank's Great Mogul, and the Duke of York (23,032), who is by Capt. Gunter's 500 guineas Seventh Duke of York out of a cow of Sir Chas. Knightley's favourite blood. Now however Thorndale Duke (Lot 1 of the bulls) from Mr. Betts' magnificent herd is being used. The stock is very healthy and most prolific, many of the animals are good milkers, and they will be found to be very useful purchases.

Mr. Holland's herd has been well-known in the county for several years, and with the exception of 13 females and one bull, it will be sold entirely on Wednesday, the 29th inst., the day after the Dumbleton Ram Sale. Several of the 40 cows and heifers are descended from animals originally bred by Lord Exeter, Mr. Jobson, Mr. Whitaker, and Mr. Wilkinson, and there are some excellent representatives of Mr. Troutbeck's "Strawberry" tribe. Many of the cows have won numerous prizes at the various shows held in the neighbourhood. *Rose of Dumbleton* (Lot 8) from Mr. Jobson's Sonsies, won 10 prizes, whilst *Satellite's Butterfly*, of the same family, and *Cleopatra*, have also obtained high honours. Good milkers abound in the herd, and most of them are regular breeders, in fine healthy condition. During the last 10 years first-class bulls have been in service, viz., Duke of Cambridge (12,742) by the 1000 gs. Grand Duke from *Cambridge Rose 7th*, used by the late Sir Charles Knightley, and the 15 calves that were got by him made nearly 60 guineas each at the Fawsley sale in 1856. After him came Master Butterfly 5th (14,921), from Colonel Towneley's famous herd, and by the 1200 gs. Master Butterfly; and now Lord Jersey (20,185), who is a remarkably fine animal, and heads the bulls, is being used. He is by Captain Gunter's Seventh Duke of York, and from the J sort, and his stock are very promising.

The annual Ram Sale, which takes place the day before the Short-horns are sold, offers a choice of 28 Shropshire Rams of great size and symmetry, and some useful shearling ewes are also offered. The flock stands very high in public estimation, and has won about 140 prizes, with gold and silver medals.

These sales, comprising in all some 170 animals, besides a number of sheep, will afford a capital opportunity to those who are desirous of purchasing well-bred and useful stock.

"Being on a journey," says Luke Howard, the father of British Meteorology, "I made some observations which seem to prove that showers are at times determined in their extent by the nature of the soil and surface. At London, on the evening of the 20th, we had a small rain without thunder, notwithstanding the previous excessive heats. The roads were moist on the 21st, when we set out, the soil being loam. Between Barnet and St. Alban's, on the

chalk, they were dusty, with only the marks of large drops on them. Some miles beyond the latter place, we found the road, on sandy loam, watered by a shower going before us. The further boundary of this shower was Dunstable. On the calcareous downs, leaving Dunstable, no rain appeared to have fallen, the dust flying freely; but at the foot of the hill, where the new road is cut, we found the soil (a sandy loam) again well watered, precisely to the boundary between it and the chalk. Arriving at Woburn, we learned that showers had fallen there, on the sand, in the course of the afternoon, attended with hail. Thus the rain of the day had been clearly determined to the sand and clay, leaving the chalk dry."

This is a very curious observation, and possibly it may have some relation to a general law throughout the mineral kingdom, by which each kind of "rock" or stratum attracts or repels moisture. But what degree of truth there may be in the idea must be left to be determined by Mr. SYMONS and his thousand rain gauges widely spread over the country. Meanwhile the rainfall bids fair once more to excite agricultural interest by its excess, as during the past few years it has more generally done by its deficiency, and the relation of the soil to temperature in lands that are water-logged and in those that are drained, becomes a subject of first-rate agricultural importance,

Some four years ago the Marquis of TWEEDDALE offered a premium of 80*l.* for the best sets of observations on the difference of the temperature of drained and undrained land, at different depths below the surface, compared with the temperature of the air, at four feet above the surface, in the same locality. The object of the observations was to inquire whether drainage raises the temperature of the soil, and improves the climate, and if so, to what extent the produce of the land has thereby been increased.

The conditions of the experiments were calculated thoroughly to test the question. Competitors for the premium were instructed to see that the soil of the drained and undrained land was as nearly as possible the same in nature and quality; and it was stipulated, in order to secure results comparable with each other, that the cultivated fields experimented on should be under the same crop, and have received the same tillage. On mountain pastures, the thermometers were to be placed at the depth of 10 inches, and in cultivated land 10, 20, and 30 inches below the surface. These thermometers were to be respectively 16, 26, and 36 inches long, projecting 6 inches above the surface; so that the bulbs were at the required depths, care being taken to keep the bulbs clear of the drains, so as to give the true temperature of the soil affected by the drain. The thermometers for indicating the temperature of the air were to be placed, as before stated, 4 feet above the surface of the ground, and protected from sunshine and radiation in such a manner as to allow at the same time of free ventilation. The instruments were to be observed and registered daily at 9 A.M. All who may wish to institute similar inquiries cannot do better than follow this method.

We will now proceed to state the leading results of this important investigation.

Effect of Drainage on the Temperature of Arable Land.—The following observations were made on a light sandy soil under a Rye-grass crop, in a field sloping to the west, about 1 feet in 10, and about half a mile distant from the east shore of Loch Fyne. The drains were 2½ feet deep.

First, at the Depth of 10 inches.—It must be remembered that changes of temperature are much more marked at this than at greater depths.

Effect of a Sudden Fall in the Temperature of the Air.—On the 20th October the temperature of the drained land was 46°.8, and of the undrained 46°.2; the difference being only 0°.6. But on the following night the air fell to 27°, being 11° lower than on the previous night; and next morning the temperature of the drained land fell to 44°.8, and the undrained to 42°.2; the drained land being thus 2°.6 warmer than the undrained.

In summer, on the 29th of June, the temperature of the drained land was 61°.5, and of the undrained land 59°.9. On the following night the air fell to 48°.0, being 6°.0 lower than on the previous night; and the next morning the temperature of the drained land fell to 59°.5, and the undrained to 56°.9. Thus, a fall of 6°.0 in the temperature of the air was followed by a fall of 2°.0 in drained land, and 3°.0 in the undrained land.

Effect of a Continued Fall in the Temperature of the Air.—During the time the observations were carried on there occurred eight well-marked depressions in the temperature of the air; and in every case but one the temperature of the undrained land fell to a greater extent than that of the drained land, but even in this instance the drained land was still warmer than the undrained by 0°.3.

In a *Protracted Frost* of three weeks the want of drainage reduced the temperature of the soil, at the depth of 10 inches, nearly half a degree.

In a *Sudden Rise of the Temperature of the Air*, the drained land rose 1°.0, and the undrained 1°.5, but then, before the warmth set in, the undrained land was 2°.4 colder than the drained. Moreover, on the following day the air rose to 72°, and next morning the drained land had risen to 61°.5, while the undrained land had fallen to 58°.4, being now 3°.1 colder than the drained land. No rain fell on these days.

In a *Continued Rise of Temperature of the Air*—leaving out the cases when a copious rainfall raised the temperature of the undrained land—the mean temperature of the drained land was invariably higher than that of the undrained land. The mean excess was on one occasion 1°.4, and on three others about 0°.7, which are considerable amounts when spread over six days, as in the observation. In long-continued dry, warm weather the drained land was often 2°, sometimes 2°.5, or even 3°.0 (though rarely) above the undrained land.

As may be expected, the drained land is not so much affected by rain as the undrained, especially in winter. On almost all occasions when rain falls during this season its temperature is higher than that of the land. In the case of the drained land, the drains quickly convey it away; but in undrained land it remains in the soil, and the temperature of the undrained land is by this means raised above that of the drained land. In one instance, within 24 hours after 1.35 inch of rain fell, the undrained land rose to 44°.9, whilst the drained land reached only 44°.0.

There are, of course, warm and cold rains, and their effect tells differently on drained and undrained soils. On the 27th of July 1.75 inch of rain fell, and the next morning the drained land had fallen 0°.8, the undrained 1°.0. This rain was probably colder than the soil, and thus we see the advantage of draining. Three days after, 0.63 in. of rain fell, and next morning the drained land had risen 0°.3, and the undrained land 1°.3. This was probably a warm rain, and the undrained land had the advantage, but it signifies very little, when we remember the prevalence of cold rains during the early growing season. On the other hand, these different effects might have been caused by the time the rain fell, for if it fell during the day, when the surface of the soil is warm, it would carry part of the heat with it down into the soil; and if it fell during the night, when the surface is cold, an opposite result would follow. The effect of sleet showers, showed the superior condition of the drained land, the effect of sleet showers having lowered the temperature of the drained land only 2°.0, but that of the undrained land 4°.0. Of course by remaining longer in the undrained land they cooled it more.

During a thaw the temperature of the drained land continued higher than that of the undrained—for the reason above stated, and it was only after a copious rainfall that the undrained land showed a higher temperature—doubtless owing to the warmth of the rain, as before suggested.

At Depths of 20 and 30 inches. At these depths the great advantage of draining becomes strikingly evident. During the prevalence of frosty weather in February for three weeks, the mean temperature of the drained land at 20 inches was 35°.2, and the undrained 34°.7; and at 30 inches, 36°.0 and 34°.7. Hence the effect of drainage on the lower depth was to keep the soil 1°.3 warmer during a protracted frost—an immense benefit to vegetation. Moreover, whilst at 10 inches the rain raised the temperature of the undrained more than that of the drained land, it is just the reverse at 20 inches, at which the drained land had the advantage. It was the same with snow, the effect of which was to prove that the cold resulting from a covering of snow is more quickly transmitted through undrained than through drained land.

The mean annual temperature at each of the three depths was greater in the drained than in the undrained land, the amount being at 10 inches, 0°.8; at 20 inches, 0°.4; and at 30 inches, 0°.7. The annual mean temperature at 9 A.M. is greater at 20 inches than at 10 or 30 inches; from which we may infer that the daily wave of maximum temperature has at 9 in the morning passed 10 inches, and penetrated to about 20 inches, but has not yet arrived at a depth of 30 inches. Hourly observations of the underground thermometers, conducted from time to time under different states of the weather, would be of great service in determining the march of the daily wave of temperature through different soils. Since changes of temperature are more readily transmitted through undrained than through drained land, it follows, from the small excess of the drained land at 20 inches, that at 9 A.M. the daily maximum had penetrated to about 20 inches in the undrained land, but that in the drained land it was still some distance from that depth.

The difference between the temperature of the drained and undrained land varied greatly in different months and at different depths. At 10 inches, the excess is much greater during the warm months, from May to October, being 1°.1, as compared with 0°.4 during the other six months. But at 20 and 30 inches, the greatest excess occurs during the cold half of the year from October to March, being at 30 inches, 0°.9, as compared with 0°.4 during the summer months; and at 20 inches, 0°.6, as compared with 0°.2. It may be remarked, that when the excess is greatest at 10 inches, and least at 30 inches, the heat is increasing from the surface downwards; but when the excess is least at 10 inches, and greatest at 30 inches, the upper layers being coldest, heat is passing from below upwards.

The temperature at 10 inches reached the maximum on the 25th July, and fell to the minimum about the 21st February; and the mean temperature occurred about the 21st March and 21st October. At 30 inches, those periods fell from one to two days later; except in April, when it occurred four days later, owing to the rapidity with which the temperature rose to the mean in that month, longer time being thus required to raise the temperature of the lower depths.

The coldest month was January, 34°.2; and the warmest July, 58°.8. In the drained land, the coldest winter and the warmest summer temperatures at the different depths were respectively 34°.0 and 59°.9; 35°.4 and 59°.1; and 36°.0 and 57°.4; and in the undrained land, 33°.9 and 58°.9; 35°.1 and 59°.2; and 35°.0 and 57°.0.

Thus, the difference between the mean temperature of the coldest and warmest months was, in the air, 24°.6; in the drained land, 25°.9, 23°.7, and 21°.4; and in the undrained land, 25°.0, 24°.1, and 21°.9. And hence the annual fluctuation of the mean monthly temperature was greater at 10 inches, about equal at 20 inches, and less at 30 inches, than that of the air.

The chief points in connection with the extreme monthly temperatures are—(1), while in several of the months the highest temperatures of the drained land were considerably in excess of the undrained land, in nearly half of the months the undrained land either equalled or slightly exceeded the drained land; but (2) the lowest temperatures of the undrained land were in every month lower than those of the drained land at 10 and 30 inches, and nearly in every month at 20 inches. Hence, the advantage of drainage consists more in keeping up the temperature of the land during periods of cold weather, than in favouring its increase during warm weather, when, indeed, it is not absolutely required.

MR. ALBERT PELL, of Haselbeach, Northampton, who was mainly instrumental in organising the public meeting in St. James's Hall last February, to which the legislation which has acted so efficiently in accordance with the report of the Commission on the Cattle Plague was principally due, has published a letter on CHAMBERS OF AGRICULTURE. He is the Chairman of the recently established Central Chamber of Agriculture, and thus discusses the work that there is for such an institution to accomplish:—

"Never was the need of such an institution as our Central Chamber of Agriculture more apparent than in the case of the cattle plague last autumn and winter. With an admirable Report in our hands from the Cattle Plague Commissioners, it seemed at one time that it was to be for us nothing better than waste paper. I turned to the Royal Agricultural Society to lead, but found that the laws contained in their Charter, which cannot at any time be altered or departed from, precluded the Society from taking part in any questions of a political tendency, or having reference to measures pending, or to be brought before Parliament.

"Had Chambers of Agriculture been established last summer in England, with their Central Organisation in London, I cannot but think that remedial measures would have been taken by the Government sooner, that we should have had no killing without compensation, and that the course the plague was taking would have received an earlier check.

"The Chambers of Agriculture have still other work to do let them deal with the malt tax, and the tax that presses with undue severity on the out-of-doors labourer, to whom good and cheap beer is as much a necessary as meat. The former, and the material that it and its producing this. Barley he grows; Hops are English produce; water, fuel, cellarage, and space for the manufacture exist on most farms; but he cannot turn these to the best advantage, owing to a duty that is almost prohibitory. Home-brewed ale and clean small beer below, for the poor at least, to village tales and romances

"Then the destruction of human food, arising from the stocking cultivated land with ground game, is a fair question for examination; and if it can be shown that the preservation of hares and rabbits is incompatible with good husbandry, a representation to that effect might be urged with the view of removing them from the game list. Certainly, the preservation of them, out of the woodlands, for letting or selling, or for keeper's perquisites, is a practice productive of ill-will, poor crops, inferior tenant farming, and deterioration of stock. To my mind recent legislation on this head has pointed in the wrong direction. The old laws prohibiting the sale of game, and limiting the pursuit of it to qualified persons only, placed the cultivator of the soil in a better position than he now finds himself in.

"Again, there is another subject which falls well within the province of Chambers of Agriculture—I mean the employment of children full time in the fields. I believe that the greatest benefit might accrue from legislation on this head; so that either the morning or afternoon time should be reserved to the child from his hours of field labour for schooling. Might not the labour of children be suspended during half or one-third of the time now devoted to it without unduly disarranging the course of farm work? And if that time were spent in education, should we not have the promise of a race of labourers superior in body and mind to those who now till the soil? The price of labour would doubtless be higher, but the quality would be proportionably improved, and the character of our rural population sensibly raised.

"I will say a word upon a question that has been made to Chambers of Agriculture—that they are likely to sow dissension between landlord and tenant; that politics and legislation are for the owners of the soil and the labourer; and that the farmer, being a middleman, must leave the ultimate results to be adjusted in rent.

"As to ill-will, the interest of owners and occupiers are identical at so many points, that I have no fear of their becoming like a house divided against itself; and, with reference to the farmer having no politics of his own, I would reply, that he seems to have suffered from this assumed want of class feeling, seeing that though he owns a capital equivalent to a sixth or a seventh of the value of the soil he rents, it is admitted that of all investments his brings the poorest return; and of all capitals his is the most imperfectly represented in the House of Commons. He has hitherto been beaten, in detail, on most points advanced by him for legislative amendment. There is a Board of Trade, but no Board of Agriculture, and the opiate of an occasional commission is considered a specific for all his ailments.

"We trust that this year will see a new system inaugurated, and that in the establishment of local Chambers of Agriculture in correspondence and connection with the central one (for without focussing in London I believe little good will be done), opportunity will be given for the expression with some weight and influence of the feelings of many good and intelligent men upon points where they have hitherto been silent,

not so much from want of conviction, as from the hopelessness attending isolation, and the want of institutions whose chance it will be to press their resolutions home upon the Government."

ON HARVESTING CORN.

[The following is the rest of Mr. Love's essay, partly published last week.]

Comes next the carting. I have always had this done at a halfpenny per laid-red sheaves for each haul they pass through until finally laid on the stack; this protects for pitching, loading, unloading, handing to stacker, and stacking, besides a man who sees that the stack is piling up all right, and gets on the platform to repitch when the stack gets too high for the man on cart or waggon to reach the top; this gives 3*d.* a hundred sheaves as the expense of manual labour in carting and stacking; the cost of horses and drivers depends on the distance of the stack from the field. A horse will go and return a quarter of a mile in 10 minutes (at the rate of three miles an hour); and two loaders and two pitchers will load 240 sheaves in the same time; therefore for every quarter of a mile between the field and stack, an extra horse, cart, and man will be required; of course intermediate distances must be met, either by more horses going more slowly, or fewer going faster. Inasmuch as expedition (when the crop is fit) is of the utmost importance, and three horses and carts or waggons are the smallest number that can insure the labour of men against loss of time,—the additional cost for horse-labour with the drivers will be about 2*d.* per hundred sheaves, and for every additional quarter of a mile in distance two-thirds of a penny.

A considerable saving of cartage will obviously be effected if for the central farm-steading, which may be called the Scotch plan, there be substituted that of having several field barns. This system has been introduced into England, together with the movcable steam-threshing machines, which have in many parts quite superseded the old method, because they can thresh the corn in less time than was once required to put it into the barn.

Economy in thatching is another point for consideration. This item of expenditure becomes more costly as the bulk of the straw is increased by the use of other implements than the sickle, as the use of the sickle is diminished, as the space of the top or ridge is increased, and as the sides are allowed to increase in size as they go upwards, which shape also involves an increase of labour, because a greater portion of the sheaves have then to be thrown up above the level of the carts.

The stacks, therefore, should be made as large a size as circumstances will permit, and this size will be ruled by the number of sheaves which can be threshed in a day, which will commonly be 800, or the produce of about 10 acres, yielding 40 quarters of Wheat; at all events the size of the stacks should be so regulated that one, two, three, or more, should constitute a day's threshing.*

I have been in the habit of building my stacks on stadles 30 feet long and 12 feet wide, the ends being circular. Commencing in the middle, the first outside sheaves are allowed to project 6 inches over the frame, and the next two courses of crop to the same extent, which brings the width to 15 feet; the walls or sides are then carried up so nearly vertical that when 12 feet high the width has only increased by 18 inches; the head or roof is then put on at an angle of 45°, which settles down to about 40°; these stacks hold about 6000 sheaves, reaped low. They require nine score pounds of thatching, costing 1*s.* per square, which comes to 1½*d.* per 100 sheaves. If the crop has been bagged, the cost of thatching is about 1¼*d.*; if mown, 1½*d.*; if high-reaped, 1*d.*; if machine-mown, 1¼*d.* per 100 sheaves. The threshing I have found to cost per 100 sheaves an average of 10*d.* for high-reaped sheaves, 1*s.* for low-reaped, 1*s.* 2*d.* bagged, 1*s.* 3*d.* mown, 1*s.* 1*d.* machine-reaped, and 1*s.* 2*d.* machine-mown.

I have put together these various costs in the following Table:—

Operations.	Price per 100 Sheaves	High Reaping 240 Sheaves	Price per 100 Sheaves	Low Reaping 720 Sheaves	Price per 100 Sheaves	Bagging Low 870 Sheaves	Price per 100 Sheaves	Mowing Low 978 Sheaves	Price per 100 Sheaves	Machine Reaping 600 Sheaves	Price per 100 Sheaves	Machine Mowing 850 Sheaves	Price per 100 Sheaves
		Per Acre		Per Acre		Per Acre		Per Acre		Per Acre		Per Acre	
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Cutting and sheaving	0 1 9	0 9 11	0 1 9	0 12 7	0 1 2	0 10 0	0 1 0½	0 8 6	0 0 9	0 6 0	0 1 0	0 11 0	0 1 10
Carting and stacking	0 0 3	0 4 0	0 2 8	0 3 0	0 0 4	0 2 10	0 0 4	0 3 2	0 0 4	0 2 8	0 0 4	0 2 10	
Thatching	0 0 1	0 0 5½	0 0 1¼	0 0 9½	0 0 1½	0 1 0½	0 0 1½	0 1 5	0 0 1½	0 0 10½	0 0 1½	0 1 6½	
Threshing	0 0 10	0 4 6	0 1 0	0 7 2½	0 1 2	0 9 11	0 1 3	0 12 1	0 1 1	0 8 7	0 1 2	0 9 11	
Total cost per acre	0 3 4	0 16 8½	0 3 2½	1 2 11½	0 2 9½	1 3 9½	0 2 6½	1 5 2	0 2 3½	0 18 2	0 2 0½	1 1 7½	
Cutting and carting stubble	..	0 3 9											
Loss in value of straw	..	0 0 4											
Say	..	1 7 9		1 2 11½	..	1 3 9½	..	1 5 2	..	0 18 2	..	1 7 7½	

On all these systems, except that of high-reaping, autumn cultivation can be carried on even between the shocks, if these are carefully set up in straight rows. It may be satisfactorily shown that the saving effected by high-reaping is more than counterbalanced by the cost of harvesting the stubble and by the deterioration of the straw. To prove this point I carefully removed the straw off 4 square yards of ground and set it up even at the bottom, when I found that the top foot gave at the rate of 6 cwt. per acre, the second 4 cwt., the third 7 cwt., the fourth 8 cwt., the fifth 9 cwt., and the sixth 10 cwt. per acre in round numbers on a full crop. As the standard crop taken for our calculations is 5 feet high, the quantity of straw deteriorated will be 15 inches, which, at 9 cwt. per foot, gives 11 cwt.; this, as straw, is worth at least 1*s.* per cwt. for manure and 2*d.* for litter, or 14*d.* in all. On the other hand, as stubble, its value for manure is diminished by one-half, or 6*d.* per cwt., whilst for litter it is totally unfit, being always cold and damp when so applied. This deterioration, therefore, on 11 cwt. amounts to 7*s.* 4*d.* per acre, to which, if we add 2*s.* 9*d.* for the expense of cutting, gathering, and carting home the stubble, we have 11*s.* 1*d.* as our estimate for the loss to be added to harvest, the cost at harvest time, or 11*s.* 7*s.* 9*d.* in all; which shows that high-reaping is the most wasteful and expensive of all the methods in use, the reaping-machine being next condemned by the 50 per cent. saved by low-reaping and bagging are 9 per cent. more expensive than machine-mowing; hand-mowing being more expensive than any except high-reaping.

As despatch is of the utmost importance in harvest, the reaping-machine and mowing-machines that take a wide cut must rapidly come into use. The custom of mowing Barley and Oats, and carting them loose, is most slovenly, and, as far as Oats are concerned, very wasteful, besides being at all times injurious to the fodder. Barley, however, is thought by many to malt better when got loose and dry, because every grain will thus become the same exposure to the weather, and consequently sprout alike; but as the land gets better cultivated and heavy crops become the rule, farmers will be weary of the everlasting job of carrying heavy crops loose, and be induced to bind more and more every year, even if the Barley has been previously left in the swathe till properly weathered.

An opinion is generally prevalent that a great difference in the quality of the straw of any crop will ensue, and to a small extent this is the case; but far greater difference arises from the condition of the soil as to manurial matter for the nourishment of the crop, and from careful harvesting, by which the scorching heat of the sun and bleaching effect of wet are avoided. The truth of this may be inferred from the high value put upon straw as fodder in those districts where the slovenly system of mowing and carting Barley and Oats as loose corn obtains. It is to be hoped that the high price of mutton and beef may cause these farmers to see the vast value of well-saved straw as the most economical means of supplying those fibrous elements of food which are indispensable for ruminating animals. It must be admitted that in a fine harvest Barley and Oats are more quickly though more expensively saved when loose, because if the crop is tied up and shocked it will require three times the field bedding before it is fit for the stack and safe from risk of heating.

But as the object of cultivation is to aid Nature to produce the greatest possible supply of bread and meat for man, it is surely unwise to sacrifice by mismanagement any of the elements that go toward forming this supply; and it therefore must be right to cut down the crop dry, tie it up dry, and shock it up securely, that it may remain internally dry, however wet the season may be, until it be fit, or until the fine weather comes, that is always given in due season for securing the crops of the farm. We all know that the best hay is made in dry, sunless weather, which shows that the sun deteriorates its quality; we also know that every shower extracts from it some of its flavour and nourishment; yet how often do we manage our straw or grain crops as if there was no value in straw worthy of our consideration! After travelling through all Great Britain and Ireland, as well as the greater part of the continent of Europe, I have come to the conclusion that if there is any unfailing criterion of a backward state of agriculture, it is the quantity of land mown for hay to be consumed on the farm. All enlightened men know that the value of well-got hay for fodder is not more than three times that of well-saved straw. For instance, if we value hay at 60*s.* per ton and straw at 20*s.*, and put one beast to winter on the hay and another on the straw, with 40*s.* worth of oilcake or meal, there is little doubt which will do the best, and produce the most and best manure.

For the more perfection of autumn cultivation, all crops should be cut low and shocked up in straight parallel rows, pretty wide apart, so as to allow cultivation to proceed, even though the weather should retard the carting of the crop. It is well known that bagged, mown, and machine-cut corn does not bind so closely in the sheaf as when reaped, therefore the wind and air more rapidly extract the moisture out of the grain and straw of the former than the latter; also that wet does not so readily penetrate the former as the latter; consequently all those crops that are bagged, mown, or machine-cut are sooner fit for carting than reaped ones.

The best situation for stacks is an exposed one, open to both sun and air; and they should not be set too close together, that wind and sun may the more freely operate upon them; also that in case of a fire it may not spread from one to the other; also that the engine and thresher may be set down on the lee side while threshing out the grain. The best position for stacks is by the side of a good hard road, and if they are long stacks or ricks, the ends ought to stand north and south, that the sun may shine equally on both sides. We do not believe that the system of setting stacks in the fields where they grow is the most economical; they should be placed on the most convenient spot as near the homestead as three carts, when carrying the crop, can deliver them; on the threshing day the cavings, chaff, and grain will then be within a moderate distance for carting to the straw-barn and granary, and the straw must be stacked till wanted, when it may be carted home by teams when returning from fieldwork.

The working of the portable engine and threshing machine has shown how inexpedient it is to waste a fine day fit for threshing out of doors in carting crops into the barn, to be there threshed in the face, barns to hold crops in the straw are no longer required, and they should be converted into places for preparing food for cattle, or stalls for feeding, with a good plaster-floored granary above. When new buildings are erected, all that is required as stowage for corn, in a granary, which should be placed over a good cart and implement shed. Instead of barns, what is now most required are places for cutting chaff, pulping roots, grinding corn, and breaking oilcake; in fact, a food-factory, where the straw, roots, &c., can be manipulated into food containing the elements found in the richest feeding pasture, which develops both fat and flesh with economy and despatch: thus we may produce a harvest of beef and mutton equal to the requirements of our fast-increasing population.

APPEARANCE OF THE CROPS.

County Cork: *Kildorrery.* Wheat good. Barley good, but not cultivated about this locality. Oats good. Beans not much cultivated about this place. Potatos a fair crop, though slightly touched, but not yet down to the tuber. Root crops good. Hay an average crop. Harvest general next month. *Sam. Piddell.*

Forfarshire: *Brechin.*—Wheat an average crop. Barley under average. Oats much under average. Hay a light crop, but well got. Beans an average. Turnips: on light soils good, above an average; on heavy lands a failure. Harvest will be general first week of September. *Wm. Smith.*

Gloucestershire: Wheat about an average. Barley very good; considerably above an average. Oats above an average. Beans a good deal blighted in some parts; crop good where not blighted. Peas above an average. Potatos very good; no disease as yet. Root crops excellent of all kinds; the roots have not been so promising at this time of the year for several years past. Hay—early crops of Clover and Rye-grass, light; meadow Hay a full average crop, and generally well secured. Harvest general on 13th August.

Lancashire: *Holker.*—Wheat good, but much beaten down with the wind and rain during the last week. Barley very good. Oats good. Potatos very good; some complaints of disease. Root crops: Swedes various; Mangel very good. Hay: Seed Grass light: Meadow Grass good, and generally well secured. Harvest general on Aug. 15. *Geo. Drury.*

Suffolk: *Neighbourhood of Framlingham, Aug. 9.*—Wheat hardly an average crop, as the plant is thin, and the ears short; the colour of the straw is good and healthy, somewhat broken down by the recent storms, but the kernel is so forward that the breaking down will not materially injure the quality. Harvest has been delayed by the recent unsettled weather, and the work is pressing and no extra hands to be had. Barley is bulky, and a full average on well-farmed lands. Some of the Turnip-land Barley is of very thin quality, the frosts in the spring being insufficient to meliorate the soil. Oats are but little grown hereabouts. Peas and Beans are abundant. Flax a failure again. More than half the land sown was ploughed up; and the straw of that left for a crop is short and of bad colour. First crops of Clover and Grass are heavy and well secured; the second promising. The Mangel full plant, but injured somewhat by the recent cold, if not frosty nights. Swedish Turnips not so much grown here, being very much supplanted by Mangel, which is more suitable to these lands. Common sorts of Turnips promise well; thus we are well provided for winter food, but of store stock we know but little, only that it is very dear, and may be dangerous. The prices of lambs out of all reasonable rates; but to speak justly, they are forward and in capital condition, and mutton is very, very dear. *Cor.*—*Ipswich.*—Wheat, one quarter below an average crop; a great deal is blighted. Barley good; quite an average. Oats good. Beans, but few grown here; winter good, others about average. Peas good; one quarter above average. Potatos much diseased, otherwise look promising. Root crops: Mangels good; Turnips backward. Hay, heavy crop; generally got in good condition. Many Peas are made, and some carted and threshed, and a little Talavera Wheat cut. Harvest will be general on August 6. *G. M. Sexton, Wherstead Hall.*

Wilts. *Kennet, Marlborough.*—Wheat barely an average; thin on the ground, but likely to yield well from the straw. Barley above an average crop, but rather backward. Oats good. Peas good. Potatos good. Root crops good. Hay very good. Harvest general on the 7th August. *Wm. Spearing.*

SCOTCH AND ENGLISH DRAUGHT HORSES.

It appears to me that there is no branch of agriculture more interesting, or of which a more extensive and thorough knowledge would do more for the benefit of the farmer and agriculturist, than that part of it which belongs to the breeding and improving of that important animal, the draught horse. Nevertheless, it is amazing to hear and see the great amount of ignorance that prevails about the origin and national character of the different kinds of breeds of these most useful animals by farmers—those who should have the greatest interest in the subject.

The first kind of breed that we shall notice is the much-esteemed Clydesdale. Perhaps it may not be generally known that this celebrated breed of horses have for their progenitors the Flemish horse, which was brought over here from Flanders by one of the Dukes of Hamilton, and on his estates in Clydesdale serving the then small native mares. Thus we have the foundation for the superiority of Clydesdale stock produced by the crossing of these different breeds, which stock soon became common to the whole district, and gave to this breed its celebrated name of Clydesdale, thus showing that this breed is not indigenous to the vale of Clydesdale. And to all who observe passing events with attention it would not be too much to say that the present breed they have in Clydesdale would be again much regenerated by some other new, or more of the Flemish blood being brought into the district, as there has been far too much breeding within too close degrees of consanguinity, or, as it is technically termed, breeding in-and-in, amongst them in that district. This mode of proceeding on the part of the breeders is decidedly pernicious, and has had a great tendency to create and increase hereditary disease amongst the animals, which is by far too much the case with them. Of this so-called Clydesdale breed, power more than beauty is the prevailing characteristic. They have often large heads, ill-defined jaws, and round sour-looking muzzles. They are somewhat flat in their sides, and plain and low in their quarters. The neck is long, and so are the legs, and flat in their feet, but the barrel is light. The temper is tractable and docile, and they are useful animals for the plough and the cart; but they eat a large amount of food, and are not by any means the cheapest kind of horses for the farmer; and the most observant Scottish farmers who have paid attention to this subject confess that the expense of their horse-keep exceeds that of their brethren in England, unwilling as they are to admit of any superiority over them in matters of this kind.

The next breed that comes under our notice is the English draught horse, said to be first imported into that country by the Saxons, and subsequently gradually improved in size and power by crossing with the Flemish horses introduced by the followers of William

* Where small stacks are thought desirable, they should be so placed in pairs that the two may be threshed without moving the machine and engine, and thus sacrificing nearly an hour of work.—P. H. F.

of Normandy. It is recorded of King John that he imported 100 choice stallions from Flanders, which at that time must have been an important step in the way of improvement, and eminently calculated to raise the agricultural horses to a standard of power and vigour for field labour and for draught then before unknown. Edward II. in his reign gave a commission for 20 war horses and 12 draught stallions to be purchased in Lombardy, requiring all his loving subjects to assist in carrying the commission into effect, which bears strong testimony for his zeal for their improvement. Henry VIII. enacted a law that every brood mare should be at least 14 hands high, and prohibited all parties from breeding with inferior descriptions of horses, or with diseased and infected ones, which raised the general character of the horses in the country, and brought in a race of large and serviceable animals. Other Acts of Parliament were passed by the English Government, all with an evident view to the attainment of a large and powerful breed. For example, every archbishop and duke was obliged, under heavy penalties, to keep seven entire horses, each above three years old, and not less than 14 hands high. The plain reason for enjoining entire horses to be so kept was for the promotion of breeding and improving the stock of horses; and with a consideration that was worthy of a king, the rich and noble were alone compelled to keep stallions, because of their keep being so much more expensive, while the other classes might keep such mares and geldings as they thought proper. No man who has the improvement of that noble animal, the horse, at heart, can doubt but that these prohibitions and regulations are as sound as they are politic. The English cart-horse, as bred chiefly in the Midland counties, Yorkshire, Lincolnshire, Cambridgeshire, and Northamptonshire, is a powerful animal. The whole form is so constructed as to possess great power; and the gentle, willing, obedient nature of the animal renders him one of the most valuable slaves of man. His head is finely formed; his neck a little arched; the shoulder thick; the breast very deep, broad, and capacious; the shoulders but slightly slanting; the legs, especially the fore ones, very muscular; broad hocks; broad short back, with great rotundity of form and well ribbed home; short fetlocks and round hoofs complete the picture of one of the most noble and massive animals, combining with amazing strength the gentleness and docility of a pet. One of these fine animals bred in Northamptonshire, appropriately styled the Mammoth Horse, was 20 hands (6 feet 8 inches) at the withers; his weight, 25 cwt. (a ton and a quarter). This horse was not clumsy, but on the contrary he was a grand, graceful, and noble-looking creature, quite free from vice, and as playful as a lamb. He is said to have been produced by a cross between the English and Flanders stock.

Of these two breeds we derive this fact from their history, that the origin of the Clydesdale and the English cart-horse is substantially from the same root on the male side, viz., the Flemish stallion, with this difference, that the present breed of English draught-horse has had far more attention paid to his improvement by the frequent introduction of new and fresh blood from different sources, and that greater care has been taken to guard against the introduction and spread of all diseases that have a hereditary tendency; and it surely will not be disputed by any one acquainted with the subject that the original native English mare was equal, if not superior, to the original small breed in the vale of Clyde previous to the introduction of the Flemish stallion into that district.

I may be allowed a few words on the points and qualifications of a good horse for breeding. A sound constitution stands at the head of the list. He should possess this quality not only himself but all his progenitors; and likewise a wide chest as a first desideratum, and as being the most strictly indicative of this peculiarity—not only wide in the front, however, but continuing the width behind the forearms, further indicated by fulness behind the elbows. A masculine appearance is also another of the indications of constitutional power. Large well-developed muscles are also an indispensable quality. He must have muscular forearms, strong flat legs, broad hocks, elbows not too close to the chest, deep and broad chest, straight short back, round ribs and ribbed home, with a round body and broad loins, long quarters, full and muscular, the neck rather thick and a little arched, and the tail set on in a line with the back, head not too acute, with good broad hoofs. And as polygamy is the rule that is followed in the breeding of horses, the stallion has by far the greatest influence on the horses of a country; therefore it is within the power of breeders, by a judicious selection, to insure a good offspring with few exceptions. Few things are more certain than horse breeding, for the rule "like produces like," in most cases holds good from generation to generation, and nothing is so unsatisfactory, or so likely to turn out an unprofitable speculation, as breeding with a stallion affected with hereditary disease, such as roaring, spavin in all its multifarious forms, boggy hocks, with their distressing and weakening effect on that important part, thoroughpin, ringbone, side bones, splents, shivering or diseased nerves, with their deteriorating consequences, and many others which the horse is peculiarly liable to; and there is scarcely a malady to which the horse is subject that is not hereditary, and increases with every new generation, slowly, but surely, in their virulence, until the progeny becomes utterly useless. Therefore the first symptom of any kind of disease of that nature should be enough to condemn the stallion as a breeding horse with all who wish to maintain and improve the breed of our much prized horses.

Having endeavoured to draw an outline of the rise and progress of the Scotch and English draught horse, I leave the reader to draw from what has been written his own conclusions. But there is another very important argument in favour of the great benefit which arises to the farmer from crossing the breeding mares with a stallion of pure blood, which the following facts go far to establish: that at all the shows of horses that have taken place around Glasgow this year—at Killbride, which is open to all Scotland; at Bishopbriggs, and at Kirkintilloch, where in these districts the very cream of the Clydesdale is said to be bred—that at every one of these shows the 1st prize year-old is the foal of a real English stallion horse direct from Cambridgeshire; and in several instances 100*l.* sterling has been offered for year-old colts and fillies of his stock bred in the famed district of Clydesdale, and been refused by their owners, which speaks volumes in favour of the English breed for crossing with; and I am not aware of it, if such be on record, that any of the Glasgow Clydesdale prize stallions have produced stock of the same age for which any such sums of money were offered. *Correspondent of the Dumfries Courier.*

THE CATTLE PLAGUE.

The following Returns were issued on August 10:—

This Return gives the number of cases occurring in Great Britain which have been officially reported to this Department. The divisions of England are those of the Census. Column 1 only records the cases reported as having commenced during the weeks indicated by the headings. All "back cases" are included in Column 2.

Census Divisions.	1 Number Attacked. Week ending July 28.	Week ending August 4.	2 Result of Reported Cases from Commencement of Disease. Attacked.	Killed.	Died.	Recovered.	Unaccounted for.
Metrop. ..	1	1	7,941	3,424	3,714	318	485
S. Eastern .	—	11	4,886	1,750	2,539	465	131
S. Midland .	42	57	20,879	8,881	10,070	1,541	387
Eastern Co.	12	6	11,189	3,470	4,851	780	1,088
S. Western .	5	4	1,870	744	757	287	71
W. Midland .	63	55	14,871	6,451	6,606	1,549	965
N. Midland .	18	8	19,067	10,974	6,388	1,226	559
N. Western .	90	90	73,142	29,852	37,430	4,491	1,369
Yorkshire .	12	11	31,667	7,940	18,359	3,908	2,460
NorthernCo.	—	—	8,656	4,951	2,613	944	118
Monmouth. & Wales .	3	6	8,814	1,175	5,754	1,111	299
Scotland ..	—	—	46,881	6,483	28,338	10,707	1,803
	246	251	245,753	84,572	124,329	28,287	10,995

Back Cases reported in the week ending August 4.—North Midland Counties, 2; North Western Counties, 1242.*

The Return shows that 251 attacks were reported to have occurred during the week ended August 4, being an increase of 13 on the previous week.

Correcting the total by adding an estimated average of attacks commencing during the week, but which may be subsequently included under the heading "back cases," the number for the week will be 243.

Fresh outbreaks took place in 40 farms or places where cattle are kept; the number of such outbreaks in the previous week being 46.

Three Inspectors who reported cases last week have not reported in time for this return—viz., for the county of Lincoln, 1; Norfolk, 1; and Stafford, 1. These inspectors reported 3 cases last week.

RECENT SHEEP SALES.

COTSWOLD RAMS.—July 24, at Minster Lovel, Messrs. Lyne & Son sold, for Mr. John Gillett, 56 sheep, at an average of 8*l.* 16*s.* 3*d.* Last year's average, 10*l.* 3*s.* 8*d.*

July 25, Mr. Acock sold, at Coln Rogers, for Mr. Charles Barton, 45 sheep, which averaged 10*l.* 2*s.* 11*d.* Last year's average, 12*l.* 14*s.* 9*d.*

On the same day Mr. W. Tayler sold, at Badminton, 40 shearhogs, for Mr. Francis Frankcom, which made an average of 10*l.* 13*s.* 6*d.*

July 26, Messrs. Lyne & Son sold, for Mr. W. Lane, at Broadfield, 54 sheep, and attained the extraordinary average of 26*l.* 18*s.* 9*d.* Four of the sheep realised upwards of 100*l.* each, namely, one purchased by Mr. John King Tombs, 210 guineas; another, by Mr. Fletcher, 122 guineas; a third, by Mr. T. Porter, 126 guineas; and a fourth, by Mr. R. Garne, at 100 guineas. There was a splendid company, and the sheep were generally considered to be the best ever exhibited by Mr. Lane. The average last year was 17*l.* 9*s.* 9*d.*

July 27, at Aldsworth, Messrs. Lyne & Son sold 51 sheep for Mr. Robert Garne, which made an average of 17*l.* 18*s.* 10*d.* Mr. Brown, of Norfolk, gave 120 guineas for one sheep, and Mr. Charles Barton 70 guineas for another. Last year Mr. Garne's average was 13*l.* 18*s.* 6*d.*

July 28, at Bibury, Messrs. Lyne sold 41 sheep, for Mr. William Smith, which made an average of 13*l.* 7*s.* 6*d.* The whole sheep exhibited were unusually good, and we heard a remark that had they been sold with either flock a day or two previously a much higher sum would have been realised. Last year's average, 10*l.* 7*s.* 10*d.*

July 31, Mr. Villar sold for Mr. Fletcher, at Shipton, Andoversford, 50 sheep, which produced an average of 15*l.* 5*s.* 4*d.* The highest price was 53 guineas, and as an instance of the uniformity of the rams, we may mention the fact that whilst the lowest price was 10 guineas, no less than 15 were knocked down at that sum. The average last year was 13*l.* 5*s.* 2*d.*

August 1, Mr. Acock, at Fyfield, sold 46 rams for Mr. Charles Barton, at 10*l.* 11*s.* 3*d.* each. Last year the average was 10*l.* 7*s.* 2*d.*

August 2, at Northleach, Mr. Villar had the honour to preside upon what ten years' experience has shown to be the crack tup sale of the Cotswolds. The company assembled at Mr. William Hewer's was one of the most numerous and business-like we have ever seen, and whilst there was an absence of extravagant competition for a few sheep, the general trade was so spirited, that a grand average was obtained of 20*l.* 18*s.* 8*d.* for 50 sheep. The average last year was 21*l.* 19*s.* 9*d.* Taking the statistics which we have published for many years, we find that Mr. Hewer in the ten years last past has sold by auction 518 sheep, at an average of 18*l.* 14*s.*; the total produce being 9688*l.* 0*s.* 7*d.* His nearest competitor for the same period has been Mr. W. Lane, whose average has been 17*l.* 1*s.* for 515 sheep. Total produce, 9291*l.* 19*s.*

Mr. Villar sold for Mr. Handy, at Sierford, 50 sheep, at an average of 15*l.* 7*s.* 7*d.* Last year's average, 13*l.* 5*s.* 2*d.* *Wilts Standard.*

Mr. Lane's Sale at Broadfield, Northleach, drew together one of the largest companies ever seen on the hills. His sheep averaged 26*l.* 18*s.* 9*d.* each, one sheep being knocked down at 210 guineas, to the bidding of Mr. John King Tombs. Mr. Fletcher bought a sheep at 122 guineas. It is now certain that Mr. R. Lane, of the Cottage Farm, and his brother, Mr. William Lane, have carried off the palm for the highest averages for Cotswold sheep on record. Mr. R. Lane's sheep in 1861 averaged 31*l.* 10*s.* 8*d.* each.

Marham Hall Farm.—The annual show and letting of long-woolled rams by Mr. T. Brown, of Marham Hall Farm, took place last week. The first ten lambs let for 82*l.* 5*s.*, an average of 8*l.* 4*s.* 6*d.* The first 20 let for 138*l.* 10*s.*, an average of 6*l.* 16*s.* 6*d.* The 15 lots of two lambs in each lot let for 191*l.* 10*s.*, or 6*l.* 7*s.* 8*d.* each animal; the 50 lambs thus let for 330*l.*, an average of very nearly 6*l.* 12*s.* each. The first 10 shearlings let for 89*l.* 9*s.*, an average of 8*l.* 18*s.* 10½*d.* each; the first lot put up being the winner of a 1st prize at the Suffolk Agricultural Show at Bury St. Edmund's, and being hired by Mr. Bird, of Shouldham Abbey, at 11*l.* 5*s.*

Mr. G. M. Sexton's, Wherstead Hall.—The average price made by two-shear rams was upwards of 8*l.* The shearling rams realised high prices, ranging from 6*l.* to 11*l.*, and the average was again in excess of 8*l.* After the rams for sale came those for letting, the ram-lambs being first offered. Here the average was 5*l.* 18*s.* The shearling rams were next offered; the highest price was given by Mr. Constable, 15*l.* The average was about 8*l.*

Mr. Joseph Giblin's, Great Bardfield, Essex.—Thirty-six Cotswold rams made 328*l.*; the highest price being 15*l.*; average price per head being 9*l.* 2*s.* 2*d.*; the same last year being 7*l.* 4*s.* 2*d.* Sixteen Oxford Down rams (including four old sheep) made 130*l.*; the highest price being 18*l.*, purchased by Mr. Offin, of Hutton; average price per head, 8*l.* 2*s.* 6*d.*; the same last year was 6*l.* 3*s.* 6*d.*

August 4, at Northleach, Mr. Acock sold 40 rams for Mr. James Walker, which made an average of 10*l.* 11*s.* 3*d.* Last year, 16*l.* 0*s.* 6*d.*

August 6, at Baunton, after the sheep fair at Cirencester, Mr. Villar sold 50 rams for Mr. Thomas Porter, the average obtained being 7*l.* 19*s.* Last year, 17*l.* 5*s.*

August 7, Messrs. Moore & Hill sold 40 sheep, at Ewen, for Mr. John Howell; the average was 10*l.* 19*s.* 5*d.* Last year, 11*l.* 19*s.*

August 8, at Coates, Messrs. Moore & Hill sold 40 sheep for Mr. Henry Howell, at an average of 10*l.* 14*s.* Last year, 9*l.* 10*s.*

Cirencester Great Market.—Last week the largest collection of Cotswold rams probably ever known took place at Cirencester great market; about 500 head were penned, and purchasers were in attendance from all parts. Mr. Villar disposed by auction of about 200 from the flocks of some of the most eminent breeders of the neighbourhood. The highest average was 13*l.* 1*s.* 11*d.*, made by 18 rams, the property of Mr. T. Hebert, of Lechlade. The following averages were also obtained:—T. B. Browne, Esq., of Salperton Park, 20 rams, 11*l.* 15*s.* 2*d.*; Mr. Ratcliffe, Sapperton, Cirencester, 16 rams, 11*l.* 15*s.* 2*d.*; Mr. H. Cole, Ashbrook, Cirencester, 28, 11*l.* 6*s.* 6*d.*; Mr. James Kearsey, Tarlton, 21, 9*l.* 18*s.*; Mr. B. Fowler, Avening, 18, 9*l.* 8*s.* 5*d.*; and Mr. J. Lane, Barton Mills, 6, 8*l.* 4*s.* 6*d.* 12 Oxford Downs, the property of Mr. C. Hobbs, of Maiseyhampton, made an average price of 9*l.* 7*s.* 3*d.* Messrs. Moore and Hill sold a number of rams from well-known Cotswold breeders. Mr. J. Barton's, of Kemble, made an average of 6*l.* 6*s.* Mr. Clark's, of Frampton Mansell, averaged 8*l.* 8*s.* Mr. John Tombs, of Hatherop, obtained an average of 9*l.* 9*s.* Mr. Charles Barton's, of South Cerney, averaged 5*l.* 15*s.* 6*d.* And 15 ram lambs, the property of Thomas Dunn, Esq., of Combend, made an average of 9*l.* 4*s.* Mr. Arthur Acock sold many sheep from some of the first-class breeders. Mr. Robert Lane, of the Cottage Farm, made the extraordinary average of 23*l.* 9*s.* 4*d.* for ten sheep. Mr. T. Taylor, of Turk Dean, made an average of 12*l.* 1*s.* 6*d.* Messrs. Lyne & Son sold 40 sheep for Mr. J. Gillett, of Oaklands, which made an average of 12*l.* 2*s.* Mr. Thomas Gillett, of Kilkenny Farm, Bampton, averaged 15*l.* 5*s.* 4*d.* for 12 sheep.

Mr. Cother's (35th Annual Sale).—Several sheep were let at 15 to 33 guineas, and 44 lots were sold. The average price realised was 12*l.* 17*s.* 5*d.* (including the lettings) but many bidders went above 15 guineas.

The August Ram Sales at Oxford.—Messrs. Paxton & Castle disposed of 26 Cotswold shearling rams of Mr. R. Lord's, of Stanton Harcourt, which realised an average price of 11*l.* 0*s.* 6*d.*, the highest price being 15*l.* 15*s.* Their next sale was of 20 fine Cotswold ram lambs, of Mr. W. Gillett, of Southleigh. The highest price realised by these was 8*l.*; average, 5*l.* 19*s.* 9*d.*

* Of these "back cases" 1205 refer to Cheshire, and extend over a period of about six months.

Mr. C. Bradfield, Babingley Hall, on the Prince of Wales's Estate.—Several of the rams were retained in their wool, and clipped in the presence of the public, and yielded 21 lb., 20 lb., 17½ lb., and 16½ lb. respectively. The following is the average of the prices realised:—

	£	s.	d.		£	s.	d.
First 10	8	19	0	First 50	8	14	0
,, 20	8	18	9	,, 60	8	7	10
,, 30	8	18	0	,, 70	7	19	2
,, 40	8	15	3	,, 76	7	15	0

Three two-year-old sheep realised 18*l.*, making the total of the sale 624*l.*

Messrs. T. & G. West, of Bletchingdon. 61 Greenhill Cotswold ram lambs averaged 7*l.* 13*s.* 1*d.*, the highest fetching 15*l.*

The *Illustrated London News* of last week says:

"'The brandy-and water week' on the Cotswold hills has been once more a great success. The same well known hill faces were to be seen, with a strong sprinkling of flockmasters from the Chipping Norton and Banbury side, who are bent upon maintaining the 'top knot title' against the Leicester who comes up to Banbury: the Oxford Down, who holds the pastures of his native county as far as Charlbury, and the Shrop, who presses them hard on the Evesham and Honeybourne side. Norfolk sent her great Longwool rivals, Mr. Tom Browne and Mr. Hugh Aylmer, and a coach load of canny Scots, who had taken up their quarters over night at Northleach, did a good stroke of business privately, with a view, no doubt, to increasing the 'Border Leicesters' size. Some rams were bought for the commission to cross with the Romney Marsh sheep, and others went to Bedfordshire for crossing with the Hampshire Down.

"Mr. John Gillett, of Minster, led off with a good lot of his well-known 'big, rough sheep,' which averaged about 9*l.* Tuesday was taken up by Mr. Charles Barton, of Yelne Rogers, whose flock is noted for its heavy coat; and his average was about 12*l.* Wednesday was a blank day, for 'breathing time' and making up accounts before the great field day at Broadwell, where one of the two Norfolk champions, whose proceedings were watched with much interest, gave battle at last. Mr. Aylmer fought hard for No. 5, the 105-guinea ram (which fell to the nod of Mr. Fletcher's son, who had an unlimited commission to bring home his fancy), and also for No 7, which topped the sale at 210 guineas. Many of the Cotswold men were well in up to 200 guineas, which Mr. Lane announced that he would 'give all one minute to consider of it,' and Mr. King Tombs, who had 'never left' the ram, cried 'Time,' and secured him. He is a very grand, upstanding sheep, with size and substance enough for a two-shear. Fourteen out of the 54 (which averaged 27 guineas each) were by the shearling for which Mr. Lane gave 230 guineas two years since at Mr. John Hewer's sale, and two out of the four, which averaged 120 guineas, were by him. The attendance was enormous, and its great test, the line of gigs and other vehicles, extended from the old sheephouse 'across the manure pit' right into the 200-acre home paddock, an array not within the memory of the oldest shepherds, who came, as usual, in strong force, with their lads, and kept up their 'bits of hill songs' until Cotswold tunes and choruses swell into the night. Mr. Robert Garne's sale was, as usual, last of the week. The highest price given was 110 guineas (Mr. Tom Browne), and the average for the 50 was 17 guineas. The old housewives have gone, but the sale ground, which is near the spot on Minster's racecourse, was the same as of yore, with the conventional auctioneer's stand - a board on the top of a hurdle rack. Mr. William Smith's 'Cotswold greys' were brought out on the Saturday, and lost no ground, as the highest price was 34 guineas, and the average about 12 guineas. They are a most eminent sheep for the butcher and the butcher, as the look of grey wool which the latter so scrupulously leaves on the shanks of the legs and shoulders transmutes them at once into the coveted half-bred.

LEICESTERS: *Mr. Stamper, of Highfield House, North Riding.*—The competition was brisk, only one Leicester shearling being returned unlet by the auctioneers. Shearling No. 2 was rapidly bid up, and eventually went to the Knapton flock at 12*l.* *5s.* No. 5 let for 19*l.* to Mr. Hall, of Thirsk; and at 13*l.* Mr. Walker, of Goldsborough, took the own brother to one of the highly commended Plymouth sheep. The average price of the whole was about 8*l.* 4*s.*

Mr. James Hall, of Scarbro'.—The average price was 10*l.* 10*s.*

LINCOLNSHIRES: *North Newbald.*—The annual sale of pure-bred Lincolnshire rams took place at Bushby Hill on Thursday of last week. After much spirited competition, the 62 shearlings were sold by Mr. C. Tateson, at an average of 9*l.* 17*s.* each; seven aged sheep, some of which had been used by Mr. Stephenson himself, fetching an average of 15*l.* 3*s.*

OXFORDSHIRE DOWNS.—The annual sale of Oxfordshire Downs, the property of Mr. C. Howard, took place last week. Sixty shearling ewes ranged from 70*s.* to 81*s.* Average 76*s.* a-head. The shearling rams fetched: the lowest price 6 guineas, the highest 19 guineas. The average price 11*l.* Total 73*l.*

Mr. Joel Pratt, of Little Mussley Court Farm.—These sheep were much admired for their true Oxfordshire Down character, combined with strong bone and substance. 20 shearling rams and 25 ram lambs averaged 9*l.* 3*s.* 6*d.* and 8*l.* 7*s.* 6*d.* each.

Forty shearling Oxfordshire Down rams of Mr. Joseph Roberts, of Caswell, near Witney. The highest price fetched by these was 14*l.* 14*s.*; average, 9*l.* 17*s.*

Forty Oxfordshire Down shearling rams, the property of Mr. C. Gillett, of Cote House, Bampton. Thirty-eight were sold, at an average price of 16*l.* 7*s.* 5*d.* The highest fetched 31 guineas.

Mr. Wallis, of Old Shifford, near Bampton. Twelve shearlings averaged 12*l.* 6*s.* 2*d.*; highest price, 22½ guineas.

SHROPSHIRES: *Mr. Horley's Sale, The Fosse, near Leamington.*—Of the shearling rams that were sold the highest price was 22*l.* 1*s.*, given by Mr. Brown. The highest price for a pen of five first-class young stock ewes was 23*l.* 15*s.* The 28 lots of shearling rams sold for a total of 339*l.* 5*s.*, which was an average of 12*l.* 2*s.* 3*d.* each. The 18 lots of stock ewes fetched 319*l.* 12*s.*, or an average of 17*l.* 15*s.* 2*d.*

Mr. C. R. Keeling's Annual Sale.—Mr. Randell hired one at 20 guineas, and the same gentleman also bought No. 4, at 43 guineas. Others followed at 30, 25, 24, 22, down to 9 guineas—the whole number, 31, reaching within a few pence of 16*l.* per head.

Mr. Willoughby Wood, Holly Bank.—The prices ranged from 18 guineas down to 6; the average being 9*l.*

WILTSHIRE DOWNS: *Mr. Edmund Olding, Ratfyn Farm, near Amesbury.*—The stock consisted of 122 ram lambs and rams, of which 100 ram lambs and nine rams were to be sold, and 10 lambs and three rams were for letting. The business commenced with the letting of 10 ram lambs: No. 1, 16*l.* 5*s.* 6*d.*; No. 5, 17*l.* 17*s.*; No. 8, 20*l.* 9*s.* 6*d.*; No. 10, 13*l.* 13*s.* No. 7 was let for 23½ guineas, but this was afterwards increased to 30*l.*, in consideration of an extension of the time of hiring. The prices realised for single ram lambs were:—17*l.* 6*s.* 6*d.*; 16*l.* 15*s.* 6*d.*; 12*l.* 12*s.*; 11*l.* 11*s.*; 10*l.* 16*s.* 6*d.*; 5*l.* 5*s.* The prices for a pair were:—26*l.* 5*s.* 6*d.*; 16*l.* 5*s.* 6*d.*; 15*l.* 4*s.* 6*d.*; 15*l.* 15*s.* A two-teeth ram was let for 25*l.* 14*s.* 6*d.*, and another for 17*l.* 6*s.* 6*d.* The average of the rams and ram lambs let and sold was 8*l.* 7*s.* 8*d.* each.

The Bulbridge Ram Sale.—Mr. James Rawlence's annual sale and letting of rams and ram lambs took place last week, at Bulbridge Farm, and drew together a large number of flockmasters, sheep-breeders, and agriculturists from Wilts, Hants, and Dorset, and from distant parts of England. The business of the sale, which was conducted by Mr. Ewe, commenced with the letting of 18 lambs, and the highest sum reached was 32 guineas, which was bid by the agent of Mr. Morrison, of Fonthill. The other prices were 21 guineas, 23½ guineas, 23 guineas, 22 guineas, 21 guineas, 17 guineas, 15 guineas, 12 guineas; 11 guineas, 10½ guineas, 10 guineas, and 9 guineas. The highest prices realised were—23 guineas, 22½ guineas, 20 guineas, 19 guineas, 17 guineas, 16 guineas, and 14 guineas. The letting of the two-teeth rams followed, the highest prices being 20 guineas, 16 guineas, and 15 guineas. For the two-teeth rams sold the highest sums were 15 guineas, 14 guineas, and 10 guineas. There were four four-teeth rams to be let, one of which realised 21 guineas, and another 10½ guineas. There were three four-teeth rams for sale, one of which realised 9 guineas, and another 8 guineas. The amount realised by the sale was 142*l.* 6*s.* 6*d.*; the whole average of the sale and letting per head was 10*l.* 3*s.* 6*d.*; and the average of the lamb letting 26*l.* 0*s.* 9*d.* per head.

Home Correspondence.

Self-moving Engines for Farm Use.—We think the following facts will be interesting to some of your readers. Being desirous of exhibiting our new 10-horse power self-moving engine at the Yorkshire Agricultural Society's Meeting, held at York during the present week, we determined that it should travel thither by road instead of by rail, and that it should also draw one of our large finishing steam threshing machines after it to the Show. It started from Ipswich on Thursday, July 19th, and accomplished the journey (a distance of 222 miles) in 11 working days of 10 hours each, travelling on an average more than 20 miles per day. The total load of the engine and machine with extras, is about 13 tons, and without any assistance from horses it ascended all the hills on the road, some of which are very steep. The engine was driven by a farm labourer accustomed to drive portable engines; it was steered all the way by a lad under 15 years of age, and was not afflicted with any special appliances for reducing the consumption of coal. No accident occurred to any persons or horses meeting it on the road. The total quantity of coal consumed was 5 tons 12 cwt., or equal to 50 lb. of coal per mile. The same engine and machine went to, and returned from the Suffolk Show at Bury St. Edmund's, July 6th, with a consumption of 47½ lb. of coal per mile—the difference is explained by the better quality of the road and more skilful driving. The cost, including the wages, board and lodging, of two men and one lad, also coals, oil, cost of getting water, tolls, &c., averaged 2*s.* 3*d.* per mile, being nearly the same as it would have cost if sent by railway. Of this cost the tolls were 2*d.* per mile. Leaving these facts to speak for themselves, and thanking you for the insertion of this letter. *Ransomes & Sims, Orwell Works, August 9.*

The Kidney Tare.—In the month of March, 1865, I received from Mr. B. Gibbs a small bag of Kidney Tare seed, which I purposed testing beside my Red Clover crop in the ensuing summer of 1866. It was carefully sown in my April at the same time as the Red Clover seed, and precisely under the same circumstances, being sown upon winter Wheat after the hoeing, and was harrowed in. This is not a favourable course to secure a good plant, but in the district from whence I write it is frequently done. Both the Clover and Tare seeds took pretty well, and a fair crop resulted. Throughout the autumn and winter the Kidney Tare did not appear to progress satisfactorily, and I felt assured it was no match for the old and popular Broad or Red Clover. However, it kept a good plant, stood the winter admirably, and as the spring put in it commenced spreading or tillering, very much to my satisfaction, so that I soon began to think it would, notwithstanding my fears, fully equal, if not overstep the Red Clover. The Clover did not stand the winter very well; many plants died off, and the crop of Clover hay can only just be called a fair one. The Kidney Tare continued to progress, and it thickened surprisingly. It took the lead of the Clover, was earlier in flowering, and kept throwing out more and more flowers up to the time when the Clover was ready for the scythe, *i.e.*, when about one half of the flowers are faded. It was cut down at the same time. It withered slowly in the process of haymaking, chiefly in consequence of its great bulk, but partly owing to its strength of plant, or as some of our scientific men would say, its woody fibre. The stems are full of pith; the Broad Clover stems are hollow of course this alone would account for its withering slowly; however it did wither, and that very satisfactorily, and proved to be as fine a sample of hay as ever was seen, and nearly three times in bulk heavier than the adjoining lands of Broad Clover on either side. It appears to be greatly relished by all kinds of stock, and the aftermath is good, but not so rapid in its growth as the Broad Clover. From my limited experience of its growth I cannot pretend to advise respecting its adoption, or describe its culture, but I am decidedly of opinion that it may be made a valuable substitute for Broad Clover in alternate husbandry. It does not grow so rapidly in the spring, but it ultimately thickens and grows so steadily that it exceeds in bulk the Broad Clover, both for mowing as green fodder, or for hay. My horses could not consume a corresponding quantity to Broad Clover, but they did equally well, in fact better, as the latter when fresh cut is apt to cause looseness or scour. In cases of Clover sickness on land too frequently under Clover it would be well to substitute the Kidney Tare. It need not be sown so thickly as Broad Clover. The seeds are much larger and kidney-shaped—hence the name. Its tillering propensities will cause the filling up of plants. The height to which it grows varies of course according to the richness of the soil, but upon the average it does not quite equal the Broad Clover in length or height. It appears to be perennial, but of this I have no experience or knowledge. I should strongly recommend its being extensively tested, and in very many districts, in order to prove its utility. A small plot would suffice to test its growth and worth. My experiment was upon a good loam, upon which I report it as answering exceedingly well. My impression is that it will answer well upon any soil of tolerable consistency. The root appears to require a firm hold of the soil to prosper. I fear it would not tiller upon light sands or gravels, but it would be well worth trying even upon these soils. The seed can be obtained in limited quantity from any respectable seedsman. Try it first, don't sow whole fields. I believe it has not been so cultivated in England yet. It will be. *O. F.*

Societies.

YORKSHIRE AGRICULTURAL.—In taking up our remarks of last week under this heading, we may confirm the intimation we gave of the great pecuniary success of this Show by giving the Secretary's returns. On Wednesday the entries, in addition to members, were 145, at 2*s.* 6*d.* each; Thursday, 786, at 1*s.* each; Friday, 13,048, also at 1*s.* Thus, nearly 1220*l.* have been added to the members' subscriptions for future ordinary expenses, and for awarding prizes for machinery and live stock. Much of this success is undoubtedly due to Mr. Farrington's (the Secretary's) admirable generalship in organising his staff, and the efficient manner in which every matter of detail was carried out.

To return to the remaining classes of Horses, for which prizes were awarded on Thursday, we may say that a fair description of them would be almost a continuous stream of praise. Taking them altogether, it was far the best show of horses we ever saw together, the Royal show on Yorkshire ground at Leeds even not excepted. The most defective class as regards numbers was the "4-year-old carriage horses to be shown in harness," but Mr. Pease's bays were excellent, and Mr. Smith's blacks were rare workers to look at, but the "bellows-to-mend" character which one had did not bespeak the power of lasting to be equal to promising appearances. As, however, there were only two pairs competing, the judges rightly or wrongly awarded the 2d to the blacks. But although the 4-year-old coachers were short, there was a good string of 24 entries of 3-year-old geldings and nine fillies, the 1st in the former being a big banging animal, and the 2d prize filly, a splendid bay of the finest quality, and as near perfection in form as one of these animals may be expected to appear. In the class of brood mares for breeding coachers there were 10; the 1st prize of Mr. Robinson's being an extraordinary good mare, her chest being broad, her back and loin muscular and truly made for strength, while her plate was well up, and preceded by a fair neck and head, all of which were supported by admirably formed and clean legs. Mr. Tate's 2d was also a good one, and would have received considerable attention had not Mr. Robinson's been there. This is one of the exceptional cases where the groom might say, "We thinks a good deal of it as it-whoam," and be beaten in an assembly like this without discredit or disappointed over-estimation or vanity. We omitted to say that the 1st prize filly in these classes, although of fine appearance, was out of her place, from being too light and slender for a coacher, and more adapted for a light dog-cart.

It was in the Hunter, Hackney, and Roadster classes, however, that the Yorkshiremen more particularly, and with commendable pride, excelled on their own ground. Mr. Brown's hunter-breeding mare had immense power, and a corresponding foal was at her foot; but Mr. Clark's 2d prize was too light for perpetuating stout hunters to a thoroughbred horse. The roadster-breeding mares were not first-rate, with the exception of the 1st and 2d prize animals, and a fine old mare of 20 years with her 13th foal by her side.

The Breeding Agricultural Mares with Foals sucking were only three in number, a singular fact in connection with the long list of stallions of this character. The Fillies and Geldings of the latter sort were also few, but Mr. Carr's 1st was a very "clever" active bay; and Mr. Parker's 2d was a good ditto. The pair of Agricultural Horses we must not omit to mention, as they were a fine class, Mr. Carr's, of Heslington, York, being broad-chested, active, short and clean-legged blacks, and Mr. Jewitt's as fine a pair of blacks as ever walked.

The 3 year-old Hunter Geldings were a grand show of 25, Mr. Clark's 1st being an excellent one, that, in addition to his fine form, had a straight kindly head, well carried. Mr. Holme's 2d, a "black brown," was a

smart wiry gelding, but with his thin legs he is only equal to carrying a lady or a light weight.

The 4 year-old Hunter Geldings were 37, and their excellent character as a whole produced another grand display as they moved in succession, or should, or were walked and cantered singly before the judges. Mr. Lees 1st prize was a beauty as well as clever in his paces, while his style, whether of standing or moving, was as staid as that of one which had been through the excitement of the field and chase for years.

In the 4-year-old Hunting Fillies, Mr. Ireland's 1st was an elegant bay, but Mr. Brown's 2d was the most unlikely looking animal for taking a prize of any among the officially honoured.

The two classes of Gentlemen's Hackneys numbered 61 animals. The first class were "up to 14 stone," and the second class "to 12 stone." These were generally so good that it would be almost invidious to make any selection or remarks beyond referring to the prize list; but we may say Mr. Percy's Crafty was a grand hackney, Mr. Beart's Princess a perfect little mare, while Mr. Lowish's White Stockings was a very beautiful dappled brown 4-year-old, with extraordinary action. There were a few Ladies' Hackneys, but nothing among them worthy of comment. The ponies were not numerous; the form and quality of most of them were, however, very choice.

The Hounds, the entries of which were 108, as compared with 47 last year, and no entries in 1864, were kennelled opposite the Royal Stand, as we have described, and, together with the classes of horses for following them, these seemed to—in fact, did—form the centre of attraction for a greater part—when the Royal party was not present—of the last day (Friday). From this it was inferred that the implement exhibitors suffered considerably in sales and orders. It is to be hoped this is not a correct view, and that the agricultural implement makers have not begun to feel the chronic depression which has seized many other branches of the national business. Certain, however, it is that with the exception of such special articles as reaping machines, for supplying the place of labourers who have fled from agricultural districts, and horse rakes, for gathering expeditiously the corn and the hay, the trade in this character of machinery was in a very dull state. The high rate of interest, with the falling off in the farmer's returns in consequence of the rinderpest, and the low and middling prices of grain, are acting in a two-fold manner in restricting the trade in agricultural machinery. And when to these current difficulties we take into consideration the fact that a large number of small men have rushed into this business, and agents by all the leading makers are now appointed at easy distances from every farmer's door, no surprise need be expressed at competition being smart, from the supply of articles being greater than the demand.

One instance of the cutting trade which has begun we may mention. It is not long since a considerable drop was made in the price of Portable Engines by one firm of middling standing as regards the work they turned off. This was followed by a greater fall in prices by a leading firm in these particular articles. These reductions have now been followed up by a further fall in the price of portable engines; for Messrs. Fowler & Co., of Leeds, exhibited here an 8-horse engine, in every way excellent for work, the price being 190*l.*, or about 10 per cent. lower than these articles have hitherto been supplied by English manufacturers. This is the first portable engine Messrs. Fowler have exhibited for sale at a show, and they are prepared to supply any quantity at this reduced price. On the other hand Messrs. Ransomes & Sims have started in making "self-moving" engines, the first specimen of which worked its way from Ipswich to York, drawing after it a truck and appurtenants, at the rate, including stoppages, of 20 miles a day of 10 hours each. The price of this engine is 370*l.*, and it is written, by its makers, in its praise that it scaled some of the heaviest hills across Yorkshire without the slightest extraneous assistance. It is only in the special articles, however, which the altered position of the British farmer needs, that any briskness of trade was observable. The third class thus brought out consists in grist mills. Of these Messrs. Richards & Watts had a large show of their American steel mills, and they did a good trade; while Messrs. Amies & Barford, who now manufacture these iron and steel mills, with improvements for various sizes, and the work required of them, also attracted considerable company by their large stand of machines in motion, and they did a good trade in them. On this stand there was also a neat novelty in the form of an open-air seat for the sea-side or lawn. It is simply composed of a double chair back, pinned together at the top, so that it will expand to the form of an inverted V for use, to the front part of which is attached about 2 feet in length of impervious material, such as oil-cloth or dressed leather, to sit upon. This article was so striking for its comfort and convenience in carrying about, that treble the number would have been bought and carried off in the hands of visitors had an adequate supply been on the stand.

The trials of reapers, which were postponed in consequence of the lateness of the harvest, came off on Tuesday and Wednesday last at Heslington, about two miles from York. The judges were Mr. John Coleman, of Escrick, York, and Mr. Richard Kay, of Forcett Valley, Darlington. The well-known Mr. H. B. Caldwell was nominated, but he was not present.

In the absence of Messrs. Hornsby, Mr. Woods, Messrs. Samuelson, and Messrs. Burgess & Key, there was not much excitement, and, consequently, but a small company present.

It is not necessary for us to go into lengthened particulars of these trials, but we may say the Beverley Wagzon Company worked two of their well-known machines, and the swathe was laid and the stubble cut in a way that caused great satisfaction among the few practical visitors. For their self-acting reaping machine, clearing 8 feet 4 inches at a cut, they received the offered prize of 20*l.* For the 2d prize of 10*l.* there was no competition. Although the Beverley Company worked under the great disadvantages for a large machine of lowering to cut short lengths, and backwards and forwards irrespective of the "lay" of the corn, the speed with which they cleared a space, and the manner in which the work was done, were amply sufficient to convince spectators of the value of these machines in the present state of the labour market, and particularly so now that the modern systems of agriculture cause Wheat, Oats, and Barley to be fit to cut at about the same time.

For Combined Reaping and Mowing Machines the prizes were awarded, 1sto Mr. Bamlett and 2d to Mr. Kearsey. In this trial the judges were taken by surprise at the light draught, as tested by the dynamometer, of Mr. Kearsey's small machine. While Mr. Bamlett's produced a comparative register of 33.1 "units of power to cut a square foot," and Mr. Cuthbert's 81.4 ditto, Mr. Kearsey's marked only 14.2! Mr. Bamlett's heavy draught was attributable to misfitting, or too close fitting, cogs in the particular machine worked. But the great difference here was something very important, as evidenced by the horses at the end of the week. Mr. Kearsey's attempt to lay a swathe with a "putting-off-board" on the machine side, as a pair to the "swathe-board," and this with a view to enable the horses and machine to travel at once for the next cut, was anything but successful. Mr. Bamlett's "swathe-board," the material of which is sheet-iron, was too much the shape of a deep-ploughing mould-board, as its broad surface caused some of the corn to ride with the heads to the standing corn, instead of falling on the platform. This can be easily remedied, and it is very desirable that the credit of the other parts of the machine should not be compromised by this self-evident fault.

The competitors in the final trials for the prizes for the small occupation machines were Mr. Kearsey, who was placed 1st, the draught of the machine being again a great consideration; Mr. Cuthbert being 2d, while Mr. Bamlett was honoured with a "high commendation." Here Mr. Cuthbert did his work in a most excellent manner, cutting his stubble low and clean, and putting his sheaves straight and even.

After these trials horse-rakes were tried. Mr. Sawney, of Beverley, as the representative of Messrs. Page & Co., of Bedford, being awarded the 1st prize, and Mr. Allcock, of Ratcliffe-on-Trent, the 2d.

We add to our last week's report the following Prize List in the Sheep and Pig Classes:—

PRIZE LIST

SHEEP.—LEICESTERS.

Judges (for Leicesters and other Long-woolled Sheep).—W. Barthol[illegible] Waldershare Hedge, near Sandwich; J. Painter, Mount Lemon Villa, North Deal; W. Wade, Old Basford, Nottingham.

Shearling Rams.—1st, 15*l.*, R. W. Cresswell, Redcastle, Ashby-de-la-Zouch; 2d, 10*l.*, J. Borton, Barton House, Malton; commended [illegible].

Aged Rams.—1st, 10*l.*, J. Borton; 2d, 5*l.*, J. Borton.

Pens of Five Shearling Ewes.—1st, 15*l.*, J. Borton, Malton; 2d, 5*l.*, G. Wright, Broughton, Malton.

Pens of Five Gimmers.—1st, 15*l.*, J. Borton; 2d, 10*l.*, W. Brown, Holme-on-Spalding-Moor; 3d, 5*l.*, J. Borton.

LINCOLN AND OTHER LONG WOOLS.

(Not included in the foregoing Classes.)

Shearling Rams.—1st, 15*l.*, J. W. Richardson, Willoughton, Kirton Lindsey; 2d, 10*l.*, C. Williams, Carlton-le-moor-land, Newark; and [illegible] Lincoln [illegible].

Aged Ram.—1st, 10*l.*, R. Wilkinson, Burnetby-le-Wold, Ulceby; 2d, 5*l.*, T. B. Marshall, Branston, Lincoln. Commended: T. Marshall.

Pens of Five Shearling Gimmers.—1st, [illegible] W. Wardale, 2d, 10*l.*, J. K. Tombs; 3d, 5*l.*, W. Chaplin, Tathwell, Louth.

SHORT WOOLS.

Judges.—H. [illegible] Whitehouse, Richfield, [illegible]; and [illegible] Lockton, W. Rogers, Hope Enright.

Shearling Rams.—1st, 15*l.*, T. Marshall, Merton Hall, Thetford; 2d, 10*l.*, W. Rogers, Hope Enright. Commended: T. Marshall, Merton Hall, Shrewsbury, and Richard J. Waters.

Ram of any other Age.—1st, 10*l.*, Lord Walsingham; 2d, 5*l.*, J. Waters, Motcombe, East Bourne.

Pens of Five Shearling Gimmers.—1st, 15*l.*, Lord Wenlock, Escrick Park; 2d, 10*l.*, D. R. Davies, Mere Old Hall, Knutsford; 3d, 5*l.*, Lord Wenlock.

MOUNTAIN OR BLACK FACED.

Shearling Rams.—10*l.*, W. Rudsdale, Danby, Grosmont.

Rams of any other age.—5*l.*, C. Smith, Broadgate, Westerdale.

Pens of Five Ewes certified to have reared Lambs in 1866.—5*l.*, C. Smith.

EXTRA STOCK.

Medal to T. B. Marshall (for two Lincoln Wethers); and Medal to J. and E. Tindall, Knapton Hall, Malton (for one two-shear ewe and one five-shear ewe).

PIGS.

Judges (for Large Breed).—W. Bartholomew, J. Painter, W. Sanday.

Judges (for Small Breed).—H. Fookes, C. Randall, W. Rigden.

Boars of a Large Breed.—1st, 5*l.*, J. Dyson, Leeds; 2d, 2*l.*, R. E. Duckering, Northorpe, Kirton Lindsey.

Sows of a Large Breed, in Pig or Milk.—1st, 5*l.*, J. Lakland, Retford; 2d, 2*l.*, R. E. Duckering.

Boars of a Small Breed.—1st, 5*l.*, J. Crabtree, Shipley, Leeds; 2d, 2*l.*, W. Riddions, Addingham, Leeds.

Sows of a Small Breed, in Pig or Milk.—1st, 5*l.*, H. Abel, jun., Wigginton, York; 2d, 2*l.*, W. Linton, Skeriff Hutton, York.

Boars of any Breed not qualified to compete in the previous Classes.—1st, 5*l.*, W. Clark, Ghusburn, Cross Hills, Leeds; 2d, 2*l.*, R. E. Duckering.

Sows of any Breed in Pig or Milk not qualified to compete in the previous Classes.—1st, 5*l.*, R. Barrett, Sutton Mills, Cross Hills, Leeds; 2d, 2*l.*, B. Calvert, Bingley, Bradford. Highly commended: [illegible] Commended: W. Sugar.

Pens Stock [illegible] any Breed not qualified to compete in the previous Classes, not exceeding 4 to 9 Months Old.—1st, 5*l.*, Sir George O. Wombwell, Bart., Newburgh Park; [illegible] R. E. Duckering.

PIGS NOT EXCEEDING 12 MONTHS OLD.

Boar of a Large Breed.—2*l.*, R. E. Duckering.

Sows of a Large Breed.—2*l.*, R. E. Duckering.

Boars of a Small Breed.—2*l.*, W. Sugar, Saltaire, Bradford.

Sows of a Small Breed.—5*l.*, W. Holmes, Groves, York.

EXTRA STOCK.

First Medal, R. E. Duckering, for Pen of White Pigs. Second Medal, M. Walton, Halifax, for middle breed, gilt.

DAIRY PRODUCE.

Judges.—T. P. Dickinson, Stockton-on-Tees; W. Wilson, York.

Cheese (not less than 1 cwt. in quantity, made since October 1st, 1865, the produce of one dairy).—5*l.*, H. Saville, Rufford Abbey, Ollerton. Butter (fresh, 6 lb. in single lbs.)—3*l.*, J. Nightingale, Guisbro'; 2*l.*, G. Daniel, Elvington; 1*l.*, Harriet Fletcher, Tadcaster.

WOOL.

Judge.—T. Clayton, Stanley House, Ripley.

Five hog fleeces (long wools).—1st, 5*l.*, T. Marris, Cleeby; 2d, 3*l.*, Wm. Blackburn, Studley. Five hog fleeces (short wool).—1st, 5*l.*, T. Mansell, Shrewsbury; 2d, 3*l.*, T. Marris. Highly Commended: D. R. Davies. Commended: Lord Wenlock.

Special prize for the heaviest and best fleece of long wool.—J. Barker, Somersby, Kesby.

HOUNDS.

Judges.—The Earl of Macclesfield, the Earl of Portsmouth, Lord Lichfield, Lord Bective, Sir William W. Wynn, Mr. J. A. Thomson.

Two couples of entered Hounds, dogs (no hound being older than [illegible] season hunted).—1st, 20*l.*, Lord Yarborough; 2d, 10*l.*, Lord Poltimore.

Two couples of entered Bitches.—1st, 5*l.*, G. Lane Fox; 2d, 10*l.*, Lord Poltimore.

Two couples of Hounds, dogs (not to be entered in the Kennel in 1865).—1st, [illegible] Trollope, Bart., 2d, [illegible] C. Colman.

Two couples of Bitches (not to have hunted with Hounds).—1st, 5*l.*, Sir C. Slingsby.

Stallion Hounds (not less than three season hunters, and certified to be the sires of living puppies).—10*l.*, Lord Poltimore.

Brood Bitches (having reared litters since December 1, 1865).—10*l.*, Lord Middleton.

At the General Meeting held on Thursday it was resolved to hold the Society's meeting next year at Thirsk, and Sir George Wombwell was elected President for the ensuing year.

Farmers' Clubs.

Ballymahon: *Friends and Foes of Agriculture.*—We now give the former part of Mr. Kingstone's paper on this subject—a portion was given at p. 719.] It is of great importance to the farmer to make himself thoroughly acquainted with the habits of all those animals that are supposed to be so injurious to the crops, and to study their instincts at all seasons of the year. This knowledge enables him to check their injurious practices, and to encourage their beneficial ones. The weasel destroys the eggs and young birds of the poultry-yard, but it also overcomes the rats and mice, whether in the granary or stock, and these do no good at all to the farmer. The rook and hedge birds devour grain at the ripening of the crops, but in the season of rearing their young especially they destroy myriads of the insect tribe, All insects are not injurious to the farmer; on the contrary, many are positively beneficial. The ladybird destroys multitudes of the aphides which injure many useful plants and trees, while the ladybird itself does no injury at any time. The song birds of our hedges help in spring; they also devour large numbers of insects and snails; and when in autumn they delight to feed on ripe fruit, we can protect it from their depredations by the use of simple safeguards. Among the quadrupeds of injurious habits are the wild cat, the fox, the weasel, the stoat, the marten, and the pole-cat; some of these are well known to us; others are scarce, and perhaps not known in this country, though more abundant in our sister island. The stoat and the weasel are sometimes confounded with each other, but the stoat may be distinguished by its having a black tip to the extremity of its tail; it is a somewhat larger animal than the weasel. The stoat in colder climates becomes white, and is then called the ermine, but the tip of its tail remains black. The weasel has a short tail, the extremity of which is never black; it may be taken with spring traps.

Rabbits.—Although there is but one acknowledged species of British rabbit, there are four varieties of the animal which can be distinguished by the practised eye, namely, "warreners," which always remain in and about the warrens — the fur of this variety is the most valuable; "parkers," which leave the warrens and take up their abode in the open grounds; "gipsies," called also "hedgehogs," which have no fixed abode, but travel tinker-like from place to place, and are, like those wandering smiths, usually but ill-clad; "sweethearts" are the ordinary tame rabbits—their fur is of little value. Whether these varieties be the result of successive generations indulging in similar habits, or whether they may be merely eccentricities of conduct in certain individuals, is rather doubtful; the fact, however, exists.

The rabbit, when left to its own unrestrained devices, is, of course, a fearful nuisance, one of the worst foes to agriculture, but so will it, nevertheless, pay, with proper management, be reared a very considerable source of emolument, and thus may be transferred into the rank of the friends of agriculture. Here is not in all the class of animals called game one which has half of the hum to the farm that is done by the rabbit. The hare will eat her track, but the rabbit is always nipping a little corn here and there, and prevents it coming to maturity for acres together. Grass land is similarly eaten, trampled, and is just as much injured by rabbits. Sweds Turnips, Mangel, next to Wheat and Barley, to seed fields they have amount of damage for which the farmer is scarcely ever compensated. They breed also with such rapidity that they are the source of continual reflections, which are not confined to the eating of green crops, and so damaging subsequent crops as the fur on the [illegible] extent to the burrowing in young [illegible] in spring, and burrows and in the banks of drains and of open [illegible] lakes, and by scraping down in fall season, the bows of water, and marring the drainage of the land. What reader has not been a well stocked

garden, they do very much mischief in a few hours, they eat away the young and tender plants, vegetables, and flowers, nibble off the tops and new shoots of shrubs, and in default of better food, or even in sheer wantonness, will bite away the bark from the fruit trees, and leave it lying in flakes upon the ground. In the nursery and young plantations they cut the topmost shoots and bark of young trees; but mice, rabbits, and hares detest the smell and taste of tobacco, therefore it may be used as a preventive. Mix strong tobacco-water (i.e. water in which the roughest and coarsest tobacco has been boiled) with clay, cow-dung, or other substances to make it thick and adhesive; mix in a little glue and lime; stir the mixture till it is about the thickness of paper-hangers' paste, and with a brush apply it plentifully to the bark, working it well into the crevices all round the tree for three feet from the ground; or use common coal tar, mixed with equal portions of spent lime and dung, and with very young trees or young branches the coal tar may do by itself, or mix sod and milk till it becomes like thick paint, and apply with a brush on a dry day; or try lime wash. Some of these may be useful to prevent horses, deer, or even goats from injuring the bark of fruit trees, or the smooth bark trees. Small branches of Thorn dipped in gas-tar and pushed into rabbit holes, where not numerous, will have the effect of driving away the rabbits; the operation may have to be repeated, and the mouth of the hole should be stopped each time. Small traps, baited with bread, have been used with success. The gun, the ferret, and the net, the pit-fall, and other traps are useful preventives against the excessive increase of rabbits. But if you would have rabbits, and only profit, without suffering from their natural propensities, keep them in enclosures, where they provide themselves with sheltered holes; the hutches should stand on dry ground and be well ventilated; if sloping so much the better, as this allows the wet to run, and let there be tanks placed in front to receive it; when mixed with straw it is valuable as manure. There were formerly many rabbit warrens in this country, and some of them kept a stock of between three and four hundred, sending three dozen weekly to the London market. The manure produced was one load per week, and two loads were sufficient to manure an acre. This manure was sold at the rate of 5*s.* per load, but I think 20*s.* per year now may be taken as a fair average. Valuing the rabbits sent to market at 9*d.* each, we have a result of 1*l.* 7*s.* for them and 1*l.* for dung, besides the manure made by the urine mixed with straw, which was valuable for home consumption. When wanted for sale the dung was kept to be mixed with litter, but not pure. This gentleman did not include in his calculation such rabbits as he used at home for the table." See Richardson. In such cases we may count the rabbits among friends.

The Hare is one of the foes of agriculture; when allowed and encouraged, it multiplies to an excessive degree and commits serious injury. In the neighbourhood of large preserves, as many as 300 hares have been seen feeding one morning upon a field of Wheat. Those who are desirous of information by reference to the rabbit, painting gate-posts and railings a white colour, at intervals, will in some degree scare them.

Rats.—Of all four-footed vermin, rats and mice, with their varieties, are the greatest foes to the agriculturist, and to man generally.

There are three kinds commonly known as a nuisance to the farmer and the merchant—the indigenous black rat, the common brown rat or Norway rat, and the water rat; but the last is seldom a true rat, for what is usually known as water rat is not a rat at all, but an animal of a totally different species, the Water Vole (*Arvicola amphibia*). The most formidable is the brown rat, said to have come from Norway in 1728, then to have nearly extirpated the black rat. Where it says the brown rat came from Germany, and calls it the Hanoverian rat, others say the brown rat was imported into Britain from Persia, the Red Indies, and China in the year 1730, and has since spread over the whole of Europe and America. The albino, or white rat, is rare, and merely an accidental variety of the brown. They are all mischievous, and resemble each other in their habits, as they do in the same colour. Well adapted for all or the purpose traps and poison are used, both equally good under certain circumstances, and of such there are endless varieties. Here were exhibited lately in London about 20 different kinds of vermin traps, believed they are still to be seen in the garden of the Royal Horticultural Society at South Kensington; they were there in June, 1865. Steel spring traps, when used with skill, and occasionally, not constantly, are very effective. Stephens relates a feat of rat-killing performed by a Yorkshire man, John Fetherstone, who, with 21 small spring traps, kept him very constantly in employ day by day, and in the course of a few months caught a penny a rat and his own food; he occupied two days in preparations, so that in three days he earned in money 1*l.* 12*s.* 1*d.* In setting traps the operator should disguise the natural odour of his person by rubbing between his hands a little mint, finely impregnated slightly with a mixture of equal parts of oil of rhodium and oil of caraway; one part of the mixed oils to 5000 parts of malt. This is one of the most attractive baits for rats, and may be used either in baiting traps or as a vehicle for mixing poison. An effectual poison is prepared of fat roasted lard, the formula for which was communicated by the well-known chemist Dr. Ure to the Royal Agricultural Society of England. Take one pound of lard in a large wide-mouthed bottle or jar, plunge it in a vessel filled with water heated to about 150 degrees of Fahrenheit, and when it is thoroughly melted, then pour in one pint of proof spirit or whisky, and 1 ounce of phosphorus (some say ½ ounce); cork the bottle firmly, take it out of the water and shake it until the whole mass becomes of a milky white colour, and quite fluid, then add any kind of bait you may be pleased to use, which must not mix properly, place the bottle in the hot water again, and repeat the process till the operation is satisfactorily completed. Lay the bottle aside to cool, and the phosphorated lard will form itself into a hard white mass, while the spirit lies clear on the surface, and may be poured off for use in another occasion. When required take out a portion of this compound, mix it with flour, adding some sugar, and flavouring it with oil of rhodium, oil of aniseed, or such attractive odour; make this dough into pellets, and lay them for the rats in their runs and runs. Some persons do not use lard or dripping, but use instead of it starch, the phosphorus being added just when the starch is formed into a jelly with hot water; then stirring it up with a wooden spoon or a flat stick, Paosphorus is a dangerous substance to handle; it should never be touched with the fingers, nor cut in the open air; it should be kept in water, and cut under water; the safest plan for one not accustomed to handle phosphorus is to get the druggist to weigh it. Rat poison should be laid in the evening, before dusk, after the poultry have retired to roost, and the poison not eaten during the night time should be taken up at earliest dawn. Instead of flour and sugar being used with the above compound of lard and phosphorus, some use fresh malt, and add the following as an allurement to the rats:—oil of rhodium 1 scruple, oil of caraway 1 drachm, oil of lavender 5 drops, oil of aniseed 10 drops, tincture of musk 2 drops: this to be added to the compost in the proportion of 10 drops to the ounce. If kept in a well-stopped bottle, and a bit of bladder tied over the stopper, it will retain its strength for a length of time. To keep rats from corn-stacks shake a handful of the following mash on every second course, up to the casing, when building the stacks:—dissolve 1 lb. nitre and 1 lb. alum in 2 parts of spring water, and 2 pints of this liquid into a mash of about a bushel of bran, and mix. It is said that putting garlic in the bottoms of stacks will protect the stacks from vermin. Sir H. Davy is said to have recommended carbonate of baryta 2 ounces, mixed with grease 1 stone; it produces great thirst, and death ensues if they drink drinking. Arsenic, 1 ounce; treacle, 1 pound, mixed with chopped rabbit flesh, or with a salt herring, is given by some. Oil of amber or ox gall in equal parts, added to thin oatmeal and flour sufficient to form a paste. Divide it into little balls, and lay it in the middle of the apartments they frequent. Oil of fish in its unslacked state with 1 stone oatmeal; place it within reach of rats and mice: the moisture in their stomachs will cause the plaster to set, and speedily produce death; begin by giving pure oatmeal; mix 2 ounces of dried oatmeal with 12 drops oil of aniseed, for this one night; the next night, 1 ounce dry oatmeal, 1 ounce linseed meal, 1 ounce bread crumbs, ½ ounce moist sugar (don't touch it with your hands); stir all together with a wooden spoon; when this is put together dry, add 2 ounces quick lime, and well mix it together; put this on slates in the places most frequented; and at a short distance place several flat vessels holding about a pint of sweetened water; powdered squills, 2 ounces, strong smelling cheese 8 ounces; mix and place in their haunts; it acts immediately. Wheaten, when on the ground, mixed with the following paste, and put in a box-trap, and dipped in black pitch in warm tar; then let him off; the others themselves. A singed rat let go into the holes about the house is said to have a similar effect for a time. Also coal-tar smeared about the holes of their haunts. Where such a plan would not can be adopted. A house where they frequent, or a room, should be carefully shut up, and kept still; lay in it a plate of oatmeal, or even flour, for several days, adding as it becomes nearly finished; when well habituated to be fed on this, sprinkle some over it the next night, and strychnine with it, which they would not do if it was given at first. In some extensive premises where rats have increased to vast multitudes, special buildings have been constructed for the purpose of capturing and killing them. Such a building was erected by Mr. Norfolk, the inventor of the turnip-fly trap and other curious modes of destroying vermin, constructed on his farm a building that he called a rattery. By this contrivance he effectually cleared his own premises, and also largely benefited his neighbours. Drawings and descriptions of the Turnip-fly trap are given in Loudon's "Encyclopædia of Agriculture." Two or three ferrets, kept on the farm-yard premises, will soon do to banish rats. The farmer should feed them, otherwise he will not return when he has driven out the enemy. Weasels are destructive pests to rats, but also kill fowls and steal eggs. Cats should be encouraged to frequent the barns, out-houses, &c. They should be regularly fed; then the cat hunts best, because then it hunts for sport, and not being pressed by hunger, will watch at the same spot for hours. Cats in stout condition, and from its dam, will kill rats, if feels itself strong enough to encounter any vermin, and will destroy numbers in the course of a day. A starved cat, on the other hand, which hunts for food, eats the first prey it catches, and gorging itself, lies down to rest, in accordance with the feline nature, and the feline race to which it belongs. The great use of a cat is to kill or scare away, not to devour vermin. A good means of preventing the lodgment and breeding of vermin about farm offices is to build up the tops of all walls of stables, cowhouses, hammels, and other houses, beam ends, and the edges of the roofs with lime and mortar, keeping the mortar from contact with the timber. The walls of the old, as well as the new houses should be thus treated; the walls of barns, granaries, &c., should be plastered smoothly and whitened, especially at the corners, from floor to roof. These operations act as hindrances to lodgment, and mice running up to escape; a smooth triangular board or slate placed across each corner near the top of the wall is sometimes useful. Rats are thirsty beings, and if a stack be built on well-made staddles, and a colony of rats should contrive to get into it, they will find it a sad place for water, and, in search of it, forming a bridge over which the rats can run, even under these circumstances they may be dislodged by drought, either by waiting for fine weather or by placing a rick cloth over the stack. The rats would speedily die of thirst in such a location; and out they must jump to the ground in search of water, when, of course, they are unable to make good their admission afresh. Mice, however, cannot be dislodged in this simple manner, as they find sufficient supply of water in the dew that collects upon the thatch, and may be seen in the early morning licking the dew drops that hang glittering upon the straws. On board a number of war rats have been known to consume a hundred weight of biscuits daily, and when, to destroy them, the ship has been smoked between decks, six hampers a day have for months been filled with dead vermin. The rats of France was once abandoned on account of their immense swarms. In Paris rats are very abundant in the sewers near the markets and slaughter-houses. Some years ago, at the slaughtering establishment of Montfaucon, the carcases of the horses killed in the evening covered with those vermin, and were found next morning picked bare to the bone. The proprietor of one of the slaughterhouses decoyed the rats into an inclosed part of the establishment, where, after one night's slaughter, the carcases were covered with the result of the night's slaughter, and by repeating the experiment at intervals of a few days, he and his men killed within a month 16,050 rats. Their ferocity as well as voracity surpass anything that can be imagined, to prove which the following fact was stated:—Mons. Magendie, who have for months been filled with rats which he made experiments, had them put together in a box. On his return home he opened the box, and found but three rats, the others having been devoured by the survivors, and nothing remaining of them but their tails and phonces. The fact appears incredible, but the proprietor declare they came from Mons. Magendie's own lips. No doubt this fact is correct; but cannot we Irish match the French fact by our story of the Kilkenny cats, which fought with each other till nothing was left but their heads and tails!

The water rat, or, more properly, water vole, has a short tail and small ears; does not frequent the farmstead, but lives on the borders of rivers and ditches that have water in them constantly, and of canals, mill dams, and ponds, undermining their banks and fences with its long, crooked burrows, which, like those of the beaver, usually have openings under water, and frequently end with a sort of room, or magazine, in which it stores its provisions for the winter. The storeroom is generally placed so as to be above the reach of ordinary floods. The water vole is a vegetable feeder, living chiefly on aquatic vegetables and roots, but is most injurious by undermining fences, letting down land by the sides of rivers and ditches, and thus impeding the drainage, also by making holes in banks, as well as gnawing away sluices, to the ruin of vast areas of property when flood time arrives.

Of that well-known very destructive little animal the mouse, there are several varieties, including the common house mouse or domestic mouse, the long-tailed field mouse, the short-tailed field mouse, or more correctly called the field vole, and the little harvest mouse. This last is the smallest of British quadrupeds, two of them not weighing much more than a halfpenny. This kind makes a beautiful nest, scarcely larger than a cricket ball, and about that size. The long-tailed field mouse is in many points like the domestic mouse, and by its much longer tail, sharper nose, and longer ears, may be readily distinguished from the field vole.

The field vole, or short-tailed mouse, is small; its total length is about 5 inches, the tail including little more than 1 inch in length. It is not more than half the size of the water vole, but, like it, has very small ears, barely showing their tips above the fur. The field vole can readily be distinguished by the chestnut-red upper part of the body, the blunt muzzle, the very short tail, which is barely a quarter the length of the body, very scantily covered with hair, and blunt at the tip, presenting a great contrast to the long, graceful, and pointed tail of the domestic mouse. The body below is ashen gray; the feet and tail are brown, without much red in them. The field vole does not rightly belong to the mice, but the allied to the voles, forming, together with the water vole and the bank vole, or bank campagnol, the only relics of that group of animals.

DERBYSHIRE: *Breeding and Form of Stock.*—This was the subject of an elaborate paper lately read by Dr. Hitchman, of Derby, before the members of the Derbyshire Agricultural Society, of which he is President. He commenced by noticing the increasing demand for meat on the one hand, and our diminishing resources on the other, and gave a few interesting statistics, showing the enormous demand for London alone. A gentleman wrote some time ago a brilliant article in the "Quarterly Review," entitled "The London Commissariat." He made a careful calculation that, supposing all the oxen required for a year to be coming along the Great North Road, and the sheep on the Western Road at the same time—and he himself on a pillar at Hyde Park—at 10 abreast, the last animal of the herd of cattle would be 72 miles away, and the driver goading his shrinking flank considerably beyond Peterborough. And of the sheep at 10 abreast, on the Western Road, he says, "The shepherd at the end of the flock, and the dog that is worrying the last sheep, would be just leaving the environs of Bristol, 121 miles away, as the first 10 would pass him at Hyde Park Corner."

This is the requirement of London alone, with its population of three millions, while there still remains 16,995,000 persons in other parts of England and Wales to be supplied by the British farmer, or his rival in other lands.

Dr. Hitchman then proceeded to point out, by the aid of drawings, the strange changes brought about in breeding in the colour, form, and habits of the rock dove, the almond tumbler, the carrier pigeon, the pouter, the fantail, and adduced them as interesting facts, showing how an arbitrary and artificial standard had been resolved upon and realised and maintained. Again, aided by drawings, the lecturer graphically pointed out the great contrast between a Polled or horn-less cow, the mountain ram and the Leicester sheep, the Irish pig and the English sow, and other specimens, and stated that the tendency is ever to revert, to go back to the original forms.

How have breeds been founded? Why has Charles Colling's Hubback (the grandsire of the bull Comet), picked up in a lane, or the Godolphin Arabian (the maternal grandsire of Eclipse), purchased from a water-cart, become the fountain-head to which cattle-breeders and horsemen desire to trace up the pedigrees of their stock? Why were they selected, but because the body possessed, in a marked degree, most of the very best qualities which were desired in ox or horse, and because the purchasers believed and acted upon the idea that "like begets like;" and if "like begets like" in good qualities, why not in the bad? "Like begets like" is the law of nature, if not, indeed, the only law in the good. Malformation in a nervous animal is often handed down to his progeny for generations, even if none of his known ancestors possessed the fault: but it rolls on with fearful power if the defect be an hereditary one.

Again, individual animal possess great vital energy, his characteristic form will be stamped on his progeny. Thus in the "Philosophical Transactions" of 1813, and in "Thomson's Annals of Philosophy," vol. ii. there is a description of a new variety of sheep, as follows:—"Seth Wright, who possessed a small farm on the Charles River, about 16 miles from Boston, had a small flock, consisting of 15 ewes and 1 ram. One of these ewes in 1791 produced a singular-shaped male lamb. Wright was advised to kill his former ram, and keep this new one in place of it. The consequence was, that the breed of a new breed of sheep, which gradually spread over a considerable part of New England; but the introduction of the Merino has nearly destroyed them again. This new variety was called the Otter, or Ankon breed. They are remarkable for the shortness of their legs and the crookedness of their fore-legs, which allows the body to approach much more feeble and much smaller than the common sheep, and less able to break over low fences; and this was the reason of their being continued and propagated." This fact proves that an individual animal starting a defect may propagate this defect, although descended from a race without such peculiarity. Where, then, is the wisdom of selecting an animal which possesses few of the qualities we desire, but which comes before us with the magic of a name, and surrounded by the artificial halo of a pedigree?

As regards the form of the head, I attach great importance to a large, wide forehead, and a somewhat short face, in all cattle intended for grazing purposes. There was a very fine specimen of a head in the yearling bull Bushire 2d, bred by Mr. Leek, and sold for 40 guineas at Mr. Cox's sale. The head of that young animal was a model, and, as I was going to add, alone worth the sum for which the fine fellow was sold. Animals with the forehead wide between the eyes, and expanding well out also in the upper portion of the skull, are more intelligent, and therefore more manageable, than animals having narrow or convex heads. It is the index to coarseness everywhere, and often the index, too, of a bad constitution—what we should term ricket or scrofulous in the human subject. Size and strength are not identical in living and structures; the small bones of the gazelle and the chamois, supporting them in dashing leaps from crag to crag, are natural illustrations of how strength may be condensed in the small bone. The large bones are full of cells—are porous,

so to speak—and bear about the same relation to small bones as the branch of the pithy Alder tree does to the dense and compact stem of the Oak. It is pleasant to find very strong testimony on this point by one of the most successful graziers and cattle dealers that England has ever known. Mr. Culley, who realised a very large fortune by the purchase and sale of feeding stock, writes thus:—"For I aver that no large-boned animal will feed so quickly, or cover so readily and thickly with fat flesh, as one with a small bone, if well formed. This is the criterion, this is the main principle that we found our judgment upon, respecting all animals which are to be fatted for the support of mankind; and we can justly say that this judgment is confirmed by nearly 40 years' experience."

Well, having for the most part dealt thus far with evil points, what may be considered good ones? In the bull, the head should be well set upon a broad, deep, muscular neck; the horns short, and not too bright; the ears long, and situated near to the head, the inside skin having an orange tint. The forehead should be broad at this point, with a somewhat concave appearance between the eyes—the eyes themselves large, mild, lustrous, and prominent. The butcher knows if he finds the eye of the calf protuberant, and by elevating the eyelids sees fat underneath, that the protuberance is caused by fat in the condition, and if it be found in quantity here, it is a fair criterion that it is well diffused in more important points. A fine flesh-coloured muzzle, with nostrils well dilated; the neck, as said before, broad, deep, and muscular; the shoulder-blades well set towards the rib behind, and yet standing up finely towards the "crop," leaving no deep hollow between it and the ribs; chest deep; ribs well rounded, and stretching backwards to the bookbone, so as to leave no very wide space there. The breadth between the "book bones" should be proportionate to the length from them to the point of the fleshy part of the thigh, well set on the fore-legs should be broad and muscular, from this point upwards; the thighs well developed, and touching each other inwardly to near the hock; the skin covered with thick, soft, somewhat curly hair, and should be to the touch, when the animal is in a fair condition, soft, elastic, and pleasant; but when the animal is fully fat (however soft the hair) the skin itself should be very firm, resistent to the pressure, like to the feel of a strained, well-distended air cushion. The bones should be as small as is compatible with the full steady support of the animal. Continued symmetry everywhere expect greater roundness of form, a softer touch, wider hips, and a more delicate outline. In both a graceful carriage and lively air are desirable. Such I conceive to be the perfect animal. Some one has said, "The perfect monster the world never saw;" but to this we aspire at our shows, and the "prize-taker" is, or ought to be, the one which possesses the above points in the greatest perfection. However, practically, if there be a deep chest, a round rib, a broad loin, a mellow skin, and small bones, you have a beast which will repay your care, and cover faults may be found by the connoisseur in other parts of the animal's structure.

The lecturer then proceeded to consider what are the best principles of management—in other words, how we were to proceed to obtain animals of good colour, good form, prolific character, and sound constitutional qualities? He viewed the system of breeding from young animals. And after a very interesting reference to the best colour of cattle, he said—I am as positive as I am of my own existence that a uniformity of colour, as universal as any other class of animals, could be secured in process of time, if breeders were unanimous in determining upon one of three—namely, red and white, pure white, or red. So long as roan, which is a compound colour, is determined upon, so long will it be a matter of the greatest possible uncertainty what the actual colour of the progeny may be. Certainly roan is a very beautiful colour, and the variety which it leads to makes a herd of Short-horns a most picturesque object in the parks or meadows of a nobleman; but still this variety detracts from its dignity as a tribe, and lessens its effect when exhibited as a herd in the yard or grouped for sale in the market. This uniformity may be effected, because even now there is a kind of unity amid all this variety; for, if we cannot determine what the colour of the future calf will be, we can at all events predicate what it will not be. We know it will not be entirely soft, like the hare, and not to fancies. In what colour does Nature robe the animals which spend their lives amid the regions of eternal snow? What is the predominant colour in the Arctic hare, the Esquimaux dog, and the Polar bear? Of what colour are the hoary-coats of nearly all the animals which people the cold water-fowl occupying cold latitudes? What colour has instinct and experience alike sanctioned as the proper one to husband and preserve the heat of the human body? Let no man condemn white colour in his ox as a sign of "nesh." A white cow may be "nesh," but the same rule would not be known as "nesh," or "nesher," if she had been of any other colour.

After noticing the peculiar predominance of the characteristics of the male sex, he said that, coupled with another great truth, viz., the dominance of faculties impressed upon and handed down from the male generations, it will be found to be true in the main that in crosses it is better to seek the "constitution" from the dam, and the quality and form from the sire, than the opposite. Referring to the custom of close breeding, which the lecturer thought had produced the best animals he had seen, the lecturer explained the dangers of such animals and recounted the high value set upon them by eminent agriculturists. In forcible and eloquent terms Dr. Hitchman enforced a proposition that the Royal Society should furnish its members with accurate portraits of winners of the Gold Medals of the Society, that the point on to point risk the great thing to be avoided is breeding from a diseased, deformed, or defective animal; a hereditary taint becomes by close breeding frightfully confirmed and difficult to eradicate. The lecturer concluded by further enforcing the following propositions:—

1. That man has been endowed with the means of controlling and modifying the forms of all animals.

2. That such modified forms can be handed down to the progeny; but, being departures from the primitive or natural type, the form can only be maintained by assiduous attention on the part of the breeder.

3. That not only because the qualities of the male can be immediately brought to bear upon larger numbers, but also because of his own special endowments, it is best to seek for improvements of form and quality through him.

4. That qualities both of the form and also of the character become hereditary in proportion to the frequency of the repetition in past generations, but that it is dangerous to breed from any animal with important defects, however high its pedigree.

5. That healthful well-formed animals, without hereditary taint, even if closely related, may be safely permitted to propagate their kind, provided the practice be not continued through many generations.

6. That young animals for their first impregnation should be placed to the best of their own kind, in order to avoid the reappearance of stain in any future progeny.

7. That science has not revealed any trustworthy arrangement by which the proportion of the sexes can be determined upon and secured.

Reviews.

A Dictionary of Science, Literature, and Art, comprising Definitions, &c. Edited by the late W. T. Brande, D.C.L., and the Rev. G. W. Cox, M.A. (Longmans.)

This extremely complete and elaborate work is approaching the completion of a fourth edition. Originally published 24 years ago, it has been rewritten and extended wherever the advance of knowledge rendered such extension necessary. The agricultural articles, like those descriptive of many other branches of knowledge, have required both alterations and additions, and though no attempt is made to present a systematic treatise on the subject, yet the salient points both of the theory and practice of farming are made the subject of descriptive paragraphs, so that agriculture is fairly represented among the various arts and sciences about which the reader will consult these volumes. We extract some of the paragraphs relating to farm practice included within Ra—Ru, which are the limits of the current number.

"*Rinderpest.*—The Report of the Cattle Plague Commission (May 1866) renders it necessary to make a few remarks in addition to those already made in the article Murrain. Although no unfailing specific has been discovered, some facts have been ascertained which throw considerable light on the pathology of this disorder. It appears that within 48 hours of the time when the animal has imbibed the disease, the temperature of the body rises from 2° to 3½° of the thermometer. The period of incubation is thus shown to be shorter than was generally supposed, and this rise of temperature is especially valuable as furnishing a means of separating sick from healthy cattle, and shortening the time of quarantine. The whole course of the disease is seven days; but hitherto it has been erroneously treated as beginning when it has already existed for four days, and obtained a fatal hold on its victim. It is confined almost entirely to ruminating animals, although it may exist in the sheep and goat. The Commissioners unanimously report that it is propagated only by contagion, and that it consists in a poison generated in the blood and capable of being conveyed by inoculation, the increase of the poisonous matter when the disease is established being excellently rapid. For the purpose of disinfection they recommend chlorine and the acids obtained from tar and sulphur. Inoculation and vaccination with the matter of the cow-pox have been tried as a preventive without success. All strong medicines, it is asserted, heighten the mortality; and the only remedies suggested are cleanliness, ventilation, disinfection, and careful feeding. If these conclusions accord with the facts, the necessity of a strict quarantine becomes imperative for all cattle arriving from foreign ports.

"In their third and final Report, issued June 1866, the Commissioners adhere to their former conclusions as supported by microscopic and other experiments. Having used the highest magnifying powers, Dr. Beale considers that with regard to the nature of the contagion itself, evidence has been adduced to show that it consists of very minute particles of matter in a living state, each capable of growing and multiplying rapidly when placed under favourable conditions; that the rate of growth and multiplication of these minute particles far exceeds that at which the normal germinal matter of the blood and tissues multiplies, and that they appropriate the pabulum of the tissues, and even grow at their expense.'

"The most efficient disinfectant agents, sulphurous and carbolic acids, are supposed to act by destroying the vitality of the poisonous particles emanating from animals in a state of disease. On the whole the Commissioners are convinced of the necessity of treating the disease as strictly contagious, and of the importance of marking the rise of the natural temperature of the animal as the first and surest symptom that the disorder has begun.

"*Rot* (A.-Sax. frotian, *to rot*).—A term applied to a well-known disease peculiar to sheep; also termed cothe, but more generally known by the term rot. Many causes have been assigned for it, as the Fasciola hepatica or fluke worm, or some particular plants taken as food; but as most of the supposed deleterious herbs have been tried by way of experiment, and have failed to produce the disease, it must be attributed to some other cause. It is believed that the germs from which the fluke is derived, are taken into the system with the Grasses and other green food grown in marshy ground. Bakewell, when his sheep were past service, used to rot them purposely by feeding them on wet land, that they might not pass into other hands. This he always readily did by overflowing his pastures. It is said that land on which water flows, but does not stagnate, will not rot, however moist; but this is contradicted by the experience of Bakewell, who used merely to flood his lands a few times only to rot his sheep. It is also said that they are safe from rot on Irish bogs, salt marshes, and spring-flooded meadows, a statement apparently verified by experience. When salt marshes are found injurious, it is only in years when the rain has saturated or rather super-saturated such marshes. The assertion that putrid exhalations unaccompanied with moisture can occasion rot, needs confirmation; for these commonly go together, and it is difficult to separate their effects. It is not the quantity of water immediately received by land, but the capacity of that land to retain the moisture, which makes it good breeding ground for the germs of the disease, and thus makes the land itself of a rotting quality.

"The signs of rottenness are sufficiently familiar to persons about sheep. They first lose flesh, and what remains is flabby and pale; they also lose their vivacity. The naked parts, as the lips, tongue, &c., look livid, and are alternately hot and cold in the advanced stages. The eyes look sad and glassy, the breath is fetid, the urine small in quantity and high-coloured; and the bowels are at one time costive, and at another affected with a black purging. The wool will come off on the slightest pull in almost all cases. The disease has different degrees of rapidity, but is always fatal at last. This difference in degree occasions some rotted sheep to thrive well under its progress to a certain stage, when they suddenly fall off, and the disease pursues the same course as with the rest. Some graziers know this crisis of declension, as it has been called, and kill their sheep for market in the immediate nick of time, with no loss. In these cases, no signs of the disease are to be traced by ordinary inspectors; but the existence of the flukes, and still more a certain state of liver and of its secretions, are characteristic marks to the wary and experienced.

"The treatment of rot is seldom successful unless when it is early commenced, or when the disease is of a mild nature. A total change of food is the first indication, and of that to a dry wholesome kind; all the farinæ are good, as the meals of Wheat, Barley, Oats, Peas, Beans, &c. Oilcake is good also. Carrots have done good, mixed with these: Broom, Burnet, Elder, and Melilot, as diuretics, have also been recommended: but it is necessary to remark, that there is seldom any ventral effusion but in the latter stages of the complaint. As long as the liver is not disorganised, a cure may be looked for by a simple removal of the cause, aided by such remedies as assist the action of the biliary system. Salt acts in this way, and thus salt mashes are good; salt may also be given in the trough, to be licked at will by the sheep.

"*Rotation of Crops.*—In Agriculture and Gardening it is found that the same annual crop cannot be advantageously cultivated on the same soil for more than one or two years; and hence one kind of crop is made to succeed another. The number of cultivated crops being limited, when the whole course has been gone through once, the series is again repeated; and hence the use of the word 'rotation.' As the same kinds of crops are not, however, always grown in regular succession, a change being frequently made according to general principles, the term used in that case is 'succession of crops.' The principle on which the succession of crops is founded is, that every kind of plant extracts nourishment from the soil, and leaves it deficient of that which should prove nutritious to another species. As a general principle of guidance in determining the succession of crops, it is considered advantageous that a crop cultivated for its leaves or roots should succeed one cultivated for its ripened seeds; that the cereal Grasses should be succeeded by leguminous plants; tap-rooted plants, or plants bearing tubers, by fibrous-rooted plants; plants which form a compact covering on the surface, such as corn and legumes sown broadcast, by plants which only partially cover the surface, such as crops grown in rows sufficiently wide to admit of cultivation between; and plants which may be said by their abundant leaf to feed the soil with what they take from the air, by plants which are almost wholly dependent upon the stores of food for them contained in the soil and subsoil. It may also be adopted as a rule, that where land is to be subjected to a crop of the same plants for a number of years, as in permanent pasture, the plants composing the crop should be of several different kinds, seeking a different kind of aliment. Hence the propriety of sowing Clover, Ribwort, and other tap-rooted dicotyledonous herbage plants among pasture Grasses."

We add that *Rent* and *Roads* are articles well deserving perusal by agriculturists; and that the completeness of the work up to the date of issue is illustrated by the fact that under *Reform* the history of the late debate and its issue are described.

On the Application of Disinfectants in Arresting the Spread of the Cattle Plague. Report to Her Majesty's Commissioners. By W. Crookes, F.R.S. J. H. Dutton, 1, Wine Office Court, Fleet Street.

Mr. Crookes' exhaustive and most valuable report on the subject which was remitted to him and to Dr. Angus Smith for examination by the Commissioners on the Cattle Plague, is reprinted in a pamphlet of 62 small pages. We strongly recommend all stock-owners, who have latterly become so lamentably interested in the subject of infection, to purchase it and study it.

The Shooter's Diary for the Season of 1856. By J. C. B. C. *Field* Office, 346, Strand, W.C.

This is a well-designed and compendious literary memorandum book, with a sufficient number of "pigeon holes" allotted for all sorts of records of your own, and with others well stored with abundant and most serviceable information regarding outfit and sport in all parts of the world.

Miscellaneous.

The late Mr. S. Taylor.—On Sunday, the 29th of July, in great peace, died Mr. Samuel Taylor, of Wotton Parade, Gloucester, aged 80 years. The deceased gentleman was the eldest son of Mr. Samuel Taylor, formerly of Banham, and afterwards of New Buckenham, in Norfolk, and a great grandson of Dr. John Taylor, of Norwich, the author of the "Hebrew Concordance," a very learned and distinguished Presbyterian minister of the last century. In the decease of this venerable man, his friends have sustained a severe loss; for though age had impaired his bodily frame, it had not destroyed his genial humour and open-heartedness. In his social intercourse and correspondence there remained, until a short time previous to his death, a mirth and freshness almost amounting to juvenility, which made it difficult

to believe that his earthly career was so nearly terminated. Mr. Taylor in early life followed Agriculture as his pursuit, and was one of the earliest and most extensive contributors of practical articles to the Agricultural periodicals. [We cordially join with our correspondent in this expression of his regret. Mr. Taylor was a frequent correspondent of the *Agricultural Gazette*, and wit, intelligence, and candour combined to make his contributions to our columns most valuable.]

The Reaping Machine Trial at Peterborough.—Shortly before 3 o'clock the judges, Messrs. Watts, Orlingbury, Cranford of Bukden, Hunts, and Derry of Gedney, Wisbech, again repaired to the field. The machines selected were Burgess & Key's, Hornsby's, Samuelson's, and Crosskill's (from the Beverley Iron Works). The crop was a piece of rather light Wheat, and each machine had an acre to reap, viz., 12 chains long and three-quarters of a chain wide. All started together at 20 minutes past 3. The average time taken for each cut was two minutes. Burgess & Key's machine had completed its work at 4h. 4m. 30s. o'clock; Hornsby's, 4h. 5m. 5s.; Samuelson's, 4h. 8m. 30s.; Crosskill's (the Beverley Company), 4h. 11m. 20s.; so that the longest time taken to reap an acre of corn was 48½ minutes, and the shortest 44½ minutes. Much interest appeared to be taken in the work of Crosskill's, it being a larger machine than the rest, and consequently taking a wider swathe, being propelled instead of drawn by three horses. The loss of time in turning occasioned by this arrangement, and the machinery getting out of gear, appeared to counterbalance the advantage of size, as will be seen by the above result. The work of each machine was good, but the laying of the swathe was decidedly best by Burgess & Key's machine. Of the smaller manual machines three were selected, viz., Cuthbert's, Bamlett's, and Hornsby's. The latter was objected to as not being strictly a manual machine, but rather to be called semi-manual, there being chains attached to it; it having, however, been allowed to compete at the Royal Agricultural Show at Plymouth, the stewards over-ruled the objection. The two other makers not being satisfied declined to compete, and Hornsby's therefore went in alone. Notwithstanding the unfavourable state of the weather, the work done both with Wheat and Barley was very creditable, and on its completion the company retired to the tent, when the Chairman made known the awards, viz., for the best self-delivering reaping machine a cup value 10*l.*, by the Agricultural Society, to Messrs. Burgess & Key; and for the best manual machine a cup value 10*l.*, by Messrs. Amies & Co., to Messrs. Hornsby. With regard to the work of the small machines at the preliminary trial, it may be stated that Cuthbert's and Bamlett's were, irrespective of Hornsby's, the favourites. The work of the former was much admired from the evenness with which the sheaves were laid ready for tying. This, however, was attributed to the experience of the layer extending over 14 or 15 years. The cutting of Bamlett's was considered as good, but the laying deficient, owing to the comparative inefficiency with which the rake was used. *Peterborough Advertiser.*

Horncastle (*Lincolnshire*) *Horse Fair.*—This celebrated horse fair opened on Monday morning, and comprised a fine exhibition of horses. There was an unusually large attendance of horsedealers, private speculators, and breeders; foreign agents eagerly secured small thick-built horses for exporting abroad. Business continued active throughout the day, and the fair was resumed yesterday with an equally brisk trade. Large studs of horses were sold at the following figures:—Young horses suitable for town carts, public carriers, van and omnibus purposes, 40 to 55 guineas; and small thick-set ditto adaptable for artillery and other military work, 35 to 45 guineas. Heavy cart-horses, for brewers' and merchants' work and road teams, 50 to 70 guineas; and seasoned ditto for farmers' work, 20 to 28 guineas; and cart colts, 25 to 45 guineas. Handsome well-bred young horses, of high class and fashion, broken to double and single harness, suitable for brougham and other private carriage purposes, 75 to 90 guineas; and well-matched pairs of ditto, 200 to 250 guineas; young promising horses of this class and unbroken, 60 to 70 guineas. Horses suitable for ladies' riding chargers, and other saddle purposes, fetched prices varying from 60 to 130 guineas, and horses of high blood and pedigree for the hunting field produced from 80 to 150 guineas, and hunters of celebrity and accustomed to hounds, 200 to 300 guineas; neat steady cobs and cover hacks, 25 to 40 guineas; roadsters, hacks, and single harness horses, 25 to 35 guineas; trotting horses, 50 to 100 guineas; and brood mares, foals, and yearlings sold freely to breeders. The fair lasts six days for horses, Saturday being exclusively for heavy cart animals, and the great sheep fair will be held on Monday next.

Notices to Correspondents.

Bushy Carts: *W E O.*, &c. Mr. Busby's address is Bedale, Yorkshire.

Gorse-Crushing Machine: *G C.* Apply to Mr. Walsh, Balbriggan, Ireland.

Insects: *Sussex.* The earwig certainly feeds on vegetables, and for want of other food would attack Turnips, but you may satisfy yourself easily if they be the real depredators in your case by examining the fields after dark with a lanthorn.

Land Agency: The Editor of the *Agricultural Gazette* would be glad to know of a situation where Agricultural experience and good judgment in the management of land, whether as Farm Bailiff or Estate Agent, would be serviceable. A most competent and trustworthy man can be confidently recommended for such a place.

Poultry Management near London: *C. Dietrich.* There is a great Poultry establishment at Bickley, near Bromley, Kent, but nothing is known here of such an establishment as you describe, "wherein laying hens in large numbers are kept and fed upon horseflesh principally, and where the profits of the industry are derived from the eggs, the sale of grease obtained from the horses, and from artificial manure made off the offal."

PRIZE MEDALS AWARDED to GREEN'S PATENT LAWN MOWERS.

INTERNATIONAL EXHIBITION, LONDON, 1862.
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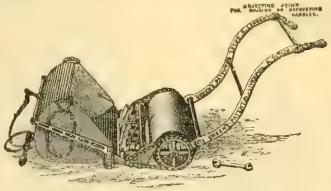
The above Lawn Mowers have proved to be the best, and have carried off every Prize that has been given in all cases of Competition.

Sold by all respectable Ironmongers, Seedsmen, &c., in the Kingdom. Illustrated Price Lists free on application.



AGRICULTURAL and HORTICULTURAL IMPLEMENTS and MACHINES of every description.

IMPROVED IRON STABLE FITTINGS.

HURDLES and CONTINUOUS IRON and WIRE FENCING.

Palisading Entrance and Field Gates. Plain and Galvanised Wire Netting.

GREEN'S PATENT LAWN MOWERS and GARDEN ROLLERS.

Garden Engines, Syringes, Water Barrows, Ornamental Garden Seats, Chairs, Tables, Iron Fountains, Vases, &c.

IRON and BRASS BEDSTEADS, in great variety.

Washing, Wringing, and Mangling Machines.

IMPROVED SAUSAGE MACHINES and FILLERS.

Separate Illustrated Price Lists free on application.

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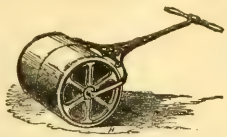
GREEN'S IMPROVED NEW PATENT GARDEN ROLLER.



The above Rollers possess many advantages over all others. They are made in two parts, and are free to revolve on the axis, affording greater facilities for turning, and the outer edges are rounded off or turned inwards, thus avoiding the unsightly marks left by other Rollers.

Diameter, 30 inches;	Length 32 inches,	£7	10	0
,, 24 ,,	,, 26 ,,	4	10	0
,, 20 ,,	,, 22 ,,	3	10	0
,, 16 ,,	,, 17 ,,	2	15	0

Prices for Rollers fitted with Shafts suitable for Pony or Horse Power, free on application.

Delivered carriage paid to all the principal Railway Stations and Shipping Ports in England.

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Caution to Gardeners.—When you ask for SAYNOR AND COOKE'S WARRANTED PRIZE PRUNING and BUDDING KNIVES, see that you get them. Observe the mark Saynor, also the corporate mark Obtain Warranted, without which none are genuine.

S & C. regret having to caution Gardeners and others, but are compelled to do so, in consequence of an imitation, of common quality, having been sold for the genuine one, and which has caused many complaints to be made to them of Knives which were not of their make, all of which are warranted both by Sellers and Makers.

S. & C.'s Pruning and Budding Knives are the best and the cheapest in the market.

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PATENTEES AND SOLE MANUFACTURERS,

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GUARANTEED TO GIVE PERFECT SATISFACTION,

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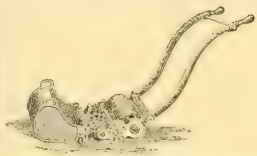

This New Patent Lawn Mower combines all the latest improvements in Lawn Mowing Machines, being simple in construction, very light, silent in movement, easily worked, and so strong and durable as to be literally unbreakable—an all-important feature in Machines of this class; the ordinary Cast-iron being entirely done away with, and Malleable Iron substituted in all breakable parts, and every part being numbered and accurately made to standard gauges. The workmanship and finish are also of a superior character; the entire Machine being quite equal to a revolution, so to speak, in Lawn Mowers. The Machines are all guaranteed to give perfect satisfaction in every respect.

TESTIMONIAL *from* Thos. Ingram, Esq., *Royal Gardens, Windsor, August* 11, 1866.

"Gentlemen,—I have much pleasure in stating that your New Patent B B Lawn Mowing Machine has had a good trial, and has proved quite satisfactory. The work done is of the first order, leaving the Lawn like a piece of velvet.

"I am, Gentlemen, yours faithfully,

"Messrs. J. B. Brown & Co." "Thos. Ingram."

Patent B B Hand Machine.

PRICES—including Carriage to any Railway Station or Shipping Port in England.

10-inch Machine ..	£3	10	0	*Easily worked by a Boy.*
12-inch Machine ..	4	10	0	
14-inch Machine ..	5	10	0	
16-inch Machine ..	6	10	0	*Ditto by a Man.*
18-inch Machine ..	£7	10	0	*Easily worked by a Man and Boy*
20-inch Machine ..	8	0	0	
22-inch Machine ..	8	10	0	*Ditto by Two Men.*
24-inch Machine ..	9	0	0	

Patent B B Horse Machine.

PRICES—Complete, without extras, including Carriage to any Railway Station or Shipping Port in England.

42-inch Machine	£28	10	0	*Drawn by a Horse*
36-inch Machine	24	10	0	
30-inch Machine	21	10	0	*By a Horse or Strong Pony*

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PRICES—Complete, without extras, including Carriage to any Railway Station or Shipping Port in England.

30-inch Machine	£17	10	0	*Drawn by a Pony*
28-inch Machine	16	10	0	
25-inch Machine	14	10	0	*Drawn by a Donkey*

New Improved Horse, Pony, and Donkey Boots, wholly of Leather, as follows:—Horse Boots, 24*s.*; Pony Boots, 21*s.*; Donkey Boots, 16*s.* per set.

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NEW OVAL TUBULAR BOILER,

Acknowledged by practical judges to be a great improvement on every form of Tubular Boiler yet introduced. It has proved itself superior to all other Boilers for quickness of action and economy of Fuel, doing its work with one-third less the amount required by any other.

Extract from Report in Gardeners' Chronicle *of International Exhibition, May* 24, 1862, *page* 476.

"The upright form of Boiler is usually made on a circular plan, but the oval form given to Mr. Gray's variety of it is said to be preferable in consequence of its bringing the tubes in closer contact with the fire. The usual form of a furnace being a parallelogram rather than a square, it seems feasible that the Boilers on the oval plan should bring the tubes more completely within range of the burning fuel; and this being so, the change, though a slight one, is no doubt an improvement."

☞ *They are made of all sizes, which, with prices, may be had on application.*

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HOTHOUSES for the MILLION, invented by the late SIR JOSEPH PAXTON

Manufactories: London, Newton in Cartmel (Lancashire), Gloucester, Coventry, Aberdeen, and Paisley only

Illustrated Circulars, with revised List of Prices, will be sent on prepaid application to Messrs HEREMAN & MORTON, Head Office, 7, Pall Mall East, London, S.W.

HOT WATER PIPES and FITTINGS of the best description supplied by

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BURY AND POLLARD'S CONICAL BOILERS for HEATING by HOT WATER fixed at Seats of Duke of Newcastle, Lord Belper, &c., at Viscount Sydney's replaced, after being 20 years in constant use. Apply at 17, New Park Street, Southwark, London, S.E.

HOT-WATER APPARATUS, of every description, fixed complete in any part of the country, or the materials, viz., Boilers, Pipes, &c., delivered to any Station.

Estimates on application.

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Heating by Hot Water.

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HOT WATER PIPES, from Stock, per yard:—2-inch, 1s. 2d.; 3-inch, 1s. 10d.; and 4-inch, 2s. 3d. BENDS, from Stock, 2-inch, 2s. 6d.; and 3s. each. THROTTLE VALVES, 1os., 14s., and 14s. each. Other Connexions of equally low prices, and all on of first class manufacture. Estimates given, and orders by post punctually attended to the same day.

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HOT-WATER PIPES, at Wholesale Prices, with Elbows, Syphons, Tee Pipes, and every other connection; Wrought and Cast-Iron Boilers, Saddle, Conical, Cylinder, Tubular, and Hollow, to any scale. Ingraved Boilers and Brick Stands to use without brickwork, 60s. each. Valves from 10s. 6d. each. Patent Valve, Improved Furnace Doors, Furnace Bars, Supply Cisterns, and Castings of every description in stock, &c.

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200 CUCUMBER and MELON BOXES and LIGHTS, and from four to four dozen FRAMES for PITS of all SIZES Kept in STOCK. Glazed and Painted complete, ready for immediate use. Packed and sent to all parts of the kingdom. Public and Private Buildings, Warehouses, &c., fitted on the most approved Hydraulic and economical principles. References to the Nobility, Gentry, and Trade in most of the Counties in England.

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Estimates given for efficiently Heating by Hot Water in any part of the kingdom.

GREENHOUSES, 12 feet by 12 wide, £90; 24 feet by 12 wide, £78; 12 feet by 10 wide, £15. Glazed, ready for fixing, a handsome CONSERVATORY, 36 feet by 10, £120. Estimates for any branch in the Length from Wood.

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TO BE SOLD, an ORCHARD HOUSE, nearly new, and in first-rate condition, size 75 ft. by 20 ft., the property of a Gentleman; also about 50 ORCHARD-HOUSE TREES, well grown and in fine condition.

Apply to E. COATES, Mile Ash Nurseries, Derby.

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HAND MACHINE.

Two are the only Lawn Mowers that will work for a year without requiring repair.

Three are the only Lawn Mowers that will Mow properly on a fine Grass Wet.

Three are the only Lawn Mowers that are in use in all the Royal Gardens.

Every Machine warranted, and if not approved of can be returned. Illustrated Price Lists sent free on application.

ANDREW SHANKS & SON, Dens Iron Works, Arbroath, and 37, London Wall Street, London, E.C.

37, London Wall Street is the only place in London where intending purchasers of Lawn Mowers can choose from a stock of from Twenty-four Machines, of all sizes kept there, whether for Horse, Pony, or Hand Power.

GARDEN BORDER EDGING TILES, in great variety of patterns and material, the former soft, being especially suited for KITCHEN GARDENS, as they harbour no slugs and insects, take up little room, and once put down, occasion but little trouble and expense, as do "grown" Edgings, consequently being much cheaper.

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ORNAMENTAL PAVING TILES for Conservatories, Halls, Corridors, Balconies, &c., as cheap and durable as Stone, in blue, red, and buff colours, and capable of forming a variety of design.

Also ENCAUSTIC PAVEMENTS of more enriched designs than the above.

WHITE GLAZED TILES, for Lining Walls of Dairies, Larders, Kitchen, Bakers, Baths, &c. Grooved and other Stable Paving Bricks of great durability, Dutch and Adamantine Clinkers, Wall Copings, Red and Stoneware Drain Pipes, Chimney Pots, &c.

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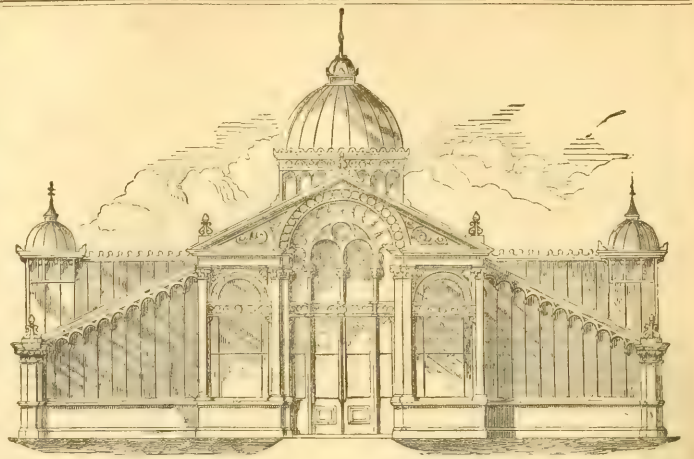

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HOT-WATER PIPES, CONNECTIONS, &c., for every description of HEATING APPARATUS, supplied at the Lowest Prices, with or without fixing, accompanied by a Working Plan for the Fixing of the Apparatus.

Prospectus and Estimates on application.

Several good SECOND-HAND BOILERS, of different descriptions, for SALE.

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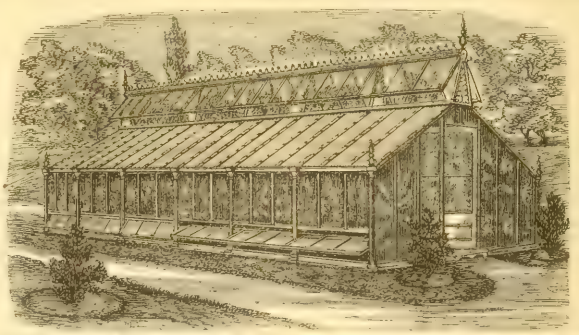
GREAT INTERNATIONAL HORTICULTURAL EXHIBITION & BOTANICAL CONGRESS.



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Showing the Patent System of perfect Ventilation and Perfect Method of Glazing, whereby breakage from expansion and contraction is prevented, and facility given for immediate reparation by any ordinary labourer.

MESSRS. SANDERS, FREWER, AND CO. beg to call special attention to the high value of these great improvements in the VENTILATION, &c., of HORTICULTURAL ERECTIONS, which are also applicable to all WOODEN HOUSES, as well as to CHURCHES, RAILWAY STATIONS, PUBLIC BUILDINGS, MANUFACTORIES, &c.; and have received the highest recommendation from many of the first Horticulturists and practical men of the United Kingdom.

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Full particulars and descriptions may be obtained on application to

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VICTORIA HORTICULTURAL AND ENGINEERING WORKS, BURY ST. EDMUNDS.

JAMES PHILLIPS AND CO. beg to submit their Reduced Prices as follows:—

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Squares 20 by 12, 20 by 13, 20 by 14, 20 by 15.

	16 oz. to the foot.	21 oz.
Fourth quality	14s. 6d.	18s. 6d.
Third ditto	16s. 6d.	21s. 6d.
Seconds	17s. 6d.	25s. 0d.
English	20s. 0d.	26s. 0d.

Stock sizes, 16-oz., in 100 feet boxes, boxes included.

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4ths.	3rds.	2nds.
11 by 9 12 by 9 13 by 9 14 by 9	s. d.	s. d. s. d
12 .. 10 14 .. 10 15 .. 10 }	12 6	14 6 16 0
13 .. 11 14 .. 11		
14 .. 12 15 .. 12 16 .. 11		
15 .. 12 16 .. 12 17 .. 12		
16 .. 13 17 .. 12 21 .. 14		
19 .. 13 20 .. 14 18 .. 13	14 0	16 0 17 6
16 .. 14 17 .. 14 24 .. 15		
19 .. 14 20 .. 15 18 .. 14 }		16 to 17 oz. to the foot.

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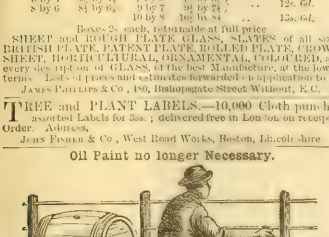
Oil Paint no longer Necessary.



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"I have used your Black Varnish for park palings and consider it to be the most durable article I have ever seen. I think it might be applied with still greater advantage to iron fencing instead of paint, and it is my intention so to employ it in future."

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FOUNTAIN JETS.

Fig. 526. JET D'EAU. 18 holes, 5s. 6d.; 24 do., 8s. 9d.; 36 do., 6s. 6d.

Fig. 527. DOME and CONVOLVULUS. 17s.

Fig. 525 DOME. 8s. 6d.

Fig. 522. CONVOLVULUS, 8s. 6d.

Fig. 521. BARKER'S MILL. 11s.

Fig. 532 WIRE BASKET with BALL. 10 ins., 8s. 6d.; 12 ins., 17s. 6d.; 15 ins., 28s. 0d.

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A Tap is required to be fixed in the Pipe to regulate the supply of Water to Fountain Jets.

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E. T. ARCHER'S "FRIGI DOMO."

E. Patronised by Her Majesty The Queen, the Duke of Northumberland for Syon House, His Grace the Duke of Devonshire for Chiswick Gardens, Professor Lindley for the Horticultural Society, Sir Joseph Paxton for the Crystal Palace, Regent Zoological Society, &c.

PROTECTION from the SCORCHING RAYS of the SUN

"FRIGI DOMO," a Canvas made of Patent Tarred Hair and Wool, a perfect Non-conductor of Heat and Cold, costume, whereon it is applied, a fixed temperature. It is suitable for all Horticultural and Floricultural purposes, for Preserving Fruits and Flowers from the Scorching Rays of the Sun, from Wind, from Attacks of Insects, and from Meridian Frosts. To be had in any required lengths.

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An improved make, 2 yards wide ..	1s. 9d. per yard.
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"FRIGI DOMO" NETTING, 2 yards wide, 1s. 6d. per yard run.

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"It is much cheaper than Mats as a covering."

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Can be had in any quantity of EARN & DERBY, 6 and 7, Crooked Lane, London Bridge, E.C.

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EXCLUSIVELY USED IN THE ROYAL LAUNDRY,

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THE SMOKER'S BONBON unsurpassed and effectually REMOVES the TASTE and SMELL of TOBACCO from the Mouth and Breath, and renders Smoking a recommend sale. It is very pleasant and wholesome. Prepared by a patent process, from the genuine Spanish Liquorice plant, and sold by the Trade, Wholesale and Export Confectioners, Bethnal Green, London, N.E., in 1-per box post free, 14 stamps.—Sold by Chemists, Tobacconists, &c.

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WORCESTERSHIRE SAUCE.—The delicious Relish pronounced by Connoisseurs "THE ONLY GOOD SAUCE," is prepared solely by LEA & PERRINS. The public are respectfully cautioned against worthless imitations, and should see that LEA & PERRINS' Names are on Wrapper, Label, Bottle, and Stopper. Ask for LEA & PERRINS' Sauce.

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DINNEFORD'S FLUID MAGNESIA.—The Medical profession for 30 years have approved of this pure solution of Magnesia as the best remedy for Acidity of the Stomach, Heartburn, Gout, and Indigestion; and as a mild aperient it is especially adapted for ladies and children. Prepared by Dinneford & Co., Chemists, &c., 172, New Bond Street, London, W., and sold throughout the world by all respectable chemists. CAUTION.—See that "DINNEFORD & CO." is engraved in the Government Stamp over the cork.

Destroy your Insect Pests.

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YOU MAY EASILY DESTROY ALL PLANT PESTS,

RED SPIDER	GREEN AND BLACK	ANTS
MEALY BUG	FLY	SCALE
THRIPS	AMERICAN BLIGHT	MILDEW

Without injury to the most delicate Plant or Tree, by using

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COCOA-NUT REFUSE is becoming scarce, the old reserves will soon be gone. Now sold in bags, 1 for 2s., 10 for 16s., 20 for 30s., 50 for 65s., 100 for £6.

Fourpence allowed for each bag returned carriage-paid.

A Railway Truck-load (in bags), 40s.

Postage Stamps or Post-office Order, payable to J. BARSHAM & Co., Kingston-on-Thames, S.W.

Tothill, Plymouth.—To Gardeners and Others.

TO BE LET, by Tender, for a term of 7 or 14 years, from Christmas, 1866, all that MESSUAGE or DWELLING HOUSE, GARDEN, and PREMISES, situate near Tothill, in the Parish of Charles, Plymouth, in the occupation of Mr. Thomas Wood, Gardener and Seedsman, as Tenant, containing by admeasurement 1a. 1r. 9p. or thereabouts. The above has been for many years occupied as a Gardener's and Seedsman's Business, is supplied with well-sunk Pump Water. The Lease will be required to be purchased at a Valuation by Competent Person, to be agreed on between Landlord and Tenant, the Outgoing Tenant, or, if not, and also the Stock of Plants, Greenhouses, and Fencing and Potting-houses on the Premises, being allowed to remove the latter at the expiration of the Lease.

Tenders for taking the above Premises must be left at the Offices of Mr. LAVINGTON, Solicitor, Argus Insurance Office, Courtenay Street, Plymouth (where the terms and conditions on which they are to be let may be seen), on or before October 1 next, and in the meantime the Tenant will show the Premises on application.

The Setter shall not be required to accept the highest Tender.

Argus Insurance Office, Plymouth.—August 18.

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Apply to Mrs. L. DAVIS, Magden, Isleworth, W.

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The only breed of Cattle that have escaped the Rinderpest. The nobility, gentry, and others are respectfully informed that they can be supplied with the above beautiful and profitable breed of Cattle, direct from the Province, in small number, at the shortest notice. The great success and encouragement which have attended the efforts of the importer, in introducing the pure breed of this useful and hardy Cow into the country, has induced him to extend his connection with the exporting establishment in Brittany, and he is now enabled to offer the public a constant supply of the choicest stock that can be obtained, at prices whereby all competition will be defied, together with the full confidence of the Cows Breed, render them of great value to the cottager, as well as the large stockkeeper and dairyman.

YOUNG BULLS always on hand. BRITTANY SHEEP, 25s. each. ALDERNEY and GUERNSEY COWS and HEIFERS supplied to description, as to age, colour, and time of calving.

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Sales by Auction.

SALE THIS DAY AT HALF-PAST 12 O'CLOCK PRECISELY.

Important Sale of Specimen Stove and Greenhouse Plants,

A CHOICE SELECTION OF BEDDING PLANTS, AND TWO CASES OF BULBS FROM HOLLAND

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on SATURDAY, August 18, at half-past 12 o'clock precisely, a Collection of EXOTIC FERNS, including all the most desirable varieties; also a fine Specimen-size Dipladenia Brearleyana, Gloxinias, Ornamental-foliage Begonias, Achimenes, Gesneras, Caladiums, Ornamental-foliage Geraniums, Tuberous-rooted and Fibrous-rooted Begonias, Bedding Pelargoniums, Fuchsias, Verbenas, Petunias, and other Bedding Plants, choice Dutch and other hardy Bulbs, Lilies of the Valley, Crocuses, Hyacinths, Tulips, Cornuses, and other Dutch Bulbs for Autumn planting.

On view the Morning of Sale, and Catalogues had.

Poultry and Pigeons Sale.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, Aug. 23, at half-past 12 o'clock precisely, a Collection of POULTRY, consisting of Dorkings, Brahmas, Cochins, Houdans, &c. Also a few PIGEONS, including Carriers, Almonds, Beards, Jacobins, Nuns, &c.

On view the Morning of Sale, and Catalogues had.

Orchids.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, August 22, ESTABLISHED ORCHIDS, consisting of

Cymbidium eburneum	Lælia Schilleriana
Vanda suavis	Cattleya Regnelli
,, tricolor	Cypripedium concolorum
,, cærulea	,, Dayi
Cattleya labiata	,, Chapedium Lindeni.

Also some fine IMPORTED PLANTS, including

Cypripedium insigne	,, venustum
Saccolabium praemorsum	Vanda cœrulea
Cattleyas, and others	

A few established TREE FERNS, including

Cyathea Smithii	Cyathea dealbata
,, spinulosa	,, excelsa, &c.

And Four Cases of BRAZILIAN ORCHIDS in fine condition

On view the Morning of Sale, and Catalogues had.

Courtlands, East Grinstead, Sussex.

IMPORTANT SALE OF SHORT-HORNED CATTLE.

MR. STRAFFORD has been instructed by R. Skelton, Esq., of Courtlands, Sussex, to announce for SALE by AUCTION, without reserve, on WEDNESDAY, August 22, his entire Herd of fine SHORT-HORNS, numbering 50 head of Bulls, Cows, and Heifers, that have been selected and bred from the renowned herds of the late Mr. A. L. Maynard, of Mottcombe-Moor, Mr. Jonas Webb, of Babraham, and other eminent breeders. In 21 years Twelve Bull Calves have been reared by the "Duke" in the Bath and West of England, Birmingham, Smithfield, and local Shows. Among the animals will be found the well-known prize Cows "Miss Emily," her daughter "Elizabeth Ann," "Miss Young," "Lilac," and the celebrated Bull Calf Chimney (20,690), purchased at the Babraham Sale for 100 guineas, and the winner of the First Prize at the Royal Agricultural Show Meeting, held at Chelmsford. Most of the young stock are by this famous Bull, and their forward Heifers principally in calf to him.

Catalogues with Pedigrees may be had on application to Mr. STRAFFORD, 19, Euston Square, London, N.W.; or of the Bailiff, at Courtlands, East Grinstead, Sussex.

Wadhurst Castle, Sussex.

IMPORTANT SALE OF SHORT-HORNED CATTLE.

MR. STRAFFORD is requested by Edward Watson, Esq., to SELL by AUCTION, without reserve, at Wadhurst, on THURSDAY, the 23rd August, by entire Herd of pure-bred SHORT-HORNED CATTLE, consisting of 40 Bull, Cows, Heifers, and Bulls, which have been carefully bred for several years from herds of long standing. They are chiefly by Don Juan (15,998), a son of the celebrated Second Duke of Northumberland (12,253), and Bulls by Grand Monarch (14,660), and the Duke of York (15,862), a son of Captain Gunter's Seventh Duke of York (17,754). "Thornhale Duke," from Lady Ellen (a magnificent heifer, is now being used, and the Cows and Heifers are all to him.

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Dumbleton, near Evesham.

IMPORTANT SALE OF SHORT-HORNED CATTLE.

MR. STRAFFORD has received instructions to SELL by AUCTION, with no reserve, on WEDNESDAY, August 29, by order of the Executors of the late Rev. Edward Cartwright, Vicar of Dumbleton, the CELEBRATED HERD OF SHORT-HORNED CATTLE, consisting of Bulls, Cows, and Heifers, the property of E. Bedford, Esq., M.P., and Bradfield Hall, the Seat of the late Rev. Edward Cartwright, and long celebrated Herds. During the last 20 years the celebrated Bulls "Duke of Cambridge" (12,742), "Master Butterfly 4th" (11,921), and "Lord Jersey" (20,153) have been used. The Young Stock are chiefly by the latter Bull, who was Son of Captain Gunter's famous "Seventh Duke of York" (17,754). Many of the Cows are good Milkers and regular Breeders, in fine healthy condition. Several of them have lately distinguished themselves at the various Shows in the district.

Catalogues, with Pedigrees, may be had on application to Mr. STRAFFORD, 19, Euston Square, London, N.W.; or of Mr. C. G. CLARKE, at the Cuthbono Farm, Dumbleton, near Evesham.

THE AERIAL CHAIR.

WONDERFUL APPLICATION OF THE PRINCIPLE OF OSCILLATION.

FOR THE GARDEN, CONSERVATORY, AND NURSERY.

Entirely "Self-acting," the operator requiring no assistance whatever, and so easy of motion that a Child can propel itself to any desired altitude without the slightest danger of accident. It has been pronounced a marvel of ingenious mechanism, and cannot fail to become a necessary adjunct to every well-appointed Garden and Nursery, while for Invalids it will be hailed as a means of recreation and hygienic exercise never before offered them. They are very easily fitted up in any ordinary-sized room, and can be attached to the ceiling by means of a few common iron bolts. The only instructions necessary for the use of this invention are, that the person upon being seated simply presses the feet against the footboard, which will at once set the Chair in motion.

For Gardens or Lawns the "AERIAL CHAIR" can be secured to the branch of a tree or to the framework of an ordinary Swing.

Manufactured of Wrought Iron, in three different sizes, to wit:—

Size No. 1, suitable for Children ... ... price £2 2s. | **Size No. 2, suitable for Youths** ... ... **£2 10s.**
No. 3, suitable for Adults ... ... **£3 3s.**

These prices include packing, but not carriage. The suspending rods are about 8 feet in length. Extra rods can be obtained, if required, at 2s. 6d. per foot. The Seat to the "AERIAL CHAIR" is of wood, and moveable. Iron Seats, in imitation of Cane, can be had at 15s. each.

Attached to the head-board of the "AERIAL CHAIR" is a brass label, with the following words:—"AERIAL CHAIR, SECURED BY ROYAL LETTERS PATENT. MANUFACTURED BY PEYTON & PEYTON, METALLIC BEDSTEAD MANUFACTURERS, BIRMINGHAM. CHARLES POMEROY BUTTON, PROPRIETOR, NOS. 142 AND 143, CHEAPSIDE, LONDON."

TRADE MARK—"AERIAL CHAIR."—TERMS CASH.

All Orders must be accompanied with a City Reference or Remittance to

CHARLES POMEROY BUTTON, Nos. 142 & 143, CHEAPSIDE, LONDON, E.C.

Editorial Communications should be addressed to "The Editor," Advertisements and Business Letters to "The Publisher," at the Office, 41, Wellington Street, Covent Garden, London, W.C.
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THE GARDENERS' CHRONICLE
AND
AGRICULTURAL GAZETTE.

A Newspaper of Rural Economy and General News.

No. 34.—1866.] SATURDAY, AUGUST 25. [Price Fivepence. STAMPED EDITION, 6d.

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BOSTON FLORAL and HORTICULTURAL SOCIETY (1866).—The FIRST GREAT AUTUMN SHOW of FLOWERS, FRUITS, and VEGETABLES, will be held in MAJOR HOPKINS' PARK, on THURSDAY, August 30. Extra Prizes of £5 and £3 (subject to the Judges' discretion), will be given for the Best and Second Best Collections of 12 Stove and Foliage Plants.

The Boston Artillery Band will attend.

For Schedules, &c., apply to the Hon. Secs., Mr. W. H. BAILES, Solicitor, Boston; and Mr. JOS. COOKS, West Skirbeck Nursery, Boston.

Tickets of Admission, at 1 o'clock, 2s.; at 3 o'clock 1s., may be obtained of Mr. R. M. DINGWALL, Market Place, Boston.

N.B. It is particularly requested that Intending Exhibitors give the notice required by Rule 4 with regard to Entries, for the Hon. Secretary's convenience.

ROYAL CALEDONIAN HORTICULTURAL SOCIETY (Incorporated by Royal Charter).—A GRAND AUTUMN COMPETITION and PROMENADE SHOW will be HELD in the Assembly Rooms and Music Hall, George Street, Edinburgh, on the 6th and 6th of September next. Prize Lists and Rules can be had post free on application to

Mr. JAMES, 33, Scotland Bridge, Edinburgh.

WORKSOP FLORAL and HORTICULTURAL SOCIETY.—The NINTH ANNUAL EXHIBITION of the above Society will be held on THURSDAY, September 6.

In addition to other Prizes the following will be offered for competition, open to all England:—

Collection of Fruit, 8 dishes, 6 varieties, 1st, £5 5s.; 2d, £3 3s.; 3d, £1 10s.; 4th, £1 1s.

Six Bunches of Grapes, 6 varieties.—1st, £2 2s.; 2d, £1 1s.; 3d, 10s. 6d.

Two Bunches Black and 2 Bunches White Grapes.—1st, 21s.; 2d, 10s.; 3d, 5s.

Six Peaches and 6 Nectarines.—1st, 21s.; 2d, 10s.; 3d, 5s.

Best Pine, any Variety.—1st, 21s.; 2d, 10s.

Twelve Dissimilar Blooms of Dahlias.—1st, 21s.; 2d, 10s. 6d.; 3d, 5s.

Twelve Hollyhocks, Distinct Varieties.—1st, 21s.; 2d, 10s. 6d.; 3d, 5s.

Schedules of Prizes and other particulars may be had on application to

GEORGE BAXTER, Hon. Secretary.

BRIGHTON and SUSSEX FLORICULTURAL and HORTICULTURAL SOCIETY.

The THIRTEENTH ANNUAL FLORAL EXHIBITION will be held, by permission of the Town Council, on the Eastern Lawn, and in the entire suite of splendid decorated rooms of the Royal Pavilion, on WEDNESDAY and THURSDAY, 12th and 13th September, and the AUTUMN SHOW, 12th and 13th September, on the same grand scale as in former years.

Schedules of Prizes can be had on application to the Secretary, 96, St. James's Street, or R. PARSONS, General Superintendent of the Exhibitions, Queen's Graperies, Park Street, Brighton.

August 25. EDWARD CARPENTER, Secretary.

New Verbenas of 1866.

WM. KNIGHT has selected from the various raisers 20 distinct varieties of VERBENAS, which he now offers in good Plants for 15s., package included. Terms cash.

Floral Nursery, Hailsham, Sussex.

Botanic Nurseries, Biggleswade, Beds.

DOUBLE SCARLET GERANIUMS of Sorts, 2s. 6d. each, 24s. per doz. VARIEGATED CHRYSANTHEMUM, a fine plant for winter work, 9s. per doz. Cash from unknown correspondents. EDWARD SHENTON.

REBECCA, the finest BEDDING GERANIUM ever raised. Plants now ready, price 5s. each.

See WM. PAUL'S NEW LIST.

PAUL'S Nurseries, Waltham Cross, London, N.

Botanic Nurseries, Biggleswade, Beds.

ALL the NEW ZONALE GERANIUMS, 1865, 1866. Four dozen, 20s.—EDWARD SHENTON.

WANTED, CUTTINGS of MRS. POLLOCK, BIJOU, STELLA, and one or two others of the best Bedding PELARGONIUMS. State price per 100 to

C. M., Post Office, Esher, Surrey.

CHOICE VARIEGATED PELARGONIUMS.

Mrs. Benyon	Italia Unita	Sunset
Mrs. Pollock	Raunhow	Golden Tom Thumb
Clara	Picturata	Princess Alexandra
Yellow Belt	Fontainebleau	Burning Bush

The above, in strong plants, for 21s., package included. Terms, cash. Remittances required from unknown correspondents. Address,

ALFRED FRYER, Nurseries, Chatteris, Cambridgeshire.

Railway Planting.

FIVE MILLION Transplanted QUICKS, of superior growth. Samples and prices on application to

JOHN HEMSLEY, High Fields, Melbourne, near Derby.

FINE SPECIMEN and HALF-SPECIMEN HARDWOODED and ORNAMENTAL FOLIAGE STOVE and GREENHOUSE PLANTS.—Exhibitors and gentlemen furnishing Conservatories are invited to inspect our Collection of the above, which is large and in very fine healthy condition. Prices moderate.

T. JACKSON & SON, Nursery, Kingston, Surrey.

Hyacinths, &c.

WM. PAUL'S SELECT LIST of HYACINTHS, EARLY TULIPS, and other SPRING-FLOWERING BULBS and PLANTS, is now ready and will be forwarded post free on application.

PAUL'S Nurseries and Seed Warehouse, Waltham Cross, London, N.

Hyacinths and other Flower Roots.

JOHN FRASER begs to intimate that his CATALOGUE of HYACINTHS, NARCISSI, TULIPS, &c., is now published, and may be had on application. A DESCRIPTIVE LIST of the best kinds of STRAWBERRIES is also ready for distribution.

The Nurseries, Lea Bridge Road, London, N.E.

Dutch Flower Roots.

HUGH LOW AND CO.'S CATALOGUE of the above is now ready for distribution, and will be forwarded post paid on application. Clapton Nursery, N.E.

Dutch Flower Roots.

B. S. WILLIAMS' NEW and DESCRIPTIVE CATALOGUE of the above is now Ready, and can be had post free on application.

Victoria and Paradise Nurseries, Holloway, London, N.

Hyacinths, Tulips, Crocuses, &c.

BUTLER, MCCULLOCH, AND CO. have the pleasure to announce that their CATALOGUE of the above and other SPRING FLOWERING and CAPE BULBS will be ready the first week in September. It will be forwarded to all parts of the world.

Covent Garden Market (Strand side), London, W.C.

Just Published,

"BULBS and their CULTURE." See Original Article in AUTUMN SUPPLEMENT to CARTER'S GARDENERS' and FARMERS' VADE MECUM.

JAMES CARTER & CO., 237, 238, & 239, High Holborn, W.C.

Post free, 12 stamps; gratis to Customers

Hyacinths, and other Dutch Bulbs.

E. BARNAART, Vogelensang, Haarlem, begs to announce that his CATALOGUE of FLOWER ROOTS for 1866 has just appeared, and can be had post free on application.

N.B. Postage to Holland, 3d.

DUTCH BULBS, unusually fine; a choice Collection of BRITISH and EXOTIC FERNS, Wardian Cases, Fern Shades, Gold Fish Aquariums, &c.

R. GREEN, 154, Kingsland Road, N.E.; and the Bedford Conservatories, Covent Garden, W.C.

J. SCOTT'S PRICED CATALOGUE of HYACINTHS and other FLOWER ROOTS is now ready.

Purchasers wishing for Bulbs of very best quality at lowest prices should send for a Copy

DAVIES' VERY HARDY GIANT GREEN COS LETTUCE 1s. per packet. The best and hardiest Winter sort grown.

COLLINSIA VERNA, 6d. and 1s. per packet.

J. SCOTT, Merriott Nurseries, and Yeovil, Somerset.

New Catalogue of Plants, Dutch Bulbs, &c.

ROBERT PARKER begs to announce that his NEW CATALOGUE, containing Select Descriptive and Priced Lists of New, Rare, and beautiful Greenhouse, Hardy and Stove Plants, Hardy Ferns, Fruit Trees, Grape Vines, Roses, Rhododendrons, Sweet Violets, &c., Amaryllis, Crocuses, Cyclamens, Gladioli, Hyacinths, Liliums, Narcissus, Tulips, and other Bulbs, is now published and will be forwarded to applicants.

Exotic Nursery, Tooting, Surrey, S.

See Barr & Sugden's Bulb Advertisement, page 799.

BARR'S PRIZE CALCEOLARIA, 2s. 6d. per packet. The above beautiful strain of Calceolaria was saved by Mr. James, of Isleworth, from the plants which were awarded the 1st prize at the International Horticultural and Botanical Congress.

SUTTON'S AUTUMN CATALOGUE, now in the Press, will be shortly published, and forwarded gratis and post free on application

Royal Berkshire Seed Establishment, Reading.

New General Plant Catalogue.

B. S. WILLIAMS' NEW PLANT CATALOGUE, containing many really good Novelties, and carefully selected LISTS of STOVE, GREENHOUSE, and HARDY PLANTS, is now ready and will be forwarded post free to all applicants.

Victoria and Paradise Nurseries, Holloway, London, N.

WM. CUTBUSH and SON beg to say that their DESCRIPTIVE CATALOGUE of CHOICE HYACINTHS, TULIPS, CROCUSES, &c., is now ready, and can be had post free on application.

Highgate Nurseries, London, N.

Notice.

60-PAGE CATALOGUE of NEW PLANTS of 1866 now ready, free for one stamp

WM. DILLISTONE, Munro Nursery, Sible Hedingham, Essex.

Genuine Garden and Agricultural Seeds.

JAMES CARTER AND CO., SEED FARMERS, MERCHANTS, AND NURSERYMEN, 237, 238, & 239, High Holborn, W.C.

J. IVERY AND SON having a few NOVELTIES now ready to send out, will be pleased to forward their PRICED DESCRIPTIVE CATALOGUES of AZALEA INDICA, and No. 10 HARDY BRITISH FERNS, which contain full particulars.

Dorking Nursery.

British Fern Catalogue.

ROBERT SIM can now send, post free for six postage stamps, Part I. (British Ferns and their varieties, 36 pages, including prices of Hardy Exotic Ferns) of his NEW and PRICED DESCRIPTIVE CATALOGUE of BRITISH and EXOTIC FERNS No. 7.

*** Part II. (Exotic Ferns) will be issued as early as possible.

Foot's Cray Nursery, S.E.

Just Published,

"SPRING FLOWERS and SPRING GARDENING." See Original Article in AUTUMN SUPPLEMENT to CARTER'S GARDENERS' and FARMERS' VADE MECUM.

JAMES CARTER & CO., 237, 238, & 239, High Holborn, W.C.

Post free, 12 stamps; gratis to Customers.

Orchis maculata superba.

OSBORN AND SONS are now taking orders for this beautiful hardy TERRESTRIAL ORCHID, for which a First-class Certificate was awarded on the 19th of June by the Floral Committee of the Royal Horticultural Society. It is of vigorous habit, 1½ to 2 feet high, has leaves transversely marked with very dark stripes, and a dense spike of spotted rose-coloured flowers 6 inches long. Price 5s. each, to be delivered in autumn.

Fulham Nursery, London, S.W.

Roses.

PAUL and SON'S ROSES are NOW in BLOOM at the "OLD Cheshunt Nurseries.

Frequent Trains from Bishopsgate to Cheshunt.

The HOLLYHOCKS are also in BLOOM at

PAUL & SONS, Old Cheshunt Nurseries, N.

Lea Bridge Road Nurseries, London, N.E.

JOHN FRASER respectfully invites an inspection of his Collection of ROSES, which he begs to announce are NOW in FLOWER. The Collection contains many new and fine varieties. The Nurseries are about 5 miles from London, and are easily reached by Train on the Great Eastern Railway, to Lea Bridge Station

Roses in Bloom.

WM. PAUL'S ROSES are NOW in FULL BLOOM. Inspection respectfully invited. Trains almost hourly from Shoreditch to WALTHAM Station.

PAUL'S Nurseries, Waltham Cross, N.

New Tea Rose.

AMBROISE VERSCHAFFELT, NURSERYMAN, Ghent, Belgium, begs now to offer his new fine TEA ROSE, ISABELLE SPRUNT, figured in the July Number of the "Illustration Horticole." Fine strong plants, 7s. each.

N.B. A Coloured Drawing may be obtained on applications as above

Rose Nurseries, Tunbridge Wells.

EDWIN HOLLAMBY respectfully begs to announce that his Stock of ROSES are as usual beautiful healthy good-rooted plants. This magnificent Collection contains nearly every variety worthy of cultivation. Early orders are solicited.

Roses in Bloom.

JAMES MITCHELL has the honour of informing his kind patrons that his magnificent COLLECTION is NOW in FINE BLOOM. Pitt Down Nurseries, Maresfield, Sussex.

The London, Brighton, and South-coast Railway. Two and a-half miles from the Uckfield Station.

JAS. BACKHOUSE AND SON regret to say that they will be unable, from unexpected causes, to send out Plants of LOBELLA CORONOPIFOLIA this season. Orders received will be executed as soon as possible.

York Nurseries, August 18.

Botanic Nurseries, Biggleswade, Beds.

PANSIES, all the finest Show varieties, 20s. per 100.

EDWARD SHENTON.

PAUL AND SON'S HOLLYHOCK SEED, in 6s. packets of 12 varieties, should be sown at once.

The Old Cheshunt Nurseries, N.

Grape Vines.

B. S. WILLIAMS begs to announce that he has a splendid stock of Strong Planting and Fruiting CANES of all the best varieties PRICED LIST may be had on application.

Victoria and Paradise Nurseries, Holloway, London, N

CASTLE KENNEDY FIG.—Plants of the above may now be had at 10s. 6d. and 21s. each; the usual discount to the Trade. PETER LAWSON & SON, Edinburgh and London.

Strawberries.

CHARLES TURNER can supply all the leading kinds, in good Plants.

DESCRIPTIVE CATALOGUE may be had on application.

The Royal Nurseries, Slough.

To Nurserymen.

WANTED, 10,000 stout SPANISH CHESTNUT PLANTS, 6 feet high, to be delivered in London.

Apply to Mr. ROBERT AUSTIN, Dunkley, Kent.

A Quarter of a Million of Fruit Trees.

THOMAS WARNER begs to inform intending Planters and the Trade, that his Nurseries, which occupy upwards of 70 acres, contain the above, in addition to a most extensive stock of Evergreens, Ornamental Trees, &c. All in a high state of cultivation. An inspection is respectfully invited.

CATALOGUES, Wholesale and Retail, ready in October.

The Nurseries, Leicester Abbey, ½ mile from the Midland Railway Station.

Fancy Tulips.

FOR SALE, a splendid Collection of FANCY TULIPS, consisting of above 800 Bulbs, in 220 varieties, all correctly named. Price £20. For particulars apply to

A. VAN GEERT, Nurseryman, Ghent, Belgium

VIOLETS, now ready and in first-rate condition for planting out for the coming season.—A large stock of all kinds of Violet Plants, including the GIANT, NEAPOLITAN, CRIMEA, DOUBLE BLUE, &c., &c.

LIST of PRICES on receipt of stamp for postage.

JOHN STEDMAN, Violet Grower, Thornton Heath, Surrey, N.W.

JAMES FAIRHEAD AND SON, SEED GROWERS and MERCHANTS, 7, Borough Market, London, S.E.

New and Genuine AGRICULTURAL, GARDEN, and FLOWER SEEDS. Special prices and collections on application.

RAYNBIRD, CALDECOTT, BAWTREE, DOWLING, AND COMPANY, Limited,

CORN, SEED, MANURE, and OILCAKE MERCHANTS,

Address, 80, Seed Market, Mark Lane, E.C.; or Basingstoke.

Samples and Prices Post free on application. Prize Medals, 1851 for Wheat; 1862, for "Excellent Seed Corn and Seeds.

PETER DRUMMOND AND CO. (late J. SCOTT), Preston Road Nursery, Yeovil, Somerset, have still on hand a surplus stock of BEDDING PLANTS, including DAHLIAS in great variety; GERANIUMS, FUCHSIAS, LANTANAS, VERBENAS, &c., at moderate prices; also TURNIP and other Seeds of best quality and variety for present sowing.

Please address as above

SUTTON'S RENOVATING GRASSES SHOULD NOW BE SOWN.

8 to 12lb. required per acre.

Price 10d. per lb., or cheaper by the cwt.

SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

Grass Seeds for Autumn Sowing.

SUTTON'S PERMANENT GRASS SEEDS FOR ALL SOILS.

Prices (according to quantity required and soils for which they are intended), may be had on application

SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

SUTTON'S IMPROVED ITALIAN RYE-GRASS, the BEST and MOST PRODUCTIVE in CULTIVATION.

SUTTON & SONS can supply New Seed of the above at 6s. per bushel, or cheaper in large quantities

August and September are the best months for Sowing.

SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

HOT WATER PIPES and FITTINGS of the best description supplied by
Bury & Pollard, 17, New Park Street, Southwark, London, S.E.

BURY AND POLLARD'S CONICAL BOILERS for HEATING by HOT WATER fixed at Seats of Duke of Newcastle, Lord Ingest, &c.; at Viscount Sydney's replaced, after being 20 years in constant use. Apply at
17, New Park Street, Southwark, London, S.E.

HOT-WATER APPARATUS, of every description, fixed complete in any part of the country, or the materials, viz., Boilers, Pipes, &c., delivered to any Station.
Estimates on application.
J. Jones & Sons, 6, Barkside, Southwark, London, S.E.

Heating by Hot Water.

W. J. HOLLANDS, Iron Merchant,
21, Bankside, London, S.E.
HOT WATER PIPES, 4-in in Stock, per yard:—2-inch, 1s. 2d.; 3-inch, 1s. 10d.; 4-inch, 2s. 4d. BENDS, from Stock, 1s.6d., 2s. 6d., and 3s. each. THROTTLE VALVES, 10s., 13s., and 14s. each. Other Connexions at equally low prices, and all kinds of first-class manufacture. Estimates given, and orders by post punctually attended to the same day.

Heating by Hot Water.

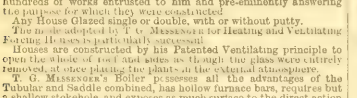
HOT-WATER PIPES, at Wholesale Prices, with Elbows, Syphons, Tee Pipes, and every other connexion; Wrought and Cast-Iron Boilers, Saddle, Conical, Cylinder, Tubular, and Lobptic, from 24s. each. Improved Boilers and Iron Stands to use with or brickwork, 60s. each. Valves from 10s. 6d. each. Patent Valves, Improved Furnace Doors, Furnace Bars, Supply Cisterns, and Castings of every description in stock, at
Mr. LYNCH WHITE'S Iron Wharf, Upper Ground Street, Blackfriars Bridge, London, S. Price List on application.

WM. SMITH, Hothouse Builder, Turnham Green, Chiswick, London, begs to inform the Public that he will be glad to make GREENHOUSES or HOTHOUSES, of good Yellow Deal, Glazed with 21-oz Glass, Painted three times, Fitted together all ready for fixing, of any size, at 1s. 6d. per foot super. Also that he has ready for use 50 GREENHOUSE LIGHTS, 9-ft. 9-in. long by 4-ft. 9-in. wide, 21-oz. glass, price 27s. Also several lots of smaller size; and a large stock of 1, 2, 3, and 4 Light GARDEN FRAMES, made just alike, kept in stock.
Estimates given for efficiently Heating by Hot Water in any part of the kingdom.

JAMES WATTS AND CO., Hothouse Builders and Hot-Water Apparatus Manufacturers, 363, Old Kent Road, London, S.E.

200 CUCUMBER, MELON, &c. SCALLON SASHES and LIGHTS, all sizes, Glazed and Painted complete, ready for immediate use, packed and sent to all parts of the Kingdom.
Strong ZINC HAND GLASSES, all sizes.
References to the Nobility, Gentry, and Trade in most of the Counties in England.

Midland Steam Power Horticultural and Hot Water Works, Loughborough.



T. G. MESSENGER, Midland Steam Power Horticultural Works, Loughborough, Hot-Water Apparatus and Valve Manufactory.
Honourable Mention awarded at the International Exhibition, 1862, and at the Dublin Exhibition, 1865; also a First-class Certificate to the Royal Horticultural Society.
T. G. Messenger, Patentee of many important improvements in Buildings and Implements connected with Horticulture, and which meet with unqualified approbation, is prepared to give reference to hundreds of works entrusted to him and pre-eminently answering the purpose for which they were constructed.
Any House Glazed single or double, with or without putting.
The mode adopted by T. G. Messenger for Heating and Ventilating Forcing Houses is particularly successful.
Houses are constructed by his Patented Ventilating principle to open the whole of roof and sides as though the glass were entirely removed, at once placing the plants in the external atmosphere.
T. G. Messenger's Boiler possesses all the advantages of the Tubular and Saddle combined, has hollow furnace bars, requires but a shallow stokehole, and exposes as much surface to the direct action of the fire as can possibly be obtained, the whole of which can be easily cleaned; and it is an important fact that out of upwards of 500 now at work made upon the improved principle not one has cracked.
T. G. Messenger's Valve (single or double) is effective, simple, easy to work, and as durable as the pipe to which it is attached.
Designs and Estimates supplied for all kinds of Horticultural Works, and guaranteed to answer the purpose for which they may be intended.

GREENHOUSES, 42 feet by 13 wide, £60; 21 feet by 13 wide, £38; 12½ feet by 10 wide, £15, Glazed, ready for fixing; a handsome CONSERVATORY, 30 feet by 19, £120. Estimates for any branch in the line in Iron or Wood.
H. Freeman's Works, Triangle, Hackney, N.E. Established 20 years.

FOUNTAIN JETS.

Fig. 526.
JET D'EAU
18s. 6d.; 24s.; 30s. 6d.; 36s.; 42s.; 48s. 6d.; 54s.; 60s.; 66s. 6d.

Fig. 524.
DOME and CONVOLVULUS.
47s.

Fig. 525.
DOME.
36s. 6d.

Fig. 522.
CONVOLVULUS,
8s. 6d.

Fig. 521.
BARKER'S MILL.
11s.

Fig. 523
WIRE BASKET with BALL
10 jets, 16s. 6d.; 12 jets, 17s. 6d.; 15 jets, 18s. 6d.

Connecting Screws to all the above Jets, 1s. 6d. extra.
Branch Pipe for raising up Jets 1 foot high, 6s. 6d.
A Tap is required to be fixed in the Pipe to regulate the supply of Water to Fountain Jets.
J. Tyler & Sons, Manufacturers, Warwick Lane, Newgate Street, London, E.C.

PEAT EARTH.—The Undersigned has for Sale Peat Earth in any quantity, at 2s. 6d. per Cart-load.
H. C. Jeffreys, Culmhead House, Blagdon Hill, Taunton.

COCOA-NUT REFUSE is becoming scarce, the old reserves will soon be gone. Now sold in bags, 1 for 2s., 10 for 16s., 20 for 30s., 50 for 68s., 100 for £6.
Fourpence allowed for each bag returned carriage-paid.
A Railway Truck-load (not in bags), 80s.
Postage Stamps or Post-office Order, payable to J. Barnham & Co., Kingston-on-Thames, S.W.

Red Spider
Magnified.

GISHURST COMPOUND, whether used against Insects and Mildew, on Growing Plants, or as Winter Dressing on Trees at rest, should be dissolved in lumps for use. Pure gets rid of smell, and if the Solution be decanted, prevents any staining of foliage. A strength of from 1 to 2 oz. to the gallon of water is recommended for growing Plants; one from 4 to 16 oz. for Trees at rest.
Sold Retail by Nurserymen and Seedsmen, in boxes, 1s., 3s., and 10s. 6d. each.
Wholesale by
PRICE'S PATENT CANDLE COMPANY (Limited).

Destroy your Insect Pests.
PRESERVE YOUR PLANTS and TREES.
You may Easily Destroy all Plant Pests,

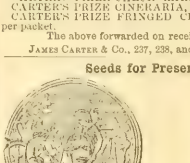
Red Spider	Green and Black	Ants
Mealy Bug	Fly	Scale
Thrip	American Blight	Mildew,

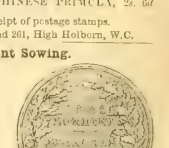
Without injury to the most delicate Plant or Tree, by using
FOWLER'S GARDENERS' INSECTICIDE,
pronounced by all who have used it to be far superior to any other remedy. One trial will prove its efficacy. Testimonials forwarded on application. Price 1s. 6d., 3s., 5s. 6d., and 10s. per Tin.
Gee & Thomas Fowler, North Street, Brighton; and of Hooper & Co., Covent Garden Market, W.C.

Seeds for Present Sowing.

JAMES CARTER AND CO. are now offering New Seed of the undermentioned, the quality of which cannot be surpassed, the seed being saved from plants which have taken Prizes at all the principal London Flower Shows.
CARTER'S PRIZE CALCEOLARIA, 2s. 6d. per packet.
CARTER'S PRIZE CINERARIA, 2s. 6d. per packet.
CARTER'S PRIZE FRINGED CHINESE PRIMULA, 2s. 6d. per packet.
The above forwarded on receipt of postage stamps.
James Carter & Co., 237, 238, and 261, High Holborn, W.C.

Seeds for Present Sowing.



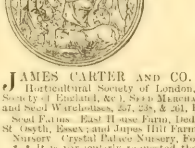


LOOK to YOUR GRASS LANDS. The months of August and September are the best in which to renovate Old, or Lay Down New Pastures.
James Carter & Co offer their celebrated
RENOVATING MIXTURE at 16s. per lb. (sow 10 to 12 lb. per acre)
Also FINEST MIXED PERMANENT GRASSES and CLOVERS (free from weeds, mixed to suit all soils, at 40s. per acre.
ITALIAN RYE-GRASS (clean) TRIFOLIUM INCARNATUM
STUBBLE TURNIP (new seed).
All of best quality. Price on application.
James Carter & Co., 237, 238, & 261, High Holborn, W.C.

Seedsman to Her Majesty's Chief Commissioners of Public Works and other Government Departments, the Royal Gardens, Kew, &c., &c., &c.

Seedsman to H.I.M. the Emperor of the French, the Crystal Palace Company, the Agri Horticultural Society of India, &c., &c., &c.

The Only Prize Medal for Seeds and Flowers,
INTERNATIONAL EXHIBITION 1862 (*Vide* Jurors' Report).



JAMES CARTER AND CO. (Fellows of the Royal Horticultural Society of London, and the Royal Agricultural Society of England, &c.), Seed Merchants and Seed Growers, Offices and Seed Warehouses, 237, 238, & 261, High Holborn, London, W.C.
Seed Farms: East House Farm, Dedham, Essex; The Seed Farm, St. Osyth, Essex; and Joppa Hill Farm, Dedham, Essex.
Nursery: Crystal Palace Nursery, Forest Hill, Sydenham, S.
*** It is particularly requested that all letters be addressed to the Holborn Establishment to avoid delay.

Just published,
The AUTUMN SUPPLEMENT of CARTER'S GARDENER'S and FARMER'S YADE MECUM, containing complete lists of New and Choice Dutch and Cape Bulbs, Stove, Greenhouse, and Hardy Plants, Ornamental Trees and Shrubs, Fruit Trees and Roses, all for Autumn Planting, to which is added Original and Instructive Articles on Bulbs and their Culture, and Spring Flowers and Spring Gardening. Price 1s., post free; gratis to Customers.

BARR & SUGDEN.

Now Ready, and can be had Free and Post Paid,

THE AUTUMNAL GUIDE
TO
WINTER AND SPRING GARDENING.

IT CONTAINS LISTS OF THE BEST BULBS FOR EXHIBITION PURPOSES, AND FOR THE DECORATION OF THE CONSERVATORY, SITTING ROOM, AND FLOWER GARDEN.

For the benefit of Amateurs the "GUIDE" contains directions for furnishing a series of Beds and Borders with Early-flowering Bulbs and Plants; some of which may be had in full bloom from the opening of Spring till June, the general effect and beauty of which will bear favourable comparison with the Plants that flower during the Summer and Autumn months.

BARR AND SUGDEN,
12, KING STREET, COVENT GARDEN, LONDON, W.C.

Gem Plant Case.

Gem Plant Case.

New Seeds for Autumn Sowing.

PETER LAWSON AND SON,
THE QUEEN'S SEEDSMEN,
London and Edinburgh,

Can supply NEW SEEDS of all kinds for AUTUMN SOWING, which have been selected and saved with the greatest care.

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THE QUEEN'S SEEDSMEN,
28, King Street, Cheapside, E.C.

NEW SEEDS FOR AUTUMN SOWING.
NATURAL GRASS SEEDS of all sorts, for Laying Down Permanent Pasture.
ITALIAN RYE-GRASS.
WINTER TARES, RYE, OATS, and BARLEY.
TRIFOLIUM INCARNATUM — EARLY and LATE
GREEN ROUND, GLOBE, and SIX WEEKS' TURNIP.
LARGE DRUMHEAD SAVOY.
LARGE DRUMHEAD CABBAGE.
ROBINSON'S CHAMPION CABBAGE.

Also the NEW FORAGE PLANTS, KIDNEY VETCH and SCHRADER'S BROME GRASS.

50,000 Azalea indica, and 100,000 Rhododendrons,
GRAFTED PLANTS.

JOSEPH BAUMANN, NURSERYMAN, Ghent, Belgium, begs to offer the following, free to the Custom House, London:—

100 AZALEA INDICA, with flower buds, £4 to £6.
100 " stronger plants, £6 to £8.
(They are all dwarf bushy heads and the best kinds.)
100 RHODODENDRONS, 1 year grafted, £4.
100 " 2to 3 years, grafted, £8.
100 " stronger plants, £10.
100 " with flower buds, £8.
100 " with flower buds, larger plants, £12 to £18.
(They are all the best English and Belgian hardy sorts.)

All my finest Hardy Ghent Azaleas are already ordered for England.
CATALOGUE on application.

The Forwardest Turnip known is

SUTTON'S SHORT-TOP
SIX WEEKS.

Price 1s. per lb.

Cheaper by the Bushel.

This excellent Turnip if sown now will produce a heavy crop, to come off in time for Wheat sowing.

SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

For Present Sowing.

TRIFOLIUM INCARNATUM, Italian Crimson Clover
NEW LATE RED TRIFOLIUM
SUTTON'S IMPROVED ITALIAN RYE-GRASS.

SUTTON AND SONS are now harvesting, for delivery in a few days, very excellent Seed of the above. Prices are very moderate, and may be had post free on application.

The quantity of Trifolium (alone) usually sown per acre is 25 lb., or with Italian Rye-grass 8 lb. per acre is sufficient.

Also MUSTARD and RAPE, new seed.

All Goods carriage free, except very small parcels

SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

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EDWARD CARPENTER'S MIXTURES of PERMANENT GRASS and CLOVER SEEDS — Best quality, 36s. per acre (2 bushels light seeds, and 12 lb. Clovers and small seeds per acre).—See testimonials in Catalogue.

EDWARD CARPENTER'S RENOVATING MIXTURES for Improving Old Pastures.

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B. S. WILLIAMS' ANNUAL LIST of DUTCH and other ROOTS, &c., will be forwarded to all persons Customers in a few days. Can be had post free on application.
Victoria and Paradise Nurseries, Holloway, N.

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PRIMULA (WILLIAMS'S superb Strain).—The most noted strain of Primula in existence; some are supplied to nearly all the largest Gardens in England. In united packets, at 10s. 6d. and 21s. 0d. each. None genuine without B. S. WILLIAMS'S name in Labbitss on the packet.

CALCEOLARIA (JAMES'S Strain) 5s. and 10s. 6d. per packet.

CINERARIA (WATSON'S extra choice Strain).—This well-known Covent Garden strain to be had genuine only in sealed packets bearing B. S. WILLIAMS'S name and address. Price 6s. and 3s. 6d. per packet.

Paul's Nurseries, Waltham Cross, London, N.

SEEDS FOR PRESENT SOWING.

WM. PAUL can confidently recommend the following first-class Seeds:—PRIMULA, CINERARIA, CALCEOLARIA, and HOLLYHOCK, from finest strains, 1s. 6d. to 2s. 6d. per packet; VIOLA CORNUTA; POLYANTHUS, splendid mixed, 1s. per packet.

WM. PAUL'S IMPROVED TELEGRAPH CUCUMBER, WALTHAM GREEN CURLED ENDIVE, BROCKET HALL LETTUCE, 1s. per packet. All other Seeds of the finest quality at moderate prices. CATALOGUE on application.

Amaryllis.

JAMES GARAWAY AND CO., Durdham Down Nurseries, Bristol, offer, from their unequalled stock of the above-named favourite flower, strong Bulbs of unnamed Seedlings, and others that have bloomed with them during the last season, at 5s., 7s. 6d., and 10s. 6d. each, or 50s., 80s., and 105s. per dozen.

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JAMES GARAWAY & CO., Durdham Down Nurseries, Bristol.

100,000 Camellias.

JOSEPH BAUMANN, NURSERYMAN, Ghent, Belgium,

100 CAMELLIAS, with flower buds, best sorts, £5
100 " " " £6.
100 " " " stronger, £8.

The following free to the Custom House, London:—
100 CAMELLIAS, without flower buds, 1 year's grafted, £4.
100 " 2 to 3 years grafted, £5.
100 " stronger plants, £6.
100 CAMELLIA STOCKS, £1 10s.
100 " stronger, £1 15s.

THE GOLDEN VARIEGATED WELLINGTONIA.—The Parent Tree, though stripped of some thousands of its shoots last winter, is now 12 feet high, with a most beautiful base. It has made a splendid pure Golden Leader, and every part of the Tree is finely marked with the same, presenting a most beautiful appearance; and Tourists interested in Conifers, and coming to this neighbourhood, will find it well deserving on a visit.

RICHARD HERSLAND, The Lough Nurseries, Cork.—Aug. 21.

NEW HARDY RHODODENDRON, MICHAEL WATERER.—This Rhododendron has hitherto been exhibited under the name of ANNIHILATOR, but it will be sent out under the above name. It is undoubtedly the most brilliant-coloured late hardy free-blooming Rhododendron yet offered.

Orders are now being taken for Plants to be sent out in the Autumn at 21s. 0d. each. The usual discount to the Trade.

JOHN WATERER, American Nursery, Bagshot, Surrey.

NEW STRAWBERRY, DR. HOGG (BRADLEY).—Resembling British Queen, but very large, and a better grower than the Queen; one of the sweetest Strawberries in cultivation, and, like Sir J. Paxton and Dr. Hogg, by the same raiser, will become a favourite, and be generally grown. It received a First-class Certificate from the Royal Botanic Society in 1865, and the same distinction by the Fruit Committee of the Royal Horticultural Society this season; was exhibited in C. Turner's successful collection of four varieties of Strawberries, and also in his Collection of Fruit at the July Exhibition of the Royal Botanic Society. Price 21s. per 100.

CHARLES TURNER, The Royal Nurseries, Slough.

CUTHILL'S STRAWBERRY PLANTS, strong and fine for bearing, will be sent out on August 20, &c. The sorts lifted on days—from June 2 Dr. Lindley often said that he never could depend on a crop until he had mine. BLACK PRINCE, PRINCESS ROYAL, RICHARD II., HIGHLAND MARY, NEWTON SEEDLING, and LATE PRINCE of WALES, per 100, each sort, 5s.; but if selected, 7s. 6d. Superior MUSHROOM SPAWN, 5s. 6d. per bushel; PRINCE ALBERT WINTER CUCUMBER, 1s. Pamphlets on Gardening, &c.

Post Office Orders payable on Camberwell Green.

JAMES CUTHILL, Denmark Hill, Camberwell, London, S.

WILLIAM BULL, F.L.S.,

BEGS TO INVITE

AN INSPECTION of his **WINTER GARDEN,**

TO VIEW ONE OF THE MOST REMARKABLE SIGHTS EVER WITNESSED IN GRAPE-GROWING.

The VINES, which are festooned over the entire building, covering an area of upwards of 20,000 superficial feet, spanning 60, with the height of 26, are principally grown for the purpose of partially shading Specimen Plants from the direct rays of the sun.

These VINES are now loaded with Thousands and Thousands of Bunches, hanging almost in perfect rotation in every part of the house, which, with the magnificent Specimens beneath, present a *coup d'œil*, and a combination of use and ornament, which Mr. W. B. ventures to think is unsurpassed in this country, or indeed in Europe.

ESTABLISHMENT for NEW and RARE PLANTS, KING'S ROAD, CHELSEA, S.W.

DUTCH FLOWER ROOTS.

JAMES VEITCH & SONS,

ROYAL EXOTIC NURSERY, CHELSEA, S.W.,

BEG TO ANNOUNCE THAT THEY HAVE RECEIVED THEIR

ANNUAL SUPPLY OF BULBOUS ROOTS FROM HOLLAND,

AND ARE PLEASED TO SAY THAT THEY ARE IN EXCELLENT CONDITION.

CATALOGUES are now ready, and will be forwarded post free on application.

J. V. AND SONS desire to impress upon those who patronise them the great advantage of giving them their orders early, as the successful Cultivation of Bulbs depends in a great measure upon their being planted early in the season.

JEAN VERSCHAFFELT, GHENT, BELGIUM,

BEGS TO

OFFER TO THE TRADE THE UNDERMENTIONED PLANTS

AT THE FOLLOWING LOW PRICES, VIZ.:—

CAMELLIAS.—With flower buds, very fine stuff, choice named varieties. Per 100, £6.
" Stronger. Per 100, £8, £10, £15, and upwards.
" Specimen and half-specimen plants. Prices according to size and variety.
" Stocks for immediate use. Per 100, 28s.
AZALEA INDICA.—Nice stuff, choice named sorts, for winter blooming. Per 100, £4, £6, £9, £10, and upwards.
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CITRUS SINENSIS (OTAHEITE ORANGES).—Covered with young fruit, £2 per doz., £14s.
JASMINUM GRANDIFLORUM.—Very fine strong plants, all grafted. Per doz., £1.
ARUNDO DONAX VARIEGATA.—Fine plants, grown in pots, strong. Per doz., £1 4s.
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Splendid BULBS of LILIUM LANCIFOLIUM RUBRUM, ALBUM, and PUNCTATUM, may be ordered to be sent at the proper time. Price on application, according to the quantity wanted.

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N.B.—Good reference or cash required from unknown Correspondents.

The Gardeners' Chronicle.

SATURDAY, AUGUST 25, 1866.

MEETING FOR THE ENSUING WEEK.

SATURDAY, Sept. 1 { Royal Horticultural South Kensington Weekly Show., at .. .. 2 P.M.

WE can hardly imagine anything more likely to conduce to the advance of HORTICULTURE in the PROVINCES than the well-planned co-operation of the local societies with the executive of such central and general associations as the assembly of savants now at Nottingham, or of that meeting which it is proposed shall be held at Bury St. Edmund's in the ensuing year under the joint auspices of the Royal Horticultural and Agricultural Societies. Harmonious co-operation is all that is required, each society retaining its own independence, but lending to the other the support and strength which well-directed association always affords. For the sake of Horticulture we are particularly pleased at the results of the Nottingham Show, as necessarily very briefly recorded in another column.

As the British Association is the representative assembly of British science and British skill, certainly Horticulture ought to be well represented at its meetings; but so far as we are aware, but little has been hitherto done to advance the claims of Horticulture, or to show its capabilities at these gatherings. For some reason or other, which we cannot fathom, even Botany has not been well represented at the yearly meetings of the Association. This year will, we trust, inaugurate a new era. Among the specialities of the present meeting are included a lecture by Dr. HOOKER, on a subject on which no one is so competent as himself to speak, and a floral exhibition to which he lends his name as

President, and which seems to be worthy of that honour. The British Association, though fostering many purely scientific and abstract questions, has always had a leaning towards what is, or may become practically useful, and therefore we are the more surprised that Horticulture has not sooner vindicated its claims to be represented at the Parliament of Science. The different towns in which the Association meets in the east, west, south, north, or midland districts of our islands, as the case may be, surely afford excellent opportunities for illustrating the horticultural practice of the different provinces and for demonstrating the effects of variations in climate, soil, and other local conditions. Already two or three subsidiary societies hold their meetings at the time and place appointed for the assembly of the British Association. If it is a good thing for the pharmaceutists to hold a conference on these occasions, it must, one would think, be a good thing for the horticulturists to hold a similar Congress for the purpose of discussing subjects of interest to them, and specially desirable to hold as now in Nottingham, a floral exhibition designed so as to exemplify the skill and capabilities of the local gardeners and the peculiarities of the local climate and soils.

Again, in the discussion of such general questions as those connected with the origin of species, and the extent and inducing causes of variation, surely few men would be more competent to offer an opinion in their own speciality than practical horticulturists. A GROVE, a HOOKER, a DARWIN, a LYELL, may by their knowledge and their powers of generalisation be able to do more towards the advancement of general science than a horticulturist, but they must have facts to build with, and for these they must depend to a very great extent upon the practical workers in each department; at the same time the latter may derive many a useful hint from the inferences and deductions drawn by the men of science from a range of observation and experiment greater than their own can possibly be.

THE selection of soils for the cultivation of the PINE-APPLE is one of the most difficult questions which the general gardener has to contend with, some localities producing them of excellent quality, while in others it is difficult to obtain soil in which the Pine will grow moderately well. In point of suitability, the soil in which we have found the plants to root most profusely is what in the neighbourhood of London was, 20 years back, called Norwood loam, a strong marly loam, in which the plants produced a quantity of roots, but still made but very moderate growth, generally having the pale green or yellow tinge upon them when grown in it in its natural state. The fact is, it was poor, comparatively destitute of fertilising quality; and hence, until enriched by some extraneous substances, as soot, bone, or fermented manure, was not sufficiently rich to produce luxuriant growth.

At the present time this soil is not much used by Pine growers, others of superior quality having been discovered. Mr. BARNES, of Bicton, who about the time above alluded to, created quite a "sensation" by his Pine growing, said, "take the top spit from an old common, Furze and Grass, altogether; use it rough, in pieces half as large as a brick, and you will have no trouble in Pine growing,"—or words to that effect. An equally successful cultivator, the then gardener at Meudon, worked in an entirely different direction, using the rich vegetable earth peculiar to the neighbourhood of Paris, that is to say peat or leaf-mould, perfectly light and soft, and with scarcely any adhesiveness about it. In this, placed over a bed of fermenting horse-manure, the Pines at Meudon grew with remarkable compactness and health, not being so notable for size of plant or vigour of foliage, as for the results of the matured growth in the production of fruit very much larger than that obtained from plants of the same size in other soils.

The Meudon system had many disciples in this country, among which the South-Wallian growers were not the least successful. BARRON, of Singleton, near Swansea, produced some excellent Pines in peat soil, and the same may be said of JONES, gardener to Sir JOHN GUEST, Bart., at Merthyr Tydfil; but, judged plant for plant, they did not obtain a result corresponding to that achieved by their French preceptor: that is, the superiority in the size of the plant was not consummated by an equal superiority in the fruit produced. At Merthyr, the plants were grown in pits heated by steam and fermenting dung conjointly, the atmosphere in the growing season reeking with the stench of ammonia. At Singleton hot water was used for bottom heat, the pipes passing through the mass of soil used for growing the plants, and it was singular to see the tenacity with which the roots of the plants entwined themselves around the pipes. Mr. BARRON supplied the ammonia in the form of manure water, with which the plants were syringed, and in the evaporating troughs upon the hot-water pipes. Indeed, these two growers imitated the Meudon system of cultivation as closely as they could under the varying circumstances; they secured superb growth as to size and vigour of plants, the fruit was excellent, but still, as compared with that produced at Meudon, not correspondingly so.

Now, tracing effects to their causes, we should attribute this want of complete, or we might say superlative success, to the immaturity of the growth of the plants consequent upon the murky and ever-weeping Welsh atmosphere, especially in the neighbourhood of the mines, as compared with the pure and brilliant atmosphere of Paris at the same season; and, consequently, though there was great size and vigour in the plants, there was not the matured growth and deposit of organisable matter in the plant necessary to a superior result. Take an Erica, a Pelargonium, or a Balsam, grow them vigorously on, by the force of manure and a warm moist temperature, and you get plenty of foliage but no flowers. Moderate the treatment, restrain the roots by smaller pots, give little or no manure water at the time the flower-buds are forming—in fact, mature the growth and you obtain a profusion of flower-buds; then give a stimulant in the form of manure water, and a moist, growing atmosphere, and you get a profusion of fine flowers. Just the same rule appertains to the cultivation of the Pine-apple. In this murky atmosphere of ours we have not sufficient sunlight to ensure the complete maturation of very luxuriant growth, and hence Mr. D. THOMSON, whose book we have referred to before, has been fortunate in hitting upon the happy medium by which he secures moderate growth, perfect maturation of the plants, and larger fruit than are generally obtained from plants much larger in size. Mr. THOMSON seems to eschew the vapour bath system and the excessive forcing of the growth, but rather trusts to steady, sturdy growth, by which he secures perfect maturity of the plant at a given time, and large fruit upon small plants, instead of small fruit upon large plants, as is comparatively the general rule.

With regard to soil, we consider a firm fibrous loam, stored in thin slices for six months before using, the best for white Pines; but the black varieties, being more delicate rooters, are benefited by an admixture of one-fourth or even one-third of rich fibrous peat. For stimulants, bone dust in half-inch pieces, mixed in the soil with some soot, is the best; and a top-dressing of two-years-old pigeons' dung half and half with loam is not bad after the fruit has shown. Deer or sheep and pigeons' dung with soot, clarified with a piece of lime, contribute to make excellent manure-water, either for sprinkling the paths or watering the plants.

We should recommend the study of Mr. THOMSON'S book, in conjunction with the remarks we have made upon it, to the particular attention of young gardeners. They will find a fund of information founded upon principles which they may utilise with advantage to themselves and their employers.

—— WE last week alluded to the probability that the ROYAL HORTICULTURAL SOCIETY would next year hold a COUNTRY SHOW in connection with that of the Royal Agricultural Society, which is to be held at Bury St. Edmund's. One of the local papers, the *Bury Post*, alludes to this probability in the following terms:—

"Bury is to entertain two 'Royal' Societies next year, and the visit of the Royal Agricultural Society is to be rendered especially attractive by an unprecedented addition to the display in the show-yard. The Royal Horticultural Society has resolved to follow the example of the sister association, and instead of confining its shows to Chiswick and Kensington, to bring its exhibitors once a year to some town in the provinces. This step will be an experiment to be justified or condemned by the results—which will be known 12 months hence; but it is one which, somewhat singularly, was strongly urged by our neighbour, Mr. FISH, in the *Gardeners' Chronicle* four months ago (p. 496), as in his opinion likely to promote the prosperity of the Society, and the interests of gardening. Moreover, the first migration is to be made in company with the Royal Agricultural Society, and a Committee specially appointed by the Council of the latter body, having conferred with the Horticultural Society on the subject, the decision at which they arrived has been transmitted to the Mayor of this town in the following terms:—

"'The map of the Show-yard at Bury St. Edmund's was examined, and the Committee see no objection to the Royal Horticultural Society holding a Flower and Fruit Show adjoining and communicating with the Show-yard of the Royal Agricultural Society of England, on such a portion of the land as may be found available for the purpose, with the consent of the authorities at Bury St. Edmund's.'

"The Agricultural Society was represented in the conference by Earl POWIS and Mr. CANTRELL, and the Horticultural Society by Lieut.-Colonel SCOTT and Mr. BRANDRETH GIBBS, Col. CHALLONER presiding; and from Colonel SCOTT, as the representative of the latter body, we may shortly expect some further information respecting the course which will be adopted in carrying out the resolution of the Conference Committee. It is, however, as we think, evident from the terms of the resolution that a portion of the ground already placed at the disposal of the Agricultural Society will be occupied by the National Flower Show."

We heartily trust that no unforeseen obstacle may hinder this design from being carried out. Our correspondent Mr. FISH, appeals, we observe, to the local societies within 50 or 60 miles of Bury, to unite their efforts with those of the Royal Horticultural Society, in making such a meeting as the one proposed, "a powerful stimulus to Horticulture throughout the whole of East Anglia." He observes:—"It is not likely that any difficulty about space will occur, therefore the formation of a Flower Show under the auspices of the Royal Horticultural Society may be anticipated with certainty. Under these auspicious circumstances it would be well for all the officers of the local Horticultural Societies in towns and counties to place themselves in communication with the Royal, to afford information, and offer assistance. Few, if any of them, it is to be hoped, would think of holding a summer fête next year. The whole energy of the county should be put forth to render the Royal show at Bury a decided success. No local jealousies, nor financial prospects, however bright, should be permitted for a moment to divert the attention of local societies from the attainment of the objects for which they are formed. These objects may be held to be the advancement of horticulture; the enjoyment of the public; and the reward of merit; and all three can be infinitely better promoted through the Royal, than by any number of local societies."

—— M. LUIZET, of Ecully, near Lyons, records, in a recent number of the *Revue Horticole*, a curious case wherein a PEACH-ALMOND grafted on a Peach, and which in 1863 and 1864 produced Almonds only, in 1865 bore six Peaches and no Almonds. M. CARRIÈRE, in commenting on this instance, cites a similar one in which a double-flowered Almond which bore for several years Almonds, suddenly bore for two years in succession spherical fleshy Peach-like fruits, and in 1865 reverted to the Almond habit and produced very large Almonds.

—— M. RIVIÈRE, the head-gardener at the Luxembourg, records a method of procuring CUTTINGS of the FIG in the open air. Small branches are cut off at the beginning of winter, and laid horizontally in the ground at a depth of about 18 inches. In the following spring (May) the branches are dug up, cut into pieces about 6 or 8 inches in length, which are then inserted perpendicularly in the ground, so that their tips are about an inch below the surface. A slight watering is then given, and in a few months the cuttings make a growth of from 18 inches to nearly 3 feet, and even bear small fruits, which, however, do not ripen.

—— The late GOOSEBERRY SHOW at Sherwood, open to all England, was an exhibition of first-class character; the fruit generally was very fine. The prize for the heaviest berry of any colour was awarded to Mr. MILLS' Stockwell, which weighed 25 dwts. 3 grs. The 1st prize berries in the different classes weighed:—*Red:* Mr. BURGESS' London, 21 dwts. *Yellow:* Mr. BALL'S Scarborough, 20 dwts. 17 grs. *Green:* Mr. ASH'S Stockwell, 22 dwts. 19 grs. *White:* Mr. SOARS' King of Trumps, 19 dwts. 18 grs. Other damaged berries from Mr. MILLS weighed:—Antagonist, 25 dwts. 20 grs.; Stockwell, 24 dwts. 2 grs.; Antagonist, 25 dwts. 12 grs.

—— We beg leave to call special attention to an Advertisement which appeared in this Journal on the 18th inst., intimating that Mr. H. W. RAVENEL would be happy to prepare COLLECTIONS of PHÆNOGAMIC and CRYPTOGAMIC PLANTS, or to collect seeds of trees and hardy shrubs for the trade. Mr. RAVENEL was well known before the late troubles in the Southern States, by which in common with so many he has been a severe sufferer, as a skilful horticulturist and botanist; and the beautiful collection of dried Fungi of the United States, consisting of 500 accurately-named specimens in five large quarto volumes, is a sufficient guarantee for the quality and interest of the collection which he will offer for sale. The botany of South Carolina is extremely interesting; many of the Fungi, as we can speak from personal knowledge, are very beautiful, and the phænogamic vegetation is varied and frequently striking. It is not too late, if orders are transmitted at once to Mr. RAVENEL, at Aiken, South Carolina, to get seeds of the various Oaks and other beautiful trees characteristic of the district, and there is great chance of most of the seeds vegetating if sown immediately on their arrival. The acorns at least will not keep till the spring, but if packed in earth and transmitted this autumn there need be no fear of their succeeding. *M. J. B.*

—— A new Part of DE CANDOLLE'S "Prodromus" (vol. xv. sect. 2, fasc. 2) has just been issued, and which completes the monograph of the large and

important family of the Euphorbiaceæ, a group which seems to have special attractions, if we may judge from the number of botanists at work on it.

—— On Monday next, August 27, the Gardens of the Royal Horticultural Society at South Kensington will, we have been informed, be opened to the public free, in commemoration of the birthday of the late Prince Consort. The fountains and cascades will play throughout the day, and various military bands will perform both during morning and afternoon.

CHERRY CULTURE UNDER GLASS.

I have derived so much pleasure this season from my Cherry-house that I feel it almost a duty to say something about it. In the first place I must describe it. It is 60 feet long and 14 feet wide. I find from experience that a house of this width is to be preferred, as that terrible black aphis is more easily destroyed by fumigation than when the trees are in larger houses—It should be 6 feet high at the sides, and 12 feet in the centre—mine is not quite so lofty. A shutter, 1 foot wide, opening downwards — this downward opening must be attended to—and 1½ foot from the ground, extends along each side of the house; no other ventilating power exists, except a triangular opening at each end under the gables, to let off the heated air. As soon as the fruit commences to colour, the shutters are opened, and suffered to remain so till all the fruit has ripened. On the outside, over the aperture, closed by the shutters in winter and spring, is a strip of galvanised iron netting, the meshes one inch in diameter; this is to keep out birds, and the hands of boys, always so active when Cherries are within reach. Some hexagonal netting should be placed over the wire outside to keep out wasps.

In as few words as possible this is a description of my Cherry-house, a house that gives me more pleasure than the grandest of Pineries, Graperies, and Peacheries would do. The trees are all cultivated in pots from 13 to 15 inches in diameter, and as the roots of Cherry trees are not benefited by the warm air of the house, or at least do not seem to require it, they are plunged to their rims in the borders of the house. What will your experienced correspondent "D." say to this obstinate adherence to that mode of culture which he has discontinued?

The trees are all pyramids, and kept in health and fertility by surface dressings and pinching in their shoots. Next to my pyramidal Apricot trees in pots these Cherry trees have excited my admiration, for nothing in fruit-tree culture can much exceed in beauty a pyramidal Cherry tree covered from "tip to toe," with its large fruit thoroughly ripened, a state in which no Cherry tree is ever seen in this bird-haunted country, for as soon as Cherries commence to change colour in June most of them are taken.

I commenced to gather ripe Cherries towards the end of May, and it may be of some little interest to your readers if I describe a few of the most eligible varieties in the order of their ripening.

The earliest of all is the Guigne Très Précoce; this is a sort with fruit not quite so large as the Black-heart, with very short stalks; its colour is a deep purplish black. It is very sweet, in this respect differing much from that earliest of our old kinds, the Early May or Cerise Indulle, which is very small and acid. The variety that immediately succeeded is that magnificent one, the Early Purple Guigne, a kind that was sent from France to the Horticultural Society more than 30 years since. It seems now unknown to French cultivators. It has been successfully grown against walls—the tree is too tender for open-air culture in England, unless in very warm sites and soils. It commenced to ripen this season on the 1st of June, and continued in fine perfection till the end of the month. Its large deep purple fruit, hanging by long slender stalks, furnished a sight almost as enjoyable as the eating of them after breakfast, the time of all others to pluck and eat fruit. Ripening almost simultaneously with the above, the Early Lyons Heart (Guigne Hâtive de Lyon) a newly-introduced sort, was if possible larger and more attractive, its very large dark red fruit were very rich and juicy.

Closely following these sorts was that very early and tender-fleshed Cherry falsely called a Bigarreau—it is a Guigne—Bigarreau Jaboulay, a newly-introduced kind, remarkably sweet and rich: this excellent sort ripens fully a fortnight before the May Duke. Our old favourite, the Belle d'Orléans Cherry, which gives pale red fruit, rather small, and most remarkably sweet, ripened as nearly as possible with the preceding. Then came the Early Red Guigne, a pale red Cherry, which shrivels and tastes like a confection; and Werder's Early Black, a good Black-heart kind. Next Empress Eugénie, an early sort of May Duke, giving large fruit, with the brisk subacid flavour peculiar to the race, so entirely different to the Guigne or Heart Cherries and the Bigarreaus, which are all sweet and rich. The May Duke and Knight's Early Black succeeded those above-mentioned, and then came the Early Black Bigarreau, the Early Red Bigarreau, and the Early Strassen, the first one of those large early black Cherries which are so rich and sweet (this sort is on the whole a better Cherry than Werder's and Knight's); the second is a remarkably nice sort, with rich firm flesh; the third is a variety quite unique, it is large as the May Duke, its colour bright red, but its flesh is so delicate, melting, and sweet as to differ from all other kinds. It was sent here, purporting to come from the Crimea, to which like Burchell in the "Vicar of Wakefield," I say "fudge." To the sorts above described, I must add that very remarkable Cherry, perhaps the most abundant bearer of any kind known, whether as a Standard or Pyramid in the open air, or as a wall or Cherry-house tree; this was raised in Ohio by Dr. Kirtland, and is known as Governor Wood; its fruit are full-sized, of a pale yellow and red, and of excellent flavour.

The sorts I have named carried us on from the middle of June till the middle of July, and then came a host of fine large black Cherries, looking very rich and imposing on the trees. Among these the Bohemian Black Bigarreau was conspicuous for its size, and remarkable for its flavour: also the large Black Bigarreau (not the Tradescant) about which a few words may be said. In the south of France there are several kinds of Cherries cultivated under the names of "Bigarreau à Fruit Noir," and "Bigarreau à gros Fruit Noir." These were introduced, and have all borne fruit here; one of the varieties under the latter name, which gave large fruit and is of a vigorous habit, has been named Large Black Bigarreau, a name it well deserves. The Black Tartarian, a noble Cherry under glass, and those dark-fruited sorts from Ohio, Brant, Pontiac (the finest of the race), Black Hawk, and Osceola, were all ripe in July, closely followed by Reine Hortense, a most refreshing sort; and the Bigarreau and Elton, the Tomato or Love Apple, and the Transparent, which, like Reine Hortense, are full of cool refreshing juice, also ripened in July. The Napoleon Bigarreau, a very large, firm-fleshed sort, ripened towards the end of the month; and then in August the Late Purple Guigne gladdened one's eyes with its very large dark purple fruit suspended from the tree by its long slender stalks, so firm, so rich, and hanging a long while after being fully ripe; this is without doubt one of our finest late Cherries. Towards the end of August, the Rival, a Cherry received from Lyons, ripens; it is now (August 20) ripe; this is not large, but is remarkable for its bearing qualities, and its sweet black fruit are grateful when the larger sorts have passed. In September, the Late Duke, which like all of that race, gives fruit full of cool subacid refreshing juice, is in perfection; and then, to fill up the month and to go even into October, we have that remarkable sort the Autumn Bigarreau, or Belle Agathe, which, with the usual exaggeration attending any new production, was at first named Belle Agathe de Novembre; it is however a sort worthy of cultivation, ripening fully in the Cherry house in September, and in the open air hanging on the tree till the middle of October. The fruit on trees in the open air are now commencing to colour, and the trees have the appearance of Cherry trees in June. In size it is below the Black-heart, and when ripe is of a bright red; its flesh is firm, like that of the Florence Cherry, and very sweet. There is one curious fact attending this variety, which at present is a mystery. I have two fine standard trees about 10 years old; they are growing near a Florence Cherry tree of the same age. The birds regularly devour every fruit of the Florence as soon as they are ripe, but never touch a fruit of the Belle Agathe. Now, when I see them taking off Mountain Ash berries in October, which, as is well known, are bitter and unsavoury to our palates, I am, as they say here, "put out" at their leaving nice sweet red Cherries untouched; the fact does not seem to tell well for the reasoning powers of blackbirds and thrushes.

I must bring this "Cherry Ripe" narrative to a conclusion. In giving an account of my successful culture of the trees in pots, I fear I shall disturb the digestion of "D." "E.," and "les horticulteurs de l'ancien régime," which, being interpreted, means old-fashioned gardeners; but it may quiet their minds at being told that as usual there "is nothing new under the sun." My old friend (as proud a gardener as he is a man) Mr. Ingram has cultivated Cherry trees in pots at Frogmore for many, many years; it was there that I first saw old Cherry trees in a healthy state in pots, and from the experience I have gained I fully believe that pyramidal Cherry trees with their shoots regularly pinched in summer, and managed as other orchard-house trees are, will flourish for many years. When this mode of culture becomes known it will be much enjoyed, and a Cherry house will be a mine of pleasure to the amateur. A house of the dimensions I have given, with a path in the centre, and the trees arranged nicely in each border, is, when they are covered with their beautiful fruit of many colours, equal in interest to a house full of flowers; above all it will give ripe Cherries for four months, a very pleasant fact.

This mode of cultivating Cherries will of course meet with opponents—all new methods of culture do—witness the thin and thick sower, the shallow and deep plougher. There appears indeed to be a powerful instinct, implanted by Providence in all cultivators of the soil, to resist innovation, and evidently for a wise purpose. This instinct may be traced back for many ages to the time when corn was neither imported nor exported, but every cultivator grew his own, for his own; in those times innovation, which might bring on tribulation, was dreaded. Let us imagine an innovator to make his appearance in a like community, and by some new mode of digging or ploughing put the crop—without which would come starvation—in jeopardy, ending in failure; he would of course be mobbed and driven from the district, and good old practices be resumed with firmness.

It is just possible that some grave and good old farmer may look at Mr. Prout's steam farm, described in p. 713, and feel some tribulation, for have not he and his ancestors for several generations ploughed their land 4 inches deep, and had good crops? "Why then should this steam thing be brought in to plough four times 4 inches?"

This is undoubtedly the original instinct of the husbandman, and it is still very active in some parts of the country, and for which I have a great respect, for I feel to have traced it back to the earliest stages of earth culture; as it is therefore so very, very old, let us, as usual with all old things in this country, continue to treat it kindly. I was amused the other day by a passage in Tristram Shandy, which seems apposite: "It is a singular blessing that Nature has formed the mind of man with the same happy backwardness and reuitency against conviction which is observed in old dogs," who will not learn new tricks.

There is not the least doubt but that all those who oppose new modes of culture have that ancient turn of mind I have alluded to,—they are men of instinct. *T. R.*

RED SPIDER.

This little "nibbler" has been rightly called by Mr. Rivers the "grand enemy" of wall-fruit trees. Never, I believe, have wall-fruit trees (Peaches and Nectarines), so dropped their blossoms and fruit as they have done this season, both under and outside of glass. It cannot be said that they have dropped their blossoms and fruit from immaturity of wood, which is one cause; for never was wood, well attended to, better ripened than that of last year. As the falling of blossoms and fruit, I believe, has been general, we must look for some general reason; I believe the cause to be "red spider," which abounded last year, more so than I have ever known it to do. Wall trees, Strawberry plants, and even Rose trees were much infested by it in the previous year. As soon as I perceived them on my wall trees I ordered my trees to be syringed twice a day, and I got rid of them, and "landed" 503 Peaches from three trees, and so kept my trees with foliage but little impaired.

I have read of different kinds of remedies for red spider—sulphur, composts, lotions of different kinds, but I have never used anything but lots of cold water, which is a thing they do not like. Cold water is not only a good remedy for "red spiders," which abound in hot seasons and dry situations, but it is good for the bark and foliage of trees. It cleanses the leaves and keeps the stomata open, and also washes off the spores of Fungi, and the various broods of "the prince of the power of the air." It cannot be denied that in England, for lack of cleansing, our wall trees suffer in their foliage (lungs), and hence in their health. I should be sorry to have as much filth on my skin, and in the air-cells of my lungs, as I see on wall-fruit trees both under and outside of glass. The foliage, roots, and health of these trees have a close connection. If by any cause the foliage is injured, the other two must suffer. Mr. Bréhaut, of Guernsey, has just written to me complaining of the havoc of red spider; I have sent him a fair specimen of my foliage, which is so beautiful, that when my old friend Archdeacon Heathfield was here a few days ago, he said, "I never saw such foliage, I wish you would tell me the 'secret.' I told him what the secret was—"lots of cold water." I saw his trees last year, and the foliage was auburn, or *jaune canari*. This year, of course, I could not find either outside of or under glass, a single specimen of fruit; they had all fallen off. There are doubtless some people who syringe, and are surprised to find that it does not answer; but they do not do it properly or constantly. I am thankful to Mr. Leach, Mr. Knox, and Mr. Norris, the head gardeners of Lord Portman, Mr. Farquharson, and Baron Hambro, who came to dine with me last year, and to eat some Peaches, for showing me the proper way. It is of no use to stand in front of the trees, you must put the syringe close to the wall, sideways, and then, having syringed, you must "reverse the engine." Do this twice a day, and you will soon get rid of myriads of almost invisible "nibblers." I have built since here 217 feet of wall, and put up two pumps, and I am not afraid of red spider. I have planted 10 Peach and Nectarine trees, which are very healthy, and which, being pinched and repinched, will bear fruit well next year. I shall plant 12 more Peach and Nectarine trees at the fall. The walls are built according to Mr. Rivers' suggestion, single brick, with 9-inch piers at intervals.

Once more, keep your foliage perfectly clean. Begin syringing as soon as the leaves unfold themselves and the fruit is set, but do not water the blossoms. *W. F. Radcliffe, Okeford Fitzpaine.*

ON RAISING GLOXINIAS.

The Gloxinia takes a prominent place among stove plants on account of its great beauty and elegance, and there can be no doubt but that many excellent varieties may yet be obtained by the careful intercrossing of the varieties we now possess, and by the infusion of new blood amongst the garden forms now grown, for which latter purpose one or two of Mr. Weir's plants appear promising.

In order to obtain seed of good quality, the plants which produce the finest flowers should be carefully operated on, and after the blossoms have decayed they should be removed to a moderately dry part of the house, where however, they must be supplied with water as freely as when they were in flower, but the seed-pods should not be wetted, as they are liable to rot, instead of progressing towards maturity. When the seed is nearly ripe, that is, not perfectly dry, the stalks should be cut off and laid carefully on sheets of paper to dry, but the produce of each separate cross should be kept separate. It will be dry in a few days if the weather is warm, and it should then be put away for sowing.

The best time for sowing is about the end of February, when a number of flat pans should be well drained with pieces of broken pots and rough peat. The soil used should be a mixture of well-decayed leaf-mould and sandy peat, three parts of the former to one of the latter; and the whole must be passed through a moderately fine sieve, after being properly mixed together by the hands. The pans should be filled to within half an inch of the rim, and the soil made firm and level, when the seeds should be sown regularly and somewhat thinly over the surface, and very slightly covered by passing a little soil through the sieve over them.

The pans should be plunged in gentle bottom-heat

either in a stove or in a frame, and carefully covered with hand glasses. As soon as the young plants appear, the glasses must be taken off, and the pans placed on a shelf in the stove as near the light as possible without being at the same time too much exposed to the sun. But the ill effects of strong sunheat may be prevented by means of sheets of thin paper laid over the pans.

The young plants must not be carelessly syringed or exposed to the dripping of water from the roof, and great care is necessary in supplying them with water. The safest method is to apply the water through a small sponge, pressing it gently out over the dry parts of the soil. In about 10 days after they appear on the surface, the young plants will be strong enough to admit of being pricked out into boxes or pans, and in soil similarly mixed to that in which they were raised, but it is not necessary to have it so fine at this stage. They will soon grow strong in their new position, and when they have made their third set of leaves, they may be potted singly in 2-inch pots, well drained with crocks and half-rotted leaves, then placed on a shelf in the stove. Here they must have plenty of air, but not be exposed to direct sunshine. In a short time they will require to be shifted into 3-inch pots and placed in a frame, about 6 inches from the glass, the pots resting on gravel, ashes, or light dry soil. They may remain in the frame three or four weeks, or till they show their flower buds and are well rooted, when they should be again shifted into 5 or 6-inch pots; and after being kept somewhat close for the first four or five days, they may be exposed to more air and light according to the weather, and watered carefully as occasion requires.

Treated in this way they will make fine healthy plants with a number of side shoots, all strong enough to produce flowers as freely as old plants, and after having made their growth, will have formed good bulbs. About the end of June seedlings so raised may be expected to produce from six to ten flowers, and plenty of leaves. If the plants are more numerous than can be conveniently maintained in pots, some of them may be planted out in a low frame in light soil, and kept well shaded during strong sunshine. Varieties of great excellence should be kept separate from the others for the purpose of crossing. *P. F. K.*

LIME FOR PEACHES AND NECTARINES.

Perhaps nothing has placed a heavier drag on the improvement of practice and the advancement of science than hasty generalisations from imperfect or insufficient data. Such a mode of procedure is like building a house on sand, or without a foundation at all. It may rise all the faster in the air, for want of the necessary excavations, and building up material under the surface; but we all know the end of it is a mass of ruin. It has nothing to stand upon, and consequently it must fall. It is very much the same with much of our practice. One man succeeds well in cultivating a certain race of plants. Some peculiarity of soil, climate, culture, or training is observed, and forthwith, often without the slightest investigation of all the circumstances of the case, the whole of his success is put down to that. These guesses may occasionally be right, but the probability is that they are oftener wrong; and when they are wrong, the results are often most disastrous.

A case which may prove one of this description has just occurred. It is well known to every one that Mr. Rivers is a most successful grower of fruit trees in general, and of Peaches, Nectarines, and Apricots in particular. It also so happens that the soil at Sawbridgeworth is largely mixed with chalk. Under these circumstances it was perhaps only natural that Mr. Rivers should attribute part of his success to this fact, and perhaps he is right; but I have not seen any facts strong enough to prove that the chalk has much if anything to do with his success. I know that the soil at Berkhampstead is first-rate for Peaches, independently of the chalk it contains, and I should be inclined to attribute Mr. Rivers' undoubted success rather to his great skill, and to other causes, than to the chalk in his soil. I know as a matter of fact that Peaches can be grown pretty successfully without chalk.

The extract given at page 736, from Bréhaut's "Modern Peach Pruner," professes to prove that chalk is of the highest necessity in Peach culture. The proof consists in a statement that the water at Sawbridgeworth is so strongly impregnated with carbonate of lime that a thick deposit of lime was found adhering to the drainage; that the roots were finely developed, while vigorous and healthy growth was visible everywhere. I accept the latter fact, and deny that either of the others had anything to do with it. A deposit of lime on the drainage would not, could not, cause the roots to be finely developed, whatever that may mean, nor produce vigorous growth. The fact is, Peaches and Nectarines in pots will root freely and produce a network of fibres when potted in almost any soil; never more freely than in black garden earth, full of humus, and without an atom of chalk. Therefore I am as much justified in asserting that the chalk had nothing to do with it, as others have in saying that it had. It must be obvious to every practical cultivator that a deposit of lime adhering to the drainage would be very likely to block it up. How far this would conduce to healthy growth I leave your readers to judge. But M. Bréhaut offers stronger proof. He says "the absence of lime is at once perceived by the falling of the fruit at the period of stoning, because carbonate of lime constitutes a considerable portion of the stone."

Here is hasty generalisation with a vengeance! Would that M. Bréhaut were right. No more fruit dropping after this—only give the tree lime enough (chalk), and it is impossible. The whole science of successful cultivation also becomes as simple as A B C. It is reduced to a mere matter of chemical analysis and mechanical admixture. When Peaches are growing at first give them prussic acid; when stoning give them chalk and flint; when ripening supply them with sugar. The fallacy of such reasoning could not perhaps be better exposed than in the answer given to a correspondent on the same page, who writes, "Pray be so kind as to inform me whether by giving Red Currant leaves as food to silkworms you can produce red silk. I have heard it, but cannot credit it." The answer is —"We should think not; as well might you expect to get blue silk from feeding them on Blue-bells." The same answer is equally applicable to M. Bréhaut, only substituting chalk Peaches for blue silk, and chalk for Blue-bells. No, living plants are something more than mere conducting tubes; they are exquisite manufacturers of all they need to build up their fabric and perfect their produce; and as such they deal in the raw material of primitive elements, and not in the finished product of chalk or any other substance. Peaches cannot absorb either prussic acid, chalk, or sugar, as such, and therefore their application to them is at least of doubtful utility. If chalk is to be given for the reason assigned, so must the other two, and many other things as well. Before, however, such things can be of the slightest use, the whole of the processes of assimilation, elaboration, and secretion must be altered. Believing that for the present this is not likely to happen, I consider the reasons assigned for the use of chalk as an aid to the successful growth of Peaches, &c., to be unphilosophical and wholly insufficient. *Excelsior.*

P.S.—Since writing the foregoing I have carefully read "T. R.'s" answer to "D." I do not consider that he has much strengthened the claim of chalk as a fructifying agent. In fact there is some discrepancy between the statements. It seems somewhat doubtful now if the Sawbridgeworth water is so very chalky, for "T. R." says that it is from the "gravel drift." He also informs us that Dr. Voelcker's analysis shows the parish of Sawbridgeworth to possess a "practically inexhaustible fund of fertility." "T. R." proceeds, "this I impute to its calcareous nature." Does Dr. Voelcker endorse this? If not, I would advise cultivators to exercise some of the sound gardening sense which "T. R." so much commends in others and makes so great use of himself, before giving much chalk to their stone fruits, else their hasty practice may lead to failure.

PARISIAN GARDENING.

(The following interesting account is condensed from an article recently published in *Le Bon Jardinier*.)

The marvellous establishment which supplies the gardens of Paris, is placed under the direction of M. Barillet-Deschamps, and is situated in the Avenue d'Eylau, near the Bois de Boulogne. All lovers of horticulture who visit Paris should see this garden, which comprises a collection of about 6000 species, some of them well represented: the Hæmanthus, for example, by 18,000 individuals, the Erythrinas by 20,000, the Cannas by 300,000, and the Hibiscuses, the Musas, the Ficuses, the Caladiums in proportion. It is sometimes called the Jardin de la Muette. Besides providing a portion of the plants for the public squares, it is devoted to experimentalising on the new species or varieties likely to be of service to horticulture.

The gardening of Paris is placed under the control of M. Alphand, surveyor in chief; M. Barillet-Deschamps is director-general; M. Troupeau is principal gardener of the town squares; and M. Andrè of those of the suburbs.

In the experimental garden may be seen Solanum Sieghizi, 3 years old, and upwards of 6 yards in height: a veritable trunk supporting an ample head. Around it are Solanum cornutum, Phytolacca dioica, Nicotiana wigandioides, Montagnæa heracleifolia, which rival it in development. The collection of Bananas is perfect, forming a mass in the open air. Certain borders are heated by gas, which produces marvellous effects. Otaeanthus coeruleus is particularly suitable for the borders in autumn. A striped Gynerium, and another Grass, Cinna arundinacea, produce a very fine effect, while a tuft of Saccharum perenne rivals these in elegance. Then come those majestic plants which give our modern gardens quite a new character. They are plants to place singly, under the best possible conditions of development. Such are Senecio Ghiesbreghtii; Montanoa mollissima, a very floriferous Composite; Solanum betaceum, with red fruit; Ferdinanda eminens, which in two or three years attains vast dimensions; Bocconia frutescens; Uhdea bipinnata; and a Ficus resembling elastica, but a new species more suitable for open-air culture. The garden possesses a collection of 112 species of Ficus.

The greenhouses, of which there are several for propagation, for Pelargoniums, for Aroideæ, for Solanaceæ, for Begonias, for ornamental foliage plants, &c., are shaded in spring by applying to the glass the following preparation:—Ioth of green powder, 1oths of whiting, 100 quarts of paste; no water. The Camellias in tubs, which occupy one greenhouse, are used principally for the fêtes of the Hôtel de Ville. These are grouped in the rooms, and then, on the morning of the fête, as many flowers as may be required are cut from another house in which the Camellias are planted out, and these are attached to the foliage of the moveable plants. In this way the flowers are fresher, and the effects which it is wished to produce are easily obtained. In this vast Orangery are three Camellias, which are souvenirs of the Empress Josephine; she herself bought them and transported them in her carriage to the Palace, where she cultivated them. They are Camellia pomponia rosea, pomponia mutabilis, and alba plena variegata. They now form great shrubs.

The following extract from the Catalogue Général gives a brief account of those exotic plants with large foliage and gigantic growth, which may be employed singly or in groups for the decoration of parks and gardens during the summer season:—

Aralia papyrifera.—An ornamental plant of vigorous habit, adapted for planting singly or in groups on grass plots.

Aralia leptophylla.—A splendid species, differing from its congeners by its palmate leaves. It should be planted shady in peat earth.

Asteropeia imperialis.—A plant of very fine effect, planted in a mixture of loam, heath-mould and rotten manure.

Asteropeia integrifolia.—Placed in the open air, in summer, in a hot situation, in good soil mixed with peat, and watered with liquid manure, it will become one of the finest ornamental garden plants.

Arundo Donax.—This plant may be employed to decorate the edges of rivers and pieces of water.

Arundo Donax foliis variegatis.—Very ornamental, but of slow growth. It prefers a mixed soil with peat.

Arundo mauritanica.—A very vigorous and hardy species.

Astrocaryum Wallisii.—Should be planted in a mixed soil, rich in humus, and watered copiously with liquid manure during its growth.

Balantium antarcticum.—An arborescent Fern: planted in a shady situation in peat earth it will attain quickly a large growth. In employing this plant for the decoration of gardens, a remarkable effect will be obtained.

Bocconia frutescens.—To be planted singly on grass plots, where its glaucous foliage and luxuriant growth will make it decorative from spring to autumn.

Bocconia cordata.—A gigantic Urticaceous plant, to be planted in shady places; the large foliage is spotted with white, and has a fine effect.

Bombax Ceiba.—A superb exotic tree, which should be planted singly on grass plots, in peat earth, and watered with liquid manure.

Brachyglottis repanda (Cineraria repanda).—A plant with large foliage, silvery beneath; placed singly in a mixed soil containing peat, it will produce in the open air the best effect during all the fine season.

Cecropia peltata.—Very fine *C. palmata*. This variety gives the largest leaves met with in the genus; they reach sometimes to upwards of a yard in length.

Canna nigricans.—Large deep purple foliage; its flowers resemble those of Gladiolus. In a mixed fertile soil and watered with liquid manure, this plant will attain 3 yards in height.

Caryota urens.—An arborescent Fern of large growth, which has perfectly succeeded in the open air during the summer.

Cocoloba excoriata.—Suitable to plant singly in the open air during the fine season, in a mixed soil, rich in humus.

Colocasia (or Arum) esculenta.—A fine and curious species, having the petioles streaked with white and green; it is ornamental, and of a fine growth in the open air.

Colocasia antiquorum.—The finest and most gigantic of all the Colocasias; its leaves have violaceous petioles, and attain upwards of 1 yard in length: the habit is fine.

Colocasia antiquorum (Caladium antiquorum).—A very fine species with large metallic-coloured leaves, very ornamental.

Cordyline glauca.—A large arborescent species of a very fine effect, suitable for placing in the open air, singly or in groups, in situations which need a little shelter.

Curculigo sumatrana.—Placed singly in peaty heath-mould, with a drained subsoil, and watered during its vegetation with liquid manure, this superb plant will not fail to develop its rich foliage.

Curculigo recurvata.—A fine plant with large foliage, watered above, violet beneath. To obtain a fine growth in the open air during summer, it will be necessary in the north of France to place it in peat soil on a hotbed, half shaded and sheltered from the winds.

Cyperus Papyrus.—This must be placed in a rich soil, singly or in groups, either on grass plots or at the edges of rivers or pieces of water, and must be watered with liquid manure during its growth.

Dahlias, various.—Should be planted in a mixture of peat and ordinary earth on a drained subsoil, and watered with liquid manure during its growth.

Dracæna Draco.—One of the finest and most hardy of the Dracænas for the open air during the summer. In a few years the trunk attains from 1 yard to 2 yards in height, crowned by a head formed of numerous leaves upwards of a yard in length. It should be planted in peat earth, added to some free loamy earth.

Dracæna australis.—One of the most ornamental species as a single plant; it should be planted in heath-mould, and watered with liquid manure during its growth.

Dracæna indivisa.—Of large growth; should be planted singly in very rich soil, and watered copiously with liquid manure.

Eucalyptus globulus.—An Australian plant, acquiring large size in our climate (54 yards high in a year). The foliage is of a glaucous green, and sometimes tinted with rose; it produces a fine effect in gardens.

Ferdinanda eminens (Cosmophyllum excalliatolium).—An exotic composite, attaining to very large size, the shoots sometimes growing over 5 yards in height during the season, and the leaves attaining nearly 20 inches in breadth. To obtain the best effect it should be planted singly on a grass plot in a rich soil, and watered frequently with liquid manure. The Paris establishment possesses a two-year-old plant, which measures upwards of 6 yards in height, with a head 4 yards in breadth.

Ficus macrophylla.—Placed singly on declivities this plant will give a fine effect of rich foliage.

Gustavia augusta.—A splendid Aralaceous plant with large palmate foliage borne on long petioles. It should be planted singly in a mixed soil containing peat.

Gynerium Tweedianum.—Planted singly in peat earth in a warm situation, its young shoots of a fine rose colour will produce a good effect.

Gynerium sulphuratum.—A vigorous species, of a very ornamental character. It should be placed near the borders of grass plots in a mixed soil, and watered frequently with liquid manure during the fine season.

Gynerium Lindleyanum.—A splendid Mellinconia plant whose palmate leaves attain upwards of a yard in length.

Hedychium coronarium.—This plant, whose foliage has a lively red centre, is very effective among other plants. It may be cultivated in the open air during the fine season, in a mixture containing peat earth, and should be watered lightly with liquid manure. In this way a fine ornamental effect will be obtained from this superb plant.

Hedychium Gardnerianum.—To obtain in the open air all the ornamental effect of this plant it is even advisable it is necessary to plant it in a partially shade bed, and to protect it artificially from the sun. When planted in a mixture of peat and loam, its leaves will attain 16 inches in diameter.

Jessenia oleracea.—Should be planted singly in peat, and watered with liquid manure, the plant being nipped to make it branch.

Ipomœa cavallina.—The finest of the Convolvulaceous plants; planted singly in a hot and rather shady situation, in mixed earth, rich in humus, and watered frequently with liquid manure, its leaves will attain more than a yard in length.

Ipomœa pyramidalis.—This only differs from the preceding by its round and pulverulent foliage.

Meppe Fortunei (Hemitanthus).—One of the most splendid plants recently introduced. Planted singly in a mixture of peat and loam, it soon acquires a large development. The large red stains of its stems and petioles place it in the first rank among ornamental plants.

Melanodendron dentatum.—An Umbellifer of very large growth, whose leaves attain over a yard in length. It should be planted singly in light soil.

Melianthus major.—A Zygophyllaceous plant of the Orangery long since abandoned; cultivated in the open air, it now proves very ornamental, its glaucous foliage having an agreeable effect on a grass plot.

Musa ensete Ecuadorida.—The majestic shape and large foliage of this plant make it indispensable for the pleasure garden and park. It attains 5½ yards in height.

Montanoa undulata.—A Composite with white flowers; it forms very pretty tufts on the lawn during the fine season.

Nicotiana suaveolens.—One of the most ornamental plants, attaining from 4 to 6 yards in height. It should be planted in a very rich soil, and watered copiously with liquid manure.

Perezia nana chordata.—This Composite plant will, in a very rich soil, form in the autumn tufts which will be 3 yards in diameter, and as much in height.

Phytolacca dioica (Bella sombra of the south of Italy).—One of most remarkable plants in consequence of its rapid vegetation, and the large dimensions which the trunk attains; it is not rare to see it 50 feet in circumference at the end of the first year, and it is very easy to preserve in a greenhouse.

Polygonum sacchalin.—Planted singly in a soil rich in humus, this plant will by the autumn form tufts 2 or 3 yards in diameter, and will be covered during two months with numerous yellow flowers. It is recommended for the ornament of large parks.

Picea, various accessibilium.—Planted singly in heath mould, in a hot situation, this species will produce tufts of more than 2 yards in height. Its large leaves, white below, place it in the first rank of ornamental plants.

Rhapalo cassa adnascens.—A superb plant, with large foliage, green above and ferruginous beneath. It should be planted in well-drained peat, and prefers a partially shaded situation.

Rhapalo glaucophylla.—This differs from the preceding by its habit of growth, and its pubescent whitish foliage.

Sinclairea violacea (discolor).—A plant with the foliage silvery-white beneath. Planted in peat in groups of 5 or 6 plants, it is very ornamental.

Saxifraga cotyledon, peltoscea (Aralia peltoscea).—One of the finest and most hardy of the Araliaceous plants, for the open air during the fine season. Planted either in groups, or in masses in peat earth, it will be sure to succeed. A mass of this plant, growing in the Monceaux Park in 1865, was very much admired.

Solanum insidiatum.—A very large species without spines, the stems sub-shrubby, with large oval oblong woolly leaves, small violet flowers in corymbs, and globular yellowish berries. It is an ornamental plant, remarkable for its fine growth.

Solanum lanuginosum.—A superb species, attaining 9 or 10 feet in height. The stems are frutescent, straight, green spotted with grey, an l herbaceous at the top, the leaves heart shaped, a foot and more in length, thick, shining above; flowers white, in large cymiferic lingles at first yellowish green, afterwards red. It is a very ornamental species, and produces a very fine effect, either singly or grouped.

Solanum lanuginosum purpureum is a variety of the preceding with purple leaves.

Solanum marginatum.—A very fine spiny species with stems, petioles, and leaves clothed with a violet coloured down, especially at the extremities; the leaves are very large, heart shaped, with large teeth, almost gouffred and more spiny below than above; the calyx is violet, not spiny; the flowers white; it is a fine ornamental plant, attaining a yard or more in height.

Solanum robustum.—A superb Guiana plant with frutescent, hairy, and spiny stems, the spines violet at the base and pale-coloured at the top, the leaves large, thick, green, more green darker above than below, and with violaceous venation above: the young leaves are very hairy, of a pale green, and the flowers large white.

Solanum quadrangulum.—A large species with green downy stems, purplish in some parts, and clothed with large scattered spines; the leaves large, softly pubescent, sinuously laciniate-dentate (9 teeth), the tops clothed with a rusty down. It should be planted singly in a mixed soil rich in humus, and watered frequently with liquid manure.

Solanum gigantheum, var., sub-shrubby spiny, tomentose, whitish, large leaves, with large lanceolate leaves, accompanied by smaller ones growing in their axils; flowers in corymbs, numerous, small, purplish violet. Strong plants of this species produce a fine effect for the decoration of landscape gardens.

Solanum tomentosum, a large species with succulent not spiny stems, sub-shrubby at the base, the leaves pinnatifid, with linear lanceolate lobes, some of them entire, linear lanceolate; the flowers large, blue, and the berries subglobular, yellowish. It is a very fine ornamental plant, remarkable for its luxuriant vegetation, and should be planted singly in good earth.

Solanum warscewiczianum.—A very large species, producing in the season shoots of 10 or 12 feet in height. Its ample foliage, with large divisions, makes it one of the most ornamental species for the summer garden. It should be planted singly in mixed soil rich in humus, and watered often with liquid manure.

Solanum marginatum.—A shrub growing upwards of 6 feet in height, spiny, the upper branches tomentose and covered with white powder; the leaves are spiny, almost cordiform, sinuately lobate, tomentose, white when young, then greenish with a whitish border above; the flowers are large, white, with a little purple star in the centre; and the berries globular, yellow, and pendent. Its stems and large silvery foliage produce an admirable effect in the landscape garden.

Solanum robustum.—A very fine spiny species, rising 2 yards in height, the stem clothed with a whitish and rusty down, winged by the decurrence of the leaves, which are very large, velvety, and clothed, especially in their youth, with a bright red down; the flowers are small, of a yellowish white. It is a very ornamental plant, and is to be recommended for its hardiness.

Solanum sculptum.—A large sub-shrubby species, attaining 10 or 12 feet in height, the stems green, wrinkled, clothed with a rough down, and armed with spines; the leaves very large, cordiform, lobate, softly tomentose, a little tough, and armed with green spines. This Solanum is remarkable for its fine growth and the magnificent effect which it produces, placed either in groups, or single on grass plots.

Solanum warscewiczianum candicans.—A new species with very large foliage. This fine plant is very distinct from the other species on account of its large size; its fine leaves are silvery beneath, and attain from 2 to 3 feet in length, and 2 feet in breadth. It deserves to be placed in the first rank among ornamental plants for the open air in summer.

Spermacoce glaucescens.—A very old plant, frequently cultivated in pots or boxes, where it produced but little effect. Planted during the summer in the open air, in a good mixed soil, with abundant waterings of liquid manure, it forms a very ornamental plant during all the fine season.

Spathodea quanten.—A very large plant, with large foliage; it should be planted in peat earth, in groups of three, about a yard apart.

Stenlaucia nutricia.—This plant is of very large growth, and has ornamental foliage, and deserves to take a place among the finest plants for ornamenting gardens during the summer. It should be planted in pure heath mould.

Stevenia ornamenta.—A very fine tree of North Africa, which should be planted in heath mould, in which it grows very vigorously. Its habit and its foliage render it a fine ornamental plant for the garden during summer.

Teramnthe mollis.—A plant of very large growth, and bearing large clear green foliage, on horizontal branches; should be planted in a mixture of peat and other light soil.

Thespesia populnea (Cravatella).—One of the finest plants for summer cultivation in the open air. Planted in mixed earth containing peat it will, during the fine season, develop leaves 20 inches or more in length.

Ulex hispanicus (Mouligeanus rupens).—A hardy plant, producing much effect in the open air. Planted in a rich soil, it has attained, during 1865, a height of 3 yards and as much in breadth.

Ulex nanus.—Planted in groups or in masses in a partially shaded situation, this will produce a good effect.

Verbascum phœnicium.—Placed singly in a rich soil, this plant forms very strong tufts, which flower in the autumn.

Verbascum giganteum.—Of very large growth, and producing large foliage. Planted singly, this plant will attain, during the course of a fine season, from 5 to 6 feet in height, and will prove very effective.

Verbascum Sinuatii (pinnatifidum).—This recommendable species forms very strong bushes of a couple of yards in height. It should be planted in rich earth, and watered abundantly during the fine season.

Wigandia caracasana.—A fine subject to plant singly or in groups of three, in a very rich soil.

Wigandia urens has the foliage more rounded than in the preceding.

Wigandia Vigieri.—A gigantic species, acquired in the establishment of Baron Vigier, of Nice. It is a fine ornamental plant, remarkable for its noble habit and strong growth. It looks well isolated or grouped on grass plots.

Xylophylla latifolia.—A very fine Euphorbiaceous plant, which should be planted singly in peat earth, and carefully be taken to nip the extremity of the shoots frequently in order to make them branch.

Xylophylla montana.—A more graceful plant than the preceding. It may be employed for open air decoration in summer, and for rooms in winter.

Home Correspondence.

Snowdrops on Lawns.—I was pleased to see (p. 753) that you are advocating the planting of Snowdrops on lawns, and as this has been one of my hobbies, I will just add a few words for the encouragement of others. My plan does not quite coincide with Mr. McNab's, as I usually plant them in open spaces on the turf, forming the outline of such a clump as may best suit the place, and the effect in winter is quite cheering. I have also used them for figures or letters to note the time of planting, &c.; but in this case the letters or figures require to be large, otherwise, after the Snowdrops have been up for some time the foliage falls aside and causes confusion, whereas, if done well and planted closely, they look very pretty. Any ingenious amateur might invent many ways of using them which would afford much amusement to himself. I am pleased to find that for once I am not behind everybody else. *Jasper Woodcock.*

Adiantum farleyense.—I see in your impression of the 4th inst. an article about this Fern, copied from the Journal of the Royal Horticultural Society. That article certainly contains some truth, but not the whole truth. It is true that Thos. Hill, Esq., received the package in London, and that he forwarded it to his uncle; but it is also true that the Fern was resuscitated, propagated, and sent out from here. I cannot help thinking that Mr. Green must have known the plant Mr. Hill took from here, for Colonel Miles had not come direct from the West Indies. *A. Bray, Gr. to Thos. Daniel, Esq., Stoodleigh, Devon.*

Raphanus caudatus.—In April I purchased a packet of seed of this new vegetable, which has succeeded with me beyond my expectations, and is delicious. One plant has grown 5½ feet high, and has on it 26 pods, some 4 inches in thickness, and 24 inches. The pods appear almost ripe, the leaves have withered, and some are dead. *Walter Soulthorpe, Hampstead.*

Abies Pinsapo.—We have a handsome tree of this Fir, bearing cones for the first time. Can you tell me whether or not it has borne cones elsewhere in this country? *G. A., Finedon Hall, Hunts.* [A small tree in Messrs. Jackman's Nursery at Woking has one or two cones on it. No cones have been as yet produced by this Fir at Bicton; but Mr. Barnes states that Abies cephalonica, of which trees exist there from 50 to 60 feet in height, are covered with blue cones, which have a very ornamental appearance.]

Sport from Pelargonium Mrs. Pollock.—I inclose a leaf of a sport produced by this Pelargonium here in March last. It appears to be quite distinct from that mentioned by Mr. Fish (see p. 756). I would add that the sport has a much more vigorous habit than its parent. *William Wildish, Gardener, Raynham Hall, Rougham, Norfolk.* [The leaf sent measured 6 inches in diameter. It was green in colour, broadly zoned with warm reddish brown, outside of which was a green border, fully half an inch in width, mottled with bright red.]

Genista candicans.—The Cytisus of which I enclose flowers, foliage, and seed, flowers generally in spring or early summer; but, as you will observe, it frequently blooms again in the autumn—in fact a few blooms may be found upon it in most months throughout the year. It is of free growth, easily propagated, makes nice little standards when pruned to one stem, and being perfectly hardy (at least here), it deserves. I think, to be more extensively cultivated, inasmuch as I find that hares and rabbits will leave untouched all other trees and shrubs, while a supply of this Cytisus is afforded them; and if for no other reason, this should recommend it to those cultivators who have charge of game-preserves or plantations where hares and rabbits are numerous. *Johannes Scnilis, The Nurseries, Ringfield, near Lymington.*

Chinese Apple.—I thank you for inserting my description of the Chinese Apple, but as no one has yet said anything about it, and as the plants are growing nicely, I enclose a leaf, which is all I can send at present, in the hope that you may be able to tell what it is. As regards the Asplenium Trichomanes, I had always considered that a British plant, according to Loudon. Am I wrong, or is it natural to both countries? I thought a plant natural to Italy could not live here in the open air, any better than the Oranges which grow with it. Will you kindly explain it? *Jane.* [The leaf is, we think, that of a young seedling Loquat. Asplenium Trichomanes, besides being a native of Britain, occurs in all parts of Europe, in North and South Africa, in Siberia, in India, in the Pacific Isles, in the United States, Mexico, and various parts of South America, in the West Indies, and in Australia. EDS.]

The Castle Kennedy Fig.—This now famous kind of Fig will, I apprehend, be found identical with a sort sent to me from France under the name of "Grosse Marseilles" and also as "Marseilles." A tree under the latter name has borne one or two fruits here, in an unheated house, of exactly the same character as the Castle Kennedy; its leaves are of the fingered-leaved race, like the Brunswick, and other large Figs. It is probably a variety peculiar to the neighbourhood of Marseilles, and was perhaps introduced to Scotland in the "good old times" when French wines and other French "notions" were so popular in "theland o' cakes." *T. R.*

Gardeners' Royal Benevolent Institution.—It has often been regretted that gardeners do not more generally support this Institution, inasmuch as it was inaugurated entirely for their benefit and support in old age; and when we look at the comparatively short list of names of those have enrolled themselves as members, we are bound to confess that from some cause or other the Institution does not get that support from gardeners which one would consider it to be fairly entitled to. I have heard it remarked as a reason for not subscribing, that those who have not subscribed often get elected over the heads of those who have subscribed for years. This, upon the face of it, seems unfair; and I am of opinion that if it could be so altered as to leave no cause for complaint in that direction, the credentials of the Institution would be more presentable to the great majority of gardeners than at present. I would beg leave to suggest for the consideration of the committee of management some such scheme as the following. One of the rules of the Institution provides that any members who have subscribed for 15 years to the charity shall be entitled to its full benefit on a vacancy occurring without going through the form of an election. Now what I want to suggest is, that any member of the Institution, upon soliciting its aid, should be entitled to a *pro rata* benefit; in other words, should have added to his number of votes as many fifteenths of the highest total as he has subscribed numbers of years. This would be giving him a decided advantage over the non-subscribing candidate, and one to which he is fairly entitled. I cannot but feel that such an arrangement would induce many gardeners to become subscribers, as they would secure, in case of need, an immediate benefit thereby; and it must be confessed that 15 years is a vista of almost hopeless length to look through, especially when persons have been late in life before commencing their subscriptions. I think in common fairness, if it is right that a person should have the full benefit of his subscription at the end of 15 years, he should also have a comparative benefit for every year of his subscription. I trust the Committee will consider this suggestion, and if they approve of it, that they will not hesitate to adopt it. I don't think it can do harm; it might do a great deal of good. *E.*

Pelargoniums.—Allow me to thank Mr. Rush, of the North-West of England Seed Warehouse, and Eaton Road Nurseries, Chester, for the cuttings of Beaton's Silver Nosegay and the Stella sport so kindly forwarded. The latter seems identical with some of my own sports, and the former is probably the origin of the variegation in Stella—presuming that it preceded it and was raised by Beaton. As Mr. Rush says their Silver Nosegay was obtained from the Clapton Nurseries, perhaps the Messrs. Low may favour us with their opinion on this point. I shall be pleased to receive the leaves promised by Mr. Rush as well as some cuttings of Mr. Bennett's, of Osberton, Variegated Nosegay, to prove their identity or otherwise with Beaton's Silver Nosegay. Permit me also to inform Mr. Rush and others that the expression, after trying 'every Nosegay' in my last note, should have been rendered 'many Nosegays.' I may also take for the information of other inquirers that next in order of merit to Stella I place Cybister, Spread Eagle, and Pink Pearl; Baron Ricasoli, Ratazzi, Rubro-cinctum, Miss Parfitt, Rival Nosegay, Carminatum Improved, and Lord Palmerston, also make good beds. Spread Eagle is unapproachable for brilliant small beds, and was Mr. Beaton's first step towards one of his latest efforts, a yellow Pelargonium. And doubtless he would have succeeded in giving us this if he had lived. He was the first to demand a "white scarlet," and led the way to it. Singularly enough some 20 years ago I had the pleasure of sending him the first white I believe ever raised, with flowers about the size of a Chickweed, which he turned to good account as a breeder. *D. T. Fish.*

Laburnum Sports.—Here we have a tree which pro-

duces four sorts of flowers, the principal part lilac Cytisus, pink, and white, with a few branches of the common yellow Laburnum. This year I have been asked repeatedly the cause of this freak of Nature, some believing we have either grafted or budded it. Can this sort be increased by grafting with the same result, or by budding, and if so, how could it be done? *Robert Craig, Leven's Hall.*

Difference in and Nectarines on the same Tree.—About 50 years ago I first saw Peaches and Nectarines growing on the same tree without buds or grafts having been inserted. I have seen the same thing since, and old Abercrombie, I think, mentions other cases of the same kind; therefore Messrs. Darwin and Rivers may rest assured that Nature's progressive change in her forms is not left to the agencies of man and of the busy bee. *Verily.* [We have seen one instance of the kind you mention, and a similar circumstance has been frequently put on record. Eds.]

Mendicants in Fine Linen.—If sympathy can console "A Country Curate" (see p. 780), and a great writer has told us that the tart small-beer of sorrow becomes less distasteful, when poured from one jug into another, he may feel quite sure that his complaint is echoed again and again, like the bugles at Killarney, not only by rose-growers, but by the Roses themselves. My name is Maréchal Niel, and I have been this season the "Swell" in the *beau monde* of Roses. Many of your readers have seen me in the Park (Regent's), and in the Palace (Crystal); and, though I may have been arm-in-arm with the handsomest of Roses, as, for example, with my dear friends Chas. Lefebvre or Duc de Rohan, they have always given me the larger share of their most welcome admiration. I should be a hypocrite indeed were I to pretend ignorance of those personal charms which have been so generally and audibly acknowledged. Modesty and reticence dissolve and lose all consistency, like an ice-pudding in a hot dining-room, in an atmosphere of fervent praise. Thousands pretty women have called me "darling," and one of the prettiest almost spoiled my complexion for ever, and changed me into a blush Rose, by saying "she should like to kiss me!" Whereupon Madame Boll tried to conceal herself behind her foliage, and Celine Forestier exclaimed "Well, I never!" Who would not be proud of such adulation? I gloried in it; and now, alas, am punished for my vanity. My pride has had a grievous fall. I, the most magnificent, am now the meanest of Roses. I have gone up like the rocket, and come down like the stick—very like the stick indeed. Adversity has stripped me of my honours, and left me, like Wolsey, "naked to mine enemies." Hear my history! Soon after my blooms had been cut for exhibition, my owner came, with a knife in his hand, and remarking to his gardener "that he grieved to touch such beautiful wood, but that of course *the* Rose of the season must be multiplied as much as possible," he severed in half my two longest shoots. I bore this patiently, nay contentedly, out of the love which I have for my dear master, who has tended me affectionately ever since I was a "bud;" and after drying up my tears (of sap), I made up my mind to repair the damage as soon as possible by taking extra pains with my laterals. These grew vigorously, and I was beginning to feel quite happy and complacent, when, one day, a large company of visitors came, laughing and talking, into our budding-ground. They had evidently enjoyed a satisfactory luncheon, and I should say that the champagne had not been very "still." I could hear the host's merry voice, saying, "Oh, by all means," and "as many as you like;" and I could see him cutting and slashing, as freely as a schoolboy with a new knife. Presently two ladies, no longer (if ever) beautiful, came and examined me; and one of them, "regardless of grammar, exclaimed 'that's him,'" and "might she have one tiny snip?" My poor leaves quivered with terror, but the master was in conversation with a blue bonnet, and did not seem to hear. Then, woe is me, that blue bonnet came over my border, and from the sweetest face came the sweetest voice—"*that*, of course, I shall not dream of asking for." And I had hardly time to admire her abstinence, when, to my intense surprise and disgust, my master seized me with a resolute grasp, and away went three of my laterals. Twice since then has the same sacrifice been performed, and Flora has been jilted for Venus. I am become a mere stock, and, worse still, a laughing-stock. That great coarse Charles Lawson flourishes his long arms in my face—the donkey kicking at the sick lion. It is too bad that Venus should thus abuse her power. "When maidens sue, men give like gods," but maidens ought not to sue over much, especially from men whose income is not proportioned to their impulse. I would not for the world exclude these Buddhists with a Brahmah lock from the garden, but I would ask them to spare the weak, to apply to nurserymen and not to amateurs for their devoted admirer *Maréchal Niel.*

Red Spider (see p. 780).—Ventilation and syringing are the preventives here; when he is in possession there is no cure, although the latter operation may make him unhappy and stationary. For span-roofed houses, 14 feet wide, a shutter 1 foot wide should be placed on each side. For houses of the same description, 20 feet wide, the shutter on each side should be 15 inches wide. For houses 24 feet wide it should be 20 inches wide; these widths may be exceeded by 2 or 3 inches, but never lessened. The shutters should be on hinges and open downwards, so that no obstruction exists to the ingress of cool air. The lower edge of each aperture should be at the same level, and 18 inches from the surface of the ground outside. This form of ventilation may not be the mode with fashionable builders, but it is the best ever invented. The trees are syringed in the morning between 7 and 8 o'clock, and the shutters are then opened. This syringing is repeated between 5 and 6 P.M., and the shutters closed. For lean-to houses the same principle of low ventilation should be carried out. Red spider does not like this treatment, and migrates to more favoured localities, where they coddle him with a warm, dry, close atmosphere. *T. R.*

Golden Tricolor-leaved Pelargoniums.—Mr. Jabez J. Chater has certainly thrown out some good suggestions in reference to the future classification of the numerous family of Pelargoniums. I have many that might be justly called versicolors. Some of Mr. Chater's remarks I shall reply to at a future time, my present object is to show that there are other Pelargoniums possessing qualities quite as good as those of Senior Wrangler. I send you leaves from two of my sports—Lottie Wills and Northern Star. I have been told by a person who has seen both Lottie Wills and Senior Wrangler that Lottie Wills is by far the best of the two; and from what I saw of the Senior, at the International Exhibition I am inclined to think the same. Northern Star I consider better than Lucy Grieve. The person already referred to as having seen both Senior Wrangler and Lottie Wills, told me that Mrs. Pollock was not originated by Mr. Grieve; that Mr. Grieve procured it from a person in the Eastern Counties; and that it was produced in the first instance by sport, and not direct from seed. I trust Mr. D. T. Fish or Mr. Grieve will clear up this matter, so that the truth may be known about Mrs. Pollock—whether she was obtained direct from seed or not. *J. Wills.* [Wee Mr. Grieve's remarks (p. 780) published coincidently with the receipt of Mr. Wills' letter, as to the origin of Mrs. Pollock. The leaves sent by Mr. Wills were very beautiful, and by the kindness of Messrs. E. G. Henderson & Son, we have been enabled to compare them with some of the best, named sorts. Lottie Wills is the most distinct. It has more yellow than most of the varieties of its class, and the red zone is narrower, but very bright, and zigzag in its disposition. Judging from memory, we think it is distinct from Senior Wrangler, though in its breadth and lobed character it has a certain resemblance to that variety. Northern Star comes nearest to Lady Cullum, indeed the detached leaves are undistinguishable. This, which we regard as one of the very best yet produced, is remarkable for its obscurely lobed leaves, and its broad even zone of bright colour, less clouded than in Lucy Grieve, by the running outward towards the edge of the green colour from the centre of the leaf blade. Eds.]

Peach Growing.—There has been no new discovery in the art of Peach growing during the last 50 years, save that of a north countryman who set forth his discovery of the cause of gum in the Peach tree, which article appeared, I believe, in the "Quarterly Journal of Agriculture." As to keeping our Peach tree roots dry, out of doors in winter, it is simply impossible by ordinary means; my Peach tree roots, or at least the strong soil they grow in, stands about at saturation from Nov. to March, and yet they "turn off" more than 2000 fruits annually. This year is rather an exception to that rule, inasmuch as though the blossoms did not suffer by frost, yet they suffered from excessive rain from the south while in bloom; they did not "set well." "In the resting season keep the plants dry," says Mr. Rivers; yet this advice is against the law of Nature, in this country at least. I assert, keep your Peach trees dry in winter if you can, and whatever the rainfall may be on the border in the resting season, you will succeed satisfactorily, everything else being the same. When rearing young trees out of doors I place old sashes against them to keep off the rain in the winter, which, combined with severe frost, would otherwise seriously injure my luxuriant young trees; and, if you are to cover a 12 or 14-feet wall, and 40 feet diameter, your young trees must be A 1 in stamina for the first 10 years of life. It is singular how we realise accidentally the firmness of border so insisted on by Mr. Rivers. Our walls being "fired," the constant trampling during the spring and down to the present time, August 10, as well as from the attention the trees otherwise receive, and lastly, which is no trifling affair, the treading down of the earth by ladies and gentlemen when picking the fruit. Thus have practice and science met by accident. Mr. Rivers' philosophy and practical attainments in the culture of Peaches in pots, reminds me of T. A. Knight's accomplishments in the culture of the Pine-apple without tan, &c. Both Rivers and Knight make all the necessary appliances in their respective arts very smooth, so to speak; yet a Knight and a Rivers appear to be required to apply them before success can be attained in either art. *Verily.*

Bees and Fruit Setting.—In your Paper of the 11th inst., one of your correspondents advocates the employment of bees for the purpose of fertilising the blossoms of Peach and Nectarine trees in early houses. Convinced that, in such houses, bees do much more harm than good, I carefully shut them out as much as possible. In the month of March, when the trees are in blossom, there is not a single flower out of doors which will yield them a mouthful of food; and it is extraordinary how, in a fine day, they will discover where Peaches are in flower under glass, and how they will gain admission. When they appear, as they frequently do, in numbers, it will be found that they eat up the pollen as fast as it is set free, and that so completely that little or none will be found upon the stigmas. All the good they could do would be to scatter the pollen, a benefit which is much more effectually and safely secured by the "stout stick" recommended by Mr. Rivers. *An Amateur and Microscopist, Clapham.*

Movement of the Sensitive Plant.—Some months ago it occurred to me that the motion of the folioles of the Sensitive Plant, on being touched by the finger, might be due to the transmission or interchange of electricity between the two points in contact. Impressed with this idea, I took the opportunity a few days ago of putting the matter to the test, by using for the purpose of touching the folioles a non-conductor, a steel conductor, and the finger. The experiment quite answered my expectations, as the subjoined letter from my friend Dr. Divers will testify. The plant, I should state, was in flower, and at this period it is probably more sensitive than at other times. On the 12th inst. I experimented three or four times; and on the 19th inst. I again repeated these trials with a similar result, so that the gardener spontaneously remarked upon the difference in the effects produced. They were these: on touching gently and even lightly pressing the folioles with glass they remained as they were; on touching them with steel held in the fingers, or (in other instances) with the finger alone they made their usual movement. Before I applied these tests, a gentleman asked me to explain how it happened that the plant moved more readily when touched by any of his children than by himself. He had seen this take place several times, and could not account for it. I have since had reason to believe that, with the same individual, the action will be more evident when he is in a tonic state (if I may use the expression) than when he is exhausted or weary. Although what I have shown goes to prove that the passage of electricity between the points in contact will account for the movement of the leaflets in such instances; I do not mean to say that whenever a foliole moves there must be contact with a conductor, for I consider it possible that the plant may be capable of developing, within itself, sufficient of such force to close its folioles (a seemingly protective movement) if roughly handled. From what I had observed with regard to the Sensitive Plant, it appeared to me probable that the fly-trap movement of the processes of the Dionæa muscipula was due to the same cause. Having gently touched these exteriorly, I was disappointed to find no result produced. Laying the tip of the little finger softly within the open processes, in two cases I found them close, whereupon I withdrew it at once, that there might be no possibility of injury to the plant. I thought the fact almost valueless, as there was no opportunity of testing what would be the action with a non-conductor. However, but a few moments had elapsed when my attention was drawn to a distinctly painful sensation in the ulnar nerve at the right elbow, it being the little finger of the right hand which I had used. This sensation persisted for some time, and then imperceptibly passed away. I admit that the subject is capable of many more tests and much more development than I can give it in this letter or at this time. It is my intention, however, to pursue the investigation, confident that it will be recognised as one of considerable importance. Now, when the rigid limit drawn by old naturalists between the animal and vegetable kingdoms has been found untenable, there will be many, I presume, to admit that, *a priori*, there is no absolute reason why individuals of the former kingdom should be endowed with power of generating electricity, essentially denied to all members of the latter. Few, also, I believe, will assert the antecedent impossibility of any of those plant-organs, termed "vessels" and "ribs," subserving in a very restricted sense, it may be, the purpose of nerves. *George Sigerson, M.D.* The following is a copy of the letter referred to above:—"At your request I am very glad to be able to acknowledge witnessing the interesting fact you showed me at Kew on the 12th of the present month, concerning the Sensitive Plant. The fact was this: that while the leaves of the plant proved highly sensitive to the slight contact of your finger or of a piece of steel held in your hand, they were not sensitive to the similar contact of glass. This fact was new to me at the time. *Edward Divers, M.D., Charing Cross Hospital.*" [We have tried the experiments with steel and glass respectively, but without witnessing the difference in the action of the leaves alluded to by our correspondent. The leaves in our trials were fully as sensitive to the contact of glass as of any other material. We have not yet tried the Dionæa with glass, but with steel the effect was the same as with the finger. Moreover, we experienced no such sensation in the ulnar nerve as our correspondent describes. Eds.]

Hard Borders and Orchard-house Trees.—With regard to "D.," the doubter (see p. 781), if he knew me he would be well aware that I have never recommended any mode of practice till I have tried it. If the stir his borders, as I did, 20 inches deep, and if the soil require it, mix some manure with it, he may ram the surface a week after planting with no "absurd" effect—the trees will flourish and bear fine fruit as mine do, and moreover he will feel surprised to find to how small a depth the earth is compressed. I acknowledge that I ought to have weighed a paviour's rammer before naming that instrument as suitable; that used for my border was the kind used in beating down turf or in ramming a post hole. The soil operated upon here is a stiff calcareous clay; if there is much iron in the soil, some gardening sense must be exercised. The border in which my trees are flourishing—no red spider, no mildew on them, only a little too much vigour—is so hard that a pointed stick used with much force will not enter deeper than one inch, and that only when the surface has been watered. As to criticism, every man that writes half a dozen lines without correcting "proof" opens a wide door to it. If however truth and long experience guide the writer's hand, he can afford to smile at critics, and think of the stop-watch scene. The "absurd" method of giving Peach trees solid soil to grow in, is an old, old idea. Some 30 or 40 years since I always noticed the trained Peach trees to be in more vigorous health when growing near a well-trodden path than those away from it, where the ground, trenched 2 feet deep, was loose and seemingly in a state more favourable to their well-doing. I have been very slow in acting on this hint. Is it good to be "slow and sure?" This reference to old times reminds me that it is now

some 20 years since that I happened to pay a visit to a friend at St. Alban's. In his garden I saw rows of Apricot bushes covered with their golden fruit, and between the rows were Melons ripening. The scene haunted me ever afterwards, and I could not rest satisfied till I had created a climate equally or more favourable. Thus arose the orchard-house idea, and I have now the satisfaction of possessing Apricot trees in pots from 10 to 15 years old that are models of perfection in health and fertility. With regard to your correspondent "E.", I am inclined to think he must move in the regions of business, and is possessed with the idea that every man who recommends bacon for breakfast, must *par conséquence* be a bacon seller. It is not a lofty turn of thought. He may read the following letter, one of many, and go to Ely, to Iver, to Culford Hall, near Bury, Suffolk—to many other places, or, best of all, come here and make himself known as an unbeliever in the honour of men of business. I may add that orchard-house trees cannot be exhibited when in perfection and covered with ripe fruit. I have never attempted to show them.——"If you should be coming this way I should like you to see Mr. Harlock's orchard house, which is 100 feet long and 25 feet wide; it now contains about 230 trees—Peaches, Nectarines, and Apricots. They are growing in 18-inch pots, standing on a hard bottom. They have the most magnificent crop of fruit I ever saw; many of the Peaches and Nectarines have more than 100 fine fruit, each now ripening, and the trees are in the most perfect health. The Pears and Plums were removed from the house soon after the fruit set, to make room for the Peaches and Nectarines; they have a fine crop on them. Mr. Grix, the gardener, tells me that he has taken 24 dozen of fine fruit from two trees of the Williams' Bon Chrétien Pear, and I noticed this morning (August 20) a fine tree of the Glou Morceau Pear, on which there cannot be less than 100 fine fruit. A Diamond Plum has such a load of large fruit that we failed in counting them; in fact, there is but one tree that has failed in giving a good crop of fruit. They are pictures of health, and worth a trip to see. Apricots, of which they have gathered the last three days 1½ bushels, are over, and the Peaches and Nectarines are now ripening very fast, and when I reached the garden this morning the gardener had just gathered about 30 dozen, equal to any I ever saw on the open walls. I think I told you that several Peach and Nectarine trees were producing 8 dozen fruit—and these not small things in clusters, but fine fruit, placed as regularly over the trees as though a rule had been used. The trees set such a crop that some thinning was necessary. There were, in some instances, as many as 20 or 30, and from one or two of the trees as many as 40 dozen removed when they were about the size of Hazel nuts. The house has a firm floor of concrete, so that a root cannot enter. *R. Debron.*" I hope "E." (see p. 781) will now be satisfied. If his instinct of unbelief requires more, I will give him an introduction. As to the letter of Mr. Fish (see p. 779), he must come here and look at the trees, and then we will reason together. Some years since I knew Bury St. Edmund's as intimately as my native village, and I perfectly well remember seeing in the town gardens numerous Apricot trees flourishing against the walls and bearing fine fruit. As far as I can recollect, they grew and bore fruit equally well in ground dug and undug; but what surprised me was the fact that Peach and Nectarine trees would not grow; the trees planted against the same walls as the Apricot trees were always in an unhealthy or dying state. Now, as I knew that these trees were budded on the same kind of Plum stock as the Apricot, I could not then, and cannot now, understand why this should be. Mr. Fish could perhaps assist me in the rationale of this and the effect of hard borders, and then, when settled, it could be given to the world. In the cultivation of trees for many years—in closely observing, among other things too numerous to mention, the effect of the stock on the graft, and the graft on the stock in thousands of instances, I have met with many phenomena which have baffled the researches of physiologists. I am therefore in my old age more than ever inclined to bow to "a Great First Cause," and humbly acknowledge that in many things we must continue to "see through a glass darkly." *T. R.*

Societies.

ROYAL HORTICULTURAL: *Aug. 21* (*Scientific Meeting*).—G. F. Wilson, Esq., F.R.S., in the chair. After the election of new members and the affiliation of the Glamorganshire and Middlesborough Horticultural Societies, the usual announcement of awards was made, and the Rev. M. J. Berkeley offered a few remarks on the different subjects exhibited. Attention was first directed to a variety of Bramble which was shown at the last meeting by Mr. Bateman. It is nearly allied to our common Raspberry (Rubus Idæus), and is clearly a form of Rubus strigosus. R. occidentalis, and cuneifolius are the other nearly allied species, which have leaves white on the underside. Fruit of the Lawton Blackberry was shown by the Rev. A. Rawson, of Bromley. It is large and fine-looking, and would probably be valuable for culinary purposes. In Canada and the United States, the summer of which is hotter than that of England, it is held in high repute, as are also other kinds of Blackberry, which find little favour with us as far as their fruit is concerned. It was stated that Mr. Rivers had been making some experiments with the view of improving the fruit of our Blackberries, and that from some of his plants, procured by judicious cross-breeding, and now in the Garden of the Society, it was hoped a dish of fruit would be shown at the Society's next meeting. Blackberry Jelly, it was said, was wont to be prescribed by a physician in Northamptonshire for gout, and it was stated that what remedial power it possessed doubtless depended on the small quantity of citrate of potash which the berries contain, and which is well known to be one of the medicines usually given for the cure of that disease. Rubus Gircondianus, raised from seeds stated to have been imported from the Amoor River, Mr. Berkeley pronounced to be R. reflexus of Ker, a species figured in the "Botanical Register" as far back as 1820, and which is there said to come from China. Caution in the adoption of mere trade names was therefore recommended. Mr. Berkeley stated that Abies Pinsapo had produced male catkins at Orton Longueville, the seat of the Marquis of Huntly, and it will be seen (see p. 803) that this Fir has borne cones at Finedon Hall, in Northamptonshire. As regards Orchids, Mr. Anderson, gr. to T. Dawson, Esq., Meadow Bank, near Glasgow, furnished a magnificently flowered branch of an unnamed Oncidium; also O. cruentum, two small plants of which were likewise shown by Messrs. Low. Mr. Anderson, moreover, furnished a portion of a spike of Oncidium leucochilum, on which there were said to be no fewer than 242 blossoms. Lælia Wallisii was next adverted to, as was also Adiantum velutinum from Mr Bull, a full account of which was given last week (see p. 777). To Podophyllum Emodi, a plant bearing large red fruit, having somewhat the appearance of a purple Aubergine, attention was next directed. The fruit of this, on being cut, proved tasteless, a fact somewhat surprising when it is considered that this species is closely related to P. peltatum, the American May Apple, which, probably on account of its acidity, has also received the name of Wild Lemon. Among economic plants exhibited was Maranta arundinacea, from the grated tubers of which the Arrowroot of commerce is washed. Various other plants, however, yield a starch to which the name of arrowroot is applied. For instance, what is called Portland Arrowroot is prepared from the root of our common Arum, which is poisonous; but which by repeated washings becomes innocuous. About the year 1823, when a scarcity of food existed in the West of Scotland, fecula washed from the roots of Typha latifolia likewise furnished a kind of food, though that could hardly be called Arrowroot. The Rice-plant was shown by Mr. Bull, a list of whose economic plants was given in a former number (see p. 566). Dionæa muscipula, or Venus's Flytrap, in flower, next came under notice, and the peculiar action of its leaves was commented on, as was also that of the stamens of Apocynum androsæmifolium, the Flytrap of North America, which is cultivated in gardens in this country as an object of curiosity.

The Dahlia called Fanny Sturt was exhibited in three forms: one the normal condition, in which the petals are tipped with white; a second tipped with half white and half crimson; and the third wholly crimson, indicating the facility with which one flower sports into another.

Aug. 21 (*Floral Committee*). From Mr. Standish, of Ascot, came a collection of cut spikes of beautiful Gladioli, to two among which, viz., Dr. Hogg, vivid crimson scarlet shaded in the throat with a peculiarly pleasing violet hue; and Basil, a delicate salmon sort with large flowers mottled and striped with carmine, First-class Certificates were awarded. One or two spikes of Gladioli also came from Mr. Tillery, gr. to the Duke of Portland, at Welbeck; and Mr. Stevens, gr. to F. E. Williams, Esq., Malvern Hall. Among those from the latter was one named Exhibitor, vivid crimson scarlet with white in the under petals, to which a Second-class Certificate was awarded. Mr. Noble, Bagshot, furnished a fruiting plant of Momordica Balsamina. Blooms of three varieties of Dahlias were exhibited by Mr. Hopkins, of Brentford. From Mr. Keynes, Salisbury, came Dahlias Clara Simons, Butterfly, and others, to one or two of which First-class Certificates were awarded. Mr. Rawlings received a Second-class Certificate for a very dark mulberry-coloured medium sized Dahlia named John Sladden. From Mr. Green, gr. to W. Wilson Saunders, Esq., came an interesting collection of Peperomias, a class of plants which differ from each other considerably, both in habit and general appearance. Some of them are small fleshy Creepers, which grow on trunks of trees, or on damp rocks; others are erect, of a more or less shrubby character, and are terrestrial in their habits. Their leaves also vary much as regards size and beauty, some being very small, while others are large and of a deep glossy green, not unfrequently ornamented with silvery markings. For these a Special Certificate was awarded. From Mr. Cripps, Tunbridge Wells, came some handsome blooms of Clematis, to two of which, viz., C. lanuginosa tunbridgensis, reddish purple, shaded in the centre of each petal with a fine metallic blue colour, and to Lady Caroline Neville, delicate bluish white, ornamented in the centre of each petal with purplish lilac, First-class Certificates were awarded. The last mentioned also belonged to the lanuginosa class. A First-class Certificate was also awarded to Pteris serrulata polydactyla, an interesting Fern from the same exhibitor, who also showed cut flowers of one or two kinds of Everlasting Pea, a beautifully creamy white variegated-leaved variety of Forsythia viridissima, to which a First-class Certificate was awarded, and a variety of Hydrangea japonica named elegantissima, to which a Second-class Certificate was awarded. The leaves of this are freely variegated with pale yellow. Mr. Cripps also furnished a handsomely spotted-leaved Aucuba, named A. fœmina grandidentata. From Messrs. E. G. Henderson came various double-flowered Petunias, a variegated-leaved Petunia named Joseph Handrechy, a pretty Verbena called Blue Shade, Coleus aureus marginatus with deep velvety-brown and yellow leaves; pink Nosegay Pelargonium Christine, a purple and white carnation-striped Verbena named Harlequin; a double-flowered Fuchsia with white corolla, and one or two other plants. Mr. Wm. Paul received a Special Certificate for beautiful examples of Nosegay Pelargoniums. The same exhibitor also showed an interesting collection of hardy variegated and other shrubs; a double flowered Hemerocallis, with white striped leaves of considerable beauty; the golden-coloured variety of Retinospora pisifera; and finely fruited plants of Rat-tailed Radish. From Mr. Keeler, gr. to T. Todd, Esq., Woodhouse, Dulwich, came a scarlet zonal Pelargonium named Sambo, bearing magnificent trusses of well-formed flowers over which was thrown a soft velvety shade. For this a First-class Certificate was awarded. A similar mark of distinction was also conferred on Cattleya Manglesii, a hybrid raised between C. Harrisoniæ and C. Mossiæ. In colour it is violet shaded lilac, with a small amount of pale yellow in the lip. From Mr. Todman, gr. to R. Hudson, Esq., Clapham, came a crimson scarlet Verbena named King of the Bedders, which is evidently a free flowerer, and it was stated that it is not liable to burn; it received a Second-class Certificate. Mr. Bull furnished Vallota purpurea eximia, and V. purpurea, in order to show how superior in all respects the former is to the latter, which it certainly must, on comparison, be admitted to be; also Dioscorea discolor vittata, a climbing plant, with clouded richly-coloured foliage; and Adiantum velutinum, adverted to by Mr. Berkeley. For both of these First-class Certificates were awarded, and a Second-class Certificate was given to the same exhibitor for a Pentstemon named Sceptre, of a bright reddish-brown colour. To Yucca hystrix, also from Mr. Bull, a First-class Certificate was awarded. Mr. Eckford, Coleshill, showed cut Verbenas, to two among which, viz., Lord Radnor, scarlet, and Lady Folkestone, rose, Second-class Certificates were awarded. We also noticed some cut blooms of Salpiglossis and double Zinnias. Mr. Bartleman, Leybourne Grange, showed a pretty rosy pink Pelargonium called Emmeline.

August 21 (*Fruit Committee*).—Mr. Bell, gr. to the Duke of Wellington, at Strathfieldsaye, exhibited Anson's Pine-apple, which has considerable resemblance to a Providence; also a fine fruit of Charlotte Rothschild Pine-apple, which, on being cut, proved excellent in flavour. For the last a Special Certificate was awarded. From Mr. Holliday, gr. to H. B. Walmsley, Esq., The Elms, Acton, came a crownless example of Ripley Queen Pine, weighing 6 lb. 6 oz. Some seedling Grapes were shown, but not in sufficiently good condition to make it expedient to offer any opinion as to their merits. Other fruits consisted of Prickly Pears imported from Lisbon; fruit of Podophyllum Emodi, alluded to above, from Messrs. Osborn, who had also fruit of Gaultheria Shallon, which in North America is sometimes pressed into edible cakes.

NOTTINGHAM FLORAL FÊTE.—This fete opened on Thursday, and closes this evening. It was, as we have previously intimated it was expected to be, a thorough success, looking at it from a horticultural point of view; and judging from the fashionable company thronging the exhibition ground at the moment we write, it should be no less successful financially. The Show, which is held in the valley of the Park, is within a few minutes' walk of the Castle gates, and is distributed through a series of tents, after the usual fashion of a country show, these tents being filled to overflowing with a very varied assemblage of plants and flowers, some of which are exceedingly well grown, and the generality of which are fully up to the average in merit. We regret that the exigencies of the printing-office leave us only time to prepare a very general sketch of this interesting gathering.

The show may be specially called a Fern Show, for never before, we suppose, were so many Ferns exhibited at one time. Two long marquees, connected so as to form a continuous promenade, were entirely filled with them in all their several phases of Hardy and Tender, British and Exotic, and besides these another by no means small tent was filled exclusively by a collection of the varieties of British Ferns, brought from Plymouth by the Rev. C. Padley, and another was nearly filled with the overflowings of the general collections. In point of fact there were too many shown, and as they were set up by themselves the effect was wearying and monotonous, notwithstanding the interest the assemblage possessed for the many admirers of this beautiful tribe of plants. The most interesting to us, after Mr. Padley's group, because of their superior cultivation, were some plants from the garden of Lord Belper; an Adiantum cardiochlæna, which took the 1st prize as a specimen in one of the classes, was exceedingly fine, and an Adiantum tenerum in a prize group of four plants from the same garden was no less noteworthy. Another fine Adiantum, a plant of cuneatum, in splendid condition, and about 4 feet in breadth, was sent by the Hon. Secretary, Mr. E. J. Lowe. Mr. Williams, of Holloway, in a noble group of exotic species, had the finest plant we have ever seen of Nothochlæna sinuata, a spreading arching mass, with fronds fully 2 feet long. Among novelties a multifid Blechnum from Mr. Cooling was remarkable; and among the groups of British varieties, Messrs. Edwards & Son, Nuthall, had very creditable collections of Scolopendriums and Polystichums, with which, as also with a general collection of British species and varieties, they took 1st prizes.

The next most extensive feature of the Show consisted of the Stove and Greenhouse collections, including fine-foliaged plants. Among them we noticed specially fine examples of Croton angustifolium and variegatum, Ananassa sativa variegata, Alocasia macrorhiza variegata, Cyanophyllum magnificum, and Anthurium magnificum, the two latter from the garden of Lord Middleton, who also had a splendid specimen of Caladium Chantini, which took the 1st prize in its class. Mr. Williams was first among Palms with Livistonia Jenkinsi, among Heaths with Erica Marnockiana, and among Creepers with Cissus discolor, all plants of mark. One of the two great circular tents was devoted to plants of this class. The other was filled by Mr. Barron, of Elvaston, with some of his noble Conifers and Hardy Evergreens, an exhibition of great interest, but which we cannot particularise. We may mention, however, that slung in one of Mr. Barron's transplanting machines was a huge golden Variegated Holly, some 10 or 12 feet in height, and of faultless symmetry—a wonderfully fine specimen of its class. In the same collection we saw the extremely elegant Quercus filicifolia. Another large tent was filled with Evergreens, sent by Mr. Frettingham, of Stapleford Nurseries, near Nottingham. Among these were many beautiful bushes of Variegated Hollies, some 5 or 6 feet high, and well-shaped plants, which, intermixed with choice Conifers of larger size, made up a very interesting group.

Orchids were not numerous nor specially good, though creditable to the exhibitors. The contest lay, and it was a very close one, between Mr. Williams, of Holloway, and A. Turner, Esq., of Leicester, and the former was victorious on account of the more even merit of the plants exhibited in his collection, which contained a fine Miltonia spectabilis, a good Phalænopsis rosea, Lælia elegans in fine bloom, a very hand some Odontoglossum grande, and good plants of Aërides, Saccolabium, and Vanda. Mr. Turner had one remarkably fine specimen of Cattleya crispa, but there was a falling off in other parts of the collection, which moreover contained too many examples of Cattleya crispa, handsome and to some extent varied as are its forms. In the subsidiary Orchid Classes Mr. Williams was the only exhibitor. Balsams were not so well nor so extensively represented as we had expected, though some fairly grown and well-bloomed plants came from Lord Middleton's garden. Fuchsias were numerous; these, again, were scarcely so good as we had expected to find them, for Fuchsias at country shows often beat those which make their appearance at the metropolitan exhibitions. The best in the collections of 8 plants were sent by Mr. Beard, and the best in the collections of 4 plants by Mr. Farmer. They were generally tall plants, 5 or 6 feet high, and too narrowly pyramidal in outline, but in the case of the best lots pretty freely and regularly bloomed.

A group of Japanese plants from Mr. Barron contained a fine bush of Torreya nucifera, 6 ft. high, and like a huge bush of Yew; a very fine specimen of Sciadopitys, 3 feet high, with a vigorous leader, a good Thujopsis dolabrata variegata; and well-furnished bushes of Retinospora pisifera and obtusa, 3 feet high, the former evidently the better grower of the two. Among hardy plants, we may also notice a dwarf Aucuba from Mr. Laxton, literally laden with berries, though, unfortunately for the exhibition, they were only in the green state.

Cut flowers were very well represented in the shape of Hollyhocks, Dahlias, Gladioli, &c.; and there was a fair display of Fruit, but this department of the Show was not nearly so full as we expected it would have been, occurring, as it did, in the neighbourhood of the "Dukeries." This, we understood, was owing to the limited encouragement held out in the shape of prizes.

ENTOMOLOGICAL: *August 6.*—Professor Westwood, V.P., in the chair. Mr. Samuel Stevens exhibited portions of two collections of insects recently received from Mr. Edwin Reed, collected at Bahia, amongst which were some interesting Cicindelidæ and Carabidæ, and from Mr. Gerrard at Madagascar, including three species of the rare genus Pogonostoma (Psilocera, Gory), and a new Cetonia from Sierra Leone; Mr. MacLachlan exhibited a case of melanism occurring in Cabera pusaria, with the wings quite slaty-coloured, captured by Mr. D'Orville; also a series of caddice cases made by the larvæ of Trichoptera, chiefly collected in Bavaria and also from the neighbourhood of Basle; likewise specimens of galls on Elm trees formed by aphides of the genus Erosoma—some of the galls were found partly filled with fluid. He also noticed the capture of Sisyra Dalii (family Hemerobiidæ) at Reigate. Mr. Bond exhibited Eudorea basistrigalis, a new species recently described by Dr. Knaggs; and Sericoris Euphorbiana and Catoptria microgrammana, taken at Folkestone by Mr. Meek.

Mr Jansen exhibited various rare Beetles collected in the New Forest by Mr. C. Turner, including Vellejus dilatatus found in the burrows of the larvæ of the Goat Moth. Professor Westwood stated that it had been obtained by the late Professor Winslow from hornets' nests. He also made some remarks on the structure of the blind Ant beetle Ectrepleus of Tasoon, from Australia, and on the rearing of the new Chinese Silkworm, Bombyx Cynthia. A communication was also read respecting the recent plague of locusts in Algeria.

United Horticultural: *August* 13.—This, the ordinary monthly meeting, was held at the Green Dragon Hotel, Bishopsgate Street. Amongst the subjects exhibited the most prominent were some varieties of Tropæolum compactum, produced by Mr. George; one especially was selected as being very distinct, the colour is a dark maroon, and flowers profusely. This was awarded a First-class Certificate. T. compactum and its varieties will supersede the varieties of T. elegans (Crystal Palace) and T. minus, or Tom Thumb, as they have a much dwarfer habit than Tom Thumb, and the blossoms are the size of T. elegans. Mr. George has already introduced three colours—scarlet, yellow with spots, and dark chocolate or maroon. If he can succeed in raising a pure yellow variety, the colour of yellow Tom Thumb, nothing will be more effective for ribbon borders or beds of the colour. The flowers are produced in such profusion that the foliage is almost hidden. Mr. Joyning, of Enfield, exhibited a stand of seedling Hollyhocks, several of these promise to be acquisitions. Mr. Wilson, gr. to William Marshall, Esq., of Enfield, staged a box of about 50 varieties of Zonal Pelargoniums, new varieties of the last two seasons; they were fresh from the open ground, and in good condition, taking into consideration the bad weather of the last fortnight. Mr. Cannell, of Woolwich, had a very nice brace of white spined Cucumbers, named Pride of Kent. White spines seem to predominate, although for exhibition, they are not so handsome as black spines, the latter carrying a much finer bloom than the former. We do not see staged at the present day such Cucumbers as Weedon's Victory of Bath, &c. There were also exhibited some very interesting varieties of striped Verbenas of French extraction; several of them were very handsome, especially Madame Herman, Stenger, M. Wood, M. Lenszeur Jeune, Oreglia, Orango, Fra Diavolo, &c. Annie (Cooling) was, however, the most distinctly striped.

Clay Cross Horticultural: *July* 31.—Clay Cross may with justice boast of possessing one of the most useful Societies in England; for while it gives in the course of the season nearly 70*l.* for the promotion of purely cottage gardening, it at the same time gives such liberal prizes for plants, fruits, and flowers, that some of the first growers in England are induced to enter the lists. Upwards of 350*l.* was offered on this occasion, and this by a small town containing only about 5000 inhabitants. The Show is the principal one in Derbyshire, and usually attracts a large concourse of people, but on this occasion, for the first time in nine years, the day was wet. Early in the morning, fortunately before any plants were unloaded, the large tent in which they were to be shown blew down. The Committee, therefore, promptly decided to divide the Show, placing the cottagers' produce in the public Hall, and the other classes in the two remaining tents, and by this arrangement a very effective display was made, particularly of stove and greenhouse plants, stove and hardy Ferns, orchard-house fruit trees, and fine-foliaged plants. As regards subjects of exhibition this was by far the best show that has been held at Clay Cross, and some of the professional gardeners present said it was one of the best shows of the season, but the continual down-pour of rain allowed but few people to inspect it, and thus the supporters of the Society and the public generally lost a treat. For the list of prizes awarded on the occasion we have unfortunately no room.

Notices of Books.

Manuel de l'Amateur des Jardins. Tome 2. Par Messrs. J. Decaisne et C. Naudin. Paris, 1866, 8vo, pp. viii. and 824. Ouvrage accompagne de figures dessinees par H. Riocreux, gravees par F. Leblanc.

[First Notice.]

The present volume treats of the cultivation of ornamental plants, both under glass and in the open air, in different climates of France, and as the temperature and other climatic conditions are very different in the north and south of France, or indeed in the east and west, the work commences with a treatise on the climate, founded on the "Patria" of Mons. Martins, accompanied by an illustrative Map. Of this interesting chapter the following is a brief abstract.

France is divisible into five different regions, in which, making allowance for differences arising from increased altitude and proximity to the sea, the climate is tolerably equable. In particular spots and districts special causes modify the climatic conditions, but such cases are to be regarded as exceptional.

1. The first is the Vosges, or north-eastern mountainous district, in which the cold is severe in winter and the heat great in summer. The rainfall is about 26½ inches, the rain in summer being the greatest. The climate is favourable for the growth of the ordinary objects of cultivation in the north of France, but from the severity of winter unfavourable to the naturalisation of exotic trees. Those with deciduous leaves from similar climates succeed the best, and ripen their seeds; but the trees of milder climates, as Magnolia Yulan, Hibiscus syriacus, Cissus orientalis, Euonymus japonicus, and a host of others, which are patient of frost, but which require a long dry hot summer, do not bring their fruit to perfection. Those on the contrary, as the common Laurel, Laurustinus, Fig, Myrtle, &c., require the protection of a conservatory in winter, though they succeed well on the coast, and some of them as far north as Paris. Melons, Cucumbers, Tomatos, &c., require artificial heat of some kind to bring them to perfection, as also many half-hardy plants.

2. The second is the region of the Seine (Sequanian) or north-west, which is as essentially marine as the first is continental. The first is the climate of Central Germany, the second that of England or the Netherlands, with a slight accession of heat. The hot or summer is moderate, the winters not severe. As it is of considerable extent the climate is less homogeneous than that of the Vosgesian district, while on the south it blends insensibly with the district of Gironde. The more we approach the ocean, the more distinctly marked are the peculiar characters of the region. The winters are milder than those in the more central and strictly continental parts, but on the other hand the summer is cooler. The rainfall varies extremely in different districts. It is about 20 inches in the central parts, and gradually attains its maximum in Brittany, where it varies from 31 to 37 inches.

The distinctive mark is the low degree of illumination in consequence of a clouded atmosphere during the season of active growth, from May to August. Besides the number of rainy days, there are many in which the sky is obscure. It is this deficiency of light as well as heat which prevents the fructification and sometimes even the flowering of plants which are in other respects tolerably hardy. Either there are only leaves, the pollen is not perfected, or the seeds are abortive if the fruit swells. These climatic conditions are, however, very favourable to the production of perfect lawns or evergreens. They are the conditions which produce the beautiful green Grass-plots of England, which can be imitated even at Paris only by frequent watering, and then they are after all imperfect.

In the Sequanian region many trees arrive at great perfection. Amongst these many of the American Oaks and Walnuts, and even plants of more southern climes, succeed admirably, but at Paris, and in the whole of the eastern portion of this region, the common Laurel, the Portugal Laurel, the Phillyrea, and other plants which do admirably in the western part, are often injured by frost, and last only a few years. At Angers and Nantes, and indeed on the coast generally, a great number of southern plants which cannot be cultivated at Paris, unless they be protected in winter, as Myrtles, Camellias, New Zealand Flax, or even some species of Chamærops. Chamærops Fortunei succeeds at Osborne without any protection, and flowers every year. It is above all other regions the land of gardens, social conditions combining with those of climate to favour their number, extent, and perfection of cultivation.

3. The climate of Gironde, or the south-west region, comprises the vast district between the Loire and Cher on the north, the Pyrenees on the south, and the basin of the Rhone on the east. A small portion of the Provençale region intervenes between it and the sea on the south-east. The climate is more equable than in the region of the Seine, and though bordering on the sea it has a more continental character, being removed from the influence of the Gulf Stream. The sky is less clouded, and though the winter is tolerably cold, the summers are very warm. The mean temperature of summer and winter is however only one degree Centigrade above it. At Rochelle, Poitiers, and Bordeaux the rainfall is about 22½ inches, but the figures increase towards the Pyrenees. The greatest quantity of rain falls in autumn, amounting to nearly 8 inches, and as the number of rainy days in the year does not exceed 130, it follows that the rain is heavier and more abundant while the sky is clearer. The whole of the northern half is exposed to south-east winds, but in the other half, and especially as we approach the Pyrenees, the west and north-west winds are predominant; at Toulouse the north-west and south-east are most prevalent, and at Pau the north and north-west. On the whole the climate is the most beautiful in France. It is cooler than that of the Mediterranean, and is not, like that, subject to excessive and prolonged droughts. The fertility of the soil is favourable to every kind of cultivation, and amongst other objects to Maize, Vines, Figs, &c., the quality of the Figs being almost equal to that of those of Languedoc and Provence. Magnolias, Araucarias, Conifers, American Oaks, &c., attain a size which is scarcely equalled anywhere, and their seeds ripen every year. It is perhaps the most promising spot in France for horticulturists.*

4. Fourthly, we have the region of the Rhone, or south-east. It comprises all the valley of the Saone and Rhone, from Dijon to Viviers, where the southern region commences. Its western limit is determined by the Cevennes mountains, running up to those of the Vosges. It presents no marked characters of temperature. The differences between winter and summer are as decided as in the Vosgesian region. The winters are milder than those of the north-east, but the summers are much hotter. The climate has all the extreme character of a continental climate, but it is a continental climate which is temperate as compared with that of the north-east.

The rainfall, however, is greater than that of any other part of France, with the exception perhaps of the two north-western peninsulas, and the neighbourhood of the Pyrenees. The mean rainfall is above 37 inches. The number of rainy days in the basin of the Saone is from 120 to 130; along the Rhone, from Lyons to Viviers, from 100 to 115. The rains, therefore, individually, are more abundant, and sometimes extreme. On the 9th of October, 1827, in 22 hours the rainfall at Joyeuse, near the Rhone, amounted to the enormous quantity of 31 inches,† or 14 times as much as falls at Paris in a year. It is the south-east winds which bring the rain. The cold of winter, the heat of summer, and the amount of light cause a marked character in the culture. The pastures of the Sequanian region are replaced by vineyards, which exceed the corn fields. The Maize, which does not ripen generally in the north-west, succeeds perfectly; but while the fruit, in general, is excellent, the Fig, for the most part, does not succeed, on account of the comparative severity of the winter. Exotic Evergreens do not become naturalised, as in the Gironde, but the deciduous trees have more chance of success. Many of the characteristic trees of the South, as the Bay, Myrtle, Pistacio, &c., will not thrive in the open air. In some respects, therefore, the climate is inferior to that of the Seine, the arborescent vegetation less varied, and the verdure less vivid. On the contrary, its long warm summers adapt it to the cultivation of a great many Exotic annuals, or plants treated as annuals, which require a good deal of light during four or five months in the year.

5. Finally we have the region of the South or Mediterranean, which is of all the most decidedly marked in its character, and more like that of Italy than the rest of France. It comprises Roussillon, the maritime nations of Languedoc, Provence, Corsica, and Nice. The mean temperature is above that of the Gironde, though the difference between the winter and the summer is the same, since the heat of summer is not lowered by the Mediterranean, and the barrier of the Alps or Cevennes, arresting the north wind in the whole of the district which does not belong to the Valley of the Rhone, keeps the temperature of winter at a comparatively high figure. The annual rainfall is about 25½ inches, distributed in winter, spring, summer, and autumn, in the rates of 25, 23, 11, and 44 per cent. The sky for the greater part of the year is unclouded, and the rain being nearly the same as in the Gironde, and the rainy days much less numerous, the rains are much heavier, and in this respect resemble those of the district of the Rhone. Provence is however subject to the north-west wind known as the mistral, which is the scourge of Marseilles, Toulon, &c. The littoral zone is especially that of Oranges, and the Palms there attract the admiration of strangers from their beauty. In some parts the Olive flourishes, but the cultivation is limited. The region has a vegetation of its own, characterised by many evergreen trees, as the Cork tree, the Vallota, the Pistacio, the Jujube, the Pomegranate, the Dwarf Palm, &c. The Fig flourishes everywhere, yielding generally two crops a year. The Japan Medlar perfects its fruit every year. The gardens abound in tender exotics, the Indian Fig becomes a tree, as does the Castor-oil plant, and a multitude of plants of New Holland and the Cape are quite domesticated. Indeed some decidedly tropical trees flourish in some sheltered spots, though unable to endure an abnormally severe winter.

There are of course exceptional localities in each region, but as a general rule the five regions are tolerably well characterised.

Sur l'Odorat et les Odeurs, par M. Fée. Perfumes and the Sense of Smell, &c. (*Bulletin de la Société Royale de Botanique de Belgique.* Bruxelles, 1865.)

From the earliest times perfumes have been among the luxuries of princes. Frankincense and myrrh are mentioned as of equal value to gold in the offering of the Magi. No doubt among the costly gifts brought to Solomon by the Queen of Sheba, scents of delicious fragrance were included. The patriarch Isaac in his blindness was deceived by the scents which Jacob had used in imitation of his brother; and in the Roman and Grecian temples the burning of sweet-smelling incense formed part of the customary worship. Many attempts, more or less successful, in later times have been made to classify odours. Of those useful as perfumes, M. Rimmel offers to the public a variety of eighteen kinds, of which he gives the following as types:—Rose, Jasmine, Orange-flower, Tuberose, Violet, Balsam, Spice, Clove, Camphor, Sandal-wood, Citrine, Lavender, Mint, Aniseed, Almond, Musk, Amber, and Fruit-flavour. Many of these scents are obtained from animal substances, such as musk, civet, and ambergris; and many are derived from the combination of elements obtained from various sources. The oil of Pine-apples is obtained from a product of the action of putrid cheese on sugar. The artificial oil of Bitter Almonds, now so largely employed in perfuming soap and for flavouring confectionery, is prepared by the action of nitric acid on several organic substances. But by far the greater portion of perfumes are extracted from flowers; and M. Rimmel states that in the south of France there are no less than 100 firms engaged in obtaining pomades and essential oils from flowers to the value of 68,000*l.* per annum, and that the value of rose-water, &c., prepared from these is nearly 30,000*l.*

M. Fée has executed a very difficult task with great pains and care. He has defined 27 types of odours, but our readers will doubtless think he might have carried his classification still further when we mention that notwithstanding this great number of types, the Violet, Wallflower, and Mignonette are all included under one. Some odours appear to classify themselves together naturally, as for instance, the scent of Hawthorn and of Meadow-sweet, and who ever smells either without being reminded of the taste of Almonds?

Flowers may be compared to birds, many of which owe all their charm to the brilliancy of their colour. The gay paroquet has no sweet song, and the Dahlia no sweet scent; whilst the thrush, and the blackbird, and the nightingale in their sober plumage gladden us with their joyous music, singing year by year as if "life were a new thing to them," and Violet and Mignonette and Lavender, the Cinderellas of the vegetable kingdom, are among those things that every morrow are wreathing "a fairy chain to bind us to the earth."

The celebrated Swiss botanist Haller divided scents into three kinds; Linnæus into seven, viz., ambrosial, fragrant, aromatic, alliaceous, fusty, poisonous, and nauseous. De Saussure recognises besides these five others, piquant, muriatic, balsamic, hydrosulphuric, and camphorated. "Many of these classes," says M. Fée, "appear arbitrary. What is indeed a fragrant, piquant, or nauseous odour? We have gone further and perhaps with no better success." Of this our readers may judge for themselves.

M. Fée divides odours into two great divisions he calls "*odorants*" and "*inodorants*," which we, for want of better equivalents, will render by "*Fragrant*" and "*non-fragrant.*" These he again divides into

* The nursery grounds of Monsieur Ivoy at Geneste, near Bordeaux, are especially worthy of notice.

† The quantity in the original is 792 millimetres, and exceeds what has been observed in the region of the Himalayas, north of Calcutta, to fall within 24 hours.

scents of a superlative and those of a positive degree of intensity, as follows:—

1. *Fragrant Odours.*

1. Odours due to volatile oils having almost always a special seat, and mostly easy to obtain by simple distillation.

A. *Camphoroid*, occurring in the camphor of Lauraceæ, Mints, and other Labiatæ, Cardamoms, the fruits of Piperaceæ, and the rhizome of Acorus Calamus.

B. *Citroid*, occurring in the fruit of Orange and other species of Citron, the flowers of Gardenia florida, Melissa officinalis, and Œnothera biennis, &c.

C. *Myrtoid*, occurring in the flowers and fruit of Myrtaceæ, the bark of Drymis Winteri, the root of Geum urbanum, &c.

D. *Anisoid*, occurring in various Umbelliferæ, as Fennel, Anise, Myrrhis odorata, and Sassafras.

E. *Rhodoid*, occurring in the Rose.

F. *Anthemoid*, occurring in Chamomile.

2. Odours associated with a principle of a resinous nature with Cinnamomic or benzoic acids.

G. *Balsamoid*, occurring in Balm of Peru, &c.

3. Odours due to an aroma of unknown nature, although distinctly marked.

H. *Nardosmoid*, occurring in Nardosmia fragrans, Angræcum fragrans, Heliotrope, and dark or sad-coloured plants of various families, as Cruciferæ, Geraniaceæ, Iridaceæ.

I. *Ambrosoid*, occurring in Ambrosia maritima, Chenopodium ambrosioides, &c.

J. *Moschoid*, occurring in Mimulus moschatus, Malva moschata, Adoxa moschatellina, Hæmanthus moschatus, &c.

K. *Melilotoid*, occurring in Melilotus, Tonquin-bean, dried Woodruff, &c.

L. *Narcissoid*, occurring in Narcissus poeticus, Jonquil, Tuberose, and many other Liliaceæ and Amaryllidaceæ.

M. *Ionmoid*, occurring in Violet, Wallflower, Mignonette, Nymphæa cærulea, Asclepias syriaca, Hoya carnosa, Paulownia, &c.

B. *Sub-fragrant.*

N. *Meliosmoid*, occurring in Galium verum, Lime-tree flowers, Viburnum, Lantana, Spiræa, &c.

O. *Jasminoid*, occurring in Jasmin, Privet, and Lilac.

P. *Amygdaloid*, occurring in the Almond and other bony-fruited Rosaceæ, Prunus laurocerasus, and Anthoxanthum.

Q. *Cyamoid*, occurring in flowers of the Bean and other Leguminiferæ.

R. *Maloid*, occurring in Apples and the flowers of Calycanthus præcox.

S. *Tannoid*, occurring in the bark of Oak and Cinchona.

2. *Non-fragrant Scents.*

1. Odours due to volatile oils holding resins in solution, which are easily separable by distillation.

A. *Terebinthoid*, occurring in the Coniferæ yielding the substances used as resin, turpentine, mastic, &c.

2. Odours due to volatile oils not associated with resins.

B. *Peganoid*, occurring in Fraxinella, Rue, &c.

3. Odours due to the presence of a sulphurous essence, which it is sometimes possible to isolate.

C. *Allioid*, occurring in Garlic, Onion, Chives, Erysimum Alliaria, &c.

4. Odours due to various slightly known principles.

D. *Fetoroid*, occurring in Tobacco and other Solanaceæ.

E. *Meconoid*, occurring in Opium.

F. *Cicutoid*, occurring in Hemlock.

G. *Hircoid*, occurring in Ononis hircina, Orchis hircina, and goat-like smelling plants.

H. *Cuminoid*, occurring in Coriander, Orchis coriophora, &c.

I. *Pteridoid*, occurring in Ferns.

We do not see the advantage of the intermediate or sub-fragrant division, and should certainly have been disposed to put "Tannoid," and perhaps also "Anthemoid," amongst the non-fragrants; but "*tot homines tot nasi!*"

Florists' Flowers.

Roses, New and Old.—I was glad to see Mr. Heale's communication (see p. 710) upon new and old Roses, for it is by comparing notes in this way that amateurs who cannot afford to test all the new Roses themselves, and have not the opportunity of attending shows or inspecting the Rose gardens of great growers, can obtain information about those new kinds which are most worthy of being added to a select collection. Mr. Heale mentions, amongst other of this year's flowers, Alfred Colomb, which is, I believe, admitted on all hands to be the best Rose of the year. He also speaks of Exposition de Brie, which he says is bright scarlet, full, and of fine form. Will he please say what style it is in, and whether it is a good grower? for that point is in my opinion of the first importance when selecting new varieties. Prince de Porcia he also speaks of as first-class. Is this a good grower? And what can be said of William Rollisson?

The following kinds not mentioned by Mr. Heale have been recommended to me by a first-class Rose grower as very good, viz., Fisher Holmes and Madame Fillion.

Mr. Heale describes President Mas as globular and flat. How can that be? I quite agree with him as to Duchesse de Caylus, Xavier Olibo, and Marie Baumann being A 1, but is not Marguérite de St. Amand a first-class flower too, and very distinct? I do not know John Keynes nor M. Boncenne; the last has, however, been highly recommended to me. Is John Keynes large, full cupped, and a vigorous grower? Mr. Heale condemns Dr. Andry. It is curious to see the different opinions of different persons about the same flower. I have but one plant of Dr. Andry, it is on the Manetti stock, and is exceedingly robust in habit: it has produced me some beautiful blooms, large, full cupped, and of great substance, and though not choice in colour I have put it down as a most desirable Rose for show purposes. With regard to Xavier Olibo, I remember that a gentleman some time ago, either in your Paper or in the columns of a contemporary, expressed a fear that it would open badly, that is in a lop-sided sort of way. I have had four blooms of it on a plant on the Briar; the first was rather rough on the edges, like Eugène Appert, but all four opened well, and the three last were splendid. I think this will prove to be a beautiful addition to the dark section. Charles Wood has been described as an improved Louis XIV. Can Mr. Heale tell us whether it is so, and whether it is robust? Louis XIV. grows most vigorously with me, but opens badly. I am very much surprised to find that Souvenir de William Wood does not burn. Surely there must be some mistake, for no other dark Rose that I know of is free from that failing, which I believe is caused by that absorption of the sun's rays which we know anything black induces.

Mr. Cant tells me that Souvenir de William Wood is not only no improvement on, but is in his opinion inferior to Prince Camille de Rohan. Of another Rose of 1865 I hear very good reports, viz., Comtesse de Paris. I saw a bloom of it a week or two ago which certainly was the very brightest Rose that I ever saw; it was like the richest scarlet velvet. I believe it is not very full, but it is magnificent in colour, and I think good in growth and habit. I saw a white or very light Rose at the Crystal Palace Show marked M. Boissé, or some such name; do any of your readers know it? It looked to me to be a very promising flower. Mr. Rivers some time since stated that in his opinion fruits had seasons in which they did better than others. It must be so with Roses, for it is remarkable how badly Senateur Vaisse has done with me this year. I have 20 plants at least of it on Briar and Manetti stocks, and yet I really have not had a single bloom that could be called first-rate; whereas I have had scarcely a flower on my C. Lefebvre plants—some dozen or so in all—which has not been splendid.

Let those who find Le Rhone and F. Lacharme not to succeed well on the Briar try the Manetti, and I think they will not complain. Maréchal Vaillant, too, is magnificent on the Manetti Stock. *P.*

The Apiary.

Stewarton Hives.—Can it be the case that the amount of honey gathered by bees in single days in Scotland, so that the hives increase in weight "upon an average 7 or 8 lb. each day," as told us by Mr. Thomson at p. 640 of your current volume, makes it proper in that country to employ a different kind of hive or mode of managing hives, from what are suitable where the honey is gathered more by degrees, and in a more prolonged space of time?

My reason for asking is the following incident in my own practice here in South Wales. In the spring of last year I hived a good swarm in a Stewarton 6-inch body-box, with a honey-box 4 inches deep on the top, as part of the stock hive. This gave exactly 9½ inches in depth for the stock hive, which in boxes 14 inches in diameter is sufficient. I am aware that, according to the usual practice with these hives, two 6-inch boxes should have been used for the stock, which would have given 2 inches more in depth; but as single Stewarton boxes, 9 inches in depth, for the stock hive, are now come into use, and the space mentioned as having been given was ample, that difference cannot have been material. This hive did well during the summer, and was quite full in the autumn, weighing with the boxes, &c., nearly 50 lb. In the spring of this year I gave it a honey-box, followed by a body-box when they had taken to the first, according to the Scotch plan; by the end of June the honey-box was quite full of comb, and the body-box given with it about three quarters full. Some honey appeared in those combs of the honey box which could be seen from the back window, filling them one-third or one-half full; but none of the cells were sealed. How it was in front I could not tell, as the construction of the house I then used did not allow of my examining the hive in front. I fully expected to see this box finished off in a week or 10 days; but it did not happen so. On the contrary, the box remained in the state I have mentioned all July, with at first some bees in it, and then, say from the middle of the month, with a number of drones by themselves, clustering on the combs, and of course eating the honey in the unsealed cells. By this time the body-box given with the honey-box had become quite filled with comb, which, though not sealed at the back window, evidently contained much honey.

I let the honey-box remain on, hoping that when the massacre of the drones took place that it would be finished; but the drones disappearing wholly at the end of July, a few bees only appearing straggling over the combs, and the cells of the stock boxes beneath the honey-box becoming quite sealed up, I took the box off on the 4th of August. It held 14½ lb. of honey, very pure and good, but all the cells of the three centre, or largest combs were unsealed, and only partially filled up to about the middle of the box; the only combs perfectly sealed being the two extreme side ones. Finding that the hive was still enormously weighty, I then took off the upper body-box of the stock hive, which, as has been stated, was 4 inches deep (the same as the honey-box just taken off). This was perfectly full, and contained 18½ lb. of very fair honey, equal to what is usually obtained from the upper part of the combs of an ordinary straw hive of the previous year, and making 33 lb. in all. A few only of the cells in the bottom of the combs of the last box had pollen in them.

The bees are now in the lower box of the original stock (which box is now the upper one), and in the body-box, which was added beneath when the honey-box was put on. These must contain upwards of 40 lb., exclusive of board, if I may judge from the effort required to raise them.

I should state here, that as the bees began to cluster out thickly the middle of July, on the 16th of that month I gave them a second under body-box to prevent swarming. This I did, instead of supplying additional room above, for two reasons, viz., that they were obstinately refusing to finish the honey-box already on, and that I wished to take off the top compartment of the stock hive, as it was not of the usual depth, and it appeared to me that giving another honey-box at that late period might possibly prevent that. In this body-box, which must be presently taken away, only some small empty combs have been made.

Now, the question is, Why was not the comb in the honey-box filled? From the quantity of honey that has been put in the lower boxes it appears that the bees could have easily done that had they liked; but they preferred filling the body-box given with it in preference, and even, instead, to make some comb in the second body-box given.

It occurs to me as possible that when a nadir was given with the honey-box, too much surface working space was given to the bees in proportion to the gradual gathering of honey which takes place here, compared to that which we are informed is the case in Scotland. When honey "comes in with such a rush" as it does in the latter country, so as to make an increase in the hives of 7 or 8 lb. per day an average one, the space available for working at once in a super or honey-box of the usual diameter may be insufficient, and additional room may be required to prevent preparations for swarming; for this reason nadirs may be necessary. Giving a nadir soon after the honey-box is on, and taken to by the bees, is much the same as giving a honey-box of double the surface space.

I am the more inclined to the above solution of the question by what you tell us occurred in your own apiary last season. You say you had hitherto believed that sufficient super accommodation was in general sufficient to prevent swarming, but that last season proved that this was not the case, so much so that you intend in future to be provided with shallow ekes in addition. Did not last summer's honey season in England approximate more to that of Scotland than is usually the case? for there, after the bad weather of the first part had passed away, honey was gathered in unusual quantities.

I have had copious information from Scotland about Stewartons, and believe that my practice was in every material particular correct throughout; but if it appears to you, or to any of your well-informed correspondents living in that country, that it was not so, I should be obliged by a correction.

I am prepared to try again with four strong stocks in Stewartons, one of them being the new-fashioned 9-inch deep box, to be nadired with another of the same depth. *Novice.*

Miscellaneous.

The Trees of Windsor Forest.—The vegetable patriarchs of Windsor Park and Forest, in the shape of picturesque Oaks and Beeches, must have been mere saplings when, by the merging of the Saxon heptarchy into a more solid body-politic, a lasting foundation was laid for England's power and greatness. A pollard Oak at the Forest Gate, 800 years old, is, at 5 feet from the ground, 26 feet in circumference; and a pollard Beech at the Ascot Gate, 30 feet in circumference, is supposed to be of the same age; and there are whole groups of veterans of the Forest the youngest of which has seen 500 summers. Such trees are more remarkable than the giants of the virgin forests of tropical Asia and America; for, while the tropical trees owe their existence to the mere chance of not having been required for timber by lawless savages, ours owe it to the protection which the law has for more than one thousand years thrown around them. The "Parish Boundary Oak" near Ascot Gate, 70 feet high, is 16 feet 9 inches in circumference at 5 feet from the ground. Though estimated to be only 350 years old, its uppermost branches are already beginning to die off—after the manner of Oaks. Shakespeare, who had as sound a knowledge of the nature of trees as he had of most other subjects that have ever engaged man's attention, alludes to this feature in "As You Like It"—"And high-top bald with dry antiquity." The "high-top bald" is singularly characteristic. When a Beech begins to decay, Fungi appear either at the roots or on the forks; the leaves begin to curl up, as if scorched; and the tree dries gradually all over. In an Elm a great limb dries off at once from the point right into the trunk, while all the rest keeps green; then another limb goes; and so on, until the whole tree is dead. The trees belonging to the Pine tribe die all over gradually; but the Oak alone, especially if a maiden—*i. e.*, an unlopped tree—decays first at the points of the highest branches, while all the rest is green and healthy; and, while the other trees mentioned almost die within a few years after the first symptoms of decline, and never recover when they once begin to show them, the Oak will live on for centuries in this condition. *Reader.*

The Elm.—The common Elm, the plant of our parks and roadsides, is not particular as to soil, and is of rapid and vigorous growth, producing in a short time timber of great value for building purposes,

During the process of seasoning it however loses much of its bulk and weight, when it becomes little affected by wet; and for this reason it has been invariably selected for damp situations. Its generally very straight stem rendered it fitting for the old water-pipes, for which it was much used. Keels and the submerged parts of vessels were at one time invariably made of it. It is generally selected for use in the piles for bridges and similar structures, for coffins, and for numberless other purposes where endurance in a wet situation is required, and where the wood of other trees, if as good for the purpose as Elm, is not as readily and cheaply procured. The variety or species known as Wych Elm is believed to be truly indigenous to this country; its general character is different to the common Elm; the central upright stem being lost in this species, and the branches are inclined to droop, the leaves are much larger, and the timber it produces is sound and tough, but said to be inferior to the common form. The gnarled and knotted excrescences are much used by cabinet-makers for fancy work. The Elm is somewhat deficient in direct historical associations and classical allusions; although many references are made to the tree by poets and historians, ancient and modern, the statement that the tree was introduced to this country by the Crusaders appears to be wholly without foundation; other unimportant associations of the tree we will pass over. The peculiarities of its branching and leafage are readily caught by the artist, and for this reason it may be said to occur in nearly all landscape compositions. The Elm tree is pressed into service by artists of every grade; and when pictures of fêtes and sporting views are given in the illustrated papers, the trees figured are invariably Elms; the mannerism of one artist is so repeatedly copied by another, and his by a third, that the poor Elm tree, as pictorially represented, often becomes quite a conventional object. *Builder.*

Fruit Shows in Nova Scotia.—The Fruit Growers' Association has determined to hold monthly exhibitions of summer and autumn fruits during the present year, and also to have an exhibition of winter fruits in April, 1867. The object of this arrangement is to encourage the cultivation and growth of the smaller and earlier fruits, as well as those which have hitherto received most attention, and to test the comparative merits of the different sorts of later keeping Apples as grown by different producers, and in the different parts of the province. The premiums to be awarded are to be in the form of certificates of merit of the first, second, and third class; and the medal of the Royal Horticultural Society of London granted to this Association in 1864, and still in possession of the council, is to be competed for by members of the Association as follows, viz.:—The person obtaining the largest number of first-class certificates during the year shall be declared winner of the medal; and any person winning it three years, not necessarily consecutive, shall be declared owner of it. Two second-class, or four third-class certificates, are to count as one of the first-class. The person gaining the second or third highest number of first-class certificates is to receive a handsome diploma. *Journal of Agriculture.*

Weight of Lettuces.—At a recent Lettuce show held at New Radford, the following are the weights of some of the pairs of Lettuces exhibited:—3 lb. 3 oz., 4 lb. 6 oz., 2 lb. 11 oz., 2 lb. 7 oz., 2 lb. 2 oz., 2 lb. 5 oz., 2 lb. 7 oz., 2 lb. 9 oz. The competitors showed for quality and weight.

Ice.—A word on the commerce of ice may prove interesting. This trade began in Boston (U.S.) in 1805; 74,000 tons of ice were shipped there in 1847, in 353 vessels, for Havannah, Calcutta, England, &c. In 1854, the capital engaged in that industry in North America amounted to seven millions of dollars; 10,000 persons were employed in it. An American newspaper of this month (May, 1866) says, "The various ice companies in the neighbourhood of New York have on hand now, and ready for sale, one million or a million and a half tons of ice." Ice is also exported sometimes from Norway. In Paris the use of ice is universal in the summer months; the quantity consumed is said to amount to 12,000 or 15,000 tons a-year: in 1822 it was sold there as high as 300fr. per 50 kilogrammes; but generally it is much cheaper. A new supply of ice has been afforded for some years to Paris from a glacier in Switzerland. The landlord at the "Eagle Hotel," at Grindelwald, in the Bernese Oberland, exploits this rather glacier near his estates; from Grindelwald it is transported to the lake of Thun, and thence on the Central Railway, which conveys it to Mayence, to Paris, &c.; a great quantity of that ice is consumed in Paris. At the lake of Thun it costs about 28*s.* per ton. *Bernardin, Melle, near Ghent, in "Science Gossip."*

Cellular Tissue.—We have lately seen a curious Japanese novelty which illustrates well the power of rapid absorption of water, possessed by cellular tissue. Some small dry fragments looking more like fine splinters of wood than any thing else are put into a saucer, boiling water is then poured on them, when instantly the splinters swell out and assume the form of fish, stars, or other objects, having each a coloured edge, blue, green, or red, as the case may be. It would seem as if small fragments of the pith of some plant (Rice Paper plant?) were cut into the desired forms, then dried and rolled up after the manner of tea-leaves; this however is mere surmise.

Calendar of Operations.

(*For the ensuing week.*)

STOVE plants which flower upon young wood may now receive a shift. Those, on the contrary, which flower upon the ripened wood, must be gradually encouraged to go to rest. Poinsettias, which do not flower until late in the season, may be repotted now, and freely supplied with liquid manure; under this kind of management the floral leaves will be double the size that they would be if less liberally treated. Before the season is further advanced, every gardener should calculate, as nearly as he can, whether the extent of his framing conveniences will be sufficient to afford shelter during winter to his stock of established half-hardy plants, as well as those he is now propagating. If his room is deficient, he must either restrict autumnal propagation within certain limits, or prepare additional pits without further loss of time. Brick pits are of course the most durable, and although expensive in the first outlay they are cheapest in the end. A common make-shift pit, however, might be built of turves; it will last several seasons, and prove very warm.

FLOWER GARDEN AND PLANT HOUSES.

Bedding plants should now receive every attention in the way of keeping them as gay and dressy as possible. Weeds must be kept in check, Grass cut short, and walks kept clean and neatly rolled. If wet weather should set in, choice specimens of greenhouse plants now in the open air had perhaps better be placed under cover.

BEDDING PLANTS.—These may now be propagated, and in doing so see that cuttings of a proper description are selected for the purpose, and that they are put into well-drained pots that will occupy little room during winter. See that the cuttings are not allowed to flag. When potted, place them in a cold frame, and shade them from bright sunshine until they have become a little established. The chief point is to get them as hardy as possible before winter. On no account allow them to get weakly and drawn. The greater part of out-door stock should be wintered in store-pots, the plants in which will yield good materials for propagation in spring.

CARNATIONS AND PICOTEES.—Pot-off rooted plants and place them on ashes in a shaded and sheltered place, covering with frame-lights, so as to prevent excessive rain from soddening the soil, or if a cold frame is at liberty they may be placed in that; regular attention as to watering, &c., must be given them.

FORCING GARDEN.

CUCUMBERS.—In bright weather dew the plants overhead once or twice a week, observing always to use a fine rose, as a heavy stream breaks down the leaves.

PEACHES.—Wood in most cases will now be ripe; but where any is still immature, means must be taken to forward it, as next year's success will very much depend upon ripening being properly effected. Keep the foliage clean and free from insects.

PINES.—Afford plants lately potted a liberal temperature, but let it be accompanied by sufficient ventilation to prevent undue elongation of the leaves, and to mature their tissue while sunlight is powerful enough for that purpose. A less humid atmosphere should be supplied generally, and especially to plants intended for fruiting early next spring, as it is very important that they should acquire a strong sturdy habit, and that the accumulation and elaboration of sap should be encouraged, rather than the increase of the size of the plant. Assist the swelling fruit with liquid manure, but admit abundance of air, for the sake of the flavour, and to prevent the crowns growing too luxuriantly.

VINES.—Preserve ripe Grapes from the effects of damp, by avoiding the spilling of water about the houses, and by admitting a free current of air during favourable weather, accompanied by a little fire-heat during rain or fogs. Late Vineries should now, if possible, be freed entirely from plants in pots, or if any are allowed to remain they should be of kinds requiring little or no water, such as bulbs and other stove plants, which like a dry cool treatment to induce them to rest. From this time the points of all growing shoots should be stopped, as leaves produced after this time appropriate stored-up energy, without ripening sufficiently early to benefit the Vines in return. Care, however, must be taken not to stop too closely the lateral shoots of Vines which are still growing vigorously, as they are liable in such cases to burst the buds too near the base of the shoots.

HARDY FRUIT AND KITCHEN GARDEN.

Shorten the breastwood of wall trees, and at the same time divest them of superfluous shoots: gather all kinds of outdoor fruit as it becomes ripe and fit for storing.

CAULIFLOWERS, BROCCOLI, &c.—Seed of these may still be sown; and vegetables may still be planted out for winter and spring use whenever ground is at liberty for that purpose.

CELERY.—Take advantage of dry days to earth the rows up, sprinkling a good dusting of quicklime or soot about the plants in the lines, and over the surface of the ground for some distance on each side, to destroy slugs, which generally do considerable damage to Celery, especially in wet seasons. The soot or lime should be applied two or three times before earthing up the plants, at intervals of a few days, and early in the morning, before the pests have retired to their hiding-places.

POTATOS.—As in some places these are becoming badly diseased, get all that are fit for lifting out of the ground as soon as possible; before storing them let them be well dried, but not greened, and separate the diseased tubers from those that are sound.

STRAWBERRIES.—Let young plantations of these be well attended to by stirring the soil between the plants, and supplying them with plenty of liquid manure, that they may continue to progress at the root, and fully employ their leaves in the elaboration of sap. Promote by every means vigorous growth now, and fine fruit next year will be the reward. Alpine Strawberries should be looked to, as they will now or soon be found useful in supplying a desirable addition to the dessert. If they are in a state to receive water, supply it in the shape of liquid manure. Plant a few beds of young runners on a north wall for another year; let the soil be a sandy loam, moderately enriched.

STATE OF THE WEATHER AT CHISWICK, NEAR LONDON,
For the Week ending Aug. 22, 1866, as observed at the Horticultural Gardens.

August.	Moon's Ages	Barometer.		Temperature. Of the Air.			Of the Earth 6 inches deep.	Of the Earth 2 feet deep.	Wind	Rain.
		Max	Min.	Max.	Min.	Mean				
Thurs 16	6	29·785	29·623	65	45	55·0	62	59	S W.	05
Friday 17	7	29·848	29·714	67	38	52·5	61	58½	W.	00
Satur. 18	☽	29·943	29·895	75	36	55·5	60	58	W.	00
Sunday 19	9	29·879	29·764	77	54	65·5	63	58½	S W.	08
Mon 20	10	29·671	29·608	76	54	65·0	62	59	W.	02
Tues 21	11	29·840	29·774	59	62·0	62	60	W	00
Wed 22	12	29·987	29·932	74	49	61·5	61	60	W.	00
Average		29·844	29·765	72·5	46·0	59·1	61·5	59·0		15

Aug 16—Overcast, rain, clear and fine at night
— 17—Cloudy and cold, fine, cloudy, fine at night, very cold
— 18—Clear; very fine; clear and fine, cold at night, only 4 deg. above freezing
— 19—Fine, very fine, rain, fine, warm at night.
— 20—Hot and sultry; very fine throughout
— 21—Hazy, very fine throughout
— 22—Uniform haze, very fine, rather cold at night
Mean temperature of the week, 2 l 3th deg. below the average.

STATE OF THE WEATHER AT CHISWICK,
During the last 40 years for the ensuing Week, ending Sept. 1, 1866

August and Sept	Average Highest Temp	Average Lowest Temp	Mean Temp	No of Years in which it Rained	Greatest Quantity of Rain.	Prevailing Winds.							
						N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.
Sunday..26	72·6	48·1	60·3	12	0·51 in.	3	3	4	—	7	9	4	
Monday..27	73·4	49·3	61·3	12	1·31	2	2	4	—	3	11	9	
Tues..28	73·0	49·5	61·2	18	0·22	3	6	2	—	5	12	7	4
Wed..29	71·6	47·6	59·6	14	0·58	1	4	5	4	11	2	3	7
Thurs..30	71·7	47·7	59·7	10	0·92	1	2	7	—	4	2	10	3
Friday..31	71·3	47·2	59·2	17	1·31	3	7	3	2	2	8	9	5
Satur.. 1	70·7	47·6	59·2	20	1·59	1	3	4	1	3	12	4	5

The highest temperature during the above period occurred on the 1st, 1864—therm. 85 deg., and the lowest on the 29th, 1861—therm. 31 deg.

Notices to Correspondents.

BOOKS: *W. W.* "The Manse Garden," Neill's "Fruit, Flower, and Kitchen Garden," or Paxton's "Cottager's Calendar," would one and all be useful to you.

CARNATIONS: *James Marshall.* Your seedling is of a very curious colour—more curious, indeed, than beautiful, but, so far as our memory serves, perfectly novel. It may be described as a dove-colour flaked with scarlet. We should grow it another season, as it may improve as to size and fullness, and then would form an interesting border flower.

DEFORMED POTATOS: *L Taylor.* The formation of tubers on the haulm, in the axils of the leaves, is not an uncommon occurrence, but your specimens are unusually large. They show clearly that the future is nothing but a thickened branch. These haulm-tubers are poisonous, the exposure to light inducing the development not only of green colouring matter, but also of solanin. They are usually caused by some accident or injury to the haulm, whereby the sap gets arrested.

DISEASED PINE-APPLES: *E B.* The disease to which you allude is undoubtedly canker or ulcer. It is very insidious in its attacks, and may be present in the organisation of the plant long before its presence is developed outwardly—in fact, unless in very virulent cases, not until the plant approaches maturity. Various causes may combine to produce it, an enumeration of which may enable you to detect the right one in your particular case. It may arise from the suckers being removed from the parent plant before the lower part of the stem is sufficiently matured, in which case incipient organic decay is induced in the centre of the stem; or if matured, it may arise from the application of too much water before the roots are sufficiently developed. Again, it may be induced by the use of a soil too finely pulverised and apt to run together, which would interfere with a healthy development, because the Pine delights in an open and porous soil; and when the plants are more developed it may be brought about by an excess of bottom-heat, which by lacerating the roots forces the sap back on its own resources, and causes incipient decay from the centre. Lastly, it is often caused by over doses of liquid manure, more particularly if this is applied too strong or in an unclarified state. A combination of these causes about the time the fruit is forming will certainly produce the effects of which you complain, although, as you say, the fruit swells off, and apparently colours and ripens well. *C.*

FUNGI: *T H P.* Your Fungus is apparently the spawn o Agaricus campestres. *M J B.*

NAMES OF PLANTS: *J M.* Prunella vulgaris.—*S T H.* 1, Asplenium Ruta-muraria; 2, Asplenium Trichomanes: 3, Selaginella denticulata; 4, Selaginella cæsia.—*J Breen.* Petunia inimitabilis flore-pleno.—*W M.* 1, Bromus secalinus. The other was too far gone.—*A F.* 1, Aloysia citriodora; 2, Cereus flagelliformis; 3, indeterminable; 4, Aspidium Filix-mas.

ŒNOTHERA MACROCARPA: *G F H.* This is not, so far as we are aware, poisonous to cattle.

ROOT-PRUNING: *Subscriber.* Prune any time during the early autumn months, the earlier the better. Carefully fork out all the roots, cut off all the coarse ones that grow downright, make the soil firm beneath the tree, and then lay out all those roots which are well provided with fibres in a horizontal position, working in amongst them some good fresh loamy soil.

SOLANUM LEAVES: *Sir W Jardine.* The leaves of your Solanum have little patches of deformed cellular tissue analogous to those of Erineum. We do not detect any Fungus in the patches, but there are a few irregular elongated free cells much distorted, which differ somewhat from the cells of Erineum. *M J B.*

SPORT OF MOSS ROSE: *C P Lightbourne.* A very good illustration of median prolification, in which the stem has gone through the centre of the flower, and bears supplementary flowers at the top. Such changes are more common in some seasons than others. We have seen comparatively few this year.

VARIEGATED PELARGONIUMS: *Witts & Son.* There can be no doubt that Mrs. Pollock, Sunset, and Italia Unita are variegated Pelargoniums. If, therefore, you have been disqualified for showing them as variegated sorts you have been wronged.

COMMUNICATIONS RECEIVED.—Prof. Daubeny.—Prof. De Candolle.—M. Pynaert.—Herbert Spencer.—C. D.—Prof. Morren.—Prof. Reichenbach.—J. Weir.—C. H. S.—Elmham.—H. Harrison.—J. D.—S. H.—W. W., junr.—A. T.—P. P.—Young Beginner.—A. P., Faithlegg. Your Notice can only appear in the form of an advertisement.—R. T. C.—W. E.—J. C.—A C.—Dr. Miller.

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	£ s. d.
LAWES' PATENT TURNIP MANURE, and BONE SUPERPHOSPHATE of LIME	6 0 0
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American and other Cakes at market prices.
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CORN MANURE, for Spring Use
DISSOLVED BONES, for Dressing Pasture Lands
SUPERPHOSPHATES of LIME
PREPARED GUANO
MANGEL and POTATO MANURES
Also Genuine PERUVIAN GUANO, and NITRATE of SODA ex Dock Warehouse; SULPHATE of AMMONIA, FISHERY SALT, &c. E. PURSER, Secretary.
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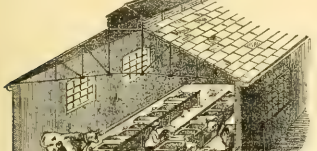

Their advantages are—Portability, not Fixtures, removable at pleasure, no Woodwork or Partitions to impede Ventilation or breed Vermin, Hay Rack dispensed with as unnecessary, increased width and depth of Feeding Troughs, Water Cistern, and Patent Drop Cover to prevent over-gorging. Cleanly, durable, and impervious to infection, being all of iron. Price of Fittings per Cow, 45s.
Prospectuses free of COTTAM & Co., Iron Works, 2, Winsley Street (opposite the Pantheon), Oxford Street, London, W., where the above are exhibited, together with several important Improvements in Stable Fittings just secured by Patent.

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COTTAM'S HURDLES are made in the best manner of superior Wrought Iron. SHEEP HURDLES, from 4s.; CATTLE HURDLES, from 4s. 11d. each; CONTINUOUS FENCE, from 8d. per foot; FIELD GATES, from 25s. each. Illustrated Price List on application.

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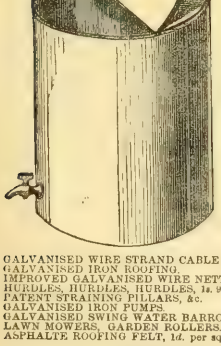

To hold	Each.
30 gallons,	20s. 0d.
50 gallons,	24s. 0d.
80 gallons,	32s. 0d.
100 gallons,	38s. 6d.
125 gallons,	45s. 0d.
150 gallons,	49s. 0d.
200 gallons,	65s. 0d.
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The Agricultural Gazette.

SATURDAY, AUGUST 25, 1866.

RATHER more than three years ago a description was given in these columns of an East Sussex Farm. The tenant, whose lease expires this autumn, is about to leave this farm, and the Southdown flock which was then referred to will be sold by auction on Thursday, Sept. 20.* We mention this sale here because the distribution of well-bred stock, and especially of stock which owes its character to persistent and well judged management during a course of years as much as it does to the occasional purchase of costly blood, is a matter of public interest.

It was a suggestive remark of Mr. WILLIAM TORR'S regarding breeds the other day, when discussing the alternative of sheep or cattle before the Royal Agricultural Society of England, that, unprejudiced though he believed himself to be against other breeds, he could not help seeing that pure-bred Leicester blood had done good service wherever it had gone among Long-woolled sheep, whilst nothing had done aught but harm to the Bakewell breed itself.

The necessity of maintaining pure breeds, if only that we may obtain profitable cross breeds, is a matter of great public importance, and if the pure-bred Leicester blood exerts, and has exerted, a serviceable influence over the stock of whole counties of other Long-woolled sheep, including Gloucestershire, and Lincolnshire, and Yorkshire, as well as all the midland counties, so also have the breeders of true Southdown sheep done great public service, not only in their own home district, but over many southern counties where Black-faced sheep prevail, and over Oxfordshire and even Shropshire, where breeds either originally cross-bred or needing correction from time to time are commonly cultivated.

This power of a herd or a flock to hand down unimpaired the qualities it possesses is proportioned to the number of generations through which they have been inherited; and Mr. HAYWARD'S flock, formed originally 21 years ago by purchase from Messrs. FARNCOMBE, SAMPSON, DENMAN, GRANTHAM, and COOPER, all well-known Sussex flock-masters, and since served by rams purchased from Mr. ELLMAN, Mr. HART, Mr. OVERMAN, Mr. JONAS WEBB, and the Earl of CHICHESTER, represents the pure-bred Sussex Down in the home where untold generations of the same blood have long since permanently formed its character. What that character is on Mr. HAYWARD'S farm may be gathered from the following description of the flock, written three years ago, when there was no prospect of the tenant leaving:—

"The farm is especially interesting for its flock. The tenant, formerly a Cotswold breeder, was too well satisfied that the practice of a district is the result of long and safe experience to think of introducing the larger long-woolled sheep when the Southdown sheep were naturalised. He gradually procured his flock 21 years ago from established flocks in his neighbourhood, purchasing from Messrs. FARNCOMBE, DENMAN, SAMPSON, GRANTHAM, and COOPER, all of them well-known Sussex flockmasters; and during subsequent years, by careful attention to the characteristic points of the several families within the flock thus gathered, and selecting and using rams adapted to them, there has been a constant aim to acquire and maintain the character of the pure-bred Sussex Downs. In the earlier years of the flock, rams from Mr. HART, of Beddingham; Mr. J. ELLMAN, of Glynde; and Mr. SAMPSON, of Bletchington, were used—then two rams from Mr. FARNCOMBE, of Bishopston, near Seaford; and rams of their produce were then used for two or three years over the whole flock. A ram descended from Mr. RIGDEN'S flock was then employed—then one of the old Glynd blood from Mr. TIGGS. ELLMAN, of Beddingham — again, rams of Mr. OVERMAN, of Weasenham, Norfolk; then one of Mr. JONAS WEBB'S, and at present descendants of a sheep presented to Mr. HAYWARD by the Earl of CHICHESTER, and descended from the Goodwood flock, which gained the 2d prize in its class at the Carlisle meeting of the Royal Agricultural Society of England. No very unusual expense has at any time been incurred, 50*l.* for the hire of a Babraham sheep being the utmost; but by careful attention and good judgment and management, both in selecting and rejecting sheep, the flock has acquired a very good stamp as characteristic pure-bred Sussex Downs. Sheep have been repeatedly shown from it at the Smithfield and the Royal Agricultural Society's meetings, and the county shows; and especially at the last, where Sussex men compete and Sussex men adjudicate, a creditable amount of success has been achieved in competition with sheep from first-class flocks, as those of the Duke of RICHMOND, and of Mr. RIGDEN, &c. The 1st prize for ewe tegs was won at the Paris Show in 1855. And for a flock purchased 21 years ago at 30*s.* a head, or thereabouts, ewes have been sold at 100 to 120 guineas the score, and rams from 10 guineas up to 40 guineas apiece."

This flock thus described is for sale on Sept. 20 at Folkington Farm, near the Polegate Station on the Brighton and South Coast Railway. The distribution of stock of its quality and history is sufficiently of public interest to deserve this public reference to it.

Since writing the above, we see that the sale of ewes and rams from Lord SONDES' flock—and of pure-bred Norfolk heifers and bulls from his Lordship's herd—is announced at Elmham Hall, one mile from the Elmham Station on the Wells branch of the Great Eastern Railway, for next Thursday week, September 6.

HAVING given an account of the Tweeddale investigations respecting the temperature of drained and undrained arable land, we now proceed to consider the influence of drainage on hill pasture.

A growing temperature is the prime element of all vegetation. This must be secured by all means in our power; and one of the most effectual is proved to be drainage, by the interesting observations in question, which, as far as they go, may be considered a most important advance in true scientific farming.

The effect of drainage on hill pasture is much more decisive than on arable land. In arable land, at the depth of 10 inches, the mean temperature of the coldest month was, as stated in our previous article, 0°.2 less than that of the air, and of the warmest month, 1°.1 greater; whereas, in hill pasture, the mean temperature of the coldest month was 2°.7 higher than that of the air, and in the warmest month the air and land were of equal temperature. Hence, the range of the monthly mean temperature was smaller in hill pasture, at the depth of 10 inches, than in the air, and still smaller than in the arable land.

The details of the observations are as follows:

The soil is composed of a mixture of moss and clay, with a clay subsoil. The land slopes to the east, but the portion of it on which the observations were made is level. On one side the drains were 1 foot deep, and uncovered; and on the other, 2 feet deep, and covered. The thermometer was fixed 6 feet from the nearest drain. On the 29th November the temperature of the air fell to 26°.0, being from 15° to 20° lower than it had fallen for some time; and the temperature of the drained land fell from 44°.3 to 43°.5, and the undrained land from 44°.0 to 42°.5—the drained land having thus fallen only 0°.8, and the undrained 1°.5. On each of the two next nights the temperature fell to 25°, and both underground thermometers fell 1°.0, and then 0°.5, the drained land keeping constantly 1°.0 above the undrained.

On the 9th September the air fell to 39°, being several degrees lower than it had been for some time, and the drained land fell from 52°.3 to 52°.0, losing only three-tenths, whereas the undrained land fell from 52°.0 to 51°.2, losing eight-tenths of temperature. On the next two nights there was a further fall of the temperature of the air, and the fall in the drained land was 0°.8 and 0°.2, and in the undrained land 1°.0 and 0°.2. Thus, during these three days the drained land fell 1°.3, whereas the undrained fell 2°.0, the difference being seven-tenths. Besides, the cold first took effect on the undrained land, causing its temperature to fall more rapidly; but as it continued, the temperature of both soils came to fall equally.

So much for winter and autumn. We come now to

* See advertisement.

the observations in spring. During the 24 days beginning with the 2d February, the temperature of the air fell almost every night below freezing—the mean of the nights for the period being 30°.1. During this protracted frost, the drained land was 37°.1, and the undrained 36°.7; the drained land being thus nearly half a degree warmer.

On the 31st July, the temperature of the air rose about 8° higher than it had been for some time; and on the 1st August the drained had risen from 50°.8 to 51°.5, and the undrained land from 50°.1 to 51°.3—the drained having thus risen 1°.0, and the undrained 1°.2. Similarly on other occasions, when the temperature rose, the undrained land generally rose a little more than the drained land; the drained land, however, generally continued higher, though in several cases the temperature came to an equality in both soils.

The mean annual temperature of the drained land was 44°.3, and of the undrained 43°.9—the drained being thus 0°.4 warmer. Here, again, as in arable land, the year may be divided into two periods—the one from June to November, when the excess was large, being nearly 0°.7; and the other from December to May, when the excess was small, being scarcely 0°.2. These periods correspond in time with the similar periods in arable land at the same depth, but the excess of the temperature of the drained pastures was not so large as in the arable land. The difference between the highest monthly extremes was generally less than the difference between the lowest monthly extremes—a peculiarity which was apparent also in the case of arable land.

Bearing in mind that the observations refer only to arable land of light sandy soil, under a Rye-grass crop, and in the case of hill pasture, to clay soils mixed with decayed moss, the conclusions regarding the effect of drainage on the temperature of the soil appear to be as follows:—

1. The temperature of hill pastures and arable land is raised by drainage, the contrary result being doubtless caused by the cooling effect of the larger evaporation from the undrained wet land.

2. The temperature of hill pastures was not raised by drainage to the same extent as that of the arable land. But, as suggested by Mr. David M. Home, the difference possibly arose from the nature of the soil in the two cases. The hill pasture on which the observations were made, was a clay soil, whilst the arable land consisted of light sandy soil. Such being the case, the question is—Was the clay soil as thoroughly drained as the light sandy soil? If it was not, it is then not difficult to understand why the effect of drainage, in raising the temperature, should have been less manifested in the hill pastures. In clay soils drains will not draw water as far as in light sandy soils; therefore, if in both cases the drains were at equal depths and distances, more water would be left in the clay soils than in the sandy soils, and more evaporation—with consequent loss of heat—would take place in the former.

3. During sudden falls of temperature, and during protracted cold periods, as when the soil is under a covering of snow, the cold finds its way sooner and more completely through undrained than through drained land. For undrained land, having the interstices between its particles charged with water to a greater extent than drained land, is less porous, and therefore a better conductor of heat to the outer air; and hence its temperature falls more quickly when the temperature of the air has fallen below it.

4. When the temperature of the air is higher than that of the soil, drained land receives more benefit from the higher temperature than undrained land. The reason probably is, that the drained land—especially if in a state of cultivation—is more easily permeated by the air.

5. When rain or sleet has fallen, the superfluous moisture soon flows away from drained land. Hence, in such circumstances, drained land possesses the great advantage of a comparatively equable temperature; whereas the temperature of undrained land is liable to considerable fluctuation; for, when soaked with warm rain-water, it is temporarily raised, and when soaked with melted snow it is temporarily lowered.

6. Since, from the above causes, the temperature of drained land is in summer occasionally raised above undrained land, to the extent of 3°.0, often 2°.0, and still more frequently 1°.5, it follows that the advantage derived from drainage is in many cases the same as if the land had been actually transported 100 or 150 miles southwards, and thus drainage must have the effect of altering the climate of a locality—and generally improving the climate of a country by raising the temperature of the land.

By raising the temperature of the land, the temperature of the air, as it flows over the land, will be raised by contact with the soil. This seems to be a sufficient explanation of this most important result.

The observations on the temperature of drained soil when under Turnips, and of undrained soil when under old Grass, brought out the somewhat unexpected result of the temperature of the drained land being less than that of the undrained. To understand this result, as observed by Mr. Home, it would be necessary to have explanations on various points. Were both soils in the same locality? Were both soils of the same nature? If both soils were in the same locality, and of the same nature, then the land under the crop of Turnips was very differently circumstanced from the land covered by old pasture. Evaporation will take place much more rapidly from soil that is bare or partially so, than from soil which is well clothed with Grass. Heat radiates more rapidly from soil when covered only by Turnips—especially if the leaves have decayed—than when covered by old Grass. Snow melts more rapidly on a fallow or a Turnip field, than on a Grass field.

Mr. Home made some interesting experiments in illustration of these principles. He took two zinc boxes, 2 feet square and 1 foot deep, filling one of the boxes with sandy loam, and the other with strong clay. Each was suspended at the end of a balance, and the quantity of soil in each was so adjusted that the one box was exactly equal in weight to the other. He then poured an equal quantity of water into each box, and placed a thermometer into the centre of each, immersed 6 inches into the soil.

Mr. Home found that the thermometer was almost always lowest in the sandy loam, and that before a week had elapsed, the sandy loam box rose above the level of the other box, in consequence, as he inferred, of more water evaporating from it than from the clay soil. Probably in the former the water was more uniformly diffused through the soil, so that there were more surfaces or points for evaporation than from the clay soil. In the clay box the water would be less interspersed or more accumulated.

The benefit of drainage to crops arises perhaps not so much from the higher temperature caused—although this is of vital importance to their safety in winter and spring—as from the improvement of the soil—by making it more *friable*, and by *drawing the air to the roots of plants*.

—— We beg to direct the attention of our readers to the interesting report of Berwickshire and East Lothian Agriculture, for which we are indebted to Professor J. Wrightson, of the Royal Agricultural College. It will be found in another page, under the heading "Farm Memoranda."

WHAT IS THE RENT OF LAND?—No. I.

In considering this subject I propose to myself to discuss the somewhat difficult relation between landlord and tenant; to inquire into the causes that govern the price of land and the rise of it, and to elucidate, as far as may be, the mutual dependence as well as the mutual advantage, both to owner and occupier, arising from the increased value of the products of the soil; and the result I hope to arrive at is to show that whatever changes tend to benefit one party must also in the end benefit the other.

I shall not have to enter on the ground so debated by the political economists in the beginning of this century as to the definition of rent—whether the rent of the landlord is, according to Dr. A. Smith, "the recompense of the work of Nature, remaining after all that part of the product is deducted which can be regarded as the recompense of the work of man;" or, as Mr. Ricardo taught, it is "the difference in the quantity of produce obtained by equal capitals from lands of different degrees of fertility;" or whether rent is the fixed sum which one man will agree to take in order to be relieved of the anxiety and uncertainty of cultivating his own land, and the other will agree to give him, in the hope of realising a living profit from its cultivation, is not now necessary to determine, though we shall see that each of these ingredients enters into the composition of modern rents. It will be more profitable perhaps to look back to the origin of rents and trace the different circumstances that have had the greatest influence upon rents in past times. There must have been a considerable period after the first occupation of this island by its original inhabitants when land was worth nothing. The savage is everywhere content to live off the natural produce of the ground, to kill and eat the wild animals, and adapt their skins for his clothing. In process of time, as population increased, our fathers settled in hamlets and cultivated patches of corn. We may still discern in the elongated shape of many of our parishes, how our Saxon ancestors included with the field they cultivated a tract of marsh land for the summer feeding of their cattle, and of hill or woodland for the fatting of hogs on acorns and beech-mast. The ownership of the soil appears at this period to be in the parishioners or tything men in common. Their system of alternate farming, or infield and outfield, may still be traced in the few remaining uninclosed common lands still farmed on that system. The Saxons (like ourselves) too were fond of country life. The Normans, on the contrary, preferred the towns and encouraged manufactures. As a consequence, corn, meal, and wool rose in value, and were in constant demand. And from this time we hear of the payment of annual rents, at first as a composition for feudal service due to the baron proprietor; soon after as a fixed payment in its broader acceptation.

What the amount of rent might be during the middle ages it is now impossible to determine with any accuracy. During our protracted civil wars the insecurity of property was such that no man could make certain of reaping what he had sowed, unless in the immediate vicinity of a town, or under the protection of his lord's castle. The roads, too, being impracticable for any carriage, the surplus of one district could not replenish the wants of another, so that plenty and famine were frequently near neighbours, added to which the constantly decreasing value of the coinage makes all comparison of prices inaccurate; but we have reason to suppose that a practice, still prevalent in some parts of Russia and in Italy, was usual in this country, and that the crops of corn were divided into equal shares, one-half to the landlord as rent, the other to the tenant for his labour. We have also grounds for assuming that lands cultivated on the infield and outfield system would not produce more than two quarters of Wheat to the acre the years they were sown with corn, *i. e.* every second or third year, which would bring the landlord's share of the produce to about three bushels per acre per annum, *i. e.* one quarter every two or three years, equal to about 1*s.* per annum of our currency, and this for the best lands which would naturally be enclosed first. The price of corn seems at all times to have governed the value of rents, and the encouragement of arable land in preference to pasture to have been the great aim of economists and legislators throughout our history. At the Reformation tithes and rates were assessed chiefly on the arable, and the price of meat, which was fed principally on the commons, and was killed and salted in autumn for winter food, was restricted by an Act of Henry VIII. to ½*d* per lb. As Wheat was at this period about 1*s* the bushel, meat must have been as cheap again in proportion as it is now; there could have been no profit in fatting it for market. Up to the year 1770 we find that England was more or less an exporting country. After that date it became gradually more and more an importing country, and it may be important to mention that the price of Wheat varied then from 40*s.* to 60*s.* the quarter, which may be considered the natural price, as there were no laws then to influence it. From this period, during a succession of wars and restrictive duties, it rapidly rose, until at the beginning of the present century it reached 80*s.* to 100*s.*, and rents rose in proportion. At the same time a great spur was given to cultivation. Large tracts of commons were enclosed; the Norfolk system took the place of the old infield and outfield rotation, and the introduction of Turnips enabled the farmer to keep fatting animals during winter; his crops greatly increased, and the prospects of agriculture were very bright—indeed, too bright to last. With the peace prices fell, and the repeal of the import duties finally reduced the value of Wheat back to its natural price, and great was the fall in tenants' and landlords' incomes. And though large sums have been expended in draining and other permanent improvements, and though machinery and drill husbandry have very much cheapened production, and artificial manures increased it, yet the corn crops have been charged with the expense of the fallow crops, and the average rent of land not exceeded 1*l.* per acre.

From this rapid sketch of farming experiences we may, I think, fairly deduce two conclusions; first, that the land-owner is not overpaid. There may be great security in possessing landed property—there may be great pleasure in country amusements. We inherit from our Saxon ancestors a love of rural sports, and the prestige which accompanies the performance of county offices and magisterial duties; but the purchaser of land certainly gets no pecuniary return commensurate with his outlay. A fare 3 per cent. is continually reduced by repairs and other drawbacks, whereas a third of his outlay, say 10*l.* to 12*l.* an acre, representing the cost of buildings, fencing, drainage, and other perishable improvements, would pay 7 or 8 per cent. in any other investment, thus leaving little or nothing for the original value of the soil. Under these circumstances we can neither wonder at nor blame the landlord if he takes any opportunity that may fairly occur of raising his rents more nearly to the usual standard of interest.

The other conclusion we may safely arrive at is that the rental of land must needs rise in proportion to, 1st, the demand for farms, which, being limited in extent, while population increases will become scarcer and therefore dearer; 2d, the economy of manufacture of farming produce, including the introduction of machinery and manures; 3d, the price at which the produce may be expected to sell on an average of years. If I can show that these three ingredients are now co-operating together to raise the rents of land to a considerable degree, I shall doubtless have the ear of the landowner, but I hope to show in your next Number that the well-being of the tenant goes hand in hand with that of his landlord, and that the prosperity of the one will eventually coincide with the prosperity of the other.

We have just seen how rents have varied with the price of corn; we shall now have to consider the price of meat. If, as seems probable from the general prosperity of the middle and labouring classes, their power of consuming meat is likely to continue, and the importation of the article, both alive and dead, is restricted by the

expense of moving as well as by its perishable nature, it will follow that this will be a great ingredient in the rents of the future, to what extent will be considered in your next Number. *J. B. M.*

THE CATTLE PLAGUE.

The following Returns were issued on August 17 :—

This Return gives the number of cases occurring in Great Britain which have been officially reported to this Department. The divisions of England are those of the Census. Column 1 only records the cases reported as having commenced during the weeks indicated by the headings. All "back cases" are included in Column 2.

Census Divisions.	1 Number Attacked. Week ending August 4	Week ending August 11.	2 Result of Reported Cases from Commencement of Disease. Attacked.	Killed.	Died.	Recovered.	Unaccounted for.
Metrop. ..	1	—	7,911	3,429	3,714	318	450
S. Eastern .	—	—	4,889	1,705	2,539	465	171
S. Midland .	57	35	20,871	8,874	10,076	1,541	387
Eastern Co.	6	9	11,188	5,457	4,854	789	488
S. Western .	5	6	1,845	739	828	207	71
W. Midland.	55	28	11,990	6,479	6,696	1,519	905
N. Midland.	8	9	19,046	10,984	6,268	1,226	559
N. Western .	90	59	73,398	26,674	35,042	8,491	3,491
Yorkshire	13	1	31,620	7,962	18,359	5,938	2,361
Northern Co.	—	—	8,636	4,931	2,613	974	118
Monmouth. & Wales .	6	6	8,387	1,179	5,794	1,117	297
Scotland ..	—	5	46,866	6,363	28,091	10,707	1,805
	221	161	252,927	84,372	124,268	33,292	10,995

Back Cases reported in the week ending August 11 :—South Midland Counties, 7 ; North Western Counties, 6. Total, 13.

The Return shows that 161 attacks were reported to have occurred during the week ended August 11, being a decrease of 60 on the previous week.

Correcting the total by adding an estimated average of attacks commencing during the week, but which may be subsequently included under the heading "back cases," the number for the week will be 177.

Fresh outbreaks took place in 33 farms or places where cattle are kept ; the number of such outbreaks in the previous week being 40.

Two Inspectors who reported cases last week have not reported in time for this return—viz., for the county of Chester, 1 ; and Stafford, 1. These inspectors reported 7 cases last week.

OUR COAL, FOOD, AND POPULATION IN 1966.

"While other countries mostly subsist upon the annual and ceaseless income of the harvest, we are drawing more and more upon a capital which yields no annual interest, but once turned to light and heat and force, is gone for ever into space." *Jevons*, p. 332.

"A farm, however far pushed, will under proper cultivation continue to yield for ever a constant crop. But in a mine there is no reproduction, and the produce, once pushed to the utmost, will soon begin to fail and sink towards zero.

"So far then as our wealth and progress depend upon the superior command of coal, we must not only stop, we must go back." *Jevons*, p. 178.

Since writing my last paper (On our Coal, Food, and Population in 1966) I have been reading attentively Mr. Jevons' admirable book, which contains such a valuable, concise, but comprehensive summary of statistical facts bearing upon and arising out of our social and industrial condition, that I commend it for general perusal.

From that clear-headed writer I quote the paragraph that heads this paper. The more one reflects on the general condition of British agriculture as compared with our other industrial occupations, the more one is struck with the unfavourable contrast that it presents, and the public indifference regarding it. Year by year we become more and more dependent upon foreign imports of food, while, in an exactly opposite ratio, we are saturating the whole world with our other productions and manufactures. The causes of this unfortunate discrepancy are clear and obvious. In one case we employ an enormous increase of labour and capital, in the other a decrease of both ; for I believe that very much capital is annually lost by our inefficient and therefore unprofitable mode of farming and land holding.

In our agricultural counties population has almost stood still, and in some counties actually decreased during the last 10 years ; whereas in the manufacturing counties the increase of population is for the same period 20 to 23 per cent., and in manufacturing towns 26 per cent. Our manufacturing population has more than quadrupled itself in 60 years ; it has multiplied at a rate equivalent to doubling in 28 years. Now it is quite clear that a proportionate investment of capital and enterprise must have also taken place, and that poor and inert Agriculture has made little comparative progress. I admit that the introduction of machinery in agriculture may have displaced some portion of human labour, but that is but a small matter. In my own case, at Tiptree, with abundant machinery and steam power, the increase of labour has been 100 per cent., or from 32*s.* to 64*s* per acre. If to this be added the extra labour used in the original improvements, such as removal of fences, drainage, improved roads, new buildings, digging tanks, burning earth, &c., the population, in connection with agriculture, must have concurrently and greatly increased, and it has done so hereabout.

The general, social, moral, and physical condition of the labourer has amended ; our new village church and new dissenting chapel are filled by well-dressed and orderly congregations : new cottages are erected, and the evidences of increased comfort as well as of increased population are various and unmistakeable. The new village school is well attended by the juvenile labouring population. Can anybody, then, deny the benefits thus resulting to the country at large from such investments of new capital in agriculture ?

What has taken place in this respect of labour in my neighbourhood has likewise occurred in all other similar cases of agricultural improvements.

One great drawback to landowners is the difficulty of finding tenants who believe that a capital of 14*l.* per acre will bring them a larger per centage of profit on their capital than an acreable investment of half or one-third of that amount. The general farm capital of the United Kingdom being only 4*l.* per acre, it follows that our amount of food production must be miserably insufficient.

The population of England and Wales was in 1570, 4,160,321 ; 1670, 5,773,646 ; 1701 to 1750, about 6,000,000 ; 1801, 9,192,810 ; 1831, 14,070,681 ; 1861, 20,281,587.

As we have about 60 millions of acres (landlords' measure) in the United Kingdom available for agriculture, importations of food were formerly unnecessary, and we were exporters of corn, but now all this is changed. Our acres do not multiply, so that our population, owing to the miserably low production from those acres, require and consume the produce of probably some 30 millions of foreign acres. In other words, three acres (landlords' measure) are required for each man, woman, and child in the United Kingdom. With high farming, where abundant capital and labour are employed, one acre per head of population would suffice. The average acreable produce of the kingdom may be taken at 3*l.* 12*s.* On some lands of average quality the produce is three times that amount—resulting from improvements effected by the landlord and tenants conjointly.

We must therefore conclude, that as compared with the enterprise of trade, commerce, and manufactures, agriculture is in a stagnant and non-progressive condition ; that it neither employs sufficient capital or labour, and that consequently, in comparison with the other industrial occupations of the country, it is poor, penurious, and humble.

All this can only be remedied by a concentration of the present capital of landowners and farmers on a more limited area, and by much land passing into the hands of rich and enterprising purchasers and holders. The present landowners' capital I estimate at 1500,000,000*l.* (how much of this is on mortgage ?), the farmers' capital about 240,000,000*l.* ; both those amounts must be doubled or tripled ere we can satisfy abundantly and cheaply with our own produce John Bull's gastronomic requirements.

But where is the money to come from ? I have not been able yet to ascertain the amount of our loans to foreign and needy potentates, but I fancy that the enormous total would go far towards accomplishing the objects I have indicated, to say nothing of our annual profits and accumulations, to the extent of probably near 100 millions.

I do hope that our agricultural friends will give up their prejudices in regard to statistics, and then we shall have no longer to guess at the probable acreage and agricultural position of the country. Farmers must prepare themselves for a rise in the price consequent upon the scarcity in the supply of labour. Labourers not only migrate to America and our colonies, but are attracted to our mines and manufactories by higher wages, and a facility of communication and transit. Persons employed in agriculture are decreasing annually. In 1861 they only numbered 1,924,110, while in other occupations they have vastly increased. The extensive use of agricultural machinery in the United States of America is owing to the fact that the agricultural labourers always earned 4*s.* 2*d.* to 5*s.* per day, which, considering the low price of food there, was equal to 6*s.* or 7*s.* a day in this country.

Dear labour here will compel farmers to adopt machinery far more extensively than at present, and they will come to my conclusion, viz :—"Never to use a man where a horse will do, and never use a horse where you can substitute steam-power." *J. J. Mechi, Tiptree, Aug.* 22.

THE FLAX CROP IN IRELAND, 1866.

Return, showing in Statute Acres, the Extent under Flax in each County and Province in 1865 and 1866, compiled from information obtained by the Constabulary and Metropolitan Police, who act as Enumerators.

Provinces.	Extent of Land under Flax. 1865. Acres.	1866. Acres.	Difference between 1865 and 1866.
Ulster	243,191	245,190	11,999 acres increase in 1866
Munster	4,979	4,151	828 acres decrease in 1866
Leinster	3,858	7,328	1,470 acres increase in 1866
Connaught	7,405	6,750	655 acres decrease in 1866
Total acreage under Flax in Ireland in 1865 and 1866	1865 Acres. 251,433	1866. Acres. 263,419	

Total increase in 1866, 11,986 acres.

Total extent of Flax grown in Ireland in each of the following years :—

	Acres.		Acres.		Acres.		Acres.
1851 ..	140,346	1855 ..	97,075	1859 ..	136,282	1863 ..	214,099
1852 ..	127,008	1856 ..	106,311	1860 ..	128,595	1864 ..	301,693
1853 ..	174,570	1857 ..	97,721	1861 ..	147,957	1865 ..	251,433
1854 ..	151,405	1858 ..	91,646	1862 ..	150,070	1866 ..	263,419

This Return, which exhibits an increase of 11,986 acres in the area under Flax in 1866, compared with 1865, is published in anticipation of the General Abstracts, which will give the acreage under the various crops, and also the number of live stock, by counties and provinces ; they will, I trust, be ready for publication in the course of the ensuing month.

I do not apprehend that any difference of importance will be found between the acreage under Flax here given, and that which will appear in the Tables of the General Abstracts of the Crops now in course of compilation. *William Donnelly, Registrar-General, Agricultural and Emigration Statistics Office, 5, Henrietta Street, Dublin, Aug.* 18.

INSTRUCTIONS FOR THE PLOUGHMAN.

The following instructions are given to the ploughman relative to the treatment and management of horses, the mode of working them ; the management of the plough, and the best method of ploughing the land, the management of the cart, &c.

1. The horse is a very tractable animal. By care and punctuality in cleaning and feeding him he will soon become familiar with his keeper, and will then be easily brought to understand the orders given him. He should always be managed and directed by words, not by stripes. He will soon learn his vocabulary, which does not require to contain many words, the fewer the better, if they are distinct and differ in their sound.

His name and four or five other words are all that are required—just so many as will enable you to order him to the right hand and to the left, to go briskly, to go slowly, and to stop.

It is most absurd to punish an animal for not doing as he is directed when he does not understand the orders given him. The language used should therefore be simple, and always the same.

Each man must be at the stable before five o'clock in the morning. His horses must be cleaned down and fed by half-past five, so as to be ready to go to work at six. In these points the watch of the foreman is to be the guide.

On coming in from work at 11 o'clock each man must first clean out the mangers and then feed his horses. Their harness must be taken off during the interval from 11 to 1, when they go again to work ; and when they return to their stable at 6 they get Clover if in summer, and Carrots if during winter and spring, and at 8 o'clock all the men must be again in the stable to give the horses their supper, clean them down, and make a bed for them ; their feet must be picked out with a foot-pick, and well cleaned by a brush, but not washed.

2. In harnessing horses either to the cart or plough the chief object should be to place them as near the point of resistance as possible. This, in the plough, may be a point situated somewhere on the mould-board side of the coulter, about half the depth of the furrow under the surface of the ground, and that the object may be attained, the draught chain should be no longer than the horses require, and the beam of the plough should be as short as is consistent with the length of the swing. The reason for placing the horses so near the centre of resistance is not only that we thereby enable them to exert their strength to greater advantage, but that we also give the ploughman greater advantage over them. These two things should be the object aimed at, both by the ploughman in yoking his horses and by the saddler in the construction of the various parts of his harness. The line of draught passes from the point of resistance through the muzzle or bridle of the plough to which the draught tree is attached, and in the same straight line to where the chains are attached to the back band, and from that to where they are at tached to the collar ; it thus makes an angle at the point of attachment with the back band. The back band should be placed on the horse at the second or third rib from his loins. Its use is to enable the ploughman, if he finds his plough going too deep or too shallow, by shifting it backwards or forwards, to give the line of draught a greater or less inclination, thus increasing or diminishing its tendency to pull the plough out of the ground.

By causing the line of draught to bend in this manner at the back band, an uplifting power is obtained which could not be obtained without it, the resistance is divided between the back of the horse and his shoulder, and his strength is thus rendered available in both directions.

When the horses are yoked near the point of resistance, the man, as we said before, has a greater power over them ; the surface of the land, too, if uneven, is ploughed with much greater ease at an uniform depth, as the ploughman has his power increased in this way over both the horses and the plough. Another advantage attendant on this way of yoking, though one not perhaps of so much consequence, is that the horses are enabled to turn on a narrower headland.

3. During the time of working, the horses should always be kept at a good pace. An acre of land is ploughed with much greater ease when the plough moves along at the rate of two or three miles in the hour than when it is drawn at the rate of only one mile in the same time. The resistance which a plough meets with in cutting and turning over the furrow slice is a simple case of friction. Experiments on friction uniformly show that it is independent of velocity—that the resistance which one body gives to a power drawing it over another is the same whether the one surface be drawn over the other a foot or a yard in a second ; indeed some experiments would bring one to the conclusion that friction diminishes as the velocity increases.

If then the plough be drawn three miles in the hour, the strain upon the horses is not a bit more than if it were drawn one mile in the same time. The only difference which they experience arises from the increased exertion necessarily attendant upon an increase of speed, or that which they would feel were they to quicken their pace when walking unattached to the plough. It is very evident that if horses lean

against their collars with a force which would lift 6 cwt., they will not turn the furrow, which requires a force of 6½ cwt. to move it. In such a case as this, the horses are exerting themselves almost as much, and will be as much fatigued with their exertions as if they pulled with an additional force of 56 lb., and turned over the furrow. From this it appears that a team may move sluggishly along, and yet be no less fatigued than if they were to move at a brisk pace, drawing the plough after them at the rate of two and a half or three miles in the hour.

(To be Continued.)

RAM SALES.

Mr. Hugh Aylmer's Letting of Long-woolled Rams.—The Abbey Farm, West Dereham, Norfolk, lies about five miles S.E. of Downham Market, on the Ely and Lynn Railway, and it is reached through a pretty and well-farmed country, composed principally of light and mixed soil, the crops on which this year are of fair weight and promising yield, but much discoloured from the succession of showers which have fallen since the time has arrived for white straw crops to mature. As the Abbey Farm is approached there are in all directions self-evident signs of a long course of care, industry, and well-practised judgment; fences are well trimmed, ditches have been scoured and cleared of weeds before their seeds ripened, and corn and pastures are free from these natural enemies to cultivated crops, and offensive objects to well-trained eyes.

In addition to the specimens of the woolly tribe which were announced for sale on Thursday, numerous and fine specimens of pure Short-horns were herded in the enclosures by the entrance to the Abbey Farm, and in pastures near at hand; but the character of these animals and the great interest which is centred in them, from special permission from the Privy Council having been obtained to experiment on them while under Rinderpest, we can only refer to at the late hour of the week when this despatch must be posted. We may however say the latter question was canvassed and spiritedly discussed by Mr. Bagge, M.P. for West Norfolk, and Mr. Clare Sewell Read, M.P. for East Norfolk, during the speechifying which followed the luncheon. These views we must defer till next week.

The company present at the luncheon and sale was very numerous, and composed of the more active gentlemen and clergy and the leading practical farmers of the neighbourhood, with some breeders from distant counties.

The sale itself passed off in a highly spirited manner throughout. The sheep were in excellent condition, and they had been so fed as to be full of meat, and yet were fat enough to have a good appearance, while their fleeces were suitable to the fashion and times, viz., full and fine in the hand, and heavy. The lambs were first offered, the first single one letting at 11*l.* to Mr. Leeds, of Texham; another was hired by Mr. John Overman, at 12*l.*; another at 11*l.* 10*s.* by Mr. Mathews; another at 11*l.* by Mr. Delf, and No. 13, at 13*l.* by Mr. Cudden. Among the pairs of lambs the 1st was taken by Mr. Burgess at 18*l.* 10*s.* Mr. Farrow also took a pair at the same figure, while Mr. Durrant took a pair at 18*l.* The sum realised for 100 lambs from this flock was 668*l.* 10*s.*, the average being nearly 6*l.* 15*s.* each. Considering these are only let, and will be returned to the Aylmer for re-letting or using next year, this is a great price.

The Shearling Rams made similar prices. No. 1 was hired at 13*l.* by Mr. Leeds; No. 3 at 30*l.* by Mr. Lane (Cirencester), Mr. Mumford Sexton running him hard up to 29*l.* Mr. Carter took one at 12*l.*, and Mr. Lane another at 17*l.*, while Mr. Blyth, of Hingham, hired Nos. 35 and 36 at 20*l.* each; Mr. Sewell, of Pickenham, taking two at 13*l.* and 14*l.* respectively. The average of these was 9*l.* 16*s.* 7*d.* each.

The 2-shear were only 10 in number, and they averaged 7*l.* 6*s.*

When it is considered that Mr. Aylmer makes no pretensions to be a breeder of ram-breeders' sheep, except it be with a few of his more choice ewes, it will be allowed that the above prices are highly satisfactory and creditable to the manager of the Abbey Farm flock.

The hearty enthusiasm which was displayed by the company when the health and success of Mr. Aylmer was given, sufficiently testified to the respect in which he, as a man of business and a friend, is held by his neighbours. This feeling was more than usually excited by the delicate and feeling manner in which the proposer of this toast touched on the great labour and losses which had, since the last meeting of this kind, befallen Mr. Aylmer through the cattle plague, to which insidious disease several of his high-priced Short-horns—including a hired Booth's bull at 200 guineas—in a short time succumbed. The points here, however, which are of public interest we will return to next week.

AGRICULTURAL STATISTICS.

[The following is a portion of the inaugural address read on Thursday last by Professor Rogers, President of the Section of Economic Science, British Association, Nottingham.]

THE value of agricultural statistics does not lie simply in the aid which they may afford in indicating the probable course of the market, and in saving it from needless fluctuations, but in suggesting what is the probable annual deficiency in supply. Many years have passed since this country grew enough food for its inhabitants. That its prosperity may be uninterrupted it will be necessary that it should rely increasingly on foreign produce. That its people should be well fed it is necessary that every facility should be given for the growth and importation of live stock and meat. The table of statistics giving information of the amount of cattle, sheep, and pigs on the 5th of March, 1866, on the presumption that the returns are accurate, is singularly instructive. In drawing any inference on this subject, we should treat Great Britain separately from Ireland, as the importation of cattle from this part of the United Kingdom is more difficult than it would be from Belgium or France, and nearly as difficult as from Denmark and the Elbe. In round numbers the population of Great Britain is about 24,000,000. In one particular only, that of sheep, is Great Britain on a general level with other countries. There is nearly a sheep to every head of population. But of horned cattle there is only one to about every five; of pigs only one to every nine. Were the amount of horned cattle in France proportionate only to that of Great Britain, France would have a little more than 6,000,000; in fact it has rather more than 14,000,000. The same may be said of Austria. In many of the German States the proportion is higher still. In Denmark the cattle are not very much less numerous than the population. In the United States there is rather more than one head to every two of population. With pigs, as I have stated, Great Britain is very scantily provided. In France and Prussia pigs are one to seven; in Austria one to four-and-a-half. Taking the whole of Europe, the proportion is one to six. In the United States there are more pigs than population. Had the returns supplied us with information as to poultry, the deficiency would have been still more striking. In the year 1865 this country imported more than 90,000,000 of eggs, if the hundreds of eggs be taken, as it has been from the earliest time, at 120. I need hardly inform my hearers of the fundamental canon of prices—that when the supply of any necessary of life falls short of the demand, the price rises in a proportion which I may perhaps venture on calling geometrical; that is, the quantity available for sale is worth increasingly more, according to the deficiency, than the normal or natural supply would be. The statistics of the cattle returns supply the key towards interpreting the high price of meat, and we may be sure that the price of meat would be higher than it actually is were it not for those improvements in stock-keeping by which cattle become more available for consumption at earlier dates—improvements which are yearly developed. This deficiency is not greatly supplemented by importation. Small as the stock of cattle is, the annual importations do not amount to more than one-twentieth of the ordinary stock, while that of sheep is, as a rule, but one-fiftieth. During the present year even these quantities must have undergone a serious diminution. Nor is the import of meat large. The most important item is that of bacon. But even here the largest estimate will not give more than the equivalent of 300,000 pigs. The beef seems to be about equal to the supply of 50,000 oxen. It is matter of regret that no facts have been collected by which we might compare the present and past supply of live stock in Great Britain. It is of course always dangerous to trust to impressions or to memory, but I cannot but be convinced that there has been a general and considerable diminution in the amount of live stock in Great Britain during some years past. It is now comparatively seldom that agricultural labourers are able to keep pigs; it is still more rare that they breed poultry. The enormous importation of eggs suggests that the fowls kept in Great Britain are comparatively scanty. But it is probable that the maintenance of insect-eating birds is an important provision in agricultural economy, and that when we find fault with the destruction of small birds we forget that our practice is dispensing with a still more important means for checking the ravages of insects, as well as for supplying that great deficiency in live stock which seems to characterise our domestic economy. It is possible, too, that the abandonment of much pasture in the northern part of the island to deer forests and grouse moors has considerably lessened stocks of lean cattle and mountain sheep.

Home Correspondence.

British Capital and Agriculture.—Alderman Mechi (p. 740) laments that British capital is loaned out to foreign countries instead of being invested in the improvement of our land. Capitalists are quite alive to their own interests. The profits on a foreign loan are liable to income-tax. The profits arising from an increased produce of land are liable, not only to income-tax, but to heavy local rates. An improvement, which would yield 5 per cent. net, is reduced by these rates to 4 per cent., or less. As to the comparative expense of the transfer of land beyond the transfer of stock, the Alderman must not forget that the stamp duty is ½ per cent., and that the Government, by exempting stock from duty, have made a profit by the higher price at which they have been thereby enabled to dispose of their issues. As to the law expenses of transfers, they chiefly arise from the complicated and varied trusts which landed proprietors create. Nor can they be materially reduced until the law declares that the parties in whom the legal estate vests shall have absolute power of sale, and that no purchaser need inquire whether trustees have or have not fulfilled their trusts. Persons who are beneficially interested in the trust might protect themselves by having the deed which conveyed the legal estate to the trustees deposited in the hands of third parties. They would also have their remedy against the trustees for breach of trust. If, then, the examination of title were reduced to a simple deduction of the legal estate, it would be comparatively a short affair, and in order to make it still more easy I would enact, that in case of the death of the owner, the legal estate should pass, not as at present to the heirs, but to the executors, who, by a short deed, should assign it to the heirs. A purchaser, therefore, instead of hunting up old pedigrees, would be satisfied with probate to A. B., and the assignment from A. B. to C. D. The plan above proposed involves no mapping, no registration, and no disagreeable publicity. *G. S.*

Farmers' Clubs.

CIRENCESTER: *Rearing of Calves.*—At the late monthly meeting of this Club this subject was introduced by Mr. Henry Ruck in the following valuable paper. He said:—The cattle plague, which has cost the country a great loss of cow stock, and thereby calves, demands the attention of every thinking man who will endeavour to fill up this deficiency, and any light thrown on the subject is worthy of consideration. It is not to be supposed that this country will do without beef, so I expect the subject of 'rearing of calves' will be discussed for many generations. The few remarks I mean to make will be the result of my own observation, so I hope you will not criticise my statements too acutely, as no doubt many here will differ in some points, but we shall hope to have their opinions so as to gain information, which is the object of this Club. I have been very successful in weaning calves. This year I had 55, but have lost three from bad management; 54 last year, and did not lose one; and 50 the year before, and all alive. Some would say, how lucky, but there is a great deal in management. When I first began, it was my opinion, and I think the generality of farmers still think, that calves cannot be weaned without a considerable quantity of milk. I remember an instance at that time. My brother gave his cowman 1*s.* per head extra, to encourage him to wean as many calves as he could with three cows; he reared 30, but I am now convinced that any number can be weaned with but little milk, and the observations I make will, I hope, prove that the old system of rearing calves with milk, and that alone, was not such as will return to the farmer the greatest profits, or fill our country with a large supply of cattle stock, so to use some of our roots and straw with the inferior Barleys, which are so heavily taxed that they cannot come into competition with the better samples, but must be consumed by cattle, sheep, or pigs, to be brought to market in the shape of meat on their own legs, instead of on our waggon wheels. From the high price of butter and cheese, we see how eager the dairymen are to dispose of the calf at about eight or ten days old. The reason is they can turn their produce into money at once, or if the calf be fatted it is soon brought for sale; not so with the weaned calf; it must be kept for two, three, or more years before the first cost is received. I am surprised the public are so unwise as to purchase veal at the same price as good fatted ox beef. Before a person begins to wean, he ought to have some object to carry out—knowing to what purpose the cattle will afterwards be turned, whether for the dairy, or for fattening. If for the last purpose, I am sure the better you do the stock at all times, the sooner you bring them fat to market, the quicker the return, and the greater the profit. Now the first point of importance is the calf—there must be a calf. Now, whether you have a well-bred, good colour, one likely to grow into a good one, or one with bad colour, black eyes, black nose, crooked back, and likely to be always a mean beast, the expense of rearing one or the other is the same, so I should recommend that we should begin with calves from good cows, got by superior bulls; the difference in expense is very trifling, considering the number of calves one bull gets, and the offspring will prove the most promising animal, and will well repay the owner for a little trouble in choosing the right sort, and his attention and perseverance in looking to them when young. I do not recommend such very high-bred cattle for general stock, but really useful beasts. It is peculiar that the highest breeds sometimes bring the smallest calves. I should always like to purchase calves where the cows are kept in good condition; they generally go on better than when dropped from cows in a low state.

ON THE DIFFERENT MODES OF WEANING.

The first I shall mention is allowing the calves to suck one cow for 8 or 10 weeks (perhaps our worthy Chairman allows his more than their share, each having the benefit of two), until the calf eats, which it is not inclined to do so long as it can have plenty of milk. But this is very expensive, and does not require much science. Sometimes two calves are put to one cow for a month or five weeks; then take those from her again and put two more for the same time; in this plan sometimes a fifth is added, but the objection to this system is, the cow must be grazed afterwards, as she will not take the bull whilst the calves are with her; but the general way with dairymen is to give the calves 6 or 8 pints of milk per day, for 6, 8, or 10 weeks, with old Beans, cake, &c., the herdsman slipping a Bean now and then in their mouths to teach the calves to eat them. We also hear of yearling heifers being put to the bull late, say in July, the bull running with a lot for about a month; those that prove in calf are allowed the following spring to wean their own, the heifer is then let dry, and comes into the dairy at the usual time of three years old. But, gentlemen, there is no great difficulty with the above plans, and what we farmers, having a quantity of inferior pasture, which is not suited for a dairy, but for keeping young stock, want to find out is how to wean without milk, and keep a greater quantity of profitable cattle. The plan I have adopted, having only four cows, has been the following: I take all the calves, after about the beginning of March, from a large dairy near my farm. Every Wednesday I send for what are above 10 days old, as before that time they ought to have their own mother's milk, nor ought the milk up till then to be used in the dairy. The price I pay is 30*s.* each. They have for the first three or four days 2 or 3 qrts. of milk at a meal; then gradually add some food in the shape of gruel with their milk, and by degrees water, having so small a supply. Mixing the oilcake with gruel is the secret of success. I use half oilcake—the best I can buy. Take a large bucket, say 6 gals., and as the number of calves increase of course more; put into

each 2 gals. of scalding water; then add 7 lbs. Linseed cake, ground fine, which is done by saving what dust falls through the screen of cake-crusher, and passing it through one of Turner's mills (I object to Linseed itself); stir the oilcake with water; add thereto 2 gals. of hay tea to each bucket. The hay tea is made every morning by filling a small tub with good hay, pouring on scalding water; use this in the evening, add sufficient scalding water, and cover down for the next morning. I wish to draw your attention to the hay tea: it is very sweet, and dark colour, and I think the extract from the different herbs assists digestion. Again we stir up, and put 7 lbs. of mixed flour, consisting of one-fourth Wheat, one-fourth Barley, one-fourth Oats, and one-fourth Beans; add sufficient cold water to fill the bucket, and well mix together, which makes a pail of capital gruel, 2 qrts. of which, with 2 qrts. of cold water, will be about the right heat, and sufficient for one calf at a meal. The food should be given at regular hours, say 6 in the morning and 6 at night. Each bucket of gruel will be enough for 12 or 15 calves, and costs about 1*s.* 6*d.*, or 3*d.* per day for each calf. We always measure the food with a 2-qrt. cup, and never over-load the stomach of young calves. After about the first 15 days, when the calf chews the cud, some of the difficulty and danger is passed; and when the calf eats well, we gradually diminish the gruel. I have never tried bread in the early stage, but must think it proper, and more digestible than flour, until the calf chews the cud. Perhaps Mr. Hobbs will give us his opinion; if there is not a proper mastication, the heat of the body is not kept up. The calves we always tie up night and morning when served, and I prefer their sucking their food always by the old-fashioned plan with the fingers, as there is sometimes a difficulty in getting them to drink, and if they miss one meal, scour is likely to follow. A good supply of buckets is essential for a large number. I always keep some mixed crushed corn with cake before them; hay, Vetches as soon as there are any, and a supply of Mangel Wurzel; they will soon take to them, and consume a quantity. The later in the year you can keep some the better. Some crushed Oats should always be given when young, and I endeavour to keep them dry, clean, warm, and quiet, and never allow the manure to heat under them, as preventives from diseases. Water fresh every day. Each Wednesday I pass on the same number received of the oldest and best doing ones to another lot, until they make a pen of 12, which is quite sufficient together, and with those we gradually diminish their night's and morning's gruel until they manage for themselves; it generally takes about six weeks to wean them. Although successful hitherto, I look forward next year to adopt a plan of weaning without any cows, by purchasing milk for a week or two, which costs about 8*d.* or 9*d.* per gallon, and have all the calves to come in as near together as I can, instead of weekly, and although I know it greatly depends upon the details being carried out, I am sanguine of success, as I find the early calves are much stronger before winter, and turn out better the following spring. I do not see why weaning of calves should not be the business of any one, so as not to allow them to be sent to our large towns at about 10 days old for slaughtering, at 20*s.* each, and if the system of weaning can be carried out without milk, one might soon wean a large number, which would return a good profit. Should a quantity be attempted, a long shed divided with hurdles, with a little open space, is much better than being too confined. Respecting

CALVES IN YARDS

the first summer, I think it will repay the expense of carting food, especially if you can have a regular supply of green, but if not I think some extra allowance of cake should always be had. I give my calves quite a pound of cake, with a little corn daily, when out at Grass, and I am sure that cake pays double given at that age than at any other; it keeps the body in such a healthy state that whatever food is consumed its properties are taken up by the animals. It is a bad plan to allow the calf to lose its glossy coat. The old saying, from the fine weather, will this year be true—"no calves' hay," as it used to be the idea of giving the calves the spoilt hay. How absurd to think that the young stock and those that require the best of everything, should have been for so many years neglected! The objections to turning out are several—one, the annoyance of fly, which I have lately seen so great that calves run until quite exhausted, and instead of increasing in flesh they are losing; again their standing in water, which ought not to be. I should never allow them to stay at Grass late in the autumn, especially in frosty nights; it will repay to give a little hay, and a few loads of Burnips, or Mangel, with Grass, during September and October. At the latter part of this month they should come into yards; when so done the weak and youngest should be divided, to do those better, and turn out the following spring a regular herd of one size. It is a mistake to put young stock on too good Grass land; the food will sometimes run through them in wet seasons from its being too rich. I should prefer more acres of the same value, although the quality of herbage is not so good.

THE SELECTION OF STOCK.

When the farm is mostly arable, I should prefer having steer calves, but if a dairy farm, should keep all cow calves, and those from the best milkers, as no doubt the milking properties follow from the dam. I should then select those I like, and dispose of the remainder, and so keep up a good dairy. There is no doubt but stock bred on a farm do better than those purchased; but if a farmer purchases stock, I should recommend buying bone, I mean strong poor stock, and add the flesh; it takes a considerable quantity of food to grow bone. I might here mention that calves will do particularly well the first summer on Sainfoin. During the first winter I have kept my calves with cut straw, pulped Mangel, one pound of oil-cake, and two pounds of crushed Barley to each, with a small quantity of hay; and I think the idea that stock cannot be kept without hay will soon pass by. As a substitute for good hay, I should put 5 cwt. of straw-chaff at 5*s.*, 10 cwt. of pulped Mangels at 5*s.*, 1 cwt. cake at 10*s.*, and 1 cwt. of mixed crushed corn at 30*s.*, and allowed to heat a little. You have a ton of food for 50*s.*, equal to the best hay (but for all stock the addition of a little is beneficial), and again we are consuming our straw and corn, thereby improving our arable land, and we maintain our stock in a steady but constant growth and improving condition, on which point the success of breeding depends, for whenever an animal receives a check there must be a loss, and it costs more to bring it again into a proper state than it would have done to have kept it going on. Our animals should daily become more valuable, for it will never pay the farmer to let them continue in the same state: a change of food is often required, and I question if some of our large pasture fields were divided with flakes for that purpose, it would repay, for when you see your cattle with a skin soft and mellow, its frame covered with flesh, with a healthy appearance, you may rest satisfied; but if otherwise, the hair staring, skin tight, unhealthy about the eye, be sure your stock requires immediate attention. I have found that 1 cwt. of straw-chaff and three or four of pulped Mangel, will keep store stock in an improving state without corn or cake.

THE DISEASES OF CALVES

are many, but as I think prevention is better than cure, I shall only mention four: murrain, husk, scour, and lice. Respecting lice, they are easily detected by the calves scratching themselves, generally on the neck; a little stavesacre boiled with water and applied will soon do for them. Scour I attribute to too sudden change of food, or by taking calves from all dry food to such as contains considerable moisture, or giving sour food, but as it is a stomach complaint, it is generally for want of attention; as a preventive I should stick to my oilcake, but as a cure some medicine is required. Husk is from a living insect, something like a large white thread, which clings to the windpipe; it is, I think, often caused from calves being put on lattermath, and there taking up some egg that breeds them, but they ought always to be kept on land that has been fed in the spring; there are several modes of treatment, such as inhaling certain gases, a spoonful of turpentine, with a little poured down the nostril, but as I am no veterinary, I had better not dwell on these. Murrain is a stoppage in the circulation of blood, and is easily known from the peculiar crackling when you draw your hand across the infected parts; it is generally brought on when calves are improving too quickly, or by the changeable atmosphere. I think there is no cure; some people put a seton in the dewlap as a preventive, but the best plan is to keep your stock in a continually thriving condition. It behoves the rearer of calves to "look sharp," for if disease does attack his herd they quickly drop off, and the death of two or three in a year, or the absence of thriving, would swallow up a considerable amount of profit. The castration of calves should be performed at about a month old, and as at that time you can form an opinion, from the growth of the calf, what kind of beast it is likely to make, it might be profitable to save a few for bulls. Calves will sometimes suck the navel of others, but a little tar applied will prevent their so doing. What do we rear cattle for but to consume the food grown on lands we occupy, so as to turn the produce into money, and how is that best done? not by buying a calf at 30*s.*, weaning it at considerable cost, then allowing it to do badly, and at last selling it as a heifer and calf rather over three years old at from 14*l.* to 15*l.* I find, after deducting the first outlay, you have about 1*s.* 6*d.*, yes, the large amount of 1*s.* 6*d.* per week, per head, to provide food, shelter, and risk. There can be no profit in that, but then what would you do? I know the dairy is the most profitable, but those are not in fashion now-a-days, so we must try on, and look for some small encouragement to gain a remuneration for our labour in

REARING OF CATTLE.

I think the plan to be adopted must be to buy a good calf at 30*s.* Do him well from the time of his birth to the earliest period you can sell him as beef, which would be before Christmas, so not to be three years old; and although it would require a quantity of artificial food, it is consumed by young stock, which, as I before stated, will make more meat for the food consumed than at any other age. So the pound I arrive at is—keep all the young stock you can. The same land will provide food for a greater quantity than older ones, and make a quicker return. It also makes room for next year's graziers. I might here mention Mr. Campbell's plan of giving a liberal allowance of corn with Grass; it must be good management. There is one drawback to increasing our cattle stock, that is buildings, which at present are very expensive, as we often see six or eight beasts occupying a stall all the winter. The repairs and interest must reduce the profit. Some good open pens built with mortar walls, 9 feet high, with a feeding gangway down the middle, can be made for about 300*l.*, and that would provide good shelter and the most approved feeding arrangement for 100 store cattle. But, after all, do cattle make as great a return as sheep? I must say no; for I know from experience that sheep are the mainstay of agriculture.

CONCLUSION.

I fear I have now exhausted your patience, and am afraid that no new light has been thrown on the subject, and I have, perhaps, only stated what you knew before. In conclusion I shall mention that the success of "rearing of calves" depends on their being regularly served, the food well mixed, not too warm, time given for each to take its proper quantity, not too sudden change of food but gradual, kept clean, dry, warm, and quiet, a liberal allowance of oil-cake, and if convenient in yards the first summer; and if the rearer of calves studies his business he may look for a fair share of profit in his undertaking, but if he allows his stock to take their chance, he must not expect any remuneration.

DISCUSSION.

The CHAIRMAN said he had listened with a great deal of pleasure to the remarks of Mr. Ruck, and he had heard much that he did not know before. He was not aware that calves could be kept for 1*s.* 6*d.* per week, and he should certainly go home and try the system recommended by the lecturer. He agreed with Mr. Ruck that it was not necessary for every one to keep high-priced stock as a general rule, but he was sure they would all bear him out in saying that it was of great importance to the public that some one should keep pure bred animals for the use of others. He believed that many people who had not tried pure bred bulls were hardly aware of the effect they had upon stock. Notwithstanding what Mr. Ruck had said about small calves, he knew that his were got by pure-blood animals. For his own part he was not at all anxious for big calves, as some of the smallest calves he ever had turned out the largest stock. The hay tea mentioned by Mr. Ruck was somewhat of a novelty to him, and he should like him to repeat how he made it.

Mr. H. RUCK said he regarded the making and use of hay tea as one of the secrets of weaning calves. They filled a tub with good hay, and poured scalding water upon it, and after the hay had had the direction in the evening, they poured more boiling water on the hay and used it again the next morning. He was sure that the use of hay tea in the rearing of calves would be attended by great benefit.

Mr. SMITH asked what was done with the hay after the tea was made?

Mr. RUCK said it was of very little value.

Mr. SMITH: Don't you think, if the calves were to eat the hay, that it would do them as much good as the tea?

Mr. RUCK: I think it would if they could eat it; but the tea is given to calves when they are unable to eat hay.

Mr. SMITH asked if good milk would not be much better? For his own part he should prefer a little good milk for calves to all the hay tea they could give them.

Mr. RUCK: You were not here when I commenced my remarks. If you had been, you would have heard that I was simply suggesting what I considered to be the best mode of rearing calves without milk.

Mr. SMITH: I don't approve of hay tea at all. I have known people who have used it, and the calves that have been fed with it have had bigger bellies than backs, which I don't like to see. Now, do you really think that this hay tea is very much better than water?

Mr. RUCK: Decidedly it is.

Mr. SMITH: A little better, you think. Well, what quantity do you give your calves per day?

Mr. RUCK: For 12 calves I use two gallons a day.

Mr. SMITH: I do not think it was worth the trouble of making, as the less weight they have they grow young animals the better. Now he thought good milk could be used with advantage for young calves, both, he said, if skimmed; but even skimmed milk would be better than hay tea.

The CHAIRMAN said, as Mr. Smith was not present when the proceedings commenced, he would just mention, as a proof of the success of Mr. Ruck's system of rearing calves, that in Mr. Ruck's herd of cows, that gentleman weaned 46 calves, which were all we have in 1865; he weaned 54, all of which were now alive, and this year he had weaned 55, but had lost three through bad management.

Mr. SMITH remarked that he had weaned calves without milk, but he had never used hay tea. He preferred good thick gruel to that. He believed that good gruel made of Oats and Wheat, or all Wheat, if they liked, could be used with advantage.

Mr. J. H. BRYAN stated that he had inspected Mr. Ruck's calves, and he never saw any that looked more healthy than they did. He should think his yearlings were worth this year 10*l.* a-piece.

In answer to Mr. Smith,

Mr. RUCK said he gave his calves both Beans and Bean flour.

Mr. SMITH: I will back that against hay tea. The Beans counteract the tea.

The CHAIRMAN stated that considering the want of animal food in this country, and looking at the many calves that were sacrificed at a few shillings a piece, it was really a question of national importance how those calves could be best brought up and reared. They were therefore deeply indebted to Mr. Ruck for bringing the subject forward.

Mr. CHARLES HOBBS stated that a year or two since he used about 4 lbs. bread and 1 qrt. of new milk for his calves, which kept the flesh up very well, but he thought the diet was too fattening, and he had discontinued it this year. He was of opinion that there was nothing like new milk for calves, but he thought that they might be successfully reared on only a portion of milk, with mixtures of hay tea, Linseed gruel, and other preparations referred to by Mr. Ruck. He had seen that gentleman's calves, and they were certainly looking well.

The CHAIRMAN observed that one of the most important things in rearing calves was to keep them clean. He had known them to have the scour from their being kept in a filthy state, and dirt being allowed to accumulate under them. It was also important that too many should not be kept together. He was sure they all felt greatly indebted to Mr. Henry Ruck for the valuable information he had given them, and he had no doubt they would all cordially join in according him a hearty vote of thanks. A man who could wean 50 calves in a year, keep them all in a good healthy state, and bring them out at three years old, was a good friend to his country.

The vote of thanks having been passed by acclamation,

Mr. RUCK briefly acknowledged the same. He said he hoped Mr. Smith did not think that he advocated the weaning of calves on hay tea alone. He recommended no such thing. Calves required the best food they could give them, and they should be kept always growing, constantly improving, and every day paying.

—*Wilts Standard.*

LOGIE AND LECROPT: *Application of Machinery to Farm Labour.*—Mr. Finlayson, of Pendreich, read a paper on this subject at the last meeting of this Club, Sir J. E. Alexander in the chair, which included a number of practical suggestions well worth consideration:—

THRESHING MACHINES.

In regard to the threshing machines, whether plain beater, spike or betting drum, revolving or clank shaker, or whatever plan, small pinions and bevel wheels should be avoided as much as possible. Pitch chains are a very cheap method of driving the rollers and shakers, but the first and most important thing to be looked at is a good large horse shed. First, give the horses a good lever power, and the rest becomes easy. Make the horses strong, and you gain the additional advantage of a large outer wheel and pinion, large spur wheel and pinion, large second power and drum pinion, and you can make four horses do the work of six with everything the other way. It may be laid down as a general rule that small pinions are ill to turn, and a great drawback to threshing machines; but the only way to remedy this evil in

many cases, and keep up the required speed, is to begin at the beginning and give the horses a good leverage. Not a few of our mill sheets are just as they were when the mill was first hung over the staples as a thing of course, and was so recorded by the threshing mill, and it is no wonder they should bear little antiquated. Some of them in the district, where there is a good deal of thrashing to do, are not 23 feet within walls, whereas they should be no shed less than 30 feet. I have had a long trial of both, and the longer one, in my experience, has all the advantages I ascribe to it.

FANNERS.

There is room for improvement, too, I apprehend, in the way and manner of cleaning our grain. Not a few of our fanners in the district, with little alterations in detail, are the same as when this system of winnowing by wind was first brought out, the prevailing principle of the old fanners is long blades, about 2 feet, some of them more. The invention of fanners was no doubt a great affair, however light we may think of it now—a great improvement on the old plan of cleaning the grain between two handsome young men on the top of a hill, to catch the passing breeze, and perhaps catch the passing shower instead. But we could not expect these men, genius though they must have been, to jump to the best construction of fanners at once and I find, as anyone cleaning and by shooting blades from them, that in these long blades fanners very blade has its own blast. There is a lull and a puff as every blade comes round, and they are of necessity heavy to drive. The most modern fanners again, which we see taking prizes at shows, are not so long in the blades—somewhat short, for fear, and I am very inclined to believe, from the haste to attain perfection, as I suppose, in cleaning the grain, they have filled the whole inside with riddles, so that the wind has next to no chance at all in doing its duty, as it has no way of getting near the grain but through and among these riddles, which is far from right. Fanners are aware, even only by discriminately cleaned when it is falling, not when it is striking against or resting on anything and hence the absurdity of blocking up the whole interior of fanners with riddles. Riddles I would have, and riddles I wonder we have not had in all our mills, and I am surprised we have not them there should be so placed as not to interfere on any account with the winnowing of the grain. There should only be a slight part of the blast allowed to play upon them, and a foot or more clear below for the wind to act on the grain as it falls from the riddles. I find that when riddles are apt to clog—and they do even most handling about them, and that pierce from or rise is preferable. But to approach perfection in the winnowing of our grain, I would recommend that our fanners be short in the blades and double blasted—that is, that they should have two pair of blades or fans, the one going out when the other is coming in, or working half-stroke to each other, to prevent that lulling and puffing that is in all fanners and I make no doubt and could show. Three riddles, when properly applied, may be said to add nothing to the weight of division and a fanner of fanners so constructed I give credit for for the wind to act on the grain, when it is resting on anything as is too often done, is like striking a man when he is down; it gives him no chance of his life. The strong man is weak then and it is the strong grain. It is an expensive affair riddling grain by hand, and not every one can afford the obstacles they have to meet with. The old Scotch wooden plough is still in use in some parts of the district, but wooden ploughs, in whatever form, are never thrifty. The "Scotch Rational" can be made in its native form, and as light and strong in iron as it would be in wood, but when it comes to the other's plough nor swell and rot with winter's wet—would last generations in place of a few seasons. But two sets of ploughs are expensive and unnecessary, except improved iron plough, with a plain bread level sock and a straight coulter, will suit almost all soils equally well, if not better, than the other, and be as easily drawn. Very short, convex, sharp turned, hollow breasted mould boards are better for scouping loose land than ploughing it, unless a medium length and twist will do their work on all soils, and prove more generally useful. Wheels, when rightly attached, make a plough very easy to guide. And though a good man at a ploughing match may make better work without them, a very inferior ploughman will with a day or two's practice make superior work with them; and it would be a great saving of our ploughmen's horses were wheels more in use than they are. What we call grub harrows, when well made, have been found exceedingly useful in tearing up and loosening land that is to be often rolled in the breaking down, and when land is foul, for taking weeds to the surface, the grubber over ploughs at one time to take the place of the plough, but now it will have enough to do to keep it's own place. A turn of the grubber may sometimes be better than a ploughing better for keeping in the moist, for the sake of drawing in the weather. But there is danger in going too deep with it, but the plough can turn the soil over thoroughly to the influences of the atmosphere, which influences, although we have them for nothing, are often more enriching to the soil than the best and most costly manures we can apply.

STEAM POWER.

Water power may be said to be the cheapest of all known powers, when conveniently got; but unfortunately, where most grain is grown, and most needed, it is most difficult to get. And that is why steam power is considered almost the only profitable threshing machine for threshing alone, for these reasons among many—that we often can't get on our land for weeks together, and in such seasons it is an advantage for our horses to have threshing to do, and with a good moving machine hands of one threshing may be overtaken in such seasons. Besides, we have Mr. Raines' portable engine and threshing machine to apply to in a strait, which does all the departments of the work well and is not long in making a clean job in the barn and. Too it is, that in the lothians, and even other districts, we still see flow fanning stealing without the engine clouds hovering above all round. But in many places the straw is sold, and dung is bought, so that when the horses are not on the land they are on the road. Other places, from their proximity to coals, or the dry texture of their land, that can be wrought at any time of the year, are very different. And in the vales of Monteith and Stirling the straw is generally made into dung, on the farm-yards as we experience, and the land still so tenacious as much of it is that one day's work on it when not in tune would be like a year's restoration. Steam power has done much for the world, but comparatively little as yet in the cultivation of the soil. Till recently, we used to see cotton factories and mills of all sorts in out of the way places—beside burns and streams, and rivers; but taking advantage of steam power, we now see the manufacturer having a mill—without any such restraint, anywhere and everywhere—in the midst of large cities, on the quays and banks of navigable rivers, where coals can be imported and exported to and from all parts of the world—and we farmers can only say we think we could do with that power. We will not get it in the same advantage of this giant power. The difficulty of applying steam to agriculture is too manifest, from the time it has taken to introduce it. Could it have been done as easily, and with the same advantage as in the other case, the whole country would have been supplied in every farm. There has been such indefatigable energy or ingenuity, and I should say philanthropy, shown in introducing steam to factories as to farms, for the fact is, it was not needed. The manufacturer, as I have hinted, has only to erect his work, set down his engine in the place and position required, and away it goes, saying to itself, we may suppose, 'This is the place for me.' It is no doubt difficult to estimate the benefit manufacturer and mechanics have derived from the perfection to which they have brought their machinery, but no one thing in order, I am persuaded, has done more to advance their interests than steam power. It is like the root from which other improvements have sprung—the trunk on which they grow and flourish; and we, as landlords and tenants, we, so interests are so linked together, ought to strain every nerve, if possible, to introduce steam power into every farm. Most people like a young horse to be bold and forward a little in the breaking in. They say there is something in him; if this holds true, then you may depend there is something in steam, and we ought not to be frightened for any pranks and cantrips that may take place at first, and we should be encouraged to preserve in the improvements made in our own, and from the success that has attended the steps of this bold horse—this noble power—in every other department of industry. It has not yet been established, it is true, that cultivation by steam is cheaper than by horse power, but such a comparison is premature. It is certainly not reasonable that a power that came into existence yesterday should already cope with another that has been in existence since the time when Adam was a young man, or soon after. It is not so long since we, in spite of the scoffing of sneering, left the plough and guiding the horses; some here may have used him in their younger days; so give this youthful power time—I would not say four or five thousand years, but four or five years—and we will get the gadman paid off here too, and many other seeming incumbrances that lie in the way of progress. It has already been great improvements made since this young wild horse was yoked in our district which should be noticed, but I must pass on. It may be observed here that this fiery horse eats coal, not corn, and eats and drinks only when he is working, decent fellow! and then only when we please and as we please, and must be attended to, work or no work, lazy fellows that they are—are they not? No doubt the present extensive form of application of steam power is beyond the reach of the great bodies of farmers, and may have frightened some and grieved others; but it was the same with the introduction of steam by more spirited landlords that took the lead in the movement, and it was such form they required, and no one need be concerned as it can be brought down to any size or form. I only wish I saw it brought out in a form suitable to a farm of 100 acres or so, that would be within the reach of the capabilities and rest of application in their own case. But I must say that I don't like the idea of the engine toiling so far from its work, shorn of half its power; for recollect that an engine of 12-horse power, so far as I have seen, only drags two or three parts of the power it has to the point of labour. It of course easier far to find fault than find a remedy. But allow me to say, for the sake of argument, would it not do to have the engine, instead of standing at the end expending half its power doing nothing, traversing our fields, short angled corners, and all, on a railway, and by means of the principle of adhesion on Norwegian harbours travel on, in place of the bird wheels. The four wheels for guiding the engine would be the only compressing weight on the soil, and would be less so than the yoking and stabbing of the horses' feet. Supposing the engine to have cultivators, the one going deeper than the other as they came back. The depth could be regulated by wheels. It would be like tooth and pinion for taking the engine over a height; the wheels would not skip round and leave the engine helpless, but go and then stop till knolls or their farms would not need to consider themselves excluded from a share of the advantages of their more favoured brethren in the plains. But without joking, if a principle somewhat like that described would do, for the gadmen alone, the rope, porters, anchor, attendants, the laying and lifting of this gear—would be dispensed with, and this magnificent power brought within the reach of every one. I see many difficulties to the plan, but a great many advantages if it would do. At all events it is by debating and discussing that we get on to topics that we can endeavour to help on improvements that so much interest ourselves and the community.

REAPING MACHINES.

Some of the other members will give us the advantage of their experience of the reaping machine, as your patience must be already over-taxed. Allow me to observe, however, that though the reaper has much to contend with in our variable climate, it is gratifying to see the heavy it has made against cheap labour, and seemingly irresistible, since it came into use. Those only who began with it can estimate the advances that have been made. The real improvements, or labour of effecting them, cannot be appreciated by a casual observer. Many thought at one time, that when we got the length of self-delivery we could go no further, and so we did. Some machines at first, when the knife got the least blunt, would come to a dead lock for want of power, although driving nothing but the knife; but now, from the knife being made lighter, of better stuff, kept sharper, and other parts made more perfect, we find it not only able to perform the knife, but a large side-delivery reel into the bargain. Heavy cumbrous machines cannot be expected to be handy or profitable in average circumstances, as, from the laid state of our crops generally, they can only be cut one way, and such machines are always difficult to take back empty as others are to bring forward full. I am not aware whether our last year's exhibition has brought out any new machine, but if it were the means of perfecting those already out and bringing them into notice, which are doing well, and likely to be self-side-delivers ordered in the district, our labour has not been altogether thrown away. The perfection of the reaper is becoming more and more important for the efficient and profitable harvesting of our crops, and calls for more attention than it generally receives. Any one who has had the experiment that is used all the year round, that can be repaired or improved at any leisure time. It would require to come into the field like a warrior armed to the teeth—without a weak point or a flaw in its equipment. The soldier may find out the flaw in the heat of battle, but the field, but there is neither the time nor place for repairing his loss. So is it with the reaping machine. The harvest-field, and throng of harvest, is neither the time nor place for inefficient machines, nor for repairing their defects. Stoppages are a great loss and annoyance, but this evil is lessened, you will observe, by the side delivery, as it can be wrought any distance ahead of the binders, which the back delivery cannot. Neither is there any time lost by the binders going backwards or forwards, as each has his own row to bind from end to end, consequently more work can be done. But the advantages of the side-delivery come most prominently out in the Bean-field, where the lifters are dispensed with altogether. Self side-delivery is the great point of perfection we have long striven to attain, and it is most gratifying to see it brought out so completely in so many different ways, and throwing a lustre on man's powers of ingenuity and perseverance.

Rebiews.

Land Tenure in Ireland: a Plea for the Celtic Race.

Mr. Isaac Butt, Q.C., formerly Professor of Political Economy in the University of Dublin, and M.P. for an Irish constituency, has very recently published a pamphlet on the above-named subject. His high intellectual endowments and especial opportunities of fathoming the political and social feelings of those whose leading counsel he has been during the ably contested State trials, attach more than ordinary importance to the publication before us.

As the Irish land question is still in abeyance, but likely to be resumed with practical results in the next session of Parliament, we would offer some remarks on the matter and scope of the pamphlet, without following exactly the order of the subjects discussed.

The still continuing exodus of the peasantry is a leading consideration. "Why are the whole people flying from their native land?" Mr. Butt distinctly attributes the emigration which he eloquently bewails to what he terms the state of "serfdom" in which the occupiers of the soil are generally held, "without any security either for their tenure or the fruits of their industry. They are dependent for the very means of their existence on the will of their landlord; while the amount of that which is called rent is regulated, not by any economic law, but by the disposition of the landlord to extort, and their ability to pay."

Now this bold assertion cannot, we think, be supported by facts. We speak from personal knowledge of the circumstances of various large estates the landlords of which have granted and continue to grant leases of three lives or 31 years to the occupiers, if they desire to have them (many tenants are so certain of their fixity that they would not incur the trifling cost of a lease), and we are so well informed of the liberalities to tenants of many of the largest landowners in a list inclusive of some of the highest of the nobility of the United Kingdom, and of proprietors of all grades of property, that we emphatically deny the justice of the imputation. No doubt the practice of giving leases had from the peculiar social condition of the country greatly diminished before the Irish Franchise Bill passed in 1850, but that "at the present time a tenant holding a lease is rarely met with, and the vast majority of the occupiers of the land in Ireland are at this moment liable to be turned out at the pleasure of their landlords," we deny. An Englishman or foreigner judging from such representations and other parts of the pamphlet, would conclude that the landlords of Ireland are heartless tyrants, without independent and thriving tenantry. From generation to generation many families, whether with or without leases, have held their farms satisfactorily to themselves, and without danger of removal—unless from absolute insolvency and mismanagement—and many popularly reputed evictions have been mere formal notices for removal, to establish disputed rights. Mr. Butt cites some cases illustrative of landlord cruelties. The purchaser of an estate prevailed upon the vendor in preliminary arrangements to clear it of 13 families, who had paid their rents in full—happily there was some legal blunder on the part of the offender which entailed retributive punishment: "the landlord adopted a course which enabled a jury to strain the law and award these poor tenants ample compensation, an accidental error in the process put it in the power of a jury of landlords by the damages they awarded to mark their sense of the moral character of the Act." This surely was but an exceptional case of gross inhumanity, and landlord sympathy with the sufferers was proportionally the unanimity of a landlord jury. Mr. Butt adds, "In a country circumstanced like Ireland, to give the power of doing such things is to say that they *will* be done."—Not so;—no doubt to say that be done, but where they are done is the exception. From our knowledge of the characters of the principal landlords of the sea-coast estates from Arklow to Cork, and after inquiry into their modes of dealing with their tenantry, we can assert that the tenants generally feel sure of their tenure, and have leases. There are generally liberal and indulgent landlords; and tenants are not dispossessed from caprice, avarice, intolerance, or any causes except such as even the greatest democrats would deny to be just and reasonable. If we pursued the analysis of landlord character, especially among the magnates of property, whether noblemen or gentry throughout the kingdom, we should learn that the number who do not grant leases and have not prosperous and contented tenants is, comparatively, small. We would strenuously advocate the general tendency of giving leases to tenants. Security of occupancy is indispensable to satisfy the cultivator of land who intends to improve it by the outlay of his money, capital, or the application of his labour. This cannot be too strongly insisted on in Ireland, where usually the building of farm houses and offices, and the drainage of land, are executed by the tenants. When they expend capital they should be secure of repayment in some form for their unexhausted or permanent improvements. That principle of tenant-right which custom has established in some parts of Ulster is strongly recommended by Mr. Butt as causative not only of "security but fixity of tenure." After adducing Tuscany as a model, "with her 88,000 landed proprietors of estates varying in annual value from 8*d.* to 3*l.* 4*s.* 8*d.*," and exclusive of 350000 whose possessions vary between 3*l.* 4*s.* 8*d.* and 16*l.* 13*s.* 4*d.*," he concludes with a desire to apply the same principle to Ireland; and he adduces in confirmation of his opinion some

analogous reasoning of Mr. Whiteside, the new Chief Justice of the Queen's Bench. This distinguished lawyer and senator has stated in his late review of the circumstances of Northern Italy, that "it is not creditable to the collective wisdom of England to attempt nothing on a bold and comprehensive scale for the social improvement of Ireland. And as the evils under which she groans, or many of them, spring from the mode in which land is held and miserably cultivated, the attention of the Legislature should be directed to the means calculated to remove and abate these deplorable evils. If the existence of what is called tenant right be productive of good in Ulster, the principle should be fearlessly applied to the other provinces."

Mr. Butt would fearlessly apply that principle. We are not about to discuss the question of "tenant-right" as defined by those who would deprive landlords altogether of their controlling power over their tenants. No British Parliament would pass laws to give not merely security, which is equitable and needful, but absolute perpetuity of tenure. To the denial of Ulster tenant-right by some landlords in the north, our writer attributes those agrarian outrages and party conflicts, ending in cruel homicides, which, with more probability, have arisen there from passions excited by political and religious causes, and not from the "land question." But in fairness we admit that very stong testimony from competent and impartial witnesses has been quoted by Mr. Butt in favour of his view. Not to recognise tenant-right where it has prevailed more than two centuries would be now impolitic and dangerous. Where the "right" exists its effects are thus described:—"In these districts we meet with a manliness, a boldness, and a sturdy independence of character, which we seek in vain in the naturally finer population of the south. The northern yeoman, for such is almost his position, can call his farm his own, his farmhouse his castle, and the fruits of his industry he can claim for himself. He does not live in constant expectation of the visit of the bailiff with his notice to quit, or fear to show any sign of superior comfort, lest it may be an invitation to the agent to raise the rent. He has all the conscious dignity which belongs to the sense of proprietorship in the soil." What is the concluding sentence here but mere assertion? Other differences have their share in stamping character. "It is from men trained from childhood in this sense of independence, that we would expect the habits of energy, and enterprise, and self-reliance. Exactly in the districts in which tenant-right has impressed independence upon the people, we find all those qualities exerted with a result of commercial and manufacturing progress and prosperity as great as has been achieved by any English community. The marvellous advance of Belfast is the best testimony to the value of fixity of tenure. In natural qualities, in intellectual and physical power, the race that have created it are certainly not superior to the races that inhabit the plains of Munster. In climate, in soil, in all natural advantages of position, Belfast is far behind Limerick and Cork. We are told that religious dissensions are the ruin of Irish prosperity; Limerick and Cork are free from them." Is the latter part of the sentence true? Mr. Butt has sketched the frame of a statute (for the enfranchisement of the serfs of Ireland, as he chooses to denominate the tenants) with these proposed provisions, which seem to be just and reasonable, but would they satisfy the advocates of tenant right?

"Every person in the occupation of an agricultural tenement in Ireland, under any tenure, should be at liberty to serve a notice on his landlord that he elected to hold under the statute.

"Upon service of this notice the rent to be paid should be fixed at a fair valuation.

"This declaration should be equivalent to a lease for 60 years at the specified rent, and subject to the following covenants:—To pay the rent; to cultivate the lands in a proper manner; to maintain and keep the premises in good order and condition; and not to sublet without the consent of the landlord.

"To these might be added a condition that within a given number of years the lands demised should be put into good cultivation.

"The breach of any of these covenants to be attended by forfeiture of the interest; and in ejectment for non-payment of rent the forfeiture to be absolute, and the right of redemption taken away.

"All future lettings of land to be made in the same manner, and subject to the same conditions."

This seems reasonable and just, but we fear it would not satisfy the advocates of tenant right.

Upon this portion of his copious and important subject, the learned gentleman is not to be criticised unfavourably. And, indeed, we can point out other just and truthful arguments, such as those epitomised. Where the tenant right system prevails, the landlords receive as high rents as in any other parts of Ireland, relatively with the intrinsic value of the soil. "If the interest transferred as tenant right is a property created by his own industry under the assurance that it would be his own, it would be a legalised robbery in the landlord to take it to himself; under the system the landlord has the benefit of all that property as a security for his rent." The reasoning concludes thus: "Of what rights or rather power would the measure I propose deprive the landlord? 1. It would deprive him of the power of arbitrary eviction; 2. Of the power of exacting an exorbitant rent; and 3. Of the power of appropriating to his own use improvements effected by the industry of the tenant." What honestly-disposed landlord will deny the force of these remarks?

One of the large landowners in an eastern county, where tenant right is unknown, has dealt with his tenantry during several years on the spirit and principle of the established custom of tenant-right in three of the northern counties. This gentleman has not, during more than 30 years of our own knowledge, evicted a tenant, even for nonpayment of rent. In the rarely occurring cases of tenants unable or unwilling to retain their holdings, he gives them permission to sell their good-will to any nominee of fair character who is prepared to pay up arrears of rent. Indeed, bad as the system undoubtedly is, he does not even refuse a lease of three years or 31 years to any tenant desirous of it, and many of his tenants do not think it necessary to take the security of a lease, unless to facilitate marriages and family settlements. This landlord has experienced a collateral advantage from his indulgent system. Some small holdings have been consolidated by the exchange or transference of fields and alteration of boundaries effected by the voluntary arrangements of tenants among themselves to mutual dealings.

Mr. Butt's scheme compels such protection to landlords, whom otherwise it would render powerless to exercise their ordinary existing rights, by giving them the power of calling for revision of rent according to the prices of agricultural produce, or in cases of "fluctuations in money, or in the real and intrinsic value of land generally," but his plan would not afford reciprocal power upon the tenant, who, "in return for the boon of fixity of tenure, might fairly be held to the rent originally fixed." We question the soundness of this reasoning: if the tenure be a fixed right, it should stand upon its own justice, and not be a set-off against any other right; if the landlord may raise rent (subject though it would be to appeal) when prices rise or the market value of land increases, the tenant ought to have a reduction when prices and the value of land descend. *D.*

Farm Memoranda.

Berwickshire and the Lothians. — Anyone travelling by rail from London to Edinburgh for the first time must have been struck by the gradual change for the worse in the appearance of the country through which he passes. The beautiful meadows and fertile lands around London, and extending to Hitchin, gradually give way to less interesting scenery. He travels on through a uniformly uninteresting country to York, and from thence to Darlington. Matters now become worse, and the eye is wearied with the sight of constantly-recurring pit heaps, coke ovens, and colliery railways, while the intervening land is occupied by scanty crops of corn.

Passing Newcastle, he finds things somewhat improved, and is refreshed by the sight of the picturesque old town of Morpeth and the beauties of Warkworth. Still the traveller can hardly restrain the impression that he approaches an *ultima Thule*. On the one side he views a tract of uninviting clay soil, and on the other roars the ocean at the foot of precipices along the edge of which he rushes with perilous speed.

The great Cheviot rises before him and he prepares himself for the "shaggy woods" and mountains of Scotland. He is gradually exchanging the fertile plains and the comparatively sunny climate of England for moss and muir, and for a climate in which the monotony of constant rain is only relieved by the fact that it "whiles snaws."

Thus meditates or might meditate the traveller as the train slackens its speed into Berwick. Thus doubtless would also the present writer had he not known better.

If we still further imagine our friend continuing his journey to Edinburgh, we may picture his surprise at what meets his eye. The gradually increasing barrenness of soil—the vegetation which had sympathised more and more with the nearer approach of the North Pole, experiences a change.

He finds himself in a garden of beauty—level tracts of fertile land stretch from him on either hand. Large field, neat hedges, handsome farmhouses, substantial homesteads, and magnificent crops show him that he has entered a fine agricultural district, while beautiful scenery and fine timber call to his mind the sunniest parts of the south of England. He passes on to Edinburgh charmed with the scene, or, if he seeks the more magnificent views of the Highlands, sighing for more stirring scenery.

Such are the first impressions of a traveller from London to Edinburgh, if the journey be undertaken in the summer. It is my intention, however, to pause between Berwick and Edinburgh, in order to examine more closely the agriculture of Berwickshire and the Lothians. I had heard much of the agriculture of the Lowlands of Scotland, and left Newcastle on the morning of July 11th in order to spend a few days with some of the best farmers of that district.

In the south of England we were blessed with abundance of rain at a time when it was most precious—namely, during the principal Swede-sowing season, and consequently the plants brairded quickly, and there is at present a good prospect for roots. In the north of England, and especially in Scotland, they have been less fortunate, the season having been extremely dry, so that at the present time the Turnip crop is looked upon, with certain exceptions, as a failure. The pastures are dried up, and the sheep and cattle are living on "roast meat." Potatos are the only green crop which really look well. The grain crops are good, although they fall short of the usual high average of Lothian farming, and the Barley was fast changing colour on July 23d on the lighter soils.

The concurrent testimony of both Berwickshire and East Lothian is that the country has not looked so badly for years as it does at the present time. Notwithstanding the unfortunate nature of the season the state of cultivation of this district, and the magnificent show of crops (with the exception of Turnips) must strike an Englishman as superior to what, except in a few districts, can be witnessed in England.

Berwickshire cultivation is excellent, but cannot be looked upon as exhibiting a system of high farming. We find neither the large quantities of manure used that are applied in the Lothians, nor yet the highly artificial method of feeding cattle which is practised in Norfolk. It is plain, good, and we doubt not profitable farming. So much for general impressions, and the time of our stay was scarcely long enough to really gain an insight into the minutiæ of management. A large proportion of the county is, and will perhaps always continue to be, in hill pasture.

A magnificent view may be obtained from or near Hardens, about three miles north-west of Dunse, from the summit of a spur of the Lammermuirs. To the north, north-east, and north-west little is to be seen but sheep walks. About two-thirds of the county appear to be in this condition, and the remaining third stretches as a rich cultivated district, known as the "Merse," to the south and south-east, where it is bounded by the Tweed, and includes the districts around Kelso, Coldstream, Swinton, Fogo, Edrom, Dunse, Hutton, and Berwick.

The Merse of Berwickshire is composed for the most part of a clayey soil, resting upon the lower members of the coal measures, and not naturally of first-rate quality. In the parishes of Chirnside and Foulden we find the presence of the old red sandstone giving a richer character to the soil. We had the opportunity of examining some farming in the centre of this district, which may be considered as representative of the usages generally followed.

Mr. Thomson, of Mongoswalls, farms 500 acres of land about two miles south of Dunse, on the banks of the Blackadder water. The soil is for the most part of a clayey character, and rented at 50s. per acre. Of this, 400 acres are arable, and only 10 acres old pasture, and in this paucity of old Grass it resembles the rest of the district.

The quality of the land may be best realised from the fact that about 36 bushels per acre is the amount of Wheat which is aimed at, although the average frequently falls beneath this quantity. The rotation generally followed is the five-course, viz. Turnips, Wheat or Barley, seeds, 2d year seeds, Oats.

The Oat stubble is broken up immediately after harvest, and is either once or twice ploughed in the spring according to the strength of the land and its state with regard to weeds; the pulverisation is completed by means of grubbers and harrows.

The cultivator is not in high favour here as a substitute for spring ploughing, the general impression being that it is apt to render the land stiff in the bottom, and to encourage "twitch," Thistles and Coltsfoot.

The roots are all sown on the ridge, as is the universal practice in the north of England and Scotland.

Mr. Thomson manures as follows:—For Swedes, 20 single horse-loads of farm-yard manure, 2 cwt. Peruvian guano, 3 to 4 cwt. bone-superphosphate. When the crop has to be fed off with sheep, one-third less is used. For Turnips: 12 to 15 single horse-loads of farm-yard mauure, 3 cwt. bone superphosphate, or 5 or 6 cwt. bone superphosphate alone when folded with sheep. In practice, three teams are found sufficient to raise and split $7\frac{1}{2}$ acres of drills per day. To lift the dung into the carts three men will be required, or at the rate of 18 loads per acre three men will lift 135 loads, or 15 each in the day.

The singling of the crop is done by women, and we are assured that two women will frequently single one acre in the day of 10 hours.

We cannot refrain here from insisting on the great advantage of making the workers work in company rather than in the isolated manner so common in the south of England. A band of women, accompanied by a trustworthy steward, will do more and better work than can be done by any other arrangement.

It is not customary to top-dress corn crops except in the case of Oats upon light lands, where a dressing of nitrate of soda and superphosphate is applied.

Grass seeds are top-dressed with $1\frac{1}{2}$ to 2 cwt. of nitrate of soda or dissolved guano, or occasionally with a mixture of the two.

Mr. Thompson grows about 90 acres of Turnips every year, and maintains a flock of 200 Leicester ewes of very superior quality. The ram lambs are not castrated, and a large number of them are sold for ram-sales, and have been once sheared, and when about 16 months old. Those tegs not required either for the flock or for rams are sent off fat. 100 half-bred lambs are also bought at Boswell's Fair, done well upon Turnips, and finished off upon Grass. About 40 bullocks are annually fatted in yards.

The cattle feeding is a simple operation. The animals are placed in yards which are provided with sheds and troughs. Here they are supplied with abundance of litter, and fodder in the form of Oat-straw as delivered from the threshing-machine. The Turnips are generally supplied whole, and are afterwards broken into four divisions while lying in the trough, by an implement resembling a spade, only furnished with two blades placed at right angles to each other +. In Berwickshire pulping, chaff-cutting, and cooking are comparatively unknown, or are looked upon as either fanciful or expensive methods.

Mr. Wilson's cooking apparatus at Edington Mains has not been used for the last year or two, and a general impression seems to exist that the old method of Turnips and straw, supplemented with from 5 to 7 lb. (as a maximum) of cake or corn is after all the most successful plan. The great object of feeding cattle is to crush down straw, and in order to accelerate this end, it is extremely common in good homesteads to find the yards unspouted, so that the rain-water may do its part in turning straw into manure.

The wages are high in Berwickshire, and as much has been of late written on this subject, it may be interesting to state the rate for men and women:—Women receive 1s. per day for three-quarters of the

year, and 10*d.* for the remaining quarter; 3*s.* and bread and beer during harvest, and besides this 3*l.* per annum in money if they pay house-rent, but they do not receive this if they have cottages rent-free. The men are paid partly in money and partly in kind.

The following is a statement of wage for the present year, with the supposed money value of each item affixed:—

60 bushels of Oats, at 4*s.*	..	..	£12	0 0
18 ,, Barley, at 4*s.* 3*d.*	..	..	3	16 6
6 ,, Beans, at 5*s.* 6*d.*	..	..	1	13 0
Cow's Grass and Turnips	..	..	*7	0 0
Potatoes, 180 lineal yards of row	..	..	5	0 0
House and garden	..	..	3	0 0
Coals carried	..	..	1	10 0
Harvest extras, bread and beer	..	..	1	5 0
Money	..	..	5	0 0
			£40	4 6

Or, 15*s.* 5¼*d.* per week.

The "bondage" system, which compelled each man who had a cottage to furnish one woman worker for the farm, is now abolished in this district. Combinations or unions among the workpeople, for the purpose of demanding higher wages, are now organised throughout the Lowlands of Scotland, and so far they have been successful, and the wages have been raised both in Berwickshire and East Lothian. The argument which they bring forward when they are accused of having chosen an unfitting time to advance their claims, farming being somewhat depressed, is that so far all increase in the value of land has gone into the landlord's or tenant's pockets, and they do not see why some of it should not come to them, even if the rents should be lowered in consequence.

Mr. Lyal, of Green Knowe, Gordon, is carrying improvements forward vigorously within a few miles of Greenlaw.

He farms about 1200 acres of land, part of which is still surrounded by muirlands. The quarries and railway cuttings in the immediate neighbourhood clearly show trap and old red sandstone to be the formations upon which the soil rests, and from which it was derived, and this is sufficient to explain the fertility of the newly-reclaimed soil. In this particular the land around Greenlaw differs materially from the unreclaimed tracts constituting the Lammermuir Hills, which are composed of the Granwacke and clay slate series, which generally yield soils of inferior quality.

Mr. Bruce, the former tenant, did a great deal towards improving this estate; and Mr. Lyal, his successor, still carries forward the good work in a most spirited manner. Mr. Lyal has occupied the farm for about five years, during which time he has reclaimed 180 acres of muirland.

The natural appearance of the unreclaimed land is that of ordinary heath, and possesses no visible peculiarity to indicate its fitness for cultivation.

The autumn immediately after harvest is the time chosen for commencing operations. At this time the piece of muir-land to be reclaimed is trenched with the spade to the depth of about 8 inches. First a trench is thrown out of the required depth, and then the top soil is pared off by the spade to the thickness of a couple of inches, and this thin layer of soil is thrown to the bottom of the trench, taking care that the "fell" or heathery side is turned downwards.

The under soil, to the depth of 6 to 7 inches, is then moved by the spade and thrown over the inverted turf already at the bottom of the trench. The object of this treatment is to rot the heathy upper soil, and to do this effectually is justly looked upon as one of the most important points.

On the poorer soils the land thus trenched is allowed to rest over the succeeding summer, while on the better classes of land, Oats are sown broadcast and harrowed in in the spring which succeeds the trenching. Thus the land trenched in autumn 1866 will be sown with Oats in the spring of 1867, or allowed to lie fallow over the whole of 1867.

The Oat stubble is allowed to remain untouched until the spring, when it is ploughed once, chain harrowed, and sown broadcast with Turnip seed at the rate of 1 lb. per acre. The land which has not yet borne a crop is treated in a similar manner, and sown also with Turnips.

It is truly wonderful to see the precision with which the 1 lb. of Turnip seed per acre is sown broadcast (by hand), the whole ground being covered with plants. These are never singled, hoed, or receive any cultivation; but the land is clear of weeds, every living thing having been buried by the trenching.

Respectable crops of Turnips are thus obtained, which are eaten on the land by sheep, after which the land is cultivated and sown down with Grass seeds and Clovers for two, three, or four years.

The object of this is to cultivate the land as little as possible—to keep down expense, and to let the land lie in Grass as long as possible. Thus it is the practice to break up the Grass soon as it begins to fail, to put the land through a course of cropping, and again lay the land away to pasture for an indefinite time.

Mr. Lyal has a strong prejudice against burning land, and doubtless burning a soil so impregnated with vegetable matter as that which he is now managing would materially lessen the quantity of cultivatable mould. Repeated ploughings and cultivations would be followed by similar results, the only difference between combustion by fire and gradual decay owing to oxidation by the air being that the first is much quicker in operation. Hence the principle adopted by Mr. Lyal of conserving as much as possible the vegetable matter already contained in the soil.

The trenching by spade before described is a most costly operation, and the expense is added to by the immense number of stones and boulders which lie scattered over the surface. The smaller of these are carted away at once, while the larger ones are first blown to pieces by gunpowder, and afterwards used to build the dry stone dykes, or walls, a purpose which consumes a large proportion of the supply. The general cost of trenching and blasting the stones amounts to 5*l.* 5*s.* per acre, although in exceptional cases, in which the plantations have been grubbed, the price has risen as high as 14*l.* per acre.

I shall never forget the appearance of the 30 or 40 acre piece, which I witnessed in the transition state; patches of the original heath still remained, while by far the greater portion was thoroughly trenched, as before described, but in many places almost covered by huge fragments of newly blasted rocks, which gave the impression of hopeless confusion. The line for a stone-wall was, however, traced through the very midst of this chaos, and this it was supposed would require most of the fragments of stone with which the land was now strewn. I should have mentioned that Mr. Lyal considers it absolutely necessary that lime should be applied to newly broken-up muir. This is done about six months before the first crop is sown, at the rate of from 4 to 6 tons per acre. In a letter just received, Mr. Lyal writes as follows: "If Turnips be the first crop it is necessary to manure, but perhaps Oats might grow without."

The general method of breaking up muir-lands in Berwickshire is to use the plough, in which case it must lie in the first furrow two years, and then must be further wrought by ploughing across, harrowing, &c., before it will grow anything, whereas when trenched it may be prepared for crop six months after the lime has been laid on. The older land is managed in accordance with more usual notions of good farming.

One large main drain had been cut through the lowest ground, and into this other furrow and main drains emptied their water. The lower part of this main drain is composed of 8-inch pipes, further up, as the amount of water diminishes, these are supplanted by 7-inch, and afterwards by 6 and 5-inch pipes. The whole is brought down to a mill head, and helps the water-supply for the threshing machinery.

The rotation, as may have been already gathered, is not very definite. Wheat does not occupy an important place, and is entirely wanting this year.

Good crops of Oats and fair crops of Barley are grown. The land is naturally light, and well adapted to Turnip cultivation, and Mr. Lyal has never missed a crop since he entered the farm.

The whole of the manure is applied to the Turnip crop, and little is done in the way of top-dressing for corn crops. Farmyard dung and superphosphates are the principal manures for Turnips, guano being thought too dear.

Like other Berwickshire farmers, Mr. Lyal's method of feeding cattle is simply Turnips and straw, both given whole and supplemented by moderate quantities, 5 lb. to 7 lb., of oilcake. The fold yards are also kept unspouted, so that the rain-water may help the crushing of the straw into manure.

Miscellaneous.

Chamber of Agriculture.—The "Constitution and Laws" of the Gloucestershire Chamber of Agriculture, to the formation of which reference was made in the *Herald* a fortnight ago, have been issued within the last few days. The object of the Chamber, it is explained, is "to co-operate with the Central Chamber in watching over all measures affecting the agricultural interests, both in and out of Parliament, and to take such action thereon as may seem desirable for the benefit of agriculture." We also subjoin a few of the principal laws:—"Persons wishing to be admitted members to be nominated by a member of the Chamber at one meeting for election at the subsequent meeting. The annual subscription to be 10*s.*, payable in advance, on the 1st of January in each year; or a composition of 5*l.* for life, such members to be called life members.—That this Chamber subscribe, in advance, the sum of 5*l.* per annum to the funds of the Central Chamber; and to have the power of sending two deputed members to the meetings of the Council of the Central Chamber.—The business of the Chamber to be managed by a board, called the Council, consisting of the chairman, vice-chairman, and 24 others, chosen out of the general body of subscription members; eight of this board retire by rotation at the annual meeting, but are eligible for re-election.—The officers of the Chamber to be a chairman, a vice-chairman, to be elected annually at the general meeting; a secretary, to be appointed annually by the Council in December; and a treasurer, to be appointed by the Council at the same time.—The meetings of the Council to take place not less than four times a year, on such days and at such places as the Council may decide.—The Council to lay before the annual meeting a report of its proceedings."—Mr. Edward Holland, M.P., is the first chairman, and Captain De Winton the vice-chairman. *Midland Herald.*

The Recent Order in Council in reference to the Cattle Plague.—This Order, which authorises the unrestricted movement of cattle within Scotland, and the introduction of cattle from England by a licence obtained from one or other of the local authorities of the counties of Berwick, Roxburgh, and Dumfries, is causing considerable alarm in several districts. The energetic and sagacious members of the local authority of Aberdeenshire have adopted measures to obtain powers to keep in check the indiscriminate movement of stock in Scotland, and the introduction of cattle from England. The principal speaker at the meeting held in Aberdeen on Friday was the well-known Mr. M'Combie, Tillyfour. He said—"There should not be a moment lost in bringing our complaint before the Privy Council. All our influence and energy should be exerted to have the objectionable clauses in the New Order rescinded. A deputation should be immediately sent to London, and other counties should be communicated with on the subject without delay. I myself view the matter with the greatest alarm. All know what we have suffered from the introduction of cattle from the South. We know that rinderpest was introduced here from England; and what may we expect now? In the course of a week or two we shall have English cattle, if not sheep, shown at our fairs—at our own doors, standing side by side with our own cattle. We have no power to prevent them. To a certainty the plague will be very soon amongst us again." His opinions cannot fail to have considerable weight with owners of stock generally, and perhaps with the members of the Privy Council. The manner in which the agriculturists of Aberdeenshire took up the question of dealing with the plague last summer entitles them to be heard upon any point bearing upon the disease. It is evident that the alarm will not be allayed until some change in the Order is obtained. *North British Agriculturist.*

A Board of Agriculture.—"In America the farmers have a department in connection with Government. They have a meeting of that department monthly; and it is astonishing how easily and correctly they can obtain the agricultural statistics of the whole of the United States. In France they have a Minister of Agriculture. In other countries of Europe also agriculture has a standing in connection with Government. In this country we have only a Board of Trade. It ought to be called a Board of Trade and Agriculture." So said Mr. Holland, M.P., at a meeting held last week in Gloucester, when urging more systematic action on the part of the farmers in maintaining their own rights and interests. And so have we continued to say for some time past, although we should be prepared to go further than Mr. Holland, and ask for the establishment of an entirely distinct Board of Agriculture, in no way associated in its conduct with any other department. There is, moreover, no time like the present for, with the Country Party in power, such a feature might be reasonably accepted as a part of the Ministerial programme, even without the incentive of any outside pressure. There is no doubt but that the claims of Agriculture require more attention than they are now receiving from the Government, where any question touching upon rural matters is too apt to be treated pretty much upon the principle that "everybody's business is nobody's business." The heads of the Home Office or of the Board of Trade have really nor the time to study such subjects, which are bandied about from one to another until they can be conveniently dropped or shelved to some more "fitting" opportunity. We should be coming, however, to a better understanding with our rulers, as there is some satisfactory evidence of this feeling to be apparent. In a letter which Mr. Albert Pell, of Northampton, has just published, he states that he "turned to the Royal Agricultural Society to lead, but found that the laws contained in their Charter, which cannot at any time be altered or departed from, precluded the Society from taking part in any questions of a political tendency, or having reference to measures pending, or to be brought before Parliament." Mr. Pell will be rejoiced to learn that the laws of the Royal Agricultural Society can be altered, and that a Committee is sitting at this very time with the object of striking out from the conditions of the Charter those clauses which "preclude the Society from taking part in any questions of a political tendency, or having reference to measures pending, or to be brought before Parliament." With, then, this objectionable proviso removed, as no doubt it will be, the Royal Agricultural Society of England should be the agent through which, of all others, the formation of a Board of Agriculture might be brought about. And this is all the more probable when we bear in mind that the reconstruction of the Council has also been determined upon. The mere drones and obstructives are to be removed, and at least a fair half of the members of the direction to be taken from the tenant-farmers of the country. Here, then, we repeat, with the working machinery already supplied—with men of becoming position and influence identified with the Executive—the way from Hanover Square to Downing Street should be easy enough to find. It will remain very much with the farmers themselves to determine whether or when such a course shall be taken. If they split up into little parties, if, in a word, they agree to divide their own strength, the old fable of the bundle of sticks will be the moral of their story. It has always, and naturally, been a matter of difficulty to get agriculturists together; but there are tried men who have for long sacrificed their time and their money to the interests of the cause, as with these we should infinitely prefer still leaving the lead. *Mark Lane Express.*

Lord Oxford and 10th Grand Duke: Portraits by An Enthusiast.—The admirers of Lord Oxford will miss in Tenth Grand Duke the lofty style and grandeur of that remarkable bull, the majesty of his character, and the indescribable prestige of his presence; nor will they perhaps accept as equivalents for these fascinating properties, the vast substance, the abundantly heaped up wealth of firmest flesh, the general accurary of structural detail, the beautiful fore end, the unobtrusive shoulder points and neat shoulders, the wide and deep loin, the ponderous flank, the heavy thighs and enormous twist, of his successor. Yet we can quite understand that there are hundreds of Short-horn breeders who would give their suffrages in favour of Tenth Grand Duke. He is a bull of a totally different stamp; more bulky, less vivacious, rather appealing to the utilitarian and carnivorous instincts than to those which seek satisfaction in qualities of a less directly gross and sensual kind. Though nominally a Bates bull, and though only five parts of his pedigree out of 32 consist of elements away from Bates, Tenth Grand

* Usual estimate of this privilege.

Duke is not exactly what pure Bates bulls usually are. He displays, in fact—at least so it seems to us—a good deal more of the highest Booth type than the Booth quantity in his composition would seem to warrant. At all events, he is a very grand and valuable bull, nor has the country many bulls of the same age so good. His colour is a deep but cheerful red—dappled all over, now that his winter coat is cast, with spots or roses of darker hue. He has a fine head, and a pair of noble yellow horns, large and long, betokening vigorous constitution. His alleged portrait in the 16th volume of the "Herd Book" is absurdly unlike him. It is the picture of a fabulous animal, with spindle legs, and eyes that start and blaze out with strange amazement. But the real expression of Tenth Duke's face is quiet, serene, and dignified. *Bell's Messenger.*

Game Preserving—Important to Farmers.—Patrick Carnegie, tenant and farmer of Mains and Law of Newton, near Laurencekirk, was summoned recently to appear before the Justices Court at Stonehaven. Present—Major Innes of Cowie, &c., and J. B. Nicholson, Esq., of Glenbervie. Charged with trespass in pursuit of game on his own farm, at the instance of Francis Edmond, factor for Lord Kintore. The charge was found not proven. The facts of the case, as we are informed, are these:—Mr. Carnegie pays above 880*l.* of yearly rent. The game on the farm is let by Mr. Edmond to the Rev. George Stewart Burns, late First Minister of Montrose, now of Glasgow, who has a gamekeeper on the farm, and the game and rabbits have of late increased to a great extent. Mr. Carnegie complained to the rev. gentleman and his keeper of the great damage done to his crops, but without getting any redress, in consequence of which the tenant, both by himself and his servants, have begun to kill the rabbits; and on evening his collie dog took a young hare, but without his knowledge or sanction. Thus has this improving and industrious tenant been brought up and annoyed because he seeks to protect his crops! but it cannot be too generally known that every tenant who is not bound to protect rabbits in his lease is by law entitled to kill rabbits; and it is probable that after such treatment as Mr. Carnegie has received he will make clean work of them. At the same Court, on the same day, one of Mr. Carnegie's servants, who had fired at a rabbit on Dyke-lands, was fined 10*s.*, and 48*s.* 1*d.* expenses—in all, 2*l.* 18*s.* 1*d.* A tenant can only, of course, allow his servants to kill on his own farm; and it came out in evidence that Mr. Carnegie gave strict orders not to go beyond the bounds of his own farm, and to kill only rabbits. The farm consists of nearly 600 acres, and is now sadly overrun with game. *North British Agriculturist.*

Reaping Machine.—Since the International Exhibition of 1851, the American reaping machine, then first shown in this country, has gradually won its way in English agriculture, and there are now many counties in which much the larger portion of our corn crops are cut by it. The American reapers by Hussey and M'Cormick, and others, are, however, no doubt of English or Scottish origin, being essentially the same as the reaper invented long ago by the Rev. Mr. Bell of Forfarshire, and used ever since upon the farm of his brother. The cutting apparatus is an oscillating horizontal knife, having an edge either serrated, or if smooth presenting deep almost finger-shaped cutters. It oscillates through slots in a number of fixed horizontal fingers, which, as the machine is drawn or pushed forwards, hold the straw of the standing corn against which they project while the oscillating knife is continually cutting it. The corn as it is cut falls upon a platform extending backwards from the cutting apparatus, and thence it is either raked in sheaves by a man who rides upon the machine, or it is there received upon a revolving web by which it is carried to one side and let fall in a swathe upon the stubble. The use of the reaping machine is a welcome economy in harvest time, when hand-labour is costly, and when rapidity as well as efficiency of work is of the utmost consequence. *Dictionary of Science.*

Calendar of Operations.

August.—*Trifolium incarnatum*, sown now, furnishes a supply of most useful fodder, especially for the stable early in May. The cultivation of the crop is also particularly easy. If the stubble be clean, all that is needed is to sow 20 lb. of the seed per acre as soon as practicable after harvest—in August, if possible. The seed is sown broadcast over the stubble, and simply harrowed in. If the land be ploughed and cultivated and manured, the plant is not likely to come so well as when it is simply scattered over the hardened surface of the field, and brushed or harrowed in after the first shower that falls. The crop then comes thickly, and if it escapes the slug, it will yield on land in ordinary condition a heavy cutting of most useful fodder for the stall and stable early in the following month of May. The only fault of the crop is that it remains at its best for so very short a time. Between the period when it is coming into bloom, and that in which the seed is forming, and the leaf has fallen, and the stems have become hard and unpalatable, there is barely a fortnight or three weeks when it is at its best. A comparatively small extent is thus all that is needed on the largest farms. It makes coarse hay, and thus is useful only as a forage crop. The shortness of the time during which it is available for this purpose is thus a serious drawback on its value, and one which cannot be successfully met by any attempt by various seed-times through the autumn to obtain a succession of crops.

Messrs. Vilmorin, of Paris, have, however, introduced three varieties of the Trifolium, differing in the period of flowering, although sown together. Their *trèfle incarnat ordinaire* corresponds to our ordinary Trifolium incarnatum, of which an acre will generally provide during May all the produce wanted as forage on farms of ordinary size while it remains good. Their *trèfle incarnat tardif*, sown the same day as the other, attains its fit state a fortnight later, so that another acre sown with it comes into use immediately on the exhaustion of the other; and their white-flowered *Trèfle incarnat tardif* is a still later sort. The value of the crop for forage purposes is thus in effect tripled. If sown in all these three kinds, which any of our large seedsmen now supply, three times the ordinary extent upon the whole, may be cultivated with the certainty that it will all come into use successively, and thus continue good during thrice the usual length of time. Blanks already apparent in the young Clover among the Barley stubble may be filled up by scattering some Trifolium seed over them, and harrowing the ground.

Hemp is pulled in the month of August. The leaves turning yellow, and the stalks white, are signs of its maturity; the male and female Hemp are pulled together.

When it is all taken up and bound in small bundles, with bands at each end, to such a bigness as you can grasp with both hands, it is conveyed to a pond of standing water (if a clay-pit the better), where it is laid bundle upon bundle, direct and across. This is termed a bed of Hemp, and after it is piled to such a thickness as to answer the depth of the water, it is loaded with blocks and logs of wood until all of it is totally immersed; after remaining in this state four or five days, as the weather shall direct, it is taken out, and carried to a field of aftermath, or of any other Grass that is clean and free from cattle. The bundles being untied, it is spread out thin, stalk by stalk; in this state it must be turned every other day, especially in moist weather, lest the worms should injure it. Thus it remains for six weeks or more; then it is gathered together, tied in large bundles, and kept dry, either in a house, or thatched, till January. Hemp, when left for seed, is seldom water-retted, from the additional trouble and expense; but it would be better if so done. It is generally stacked and covered during the winter, and is spread upon meadow land in January or February. If the season suit (particularly when covered with snow) it will come to a good colour, and make strong coarse cloths. It is much inferior to Hemp pulled in proper time and water-retted.

Notices to Correspondents.

Imports for Half of 1866: *R.*—

Articles.	Quantities Imported. 1865.	1866.
Animals Living—Oxen, Bulls, and Cows .. .. .. No.	74,492	72,812
Calves	18,785	9,122
Sheep and Lambs	240,212	411,729
Swine and Hogs	38,706	29,873
Bones, burnt or not, or as animal charcoal .. .. .. tons	23,505	35,850
Flax .. .. cwts.	439,656	463,377
Guano .. .. tons	106,243	72,552
Gum shellac .. .. .. cwts.	14,739	15,525
Hemp	225,720	280,912
Hops	38,031	21,991
Oil seed cakes .. .. .. tons	49,971	54,667
Potatos .. .. cwts.	411,789	216,210
Provisions—Bacon and Hams	403,449	451,744
Beef, salt	143,471	131,621
Pork, salt	99,709	123,179
Butter	455,752	464,645
Cheese	240,404	190,409
Eggs .. .. No.	195,248,160	249,290,280
Lard .. .. cwts.	76,000	193,293
Saltpetre	55,758	85,067
Cubic Nitre	411,396	529,455
Seeds—Clover .. .. .. tons	104,753	174,648
Flaxseed and Linseed .. qrs.	524,048	401,683
Wool .. .. lb.	87,470,088	101,948,949
Alpaca and the Llama tribe	1,072,221	1,420,046
Corn—Wheat—From Russia cwts.	2,693,820	3,649,398
Prussia	2,260,322	1,663,193
Denmark	233,665	148,615
Schleswig, Holstein, and Lauenburg	134,640	73,507
Mecklenburg	260,768	302,225
Hanse Towns	245,822	315,701
France	409,662	2,083,389
Turkey and Wallachia and Moldavia	352,393	295,973
Egypt	..	7,942
United States	212,901	315,160
British North America	21,187	8,789
Other countries	560,088	2,045,714
Barley	4,161,870	2,543,029
Oats	3,081,990	3,490,490
Peas	218,068	542,837
Beans	436,033	244,376
Indian Corn, or Maize	2,076,918	6,151,931
Wheatmeal and Flour—From Hanse Towns	129,294	130,352
France	1,231,380	2,713,046
United States	108,604	164,735
British North America	14,136	6,142
Other countries	78,871	120,209
Indian Corn Meal	4,105	8,376

Name of Plant: *T. F.* The Plant—not Grass—in question is the Trifolium fragariastrum—Strawberry headed Trefoil. Its name is derived from the head of enlarged calyces (which are sometimes beautifully coloured) simulating a Strawberry fruit. In this respect it differs from White Dutch Clover. It is usually indicative of what is termed sour land, poor clays, or damp situations.

Peas: *Young Grower.* Of the two, we should prefer Peas for sheep, and the heaviest you can get for the money, whatever the colour may be.

Top-dressing for Wheat: *Top-dresser.* Two cwts. of a dressing made up of one of sulphate of ammonia, and two of common salt, is a good dressing for Wheat—or 1 cwt. of nitrate of soda, and 2 of common salt per acre. Apply either in early spring, in wet weather.

Turn sick, Giddiness: *A Z.* The sheep is dull and moping, unsteady in his motions, and moves round in a circle. If any soft place can be felt on the surface of the skull, the hydatid may sometimes be penetrated by means of a common awl; the operation of trephining has been had recourse to with success. Unless a soft place can be felt on the surface, when the awl or trephine may be used, it is better to confine the sheep and fatten it.

THE CELEBRATED

AMERICAN HORSE POWER.

PARTICULARLY ADAPTED TO

ALL KINDS OF FARM WORK.

IT WILL THRESH GRAIN,

GRIND OR CUT FEED FOR CATTLE,

SAW WOOD,

DO HEAVY CHURNING.

Or any kind of work a Horse Power can be used for

One Horse only would be sufficient for most of these operations.

A few points of Superiority over all other Horse Powers, as practically proved, to wit—

It is Less Heavy and Cumber-some,

Not at all Liable to be Racked or Injured by Moving,

Is very Quickly and Easily set up for Work,

No Joints Loosened by Setting Up or Taking Down,

Will Cost Less for Oil, Lard, or Tallow, to Run it,

Will Cost Less for Repairs and Last Longer,

Not Liable to serious Breakage from Great or Sudden Strains,

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No Danger of Long Suspensions of Work from Breakdowns,

Has no Bridge, Rod, or Belt, or any other part of the Machine for the Horses to Step over every Turn they make (a great advantage),

Will do nearly Double the Work of other Sweep Powers with the same Team,

Is the Lowest Priced of any Power in the Market,

Capable of doing either an Equal Variety or an Equal Amount of Work,

Especially adapted for the Colonies.

A sample of the above most admirable and useful HORSE POWER, in complete working order, with Drag Saw attachment, Saw-bands, &c., &c., just received from New York.

This Machine can be worked with one, three, or six horses, as may be required, and will give almost any desired speed for the various kinds of work to which it may be applied.

It has received a host of American Testimonials and Medals from Agricultural Societies.

Price only £30, complete as above.

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142 and 143, Cheapside, London, E.C.

FOWLER'S PATENT STEAM PLOUGH and CULTIVATOR may be SEEN at WORK in every Agricultural County in England.

For particulars apply to JOHN FOWLER & Co., 28, Cornhill, London, E.C.; and Steam Plough Works, Leeds.

AGRICULTURAL IMPLEMENTS.—Steam Engines, Threshing and Dressing Machines, Waggons and Carts, Cultivators, Ploughs, Harrows, Chaff Cutters, Grinding Mills, Lawn Mowers, Garden Rollers, Water Barrows, and Horticultural Tools of every description, Corn Bins, Wire Netting, Churns, Forks, &c.

BURGESS & KEY, 55, Newgate Street, London, E.C.
Works, Brentwood, Essex

Important Reduction in the Prices of Portable Engines for 1866.

CLAYTON, SHUTTLEWORTH AND CO., ENGINEERS, Manufacturers of Portable and Fixed Steam Engines, Machinery for Pumping, Hoisting, Grinding, Sawing, &c.; Engines for Steam Cultivation, Self-moving Engines for Common Roads and Agricultural Purposes generally.

Stamp End Works, Lincoln; and 78, Lombard Street, London; also at Lowengasse No. 44, Landstrasse, Vienna, and Geschwader den Bahnhof, Pesth.

Descriptive, Illustrated, and Priced Catalogues Free per Post. Special Drawings when required. The Last Steam Threshing Machinery made.

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S. & C. regret having to caution Gardeners and others, but are compelled to do so, in consequence of an imitation, of common quality, having been sold for the genuine one, and which has caused many complaints to be made to them of Knives which were not of their make, all of which are warranted both by Sellers and Makers.

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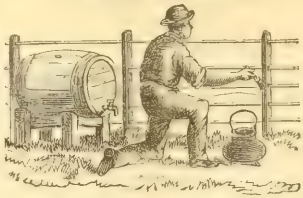
Oil Paint no longer Necessary.



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ONE PENNY per Square Foot.

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Have much improved the construction of their

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in some important particulars for this Season.

They may be obtained of the Trade generally throughout the Kingdom at the following prices:—

No. 547. WARNER'S best ENGINES, in Wood Tubs, and fitted with WARNER'S Registered Spreaders—

24 Gallons,	£6	10	0
14 ,,	5	10	0

No. 547A. WARNER'S strong ENGINES, in Galvanised Iron Tubs, well painted—

10 Gallons,	£2	19	0
16 ,,	3	14	0
24 ,,	4	19	0
28 ,,	5	10	0

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20 Gallons,	£2	2	0
30 ,,	2	13	0
38 ,,	3	17	0
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The 50-Gallon Barrow is made extra strong throughout, and fitted with handle for two men.

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No. 36½. FORCE PUMP on BARROW, recommended for its great portability and simplicity of construction. £5 10s.

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Price 55s.; Rubber Suction, 2s. 11d. per ft.

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Each.	s.	d.		Each.	s.	d.
2 inches in diameter	0	3½	12 inches in diameter	1	9	
3 " "	0	4½	13 " "	2	0	
4 " "	0	6	14 " "	2	6	
5 " "	0	6½	15 " "	3	0	
6 " "	0	8	16 " "	3	6	
7 " "	0	10	17 " "	4	0	
8 " "	0	17	18 " "	4	6	
9 " "	1	0	18 " "	5	6	
10 " "	1	2	19 " "	6	0	
11 " "	1	4	20 " "	7	0	
	1	6				

BEE GLASSES, with Conical or Flat Tops.

Each.	s.	d.		Each.	s.	d.
4 inches in diameter	0	7	9 inches in diameter	1	8	
5 " "	0	8	10 " "	2	0	
6 " "	0	10	11 " "	2	6	
7 " "	1	0	12 " "	3	0	
8 " "	1	4				

CUCUMBER GLASSES.

Each.	s.	d.		Each.	s.	d.
24 inches long	2	0	16 inches long	1	4	
22 " "	1	10	14 " "	1	2	
20 " "	1	8	12 " "	1	0	
18 " "	1	6				

Made to any length.

HAND GLASSES, WITH OPEN TOPS.

Each.	s.	d.		Each.	s.	d.
12 inches	6	6	18 inches	9	6	
14 "	7	6	20 "	10	6	
16 "	8	6	24 "	11	6	
				12	6	

Painted and Glazed with 16oz. Sheet Glass.

SHEET and ROUGH PLATE GLASS, SLATES of all sizes, BRITISH PLATE, PATENT PLATE, ROLLED PLATE, CROWN, SHEET, HORTICULTURAL, ORNAMENTAL, COLOURED, and every description of GLASS, of the best Manufacturing, at the lowest terms. Lists of prices and estimates forwarded on application to

JAMES PHILLIPS & Co., 180, Bishopsgate Street Without, E.C.

E. T. ARCHER'S "FRIGI DOMO."

Patronised by Her Majesty The Queen, the Duke of Northumberland for Syon House, His Grace the Duke of Devonshire for Chiswick Gardens, Professor Lindley for the Horticultural Society, Sir Joseph Paxton for the Crystal Palace, Royal Zoological Society, &c.

PROTECTION from the SCORCHING RAYS of the SUN

"FRIGI DOMO" is Canvas made of Patent prepared Hair and Wool, a perfect Non-conductor of Heat and Cold, Keeping, when once it is applied, always temperate. It is adapted for all Horticultural and Floricultural purposes, for Preserving Fruits and Flowers from the Scorching Rays of the Sun, from Wind, from Attacks of Insects, and from Morning Frosts. To be had in any required lengths.

Two yards wide	.. ..	1s. 9d. per yard run.
Four yards wide	.. ..	3s. 6d. per yard.
An improved make, 2 yards wide	.. ..	1s. 6d. per yard.
An improved make, 3 yards wide	.. ..	2s. 3d. per yard run. Also

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"It is much cheaper than Mats as a covering."

GLASS FOR GARDEN PURPOSES, &c.—PROPAGATING GLASSES, BEE do., FERN do., CUCUMBER do., MILK PANS, SHEET GLASS, HARLEY'S PATENT ROUGH PLATE GLASS, GLASS TILES and SLATES, and every description of Glass. Prices by post.

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The entire Stock of this Manufactory comprises

180 different MODELS of VASES,

70 different MODELS of TAZZAS,

About 200 different FOUNTAINS,

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SHIELDS, suitable either for WATER or ROCK PLANTS, from 16 inches to 12 feet diameter,

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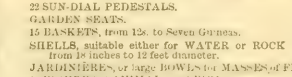

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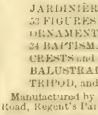

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Sole London Agents for FOXLEY'S PATENT GARDEN WALL BRICKS. Illustrated Price Lists free by post. The Trade supplied

ORNAMENTAL PAVING TILES for Conservatories, Halls, Corridors, Balconies, &c., as cheap and durable as Stone, in blue, red, and buff colours, and capable of forming a variety of designs.

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SILVER SAND (REIGATE, best quality), at the above Address:—18s. per Ton, 1s. 6d. per Bushel; 28s. per Ton extra for delivery within three miles, and to any London Railway or Wharf. Quantities of 4 tons, 1s. per Ton less.

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CAUTION to FARMERS.—In consideration of Messrs. RANSOMES AND SIMS, of Ipswich, having agreed not to file a Bill against me in Chancery to obtain an Injunction to restrain me from using their Name and Trade Mark on Plough Shares, I, the Undersigned, EDWARD GIBSON, of Great Driffield, Iron-founder, hereby PUBLICLY APOLOGISE to them for having used their Name and Marks, and I hereby promise never to offend again in like manner. Dated this 18th day of August, 1866.

Witness, G. S. SHEFFIELD, Clerk to EDWARD GIBSON.

Mr. John Richardson, Solicitor, Beverley.

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TO BE SOLD, Cheap, a Handsome GOTHIC HOUSE, made of the best Yellow Deal, 7 feet square, the Sides are of Oak, with Mahogany mouldings, and is Roofed with Best Cedar, suitable for a Cloak Room. The Structure is suitable for a Porter's Lodge, or a neat retreat in an Estate or Plantation House.

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TO BE DISPOSED OF, a WELL-STOCKED GENERAL NURSERY of 12 Acres of excellent soil, situate at a Market Town, and less than half a mile from a First Class Station on the Great Northern Railway, within an hour and a half's ride of London. There is a good Assortment of Fruit Trees, Young Stools, Quicksets, Forest Trees, &c., good Plant Houses, Pits, and Frames, and Large-bearing Vinery. Immediate possession may be had, the incoming tenant taking the Stock, Houses, &c., at a Valuation. Apply, by letter only, to

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FOR SALE, this valuable BUSINESS, and the the unexpired interest of the Lease of 20 years, nearly Two Acres of Land, well stocked: good Greenhouses, &c., unexpiring Dwelling House. Frontage in King's Road, 270 feet.

Apply to Messrs. Cattle and Bevan, Solicitors, Eldon Chambers, 20, Devereux Court, Temple, London, E.C.

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G. M. ALLENDER, Aylesbury.

Sales by Auction.

Greenhouse and Hardy Plants, Dutch Bulbs, Rustic Seats, &c.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on SATURDAY MORNING next, the 25th inst., at half-past 12 o'Clock precisely, several cases of HYACINTHS, TULIPS, CROCUSES, and other Bulbs, just arrived from Holland; a variety of Foliage and Choice Ornamental Greenhouse Plants, Orchids, Rustic Seats, Vases, Stools, Chairs, &c.

On view the Morning of Sale, and Catalogues had.

Five Wardian Cases from Japan and Sydney.

First Large Consignment of Tree Ferns from Melbourne.

Important Orchids in our Sales, &c.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY, September 4, at half-past 12 o'Clock precisely, THREE WARDIAN CASES of the MALL ACCURA, and other Productions of Japan; FIVE WARDIAN CASES of NEW ZEALAND and FLORIDA from Sydney, SIXTY fine TREE FERNS from Melbourne; SEVERAL CASES of ORCHIDS from Mexico, and a variety of other Plants.

On view the Morning of Sale, and Catalogues had.

Coleshill, Faringdon, Berks.

IMPORTANT SALE OF SHORT-HORNED CATTLE.

MR. STRAFFORD is favoured with instructions to submit once for SALE by AUCTION, without reserve, on THURSDAY, September 13, a choice selection of about 60 HEAD of SHORT-HORNED BULLS, COWS, and HEIFERS, from the Coleshill Herd, the property of the Right Hon. the Earl CRAVEN, which has been extensively bred during the last 60 years from Herds of great repute. Many of the animals are by the celebrated Bulls Duke of Oxford (12,252), Windsor (11,761), and Bertram (11,711), and of the same blood as the Heifer that so highly distinguished herself last year at the Smithfield Cattle Show. They are perfectly healthy, in good breeding condition, and are sold in consequence of excess of Stock. The Cows and Heifers are mostly in calf to Second Baron Wetherby (11,245), a Son of Captain Gunter's Seventh Duke of York (17,564).

Catalogues, with Pedigrees, may be had in application to Mr. STRAFFORD, 18, Euston Square, London, N.W., or of Mr. MOORE, at Coleshill, near Highworth, Wilts.

Yardley, near Birmingham.

IMPORTANT SALE OF SHORT-HORNED CATTLE.

MR. STRAFFORD begs to inform Breeders and Admirers of Short-horned Cattle that he is instructed by the Executors, Exors of Yardley, in consequence of his change of residence, to offer for SALE by AUCTION, without any reserve, at Yardley, on WEDNESDAY, September 19, his entire and well-selected HERD of pure-bred SHORT-HORNS, consisting of Head of Bulls, Cows, and Heifers, which have been bred with great care and purity from the far-famed Herds of Fawsley, Hollingworth, Kirklington, Milnedge, &c.

Catalogues, with Pedigrees, may be had on application to Mr. STRAFFORD, 18, Euston Square, N.W., or of Mr. GRAHAM, at Yardley, near Birmingham.

Folkington, Sussex.

TO SOMERMEN, FLOCKMASTERS AND OTHERS. IMPORTANT SALE OF A SUPERIOR FLOCK OF SOUTHDOWN SHEEP AND LAMBS, SHEARS, &c.

MR. SOUTHERDEN is instructed by H. S. HAYWARD, Esq., of The Place Farm, Folkington, through his quitting the said Farm and leaving the country, to offer by PUBLIC AUCTION on the said Premises, on THURSDAY, Sept. 20, the whole of his noted FLOCK of pure SOUTHDOWN SHEEP and LAMBS, comprising 70 Ewes of various ages and Ewe Lambs, and 20 Rams and Ram Lambs.

The Sale will consist of 12 Score of various ages, a 2-year old Boar, bred by Colonel Pennant, and several young Boars. Also the Sheep Wattles, Cots, and Troughs.

Mr. Hayward, in announcing from having known the above flock for 21 years, confidently asserts that such an opportunity rarely occurs of purchasing Sheep of the purest blood, Mr. Hayward having paid great attention to the improvement of his flock, and regardless of expense having secured blood from the flocks of the most eminent flock-masters. He has at various times exhibited Sheep at the All England, Paris, and other Shows, where they have been greatly admired and awarded Prizes and Commendations by the Judges.

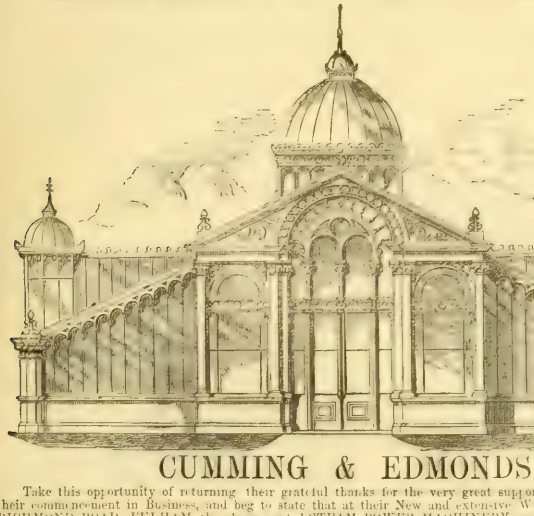
Mr. Hayward's White Breed of Pigs are too well known to require any comment, and are by Boars bred by the late Prince Albert, the Duke of Cambridge, and Colonel Pennant.

Neither the Rams or Ewes have been fattened up for sale, but are in good breeding condition.

Conveyances will meet all the Up and Down Trains that arrive at Polegate Station, South Coast Railway, between the hours 10 and 12.30, to convey purchasers to the place of Sale, and also conveyance from back to Polegate to meet the evening Trains.

Luncheon will be provided on the Premises at half-past 11 o'Clock, and kept on the table until 1 o'Clock, at which time the Sale will commence.

Catalogues may be had, seven days previous to the day of Sale, at the King and Queen Hotel, Brighton; Star and White Hart Hotels, Lewes; and of the Auctioneer, Hailsham, Sussex.



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Take this opportunity of returning their grateful thanks for the very great support they have received since their commencement in Business, and beg to state that at their New and extensive Works, LILLIE BRIDGE, RICHMOND ROAD, FULHAM, they have erected STEAM-POWER MACHINERY, and have every convenience for executing Work with the greatest superiority, cheapness, and despatch.

C. AND E. beg to invite special attention to their superior DESIGNS for CONSERVATORIES, and every class of HORTICULTURAL WORK, and to state that they prepare and supply Designs and Estimates free of all expense.

The great success of CUMMING AND EDMONDS'S

PATENT TUBULAR ARCHED SADDLE BOILERS,

the general satisfaction they have given where fixed, and the high terms in which persons who have the management of them express themselves, enable C. AND E. with confidence to strongly recommend the Boiler to particular notice.

HOT-WATER PIPES, CONNECTIONS, &c., for every description of HEATING APPARATUS, supplied at the lowest prices, with or without fixing, accompanied by a Working Plan for the Fixing of the Apparatus.

Prospectus and Prices on application.

☞ Several good SECOND-HAND BOILERS, of different descriptions, for SALE.

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CONSERVATORY ARCHITECTS, HORTICULTURAL BUILDERS, and HOT-WATER APPARATUS ENGINEERS.

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HOTHOUSES FOR THE MILLION,

AWARDED A PRIZE MEDAL, 1862.

INVENTED AND PATENTED BY THE LATE SIR JOSEPH PAXTON.

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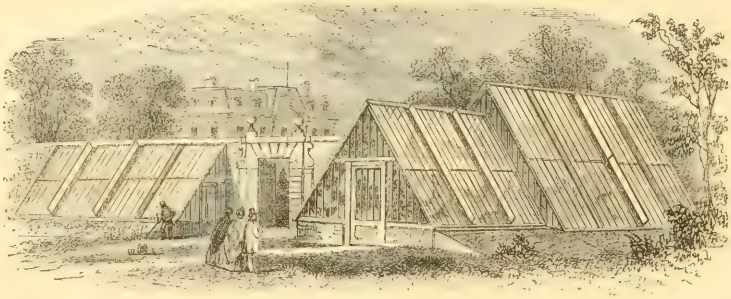
COMBINE SIMPLICITY, CHEAPNESS, AND DURABILITY



FULFIL ALL THE REQUIREMENTS OF HORTICULTURE.

"Without any pretence to high finish or elaborate workmanship, which in such structures represent a mere waste of money, they are perfectly well made. Their arrangement is as simple as ingenuity can render them. No rafters obscure the light and make them cumbrous. No sashes have to be pushed up or let down by ever-breaking lines and weights, or by expensive mechanical contrivances; and yet all the ventilation requisite in such buildings is as perfectly secured."—*Dr. Lindley in* "THE GARDENERS' CHRONICLE," *July 28th*, 1860.

"Nothing can be more easy than to build them, nothing more simple than to remove them."—*Daily News, May* 22, 1862.

"We do not know in what other way so much interesting amusement, pleasant exercise, and luxurious profit, can be obtained as these 'Hothouses for the Million' are calculated to afford."—*Bell's Weekly Messenger, August* 23, 1862.

SELECTED TESTIMONIALS.

"Grosvenor House, May 19, 1863.

"The Marquis of Westminster writes, in reply to Mr. Hereman's note, to say that he has much pleasure in informing him that the Glass Houses for Peaches, &c., which he constructed for him in Dorset, 1860, have fully answered their purpose, and prove very satisfactory."

"Killarney Gardens, February 1, 1866.

"Gentlemen,—I have pleasure in giving you my report in favour of your excellent Hothouses.

"In the range erected January, 1865, I had the Peaches and Nectarines and Vines, and they have every appearance of an abundant crop this year. With the new sashes you lately supplied, the range is now 232 feet in length, and I consider it a most useful addition to these gardens. Your Houses have many advantages; they are light in appearance, and effectually exclude wet, with the closest sash; the ventilation is excellent, and really opened with the machinery. They are easily erected, and very cheap, and have given perfect satisfaction. I shall feel a pleasure in recommending them.—I am, &c.,

"MESSRS. HEREMAN & MORTON." "GEORGE BARLEE, Gardener to Viscount Castlerosse."

"Inverary Gardens, May 21, 1863.

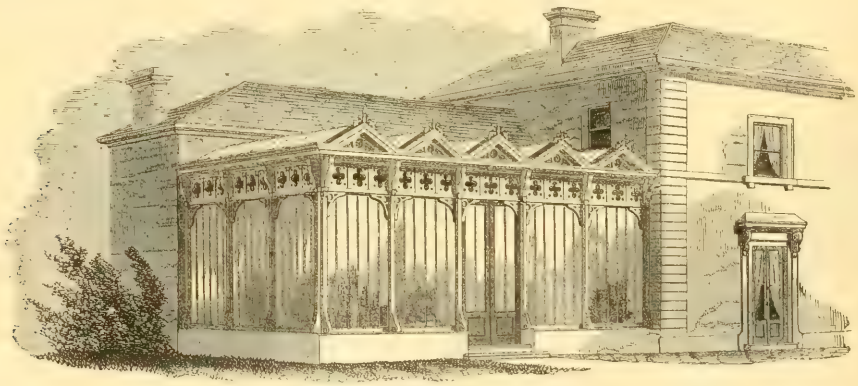
"DEAR SIR,—I have much pleasure in bearing testimony to the efficiency of the Lean-to Glass Houses which you erected here for covering in Peach and Fig trees. Although our wall is 17 feet high, the fruit sets regularly over the whole surface, and, with the command of ventilation these houses have, fruit can be forwarded or retarded at pleasure.—I remain, &c.,

"MR. S. HEREMAN." "JOHN CAIE [Gardener to His Grace the Duke of Argyll.]"

"Kingfield House, Carlisle, January 27, 1860.

"Gentlemen,—To the Lean-to Vinery supplied by you in October, 1861, Mr Ewart wishes to add three more sashes and ventilators. As we commenced to cut about the middle of February, you will much oblige by having them forwarded without delay. I am glad to say the Vinery gives great satisfaction, has been very short, and gave us two heavy good crops for the last three seasons, and each of the last two crops I am sure would pay for the house. I must also add that the quality of wood and workmanship was far above my expectations.—I am, &c.,

"MESSRS. HEREMAN & CO." "MARTIN SUTHERLAND [Gardener to J. Ewart, Esq.]"



View of Ridge-and-Furrow-roofed Conservatory, 30 feet by 15, and 15 feet high, attached to a Plain Mansion.

☞ *Plans prepared to suit different styles of Mansions, and to special dimensions.*

ILLUSTRATED CIRCULARS with LISTS of PRICES of the PATENT ROOFS, also ESTIMATES for HEATING APPARATUS, ORNAMENTAL CONSERVATORIES, GREENHOUSES, &c., to Special Designs, can be had on application to

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The SECOND EDITION of A HANDBOOK of VINE and FRUIT TREE CULTIVATION, as adapted to the above Patent Hothouses, containing Illustrations, Hints for Heating Houses, and General Directions for Cultivation, &c., may be had of MR. HEREMAN, price 1*s.*; post free, 1*s. 1d.*

"The portion of the Book devoted especially to the Cultivation of Fruits will be found particularly valuable to Amateurs, and there are few Gardeners, however practical they may be, but may gain some hints from it which may be of infinite service."—*Floral World, August*, 1863.

Editorial Communications should be addressed to "The Editor." Advertisements and Business Letters to "The Publisher," at the Office, 41, Wellington Street, Covent Garden, London, W.C.
Printed by JAMES MATTHEWS, at the Office of Messrs. Bradbury, Evans, & Co., Lombard Street, Precinct of Whitefriars, City of London, in the Co. of Middlesex, and Published by the said JAMES MATTHEWS at the Office, No. 41, Wellington Street, Parish of St. Paul's, Covent Garden, in the said County.—SATURDAY, August 25, 1866.

THE GARDENERS' CHRONICLE
AND
AGRICULTURAL GAZETTE.

A Newspaper of Rural Economy and General News.

No. 35.—1866.] SATURDAY, SEPTEMBER 1. {Price Fivepence. STAMPED EDITION, 6*d*.

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ROYAL HORTICULTURAL SOCIETY, SOUTH KENSINGTON.

NOTICE.—A MEETING of the FRUIT and FLORAL COMMITTEES will be held on TUESDAY NEXT, September 4, at 11 o'clock: LECTURE at 3.

CRYSTAL PALACE.—The GREAT FLOWER and FRUIT SHOW, September 5 and 6. Forms of Entry should be at once sent in. Schedules, with List of Prizes, on application to
I. WILKINSON, Superintendent.

CRYSTAL PALACE.—The GREAT AUTUMN SHILLING FLOWER and FRUIT SHOW NEXT WEDNESDAY and THURSDAY, will be a really great display.
One Shilling only.

ROYAL CALEDONIAN HORTICULTURAL SOCIETY (Incorporated by Royal Charter).—A GRAND AUTUMN COMPETITION and PROMENADE SHOW will be HELD in the Assembly Rooms and Music Hall, Georges Street, Edinburgh, on the 5th and 6th of September next. Prize Lists and Rules can be had post free on application to
Mr. YOUNG, South Bridge, Edinburgh.

ENFIELD HORTICULTURAL SOCIETY.—The SECOND SHOW this year will be held in the Grounds of F. B. Adams, Esq., Chase Side Park, Enfield, on FRIDAY, Sept 7. Open at 2 P.M. Admission 2*s*. 6*d*. WM. MARSHALL,
Clay Hill. Hon. Sec.

BRIGHTON and SUSSEX FLORICULTURAL and HORTICULTURAL SOCIETY.
The THIRTEENTH ANNUAL AUTUMN EXHIBITION will be held, by permission of the Town Council, on the Eastern Lawn, and in the extensive and splendid decorated rooms of the Royal Pavilion, on WEDNESDAY and THURSDAY, September 12 and 13, on the same grand scale as in former years.
Schedules of Prizes can be had on application to the Secretary, 96, St. James's Street, or E. SEARY, General Superintendent of the Exhibitions, Queen's Graperies, Park street, Brighton.
Sept. 1. GEORGE TERCY, Secretary.

UNITED HORTICULTURAL BENEFIT and PROVIDENT SOCIETY
Open to all Gardeners throughout the United Kingdom.
The Rules are now certified by John Todd Pratt, Esq., and Alexander G. Finlaison, Esq., Actuary. Copies of Rules and any information may be obtained of WILLIAM HEALE, Sec. pro tem.
14, George Terrace, Brook Street, Upper Clapton, N.E.

Notice.

MR. JOHN NUNN, St. Augustine's Nursery, Norwich, begs to inform the Trade and others that he has just entered into PARTNERSHIP with Mr. HOBDAY, late Gardener to E. Fellowes, Esq., M.P., Haverland Hall, and that in future the business will be carried on under the Title or Firm of NUNN and HOBDAY

Genuine Garden and Agricultural Seeds.

JAMES CARTER and CO., SEED FARMERS, MERCHANTS, and NURSERYMEN, 237 & 238, High Holborn, London, W.C.

JAMES FAIRHEAD and SON, SEED GROWERS and MERCHANTS, Mile End Road Market, London, E.E.
New and Genuine AGRICULTURAL, GARDEN, and FLOWER SEEDS. Special prices and advantageous offers on application.

Lea Bridge Road Nurseries, London, N.E.

JOHN FRASER respectfully invites an inspection of his Collection of ROSES, which in consequence are NOW in FLOWER. The Collection contains many new and fine varieties.
The Nurseries are about 5 miles from London, and are easily reached by Train on the Great Eastern Railway, to Lea Bridge Station.

Roses in Bloom.

WM. PAUL'S ROSES are NOW in FULL BLOOM. Inspection respectfully invited. Trains almost hourly from Shoreditch to WALTHAM Station.
PAUL'S Nurseries, Waltham Cross, N.

Rose Nurseries, Tunbridge Wells.

EDWIN HOLLAMBY respectfully begs to announce that his Stock of ROSES are as usual beautiful healthy good-rooted plants. This magnificent Collection contains nearly every variety worthy of cultivation. Early orders are solicited.

Roses in Bloom.

JAMES MITCHELL has the honour of informing his kind patrons that his magnificent COLLECTION is NOW in FINE BLOOM. Pitt Down Nurseries, Maresfield, Sussex.
The London, Brighton, and South-coast Railway. Two and a-half miles from the Uckfield Station.

New Tea Rose.

AMBROISE VERSCHAFFELT, NURSERYMAN, Ghent, Belgium, begs now to offer his new fine TEA ROSE, ISABELLE SPRUNT, figured in the July Number of the "Illustration Horticole." Fine strong plants, 8*s*. each.
N.B. A Coloured Drawing may be obtained on application as above.

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A. VAN GEERT, NURSERYMAN, Ghent, Belgium, begs to offer this new fine Plant, with splendid large leaves, and far superior in beauty than the old known Ficus elastica.
Good young plants, 15*s*. each, free to London.

The Best Twelve Hyacinths Imported by

SUTTON AND SONS,
for Twelve Shillings.
SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

MIXED HYACINTHS, for Beds or Open Borders, all colours, of various shades.
21*s*. per 100 (carriage free), or 3*s*. per dozen.
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Hyacinths and other Dutch Bulbs.

WM. CUTBUSH and SON beg to acquaint their numerous Patrons that they have received their usual Consignment of Choice HYACINTHS, TULIPS, CROCUSES, &c.
PRICED DESCRIPTIVE CATALOGUE post free on application
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Hyacinths, &c.

WM. PAUL'S SELECT LIST of HYACINTHS, EARLY TULIPS, and other SPRING-FLOWERING BULBS and PLANTS, is now ready and will be forwarded post free on application.
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Dutch Flower Roots.

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DUTCH BULBS, unusually fine; a choice Collection of BRITISH and EXOTIC FERNS, Wardian Cases, Fern Shades, Gold Fish Aquariums, &c.
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PAUL AND SON
have received their annual importations in good condition, and their CATALOGUE is now ready. They respectfully solicit early orders.
The Old Cheshunt Nurseries, N.

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HAMILTON and WRIGHT have received their first Consignment of the above, in excellent condition. Intending purchasers will find them well worthy of inspection.
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CHARLES TURNER'S DESCRIPTIVE CATALOGUE of the above is now ready, and may be had on application.
The Roots are fine this season, and early Orders are respectfully solicited to ensure strong Bulbs.
The Royal Nurseries, Slough.

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ARCHIBALD HENDERSON begs to announce that he has received from Holland a large Consignment of BULBOUS ROOTS in fine condition.
DESCRIPTIVE and PRICED CATALOGUES are now ready, containing many Directions for successful cultivation of each section of Bulbs, in Pots, Glasses, and the Flower Garden.
Also a DESCRIPTIVE PRICED LIST of all the best Grape Vines in cultivation. Catalogues may be had gratis and post free upon application.
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COLLINSIA VERNA, 6*d*. and 1*s*. per packet.
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ROBERT PARKER begs to announce that his NEW CATALOGUE, containing Select Descriptive and Priced Lists of New, Rare, and beautiful Greenhouse, Hardy and Stove Plants, Hardy Ferns, Fruit Trees, Grape Vines, Roses, Rhododendrons, Sweet Violets, &c., Amaryllis, Gesneras, Cyclamens, Gladioli, Hyacinths, Liliums, Narcissus, Tulips, and other Bulbs, is now published and will be forwarded to applicants
Hale Farm Nursery, Tottenham, Middlesex, N.E.

British Fern Catalogue.

ROBERT SIM can now send, post free for six postage stamps, Part I. (British Ferns and their varieties, 36 pages including prices of Hardy Exotic Ferns) of his NEW and PRICED DESCRIPTIVE CATALOGUE of BRITISH and EXOTIC FERNS, No. 7.
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Foot's Cray Nursery, S.E.

CERASUS LUSITANICA var. AZORICA.—Plants of this very superior variety of Portugal Laurel (in habit, flower, and hardiness), to which a First-class Certificate was awarded by the Royal Horticultural Society on the 5th June, will be ready for distribution the ensuing Autumn. 7*s*. 6*d*. and 10*s*. 6*d*. each.
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CUTHILL'S Six Sorts of STRAWBERRIES at 5*s*. per 100. See all August Advertisements. They are the earliest and latest in this country.
MUSHROOM SPAWN, 5*s*. 6*d*. per bushel. Pamphlets, &c.
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CHARLES TURNER can supply all the leading kinds, in good Plants.
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New Perpetual Pine-apple Strawberry.

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N.B.—Early Orders are solicited, as the stock is not large.

Grape Vines.

B. S. WILLIAMS begs to announce that he has a splendid stock of Strong Planting and Fruiting CANES of all the best varieties. PRICED LIST may be had on application.
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FOR SALE, 50 SUCCESSION QUEEN PINES.
Apply to
ROBT F. DARBY, The Nurseries, Cirencester.

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Fruit Trees, Conifera, and Trees and Shrubs.

PULHAM AND SON'S
COLLECTION of the above are now worthy of a visit. The Pyramid Fruit Trees for Sale are in full bearing, and the various Trees and Shrubs will be found in fine condition. Autumn Roses, Hollyhocks, and Gladiola are all in good Bloom.
"Old" Cheshunt Nurseries, Cheshunt, N.

A Quarter of a Million of Fruit Trees.

THOMAS WARNER begs to inform intending Planters and the Trade, that his Nurseries, which occupy upwards of 70 acres, contain the above, in addition to a most extensive stock of Evergreens, Ornamental Trees, Roses, &c. All in a high state of cultivation. An inspection is respectfully invited.
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FINE SPECIMEN and HALF-SPECIMEN HARD-WOODED and ORNAMENTAL FOLIAGE STOVE and GREENHOUSE PLANTS.—Collectors and gentlemen furnishing Conservatories are invited to inspect our Collection of the above, which is large and in very fine healthy condition. Prices moderate.
T. JACKSON & SON, Nursery, Kingston, Surrey

Railway Planting.

FIVE MILLION Transplanted QUICKS, of superior growth. Samples and prices on application to
JOHN HEMSLEY, High Fields, Melbourne, near Derby.

Finest Dutch Crocuses and Early Tulips.

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SUTTON'S AUTUMN CATALOGUE of GARDEN and FLOWER SEEDS for AUTUMN SOWING is now ready, and may be had gratis and post free on application to
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60-PAGE CATALOGUE of NEW PLANTS of 1866 now ready, free for one stamp.
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B. S. WILLIAMS' NEW PLANT CATALOGUE, containing many really useful Plants, carefully selected LISTS of STOVE, GREENHOUSE, and HARDY PLANTS, is now ready and will be forwarded post free to all applicants.
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"SPRING FLOWERS and SPRING GARDENING."
See Original Article in AUTUMN SUPPLEMENT to CARTER'S GARDENERS' and FARMERS' VADE MECUM.
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Post free, 124 stamps; gratis to Customers.

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CORN, SEED, MANURE, AND OILCAKE MERCHANTS,
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Samples and Prices Post free on application. Prize Medals, 1851 for Wheat; 1862, for "Excellent Seed Corn and Seeds.

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SUTTON'S IMPROVED ITALIAN RYE-GRASS, the BEST and MOST PRODUCTIVE in CULTIVATION.
SUTTON & SONS can supply New Seed of the above at 6*s*. per bushel, or cheaper in large quantities.
September is the best month for Sowing.
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SUTTON'S RENOVATING GRASSES SHOULD NOW BE SOWN.
8 to 12lb. required per acre
Price 10*d*. per lb., or cheaper by the cwt.
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Prices (according to quantity required and soils for which they are intended), may be had on application
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LOOK to YOUR GRASS LANDS. The months of August and September are the best in which to renovate Old, or Lay Down New Pastures.

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RENOVATING MIXTURE at 10*d* per lb. (sow 10 to 12 lb. per acre)
Also FINEST MIXED PERMANENT GRASSES and CLOVERS (free from weeds), mixed to suit all soils, at 35*s.* per acre.
ITALIAN RYE-GRASS (clean) | TRIFOLIUM INCARNATUM
STUBBLE TURNIP (new seed).

All of best quality. Price on application.

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Seedsmen to Her Majesty's Chief Commissioner of Public Works and other Government Departments, the Royal Gardens, Kew, &c., &c., &c.

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The Only Prize Medal for Seeds and Flowers,
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Seed Farms: East House Farm, Dedham, Essex; The Seed Farm, St. Osyth, Essex; and Dupes Hall Farm, Dedham, Essex.
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*** It is particularly requested that all letters be addressed to the Holborn Establishment to avoid delay.

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The AUTUMN SUPPLEMENT of CARTER'S GARDENER'S and FARMER'S VADE MECUM, containing complete Lists of New and Choice Dutch and Cape Bulbs, Stove, Greenhouse, and Hardy Plants, Ornamental Trees and Shrubs, Fruit Trees and Roses, all for Autumn Planting; to which is added, Original and Instructive Articles on Bulbs and their Culture, and Spring Flowers and Spring Gardening. Price 1*s.*, post free; gratis to Customers.

New Seeds for Autumn Sowing.

PETER LAWSON AND SON,
THE QUEEN'S SEEDSMEN,
London and Edinburgh,

Can supply NEW SEEDS of all kinds for AUTUMN SOWING, which have been selected and saved with the greatest care.

PETER LAWSON AND SON,
THE QUEEN'S SEEDSMEN,
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NEW SEEDS FOR AUTUMN SOWING.

GREEN ROUND, GLOBE, and SIX WEEKS' TURNIP.
NATURAL GRASS SEEDS of all sorts, for Laying Down Permanent Pasture.
ITALIAN RYE-GRASS.
WINTER TARES, RYE, OATS, and BARLEY.
TRIFOLIUM INCARNATUM — EARLY and LATE.
LARGE DRUMHEAD SAVOY.
LARGE DRUMHEAD CABBAGE.
ROBINSON'S CHAMPION CABBAGE.

Also the NEW FORAGE PLANTS, KIDNEY VETCH and SCHRADER'S BROME GRASS.

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100,000 Camellias.

JOSEPH BAUMANN, NURSERYMAN, Ghent, Belgium, begs to offer—

100 CAMELLIAS, with flower buds, best sorts, £5.
100 ,, ,, ,, £6.
100 ,, ,, ,, stronger, £8.
The following free to the Custom House, London:—
100 CAMELLIAS, without flower buds, 1 year's grafted, £4.
100 ,, ,, 2 to 3 years' grafted, £6.
100 ,, stronger plants, £6.
100 CAMELLIA STOCKS, £1 10*s.*
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50,000 Azalea indica, and 100,000 Rhododendrons,
GRAFTED PLANTS.

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100 AZALEA INDICA, with flower buds, £1 to £5.
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(They are all dwarf bushy heads and the best kinds.)
100 RHODODENDRONS, 1 year grafted, £4.
100 ,, 2 to 3 years, grafted, £8.
100 ,, stronger plants, £10
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100 ,, with flower buds, larger plants, £12 to £18.
(They are all the best English and Belgian hardy sorts.)

All my finest Hardy Ghent Azaleas are already ordered for England CATALOGUE on application.

PALM-NUT MEAL, Manufactured by ALEXANDER M. SMITH & Co., Kent Street Mills, Liverpool.
£7 a Ton free to Rail or Boat in Liverpool.
£7 10*s.* delivered to Rail in Bristol.
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In Bags containing 2 cwt. each, branded AMS L

"This valuable Meal, containing above 20 per cent. of fatty matter, is recommended as an economical food to mix with home-grown produce." (See Dr. Voelcker, R. A. S. E. Journal, Vol. I., 3d Series, page 176).

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Have now ready for delivery in dry fine condition,
CORN MANURE, for Spring Use
DISSOLVED BONES, for Dressing Pasture Lands
SUPERPHOSPHATES of LIME
PREPARED GUANO
MANGEL and POTATO MANURES

Also Genuine PERUVIAN GUANO, and NITRATE of SODA, ex Dock Warehouse; SULPHATE of AMMONIA, FISHERY SALT, &c.

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Offices, 116, Fenchurch Street, E.C.

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The Manures manufactured by J. B. LAWES for the present season of 1866 are now ready for delivery at his Factories, at the following prices, per ton:—

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LAWES' PATENT TURNIP MANURE, and BONE SUPERPHOSPHATE of LIME	6	6	0
LAWES' SUPERPHOSPHATE of LIME from BURNT BONE or MINERAL PHOSPHATES	5	5	0
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CONCENTRATED CORN and GRASS MANURE	12	0	0

These Manures can be obtained of Mr. LAWES, or through the appointed Agents in all parts of the United Kingdom, at prices varying according to cost of carriage.

Genuine Peruvian Guano direct from the Importers. Nitrate of Soda, Sulphate of Ammonia, and other Chemical Manures. American and other Cakes at market prices.

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Fourpence allowed for each bag returned carriage-paid.

A Railway Truck-load (not in bags), 80*s.*

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Red Spider

Magnified.

GISHURST COMPOUND, whether used against Insects and Mildew, on Growing Plants, or as Winter Dressing on Trees at rest, should be dissolved 48 hours before use. This gets rid of smell, and if the Solution be decanted, prevents any staining of foliage. A strength of from 1 to 2 oz. to the gallon of water is recommended for growing Plants; one from 4 to 16 oz. for Trees at rest.

Sold Retail by Nurserymen and Seedsmen, in boxes, 1*s.*, 3*s.*, and 10*s.* 6*d.* each.

Wholesale by
PRICE'S PATENT
CANDLE COMPANY
(LIMITED).

JEAN VERSCHAFFELT, GHENT, BELGIUM,

BEGS TO

OFFER TO THE TRADE THE UNDERMENTIONED PLANTS

AT THE FOLLOWING LOW PRICES, VIZ.:—

CAMELLIAS.—With flower buds, very fine stuff, choice named varieties. Per 100, £6.
,, Stronger. Per 100, £8, £10, £15, and upwards.
,, Specimen and half-specimen plants. Prices according to size
,, Stocks for immediate use. Per 100, 28*s.* [and variety.
AZALEA INDICA.—Nice stuff, choice named sorts, for winter blooming. Per 100, £4, £5, £6, £10, and upwards.
,, Stocks fit for immediate use. Per 100, £1.

CITRUS SINENSIS (OTAHEITE ORANGES).—Covered with young fruit. Per doz., £1 4*s.*

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Splendid BULBS of LILIUM LANCIFOLIUM RUBRUM, ALBUM, and PUNCTATUM, may be ordered to be sent at the proper time. Price on application, according to the quantity wanted.

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N.B.—Good reference or cash required from unknown Correspondents.

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Now Ready, and can be had Free and Post Paid,

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TO

WINTER AND SPRING GARDENING.

IT CONTAINS LISTS OF THE BEST BULBS FOR EXHIBITION PURPOSES, AND FOR THE DECORATION OF THE CONSERVATORY, SITTING ROOM, AND FLOWER GARDEN.

For the benefit of Amateurs the "GUIDE" contains a Treatise on Spring Gardening, with directions for furnishing a series of Beds and Borders with Early-flowering Bulbs and Plants; one or other of which may be had in full bloom from the opening of Spring till June, and the general effect and beauty will bear very favourable comparison with the brilliant display produced by the Summer and Autumn flowering Plants.

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Gem Plant Case.

Destroy your Insect Pests.

PRESERVE YOUR PLANTS and TREES.

YOU MAY EASILY DESTROY ALL PLANT PESTS,

RED SPIDER	GREEN AND BLACK	ANTS
MEALY BUG	FLY	SCALE
THRIP	AMERICAN BLIGHT	MILDEW,

Without injury to the most delicate Plant or Tree, by using

FOWLER'S GARDENERS' INSECTICIDE, pronounced by all who have used it to be far superior to any other remedy. One trial will prove its efficacy. Testimonials forwarded on application. Price 1s. 6d., 3s., 5s. 6d., and 10s. per Tin.

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GARDEN BORDER EDGING TILES, in great variety of patterns and material, the plainer sorts being especially suited for KITCHEN GARDENS, as they harbour no Slugs and Insects, take up little room, and once put down incur no further labour and expense, as do "grown" Edgings, consequently being much cheaper.

GARDEN VASES, FOUNTAINS, &c., in Artificial Stone, of great durability, and in great variety of design.

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ORNAMENTAL PAVING TILES for Conservatories, Halls, Corridors, Balconies, &c., as cheap and durable as Stone, in blue, red, and buff colours, and capable of forming a variety of designs.

Also TESSELATED PAVEMENTS of more enriched designs than the above.

WHITE GLAZED TILES, for Lining Walls of Dairies, Larders, Kitchen Ranges, Baths, &c. Grooved and other Stable Paving Bricks of great durability, Dutch and Adamantine Clinkers, Wall Copings, Red and Stoneware Drain Pipes, Slates, Cements, &c.

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SILVER SAND (REIGATE, best quality), at the above addresses—14s. per Ton, or 1s. 3d. per Bushel; 2s. per Ton extra for delivery within three miles, and to any London Railway or Wharf. Quantities of 4 Tons, 1s. per Ton less.

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N.B. Orders promptly executed by Railway.

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As supplied by them to Mr Rivers, to the Royal Horticultural Society, and to most of the Nobility, Clergy, and Gentlemen of the United Kingdom.

Each Box contains 100 feet. The prices only apply to the sizes stated.

Squares 20 by 12, 20 by 13, 20 by 14, 20 by 15.

16 oz. to the foot.

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				s. d.	s. d.	s. d.
11 by 9	12 by 9	13 by 9	14 by 9	12 6	14 6	16 0
12 „ 10	13 „ 10	14 „ 10	15 „ 10			
13 „ 11	14 „ 11					
14 „ 12	15 „ 12	15 „ 11	16 „ 11			
18 „ 12	16 „ 12	16 „ 12	17 „ 12			
16 „ 13	17 „ 13	20 „ 12	21 „ 14	11 0	16 0	17 6
19 „ 13	20 „ 13	18 „ 14	..			
16 „ 14	17 „ 14	21 „ 13	..	16 to 17 oz. to the foot.		
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The above prices include the Boxes, which are not returnable.

SMALL SHEET SQUARES.

In 100 feet Boxes.

6 by 4	6½ by 4½	7 by 5	7½ by 5½
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Boxes 2s. each, returnable at full price.

SHEET and ROUGH PLATE GLASS, SLATES of all sizes, BRITISH PLATE, PATENT PLATE, ROLLED PLATE, CROWN, SHEET, HORTICULTURAL, ORNAMENTAL, COLOURED, and every description of GLASS, of the best Manufacture, at the lowest terms. Lists of prices and estimates forwarded on application to

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Caution to Gardeners.—When you ask for SAYNOR AND COOKE'S WARRANTED PRIZE PRUNING and BUDDING KNIVES, see that you get them. Observe the mark SAYNOR, also the corporate mark OBTAIN WARRANTED, without which none are genuine.

S. & C. merely having to caution Gardeners and others, but are compelled to do so, in consequence of an imitation, of common quality, having been sold for the genuine one, and which has caused many complaints to be made to them of Knives which were not of their make, all of which are warranted both by Sellers and Makers.

S. & C.'s Pruning and Budding Knives are the best and the cheapest in the market.

Paxton Works, Sheffield. Established upwards of 125 years.

TREE and PLANT LABELS.—10,000 Cloth punched assorted Labels for 3s6.; delivered free in London on receipt of Order. Address,

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For samples and prices apply to

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SHAW'S TIFFANY, from 8s. per piece; GARDEN NETTING, 2 yards wide, 3d. per yard run; WIRE NETTING, 2 feet wide, from 4½d. per yard. Forks, Flower Pots, in great variety; Zinc and Wood Labels, Flower Sticks, &c.

The Garden Repository, 32, James Street, Covent Garden, W.C.

WASPS.—The WASPS are COMING. — Reduced prices. Testimonials and patterns of HAYTHORN'S HEXAGON and CHISWICK GARDEN NETS, free by post. These Nets are used for Shading, and will protect Fruit from Wasps, Flies, Birds, &c.

Address, Mr. HAYTHORN, Nottingham.

AUSTIN'S ARTIFICIAL STONE, INVENTED 1826. The entire Stock of this Manufactory comprises

180 different MODELS of VASES.
70 different MODELS of TAZZAS.
About 200 different FOUNTAINS.
74 STATUES from the Antique, and by Modern Artists, and SMALL FIGURES of CHILDREN.
22 SUN-DIAL PEDESTALS.
GARDEN SEATS.
15 BASKETS, from 12s. to Seven Guineas.
SHELLS, suitable either for WATER or ROCK PLANTS, from 18 inches to 12 feet diameter.
JARDINIÈRES, or large BOWLS for MASSES of FLOWERS.
53 FIGURES of ANIMALS and BIRDS.
ORNAMENTAL RIMS to WATER BASINS.
34 BAPTISMAL FONTS.
CRESTS and other ORNAMENTS for GATE PIERS.
BALUSTRADING, in various styles.
TRIPOD, and other ANTIQUE PEDESTALS.

Manufactured by AUSTIN, SEELEY, & Co., at Nos. 369 to 375, Euston Road, Regent's Park, N.W.

GLASS for GARDEN PURPOSES, &c.—PROPAGATING GLASSES, BEE do., FERN do., CUCUMBER do., MILK PANS, SHEET GLASS, HARTLEY'S PATENT ROUGH PLATE GLASS, GLASS TILES and SLATES, and every description of Glass. Prices by post.

*N.B.—100 feet sup. of SHEET GLASS, 7 inches by 5 inches, for 10s., box included.

ROBT. P. TATE, 31, Holborn Hill, London, W.C.

BY HER MAJESTY'S ROYAL LETTERS PATENT.

ORMSON'S

NEW PATENT WROUGHT IRON MULTITUBULAR HOT-WATER BOILER.

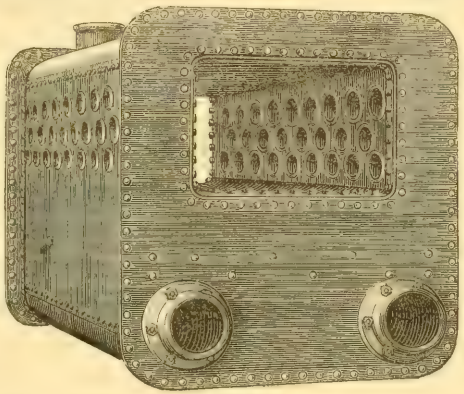
THE GREAT ADVANTAGES OF THIS BOILER ARE:—

1st. Being entirely of WROUGHT-IRON, its safety from leakage and cracks (from expansion or contraction), a danger to which all Cast-iron Boilers are more or less liable.

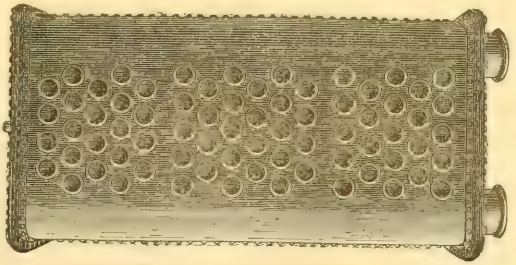
2d. An immensely increased surface exposed to the direct action of the fire, which passes through the tubes, thereby giving a wonderfully increased amount of power.

3d. A great saving in the consumption of fuel. Its facility for banking up the fire. Its peculiarly well-adapted construction for slow combustion, and burning many hours without attention, at a trifling expense.

4th. Its extraordinary power and safety for carrying out the One Boiler System, and small space and depth for setting.



ELEVATION.



UNDERSIDE OF BOILER AND PLAN OF TUBES.

One of these BOILERS Heated the GREAT ORCHID TENT, 560 feet long, and 40 feet wide, at the INTERNATIONAL HORTICULTURAL EXHIBITION, with a remarkably small quantity of fuel, and gave the greatest satisfaction. Was highly approved of by many Scientific Men and Practical Horticulturists.

The great Power, Economy, and Safe Working of these BOILERS has been thoroughly tested for the last 12 months at the Horticultural Gardens, Chiswick, where they may be seen in action, and also at other places in various parts of the country.

THEY ARE MADE OF VARIOUS SIZES. PRICES ON APPLICATION.

HENRY ORMSON, F.S.A.,

HORTICULTURAL BUILDER TO HER MAJESTY, AND HOT-WATER APPARATUS MANUFACTURER TO THE COMMISSIONERS OF HER MAJESTY'S ROYAL PALACES AND PUBLIC BUILDINGS, AND TO THE ROYAL HORTICULTURAL SOCIETY,

STANLEY BRIDGE, KING'S ROAD, CHELSEA, LONDON, S.W.

NEW STRAWBERRY, DR. HOGG (BRADLEY).—Resembling British Queen, but very large, and a better grower than the Queen; one of the sweetest Strawberries grown, and, like Sir J. Paxton and Oscar, by the same raiser, will become a favourite, and be generally grown. It received a First-class Certificate from the Royal Botanic Society in 1865, and the same distinction by the Fruit Committee of the Royal Horticultural Society this season; was exhibited in C. Turner's successful collection of four varieties of Strawberries, and also in his Collection of Fruit at the July Exhibition of the Royal Botanic Society. Price 21s. per 100.
CHARLES TURNER, The Royal Nurseries, Slough.

"Radcliffe-on-Trent, Aug. 8, 1866.

"DEAR MR. UNDERHILL,

"MY CORRESPONDENCE is getting sadly in arrear. The pressure of duties at this season of the year makes me sad largely in this respect; pray excuse.

"I had, according to appointment, 'The Lady' at the Station. Her blushes on our first introduction bewitched me at once; it was literally and emphatically a case of 'love at first sight.' In accordance with your wish, I submitted her to a most searching examination. I found her all you had described her to be; her abilities and qualifications are of the highest order. She has sweetness in a large degree; her delicacy of taste, so becoming a lady, is of the most chaste and pleasing kind; and her liveliness of disposition will lead captive all persons of discriminating taste. Her constitution is peculiarly that of a Lady of such birth; it is healthy and vigorous, yet refined to a degree. In a word, 'The Lady' does her parents and her guardian the highest credit; and I predict for her an infinity of conquests over the hearts of all who make her acquaintance. For her own sake, as I know her, is for her to be loved and cherished. I wish her 'great luck,' and remain ever yours, most truly,

"Mr. RICHARD UNDERHILL, "N. HYDE POWNALL."
"Sir Harry's Road, Edgbaston, Birmingham."

CHOICE VARIEGATED PELARGONIUMS.

Mrs. Benyon	Italia Unita	Sunset
Mrs. Pollock	Rainbow	Golden Tom Thumb
Clara	Picturata	Princess Alexandra
Yellow Belt	Fontainebleau	Burning Bush

The above, in strong plants, for 21s., package included. Terms, cash. Remittances required from unknown correspondents. Address,
ALFRED FRYER, Nurseries, Chatteris, Cambridgeshire.

Amaryllis.

JAMES GARAWAY AND CO., Durdham Down Nurseries, Bristol, offer, from their unequalled stock of the choicest and favourite flower, strong Bulbs, of unnamed Seedlings and others that have bloomed with them during the two last seasons, at 5s., 7s. 6d., and 10s. 6d. each, or 6s., 9s., and 15s. per dozen.

JAMES GARAWAY & CO.'S GENERAL BULB CATALOGUE for the coming season is in the Press, and when ready will be forwarded post free on application.
JAMES GARAWAY & Co., Durdham Down Nurseries, Bristol.

THE GOLDEN VARIEGATED WELLINGTONIA.—The Parent Tree, though stripped of some thousands of its shoots last winter, is now 12 feet high, and to give beauty. It has made a splendid pure Golden Leader, and every part of the Tree is finely marked with the same, presenting a most beautiful appearance; and Tourists interested in Conifers, and coming to this neighbourhood, will find it well deserving of a visit.
RICHARD HARTLAND, The Lough Nurseries, Cork.—Sept. 1.

GEORGE DAVIES begs to inform the Nobility and Gentry that his very SELECT and DESCRIPTIVE CATALOGUE of HYACINTHS, TULIPS, NARCISSUS, CROCUS, &c., for the present season is now ready, and may be had post free on application.

Any Ladies or Gentlemen requiring HYACINTHS, &c., for competition, can be supplied with (specially selected) Bulbs suitable for that purpose at moderate prices.

G. D. having received his first importations of Hyacinths, &c., has much pleasure in stating that they are unusually fine this season, and begs to assure those who may favour him with their commands, none but first quality of Bulbs will be sent. England has not a superior to any house in the Trade.

G. D. has much pleasure in informing his Friends and the Public generally, that he obtained the First Prize for the best 24 Hyacinths (Nursymen's Collections) at St. George's Hall, Liverpool, in March last, in competition with Messrs. Wm. Cutbush & Son, for £10; also the Bronze Medal at the Royal Botanic Society, London.

My Friend Mr. Cutbush having vauntingly Challenged me last year, I now venture to Challenge him to Exhibit 24 Hyacinths at St. George's Hall, Liverpool, next March, 1867.

Green Lane Nurseries, Old Swan, near Liverpool.

SUTTON'S UNRIVALLED COLLECTIONS of DUTCH FLOWER ROOTS, carriage free.

For OUT-DOOR DECORATION
No. 1, £2 2s. | No. 2, £1 1s.
No. 3, 10s. 6d.

For GROWING in POTS and GLASSES.
No. 4, £2 2s. | No. 5, £1 1s.
No. 6, 10s. 6d.

SUTTON'S DESCRIPTIVE CATALOGUE gratis and post free on application.

SUTTON & SONS,
Royal Berkshire Seed Establishment,
Reading.

Hyacinths for Exhibition.

SUTTON AND SONS beg to offer—

100 in 100 very choice sorts	£1	4 0
100 in 50 "	3	10 0
60 in 30 "	2	2 0
60 in 25 "	1	15 0
25 in 25 "	1	1 0
12 in 12 extra fine choice do.	0	12 0
12 in 12 choice sorts	0	9 0
12 in 12 good sorts	0	6 0

All goods carriage free, except small parcels.

SUTTON & SONS,
Royal Berkshire Seed Establishment,
Reading.

For Present Sowing.

TRIFOLIUM INCARNATUM, Italian Crimson Clover.
TRIFOL. INCARNAT. TARDIF. Late Red
TRIFOL. INCARNAT. TARDIF. Late White
SUTTON'S IMPROVED ITALIAN RYE-GRASS.

SUTTON AND SONS have ready for sale very excellent Seed of the above. Prices are very moderate, and may be had post free on application.

The quantity of Trifolium Incarnatum (alone) usually sown per acre is 28 lb., or with Italian Rye-grass 8 lb. per acre is sufficient.

The Late Red and Late White should be sown more thickly than the Incarnatum, as they do not grow so quickly, or produce so large a quantity of food.

Also MUSTARD and RAPE, new seed.
All Goods carriage free, except very small parcels.
SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

Brighton and Sussex Seed Warehouse.

EDWARD CARPENTER'S MIXTURES of PERMANENT GRASS and CLOVER SEEDS.—Best quality, 36s. per acre (2 bushels light seeds, and 12 lb. Clovers and small seeds per acre).—See testimonials in Catalogue.

EDWARD CARPENTER'S RENOVATING MIXTURES for Improving Old Pastures.

PRICED CATALOGUES of KITCHEN GARDEN, FLOWER, and FARM SEEDS now ready.

EDWARD CARPENTER, Seed Merchant and Grower, 90, St. James's Street, Brighton.

WILLIAM BULL, F.L.S.,

BEGS TO INVITE

AN INSPECTION of his WINTER GARDEN,

TO VIEW ONE OF THE MOST REMARKABLE SIGHTS EVER WITNESSED IN GRAPE-GROWING.

The VINES, which are festooned over the entire building, covering an area of upwards of 20,000 superficial feet, spanning 60, with the height of 26, are principally grown for the purpose of partially shading Specimen Plants from the direct rays of the sun.

These VINES are now loaded with Thousands and Thousands of Bunches, hanging almost in perfect rotation in every part of the house, which, with the magnificent Specimens beneath, present a *coup d'œil*, and a combination of use and ornament, which Mr. W. B. ventures to think is unsurpassed in this country, or indeed in Europe.

ESTABLISHMENT for NEW and RARE PLANTS, KING'S ROAD, CHELSEA, S.W.

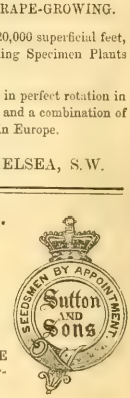
FRESH IMPORTED DUTCH FLOWER ROOTS.

SUTTON & SONS

Have received in good condition their ANNUAL SUPPLY of

DUTCH FLOWER ROOTS.

The prices are very moderate, as see SUTTON'S DESCRIPTIVE AUTUMN CATALOGUE for 1866, which is now ready, and will be forwarded gratis and post free on application.



SUTTON AND SONS, ROYAL BERKSHIRE SEED ESTABLISHMENT, READING.

DUTCH FLOWER ROOTS.

JAMES VEITCH & SONS,

ROYAL EXOTIC NURSERY, CHELSEA, S.W.,

BEG TO ANNOUNCE THAT THEY HAVE RECEIVED THEIR

ANNUAL SUPPLY OF BULBOUS ROOTS FROM HOLLAND,

AND ARE PLEASED TO SAY THAT THEY ARE IN EXCELLENT CONDITION.

CATALOGUES are now ready, and will be forwarded post free on application.

J. V. AND SONS desire to impress upon those who patronise them the great advantage of giving them their orders early, as the successful Cultivation of Bulbs depends in a great measure upon their being planted early in the season.

HYACINTHS AND OTHER BULBS.

WILLIAM PAUL,

SON and SUCCESSOR to the late A. PAUL,

BEGS TO ANNOUNCE THAT HE HAS NOW READY FOR DELIVERY

HIS USUAL SUPPLY OF HYACINTHS AND OTHER BULBS,

Which he has selected from the stock of the first growers in Holland, and which he believes will be found equal to any Bulbs this year imported, and give the same satisfaction to the respective purchasers as those imported and supplied by him in previous years.

HYACINTHS, good named sorts, 50s. per 100
" choice selection, 9s., 12s., and 15s. per doz.
" low sorts, 18s. to 42s. per doz.
" for bedding, 18s. to 24s. per 100

TULIPS, early, in great variety, 1s. to 4s. per doz., 6s. to 24s. per 100
POLYANTHUS NARCISSUS, by name, 4s. to 6s. per doz., 25s. to 42s. per 100
CROCUS, of sorts, 2s. to 5s. per 100.

All other Bulbs and Spring-flowering Plants and Shrubs for Forcing equally reasonable in price.

His friends and the public generally are respectfully reminded that his Collections of these Plants obtained no less than 29 FIRST PRIZES last spring in the space of one week, from the Royal Horticultural and Royal Botanic Societies of London.

NOTICES OF THE PRESS.

"The breadth and length of spike of many of these Hyacinths are much greater than we have ever before seen, and the colours are remarkable for their solidity and clearness."—*Gardeners' Chronicle.*

"There was an air of nobility about the spikes that it is difficult to describe, but which was most striking."—*Journal of Horticulture.*

"It is due to Mr. W. Paul's wonderful group of 24 Hyacinths to which was awarded the First Prize, that a tribute should be borne here to their incomparable quality."—*The Florist.*

"A Collection that were as near absolute perfection as in the present state of our knowledge we can imagine."—*Gardeners' Magazine.*

"The Hyacinths were particularly fine and very numerous, the plants and flowers large and well-grown."—*The Times.*

"The Hyacinths are of giant size, the colours having a metallic lustre and an intensity which we never saw equalled."—*Morning Post.*

"The Hyacinths and Roses of Mr. Wm. Paul proved the greatest attraction at the exhibition, the varieties being good and the plants well-grown."—*Daily Telegraph.*

EARLY ORDERS ARE SOLICITED.

PAUL'S NURSERIES and SEED WAREHOUSE, WALTHAM CROSS, LONDON, N.

B. S. WILLIAMS, Victoria and Paradise Nurseries, Holloway, London, N.

CHOICE SEEDS.

PRIMULA (WILLIAMS's superb Strain).—The most noted strain of Primula in existence; same as supplied to nearly all the largest Gardens in England. In sealed packets, at 5s., 3s. 6d., and 2s. 6d. each. None genuine without B. S. WILLIAMS's name and address on the packet.

CALCEOLARIA (JAMES's Strain).—5s. and 3s. 6d. per packet.

CINERARIA (WEATHERILL's extra choice strain).—This well-known Covent Garden strain to be had genuine only in sealed packets bearing B. S. WILLIAMS's name and address. Price 5s. and 3s. 6d. per packet.

NEW HARDY RHODODENDRON.

MICHAEL WATERER.—This Rhododendron has hitherto been exhibited under the name of ANNIHILATOR, but it will be sent out under the above name. It is undoubtedly the most brilliant-coloured late hardy free-blooming Rhododendron yet offered.

Orders are now being taken for Plants to be sent out in the Autumn at 31s. 6d. each. The usual discount to the Trade.

JOHN WATERER, American Nursery, Bagshot, Surrey

THE COUNCIL of the ROYAL HORTICULTURAL SOCIETY have to announce that they have arranged with the Garden Superintendent, Mr. GEORGE EYLES, that he shall give to Fellows of the Society the ADVICE and ASSISTANCE in the Laying-out and Management of their Gardens at the rate of One Guinea per Visit, with Travelling expenses.

Mr. EYLES begs to inform the Fellows of the Royal Horticultural Society and the Public generally, that having made the above arrangements with the Council, he will be happy to give advice upon all matters connected with Gardening, arranging Conservatories, Laying out new or Improving existing Gardens.

Mr. EYLES was engaged under the late Sir Joseph Paxton at Chatsworth and Sydenham for 12 years, and carried out all the Garden arrangements of the Interior of the Crystal Palace under his direction; and he was subsequently intrusted with the Laying out of the New Gardens of the Royal Horticultural Society at South Kensington from Plans prepared by Mr. Nesfield.

The Gardeners' Chronicle.

SATURDAY, SEPTEMBER 1, 1866.

MEETINGS FOR THE ENSUING WEEK.

TUESDAY,	Sept. 4	{ Royal Horticultural (Floral and Fruit Committees), at South Kensington .. .. 11 A.M. { Ditto (Scientific Discussion) .. .. 3 P.M.
WEDNESDAY,	— 5	
THURSDAY,	— 6	Crystal Palace Horticultural Exhibition .. Noon
SATURDAY,	— 8	{ Royal Horticultural (Weekly Show), at South Kensington .. .. 2 P.M.

WHILE the animal physiologists have had recourse to the cold-blooded, slow-going frog for the prosecution of numberless experiments on the nervous system, vegetable physiologists have been no less actively employed in questioning the SENSITIVE PLANT, with a view to discover the why and wherefore of the movements exhibited by this elegant, and, so to speak, lively plant. It has been subjected to rude blows, to gentle taps, with the finger, with glass, with metal, with gutta percha, with amber, with conductors and non-conductors of all descriptions; it has been subjected to the action of acids, of caustics, of anæsthetics, such as chloroform; of sedatives, such as opium; it has been shut up in a dark room, or exposed to candle-light only; it has been turned ghastly pale beneath the blue rays of the spectrum, and has blushed rosily under the red ray; it has been exposed to the rough jolting of a carriage till it got used to the motion and lost its sensibility accordingly. With all this it cannot be said that we have arrived at any thoroughly satisfactory conclusions as to the cause of the movement. Electricity and endosmose of course have been considered to have an influence on this, as they have been pressed into the service to account for many other of the phenomena of vegetable life, and often without sufficiently justificatory reasons. With reference to electricity it has been observed, says M. DUCHARTRE, in his recently published "Elements of Botany," that the electric spark serves as an irritant to the plant, causing it to fold its leaves, while a continuous current has no effect.

Some experiments of DUTROCHET's, alluded to by DUCHARTRE, prove pretty conclusively that the fibrous portions of the leaf-stalk and its subdivisions are the channels through which the irritation is conveyed, as when they are left intact, while the investing cellular tissue is cut away, the plant still manifests sensibility, while under the reverse conditions no action takes place; but while it seems clear that the irritation is propagated along the fibro-vascular cords, it seems equally clear that they are mere conductors,—telegraph wires, as it were,—and that the batteries in which the force is generated are to be sought in those little swellings or tumours which exist at the base of the main leaf-stalk, as well as at the base of each of its subdivisions. These little swellings have a distinct and peculiar anatomical structure, and in their outer cells act as springs in raising or lowering the leaf-stalk; for if the cells are detached in strips from the central fibres, these strips are found to elongate; and hence all the while they are attached to the central cord, they are in the same condition as a spring that is prevented from uncoiling, and act on the median framework in the same manner—the cells on the upper side having a tendency to uncoil in one direction, those on the lower in the opposite, the antagonism of the two serving to keep the leaf horizontal. But if the equilibrium be destroyed from any cause, then a movement of the leaf takes place; thus, when the leaf falls, the lower set of springs loses for an instant its power, in consequence of which the upper set, being left free to act, presses the leaf down. When the relaxation of the lower spring ceases, and its force is restored, the leaf returns to its normal position. What causes the momentary loss of power in the lower spring is not as yet determined, though it is supposed to depend upon a sudden emptying of the liquid contents of the cells of the lower spring. Knowing how very contractile the contents of the cells are in some instances, *e. g.*, in the Selaginella mutabilis, we can hardly avoid hazarding the surmise, that in that tissue specially will be found the seat of the contraction and expansion.

THIS year's bloom of RHODODENDRONS suggests a few remarks which may be of interest to some of our readers. It is now rather a long lookback to the flowering season of this favourite shrub; but as what we have got to say respects its planting and protection, our hints cannot be deemed out of date. We may premise that the display of blossoms, particularly in later situations, was extremely fine. In many places, however, a considerable portion of the flower-buds of the early varieties was destroyed, or materially injured, by the lingering frosts of April and May. It unfortunately happens, that a few degrees of frost prove injurious to the flowers of Rhododendrons, not only when they are fully developed, but almost as soon as the flower buds begin to expand.

Why should not the early varieties be protected from frost? A florist does not grudge the expense of a frame for his Auriculas, or a canvas awning for his Tulips. In most catalogues, it is true, certain early Rhododendrons are set down as specially adapted for conservatories—an excellent hint for those who possess such structures, and have room in them for such plants; but with the exception perhaps of R. arboreum, we seldom see Rhododendrons planted out in the soil which forms the floor of a conservatory. Ordinary hybrids are grown in pots or tubs; and they are not often well grown, for as soon as they have flowered, they are hurried away to the back of a wall, or some shady place, where a minimum of watering is required, and where accordingly they do not form fine foliage or strong flower buds. Early Rhododendrons, if cultivated at all, must generally be grown in the open air. Mr. JOHN WATERER, indeed, who is a great authority on this subject, is of opinion that they should not be so cultivated, and he strongly "advises gentlemen on no account to introduce into their clumps tender or early blooming kinds." Of course the late bloomers are to be preferred for the general collection, and it is a happy thing that we have so many brilliant varieties of that character. But we should hesitate to lop off a whole month from the beginning of the Rhododendron season, and that at the very time that they are most wanted. We should be sorry to miss the bright scarlet or crimson blossoms of Nobleanum, or of other vernal sorts, from our spring bouquets. It is true that we sometimes see the brilliant trusses of these varieties encrusted with snow, and still more frequently we find their half-opened buds blighted by the black frosts of March and April. Well, let it be so, if it must be so; but they not unfrequently escape, like the charming R. dauricum atrovirens, which sometimes blooms as early as Christmas, and takes any opportunity of fresh weather to put in its appearance, and which, though often destroyed, is about the last shrub we should spare from our gardens. Early Rhododendrons, however, need not be destroyed by frosts. They may be effectually protected by light airy tents of tiffany or canvas. Suppose a well-selected group of these sorts to be planted in a sunny, sheltered corner of the flower garden—in a figure, let us say, of an elongated hexagonal or octagonal shape; posts, some 6 feet high, might be erected at the angles, with a few taller ones in the centre; and on these a roof and side curtains might be suspended, the latter to be drawn aside in fair weather and sunshine. A clever gardener would have no difficulty in realising this suggestion. The posts might be covered by creeping plants in summer, and with a little ingenuity these out-of-doors, extemporised conservatories, might easily be made to harmonise with the permanent glazed structures set apart for the culture of plants.

This suggestion implies the grouping of the various sorts of Rhododendrons according to their periods of flowering. It would be a waste of space to put under canvas any that do not require protection. The principle of grouping we are disposed to advocate for another reason, which is well understood in the autumnal flower garden. The only means of securing a compact array of blossoms is to plant together the varieties which bloom about the same time. The effect of a mass is greatly marred by the presence of plants, some of which have done flowering, while others have not expanded their flower-buds. It would be easy, by noting the dates of the flowering of the most desirable sorts—as is partially done in Mr. STANDISH's excellent Catalogue—to throw them into three, four, or five groups, according to the convenience of the place, or the magnitude of the collection. The following attempt at grouping will illustrate our meaning; only we beg that it may not be taken as exhaustive, many fine sorts being omitted, nor as professedly accurate, for we write chiefly from memory, aided by the above-mentioned Catalogue, which does not include all the sorts named. In passing, we may express a wish that the Rhododendron nurserymen would follow Mr. STANDISH's example in giving the dates of flowering, and that they would imitate the catholicity of the Rose-growers, who enumerate all good varieties whether raised or introduced by themselves or not.

Early Group.—Altaclerense, Russellianum, Nobleanum several varieties, Gloire de Gand, Cinnamomum Cunninghamii, Sun of Austerlitz, Limbatum, Sir Walter Scott, Broughtoni, Prince Camille de Rohan, &c.

Medium Group.—Alarm, Album elegans, Atrosanguineum, Barclayanum, Blandyanum, Brayanum, Bylsianum, Coriaceum, Countess of Wilton, Curricanum, Delicatissimum (particularly Veitch's), Everestianum, Fastuosum, Gem, Genseric, Iago, Lady Eleanor Cathcart, Lady Godiva, Ingramii, Mooreanum, Mrs. Loudon, Nelsoni, Nero, Paxtoni, Perspicuum, Schiller, Victoria, Zuleika, &c.

Late Group.—Butlerianum, Candidissimum, Celebrandum, Chianoides, Colonel, Comtesse de Morella, Concessum, La Vivandière, Maculatum, Nigrum superbum, Marguérite, Minnie, Macranthum, Mr. John Waterer, Mrs. John Waterer, Mrs. Standish, Standish's Perfection, Star of England, Leopardi, &c.

The above may be recommended as a selection for a beginner. It contains few or none of the fine new high-priced varieties. Of course one fairly inspired with the love of Rhododendrons will not content himself with these; and he will speedily discover that the second and third groups may be greatly increased. The white or light-coloured varieties in the late group are so exquisitely fine, that it is difficult to speak of them with moderation. They will match the finest Camellias any day. We may add that in the second week of last July, we saw some fine trusses of Maculatum nigrum superbum, in a cool shaded situation, and that circumstance, supposing that Nobleanum flowered about 1st of April, as it no doubt did in many parts of the country, marks off a period of 3½ months for the Rhododendron season of 1866.

Our observations this year have convinced us of the great superiority of soil largely composed of peat earth for the growth of Rhododendrons. It is usual for nurserymen to affirm that this shrub will grow well enough in any light soil of a loose or sandy texture. Most of their nurseries are of this description; and it is natural for them to maintain that what is sufficient for propagation is good for growth. It is true that Rhododendrons will grow, in a way, in any light soil containing abundance of vegetable matter as one of its elements. There is, however, all the difference in the world between plants that barely live after a stunted precarious fashion, and plants that grow like Willows, and are covered annually with immense showers of blossom. Amateurs who can procure peat earth are strongly recommended to avail themselves of it. If they reside near a railway, they will probably have little difficulty in obtaining say five or six truck-loads of it, which may be equal to 20 or 25 cart-loads. Let them chop it small, or break it well with a coarse rake, but not screen it. Let them add an equal quantity of well-rotted leaf-mould, free from sticks, with a sufficiency of sharp sand. That will give from 60 to 70 cart-loads of compost to begin with. If the original soil of the garden is clayey or chalky it should be excavated to the

depth of 12, 15, or 18 inches, as the grower can afford it, and a layer of the compost put in its place. It is often injurious to mix up any of the old soil. After the Rhododendrons have been planted they will be benefited by a strong mulching from a decayed hotbed; and the process may be repeated with good effects for several years.

—— M. HERINCQ, in a recent number of the "Horticulteur Français," states that he has succeeded in obtaining several plants of IRESINE HERBSTII with perfectly GREEN FOLIAGE. The plants so obtained have little or nothing of an ornamental character. They seem to have originated as sports from the ordinary-leaved plant; and they lead M. HERINCQ to the conclusion that cuttings do not always exactly reproduce the typical form of the plant from which they sprang, any more than seeds do, but they tend to increase and perpetuate the slightest variation. Hence the necessity for carefully selecting the cuttings, and for taking those which are the most true to the typical or required form; but if, on the other hand, it is desired to obtain a new variety, then those branches should be selected to supply cuttings which vary most from the specific type.

—— It is with the deepest regret that we have to record the DEATH OF DR. GEORGE METTENIUS, of Leipsig, one of the most able and accurate of modern pteridologists. Dr. METTENIUS, who was Professor of Botany in the Leipsig University, died of cholera, on the 18th of August, in the 43d year of his age, and will be greatly regretted by all who knew him, no less for his personal qualities than for his scientific attainments. We have also to record with much concern the death of another German Botanist of repute, Dr. KOTSCHY, whose splendid work on the Oaks is known to many of our readers.

—— A simple method of PRESERVING FRUIT FROM INSECT RAVAGES would be a great boon to Horticulture, for the quantity of fruit destroyed by insects depositing their eggs in fruit blossoms is enormous. These creatures are said to have a great antipathy to vinegar, the mere odour of which is enough to drive them away, and in some cases to destroy them, and nothing more is required than to sprinkle the branches with a mixture of vinegar and water at the moment the blossoms begin to appear. The plan is recommended for adoption by the Society of Practical Horticulture of the Rhone. The mixture recommended consists of one part of vinegar to nine parts of water, but as French vinegar is very strong, perhaps the amount of water should be less when English vinegar is used. When the liquids are well mixed, the solution is to be sprinkled over the flower-buds, by means of a garden-engine or syringe, or even with a watering-pot with a fine rose. Mr. Denis, the director of the School of Arboriculture at Lyons, reports that fruit trees so treated were covered with fruit, while those to which the acidulated water was not applied bore scarcely any.

—— We have formerly invited attention to Messrs. JACKMAN'S fine hybrid varieties of CLEMATIS (see 1864, p. 823), the great merit of which, and that by which they far surpass the ordinary varieties of C. lanuginosa, is their quality of continuous flowering. Through the month of August they present masses of magnificent blossoms, and they continue branching and blooming on freely till arrested by the ungenial weather or frosts of autumn. Shades of blue-purple and of reddish-purple in considerable variety predominate in the original batch of seedlings, but there are some very desirable forms of a paler or lilac tint, and paler hints of lavender and lilac have been also obtained in a second batch of seedlings which we have seen blooming this season. The size and profusion of the flowers in the older established plants is astonishing, and the sight of them would well repay a visit to Woking.

—— Messrs. SUTTON & SONS, of Reading, have addressed to us a letter repudiating DR. BONAVIA'S imputations as to the INFERIORITY OF ENGLISH SEEDS as compared with those derived from America, and quoting several letters in eulogy of the seeds sent to India by that firm. DR. BONAVIA, it should be remembered, neither says how nor why the English seeds are inferior, nor does he state from whom he procured them.

—— We hear that on Monday last, the anniversary of the birthday of the late PRINCE CONSORT, no fewer than 180,000 persons visited the Gardens of the ROYAL HORTICULTURAL SOCIETY at South Kensington. We are also authorised to state that, to enable the public to inspect the flowers and plants with greater quiet than is practicable on this holiday, the Council have determined to open the Gardens free on every Wednesday during the months of September and October.

—— We understand that at the meeting of the Floral Committee, at South Kensington on Tuesday the 4th inst., Mr. BULL will exhibit a plant of AMARYLLIS JOSEPHINÆ with upwards of 50 flowers.

THEORY AND PRACTICE OF VENTILATION. No. XI.

(Continued from p. 708).

SUFFICIENT has been already advanced to prove the necessity of air as food for plants. From thence they derive the great bulk of their substance. Most of what is consumable by fire has been obtained from the atmosphere. Besides these, plants contain certain saline and earthy matters which reveal their earthy origin. But as food, the air which they eat as well as breathe is of more importance than the soil in which the roots are fixed. Hence a fresh supply of air may bring more and better sustenance for plants than loads of manure applied to the ground. Doubtless a portion of plant food is absorbed by their roots; but I believe comparatively little carbonic acid gas or ammonia enters into plants through these channels. Where roots absorb their thousands of grains of food, I believe the leaves absorb their tens of thousands, and mainly for the simple reason that the leaves present such an infinitely wider area of feeding surface than the roots. The ramifications of roots are doubtless extensive, but few of them absorb food unless at their extremities, and these are not only very small, but comparatively few in number. Roots more frequently resemble pipes for the conveyance of fluids than congeries of mouths for the collection and absorption of food; they are as much, or more, mere mechanical ties to fix plants to the earth, as food collectors. The chief function of leaves, on the contrary, is to sift out and elaborate food; their whole surface is permeable to gases and fluids. The extent of surface they present to the atmosphere is almost incalculable and incredible: their waving motion is ever bringing them into contact with new feeding ground. Or if they cease to move, fresh supplies of food are brought to them by the ever moving air. To plants in their normal condition that supply is inexhaustible. They collect it from the whole world; they draw it in out of the earth, lap it up from the water, inhale it from the air. It is the boast of our commerce that its cargoes float upon every sea; but the vegetable kingdom takes a loftier flight, and while it presses alike the solid earth and the ocean of waters into its service, it makes the heavens themselves the chief agency for the transportation of its food. The air is ever freighted with its burden, and rests not day nor night in carrying plant food from where it is not wanted to where it is. The entire process is based on the soundest commercial principles: production, conveyance, and consumption exactly match and balance each other. There is never a glut of food in the atmospheric market, nor lack of force to convey it, nor difficulty of finding a brisk demand. The great manufacturers — combustion, respiration, and decomposition — maintain the supply of food. Heat and the buoyant air distribute it, and plants with their myriad leaves, porous stems, and open-mouthed roots consume it. By these processes plants live and grow and are perfected; the air is fully renewed, and its purity maintained. The food of plants is manufactured at the expense of the atmosphere; its oxygen imparts the motive power to the whole machinery of production. No fire, no breathing, no decay without that. The quantity consumed in these operations is enormous. The whole volume of the atmosphere would speedily be impoverished and robbed of its vital life-sustaining powers; but plants seize upon the products of the oxygen, decompose them, retain the carbon as food, and breathe forth the oxygen once more into the air. So, in the eloquent words of the late Professor Henfrey, in the "Magazine of Botany," "the carbonic acid gas we are exhaling, in a few short hours will be travelling along to the north and south of us, endeavouring to traverse the world. The Cedars of Lebanon, the Araucarias of the Andes, and the beautiful pines of the Himalayas will take of it to increase their size; the Date trees of the valley of the Nile will drink it in by their leaves; the Cocoa-nuts of Tahiti, the Mangoes of the Amboyna Islands will ripen upon it; the Ericas of the Cape, the Cacti of the New World, and the Orchidaceous plants of the Indian Archipelago will change it into flowers. The oxygen we are inhaling has been but lately distilled for us by the Magnolias of the Susquehanna and the Passifloras of Texas. The huge Rhododendrons of the Himalayas, the Cinnamon trees of Ceylon, and the Roses of Cashmere, with forests older than the Flood, buried deep in the heart of Africa, have contributed to it. The rain we see falling around us was thawed from the mountainous icebergs of the polar seas; and aquatic plants have sucked up from the Nile, the Mississippi, and the Tigris, and exhaled as vapours the mighty snow-fields of the Andes, the Atlas, and the Alps."

And thus the matchless constitution of the atmosphere is preserved; man finds a constant supply of oxygen, and plants of carbonic acid gas, ammonia, &c., but it will be observed that they have the range of the whole atmosphere to find it in. It should also be borne in mind that those gigantic modes of circulation already adverted to are as necessary for the distribution of plant food as for equalising the world's heat: the air of our world never moves but it carries a load of food with it.

But how very different from all this are the artificial atmospheres shut up in our plant-houses. The air in these is often kept as nearly stationary as possible; or if it moves at all it moves in a treadmill round from pipe to glass and back to pipe again. Great care is taken to prevent the addition of fresh air to it. Every time it comes into contact with attenuated leaf or lanky stem they nibble away at the meagre food it bears to them, until none is left. Still while a disparity of temperature prevails in different parts of the house the air must make its dreary round. Under such circumstances not only does the air convey no food to the plants, but it actually abstracts elements from them. It is well known that plants, during darkness, evolve or give out carbonic gas, and consume oxygen. It is quite possible that during dull weather, and in an unchanged atmosphere, they do the same. Hence they are "drawn," or become thin, not so much from the absence of light, and a sheer lack of food in the air, as by the oxygen robbing them of still more of their solid substance or carbon. Instead of feeding upon the carbonic acid gas and ammonia which they ought to find in the air, they are perforce obliged to eat pure oxygen. No sooner does this gas enter into plants than it begins to destroy, instead of build up; it causes an entire reversal and derangement of function. A similar thing happens to men in close atmospheres, only the position of the gases is reversed. No sooner is all the available oxygen used up in a given atmosphere than they are compelled to breathe in again the carbonic acid gas which has just been expelled. The result is immediate derangement, speedy suffering, and ultimately death. In the case of men however the symptoms of distress are felt, and loudly expressed, and a remedy is found.

Plants may feel these as much or more, exhibit every symptom of visible distress up to actual death, but can make no audible complaint. Were they endowed with speech, in hundreds of plant houses we should be deafened with their urgent calls for air, air, air! more and fresher air! And they must have it, for air to them is not only something to breathe, but almost everything to eat.

Startling as it may appear to many, plants in glass houses now receive less air than formerly. Most of our improvements in hothouse building have tended to reduce the amount of air admitted. I do not mean that less provision has been made for ventilation; more and better has doubtless been provided. But this does not compensate for that formerly admitted accidentally. And roofs now are hermetically sealed in many cases — in all they are nearly air-tight. The old roofs, with their innumerable laps, cracks, and imperfections of movement and fitting, were as much or more huge ventilating screens, as protecting air excluders. Innumerable currents of air flowed freely through them in all weathers; there were no means of keeping it out unless the snow did it occasionally. Hence, whatever danger there was then of the plants being starved with cold, they could never be pinched with hunger for lack of food in the air. In securing them, as we have now done, against the first, we seem to have run the risk of exposing them to the second danger.

This has chiefly arisen from underrating the importance of a continuous supply of air as plant food, and under-estimating the quantity admitted through the old-fashioned roofs. It is impossible to measure the exact quantity. Could we do so, its amount would startle the most profuse aërators of the present day. Over the whole surface of the roof, air was passing out and coming in; at all points throughout its entire volume in atmosphere of the old hothouses was being constantly changed. This constancy constituted the merit of what may be termed the accidental mode of ventilation. As far as the renewal of the air was concerned, such ventilation was perfect.

Of course it had serious drawbacks. The loss of heat and of moisture was enormous; the volume of cold air rushing into immediate and direct contact with tender growth chilled and withered up its life. Our improved roofs and new modes of glazing, enable us to economise heat and exclude the air at pleasure, and these are manifestly steps in the right direction. It would be the extreme of folly, for the sake of securing fresh air as plant food, to go back to the old semi-open roofs, but the great lesson they taught us should not be lost; that lesson was that a constant supply of fresh air is essential to the well-being, to the healthy growth and very life of plants. It was because of this that our predecessors, amid all other drawbacks, achieved their measure of cultural success. They took no trouble about it. The air was admitted then by circumstances over which they had no control; but it came in constantly and freely all the same. We have the power of excluding it; therefore we must exercise the wisdom of admitting it: not fitfully, when the sun shines, or the air is genial only — not merely by day, but by night as well, and, in fact, at all times and in nearly all weathers. And we must also see to it that the whole volume of the atmosphere is changed. To this end there must not only be inlets but outlets for air. It will not suffice to have a few pipes coming in from the front to be carefully heated before admission into the house. There ought also to be outlets for air to escape, or the air will not flow in. Disparities of temperature must also obtain between the inflowing and outpouring currents, or there will be little or no motion. If the house is already full of air it is obvious that more cannot flow into it under ordinary pressure; and if it is of one uniform temperature it will lack the ability to move. Now, as plants in our hothouses seldom enjoy wind enough to bring their leaves and stems into new and unexplored strata of the atmosphere, from which the food has not been abstracted, it is of the greater importance that their aërial food should be constantly conveyed to them by the moving air. In fact, change of air is not only the breath but the bread of life to plants. Let this fact but be deeply ingrained in the minds of gardeners, and a stuffy stagnant atmosphere will become as rare in our hothouses as it is in Nature.

Doubtless, in very severe weather, something may be done to keep up the supply of plant food in our hothouse atmospheres by artificial means. By various contrivances — such as evaporating pans charged with water more or less impregnated with carbonic acid gas and ammonia, and the good old system of introducing sweet fermenting horse droppings or stable litter — the air may be re-stocked with the food of plants. The best fruit I have ever grown were largely assisted in this manner. It is the more necessary to resort to such expedients when the houses are crowded with plants. The more and healthier they are, the sooner the stock of food is exhausted. Bulk for bulk our internal atmosphere has many more mouths to feed than the same volume of the external air; therefore it is the more necessary to keep up its nutritious qualities by artificial expedients. Especially is this requisite when the external source of supply is shut out. And even when and where a constant stream of fresh air is admitted, the quantity and activity of the semi-tropical life developed in our hothouses, may require more carbonic acid gas and ammonia than our temperate climate affords. And as a slight excess of either of these elements in the atmosphere will do no harm, and may be of the highest

service, it is good and safe practice to generate a supply, during all stages of growth short of the final or ripening one. In small houses much may be done to feed the plants by sending several people to work among them in dull cold weather, when the outside air is excluded. The quantity of carbon breathed forth by them will be very considerable, and will be greedily and at once consumed by the plants as food.

I by no means recommend any of these or other artificial modes of charging the air with food, to the exclusion of the natural one which is constantly at hand—that of renewing the air by changing it. But when the latter from extreme cold outside or paucity of heat within becomes impracticable, or at least difficult, then the former may be used with advantage; and the two combined would enable us to command the plant-feeding properties of a tropical atmosphere throughout our glass houses, erected for the perfecting of tropical produce. *D. T. Fish.*

BRITISH ASSOCIATION.

[The following is a condensed abstract of such portions of Mr. Groves' address to the British Association at Nottingham, as relate to Natural History.]

ONE word will give you the key to what I am about to discourse on; that word is *continuity*,—no new word, and used in no new sense, but perhaps applied more generally than it has hitherto been. We shall see, unless I am much mistaken, that the development of observational, experimental, and even deductive knowledge is either a series of steps so extremely small as to form really a continuous ascent, or, when distinct results apparently separate from any co-ordinate phenomena have been attained, that then, by the subsequent progress of science, intermediate links have been discovered uniting the apparently segregated instances with other more familiar phenomena. It seems strange that the referring past changes to similar causes to those which are now in operation should have remained uninvestigated until the present century; but with this, as with other branches of knowledge, the most simple is frequently the latest view which occurs to the mind. It is much more easy to invent a *Deus ex machinâ* than to trace out the influence of slow continuous change; the love of the marvellous is so much more attractive than the patient investigation of truth, that we find it to have prevailed almost universally in the early stages of science.

In astronomy we had crystal spheres, cycles, and epicycles; in chemistry the philosopher's stone, the elixir vitæ, the archeus or stomach demon, and phlogiston; in electricity the notion that amber possessed a soul, and that a negative fluid could knock down a steeple; in geology a deluge or a volcano was supplied; in palæontology a new race was created whenever theory required it; how such new races began the theorist did not stop to inquire.

A curious speculation might be set to a palæontologist of even recent date, in the words of Lucretius,—

Nam neque de cœlo cecidisse animalia possunt
Nec terrestria de salsis exisse lacunis.

E nihilo si crescere possent,
(Tum) fierent juvenes subito ex infantibus parvis,
E terrâque exorta repente arbusta saliret;
Quorum nihil fieri manifestum est, omnia quando
Paulatim crescunt, ut par est, semine certo,
Crescentesque genus servant.

—which may be thus freely paraphrased: "You have abandoned the belief in one primeval creation at one point of time: you cannot assert that an elephant existed when the first saurians roamed over earth and water. Without, then, in any way limiting Almighty power, if an elephant were created without progenitors, the first elephant must, in some way or other, have physically begun to exist upon earth. Whence did he come? did he fall from the sky (*i. e.* from the interplanetary space)? did he rise moulded out of a mass of amorphous earth or rock? did he appear out of the cleft of a tree? If he had no antecedent progenitors, some such beginning must be assigned to him." A writer of scientific works who, before the discoveries of geology have become familiar, ventured to present in intelligible terms any definite notion of how such an event could have occurred. Those who do not adopt some view of continuity are content to say—God willed it; but would it not be more philosophical, more philosophical to inquire by observation and experiment, and to reason from induction and analogy, as to the probabilities of such frequent miraculous interventions?

As we detect no such phenomenon as the creation or spontaneous generation of inorganic and animals which are large enough for the eye to see without instrumental assistance, as we have long ceased to expect to find a Plesiosaurus spontaneously generated in our fish-pond, or a Pterodactyle in our pheasant-cover, the field of this class of research has become identified with the field of the microscope, and at each new phase the investigation has passed from a larger to a smaller class of organisms. The question whether among the smallest and apparently the most elementary forms of organic life the phenomenon of spontaneous generation obtains, has recently formed the subject of able and apparently animated discussion in France. If it could be found that organisms of a complex character were generated without progenitors out of amorphous matter, it might reasonably be argued that a similar mode of creation might obtain in regard to larger organisms. Although we no more see phenomena as the formation of an animal such as an elephant, or a tree such as an Oak, excepting from a parent which resembles it, yet if the microscope revealed to us organisms, smaller but equally complex, so formed without having been reproduced, it would render it improbable that the larger should have had nothing with larger organic beings. The controversy between M. Pasteur and M. Pouchet has led to a very close investigation of this subject; and the general opinion is, that when such precautions are taken as exclude from the substance submitted to experiment any trace of germs, and that the atmosphere being introduced, as by passing the air which is to support the life of the animalcule through tubes heated to redness and other precautions, no formation of organisms takes place. Some experiments of Dr. Child's, communicated to the Royal Society during the last year, again throw doubt on the negative results obtained by M. Pasteur; so that the question may be not finally determined, but the balance of experiment and opinion is against spontaneous generation.

One argument presented by M. Pasteur is well worthy of remark, viz., that in proportion as our means of scrutiny become more searching, heterogeny, or the development of organisms without generation from parents of similar organism, has been gradually driven from higher to lower forms of life, so that if some apparent exceptions still exist they are of the lowest and simplest forms; and these exceptions may probably be removed, as M. Pasteur considers he has removed them, by a more searching investigation.

If it be otherwise, if heterogeny obtains at all, all will now admit that at present the result of the most careful experiments shows it to be confined to the most simple organic structures, such as vibrions and bacteria, and that all the progressive and more highly developed forms are, as far as the most enlarged experience shows, generated by reproduction.

The great difficulty which is met with at the threshold of inquiry into the origin of species, is the definition of species; in fact, species can hardly be defined without begging the question in dispute.

Thus, if a species be said to be a perseverance of type incapable of blending itself with other types, or, which comes nearly to the same thing, incapable of producing by union with other types offspring of an intermediate character which can again reproduce, we arrive at this result, that whenever the advocate of continuity shows a blending of what had been hitherto deemed separate species, the answer is, they were considered separate species by mistake, they do not now come under the definition of species, because they interbreed.

The line of demarcation is thus *ex hypothesi* removed a step further, and thus, unless the chain of continuity can, on his side, prove the whole question in dispute, by showing that all can directly or by intermediate varieties reproduce, he is defeated by the definition itself of species.

On the other hand, if this, or something in fact amounting to it, be not the definition of species—if it be admitted that distinct species can, under certain favourable conditions, produce intermediate offspring capable of reproduction, then continuity in some mode or other is admitted.

The question then takes this form:—Are there species or are there not? Is there such a thing as qualifying a real, natural distinction, or as a mere convenient designation applied to subdivisions having a permanence which will probably outlive man's discussions on the subject, but not an absolute fixity? The same question, in a wider sense, and taking into consideration much longer time, would be applicable to genera and families.

Actual experiment has done little to elucidate the question, nor, unless we can suppose the experiments continued through countless generations, is it likely to contribute much to its solution. The experience or induction from the facts of geology, palæontology and physiology, aided by analogy from the laws of action which Nature evidences in other departments.

The doctrine of gradual succession is hardly yet formularised; and though there are high authorities for certain modifications of such view, the preponderance of authority would necessarily be on the other side. Geology and Palæontology are recent sciences, and we cannot tell what the older authors would have thought or written had the more recently discovered facts been within their view. Authority, therefore, does not much help us on this question.

Geological discoveries seemed, in the early period of the science, to show complete extinction of certain species and the appearance of new ones, great gaps existing between the characteristics of the extinct and the new species. As science progressed, these were more or less filled up; the apparent difficulty of admitting unlimited modification of species would seem to have arisen from the comparison of the extreme ends of the scale, where the intermediate links or some of them were wanting.

To suppose a Zoogloia the progenitor of a Mammal, or to suppose at some particular period of time a highly-developed animal to have come out of nothing, or suddenly grown out of inorganic matter, would appear at first sight equally extravagant hypotheses. As an effort of the mind to realise either of these alternatives presents more difficulty than the other; but as we have no means of ascertaining how creative power worked but by an examination and study of the works themselves, we are not likely to get either side proved to ocular demonstration. A single pair, as the progress of transmutation would probably require a term far transcending all that embraced by historical records; and, on the other hand, it might be said, sudden creations, though taking place frequently, if viewed with reference to the immensity of time involved in geological periods, are so few with reference to our experience as to be difficult of clear authentication, that the non-observation of such instances cannot be regarded as absolute disproof of their possible occurrence.

The more the gaps between species are filled up by the discovery of intermediates, the more the argument becomes the argument from ignorance, and the weaker that for successive creations, because the former view then becomes more and more consistent with experience, the latter more discordant from it. As undoubted cases of variation, more or less permanent, from given centres, are found to increase, and the effects of climate, food, domestication, &c., the more species are increased by intercalation, the more the distinctions slide down towards those which are within the limits of such observed deviations; while, on the other hand, to suppose the more and more frequent recurrence of the miraculous or amorphous production, multiplication of miracles or special interventions, not in accordance with what we see of the uniform and gradual progress of nature, either in the organic or inorganic world. If we were entitled to conclude that the progress of discovery would fill up the gaps of species, and that species would become indefinitely multiplied, the distinctions would become infinitely minute, and all lines of demarcation would cease, the polygon would become a circle, the succession of points a line. Certain it is that the more we observe, the more we increase the number of species and conquer the difficulties of some of these supposed creations; so that new creations become innumerable, and yet of these we have no one well-authenticated instance, and in no other observed operation of Nature have we seen this want of continuity, which is a fact in itself, so remarkable as to require careful consideration.

The difficulty of producing intermediate offspring from what are termed distinct species and the infecundity in many instances of hybrids are used as strong arguments against continuity of succession. On the other hand, if we admit such long-continued modification through countless generations has given rise to such differences of physical character, that reproduction is difficult in some cases and in others impossible.

Suppose, for instance, M to represent a parent race whose offspring by successive changes through some of these have divaricated from it, placed on the one hand a species A, and on the other a species Z, the changes here have been so great that we should never expect directly to reproduce an intermediate between A and Z. A and B on the one hand, and Y and Z on the other, might reproduce; so again regain the original type M, we might, by a procedure through all the intermediates, but must have similar circumstances recalled in an inverse order at each phase of retrogression, conditions which it is obviously impossible to fulfil. But though among the higher forms of organic structure we cannot retrace the effects of time and reproduce the preceding types, yet among some of the lower forms we find it difficult to assign any line of specific demarcation; thus, as one result of the very elaborate and careful investigations of Dr. Carpenter on Foraminifera, he states, "It has been shown that a very wide range of variation exists among Orbulites, not merely as regards external form, but also as to plan of development; and not merely as to the shape and aspect of the entire organism, but also with respect to the size and configuration of its component parts. It would have been easy, by selecting only the most divergent types from amongst the whole series of specimens which I have examined, to prefer an apparently substantial claim on behalf of these to be accounted as so many distinct species. But after having classified the specimens which could be arranged around these types, a large proportion would yet have remained, presenting characters intermediate between those of two or more of them, or actually combining those characters in different parts of their fabric; thus showing that no lines of demarcation can be drawn across any part of the series that shall definitely separate it into any number of groups, each characterised by features entirely peculiar to itself."

Mr. H. Bates, when investigating "the Lepidopters of the Amazon Valley," may almost be said to have witnessed the origin of some species of butterflies, so close have been his observations on the habits of these animals that have led to their variation and segregation, so closely do the results follow the observation, and so great is the consequent possibility of otherwise accounting for any of the observed facts.

In the numerous localities of the Amazon region certain gregarious species of butterfly (Heliconidæ) swarm in incredible numbers, almost outnumbering all the other butterflies in the neighbourhood; the species in the different localities being different, though often to be distinguished by a very slight shade.

In these swarms are to be found, in small numbers, other species of butterflies belonging to as many as 10 different genera, and even some moths; and these intruders, though they structurally differ *in toto* from the swarms they mingle with, and from one another, mimic the Heliconidæ so closely in colours, habits, mode of flight, &c., that it is almost impossible to distinguish the intruders from those they mingle with. The obvious benefit of this mimicry is safety, the intruders hence escaping detection by predatory animals.

Mr. Bates has extended his observations to the habits of life, food, variations, and geographical range of the species concerned in these mimetic phenomena, and finds in every case conclusive evidence of specific change of a purely derivative, the species being modified from place to place to suit the peculiar form of Heliconidæ stationed there.

Mr. Wallace has done similar service to the derivative theory by his observations and writings on the Butterflies and Moths of the Malay Archipelago, adducing instances of mimetic resemblances strictly analogous to the above; and adding in further illustration a beautiful series of instances where the form of the wing of the same butterfly is so modified in various islets, as to produce changes in their mode of flight that tend to the conservation of the species by aiding its escape when chased by birds or predacious insects.

He has also adduced a multitude of examples of geographical and representative species, races, and varieties, forming so graduated a series as to render it obvious that they have had a common origin.

The effects of food in the formation and segregation of races and of certain groups of insects has been admirably demonstrated by Mr. B. D. Walsh, of North America.

Mr. M'Donnell has been led to the discovery of a new organ in electric fishes from the application of the theory of descent, and Dr. Fritz Müller has published numerous observations showing that organs of very different structure may, through the operation of natural selection, acquire very similar and even identical functions. Sir John Lubbock's diving hymenopterous insect affords a remarkable illustration of analogous phenomena: it dives by the aid of its wings, and is the only insect of the vast order it belongs to, that is at all aquatic.

The discovery of the Eozoon is of the highest importance in reference to the derivative hypothesis, occurring, as it does in strata that were formed at a period inconceivably antecedent to the pre-supposed introduction of life upon the globe, and displacing the argument derived from the supposition that at the dawn of life a multitude of beings of high organisation were simultaneously developed (in the Silurian and Cambrian strata).

Prof. A. de Candolle, one of the most distinguished continental botanists, has to some extent abandoned the tenets held in his "Géographie Botanique," and favours the derivative hypothesis in his paper on "Variation of Oaks;" following up a paper by Dr. Hooker, on the Oaks of Palestine, showing that some 16 of them are derivative, he avows his belief that two-thirds of the 300 species of this genus, which he describes, are provisional only.

Dr. Hooker, who had only partially accepted the derivative hypothesis propounded before the publication of "The Origin of Species through Natural Selection," at the same time declining the doctrine of special creation, has since then cordially adopted the former, and illustrated its principles by applying them to the solution of various botanical problems: first, in reference to the Flora of Australia, the anomalies of which he appears to explain satisfactorily by the application of these principles; and, latterly, in reference to the Arctic Flora.

In the case of the Arctic Flora, he believes that originally Scandinavian types were spread over the high northern latitudes, that these were driven southwards during the glacial period, when many of them changed their forms in the struggle that ensued with the displaced temperate plants; that on the returning warmth the Scandinavian plants, whether changed or not, were driven again northwards and up to the mountains of the temperate latitudes, followed, in both cases, by series of pre-existing plants of the temperate Alps. The result is the present mixed Arctic Flora, consisting of a basis of more or less changed northern plants, identical, or nearly so, and connected in each longitude with representatives of the mountain Flora of the more temperate regions to the south of them.

The publication of a previously totally unknown Flora, that of the Alps of tropical Africa, by Dr. Hooker, has afforded a wealth of facts that have been applied in confirmation of the derivative hypothesis. This Flora is found to have relationships with those of temperate Europe and North Africa, of the Cape of Good Hope, and of the mountains of tropical Madagascar and Abyssinia, that can be accounted for on no other hypothesis, but that there has been ancient climatal connection, and some coincident or subsequent slight changes of specific character.

The doctrine of Cuvier, every day more and more borne out by observation, that each organ bears a definite relation to the whole of the individual, seems to support the view of indefinite variation. If an animal seeks its food or safety by climbing trees, its claws will become more prehensile, the muscles which act upon those claws must become more developed, the body will have to adapt itself by like degrees to the change in it, and each portion of the frame will mould itself to the wants of the animal by the effect on it of the habits of the animal.

Another series of facts which present an argument in favour of gradual succession are the phases of resemblance to inferior orders which the embryo passes through in its development, and the relations shown in what is termed the metamorphosis of plants: facts difficult to account for on the theory of frequent separate creations, but almost inevitable on that of gradual succession. So, also, the existence of rudimentary and effete organs, which must either be referred to a *lusus naturæ*, or to some mode of continuous succession.

The doctrine of typical nuclei seems only a mode of evading the difficulty; experience does not give us the types of theory, and, after all, what are these types? We must admit that there are none such in reality; how are we led to the theory of them? simply by a process of abstraction from classified existences. Having grouped from natural similitudes certain natural forms into a class, and call the assemblage of such attributes a type of the class, we add to that name common to each member of the class. The process gives us an abstract idea, and we then transfer this idea to the Creator, and make Him start with that which our own imperfect

generalisation has derived. It seems to me that the doctrine of types is, in fact, a concession to the theory of continuity or indefinite variability; for the admission that large groups have common characters shown, necessarily, a blending of forms within the scope of the group, which supports the view of each member being derived from some other member of it: can it be asserted that the assigned limits of such groups have a substantial foundation?

The condition of the earth's surface, or, at least, of large portions of it, has for long periods remained substantially the same; this would involve a greater degree of fixity in the organisms which have existed during such periods of little change than in those which have come into being during periods of more rapid transition; for this reason the catastrophists as the general [illegible] of Nature. I am far from saying that the march of physical changes has been always perfectly uniform.

There have been doubtless what may be termed secular seasons, more than have been local changes of varying degrees of extent and permanence; from such causes organised beings would be more concentrated in certain directions than in others, the fixity of character being in the ratio of the fixity of condition. This would throw natural forms into certain groups which would be more prominent than others, like the colours of the rainbow, which present certain predominant tints, though they merge into each other by insensible gradations.

While the evidence seems daily becoming stronger in favour of a derivative hypothesis as applied to the succession of organic beings, we are far removed from anything like a sufficient number of facts to show that, at all events within the existing geological periods capable of being investigated, there has been any great progression from a simpler or more embryonic to a more complex type.

Prof. Huxley, though inclined to the derivative hypothesis, shows, in the concluding portion of his address to the Geological Society, 1862, a great number of cases in which, though there is abundant evidence of variation, there is none of progression.

The records of life on the globe may have been destroyed by the fusion of the rocks, which would otherwise have preserved them, or by crystallisation after hydrothermal action. The earlier forms may have existed at a period when this planet was in a condition, or belonged to a system detached from other worlds or systems. We have not evidence enough to speculate on the subject, but by time and patience we may acquire it.

Were all the forms which have existed embalmed in rock, the question would be solved; but what a small proportion of extinct forms is so preserved, and must be, if we consider the circumstances necessary to fossilise organic remains. On the dry land, unwashed by rivers and seas, when an animal or plant dies, it undergoes chemical decomposition which changes it, or is removed by insects, therefore, might be oxidised and crumbles into dust. Of the myriads of animals and vegetables which annually perish, we find hardly an instance of a relic so preserved as to be likely to become a permanent fossil. So, again, in the deeper parts of the oceans, or of the deeper lakes, where the waters are purish and there remains sink to the bottom, and are there frequently consumed by other marine or lacustrine organisms, or are chemically decomposed. As a general rule, it is only when the remains are silted up by marine fluviatile or lacustrine sediments that their forms are preserved, and we therefore, might be expected to keep for us such organic remains only as were likely to inhabit deltas or the margins of seas, lakes, or rivers; here and there an exception may occur, but the mass of preserved relics would be those of creatures so situated; and so we find of fossils, the bulk consisting of fish and other amphibia, shell-fish form the major part of the geological museum, limestone and chalk rocks frequently consisting of little else than a congeries of fossil shells. Plants of reed or rush-like character, fish which are capable of inhabiting shallow waters, and saurian animals form another large portion of geological remains.

Compare the shell-fish and amphibia of existing organisms with the other forms, and what a small proportion they supply; compare the shell-fish and amphibia of Palæontology with the other forms, and what an overwhelming majority they yield!

There is nothing, as Prof. Huxley has remarked, like an [illegible] of Birds or Mammals, only a few isolated instances. It may be said, the ancient world possessed a larger proportion of fish and amphibia, and were more suited to their existence. I see no reason for believing this, at least to anything like the extent contended for; the Fauna and Flora now in course of being preserved for future ages would give the same idea to our successors.

Creatures like the elephant, cattle, birds, insects, &c., how few are geologically preserved! while the muddy or sandy margins of the ocean, the estuaries, and deltas are yearly accumulating numerous crustacea and molluscs, with some fishes and reptiles, for the study of future palæontologists.

If this position, that, notwithstanding the enormous number of preserved fossils, there must have lived an immeasurably larger number of unpreserved organic beings, so that the chance of filling up the missing links, except in occasional instances, is very slight. Yet where circumstances have remained suitable for their preservation, many closely-connected species are preserved—in other words, while the intermediate types in certain cases are lost, in others they exist. The opponents of continuity lay all stress on the lost, and none on the existing links.

But there is another difficulty in the way of tracing a given organism to its parent form, which, from our conventional mode of tracing genealogies, is never looked upon in its proper light.

Where are we to look for the remote ancestor of a given form? Each of us, supposing none of our progenitors to have intermarried with relatives, would have had at or about the period of the Norman Conquest upwards of a hundred million direct ancestors of that generation, and if we add the intermediate ancestors, direct and collateral. As each male and female parent, we have only to multiply by two for each 30 years, the average duration of a generation, and it will give the above result.

Can we assume that one of his ancestors at the time of the Norman Conquest was a Highland cadger, a Celt, a Scandinavian, a Laplander, and that these three were preserved while all the others were lost, he would never recognise either of them as his ancestor; he would only have the one hundred millionth of the blood of each of them, and as far as they were concerned there would be no perceptible sign of identity of race.

But the problem is more complex than that which I have stated. At the time of the Conquest there were hardly a hundred million people in Europe; it follows that a great number of the ancestors of the *propositus* must have intermarried with relations, and then the pedigree, going back to the time of the Conquest, instead of being represented by diverging lines, would form a network so tangled that no [illegible] could trace it. It is probable, however, that any two people in the same country, taken at hazard, would not have many generations to go back before they would find a common ancestor, who probably, could they have seen him or her in the life, had no traceable resemblance to either of them. Thus two animals of a very different form, and of what would be termed very different species, might have a common geological ancestor, and yet the skill of no comparative anatomist could trace the descent.

From the long-continued conventional habit of tracing pedigrees through the male ancestor, we forget in talking of progenitors that each individual has a mother as well as a father, and there is no reason to suppose that he has in him less of the blood of the one than of the other.

The recent discoveries in palæontology show us that Man existed on this planet at an epoch far anterior to that commonly assigned to him. The instruments connected with human remains, and indisputably the work of human hands, show that to these remote periods the term civilisation could hardly be applied—chipped flints of the rudest construction, probably, in the earlier cases, fabricated by holding an amorphous lump of flint and chipping off portions of it by striking it against a larger stone or rock; then, as time suggested improvements, it would be more carefully shaped, and another stone used as a tool; then (at what interval we can hardly guess) it would be ground, then roughly polished, and so on,—subsequently bronze weapons, and, nearly the last before we come to historical periods, iron. Such an apparently simple invention as a wheel must, in all probability, have been far subsequent to the rude hunting tools or weapons of war to which I have alluded.

A little step-by-step reasoning will convince the unprejudiced that what we call civilisation must have been a gradual process; can it be supposed that the inhabitants of Central America or of Egypt suddenly and what is called instinctively built their cities, carved and ornamented their monuments? If not, if the Egyptian, the Assyrian, the Aztec and Peruvian, did it not take time to acquire such learning, to invent tools as occasion required, contrivances to raise weights, rules or laws by which men acted in concert to effect the design? Did not all this require time? and if, as the evidence of historical times, justly or unjustly, warrants us in believing progression, how slow must have been the earlier steps! If even now habit, and prejudice resulting therefrom, vested interests, &c., retard for some time the general application of a new invention, what must have been the degree of retardation among the comparatively uneducated beings which then existed? The fair question is, Does the newly proposed view remove more difficulties, require fewer assumptions, and present more consistency with observed facts than that which it seeks to supersede? if so, the philosopher will adopt it, and the world will follow the philosopher, sooner or later.

It must be borne in mind that even if we are satisfied from a persevering and impartial inquiry that organic forms have varied indefinitely in time, the *causa causans* of these changes is not explained by our researches; if it be admitted that we find no evidence of amorphous matter suddenly changed into complex organisms, that we could by no means connect with the plasticity by which it slowly acquires modified structure is unexplained. If we assume that natural selection, or the struggle for existence, coupled with the tendency of like to reproduce like, gives rise to various organic changes, still our researches are by no means unfavourable to the idea should produce like, why acquired characteristics in the parent should be reproduced in the offspring. Reproduction itself is still an enigma, and this great question may involve deeper thoughts than it would be suitable to enter upon now.

Perhaps the most conclusive argument in favour of continuity which could be presented to a doubting mind would be the difficulty it would feel in representing to itself any *per saltum* act of Nature. Who would not be astonished at beholding an Oak tree spring up in a day, and not from seed or shoot? We are forced to believe in continuity as to all effects now taking place; if any one of them be anomalous, we endeavour, by tracing its history and concomitant circumstances, to find its cause, *i.e.* to relate it to antecedent phenomena; are we then to reject analogy as a guide? Is it not by analogy that we obtain an explanation of present changes by observation, experiment, and analogy, and yet reprehensible to apply the same mode of investigation to the past history of the earth and of the organic remains embalmed in it?

If we admit sudden creations of matter or force, in the sudden formations of complex organisms now, if we now assign to the heat of the sun an action enabling vegetables to live by assimilating gases and amorphous earths into growing structures, why should such effects not have taken place in earlier periods? Why should not Noble Gases, the sun whole as now, and when the same materials existed for his rays to fall upon?

If we are satisfied that continuity is a law of Nature, the true expression of the action of Almighty power, then, though we may be utterly unable to explain why, we feel that science is impressed with this gradual tendency to structural formation, we should cease to look for special interventions of creative power in changes which are difficult to understand, because, being removed from us in time, their concomitants are lost; we should wonder how the sun rules the whole as now, and when the same materials existed for his rays to fall upon?

It it be true that continuity pervades all physical phenomena, the doctrine applied by Cuvier to the relations of the different parts of an animal to each other must admit of great extension. All the phenomena of inorganic and organised matter might be expected to be so inter-related that the study of an isolated phenomenon would lead to a knowledge of numerous other phenomena with which it is connected. As the anatomist deduces from a mouth-full of bone, the size, the habits, and epoch of those by whom it is wrought, so the student of science may deduce from a spark of electricity or a ray of light the source whence it is generated; and by similar processes of reasoning other phenomena hitherto unknown may be deduced from phenomena with which they are connected. But, as with heat, light, magnetism, and electricity, though we may study the phenomena to which these names have been given, and their mutual relations, we know nothing of what they are; so, whether we adopt the view of natural selection, of effects of plasticity, &c., we know not why organisms should have this *nisus formativus*, or why the acquired habit or exceptional quality of the individual should reappear in the offspring.

Philosophy ought to have no likes or dislikes; truth is her only aim; but if a glow of admiration be permitted to a physical inquirer, to my mind a far more exquisite sense of the beautiful is conveyed by the orderly development, by the necessary inter-relation and inter-action of each element of the Cosmos, and by the conviction that a bullet falling to the ground changes the dynamical conditions of the universe, than can be conveyed by mysteries, by convulsions, or by cataclysms.

The sense of understanding is to the educated more gratifying than the love of the marvellous, though the latter need never be wanting to the nature-seeker.

SPORTING OF PELARGONIUMS.

A VERY wide-spread and general opinion prevails that sporting is more common among varities originating in sports than in those raised from seed. It seems reasonable to suppose that this would be the case, but it is by no means certain that it is so. For if once a branch has decidedly varied from its parent stem, it often seems as if no trace of the original colour or character remained. Seedlings, on the other hand, after remaining true to their specific character for months or years, often prove the existence of parental blood by going right back to one or other of their progenitors. One of the best means of determining this important point would be for every raiser of new Pelargoniums or other plants to keep a pedigree book, and for every purchaser of such plants to publish extracts from such pedigrees when the plants were offered to the public. Thus Lucy Grieve—say, Defiance by Mrs. Pollock; Stella variegata—sport of Stella, &c. We should then know at least whether the varieties were sports or seedlings, and from this basis of fact the sporting powers of each mode of production could be tested by careful and extended series of observations. Let us take by way of illustration the two varieties named by Mr. Grieve as parents of classes,—Flower of the Day and Golden Chain. Were they sports or seedlings? I have always understood that Flower of the Day was a sport originating with Mr. Kinghorn. Who knows anything about the origin of Golden Chain? Well, then, shall we presume it was a seedling? If so, let us compare the sporting power of these two varieties. Has any one ever seen a sport in Golden Chain? I have grown it by thousands for years, and have never noticed it to swerve a hair's-breadth from its original type. Flower of the Day sports, but only back to a green. I have never seen it vary in any other way, and I have grown it from the very first, and grow it by the thousand still. So far, presuming that these two varieties are as I have represented them, the seedling clearly has the advantage in the matter of permanency of character. But suppose Golden Chain is shown to be a sport. What then? Why the whole theory in favour of the greater permanency of seedlings falls to the ground.

And even if Golden Chain is proved to be a seedling, too much must not be inferred from the fact of its constancy. For do not other seedlings sport? Is there is one seedling that I know better than another from its babyhood till now, it is Mrs. Pollock. And if it is more distinguished for one thing than another beyond its great beauty, in this neighbourhood, it is its permanency of character. So much is this the case, that I thought my green branch quite unique. Within these few days, however, I have heard from the North of England that it does not only sport back to a green, but also to a silver; and that so frequently does it sport that until the appearance of my note in the *Chronicle*, it was generally believed to be itself a sport on account of its changeable nature.

This opens up not only the intricate question of blood, but the wider one of the influence of soil and climate upon the permanency of colour. And yet from the sunny south to the sunless north, over the widest geographical range, and on every variety of geological formation, Golden Chain remains the same. Whence, then, the difference between it and Mrs. Pollock? We know that Mrs. Pollock is a seedling, and Golden Chain must either be a seedling or a sport. That one-coloured varieties, such as Tom Thumb, should continue constant is what might be expected, but that bi- or tri-coloured hybrids like these, should the one be constant and the other not, is, to say the least of it, mysterious, and, I fear, well nigh inexplicable. But just as a certain class of philosophers solve all difficulties by attributing every knotty point to electricity, I will try to cut this one by hinting at the difference of the age of the two plants. May not time impart permanency to character in the vegetable as it does in the moral world? Are your readers content to wait till Mrs. Pollock, Lady Cullum, &c., are as old as Golden Chain before pronouncing an opinion? I hope not. It would not only be most instructive, but of great practical importance, to hear the opinion of our best hybridisers on these points. Meanwhile those who entertain a prejudice against sports may consider them as valuable, and probably as permanent, as seedlings. While upon this subject, may I inquire if any one knows the origin of the peculiar white flower stems of Cerise Unique Pelargonium. Was this a new manifestation, or is it hereditary? And is Cerise Unique a sport or a seedling? A further increase of white-stemmed varieties would furnish some valuable acquisitions. *D. T. Fish.*

P.S. Since writing the above I have observed the following in the *Agricultural Gazette* of last week. It is written in connection with a forthcoming sale of true Southdown sheep. Referring to purity of blood, the Editor remarks: "This power of a herd or flock to hand down unimpaired the qualities it possesses is proportioned to the number of generations through which they have been inherited;" and after stating from what sources they were obtained two years ago, he continues: "That these sheep represent the pure bred Sussex Down, in the home where untold generations of the same blood have long since permanently formed its character."

What say our plant breeders to this? When writing the above I was not aware that time and place were so thoroughly recognised by animal breeders as important elements in securing stability and permanence of character. Doubtless they are of as much or more moment in the vegetable as in the animal kingdom. And hence probably, Golden Chain, with its burden of 50 years or more, remains steady, while Mrs. Pollock, Lucy Grieve, Lady Cullum, and other seedlings of yesterday, sport, change, or flirt as becomes their giddy youthfulness and beauty. *D. T. F.*

Home Correspondence.

Sports or Seedlings (see pp. 756, 780).—The subject of variegation in flowers, as produced by seeds or sports, is one of great interest to physiologists as well as florists, and I am glad to see it discussed in the leading journals on gardening. Mr. Grieve does not mention whether Mrs. Pollock was raised from known parents, or whether it was a chance seedling. It would be satisfactory to know this. Mrs. Pollock, whether used as the seed-bearing, or as the pollen parent, seems to

produce a large per-centage of the curious bronzy yellow selfs now cultivated. Golden Fleece, or a similar form, was raised by Mr. John Goode, a very intelligent young gardener, at the Bishop of Winchester's, soon after he left my garden, where he probably, with the rest of my men, became infected with the fascination of getting a cross. Golden Chain is said to be a very old variety, and a sport from the wild inquinans. A gold margined sort was known to Miller. This is said still to exist in the form of a narrower margined sort cultivated in our gardens before it was eclipsed by Golden Chain. I have always saved the green sport from Golden Chain, in hopes of procuring the true inquinans for comparison, but have not yet happened to meet with it. Seedlings from Golden Chain all came green when used as seed-parent, and not artificially fertilised. In spite of the circumstance mentioned by Mr. Grieve I am inclined to think that many Geranium blossoms are fertilised with their own pollen. Experiments are much wanted to show the effect of raising seedlings from florists' flowers and cultivated vegetables in a state of isolation from the influence of strange pollen, and especially when continued for several generations. One of my men raised an extremely interesting seedling from Christine by Golden Chain. Some of the shoots were gold variegated, the rest of the plant had the pale green blotch on a darker ground, as in Queen of Summer, but the blossoms retained the colour of Christine. I have the plant still, as it is handsome in its way, and has some good properties. I lost the plants derived from the gilded portion, and they were not of sufficient floristical value to be retained at Chiswick. Flower of the Day is said to have originated at Messrs. Lee's establishment. It produced many variegated seedlings with me. Stella gave me a pale, golden-variegated sport last year, passing into white as the leaf matured. It was slow in growth, but has improved this year; I know not how it has behaved at Chiswick. Mr. Grieve's classification of Variegated Geraniums is excellent, and should be adopted. I cannot conclude without remarking that the modern physiological botanists by no means desire to discourage the labours of the hybridists, but look upon them, if accurately conducted, and accurately reported, as a valuable help to the determination of species. It would be well if hybridised plants, the result of authentic parentage, accompanied by their parents, on both sides, were to appear, and were encouraged to appear, at our now really scientific Tuesday meetings at South Kensington. *R. T. C.*—Will Mr. Grieve (see p. 780) kindly inform me if Mrs. Pollock, when a seedling, was green in the first instance, and afterwards became variegated? I ask this question because I have been under the impression that all variegated Pelargoniums are sports from green plants, and lately while visiting Mr. Wills, at Huntroyde, my attention was called to a greenish sport from Mrs. Pollock, which I have no doubt was a true form of the well-known Cerise Unique, a fact which would indicate that plant to be the parent of Mrs. Pollock, whether in the shape of a sport or from seed. I have always found that much variegated seedlings from variegated plants to die off as soon as the seed leaves were formed, and much more rapidly in strong light than in shade; the same thing occurs with seedlings of variegated Hollies, Ivies, &c. Lately, while visiting the nurseries of Messrs. Backhouse and E. G. Henderson, I was shown a quantity of seedling Pelargoniums from Mrs. Pollock and others of that strain. Among these in many cases, I observed several distinct varieties on one plant, and as far as I could see on plants having a green origin. A batch of seedlings with me this season from Mrs. Pollock, has furnished about one-half variegated, all of which are dead; the remainder have green leaves and are growing freely. An inspection of Mr. Wills' extensive and beautiful collection certainly confirmed my previous experience with regard to variegated Pelargoniums. One of Mr. Wills' most beautiful varieties this season has been obtained from a plant which was wholly green last year. And any one not in the secret would be at a loss to understand and appreciate his long lines of sturdy luxuriant plants, which look more like Cabbages than ordinary Pelargoniums. Yet it is from these Mr. Wills expects to add to the fine things he has already produced. On closely inspecting these young Tree Mallow looking plants I noticed quite at the base of the stem in many cases a group of beautifully variegated young leaves, and in close proximity to them several headless trunks were showing only the beautiful leaves at their bases. *J. Tyerman, Botanic Gardens, Liverpool.*

English v. American Seeds in India.—The nursery "men of England" cannot "live at home at ease" till they ascertain more fully the value of Dr. Bonavia's assertion (see p. 782) that American seeds are preferable to English. If the learned Doctor's assertions are not better founded than his Theory of Variation by seed, his denial of the fact of degeneration, and his use of that wretched word, "acclimatisation," they will not be accepted in England. Both plants and animals do degenerate in India. He can no more teach such to live and increase permanently in India than he can a Leicester sheep, a dog, or a baby from temperate Europe. Let us see him acclimatise an English Oak, and we will acknowledge the word, particularly when we have got a Kidney Bean to stand the winter and early spring. As to the acclimatisation of the Poppy and Hollyhock, we suspect the Poppy and Hollyhock will say "thank you for nothing." We are aware that a year or two since some parcels of seeds for India, sent by an eminent firm, failed to grow. This, however, was remedied when the firm sent their own seeds in their own way as to route and shipment. After all, perhaps, we must forgive the Doctor, on account of his kindly and benevolent remarks quoted at the end of your critique. *Gens Hortulana.*

Hard Soil for Fruit Trees.—I am exceedingly obliged to Mr. Rivers for his courteous invitation to Sawbridgeworth (see p. 805), and hope to be able to go before the orchard-house fruit are all gathered. I will go as a learner, and expect to enjoy the rich feast of facts provided by Mr. Rivers. I trust, also, that he will be induced to publish his numerous and valuable observations upon fruit-culture, referred to in his last letter, as facts, more facts are the great want of gardening science, practice, and literature at the present time. *D. T. Fish.*

Lilium auratum.—I beg to forward you my yearly account of the progress of this Lily with us here, which from letters I receive, not only from remote parts of Britain, but also from the continent, would appear to be of more than usual public interest. The bulb now in a 15-inch pot has produced three stems, two of which are each 9 feet 6 inches in height from the surface of the soil, one has 14 flowers, the other 13; the smaller stem is only 2 feet in height, and has one flower, making a total of 28. The largest of the blooms is about 1 foot in diameter, which is not so large, in proportion to the strength of the plant, as the flowers have been in previous years. This, however, is perhaps owing to the fact that I was anxious to get the plant into flower, and subjected it to the temperature of the East Indian Orchid house from the time the flower buds were half matured, until several of them were expanded. When in this stage the forcing qualities of this fine Lily are excellent, as I had it in flower in less than half the time I should have had it in an ordinary greenhouse. The girth of the largest stem near the bottom is 3¾ inches, that of the other is 3¼ inches. *Robert Bullen, Gardener to A. Turner, Esq., Bow Bridge, Leicester.*—I have just now a beautiful Lilium auratum, with four expanded blooms, three of which present the appearance of semi-double flowers, from the long filaments having each a perfect half flower-leaf springing from one side along their entire length, and densely spotted with crimson points. The flowers are all extra-sized, and this, to me novel, sport, adds greatly to their beauty. I had a plant last year from Mr. Bull, which yielded only one flower, the bulb being small; but this flower far exceeded in size and colour any I have since seen. It was a yellow throughout, and expanded smoothly and regularly. I think it measured nearly 12 inches across, and had somewhat larger crimson spots than some, and the green foliage was much broader. This bulb from neglect was lost, as well as two young offsets. None at the late Great International Exhibition approached it in beauty. *Thomas Ingle, M.D., The Villetta, Emsworth, Hants.*

Strawberry Culture.—I hope that others may find the following as profitable a mode of cultivation as I have done; it is no hasty theory at which I have arrived, but the honest practice of at least eight years. My system is simply as follows:—As soon as the fruit is gathered, I layer what runners are required in 60-sized pots, filling the pots without crocks with any common soil. I then put the runner on the surface, and a stone on it to keep it down. In a week, or, at most, a fortnight, the runners will be rooted. If there is ground ready to receive them, they may be planted as soon as they are separated from the parent, but I have to wait until ground can be cleared of early Peas, Potatos, or something of that sort; owing, however, to the runners being in small pots, they can be put in any out-of-the-way corner till the ground is ready for them, which I prepare as follows:—I trench deeply and dung (of which they cannot have too much) as well as can be afforded. I then tread down firmly and roll the ground till it is quite hard. It cannot be made too hard. I then plant the runners, which may now be called plants, at angles 3 feet apart in groups of three, thus—

I give water if the weather is dry, cut off what runners they make during autumn, and keep clean; and when the flower stems appear the following spring, I lay some clean straw between the plants. I find by this system that they require little or no artificial watering. The ground being fresh and so recently filled with roots, they will bear a heavy crop without showing signs of flagging. I like to plant in August if I can, but I have made plantations with equal success in the second week of September. At present all my 1865 plantations are on the dunghill except a few Rifleman and Frogmore late Pines on a north border, and these will follow as soon as the fruit is gathered, and the runners are secured. I have kept plants a second year to see the difference between them and young plants, but the difference is so much in favour of young plants that I have for years given up keeping any variety after it has once fruited. I do not even like to plant out forced plants. It is said that a few fruits may be got off them in autumn, which is true, but they are so very few that I do not think that they repay the trouble of planting. I have frequently gathered off young plants, single fruit, 3 oz. weight, and hundreds 2 oz. in weight—in fact, the fruit from young plants is all fine, both as regards size and flavour. This year we have gathered off a piece of ground, 77 feet in length and 65 in breadth, over 700 lb. of fine fruit, and in former years I have obtained equally good results. In generally plant Broccoli after the Strawberries. In clearing the latter, I merely cut them off with a spade under the collar. I then make holes with an iron bar on the hard ground, and if the weather is dry fill the holes with water. I then puddle the Broccoli in with a dibble. When the ground is all planted, I give another watering. They require no more even if it should not rain for a month or six weeks. Just before the Broccoli plants meet in the rows I fork the ground up between them, pushing the soil toward the plant, which require no more attention until they are laid down for the winter. I find all the Cabbage tribe planted in summer do best on solid ground, in which it does not club. *J. G. Temple, Packington Gardens, Coventry.*

White-leaved Robinia.—A novelty has sprung up in our shrubberies, in the shape of the common Acacia, or Robinia, perfectly white. The plant is from 2 to 3 feet high, with several stems. I dare not disturb it yet to ascertain whether it is a seedling or a sucker. Do you think it is likely it can live and retain its present character? I do not perceive a particle of green leaf on the whole plant. *Jasper Standstill.*

[Probably it is a sucker, that is thus affected; at any rate the chlorosis is so complete that there is little chance of perpetuating the plant in its present condition.—EDS.]

Spurless Linaria.—A few days ago I found a somewhat curious specimen, of which I inclose you an imperfect sketch. It was, as you see, a sprig of Linaria, some flowers of which had however all the characters of Antirrhinums. I found two or three sprigs with the same peculiarity at the same spot. *Gilbert W. Child, Exeter College, Oxford.*

Glands of Peaches and Mildew.—In Mr. Rivers' deeply interesting paper read at the late Botanical Congress (reported at p. 706), the following sentence occurs:—"The Early York Peach, from which a great number of seedling trees were raised, reproduced itself with but little variation, with one exception, which is a tree with round glands, consequently not liable to mildew." I should be exceedingly grateful to Mr. Rivers if he would tell us on what this inference is based. I am aware that Mr. Thompson, of the Royal Horticultural Society, and for many years chief manager of the fruit department at Chiswick, one of the ablest pomologists in Europe, attributed great importance to the flowers and glands as a means of classification, but I do not think he ever inferred that any particular form of gland indicated a power of warding off disease. It will, however, be an invaluable addition to the knowledge of fruit growers if it can be satisfactorily shown that peculiarities in the forms of glands possess such powers. It will also afford an additional argument in favour of uniting science with practice, for many fruit growers scarcely know what a gland is. Further, it will do much to foster exact observation, the basis alike of true science and successful practice, if it can be shown that such great results as the immunity of particular varieties from mildew, depend upon such small causes as the form of a gland. *Quercus.*

Iresine Herbstii.—I can fully endorse what is said by "S. R. H." (see p. 789) respecting this valuable bedding plant, which to be seen to full advantage requires proper associates; here we have a bed planted with it, but instead of using Centaurea candidissima as an edging for it, we have Cineraria maritima (true), which in my opinion has a far more graceful appearance. By using spring-struck cuttings, together with a little attention in pinching and pegging down, it may be kept as dwarf as may be desired, and it heightens as it were the brilliancy of the charming rose-veined foliage of the Iresine, which, as seen here now, is in grand perfection, while in a similar situation the Amaranthus melancholicus ruber cuts but a sorry figure, which is doubtless owing in some degree to the dull wet weather which we have had in the north for these last three weeks. The Iresine is also used here for ribbon-work in a border which we have of some extent, but it is not on a north border; its position, on the contrary, with us is due south, and associated as it is with Bijou Pelargonium on one side, and Cineraria maritima on the other. It is in my opinion all that can be desired in its way. *W. Muir, Gardener to Sir Philip De M. G. Egerton, Bart., M.P., Oulton Park.*—I quite agree with Mr. Bennett, of Osberton (see p. 612), that no plant should be too hastily condemned for the following reasons—1, I believe that soil has a great influence on all fine-foliaged plants; 2, the amount of water with which the plants is supplied; 3, their condition when put into summer quarters. As none of your correspondents in answering the inquiries of "Amaranthus" (see p. 684) mentions any of the above conditions, I think it would be only fair for the benefit of those who have not yet tried the Iresine for themselves, if they would state what sort of soil their plants are growing in, &c. Intending planters would then be better able to judge if the plant would be likely to succeed with them. A did not employ it very extensively myself this season, as I was rather doubtful about it, but I bedded-out some 250 good strong plants of it in different positions, for experiment, as an edging, in a good sandy loam resting on clay. It has done moderately well, but not equal to the Amaranthus or Coleus, which are both beautiful, in the same soil not many feet away from it. In a heavy loam, on a north border, the Iresine is superior to the Coleus, being a little shaded. In both these positions it has been well supplied with water when necessary. In another position, in heavy loam, where it has not been watered so much, and is rather more exposed to the sun, it has rather a rusty coat, but not so bad as that of my neighbours. My plants are not so rich in colour as the Coleus and Amaranthus; still they make a variety, and by using light, rich earth for this Iresine, I think it will come out much better even than it has yet done with me, therefore I shall give it another trial before passing sentence of death upon it. With respect to two varieties, I must say that I cannot distinguish any difference between Achyranthes Verschaffeltii supplied from a nurseryman, and Iresine Herbstii supplied to my employer from the Royal Horticultural Society's garden. *J. M. Y., Hants.*—If your correspondents who cannot grow Iresine well would give it rich compost, with plenty of manure added when planting out, it would, I am sure, cause them to have a different opinion of it. I saw lately in the neighbourhood a row of plants of Iresine, and they were 1 foot broad by 9 inches high, and having got manure when being

planted, the result is that the colour of the foliage is perfectly dazzling, most of the leaves being of a pure carmine, with no crimson marking. Where it has not done well, if liquid manure is applied at once it will effect a rapid improvement before the end of the season. *A. C., jun., Dublin.*

Florence Cherry.—It is strange that one so seldom meets with this remarkably fine fruit, for long after all our other dessert Cherries are gone this fine kind comes into use. It is large, handsome, and of good flavour. I have this day, August 17, gathered a dish of it, a fact which speaks for itself, and indicates the desirability of cultivating it, adding as it does another dish to the dessert. *J. Rust, Eridge Castle, Tunbridge Wells.*

Peaches and Nectarines.—The nations of the world and the nation of gardeners seem of late to have forgotten that "they shall beat their swords into ploughshares and their spears into pruning-hooks; neither shall they learn war any more." The halcyon seraphic period, it is to be hoped, will soon set in. I have read the remarks advanced by some of your correspondents in reference to "T. R.'s" observations on chalk, lime, and pressure for wall-fruit trees. Lime and chalk, I believe, to be chiefly alteratives. Still they may be useful for stoning purposes. Poultry feeders give their chickens lime for shell purposes. I believe that Peach and Nectarine trees drop their flowers and fruits from several causes, such as immaturity of wood, the non-stopping of wood, too little water at stoning time, bad drainage, spring frosts injuring the axils of the blossoms, and from ill health arising from injury to the leaves. If the blossoms are kept dry (and dry they must be kept) they will often fall, and refuse to "set," unless the trees are watered at the stump. I remember two years back that I thought my Peach trees would never set their blossoms; I then gave them an abundant watering, and they set their fruit with the quickness of enchantment. I was obliged to disfruit the clusters with nail scissors. I have of late years found the benefit of thinning the blossoms. Peaches and Nectarines may also fall from insufficiency of manure. People are afraid of getting their wood too gross, and seek to starve the tree into fruitfulness. Young fresh-planted trees are best without manure, but old worked trees require some stimulant; for it is an axiom both in gardening and farming, that what you take out you must put back again, unless the land contains a redundancy. Before I went to Rushton I farmed, and found that as I could not put back the silica I could not advantageously grow straw after straw. With regard to pressure, I believe the theory to be this, that the growth is slower, and hence the wood is more matured. I never broke my chalky Peach-tree ground at Rushton. I walked over it most days in the year, and for years together. I have trodden the ground round my fresh-planted trees here, and put half a wheel-barrow full of lime refuse in a radius round the roots. No trees can look better. I believe Mr. Rivers to be right in all respects both as to lime or chalk, and pressure. If the land is chalky, then there is no need to add chalk or lime; but if it is sandy, or clayey, then lime and chalk are capital alteratives. My brother's wall-trees are in sandy land, and though young they do not maintain their health. I advised him to get clay; and if he could not get that, to procure chalk or lime and chopped clots of as strong a nature as he could procure, and to dress the land with them. "Facts are stubborn things," but we often attribute effects to wrong causation. *W. F. Radclyffe, Okeford, Fitzpaine.*

Climbing Roses.—What are the best hardy and fast-growing climbing Roses for a house fronting south-west, but very open and bleak?—No 1. Two for front, a full pink or crimson and a white one. No. 2. Two for the back, the same colours if suitable. No. 3. The best cover for an outhouse at the back. No. 4. The best time for planting climbing Roses. *An Amateur, Worsley, near Manchester.* [No. 1. may consist of Fulgens, crimson; and Félicité perpetué, white. No. 2. Amadis, crimson; and Rúga, pale flesh. No. 3. Large-leaved varieties of Ivy. No. 4. End of October or early in November].

Artichokes.—What is the reason that the Artichoke leaves such a dark mark upon steel knives? *Old Subscriber.* [Probably the presence of tannic acid. EDS.]

Kentish Fruit Growers.—If the inhabitants of our great metropolis are indebted to any one in particular for their luxuries, it is to these enterprising men, who labour early and late to provide that which suits the most delicate palate, though it must be admitted that the growers would soon be involved in difficulties if Londoners rejected their produce. Fruit-selling is a fluctuating trade, in which the grower is more at the mercy of the public than any other vendor with which I am acquainted. The farmer, for instance, can take his sample of grain in his pocket, and if he cannot get what he demands for the stock, he can retain it without its quality being impaired. The fruit-grower is also subjected to vicissitudes of weather. An excess of either rain or drought often causes great loss, especially in the case of berries, or what is called soft fruit, which we all know has only a limited season, even under the most favourable circumstances. This season has been all that could be desired as regards weather; the fault has been with the public—the complaint of "no demand" being prevalent during the past two or three weeks, or perhaps, more properly speaking, the demand has not been equal to the supply, the latter being unusually large. At the time when I made a few remarks on Strawberry growing in Kent (see p. 657), Strawberries were fetching 8*s.* per dozen baskets. The following week they were reduced to 2*s.* 6*d.* and 3*s.* And the difference between some of the corresponding weeks of this year and last has been as much as 7*s.* or 8*s.* per dozen. The general complaint therefore has been that they have barely paid for gathering. The deficiency of demand has doubtless been caused in some degree by slackness of trade, owing to the late monetary crisis, and perhaps also to the appearance of cholera, fruit being said to foster that disease. Whether it does so or not I am not going to decide, but it appears to me that the disease commences amongst a class of persons who seldom taste fruit. Some fruit growers experience considerable loss from want of persons to gather their fruit, causing men to be chiefly employed in that operation. This want is created by a deficiency of accommodation in the neighbourhood for the working classes. One grower informed me that he had 2 tons of Raspberries spoiled for want of hands to pick them. Strange as it may appear, it is an indisputable fact that an abundant season is not the most profitable. It will be seen from what I have stated that it is essential for the grower to realise large profits some seasons in order to make up for all the deficiencies just adverted to. Rents are always the same, perhaps too much on the increase, and it is to be regretted that ground under fruit is not leasehold. The labour market is also high, be the season good or bad. I am surprised that large growers do not take advantage of the "no demand" seasons and convert their produce into jam; or that some person of capital has not erected a manufactory for the purpose. For if it pays to do so after their conveyance to London, why not in the immediate neighbourhood? Several tons of fruit would be saved in this way. *W. P. R. Holwood, Bromley.*

Orchard-house Trees in Pots.—If "T. R." (see p. 781) had read my letter rightly he would have seen that I did not expect to see trees in pots with ripe fruit on them at the forthcoming show at the Crystal Palace. What I desired to see was fruit from such trees competing with that produced by other means. I am aware that trees laden with a crop approaching maturity or perfectly ripe could not travel, but I cannot see what harm such trees would have encountered at the time of the late Great International Show (the 20th May), when the crop was only a little way advanced; six prizes were offered for such trees, but only two collections competed for them. My trees, which are really in pots, as I stated before, are far from satisfactory; most of the fruit drops off, and what remains on is very small. Other trees I have as good as need be, but they have rooted through the bottom of the pots into the ground. I have therefore spread earth over the surface some 6 inches deep around each pot. These trees I call planted out, and I maintain that fruit gathered from trees managed in this way ought not to be enforced out from trees in pots. Now, with these examples before me, I am naturally enough anxious to know whether or not any private grower has succeeded better than myself. In my own neighbourhood I am acquainted with several orchard houses which have done much worse than mine, and that have been in some cases converted into other purposes; but I am anxious to see mine succeed, and have no reason to find fault with the results of trees planted out, as mine must be admitted to be. What however I want to know is, where really good fruit is grown in pots of a reasonable size that can be moved from place to place; for I do not hesitate to say that mine on trees in pots is a failure. I again repeat that I hope to see some examples of fruit that has been grown in pots at the forthcoming Crystal Palace Show, and my opinion with regard to it will be guided to a great measure by what is there exhibited. Ely and Bury St. Edmunds are too far off for my going to see. Can nobody mention a private garden or two within 40 miles of London, and not more than two miles from a railway station, where such doubters as myself could be set at rest by what may be seen in the way of Peaches, Apricots, Plums, and Pears in pots, in the true sense in which this term ought to be applied? *E.*—I have had the management of an orchard house for seven years, all the trees in which are grown in pots with unvarying success. The house I allude to is only 25 feet in length and 20 feet in width, and it has produced from 70 to 100 dozen of fine well-ripened fruit each year. I have just weighed three Peaches, taken off a tree about 6 feet high, and find their collective weight to be 17 oz., one of them weighed 6¼ oz. As to the fruit dropping, I have never found that to be the case, but I am obliged yearly to take off large quantities, even as many as 200 off a tree. I have some Nectarine trees in 15-inch pots, now carrying over 80 fruit. As regards the advantages of pot culture, a greater variety of fruit may be had than by any other means; while every leaf is under the eye, and if properly managed the result will be an abundant crop. *H. Harrison, gr. to W. H. Penrose, Esq., Dewham, Essex.*—I must confess that, as far as my limited experience goes, I am no great advocate for the culture of orchard-house trees in pots, but that they can be grown successfully in that way I can bear testimony from a sight I saw not two hours before penning this. Happening to go into the garden of Col. Langley, Esq., of Speen Hall, near here, the gardener (Mr. Gardiner) took me into his orchard house, which is a small lean-to structure, formerly used as a greenhouse, and built in the old style, with heavy woodwork and sliding lights. The length of the house I should say is about 20 feet, and along the front stood some seven or eight Peaches and Nectarines in pots, standards, with about from 3 to 4 feet of clean stem. These trees had borne each from two to three dozen fruit. One Nectarine tree had the whole crop on it; some of the rest had been gathered, but enough remained to show what they had been—and such fruit! large and well coloured—in fact, finer fruit I never saw. The trees are, I believe, in 14-inch pots, and have never been repotted since put in as maidens in the autumn of 1864. They are annually top-dressed, and certainly the healthy, vigorous foliage and short-jointed wood give promise of prolonged fruitfulness. In the same house were other trees in pots, dwarf bushes and pyramids, which had with one or two exceptions borne heavy crops. I very much question whether an equal quantity of fruit could have been grown in this house on trees planted out, as, in addition to the trees in pots, the back wall and sides are covered with trees. Mr. Gardiner is a great advocate for standards, it being so easy to well syringe the under side of the foliage, where of course red spider, &c., is most troublesome. I can assure "E." that these trees have very much raised the pot culture of fruit trees in my estimation. *Wm. Windebank, Jun., Bevois Valley Nursery, Southampton.*

Violets.—Mr. Wills, Huntroyde Park, has not said (see p. 147) one word too much in praise of Viola cornuta, for when properly managed, it is one of the most beautiful things that ever graced a flower garden. This with Viola lutea var. and Viola montana var. would make a charming display alone in all weathers and situations. *John Tyerman, Botanic Gardens, Liverpool.*—Has Viola cornuta given satisfaction to those who have cultivated it? Of the few plants I have seem to be deficient of flower, and the colour is not by any means prepossessing. The habit, however, is good, and in a continuous line I have no doubt this Violet looks well; but, accustomed as we are to look on lines of Lobelia, Nierembergia, and other plants of that kind, we doubtless become fastidious. *E.*

Snowdrops.—Your excellent remarks (see p. 753) in reference to Mr. McNab's suggestion regarding the planting of Snowdrops have very much pleased me. I may add, however, that the plan of planting on Grass is by no means new. The grassy orchard has long been one of the favourite haunts of the Snowdrop. I have planted it in various situations, but by far the most effective have been woodland glades, by the sides of walks and drives, among grassy hollows and crevices, among natural and artificial cliffs and rockwork, and especially in cemeteries and private burying grounds. I never felt satisfied with its effects on purely dressed lawns, where the Grass has been kept constantly close cut, and where the keen edge of the scythe or mowing machine has too often cut away its life knot; although it has appeared once or twice, its vital powers became exhausted, and in such places its years too often become numbered. The Snowdrop is one of Nature's children, and must be treated as such if it is to be seen in perfection. At Kiell House, Cantire, the property of J. N. Fleming, Esq., there is a precipitous range of cliffs immediately in the rear of the mansion, partially covered with wood and intersected with serpentine walks. The entire face of those cliffs and edges of the walks have, at some early period, been planted with Snowdrops, which have now become completely established as if they were indigenous to the spot; in January and February these cliffs look as if covered with wreaths of snow, and at a short distance have a charming effect. The Snowdrop should be planted in Grass, and afterwards left undisturbed. Cottage frontages, school grounds, churchyards, city squares, and parks are appropriate places for Snowdrops. *J. Lothian, Cambeltown, Argyle.*

Apricots and Melons.—In your last week's issue, p. 805, for "St. Alban's," read Le Mans, a town in France. Mr. Debron's letter should have been dated Ely, August 20. *T. R.*

Lime for Peaches and Nectarines.—On reading the first paragraph of the article on this subject (see p. 802), I concluded the writer ("Excelsior") to be one of those amiable old gentlemen that one meets with in society who are always fearing—without any groundwork for their fear—something "most disastrous." On reading "Excelsior's" postscript, which happened to catch my eye, before I had finished the article, I saw that he must be young and unobservant, for in the article by "T. R." alluded to, it is distinctly stated that the gravel, sand, clay, and loam, of Sawbridgeworth, are all full of comminuted chalk. Where then is there any "discrepancy." "Excelsior" seems to have seen little, and to have thought less, of fruit tree culture. In Holland and parts of Belgium, Peach trees grow with enormous vigour in loose peaty soil. In the irony loams of Sussex they also make vigorous growth, and doubtless in other places where there is but a small admixture of lime in the soil they may flourish to a certain extent, but in no soil or site do they make such healthy fertile trees as in soils in which lime largely predominates. At Montreuil, which supplies Paris with the finest of Peaches, the soil is highly calcareous; the loam in the Royal Horticultural Society's gardens at Chiswick, in which is that fine wall which for some 40 years has always been covered with healthy Peach trees, is well charged with lime, as is the water. Some years since a most beneficial act was carried out by the Horticultural Society, with a view, I presume, of ascertaining the nature of some soils known to be highly favourable to the culture of certain fruits—the soil at Chiswick was analysed by Mr. Solly, and also some procured from Thomery, near Fontainebleau, so famous for its Grapes. Both, and more particularly the latter, were found highly calcareous. Every schoolboy knows that to the calcareous hills of France we owe our finest wines; every French fruit cultivator looks out for "la terre calcaireuse" for his orchard or his vineyard. This has been the custom for ages, and in the present day every educated and observant horticulturist knows that calcareous earth is the basis of sound fruit-tree culture. As to the deposit of carbonate of lime "obstructing drainage in pots"—after watering a Vine in a pot daily for six months with water highly charged with it, I found the deposit on the iron on which the pot stood to be only half a line in thickness. So much for the theoretic speculation. Your correspondent's attempts at philosophical wit are very weak, "unphilosophical, and wholly insufficient" to convince even the most inexperienced cultivators. Before he writes further about "assimilation, elaboration, and secretion," he should consult the "Theory of Horticulture," and paraphrase some of its contents. *Facile Princeps.*

Hybrid Ferns.—This is a term which I fear is too generally applied to what are known as accidental

varieties or sports, and I shall be glad to be furnished with information as to any authentic varieties that may have been produced by the crossing of two distinct species. That the hybridisation of Ferns is possible I do not doubt; but in a state of nature I believe it rarely or never occurs. And I am very doubtful if even in our crowded Ferneries, where so many species are intermingled, hybrids are often produced. They certainly do not occur so frequently as is generally supposed. That Ferns will sport abundantly we have ample proof in the great numbers of beautiful forms that now exist of our British species; and that sports come true to the parent forms from seeds is now well known to all who grow the different varieties of Athyrium, Lastrea, Scolopendrium, &c.; a certain proportion of which may always be depended upon to perpetuate the variety, particularly in the case of Lastrea Filix-mas cristata and angusta, and some others, which in general remain true to the form they assume in the first instance, though some of the normal forms will make their appearance. Athyrium Filix-fœmina vars. Frizelliæ and Fieldiæ can never be depended upon; in some cases but few of their varieties will be reproduced, and these are always liable to vary, or as it is termed, run out. For example, a very interesting variety from A. F.-f. Frizelliæ was presented to the gardens here by Mr. Glover, of Cheetham Hill, near Manchester; this has the contracted and rounded pinnules of the parent, with the addition of a large tuft or tassel at the end of each frond; this plant has continued to produce fronds, all like one another, during these past three years; but about three weeks ago it produced from the centre of the crown a luxuriant frond totally different from the others, and exactly resembling the variety named multifidum. We also cultivate a variety of Gymnogramma, which I have named "lanata hybrida;" it is intermediate in form between G. lanata and G. Mertensii, but I have no reason to believe it to be anything else than a sport from the former, as the Gymnogrammas have nearly as great a tendency to vary as the Athyriums, &c.
J. Tyerman, Botanic Gardens, Liverpool.

Societies.

ROYAL HORTICULTURAL: *Aug. 25 (Weekly Store).*—Prizes were offered on this occasion for the best exhibition of Vegetables. Mr. W. Earley, Digswell, received a 1st prize for a collection consisting of some 27 varieties. Conspicuous amongst these were good examples of what was called London Cauliflower, large red Potatos, and Brussels Sprouts, which considering the time of year were remarkably good. Associated with these were a large fine-looking Kidney Potato named Hard Cash, Salsafy, and Scorzonera. A useful variety of Vegetable Marrow, called Digswell Prolific, which is stated to have the merit of producing two fruit at one joint; Telegraph and Munro's Rubley Cucumbers; fine examples of Blood red and White Spanish Onions, the former a remarkably firm, white fleshed variety; Dewar's Beet, a fine shaped early variety, though as shown, somewhat deficient in colour; some large Hyde's and a fine dish of Mr. Laxton's Supreme Pea, of which we have on former occasions spoken in terms of praise. Mr. Hill, Highgate, also received a 1st prize for a very good collection of vegetables, amongst which were examples of Dwarf Beans, French cauliflowers, Cabbage, and some excellent Peas, Potatos, Carrots, &c. These were tastefully interspersed with varieties of herbs. Mr. Standish exhibited a beautiful collection of cut Gladioli; and to Mrs. Hook First-class Certificates were awarded for Fuchsias, Miscellaneous Plants, and Lilies; and a Second-class Certificate for cut spikes of Gladioli. Mr. Eastwood also contributed a basket of very fine flowers and remarkably large spikes of Tritonia aurea, measuring from 4 feet to 4½ feet high; also an extra prize for six spikes of the newer varieties of Potatos, among which Napoleon and Giant King had finely-formed tubers. A First-class Certificate was also awarded to the same exhibitor for a pleasingly-arranged bouquet, consisting of Pelargoniums Christine, Punch, and Madam Vaucher, lightly interspersed with green and edged with Fern fronds. Mr. Bartlett, of Hammersmith, showed some fine-flowered plants of Lilium auratum, and others.

MANCHESTER BOTANICAL AND HORTICULTURAL: *Aug. 24 and 25.*—The third and last show of the season, which took place in the gardens at Old Trafford, was in every respect a success. At this season of the year fruit and vegetables always form a very important feature, and florists' cut flowers, as Dahlias, Gladioli, Asters, &c., make gorgeous banks of colour of almost every shade. The plants shown on this occasion in the several classes were in first-rate condition. Orchids in fine health came from Mr. J. Dixon, Burnage, and Ainsworth in collections of eight, six, and single plants; and in each case the 1st prize fell to Mr. Turner, and the 2d to Dr. Ainsworth. In the first collections were healthy, vigorous, and finely bloomed plants of Aërides quinquevulnera, bearing three spikes of lovely flowers; Saccolabium Blumei, also showing wonderfully fine spike; and fine plants of Oncidium Lanceanum and Phajus albus. The same exhibitor staged several pots of Disa grandiflora, just expanding their lovely flowers; also a plant of Bouvardia staphicoflora finely in bloom. The plants which took the 2d place were also fine, but not nice healthy young plants well bloomed, and included a very fine plant of Odontoglossum hastilabium; and a good specimen of Mr. Day's variety of Saccolabium Blumei. Mrs. Cole & Son, Withington, showed a mixed collection of stove and greenhouse plants, to which an extra prize was awarded. It contained good specimens of Dipladenia amabilis, very deep in colour; the new Allamanda Hendersoni, with wonderfully large blooms, an infinely marked specimen of Alocasia macrorhiza, and well-grown Pancratium fragrans, all of which in every way deserving the 1st prize, which they received, showing Mr. Schloss, whose plant of Croton angustifolium was very fine, as was his Anthurium magnificum, Alocasia, and Yucca aloifolia variegata. There were two collections of Fuchsias, large plants, and so loaded with bloom that they made a fine display; the 1st prize was taken by Mr. P. Cadeville, Mr. S. Stafford, of Hyde, showed a very extensive collection of new and rare plants, for which he received an extra prize. The plants were not large, but consisted of many good and valuable subjects, choice Orchids, and fine-foliage species, as well as flowering plants. A collection of Tricolor-leaved Pelargoniums was shown by Messrs. F. & A. Smith, Dalwich, some of them beautifully marked and richly shaded; and a box of fine Balsam flowers was also shown by the same firm.

Cut flowers were very plentiful. Gladioli were exhibited in collections of twelve, eighteen, and six, and in each case the 1st prize was given to Mr. S. Yates. Dahlias were remarkably fine, and were shown in collections of thirty-six, twenty-four, and twelve. Mr. C. Rylance took the 1st prize in each class. Hollyhocks, Asters, and Verbenas were also shown in great variety; and in each case Mr. C. Rylance was the successful competitor.

Fruit was very plentiful and good; the Grapes being particularly fine. The 1st prize for Black Grapes was given to Mr. Capdeville, for fine examples of Black Hamburg; and the 1st prize for White to Mr. S. Ashton, for splendid bunches of Buckland Sweetwater. There were two remarkably fine bunches of Canon Hall Muscat, shown by Mr. T. Statter, of Prestwich, which, however, were not quite ripe. Messrs. Lane & Sons, of Berkhampstead, showed two large pots with Vines well covered with fruit. Peaches were very fine; the 1st prize was given to Mr. J. W. Pearson. The prize for Nectarines was given to Mr. A. F. Payne; that for Apricots to Sir C. W. Shakerley, Bart.; for dark Plums to Mr. J. Travis; for light Plums to Mr. H. Nixson; for Apples to Mr. A. F. Payne for dessert, and to Mr. C. Rylance for culinary varieties. Mr. Capdeville won the prize for a Melon, and Mr. A. F. Payne for Pears. Mr. C. Rylance was successful with the collection of vegetables.

The flower garden and grounds of the Horticultural Society were in fine condition, the large beds being filled with splendid masses of bedding plants of the most choice description; while in the houses the Victoria regia was in flower.

Notices of Books.

Manuel de la Flore de Belgique. Manual of the Belgian Flora. 2d edition. By F. Crepin. Brussels, 1866. 8vo. Pp. 384.

During the last few years there has been a great revival of the study of botany amongst the Belgians. In 1827 Dumortier published his "Florula Belgica," which was intended only as the prodromus of a complete description of all the flowering plants and Ferns of the country; but politics attracted him from botany; he became a Minister of State, and never carried out his plan. For a generation the few local observers were content to use the French and German handbooks. In 1859 M. Crepin, of Rochefort, who has since been chosen Professor of Botany at the State School of Agriculture at Ghent, published his first fascicle of "Critical Notes upon Belgian Plants," and this has since been followed by four others, all containing valuable observations on critical species, and the report of experiments on cultivation which bear upon the question of how far many of the supposed species which have been made out of the dismemberment of old specific types are really permanent in their characters. In 1860 he published the first edition of the book now before us, which was intended as a convenient handbook for general circulation at a low price, but at the same time including all the genera and species that grow in the country, so that they could be clearly recognised, and giving a general outline of the distribution of each. Since that date a Royal Society of Botany has been founded, which has organised excursions to explore the less known regions, and has published four annual bulletins containing a large amount of valuable critical matter. There have been issued several local floras and two rival series of dried specimens of critical plants, which have been largely subscribed for in England. And now M. Crepin has published a second edition of his Manual, nearly doubled in size, and bringing the information up to the present time.

A Belgian book is specially interesting to a British botanist, because there is so great a similarity between the plants of the two countries. The total number of species is rather less in Belgium than in Britain. They have about 1300 against 1450 for Great Britain and Ireland. They will have about 50 species which we do not possess, plants of Central Europe which do not reach us. But, on the other hand, we are more northern in position and have higher mountains, and have about 200 mountain and other plants which are not found in Belgium.

The area of Belgium is only 11,000 square miles, one-fifth of that of England and Wales, not twice that of Yorkshire. Within this compass we may define four tracts, different in geology and physical geography. The first is a region of limestone, not more than 300 square miles in area, which occupies the south east of the province of Luxembourg, and is somewhat similar in its flora to the hills of the north of England. The second is the mountainous tract of Belgium, the Ardennes, the termination in a western direction of the range which bounds the great Germanic plain on the south, which begins with the Carpathians and extends from east to west by way of the Sudetes, the Reisengeberge, the Erzgeberge, the Thuringerwald, the Taunus, and the Eifel. In Belgium it is a tract of hills of Silurian slate, the highest of which does not exceed 2200 feet, which lies between the Meuse and the Moselle, and occupies the south-west of the country. The third is a comparatively flat central region, in the southern half calcareous, and in the northern half argillo-arenaraceous, which includes the whole of Hainault and Namur, most of Brabant and Liége, the southern half of West, and the southern third of East Flanders. Brussels and Touraine are in the midst of the northern tract. Then comes a particularly flat northern region, which in the west is called the Campine, a region of moor and bog and marsh, with wide tracts of sandy heath, covered with brown and stunted Pine, which fills the province of Limburg and a considerable part of that of Antwerp. And in the east from the city of Antwerp, stretching eastward, by way of Ghent and Bruges to Ostend, are the Polders, a rich cultivated district, principally reclaimed from the sea by Flemish ingenuity and perseverance, with a coast-line bordered by low sand-hills, bound together by Triticum and Ammophila.

M. Crepin employs to a great extent, to distinguish species and genera, the dichotomous or analytical plan, first applied to botanical purposes by Lamarck, since used in France by Boreau, and now becoming daily more popular in England from the example of Mr. Bentham. The danger of the method lies in the fact, that if, in using the analytical couplets, the student once gets thrown off the right way, he is involved at once in a maze, from which there is no hope of extrication. And it specially behoves all who employ this plan to be very careful in correcting their printer's proofs. In his analysis of the Dog Roses, for instance, M. Crepin (or his printer for him) has transposed the index letters of the two alternatives of the very first couplet, a confusion which will we fear sadly puzzle the young Belgian amateurs who are attracted to this thorny (in a scientific as well as in a literal sense) genus.

Again, we are sorry to see names that have been completely forgotten and superseded, brought out from old books and substituted in place of those which have been accepted universally, as for instance Ranunculus sardous for hirsutus, Nasturtium fontanum for N. officinale, Barbarea lyrata for B. vulgaris. Where one name has been given and employed by authors of repute in one country, and another has obtained wide acceptance somewhere else, it is quite right that the law of priority should be scrupulously adhered to, but to do as MM. Ascherson and Crepin are doing is to ride an idea to death, and to make confusion instead of helping to prevent it.

In spite of these minor drawbacks, our readers will find that the book contains a full, clear, and complete account of Belgian plants and their distribution, in a cheap and portable form, and as such we recommend it cordially to their notice.

Florists' Flowers.

WHAT IS A FLORISTS' FLOWER?—You still object to exclude greenhouse plants from the category of florists' flowers, giving as a reason for doing so that the Auricula, an acknowledged florists' flower, cannot be successfully grown as such without the aid of glass, implying that this flower, although a florists' flower, must be considered as a greenhouse plant. But you maintain that the Auricula as a "border flower" is not a "florists' flower," implying that it may be grown in the open ground also; thus bringing it within my definition, which excludes true greenhouse plants; for no such plants can be grown in the open ground. The question is not, can the florists' varieties of the Auricula be successfully grown without the aid of glass? but, can the genus Auricula, from which these varieties have been derived, be grown in the open ground? It undoubtedly can. Therefore the Auricula is not a greenhouse plant. *A. T.* [Of course not: we did not say it was; but it is a half-hardy frame plant, and the difference between a frame and a greenhouse is only one of degree, which does not appear to us to affect the question of what is a florists' flower. Nor has "A. T." yet given any reason why shrubby plants should not be included in the category.—EDS.]

The Apiary.

IN reply to "A Determined One" (see p. 711), I beg to say that, with some courage and a little patience along with determination, he will I doubt not soon become master of bees, and then he will find the Stewarton hives easily mastered. He asks, "Under what circumstances could the box added be the fifth?" I thought I had already, in my former letters, made that plain enough, but in case not, I will give it a little more in detail; at the same time recommending him to, the perusal of the second edition of Mr. Neighbour's "Apiary, or Bees, Bee-hives, and Bee-culture." I will then begin with the management of these hives the year after stocking in what is termed here raised hives. He must bear in mind that, although four boxes comprise what is commonly termed a set, this number is by no means sufficient to insure success. After a stock has been wintered, which may have been in two or three boxes, the latter being often the case, it is the duty of the apiarian to examine his stock to see whether it has sufficient food, or, as it may happen, too much; to determine the number of bees and the existence of a queen, and to notice whether there be any internal damp. Should there be any of the latter, the hive must be well wiped and made as dry as possible; but if it has been rightly ventilated, which may be easily done by drawing all the slides and interposing some clean straw between it and the outside cover, there need be no apprehension. If all is right, attend to feeding in small quantities every night, or on alternate nights, until safe. If too heavy, and in two boxes only, give a third box with comb, which will afford the queen plenty of room for the deposition of her full complement of eggs. In about a month, a fourth box may have to be added, and, if the weather is then fine and likely to continue, a fifth one will soon be required, which will be a nadir if the honey season has not made its appearance, but a honey box if it has. When first-class supers are desired, I do not even draw one slide wholly. Sometimes, when honey is abundant, and all danger of the queen ascending is past, or when the combs are well extended, I draw many of the slides. When in two boxes, the plan is similar; nadiring to keep up the breeding till the honey season sets in, and supering and nadiring then to obtain comb, and, if possible, to prevent swarming. Sometimes I am very fortunate with supers, without nadiring at all; but no reliance can be placed on the plan. Nor am I sure of getting them well finished. The supers have generally to be taken off before being finished, or swarming would be the result. This is when working them in three boxes only.

"A Novice, but a Determined One" asks an explanation of the latter part of that sentence which says the queen does not venture on the outside of the combs so much as at the ends. He must be aware that, as a rule, in a strong hive, the middle of the central comb is the first place in which they commence breeding, and by degrees they extend their brood towards the end and to the adjoining combs, so that the queen has

to pass from one to another, gradually filling up empty space, so that her route is commonly round the ends of the combs. She occasionally requires a little rest. Watch how cautiously she leaves the throng followed by a retinue of a few workers, and retires to a quiet place at the ends of the combs. How easy then would it be for her to ascend to the super were the openings immediately above, whereas, being at the sides (and often the outside combs are either filled with honey or much enlarged), she is not so likely to venture on them. Sometimes I put on a super above the one already given. He asks my opinion on the 9-inch deep Stewarton hive. I consider it but an imperfect bar-hive, the proper working of which is difficult. Your correspondent, in his last sentence, asks advice when additional room should be added. After the eke has been removed (if it has been employed), the hive ought to be attended to with cautious feeding, to get the stock hive as soon as possible well forward and filled, which will depend on season and locality. A box with comb, or supplied with wax sheets, may then be added. The stock will, in a short time, be ready for another box, either nadir or super.

But judgment will be called into requisition at this time, knowing the state of both hive and weather. If the bee-master considers the honey season not quite at hand, and thinks that a full-sized box may be more than they can fill until it really sets in, a shallow eke with bars may be put under. After this is quite full the honey-box may be added, at the same time withdrawing the eke. To induce the bees to work up he must not forget guide combs. At first a number of slides must be drawn, after a while shutting them all in but one or two outside ones. I do not think it worth while to occupy space in exposing the blunders that many have fallen into, and will only say that if "A Novice" wishes to be successful with these hives he must follow the directions given as near as possible, using his own judgment and knowledge for what deviations he may have to make respecting the course of management. I would advise him not to ventilate the honey-box, to take care that the eke is never placed between two boxes, to allow one entrance only, and that at the bottom. Above all, to succeed with bees, remember that it is bees only that make honey, and although hives are made so as to render them suitable for deprivation and encouraging storing, without an abundant population a fancy hive has nothing whatever to do with abundant supplies of honey. *Wm. Thomson, Blantyre.*

Miscellaneous.

Drying Plants.—Twenty years ago, when botany was my hobby, I adopted a plan for drying my specimens which was both rapid and very effectual in preserving colours. I borrowed a tin dripping-pan from the cook, which was just the size of my sheets of blotting-paper. In this I laid the produce of the day's excursion between sheets of blotting-paper in the usual way, and when the pile was complete I covered it over with a layer of common scouring sand half an inch thick, so that the tin dish appeared to be simply full of sand. I then placed it on the kitchen fender, or on the hob, or in the oven if it were not too hot, and in three or four hours the whole batch of specimens was perfectly dried. It required a little care to take them out at the right moment, when they were baked just enough, and not too much; but this care being given, the success of the plan was perfect. Many specimens still in my herbarium bear witness to the superiority of such rapid drying over the old method. *F. T. M., Loughborough, in "Science Gossip."*

Calendar of Operations.

(*For the ensuing week.*)

The heavy rains which we have had recently have unfortunately greatly impaired the beauty of bedded-out plants, and even valuable specimen plants placed temporarily out of doors will soon be better under cover, should the weather continue stormy and wet. Before housing such plants, however, see that the drainage is in a state of efficiency, and that the pots are well washed. A little top-dressing will also give the whole an additional appearance of neatness. A few late cuttings of choice bedding plants may still be put in, and among these do not overlook the different varieties of Nosegay Pelargoniums, which are not only effective in beds and vases, but also make valuable pot plants.

FLOWER GARDEN AND PLANT HOUSES.

Importations of Hyacinths and other Dutch bulbs are now being made; those, therefore, who wish to have their flowers early should procure them. Orange trees intended for forcing for the decoration of the conservatory or greenhouse should now receive attention. These and Daphnes are invaluable for winter blooming, and should be largely grown for that purpose. Look carefully after red spider. It is easily got rid of by laying the affected plant on its side, and well washing the under sides of the leaves with the engine, applying the water with as much force as the foliage will bear.

ASTERS.—These will now be beautifully in flower in open borders. Truffaut's White Perfection is an extremely showy useful sort, as are also Victoria, rosy pink, and the different kinds belonging to the Giant Emperor class.

AZALEAS.—Get these now tied into form. In doing this, however, avoid too much formality. Also attend to the staking and training of specimen plants of other hard-wooded kinds as leisure time can be found for that purpose.

BALSAMS.—Keep these in beauty as long as possible. Do not let them suffer from want of water, remove all dead blooms, and be careful to keep the foliage clean and healthy.

DAHLIAS.—Exhibitions of these will now be held plentifully all over the country, and to procure fine blooms for them will test the skill and patience of many an amateur. Early flowers, from which it may be desirable to save seed, should have attention, and as they wither, the decaying florets should be extracted. Seedlings, especially weak, late-blooming ones, that give any evidence of merit, though they may not be quite up to the mark in every respect, should be taken care of, to be tried again, as high cultivation another season may induce a more favourable development of their good qualities.

HEATHS.—When watering these, do it thoroughly, so as to moisten the whole of the ball; also look sharply after mildew on comparatively soft-wooded varieties, and dust with sulphur directly the enemy is perceived.

HOLLYHOCKS.—Save seed from the best kinds. Some adopt the plan of removing the upper part of the spike, leaving six or eight of the early blooms. When the plant throws up four or five stems, and propagation of the variety is an object, one or more of the spikes of flowers may be sacrificed; the stem may be split, cut in lengths, with a bud in each, and placed under a hand-glass, taking care that the small portion of shoot retained is covered with soil, leaving the point of the bud exposed. Strong young plants may often be raised in this way.

FORCING GARDEN.

CUCUMBERS.—Where a supply is required during winter, vigorous young plants should be secured at once from seed, as plants that have been bearing through the autumn, however promising they may look, seldom answer well for winter fruiting.

PINES.—Be careful not to over-water fruit that is ripening. Endeavour to afford growing stock a steady bottom-heat of about 70°, and keep it well supplied with manure-water at the root, but avoid getting the soil too wet. As fire-heat will soon be necessary to a considerably larger extent than has been the case during summer, care must be exercised to secure a properly moist state of the atmosphere, keeping the evaporating pans or troughs regularly supplied with water, and moistening the floors, &c., frequently, as any sudden change from a moist to a dry state of the atmosphere would be injurious to growing stock, and also to plants swelling their fruit. Be as sparing of fire-heat, however, as circumstances will permit, and shut up early. Where young stock is grown in dung-pits care must be exercised after this season not to get the plants weakly through keeping them too close and warm; air should be admitted freely on every favourable opportunity, and sufficient command of warmth should be secured from the linings, to allow an opportunity of giving a little air at night and on warm cloudy days.

HARDY FRUIT AND KITCHEN GARDEN.

Look over gathered fruit frequently, in order to see that nothing is going wrong with it. Keep it as thin as possible on the shelves on which it is placed.

CABBAGE.—A sowing may now be made for spring use. Plant out those sown last month for Coleworts.

CELERY.—Earth up plants of this in an advanced state of growth, choosing a dry day for the purpose.

LETTUCE.—Sow Brown Cos and Hardy Cabbage for spring use, and plant out those sown last month in a warm situation, where they will be useful late in the season.

SPINACH.—Make a sowing for the winter and spring supply.

TURNIPS.—A sowing may soon be made of early Dutch for spring use.

WINTER GREENS.—Plant out these on Potato ground as soon as the crop is up, and provide against the supply being less than the demand.

STATE OF THE WEATHER AT CHISWICK, NEAR LONDON.

For the Week ending Aug. 29, 1866, as observed at the Horticultural Gardens

August.	Month's Age.	Barometer.		Temperature.					Wind	Rain.
				Of the Air.			Of the Earth			
		Max	Min	Max	Min	Mean	1 foot deep	2 feet deep		
Thurs	24	30·01	29·958	76	55	65·5	68	63	S.E.	05
Friday	24	30·09	29·972	77	48	62·5	64	64	S.	00
Satur.	25	30·01	29·909	74	49	61·5	64	60	S.W.	00
Sunday	26	30·01	29·883	69	56	62·7	64	60	S.	01
Mon.	27	29·85	29·748	76	52	63·5	65	61	W.	00
Tues.	28	29·80	29·410	71	57	63·5	65	61	S.	00
Wed	29	29·39	29·254	58	50	54·0	64	61	W.	90
Average		29·780	29·696	73·7	59·1	61·6	64·2	60·7		1·03

Aug. 23—Foggy, very fine, rain at night
" 24—Slight fog, warm and drizzly, very fine, rather cold at night
" 25—Slight haze, partially overcast and fine, very fine at night
" 26—Slight rain, very fine throughout
" 27—Cloudy and fine, very fine and dry air, low white clouds, cold at night
" 28—Dusky clouds, slight rain, cold at night
" 29—Cloudy, violent rain and cold, heavy rain in the evening
Mean temperature of the week, 1·4 deg. above the average.

STATE OF THE WEATHER AT CHISWICK.

During the last 10 years, for the ensuing Week, ending Sept. 8, 1866

Sept.	Average Daily Temp.	Average Nightly Temp.	Mean Temp.	No. of Years in which it Rained	Greatest Quantity of Rain.	Prevailing Winds.							
						N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.
Sunday..	2	71·6	47·5	59·2	17	0·11 in.	1	5	2	7	4	8	10	3
Mon. ..	3	71·5	47·6	59·7	17	0·49	3	7	3	7	6	10	7	3
Tues. ..	4	70·7	46·4	58·5	17	0·58	5	7	4	4	3	7	4	6
Wed. ..	5	70·1	47·1	58·6	16	0·40	3	9	8	—	1	6	5	8
Thurs. ..	6	69·8	46·1	58·2	18	0·70	1	10	4	—	1	16	7	1
Friday ..	7	70·2	47·5	58·8	18	0·55	1	8	6	1	6	13	5	2
Satur. ..	8	69·4	47·8	58·6	18	0·65	2	7	2	2	2	4	18	3

The highest temperature during the above period occurred on the 8th, 1865—therm. 89 deg., and the lowest on the 6th, 1850—therm. 30 deg.

Notices to Correspondents.

BLIND CAULIFLOWERS: *P P.* The fact that your Cauliflowers is blind most probably arises from the centre of the plant being either eaten out by slugs, or punctured by insects when in a young state. By way of prevention we use frequent dressings of lime and fine coal ashes mixed up together and dust them over the seed beds. The greatest care, however, should be exercised when planting out permanently, as the plants will then be large enough to show whether they are perfect or not; the heart of every one should therefore be examined, and doubtful ones should be thrown away. *C.*

CAMELLIAS: *Old Subscriber.* You ask what should be done with some fine large Camellias which flowered profusely last winter, and are now covered with large buds, and which have been in a cool Pean in a cool house. Keep the growth of the plants by resting them, and keep them in a cool airy greenhouse, giving abundance of water by and by, when the buds begin to swell rapidly.

EARLY PEAS: *W. Ignotus.* It will be better to await the publication of the results of the trials at the gardens at Chiswick.

ELEVATION ABOVE THE SEA: *S H.* 1, By the barometer, but the readiest mode is to apply for particulars of any given locality to the Ordnance Map Office, Southampton; 2, Yes. You should consult that work on the distribution of plants in Balfour's "Class Book." You will also find a review of the subject in "Popular Geography of Plants," edited by Professor Daubeny.

FOOT FUNGUS: *W. T.* Your Fungus is Sclerederma vulgare. It is far from uncommon, and nearly allied to the Puffballs. *M J B.—An Old Subscriber.* Your Mushrooms are the Horse-mushroom, Agaricus arvensis. It has not the fine flavour of A. campestris, but specimens in pastures are perfectly wholesome, and sold in great numbers in Covent Garden Market. One variety, called by some A. exquisitus (Boule de neige), is sometimes preferred abroad to the common Mushroom. *M J B.*

GLADIOLI: *Foster & Co.* The seedlings sent are very pretty border flowers, but not equal in quality to many named varieties, nor, as far as we can judge, presenting any striking novelty. No. 4 appears to be the most novel in character, but it is too small.

MANGEL LEAVES: *W E.* Your Mangel Wurzel leaves are studded with the eggs of some moth, which are a very pretty microscopic object. The eggs will soon be all hatched, and there are multitudes of little caterpillars crawling about. We fear that they must prove very destructive. The precise species could not well be determined from the minute black caterpillars. *M J B.*

MELON: *A Subscriber.* The native country of the Melon, as of many other long cultivated plants is not certainly known, but it is considered to be in the warmer parts of Asia and Africa. It has been cultivated in this country since 1570. Deficiency of flavour may sometimes be inherent, as the Melon is very liable to sport; but also the frequently to be attributed to bad seasons or unskilful management, amongst which latter class of influencing causes, a too copious supply of water may, as you suggest, un doubtedly be included.

MOSS ON LAWNS: *Tweed Borderer.* The growth of Moss on lawns may be partially prevented by frequent rakings with a fine toothed iron rake, conjointly with dressings of quicklime. This may be sufficient in the case of soils which have strength enough to throw up a healthy thick sward soon to smother the Moss; but in your case it appears that the soil is poor, and therefore the best way will be to apply liberal dressings of strong compost. Before doing so, however, let the Moss be well raked off, and if you have reason to fear that the Grass plants are not in sufficient numbers to form a sward, apply the dressing of compost immediately, and sow at once with fine lawn Grass seeds, which should be carefully raked in, and the ground levelled and rolled. With a favourable season, this will form a good covering before the frosts of winter set in. The compost may consist of equal parts of strong loam and pulverised well decomposed manure, with the addition of one part in four of soot, and if malt dust is easily attainable it may also be liberally added, thoroughly mixing all well together. When a sward is once attained a winter should never be allowed to pass without a liberal top-dressing of a similar compost, to which a little nitrate of soda will be an advantage. *C.*

MOULDS: *H V.* You have not sent a specimen of the mould, but its history is that of Botrytis Tilletii. You may possibly get rid of it by dusting it with flowers of brimstone (sublimed, not ground, sulphur). *M J B.*

MOUNTAIN ASH BERRIES: *S A J* wishes to know if there is any mode of preserving the berries of the Mountain Ash in bunches as they grow, for purposes of winter decoration. We do not know of any process by which they can be kept in a perfect condition. Has any one succeeded in so keeping them? They may be "preserved" in another way, and made into a jelly, which is highly appreciated with venison.

NAMES OF PLANTS: *J H.* No 1 is not "Asclephas curassavica," but Asclepias curassavica; 2, Tagetes signata—whether it be the var. pumila or not your specimen does not show; 3, Nepeta Mussinii; 4, Linaria cymbalaria.—*J W.* Empetrum nigrum.—*A B.* Rhus Cotinus, the Wig plant.—*A Meiklc.* Pteris semipinnata.—*L S X.* 1, Lastrea decomposita; 2, Pteris tremula; 3, Nephrolepis tuberosa; 4, Platyloma Brownii; 5, Lastrea Sieboldii; 6, not recognisable; sent an entire frond. Lastrea villosa is exotic.

PEAR LEAVES: *Dr M.* The affection on your Pear leaves is very common. It commences early in the year, and sometimes attacks the fruit. It seems analogous with the spongy bodies which grow so frequently on the under side of Vine leaves, and so long as it is confined to the leaves is not injurious to the crop.

PEAS: *J M, Forres.* It is impossible to say with certainty what your Pea is, but it seems to us, judging from the single pod sent, to be either Tall White Marrow or British Queen.

ROSES: *Old Sub.* Try Madame Domage, Victor Verdier, Baron Adolphe de Rothschild, Alfred Colomb, Reine de Danemarc in your exposed situation. In order to make Blairii No 2 blossom, thin out and shorten the shoots to about half their length, instead of pruning in the ordinary way.

ZONAL PELARGONIUMS: *G H S.* No doubt Mrs. Pollock is, strictly speaking, a Zonal Pelargonium (not Geranium), but it is something more. The Zonal Pelargoniums take their name from the horse-shoe band or zone of dark colour on the leaf, which zone suggested for the parent species the specific name zo-nale, or zoned. When the word in an Anglicised form, zonal, or zonate (not zo-nale, as we so often hear it pronounced) became employed for the purpose of classifying or grouping the garden varieties, it was applied to the original horse-shoe kinds, and to prevent confusion it should be restricted to these, except in so far as it may be used in combination to designate other groups, in which latter case Mrs. Pollock might be ranked as a "tricolor zonate," or, adopting Mr. Chater's idea, "versicolor zonate." We may add that while botanists and others may correctly speak of varieties of Pelargonium zonale (zonal-le), both cultivators and florists are wrong in using the designation Zonale (zo-nale) Pelargoniums. In the latter case the word should be zonal, zonate, or zoned.

COMMUNICATIONS RECEIVED: Prof. Caspary.—L. Cornock.—W. Woodward.—T. Buckham.—J. Cobbam.—Prof. Leeop.—Prof. De Candolle.—J. Collyer.

FOWLER'S PATENT STEAM PLOUGH and CULTIVATOR may be SEEN at WORK in every Agricultural County in England.
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CAUTION to FARMERS.—In consideration of Messrs. RANSOMES AND SIMS, of Ipswich, having agreed not to File a Bill against me in Chancery to obtain an Injunction to restrain me from using their Name or Trade Mark on Plough Shares, I, the Undersigned, EDWARD GIBSON, of Great Driffield, Iron-founder, hereby PUBLICLY APOLOGISE to them for having used their Name and Marks, and I hereby promise never to offend again in like manner. Dated this 15th day of August, 1866.
Witness: G. S. SHEFFIELD, Clerk to Mr. John Blythe Robinson, Solicitor, Beverley. EDWARD GIBSON.

THE ALBERT VETERINARY COLLEGE (Limited), Queen's Road, Bayswater, London, W.
Authorised under Royal Sign Manual.—Session 1866-67.
INAUGURAL ADDRESS on MONDAY, Oct. 1, at 3 P.M. precisely.
President—His Grace the DUKE of NEWCASTLE.
Principal—Professor JOHN GAMGEE, late Principal of the New Veterinary College, Edinburgh.
Professor of Veterinary Anatomy and Curator of Anatomical Museum—James Law, M.R.C.V.S.
Professor of Veterinary Physiology—William Duguid, M.R.C.V.S.
Superintendent of Pharmacy and Lecturer on Veterinary Materia Medica—Alexander Horne, M.R.C.V.S.
Professor of Chemistry—William J. Russell, Ph.D., F.C.S.
Infirmary Superintendent and Professor of the Art of Farriery—Joseph Gamgee, Sen.
Professor of Veterinary Medicine and Surgery—John Gamgee.
FREE STUDENTSHIPS.—As an inducement to make good progress in the essential studies of Anatomy, Chemistry, and Physiology, all Students entering the Albert Veterinary College not later than October 1, 1866, will be afforded an opportunity to compete for a Free Studentship in April, 1867.
FEES.—Perpetual Ticket for Winter Sessions, £26 5s; Single-class Ticket, £5 5s.
R. B. PUNNETT, Secretary.

SMITHFIELD CLUB SHOW.
AGRICULTURAL HALL, ISLINGTON, DECEMBER 10 to 14.
IMPLEMENT DEPARTMENT.
The LAST DAY for receiving Applications for Space for Implements and Machinery, &c., is OCTOBER 1.
Printed Forms of Application, with Rules and Regulations, may be obtained of Mr. DAVID PULLEN, Assistant Secretary, at the Office of the Honorary Secretary, Corner of Half Moon Street, Piccadilly, London, W.

SMITHFIELD CLUB FAT CATTLE SHOW.—The ANNUAL SHOW of FAT CATTLE, SHEEP, and PIGS, will be held at the AGRICULTURAL HALL, ISLINGTON, on MONDAY afternoon, December 10, and Four following Days.
Intending Exhibitors are requested to apply for Certificate Forms by the reference letters as under:
CATTLE.—Form A. For an OX or STEER (in any Class).
" B. For a COW or HEIFER (in any Class).
" C. For a BREEDING HERD.
SHEEP. " D. For a PEN of 3 WETHERS (in any Class).
" E. For a SINGLE SHEEP in Extra Stock.
PIGS. " F. For a PEN of 3 PIGS (in any Class).
" G. For a SINGLE PIG in Extra Stock.
ENTRIES for LIVE STOCK CLOSE NOVEMBER 1.
Prize Lists, Forms of Certificates, and all information may be obtained on application to Mr. DAVID PULLEN, Assistant Secretary, at the Office of the Honorary Secretary, corner of Half-Moon Street, Piccadilly, London, W.
N.B. All communications respecting the Show must be addressed to the Assistant Secretary, as above, and should bear outside the words "Smithfield Show."

The Agricultural Gazette.

SATURDAY, SEPTEMBER 1, 1866.

IT is with sincere regret that we have to announce the death of JOHN HALL MAXWELL, C.B., late Secretary of the Highland and Agricultural Society. The record of his most useful and distinguished agricultural career was given in our columns only a few months ago, on his resignation of an office which he had made fruitful of good service to the agriculture of his country beyond all former experience of the great Society in connection with which it was held. We refer our readers to the fuller biographical notice which we have given in another page from the columns of the *Edinburgh Evening Courant*.

Mr. MAXWELL will be greatly missed and lamented by Scottish agriculturists. Never have greater powers been more earnestly or more successfully devoted to their service than those which he displayed during his long connection with their National Society.

THE accounts given at the West Dereham Ram-letting last week of Mr. AYLMER'S experience in chloroform as a cure for the cattle-plague forms another curious chapter in the history of alleged remedies for that fatal disorder.

It appears that Mr. AYLMER'S herd consisted in the spring of 106 Shorthorns. Now they are reduced to 8 bulls, 11 cows, 2 two-year-olds, 12 heifer calves, and 12 yearling heifers in calf; in all 45. It is a great satisfaction that so many have been saved. The proportion of recoveries, assuming that the whole herd was attacked, is very much larger than has been generally experienced; and Mr. AYLMER states that if his herd had been all common cows, and not in the high condition in which the pedigree cattle will keep themselves, he would have saved nine-tenths of them.

This, of course, is a matter of mere judgment, and must be taken for what it is worth. Certainly the earlier experience of the remedy was encouraging. The first animal struck, a cow, was killed after 12 days. Then followed eight 2-year-old heifers, all of which recovered after eight inhalations of chloroform having been administered each day. Then six young bulls were attacked, the fever in these cases entering into a new phase, which was not understood till some had died, and the others were too far gone to be curable. This phase was inflammation of the kidneys, bladder, and urinal canal. Specific treatment with reference to these altered symptoms appear to have been successful in only two or three other instances. A number of examples are described, in some of which the inhalation of chloroform appears to have been successful, and in others it has failed. Thus:—

General Hope, a Booth bull, hired at 200 guineas, was attacked and soon succumbed. He had a single inhalation the 1st day, two the 2d, three the 3d, and was then given up as hopeless, and killed on the 4th day.

Thorndale Duke, a young bull, was taken on the same day as the above. He had eight single inhalations, six twice a day, then a single one, then two twice, followed by six more single ones, when he was cured, and he has since recovered so rapidly that he is doing duty among the cows in open pastures.

But the main and leading fact on which any hopes can be built of treatment by chloroform being effectual, is that out of a herd of upwards of 100, nearly 50 are survivors. This is sufficiently encouraging to make one desire a full and detailed report of his experience, and this we hope that Mr. AYLMER will be induced to give. It makes one doubtful of the alleged remedy when we hear that it matters not whether the ounce, which is the prescribed quantity, be inhaled or swallowed! but something like that is told us in the report. A brother farmer mistook the instructions that were given him, and "an ounce was given to each animal internally! The effect, however, was—the cows were cured."

On the whole, however, the history is sufficiently interesting and encouraging to make us desire it in full detail.

THE Short-horn Sales last week suffered, no doubt, from the unfortunate weather. Mr. SHARPE'S sale (at Courtlands) of 49 head, averaged 32*l*. 17*s*.; Mr. SMYTH'S sale (at Wadhurst) of 66 head averaged 23*l*. 14*s*. 9*d*.; and Mr. HOLLAND'S (at Dumbleton) of 54 head of all ages averaged 23*l*. 4*s*. We see that other three sales are announced by Mr. STRAFFORD during the next fortnight: Mr. HETHERINGTON'S at Middle Farm, Brampton, Cumberland, on Sept. 6; Lord RADNOR'S, at Coleshill, Berkshire, on Sept. 13; and Mr. GRAHAM'S, at Yardley, Birmingham, on September 19.

Visitors to Coleshill will see capital management, one of the very best homesteads we know, and an excellent herd of pure-bred Short-horns, from which a selection of 56 head is to be sold, owing to excess of stock. The herd has won many distinctions of late years, and in particular received the prizes at the Agricultural Hall last December awarded to the best cow or heifer in the yard.

THE affection to which Turnips are liable, known as Anbury, is so interesting, that any facts tending to elucidate its history can hardly fail to be of interest to the agriculturist.

By Anbury we here mean that malformation of the root which results in warty excrescences, tumours, and putridity, as distinct from the mere branching or forking of roots, the former, indeed, being diseased, and the latter degenerate roots.

It fortunately happens that all farmers are not acquainted with Anbury, as it only occurs with those who have the management and cultivation of sandy soils; and so decided is this line of demarcation that, in the large and widely-extended district in the centre of England, known as the Cotteswold hills, Anbury is almost unknown, and in truth so it is in any extensive sandy deposit; but as we leave those hills and get on to higher deposits, as they dip towards the south, we meet with some rounded eminences or mounds at the base of the Oxford clay, capped with the sands belonging to the Kelloway rock deposit, and here, in these isolated spots and merely as far as the sands extend, Anbury is too prevalent. We examined an instance of this kind some years since in a crop of Swedes at Aston Keynes, and so sharp was the line of demarcation, that where the sand rested on the cornbrash only a field or two of Turnips were liable to Anbury, but in the limestone brash it was never seen; and further, as an evidence that the absence of lime as well as the presence of sand has to do with the matter, we were shown a portion of a field of Turnips on the sand quite free from Anbury, because lime had been used as a top-dressing.

Now, bearing these facts in remembrance, with other well-known observations upon this curious subject, we were not a little interested in observing the growth of roots in Dorsetshire, and more particularly on that thick deposit by which the inferior oolite of that county is underlaid in the fine light-land farming district between Yeovil and Sherborne. Here the sands which crop up to the surface over hundreds of acres are liable to Anbury, but only where the sands are, so to speak, most sandy, as where they are intercalated with seams of lime, the remains of decayed mollusca, as is not unfrequent, or where they are visited by the oolitic brash, Anbury does not occur, or if its cause be there, as we shall presently notice, the effects are by no means so palpable.

We have hitherto viewed Anbury as confined to Turnips and Swedes, crops grown for their roots; but a few days since we were led by a neighbour into a field of Rape, a large portion of which, instead of presenting the fine green colour and vigorous growth indicative of health, was stunted, and the tops had the purple hue of collapse. On taking these up the roots were found to be malformed to as great an extent as ever we saw in root crops.

The field in which these occurred was on a very gradual slope, and the higher half of it was almost, if not quite, free from Anbury, and presented a fine healthy plant at the period of our visit, the first week in August. How is this difference accounted for? Simply by the fact that the upper part of the slope consisted of limestone brash, the lower being the pure sands.

Having pointed out the situation in which Anbury occurs—and it is wonderful how uniformly it keeps to sands—we now proceed to examine the manner in which the injury commences and is carried on.

On examining the injured roots of all Brassicaceæ grown in these sands, we find the early stage marked by brown erosions, in the upper parts of the tap-root in which are found ensconced small white maggots: these are the larvæ of a species of Tipula, gnat, which are thus described by CURTIS:—

"These larvæ are slender, cylindrical, shining, and pale yellow; they taper gradually to the head, which is very pointed, with two black lines on the crown and two horny spines or jaws at the mouth; the body is composed of about 12 segments, thickening towards the tail, which is blunt and rounded, with two brown spots, being the tips of two tubercles; they are about five lines, or not quite half an inch long."

He states in another place "that the maggot lives in small families in the putrid or moist portions of the bulb." Here it seems he had very bad cases before him, but not the beginning of the malady, or he would have referred to them in the erosions just mentioned; and so, with such cases before him, he ascribes the diseased condition to the following cause. He says:—

"I think it is pretty clear that certain conditions of the soil, induced probably by the repetition of certain crops, and not insects, are the cause of Anbury; the enlargement of the lateral roots, which become woody, stops the flow of sap to the bulb: it consequently ceases to draw nourishment from the soil, when it dies and rots in the earth, and becomes a fit nidus for a variety of insects."

Here, then, we see that this careful observer deems the insects to be the result of the malady; but as a proof that the larvæ of dipterous insects, perhaps of more than one kind, will attack young and undecayed roots, it will be sufficient to state that we have found them at the roots of Swedish and common Turnips only two or three weeks old, and we feel quite sure that it is the injury that they do the young, unformed bulb, thus stunting and checking the flow of the sap upwards through the roots to the bulb, that causes the malformations we so often observe in the positions indicated; in fact, the remarks from CURTIS sufficiently explain what such insect attacks in young plants, whether of Turnips or Cabbage, might do, and such galls and excrescences are analogous to the extraordinary malformations seen in Roses and other plants as the result of habitation by insect larvæ.

But then comes the question, Why do not all Turnip crops suffer from this cause? Surely, it may be remarked, flies have little regard for the

nature of the soil? To this we might reply, that Carrots and Parsnips in sands are attacked by a fly whose larvæ live in the body of the root—the *Psila Rosæ*—the Carrot fly; and Turnips on the oolites are attacked by galls on their sides called "Turnip warbles," from which they are mostly free on the sands, and thousands of instances may be quoted of insects preferring certain soils.

There surely can be no wonder in this when plants with which they are connected do the same; for example, in all districts wherever we have seen Anbury we have found some or all of the following weeds to prevail:—

1. *Spergula arvensis*, Spurrey.
2. *Scleranthus annuus*, Knowel.
3. *Papaver Rhœas*, Red Poppy.
4. *Chrysanthemum segetum*, Yellow Chrysanthemum.
5. *Silene anglica*, English Catchfly.
6. *Hordeum murale*, Wall Barley.
7. *Holcus mollis*, Soft Grass.

And as regards this last, it is curious to note that in the Wiltshire instance the plants 1, 2, and 5 were found on that isolated sand bank, when they are not found for miles around, and certainly not on any stiff clays or calcareous soils. They are always indicative of sand.

Now, as regards these weeds, it is quite certain that a heavy dressing of lime to the soil where they are found to grow will keep them in check. We know not how it is that lime—a necessary ingredient, by the way, in good soils—keeps these insects in check, but there seems reason to believe that in the best root soils—and these purer sands are not such—if the insect attacks the root it more readily gets over the injury, but in the sands they are so weak that they ultimately succumb, and decay is commenced, and the family of flies are all fond of decaying elements, and seem indeed thus destined to act as scavengers of nature,—and certes, the bad smell of these diseased roots is intolerable; any specimen taken home to be sketched is a nuisance to the whole house while sitting for its protrait.

We thus can quite believe that these decaying elements are necessary to the well-being of the fly; they thus become propagated in such soils as would aid in putrefaction, and are ready to attack such plants as can be made to produce the desired food; and thus, without saying that these larvæ do not attack Turnips in other than sandy soils, we are quite prepared to state that they do so abundantly in the sands, and we have traced the injury in all its stages, from the first gallery mined by a maggot, before the bulb has begun to form, until malformation and putrefaction have fully set in; and we would now make a few remarks upon the different conclusions which CURTIS and others have arrived at on the subject.

It would appear that they have but few, if any, opportunities of examining the beginnings of the attack. Naturally, fine samples of the affected roots have been sent them. So on looking at the tumours, as no maggots were found in them, it was hastily concluded that they had nothing to do with the evil: thus, CURTIS says:—

"On cutting open the tumours I found them solid, and with the exception of a few small holes eaten here and there, which were like the erosions of the wire-worm, of which I detected one, they did not exhibit the slightest signs of any insects inhabiting them, even in an embryo state; the centre of the tumours was discoloured, and the texture perfectly fibrous or woody."

The truth is, then, at the time when the tumours are formed, the larvæ which have formed them have hatched, and cannot then be traced; and we quite think that at this stage other flies step in and live in the decaying bulb; and hence it has been hastily concluded that flies are not the cause of the malformation, but a result; and cultivation, manures, and various extraneous matters, have been wrongly blamed.

It is, however, quite true, that good cultivation, which includes manuring with all the elements which Turnips require for their growth, will carry them through the attacks of these as of other flies. *B.*

THE LATE JOHN HALL MAXWELL, C.B.

WE deeply regret to announce the death of Mr. Hall Maxwell of Dargavel, which took place on Saturday, at Torr Hall, Bridge of Weir, Renfrewshire. The intimation will be received with sorrowful interest by all classes of the community, and especially by those engaged in agricultural pursuits, with whom he was brought so much into contact as Secretary of the Highland and Agricultural Society of Scotland. From that office, which he filled for twenty years with great zeal and vigour, and with splendid success, he had just retired, amidst the thanks and plaudits of the whole agricultural community. He had withdrawn into private life to enjoy, it was hoped, long years of well-earned leisure, broken only by the duties he was still invited to discharge as one of the extraordinary directors of that society which in a more active capacity he had so faithfully served. It has pleased Providence to close his life almost simultaneously with his public career, and to call him to a deeper repose than his friends had contemplated for him.

One of the reasons of Mr. Hall Maxwell's resignation was the sense he entertained that, though he had scarcely passed the meridian of life, his constitutional vigour had become affected by his active life. Since his resignation, insidious disease had stolen still more rapidly upon him than before, and for some months it was known that his health had given way. About the middle of June, in writing to a friend, he said his worst symptoms were fainting fits. In July he had had two most dangerous attacks, but at the end of the month there was some prospect of improvement. At the beginning of August, however, he became worse, and incapable of attending to any business. It is supposed that disease of the heart was the cause of death; but some difference of opinion was entertained by his medical advisers here and in the west as to the precise nature of the disease which was undermining his constitution. He was attended while in Edinburgh by the late Dr. Duncan, and latterly by Dr. Robertson, Albany Street.

The late John Hall Maxwell, Esq., of Dargavel, in the county of Renfrew, Companion of the Bath, Deputy-Lieutenant of Renfrewshire, and Justice of the Peace, was born in 1812, and married in 1843 Eliza Anne Margaret, daughter of Thomas Williams, Esq., and grandniece and heiress of Admiral Sir Thomas Williams, G.C.B., of Burwood House, Surrey; and has issue William, born 1847, Helen, Anne, Edward, Mary, and Egidia. Mr. Hall Maxwell represented the Dargavel line of the knightly family of Maxwell of Newark, a cadet of that of Poloe so early as A.D. 1401. In the male line he was the chief of the name and family of Hall in Scotland.

The deceased gentleman was in 1835 called to the Scottish bar. He had, however, given himself more to the pursuits of a country gentleman than to those of the honourable profession of the law, and in 1846 he was chosen secretary of the Highland Society of Scotland, one of the highest distinctions to which a Scottish gentleman can aspire, as a man of business and affairs. The first show which he conducted was at Inverness in the autumn of that year, and even at that early period he won golden opinions for his excellent and successful management on the occasion. It was at Inverness in 1855 that he eventually laid down the office which he had filled during a long series of highly successful shows. Shortly afterwards a successor was appointed to him in the person of Mr. Macduff of Bonhard; but it will be remembered that no sooner had that gentleman accepted the position than he was stricken down by a malady from which he never recovered, and which resulted in his death in March last. During Mr. Macduff's illness, Mr. Maxwell continued to discharge the duties of secretary, and it was not till the appointment of Mr. Fletcher Menzies in May last that he was eventually released. Mr. Hall Maxwell's last attendance was on the 9th of May, and he never returned to the office of the society.

During Mr. Hall Maxwell's period of office, the Highland Society had made a prodigious advance in all matters affecting the agriculture, manufactures the untiring vigour with which the secretary promoted its work. It increased in membership from 2620 to 4200, and its capital had increased from 34,000*l.* to about 50,000*l.* The agricultural chemistry department, and the agricultural education department had been organised under his management, the general shows were greatly extended in their scope, and the district shows were also placed on a better footing. In addition to his other labours, he edited the Transactions of the Society; and it will be remembered that from 1854 to 1857 he conducted the Agricultural Statistics of Scotland for the Board of Trade, a work which it is much to be regretted was not continued after the last-mentioned date. On retiring from the office of secretary, Mr. Hall Maxwell was presented with a testimonial, for which the contributions amounted to the handsome sum of 1650*l.* The presentation was made on 17th January last by the Duke of Buccleuch, in the form of a massive piece of plate and a purse of 1000 sovereigns. In addition to this tribute from individual members of the Society, Mr. Hall Maxwell received a more official recognition of his services, in being requested by the directors to sit for his portrait to be hung up in the Society's hall. The execution of the portrait was entrusted to Mr. Gourlay Steell, to whom Mr. Maxwell gave sittings for the purpose.

The following record appeared at the time in the Transactions of the Highland Society relative to Mr. Maxwell's resignation:—

"The principal event which has occurred during the past year in the internal management of the Society has been the resignation of Mr. Hall Maxwell, who for 20 years has discharged the duties of secretary. The high sense which the Society entertain of the value of that gentleman's services cannot be better illustrated than by transferring to these pages the following extract from the minutes of the directors, dated 6th September, 1866:—

"'The directors cannot accept Mr. Hall Maxwell's resignation without recording in their minutes the deep sense which they, in common with the members of the Society at large, entertain of the zeal, energy, and ability with which that gentleman has for 20 years discharged the duties of secretary. The progress which the Society has made, both financially and numerically, since Mr. Maxwell's appointment, and the increasing success which has attended the Society's annual Shows under his administration, afford the best proofs of the efficient manner in which the office of secretary has been filled. None but those, however, who have been associated with Mr Maxwell in the conduct of the Society's affairs can fully appreciate the great earnestness with which he uniformly applied his admirable business talents to the discharge of the multifarious duties of his office.

"'The directors further resolve that, as a suitable and permanent memorial of the general approval by the Society of Mr. Hall Maxwell's services, he should be requested to consent to have his portrait executed, at the Society's expense, by an eminent artist, and that the picture when completed should be hung in the Society's hall.

"'This minute having been reported to the general meeting of the Society on the 17th of January 1866, was, on the motion of his Grace the Duke of Buccleuch, cordially and unanimously adopted as the resolution of the Society. It is highly honourable to Mr. Hall Maxwell to observe that a similar expression has been given in different districts of Scotland to the feelings entertained towards him by all classes of agriculturists.

"'The last meeting which he attended in his official capacity was held at Aberdeen on the 24th November, in reference to the show to be held there in 1868. At that meeting it was moved from the chair by the Earl of Kintore, seconded by William M'Combie, Esq., Tillyfour, and unanimously resolved—

"'That this meeting, representing the various agricultural societies of the counties of Aberdeen, Banff, and Kincardine, as well as the members of the Highland and Agricultural Society of this district, now assembled among them the presence of Mr. Hall Maxwell—gratefully record their deep sense of the valuable services which, in the constant and faithful performance of his multifarious and often arduous and anxious duties, as secretary of the Highland and Agricultural Society of Scotland, he has for that capacity, during a period of over 20 years, rendered to the progress and interest of agriculture—and thankful for this fitting opportunity of expressing their special acknowledgments of Mr. Maxwell's great kindness and urbanity, and of his ever willing, prompt, and generous aid in furthering the objects and prosperity of the association—and their sincere trust that, in now retiring from his hitherto active and responsible duties in the cause of agricultural advancement, Mr. Maxwell may for many years enjoy every comfort and happiness.'

"It may also be mentioned that, in grateful appreciation of the zeal, energy, ability, and success which he has discharged the duties of secretary, Mr. Hall Maxwell has been presented by no fewer than 830 members of the Society, with several valuable articles of plate and a purse of 1000 sovereigns."

Many other farmers' clubs throughout Scotland followed the example of Aberdeen in sending to Mr. Hall Maxwell these expressions of their gratitude and regard.

The following notice of Mr. Hall Maxwell, taken from the "Farmers' Magazine" of September, 1858, will be read with regretful interest, now that the subject of it has his name recorded in the obituary column:—

"John Hall Maxwell of Dargavel comes of an old Scotch family, that—we gather from 'The Statistical History of Scotland'—has been settled in the county of Renfrew for nearly 600 years. Mr. Maxwell was himself born there in 1812, and having adopted the law as a profession, was called to the Scottish bar in 1835. The characteristic energy of the man never allowed him to occupy the ranks of the briefless. He enjoyed, indeed, at one time considerable practice, more particularly in such business from Scotland as came before committees of the House of Commons. In the year 1845, however, Sir Charles Gordon, the then Secretary to the Highland Society, died, and Mr. Hall Maxwell was induced to offer himself for election, as well as with a predilection for agricultural pursuits, became a candidate for the appointment. He was elected to it in the January of the following year; and at once abandoning all further employment at the bar, he has since been entirely engaged in the active duties of the office. It is not too much to say that he has done so with the most signal success. Mr. Maxwell gives a high reading to the office of Secretary, and his influence and example are something remarkable. The best patrons of the Society have come put themselves under his direction, and it is amusing at times to see how dutifully a noble Duke or a lofty chieftain receives his orders as to where he is to be at such an hour 'to-morrow morning.' They all, proverbially, work well together, and none more zealously than their secretary will be found. The effect of this is far from a slight, significant and encouraging. During the last 10 or 12 years the Highland Society has progressed and prospered exceedingly. The funds have accumulated, its power has extended, and its constituency greatly increased. The Association now numbers nearly 4000 members, having added more than 50 per cent to that original support it traces back to. Still the Highland Society has been in active operation for the best part of a century, while it has embraced within its legitimate sphere of action many features which the common run of agricultural associations have carefully kept out of sight. So far, for instance, from interfering with any question before Parliament, it has promoted and been the chief agent in the adoption of many measures. One of the more recent and marked of its proceedings has been the recognition by the Society of the Scottish agricultural statistics—a question that has brought Mr. Hall Maxwell prominently before the general public. Nothing, perhaps, could speak better to the appreciation with which the institution and its chief officer were held by the farmers of Scotland than the readiness with which they answer the call made upon them, and the goodwill with which they assisted in carrying out the experiment. The machinery, organised and worked by Mr. Maxwell, consisted of a Volunteer Committee of somewhere about 12,000 practical men, representing every parish in Scotland. The result of their combined exertions was that, almost from the first year, very complete returns continued to be made, and at an expense far below what was expected by the Government. The annual cost was originally estimated at 6000*l.*, and such a limit would be found sufficient to defray the whole charge of both the conduct of the inquiry, the information was obtained at something about 3500*l.* a year. We have already said this was of the highest and most satisfactory description. All the good men in Scotland were more or less directly engaged in rendering it perfect, and certainly no 'innovation' was ever introduced or familiarised to a people under more encouraging auspices. It was just such a precedent and an example as a Minister would wish for. It is, however, an old story by this, how routine stepped in, and insisted on Mr. Maxwell explaining why he spent 6000*l.* a year when it was calculated he would require twice that sum. But something more than an explanation was needed. Indeed, the vouchers and receipts regularly furnished were such as to amply satisfy the most scrupulous. In fact, as a man of honour, Mr. Maxwell himself would be content with nothing less. There was, however, an attempt at petty interference and minute dictation that, equally as a man respecting himself and those associated with him, the Secretary of the Highland Society could not submit to. He held to other counsel but to relinquish his charge. When, moreover, Mr. Maxwell withdrew from the collection, the whole of his staff resigned with him, and the agricultural statistics were again all mystery and mere guess-work. It is even still very noticeable that whenever the subject is now introduced, people in or out of Parliament, some of the first men connected with Scot-

land are certain to speak to the integrity and usefulness of Mr. Hall Maxwell.

"Mr. Maxwell is a landed proprietor in, as well as a magistrate and deputy-lieutenant for, the county of Renfrew. In 1859 he was created a Civil Companion of the Bath; and in the same year he received a decoration—in lieu of the Cross of the Legion of Honour—from the Emperor of the French, in consideration for his services in connection with the Great International Agricultural Exhibition. These are high distinctions; but we question if Mr. Maxwell would not rank as his best reward the appreciation in which he is held by the members of the Highland Society."

The following account of the family is taken from the "Statistical Account of Scotland:"—

"Mr. Maxwell of Dargavel is the representative of two very ancient families in Renfrewshire, the Maxwells of Dargavel and the Halls of Fulbar. The family of Hall obtained possession of Fulbar by charter from James, High Steward of Scotland, the grandfather of King Robert II., which was confirmed by a corroborative charter from Robert II. in 1370; and one of its descendants followed James IV. to the ill-fated battle of Flodden, and fell there. The family of Maxwell was a cadet, but now represents the house of Newark. The eldest son of Patrick Maxwell, of Newark, by his second wife, obtained a charter of the lands of Dargavel, along with those of Rashiclee and Haltourdige, in the neighbouring parishes of Inchinnan and Kilmalcolm, from his father in 1516. One of his descendants was slain in the desparate conflict which took place at Lockerby, between the rival clans of Maxwell and Johnstone. John Maxwell, the proprietor of Dargavel, at the beginning of last century, entailed that estate, but, as both he and his brother, William Maxwell of Freeland, died without issue, the next heir of entail, John Hall, second son of Robert Hall, of Fulbar, and Margaret Maxwell, his wife, the sister of the entailer, succeeded under the title of Maxwell of Dargavel, and eventually he became, by the death of his eldest brother, the proprietor and male representative of the house of Fulbar. The present proprietor married the eldest daughter of John Campbell, Esq., of Possil, Dumbartonshire, by whom he has a numerous family.

THE CATTLE PLAGUE.

The following Returns were issued on Aug. 24 & 30:—

This Return gives the number of cases occurring in Great Britain which have been officially reported to this Department. The divisions of England are those of the Census. Column 1 only records the cases reported as having commenced during the weeks indicated by the headings. All "back cases" are included in Column 2.

Census Divisions.	1 Number Attacked.			2 Result of Reported Cases from Commencement of Disease.			
	Week ending August 4.	Week ending August 11.	Week ending August 18.	Attacked.	Killed.	Died.	Recovered.	Unaccounted for.
Metrop.	—	—	—	7,911	3,420	3,714	318	459
S. Eastern .	—	—	—	4,888	1,708	2,544	467	171
S. Midland .	35	24	10	20,907	8,307	10,072	1,541	387
Eastern Co.	9	1	32	11,531	5,481	4,869	780	401
S. Western .	6	—	—	1,845	739	828	271	74
W. Midland .	28	30	32	15,061	6,521	6,996	1,539	905
N. Midland .	9	7	7	19,934	10,998	6,271	1,226	539
N. Western .	50	43	28	73,479	26,452	35,043	8,494	3,491
Yorkshire .	14	21	29	34,670	8,011	18,360	5,938	2,361
North'mb'd.	—	—	—	8,636	4,951	2,613	974	118
Monmouth & Wales .	6	1	—	8,388	1,180	5,794	1,117	297
Scotland ..	*	—	—	46,861	6,263	28,088	10,767	1,803
	156	127	148	253,211	84,620	124,283	33,314	10,994

* The five "attacks" reported during the week ended the 11th of August from Thirdpart, West Kilbride, Ayrshire, have since been ascertained with certainty not to have been cases of cattle plague.

Back Cases reported in the week ending August 18:—South Midland Counties, 2. August 25:—South Eastern Counties, 8; North Midland Counties, 4.

The Return shows that 127 attacks were reported to have occurred during the week ended August 18, being a decrease of 34 on the previous week.

Fresh outbreaks during the week ending August 18, took place in 20 farms or places where cattle are kept; the number of such outbreaks in the previous week being 33.

Two Inspectors who reported cases in the previous week had not reported in time for that return—viz., for the county of Salop, 1; and Leicester, 1. These inspectors reported 3 cases the previous week.

Last week's return shows that 148 attacks were reported to have occurred during the week ended August 25, being an increase of 21 on the previous week.

Fresh outbreaks took place in 17 farms or places where cattle are kept; the number of such outbreaks in the previous week being 20.

The number of "back cases" of attacks reported lately being now inconsiderable, no estimate in anticipation of such cases is made in the present return.

WHAT IS THE RENT OF LAND.—No. II.

In approaching this question from the tenant-farmer's point of view, we must first disembarrass it from some vexed points which have very much perplexed it, and especially the subjects of Tenant-right and Game-laws. There can be no doubt that a tenant on quitting a farm has a right to reimburse himself with the capital he has expended upon it during his tenancy, provided he can do so without deteriorating his landlord's property, and leaving it in worse condition than when he took to it, provided also that a sufficient consideration has not already been granted him by means of a reduced rent. It is I apprehend for the purpose of carrying out these provisoes that long leases are granted, and the covenants introduced into them by lawyers are framed. Unfortunately these legal meshes will include some cases and let slip others contrary to the intention of the contracting parties, and have given rise to so much ill-feeling that it is questionable whether a generous reliance on one another's good feeling and general sense of justice has not been found, when practicable, to be preferable in the end. I am of opinion that a referee on the spot could generally settle all matters of difference arising between an outgoing tenant and his landlord much more equitably and satisfactorily to both parties than a lawyer, who can be but little conversant with country management. The feeding of game for the landowner's sport must be considered as a part of the rent. If both parties are aware of the damage and annoyance caused by preserving, and have entered into an agreement with full notice of such drawbacks to the tenant's interest, there can be no reasonable cause for after disagreement. Each party to the bargain ought to be able to calculate and assess the deduction to be made on this head, and to settle the rent accordingly. I propose to discuss the amount of rent irrespective of these extraneous considerations, and irrespective of any capital sunk in permanent works, such as buildings or drainage, which belong to the landlord. We will suppose our tenant farmer then to have a head upon his shoulders, with sufficient knowledge of his business and sufficient command of capital to farm profitably, —What ought he to give for his farm?

During the time of great agricultural depression in 1821, when a large body of evidence was taken by a Committee of the House of Commons on agricultural prospects, the following propositions seem to have been unanimously acceded to,—that the average produce of English farms was 3 quarters of Wheat and 4 of Barley every alternate year; that the corn crop had to pay all the expenses of the fallow crop; that Turnips and cattle did not pay their expenses; and that the lowest price at which Wheat could be grown on such average lands was 65*s.*, or a gross produce of 10*l.* per acre, the inferior lands, which grew less than 3 quarters, being profitless under 80*s.*

It was also agreed that the gross produce ought to equal five rents. Hence a gross produce of 10*l.* would leave 2*l.* for the two years' rent, or 1*l.* per acre per annum., and the labour to produce these crops was then reckoned at from 3*l.* to 3*l.* 10*s.* per acre per annum. Now, since the introduction of new and improved implements, I think it may be taken that the expense of growing, marketing, and consuming the modern crops of roots and the increased produce of corn is not greater than was thus experienced in the alternate fallow crop of our fathers: and the tendency of rents has been to rise; so that although prices of Wheat seem to have settled down to about two-thirds of what was considered the minimum in 1821, there is no great present distress, and the condition of the tenant farmer has certainly not deteriorated.

On the other hand, let us look at his advantages. Though Wheat has fallen in price, other crops have maintained their highest value; Barley at 40*s.*, Oats at 25*s.*, Beans at 50*s.*, are as valuable as a crop of Wheat; and roots, instead of being a losing crop, are become very profitable. Meat, which used to be 4*d.* the lb., now sells readily at 8*d.*, and has for some time. There can be little doubt that a crop of 20 tons to the acre pulped, and mixed with straw chaff and cake or grain, will bring in a net return of 10*l.*, equal to the original Wheat crop. Neither can it be doubted that the manure resulting from the feeding cattle will increase the corn crop at least 1 quarter per acre, equal to another 2*l.*, so that every crop instead of every other one will now produce 10*l.* at the least. Taking still the same ratio of 1-5th as the fair rent, this will be at once doubled, or 2*l.* per acre instead of 1*l.* Therefore any valuer in assessing the rent of land will now have to consider not only what corn the land is calculated to produce in alternate years, but what quantity it may be made to produce when all the manure that can be made by the economical consumption of the straw and green crops has been added to it, to which he may add (as long as meat fetches 8*d.* the lb., or anything near it) such a proportion of the profit on rearing and feeding animals as in his judgment may remain after allowing the tenant full remuneration for the corn capital employed, for insurance against disease, and for the additional skill required in buying and selling stock.

It has been generally stated that 150 lb. of roots will make 1 lb. of meat; consequently a ton will at 8*d.* produce 9*s.* It has also been asserted, and I believe with truth, that the manure from the consumption of 25 tons of roots, with 1 ton of cake or corn, will produce two additional quarters to the acre in the succeeding corn crop. It is equally ascertained that a bushel of Barley will produce 8 lb. of pig-meat, at present prices equal to 40*s.* the quarter, without extra winnowing and marketing expenses, besides the manure for nothing. Upon these data not only will every crop a farmer grows produce 10*l.* an acre, but it will pay him better to sell most of his produce to his stock than to take it to the corn-market, and the only limit to his stock-feeding will be want of accomodation, or his land getting too rich for growing corn. This latter difficulty has already been experienced in some districts; and has been met by growing Barley after Wheat, in succession, to prevent the latter being spoilt by over luxuriance. But I am not writing a treatise on high farming; I merely adduce this as an example to show that I have not overrated the value of land, to encourage tenant farmers to make the most of the existing prices while they last, and to prove to them that though their farms may be high rented in comparison with old times, yet they can afford to give their landlord a better return for his capital, and themselves make a better investment than they could when meat was at 4*d.*, and Wheat at 80*s.*

That farming should ever be a very profitable concern is not in the nature of things; it is too agreeable an occupation. Many are content with a small return in consideration of its enjoyment, and many landlords would prefer farming their own land with a bailiff if they thought they should so make their rent; and I would advise the tenant farmers not to drive them to this alternative. They might find it more advantageous than they had been led to expect. Neither can it be expected that the production of meat can for any length of time pay more than the average profit of other trades. If it did, butchers would begin fattening for themselves; but for some time to come the fear of disease, if not disease itself, will prevent many from embarking in a new business, and make the present perhaps a more favourable opportunity than may again occur of entering on a farm—for sure I am, that in a short time the reasons I have given must operate, that the price of meat instead of the price of corn will be the measure of rent, and that on all farms adapted for rearing or fattening animals, the latter will be doubled. Commons are nearly everywhere enclosed. Villas and railways are encroaching seriously on the existing arable land. More people and with larger capital are daily looking out for investments. Above all, every part of England is now within easy access by rail or road to some good market or station, therefore all situations are getting more favourable, and farming is daily more approximating to garden cultivation, and what gardener could afford to grow Wheat? These circumstances must produce a revolution in the rotation of crops. A corn crop should not be taken unless the land is rich enough to insure 5 quarters to the acre; it must be improved by root crops until it will. And thus a general improvement in our system of farming will tend to raise rents, and a rise of rents will react on our present system. And should the Educational Committee of our Royal Agricultural Society succeed in improving the race of cultivators, they will soon see that every advance in farming is a benefit to both owner and occupier, increases the certainty of their returns, and consequently their security; they will learn that by intensifying their capital on a smaller area they will increase their produce, their profit, and their rent on a smaller comparative outlay and with less anxiety; that the highest farmed lands are most independent of seasons; and that any spare capital is better expended in bettering what they now have than in grasping at a wider range. Another illustration of the old doctrine that "what is worth doing at all will pay to do well." *J. B. M.*

INSTRUCTIONS FOR THE PLOUGHMAN.

(*Concluded from p.* 812.)

4. Having got our team harnessed and working briskly, let us inquire what means the ploughman has of regulating the depth and breadth he wishes to plough, and how he should use these means.

The plough may be made to go deeper by any of the following methods:—By shifting the back band nearer the shoulder, by lengthening the draught chain, or raising the muzzle of the plough; all these act by rendering the line of draught more horizontal, thus diminishing the uplifting force, which if increased would lift the plough out of the ground. The plough should be so regulated as to require no exertion on the part of the ploughman to put it in its proper course. The harness and the parts of the plough connected with the handle or muzzle should be placed so as to make the plough "swing fair." All these plans being to enable it to go deeper, the reverse of these must be had recourse to when we wish to plough shallow.

The breadth of the furrow is regulated by altering the position of the ring to which the draught tree is attached on the bridle of the plough, thus causing the coulter to move to the left or right. When, however, this mode is adopted, it causes the plough to heel over in some measure like a boat when the rudder is used to keep her on her course against the effects of a side wind, and therefore this plan is faulty. The proper and best way of increasing the breadth of the furrow is to lengthen the reins or rod which connect the two horses together, so as to allow the left-hand horse to walk further from the one in the furrow. By increasing the distance between the two horses we increase the breadth of the furrow slice; by diminishing it we are enabled to cut a narrower furrow.

5. We now come to the consideration of how land should be ploughed. The object to be aimed at is to loosen the soil and put it in such a position as will expose the greatest surface of the newly turned up soil to the influence of the atmosphere. This is accomplished when the furrow slice is rectangular and laid at an angle of 45°; but this can only be done when the breadth of the furrow slice bears to its depth the proportion of 10 to 7. A field ploughed 7 inches deep, the furrow being 10 inches wide, will expose a greater surface of new soil than if it were ploughed the same width with any other depth. This is most particularly the case in ploughing lea or Grass land. In ploughing fallow, the greater the depth of the furrow in proportion to its breadth, the more effective is the work; in that case the earth turned up is crushed and crumbles down on being moved by the plough.

Well-ploughed land has all the furrows perfectly straight, of the same depth and width, and all of them laid over at the same angle. If the regulation of the plough has been properly attended to, then the excellence of the work depends on the ability of the ploughman and the docility of his horses. When the plough is once arranged to "swing fair," the man has only to hold the plough upright and see that the horses move in a straight line, and the furrow will be straight and of uniform breadth and depth.

When a field is to be ploughed, the first thing to be done is to draw two furrows at the distance of one perch from both ends of the field, turning the slice out from the field; this forms the two headlands on which the horses are to turn. The object of these furrows is, that the plough may be entered at once at the proper depth and width, and on coming to the other end the plough may be lifted out at once, and not be allowed to scratch a furrow on the headland in turning; when turning on the headland the horses should walk straight out to the boundary of the field, and then turn at right angles till the plough comes opposite that part of the headland at which it is again to be entered, and the plough is at once entered at the proper width and

depth, and proceeds with another furrow. It looks well to see the headland without being scratched or furrowed by the plough in turning.

6. *The best Mode of Yoking a Horse to the Cart*—In the construction of the cart, care should be taken to give such a width between the shafts as will enable the horse to draw it even on the roughest road without rubbing his sides against them. The common width in the Gloucestershire farm cart is 22 inches; in the one-horse Scotch cart it is 32 inches, which is found to be the best distance.

In these carts the horse draws from staples placed in the shafts as far back as the horse's loins. In loading the cart the horse is made to bear a considerable weight upon his back, and thus only a portion of the load is left to be sustained by the wheels. It is this portion of the load alone (the friction occasioned by the weight on the wheels) which he has to overcome when he is hauling on a horizontal road. It is, however, in hauling up hill that the greatest advantage of this mode of loading the cart is more especially felt, for then the horse has not only to overcome the friction, but he has to exert an additional force dependent on the weight of the load and the angle of the ascent. If, then, we diminish the load on the wheels by placing part of it on his back, we enable him to exert his strength in two ways—not only by leaning against his collar, but also by exerting an uplifting or carrying power.

There is another mode of economising strength which is very much disregarded, and nowhere so much as in this county—the yoking of two or more horses in a line instead of abreast. In carts where this rule cannot be followed, it is best to make each horse trust to his own strength, by having one-horse carts. Three single-horse carts have been found to draw as heavy a load the same distance as a waggon with six horses in a row.

In the collieries in Durham it has been found that the strength of one horse in four, when drawing in a line, is lost, and that a single horse, working in a cart 12 hours a-day, will haul a ton of coals 26 miles each day in the week. *J. M.*

A TABLE SHOWING THE LENGTH TRAVELLED BY THE HORSE IN PLOUGHING, HORSE-HOEING, CULTIVATING, HARROWING, OR ROLLING AN ACRE; ALSO THE QUANTITY OF LAND WORKED IN A DAY AT THE RATE OF 18 AND 16 MILES PER DAY OF 8½ HOURS CONSTANT WORK.

Breadth of Work.	Space travelled in doing an Acre.	Quantity of Work done per Day, at the rate of 18 or 16 Miles.	
Inches Wide.	Miles.	Acres at 18 Miles per Day.	Acres at 16 Miles per Day.
The Plough:			
7	14½	1¼	1¼
8	12½	1½	1½
9	11	1⅝	1¾
10	9 9/10	1⅞	1⅞
The Horse-hoe:			
18	5½	3 2/10	3 2/10
20	4 9/10	3½	3½
22	4½	4	3⅝
24	4 1/10	4⅛	3 9/10
26	3¾	4⅜	4⅛
28	3½	4⅝	4⅜
30	3¼	5⅛	4⅝
32	3 1/10	5½	5⅛
34	2 9/10	6⅛	5⅝
36	2¾	6½	5¾
Cultivators:			
48	2 1/10	8⅝	7¾
50	2	9 1/10	8 1/10
52	1 9/10	9½	8½
54	1¾	9⅞	8¾
56	1½	10⅜	9
58	1 4/10	10¾	9¼
60	1⅜	10 9/10	9 7/10
62	1⅓	11⅓	10
64	1¼	11 7/10	10¼
66	1⅛	12	10⅔
68	1⅛	12⅓	11
70	1⅛	12⅝	11¼
72	1⅛	13¼	11⅔

THE STEAM PLOUGH WORKS, LEEDS.

DURING my visit to the Exhibition of 1851, walking amongst the implements there with an intelligent and thinking friend, we came to an instrument that was to dig the land by a sort of revolving spade, to be propelled by steam power. "This," said my friend, "seems very unlikely to answer, but some method by steam power of cultivating of the land is certainly very desirable. We should be able then to work the land at our pleasure, without depending upon the tedious work of cattle; it could be done at any time and in any quantity, just at the proper time. The trampling of horses would be avoided, and the attendant advantages would be more perfect cultivation, and consequently an increase of crops at a reduced cost."

However certain the truth of these considerations, their realisation was well nigh extinguished by the difficulties which for many years presented themselves to the agricultural engineer.

The Royal Agricultural Society felt the importance of the subject, and offered a prize of 500*l.* for the best application of steam power to the cultivation of the soil, and this tempting prize, though often sought for several years, remained unawarded, until at last the tackle of the late John Fowler satisfied the judges, and the 500*l.* prize was given to him. And although his machinery as then constructed fell short of commanding the attention to any great extent of the inquirers after steam machinery, yet from this award the history of practical steam cultivation may be said to have taken a fresh start. The general principle has not been altered, but the details have been so improved and perfected as quite to account for the favour the public have since bestowed upon it.

Although the following remarks apply exclusively to Fowler's system, I do not wish to disparage other applications of steam power to the cultivation of the land, but simply to give to the best of my ability a correct account of Fowler's Steam Plough Works at Leeds, without any reference to other makers; the latter of which I should be incompetent to speak about without a knowledge of their particular merits.

Not having been in Leeds since the meeting of the Royal there, and having attended the recent Yorkshire show, curiosity prompted me to run over to Leeds to see this steam plough manufactory, of which I am about to give a short account.

As far as I remember, at the Royal Agricultural Show at Leeds in 1861, these works were very circumscribed; the demand for the apparatus had scarcely amounted to anything of consequence; in fact the engines were made by a neighbouring maker, and only a part of the ploughs and anchors were made upon the small premises called the "Works."

Now, however, my guide informed me, everything belonging to the steam plough is manufactured upon the premises, and these works cover an area of 6 acres and a half, and find employment for between 800 and 1000 hands! In busy times for months consecutively one set of tackle has been turned out daily on the average, so greatly in five years has the demand increased. "But surely," I observed, "these great numbers cannot be used in this country?" "Oh, no," was the reply, "they go to all parts of the world." "Where, and for what purpose?" were our next questions. "They are now in use in nearly every county in England, but the demand for them abroad takes the greater number made. Among those sent into foreign countries, Egypt has taken very largely, where they are used very successfully for the cultivation of Cotton. South America employs them for the culture of the land for Cotton and Tobacco. The West Indies use them with the most marked advantage. Turkey has taken a considerable number, cultivating for Cotton, Coffee, &c. At the foot of the Himalaya mountains they are used very successfully for Tea. On the banks of the Ganges they answer for the preparing the land for Indigo, and in Holland for grain and Madder. In Austria, France, Bohemia, Prussia, Russia, Australia, and New Zealand, they are exported for the cultivation of the soil for grain.

So much are the advantages of this new branch of industry appreciated, that it has established itself over most foreign countries.

Before commencing a description of the works, I cannot suppress a reflection on the vastness of the advantages of this new invention to the whole world, and to this country in particular.

Those who will consider the purposes for which Fowler's steam plough are employed in foreign lands, will find that they are invariably used in the cultivation of such produce as is consumed or worn very largely in this country. Whether it be corn, Tea, Indigo, Coffee, Cotton, Sugar, or even Tobacco, the people of this country are largely interested in the increased production of each one of these several articles.

One great reason for the use of steam power in the burning East is the intense heat, which produces such a listless and enervation of body as makes it impossible for the people, and even the cattle, to accomplish an amount of labour sufficient for the necessary cultivation of the crops the land is expected to bear. Not so, however, with the steam plough. Heat offers no opposition to its progress, but rather the opposite; and the result is, that where before with cattle the soil was little more than scraped, it is, by means of the steam plough, thoroughly and perfectly cultivated; and I am informed, from an independent source, that the results from steam cultivation, particularly for Sugar, Coffee, and Tea, are perfectly astounding.

There is one very melancholy circumstance alone to act as a drawback to the surprise and gratification experienced in visiting Leeds the second time. At the show in Hyde Park, Fowler, elated no doubt with the prizes awarded to his implement, was anticipating a speedy reward to years of anxious and wearisome toil; but just at the moment of his victory, he was smitten by the hand of death; and those who knew him, and had watched the work of his short life, can best attest how great a loss we have suffered.

Fowler's Steam Plough Works in Leeds adjoin the Locomotive Engine Manufactory of Kitson & Co. They occupy an area of 6½ acres. The Midland Railway has rails laid into the premises. Every part of the complete machinery for cultivation is manufactured here. I first entered the store where all articles are kept. Thence to the fitting shop, where 120 hands are employed in filing, planing, and working iron in every imaginable shape and form. There we saw Burton's clip drum 8 feet in diameter, that is used for colliery work, and is capable of holding a weight of 45 tons. This is on the same principle as the clip drum on the plough engines, that has a grip like the human hand, and here "holds fast" to the enormous weight of 45 tons. We then went into the pattern shops, in which were a goodly number of hands making patterns of various descriptions.

In the next department our notice was attracted by the "slotting" machine, which cut thick iron into the required form with apparently as much ease as a sempstress cuts her pattern for a ladies' dress; and next was a powerful hydraulic press, giving out its immense strength as circumstances required.

The motive power required for all the various machines used in this establishment is one 30-horse power engine, and four of inferior power. We next entered the casting foundry, where the processes of making patterns in sand, into which the liquid iron is poured, are carried on. Next we were shown the boiler-yard, in which the steam hammer of 2 tons power interested us much. So powerful, and yet so easily managed is this wonderful machine, that by a boy about 11 years old pressure may be brought to bear upon an object equal to 2 tons, and yet in a moment it may be so modified as to crack a nut without touching the kernel. The smiths' shops presented a picturesque scene of industry. Passing on we were conducted into the refuse yard. The casual observer at our agricultural shows can criticise the defects of new implements; but if he would ascertain the history of even a comparatively trifling machine, it would modify very much severe criticism. To work successfully in the ever-varying circumstances and conditions which soil and climate present requires a succession of efforts, oftentimes defeated altogether, that fills too rapidly the waste part of an inventor's premises with costly lumber. These were our reflections as the original Fiskin's plough caught our gaze. The outline in principle was correct, but who can estimate the tax upon the mind of the deep-thinking and determined man who filled in the outline and reduced the principle to be of that economical advantage to be now profitably working all over the world!

A description of other parts of these works, consisting of offices, &c., would be of small interest to the general reader. On leaving these remarkable works we thought of the lines of Milton—

> "Peace hath her victories
> No less renowned than War."

Here is a peaceful victory obtained over many of the difficulties which have beset the production of food and clothing. Thus may the greater abundance be provided for the benefit of man of all those articles by which life is supported and existence made more comfortable. And so we pray, "God speed the steam plough." *R.*

LINCOLN RAM SALES AND LETTINGS.

ATTLEBOROUGH HALL, NORFOLK.—The Messrs. Salter have broken through local customs, with a view to adapt their business of farming and breeding to the altered state of the times. It now requires, however, something like superhuman ingenuity to make anything of an exclusively agricultural character highly profitable, not to say fairly remunerative. What with rinderpest coming on the top of short crops of corn, and low prices, he must have been a clever and very lucky Norfolk farmer if he be not worse off this year in a monetary sense than he was last year. Nevertheless, as we have said, the Messrs. Salter are doing all they can to produce meat and wool, and leaving corn to stand in a secondary position, although, as practical men are well aware, the more stock fed the more corn will grow; but, where roots and Grass can be taken instead of corn, this is done.

Five years or so ago the Messrs. Salter started with 50 Lincoln ewes, and by judicious management they have, without much extraneous assistance, excepting in rams, established a flock of 350 fine breeding sheep. The object of the Attleborough Hall flock at present is merely to produce good and useful male sheep for using with the longer, thinner, and more ranging ewes required to "work" the thin-skinned land to be found in large breadths in Norfolk. This "working" consists in running the ewes over heaths and commons by day, and walking them three or four miles to fold at night. To be able to do this it is necessary that the ewes should be lengthy and active; but while they are doing this it does not matter what character the embryo, or half-grown lamb they carry may be; but when they are taken to Turnips, to lamb-down, it is of great importance to their owner whether this lamb be productive of half-bred wool, and whether it will mature more readily than its mother's appearances indicate. The high price of wool and the great demand for mutton have decided the question. Hence the demand for well-bred, thrifty-growing, early-maturing, long-woolled rams.

One striking peculiarity about the Messrs. Salter's practice is the manner in which they have adapted heavy land and light land in wet weather to carrying heavy Lincoln long-woolled sheep. This is done by littering the folds with straw on the stubble and carrying roots there to feed sheep, instead of carrying both roots and straw to the homestead for feeding and treading down by beasts and horses. Thus a great saving in lambing is undoubtedly gained, while any chemical action which belongs to, or is induced by, the droppings from sheep, takes place in the soil. Another feature of this practice is, after this folding the land is ploughed with one furrow 10 or 12 inches deep, when it is left for sowing for Mangels or Turnips, excepting of course such harrowing and rolling as may be advisable. So far as this practice of spreading straw in the folds goes, and ploughing with one deep furrow for the roots succeeds, we may say we never saw any crops in a more thrifty condition according to the soil, nor the land cleaner according to the expense at which they had been kept free from weeds. In one field thus treated there is a striking practical lesson. A part of a field was required for Mangel, and to make out the day a portion that was intended for Swedes was ploughed. Afterwards, in about three weeks, the remaining portion of the field was ploughed, and in a day or so the stale part and the part fresh ploughed were drilled at a spell under precisely the same conditions as regards seed, distance, and manure. The part, however, which was of stale tilth has grown most vigorously and luxuriantly, but that which was fresh ploughed has not done well, and it now looks as though it had been sown three weeks later. This is a chemical question, and shows that Nature may be assisted but cannot be driven in regard to the production of domesticated crops. It required a certain number of days for the mineral compounds of the under soil thus turned up to

be oxidised and neutralised to make them digestible food, or assimilable food for Swedes. The same mistake has been made when the steam-plough has been used for Wheat. Farmers have been lavish, used the great motive power as a toy; forgetting all their former experience in favour of a 4 or 5-inch furrow, ploughed 9 or 10 inches deep, and, from the same causes, either lost their plant of Wheat, or it did not begin to grow till it was too late for an ordinary or fair crop. Deep cultivation must be practised in advance of sowing any crop.

Another feature in Messrs. Salter's practice is sowing Beans for feeding off on the land. This is done in the place of seeds for mowing and feeding, and instead of pulse for a crop. No manure is used, but two bushels per acre are simply dibbled in (they would do as well drilled), 24 inches apart in two narrow rows. This is done in March or beginning of April, and after the last hoeing—a month or so ago—a row of Rape was drilled in between each row of Beans. This crop will soon be begun with the breeding ewes, and the stamina that is thus imported is said to make the flock equal to almost any hardship as regards weather through the winter. This manure is saved for the root crops, and a crop of excellent food is obtained at a cost of 10*s.* per acre, exclusive of the little labour expended; while the value of the food is said to be from 5*l.* to 6*l.* per acre, and it is reckoned this is the best preparation—without any additional manure—that can be made on this land for Wheat. The present crop is certainly an admirable one, and the land thus treated is thoroughly rested for the next crop of Clover.

A very business-like company attended the sale on Monday last, and a very agreeable meeting over an excellent luncheon preceded the sale. The prices were quite satisfactory, and the many buyers who were there last year proved in the clearest possible way that this class of sheep gives satisfaction in the eastern counties, for the purposes explained. Buyers, however, were not confined to the county. Mr. Webb, brother to the late Jonas Webb, a Cambridgeshire man, bought five at from 8*l.* 10*s.* to 10 guineas each. These were for purely crossing purposes for stores. Mr. Lock, of Carbrook, bought one at 20*l.* 10*s.*; Mr. Jary, of Westley, Cambridgeshire, bought another at 18*l.* 10*s.*; Mr. Turner, of Ickworth, Bury St. Edmunds, bought a good sheep for the Marquis of Bristol at 18*l.*; Mr. Biddle, Werstead Park, bought one at 15*l.*; Mr. Thomas Gayford, of Haigham, one at 15*l.*; Mr. Limmer, of Rondham, bought three for stores at 11*l.*, 9*l.* 10*s.*, and 12*l.* 15*s.* each. Mr. Lock's, the highest price shearling, weighed above 20 stone, of 14lb., live weight. The lambs were let and ranged from 7*l.* 5*s.* down to 3*l.* 10*l.* each. Messrs. Salter have a fine quality of wool and a compact form of sheep, and although some of their friends spoke in favour of more length, and a general appearance of greater size, we have no hesitation in saying that the character of this flock had better be preserved and perfected than an attempt made to follow some other breeders we know of in attempting to produce impossibilities.

BISCATHORPE has long been renowned for its celebrated rams, and particularly for the splendid style in which its present occupier, Mr. Thomas Kirkham, has received and entertained his friends on his ram-letting days. On Thursday last there were offered 80 shearlings, 26 two-shear, and 44 three-shear, in all 150 rams. The company gathered to compete for these sheep numbered upwards of 300.

A feeling of regret pervaded the whole company when they were informed that it was anticipated that this was the last meeting of the kind that would be organised at Biscathorpe. This arises from the fact that the farm, which has been in the hands of trustees, soon comes into the full possession of George Whitlam, Esq., the heir. It is feared that its proprietor will desire, or rather decide, to come to reside at Biscathorpe House.

The 80 shearlings made 1337*l.*, or averaged a trifle over 16*l.* 14*s.* each. When it is considered these sheep are all let, and come back to Mr. Kirkham for re-letting, it must be allowed this is a great success. The highest figure was for No. 8, which made 90*l.*, to Mr. Caldwell, in Boston; Mr. Richardson, of Willoughton, took No. 6, at 31*l.*; Mr. Langdale, of Beverley, No. 9, at 40*l.*; Mr. Isles, No. 26, at 28*l.*; Mr. R. C. Howard, Temple Bower, took No. 27, at 30*l.*; Mr. Sowerby, of Aylesbury, took No. 30, at 26*l.*; Mr. Brice, of Risby, took No. 44, at 44*l.*; Mr. E. Paddison, near Lincoln, took No. 49 at 40*l.*; Mr. Richardson took another, No. 76, at 26*l.*; and Mr. Salter, Attleborough, Norfolk, took four, Nos. 11, 14, 46, 56, at the respective prices of 20*l.*, 24*l.*, 21*l.*, and 22*l.*

The 26 two-shear sheep made 376*l.*, or 14*l.* 9*s.* odd, each. The lot was taken by Mr. Needham, of Huttoft, at 20*l.*; another at 18*l.*, by Mr. Norfolk, of Louth; another at 26*l.*, by Mr. Grime, of Halton; another at 22*l.*, by Mr. Gilliat, of Martin; another by Mr. Rippon, at 20*l.*, and another by Mr. George Nelson, of Limber, at 22*l.*

At this meeting there is always a spirited competition for some of the aged sheep. This is from the character of their issue being known. The first sheep offered in this class was secured for a second time by Mr. Aveling, a nephew of Captain Cattling, for the use of the latter gentleman. As a shearling this sheep was let at 16*0l.* to Captain Cattling, of Needham Hall, Wisbeach; as a two-shear at 135*l.*; and now at 105*l.* These figures amount to the goodly sum of 590*l.*, not a bad test of the character of the flock from which he came, independent of what the sheep himself is. The next was let to Mr. J. Kirkham at 50*l.*; the next to Mr. Davy, of Owersbery, at 70*l.*; the next to Mr. Mumford, of Credenhill, Hereford, at 35*l.* Another was taken at 20*l.* by Mr. Mariot; another at 22*l.* by Mr. P. Brown, of Glentworth; another to Mr. J. Kirkham at 20*l.*; No. 119 to Mr. Isles at 50*l.*; No. 122 to Mr. Williams, of Carlton-le-Moorlands, at 30*l.*; No. 126 to Mr. Chatterton, of Hallington, at 52*l.* 10*s.*; No. 127 to Mr. E. Davy at 23*l.* These 14 sheep made the great sum of 128*l.*

Home Correspondence.

Water Supply.—Owing to the existence of cholera attention is now being recalled to the great question of our general water supply. Much time has been devoted by the Rivers' Commission to the pollution of the Thames, resulting in a valuable report on its present condition and the necessity of purification, and the Commons' Committee on the Thames Navigation Bill has heard much evidence confirming the fact that effective navigation is not antagonistic to either good drainage or the desired purification of the river. Nevertheless, in spite of all this consideration, the primary object—the supply of pure water—if not altogether ignored, has been made subservient to that of drainage and its consequences, and the true action and service of all main rivers have not been recognised. The water contributed to a river from its various sources is only pure and fit for drinking use so long as it is uncontaminated by drainage. As soon as a river or stream has obtained a place in the valley sufficiently low to become the drain of the watershed, the water ceases to be unobjectionable for such a purpose, as it then becomes a vehicle for the transport of floating and soluble matter washed or discharged from the whole watershed, and which, in the case of sewage, taints the stream in such a manner that no arresting process of precipitation, filtration, deodorisation, or even irrigation can altogether remove it. The aboriginal character of the river is lost. This is the plain English of the case. No purification of a river, when once it has become a drain, can make its water fit to drink; it may be made more agreeable to the eye and more pleasant to the nose, but as human drink it is out of the question, if purity is a *sine quâ non*, and the sources of the river remaining undefiled are within reach. And why should it not be generally recognised that the important service of a river as the drain of its watershed is not to be changed by the work of man? Rivers are essential as scavengers, though they should be made as unobjectionable in that character as possible; but they are even more important as a means of water supply, the only point necessary to be understood and acted upon being that the same water cannot be used for both duties. To obtain water for domestic use we must take it as nature herself first supplies it. Instead of trying to divert the *régime* of nature, by attempting an extent of purification we cannot achieve, we must ascend to the sources and springs of our rivers, or when they are beyond our reach appropriate the water of under drainage, which closely assimilates to them in purity, for the supply of our cities, towns, and villages. To do this with impunity we must provide compensation by collecting in reservoirs the excess of floods and the spare water of our springs and underdrainage when the river and outfalls are discharging their *maximum* flow. It can be readily demonstrated that the *minimum* supply furnished to our main rivers for the maintenance of their flow will much more than satisfy the population within their several watersheds, let the population be what it may, in the case of the Thames this is well known to be—even though the metropolis and the various towns within its watershed should treble their populations. To go, therefore, for all that is wanted to the fountain head of the Thames and its tributaries—as Myddelton did when he created the New River, and repay the abstracted supply by an equal quantity of stored water, which Myddelton did not do, is not only very possible, but it is the most just and economical thing to do. At any rate, it is extremely wrong that the water companies should continue to take their supplies from the Thames and the Lea, after they have become irretrievably tainted—and, perhaps, it is equally wrong to substitute supplies from other watersheds which at some future time may suffer from the loss. North Wales and the lake district of Cumberland have each their advocates among metropolitan authorities, but with Liverpool, Birkenhead, Chester, and, in fact, all the manufacturing districts—from Preston in Lancashire, to Birmingham, in Warwickshire—in a state of alarm as to their supplies, it would appear most unjust to give them the "go-by" as long as the resources of the Thames watershed remain untried. The quantity of water now pumped up at Thames-head and withdrawn from the Thames to be thrown into the Severn is, I consider, underrated. The quantity pumped up daily is nearly 3,000,000 gallons, and although a proportion of this quantity infiltrates from the canal into the earth and through the substrata back to the Thames, I believe much more than 1,000,000 gallons is abstracted from the metropolitan river. Let this be as it may, if the abstracted water of this one spring were applied to domestic purposes instead of feeding the profitless Thames and Severn Canal, from 50,000 to 100,000 persons might be served, and had it been substituted for the "sewage water" of the Lea (sewage water because it is taken from the Lea after it has become a drain), which the East London Water Company supply to their customers, it is more than probable that many hundred lives might have been saved in the pending visitation of cholera. This incidental reference to the East London supply leads me to ask why the River Lea Commissioners should not co-operate with the East London Water Company, as, I believe, was at one time proposed, and, by the aid of compensating storage reservoirs and Mr. Homersham's system of pumping water from the subterranean supply of the London basin, gain a sufficient and innoxious supply? Much has been made of the saving of soap in washing which would be gained by the use of water derived from certain geological formations, and, doubtless, in the general question of our water economy this is an important point; but it is not so important as securing water to drink and for use in boiling, which shall be free from that inseparable sewage which will find its way into our rivers, let us do what we may. Nor is it as important as the local utilisation of the water nature has placed at our command, whereby it would become unnecessary to rob other valleys of what belongs to them. I lay great stress on this latter point, for the present summer has shown, in the cases of North Wales and those places specially known to have a large rainfall, that they are subject to remarkable vicissitudes and diminution, and with the extraordinary demands for water likely to follow the increasing trade and population of the north-western counties this consideration cannot be overrated. All these questions, however, are evidence of the magnitude of the subject and show the necessity of a full and speedy comprehension of it in all its bearings. Why, I ask, is the inquiry into the purification of our rivers to precede the more important object, our national water supply? *J. Bailey Denton*, 22, *Whitehall Place, Aug.* 25.

Thin-seeding at Tiptree Farm.—Having seen Mr. Mechi's advertisement, or his statements in his published letters, that his farm consists of 170 acres, and that he seeds a part of it with one peck of Wheat an acre only, will you allow me to ask him through the medium of the *Agricultural Gazette* how many out of the above number of acres he on an average puts in out of one peck an acre? and whether he sows the peck broadcast, or puts it in with the drill, or with any kind of hand dibbler? and, if with the drill or dibbles of any kind, I wish him to inform me also how wide the rows are asunder, and how thick the seeds are in the rows? If Mr. Mechi will be so kind as to fairly answer these questions he will greatly oblige me and some friends; and, should the answers be satisfactory, and he shows further that his thin-seeded crops have been on an average of years equal to his thick-seeded ones in quality and quantity, I will this autumn ask him to put in 50 acres, which I will place at his disposal, in the same way he usually adopts, or in any other way he may choose, only that the 50 acres are to be seeded with 50 pecks of seed only, or 12½ Winchester bushels only. I will just add that I am the more anxious that these questions should be answered, because some years back I procured two of Dr. Newington's patented dibbles, and which I have used to a small extent every year since, and yet, though my rows are never more than 12 inches asunder, and the seeds are not more than 4 inches asunder in the rows, yet I have never been able to seed an acre in this way with so small a quantity as 1 peck of seed; and on this account I am the more anxious to obtain the information I require from Mr. Mechi. And, Mr. Editor, shall I ask your readers if any of them can inform me what is become of Parson Wilkins? I hope he is still in the land of the living; he used to be a strenuous advocate of thin-seeding, but not so much so as his disciple, Mr. Mechi. But still I used, 20 years back, to be much amused, and I will add also interested, in what he wrote in favour of thorough cultivation and thin-seeding; but, if I recollect, the smallest quantity he advocated was double that of his disciple. I hope we shall hear from him again. *T. B.*

The Kidney Vetch.—Seeing in your paper of Saturday, August 18, a letter from a correspondent signed "O. F.," bringing to notice the Kidney Tare or Vetch, Anthyllis Vulneraria, I take the liberty of remarking that the writer is under a mistake in supposing it has not been cultivated to the extent of a whole field in England. As you are aware, I collected and cultivated the plant first in 1858, having advertised and sold much seed since. Many gentlemen are now growing it. "O. F." fully bears out my experience of the value of the Kidney Vetch. The last three or four years have been too dry and scorching to bring out a new forage plant, therefore I have kept quiet, feeling sure that time would do more to introduce to the agricultural world so valuable a plant than all I could say or write. I differ from "O. F." in thinking it requires a long time to wither or make, as I carry mine very green, retaining all its colour and sweetness; I put it in heaps or cocks about the second day after the scythe, letting it remain according to circumstances. I think you cannot stack it fairly too green, provided it is dry. Stock of all kinds are very fond of it, particularly sheep, as herbage, thriving very fast upon it. I crop my land alternately with Kidney Vetch, Trefoil and White Clover, Sainfoin, Red Clover; therefore it will be 16 years before each plant comes on the same land a second time. I grow from 40 to 50 acres yearly, and drill 16 lb. of seed to the acre. "O. F." fears it would not tiller on light sand or gravel; I have 18 acres this year on a light sand with gravel subsoil on a very high hill; it is a two years' lea; I left it for seed, and have just carried two and a-half large waggon loads per acre off it. It grows from 18 to 24 inches long. I could mention several gentlemen who have grown it on the lightest of land. One person has upwards of 100 acres laid down with it, has been growing it five or six years, and has not broken up any of it from the first. Another, having some on a piece of Blackheath land, which he considered for any other crop almost useless; on a two-year-old lea, having taken a crop of seed last year, has this season two and a-half loads per acre. My Wheat is always best where the Kidney Vetch has grown. It is most kind on chalk, and I have also seen a very good crop on clay bottom land. You will greatly oblige by inserting the above in your valuable journal. *H. Stebbing, Stow Bedon Hall, Attleborough, Norfolk.*

Summer Cattle Food.—I continue to use green Beans—stalks, pods, and all—cut up through the chaff-cutter, and mixed with pulped or cut Cabbage. This makes a most appropriate food for growing and fattening cattle, aided by a little Malt combs, Bran, and cake. We cease to use the Beans when the leaves drop or dry. It is a useful and paying process. The Cabbages were planted in March. *J. J. Mechi, Aug.* 22.

Societies.

[illegible] At a late meeting of this Society, Mr William M'Combie [illegible] said:—We must look up to such promising young men as are here to-night for the advancement and progress of further improvements in Aberdeenshire. It is surely the duty of the old to lend them a helping hand in such a commendable undertaking. My young friends, I congratulate you on the formation of this Society, and I cannot express the pleasure it affords me to be here to give you my support. [illegible] Colonel Gordon, of Fyvie, at a dinner I had the honour to receive some years ago in the [illegible] Hall of Aberdeen, was pleased to do justice to the tenant farmers of Aberdeenshire. He stated that "the great improvements of the country had been effected by the tenant-farmers." I am sure, gentlemen, I not only speak my own feelings, but the feelings of this meeting, and of the tenant farmers of Aberdeenshire, when I say that we [illegible] Colonel Gordon, of Fyvie. It is with confidence that I affirm that it is to the indomitable energy, skill, perseverance, and [illegible] of the tenant-farmers that Aberdeenshire has attained the highest position as the greatest cattle-breeding and feeding county in Britain. Most important subjects must come under the consideration of this association. [illegible]

[illegible]

tenant's privileges, in a question which involves alike the [illegible]

[illegible]

would get the [illegible]

[illegible]

draught horses at all, as I feel quite [illegible]

[illegible]

it would be advisable to breed coach horses. That may be [illegible] with advantage; in fact, it is very questionable whether any kind of half-bred horse pays so well for breeding as a coach horse. They are ready for sale at an early age, being generally sold at from three to four years old to the London dealers and [illegible], who buy them unbroken, and break them in when they want them. In breeding coach horses, care must be taken, as the coach horse now is of a very different class to what it was before the times of railways. Then were in fashion large lumbering carriages, and there were bad roads and long stages. The Cleveland horse was then in favour. Now, with light carriages and short stages, a good clean legged half-bred mare is required, with good action, to put to the thorough-bred horse, in order to produce the quick-stepping, [illegible] valuable carriage horse of the present day. But you may say, It is very good talking about the good mares, but how are we to get them? I might reply to many, Do you ever try? I am sure if you did you might very easily get better bred mares than you have now. On the contrary, the custom with many is to sell the good mares to the [illegible] and perhaps keep one that no one will buy to breed from themselves—penny wise and pound foolish. I am afraid it would take some one far more persuasive than I am to induce some people to keep their best mares, though I am happy to say in many instances there is more inclination to [illegible] than there was. In breeding hunters there is even more difficulty in finding suitable mares than for breeding coach horses, for, with the improvements in agriculture, the fields [illegible] of blood. This, combined with strength, is difficult to [illegible] much [illegible]. But whatever kind of horse you wish to breed, there are a few points that should not be lost sight of, [illegible] good feet, and freedom from all natural [illegible]; for without these, however good-looking the horse may be, he is comparatively worthless. Before putting [illegible] every man should first ask himself what [illegible] from such parents. [illegible] for a [illegible] draught horse, harness [illegible] it can only [illegible] a man [illegible] a mongrel [illegible] is perhaps that he [illegible] and I am sorry to say [illegible] What can he expect [illegible] of little [illegible] good [illegible] and in [illegible] then it is evident [illegible] to produce [illegible] really good [illegible] great importance. [illegible] the [illegible] stallion [illegible] Can this Society, or the members of it, do anything to ensure for the district [illegible] the enterprise of some individuals, to whom our thanks are due, [illegible] better than [illegible] for the [illegible] expense of travelling [illegible] he is [illegible] to make it [illegible] many [illegible] and [illegible] season [illegible] many [illegible] this week I asked [illegible] he had made? [illegible] This [illegible] I don't [illegible] district. [illegible] together and [illegible] brought [illegible] entrust [illegible] This has been thought [illegible] I am aware [illegible] which I think might [illegible] because [illegible] opinions [illegible] as to the rearing, management, and breaking of young horses, as to go [illegible] much of [illegible] young [illegible] they [illegible] keeping. [illegible] In conclusion, I beg of you all who breed horses to breed only from the best [illegible] you must expect [illegible] no more keeping than a moderate one, and, when ready for sale, is worth three times the money.

[illegible] Mr. [illegible] said that he [illegible] thorough-bred horse, but he had not succeeded in obtaining the animal [illegible] short-legged [illegible] purposes, and when [illegible] he would not keep him as an entire horse to travel about the country, but have him for the use of the farmers around, and they could send their mares to him and be charged a reasonable price. The [illegible] the kind of animal for breeding carriage horses, unless by putting it to the entire thorough-bred horse of the kind he had been speaking; and he was of opinion that by using a horse and mare of these kinds they would succeed in procuring the exact sort of [illegible] for the present day. A thorough-bred horse was the best to breed from for the [illegible] improving in breed. They were inferior animals and short of blood, and [illegible] than that distance, [illegible]

Farmers' Clubs.

BALLYMAHON: *Proper Management of Flax.*—We have from this Club, which has lately given us a number of most valuable papers, an interesting one on "The Proper Management of the Flax Crop," from which we make the following extracts:—

The soil and climate of Ireland are peculiarly well adapted to the growth of this crop; and if it be managed with knowledge and energy, it will not fail to remunerate the employed and the employer. Every [illegible] will produce Flax, and even [illegible] with a good clay bottom; but that which produces [illegible] is the deep loam or the heavy clay. The land in cultivation best suited for it is the first [illegible] Oats [illegible] poor soils not previously [illegible] it, where properly cleaned of weeds, may produce good crops. We do not by any

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adapted to the growth of cereals and fruit trees. The fourth or upland terrace, which is between 3000 and 4000 feet above the level of the sea, also grows corn to perfection; while on the three last-named terraces, horses, sheep, and oxen thrive as in England. The surface of the country is undulating throughout, is everywhere abundantly watered, and is covered with Grass. The country is intersected by 23 rivers, which reach the sea, and by numerous tributaries; to this circumstance, and to the variety of its soil, may be ascribed the remarkable salubrity of the country, and its capacity for yielding an extensive range of both temperate and sub-tropical products.

We also quote the following report of his experience as a colonist given by Mr. R. Hamilton, of Bluebell Farm, Colenso County, Weenen, Natal:—

"I came here in 1861. I bought my present farm from a Dutchman; it is situated on the River Tugela, some six miles above the village of Colenso, in the county of Weenen, and a portion of a Government grant. I now farm 5000 acres, about 50 of which are under cultivation. I commenced to grow Wheat, Oat forage, Barley, Turnips, and Potatoes. I have grown, in four years, off 20 acres of land, 500 muids or 1500 bushels of beautiful Wheat, which was sold at 30s. and 32s. per muid of 3 bushels. The average quantity of Wheat grown per acre during the last three years was, 9 muids or 27 bushels. The crop was sold generally to retail for 33 bushels per acre. The quantity of Oats sold off 10 acres of land during the last four years was, 370 muids (1121b. to the muid), sold at 22s. and 25s. per muid. I find my average produce of Oats per acre about 12 muids. Barley, Turnips, Beet, and Potatoes, yield per acre, quite as much as at home. In 1862 I dug 60 cwt. of Potatos, of a blue variety, off an acre. Tobacco yielded me 16 0 lb. to the acre; sold at 8d. per lb. The soil in most parts of the Colony is exceedingly rich, and will give seven crops of Mealies and Oats without any manure. It only requires industrious, steady men out here, with a moderate capital, say 500l. to 1000l.; such men would do well here, and be very soon independent. My stock, which run on my farm winter and summer (having a sufficiency of Grass all through the year), and which I do not consider half stocked, consists of 121 head of cattle, 500 sheep, and 9 horses. I commenced with 50 milch cows. In three years my increase was 20 head; in fact, I only lost 3 calves during the whole time. I have made and sold during that time, 2500 lb. of butter, sold at 10d. and 1s. per lb., from these cows, besides supplying my establishment, and I have disposed of a number of old cows, so many a year from the herd. I milk at present 30 cows, and expect to sell this year 1000 lb. of butter, besides rearing calves, feeding pigs, and keeping the house. I inoculated my whole troop of 130 head in 1864, as a preventive against lung sickness, only losing 2 head previously, and 6 head from inoculation. I inoculate every year when my calves are a year old. I consider my cows pay me 60 per cent. per annum. The Merino sheep do well in the Colony after they are acclimatised; the first three years I was here, the few I had paid me 75 per cent. at least, of course you are liable to a bad year, perhaps once in five.

"I breed no horses, but they do remarkably well on the high lands. I would double my stock and cultivation departments on the same acreage, were it not for want of capital, so must get on by degrees; as it is, I have about 500l. a year out of them together. I like the climate very well, it is never hot or cold. The thermometer averages in the shade up country in summer 71°, in the winter months about 55°. With regard to labour, I have about 30 able-bodied Kaffirs living on the farm, who can do all the ordinary out-door farm work of description, at very low wages. I pay to my daily Kaffirs 3d. per day, and monthly Kaffirs receive, men 5s., and boy 3s. per month; nearly all the farms bought and for sale here have a certain number of Kaffirs located thereon, so that labour would not be any drawback to any one commencing.

"I think Natal cannot be well known at home. I hear of people flocking to Australia, New Zealand, and other Colonies, and for the life of me, I cannot tell why such a fine country as Natal does not get her share.

"There are hundreds of farming men at home struggling hard to get a bare living, who, if out here with a few hundred pounds at their command would do well, and soon be independent, but it must be clearly understood, they must have a certain amount of stubborn industry and energy. I hope, if spared for a few years longer, to be able to return to England in comfortable circumstances. I have done very well since I came here, I only hope others who are working hard here may have the same luck I have had."

Farm Memoranda.

FENTONBARNS. — We extracted some weeks ago from the *Sligo Independent* the account given of this farm in that journal, which has been discussing lately the contrasts of Scottish and Irish agriculture. We now give the fuller report of the same farm given in the *North British Agriculturist*:—

Fentonbarns consists of 670 acres. This includes the space occupied by buildings, gardens, fences, and roads. The farm is held under a lease of 21 years, nearly two-thirds of which has expired. The farm was occupied by the father and grandfather of the present tenant, and has been in possession of the family for upwards of 80 years. The farm is well known in the annals of British agriculture in connection with the name of the present tenant, Mr. George Hope, and his father, Mr. Robert Hope. The visitor can form only an imperfect idea of the original state and condition of the land previous to the recent operations of a considerable portion, the completion of the drainage by the insertion of parallel drains, and the adoption of a system of high farming. The elevation is from 30 to 100 feet above the high-water mark. The farm is generally level. About one-third of the farm consists of a fertile loam on interjected greenstone; another third a heavy or clay loam of medium fertility, lying on boulder clay and interbedded felstone; and the remaining third is a yellow moorish sand on alluvial clay of great depth, and which comes to the surface at various parts. The fields are all divided by Thorn hedges, the whole of which were planted by the father and grandfather of the present tenant. The latter has placed large tiles in almost the whole of the ditches which formerly surrounded every field, and thus added to the arable land. He has also, by removing fences, increased the size of some fields, and rendered others more square in shape.

The lands being frequently difficult to reduce, involving a great amount of horse labour, one of Howard's cultivating apparatus with engine was obtained in the autumn of 1864. The engine, manufactured by Messrs. Clayton, Shuttleworth, & Co., is of 10-horse power. The price of the whole was 650*l*. The length of wire rope originally obtained was 1600 yards; since that time 400 yards additional have been procured. The increased length of rope has tended to expedite the cultivation of the land, particularly where the fields are large. The additional length of rope has proved so decided an advantage that Mr. Hope recommends that not less than 2000 yards should be obtained at first by those purchasing one of Howard's steam cultivators. The cost of repairs of tackle has been almost nothing, the breakage having been so insignificant that 5*l*. will cover the whole outlay. This expense for repairs, taking into account the number of landfast boulder-stones, and the extent of land gone over, is a remarkable example of the successful application of steam-power to the stirring of the soil. We were shown a heap of stones weighing not less than 100 tons, which had all been taken from one field. These stones had been under the common plough-furrow, and it was only when the steam-cultivator was used that their presence was discovered, and their consequent extraction from the subsoil effected. The landfast stones are marked as they are touched by the points of the cultivator, and labourers afterwards remove them by means of spade, pick, crowbar, and frequently by the use of gunpowder. Where the obstructing rocks reach the surface they have in two or three fields been quarried, and earth carted on to form a soil. The fields, numbering 27, are generally large. The fences are usually straight—a condition favourable for the application of steam-power, even when the engine is stationary, as in this case. The time required to lift, convey, and lay down the cultivating-apparatus takes from three to four and a half hours. The extent cultivated or grubbed is about 7 acres daily; extent harrowed about 10 acres. The depth the grubber enters the soil is from 8 to 12 inches. The harrow moved by the steam-engine is found to be a great acquisition to the other cultivating implements.

During the autumn of 1865 the extent cultivated for Wheat, upon the removal of the Potato and Bean crops, was 103 acres; 27 acres of the Bean land were gone over twice by the grubber; 94 acres of stubble land were also grubbed. This spring there were grubbed 14 acres, from which a Turnip crop had been removed, one-third to one-half of the crop being eaten by sheep folded on the land. The sheep having received cake, corn, and hay, in addition to the Turnips, the land was as much compressed as if the whole Turnip crop had been eaten by the sheep folded. Thirteen acres had to be grubbed twice to enter deep enough into the soil, and to reduce it sufficiently. Betwixt 140 and 150 acres were grubbed in preparation for the Potato and Turnip crops, and 105 acres were harrowed by means of the steam-harrow.

The steam-engine and cultivating apparatus have proved, during the springs of 1865 and 1866, of great utility in the preparation of land intended for Turnips —expeditious and deep stirring being of advantage in the seeding of the land; on Fentonbarns the Turnip crop, since steam-power was applied, has been got in early and been superior.

For several years none of the ordinary rotations have been followed. In future the six-course rotation is to be observed, to bring the farm into the state required at the expiry of the lease. The extent of the various crops of the present year is as subjoined:—Potatos, 82 acres; Beans and Vetches, 33 acres—grown in rows 16 inches apart; Turnips, 88 acres—the extent of Swedes, Yellow, and White Turnips being about one-third of each, the greater proportion, however, being Swedes; Wheat, 126 acres; Barley, 88 acres; Oats, 54 acres; mixed Rye-grass and Clover for cutting, 21 acres; pasture, 85 acres of young Grass depastured; extent of second year's pasture, 50 acres; in permanent pasture, 3 acres; Turnip seed, 15 acres, the variety being East Lothian Purple-top Swede.

In addition to the farm of Fentonbarns, Mr. Hope occupies another farm on the Dirleton Estate. This farm lies close to the estuary of the Firth of Forth, betwixt Dirleton and the sea, and contains on the north the links or duns raised at one time by the drifted sands of the sea-shore, and now retained by the roots of the bent Grasses and other coarse herbage plants. Dirleton farm amounts to 220 acres arable, and about 500 acres of "links" and permanent pasture. A part of the links is waste, there being almost no vegetation of any kind, "bent Grass" excepted. The improvement of the sandy and calcareous soils of this farm by claying is a most remarkable example of what can be effected by a liberal application of clay to such light soil, having so little cohesion that, when broken up by the plough and reduced, the strong breezes blow away the soil and tender crops. The claying has been carried out by employing horses in single carts to remove the clay dug in various parts of the farm to those portions where the soil is a fine sand with broken sea-shells interspersed. Sand is there taken to fill up the spaces from where the clay has been removed. As the "claying" proceeds at the rate of about 200 cart-loads per acre, the texture and fertility of the land is changed. Previous to "claying," the stunted crops rendered it questionable management to attempt to cultivate such apparently worthless land; now the whole appearance of the crop when growing is changed, their productiveness is more than doubled and in some instances it has been quadrupled. About 100 acres have been clayed, at the rate of 200 tons per acre, the clay being found on the farm; the expense of cartage is not great, as the work has been done generally when the horses could not be otherwise employed on the farm. This change in the productiveness of the soil has not been due to the clay alone. A liberal application of auxiliary fertilisers has advanced the manurial condition of the land, and the two acting in combination have rendered the crops greatly superior to any previously grown on the land, and, indeed, fully equal to those raised upon the naturally good soils in the parish of Dirleton—a parish justly celebrated for the productive crops grown by the enterprising and skilful occupiers of the soil.

The following is the extent of land under the various kinds of crops growing at present:—Potatos, 31 acres; Turnips, 50 acres, nearly all sown (10th June); Barley, 38 acres; Wheat, 9 acres; Oats, 34 acres; Rye, 6 acres. The remainder of the arable portion is in pasture, the land being usually grazed for three years. The Potato break was pastured for three years, the land being ploughed out of Grass for the Potato crop. Mr. Hope finds it advisable to take Potatos immediately after the Grass this season. Fifty acres of the Potato break on the farm of Fenton were depastured the last three years. The Grass land is ploughed with a furrow from 12 to 14 inches deep. A two-horse plough turns down the surface sward, and a second plough follows, which turns up the soil left by the first plough. The manure used consists of a mixture of Peruvian guano and superphosphate, 4 cwt. of each substance being used to the acre. The drills are 28 inches apart; distance between the sets, 10 inches. Mr. Hope does not approve of wide-apart setting, his experience being that when sets are placed wide apart the tubers are very unequal in size, a portion being too large for the English market, while many of the large Potatos are hollow in the centre—due, some believe, to their rapid growth.

The weight of produce is considerably above the average grown on similar soils, even with the application of farmyard manure, when succeeding a grain crop. The Potatos are more uniformly good in appearance, and when cooked are found to be generally of a superior quality. By this method of growing Potatos farmyard manure is not requisite to ensure full crops; but to ensure this, the grazing stock are liberally supplied with Linseed cake and corn. Mr. Hope usually plants a part of his Potato crop after a Turnip crop, eaten on the land with sheep, or an equivalent amount of cake and corn consumed in lieu of a portion of the Turnip crop carted off for cattle. Large crops of Potatos have been raised by this method, and the succeeding Wheat crop is generally luxuriant and prolific, and the Clover and Grass which follow are invariably well planted.

The crops of corn, Potatos, and Turnips raised are generally superior, being usually more productive than their appearance when growing would indicate. The Wheat ("Fenton") produces an abundant return; Barley (Chevalier) yields well; the Oat (Potato) gives a large produce of fine plump grain. The Beans and Tares, grown as a mixture, also produce abundantly. We know of no farm where the yield of grain per acre exceeds that usually grown at Fentonbarns. The average produce has been greatly raised during the last 20 years: the beneficial effects of the system of parallel drains, deeper stirring the soil, and the liberal application of manures continued for years have acted and reacted on the fertility of the land, and consequently upon its productive capabilities. This has resulted the supplying of the marketable produce alike of corn, beef, mutton, and wool, since the time of Mr. Hope's management. The fine crops grown at Fentonbarns are by many considered to be due more to the natural fertility of the land than to the application of the principles of successful cultivation, labour judiciously and skilfully directed, and manures liberally used to maintain and advance the exhaustive process of growing large crops for sale.

The expenses connected with the labour of the farm are higher than the average of the district. On Fentonbarns the number of servants engaged by the year is 19; including one steward, one shepherd, and one man who acts as gardener and attends the thrashing-engine, makes gas, &c. At Dirleton there is one shepherd, three ploughmen, and two orra-men. Upon both farms there are a number of men employed by the day. Besides these there are betwixt 30 and 40 women and boys engaged on the farm cleaning the crops, harvesting, and preparing the crops for market. The annual expenditure upon labour is not less than 1850*l*. for the two farms, being at the rate of 40*s*. for each acre cultivated.

Thirteen pair of horses are still kept. The reduction in the number required since the steam-engine with tackle was acquired has been only two pair; the saving in the keep and tear and wear of four horses is small. The explanation is that the improvements at Dirleton which have been proceeded with during the last two years have involved a great deal of horse work in the carting of clay, stones, &c.; the carting of the farm manure and the large Potato crops likewise involve a great amount of work to be done by carts. It is scarcely paying in view that the horses are now less necessarily taxed in the stirring of the land; they are, consequently kept in better condition; the field labour is always well advanced; the various operations of the farm are executed at those seasons the best adapted to ensure efficient and perfect cultivation; and there is less anxiety felt for the delays arising from the occurrence of a tract of wet or unseasonable weather. The stock kept is as follows:—

Cattle.—One short-horn bull; five cows kept for the rearing of calves, &c.; 12 cows belonging to the farm servants; 80 cattle are fattened annually in courts, receiving Turnips, and straw with cake. The calves reared number from eight to 10; this year there are 18 or 20; these are fattened and sold at the age of from 20 to 24 months; the price this winter averaged 23*l*.; cattle purchased, and sold fat when three years old, realised from 20*l*. to 31*l*. 10*s*.

Sheep.—A flock of Leicester sheep is kept, the number of ewes being 110. Three crops of lambs are taken, when the ewes are sold fat. The ram lambs, numbering about 60, are kept and sold as shearlings. The best of the ewe lambs are retained for keeping up the flock; the drafts are sold. From 180 to 200 Cheviot ewes are annually brought to Fentonbarns

and Dirleton from the sheep farm Glencotho, the property of Mr. Hope. These ewes produce one crop of half-bred lambs. The lambs are reared and sold fat as hoggets. This spring there were 240 hoggets fattened, and upwards of 300 Cheviot 2-year-old wethers; the latter, sold in March, averaged 65*s*. On Dirleton farm there are also 112 half-bred ewes—Leicester Cheviots—kept for producing three-parts-bred lambs, and 300 Cheviot hoggets wintered. These form part of the hill stock of Glencotho.

Feeding substances used annually consist of about 100 tons of corn and cake, principally Linseed cakes, but about 200 qrs. of grain are eaten by the stock.

Manures: This season there were purchased 56 tons Peruvian guano, 7 tons nitrate of soda, and 70 tons of superphosphates. Formerly broken bones were largely purchased, seldom less than 200 qrs. being used in spring. The amount of guano purchased was also greater in previous years. The superphosphate and nitrate of soda are being substituted for the more expensive fertilisers, Peruvian guano and broken bones. Police manure is also obtained from Edinburgh. The carriage by the railway is 1*d*. per ton per mile; price of the manure put on the railway, from 2*s*. 3*d*. to 2*s*. 6*d*. per ton. The outbreak of the cattle plague in the Edinburgh town dairies put an almost entire stop to the use of police manure in the country, and for the last 12 months none has been brought to Fentonbarns. Lime in the form of compost is now being applied, from 50 to 60 tons of lime being annually brought to the farm to be mixed with the collected weeds, road-scrapings, and other substances.

The amount of produce per acre, alike of Corn, Potatos, beef, mutton, and wool, greatly exceeds the average of the county of Haddington. This is the result of high farming. The expenses of cultivation are necessarily above the average, while the annual outlay for feeding purposes and for manures averages about 4*l*. per acre. During the last 30 years the expenditure for manures has seldom been under 2*l*. per acre for each acre under cultivation.

Miscellaneous.

Strange Effect of the Rinderpest.—It is hard to know that we are geographically in England, and yet to find that we are practically, or rather agriculturally, in exile. We are separated, alas, not by water, but by Devon, from the rest of England. We are very poor up here in the north-east corner of Cornwall. We have no ports on our coasts, no trade. We breed a number of hardy Devon steers, and a greater number of half-bred useful sheep, and these we expect to sell, at this time of year, for about a penny a pound below the market price, although we know that our animals fetch the top price in the London market after they leave our hands. We have had no cattle plague within 20 miles. There has been no cattle plague in the county for more than two months. The alarm of a new case at St. Erme, in a fortnight since, has proved false. Yet Devon shuts the door upon us. Neither sheep nor cattle from Cornwall are to pass through her coasts except by rail right through. The Devon men till now have bought our cattle and sheep; the rest of England would be puzzled to find us on the map. Our grass must come to an end; our cattle are fit for sale; but there are no buyers. Unless some Wise Men from the East will come and bring our sheep and oxen through this Edom of the West, we must let them starve through the winter, or set to work and pickle them at once. *A Cornish Victim, in the "Times," August 27.*

The Crops of 1866.—The subjoined letter appeared in the *Times* of Monday last :—" Again the season has returned to us when our agricultural crops have to be reaped and gathered in, and when we can estimate with tolerable accuracy how far those crops are likely to meet a nation's wants. I have been recently travelling through various parts of the kingdom, and in the exercise of my professional engagements have myself inspected a wide extent of land, and have been brought in contact with many intelligent agriculturists in various and distant localities, with whom I have compared notes respecting agricultural crops; and, with your permission, will report the result of my inquiries and observations for the use of those who may not have had the same advantages. The weather during this summer has been generally dull, and all grain crops show a want of sunshine, especially in the midland and northern counties, by the absence of brightness in the straw and by the slowness with which the corn ripens. Great progress has been made in harvest work in the southern counties, where a large portion of the crop of white corn has been safely carried. In the midland counties much of the crop has been cut, and a good deal carried, while in the northern counties reaping has commenced in the earlier districts, none has been carried, and a great deal of grain will not be ripe for one or two weeks yet. It will thus be seen that we are to have a lingering harvest, and I think throughout the whole kingdom it will be a fortnight later than was the harvest last year. The crop of Wheat on good land is heavy; on moderate, undrained, and badly farmed land the crop is light, and in many places much broken down by the heavy winds prevailing early in this month. Over the whole country I think the Wheat crop is nearly but not quite an average one. What has been carried up to this time is perfectly sound, but much of it is not dry enough to grind yet. The Oat crop varies very greatly, and is, I think, scarcely an average one. Barley is an excellent crop —above an average—and in many of the best malting districts the crop has been carried in fair condition. I expect the sample will prove very good. Beans and Peas an average crop. The prospect for Turnips varies considerably. In some parts of Northumberland they have grown badly, while in Cumberland and in Yorkshire the promise of an abundant crop of this most valuable root is greater than it has been for many years. Over the whole country I am persuaded we shall have more than an average crop. Mangels are very good, and I cannot help thinking our farmers would find it profitable to have more of this root than they have lately grown. It can be grown when Turnips are very uncertain, and when he land is well cultivated, and the seed well put in, the return on much ground is far heavier, and the root quite as valuable for dairy or fattening purposes as Turnips. The Potato crop is very promising, but very little of the general field crop for winter use has been taken up yet. Thus far very little disease has appeared. The hay harvest has been a lingering one. Crops were generally good, and when the Grass was cut early the hay was easily made, and secured in excellent condition; when the Grass was cut late, much of it has been seriously injured. Pastures are everywhere good, and there is much Grass in them. A saddening fear, however, comes over one when looking at some of those beautiful green fields in Cheshire, that part of the luxuriance of this Grass may arise from the land being too lightly stocked, in consequence of the ravages of the justly dreaded rinderpest. In a year like this, wet and badly farmed lands show themselves very conspicuously by lateness in ripening the crops, and by the appearance of docks, thistles, and other weeds above the grain, where they are allowed first to perfect and then to shed their seeds. Farmers, as a body, and old farmers especially, do not move readily out of the beaten course pursued by their forefathers; but one clings to the hope that when good and successful examples of cultivation and cropping are brought directly under their eyes they will in time be led to imitate them. In many districts landowners have introduced improved implements, and have shown by their use, combined with a liberal application of imported manures, that heavy crops can be grown on what had previously been deemed very moderate land. As I write, I have in my mind's eye several such instances. In one parish in particular I have seen for several years the rector cultivating his glebe farm in the best manner, and showing that excellent crops of all kinds of roots could be grown when such crops had never been attempted before; and in the same parish one of the landed proprietors—a man of high birth—has recently devoted his time, talents, and money to the same laudable purpose, and to my certain knowledge there may now be seen on his farm of moderate land, in a cold part of this country, and 1000 feet above the level of the sea, crops of corn and roots which fully equal the crops on many of our best farms in the midland and southern counties. *H. J. Turner, Richmond, Yorkshire, Aug. 24.*"

Calendar of Operations.

SEPTEMBER: *Gleaning.*—The custom of gleaning is universal, and very ancient; in this country, however, the poor have no right to glean but by the permission of the farmer; but the custom is so old and common that it is scarcely ever broken through. It much behoves the farmer in some places where it is carried on to excess to make rules for the gleaners, and not suffer them to be broken under any pretence whatever.

The abuse of gleaning in many places is so great as deservedly to be ranked among the farmer's evils; the poor glean among the sheaves, and too often from them, in so notorious a manner, that complaints of it are innumerable. Make it therefore a law, that no gleaner shall enter a Wheat field until it is cleared of the crop; this is the practice in many places, and great advantages are found from it. But, upon this plan, always desist from turning any cattle into the field until the poor have gleaned it; for if a use is made of keeping them out while sheaves are there, merely for an opportunity of turning hogs and other cattle in, it is double-dealing and unpardonable meanness.

A concluding word may be allowed in praise of the good old English custom of harvest-home. As was well said by the Rural Dean on a late occasion of this kind, in the parish of Symondsbury, near Bridport:—It has been a reproach to Old England that in these merry-makings we are too apt to disgrace ourselves by intemperance, rioting, and an unseemly way of rejoicing; he thought the reason of it has been that the gentry, the clergy, the farmer, and those whom the more humble are apt to look up to as leaders, have deserted these meetings, and the consequence is that they are left to those who are disposed to riotous and disorderly conduct. He was quite sure the way to prevent that state of things would be for the gentry, the clergy, and all others who have an interest in their fellow-creatures to join in such gatherings. It would tend to do away with that distrust which is likely to arise between class and class, and to show that we are all bound together in one common interest—that we all have need one of another, that the farmer cannot do without the labourer, nor the labourer without the farmer; that the rich cannot do without the poor, nor the poor without the rich, and that the more we recognise the ties which bind society together, the happier shall we be as a nation.

When a day's enjoyment of this kind begins with a service of thanksgiving to Almighty God for his bountiful goodness, it is not likely to degenerate in the way thus hinted at.

Notices to Correspondents.

FORM OF LEASE: *A Subscriber* says, I have a small farm in the Midland Counties, which has got into a bad state. I am desirous to let it to a tenant to improve, and therefore on lease. Can any of your readers recommend me to a good form of lease.

STRAW: *A B.* Its nutritiveness depends on its state of ripeness. Under similar circumstances the best straw for fodder is that of the Oat. Barley is, however, generally preferred, because Clover is grown generally in it, and some of it thus harvested along with it.

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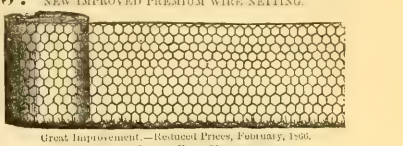

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2	Poultry	0 3	0 3½	0 4½	0 5½
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1½	Smallest Rabbits	0 4½	0 5½	0 6½	0 8
1	Pheasantries, Small Birds, &c.	0 5½	0 10½	0 11½	1 1
½	Aviaries, Window Guards, &c.	0 11½	1 1½	1 4½	1 7
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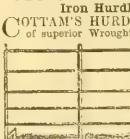

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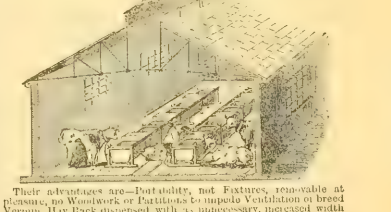

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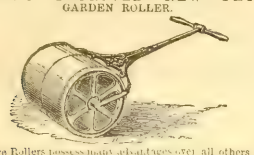

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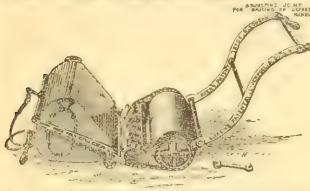

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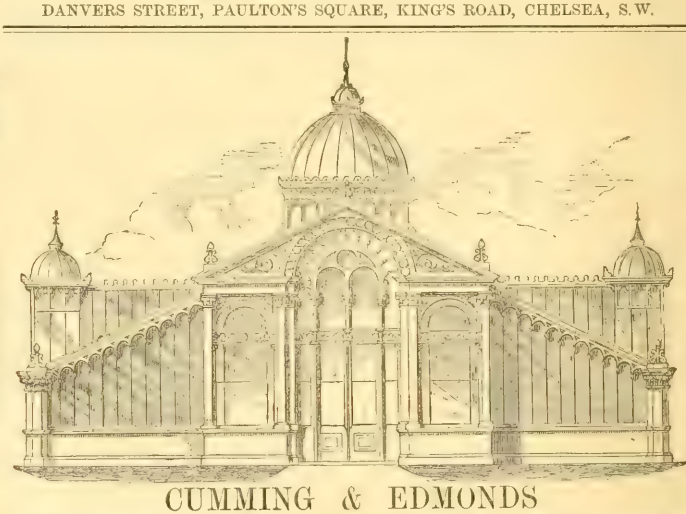

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DINNEFORD'S FLUID MAGNESIA.—The Medical profession for 30 years have approved of this preparation of Magnesia as the best remedy for Acidity of the Stomach, Headache, Heartburn, Gout, and Indigestion ; and as a mild aperient it is especially adapted for those Ladies, Children, Clergymen, &c. DINNEFORD & Co., Chemists, &c., 172, New Bond Street, London, W., and sold throughout the world by all respectable chemists. CAUTION.—See that "DINNEFORD & Co" is on each bottle and red label over the cork

ROWLANDS' MACASSAR OIL.—This elegant and fragrant oil is universally in high request for its unparalleled success in promoting the growth, restoring, preserving, improving, and beautifying the Human Hair. It is patronised by Royalty and the Aristocracy of Europe, and universally admired by the Nobility of Royalty, and those of the Upper Classes, is a sufficient proof of its merits. Price 3s. 6d., 7s., 10s. 6d. (equal to four small), and 21s. per bottle. Sold at 20, Hatton Garden, and by Chemists and Perfumers.

Ask for "ROWLANDS' Macassar Oil."

PAINS in the BACK, KIDNEYS, &c., resulting from Debility and Exhaustion of the System, and Disordered Kidneys, produced by impurity of the blood, have been relieved and cured by the use of FARR'S LIFE PILLS. May be had of any Chemist.

WANTED, on LEASE, from TWO to FIVE ACRES of LAND, within 12 Miles of London, with a Cottage, for a Florist's Business, with excellent Glass.
Grosvenor Cottage, Richmond Road, Twickenham, S.W.

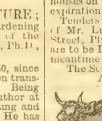
Tothill, Plymouth.—To Gardeners and Others.

TO BE LET, by Tender, for a term of 7 or 14 years, from Christmas, 1866, all that MESSUAGE or DWELLING HOUSE, GARDEN and PREMISES, situate near Tothill, in the Parish of Charles, Plymouth, and in the occupation of Mr. Francis Wright, Gardener and Seedsman, as Tenant, consisting of a commodious Dwelling-house, Shop, Greenhouses, and Garden, with the Stock in Trade, Fixtures, and Implements of Trade thereabouts. The above has been for many years occupied as a Garden, is well suited for a business in all respects, and is supplied with Spring Water. The Tenant will be required to purchase, at a valuation by a competent person to be agreed on between himself and the Tenant, the Growing Crops, if any, and also the Stock of Plants, Greenhouses, and Potting and Potting-houses on the Premises, being allowed to remove the latter at the expiration of his Term.

Any Person taking the above Premises must be left at the Offices of Mr. LUXMOORE, Solicitor, Argus Insurance Office, Courtenay Street, Plymouth (where the terms and conditions on which they are to be let may be seen), on or before October 1 next, and in the meantime the Tenant will show the Premises on application.

The Seller shall not be required to accept the highest Tender.

Argus Insurance Office, Plymouth,—September 1.



BRITTANY COWS.—The only breed of cattle that have escaped the Rinderpest.

The nobility, gentry, and others are respectfully informed that they can be supplied with the above beautiful and profitable Little Animals (calved and down perfect), in any number, at the shortest notice. The great success and encouragement which have attended the efforts of the

importer, in introducing the pure breed of this useful and hardy Cow into the country, has induced him to extend his connection further, by appointing experienced Agents throughout Brittany, and he is now enabled to offer the public a constant supply of the choicest stock that can be obtained, at prices which defy all competition. The Cows are unrivalled for their milking qualities, and this Breed, render them of great value to the cottager, as well as the fancy stock-keeper and dairyman.

YOUNG BULLS always on sale. BRITTANY SHEEP, 25s. each. ALDERNEY and GUERNSEY COWS and HEIFERS supplied to description, as to age, colour, and time of calving.

Apply to the Agents of the Exporter Messrs. ROBERTSON & Co. 38, Crutched Friars, London, E.C.

Lincolnshire Long-woolled Rams.

MR. JOHN CLARKE, of Long Sutton, Lincolnshire, will be happy to show his RAMS for SALE or LETTING, on WEDNESDAY, September 12, or any subsequent day during the season. Every facility will be given to inspect the Sheep safely to those Gentlemen who may favour him with their patronage.

Mr. C. will be pleased to supply Gentlemen resident in any part of the kingdom with SHEARLING RAMS at moderate prices.

Sales by Auction.

Five Wardian Cases from Japan and Sydney.

THREE LARGE CASES OF TREE FERNS FROM MELBOURNE.
IMPORTED ORCHIDS FROM MEXICO, &c.

MR. J. C. STEVENS will SELL by AUCTION, at his Rooms, King Street, Covent Garden, W.C., on TUESDAY, September 4, at half-past 12 o'Clock precisely, THREE WARDIAN CASES of the MALE AUCUBA, and other Plants from Japan ; TWO WARDIAN CASES of NEW SOUTH WALES BRANDFORDIA from Sydney ; SIXTY fine TREE FERNS from Melbourne ; SEVERAL CASES of ORCHIDS from Mexico, and a variety of other Plants.

On view the Morning of Sale, and Catalogues had.

Shepherd's Bush.

PRELIMINARY NOTICE OF AN IMPORTANT CLEARANCE SALE OF GREENHOUSE AND OTHER PLANTS, GREENHOUSES, PITS, &c.

MESSRS. SMITHER AND MORE have received instructions from Mr. F. Smith, who is retiring from the Business, to prepare for UNRESERVED SALE by AUCTION, early in OCTOBER NEXT, unless previously disposed of privately (the remaining LEASE also), the whole of his valuable COLLECTION of HARD and SOFT-WOODED GREENHOUSE PLANTS, including about 10,000 choice Ericas, sorts, mostly setting with flower ; 5000 fine Azalea Indica, embracing all the leading varieties to the present day ; 1000 Double Camellias, 1 to 5 feet ; 3000 Hybrid, Perpetual, and other Roses in pots, 6000 Cytisus racemosa, 2500 Acacia Armata, and many thousands of other thriving young Plants too numerous to specify in this advertisement. Also the erection of 21 Greenhouses, ranges of Pits, Boxes ; about 5000 feet of Hot-water Piping, mostly of Riddell's Patent, put together with screws, bolts, and Indiarubber collars ; its capital Heating Apparatus ; the fixtures about ; thousands of feet of capital York Paving and Slate Staging, Seed Shops, Sheds, Stables, and other erections, of which full particulars will appear in *Gardeners' Chronicle* of 15th inst.

American Nurseries, Leytonstone, N.E.

Shropshire Sheep.

GRENDON, 3 miles from Atherstone, 5 from Tamworth, and 14 from Polesworth Stations, on the London and North-Western and Midland Railways.

MR. JOHN B. LYTHALL (Secretary to the Birmingham Cattle Show), will SELL by AUCTION, on WEDNESDAY, September 5, at 2 o'Clock, Thirty-two SHEARLING and Older RAMS, and 100 BREEDING and SHEARLING EWES, the property of Mrs. Baker.

In calling attention to Mrs. Baker's Flock, the Auctioneer has no hesitation in stating that these are the best lot of Rams and Ewes that have been at Grendon, the interest in which has increased since the Lambs R.A.S. Ram "The Model," from Mr. Byrd's, having considerably improved the size and woolbearing properties of the Sheep ; whilst they retain the fineness of Wool, excellent quality, good backs and necks, and heavy legs of mutton, for which characteristics the Flock has so long been pre-eminent, and which have obtained for it such high honours that could be conferred at numerous Local and Royal Meetings.

No Flockmaster has had a more successful career as an exhibitor, as his records of the Royal, Bath and Highland Societies, &c. will be found on to the Catalogue will show, and no pains or money have been spared to produce what is now the great desideratum, a true rent-paying class of Sheep.

The whole of the Rams were bare-shorn in May, and are kept constantly in the open pasture.

Mrs. Baker's Shepherd has this year, and on many previous occasions, secured the county premiums for rearing the greatest number of Lambs, the most convincing proof of the prolificness of the Ewes.

Luncheon at 12 o'Clock. Conveyances will meet Trains at Polesworth free of charge.

Auctioneer's Offices, 204, New Street, Birmingham.

Shropshire Sheep.

THE LEESE FARM, STAFFORD.

MR. JOHN B. LYTHALL (Secretary to the Birmingham Cattle Show), will SELL by AUCTION, on FRIDAY, September 7 next, at 12 o'Clock, Thirty SHEARLING RAMS, Two Older RAMS, and a number of RAM LAMBS, of the celebrated "Patentee" blood, bred by and the property of Mr. S. Byrd, who feels satisfied that his Sheep will be found particularly suited to meet the requirements of the present day, viz., by furnishing an opportunity of obtaining Sires combining great strength of constitution, strong muscular development, natural aptitude to fatten, without the expensive use of artificial food (as evidenced by the unequalled weights attained by specimens from this Flock), and carrying a heavy money-making Fleece of best Wool.

The Ewes not having been housed, and daily ranging in the Pastures, will be found in an active improving state, and have not been excelled in uniformity of character and quality.

Mr Byrd obtained the First Prize and a high Commendation with the two Rams exhibited at the Bath and West of England Agricultural Show at Hereford last year, and a Prize at the Royal Agricultural Show at Plymouth.

Luncheon at 12 o'Clock. The Leese Farm is two miles from the Railway Station, Stafford, where Conveyances will meet Trains to convey parties to and from the Sale.

CONSERVATORIES, GREENHOUSES, FRAMES.

THE ONLY PAINT THAT SUCCESSFULLY STANDS UPON THE ABOVE TRYING WORK IS

CARSONS' ORIGINAL ANTI-CORROSION PAINT,

TRADE MARK.

ENTERED AT STATIONERS HALL.

AND IS CONSEQUENTLY LARGELY USED BY THE NOBILITY AND GENTRY, ALSO THE LEADING HORTICULTURISTS.

IT IS EQUALLY ADAPTED FOR ALL DESCRIPTIONS OF EXTERNAL WORK.

3 cwt. Free to any Station in England and Wales, and most Ports of England, Ireland, and Scotland.

TRADE MARK.

ENTERED AT STATIONERS HALL.

PATTERNS, PRICES, and TESTIMONIALS on application to

WALTER CARSON AND SONS, Removed to LA BELLE SAUVAGE YARD, LUDGATE HILL, LONDON,

Three doors East of London, Chatham, and Dover Railway new Viaduct.

CAUTION.—All Casks bear the Trade Mark, or are not Genuine.

JOHN WARNER & SONS, LONDON, MANUFACTURERS.

J. WARNER AND SONS

Have much improved the construction of their

GARDEN ENGINES

in some important particulars for this Season.

They may be obtained of the Trade generally throughout the Kingdom at the following prices:—

No. 547. WARNER'S best ENGINES, in Wood Tubs, and fitted with WARNER'S Registered Spreaders—

24 Gallons,	£6	10	0
14 ,,	5	10	0

No. 547A. WARNER'S strong ENGINES, in Galvanised Iron Tubs, well painted—

10 Gallons,	£2	19	0
16 ,,	3	14	0
24 ,,	4	19	0
28 ,,	5	10	0

No. 579½. WARNER'S WATER BARROWS, thoroughly Galvanised and well painted—

20 Gallons,	£2	2	0
30 ,,	2	13	0
38 ,,	3	17	0
50 ,,	5	12	0

The 50-Gallon Barrow is made extra strong throughout, and fitted with handle for two men.

No. 568½, AMERICAN ENGINE, is now well known and appreciated. It throws a continuous stream, and is complete in itself. £2 2*s.*

SYRINGES in great variety, from 7*s.* 6*d.* to 18*s.* 6*d.*

The DISC SYRINGE, No. 557A, will recommend itself by the ease with which it is filled, and non-liability to get out of order. Price 9*s.*

DESCRIPTIVE PRICE LISTS forwarded on application.

WARNER'S AQUAJECT

Is recommended to the notice of Horticulturists as possessing the following advantages:—It is simple in construction, portable, and easily worked. It throws a continuous stream, and is low in price.

The Aquaject, 30s.

Ditto small size, 18*s.*

WARNER'S 6-Gallon GARDEN ENGINE, of Galvanised Iron and well painted, fitted with Brass Air-vessel, Branch Pipe, and WARNER'S Registered Spreader, 50*s.* Light, portable, and easily worked by a lady or child.

No. 35. WARNER'S IRON PUMPS for Wells, not exceeding 25 feet in depth — 2½-in., 28*s.* 6*d.*; 3-in., 41*s.*; 3½-in., 46*s.*; short barrel do., 21*s.*

No. 36. IRON FORCE PUMPS for raising water above their level, or Watering Yards, Gardens, &c., through hose—2½-in., 59*s.*; 3-in., 65*s.*; 3½-in., 77*s.*; 4-in., 89*s.*

No. 36½. FORCE PUMP on BARROW, recommended for its great portability and simplicity of construction. £5 10*s.*

No. 42. WARNER'S PORTABLE PUMPS on Folding Legs, are of a superior construction.

Price 55*s.*; Rubber Suction, 2*s.* 11*d.* per ft.

No. 597A. BRANCH PIPES with Cocks and Roses—½-in., 3*s.*; ⅝-in., 4*s.*; ¾-in., 5*s.*

No. 599. TAPER BRANCH PIPES—½-in., 4*s.* 9*d.*; ⅝-in., 5*s.* 3*d.*; ¾-in., 6*s.*; 1-in., 7*s.*

RUBBER HOSE in all sizes.

FOUNTAIN JETS in great variety, from 3*s.* 6*d.* to 25*s.*

Editorial Communications should be addressed to "The Editor," Advertisements and Business Letters to "The Publisher," at the Office, 41, Wellington Street, Covent Garden, London, W.C.
Printed by JAMES MATTHEWS, at the Office of Messrs BRADBURY, EVANS, & Co., Lombard Street, Precinct of Whitefriars, City of London, in the Co. of Middlesex, and Published by the said JAMES MATTHEWS at the Office, No. 41, Wellington Street, Parish of St. Paul's, Covent Garden, in the said County.—SATURDAY, September 1, 1866.

THE GARDENERS' CHRONICLE

AND

AGRICULTURAL GAZETTE.

A Newspaper of Rural Economy and General News.

No. 36.—1866.] SATURDAY, SEPTEMBER 8. {Price Fivepence. {STAMPED EDITION, 6d.

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UNITED HORTICULTURAL BENEFIT and PROVIDENT SOCIETY.
Open to all Gardeners throughout the United Kingdom.
The Rules are now certified by John Tidd Pratt, Esq., and Alexander G. Finlaison, Esq. (Actuary) Copies of Rules and any information may be obtained of the Secretary, Mr. Heale, pro tem.
14, George Terrace, Brook Street, Upper Clapton, N.E.

Strawberries.

CHARLES TURNER can supply all the leading kinds, in good Plants.
DESCRIPTIVE CATALOGUE may be had on application.
The Royal Nurseries, Slough.

CUTHILL'S Six Sorts of STRAWBERRIES at 5s. per 100 See all August Advertisements. They are the earliest and latest in this country
MUSHROOM SPAWN, 7s. per bushel. Pamphlets, &c.
JAMES CUTHILL, Camberwell, London, S.

New Perpetual Pine-apple Strawberry.

A. VAN GEERT, NURSERYMAN, Ghent, Belgium, has much pleasure in offering this very extraordinary Novelty, which is a very free bearer, with a delicious fragrant fruit. Plants will be sent out in October at 18s. per dozen, or £5 per 100, free to London.
N.B.—Early Orders are solicited, as the stock is not large.

CASTLE KENNEDY FIG.—Plants of the above may now be had at 10s. 6d. and 21s. each; the usual discount to the Trade.
PETER LAWSON & SON, Edinburgh and London.

Grape Vines.

B. S. WILLIAMS begs to announce that he has a splendid stock of Strong Planting and Fruiting CANES of all the best varieties. PRICED LIST may be had on application.
Victoria and Paradise Nurseries, Holloway, London, N.

PINE PLANTS (QUEENS), for Sale, in all sizes, very fine, and from a choice stock, never had any sale
Apply to M. ROCHFORD, Market Gardener, Pace Green, Tottenham, N.

Succession Pine Plants for Sale.

ONE HUNDRED SUCCESSION RIPLEY QUEEN PINES, perfectly clean and in good health.
Apply to PAUL & SON, Old Cheshunt Nurseries, N.

SMOOTH CAYENNE and QUEEN PINES. Strong heads, 2s. per dozen.
Apply to E. COOLING, Mile Ash Nurseries, Derby.

Fruit Trees, Conifera, and Trees and Shrubs.

PAUL AND SON'S COLLECTION of the above are now worthy of a visit. The Pyramid Fruit Trees for Sale are in full bearing, and the various Trees and Shrubs will be found in fine condition. Autumn Roses, Hollyhocks, and Gladiola are still in good Bloom.
"Old" Cheshunt Nurseries, Cheshunt, N.

A Quarter of a Million of Fruit Trees.

THOMAS WARNER begs to inform intending Planters and the Trade, that his Nurseries, which occupy upwards of 70 acres, contain the above, in addition to a most extensive stock of Ever-trees, Ornamental Trees, Roses, &c. All in a high state of cultivation. An inspection is respectfully invited
CATALOGUES, Wholesale and Retail, ready in October.
The Nurseries, Leicester Abbey, 1¼ mile from the Midland Railway Station.

Railway Planting.

FIVE MILLION Transplanted QUICKS, of superior growth Samples and prices on application to
JOHN HEMSLEY, High Fields, Melbourne, near Derby.

FINE SPECIMEN and HALF-SPECIMEN HARD-WOODED and ORNAMENTAL FOLIAGE STOVE and GREENHOUSE PLANTS.—Exhibitors and gentlemen furnishing Conservatories are invited to select out of the Collection of the above, which is large and in very fine healthy condition. Prices moderate.
T. JACKSON & SON, Nursery, Kingston, Surrey.

Important to Nurserymen.

JOHN BLAKE and SONS, NURSERYMEN, Summer-hill, County Meath, have a large quantity of the following Land 2-year SEEDLINGS to offer:—LARCH, SCOTCH SPRUCE, ALDER, THORN QUICK, SILVER FIR, BEECH, SYCAMORE, ASH, OAK, &c WHOLESALE PRICED LIST on application.

JOSEPH FRYER, Clarendon Nurseries, Camberwell, S., begs to offer a large quantity of AUCUBA JAPONICA, from 1 to 4 ft.; EUONYMUS JAPONICA, do.; MAGNOLIAS, varieties; LILACS, all sorts and sizes. A great variety of CLIMBING PLANTS in pots, &c.

NURSERY STOCK WANTED, for the Formation of a SMALL NURSERY.—Any one having Surplus Stock of the above, also Cuttings of COLEUS VERSCHAFFELTII and CENTAUREA CANDIDISSIMA, for sale Cheap, apply to
JOSIAH MARTIN, Florist, &c., Buckhurst Hill, Essex, N.E.

CAMELLIA STOCKS, in single pots, fit for immediate working, 30s. per 100; selected ditto strong, 40s. per 100.
W. H. ROGERS, Red Lodge Nursery, Southampton.

NEW HARDY RHODODENDRON, MICHAEL WATERER.—This Rhododendron has hitherto been exhibited under the name of ANNIHILATOR, but it will be sent out under the above name. It is undoubtedly the most brilliant-coloured late hardy free-blooming Rhododendron yet offered.
Orders are now being taken for Plants to be sent out in the Autumn at 31s. 6d. each. The usual discount to the Trade.
JOHN WATERER, American Nursery, Bagshot, Surrey.

Hyacinths and other Dutch Bulbs.

WM. CUTBUSH AND SON beg to acquaint their numerous Patrons that they have received their usual Consignment of SUPER HYACINTHS, TULIPS, CROCUSES, &c.
PRICED DESCRIPTIVE CATALOGUE post free on application
Highgate Nurseries, London, N.

Hyacinths, &c.

WM. PAUL'S SELECT LIST of HYACINTHS, EARLY TULIPS, and other SPRING-FLOWERING BULBS and PLANTS, is now ready and will be forwarded post free on application
PAUL'S Nurseries and Seed Warehouse, Waltham Cross, London, N

The Best Twelve Hyacinths imported by SUTTON AND SONS,
for Twelve Shillings.
SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

MIXED HYACINTHS, for Beds or Open Borders, all colours, of various shades.
21s. per 100 (carriage free), or 3s. per dozen.
SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

JAMES CARTER AND CO.'S First Importation of DUTCH and CAPE BULBS has arrived in fine condition, and the Bulbs are much finer than usual.
JAMES CARTER & Co., 237, 238, and 261, High Holborn, W.C.

DUTCH BULBS, unusually fine; a choice Collection of BRITISH and EXOTIC FERNS, Wardian Cases, Fern Shades, Gold Fish, Aquariums, &c.
R. GREEN, 154, Kingsland Road, N.E.; and the Bedford Conservatories, Covent Garden Market, W.C.

Dutch Bulbs.

PAUL AND SON have received their annual importations in good condition, and their CATALOGUE is now ready. They respectfully solicit early orders. The Old Cheshunt Nurseries, N.

Dutch Flower Roots.

B. S. WILLIAMS' NEW and DESCRIPTIVE CATALOGUE of the above is now Ready, and can be had post free on application.
Victoria and Paradise Nurseries, Holloway, London, N.

Dutch and Cape Bulbs.

HOOPER AND CO.'S CATALOGUE (Illustrated) of the above is published, and may be had post free for Six Stamps. Gratis to Customers.
HOOPER & Co., Covent Garden, London, W.C.

Dutch Bulbs and other Flower Roots.

CHARLES TURNER'S DESCRIPTIVE CATALOGUE of the above is now ready, and may be had on application.
The Roots are fine this season, and early Orders are respectfully solicited to ensure strong Bulbs.
The Royal Nurseries, Slough.

Louis Van Houtte's Nursery, Ghent, Belgium.

LOUIS VAN HOUTTE begs to intimate that his BULB CATALOGUES are now ready, and will be forwarded post free on application to his London Agents, Messrs. R. SILBERRAD & Son, 5, Harp Lane, Great Tower Street, E.C.

J. SCOTT'S PRICED CATALOGUE of HYACINTHS and other FLOWER ROOTS is now ready.
Purchasers wishing for Bulbs of very best quality at lowest prices should send for a Copy.
DAVIS'S NEW HARDY GIANT GREEN COS LETTUCE 1s. per packet. The best and hardiest Winter sort grown.
COLLINSIA VERNA, 6d. and 1s. per packet.
J. SCOTT, Merriott Nurseries, and Yeovil, Somerset.

New Catalogue of Plants, Dutch Bulbs, &c.

ROBERT SIM begs to announce that his NEW CATALOGUE, containing Select Descriptive and Priced Lists of New, Rare, and beautiful Greenhouse, Hardy and Stove Plants, Hardy Ferns, Fruit Trees, Grape Vines, Roses, Rhododendrons, Sweet Peas, &c., Alpine Auriculas, Crocuses, Cyclamens, Gladioli, Hyacinths, Liliums, Narcissus, Tulips, and other Bulbs, is now published and will be forwarded to applicants.
Bedale Nursery, Tooting, Surrey, S.

See Barr & Sugden's Bulb Advertisement, page 846

BARR'S PRIZE CALCEOLARIA "A. 6d." per packet. The above beautiful strain of Calceolaria was saved by Mr. James, of Isleworth, from the plants which were awarded the 1st prize at the International Horticultural and Botanical Congress.

Finest Dutch Crocuses and Early Tulips.

SUTTON'S SELECTIVE LIST is now ready, and will be forwarded gratis and post free on application.
SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

Guernsey and Bella Donna Lilies.

SUTTON AND SONS have just received a good supply of the above beautiful LILIES, and can offer them at 6s. per dozen.
Royal Berkshire Seed Establishment, Reading.

Now Ready.

GUERNSEY and BELLA DONNA LILIES.
Very fine Bulbs, 5s. 6d. per dozen.
JAMES CARTER & Co., 237, 238, & 261, High Holborn, W.C.

New Verbenas, 1866.

PHILIP LADDS is sending out strong Plants, in thumb pots, in 40 varieties, for 10s., package included.
Nursery, Bexley Heath, Kent, S.E.

Ficus Chauvieri.

A. VAN GEERT, NURSERYMAN, Ghent, Belgium, begs to offer this new fine Plant, with splendid large leaves, and far superior in beauty than the old known Ficus elastica.
Good young plants, 15s. each, free to London.

THE GOLDEN VARIEGATED WELLINGTONIA.—The Parent Tree, though stripped of some thousands of its shoots last winter, is now 12 feet high, and in great beauty. It has made a splendid pure Golden Leader, and every part of the Tree is finely intermixed with Golden variegation, of most beautiful appearance; and Tourists interested in Coniferæ, and coming to this neighbourhood, will find it well deserving of a visit.
RICHARD HARTLAND, The Lough Nurseries, Cork.—Sept. 8.

Cupressus Lawsoniana argentea.

MESSRS. WATERER AND GODFREY propose sending out this plant in October next.
Good stout Plants, 1½ foot high and bushy, at 21s. each.
It has been awarded Three First class Certificates by the Royal Horticultural Society of London, Royal Botanic Society of London, and at the Crystal Palace; and may be justly represented as a distinct and very beautiful plant, and one that will become a general favourite.
Knap Hill Nursery, Woking, Surrey.

Roses in Bloom.

WM. PAUL'S ROSES are NOW in FULL BLOOM. Inspection respectfully invited. Trains almost hourly from Shoreditch to WALTHAM Station.
PAUL'S Nurseries, Waltham Cross, N.

Rose Nurseries, Tunbridge Wells.

EDWIN HOLLAMBY respectfully begs to announce that his Stock of ROSES are as usual beautiful healthy good-rooted plants. This magnificent Collection contains nearly every variety worthy of cultivation. Early orders are solicited.

Roses in Bloom.

JAMES MITCHELL has the honour of informing his kind patrons that his magnificent COLLECTION is NOW in FINE BLOOM. Pilt Down Nurseries, Maresfield, Sussex.
The London, Brighton, and South-coast Railway. Two and a-half miles from the Uckfield Station.

New Tea Rose.

AMBROISE VERSCHAFFELT, NURSERYMAN, Ghent, Belgium, begs now to offer his new fine TEA ROSE, ISABELLE SPRUNT, figured in the July Number of the "Illustration Horticole." Fine strong plants, 8s. each.
N.B. A Coloured Drawing may be obtained on application as above.

Lea Bridge Road Nurseries, London, N.E.

JOHN FRASER respectfully invites an inspection of his Collection of ROSES, which he begs to announce are NOW in FLOWER The Collection contains many new and fine varieties.
The Nurseries are about 5 miles from London, and are easily reached by Train on the Great Eastern Railway, to L a Bridge Station.

New Seeds for Autumn Sowing.

SUTTON'S AUTUMN CATALOGUE of GARDEN and FLOWER SEEDS for AUTUMN SOWING is now ready, and may be had gratis and post free on application to
SUTTON & SONS, Royal Berkshire Seed Establishment, Reading

Notice.

60-PAGE CATALOGUE of NEW PLANTS of 1866 now ready, free for one stamp
WM. DILLISTONE, Munro Nursery, Stoke Hedingham, Essex.

New General Plant Catalogue.

B. S. WILLIAMS' NEW PLANT CATALOGUE, containing many really good Novelties, and carefully selected LISTS of STOVE, GREENHOUSE, and HARDY PLANTS, is now ready and will be forwarded post free to all applicants.
Victoria and Paradise Nurseries, Holloway, London, N.

J. IVERY AND SON having a few NO. LISTS now ready to send out, will be pleased to forward their PRICED DESCRIPTIVE CATALOGUES of AZALEA INDICA, and No. 10 HARDY BRITISH FERNS, which contain full particulars.
Upper Clapton Nursery, Surrey.

British Fern Catalogue.

ROBERT SIM can now send, post free for six postage stamps, Part I. (British Ferns and their varieties, 36 pages including prices of Hardy Exotic Ferns) of his NEW and PRICED DESCRIPTIVE CATALOGUE of BRITISH and EXOTIC FERNS, No. 7.
*** Part II. (Exotic Ferns) will be issued as early as possible.
Foot's Cray Nursery, S.E.

THE CZAR VIOLET is NOW in BLOOM, and will continue to bloom the whole winter, even during frost and under snow, until May The flowers are twice as large as the Old Russian, and sweeter; on very long stout stalks. Awarded several First-class Certificates and Prizes. Strong blooming plants may be had, 10s. per dozen, prepaid, of Mr. JOHN GERARD, Cranbrook, Hoanslow, W.
The usual allowance to the Trade.

Late Show Tulips.

CHARLES TURNER has for Sale one of the finest Collections of LATE TULIPS, the purest strains of Show Flowers in cultivation, of 50 or 100 bulbs each sort, strong and ready for planting, of any length, from 25 to 100 rows, of choice kinds, will be supplied at most reason ble prices, which may be obtained on application.
The Royal Nurseries, Slough.

Orchis maculata superba.

OSBORN AND SON are now taking orders for this beautiful hardy TERRESTRIAL ORCHID, for which a First-class Certificate was awarded on the 10th of June by the Floral Committee of the Royal Horticultural Society It is of vigorous habit, 1½ to 2 feet high, has leaves transversely marked with very dark stripes, and a dense spike of spotted rose-coloured flowers 6 inches long. Price 5s. each, to be delivered in autumn.
Fulham Nursery, London, S.W.

JAMES FAIRHEAD AND SON, SEED GROWERS and MERCHANTS, 7, Borough Market, London, S.E.
New and Genuine AGRICULTURAL, GARDEN, and FLOWER SEEDS. Special prices and advantageous offers on application.

Genuine Garden and Agricultural Seeds.

JAMES CARTER AND CO., SEED FARMERS, MERCHANTS, AND NURSERYMEN, 237 & 238, High Holborn, London, W.C.

RAYNBIRD, CALDECOTT, BAWTREE, DOWLING, AND COMPANY, Limited,
CORN, SEED, MANURE, AND OILCAKE MERCHANTS,
Address, 38, Seed Market, Mark Lane, E.C.; or Basingstoke.
Samples and Prices Post free on application. Prize Medals, 1851 for Wheat; 1862, for "Excellent Seed Corn and Seeds.

DILLISTONE'S FIRST EARLY PEA. A fine selected and improved stock now ready.
Wm DILLISTONE, Stoke Hedingham, Essex.

DICKINSON'S ITALIAN RYE-GRASS SEED, grown by the largest and most Agriculturists for present payment at 44s per quarter; 5 quarters at 4 0
New Park, Lymington, Hants.

SUTTON'S RENOVATING GRASSES SHOULD NOW BE SOWN.
6 to 12lb. required per acre.
Price 10d per lb., or cheaper by the cwt.
SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

Grass Seeds for Autumn Sowing

SUTTON'S PERMANENT GRASS SEEDS FOR ALL SOILS.
Prices (according to quantity required and soils for which they are intended), may be had on application.
SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

SUTTON'S IMPROVED ITALIAN RYE-GRASS, the BEST and MOST PRODUCTIVE in CULTIVATION.
SUTTON & SONS can supply New Seed of the above at 6s per bushel, or cheaper in large quantities.
September is the best month for Sowing.
SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

NEW STRAWBERRY, DR. HOGG (BRADLEY).—Resembling British Queen, but very large, and a better grower than the latter; one of the sweetest Strawberries grown, and, like Sir J. Paxton and Oscar, by the same raiser, will become a favourite, and be generally grown. It received a First-class Certificate from the Royal Botanic Society in June, and the same distinction by the Fruit Committee of the Royal Horticultural Society this season; was exhibited in C. Turner's successful collection of four varieties of Strawberries, and also in a Collection of Fruit at the July Exhibition of the Royal Botanic Society. Price 21s. per 100.

CHARLES TURNER, The Royal Nurseries, Slough.

Fruit Trees, Roses, Evergreens, &c.

W. KNIGHT begs to inform intending Planters that he has many thousands of the above, the finest possible condition, at reasonable prices. An inspection is respectfully invited. DESCRIPTIVE PRICED CATALOGUES free.

The Nurseries, within five minutes' walk of the Hailsham Station (South Coast Railway).

Ferrall Nursery, Hailsham, Sussex.

Northampton Nurseries.

JOHN PERKINS, SENIOR, begs to call the attention of Noblemen, Gentlemen, and others engaged in Planting, to his Large Stock of the following fine Trees:—COMMON LARCH FIRS, 10 to 14, 4 to 6 feet; fine SPRUCE FIRS, 10 to 12, 5 to 6 feet; 2,000 good WHITE THORN QUICK, 2 and 3 Years' Transplanted.

Also, extra strong

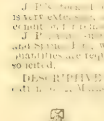
Scotch Firs, 10 to 12 feet	Hollies, 10 to 12 feet
Poplars, various, 10 to 20 feet	Oaks, English, 2 to 4 feet
Berberis Aquifolia, 1½ to 2 feet	Limes, 2 inches, 14 feet
Ditto Duteis, 2 to 3 feet	Ditto, Rosebud, 10 to 12 feet
Green Box, 1½ to 2 feet	Ditto, Handsome, 6 to 8 feet
Laurels, common	Chestnuts, Spanish, 10 to 12 feet
Portugal Laurels, 1½ to 2 feet	Ditto, Horse, 6 to 8 ft.
Ditto ditto, 2 to 3 feet	Sycamore, 10 to 12 feet
Evergreen Privets, 2 to 3 feet	Beech, 10 to 12 feet
Birch, 2 to 4 feet	Cedars Deodara, 2 to 3, 6 to 8 ft.

A FULL account of Stocks of Fruit, Forest, Ornamental Trees, &c., in extra extensive, and fine sized, remarkably fine, and in excellent order for planting, and 2 to 3 years' straight transplanted.

J. P. can supply the largest quantity of Beech Thorns, Larch, and Spruce Firs, will be pleased to measure a special offer where large quantities are required. An inspection of the above is respectfully solicited.

DESCRIPTIVE PRICED CATALOGUES sent post free on application to the Manor Nurseries, Northampton.

New Seeds for Autumn Sowing.



PETER LAWSON AND SON,

THE QUEEN'S SEEDSMEN,

London and Edinburgh,

have supplied NEW SEEDS of all kinds for AUTUMN SOWING, which have been selected with the greatest care.

PETER LAWSON AND SON,

THE QUEEN'S SEEDSMEN,

LONDON and EDINBURGH

have NEW and CHOICE AUTUMN SOWING SEEDS of all kinds, for GREEN CROP, GLOBE, and SIX WEEKS' FORMS.

NATURAL GRASS SEEDS of all sorts, for Lawns, or Permanent Pasture.

ITALIAN RYE GRASS.

WESTERWOLD and TRITICUM CASTS, and PARSLEY BEET, LUCERNE, SAINFOIN, EARLY and LATE.

LARGE BRUNSWICK SAVOY.

LARGE DUNMEAD CABBAGE.

ROBINSON'S CHAMPION CABBAGE.

Also the NEW DWARF PLANTS, KIDNEY VETCH and SCHRADER'S BROME GRASS.

98, King Street, Cheapside, E.C.

100,000 Camellias.

JOSEPH BAUMANN, NURSERYMAN, Ghent, Belgium, begs to offer—

100 CAMELLIAS, with fl. we buds, best sorts, to		£1
100	"	£0
100	"	stronger, £5.

The following are to the Custom House, London:—

100 AMELLIAS, with fl. flower buds, 12 sorts grafted, £1.		
100	"	24 sorts grafted, £3.
100	"	50 finest grafted, £5.
100	"	stronger plants, £6
100 CAMELLIA STOCKS, £1 15s.		
100	"	stronger, £3 15s.

50,000 Azalea indica, and 100,000 Rhododendrons,

GRAFTED PLANTS.

JOSEPH BAUMANN, NURSERYMAN, Ghent, Belgium, begs to offer to the following, free to the Custom House, London:—

100 AZALEA INDICA, well flower buds, £4 to £5		
100	"	stronger plants, £6 to £8

(Flowering splendidly in pots in the Nurseries in March next.)

100 RHODODENDRONS, 1 year grafted, £4.		
100	"	2-years grafted, £6.
100	"	stronger plants, £10.
200	"	with flower buds, £8.
100	"	with flower buds, larger plants, £12 to £18.

(They are all the best English and Belgian hardy sorts.)

All my finest Hardy Ghent Azaleas are already contracted for England

CATALOGUE on application.

Amaryllis.

JAMES GARAWAY AND CO., Durdham Down Nurseries, Bristol, offer, from their unequalled stock of the above-named favourite flower, strong Bulbs of unnamed Seedlings and others that have bloomed with them during the present season, at 5s., 7s. 6d., and 10s. 6d. each, or 50s., 80s., and 105s. per dozen.

JAMES GARAWAY & CO.'S GENERAL BULB CATALOGUE for the coming season is in the Press, and when ready will be forwarded post free on application.

JAMES GARAWAY & Co., Durdham Down Nurseries, Bristol.

Advertisement.

ENGLISH SEEDS *versus* AMERICAN SEEDS.

To the EDITOR *of the Gardeners' Chronicle.*

"Reading, August 28, 1866.

"DEAR SIR,—Observing the remarks made by Dr. Bonavia in the above report as to the relative merits of English and American Seeds as referred to at page 782 of the *Gardeners' Chronicle*, we shall be obliged by the opportunity of publicly stating that whereas we are continually setting Seeds to India as well as other Foreign parts, we rarely (if ever) hear of failures; on the contrary, our modes of packing is so effected that we almost invariably receive the most gratifying reports, and from among them we would quote the following from Gentlemen in the same locality as that from which Dr Bonavia writes, besides other parts of India.

From Mr G. MARSHALL, *Superintendent to the Government and Civil Architect, Horticultural Gardens, Lucknow*

'I received some Vegetable Seeds and Flower Seeds from your Firm some 18 months ago, and they turned out first-rate.'

From Mr. J. HUSSEY, *Esq., Secretary, Lucknow Agricultural Society.*

'With regard to the Vegetables you sent, I have the pleasure to inform you that the result was very satisfactory (with two exceptions only), and these I attribute to the Seeds sown by the Members, as well as those sown in the Society's Gardens.'

From SIR R. MONTGOMERY, *Lieutenant-Governor, Punjaub, India*

'The Seeds you sent me the last year answered very well, and carried off the First Prizes both for Vegetables and Flowers, as you will see by an extract from the *Lahore Chronicle*.'

From T. W. SHEPPARD, *Esq., Secretary, Lahore Public Gardens, Agricultural, N.W.P., India*

'The Vegetable Seeds which you supplied last year turned out very well, the quality of the Vegetables was very good.'

From MAJOR J. MCBAIN, *Horse Breeding Establishment, Mooltan*

'You sent out some Seeds to my predecessor Major Shaw Stewart, which have given great satisfaction.'

From A. A. BLAKE, *Esq., Superintendent, Mysore Government Farm, Hebbal*

'The Seeds received from you last season were very satisfactory.'

From Mr J. DEACON, *Sub-Engineer, Peshawur*

The Seeds arrived in good condition on the 26th June, and I am quite pleased with them.'

From ROBERT P. GRAHAM, *Esq., Manager, Tukvar Tea Estate, Dayerking, India.*

'Your last Seeds gave great satisfaction, and proved very true and good.'

From CAPTAIN MCNAIR, *Agent to Kumaon, Soonpore, India*

'I duly received the case of Seeds, and am much pleased with your selection. Many of them I planted at once, and with few exceptions they have all come up.'

"Apologising for occupying so much of your space, which we should not have done had we not thought the statements of Dr. Bonavia to require some comment,—We are, dear Sir, yours very truly, "SUTTON AND SONS"

Brighton and Sussex Seed Warehouse.

EDWARD CARPENTER'S MIXTURES of PERMANENT GRASS and CLOVER SEEDS — Best quality, 30s. per acre in bushels light seeds, and 12 lb. Clovers and small seeds per acre).—See testimonials in Catalogue.

EDWARD CARPENTER'S RENOVATING MIXTURES for Improving Old Pastures.

PRICED CATALOGUES of KITCHEN GARDEN, FLOWER, and FARM SEEDS now ready.

EDWARD CARPENTER, Seed Merchant and Grower, 96, St. James's Street, Brighton.

Horticultural Agent and Valuer.

MR. A. CHANDLER of the Late Firm of CHANDLER & SONS, Nurserymen, Vauxhall) continues to LET NURSERIES and make all kinds of VALUATIONS connected with Horticulture.

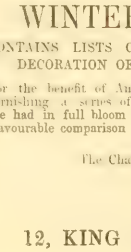
Orders taken for DUTCH BULBS, VEGETABLE and FLOWER SEEDS in Collections.

N.B. Gentlemen favouring Mr. A. C. with orders for any of the above, may depend on having them of the best kinds and quality.

Address, 1, Devonsuire Terrace, Fulham Road, S.W.

FIBROUS PEAT of superior quality for Orchids, American Plants, and all Potting purposes, may be obtained from Farningham Road Station on London, Chatham, and Dover Railway, in Trucks of 10 tons, and from the Longfield Station on the Great N. Kent, Great Western, and Midland Railways.

Apply to THOS. JESSOP, Farningham Wood, Farningham, Kent



COCOA-NUT REFUSE is becoming scarce, the old reserves will soon be gone. Now sold in bags, 1 for 2s., 10 for 16s., 20 for 30s., 50 for 65s., 100 for £6.

Fourpence allowed for each bag returned carriage-paid.

A Railway Truck-load (not in bags), 60s.

Postage Stamps or Post-office Order, payable to J. BARSHAM & Co., Kingston-on-Thames, S.W.

Destroy your Insect Pests.

PRESERVE YOUR PLANTS and TREES.

YOU MAY EASILY DESTROY ALL PLANT PESTS,

RED SPIDER	GREEN AND BLACK	ANTS
MEALY BUG	FLY	SCALE
THRIP	AMERICAN BLIGHT	MILDEW,

Without injury to the most delicate Plant or Tree, by using

FOWLER'S GARDENERS' INSECTICIDE, pronounced by all who have used it to be far superior to any other remedy. One trial will prove its efficacy. Testimonials forwarded on application. Price 1s. 6d., 2s., 5s. 6d., and 10s. per Tin.

GEO. & THOMAS FOWLER, South Street, Brighton; and of HOOPER & Co., Covent Garden Market, W.C.

Red Spider — Magnified.

GISHURST COMPOUND, whether used against Insects and Mildew, on Growing Plants, or as Winter Dressing on Trees at rest, should be dissolved 48 hours before use. This gets rid of smell, and if the Solution be decanted, prevents any staining of foliage. A strength of from 1 to 2 oz. to the gallon of water is recommended for growing Plants; one from 4 to 10 oz. for Trees at rest.

Sold Retail by Nurserymen and Seedsmen, in boxes, 1s., and 2s. 6d. each.

Wholesale by

PRICE'S PATENT CANDLE COMPANY (LIMITED).

GARDEN SEATS and TABLES, GARDEN ROLLERS, HAND BARROWS, FERN CASES, FLOWER STANDS, GARDEN ARCHES, NETTING, &c.

The Garden Repository, 32, James Street, Covent Garden, W.C.

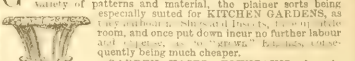
Caution to Gardeners.—When you ask for SAYNOR AND COOKE'S WARRANTED PRIZE

PRUNING and BUDDING KNIVES, see that you get them. Observe the mark SAYNOR also the corporate mark CERTAIN WARRANTED, without which none are genuine.

S. & C. regret having to caution Gardeners and others, but are compelled to do so, in consequence of the inferior, if not common quality, having been sold for the genuine one, and which has caused many complaints to be made to them of Knives which were not of their make, all of which are warranted both by Messrs and Makers.

S. & C.'s Pruning and Budding Knives are the best and the cheapest in the market.

Penton Works, Sheffield. Established upwards of 125 years.



GARDEN BORDER EDGING TILES, in great variety of patterns and material, the plainer sorts being especially suited for KITCHEN GARDENS, as they embrace Shrubs and Beds, leave more room, and once put down incur no further labour and expense, as "CREEPING" becomes subsequently being much cheaper.

GARDEN VASES, FOUNTAINS, &c., in Artificial Stone, of great durability, and in great variety of design.

F. & G. ROSHER, Manufacturers, Upper Ground Street, Blackfriars, Queen's Road West, Chelsea, S.W.; Kingsland Road, Shoreland, N.E.

Sole London Agents for FOXLEY'S PATENT GARDEN WALL BRICKS. Illustrated Price Lists free by post. The Trade supplied.

ORNAMENTAL PAVING TILES for Conservatories, Hall, Corridors, Balconies, &c., as cheap and durable as Stone, in blue, red, and buff colours, and capable of forming a variety of designs.

Also TESSELATED PAVEMENTS of more enriched designs than the above.

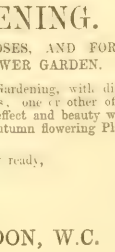
WHITE GLAZED TILES, for Lining Walls of Dairies, Larders, Kitchen Ranges, Baths, &c. Grooved and plain Stable Paving Bricks of great durability, Dutch and Adamantine Clinkers, Wall Copings, Red and Stoneware Drain Pipes, Slates, Cements, &c.

To be obtained of F. & G. ROSHER, at their Premises as above.

SILVER SAND (REIGATE, best quality), at the above addresses—14s. per Ton, or 1s. 3d. per Bushel; 2s. per Ton extra for delivery within three miles, and to any London Railway or Wharf. Quantities of 4 Tons, per Rail, 10s.

FLINTS, BRICK BURRS, CLINKERS, for Rockeries or Grotto Work. F. & G. ROSHER.—Advice and Estimates given.

N.B. Orders promptly executed by Railway



Tyes's Registered Hyacinth Glasses.

SOLE WHOLESALE DEPOT,

CLAUDET, HOUGHTON, AND SON,

Fern Case Manufacturers, and Horticultural Glass Depot,

89, High Holborn, W.C.

Price Lists free on application.

BARR & SUGDEN.

Now Ready, and can be had Free and Post Paid,

THE AUTUMNAL GUIDE

TO

WINTER AND SPRING GARDENING.

IT CONTAINS LISTS OF THE BEST BULBS FOR EXHIBITION PURPOSES, AND FOR THE DECORATION OF THE CONSERVATORY, SITTING ROOM, AND FLOWER GARDEN.

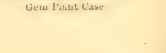
For the benefit of Amateurs the "GUIDE" contains a Treatise on Spring Gardening, with directions for furnishing a series of Beds and Borders with Early-flowering Bulbs and Plants, one or other of which may be had in full bloom from the opening of Spring till June, and the general effect and beauty will bear very favourable comparison with the brilliant display produced by the Summer and Autumn flowering Plants.

The Charming GUERNSEY and BELLA-DONNA LILIES are now ready, *5s. 6d.* per doz., and should be ordered at once.

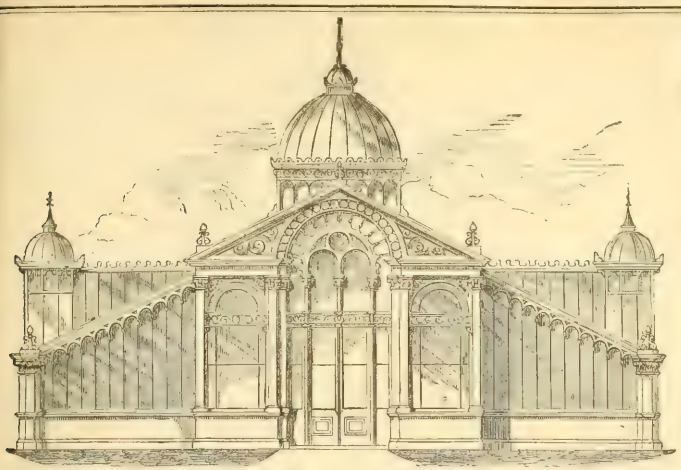
BARR AND SUGDEN,

12, KING STREET, COVENT GARDEN, LONDON, W.C.

Gem Plant Case.



Gem Plant Case



CUMMING & EDMONDS

Take this opportunity of returning their grateful thanks for the very great support they have received since their commencement in Business, and beg to state that at their New and extensive Works, LILLIE BRIDGE, RICHMOND ROAD, FULHAM, they have erected STEAM-POWER MACHINERY, and have every convenience for executing Work with the greatest superiority, cheapness, and despatch.

C. AND E. beg to invite special attention to their superior DESIGNS for CONSERVATORIES, and every class of HORTICULTURAL WORK, and to state that they prepare and supply Designs and Estimates free of all expense.

The great success of CUMMING AND EDMONDS'S

PATENT TUBULAR ARCHED SADDLE BOILERS,

the general satisfaction they have given where fixed, and the high terms in which persons who have the management of them express themselves, enable C. AND E. with confidence to strongly recommend the Boiler to particular notice.

HOT-WATER PIPES, CONNECTIONS, &c., for every description of HEATING APPARATUS, supplied at the lowest prices, with or without fixing, accompanied by a Working Plan for the Fixing of the Apparatus.

Prospectus and Prices on application.

☞ Several good SECOND-HAND BOILERS, of different descriptions, for SALE.

CUMMING AND EDMONDS,

CONSERVATORY ARCHITECTS, HORTICULTURAL BUILDERS, and HOT WATER APPARATUS ENGINEERS,

LILLIE BRIDGE, RICHMOND ROAD, FULHAM, LONDON, S.W.

HOTHOUSES for the MILLION, invented by the late SIR JOSEPH PAXTON.

Manufactories: London, Newton in Cartmel (Lancashire), Gloucester, Coventry, Aberdeen, and Paisley only.

Illustrated Circulars, with revised List of Prices, will be sent on prepaid application to Messrs. HERLMAN & MORTON, Head Office, 7, Pall Mall East, London, S.W.

HOT WATER PIPES and FITTINGS of the best description supplied by

BURY & POLLARD, 17, New Park Street, Southwark, London, S.E.

BURY AND POLLARD'S CONICAL BOILERS for HEATING by HOT WATER fixed at Seats of Duke of Newcastle, Lord Belper, &c., at Viscount Sydney's replaced, after being 20 years in constant use. Apply at

17, New Park Street, Southwark, London, S.E.

HOT-WATER APPARATUS, of every description, fixed complete in any part of the country, or the materials, viz., Boilers, Pipes, &c., delivered to any Station.

Estimates on application.

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Heating by Hot Water.

W. J. HOLLANDS, IRON MERCHANT, 31, Bankside, London, S.E.

HOT WATER PIPES, from Stock, per yard:—2-inch, 1s. 2d.; 3-inch, 1s. 10d.; and 4-inch, 2s. 4d. BENDS, from Stock, 1s.6d., 2s. 6d., and 3s. each. THROTTLE VALVES, 10s., 13s., and 14s. each. Other Connexions at equally low prices, and all goods of first-class manufacture. Estimates given, and orders by post punctually attended to the same day.

Heating by Hot Water.

HOT-WATER PIPES, at Wholesale Prices, with Elbows, Syphons, Tee Pipes, and every other connection; Wrought and Cast-Iron Boilers, Saddle, Conical, Cylinder, TUBULAR, and Elliptic, from 24s. each. Improved Boilers and Iron Stands to use without brickwork, 60s. each. Valves from 10s. 6d. each. Patent Valves, Improved Furnace Doors, Furnace Bars, Supply Cisterns, and Castings of every description in stock, at

MR LYNCH WHITE'S Iron Wharf, Upper Ground Street, Blackfriars Bridge, London, S. Price List on application.

JAMES WATTS AND CO., HOTHOUSE BUILDERS and HOT-WATER APPARATUS MANUFACTURERS, 353, Old Kent Road, London, S.E.

200 CUCUMBER and MELON BOXES and LIGHTS, all sizes, Glazed and Painted complete, ready for immediate use, packed and sent to all parts of the Kingdom.

Strong ZINC HAND GLASSES, all sizes.

References to the Nobility, Gentry, and Trade in most of the Counties in England.

EXTRAORDINARY ACHIEVEMENTS OF

WEEKS'S ONE-BOILER SYSTEM.

THE DISTINGUISHED CAPABILITIES OF THIS LONG-TRIED SYSTEM THROUGHOUT GREAT BRITAIN AND THE CONTINENT, ENABLES IT NOW TO STAND FORWARD AS THE CHAMPION AND MOST SUCCESSFUL OF ALL SYSTEMS OF HEATING BY HOT-WATER.

THE FOLLOWING INTERESTING STATISTICS ARE CONCLUSIVE EVIDENCE THAT

WEEKS'S IMPROVED UPRIGHT TUBULAR BOILERS

ARE PERFORMING THE MOST GIGANTIC OPERATIONS ON RECORD, AND BANISH ALL DOUBTS AS TO WHOSE IS THE MOST POWERFUL BOILER EXTANT.

No other Boiler can have any pretensions to such an exposition of achievements as the following :—

Upwards of FOUR MILES of PIPING, fixed on WEEKS'S ONE-BOILER SYSTEM, is employed to HEAT the various COMPARTMENTS of the ROYAL HORTICULTURAL SOCIETY'S GARDENS, KENSINGTON.

TOTAL LENGTH OF PIPING IN MILES AND FEET :—

	Miles.	Feet.
ROYAL BOTANIC SOCIETY	1	700
TEDWORTH, WILTS	..	5100
HIS GRACE THE DUKE OF LEEDS	..	5000
MR. WOODHOUSES, HARROW ROAD	..	4300
M. LOUIS VAN HOUTTE, BELGIUM	2	2400
MESSRS. E. G. HENDERSON, WELLINGTON ROAD	..	3800
MESSRS. A. HENDERSON, PINE-APPLE PLACE	..	3600
BOTANIC GARDENS, LIVERPOOL	..	3500
ZOOLOGICAL SOCIETY, LONDON	..	3000
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MESSRS. SMITHS', DULWICH	1	3000
WHITECHAPEL UNION	1	1400
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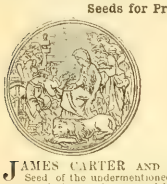

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The Gardeners' Chronicle.

SATURDAY, SEPTEMBER 8, 1866.

MEETING FOR THE ENSUING WEEK.

SATURDAY, Sept. 15 { Royal Horticultural (Weekly Show), at South Kensington .. .. .. 2 P.M.

THERE is a certain class of people who can never let well alone. Give them an inch, they want an ell; give them something new, they seek something newer. Horticulturists are no more free from this feeling of "restless, unsatisfied longing" than are any other people. If a plant produce single flowers, they watch and coax it till it forms double flowers. If its leaves are of a plain standard green, they are not content till they get a sport with striped or variegated foliage. If one flower is a shy bloomer, it is crossed by another that is less reticent as to its flowers, and so forth. Even Orchids have had to conform to this tendency, and although Calanthes or Cattleyas are fair enough by themselves, yet they are not so much so as to stay the cunning hand of the skilful hybridiser. And, as to Ferns, why a steady-going old-fashioned plant, that keeps itself to itself, stands but low in the esteem of the "fancy" in comparison with one that breaks out into a score of sports, each with an appellation that recals the ante-Linnean days, when sentences, not words, stood for the names of plants.

So great, however, is the physiological interest attaching to these horticultural freaks, so important the lessons that may be derived from them, that we should be sorry, indeed, if the spirit of curiosity, or the desire to "improve" the subjects that fall under their care, were to die out among gardeners.

Take, for instance, the case of HYBRID FERNS. Although Ferns are beautiful enough to look on, yet there are so many points in their life history to be cleared up, that we do earnestly hope that Fern-lovers will set systematically to work to produce hybrid Ferns. How they may best succeed is told in the last Number of the "Journal of the Horticultural Society." And there is the more need for this, as not one of the so-called hybrid Ferns has as yet proved its claims to be so considered. Professor EATON (see p. 78), who is better acquainted with American Ferns than any other botanist, has grave doubts as to whether the Fern figured in the Society's Journal, to which we have just alluded, is a hybrid at all. So also we find Fern-growers, as a rule, disposed to doubt the existence of Fern hybrids. M. STELZNER says he has produced a hybrid Gymnogramma by crossing G. chrysophylla and G. lanata, but when we learn from him how he procured the intermediate form, called G. Stelzneriana, we are led very much to doubt its hybrid origin. He mixed, as we read in the Bulletin of the Amsterdam Botanical Congress, the spores of the two species above named, thoroughly together on a piece of white paper, and then sowed them, and amongst the seedlings there sprang up a good proportion of plants of G. Stelzneriana. In a similar way he mentions having procured numerous crosses between G. gracilis, G. pulverulenta, and several other species of the same genus, though he has not been successful in the case of other genera. It is of course possible that a cross may have been produced in this way from the juxtaposition of the pro-embryo of two species, and the passage of the Fern-pollen, if we may be allowed the term, from one to the other; and it is borne out by the fact that in some cases, though not in all, the intermediate forms, though cultivated for some time, did not produce any spores. Still, even assuming the correctness of M. STELZNER's conclusions, the method of arriving at them is of the happy-go-lucky order, and is not likely to throw much light upon the phenomenon, nor does it hold out much promise of success.

WE have lately received from Durham specimens of AGARICUS GRAMMOPODIUS with the information that it is greedily eaten by cows. A second species was also sent, which is clearly A. collinus of Scopoli, an Agaric new to our Flora, which our correspondent suspects is also eaten by the same animals. We have not heard of this before, but we believe that sheep often eat Marasmius Oreades and other species of fleshy or subcoriaceous Fungi, as A. gambosus, and it is certain that other four-footed animals are extremely fond of them. It is, for example, difficult, where squirrels abound, to get good specimens of Boletus edulis, the stems of which resemble nuts in flavour and somewhat in texture. They are, however, not very nice in their tastes. They attack several of the Russulæ, whether acrid or mild, and even the juiceless form of Lactarius vellereus does not come amiss. Rabbits also occasionally eat Fungi, and the tough and ultimately almost woody Polyporus dryadeus is often gnawed by them when young, though they never seem to go deeper than the outer and more tender coat which has just been developed. It is curious that these animals which are essentially herbaceous, should have a fondness for such nitrogenous food, though in some cases, under peculiar conditions of depraved appetite, animal food is eagerly sought for.

It is notorious that most of the fleshy Fungi, especially Russulæ and Boleti, are the favourite food of slugs. But these creatures are not only omnivorous, and will thrive and fatten when fed exclusively on animal food, but some of the Helices will devour their weaker brethren if they have not access to other nourishment.

We should like very much to ascertain how many insects live exclusively on Fungi. A very curious larva accompanied the specimens of A. grammopodius, which we have never seen before, which spins for itself a most delicate white cocoon, about the size of a large Melon seed (half an inch long), in the centre of which the straight white grub, about two-thirds of the length, with a shining black head, is visible. We are endeavouring to obtain the perfect insect, but meanwhile should be glad to receive any conjecture as to the genus to which it belongs. *M. J. B.*

—— We have to-day the mournful task of recording the death of JOHN JACKSON BLANDY, Esq., for many years an active supporter of the Royal Horticultural Society, and lately the deputy-chairman of the London International Horticultural Exhibition, of which he was indeed one of the few original promoters, and to which he rendered many useful services in his official capacity. Mr. BLANDY died at his residence, High Grove, Reading, after a severe illness, on the 2nd of September, at the good old age of 72.

—— The SEEDS of GLEDITSCHIA do not generally germinate till the second year after they are sown, or even till a still later period; but this year, says M. CARRIÈRE, a number of the seeds of various species sown together on the same plot, and under the same circumstances as in former years, sprouted in from 15 to 18 days. M. CARRIÈRE does not offer any explanation of this peculiarity.

—— From information that has been kindly furnished us by several correspondents in Herefordshire and Gloucestershire, we learn that the APPLE CROP in the former county is, as a rule, below the average: while in the latter county the crop is spoken of by all our correspondents as above the average, though the fruits are small, but improving in consequence of the late rains, so that if fine weather ensue the crop will ripen early, and an average yield of Cider of good quality be obtained. Pears are spoken of as below the average almost everywhere, while Walnuts and Filberts are more abundant than they have been for many years. The crop of Plums, Apricots, and wall-fruit has been scanty. Strawberries and bush fruit have yielded full crops. In the Eastern Counties generally we learn that the crop of Apples is partial, much fruit being destroyed by maggots, as is also the case with Pears. The cold easterly winds in May seem to have done great mischief all over the country. A letter on the subject of fruit crops, from a correspondent in Yorkshire, will be found in another column.

—— The value of the proposal to which we have more than once alluded, of giving LATIN NAMES to the varieties of kitchen garden plants, may be fairly estimated by the way in which some of the names of the fruits exhibited at the Crystal Palace were spelt. For instance, Dongerlan for D'Angoulême, Serlemmer for Cellini, Carrey Pippin for Kerry Pippin, Ashmead's Colonel for Ashmead's Kernel. Let us hope that in future this matter may receive better attention. If such be the mistakes in names that should be familiar to gardeners, what would happen if Latin were to be employed for all these garden varieties?

ON HYBRIDS OBTAINED BY GRAFTING.

I TAKE the liberty of directing attention to a very obscure phenomenon in vegetable life, which is of such a nature that practical gardeners, whose occupation is the improvement of trees and shrubs by grafting and budding, have much better opportunities of throwing light upon it than botanists.

It is this: the capability of procuring by grafting crosses of two species or varieties similar though not exactly identical with those produced by sexual impregnation. Hitherto the nature of the subject has not allowed of experiment; and observations can only be made when a favourable opportunity offers. If it could be readily experimentalised upon I should not consider myself justified in speaking of it before having obtained by proof complete clearness and certainty of the laws by which it is governed. I am therefore obliged to speak of it more as an hypothesis which I entertain through subjective conviction than as a once for all demonstrable matter of fact; but I do not refrain from expressing an opinion, on account of the importance of the subject, and the desirability that it should be, through repeated observations, either proved or refuted.

Very little in general is known of the influence of the scion on the stock, and *vice versâ*, but Carl Friedrich von Gartner in his excellent work on the production of "Hybrids" (Stuttgart, 1849, p. 606) has brought together, with the utmost possible completeness, the phenomena bearing on this subject. The extreme of this influence, the entire mingling of the stock with the scion, has only very rarely been remarked, so that the laws on which this appearance depends cannot be fully explained. Certain cases of this most remarkable combination appear to have been observed in the Aurantiaceæ, Leguminosæ (between Cytisus Laburnum, L., and C. purpureus, L.), and Rosaceæ (genus Rosa). I myself, after several years' acquaintance with the subject, only arrived at the personal conviction of the occurrence of this strange phenomenon in the summer of 1851, through an opportunity I had of observing a case of the kind, between a white Moss Rose and a (to gardeners) worthless red mossless Rose.

Pietro Nati, Professor of Pharmacy at the University of Pisa, was the first to publish detailed, and for the time, exact observations on a case of hybridism of this kind in the Aurantiaceæ.

In the year 1674 he published a book at Florence under the title "De Malo Limonia citrata-aurantia, Florentiæ vulgo la Bizzarria." This book is now extremely rare, Pritzel having seen only one copy in Jussieu's library, and which after his death was purchased for the Royal Library at Berlin, where I saw it. In this work Nati describes an Orange tree which originated somewhere about the year 1640 in the garden Torre degl' Agli, near Florence, the property of the noble family of Panciatici, bearing here and there, without order, leaves as well as fruits of a threefold form.

1. The Bitter Orange, Citrus Bigaradia, Risso. Nati called the plant Aurantia, the fruit Aurantium.

2. The Citron, Citrus medica, Risso. The plant is called Limonia citrata, and the fruit Limon citratus by Nati.

3. A mingling or blending of both in all possible proportions, as plant, Limonia citrata-aurantia of Nati; as fruit, Limon citratus-aurantium, Nati. Nati describes the fruit in such a way as to make it appear that two forms occurred. In the first place it produced fruits, which as in the case of sexually-formed hybrids, showed the nature of both species so intimately united that in none of its parts was one species pure, but there was throughout the closest mixture of both; and secondly, Nati's tree produced fruits showing a more mechanical admixture, some of the carpels having quite the nature of Citrus Bigaradia and others that of Citrus medica, Risso, in the same fruit.

Concerning the origin of this wonderful plant, Gartner, who was the first to investigate it after Nati, says "that it was owing to no grafting of other species on it, that it was through no artifice in sowing, nor through any cleverly produced cross, but that he received the tree as a spontaneous natural production" (p. 17). Nati, however, was of the opinion that it originated from the grafting of the Citron (Citrus medica, Risso), on the Bitter Orange (Citrus Bigaradia, Risso), whereby an intermediate form partaking of the nature of both was originated in one shoot, which sprung either from the place where a well united scion of the Citron was grafted on the Bitter Orange, and met the sap of both, and grew up, or it made its appearance where a grafted eye, the lowest of three or four, had not shot forth, but

remained inactive, without however dying. Nati dismisses two other views on the origin of the "Bizarria," without further argument, but which in later times have been frequently repeated. According to the first, two seeds, one of the Citron and the other of the Bitter Orange, were sown together, and the plumules of the seedlings closely bound to one another, as in a graft, ("tenerrimis caudicibus arcte insitionis lege colligentis.") According to the second, branches of both species were cut longitudinally and grafted together. On the origin, therefore, of this wonderful plant nothing historically certain can be given.

The knowledge of this Bizarria, first made known in Central Italy, has continued up to the latest times. Tanara, Volkammer, the Philosophical Transactions, Van Steerbeck, Zucagni, Gallesio, Poiteau, and Turpin, Michel, Risso, Calvel, and others, mention and figure numerous forms of them. But during the last 30 years it appears to have become lost sight of, and no description answering to our present botanical requirements exists. Hitherto I have seen no Bizarria, although I have made numerous inquiries for it in Germany, France, and England.

In 1841 we were very imperfectly made acquainted by some Englishmen, with another differently composed Bizarria, which was met with in the East, and at all events from a different source to that from Central Italy, which remained unknown to the English reporters. Lindley gives in the *Gardeners' Chronicle*, 1841, pp. 365. 379, 471, 613; 1854, 583; 1855, 627, and in his "Theory and Practice of Horticulture," information of a Bizarria found by St. John in the garden of a certain Boghos Bey, at Alexandria, whose fruit was said to be a combination of three species, viz., the Lemon, Citrus Limonum, Risso; the Sweet Orange, Citrus Aurantium; and the Citron, Citrus medica. And G. C. Renouard reports in *Gardeners' Chronicle*, 1841, p. 396, that as early as 1812 he saw in the village of Hajilar, near Smyrna, a fruit in which only two species were united — the Lemon and Sweet Orange.

Renouard expresses the opinion that the fruit seen by St. John near Alexandria, was probably from Smyrna, and identical with the one investigated by himself, which he, however, describes as a combination of two species. On the origin of the Alexandrian Bizarria the tradition of St. John is repeated with credence—that three seeds are taken, of the Citron, Orange, and Lemon, one of which is cut down both sides, and the others on one only; the first being placed between the latter, and bound together with thin grass, and sunk in the earth. This procedure to obtain Oranges combining three species, is supposed to have been acquired by Jussuf Bey in Smyrna, where it has been practised from time immemorial. I am persuaded that the statement of St. John, that three species of Citrus were united in the Bizarria of Alexandria is erroneous, and that it consists of only two species, the Citron and Sweet Orange. What St. John, and Lindley after him, took for a third species, is, according to my opinion, not a third species, but, from the analogy of other more certain graft-crosses, only a blending of the Citron and Sweet Orange.

Much more generally known and accessible is the graft-hybrid of two Papilionaceæ of the genus Cytisus, C. Adami, Poiteau (not Poiret), which originated from the grafting of C. purpureus and C. Laburnum. The first account of Cytisus Adami was given by Prévost filius, nurseryman at Rouen, in 1830 (Annal. Soc. d'Hortic. de Paris, vii., 1830, 93); but as the plant is well known, it appears superfluous to give a more detailed description. In its smooth, rather deep green leaves, which are larger than those of C. purpureus and smaller than those of C. Laburnum — and in its long, loose, drooping, dirty carmine-red or yellowish racemes of flowers, it is intermediate between C. purpureus and C. Laburnum, so that one might take it to be a sexually-produced hybrid between the two. But the statement of the nurseryman Jean Louis Adam, at Vitry, near Paris (in whose garden it was raised), on the origin of this remarkable plant, is entirely at variance with this opinion.

To Poiteau we are indebted for the communication concerning it (Annal. Soc. d'Hortic. de Paris, *l. c.*), who also gave it the name of C. Adami.

Adam's report runs thus :—" In 1825 I shield-grafted a number of C. purpureus on C. Laburnum; one of the shields remained inactive for a year, which frequently happens, and the bud increased considerably, which is also a usual occurrence. In the following year all the eyes on this shield grew, and I noticed, among the branches it produced, one which differed from the others in its more robust development, perpendicular direction, and much larger leaves which resembled very nearly those of C. Laburnum. I then propagated this branch by grafting, hoping it would furnish an interesting variety; but as I invariably sold the trees after propagating them, I never saw the flower." Adam's report on the origin of Cytisus Adami contained such an anomalous account of the behaviour of scions from that otherwise universally known as the safest manner of propagating and retaining varieties, that it found no credit. Even Poiteau, who made Adam's report known, did not agree with him, but declared it to be an accidental production (*un développement accidentel*) of C. Laburnum, just as the Bizarria in Oranges. What made Cytisus Adami so highly remarkable, would doubtless soon have been forgotten but for the new and extraordinary phenomena it showed, and which drew the attention of very numerous observers to it. Everywhere it was planted and flourished, and after some years threw out branches, which partly in foliage, flowers, and fruit, represented pure C. Laburnum, and partly pure C. purpureus.

This extraordinary appearance was remarked, and more or less minutely described, by Rivers, Loudon, Henon, Seringe, Herbert, Dillwyn, Noack, Schnittspahn, Kirschleger, Reisseck, A. Braun, Steetz, Lindley, Le Jolis, Sinning, Treviranus, Kurr, myself, and others. As Adam's statement was not believed by the majority of the observers, several other hypotheses of its origin were put forward. Many held it to be a hybrid of sexual origin; others had different explanations, to which I cannot now allude. Formerly I had an opportunity of examining it in different places in the Rhine provinces, and have grown it for the last five years in the unfavourable climate of Königsberg, although in the latter place I have not succeeded in obtaining branches of C. purpureus and Laburnum. In the hybrid we have a complete amalgamation (C. Adami), a mechanical admixture, and an entire separation of the two species composing it.

In foliage and flowers C. Adami shows the following branches :—1. Those wherein the nature of C. Laburnum and C. purpureus is intimately combined, as in sexually-produced hybrids, so that the characters of neither species predominate; these represent the pure C. Adami of Poiteau. The flowers have been sterile in all places, they therefore resemble in this particular true sexually-formed hybrids. From this I expected that the pollen would be imperfectly developed; but I was astonished to find on examination that the grains were not only numerous but perfect in form and contents. They formed tubes on the stigma, and also when scattered on sugar water. The pollen was consequently quite at variance with that produced by sexual hybrids. Even this was the case in the greater number of the ovules. In sexually-formed hybrids the female part, and the pistil, and especially the ovules, are generally well developed; in Cytisus Adami this is not the case, the ovules being generally monstrous, few of them exhibiting the normal form. On this I shall enlarge more fully in another place. 2. There are numerous flowers which appear to consist of a mechanical mixture of C. Laburnum and C. purpureus. H. Braun (Verjüngung, 1851, p. 340) has fully described them. These also bear no fruits. 3. Branches and flowers of perfectly developed C. Laburnum; and 4, perfect C. purpureus; both bear fruit whose seeds germinate. From seeds of C. Laburnum, on C. Adami, I raised plants (of C. Laburnum) which, unfortunately, in the rough climate of Königsberg only survived a few years, and succumbed during the hard winter of 1863-64. Hofgartner Schmidt (Verhandlungen des Gartenbauvereins zu Dessau, 1859 and, 60, p. 46), raised from seeds produced by C. purpureus, on C. Adami, C. purpureus. It is evidently of great importance to obtain sexually-formed hybrids between C. Laburnum and C. purpureus for the purpose of comparison with C. Adami.* This task I particularly recommend to those whose homes are favoured with a milder climate than Königsberg.

It appears to be difficult to obtain the sexual hybrid between the two plants. Twelve flowers of Cytisus Laburnum which I dusted with the pollen of C. purpureus in the Botanical Garden at Königsberg did not set a fruit. Dr. Reisseck, in Vienna, has also tried in vain two years running to fructify C. Laburnum with C. purpureus, and *vice versâ*, as he communicated to me by letter.

I have made observations on a Rose, whose history was clearly ascertained, and which are of a nature to induce me to give credence to Nati's view of the origin of the Bizarria and Adam's report of that of C. Adami, and which appear to me to decide the question—are there graft-hybrids or not?

On the 21st July, 1864, Mr. A. E. Lorek, house and garden proprietor in Königsberg, Alte Gasse No. 23, brought me a branch of a white Moss Rose, with two shoots; one of them bore a white Moss Rose (probably "Quatre Saisons"), the other, two common, worthless, mossless, red centifolia Roses. That it was not worked on was perfectly certain. At once the analogy with the Bizarria and Cytisus Adami occurred to me. The plant from which this branch was cut was purchased by Mr. Lorek six years previously from C. L. Kasemir, nurseryman, of Königsberg, as a white Moss Rose, and planted out in his garden. The plant had hitherto borne only white Moss Roses, had suffered much from frost, by which its shoots were cut off close to the ground; but it had always made shoots from below the earth. Mr. Lorek observed that it bore two kinds of Roses for the first time in 1864, and fortunately this was so strange to him that he handed one to me. On examining the plant myself in Mr. Lorek's garden on the following day I found six erect shoots, 3 to 3½ feet high, growing out of the soil.

One of these was a red centifolia Rose, entirely destitute of moss, with thorns 5 to 5½ lines long; the remaining five were white moss Roses. The branch which, with the white moss Rose, bore the red centifolia, sprang from a horizontal stem, half hidden in the soil, and had produced a branch bearing centifolia throughout. The branch bearing the two kinds of Roses appeared to be only two years old, was 6 lines in diameter at the base, and possessed no thorns on the old wood, but merely on this year's growth. On a closer examination of the Moss Roses of the remaining four shoots, another phenomenon presented itself, namely, white Moss Roses, in which single petals showed a mechanical mixture of red and white. Either one-half of a petal was red and the other white, or the red part was larger than the white, or the white larger than the red; in the latter cases the different coloured parts often formed a wedge between similarly coloured side-pieces. The subterranean part of the stem admitted of no further examination. It was very propitious that the history of the stock and the mode of grafting could be ascertained. Mr. Kasemir told me that he sold Mr. Lorek a white Moss Rose, like all others at that time worked by him, grafted on the root of the centifolia. For this purpose he had raised from cuttings the mossless red centifolia, of which, when well rooted, the principal branches were cut down, the underground side branches cut off, and then the scion of the white Moss Rose was grafted on the place where the principal branch was taken out. He preferred this mode of grafting to stem grafting, for in the former case he always succeeded, but in the latter he had often failed. The white Moss Rose used by him for grafting had the peculiarity that in the bud the petals were tipped with red, and only became completely white after opening.

As it often happens that flowers of different colours, or of different size and colouring, occur on the same plant, as for example in Viola tricolor, V. lutea (V. calaminaria, Lej.), as I have observed at Moresnet, Aix-la-Chapelle, in Dahlias, Phlox, Rosa Eglanteria, Mirabilis jalapa, &c., so, of course, we may suppose that the Rose just mentioned, instead of being a graft-hybrid, may be accounted for by a similar process of variation, but it is highly improbable that this should be the case, and even, on closer consideration, it appeared to me to be impossible, as not only was the colour of the Roses altered, but also their covering, in the highest degree: for the one had long, glandular, crowded appendages, called moss, and no thorns, the other no moss, but scattered, long thorns. As no other example of so great an extent of variation in morphological appearances in one plant is known to me, this did not appear to me to be probable, and nothing else remained but the supposition that this was one of those rare examples in which, through grafting, a mixture of the nature of two plants, this time of two varieties, and not species, as in the Bizarria and Cytisus Adami, was produced.

In the graft-blending of Rosa centifolia, L., fl. roseo, and R. centifolia β muscosa, Lindl. flore albo, just described, I observed, moreover, that a real, intimate amalgamation of both varieties did not exist, but either an already complete separation of both, or the beginning of the separation, in the almost mechanical mixture of the two flowers. A mixture after the manner of sexually-formed blendlings would here have been exhibited, had Mr. Lorek's Rose borne also white mossless Roses, and red mossy Roses, but I saw neither. However, my observations can in no way be considered as complete. Mr. Burdach informs me that in his garden, some 15 years since, he had three buds of a white Moss Rose worked high up on the stem of a red mossless Provence Rose, which grew well, and for several years produced Moss Roses. However, after some years, one of these buds had white Moss Roses, which also possessed red petals, so that some of them were half red; and in the following year the Roses on the same branch were quite red and mossy. The foliage also of this red Moss Rose was of a deeper green, and that of the white was and remained lighter. This observation of the intimate mingling of two varieties of Rose completes mine.

In the *Gardeners' Chronicle* (1860, p. 672) is a case in question. In this graft blending of Rosa Banksiæ and Devoniensis, according to the report, the mixture certainly, but not the separation of the two constituents is reached.

If anybody were inclined to take these cases reported on Roses, where different varieties of flowers were produced on the same branch, simply as instances of variation, this consideration stands in the way—which appears to make such an idea inadmissible—that the extent of variation falls entirely within the properties of the scion and stock. How is it, then, that the variation shows no characteristics different from those possessed by either? It is at once a wonder that in all these cases the variation is confined to the properties of the scion and stock, and I think that no other explanation of so striking a fact can be given than that the stock and scion have commingled. Graft-crosses, the analogues of sexually-formed crosses, (which I designate hybrids when they have originated from species, blendings when from varieties), divide themselves into graft-hybrids (*Pfropfmischlinge*), and graft-blendings (*Pfropfblendlinge*), and have, according to the little which appears to me trustworthy observation, this in common with sexually-produced crosses, that they exhibit a form which shows a complete amalgamation of those from which they have originated. This form is, as in most sexually-produced hybrids, and also in the graft-hybrids, sterile (Bizarria of Nati and Cytisus Adami); however, in the case of C. Adami, the anomalous property of perfecting the pollen, and producing imperfect ovules, and thus inducing sterility, appears. Again, the graft-crosses distinguish themselves in one peculiarity from sexually originated crosses, that on one stem of the cross a separation, and of the characters of its parents, is present; some branches form foliage, flowers, and partially fruit, which show the nature of both parents, mechanically placed side by side. I call this appearance of incomplete separation "*mengform*" (mixed form), and besides these "mengforms" other branches show the extreme of separation, in the complete development of both parents in foliage, flowers, and fruit, which even contain seeds capable of germination. Whether some observations of two kinds of fruit on the same stem of cultivated plants, of other species than those enumerated by me, as for example — Nectarines and Peaches

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* Aug. Nap. Baumann, nurseryman at Bollwiller (Haut Rhin) announced in his Catalogue for 1861 Cytisus purpureo elongatus as "une nouvelle hybride remarkable." The following was received by Prof. A. Braun, in answer to an inquiry as to the origin and constancy of this plant :—"My Cytisus purpureo-elongatus is from my own sowing, but not through artificial impregnation. The mother of this plant is C. elongatus, from which I gathered the seeds; near this stood a plant of C. purpureus, whose pollen was probably carried by insects to the others, and thus the hybrid was produced. I have never observed any variation in this plant, and I believe I am safe to say with certainty that this does not take place in it." A fatal. The last statement of Baumann is not in favour of C. Adami being a sexually-produced hybrid. I have had no opportunity of seeing Cytisus purpureo elongatus.

(*Gardeners' Chronicle*, 1865, p. 1245) concerning which Decaisne once wrote to me: of red and yellow Gooseberries (*Gardeners' Chronicle*, 1855, pp. 595 and 612); of different Pears (Dureau de la Malle, in Compt. Rend., ii., 1855, p. 805); Apples (Gaudichaud, in Compt. Rend. xxxiv., 1852, p. 746; Treviranus, Sitzungsberichte der Niederrhein. Gesellschaft, in Bonn, 1858, p. cvii.) and by others, are also to be explained as crosses by grafting, cannot be safely said, for the history of those stems, that is to say, what was stock and what scion, is not given. It appears to me, however, very probable, that Gaudichaud's case of an Apple tree bearing two forms of fruit and a third, which was a blending of the two others, belongs to this category. For the future let other, more exact, observations of similar cases take place.

The hidden conditions under which a completed graft forms a graft cross, and those under which a scion without mingling its nature with the stock, may perhaps then be explained. *Translated from the original article by Prof. Caspary in "Bulletin du Congrès International de Botanique et d'Horticulture, Amsterdam, 1866."*

OUR FRUIT CROPS.

It is no easy matter to get fine crops of superior fruit year after year in a climate so changeable as ours, and the difficulty is increased when the soil and locality are of an unfavourable character. Notwithstanding these drawbacks, however, my own opinion is, after many years' observations, thought, and practice, that, if a proper system of management was adopted by our orchardists, more regular crops of fruit would be annually obtained than are now furnished under the unsystematic management that prevails. When fruit crops fail the variableness of our climate is in general blamed, for the mishaps of rain, snow and frost, when fruit trees are in bloom, are very injurious to the delicate flowers, and doubtless sometimes destroy some of our crops. But if the matter is inquired into, I am convinced the failure might be traced very often to a different cause. If we examine the state of orchards throughout the country, we shall find in general that they receive little or no attention. Apple trees, Pears, Plums, and Cherries are planted often with very little or no preparation of the ground; they are generally planted too close together, and are allowed to make all the wood they can. In a few years they naturally become overcrowded. When they get into a full bearing state and the season is favourable, the crop is so heavy that the branches are bent to the ground with its weight; under these circumstances the fruit is generally small, and when sent to market it only brings a low price. The evil does not, however, rest here. The trees, owing to the heavy crop they have borne, become so exhausted that they require a year's rest in order to store up matter for another crop, and this goes on, the one year a heavy crop, the following season a failing one, and people in general attribute the failure when it occurs to the coldness of our springs, while in nine seasons out of ten it arises from no other cause than allowing the tree to carry too heavy a crop, thereby exhausting it of the matter necessary for a crop the following year.

If we look into our best gardens where a proper system of management is adopted, we find very different results. If we examine trees on walls we find at this season of the year that not a single shoot more than is required is retained, and that the fruit has been so thinned that the trees can bring what is left to the highest degree of perfection without their being exhausted of the matter necessary for a crop the following season. If we look at the Espaliers, the Dwarfs, the Pyramids, and Standard trees, we also find that the same care and attention has been bestowed on them as to the proper thinning of the shoots, spurs, buds, and fruit, so that the produce which the trees are allowed to carry should be fine, without the trees being exhausted of the matter required for a crop the following year. In gardens then where a proper system of management of this kind is followed—when soil and situation are of a favourable character—we do not find a failing crop every second year, nor every third year: indeed a total failure of the crops rarely occurs in such gardens once in half a dozen years. Of course, in places where the soil is bad and the situation unfavourable, good crops are not so certain, even under the best management.

In this part of Yorkshire, which for fine timber, good fruit, good corn, and good Grass land is not surpassed by any other locality in the kingdom, the fruit crops, with two or three exceptions, are good. The exceptional cases are Strawberries, Peaches, and I think I may add Plums. Plums in gardens are a tolerable crop, a little below an average. Here the Orleans is good on walls and on standards; also the Victoria, Kirke's, Mitchelson's, and Golden Drop. Wine Sour is thin; Damsons are thin on some trees, on others they are a fair crop; Washington and Jefferson are thin; Green Gages are a fair crop on some trees, and the fruit is very fine. Last year Plums were a most abundant crop in all parts of this county, and this accounts for the failure of them in orchards this season; but the crop this year being a failure, and the summer favourable for ripening the wood, the prospects of a crop next year are satisfactory.

The Strawberry plants suffered much last season from the long-continued dry weather, especially on light soil. About Knaresborough great quantities of Strawberries are grown for Harrowgate, Leeds, Bradford, and other markets. The situation is favourable in ordinary seasons; but being a sloping bank above the river Nidd, and very open, the plants suffered from want of moisture, and the year the crop in consequence has been light. In some gardens, where the ground is of a heavy and deeper nature, and sloped to the north, the crops have been good. In the neighbourhood of York, where the ground is level and of a deep loamy character, the plants withstood the drought better, and the crops this season were good. And so in other parts, where the soil was light the crop also was light, and where the soil was good the crops also were good, though in some places the frosts in May killed much of the blossom.

Peaches on open walls are a very light crop this season, indeed in many places they are a total failure. At the beginning of September last year myriads of aphides settled on the trees, covering every part of the leaves, buds, and wood; the foliage soon all fell off, and the wood, in consequence, never got properly ripened. The trees were very full of bloom last spring, but owing to the greater part of it being imperfect, it fell off without setting. The trees that made the weakest wood last summer, and which, in consequence, were the ripest when attacked by the aphides, have this season most fruit on them. The trees that made the strongest wood, have little or no fruit, though they showed abundance of flowers, last spring. There are two trees here that made rather weakly wood, the one is a Royal George the other a Barrington; a greater quantity of fruit set on these trees than all the others put together, so that I have had to thin the fruit considerably. I have noticed the same thing in other gardens. Some few gardens here and there were fortunate enough to escape the attack of aphides. In these Peaches are abundant.

Apricots are a fair crop in general and very fine in quality; here they are a very good crop, but I protected the trees all the time they were in flower. They came very early into bloom owing to the very great mildness of the winter. They could scarcely have more unfavourable weather than occurred the whole time they were in flower; there was not one fine sunny day while they were in that condition. The trees were very full of bloom, which was very fine and perfect, owing to the heat and dryness of last summer; and it set well, where it was not injured by frost or snow.

Apples are a very abundant crop this season, and will naturally be a light one next year. Owing to the lateness of the season and the heavy crop, the fruit is small, but it is very clean and free from spots.

Pears are a moderate crop, indeed rather below the average. Trees that bore abundantly last year have very little fruit this season, and trees that were light last season have good crops this; on the whole, I think the crop a moderate one. Cherries have been very plentiful and fine this season. Raspberries, Gooseberries, and Currants have been very abundant, and very fine. Filberts are a very good crop. Walnuts are plentiful, and will be fine.

On the whole, we have every reason to be satisfied with our fruit crops. The dryness of the present season will ripen the wood and buds for next year, so that, as far as gardens are concerned, we can look with some certainty for fair crops of fruit next year; but in orchards the Apple crop next year cannot but be very light, owing to the great quantity of fruit on the trees this year. *M. Saul, Stourton, Yorkshire.*

NOTES ON CONIFERS.—No. VIII.

Welwitschia mirabilis (concluded from p. 778.)—The points of resemblance with Ephedra, so far as we have gone, appear to us few and trifling as compared with the discrepancies. But the testimony against affinity with Ephedra or Gnetum is much more formidable than any we have yet touched on. In fact we are only coming to the strong point, that is the other half of the inflorescence, viz., the hermaphrodite flowers of Welwitschia; these occur in strobili smaller in size than those we have described as female, and contain male stamens, and not only so, but extraordinary to relate, also a stigma and ovary, and still more extraordinary, a stigma and ovary constructed on a different plan from that in the female strobilus. Fig. 8 shows this hermaphrodite strobilus, and Fig. 9 a magnified flower taken from the base of

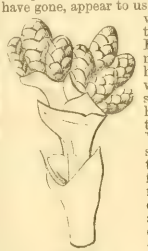

Fig. 8.

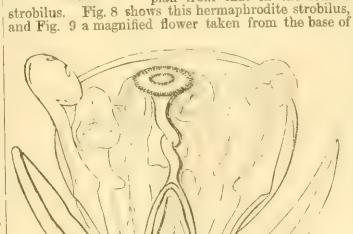

Fig. 9.

one of its scales, showing the stamens surrounding the pistil. The structure and form of the stamens in these hermaphrodite flowers is one of the points of accordance with Ephedra which Dr. Hooker cites. Of this the reader can judge for himself. The resemblance seems to us remote.

As to the pistil and ovary, Dr. Hooker allows that they are wholly anomalous. But although the ovary present, it appears that they are always sterile, at least so they have always been found in the specimens hitherto examined. On this point Dr. Hooker makes the following interesting remarks, "The most analogous case known to me of an apparently highly perfected stigmatic organ being absolutely functionless is that of the curious genus Cardiopteris, which abounds in the eastern provinces of India, and which I have examined in a living state. In this plant the ovary is unilocular, and has two stigmata—one large, globular, and papillose, borne on a flexuous style; the other a low mamilla, in no respect resembling a stigma in outward appearance. Mr. Brown has shown that this fully formed stigma is in all probability functionless, and withers away without sphacelation, but that impregnation takes place through the mamilla, which, after performing its function, becomes remarkably developed." And afterwards his train of thought leads him to the following speculation:—"It is difficult to regard this remarkable ovule without speculating on the possibility of its being the only known representative of an existing or an extinct race of plants, in which such a stigma-like organ was really capable of performing the function of a stigma; and when we see this organ occurring in a hermaphrodite flower, it is easy to suppose that we have in Welwitschia a transition in function as well as in structure between the gymnospermous and angiospermous Dicotyledons, and that the ideal race consisted of hermaphrodite-flowered plants in which the office of the stigma of the carpellary leaf was performed by a stigmatic dilatation of the ovular coat itself. Nor is it difficult to trace the successive variations from this imaginary type which in the course of many generations would result on the one hand in the obliteration in the embryo sac, and suspension of the functions of the ovule in the flowers of certain individuals, and on the other in the obliteration of the stamens and stigmatic apex of the ovule in the flowers of other individuals—the once bisexual plants thus becoming unisexual. Singularly enough Ephedra presents one step in advance of Welwitschia, in the total disappearance of the ovule in its male flower, and is one step behind it in the retention of a functionless stigmatiform disc in its perfect ovule."

The ingenuity of this speculation must not make us overlook the instability of its foundations. We must remember that there is a good deal of assumption in it. It assumes that there is a functional difference in structure between angiospermous and gymnospermous Dicotyledons. It assumes the *permanent* obliteration of the embryo sac, and the suspension of the functions of the ovule in the hermaphrodite flowers of Welwitschia. It assumes that the stigmatic apex is absent in its female flowers, and as to Ephedra it assumes that the stigmatiform disc is functionless in the perfect ovule, all points which are at least open to argument.

But there is something much more extraordinary in the thing than the point on which Dr. Hooker remarks. His observations apply to the assumed functionless character of the ovary in the hermaphrodite flower; but in our eyes a much more wonderful fact is there being two different kinds of ovaries of different types, and situated at different places in the same plant. In Cardiopteris it is only one of the stigmas of the same ovary which is abnormal in its development. It would have been a thing very remarkable, and far beyond the case of Cardiopteris, had ovaries of the same type, and identical in appearance and structure, existed without male flowers on one part of the tree and with male flowers on another; and still more remarkable if they were always sterile when associated with the stamens, and fertile when away from them. But how far beyond all such cases is the present, where, in addition to the other peculiarities, the ovaries at the different parts are different in appearance and differently placed.

Moreover we do not think we have as yet sufficient knowledge of the plant to allow us to assume as a matter of course that the ovary in the hermaphrodite flower of Welwitschia is functionless. In the specimens examined hitherto they were always found sterile, but in other specimens or in other years, or under other and more favourable conditions, they may be fertile. There is nothing in their appearance to denote functional disability, and if at times they do prove fertile, then, seeing that the apparatus is so different, it is surely not illogical to infer that the seed produced may be different, and that in all probability the plants raised from the seeds may be different too. In fact we should then have a case of alternate generation in plants, and in a plant of a high order of organisation, too, still more extraordinary than those which have been observed in some of the lower animals.

But even although absolute functionless sterility were the true and permanent condition of the ovaries in these hermaphrodite flowers, the fact as it then would stand is scarcely less extraordinary. We still have two wholly distinct and dissimilar ovaries on different parts of the same plant, and although one of these is functionless, that phase is a mere matter of development. The existence of two forms of ovaries is a matter of original organisation, which of course is necessarily of much higher import than any mere question of completed or arrested powers to use the organ.

A plant possessed of this most amazing property, or the possibility of exercising it, ought surely not to be placed in any natural order which is without it. It ought to stand by itself, "solely singular in its singleness."

We imagine that we need dwell no longer upon the differences between it and Ephedra. We do not pretend that we have proved that it is not allied to Ephedra. We are not so Quixotic as to attempt to prove a negative. But we do think that we have shown that Dr. Hooker has not proved the affirmative, and the *onus probandi* lays upon him.

Ephedra and Gnetum.—Having cleared away Welwitschia from our path, we shall now very briefly inquire

whether these two, although unrelated to Welwitschia, may not still have something to do with the Conifers.

On this point the limits of our inquiry are very narrow. The only grounds on which these plants have maintained their place for so long as next door neighbours are the belief that they are all gymnospermatous, that their timber shows the coniferous discs, which are considered characteristic of Conifers, and of Conifers alone, and that the development of the endosperm and corpuscula is in all by a process analogous to the formation of the prothallia and archegonia of the vascular Cryptogams, and which is entirely wanting in the Phænogams. Dr. Hofmeister's valuable work on the higher Cryptogams gives the cell formation inside the pollen grain as an additional point of distinction between Conifers and what are called angiospermatous plants; but we must omit this test as too difficult of ascertainment—of doubtful and admittedly inferior value, and as a point on which materials are wanting for all but the true Conifers.

We thus need not extend our inquiry beyond the three chief points above indicated:—1, whether corpuscules occur in the ovules; 2, whether the seeds are gymnospermatous; and 3, whether the structure of the timber is that of Conifers. If any have none of these characters, we shall take the liberty to disallow their relationship, satisfied that the total dissimilarity of their appearance will prevent any one urging their claim to kindred upon other grounds.

1. The corpuscules in the ovules. We have already pointed out in our examination of Welwitschia, that the corpuscules do not occur in it or in Gnetum; and that although our information was insufficient as regarded Ephedra, the fact of its having only two cotyledons (if we were right in that fact) was a strong presumption, if not absolute proof, of its having no secondary embryo sacs or corpuscules in its ovule.

So far as the corpuscules go, then, there seems no reason for placing the Gnetaceæ with the Conifers.

2. We shall now take the gymnospermatous character of the seeds into consideration a little more in detail than we have yet done. We have already pointed out that under the expression gymnospermatous, two different and unconnected matters have come to be mixed up together, each of which require to be taken separately—the supposed nakedness of the seed and the supposed nakedness of the ovule.

As to the supposed nakedness of the seeds dependent on the absence of a pericarp and ovary, we have, in the first place, to observe that the nakedness is not actual; it is only theoretical. If we take the cone of a Scotch Fir, not a seed is to be seen or got at until the cone has arrived at maturity, when it opens and allows the seeds to drop out as the pericarps of other plants do; and the hypothetical nakedness consists in this—that when the cones do so open, they are seen not to be enclosed all round by something like the pericarp of other plants. It is hence assumed that the pericarp is absent.

Now, according to our view, in Conifers all the parts are present in exactly the same relations to each other as in angiospermatous plants in general. In these plants the following is the concentric arrangement of parts when all are present:—Outside is the flower or floral envelope, within that the stamens, within them the disk, next the pericarp of the ovary, within that again the seed, enclosing the ovule, surrounded by its various envelopes. Now, it so happens that a different character of structure is usually present in these different parts; the petals have a cellular structure, called petaloid, the disk is variable, of a scaly, waxy, or woody texture, as the case may be: and the pericarp is often woody or corticaceous. The same relation of parts occurs in Conifers. The bract is the petal, the flower being female the stamens are of course absent, the scale is the disk, the wing and testa of the seed is the pericarp, and the parts of the seed within the testa or nut succeed each other in the same order as in angiospermatous plants; and it is not unimportant to observe that the structures of these different parts correspond with the position and function we assign them. The margins of the bract show that its structure is petaloid, and so corresponds with the idea that it is the petal. The semi-woody structure of the scale accords with its being disk, and the nut-like covering of the seed corresponds with its being the pericarp. In fact, the fruit of the Conifer is a spiral aggregation of one-sided nuts, or rather hips, like those of the Rose, whose shell, instead of enclosing it all round, lies, like the petal, only on one side; and the reason is plain — Nature sets us all an example of economy. If the gable of another house would serve for one of the walls of one she was about to build, she would never repeat a second wall parallel to it, but would use the old gable to save space and expense. She has done so in the Conifers—she has built her wall of disk leaning on the back of the next, and because she has not built another superfluous wall alongside its back, the gymnospermatists would have it that she has built no house for the seed at all.

There is an alternative view of the homologies of the parts of the cone, for which we think there is a good deal to be said, although on a comparative view of the relations of the bract in all its different forms, we prefer that above stated. It is that the bract is equivalent to the calyx, and that the scale consists both of the petal and the disk, the petal being represented by the prickle or mamma of the apophysis, and the disk being the inner half of the scale. A very few words will suffice to point out the respective merits of both these views. *A. M.*

BRITISH ASSOCIATION.

FROM the admirable address of Professor Humphry, President of the Sub-section Physiology, we make the following extracts, bearing on the phenomena of animal and vegetable life:—

The animal frame stands at the summit of the great physical cone, with man at the apex, in whom the material is worked up to the point of contact with, and made subservient to the purposes of the spiritual. So complex is the animal organism, so intricate and varied are the questions in physiology, that it is apt to pass out of the range of science, and become too much a matter of speculation and an object of mystery; so that there is some danger of its being degraded by the very difficulties and features which should really place it in the highest position among sciences. Finding, as we do, that the animal machine is the resultant of all the properties or forces of matter, combined and harmonised by that most mysterious of them which we call the "vital force," we claim as fellow-labourers the workers in every division of science, and watch with interest each discovery, knowing that in whatever direction it is, it has a bearing, more or less direct, upon our own studies.

The discovery of development by cells, is, perhaps, second only to that of gravitation, evincing, as it does, a simple, uniform law, underlying and working out the vastly diverse forms and structures of vegetable and animal life. Surely the knowledge that the tough Oak plank, the blade of Grass, the lion's claw, the contracting muscle, and the thinking brain all emanate from simple forms which, so far as we can tell, are perfectly alike; an I, further, that the entire plant or animal also emanates from a single form or cell which is undistinguishable from the rudiments of its several parts, is as full of interest and of beauty as any fact or law in science. One of the fragments of knowledge which man has worked out for himself in the whole range of physical science.

The microscope has lately been to physiology much what the steam engine has been to manufacture and transit. It has opened up new fields of observation, and has given an entirely new direction to our thoughts. The structure of the several tissues and organs has probably been made out as far as the present means permit, and we are occupied now in investigating their mode of formation and connection with one another. The more we investigate, the more we think that they are more closely related, more continuous, than we have been in the habit of regarding them. There is now little doubt of the continuity of the nerve fibres and the nerve vesicles; and it is not improbable that the other parts of the nerves are continuous with the several tissues among which they ramify.

We perhaps scarcely realise and appreciate the bearings of the fact, that all the various tissues are formed from a primitive homogeneous and continuous plexus, by the formation and metamorphosis of nucleated cells, "granules," "masses," "cells," or whatever we please to call them, and their development into structure; attention has been directed almost exclusively to the formation and development of these masses and too little to their separation; though the latter is a process little, if at all less important than the former, and must be effected by something analogous to what we call abruption. Indeed, the work of disruption, or hollowing out, during the embryonic state is little less active than that of secretion or building up.

What we call Chemistry, with its attendants, heat and electricity, plays a most important part in the animal machine; and, probably, more information as to the nature of the organic processes is to be expected from their chemical study than in any other way. We have found out that there is a very close relation between a complete atomic formula and the vital processes, the amount of chemical transition which is expressed by the former being commensurate with the character of the latter, and the amount of chemical change which takes place in the textures being commensurate with the activity of the vital processes. There seems good reason to believe that a muscle at rest is the receiver of energy, or force, in the balanced force compressed by the medium of a high chemical formula, and existing, therefore, in a high state of tension, that during its construction the compressed force is set free by the decomposition of its structure—that is, by the resolution of its complex formula into simpler ones, and a passage to a lower formula or a state of lower tension, at the same time that heat is evolved and electrical changes take place; though the latter are not yet distinctly defined. It is impossible, therefore, to avoid the application here of the doctrine of contrast in force, and to look for the source of the force in the organic world, and which seems to be the greatest advance that has for some time been made in our knowledge of the laws of matter. We can scarcely doubt that the chemical force which is set free during the decomposition attendant upon muscular action is the force which is the counterpart of the work done and of the heat that is evolved. In other words, a muscle may be regarded as the medium by which force is accumulated, rendered latent, or condensed in a condition of high chemical tension, and is, from time to time, as occasion may require, set free and converted into muscular or contractile force and heat.

But can any combination of the ordinary forces of matter ever lead to the phenomena of life? If they are proved to be correlative with the vital force it might seem that some show of probability would be given to the affirmative. We must remember that for the manifestation of vital force a living being is, as far as our observation at present goes, absolutely necessary; that is life has never been known without a living being, without a form, without a medium, for the exercise of the vital force. Life, therefore, is a manifestation of matter, or heat, without the medium—matter through which they act. Thus we are impaled upon the horns of the dilemma—life is not manifested without a living being or medium, and the medium cannot exist without life—a dilemma from which our knowledge of the properties of matter does not rescue us; and our only refuge is in the admission of a creative power to which the medium and properties of life, in the same way as the medium and ordinary properties of matter, owe their simultaneous existence. Further observation may supply other bases for reasoning upon, and widen the area of our thoughts by showing that matter endowed with properties which enable it to aggregate into living forms; but no sufficient ground for such an assumption has yet been given.

A subject for investigation nearly akin to that last mentioned, and which may, perhaps, some day tend to throw some light upon it, is the manner in which forms change, slowly and gradually, or, perhaps, if needs be, more rapidly, so as to adapt it to various circumstances and conditions, so as, in short, to evolve, in time, the diverse forms which life is known to assume; or must each of those forms have been the result of a special creation similar to those which we suppose in the first instance? One might have judged this to be a question which a careful examination and comparison of the different species, and the circumstances under which they are found, would have enabled us to decide with tolerable ease and certainty. But it was found not to be so. On the one hand we see changes in each individual, whereby the complete being is evolved from the simple germ, changes that are suggestive of a corresponding evolution of the varied forms from one humble beginning. We find all the different animals emanating from the same point as its centre, the simple germ which presents precisely the same features in them all. We find them all carried along to the same high road of development and diverging to acquire their respective peculiarities; so that certain structural types are largely traceable among them, binding them together and suggestive of a common origin. We can arrange them in gradational series, not one series, but several, of which one emanates in man. We find each so suited to its position, and so nearly disappearing when the conditions cease to be favourable to it, and as a necessary consequence of the alteration of those conditions, as to suggest that it was modified from a common standard, not merely for but by the conditions which surround it. The records of the earth's history prove this adaptation to have been the case in former times as well as now, the faunas varying in correspondence with the variations in the surface and climate and temperature of our planet; and we can clearly point out certain modifications in species to be caused by changes in the external conditions in which they have been placed. Moreover, by attention to external circumstances and selection in breeding, we can induce deviations in the offspring, and so imitate, it has been suggested, the process that goes on in Nature.

These, with some other considerations, coincide with our scientific yearning to unfold the plan of the universe and trace in its growth and the development of its parts the operation of natural law. But much observation must be made and much information accumulated before we can see our way to a theory of transmutation of species. The only valid, but it is a serious objection, to such a theory, is the want of evidence that a change of the kind inferred really takes place, and that so little proof of it is forthcoming in spite of the attention which has for many years been anxiously directed to this subject. The nearly allied species tantalise us by a certain flexibility of type and by their near approach to one another; but they seem rigidly to abstain from the boundary lines; and the variations that take place seem to have no especial reference to an approximation to these lines, but rather to a certain power of accommodation to external circumstances necessary for the preservation of the species. We find considerable varieties in the human species. We do not clearly yet know how to connect even these with one another or with a common origin. Some of these are more, some less, like the monkey; but between the lowest of the human and the highest of the monkey there is a gap, the width of which will be differently estimated by different persons, but so wide that there has never yet been any doubt to which side any specimen should be referred. Now, if the two lines be transmutations from the other, how comes it that the series has been broken and that the connecting links ceased to exist. The conditions are still favourable to the existence of the man and the existence of the monkey; why are they not still favourable to existence of the species that have connecting links one with the other. We may wonder, not only that the traces of species of the time are not forthcoming, but that the species are not *now* living. Moreover, we do not know that any conceivable conditions, operating through any number of years, will bring the gorilla or chimpanzee one whit nearer to man, would give them a foot more capable of walking, a body more erect, a brain more capable of conceiving ideas, or a larynx more capable of communicating them. Very little direct assistance has been given by the theory of natural selection based upon the struggle for existence, ably propounded and ably defended as it has been. It has dispersed some of the difficulties and answered some objections which beset transmutation of species, and has so placed the question in a fairer position for discussion; but it reminds us forcibly of some of the real difficulties and objections. Though artificial selection may do much to modify species, it is rather by producing varieties than by making species. The species is the original stock. To the former there seems no limit; but the latter is stopped by the increasing unproductiveness and unhealthiness of the individuals, by the susceptibility to disease, and the tendency to revert to the original type. So that increasing departure from the original stock is only known of as far as any amount of care and time would be sufficient to produce what might fairly be called a new species. The bringing about any marked change by Nature's selection is shown to be very hard of proof, and has opposed to its probability the fact that the species multiply by means of varieties, and that the greatest tendency to pair and are the most fertile. This law is more striking from its contrast with the bar that exists to the pairing of different species and the infertility of hybrids. Within a given range, dissimilarity promotes fertility; beyond that range, it is incompatible with it.

These and other considerations have always inclined me to the opinion that modifications of type, occurring in nature, are more likely to be the result of external influences operating upon successive generations, influencing their development, than by means matured entirely, than of "natural selection" and the "struggle for existence."

The slight variability of animal types through long periods, the clear manner in which many of them are worked out from one another, and which increasing investigation seems to render more and more apparent, make the prospect of proving that they are educed from one another by any of the hitherto supposed processes, grow more and more distant, and the feeling arises that there must be some other law at work which has escaped our detection.

Whatever be the law and forces which effect and regulate the evolution of species, they are probably of the same kind as those which are operating in the inorganic world. The orderly and definite manner in which forms and features and specific characters are given and preserved in the one instance may be considered to be of the same nature as in the other; and we must probably refer the fixed and invariable crystalline types to influences identical with, or similar to, those by which the forms are assigned to crystals, and the stratification is given to rocks, by which the geological epochs have been determined, and the boundaries of our planetary and solar systems have been set. One cannot but think that it may be within the power of man to work out and to comprehend, in some degree at least, the principles by which these breaks in the organic and inorganic works, constituting as they clearly do an important feature in the plan of creation, are brought about and regulated.

Let us not shrink from the free, bold, fair discussion of these and other kindred subjects, under an apprehension that they are calculated to lower the religious elements and shake our faith. That which is inevitable must be accepted. It would show a want of faith in truth if we must work patiently on, not pressing hastily to conclusions which our aspirations seem to point to, but relying on careful observation and honest reasoning to give us a solution of some of the great problems which life presents.

Home Correspondence.

Habitats of Schizæas.—I forward you fronds of two or three forms of a genus of Ferns (Schizæa) which, I believe, has never yet been very successfully cultivated; and as all the species of the genus are curious, and some of them, including S. fabellum, one of those I send, are very beautiful, a few remarks on the habitats of this species may not be uninteresting to lovers of Ferns. I found it growing plentifully in the

hot dense forests on the River Magdalena, and again repeatedly in forests at various altitudes up to quite 5000 feet above the sea. It invariably grew in a thick layer of pure vegetable mould, consisting of the fallen leaves of the trees, the accumulation of ages. This mould was often so loose near the surface that the hand could easily be plunged into it quite underneath the roots of the plants, which could thus be easily taken up—at considerable risk, however, for scorpions, monster centipedes, and spiders abound in such situations. I do not think the species would be very difficult to cultivate, provided good growing plants of it could be got into the country. The only way to do this would, I think, be to have pots or boxes on the spot in which to put the plants immediately they were taken up, and in which they ought to be thoroughly established and growing before they are exported. Of a quantity sent home by me some got home alive, but they all perished soon after they arrived in England. These, however, had been packed up in a close box for quite three weeks before being planted in the cases in which they came home. The plants of this species growing at these different altitudes do not vary in any remarkable degree, the segments of the fronds of those in the higher regions being only a little narrower than they are in those growing in the lower and hotter localities. [This narrower form is exactly S. elegans.] One of the fronds inclosed is from a low, and the other from a high elevation. The latter was gathered just within the mountain forest, at a point where it abruptly ends and the open savannah begins; and just outside the forest, from amongst sparse wiry Grass and stunted herbage, was gathered the second species enclosed [S. dichotoma]. The two forms were growing plentifully within three or four dozen yards of each other, the one in the rich vegetable mould and moist shade of the forest, and the other from the hard, poor, sun-baked soil of the savannah. Am I wrong in thinking it probable that both have had a common origin, and that each, or at least one of them, has been changed from its original to its present state by the circumstances under which it has been placed? *W. F.*

Setting of Peaches and Nectarines.—Mr. W. F. Radclyffe states (p. 830) "that if the blossoms of these are kept dry (and dry they must be kept) they will often fall and refuse to set, unless the trees are watered at the stumps." Doubtless, if the trees are dry, watering at the root while they are in flower is a good and safe practice; but I very much doubt the necessity of keeping the blossoms dry. No doubt a dry atmosphere is favourable to the ripening and dispersion of pollen. But this is of secondary importance to the vigour and health of the pistil. The former is too often secured at the expense of the latter, and the crop is sacrificed in consequence. This catastrophe is as often as not the result of excessive drought. Looking at the delicacy of the organs concerned in attaching the embryo fruit to the tree, it is obvious that a genial, and occasionally a moist atmosphere would be much more likely to strengthen than make a dry one. And if the whole attention of the cultivator is given to secure the most favourable conditions for the development of pollen, is it any wonder that the other sex droops and dies in consequence? That they do so is a matter that I have proved over and over again by actual observation. Out of doors I have long observed that stone-fruit sets best in genial showery weather. It is chiefly in those seasons when the dry winds of March intrude so far into April as to last through most of the blooming period, that failures occur. These failures often happen when there has been no cold severe enough to injure the blossoms. The stamens are perfectly matured, pollen is dispersed in showers, but the stigma is withered with excessive drought, and a crop becomes impossible. It was such facts that made me sceptical of the use of a dry atmosphere for setting stone-fruits. It then occurred to me that such dryness was unnatural. In no country are the blossoms of trees kept dry during the ticklish process of setting. Supposing the Peach, for instance, to be a native of the genial climate of Persia, and that no rain might fall when it was in bloom, what about the semi-tropical dews? Certainly this, that as a Scotch mist is reported "to wet an Englishman to the skin," so a tropical dew is equal to an April shower. Presuming that Nature's method at home and abroad could not be far wrong, and observing moreover that she was eminently successful, I began many years ago copying her example in this matter. Hence, instead of the dry I adopted a moderately moist regimen, with the best possible results, ensuring a continuance of dull weather little or no moisture will be required by Peaches, &c., in bloom; but on every other evening of bright days send a shower of diamond dust from a skilfully used syringe right over and on to all your trees, blossoms and all, and they will show their appreciation of your skill by setting all the surer in consequence. I do not recommend ordinary syringing; that might be too heavy, and would batter the pistils, perhaps injure the stamens, and at least too rudely disperse the pollen; but with one finger or thumb over the single opening of the syringe a gentle shower, as like dew as possible, is easily produced. And such a shower strengthens every part of the pistil, and is highly favourable to that development and fixing of ovary which we, for want of a better name, call "setting." Neither does it at all injure the stamens, nor hinder the maturation of the pollen. Even the check which the presence of the moisture in the air places upon the diffusion of the pollen seems useful, for it is not always the most volatile pollen that is the most effective. That most readily dispersed to a distance often fails in performing its legitimate functions at home. Frequently whole showers of dry pollen may fall from the trees, and the stigmas remain untouched. A certain amount of moisture seems needful to enable the stigma to receive the pollen. This is generated and deposited by the action of vegetable life; but a dry atmosphere licks or dries up this natural provision for insuring perfect fructification; all which are additional reasons against keeping blossoms dry, as a means of setting fruit. Neither is it quite certain that Mr. Radclyffe's crop was insured altogether by the root-watering. It is possible that the trees were helped to set by the evaporation of the water from the earth into the air. They had been kept very dry, be it observed, without setting; therefore dryness alone will not set fruit. They were watered abundantly, and they set "as if by enchantment." Now, unless the trees were in pots they could hardly be dry at the root, for there is scarcely any drain upon the trees until after the fruit is set. Hence it is quite possible that a large portion of the abundant water which found its way into the air, was, perhaps sensibly as dew, or insensibly as vapour, deposited on the organs concerned in fructification, and thus by virtual overhead watering insured a crop. Be that as it may, I confidently advise frequent dustings of water over all stone fruits in blossom, as I have prescribed, as one of the likeliest means of insuring a thoroughly good crop. I have done it for years, and have never failed but once, and that season it was not done, as not a gleam of sunshine gladdened the trees during the whole six weeks they remained in blossom, and watering was out of the question. *Censor.*

Mrs. Pollock Pelargonium.—I have much pleasure in complying with the request of your correspondent, Mr. J. Tyerman (p. 829). The Pelargonium Mrs. Pollock was not green in the first instance, but came variegated from the cotyledons, and has always remained so. I may further state that such has been the case with regard to all the best of the variegated Pelargoniums that I have raised, including Mrs. Benyon, Lady Cullum, Sunset, Lucy Grieve, &c. But I have also secured many variegated varieties in the manner described by Mr. Tyerman as being practised by Mr. Wills; and to reconcile this statement with my former assertion, that I had never raised a variegated Pelargonium from a sport, I may as well explain that I do not consider any form obtained from a seedling under one year old as a sport. I consider the term "sport" to apply only to deviations in form, colour, or habit, either in foliage or flower, from the well-known and recognised habit or form, &c., of established varieties. Very possibly difference of opinion may exist as to the acceptation of this term, and it is certainly desirable that uniformity as to its exact signification should be established. Mr. Tyerman is not quite correct in supposing that the well-known variety Cerise Unique was one of the immediate parents of Mrs. Pollock, although if the latter-named variety was endowed with the power of speech, and if also inspired with something like pride of birth, she might with justice claim descent from that well-known and celebrated variety; but I am rather inclined to think that the beautiful Mrs. Pollock can pretend to stand or fall by her own merits, and would be more likely to say in the words of the poet laureate, that "she was too proud to care from whence she came." However, for the information of Mr. Tyerman, and also of your correspondent "R. T. C." (who I am very pleased to see approves of my proposed classification of Variegated Pelargoniums), I will give as briefly as possible, and so far as I know, the pedigree of Mrs. Pollock. The seed-bearing parent was a variety called Emperor of the French, and the pollen parent was Gold Pheasant. The seed parent of Gold Pheasant was also Emperor of the French, and the pollen parent Golden Tom Thumb. The seed parent of Golden Tom Thumb was Cottage Maid, and the pollen parent Golden Chain. The seed parent of the Emperor of the French was Cerise Unique, and the pollen parent a silver variegated variety named Attraction introduced by Messrs. Henderson. The result of this latter cross was the production of three distinct varieties on one plant, viz., Emperor of the French, Empress of the French, and Rainbow. The first of these is a strong grower, and a good bedder, and was much in favour in this locality until superseded by Mr. Beaton's famous Stella; the Empress is of dwarfer habit than the Emperor, having the stems and leaf-stalk striped, as in Cerise Unique; and Rainbow is a silver tricolor of considerable merit. Which of these three varieties should have been considered as sports, and which as seedlings? It has been stated that somewhere in the north of England Mrs. Pollock has produced a silver-variegated sport; but this requires confirmation. If correct it is a very interesting fact, and well worthy the consideration of physiological botanists, as it would appear to show a tendency to revert to the peculiarities of a rather remote ancestor. I enclose for your inspection a leaf of a golden tricolor of the present season, which I consider an advance on anything that I have yet seen. It is about 18 inches high, and has never produced a green leaf, nor one in any way differing from that sent. *P. Grieve, Culford, Sept.* 4. [It is the finest of its class which we have yet seen. EDS.]

Annuals for late Summer Beds.—Will some of your readers be kind enough to say what, or whether any, annuals may be planted in beds late in spring, and bear transplanting in autumn to beds which earlier kinds have occupied? I tried, last month, at mere hazard, some French Marigolds, which scarcely flagged an hour after they were moved. *G. E.*

Mangos.—It may interest some of your readers to know that there is a very fine crop of Mangos at Chatsworth this season, but from the cold, dull weather, the fruits are not ripening so early as last year. *A.*

American Cherries.—An article on the cultivation of Cherry trees in pots, at p. 801, induces me to ask a question concerning the American varieties of Cherry, introduced, I believe, and highly praised by Mr. Rivers some few years since. If any gardener has fruited any of those Cherries, he will render a service to his brethren by giving his opinion of their merits as compared with the sorts usually cultivated against walls, such as the Elton, Black Tartarian, &c. I ask this question because such as I have seen of those American Cherries are decidedly inferior to our own; and I would like the question to be answered by unprejudiced gardeners who have a gentleman's table to supply. "T. R." is evidently displeased with the birds because they turn up their beaks at one of his pets, the Belle Agathe. Now, when a hungry bird refuses to eat a Cherry, I think we may therefrom form a pretty accurate estimate of its merits as a fruit. I have myself tasted the Belle Agathe, and must acknowledge that I am much disposed to agree with the birds. *Instinct.*

Sports of Golden Chain Pelargonium.—From what Mr. Fish says on sporting of Pelargoniums (p. 828), it appears to be something rather unusual for Golden Chain to sport. It has, however, done so twice here with me. In 1861 it produced a variety with a considerably larger leaf, and only a very narrow margin of gold. This is a much stronger grower, as might naturally be expected, from there being more green in the leaf than in the parent plants, and it strikes more freely from cuttings in the autumn than the old variety does. The other is the produce of this season, and has a plain green leaf. I took it off ten days ago, in order to endeavour, as far as I possibly could, to propagate it. *R. Bowie, The Gardens, Chillingham Castle, Sept.* 3. [A leaf of each, sent by Mr. Bowie, was exactly as described above.—EDS.]

Societies.

ROYAL HORTICULTURAL: *Sept.* 4 (*Floral Committee*).—A candidate for fellowship was elected on this occasion, and one Society was affiliated. Perhaps the most remarkable plant exhibited was the Amaryllis Josephine, from Mr. Bull, alluded to last week (see p. 826). From the crown of the bulb had risen a stout thick stem, about 2½ feet in height surmounted by a noble candelabrum like head of not very showy flowers. The general appearance of the plant was, however, so artistic and altogether so striking, as to render it well worthy attention. Associated with it were two smaller plants, which also excited considerable interest. Mr. Bull likewise exhibited Caladium Annibilator, with leaves prettily marbled with red and white; Philodendron crinipes with singularly-shaped shining green foliage; and the charming Dieffenbachia, one of the last-existing under the wrong name of D. vittata, its correct name being D. discolor variegata; the variety has rounder, broader, and altogether handsomer leaves than those of the true D discolor vittata From Messrs Downie Laird & Laing came an interesting collection of subtropical plants, conspicuous among which were Wigandia caracasana, Solanum auriculatum, S robustum, S verbascifolium, and Polymnia grandis, all stately large-leaved plants. Along with these were also Ferula nodiflora, with much-divided Fennel-like foliage; Solanum pyracanthum and decurtcks, both handsome-foliaged plants, ornamented with orange-coloured spines; S. Fontanesianum, a crumpled, comparatively small-leaved sort, with yellow blossoms; a very spiny dark-coloured Solanum, called amazonicum atropurpureum; Ubden bipinnatifida, a Mexican, tender plant, with bold deeply-cleft hairy foliage; the white-striped Japanese Maize, and the little bright orange-red-leaved Alternanthera spathulata, which promises to be a useful plant in masses of distinct colours. To these, moreover, were added the following silvery leaved plants, viz., Farfugium grande, Solanum argenteum, S. glaucophyllum, &c. To Messrs. Osborn was awarded a First-class Certificate for magnificent specimens of Statice Frostii, a noble variety in the way of Holfordii, but deeper coloured. From Mr. Hartland, Lough Nurseries, Cork, came a small plant and cut twigs of the yellow variegated variety of Wellingtonia gigantea, for which a First-class Certificate was awarded. Mr. Parker, of Tooting, showed a dark-coloured variety of Lælia elegans, and Mr. Ferguson, of Whitton, seedling zonal Pelargoniums. To Mr. Mason, Chantyond, was awarded a First-class Certificate for a tricolor-leaved Pelargonium called Melona; and to Mimas, a zonal Pelargonium with good trusses of large bright scarlet flowers, a Second-class Certificate was awarded. Mr. Standish, Ascot, furnished a collection of a few spikes of beautiful Gladioli, which will keep blooming from this time until cut off by frost. Mr. Smith, gr. to S. H. Norris, Esq., Altrincham, near Manchester, showed a spike of Renanthera coccinea cut from a plant which was in full flower in the spring of last year, and which bids fair to blossom again in the spring of next year. So much for Orchids under skilful treatment, this plant may be made to produce its handsome inflorescence. Mr. Eckford, Coleshill, received a Second-class Certificate for a rosy-tipped light Dahlia named Lady Jane Edice; the same exhibitor also had cut flowers of Verbenas, one of which, named Coleshill, a large orange-scarlet, gained a First-class Certificate. From Messrs. Stuart & Mein came various Hollyhock blooms, which were, however, unfortunately, not in good condition. Messrs. Veitch contributed the handsome Maranta Lindeni, and another variety named M. rosea-picta, a variegated Abutilon, Anthurium Veitchii, Coleus Gibsoni, Hermania palmata, Euonymus macrophyllus (with handsome glossy green leaves), a Thibaudia, Dieffenbachia Weirii, and examples of the charming Retinospora obtusa aurea. Two seedling Fuchsias were exhibited by Mr. Cannell, of Woodfield, Bexley Heath, George, Stamford Hill, was awarded a First-class Certificate for a variety of Tropæolum compactum called King of Scarlets; he had also an orange-yellow kind spotted on all the petals with crimson. Mr. Keynes, of Salisbury, was awarded a First-class Certificate for a Dahlia named Fanciulae William, for medium-sized finely-formed deep maroon crimson. To the same exhibitor were also awarded Second-class Certificates for Gazelle, a large violet shaded bronzy salmon; for Vice-President, a golden yellow, or rather amber-coloured kind; and for Hero of Tortell, a light ground variety heavily tipped and flushed with purplish crimson. From Messrs. Carter & Co. came various showy Lobelias of the fulgens section, and examples of the same class of Lobelia were also furnished by Mr. Kinghorn, of Richmond, to whom Second-class Certificates were awarded for Rose Queen and Crimson King, names which sufficiently denote their respective colours. A lilac Verbena, called Lady Leigh, was shown by Mr. Thomas, of Coventry; and a crimson variety of Verbena, with a white eye, called Constance, came from Mr. Woodford, of Ashford. Messrs. Veitch contributed interesting illustrations of the different sections of Asters, both in the shape of plants and cut blooms. Among them were Giant or Emperor, tall showy kinds; Chrysanthemum-flowered, large-blossomed sorts, very suitable for pot culture; Hedgehog, slightly quilled, tall-growing kinds; Dwarf Pyramid, each plant of which forms quite a bouquet of flowers in itself; Truffaut's Pæony Perfection, varieties, with the merits of which most cultivators of Asters are familiar; the original China Aster, a tall straggling kind, which few now would care to grow; the Victoria, which, like the dwarf Chrysanthemum-flowered, is one of the best sorts either for cut-door display or for pot culture; Ranunculus-flowered, with compact, hard, flat, button-like blossoms, each about the size

of a crown piece; Globe-flowered, with blossoms well raised in the centre; Peony-flowered Globe, like Truffaut's varieties; Imbricated Pompon, a broad petaled kind; Reid's New Quilled in various colours, ranged round a light centre, but, as shown, not so compact in growth as the German Quilled; Coeardeau, or Crown, a class of Asters comprising some of the handsomest of all varieties, the centre of the flower being white, surrounded by crimson, rose, violet, purple, plum, and other shades; Dwarf Pyramid Bouquet, so compact and free-flowering as to want thinning; Pyramidal flowering, good showy, slightly quilled kinds, and Double Dwarf Bouquet, with medium-sized extremely pretty Camellia-shaped flowers. For these a Special Certificate was deservedly awarded. Mr. Cripps, Tunbridge Wells, represented the fine varieties of plants which he showed at the last meeting; he also furnished an addition a prettily striped Phlox, Desmodium penduliflorum, a purplish pink flower; and Lathyrus heterophyllus, the Pea family, and plants of Alstroemeria and Tekenthera. From Mr. Cunningham, The Lodge, Burton-on-Trent, came a compact growing variety of Ivy-leaved Pelargonium, with creamy-edged foliage, named L'Elegante, which, combined in a class Certificate was awarded. Messrs. E. G. Henderson contributed a well-known medlowetted example of Acalypha stamineæ, a creeping plant nearly related to Euchysmatus, also different varieties of Coleus, and a beautiful tricolor-leaved Pelargonium, named Sophia Dumaresq, a decided improvement on Sunset, to which a First class Certificate was awarded.

Sept. 4 (Floral Committee).—From Mr. Shortt, gr. to Viscount Eversley, at Heckfield, came examples of Red Astrachan Apples and Siberian Crabs, which were published. Apples and Pears of Crabs in general, was deservedly superior. There were not the numbers of horticulturists crowding the Hall between the hours of 9 and 11 in the forenoon—for the show of 1865 was a great gathering in that respect; but there were no less crowds of visitors to the Gardens and to the viewing, who are at all times interested in great fruit shows. England was represented by the two redoubtable champion Grape growers, Mr. Meredith, of Garston, and Mr. Hill, of Keele Hall; while Scotland was no less creditably represented than on a former occasion by Mr. Fowler, of Castle Kennedy, Mr. Thomson, Dalkeith, and others.

The principal prizes of the day was that for the collection of 20 sorts of fruits, which were well represented from the gardens of the ducal houses of Dalkeith and Hamilton, and from the Earl of Dudbalbane, Talbot Rice, Esq., and others. There was fine Alicante, and when I say fine with ease, I had three fine Queens, none of them less than 4 lb. weight, and two Smooth Cayennes, also very fine fruit, which were arranged on the background of a very handsome stand lined with pale blue paper. In front of these were fine bunches of Lady Downe's and Alicante Grapes, and between these good samples, but not highly finished, of Muscat of Alexandria and Golden Frankenthal. In front of these again were dishes of Cherries, the Ruby castle Red Currant, a fine deep blood colour and a large berry, and good White Currants, Moorpark Apricots in circular chip baskets, with Melons intervening, and in front of all, in walled off partitions, Moorpark Apricots, Pitmaston Orange and Boiscoade Peaches, Elruge Nectarines, Victoria and Kirke's Seedling Plums, good Apples, and Largeonde Pears, making a pretty feature of the whole. Messrs. Lee, Hammersmith, showed his 20 in dishes. They comprised Eastville and Queen Pines of good size, Canon Hall and Alexandrian Muscats, along with a black seedling called the Abercarney variety; Peaches and Nectarines of fine quality, a dish of Brown Turkey Figs, Gooseberries, and other things. Mr. Mitchell was 3d, with a collection nearly if not equal to Mr. Murray's. It comprised Queen and Black Jamaica Pines, Melons of sorts, Canon Hall Muscat, Royal Vineyard, a very handsome bunch, Lady Downe's Grape, Noblesse, white ripe, and Black Hamburgh, Royal George Peaches, Elruge Nectarines, Plums of sorts, Largeonde Pears, Gooseberries, Currants, and Strawberries. The principal portion of these was arranged in a case, with the smaller fruit placed in dessert dishes in front.

For the best 16 sorts, exclusive of Pines, there were seven competitors. Mr. Temple, Balbarnie, winning first honours with a very imposing assortment, including well managed samples of Black Hamburgh, Muscat Hamburgh, and Lady Downe's Grapes, sorts of Melons, Peaches, Plums, Malvern Hall, which Mr. Temple speaks highly of, and another one, Bousie's Melon, which is a large fruit of good flavour, but is apt to give way before ripening. In this lot were some extra fine brown Turkey Figs, about as large as we have ever seen, Kentish Cobs, a splendid dish of Belleau Rasperries, good Magdalene Peaches, and several other good things. Mr. Mitchell, gr. to Sir David Baird, Newbyth, was an excellent second, with Grapes of a similar kind to above. Crystal Palace Green flesh Melon, Golden Drop, and Jules's Seedling Plums, Noblesse Pears, and much the best Moorpark Apricots exhibited, and Currants, &c., all good. Mr. John McKay, gr. to W. Wood, Esq., Kenmuck, had four sorts Grapes, including Raisin de Calmer among those named above, splendid Bigarreau Cherries, Noblesse Peaches, Orange Cardinal and Victoria Plums, &c. Mr. Mallison, gr. to the Countess de Flahault, Tullallan Castle; Mr. McMillan, gr. to Lord Blantyre, Erskine House, who had fine samples of the Mulberry in his collection; Mr. McIvith, gr. to the Earl of Roseberry, Dalmeny Park; and Mr. James Gordon, gr. to Andrew Watchope, Esq., Newton, were the other exhibitors, and they had all praiseworthy collections.

For the best collection of Fruit by Fruit Merchants, there were two most excellent assortments, the 1st prize being awarded to Mr. William Brown, 5, Hanover Street, Cowgate, consisting in this lot were five Pines, including Queen, Smooth and Prickly Cayenne, raised and set into 8-inch pots, surrounded with ornamental covers, and done up with Moss, which enhanced their appearance very much. Between these were large dishes of Tokay, Hamburgh, Muscat, and Lady Downes' Grapes; very fine Yellow Magnum and Pond's Seedling Plums; Peaches and Nectarines, of sorts; splendid coloured Beurré Clairgeau Pears, as well as Bon Curé, Duchesse d'Angoulême, and Beurré Hardy, Prince Napoleon, and Knight's Monarch Apples; also Hibston Pippins, and fine dishes of Granadilla and Bananas, along with Elton Pine Strawberries, Morelle Cherries, Golden Perfection, and another Melon, 12 lb. in weight, all nicely arranged on a chaste dessert service. On a side table were auxiliary lots from the same gentleman, and a collection of Gourds and Cucumbers in a ripe state. Messrs Carstairs had also a fine assortment, comprising Pines of sorts, very fine Hamburgh and Lady Downes' Grapes; Golden Gem Melon, a very handsome fruit; fine Moorpark Apricots, Elruge Nectarines, and Peaches of sorts, Pond's Seedling, Goliath, Magnum Bonum, and Washington Plums, splendid Louise Bonne Pears, and several good dishes of Apples, Strawberries, and Cherries.

For the best 8 Varieties of Grapes (excluding Chalice of Hale, White Nice, Syrian, Barbarossa, and Raisin de Calabre), one bunch each, there were only two competitors, but only one competitor came forward in the person of Mr. Archibald Fowler, gr. to the Earl of Stair, Castle Kennedy. His collection was a unique one, each bunch being a model of cultivation, but most of the sorts not finished up to that point desirable for exhibition. The sorts were as follows, viz. The following are the names of the sorts—Black Hamburgh, a nice compact well finished bunch; Golden Hamburgh, of similar dimensions and character; Black Morocco, a much more handsome bunch than that he exhibited last year, the berries large, round, and covered with blue bloom, but not yet reddening towards the footstalk; Trebbiano, 15 inches long by 12 inches across, as compact as can well be imagined; Muscat Hamburgh, a beautiful bunch measuring 12 by 10 inches, and a model in point of form, but not at all up in finish; Muscat of Alexandria, also dimensions short, and not so good way but finish; Black Lombardy, a variety similar to Black Prince, a fine oblong compact bunch, with good sized berries; and last and most wonderful of all, Duchess of Buccleuch, measuring 16 inches long by 13 inches across, not fully finished, but quite good everywhere, and the berries of Mr. Fowler has been able to grow it. It would weigh about 3 lbs., but Mr. F. assured us he had it much larger at home, having cut the ripest for exhibition purposes.

For a collection of 4 kinds of Grapes there was a spirited competition, Mr. Meredith being placed 1st, and beating with ease Mr. Fowler of Hamburgh, coloured as Mr. Meredith apparently only can do. Trebbiano, fine in bunch, berry, and finish; Burchard's Prince, fine finish, but small both in berry and bunch; and Muscat of Alexandria, fine in bunch and berry, but unripe. Mr. Fowler, gr. to Archd. Fowler, Esq., Rudding Park, was 2d, with good Hamburgh, Lady Downes, Sweetwater, and Muscats. Mr. Temple, Balbarnie, Markinch, had also a fair assortment, and so had Mr. John Lang, gr. to R. Cuthcart, Esq., Pitcaithle.

For a collection of Black Hamburghs, Mr. Meredith won easily in the following sorts—Millhill, Champion, Old Black, Popes, Victoria, and Richmond Hills. The Millhill is decidedly the best for finishing and for flavour. Popes the smallest; and Victoria the largest and most attractive looking berry, but deficient in flavour to either of the others.

For the best collection of Melons, Mr. Fowler had much the finest and most distinct lot, although not so numerous in bunches as that of Mr. Mitchell. They comprised the Tynninghame variety, the largest and probably best formed bunch of the lot, Bowood, the Old Mussel, and Hybrid Persian, all of large bunches, and the Golden Gem of Canon Hall, and as shown a free setter, but as to flavour we were not in a position to judge.

For three heaviest bunches, Mr. Fowler had wonderful examples, and the most wonderful of all was Muscat Hamburgh, coming under the last section, but 3 lbs. 12 ozs., as soon coming under the first as much as could well be manipled, but not well coloured, as indeed it scarcely could be when 40 lb. of Grapes were cut off one tree. Trebbiano, a remarkably large handsome bunch, and White Nice, 23 in across to tip in long. The same gentleman had also the heaviest single bunch, and that was of Muscat Hamburgh, in the former instance weighing 6 lb., and measuring 18 in long by 15 in across, and the latter also plant growing on its own roots. What will folks say that bunches are so small now after this? White Nice was the heaviest white, weighing 4 lb. 12 ozs. Mr. Burchell, gr. to Joseph Mackay, Esq., Kentlaw, were equal second.

For the two best Muscat of Alexandria, Mr. James McConachie, gr. to A. Smollett, Esq., Cameron House, Dumbarton, was placed 1st with long handsome bunches, well coloured, and fully finished. Mr. Fowler was 2d with much more handsome bunches, but evidently hurried into colour, and the Rev. Mr. Bushby, The Parsonage, Dalkeith, was 3d, with very compact handsome bunches, not much, if any, inferior in point of finish and colour to the second lot. Mr. Mitchell, Dalkeith, Mr. Alexander Anderson, gr. to J. T. Pringle, Esq., Torwoodlee, and Mr. Alexander Forbes, Callendar House, had also capital bunches, but unripe. For the two best Black Hamburgh Mr. Meredith distanced all competitors with such samples as are rarely seen, bunches, berries, and bloom perfect, and the latter very rubbed or injured in bloom. The same remark applies to Mr. Hill, of Keele Hall, who was second; but the other exhibitors have evidently something to learn in the way of packing and putting up for competition, as all their fruit was more or less bruised, although not to the quarter of the degree that those just mentioned did. Mr. Fowler was 3d. The same gentleman carried off prizes for the best bunch, with the exception of Mr. Fowler, who was not placed, Mr. Temple being 3d in his stead. Mr. Alex. Peggo, gr. to Wm. Forbes, Esq., Hayfield House; Mr. Mitchell; Mr. James Mathieson, gr. to the Hon. Mrs. Ramsay, Burnton; Mr. Morrison, gr. to Capt. Arbuthnot, Inchmartine, and Mr. Turner, gr. to Mark Sprott, Esq., had creditable examples. In the best Muscat Hamburgh, Mr. Turner had much the smallest bunch, but the berries were fully ripened and even; indeed it would be difficult to match them either for size or finish, but the bunches had been thinned too much to be handsome. Mr. Morrison was 2d, with a badly carried lot; and Mr. Fowler 3d, with his immense bunches, but the judges said they were not ripe enough. Mr. Brobdingnian they might be grown. For a sample of the true Tokay, Mr. Meredith was 1st, but it seems a pity to encourage so tasteless and so insipid a Grape. Mr. Mathieson was 2d with a variety, but considered by some not to be true Black Prince. Mr. Peggo was only 4th. For Alicante, Mr. Skeoch, gr. to J. Menzies, Esq., Westland House, Dalkeith, but it was a splendid example, and the bloom all that could be desired, being very carefully handled.

For the best flavoured White, Mr Thomson's Duchess of Buccleuch was again in the ascendant, triumphantly carrying 1st and 24 prizes against a most splendid example of the Muscat of Alexandria. Mr. Neal Black, gr. to Major General Ramsay, Dalhousie, and Mr. Mitchell were placed in the order they are named, although most practical men thought the prizes should be reversed. Mr. Alexander Anderson, Torwoodlee, was 3d. For the best flavoured Black, Muscat Hamburgh triumphed in all three instances. Mr. Laing 1st, Mr. D. Morrison 2d, and Mr. Fowler 3d. The highest coloured of these took the best position, but a higher coloured than either of the three, from Mr. Turner, was considered deficient in flavour, so that colour in this instance was not an unexceptionable test. For the finest bloomed sample in the class Mr. Meiklejohn's Alicante was placed in opposition to Mr. Meredith's Hamburgh, which we think was a mistake, an opinion shared very generally, although the judges seemed to have been unanimous upon the point. For the best bunch not named in the Schedule, Mr. Fowler was 1st with Trebbiano, not large, but of fine configuration and finish; Mr. Morrison 2d, with a bunch of the Black Morocco character, unnamed; and Mr. Mitchell 3d, with Royal Vineyard.

"For the best two Bunches of any Seedling White Grape not offered to the Public," Mr. Fowler obtained a premier award for a white seedling of the Trebbiano cast, only having an oblong berry, and a little more flavour than that variety. The flavour, however, was really deficient, and we question the wisdom of awarding first class prizes for objects, which, at all events, are not of first class excellence. Mr. Melville exhibited under this class, as he had in this Chamber, Muscat in the Black class of a similar kind, and obtained a premier award. It is a very large Grape, but as shown deficient in colour, and the flavour not up to the mark. Both these new sorts would require a still longer period of probation before placing them in the hands of the public.

There were splendid examples of cultivation, especially those coming from Mr. Fowlis, gr., Fordell House, Inverkeithing, and Mr. J. Peacock, gr. to R. Scott, Esq., Castle Dykes, Dumfries. The former gentleman's weighed 6 lb. and 4 lb. 13 oz. respectively, which is good Pine apples, and the latter was not much behind him. Mr. Thomson had also a very good pair, and so had Mr. Murray, and Mr. Rose, gr. to the Duke of Roxburghe, Floors Castle. Mr. John Munro, Liverpool, was the only exhibitor of Smooth Cayennes. They were handsome fruit, and of good colour, which the gentleman exhibited. A magnificent sample of Hurst House was shown in a pot by Mr. Fowler, which would not weigh less than 8 lb., and was only swelling off. It had a fasciated crown or series of crowns. Melons were a poor exhibition, some 20 being staged, but not more than 6 had been in the houses. Mr. Mitchell, gr. to Laing, were most successful in Green flesh, and Mr. Colbourn, gr. to John Cox, Esq., Gorgie, and Mr. Thos. S. Shannon, gr. to John Inglis, Esq., Redhall, in Scarlet-fleshed. Mr. McMillan, gr. to Sir W. Jardine, Jardine Hall, sent a few dishes of Passiflora edulis, which were highly artificial flowers in close imitation surrounding the fruit; as also fine samples of P. macrocarpa and edulis. Mr. Fowler had a dish of Citrons and Oranges alongside of the patent portable folding ground Vinery, shown as a model by Mr. Wells, of London. Peaches and Nectarines were not so large nor so fine as in the third preceding year, but in a few cases they were superior. The Noblesse and Royal George, from Mr. David Ross, gr. to Lieut Col. M'Donald, St. Martin's Abbey; and Mr. Laing were first rate; as also were the dishes of six exhibited by Mr. A. Heathe, gr. to Earl Haddington, Tyninghame, and Mr. Fowler. In Nectarines, Mr. R. B. Annandale, gr. to J. R. Carnegie, Esq., Ardsreath, and Mr. Laing, were the most successful. In Jargonelle Pears and in Pears of sorts, as well as in Apples, Mr. R. Ramsay, gr. to the Marquis of Bute, Rothesay, was 1st. Mr. Fowler 2d, and Mr. Peddie, Dalkeith, and Mr. Kerr, gr. to Dr. Lowe, Saughton Hall, were also large and successful competitors.

Vines in pots were shown by Mr. Gordon, Niddrie, Dickson & Co. had fruit of Passifora quadrangularis. Mr. Baxter, Riccarton, had an assortment of distinct varieties of Cherries, still in good preservation. Mr. Webster, gr. to the Duke of Richmond, Gordon Castle, had 8 seedling varieties of Plums, one named on the spot, Webster's Gage, is a delicious fruit of an oblong form and a fine yellowish green skin, juicy and melting, and ripening at this time that it will have to be a valuable acquisition. Other sorts were not in a condition to pass an opinion upon their merits. All these were placed in the Assembly Rooms, and the arrangement was such, both for comfort and inspection, as to merit unqualified approbation.

In the Music Hall, Mr. Thomson, Dalkeith, had pretty much his own way with foliage plants, Ferns, Heaths, and flowering plants, obtaining premier awards in all these classes. In his collection of six flowering specimens were two good Vandas—sanderiana true, Statice profusa, Epacris Carnockiana, Jacksoni, and Ixiaota major, three first class Heaths and in beautiful bloom. In the Heath Classes Mr. Thomson's Anatuiana was a picture, splendidly coloured, and a variety of the first excellence. Mr. Fowler, Mavisbank, had a good Hibbertioides, three good Heaths, the best of which was Carnockiana and two Lilliums—lancifolium punctatum and album. Mr. Neil Black had also a good lot. Mr Thomson had a beautiful example of Alocasia macrorhiza variegata, and a good A zebrina. The coral Pelargoniums from Mr. Wm. Laird, gr. to Mrs. Baird, Cleghorn, were meritorious examples of cultivation, and must have struck every one with their adaptability for conservatory decoration in the autumn months. Princess of Prussia, Madame Vaucher, Rose Rendatler (a most beautiful object under this section), and Henri Jacoby were splendid; so were Amethea Grisau and François Deslois.

Peter Lawson & Sons decorated the orchestra with much taste, and to some purpose, with fine Conifers, mixed, ornamental, hardy, as well as greenhouse Ferns, miscellaneous group; so had Drummond Brothers, on either side. J. & R. Thyne, of Glasgow, had a few novelties. Peter S. Robertson & Co. had also some nice things, enlivened by the glorious Lilium auratum and the chaste longiflorum, and with a distinct and novel addition in the chaste Ixia Bridesmaid, with flowers like a Hyacinth. Splendid cones of Picea nobilis came from Mr. Baxter, gr. to Sir W. Gibson Craig, Riccarton. Dickson & Co. had also a table of small ornamental stuff, with the handsome orange-scarlet Vallota purpurea, and some cut flowers. Mr. Laidlaw, Valleta purpurea, and some cut flowers. Mr. Laidlaw, Ballencrieff, had Gloxinias, Gollyhocks so well represented, both in spike and as cut blooms. Those from Downie & Co were magnificent. Their eleven spikes comprised Lord Rokeby, a fine deep rose; Mrs. Downie, a splendid buff; Rose of England, a fine full rose; Duchess of Sutherland, a splendid pink; Mrs. M'Kenzie, a bright crimson. Invincible, a fine full buff with fawn shading; Mrs. Sharpe, a pale lilac; Earl of Breadalbane, a splendid crimson. Countess of Craven, a very soft shade of flesh; Charles Eyre, not a large but a full crimson, and the Prince of Orange, a splendid purple. In addition to these from this firm the following obtained First class Certificates:—James Anderson, a splen lid full flower, very firm and compact, of the Rose of England style, but of a better colour, richer substance, and a more solid habit; and that fine variety Mrs. Fisher, a first class full flower after the same character, but having a soft shading of a paler hue pervading the tips of the florets; William Thomson, a very striking flower of the Charles Eyre kind, but greatly superior to that sort, being of immense depth and a fine glowing crimson; and Lord Clarence, Mr. Gordon, Esq., John Gordon, Esq., Belchester, and Mr. Thomson, gr., Preston Towers, were the most successful. In these stands were fine spikes of J. B. Ullet, Mrs. Ellet, Mrs M. Binning, Mrs. Downie, Lady Palmerston, Underfield, Willingham, Defiance, Mrs. Paul, Countess of Craven, graduate, Willingham, and Rev. H. Dombrain. Mr. Thomson had also a stand of large well-grown flowers.

Dahlias were not so good an exhibition as on most former occasions. The very best in Downie & Co's stand which stood alone were Criterion, Delicata, Earl of Derby, Lady of the Lake, Leah, Ne Plus Ultra, Lady Mary Wylde, Freemason a splendid novelty of the mauve type of colour, Golden Gem, Lotty Atkins, Gladiator, Fanny Purchase. In the others, differing from the above and of first rate excellence, was Miss Henshaw, Mr. Wain, gr. to P. A. Halkett, Esq., Pitfirrane; Mr. R. Buchan, schoolmaster, Tullialan, Mr. A. Kerr, Langton

Hall; and Mr. A. Elen, gr. to John Wood, Esq., Rose Hall, were the most successful cultivators in Fancies, Messrs. Downie & Co. also excelled; their very best were Queen Mab, Startler, Octoroon, Stafford's Gem, Messenger, Prospero, Mrs. Reid, Regularity, and Mrs. Joy.

Messrs Downie & Co.'s stand of Gladioli was magnificent, being arranged in three tiers, with pigmy "handrails" for keeping the spikes to keep them in position. They were 50 varieties in all, and out of the 50 stood decidedly prominent Shakespeare, white with purple tinge in centre, large, and finely formed; Milton, Dr. Lindley, Madame Binder, Duc de Malakoff, Achille, Reine Victoria, John Waterer, Princess of Wales, Mdlle. de Vatry, John Bull, Flore, La Quintinie, Mons. Camille Bernardin, Prince of Wales, James Veitch, Madame Vilmorin, and Marie Dumortier. Mr. Taylor, Mayfield Cottage, Inverness, and Mr. Wm. Reid, gr. to C. Dalrymple, Esq., Newhailes, had also very fine stands.

A staffed plant of the variegated Wellingtonia was exhibited by Mr. Hartland, the Lough Nurseries, Cork; and a fine golden bicolor leaved zonal Pelargonium was shown by the Assistant-Secretary, Mr. Young, and received a first class Certificate.

Vegetables were a good exhibition of themselves, and comprised most sorts at present fit for table.

A series of plans by Mr. Joseph Newton, 30, Eastbourne Terrace, Hyde Park, was exhibited in the entrance sideroom, consisting of 11 different subjects, as compiled for Lord Lisburne's Welbeck estate, and comprising subjects relating to planting, ornamental water, architectural terraces, &c., now in course of arrangement for the Saltburn Improvement Company at Saltburn by the-Sea, Yorkshire; and views of splendid old and rare deciduous trees, showing the effects of judicious planting, taken from the Bishop of London's grounds at Fulham.

CRYSTAL PALACE: *Sept. 5 & 6, (Autumn Exhibition of Fruits and Flowers).*—This exhibition was scarcely so good as that of last year, as far as fruits were concerned; but there was a large and fine display of Dahlias, Roses, Gladioli, Asters, and other cut flowers.

Pineapples.—These were neither plentiful nor remarkable for heavy weight. Mr. Douglas, gr. to F. Whitbourn, Esq., Hford, had a Smooth Cayenne, Mr. Mills, gr. to Charles Churchill, of the same weight. Mr. Page, gardener to W. Leaf, Esq., Streatham, showed Smooth Cayennes, weighing 5 lb., and Charlotte Rothschild, 4 lb. Mr. Chilman, gr. to the Earl of Normanton, Ringwood, had Smooth Cayennes and Queens. Mr. Wallis, gr. to J. Dixon, Esq., Kettle Park, Farnham, Providence, Enville, and a Brown Sugar-loaf. Mr. Davis, gr. to Earl Cowper, contributed well-ripened Providences, Black Prince, and Smooth Cayenne. The best Queen came from Mr. Snow, gr. to W. H. Stone, Esq., M.P., Dulwich, and the next fruit in point of merit came from Mr. Parsons, gr. to Mr. Lawrence, Esq., Clapham Park. Mr. Crail, gr. to G. Seaman, Esq., Streatham, showed a very ripened Queen.

Collections of Fruit.—Of these only two were staged, the best of which came from Mr. Dawson, gr. to Earl Cowper. It consisted of Black Barbarossa, Muscat Grapes, Black Prince Pine Apple, Violet Hâtive Peaches and Elruge Nectarines, a green fleshed Melon, and Florence Cherries. Mr. Donald, gr. to G. Barclay, Esq., Leyton, the other exhibitor in this class, also had good Black Hamburgh and Muscat Grapes, a Queen Pineapple, Moselle Cherries, and Perfection Melons, Royal George Peaches, Nectarines, and Pears.

Grapes.—In dishes of three bunches, Mr. Meredith, of Garston, near Liverpool, distanced considerably all other competitors; the three bunches of Black Hamburgh shown by him being in all respects exceedingly fine. Mr. Osborn, of North Lodge, Bexley, Mr. Osborn, Finchley, had the next best three bunches of the same variety, while three fine bunches of Muscat Hamburgh, attached to the rod on which they grew, attracted much attention on account of their size and general excellence. Mr. Osborn, of Bexley, was found to be the exhibitor. These came from Mr. Devenish, Rodwell, near Weymouth. The best basket of 12 lb. came from Mr. Norris, gr. to A. Beaumont, Esq., Scaithgate, who showed excellent Black Hamburgh. The same variety was also shown in good condition by Mr. Osborn, gr. to Mr. Palmer, of Bexley, Kent, Esq., Heavy Hill, and Mr. Frost, Maidstone, were equal 3d, the former with Muscats, the latter with Black Hamburgh. Messrs. Lane & Son had some beautiful bunches of Black Prince; Lady Downes' came from Mr. Morris, gr. to R. Bright, Esq., Tring; and Mr. Mitchell, Dorking, showed very good bunches of the same variety. Good examples of Black Alicante, ripened under glass without the aid of fire heat, came from Mr. Irving, gr. to the Duke of Hamilton at Boston Park. By far the best Muscats came from Mr. Hollingworth, Bridlington, who had fine bunches of fine berry, and possessing that beautiful golden yellow colour which this variety should have when perfectly ripe. Mr. Irving furnished good specimens of Buckland Sweetwater. Mr. Bailey, gr. to T. T. Drake, Esq., Shardeloes, showed Muscats, as did also Mr. Osborn. Mr. Meredith's Muscat of Alexandria Hamburgh, a little deficient in colour, came from Mr. Osborn. From Mr. Irving came a bunch of the same variety, weighing 4 lb. From Mr. Frost, Slough, came some bunches of Grapes, apparently ripened out of doors. Pot Vines were excellent, especially Mr. Meredith's, from Messrs. Lane & Son, and Black Hamburgh, from Mr. Toomer.

Peaches.—These were small, as, indeed, are all stone fruit this year. The best, called Violâtre, came from Mr. Thorneycroft, Floor, Weedon. Mr. Crane, gr. to Rev. L. Deedes, Bramfield, showed good examples of Royal Charlotte. Mr. Chilman, Black Hill, Mr. Gibson, of Gross Charlotte. Other sorts consisted of Noblesse, Royal George, Barrington, Belle garde, and Violet Hâtive. We also noticed good fruit of Royal George, stated to have been gathered from trees in pots in an unheated orchard house.

Nectarines.—The best were furnished by Mr. King, gr. to G. Roder, Esq., Langham, who had Violet Hâtive. They were small, but well coloured, and good considering the season. The next best dish consisted of the same variety from Mr. Sutherland, gr. to Mrs. Jameson, Fulham; Downton came from Mr. Dawson, Earl Cowper's gardener. Elruge, Pitmaston Orange, Victoria from Orchard house trees, Elruge, Rivers' Orange, a richly-coloured kind from pots, Roman, and Murray.

Melons.—Of these there were in all about 60. Among Scarlet-fleshed varieties were found in the foremost rank The best Green-fleshed sort was one named Preston Hall Hybrid, from Mr. Frost, Nurseryman, Maidstone.

Figs.—The set to which the 1st prize was awarded were large and excellent. They came from Mr. Dennis, gr. to H. Hayward, Esq., Polkington, and consisted of Brown Turkey and Brunswick. Mr. Samuel, Betchworth, had Black Ischia and Brunswick, and Mr. Turner the last named variety and Brown Turkey. Among other varieties were good specimens of White Genoa.

Plums.—Mr. Webb, of Reading, furnished handsome fruit of White Magnum Bonum, Goliath, and Cox's Golden Drop. Mr. Bailey had Prince of Wales, Washington, and Denyer's Victoria; while from Mr. Shoebridge, Carshalton, came Jefferson, Goliath, and Washington. From Mr. Gilbert came Pond's Seedling, Jefferson, and Goliath. Among others were Green Gage, La Delicieuse, a sort like Goliath, Kirkes, and from Mr. Wilson's Orchard House at Weybridge came beautiful examples of Transparent Green Gage, a large fine looking kind, which, if as good as the ordinary Green Gage, must prove an acquisition. His other sorts were Reine Claude de Bavay, and Coe's Golden Drop.

Cherries.—Although late in the year, several dishes were exhibited. The best were Morello and Kentish from Mr. Marcham, gr. to E. Oates, Esq., Hanwell. Mr. Bailey had Morello and Bigarreau, and Mr. Dawson, Florence and Belle Magnifique. From Mr. Sage, Ashridge, came Florence and Morello. Among others were Harrison's Heart, like the Florence, but darker in colour.

Pears.—In the class of three dishes, the best came from Mr. Gilbert, Slough, Mr. Rivers and Williams's Bon Chrétien, Duchesse d'Angoulême, and Louise Bonne of Jersey. From Mr. Harrison, Oatlands, came beautiful examples of Beurré Clairgeau, Duchesse d'Angoulême, and Louis Bonne of Jersey. Mr. Richbell, gr. to — Heathcote, Esq., Epsom, showed good Beurré Diel, Beurré Superfin, and Passe Colmar. From Mr. Bonner, gr. to Rev. J. Cooper, Woking, came Gansel's Bergamot, Marie Louise, and Duchesse d'Angoulême. Among others were Beurré d'Amanlis, Jargonelle, Winkfield, Passe Colmar, and Flemish Beauty. The heaviest dish of 12 fruit came from Mr. Gaid, gr. to J. Jaffray, Esq., Betchworth. It consisted of Uvedales, which collectively weighed 10 lb. 14 oz. Twelve specimens of Maréchal de la Cour, from Mr. Wilson, weighed 8 lb. 4 oz. The 1st prize for the best-flavoured variety was given to a Pear, the name of which was unknown. It came from Mr. Thorneycroft, Floor, Weedon. Williams' Bon Chrétien, from Mr. Grover, Hammersmith, obtained a 2d prize; and to the same variety from Mr. Fraser, Lea Bridge, a 3d prize was awarded. Jargonelle was at first considered to be the best in point of flavour, but afterwards it fell behind Williams', attributed to in the estimation of the judges. Among others which competed for the prizes offered in this class were English Caillot Rosat, Louise Bonne, and Marie Louise.

Apples.—Of these some large and fine fruit was exhibited. In the class for 24 dishes of Kitchen kinds, the best came from Mr. Willmore, Hoyle Place. They consisted of Emperor Alexander, Blenheim Pippin, Red Astrachan, and Stone Pippin From Mr. Mortimore, gr. to A. Stace, Esq., Carshalton, came Lord Suffield, Cellini, Lord Derby, and Hall's Jubilee. Mr. Lane, Shrubland Park, Coddenham, Chancellor, Tankboun, and Catshead. Messrs. Gold & Sons, Dorking, had Lord Suffield, Nelson's Glory, Hambury, and New Hawthornden. Among other kinds were noticed Keswick Codlin, Kentish Fillbasket, large and fine; Hawthornden, Cox's Seedling, Alfriston, Dumelow's Seedling, Gloria Mundi, York shire Greening, and Monstrous Leadington. The best 4 dishes of Dessert kinds were contributed by Mr. Lane, St. Mary's Cray They consisted of Red Pearmain, Red Astrachan, Lord Vaughan, and Ribston Pippin. From Mr. Rendle, Stoke, came Ribston Pippin, Cox's Orange Pippin, Quarrenden, and a pretty Carnation striped Seedling Mr. Webb, Reading, furnished Red Astrachan, Scarlet Nonpareil, Cox's Orange Pippin, and Ribston. Mr. Bentley, Goring, showed Pearmain Pippin, Red Astrachan, Cellini, and Ribston Pippin. Mr. Gilbert, Slough, had a dish of what was labelled Golden Bush Squash, also a dish of the Cherry Tomato. Of Gooseberries and Currants we noticed one or two dishes. Victoria Red Currants, Sir Charles Napier Strawberries, and Jefferson Plums, came from Mr. Vertigan, Clapham. From Mr. Rendle, Stoke, came Large Filbert Nuts. There were also some good specimens of Cucumbers, and Mr Sage, Ashridge, and Mr. Kemp, gr. to E. H. Bentall, Esq., showed fine clusters of Banana.

Vegetables.—These consisted chiefly of Onions, of which Messrs. Cutbush had beautiful examples of what they called Nuneham Park. It was stated that none of them weighed less than 1 lb. each, and that one of the bulbs shown weighed 1 lb. 8½ oz. From Messrs. Cutbush also came Giant French Bean, 3 ft. long, well formed, useful looking variety. A collection of vegetables of different kinds was contributed by Messrs. Barr & Sugden.

Dahlias.—These were numerous, large, and fine, especially the blooms in the winning stands.

In the class of varieties Mr. Keynes, of Salisbury, had the first prize for beautiful examples of Golden Admiration, King of Sweden, Matilda, Queen of Primroses, Delicata, Edward Spary, Baron Taunton, Lord Shaftesbury, Chairman, James Backhouse, Miss Henshaw, Flossy Gill, George White, Isaak, Paradise Williams, Mrs. Wyndham, Andrew Dodds, Earl of John Wyatt, Bob Ridley, Annie Austin, Disraeli, Anna Keynes, British Triumph, Lady of the Lake, Freemason, Lady Mary Wyke, George Wheeler, Miss Herbert, Bob Ridley, Stella Colin, Criterion, Lady Palmerston, Hugh Miller, Ellen Potter, Lilac Perfection, Lady Gladys Hillcoat, Forget-me-not, Duke of Norfolk Hero, Queen of Sheba, Scarlet, Peri, Earl Pembroke, Fanny Purchase, Vice Chairman, Golden Gem, and Jenny Austin. Among other exhibitors in this class were Mr. Walker, of Thame, Mr. Kimberley, Coventry, and Mr. Morse, Epsom.

In the class of 24 Fancy Dahlias Mr. Keynes took the 1st prize with large beautiful blooms of Chang, Formidable, Regularity, Lightning, Octoroon, Remarkable, President Lincoln, Lord Warden, Queen of Sheba, Forget-me-not, Lady Palmerston, Mayor Sharpe, Vice President, Miss Henshaw, Delicata, Harriet Tetterell, Leah, and Miss Herbert. The next best collection came from Mr. Draycott, Humberstone, Leicester, who contributed good blooms of Alexandra, Charles Turner, Lottie Atkins, Imperial, Master Beaumont, Lady Bird, Brown, Lady Penzance, Prince of Prussia, Foxhunter, Lord Derby, Miss Henshaw, Juno, Anna Keynes, Norfolk Hero, Fanny Purchase, Lilac Queen, Champion, Model, Charlotte Dorling, Leah, Donald Beaton, Triumph de Peeq, Annie Austin, and Lady Mary Wyke. Messrs. Keynes, Kimberley, and Keet also all staged good blooms in this class.

In the Class of 12 Fancy Dahlias, Mr Keynes took the 1st prize with large beautiful blooms of Chang, Formidable, Regularity, Lightning, Octoroon, Remarkable, President Lincoln, Lord Warden, Queen of Sheba, Forget-me-not, and Floor. Mr Perry, Castle Bromwich, contributed Leopard, Pauline, Countess of Bective, White tipped Scarlet Seedling, Harlequin, Queen Mab, Lady Paxton, Norah Creena, and Fanny Sturt. Conspicuous among Mr. Legg's blooms, to which a 3d prize was awarded, were Le Domino Noir, Glory, and Queen of Sports.

In the Amateurs' Class of 24 kinds, Mr. Perry was 1st with charming blooms of Chairman, Arthur, Phidias, Anna Keynes, Andrew Dodds, Master of Arts, Bob Ridley, Delicate Pink Seedling, Model, Leah, Delicata, Donald Beaton, Miss Henshaw, Meteor, Lady G. Herbert, Lord Derby, Alexandria, Hugh Miller, George Brown, British Triumph, Juno, Criterion, Charlotte Dorling, and Pauline. Mr Thorneycroft, Floor, Weedon, had fine blooms of Volunteer, Juno, British Triumph, Startler, Willie Austin, and Lord Derby. In collections from Mr. Hopkins, Brentford; Mr. Hedge, Reed Hall, Colchester; Mr. Glasscock, Bishops Stortford; and Mr. Cottis, Newhall, we noticed fine examples of Bob Ridley, Peri, Mrs. C. Waters, Criterion, Miss Henshaw, Chairman, and Lord Derby.

In the Class of 12 blooms (amateurs) Mr. Thorneycroft was the most successful exhibitor. He had Lord Palmerston, Volunteer, Fanny Purchase, Yellow Seedling, Lord Derby, Model, International, Willie Austin, Juno, Miss Henshaw, British Triumph, and Matilda Keynes. Mr. Glasscock, who stood next in point of merit, had Goldfinder, Chancellor, Andrew Dodds, Jenny Austin, British Triumph, Garibaldi, Lord Palmerston, Fanny Purchase, Bird of Passage, Defiance, Lord Derby, and Mrs. Bolton. In collections from Mr Lane, Mr. Hopkinson, Mr. Hedge, and Mr. Perry, were good blooms of Andrew Dodds, Norfolk Hero, Comet, Miss Henshaw, Champion, Earl Pembroke, Lady Popham, Leah, Chairman, Lottie Atkins, Peri, Golden Admiration, and Charles Turner.

In the Class of 12 Fancy kinds (amateurs) Mr Perry had the best blooms; they consisted of Juno, Sam Bartlett, Queen Mab, Octoroon, Pauline, Queen of Sports, Harlequin, Garibaldi, Yellow Seedling flaked with crimson, Triomphe de Robaix, Regularity, and Artemus Ward. Among Mr. Thorneycroft's blooms, to which a Second Prize was awarded, were Pauline, Queen Mab, Peri, Angelina, and Queen of Sports. From Mr. Tetheld, gr. to G. Thornhill, Esq., Dyddington, came good examples of Elsor, Frank Tiffin, Sam Bartlett, Queen of Sports, and Messenger.

Seedling Dahlias.—Mr. Keynes received First-class Certificates for Tarcdiss Williams, a finely shaped maroon crimson, and for Princess of Wales, delicate lilac, with a white centre, in which the petals are slightly tipped with violet. Butterfly, reddish-orange, and Vice President, golden yellow, both also from Mr. Keynes, received Second class Certificates, as did Mrs. Burgess, from Mr. Keynes, Whitehead's Grove, Chelsea. The last is crimson, prettily shaded with violet, which gets paler as the flower becomes older. Second class Certificates were also awarded to Mr. Wheeler, Warminster, for Bijou, bronzy-salmon-lilac, and for Vaughan, purplish maroon. Mr. Pope, Chelsea, received a Second-class Certificate for Pope's Gem, a fancy kind, in which crimson and white were contrasted together in about equal proportions; a Second class Certificate was also awarded to Mr. Penfield, for a light ground flower, tipped with purple-lilac Mr. Rawlings furnished Rosy Morn, and Mr. Sladdin, nearly black crimson, and from Mr. Turner, of Slough, came Starlight and Flambeau, both striking flowers, in which the prevailing colours were scarlet and orange.

Bouquets.—No spikes of these were shown, but instead of them there were some very large and fine single blooms, especially those of two collections from the Rev. E. Hawke, Willingham, Gainsboro'. Among them we noticed Chairman, G. Venn, Crimson Seedling, Acme, Purple Seedling, Prince, Hercules, George Keith, Invincible, Lilac Perfection, Snow, and Wanderer, Rawlings furnished Standard, Lilac Perfection, Creamy-yellow Seedling, Countess of Craven, Governor General, William Dean, Autumn Queen, Mrs. Elliott, Willingham, Defiance, Crimson-scarlet Seedling, and J. B. Ullett. Mr. Porter, gardener, Copt Hall, also showed good blooms of Dido, Mr. Herrington, Hawkes, Countess of Craven, Prince Christian, Earl Breadalbane, George Paul, Beauty of Waltham, and one or two others.

Pæonies.—Of these Mr. Perry showed some charming sorts, chiefly seedlings of his own, in the raising of good sorts of which he is noted as well.

Only a couple numbers of boxfuls of these were shown, even thus late in the season, in good condition. Among exhibitors of them were Messrs. Paul & Son, Mr. Keynes, Mr. Cant, Mr. Hollingworth, Mr. Hedge, Mr. Thorneycroft, Mr. Maulson, and others. Boxfuls of Lord Macaulay, Charles Lefebvre, and Madame Victor Verdier were furnished by Mr. Wm. Paul. Senateur Vaisse was shown in quantity by Mr. Clarke, of Brixton Hill, and Mr. Keynes and Messrs. Paul & Son had fine boxfuls of Maréchal Neil, the beauty of which attracted general attention. Among others we noticed Maurice Lachaume, Gloire de Santenay, Maréchal Vaillant, Dr. Andry, Victor Verdier, Oliver Delhomme, Madame Boutin, Pierre Notting, Mrs. C. Wood, Comte Vigier, Lord Herbert, Baron Adolphe de Rothschild, Princess of Wales, Prince Camille de Rohan, Rubens, Madame de Stella, and other fine kinds.

Roses.—Both German and French kinds were shown in good condition. The last, especially, were large and fine, and the colours bright and clear, while the German varieties were not less remarkable for their compactness and neatness. The best exhibitions in both classes came from Mr Stanford, gr. to J. Thomaseth, Esq., Walthamstow. Mr. Hedge, also, showed some good French varieties, and Mr. Benham, Newbury, some pretty quilled German kinds.

Gladioli.—Cut spikes of these were shown in beautiful condition by Messrs. Salway & Sons, Langport, Somerset, and by Messrs. Paul & Son, Brown, Cutbush, and others. A huge conical cumbine-like trellis covered with spikes of them was also shown by Mr. Prince, Market Street, Oxford.

Miscellaneous Subjects.—Among these was a large and fine collection of sub tropical plants, from Messrs. Veitch, Laird, & Lathing. Mr Cunningham showed a fine new variegated ivy leaved Pelargonium. From Mr. Wm Paul came beautiful exhibitions of Nosegay Pelargoniums; also variegated Ivies and fine leaved shrubs. Mr. Turner furnished Duchess of Sutherland and other handsome Pelargoniums, and we noticed some good exhibitions of new and flowering and green-leaved plants. Mr Perry had a rosy-scarlet Pelargonium named Shirley Hibberd, to which a Second class Certificate was awarded. Messrs. Carter & Co. contributed a beautiful exhibition of Plant Cases, interwixed with fine foliaged plants, Gladioli, and cut blooms of the large showy Lemon and Orange African Marigolds. They also showed a handsome Window Box, the panels of which consist of ornamental wrought iron, which is equally handsome and more durable than porcelain. From Messrs. Veitch & Sugden also came an interesting exhibition of Plant Cases and other ornamental garden appliances.

The Apiary.

UNCERTAINTIES OF BEE-KEEPING. — I have two apiaries, separated from each other by a distance of about three miles. All my hives are managed upon the depriving system, natural swarming being systematically discouraged. When an increase of stocks is required, recourse is had to the formation of artificial swarms in the manner described in former numbers of the *Gardeners' Chronicle*.

In one apiary, consisting of eleven hives, the majority of the super-working stocks swarmed, or persisted in threatening to swarm, having previously made considerable progress in comb-building. Also, after the return of the swarms to the parent stocks, and in some cases, notwithstanding the careful excision of the royal cells, the queens again departed at the head of their subjects. In one instance this occurred exactly 21 days after the return of the first issue and the excision of the royal cells, proving that the bees must have commenced the construction of new cells almost immediately. From this apiary, in consequence of these untoward events, only about 50 lb. of honey in supers has been obtained.

The second apiary consists of seven hives, out of

which two only threw off swarms. One of these was allowed to stand; and the hive having been partly furnished with empty combs in frames, the bees went a-head right merrily. It is usually my custom under such circumstances to remove the deserted super from the necessarily weakened stock-hive, and give it to some other colony to finish. In this case the super, about half-filled with combs, was at once placed on the swarm, which, as before stated, was supplied with some ready-made combs, giving the queen abundant space for the deposit of her eggs. In due time a beautiful super, of 20 lb. weight, was taken off.

The other hive at the time of sending out its swarm had two-thirds filled a large octagonal glass box. Removing this with its adapter, all the frames of the stock-hive were carefully examined, a considerable number of royal cells being destroyed. Two large drone combs full of larvæ were also removed, for which were substituted two empty worker-celled combs. As the rest of the inferior was crammed with brood and eggs, no doubt the queen was delighted on her return to her old domicile, to find such a wide field for her ovipositing operation, and possibly this may have contributed to my ultimate success. The bees of the swarm were then shaken out on the tops of the frames. So enormous were the numbers thus summarily dislodged, that the top and sides of the hive were completely covered with thick masses of them. About two hours elapsed before they had entered the hive sufficiently to enable me to replace the super and its adapter. From this time all went merry as a marriage-bell; no further attempt at swarming was made; the bees worked at an astonishing rate, and in one month after, I had the satisfaction of seeing completed a glass super of 80 lb., the handsomest and heaviest top-box it has ever been my fortune to possess in my own apiary.

Two other hives out of the seven comprising this particular apiary were weak in the spring, and did not recover their populations sufficiently early to take advantage of the honey harvest, nor did they throw off swarms. They are now very heavy, and strong in bees. Therefore, it will be seen that the hives which afforded me any honey harvest were reduced to five in number. The sum total amounted to 212 lb., an average of rather more than 42 lb. per hive. These results, though seeming to speak much more favourably for one apiary than the other, do not exactly exhibit the real state of the case. The apiary from which the smallest harvest has been obtained possesses now a certain number of new stocks, well stored and vigorous for the next campaign; while the parent hives have, of course, young queens, which ought to be in their prime. It is probable that this apiary may from next summer be in a better condition to reap the full benefit of an abundant supply of honey, should we be again so highly favoured as we have been for the last four seasons.

My object in writing the foregoing outline of my doings is to show how easily we may be misled by appearances. Had I been the possessor of but the one unremunerative apiary, I should have been disposed to give a very bad character to the season as a honey year. The success which attended my manipulations in the other apiary will go far towards proving the contrary. For a short period honey was stored more rapidly than I ever before remember. *S. Bevan Fox.*

Supers.—Please advise me under the following circumstances. I have a Woodbury hive, into which I put a very fine swarm in April last. The bees did very well, and were rapidly filling a super, when they swarmed again, leaving the super half full of comb, but with very little honey. Since that the bees left have not of course been able to do much good, but they have rapidly increased in numbers, and have added some comb and a little honey. The super is now two-thirds full of beautiful comb, containing perhaps 2 lb. of honey. Of course I shall not take this; but the question now is, whether I ought or ought not to remove the super, and lay it by for next year, when the comb will be very valuable. My difficulty is that the super (which is a large square one), as well as the stock hive, appears always full of bees, and I fear if I remove it there may not be room in the stock hive for all. Will you kindly advise me what to do? *G.*

[You need be under no apprehension of any danger of the bees being unable to find accommodation in the lower hive when the super is taken off. This should be done without much delay, the adapter also being removed, the top put on, and all made snug for the winter. The combs in the super will be very valuable next season, and will almost ensure your becoming possessed of a fine box of honey. But, sometimes, when guide combs are scarce, we find it more to our advantage to make use of such combs (provided they are suitable worker-celled combs) by dividing them among several supers. Help and inducement to work is afforded to a larger number of hives, and more honey may be the result. If the box is to be kept as it is, take some means to remove the honey, otherwise it may ferment or become crystallised during the winter, spoiling the combs. Open-air robbery, particularly at this season, is not to be encouraged; or, by exposing the super for a few hours, the desired result would be easily obtained. Having drawn a string underneath the box, to detach any comb which may be connected with the adapter, raise the super an inch or two on four wedges; cover all up, and leave till the following morning, when probably the bees will be found to have descended into the lower hive, and taken the honey with them.]

Calendar of Operations.

(*For the ensuing week.*)

Those who contemplate making new orchards, removing large fruit trees, or replacing unhealthy young ones this year, should now or very soon commence operations of a preparatory character. In the first place secure if possible abundance of good loam; and if this can be obtained with some rough turf in it, so much the better. The loam being provided and stacked in a high and sharp ridge, in order to throw off rain, the next thing is to thoroughly drain, if not already done, the site intended to be planted; without this all subsequent operations will end in disappointment. Perfect drainage being secured, stations may be formed for the trees, which need not be planted sooner than November. In the meantime, however, we would advise a trench to be thrown out without delay around any large trees that are intended for removal. This will check late growth, and induce a disposition in the roots to throw out new fibres or small rootlets.

FLOWER GARDEN AND PLANT HOUSES.

Alterations of grounds and planting of evergreens may now be commenced and carried on with dispatch. Evergreens may be moved with greater safety now than at any other season. Before planting, see that the ground which they are to occupy is well drained, and otherwise properly prepared for their reception.

HOLLYHOCKS.—Continue to increase these both by means of cuttings and seed. The latter should be sown as soon as it is ripe.

PANSIES.—Plant out beds for early spring blooming. Seedlings, as soon as large enough, should be planted out for blooming. Late-saved seed may be sown. Cuttings may also be put in.

PINKS.—Prepare beds for planting out at the end of the month for blooming. The beds should be a little raised in the centre, to throw off the wet; plant about six inches apart. Rotten manure and common road sand should be mixed with the soil rather plentifully. Pot up a part of the stock for wintering under glass, or to be sheltered, like Carnations during the winter. These, if planted out in well-prepared beds about the 1st of March, bloom both early and fine.

SALVIAS.—See to having plenty of the showy scarlet kind called splendens, which is extremely useful for mixing among Chrysanthemums. It is a good practice to place the largest specimens of this in a shady situation out of doors for a few weeks in autumn; plants so treated will be found to bloom more strongly, and last longer in beauty than others drawn up in a warm house.

TREE VIOLETS.—Keep these clear of red spider by a liberal use of the syringe, and by giving them plenty of manure water, which will assist in keeping them in vigorous health.

TULIPS.—Bulbs of Van Thol and others of that class used for forcing may be potted. Place them on coal ashes, cover them as Hyacinths are usually done, and early in November they may be placed in heat.

FORCING GARDEN.

CUCUMBERS.—Where a supply is required during winter, vigorous young plants should be secured at once from seed, as plants that have been bearing through the autumn, however promising they may look, seldom answer well for winter fruiting.

FIGS.—Where any are ripe keep the atmosphere as dry as can conveniently be done, and also let the trees be on the side of dryness at the root, but avoid such a degree of drought as would be likely to injure the foliage or the bearing wood for next crop. Keep the shoots thin, so as to expose the trees fairly to light and air, but avoid stopping at this season. Keep the atmosphere moist where fruit is swelling, washing the foliage well with the syringe frequently to prevent red spider, and give plants in pots or tubs a liberal supply of manure-water.

PINES.—Any necessary re-arrangement of plants growing in open beds should now be effected. Encourage plants expected to show fruit next January to make vigorous growth, for these should be sufficiently advanced by the beginning of November to allow of keeping them rather cool and dry, so as to check and thoroughly ripen their growth. Plants which have been prepared for fruiting, and which it is desired to get up at once, should be encouraged with a moist warm atmosphere, keeping the soil about their roots in a healthy state as to moisture. If artificial treatment must be resorted to in order to get the plants to fruit at the desired time, there is no method so certain or so little injurious as keeping them cool and dry for a month, and then affording them a moist warm temperature and a brisk bottom-heat, giving sufficient water at the roots to properly moisten the soil. Take off and pot, or plant out suckers at short intervals as they can be obtained of sufficient strength for that purpose.

VINES.—Give air freely whenever the weather is dry in houses where the ripening of the wood is an object, and if a little fire-heat is used with the air, this will be much more efficacious now than later. Except, however, in the case of young Vines with a very gross habit it will hardly be necessary to use fire-heat if the weather is dry. It will now be advisable to cover the borders of houses in which it is intended to keep ripe Grapes for any length of time, so as to prevent the soil from getting saturated by heavy rains. Look over ripe Grapes frequently, particularly in damp weather, cutting out any tainted berries immediately they are perceived, and keep the atmosphere as dry as possible, using gentle fires when necessary, with a free circulation of air; but a warm temperature is nearly as injurious as damp, therefore use no more fire-heat than may be absolutely necessary.

HARDY FRUIT AND KITCHEN GARDEN.

Pay every attention to getting the wood of Peaches and Apricots well ripened, by exposure, shortening, &c.

APPLES AND PEARS.—Most kinds of Apples may be gathered during this and next month. Pears should, however, be left on the trees as long as the weather continues favourable for their ripening.

POTATOS.—No opportunity should now be lost for getting Potatos that are ripe out of the ground, and stored in a dry condition. They may either be kept in narrow pits, with a little dry earth sprinkled among them, or in airy dark sheds. Before storing, however, take care to separate the bad ones, unfortunately rather plentiful this season, from those that are sound.

SALADING.—Plant out Lettuces and Endive for spring use. If planted on the sloping sides of wide ridges they will stand better, damp being quite as destructive to them as frost.

STATE OF THE WEATHER AT CHISWICK, NEAR LONDON, For the Week ending Sept. 5, 1866, as observed at the Horticultural Gardens.

August and Sept.	Moon's Age	Barometer. Max	Barometer. Min.	Temperature. Of the Air. Max.	Min.	Mean	Of the Earth 1 foot deep.	Of the Earth 2 feet deep.	Wind	Rain.
Thurs.	30	29.775	29.582	69	49	54	62	60	W.	02
Friday	31	29.870	29.719	77	44	60	62	60	S.W.	00
Satur.	1	29.855	29.763	70	49	59	62	59½	S.W.	03
Sunday	2	29.833	29.536	67	49	53	63	60	W.	22
Mon.	3	29.841	29.785	67	48	55½	64	60	S.W.	08
Tues.	4	29.668	29.531	67	55	61	61	59	S.W.	36
Wed.	5	29.489	29.337	68	52	60	62	59	S.W.	12
Average.		29.759	2.613	67.0	46.7	57.5	63.3	60.3		0.83

Aug 30—Cloudy and boisterous; overcast, stormy at night.
— 31—Very fine throughout.
Sept. 1—Very fine, rain at night, rather cold.
— 2—Rain, clear, with some low white clouds, showery, thunder
— 3—Fine, with brisk wind, very fine at night.
— 4—Rain, showery, heavy thunder showers at night.
— 5—Boisterous and wet, showery, clear at night.
Mean temperature of the week, 1.5·10 deg. below the average.

STATE OF THE WEATHER AT CHISWICK,
During the last 40 years, for the ensuing Week, ending Sept 15, 1866

Sept.	Average Highest Temp.	Average Lowest Temp.	Mean Temp.	No of Years in which it Rained	Greatest Quantity of Rain	Prevailing Winds. N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.
Sunday	9	69.0	48.1	58.5	17	1.09 in.	—	6	2	3	5	15	8
Mon.	„ 10	69.5	47.8	57.7	19	1.27	2	4	4	7	7	9	11
Tues.	„ 11	68.6	46.6	57.6	10	0.63	1	2	6	1	4	7	11
Wed.	„ 12	69.2	44.6	56.9	15	0.49	1	6	1	4	2	9	11
Thurs.	„ 13	67.5	45.5	57.1	18	1.41	3	4	2	3	4	8	11
Friday	„ 14	67.1	46.2	56.7	20	0.81	1	1	8	4	3	10	7
Satur.	„ 15	66.6	46.3	56.9	20	0.63	1	5	6	3	8	5	6

The highest temperature during the above period occurred on the 13th, 1865—therm. 86 deg., and the lowest on the 11th and 12th, 1869—therm. 28 deg.

Notices to Correspondents.

BEECH GNARS: *Old Subscriber.* The nodules on Beech arise from latent buds, which increase beneath the bark without making their appearance externally. They are called Gnaurs. There are several curious forms on different trees. *M J B.*

DISEASED OAKS: *P L.* We have carefully examined your Oak branches. The under side of almost every spot on the leaves is studded with moulds belonging to the genera Cladosporium and Macrosporium. In some cases the cuticle seems to have been eaten away, in others it is intact, but though no insects are now present except a few Aphides, we believe that some insect is the primary cause. At the same time, as the affected tree is isolated, it would be well to lay bare the roots, to see if they are infested with mycelium or spawn, especially should the affection return next year and be confined to the individual tree. *M J B.*

EARLY PEAS. *W E.* We regret to say that the objects of the trials at Chiswick have been frustrated this year by blight. This is greatly to be regretted, as it leaves the matters in dispute where they were, and tends to prolong the mischief and inconvenience that arise from the same Pea being sold under so many different aliases.

FERNS: *C M F.* The Fern usually called the Gold Fern is Gymnogramma chrysophylla, but there are several other kinds with a similar gold coloured under surface. Darea viviparia is properly Aglaomia viviparum; both it and Asplenicutarium are stove Ferns, with elegant much divided fronds. Adiantum reniforme has simple fronds of a kidney-shaped outline. Phegopteris rupestris has a coarse pinnato-pinnatifid frond, and is sometimes referred to Gymnogramma or Grammitis.

FUCHSIAS: *Old Subscriber.* The following are good sorts, though tastes may differ as to the best:—*Light*: Rose of Denmark, Lucy Mills, Elegantissima, Mdlle. Tietjens, Merry Maid, Minnie Banks, Reine Blanche, Prince Alfred, Lady Heytesbury, Arabella, Blanchette, Elegance. *Dark*: Beauty, La Favorita, Emblematic, the Lord Warden, Enoch Arden, Father Ignatius, Land of Plenty, Grand Admiral, Grand Duke, Nonpariel, Vainqueur de Puebla, Conspicua. The three last have a white corolla.

FUNGI: *W. Reed.* Your Agaric arrived in a desperate state of putrefaction, but it appears to be Agaricus fusipes, a species which grows at the foot of Oaks, and if so it is excellent when pickled, but too tough to stew. *M J B.*

GLYCERINE: *Mowse, Foodfield.* The spikes you have sent us of Brencheleynsia are magnificent. Among showy autumn sorts this still stands in the foremost rank.

HEMLOCK SPRUCE: *Monday.* The bough may be cut off, not too close to the bole, however, without any great risk to the tree, provided the wound be protected from the weather by a coating of paint, or of some composition like grafting wax, that will prevent the absorption of moisture.

IRESINE AND AMARANTHUS: *A B.* The iresine should be kept through the winter in a stove or warm greenhouse, and may be propagated in any quantity in spring in a brisk heat. The Amaranthus should be sown in heat towards the end of March, and the plants should be grown on quickly in a warm pit or frame, and finally hardened thoroughly before being planted out.

MICROSCOPIC: *Anatomy of the Teeth: F A O.* We know of no book except the work of Owen that you mention. You will find much information in the article "Teeth" in Todd's "Cyclopædia of Anatomy," and also in the last edition of the "Encyclopedia Metropolitana."

NAMES OF PLANTS: *F B.* 1, Catalpa syringefolia; 2, Phytolacca decandra; 3, Euonymus americanus; 4, Ailantus glandulosus.—*F M Legg.* Amberboa (or Centaurea) odorata.—*A B.* 1, Parnassia palustris; 2, Scabiosa Columbaria; 3, crushed; 4 and 5, Athyrium filix-femina.—*J H.* Platycloma filcatum.—*Capt. Bacon.* The larger Fern is Lastrea Sieboldii; the smaller Doodia media. The plant probably got under the bell glass by the accidental intrusion of a spore.

PEACH MILDEW: *F M J.* Your mould on Peaches is the common Peach mildew, for which the approved remedy is dusting with sulphur as soon as it makes its appearance, and repeating the application if the first is not sufficient. *M J B.*

WOODWARDIA RADICANS: *T H.* It is strictly a greenhouse plant, though it sometimes survives a mild winter with a small amount of shelter.

COMMUNICATIONS RECEIVED.—W. C. T.—J. D. H.—T B.—O. L. —D. T. Fish.—Excelsior.—W. Heale.—Censor.—A. T.—P. C.—J. Grieve.—J. Anderson.—F. R. Kinghorn.—Hyacinth.—D. B.

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American and other Cakes at market prices.
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The Company will also negotiate the Rent-charges obtained by Landowners under the Improvement of Land Act, 1864, in respect of their Subscription of Shares in a Railway or Canal Company.
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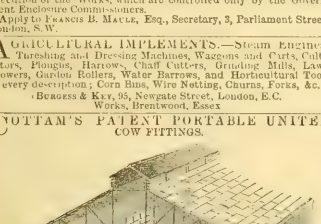

Their advantages are—Portability, not Fixtures, removable at pleasure, no Woodwork or Partitions to impede Ventilation or breed Vermin, Hay Rack dispensed with as unnecessary, increased width and depth of Feeding Troughs, Water Cistern, and Patent Dirty Cover to prevent over-gorging. Cleanly, durable, and impervious to infection, being all of iron. Price of Fittings per Cow, 45s.
Prospectuses free of COTTAM & CO., Iron Works, 2, Winsley Street (opposite the Pantheon), Oxford Street, London, W., where the above are exhibited, together with several important Improvements in Stable Fittings just secured by Patent.

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HILL AND SMITH'S PATENT BLACK VARNISH for preserving Iron Work, Wood, or Stone. This Varnish is an excellent substitute for oil paint on all out-door work, and is fully two-thirds cheaper. It may be applied by an ordinary labourer, requires no mixing or thinning, and is used cold. It is used in the grounds at Windsor Castle, Kew Gardens, and at the seats of many hundreds of the nobility and gentry, from whom the most flattering testimonials have been received, which HILL & SMITH will forward on application.
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"In answer to your inquiries, I beg to inform you I find your Black Varnish an excellent substitute for oil paint upon iron and wood out of doors, and have found the iron Barrow with apparatus essential in applying the Varnish to lines of fencing. I can strongly recommend the Black Varnish for all out-door work as superior to anything I have yet used for the purpose, and it can be applied with great economy by careful labourers."
Sold in casks of about 30 gallons each, at 1s. 6d. per gallon, at the Manufactory, or 1s. 8d. per gallon paid to any Station in the kingdom.
Apply to HILL & SMITH, Brierly Hill Iron Works, near Dudley, and 22, Cannon Street West, E.C., from whom only it can be obtained.

THE NATIONAL EXHIBITION of SPORTING and OTHER DOGS.—The SEVENTH GREAT ANNUAL EXHIBITION will be held in the NEW CURZON EXHIBITION HALL, BIRMINGHAM, on MONDAY, TUESDAY, WEDNESDAY, and THURSDAY, the 3d, 4th, 5th, and 6th December next.
Copies of the Prize Lists and Regulations may be obtained from the Secretary, Mr. G. BEECH, Temple Row, Birmingham.
The ENTRIES CLOSE on November 1.

THE BIRMINGHAM CATTLE and POULTRY SHOW, 1866.—The EIGHTEENTH GREAT ANNUAL EXHIBITION of FAT CATTLE, SHEEP, PIGS, DOMESTIC POULTRY, CORN, ROOTS, and IMPLEMENTS, will be held in BINGLEY HALL, on SATURDAY, MONDAY, TUESDAY, WEDNESDAY, and THURSDAY, December 1st, 3d, 4th, 5th, and 6th, when Prizes to the amount of £2050 will be awarded
Prize Lists, Certificates of Entry, and every information may be obtained from the Secretary.
The ENTRIES CLOSE on Thursday, November 1.
JOHN B. LATHALL, Secretary.
Offices—Stephenson Chambers, New Street, Birmingham.

SMITHFIELD CLUB SHOW.
AGRICULTURAL HALL, ISLINGTON, DECEMBER 10 to 14.
IMPLEMENT DEPARTMENT.
The LAST DAY for receiving Applications for Space for Implements and Machinery, &c., is OCTOBER 1
Printed Forms of Application, with Rules and Regulations, may be obtained of Mr. DAVID FOLLEY, Assistant Secretary, at the Office of the Honorary Secretary, Corner of Half Moon Street, Piccadilly, London, W.

SMITHFIELD CLUB FAT CATTLE SHOW.—The ANNUAL SHOW of FAT CATTLE, SHEEP, and PIGS, will be held at the AGRICULTURAL HALL, ISLINGTON, on MONDAY afternoon, December 10, and Four following Days.
Intending Exhibitors are requested to apply for Certificate Forms by the reference letters as under.

CATTLE.—	Form A.	For an OX or STEER (in any Class).
"	B.	For a COW or HEIFER (in any Class).
"	C.	For a BEAST in Extra Stock.
SHEEP.	D.	For a PEN of 3 WETHERS (in any Class).
"	E.	For a SINGLE SHEEP in Extra Stock.
PIGS.	F.	For a PEN of 3 PIGS (in any Class).
"	G.	For a SINGLE PIG in Extra Stock.

ENTRIES for LIVE STOCK CLOSE NOVEMBER 1.
Prize Lists, Forms of Certificates, and all information may be obtained on application to the Assistant Secretary, at the Office of the Honorary Secretary, corner of Half-Moon Street, Piccadilly, London, W.
N.B. All communications respecting the Show must be addressed to the Assistant Secretary, as above, and should bear outside the words "Smithfield Show."

The Agricultural Gazette.

SATURDAY, SEPTEMBER 8, 1866.

THE period of Wheat sowing, which approaches, and which, in the case of extremely thin seeded Wheats, is indeed already here, brings under our notice a recently published report of experiments with different sorts. In 1863 the Highland and Agricultural Society offered a premium of 20*l.* "for an approved report of experiments conducted for the purpose of determining the relative productiveness in corn and straw of Hunter's, Hopetoun, Fenton, and any other variety of white Wheat," the conditions of competition being as follows:—"The experiment must embrace crops of 1864 and 1865. Intention to compete must be intimated to the Secretary not later than 1st January, 1864. The soil shall be uniform in quality and condition. One acre must be allowed for each kind of Wheat, and the lots must be separated by spaces not less than two feet wide. Care must be taken to select true samples of seed for crop 1864, the produce of which shall be used as seed in 1865. Samples of the original seed, and of each year's crop, to be lodged with the Secretary. The Wheats to be sown, by drill or broad-cast, not later than November, and the crops shall be inspected by a committee in May and July following. The whole produce shall be weighed and measured; and care must be taken thoroughly to clean the thrashing machine before testing each variety. The report shall further specify the quantity of each variety of seed sown—where it was obtained—the dates of sowing, brairding, earing, ripening—the properties and appearances of the crops when growing—and the produce each year in corn and straw. Reports to be lodged by 1st November, 1865."

Three reports were received, and these were considered so equal in value that it was resolved to award a premium of 15*l.* to each, instead of awarding 20*l.* to only one of them. Messrs. RICHARDSON, of Drylawhill; and P. TURNBULL, of Little Pinkerton, in East Lothian; and Mr. THOMSON, of Grange, Kilmarnock, are the gentlemen to whom we are indebted for this comparison of approved sorts of Wheat, to the results of which we now direct the attention of our readers. The soils on which the sorts were tried were fair Wheat soils—a heavy loam with retentive subsoil, a dark brown clay loam over yellow clay, and a gravelly loam of uniform quality. The sorts were in all cases Hunter's, the old standard Scotch white Wheat, Hopetoun, also an established favourite, and Fenton, a comparatively recent sort, introduced by Mr. HOPE, of Fenton Barns. It is a short and uneven-strawed white Wheat, now well known in most parts of the country.

In addition to these, there were in one case "Mungoswells," one of many excellent sorts of Wheat introduced by Mr. PATRICK SHIRREFF; in another, "Woolly-ear," which is, we presume, the short-strawed white Wheat, well-known in our own home counties as a productive and excellent variety; and in the third case Shirreff's Bearded White, a variety for which we are more recently indebted to Mr. SHIREEFF. The following are the results on the two years as regards the grain produce per acre:—

		Hunter's.		Hopetoun.		Fenton.		Mungoswell.		Woolly-ear.		Shirreff.	
		Bush.	lb.	Bush.	lb.	Bush.	lb.	Bush.	lb.	Bush.	lb.	Bush.	lb.
Mr. Richardson ..	1864	64	0	64	36	61	38	63	..	..	..	..	..
	1865	37	19	35	34	39	36	33	2	..	..	..	..
Mr. Thomson ..	1864	33	0	33	0	35½	0	..	..	36	0	..	..
	1865	59	0	60	0	66½	0	..	..	64½	0	..	..
Mr. Turnbull ..	1864	30½	0	32½	0	30	0	..	..	..	..	37½	0
	1865	43	0	37	0	40	0	..	..	..	..	35	0.

This table is not, however, sufficiently instructive by itself, as the weight and value per bushel varied very much. Thus the three sorts, Hunter's, Hopetoun, and Fenton, of the crop 1864, were valued at 37*s.*, 39*s.*, 36*s.*, and 39*s.* 6*d.*, 42*s.*, 41*s.* 3*d.*, and 39*s.*, 38*s.*, 37*s.*, in the three several cases, while Mungoswells, Woolly-ear, and Shirreff's the same year, grown by the three different reporters, were valued at 36*s.*, 39*s.*, and 41*s.* It is almost impossible, however, thus to epitomise the statements given in the reports, and we therefore condense the results of crop 1864 as follows:—

MR. RICHARDSON'S REPORT.—1. Crop 1864.—Soil a heavy loam, with a retentive subsoil. Previous crop Potatos, manured on the stubble with farmyard dung and a mixture of guano and bones in drill; no additional manure given to the Wheat.
The varieties sown were (1) Mungoswells, (2) Hopetoun, (3) Hunter's, (4) Fenton. The seed had been exhibited at the Haddington Show of seed Wheat. The seeds were all handsowed on the 20th of October, at the rate of 2 bushels 3 pecks per imperial acre, having been previously dressed with sulphate of copper. One imperial acre, where the soil was of uniform quality, was allotted to each variety.
All the varieties appeared above ground on the 17th of November, came into ear about the 15th of June, and were reaped on the 21st and 22d of August. The summer was warm and dry; all the varieties remained erect, with the exception of Hunter's, which was slightly lodged.
On the 17th of February, 1865, samples of the produce were submitted to competent judges, who valued the different varieties as follows: Mungoswells, 36*s.*; Hopetoun, 39*s.*; Hunter's, 37*s.*; Fenton, 36*s.*—all per imperial quarter.
The results were as under:—

Varieties.	Good Grain. Produce per Imperial Acre in lb.	Produce at 62 lb. per Bush.	Weight per Bush.	Light Grain	Straw per 22 lb. per stone.
		Bsh. lb.	lb.	lb.	
1. Mungoswells ..	2381	38 25	62¼	61	157 18
2. Hopetoun ..	2169	34 61	62¼	67	150 4
3. Hunter's ..	2168	34 60	62½	50	145 0
4. Fenton	2417	38 61	62	66	162 20

REPORT BY MR. R. J. THOMSON.—The soil is a dark-brown clay loam, about 12 inches deep; the subsoil is yellow clay, with a few small boulders in it. It is drained at about 22 inches deep, and 18 feet apart. The course of cropping had been as follows:—1861, Oats, after three-year-old pasture; 1862, Wheat, 1863, green crop. A portion of the field was divided into plots four ridges in breadth, containing rather more than an acre in each, and the most favourable "tid" in November was taken advantage of for committing the seed to the ground. In the first plot, 185 lb. of Hopetoun Wheat grown in East Lothian was sown; in the second lot, 187 lb. of Woolly-ear, grown in Mid-Lothian; in the third lot, 193 lb. of Fenton, grown in East Lothian; and in the fourth, 193 lb. of Hunter's, grown in East Lothian. The braird of all was distinctly visible on 8th January, and there was no difference between them. Frost and strong sunshine—fatal to many fields—hurt all the lots; but the Fenton and Hunter's seemed to have suffered most. Forcing weather followed. In June, two nights of sharp frost blackened the leaves of the Hunter's, while the others were only slightly affected. All came into ear about the beginning of July. The Hoptoun was shorn on the 7th September; the other lots as they became ripe within three days. The lots were cut, carted, and thrashed at the same time, when the result was:—

PRODUCE AND VALUE PER ACRE.

	lb	Weight per Bushel	Price per Quarter.	Total per Acre.
			£ s. d.	£ s. d.
Hopetoun	2045	62	2 2 0	8 18 11
Woolly-ear	2229	59	1 19 0	9 0 4
Fenton	2291	61½	2 1 3	9 9 0
Hunter's	2040	59½	1 19 6	8 7 10

Including the straw, the values per acre were—Hopetoun, 12*l.* 5*s.* 6*d.*; Woolly-ear, 11*l.* 18*s.* 10*d.*; Fenton, 12*l.* 13*s.*; Hunter's, 11*l.* 12*s.* 4*d.*

REPORT BY MR. PHIPPS TURNBULL.—*Crop of* 1864.—Soil, a a gravelly loam, of uniform quality, 180 feet above the sea. Previous crop, Potatos, manured with 15 tons of farmyard dung per imperial acre, on the stubble of the previous crop of Barley, and 4½ cwt. per acre of a mixture of artificial manures, not stated, in the drill.
The varieties of Wheat sown were Hunter's Hopetoun, Fenton, and Shirreff's bearded white Wheat, all sown with a drill-machine on the 16th November, 1863, the land having been previously manured with 5 cwt. per acre of finely-ground rape dust. The quantity sown of all the varieties but Hunter's was 2 bushels 3 pecks per acre; of Hunter's 3 bushels were sown, owing to the machine not having been properly regulated at starting.
Hunter's, Hopetoun, and Shirreff's brairded on the 14th of December, and Fenton two days later. On March 28th the different lots were hand-hoed, and afterwards rolled with a one-horse roller. The Hopetoun came in ear on June 23d,

Hunter's and Shirreff's on June 24, and the Fenton on June 25. All the varieties were in full bloom on July 8. On July 22 the straw was measured, the average length of each variety being as follows:—Hunter's, 3 feet 9 inches. Hopetoun, 4 feet 1½ inch; Shirreff's, 4 feet 1 inch; Fanton, 3 feet 9 inches. On the 1st of August there was a heavy gale of wind, and the Hunter's variety was more damaged than any of the other kinds, the loss being estimated at about 2 bushels per acre, together with a loss of weight in the straw, this circumstance being ascribed by Mr. Tennant to its having been somewhat thicker than the other varieties, thereby rendering the straw softer and lighter.

The season on the whole was favourable to the growth of Wheat, and the four varieties were reaped, on the 29th and 30th of August, carried on the 3d and 5th of September, and thrashed on the 9th and 10th of November.

The produce per acre was as follows:—

Hunter's, good grain, 3 quarters 6 bushels 2 pecks, weighing 62 lb. per bushel. Light grain, 5 bushels; weight, 61½ lb. per bushel. Straw, 377 imperial stones; chaff, 24 stones.

Hopetoun, good grain, 4 quarters 0 bushels 1 peck; weight, 62½ lb. per bushel. Light grain, 4 bushels 1 peck; weight, 61¼ lb. Straw, 308 stones; chaff, 23 stones.

Shirreff's, good grain, 4 quarters 5 bushels 2 pecks; weight, 63½ lb. per bushel. Light grain, 4 bushels; weight, 62½ lb. Straw, 353½ stones; chaff, 31 stones.

Fenton, good grain, 4 quarters 7 bushels 1 peck; weight, 61¼ lb. per bushel. Light grain, 5 bushels; weight, 60½ lb. Straw, 323 stones; chaff, 27 stones.

The value of the produce per imperial acre of the different varieties is stated by Mr. TURNBULL to have been as follows:—

Hunter's, good grain, at 36s. per quarter, 6l. 17s. 3d.; light do., at 33s. per quarter, 1l. 0s. 7½d.; straw, at 4l. per stone, 4l. 12s. 4½d., chaff, at 1½d. per stone, 3s.—total, 12l. 13s. 2½d.

Hopetoun, good grain, at 36s. per quarter, 7l. 5s. 1½d.: light do., at 33s., 1l. 6½d.: straw, 5l. 2s. 8d.; chaff, 2s. 10½d.—total, 13l. 8s. 2½d.

Shirreff's, good grain, at 41s. per qr., 9l. 12s. 2½d., light do., at 38s., 19s.; straw, 5l. 17s. 2d.; chaff, 3s. 10½d.—total, 16l. 12s. 2½d.

Fenton, good grain, at 34s. per qr., 8l. 6s. 9½d.; light do., at 32s., 1l.; straw, 5l. 7s. 8d.; chaff, 3s. 4½d.—total, 14l. 17s. 10d.

On the whole it will be seen that the Fenton variety is one which deserves extended trial, or we may rather say adoption, seeing that it has now been tried for many years.

—— WE may refer once more to the sale on Thursday next of a portion of Lord RADNOR'S Short-horn herd at Coleshill,* which will probably represent by its results what the present market value is of well-bred Short-horns where there has not been any special affectation of one or other of the fashionable strains. Mr. MOORE, Lord RADNOR'S agent, bought the first cows of this herd at Mr. BEASLEY'S sale in 1842. His next purchases were at Mr. STICKLAND'S, Oct. 1848, and at Lord SHERBORNE'S sale, Oct. 1848 (some valuable cows were secured at the latter sale especially); then at Mr. BEASLEY'S final sale of Short-horns, and at Mr. HUTTON'S, of Gate Burton, Lincolnshire. He has used bulls bred by Mr. BEASLEY, Sir C. KNIGHTLY, Earl SPENCER, and Mr. TANQUERAY; also Mr. BOOTH'S MAJESTIC, and Mr. SANDY'S FAIRLEIGH. There has been no attempt to preserve any particular line either of BATES or BOOTH, but rather useful animals of whatever strain of pure-bred Short-horns have been selected. Most of the cows milk well, and every animal in the sale but one was bred on the premises. Those whose names begin with O are of the same blood as *Octavia*, that took the first prize in her class at Smithfield last Christmas, and also the Gold Medal and 40*l.* cup as the best female of all breeds. *Olivia*, Lot 1 in the sale, has bred nine calves, and *Olympia*, her dam, also bred nine, and died of milk fever with the last; every animal of age is a regular breeder. About half the herd have been selected for the sale; the stock being overdone in numbers.

—— Messrs. DAY have published a capital chromo-lithograph of the celebrated Northamptonshire Short-horn ox, bred and fed by Mr. WOOD, of Clapton, Thrapstone, which carried away all the prizes which one animal could receive at the last Midland Counties Show at Birmingham. The picture is good, both as a portrait and for artistic execution, though one feels the need of some figure beside the animal to serve as a standard by which to judge of its magnificent size and proportions.

SHEEP SALES.

SOUTHDOWNS: *Mr. Rigden's Sale.*—The very high position held by Mr. Rigden, of Hove, as a breeder of Southdown sheep, gives to his annual sale a degree of interest extending far beyond the limits of Sussex. In the counties, indeed, in which this journal circulates, it is quite unnecessary to say one word expressive of admiration at the skill and success with which capital has been expended by our enterprising neighbour in the production of a flock possessing the highest attributes of merit. The pens of ewes sold last Tuesday consisted of really splendid animals, and the prices they fetched show how much value is attached to the Webb blood. The rams, too, many of which were by the late Mr. Webb's fine prize sheep, fully shared in the admiration generally expressed by the large company present. The ewes realised 350*l.*, or an average of nearly 18*l.* 10*s.* per pen of five. The rams for letting ran as high as 40 guineas, and, altogether, the sale must have been most satisfactory, both to Mr. Rigden and to Mr. Bushby, of Rustington, by whom it was conducted with his usual care and indefatigable attention to the interests of his clients. The wetness of the day did not prevent a large party from assembling together in Mr. Rigden's homestead, which has now, as a background, and that only a field off, the magnificent mansions in Palmeira Square, which claim Sir F. Goldsmid as their founder.

The sheep were then put round the ring. Mr. E. Stenning, of Godstone, bought the first lot of ewes at 3½ guineas. The second, third, and fourth, after a good deal of competition, particularly for the second, fell to Capt. Thurlow (Bayuards), at 5 guineas, 3½ guineas, and 5 guineas. No. 5 was bought by Mr. Hallett, Manor Farm, 3*l.* 17*s.* 6*d.* Lots 6 and 7 fell to Capt. Thurlow, at 3*l.* 12*s.* 6*d* and 3*l.* 2*s.* 6*d.* Mr. E. Stenning bought lots 8 and 9, at 4*l.* 2*s.* 6*d.* and 3*l.* 7*s.* 6*d.* Lot 10 fell to Mr. Cooke for 3*l.*, and lot 11 to Capt. Thurlow, at 3*l.* 2*s.* 6*d.*: and lots 12, 13, and 14 to Mr. Hallett, for 3*l.* each. Lot 15 was carried off by M. de Stafford O'Brien for 2*l.* 17*s.* 6*d.*

We now come to the rams for letting. We append the result, which must have been very gratifying to the breeder:—

			Guineas.
2	Two years old, by the Gold Medal Battersea sheep	Earl of Radnor ..	30
3	Two ditto, by Webb's No. 21, a pure bred Webb sheep	Duke of Richmond ..	40
4	Two ditto, by Webb's 39, ditto	Mr. Hallett	21
5	Two ditto, by ditto	Capt. Apthorpe ..	18
6	One year old, by second prize ram at Battersea ..	Mr. Smith	23
7	One ditto, by ditto..	Rev.—Parkes ..	12
8	One ditto, by Webb's 39 ..	Mr. Gorringe	26
9	One ditto, by ditto ..	Mr. Woodhouse ..	14½
10	One ditto, by ditto.. ..	Mr. Majoribanks ..	20
11	One ditto, by ditto ..	Rev. J. Goring ..	12½
12	One ditto, by ditto ..	Mr. Selby	13
13	One ditto, by ditto.. ..	Mr. S. A. Leigh ..	10½
15	One ditto, by ditto, pure bred Webb	Mr. Hallett	10
16	One ditto, by ditto ..	Rev. J. Goring	11

There was a very spirited competition for No. 3, and it being bought for Goodwood shows that the Duke intends, if possible, to maintain the character of his valuable flock. We now come to the rams for sale, the prices of which usually just turned the reserve set on them, but one, by a pure bred Webb, went to Crabbett Park, Worth, at 14½ guineas. We append the list:—

			Guineas.
1	Three years old, by a son of Winklebury ..	Mr. Heasman ..	10½
18	One year old, by Webb's 39	Mr. O'Brien ..	10½
19	Ditto, by ditto ..	Mr. Lawrence ..	11½
21	Ditto, by ditto, pure bred Webb	Mr. Smith	14½
22	Ditto, by ditto ..	Mr. Newland ..	10
25	Ditto, by second prize Battersea sheep	Mr. S. A. Leigh ..	10
27	Ditto, by Webb's 39 ..	Mr. Agate	12
28	Ditto, by second prize Battersea sheep	Mr. Lawrence	10½
30	Ditto, by ditto ..	Mr. Selby	10½

LINCOLNS: *Tathwell.*—This sale took place on the farm of W. Chaplin, Esq., of Tathwell, on Tuesday. There appeared to be but one opinion in reference to the 40 shearlings penned for sale; Tathwell had never produced so good a lot. The principal sheep breeders of the neighbourhood were present, and their estimate in the character and quality of the sheep will be seen in the following list of prices. The net average of the 40 was 15*l.* 16*s.*, and with the commission 16*l.* 4*s.*

LONG-WOOLS: *The Owersby (Market Rasen) Letting.*—The high price of wool and mutton, when compared with the price of corn during the last few years, has caused great activity among the more enterprising and energetic Lincolnshire men in procuring the largest possible number of male sheep suitable for the current wants of the bulk of farmers, that is, for those who only keep their flocks for the ordinary purpose of consuming their Turnips and "seeds," and then clear out according as their feed and the season may suit them. Mr. John Davy is one of the men who have hit off the demands of farmers in Lincolnshire and various other counties. Five years ago he saw the prospect of an opening of this kind, when he started with 10 rams, and then about as many customers, besides neighbours and friends, attended his luncheon and sale. This year his card of lots was composed of 75 shearlings, 37 two-shear, and 23 three-shear, and older sheep, in all 135. This is a great accomplishment in so short a time, but Mr. Davy had a good flock to start with, a fine farm of upwards of a thousand acres to go to work upon, and he has spared no expense in procuring sheep from the best and best selected flocks of the county. The increase of customers and admiring visitors has been in greater proportion, for although plates were set for 300 in a marquee on the lawn, a considerable number had to find accommodation for refreshing themselves by adjourning to the house.

In regard to the sheep and the prices they made, both were highly satisfactory, considering the large number offered as the production of the comparatively young Owersby flock. The 135 sheep realised 1684*l.*, or about an average of 12*l.* 9*s.* 6*d.* each; the shearlings averaged a trifle over 13*l.*, the two-shear a little under 12*l.*, and the older sheep a little over 11 guineas. Mr. Sharpley, of Torrington, hired several, No. 54 being one, at 18*l.* 10*s.*; Mr. J. Brown, of Owersby, took one, at 18*l.*; Mr. Haseltine, of Barton, took the next at 19*l.*; No. 47 was taken by Mr. P. Richardson, of Horkstow, at 20*l.*; Mr. W. Collingwood, of West Rasen, took No. 19 at 18*l.* 10*s.*; No. 20 was taken by Mr. T. Cartwright, of Dunstone, at 31*l.* Mr. Daintree took the next at 39*l.*; No. 30 made 20*l.*, to Mr. Glow, of Market Rasen: Mr. Wilson, of Leedford, took the next, at 16*l.* 10*s.*; Mr. Dickenson, of Holm Hill, No. 42, at 19*l.* 10*s.*; Mr. Simmonds, No. 44, at 21*l.*; and Mr. Bowine, of Kelsey, took No. 71, at 23*l.* Among the two-shear sheep, Mr. Walker, of Summerley, took one at 17*l.*; Mr. Garne, of Herts, one at 15*l.*; and Mr. Benjamin Wass, of Worlaby, one at 22*l.* Of the older sheep, No. 120 was let to Mr. Rouston, of Grayingham, at 17*l.* 10*s.*; No. 128 to Mr. Spafford, at 23*l.*; and No. 123 to Mr. Garne, at 22*l.*

The base of this flock is well laid for size, and the production of a great weight of wool. Mr. Davy, however, is becoming careful in not being carried too far away by the bad judgment of many store breeders, who think everything almost depends on great size of individual sheep and the weight of wool clipped. No calculation seems to be made by these men that so much mutton and wool is so much Turnips, corn, and hay in another form. As will have been seen by our Biscathorpe report last week, Mr. Davy hired a sheep at 70*l.* This animal does Mr. Davy great credit for his judgment in selecting him, for he will be a safeguard against this flock becoming what some other flocks have come to, viz., bad in form from attempting to get unattainable size and weight of wool per each individual sheep.

The Fenton Sale and Letting.—The Messrs. Dudding, who are well known as breeders of shorthorns as well as of long-woolled rams, possess descendants of one of the oldest established flocks in Lincolnshire. The character of these sheep is one which, if adhered to for a short time longer, will become better appreciated than it was on Tuesday last. The notions previously referred to must soon wear themselves out, since they are based on passing or expedient advantages without any principle to guide breeders safely into the future. The Messrs. Dudding have done themselves credit for sticking to their text. As it was said at the luncheon, although the active part of the management of the Fanton flock and herd has fallen into the hands of another generation, an experienced pilot, in the form of Mr. Dudding, sen., still directs the helm. In our opinion this piloting has been well done. In the Fanton sheep that form which a few years ago was the first consideration has not been lost, while enough wool is carried on their backs, and this sufficiently lustrous to command the highest price given per pound for this class of production. The notion that sheep would be the most profitable which were likely to beget high upstanding lambs and sheep, has of late years prevailed, but the farmers who feed, and have to go to breeders, whether in Lincolnshire or elsewhere, have found out that long legs below the hocks and knees do not tell much in the scale, and they have also discovered that it is better to have a true-backed sheep with wide ribs and thick quarters than one that is merely conspicuous for its heavy "skin," or greyhound-like proportions of neck, legs, and body. That part of the public who may be termed the better judges, are also reasoning out the above data in regard to an article of turnips, and the mutton and wool that can come from it. Hence it is that some of the Messrs. Dudding's sheep made good prices to the breeders of the best rams, while others were well sold to breeders for stores, who are wise enough to prefer close-made, compact lambs, that can walk well, to longer limbs and legs, which are often instrumental in causing them to be dragged at a tender age to death.

A purchase made by Mr. Thomas Kirkham is a practical illustration of this argument and reasoning. No. 9 is long enough to produce ample weight, and his back and legs are true enough for any one. His bluish face and thin ears spotted with black are attractive points to a ram-breeder, or he might not have been thought so highly of, for there were two or three other sheep of similar form, but in our opinion this was far the best sheep of the day, in confirmation of which we may say he was the only sheep that we put an extra cross to, after a brief inspection before the sale. His price was 55*l.*, and the probability is some other ram-breeders will regret when they see him that they were not present to attempt to secure him. Mr. Wingate, of Ludford, bought No. 1 at 20*l.*; Mr. Turner, of Ulceby, bought another at the same price, as did Mr. Kemp. Mr. Robson, of Tupham, hired one (No. 11) for 20*l.*; and Mr. Simpson, of Reepham, did the like with No. 12, at 19*l.* Mr. Walker, of Girsby, bought No. 25 at 19*l.*; and Mr. Borman, of Swallow, bought one at 15*l.* A number of others varied from a similar price to 12*l.*; and a few of the smaller sheep were sold at from 7*l.* to 10*l.*, for using on store-breeding ewes. The day was very wet and dispiriting, as well as calculated to keep folks at a distance from coming, or probably the want of competition at the latter end would not have happened.

FILTRATION FOR CATTLE TROUGHS.

SOMETHING very much out of date manifests itself in the common practice of watering cattle. There may be exceptions to this rule—but a visit to the old ponds or the modern watering troughs at this season proves that such exceptions are few and far between in most of our English counties.

From the important part which water plays in the animal economy, a dirty thick liquid, green, brown, and blue, from being literally in life by swarms of insects, with a luxuriant crop of Cryptogamous vegetation, is, to speak in the mildest possible terms, the opposite of what it should be. That water is of more value than oilcake in the dietary of cattle cannot be doubted, and yet how differently does it appear to be estimated, judging from practical data, for throughout the length and breadth of the land the adulteration of the latter forms the universal complaint, whereas the adulteration of the former is passed over as one of the shortcomings of a daily necessity. We have even heard it argued that the stinking pool was better for cattle than the clear crystal fountain!

True, many of our clear crystal streams contain an

* Coleshill is four miles from Faringdon, four miles from Shrivenham, and eight miles from Swindon, all stations on the Great Western Railway, and at Swindon every train stops.

amount of saline matter that reduces its value for cattle, often rendering it worse than the soft water in the ponds, although the latter may be literally swarming with insect life; but the objection to the former falls to the ground as null and void in a practical light, for water should be purified of its objectionable inorganic matter as well as of decomposing animal and vegetable matter, with the countless brood of insects invariably present in the warm weather of summer. Altogether, from beginning to end, the subject evidently demands a thorough investigation.

The common practice of purifying water for large towns is by filtration. The process is generally very imperfectly performed by water companies, while the allowing of the water to remain in large open public reservoirs and in uncovered house cisterns afterwards makes it often nearly as impure as in the outset. When the reservoirs and cisterns are covered it greatly retards the growth of animal and vegetable life; but even when thus preserved from atmospheric influence the water is seldom fit for drinking until filtered a second time.

The principles which experience has taught to be necessary relative to the health of towns in procuring a proper supply of pure water furnish the farmer with an instructive lesson as to how he should supply his cattle in order to preserve their health. Just now, when cholera is making its appearance here and there as if in search of an inviting field or predisposing ground, our civic authorities are alive to the dangerous character of impure drinking water, stagnant sewage matter, and such like choleraic-producing substances; and although our agricultural societies have not yet begun corresponding chemical, microscopic, and other scientific investigations relative to the cause of the growing mortality amongst cattle, and how much of this is due to the drinking of impure water—water that would inevitably produce cholera in any of our large towns at the present time—yet the visitation of rinderpest is obviously turning attention in this direction. And the reader will perceive that, judging from the parallel case of towns, stagnant ponds, in which the urine and faeces of cattle, and the washings of Grass lands, &c, are allowed to accumulate and putrify, thereby polluting the atmosphere in the immediate neighbourhood of these ponds—this polluted atmosphere may be as instrumental in propagating disease, as it is taken into the circulation by inspiration.

There is no doubt a difference between the stomach of a man and that of an ox, and no doubt also the vast majority of the agricultural body may as yet conclude that the organs of cattle may have the power of defecating ingested and inhaled matters of all impurities which the former has not. Though, however, this were granted, yet every species of the animal creation has its weak points, the ox not excepted, so that when certain morbid substances are taken into his circulation they may prove fatal, although they might prove harmless in the circulation of man, the horse, or pig.

Naturally the organs of smell and taste in cattle are more sensitive than are those of man, owing perhaps to the omnivorous and depraved habits of the latter.

It will no doubt be said that our cattle, strictly speaking, are now in an artificial state and not in a natural one, and that their habits by long use are about as omnivorous and depraved as are those of man.

The objection thus raised, however, may not inaptly be said practically to refute itself, for by training our cattle, or perhaps we should rather say by starving them into the necessity of eating many things which they would refuse in a natural state, and of drinking water of a still more abnormal character, we are undermining their normal health, thereby predisposing them to all the contagious maladies now so rife and ruinous in our flocks and herds.

From these observations it follows that farmers ought to study closely the natural wants of their cattle, and one of these wants, more especially at this season of the year, is an ample supply of pure water. If water forms 83 per cent. of the whole constituent elements of the body, and there is also a large consumption daily in alimentation and excretion, how essentially necessary is it that this large supply should be free from contaminations of every kind injurious to health!

The grand mistake into which farmers are liable to fall in this case, is to overlook or under estimate its practical dimensions. In our climate water is such a common-place commodity, putting summer and winter together, that few ever think of setting a pecuniary value upon it for their cattle. If the supply is plentiful and the quality good at all seasons of the year, the blessing is a natural one, and accepted accordingly. If the quality is bad it is considered a natural misfortune to which the locality is subject—one that is often borne as if it cannot be helped. It is only when a deficiency in the supply is experienced that people grumble, and then the make-shifts to catch and store rain-water are of a most inefficient character. Had farmers to pay their landlords for their water according to its intrinsic and dietetic value, it would, doubtless, be otherwise, for under such conditions they would not pay away sterling money for dirty water. But because farmers get their water for nothing, that is surely no valid reason why they should water their cattle out of any stinking puddle. And this, too, is not the most unfavourable view of the subject that must be taken, for in our day the quality of the water in our ponds and rivers is much worse than it was in the olden time, owing to the more effective drainage of land and the extensive use of artificial manures, together with the increase of population in towns and refuse from manufactories, &c., and the impurities which find their way into the water from these sources. Altogether it is not very easy to comprehend the real magnitude of the whole question involved in supplying cattle with pure water, for at the present time the quality of the supply is annually getting from bad to worse over a large extent of the country.

Those who have a regular supply of pure water from natural springs, or from artificial wells and pumps, have little more to do than to keep out impurities, and attend to the daily washing out of the watering troughs, and the supplying of them with water. A sufficiency should be put into the trough to supply the daily wants of the cattle, with the addition of what may be required to wash out the trough, after which it should be rinsed out with a pailful of newly-drawn water, so as effectually to clean it of the seeds and germs of animal and vegetable life, which may have been deposited during the day. Ignorant cowherds who throw in fresh water upon the stale, actually cultivate the growth of these microscopic broods of little bodies and vegetables that give to the water its green or brown colour. In the warm weather of summer the atmosphere is often literally thick with the germs of such life, and cattle when they drink, whether in the house or in the field, invariably leave less or more of the food they are eating or ruminating upon in the water, which attracts and feeds such organisms, thereby nursing them into maturity.

From the large quantities of artificial manures now used, the drainage of arable lands ought not to be collected in ponds or reservoirs for watering cattle, if a supply can otherwise be obtained. Much spring-water which rises in arable land, and is removed in common underground drains, is also rendered unfit for the use of cattle, from its being adulterated with the manure thus washed out of the land.* In all cases, therefore, where such spring-water is intended to be used for cattle, it should be conveyed in close pipes either to wells or directly to the watering troughs for use. Where spring-water does not exist, and where the dependence is exclusively upon rain-water, this should be collected if possible from waste lands, or Grass lands not recently manured, or from arable lands where the manure has been exhausted by cropping, so as to have it as free as possible from foreign soluble matter, which cannot be removed by filtration.

The seeds of small plants, spores of fungi, and eggs of insects, &c., washed from waste and Grass lands into surface or subsoil drains, and by these conveyed into ponds, may be got rid of by filtration. Sometimes these latter impurities are removed by natural filtration, the water having passed through a porous sandy subsoil into the pond. The best ponds are those which are deep, and into which the water is thus filtered, for in the first place the water is comparatively pure, while in the second place a deep narrow pond presents a minimum area of contaminating surface to the atmosphere, and also a midus of less attractive power to insects, from the water being of a low temperature. It is otherwise with broad shallow ponds at a higher temperature, into which the rain-water flows in open furrows, for animal and vegetable life both luxuriate in such examples.

Open ponds, however deep, are nevertheless objectionable, even when the water is filtered into them. The experience of towns on this head is practically conclusive, and therefore our open ponds, surrounded as they generally are with growing wood of some kind, as if purposely to attract insects, must be converted into deep covered wells, into which the rain-water should be filtered by artificial means in the absence of natural filtration, and from which it may be pumped into the watering troughs as required. If the well is deep and the water of a low temperature, a second filtration may be unnecessary; but when the contrary conditions are present, and the first filtration not well performed, a second filtration may be the more economical and profitable practice.

As to water from rivers and their tributaries, numerous examples of this kind are in the summer time literally a series of putrid pools, in which modern eels cannot live. And even in the cold weather of winter the water is now so polluted by the sewage of towns and villages as to be generally speaking, unwholesome for cattle. In the worst examples filtration will not remove much of the poisonous soluble matter which the water contains, and even in the best examples much noxious matter may remain in solution after the water has passed through the filter. Practically speaking it may be difficult to bring some of those farmers and graziers whose cattle are now, with comparatively no trouble or expense, watered at such objectionable watering places, to entertain the proposition of collecting water from other sources into deep wells for their cattle, either by surface drainage and filtration or by boring; but others will readily perceive that this may be the cheaper and more profitable plan, all things taken into calculation. Flowing water has a tendency to purify itself, and were towns once compelled by statute to divert their sewage from rivers, much water would in a few years afterwards become available for cattle by the simple process of pumping and filtration into watering troughs. *W. R.*

* Surely this is hypercriticism. Ed.

THE CATTLE PLAGUE.

TREATMENT BY CHLOROFORM.

[The following detailed account of Mr. Aylmer's experience, to which we referred last Saturday, was given on Monday's *Morning Advertiser*.]

In the spring of this year Mr. Aylmer had a herd of 106 Short-horns of excellent character. They are now reduced to 44, viz., 8 bulls of various ages, 10 cows, 2 two-year-old heifers, 12 yearlings, and 12 heifer calves. In April this herd was attacked with rinderpest and how is it that any are now alive, considering the Order upon Order issued by the Privy Council before an I about that period, is the main point of the details which we have now to relate.

When this herd was unmistakeably attacked, in spite of the precautions that were stringently put in force, Mr. Aylmer gave the usual notice to the authorities, and applied for permission to treat them in a way that had previously been tried elsewhere with considerable success; but as this application was not met with much promise of concession, Mr. Aylmer put on a bold front, and openly told the authorities that he should not allow his highly valuable cattle to be slaughtered indiscriminately and entirely, for he not only intended to try to cure them, but was resolved and prepared to abide by the consequences. This, of course, caused some astonishment and much correspondence, and it was some days before Mr. Aylmer knew what would be the real effect of his resolution on the Privy Council. In the meantime, Mr. Aylmer had begun and was continuing to treat his cattle, and in certain instances to perfectly remove the virulent disease. Some of the animals thus attacked and relieved recovered, and have since been free from rinderpest, while others relapsed and were again cured, or, as occurred in one or two cases, fell into a state of collapse, and were consequently killed. In course of time, however, Mr. Aylmer received an authoritative letter which permitted him to "treat," subject to inspection, instead of "stamping out" by wholesale slaughter. This inspection was organised under the personal attention and instruction of Professor Simonds—an element which does not make the course of events less valuable; but our present purpose is to relate, and not to discuss, or criticise.

The treatment which was recommended to and adopted by Mr. Aylmer was to place the cattle when attacked under the influence of chloroform by inhalation, and to resort to the use of such stimulants and nourishment as the animals appeared to require or could take. In cases of great exhaustion gruel and Linseed tea were accompanied with a wine-glassful of pure spirit, to which was added chloroform at the rate of 2 oz. to the pint of spirit. How this was used will be better shown in connection with individual cases. The manner in which the chloroform was administered to the animals was by casting and binding them, this precaution being necessary to prevent injury to the hips, the other parts of the body, and horns, during the staggering and falling in close quarters which must inevitably ensue. This done, one ounce was put on a hum handkerchief and applied to the animal by means of a nose-bag. It generally took between five and seven minutes for the animal to be effectually overcome. The following is a brief account of the cases as they occurred, with some of the leading symptoms presented during the progress of the disease:—

Henrietta, a cow, was the first attacked. This was on the 12th of April, and she was killed after 12 days' unsuccessful treatment. The next cases came in a batch of eight two-year-old heifers, all of which recovered after having chloroform administered to them each day for eight days. The next six were young bulls. These, however, were so full of condition that fever ran high; the pores of the skin and lungs were partially closed, which caused the vapour, that would otherwise have been given off by exhalation, to flow to the kidneys in excessive quantities, where its acrid character induced a high degree of inflammation in the regions of the bladder, in which urine accumulated, and the animals so collapsed that they were killed. This was new and important experience, and when other bulls were attacked powerful diuretics were added to the gruel and stimulants, which so far acted with the desired effect. The next lot was composed of seven heifers, two cows, and one steer. Chloroform was administered to them for a few days, and all recovered. The animals which have been cured, we may here remark, are in such excellent condition that no one would suspect they had been so near the end which professors say they must certainly come to when attacked with rinderpest. Indeed, we never desire to see breeding animals in better trim.

The next case was the first prolonged attack, which was ultimately successful. *Shepherd's* bull, then a young, had 35 inhalations of chloroform administered between the 19th of April and the 25th of May. He then got entirely quit of the disease, gradually began to recover from the shock his system had sustained from the remedy as well as the disease, and he is now perfectly well, his eyes being as bright and his coat as blooming as any breeder would desire to behold.

The next was also an interesting case. A white steer had seven inhalations—viz., one a day between the 19th and 26th, and was apparently cured; but in a fortnight he relapsed, and was killed after two days' similar, but this time ineffectual, treatment. This was attributable to the first administrations having been applied at too early a stage of the development of the disease. By this time, Mr. Aylmer and his friend Mr. Overman, and their assistants, had become so practised in detecting the first symptoms, that they could tell frequently for days before the disease would develop itself that the attack had begun. It was also found from this and other cases which followed, that to attempt to cure, by this remedy at least, before the complaint had advanced to a particular stage, resulted merely in what may be termed locking up the virulence in some sensitive part of the system—probably the brain and nervous organisation—to burst forth with greater danger, if not more virulence, at some future and not far distant period.

The next lot which fell down consisted in a cow and two heifer-calves, which were cured in from ten days to a fortnight, after variable treatment with inhalation of chloroform and other remedies, according to symptoms exhibited. *Rosa Lee* next fell down, and hers proved to be a highly interesting case. Her attack was addressed to day or two too soon, and the results, as above described, ensued. She had nine inhalations in a fortnight, and was apparently cured; though at the end of seven days, a relapse befel her, when she had an inhalation daily for five days; but, as her appearances were less favourable, her inhalations were increased from one in 24 hours to one in 12 hours, for seven days, when one inhalation only was administered the next

day. As, however, this was not found to keep the virulence of the disease in subjection, the two inhalations were returned to, and continued for 21 days in succession, when a favourable turn again occurred, and after eight more single applications per day, she recovered, and is now sleek and rapidly regaining flesh. The first remedy to this animal was applied on the 19th April; and after more than six weeks of this suffering and treatment, her attack subsided, and, being put on tonic drinks, her appetite returned, and she is saved, so far, to perform her valuable services to Mr. Aylmer, and in increasing the stock of the country. This was one of the animals that Professor Simonds entered as one of those under inspection; and on the 31st of May he said of her, "She is so dilapidated that she *must* die." After her recovery, the Professor acknowledged that the true marks of rinderpest, from the virulence of the lymph which the attendant fever generates, were still in her mouth. Here we may ask, How far are these results consistent with the assumed theory and declared opinion of the Professor—that a real case of rinderpest cannot by any possibility be cured? There is no mistake about the character of these cases, any more than there is about the declarations by the professors in respect to them. This heifer, in particular, was a perfect bovine lunatic for several days during her severe suffering, as was indicated by her groping about her box, running backwards as if attempting to withdraw from the pain in her poll and forehead, rooting her nose into her litter, eating her own dung, and demonstrating other indications of madness.

Guava fell down and was killed, after five single and three double inhalations per day. This cow and one of the above were apparently cured, when Mr. Aylmer was advised to turn them out, on the ground that free air is more conducive to their restoration. This may be all well enough when animals have not been taken up; and it may be better, as we believe it is, not to confine them if they be kept dry and sheltered; but it is a very different thing when they have been nursed in close boxes, as indeed was proved by these animals suddenly relapsing into an incurable condition under such treatment. *Daffy Gwynne Fifth* was the next case, and a very remarkable one. From April 20th she had four single inhalations of chloroform a-day, then two a-day for 17 days, followed by one a-day for five days, being finished off with two other single administrations every other day. This heifer lived entirely on gruel and linseed tea, with the above-named stimulant of spirit and chloroform, a wine-glass full having been given three or four times a day. She is now alive, looking healthy in every way, and about six weeks gone in calf.

Phillis the Fifth now fell down, and was treated similarly to *Rosa Lee*; she, too, is now looking and doing well. The next two were heifers also, and after eight and nine inhalations respectively they recovered. A three-year-old heifer was next treated, and after one single and three double inhalations her symptoms turned to an aggravated character, and she was killed. A steer fell next, and after five single inhalations he appeared to be cured, but after a fortnight a threatening relapse ensued. This was followed by a prolonged attack, during which he had 33 single and double inhalations as his symptoms varied. This latter treatment occurred between the 14th of May and the 15th of June. After all this he struggled through, and is now looking well. *Rose of Dereham*, a three-year-old heifer, was next down; she had just calved, and as she was besides in high condition, the fever became of a virulent order, and she was killed the day after being attacked. The above were at off yards, one of which was situated within about 100 yards of cowhouses of two small farmers, one of which had six and the other five cows, part of one of which was attacked, although the adjacent pastures adjoined Mr. Aylmer's, and they could reach over the fence, and, as they did, smell each other's noses and breath.

We now come to the Home Farm, where the more choice cows and bulls of the herd were located. On the 25th of June a bull was taken, and the next day 12 cows, all of which were killed at the end of from five days to a fortnight. *Phillis*, a very fine cow, then forward in calf, came down next; she had a single inhalation a day for three days, and one after seven days, when she had no more signs of the disease, and has since thriven to beautiful condition. *Glauca*, twin sister to *Guava*, had 17 single inhalations during 24 days, and recovered. The next two were cows, and were killed after 7 and 15 days' treatment, according to appearances. The next four were cows, and recovered under similar treatment during a period of from one to three weeks.

Here began the beginning of the end of GENERAL HOPE—Mr. Booth's bull already referred to. Bulls, it appears, are more sensitive under this disease than cows, as their kidneys and urinal passages become inflamed, when the chances are their game is over. By proper precautions this may probably be averted, which in fact was done in some subsequent cases. The GENERAL had a single inhalation the first day, two the second, three the third, when his prostration and burning mouth indicated that his case was hopeless, and on the fourth day he was killed. GOLDEN GEM recovered after two single, 14 double, and eight other single inhalations between May 2d and 24th. She is now blooming, and otherwise looking well. A young bull was next attacked, and was killed at the end of seven days. A white bull-calf had four single, 11 double, and eight single inhalations, when he was cured, and now has no appearances of having been attacked.

The next lot was a young bull and two yearling heifers—one of the latter being what is called "half-bred," from having come from a cow with no pedigree. The latter had single and double inhalations per day between May 5 and June 13, when she recovered. The others were cured in half the time.

The next lot of five had to be killed; they were four bulls and one heifer-calf. With this lot an interesting incident occurred. MASTER JOLLY, a yearling bull, fell down on May 6. In this case the disease was modified, but it resulted in his end merely being put off a few days. He had first eight single inhalations, then two a day for six days, next day one, when two a day were returned to for 16 days; but he then suddenly collapsed, and he was killed. This animal Professor Simonds saw on two or three occasions; and, as late as May 31, the Professor said, "He had not the rinderpest, or, if he had, it was only in a very mild form." Mr. Aylmer's practised, and, as it appears, better-instructed eye, told him differently, for what had been kept under could not be driven out, and he was killed on the 6th of June. In a former case, it will be remembered, where the Professor gave a decisive opinion, he said, "The animal must die," but it did not. In this other case he said it was not diseased, while the animal was so full of it, as Mr. Aylmer knew, that the slightest unfavourable change must end in its destruction. This reverse came, and the bull of course collapsed at once. THORNDALE DUKE was taken on the same day as the last lot. His inhalations were eight single, six double, one single, two double, and six more single ones, when he lost all symptoms of the disease, and he is now in perfect health in the pasture with the cows, and doing efficient work. PRINCE OF WALES, a big and fat yearling, died after a fortnight's treatment, having for the last week four inhalations a day! From his high condition and fatty nature, however, the attack was so violent that no effectual counter-impression could be made on his system. The last case was a yearling heifer, and it occurred on the 21st of May. After 20 inhalations, between then and the 13th of June, she began to mend, and has since perfectly recovered, and is in good condition.

After these lengthened details of the progress of this dire disease through Mr. Aylmer's herd, we cannot enter into any minute individual particulars of the character of the animals themselves. These will be worthy of a column on some future occasion. But this much we may say—the 44 animals left are, as a whole, a very capital lot. There are no small, weedy animals, but they are chiefly as well-grown and as upstanding as such animals ought to be when they are spoken of as the noble Short-horns; and it is a great satisfaction to see nearly 50 per cent. saved.

There are a few more points which we must not omit to mention. One common cow—a polled red Suffolk—was in the midst of the whole of the disease, and acted as a sort of scavenger to the rest in cleaning up the food left by the diseased animals. This cow has never shown any signs of this disease. On the other hand, five other common cows—all of the same sort—were unmistakeably attacked, and cured without difficulty. From this and many previous observations, we believe that, if Mr. Aylmer's herd of upwards of a hundred had not been high-bred and full-conditioned animals, he would have saved at least nine of them out of ten.

In conclusion, we cannot but say Mr. Aylmer was naturally much affected at the kindness of his friends and neighbours throughout this great trial, and particularly for the services rendered by his neighbour Mr. Robert Overman, who attended to one lot from 5 a.m. to 11 p.m., throughout the whole time.

CATTLE PLAGUE RETURNS.

The following Returns were issued on September 6:—

COUNTIES Reporting. Attacks.	1 Number Attacked		2 Result of Reported Cases from Commencement of Disease.				
	Week ending August 25.	Week ending September 1.	Attacked.	Killed.	Died.	Recovered.	Unaccounted for.
Buckinghamshire	5	—	2,565	1,854	504	187	20
Oxfordshire ..	4	2	3,779	2,145	1,190	395	49
Bedfordshire ..	—	—	629	224	316	80	4
Cambridgeshire..	1	—	7,874	2,685	4,533	454	162
Essex	32	12	2,442	557	1,469	305	110
Norfolk	—	—	6,671	3,667	2,455	294	262
Gloucestershire ..	—	1	130	69	51	8	2
Shropshire ..	26	11	7,283	3,406	2,742	788	347
Staffordshire ..	5	3	5,922	2,577	2,339	521	484
Warwickshire ..	1	—	743	168	404	105	36
Lancashire	11	—	14,061	7,643	5,906	893	457
Derbyshire	—	1	1,259	1,016	160	41	42
Cheshire	18	29	67,576	23,733	32,729	7,967	3,147
Lancashire	20	23	5,969	2,781	2,314	530	344
York, W. Riding	1	—	11,015	2,159	6,537	1,789	530
.. East Riding	28	5	12,044	3,332	6,226	1,487	999
.. North Riding	—	1	11,159	2,525	5,628	2,112	894
Total	148	99	161,568	60,559	74,636	18,546	7,827
Remainder of England	—	—	36,507	16,714	15,769	2,957	1,067
Monmouthshire & Wales	—	—	8,388	1,180	5,794	1,117	297
Scotland	—	—	46,861	6,263	28,088	10,707	1,803
Great Britain ..	148	99	253,324	84,716	124,287	33,327	10,994

Back Cases reported in the week ended September 1:—Cheshire, 14.

The Return shows that 99 attacks were reported to have occurred during the week ending September 1, being a decrease of 49 on the previous week.

Fresh outbreaks took place in 17 farms or places where cattle are kept; the number of such outbreaks in the previous week being 17 also. The number of healthy cattle slaughtered, to prevent the disease extending to them, was 47 during the week.

The disease is reported to have prevailed during the week in the following 26 petty sessional divisions of England—viz., Oxford.—Ploughley, 2. Essex.—Brentwood, 7; Chelmsford, 2; Ongar, 3. Gloucester.—Lawford's-gate, 1. Shropshire.—Whitchurch, 11. Stafford.—Eccleshall, 3. Lincoln.—Barton-on-Humber, 6; Gainsborough, 2; Horncastle, 1; Lincoln Lindsey, 1; Wainfleet, 1. Derby.—Appletree, 1. Cheshire.—Broxton, 1; Daresbury, 1; East Bucklow, 1; Edesbury or Eddisbury, 1; Macclesfield, 3; Nantwich, 18; Northwich, 4. Lancashire.—Amounderness, 1; Garstang, 18; Kirkham, 4. York, East Riding.—Middle Holderness, 4; South Holderness, 1. York, North Riding.—Whitby Strand, 1.

Since the commencement of the disease 253,324 cattle have been reported as attacked.

206 sheep are reported during the week to have been attacked, making the total to the date of this return 6831.

NOTE.—Three Inspectors who reported cases last week have not reported in time for this return—viz., for the county of Cambridge, 1; Salop, 1; and York (West Riding), 1. These inspectors reported 3 cases last week.

BRITISH ASSOCIATION.

[The following Papers were read before the British Association at Nottingham, Aug. 27.]

ON THE ACCUMULATION OF THE NITROGEN OF MANURE IN THE SOIL.

By J. B. LAWES, F.R.S., F.C.S., and Dr. J. H. GILBERT, F.R.S., F.C.S.

THE authors had been engaged for many years in experiments, in the course of which they had grown Wheat year after year on the same land for more than 20 years, on some portions without any manure, and on others with farmyard manure, or with various descriptions of manure. They had published the results obtained in the field during the first 20 years of these experiments, and they were now engaged in investigating the composition of the produce grown under the different conditions, and also the comparative composition of the soils of the different plots as affected by the various treatment. The point to which they chiefly confined attention on the present occasion was the accumulation and the loss of the nitrogen which had been supplied in the manure and not recovered in the increase of crop. After discussing the difficulties of sampling, preparing for analysis, and analysing soils in such manner as to yield results applicable to the purposes of their inquiry, and describing the methods they had adopted, they called atttention to the results obtained, which were exhibited in several tables hung up in the room. The percentages of nitrogen determinable by burning with soda-lime were given for the soil of the first, of the second, and the third 9 inches, of 11 differently-manured plots, showing the amounts therefore to the depth of 27 inches in all. In some cases the accumulation from the residue of manuring was very considerable, but even with the same amount supplied, it varied both in total amount and in distribution according to circumstances, the depth to which the unused supply had penetrated being apparently influenced by the character and amount of the associated manurial constituents. The general result was, that a considerable amount of the nitrogen of the supplied manure which had not been recovered as increase of crop was shown to remain in the soil, a still larger amount was as yet unaccounted for. Initiative results indicated that some existed as nitric acid in the soil, but it was believed that the amount so existing would prove to be but small. In fact, it was concluded that a considerably larger portion would remain entirely unaccounted for in the soil than was there traceable, and the probability was that at any rate much of this had passed off into the drains or into the lower strata of the soil. Finally, it was shown by reference to field results that there was not more than one or two bushels of increase in the Wheat crop per acre per annum, due to the large accumulated residue of nitrogen in the soil, notwithstanding its amount was many times greater than that which would yield an increase of 20 bushels or more if applied afresh to soil otherwise in the same condition. On the other hand, it was shown that the effect of an accumulated residue of certain mineral constituents was not only very considerable in degree, but very lasting.

ON THE SOURCES OF THE FAT OF THE ANIMAL BODY.

In 1842 Baron Liebig had concluded that the fat of herbivora must be derived in great part from the carbohydrates of their food, but might also be produced from nitrogenous compounds. Dumas and Boussingault at first opposed this view; but subsequently the experiments of Dumas and Milne-Edwards with bees, of Persoz with geese, of Boussingault with pigs and ducks, and of the authors with pigs, had been held to be quite confirmatory of Liebig's view, at any rate as far as the carbo-hydrates were concerned. But at the Bath meeting of the British Association in 1864, Dr. Hayden expressed doubt on the point, and at the Congress of Agricultural Chemists held at Munich last year Professor Voit, from the results of experiments with dogs fed on flesh, maintained that fat must have been produced from the nitrogenous constituents of the food, and that these were probably the chief, if not the only source of the fat even of herbivora. Baron Liebig disputed this conclusion, and his son, Hermann v. Liebig, had since sought to show its fallacy by reference to experiments with cows. The authors agreed with the conclusions of these latter authorities, but pointed out the inadequacy of the data relied upon by Hermann v. Liebig. They showed that, owing to the much less proportion of alimentary organs and contents, the higher character of the food, the much larger amount of fat produced both in relation to a given weight of animal within a given time, and to the amount of food consumed, the much less proportion of the solid matter of the food that passed off in the solid and liquid excretions, and, finally, the larger proportion of fat in the increase, results obtained with pigs must be much more conclusive than those with either cows, oxen, or sheep. Numerous tables were exhibited showing the results which had been obtained by the authors in experiments with pigs, from which the following conclusions were drawn:—1. That certainly a large

proportion of the fat of the herbivora fattened for human food must be derived from other substances than fat in the food. 2. That when fed on the most appropriate fattening food, much of the stored-up fat must be produced from the carbo-hydrates. 3. That the nitrozenous constituents may also serve as a source of fat, more especially in defect of a liberal supply of the non-nitrogenous ones.

A YEAR OF RINDERPEST IN SCOTLAND.

IT may not be amiss to take the occasion, while it is yet with us, of Scotland's recovered freedom from the cattle plague, to glance at the leading facts and figures in the history of the visitation. The first cases from Scotland were reported in the week ending July, 1865, when there were 15 attacks, all in Aberdeenshire; the last, in the week ending July 21, 1866, when there was one attack in Stirlingshire. For several weeks preceding this, the number of attacks had not exceeded two or three; but, reckoning every week during which any cases were reported, the disease has remained among us for precisely a year. During that year 46,861 cattle were attacked, out of a total estimated stock, taking the figures of the returns of 5th March last, of 967,975—the proportion of attacks being almost exactly 5 per cent., or one head in 20. The disease visited 3700 farms, sheds, and other places where cattle were kept, to the number of 79,359. 13,444 of those animals were slaughtered healthy, to anticipate the plague; 46,861, as we have said, were attacked; so that, on the spots which it actually visited, only one out of every four head remained alive and healthy. Of the animals attacked, 6263, or about 14 per cent. were killed—the proportion under the same head in England, owing in great part to the energy with which the killing-cure was at the outset employed in the London dairies, being 40 per cent.; 28,088, or 62 per cent., died, against 48 per cent. in England; and 10,707, or nearly 24 per cent. recovered, against 11¼ per cent. in England. 1806 cases remained, in the latest returns, "unaccounted for;" and, as a considerable number of these cases must have resulted in recovery, the proportion of cures in Scotland to those in England may be stated at five to two. This favourable difference is to be ascribed to several co-operating causes—to the free use of the stamping-out process at the outbreak of the plague in the London dairies; to the milder type in which the disease reached Scotland; and also, we do not incline to doubt, to the more successful treatment of the disease by the northern farmers, who were able to bring to the conflict with a mitigated form of the malady the dear-bought experience of those who lost first, if not worst, by the visitation.

The incidence of loss by the disease in Scotland—which, as we pointed out some time ago, was a good deal heavier over the counties that were more than nominally afflicted by the disease than in England—of course varied very much in various counties. The attacks, we have seen, averaged 5 per cent. of the entire stock of cattle in the 32 counties. But in 10 counties not a case occurred and not a head was lost in Argyle, Banff, Bute, Caithness, Elgin, Nairn, Orkney and Shetland, Ross and Cromarty, Sutherland, and Wigtown; those counties containing 275,000 out of the estimated ordinary stock of 967,975 head of cattle in Scotland. In Inverness, with 45,000 head, there was only a single case, which occurred on the very borders of the county, and more properly belonged, if we remember aright, to Perthshire. In other eight counties, with 329,000 head of cattle—Aberdeen, Ayr, Berwick, Dumfries, Kirkcudbright, Peebles, Roxburgh, and Selkirk—the loss of animals actually attacked by the disease was under 2 per cent. of the estimated stock; being 2190, or, on the average, three-fourths of 1 per cent. Almost the entire loss by the plague, therefore, has fallen upon the remaining 13 counties, possessing an ordinary estimated stock of 319,000 cattle. Clackmannan lost by or because of the actual disease (the "unaccounted for" not being here taken into account) 279 out of 2361, or 12 per cent.; Dumbarton, 746 out of 11,287, or 6½ per cent.; Edinburgh, 1067 out of 14,088, or 7⅗ per cent.; Fife, 4229 out of 30,776, or 14 per cent.; Forfar, 9165 out of 37,501, or not far from 25 per cent.; Haddington, 546 out of 10,170, or 5½ per cent.; Kincardine, 1719 out of 22,734, or 7½ per cent.; Kinross, 750 out of 4596, or 16⅓ per cent.; Lanark, 4246 out of 60,539, or 7 per cent.; Linlithgow, 690 out of 8704, or 8 per cent.; Perth, 4669 out of 69,944, or nearly 7 per cent.; Renfrew, 552 out of 21,968, or 2½ per cent.; and Stirling, 3502 out of 23,891, or 14⅔ per cent. The average loss in the Scotch counties where the cattle plague took anything like a hold, therefore, was fully 10 per cent.; or somewhere about 2 per cent. more than in the English counties where the disease was felt in more than the lightest degree. Forfarshire still remains the highest sufferer, next to Cheshire—where 56,000 out of an estimated ordinary stock of 125,192, or 45 per cent., have fallen victims to the plague.

During the year of cattle plague, 159 sheep were "reported" from Scotland as suffering from the malady—111 in Fifeshire, 1 in Perthshire, and 44 in Forfarshire; of which 138 died, and 21 recovered or remain "unaccounted for." It will be remembered that opinions varied extremely as to the nature of the disease under which these sheep suffered; but that the balance of scientific and practical opinion was decidedly against the notion that that disease was rinderpest. In England, outbreaks of rinderpest in sheep are still reported; and there has been in that country a total loss of 5300 sheep, by slaughter or death, through this alleged cause. There appears, therefore, to be reason for regret that more extended and careful examination was not made in the south, and that some authoritative statement as to the liability of sheep to the Russian pest was not officially published. No alarm, however, is happily now felt on this score among those at once most experienced and most interested; and in Scotland at least very general and very justifiable dissatisfaction will be felt if, in view of the autumn sales, the free movement of sheep within or out of Scotland be not permitted. It is too soon to be confident that the rinderpest has finally quitted us; and the regulations enforcing immediate slaughter of cattle attacked by the disease, and strictly prohibiting import of animals from England and other infected countries, must be maintained in all their rigour. We have now at last a clear field on which to battle with the disease should it return; and no relaxation need be made that will render possible the carrying of disease across, or to and fro within the borders. But, now that there is no disease within the borders to carry about, and that the sources of possible contagion have presumably been thoroughly purified, there is no reason why a crowd of local regulations and prohibitions, which vexatiously and expensively interfere with the general convenience, should not be repealed, and the internal cattle trade be allowed to resume its natural course. Vigilance at the frontier, and freedom everywhere else during the absence of the disease, ought now to be the order of the day, for only by inconceivable mismanagement can the deadly infection be a second time allowed to run its destructive course from the Tweed to the Spey. *Scotsman.*

Home Correspondence.

Hinds' Wages.—It is stated in the *Agricultural Gazette* of Aug. 25, that hinds' wages in Berwickshire, are 40*l.* 4*s.* 6*d.* The following is a list of the prices (average market prices) struck at Jedburgh on the 20th of February last:—Wheat, 1*l.* 15*s.* 7*d.* per boll of 6 bushels; Peas, 1*l.* 10*s.* 9*d.*; Beans, 1*l.* 12*s.* 9*d.*; Barley, 1*l.* 3*s.* 7*d.*; Oats, 18*s.* 7*d.*, all the yearly average prices for the boll of 6 bushels; Oatmeal, 1*l.* 15*s.* 8*d.* per load of 280 lbs. I send part of my article in the *Scottish Farmer* of May 6, 1865, which gives a synoptical view of the different modes of payment and the money value to farmers, which makes higher rates of wages than the Scotch yearly average prices of grain for the last twelve-month preceding February. I based these calculations on the London averages as given in "Morton's Farmers' Almanac for 1863." The following is part of my article in the *Scottish Farmer* of May 6, 1865, in the tabular form:—

No. 2.—MINIMUM RATE OF WAGES FOR THE 52 WEEKS ENDING THE 26TH MAY, 1865.

Five loads (160 imperial stones) of Oatmeal, equal to from 50 to 60 bushels of Oats, at 9*s.* 1*d.* ..	£2	5	0
18 bushels of Barley, at 4*s.* 7½*d.* ..	4	2	10½
6 Bushels of Peas, at 5*s.*	1	10	0
Sheep money	5	0	0
Substitute for a cow's keep	5	0	0
Substitute for two months' keep of Potatoes ..	5	0	0
Substitute for a month's food in harvest ..	1	0	0
	£24	3	10½
Money paid to hind for his bondager contract —			
Say 12 days at 2*s.* and board ..	£1	16	0
For board when reaping corn ..	0	10	0
30 days 10*d.* (for those who work full time)	1	5	10
	£3	11	10
Earnings of bondager as the hind ..	£14	16	10
Gross total paid to hind for his own wages and for his bondager contract			£43 14 8½
Deduct the cost to the hind of the bondager contract —			
From 12*l.* to 13*l.* per annum for wages	£12	0	0
Board for 2 weeks, &c. ..	1	12	0
For lodgings, washing, &c. ..	1	12	0
	£15	4	0
Balance to the hind			£28 9 8½

The minimum rate of wages consists of £17 12*s.* 8½*d.*, and perquisites of potatoes and garden free, the cartage of six and seven cartloads of coals, and the liberty to keep a pig.

No. 3.—GENERAL RATE OF WAGES.

Or, instead of 9*l.* for the cow's keep makes No. 3 account equal to			£30 17 10½
Maximum rate paid to hind for the bondager contract —			
Say 12 days at 2*s.* and board ..	£1	16	0
For board when reaping	0	10	0
223 days at 1*s.*	11	3	0
78 days at 10*d.*	3	5	0
Earnings of the bondager for the hind	£16	14	0
		16	14 0
Gross total paid to hind			£48 11 10½
Cost to hind of the bondager contract ..			28 2 0
			£20 9 10½

The general rate of wages consist of the perquisites named in No. 2 and £20 9 10½*d.*

No. 4.—THE MAXIMUM RATE OF WAGES FOR THE 52 WEEKS ENDING 26TH MAY, 1865.

Five loads of oatmeal, and 60 bushels of Oats on some farms, the latter of which is in some seasons equal to 120 imperial stones of Oatmeal ..	£2	5	0
24 bushels of Barley, at 4*s.* 7½*d.* ..	5	10	6
6 bushels of Peas, at 5*s.*	1	10	0
Sheep money	6	0	0
Substitute for a cow's keep	7	0	0
Substitute for the land for Potatoes ..	5	0	0
Substitute for a month's food in harvest	1	0	0
Market value of what is paid to hind, exclusive of the perquisites	£33	5	6
		55	5 6
Money paid to hind for his bondager contract		16	14 0
Gross total		£71	19 6
Cost to the hind of bondager contract ..		28	2 0
Balance to hind		£43	17 6

and the perquisites named in No. 2.

This is the most elaborate statement of facts I ever made in behalf of those hinds who use mode of payment it describes. I beg my opponents to draw a line of demarcation between what is the market value to farmers in its crude, undeveloped state, and the market value to hinds of the produce of a good cow, by 8 or 10 lbs. of butter, at 1*s.* to 1*s.* 2*d.* per lb. during the summer months. A cow, whose produce of milk and butter only serves the hind's household, is worth the money-substitute to the hind—5*l.* to 7*l.*, which farmers give those hinds who cannot purchase cows. The produce of a good cow is regarded by some as equal to 15*l.* a year—8*l.* and 10*l.* more than what farmers pay as money-substitute for cows. The food of hinds' cows on many farms is a bare Grass field in summer, and straw and 4 cwt. of oil-cake in winter. Again, I know of several hinds, each of whom realised 8*l.* for pigs they sold last winter. A farmer, who read my letter in the *Agricultural Gazette* of July 28, told me at St. James's Fair that one of his yearly servants sold 40 imperial stones of pork last winter. In short, were I a hind, I would not take less than 50*l.* for the resources of the yearly wages in cash and kind on some farms; but it does not necessarily follow that farmers can make out that they part with 40*l.* of cash for the services of a first-class, able-bodied ploughman for a year. For example, a man who succeeded my late father as steward, after reading my letter in the *Agricultural Gazette* for 1860 (April), remarked that I have down 24 bushels of Barley, and 7*l.* for the cow's keep; and stated that each of two hinds was paid only 18 bushels of Barley, 100 imperial stones of oatmeal, 6 bushels of Peas, 5*l.* as a substitute for the cow's keep, 5*l.* of sheep-money, and the other items named. I know of one farmer who refused to give his hinds more than 8*d.* for a score of lineal yards of a Potato drill. In my letter of July 7, I put 3*l.* 15*s.* against the hinds for the 1500 yards of Potato drills—1*s.* a score. Again, the harvest-beer is supplied wholesale to farmers at 9*d.* a gallon, which is six dinners with six 18-oz. loaves at 2½*d.*, which amounts to 2*s.* for six dinners of bread and beer. The 24 breakfasts of porridge and milk do not cost the farmers more than 1½*d.* a meal—1*d.* for oatmeal, and ½*d.* for milk. It is the general rule for the farmers to give each hind one firlot (6 pecks) of Barley as a substitute for 24 suppers of porridge and milk; hence my grounds for setting down 16*s.* against the hind for the 24 days' food during the harvest month. So many being anxious to abolish the cow part of payment, I deem it judicious to point out that a cow's value to a hind's family much exceeds the money substitute paid to those hinds who have not cows of their own, nor "put on" by their farmer-employers. The boudanger system is totally abolished from the majority of farms; but Mr. Skirving's statements in 1860 respecting the bondager system in East Lothian, as given in the *Agricultural Gazette* for 1860, March 31, p. 298, are still applicable to too many farmers in the counties of Roxburgh and Berwick. If I may refer to previously published letters, all that I need say about this subject is given at p. 810 and 826 for 1857; p. 426 for 1858; and p. 81 for 1859. *T. W. Rutherford, Forest Field, Ashe, N.B.*

The Peck of Wheat per Acre.—We have threshed the two half acres and the result is as follows:—

The peck per acre	4½ grs. and ¼ peck per acre	
The ½ pecks per acre ..	5 grs. and 1 peck per acre.	

Showing an advantage to the thicker sown of fully 4 bushels per acre. This is the third year of the experiment under like circumstances as to land and crop. In 1864 and 1865 the yield from the peck of an acre was over 7 qrs. per acre, and the best on the field. This year we expected it also to be the best, and so it was on the lower part of the stitches, but they passed through some veins of light soil in the upper portion of the field, and there was both a deficiency of plant and branching, proving what we already knew, that Wheat branches or tellers less on light than on heavy land, and is more subject to attacks by birds or insects. The time of sowing has also much to do with the success or failure of thin sowing. For instance, in both the previous years the corn was sown in October, the proper time with us. In the present case the sowing was early in November, owing to the very wet October, and it is really surprising, looking to the lateness of the time of sowing and the miserably unfavourable season, that so large a crop as 36 bushels per acre should have been yielded from 1 peck, an increase in fact of 144 for 1, while the average increase of the country is only (according to Mr. Caird) 9 for 1. Climate as well as soil has much to do with the proper quantity of seed. Each man ought to experiment and judge for himself. Poor, half-starved farming does not promote tillering, while high farming stimulates it greatly. I am more and more convinced that the losses both in quality and quantity by excessive seeding are enormous, especially with Barley, after a large crop of Turnips fed off with cake. To sow 4 bushels per acre under such circumstances is a sad mistake as regards profit. [Who sows 4 bushels? Ed.] The crop gets laid early, the weeds and growing clover shoot through it and draw it to the earth. The quantity of seed and period of sowing that would be proper in our south country, with its early harvest and high and dry temperature, would be egregiously wrong in the northern moister, colder, and later districts. As in the former trials the Wheat, both thick and thin, were put in the same day on a Clover lea which had been mowed for hay and afterwards folded with sheep. The land in good forcing condition. *J. J. Mechi, Tiptree Hall, Sept.* 5.

Crops in Kent.—The frequent showers we have had has delayed the completion of harvest, but it may now be said finished in this locality, and no serious injury has been done by the weather. The Wheat crop will prove a good average, weight and colour good. Barley is very inferior in many places; some persons will scarcely have a sample fit for malting, whilst I have seen in some instances good crops of good quality. Oats are above an average crop, quality good, the same may be said of Beans and Peas. I think the harvest here may be considered above an average, Barley being

the only exception. The Potato disease is increasing daily, the haulm is prematurely dead, and many of the tubers rotten. Swedes, Turnips, Mangel, and all green crops are very good, and keep of all kinds abundant. *Wm. Manser, Dumpton, Ramsgate, Sept.* 1.

The Central Chamber of Agriculture.—There appears to be a growing interest in the recently formed Chamber of Agriculture, of which Mr. A. Pell, Northampton, is the Chairman, and Mr. Clay, of Walton, the Honorary and Provisional Secretary. There, perhaps, never was a time when such a Chamber was more needed to watch over the interests of British agriculture. Its watchfulness and guardianship is imperatively required at the present crisis, when we are, I trust, about "to stamp out" the cattle plague. The good it might have accomplished had it been in proper organisation before the introduction of the rinderpest cannot be estimated. It would have been its province to have taken the initiative at once—to have collected every available information, and have had it diffused through the length and breadth of the land, so that every effort might have been made to stop its progress. Instead of this, what ignorance existed, what errors were committed, and what losses were the consequence? And although this destructive pest is apparently subsiding the danger is by no means over. The return of cold weather, or some unforeseen, or unknown cause, may bring a fresh visitation as virulent and bad as ever. I presume it to be the duty of a Chamber of Agriculture to watch over every department connected with the progress or welfare of agriculture; and surely nothing can be more legitimate and worthy their best attention than the healthy condition of its flocks and herds. It behoves this very Chamber of Agriculture to take up the question without a moment's delay, and endeavour to aid, to influence, and to guide the Government in such a course as may be best for the country, and the most likely to annihilate the disease. To their office might be sent very many particulars as to the spread or subsidence of the disease, and the annoying and injurious restrictions put upon districts or counties. Here they would be acting upon such intelligence, and in communication with the Government, cause to be modified or removed altogether, as required. The Chamber would become the standard authority before whom all grievances might be laid, and all remedies sought. Through the Chamber of Agriculture the country might appeal to the Government at all times, and upon all occasions in which Governmental interference is necessary. In the present crisis it ought to be well up in all matters relative to the importation of foreign stock, or whatever might conduce to spread again this fatal or any other disease. The whole subject should be taken up, and be fully ventilated through their agency, *i.e.*, importation of fat and store stock, their inspection, quarantine, and slaughtering at port of debarcation, &c. It is to no purpose that a Chamber of Agriculture is established if it is, through lack of support, unable to do anything. This may arise from want of energy and daring on the part of the promoters. They deserve every aid, and would undoubtedly receive it upon taking up the most important agricultural questions of the time, more particularly just now that of rinderpest and its prevention. The whole agricultural community is in great difficulty and perplexity about sales and removal of stock at the present time, and they want some central office through which their complaints can be made to the proper authorities. Let the Chamber assemble and take up this at once, depend upon it they will meet with support. In all other subjects as they arise connected with agriculture in any political phase, *i.e.*, the malt-tax, agricultural statistics, tithe averages, weights and measures, transfer of land, importations of manures or fertilisers, cattle food, &c.; in fact, all questions requiring legislative or governmental action or interference, this Chamber of Agriculture would be a body ever ready to obtain every information, and to move the country districts to proper and simultaneous effort to uphold their own interests, should they in any way be infringed. It cannot be expected that men who are immersed in business can give much of their valuable time to aid their order in the direction of such a society. A good working staff ought to be appointed, to be aided by a first-class man as paid secretary, to whom all communications should be sent, and from whom all information might be obtained. The office should be in the metropolis, and the country or district boards ought to put themselves into early intercourse and connection with it. It will soon be time to arouse the country districts relative to the malt-tax question. We have a new Ministry who must do something with it. The substitution of a beer-tax is making way with the farming public. *O. F.*

The Produce of the Harvest is by no means equal to the estimate. So far as can be ascertained from the thatchers and travelling threshing machine owners, the yield is woefully short of the expectations formed, both on light and heavy land, but particularly the latter. There are yields both of Barley and Wheat of only 2 to 2½ quarters per acre. The thatchers say that their earnings will only be about half as much as last year. We hear of a good deal of straw and very little corn. My own crop will be much less than that of last year, which was a "bumper," for I had 40 acres of Wheat that averaged 7 quarters per acre. A good deal of cut Barley and Oats and Clover are being injured by the frequent and heavy rains. Turnips, Mangel, and pastures are rapidly improving. *J. J. Mechi, Tiptree Hall, Sept.* 5, 1866.

Farmers' Clubs.

ATTLEBOROUGH.—*Agriculture in Norfolk.*—The following remarks on this subject were made by Mr. C. S. Read, M.P., at the meeting here the other day:—"He had to congratulate them on the rather improved appearance in the crops, and he thought they would this year, with a little fine weather, secure a fair average corn crop in the county of Norfolk. Having said thus much, it seemed impossible for him not to revert to the events of the past year, and to remark how deeply he had felt for, and how much he commiserated, the agricultural interest, especially that of Norfolk. Last year they harvested the very worst crop they ever grew, and sold most of it at an unremunerative price. And then came down the 10 per cent. of which, if they did not feel the effects now, he had no doubt they would when the bank book was made up. In addition to this, they were aware of the ravages of the cattle plague; in speaking of which he could not help protesting against the way in which certain gentlemen estimated the loss they, as farmers, had sustained. They took up the weekly returns, and said, 'Oh, there are only 253,000 deaths from the cattle plague in the whole kingdom! What is that?' 'Why,' he would repeat, 'what is it?' In itself it was an immense loss. Taking the 6600 cases of plague in Norfolk, putting each animal down at 15*l.* each, the total amount would be £100,000 out of the pockets of the farmers. But that was not the way to look at the question; that was not the loss they had sustained; for how many cattle had been made away with that not a word had been said about? How came it to pass that at Trowse, during the latter six months of last year, the supply of store cattle was short by 25,000 head? Had they not lost quite as much from the want of cattle as they had from the deaths; had they not had their root crops rotting while the cattle in some counties had been starving upon the hills; and was it not the fact, at that time, when they had a good quantity of hay, the prospect of a good root crop, and a large supply of Grass, that Ireland and other places were overstocked with cattle, and yet they could not, or dare not buy them? He believed all this had very much deranged their system of agriculture. When he looked round a few weeks ago and saw all those beggarly patches of scarlet Peas, which bedizened the country, or the stolen crops of Oats and Barley, instead of what should be their mainstay and anchor, the root crop, they showed to him that there was poverty among the farmers which he deeply deplored, and which never existed so greatly as at the present time. When a man was thoroughly ill, the doctor troubled him very little about what he should eat, drink, or avoid, or how he should conduct himself; but no sooner was he approaching convalescence, than the doctor said to him, 'You must be very careful now as to what you take; you must not by any possibility over-exert yourself' Then it was that the patient became irritable and fractious. And so it was with the agricultural interest. It was now becoming very irritable and fractious under the remaining restrictions of the cattle plague; but he recommended them to cheerfully bear what he might call legitimate restrictions; at the same time, when they came to the restrictions imposed upon sheep, they were most vexatious and unnecessary. He could truly say that he had worked during the last 10 days with all his heart and soul, to get those restrictions modified or entirely removed."

Reviews.

Political, Agricultural, and Commercial Fallacies, or the Prospects of the Nation after 20 years Free-trade. By W. Waller Good. E. Stanford, 6, Charing Cross, S.W.

This work, inspired apparently by an indignant sense of the unfairness with which agriculturists have been treated by Government and public men, is an angry display of personal criticism and controversy throughout. Mr. Mechi who, whether rightly or wrongly, has always honestly spoken his mind on agricultural subjects during the past 20 years, and whose perpetual agitation of agricultural topics before societies and through the press has been simply the exuberant efflorescence of an enthusiast, is in particular made the target of every shaft.

It is a great pity that all the industry and earnestness which Mr. Good has exhibited, and by which he might have piled up an effective argument for agriculture being made the subject of a special Governmental department, have been here marred by extreme and offensive personality. It is this, and not the public good, which any cursory reader of the work will carry away with him as its chief object. Mr. Alderman Mechi, one of the heartiest and most good-natured of men, had many years ago amassed, we believe, a considerable fortune, and was able at length to gratify his life-long preference for country life. The publicity which he has subsequently achieved as an agriculturist was inevitable. A man of his temperament and ability could not help doing what he has done; and in all his talking, writing, criticising, publishing, which, ever since he purchased Tiptree, have been constant, in and out of season, we firmly believe that he has had no personal aim whatever. He has been merely pouring forth his soul. His teaching and learning have indeed been carried on very much together, and therefore he has often made mistakes, and he has accordingly been made the butt of much agricultural criticism; but it has generally been good-natured, like the man attacked, and he deserves no other. Nay more, he deserves, and will receive, a public recognition of his services. They have been beneficial to landlord, tenant, labourer. It has not been the imagination which has foretold large profits, or even declared them in high farming, that has raised the rent upon his neighbour. Rents have been raised by competition amongst farmers themselves. On the other hand, his perpetual iteration of certain necessary items in the high farming scheme—the removal of hedgerows, the need of good buildings, of roads and drains and proper fences—has had a sensible influence on the management of estates, and so far the thanks of tenant farmers are due to Mr. Mechi. He has now retired to a certain extent from public life, retired however, we are glad to know, rather as a citizen than as a countryman. And we gladly take the opportunity which Mr. Good's book affords us, of declaring that the rancour of his treatment in its pages is offensive to many others as well as (probably, indeed, much more than) to himself.

What Mr. Good's opinions are of the present condition of English agriculturists, and of the way in which they have got into their present plight, may be gathered from the following passages.

"As agriculture must be governed by and conducted under the same principles of economy as trade, commerce, and manufactures are, when successful, and as the legislative enactments have been, during the period in question, designedly in favour of the direct business interests of merchants, manufacturers, and townspeople generally, and as designedly dead against the country or agriculturist interest, there has been an illegitimate withdrawal of capital from agriculture. By this we simply mean that the bulk of farmers, while they have had their fixed expenses increased, have had their returns greatly lessened; and therefore, instead of growing richer in stock and capital as the nation has increased in wealth and importance, they have grown poorer and poorer both in money and means. This is the most natural and the commonest result of our past revolutionary and one-sided financial policy. The money in the hands of British farmers was never so inadequate to the nation's wants as it is at the present time. It naturally follows that a scarcity and dearness of every article of agricultural produce, always excepting Wheat and some other sorts of grain of foreign growth, must now exist.

"We have not overlooked the fact that, in a few isolated and favoured cases, where farms are large and their soils are well adapted for breeding, rearing, and feeding animals, and this combined system has been pursued, and an excess of capital has been at the command of the occupiers, the past state of things has not been so injurious. But we refer to the effect which this one-sided policy has had on the bulk of farmers. And it is especially to small farmers that we allude, for it is this class of men who have mainly reared cattle for supplying the pastures of the midland counties in summer, and the yards of the eastern counties in winter. But what do we find now? That these men have become so crippled through the uncertainty and lowness in the prices of corn that they are glad to take advantage of the high prices of butter and cheese; the former they take to market weekly to pay current expenses, and draw on the other from some factor, who takes the cheese when fit to move, and, of course, nearly at his own price. For this reason, remembering that farming is governed by the principles of political economy, the calves which used to come south from the dairying counties for rearing are now largely sacrificed at times at a week and ten days old in the shambles of Birmingham, Manchester, Liverpool, and other large neighbouring towns. If, however, calf had been free from duty, not only would farmers have made more profit, and more been able to keep their stock till it got older and heavier, but it would have been substituted for milk for rearing by men who did not keep cows, and thus the present alarming scarcity of young cattle which has befallen the nation would have been largely averted. What these little men now say, in reply to recommendations to rear, is, 'We know very well it would pay to rear on milk, but it would first require us to put our hands in our purse, which we cannot do, and then we should have to wait a long time for a return, instead of getting it at once by dairying.'

"As with every other class, it is a question of capital and profit with farmers, and if they have the first withdrawn from them, as it has been done in many years of late, or if their capital be prevented from returning to them to an extent equal to their proportion of the expenses of the State, how is it possible that they can increase their labours and manures for cultivating and fertilising their fields and pastures, and thereby add to their own profits, while they increase the food of the community? If money goes to farmers in a fair and legitimate way, they invest it to get more, as other business people do. One would, suppose, however, from the lines of argument which we have heard of late years, that English farmers used to eat all the money they had to spare after paying their fixed expenses, and that thereby it was lost to the world for ever; while foreigners or all countries merely took it with one hand and handed it back with interest at once with the other, accompanying it besides with every mark of respect and form of compliment for being allowed to have such a flattering honour from Mr. Bull!"

Farm Memoranda.

[We give here another portion of Professor Wrightson's report of Lothian agriculture.]

EAST LOTHIAN: *East Barns.*—Leaving Berwickshire, we soon found ourselves at Dunbar, and a walk of 2½ miles brought us to East Barns. Here we were most kindly received by Mr. James Murray, who farms 500 acres of the best land in East Lothian. It is derived entirely from the old red sandstone, a formation which generally yields soils of first-rate quality. It may be described as free working, and of a rich red colour, with sufficient body (clay) to enable it to grow first-rate crops of Wheat. It is specially adapted for the cultivation of Potatos, which crop the disease seldom attacks in this locality. The rent is high, being 2400*l.* for Mr. Murray's farm, and that of a neighbouring small farm recently taken of 160 acres amounts to 800*l.* With this large rental Mr. Murray has full liberty to sell hay and straw, and to grow Potatos to a large-

extent; but he never uses this liberty with regard to either the hay or straw, as he has quite sufficient use for both at home.

First, then, with regard to the general appearance of the farm. When we had the pleasure of inspecting it it was suffering from the effects of a droughty season. The pastures were bare, and the Barley in many places prematurely changing colour. The corn was said to be light, although we could not but admire the glorious crops of Wheat and Barley. Potatos were looking very well—in fact, could not have been better; and Turnips were beautifully regular, and in process of being thinned. Some Swedes were ready for the second hoeing.

One of the most striking points which attracted our attention was the exceedingly neat way in which the hedges were kept. Usually we see even in well-farmed districts in this country the hedge bottoms infested with weeds; in fact, the little green banks on which Primroses, Geraniums, and Violets appear earliest in the spring are familiar to all, and seem to be in their right place when under the lea of a protecting hedge. Mr. Murray, however, does not agree with this pretty idea, and his hedges are thoroughly clean up to the very roots of the "quicks." Not a sod nor a blade of Grass, but the hedge stands reduced to the least possible bulk, and as thoroughly hoed as the row of Swedes which stands next to it. Mr. Murray attributes his comparative freedom from attacks of the turnip-fly partially at least to this precaution. To do this and other work of a similar kind three spade hinds are always employed on the farm. Every department manifests the same care and liberality of management as is illustrated in the last example.

Turnips singled regularly and every weed cut, and the women and boys working like a regiment of soldiers, closely superintended by the under steward, who, without taking a row himself, marches from end to end of the array, finding fault with the careless, and helping forward the weaker members.

The rotation pursued on East Barns is somewhat peculiar, and differs from the usual East Lothian course, which, as will be easily remembered, is as follows:—Turnips, Wheat or Barley, seeds, Oats, Potatos, Wheat.

Mr. Murray's rotation is for seven years:—

1. Turnips
2. Barley and [illegible] Wheat
3. Seeds
4. Seeds
5. Potatos Oats
6. Turnips Potatos
7. Wheat

By this rotation—1st, a larger proportion of land is kept in Grass, and the labour bill is diminished, as well as the grazing land increased; 2d, a larger proportion of Turnip land, and a somewhat smaller proportion of Potatos is obtained; and 3d, the proportion under white crop is lessened. It is therefore essentially less scourging than the ordinary East Lothian rotation.

Commencing with the Turnip crop, we find that part of it follows Wheat and part follows Turnips. Mr. Murray does not advocate the use of the grubber in the spring, for the reason before stated, that it encourages the growth of deep-rooted weeds, such as Thistles and Coltsfoot. The land for Turnips is ploughed once before winter, and then lies untouched until the beginning of May. It is then harrowed down and rolled. Several teams are set to work at 4 P.M., and as much land is ploughed by night as will serve for half a day's raising and splitting into drills. The teams commence to raise drills at 5 A.M. the following morning, and the dung is put in the ridges, split, and the seed sown before 10 o'clock A.M. The people now rest through the hottest part of the day, and the teams, after 1 o'clock, plough in preparation for to-morrow's sowing, or "making," as it is termed. Thus enough is ploughed every afternoon for the next morning's sowing, and by this plan the moisture is preserved as much as possible. The method of sowing is also worthy of notice. Two machines are sowing, one of them being in advance of the other. Every ridge is sown by both machines, in fact, twice over, the coulter of the first machine being set 1 inch deeper than that of the second, so that there are two lots of seed sown; and instances have been known in which when the fly went with one lot, the other and deepest sown Swedes coming up a few days later effectually filled up the gaps, and thus a regular crop was obtained.

We were induced to thus inquire particularly as to the method of cultivation for Turnips by the perfect manner in which Mr. Murray's land was occupied by plants, while all around was blanky and even failing in Turnips; and the pains taken is ample explanation for more than ordinary success. Both winter and spring furrows are 11 inches deep, and this is always done by two horses. This is a fact somewhat puzzling to south country farmers, but much of the secret doubtless lies in the manner of feeding. In the first place we find a very "useful" stamp of horse in Lothian, either Clydesdale, or something near akin to that famous breed. Here, and generally in Scotland, we found that Oats and hay were given almost *ad libitum* in busy seasons; 3½ bushels of Oats per week and as much hay as they could eat was quite an ordinary allowance. In summer, when little work is required, they receive cut green food and often no corn. It may here be observed, that the system of cultivation just described could only be possible upon thoroughly clean land, and nothing more clearly shows the order into which Mr. Murray has brought East Barns than that he is able to follow it. The Turnips receive farm-yard manure whether they succeed Wheat or Potatos. The following is the proportion of manures applied:—Farm-yard manure, 10 to 12 tons; the alved bones, 5 cwt.; or dissolved bones, 10 cwt, and no farm-yard manure.

Here, as in Berwickshire, we found superphosphate preferred to guano for the Turnip crop. We found it, however, very difficult to establish any rule with regard to these two great classes of portable manures, some farmers preferring one and some the other, while we failed to see that difference in the quality of the land that might give a rational explanation for such a preference. The most interesting part of the question refers to quantity. Are these Lothian farmers right in applying 4 ton of superphosphate or 7 cwt. of guano to one crop? All we can say is, that they sit under enormous rents, such as would frighten most of their English brethren, that they grow enormous crops, and live in a style which is perhaps one of the most striking features of Lothian farming.

An East Lothian farmer, judging from his house, his furniture, his gardens, his servants, his *tout ensemble* is living in better style than we should expect the *owner* of a similar estate to keep up in this country. This may seem a somewhat odd way of solving the question as to the amount of guano or bones which should be applied to a Turnip crop; but when a man of the professional standing of Mr. Hope, of Fentonbarns, assures us that the tendency is to farm higher and higher, we have an evidence in favour of heavy manuring, which in some respects is superior to the deductions of isolated experimenters or agricultural chemists. Turnips which have followed Wheat are taken off the land, hauled home, and the land is sown with Barley, which receives no yard-dressing. The variety is usually Chevalier, and the average crop is from 56 to 60 bushels per acre. The Barley is sown with mixed Clover and Grass seeds, half of which is mown and half grazed the following year. The second year the whole is grazed.

When we were at East Barns the hay was being carted, and since Mr. Murray weighs all into the stack we were enabled to know the exact weight of the crop which had just been cut. This averaged 2 tons 8 cwt. per acre, and the land had also furnished some keep in early spring. The second year's Grass is broken up, and divided into two equal parts, half being planted with Potatos, and half sown with Oats. In neither case is any manure applied, and nothing shows more strongly than this the high condition and natural good quality of the land. We find next year the Potatos followed by Turnips treated as before described, and the Oat land prepared for Potatos. These Potatos receive 12 tons farmyard manure, 4 cwt. Peruvian guano, and about the same weight of superphosphate. The usual crop is from 40 to 60 bolls of 4 cwt. each, or from 8 to 12 tons per acre (variety, Regents). After the Potatos and Turnips, into which the previous share had been divided, we find the whole sown with Wheat, which brings us to the end of the rotation. This crop is top-dressed with 4 cwt. per acre of equal parts of nitrate of soda and guano. The varieties grown all belong to the finer kinds of White Wheat, and most of the Wheat fields this season were bearing crops of Essex rough chaff.

One of the most interesting points which we noticed at East Barns was the good feeling which subsisted between the master and the servants. Each cottager is furnished with a good dwelling-house containing three bedrooms, a good kitchen, a pantry, milk-house, and entrance lobby, and each hind (or married ploughman) keeps a cow and a pig. An excellent parish school is provided in close proximity to the farm, which we had the opportunity of inspecting, where the children receive the elements of a good education. But Mr. Murray does not stop here; he engages the services of Mr. Lowe, the dancing-master to the Royal family, to teach all his lads and lasses to dance, and he has them also taught singing. In order to give them scope for the exercise of these new powers he periodically has his large barn papered, and decorated, and lighted up; and there in white dresses and dress boots the lasses, and in their Sunday clothes the lads, are treated to a ball. "Ah!" Mr. Murray said to us, "you would enjoy seeing them dance; the Prince of Wales himself would not object to dance with them, they look so well, and behave so properly. Everything is conducted, we understand, with the most perfect propriety, and, as Mr. Murray said, you would think they were ladies and gentlemen, they act in so self-possessed a manner. Such an entertainment had just been held before our visit, and the barn still showed traces of the decorations and numerous small candlesticks were still hanging around the walls.

Mr. Murray maintains that they work better, and are much more cheerful after these little relaxations from the monotony of daily life.

"You should see," said he, "how those who are dancers skip about the barn when the threshing machine is going. They go as lightly again as those who don't dance. This somewhat eccentric conduct of Mr. Murray is looked at from two points of view, some condemning and others commending it; but whether it is the best way of giving the people recreation or not, it is certainly well meant. "Send the Editor of the *Telegraph* to me," said Mr. Murray, "and I'll show him how I behave to my people. I'll let him see that they are not 'thin-legged and big-bellied, with strong loins, and weak brain-pans.'" This was in allusion to a villanous leading article that appeared in the *Daily Telegraph* this last spring upon the state of the agricultural labourer.

MERSE OF BERWICKSHIRE, *Sept.* 1.—As usual, after a dry summer, August has been wet and unfavourable to the white crops. The downfall of five weeks amounts to near seven inches, and we have the promise of more yet. Bands of Irish have been about for some time, and very cheap to those who wanted them. All spring corn is strangely mixed with perfectly green heads to the extent of a third part or more, and will contain much light corn. Most people have made a beginning these two or three days (being just 14 days later than last year), although there is no ripe corn, for corn is cut much greener now than formerly. Wheat is unequal, owing to deficiency of plant in places, and small of head. Barley was early beaten down where cake was used last winter, and is now much discoloured. Standing crops were broken badly by a gale in the end of July, and altogether it is very bad to harvest. Oats suffer less from the weather. The crop is better than last year, except on clay and moory soils, where it is poor indeed. Beans are poorly podded. Turnips are unveiling this week at last, but Swedes on good land are a failure. *J. T.*

Miscellaneous.

On the Breeding of Sheep.—As the season of the year brings us again to this point of business which ought to command our attention in order to make it the more profitable, allow me to give my humble opinion as to the sorts I think the most profitable. Let us begin by considering the description of sheep best suited for this county, the best mode of establishing a flock, and the sort that will give the greatest return per acre. Doubtless there will be various opinions among different breeders, but on one point I think we must all agree—that the breed which will give the greatest return will be that of which he can keep the greatest number in proportion to the food consumed, and which will realize the largest sales from the greatest amount of profit. Assuming this proposition to be generally assented to, it next becomes necessary to inquire for what purpose the flock is required, whether for stocking or grazing, as on this the decision as to the most eligible breed must mainly depend. As grazing sheep, the Lincoln, the old improved Leicester, Devon, and the now improved Cotswolds have been kept with various degrees of success; but during the last seven years, when quantity and length of wool have been great considerations, the latter breed has been grazed to the greatest advantage. In this, however, as well as in the others mentioned, there is a slight objection—that the mutton is too large for the present taste of the English people, and the coarser parts are obliged to be disposed of at a low rate. This is the material objection to the larger breeds; but at the same time it must be acknowledged that these sheep, from their quiet disposition and fattening propensities, will acquire more weight on a given quantity of food in a limited time than the more restless and prowling breeds, such as the Norfolks. As to Sussex and Hampshire Downs, the mutton may be more preferable, owing to its finer quality and shorter joints, but they are objected to as not bearing sufficient wool, or not coming to maturity until a year or two after the larger breeds. What then appears to me the more profitable breed for grazing is the produce of a Hampshire Down Ewe and a Cotswold tup. This is the first cross; and in it you have a union of the good qualities of each breed, with the objection as to size and coarseness much lessened; an animal between the two extremes more saleable in the market, and sufficiently large to arrive at maturity early. But as some require a flock for folding, and one which occasionally has to feed and work hard, I should then say let the second cross be preferred—such as the Oxfordshire Downs or Shropshire sheep. I will state my reasons why I consider the last breed of sheep the most preferable—reasons which have been suggested after several years' strict and impartial trial of the Hampshire Down ewe and a Cotswold tup, under all circumstances of good and bad keep. 1st, I have proved that the second cross of sheep is equal to all the travelling to fold which is required of the Down. 2d, That the same number can be kept. 3d, That from its inheriting the kindly qualities of the Cotswold it will thrive much better—that the deeper breast, wide shoulders, bowed ribs, wide loins, and long projecting rump, constitute a frame which, while to a superficial observer it does not present a much larger appearance, gives the animal a decided advantage in weight when fat over the true-bred Down or Norfolk sheep, in which these points are notoriously deficient. 4th, That the quality of mutton thus twice crossed, and possessing two degrees of Down, loses the objection of coarseness and great size. 5th, That the colour of the face and legs will come dark in the proportion of 90 to 100, and unobjectionable. 6th, From the thickness and quantity of the wool they have a decided advantage through the winter, are thereby rendered hardier, the fleece, when of a good description, being impervious to incessant rain beyond the depth of 2 in., the wool of tegs or hoggets varying from 6 to 8 in. in length. Lastly, The quantity of wool will exceed by 2 lb. per fleece that grown on the average by Downs or Norfolks, and of a description the most valuable for combing, which a glance at our position in respect to the yearly increasing importations of short wool, and the fact that but little of the foreign long wool will bear a comparison with the English, owing mainly to the judgment in the cross-breeding, will appear to be a consideration beyond all the others important. These are the conclusions I have arrived at. They comprise but an individual opinion, and I am ever open to conviction; but as the results of a strict and impartial trial must of necessity prove of greater force than the best of argument to all interested in the particulars here set forth, the purport of which is to prove that the sheep which will return most profit to the breeder and feeder is the one most to be recommended; and which I hold to be a selection of the above-named first and second crossing of Cotswolds and Downs, differing in the degree of cross according to the purpose for which they are wanted, and the nature of the soil and treatment of the animal required. *Chelmsford Chronicle.*

Town Manure of Leith.—Some 4000 tons of "police dung" have accumulated in a great heap close by Leith, owing to the refusal of the neighbouring farmers

to take it, from fear of rinderpest; and, as it might become a serious source of mischief and disease if not disinfected, the process was lately carried out by Mr. Councillor Lundy, as described in the following paragraph from the *Leith Burghs Pilot*:—

"The great difficulty was to procure water, the frequent passage of trains on the railway preventing the hose being laid across the rails at any reasonable hour. Two of the town water carts were filled with water to supply the small fire engine, kindly lent for the occasion by Messrs A. B. Fleming & Co., Salamander Street. The water was mixed with condy's red fluid (permanganate of soda), and pumped on to the heap, whilst hypochlorous acid was liberated by a mixture of hydrochloric acid with the fluid. That portion which was so treated was found to be much improved; but in practice it was found inconvenient, as there was no means to use effectually sufficient hydrochloric or sulphuric acid on to so great a mass. The acids also were injurious to Mr. Lundy to fix the ammonia, or, in conjunction with the permanganated fluid of Mr. Condy, to liberate hypochlorous acid from the hydrochloric acid, or, by the use of sulphuric acid, added to Condy's fluid and large quantities of water, to liberate ozone (Nature's disinfectant). It was finally arranged to cover the heap with gypsum, as the cheapest, safest, and best means of absorbing the ammonia, and afterwards to pump with the town's fire-engines a mixture of Condy's patent green fluid (manganate of soda and water). On Saturday last, under Mr. Lundy's direction, the heap was covered slightly with gypsum (about 4 tons being used), whereby the smell was much abated, and all parties present agreed that it was a great improvement. However, as this step was only taken for the deodorisation and absorption of the ammoniacal compounds could not be completed for the use of the fire engine, and procuring sufficient water until Monday evening, the further disinfection and deodorisation was deferred till then, when Mr. Lundy, assisted by Superintendent Grant and part of the fire brigade, operated upon the heap by pumping water for an hour from one of the town fire engines, into the well of which was being constantly poured small quantities of Condy's green manganate of soda, until at the finish some 12 gallons of the fluid had been consumed. During this time the whole heap of above 3000 tons of putrefying vegetable and animal refuse was deodorised, and it was mixed with 25 to 30 tons of putrefying slaughter-house refuse, which was in another heap, was deodorised also. At the beginning of the operation the air was tested by exposure of the fluid in watch glasses, and found to be much purer on the windward than on the lee side of the heap, and at the end of the hour when it was completed it was found that the smell was completely abated. No experiment of the kind has, we believe, ever been attempted on so stupendous a scale before with any disinfectant, or deodorisation attempted upon so large a mass, which has been accumulating for years, and is refusing to buy it from the Leith authorities, simply because Leith was a place for importing foreign cattle, and from a dread that the slaughter-house refuse might be mixed with it, which, however, the authorities have been careful to avoid, as also preventing the sale of the confederate manure accepted by market gardeners and nurserymen. Indeed, the Public Health Committee have been as particularly watchful in their endeavours to prevent the spread of Rinderpest as they appear to be now anxious to avoid cholera getting any footing in the country through any neglect of precaution in Leith. It will be a fine factory to hear that as soon as these precautions were known to the farmers, all the manure was sold in a few days, and is being sent into the country as fast as carts and trucks can be procured, and that about four weeks will see it all removed."

Haymaking.—(1). In your Journal of May 24, a correspondent, (living in Ohio, where much hay is produced), says: "Cut and cure two acres of Grass, same quality, one late and the other early; place the hay where it can be reached freely, and in the following winter turn horses or calves coming one year old to them (and they are cattle that always select), feeding the best when the opportunity is afforded): he will find the late-cut hay gone, while the other is but slightly disturbed; and he will discover also, that they will thrive much better on the late than on the early mown Grass. I write thus confidently from testing the matter myself, and knowing others to have done the same." The experience of farmers in East Tennessee has, I believe, led them to the conclusion above stated; for they generally mow their meadows of Timothy and Red-top when the seed is older and riper than that of Wheat and Rye when harvested. Without farther citations, which might be extended to any length, I raise the question:—At what time in the development of common meadow Grass do the plants possess the largest amount of assimilable nutritive matter? It is easy to answer this question by an honest guess; but such answer has no more value than a guess at the time when the next eclipse of the sun will take place, without any knowledge of astronomy. All will admit that true science alone can give, in the first instance, a true answer to the astronomical question; and I wish all to see, if possible, that true science alone can tell, in the first instance, when Grass, Clover, and corn plants contain the maximum of available nutritive matter, as food for farm stock. Is the maximum reached not until the seed is fully matured, or, if before that time, how long before? Professor Way, when chemist to the Royal Agricultural Society of England, made many analyses of Grasses when in blossom, or at that stage of development when usually cut, for making hay, in Great Britain and on the continent. Orchard Grass was analysed, also, when the seed was ripe. I do not regard his researches as settling this important inquiry, yet they throw much light on the obscure parts of the subject. He found that orchard Grass had, in seven eleven-hundredths per cent. of woody fibre when in blossom; and twenty and fifty-four-hundredths per cent. when the seed was ripe. If it were not for this sudden increase of wood in Grass and grain plants, during the growth of their seeds, equal to 100 per cent., and often more, no one could doubt the gain of assimilable food during the last days of their active vital functions. But when sugar, or its equivalent, is changed rather more into wood, to make straw, as in Wheat or Rye plants, than into starch to form seeds, when the process of seed-forming is in progress, why should not all this sugar be saved—making Wheat, Rye, corn, or Timothy into hay? If seed is made not directly from carbonic acid, ammonia water, and agricultural salts, but from elements already organised in the leaves and stems of plants, nothing is gained by their new position in the heads of Grass or grain. What the ear or head gains the body loses. Hence, corn blades or leaves are nearly worthless for fodder after the seed is fully ripe on the ear. If the soil and atmosphere supply the elements that form seeds after the plants are in blossom, it is difficult to see how corn or any grain can materially improve in the shock. It is to avoid the formation of worthless wood in Grass, corn and Rye, if wanted for forage, that these plants are cut just before the seed is ripe or formed, when used as hay. If it can be shown that plants gain in weight of organised assimilable substances, after they blossom, as much as they gain in woody fibre, then no loss results by waiting for Grass fully to mature before it is harvested; but has any one proved such a fact? The analyses of Professor Way favour this important conclusion, as the following statements seem almost to demonstrate:—He found in 100 parts of orchard Grass, cut when in blossom, 70 of water and 30 of dry organised matter, containing 4.06 per cent. of albuminous or flesh-forming principles. The same Grass, cut when the seed was ripe, contained 52.57 per cent. of water, and 47.43 per cent. of dry solids, in which there was 10.93 per cent. of albuminous principles. If there is neither loss nor gain in these flesh-forming elements from the flowering to the full maturity of the plant, then, 30 pounds of dry Grass cut when in blossom contain 4.06 pounds of albuminous principles, 47.43 pounds of dry Grass, cut when the seed is ripe should give about 6.43 pounds of the same principles. Subtract 6.43 from 10.93, and there remains 4.50 pounds of albuminous matter whose formation is unexplained. I wish to fix in the reader's mind the fact that the flesh-forming substances in orchard Grass are doubled in quantity during that most interesting and short period of plant life and growth which intervenes between the flowering and maturity of the seed. The problem can be solved in two ways only—either flesh-forming principles are largely and rapidly organised from ammonia, water, carbonic acid, and agricultural salts, at the time when the numerous offspring of the parent plant require albuminous aliment in the greatest abundance, or this aliment exists in a nascent state when blossoms appear, so as not to respond to the re-agents of the chemist. The former is probably the more rational conclusion, although the latter solution may be the true one. The female parent in the mammalia elaborates much blood and milk for the benefit of her offspring, to ensure the perpetuation of the species during its foetal and infant state; and may not the vital functions of plants, when most actively reproducing and perpetuating the species, elaborate the food of needy germs with peculiar force? A single Timothy seed will send up many culms, and each support a rachis that contains 1000 or more seeds. How does Nature provide food for so numerous a progeny? Is she likely, in the face of these obvious and inexorable wants, to suspend suddenly the organisation of germinal nourishment? On the contrary, should not the primary formation of food for growing seeds at this time be peculiarly active and efficient? If so, why cut meadow Grass prematurely, and at a time when it is transforming atmospheric elements most rapidly and cheaply into flesh-forming principles? *D. Lee, Gay Creek, Knox Co., Tennessee.—Country Gentleman.*—(2). We have for some years past advocated the cutting of Clover for hay at an earlier stage of its progress than is common in this country. The usual indication of fitness for the scythe is the browning of the blossoms to the extent of one-half or two-thirds; but it is by no means uncommon to leave it, under press of other work, much beyond those points. The consequence is, too great hardening of the woody stems, and a great and incurable damage done the quality of the hay by the rotting of the lower leaves. These fill the hay with that impalpable dust so distressing to horses, and, highly nutritious and valuable as otherwise it would be, makes it unfit food for them. We have urged, therefore, the harvesting of the crop when it has come pretty well into flower, without further delay. That this is the proper period for cutting, we may take a hint from the bees and other insects. When they begin to operate on the Clover blossoms it is a sign that sugar has been elaborated. If the Clover be not then cut, the sugar goes to perfect the seed, and is lost to the hay. An experiment made some years ago by Professor Horsford seems decisive as to the point that it is to be cut neither before nor after the period of full development of bloom. He found that Clover cut at the surface of the soil, when the heads just began to appear, produced only 0.80 per cent. of sugar. Clover cut when the heads were fully developed, produced 1.15 per cent. of sugar, very near 50 per cent. more than that cut first. An important incidental advantage of the earlier cutting is that we get a week or more of time in which we may take advantage of the good weather, and so secure the crop with less risk of exposure to rains—a very desirable point. Hay cured thus early is more nutritious, more delicate, more apt to be well cured, and sooner out of the way of damage from exposure. It favours very much, too, the second or seed crop, by giving it the opportunity of getting well started before the excessive heats of summer. Curing the hay: Green Clover contains, when first cut, from 75 to 83 per cent. of water. It contains also a certain amount of sugar, which is easily fermented. Therefore, if cut and placed in a barn or stack, should fermentation be produced, it will destroy the sugar and other nutritious qualities, and vinegar or acid will be produced, rendering the hay sour and unfit for food. If sufficiently dried, the sugar will remain with the fibre, and the hay will be nutritious, wholesome food for stock, and supply the animals with not only food, but an element (carbon) which will generate animal heat. It will, from this view, be seen how important is a proper curing of the hay. No rule can be given as to the length of time which Clover should be allowed to dry in the sun and air before it is put up, because much will depend upon the previous condition of the weather, the dryness of the ground, and the quantity of water the Clover may contain, but a point should be made of not having the leaves destroyed by too much drying in the sun. In favourable weather, a few hours' wilting is sufficient before putting it into small cocks, which, after standing a day, may be thrown open and taken at once to the mow. But the process of curing demands especially the eye of the master, and no advice can be implicitly followed. It must be matter for the exercise of his own good judgment. Value of Clover Hay: While every one knows, and is quite familiar with the fatteuing qualities of a Clover pasture for stock of every description, Clover hay is poorly appreciated. There is no doubt that this is because it is generally so badly cured and imperfectly preserved. It is harder to cure than the common hay Grasses; is fit to cut when there is much more liability to rains than later in the season; and it cannot be properly preserved in stacks or ricks out of doors. A large portion inevitably rots, and the remainder is more or less damaged. *Baltimore Sun.*

Calendar of Operations.

SEPTEMBER: *The Dairy—Truckle Cheese.*—This is a good time for making loaf or truckle cheeses, which are made from 6 to 9 inches deep, and about 9 inches across. It being rather difficult to fill vats of this description, it has been found more convenient to have vats made of small staves in the same manner as a pail or bucket, with white hoops round them, and without bottom. A piece of board, rather larger than the vat, is provided to place at the bottom when the cheeses are being made, and it is kept underneath until they are turned out. These cheeses, if not made with great care, are very apt to bulge in the sides, and thereby lose their beauty; and not only is their appearance affected, but the quality also is inferior when the cheeses do not retain the proper shape of straightness at the sides and flatness on the top. The shape consequently marks the quality. Sometimes broad bandages are kept round these cheeses for a time, when first placed on the shelves, to prevent their getting out of shape. When the vat is about half full, a small table-spoonful of fine salt should be put into the middle of the cheese, and well rubbed into the curd, taking care that it does not spread to the outside, which would cause it to separate, and be of injury to the cheese. In making truckle cheeses the curd should be quite sweet, thoroughly crumbled, and made as dry as possible before filling the vats, and it should be pressed very firmly in with the hands, and allowed to remain in the press four or five days, turning them every day, and salting them three times. Truckle cheeses after being kept 12 months are fit for use. They always bring a higher price than other cheeses, and are recommended as the most convenient size for the table; and when the top is carefully cut off in one piece it can be used as a cover to the cheese, which will keep it from becoming dry during the time of consumption. Exposure to the air invariably deprives all cheese of its original freshness of flavour. This form of cheese is in some dairies made throughout the whole season, and in others none but these truckle cheeses are ever made. There is, however, a risk, under ordinary management, of their bulging and heaving during the extreme heat of the summer, owing to fermentation, and this difficulty does therefore in most dairies confine the making of this sort of cheese to the autumn months, when less heat interferes with the ripening it.

Of Vetches we give the following account, extracted from the somewhat enthusiastic essay on their cultivation given in the first edition of Arthur Young's "Farmer's Calendar":—

The author of this essay feels both pleasure and pride in having been the first person who raised them on a large scale, and publicly recommended them to the notice of agriculturists. In 1821, after 30 years' experience of their utility, it is difficult for him to say more in their favour than they deserve. But he takes leave to observe that they may be made one of the principal means of enabling the arable farmer to support as much live stock as the grazier. For during the time they occupy the ground they produce as much green food, of the best quality, per acre, as the richest grazing land; and the ground may be cleared of them in such good time (in June) as to admit of raising a clean crop of either Turnips, Cole, or Cabbages on the same soil in the same year; or in lieu of any of these plants, if the soil be infested with Couch, that may be eradicated, and the land sown with Wheat in October; or even after the crop of either Turnips, Cole, or Cabbages have been cultivated and removed, the same soil may be prepared and sown with either Wheat, Barley, Oats, or Pulse. By this arrangement three valuable crops may in any place be obtained every two years.

Vetches, if not cut too green or given fresh, are good food for horses, and they will fatten sheep and bullocks; they are excellent for promoting the secretion of milk in cows, ewes, and mares; they suit every situation, and flourish on almost every variety of soil; they do not depend on any particular market; and, above all, if folded on the land with sheep, they manure the land fit for the immediate production of Turnips or Cole, whereby a succession of green crops can be kept up, that will fatten an increased quantity of live stock, and be the means of adding to the manure of the farm. A rotation of Vetches, Turnips, Cole Cabbages, and other green crops may with perfect ease be made the means of rendering all arable land as rich as can be desired.

Vetches are good food alone, but they are particularly useful as following Swedish Turnips or Cole in fattening ewes and their lambs; by which the latter may be sold to the butcher in the month of May or June, and the ewes in September. In this manner the whole flock may be fattened and cleared off within the year, and thus make room for a fresh stock of store ewes to

be fed, as well as their lambs reared, and both fattened annually.

Winter Vetches cannot be sown too early after the corn harvest is finished, though they are generally sown at any time during the latter half of August, the whole month of September, or the first half of October, and in a mild season they will bear sowing even a fortnight later. If the soil be poor, or the situation elevated and exposed, sow in August; and upon every farm it is advisable to sow some of them early and others late, in order to have a succession of green food the ensuing summer.

Spring Vetches produce rather a lighter crop than the winter sort, and are subject to more risk from a dry summer. There is no difference in their use or value per ton; but the spring sort coming to maturity two or three weeks later, makes it convenient and advisable to grow some of each, in order to have a succession of them for green food all the summer. They may be sown all the spring and summer from February till the middle of July, but the success of late sowing will depend on a showery season.

Immediately after corn is carried from a field, or even part of a field, in August, or early in September, scarify and cleanse whatever of them, having no Clover or other seeds among them, may be intended for Vetches. Cart on it such manure as can be spared, up to 10 or 15 tons of well-rotted dung per acre, and spread it, sowing the Vetches upon it; these (the seeds and manure) should then be immediately covered by the thin and narrow slices of a very small plough. Or what is generally better, plough in the dung, give the land a slight harrowing, and then drill the Vetches in rows 6 or 8 inches apart. If ploughed and pressed, and then sown broadcast, a very light harrow, or, if the soil be friable, even a bush harrow may close the seams. These operations will cost about 10*s*. per acre. But where no manure is used the seeds may be harrowed or scuffled in without ploughing, at so small a charge as 1*s*. per acre.

A proper quantity of seed is three bushels of Winter Tares alone, or two bushels and a-half of Tares mixed with half as much Winter Barley or Rye per acre.

After the seed is covered, cleanse the water-furrows, in order to render the land dry during the winter.

Notices to Correspondents.

IMPORTS, 7 months, 1866. *E.*

ARTICLES.		Importations. 1865.	1866.
Animals Living — Oxen, Bulls, and Cows	No.	92,116	86,177
Calves	,,	27,475	10,957
Sheep and Lambs	,,	322,074	472,545
Swine and Hogs	,,	50,422	33,899
Ashes, Pearl and Pot	cwts.	74,946	55,850
Bark, for Tanners' or Dyers' use	,,	180,598	222,661
Peruvian	,,	8,757	7,948
Bones (burnt or not, or as Animal Charcoal)	tons	33,759	43,872
Flax	cwts.	822,680	691,350
Guano, from West Coast of Africa	tons	2,719	38
United States	,,	1,082	1,750
Peru	,,	111,222	64,611
Bolivia	,,	5,432	—
British and West India Islands	,,	3,174	1,908
Other countries	,,	5,133	10,188
Hemp	cwts.	387,172	432,847
China Grass	,,	—	50
Jute and substances of the nature of Hemp	cwts.	684,367	1,070,228
Hops	,,	43,303	25,312
Oil Seed Cakes	tons	51,595	63,992
Potatoes	,,	544,003	346,712
Provisions—Bacon and Hams	cwts.	464,268	486,888
Beef, salt	,,	143,850	140,803
Pork, salt	,,	113,520	131,681
Butter	,,	544,403	545,480
Cheese	,,	326,456	271,128
Eggs	No.	233,760,000	265,760,000
Lard	cwts.	81,140	205,530
Saltpetre	,,	82,300	110,011
Cubic Nitre	,,	480,488	562,936
Seeds—Cotton	tons	69,530	75,347
Clover	cwts.	111,648	176,783
Flaxseed and Linseed	qrs.	610,936	445,181
Rape	,,	53,816	186,873
Wool — Sheep and Lambs': from Europe	lbs.	11,558,481	17,439,552
British Possessions in South Africa	,,	12,076,132	10,54,408
British India	,,	7,049,209	9,659,823
Australia	,,	72,596,701	76,520,409
Other Countries	,,	10,658,610	11,304,165
Alpaca and the Llama Tribe	,,	1,323,862	1,476,762
Yeast, dried	cwts.	67,436	64,336
Corn—Wheat from Russia	,,	3,510,434	3,988,969
Prussia	,,	2,729,000	2,450,902
Denmark	,,	297,112	244 932
Schleswig, Holstein, & Lauenburg	,,	159,211	117,536
Mecklenburg	,,	319,333	455,222
Hanse Towns	,,	267,091	439,720
France	,,	678,791	3,162,206
Turkey & Wallachia & Moldavia	,,	407,469	300,973
Egypt	,,	—	8,738
United States	,,	405,307	323,160
British North America	,,	101,594	8,789
Other Countries	,,	676,667	2,233,274
Barley	,,	4,826,906	4,368,306
Oats	,,	4,108,641	4,506,907
Peas	,,	282,206	709,457
Beans	,,	496,665	280,446
Indian Corn or Maize	,,	2,645,827	7,653,850
Wheatmeal and Flour—From Hanse Towns	cwts.	140,041	160,477
France	,,	1,409,217	2,974,122
United States	,,	150,188	168,949
British North America	,,	70,464	9,166
Other Countries	,,	83,889	143,108
Indian Corn Meal	,,	4,847	9,979

OILCAKE, &c.—*Irish Subscriber.* About one-third of this year's corn and cake and manure bill should be charged on next year's crops. The proportion varies with different substances; for instance, bones may be charged over three years, while nitrate of soda should not be allowed anything at all for in the second year. We hope to give an account of the Tenant Right customs which define their practice in these respects next week.

THE CELEBRATED

AMERICAN HORSE POWER.

PARTICULARLY ADAPTED TO

ALL KINDS OF FARM WORK.

IT WILL THRESH GRAIN,

GRIND OR CUT FEED FOR CATTLE,

SAW WOOD,

DO HEAVY CHURNING,

Or any kind of work a Horse Power can be used for.

One Horse only would be sufficient for most of these operations.

A few points of Superiority over all other Horse Powers, as practically proved, to wit—

It is Less Heavy and Cumbersome,

Not at all Liable to be Racked or Injured by Moving,

Is very Quickly and Easily set up or Worn,

No Joints Loosened by Setting Up or Taking Down,

Will Cost Less for Oil, Lard, or Tallow, to Run it,

Will Cost Less for Repairs and Last Longer,

Not Liable to serious Breakage from Great or Sudden Strains,

Home Blacksmithing or Carpentry will suffice for almost any Carelessness,

No Danger of Long Suspensions of Work from Breakdowns,

Has no Bridge, Rod, or Belt, or any other part of the Machine for the Horses to Step over every Turn they make (a great advantage),

Will do nearly Double the Work of other Sweep Powers with the same Team,

Is the Lowest Priced of any Power in the Market,

Capable of doing either an Equal Variety or an Equal Amount of Work.

Especially adapted for the Colonies.

A sample of the above most admirable and useful HORSE POWER, in complete working order, with Drag Saw attachment, Saw-bands, &c., &c., just received from New York.

This Machine can be worked with one, three, or six horses, as may be required, and will give almost any desired speed for the various kinds of work to which it may be applied.

It has received a host of American Testimonials and Medals from Agricultural Societies.

Price only £30, complete as above.

CHARLES POMEROY BUTTON,

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MOULE'S PATENT

EARTH CLOSET COMPANY

(LIMITED),

LATE WHITE AND CO.

OFFICE, 29, BEDFORD STREET, STRAND, W.C.,

where the Closets may be seen, and every information obtained

MANAGER, MR. T. M. EVANS.

MOULE'S PATENT EARTH CLOSETS.—This invention effectually remedies the well-known evils arising from the common Cesspool Privies; and is far superior to the Water-closet when the Drainage is injurious or defective or the supply of Water imperfect, while it effectually prevents the Offensive Smell consequent on the use of the Ordinary Commode in Bed Rooms, Hospital Wards, &c. It is founded upon the well-known power of Earth as a Deodorising Agent. The practical application of this Power has been successfully carried out by the present invention; a given quantity of Earth destroying all Smell, and entirely preventing Noxious Vapours and other discomforts, inevitable where there is no water, or where the supply of water is insufficient & defective. Apart from its superiority over the Water System in destroying the Smell, the Earth System is very Economical, there being no expensive cistern, or pipes likely to burst in frosty weather and the Product being a Manure of value to farmers or gardeners. The supply of the Earth and its removal are attended with no more inconvenience than the supply of coal and the removal of ashes.

MOULE'S PATENT EARTH CLOSETS.—CHOLERA.—The Cholera may be greatly checked in its progress, and at all times the Health of Human Beings greatly promoted, by the adoption of a Plan which is in itself perfectly simple and within the reach of every one. The Secretions of Human Beings are among the most active agents in spreading and fostering Disease when they are allowed to ferment and the exhalations from them are suffered to escape, or when they Drain into Household Wells or into Streams which supply Water to the neighbourhood. For the Cholera Room, or Hospital, or Prison, or Private House these Earth Closets are of the most simple and efficient construction. They may be used as a Receptacle both of Liquid and Solid Secretions, in which those Secretions can be immediately covered with Earth so that all Fermentation is prevented, and no Exhalation or Offensive Smell can escape into the room, and no Offensiveness is found in the Removal of the Secretions. The Manure may be applied at once to the Garden or Field, or may be stored to accumulate under cover until wanted for use. The accumulation is quite Inodorous, and becomes rapidly dry

MOULE'S PATENT EARTH CLOSETS.

Extract from Report on Indian Gaols, by Dr. MOUAT, *Inspector-General of Gaols in India.*

"The papers printed in the Appendix show that the Dry Earth System of the Rev. Mr. Moule has been attended with success, that it has removed the greatest defect in the sanitary arrangements of Indian Prisons; that it has led to a remarkable change in the condition of such extremely unhealthy Gaols as Monghyr and Gya, and that it is without exception the greatest public benefit conferred by a private individual in a matter so essential to public health that I am acquainted with."

MOULE'S PATENT EARTH CLOSETS may be applied to any Closet at trifling cost.

MOULE'S PATENT EARTH CLOSETS, the best Night Commodes.

MOULE'S PATENT EARTH CLOSETS.—No Bad Smells.

MOULE'S PATENT EARTH CLOSETS.—Earth recommended by the Privy Council in their "Cholera" Circular as a Deodoriser.

MOULE'S PATENT EARTH CLOSETS.—A valuable Manure saved, and Fertility to the Soil ensured.

MOULE'S PATENT EARTH CLOSETS.—No Water Pipes to get out of order.

MOULE'S PATENT EARTH CLOSETS.

From JOHN WILSON, Esq., *Edington Mains.*

"Hitherto, we regret to say, that the numerous and costly attempts that have been made to separate the fertilising matter from the water in which it is contained, have proved utter failures. The most feasible plan for the utilisation of night-soil is that by night forward by the Rev. Henry Moule, of Fordington Vicarage, Dorset."

MOULE'S PATENT EARTH CLOSETS

From J. SMEDLEY, Esq., *Matlock Bank Hydropathic Establishment, Ruber Castle, Matlock, and Lea Mills, near Derby, May* 31, 1866.

"GENTLEMEN,—I find your Patent Earth Closet a perfect success. It may be used in any room without the slightest effluvium being perceived. "J. SMEDLEY."

MOULE'S PATENT EARTH CLOSETS.

From J. G. TALBOT, Esq., *New Falconhurst, Edenbridge, Kent, May* 1, 1866.

"I have very great pleasure in bearing my testimony to the great value of the Earth System, as carried out by Messrs. White & Co., according to the Rev. H. Moule's invention. I have had personal opportunities of testing the system, having set up several Closets about the house, stables, and garden. The wonderful effect of the System in removing the great nuisance of bad smells, which are almost inseparable from the ordinary privies, as well as of the great value of the Manure which the Earth System renders perfectly inoffensive, makes it a matter of surprise that the arrangement is not universally adopted. I shall have great pleasure in recommending Messrs. White & Co.'s System to any one who may be influenced by my opinion. "JOHN G. TALBOT."

MOULE'S PATENT EARTH CLOSETS.—

From OSWALD FOSTER, Esq., *Hitchin.*

"Hitchin, March 19, 1866.

"To MESSRS. WHITE & CO.—Your Earth Closets have been in use for two years in the Sick Wards at the Hitchin Union House. As Medical Officer at that establishment, I can speak with the greatest confidence of the vast convenience and comfort they have been to the inmates, indeed, to all connected with the Institution, as, since their introduction, the annoyance and evil of disgusting effluvia attendant upon the use of the old-fashioned Commodes have been avoided. The prejudice in the minds of many, not only among the poor but the more educated, at the introduction of anything new is patent to most; but I feel sure that any attempt to return to the old Commode would create great dissatisfaction among the occupants of our Sick Wards. "OSWALD FOSTER, Surgeon."

MOULE'S PATENT EARTH CLOSET COMPANY

(LIMITED),

29, Bedford Street, Strand, W.C.

WM. SMITH, HOTHOUSE BUILDER, Turnham Green, late of Hammersmith, begs to inform the Public that he will be glad to make GREENHOUSES or HOTHOUSES, of good Yellow Deal, Glazed with 21-oz. Glass, Painted three times, Fitted together all ready for fixing, of any size, at 1s 8d per foot superficial. Also that he has ready for use 16 GREENHOUSE LIGHTS, 6ft 10in. long by 4ft 8in. wide, 21-oz. glass, price 27s. Also several lots of smaller size; and a large stock of 1, 2, 3, and 4 Light GARDEN FRAMES, made portable, kept in stock

Estimates given for efficiently Heating by Hot Water in any part of the Kingdom.

FOR SALE, a WEEKS' Large TUBULAR BOILER, sufficient to Heat from 100 to 1000 feet of Piping. To be Sold Cheap.

Apply to Mr. WEARE, Post Office, Nursling, Southampton.

To Noblemen and Gentlemen.

TO BE SOLD, Cheap, a handsome GOTHIC HOUSE, made of the best Yellow Deal, 7 feet square; the Sills are of Oak, 6 inches square; and a Room at the rear suitable for a Cloak Room. The Structure is suitable for a Porter's Lodge, or a quiet retreat for an Estate or a handsome House

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Croquet, Cricket, and Garden Tents.

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Temperate Rooms to Hire for Fêtes, Balls, Dinners, &c.

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Descriptive, Illustrated, and Priced Catalogues Free per Post. Special Drawings when required. The best Steam Threshing Machinery made

AUSTIN'S ARTIFICIAL STONE, INVENTED 1826. The entire Stock of this Manufactory comprises

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About 200 different FOUNTAINS.

74 STATUES from the Antique, and by Modern Artists, and SMALL FIGURES of CHILDREN

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GARDEN SEATS.

14 BASKETS, from 12s to 50s each.

SHELLS, suitable either for WATER or ROCK PLANTS, from 18 inches to 12 feet diameter.

JARDINIÈRES, or large BOWLS for MASSES of FLOWERS

52 FIGURES of ANIMALS and BIRDS.

ORNAMENTAL RIMS to WATER BASINS.

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CRESTS and other ORNAMENTS for GATE PIERS.

BALUSTRADING, in various styles.

TRIPOD, and other ANTIQUE PEDESTALS.

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FOWLER'S PATENT STEAM PLOUGH and CULTIVATOR may be SEEN at WORK in every Agricultural County in England.

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Steam Cultivation.

WANTED (Second hand), SMITH'S WINDLASS, ANCHOR, PORTERS, and STEEL ROPE, if not much worn; also TWO-FURROW PLOUGH.

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Asphalte Roofing Felt,

ONE PENNY per Square Foot.

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E. T. ARCHER'S "FRIGI DOMO." Patronised by Her Majesty The Queen, the Duke of Northumberland for Syon House, His Grace the Duke of Devonshire for Chiswick Gardens, Professor Lindley for the Horticultural Society, Sir Joseph Paxton for the Crystal Palace, Royal Zoological Society, &c.

PROTECTION from the SCORCHING RAYS of the SUN

"FRIGI DOMO," a Canvas made of Patent prepared Hair and Wool, a perfect Non-conductor of Heat and Cold, keeping, wherever Plants, Fruit, &c., are required to be kept, a Temperature of Uniform Moisture and Equability, for Preserving Fruits and Flowers from the Scorching Rays of the Sun, from Wind, from Attacks of Insects, and from Morning Frosts. To be had in any required lengths

Two yards wide .. .. 1s. 9d. per yard run.
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An improved make, 2 yards wide .. 1s. 6d. per yard.
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"FRIGI DOMO" NETTING, 2 yards wide, 1s. 6d. per yard run.

ELISHA THOMAS ARCHER, Whole and Sole Manufacturer, 7, Great Trinity Lane, Cannon Street, City, E.C., and of all Nurserymen and Seedsmen throughout the Kingdom.

"It is much cheaper than Mats as a covering."

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J. WARNER AND SONS

Have much improved the construction of their

GARDEN ENGINES

in some important particulars for this Season.

They may be obtained of the Trade generally throughout the Kingdom at the following prices:—

No. 547. WARNER'S best ENGINES, in Wood Tubs, and fitted with WARNER'S Registered Spreaders—

24 Gallons,	£6	10	0
14 ,,	5	10	0

No. 547A. WARNER'S strong ENGINES, in Galvanised Iron Tubs, well painted—

10 Gallons,	£2	19	0
16 ,,	3	14	0
24 ,,	4	19	0
28 ,,	5	10	0

No. 579½. WARNER'S WATER BARROWS, thoroughly Galvanised and well painted—

20 Gallons,	£2	2	0
30 ,,	2	13	0
38 ,,	3	17	0
50 ,,	5	12	0

The 50-Gallon Barrow is made extra strong throughout, and fitted with handle for two men.

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DESCRIPTIVE PRICE LISTS forwarded on application.

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AQUAJECT

Is recommended to the notice of Horticulturists as possessing the following advantages:—It is simple in construction, portable, and easily worked. It throws a continuous stream, and is low in price.

The Aquaject, 30s.

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RUBBER HOSE in all sizes.

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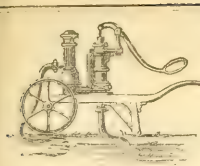

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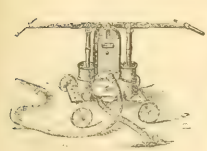

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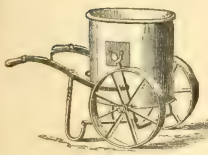

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☞ *Further particulars, Estimates, and Illustrated Price Lists on application*

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No. 38.

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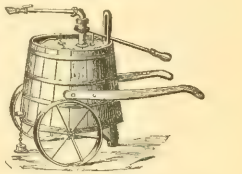

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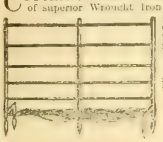

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GREAT EXHIBITION OF 1851, PRIZE MEDAL, 1862.

PRICES PER LINEAL YARD 24 INCHES HIGH.

Size of Mesh.	Mostly used for	Light.		Medium		Strong.		Extra Strong	
		Jap Gal		Jap Gal		Jap Gal		Jap	Gal
in.		s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
2½	Dogs or Poultry	0 2½	0 3½	0 3½	0 4½	0 4½	0 5½	0 5	0 6½
2	Poultry	0 3	0 3½	0 3½	0 4½	0 4½	0 5½	0 5	0 7
1½	Small Rabbits, Hares, &c.	0 3½	0 4½	0 4½	0 5½	0 5½	0 6½	0 6	0 8
1¼	Smallest Rabbits	0 4½	0 5½	0 5½	0 6½	0 6½	0 8	0 8	0 10
1	Pheasantries, Small Birds, &c.	0 8	0 10	0 9½	1 0½	1 1½	1 4	1 7	1 10
¾	Aviaries, Window Guards, &c.	0 11	1 1½	1 1	1 4	1 4	1 7	...	...
⅝	Aviaries, Window Guards, &c.	1 7	1 10	1 10	2 0	2 0	2 3	2 3	2 6
½	Aviaries, &c.	2 5	2 6	2 6	2 8	...	...	...	...

Quantities of 100 Yards or upwards delivered free at all Railway Stations and Shipping Ports in England.

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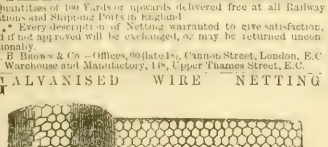
GALVANISED WIRE NETTING



PRICES OF NETTING, 24 INCHES HIGH.

Size of Mesh.	Proof against	Light, per Yard.	Medium, per Yard.	Strong, per Yard.	Extra strong per Yard.
2½ inch	Hares, Dogs, Poultry, &c.	3½d.	4½d.	5½d.	6½d.
2 inch	All kinds of Game	3½d.	4½d.	6½d.	7d.
1½ inch	Small Rabbits, Hares, &c.	4½d.	6½d.	6½d.	8d.
1¼ inch	Ditto Ditto	6½d.	6½d.	8d.	10d.

100 Yards and upwards Carriage Free.
GALVANISED IRON WATER CISTERNS.
GALVANISED CABLE STRAND FENCING.
GALVANISED IRON PUMPS.
GALVANISED SWING WATER BARROWS.
GALVANISED IRON ROOFS and BUILDINGS.
LAWN MOWERS, GARDEN ROLLERS.
ASPHALTE ROOFING FELT, 1d. per square foot.
HURDLES, HURDLES, HURDLES, 1s. 9d. to 3s. 9d. per yard.

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POWERFUL GARDEN ENGINE, suitable for the above, price 45s.

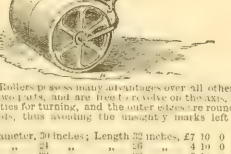
IMPROVED WATER and LIQUID MANURE CARTS.
Various sizes on approbation.

Manufactured by W. S. HOLMAN, Horse Lane Iron Works, Norwich.

SWING WATER BARROW.

THIS is the best and cheapest article yet introduced for use in Gardens, Farm Yards, &c. The Water may be tipped out, or the Tub tilted and poured out, or be merely raised to the Handle it can be placed on the ground, and the Frame detached. To hold about 20 or 30 gallons, price 45s. Carriage paid to any station on Great Eastern Line.

GREEN'S IMPROVED NEW PATENT GARDEN ROLLER



The above Rollers possess many advantages over all others. They are made in two parts, and are fixed revolve on the axles, affording greater facilities for turning, and the outer edges are rounded off or grooved inwards, thus avoiding the unsightly marks left by other Rollers.

Diameter.	Length		
20 inches;	32 inches,	£7	10 0
" 24 "	" 26 "	4	10 0
" 30 "	" 32 "	5	10 0
" 16 "	" 17 "	3	15 0

Prices for Rollers fitted with Shafts suitable for Pony or Horse Power, free on application.

Deliveries carriage paid to all the principal Railway Stations and Shipping Ports in England.

THOMAS GREEN & SON, Smithfield Iron Works, Leeds; 54 and 55, Blackfriars Road, London, S.; and 19, Eden Quay, Dublin.

N.B. All Orders executed on the day they are received.

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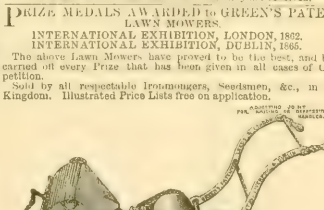
INTERNATIONAL EXHIBITION, DUBLIN, 1865.

The above Lawn Mowers have proved to be the best, and have carried off every Prize that has been given in all cases of Competition.

Sold by all respectable Ironmongers, Seedsmen, &c., in the Kingdom. Illustrated Price Lists free on application.



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HURDLES and CONTINUOUS IRON and WIRE FENCING.
Palisading, Entrance and Field Gates. Plain and Galvanised Wire Netting.

GREEN'S PATENT LAWN MOWERS and GARDEN ROLLERS.
Garden Engines, Syringes, Water Barrows, Ornamental Garden Seats, Chairs, Tables, Iron Fountains, Vases, &c.
IRON and BRASS BEDSTEADS, in great variety.
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IMPROVED SAUSAGE MACHINES and FILLERS.
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Market Garden Ground.

TO BE LET, 36 ACRES of excellent LAND, at Barnes, within 5 miles of Covent Garden. Possession at Michaelmas.

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GREY DORKING FOWLS, of purest breed, in any numbers.

Imported TOULOUSE GEESE, the largest and most productive breed known.

Imported NORFOLK TURKEYS, large, hardy, and good breeders.

AYLESBURY and ROUEN DUCKS.

Imported BELGIAN HARE RABBITS, for size and early maturity.

BRAHMA-POOTRA, CREVECŒUR, and LA FLÈCHE TOWLS, for cossing purposes.

Priced Lists and Estimates on application to

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Lincolnshire Long-woolled Rams.

MR. JOHN CLARKE, of Long Sutton, Lincolnshire, will be happy to show his RAMS for SALE or LETTING, on WEDNESDAY, September 12, or any subsequent day during the season. Every facility will be given to deliver the Sheep safely to those Gentlemen who may favour him with their patronage.

Mr. C. will be pleased to supply Gentlemen resident in any part of the Kingdom with SHEARLING RAMS at moderate prices.

Sales by Auction.

Shropshire Sheep.

ELFORD PARK, TAMWORTH.

IMPORTANT ANNUAL SALE OF PURE-BRED SHROPSHIRE RAMS AND EWES.

MR. JOHN B. LYTHALL (Secretary to the Birmingham Cattle Show) informs the Breeders and Feeders of Pure-bred Sheep that he will SELL by AUCTION, on WEDNESDAY, Sept. 12 next, at 2 o'Clock (Luncheon at 12), Forty first-class RAMS, and 150 large-sized healthy EWES, in consequence of Mr. Lythall's "Volunteer" (the property of Mr. G. A. May, "Pitchcroft," bred by Mr. Ashley, winner at Royal Agricultural Show, was one of the best and the best Shropshire Rams ever shown. "Volunteer," bred by Mr. Thorne, winner at the Royal Agricultural Show at Plymouth, was bred by Mr. Thorne, and Being Pure are of large frame, pure blood, and fine constitution, and will fatten at any age. The Rams were shorn bare during the first week in May, and are offered on their own merits. They weighed are from 20 lb. to 60 lb. per qr.

Elford Park is one mile from the Hawkesyn and Croxall Stations on the Midland, and two miles from Alrewas Station on the South Staffordshire Railway.

By permission of the Midland Railway Company, the Train leaving Birmingham at 9.25, and Tamworth at 10.17, will call at Hawkesyn on the morning of the Sale.

Conveyances will meet the Up and Down Trains at Tamworth at 10.50 and 12.28 to convey parties to the Sale free of charge.

Coleshill, Faringdon, Berks.

IMPORTANT SALE OF SHORT-HORNED CATTLE.

MR. STRAFFORD is favoured with instructions to SELL by AUCTION, on the premises, as above, on THURSDAY, September 13, a choice selection of about 60 HEAD of SHORT-HORNED BULLS, COWS, and HEIFERS, from the Coleshill Herd, the property of the Right Hon. the Earl of Radnor, which has been carefully bred during the last 20 years from Herds of great repute. Many of the animals are by the celebrated Bull Dukedom (12,720), Wolfsbane (15,519), and Fairleigh (19,714), and of the same blood as the Heifer that so highly distinguished herself last year at the Smithfield Club Show, by winning the First Prize and Silver Medal, with the £40 Cup for the best Cow or Heifer exhibited in any of the Classes. They are perfectly healthy, in good breeding condition, and are sold in consequence of excess of Stock. The Cows and Heifers are mostly in Calf to Second Baron Wetherby (24,243), a Son of Captain Gunter's Seventh Duke of York (17,754).

Catalogues, with Pedigrees, may be had on application to Mr. STRAFFORD, 12, Euston Square, London, N.W.; or of Mr. Moore, at Coleshill, near Highworth, Wilts.

Fulham, Middlesex.

TO MARKET GARDENERS, AND OTHERS.

MR. W. T. ATWOOD is instructed by Mr. G. Bagley to SELL by AUCTION, on the premises, Percy Cross, Fulham, S.W., on TUESDAY, September 18, and following day, at 12 o'Clock each day, the whole of the valuable LIVE and DEAD STOCK and remaining CROPS of a Market Gardener.

The Stock includes 5 powerful Draught Horses, 4 capital built Spring Market Waggons, Lurch Van, 10 Tumbril, long, Market, and other Carts, Plough by Howard, Harrows, a variety of new and other Tools, Ware Tubs, Barrows, Fruit Ladders, large stock of Baskets, 200 Light Boxes and Lights and Hand Glasses, Seeds, quantity of Manure, and a variety of other articles.

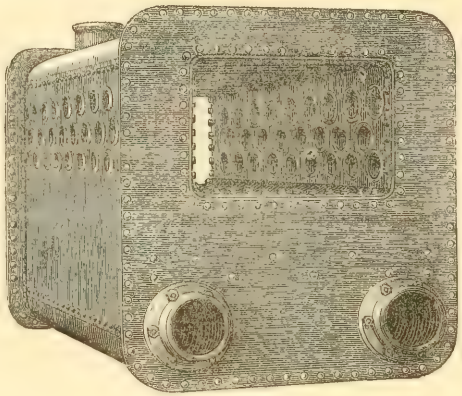
The Crops comprise excellent Seakale Roots for Forcing, Rhubarb, Asparagus, Parsnips, Cabbage, and other Plants.

May be viewed the day before and Morning of Sale.

BY HER MAJESTY'S ROYAL LETTERS PATENT.

ORMSON'S

NEW PATENT WROUGHT IRON MULTITUBULAR HOT-WATER BOILER.



ELEVATION.

THE GREAT ADVANTAGES OF THIS BOILER ARE :-

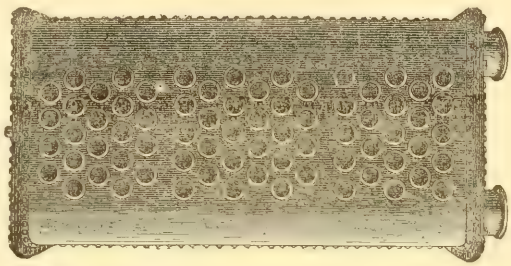
1st. Being entirely of WROUGHT-IRON, its safety from leakage and cracks (from expansion or contraction), a danger to which all Cast-iron Boilers are more or less liable.

2d. An immensely increased surface exposed to the direct action of the fire, which passes through the tubes, thereby giving a wonderfully increased amount of power.

3d. A great saving in the consumption of fuel. Its facility for banking up the fire. Its peculiarly well-adapted construction for slow combustion, and burning many hours without attention, at a trifling expense.

4th. Its extraordinary power and safety for carrying out the One Boiler System, and small space and depth for setting.

One of these BOILERS Heated the GREAT ORCHID TENT, 560 feet long, and 40 feet wide, at the INTERNATIONAL HORTICULTURAL EXHIBITION, with a remarkably small quantity of fuel, and gave the greatest satisfaction. Was highly approved of by many Scientific Men and Practical Horticulturists.



UNDERSIDE OF BOILER AND PLAN OF TUBES.

The great Power, Economy, and Safe Working of these BOILERS has been thoroughly tested for the last 12 months at the Horticultural Gardens, Chiswick, where they may be seen in action, and also at other places in various parts of the country.

THEY ARE MADE OF VARIOUS SIZES. PRICES ON APPLICATION.

HENRY ORMSON.

TRULY grateful for the very liberal and kind patronage bestowed on him, begs most respectfully to inform the Nobility, Gentry, &c., that it is his determination to spare no pains to merit a continuance of their favours; and, that he may be enabled to execute his extensive and increasing orders punctually, and at the lowest possible cost (agreeably with the best materials and workmanship), he has erected a most complete set of Steam-Power Machines, peculiarly adapted for the purposes of his Trade.

H. O. begs to call attention to his superior manner of Erecting every description of Horticultural Building, and trusts—by unremitting personal attention to the details of his business, by using only the very best materials, by employing the most skilful and efficient workmen, and by the most moderate possible charges, to merit a continuance of the patronage so kindly and liberally bestowed on him for many years past.

In the **BUILDING DEPARTMENT** his object will be (having a practical knowledge of Horticultural Science), to adapt all Erections to the particular purposes for which they are required. He will devote equal attention to the plain, inexpensive, practical Erections of Pits, Orchard Houses, Green-houses, Vineries, &c., as to the more elaborate and architectural erections of Conservatories, Winter Gardens, &c., either in Wood or Iron.

The **HEATING DEPARTMENT** always engages his especial personal attention, and he feels justified in saying that in simplicity, safety, durability, and economy of fuel, combined with thorough effectiveness, his system cannot be surpassed.

Knowing the absolute necessity for well regulated and properly arranged Ventilation, he makes it a matter of first consideration.

H. O. having competent Draughtsmen and an efficient Office Staff, is prepared and will be happy to forward Plans, Estimates, and Specifications by post or otherwise, and to wait personally on any Ladies or Gentlemen who may desire to see him on their Grounds.

H. O. is also in the habit of furnishing Estimates, and building from Drawings prepared by Architects, and is kindly permitted to refer to many of the most eminent in the profession. He has also much pleasure in stating that he can refer to many of the Seats of the Nobility and Gentry in all parts of the kingdom, where he has been employed to build some of the finest and best arranged Glass structures known at the present time.

HENRY ORMSON, F.S.A.,

HORTICULTURAL BUILDER TO HER MAJESTY, AND HOT-WATER APPARATUS MANUFACTURER TO THE COMMISSIONERS OF HER MAJESTY'S ROYAL PALACES AND PUBLIC BUILDINGS, AND TO THE ROYAL HORTICULTURAL SOCIETY,

STANLEY BRIDGE, KING'S ROAD, CHELSEA, LONDON, S.W.

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THE GARDENERS' CHRONICLE
AND
AGRICULTURAL GAZETTE.

A Newspaper of Rural Economy and General News.

No. 37.—1866.] SATURDAY, SEPTEMBER 15. {Price Fivepence. {Stamped Edition, 6*d.*

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ROYAL HORTICULTURAL SOCIETY, SOUTH KENSINGTON.

NOTICE.—A MEETING of the FRUIT and FLORAL COMMITTEES will be held on TUESDAY NEXT, the 18th inst, at 11 o'Clock; LECTURE at 3 o'Clock.

AGRICULTURAL HALL, ISLINGTON.—On MONDAY, Sept. 24, and two following days, an EXHIBITION of MISCELLANEOUS PLANTS and CUT BLOOMS will be held in connection with the Workman's Exhibition, now open.

Gardeners and Nurserymen willing to assist Working Men in this undertaking are requested to apply to the SECRETARY, Barford Street, N., or to Mr. S BROOME, Temple Gardens, E.C.

Rose Nurseries, Tunbridge Wells.

EDWIN HOLLAMBY respectfully begs to announce that his Stock of ROSES are as usual beautiful healthy good-rooted plants. This magnificent Collection contains nearly every variety worthy of cultivation. Early orders are solicited.

Roses in Bloom.

JAMES MITCHELL has the honour of informing his kind patrons that his magnificent COLLECTION is NOW in FINE BLOOM. Pitt Down Nurseries, Maresfield, Sussex.

The London, Brighton, and South-coast Railway. Two and a-half miles from the Uckfield Station.

Roses in Bloom.

WM. PAUL'S ROSES are NOW in FULL BLOOM. Inspection respectfully invited. Trains almost hourly from Shoreditch to WALTHAM STATION.

PAUL'S Nurseries, Waltham Cross, N.

New Tea Rose.

AMBROISE VERSCHAFFELT, NURSERYMAN, Ghent, Belgium, begs now to offer his new fine TEA ROSE, ISABELLE SPRUNT, figured in the July Number of the "Illustration Horticole." Fine strong plants, 5*s.* each.

N.B. A Coloured Drawing may be obtained on application as above.

Gladioli, Roses, and Pæonies.

EUGENE VERDIER, Fils Aîné, NURSERYMAN, 3, Rue Dunois, Paris, has the honour to inform his numerous Friends and Patrons that he is now publishing his TRADE CATALOGUE of NEW GLADIOLI, ROSES, and PŒONIES, obtainable direct of him, or of his Agents, Messrs. BETHAM & BLACKITT, Cox's Quay, Lower Thames Street, London, E.C., upon pre-paid application.

Gladioli.

CHARLES VERDIER (late VICTOR VERDIER and CIE. VERDIER), 12, Rue de la Reine Ste Marcelle aux Chevaux, 32), Paris, has just published his CATALOGUE of GLADIOLI, comprising the novelties of the season, and which may be obtained either from M. VERDIER, or from R. SILBERRAD & SONS, 6, Harp Lane, Great Tower Street, London, E.C.

Ficus Chauvierii.

A. VAN GEERT, NURSERYMAN, Ghent, Belgium, begs to offer this new fine Plant, with splendid large leaves, and far superior in beauty than the old known Ficus elastica.

Fine stock of good young plants, 15*s.* each, free to London.

AMBROISE VERSCHAFFELT, NURSERYMAN, Ghent, Belgium, begs to announce that his NEW GENERAL CATALOGUE, No. 73, is just out, and can be obtained Gratis at his Agents, Messrs. R. SILBERRAD & SON, 6, Harp Lane, Great Tower Street, London, E.C.

New Seeds for Autumn Sowing.

SUTTON'S AUTUMN CATALOGUE of GARDEN and FLOWER SEEDS for AUTUMN SOWING is now ready, and may be had gratis and post free on application to

SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

HARDY FLOWER SEEDS for AUTUMN SOWING (Post Free).—Twelve large Packets of the most showy sorts of HARDY ANNUALS, including the splendid new Scarlet Sweet Pea Invincible, 5*s.* the 12 sorts; or the Scarlet Invincible Sweet Pea alone, 6*d.* and 1*s.* per packet, post free.

SUTTON & SONS, Reading, Berks.

Notice.

60-PAGE CATALOGUE of NEW PLANTS of 1866 now ready, free for one stamp.

WM. DILLISTON, Munro Nursery, Sible Hedingham, Essex.

New General Plant Catalogue.

B. S. WILLIAMS' NEW PLANT CATALOGUE, containing many really good Novelties, and carefully selected LISTS of STOVE, GREENHOUSE, and HARDY PLANTS, is now ready and will be forwarded post free to all applicants.

Victoria and Paradise Nurseries, Holloway, London, N.

British Fern Catalogue.

ROBERT SIM can now send, post free for six postage stamps, Part I. (British Ferns and their varieties, 36 pages including prices of Hardy Exotic Ferns) of his NEW and PRICED DESCRIPTIVE CATALOGUE of BRITISH and EXOTIC FERNS, No. 7.

*** Part II. (Exotic Ferns) will be issued as early as possible.

Foot's Cray Nursery, S.E.

Hybrid Rhododendrons.

WILLIAM FLETCHER begs to inform the Trade that he has a Splendid Stock of the above to offer this season, well set with Bloom Buds, with from 6 to 12 Buds on each plant suitable for forcing. CATALOGUES sent free on application.

Ottershaw Nurseries, Chertsey, Surrey.

Hyacinths, &c.

WM. PAUL'S SELECT LIST of HYACINTHS, EARLY TULIPS, and other SPRING-FLOWERING BULBS and PLANTS, is now ready and will be forwarded post free on application.

PAUL'S Nurseries and Seed Warehouse, Waltham Cross, London, N.

Dutch and Cape Bulbs.

HOOPER AND CO.'S CATALOGUE (Illustrated) of the above is now published, and may be had post free for Six Stamps. Gratis to Customers.

HOOPER & Co., Covent Garden, London, W C.

Dutch Flower Roots.

B. S. WILLIAMS' NEW and DESCRIPTIVE CATALOGUE of the above is now Ready, and can be had post free on application.

Victoria and Paradise Nurseries, Holloway, London, N.

JAMES CARTER AND CO.'S First Importation of DUTCH and CAPE BULBS has arrived in fine condition, and the Bulbs are much finer than usual.

JAMES CARTER & Co., 237, 238, and 261, High Holborn, W.C.

Dutch Bulbs.

WM. WOOD AND SONS first Importation of the above have arrived in splendid condition.

DESCRIPTIVE CATALOGUES on application.

Woodlands Nursery, Maresfield, Uckfield, Sussex.

J. SCOTT has received large Consignments of DUTCH FLOWER ROOTS, which he is offering at extremely low prices. A PRICED CATALOGUE, full of Notes on the Easy Culture of Bulbs, and other information sent free on application to

J. SCOTT, the Seed Stores, Yeovil, Somerset.

The Best Twelve Hyacinths Imported by SUTTON AND SONS,

for Twelve Shillings.

SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

MIXED HYACINTHS, for Beds or Open Borders, all colours, of various shades.

21*s.* per 100 (carriage free), or 3*s.* per dozen.

SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

Dutch Flower Roots.

THE PROPRIETORS of ST. JOHN'S NURSERY beg to intimate that their CATALOGUE is now ready, and may be had on application.

WM. BARRATT, Wakefield.

Hyacinths and other Dutch Bulbs.

WM. CUTBUSH AND SON beg to acquaint their numerous Patrons that they have received their usual Consignment of Choice HYACINTHS, TULIPS, CROCUSES, &c.

PRICED DESCRIPTIVE CATALOGUE post free on application

Highgate Nurseries, London, N.

Dutch Bulbs and other Flower Roots.

CHARLES TURNER'S DESCRIPTIVE CATALOGUE of the above is now ready, and may be had on application

The Roots are fine this season, and early Orders are respectfully solicited to ensure strong Bulbs

The Royal Nurseries, Slough.

Hyacinths and other Flower Roots.

JOHN FRASER begs to intimate that his CATALOGUE of HYACINTHS, NARCISSI, TULIPS, &c., is now published, and may be had on application. A DESCRIPTIVE LIST of the best kinds of STRAWBERRIES is also ready for distribution

The Nurseries, Lea Bridge Road, London, N.E.

DUTCH BULBS, unusually fine; a choice Collection of BRITISH and EXOTIC FERNS, Wardian Cases, Fern Shades, Gold Fish, &c.

R. GREEN, 164, Kingsland Road, N.E.; and the Bedford Conservatories, Covent Garden Market, W.C.

Hyacinths, Tulips, &c.

BUTLER, MCCULLOCH, AND CO. have the pleasure to intimate that their usual supply of DUTCH and CAPE BULBS has arrived in fine condition.

PRICED DESCRIPTIVE CATALOGUES free and post paid on application. Covent Garden Market, London, W.C.

Finest Dutch Crocuses and Early Tulips.

SUTTON'S DESCRIPTIVE LIST is now ready, and will be forwarded gratis and post free on application.

SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

Guernsey and Bella Donna Lilies.

SUTTON AND SONS have just received a good supply of the above beautiful LILIES, and can offer them at 6*s.* per dozen.

Royal Berkshire Seed Establishment, Reading.

Now Ready,

GUERNSEY and BELLA DONNA LILIES. Very fine Bulbs, 5*s.* 6*d.* per dozen.

JAMES CARTER & Co., 237, 238, & 261, High Holborn, W.C.

See Barr & Sugden's Bulb Advertisement, page 870.

BARR'S PRIZE CALCEOLARIA, 2*s.* 6*d.* per packet. The above beautiful strain of Calceolaria was saved by Mr. James, of Ilkeston, from the plants which were awarded the 1st prize at the International Horticultural and Botanical Congress.

CAMELLIA STOCKS, in single pots, fit for immediate working, 30*s.* per 100; selected, extra strong, 40*s.* per 100.

W. H. ROGERS, Red Lodge Nursery, Southampton.

To the Trade.

WINTER and SPRING FLOWERING PLANTS.—Our stock of Soft-wooded ERICAS, EPACRIS, AZALEAS, and New Holland Plants is extra fine this year, and being much greater than we can house, we are selling at unusually low prices.

T. JACKSON & Son, Nurseries, Kingston, Surrey (adjoining the Railway Station), S.W.

Late Show Tulips.

CHARLES TURNER has for Sale one of the finest Collections of LATE TULIPS, the purest strains of Show Flowers Collections of 50 or 100 varieties, or beds arranged ready for planting, of any length, from 25 to 100 rows, of choice kinds, will be supplied at most reasonable prices, which may be obtained on application.

The Royal Nurseries, Slough.

THE GOLDEN VARIEGATED WELLINGTONIA.—

The Parent Tree, though stripped of some thousands of its shoots last winter, is now 12 feet high, and in great beauty. It has made a splendid pure Golden Leader, and every part of the Tree is finely marked with the same, presenting a most beautiful appearance; and Tourists interested in Coniferæ, and coming to this neighbourhood, will find it well deserving of a visit.

RICHARD HARELAND, The Lough Nurseries, Cork.—Sept. 15.

CUTHILL'S Six Sorts of STRAWBERRIES at 5*s.* per 100. See all August Advertisements. They are the earliest and latest in this county.

MUSHROOM SPAWN, 2*s.* 6*d.* per bushel. Pamphlets, &c.

JAMES CUTHILL, Camberwell, London, S.

Strawberries.

CHARLES TURNER can supply all the leading kinds, in good Plants.

DESCRIPTIVE CATALOGUE may be had on application.

The Royal Nurseries, Slough.

New Perpetual Pine-apple Strawberry.

A. VAN GEERT, NURSERYMAN, Ghent, Belgium, has much pleasure in offering this very extraordinary Novelty, which is a very free bearer, with a delicious fragrant fruit. Plants will be sent out in October at 12*s.* per dozen, or 25 per 100, free to London.

N.B.—Early Orders are solicited, as the stock is not large.

CASTLE KENNEDY FIG.—Plants of the above may now be had at 10*s.* 6*d.* and 21*s.* each; the usual discount to the Trade. PETER LAWSON & SON, Edinburgh and London.

Grape Vines.

B. S. WILLIAMS begs to announce that he has a splendid stock of Strong Planting and Fruiting CANES of all the best varieties. PRICED LIST may be had on application.

Victoria and Paradise Nurseries, Holloway, London, N.

Fruit Trees, Conifera, and Trees and Shrubs.

PAUL AND SON'S COLLECTION of the above are now worthy of a visit. The Pyramid Fruit Trees for Sale are in full bearing, and the various Trees and Shrubs will be found in fine condition. Autumn Roses, Hollyhocks, and Gladiols are still in good Bloom.

"Old" Chestnut Nurseries, Cheshunt, N.

WALL-TRAINED TREES of BEARING SIZE.—Our Wall-Trained Fruit Trees this season are very fine, and include PEACHES, NECTARINES, APRICOTS, and FIGS, suited for planting in houses for immediate Fruiting. An inspection is respectfully invited.

T. JACKSON & Son, Nurseries, Kingston, Surrey.

Railway Planting.

FIVE MILLION Transplanted QUICKS, of superior growth. Samples and prices on application to

JOHN HEMSLEY, High Fields, Melbourne, near Derby.

To Railway Contractors & Gentlemen about to Plant.

B. WHITHAM begs to submit to the notice of the above, that he has the largest and best stock of Transplanted QUICKS in England. Prices and samples on application at the Nurseries, Reddish Road, near Stockport.

To Gentlemen about to Plant.

A LOT of YOUNG FOREST TREES, of every variety, in full vigour and of large size, all Transplanted within the last two years, to be SOLD, either in One Lot or in Lots of 1000, to be removed by the 1st December next.

Apply to Messrs. WRIGHT & WOODROW, Land Agents, Norwich.

Important to Nurserymen.

JOHN BLAKE and SONS, NURSERYMEN, Summer-hill, County Meath, has a large quantity of the following 1 and 2-year SEEDLINGS to offer:—LARCH, SCOTCH, SPRUCE, ALDER, THORN QUICK, SILVER FIR, BEECH, SYCAMORE, ASH, OAK, &c. WHOLESALE PRICED LIST on application.

TO COUNTRY GENTLEMEN.—Private Parties wishing to DISPOSE OF Collections of good HARD-WOODED and other Choice GREENHOUSE PLANTS, should apply to JAMES EWING, FLORIST, Pembridge Conservatory, Westbourne Grove, Notting Hill, W., stating the character and quantity of their assortments, with price for Cash. He is at all times open to purchase.

To Cultivators of Succulent Plants, &c.

T. COOPER, Holmsdale Road, Reigate, Surrey, has a large Collection of SUCCULENT PLANTS &c., including about 450 varieties of CACTI, also ALOES, HAWORTHIAS AGAVES, TESTUDINARIA ELEPHANTIPES, &c.; also a great many New Plants raised from seed, many of which are very interesting. Orders punctually attended to.

CERASUS LUSITANICA var. AZORICA.—Plants of this very superior variety of Portugal Laurel (in habit, flower, and hardiness), to which a First-class Certificate was awarded by the Royal Horticultural Society on the 4th June, will be ready for distribution the ensuing Autumn. 7*s.* 6*d.* and 10*s.* 6*d.* each.

OSBORN & SONS, Fulham Nursery, London, S.W.

THE CZAR VIOLET is NOW in BLOOM, and will continue so through the winter, even during frost and under snow, until May. The flowers are twice as large as the Old Russian, and sweeter; on very long stout stalks. Awarded several First-class Certificates and Prizes. Strong blooming plants may be had, 10*s.* per dozen, prepaid, of Mr. JOHN GRAIG, Crescent Road, Hounslow, W.

The usual allowance to the Trade.

J. IVERY AND SON having a few NOVELTIES now ready to send out, will be pleased to forward their PRICED DESCRIPTIVE CATALOGUES of AZALEA INDICA, and No. 19 HARDY BRITISH FERNS, which contain full particulars.

Dorking Nursery.

Intermediate Stocks.

THOS. S. WARE can supply PLANTS of INTERMEDIATE STOCKS (good strain) at 10*s.* per 1000 in sizes.

Hale Farm Nursery, Tottenham, Middlesex, N.

Genuine Garden and Agricultural Seeds.

JAMES CARTER AND CO., SEED FARMERS, MERCHANTS, AND NURSERYMEN, 237 & 238, High Holborn, London, W.C.

JAMES FAIRHEAD AND SON, SEED GROWERS and MERCHANTS, 7, Borough Market, London, S.E.

Now and Genuine AGRICULTURAL, GARDEN, and FLOWER SEEDS. Special prices and advantageous offers on application.

DILLISTONE'S FIRST EARLY PEA. A fine selected and improved stock now ready.

WM. DILLISTONE, Sible Hedingham, Essex.

DICKINSON'S ITALIAN RYE-GRASS SEED, grown by him and sold to Agriculturists for present payment at 44*s.* per quarter; 5 quarters at 40*s.*

New Park, Lymington, Hants.

NOW READY for PLANTING.—ROBINSON'S CHAMPION DRUMHEAD CABBAGE PLANTS (have been grown the extraordinary weight of 80 lbs. each) can be supplied in any quantity at 2*s.* 6*d.* per 100. A remittance or reference is requested from unknown correspondents.

FRED. GEE, Seed Merchant and Grower, Ingersoke, Bedfordshire.

Amaryllis.

JAMES GARAWAY AND CO., Durdham Down Nurseries, Bristol, offer, from their unequalled stock of the above-named favourite flower, strong Bulbs of unnamed Seedlings and others that have bloomed with them during the two last seasons, at 5s., 7s. 6d., and 10s. 6d. each, or 30s., 42s., and 60s. per dozen.

JAMES GARAWAY & Co.'s GENERAL BULB CATALOGUE for the coming season is in the Press, and when ready will be forwarded post free on application.

JAMES GARAWAY & Co., Durdham Down Nurseries, Bristol.

New and Rare Perennials.

W. THOMPSON, SHELDRAKE, Tavern Street, Ipswich, begs to offer the following CHOICE NEW, or RARE, HARDY PERENNIALS, to the notice of Amateurs and the Trade:

ARABIS BLEPHAROPHYLLA (HOOKER).—From California, with fine rose-purple flowers, blooms early. Plants 6d. to 2s. 6d. each

AUBRIETIA DELTOIDEA (ORIENTALIS).—Resembles A. purpurea, but its flowers are considerably larger and deeper in colour; splendid for spring beds. Price 1s. each

ÆTHIONEMA CORDIFOLIUM (D. C.).—A charming little border or rock plant, from Lebanon, with rosy-lilac flowers. Price 2s. each

ECHINACEA ANGUSTIFOLIA (D. C.).—Resembles E. purpurea, but blooms more freely and has narrower foliage. Price 1s. 6d.

ERIOGONUM UMBELLATUM.—A very pretty and free blooming species, with yellow flowers, from Rocky Mountains. Price 2s. 6d. each

HELENIUM HOOPERII (A. GRAY).—Very distinct species, from Rocky Mountains, flowers orange yellow, very large, in June. Price 1s. 6d.

SALVIA CHIONANTHA (BOISSIER).—A showy and free blooming species from Lycia, with greyish foliage and large white flowers. Price 2s. each

PENTSTEMON COBÆA (NUTTALL).—This is warranted to be the true species, quite distinct from the continental plant, which is P. digitalis: fine plants. Price 2s. 6d. each

PENTSTEMON FENDLERI (BESTH.).—Very pretty, distinct and early, flowers light purple, foliage glaucous, habit dwarf. Price 1s. 6d. each

PENTSTEMON GLABER (PURSH).—A very desirable dwarf blue-flowered species, blooms in June, very hardy. Price 1s. 6d. each.

PENTSTEMON SPECIOSUS (DOUGLAS).—The finest of the blue-flowered species, and perfectly easy of cultivation. Should be in every garden. Price 2s. each.

AQUILEGIA CŒRULEA (HOOKER).—This splendid species can now be supplied in good flower. Plants at 2s. 6d. each.

One Plant of each of the above will be sent for 21s., hamper included. The usual discount to the Trade.

NEW STRAWBERRY, DR. HOGG (BRADLEY).—

Resembling British Queen, but very large, and a better grower than the Queen; one of the sweetest Strawberries grown, and, like Sir J. Paxton and Oscar, by the same raiser, will become a favourite, and is generally grown. It received a First-class Certificate from the Royal Botanic Society in 1865, and the same distinction by the Fruit Committee of the Royal Horticultural Society this season; was exhibited in C. Turner's successful collection of four varieties of Strawberries, and also in the Collection of Fruit at the July Exhibition of the Royal Botanic Society. Price 21s. per 100.

CHARLES TURNER, The Royal Nurseries, Slough.

Fruit Trees, Roses, Evergreens, &c.

W. KNIGHT begs to inform intending Planters that he has many Thousands of the above, with every other ORNAMENTAL TREE and SHRUB, in the finest possible condition, at reasonable prices. An inspection is respectfully invited. DESCRIPTIVE PRICED CATALOGUES free.

The Nursery is within two minutes' walk of the Hailsham Station (South Coast Railway).

Floral Nursery, Hailsham, Sussex.

Northampton Nurseries.

JOHN PERKINS, SENIOR, begs to call the attention of Noblemen, Gentlemen, and others engaged in Planting, to his Large Stock of the following:—2,000,000 BLACK THORNS, for Covert Planting, 1½ to 2, 2½ to 3 feet; 2,000,000 LARCH FIRS, 3 to 4, 4 to 6 feet; 1,000,000 SPRUCE FIRS, 1½ to 2, 2½ to 3, 3 to 4 feet; 2,000,000 WHITE THORN QUICK, 2 and 3 Years' Transplanted. Also large quantities of

Scotch Firs, 3 to 3 feet	Hornbeam, 3 to 4 feet
Pinus austriaca, 2 to 3 feet	Oaks, English, 3 to 4 feet
Berberis Aquifolium, 1½ to 2 feet	Ditto, Turkey, 4 to 6 feet
Ditto bushes, 2 to 3 feet	Elms, English, 6 to 8, 8 to 10 ft.
Green Box, 1½ to 2 feet	Do., Huntingdon, 6 to 8, 8 to 10 ft.
Laurels, 2 to 3 feet	Chestnuts, Spanish, 1½ to 2 feet
Portugal Laurels, 1½ to 2 feet	Ditto Horse, 4 to 6, 6 to 8 ft.
Ditto Ibis, 2 to 3 feet	Sycamore, 3 to 4 feet
Evergreen Privets, 2 to 3 feet	Beech, 3 to 4 feet
Birch, 3 to 4 feet	Cedrus Deodara, 5 to 6, 6 to 8 ft.

J. P.'s Stock of all kinds of Fruit, Forest, Ornamental Trees, &c., is very extensive, and this season remarkably fine, and in excellent condition for removal, having been frequently transplanted.

J. P. will be pleased to send an immediate quantity of Black Thorns, Larch, and Spruce Firs, will be pleased to make a special offer where large quantities are required. An inspection of the above is respectfully solicited.

DESCRIPTIVE PRICED CATALOGUES sent post free on application to 32, Market Square, Northampton.

NEW HARDY CLEMATISES.

Clematis rubella.

Very rich velvety claret; the deepest coloured Clematis yet offered. Very distinct, and having the advantage of flowering 60 to 70 per cent of blooms, with five and six sepals. First Certificate, Royal Horticultural Society.

Clematis Prince of Wales.

Large flowers, of a rich deep violet purple, with red bars down the centre of each sepal. A decided improvement on C. rubro-violacea. First Certificate, Royal Horticultural Society.

MESSRS. GEORGE JACKMAN & SON

Have much pleasure in announcing that they are in a position to send out the above CLEMATISES, that are distinct, and can with confidence recommend them "amongst the best of hardy Climbers, if not the very best Ornaments for Walls, Trellis Work," &c.

Early orders will secure the strongest Plants, which will be sent out strictly in rotation first week in October.

The "Floral Magazine," in the October Number, will insert C. RUBELLA and C. LANUGINOSA CANDIDA.

Strong Plants, with bine, 1½ to 2½ feet, 21s. each.

The usual allowance to the Trade.

Coloured Drawings, by Andrews, for Twenty-four Stamps.

WOKING NURSERY, SURREY.

JEAN VERSCHAFFELT, GHENT, BELGIUM,

BEGS TO

OFFER TO THE TRADE THE UNDERMENTIONED PLANTS

AT THE FOLLOWING LOW PRICES, VIZ.:—

CAMELLIAS.—With flower buds, very fine stuff, choice named varieties. Per 100, £6.

„ Stronger. Per 100, £8, £10, £15, and upwards.

„ Specimen and half-specimen plants. Prices according to size

„ Stocks for immediate use. Per 100, £8. [land variety.

AZALEA INDICA.—Nice stuff, choice named sorts, for winter blooming. Per 100, £4, £5, £6, £10, and upwards.

„ Stocks fit for immediate use. Per 100, £4.

CITRUS SINENSIS (ORAHEITE ORANGES).—Covered with young fruit. Per doz., £1 4s.

JASMINUM GRANDIFLORUM.—Very fine strong plants, all grafted. Per doz., £1.

ARUNDO DONAX VARIEGATA.—Fine plants, grown in pots, strong. Per doz., £1 4s

CYCLAMEN.—Extra fine seedling varieties, in pots, strong plants Per doz., 18s.

Splendid BULBS of LILIUM LANCIFOLIUM RUBRUM, ALBUM, and PUNCTATUM, may be ordered to be sent at the proper time. Price on application, according to the quantity wanted.

All Orders to be sent directly to

JEAN VERSCHAFFELT, 43, RUE DE LA CAVERNE, GHENT, BELGIUM.

N.B.—Good reference or cash required from unknown Correspondents.

SEEDS CARRIAGE FREE.

Grass Seeds for Permanent Pasture.

WM. WOOD AND SON are now supplying the finest MIXTURES of NATURAL GRASS SEEDS (2 bushels of light seeds, and 12 lb. of Clover's per acre), best quality, 45s. per acre.

RENOVATING MIXTURE, at 10d. per lb. (10 to 12 lb. per acre).

The best ITALIAN RYE-GRASS, at 6s. per bushel, or cheaper by the quarter.

TRIFOLIUM INCARNATUM, 12s. to 18s. per bushel.

Woodlands Seed Warehouse, Maresfield, Uckfield, Sussex.

For Present Sowing.

TRIFOLIUM INCARNATUM, Italian Crimson Clover.

TRIFOLIUM INCARNATUM TARDIFLORUM, Late Red

TRIFOLIUM INCARNATUM TARDIFLORUM, Late White

SUTTON'S IMPROVED ITALIAN RYE-GRASS.

SUTTON AND SONS have ready a very excellent Seed of the above. Prices are very moderate, and may be had post free on application.

The quantity of Trifolium Incarnatum (about usually sown per acre is 20 lb., or with Italian Rye-grass 8 lb. per acre is sufficient.

The Late Red and Late White should be sown more thickly than the Incarnatum, as they do not grow so quickly, or produce so large a quantity of bloom.

Also MUSTARD and RAPE, new seed.

All Goods carriage free, except very small parcels.

SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

New Gladioli.

CHARLES VERDIER, Fils (late VICTOR VERDIER & CHARLES VERDIER), NURSERYMEN, 12, Rue Dumeril, formerly Rue du Marché aux Cherries, 72, Paris, beg to offer the following NEW SEEDLING GLADIOLI (SECTION 2):—

Adolphe Brongniart	Nemo
Amie	Princesse Marie de Cambridge
Apollon	Rev. M. J. Berkeley
Bernard Palissy	Sir W. Hooker
Fermier David	Thomas Moore
Lady Franklin	Joseph Hake

The CATALOGUE containing the descriptions and the prices may be obtained from M. VERDIER as above, or from Messrs. R. SUTHERAD & Sons, 5, Harp Lane, Great Tower Street, London, E.C.

ALEXIS DALLIÈRE, Faubourg de Bruxelles, Gand, (Ghent), offers:—

AZALEA INDICA, with flower buds, various sorts, medium sized plants, £3 10s. 0d. per 100; strong plants, £4 5s. 0d. per 100.

CAMELLIAS, showy, 2 to 3 bloom, £5 5s. 0d. per 100, single varieties for grafting, 16s. 0d. per 100

CITRUS SINENSIS, in fruit, 12s. 0d. per dozen; without fruit, 7s. 6d. per dozen

BOUGAINVILLEA GLABRA, showing for bloom, 6s. 0d. per doz.

DRACÆNA AMABILIS, showing for bloom, 6s. 0d. per doz.

DRACÆNA TERMINALIS, showing for bloom, 6s. 0d. per doz.

PULTENÆA STRICTA, showing for bloom, 6s. 0d. per doz.

ERICAS, various, £1 8s. 0d. per 50

CHAMÆROPS HUMILIS, 2 years old, £1 0s. 0d. per 100.

ARIES NORDMANNIANA, 2 years old, £1 0s. 0d. per 100.

EL. LAGNUS JAPONICUS VARIEGATUS, 9d. per 0

100,000 Camellias.

JOSEPH BAUMANN, NURSERYMAN, Ghent, Belgium, begs to offer—

100 CAMELLIAS, with flower buds, best sorts, 6s

100 „ „ „ stronger, 8s.

100 „ „ „ stronger, 12s.

The following free to the Custom House, London:—

100 CAMELLIAS, without flower buds, 1 year's grafted, £4.

100 „ 2 to 3 years' grafted, £6.

100 „ stronger plants, £9

100 CAMELLIA STOCKS, £1 10s.

100 „ stronger, £1 15s.

50,000 Azalea indica, and 100,000 Rhododendrons, GRAFTED PLANTS.

JOSEPH BAUMANN, NURSERYMAN, Ghent, Belgium, begs to offer the following, free to the Custom House, London:—

100 AZALEA INDICA, with flower buds, £4 to £6.

100 „ stronger plants, £6 to £8

(They are all dwarf bushy heads and the best kinds.)

100 RHODODENDRONS, 1 year grafted, £1.

100 „ 2 to 3 years, grafted, £8.

100 „ stronger plants, £10.

100 „ with flower buds, £5.

100 „ with flower buds, larger plants, £12 to £18.

(They are all the best English and Belgian hardy sorts)

All my finest Hardy Rhododendrons are reserved ordered for England.

CATALOGUE on application.

COCOA-NUT REFUSE is becoming scarcer, the old reserves will soon be gone. Now sold in bags, 1 for 2s., 10 for 16s., 20 for 30s., 50 for 68s., 100 for £6.

Fourpence allowed for each bag returned carriage-paid.

A Railway Truck-load (not in bags), 10s.

Postage Stamps or Post-office Order, payable to J. BARNHAM & Co., Kingston-on-Thames, S.W.

Gem Plant Case.

BARR & SUGDEN.

Now Ready, and can be had Free and Post Paid,

THE AUTUMNAL GUIDE

TO

WINTER AND SPRING GARDENING.

IT CONTAINS LISTS OF THE BEST BULBS FOR EXHIBITION PURPOSES, AND FOR THE DECORATION OF THE CONSERVATORY, SITTING ROOM, AND FLOWER GARDEN.

For the benefit of Amateurs the "GUIDE" contains a Treatise on Spring Gardening, with directions for furnishing a series of Beds and Borders with Early-flowering Bulbs and Plants; one or other of which may be had in full bloom from the opening of Spring till June, and the general effect and beauty will bear very favourable comparison with the brilliant display produced by the Summer and Autumn flowering Plants.

The Charming GUERNSEY and BELLA-DONNA LILIES are now ready, 5s. 6d. per doz., and should be ordered at once.

BARR AND SUGDEN,

12, KING STREET, COVENT GARDEN, LONDON, W.C.

Gem Plant Case.

NEW PLANTS FOR 1866.

MESSRS. E. G. HENDERSON & SON

Have much pleasure in calling the attention of Amateur Cultivators and others to the following NOVELTIES possessing great merits, and which will prove as valuable acquisitions for cultivation as many others they have previously sent out

The NEW BULB CATALOGUE forwarded free on application

Plants for distribution will be ready in October.

FOA TRIVIALIS ARGENTEA ELEGANS (Silver-leaved Meadow Grass).—This plant is commended as one of the most useful and beautiful varieties of hardy Grasses with silvery white-margined leaves yet introduced to gardens. It is strictly a perennial in habit, forming a remarkably dense and compact many-branched growth from the base, and, by its natural and free tendency to emit roots upon the under shoots, it makes a close yet gracefully free growth from 10 to 9 inches in height, and with a luxuriance which renders it suitable for Grass plots, verges, or terraces, covering the ground-surface with a lasting verdure as an ordinary meadow, whilst its elegantly variegated leaf blades produce an effect upon a much larger scale than can be had from any other silver-leaved Grass.

By forming ornamental portable specimens and suspended basket groups of this variety in the early winter and spring months, for conservatory and greenhouse decoration, it will at those seasons be found by far the most beautiful and picturesque plant in its tribe.

From its ready increase, it is especially adapted for small flower-stands and vases, and for its freedom in growth when placed in a genial warm greenhouse, it is equally adapted for larger groups and designs, of either a fine isolated or contrast with green leaved plants of uniform growth at 1s. 6d. each.

For a vase of the finer ramose Lycopods or Ferns, the silver-leaved Meadow Grass will form an exquisite silver rim or outer belt, or a group of the latter, margined with the former, or the still more graceful Isolepis gracilis, would be very effective.

No other plant yet introduced is so admirably adapted as the present one for marginal effect, or as a belt for conservatory decoration on a large scale.

The habits of its growth, ready increase, and uniformly picturesque effect in the embellishment of illuminated drawing and ball-room, when cultivated in large groups, render it one of the most valuable of plants in its section; and the first example of a long wished for desideratum as a fine but perfectly adapted, by greenhouse culture, for floral decoration by day and night throughout the winter months.

The Silver Meadow Grass differs from the variegated forms of Dactylis glomerata much more decidedly than the latter does from the former, the former having numerous small rootlets upon the under stems: the latter species are generally restricted to solitary tufts of growth, without such roots, and thereby admit of but slow increase.

1 Plant, 2s. 6d. 3 Plants, 5s. 50 Plants, 50s.
6 Plants, 9s. 25 Plants, 25s. 100 Plants, 75s.

NEW STRIPED-FLOWERED CHINESE PRIMROSE (Primula Sinensis Stewartii).—This elegant and novel variety was awarded a First-class Certificate of Merit by the Floral Committee of the Royal Horticultural Society, in March, 1865. Its style of growth approaches near to the original type or species; of a neat outline, and free-flowering habit. The bloom is produced in numerous trusses, the individual flowers are large, of a clear white, well-spread with light rose, and forming a picturesque effect by the large yellow eye or centre in each blossom. As the first and finest variety with uniformly striped flowers in this tribe, it forms a welcome addition for conservatory decoration, and drawing-room bouquets during the winter and early spring months. 3s. 6d. each; less if ordered in quantity.

NEW PERPETUAL PINK MOST WELCOME.—A beautiful variety, producing flowers in the style of the finest florist kinds, with pure white ground colour, and dark rich crimson centre, the white middle space of each petal being elegantly laced or margined with red crimson. The growth is free and vigorous, yielding a profusion of bloom during the summer and autumn months, and from a succession of plants grown in rich soil, continues to produce its finely-formed blossoms up to winter.

The flowers are reliable to burst, and, in its excellent outline, purity of colour, constancy in character, and fulness of petal, it is equal to the best competition varieties. It is a valuable plant by its delicate fragrance for furnishing flower vases and bouquets, continuing to bloom in all the winter months when the ordinary varieties of garden Pinks are out of season: besides this desirable feature of blooming like the Tree Carnations, it is a valuable plant for the flower garden, equalling any other choice Pink. Its facility of increase by the ordinary methods in its tribe, admits of it being grown either in groups, or by pot culture. 2s. 6d. each.

NEW SWEET-SCENTED VIOLET KING OF VIOLETS, 2s. 6d. each plant.—E. G. Henderson & Son having purchased the entire stock of the above, respectfully offer the same as a remarkably beautiful and noble form of Violet. Its style and constancy of growth has been proved as a seedling by six successive seasons of culture. The flowers are very double and rosette-like in form, 1½ to, occasionally, 1¾ inches in width, delightfully fragrant, and in some soils are constantly striped with white. The growth is dwarf and compact, not liable to exhibit any straggling growth as in the single-flowered forms of its tribe. In colour it approaches the rich indigo blue of the well-known Tree Violet, but its individual blossoms are double the average size of that variety, and it surpasses all other known kinds by its neatness in growth, combined with profusion and size of flowers, grateful odour, and long-continued succession of bloom.

The following are Voluntary Testimonials to its merit:—

"Your double blue Violet is remarkable for its possession of petals, each flower having a close resemblance to a miniature rosette. It will certainly take the first place in the class of flowers to which it belongs. The colour appears to be indigo, with a violet shade."—*The Gardeners' Weekly Magazine.*

The Rev. Marshall Wetherfield, *Haverhill*

"The double-flowered blue Violet that you name Goliah (as first given by its raiser) is a most wonderful flower. I have never before seen anything to equal it amongst Violets. The name is well suited to it, and it certainly will be a great acquisition."

John Perris, Esq., *Stanmer Hall, Essex.*

"I am much pleased with your new Violet, it is very sweet, and the largest I have ever seen; the blooms you sent me measure individually 1½ inches over. I consider it a great novelty, the flowers not only being so large and sweet, but prettily striped. It is in my opinion a great acquisition."

A plate of the above, with the Queen of Violets (white), in one group is published.

NEW CAMELLIAS.

The following new varieties of Camellia are raised by one of the most eminent amateur cultivators in Europe, and are offered as valuable additions to one of the finest sections of plants for conservatory decoration during the winter and early spring months:—

ELVIRA BIANCHINI.—An improvement upon Jenny Lind, flower large, imbricated with fine circular outline, and large even margined rose-like petals, of a pure cream white tint, elegantly marked with rose-coloured bars and streaks; an effective flower, of fine proportions. 21s. and 42s. each.

GENERAL CIALDINI.—Bright shaded carmine, with casual red bars, finely imbricated, and full in the centre; petals of good substance, smooth, even-margined, and rose-like, outer series round, and gradually smaller to the disc; a very attractive flower, of beautiful symmetry, and pure colour. 21s. and 42s. each.

ZORAIDE VANZI.—Blush white, with very picturesque rosy red bars and flakes, outer petals large, rounded, rose-like, and even; a flower of great substance, full to the centre, and very effective. 21s. and 42s. each; 252s. for one of the set.

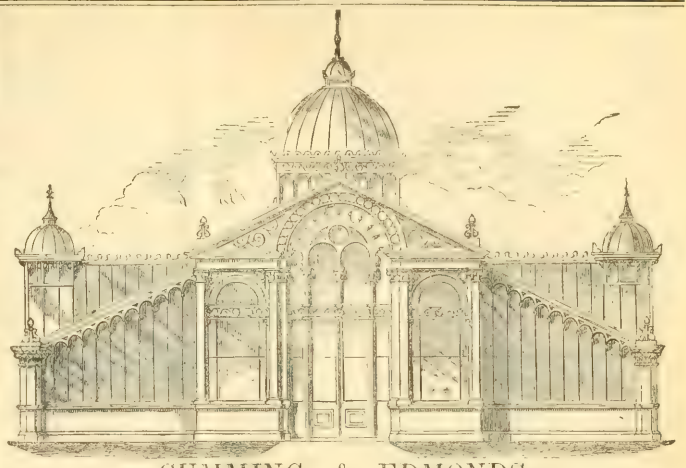
A Plate of the above varieties in one group is published.

CLIANTHUS DAMPIERII (in varieties).—E. G. Henderson & Son have much pleasure in offering seed of this splendid plant in its remarkable varieties of colour. Per packet, 1s. and 2s. 6d.

VIOLA CORNUTA.—Seed, 6d., 1s., and 2s. 6d. per packet; Plants, 6s. per dozen.

AUBRIETIA CAMPBELLI.—A most beautiful and brilliant dwarf Alpine plant, with rich violet-purple blossoms. Price 1s., 1s. 6d., and 2s. 6d. each; 10s., 15s., and 21s. per dozen.

Wellington Road, St. John's Wood, London, N.W.



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Take this opportunity of returning their grateful thanks for the very great support they have received since their commencement in Business, and beg to state that at their New and extensive Works, LILLIE BRIDGE, RICHMOND ROAD, FULHAM, they have erected STEAM-POWER MACHINERY, and have every convenience for executing Work with the greatest superiority, cheapness, and despatch.

C. and E. beg to invite special attention to their superior DESIGNS for CONSERVATORIES, and every class of HORTICULTURAL WORK, and to state that they prepare and supply Designs and Estimates free of all expense.

The great success of CUMMING and EDMONDS'S

PATENT TUBULAR ARCHED SADDLE BOILERS,

the general satisfaction they have given where fixed, and the high terms in which persons who have the management of them express themselves, enable C. and E. with confidence to strongly recommend the Boiler to particular notice.

HOT-WATER PIPES, CONNECTIONS, &c., for every description of HEATING APPARATUS, supplied at the lowest prices, with or without fixing, accompanied by a Working Plan for the Fixing of the Apparatus.

Prospectus and Prices on application.

☞ Several good SECOND-HAND BOILERS, of different descriptions, for SALE.

CUMMING and EDMONDS,

CONSERVATORY ARCHITECTS, HORTICULTURAL BUILDERS, and HOT-WATER APPARATUS ENGINEERS,

LILLIE BRIDGE, RICHMOND ROAD, FULHAM, LONDON, S.W.

BEARD'S PATENT.

GREAT INTERNATIONAL HORTICULTURAL EXHIBITION & BOTANICAL CONGRESS.

The FIRST and ONLY PRIZE given at the above EXHIBITION for the BEST METHOD of VENTILATION for PLANT STRUCTURES, was awarded to

MESSRS. SANDERS, FREWER, & CO.,

VICTORIA WORKS, BURY ST. EDMUNDS,

FOR THEIR MODEL OF

BEARD'S PATENT METALLIC NON-CONDUCTING GLASS HOUSES,

Showing the Patent System of perfect Ventilation and Patent Method of Glazing, whereby breakage from expansion and contraction is prevented, and facility given for immediate reparation by any ordinary labourer.

Messrs. SANDERS, FREWER, and CO. beg to call special attention to the high value of these great improvements in the VENTILATION, &c., of HORTICULTURAL ERECTIONS, which are also applicable to all WOODEN HOUSES, as well as to CHURCHES, RAILWAY STATIONS, PUBLIC BUILDINGS, MANUFACTORIES, &c.; and have received the highest recommendation from many of the first Horticulturists and practical men of the United Kingdom.

The system is invaluable also for AGRICULTURAL BUILDINGS, as by it abundant Light and Air can be obtained, and the Ventilation regulated to the utmost nicety in the Tops and Roofs of all Structures, where, as is well known, Impure Air constantly accumulates, and where the ordinary system of Ventilation is impracticable.

Full particulars and descriptions may be obtained on application to

MESSRS. SANDERS, FREWER, and CO.,

VICTORIA HORTICULTURAL AND ENGINEERING WORKS, BURY ST. EDMUNDS.

New Seeds for Autumn Sowing.

PETER LAWSON AND SON,

THE QUEEN'S SEEDSMEN,

London and Edinburgh,

Can supply NEW SEEDS of all kinds for AUTUMN SOWING, selected with the greatest care and harvested in fine condition.

PETER LAWSON AND SON,

THE QUEEN'S SEEDSMEN,

London and Edinburgh.

NEW SEEDS FOR AUTUMN SOWING.

NATURAL GRASS SEEDS of all sorts, for Laying Down Permanent Pasture, Lawns, Bowling, Croquet Grounds, &c.

ITALIAN RYE-GRASS and TRIFOLIUM INCARNATUM—early and late varieties

WINTER TARES, RYE, OATS, and BARLEY.

LARGE DRUMHEAD FIELD CABBAGE

ROBINSON'S LARGE CHAMPION FIELD CABBAGE.

Also the NEW FORAGE PLANTS, KIDNEY VETCH and SCHRADER'S BROME GRASS.

78, King Street, Cheapside, E.C

Brighton and Sussex Seed Warehouse.

EDWARD CARPENTER'S MIXTURES of PERMANENT GRASS and CLOVER SEEDS.—Best quality, 30s. per acre (2 bushels light seeds, and 12 lb. Clovers and Small Seeds per acre).—See testimonials in Catalogue

Now also CARPENTER'S RENOVATING MIXTURES for Improving Old Pastures.

PRICED CATALOGUES of KITCHEN GARDEN, FLOWER, and FARM SEEDS now ready.

EDWARD CARPENTER, Seed Merchant and Grower, 96, St. James's Street, Brighton.

Dutch Bulbs and Plants.

JAMES CARTER AND CO. (Fellows of the Royal Horticultural Society of London, and the Royal Agricultural Society of England, &c.)

Seedsmen to Her Majesty's Chief Commissioner of Public Works and other Government Departments, the Royal Gardens, Kew, &c., &c., &c.

Seedsmen to H.I.M. the Emperor of the French, the Crystal Palace Company, the Agri-Horticultural Society of India, &c., &c., &c.

The Only Prize Medal for Seeds and Flowers,

INTERNATIONAL EXHIBITION, 1862 (*Vide* JURORS' REPORT).

Just published,

The AUTUMN SUPPLEMENT of CARTER'S GARDENER'S and FARMER'S VADE MECUM, containing complete Lists of New and Choice Dutch and Cape Bulbs, Stove, Greenhouse, and Hardy Plants, Ornamental Trees and Shrubs, Fruit Trees and Roses, all for Autumn Planting; to which is added Original and Instructive Articles on Bulbs and their Culture, and Spring Flowers and Spring Gardening. Price 1s., post free; gratis to Customers.

SEED MERCHANTS and NURSERYMEN, Offices and Seed Warehouses, 237, 238, & 261, High Holborn, London, W.C.

Seeds for Present Sowing.

JAMES CARTER AND CO. are now offering New Seed of the undermentioned, the quality of which cannot be surpassed, the seed being saved from plants which have taken Prizes at all the principal London Flower Shows

CARTER'S PRIZE CALCEOLARIA, 2s. 6d. per packet.

CARTER'S PRIZE CINERARIA, 2s. 6d. per packet.

CARTER'S PRIZE FRINGED CHINESE PRIMULA, 2s. 6d. per packet

The above forwarded on receipt of postage stamps.

JAMES CARTER & CO., 237, 238, and 261, High Holborn, W.C.

Seeds for Present Sowing.

LOOK to YOUR GRASS LANDS.—The month of September is the best in which to renovate Old, or Lay Down New Pastures

JAMES CARTER & CO. offer their celebrated

RENOVATING MIXTURE at 10s. per lb. (sow 10 to 12 lb. per acre)

Also the FINEST MIXED PERMANENT GRASSES and CLOVERS (free from weeds), mixed to suit all soils, at 30s. per acre.

ITALIAN RYE GRASS (cheap) | TRIFOLIUM INCARNATUM

STUBBLE TURNIP (new seed)

Add to best quality Price on application.

JAMES CARTER & CO., 237, 238, & 261, High Holborn, W.C.

DUTCH FLOWER ROOTS.

JAMES VEITCH & SONS,

ROYAL EXOTIC NURSERY, CHELSEA, S.W.,

BEG TO ANNOUNCE THAT THEY HAVE RECEIVED THEIR

ANNUAL SUPPLY OF BULBOUS ROOTS FROM HOLLAND,

AND ARE PLEASED TO SAY THAT THEY ARE IN EXCELLENT CONDITION.

CATALOGUES are now ready, and will be forwarded post free on application.

J. V. AND SONS desire to impress upon those who patronise them the great advantage of giving them their orders early, as the successful Cultivation of Bulbs depends in a great measure upon their being planted early in the season.

SUTTON'S

UNRIVALLED COLLECTIONS OF

BULBOUS FLOWER ROOTS,

FOR BLOOMING DURING THE WINTER AND SPRING.

These are every year becoming more popularly cultivated, and the HYACINTHS, ANEMONES, TULIPS, &c., which we imported last season from the celebrated Dutch Florists, Messrs. de Boom, Veen, Bycoet, and others, having been so generally admired, *we have imported from the same parties, and still more extensively. As many of these sorts are at present unknown to English cultivators, we have considered it advisable to make up Collections* of the sorts which, after careful observation, we have found to be the best worthy of cultivation, being THE MOST SHOWY AND MOST CERTAIN TO THRIVE WELL under any ordinary treatment, and for which any good Garden soil (not particularly heavy) will be suitable.

SUTTON'S COLLECTION of HARDY FLOWER ROOTS for OPEN GROUND.

		£	s.	d.
No. 1.	A large and Choice Collection of ANEMONES, HYACINTHS, CROCUSES, TULIPS, RANUNCULI, NARCISSI, SNOWDROPS, IRISES, GLADIOLI, &c.	2	2	0
No. 2	Ditto ditto, consisting of all the same kinds, in Reduced Quantities	1	1	0
No. 3.	A Small and Choice ditto	0	10	6

SORTS for FLOWER POTS and GLASSES.

		£	s.	d.
No. 4.	A splendid Collection of HYACINTHS, JONQUILS, NARCISSI, EARLY TULIPS, New large CROCUSES, &c.	2	2	0
No. 5.	The same in Reduced Quantities	1	1	0
No. 6.	A Small and Choice Assortment	0	10	6

N.B. A complete LIST of the above may be had post free, and any article specified, if not required, will be omitted, and additional quantities of others included.

The very low charges now made for the above Choice Collections of Flower Roots will, it is believed, insure a continually increasing demand.

Early Orders are requested before the more scarce kinds are all sold.

SUTTON'S AUTUMN CATALOGUE,

Containing Descriptive Lists of the best varieties of HYACINTHS, GLADIOLI, ANEMONES, CROCUSES, and other Bulbous Roots, and CHOICE STOVE and GREENHOUSE PLANTS, FERNS, AMERICAN PLANTS, ROSES, CARNATIONS, and other Florists' Flowers, FRUIT TREES, New GARDEN SEEDS, &c., is now ready and may be had gratis and post free on application.

All Goods sent Carriage Free except small parcels, and 5 per cent. allowed for cash payments.

SUTTON AND SONS, ROYAL BERKS SEED ESTABLISHMENT, READING.

HYACINTHS AND OTHER BULBS.

WILLIAM PAUL,

SON and SUCCESSOR to the late A. PAUL,

BEGS TO ANNOUNCE THAT HE HAS NOW READY FOR DELIVERY

HIS USUAL SUPPLY OF HYACINTHS AND OTHER BULBS,

Which he has selected from the stock of the first growers in Holland, and which he believes will be found equal to any Bulbs this year imported, and give the same satisfaction to the respective purchasers as those imported and supplied by him in previous years.

HYACINTHS, good named sorts, 30s. per 100
" choice selection, 9s., 12s., and 15s. per doz.
" new sorts, 18s. to 42s. per doz
" for bedding, 12s. to 24s. per 100

TULIPS, early, in great variety, 1s. to 1s. per doz., 6s. to 24s. per 100
POLYANTHUS NARCISSUS, by name, 4s. to 6s. per doz., 20s. to 45s. per 100
CROCUS, of sorts, 2s. to 3s. per 100.

All other Bulbs and Spring-flowering Plants and Shrubs for Forcing equally reasonable in price.

His friends and the public generally are respectfully reminded that his Collections of these Plants obtained no less than 29 FIRST PRIZES last spring in the space of one week, from the Royal Horticultural and Royal Botanic Societies of London.

NOTICES OF THE PRESS.

"The breadth and length of spike of many of these Hyacinths are much greater than we have ever before seen, and the colours are remarkable for their solidity and clearness."—*Gardeners' Chronicle.*

"There was an air of nobility about the spikes that it is difficult to describe, but which was most striking."—*Journal of Horticulture*

"It is due to Mr. W. Paul's wonderful group of 24 Hyacinths to which was awarded the First Prize, that a tribute should be borne here to their incomparable quality."—*The Florist.*

"A Collection that were as near absolute perfection as in the present state of our knowledge we can imagine."—*Gardeners' Magazine*

"The Hyacinths were particularly fine and very numerous, the plants and flowers large and well-grown."—*The Times.*

"The Hyacinths are of giant size, the colours having a metallic lustre and an intensity which we never saw equalled."—*Morning Post.*

"The Hyacinths and Roses of Mr. Wm. Paul proved the greatest attraction at the exhibition, the varieties being good and the plants well-grown."—*Daily Telegraph.*

EARLY ORDERS ARE SOLICITED.

PAUL'S NURSERIES and SEED WAREHOUSE, WALTHAM CROSS, LONDON, N.

B. S. WILLIAMS,
Victoria and Paradise Nurseries, Holloway, London, N.
CHOICE SEEDS.

PRIMULA (WILLIAMS's superb Strain) —The most noted strain of Primula in existence; same as supplied to nearly all the largest Gardens in England. In packets, at 2s. 6d., and 2s. 6d. each. None genuine without B. S. WILLIAMS's name and address on the packet.

CALCEOLARIA (JAMES's Strain) —5s. and 2s. 6d. per packet.

CINERARIA (WEATHERILL's extra choice strain.—This well-known Covent Garden strain to be had genuine only in sealed packets bearing B. S. WILLIAMS's name and address. Price 5s. and 3s. 6d. per packet.

CHOICE VARIEGATED PELARGONIUMS.

Mrs. Benyon	Italia Unita	Sophia
Mrs. Pollock	Rainbow	Golden Tom Thumb
Clara	Picturata	Princess Alexandra
Yellow Belt	Fulminbleau	Burning Bush

The above, in strong plants, for 21s., package included. Terms, cash. Remittances required from unknown correspondents. Address,
ALLISTON FIELD, Nurseries, Uxbridge, Middlesex.

NEW HARDY RHODODENDRON.
MICHAEL WATERER.—This Rhododendron has hitherto been exhibited under the name of ANNIHILATOR, but it will be sent out under the above name. It is undoubtedly the most brilliant-coloured and hardy free bloomer in Rhododendron yet offered.

Orders are now being taken for Plants to be sent out in the Autumn at 3s. 6d. each. The usual discount to the Trade.
JOHN WATERER, The Ascot Nurseries, Bagshot, Surrey.

Silene Pendula.
THOS. S. WARE can still supply strong SEEDLING PLANTS as under, at 10s. per 100, 500 for 20s. — Alyssum saxatile, Lychnis (scarlet), Lupinus polyphyllus, Lupinus albus, Polyanthus, Anterrhinums (fine selected), Canterbury Bells (single), Canterbury Bells (double), Rose Campion, Sweet Williams, Dianthus Dunnettii, Ingrahis (spotted), Ingrahis (white), Silene pendula
Hale Farm Nursery, Tottenham, Middlesex, N.

A Quarter of a Million of Fruit Trees.
THOMAS WARNER begs to inform intending Planters and the Trade, that his Nurseries, which contain upwards of 70 acres, remain the same, in addition to a most extensive Stock of Evergreens, Ornamental Trees, Roses, &c. All in a high state of cultivation. An inspection is respectfully invited.

CATALOGUES, which will be sent free, are nearly ready in October.
The Nurseries, Leicester Abbey, ½ mile from the Midland Railway Station.

Cupressus Lawsoniana argentea.
MESSRS. WATERER AND GODFREY propose sending out this plant in October next.

Good stout Plants, 18 inches high, ready at 2s. each.

It has been awarded Three First-class Certificates by the Royal Horticultural Society of London, Royal Botanic Society of London, and at the Crystal Palace; and may be justly represented as a distinct and very beautiful plant, and one that will become a general favourite. Knap Hill Nursery, Woking, Surrey

New Catalogue of Plants, Dutch Bulbs, &c.
ROBERT PARKER begs to announce that his NEW CATALOGUE, containing Select Descriptive and Priced Lists of New, Rare, and beautiful Greenhouse, Hardy and Stove Plants, Hardy Ferns, Fruit Trees, Grape Vines, Roses, Rhododendrons, Sweet Violets, &c., Pinks, Carnations, Pentstemons, Gladioli, Hyacinths, Liliums, Narcissus, Tulips, and other Bulbs, is now published and will be forwarded to applicants.
Exotic Nursery, Tooting, Surrey, S.

Dutch Flower Roots.
ARCHIBALD HENDERSON begs to announce that he has received from Holland a large Consignment of BULBOUS ROOTS in fine condition.

DESCRIPTIVE and PRICED CATALOGUES are now ready, and contain practical directions for the successful cultivation of each section of Bulbs, in Pots, Glasses, or Flower Garden.

Also a DESCRIPTIVE PRICED LIST of all the best Grape Vines in cultivation. Catalogues may be had gratis and post free upon application.

Seed Nursery, Thornton Heath, Surrey; and at the East Surrey Seed Warehouse, College Grounds, South End, Croydon

New Caladiums.
CHARLES VERDIER (late Victor VERDIER and Ch. Verdier), Nurseryman, 12, Rue Dunoyal (late Rue du Marché aux Chevaux, 28), Paris, offers for Sale the following magnificent SEEDLING CALADIUMS, raised by M. Bleu —

Baron Rothschild	Edouard Moreaux	Rauhna
Barral	Isidore Leroy	Reine Marie
Charles Verdier	Ketcleer	Schobel

A CATALOGUE containing Descriptions and Prices may be obtained from M. VERDIER, or from Messrs. SILBERRAD & SON, 5, Harp Lane, Great Tower Street, London, E.C.

To the Trade.—A Good Opportunity.
JOHN J. HASLAM, Bradshaw Gardens, Chadderton, Manchester, begs to offer, in unusually fine strong well rooted Plants, the late Mr. John Holland's unequalled Collection of CARNATIONS and PICOTEES, 75s. per 100 pairs; 40s. per 100 pairs; YELLOW GROUND PICOTEES, 75s. per 100 pairs

Also a choice assortment of LANCASHIRE SHOW GOOSEBERRIES, true to name, 10s. per 100, 2s. per dozen.

Named sorts of the best CURRANT TREES grown. Black, per dozen, 2s.; Red, per dozen, 2s.; White, per dozen, 3s. Selections of the above left to J. J. H.

CATALOGUES will be forwarded on application post free for one stamp. A liberal allowance in Plants for long carriage will be given. Post Office Orders payable to
JOHN J. HASLAM, Middleton, Lancashire.

HENRY HOOPER'S PRIZE PANSY SEED, the quality of which cannot be surpassed, the Seed having been saved from plants which have taken Prizes at all the principal London Flower Shows, the First and two Sets at the International Exhibition, and at all the leading Shows in the West of England for 1865, 5s. and 2s. 6d. per packet.

CARNATIONS and PICOTEES are now ready, in good strong well rooted plants, the finest strain in the kingdom. The varieties that were awarded Two Prizes at the Royal Botanic Society's meeting on July 4, 1866; and the Two First Prizes at the Royal Horticultural Society, South Kensington, July 7, 1866. Two First Prizes at Merthyr Tydvil, and Beyond and many other leading Exhibitions.

The DUKE OF CAMBRIDGE CARNATION now ready, the finest in the world, 5s. per pair.

New PANSIES, PINKS, YELLOW PICOTEES and CLOVES now ready

PINK SEED, saved from all the best varieties in cultivation. 5s. and 2s. 6d. per packet.

Be particular to observe the Christian Name and Address—
HENRY HOOPER, Vine Nursery, Widcombe Hill, Bath

The Preston Road Nurseries, Yeovil, Somerset.
"Having DISPOSED of the above NURSERIES to MR. THOS. SAMPSON, I have now to thank the Public for the liberal patronage bestowed upon me, and solicit for the present Proprietor a continuance of the same. "(Signed) PETER DRUMMOND."
"Sept. 12, 1866."

T. SAMPSON begs to inform the Public that he has PURCHASED the STOCK in TRADE of the above NURSERIES, and hopes to merit a continuance of that liberal support formerly bestowed on DRUMMOND & Co., guaranteeing a continuance of the same advantages, by offering good articles at the lowest possible prices. He has arranged that Mr. MACKENZIE, and Mr. PETER DRUMMOND, late Proprietor, who will in every instance attend to all Orders received with the greatest of care and attention. All Business Letters to be addressed to
MR. PETER DRUMMOND, Manager.

THOMAS SAMPSON, late Drummond & Co., have now to offer an unrivalled COLLECTION of DUTCH BULBS, and other flowering roots of the very best quality, at the lowest prices.

CATALOGUES of which can be obtained free on application.

The season for planting is now at hand. Intending purchasers are invited to an inspection of the Public Nurseries, the Stock of which, consisting of ORNAMENTAL CONIFEROUS TREES, FRUIT TREES, FOREST TREES, ROSES, & FLOWERS of every description, and every requisite for the Farm and Garden.

Hyacinths for Exhibition.
SUTTON AND SONS beg to offer—

100 in 100 very choice sorts	£1	4 0
100 in 50 "	0	15 0
50 in 50 "	2	2 0
50 in 25 "	1	5 0
25 in 25 "	1	1 0
12 in 12, 12 extra fine choice do.	0	12 0
12 in 12 choice sorts	0	9 0
12 in 12 good sorts	0	6 0

All goods carriage free, except small parcels.
SUTTON & SONS,
Royal Berkshire Seed Establishment,
Reading.

GEORGE DAVIES begs to inform the Nobility and Gentry that his very SELECT and DESCRIPTIVE CATALOGUE of HYACINTHS, TULIPS, NARCISSUS, CROCUS, &c., for the present season is now ready, and may be had post free on application

Any Ladies or Gentlemen requiring HYACINTHS, &c., for competition, can be supplied with (specially selected) Bulbs suitable for Dutch purposes at moderate prices

G. D. having received his first importations of Hyacinths, &c., has much pleasure in stating that they are unusually fine this season, and begs to assure those who may favour him with their commands, none but first quality of Bulbs will be sent. Equal if not superior to any house in the Trade

G. D. has much pleasure in informing his Friends and the Public generally, that he obtained the First Prize for the best 24 Hyacinths, (Nurserymens' Collections) at St. George's Hall, Liverpool, in March last, in competition with Messrs. Wm. Cuthbush & Son, for £10; also the Bronze Medal at the Royal Botanic Society, London

My Friend Mr. Cuthbush having vauntingly Challenged me last year, I now venture to Challenge him to Exhibit 24 Hyacinths at St. George's Hall, Liverpool, next March, for £5.

Green Lane Nurseries, Old Swan, near Liverpool.

All the Year Round
DOBSON AND SONS supply their magnificent Strain of PRIZE FLOWER SEEDS, viz.:—

CALCEOLARIA, sealed packets, 1s. 6d., 2s. 6d., 3s. 6d., 5s.
CINERARIA, 1s., 2s. 6d., 5s.
PRIMULA, extra fine, 1s., 2s. 6d., 5s.
PELARGONIUMS, 2s. 6d., 5s.

D. & SONS have been awarded Prizes for their Collections at the International and Botanical Congress, Royal Horticultural, Royal Botanic, and all the Crystal Palace Flower Shows. The Seed may be relied upon as being unequalled by any other strain.
Woodlands Nursery, Isleworth, London, W.

Dutch Flower Roots.
JOHN AND CHARLES LEE, SEEDSMEN to the QUEEN, have received their usual Importation of DUTCH BULBS, for which they are now executing orders. CATALOGUES post free on application.
Royal Vineyard Nursery and Seed Establishment, Hammersmith, London, W.

The Gardeners' Chronicle.

SATURDAY, SEPTEMBER 15, 1866.

MEETINGS FOR THE ENSUING WEEK.

TUESDAY, Sept. 18	{ Royal Horticultural Floral and Fruit Committees, at South Kensington	11 A.M.
	{ Photographic Society, Conversazione ..	8 P.M.
SATURDAY, " 22	{ Royal Horticultural (Weekly Show), ..	
	{ South Kensington	2 P.M.

PROFESSOR CASPARY'S communication on GRAFT-HYBRIDS to the Amsterdam Congress, a translation of which was given last week (see p. 849), revives a question which has very frequently been discussed both in our own columns and elsewhere; and indeed the interest is so great, that no surprise can be felt that the subject should be so often reverted to. Every summer brings with it records of the flowering of the now well-known Cytisus Adami, and inquiries as to how it is that this extraordinary plant produces at the same time yellow or lilac flowers, or others intermediate in colour between the two we have mentioned.

The history of this protean plant is given in brief in Prof. CASPARY's paper, and is probably known to most of our readers; and from it we see that the question in a great degree turns upon the veracity of ADAM, the nurseryman, in whose grounds the plant originated. Now although, so far as we know, no one has ever attempted to show that ADAM's statement was a designedly false one, and there exists no evidence of any motive for falsehood on his part, yet it is clear that as a rule both practical horticulturists and physiological students have discredited, and do discredit, his statements, not considering him perhaps to have been guilty of any intentional deception, but simply to have been himself mistaken. But Professor CASPARY, relying upon an apparently similar instance, wherein a Rose branch bore both white moss Roses and mossless red Roses, gives his adhesion to the theory of the possibility of producing crosses by grafting, pretty much in the same way as they are obtained by hybridisation; and, indeed, the history of this Rose, as given by the exact and minutely-observing Königsberg Professor, will hardly bear any other interpretation. But if this be so, if intermediate forms can be produced by grafting in this way, how is it that the cases of this kind are not more numerous? In orchards one stock will bear numerous different grafts, and yet the cases, which would be considered by Professor CASPARY as graft-hybrids, are so few that they might be counted on the fingers. Considered abstractedly, we can see no reason why the scion should not have an influence on the stock, an influence, *ceteris paribus*, as great as that of the stock upon the scion. It cannot be overlooked that the hybridisation theory seems to account for some of these cases, and more especially so since the researches of NAUDIN and others have shown how frequently, in the case of true hybrids, there is a divergence of form, a reversion to one or other parent; yet, on the other hand, it must not forgotten, that in some of these cases, *e. g.*, the variegated Jasmine and others that we might mention, there is not the faintest evidence of hybridisation. Neither do we see that the phenomenon of dimorphism, to which Mr. DARWIN has drawn attention, can be fairly considered to have much to do with the matter. That this subject, at least so far as regards the Cytisus Adami, should still have to be treated as an open question, is not very creditable to the managers of our botanic gardens, wherein the matter might be put to the test by crossing Cytisus Laburnum or C. alpinus with C. purpureus, and *vice versâ*, as well as by grafting. A few well-planned and well-executed experiments would in the course of a few years tend to settle this point, which clearly is no mere scientific curiosity, but one which opens up much practical utility, and might materially modify horticultural practice.

IN another column (p. 877) will be found some noteworthy remarks by a correspondent on SOILS SUITABLE FOR RHODODENDRONS. We gladly welcome any addition to our knowledge in this matter. It is our conviction that these fine shrubs are not yet sufficiently appreciated. Notwithstanding the annual shows in the metropolis, the practical knowledge of Rhododendrons is, in the main, confined to certain nurserymen who make them their specialty, and to amateurs who delight in their culture. Whatever improves our methods of growing the plant will tend to diffuse a taste for this most ornamental shrub.

The conditions essential to the successful growing of Rhododendrons are, a soil of loose texture and largely composed of vegetable matter in which the small rootlets may spread out freely, moderate moisture but not stagnant water, and a temperature sufficient to ensure the vigorous growth of the annual shoots, and to ripen the flower buds. In Britain, fine Rhododendrons must be grown in the sun; and in that view, a soil largely composed of peat is the best representative of the loose spongy vegetable earth which they affect in their native habitats. Not that the plant has any natural predilection for crude peat. There is no peat in the middle states of America, which are the original homes of R. maximum, and catawbiense, nor so far as we know on the Sierra Morena, in the south-west of Spain, or in northern Asia Minor, where R. ponticum grows wild. Some of the Himalayan species are found growing as epiphytes, a fact which implies a considerable amount of shade and moisture. When we cannot reproduce exactly the native circumstances of plants, we should endeavour to come as near to them as possible. This suggests the study of their "local habitations and wants," a subject which, since the time of the late sagacious Dean HERBERT, has perhaps not received from botanist-cultivators the attention it deserves.

Adverting to the remarks of our Correspondent, we may say that the soil on heathy commons—moor soil as it is sometimes called—only approximates to peat; but it is very suitable for Rhododendrons when it contains abundance of sand and vegetable matter. It is the staple material of some of the Surrey nursery grounds, and it is fortunate when it is to be had in sufficient quantity, for when Rhododendrons are to be grown by dozens or scores of acres, the formation of artificial soils is out of the question. Another variety of this, more nearly approaching to peat, is found on the slopes of hills that are covered with the common Heath or Ling, and sometimes at the bottom of declivities whither it has been washed by rain. This, when it contains a due proportion of siliceous matter, is the favourite soil for Cape Heaths and hard-wooded Australian plants. It may be used at once, but it is generally piled up for a year or two to rot out the Heaths, Tormentillas, and creeping Grasses which it contains. It is perhaps at times a little too dry for Rhododendrons, and in

that case it may be improved by an addition of rotted leaves. Peat, pure and simple, is to be obtained from morasses or peat-hags in a great variety of situations. Its mechanical texture is extremely diversified, sometimes being not unlike gruel, as in the moving Irish bogs, and sometimes almost as hard and horny as lignite, when it has been long drained and subjected to compression. Its best form is found in the top layer of a common peat bog, where fuel is cut, and which has been partially dried. As it holds in suspension a considerable portion of tannin, and sometimes shows traces of iron, it is useful to expose it for a time to the action of the atmosphere, and it should be largely diluted (if we may use the expression) with sharp sand and well-rotted leaf mould. A third of each, in bulk, may be used, and this has the advantage of increasing the amount of the material. It should be carefully chopped or broken in the compost yard, and duly mixed with the other materials before it is placed in the beds where it is to remain. Peat that has been drained, and that remains *in situ* (the subspecies 2 of our correspondent) is much benefited by the addition of sand and vegetable mould recommended above. It requires careful manipulation. The adjacent soil is often clayey, and should not be mixed up with it. We have seen a fine bed of natural peat completely ruined in this way. The drainage should be made as complete as possible, and the peaty material, while kept free from loam, should be largely treated with sand.

We are informed by a distinguished Scottish amateur in Rhododendrons—a man possessed of both eyes and hands—that there are great differences in sand, in respect to the growth of this plant. In some sorts Rhododendrons will scarcely put out a fibre in 12 months; in others they will be surrounded with a matting of roots, like a wig, in half that time. He has found clean sharp pit sand to be the best. We have frequently used, with good effect, pulverised white or grey sand-stone. Yellow sand-stone we found injurious, probably from the iron it contained. Calcareous sand, whether from rock or pit, should, if possible, be avoided.

As we are convinced that nothing but a more general and accurate knowledge of Rhododendrons is required to secure for these most beautiful shrubs their proper place in the flower-garden, we invite communications from all persons who may have anything to say on the subject, even though they may not agree with the opinions we have expressed. A man writing from experience is apt to stick to his own point of view, and so to give utterance to half-truths. It is always beneficial that a subject should be well ventilated and discussed. Wherefore, to use the words of a Latin poet, "If you know anything better than we do, let us have the benefit of it; if not, avail yourselves of our suggestions."

THE Rules of the UNITED HORTICULTURAL BENEFIT AND PROVIDENT SOCIETY have just received the sanction of the Registrar of Friendly Societies, and from an early copy, for which we are indebted to the Secretary, we learn something of the scope and objects of this new Benevolent Institution, of which Mr. W. HEALE, of Clapton, is Secretary.

As to its objects, in so far as they are set forth in the Rules before us, they are, to render assistance to gardeners in time of sickness, calamity, and old age, by allowing sick-pay until the member reaches his 70th birthday, and by assistance from the Benevolent Fund, after he has attained 70 years of age, in time of sickness or in seasons of distress. As to its scope, the members are to consist of persons following the calling of gardeners, to be admitted while not under 18, nor over 45 years of age, and to have worked not less than three years in a garden; and these are entitled to the benefits of the Institution after having been members for 12 calendar months.

It seems that there are two rates of contributions payable by members. For instance, they may pay 2*s.* monthly to a Sick and Deposit Fund, and 2*s.* annually to a Benevolent Fund; and in this case they receive 10*s.* 6*d.* as a weekly allowance in time of sickness; or they may pay 3*s.* monthly to the Sick and Deposit Fund, and 3*s.* annually to the Benevolent Fund, and receive when sick 16*s.* weekly. The payment to the Management Fund is 2*s.* 6*d.* annually in either case. After receipt of full sick pay for 26 weeks, the sick member is put on half-allowance for 26 weeks more, and after that, should the necessity continue, he is transferred to the Benevolent Fund, from which he receives such assistance as the Committee deem fit.

The more important of the Rules are the following:—

RULE 14.—The contributions to be paid by every deposit member shall be 2*s.* in each month, or annually, the amount of one month's contribution to the Benevolent Fund, and 2*s.* 6*d.* towards the fund for the necessary expenses of management, of which a separate account shall be kept.

The amount of sick-pay to which a member is entitled is to be 1*s.* 6*d.* per day, with the privilege of increasing this allowance to 16*s.* per week of seven days upon payment of 1*s.* per month extra; these payments once fixed may not be altered without the consent of the Committee.

Whilst a member is in receipt of sick-pay, no larger amount than twice his sick-pay monthly may be received from him, but at all other times he may pay as many as he can afford to lay by, and the same will be carried to his account as stated in Rule 16.

As all members pay the same contributions, and no entrance fees are required, a member's deposit, while he is in receipt of sick-pay, shall be liable to the following deduction, for the benefit of the Benevolent Fund, viz.:—For every 1*s.* he receives, a deduction of ½*d.*, if he was under 25 years of age when admitted; 1*d.*, if between 25 and 35; 1½*d.*, if between 35 and 45.

The payments in case of sickness to be made in full from the Sick Fund for 26 successive weeks, half the amount for the next 26 weeks, providing the member's deposit can supply the above deductions; if not, and his sickness continues, he shall be considered as permanently disabled, and transferred to the Benevolent Fund, and he will not again have a claim for sick-pay from the Sick Fund until he has been free from illness for six months.

Being a recipient from the Benevolent Fund will not interfere with his deposit.

During his illness the Secretary will be responsible that his payments are kept up, acting under instructions from the Committee.

No fines will be levied for non-payment of subscription, but any member who allows his payments to be seven months in arrear will be suspended from receiving sick-pay, and any monies due from him to the Sick Fund will be taken from his deposit account to supply the deficiency; and before being reinstated will have to produce a certificate from a properly qualified medical practitioner as to the state of his health before he can be allowed to receive the sick benefits, unless he should, for long sickness or family affliction, be so impoverished as to be in the opinion of the Committee unable to continue his payments; in this case he shall be eligible to receive relief from the Benevolent Fund.

Any member allowing his subscription to fall in full 12 months in arrear will be struck off the books, he will not have his deposit—it will not, however, be paid to him, but be retained by the Society until he attains the age of 70 years, or should he sooner die, be paid to the party nominated by him—to which sickness or family affliction may be pleaded at the time of his allowing his subscription to fall in arrear, all interests in the Society cease after this period, and he will be struck off the books but [illegible]

Should the amount of deposits exceed one year be more than the subscriptions of members will defray, the deficiency to be deducted from each member's deposit in equal proportions.

No payments will be received from any member on account of [illegible] after the month [illegible] and he ceases at that time to have any claim on it in case of illness, being provided for by the Benevolent Fund, *which see*.

The subscriptions to be paid to the Secretary, who will attend at the monthly meetings at the Green Dragon Hotel, or be forwarded to his residence by Post-office Order or otherwise [illegible] and he shall pay all sums received to the Treasurer, [illegible] remain in his possession, but pay to the Treasurer any surplus above that amount.

The Secretary will be required to provide one surety, [illegible] Auditors, [illegible] sec. 21, to the amount of £[illegible].

RULE [illegible].—The contributions of members shall be paid into a fund, out of which shall be paid the current expenses of sick-pay, the annual charge for the Benevolent Fund, and also the sums towards the Management Fund, as stated in Rule 14.

In February every year the account of the 12 months ending the previous year shall be made up, and a balance-sheet prepared, showing the receipts and expenditure under each separate heading or fund. The surplus of receipts of the 12 months, after deducting the expenses above-mentioned, shall be appropriated to individual members in proportion to the amount of contributions paid by each; the sum standing in the name of each member shall be called his deposit, and shall belong to such member.

The balance of each member, with such increase as may be made to it year by year, shall be carried to the credit of the member in his book by each; the Society shall be reached the age of 70, with interest on all amounts of 20*s.* and upwards.

RULE 18.—The Benevolent Fund shall consist of all moneys handed over by the United Horticultural Society in conformity with the Rules of the dissolved Society, contributions of members, as stated in Rule 14, and the donations of patrons and contributions of honorary members specially given for this purpose. Honorary members' subscriptions to be one guinea per annum, or ten guineas paid in one sum.

The sum so raised yearly by year shall be applied towards rendering assistance to members who have passed their 70th birthday, to such an amount as the state of the funds will admit and the Committee deem advisable, consideration being given to those who have used the best exertions to lay by a provision for old age, and to keeping a careful balance.

Every member also who has the misfortune to be ill for a longer period than 52 weeks will be eligible to receive relief from this fund, the Committee to determine the amount to be allowed. Subscribers of 21*s.* and upwards per annum, being professional gardeners, shall also be contributors as recipients from this fund, should they be at any time placed in such a position as to require assistance.

Should any member or subscriber, being a gardener, die in [illegible] leave [illegible] being a widow or widow and children, the Committee shall, on the case being brought before them, investigate it, and afford such temporary relief as they may deem requisite and necessary.

Should any member receiving sick-pay from the Sick Fund meet with any accident, such as a broken limb or dislocation, the Committee shall have power to pay such sum towards his surgeon's account as they may deem expedient from this fund.

The Committee of Management to have power to relieve members of this Society from this fund as they may deem advisable.

Such are the main features of the plan upon which this Benevolent Society of Gardeners is proposed to be worked. It is founded, we are told, without anything like antagonism to existing institutions having a similar object, the opinion being entertained that there is room for both. We cannot, however, resist the conviction that a division of interests must weaken the action of both; and we can but deplore the existence of feelings of dissatisfaction and distrust amongst the brotherhood of gardeners, which has long been smouldering, and to which it cannot be doubted the establishment of a second Gardeners' Benevolent Institution is mainly due.

— Apropos of PROVINCIAL EXHIBITIONS, we are glad to learn from the local papers that the recent Floral Fete at Nottingham has been so far a success that it is expected there will remain, after paying all expenses, a good surplus to form the nucleus of a new Society that shall worthily represent the Horticulture of the Midland Counties. It is, however, significantly observed, that "the promoters of the new Society must agree to sink personal and political bias," and the providers of the feast—that is, gardeners—"must be fully represented in the management." We are informed on good authority that the arrangements for the Manchester National Show of next year, in the shape of a guarantee fund, are progressing very satisfactorily. The promoters seem to have prudently taken care that this show, which is fixed for the first week in June, shall not clash as to time with that of the Royal Horticultural Society to be held at Bury. With respect to this last, we learn that at a meeting of the Town Committee, the proposed plan of holding the two shows (Agricultural and Horticultural) coincidently, met with a qualified approval. It was concluded that the 30 acres placed at the disposal of the Royal Agricultural Society would afford sufficient accommodation for both meetings, but if not, additional space could be found at a moderate rental. A correspondent of the *Bury Free Press* observes, in reference to this movement:—"The Royal is anxious to become in fact, what it has long been looked upon in name, a National, and not chiefly a Metropolitan Society. It will come into the provinces, if it comes at all, to promote the advancement of horticulture. Its members are found everywhere throughout the three kingdoms, and it is only equitable and right that its patronage and its stimulating presence should be felt throughout the whole country. I know that it will secure a hearty welcome to Bury, and should the application for a free site result in a grant of money from the borough necessary, my mite will be forthcoming towards securing the number of acres needed. It becomes everyone, and especially the members and officers of the Bury Horticultural Society, to do all in their power to ensure the success of the first provincial show of the Royal Horticultural."

BEDDING-OUT.

"VARIUM et mutabile semper femina:" and, "we are the sons of women, Master Page," inheriting largely the unstable mind, and nowhere, perhaps, exhibiting it more conspicuously than on the scene of its first transgression—a garden. Faithful and affectionate in the main, we florists, we have our fickle moods. I remember an old Oxford friend, who assured me that, staying one vacation in the home of two lovely sisters, he loved them both with such an equal fervour, that when the last day of his visit came, he registered a solemn vow, while shaving, to propose to her whom he saw the first; that he met Agnes on the landing, and was refused by her in the conservatory after breakfast, an incident which he always attributed to the inclemency of the weather, and to Edith, by which had decreed that he should marry Edith, who accepted him that very evening, and whom, so he immediately discovered, he had always loved the most. So we gardeners are not always quite sure which of Flora's daughters is our Queen of Hearts. In winter and spring it is the elder damsel, the old system of gardening, with its mixed beds of shrubs and flowers, having something to charm us in every season, and distributing its bright colours and sweet perfumes over the 12 months of the year. In summer and autumn, it is the younger sister, on whom we gaze so earnestly, and woo so tenderly; it is the modern system of "Bedding-out," with its glowing splendours, its strikingly effective contrasts, its harmonious combinations, and artistic gradations of light and shade. Some few weeks ago I was conversing with a lady whose refined and graceful taste yearly realises the garden *par excellence* of our county, and one of the most beautiful in England. I almost tremble now to remember our dialogue, our declamations against "Bedding-out." It was wrong, it was unworthy of a true gardener, to endure nine months of dreariness and desert for three of uncertain grandeur. It was the discontented spirit of the age, which would not be satisfied with the provisions of Nature, but fretted for sensational effects. The days of bedding-out were numbered. We should return to the arrangement and to the culture of those wiser days, when, as our Laureate sings—

> "The daughters of the year,
> One after one, through that still garden passed.
> Each, garlanded with her peculiar flower,
> Danced into light, and died into the shade;
> And each in passing touched with some new grace"

that pleasant and peaceful spot.

Such were our resolutions; but what was the result? The judge has put his black cap in his pocket, and is complimenting the prisoner on the extreme beauty of his personal appearance, and the peculiar excellence of his moral character. The lady writes to me, that she is delightfully occupied in designing her arrangements for next year's Bedding-out; and I, with all the tenderness of a forgiven boy to his mother, and all the ardour of a lover, who has just discovered the absurdity of quarrelling with his "own, own darling," am never

weary of admiring my heart's desire—too happy in the present to be penitent for the past, too sure of future faithfulness to be distressed by any former failings.

But will not the old vacillations recur? When the garden is "deformed by sullen rains," or, at all events, when it is denuded by frosts, will no change come over the spirit of our dream? Will November gales be powerless to move the weathercock of our affections? Will our motto be—"*Vestigia nulla retrorsum*," and shall we abide by it as steadfastly as those who translated it, "we don't mean to go back?" We cannot hope for such complete devotion. There will be murmurings, doubtless, and obliquities of faith during the winter of our discontent, but I am quite sure that the former will be less audible, and the latter less frequent every year among us. And the reliable ground of my anticipation is this—that the Bedding-out system has not only attained to such a phase of beauty as to justify a great sacrifice, but that the sacrifice required becomes yearly less. The introduction of plants of distinct and variegated foliage, such as the Coleus, Amaranthus, Iresine, Perilla, Centaurea, Cerastium, the Tricoloured Golden and Silver-leaved Pelargoniums, has not only enhanced but greatly prolonged our enjoyment. A few years ago and we had six weeks to wait after planting for the fruition of our Bedding-out. It has charms for us now from first to last. Rains and winds damaged and decapitated our Tom Thumbs, Calceolarias, and Verbenas; they only refresh and beautify Mrs. Pollock and Miss Iresine. We may depend now upon an effective, charming display during the four months of June, July, August, and September; and surely we may endure a brief fallow season for such a glorious harvest. Suppose that some skilled and earnest gardener, who died before the establishment of the modern system, could revisit his garden, and see it in its summer glory, would he not say that such a consummation of loveliness was ample reward for any labour, and largely repaid any past privation?

But these privations are, I repeat, gradually decreasing. The former and the latter dreariness and dinginess, which disfigured our beds in the first years of the new method, are gone; and the objection, that from November to June our bedding-out department was a howling wilderness is no longer valid. Large plants of Centaurea remained in the centre of several beds here throughout the winter, and with a few dwarf evergreen shrubs, kept in pots for the purpose, had a pleasing cheerful appearance. Edgings of Cerastium, still more hardy, relieved the monotony of the borders. And in the spring, although we may not emulate the exquisite beauty of Cliveden or of Belvoir*, the poorest may make his garden glow, with Hyacinths at 18*s.*, early Tulips at 6*s.*, and Crocuses at 1*s.* 6*d.* per hundred.

Here I must pause for the present. On a future occasion, and in the hope of eliciting information and instruction from some of your more experienced readers, I will venture to describe a few combinations of plants, which have been admired in my garden. In this season of propagation, and preparation for another summer, mutual advice from practical teachers will be welcome to many of the floral brotherhood, and gratefully appreciated by *S. R. H.*

CAMELLIA CULTURE.—No. II.

In order to meet the wishes of "A Nineteen Years' Subscriber," and others similarly situated, I have diverged from the original method in contemplation in treating upon this subject, and will at once proceed to nominate my special favourites—sorts that have stood the test of popular criticism for a lengthened period, and which are eminently fitted to take a position in the best conservatories and in the choicest collections of this or any other country. The experienced cultivator must, in compiling a catalogue, mercilessly weed out many sorts bearing high-sounding names, and occasionally introduced with a "flourish of trumpets," while there are others which may not have come under his criticism and control that may be well worthy of a place in the front rank. Among the many hundreds that have been sent out, justice compels the remark that a very small minority indeed merit distinction as acquisitions in the various classes of colour, while in point of form and substance or texture they cannot be tolerated. Trustworthy information as to the relative merits of a batch of novelties is of the utmost importance to growers generally; for if you buy upon credit and the majority of your choice selection turn out worthless, mere weeds, you cannot be blamed if you do not quite repress your indignation, and say hard words upon "commercial immorality," and append certain adjectives to your epithets which cannot be reproduced here. The writer has got his "fingers burnt" several times in this way. The price of the article is bad enough, but it is a mere bagatelle, relatively speaking. When one gets a good thing, or thinks he has got it, it not only gets the best position, but the little twig is grafted or inarched as the case may be upon a strong stock, and the tiny shoolbet rapidly assumes more gigantic proportions. Under the most favourable circumstances it may take two or three or more years to prove its character, and if it turn out worthless recount the labour in vain, and you after your toil, patience, and perseverance have nothing but a stock after all: for so far as my experience goes "double wrought" Camellias have no special virtue in them.

My plan then will be to lump together the new and old sorts that merit a front rank distinction; then classify a few which are remarkable for decorative purposes, and lastly have a look at the more important novelties undergoing their probationary trial. I shall not hold to the alphabetical line of arrangement, neither may the "placing" of sorts be altogether considered as an index of relative merit.

Alba plena (*Old White*).—A very handsome and useful plant, well suited for growing either as a pyramid or a round bush; dense habit; beautiful foliage; a prolific setter of bloom buds, and the flowers large, pure white, imbricated to the centre; and when well grown of great depth of petal.

Fimbriata.—A plant evidently of a more delicate constitution than the former, less vigorous in habit, and more liable to succumb to injudicious management; bearing noble flowers of a size almost equal to the Old White, with more numerous petals, and therefore when in good character presenting greater depth; each flower finely fimbriated on the edges; one of the very first favourites of the ladies, and eagerly pounced upon for "hair" and other purposes of decoration. These two, as "whites," stand "wiring" better than any other of the same colour in cultivation, and are invaluable for all those who have to lay their account for evening parties and such other demonstrations, where cut flowers are in request. To those who do not know we may also intimate that the blooms stand much longer, and resist "wear and tear" far more successfully under this neat little process of wiring, than if attached to the shoot in the natural way.

Flavescens (*Lady Hume's Blush*).—This is also one of the original sorts introduced into the country. It is rather of a straggling or wayward habit, blooming freely, but seldom, if ever, making a handsome plant. Its flowers differ in this respect from the purely normal type in having the petals arranged in a hexagonal form, a position almost, although not altogether, peculiar to this variety, for it is to be observed occasionally in other flowers, although not with that precise regularity which the sort in question characteristically assumes. The fine shade of blush that pervades this flower, and the conspicuous texture of its petals, rank it as a special favourite. It is one of the few that will fall to pieces if attempted to be wired.

Imbricata.—A crimson flower of exquisite form, with occasional blotches of white, which contribute much to its decorative appearance. Blotching or flower variegation in this and several other "sporting" varieties is induced by a course of treatment which will be more particularly referred to when "cultivation" is under discussion. Under ordinary circumstances the self colour prevails which is not quite so attractive. When fully expanded, this flower shows several undeveloped petals in the centre, which is a decided mark of deterioration in the eye of the florist, destroying its formal geometrical build. When about half expanded it is quite a gem, being sufficiently large for general purposes, and the outline all that could be desired. Placing it side by side with all the best novelties of the same cast of colour, at that particular stage, I do not know a single one that will surpass it. As a plant it can be distinguished at any time by its foliage and habit of growth. Redundancy of bloom and a fine suffruticose habit, with the leaves having a slight tendency to curl inwards towards the edges, are its distinguishing characteristics; so that those who are familiar with the tribe could, in a large miscellaneous group of sorts, pick out every imbricata faster than a man could gather them together.

Saccoi nova.—A splendid growing plant, with large lustrous leaves, not the least disposed to be shy either in bud-setting or in flower expansion—a waywardness very often attached to some of the choicest of our novelties. Flowers of a rosy pink with prominent flesh-coloured venation; constant, large, and imbricated to the centre. With proper treatment the flowers sometimes attain a superb degree of excellence, and although making large buds expand to the very centre, showing a depth of bloom and an outline positively charming; although each petal is not quite so perfect as if turned out of a mould like a Ranunculus, or some of the more advanced of our Pinks.

Henri Favre.—This is a vigorous-growing plant, but shorter in the internodes, smaller in the foliage, and therefore of a denser habit than the preceding variety. It is not at all shy, and is capable of withstanding more fatigue, by a violation of cultural rules, than most other sorts. It is an abundant bloomer, and the flowers more perfect in outline than any of the above, sometimes assuming the hexagonal form, and it is a sort that prominently attracts general attention. It is a deep shade of rose, almost inclining to a ruby. It is, however, one of those sorts that fall to pieces if attempted to be wired, and is a shorter lived variety than most of its associates. This little depreciation is due to the flower being almost entirely without a calyx, which in the others forms a capital socket for holding the petals together.

Sarah Frost.—This is an American introduction, and one that can unhesitatingly be placed in the front rank. It has a good habit, with leaves narrow in proportion to their length, and rather small wooded than otherwise. Flowers very large, of a rosy shade of crimson, imbricated to the centre, and possessing great depth of good petals; a splendid late bloomer, and not at all fickle in its floriferous character; occasionally, however, showing a disposition akin, or similar to fasciation by having a double-centred flower.

Contessa Lavinia Maggi.—This is unquestionably one of the best novelties that has ever been introduced. It is not only a most superb flower, but it is a plant of noble habit, with such foliage of broadly-ovate lustrous character as eminently distinguishes it. An acquisition of such a character as this is far better worth a 5*l.* note than 24 of an indifferent character. When well grown each flower is imbricated to the centre, although we have seen plants producing blooms something like the imbricata type only a little faulty; but the plant is capable of producing blooms that completely rival all the carnation stripes, and we have seen it in such character that nothing, new or old, could stand against it. The flowers, in the first instance, are finely cupped, and made up of shell-like petals of great substance and beautiful formation, with the white, the red, and the crimson so nicely flaked that an enthusiast could stand and admire it for an hour.

Wilderi.—This is a dwarf pigmy-habited variety, with a little larger foliage than the old Myrtifolia. The flowers are as nearly as possible what the dogmas of the florist imperatively demand. It requires a little coaxing in the way of attention to its physiological character to keep up first-rate appearances in the way of general health. If this be attained it flowers freely, and the flowers can be produced above a medium size. It is a deep shade of rose, something between the colour of Saccoi nova and Henri Favre, and has a general finish about it which neither of the two can boast of, being imbricated to the very centre, each flower looking as if it had been turned out of a mould.

Reine des Fleurs.—This is a vigorous grower, partaking somewhat of the habit and general mode of growth of Doukelaarii, but of a totally different character of flower. The foliage is comparatively small, but the flowers are very large, some of them quite approaching in size to Mathotiana, but of a far less exceptional build than that variety, and a much finer-formed petal. It also is one of those that can be thoroughly depended upon if obtained true to name (I have seen spurious varieties under the name), and I may state that I have had branches of this sort with great flowers at the extremity, looking more like a Hollyhock spike, such were the glow and mass of colour, than what it actually was. The flowers are of an intense velvety crimson, with petals of great substance, and forming, when in condition, nearly three-fourths of a ball in outline.

Feastii.—This is one of the largest of the white and pink striped varieties; and if grown too strong, or attempted to be forced in any way too early into bloom, will not unfold its immense ball of petals to the centre. It possesses a beautiful habit, and can be depended upon under wise treatment; but if the tyro adds this to his collection, and gets disappointed, it will be entirely owing to a want of knowledge of its cultural requirements. Flowers often white, but when in real character having decided and irregular pencillings of pink; petals not particularly well-formed, but the flower as a whole, from its great size and depth, and its perfectly imbricated form, is one of the most attractive of the section, and well worthy of a place in the front rank.

Cup of Beauty.—A plant of vigorous growth, rather inclining to be straggling as otherwise, and requiring the knife more freely than some others. It blossoms, however, freely, and yields very good-formed flowers of average size, although not possessing the same depth of petal as some others named above. It is inclined to be "cupped" before fully expanded. It afterwards reflexes a little, and shows a very good outline. It is of pure white colour, stained and pencilled with rose.

La Mastoue.—This plant possesses a dense bushy habit, and has all the characteristics of a first-class flower. It is of the same general character as Valtevaredo, which I once looked upon as the best of its class, but the variety in question is fully a beat upon it. The sorts are not precisely similar, but, adopting the canon of the florist, Valtevaredo, must give way. It is one of the sporting varieties of the imbricata cast; although the prevailing colour in this instance is a soft pinky rose, it can be produced so suffused with white blotches as almost to change its character. Its outline is as nearly perfect as may be, and the flower is imbricated to the centre. When large plants of this are grown it will be exceedingly telling, and I have not the slightest doubt that we may look to it as one of the standard varieties for many years hence.

Comte de Flandres.—Strangely and singularly enough the merits of this variety have been underrated. It has quite exceeded the most favourable anticipations of the raiser, and no one will hesitate for a moment in adding this to his collection. If it has a fault, it will be more in the way of a lanky habit, which can be endured when we look to its splendid blossoms. It is of cupped formation like the Charles Lefebvre Rose, and if we had such a colour in a Camellia as that magnificent rose it would cause a sensation. The prevailing and ground colour is white with carnation stripes and an occasional dash of flame pervading the surface, with fine massive shell-like petals exquisitely formed, and making up a perfect flower imbricated to the centre.

Storyi possesses a vigorous habit with splendid foliage, and is one that can always be depended upon to come good towards the end of the blooming season. It is rather a dull shade of crimson, but its finely formed petals and flowers point it out as one worthy of being placed among the select few.

Candidissima is by far the best of the late blooming whites, and for that, if for no other purpose, it merits a first place. It is pure white, and fully imbricated; the petals, however, are small, and sometimes malformed towards the centre. It is not particularly vigorous in habit, but "sets" and blooms freely.

Jubilee is a vigorous grower, making a beautiful bush. It requires to be in very good health, and its flower-buds developed in time, to produce flowers of the first order; but, when so managed, the produce well repays the cultivator. It is a large flattish flower, with an immense petal, finely formed, the ground colours pink and white suffused with pink mottling, spotting, and staining. It is apt sometimes to produce "monstrous" flowers, and at best, when fully expanded, the centre petals assume a little irregularity; but, like imbricata, in the act of expanding it is a beautiful object.

Mrs. Abby Wilder is a good grower, having fine foliage of a paler green tint than common. The flowers, when in perfect condition, are most beautiful, as regards their form, colour, and substance, but they are not at all constant, sometimes coming with a confused arrangement of petals. The ground colour is a pale shade of blush, like Lady Hume's, with prominent pink

* I hope next spring, with my friend Mr. Ingram's consent, to describe the attractions of the latter.

and salmon stripes. Its texture is of the first quality, and but for its waywardness it might be held up as a model variety. Seedling in its sporting capacity that flowers sometimes come salmon-coloured with prominent fleshy venation, and I am certain that Queen of Beauties is a sport of this variety, as I have had flowers precisely similar off Mrs. Abby Wilder, and when both sorts become more generally known they will be found occasionally to revert to the original.

Duchess of Orleans has been a considerable time in Camellia collections, and although a flower of generally acknowledged excellence, is not often seen in good character. The plant is a little shy, and very impatient of checks of any kind; but if the buds be early matured, and the plant kept moderately cool and airy during a season of rest, it will yield very finely-formed fully imbricated flowers. It is a combination of white and flesh ground colour, with distinct prominent bands of carmine down the centre of the petals, which in turn are of good formation and of large size.

Countess of Derby is an English seedling of unquestionable merit, free in growth and blooming properties. It is also one of the striped varieties that find so much favour—a good white ground broadly marked with rosy stripes and stains, having a bold petal and a good outline.

Princess Frederick William.—This is a considerable improvement on Tricolor flore pleno, of very much the same character, being striped and flaked with carnation colours. The flowers are not quite perfect, in a florist's point of view, towards the centre, but the petals are of good formation, and the texture altogether desirable. The plant has a good constitution, and is adorned with broad massive foliage.

Bothwelliana.—This is a Scotch seedling, raised by Mr. Turnbull, of Bothwell Castle, who has had a numerous progeny, but this one far eclipses all his batch. It is of much the same character as the Duchess of Buccleugh, in fact they are all but identical. As, however, the name Bothwelliana was first in existence, adhering to acknowledged botanical precedent, it must remain. As a late flower it is an unquestionable gain, and it is one too that is constant under any circumstances short of bad management. It is a dark ruby-red, a colour not predominating among Camellias and selfs, by the way, of sufficient merit are a scarce commodity. In depth and general outline of flower this is a capital fellow to the chaste white Feastii. There are an enormous number of petals to the bud, which follow the law of the order of expansion to the very centre, albeit they are not so roundly formed at the extremity as the florist's law would demand.

Princess Bacciochi.—This makes a dense suffruticose bush, and is one that can thoroughly be depended upon. It is, moreover, one of the best of a colour approaching to scarlet, and possesses finely imbricated flowers of good substance, but having petals a little pointed. It is also a thin, flattish flower, but notwithstanding these drawbacks ought, from its distinctness, to be in every collection.

Montironi has a good habit, and produces flowers freely, sometimes having a tendency not fully to expand. When in good condition it is very attractive, from its broadly ovate petals and its cupped form; colour pure white, very slightly stained with rose pencillings.

These 24 sorts, take them "for better or for worse," with the drawbacks and excellences attached to each of their characters, may fairly be said, all things considered, to be the best group of Camellias in the market, and such as are sure to give unqualified satisfaction to all who grow them well. *A.*

(To be Continued.)

THE CEDARS OF LEBANON.

THE Rev. Mr. Tristram, F.L.S., informs me of a most interesting discovery lately made in the Lebanon, viz., of several extensive groves of Cedar trees, by Mr. Jessup, an American missionary, a friend of his own, to whom he pointed out the probable localities in the interior. Of these there are five, three of great extent, east of 'Ain Zahaltch, in the Southern Lebanon. This grove lately contained 10,000 trees, and had been purchased by a barbarous Sheikh from the more barbarous Turkish Government, for the purpose of trying to extract pitch from the wood: the experiment of course failed, and the Sheikh was ruined, but several thousand trees were destroyed in the attempt. One of the trees measured 15 feet in diameter, and the forest is full of young trees springing up with great vigour.

He also found two small groves on the eastern slope of Lebanon, overlooking the Buka'a, above El Medeûk; and two other large groves, containing many thousand trees, one above El Barûk and another near Ma'asiv, where the trees are very large and equal to any others: all are being destroyed for firewood. Still another grove has been discovered near Dûma, in the western slope of Lebanon, near to the one discovered by Mr. Tristram himself. This gives 10 distinct localities in the Lebanon to the south of the originally discovered one, and including it. Ehrenberg had already discovered one to the north of that locality, and thence northwards the chain is unexplored by voyager or naturalist. *J. D. Hooker.*

Home Correspondence.

Origin of Flower of the Day and other Pelargoniums.—I have read with much interest the several articles that have appeared of late respecting the origin of the numerous varieties of our fine bedding Pelargoniums: at the same time I have been much amused at the rather strong assertions and hazardous conjectures of some of the writers. Has it never occurred to them that 20 years ago there were not many varieties to get sports from? It is now very different, on account of the mixed character of Scarlet Pelargoniums, including zonals, tricolors, silver and golden variegates, and Nosegays (which I have lately proved can all be raised from one seed-bearing parent), and I have no doubt, therefore, but that some of our fine varieties of late years may be sports, but I have not been fortunate in that way, and must say I prefer the seedlings. As the Flower of the Day is generally admitted to have been the first really good variegated Pelargonium, I will state in a few plain words how I obtained it, and some others of my seedlings. I have long taken a great interest in raising plants from seed, as my once celebrated Calceolarias, and my still-admired Epacrises and Azaleas prove. After trying show Pelargoniums, with which I had some success, I was delighted to find that Messrs. J. & C. Lee possessed a real silver variegated, bright scarlet Pelargonium, but such a difficult plant was it to increase, that some of the best gardeners failed with it. Messrs. Lee had a very limited stock of it, but I managed to procure a plant. I wanted it only to bloom, and was successful in growing it on nicely. The only name I ever heard for this variety was Lee's Variegated Scarlet; this is a proof of its rarity. I cannot state how many years the Messrs. Lee held this plant, but it was obtained by them from the gardens at Littlecot, near Hungerford, as a pretty plant with which nothing could be done. Its origin I have not been able to ascertain. As soon as I got my small plant into bloom, I lost no time in fertilising the Globe compactum with its pollen, and was rewarded by getting Cerise Unique and Flower of the Day. The former bloomed the next autumn; the latter stood over till the following season, when I exhibited a large plant in full bloom at the South London Show, where it was one of the lions, and shortly afterwards it was purchased by the Messrs. Lee. The late Mr. Thomas Gaines, of Battersea, had previously purchased Cerise Unique; and by him it was sent out. I may here state that Flower of the Day was a variegated plant from the seed leaf, and that the original plant never sported. Cerise Unique has maintained its character true until now, with the exception of a silvery leaf occasionally. In the next generation I obtained Attraction, the first of the zonal tricolors, and this was variegated from the day it appeared above ground, and bore the largest trusses of any that I have seen. This also was sent out by the Messrs. Lee. Then followed Silver King, Annie, and Countess of Warwick in the variegated class, and Richmond Gem, General Peisier, and Silver Rival in the marbled class. The appearance of this marbled character in the first instance in Cerise Unique, I cannot well account for, excepting that Lee's Variegated Scarlet was more inclined to show green and white portions in all its parts in faint stripes up to the very calyx, than any other sort I have noticed. About the same time my friend and neighbour, Mr. Pennycuik, raised Commander-in-Chief and others, which passed into the hands of Messrs. E. G. Henderson & Son. Then I succeeded in raising Christine and Rose Queen. The male parent of Christine, I believe, was an old rose-coloured Nosegay, and that of Rose Queen, Ingram's Princess Royal. *F. R. Knudson, Shenn Nursery, Rich mond, Surrey.*

Martagon Lily.—In the notice which accompanies the Plate (2799) of this plant in "Sowerby's English Botany," published May 1, 1837, I find it stated that the bulbs of this and other species of Lily are cultivated in some parts of the Continent as the Potato is with us, and that they furnish a nutritious and agreeable article of vegetable diet. Can any of your correspondents favour me with the best mode of propagating this Lily, so as to produce it in quantities amongst Underwood and copses? Also the best mode of cooking? And the names of any other species of Lilies which will serve both for ornament and food? *Diss.*

Viola cornuta.—I had an impression that this beautiful Violet was identical with V. calcarata; but this I find is not the case. A few days ago I visited Huntroyde Park, where I saw the true V. cornuta, and I have no hesitation in saying that it is one of the most useful as well as beautiful plants used for flower garden decoration. Previous to my visit, there had been days of drenching rain, but the plants of this Violet were bright and striking, and loaded with lovely flowers, which are to all intents and purposes "waterproof." Mr. Wills deserves the united thanks of gardeners, particularly of us northern ones, for bringing this plant so prominently before us. *Bruce Findlay, Botanic Gardens, Manchester.*——Viola cornuta deserves more praise than I can find words to express. I have tried it for masses and also for edgings, and I have never before seen any plant equal to it. It has a pleasing effect as an edging associated with yellow Calceolarias, and as regards masses it looks well near scarlet or pink Pelargoniums, its mauve coloured flowers, which are produced in profusion, being very effective. I may also add that in beds no plant which I have ever cultivated bears up so well as this Violet against the extreme changes of weather, which we have experienced this season. High winds and pelting rains have no ill effect on it; indeed very shortly after the weather has cleared up Viola cornuta may be seen again in all its beauty. For my own part, therefore, I must tender my thanks to Mr. Wills for having introduced so very desirable an old plant to public notice. It is well worthy of the admiration of all true lovers of flowers. It is hardy and easily cultivated, and in the case of amateurs whose glass structures in which to winter plants are limited, this Violet will prove a real acquisition. A dozen of good plants of it taken up in autumn and stowed away in a cold frame during winter, will furnish a good supply of cuttings early in January. Owing to the success which has attended the plants which I raised early last spring, it is my intention to adopt a similar course in future; for I consider that young plants are likely to produce a greater profusion of flowers, and of a better colour, than those which are longer established. Seeds of this Violet sown in pans, and placed in heat during the two first months of the year, will furnish a good supply of plants in time for putting out in May. *Jas. Drewett, Denbies, Dorking.*

Currant Sports.—In your Paper of August 25 (p. 804), is an article headed "Peaches and Nectarines on the same Tree." Some years ago (see p. 646, 1855) there appeared in your columns a notice of a Currant bush having three varieties of fruit upon it., viz., red, white, and champagne or pale red. This bush is still alive and in good health, and this season, the three varieties of fruit have been very distinct, although they have not been every year alike. *P. Mackenzie.*

Cherries.—In looking over "T. R.'s" list of Cherry trees under glass (see p. 801) I think I have one somewhat different from any noticed by him. It is a Mayduke, and has for upwards of 20 years produced two crops of fruit, an early crop and a late one. The lower part of the tree furnishes the early crop, part of which was gathered this season about the middle of June; while the upper portion, although neither grafted nor budded, produces the late fruit which was gathered at the end of August. The fruit has the appearance of that of the Mayduke, but the taste is different from that of the kind just named. *P. Mackenzie.*

Orchard-house Trees in Pots.—An article on orchard-houses, signed "E." (p. 830), appears to me to be so direct a challenge as to the merits of that most delightful amusement, the growth of fruit trees under glass, that I cannot resist the temptation of saying a word or two on the subject. I will commence by stating that about five years ago I was equally sceptical with "E." as to the probability of success attending my efforts. My house, built on Mr. Rivers' plan, 100 feet long and 25 feet wide, presented an appearance anything but creditable to a gardener. Trees stunted in growth, eaten up with red spider, and all other pests that vegetation is heir to, really suggested to me that I had better give up that system of culture as a bad job, and row in the same boat of incredulity as your correspondent. Not so however. I did not at all like to be beaten, so I tried the plan of planting out some trees in a border in the orchard-house. As time passed, this altered system gave me as much hope of ultimate success as the pot system, inasmuch as the trees, instead of doing badly would not do at all. Now for the cause of failure. It was doubtless thought that when once under glass the trees could take care of themselves; but pressing periodically during the fruit-swelling season, watering and syringing to get rid of red spider, &c., were not systematically attended to, consequently stunted growth and its attendant evils reigned preeminently in my orchard-house. Nothing daunted, I determined to try one more season, the third, when by dint of following out those useful and plain instructions, except as to pinching-in, given in Mr. Rivers' valuable little work on "Orchard-house Culture," I succeeded in producing a fair crop. The fourth year was as much superior in point of produce and general fertility to the third as it was to the second. I felt now that the novel and delightful plan of thus producing fruits was most certainly an acknowledged fact, and from it received fresh stimulus to go on and conquer. This season my house presents such an appearance of luxuriousness and productiveness, as my numerous friends, some professional, tell me, cannot be surpassed by any one. It is occupied by about 240 trees till after the spring frosts are over and the fruit (Pear and Plums) sufficiently forward to be turned out; the house is then devoted to the remaining Peaches, Nectarines, and Apricots, in all about 150; those in bushel pots will average as follows; Peaches, 5 doz., and Nectarines 6 doz. each tree; size very good, and quality, as attested by many, equal to any outdoor production. I may add, that the fruit never drops off prematurely, and that my success is not limited to a tree or two; on the contrary, every individual specimen is loaded with handsome fruit. I trust that this communication will not be considered as the mere praise of an enthusiast, but as a statement of facts to be verified by the ocular demonstration of any one interested in the matter. A word more, although fearing tautology, to the lovers of gardening, whether on a large or a small scale, the greatest enjoyment may be derived from an orchard-house, a style of gardening of unsurpassed ease, as no heating apparatus or skilled labour is required, a simple and steady adherence to a few rules being certain to reward one for time and trouble bestowed. One thing has just struck me, that the keeping of bees wonderfully assists in the certainty of a crop; as soon as a blossom appears, my house is swarming with them, and they keep possession till their supply of food is stopped by the setting of the fruit to which they have contributed so much. The perfect flower-show exhibited by the trees when in blossom—Pears, Peaches, Plums, Nectarines, and Apricots, all interspersed judiciously with regard to colour and effect—is not the least attractive of the numerous pleasing phases of a well-cared-for orchard-house. *Ebenezer Wm. Harlock, Brewern, Ely, Cambridgeshire.* —— If your correspondent "E." waits till fruits from trees in pots compete successfully with those from trees in pots, I do not think that there is much probability of his becoming a convert to the pot system. In my opinion there is no comparison between the two in point of flavour, for no fruits require more exposure to the influence of sun and air at the time of ripening than Peaches and Nectarines. Moreover, the constant slopping of water at the root very much impairs the flavour of the fruit, and the crop is more uncertain. Gentlemen who go to see the system, only see the successes which attend it, but none of the failures of setting a crop; let them inspect the hospital for sick patients. As to getting more variety, why, there are not more than five or six sorts of Peaches, Nectarines, and Plums that are really desirable, and it is very easy to bud two or three Peaches on one

tree, so as to get a succession—say, Bellegarde and Walburton Admirable on Royal George or Noblesse, and late Nectarines on Elruge and Violet Hâtive; and in a small house this would much prolong the season. In a house here, 64 feet long and 11 feet 6 inches wide, I have planted as follows:—Front trellis: Royal George, Noblesse, Stirling Castle Peaches; Violet Hâtive and Elruge Nectarines. Back wall: Bellegarde, Varington, and Walburton Admirable Peaches; Pitmaston Orange and Downton Nectarines. I anticipate these will give us an abundant supply of first-class fruit till we get it on the open walls, and this at not one tithe of the labour and first cost of trees and pots. Trees in pots may be all very well for purposes of amusement, but they will not do for a gardener who has to supply an employer's table with fruit of first-rate quality. *J. Sheppard, gr. to J. Berners, Esq., Wolverstone Park.*

Strawberry Culture.—What has our friend Mr. Radclyffe to say respecting the system of Strawberry cultivation recommended by one of your correspondents (see p. 829)? And further, what have our successful market gardeners to say regarding the advice to plant Broccoli in ground comparatively speaking as hard as a rock, for if it were not so an iron bar would not be required wherewith to make a hole for the reception of the plant? Such practice I have never seen carried out, much less recommended, and I imagine that I have seen gardening carried out in perfection in all departments. *J. E., Herts.*

Belle Agathe Cherry.—The fruit of this "pet" (see p. 853) are this season larger than usual, and although not ripe they are sweet and juicy. The blackbirds and thrushes have, as usual, not touched them, but myriads of wasps—not bad judges of fruit—have within these few days attacked them, and have left branches covered with the stones stripped of their flesh. The American Cherries are faithfully described in Dr. Hogg's third edition of the "Fruit Manual;" those that ripen earlier and later than such sorts as the Elton and others are worthy of cultivation. As a rule, they are hardy and remarkably prolific. *T. R.*

Passion Flowers.—In your report of the last Edinburgh Flower Show (see p. 854), you state that there were exhibited from here artificial flowers of Passiflora quadrangularis. I beg to inform you that the flowers were not artificial, but real; and that real flowers of *P. macrocarpa* and *P. edulis* were also exhibited. *Alex. M'Millan, Jardine Hall.*

Setting of Peaches and Nectarines (*see p.* 853).—I have read the censure of "Censor." It puts me in mind of the words,—

"Apparuit corvos vexat censura columbas."

Mr. Rivers and myself seem of late to have impersonated the Columbæ. I am obliged to "Censor" for the hint on "diamond-dusting," which in certain climates and under certain circumstances is perhaps a good plan; but I do not think in England, Scotland, or Ireland it will find much favour with out-of-doors Peach and Nectarine growers, at least in hoar-frosty valleys. A gentle shower and semi-tropical dews, I have no doubt, would do good, provided always that they were not to be followed by hoar-frost, which is frozen dew. The hill-tops are not so subject to hoar-frost as the valleys. My trees were in a valley close to a rivulet, and with nothing but a high thorn hedge to the west between them and the stream. Before I took to sheet-covering I never had enough fruit to fill my hands; the frosts, following heavy dews and rains, destroyed the blossoms, and in some cases the set fruit. After I took to keeping the blossoms dry, I gained in nine years 4563 beautiful Peaches from my three trees, which are now in fine condition. The three trees are nearly in united ages 150 years old. Two of them are as fine trees as any in Europe. The other is in as good condition as it could be made to be. I left on the trees 377 fruit this year, but, owing to my having removed, and there being no one there to stop the shoots, and water them during stoning, I believe many fell during that trying process. "Censor" illustrates by Persia, and asks, "what about the semi-tropical dews?" I must illustrate by Dorsetshire, and ask, "What about the hoar-frosts," which last off and on from March till the 14th of May? I have known a severe hoar-frost to occur on the 1st of June. It is not only of advantage to keep the blossoms dry, but it is beneficial also to keep the foliage, which, in its infant state is more tender than the blossoms, dry also, and protected from the frost and cutting winds, which disorganise the leaves and produce blisters. I have not had in the last three years three dozen blistered leaves. The foliage of ten trees here, and also of the three trees spoken of, is beautiful. In valleys the atmosphere is fraught with moisture, sufficient for the blossoms and pistils, though covered with sheets at night, without the aid of "diamond-dusting." I never remember seeing the blossoms and pistils "flag." It would have been of advantage to the public if "Censor" had said whether he was a Persian or a Frenchman, and whether his garden was on a hill or in a valley; also, whether he is speaking of fruit grown out of doors or under glass. Who can be sure in England of "a genial and moderately moist atmosphere," free from "hoar-frosts?" *W. F. Radclyffe, Okeford Fitzpaine.*—I have seen partial success attend many anomalous and empirical practices in horticulture, and am therefore not surprised at "Censor's" thinking that the stigmas of the blossoms of fruit trees are benefited by moisture. If the secretion on the summit of each stigma were water, his idea might be entertained. "In certain cases," says Dr. Lindley, in "Theory of Horticulture," "it may be thought necessary to apply some fluid to the stigma for the better retention and development of the pollen grains. Water is generally unfavourable." This accords exactly with my experience. It is simply absurd to suppose that the blossoms on fruit trees growing in the open air in England, and blossoming in April, when the earth is full of water from the rains of winter, can ever suffer from drought—it is impossible; if they blossomed in July the idea might be tenable. I have kept a weather journal for some 30 odd years, and I find that sunny springs with dry cold winds, the thermometer not registering lower than 28°, have been followed by fruitful summers. The rustics think that "showery weathery is good, for it sets the fruit." It is a rustic idea. To illustrate what I have said respecting the favourable nature of dry springs to fruit blossoms, I now give a few abridged extracts from my journal. "1862: April from the 12th to the 24th cold, sunny, and dry, Plums blossoming abundantly; August, Plums a heavy crop. 1863: the whole of April very dry and bright, frosts at commencement severe, thermometer registering 20°; towards the end frosts less severe, register at 30°; blossoms of fruit trees remarkably healthy; stigmas as in 1862 glistening with their secretions. August: Plums a good crop; Pears and Apples abundant. 1864: April the whole month dry and warm (a third dry April); blossoms of fruit trees remarkably vigorous and healthy. August: Apples and Pears a most abundant crop, Plums a good but not a heavy crop. 1865: April warm and dry throughout (a fourth dry April), wind mostly from the east; blossoms of fruit trees most abundant and healthy. August: Apples a good crop, the fruit large and handsome; Pears and Plums the heaviest crop ever known. 1866: April mild, with much rain. August: Apples abundant, but small and worthless; Pears but very few; Plums none." With regard to my orchard house, I commence to water the roots as soon as the blossom-buds swell, and give them water in moderation during the blossoming period. Not a syringe is permitted to be used till the fruit has set. "For years" I have had abundant crops of Apricots, Peaches, and Nectarines; and it is singular that last April more Peach blossoms dropped without setting their fruit than I ever remember, although enough escaped to give a fair, and, on some trees, a heavy crop; the air was close, and full of moisture. *Investigator.*

Peat for Rhododendrons.—There are two very distinct kinds of soil to which in common parlance the term peat is applied. Which is it that you recommend for the cultivation of Rhododendrons? One kind (A) is that found on every Heathy common, consisting chiefly of rather coarse sand with a large intermixture of vegetable fibre. The other kind (B) is that which is often used for fuel, is found in swamps, and which may be divided into two sub-species: (1), that which is found in spots still swampy, which is compact and solid; (2), that which is found in spots once swampy but now dry, which is friable. Both sorts (viz. 1 and 2) burn away usually with little ash. I think the Rhododendron nursery grounds of Messrs. Waterer and Godfrey, near Woking, are on the soil (No. 2); and the nursery grounds of Mr. John Waterer, at Bagshot, are on soil (A). *P. P. C.* [Strictly speaking, only the materials marked (1) and (2) are to be called peat. There are however many varieties of that substance, according to the amount of water held in suspension by it; the progress of decay in the component parts; and the foreign matters, such as earth or sand, introduced into it. It was the rough fibrous sorts that we had in view in recommending peat earth for Rhododendrons at p. 825. More detailed remarks on this subject will be found in Volume Eds.]

The Early Pea Controversy.—It must be a matter for regret to many that the trial of Peas at Chiswick should have been a failure. In a contested matter involving the interest of rival seed merchants, the free unfettered decision of a public body is of great importance. It is not so much the question as to which is the earliest Pea that is important, as the affixing to the same Pea at least four different names. If this be done wilfully it is a very "dirty trick of the trade;" if in ignorance, the public still suffers, by having to pay an exorbitant price for an old Pea with a new name. Hereabouts the general opinion is that Carter's, Dickson's, Dillistone's, and Sutton's Early Peas are undoubtedly the same thing under different names. *W. E., Cheshire.*

Lilium auratum.—I added to my collection of Lilies 10 very large bulbs, purchased at Stevens' in February last. Of these nine have produced one, two, and three blooms; but one bulb, which has not yet flowered, has five blossom buds on it. This, I should fancy, is the only instance of an imported bulb producing so many flowers the first year. *Geo. Cooper, Alpha House, Coburg Road, Old Kent Road.*

Seedling Roses.—Mr. Davis, of the Bath Kensington Nursery, sowed on the 1st of March last some Rose seed, and to-day (Sept. 7) one of the plants has two flower-buds on it showing colour. I have measured the plant itself, and I find that it is not more than 3 inches in height. *Thomas Parker, Ball Brook, Bath.*

Pelargoniums.—I wish to thank Mr. Rush, of Chester, for the promised leaves of Pelargoniums. I consider Bertha Chivas quite equal, perhaps superior to, and distinct from Mrs. Pollock. The centre green disc is about half the size, the zone is wider and darker, and the band is of greater width, and a deeper orange-yellow, like Golden Chain. The spaces between the veins are also slightly puckered up, and the leaf is so placed on the stalk as to assume a convex form. This would be a considerable advantage in wet summers like the present, enabling the leaf to dry so much sooner, and thus probably preserving its colour. Altogether this is a very fine variety, and I inclose the leaf for your inspection. Several of the others are very pretty, and as Mr. Rush keeps a pedigree book, one is able to tell which parent predominates. Most of them are good hybrids, showing traces of both parents, whereas some are very like only one of their progenitors. Nos. 7 and 9 resemble Golden Chain, but differ from that variety in the width and colour of the golden edge and the size of the green disc. No. 8 is a Golden Chain one inch across, and if the specimen sent is fully grown it will be invaluable for edgings. No. 12 is a tiny Horse-shoe of a peculiar colour, about the same size. It is a cross between Golden Circle and Stella. No. 3, Stella, by Cloth of Gold, is a fine variety, with a duller yellow margin than Golden Chain, and a bronzy tinge over the green centre. No. 2, Stella, by Golden Fleece, is a very peculiar colour. No. 10, Madame Vaucher, by Golden Fleece, is a unicolor of the yellowish-green class, of a similar colour to Golden Nugget. If the flowers and habits of these prove as good as the leaves, they will be useful additions to the flower garden. I also wish to thank Mr. Ross, of The Gardens, Welford Park, Newbury, for a sport of Golden Chain. It is a very peculiar variety. The centre is yellowish green, like the green disc of Cerise Unique, but it has no horse-shoe zone like that variety. The yellowish green runs through nearly to the edge, which is light green, like Cerise Unique. The leaf also has the whitish stem of that variety, from which I infer that Golden Chain was probably one of the parents of Cerise Unique. The entire reversal of colour in this sport is extraordinary. The green centre is changed into a yellowish hue, and the golden edge to a light green. This sport, Mr. Ross informs me, is two years old, and has continued quite true since 1864. Two sports, exactly alike, were obtained from two distinct plants that year; they are much stronger and more vigorous in habit than Golden Chain. I enclose a leaf, and a part of the whitish stem. I am also obliged to Mr. Bowie, of Chillingham, for information of the sporting of Golden Chain. I still believe that it very rarely sports; but should be glad of further information concerning its constancy and origin. Perhaps my correspondent in Yorkshire will also be good enough to forward to the editors of the *Gardeners' Chronicle* leaves of his silver sport of Mrs. Pollock. Can any of your readers explain why fruit and flowers are so much more constant to their true character than leaves, and why when the former sport the latter seldom or ever sport with them? I desire to thank Mr. Judd for his valuable information just received about Golden Chain. It seems it also sports with him, and that the late Donald Beaton thought Golden Chain 150 years old, and that it had descended from inquinans, as already stated. There is no doubt but that Mrs. Pollock came with variegated cotyledons, as stated by Mr. Grieve last week, and that all seedlings that come with white cotyledons die. I hope this statement will satisfy those numerous correspondents who seem to have doubts on these points. *D. T. Fish.* [The variety called Bertha Chivas is, we think, superior to Mrs. Pollock, having a smaller centre of green, and a broader golden margin, this golden tint being the deepest and richest we have yet seen. The red zone too is somewhat brighter, but in this respect the variety does not equal Lady Cullum. The sport from Golden Chain is one of the marbled series, with a green margin, yellow-green centre, and striated petiole. EDS.]

Allamanda Hendersoni.—Will some of your correspondents who have flowered this inform me whether or not they see any difference between it and A. Schottii? I bought a plant of it, which has made vigorous growth, and is now in bloom, and I can discover no difference whatever between it and Schottii. Mr. Bull, from whom I had my plant, told me where I could see it in perfection. I did not go; but the gardener at the place named kindly sent me a bloom, which differs in no way from those of Schottii, except in its being an inch less in diameter than one with which I matched it, and which was gathered off a plant that had been in flower three months, and which had travelled to several exhibitions. *John Stevens, Gardener, Malvern Hall, Solihull.* [It is said to be a more continuous bloomer than other kinds. EDS.]

Wrens.—These give us a song most days in the year, and are great favourites of mine. The robin sings and twitters in many months, so do the song thrush, the missel thrush, the hedge sparrow, and the beautiful wood lark; the lovely warble of the latter by night or day I delight to hear; and here, where we are not favoured with the company of the sweet nightingale, the wood lark is a charming substitute. I must say, however, that I have concluded for years that the little jolly jovial Jenny Wren is the bird that gives us a hearty song on more days in the year than any other of our native birds. In a plantation here behind the hothouses, potting shed, &c., I erected a sort of home-built shed with posts, having forks at their summits for laying poles in to support the rafters and roof, no nails being used, the fixing being done with withes. These sheds are first covered with branches of evergreens or other leafy plantation pruinings, which also clothe the sides and ends. A light thatching of straw is then given to keep all water-tight. Convenient stores are thus formed fitted up with bins, where required, made with rough slabs, poles, &c. In these I keep all sizes of flower-pots, pans, charcoal, lime, sand, soils of all kinds, stakes, pegs, lights, coverings for frames, and a host of other materials, which are come-at-able at all times and seasons. These sheds form the sheltering harbours of the jolly little Jenny Wrens. In these they build their nests and hatch their young without molestation. They roost all the year amongst the warm leafy branches, among which they forage for spiders, gnats, eggs, and larvæ; they sally forth at early morning, singing heartily and joyfully almost every day in the year. No matter how cold, or whether it be frost or snow, their song is sure to be heard. They make their appearance, and rummage about under the leaves of shrubs, and keep picking away at what in many cases cannot be discovered by the naked eye. They search all through our beds of Violets, through all the houses that are ventilated, breaking out into a hearty song occasionally when they appear to have good luck in finding their favourite food. I was very sorry one day on observing one of those dear little

birds caught and dead in a large Erica Massonii, covered with glutinous flowers—a plant which was also loaded with dead flies and gnats in great variety, humble bees, wasps, &c., in thousands. Here one of my poor Jenny Wrens was fixed by its wings and tail, and quite stretched out by its flutter in trying to escape. *James Barnes, Breton.*

Societies.

GLASGOW AND WEST OF SCOTLAND HORTICULTURAL: *Sept.* 12.—The last great Show of the season, which was a great one in every respect, as can well be imagined when we state that no fewer than 1200 entries were made, and that upwards of 1200 groups were exhibited. The city of Glasgow has been famous in this respect above any other great populous centre. This is an indication of the most unmistakable character, of the wide spread influence which horticulture is exercising not only amongst the wealthy, but amongst the more humble classes which form the theory and stamina of the greatness of any commercial district. It was as unlike the great Edinburgh Show as possible in many of its details, inasmuch as it not only represented the gardens of the aristocracy, but in a very large measure those gardens and plots of the toiling artisan who devotes a portion of his spare time to flower cultivation.

As a plant show it was not unattractive, owing to the groups furnished by various exhibitors. As usual Mr Mitchell, gr. to the Duke of Hamilton, Hamilton Palace, figured prominently among the prize takers in the plant department, the new plants in particular being a source of great attraction Among them we noted Agave schidigera, a very handsome Agave, ornamented with long ribbon-like white filaments hanging gracefully from its green foliage; the very handsome Fern like Cycas Wedelliana; the Thief Palm Phœnix phœnicophallium, and a few others. Draca gracilis and Dracæna also very handsome plants of Pandanus ornatus, Maranta rosea-picta, and Verschaffeltia splendida. Mr. Clark, Royal Botanic Gardens, sent a large and most interesting assortment of fine plants, including the handsome tree Fern, Alsophila excelsa; two of the best examples to be seen of this grand and noble-looking Dracena Draco, with its lanceolate foliage reaching near to the dome of the famous City Hall; a Miltonia spectabilis with 300 blooms, a very wonderful plant! Oncidium Lanceanum; a most lovely new Huntleya, with yellowish white sepals and petals, and a pure white lip, tipped with the white ground colour heavily suffused with violet. Messrs. J. & R. Thyne had also a nice miscellaneous assortment, including several pretty variegated specimens of Alocasia macrorhiza, Verschaffeltia splendida, Anthurium magnificum, with Maranta roseo-picta and Aucuba, interspersed with finely flowered half specimens of Ixoras of different kinds, making a very nice arrangement.

One of the most novel and probably generally interesting features that commanded at once respect and attention, was a collection of variegated Pelargoniums, &c., from Mr. William Campbell, gr. to Wm. Stirling Crawford, Esq., Castlemilk, arranged in front of the orchestra on sloping terraced shelves. They were chiefly grown as pyramidal plants, and the effect was as imposing as it was undoubtedly chaste. Among the silver variegations the following were remarkably pretty plants:—Flower of Spring, Lady Plymouth, Countess, Silver worm, and Kenilworth. Among the more fiery-zoned varieties stood out the following—Mrs. Benyon, Mrs. Pollock, The Countess, Lucy Grieve, a conspicuous and beautiful acquisition to the class, Countess of Tyrconnel, Italia Unita, and Sunset. What enhanced the beauty of these was the introduction of several nice pyramidal plants of Coleus of sorts, with Ferns as a back ground.

In the miscellaneous plant assortment Mr. Mitchell had not a plants of Erica ampullacea, Marnockiana, and Autumnalis hirtibullata, along with a plant of Cyrtoceras reflexum, each with fine spikes. A dwarf plant, and a Perisworthe. Mr. Murray, gr. to David Lod. Esq., of Partick, had a nice Lapageria rosea, a good Odontoglossum grande, O. luteo-purpureum, and some others. In the Heath classes Mr. Neil Gibson, gr. to R. Arbie, Esq., View Park, Bothwell, was first with a splendid Marnockiana, one of the most lovely and effective of all autumn-blooming Heaths; a very fine Jacksoni, and some others. Mr. Boyd, gr. to T. D. Finlay, Esq., Easterhill, had a good retorta major, Aitoniana, and others. In the smaller collection classes, Mr. Fleming, gr. to J. C. Whitehead, Esq.; Mr. A. Wilson, gr. to S. Hill, Esq., Merrylees, Cathcart; and Mr. Jas. Forbes, gr. to Geo. Buchanan, Esq., Beechwood, took prizes. In these groups were splendid examples of Statice Holfordi, Pleroma elegans, finely bloomed; Oncidium flexuosum, Ericas of sorts, some nice plants of Lilium auratum, and other Lilies. Some good competitions tried the merits of this class. In the Fine Foliage plants, Mr. Mitchell and Mr. Murray, Ironbank, were successful; the former exhibitor having a splendid Cordyline indivisa. Dasylirion glaucum, Croton variegatum, and Pandanus elegantissimus Mr. Murray had a fine Theophrasta imperialis, a Croton angustifolium, and Cordyline indivisa.

In the Zonal Pelargonium class there was a spirited competition. Mr. Neil Campbell, gr., Cathcart, having much the finest lot, comprising Amelina Grisau, Lucius, Virgo Maria, Excellent, Herald of Spring, Prince of Wales, Beechwood, and Meadow Park, had also a lot similar in kind to those mentioned above. Fuchsias were not a large exhibition, and they comprised some of the older sorts, which yet find much favour, such as Catherine Hayes, Silver Swan, Wiltshire Lass, Margharita, Princess of Wales, and the like. Mr. Boyd, gr. to R. Goodwin, Esq., Hazlewood, and Mr. Alex. Walker, were the most successful. Lilliums were a large and a very prominent group, including the several varieties of lancifolium, which are in general demand, such as punctatum, cruentum, album, &c. Those from Mr. Forbes, gr. to Geo. Beechwood, Mr. Angus M'Intyre, gr. to S. W. M'Culloch, Esq., Partick; and some from an exhibitor, which were disqualified by the judges from not being distinct enough, formed a remarkably fine lot.

Floral devices and table and hand bouquets were quite an exhibition of themselves, and most of them were of a praiseworthy character. If exception might be taken to any of them, it was to the devices, which instead of being done up with flowers, *pur et simple*, were bespattered with Moss and sand, and some of the colours were made up with the bruised corollas of some of the many flowers which decorate the border and the greenhouse. The small bouquets, however, were worthy of all praise for their want of the stiffness and general monotony which characterise these things, being relieved by handsome fronds of Ferns, and other "lively green." Mr. A. M'Parlane, gr. to A. Dennistown, Esq., Golf Hill, and Mr. A. M'Cullum, Ardchapel, obtained the premiums for devices. Mr. James Forbes, gr. to George Buchanan, Esq., Partick; Mr. Francis Smith, gr. to A. Arthur, Esq., Laurel Bank, and Mr. Coulbourn, Renfrew, were the premier prize-takers for table bouquets; small bouquets, made up 40 bouquets from Mr. Campbell, Mauldslie Castle, Mr. Ramsay, Helensburgh, and Mr. M'Bride, Hazlewood, excelled, and were placed in the order in which they are named.

Austin and M'Aslan exhibited a miscellaneous lot suitable for indoor decoration, inserted within handsome ornamental painted pots and guards. Peter M'Kenzie, Gordon Street, had a lot of similar character, with some cut flowers. Dreghorn and Aitken, Kilmarnock, exhibited a collection of herbaceous Plants, Ferns, both hardy and exotic, and several nice things, not the least beautiful of which was Rochea falcata, having a fine umbellate head of scarlet flowers.

Orchids were only exhibited by Mr. Murray, who had a nice plant and a good variety of the charming Lælia elegans, together with Cypripedium Lowii and superbiens, and Oncidium barbatum.

In Florists' Flowers the first thing demanding attention is the Dahlias, which were both shown largely and well. The chief prize for 36 varieties fell to Joseph Garshore, Nurseryman, Falkirk, who had the following sorts in very good style—Lord Palmerston, Leah, Miss Chesham, Blushing 13 (a very good thing), Chairman, Criterion, Yellow Triumph, Jeannie Austin, Miss Roberts, Charlotte Dorling, Willie Austin, Lady Maude Herbert, Bob Ridley, Lotty Atkins, Lilac Perfection, Peri, Baron Taunton, Delicata, Juno, Stella Colas, Princess Wera, Anna Keynes, Beauty of Pilperton, Jimmy Hawes, Lilac Queen, Hugh Miller, Princess of Prussia, Belloni, Marquis of Winchester, John Downie, Andrew Dodds, Count Cavour, Favourite, Golden Drop, and one or two others. Mr. Geo. White, Nurseryman, Paisley, was a good 2d, with sorts similar to the above. In the Cactus for 24, Mr. Jas. Gibson, gr., Fairhill, Hamilton, had a very fine stand, comprising Criterion, Belloni, Beauty of Slough, Willie Austin, Lilac Queen, Miss Henshaw, Baron Taunton, Lord Palmerston, Golden Drop, Delicata, Garibaldi, Donald Beaton, Chairman, Lord Derby, Anna Keynes, Anna Boyce, Beauty of Pilperton, Jimmy Hawes, Nonsuch, Golden Admiration, Bird of Paradise, Model, Mulberry, and General Jackson. Mr Alex. King, Langton Hall, was 2d, and had the following different from the above:—Favourite, Andrew Dodds, Maid of Bath, Purple King, Leah, Messenger, Scarlet Gem, Mrs. Heaton, Cygnet, Stella Colas, Hugh M'Long, Esq., Blackdale, Largs, and Mr. James Weir, gr. to Sir P. A. Halkett, Pitfirrane, Dunfermline, had each good stands. Mr. T. Buchan, Tullallan; Mr. W. Hilson, Cathcart, and Mr. Alex. Eadie, had the best stands among amateurs.

In the Hollyhock spikes Downie, Laird & Laing had, besides those named, six spikes at the Edinburgh show, the finest being an immense crimson flower; Wm. Young, a fine rosy salmon; Lelia, a good salmon-peach; along with James Anderson, in good condition as to spike and individual flower. Mr. D. M'Farlane, gr., King's Meadows, was successful among gardeners with the following:—Grenville Beda, Orange Perfection, Charles Eyre, Glory, Lord Rokeby, Countess of Craven, Earl of Breadalbane, one of the very best crimson; Glory, Mrs. Downie, and Invincible. Mr. Niel Glass, gr. to R. Addie, Esq., View Park, Bothwell, was a good second.

In Pansies, Mr. Matthew Todd was most successful with the following flowers:—Rev. H. Dombrain, Lavinia, Prince Imperial, Lord Clyde, Lady Hastings, J. B. Downie, W. B. Speirs, Miss Grieve, Cherub, Cupid, Lady Belhaven, Emperor, Perfection, Othello, Annie Lisle, Hugh Campbell, Chancellor, Lady L. Dundas, Mrs. Scrymgeour, Mrs. Newton, and some seedlings. In the other lot were good blooms of Francis Low, Mrs. Laird, Cherub, Miss E. Cockburn, &c.

Cherubs were largely represented, Mr. James Henderson, gr., Gordonrigg, having nine spikes of Madame Besseville, James Madame de Chavry, Nymphe Dubouché, Madame de Monet, Impératrice, Linne, Calypso, Penelope, Madame Binder, Brench Ieyensis, and Neptune. Mr. R. Munro, gr. to H. Long, Esq., Largo, and Mr. John M'Gregor, gr. to Wm. Henshaw, Esq., had good stands, the more prominent of which were Le Poussin, Madame Souchet, Rubens, Achille, Princess Clotilde, Mathilde de Landerneau, and Madame Vetch.

Robert Allen, Nurseryman, Bridge of Allan, had several finely grown plants of Leptopteris superba. Stuart & Mein, Kelso, had several spikes of seedling Hollyhocks. A splendid specimen of Lastrea Filix-mas cristata was shown by Mr. Hugh Highgate, Tree Glenlee.

Fruit was by no means a small exhibition, many of the articles shown being very meritorious. The very best for effect was the collection shown by Mr. John Colquhoun, Fruiterer, Glasgow, on a long table standing across the principal hall. The display was a splendid one, and so well did the arrangement was such that the visitors unequivocally expressed their admiration, both as to the samples and the mode of arrangement. It comprised seven Pines of sorts; several of the bunches of Grapes that obtained premier awards at Edinburgh Show, Queen, Muscat of Alexandria, and White Nectarines, and Apricots, garnitured Plums, Walnuts, and lots of small fruit, with some very showy and beautiful Pears, Apples, and Shell-barks, set in vessels lined with vine leaves, and the whole group arranged in a dessert service of blue and white. Basket-work Epergnes, Vases, &c., were used. Mr. Campbell, Mauldslie Castle, and Mr. Gilbert M'Meekan, gr., to Robert Kerr, Esq., Crookston Hall, comprising Pines, Grapes, Peaches, Melons, &c., the exhibitors being placed in the order in which they are named. An extra prize was awarded to Mr. John Barnwell, gr. to Wm. Fleming, Esq., Kilkerran, for a very nice box comprising such sorts as has been noticed above.

In the White Muscat class, Mr. M'Connachie again took 1st position, and Mr. Mitchell 2d, both growers having good samples. In the Black Hamburgh classes, Mr. Jas. Cassels, gr. to J. Deans, Esq., Kirkstyle, Kilmarnock, was first with a nice lot, a little finished in colour. Mr. Alex. Eadie and Mr. David Smilie, gr. to the Duchesse de Coina, Burgeny, were equal 2d. Mr. Mitchell was placed 1st with a collection of Hamburghs; and Mr. Smith, gr. to Sir R. Napier, Milliken Hall, was 1st for the heaviest bunch in a condition fit for table, which Angus Bruce, Nurseryman, Perth, was also in Assembly Rooms by Mr. Fowlis, gr., Fordell House, and by Mr. James Peacock, Castledykes. Peaches were neither a large nor a very fine lot, a good dish of Barrington being furnished by Mr. Peacock, and Late Admirable by Mr. Campbell. Plums were not particularly good, and Figs not at all remarkable for quantity or quality. A particularly fine sample of Apples was furnished by Mr. Ramsey, gr. to the Marquis of Bute, Rothsay, comprising Echinvale, Wellington, and Lord Suffield. A very promising seedling Apple, named Princess of Wales, was shown by Brownie & Co., and which we understand is a very heavy cropper.

Miss Emma Peckham, Brighton, exhibited a fine assortment of artificial flowers in wax, good representations of Orchids of sorts, Kalmia latifolia, Heaths, Ferns, &c. Fowler & Co. had a case of seeds, very arranged. Amateurs had a large and imposing display, which to particularise would occupy too much space, but, considering the circumstances under which they had been grown, were of a highly satisfactory character. The Hall and adjacent rooms were filled from morning till 10 o'clock at night, and the receipts were larger than on any former occasion.

Notices of Books.

Contributions towards a Cybele Hiberaica, being Outlines of the Geographical Distribution of Plants in Ireland. By D. Moore, Ph. D., and A. G. More, F.L.S. Dublin: Hodges, Smith & Co.; London: Van Voorst, 1866. 8vo. Pp. 399; with a map.

Dr. David Moore, for the last quarter of a century director of the Botanic Garden at Glasnevin, needs no introduction to the readers of the *Gardeners' Chronicle*. Trained originally as a botanist under Dr. Mackay, and attached for many years as naturalist to the Irish Ordnance Survey, his practical knowledge of the plants of the island and their localities is well known to be unsurpassed by that of any other person. Mr. A. G. More is a younger man, who has published but little hitherto, but who also is well known amongst those interested in British botany as having thorough, critical knowledge of our indigenous flora. In the present work they have united their forces in an attempt to fill a blank in botanical literature. This is the first endeavour which has been made to trace out systematically the distribution of Irish plants. For Britain proper we have had two "Botanists' Guides;" one of them going back nearly to the beginning of the century, and about 30 separate books for counties and other tracts, and more recently a very elaborate work in four volumes, the "Cybele Britannica" of Mr. H. C. Watson, in which the horizontal and vertical range of each plant is very carefully sketched out in detail, and the introduced species and those reported upon as doubtful or on unconfirmed authority are sifted out from the others. The author of this work had proposed that the title of "Cybele" should be employed for books of this kind, in the same way as that of her sister goddess "Flora" is used for works where the plants of a particular tract are distinguished from one another. Hence the title "Contributions towards a Cybele Hiberaica." It has not been found possible as yet to write nearly so complete an account of the distribution of the plants of Ireland as of those of Britain proper. The latest special flora of Ireland (the "Flora Hibernica" of Dr. Mackay) is now 30 years old, and perhaps we should add not very trustworthy, and certainly very meagre in its geographical details. For detached portions of the island there are only two separate recent local lists, the "Botanists Guide for the County of Cork," by Dr. Power, published in 1845; and an excellent "Flora of Ulster and Botanists' Guide through the North of Ireland," published two years ago by Professor Dickie. These, with several older lists, and various scattered notices in the "Phytologist" and other periodicals, were the previously published material for information on the subject; but the authors have of course incorporated this and thoroughly sifted it, and have added and classified a large amount of unpublished information from their own resources, and the contributions of correspondents in various parts of the island.

By Mr. Watson Britain proper was divided into 18 botanical provinces. Following out the same plan our authors divide Ireland into 12, the limits of which they illustrate by a coloured map. Under each plant they give first a line of figures denoting the provinces in which it has been ascertained to grow, and then, for most of those that are at all rare, a list of particular localities, so that the work will serve both as a list for reference to the general botanist in his study, and as a field guide to let the travelling or resident collector know what species have been ascertained to grow in any particular part of the island, and where to look for the rarities. The following, for instance, is the way in which they notice the Killarney Arbutus:—

"A. Unedo (Linn.), Strawberry tree.

"District 1 - - - - - - - - - - - -

"Lat. 51°—53°. South-west of Ireland—Kerry and Cork.

"Hibernian type; not native in Great Britain.

"Boggy woods and rocky places; very local. Fl., Sept.—Oct.

"Plentiful in the woods at Mucruss, and in all the islands in the lakes at Killarney, as well as at Glengariff, near Bantry; *Flor. Hib.* At Glengariff, and about most of the mountains and lakes in the Barony of Bere; *Drummond*. By the lakes in the Barony of Bere; Ballyrizzard, Crookhaven; *Flor. Cork*. An old tree on the western declivity of Hungry Hill: Island in Loch Inchiquin, on the south side of Kenmare Bay; *I. Carroll*. Islands at the head of the Kenmare River; *Smith's Kerry*.

"Parkinson notices the Arbutus as "of late dayes (1680) found in the west part of Ireland,—*Theatr. Bot.*, pp. 1489, 1490."

The average annual temperature of the Kerry coast is about equal to that of Helston and Ventnor, 52°; whilst that of Ulster equals that of the north of England. At Dublin the rainfall is not much greater than that of York or London, but towards Cork and the south-west the annual fall rises to from 40 to 60 inches. The hill-country is so distributed throughout the island that there is not one of the 12 provinces where, in some parts, the surface does not rise above 2000 feet. The highest mountain about equals Snowdon and Scawfell, falling below the highest Scottish peaks by nearly 1000 feet. The most striking circumstance brought out, when we compare the Irish with the British flora, is the large number of plants common to Britain and the Continent which do not reach Ireland. Out of 1425 British plants our authors admit as clearly ascertained for Ireland only 950, just two out of three. Mr. Watson has carefully classified the British plants into "types of distribution," according as they are spread over the whole island, or are restricted to particular parts of it. Of the 530 species diffused throughout Britain, Ireland has nearly all. Of the 70 "Atlantic" or south-western species she has 41; of the 127 "Germanic" or south-eastern species she has only 18; of the 458 "English" and "local" species, principally plants which grow in England and are absent from or very local in Scotland, or, at any rate, fall short of the Highland provinces, she has 250; whilst of the 238 plants of the north, the species restricted in Britain to the hill-country, she has only 106.

There are about 20 plants which grow in Ireland but not in Britain, and from a geographical point of view these are very interesting. Two of them, Neottia gemmipara and Sisyrinchium anceps, are common to Ireland and America, but not known anywhere upon the European Continent. A third species, Eriocaulon septangulare, is common to America, the west of Ireland, and the Island of Skye, but is not known elsewhere in Europe. Most of the other species which are Irish but not British, as, for instance, the Arbutus,

two or three Saxifragas of the London Pride group, two Heaths, and a recently-discovered Orchis (Neotinea intacta) are plants of Spain and the south-west of France. These facts serve as a foundation for more than one hypothesis; indeed, there is greater need, it appears to us, for fresh facts than for new hypotheses—a need which the present volume, hence-forth essential to all who occupy themselves with Irish plants and their distribution, goes far to supply.

BOOKS RECEIVED.—*Handbook for Travellers in Westmoreland and Cumberland.* Another of Mr. Murray's useful handbooks, containing an account of the physical features and geology of the district, as well as an account of the "manners and customs of the natives," and the usual information for travellers.—*Nature and Art.* Under this title Messrs. Day & Sons are issuing a monthly periodical, the coloured illustrations of which render it an acceptable addition to the already copious list of serials. In the number for the present month are coloured plates representing a mummy case, the sand grouse, some Parisian trinkets, and one in illustration of an article of Mr. Penley's on Sketching from Nature. There are in addition several well-executed woodcuts. The text comprises articles on archæology, natural history, fine arts, music, travels, etc., so that an excellent shilling's worth of agreable reading in addition to attractive illustrations is here provided. In former numbers we notice, among other things, coloured plates and descriptions of the Welwitschia and of the Rat-tailed Radish.—We observe that a third edition of Mr. William Paul's *Observations on the Cultivation of Roses in Pots* (Kent & Co.) has lately been issued. The success which has attended Mr. Paul's productions at the metropolitan shows affords sufficient evidence that those who have hitherto been aided by his instruction have been taught by a master of the art of growing pot Roses; and that those who wish to excel in the future cannot do better than put themselves under his guidance.

CATALOGUES RECEIVED.—The return of the Bulb-planting season is evidenced by the appearance of the Priced Lists of Dutch Bulbs. Of these there are before us the excellent lists of the great champions at our London Spring Shows, Mr. W. Paul, and Mr. Cutbush—namely, *W. Paul's* (Waltham Cross) *Select List of Hyacinths, &c.*, and *W. Cutbush & Son's* (Highgate) *Bulb Catalogue* for 1866. We have also the Fourth Part of *J. Carter & Co.'s*, (Holborn) *Vade Mecum*, devoted to *Dutch and Cape Bulbs, &c.*; *Barr & Sugden's* (Covent Garden) *Choice Bulbs*; *Sutton & Sons'* (Reading) *Catalogue of Bulbous Flower Roots*; *E. & A. Anderson & Son's Catalogue of Bulbs*; and *F. & A. Dickson & Sons'* (Chester) *Dutch Flower Roots*, all comprehensive in character. *Hamilton & Wright's* (Thornton Heath) *Bulb Catalogue* is more limited, as is *C. Turner's* (Slough) *Bulbous Flower Roots*; *B. S. Williams's* (Holloway) *General Bulb Catalogue*; *J. Scott's* (Yeovil) *Catalogue of Flower Roots*; *W. Bull's Retail List of New, Beautiful, and Rare Plants*, comprising among other novelties several introduced by Dr. Welwitsch and Dr. Seemann; and *R. Parker's* (Tooting) *Catalogue*, which latter combines bulbs with a general selection of plants. Of foreign bulb lists we have *Vilmorin Andrieux & Cie's Catalogue des Oignons à Fleurs et des Fraisiers*; and *Groeneweyen & Co.'s* (Amsterdam) *Bulb List.*—Of general plant lists we have, *Aug. Van Geert's* (Ghent) *Extract of General Catalogue*; *W. Dillistone's* (Sible Hedingham) *New Plants* of 1866, the latter chiefly consisting of soft-wooded subjects; *C. Cannell's* (Woolwich) *Autumn Catalogue of Cockscias, &c.*, which should be consulted by those interested in this flower; *T. Edwards & Son's* (Nuthall) *Catalogue of Ferns*, a very respectable list, chiefly of British kinds.—From the Antipodes we have *G. Matthew's* (Dunedin) *Garden Calendar, with list of Seeds*, a brief *resumé* of garden operations adapted to the climate and seasons of New Zealand; and *T. Lang & Co.'s* (Ballarat) *Coniferous Trees; Flowering Bulbs and Tubers*, and *Soft-wooded Plants.* Others still before us we hope to notice soon.

Florists' Flowers.

THE NEW VERBENAS OF 1866.—The last few seasons have been very adverse to the cultivation of this useful and really beautiful tribe of plants. What with black and green fly, thrips, and red spider, the cultivator has had enough to do to keep many of the old and good varieties. I was therefore much pleased early in the spring to notice amongst Messrs. Low's novelties a quantity of Verbenas, raised by Mr. Boucharlat, the fine foliage and healthy growth of which formed a striking contrast to our English varieties; they seemed to be a fresh strain, so different were they in appearance; and I was more surprised to find that many of these were striped varieties, as the striped kinds before introduced were of weak and sickly habit. I watched them carefully through the summer, and was very much gratified to find that they continued to grow in the same vigorous manner. Amongst them are some very nice additions. The striped varieties will not indeed be effective for bedding, but for exhibition they will be very interesting, forming a most pleasing contrast to the varieties with self-coloured flowers.

I find on reference to my notes, that the following are very distinct and good:—Madame Hermann Stenger and Madame Rougier Chauvière, both white, striped and flaked with scarlet. Madame Petin and Madame Thibaut, both white, striped, and flaked with purple. M. Lansezeur jeune, white with crimson stripes; fine habit. Fra Diavolo, white, curiously splashed with crimson and purple. Marquis de Chateauneuf, white, striped with purple. Mr. Wood, white, striped and flaked with purplish lilac; extra fine. Orango, white, with deep purple stripes. Oreglia, white, with crimson and purple stripes. Rovelli frères, white, with bright scarlet stripes; fine habit. Miriam, a variety of American origin, white, distinctly and evenly striped with pink. This last and Annie (Cooling) are the two best and most distinctly striped, being without flakes in the white ground.

Amongst self varieties, Attraction, deep chocolate flushed with crimson; Lord Houghton, deep purplish lilac with dark eye; and Miranda, blush, with deep purple eye, have been very fine. They were sent out by Messrs. Low in the spring, Mr. Nichols being the raiser. Attraction will make a splendid bedder, and the flower and truss are both of good size. Next in order for useful bedding purposes is Crimson King (Methven); and as a scarlet "Fire Brigade," sent out by Mr. Kirtland, of Stoke Newington, will I think take a first rank, being dwarf in habit, a free bloomer, of fine colour, with medium truss, and stands wet and drought well. Some other varieties from the Continent are also useful additions from their fine habit and distinct colours; namely—Ninon, crimson with lemon eye, very effective; Renaudet, deep velvety crimson, with dark eye, fine; Madame Comtet Aine, white, with rosy pink eye, very beautiful; Arlequin, variegated foliage, cerise, good truss, the best variegated variety; Azuren superba, deep bluish purple, white eye, fine; Reine des Roses, deep rose, beautiful foliage and a fine bedder.

With the varieties sent out by the English raisers I am somewhat disappointed, especially with those recommended in such grandiloquent terms and with so much verbosity as to puzzle ordinary readers—one in particular taking a whole catalogue page to describe its wonderful properties, in which case I suppose the writer so mystified himself that he quite forgot to mention the colour. Surely such descriptions are not required by a simple flower like the Verbena. The varieties of Maonetti sent out by Messrs. E. G. Henderson & Son may be interesting, but at present can scarcely be called useful additions to our gardens. Beauty of England, sent out by them, is a nice blush white variety; Rosy Circle, a rosy purple with lemon eye, is a fine bedder; Painted Lady, blush, with deep crimson eye, is very attractive; Mrs. General Lee, crimson purple, is a fine bedder; and Junius, a novel colour, deep orange scarlet, are all worth a place in any garden. Neither their Celestial Blue nor Mr. Bull's Really Blue will, I am afraid, be so useful as our old Purple King. We have nothing among light blues yet to be compared with old Blue Bonnet, which I have seen at Broxbourne this season very good.

The Carnation stripes, sent out by Mr. Bull this season, are eclipsed by the Continental varieties, the raisers of which have stolen a march upon us in this class.

Out of 100 "new" varieties of this year the above are all I could find that would pass muster, although some are no doubt deserving of further trial. I have not seen the varieties raised by Mr. Eckford, and sent out by Mr. Keynes, therefore I am unable to say anything respecting them, but no doubt some of your readers, who may be able to give us their experience with the new varieties, will tell us something about them.

Amongst old varieties Melindres has especially attracted my attention, and is still worth growing for vases, edging, &c. The Moor (Smith), a deep maroon crimson, with dark eye, is good; and Startler (Bull), cerise, with large lemon eye and a splendid habit, seems to be a great improvement on that old favourite, Lord Raglan. *William Heale, Upper Clapton.*

CARNATIONS.—Seeing in a recent *Gardeners' Chronicle* (p. 808) a notice of a curiously-coloured Carnation, I send you specimens of some, among which I think you will find the same variety which Mr. Marshall sent. They were raised from seed I got two years ago at Clermont, in the south of France, and produced last year many which were remarkable novelties to me, especially in point of colour, of which I should have sent you specimens, had I not presumed that they must be known in the south of England. Unfortunately many of my plants perished last winter, so that I have not so many varieties, nor are they so fine, as last season. *W. C. Trevelyan, Wallington, Newcastle-on-Tyne.* [Some of the flowers sent were identical with those previously noticed; and the whole were of the same character, though varying in their colours. EDS.]

The Apiary.

FAILURE AND DISAPPOINTMENT.—Many months ago I wrote to you for advice respecting some frame-hives in which the bees had chosen to build their combs right across the frames. In accordance with your advice, which, to any one more experienced in the manipulation of bees under such circumstances than I am, was very good, I proceeded, early in May, to examine into the state of these particular hives, with a view to carrying out your directions. Removing the crown-board of one, I found the bees very strong, and the combs well supplied with honey. This was one of my artificial swarms, reared a twelvemonth previously. As anticipated, I found the combs to be all constructed crossways; but acting on your hint, I commenced cutting the connecting combs, and succeeded pretty well in taking out the first or outside frame. I then began to dissever the second from its neighbour, but found considerable difficulty in passing the knife down between, and on attempting to lift it out, a large piece of brood-comb, filled at the top with honey, and below with grubs, gave way and fell into the hive. I now became alarmed, and feared to go on with the attempt to set matters right. I took away the piece of comb that had fallen down, replaced the frames and crown-board, inwardly resolving to proceed no further, but to let the hive take its chance. This resolution I have kept, and feel no inclination to break through. It is a great disappointment to me, as I had hoped, when procuring these much extolled Woodbury hives, to have begun a new era in my bee-keeping experiences. But the truth is, I am too old to commence any new-fangled methods of manipulating my bees with any chance of seeing my attempts successful. When a person is bordering on 60 years of age, he should be content to take things pretty much as he may find them; and I think I was rash and presumptuous in beginning (to me) a novel system of bee-keeping. The most I shall hereafter attempt with these hives will be to use the supers and endeavour to obtain honey, leaving the manipulation of frames to such excellent bee-masters as your correspondent Mr. S. Bevan Fox, who, with their use, appears to have no difficulty in compelling his bees to do pretty much as he pleases. I often wish that I could have the opportunity of seeing him perform some of the operations, which, to me, appear to be so very difficult. I doubt not that more could be learned in an hour or two with him, than can be gained from almost any amount of reading.

I intend to keep the number of my stocks to about 14, by returning swarms to their parent hives, or by uniting two or more together.

There is another disadvantage under which I labour. My bees are so spiteful, that they will not allow me to perform the slightest operation among them without having on a bee dress; and often, when I am at work in a part of my garden at a considerable distance from their stands, they attack me most persistently, and drive me to seek refuge in the nearest bush. It is the same as regards my gardener; and my wife and children, owing to the bees being so vicious, can scarcely attempt to gather a few flowers. This spitefulness is always much increased after I have been doing anything to trouble their equanimity. If this sort of treatment continue, the bees will have to be removed from my garden, and placed under the charge of some neighbour. I am more disappointed in this than I like to confess, and feel deprived of an anticipated pleasure. I am also disappointed in having to write in such a desponding manner, after having, on other occasions, reaped considerable advantage from the advice given by your correspondents, which has usually been crowned with perfect success. But the vindictive character of my bees, and my possessing some peculiarity that apparently excites their anger, combine to warn me against having much to do with them for the future. My feelings towards them are most friendly and affectionate, and I would do, and give much, to gain the like feelings towards myself from them. My brother, who happens to be a smoker, can do almost anything among bees, without protection to face or hands.

From some cause the bees in this neighbourhood never increase the weight of their hives during the time the Heather is in bloom. I have some hundreds of acres of it within 2½ miles of my house, and two large commons east and west of me, almost adjoining my garden, yet the bees seem to take no advantage of them. This, I find, is the opinion of all the bee-keepers in the locality. I therefore am convinced that it is best to remove all supers very early in the autumn.

When I read of the success which attends the efforts of other apiarians, I am almost moved to envy. I am sorry to write of my want of success, and of my despondent feelings in consequence, but I could not do otherwise without suppressing what I feel to be my difficulties. I do not see that others meet with the same drawbacks to success. I try to imitate, and fail. Mismanagement is, I doubt not, the cause of failure; and this I fear can only be remedied by experience extending over a somewhat long series of years. However, notwithstanding their ill-temper, I do not see why my bees should not be remunerative, if I confine myself to the working of supers, and otherwise letting them alone. I feel that I shall never succeed in the more advanced methods of management. *T. D.*

Miscellaneous.

Flowers in the Parks.—Stern sticklers for the unities in landscape gardening contend that a park is no place for floral prettinesses, but should be sacred to turf and trees. The theory holds good, no doubt, where a park surrounds the mansion, and the mansion has its terraces and flower garden, all properly disposed. But with the public pleasure-grounds the case is different. Flowers are wanted in the peoples' parks just because the peoples' houses have no gardens, and nine-tenths of those who frequent the parks have no opportunity of seeing growing flowers anywhere else. Lord John Manners will not, we hope, reverse the policy of his predecessor. The opposition which was raised to the first introduction of flowers by Mr. Cowper has now given place to a general feeling that it has done much to improve the beauty of the parks and to increase the enjoyment of them by all classes, but especially by the poor. When Mr. Cowper took office, the London parks were large prairies, fairly wooded, and pleasant enough at all seasons of the year. They are pleasant still, but a little artistic landscape gardening has given them a new character without robbing them of one iota of their old charms. Between the Marble Arch and the Hamilton Gardens you can enjoy a feast of colour, and the beds of Ivies and Periwinkle dotted among the trees, and the pretty blending of fine foliage and bedding plants, are a great attraction. But the great show-place for flowers is the geometrical garden in the Regent's Park, designed by Mr. Markham Nesfield. On entering it, one has an impression of formality and stiffness; but the nature of the ground is said to be unfavourable to an English garden, and the contrast which is now supplied to the park scenery around is certainly bolder and more striking than would be possible by adhering to "natural" gardening. At first the flowers did not look so well as in more open spaces, for the trees spread

their roots into the choice mould prepared for the bedding plants, robbing them of their proper nourishment. To prevent this an underground wall has been built over 600 feet long, 20 inches wide, and 14 feet deep; and the greedy roots have thus been confined to their own domain. Now, beneath the stout Poplars and spreading Chestnuts, Verbenas, Calceolarias, and Pelargoniums of all hues flourish luxuriantly, and their brilliant colourings is toned down by the red and Grass-pending Ivy Holly and Ivy, the variegated Mint, and the melancholy Amaranthus. The tropical foliage of India-rubber and Castor-oil plants, of Ferdinandea and Caladiums, and the floral friezes, the bands and circles of colour, and the other combinations in which landscape gardeners now delight, make the avenue, or broad walk, of the Regent's Park very attractive; and on a fine Sunday when the band plays you may count the people by the ten thousand. At Battersea, again, without trenching much upon the recreation ground, Mr. Gibson, the superintendent, has made the park famous for its growth of fine foliage plants, and in his "sub-tropical garden," during the summer months, many strange plants, used to brighter skies and a warmer sun than Battersea enjoys, still grow and thrive out of doors, showing that, after all, the London atmosphere is not so black as it has been painted. In Victoria Park, the beauties of which are known to few except East Londoners, the flowers are as choice and as beautiful as in any of the West End parks, and they are quite as much enjoyed by the teeming population in this part of London. Even Kennington Common, which now also aspires to the name of Park, has its bordering of flowers, as bright as the smoke and vapour from an adjoining vitriol factory will let them be. Most persons will think that in all these instances Mr. Cowper has ministered successfully to an innocent and healthy taste, and that no portion of the public money voted for the parks has, in fact, been better spent than that which has been given to flower cultivation. A good many works of utility or of ornament remain, however, to be done before our parks can be regarded as perfect; and to these in the recess the new Commissioner of Works may usefully apply himself. Thus in the Regent's Park, the soil from some of the excavations of the Metropolitan Railway has been turned into artificial slopes and undulations, which it is proposed to plant as informal shrubberies. A communication between the avenue gardens and Portland Place has often been talked of, and would worthily commemorate the addleship of Lord John Manners. This central avenue is the chief artery of the park, and, now that it is radiant with flowers, constitutes the chief attraction there. It might be continued without difficulty, and with very little interference with vested rights, across Park Square and Crescent and to the end of Portland Place. Whether this improvement is carried out or not, handsome gates might at all events be placed at the entrance of the avenue gardens; and the gates at the crossing of the Chester Road are much too narrow for the Sunday crowds of 30,000 and 40,000 persons who sometimes found here. In Hyde Park the garden by Rotten Row is still incomplete, and in the Green Park alterations of an extensive character have been, we believe, in contemplation. At present the general effect of this park is poor and dreary, and something is needed to make it worthy of its position in the centre of London. Then the garden by Piccadilly is by no means what it should be, and might be made. The Thames Embankment Act provides that the Metropolitan Board of Works may appropriate, "for squares, gardens, or open places," any part of the land reclaimed which may not be required for the purposes of the Act. There is no reason why, in front of the long line of houses and shops which will spring up on the northern side of this great thoroughfare, the eye should not be rejoiced by the sight of trees and turf, with here and there some flowers. The new river bank will in itself be a great ornament to the town, and its effect will be much increased if the monotony of brick and stone can be broken by the formation of a public garden between the roadway and the houses. The two Temples will gain considerably in territory when the embankment is completed, for the Act strictly provides that all the land reclaimed in front of the Middle and Inner Temple which may not be required for the purposes of the embankment shall be handed over to the benchers. We hope we may assume that they will dedicate it to the uses of the present garden, and will encroach upon no portion of their new or old domain by bricks and mortar. *Pall-Mall Gazette.*

The Truffle-plots of Vaucluse.—The principal Truffle markets of the department are at Carpentras and Apt; in the first the annual sale realises from one million and a-half to two million francs; in the second from 600,000 to 600,000 francs, making in all from two millions to two million and a-half francs, without counting the local consumption and the secondary markets. The Truffle may generally be found in woods of Oak and Holm Oak, at a moderate height, exposed to the south, and having a limy or clay-limy soil, sufficiently stocked and divided. The Truffles are generally found near the roots, to which they sometimes adhere. These diverse observations have caused the formation of artificial Truffle-plots, consisting in the formations of plantations of Oak, according to the appropriate conditions of soil, exposure, and altitude. The results obtained have attracted the attention of the Minister of Agriculture, Commerce, and Public Works, who has recently charged a commission to visit the Truffle-plots created in the environs of Carpentras by M. Rousseau, one of the principal inventors of this new work. His property, situated near the pretty town of Carpentras, comprises about seven hectares [1 hectare equal to 2½ acres, nearly], there being four plantations of trees of 18 and 12 years respectively, and three plantations of seven, five, or three years. The substances are the Holm Oak, some Oaks of the hardiest kind, and a small number of the Aleppo Pine. The trees have been sown in straight thick lines of from 5 to 6 metres, and at a distance of 1.50 to 2 metres from each other. In the spring the earth between the lines is ploughed to a depth of about 10 to 12 centimetres each. The ground which formerly produced only a mediocre harvest of Rye at the value of 90 francs the hectare, yields now, by the cultivation of Truffles, an annual revenue of nearly a thousand francs a hectare. The example of M. Rousseau has besides been already followed by a large number of private men as well as villagers, whose trials have been also visited by the Commission. Twenty-six villagers farm the harvest of the Truffles in their woods at 20,800 francs; this produce being double what it has been in 10 years. The actual number is still very small, but the impetus is given, and the villagers as well as the private individuals appreciate now the value of the treasures which their ground conceals, and which will yield a large profit to the proprietor and be a great advantage to the public fortune. The Commission solicited a gold medal for M. Rousseau. *Annales Forestieres.*

Calendar of Operations.

(*For the ensuing week.*)

If the weather should continue as wet as it has been lately, no time should be lost in getting tender plants under protection, a kind of work the omission of which may peril the welfare of valuable stock that cannot be readily replaced. In addition to making the indoor department as gay as possible at this season, attention to cleanliness and order should be rigorously enforced, as the time is drawing near when glass structures will be looked to as a principal means of affording gratification and enjoyment, in lieu of that which must soon be lost in the open garden; and when attention is concentrated more exclusively upon the plant-houses, anything which is untidy or out of order, will the sooner attract notice. Some nice good-shaped plants of hardy Rhododendrons, Azaleas, and Kalmias, which are well supplied with blossom-buds, should now be taken up, potted, and plunged in a bed of ashes, from whence they can be brought forward in succession as they are required.

FLOWER GARDEN AND PLANT HOUSES.

Alterations of grounds and planting of Evergreens should now be carried on wherever the soil is not too wet for the practice of these operations. Drainage of wet lands should also now receive attention.

ASTERS.—These are still in beautiful condition in most places, and should receive careful attention, in order that their beauty may be maintained for as long a period as possible. The dwarf Chrysanthemum-flowered varieties produce blossoms in great profusion, and in small beds, or in the shape of edgings, look remarkably pretty.

AZALEAS.—Keep these in an even condition with regard to water at the root. Stake or tie out if necessary, and do all that can be done to keep the place clean, and to maintain them in good health.

BEDDING PLANTS.—Cuttings of Calceolarias and zonal Pelargoniums may still be put in where stock of such things is deficient. Cuttings of Calceolarias taken from plants in the open ground are, however, liable to damp off in heat; but they will be found to do very well in a close pit or frame, where there is the means of applying a little warmth when necessary to dispel damp. See to securing as many cuttings as possible of any scarce plants which it may be desirable to increase while there is a fair chance for rooting them; and also be prepared to protect choice Pelargoniums and other things which it may be intended to take up and winter.

CAMELLIAS.—Thin the blossom buds if too thick, and give the plants plenty of air.

CINERARIAS.—Cuttings of these may now be put in, or young plants may be raised from seeds. The last will prove useful late in the season. Plants struck early may now require a shift.

CLIMBERS.—These, at least some of the most rambling of them, will now want a smart dressing where they obstruct light in any material degree. Such as flower on the young wood, and which are now in a ripening condition, or approaching a state of rest, may be pruned in pretty closely. Others, such as the late-blooming Passifloras, Combretums, Echites, Ipomœas, Stephanotis, Thunbergias, and Mandevillas, which are still thriving, must be regulated with a more gentle hand, cutting away merely barren shoots, and drawing the remainder into somewhat closer festoons, in order to throw sunlight into the interior of the house.

HEATHS.—These should be kept as much as possible apart from other plants, especially such as are of a herbaceous character; indeed, where circumstances admit of it, they should wholly occupy a house or pit by themselves. They seldom succeed well if associated with soft-wooded plants.

FORCING GARDEN.

CUCUMBERS.—Plants in bearing will now or soon require fire heat, at least at night. They will also enjoy a moist growing atmosphere.

PINES.—Do not subject plants in a fruiting state to a very low temperature, which should be kept at from 60° to 65° by means of fire-heat, for although they will bear a considerable amount of cold without apparent injury, those not subjected to any unnecessary extremes will produce the finest fruit; and a short period of comparatively dry treatment will ripen the growth and just as effectually induce a tendency to show fruit as checking the energies of the plant by an unnaturally low temperature, and without any of the ill effects of the latter method. Little dependence can be placed on the weather at this period of the season, therefore see that plants in pits with insufficient means of heating are well protected by means of covering at night; and maintain the command of a rather high temperature by frequently renewing the linings, so as to be prepared for any sudden decrease of heat. Avoid anything approaching excess of atmospheric moisture among young stock, whether in pits heated by linings, or in better arranged structures; it only tends to promote a too free growth for the amount of light.

VINES.—Admit a free circulation of air through Vineries in which there are no crops, and attend vigorously to the destruction of insects, if any. Keep the atmosphere as cool as may be possible, where the wood is ripe, or nearly so; and in all cases stop the growth of laterals, even where a warm temperature is of necessity kept up, for the purpose of ripening late crops; as leaves produced during this month cannot possibly attain a perfect development sufficiently early to repay the amount of stored up sap, which they have consumed in their formation. Where the fruit is not yet fully ripe, a brisk temperature must be maintained, as the keeping properties of the fruit depends on its being matured before the end of this month.

HARDY FRUIT AND KITCHEN GARDEN.

Look over fruit stores frequently to see that all is keeping well, and remove any fruit that may show symptoms of decay, so as to prevent the mischief from spreading; attend to gathering fruit as it becomes ripe.

CAULIFLOWERS.—Plants heading must be frequently examined; those not wanted for immediate use should be taken up, and stored till wanted.

POTATOS.—As recommended last week, get these out of the ground as soon as they are fit for lifting, and frequently inspect them after they are stored, in order to separate any that may be bad from the good.

STATE OF THE WEATHER AT CHISWICK, NEAR LONDON, For the Week ending Sept. 12, 1866, as observed at the Horticultural Gardens.

Sept.	Month	Barometer		Temperature of the Air.			Of the Earth 1 foot deep.	2 feet deep.	Wind	Rain.
		Max	Min	Max.	Min.	Mean				
Thurs.	6	29.607	29.371	68	51	61.0	62	59.8	S.W	0.61
Friday	7	29.696	29.549	68	51	61.0	62	59.8	S.W	0.08
Satur	8	29.740	29.573	68	50	61.3	62	59	N.E.	0.22
Sunday	9	29.779	29.571	68	51	61.7	62	59	S.E	0.21
Monday	10	29.785	29.433	68	49	59.5	61.5	59	S.W	0.06
Tues.	11	29.682	29.449	63	46	54.5	60.5	58.8	S.W	0.16
Wed	12	29.925	29.769	66	47	54.5	60.5	58.8	S.W.	0.03
Average		29.719	29.536	65.8	51.1	58.5	61.5	59.0		1.40

Sept. 6—Partially overcast, showery, very boisterous, stormy and wet
— 7—Partially overcast and boisterous, fine, rain
— 8—Overcast, showery, densely overcast, showery, heavy rain
— 9—Overcast, cloudy, overcast, showery, rain at night
— 10—Heavy rain, fine, overcast
— 11—Rain, boisterous, fine, showery
— 12—Overcast, uniformly overcast, cold drizzling rain
Mean temperature of the week, 1 deg. above the average.

STATE OF THE WEATHER AT CHISWICK,
During the last 40 years, for the ensuing Week, ending Sept. 22, 1866

Sept.	Average Temperature from 40 years	Average Highest Temp.	Average Lowest Temp.	Mean Amount	No. of Years in which it Rained	Greatest Quantity of Rain	Prevailing Winds. N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.
Sunday. 16	63.1	74.3	52.1	0.61	16	0.61 in.	3	2	5	1	10	7	7	2
Monday. 17	62.8	74.1	51.7	0.59	15	0.90	2	1	6	4	3	11	4	2
Tues. 18	62.5	73.9	51.4	0.57	15	0.90	2	1	6	4	3	11	6	5
Wed. 19	62.4	73.6	51.2	0.56	14	0.90	2	1	6	4	3	11	6	5
Thurs. 20	62.2	73.4	51.0	0.55	14	0.90	2	1	6	4	3	11	6	5
Friday. 21	62.1	73.3	50.8	0.54	14	0.90	2	1	6	4	3	11	6	5
Satur. 22	62.0	73.1	50.7	0.53	14	0.90	2	1	6	4	3	11	6	5

The highest temperature during the above period was 90 on the 17th, 1852 -Therm. 51 deg., and the lowest on the 17th, 1849 - therm. 29 deg.

Notices to Correspondents.

A PEDIGREE, IF NOT A PLAGIARISM. *Sandys.* The statement that "the boundary line between life and death is hard to define" has been so long generally assented to, that we fail to see how Professor Humphrey can be made liable with plagiarism. We think it highly probable that the learned professor may have derived the idea elsewhere than from the passage to which you refer, beginning "Funerals are a phenomena which was, is, and shall be coeval with matter."

BOOKS. *H. B.* The "Treasury of Botany" and Hardwicke's "Science Gossip." Your will find the latter very suitable for your purpose.—*C. G., Gosport.* The "London Catalogue of British Plants" may be had for a few pence, we believe, of Dulau & Co.

HYACINTHS. *Hyacinth.* We have not space for a list of "six choice" varieties, but this number may readily be selected from any catalogue. For greenhouse decoration we recommend the following sorts among the single varieties, which are preferable to the double sorts for this purpose. *Red:* Diebitsch, Sabalkansky, La Peine du Jue, Norma, Madame Hodges, and Robert Steiger. *Yellow:* Prince of Yellows, Ida, Ida superissima, Elfrida, Grand Vainqueur, Grandeur à Merveille, Queen Victoria, Queen of the Netherlands; *Blue:* Baron von Tuyll, Bleu Mourant, Charles Dickens, Grand Lilas, Emicus, Ornulatus. *Black:* Prince Albert; *Mauve:* L'Unique. Of doubles the following might be named.—Bouquet Royal and Lord Wellington among reds, La Dresse and Prince of Waterloo among whites, and Bloksberg and Laurens Koster among blues. There are many higher priced and choicer kinds if desired; the foregoing are recommended for their usefulness.

INSECTS: *Sybil H.* The caterpillars you have sent, and which have been so extremely numerous on various forest trees, are those of the common Buff-tip Moth, Bombyx bucephala. The moth appears in June. It has not been figured in the *Gardeners' Chronicle.*—*W.*

NAMES OF PLANTS. *S. W. Telford.* Leycesteria formosa.—*Delta.* 1, Polystichum angulare; 2, Lastrea dilatata; 3 and 4, varieties of Athyrium Filix-femina.—*G. M.* 1, appears to be Tillandsia usnea, but the flowers were very much crushed; 2, Cotyledon Cotyledon.—*W. Williams.* Cupressus juniperoides. It is not hardy.—*Y. L. R.* Cupressus macrocarpa.—*N. Z.* Cestrum aurantiacum.—*J. H. T.* Cerasus virginiana.—*R. H. S.* One of the Yams, a species of Dioscorea, but which we are unable to decide without flowers or fruits.

PLANTING CRYSTALS. *W. B.* Do so at once.

SENSITIVE PLANT. *M. D. Knutsworth.* "It may be as you say," but there is at present no satisfactory evidence that it is so. Certainly in our hands the experiments did not have the same results as those alluded to by Dr. Sigerson in our columns, p. 825.

WEEDING WORK: *T. G.* A strong solution of salt, in the proportion of 2 lb. to a gallon of water, applied hot, will effectually destroy the weeds.

COMMUNICATIONS RECEIVED.—Prostwich.—Markham.—Nesfield (thanks).—Rev. D. Smith.—D. T. Fish.—W. E.—W. H. F.—H. C.—G. Willer.—W. Groom.—J. Green.—V. K. C.—Insecticide.

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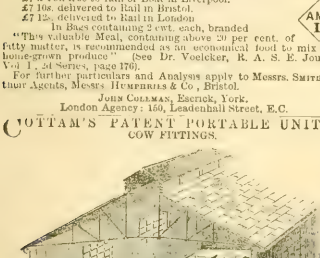
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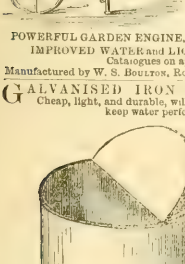
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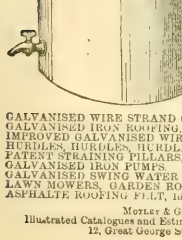

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The Term of Years for the Rentcharge is fixed by the Landowner, so as to adapt the amount of Annual Payment to the circumstances of the Tenants.
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No. 1. The Works may be Designed and Executed entirely by the Landowner's Agent, and the Company employed only to supply the Loan and ensure that the Money is Enough all the official Forms for Charging the Outlay on the Estate.
No. 2. The Company will supply Plans, Specifications, and Estimates for any Improvements to be executed by the Landowner's Agent as under No. 1. In each of these cases the Landowner will be solely under the control of the Enclosure Commissioners
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Copies of the Prize Lists and Regulations may be obtained from the Secretary, at 9, Bond Street, Leeds, Yorkshire.
The ENTRIES CLOSE on November 1.

THE BIRMINGHAM CATTLE and POULTRY SHOW, 1866.—The FIFTEENTH GREAT ANNUAL EXHIBITION of FAT CATTLE, SHEEP, PIGS, DOMESTIC POULTRY, COINS, ROOTS, and IMPLEMENTS, will be held in the LONGLEY HALL, on SATURDAY, MONDAY, TUESDAY, WEDNESDAY, and THURSDAY, December 1st, 3d, 4th, 5th, and 6th, when Prizes to the amount of £300 will be awarded.
Prize Lists, Certificates of Entry, and every information may be obtained from the Secretary.
The ENTRIES CLOSE on Thursday, November 1
JOHN B. LYTHALL, Secretary.
Offices—Stephenson Chambers, New Street, Birmingham.

SMITHFIELD CLUB SHOW.
AGRICULTURAL HALL, ISLINGTON, DECEMBER 10 to 14.
IMPLEMENT DEPARTMENT.
The LAST DAY for receiving Applications for Space for Implements and Machinery, &c., is OCTOBER 1
Printed Forms of Application, with Rules and Regulations, may be obtained of Mr. DAVID PEARS, Assistant Secretary, at the Office of the Honorary Secretary, Corner of Half Moon Street, Piccadilly, London, W.

SMITHFIELD CLUB FAT CATTLE SHOW.—The ANNUAL SHOW of FAT CATTLE, SHEEP, and PIGS, will be held at the AGRICULTURAL HALL, ISLINGTON, on MONDAY afternoon, December 10, and Four following Days.
Intending Exhibitors are requested to apply for Certificate Form* by the reference letters as under.

CATTLE.—	Form A.	For an OX or STEER (in any Class).
	" B.	For a COW or HEIFER (in any Class).
	" C.	For a BEAST in Extra Stock
SHEEP.	" D.	For a PEN of TWETHERS (in any Class).
	" E.	For a SINGLE SHEEP in Extra Stock.
PIGS.	" F.	For a PEN of 3 PIGS (in any Class).
	" G.	For a SINGLE PIG in Extra Stock.

ENTRIES for LIVE STOCK CLOSE NOVEMBER 1.
Prize Lists, Forms of Certificates, and all information may be obtained on application to Mr. DAVID PEARS, Assistant Secretary, at the Office of the Honorary Secretary, corner of Half-Moon Street, Piccadilly, London, W.
N.B. All communications respecting the Show must be addressed to the Assistant Secretary, as above, and should bear outside the words "Smithfield Show."

The Agricultural Gazette.

SATURDAY, SEPTEMBER 15, 1866.

WEATHER such as we are now experiencing naturally directs attention to the possibilities of an economical artificial drying of grain and straw and hay. A constant or almost constant rain is deluging the corn-fields, and many of them in the northern, and even the midland counties, still have the crop standing in them. The ordinary expedient of hooded stooks becomes ultimately worse than useless, only helping to retain the rain-water which may at length have penetrated them. And there is nothing for it but repeated opening of the sheaves during every gleam of sunshine, replacing them as soon as possible, or before the next downfall comes. What if we had the means when thus half dry of housing them! This was Mr. HALLETT's plan one wet season some years ago, and he then wrote to point out that any farmer with the ordinary building equipments of arable land would be surprised to find how large a quantity can be stowed away to get gradually dry under all the sheds and roofing at his disposal, by standing all the sheaves one row thick, and closely, side by side. How much better would it not be, however, if the farmer possessed an apparatus capable of driving off, say 20 or 30 tons of water daily from any substance submitted to its drying action? And this could be done at no very extraordinary expenditure of fuel. Even if we take the fact that one of coal will convert six of ice-cold water into steam at 212°, so that taking mere consumption of fuel into account, 30 tons of water could be driven off daily at the cost of 3*l.* to 5*l.* a day, the probability of an economical and advantageous result seems encouraging. But one of coal will drive off much more than six of water at a lower temperature than 120°, and there seems no reason why its power for this purpose should not be used in the case of a material like corn, which when ready to cut is already nearly dry.

An experiment made during the past season on a heavy crop of Clover quite ready to cut (*i. e.*, with some of its blossoms already getting brown), showed that of 21,519 lb. of crop which there was ascertained to be per acre, there remained only 10,485 lb. after 24 hours of a fair drying day during which the swathes had been once turned. There were still 7362 lb. per acre after 48 hours of the same weather, the swathes having been again turned. We did not weigh on the third day, but before carrying to the rick on the fourth day there were still 5964 lb. per acre when it was ready to carry. The fact was, the crop had lost one-half of its original weight in the first 24 hours, a little more than one-sixth of its original weight in the second 24 hours, and

not more than 1-15th of its original weight in the following 48 hours. And if we take the material as it exists at the immediate commencement of every 24 hours, we find from these results that fresh Clover will lose one-half its weight the first day of the cutting—Clover after one day's drying will lose barely one-third of its weight in 24 hours under a similar drying influence—and Clover after two days drying will not lose more than one-fifth its weight during the subsequent 48 hours. A crop of 10 tons becomes 5, 3½, 2¾ (probably), and 2½, after the 1st, 2d, 3d, and 4th days respectively of a good harvest season.

Of course no artificial method can compete with the natural plan when that is carried on under favourable circumstances. But when the weather is unpropitious, and when in addition to the real cost of the process we have the gradual and ultimately the rapid deterioration which ensues in bad weather, it is probable that we may secure a better salvage artificially. The natural method it appears becomes less and less efficient and productive of result towards the end of the process. And it is then, therefore, that we are most likely to emulate or excel it. If a good crop of Clover has only one good day's drying, there then remains not more than 50 cwt. of water to drive out of it per acre to convert it into hay. And an apparatus capable of driving off 50 cwt. of water per hour, *i. e.* of burning from 6 to 8 cwt. of coal per hour, and applying all the heat which is thus produced to the conversion of water into vapour, would be a most useful and profitable agent on a farm.

What the quantity of water may be that there is in an acre of a half-won good crop of Wheat we do not know, but it cannot be anything like so much as there is in a half-won crop of Clover; and such an apparatus, therefore, would be even more useful and desirable in August and September than during June and July.

—— NOTWITHSTANDING the protests of the Highland and Agricultural Society, and of the Edinburgh Chamber of Agriculture, the recent Orders in Council relating to the movement of Cattle in Scotland have been allowed to take their course, and the great September Tryst at Falkirk has accordingly been held during the past week, contrary to the expressed wishes of the representatives of Scottish agriculturists. The attendance of buyers has been unusually limited, and prices of sheep are reported to have fallen 3*s.* or 4*s.* a head below those of the corresponding market last year.

—— THE sale of Mr. HETHERINGTON'S herd by Mr. STRAFFORD was well attended on the 6th inst. Among the best tribes were the *Gwynnes*. *Polly Gwynne*, lot 1, and her six descendants, made 300 guineas, the highest prices being 60 guineas for *Duchess Gwynne*, bought, with five other animals, by Mr. J. P. FOSTER, of Killhow. *Christmas Gwynne*, 55 guineas (R. JEFFERSON). *Christmas Gwynne* 2d (40 guineas), and 2d DUKE OF CUMBERLAND (a splendid bull calf), 62 guineas, both bought by Mr. H. SHARPE for the Earl of AYLESFORD. The 34 cows made 920*l.* 6*s.* 6*d.*, or just over 27*l.* each. The 13 bulls averaged 24*l.* 17*s.* 6*d.*, and the total for the 47 head was 1243*l.* 14*s.* 6*d.*, being an average of 26*l.* 10*s.*

On Wednesday, the 19th inst., Mr. STRAFFORD will sell a small but very first-rate herd of Shorthorns at Yardley, near Birmingham, belonging to GEORGE GRAHAM, Esq. This stock, which has been collected during the last seven years, is of very pure and favourite blood, combining the most fashionable strains of the day. It consists of 24 cows and heifers and 6 bulls, that are divided into six families or tribes, all of which are descended from some excellent animals. The well-known *Sylph* tribe of Mr. J. C. ADKINS has seven representatives; the *Foggathorpes*, at one time in the possession of Mr. BATES at Kirklevington, also has seven members; whilst the *Fillets*, perhaps the purest and most favourite of all Sir CHAS. KNIGHTLEY'S good blood, consists of four animals. There is likewise one member of the *Wild Eyes* family, and four others descended from cows bred by the Messrs. BELL at Kirklevington. The remaining strain is from the Earl of CARLISLE'S stock at Castle Howard, called the *Bracelets*, with the 1000-guinea GRAND DUKE and SECOND DUKE OF BOLTON crosses.

These tribes have been crossed by Mr. GRAHAM with bulls of Sir CHAS. KNIGHTLEY'S blood, viz., BARLEYCORN (17,348), TOUCHSTONE (20,986), and now the celebrated bull KNIGHTLEY (22,051, see "Coates's Herd Book," vol. 16, p. 142) is in service. He, with TOUCHSTONE, are Lots 1 and 2 of bulls. The older cows are by the BATES' bulls DUKE OF CAMBRIDGE (12,742), SEVENTH DUKE OF YORK (17,754), and SECOND DUKE OF THORNDALE (17,748); one of the *Foggathorpes* is sired by SECOND DUKE OF BOLTON (12,739), and SIR JAMES (16,980), of Mr. R. BOOTH'S blood, is sire of *Christine*, Lot 5, from the *Fillet* tribe.

It is rarely that such a combination of good blood is offered in one herd, and the animals themselves, which are in nice healthy condition, will fully bear out the high character of their pedigrees. The sale takes place solely in consequence of Mr. GRAHAM'S change of residence, and will be conducted without any reserve.

—— WE are glad to learn that at the annual meeting of the Kingscote (Gloucestershire) Farmers' Club, some progress was made towards the institution of a county examination of agricultural students and agricultural apprentices in all matters relating to their professional knowledge. Possibly we may yet have to congratulate agriculturists on the National Agricultural Society no longer refusing to lend a hand to a scheme of this description. It may yet see that it ought to "promote the education of those who are dependent on the cultivation of the land for their support" by rewards to agricultural students for proficiency and excellence in agricultural knowledge. At any rate, it is hard to believe that any county will meet with a refusal when it shall come forward with sufficient annual funds for the promotion of agricultural education in this way, and seek the assistance of the Society's examiners in administering them. The object of the movement in Gloucestershire is the organisation of a scheme for an annual examination, by which the attainments and knowledge in practical agriculture of young men resident in, or belonging to, the county of Gloucester may be determined.

To this end it is in the mean time proposed that candidates be over 18 years of age, and that they satisfy the examiners in a preliminary examination in reading, spelling, dictation, and arithmetic, including book-keeping. It is proposed that the examination in practical agriculture take place annually in Easter week, and embrace the following subjects,—Labour, Implements, Cultivation, Crops and Stock; to be conducted on the farm *viva voce*. And thereupon the competitor securing the greatest number of marks in the practical examination will receive 40*l.* a year for two years in succession, to aid him in the prosecution of his studies at an Agricultural Institution.

That is the proposal on which an influential committee intend to seek for the assistance of landowners and farmers within their county—having obtained which, we presume that they will claim the assistance of the National Society; and thus, we hope, at length succeed in arousing that slowly moving body to some effort for the promotion of professional agricultural education.

ON THE DIVISION (*MORCELLEMENT*) OF ESTATES.

[Translated from the "Journal d'Agriculture Pratique."]

THE Agricultural Society of Drôme, in response to an appeal from the Central and Imperial Society of Agriculture, is investigating the question of *morcellement*.

"Extreme division of land; necessity of legal measures which shall have the effect of arresting the abuse by fixing a limit to the parcelling out; to create facilities for laying together the small plots"—such are the assertions and views expressed by the Drôme Society. M. Marcel Marre, Member of the Chamber of Agriculture of this Department, does not coincide in this advice. He has set forth his opinions in an article communicated to the "Journal d'Agriculture Pratique." According to him, unlimited division entails neither abuse nor loss; he merely admits the propriety of returning to the law of 1824, which freed exchanges from duty, thus recognising that the scattering of fields is the cause of loss; but in regard to the principal question, his opinion may be briefly summed up by the motto, "Let alone."

Any person acquainted with the methods of correction employed with success in countries where the division of farms had entailed consequences similar to those complained of in many parts of France, might have expected that a negative sentence would not have been pronounced in so absolute a manner on a subject of so much importance. We recommend to those who wish to understand the subject, the study of the territorial reforms which our neighbours over the Rhine have established for half a century. These measures, followed by a success which has made them popular, have extended at the present day over three-fourths of the German dominions. They were explained in an article inserted last year in the "Journal d'Agriculture Pratique."

Without reproducing here the considerations which serve to recommend the German laws which bear upon the recasting of small plots, we shall merely remark that they have no retrospective effect; that they do not modify the laws of succession; that they do not fix a minimum extent in the division of lands; and that their efficaciousness consists in the accomplishment of simultaneous transfers, which they promote in every communal territory. Far from being compulsory, this measure only takes effect when the majority of the proprietors desire it. The important end attained is to remedy the excessive division of small fields that are in the hands of little farmers. In the case of this the dominant class in many parts of Germany and in a great part of France, the scattering of their fields is the cause of very great loss of time, as well as of a costly method of cultivation, arising from the employment of too many draught animals.

This is the adverse position in which a considerable number of our farmers are placed, and which is a position in which they are likely to remain unless the question of *morcellement* is taken up, and its evils resolutely attacked.

M. Marcel Marre would not, we think, have treated the subject with so much disdain if he had studied it in all its relations; he would have learnt that the throwing together of plots by exchange, only affects the tillage land and the pasture; and that it does not extend to gardens, or orchards, or vineyards, because cultivation of this kind is carried on principally by hand, and may succeed though the fields are considerably divided and scattered. We cannot believe that the little silk worm nurseries would be in danger of being proscribed, since the transfers would not affect the Mulberry plantations.

He will learn that nothing will hinder those whom he calls the humbler rural classes from acquiring small plots of land as the reward of their labour and economy, because there will always be plenty on sale. Finally, he will not fear the destruction of the handsome villas, or the modest country houses, which are the ornament of suburban districts, and which do not at all compromise the agricultural prosperity of the country.

The erroneous notions which we controvert are adopted, we are aware, by many minds who believe that a reform in land division is too radical a measure, and one which presents insurmountable difficulties. In those countries where the abuse of division is greatest, and where the scattering of fields is excessive, the majority of cultivators consider this state of things as irremediable. It is of consequence to enlighten them. The repugnance with which the question of *morcellement* is generally received, proceeds less from the fear of seeing territorial property disturbed, than from ignorance of measures which might be beneficial. The adversary whom we are answering, calls this an important subject; we shall not contradict him on that point. In fact *morcellement* is not one of those passing evils which time removes, as it introduced them; nor is it one of those disasters which are the consequence of commercial vicissitudes. It is a constant evil, which increases irresistibly, the rapid progress of which is established by undeniable evidence.

TENANT RIGHT.

[In answer to a correspondent, who inquires about the proportion of expenditure on cattle food and manures properly chargeable on the following years, we extract the following account of this subject from Morton's Farmers Calendar.*—]

THERE are large districts in this country where no leases are prevalent—where the security of the tenant's residence on the estate (the permanency of his home) depends on the custom, and the character of the owner—and where the security of the tenant's capital is provided for by the observance of what are called "Tenant's rights." In Lincolnshire, where this system chiefly obtains, it has resulted in a high degree of fertility over the districts thus affected.

When the tenant leaves the farm, he is allowed a certain proportion of the sums spent by him in past years in various acts of cultivation or improvement, varying in amount according to the number of years which have elapsed since the expenditure. It is plain that when the proportion thus allowed is liberal, there is every encouragement to a tenant to proceed with liberal farming, whether he is under notice to quit the farm or not.

Mr. Williams, agent to the Earl of Yarborough, thus described the custom of tenant right prevalent in North Lincolnshire, in the "Journal of the Agricultural Society of England;"—

"The usual allowances in the north of Lincolnshire to outgoing tenants for unexhausted improvements are as follows:—

"Bone-dust.—This is considered to last for three years, and a tenant quitting in the spring of 1861 receives therefore two-thirds of the cost of what he put on in 1860 (one-third being supposed to be exhausted by his Turnip crop), and one-third of what he put on in 1859, of which he has had the benefit of the other two-thirds in the crops of that year and of 1860.

"Precisely the same principle is adopted in the following improvements, the only difference being the number of years which each is assumed to last, and which are as follows:—

"Marl or chalk, seven years.

"Lime, five years.

"Clay, put on sandy land, four years, and on some estates seven years, which is probably a fairer allowance.

"Draining with tiles or stone, when the tenant pays the whole cost, seven years. This is, however, now a rare case, the usual practice being for the landlord to find the tiles. In this case the tenant has generally no

* Farmers' Calendar. Warne & Co., Bedford Street, Covent Garden.

allowance for putting them in if he has had a crop off the land, though he certainly ought to have a proportion of the cost, as it must often happen that the first crop will not pay for the labour of draining. It would be probably right to put this on the same footing as bones.

"Draining with sods or thorns, four years. This allowance, I believe, is not always made. Indeed this mode of draining is now not much practised.

"The tenant is also paid the cost price of the seeds sown the spring previous to quitting, and for the labour of sowing, &c., provided they are not stocked after the 1st of November, and have not been unfairly stocked before.

"When seeds are ploughed up for Wheat the autumn previous to quitting, he is allowed for herbage until the end of the term; but it is not usual to allow anything on ploughing up Clover stubble for Wheat, that being considered the crop which ought to follow Clover as a matter of course.

"For naked fallow, on strong land, he is allowed for ploughing and all the labour performed, but not for rent or taxes, unless he paid for them on entry. The cost of seed and labour on corn sown for the incoming tenant is of course always paid by the latter." "On some estates buildings are allowed for, like other improvements, on a term of 20 years." "In addition to these allowances, a fresh one for oilcake given to stock has been established on Lord Yarborough's estate. The allowance is based on the assumption that the manure is improved to the extent of one-half the value of the oilcake consumed; but to get a fair average as to both quantity and price, it is made to extend over the last two years, and the allowance is two-sixths of the cake used in the last year, and one-sixth of that used in the previous one, making together half a year's consumption."

To this I add another Table of allowances, adopted on some estates on the recommendation of Mr. Humberston, of Chester:—

DESCRIPTION OF IMPROVEMENT.	CONDITIONS ANNEXED.	RATE OF COMPENSATION TO BE ALLOWED ON QUITTING.
1. Fine ground bone and half-inch bones	On drained or naturally dry tillage land	Two-thirds of the cost of what has been used in the last year of tenancy, and one-third of that used in the year preceding.
2. Bone dust and half-inch bones	On dry or well-drained pasture or meadow land, the same not being afterwards mown	Seven-eighths of the cost of that used in the last year of tenancy, and diminishing one-eighth every previous year subsequent to the application.
3. Dissolved bones or guano	On dry or well drained land	One-fourth of the cost of that used in the last year of tenancy for Turnips and Rape.
4. Lime	On dry or well drained Land	Three-fourths of the cost of that used in the last year of tenancy, and one-fourth of that used in the preceding year.
5. Linseed cake	Consumed on the farm	Three-fourths of the cost of that used in the last year of tenancy. The manure being carefully preserved in the fold-yard.
6. Draining—landlord finding tiles	Provided the drains are not less than 3 feet deep at regular distances, and cut under the superintendence of the landlord or his agents, and are in perfect order at the expiration of tenancy	Four-fifths of the expense of cutting, laying, and filling in the drains made during the last year of tenancy, and diminishing one-fifth for every crop grown on the land since it was drained.
7. Draining—tenant finding tiles	Same proviso as above	Six-sevenths of the cost of those made in the last year of the tenancy, and decreasing one-seventh for every crop grown since it was drained.
8. New buildings or walls—landlord finding the materials	Provided the same are done under the direction and approved of by the landlord or his agent, according to plan and specification previously agreed upon	Nine-tenths of the cost of those erected in the last year of the tenancy, and decreasing one-tenth for each year's occupation after erection.
9. Ponds	Same proviso as above	Nine-tenths of the cost of those made or filled up in the last year of the tenancy, and decreasing one-tenth for each year's occupation after completion.
10. New walls or buildings—tenant finding all materials	Same proviso as above, tenant keeping and delivering up in good repair	Nineteen-twentieths of the cost of those made in the last year of tenancy, and decreasing one-twentieth for each year's occupation after erection.
11. New fences of Hawthorn—landlord finding posts and and rails	Provided they have been properly protected and cleaned	Nine tenths of the cost of those made in the last year of tenancy, and decreasing one-tenth for each year's occupation after completion.
12. Clover and Grass seeds	Provided proper seeds have been sown in a husband like and proper manner, and have not been depastured or trod by stock	The invoice cost of seeds sown in the last year of tenancy.

It is plain that there is nothing in the two systems of lease and tenant right to make them antagonistic; they should be combined in order to the best result. The amount of rent offered for the use of land will depend upon the security, freedom, and advantages granted to the tenant. The best right which he can demand and secure for himself, when arranging the terms of his occupation, is that of peaceable possession of the land for a term of years. And, as regards the owner, obviously the best policy he can adopt is that which shall secure the permanence of the tenant-made fertility which he may then expect.

The advantages of the lease to the farmer appear self-evident. The certainty of a home which it confers upon him, and the certainty of all the investments he can make under it, are essential to the satisfactory prosecution of his business. He who, apart from the nature of the bargain, and merely on the ground of its permanence, should refuse a lease of the land he occupies, must surely either be without capital to invest, or without the spirit necessary to make it useful. The question lies between a 21 years' or a six months' notice to quit. A landowner may object to the former, but that a tenant aiming at the profitable employment of farm capital should prefer the latter, is beyond comprehension. I believe that, properly arranged, the longer term is the better for both parties; that the more, within certain limits, that their respective positions are assimilated, the more will self-interest lead each to act well for the other; that, in fact, the longer the interest of the tenant in the land, the more earnestly will he aim at that permanence of fertility which is for the benefit of the landlord as well.

There are, however, two aspects in which the lease may be considered relatively to tenancy at will; for the certainty of its termination is no less influential on the farmer than the certainty of its duration. The tenant, if it be not his interest to do otherwise, will certainly endeavour, as the known period of his lease approaches, to recover as much of his outlay as the short-sighted policy which alone it is then his interest to adopt enables. Restrictive clauses are powerless against the ingenuity of a wilful opponent: self-interest and the sense of a just claim will hinder the expensive appliances by which sterility may have been hitherto been maintained, and which, though profitable in the case of a three or four years' occupation, will never be made by a tenant under short notice to quit. And the consequence is, that in many districts the productiveness of the land is intermittent; the cultivator enters upon it after it has been impoverished by his predecessor; the first five years thereafter are a period of outlay and gradual recovery; the next eight or nine years may be considered one of entire convalescence, during which the land is at its maximum fertility; while during the rest of the term it suffers a gradual and ultimately an entire relapse.

The only remedy for this state of things—that by which the owner of land may expect to maintain a tenant-made fertility throughout the lease—is the acknowledgment on his part of a liberal tenant right at the close of it. It must be made as much the farmer's interest to cultivate "highly" during the last as during any preceding year of his occupation. The lengthened tenancy will have insured to the owner of the land the advantages which drainage and other permanent improvements can confer, and the "tenant right" acknowledged at the close of it will hinder the diminution of the current fertility which, as it is the only obvious indication of the value of land, has the greatest influence on the rental offered for it. It is as much for the incoming tenant's interest to make the payment for this high current fertility of the land at once as it would be to spread it over half a dozen years —indeed, it is far more his interest to do this, for a longer period will remain during which he reaps the fruit of his outlay—and the rental therefore cannot suffer on this account. Let the tenant be able to say—"I hold land for a term of years on terms which render it my interest to cultivate it highly till the last. These terms are simply the acknowledgment of my right, when the lease terminates, to the full value of all the produce of that cultivation, and to so much also of the cost as shall then remain unexhausted on the land. And the guide to the valuation is the document which specifies the similar valuation on behalf of my predecessor on the commencement of our tenancy. Leaving at Lady-day, I am thus insured the payment of 3*s.* 6*d.* per cubic yard for all made farm-yard manure—will not this induce abundant growth of straw in the previous year?—and there is no better test of fertility than the growth of bulky grain crops. I am also insured the expenses hitherto of the young Wheat crop, my entry having been at spring time, and with this, half the cost of manure and cultivation spent on the preceding root crop is to be repaid me. I am to be paid the market value of all unused straw, without liberty to move it; and I have permission to consume my roots in the buildings up to a sufficiently late period of the year." If there be any difference, the tenant, under such circumstances, has a greater inducement to cultivate well during the last than during any previous year of his lease. His successor will find his otherwise five-years' outlay satisfactorily condensed into a single payment on entry, and the whole period of his lease will thus be one of uniformly profitable cultivation. His landlord will find that a high actual fertility is most influencial on the offers of rent he receives. His labourers enjoy constant work till the close of his occupation. And the country, of course, benefits by the uniform productiveness of his land. I believe that the lease, as the encouragement of works for the permanent benefit to the land, with a "tenant right" at the close of it in reference to those acts of cultivation on which its current fertility depends, is the bond of relationship between landlord and tenant which the most effectually serves the interests of all parties.

The conditions of a lease form, of course, an altogether different subject of consideration: one to which your attention will be directed before Michaelmas, which is the commonest period of entry to arable land in this country.

Tenant-right Legislation.—So obvious are the advantages to all of any system which encourages the outlay of a tenant's capital on the land, that attempts have been made to secure for him by law a right to his unexhausted improvements at the end of his tenancy; but the subject seems fitter for private agreement than for interference by legislation.

In order to define what is due to an outgoing tenant, it would be necessary, according to the report on this subject, in 1848, to the Law Amendment Society, to determine not only "(1) the annual value of the land at the commencement of the tenancy, which might, perhaps, be obtained by reference to the rent, and the poor-rate assessment; (2) not only the annual value of the land at the end of the tenancy, which would require a special valuation; (3) not only proof of the fact that the improvements were made; (4) but also proof of the extent to which the improvements alone, as distinguished from other co-operating circumstances, have affected the value. Now, without taking into consideration the three former requisites, this last proof alone in would be almost impossible to give." Clearly the tenant has no right to the whole difference in the value of his farm at the commencement and close of his occupation. That may have arisen from the increase of population or of prices, from the improved condition of the people, from the neighbourhood of a lately constructed railroad, or from the settlement of a manufacture in its neighbourhood. From these causes in which the tenant has had no part, as well as from the fact that at such a date so much was spent in draining, liming, or manuring the land, has its increased value arisen; and who is to eliminate that portion of the result due to this, which is only one of its causes?

Indeed, a great apparent increase in the intrinsic value of an estate may often arise from a comparatively inexpensive act on the part of its cultivator. Draining, liming, or subsoiling will sometimes increase the value of land far beyond the cost of the operation; but notwithstanding this, no claim can justly be made for more than this cost: its effect has been so great, not because it has added to the soil anything for which the tenant paid, but because it developed and brought into action that which though dormant there, had a pre-existence as the property of the landowner.

The most fertile soil, if blocked up with water, loses its fertility; the roots of plants growing on it will exhaust their respective localities of the food proper for them, and then linger and die; but break up this stagnation, allow the water to circulate, as by drainage you may, and every successive shower will prepare fresh food, and, as it passes these roots, furnish them with fresh supplies of nourishment—of nourishment, observe, not added by the tenant, but existing in the land before he came to it. The increased fertility cannot be claimed as the tenant's own—the warehouse was full of food before his occupancy—he was only at the expense of the key. Here, then, is a new difficulty. Who is to determine what portion of the increased value of the land is due to its cultivator as the addition of real material at his cost, and what portion of it is a mere alteration of character, due no doubt to him as the instrument, but which he could not have effected had not the very basis of that character already existed—the landlord's property—in the soil?

The case against tenant-right legislation, then, is simply this:—It is impossible. It is the voluntary establishment of tenant-right that must be urged. The only period at which it can be successfully enforced occurs in the case of every farmer just before he enters his farm. It is a subject proper for private agreement, not for public enactment. But what an absurdity it seems to be, speaking of enforcing this matter as against landlords, when, of all the parties to the occupation of land, they would benefit the most by an agreement which should leave it in an improved condition. Who has any interest in a system which induces the investment of capital in cultivation, if the landlord has none? He of all should be the loudest in condemning unprotected tenancy at will.

RECENT SHEEP SALES.

LEICESTERS: *Aylesby.*—Mr. William Torr, who is known by every one connected with agricultural societies, held his private letting on Wednesday last. As this business is done under certain established conditions—one of which is that a hirer of a sheep last year may claim the offer of him before 12 o'clock in the day—and as the bargaining then takes between Mr. Torr and his customer, we have no chance of getting at the prices made. This, however, we may say, these sheep are of the finest possible white-faced quality, and of the best possible form, particularly in regard to the stiffness and straightness of their legs. As we have repeatedly argued, and been more than once laughed at by breeders for so doing, that many Lincolnshire flock-masters would have to fall back on such sheep as Mr. Torr's to get their own long-woolled or "improved Lincolnshire's" into shape. We were much gratified to hear Mr. Torr say publicly on Wednesday, that he last year let tups to 13 breeders of Lincolnshire rams. The better part of this meeting, however, to visitors and hirers of sheep when they have relieved their mind in getting what they want, is the combination of conviviality and discussion which takes place over the dinner-table and dessert. According to the above standing rule Mr. Torr has to begin early, and he does all his business beforehand — by 2 or 3 o'clock—when the dinner is announced, and no impatient auctioneer moves in and out and about with impressive looks to disturb the digestion and intellectual harmony and instruction of the company. Mr. Torr's exuberant cordiality, as we may term it, and his genuine hospi-

tality add greatly to the enjoyment of this sheep-letting anniversary on the first Wednesday in September, which is also a standing fixture. In the course of the evening, Mr. Torr expressly said to the effect that the farmers who were now grumbling about the present stringent orders in regard to the removal of sheep from districts infected with rinderpest, and in respect to assembling sheep for sale in public fairs, are now complaining because the Government is doing what the late Government was blamed for not doing at this time last year. "We don't want fairs," said Mr. Torr. "Jobbers want fairs. Farmers don't want either fairs or jobbers. Farmers can do better by buying and selling with each other, and learning to do again with fewer jobbers and no fairs." Just before dinner Mr. Torr had his splendid herd of Short-horns walked up to the corners of pastures close by the homestead, and also his breeding ewes. The discussion over and admiration of both was highly interesting and gratifying. During these remarks, Mr. Torr said, "We may, I think, challenge all the world to show 100 Short-horns and 500 breeding ewes." So far as our experience goes, we should not like to back any other man's for much against them.

Givendale.—Mr. J. R. Singleton, of Great Givendale, near Pocklington, Yorkshire, held his annual show of Leicester rams on Friday, the 17th ult. The shearlings, 25 in number, averaged 10*l.* 13*s.* Highest price, 20*l.* 5*s.*

Reiss.—The sale of Sir George Dunbar's Leicester Tups took place at the farm of Reiss on Wednesday. The following are some of the purchasers and prices: Major Horne, Stirkoke, 21*l.*; Mr. Leith, Stanstill (prize tup), 25*l.*; Mr. Smith, Olrig, 14*l.* 15*s.*; Sir G. Dunbar, Bart., 50*l.*; Mr. Thos. Rae, Borlum, 23*l.* 15*s.*; Mr. Henderson, Bilbster, 26*l.* 5*s.*; Sir John Sinclair, Bart., 15*l.* 5*s.*; Mr. Clyne, Reaster, 16*l.*; and Mr. Smith, Olrig, 23*s.* 10*s.*—Total, 605*l.* 17*s.* 6*d.* This gives an average of about 10*l.* 2*s.* per tup.

LINCOLNSHIRES: *Mr. C. Clarke, of Ashby-de-la-Launde.*—The sale was held at the Lodge Farm, 11 miles from Lincoln, on the Sleaford Road, where there is the best-arranged homestead that we have ever seen upon an off-hand business. The extent of land in Mr. Clarke's occupation is upwards of 1200 acres, and the ewes lambed down last year numbered upwards of 500.

The shearlings only were offered, their number being 100. The sum total realised was 1293*l.* 17*s.* 6*d.*, or close on 13*l.* per head average. The first sheep of any great attraction was No. 5, which was straight in his back, wide in the right places, and well covered with wool: he was bought by Mr. Winter, of Normanton, for 31 gs.; No. 9 was bought by Mr. Rudkin, of Willoughby, for 20½ gs., at which price No. 12 was taken by Mr. Fowler. Mr. Toynbee took No. 15 at 21 gs.; Mr. Grummitt, the next at 23 gs.; Mr. Lister, of Coleby, No. 20 at 40 gs.; Mr. Robinson, No. 22, at 22 gs. The sheep of the day was No. 25, and he was secured, after some exciting competition, at 55 gs., by Mr. Spafford, of Boothby House, a name and address well known in coursing circles as well as among agriculturists. No. 30 made 30 gs. to Mr. Marston, of Sleaford; No. 31, 26 gs., to Mr. Capp, of Canwick.

Temple Bruer Sale.—Apart from the real business of the day, this is one of the most spirited meetings that come off in this county. The presence of Mr. Chaplin, the proprietor of this farm among others in the neighbourhood, is an example to landlords which may be followed with pleasure, if the hearty reception accorded him by the company be looked upon with any gratification by any one who likes to stand well with his neighbours. The presence also of several clergymen, who thoroughly amalgamated, so to term it, with the business spirit of the day, added greatly to the general good feeling and animated conversation which took place over the luncheon table. These meetings have certainly an air of sociability about them, as well as of business, which cannot fail to have its good effect throughout the year.

Mr. Robert Charles Howard, the farmer of this occupation, is a young beginner in ram breeding, when compared with some of the men to whom we have previously referred. This is the third public day at Temple Bruer. Both sheep and prices improve as they appear under Mr. Howard's judgment and management. Hitherto, from the above mentioned short practice at ram selling, Mr. Howard's sales have been confined to breeders of stores, but, according to the old saying, "the third time fair," this year a respectable nibble was made by the representative of an old established ram-breeding flock. Mr. Chaplin, of Tathwell, bought No. 9, and a very capital sheep he is, being wide and heavy on short legs and full of wool. Mr. Wagstaff bought No. 4 at 15*l.* and No. 72 at 17*l.*; J. Young, Esq., bought No. 22 at 23*l.*; Mr. T. Pearr bought No. 28 at 16*l.*; Mr. E. Dawson bought the next at 23*l.* Another made 18*l.*; another 24*l.*; another 33*l.*, and the whole a good average.

P.S. The remarks previously written on the weather apply with much greater force this (Thursday) evening. Yesterday the rain fell for hours in torrents, and last evening, throughout North Lincolnshire and around Lincoln, brooks and ditches were overflowing, and furrows were full, while level stitches were inundated, the sheaves in many places standing in water. To-day some carrying has been done on Lincoln Heath, where we now are, after a very fine sunny and windy morning. But this afternoon it has again rained since 3 o'clock, and the harvest prospect is anything but cheering in the north-east.

Carrington.—Orders in Council, affecting the removal of sheep, have made the sales of rams at home nearly as numerous in Lincolnshire as parish churches. The name of Kirkham appears this year at the head of two additional home sales; at one conjointly, as Messrs. Joseph & Thomas Kirkham, and at the other as Mr. Kirkham, of Andelby, near Caistor, the head of the former firm. The former sale was held on Saturday the 8th at their farm at Carrington, about eight miles towards the coast from Boston. In consequence of the unfavourable weather, and the cross-country route to be taken to reach this place, it was feared the company would be "scarce," but the character of the Kirkham flock sold well, and by the time the auctioneer ascended the waggon a large and thoroughly business-looking assembly was present. There were only 48 sheep at Carrington. The shearlings from this flock had hitherto been sold at Peterborough fair, where customers from all directions could meet. So satisfied, however, were the Messrs. Kirkham with the company, that, be the cattle-plague among us another year or not, they have determined to make this meeting an annual one. The 48 sheep averaged 70*l.* 10*s.*, or nearly 14 guineas each. To take a few of the higher prices as they come: No. 6 made 36*l.*, to Mr. Charles Byron, of Tathwell; No. 7, 21*l.*, to Mr. Bramley. Mr. Tomlinson, from near Derby, bought two, one at 14*l.*, and the other at 16*l.* 10*s.* No. 8 made 68*l.*, to Mr. Cauldwell; No. 12 made 16*l.*, to Mr. Wolray. This sheep weighed 26 stone live weight, but his great size did not, and very properly, carry him so much into favour as the finer quality and more compact form of some sheep which were a third lighter. Mr. Byron bought another sheep at 22*l.*, and Mr. Stanton, another at 23*l.*

The leading prices at Andelby were, No. 4, to Mr. Brice, of Risby, near Market Rasen. This breeder has a clear appreciation of the present character of the Lincolnshire flocks, and he has displayed great judgment in the purchases he has made both here and at Biscathorpe. The sheep he bought here was straight in the back, had wide ribs, was firm in the hand, and his coat was heavy. His price was the low one of 23*l.* No. 6 was bought for Sir Montague Cholmondley, of Easton Hall, near Stamford, at 50*l.*; No. 13, at 30*l.*, by J. Kirkham, of Cadeby; No. 14, at 38*l.*, by Mr. Frankish; and No. 15, at 42*l.*, by Mr. Isles, Wold Newton. This good beginning is to be hoped will increase in importance and be long-continued. The average of the shearlings was 16*l.* 8*s.* 2½*d.*, and of the two-shears 12*l.* 16*s.* 3*d.*

Mr. Thomas Casswell, of Pointon.—52 shearling-rams were sold at home on September 5, by Messrs. Mason & Son: they realised an average of 16*l.* 16*s.* 6*d.* each. Mr. J. H. Casswell bought No. 24 at 105*l.*, for which sheep Mr. Charles Clark bid the sum of 100*l.*; No. 33 Mr. Clark bought at 45*l.*; Mr. Dean, of Dowsby, bought No. 10 at 36*l.*, and No. 25 at 35*l.*

SOUTHDOWNS: *Elmham Hall*—Messrs. F. and E. Beck, instructed by Lord Sondes, submitted to auction on Thursday, at Elmham, 400 Southdown sheep, and 20 red-polled Norfolk (or Suffolk) cattle; also for hire, 30 Southdown rams. Although this was his lordship's first public auction, the well-known high character of his flock, and the prizes they have earned at agricultural shows, have given him a high position as a sheep breeder, and have the effect of bringing together a full gathering of agriculturists. The following was the result:—Three bulls, 48*l.* 5*s.*; average, 16*l.* 1*s.* 8*d.* 17 heifers, 329*l.*; average, 19*l.* 7*s.* 13 rams, 179*l.* 0*s.* 6*d.*; average, 13*l.* 15*s* 5*d.* 140 wether lambs, 316*l.* 10*s.*; average, 2*l.* 5*s.* 2½*d.* 80 ewe lambs, 188*l.* 10*s.*; average, 2*l.* 7*s.* 1*d.* 80 stock ewes, 241*l.*; average, 3*l.* 0*s.* 3*d.* 100 shearling ditto, 338*l.* 10*s.*; average, 3*l.* 7*s.* 8½*d.* The total proceeds of the sale amounted to 1640*l.* 15*s.* 6*d.*

Flitcham Hall.—The 41st annual sale of rams took place on Aug. 31. No. 19 realised top price, 17*l.* 15*s.*, being purchased by Mr. Goulder, of Houghton. 20 and 44 fetched 17*l.* each, and were obtained respectively by Captain Campbell, of Snettisham, and Mr. Martin Dodman. No. 21 went up to 16*l.* 15*s.*, at which sum it was knocked down to Mr. C. Beck. Mr. Goulder gave 16*l.* for No. 22, and at least 33 of the 100 disposed of realised upwards of 10*l.* each. Mr. J. Spink got the first prize of a ram and the cheapest sold, lot 99, for 5*l.* 10*s.* The 100 sheep averaged 9*l.* 3*s.* 9½*d.*

SHROPSHIRES: *Mrs. Baker's Sale, at Grendon.*—Seventeen guineas was the highest price obtained, and the 31 averaged 11*l.* 2*s.* each, four being let.

Mr. S. Burd's, at Leese Farm.—Twenty ram lambs went off at fair prices, viz., from 5 to 9½ guineas each, the average being 7*l.* 1*s.* 6*d.* The rams commenced with "Load Weston," a noble three-shear, let for the season at 30 guineas. "Model Patentee," retained last year for use at home for a portion of the season, was let to Mr. Allen, of Knightley, at 43 guineas. Thirty-five others sold for 6½ to 18 guineas each, averaging 13*l.* 5*s.* 6*d.* each.

Mr. R. H. Masfen's Annual Sale.—Forty-four were sold at prices ranging from 40 gs. down to 8 gs., the average being 14*l.* 11*s.* 8*d.*

Shrewsbury Autumn Sale.—Two hundred and fifty Shropshire rams were brought to the hammer at Shrewsbury, on Tuesday, by Mr. W. G. Preece. Five very useful rams, in store order, from Mr. Williams, of Albrichtlee, sold readily at 11*l.* each; Mr. Evans's 13 averaging 10*l.* 6*s.* Mr. Pryce Bowen had no very superior ram to raise his average, but had a fair sale at about 10 guineas each; and Mr. Mansell's without the York show sheep would barely reach that sum. A wide-grown level two-shear, of excellent quality, bred by Mr. Minor, was cheap at 21 guineas to Mr. H. Smith, and the owner had no yearlings to follow of the same stamp, so that the average would not be much over 11*l.* Lady Willoughby de Broke's lot attracted much attention and a brisk competition, the 20 going at 15 guineas each, viz., at 28, 23, 20, down to 10 guineas. The long prize-winning career of Messrs. Crane, and the quality and general uniformity and excellence of their rams, caused an eager demand for them, though with one exception they were not large in size, but the first shearling, aptly named "Colossus," could not be far short of 50 lb. per quarter. He was purchased by Mr. Eyke, at 25 guineas, others of this lot making 28, 25, and 21, and averaging 15*l.* 19*s.* Mr. H. Smith's were very neat, well, and carried capital legs of mutton, and were quickly disposed of at 10*l.* 16*s.* per head. The best sheep on the ground was a two-shear, in Mr. Horton's lot, by "Duke of Kent," and after keen competition between Mr. Bradburne (who was in at 50) and other ram breeders, made 51 guineas for the season, to Mr. Dennis. A good yearling in this lot let at 26 guineas to Lady Willoughby de Broke, and the 12 averaged 16*l.* 14*s.* Mr. Meire's small lot made 9*l.* 16*s.* each, and Mr. Sheldon's 10*l.* 10*s.* exactly, one of the latter, a very complete two-shear, letting at 21 guineas.

CATTLE PLAGUE RETURNS.

The following Returns were issued on Sept. 13:—

This Return gives the number of cases occurring in Great Britain which have been officially reported to this Department. Column 1 only records the cases reported as having commenced during the weeks indicated by the headings. All "back cases" are included in column 2.

COUNTIES REPORTING ATTACKS.	1 Number Attacked		2 Result of Reported Cases from Commencement of Disease.				
	Week ending Sept. 1	Week ending Sept. 8.	Attacked.	Killed.	Died.	Recovered.	Unaccounted for.
Buckinghamshire	—	—	2,565	1,854	504	187	20
Oxfordshire	1	2	3,781	2,747	1,190	395	49
Northamptonshire	—	1	2,857	1,167	1,455	181	54
Huntingdonshire	—	1	2,492	466	1,788	156	82
Cambridgeshire	—	—	7,854	2,685	4,553	494	162
Essex	12	2	2,434	558	1,461	305	110
Suffolk	—	1	2,441	1,255	961	190	28
Norfolk	—	2	6,673	3,681	2,446	294	262
Dorsetshire ..	—	1	84	69	15	—	—
Somersetshire ..	—	5	309	295	9	5	5
Gloucestershire ..	1	—	130	69	53	8	2
Shropshire	11	3	7,288	3,411	2,742	788	347
Staffordshire ..	3	3	5,824	2,580	2,339	521	484
Warwickshire ..	—	—	743	168	434	105	36
Lincolnshire ..	11	5	14,066	7,648	5,068	893	457
Derbyshire	1	1	1,260	1,017	160	41	42
Cheshire	21	9	67,588	24,747	32,790	7,967	3,147
Lancashire	24	30	19,990	8,911	9,314	530	344
York, W. Riding ..	—	—	11,013	2,159	6,507	1,789	558
,, East Riding ..	5	2	12,506	3,344	6,229	2,937	909
,, North Riding ..	1	1	11,160	2,526	5,628	2,112	894
Total	90	69	169,184	63,552	78,641	18,908	7,993
Remainder of England ..	—	—	28,962	13,789	11,767	2,505	901
Monmouthshire & Wales	—	—	8,388	1,130	5,794	1,117	297
Scotland	—	—	46,861	6,263	28,088	10,707	1,803
Great Britain ..	99	69	253,395	84,784	124,290	33,327	10,994

Back Cases reported in the week ended September 8:—Shropshire 2.

The Return shows that 69 attacks were reported to have occurred during the week ending September 8, being a decrease of 30 on the previous week.

Fresh outbreaks took place in 22 farms or places where cattle are kept; the number of such outbreaks in the previous week being 17. The number of healthy cattle slaughtered, to prevent the disease extending to them, was 45 during the week.

The disease is reported to have prevailed during the week in the following 28 petty sessional divisions of England—viz., Oxford.—Ploughley, 2. Northampton.—Thrapston, 1. Huntingdon.—Leightonstone, 1. Essex.—Chelmsford, 1; Hundon, 1. Suffolk.—Bamford, 1. Norfolk.—Freebridge Lynn, 1; Guilteross and Shropham, 1. Dorset.—Dorchester, 1. Somerset.—Yeovil, 5. Shropshire.—Whitchurch, 3. Stafford.—Eccleshall, 1; Pirehill, 2. Lincoln.—Bartou-on-Humber, 2; Gainsborough, 2; Lincoln Lindsey, 1. Derbyshire.—Eckington, 1. Cheshire.—Nantwich, 2; Edesbury or Eddisbury, 1; Macclesfield or Prestbury, 4; Northwich, 2. Lancashire.—Amounderness, 3; Garstang, 25; Kirkham, 1; Warrington, 1. York, East Riding.—Middle Holderness, 1; South Holderness, 1. York, North Riding.—West Langbaurgh, 1.

Since the commencement of the disease 51 in every 1000 of the estimated ordinary stock of cattle in Great Britain are reported as having been attacked.

77 cases are reported during the week as occurring among sheep, making the total to the date of this return 6708.

NOTE.—One Inspector in the county of Chester, who reported 18 cases last week, has not reported in time for this return.

THE WEATHER AND THE HARVEST.

THE day is gone by, though not very distant, when everything, even to the fate of a Ministry, was thought to hang on the August skies. Corn was the staple of the land. With corn the rents were paid; with corn the country banks were replenished, and their paper circulation floated; out of corn were paid the labourer's wages and the tradesman's bills. As the variations in price were tremendous, it was agricultural prosperity one year and utter ruin the next. All is altered now. Changes of law and of custom, changes within and without, have rescued the agriculturist and the country from this slavish dependence on the elements. But the prospects of the harvest are still a very serious matter; and in one respect the farmer has not the same chance that he had in the last generation. In those days there poured into the country at all our western ports countless hordes of Irish peasants, who, after living no one knew how the rest of the year, suddenly appeared in every part of England to assist in gathering in the crops. No serfs or slaves could have been so useful, for they presented themselves only when they were wanted, and cost us nothing but the price of their service at its market value. No doubt the possibility of thus securing almost any quantity of any one crop helped to encourage a dependence on Wheat and Barley, to the comparative neglect of other crops. The estimate annually made at this season now comprises a great variety, and involves more compensa-

tions. Yet Wheat is 10s. a quarter more than it was last year at this time; and though even the crops of last year proved to be considerably below the average, the prospect before us is at least serious. The gravest fact is that which any one may see for himself who has occasion to travel any distance by railroad. An immense quantity of Wheat and Barley is still in the fields, cut though not carried, while the state of the ground below and of the sky above makes it too probable that the grain will be exposed still longer to the warm summer showers. A most perishable property is at the mercy of the elements, and lies like a wreck before the helpless proprietor. Indeed, it is in this last stage, when the whole crop is at stake, that the farmer seems most helpless. His harvest is being drowned, and he cannot save it. As far as the country is concerned, we are told by good authorities, and everybody's observation must bear it out, that the crops are generally heavy and the yield apparently good, notwithstanding the wet winter and the backward spring. The produce that has been housed in tolerable condition is probably enough to make up to the country at large for a good deal. But there must be much private loss. In the north of England, we are assured, appearances are even worse. A large proportion of the harvest has not been cut. In the midst of all this we are told of purchases on French account; we are told that Germany will not give us her usual assistance this year; and America is evidently not to be depended on. So here is matter at least for apprehension.

We forbear from calculations, if only because the calculations made by professional authorities at this time last year, and trusted by the public, were not borne out by the result. All we can do is to point to the rapidly rising quotations at all the country markets. The inferior and intermediate qualities appear to be rising still more than the best, and if this were really a food question we had before us. But the speculators are in the field, and it is not our business either to warn the public against them or to drive it into their nets. We cannot, however, help giving vent to the reflection that has often occurred to us at the sight of one of these stranded or rather drowned crops. Science, skill, and capital have done wonders for agriculture. There has been a universal improvement in draining and manuring, in the choice and rotation of crops, in implements and machines; but the art of man seems to fail at the critical juncture, when the crop is to be got in. One has heard of such things in a newly-settled country, where the unfortunate farmer has overplanted and over-sown, upon a miscalculation of the hands to be obtained at harvest time, and the relative price of labour and produce. But in England we may venture to ask whether it is really unavoidable, under ordinary circumstances, that a crop should be left standing long after it is ready to be cut, or left lying for days after it is ready to be carried. A great deal, of course, must depend on the judgment and the means of the farmer; but can nothing be done for the rescue of crops actually in this perishing condition? We venture to ask the question the more boldly because the spectacle seems really to suggest nothing but despair. After a year's continual labour and anxiety the farmer all at once becomes helpless, and sees nothing to be done but to wait for the fine day that will not come, or that only comes just to set the grain sprouting, and then give way to a run of bad weather. In the north of Europe it is well known they proceed to extremities with their corn, and actually dry it in kilns, as being better than losing it altogether. That is a method that necessity alone could excuse. Can we do nothing better?

Our Irish neighbours make up their minds to expect rain, and take measures accordingly. Indeed, the Normans of Breton peasants do much the same. They collect their crops in small ricks all over the field, and thus escape a greater injury by the certain amount of loss there must be in this process. The Englishman is a more fair-weather farmer. After his cost and pains, he thinks he has a right to expect a few fine days in summer. Of course he has heard of rainy summers, but he is surprised by such an August as we have just had, and such a September as we seem likely to have. We have had lately a cycle of dry years and at one time the clouds owed us a good deal. But they were sure to pay it, and we have had daily instalments sufficient for a whole month. However, it does not appear that actual rain has been the farmer's enemy this summer so much as mere clouds. "Not one cloudless day in August," we read in one of these records. Indeed, we cannot remember to have seen much of the sun this summer. But we have heard of such summers before, and they must enter into agricultural calculations. British agriculture has, in fact, adapted itself to the realities of the British climate much more than it did when the Legislature kindly undertook to give the farmer extra compensation for an indifferent harvest. He has made a great start since he was left to himself, and he has it in him to improve still more. *The Times.*

Home Correspondence.

Anbury.—Your correspondent "B." is mistaken if he means to say that Anbury is confined to sandy soils. I have had it here very badly in as sound a Turnip loam as anybody could wish. Also in reclaimed land, where much poor clay subsoil had been brought up by deep ploughing with three horses. Also on a lightish upland black soil, with a heavy subsoil. No doubt none of these soils are calcareous. I agree, however, with many of "B.'s" observations. Before thinning, on pulling up handfuls of young plants, all, or nearly all, had the wound on the side, and some had the maggot in the wound, so as to cause a very strong opinion that the wound by the maggot was the cause of the disease. But on examining other crops of my own and my neighbours, I found the wounds on the plants very general. Yet these crops did not go off with Anbury; nor would any one have observed they had the disease at all. Still the opinion remains, that these maggots and wounds are the cause of the disease, though why one crop should go off, and another should not, I cannot see. I fancied the wounds were lower down on the roots of those that did not go off (*i. e.* more on the root and less on the bulb), and so the smaller rootlets might still have sufficed for healthy growth of the bulb. But this is little more than a guess. My fields were not in bad condition. When in Turnip some years before no Anbury was observed. They were well manured with dung and five cwt. of bones per acre, and in spite of the pretence of a folding the wretched remnants of the crop gave, they grew excellent Oats the next year, and the Clover and Grass on the loam have now for two years been surprising, and have grazed capitally. Of course I am trying lime, which, as far as I have gone, seems to answer, though not perfectly, many roots being still affected. Many small fields were thrown together to make one of the present fields. Wherever there is the site of an old fence we find, generally late in the season, the crop goes off with Anbury, even if the rest of the field is sound. A good field that had been 17 or 18 years in Grass was not long since ploughed. There was a very heavy crop of Swedes in it to the eye, but as the winter advanced round patches, a few yards across, went off with Anbury, and in the rest of the field, where no Anbury was observed, the roots rotted much. It has suggested itself to my mind that the putting of Turnips and Anbury proceed from the same cause, and are probably the same disease, just as Anbury and finger-and-toe are one. The wounds by the maggot may be the first cause. Under different conditions the wounds may produce different effects. Where soil and season and manure is favourable the crop may grow well, and no mischief be observed, in spite of the wounds and maggots. Where one or other of soil, season, or manure, is less favourable, and late in the season may appear; or Anbury late in the season, as in my sites of old fences. Where lime or some food of a plant is decidedly deficient, or has been exhausted by previous crops of the same sort, or on sandy land, or such poor clay as my reclaimed land, Anbury may set in early in the season; or where the deficiency is less, finger-and-toe may alone be caused. Lime, from its power of decomposing other substances and making them available as plant food, may perhaps have a special action. Of course I only throw out these views as suggestions. Any one who is subject to Anbury will be interested even in guesses. I have also sometimes thought that the wounds were made by a fly or some other insect for the purpose of laying its egg. Those that hatched a maggot, with its help, caused Anbury; whilst the rest only suffered from rot at the end of the season as the ordinary effect of a wound. *W. B. J., Co. Cork.*

Societies.

SCOTTISH CHAMBER OF AGRICULTURE.—At a recent meeting of the Chamber of Agriculture, a deputation was appointed to certain of the Northern Counties, who should state to the farmers of those counties the objects of the Society, with a view to the extension of its membership. The following very interesting report of the proceedings of the deputation was read at the last meeting of the acting Committee:—The deputation, consisting of a member from London, one from Haddington, and another from Mid-Lothian, met on Monday, 23d ult., with the President and Secretary, and a number of Fife members, at Mr. Robert Russell's, Pilmuir, Leven. Mr. Russell kindly drove the deputation through that fertile district by Anstruther, lying along the coast, and showed them everything in it interesting to farmers. In the evening the deputation met a number of friends in his house at dinner. All present not previously members sought the fellowship of the Chamber. On Tuesday the 24th the deputation attended Cupar market, at which they found several members, by whom they were kindly introduced to the leading agriculturists of the neighbourhood, of whom about 20 most eligible agriculturists allowed themselves to be enrolled in the membership. Same evening the deputation, Mr. Russell having joined it, proceeded to Bolshan; and the following morning Mr. Goodlet drove the members through the Howe of Kinnaird—a rich district of Strathmore adjoining the basin of Montrose—and were shown the home farm and grounds of Kinnaird Castle (Earl of Southesk's), on which a new steading has recently been erected, combining in its ample dimensions the most complete and, perhaps, perfect arrangement of farm offices in the nation. The deputation spent the evening with Mr. Goodlet and his friends, and added a few more names to those already recorded of leading farmers who sought membership.

On Thursday the 26th, the deputation proceeded to Tillyfour. Mr. M'Combie met the deputation at the Alford Station, and drove the members to see his farms and fine herds, and showing them all that was most interesting to farmers in his neighbourhood. The deputation afterwards visited his fine breeding stock of pure Angus cows and heifers—many of which had carried off the highest prizes both at national and international shows (the display of medals in his dining-room is worth going a day's journey to see)—and admired the perfect symmetry of these animals in all stages of growth, from the suckling calf to the fully grown and ripened dam. So struck were the south country members with what they saw of Mr. M'Combie's herd, that they urged the owner to throw open his byres for general inspection by the agricultural world, when his animals were housed for the winter, so that all who felt interested might see for themselves to what perfection this excellent breed of cattle can be brought in the hands of a man who knows the capabilities of the breed, and how to develop these in their highest perfection. The loss of Ayrsh cattle by the plague has been great; some of the finest specimens of the breed at Kinnaird Castle and other places in Forfarshire having been carried off by it. All the more is it necessary to foster what remains; and it ought to be a matter for national thankfulness that that terrible disease has never reached the valuable herd at Tillyfour. The deputation think it not improbable that Mr. M'Combie may comply with the request to open his byres for exhibition to all who may visit them during the ensuing winter.

Having enjoyed Mr. M'Combie's hospitality, the deputation, on the following (Friday) morning, started for Elgin, and attended the weekly market held there on that day. Here the members were introduced to the leading agriculturists of Morayshire, where the deputation also met Mr. Geddes, Orbliston, through whose kindness they were greatly indebted for their success in that county. In the course of the day about 20 leading agriculturists sought the fellowship of the Chamber. The deputation proceeded in the evening to Orbliston and Westerton (Mr. Brown's), where they spent the night, and next day were driven by Mr. Geddes to many excellent and highly cultivated farms in his county, and were shown everything that was interesting to agriculturists on the way, including the prime stock of cattle and sheep of Mr. Harris at Earnhill, and of Sir Alexander Gordon Cumming at Altyre. The deputation enjoyed the hospitality of Mr. Walker, the factor and manager at Altyre, and returned to Orbliston that (Saturday) evening. The day, the drive, and friendly intercourse, were all alike delightful; and the rain having set in on the Sabbath morning, did not detract from the delight the deputation experienced from the kind and hospitable reception in Morayshire. On the Monday morning the deputation inspected Mr. Geddes' farm and select stock of shorthorns. The members from London, Mid-Lothian, and Haddington had then to return—the member for Fife having left before. The deputation, in smaller force but with undiminished ardour, proceeded direct to Ross-shire (not stopping at Inverness, it not being market-day there), and arrived at Tain same evening. On Tuesday morning they were kindly received by Mr. Kenneth Murray, who invited them to wait over the evening and meet his friends; but as they were anxious to get on to Huntly market the following day, they explained their views to Mr. Murray, and left him to promote the interests of the Chamber in that locality, and to secure an accession of eligible members—all which the deputation believe could not be in better hands than in those of Mr. Murray.

The President and Secretary reached Huntly on the Tuesday morning, and Mr. Paterson, who had requested the fellowship of the Chamber in Elgin, received them there, and kindly introduced them to the influential agriculturists attending the market there on that day. In the course of the canvass, about 16 gentlemen gave in their names to be enrolled as members, all of them leading farmers in their district, and most eligible members. The deputation returned to Aberdeen in the evening, and reached Bolshan next forenoon, having been engaged in all nine days on this most agreeable and successful tour—agreeable in many respects besides personal, for it not only enabled the deputation to form the most friendly relations with members in the northern counties, and to add 64 influential names to the membership in addition to the 33 gentlemen whose names had been sent up to the secretary by the vice president, Mr. M'Combie, from his county before starting, but to explain the principles and practice of the Chamber in greater detail than could have been done by correspondence. The deputation found in some instances opinions entertained adverse to the interests of the Chamber, which they hoped they were successful in removing; but in by far the majority of cases they found opinions all favourable to the Chamber, and an anxious desire evinced for its success. Altogether, the effects arising from this deputation to the counties beyond the Forth will, in the opinion of the deputation, be most beneficial for the future of the Chamber. Some of these effects may be shortly stated:—

1. It tended to disabuse the minds of our northern friends (some of whom were a little tender on the point) that there was or could be any antagonism whatever between our Chamber, composed as it is chiefly of practical agriculturists, and the landlords as a class. What promotes practical agriculture must of necessity promote the best and permanent interests of the landlords, and landlords themselves, conscious of this, and seeing better the scope and tendency of the deliberations of the Chamber, are coming to see their own benefit. One object of the Chamber is undoubtedly to watch over and protect the interests of those practically engaged in agriculture, and to promote, by discussion and social intercourse, practical agriculture in all its bearings, whether as affecting landlord or tenant; but such objects are not surely incompatible with the maintenance of friendly relations between landlords and tenants, where the rights of both are mutually respected and honestly maintained, as this Chamber in all its actings has strictly endeavoured to observe.

2. It further disabused the minds of our northern friends that there was or could be any rivalry between the Highland and Agricultural Society of Scotland and this Chamber; and satisfied them that the one was in fact a substantial aid to the other. The Highland Society is limited in its constitution; but the Chamber's scope is only limited by what does not belong to practical agriculture. Politics are not admissible in the Highland Society; but although in our Chamber political questions of whatever hue or texture are open for discussion wherever the interests of practical agriculture are concerned, yet party politics, so called, are entirely excluded. The party in Parliament that promotes our views, be it Liberal or Conservative, is for the time the party we support. Ours is not a political club in any sense, but, like Chambers of Commerce, is instituted solely to promote the interests of our craft.

3. It brought an accession of membership to the Chamber of 64 leading agriculturists in the northern counties, whose

numbers were somewhat limited; which, with the 33 sent up from Aberdeenshire for our vice-president, Mr. M'Combie, makes up our membership at this time to 61. These gentlemen, all influential, residing over the length and breadth of the land, give the Chamber facilities of readily bringing practical and able men together to consult in matters of common interest, and to bring their views upon questions affecting their interests under the notice of Parliament, and of influencing its decision upon them.

4. The distance of residence from the metropolis of many of our members led our northern friends to suggest that it might advance the interests of the Chamber, and certainly would be a convenience to them, were the May general meeting to be held annually at the place where and time when the Highland Society's Show was held. The deputation looked on the suggestion with great favour, and unanimously agreed to recommend it to the favourable consideration of the acting committee. The necessary alteration of the rules to give effect to this suggestion comes up afterwards for your consideration in the programme of business for the meeting.

5. The advantages of incorporating the Chamber by Royal Charter or Act of Parliament were also canvassed during the route, and was most favourably entertained by our friends. Indeed, some of them thought the influence of the Chamber for good must be cramped till incorporation is obtained.

The deputation have only to remark further that the journey was a most agreeable one. They were entertained with every kindness and cordiality wherever they went. They believe they did much to promote a knowledge of the objects of the association they represented, to remove misimpressions entertained in reference to it, and to advance its interests. The deputation has a strong opinion that it would be wise to send a deputation of our northern members, with the Chairman, on a similar mission to the south and west in another year, and they commend that suggestion to the favourable consideration of the Acting Committee.

Farmers' Clubs.

KINGSCOTE: *Sept.* 4.—At the annual meeting of this enterprising Farmers' Club, Mr. Holland, M.P., who presided, contrasted the present farmers' clubs with those which he remembered in early life, and complimented the Kingscote Society on the value of their discussions, and particularly on the benefits derived from the scientific class instructed by Mr. Church. This could not but give them a thirst for additional knowledge, and even if they might not become scientific men themselves they would have a love for science, which would lead them to make further advances, and so manage to expend their capital upon the land as that it should be an economical expenditure, and yet produce the greatest profit. In the old days, and too often now, a farmer followed the ways of his father because his father had those ways. No doubt in the long run many of those ways were right and profitable, because people who lived and farmed in the same part of the country generation after generation did get, from the knowledge of the soil and weather, to know the right time for putting in their crops and other farming operations; but though they were right, they did not know why they were right, and that was the only thing the farmer wanted to put him in the same position as any other branch of industry. The manufacturer made his dye knowing exactly how to employ and mix the different compositions so that none should be wasted. Did a farmer feed his animals in the same way? Did he know to a certainty what and how much manure to use? Was there not, to a certain extent, guess work? A knowledge of science would lead the farmer to use all his materials with profit. Ten or 12 years ago he attended a meeting at Cirencester, where there were some learned men talking very much of oxygen, hydrogen, and nitrogen. This raised the ire of an old gentleman, who exclaimed, "Cuss your gins! None of your cockney gins for me, but give us some muck!" He was right, because in "muck" were all these elements of success, and it contained what the plant wanted; but the knowledge of how to apply these things was another question. He held in his hand a paper read at the annual meeting last year, in which it was proposed to organise a scheme of examination by which the knowledge and proficiency of young farmers resident in the county should be ascertained. It took a long time to get agriculturists to move in any new scheme, and thus another year had come round, but he found the feeling was still in existence, and it was now time to originate this scheme for improving the education of young farmers, and lead them to make themselves masters of agricultural science. In different parts of the country there was a growing wish for some such scheme, which was first mooted here. For agricultural education to be worth anything it must have a good general basis. In the first instance there must be a good sound general education, on which the structure of a special agricultural education must be based. He had before him some suggestions which, if adopted by this Society, and by the rest of the county, would give the young men of Gloucestershire an opportunity of educating themselves in a way which had not been adopted before in connection with agriculture. He repeated that there must be a basis of general education, previously obtained, to receiving the special education. The object was the organisation of a scheme for an annual examination, by which the attainments and knowledge in practical agriculture of young men resident in or belonging to the county of Gloucester may be determined. The candidates must be over 18 years of age, and must satisfy the examiners in a preliminary examination in reading, spelling, dictation, and arithmetic, including book-keeping. Examinations in practical agriculture to take place annually in Easter week, and to embrace the following subjects—labour, implements, cultivation, crops, and stock; to be conducted on the farm *viva voce*. The competitor securing the greatest number of marks in the practical examination to have 40*l.* a-year, for two years in succession, to aid him in the prosecution of his studies at an agricultural institution. If that were approved, subscriptions for the purpose would be sought throughout the county. There was no difficulty in the plan of examination which had already been pursued at the Agricultural College at Cirencester. Perfect strangers were requested to act as examiners, who took the young men about upon the farm where they liked, and kept them as long as they liked, and then made their report; and no difficulty had ever arisen. He proposed the following gentlemen as a committee to carry out the scheme:—Colonel Kingscote, Mr. Rolt, Mr. Holland, Mr. E. Drew, two Messrs. Holborow, Mr. Harrison, and Mr. Rich. If all joined together in promotion of the scheme, he had no doubt of its success. He proposed, "Success to the Kingscote Agricultural Association."

Mr. Burnett replied to the toast, testifying to the value of the chemistry class, and in respect to the proposed scheme, asked whether it was intended to take the youths off the farm and place them in an institution, or to assist their education on the farm? He expressed his belief that if it was intended to take the candidates away from the farms the scheme would fail. Practical education required that they should remain at home, and if not he was sure the farmers would not enter into it, as they would object to their sons going from home.

The Rev. Mr. Constable, Principal of the Royal Agricultural College, highly approved the examination scheme, and observed that the committee must impose some conditions, or a youth might spend his 40*l.* in buying books or buying a hunter. If he bought books, they were useless without instruction. The man with the most books in his library might have least in his head, and he pointed out the immense advantage of having competent instructors at hand to give scientific and practical instruction. He also pointed out that the instruction given at his college—the best agricultural establishment in the kingdom—was practical, and therefore not open to Mr. Burnett's objection of taking young men away from practical instruction.

Reviews.

The Journal of Agriculture. No. 3.
150, Fleet Street, E.C.

THE present number of this monthly periodical is especially interesting for the memoir, illustrated by a very recognisable portrait, of the late Richard Garrett, of Leiston—the biography of a laborious and successful man, a painstaking and practical philanthropist. We extract a passage illustrative of the large-hearted energetic man to whom it refers:—

"The Agricultural Benevolent Institution, again, was fostered by his influence almost more than by his munificent gifts. He would not only subscribe handsomely, but press it upon all his friends without any false reserve. The little country post-office had no holiday work when such a scheme was being promoted; and often, in the interest of some brother farmer who was less fortunate than himself, he has paid the votes of many neighbours that votes might not be wanting. The Idiot Asylum at Colchester also owed much to him. Such an institution was either to be upheld by every means, or else left alone; mere guinea subscriptions were not his nature. When the cattle plague broke out, at the cost of immense toil and research, Mr. Garrett was among those who endeavoured to put on a satisfactory footing the Mutual Assurance Association. To his sincere regret it did not take root; the men who were most interested in it failed to see its necessity, but this did not prevent him from starting subscriptions for the earlier sufferers who had no opportunity of insuring; and as the cases were happily rare, through the effective measures which were taken, a large part of the losses in that neighbourhood was made up. His own large farm was happily spared the infliction, though it raged all round; this was owing, under Providence, to his characteristic energy and decision. The worthy veterinarian who attended his stock was appointed cattle-plague inspector through no fault of his own. He was promptly informed that his salary as veterinary surgeon to the estate would be continued, but on the express condition that he did nothing for it, and never entered the park or farm. The results were most happy. The cattle-plague inspector kept away, and the cattle plague too.

"The crowning effort of all was in connection with the Albert Middle-class College at Framlingham. On the death of the Prince Consort in 1861 a county memorial was contemplated. Sir Edward Kerrison, one of the wisest and most public-spirited men in East Anglia, was desirous of seeing a good central college or school established to provide for the middle classes an education specially fitted for their requirements in life, and at a small cost. The Earl of Stradbroke, Lord-Lieutenant of the county, suggested that the memorial might be amalgamated with the proposed college. There was a hope also that certain large charity funds, part of which were designed for educational purposes, might be legitimately applied to the undertaking. This was the state of affairs when Mr. Garrett became honorary secretary, and the wheels began to revolve very quickly. Three thousand letters were despatched in two days; a requisition, signed by almost every nobleman, squire, and yeoman in Suffolk, begged the Lord-Lieutenant to call a county meeting at Ipswich. It took place in March 1862, and was as crowded in numbers and as powerful in influence as could be desired. The noble Lord in the chair might well congratulate himself on the progress of the county in the last 30 years, when for an educational purpose no less than 6000*l.* was subscribed on the spot; it rose afterwards to nearly 20,000*l.* Several noblemen competed for the honour of giving a site, but the gift of some trust land on the part of Pembroke College, Cambridge, rendered it unnecessary. Sir Fitzroy Kelly gave the necessary legal assistance connected with the charity trusts, besides a donation of 500*l.* Sir Edward Kerrison conducted through Parliament the bill conferring the title to the land, and gave, with almost unexampled munificence, 2500*l.* to the funds. Almost every nobleman in the county was represented by a donation of 500*l.*, besides many gentlemen, some of whom did not even reside in Suffolk, being only connected with it by ties of birth. Mr. Thomas Lucas, of the eminent building firm, gave, in addition to that sum, a bronze statue of the Prince by Durham, cast by Messrs. Elkington; Mr. Goldsmith, of London, 700*l.* for scholarships; Mr. Mantle, of London, 500*l.*; and the Honorary Secretary, never behind, a first gift of 500*l.*, a second of a handsome and commodious porter's lodge, and a third (on the part of Mrs. Garrett) of a Gothic chapel for the use of the Institution, all designed and carried out by the architect of the main building, Mr. Peck, to whom reference has been made before. Then a great number of personal friends were appealed to, and the list of large donors constantly supplemented. There were difficulties from time to time, including some upon the religious question, but they were all surmounted; and when the noble building opposite the picturesque castle and town of Framlingham was opened free of debt, and supplied with everything that modern education demands, 300 boys, selected from a larger number of applicants, all nominated by subscribers, filled the school immediately."

Mr. Garrett's biography is followed in this number of the Journal by an interesting paper from the pen of Mr. Andrew Murray, F.L.S., giving a comparison with other countries in order to answer the question: Has enough planting been done in Britain? The following is the conclusion at which he arrives:—

"No doubt Britain is entitled to the lowest place (*i. e.*, is more entitled to dispense with timber than any other country). It is more independent of wood for Fuel than any other European country, in consequence of its large fields of coal; and it is more independent of it as a conservative and climatal influence, in consequence of its insular position and latitude, which secure a larger supply of atmospheric moisture than countries less favourably situated possess; and because the general inclination of its surface saves it from any great exposure to denudation by torrents.

"But although it may be entitled to the lowest place, it does not follow that it, in common with all those which come near it, does not occupy a place greatly too low. Certainly, looking solely at climatal and conservative considerations, there seems no reason why it should only require the fifth or fourth of what is required by Germany. If it is not five times more rainy, or rather we should say there is no peculiarity in climate in which there is a difference of five times between Germany and England. If 20 per cent.—that is, a fifth of the whole land—is the proper thing for Germany, there is surely no reason why 2½ per cent., or a fortieth, should be enough in Britain. But there is a special element in Britain which on other grounds calls for an additional supply of plantation—and that is, that the country, by its system of high farming, has been so thoroughly drained that the water rushes off with undue rapidity, and a minor imitation of some of the evils of the torrents in the south of France sometimes takes place. In Scotland, especially, the character of our streams has been greatly changed of late years, and this most in the counties, such as East Lothian, which have been highest farmed. They have dwindled in size, and have become subject to sudden spates greater and more destructive than any we remember in our younger days. We occasionally hear men now saying that they fear that they have undrained their land. The remedy for that is not in allowing their land to fall back more or less into or towards the sour cold state from which it has been redeemed, but by planting near it. What they require is a reservior of water constantly at hand, constantly giving out a little moisture, and not too much, and retaining a supply for a long time when a drought comes. In fact, they want a gigantic sponge placed at the higher points of their farm; such a sponge as they require they will find in a plantation.

"In looking to our own affairs, then, we have three things to attend to. 1st, the amount of planting necessary or desirable to be done on each man's possession. That is a matter to be determined by his own judgment and private consideration; extraneous circumstances, such as deficiency of means, may here intrude to prevent his adoption of the best possible course; but as his interest concurs with that course, we need not fear that as soon as the right proportion of wood for each spot can be ascertained, it will before very long be sure to be executed. 2d, the amount of planting necessary or desirable for present general conservancy and climatal objects; and 3d, for prospective purposes of fuel. The regulation of this is beyond the scope of action of single individuals, and yet can only be done by them; but there are ways of persuading or compelling private individuals to do what is necessary for the common good. We do not say that the Legislature ought actually to interfere for these objects, but we have a very decided conviction that it is a case where it ought not to sit silently by and make no sign.

"A Parliamentary Commission has been appointed to inquire into the supply of coal in the country. It is feared that the supply will not last beyond 100 years. We presume the inquiry is not being made for purposes of idle curiosity. If it turn out that the Commission considers the fear well founded, we may take it for granted that action of some kind will be taken. It is not merely to learn our fate and acquiesce in it that we have applied to the oracle. If we find that, like all oracles, it doubtfully pronounces a questionable doom, we may be sure that some means of averting, postponing, or mitigating it will be sought for. If no better

* This alteration in the rule has since been adopted.

plan can be suggested, one means is sure to be to see that we plant sufficient timber to provide a stock of wood for fuel for the future: and will it not then be necessary for Government to inquire into the state and extent of the plantations in this country?"

Farm Memoranda.

[We now give the remainder of Professor Wrightson's report.]

EAST LOTHIAN.—The railway from Dunbar to Leith runs between Linton and Long-niddry, exactly between two geological formations, the coal measures and the trap, and upon both we find good farming. The quality of the soil is evidently inferior to that of which we have just been speaking, although the country is still very beautiful. The soil may be described as a stiffish clay, well adapted for growing corn, and for the most part in high cultivation, but when neglected, as it is in some places between Haddington and Pencaitland, it bears very poor crops. We had the opportunity of visiting several farmers in this locality, among which we may mention Mr. Stodart, of Winton Hill; Mr. Foreman, of Duncra Hill; Mr. Belfrage, of Samuelston; and Mr. Hope, of Fentonbarns, to all of whom we are indebted for the courteous and hospitable way in which we were received. We are also much indebted to the kindness of the Rev. W. Riach, the minister of Pencaitland, for giving us an insight into the cultivation of this part of Haddington.

The East Lothian rotation is generally thus followed—1st, Turnips; 2d, Barley or Wheat; 3d, seeds; 4th, Oats; 5th, Potatos; 6th, Wheat. In some cases, as in Mr. Foreman's, the seeds are allowed to remain down two years, and the area of Potatos is diminished. The farmers here are heavy manurers, the purchased manure account often exceeding 2*l*. per acre over the whole farm.

Mr. Stodart farms 425 acres (imperial) of clayey soil rented at about 44*s*. per acre. He follows the East Lothian rotation, and has his land in high condition. Here we found a champion for the cultivator as a means of obtaining a good tilth in the spring of the year upon land which, if ploughed up, would present a raw tough surface, difficult to reduce to a fine state. Potatos and Turnips are both liberally treated, the former receiving 32 loads of farm-yard manure, 4 cwt. of guano, and the latter 24 loads of farmyard manure, and 3½ cwt. guano per acre. This land is too stiff for bearing sheep in winter, so that all roots must be carted to the buildings for cattle. The Wheat and Barley, succeeding the Potatos and Turnips, are both top-dressed with 2 cwt. guano, 2 cwt. nitrate of soda; and Mr. Stodart is never content unless his corn is worth 12*l*. per acre as an average. The varieties of Wheat grown are Trump, Fenton, and Hunter's, and Chevalier Barley. The manure bill amounts to 800*l*. per annum, nearly the whole of which is for guano. A large quantity of oil-cake must also be used, since the allowance for feeding bullocks is 5 or 6 lb. per day. Seeds are top-dressed with nitrate of soda, and are generally mown. Mr. Stodart finds that seeds mown two years in succession, afterwards give a better Oat crop than if the land had been pastured for two years.

Mr. Foreman, of Duncra Hill, is another leading farmer in the same district, whose farm we had the privilege of inspecting. The land is of more uneven quality than at Winton Hill, some being let at 12*s*. per acre and some at 35*s*. It may be described as lighter and inferior land to that last spoken of. We found Turnips looking tolerably well. The East Lothian rotation is followed, excepting that seeds lie two years, and that only about 30 acres of Potatos are grown, the remainder of the Oat-stubble being sown with Turnips. The former contains 875 acres (700 acres Scotch), and lies somewhat wide.

Near the homestead the Swedes are heavily manured with farmyard and other manure, and the roots are carted home for bullock feeding. The outlying parts of the farm have received no farmyard manure for about 20 years. The Turnips are raised by portable manures, and are eaten on the land, or in some cases one-third are drawn and the remainder are eaten on the land by sheep with 1 lb. of oilcake per head per day.

The Swedes grown near the buildings receive farmyard manure, 3½ cwt. Peruvian guano, 3½ cwt. Bolivian guano.

The Turnips which are eaten on the more distant fields receive 7 cwt. of guano without farmyard manure. The system doubtless saves labour, but Mr. Foreman is beginning to think that the want of farmyard manure is telling unfavourably upon the far land.

Superphosphates are not in favour here. Wheat follows the Swedes drawn off the land, and this crop is liberally top-dressed, but not so the Barley.

The liberal way in which the Grass seeds are treated struck us as peculiar. In the spring the Clover and Grass seeds are top-dressed with 2½ cwt. per acre of nitrate of soda, and immediately after the first cut it is again dressed with 1½ cwt. of the same fertiliser. This is at the rate of 5 cwt. per Scotch acre.

Owing to this management Mr. Foreman has good crops of Grass this season, when most people are complaining of short cuts. On inquiry I find that a similar plan is pursued by many of the farmers of this district, and that they consider the increase in Grass amply repays the outlay. In order further to show the high farming which Mr. Foreman follows, it may be interesting to state the quantity of stock supported on the farm:—

There are 196 acres of Turnips grown, and last year 1360 sheep were fatted, and in addition to this 100 bullocks are annually fed. The sheep receive 1 lb. of oilcake per head per day; the cattle 5 to 6 lb. Twenty horses work the farm, and these are fed in the usual liberal Scotch fashion, hay and corn *ad libitum* in busy seasons; at present they are receiving cut Clover and no corn.

Last year Mr. Foreman was a sufferer from the cattle plague, and the buildings now present a melancholy appearance—thoroughly clean and white-washed. It is still a question whether cattle will be trusted in them during the coming winter. Although there is nothing in Mr. Foreman's homestead which might entitle it to a couple of pages in Mr. Baily Denton's elaborate book of "Farm Buildings," in which a ground plan and an isometrical view of some of our best model buildings are given, yet it is thoroughly comfortable, and capable of housing a large number of bullocks. The box system of feeding prevails, and although the boxes are not large, we understand that they are made to accommodate two 50-stone cattle at the same time. We may here mention that at Fentonbarns boxes of 11 feet by 15 feet area are also made to hold two beasts if necessary.

Before leaving East Lothian we had an opportunity of visiting Fentonbarns. An account of this farm appeared so recently in the *North British Agriculturist*, that it is perhaps needless to enter minutely into Mr. Hope's mode of management. In many points it resembles that of other farms we visited.

Mr. Hope occupies three farms — Fentonbarns, Dirleton, and Glencotho, which last is his own property. Fentonbarns contains 670 acres of arable land, and the nature of the soil is thus described in the *North British Agriculturist* of June 20th. "About one-third part of the farm consists of a fertile loam or interjected green-stone; another third is composed of a heavy or clay loam of medium fertility lying on boulder clay, and the remaining third is a yellow moorish sand, on alluvial clay of great depth, and which comes to the surface at various parts."

Mr. Hope was unable, owing to indisposition, to accompany us in our inspection, but Mr. Bertram, his most intelligent steward, went with us, and we are indebted to him for much information. The rotation most commonly followed at present is as follows:—Turnips, Barley, seeds, Grass, Grass, Potatos, Wheat. So that five-sevenths of the land is in fodder, and two-sevenths in corn crops. In other cases the usual East Lothian rotation is used. A large quantity of Turnips is frequently eaten upon the seeds previous to their being broken up for Potatos, but no farmyard manure is ever applied to this crop when it follows pasture. One magnificent crop which we saw had been ploughed 14 inches deep by two ploughs following each other in the same way as subsoil ploughing is performed, and the Potatos were dressed with 4 cwt. of Peruvian guano and 4 cwt. of superphosphate of lime.

We asked Mr. Hope's opinion upon the question of pulping roots, and we were told that he had tried it and had not found any advantage from it in feeding bullocks, although he admitted that for young stock it was a good means of making the Turnips go further. The feeding cattle receive their Turnips whole, and the bailiff informed us that he had tried both pulping and slicing, and had at last come to the conclusion that the beasts did best when they had the roots unbroken. Meal and cut chaff are mixed and given separately. The maximum quantity of cake and corn is 9 lb. per day per head.

The method of feeding bullocks in Scotland struck us as one of the crudest points of management. This subject has met with much attention in England, and machines for cutting chaff, pulping roots, and cooking cattle food, form an important part of the implement departments of our shows. At the same time the economising of the Turnip crop has been discussed frequently by our leading farmers' clubs. In Scotland Turnips and straw, supplemented with moderate quantities of cake, is the whole secret of cattle feeding. The only explanation is that Turnips can be grown of better quality and in larger quantity than in this country. The bailiff at Fentonbarns talked about 25 tons per acre as a very medium crop, and of upwards of 30 tons being frequently grown.

The accommodation for cattle also struck us as being behind-hand, large courts generally unspouted being the rule. We do not allude to the cattle accommodation of Fentonbarns when we thus speak, but to other homesteads which we inspected.

Besides Fentonbarns, Mr. Hope occupies the farm of Dirleton. This farm contains 220 acres of arable land, and some unreclaimed pasture, and consists of two distinct classes of soil, the first a tenacious clay, almost unworkable, and the other a blowing sand. We should, however, rather say that this was the condition of the farm since it has been much modified. The change from the clay to the sand is extremely sudden, so that while at the entrance of one field the Turnips had struggled in vain for life upon a retentive and rough surface, a few yards further over they were revelling in a loose sandy soil. Advantage of this close proximity of two important constituents of every soil has been taken, and in one place especially (now occupied by a blooming crop of Potatos), we were informed that the entire top soil was removed and carted on to the sandy soil in the immediate neighbourhood, and spread at the rate of about 200 yards per acre. Sand was, on the other hand, carted back to mitigate the clay. Immense advantage must have followed this treatment, as is evident from the crops now growing; but it is interesting to observe how completely the lean kine, if these be for a moment allowed to personate the sand, have swallowed up the fat kine in the shape of clay, of which there is not much visible trace in the light sandy soil now bearing a pretty regular plant of Turnips.

Mr. Hope considers that the improvement to the sand is not permanent, but that a similar treatment will again have to be resorted to in the course of years. Both Wheat and Barley upon the clayey portion were looking remarkably well, but the Oats on the sandy parts were short and poor.

The Dirleton sandy soil is not clean, but on the contrary rather abounds in Couch. I pointed this out to the bailiff, who informed me that that was a trifle. Give me plenty of guano, said he, and I'll warrant that the Couch won't live long. And he further declared that he never troubled to get it off the land, but that good heavy crops and liberal manuring was the only way to keep it down. He referred of course to this particular class of land which would suffer materially if much worked, by losing moisture. Rye forms an important crop in the cultivation of this light land.

The last farm we had the pleasure of visiting was that of Niddrie-Mains, about 2 miles west of Edinburgh. This excellent farm is occupied by Mr. Mylne, and is certainly a pattern place. The peculiarity in management observable here springs from the proximity of Edinburgh, and consequent upon this we find a large amount of produce sent into the town. Mr. Mylne can sell everything except the land and building:—Straw, roots, Potatos, grain, and flesh, are sent to market, and in return immense quantities of town-manure are brought on to the farm.

Niddrie-Mains is an exceedingly compact farm of 625 statute acres, all arable land of good quality. In general, the most perfect neatness is observed, and the farm is in the very highest state of cultivation. The same cleaning of the hedges up to the very roots before spoken of is observable here, and it is a treat to inspect the magnificent crops which abound in every field.

The rotation followed is somewhat complex, but the following is as nearly as possible the plan pursued:—

1st general rotation:—

1. Potatos	5. Turnips
2. Wheat	6. Barley
3. Grass	7. Grass
4. Oats	8. Oats

Each field in its turn is allowed to remain down two years in Grass, and afterwards bears Barley after Wheat.

Potatos are a very principal crop, and receive especial attention. The Dalmahoy is the favourite early variety, and this is manured with 30 tons of farmyard (Edinburgh) manure, 6 cwt. of equal parts of guano and bones. Upwards of 14 tons per acre of Dalmahoy Potatos were thus grown on one occasion.

We found Turnips manured very liberally, most of these being sold off the premises, and we understood that only about 16 to 20 acres were reserved for home consumption. On referring to the book containing sales of Turnips, we found that about 700*l*. worth are annually sold.

When all are to be carted off, the manure per imperial acre is 24 tons of well-rotted dung (horse and cow mixed), 2 cwt. Peruvian guano, 2 cwt. dissolved bones. Where eaten off by sheep, 2 cwt. Peruvian guano, 2 cwt. dissolved bones, 2 cwt. superphosphates, but when this treatment is followed the sheep usually get oilcake also.

It is, perhaps, unnecessary to state that the corn crops which follow the Potatos and Turnips are not top-dressed. These are Barley after the Turnips eaten off the land. The earliest Potato land cleared is sown with Turnips for seed, and the rest with Wheat. The finest varieties, such as Trump, Taunton Dean, and White Essex, are sown, and the seed is obtained every alternate year from the South of England. When, however, two white crops are taken in succession, as occasionally happens, a dressing of 2 cwt. guano, 2 cwt. superphosphate, 2 cwt. common salt is applied. The seeds are top-dressed with 1 cwt. nitrate of soda, and 1 cwt. Peruvian guano.

The large quantity of straw and roots sent to Edinburgh make it necessary to bring back manure to the farm; and a letter which I hold from Mr. Mylne informs me that he carts "3000 tons per annum, besides what is made upon the farm, the great bulk of which goes to grow Potatos."

Even here we did not find that the usual plan of feeding cattle was materially altered, from 5 lb. to 7½ lb. per day being the amount of cake consumed by each bullock.

Miscellaneous.

Shortening Winters.—Farmers who cannot turn their cattle to pasture until the middle of May, and who have to begin foddering them by the middle of November at the latest, sometimes look with envy at the condition of those farther south, where several weeks are gained at each end of the winter season. It would be much better if, instead of these vain regrets, they should determine to manufacture or modify circumstances to suit their wishes and purposes. There are several ways in which this may be profitably done. 1. Several weeks are often lost early in spring in waiting for the soil to become dry. This is a great waste of valuable time, at a period when every day is of much importance. This waste can be well appreciated, but there is another loss of a formidable character, of the heat which should warm the soil, but which goes merely to evaporate the water. The surplus water in 1 foot in depth of soil often amounts in spring to 3 inches—equal to more than 10,000 cubic feet per acre. In undrained land most of this passes off by the slow process of evaporation, carrying off a vast quantity of heat which otherwise should go to warm the soil. The amount of heat thus lost may be better appreciated by stating that it is equal to that afforded by the burning of 12 cords of the best seasoned wood, and with no escape or waste of heat. Every water-soaked ten-acre lot, therefore, must require all the heat that could be derived from 120 cords of the best fuel—over 1200 cords for each 100 acre farm, to evaporate its surplus water in spring. Good and regular tile-draining will carry off this surplus water in three days—after which, all the heat of the sun will go towards warming the soil. We have had occasion the past spring to observe the difference between the condition of a piece of well drained, but naturally heavy soil, and an adjoining piece remaining undrained. The first was in fine condition for working in less than a week after it

was thawed. It was necessary to wait nearly one month before the other could be ploughed, and even then it was cold and clammy. It will therefore be safe to say that at least three weeks are gained in the length of the season by underdraining heavy soils. 2. We scarcely need allude to the great mitigation of the severity of winter on all domestic animals by providing good shelter. When we have contrasted the condition of those animals which enjoy warm stables and tight sheds, and are protected by tall screens of evergreens surrounding the yard, with those which are foddered from stacks in open fields, we do not wonder that the owners of the latter complain of the long and severe northern winters. 3. The same class of managers complain of the slow growth of their pastures in spring, and find that they are unable to turn out their animals from the barnyard until the middle of May, or even later. They could easily gain from one to two weeks by providing better and richer pastures—that is, by seeding down heavily with Grass on land which has been well manured, or by topdressing old Grass fields, and especially by protecting the plants which form the sod from the action of cold winds in winter. This may be effected by top-dressing with coarse manure in autumn, by a thin and even coating of refuse straw, and especially by not allowing the Grass to be closely grazed on the approach of winter. Any one may satisfy himself on this point by observing the rich and heavy growth of early Grass in fence corners, and in other sheltered or enriched spots, while open pastures have scarcely begun to turn green. 4. Belts of evergreens on the more exposed lands will do much towards lessening the effects of sweeping winter winds, to protect herbage, and cause it to grow later in autumn, and come on earlier in spring. An eminent florist once remarked that many tender plants commonly requiring the protection of a greenhouse in winter, would survive without injury if planted in woods, where the shelter from winds, and the covering afforded by leaves, nearly prevented the ground from freezing. The same effect, although in less degree, is afforded by occasional timber belts across farms. 5. Dairymen, who are unable to make other than poor white butter in winter, and but little of it, and who complain of winter as an unpropitious season, may overcome much of the difficulty by a good supply of Carrots, Turnips, Beets, &c., which will enable the good manager to manufacture as rich butter in winter as at other seasons of the year. An observance of the foregoing five particulars, viz., underdraining, shelter, enriched pasture lands, timber belts, and a good supply of succulent food for cows, as well perhaps as some other points of good management, will reduce the effects of the severity of our northern winters, to an amount equal to at least three degrees of latitude, and sometimes much more. Let them be carefully weighed and adopted in practice. *Albany Country Gentleman.*

Calendar of Operations.

SEPTEMBER: *Wheat Sowing.*—Sowing and reaping used perhaps more commonly formerly than now to be carried on together; and the young Wheat had often indeed appeared before Wheat harvest was completed. This was the case especially with Wheat sown after fallow, and with Wheat sown after Clover and Grass. Such fields are in the southern counties, either after a second cutting has been removed, or after a hard pasturing of the field, manured with dung from the yards which has been lying in heaps since spring, and is now carted on and spread broadcast at such a rate as the quantity allows, and ploughed under with a shallow furrow. If ploughed with a skim-coulter so as thoroughly to bury the green surface and whatever lay upon it, and afterwards pressed with the drill presser, and then suffered to lie for a month before sowing, every condition likely to secure a crop is observed. There is plenty of manure and of "heart" in the land, and it receives and acquires a good firm texture, which the Wheat plant likes. The land lies in ribs sufficiently abrupt to ensure that seed sown broadcast and harrowed in shall fall into the lines opened for it and come up in row as perfectly as if drilled.

Wheat after a bare fallow is sown by the Suffolk drill in rows from 8 to 12 inches apart on land which received its last ploughing some weeks before. And it is then harrowed in and the ground left—the rougher the better. Six pecks of Wheat, or less, is ample seeding in the month of September. And that quantity is also sufficient when sown broadcast either skilfully by hand, or by machine, over a ribbed ploughing, and harrowed in so as to come up in lines.

The following memoranda on Wheat sowing in September are given from the original edition of Arthur Young's *Farmers' Calendar*:—

Upon all cold, wet, and backward soils, September is the best season for putting in Wheat, provided the land be not too dry; for Wheat should never be sown in a very dry season, nor till rain falls in tolerable plenty. Upon drier and warmer soils, it is far better to postpone it till October. But in this case every agriculturist should remember that the soil intended for Wheat should be cleansed and prepared for it in September, by scuffling and destroying all root weeds, as well as ploughing the soil once into ridges, the most suitable for keeping it dry through the following winter. Another general observation is, that in proportion to the earliness of the sowing a small deduction may be made from the accustomed quantity of seed, as two bushels sown any time in this month are equal to three in November.

Autumn Culture.—There is no part of the skill which the clay-land farmer needs more useful to him in his business than that which times the operations of tillage to the fit condition of the soil. Tillage operations which will benefit at one time will do mischief at another, and many a man has lamented too great activity and anxiety to get on with work upon the field which had been better left undone till the weather had improved. It is the same sort of wisdom or of folly, only intenser of its kind, which is displayed in the distribution of tillage operations through the season, as is shown in their arrangement from day to day. There is a great need of fitting what is done in the field to the actual weather of the day; but there is an even greater need, especially on clay soils, of fitting the great tillage operations of the year to the average weather of the seasons.

There seems to be an advantage on clay soils in the deep and thorough tillage of the stubbles when dry in autumn, which is so remarkably greater than the advantage of the same process at any other season as almost to require some special explanation. I believe, however, that the explanation is no other than that which ordinary tillage and its influence on fertility receive; the greater effect arising from its being done in the dry and followed by the frost. But whatever the explanation be, the fact on almost every kind of soil is unquestionable; and any means of cheapening and rendering more effective a thorough autumn tillage, and of increasing our power of carrying it out, will be welcome to all clay-land farmers.

Among such means none is so valuable when turned to proper use as a long period of dry weather after harvest. Let the ordinary means of cultivation be put energetically to work immediately after harvest, and they will be better in their influence and cheaper in their cost than all that ingenuity and capital can devise or furnish for the assistance of the farmer in ordinary or in difficult times.

I am informed by a gentleman who farms largely in in Holland that there the first operation on the stubbles is as deep a furrow given with the plough as can be done with horses. Ten to 12 inches of the alluvial soil are thus turned over; and if the weather permits, a cross-ploughing of less depth is given before winter. In the neighbourhood of Edinburgh nothing strikes the spectator more during a walk over the fallows in winter than the great depth of the ploughing which has been given to the land since harvest. And in instances nearer home, where the practice has been transplanted or adopted farther South, the same advantage seems to follow a deep autumnal ploughing. In the fen districts, a large deep-working plough has been lately introduced by Mr. Howard, which seems to be most influential on the fertility of the land. The bringing up a portion of the clay subsoil to be weathered during winter, when it becomes mixed with the vegetable mould of the surface, is found to be most beneficial.

And where there are no especial reasons why advantages may be expected from a similar practice, as on a comparatively light soil over chalk in the county of Surrey, yet the same advantage has followed the adoption of a similar practice. And a furrow, 10 or 12 inches deep, given by means of steam power, has proved a capital preparation for the succeeding Potato crop, and a capital preparation, indeed, for the whole succeeding rotation. Of course, this deep furrow cannot be given in the case of a very foul stubble; such land must be cleaned before it is safe to turn it over deeply, and it is then that modern implements are most useful.

Coleman's cultivator and Bentall's broad-share, and other machines of that class, should be put to work for the purpose of cutting off that thin surface of the soil in which the roots of creeping weeds luxuriate. The comparatively small quantity of material, in the first place, disturbed, is thus the more easily weathered, and, if necessary, burned. The harrows following the scarifiers drag all the rubbish together; and when it is either carried off or set fire to, the whole soil may be turned over deeply with the plough.

Certainly the preliminary use of the paring plough and cultivator is a great economy. Where ploughs and harrows alone are used in tillage operations, the whole process is cumbrous in the extreme.

We add the following to our notice last week; though it does not relate to the proceedings of this season of the year:—

Winter Vetches.—In the following March, when the soil is dry, roll it just enough to smooth the surface for more conveniently mowing the full-grown crop. If any Docks, Thistles, or other large weeds should rise, have them drawn by hand, and carried off the land.

The crop should be left till it begins to blossom, which may be expected to take place about the middle of the following May. Then the Vetches may be daily mown and carted to sheep and cattle of all sorts in their sheds and yards; or they are served to sheep in cribs hurdled off, or they are folded upon the land where the crop has grown. It is well when they are mown and given to horses to let them wither after cutting for 24 hours before letting the horses have them, as when very young and succulent they are physic rather than food.

The land from which Vetches have just been taken will be found in a good state to be immediately prepared for, and sown with, the seed of either Turnips or Cole, or for being set with the plants of either Cole or winter Cabbages.

Notices to Correspondents.

AGENCY: The Editor of this Journal is anxious to recommend [illegible] Land Agent to any one who seeks for [illegible]

CHURNS: [illegible] if any of our correspondents who have [illegible] will recommend a churn that is [illegible] not liable to be put out of [illegible] the cows, and the churn must not [illegible] (See Morton's Handbook of [illegible] Price [illegible])

[illegible] Every [illegible] Apply to Mr. C. Bennett, Fulford, Berkeley.

[illegible] Half milk her for several [illegible] and gradually [illegible] milking.

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MOULE'S PATENT EARTH CLOSETS.—CHOLERA.—The Cholera may be greatly checked in its progress, and at all times the Health of Human Beings greatly promoted, by the adoption of a Plan which is in itself perfectly simple and within the reach of every one. The Secretions of Human Beings are among the most active agents in spreading and fostering Disease when they are allowed to ferment and the exhalations from them are suffered to escape, or when they Drain into Household Wells or into Streams which supply Water to the neighbourhood. For the Sick Room, or Hospital, or Prison, or Private House these Earth Closets are of the most simple and efficient construction. They may be used as a Receptacle both of Liquid and Solid Secretions, in which those Secretions can be immediately covered with Earth. Thus all Fermentation is prevented, and no Exhalation or Offensive Smell can escape into the room, and no Offensiveness is found in the Removal of the Secretions. The Manure may be applied at once to the Garden or Field, or may be allowed to accumulate under cover until wanted for use. The accumulation is quite inodorous, and becomes rapidly dry.

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Extract from Report on Indian Gaols, by DR. MOUAT,
Inspector-General of Gaols in India.

"The papers printed in the Appendix show that the Dry Earth System of the Rev. Mr. Moule has been attended with success; that it has removed the greatest defect in the sanitary arrangements of Indian Prisons; that it has led to a remarkable change in the condition of such extremely unhealthy Gaols as Monghyr and Gya, and that it is without exception the greatest public benefit conferred by a private individual in a matter so essential to public health that I am acquainted with."

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MOULE'S PATENT EARTH CLOSETS.—Earth recommended by the Privy Council in their "Cholera" Circular as a Deodoriser.

MOULE'S PATENT EARTH CLOSETS.—A valuable Manure saved, and Fertility to the Soil ensured.

MOULE'S PATENT EARTH CLOSETS.—No Water Pipes to get out of order.

MOULE'S PATENT EARTH CLOSETS.
From JOHN WILSON, Esq., *Edington Mains.*

"Hitherto, we regret to say, that the numerous and costly attempts that have been made to separate the fertilising matter from the water in which it is contained, have proved utter failures. The most feasible plan for the utilisation of night-soil is that brought forward by the Rev. Henry Moule, of Fordington Vicarage, Dorset."

MOULE'S PATENT EARTH CLOSETS.
From J. SMEDLEY, Esq., *Matlock Bank Hydropathic Establishment, Riber Castle, Matlock, and Lea Mills, near Derby, May 1, 1[illegible].*

"GENTLEMEN,—I find your Patent Earth Closet a perfect success. It may be used in any room without the slightest offensiveness being perceived. "J. SMEDLEY."

MOULE'S PATENT EARTH CLOSETS.
From J. G. TALBOT, Esq., *New Falconhurst, Edenbridge, Kent, May 1, 1865.*

"I have very great pleasure in bearing my testimony to the great value of the Earth System, as carried out by Messrs. White & Co., according to the Rev. H. Moule's invention. I have had personal opportunities of testing the system, having set up several apparatus about the house, stables, and garden. The wonderful effect of the System in removing the great nuisance of bad smells, which are almost inseparable from the ordinary privies, as well as of the great value of the Manure which the Earth System renders perfectly inoffensive, makes it a matter of surprise that the arrangement is not universally adopted. I shall have great pleasure in recommending Messrs. White & Co.'s System to any one who may be influenced by my opinion. "JOHN G. TALBOT."

MOULE'S PATENT EARTH CLOSETS.
From OSWALD FOSTER, Esq., *Hitchin.*

"Hitchin, March 19, 1866.

"To Messrs. WHITE & Co.—Your Earth Closets have been in use for two years in the Sick Wards at the Hitchin Union House. As Medical Officer at that establishment, I can speak with the greatest confidence of the vast convenience and comfort they have been to the inmates, indeed, to all connected with the Institution, as, since their introduction, the annoyance and evil of disgusting effluvia attendant upon the use of the old-fashioned Commodes have been avoided. The prejudice in the minds of many, not only among the poor, but the more educated, at the introduction of anything new is patent to most; but I feel sure that any attempt to return to the old Commode would create great dissatisfaction among the occupants of our sick Wards. "OSWALD FOSTER, Surgeon."

MOULE'S PATENT EARTH CLOSET COMPANY
(LIMITED),
29, Bedford Street, Strand, W.C.

Heating by Hot Water.

W. J. HOLLANDS, IRON MERCHANT, 31, Bankside, London, S.E.

HOT WATER PIPES, from Stock, per yard:—2-inch, 1s. 2d.; 3-inch, 1s. 10d.; and 4-inch, 2s. 4d. BENDS, from Stock, 1s. 6d., 2s. 6d., and 3s. each. THROTTLE VALVES, 10s., 13s., and 14s. each. Other Connexions at equally low prices, and all goods of first-class manufacture. Estimates given, and orders by post punctually attended to the same day.

Heating by Hot Water.

HOT-WATER PIPES, at Wholesale Prices, with Elbows, Syphons, Tee Pipes, and every other connection; Wrought and Cast-Iron Boilers, Saddle, Conical, Cylinder, Tubular, and Elliptic, from 24s. each. Improved Boilers and Iron Stands to use without brickwork, 60s. each. Valves from 10s. 6d. each. Patent Valves, Improved Furnace Doors, Furnace Bars, Supply Cisterns, and Castings of every description in stock, at

Mr. LYNCH WHITE'S Iron Wharf, Upper Ground Street, Blackfriars Bridge, London, S. Price List on application.

HOT WATER PIPES and FITTINGS of the best description supplied by

BURY & POLLARD, 17, New Park Street, Southwark, London, S.E.

BURY AND POLLARD'S CONICAL BOILERS for HEATING by HOT WATER fixed at Seats of Duke of Newcastle, Lord Belper, &c., at Viscount Sydney's replaced, after being 20 years in constant use. Apply at

17, New Park Street, Southwark, London, S.E.

JAMES WATTS AND CO., HOTHOUSE BUILDERS and HOT-WATER APPARATUS MANUFACTURERS, 253, Old Kent Road, S.E.

200 CUCUMBER and MELON BOXES and LIGHTS, and from 400 to 500 LIGHTS for PITS of all SIZES kept in STOCK. Glazed and Painted complete, ready for immediate use. Packed and sent to all parts of the kingdom. Public and Private Buildings, Warehouses, &c., Heated on the most approved scientific and economical principles. References to the Nobility, Gentry, and Trade in most of the Counties in England.

HOT-WATER APPARATUS, of every description, fixed complete in any part of the country, or the materials, viz., Boilers, Pipes, &c., delivered to any Station.

Estimates on application.

J. JONES & SONS, 6, Bankside, Southwark, London, S.E.

WM. SMITH, HOTHOUSE BUILDER, Turnham Green, late of Hammersmith, begs to inform the Public that he will be glad to make GREENHOUSES or HOTHOUSES, of good Yellow Deal, Glazed with 21-oz. Glass, Painted three times, Fitted together all ready for fixing, of any size, at 1s. 3d. per foot super. Also that he has ready for use 16 GREENHOUSE LIGHTS, 9 ft. 10 in. long by 4 ft. 8½ in. wide, 21-oz glass, price 27s. Also several lots of smaller size; and a large stock of 1, 2, 3, and 4 Light GARDEN FRAMES, made portable, kept in stock.

Estimates given for efficiently Heating by Hot Water in any part of the kingdom.

CONSERVATORIES, GREENHOUSES, FRAMES.

THE ONLY PAINT THAT SUCCESSFULLY STANDS UPON THE ABOVE TRYING WORK IS

CARSONS' ORIGINAL ANTI-CORROSION PAINT,

TRADE MARK.

ENTERED AT STATIONERS HALL.

AND IS CONSEQUENTLY LARGELY USED BY THE NOBILITY AND GENTRY, ALSO THE LEADING HORTICULTURISTS.

IT IS EQUALLY ADAPTED FOR ALL DESCRIPTIONS OF EXTERNAL WORK.

3 cwt. Free to any Station in England and Wales, and most Ports of England, Ireland, and Scotland.

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PATTERNS, PRICES, and TESTIMONIALS on application to

WALTER CARSON AND SONS, Removed to LA BELLE SAUVAGE YARD, LUDGATE HILL, LONDON,

Three doors East of London, Chatham, and Dover Railway new Viaduct.

CAUTION.—All Casks bear the Trade Mark, or are not Genuine.

BY HER MAJESTY'S ROYAL LETTERS PATENT.

ORMSON'S

NEW PATENT WROUGHT IRON MULTITUBULAR HOT-WATER BOILER.

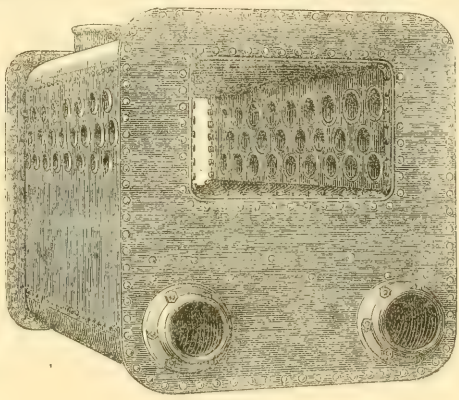
THE GREAT ADVANTAGES OF THIS BOILER ARE:—

1st. Being entirely of WROUGHT-IRON, its safety from leakage and cracks (from expansion or contraction), a danger to which all Cast-iron Boilers are more or less liable.

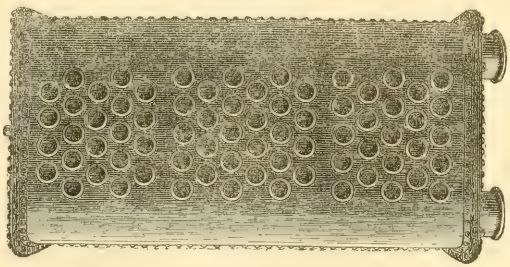
2d. An immensely increased surface exposed to the direct action of the fire, which passes through the tubes, thereby giving a wonderfully increased amount of power.

3d. A great saving in the consumption of fuel. Its facility for banking up the fire. Its peculiarly well-adapted construction for slow combustion, and burning many hours without attention, at a trifling expense.

4th. Its extraordinary power and safety for carrying out the One Boiler System, and small space and depth for setting.



ELEVATION.



UNDERSIDE OF BOILER AND PLAN OF TUBES.

One of these BOILERS Heated the GREAT ORCHID TENT, 560 feet long, and 40 feet wide, at the INTERNATIONAL HORTICULTURAL EXHIBITION, with a remarkably small quantity of fuel, and gave the greatest satisfaction. Was highly approved of by many Scientific Men and Practical Horticulturists.

The great Power, Economy, and Safe Working of these BOILERS has been thoroughly tested for the last 12 months at the Horticultural Gardens, Chiswick, where they may be seen in action, and also at other places in various parts of the country.

THEY ARE MADE OF VARIOUS SIZES. PRICES ON APPLICATION.

HENRY ORMSON, F.S.A.,

HORTICULTURAL BUILDER TO HER MAJESTY, AND HOT-WATER APPARATUS MANUFACTURER TO THE COMMISSIONERS OF HER MAJESTY'S ROYAL PALACES AND PUBLIC BUILDINGS, AND TO THE ROYAL HORTICULTURAL SOCIETY,

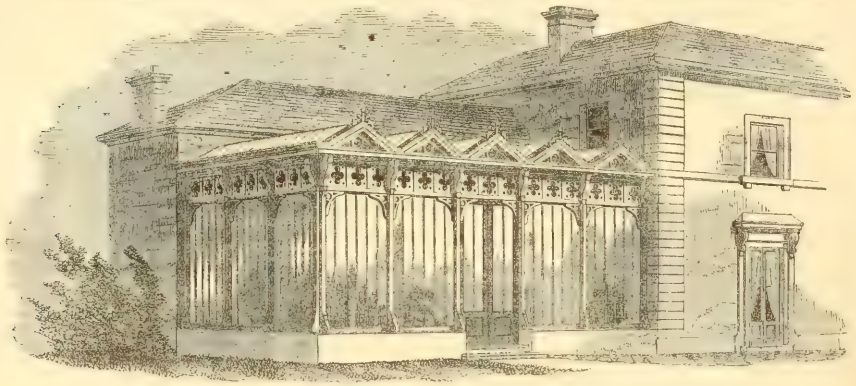
STANLEY BRIDGE, KING'S ROAD, CHELSEA, LONDON, S.W.

GLASS HOUSES FOR HORTICULTURAL PURPOSES.

MANUFACTURED in LONDON; and at NEWTON in CARTMEL, LANCASHIRE; GLOUCESTER; COVENTRY; PAISLEY, and ABERDEEN,

By STEAM-POWER MACHINERY, of BEST MATERIALS, and at LOWEST PRICES.

EVERY DESCRIPTION of STRUCTURE DESIGNED, HEATED, and VENTILATED in the MOST EFFICIENT MANNER.



View of Ridge-and-Furrow-roofed Conservatory, 30 feet by 15, and 15 feet high, attached to a Plain Mansion.

Plans prepared for Conservatories suitable for particular Styles of Mansions or Special requirements, and Estimates given to carry out Special Designs and Specifications.

HEREMAN AND MORTON, 7, PALL MALL EAST, LONDON, S.W.,

PROPRIETORS and MANUFACTURERS of SIR JOSEPH PAXTON'S PATENT HOTHOUSES for the MILLION.

Illustrated Price Lists of which will be sent on application. Also,

A HANDBOOK OF VINE AND FRUIT TREE CULTIVATION,

Containing full information on these subjects, Views of Conservatories, &c., Hints for Heating, &c., will be sent post free for 13 Stamps.

EXTRAORDINARY ACHIEVEMENTS OF

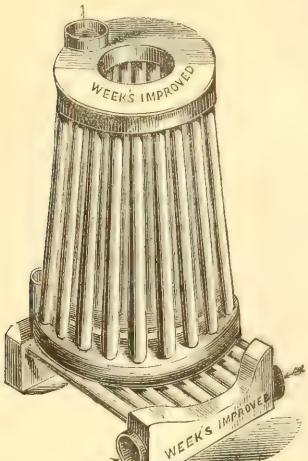
WEEKS'S ONE-BOILER SYSTEM.

THE DISTINGUISHED CAPABILITIES OF THIS LONG-TRIED SYSTEM THROUGHOUT THE UNITED KINGDOM AND THE CONTINENT, ENABLES IT NOW TO STAND FORWARD AS THE CHAMPION AND MOST SUCCESSFUL OF ALL SYSTEMS OF HEATING BY HOT-WATER.

THE FOLLOWING INTERESTING STATISTICS ARE CONCLUSIVE EVIDENCE THAT

WEEKS'S IMPROVED UPRIGHT TUBULAR BOILERS

ARE PERFORMING THE MOST GIGANTIC OPERATIONS ON RECORD, AND BANISH ALL DOUBTS AS TO WHOSE IS THE MOST POWERFUL BOILER EXTANT.



No other Boiler can have any pretensions to such an exposition of achievements as the following :—

Upwards of FOUR MILES of PIPING, fixed on WEEKS'S ONE-BOILER SYSTEM, is employed to HEAT the various COMPARTMENTS of the ROYAL HORTICULTURAL SOCIETY'S GARDENS, KENSINGTON.

TOTAL LENGTH OF PIPING IN MILES AND FEET :—

	Miles.	Feet.
ROYAL BOTANIC SOCIETY	1	700
ROYAL HORTICULTURAL SOCIETY'S GARDENS	1	900
TEDWORTH, WILTS	..	5100
HIS GRACE THE DUKE OF LEEDS	..	5000
MR. WOODROOFE'S, HARROW ROAD	..	4300
M. LOUIS VAN HOUTTE, BELGIUM	2	2400
MESSRS. E. G. HENDERSON, WELLINGTON ROAD	..	3800
MESSRS. A. HENDERSON, PINE-APPLE PLACE	..	3600
BOTANIC GARDENS, LIVERPOOL	..	3500
ZOOLOGICAL SOCIETY, LONDON	..	3000
WEEKS'S SHOW ESTABLISHMENT, CHELSEA	1	4000
MESSRS. SMITHS', DULWICH	1	3000
WHITECHAPEL UNION	1	1400
BOTANIC GARDENS, COLOGNE	..	4000

And many others too numerous for publication.

AMONG ITS MANY ADVANTAGES WE QUOTE THE FOLLOWING :—

1st. Being of Cast Iron it is rendered infinitely more desirable than if made of Wrought Iron.

2d. The Heating surface exposed to the action of the fire surpasses all other Tubular Boilers; hence its power for Heating Miles of Piping in one Apparatus.

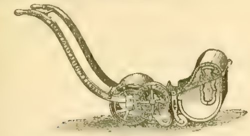
3d. By this great Heating surface a vast saving of Fuel is effected.

4th. All Gardeners know that by means of Weeks's Tubular Boiler night stokering is abolished.

Illustrated Pamphlets and Estimates for Building and Heating, Free, on application to

JOHN WEEKS AND COMPANY, HORTICULTURAL BUILDERS and HOT-WATER APPARATUS MANUFACTURERS, KING'S ROAD, CHELSEA, LONDON, S.W.

SHANKS' PATENT LAWN MOWERS for 1866.—Patronised on five separate occasions during the Season of 1864 by Her Majesty the Queen, and once by his Majesty the King of Saxony; again on four separate occasions during the Season of 1865 by Her Majesty the Queen; once by His Majesty the King of Holland; and once by His Majesty the King of Prussia.



HAND MACHINE.

These are the only Lawn Mowers that will work for years without requiring repair.

These are the only Lawn Mowers that will Mow properly when the Grass is Wet.

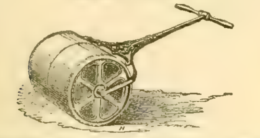
These are the only Lawn Mowers that are in use in ALL the Royal Gardens.

Every Machine warranted, and if not approved of can be at once returned. Illustrated Price Lists sent free on application.

ALEX. SHANKS & SON, Dens Iron Works, Arbroath; and 27, Leadenhall Street, London, E.C.

7, Leadenhall Street is the only place in London where intending purchasers of Lawn Mowers can choose from a stock of from 150 to 200 Machines, all sizes kept there, whether for Horse, Pony, or Hand Power.

GREEN'S IMPROVED NEW PATENT GARDEN ROLLER.



The above Rollers possess many advantages over all others. They are made in two parts, and are free to revolve on the axis, affording greater facilities for turning, and the outer edges are rounded off or turned inwards, thus avoiding the unsightly marks left by other Rollers.

Diameter, 30 inches;	Length 32 inches,	£7	10 0
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Prices for Rollers fitted with Shafts suitable for Pony or Horse Power, free on application.

Delivered carriage paid to all the principal Railway Stations and Shipping Ports in England.

THOMAS GREEN & SON, Smithfield Iron Works, Leeds; 54 and 55, Blackfriars Road, London, S.; and 19, Eden Quay, Dublin.

N.B. All Orders executed on the day they are received.

PRIZE MEDALS AWARDED to GREEN'S PATENT LAWN MOWERS.

INTERNATIONAL EXHIBITION, LONDON, 1862.
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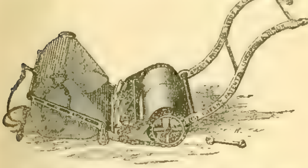
The above Lawn Mowers have proved to be the best, and have carried off every Prize that has been given in all cases of Competition.

Sold by all respectable Ironmongers, Seedsmen, &c., in the Kingdom. Illustrated Price Lists free on application.



AGRICULTURAL and HORTICULTURAL IMPLEMENTS and MACHINES of every description.
IMPROVED IRON STABLE FITTINGS.
HURDLES and CONTINUOUS IRON and WIRE FENCING.
Palisading Entrance and Field Gates. Plain and Galvanised Wire Netting.
GREEN'S PATENT LAWN MOWERS and GARDEN ROLLERS.
Garden Engines, Syringes, Water Barrows, Ornamental Garden Seats, Chairs, Tables, Iron Fountains, Vases, &c.
IRON and BRASS BEDSTEADS, in great variety.
Washing, Wringing, and Mangling Machines.
IMPROVED SAUSAGE MACHINES and FILLERS.
Separate Illustrated Price Lists free on application.

THOMAS GREEN & SON, Smithfield Iron Works, Leeds.

Show Rooms opposite the Smithfield Cattle Market, North Street, Leeds; 54 and 55, Blackfriars Road, London, S.; and 19, Eden Quay, Dublin.

Red Spider — Magnified.

GISHURST COMPOUND, whether used against Insects and Mildew, on Growing Plants, or as Winter Dressing on Trees at rest, should be dissolved 48 hours before use. This gets rid of smell, and if the Solution be decanted, prevents any staining of foliage. A strength of from 1 to 2 oz. to the gallon of water is recommended for growing Plants; one from 4 to 16 oz. for Trees at rest.

Sold Retail by Nurserymen and Seedsmen, in boxes, 1s. 3s., and 10s. 6d. each.

Wholesale by PRICE'S PATENT CANDLE COMPANY (LIMITED).

Destroy your Insect Pests.

PRESERVE YOUR PLANTS and TREES.

YOU MAY EASILY DESTROY ALL PLANT PESTS,

RED SPIDER	GREEN AND BLACK	ANTS
MEALY BUG	FLY	SCALE
THRIP	AMERICAN BLIGHT	MILDEW,

Without injury to the most delicate Plant or Tree, by using

FOWLER'S GARDENERS' INSECTICIDE, pronounced by all who have used it to be far superior to any other remedy. One trial will prove its efficacy. Testimonials forwarded on application. Price 1s. 6d., 3s., 6s. 6d., and 10s. per Tin. GEO. & THOMAS FOWLER, North Street, Brighton; and of HOOPER & Co., Covent Garden Market, W.C.

Croquet, Cricket, and Garden Tents.

BENJAMIN EDGINGTON'S ILLUSTRATED CATALOGUE of MARQUEES and TENTS for CROQUET, CRICKET, ARCHERY, &c., forwarded post free on application.

Temporary Rooms on Hire for Fêtes, Balls, Dinners, &c.

Be particular to address BENJAMIN EDGINGTON (only), 2, Duke Street, London Bridge, S.E. No other Establishment.

E. T. ARCHER'S "FRIGI DOMO." Patronised by Her Majesty The Queen, the Duke of Northumberland for Syon House, His Grace the Duke of Devonshire for Chiswick Gardens, Professor Lindley for the Horticultural Society, Sir Joseph Paxton for the Crystal Palace, Royal Zoological Society, &c.

PROTECTION from the SCORCHING RAYS of the SUN.

"FRIGI DOMO," a Canvas made of Patent prepared Hair and Wool, a perfect Non-conductor of Heat and Cold, keeping, wherever it is applied, a fixed temperature. It is adapted for all Horticultural and Floricultural purposes, for Preserving Fruits and Flowers from the Scorching Rays of the Sun, from Wind, from Attacks of Insects, and from Morning Frosts. To be had in any required lengths.

Two yards wide	1s. 9d. per yard run.
Four yards wide	3s. 6d. per yard.
An improved make, 2 yards wide ..	1s. 9d. per yard.
An improved make, 3 yards wide ..	2s. 8d. per yard run.

Also "FRIGI DOMO" NETTING, 2 yards wide, 1s. 6d. per yard run. ELISHA THOMAS ARCHER, Whole and Sole Manufacturer, 7, Great Trinity Lane, Cannon Street, City, E.C., and of all Nurserymen and Seedsmen throughout the Kingdom.

"It is much cheaper than Mats as a covering."

FIBROUS PEAT, of superior quality, for Orchids, American Plants, and all Potting purposes, may be obtained from Farningham Road Station, on London, Chatham, and Dover Railway, in Trucks of 16 yards, deliverable at some of the London Stations, and on the Great Northern, Great Western, and Midland Railways.—THOS. JESSOP, Farningham Wood, Farningham, Kent.

To Florists, &c.

PARTNER WANTED, to join the Advertiser in a BUSINESS for the SALE of FLOWERS, FRUIT, CUT FLOWERS, SEEDS, &c., with Jobbing attached. Situation West End of London, in one of the best and most improving localities round the Metropolis. Large and handsome Conservatory, fitted up with every convenience. Excellent opportunity for an enterprising Party with Capital, as it must command a First-class Trade.

Apply by letter to J. C., 17, Devonshire Terrace, Notting Hill, W.

To Nurserymen, Gardeners, and Florists.

WANTED, a PRACTICAL MAN to join the Advertiser in the above Business, which has been established two years, and is now doing well. The Plant consists of a Propagating House, 50 feet by 12, fitted with Hot Water; two others, same size, also fitted with Hot Water, and one with Flue: also Peach House, 54 feet by 12, now in fine bearing condition; and one Lean-to, 20 feet by 12; also the Materials for two Peach Houses, 54 feet by 12, ready for fixing; and Frames. There are nearly Three Acres of Ground well adapted for Nursery purposes; good House, containing Seven Rooms, and Out Houses. Within 10 miles of Covent Garden.

Apply by letter to A. B., Post Office, Welling, Kent, S.E.

Tothill, Plymouth.—To Gardeners and Others.

TO BE LET, by Tender, for a term of 7 or 14 years, from Christmas, 1866, all that MESSUAGE or DWELLING HOUSE, GARDEN, and PREMISES, situate near Tothill, in the Parish of Charles, Plymouth, now in the occupation of Mr. Francis Wood, Gardener and Seedsman, as Tenant, containing by admeasurement 1a. 1r. 0p. or thereabouts. The above has been for many years occupied as a Garden, is well suited for the purpose in all respects, and well supplied with Spring Water. The taker will be required to purchase, at a valuation by a competent person to be agreed on between himself and the Tenant, the Growing Crops, if any, and also the Stock of Plants, Greenhouses, and Forcing and Potting-houses on the Premises, being allowed to remove the latter at the expiration of his Term.

Tenders for taking the above Premises must be left at the Offices of Mr. LUXMOORE, Solicitor, Argus Insurance Office, Courtenay Street, Plymouth (where the terms and conditions on which they are to be Let may be seen), on or before October 1 next, and in the meantime the Tenant will show the Premises on application.

The Setter shall not be required to accept the highest Tender.

Argus Insurance Office, Plymouth.—September 15.

Farm Poultry.

GREY DORKING FOWLS, of purest breed, in any numbers.

Imported TOULOUSE GEESE, the largest and most productive breed known.

Imported NORFOLK TURKEYS, large, hardy, and good breeders.

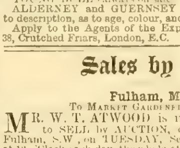
AYLESBURY and ROUEN DUCKS.

Imported BELGIAN HARE RABBITS, for size and early maturity.

BRAHMA POUTRA, CREVECŒUR, and LA FLECHE FOWLS, for constant layers.

Priced Lists and Estimates on application.

JOHN BAILY & SON, 113, Mount Street, London, W.



BRITTANY COWS. The only breed of Cattle that have escaped the Rinderpest. The nobility, gentry, and others are respectfully informed that they can be supplied with the above beautiful and profitable Little Animals (calved and down calving), in any number, at the shortest notice. The great success and encouragement which have attended the efforts of the importer, in introducing the pure breed of this useful and hardy Cow into the country, has induced him to extend his connection abroad, by appointing experienced Agents throughout Brittany, and he is now enabled to offer the public a constant supply of the choicest stock that can be obtained, at prices which defy all competition. The low cost, together with the high milking qualities of this Breed, render them of great value to the cottager, as well as the fancy stock-keeper and dairyman.

YOUNG BULLS always on sale. BRITTANY SHEEP, 25s. each. ALDERNEY and GUERNSEY COWS and HEIFERS supplied to description, as to age, colour, and time of calving.

Apply to the Agents of the Exporter Messrs. ROBERTSON & Co. 38, Crutched Friars, London, E.C.

Sales by Auction.

Fulham, Middlesex.

TO MARKET GARDENERS, AND OTHERS.

MR. W. T. ATWOOD is instructed by Mr. G. Bagley to SELL by AUCTION, on the premises, Percy Cross, Fulham, S.W., on TUESDAY, September 18, and following day, at 12 o'Clock each day, the whole of the valuable LIVE and DEAD STOCK and remaining CROPS of a Market Gardener.

The Stock includes 5 powerful Draught Horses, 4 capital built Spring Market Waggons, Light Van, 10 Tumbril, Dung, Market, and other Carts, Plough by Howard, Harrows, a variety of new and other Tools, Ware Tubs, Barrows, Fruit Ladders, large stock of Baskets, 200 3-Light Boxes and Lights and Hand Glasses, Seeds, quantity of Manure, and a variety of other articles.

The Crops comprise excellent Seakale Roots for Forcing, Rhubarb, Asparagus, Parsnips, Cabbage, and other Plants.

May be viewed the day before and Morning of Sale.

60,000 Rhododendrons, Apple Trees, & Stove Plants.

IMPORTANT SALE AT REDDISH NURSERIES, NEAR STOCKPORT.

MR. KERRISON begs to announce that he has received instructions from Mr. Whitham (who holds the largest and best Stock of Rhododendrons in England), to SELL by AUCTION, on THURSDAY, September 27, at 11 o'clock precisely, 60,000 RHODODENDRONS, fine bushy well-grown plants, 18 inches to 3 feet high, raised from all the best named sorts in cultivation; 5000 STANDARD APPLE TREES, including all the newest and best sorts out; also a Choice Collection of Rare Specimen and other Stove Plants. The whole will be Sold without reserve for want of room.

The Auctioneer begs to recommend the above to the notice of the Public, as the Establishment is the largest in the neighbourhood of Manchester.

The Reddish Station of the London and North-Western Railway is situated in the centre of the grounds, and is distant from Stockport a mile and a half, and five miles from Manchester.

Catalogues may be had on application at the Nurseries.

Choice Greenhouse Plants, Bulbs from Holland,

TROPÆOLUMS FROM VALPARAISO, RUSTIC SEATS, &c.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on SATURDAY, September 15, at half-past 12 o'Clock precisely, the SURPLUS STOCK of ORNAMENTAL STOVE and GREENHOUSE PLANTS, from a well-known Nursery, consisting of variegated Plants, choice Ferns, and rare Climbing and fine Foliage Plants, some Tropæolums from Valparaiso, and a large importation of Hyacinths, Tulips, Crocuses, Narcissus, Iris, Scillas, and other Bulbs from three well-known farms in Holland; the whole for sale without reserve, and well worthy the attention of intending planters. Some Rustic Garden Seats, Vases, Stools, Tables, &c.

On view the Morning of Sale, and Catalogues had.

Consignment of 15 Cases of Bulbs,

FROM A WELL-KNOWN FARM IN HOLLAND.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, September 19, at half-past 12 o'Clock precisely, 573 lots of BULBS from HOLLAND, consisting of several thousand dozens of Double and Single Hyacinths of all colours, and a large quantity of Tulips, Crocuses, Jonquils, Narcissus, Gladiolus, Iris, Ranunculuses, Liliums, Anemones, &c., from one of the most renowned Farms in Holland.

On view the Morning of Sale, and Catalogues had.

Shepherd's Bush.

IMPORTANT CLEARANCE, SALE OF GREENHOUSE AND OTHER PLANTS; THE ERECTIONS OF 20 GREENHOUSES, EXTENSIVE RANGES OF PITS, BOXES, SHEDS, THOUSANDS OF FEET OF HOT-WATER PIPING, PAVING, BRICKS, 20 BARROWS, &c.

MESSRS. PROTHEROE AND MORRIS are instructed by Mr. F. Hopgood, Sen., who is retiring from Business, to SELL by AUCTION, without reserve, on the premises, Exotic Nursery, Shepherd's Bush, adjoining the Shepherd's Bush Station on the Metropolitan Railway, on MONDAY, October 1, and four following days at 12 o'Clock precisely each day, the remaining LEASE, 2 years from Christmas, 1866, unexpired, with the GOODWILL; also the whole of the valuable COLLECTION of HARD and SOFT WOODED GREENHOUSE PLANTS, including about 10,000 Ericas, of sorts, mostly setting with flower; 1000 Double Camellias, 1 to 5 feet, about 700 choice Azalea Indica, well set with bloom, 3000 Hybrid Perpetual and other Roses in pots, 6000 Cytisus racemosa, 300 Coronilla, 2500 Acacia armata, 300 Hydrangeas, 400 Crassula, Epiphyllum sorts, Daphne, 2000 Deutzia, 1000 Gardenia, Ficus elastica, Hoya, Lilium lancifolium rubrum, 5000 Show, Fancy and French Pelargoniums, 4000 choice Seedling Cinerarias, several thousands Scarlet and Variegated Geraniums, &c.; also the Erections of 20 Greenhouses, thousands of feet of 2, 3, and 4 inch Hot-water Piping, mostly Riddell's Patent; 19 Boilers of various kinds, several ranges of Pits and Frames, about 200,000 Bricks, York Paving, Slate Slabs, Ornamental Iron Paving, Iron Propagating Tank, Iron Rollers, Patent Force Pump, Iron and Slate Water Tanks, Erections of Sheds, Stables, 6 nests of Seed Drawers, Shop Fittings, Barrows, Garden Tools, 2 Vans, 1 Cart, 3 Horses, sets of Harness, Ladders and other Effects.

May be viewed one week prior to the Sale. Catalogues had, 6d. each (returnable to purchasers), on the Premises; and of the Auctioneers and Valuers, American Nurseries, Leytonstone, N.E.

N.B. All Purchasers must pay into the hands of the Auctioneers a full deposit on the fall of the hammer; according to the conditions of Sale.

The whole of the Valuable EVERGREENS, DECIDUOUS SHRUBS, ORNAMENTAL FRUIT and FOREST TREES, will be offered by PUBLIC AUCTION on MONDAY and TUESDAY, October 15 & 16.

Yardley, near Birmingham.

IMPORTANT SALE OF SHORT-HORNED CATTLE.

MR. STRAFFORD begs to inform Breeders and Admirers of Short-horned Cattle that he is instructed by George Graham, Esq., to offer for SALE by AUCTION, at Yardley, on WEDNESDAY, September 19, his entire and very select HERD of First-class SHORT-HORNS, numbering 39 Head of Bulls, Cows, and Heifers, which have been bred with great care and nicety from the far-famed Herds of Fawsley, Holmepierrepont, Kirklevington, Milcote, &c.

Mr. STRAFFORD has great satisfaction in recommending this stock to the favourable notice of purchasers; it contains many Animals that possess, not only great merit in themselves, but which are bred from very pure and favourite blood, combining the most fashionable strains of the day, such a lot indeed as is rarely offered. They will be sold in a *bonâ fide* manner without any reserve, solely in consequence of Mr. Graham's change of residence.

Catalogues, with Pedigrees, may be had on application to Mr. STRAFFORD, 13, Euston Square, London, N.W.; or of Mr. GRAHAM, at Yardley, near Birmingham.

To Noblemen, Gentlemen, Flockmasters, and Others.

A Flock of Valuable Pure-bred Merino Sheep and Rams imported from Spain, Half-bred Merino and Southdown Ditto, White Cashmere Goats imported from St. Omer, France, and numerous Fleeces of Wool of the highest quality.

MESSRS. DANIEL SMITH, SON, AND OAKLEY have received instructions from C. T. Tower, Esq., the proprietor (the father of the Smithfield Club), to SELL by AUCTION, in the Park, close to the Mansion known as Weald Hall, near Brentwood, Essex, on THURSDAY, October 4, at 12 o'Clock precisely, 120 MERINO EWES and LAMBS, 10 ditto Rams and Ram Lambs, 130 Half-bred Merino and Southdown Ewes and Lambs, 9 ditto ditto Rams and Ram Lambs, and 291 Fleeces of Wool of the finest quality from the above Sheep; also 12 WHITE CASHMERE GOATS, being from the same Stock as the Herd, presented by the proprietor to her Majesty the Queen.

The stock from which the pure Merino Sheep now offered to the public have descended, was imported into this country from the Carthusian Monastery of Paular, in Spain, about the year 1810, by Mr. Tower, who has introduced into his flock, from time to time, with great care and judgment, and at great expense, Rams of the purest and best blood.

Weald Hall is situate about 2 miles from Brentwood, 5 from Romford, 12 from Chelmsford, and 17 from London; three-quarters of an hour's journey therefrom by the Great Eastern Railway.

Catalogues may be obtained at the White Hart Hotels, Brentwood and Romford; the Saracen's Head, Chelmsford; of Mr. BURTON, the Bailiff, at the Mansion; and of Messrs. DANIEL SMITH, SON, & OAKLEY, Land Agents and Surveyors, 10, Waterloo Place, Pall Mall, S.W.

Berkshire.

HIGHLY IMPORTANT AND ATTRACTIVE FREEHOLD RESIDENTIAL PROPERTY AT READING.

MESSRS. COOPER AND GOULDING are favoured with instructions from the Representatives of the late John Jackson Blandy, Esq., to prepare for submitting to PUBLIC COMPETITION, at an early date (unless previously disposed of by Private Treaty), the very valuable and unique FREEHOLD ESTATE, known as HIGHGROVE, Reading.

The Property consists of a well-built RESIDENCE, approached through a fine Avenue and well-grown Shrubbery, and having appropriate domestic offices, Coach-houses, Stabling, Yards, Lodges, Gardens, and Ornamental Grounds.

The latter, comprising a large area, were laid out by the late Proprietor at very great cost, and with the consummate taste and judgment which procured for him the distinguished position of a Vice-President of the Royal Horticultural Society, which he held for many years.

The House stands in an elevated position, commanding fine and extensive views, but possesses the advantage and comfort of complete privacy.

The Pleasure Grounds are beautifully diversified with sloping Lawns, Dutch Garden, Fountains, a variety of large and handsome Conifers, Aviary, Fernery, unusually large and elegant Conservatories, Vineries, Orchard and Stove Houses, and are also surrounded by some full-grown Forest Trees, which add greatly to their seclusion and retirement.

The Kitchen Garden is planted with the choicest Fruit Trees, which are now in most excellent condition.

The whole occupies an area of about 7 acres, is situated rather more than a mile from the Railway Stations, and near a new District Church; and offers to a Gentleman possessing Horticultural tastes, a most compact and delightful Property for Residence.

The Plants, the great rarity and value of which is well known in Floricultural circles, and other out-door effects, may be taken at a valuation by any gentleman who may become a purchaser.

Descriptive particulars, with Plans and Conditions, will shortly be prepared. Information may in the meantime be obtained of Mr. W. F. BLANDY, Solicitor, or of the Auctioneers, Reading.

WILLIAM S. BURTON,

GENERAL FURNISHING IRONMONGER,

BY APPOINTMENT TO HIS ROYAL HIGHNESS THE PRINCE OF WALES,

SENDS A CATALOGUE GRATIS AND POST PAID.

It contains upwards of SIX HUNDRED ILLUSTRATIONS of his unrivalled STOCK of STERLING SILVER and ELECTRO PLATE, NICKEL SILVER and BRITANNIA METAL GOODS, DISH COVERS, HOT-WATER DISHES, STOVES, FENDERS, MARBLE CHIMNEY PIECES, KITCHEN RANGES, LAMPS, GASELIERS, TEA TRAYS, URNS and KETTLES, CLOCKS, TABLE CUTLERY, BATHS, TOILET WARE, TURNERY, IRON and BRASS BEDSTEADS, BEDDING, BED-ROOM CABINET FURNITURE, &c., with Lists of Prices, and Plans of the

TWENTY LARGE SHOW ROOMS,

At 39, OXFORD STREET; 1, 1A, 2, 3, & 4, NEWMAN STREET; 4, 5, & 6, PERRY'S PLACE; and 1, NEWMAN YARD, LONDON, W.

THE PERFECT SUBSTITUTE FOR SILVER, THE REAL NICKEL SILVER,

Introduced more than 25 years ago by WILLIAM S. BURTON, when Plated by the Patent process of Messrs. Elkington & Co., is beyond all comparison the very best article next to Sterling Silver that can be employed as such, either usefully or ornamentally, as by no possible test can it be distinguished from real Silver.

A small useful set, guaranteed of first quality for finish and durability, as follows:—

	Fiddle or Old Silver Pattern.			Bead Pattern			Thread Pattern.			King's or Shell and Thread.		
	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.
12 Table Forks	1	13	0	2	0	0	2	4	0	2	10	0
12 Table Spoons	1	17	0	2	0	0	2	4	0	2	10	0
12 Dessert Forks	1	4	0	1	10	0	1	12	0	1	15	0
12 Dessert Spoons	1	4	0	1	10	0	1	12	0	1	15	0
12 Tea Spoons	0	16	0	1	0	0	1	2	0	1	5	0
6 Egg Spoons, gilt bowls	0	10	0	0	12	0	0	12	0	1	13	6
2 Sauce Ladles	0	6	0	0	8	0	0	8	0	0	9	0
1 Gravy Spoon	0	6	6	0	9	6	0	10	0	0	11	0
2 Salt Spoons, gilt bowls	0	3	4	0	4	0	0	4	6	0	4	6
1 Mustard Spoon, gilt bowl	0	1	8	0	2	0	0	2	0	0	2	3
1 Pair of Sugar Tongs	0	2	6	0	3	6	0	3	6	0	4	0
1 Pair of Fish Carvers	1	4	0	1	10	0	1	10	0	1	10	0
1 Butter Knife	0	2	6	0	4	0	0	5	6	0	6	0
1 Soup Ladle	0	10	6	0	12	0	0	16	0	0	17	0
1 Sugar Sifter	0	3	3	0	4	6	0	4	6	0	5	0
Total	9	19	9	12	9	0	13	9	6	14	17	3

Any article to be had singly at the same prices. An Oak Chest to contain the above, and a relative number of Knives, &c., £2 15s.; Tea and Coffee Sets, Dish Covers and Corner Dishes, Cruet and Liqueur Frames, &c., at proportionate prices. All kinds of Replating done by the Patent process.

FENDERS, STOVES, FIRE IRONS, AND CHIMNEY PIECES.

Buyers of the above are requested, before finally deciding, to visit WILLIAM S. BURTON'S SHOW ROOMS. They contain such an assortment of Fenders, Stoves, Ranges, Chimney Pieces, Fire Irons, and General Ironmongery, as cannot be approached elsewhere, either for variety, novelty, beauty of design, or exquisiteness of workmanship. Bright Stoves, with Ormolu Ornaments, £8 8s. to £27 10s.; Bronzed Fenders with Standards, 7s. to £5 12s.; Steel Fenders, £3 3s. to £11; Ditto, with rich Ormolu Ornaments, from £3 3s. to £18; Chimney Pieces, from £1 8s. to £100; Fire Irons, from 3s. 3d. the set to £4 4s. The Burton and all other Patent Stoves, with radiating Hearth Plates.

GASELIERS IN GLASS OR METAL.

The increased and increasing use of Gas in Private Houses has induced WILLIAM S. BURTON to collect from the various Manufacturers in Metal and Glass all that is new and choice in Brackets, Pendants, and Chandeliers, adapted to Offices, Passages, and Dwelling Rooms, as well as to have some designed expressly for him; these are ON SHOW over his TWENTY LARGE ROOMS, and present, for novelty, variety, and purity of taste, an unequalled assortment. They are marked in plain figures, at prices proportionate with those which have tended to make his Establishment the largest and most remarkable in the Kingdom, viz., from 12s. 6d. (two-light) to £23.

DISH COVERS AND HOT WATER DISHES,

in every variety, and of the newest and most recherché patterns, are on show at WILLIAM S. BURTON'S. Block Tin, 19s. the Set of Six; Elegant Modern Patterns, 35s. 6d. to 49s. 6d. the Set; Britannia Metal, with or without Silver-plated Handles, £3 2s. to £6 8s. the Set of Five; Electro-plated, £9 to £26 the Set of Four; Block Tin Hot Water Dishes, with Wells for Gravy, 12s. to 30s.; Britannia Metal, 22s. to 80s.; Electro-plated, on Nickel, full size, £9.

TEA URNS, OF LONDON MAKE ONLY.

The largest assortment of London-made TEA URNS in the world (including all the recent novelties, many of which are Registered), is on Sale at WILLIAM S. BURTON'S, from 30s. to £6.

BATHS AND TOILET WARE.

WILLIAM S. BURTON has ONE LARGE SHOW ROOM devoted exclusively to the DISPLAY of BATHS and TOILET WARE. The stock of each is at once the largest, newest, and most varied ever submitted to the Public, and marked at prices proportionate with those that have tended to make his Establishment the most distinguished in this country. PORTABLE SHOWERS, 7s. 6d.; PILLAR SHOWERS, £3 to £5 12s.; NURSERY, 15s. to 32s.; SPONGING, 14s. to 32s.; HIP, 14s. to 31s. 6d. A large assortment of GAS FURNACE, HOT and COLD PLUNGE, VAPOUR and CAMP SHOWER BATHS. TOILET WARE in great variety, from 15s. 6d. to 45s. the set of three.

BEDDING,

Manufactured on the Premises, and guaranteed by WILLIAM S. BURTON.

For Bedsteads, Wide.	3 feet 6 ins.			4 feet 6 ins.			5 feet.		
	£	s.	d.	£	s.	d.	£	s.	d.
Best Straw Palliasses	0	13	6	0	16	0	0	18	6
Best French Alva Mattresses	0	13	6	0	17	6	0	19	0
Best Cotton Flock Mattresses	0	18	6	1	2	6	1	6	6
Coloured Wool Mattresses	1	1	6	1	6	0	1	10	6
Best Brown Wool Mattresses	1	7	0	1	12	6	1	15	0
Best Brown ditto, extra thick	1	11	0	1	17	6	2	0	0
Good White Wool Mattresses	1	19	0	2	9	0	2	17	0
Extra Super ditto ditto	2	17	0	3	13	0	4	1	0
Good Horse Hair ditto	2	5	0	2	18	0	3	6	6
Extra Super do.	3	1	0	3	18	0	4	10	0
German Spring Hair Stuffing	3	8	6	4	4	0	4	18	0
Extra Super ditto	4	5	0	5	8	0	5	19	0
French Wool and Hair Mattress for use over Spring	2	17	0	3	15	0	4	7	0
Extra Super ditto ditto	3	11	0	4	9	0	5	0	0
Feather Beds, Poultry, in good Tick	1	16	0	2	7	0	–	–	–
Ditto ditto Grey Goose, in Bordered Linen Tick	3	2	0	4	2	0	4	13	0
Ditto ditto Best White ditto in Best Linen	4	14	0	6	8	0	7	7	0

Feather Pillows, 3s. to 10s. 6d.; Bolsters, from 6s. to £1 9s. 6d.
Down Pillows, from 10s. 6d. to 17s. 6d.
Blankets, Counterpanes, and Sheets in every variety.

PATENT IRON BEDSTEADS,

Fitted with Dovetail Joints and Patent Sacking on Castors, from 11s. to £1 4s. Ornamental Iron and Brass Bedsteads in great variety, from £1 4s. to £15 5s.

FURNITURE.

In Complete Suites for Bed-room of Mahogany, Birch, Fancy Woods, Polished and Japanned Deal, always on show. These are made by WILLIAM S. BURTON, at his Manufactory, 84, Newman Street, and every article is guaranteed. China Toilet Ware in great variety, from 6s. 6d. the set of five pieces.

CUTLERY, WARRANTED.

The most varied assortment of TABLE CUTLERY in the World, all warranted, is on sale at WILLIAM S. BURTON'S, at prices that are remunerative only because of the largeness of the sales.

Ivory Handles.	Table Knives, per dozen		Dessert Knives, per dozen.		Carvers, per pair.	
	s.	d.	s.	d.	s.	d.
3½-inch Ivory Handles	12	6	10	0	4	9
3¾-inch fine Ivory Balance Handles	17	0	13	0	5	6
4-inch Ivory Balance Handles	19	0	15	0	5	6
4-inch fine Ivory Handles	28	0	20	6	8	0
4-inch finest African Ivory Handles	35	6	27	0	12	0
Ditto, with Silver Ferules	42	0	35	0	13	6
Ditto, Carved Handles, Silver Ferules	55	0	45	0	18	6
Nickel Electro-Silver Handles	25	0	19	0	7	6
Silver Handles of any pattern	84	0	54	0	21	0
BONE and HORN HANDLES.—KNIVES and FORKS, per dozen.						
White Bone Handles	11	0	8	6	2	6
Ditto Balance Handles	23	0	17	0	4	6
Black Horn, Rimmed Shoulders	17	0	14	0	4	0
Ditto, very strong, Riveted Handles	12	0	9	6	3	0

The largest stock in existence of Plated Dessert Knives and Forks, and of the new Plated Fish-eating Knives and Forks and Carvers.

PAPIER MACHE AND IRON TEA TRAYS.

An assortment of TEA TRAYS and WAITERS, wholly unprecedented, whether as to extent, variety, or novelty.
NEW OVAL PAPIER MACHÉ TRAYS, per set of three, from 20s. to 10 Guineas.
Ditto IRON ditto, from 10s. to 4 Guineas.
CONVEX-SHAPE ditto, from 7s. 6d.

CLOCKS, CANDELABRA, BRONZES, AND LAMPS.

WILLIAM S. BURTON invites inspection of his Stock of these, displayed in two large Show Rooms. Each article is of guaranteed quality, and some are objects of pure vertu, the productions of the first Manufacturers of Paris, from whom WILLIAM S. BURTON imports them direct.

CLOCKS, from 7s. 6d. to £45.
CANDELABRA, from 13s. 6d. to £16 10s. per pair.
BRONZES, from 18s. to £16 16s.
LAMPS, MODERATEUR, from 6s. to £9.
PURE COLZA OIL, 4s. per gallon.

Editorial Communications should be addressed to "The Editor." Advertisements and Business Letters to "The Publisher," at the Office, 41, Wellington Street, Covent Garden, London, W.C.
Printed by James Matthews, at the Office of Messrs. Bradbury, Evans, & Co., Lombard Street, Pr cinct of Whitefriars, City of London, in the Co of Middlesex, and Published by the said James Matthews at the Office, No. 41, Wellington Street, Parish of St Paul's, Covent Garden, in the said County.—Saturday, September 15, 1866.

THE GARDENERS' CHRONICLE
AND
AGRICULTURAL GAZETTE.

A Newspaper of Rural Economy and General News.

No. 38.—1866.] SATURDAY, SEPTEMBER 22. {Price Fivepence. {Stamped Edition, 6d.

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Grape Vines.

B. S. WILLIAMS begs to announce that he has a splendid stock of Strong Planting and Fruiting CANES of all the best varieties. PRICED LIST may be had on application.
Victoria and Paradise Nurseries, Holloway, London, N

Succession Pine Plants for Sale.

ONE HUNDRED SUCCESSION RIPLEY QUEEN PINES, perfectly clean and in good health.
Apply to Page & Son, Old Cheshunt Nurseries, N.

SUCCESSION PINE PLANTS for SALE.—RIPLEY QUEEN (39), perfectly clean and in good health.
Apply to W. R., F. Allman, Nursery, Horsham, Sussex.

WANTED, a few good FRUITING PINE PLANTS. Address, stating price, to
Mr. Sexton Brewer, Orchid Street West, Luton, Bedfordshire.

Strawberries.

CHARLES TURNER can supply all the leading kinds, in good Plants
DESCRIPTIVE CATALOGUE may be had on application.
The Royal Nurseries, Slough.

CUTHILL'S SIX Sorts of STRAWBERRIES at 5s. per 100: see all Classes Advertisements. They are the earliest and latest in this country.
MUSHROOM SPAWN, 5s. 6d. per bushel. Pamphlets, &c.
James Cuthill, Cumberwell, London, S.W.

CASTLE KENNEDY FIG.—Plants of the above may now be had at 10s. 6d. and 21s. each; 5 per cent. discount to the Trade. Peter Lawson & Son, Edinburgh and London.

Fruit Trees, Conifera, and Trees and Shrubs.

PAUL AND SON'S COLLECTION of the above are now worthy of a visit. The Pyramid Fruit Trees for Sale are in full bearing, and the various Trees and Shrubs will be found in fine condition.
"Old" Cheshunt Nurseries, Cheshunt, N.

A Quarter of a Million of Fruit Trees.

THOMAS WARNER begs to inform intending Planters and the Trade, that his Nurseries, which occupy upwards of 70 acres, contain the above, in addition to a most extensive stock of Evergreens, Ornamental Trees, Roses, &c. All in a high state of cultivation. An inspection is respectfully invited.
CATALOGUES, Wholesale and Retail, ready in October.
The Nurseries, Leicester Abbey, ½ mile from the Midland Railway Station.

WALL-TRAINED TREES of BEARING SIZE.—Our Wall-Trained Fruit Trees this season are very fine, and include PEACHES, NECTARINES, APRICOTS, and FIGS, suited for planting in houses for immediate Fruiting. An inspection is respectfully invited.
T. Jackson & Son, Nurseries, Kingston, Surrey.

Railway Planting.

FIVE MILLION Transplanted QUICKS, of superior growth. Samples and prices on application to
John Hemsley, High Fields, Melbourne, near Derby.

To Railway Contractors & Gentlemen about to Plant.

B. WHITHAM begs to submit to the notice of the above, that he has the largest and best Stock of Transplanted QUICKS in England. Prices and samples on application at the Nurseries, Reedham Road, near Stockport.

To Gentlemen about to Plant.

A LOT of YOUNG FOREST TREES, of every variety, in full vigour and of large size, all Transplanted within the last two years, to be SOLD, either in One Lot or in Lots of 1000, to be removed by the 1st December next.
Apply to Messrs. Wright & Woodrow, Land Agents, Norwich.

Seedling Evergreen Oaks.

FOR SALE or EXCHANGE, several hundred SEEDLING EVERGREEN OAKS, grown from Acorns gathered last year from very large trees.—Application stating terms to be made to Mr. Jack, Courton House, Gorey, Ireland.

To Cultivators of Succulent Plants, &c.

T. COOPER, Holmsdale Road, Reigate, Surrey, has a large Collection of SUCCULENT PLANTS, &c., including about 450 varieties of CACTI, also ALOES, HAWORTHIAS AGAVES, TESTUDINARIA ELEPHANTIPES, &c.; also a great many New Plants raised from African Seeds, many of which are very interesting. Orders punctually attended to.

To the Trade.

WINTER and SPRING FLOWERING PLANTS.—Our stock Pure Soft-wooded ERICAS, EPACRIS, AZALEAS, and New Holland Plants is extra fine this year, and being much greater than we can house, we are selling at unusually low prices.
T. Jackson & Son, Nurseries, Kingston, Surrey (adjoining the Railway Station), S.W.

THE GOLDEN VARIEGATED WELLINGTONIA.—The Parent Tree, though stripped of some thousands of its shoots last winter, is now 12 feet high, and in great beauty. It has made a splendid pure Golden Leader, and every part of the Tree is finely marked with the same, presenting a most beautiful appearance; and Tourists interested in Coniferæ, and coming to this neighbourhood, will find it well deserving of a visit.
Richard Hartley, The Lough Nurseries, Cork.—Sept. 22.

Dutch and Cape Bulbs.

HOOPER AND CO.'S CATALOGUE (Illustrated) of the above is now published, and may be had post free for Six Stamps. Gratis to Customers.
Hooper & Co., Covent Garden, London, W.C.

Dutch Bulbs.

WM. WOOD AND SON'S first Importation of the above have arrived in splendid condition.
DESCRIPTIVE CATALOGUES on application.
Woodlands Nursery, Mansfield, Uckfield, Sussex.

JAMES CARTER AND CO.'S First Importation of DUTCH and CAPE BULBS has arrived in fine condition, and the Bulbs are much finer than usual.
James Carter & Co., 237, 238, and 261, High Holborn, W.C.

The Best Twenty-six Hyacinths,

As Recommended by the Editor of the *Gardeners' Chronicle*.
SUTTON and SONS can supply the above for £1 1s., carriage free.
Royal Berkshire Seed Establishment, Reading.

The Best Twelve Hyacinths Imported by SUTTON AND SONS,

for Twelve Shillings.
Sutton & Sons, Royal Berkshire Seed Establishment, Reading.

MIXED HYACINTHS, for Beds or Open Borders, all colours, of various shades.
21s. per 100 (carriage free), or 3s. per dozen.
Sutton & Sons, Royal Berkshire Seed Establishment, Reading.

J. SCOTT has received large Consignments of DUTCH FLOWER ROOTS, which he is offering at extremely low prices. A PRICED CATALOGUE, full of Notes on the Easy Culture of Bulbs, and other information sent free on application to
J. Scott, the Seed Growers, Yeovil, Somerset.

Hyacinths, &c.

WM. PAUL'S SELECT LIST of HYACINTHS, EARLY TULIPS, and other SPRING-FLOWERING BULBS and PLANTS, is now ready and will be forwarded post free on application.
Paul's Nurseries and Seed Warehouse, Waltham Cross, London, N.

Dutch Flower Roots.

THE PROPRIETORS of ST. JOHN'S NURSERY beg to intimate that their CATALOGUE is now ready, and may be had on application
Wm Barratt, Wakefield.

Hyacinths and other Dutch Bulbs.

WM. CUTHUSH AND SON beg to acquaint their numerous Friends and others that they have received their usual Consignment of Choice HYACINTHS, TULIPS, CROCUSES, &c.
PRICED DESCRIPTIVE CATALOGUE post free on application
Highgate Nurseries, London, N.

Dutch Bulbs and other Flower Roots.

CHARLES TURNER'S DESCRIPTIVE CATALOGUE of the above is now ready, and may be had on application.
The Roots are fine this season, and early Orders are respectfully solicited to ensure prompt Supply.
The Royal Nurseries, Slough.

Hyacinths and other Flower Roots.

JOHN FRASER begs to intimate that his CATALOGUE of HYACINTHS, NARCISSI, TULIPS, &c., is now published, and may be had on application. A DESCRIPTIVE LIST of the best kinds of STRAWBERRIES is also ready for distribution.
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Hyacinths, Tulips, &c.

BUTLER, McCULLOCH, AND CO. have the pleasure to intimate that their usual supply of DUTCH and CAPE BULBS has arrived in the finest possible condition.
PRICED DESCRIPTIVE CATALOGUES free and post paid on application. Covent Garden Market, London, W.C.

Dutch and other Bulbs.

B. S. WILLIAMS is now prepared to supply splendid roots of HYACINTHS, TULIPS, NARCISSUS, CROCUS, &c., &c. All the roots are selected with great care from the best growers in Holland.
A PRICED and DESCRIPTIVE LIST sent post free on application.
Victoria and Paradise Nurseries, Holloway, London, N.

Dutch, Cape, and other Flower Roots, ROSES, JAPANESE PLANTS, &c.

W. ROLLISSON AND SONS' CATALOGUE of the above, containing many Novelties, will be forwarded free on application.
The Nurseries, Tooting, London, S.

See Barr & Sugden's Advertisement

For BULBS and CLIVEDEN PLANTS for Spring Blooming, p. 894.

BARR'S PRIZE CALCEOLARIA, 2s. 6d. per packet. The above beautiful strain of Calceolaria was saved by Mr. James, of Isleworth, from the plants which were awarded the 1st prize at the International Horticultural and Botanical Congress.

Finest Dutch Crocuses and Early Tulips.

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ALL the LEADING SHOW PANSIES, selection left at 2s. 6d. per 100. Terms cash.
Edward Shenton.

Hybrid Rhododendrons.

WILLIAM FLETCHER begs to inform the Trade that he has a Splendid Stock of the above to offer this season, well set with Bloom Buds, with from 6 to 12 Buds on each plant suitable for forcing. CATALOGUES sent free on application.
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VARIEGATED CHRYSANTHEMUMS. SENSATION, the most beautiful plant for winter work, 6s. per doz. Double SCARLET GERANIUMS, 1ss. per doz. All the new ZONALE, 24 sorts, 10s. Terms cash.
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Woking Nursery, Surrey.

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Paul's Nurseries, Waltham Cross, N.

New Rose Catalogue, 1866-1867.

PAUL and SON'S NEW DESCRIPTIVE LIST is now Ready, post free on application; a faithful Guide, they believe, for the Amateur.
"Old" Cheshunt Nurseries, Cheshunt, N.

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AMBROISE VERSCHAFFELT, Nurseryman, Ghent, Belgium, begs now to offer his new fine TEA ROSE, ISABELLE SPRUNT, figured in the July Number of the "Illustration Horticole." Fine strong plants, 3s. each.
N.B. A Coloured Drawing may be obtained on application as above.

Rose Nurseries, Tunbridge Wells.

EDWIN HOLLAMBY respectfully begs to announce that his Stock of ROSES are as usual beautiful healthy good-rooted plants. This magnificent Collection contains nearly every variety worthy of cultivation. Early orders are solicited.

Gladioli, Roses, and Pæonies.

EUGÈNE VERDIER, Fils Aîné, Nurseryman, 3, Rue Dunois, Paris, has the honour to inform his numerous Friends and Patrons that he is now publishing his TRADE CATALOGUE of NEW GLADIOLI, ROSES, and PÆONIES, obtainable direct of him, or of his Agents, Messrs. Betham & Blackith, Cox's Quay, Lower Thames Street, London, E.C., upon pre-paid application.

Gladioli.

CHARLES VERDIER (late Victor Verdier and Ch. Verdier), 12, Rue Dumeril (late Rue du Marché aux Chevaux), 3ds, Paris, has just published his CATALOGUE of GLADIOLI, comprising the novelties of the season, and which may be obtained either from M. Verdier, or from R. Silberrad & Sons, 5, Harp Lane, Great Tower Street, London, E.C.

New Seeds for Autumn Sowing.

SUTTON'S AUTUMN CATALOGUE of GARDEN and FLOWER SEEDS for AUTUMN SOWING is now ready, and may be had gratis and post free on application to
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JIVERY AND SON having a few NOVELTIES now ready to send out, will be pleased to forward their PRICED DESCRIPTIVE CATALOGUES of AZALEA INDICA, and No. 10 HARDY BRITISH FERNS, which contain full particulars.
Dorking Nursery

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Cupressus Lawsoniana argentea.

MESSRS. WATERER AND GODFREY propose sending out a few of this splendid variety for the present season. Good plants, 18 inches high and bushy, at 21s. each.

It has been awarded Three First-class Certificates by the Royal Horticultural Society, the Royal Botanic Society of London, and at the Crystal Palace; and has been planted very extensively in the best and most conspicuous positions in the Royal Nurseries, Woking, Surrey.

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100 CAMELLIAS, with flower buds, best sorts, £5.
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The following favourite Sorts Custom House, London:—

100 CAMELLIAS, without flower buds, 1 years grafted, £4
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100 CAMELLIA STOCKS, £1 10s.
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NATURAL GRASS SEEDS of all sorts, for Laying Down Permanent Pasture, Lawns, Bowling, Croquet Grounds, &c.

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Sutton & Sons can supply best Seed of the above at moderate prices.

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FRANCIS & ARTHUR DICKSON & SONS are glad to be able to say that this PEA has again this season given universal satisfaction, and is pronounced by hundreds of the first Gardeners in Britain, and other competent Judges to be fully equal by their own repeated trials against all the best Early Peas of the day, to be the very best First Early. Persons offered for general seed purposes, 12s. per bushel, and in sealed packets, 1s. each, or 12 for 10s. 6d. "Ringleader," though in some sizes, be a day or so earlier, but it is altogether a very inferior Pea, as every one freely admits. Not to be had now, the stock being exhausted, which they have grown to meet the great and increasing demand.

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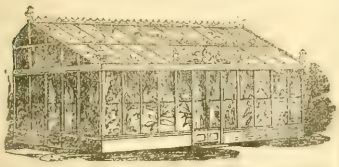

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HOT-WATER APPARATUS, of every description, fixed complete in any part of the country, or the materials, viz., Boilers, Pipes, &c., delivered to any Station.
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HYACINTH and CROCUS GLASSES, FERN CASES, SHAWS, TIFFANY, ARCHANGEL MATS, ORNAMENTAL FLOWER POTS, WIRE BASKETS and STANDS, &c.
The Garden Repository, 32, James Street, Covent Garden, W.C.

HOOPER and CO.'S ETRUSCAN HYACINTH VASES are superior to Glass for growing Hyacinths in Water. Chaste in beauty, and an ornament all the year round.
Retail of most Seedsmen throughout the kingdom. Wholesale and Retail of HOOPER & CO., Covent Garden, London, W.C.

Glass for Garden Purposes.

JAMES PHILLIPS AND CO. beg to submit their prices as follows:—

PROPAGATING GLASSES.

Each.—s. d.		Each.—s. d.
2 inches in diameter .. 0 2½	12 inches in diameter .. 1 9	
3 " " .. 0 4½	13 " " .. 2 0	
4 " " .. 0 6½	14 " " .. 2 6	
5 " " .. 0 6½	15 " " .. 3 0	
6 " " .. 0 8	16 " " .. 3 6	
7 " " .. 0 10	17 " " .. 4 0	
8 " " .. 1 0	18 " " .. 5 0	
9 " " .. 1 2	19 " " .. 6 0	
10 " " .. 1 4	20 " " .. 7 0	
11 " " .. 1 6		

HYACINTH and FLOWER DISHES:
6 inches diameter .. 1s. 6d. | 10 inches diameter 1 6
8 inches diameter .. .. 2s. 6d.

Hyacinth Dishes are intended to contain a number of Roots Bedded in and covered with Moss, instead of the common Hyacinth Glass.

LACTOMETERS, for Testing the Quality of Milk
Four Tubes .. .. 4s. 6d. | Six Tubes .. .. 6s. 6d.
With Stands complete.

HAND GLASSES, WITH OPEN TOPS.

Each.—s. d.		Each.—s. d.
12 inches 6 6	18 inches 9 6	
14 " 7 6	20 " 10 6	
15 " 8 6	22 " 11 6	
16 " 8 6	24 " 12 6	

Painted and Glazed with Sheet Glass.
London Agents for HARTLEY'S IMPROVED PATENT ROUGH PLATE.
LINSEED OIL, Genuine WHITE LEAD, Carson's PAINTS, PAINTS of various colours, ground ready for use.
SHEET and ROUGH PLATE GLASS, SLATES of all sizes, BRITISH PLATE, PATENT PLATE, ROLLED PLATE, CROWN, SHEET, HORTICULTURAL, ORNAMENTAL, COLOURED, and every description of GLASS, at the best Manufacture, at the lowest terms. List of prices and estimates forwarded on application to
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EXTRAORDINARY ACHIEVEMENTS OF

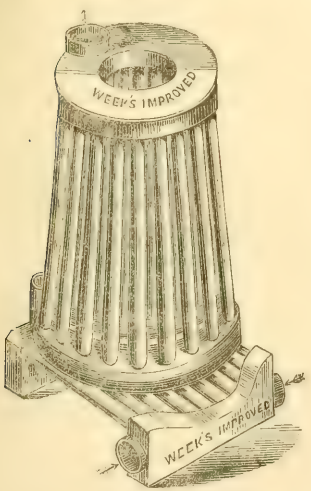
WEEKS'S ONE-BOILER SYSTEM.

THE DISTINGUISHED CAPABILITIES OF THIS LONG-TRIED SYSTEM THROUGHOUT THE UNITED KINGDOM AND THE CONTINENT, ENABLES IT NOW TO STAND FORWARD AS THE CHAMPION AND MOST SUCCESSFUL OF ALL SYSTEMS OF HEATING BY HOT-WATER.

THE FOLLOWING INTERESTING STATISTICS ARE CONCLUSIVE EVIDENCE THAT

WEEKS'S IMPROVED UPRIGHT TUBULAR BOILERS

ARE PERFORMING THE MOST GIGANTIC OPERATIONS ON RECORD, AND BANISH ALL DOUBTS AS TO WHOSE IS THE MOST POWERFUL BOILER EXTANT.



No other Boiler can have any pretensions to such an exposition of achievements as the following:—

Upwards of FOUR MILES of PIPING, fixed on WEEKS'S ONE-BOILER SYSTEM, is employed to HEAT the various COMPARTMENTS of the ROYAL HORTICULTURAL SOCIETY'S GARDENS, KENSINGTON.

TOTAL LENGTH OF PIPING IN MILES AND FEET:—

	Miles.	Feet.
ROYAL BOTANIC SOCIETY	1	700
ROYAL HORTICULTURAL SOCIETY'S GARDENS .. .	4	900
TEDWORTH, WILTS	..	5100
HIS GRACE THE DUKE OF LEEDS	..	5000
MR WOODROFFES, HARROW ROAD	..	1500
M. LOUIS VAN HOUTTE, BELGIUM	2	2400
MESSRS. E. G. HENDERSON, WELLINGTON ROAD ..	..	3800
MESSRS. A. HENDERSON, PINEAPPLE PLACE ..	..	3600
BOTANIC GARDENS, LIVERPOOL	..	3500
ZOOLOGICAL SOCIETY, LONDON	..	4500
WEEKS'S SHOW ESTABLISHMENT, CHELSEA	1	4000
MESSRS. SMITHS', DULWICH	1	5000
WHITECHAPEL UNION	1	1100
BOTANIC GARDENS, COLOGNE	..	4000
J. C. PICKERSGILL, ESQ., HOOLEY, CROYDON	1	200

And many others too numerous for publication.

AMONG ITS MANY ADVANTAGES WE QUOTE THE FOLLOWING:—

1st. Being of Cast Iron it is rendered infinitely more desirable than if made of Wrought Iron.

2d. The Heating surface exposed to the action of the fire surpasses all other Tubular Boilers; hence its power for Heating Miles of Piping in one Apparatus.

3d. By this great Heating surface a vast saving of Fuel is effected.

4th. All Gardeners know that by means of Weeks's Tubular Boiler night stokering is abolished.

Illustrated Pamphlets and Estimates for Building and Heating, Free, on application to
JOHN WEEKS AND COMPANY, HORTICULTURAL BUILDERS AND HOT-WATER APPARATUS MANUFACTURERS,
KING'S ROAD, CHELSEA, LONDON, S.W.

CROYDON. A. HENDERSON. EAST SURREY SEED WAREHOUSES. ESTABLISHED 1828

Dutch Flower Roots.

ARCHIBALD HENDERSON begs to announce that he has received from Holland a large consignment of BULBOUS ROOTS in fine condition.

DESCRIPTIVE and PRICED CATALOGUES are now ready, containing practical directions for the successful cultivation of each section of Bulbs, in Pots, Glasses, and the Flower Garden.

Also a DESCRIPTIVE PRICED LIST of all the best GRAPE VINES in cultivation. Catalogues may be had gratis and post free upon application.

Seed Nursery, Thornton Heath, Surrey; and at the East Surrey Seed Warehouse, College Grounds, North End, Croydon.

SEEDSMEN BY APPOINTMENT. Sutton AND Sons.

Hyacinths for Exhibition.

SUTTON AND SONS beg to offer—

100 in 100 very choice sorts		£4	4	0
100 in 50	,,	3	10	0
50 in 50	,,	2	2	0
50 in 25	,,	1	15	0
25 in 25	,,	1	1	0
12 in 12 extra fine choice do.		0	12	0
12 in 12 choice sorts		0	9	0
12 in 12 good sorts		0	6	0

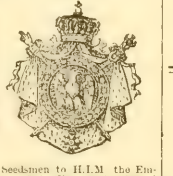
All goods carriage free, except small parcels.

SUTTON & SONS,
Royal Berkshire Seed Establishment,
Reading.

Dutch Bulbs and Plants.

JAMES CARTER AND CO. (Fellows of the Royal Horticultural Society of London, and the Royal Agricultural Society of England, &c.)

Seedsmen to Her Majesty's Chief Commissionats of Public Works and other Government Departments, the Royal Gardens, Kew, &c., &c., &c.



Seedsmen to H.I.M the Emperor of the French, the Crystal Palace Company, the Agri-Horticultural Society of India, &c., &c., &c.

The Only Prize Medal for Seeds and Flowers,
INTERNATIONAL EXHIBITION, 1862 (*Vide* Jurors' Report)

Just published,
The AUTUMN SUPPLEMENT of CARTER'S GARDENER'S and FARMER'S VADE MECUM, containing complete Lists of New and Choice Dutch and Cape Bulbs, Stove, Greenhouse, and Hardy Plants, Ornamental Trees and Shrubs, Fruit Trees and Roses, all for Autumn Planting; to which is added Original and Instructive Articles on Bulbs and their Culture, and Spring Flowers and Spring Gardening. Price 1s., post free; gratis to Customers.

SEED MERCHANTS and NURSERYMEN, Offices and Seed Warehouses, 237, 238, & 261, High Holborn, London, W.C.

Seeds for Present Sowing.

JAMES CARTER AND CO. are now offering New Seed of the undermentioned, the quality of which cannot be surpassed, the seed being saved from plants which have taken Prizes at all the principal London Flower Shows.

CARTER'S PRIZE CALCEOLARIA, 2s. 6d. per packet.
CARTER'S PRIZE CINERARIA, 2s. 6d. per packet.
CARTER'S PRIZE FRINGED CHINESE PRIMULA, 2s. 6d. per packet.

The above forwarded on receipt of postage stamps.

JAMES CARTER & Co., 237, 238, and 261, High Holborn, W.C.

Seeds for Present Sowing.

LOOK to YOUR GRASS LANDS.—The month of September is the best in which to renovate Old, or Lay Down New Pastures.

JAMES CARTER & Co offer their celebrated
RENOVATING MIXTURE at 10*d.* per lb. (sow 10 to 12 lb. per acre)
Also FINEST MIXED PERMANENT GRASSES and CLOVERS (free from weeds), mixed to suit all soils, at 36*s.* per acre.
ITALIAN RYE-GRASS (clean) | TRIFOLIUM INCARNATUM
STUBBLE TURNIP (new seed).
All of best quality. Price on application.

JAMES CARTER & Co., 237, 238, & 261, High Holborn, W.C

SEEDSMEN BY APPOINTMENT. Sutton AND Sons.

SUTTON'S

UNRIVALLED COLLECTIONS OF

BULBOUS FLOWER ROOTS,

FOR BLOOMING DURING THE WINTER AND SPRING.

SEEDSMEN BY APPOINTMENT. Sutton AND Sons.

SUTTON'S COLLECTION of HARDY FLOWER ROOTS
FOR OPEN GROUND.

		£	*s.*	*d.*
No. 1.	A large and Choice Collection of ANEMONES, HYACINTHS, CROCUSES, TULIPS, RANUNCULI, NARCISSI, SNOWDROPS, IRISES, GLADIOLI, &c.	2	2	0
No. 2	Ditto ditto, consisting of all the same kinds, in Reduced Quantities	1	1	0
No. 3	A Small and Choice ditto	0	10	6

SORTS for FLOWER POTS and GLASSES.

No. 4.	A splendid Collection of HYACINTHS, JONQUILS, NARCISSI, EARLY TULIPS, New large CROCUSES, &c.	2	2	0
No. 5.	The same in Reduced Quantities	1	1	0
No. 6.	A Small and Choice Assortment	0	10	6

N.B. A complete LIST of the above may be had post free, and any article specified, if not required, will be omitted, and additional quantities of others included.

The very low charges now made for the above Choice Collections of Flower Roots will, it is believed, insure a continually increasing demand.

Early Orders are requested before the more scarce kinds are all sold.

SUTTON'S DESCRIPTIVE AUTUMN CATALOGUE

is now ready, and may be had gratis and post free on application.

All Goods sent Carriage Free except small parcels, and 5 per cent. allowed for cash payments.

SUTTON AND SONS, ROYAL BERKS SEED ESTABLISHMENT, READING.

DUTCH FLOWER ROOTS.

JAMES VEITCH & SONS,

ROYAL EXOTIC NURSERY, CHELSEA, S.W.,

BEG TO ANNOUNCE THAT THEY HAVE RECEIVED THEIR

ANNUAL SUPPLY OF BULBOUS ROOTS FROM HOLLAND,

AND ARE PLEASED TO SAY THAT THEY ARE IN EXCELLENT CONDITION.

CATALOGUES are now ready, and will be forwarded post free on application.

J. V. AND SONS desire to impress upon those who patronise them the great advantage of giving them their orders early, as the successful Cultivation of Bulbs depends in a great measure upon their being planted early in the season.

PLANTING.

WILLIAM PAUL

(SON and SUCCESSOR to the late A. PAUL),

Begs to call attention to the following ARTICLES, to the CULTURE of which his NURSERIES of FIFTY ACRES are principally devoted. The quality of the Stock is, he believes, equal to any in the Kingdom, and the prices low as possible.

ROSES.

STANDARDS, 15*s.* per dozen, and upwards | CLIMBERS, 6*s.* per dozen, and upwards
DWARFS, 9*s.* ,, ,, | FORCING, 24*s.* ,, ,,

First and Second Prizes were awarded to his Collections at the International Horticultural Exhibition, and they have taken Prizes wherever exhibited.

FRUIT TREES.

Standard and Half-Standard Trained PEACHES and NECTARINES, very fine, 7*s.* 6*d.* to 10*s.* 6*d.* each.
Standard APPLES, PEARS, and PLUMS, 1*s.* 6*d.* to 2*s.* each.
Standard WALNUTS, very fine, 2*s.* 6*d.* each.
PYRAMIDAL APPLES, PEARS, CHERRIES, and PLUMS, 1*s.* 6*d.* to 2*s.* 6*d.* each.
Do. do., Fruiting Trees, 2*s.* 6*d.* to 5*s.* each.

Dwarf APPLES, PEARS, CHERRIES, and PLUMS, 1*s.* to 1*s.* 6*d.* each.
Dwarf-trained PEACHES, NECTARINES, and APRICOTS, 3*s.* 6*d.* to 5*s.* each.
Dwarf-trained APPLES, PEARS, CHERRIES, and PLUMS, 3*s.* 6*d.* each.
FILBERTS, of sorts, 4*s.* to 9*s.* per dozen.
GOOSEBERRIES and CURRANTS, 3*s.* to 4*s.* per dozen.

These are in fine health, and may be relied on as correct to name.

GRAPE VINES.

PLANTING CANES, all the best sorts, 2*s.* 6*d.* each, and upwards.
FRUITING CANES, 7*s.* 6*d.* each, and upwards.
Between 1000 and 2000 splendid Plants of these are now ready for delivery.

HARDY PICTORIAL TREES for the Decoration of Gardens, Parks, and Pleasure Grounds.—His Collection of these was the only one shown at the late International Horticultural Exhibition, and was universally admired. Collections from 18*s.* to 42*s.* per dozen, according to size and rarity.

EVERGREENS and HARDY FLOWERING TREES and SHRUBS.—1000 species and varieties, including the New AUCUBAS, the best and most popular kinds, of various sizes, by the dozen, hundred, or thousand.

WEEPING TREES and CLIMBING PLANTS in great variety.

ZONAL and NOSEGAY PELARGONIUMS.—The original Collection of Beaton's Hybrids, 9*s.* per dozen; his New Set of last Spring, 1*s.* 6*d.* to 3*s.* 6*d.* each.

For description and details of the above, see PRICED CATALOGUES, free by post on application. Inspection of the Stock respectfully invited.

All goods delivered free of carriage to London; if a Ton weight of Trees be ordered at one time they will be laid free of charge in the Trucks at any London Goods Railway Station.

PAUL'S NURSERIES, WALTHAM CROSS, N.

NEW STRAWBERRY, DR. HOGG (BRADLEY).—Resembling British Queen, but very large, and a better grower than the Queen; one of the sweetest Strawberries grown, and, like Sir J. Paxton and Oscar, by the same raiser, will become a favourite, and be generally grown. It received a First-class Certificate from the Royal Botanic Society in 1865, and the same distinction by the Fruit Committee of the Royal Horticultural Society this season; was exhibited in C. Turner's successful collection of four varieties of Strawberries, and also in his Collection of Fruit at the July Exhibition of the Royal Botanic Society. Price 21s. per 100.
CHARLES TURNER, The Royal Nurseries, Slough.

Fruit Trees, Roses, Evergreens, &c.

W. KNIGHT begs to inform intending Planters that he has many thousands of Trees and Plants in every other ORNAMENTAL TREE and SHRUB, in the finest possible condition, at reasonable prices. An inspection is respectfully invited. DESCRIPTIVE PRICED CATALOGUES free.
The Nursery is within two minutes' walk of the Hailsham Station (South Coast Railway).
Floral Nursery, Hailsham, Sussex.

Northampton Nurseries.

JOHN PERKINS, SENIOR, begs to call the attention of Noblemen, Gentlemen, and others engaged in Planting, to his Large Stock of the following:—2,000,000 BLACK THORNS, for Covert Planting, 1½ to 2, 2½ to 3 feet: 2,000,000 LARCH FIRS, 3 to 4, 4 to 6 feet; 1,000,000 SPRUCE FIRS, 1½ to 2, 2½ to 3, 3 to 4 feet; 2,000,000 WHITE THORN QUICK, 2 and 3 Years' Transplanted.
Also large quantities of

Scotch Firs, 2 to 3 feet	Hornbeam, 3 to 4 feet
Plane, Sycamore, 2 to 3 feet	Oaks, English, 6 to 8 feet
Berberis Aquifolium, 1½ to 2 feet	Ditto, Turkey, 4 to 6 feet
Ditto dulcis, 2 to 3 feet	Elms, English, 6 to 8, 8 to 10 ft.
Green Hedging, 2 to 2 feet	Do., Huntingdon, 8 to 10 ft.
Laurels, 2 to 3 feet	Chestnuts, Spanish, 1½ to 2 feet
Portugal Laurels, 1½ to 2 feet	Ditto Horse, 4 to 6, 6 to 8 ft.
Ditto ditto, 2 to 3 feet	Sycamore, 3 to 4 feet
Evergreen Privets, 2 to 3 feet	Beech, 3 to 4 feet
Birch, 3 to 4 feet	Cedrus Deodara, 5 to 6, 6 to 8 ft.

J. P.'s stock of all kinds of Fruit, Forest, Ornamental Trees, &c., is very extensive, and the trees remarkably fine, and in excellent condition for removal, having been frequently transplanted.
J. P. having such an immense quantity of Black Thorns, Larch, and Spruce Firs, will be pleased to make a special offer where large quantities are required. An inspection of the above is respectfully solicited.
DESCRIPTIVE PRICED CATALOGUES sent post free on application to 52, Market Square, Northampton.

Orchis maculata superba.

OSBORN AND SONS are now taking orders for this beautiful hardy TERRESTRIAL ORCHID, for which a First-class Certificate was awarded on the 19th of June by the Floral Committee of the Royal Horticultural Society. It is of vigorous habit, 1½ to 2 feet high, has leaves transversly marked with very dark stripes, and a dense spike of spotted rose-coloured flowers 6 inches long. Price 5s. each, to be delivered in autumn.
Fulham Nursery, London, S.W.

CHOICE VARIEGATED PELARGONIUMS.

Mrs. Benyon	Italia Unita	Sunset
Mrs. Pollock	Rainbow	Golden Tom Thumb
Clara	Picturatta	Princess Alexandra
Yellow Belt	Fontainebleau	Burning Bush

The above, in strong plants, for 21s., package included. Terms, cash. Remittances required from unknown correspondents. Address,
ALFRED FEVER, Nursery, Chatteris, Cambridgeshire.

THE CZAR VIOLET is NOW in BLOOM, and will continue so through the winter, even during frost and under snow, until May. The flowers are twice as large as the Old Russian, and sweeter, on very long stout stalks. Awarded several First-class Certificates and Prizes. Strong blooming plants may be had, 10s. per dozen, prepaid, of Mr JOHN GRAHAM, Cranford, Hounslow, W.
The usual allowance to the Trade.

B. S. WILLIAMS, Victoria and Paradise Nurseries, Holloway, London, N.
CHOICE SEEDS.
PRIMULA (WILLIAMS'S superb STRAIN).—The most noted strain of Primula in existence; same as supplied to nearly all the largest Gardens in England. In sealed packets, at 5s., 3s. 6d., and 2s. 6d. each. None genuine without B. S. WILLIAMS's name and address on the packet.
CALCEOLARIA (JAMES'S STRAIN).—5s. and 3s. 6d. per packet.
CINERARIA (WEATHERILL'S extra choice strain).—This well-known Gardeners' Garden strain to be had genuine only in sealed packets bearing B. S. WILLIAMS's name and address. Price 5s. and 3s. 6d. per packet.

To the Trade.—A Good Opportunity.

JOHN J. HASLAM, Bradshaw Gardens, Chadderton, Manchester, begs to offer, in unusually fine strong well rooted Plants, from the late Mr. John Holland's unequalled Collection of CARNATIONS and PICOTEES in great variety, 50s. per 100 pairs; YELLOW GROUND PICOTEES, 75s. per 100 pairs.
Also a large assortment of LANCASHIRE SHOW GOOSEBERRY TREES, true to name, 4s. to 6s. per dozen, or 30s. per 100.
Named sorts of the best CURRANT TREES grown. Black, per dozen, 2s.; Red, per dozen, 2s.; White, per dozen, 3s. Selections of the above to J. J. H.
CATALOGUES will be forwarded on application post free for one stamp. A liberal allowance in Plants for long carriage will be given. Post Office Orders payable to
JOHN J. HASLAM, Middleton, Lancashire.

PAUL AND SONS NEW DOUBLE THORN CRATÆGUS OXY. COCCINEA PLENA.—We have much pleasure in offering this Autumn this unique novelty in Hardy Trees. It has received the highest possible Awards of Merit, viz., First-class Certificate International Exhibition, and the same awards at Royal Botanic Society's great Show. Quite distinct from the old double pink, it has the same vigorous habit and free-blooming quality.
The Gardeners' Chronicle, May 26, 1866, thus speaks of it:—"A new double Thorn, much superior to any white we have previously seen, in the combined character of depth of colour and doubleness; the blossoms were fully double, and colour a bright deep carmine red. We regard the variety as decidedly superior to the old double Hawthorn with pinkish-red flowers."
Standards or Pyramids, 10s. 6d. each.
The Old Cheshunt Nurseries, Cheshunt, N.

THOMAS SAMPSON (late DRUMMOND & CO.), has now to offer an unrivalled Collection of DUTCH BULBS and other FLOWERING ROOTS, of the very finest quality, at the lowest prices. CATALOGUES of which can be obtained free on application. The season for planting is now at hand, and intending purchasers are invited to an inspection of the select Stock the Nurseries contain, consisting of Ornamental Coniferous Trees, Fruit Trees, Evergreen and Deciduous Trees, Forest Trees, Roses, Flowers of every description, and every requisite for the Garden. All Business Letters to be addressed to Mr. PETER DRUMMOND, Manager.
The Nurseries, Preston Road, Yeovil, Somersetshire.

GEORGE DAVIES begs to inform the Nobility and Gentry that his very SELECT and DESCRIPTIVE CATALOGUE of HYACINTHS, TULIPS, NARCISSUS, CROCUS, &c., for the present season is now ready, and may be had post free on application.
Any Ladies or Gentlemen requiring HYACINTHS, &c., for competition, can be supplied with (specially selected) Bulbs suitable for that purpose at moderate prices.
G. D. having received his first importations of Hyacinths, &c., has much pleasure in stating that they are unusually fine this season, and begs to assure those who favour him with their commands, none but first quality of Bulbs will be sent. Equal if not superior to any house in the Trade.
G. D. has much pleasure in informing his Friends and the Public generally, that he obtained the First Prize for the best 24 Hyacinths (Nurserymens' Collections) at St. George's Hall, Liverpool, in March last, in competition with Messrs. Wm. Cutbush & Son, for £10; also the Bronze Medal at the Royal Botanic Society, London.
My friend Mr. Cutbush having vauntingly Challenged me last year, I now venture to Challenge him to Exhibit 24 Hyacinths at St. George's Hall, Liverpool, next March, for £5.
Green Lane Nurseries, Old Swan, near Liverpool.

NEW HARDY RHODODENDRON, MICHAEL WATERER.—This Rhododendron has hitherto been exhibited under the name of ANNIHILATOR, but it will be sent out under the above name. It is undoubtedly the most brilliant-coloured late hardy free-blooming Rhododendron yet offered.
Orders are now being taken for Plants to be sent out in the Autumn at 31s. 6d. each. The usual discount to the Trade.
JOHN WATERER, American Nursery, Bagshot, Surrey.

THE QUEEN, without any exception, the best WHITE RHODODENDRON yet raised.—Robust grower, deep green foliage, late and free flowering, trusses large, full, compact, and semicircular, footstalk short and stiff, colour white, suffused with soft blush mauve, changing to the purest white, clear alabaster or wax-like, of unequalled shape and substance, reminding one of the petals of the Water Lily. It remains in bloom longer than most other Rhododendrons, a peculiarity probably accounted for by its hitherto refusing to produce seed, an advantage all Rhododendron growers well understand. All who visited the International Exhibition will remember the transcendent superority of The Queen over every other white Rhododendron exhibited. It is proposed that the Queen should assume her throne in 1867. All and everybody who wish to enjoy her regal sway should apply at once, as all orders will be executed in rotation. The price will be 31s. 6d. each, and the Trade will have four plants given for three ordered. It need excite no surprise that its sole possession by the Advertiser should have called forth the envious jealousy of certain HONOURABLE MEN. Hence a story industriously circulated in the Trade that the QUEEN is not a new one but an old kind, shown under an assumed name. The Advertiser would be glad to be informed WHEN, OR WHERE, AND UNDER WHAT NAME THIS RHODODENDRON has been seen, and in whose possession it is to be found. The whole undivided stock is in the hands of CHARLES NOBLE, Bagshot, Surrey.

The Gardeners' Chronicle.

SATURDAY, SEPTEMBER 22, 1866.

MEETING FOR THE ENSUING WEEK.
SATURDAY, Sept 29, { Royal Horticultural (Weekly Show), South Kensington .. .. 2 P.M.

An article that appeared in our columns some weeks since (see p. 681) on the subject of DOUBLE FLOWERS, induced some of our correspondents kindly to forward us several examples

of these flowers, alike interesting to the horticulturist and to the morphologist. To one or two of these, which in some respects at least, are novelties, we propose now to allude. Mr. LAXTON's double Peas, as will be seen from his communication published in another column, and as we have had the opportunity of witnessing for ourselves, were produced on a plant which at first bore single flowers only; then double blossoms were formed; these were followed by flowers, in which not only was there a substitution of petals for stamens, and an increased number of the former organs, but also a supernumerary bud, raised on a little stalk in the centre of the flower by the process of median prolification. It is not necessary here to go into detail as to the various modifications of structure presented by these flowers, but we may mention among the more curious of them the fact, that the calyx of the additional flower was partly carpellary in its nature, and bore imperfect ovules on the margins of its constituent segments, whose tips, moreover, were drawn out into the form of the style, and were in some cases even provided with a stigma.

The period at which these double Pea blossoms were produced, and the fact of their being preceded as well as followed by single flowers, have an important bearing on the question of the inducing causes which tend to the formation of double flowers, and which is a subject to which we may hereafter allude.

A double Violet sent us by Major CLARKE was also the subject of prolification. The new flower bud in this case was enclosed within the seed vessel, the seeds themselves being in some instances perfect in their conformation.

Double Verbenas, it must be admitted, would in a horticultural point of view, be desirable additions to the flower garden, and if the doubling could be effected without impairing the fertility of the flower, so much the better. There is promise of both these requisites being fulfilled; the flowers sent us by Mr. WILLS (see p. 901) have two, three, or four supplementary petals, standing up round the eye of the flower. On examination, these extra lobes may be seen to be not so much new or additional formations as an exuberant development of the already existing petals—in truth, the lobes which are faintly indicated at the base of some of the petals of an ordinary Verbena are here inordinately enlarged, and from want of space are thrust into the centre of the flower, thus giving rise to the appearance of a semi-double flower. These extra lobes are thus strictly analogous with the supplementary lobes in the calyx of the Canterbury Bell (Campanula Medium).

Neither the genus Pisum nor Verbena find a place in Dr. SEEMANN's lists of double flowers, published in the Journal of Botany (vol. ii., 1864), to which also may be added Godetia Lindleyana and Convolvulus minor.

A PAMPHLET by Signor GASPARRINI on a DISEASE in GRAPES which occurred in Naples last year has just been transmitted to us, which requires a few words, though it contains little novelty. Indeed the subject scarcely seemed worth so much notice, had not considerable alarm been excited by it, especially from the circumstance of its often being attended with a little mould, which GASPARRINI supposes may be Cladosporium herbarum, though he does not positively state that it was identical with it. The presence of the mould however immediately called to mind the ravages of the Oidium, and it was at once feared that the vineyards were to be ravaged by a new parasite, to destroy which many futile attempts were made, while the Vines in some cases suffered from the chemical substances which were used.

Under these circumstances it was well that the disease should be submitted to some one who could speak authoritatively on the subject, and the pamphlet before us must at once drive away every shade of fear.

The disease, which was in great measure confined to Vines trained to sticks (*en souche*), while those on trellises (*en treille*) escaped, was characterised by an exudation of viscid humour from the surface of the Grapes, in consequence of which they withered and dried up, and were, unlike berries which had been merely prematurely turned into raisins by the sun, totally unfit for the production even of inferior wine. A mould was in many cases developed on these berries, and the fact of the same mould being produced in the common honey dew which so often exudes from the leaves in hot weather, might at once have shown that it was not, like the Oidium, the cause, but the consequence of the disease. Doubtless the peculiar malady was aggravated by the presence of the mould, which on the leaves obstructs all their proper functions, and in the berries promotes decomposition; but the question was mainly as to the cause, and this doubtless was to be found in the peculiar and long-continued drought of the late summer.

In our own country nothing is more common, both in our hothouses and in open air cultivation, than the spreading of this pest over leaves from which inspissated sugary matter has exuded; and there are other Fungi besides the Cladosporium which are scarcely less common under similar circumstances on the Continent, as, for example, on the Orange and Poplar. The parallel case of exudation in Cucurbita maxima, which GASPARRINI brings forward in illustration, seems to belong to a different category, the exudation in that case probably consisting of bassorine, or possibly of pectine; certainly, we think, not of anything like Manna. It is a satisfaction at least that we can give something like a rational account of a malady which has caused some alarm, but which admits of no remedy except

such a judicious pruning or defoliation as may not injure the quality of the Grapes, while it protects them from the direct influence of the sun. *W. A. B.*

—— We condense the following particulars relating to the ensuing UNIVERSAL HORTICULTURAL EXHIBITION AT PARIS, from the "Revue Horticole" of the 16th inst.:—

"A fourth part of the park surrounding the great Exhibition building will be set aside for the exhibition of horticultural products, &c. This portion will be railed in and will communicate by four gateways with the general Exhibition. The principal entrance will be at the angle of the 'Avenue de Lamotte-Piquet,' and the 'Avenue de la Bourdonnais.' The laying-out of this space has been entrusted to MM. ALPHAND and BARILLET, and it will be converted into a garden wherein will be represented the most beautiful localities either in France or elsewhere, and where plants of the most varied character will be brought together. Two streams winding amid the turf will be fed from artificial sources, whence they will escape, the one with the impetuosity of the torrent, the other 'en cascade,' and blending together will form a large lake to be peopled by fish remarkable for their size or for their associations [1]. Among others will be seen a large number of the famous carp that FRANCIS I. placed in the reservoirs at Fontainebleau. Thousands of aquatic plants of all description will bedeck the lake as well as the streams, such as the species of Nelumbium, Thalia, Aponogeton, the Victoria regia, &c. The rocks from among which the springs will be made to flow, will form the entrance to two vast grottoes, the roofs of which, made of glass, will support Aquaria, some devoted to fresh-water products, others to those of salt water. The columns supporting these aquaria and the grottoes generally will consist of rocks and stalactites. Round the gardens in the shrubberies and plantations will be erected 18 plant houses of different patterns, destined to show not only the peculiarities of their construction, but also to protect the plants needing such shelter.

"Elegant tents, closed when necessary by curtains, will be provided for such open-air plants as need protection from rain, storms, or the burning rays of the sun. These tents are spoken of as of elegant design, and placed as they will be here and there amid flowerbeds, and interspersed with charming 'corbeilles' and elegant 'châlets,' will form an Eden where this time the hand of man will not spoil the work of the Creator [1]. In the midst of the garden a plant-house of vast size, '*proportions monumentales*,' will be erected, and which has already received the name of the Crystal Palace. This edifice will be 50 metres in length (about 164 feet), 37 metres wide (about 121 feet), and 20 metres high (about 65 feet). In it will be arranged at the opening of each of the 14 sections (see p. 730) the plants for the adjudication of the jury, after the award of which body the plants will be placed in the plant-houses, or in the beds before alluded to.

"The Crystal Palace, moreover, is destined for the general meetings of the juries, and also for the meetings of the Botanical Congress. In spacious galleries round the palace will be exhibited the smaller implements, drawings, plans, &c. In one of the angles of the garden a semi-circular building will be appropriated to a 'Botanical Diorama,' where the spectators will see pass before them representations of the most varied scenery of the Old and New Worlds, the native habitation of the plants that will be seen in living reality in the garden. Another gallery stretching along the Avenue de la Bourdonnais will be appropriated to the exhibition of market-garden produce and fruits.

"The 14 sections (*concours*) of the exhibition are so arranged as to secure the exhibition of the several classes of plants at the time when they respectively present the greatest interest. Some plants flower at a definite time, even foliage plants are in better condition at one time than another, hence it was felt to be impossible to have one exhibition only. The Imperial Commission has, therefore, established the 14 sections, so as to meet the requirements of all concerned as fully as possible."

Further details are promised, which we shall lay before our readers in due course.

BEDDING OUT.

(Continued from p. 874.)

NOT many of the Christian graces are so difficult to exhibit in a rural district as the grace of hospitality. It is often a very severe exercise, and always a very perilous adventure to give a dinner-party. The Jobsons have not spoken to the Dobsons since the last county election, and must be scrupulously kept asunder. The Browns have solemnly declined to meet the Greens ever since that unhappy ball, at which a bright beautiful Green respectfully declined connubial relations with a very dingy Brown. The Plantagenets are too proud, and the De Courcys too poor for the festal interchange of food. The Shorts are in Paris, and the Longs' baby has got the measles.

And when the selected guests are assembled, how many are the dangers, and how frequent are the disappointments. The Honourable Mrs. A., the grand lady of the neighbourhood, whose presence, it was hoped, would fill with envious awe the bosoms of all meaner guests, sends at the last moment a mendacious plea for her absence. Host and hostess feel themselves degraded by her cool indifference, and her vacant place disfigures the dining-table, a perpetual reproach and dreariness. The Halls, who were invited to bring one of their sons, in the hope that it might be the good-looking Oxonian, Louis, produce Dick, just expelled from Woolwich. Pretty Miss B. has an incipient sty in one of her *beaux yeux*. The new neighbours, of whom so much had been expected, turn out to be prosaic and plain. Non-appearance of Hon. Mrs. A. causes a complete derangement of the proposed procession to the banquet, and Mrs. C. sulks majestically, until the champagne has been round twice, because she had not the precedence. The Curate's Thomas drops a soup-plate, and impinges continually against the other servants, as though engaged in the recreation of blindman's buff. The haunch of venison (at two guineas) is strikingly suggestive of the ancient riddle about a stag on the top of St. Paul's; and the gourmand of the company, who is a cynic also, glares at the host, who was a dandy in his day, and mutters his dislike of "a decayed buck." Richard, from Woolwich, having drowned his misfortunes in the flowing bowl, becomes unpleasantly noisy at dessert, and nearly maddens his partner, a crack player at the Portland, by his villanous mutilations of the game of whist.

These meditations were suggested to my mind "as I lay a-thinking" the morning after a very dreary banquet, which had been given on the day of our arrival for a few days' visit at the house of a friend; and to exchange some of the thoughts of a more cheerful kind, I arose and looked out from my bedroom window. The garden was before me; and when I had gazed upon it for some two minutes, I sat down in my wife's toilette-chair, and laughed until that excellent lady, "awaking" (like Lord Byron, Childe Harold, Canto iii. line 5) "with a start," surveyed me with an expression, which seemed to say, "I am the proprietress of a first-class idiot." "What was I laughing at?" Why I was laughing to see our last night's dinner-party strikingly and faithfully done in flowers, the banquet repeated in the bedding-out! The vacant place of the honourable Mrs. A. was represented by blank patches of earth, where plants, of a *recherché* character doubtless were intended to appear, but didn't. The Jobsons and the Dobsons, the Browns and the Greens, were placed in the closest juxta-position; crimson Salvias with scarlet Pelargoniums, Perilla with Coleus, Ageratum with Heliotrope, utterly destroying each other's happiness, and marring, as only people do, the appearance and contentment of the whole company. The new neighbours, about whom so much had been written, and from whom so much was expected, were very accurately portrayed indeed, by certain "novelties," of recent introduction, announced as very great acquisitions, and turning out to be rubbish. The beautiful lady with the ocular blemish, and the Longs' baby afflicted with measles, might be traced in the foliage of Mrs. Pollock, starved and disfigured by careless culture and unkindly soil, or in the dwarf and dingy leaves of Amaranthus melancholicus, exposed too soon to the unsparing cruelty of our cutting vernal frosts. The Curate's Thomas, running obstructively among the other servants, had his antitype in a rampant species of Tropæolum, which twined itself here, there, and everywhere; and Richard from Woolwich was recalled to mind by some Coreopsis and other weeds, which occupied the room of their betters, and knew not that they were naught and vile. Even the venison, which had passed its prime, was signified by some annuals, whose bloom had faded, and whose present phase was—seedy.

As a complete museum of incongruities, a gorgeous collection of mistakes, and a Dutch concert of perpetual discords, the exhibition before me was, I think, unique; but in how many other gardens do we find some of the very same deformities, and a similar defiance of the laws of taste—plants arranged with about as much order and uniformity as the animals in a child's Noah's ark, colours confused and hostile as those upon a painter's palette?

But why are we gazing over our neighbour's hedge at tares, which may be found in our own corn field? Instead of criticising his style of rowing, let us learn to paddle our own canoe, to acknowledge and to overcome the frequent errors in that garden ground, which, like man's happiness, "never is, but always to be," perfect. Think and plan as we may, how many are our imperfections! "Our failures," as Brummel's valet termed the huge basket of crumpled neckerchiefs, which the Beau at his toilette had just cast aside, are quite sufficient to make us perfectly meek, and to induce that sympathy for our brother florists, and that willingness to help our bedfellows in bedding-out, which we so much require from others.

And so, having proved (as I hope), first, in my former paper on the subject, that the modern system is to be developed and never discarded; and, secondly, that such a development is a very difficult undertaking, I will venture to submit the results of my experience for the consideration of those who have commenced but recently, or practised hitherto unsuccessfully, the delightful occupation of bedding-out. *S. R. H.*

HORTICULTURE IN HUNGARY.

SOME observations from an eye-witness of the condition of horticulture in one of the most beautiful countries of the south-east of Europe can scarcely be unacceptable when it is considered how very little, comparatively, is known of a country which contains no less than 6155 geographical square miles. My residence for three years was at Szád, in the neighbourhood of Schemnitz; but I have had frequent opportunities of visiting other parts of the country, to which my observations equally apply.

As the vegetables more commonly in use, including Tomatos, are supplied almost entirely by field cultivation, the kitchen garden is by no means the prominent object which it is in England. The vineyards supply the finer kinds of fruit—as Peaches, Nectarines, Apricots, Medlars, and Figs; while different kinds of Gourds are planted along the boundaries, forming a loose kind of enclosure. Some of these are cultivated merely as food for cattle; others are used as Vegetable Marrows, amongst which is a very superior one known under the name of Spargel-Kürbiss (or Asparagus Pumpkin), while others are a favourite food when baked. Cucurbita melanosperma is amongst the kinds which are cultivated; but it does not appear that they have, at least north of the Danube, any variety of Cucurbita moschata, which almost supersedes the Vegetable Marrow where the heat is sufficient.

The commoner kinds of fruit, as Cherries, Mulberries, Walnuts, Strawberries, and Raspberries, grow on the mountains, on the road side, or by every ditch or waste piece of ground; so that even in bad years the proprietor has a constant supply without any pains, and in good years he merely gathers the best, and lets every one, after he is served, take what he pleases. In fact travellers, or indeed every passer-by, help themselves for the most part without any let or hindrance. The orchard is almost exclusively devoted to the cultivation of Plums (which are grown in enormous quantities) for drying, a process which is performed on hurdles in a low-heated oven. The varieties, however, in cultivation are very inferior to those which yield the better kinds of French Plums of commerce. A few Pears and Apples are grown, but of very inferior quality. Wall-fruit is unknown. It cannot be expected, therefore, that much attention should be devoted to the kitchen garden, though a few hotbeds, as in England, are made for the rearing of Brinjals and other plants which require to be brought forward artificially. The better kinds of Melons and Cucumbers are grown on the open ground in the garden, while the large coarser kinds and Water-melons (which are of excellent quality) are consigned to the field. Cabbages, Carrots, the different kinds of Kidney Beans, some of which are of very superior quality, and a few other vegetables have garden culture. A very small kind of Pulse, known under the name of Rice Beans, used frequently for soup, and belonging apparently to the genus Dolichos, with one or two other subtropical varieties, is an object of cultivation. Fruit trees, with the exception of a few Apricots and Plums, are for the most part excluded; as regards those beyond the pale, scarcely anything is done in the way of pruning beyond chopping off the dead or useless branches, which takes place in April.

The flower garden is of far more importance, and is in general large and laid out in beds of various shapes in the midst of a lawn, which is, however, not kept close-shaved as in England, but is mowed three times only in the year, as the proprietor depends on the Grass plots for the maintenance of his cows in summer, the meadows being devoted to the production of hay for the winter food of the sheep. It is mowed by the cowherds, who carry it away on a curiously-shaped cart drawn by two donkeys; the cart is made without a piece of iron or a single nail. The paths are made of silt, which is brought from the larger rivers, and the beds separated from the Grass by a very prettily-worked edging of wickerwork, the bark of the Osiers having first been carefully removed. The flowers are of much the same sorts as those cultivated in England, though, from the severity of the winter, some perennials which succeed with us do not admit of out-door cultivation. Numerous white chairs and tables are scattered everywhere, which, with the wickerwork of the borders, give the ground a gay appearance.

What, however, strikes an English eye the most is the entire absence in most Hungarian gardens of anything like evergreens, for there are no Yews, no Cedars, no Firs, no Holly trees, nor anything that is green in winter; in consequence of which there is a comparative want of contrast in summer, and an appearance of utter desolation in winter. In summer the foliage is afforded chiefly by Acacias, Gleditschias, Poplars, and occasionally Oaks.

The garden is cultivated by peasant girls under the superintendence of the gardener, who are paid 2*d*. a day. They always go about without shoes or stockings, as the only time when the Hungarian peasants wear shoes, which are considered a luxury, is when they are at church, or when the snow is on the ground. As was formerly the case almost universally in Scotland, the boots or shoes are carried in the hand, and put on only when they arrive at the church door.

The tools generally used in a Hungarian garden are very large heart-shaped hoes and wooden rakes. A spade is very seldom seen. The wheelbarrow holds no more than a bushel, and is made entirely without iron, the wheel consisting of a disk of board, and the spindle of a piece of Juniper or other tough wood.

The most prominent feature on entering a Hungarian gentleman's garden is the hothouses, which, though not as magnificent as they are frequently in our own gardens, are on an extensive scale, adapted to the exigencies of the climate. They are of three different kinds: 1, the Szaporító Ház (the slip or propagating house); 2, the Hajto Ház (the forcing house); 3, the Hideg Ház (or cool house, answering to our greenhouse or orangery).

The Szaporító Ház is a neat structure with four stone walls and a sloping roof of glass, the front wall being 4 ft. high, and the back wall 7 ft. It is heated by means of a flue, which goes round the house from the furnace to the chimney. The flue is enclosed in a wall or bricks about 3½ ft. high, in which there are four doors for the insertion of pans of water, which are placed on the top of the flue. Deal boards, which have numerous holes pierced in them, are nailed to the two walls over the flue, and on these the mould is placed—the holes in the boards being first filled up with Moss, so as to prevent the soil falling through, and at the same time to admit the steam which arises from the pans. Cuttings inserted in the mould, which are either uncovered or protected by bell glasses, grow, when treated in this manner, with astonishing rapidity, and are soon ready for potting off.

The Hajto Ház is built in the same manner as the

propagating house, but has simply a flue. Into this the cuttings are removed as soon as they are potted, and arranged on stages. The furnace is heated with wood, of which only a small quantity is necessary. It is in this house that Rose-grafting is conducted, the stocks being got forward in it by the beginning of February. The top is then sawn off horizontally, a slit made in the cut surface, and the graft inserted and secured by a cement made of resin, wax, and Venice turpentine. When treated in this way scarcely a single graft fails, and the trees bloom well in the summer. This method is found to answer far better than budding, which is not suited to the climate.

The Hideg Haz, or Orangery, is a very large room, heated by a flue in the soil, and glazed in front after the old English fashion. The chimney is composed of a number of large quadrate pieces made of clay, each succeeding piece fitting into that beneath, and decreasing from the base upwards. The whole, which is in the inside of the house, is painted green, and has not a bad effect. The plants are beautifully arranged, and the whole forms a sort of winter garden. The Orange and Lemon trees are dispersed in pleasing groups together with the shrubs, and the flowers in variously-shaped beds; but instead of having the wickerwork edging which is seen out of doors, they are surrounded by beautiful minerals from the mines, which often contain a good deal of gold and silver.

The expense of course varies according to the wealth of the Magyar, but, as a general rule, it may be reckoned that it amounts to about 60*l.* a-year; and many of the nobles do not think it derogatory to their dignity, though extremely proud of their pure descent, to diminish the expense by the sale of the plants.* *Miles Berkeley, Esq., in the Royal Horticultural Society's Journal.*

RARE OR INTERESTING PLANTS NOW IN BLOOM AT KEW.

Pachira macrocarpa, Cham. and Schlecht., figured in the Botanical Magazine, t. 4549.—A tropical American genus, now referred to the Malvaceæ, tribe or sub-order Bombaceæ, and very closely related to the Baobab (Adansonia), differing principally in having a truncate, not lobed calyx. The present species, a native of Mexico, is very nearly related, if not identical with P. aquatica of Aublet, and in the size of its flowers, is very little inferior to P. grandiflora. It is a tall tree, with large digitate glabrous leaves, and magnificent flowers, 9 or 10 inches in diameter; the petals are 6 inches or more in length, reflexed when open, imbricate in bud, their inner margins and upper surface white, the outer margins pale velvety brown; stamens numerous; filaments monadelphous below, divided upwards into many branches, yellow at the base, and gradually passing into a bright red. This, unlike many other species, produces leaves and flowers at the same time.

Heliconia humilis, Jacq. Hort. Schœnbr. t. 48 and 49; Red. Lil. 7, 382 and 383; Horaninow, Prodr. Monograph. Scitaminearum, p. 39. Musaceæ.—A very pretty, dwarf, glabrous species of this magnificent genus; leaves oblong, acute at both ends; petioles long, exceeding the scape; thyrse flexuose; spathes 5-7, broadly boat-shaped, subcordate at the base, many-flowered, scarlet; flowers sessile, whitish green; fruit blue. Native of Guiana and Caracas.

Zonicarpa Riedelii, Schott, Prodr., p. 121.—An interesting little Aroid, lately introduced from South America. This genus constitutes the tribe Zonicarpeæ of Schott, characterised by having a one-celled ovary, and numerous ovules attached to its base. An acaulescent herb, with palmately five-lobed leaves; spadix included in and partially adnate to the spathe; female flowers 2-4, unilateral; male flowers forming a ring immediately above them and the adnate part; staminodia none. It is figured in Schott's "Genera Aroidearum." Only one other species, Z. Pythonicum, Schott, is known, also a native of America.

Grias cauliflora, Sloane, Nat. Hist. of Jamaica, t. 216.—This plant, a native of Jamaica, has been in cultivation for some years, but up to the present time has never before produced blossoms in this country. It may now be seen in flower in the Palm stove. It is a tall, unbranched tree, bearing a tuft of pendent, bright green alternate leaves, nearly a yard long. The flowers, as the name implies, are borne on the trunk, appearing in clusters, of a pure white, and are about 1½ to 2 inches in diameter. The flowering specimen at Kew is about 10 feet high, but in its native country it attains from 20 to 30 feet. It belongs to the Lecythideæ, a tribe of Myrtaceæ, distinguished by having woody, fibrous, or fleshy fruits, indehiscent, or opening at the top by an operculum as in the "monkey pots" (Lecythis). The fleshy fruits of this species are pickled and eaten under the name of Anchovy Pears in Jamaica. A portrait of it will shortly appear in the Botanical Magazine.

Vitis hypoglauca, F. Mueller, Plants of Victoria, i. 94; Cissus hypoglauca, A. Gray, Bot. American Exploring Exped., i. 272; C. australasica, F. Mueller, in Trans. Phil. Soc. Vict., i. 8. Ampelideæ.—A native of Victoria and New South Wales, growing on the banks of forest streams and rivers. A climber destitute of tendrils, having digitate and 5-foliolate leaves of an oval or oblong form, light green above, and when young beautifully glaucous beneath; flowers small, yellow, in axillary cymes. This interesting plant, now flowering for the first time in this country, may be seen in the New Temperate House, where, planted against the supports, it has reached the gallery, and is trained along the balustrade, freely producing its pretty, although minute flowers.

Banksia elatior, Br.—A very fine arborescent species of this magnificent Proteaceous genus, from the east tropical coast of Australia; leaves long, linear, subtruncate, serrate, glabrescent; flowers greyish, in large cones or spikes, 6 to 8 inches in length. Now in flower in the south octagon of the new Temperate House.

Impatiens latifolia, L., var. *bipartita*, Hooker and Thomson, Linn. Journ. vol. iv.; I. bipartita, Arn. Comp. Bot. Mag. i. 322. Geraniaceæ, tribe Balsamineæ. —A plant, on account of its straggling habit, of no great beauty, although the individual flowers, of a pale rose or lilac colour, are very pretty. A native of Ceylon, at an elevation of 5-6000 feet, raised from seeds communicated by G. H. K. Thwaites, Esq., Director of the Botanic Garden, Peradenia.

Glyphæa grewioides, Hook. fil., Hook. Ic. Pl. t. 760; Niger Flora, p. 237, t. 22. Grewia lateriflora, Don. Tiliaceæ.—This pretty shrub was raised from seeds sent by J. Monteiro, Esq., from W. Tropical Africa, and is now just coming into flower. Leaves alternate, broadly elliptical, serrate, 3-nerved, bright green; flowers yellow, in axillary or terminal cymes. An interesting plant with the aspect of a Grewia, but differing essentially in its fruit; now flowering for the first time in this country.

Eugenia myrtifolia, Sims, Bot. Mag., t. 2230; Jambosa australis, D.C. Myrtaceæ. — A handsome evergreen, myrtle-like shrub, 10 or 12 feet high, bearing a profusion of white flowers about the size of those of Myrtus communis, and belonging to the section Jambosa of the genus Eugenia, as now constituted by Bentham and Hooker in their Genera Plantarum. Native of Queensland and New South Wales. It may now be seen in flower in the New Temperate House. Introduced by Loddiges in 1820.

Panax arboreum, Forst. Araliaceæ; Hook. Lond. Jour. Bot. ii. 421, t. ii.—A small tree from New Zealand; leaves digitately 5 to 7 foliolate, on long petioles; coriaceous, varying from ovate to oblong-obovate, serrate; flowers large for the genus, greenish white, borne in terminal umbels. Besides this species now in flower, there are several other Zealand ones in the New Temperate House, as P. longissimum, Hook. f., with purple narrow-linear serrate leaves, 6 to 18 inches long; P. Colensoi, Hook. f., Fl. N Z. p. 21; the Ivy tree of Otago, whose trunk is said to exude large quantities of gum; and P. crassifolium, Dcne. and Planch., very variable in its leaves, which in young plants are trifoliolate, and simple in older ones.

BRITISH *v.* GERMAN HORTICULTURE.

[The following passages are condensed from a detailed report on the late International Horticultural Exhibition, by Professor Koch, and which extends over several numbers of his "Wochenschrift." Some of his statements will afford amusement to our readers, and show the advantages that are to be derived from International Congresses in dissipating erroneous impressions.—Eds.]

Professor Koch says that he was agreeably surprised to find that the English, contrary to what he had previously heard and read of them, were far advanced in civilisation, and extended the same kind reception to him as he would have met with in most continental countries.

He criticises the arrangement of the show, and goes on to say that, with the exception of four Tree-ferns, essentially decorative plants, for the embellishment of the whole, were not made use of. The London Exhibition contained only plants of excellent growth, and on that account he doubts whether any previous show has equalled it. It was in fact alone in its way. The plants were almost without exception of superior culture, but the exhibition was nevertheless monotonous, however remarkable that may sound; flowering shrubs prevailing too exclusively, and those of a too uniform character—the same species occurring in so many collections. This might be said not only of Azaleas, but also of Ericas, Adenandra speciosa, Boronias, Pimeleas, Dracophyllums, Eriostemons, Polygalas, &c., &c., although every single specimen would have been an ornament to a continental show. There was especially a paucity of stove foliage plants, such as are seen in the shows even of the smaller towns of the Continent. Tree-ferns and Stove-ferns generally were not well represented. Five kinds of plants are specially commented on, viz., Roses, Pelargoniums (especially the variegated ones), Heath-like plants, the mass of Orchids, and the Grapes. In these five points the London exhibition stood unassailable.

Although England may, more than Germany, be termed the country where everything is carried on with the swiftness of steam, still the splendid Pelargoniums on which years of careful attention have been bestowed, show, as far as regards plant culture, a steady perseverance unknown to the German cultivators. This may be said to be the case in a still higher degree in regard to half-hardy flowering shrubs, and may be accounted for by the wealthy amateurs of Germany not liking to see the same plants in their conservatories year after year, and by the fact that the English do not change their gardeners so often, while they pay them much better.[!]

Pansies were plentiful and good. The Germans are far behind the English with these plants in regard to clearness and beauty of marking in the flowers. Tulips and Amaryllises were good. Stocks and Heliotropes were poor. Herbaceous Calceolarias showed a perfection exceptional in Germany; the markings were altogether less motley, and the harmony of the colours much better. Professor Koch says he has seen on the Continent better Fuchsias.

Azaleas were perhaps too numerous, and being so completely smothered with flowers would have made a better impression had they been surrounded with large foliage plants. They were almost, without exception, very well cultivated; but less value is to be put on their size, as that depends upon the time they have been in cultivation; they may be seen as large in Belgium and Berlin. The boasted perfection of the flowers, taking the mass, he could not see. The flowers of an Azalea, says Professor Koch, should be pure, and in form and colour constant, but this in many of the specimens was not the case.

Rhododendrons were not as well represented as Azaleas, which he could the less understand, as the English climate is eminently suitable for their growth, and they are much sought for in England. The beautiful Himalayan and the Sunda Islands yellow-flowered ones were scarcely to be found, the latter indeed not at all. It is to be sincerely hoped that the interest for them on the English side of the channel has not died out, or that the many beautiful species introduced by Hooker, Booth, &c., have not been lost. The English appear to be masters in the cultivation of flowering shrubs and Heath-like plants.

A very fine, and the most striking specimen in a collection of 16 plants shown by Mr. Kemp, gr. to Earl Percy, was Leschenaultia biloba major. Franciscea confertiflora, in Mr. Wheeler's collection, on account of its fulness of flower, is worthy of remark. This genus does not meet with the reception it deserves in Germany.

In Earl Lovelace's collection was a very pretty Melastomacea, Pleroma elegans, with large violet flowers. Plants of the above-mentioned family, which for a time found approbation in Germany, are becoming rarer, but in English collections they appear still more rare. Remarkably fine plants of Rhynchospermum jasminoides were plentiful.

Some of the plants, Epacris for instance, whose branches naturally grow erect, had experienced a very peculiar treatment, the branches being bent over and tied down. This cannot be too severely deprecated.

The beautiful Australian shrub, Acrophyllum venosum, is scarcely known at Berlin as a show plant, though in England it was one of the features of the show.

There was a conspicuous absence of decorative Bromeliaceæ, while Pitcher-plants and Sarraceniaceæ, judging from their culture, appear to be great favourites.

Professor Koch was rather disappointed at not finding the immense Orchids he had read about in the *Gardeners' Chronicle* so often, but attributed this to the fact that many of the great Orchid growers were not represented at the show; he doubts, however, if so large a collection could be brought together in Germany. For large well-grown examples, beauty, and good culture, judging those at the show, the Germans can compete with the English, and even surpass them; this relates more especially to Vandas, Aerides, Trichopilias, Cattleyas, and, above all others, to Phalænopsis, perhaps, too, Cypripediums.

Variegated-leaved Orchids were very poorly represented, in comparison to the display of them at Amsterdam and Brussels. Palms, the great ornament of large shows, were unfortunately in small numbers. Cycads, on the contrary, were not wanting.

The fine Araliaceæ, such as were seen at Amsterdam, &c., were almost entirely absent.

The beautiful and numerous collections of Coniferæ proved that this class of plants receives its share of attention; and the English climate is admirably adapted for their growth.

Variegated plants do not appear to be so much in favour as in Germany, but the English are nevertheless masters in producing charming colours and form in flowers, as also beautifully marked leaves.

As to the vegetables and fruits, it is well known that the English do not like vegetables [!!]; and it is, therefore, no wonder that, with few exceptions, they were not only sparse, but actually bad. Forced fruits, on the contrary (in which the English are masters), were excellent. Grapes were as plentiful as though it had been the time of the vintage. It would be of scientific value to investigate how it is that the English, with less light, produce better Grapes than are generally found on the Continent under more favourable circumstances.

Pine-apples, too, were numerous, and in a perfection seldom or never attained on the Continent. Melons, Cherries, Peaches, and Strawberries were good, but the Parisian and Hamburg forcers can equal them.

Home Correspondence.

Roots versus Leaves.—Feeling interested in Mr. Fish's "Theory and Practice of Ventilation," I must confess that I was (see p. 825) somewhat startled at his assertion that plants received ten times as much food through the medium of their leaves as they do through their roots. To begin, I may as well say that I am a doubter, and perhaps there are others; and as it may be for the want of better information, perhaps Mr. Fish would kindly answer a few questions, and explain away some doubts, which may lead to our better understanding. About carbonic acid gas he may be right, but if leaves are the chief absorbents of ammonia, why do men so unwisely bury Peruvian guano in the ground and take care that the soil is not allowed to crack to prevent the escape of ammonia? and do not vegetables in general show that they appreciate the act and their power of appropriation by root in their sturdy stems, healthy leaves, flowers and fruit? Why are we, and I think wisely, advised to trench the ground and put the manure well down for such crops as Carrot, Parsnip, Beet, Salsify, &c., for the reason that the tap root will go down till it finds the manure, and there ramify, and as I suppose, feed? And why have Messrs. Skirving, Sutton, and others been trying for years to get a small-topped Swede, Mangel, Turnip, &c.? According to the advanced theory, they have made a mistake, and ought to turn round and look after the largest leaved article they can find. The success of a top-dressing of guano on a crop of Grass depends entirely on the falling of a sufficient quantity of rain to wash it into the ground, where I imagine the roots and not the leaves lay hold of it. In a field where the wind blows over it from all points of the compass, and plenty of it, can the farmer

* I have in my possession a catalogue of the plants in the garden of a Magyar of some property, with the prices attached, as in a nurseryman's list.—*Editor Journ. R. H. S.*

obtain abundant crops without applying manure to the roots? In a Vinery the watchword hitherto has been, get the roots of a Vine right and there will be both fruit and colour, that is, providing that the tops have had a fair share of treatment under the present imperfect modes of ventilation; but will even Mr. Fish assert that with the roots in bad condition, or good roots in a poor border, he can finish a good bunch of Grapes by supplying whatever he may consider good feeding stuff to the leaves? If such can be established as a fact gardeners will have much reason to thank him for the discovery. Will not the canes, leaves, and fruit of English Vineries, with all their imperfect ventilation, bear comparison with the produce of vineyards of even sunnier climes where ventilation is unrestricted? And is it not a well-known fact that the Vines, not only of every country, but almost of every district, differ in quality? Is this difference the result of soil or ventilation? Suppose a couple of Fuchsias are potted in poor soil; let them be set out of doors, and one of them watered with well-water, the other with manure-water, will the plant watered with well water keep pace with the plant treated with manure-water? Or suppose another plant of the same genus is refused the necessary supply of water to its roots, on the ground that its leaves are sufficient for feeding purposes, and if supplied with as much unvitiated air as it can use, and a feast of Mr. Fish's richest fumes, and watered over-head to boot, will it thrive? Were the plant endowed with speech, it would be very likely to cry out, give me water for my mouths, I can dine without, nor drink with my breathing apparatus. I am not sure that the organism of the Anœctochili differs widely from that of semi-succulent or other plants, but somehow they contrive, not only to exist but to show that they appreciate what must, indeed, be "stuffy and stagnant, the atmosphere of a bell-glass;" surely they must "perforce" eat pure oxygen, not the best thing in the world for them, according to theory. Now, as regards the capability of leaves to absorb more food, on the ground of their presenting a greater surface to the air than the roots do to the soil. I think this must ever remain a matter of opinion; leaves we might measure, but roots we never can. See the beautiful down-like processes that surround several inches of a young root as it passes through a space not filled with soil. I believe these processes are considered analogous to mouths; they are no doubt small ones, but they are many in number; and are we sure that these mouths are not produced by every fibre in its passage through the soil? But supposing they are not, and that roots only absorb at their points, how can we measure their power so as to compare them with the feeding power of leaves? Practice, not theory, shows us their power is very great; allow a plant to become dry and flag for want of water, and then supply it—the leaves are soon up, teaching us that the quantity taken up in a short time has been considerable. Last winter in some draining operations I saw an Elm root quite as thick as a goose's quill, cut at exactly 50 yards from the nearest tree, and from its thickness no doubt it went several yards farther. Consider the multitude of roots contained within a circumference of 100 yards, and presenting perhaps as large a surface to the soil as the leaves do to the air. We are told that the great lesson taught by the old-fashioned roofs should not be lost, and that lesson was, that a constant supply of fresh air is essential to the well-being of plants. I cannot see what proof we have that even this lesson was taught in such a forcible way. Would the plants and fruit of the old houses bear comparison with those of the present day? If the present success is attributed to superior skill, will the ablest horticulturist now say that he could grow better things in the old houses than he can do in the new ones? I venture to say I think the most important lesson gardeners have learnt from a knowledge of the old lumbering timbers, small panes, and puttied laps, is, that light is more essential than air to the healthy development of the vegetable kingdom. As Mr. Fish has referred to the highest organism in the animal kingdom in support of what he advances, I beg to suggest that he tries it practically; let him get a good breakfast to begin with, but let that be the last morsel of comfort his mouth is to have for the next 24 hours; he may breathe with all his might the purest air he can find, nevertheless I expect before the end of his term he will be ready to admit that there was truth in the proverb—"Man cannot live upon the wind." I do not wish it to be thought that I ignore the necessity of ventilation, or that I feel ungrateful or unthankful to Mr. Fish for his advocacy of the subject, but I think it is riding a hobby over hard to say that plants derive ten times as much food through their leaves as they do through their roots. *D. Buchanan, Durham Park.*

[Our correspondent doubtless remembers the famous contest "t'wixt eyes and nose," and draws his inferences accordingly.—EDS.

Rose Stocks.—Will any of your readers give me information on the subject of cutting back newly budded standard Rose Stocks? I have followed the advice of Mr. Rivers, in his "Rose Guide," watching the newly budded stock in early spring until the middle of May, or the beginning of June, and then cutting off, as closely as possible, everything above the growing bud. I took the further trouble to apply the "Forsythic mortar" to the cut, but regretted to find, in a fortnight after, a black line of disease running downwards, which will surely undermine the growing bud, and destroy the stock in another season. Any advice how to make sure that the cut will cicatrise, or as to the safest time of year in which to cut back the Dog Rose stock will be thankfully received. *Devoniensis.*

Wood of the Cedar of Lebanon.—Much difference of opinion appears to exist as to the durability of the wood of this Cedar. In Dr. Stanley's "Sinai and Palestine," chap. 14, p. 435 (2d edition), it is stated that the ceiling of the church of Helena, at Bethlehem, is of beams of Cedar. If these were examined it would settle the point, so far as concerns the wood when grown and used in its native country and climate. *C.*

Hard Soil (see p. 877).—In 1859 I planted some Cottager's Kale on hard clay ground, making holes with a "gavelock" and filling them with water previous to putting in the plants. The season was very dry, and the plants did remarkably well without further attention. *A. R. L.*

Unseasonable Flowering of Laburnum.—We have a standard tree of Laburnum here on which there are several bunches of blossoms out, and several more in bud. Is it not unusual to see so much bloom on the Laburnum at this season of the year? The head of the tree has been clipped into a spherical shape, about 3 feet through. Perhaps this severe pruning may have something to do with the matter? *C. E. F., Cirencester, Sept. 17.*

Allamanda Hendersoni (see p. 877).—This Allamanda differs from A. Schottii in several particulars. I have grown both this season for purposes of exhibition, and I have had an opportunity of judging as to their comparative merits. A. Hendersoni flowers more freely than A. Schottii, especially in a young state, and it has a better habit. The flowers are much larger than those of A. Schottii, of a finer form, and when unexpanded the bud is of a dark brown colour. The flower is equal in every respect to the plate sent out of it by Mr. Bull. Like many more I was rather disappointed in not seeing a fine specimen of it at the late International Exhibition, when many who doubt its merits would have had an opportunity of seeing and judging for themselves. *John Cole.*—— This plant flowers in a much younger state, and more profusely than A. Schottii; and the individual flowers have more substance. I have been using it, and Dipladenia amabilis, carefully wired and mossed, ever since May last for table decoration; and I find them stand well, and prove very effective amongst other flowers. I send you flowers of A. Hendersoni taken from a plant struck last autumn, which commenced flowering in May last in a 6-inch pot, and has never been without from six to 12 flowers open fresh on the plant since. I am now drying the plant off, as you will see from the wood, which will account for the flowers being smaller than usual. *W. Howard, Gardener to J. Brand, Esq., Bedford Hill, Balham.*

Rhododendron Soil.—Perceiving a notice in your paper (see p. 873) as to the best soil for Rhododendrons, I would call the attention of your readers to the following facts, and then ask for a reason for them. There are Rhododendrons in this place (on the S.E. coast of Ireland) growing vigorously on a dry shingly bank with scarcely any soil, facing due south, and without any preparation having been made for them; while in the garden with a similar aspect, and in a bed carefully prepared for them, they are sickly and puny, and have been so for some years; those on the bank are all the Rhododendron ponticum, those in the garden of various descriptions, including the R. ponticum. Many of the Rhododendrons have been removed from the garden from time to time, when apparently almost dead, and have been planted in a rich moist shady flat near a small river, and are now vigorous and thriving plants, but not much more so than those on the poor, hot, dry bank. *C.*

Viola cornuta, and other Bedding Plants.—Two years ago I planted four beds in our Italian garden with this Viola, which proved far beyond my expectation, both as regards beauty and compactness of habit. As it flowers freely, it likewise seeds freely. Having hit upon a plant so useful, and so easy of cultivation, I determined to give it a larger trial. I therefore put in quantities of cuttings in a close frame, without bottom-heat, merely inserting the cuttings in sharp sand, in which they struck root freely. But my most successful plan of getting it up in quantity was raising it from seed. Having gathered a lot of good seeds at the time I was sowing my Autumn Cabbage, I prepared a bed 2 yards square, and put in the seed as regularly as possible. The Viola did not come up as soon as the Cabbage, but the seed being fresh, it was not far behind it, and it appeared in such abundance as to soon form a carpet over the bed. Arrangements had been previously made where it was to flower the following season in the shape of masses, edgings of beds, and ribbon borders. I therefore planted it out at various times from December up to bedding-out time, and now while I write I am at a loss to say which of the plantings flowers best. But doubtless the earlier it is planted the earlier and stronger it will flower. In early ribbon borders, in broad belts, it is grand. Notwithstanding the late heavy rains, when other things look woe-begone, it is the first upon the return of fine weather to show an open countenance. I may therefore safely say that it will have its day, according to the fashion. I think brighter days are also dawning for the much-abused Achyranthes Verschaffeltii. Having seen it last autumn at one or two places, I was rather pleased with its colour and compact habit of growth. As we have an extensive chain border upon each side of a broad walk on our lower terrace, I felt disposed to give it a trial with Golden Fleece Pelargonium, link for link, matching them in pairs across the walk. Mr. Bennett, of Osberton, kindly presented me with a few cuttings of the Iresine from his flower beds about the end of October, and by the month of May I had the required quantity, viz., 1600 plants, potted off for every alternate link of my chain border. At Osberton Gardens I am happy to say that it still maintains its high character as a bedding plant. When I was at the late International Exhibition at South Kensington, I had a ramble round London, and saw this plant bedded out at several places, a circumstance which made me shudder, seeing it wagging in the wind at that dry season. On paying a visit to the Royal Horticultural Gardens, at Chiswick, I got my eye upon a nice lot hardening off, which put me in better spirits. Upon making inquiry, I found that they had been out about a month. To make sure against a failure, I kept a second string to my bow, as a failure on this particular chain border would have been rather a conspicuous blunder all the season; therefore, as a safety valve, I had the required quantity of Perilla nankinensis in store. About the middle of June I put out the Iresine, laying it flat on the ground to save it from cutting winds as much as possible. But, like other things, during the hot weather it made little progress; still, it maintained its position, and when once it got proper hold of the ground it improved amazingly, while Amaranthus melancholicus, at no great distance, succumbed to its fate. Coleus Verschaffeltii has with difficulty kept its head above water; last year it was all that could be desired, as one of the stripes of a long ribbon border. The links in the chain are surrounded with white gravel; in the centre of each link is planted standard Pelargoniums 2 feet high, viz., Stella and the old Pink Nosegay, which are flowering effectively above the Golden Fleece and the Achyranthes. Mr. Veitch called here the other day, and pronounced the display to be a great success. The combination of colour is truly grand when the sun is shining; the Golden Fleece, with its clear yellow leaves and compact habit, contrasting strikingly with the bright-veined foliage of the Achyranthes; and, surrounded as it is with white gravel, a little pinching and pegging are all that it requires to keep it in order. If the Iresine and Golden Fleece possess the property more than another, it is that a wet day detracts nothing from their lustre. *J. Miller, Manor Gardens, Worksop.*

Orchard-house Trees in Pots.—I commenced cultivating Nectarine, Peach, and Apricot trees in pots two years ago on a small scale, and I was so well satisfied with Mr. Rivers' system, that last autumn I built an orchard-house to contain 100 trees in pots. My fruit I find never drops, unless more than 24 are left on a tree, and then only the small ones drop. With regard to which is the best system of growing orchard-house trees, *i. e.*, whether in pots or in the form of bushes planted out in the border, I beg to ask, if they are not in pots how are we to remove them to the open air, so as to have a succession? I remove fully 40 of mine to the open air during June; this gives me a succession, and my orchard-house, which, during winter, will easily contain 100 pot plants, during summer would only accommodate 65 or 70. I am also, by experience, so well satisfied with Mr. Rivers' pot-culture of Grapes, that I am now building a Vinery solely for their growth in pots. *E. W. Fyffe, Box, near Stroud, Gloucestershire.*

Crossing Papilionaceous Flowers.—The difficulties referred to by Mr. Darwin (see p. 756) as having occurred to himself, Gartner, and others in cross-fertilising Papilionaceous flowers, and which have led to the adoption by Mr. Darwin of the very ingenious cups proposed by him as artificial receptacles for the pollen to be applied to the seed-bearing variety, have induced me to send you the results of my own experiments in crossing the common garden Pea during the past season. They have been obtained without the aid of any artificial receptacles for the pollen, and by simply emasculating the seed-bearing parent whilst the anthers were in an immature state, at once making a single application to the pistil of the keel-petal of the male parent containing mature pollen; and as the ratio of success obtained by me during this and several previous years appears greater than that which fell to the lot of Gartner, the experiments in question may be worth recording. Amongst 104 inter-crosses tried this year between several of the popular varieties of the common Pea, I have obtained 58 pods, which may be designated of average fertility, and containing from four to 10 Peas; 32 pods containing from one to three Peas; and the remaining 14 being either abortions from the pods containing no seeds or from the flowers not setting, and consequently no pods being formed—giving a total of 90 pods, containing 413 Peas, as the result of 104 crosses. As similar results have in previous years followed my operations on the Pea, I conclude that Gartner's experiments failed, either from the flowers of the seed-bearing parents being injured in the operation, from the pollen being applied either in an immature state or in insufficient quantity, or from wet or damp (both of which are very injurious to the fertility of pollen) penetrating to the organs of fructification; and to the latter cause of non-fertility the work of opening the flowers for artificial crossing renders them more readily liable. I have conducted these operations upon the Pea principally with a view of satisfying myself that a change of colour sometimes takes place in the seed obtained as the immediate result of crossing two varieties of different coloured seed. That such does at times occur I have furnished myself with ample evidence, but I have this year noticed some changes of colour of such a singular nature that I may perhaps be excused for chronicling them. The effect of crossing the striped-seeded Sugar Pea as the seed-bearing parent with the Purple-pod Pea (which produces a greenish-buff coloured seed) as the pollen-bearing variety, has been to produce a pod, in colour partly purple and partly following that of the pod of the Sugar Pea, and containing seven Peas, some of them being of a clear violet purple colour, and the remainder of that colour mottled with olive. I shall watch with interest the produce of these seeds as springing from parents different not only in colour of seed, but also in shape and substance of pod; the inner membrane of the pod being absent in the female (a characteristic of the Sugar or edible podded Peas); whilst the pod of the male parent is of the ordinary character of Peas, the seeds only of which are edible. In another cross between a bright Grass-green seeded variety as the seed-bearing parent and the Purple Pod as the pollen bearer, I have obtained a pod of the colour of the female parent, containing six Peas of a bright yellow

colour. Although I have succeeded thus far with the Pea, the same quantum of success has not attended my experiments amongst other genera of the Papilionaceous class; but probably to wide diversities of size and variety may be attributed my non-success. *Thomas Laxton, Stamford.*

Double-blossomed Peas.—I forward you specimens of the double and semi-double blossoms of the garden Pea. They were taken from a very fertile single-stemmed seedling of upright growth, and about 5 feet in height; the original stems at the time of gathering were bearing well-filled pods of nearly-ripened Peas in full quantity. From constant daily observations of this variety I am convinced that the early blossoms were all single. The second growth produced chiefly double blossoms, but where the offshoots were lengthened the upper flowers seemed to get more semi-double towards the point, and some of the final blossoms were entirely single. The semi-double flowers were in some cases forming pods apparently fertile. It was too late to obtain ripe seed this season; I have, however, marked and saved for seed some of the semi-double blossoms which appeared to be setting, and will report to you the result of their produce, if successful, on a future occasion. I have seen the same occurrence in two other instances. Since writing the above I have examined another row of the same variety in another garden, and there I found the same tendency of double blossoms in the second growth. I have also examined other varieties growing side by side under similar circumstances, and have observed a solitary instance only. I am inclined to believe that the cause suggested by Mr. Darwin—impaired fertility—has been at work here, as the first blooms were all single and fertile, and were all, at the time of the opening of the double blossoms, ripening their seed. It would seem as if, after the drought of July, the succeeding rains had started a second growth from the ripening stems, which had already expended their fertility, and that the organs of fructification had become abortive, and the flowers double from exhaustion of the plant. *Thomas Laxton, Stamford.*

Semi-double Verbenas.—I send you a bloom of a peculiar seedling Verbena. The plant has produced flowers of a similar character to the one sent, all through the season; some have been slightly different, having two or three extra petals or florets surrounding the eye. I have been assuming most to be pure flowers with their own pollen, thinking that they may perhaps in the course of time produce a perfectly double Verbena. *J. Wills, Huntroyde Gardens, near Burnley.*

Flower Beds.—Among a great variety of bedding Pelargoniums grown here Stella has undoubtedly borne the palm, and I agree with Mr. Fish in placing Cybister next in order of merit. Spread Eagle is only fit for a small bed, and in this part of Ireland (Westmeath) where continual showers have been the order of the day for a long time, it does not display itself at all to advantage. I am glad to find that Mr. Fish reports Lord Palmerston to be a good bloomer. For size of truss, profusion of flower, and continuity of bloom it is unequalled by any I have seen. One bed here has been a sheet of colour since the week it was planted (towards the end of May) until it was cut into somewhat severely for cuttings a few days ago. Mrs. Pollock has grown as vigorously as for Mr. Gold; Christine, I think, still holds the first rank as a pink—Mrs. Whitty is not nearly so good. A circular bed planted with Excellent (zonal Pelargonium) in the centre, and surrounded by a broad belt of Cerastium tomentosum, has been very pretty up to this time, but of late the Cerastium seems to melt away, I suspect from the constant wet weather. Is this usual, or is there any remedy for the evil? Iresine Herbstii is looking very gay now, but it was rather dingy early in the season; Coleus Verschaffeltii is only "so-so;" Amaranthus, after giving a good deal of trouble, is now very good. *Alpha.*

Camellia, Lady Hume's Blush (see p. 875).—This may be wired without falling to pieces by any practical hand; and when put up even "A." himself shall not be able to tell whether it is wired or not. *W. Howard.*

Iresine Herbstii.—Mr. Bennett, of Osberton, was one of the first to bring this really useful bedding plant into notice, and it is now beginning to be generally acknowledged that he spoke the truth and nothing more as regards its suitableness for cut-flower decoration. Last spring I planted several round beds of it, edging them with Cerastium tomentosum, and by al ittle trimming and pinching of the young shoots, they are the most compact, and, at present, the prettiest beds in our flower garden. Near the Iresine is a bed of Amaranthus melancholicus, edged with Golden Chain Pelargonium, which looks quite threadbare compared with that which contains the Iresine. *Isaac Watson, gr. to Sir J. Trollope, Bart., M.P., Casewick, Stamford.*

——I quite agree with your correspondent, "J. M. Y." (see p. 829), that soil has a great deal to do with the growth of fine-foliaged plants. Here Iresine Herbstii is looking well, and has succeeded perfectly since the day in which it was planted out. All who have seen it pronounce it to be the best they have seen. I gave the ground in which it was planted a good dressing of rotten manure from an old Melon bed; the plant is, in consequence, now 2 feet 6 inches in height; some of the leaves measure 3 inches across, and are excellent in colour. It is edged with variegated Honeysuckle. It did equally well last year. Coleus and Amaranthus have succeeded very well with us, but I am of opinion that for exposed situations the Iresine is superior to the Amaranthus, which is sooner damaged by wind and rain. I have a bed of Mrs. Pollock and one of Mrs. Benyon Pelargonium, both edged with Iresine; I allowed the latter to grow about 6 inches, and then I pegged it down. It threw up shoots at every joint, and makes a very pretty edging. I ought to add that it was planted out on May 14th. With plenty of manure and water the Iresine would doubtless grow 3 feet or more. I should be glad to show it to any one who may call. *D. Parish, gr. to the Rev. W. Heberden, Great Bookham, Surrey.*

Rhododendrons.—On my invitation you have given me valuable information, and on your invitation (p. 874), I offer my experience on the subject. My situation is on the declivity of a hill, the aspect northwest, oneen to the setting sun; on the south it is bounded by hills higher than my grounds, and on the east with many running three miles to the base of Snowdon. There are spoads on the land, and a rivulet running through. The soil on which grew my plants was virgin soil—Heath and wild Gorse the product. The Rhododendrons planted along the rivulet and the banks were most prolific, as also the Portugal Laurels and the common Laurels in every direction—the latter most abundant, and cropped down annually, the leaves forming an excellent under-bedding in the horse stalls, and adding to the farmyard compost. In reference to the soil it has no energy—it gives only a *locum standi.* I believe that these evergreens draw their nourishment from the air; and the condition of a most suitable atmosphere, shaded, the south wind prevailing, with the attraction of the mountain moisture, provides the required conditions. As to the soil itself, it will not grow a garden Turnip without plenty of manure. The same of bog peat, which has no energy, and is burnt only in the powdered state for the growth of young tender roots in cuttings of Laurels or layers of Rhododendrons. The Irish Ivy, of which I send you a specimen leaf [very large], grows here most luxuriantly on brick as well as stone towers; and if the brick tower were raised 500 feet, the Ivy would reach the summit, drawing its nourishment from a congenial atmosphere, and the guano of sparrows clustering in it. The soil was only the virgin earth, sufficient to give the Ivy root, and was afterwards covered with gravel, on account of the walk. The Irish Yew also succeeds well. In Greek we find the expressive words which in our language read —"Know thyself." A man succeeds only in certain atmospheric conditions of climate. The food he takes will not otherwise satisfy the conditions of nature. His mouth, with that of other animals, stands instead of the roots of the vegetable nature. A cow is a pedestrian and a tourist, and like man travels the fields, whether by instinct or fashion, for the best nourishment and healthy air. The coat of an Alderney stares here frightfully, and craves for emigration. *B. B. C.*

Adiantum farleyense.—In your paper of Aug. 25 occurs a letter from Mr. Bray, in which he says that the report published by you at p. 730 concerning the abovementioned Fern, "certainly contains some truth, but not the whole truth." The report states that the plant exhibited at Kensington was introduced by T. D. Hill, Esq. (from whom the particulars published were derived), and was presented by him to Col. Miles. Mr. Bray admits this to be truth, but adds, "It is also true that the plant was resuscitated, propagated, and sent out from here," a circumstance which in no way clashes with the original report, which I consider contains all the information that was really necessary to be known, namely, by whom the Fern was introduced, and from whence; its habit of growth, name, &c. Mr. Bray's letter would lead one to infer that the Fern was presented to Colonel Miles in the condition in which it was exhibited in 1865. Such however was not the case, for when sent here it was a small plant in a 5-inch pot. When shown at Kensington it measured 3 feet in height and 2 feet 3 inches through; and the same plant at the International Exhibition measured 4 feet in height and 3 feet 9 inches through. I have now one large specimen plant and 12 smaller ones grown from offsets. I believe this mode of propagating it to be the most certain way of getting them true. *J. Green, Gardener to Colonel Miles, Barton Hill, Malmesbury, Wilts.*

Bulbocodium vernum.—Is this plant, which Mr. Robinson mentioned last year (pp. 675 and 868), identical with Trichonema Columnæ, noted in your pages by David Cameron only a short time before his death in 1848? And is the representation of the plant in force in Sowerby's "English Botany" (Plate 2549) faithful and just? If it be so, it does not promise much in the way of beauty; nor do I understand why, as I find stated in a catalogue, it is "best known as the Red Crocus." *Diss.* [Bulbocodium is quite a different thing from the British Trichonema Columnæ, and much more resembles a Colchicum, to which genus, indeed, it is related. See the figure in "Botanical Magazine," t. 153. EDS.]

Tom Thumb Pelargonium.—Will some one of your correspondents kindly tell us the origin of the Pelargonium named Tom Thumb? *George Willers, Gonville Nursery, Cambridge.*

Societies.

ROYAL HORTICULTURAL: *Sept.* 18 (*Floral Committee*).—S. Rucker, Esq., in the chair. The chairman alluded in suitable terms to the loss which the Society had sustained in the death of Mr. Blundy, of which event notice was taken by us last week (see p. 849). It was also stated that the dates of meetings for the month of October, as given on the outside cover of the Society's Almanack, were wrong; but that those in the body of the Almanack were right—a correction to which it is well to direct attention. As regards subjects of exhibition, Mr. Turner, Slough, contributed a charming basketful of the new bright orange-scarlet Nosegay Pelargonium, called Lady Constance Grosvenor. Messrs. Barr & Sugden furnished a variety of Alternanthera, called A. spathulata rosea, which proved a badly-coloured form of A. paronychioides. Cut blooms of a beautiful lilac and white striped Verbena, called Lady of Langleybury, was shown by Mr. Cruikshanks, gr. to W. Jones Lloyd, Esq. This was stated to have been obtained from Purple King, and if it prove to be equally good in habit with that variety, it will, doubtless, be a valuable sort for beds. It received a First-class Certificate. A Seedling Pelargonium, named Miss Beatrice Shove, with bold greenish-yellow leaves, and cinnamon zone, came from Mr. Marsh, gr. to W. Shove, Esq., Riverdale, Lewisham. From Mr. Standish came various Anemones raised from seeds furnished by plants of this genus, similarly. Their leaves were prettily mottled, and spotted with different shades of yellow, and among them will doubtless be some strikingly beautiful varieties. A Special Certificate was awarded them. Mr. Mann, Brentwood, exhibited various tricolor-leaved Pelargoniums, among which was one named Phidias, which being nearly related to Golden Harkaway, a very dwarf kind, may prove useful for small beds or edgings. Conspicuous among seedling Dahlias, of which several were shown, were Lord Lyon, purplish crimson; Valentine, white tipped with purple; and Flambeau, yellow, heavily suffused with warm brownish red, to all of which Second-class Certificates were awarded. These, as well as Starlight, a promising kind, golden yellow, tipped with reddish brown, were contributed by Mr. Turner. Mr. Bragg received a Second-class Certificate for the blooms of Mrs. Gerald Wellesley, white, heavily edged with purplish crimson; Mrs. Burgess (Burgess), violet shaded crimson, also received a Second-class Certificate; and to Pope's Gem, a fancy variety, formerly described by us, a First-class Certificate was awarded. Mr. Collier, Bethnal Green, furnished a kind called Salmon King. To Mr. Rawlings was awarded a Second-class Certificate for Aurora, rosy lilac; and from the same exhibitor were also blooms of John Sladden, a very dark variety, to which we have alluded in former reports. From Mr. Wheeler, of Warminster, came Vanguard, a tricolor, in the centre with yellow, a variety to which a Second-class Certificate was awarded. Mr. Eckford, Coleshill, also showed Seedling Dahlias. Messrs. Stuart & Mein contributed spikes of Hollyhocks, to one among which, named John Downie, salmon crimson, a Second-class Certificate was awarded. These had evidently suffered more or less from travelling. From the Gardens of the Society came a collection of plants consisting of Orchids, Lantanas, Petunias, and various zonal Pelargoniums, conspicuous among which were Clipper, Bonnie Dundee, Lucius, Pink Beauty, and Persian. From Mr. Eckford, came Saccolabium Blumei, bearing two beautiful spikes of flowers; and from Mr. Anderson, gr. to T. Dawson, Esq., Meadow Bank, Glasgow, came cut blossoms of Odontoglossum grande, which for size and brightness of colour have seldom or never been equalled: they received a special award. The pale yellow flowered Oncidium cruentum was shown by Mr. Ward, gr. to A. Berrington, Esq., Abergavenny.

Sept. 18 (*Fruit Committee*).—Mr. Jones, Petworth, exhibited a dark red-coloured seedling Plum, which was stated to be excellent in flavour, but as some doubts were entertained as to whether or not it was different from others already in cultivation, the decision of the Committee respecting it was deferred till another meeting. Apples came from Mr. Cruikshanks, and yellow Peaches, ripened on standards out of doors, from Mr. Sifkin, Sharesbrook. From the Society's garden came Lisbon and Sweetwater as good dessert kinds of blackish Grapes. Some Peaches and a purple Plum, of Belgian origin, were shown by Mr. Whiting, the Deepdene, Dorking. From Messrs. Veitch came different varieties of Savoys, among which were the Dwarf Green Curled, which is one of the hardiest of all Savoys, and the Early Ulm, which is an excellent kind for small gardens, being comparatively small in size, and on that account requiring little room. Mr. Wrench, London Bridge, furnished Early York Cabbages, and different kinds of Onions, all apparently varieties of the Tripoli. From Messrs. Veitch came Nuneham Park and White Spanish Onions, obtained from different localities in which they had been grown side by side, and the difference between the samples in point of size was very great, the White Spanish in all cases not being half as large as the Nuneham Park. It was stated that Mr. Whiting, to which Mr. Whiting would produce good samples of White Spanish, of which the Nuneham Park, notwithstanding the difference in size just adverted to, is considered to be a well selected stock.

Sept. 19 (*Weekly Show*).—Messrs. Barr & Sugden exhibited on this occasion an interesting collection of Onions, to which were White Spanish, Flat Trebons, and Nuneham Park varieties, which as shown all bore so great a resemblance to one another as to be undistinguishable without their labels. There was little or no difference between them in point of size, each measuring 1 foot 8 inches in circumference; but on weighing them the Nuneham Park proved a little heavier than either of the sorts just named, of which the lightest was the White Spanish. The three sorts in question were grown side by side in the Society's garden at Chiswick.

BRIGHTON HORTICULTURAL: *Sept.* 12 & 13.—This was held as usual in the Royal Pavilion, in which the display of flowers and fruit was both brilliant and extensive, but on the first day the weather was most unfavourable, rain falling heavily throughout the afternoon. Perhaps the strong point of the show was the fruit, which was in abundance and exceedingly good. Pine-apples were large, and excellent. Grapes both for size of berry and weight of bunches were very fine, particularly black Grapes. Peaches, Nectarines, Pears, Plums, Apples, Figs, &c., were all good and in abundance, competition in some instances being very close. The most attractive feature in this department, however, were the collections of 10 dishes, for which the 1st prize was the Brighton railway cup, value 10*l.*, the 2d prize 5*l.*, and the 3d 3*l.* Mr. J. Bristow, gr. to G. Orme, Esq., Broadwater, Worthing, obtained the cup with a superb collection.

A marquee on the lawn, opposite the Pavilion were the stove and greenhouse plants, among which was a magnificent Pleroma elegans, covered with rich deep bluish-purple flowers. This was exhibited by Mr. Hudson, gr. to F. Barchard, Esq., Horsted Place. Amongst others shown by the same grower were Ixora Duffii, Hoffordi, Ixora coccinea superba, and the bright yellow Allamanda cathartica, and the pink Bougainvillea glabra. The collections shown by Mr. Parsons, Western Road, Brighton, and Mr. A. Wright, gr. to Mr. R. Morris, St. Leonards, Hastings, were also good, and received deserved notice. Orchids, Lilies, Ferns, Bedding Plants, and Cut Bouquets were all excellent, and they were arranged so as to be highly effective. In a booth at the north end of the lawn were zonal Pelargoniums and miscellaneous plants and fruits not for exhibition. A collection of hardy Ferns, shown by Messrs. Iverey & Son, Dudley, was highly attractive.

Among designs for flower gardens, that exhibited by Messrs. Geer & Son, Erskine Nursery, Hurst, was exceedingly well done. Mr. Knight, Nurseryman, Hailsham, furnished a large collection of Apples and Pears. There was also a collection of tricolor-leaved Pelargoniums, exhibited by Messrs. Smith, Bulwich. Among these a First-class Certificate was awarded to three very handsome varieties, viz., L'Empereur, Imperatrice Eugénie, and Murillo, and a Second-class Certificate to Eclipse, Maria, and Defiance. Three plants of Cacti in pots shown by Mr Upton, Brighton, were very large and effective.

Here, too, were 10 pots of Globe Amaranthus exhibited by Mr. Gadd, gr. to C. G. Eversfield, Esq., Denne Park, Horsham. Some long well-grown Cucumbers deservedly attracted attention. A new Scarlet-runner Bean named Premier, and the Pea Pre-eminent, shown by Mr Adam Sparv, Chailey, received each a First-class Certificate, as did some Orchid pots exhibited by Mr. J. Meeds, Potteries, St. John's Common.

In the banqueting room Variegated leaved plants were most effective. At the west end was a beautifully-grown Tree Fern, with large, graceful, drooping fronds hovering over a group of most lovely ornamental plants, amongst which were in great perfection Yucca aloifolia variegata, Croton angustifolium, and two well-grown Caladiums, exhibited by Mr.

Hudson. In Mr Osman Rhodes' collection were fine plants of Zonal Pelargoniums, Bilbergia zonata vittata, and Abcasia metallica. Dahlias in the All England division were on a table in the centre of the room, and were highly attractive both for beauty and size of blooms. Among the best in the following were the best, viz., Paradise Williams (Keynes), red, full, and fine in form, with plenty of petals, and a good centre; Gem (Pope), a fancy of the finest quality, dark maroon-tipped with white, the rest of its class. Illust Gem (Keynes), white, full, fine, and good; a fine, well built and compact flower; Vice-President (Keynes), large pale buff, a good variety. Mr. Keynes also exhibited several promising fancy varieties, about which, however, there was little novelty. Mrs. Burgess (Burgess) is a curiously marked flower, maroon in colour, with wide stripe of pale violet up the centre of each petal, very novel; Hon. Mrs. G. Wellesley (Bragg), white, heavily tipped and edged with carmine crimson, a pleasing and constant flower; Aurora (Rawlings), peach blue; John Standen (Rawlings), very dark maroon; Vulcan (Wood), maroon, tipped with buff, a useful flower in its class. Harmonia (Turner), yellow, with a dense edge of light crimson, very good and one of the chief novelties of the season; Starlight (Turner), yellow, tipped with red; Lord Londesborough, violet, a truly feminine flower, of a pleasing and soft shade of colour, and the style of Lord Derby. A tastefully arranged group of ornamental plants was exhibited by Mr. Spary, Queen's Graperies, and Western Road, Brighton. They stood at the window fronting the Lawn, and were not open for competition.

The drawing-room, next to banqueting room, was devoted principally to flowers and fruit. Roses here were highly attractive. The exhibitors of 48 varieties of three trusses each were Messrs. Paul & Son, and Mr. Mitchell, Piltdown. Messrs. Paul & Son contributed a very beautiful Musical Noll flower in exquisite perfection, which, Knight's fay, was 2886; members tickets, &c., 1303; making 4189 admitted during the day, independently of the exhibitors and their friends. On the first day, Wednesday, the number admitted was 1656.

The greatest credit is due to the Committee and to all concerned, for the arrangements under the management of Mr. Spary, were excellent; but the rain on the first day put a damp on the success that usually attends this fashionable gathering. For the list of prizes, which were numerous, we are unfortunately unable to find room.

Notices of Books.

The Geographical Distribution of Mammals. By Andrew Murray. 4to. pp. 420, and 100 Maps. London: Day & Sons.

This is a work of considerable importance, and we should add of much merit; its author has set to work with a will to produce a book that shall be comprehensive, intelligible, and attractive, and we add with pleasure that he has succeeded in his task. Mr. Murray is well known for various valuable contributions to entomology and other branches of zoology; he lays no claim to being profoundly versed in Mammalia, but he is not, therefore, a mere compiler; his pages are full of shrewd observations, and he knows well how to classify his information and digest the matter.

Moreover, Mr. Murray is the apostle of a new hypothesis of the origin of species, and the expounder of a new application of the facts of geographical distribution to classification, and a disturber of the prevalent doctrines of British palæontologists. With all this he writes as a reasonable man, fully impressed with the importance of his subject, and of the responsibility of questioning the opinions of his brother naturalists, and, whilst ever anxious to do justice to their views, he treats themselves and their labours with generous appreciation. Considering, therefore, the strength of his own convictions, and that they pervade the whole work, colouring every argument and some facts, this is very much to Mr. Murray's honour.

"The Geographical Distribution of Mammals" is the first volume of a series, which (as we gather from itself) the author proposes should embrace the whole animal and vegetable kingdoms. Following Schouw, Alphonse De Candolle, and Van der Hoeven, he proposes to treat each kingdom under a geographical point of view first, and then under a zoological and botanical one respectively. This volume is devoted chiefly to the geographical zoology of mammals, or the ranges of the tribes, genera, and species of that order, but contains two concluding chapters on mammalian regions. After some lengthy preliminary discussions, the various orders are treated in their sequence, under one or more chapters, which teem with interesting information, and are abundantly illustrated by excellent maps, on Mercator's projection, in which the areas, the animals, or groups of animals under discussion, inhabit, are noted by colours.

It is with the preliminary discussions that the readers of the *Gardeners' Chronicle* have most concern, devoted as they are to the vegetable kingdom even more than to the animal; for, indeed, though it is not so stated, these chapters appear to be introductory to the whole work. Mr. Murray first treats of the origin of species and of specific centres. In this he proclaims himself a convert to Mr. Darwin's views, in all but his theory of natural selection, which he summarily rejects, avowing that he does not do so, only on scientific grounds, but also from personal conviction, that this cannot be a *vera causa*. For the doctrine of natural selection, which requires that the changes that eventuate in different species should be very slow and cumulative through a succession of individuals or pairs, and that these changes appear in the main independent of conditions, Mr. Murray substitutes the hypothesis that the required changes are sudden, and act simultaneously in all the individuals of a species. He founds this neither on facts nor observations, and owns that it is a perfect mystery to him how such changes should be effected; but he feels that it must be so, and finds in the feeling an escape both from Mr. Darwin's fallacy of natural selection, and Agassiz' heresy of multiple centres of creations. This is no place to enter the lists: all we can do is to put his views before our readers, and criticise his method. Thus Mr. Murray does not fully appreciate Mr. Darwin's views, for he affirms that this author put no check to variation, and that "he makes ample provision for instability, none for stability," which is notoriously not the case, the very root of the theory of the origin of species (*i. e.* of stable series) by selection, consisting in the fact that though the numerous offspring that each individual or pair gives rise to, do all differ from one another, some are so like the parent as to take its place, and that these are the ones that will take its place. Mr. Murray says that "the law which secures the stability of a species is *inertia*," we must confess to being no less puzzled to understand how *inertia* can be a law, than amazed by the explanatory statement that follows, viz., that "so long as species are not meddled with they stand still: give them an impulse of any kind, and variation commences." How are we to reconcile this with the fact of seeds from one pod producing different varieties, even in a state of nature?

Happily Mr. Murray's views do not in any way interfere with his treating his subject freely, much as he would have done had he been a hearty Darwinian, the essence of the difference between himself and Mr. Darwin lying in this, that Mr. Murray conceives that species are stable, and produce none but identical forms till external conditions change, when they begin to breed varieties suited to the changed conditions; whilst Mr. Darwin maintains that species are unstable, always producing forms more or less differing from the parent, and some of which (those most like the parent) are best suited to the parent's conditions, whilst others, being better suited to other conditions, are thus prepared to meet new circumstances.

If we understand Mr. Murray aright, a plant of Wheat transplanted from a loamy to a sandy soil will consequently, on the changed condition, produce grains all better suited to a sandy soil than to any other soil, the condition affecting all its progeny equally and similarly. According to Mr. Darwin, a plant of Wheat, whether grown in sandy or loamy soil, will produce seeds, some of which are better suited to sand, others better fitted for loam, and others to still other conditions: the fact of the plant having been grown in sand or loam having very little to do with the matter. In Mr. Murray's case we get a yield at once better fitted to crop a sandy soil than a loamy; in Mr. Darwin's we must, if we want a crop suited to sandy soils, go on sowing in sandy soil, and choosing from each successive crop the most productive individuals to propagate from again.

Mr. Murray's illustration of his process from Babbage's analytical machine again is a pure fallacy, and it is a misuse of the word law, to apply it in the same sense to the varying phenomena of life, and to the definite sequences in which numbers must run. It is no doubt true, that, as Mr. Babbage told him, he could so set the machine that it should go on producing a series of numbers until a certain concurrence of circumstances should take place, and that then, though the time of such concurrence could not be foretold by him, a new law would come into operation; but we fail to see the parallelism to anything that takes place in Nature. If it has any parallel at all in biological science, it is to be found in such facts as the metamorphosis of insects, not in the change of species, whether dependent or independent of conditions.

Lastly, Mr. Murray leaves out of the question a whole class of phenomena, that every other thinker on the subject regards as fundamental; viz., the adaptation of species to conditions; this, he says, "is a phenomenon of a different nature, and regulated by other laws, the working and nature of which does not come within the scope of this inquiry. I offer no opinion here upon the subject." He goes on, however, to say, that he feels sure that it is not by the process supposed by Mr. Darwin, viz., "by Nature trying an infinity of experiments and rejecting them all, until she hit upon the right one. Nature never makes chips." But Mr. Darwin could answer that Nature does make more chips, as they are here called, than perfectly adapted individuals, and that of this the slightest reflection would assure any one. What are the young hedge-sparrows that the cuckoo turns out of the nest to die, but Nature's chips? and a glance at Mr. Darwin's pages on this subject will supply a multitude of far stranger cases of unselfish Nature being at war with herself and chipping away for the general good. If in the apparently simple operation of securing the succession of a race or species, Nature creates a multitude for every one that comes to maturity, and thus carries out her ostensible object—what are such but chips? or beings unsuited to the conditions to which they were born? *i. e.*, of arriving at maturity and propagating their kind. It is no answer to say that they are created to fulfil the general conditions of life, by affording food to other animals, and so on; in this sense they are not chips, but this is not the sense in which Mr. Murray uses the term, as a reference to the passage in point will show. After discussing the origin of species Mr. Murray goes on to their dispersal, arguing in favour of any amount of ancient continental extension to account for the dispersal of species from islands to continents; but so long as he thinks nothing of raising continent and ocean, and a great deal of the power of such a barrier as the English Channel in stopping the northward migration of French plants, we cannot but regard him as in this particular, straining at gnats and swallowing camels.

The 3d chapter is devoted to Geological considerations, and the 4th and 5th to the Miocene Atlantis and Glacial period, in which we expect the geological readers will find a good many bones to pick; and the remainder of the work being purely zoological it concerns us only to recommend it, and what goes before it, heartily to the whole cultivators of that science, as a very valuable but very paradoxical work.

CATALOGUES RECEIVED.—*J. Linden's* (Bruxelles) *Plantes Exotiques Nouvelles et Rares.* This contains descriptions of many new plants, from which we glean the following particulars:—*Anthurium regale* (Linden), described as equal or superior to the Anthurium magnificum, which has obtained in this country the erroneous name of A. cordifolium. Its heart-shaped leaves are very much acuminated, upwards of 2 feet in length, and passing during their development from blood-red to chestnut, olive yellow, and finally to emerald green, the surface being satin-like and traversed by white projecting veins. The discovery of this plant is due to M. G. Wallis, who gathered it in the deep ravines furrowing the eastern declivity of the Peruvian Cordillera, near the banks of the Upper Maranon.—*Aphelandra ornata* (Anderson), introduced in 1858 from Jacobina in Brazil, by M. Porte. It is a fine plant, remarkable for its brilliant green leaves, silvery white in the centre; for its purple stem 6 to 8 inches in height, and its bracts of the same colour; and for its spike of large flowers of a lively yellow.—*Calathea* (*Maranta*) *Lindeniana* (Wallis), classed among the most beautiful of recent discoveries, and held to be quite equal in marking to Maranta Veitchii, with the advantage of greater transparency. M. Wallis, who found it in Peru, on a tributary of the Amazon, calls it the "jewel of the forests," "the *ne plus ultra*" of the genus.—*Dimorphanthus mandshuricus* (Ruprecht), from Mandshuria, a noble Araliaceous plant, suitable for the open ground. The multifid leaves acquire upwards of 5 feet in length, and as much in breadth; and are of a bright green on the surface, and glaucous beneath. The trunk and under part of the leaves are furnished with spines. It is destined, M. Linden adds, to contribute greatly to the ornamentation of our parks and gardens.—*Gustavia brasiliensis*, ornamental, with large oval, lanceolate leaves, and flowers 4 to 5 inches across, of a rosy-white; sent from the Rio Negro by M. Wallis.—*Maranta* (*Phrynium?*) *rosco-picta* (Linden), from the Upper Amazon, discovered by M. Wallis between Iquitos and Loreto. The medium-sized roundish-oval leaves are of a obscure green with metallic reflections, and ornamented with a central band and a disc of the finest carmine; the under surface being an intense red.—*Passiflora helleboriifolia* (Wallis), a charming species from the Rio Negro, sent by M. Wallis. It has pedate leaves, and pale rose flowers with a violet centre.—*Passiflora macrocarpa* (Wallis), a vigorous-growing species with a quadrangular stem, large, oval, obtuse leaves, and white and purple flowers. The fruits, which are of a very delicate taste, acquire, according to M. Wallis, a weight of 8 lb. or upwards. It is from the province of Rio Negro.—*Rhopala aurea* (Linden.), a very elegant species, discovered by M. Libon in the southern parts of the province of St. Catherine; its specific name alludes to the golden-coloured hair which covers the upper parts of the stem and petioles.—*Rhopala serratifolia* (Linden), a very distinct plant, of elegant habit, from the same habitat as the preceding.—*Philodendron Lindeni* (Wallis), a rival to the Anthuriums magnificum and regale, and one of those remarkable plants for which a place of honour ought to be reserved in all collections. Its heart-shaped leaves attain a diameter of 1½ foot; their upper surface presenting on a ground of soft satiny green, bars of dark metallic green. In the young leaves, the ground is pale very clear yellow, with the bars chestnut-coloured. The whole plant is dazzling and indescribable. It was found by M. Wallis in the Republic of Ecuador.—Of new Orchids M. Linden mentions the following:—*Cattleya maxima* (Lindl.), a marvellous species, and the king of Cattleyas. M. Wallis found this noble plant, in the epiphytal state, in the southern parts of Ecuador, between 2000 and 3000 feet above the sea. The appearance of this species is that of Lælia elegans, with this difference, that the pseudobulbs are monophyllous, and that each stem bears from 10 to 20 flowers. M. Linden has specimens bearing 47 flowers on three stems, each flower having the dimensions of that of Lælia purpurata, the sepals and petals of a very bright rose purple, and the labellum gracefully fringed, of a deep carmine, strongly veined, margined with white, and crossed in the centre by a band of a golden yellow.—*Cattleya bogotensis* (Linden), a fine species from the Cordilleras at Bogota, in New Grenada. The flower is very large, of a pure white, with a spot of a pale yellow in the throat.—*Cattleya quadricolor* (Batem.), the flowers of which, a little smaller than those of *C. bogotensis*, have the sepals of a snow white, the petals very large, lightly tinted with rose; the labellum rose at the base; the interior of the throat of a golden yellow surrounded with white, and the extremity occupied by a large triangular spot of the brightest purple. A variety called *C. carnea* differs in the rose and purple tints of the lip being replaced by flesh colour.—*Cattleya Ruckeri* (Linden) bears flowers from five to seven in number on a stem, and having the form and size of those of *C. bogotensis*; the petals and sepals pure white, the lip white with all the interior of the throat of a bright yellow colour.—*Lælia Wallisii* (Linden), a remarkable species, discovered on the banks of the Rio Negro by M. Wallis. Its very large flowers are white, and the lip yellow, pulverulent at the extremity.—*Odontoglossum Hallii* (Lindl.), a splendid species with large yellow flowers, strongly spotted with brown, the lip white and purple; it comes from Chimborazo, where it grows up to an elevation of 12,000 feet.—*Odontoglossum cirrhosum* (Lindl.) comes from the same

localities; its stems bear up to 200 flowers of a golden yellow, dotted with carmine.—*Odontoglossum cristatum* (Lindl.), from Peru; flowers yellow, spotted with purple.—*Odontoglossum angustatum* (Lindl.), a magnificent species from Ecuador, the stems bearing 100 flowers, of a pure white, dotted with carmine.—*Odontoglossum luteo-purpureum* (Lindl.), a very fine species from New Grenada, with large flowers, 4 inches in diameter, yellow, spotted with purple.—*Oncidium acinaceum* (Lindl.), a charming Peruvian species. The sepals are white, the large obcoval petals violet bordered with white, and the lip of the same colour, rayed with carmine. This species does not resemble any other of the genus.—*Oncidium cucullatum* (Lindl.), a brilliant species, with red labellum, dotted with black; grows to a great elevation in the Columbian Cordillera. It was found on Oaks near Las Vetas, in a locality where the earth, hardened by frost, was covered with snow.—*Oncidium Diadema* (Linden), a magnificent species, with large pseudobulbs, and a branched stem from 2 to 3 feet in height, bearing 100 flowers, of which the petals and sepals are of a shining chocolate brown, and the lip of a fine yellow; the extremities of the petals, joined together above the column, present the aspect of a diadem. This species is from the temperate-cold regions of the equator.—*Oncidium macranthum* (Lindl.), a splendid species with climbing stems; the flowers more than 3 inches in diameter, with purplish brown sepals, yellow petals, and a purple lip with a white crest.—*Oncidium auroseum* (Rchb. fil.), a very fine Peruvian species, with a robust panicle of more than a foot in height; the petals, sepals, and labellum are of a golden yellow, spotted and dotted with purple.—*Oncidium leopardinum* (Linden), a fine species from Peru, recalling in its pseudobulbs and flowers the *Oncidium tigrinum* of Mexico, but having the advantage of bearing stems from 2 to 3 feet high, covered with from 65 to 100 flowers.

The Apiary.

FAILURE AND DISAPPOINTMENT.—In the letter with the above heading, from "T. D.," which appeared last week, there are a few points which appear to merit some observation, and as the writer alludes personally to me, I am induced to offer him the benefit of any little experience I may have had in some of the matters to which he adverts. I am truly sorry to see one, who is evidently no small enthusiast on the subject of bees, writing under a feeling of such great disappointment and depression, but I trust this may not prove to be permanent, and that he may yet find good cause for satisfaction in ultimate success, and reap the full benefit of his past experience. At the same time I cannot see that "T. D." has sufficient cause for his feelings of despondency, nor can I admit that he has proved himself to be "too old to commence any new-fangled methods of manipulation;" or that he "was rash and presumptuous in beginning," to him "a novel system of bee-keeping." He has undoubtedly shown that he possesses considerable aptitude in the management of bees on scientific principles. His success (previously related) in the transference of stocks from common hives into frame-hives, and in the forming of prosperous artificial swarms, as well as in other matters of detail, proves him to be neither rash nor presumptuous, nor too old to depart from the beaten track, and march with the times on the new road of progress.

Proceeding to the consideration of the various points raised by the letter of "T. D.," I first come to his account of the attempt to rectify the position of the combs in the frame-hive. In this I think he was wrong in not having previously disturbed the bees, which might have been easily accomplished by driving them into an empty hive. Then the task would have been comparatively easy. The hive being reversed, the combs could be detached by the aid of a curved knife. There would then have been no danger of their falling, or of portions of the comb giving way. Then each comb being laid sideways on a table or board, could easily be adjusted to its desired position in the frame. Any crookedly built combs could have been straightened by being first exposed to a gentle degree of warmth before a fire, and then laid horizontally on a table, a board with a weight being placed above, and allowed so to remain for about 10 minutes. After all the combs had been fitted into their frames, and arranged in position in the hive, the bees would be returned by knocking them out of their temporary house of refuge on to the tops of the frames.

"T. D." in the next place seems to cast a sneer at the (as he calls it) "much extolled" Woodbury hive. I believe that frame hives, whether made after the Woodbury pattern or otherwise, are the greatest boons to apiarians, and have been productive of wonderful results in facilitating manipulation, as well as in the acquisition of knowledge of the habits and instincts of the bees. They have also proved to be hives capable of remunerating largely. In my own practice, having experimented with almost every known kind of hive, I can safely say that I have never met with any form or description that at all equals them, whether considered in a scientific or in a remunerative capacity.

Of the capability of our friend to adopt a new system of bee-keeping I have already spoken; I can only add that it would afford me much pleasure to receive a visit from him, and show him all that I can of my mode of carrying out my manipulations, provided he will give me due notice of such intention.

With regard to the number of hives which can be judiciously kept in the rather limited garden, I should think that 12 would be sufficient, and would be likely to prove quite as remunerative as a larger number.

On the savage nature of the bees, as described by "T. D.," it is difficult to give an opinion. It is certainly a very great drawback to the pleasure of keeping bees, the inability to go among them fearlessly and unharmed. I cannot do it myself, being a favourite mark for the venting of their displeasure and animosity. In the simplest operations I am compelled to wear a bee dress. When so protected by defensive armour, I care not how violent may be the attack of the angry warriors. Both apiaries and single hives will differ very much in this respect. One of my apiaries, from being less frequently visited than the other, has much more irascible populations than the other, which is more under my own immediate care. Then, again, there are certain hives in either apiary which I can single out from the rest as surpassing them in irritability. The only advice I can give, is to go about your bees with as much frequency as possible, unprotected by a dress except when performing operations. By this means, not only are the chances of attack from individual bees much lessened, but even when serious manipulations are attempted, the bees will most probably exhibit far less resentment. This is decidedly my own experience. "Driving bees," again, possesses wonderful charms in subduing them, and I find it a good plan to thus dislodge the tenants of any stock conspicuous for irritability, the effects of which rough treatment will be manifest for a considerable time afterwards.

A correspondent below advises "T. D." to smoke a cigar. Not being a smoker myself, I cannot speak as to its efficacy, and I suspect that both "T. D." and myself would hardly care to become occasional smokers, much less devotees to the weed for the sake of being able to walk among our bees with impunity.

I have often heard complaints that bees in the neighbourhood of heather do not seem to reap any benefit from the pasturage. It is my belief that they gather more honey from it than is usually thought to be the case. In such districts, breeding is carried on later and more abundantly than in ordinary localities when the honey harvest is over early in July. Consequently a much larger supply of honey and pollen is required for present consumption. A few years since I removed several of my hives to the heather; their gain in weight during the month of August varied from 5 lb. to 12 lb.; while every hive not removed from home, lost fully 3 lb. during the same period. To reap the full benefit of a visit to the heather, the hives must be stationed close to it, or in the very midst of it. A distance of 2½ miles is too far to be of the slightest benefit. This I have proved by actual experiment. In conclusion, I hope "T. D." will not be disheartened by what may appear to him at present very great drawbacks, if not insuperable difficulties; but go to work with renewed energy, and determination to overcome every obstacle. *S. Bevan Fox.*

Spiteful Bees.—Your correspondent "T. D." complains that his bees are spiteful and so vicious that he cannot approach them. If he will adopt the simple plan of approaching them with a lighted cigar in full operation he will find his difficulties disappear. *X. X.*

Garden Memoranda.

CULFORD HALL, THE SEAT OF THE REV. EDWARD RICHARD BENYON, M.A.—This stands near to the Brandon Road, about four miles N.N.W. of Bury St. Edmunds, Suffolk. It was built in 1591 by Sir Richard Bacon, half brother of the great Chancellor, and came by marriage into the Cornwallis family. It continued for years their principal seat in this county, and was rebuilt by the first Marquis after his return from his brilliant achievements in India. The late Marquis Cornwallis, shortly before his death in 1823, sold nearly the whole of his Suffolk estates; and Culford was bought by Richard Benyon Beauvoir, Esq., of Englefield House, Berkshire, the uncle of the present proprietor. Culford estate includes the five parishes of West Stow, Ingham, Timworth, Wordwell, and Culford, and extends over 12,000 acres. The soil, as might be expected from its extent, is varied; its general character being light, resting on a subsoil of chalk and gravel, although some portions are heavy—good bricks being made on the estate. With the exception however of the Heath good crops are reaped from most of the land. The park extends over 500 acres, and is remarkably well wooded, especially to the north of the house. It contains some fine specimens of Beech, Oak, Elm, Horse and Spanish Chestnut. One remarkable Oak within sight of the carriage front looks as if it might have stood for a thousand years. The park is further embellished by a fine piece of artificial water of great length, formed by a tributary of the river Lark. We have heard that this water was laid out by Repton, and its skilful disposition is not unworthy of his great powers. About a quarter of a mile from the mansion the water is spanned by a handsome iron bridge, which was erected at a cost of 10,000*l.* by the Marquis Cornwallis on his return from India. The chief approach to the mansion was then carried across this bridge, and the West Stow carriage-road still passes near to it, the other entrance being in Culford village. Entering at a very neat, new lodge, almost opposite to a new school recently erected for a village library and reading room as well as school, the carriage-road winds past shrubs and specimens of Conifers towards the house. There is a line of nice thriving plants of Pinus austriaca on each side of the drive, which have replaced an avenue of Cedars of Lebanon and Deodars that were killed here with the severe frost of 1860. Passing on we observe four alms or endowed houses for widows, and nearly opposite a new church of great beauty. It is built of flint, with facings of Caen stone, and finished with a four-cornered tower of remarkably chaste proportions. The church was of great age, and contained some fine monuments of the Bacon family. Within a very few years it has been entirely rebuilt at the sole expense of the present proprietor, who during the time he has resided at Culford has either rebuilt or repaired, or is now about doing so, the whole of the churches in his five parishes, and erected an entirely new church on Culford Heath for his distant parishioners, with a munificence as princely as it is rare. He has also built new schools at Ingham. Passing the church, and leaving the mansion (a large building without much pretension to architectural grandeur) to the left, we turn towards the right, pass the stable-yard, and approach the kitchen garden. This is of regal dimensions, containing 11 acres, all surrounded and intersected with walls, varying in height from the lowest of 6 feet to those of 10 and 14 feet. It has a gentle inclination to the south, and the soil is light, resting on a gravelly bottom. It is intersected by two walls, running east and west, and thus thrown into three, or rather four compartments. The whole is surrounded with good walks, from 6 to 12 feet from the walls, and about 10 feet wide; a main walk also pierces through the centre of the garden from top to bottom, and other walks in the largest compartments intersect this at right angles, throwing the vegetable ground into manageable squares or parallelograms.

Entering the garden at the north door, however, it is some time before one can get a glimpse of any of these features. Right in front is the gardener's cottage, and on either side of the walk is a broad border of the current year's seedling Pelargoniums, which present such a display of new and dazzling beauty that they positively rivet one to the spot. I tried many times in vain to describe say six of the best of them. It was like choosing the belle out of 500 young ladies, all characterised by many distinctive features of loveliness. Not that all these seedlings are alike good; but no sooner do you fix upon one of a class as the best, than another starts up to dispute its claim. And that is just what they are here for, as this is Mr. Grieve's great proving ground. Those he considers worthless are treated just like annuals, and thrown away at the end of the season; those that are hopeful are grown on another year; and the decidedly good are of course carefully saved and increased. One of the chief features about them was the uncommonly good quality of the bloom, pinks, cerises, and whites largely predominating. Mr. Grieve hopes yet to give us a blue. Leaves were also there in every variety of colour, from purest white to almost every tint of bronze, crimson, yellow, black, and green. One had a leaf brighter if possible than Lucy Grieve, and about three times the size. Another had a horse-shoe zone nearly black, with a magnificent truss of salmon-coloured flowers; a third had a yellow leaf splashed deeply with green, with pure white flowers; a fourth was a golden tricolor, with the finest circular pink flower; a fifth had a golden margin, bright pink zone, overlaid with dark, almost black, a green disk and pure white flowers; a sixth, but it is useless to attempt it—suffice it to say, that Mr. Grieve has as much or more for us in the lap of the future as we have yet received from him in the past, and that is saying much

On the left of the door by which we entered is an Apricot house, nearly 200 feet long. It is 12 feet high at back and 7 in front. It was erected against a wall, covered with Apricots, to insure a crop at once. Lights, 3 feet wide, are permanently fixed beneath the coping, and to a rough beam in front. Between each of these permanent lights a movable one, 16 inches wide, is placed. These small ones can be drawn up and down as the weather and other circumstances require in the spring, towards the end of May they can be taken right off for the summer; ample ventilation is thus secured without any labour. The first 2½ feet in height of the front consists of weather boarding; above that, lights, made on the usual way, in fact old frame sashes, are fixed in lengthwise; these are 6 feet long; between each of the lights a space of 6 feet is left unglazed. A long piece of frigi-domo is hooked up the whole height of the front as soon as the Apricots begin to move in spring. In cold weather this is let down over glass and vacant spaces alike, and of course as soon as all danger from frosts is over it is taken quite away, and the vacant space is left open. Mr. Grieve informed me that it was only let down a few times this season. Along the whole front a row of very fine bush Apricots are planted out; these, as well as the wall, are literally smothered with fruit. This is largely attributed to the ample ventilation. The same trees, when in pots in the fine orchard-house close by, never have a full crop. It is but justice to state that the merit of inventing this very efficient house is due to Mr. Benyon, who is an enthusiast in orchard house matters. On the right of this house is a Vinery, 35 feet long by 13 feet 6 inches wide, for Muscat Grapes, laden with fruit; and a Peach house about the same size. The trees are trained on a wire trellis, about 28 inches from the glass, have borne well, and are making fine wood. On the same wall is the earliest Vinery, 23 feet by 9 feet, and with a sharp pitch; it shows rods that mean fine fruit next April. At right angles with these houses, stretching quite across this compartment towards the chief range of glass, at each end, are placed a magnificent span-roofed orchard house, 80 feet long, 20 feet wide, 12 feet high in the centre of the span, and 6 feet at the sides. The outer sides are composed of moveable glass, worked the whole length by a bar of iron attached to the lights by elbow joints. Each end above the doorways also opens, and the ventilation is thus liberal and efficient. One of these houses is heated and the other not; and the ground floor of each is also arranged differently. One has a bed in the middle, 6 feet wide, with a path of ornamental tiles, 3 feet wide, leaving the space at the sides for borders; the other has a similar but wider path down the middle merely. The beds of soil in each case are raised about a foot above the level of the paths. In the first house fine pyramidal Peach and Nectarine trees, 12 ft. high, are planted out in the centre. Between each on each side a Cherry is also planted out. It is the intention ultimately to devote this centre border

entirely to the Peaches. One side border is devoted to Plums, the other to Cherries in 20-inch pots. The Cherries were gathered, but the Plums were a very fine crop, and the Peaches looked well. In the other orchard house, Mr. Grieve, who prefers planted-out trees to those in pots, has adopted a novel mode of culture. Along each side he has planted out about 6 ft. apart, fine pyramidal Peach and Nectarine trees, and forced them up against a wire trellis, about 18 inches from the glass roof. These are to be kept stopped and spurred, almost the same as if they were in pots, and the entire roof covered in this way, instead of tying in the wood in the usual manner. The appearance will be that of an amphitheatre of Peach and Nectarine trees, reaching downwards from 1 to 2 feet from the glass, and the results doubtless sacks of fruit. Along the sides of the paths are rows of fruit trees in pots, one side of the house being devoted to Pears, the other to Peaches and Nectarines. All the best varieties of fruit in each class are grown in these houses. Time only permits of our noticing a few of the best Plums. The Early Prolific was one of the earliest, and the following among the best:—Reine Claude Berg, Reine Claude Violette, Kirk's Purple Gage, Golden Gage, Green Gage, Jefferson, Washington, and Coe's Golden Drop.

Returning along the back of the chief range of glass, where the usual sheds, storerooms, offices, young men's rooms, &c., are situated, we observed a very fine collection of superb plants of Azaleas, a quantity of Epacrises, and other hard-wooded plants for decorative purposes, and an immense stock of Roses in pots for forcing. Also some fine canes of pot Vines, trained up a wall for next year's work. This compartment of the garden is devoted to fruit culture. Gooseberries and Currants are planted in rows 6 feet apart, and the same from plant to plant, and trained as rough pyramids to stakes 10 feet high. The effect is good, and the produce fine. This mode of training also facilitates the gathering, and affords an easy means of protection from birds. The nets are fixed to the top of the stakes, the sides enclosed, and thus, while any one may enter and gather the fruit with comfort, the birds are excluded. By substituting fine canvas or bunting for netting, even wasps may be set at defiance, and good Gooseberries be had all through October. Between the fruit bushes, one or more rows of Strawberries are grown. On a piece of wall here there was a capital crop of Muscadine Grapes. In another part, a Vine of the same variety covers 100 feet of coping, and requires it.

Proceeding onwards the Melon ground is entered, and one is struck with the number of Pinks, Scented Pelargoniums, &c., preparing for forcing. Here are several ranges of pits, three of them heated, in all about 250 feet. The Cucumber house, just planted for winter work, 21 feet by 8; the Melon house promising well, 39 feet by 11; and the Strawberry house, 31 feet by 17. This house holds about 600 plants, and is furnished with a stage that brings the plants within 2 feet of the glass. For first main crop Mr. Grieve adheres to Keens' Seedling; 2d, Napier, an excellent Strawberry that carries well; and the last, British Queen, probably still the best Strawberry grown. In all about 1200 pots are grown.

Re-entering the garden and turning to the right, we at once come to the chief range of glass. It is about 340 feet long, and consists of five Vineries, a greenhouse, a plant stove, and a glazed verandah in front of the gardener's cottage, open in front, in which good Muscadine Grapes are grown. Those spaces that were originally left vacant between the houses have quite recently been filled up with Beard's patent mode of glazing. These connecting links have a light and elegant appearance, and very much increase the comfortable enjoyment of the range in wet weather. The Vineries looked remarkably well, and regularly hung with fruit, the chief sorts being Hamburghs, Lady Downes', and West's St. Peter's—which last, however, Mr. Grieve has just grafted with Lady Downes' and Alicante. The Muscat Hamburgh is in great favour, and the Golden Hamburgh in bad repute as to quality; in fact, it is looked upon as worthless here. The Grizzly Frontignan is also much esteemed, as it must ever be, for flavour, and the White condemned for its shanking propensities. The greenhouse was prettily furnished with Celosias, zonal Pelargoniums, Fuchsias, &c., and along the front several of the new Clematises were flowering. In the stove some fine Begonias, Caladiums, &c., were found, and the roof was furnished with the elegant foliage and the brilliant flowers of the always welcome Passiflora kermesina. On the back wall a plant of the Euphorbia splendens was, as it ever does, lighting up the wall with a few of its brilliant blossoms. In another house a very large plant of Acacia vestita was growing as if it meant to cover the whole. The Stephanotis floribunda occupied the back wall of the early Vinery. In one of the Vineries a nice stock of winter decorative plants were growing—Euphorbia jacquiniflora, Sericographis Ghiesbreghtii, Centradenias, Begonia insignis, a most useful variety, B. Saundersiana, and B. parviflora, and Aphelandra Leopoldi. In another part of the garden is a Paxtonian Fig-house, 130 feet long and 10 wide. The front of the roof is raised sufficiently high to allow of bush Figs planted out to be grown. The trees were very healthy and laden with fruit. Before leaving the glass structures it may be well to notice that the water supply is excellent. Large soft water tanks save nearly all the rainfall, and most of the houses are furnished with storing tanks sufficient for a day's consumption. In connection with the outer tanks small pumps are fixed, either outside or inside the houses, and the first thing every morning all these inside tanks are filled. Thus the water gets warmed before it is used. The Vine borders are 18 feet wide, and supported by a retaining wall 2½ feet high. The piers are each surmounted by a vase of the same height, filled with Culford Rose Pelargonium, one of the best for this purpose. Next the wall a broad band of Mignonette runs the whole length of this border; secondly, Lobelia; then rows of some of the best Pelargoniums—Lady Cullum was superb—Calceolarias, &c. A striking feature is made on the Vine border by introducing nine oval baskets of corrugated iron, 8 feet long and 1 foot deep, without bottoms, and tastefully filling them with mixed plants. Returning to the raised terrace formed by the houses and their borders to the front of the gardener's cottage, two of the finest characteristics of Culford present themselves. These are the flower garden, which pierces right down through all the compartments of the kitchen garden, a distance of 220 yards; and the Yew hedges. The former unveils its rich beauty to the eye of the beholder like an open book, with outspread leaves of glory, the latter affords the requisite concealment to the quarters of vegetables. *D.*

(To be Continued.)

Calendar of Operations.

(For the ensuing week.)

As has been already stated, all sorts of evergreens should be planted as soon as the ground will bear treading on after the large amount of rain which we have had. Any shrubs or trees considered too tender for our climate should be planted in as warm situations as possible, in order that their young wood may get well ripened. The stronger-growing Roses in very exposed situations may be at least partially pruned, in order to prevent winds from swaying them so as to affect the roots. Laying turf and other ground operations may be proceeded with.

FLOWER GARDEN AND PLANT HOUSES.

All walks and drives should now, if not already done have a thorough cleaning; this will carry them through till next spring. Let lawns be well rolled, and receive a good mowing close on the heels of it, which will keep them in repair for some time to come. Dutch bulbs should be largely cultivated where a fine display is required; and where hardy shrubs are forced for the decoration of the conservatory, they should now be put in order for this purpose.

AURICULAS.—See that frames in which these are to be wintered have a proper pitch, and that all the glass is sound, so that the plants may not be subjected to drip, which would infallibly ruin them. Free circulation of air should at all times be promoted. When properly managed few flowers are more hardy than the Auricula.

DAHLIAS.—Flowers from which it may be desirable to save seed should now have attention; as they wither, the decaying florets should be extracted. Seedlings, especially weak late-blooming ones that give any evidence of merit, though they may not be quite up to the mark in every respect, should be taken care of, to be tried again, as high cultivation another season may induce a more favourable development of their good qualities. Should the weather clear up, some fine blooms may yet be expected.

HYACINTHS.—These should now be procured, potted, and placed in a cool dark place to make root. Out of doors will do, provided they are well covered over with cinder ashes or Cocoa-nut refuse. When well rooted they may be started into growth in heat as required.

TULIPS.—The time is approaching when all Tulip beds of the best description ought to be properly arranged for planting, so that the bulbs may be got into the ground in good time.

FORCING GARDEN.

CUCUMBERS.—Do not permit young plants to overbear themselves. It is much better to insure a constant moderate supply by judicious management, than to obtain over-abundance at one time, and little or nothing at another. Maintain a temperature of about 70°, and keep the atmosphere moist and agreeable for the growth of the plants.

FIGS.—Where any are ripening keep the atmosphere as dry as can conveniently be done. Keep the shoots thin and neatly tied in, so as to expose them fairly to light and air, but avoid stopping at this season. Where the fruit is swelling keep the atmosphere moist, giving the foliage a good washing with the syringe.

PEACHES.—The house which it is proposed to force early may now or soon be got ready for work. The surface of the borders, if exhausted by repeated waterings, should be carefully taken off with a fork, and replaced with fresh soil. Worn-out trees, if any, may also be replaced by bearing trees from the open walls.

PINES.—If circumstances should render it necessary to subject a portion of the stock intended for fruiting to a brisk temperature at once to induce it to start, the most promising plants should be very carefully selected for the purpose, and placed in a small house or pit by themselves. It is not, however, by any means desirable to start more plants into fruit at this season than may be absolutely necessary, for they will furnish finer produce later in the season. Where a separate house cannot be commanded for those which must be subjected to a high temperature, we would recommend the plants selected for fruiting to be placed in the warmest part of the house at command, filling the rest of the compartment with young stock.

VINES.—Let late Grapes have every attention as to thinning out decaying berries, and thorough ventilation, with occasionally a little fire-heat if the weather should become damp.

HARDY FRUIT AND KITCHEN GARDEN.

Continue to look over fruit and other stores frequently, in order to see that all is sound.

BROCCOLI.—Forward plants should be earthed up as they advance in growth.

CAULIFLOWERS.—Prepare stations for plants which it is intended to protect with hand-glasses; the soil for them should be rich, and the position, if possible, should be under a south wall; some put nine plants under a good-sized hand-glass, and in spring take five or six of them away, and plant them elsewhere.

PARSLEY.—Endeavour, as far as circumstances will permit, to have a good supply of this; for there is generally a large demand for it, and in the event of a severe winter it is difficult to save it by the ordinary protection of hoops and mats.

POTATOS.—Owing to the extreme wetness of the weather no opportunity should be lost to get fine Potatos that are ripe out of the ground, and stored in a dry room in rather pits, with a little dry earth sprinkled among them, or in airy dark sheds. Before storing, however, take care, as has been already recommended, to separate the bad ones from those that are sound.

STATE OF THE WEATHER AT CHISWICK, NEAR LONDON,
For the Week ending Sept. 19, 1866, as observed at the Horticultural Gardens.

Sept.	Moon's Age.	Barometer.		Temperature.					Wind	Rain.
				Of the Air.			Of the Earth 1 foot deep.			
		Max.	Min.	Max.	Min.	Mean	1 foot 2 feet			
Thurs. 13	4	29·933	29·808	66	50	58·0	59	58½	W.	·40
Friday 14	5	29·631	29·132	65	42	53·5	60	59	W.	·02
Satur. 15	6	29·692	29·624	65	43	54·0	60	59½	S.W.	·04
Sunday 16	7	29·532	29·15	64	43	53·0	59	58	S.W.	·14
Mon. 17	D	29·887	29·697	65	30	47·5	59	58½	W.	·02
Tues. 18	9	30·016	29·915	63	51	58·0	58½	58	S.W.	·02
Wed 19	10	30·046	29·866	67	54	53·5	59	57½	S.	·03
Average .		29·821	29·614	65·1	43·3	54·1	59·2	58·3		·77

Sept. 13—Cloudy, very fine, overcast, heavy rain
— 14—Showery; low white clouds, boisterous, clear intervals, fine
— 15—Clear and fine, masses of low white clouds, clear, rain
— 16—Fine, becoming overcast, showery, low clouds, rain at night.
— 17—Fine, masses of white clouds, very fine, below freezing at night.
— 18—Fine, heavy clouds, fine, overcast, rain
— 19—Partially overcast, showery, frost at night.

Mean temperature of the week, 3 deg. below the average.

STATE OF THE WEATHER AT CHISWICK,
During the last 40 years, for the ensuing Week, ending Sept. 29, 1866

Sept.	Average Highest Temp.	Average Lowest Temp.	Mean Temp	No. of Years in which it Rained	Greatest Quantity of Rain.	Prevailing Winds.						
						N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.
Sunday . 23	66·4	46·1	56·2	20	1·21 in.	2	7	8	2	6	10	3	2
Mon. 24	66·1	44·4	55·2	18	0·75	2	9	3	1	6	11	6	2
Tues. 25	66·0	43·8	54·9	18	0·30	2	4	4	3	4	11	8	1
Wed . 26	65·7	43·9	54·8	19	0·49	1	3	4	3	3	11	9	2
Thurs . 27	65·5	44·7	55·1	22	0·57	2	2	6	3	5	11	9	2
Friday . 28	64·9	44·8	54·4	21	1·44	1	1	6	1	6	11	9	2
Satur. . 29	65·4	44·0	54·7	21	0·81	1	2	3	4	5	10	9	2

The highest temperature during the above period occurred on the 25th, 1852 therm 82 deg., and the lowest on the 29th, 1863—therm 23 deg.

Notices to Correspondents.

FRUITS FOR WALLS: *J W. Demerara.* East and west aspects: *Apples.*—Wormsley Pippin Golden Reinette, Early Nonpareil, Ribston Pippin, Cox's Orange Pippin, Blenheim Pippin, Boston Russet, Reinette du Canada, Court of Wick, Old Nonpareil, Scarlet Nonpareil, Sturmer Pippin. *Pears.*—Williams's Bon Chrétien, Jargonelle, Beurré Bosc, Louise Bonne, Marie Louise, Thompson's, Winter Nélis, Comte de Lamy, Beurré Clairgeau, Suffolk Thorn, Glou Morceau, Easter Beurré, Ne Plus Meuris, (with Knight's Monarch for Pear stock). As you intend to train the trees to the *cordon* principle, the Apples ought to be on the Paradise stock; the Pears on the Quince; and even on these we fear the trees will recall to your mind by that mode of training that a dry Continental climate is very different from the moist one of Dumfries. *J.*

FOG: *M O.* The mould is not Raceblum cellare, but Penicillium glaucum. It certainly is not unwholesome when eaten in small quantities, as blue mould in cheese, but if spreading much amongst the Gooseberries it would, we imagine, make them unpalatable. Mould would not grow on the Gooseberries if properly secured from the air and corked when the contents of the bottles were at boiling temperature. Bottling fruit, however, requires a good deal of skill and experience to be quite successful. *M J B.*

HAWS: *D & Sons.* Mix them in sandy state as possible with sawdust or finely-powdered charcoal, and export them in casks.

LIMES: *W E.* Plant now if convenient.

NAMES OF PLANTS: *E C S.* 1, Erythræa latifolia; 2, the small plants E. pulchella, and taller unbranched one E. littoralis; 3, a dwarf state of Cuscuta Epithymum, Agrostis alba.—*T Davis.* 2, Senecio maritimus? the other fragment we do not recognise.—*Perseul* Your Orchid is probably a Maxillaria, but the flower was too much crushed for identification, and you do not say whether the flowers are solitary or spiked. —*F R.* It is the Virginian Tobacco, Nicotiana Tabacum.—*A E.* 1, apparently Aparga autumnalis; Pedicularis sylvatica; 3, Gnaphalium uliginosum. *S TH.* 1, Blechnum Spicant; 2 and 4, Athyrium Filix fœmina; 3, Lastrea dilatata.—*C M F.* 1, Polystichum aculeatum; 2, P. angulare; 3, Lastrea spinulosa; 4, Lastrea dilatata; 5, Polystichum angulare proliferum; 6, Lastrea dilatata collina.—*Rusticus.* 1, Sorbus (Adenorachis) grandifolia; 2, Abies (Picea) Lowiana; 3, Cupressus Lawsoniana; 4, Biota intermedia. You must, however, be aware that with the exception of two or three of the best-marked species it is impossible to name Cypresses with any confidence from small twigs.

PELARGONIUMS: *G Smith.* In the state in which you send the two Golden Tricolors they are not equal to some of those already known. What they may become when more established it is useless to speculate.—*W Groom.* The flowers had fallen. The small golden leaf is distinct and pretty, nearly half the disk marked with a radiating blotch of bronze; surrounding this, filling up the spaces, a broad band of flame red, and a clear narrow margin of gold. The other small one is interesting—almost wholly brown, with a narrow edge of bright green. We will print your remarks next week.

PETUNIAS AND PELARGONIUMS: *J Barker, Godalming.* Both are pleasing selections, well varied and good. The Petunias especially are very pretty, some having purple star-shaped centres set in white, wh le others are beautifully striped in the way of Mrs. Ferguson. Of selfs there are also great variety, as well as mottled and veined sorts, and their size and substance are all that can be desired.

VINES: *M S.* It is quite wrong to denude the Vines under the notion that the leaves hinder the sun from ripening the fruit. Read Lindley's "Theory and Practice of Horticulture," and consult also Thomson on the Vine.

WORMS: *V K C.* Worms in pots may be dislodged by the use of clear lime water, a few applications of which will not be detrimental to the generality of plants. Rhododendrons, however, and such like subjects dislike it.

COMMUNICATIONS RECEIVED: A. H.—A. Dean.—G. Smith.—Prof. Morren.—W. T.—A. G. M.—D. T. Fish.

LAWES' MANURES.
The Manures manufactured by J. B. LAWES for the present season of 1866 are now ready for delivery at his Factories, at the following prices, per ton:—

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LAWES' PATENT TURNIP MANURE, and BONE SUPERPHOSPHATE of LIME	6 6 0
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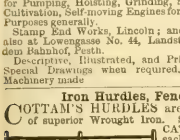

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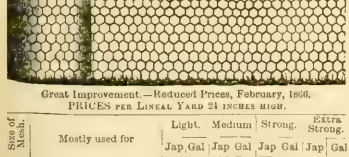

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PRICES PER LINEAL YARD 24 INCHES HIGH.

Size of Mesh	Mostly used for	Light. Jap	Light. Gal	Medium Jap	Medium Gal	Strong. Jap	Strong. Gal	Extra Strong. Jap	Extra Strong. Gal
in.		s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
2½	Dogs or Poultry	0 2½	0 3½	0 3½	0 4½	0 5½	0 6½	0 6½	
2	Poultry	0 3½	0 3½	0 3½	0 4½	0 4½	0 5½	0 5½	0 7
1⅝	Small Rabbits, Hares, &c.	0 3½	0 4½	0 4½	0 5½	0 5½	0 6½	0 6½	0 8
1¼	Smallest Rabbits	0 4½	0 5½	0 5½	0 6½	0 6½	0 8	0 8	0 10
1	Pheasantries, Small Birds, &c.	0 8	0 10	0 9½	1 0½	1 1½	1 4	1 7	1 10
	Aviaries, Window Guards, &c.	0 11	1 1½	1 1½	1 3½	1 4	1 7	..	..
½	Aviaries, Window Guards, &c.	1 7	1 10	1 10	2 0	2 0	2 3	2 3	2 6
¼	Aviaries, &c.	2 3	2 6	2 6	2 9	..	..	..	..

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SMITHFIELD CLUB SHOW.
AGRICULTURAL HALL, ISLINGTON, DECEMBER 10 to 14.
IMPLEMENT DEPARTMENT.
The LAST DAY for receiving Applications for Space for Implements and Machinery, &c., is OCTOBER 1.
Printed Forms of Application, with Rules and Regulations, may be obtained of Mr. DAVIS FULLER, Assistant Secretary, at the Office of the Honorary Secretary, Corner of Half Moon Street, Piccadilly, London, W.

SMITHFIELD CLUB FAT CATTLE SHOW.—The ANNUAL SHOW of FAT CATTLE, SHEEP, and PIGS, will be held at the AGRICULTURAL HALL, ISLINGTON, on MONDAY afternoon, December 10, and Four following Days.
Intending Exhibitors are requested to apply for Certificate Forms by the reference letters as under.

CATTLE.—Form A.	For an OX or STEER (in any Class).	
,,	B.	For a COW or HEIFER (in any Class).
,,	C.	For a BEAST in Extra Stock.
SHEEP.	,, D.	For a PEN of 3 WETHERS (in any Class).
,,	E.	For a SINGLE SHEEP in Extra Stock.
PIGS.	,, F.	For a PEN of 3 PIGS (in any Class).
,,	G.	For a SINGLE PIG in Extra Stock.

ENTRIES for LIVE STOCK CLOSE NOVEMBER 1.
Prize Lists, Forms of Certificates, and all information may be obtained on application to Mr. DAVID FULLER, Assistant Secretary, at the Office of the Honorary Secretary, corner of Half-Moon Street, Piccadilly, London, W.
N.B. All communications respecting the Show must be addressed to the Assistant Secretary, as above, and should bear outside the words "Smithfield Show"

The Agricultural Gazette.

SATURDAY, SEPTEMBER 22, 1866.

By a purely legal fiction every man is presumed to know the laws of his country, and perhaps so far as those laws relate to the right of property and the concerns of every-day life there is a sufficiently profound general knowledge current, irrespective of Acts of Parliament. The great test of the efficacy of the legal institution is applied when an emergency arises which makes it necessary to provide that things which have by long usage become matter of right, are no longer to be permitted. A short time ago every owner of a cow or sheep could in the natural course of events drive the animal in any direction he pleased, and, if so minded, send it to any market, and failing to realise the anticipated profit, could bring it back to his homestead in peace. If while in the exercise of this privilege it had been hinted to him that a time was at hand when the strong arm of the law would restrain the movements of his cattle and sheep along the public highway, and prevent him sending a beast to a particular market, he would in all probability have estimated the suggestion as we ordinarily estimate the ravings of a lunatic. Nevertheless at the present moment this wonderful change has occurred, and things still go on at the average rate. Much grumbling has been indulged in, numerous suggestions have emanated from those particularly who have no reason to trouble themselves at all about the matter, while those most interested seem to have relapsed into the belief that nothing can be done, and that we must wait and see what will happen. They plead somewhat plaintively in some cases, and forcibly in others, that they don't understand how the matter really stands, and by way of illustrating their difficulty take a great delight in putting all sorts of hypothetical cases.

Setting aside, however, the problems which are constructed with malice aforethought in the mind of the objector, there is no reason to question the fact that, purchasers and sellers of stock are commonly puzzled and confounded when the question suddenly presents itself, as to what is to be done with their beasts; and under the present circumstances a man could not more completely distract his worst enemy than by presenting him with a dozen Short-horns, on condition that he should at once remove them to his premises situated in another county.

In the endeavour to throw a little light upon the obscurity of the whole question we crave our readers' indulgence if we should happen upon the, by means remote, contingency of perpetrating an egregious blunder, or even more than one; not being learned in legal lore, we can only review the orders bearing upon the subject as they stand, and explain in common terms our notion of the meaning of certain technical clauses.

Taking the metropolis to begin with, we venture to state in decided terms that not one cow, or ox, or other bovine animal coming under the denomination of cattle, can be moved alive out of the metropolitan district under any circumstances, or by any legal process whatever, unless the person owning such cattle shall have part of his farm or premises within and part of them without the metropolis, in which case he may, with a licence from the Commissioner of Police, which licence is to last during seven days, move from one part of such premises in the metropolis to another part of the same premises out of the metropolis, any healthy animal that has been in his possession for 28 days previous to the date of the licence. If, therefore, an animal has been recently purchased and placed on such premises, the owner must wait for the period of 28 days before he can move it to any part of his farm situated outside the metropolitan boundary. If he should sell any animal within the metropolis to a friend who lives out of the metropolis, his friend must be content with occasional inspection of his purchase, for out of the charmed circle the animals must not go, unless in the condition of what is technically termed "dead meat."

Within the metropolis cattle may be moved without licence for a distance of 500 yards from one part to another of the same farm, or to water; but beyond this distance a licence, which will continue in force for 24 hours, must be obtained, and the number of the animals and the place of their destination must be stated; unless that destination be to the metropolitan market, to which animals may be sent without licence; but being there they are condemned to be killed within four days from the time of their admission, and thus prevented from doing any injury.

Animals may be brought into the metropolis from any part of the country by means of licences obtained from the local authorities, so that no special difficulty exists in getting the supply of animals either for meat or for dairy purposes; but for whatever purposes the animals are brought within the district, no licence can be obtained for the purpose of removing them out of the metropolis; and the same law applies to all cattle within the area, no matter whether they have been recently introduced, or have been within the boundary for years past.

This one point, which is clearly stated in the Order of March 27, is one of those about which so much misconception prevails, and applications are even now constantly being made for instruction as to the proper course to be adopted for the purpose of getting cattle out of the metropolis, a thing that cannot be effected by the aid of any existing machinery so long as the Order in Council remains in force.

In reference to other places a somewhat different law obtains. Cattle may be moved to or from any locality out of the metropolis under certain restrictions:—1, They must not have been brought into the place by sea; 2, They must have been in the owner's possession for 28 days before they can be removed; 3, A licence must be obtained, specifying the kind of cattle, whether fat stock or store stock, and their destination, as well as the route by which they are to travel; and they must not pass within one mile of the outward boundary of an infected place.

Cattle brought by sea from any place in the United Kingdom are not permitted to leave any town or place in England or Scotland alive unless the local authority of the place shall certify that the cattle have been examined by a proper officer, and found to be free from disease.

Foreign cattle after being landed in any place in England or Scotland, are not allowed to leave the town or place alive, except by sea. No fairs, markets, auctions, or exhibitions for the sale of cattle can be held, excepting in the case of animals that have been in the owner's possession for 28 days, and are free from disease, and are not within the limits of an infected place. Such animals may be sold on the premises, and after being sold may be removed by licence from the local authority. Markets for the sale of animals intended for slaughter may be held by licence of the Privy Council, granted on condition that no cattle shall be moved from such market until they have been marked for slaughter in the

manner ordinarily adopted in the market, and that they be slaughtered within four days from the holding of such market, and not be taken beyond certain limits. For instance, in the case of the Metropolitan Market, they cannot be taken outside the metropolis, and from other markets not beyond the limits prescribed in the licence. These restrictions apply to sheep, lambs, pigs, and goats, which can only be exposed for sale in the cattle markets on the understanding that they are intended for immediate slaughter.

Since the 8th day of August last all the regulations which relate to cattle also affect sheep in certain counties, viz., Buckingham, Cambridge, Chester, Essex, Lincoln, Northampton, Nottingham, Norfolk, Suffolk, and Somerset.

With regard to the protective effects of all these restrictions, it is difficult to judge with any amount of precision, but the general results have been so far satisfactory. Individual interests have suffered, as they always will in any great and important changes, but notwithstanding that the orders are often evaded, and still more often loosely interpreted, the country has gained considerable advantage from their operation, and would have gained more if it had been possible to insure uniformity of sentiment and action on the part of the local authorities.

At present there is a feeling which has been growing in strength for some time past, that the restrictions upon cattle traffic may to a great extent now be removed without danger; and so far as commerce is concerned, it would doubtless be very desirable to afford all the facilities which could be granted without incurring any great risk of spreading the cattle plague again over the country; but it must be admitted that the experiment would not be unattended with hazard, and would only be justifiable under very careful regulations. The one important point appears to us to be to first of all identify animals with their licences, and then make the document a personal property, and let it be countersigned to any extent by proper officers, so that it should at once protect the animal and be a guarantee of its soundness as well as an indicator of the route by which it had travelled and the place in which it had been; in fact, it should have in some sort the character of a passport.

To carry out all the necessary regulations properly would involve some trouble and expense for a time; but it must be conceded that the subject is sufficiently momentous in its relations to justify the employment, at any reasonable expenditure of time and money, of those precautionary measures which are likely to prevent infection, and at the same time permit some relaxation of the existing prohibitory orders.

MR. HENLEY has been speaking of cottages in country places, and in his opinion the agricultural labourer does not belong to the worst housed class—"the death-rate proves that." But the point for owners of country cottages to consider, as regards their tenants, is not how much worse off are the lodgers in a crowded narrow street; for the condition of rural cottagers, and the deficiency of rural cottages are generally bad enough, and want a remedy; and if need were the "death-rate" could be quoted in proof of this assertion quite as confidently as Mr. HENLEY quotes it to prove that another class is even worse. We are at this moment unable to get team-men on a farm, not 12 miles from the General Post Office, although offering 16*s.* a week, because there is not a cottage to be had within two miles. Many of our men come three miles to their work, and thus the tenant (and of course the owner also of that land shares in the disadvantages of his tenant) loses his men first when there is any unusual demand for labourers in the neighbourhood.

Lord LEIGH has lately called attention to the interest which landowners have in the provision of adequate accommodation for labourers on their property. In a recently published letter he says:

"I do not believe that in England a cottager can be really accommodated with a house and outbuildings which would not require constant repair at a cost of 100*l.*; but I do believe that landlords who can afford it, and are anxious to benefit their estates without permanent loss to themselves (if such a thing were possible), are short-sighted in not laying out money in the erection of good, comfortable, but not extravagant cottages, rented, of course, below their money value, and regarding the money so invested in these buildings in the same way as they would regard farm-buildings, draining, or other permanent improvements on their estates.

"Now, we every day see owners of property, and careful men moreover, satisfied to sink money in substantial farm-buildings and expensive machinery, and also satisfied to see their land and machinery worked by an ill-housed population, and I venture to think that landlords who are considering the prudence of laying out money in good cottages may safely do so, trusting that the same course of years to which they are content to look for a return for the money they have laid out in bricks and mortar for the reception of farm produce would also bring them interest in the increased health and vigour of their labourers."

They say that in Cornwall the adoption of the "man-engine" adds 30 per cent. to the value of the ore in the deepest mines. A company will pay 30 per cent. more for a given quantity to be quarried out and sent up from the bottom of a deep pit, where they are thus provided with a machinery which takes them to and from their work, than when they are left to go to and fro, climbing several hundred fathoms up and down as part of their day's work. Now cottages upon farms will be just such a "man-engine" as the half of English farmers need, and it is certain in the long run to have an influence upon the landlord's share in the proceeds of the surface workings there of the same kind as the owners of a Cornish mine experience. Indeed we do not doubt that one chief explanation of the higher rents obtained in Scotland is to be found in the fact that the farms are mostly well equipped with houses for their labourers.

The labourers in towns may be worse housed than those in country districts, as Mr. HENLEY says; but our own experience, not far from London, points the question whether some of even these, the lowest in the scale, are not agricultural labourers (for whose lot landowners must be held to some extent responsible), trudging in all weathers miles to the farm on which they work, with strength already half exhausted when they reach it.

MR. HAWKESLEY writes to the *Times* in advocacy of the earth closet. It is hardly the letter of a great engineer; nor if it contemplates, as it appears to do, the case of large towns, is it the letter of a practical man. Great towns can only be *washed* clean, and the disposal of their drainage water over low-lying land in their neighbourhood is the obvious remedy of any possible nuisance in their case. Water is the only carrier which can be depended on for a perfectly sweet and clean result where there is a great number of houses, and a dense population, and a considerable distance to be traversed.

It is very different in the case of villages, or even small towns, and still more with single houses or large institutions in the country. Although even here we imagine nothing can equal the cleanliness of the water-closet, yet the earth closet is undoubtedly perfectly wholesome, and especially is it economical. The whole subject was well discussed in a late volume of the Royal Agricultural Society by the inventor of the earth system—the Rev. H. MOULE, of Fordington, Dorsetshire, whose practical interest in the welfare of his parishioners has led to several other useful contrivances for domestic comfort and economy. The earth closet provides for the farm or garden a most useful manure. Mr. JAMES, of Halton, Weston Turville, near Tring, speaks confidently on this point, from his experience of it on Baron ROTHSCHILD'S estate. In the earthsheds there excrementitious matter is to be seen on its removal from the closets, and dry ready for the drill, in every stage perfectly inodorous, even when subjected to the fiercest summer heat. The deodorisation may be effected either by the application of a shovelful of garden earth every day, or by Mr. MOULE'S very effective apparatus, which is in general use in the cottages there, and which is declared to be cheap, self-acting, and not liable to get out of repair. Mr. JAMES even sees no reason why the system should not be adopted by towns, "for the earth may be taken at long intervals and stored like coals, while the cesspools might remain unemptied for three, six, or 12 months, without causing the smallest annoyance." Mr. FAITHORN, medical officer of the Chesham district of the Amersham Union, thus reports on Mr. JAMES'S experience:—

"I inspected the earth sheds and saw the process in every stage. I put my nostrils into close contact with soil which had been taken from the closets this morning, and I took up some which had been out no more than a fortnight, without soiling my hands, and, lastly, I have come away with a small parcel of the dried soil in my pocket, having during the whole investigation met with nothing in the smallest degree disagreeable. I have no hesitation in saying that any gentleman who follows the example of Baron ROTHSCHILD in adapting this process to cottages will confer the greatest possible boon upon the poor, and I shall myself have no hesitation in recommending not only the process itself, but the little machine invented by Mr. MOULE, to any one seeking my advice.

"In small towns, at least, it must be of easy and inexpensive application, while the benefit to health will be great indeed."

It is certainly for the interest of cultivators, whether they be cottagers or farmers, that Mr. MOULE'S substitution for the present wasteful neglect of house refuse in hamlets, villages, and separate dwelling-houses be generally adopted; and we are glad to give currency to the reports of Mr. JAMES and Mr. FAITHORN, notwithstanding the inapplicability of the plan to large towns, whose drainage is already an accomplished fact, and whose consequent pollution of the rivers running through them may be remedied in another way—one quite as much for the agricultural interest.

—— The sale of Mr. GRAHAM'S Short-horns at Yardley last Wednesday was a great success. The following are the prices reached, both on the whole and over the separate families of which the herd consisted:—

	Whole Herd. Average.	Total Price.
	£ *s.* *d.*	£ *s.* *d.*
24 Cows	69 0 9	1656 18 0
6 Bulls	57 8 0	344 8 0
	Tribes.	
	£ *s.* *d.*	£ *s.* *d.*
7 *Charmers*	82 13 0	578 11 0
7 *Empathorpes*	61 10 9	430 10 0
5 *Fellets*	66 7 2	334 16 0
5 *Bracelets*	62 17 9	314 19 0
4 *Empresses*	46 19 9	187 19 0
Lady Wild Eyes 2d	.. .. ..	120 1 0
TOUCHSTONE	.. .. ..	37 16 0
Total sale	.. .. ..	£3901 6 0

Average of 30 head, 66*l.* 14*s.* 2*d.*

The company was very numerous, including many leading Short-horned breeders. The day was fair, with only a slight shower, the biddings remarkably quick, and from all round the ring. The first cow, 10 years old, sold at 80 guineas, and has since been resold for 105*l.* This brilliant sale was just the fillip that the present flat Short-horn trade wanted; and as Mr. STRAFFORD, who conducted it, remarked, he hoped it augured well for the departure of the Cattle Plague, which has had so bad an effect on prices hitherto.

THICK AND THIN SEEDING AT TIPTREE HALL FARM.—No. I.

As Mr. Mechi in his letter in Saturday's *Agricultural Gazette*, dated Sept. 5, has not replied to the questions I put to him the week before, I have been requested by some farming neighbours and friends, with your permission, to put them to him again, and to comment a little freely upon what he really did write; and that I may induce you to find room for what I may state, and not weary my readers, I will divide my strictures into two, three, or perhaps four articles.

First, then, that my readers may the better understand me, I will, and especially as I have been requested to do, write my questions over again, and they were these:—

1st. Will Mr. Mechi state how many acres out of the 170, which he has stated his farm consists of, he seeds with 1 peck of seed Wheat only an acre?

2d. How does he put the peck of seed into the ground—broadcasting it by the hands, or by any implement, the drill or dibble?

3d. How many rows, assuming that, if he drills or dibbles he does so in rows, he puts upon a stitch two yards wide? or, perhaps better, how wide are his rows from row to row, and how thick are his seeds, seed from seed, in the rows?

And I may further ask, does he put in his seed singly, seed after seed in this way, or three, four, and five or more in a place?

I put these questions carefully, because at market tables, and I attend at three a week regularly, I hear warm discussions on these points, very few farmers believing that Mr. Mechi ever puts in so little seed as this one peck an acre; and I lament to know that this is also the nearly general opinion in Essex, wherein Tiptree Hall is situated, as I have learned to my disappointment at Romford and Chelmsford markets, which I occasionally attend, though I am not of that county; indeed, so strong is the belief that single pecks of seed Wheat are never sown on Mr. Mechi's farm, that a man is laughed at and jeered down if he hints at a belief that such is the real fact. In carefully answering these questions, therefore, Mr. Mechi will have the opportunity of not only vindicating his own character, but of minutely explaining, in order to stop the mouths of ill-natured gainsayers, the different operations on his farm, by which the marvellous crops he writes about from such homœopathic quantities of seed are produced.

And I am the more anxious that Mr. Mechi should

do this from another and rather accidental account. There resides just two miles from me a gentleman who was not bred a farmer, but who is deeply read in the writings of Tusser and Tull, and of them both he is a great admirer. Between this gentleman and myself, and his family and mine, a very neighbourly friendship has for some years existed. He is a man, also, far above the common race of farmers, having been bred to the bar; but, as he often told me, he could not take money to whitewash a blackleg, nor to ruin the character of an honest man, and so he gave up the bar. Then, meeting with a very evangelical clergyman of the sect of the Simeonites, his mind was warmly and devoutly turned towards the Church; and at length, contrary to the advice of a wealthy maiden aunt, he was ordained into Holy Orders, his friend the Simeonite giving him a title, in order that he should be his curate two years gratuitously and teach a little boy Latin. His sphere of action was at a fashionable watering place, but though he was both a fine classical and mathematical scholar, and had obtained university honours, he made no way, he did not take, and so his aunt took to upbraiding him for making the attempt; and besides, being a woman of strong sense, she was no friend to sectarianism in the Church, and so used to talk to him thus: "Tom, I told you you would never succeed in the Church, having no political nor ecclesiastical interest, and the sad accident you met with in the collision on the rail by which your nose, your dear mother's nose, was flattened to your face, and the bridge fractured, has rendered it impossible for you to succeed, however piously you may demeanour yourself, and eloquent your discourses." This advice of his observant aunt my friend having proved to be correct, he commenced studying Tusser and Tull, and then added to them Liebig and some others, and left the Church, and, throwing off his black coat, changed it for a grey one, and took a nice farm, as I have said, just two miles from my own; and, his excellent aunt being pleased that her advice had been followed, and flattered also by her own sagacity, afterwards purchased it for him; and this he cultivates most diligently and successfully on the Tullian system. But, still being always anxious for improvements, he attended two of Mr. Alderman Mechi's annual gatherings, or the *Olla Podrida*, as he used to call them. On the first visit my friend was rather taken with what he saw and heard, but since the second I have never been able to get him to allow there was any merit in Tiptree farming. But, on the contrary, when I spoke in its favour, warm and animated debates have arisen between us—I maintaining, and which in my folly I really thought was the case, that Mr. Mechi had really discovered that marvellous crops of corn could be grown from little more than handfulls of seed; and, as the widow of Sarepta's single handful of meal so miraculously increased in her barrel that there was no want, so I believed that Mr. Mechi's pecks of Wheat in his fields in the same manner as miraculously increased, and that at least he had 60 or 70 pecks so increasing in so many acres of his land, and that the result was that his barns and stackyards and corners of fields were all groaning and staggering under the enormous weight of Wheat stacked in and on them. But oh, fatal delusion! delirious dream! Mr. Mechi himself informs us that all the land he had last year seeded in the same way were by miserable half acres, and all the produce from them my man, Samuel Dowsey, would put into a sack and throw it on his shoulders and trudge away to the mill with, as his wife, old Sally, trots off to the market with her basket. And so, on taking up the *Agricultural Gazette* on Saturday evening last, my neighbour, Mr. C., who had just come in from shooting a brace of birds for Sunday, and casting his eye upon this account at p. 861:—"The 1 peck of seed per acre. We have threshed the 2 half-acres, and the result is as follows—the peck per acre, 4½ qrs. and ½ a peck." And to this being underwritten—"J. J. Mechi, Tiptree Hall, Sept. 5,"—he threw his pipe into the fire, broke it into pieces in his fury, ordered "his old mare Meg, and better never lifted leg," and in six minutes, as he declared, skimmed over the two miles that lie between us, and was at my door; and throwing the rein over Meg's neck, in another minute was in my *sanctum sanctorum*, as our Minister calls his study, and pulling out the *Agricultural Gazette*, and pointing to the place—"There," said he, "is your 60 or 70 acres of Wheat from a peck of seed an acre. Why, there were only two miserable half acres so seeded; and look at the product which was to make the barns and stackyards stagger and groan with their weights! Why, look, it is only 4½ quarters, and just ½ a peck! and no more." And so, on taking up the Paper, it was as Mr. Mechi himself had stated, it was so, and no more; and so upon reading it I felt abashed, humiliated, and ashamed of my advocacy. But to make the best of it, I exclaimed, "Neighbour, I thank you for calling in. Take the armchair, and we will have a bottle of the best port in my cellar, and we will drink desperation to all kinds of puffing; and so, my friend, fill a pipe, or do you prefer a cigar? and let us raise a cloud." *T. B.*

(To be Continued.)

DRYING GRAIN. 1856 AND 1862.

THERE has rarely been a season of harvest in Scotland more calculated than the present to excite the anxiety of the farmer, or to put into peril the interests of the consumer of grain, and it has been difficult to look at the crops of Wheat and Barley, drenched by the rains in the last days of September and in the commencement of October, and in the best parts of Scotland, without asking the question, whether no means can be found to prevent the food of man being destroyed to such an extent, and the just hopes of the best farmers disappointed? The quality of all grain crops must necessarily depend primarily on the season and sunshine by which they have been ripened; but it rarely happens that the quality and sample would be seriously deficient, if the moment the crops have ripened they could be secured against the subsequent risks of the season. After the period of ripening has come, it may be asked, to what amount of deterioration is the crop liable? It is to be feared that in Scotland, at least in the present year, that amount is very serious. It may be assumed that the quarter of Wheat in perfect condition is worth, at the present time (1856), 70*s*. Its possible deterioration from such a harvest as we have lately had, may be taken at any sum varying from 1*s*. to 30*s*. a quarter; indeed, if the Wheat has sprouted in the field, it is lost as the material of bread, and is saleable only at a low rate for other purposes.

The question is, whether at a cost which it is reasonable to incur, the Wheat crop can be saved from the risks of the season, and its quality preserved at that standard of excellence to which the season may have matured it. It is similar to a case of insurance—a sum to be paid to cover a risk—uncertain in its degree, but the insurance certain to cover the loss, whatever it may be. My belief is, that such a system is attainable, and if it be, it ought to have a fair trial. It seems to me that it might consist in the following scheme of operations:—

	£	*s.*	*d.*
1. A field of Wheat to be cut the moment it is ripe irrespective of the state of the weather. It being determined, the reapers are commenced. whether it rains or does not rain—to be cut by the scythe, and at a cost of about 8*s*. per acre .	0	S	0
2. Each scythe to be followed by about eight women or young persons, whose duty it shall be, by means of a short knife, as the grain falls from the scythe, to separate the ears from the straw at a cost of about 8*s*. per acre	0	S	0
The ears of Wheat to be immediately put into sacks or carts properly fitted for the purpose, and at once carried to a drying house at the farm buildings.			
4. The drying house to be a barn or other building, properly fitted with an apparatus for heating it with currents of dry air, of a temperature of about 120° or 130°. This temperature would expel all water and moisture from the ears of Wheat, in 4, 5, or 6 hours, according to circumstances, create a condition in which the grain would keep in the husk in the best manner, the sample being the best which the season had produced. All risk is from that moment at an end. The cost of the fuel required for this process could in no case, it is believed, exceed 1*s*. per quarter, in many cases only 6*d*., and labour 6*d*. or 1*s*. more; in all per quarter	0	10	0
Total cost per acre . .	1	6	0
But from this sum falls to be deducted the cutting down of the crop in the ordinary way, say . .	0	10	0
Total extra expense for acre producing 4qrs. of Wheat Nearly 3*s*. 2*d*. per quarter, or 5*d*. per bushel.	0	16	0

This sum is to be placed against the possible deterioration in the quality and consequent money value of grain exposed to all the vicissitudes of weather. Is it reasonable to cover a risk and secure a certainty at this cost? In the case of Scotland in the present year, the answer no doubt must be, that over a wide extent, the actual loss incurred far exceeds the cost of the remedy proposed.

It may be noted that an excellent and powerful heating apparatus may be erected for about 40*l*. The cost of separating the corn from the straw is taken at 8*s*. per acre (assuming five quarters of grain), the probability is that in practice it would cost less money. I have a strong persuasion that the whole operation would be practically accomplished for less rather than more money than has been estimated, and the larger the scale, the smaller must be the cost of the drying process—at all events, something between 4*d*. and 6*d*. per bushel.

Another consideration arises from the successful adoption of this scheme; the present system of threshing out the Wheat crop would be no longer applicable, the process of threshing would be applied to the ears alone, the straw would no longer pass through the threshing machine, and consequently a much smaller machine would be required, and much less power to work it. Inasmuch as power and labour are the equivalents of expense, so the discontinuance of powerful machinery and labour implies an important economy in this respect. There would be saved a costly machine, and a costly power of steam or horses, that of water being more rare. The manual labour would be much less, from the less bulky nature of the material to be dealt with; a very light machine would separate the grain from the husk and clear it of the chaff. Here, therefore, would be an important saving to set against the assumed extra expense of 3*s*. 2*d*. per quarter, or 5*d*. per bushel.

The result or object to be gained seems to be, to place the Wheat crop, after it has ripened, in circumstances of certainty and security, independent of all weather, and to secure its quality and sample at the highest standard to which the season may have matured it. There would be no waiting for dry weather to commence the cutting down of the crop—it would be a matter of indifference whether it rained or not during harvest, except as regarded the comfort of persons employed; a new class of labourers would be introduced into the operations of harvest, it would no longer be necessary to have the most able bodied at high wages, the labour would be comparatively light, and could be performed by the weaker and more numerous, without fatigue and at moderate wages, although, no doubt, the principle of contract would be introduced with advantage, and good wages might and ought to be earned, and vigour and despatch secured.

It is to be observed that the process of drying by currents of pure and dry and heated air can have no injurious effect on the taste and delicacy of the flour. It is not a process similar to drying in a kiln by which the taste of grain is affected—the processes are totally dissimilar, except that both produce dryness.

In conclusion, I may remark that the agricultural world is at present in pursuit of the important object of reaping by a machine as a substitute for the sickle and scythe, and it seems nearly to be attained. When that object is fully attained, it would only harmonise with the end and object of the present statement. The separation of the ears of Wheat from the straw would be readily effected as the crop was laid on the ground by the action of the reaping machine—its position would give every facility for the operation. The substitution of machinery for manual labour would liberate a greater number of persons for the various parts of a new system of harvest operations. The complete success of the reaping machine would only facilitate the success of the drying system, which I am desirous to bring under consideration. *A Landlord, October*, 1856.

Since 1856 a vast progress has been made towards perfecting a reaping machine, indeed it may be said that it is an established implement in farming. The object of drying grain by heated air seems, therefore, to have made an advance also; can it not now make a still further progress? can a reaper not be found to cut the ears off the crop without the intervention of manual labour, leaving the straw to be afterwards cut by the scythe? It seems to be a most important object to secure the highest quality of grain in all seasons. *June*, 1862.

CATTLE PLAGUE RETURNS.

The following Returns were issued on Sept. 20:—

This Return gives the number of cases occurring in Great Britain which have been officially reported to this Department. Column 1 only records the cases reported as having commenced during the weeks indicated by the headings. All "back cases" are included in column 2.

Counties Reporting Attacks.	1 Number Attacked		2 Result of Reported Cases from Commencement of Disease.				
	Week ending Sept. 8.	Week ending Sept. 15.	Attacked.	Killed.	Died.	Recovered.	Unaccounted for.
"The Metropolis	—	3	213	160	28	16	—
Buckinghamshire	—	—	2,572	1,861	564	187	20
Oxfordshire	2	2	3,783	2,149	1,109	506	49
Northamptonshire	1	—	2,857	1,167	1,452	181	54
Huntingdonshire	1	—	2,404	467	1,780	156	92
Essex	2	1	2,141	553	1,179	290	119
Suffolk	1	—	2,141	1,225	961	199	29
Norfolk	2	1	6,674	3,682	2,530	260	202
Wiltshire	—	1	122	90	25	12	7
Dorsetshire ..	1	—	84	60	15	—	—
Somersetshire ..	3	—	311	207	94	5	5
Gloucestershire ..	—	—	150	69	51	28	2
Staffordshire ..	3	—	7,288	3,411	2,741	788	347
Shropshire	3	2	5,926	2,586	2,319	521	484
Lincolnshire ..	5	8	11,674	7,656	3,008	893	457
Derbyshire	1	—	2,496	1,017	160	41	42
Cheshire	9	5	67,591	23,745	32,729	7,967	3,147
Lancashire	30	24	6,033	2,859	2,314	630	344
York, E. Riding	2	—	12,566	3,334	6,226	2,037	969
" North Riding	1	—	11,169	2,526	5,628	2,112	894
Total ..	66	58	140,944	58,813	67,249	16,638	7,244
Remainder of England ..	—	—	48,261	18,584	23,162	4,865	1,650
Monmouthshire & Wales	—	—	8,388	1,189	5,791	1,317	297
Scotland	—	—	46,861	6,226	28,888	10,707	1,803
Great Britain ..	66	58	274,457	84,840	124,290	33,527	10,994

Back Case reported in the week ended September 15 — Cheshire 1.

The Return shows that 58 attacks were reported to have occurred during the week ending September 15, being a decrease of 11 on the previous return. Fresh outbreaks took place in 19 farms or places where cattle are kept: the number of such outbreaks in the previous week being 22. The number of healthy cattle slaughtered to prevent the disease extending to them, was 61 during the week. The disease is reported to have prevailed during the week in "the metropolis" (Stepney Causeway, Ratcliff), 3 attacks; and in the following 18 petty sessional divisions of England:—viz., Bucks.—Cuttlehoe, 7 attacks. Oxford.—Ploughley, 2. Huntingdon.—Huntingstone, 1; Leightonstone, 1. Essex.—Ilford, 1. Norfolk.—Guiltcross and Shropham, 1. Wilts.—Everley and Pewsey, 1. Somerset.—Yeovil, 2. Stafford.—Eccleshall, 2. Lincoln.—Barton-on-Humber, 1; Gainsborough, 4; Lincoln Lindsey, 2; Wadsworth, 1. Cheshire.—Edisbury, 1; Nantwich, 2. Northwich, 2. Lancashire.—Amounderness, 1; Garstang, 25. Since the commencement of the disease 51 in every 1000 of the estimated ordinary stock of cattle in Great Britain are returned as having been attacked. 6 cases are reported during the week as occurring among sheep, making the total to the date of this return 6714.

Singular Reappearance of the Disease.—Notwithstanding all the efforts made by the "local authority," and the remedial measures carried out by farmers, the plague has again made its appearance in the Garstang district, between Lancaster and Preston. The disease has manifested itself at Churchtown, at Kirkland, and in Upper Rawcliffe, and on the generality of the farms the plague as recognised by the late inspector (Mr. Breakell) has existed and disappeared already. The very same animals which some time since recovered, along with "thousands" of others, from what Mr. Breakell pronounced to be the plague, and which circumstance created considerable excitement among the farmers of North and West Lancashire, and necessitated the visit of Professor Simonds to the Garstang district, have been taken ill during the past few days, and some of them have died or have had to be destroyed. Nearly all the farmers of Garstang backed the theory of Mr. Breakell at the time, and held meetings for the purpose of asserting the correct-

ness of his plans. The present outbreak proves either that the thousands of animals referred to never had the disease, or that cattle can have the plague a second time.

RECENT SHEEP SALES.

DUBLIN: On Wednesday of last week Messrs. Ganly held their fifth annual ram sale, in King's Bridge Park, when near 450 highly-bred rams passed through the ring.

The following is a detailed list of the prices obtained:—

Robert F. Franks, Esq., Jerpoint Hill, Thomastown, Border Leicester Shearling Rams.

No. in Catalogue.	Purch.	Price in Guineas.	No. in Catalogue.	Purch.	Price in Guineas.
1	Capt. Buchanan	15	16	Thomas Franks	20
2	John Lloyd	17	17	Jas. Simpson	10½
3	M. Kerin, J.P.	19	18	Samuel Winter	14
4	J. Simpson	15½	19	Edward Galway	15
5	M. Kerin, J.P.	26	20	Colonel Stawell	19½
6	Capt. Roberts	20	21	Samuel Winter	16½
7	Colonel Leslie	20	22	Rev. Montgomery	14½
8	Mrs. Flood	17	23	J. C. Evans	15½
9	Henry Purdon	19	24	T. Johnson	14½
10	Capt. Irvine	25½	25	J. Morrow	15
11	Geo. Fosberry	15	26	J. D. Meldon	14½
12	J. T. Riddell	31	27	Colonel Stawell	11½
13	J. Simpson	20½	28	John Taaffe	11½
14	Alex. M'Clane	19	29	Capt. Roberts	12½
15	Earl Fitzwilliam	18	30	Jas. Matthews	14

Loftus H. Bland, Esq., Q.C., Blandsfort, Abbeyleix, Shearling Border Leicester Rams.

31	Jas. Simpson	22½	41	G. C. Harris	16½
32	J. D. Meldon	20	42	Capt. Goff	14½
33	W. Duckett	20	43	Lord Domeraile	15½
34	Richard Wall	24½	44	N. M'Donald	14½
35	J. D. Meldon	21	45	Capt. Johnson	14½
36	John Madden	24½	46	Mrs. Longfield	15
37	J. C. Evans	15½	47	Capt. Johnson	14½
38	W. R. Trench	14	48	Jas. Simpson	15
39	Thos. Johnson	15½	49	A. Bole	27
40	Earl Fitzwilliam	14½	50	— Henderson (Shrp)	″

Messrs. M'Lachlan and M'Culloch, Bellegrove, Ballybrittas, Shearling Border Leicester Rams.

106	J. Simpson	15	117	Lord Carrisfort	16½
107	J. Todd	15	118	R. Atkinson	15½
108	Col. Leslie	32	119	J. Wilson	17
109	Earl Caledon	20	120	F. A. Leigh	16½
110	H. Eustace	21½	121	Lord Caledon	18½
111	F. A. Leigh	20	122	John M'Cann	14½
112	— Doyne	17½	123	Mr. Taaffe	16
113	— M'Kenzie	20	124	J. Prunty	13½
	W. Humphreys Low	16½	125	J. Brady	13
	M'Cann	16½	126	J. Howe (2 Shear)	11

Caleb Going, Esq., Traverston, Nenagh, Lincoln Hogget Rams.

127	Mr. Greene	15	132	H. Webb	24
128	Wm. Ryall	14	133	J. Ridgeway	16
129	A. J. Walker	17	134	F. Trench	15
130	— Ryan	20	135	J. Ridgeway	14½
131	F. Trench	14½	136	W. R. Trench	15½

Thomas Robertson, Esq., Narraghmore, Athy, Shearling Border Leicester Rams.

137	J. Wilson	10	145	J. Dooley	7
138	Chas. Roberts	10½	146	Lord Headley	12
139	V. Fitzgerald	8	147	Major Hall	8
140	Wm. Lawler	8	148	J. Sproule	7
141	W. Orme	10½	149	— Davidson	7
142	S. R. Moorehead	8½	150	P. Tighe	6
143	G. Low	11	151	C. M'Culloch	6½
144	Earl Fitzwilliam	6½	152	W. Orme	7

J. T. Riddell, Esq., Gurteenahilla, Rathdowney; purely-bred Border Leicester Shearling Rams.

199	Mr. Bushe	21	205	— Young	14
200	T. Barton	16	206	Captain Goff	14
201	G. Low	15	207	— Neville	15
202	— Duckett	20½	208	— Hird	15
203	— Peare	14½	209	J. Wilson	15
204	— Mole	14	210	J. Smith	14½

Lord De Vesci, Abbeyleix; purely-bred Border Leicester Shearling Rams.

289	M'Lachlan and M'Culloch	20	293	J. Peyton	11
290	F. A. Leigh	20	294	F. A. Leigh	16
291	F. A. Leigh	19½	295	Jas. Simpson	18
292	J. F. V. Fitzgerald	12	296	Jas. Hamilton	20

Richard Flynn, Esq., Tulsk; Shearling Long-woolled Rams.

356	S. Taylor	16	360	O. Farrell	17½
357	T. Roberts	21	361	— Dixon	20
358	W. Ryan	16	362	— Dixon	20
359	A. Bole	30			

William Young, Esq., Brockley Park, Stradbally: Border Leicester Shearling Rams.

416	J. Downing	17	421	R. Smith	12
417	Major Esmonde	10	422	J. Downing	14
418	J. Roe	11	423	W. Clarke	9½
419	J. Maher	17½	424	T. Johnson	8½
420	Capt. Browne	12½	425	— Clarke	10

Abridged from Dublin Farmers' Gazette.

LEICESTERS: *Sale of Rams at Kelso, September* 14.—This morning, a little after 10 o'clock, the great annual sale of Leicester rams, under the auspices of the Border Union Agricultural Society, commenced in the Inch Park in Bowmont Street. The morning was dull; but when the sales began the sun shone out. During the forenoon there were frequent showers though not heavy. The assemblage was great, including proprietors and flockmasters from the neighbouring Border counties, and from more distant parts of England and Scotland. This year's sale, unlike those of past years, was not attended by buyers from Ireland, who usually purchased large numbers. This, of course, was owing to the Privy Council regulations. There was also an absence of Australian buyers.

The number of rams brought forward for sale to-day amounted to about 2000, which were sold at four different rings; No. 1 ring being presided over by Messrs. Donkin, Rywell; No. 2 by Mr. Oliver, Hawick; No. 3 by Messrs. Atkinson, Donkin, Brand, Shiels, Embleton, and Davidson; No. 4 by Messrs. Fairbairn and Penny, assisted by Mr. Davidson. The biddings were not so spirited as on last year, which is attributable in some degree to the absence of the buyers mentioned above, and to the difficulty of removing sheep.

The sale of Lord Polwarth's rams is generally regarded with great interest, and when their turn came to-day the ring was surrounded by an eager and interested assemblage. There were altogether 59 sheep sold by this nobleman, which brought a total of 784*l.* 10*s.*, being an average of 37*l.* 1*s.*, or less than last year by 10*l.* 17*s.* 10½*d.* His highest ram this year was 98*l.*, last year it was 95*l.* As an example of the prices commanded by the rams from this stock we may specify a number:—Mr. Hardie, Harrietfield, bought one at 10*l.* 10*s.*; Mr. Torrance, Sisterpath, purchased the highest priced one at 98*l.*; Mr. Logan, Preston, Lancashire, 40*l.*; Mr. Blaikie, Camieston, 34*l.*; Mr. Nisbet, Lambden, 31*l.*; Duke of Richmond, 46*l.*; Mr. Stark, Mellendean, 50*l.*; Sir Matthew White Ridley, M.P., 30*l.*; Mr. Fender, Rulesmains, 26*l.*; Mr. Dove, Eccles Newtown, 39*l.*; Lord Justice Clerk, 38*l.*; Mr. Hardie, Harrietfield, 37*l.*; Mr. Bolam, Lawtree, 46*l.*; Mr. Bell, Cessford, 31*l.* Mr. Simpson, Courthill, had a lot, of which Lord Pendring bought two at 16*l.* each; Mr. Thorburn, Gateshaw, one at 15*l.* 10*s.*; Mr. Allan, Billie Mains, one at 22*l.*; Mr. Riddell, Hundalee, one at 16*l.* 10*s.* Mr. Torrance, Sisterpath, sold a lot, including the sheep which carried off the prize. One of these was purchased by Mr. Scott, Burnside, for 47*l.*; one by the Earl of Southesk for 35*l.*; one by Mr. Robertson, Harperton, for 21*l.*; one by Mr. Hogarth, Ecclestoft, for 21*l.* The lot of Mr. Purvis, Lintonburnfoot, sold well, as they always do. Mr. Bell, Linton, bought one of his lot at 50*l.*; Mr. Simson, Blainslie, one at 50*l.*; Dr. Marshall, Challon Park, one at 50*l.*; Mr. Primrose, Turnieduykes, one at 30*l.*; Mr. Binnie, Eshiels, one at 35*l.*; Mr. Thomson, Rutherfurd, one at 34*l.*; and Mr. Wallace, Ballgrumie, one at 21*l.* Mr. Hardie, Harrietsfield, sold one of his sheep at 24*l.*, and two at 21*l.*, and three at 20*l.* Mr. Errington, Whittingham, Alnwick, sold the highest priced ram at the sale. It was purchased by Mr. Robertson, Harperton, Kelso, at 136*l.* 10*s.*, a price never before given at this market. The rams of Mr. Stark, Mellendean, have a great repute in this market, and he sold one to Mr. Ford, Harden's Green, at 80*l.*; one at 72*l.* to Mr. Lees, Mervingston; one to Mr. Foster, Fall, at 72*l.*; and one at 57*l.*

RING No. 1.

Auctioneers—Messrs. Donkin.

No. Sold.	Owners.	Highest Price. £ s. d.	Average Price. £ s. d.
30	Mr. Chisholm, Elwick, Belford	13 10 0	6 17 3
55	Mr Morrison, New Bewick, Alnwick	10 0 0	6 13 0
47	Mr. Wood, Thornborough, Hexham	7 10 0	3 2 2
24	Mr. Charters, Turvilaws, Wooler	12 5 0	5 16 0
35	Mr. Davison, Brandon, White House, Alnwick	9 10 0	5 4 5
22	Mr. Wilson, Woodhorn, Morpeth	10 0 0	5 8 1
47	Mr. Angus, Whitefield	25 0 0	6 11 1
15	Mr. King, Woopertop, Alnwick	25 0 0	4 1 2
85	Rev. R. W. Bosanquet	30 0 0	11 2 8
30	Mr. Chisholm, Tenwick Steads, Belford	13 0 0	3 12 8
6	Mr. Errington, Whittinghame, Alnwick	136 10 0	35 10 0

RING No. 2.

Auctioneer—Mr. Oliver.

No. Sold.	Owners.	Highest Price. £ s. d.	Average Price. £ s. d.
16	Mr. Brunton, East Field	21 0 0	8 3 4½
20	Trustees of the late Col. Nisbet, of Mersington	15 0 0	8 6 0
50	Mr. Wilson, Haymount	17 0 0	8 10 9
27	Mr. Thomson, Ryle	25 0 0	8 16 4
35	Mr. Cunningham, Grahanslaw	25 0 0	8 3 6
20	Messrs. Hubback, Sunlawshill	15 10 0	7 14 0
100	Mr. Hardie, Harrietsfield	24 0 0	8 18 9
34	Representatives of the late Mr. Stark, Mellendean	80 0 0	25 15 0

RING No. 3.

Auctioneers—Messrs. Atkinson, Donkin, Brand, Shiels, Embleton, and Davidson.

No. Sold.	Owners.	Highest Price. £ s. d.	Average Price. £ s. d.
20	Mr. Marshall, Henhill, Alnwick	4 10 0	4 0 0
40	Mr. Simson, Blainslie	16 0 0	7 18 9
28	Mr. Rae	10 5 0	5 19 1
24	Mr. Calder, Kelloe Mains	14 10 10	7 12 6
70	Mr. Hogarth, Eccles Tofts	10 10 0	6 5 4
32	Messrs. Laing, Cornhill	40 0 0	8 4 6

RING No. 4.

Auctioneer—Messrs. Fairbairn & Penny.

No. Sold.	Owners.	Highest Price. £ s. d.	Average Price. £ s. d.
19	Mr. Jamieson, Nottylees	11 15 0	6 8 04
20	Right Hon. Lord Polwarth	98 0 0	20 1 8
53	Mr. Simson, Courthill	22 0 0	9 3 9
78	Mr. Robeson, Springwells	18 0 0	6 16 3
100	Mr. Purves, Linton Burnfoot	50 0 0	10 12 7
48	Mr. Torrance, Sisterpath	47 0 0	9 4 7
22	Mr. Borthwick, Cowbog	12 0 0	4 17 1
61	Mr. Nisbet of Lambden	13 0 0	7 6 0
45	Mr. Bell, Linton	30 0 0	7 11 1
24	Mr. Roberton, Harperton	11 10 0	5 1 6

THE SILSOE ALLOTMENTS.

THE allotments now referred to lie in Silsoe and the neighbouring parishes near Ampthill, in Bedfordshire. They are 618 in number and held by 584 tenants. They are 294 acres in extent, averaging as nearly as possible half an acre to every allottee. The soil is of various character and quality, between the extremes of very light sand and stiff calcareous clay. Lying as the district does geologically below the chalk, where a series of alternating clay and sand beds occur, this extreme variety of soil is easily accounted for. With the exception of one or two fields in the parish of Clophill, where the soil is very light, and some portions of an extremely stiff character in the parishes of Gravenhurst, the land is well adapted for garden culture. Much of it is remarkably productive, owing this character to its fortunate geological position as well as to good cultivation. The rents vary from 8*s.* to 18*s.* a rood; the poor's and other rates, and the cost of keeping roads and hedges in repair, being borne by the landlord. Of a rental exceeding 1500*l.* in allotment gardens and cottages there was an arrear of only 1*l.* 15*s.* 6*d.* last year, and that was in the case of a widow who, during that season, had lost her husband by sudden death, and to whom the rent would be forgiven. This fact is of itself sufficient to prove the value of these gardens to the labourer, and the safety of the system to the landowner. That there is a special fitness belonging to it in the neighbourhood of Silsoe, making it there more than usually advantageous to the tenant farmer, may also be admitted; but everywhere the tenantry are interested directly and materially in such a condition of the labourer as shall both diminish poor's rates, and, by increasing their means, give both labourers and children a certain facility for the prevalence ultimately of a better education among them.

The labouring population in the neighbourhood of Silsoe is unusually dense for a purely agricultural district. The wages are 9*s.* or 10*s.* a week, paid generally by the piece, even to men whose services are engaged by the year. This piecework payment has not proved inconsistent with that friendly and long-continued relationship between master and men, founded on mutual good-will, which is the best guarantee of the worth and respectability of both classes in so many English country districts. There are as many instances of this kind in this district of piecework payment and allotments, both of which are supposed to create undue independence, as there are elsewhere. The fact is that, here as everywhere, an interest in the welfare of the labouring man, shown by endeavours to put him in the way of self-improvement, produces its natural fruit in that goodwill on which social welfare depends.

Mr. Trethewy, the agent over the Earl de Grey's estate, read a paper a year or two ago before the Central Farmers' Club, on the uses and abuses of the allotment system, and adduced the history of Lord de Grey's allotments as his principal illustration. He declared it as his opinion, the result of a large experience, that the subject involved the comfort and prosperity of the occupier quite as much as of the owner of the land or of the labourer. "Any system having a tendency to elevate the moral character of the labourer and improve his condition must be worthy of encouragement by the farmer." Mr. Trethewy alluded to the special fitness of this system where labourers live in villages, and where sufficient garden ground cannot be obtained adjoining to the cottages. In choosing a field near the village for the purpose of allotments, he says:—"The nature more than the quality of the soil should be considered, for it is astonishing how much poor thin land is improvable by spade husbandry, while strong and heavy clays are wholly unfit for the purpose of allotments, no matter how well they may be drained."

The following are his very sensible remarks on the importance of confining the allotments, to a manageable extent of mere garden ground:—

"My experience convinces me that a rood is sufficient under almost any circumstances; and the greatest error that has been committed has been the allotting of too much land to one individual. To dwell upon the evils arising from such a tenancy is scarcely necessary, as it must be obvious that without sufficient capital the occupation of land cannot be attended with profitable results. Some instances in confirmation of this view have come under my own observation, and I can confidently assert that, instead of the position of such men having improved, it has deteriorated. Occupied nearly the whole of their time upon their own land, they can no longer be classed under the head of labourers, and they actually injure regular workmen by throwing their labour into the market at seasons of the year when the demand for it is usually depressed. If it be argued that the restriction of the system would have the effect of preventing a labourer from improving his condition, and effectually debar him from rising in the world by his own industry, I would answer that I am not now discussing the relative advantages of large and small farms, but am confining myself to that agricultural labourer in the broad acceptation of the term. Every employer knows, and every man of common sense must feel, that it is as important to the farmer to have his regular men at work at all times, as it is to the manufacturer or tradesman, and that the business of both cannot be carried on without such regularity. I regard it, then, as a fatal error for the labourer to follow any pursuit that would at all interfere with the claim of his employer upon him; for, be it remembered, that it is upon hired labour that the working man must chiefly depend. Any allotment scheme, therefore, that has a tendency to interfere with this his chief capital, must very shortly end in disappointment and distress."

The Silsoe allotments date from the enactment of the new Poor-law, and the early promoters of the scheme were driven to it by the pressure of the poor's rates. The improvement in the condition of the labourer there and elsewhere is, no doubt, partly the effect of the new Poor Law, which has taught him that his first dependence must be on his own exertions; but a share in that improvement around Silsoe must certainly be allowed to the allotment system as there established. At first the allotment tenantry were allowed a considerable extent of land apiece—2 acres or more. As much, indeed, as they declared their ability to manage was allotted to each applicant. But as these have gradually fallen in or failed, they have been subdivided; and from a rood to half an acre is now the ordinary extent allowed. There have been no restrictions placed upon the cultivators of these plots, but such as are also laid upon the farmers of the district. There is no formal provision against Sunday labour or against

immorality, nor are there any special legal securities taken for the relapse of the land to the owner in case he should require it. Every security, nevertheless, exists as to all these particulars in the general sense of propriety which prevails, as well as in the knowledge that sufficient power exists in the management to enforce it. On riding round these allotments late in May this year, I saw Poppies, Turnip-seed, Onions, Peas, and Cabbages, in some cases grown to a large extent; but the ordinary crops were Wheat and Potatos for home consumption. In a few instances the land is in the hands of market-gardeners; but, as a general rule, the allotments are occupied by agricultural and other labourers; and the following Table, extracted from Mr. Trethewy's paper, gives their extent and their number in the several parishes, together with interesting details regarding parochial rates since the period of their establishment:—

Parish.	Population per Census of 1851.	Area of Parishes.	Number of Allotments.	Acreage of Allotment Land.	Annual Average of Five Years' Parochial Rates in Last Days.	Parochial Rates for the Years—			
					1850.	1860.	1865.	1866.	1868.
		Acres.		Acres.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Silsoe	755	2067	78	34	2 10 0	3 0 0	3 0 0	3 0 0	2 0 0
Clophill	1186	3417	180	60	4 4 0	5 5 0	5 6 0	5 4 0	4 0 0
Flitton	656	1920	163	120	3 3 0	3 3 0	3 0 0	3 4 0	4 0 0
Pulloxhill	688	1784	144	54	3 0 0	4 0 0	4 0 0	4 0 0	3 8 0
Upper Gravenhurst ..	357	895			1 4 0	1 5 0	1 5 0	1 5 0	1 10 0
Lower Gravenhurst	58	754	66	24	2 6 0	2 2 0	2 0 0	1 0 0	2 10 0
	618			244					

I conclude with Mr. Trethewy's statement of the superiority of these clustered field-gardens over detached cottage-gardens, and of the advantages of encouraging rivalry by an annual judgment of cultivation and exhibition of produce:—

"(1.) Every man has the advantage of the experience of the whole field, and generally benefits by it; whereas in a garden there are not those opportunities. (2.) How frequently does one see a garden overrun with weeds, overgrown with trees, bushes, and fences, absolutely excluding sun and air, and producing next to nothing to the cultivator! In an open field-allotment the sun and air are freely admitted; the land is more easily kept clean, and the state of cultivation patent to all the neighbourhood. (3.) I believe example has a strong influence in promoting good and clean cultivation among all classes of occupiers. With a view to encourage it amongst the allotment tenants of the district, a society, called the 'Silsoe and Amphill Labourers' Friendly Society,' was established about 17 years ago. It offers several prizes annually for competition, and great interest is excited among the exhibitors. This society is under the patronage of Earl de Grey, and has Lord Wensley dale as president; while the stewards consists entirely of tenant-farmers, who thus evince their sense of its usefulness. The subscribers comprise the clergy and gentry of the neighbourhood, and the exhibition is invariably fully attended. In fact, all classes unite to promote the object it has in view; and the result is an exhibition of fruits, vegetables, &c., that would surprise anyone who had never before witnessed it. I believe this to be a most useful institution; and, where allotments prevail to any extent, I would strongly recommend the establishment of similar associations."

The almost universal testimony of experience on this subject confirms the conclusion to which, after Mr. Trethewy's paper, the discussion before the Central Farmers' Club led—that the system may always be expected to benefit both labourers and their employers, excepting under extravagant misguidance or neglect; *i. e.*, excepting (1) where the land set apart for the purpose is altogether unsuitable in character, or (2) too distant from the cottages of the allottees, or (3) where an excessive extent is permitted to the tenantry, or (4) an excessive rent demanded from them, or lastly (5), where the tenantry are left entirely to themselves, and no effort made to excite their rivalry or pride in good cultivation.

A RECENT VISIT TO NORTH IRELAND.

AFTER the lapse of 25 years I landed at Belfast from the west of Scotland. I had been an attentive observer of the agricultural practices and national customs prevalent in the north-east of that country more especially, and noted their striking similitude in some points to the characteristics of Ireland, with this broad distinction, that religious and political animosities do not much disturb popular harmony in Caledonia.

The first striking sign of the fermentation working in the social system of Hibernia was presented to me on my arrival at a railway platform, where 200 of the constabulary force were about to do part for their respective stations after assemblage at Belfast, to prevent an apprehended collision between the Orange and the "other party," who were said to have made preparations for converting a holiday into a party fight. But I shall eschew politics altogether, and merely advert to Belfast and the chief counties of Ulster in their commercial and agricultural relations, diffusing the advantages of constantly accumulating wealth and industrial discoveries to large surrounding districts where commerce and husbandry are hand in hand, each promoting and subserving the interests of the other.

No city or town in Ireland has made such advances in trade and manufactures as Belfast has attained within the present century. Although more than a century ago Belfast had high rank among the commercial towns of Europe, it was not until 1785 that it became the principal depôt of the linen trade of the north of Ireland. The Duke of Ormonde, with the full approbation of the Earl of Strafford, had, during the administration of that unfortunate British minister, adopted measures for the advancement of the Irish linen trade, and obtained legislative encouragements for that purpose.* Among these were a law that every cultivator of 30 acres should sow 3 bushels of Flax every year. Premiums were proposed for the produce of the finest webs, and in Ulster the linen trade soon afterwards flourished, though the factories which had been established elsewhere dwindled away, while the Scotch and Irish of that province manufactured on a great scale, and induced great numbers of linen weavers to settle there. The unjust and short-sighted policy of the English Government had discouraged and finally stamped out the woollen manufacture of Ireland, which had been greater there than that of the other branch of industry.

The Linen Board expended several thousand pounds early in the present century to encourage Irish millowners to introduce the machinery for spinning yarn, which previously had been invented in England, and the result was, that in 1816, about 6000 spindles were found in 14 mills, of which five were in Ulster, and the others in Leinster and Munster. Great improvements in the processes of spinning and weaving have been subsequently introduced to render the whole system of manufacture superior to that attained in any other country. The total number of people employed in connection with the linen trade in Ireland in 1862 was 200,000, and the estimated annual value of the linen product was about 8,000,000*l.*, the exports being nearly 5,000,000*l.*

Of the 35,000 tons of Flax, assumed to be the average quantity annually consumed in Ireland, and in value more than 2,000,000*l.*, from 20 to 30 tons are produced from the Irish soil.* The extension of Flax culture is now greatly pressed upon the attention of Irish farmers, and facilities for the sale and preparation of it in scutch mills are yearly increasing.

The continuous extension of large mills with every modern improvement in machinery, the size and regularity of the streets and new squares, the elegance and comforts apparent in the suburban mansions and villas, the neat lawns, well-preserved pasture fields, the high-bred cattle and good cultivation, all around evince the commercial prosperity of Belfast. The great difficulties of America have powerfully promoted the commercial interests of Belfast, which has a large trade intercourse with the United States, Canada, the West Indies, the Mediterranean, the Baltic, and latterly with the East Indies. The towns and counties of Antrim, Down, and Armagh have greatly benefited, during the stoppage of supplies of American cotton, from their staple linen trade. The manufactories for flax-spinning and linen-weaving became greatly augmented during the fratricidal war in America, to meet the increasing trade in linens. But now, when the growth of cotton in America is revived, it is a question whether reaction in the branch of linen production may not occur.

Several of the Ulster manufacturers have amassed during the last five years large fortunes; and especially in Holywood, a suburb of Belfast, the evidences of wealth are conspicuous. Belfast has its botanical gardens commensurate in improvements with the progressing wealth and importance of this great town since their formation 40 years ago, by a spirited society of shareholders.

Bangor, on the south side of Belfast Lough, and about 12 miles from the town, has become a fashionable bathing place, improved to a high degree since my first acquaintance with it, manifesting in its enlargement and general aspect the overflowing of wealth from Belfast the radiating point.

I took a second class railway seat on one of my excursions in the north, and was surprised at a station near the seacoast to meet three of the constabulary, who rushed into the carriage with me, and scrutinised my appearance with evident suspicion. I was under their espionage undoubtedly; they knew I was a roving stranger, and looked at each other significantly, and sometimes at a paper in their hands. A communicative fellow-traveller on the way to Portrush told me to my amazement that the Belfast riots had been purposely got up by the Liberals in order that the town should be put under a large constabulary force. But why? Because, said he, it was hoped that the constabulary would be convertible into auxiliaries to the Fenian conspiracy. This was too much for my credulity to believe. My temporary companions the policemen soon perceived, however, that I was not the conspirator for whom they had been on the look-out; though my black beard, of the most hirsute and formidable character, could not have impressed them with the belief that I was but a quiet civilian observer of agricultural and industrial objects.

At Coleraine, the second town of importance in the county of Londonderry, Flax mills have been recently established by the Messrs. Lawrence, relatives of the heroic military brothers of whom Londonderry is so justly proud. Much improvement is observable at Coleraine. Gardens flourish, and bleach greens glitter on the banks of the river Bann; and town and suburban embellishments attract pleasurable notice. The Flax crop was looking well, although rather short in the straw; this is the crop of Ulster, and efforts are being strenuously made to extend its culture in various parts of Ireland. Scutch mills and spinning mills have been erected, and some landlords have taken much pains to stimulate industrial occupation in districts unhappily without any sources of steady and remunerative work in manufacture of any sort for the women and children of the peasant class. Of the profits that may be made from Flax culture, very encouraging reports are afforded, from which it appears that in favourable seasons and with fit culture and appropriate soil considerable profit is derivable from its admission into the crop rotations. In weeding, pulling, grassing, &c., flax husbandry affords desirable occupation to women and children; and though the domestic spinning wheel has given way to mill machinery, application of the available labour of the unemployed but industrially disposed families, which are still numerous in the land, may become an increasing channel of social good.

The steeping of flax in stagnant pools and ditches was in process during my short passage through Ulster, and the odours exhaled were not like the sweet perfumes of Arabia. I was surprised at perceiving that the water used for the above purpose is not utilised as an irrigating agent; that it contains alimentary matter is undoubted, wherever it flowed over a patch of marginal pasture, a green and luxuriant herbage appeared; yet it is let to run waste. And worse than this, it often pollutes fish streams in spite of law and common sense. While in Belfast I was present at the trial of a case in which an offender was prosecuted for polluting a river and thereby destroying fish; but it was adjourned on account of an altercation between the bench and the counsel for the defence, who was turned out for contempt of court.

Excepting the beautiful town of Bray, near Dublin, I have not seen at any marine point in Ireland such elegance and neatness in the streets, villas, and bathing lodgings as at Portrush—and beauty of local scenery. All the improvements were, I believe, originated by the late Doctor Boyd, M.P. for Coleraine. As a proof of the prosperous and contented condition of that entire district, there has been but very little emigation thence. Generally speaking, agriculture is not sufficiently advanced in Ulster. Small and irregular fields and earth banks, excepting in the vicinity of large towns, deform much of the country, and weeds were luxuriant there, as I found to be the case as a rule in Ireland. Docks, Thistles, and Rag Weed were staring me in the face, or wagging their heads at me as I passed along, as if they meant to convey their determination to possess "fixity of tenure." Even on the demesne lands of many of the gentry, and on rented farms of great size and in the occupation of rich tenants, weeds abound. I was struck by this, more particularly after my sojourn for some time in Scotland, where I had frequent opportunities of noticing farms, corresponding in many particulars with those in Ireland, occupied by similar grades of cultivators. Generally foulness of land is not seen in Scotland, even in the most backward counties, probably because rotations of crops are there usually required from tenants, and they are prohibited from selling straw, thus securing means of providing the best manure for green crops sustaining the ameliorating rotations. Whereas in Ireland exhaustion of land from want of superintendence on the part of the landlords and their agents, and the liberty afforded to tenants, who find it their interest or convenience to run out the land by excessive and undue cropping, produces the natural result, weeds of various tribes, which establish themselves in the soil. Whatever may befal the farmers themselves, who may have fostered and encouraged them, weeds "multiply" and "subdue the earth" after their own fashion. Leases as a rule are I believe unusual in Scotland, and generally for terms of years shorter than those granted in Ireland, yet the Scotch farms are in much better order. Stone built and slated houses are almost everywhere in Scotland, and wire fences are now common, instead of crumbling and wasteful banks and ditches in Ireland. These distinctions especially occurred to me, besides feeding troughs and stells for sheep in exposed situations, and farms seldom less than 20 acres, except a few crofters (in the Highlands and least cultivated counties), many of whom have their holdings at very low rents, at what are called improving leases; this, on stony or moory land requiring reclamation, and the encouragement of long leases, or ample security for remuneration in some way. In Scotland the one-horse carts are better than those employed in Ireland by ordinary farmers, and the Scotch plough is very superior. There has been latterly a movement in the highlands of Ireland corresponding with the established practice in those of Scotland, to encourage preserves for game. Landlords in the latter country often obtain three or four times more rent from "game tenants" than from ordinary farmers. It is common in Scotland for an enthusiastic sportsman to take at a high rent during the fishing or game shooting season, the furnished houses of gentlemen who vacate them for the purpose of profiting by the occasion. Judging from the number of English tourists, who are this year travelling for information in Ireland, and enjoying the sports of salmon fishing and grouse shooting in some localities, it may be expected that the preserve system will be extended in the north-west and west of Ireland, and become a source of wealth to many proprietors of lands now almost valueless. *W. R. H.*

* The Irish custom of wearing linen scarfs and hatbands at funerals may be traced to an order issued by that friend of Ireland, with the view of promoting the manufacture in question.

* See the late "Irish Industrial Magazine," Vol. i., p. 93.

Home Correspondence.

Wheat Experiments at Little Pinkerton.—The Highland Society having offered a premium for experiments with growing four varieties of Wheat, two competitors with growing four varieties of Wheat, two competitors appeared in this county—Mr. Richardson, Drylawhill, and Mr. Turnbull, Little Pinkerton. Although these gentlemen lodged with the Secretary, in due time, their report, they were not published in the Transactions; but on Mr. Harvey bringing the omission under the notice of a general meeting, it was resolved that an abstract of the reports should be sent to the newspapers.

Last week, the experiments appeared in the Edinburgh agricultural newspapers, so arranged and described as not to be easily understood. Feeling particularly interested in the experiments at Little Pinkerton, I was led to examine narrowly Mr. Turnbull's report, and I am much mistaken if some of his conclusions are not contrary to the evidence he obtained. I shall, therefore, now attempt to place the results of the experiments more clearly before the public. The following table is drawn up from the data and figures contained in the aforesaid newspapers :—

	Weight per bushel.		Price per quarter.					
	1864.	1865.	1864.			1865.		
	lbs.	lbs.	£	s.	d.	£	s.	d.
Hunter's ..	62	64	1	16	0	2	3	0
Hopetoun ..	63	65	1	15	0	2	2	0
Shirreff's ..	60	63	2	1	0	2	6	0
Fenton ..	63	64	1	14	0	2	4	0

Weight of Straw.

	1864.	1865.	Average.
	Imp. St.	Imp. St.	Imp. St.
Hunter's	25	29	27
Hopetoun	30	28	29
Shirreff's	31	33	32
Fenton	30	29	29½

Money Value.

	1864.	1865.	Average.
	£ s. d.	£ s. d.	£ s. d.
Hunter	12 13 0	11 6 0	12 0 0
Hopetoun	13	12 13 0	12 16 0
Shirreff's	16 12 0	15 5 0	15 18 0
Fenton	14 14 0	13 8 0	14 0 0

By an examination of the above tables, it will be seen that Shirreff's Bearded-White is first in money value, in weight and quality of grain, and also in quantity of straw. These results cannot be called in question, while Mr. Turnbull's experiments are considered correct; and it was improper to conclude, as he has done in his report, that Hunter's and Fenton still retain their old place as standard White Wheats. Another conclusion of Mr. Turnbull's, that Shirreff's Bearded-White deteriorates when sown a second year in the same locality, is hotly denied. Since 1851 this Wheat has been grown without change of seed on the farm of Hedderwick Hill, which is in the same parish as Little Pinkerton, and has a similar soil and climate. During these six years the produce has been satisfactory, and in the present season no fears in East Lothian have been entertained. *Peregrine Shirreff, Haddington, July* 16.

Admirable cultivation does not seem to have ensured, under Mr. Cameron's fostering care so well as with Mr. Stebbing, of Stow Bedon, whose success is recorded in the pages of the *Agricultural Gazette* of the last few years. I am inclined to try this on the Stebbing rather than on the Cameron system for ornament and fodder in the churchyard. Mr. Cameron mentioned a red and a white variety, and could I get seed from either, I would try whether these colours are in any way constant. Linnæus attributed them to growth in a red clayey soil, or white clay. *Diss.*

Hind's Wages.—In your "Home Correspondence" of last week there appears a communication, headed by a reference to Prof Wrightson's account of hinds' wages in Berwickshire. Had not Mr. Rutherford gone on to speak of his "opponents," I should not have felt at liberty to interfere with any statement he might choose to make of his experience in Roxburgh. It seems to me, however, that we have now nothing to do with the prices of 1863. I can state from certain knowledge that the money set down (by Mr. Wrightson) for cows' keep and Potatos, is the sum paid as commutation of the same when the hind so wishes it. The price of Barley is that obtained for part of the same corn that the hind receives, sold in public market at the time. As the season for payment of the hind's Oats is not yet come, I count it not an over estimate to set down the price as which ordinary "horse corn" has been selling all summer. The hind can select the best stack in the yard, except, perhaps, it be needed for seed for the farm; and, consequently average prices are quite inapplicable to corn of such quality. "Bondage" proper is generally abolished here; yet I must notice one item in Mr. R.'s account, involving, as it does, a manifest *reductio ad absurdum*. The bondager's board, lodging, and washing he puts at 6*s.* a week. Now, a hind, his wife and family, and the bondager, cannot be reckoned as fewer than four full grown persons, and we have 62*l.* 8*s.* a year spent on the above items; to say nothing of clothes and shoes, which are *de facto* obtained and generally paid for. The poor hind must be richer than either his friends or their "opponents" imagine. Mr. Rutherford can have my name if he thinks it worth while. *Morse of Berwickshire, Sept.* 15.

The Make of Building Allotted Corn Stacks.—Probably the mode of making Wheat, Beans, and other kinds of corn stacks may be acceptable to some of your agricultural readers in this inclement season. In 1860 I was farming in the county of Herts, and having about 20 acres of Wheat lying some distance from the homestead, being a very wet season I determined to adopt a different mode of proceeding from that usually followed in stack building. In laying out the stack-bottom, we at once began two narrow stacks, about 3½ yards each in width, with an opening about a yard wide kept up to commencement of the roof. I had laid some hurdles (two thick) the entire length and breadth of the doubled stack; this was done not only to connect the two stacks, but to create a kind of air-chamber; some chimneys were made by sacks of straw from these layers of hurdles, to communicate the air up to the roof. When these two stacks were finished they had the appearance of only one stack. The result was, that in the spring when threshed the sample was perfectly dried, although it was put together in a decidedly damp state. Not so another stack in an adjoining field in another occupation, which was cut about the same time, and was about the same bulk, and put up the same day in the usual manner. The sheaves of this stack were rotten in the middle, and had even grown after being in the stack, and the sample so much damaged as to render it only fit for being ground for swine. The aerated stack neither involved any additional expense or labour, more than the usual manner of putting up stacks. I was informed some years since by an intelligent relative who had been agricultural steward to the Emperor of Russia some 20 years, that the Russian nobles, on their enormous estates, have drying houses attached to their barns, which are necessary in the humid autumns of the north of Russia. These, he informed me, were built in a similar manner to our malt kilns, with double tile floors. On the upper floor are wooden standards, with pegs upon them in such a manner that the sheaves of Wheat are hung upon them, about a thousand at one time. After the process of drying the sheaves were put into the barns and threshed. The success of this plan was complete; the Wheat was not only dried but threshed well, and the corn was in a dry state for their long winter journeys to the shipping ports. I observed, when in Victoria (Australia) in 1853, that the farmers had their reaping machines so constructed as to only cut off the ears of the Wheat, when they were so fortunate to get any, in that arid and often flooded country. *John Rivers, Sawbridgeworth, Herts.* P.S. This plan of stack building might by a simple process have a blowing machine turned by steam-power attached to it.

Farmers' Clubs.

THAME: *The Labourer and his Cottage.*—At the Thame meeting on Friday last Mr. HENLEY, M.P., said he could hardly help touching upon a matter to which reference had been made, viz., the dwellings of our agricultural labourers. Now he did not believe they were the class that were the worst housed. He had paid some attention to the subject, and he believed that the death-rate proved where the greatest grievance was. Those who knew what the death-rate was in towns ought to look at home before they laid too much blame on the rural districts. The average rural death-rate, if his memory served him right, was about 16 in a 1000 per annum, while in towns it often approached 30 per 1000. This was a fearful difference, and though he had no doubt there was abundant room for improvement everywhere, he could not admit that the need for it was so great in the agricultural districts as in the towns. Those who were as old as he was could not but remember what a very great improvement had already taken place. It was impossible to shut one's eyes to this. Humble as many cottages in the country were, it was very rare to find one that had not two rooms, whereas those who knew anything of town populations were aware how many lived in one room. Moreover, it was by no means in the country to see a bed in the downstairs room. He was often surprised at this, considering the crowded condition of many dwellings and the largeness of the families in their cottages; but he had rarely seen a bed on the ground floor. The down-stairs room, too, in many of the better cottages, was as large as those where a whole family lived and slept altogether in towns. He could not help noticing those things, because he thought too much blame was laid on the condition of agricultural cottages. He should be very glad to see them improved; but there was evidently greater necessity for improvement elsewhere. There was another matter which he might be allowed to touch upon, as it was of some local importance. His colleagues and himself, and another gentleman whom he saw present, went yesterday to London in order to have an interview with the President of the Council with reference to the restrictions that had been lately placed on the removal of sheep. He was true, indeed, that the terms of the Orders in Council did not actually prohibit the sending of sheep to market; but though a licence might enable a man to get sheep into a market, there was no human power of getting them out again; so that in point of fact the markets were closed. They were accompanied by the mayors of Oxford and Banbury, and some of the aldermen of those places, and they made such representations as they could to the Duke of Buckingham of the inconvenience that was suffered by the towns where the markets were held, and by the public at large, expressing a hope that if it was thought necessary to continue the restrictions, something might at least be done to palliate the inconvenience. They were received, as might have been expected, with great courtesy, and were listened to very attentively. It was not, of course, for his grace personally to decide or help them, but they came away with the hope that some good result might follow the interview. He trusted that the misfortunes which his own part of the county had experienced through the miserable cattle plague had now come to an end, and that, owing to the measures which had been taken by the Government, and through the kindness of Providence, the disorder would soon disappear. The decrease in the number of cases had been regular and steady, and the disease might now be almost said to have ceased. The last visitation, however, was of 12 years' duration, so that at present we could only hope and pray that there might not be a recurrence of the disease. If they were thus fortunate, they would indeed have good reason to be thankful, especially when they considered the inconvenience which had been inflicted on all classes of society by the measures that had been rendered necessary. The closing of the markets had been a serious inconvenience, not only to agriculturists, but to tradesmen and every other class of the community. When they remembered that a curse of this sort lasted upon a previous occasion for 12 years, they must all bear with patience the restrictions which were deemed necessary in order more quickly to put an end to the ravages of the rinderpest. It was only by mutual forbearance that they could hope to attain this result, and he trusted therefore that whatever inconvenience might be suffered they would yield a cheerful obedience to the restrictive measures as long as they were considered necessary.

Colonel NORTH remarked that they would all be heartily rejoiced to see the labouring classes better housed than was now generally the case; but, unfortunately, the whole question was encumbered with obstacles. The great difficulty which he had himself experienced as a landlord had been in limiting the occupants of his cottages to the number for which they were adapted, for in spite of everything, the cottagers would get a lodger if they possibly could. The hon. and gallant gentleman went on to say that if he found a young man who had married and had a large family he took the earliest opportunity of putting him into a more spacious cottage. It was, however, impossible to limit the ladies to a particular number of children. Whenever he could he enlarged the cottages which were too small; but it often happened that the land in front of it back could not be obtained for this purpose, and in other ways difficulties frequently presented themselves. He agreed with his friend Mr. Henley, that on the whole the agricultural labourers were infinitely better "put up" than the industrial classes in such towns as Liverpool and Manchester. He had visited some of the labourers' dwellings in those places, and anything more painful and disgraceful he never beheld. They all owed much to agricultural labourers, and were consequently desirous to provide them with comfortable cottages.

KIRTON: *Harvesting Corn Crops.*—At a recent meeting of this Club, the subject for discussion was—"Which was the best and most profitable way of cutting and winning corn?"

Mr. DOUGLAS, Riddletonhill, said—I am in time in so far as a very material part of this most important subject is concerned, the getting in. Important this time, and no mistake, for here, at the end of the first week in September, much corn is out, much uncut, and in many districts harvest has hardly begun. Though we ought to have a good leading time, having been plagued with a bad seedtime, a bad summer, and a bad harvest, yet the lateness of the season and the lightness of the crop justify us in being very anxious as to the securing of it. Not that this care is not requisite in every year, for sometimes all will not do, and the weather frustrates all skill and every endeavour, but in ordinary years care will do it.

Reaping.—Let us first consider the cutting, &c., not more with regard to safety than to expense—a most important consideration when the cost of production is so enormous and the returns for the last few years comparatively so slight. We are, however, beginning to divide our labour better, and, as a certain consequence, the small capital required yields a most abundant return. Let us try, then, to find out the way to cut and win corn well and cheaply. I trust that errors may be noticed and corrected, and proper allowance made for them. The first question is, when should it be cut? When we have a choice of times to cut a field, I think we should first look at the probable consequence as to the grain. A good many think that the best sample of Wheat is obtained by cutting quick, and letting the ripening be completed in the stook; and had I only my choice between too soon and too late, I should take the former; but the safest way is to cut it when ripe. Barley should be allowed to stand as long as possible, so as to be fully ripe, and the grain hard; Oats, like Barley, show and weigh best when cut ripe, but when allowed to lie untied or in the swathe, a day or two's earlier cutting makes little difference. I believe that it is profitable, on an average, to run some risk of shaking, and to have one's grain well ripened and in fine condition. Dead ripe corn requires little shaking in winning. In the case of Oats, though, I believe that look and weight ought to give way, and we should endeavour to secure good fodder for our horses and cattle. It is not every one that knows what feeding there is in Oat straw when cut early and well won. This point deserves our most careful attention. Another question which influences some is the expense. Certainly getting corn cut a shilling or two per acre below what may be expected to be the market price a week after is a strong temptation, and, besides, the danger of shaking is obviated; but I fear that the proportion of light corn more than makes up for the saving, and, in addition, you have a bad sample and light weight. Sometimes we have to cut it when we have a chance, no choice being allowed us, as in the case of wet weather; but supposing we were to please ourselves as to time, the next point is, how to reap it? In the memory of many here there was no other way but by the hook, and the reaper and his song have been the constant theme of the poet. The song, forsooth. The mention of it would lead an ignorant person to suppose that the reaper was a man or woman young, strong, and, especially, not overburdened with work, having plenty of time and heart to solace their labours with solo and chorus. Most people in this district took and still take care not to give much time for that sort of thing, and under the machine system the music, even the chance of it, is abolished, and the vocal recreations confined to talking in couples. I believe, by-the-by, that working in pairs makes people less apt to put off the time, although often not so light-some as shearing. But enough of this. The field is here, ready; the big stones have been removed, and the furrows filled in; how are we to cut it? On steep ground, or where the corn is much twisted and lodged,

the scythe or sickle must be used. The expense is nearly the same in either case, but in good standing corn I would prefer the scythe, as making the best stubble and sheaf, and in lying corn the sickle, as being most expeditious. But should the field be tolerably level, and the corn standing well up, employ the machine by all means. Of the multitude of machines which have been brought out since their first invention what can I say? Even if I were able, time would fail me to describe them, their peculiarities, their merits, and their defects—to follow the successive improvements which have been made, and to imagine what farther advances may still be made in their construction. That is a subject for a book. The statements I am about to make can be, and doubtless have been, verified by those who use them. For another thing, my results are those of last year, as I find that I can form no opinion on this year's cutting and, besides, I have not used the sickle enough. As for the kind of machine, from what I have seen and heard I do not think that the one-horse variety can be much recommended. Its only merit is the cost. Very few of them can be worked by one horse, and the high speed required cannot but be injurious to the machine. I find a two-horse manual deliverer answer far better. I found the expense of cutting, binding, and stooking Oats to be *7s.* per acre when cut with the sickle, and cheaply done too. Call it a 25 acre field, and it costs *8l. 15s.* By machine the field is cut, and cut easily, in, at the very most, two days and a-half, with the following strength:—Two on the machine, five lifters, five bandsters, and two to mow corners—total, 14; say on an average 18*s.* per week, or 3*s.* per day, which gives us *5l. 5s.*, leaving a balance of *3l. 10s.* You say, what about the horses? Well, deduct the horse which I do not, as it is only a by job, when they would have been idle, and I will tell you some more. How many would it take to cut this 25 acres in two days and a-half? Just 25 persons at an acre per reaper. Here is 25 against 14; which, for two days and a half, is 27½ meals, which is something to set off against the horses. On the terms I have stated there is a saving of *3s.* per acre or nearly. I give the sickle every chance, taking it at the cheapest, and allowing the machine the minimum; but I believe it may easily be made *3s. 6d.* A machine will cut 100 acres in a season, which gives 17*l. 10s.* Deducting interest and wear and tear, you have half your machine. For the self-delivery machine, the results are much the same, but it has this advantage, that one can cut corn and leave it lying in the sheaf. I speak of the sheafing side-delivery machine, all others being much inferior. It requires better standing corn, but on the other hand the draught is lighter. There should be, and could easily be, a fast and slow movement of the rakes to suit light and heavy corn, which would improve the efficiency of the machine; but the great desideratum is a fast moving reel, with a rake under the control of the driver. If some genius could invent this, the self-deliverer would beat the manual. Besides the cost, the machine, when well handled, makes cleaner stubble than can be got by any other way, while the sheaf is much neater and better to thresh, by having a straight bottom and the heads lying one way. Whether machine or hand-cut corn wins fastest is a question I cannot answer. I have heard various opinions on the matter; but my own impression is that they are much the same, any difference being possibly due to particular causes. The great defect of machines, and that which alone prevents their universal use, is that they cannot cut when the heads of the grain are lying flat, in a direction opposite to that in which the machine is advancing. Remove this, and they are perfect—the greatest invention the agricultural world has ever seen, and one step more to that state of things which some see looming in the future. Never mind the future just now; the present is what concerns us; the corn is down—now for the

Binding and Stooking.—Even the very best hands are apt to make the sheaves too large; and the sins of the Irish in this respect are vexatious in the extreme. These large sheaves are a great nuisance—difficult to win and unweildy to handle; in fact, the person who invented the corn knot deserves the reprobation of posterity. Should hard necessity compel to shear when dampish, it should be tied into gaits. When well set these soon dry, and the time spent in binding them up is not lost. I find that now people after the machine work for a rest, and that, in consequence, corn is often laid in and badly bound. This is the most unpardonable sin of the whole. If your bands be slack the stock cannot stand. Besides, a slack band is pretty sure to yield before it gets to the stook. The stooks are a great deal the better of being set north and south, so as to let each side get its share of the sun, and the corn knot outside. I think small stooks stand best—not more than 10 sheaves—and, besides, they look better. Always use the horse rake; the hand implement is clumsy, slow, and in the hands of most people, useless. The horse rake, in careful hands can do little damage to the bottom. It is a difficult matter to get corn right for leading; even in the best of weather mistakes may be made, and patience is the best rule, for corn should never be led till thoroughly won. After wet, the sheaves may be opened out if there is any fear of sprouting; and in all cases it is very advisable to lead corn from a dark or sheltered spot to some place where it can get sun and wind. It is also better, where the ground is thickly covered with young Grass or dirt, to turn up the bottoms of the sheaves to the wind half-an-hour or so before leading; this, if carefully done, does not injure the binding.

Stacking, &c.—As to leading, or carting, it should be done as quickly as possible. Some people do not care to go more than the regular hours, but I like to employ every available moment, and get it in as fast as I can. There are various ways of putting it together. Some prefer to stack in each field, or some place immediately adjoining. Under certain circumstances, such as being at a distance from the steading, and the weather being threatening, I should adopt this plan; but, seeing that generally the roads are good, the days comparatively long, and no other work pressing, I should, in ordinary cases, try to get it to the stackyard. Some may be induced to stack in the fields in consequence of the deplorable events which disgraced this part of the country last autumn; but such a precaution would avail little, except in the face of the chance of accidental burning; but this sort, I believe, is rare compared to the other. For the reasons I have given, I prefer to take it home, and there build it in stacks. They are better so than in sheds. The risk of spontaneous combustion is less, and should it go wrong, the trouble of leading it out much less, too. The stackyard should be high and dry, exposed to the west wind, and near the barn door. Arrange the stacks in rows, lying to the cardinal points, and intersecting each other at right angles, as I think the air circulates better than when they are set quincunx fashion. They should not be too large—16 feet is plenty; large stacks are attended with more danger, and are less handy. People that can find it in their hearts had better build on artificial bottoms; we that cannot must just build on plenty of straw. We are often plagued by bad stacking. I like to see a tidy stackyard, but beauty is immaterial if some essential points are attended to. The most important are, that the heads of the sheaves should slope upwards, and that the top be kept true and steep. It is horrible to see the ultimate condition of a stack in which these have been neglected. Under these circumstances, I am an advocate for kilns (ventilators) in stacks; they cannot but be the better of a current of air going through them. They also, I believe, strengthen a stack considerably. If posssble, have the heading ready; do not spare it. Have the stacks pointed—not round topped—and tie with small ropes; thick ones are just sponges. Now, when the corn is in and headed—if all has gone on to your satisfaction, and you are properly thankful that it is so, the people should have a "kirn." I say, do this, as they are hard wrought in leading time, and a little extra favour puts them into good spirits, and tends to keep up a proper feeling between master and servant. Some prefer to give them the money, and let them make of it what they will, or make up to them in other ways; but the best way is to give them a good kirn. I can see no objections to it; it gives a great deal of pleasure, and does no harm whatever. A few words more, and I have done. What we require in all farm operations is a complete system of machinery sufficient to do all that we want, and capable to do it when and where we want. No occupation is so destitute of this auxiliary to labour as agriculture. Though we may not see it, yet I am persuaded that succeeding generations will enjoy advantages that we can only possess in anticipation, just as we have facilities that our forefathers never dreamed of. At some future period, the then sage of Tiptree will not have occasion to say, as he has just done, "We must, therefore, conclude that as compared with the enterprise of trade, commerce, and manufactures, agriculture is in a stagnant and non-progressive condition; that it neither employs sufficient capital nor labour; and that in comparison with the others, it is poor, penurious, and humble." And, again, "Dear labour here will compel the farmer to adopt machinery far more extensively than at present." A true bill! a true prophecy! how has the manufacturer distanced us so far? Why do we, while exporting goods, import food? How is it that the manufacturers and the trader override us in the legislature and the exchange? Such is the case. The key to the reason and the remedy lies in the words I have quoted—words which, when I saw them, I hailed as a God-send, as elucidating the point which I could never have put clearly. And, gentlemen, when all that the most sanguine can now anticipate has been accomplished, people will still be looking forward—still progressing. The golden year will come to them no more than to us; but, in the words of the Laureate—

> "Unto him that works, and feels he works,
> This same grand year is ever at the doors."

Reviews.

The Human Blight and Cattle Blight; or, An Explanation of the Cholera and Cattle Plague. Longmans & Co.

"From the regions of the East there settles upon our land every now and then what are called 'blights.' These blights consist of animalculæ."

So commences the anonymous pamphleteer. This being taken for granted, all the rest of the pamphlet follows; and we have (*a*) the introduction of the blight into the stomach of the victim; (*b*) the hatching of the blight in the stomach of the victim; (*c*) the transfer of the blight from the stomach to the other intestines of the victim; (*d*) the destruction by the blight of the mucus of the victim's intestines; (*e*) the attack by the blight insects upon the intestines themselves.

"It is, however, uncertain, what is the form of the animal blight when it enters the system. The probable conclusion is that it is swallowed in the form of an egg, that the heat of the stomach hatches the egg; the grub then passes from the stomach and preys on the mucus, and is voided with it, and upon coming into the air it assumes wings, lays its eggs, and dies. These eggs being either deposited in food of man or beast, or in water, or wafted in the air so as to settle upon food or water, are swallowed by a new victim, and become the source of fresh contagion. The excrement of cholera patients is not infectious when first voided; it only becomes infectious after the interval of some time, which is probably occupied by the insects assuming wings and laying their eggs on surrounding substances, or, as is most likely, in the nearest water."

Whether it be cholera or cattle plague, the premonitory symptoms are quite such as would be produced by insects in the intestines; foul breath and incipent diarrhœa are the beginnings which end in utter prostration,—"paralysis of the eighth pair of nerves,"—that is the phrase in either case

"The mode of cure is twofold. Either (1) destruction of the insects while yet in the stomach, and before they have made their way to the other intestines; or (2) forcible removal of the insects from the stomach by emetics and aperients, but still before they have made their way to the intestines."

The first mode of cure is effected by sulphurous acid, carbonic (carbolic?) acid, and the like. Insect poisons, in fact, to kill the cause of evil, aperients and emetics to remove it—tar, Onions, asafœtida—these are the remedies. "Do not insects always avoid a new-tarred fence?" "When," however, "the insects have been hatched, and have passed alive from the stomach to the mucus of the intestines, which is their natural food, the only remedy which has any chance of success is violent purging with castor-oil. But in most cases this is useless. The destroyer must have its way, and prey upon the mucus till both are voided together, and the system of the victim thus cleared of the destroying agent and the corrupted matter. All that can be done is to assist nature by violent purgatives. Animals nearly always die during the process. The mucus being destroyed but not removed in time, the intestines themselves are preyed upon, and this is fatal." If, indeed, the mucus with the insects preying on it be driven out together before the intestines are wounded, then all that one need fear is "paralysis of the eighth pair of nerves." But, supposing the patient to have sufficient strength of constitution, "he may, after this paralysis has lasted some time, recover the use of his eighth pair of nerves; and if he does so, then all symptoms of the cholera are gone, and, barring weakness, he is as well as if he had never had the disease." And even if he has insufficient strength of constitution a cure is possible, though difficult, by art. Do you ask in what consists this art? In three things: 1, chloroform; 2, hydrocyanic acid; 3, ice. There are, indeed, others which it is barely possible may assist. For example, there is the specific of Dr. Washington Evans, of Hill House, Streatley, Berkshire, "Three teaspoonfuls of Acacia charcoal, &c.

Have our readers had enough of this nonsense? Dr. Evans stood up at the cattle plague meeting in St. James's Hall, last February, and his nonsense charmed his hearers into attention to a solemn discourse on the merits of his Acacia charcoal for cattle plague, when a ringing ironical "Hear! hear! hear!" awoke the meeting to the absurdity of the affair, and he was laughed to his seat.

The author has not applied to his subject, as he professes in his preface, "the common rules of observation and reasoning." If blights are animalculæ, as he declares, and if cholera and cattle plague be blights, he should first observe the insects on which he reasons. But cholera and cattle plague are not properly described as blights, and blights are not necessarily animalculæ.

Farm Memoranda.

WEST SUSSEX: *Sept* 17.—Harvest has been got over here about three weeks ago, and not any too soon, as the weather has been very unsuitable for the work since, hardly two dry days together; but it has had the effect of making the meadows fresh and green, and we will have some autumn Grass, and the root crops are doing well; the Mangel will not be so heavy as they are some years, they did not come on quickly at first, and they do not like so much rain as we have lately had. Every kind of corn has been got in in good order; but Wheat is said to be turning out badly upon the low lands, even worse than was expected, but the quality is good, though not so heavy as last year; but those who occupy the higher lands are satisfied with their crops; and on the whole, perhaps, the produce and quality of all kinds of grain together have seldom been better.

The lea ground is now in good order for ploughing, rather too light, and is being turned up as quickly as possible; there is a greater disposition to sow early now than used to be the case, and though some maintain that none ought to be put in before the middle or end of October, yet all are anxious to sow before rather than after that time, and late sowing Wheat has done badly for some years past.

We hear of the Potato disease prevailing in some places, but it does not appear to be very severe, and as usual Rocks, the seed of which was had direct from Scotland, are nearly free from it, and are a heavier crop than we have had for some years.

There has been no difficulty in getting sufficient hands for the harvest, and as it all stood well up good wages were made at 12*s.* to 14*s.* per acre for fagging Wheat and Oats, and the reaping machines were largely used. There will not be much autumn cleaning done this year, as the proper time has been too wet for it, and now Wheat sowing will employ all our time, and on heavy land it will not be safe to put it off very late, as the land is already moist, and should frost set in betimes, to make it mellow, a good season may be lost altogether, and the greasy, a good season may be lost altogether, and the greasy, sooner upon such land it can be put in the better. The restrictions in moving cattle are still in full force among us, and cause great inconvenience, and very few farms have got their full complement of cattle, and the prospect of beef making is very small indeed; as country butchers cannot as formerly get a supply from London, they are put to great trouble to get them in the neighbourhood, and are almost obliged to evade the strict letter of the law to get them. But so long as we hear reports of the disease existing abroad it would be far from safe to allow imported cattle to be spread over the country; we fear it will be some time before the Order

in Council can be altogether withdrawn, and we shall have great difficulty in getting dung made during the winter, artificial manures will be more extensively used both for Wheat and Turnip sowing. Sheep are still very dear, and can hardly be expected to be very profitable. *G. S.*

Miscellaneous.

"*Nice weather this, for you farmers*," said a return-ticket tourist, as on a fine morning he encountered an agriculturist on one of his own foot-paths. "And not so bad for you excursionists," immediately returned the other, not, perhaps, altogether quite pleased with the patronising air of the illustrious stranger. But so it is. At this season of the year more especially, everybody on an "outing" has something to say about "you farmers." Land-agents without any particular business of their own find themselves in the largest type of the leading columns, on the strength of being ready to abuse the present staté of agriculture in a somewhat northern accent, and to contradict each other with amusing authority as to whether the Wheat-crop is under or up to an average. Only let a bagman sit down to dine at the market ordinary, and not a man at the table knows so much as to the farming of the country—what it is and what it ought to be. Bring your London lawyer down for the partridges, and he fairly boils over with practical suggestions as to how you may make more of your land and your capital. Mr. Mechi, after all, by no means stands alone, as half his neighbours in Regent Street would be quite as ready to fall foul of the many mistakes so continually associated with the cultivation of the soil. There would really seem to be nothing so safe as this sort of thing, whether you be a Radical M.P., a city merchant, or a Fleet Street journalist out for a holiday. The whole system is wrong from beginning to end. The landlords are not men of business; the tenants are not sufficiently advanced for the time they live in; while of the condition of the labourer it is scarcely possible to speak too strongly. And here, more commonly, the force of the attack centres itself. Only look to the wages the working man receives in the rural districts, the amount of intelligence he exhibits, and the dwelling he inhabits. Can his social or moral welfare be properly regarded under such circumstances? More care is taken of a fat beast; the animal is better fed and housed than the father of a family. Continual neglect is his birthright. He is over-worked and under-fed; and he exists, accordingly, in a very atmosphere of moody discontent and coarse dissipation. All this passes current enough with people who in reality know little or nothing of the subject so broached. *Mark Lane Express.*

The Harvest, 1866.—Mr. Sanderson writes as follows to the *Times*:—

"When in my report of last year I stated, contrary to all agricultural reports, that Wheat was 4 bushels, Barley 8 bushels, and Oats 11 bushels per acre below average, I was charged by several agricultural journalists with having greatly under-estimated the average. However, the actual results of the barn floor and the considerative evidence of the high prices obtained for last year's crop, and the increased importations of foreign corn since the harvest of 1865, have fully confirmed the views I then expressed. It is worthy of remark that this season exhibits a striking contrast to the preceding. Last year a brilliant promise was followed by indifferent results; this year a large yield has succeeded gloomy prospects. Last year the English and Scotch harvests were simultaneous; this year the harvest in the North is fully three weeks later than in the South. Last year crops were exceedingly variable, while this year, excepting on badly farmed soils and undrained clays, they are singularly equal. Reaping commenced in East Kent and South Essex in the last week of July, and was general in the eastern and south-eastern counties in the second week in August. Notwithstanding frequent heavy rainfalls throughout harvest, which considerably impeded operations, grain sustained no damage till the 20th of August, as days of bright sunshine and brisk breezes alternated with those of rain. On the day named rain fell in torrents, and the whole crop was more or less beaten or soaked those in shock or swathe. Since then rain has fallen every day, and little progress has been made in clearing the fields. All corn, therefore, unsecured, cut or uncut, is considerably discoloured, although it has as yet sustained really little injury, either for malting or milling purposes. With another fortnight, however, of such weather as the present the consequences will be very serious. In the earliest districts—in Berks, Wilts, Bucks, Hertford, and Oxford—fully one fourth of the crops are still out-standing, while in the middle counties there is one third in the field. In York, Westmoreland, Cumberland, Northumberland, and Durham one half of the crops are uncut, and not more than one third secured. In Scotland the harvest of 1866—with the exception of the early soils which skirt the east coast and the very earliest districts, in Roxburgh, Mid Lothian, Stirling, and Fife—is yet to begin. Two fifths of the crops are cut and a small area carried—is still in the future. In several counties reaping is just being commenced. Wheat, of which, partly from being a bad preparatory crop for Grasses and partly from being an unfavourable crop to follow cultivation, and partly required for stock uses, there is a gradually diminishing area, has cut up well on all high conditioned loams, well-drained clays, and deep chalk soils, being a fair average, moderately thick, and having clean although rather short straw, and well formed ears, closely set with sound, bright grain, and fully developed ends. Being first matured, a larger area of Wheat has been secured than of either Barley or Oats. Throughout Scotland, excepting part of Berwickshire, the Lothians, and the Carse of Stirling, Wheat is decidedly under average. The Barley crop, which is rapidly supplanting Wheat wherever the mixed system of husbandry is progressing, has this season well rewarded the farmer's labour. Almost equal in England in bulk and yield to the great crop of 1864, it will nearly balance the deficiency of last year's crop. In all the Barley counties this cereal is fully average; the sample, however, is variable, partly from unequal ripening and partly from a considerable area having been beaten down by storms. A larger area of this crop is in the fields than any of its sister cereals, and from a larger area being allowed to lie in swathe a considerable quantity has been carried in damp condition. The Oat crop throughout England, with the exception of Westmoreland, Cumberland, and Northumberland, has, probably, never been surpassed. Bulky in straw, superior in quality, and promising a large yield, it is, with the above exceptions, nearly double the crop of last year. In Cheshire, where farmers were allowed, from want of cattle, to break up rough pastures, but crops of extraordinary bulk have been produced, and it is to be hoped that such successful results will produce a change in the Cheshire system of farming, as much of the land in that county rests on the red sandstone formation, and, therefore, if properly drained, is well suited for mixed farming. In the north of England and in Scotland the Oat crop is considerably under average. Beans are generally close on the ground, well podded, rather short in straw, and an average crop. From the failure of the Turnip crop on arid soils in the two preceding seasons a large area intended for Turnips, especially in Norfolk, was sown with Peas, which everywhere have turned out a bulky crop, and far above average. The Turnip crop, which is the basis of all successful farming, has, with trifling exceptions, probably never been equalled in England. From the almost entire absence of frost, generally considered essential to reduce Turnip fallows, the complete failure of this crop was predicted. Happily, however, results have proved otherwise, which may be ascribed to the severe droughts of 1864 and 1865, which so thoroughly baked soils of medium tenacity that when ploughed dry in autumn they were reduced to as fine a tilth as if they had been under the action of the severest frost. Favoured, too, by copious rains, especially in the south, from the beginning of May until now, Turnips have never been checked, and consequently exhibit great luxuriance. On strong clays in the north, however, the absence of frost and of a sufficient degree of moisture is very apparent, as on such soils in Durham, Northumberland, Berwick, Carse of Stirling, and East Lothian Turnips are generally a complete failure, although, in many instances, sown three times. In the county of Aberdeen, famed for the fattening properties of its roots, from being raised on the granite formation, finger and toe has proved destructive on several farms; but, on the whole, Turnips are an average crop in this county. Mangolds are now suffering from too much rain: they are, however, nearly an average crop. Potatos, one of the most rapidly soil-exhausting crops, present an extraordinary luxuriance of haulm, are above an average yield, and previous to the heavy rains of last week were almost entirely free from disease. A severe frost on the 20th of June considerably damaged the crop on soft and peaty soils in low situations. Hay, on account of the cattle plague, has been produced from a larger area than usual, is above average in bulk, and has been generally well secured. In many instances the second cutting of meadow as well as seeds hay, which was not thought of last year. Young Grasses are singularly forward and closely planted. From what has already been stated it will be observed that the crops in England are superior to those in Scotland, from the unusual circumstance of there having been a greater and more regular rainfall in England than in the north. Indeed, with the exception of Wheat, all the crops in England are average or above average; while in Scotland, with the exception of Barley and Potatos, all crops are under average. Taking both together, I estimate the Wheat crop at 7 per cent. below average; Barley, above average; Oats, average; Beans, average; Peas, 20 per cent. above average; Turnips, fully average; and Potatos, above average. Everywhere pastures are abundant, and, taking Grass and roots together, the supply of autumn and winter food for stock was never more plentiful. A depreciation in the prices of all artificial foods may, therefore, be confidently expected. A great demand in autumn for store as well as fattening stock will be another consequence of the large supply of native store food: but with Ireland, the north of Scotland, and Wales, as well as other districts, full of cattle, there can be no doubt that the actual supply is falling short of the demand. As in the previous years, sheep have proved by far the most profitable of all farm produce. Their increase, however, of late years having reached the culminating point, and as many sheep farmers, attracted by the high prices, have become breeders of artificial foods, and the sheep purchaser is being transformed into the sheep seller. The supply of lambs this season is quite unprecedented, especially among the Border Leicester breed, a breed which is now extending more rapidly than any other in Britain, and which attaches itself to the Cheviot, one of Scotland's most valuable native flocks. As an instance among many of the prolific nature of this breed this season, I may mention that of a flock of 840 ewes which produced all double lambs with the exception of 50, and there were as many triplets as made double lambs for each ewe."

Prussian Agriculture.—Let us look at a Prussian estate and village. They average perhaps 100 inhabitants. The houses are one-storied, highly gabled, with much loft room, built either of wooden frame filled in with clay and thatched, or, in later times, of brick and tiles. They are built for two families, and have either a common entrance and kitchen with separate hearth, or both separate, with a dwelling-room, a bed-room, and a store-room. They are, as a rule, quite as lofty as the rooms in six or eight-roomed London houses; walls in and outside white-washed. Between the houses are, at a small distance, the stables, behind them a small yard and a pretty large garden. Man and wife sleep in the dwelling-room, the babies in a cradle; the children in the one bed-room: sometimes these labourers have a servant, who also sleeps with the children—never more than two in one bed. You will find a deal or Oak table; behind it along the wall a bench, and about the room a number of wooden or reed chairs, all scrupulously scoured, if not painted. You will see somewhere a huge coffer, containing linen and clothes; a cabinet holding food; out the wall a clock; and often other articles of furniture. The bed is very good, there being generally a good thick cover-bed—feather beds on a quantity of frequently renewed straw, put loose into the box-like bed-steads, and shaken up every day. A feather bed covers the sleeper, with two good linen sheets, a fancy coverlet, and not unfrequently there are curtains. The stables contain a cow, one or two pigs for killing in autumn, a goose, which will breed them ten to twelve young ones, which are ready for killing in October, and half a dozen to a dozen hens, furnishing eggs and breeding chickens. The garden at the back yields Potatos, Turnips, Carrots, and greens enough for the summer's consumption. Cows and geese are, during the summer, sent to graze, whilst pigs and hens are fed at home with household waste and some ground corn, the pigs being fattened on Peas towards killing time. The geese get fat on the ears of the field after harvest, and a little extra Barley feeding. For the wants of the winter there is a plot of ground given each labourer in the field for Potatos, and a plot for Flax, as also a plot for meadow hay for the cow, straw being furnished from the farm as wanted. For firing, wood and turf are used. The latter is almost found on all estates, or if the former is wanting, it must be brought from the next forest. All carting of these things is done by the landlord's waggons. The labourer is bound to work all the year round for the landlord; his wife (or if she cannot work, a female servant), a large number of days in the year. They receive wages settled monthly, under deduction of a certain number of days for rent of cottages and all the benefits enumerated above. As for grain, the men get a percentage of what they thresh in winter in lieu of wages. This protects them in dearth from high prices; they earn generally more than they want, having some for sale, unless the families are large. Work may be considered to last from sunrise to sunset—somewhat less in summer and somewhat more in winter—with one or two hours rest for dinner. But there are always odd hours, after finishing work in one field, when it is not worth the landlord's while to go to another task; and then the labourer is left to look after his own garden, Potatos, Flax, hay, and Hemp. The winter evenings leave a good deal of time. Supper being done at 5 or 6, the women sit down at their wheels, spinning their own Flax and tow wool, which last they have to buy, into yarn, which gradually goes to the village weaver to be woven into linen for underclothes, bed, and tablecloths, sacking, and a mixture of linen and wool, of which, being first dyed blue, coats and frocks are made—the latter mostly at home, the former by the village tailor; while socks and gloves, all wool, are knitted by the women all the year round and everywhere. The men in their winter evenings do nothing but pay visits to each other, sitting round the women gossiping, telling tales, or listening to one of the children reading aloud books which the parson, schoolmaster, or squire lends them. *Cornhill Magazine for August.*

Calendar of Operations.

SEPTEMBER: *On Pulping Roots.*—It is the most recent experience that roots should be pulped and mixed with chaff a day or so before being used.

Whether or not the advantage of pulping is derived from its inducing a larger consumption of straw first cut and mixed with the pulp, than when offered to cattle uncut, it is decidedly an advantage to the arable farmer, for a large quantity of straw is on plough-land generally used wastefully in litter, and a portion of it will be saved for use as food with economy and profit.

The following memoranda on this subject, extracted from contributions to the twentieth volume of the English Agricultural Journal, appear to be conclusive on the subject.

Mr. Lawrence, of Cirencester, says:

"We find that, taking a score of bullocks together fattening, they consume per head per diem three bushels of chaff mixed with just half a hundredweight of pulped roots, exclusive of cake or corn; that is to say, rather more than two bushels of chaff are mixed with the roots, and given at two feeds, morning and evening, and the remainder is given with the cake, &c., at the middleday feed, thus. We use the steaming apparatus of Stanley, of Peterborough, consisting of a boiler in the centre, in which the steam is generated, and which is connected by a pipe on the left hand with a large galvanised iron receptacle for steaming food for pigs, and on the right with a large wooden tub lined with copper, in which the cake, mixed with water, is made into a thick soup. Adjoining this is a slate tank of sufficient size to contain one feed for the entire lot of bullocks feeding. Into this tank is laid chaff, about one foot deep, upon which a few ladles of soup are thrown in a boiling state; this is thoroughly mixed with the chaff with a three-pronged fork, and pressed down firm; and this process is repeated until the slate tank is full, when it is covered down for an hour or two before feeding time. The soup is then found entirely absorbed by the chaff, which has become softened, and prepared for ready digestion.

"We continue the use of Rape-cake as the most economical food, notwithstanding all that has been said and written against it. There is doubtless more or less Mustard seed often grown with the foreign Rape seed. The essential oil generated from the former by the chemical action hereafter explained would be injurious to animals; but we have found this adulteration to be rendered quite harmless when exposed to a temperature of 212 the boiling point and the soup allowed to simmer a few minutes at that temperature before it is thrown over the chaff. Our adoption of Rape-cake has been based on the comparative analysis by Dr. Voelcker, as the average result of his examination of several samples of each. These analyses exhibit very little difference in the feeding value of Linseed and Rape-cake, while the marked value of the one is usually double that of the other. Our experience of the use of both, thus used, extends over a period of ten years of feeding from 20 to 24 bullocks annually. We have not had a single death during all that period, and the animals have been remarkably free from any kind of ailment. Rape-cake not being so palatable to animals as Linseed-cake, we do not exceed 4 lb. per head per diem; and we had in the trough of each animal, with each midday feed, 2 lb. of mixed meal. We rarely exceed this allowance, excepting in the case of very large oxen; we commence with 1 lb. of cake per head, and increase this gradually up to 4 lb., when we begin mixing the meal. We have found the cost, on an average, including attendance and fuel, to be 6*s.* per head per week, exclusive only of the cost of the chaff-cutting. One man and a lad, at 18*s.* per week, pulp the roots by a hand machine, and feed, litter, clean, and cook the food for 23 bullocks, and cut and steam the roots for and feed 24 fatting pigs, having the chaff only cut to their hands. This just fully occupies their time."

Mr. Duckham, of Baysham Court, Ross, Herefordshire, says—

"The advantages of pulping roots for cattle are—1st. Economy of food, for the roots being pulped and mixed with the chaff, either from threshing or cut hay or straw, the whole is consumed without waste, the animals not being able to separate the chaff from the pulped roots, as is the case when the roots are merely

sliced by the common cutter; neither do they waste the fodder as when given without being cut.

"3d. The use of ordinary hay or straw. After being mixed with the pulp for about 12 hours fermentation commences, and this soon renders the most mouldy hay palatable, and animals eat with avidity that which they would otherwise reject. This fermentation softens the straw, makes it more palatable, and puts it in a state to assimilate more readily with the other food; in this respect I think the pulper of great value, particularly upon corn farms where large crops of straw are grown, and where there is a limited acreage of pasture, as by its use the pastures may be grazed, the expensive process of haymaking reduced, and consequently an increased number of cattle kept. I keep one-third more, giving the young stock a small quantity of oil-cake, which I mix with the chaff, &c.

"3d. Choking is utterly impossible, and I have only had one case of hove in three years, and that occurred when the mixture had not fermented.

"4th. There is an advantage in mixing the meal with the chaff and pulped roots for fatting animals, as thereby they cannot separate it, and the moisture from the fermentation softens the meal and ensures its thorough digestion, whereas, when given in a dry state without any mixture, frequently a great portion passes away in the manure."

On the value of the process for a grazing farm with but a small quantity of plough-land, Mr. Corner, of Woodlands, Holford, Bridgewater, thus speaks:—

"My plan is, first commencing with the grazing beasts, to cut about an equal quantity of hay and straw and mix with a sufficient quantity of roots (mostly Mangel) to well moisten the chaff; and as the beasts advance in condition I lessen the straw and increase the hay, and in their further progress I mix—in addition to all hay, chaff, and roots—from 6 to 10 lb. per day to each bullock of Barley and Bean-meal, according to its size—and I have them large sometimes; I sold last week for the London market a lot of Devon oxen, of very prime quality, averaging in weight upwards of 100 stone imperial each.

"For my horses, cows, yearlings, and oxen—the latter to be kept in a thriving condition, and turned to Grass, and kept through the summer for Christmas, 1860—I cut nearly all straw with a very small quantity of hay, and this the offal of the rick. These also have as many pulped roots as will moisten the chaff, except the horses, and to them I give, along with bruised Oats, just enough roots to keep their bowels in a proper condition. To the two or three-year-old beasts I give some long straw and a part chaff, and the offal (if any) of the food of the above lots of stock.

"My farm is but a small one—under 200 acres. My predecessor always mowed nearly all the pastures for hay, which is about half the farm, and with this scarcely ever grazed any beasts, and kept but very few sheep. Since my occupation I scarcely ever exceed ten acres of meadow with one field of seeds for hay. I keep from 250 to 300 large-size Leicester sheep, and graze from 20 to 25 large-size beasts a-year, with other breeding stock in proportion.

"I consider the pulping of roots is better for fatting pigs than anything else. My plan is to have a large two-hogshead vat as near the pulping machine as possible, so as to fill it with a malt shovel as it comes from the machine; at the same time I keep a lad sprinkling meal (either Barley or Indian Corn) with the roots, and this is all done in 15 or 20 minutes; it is then ready for use to be carried to the pigs in the stalls alongside the fatting beasts. I never could fat a pig with profit until I used pulped roots."

On feeding horses with pulped roots, Mr. Slater, of Weston Colville, Cambridgshire, says:—

"I give all my cart horses a bushel per day of pulped Mangel, mixed with straw and corn chaff. I begin in September, and continue using them all winter—or until late in the summer, nearly, if not quite, all the year round, beginning, however, with smaller quantities, about a peck, and then half a bushel, the first week or two, as too many of the young growing Mangel would not suit the stock. I believe pulped Mangels, with chaff, are the best, cheapest, and most healthy food horses can eat. I always find my horses miss them when I have none, late in the summer. I give them fresh ground every day. Young store beasts, colts, &c., do well with them; but I do not think they could be used with any advantage with a flock of sheep; they are however, useful for fattening bullocks, inducing them to eat any food you may wish to give them."

These remarks illustrate the influence of the mode in which food is given upon the economy of the meat manufacture. Wherever the root crop is inferior, or the hay crop badly harvested, the pulper, for economising the former, and for enabling the easy consumption of the latter, is a great economy. Steaming food is another great assistance to the feeding. Mr. Lawrence's account of the advantage of steaming food has been already given.

Notices to Correspondents.

GRASSES: *J Y S.* The Grasses sent were too imperfect and fragmentary to be made out with certainty. They are, probably—1. A foreign species of Setaria: 2 Poa nemoralis. The Clover, No. 3, is the Trifolium fragariastrum,—Strawberry-headed trefoil. *J. B.*

LAWN PARTNERSHIP: *A N L.* Partnership in a farm is a very rare arrangement; but we presume that an agreement between two or more, whether contributing shares of capital, or skill and capital respectively, can be drawn explicitly enough to insure the avoidance of dispute. As to the law of such matters, we imagine the question for decision, if ever it arises, must hinge on the interpretation of a written agreement.

WEEDS: *B A.* In pastures weeds are discouraged by drainage, close pasturage, and artificial top-dressings, and by perseverance in spudding or pulling large plants at all seasons of the year, especially in the spring and summer, and before their seed time. If these means will not avail, the land must be ploughed up, well fallowed, and laid down again.

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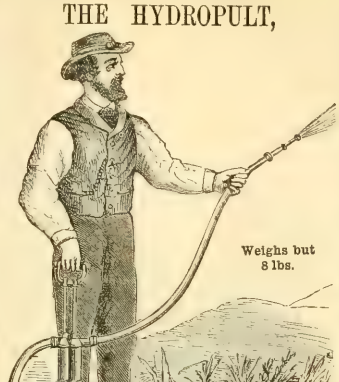

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IMPORTANT TO THE PUBLIC.—The extensive sale of the Hydropult has excited the cupidity of so-called respectable, but in reality unprincipled Manufacturers, who are now palming on the Public worthless imitations of the Hydropult, and through their connections are enabled to place said devices on exhibition, and for sale, in many of the principal Ironmongery and Seed Establishments throughout the city and provinces. These devices resemble in many respects the Hydropult in appearance, and are calculated to deceive the unsuspecting. The Proprietor therefore issues this Caution, and respectfully intimates that parties wishing to purchase the Hydropult should examine the machine offered for sale, and see if it has attached thereto a label, with the following words:—"The Hydropult, Vose's Patent, manufactured only by GRIFFITHS & BROWITT, Birmingham. CHARLES POMEROY BUTTON, Proprietor, 142 and 143, Cheapside, London." Unless this label is attached, the Machine is not the Hydropult.

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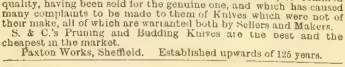

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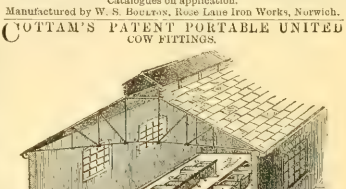

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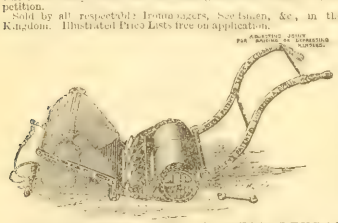

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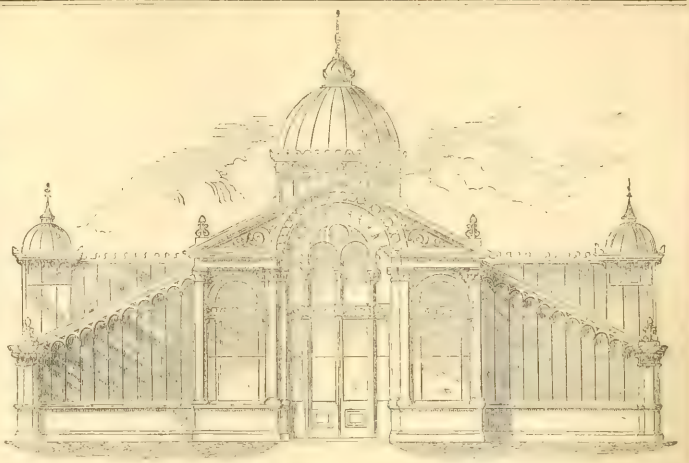

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THE GARDENERS' YEAR-BOOK, ALMANACK, and DIRECTORY for 1867, by BENJAMIN HOOG, LL.D., F.L.S., will be Published on December 1. Any alterations in the style and Address of Firms are requested to be sent forthwith to the Editor, so that the necessary corrections may be made in the Directory portion.

"Journal of Horticulture" Office, 171, Fleet Street, London, E.C.

HOGG'S GARDENERS' YEAR-BOOK, ALMANACK, and DIRECTORY for 1867.

ADVERTISEMENTS intended for insertion in the forthcoming issue, on December 1, should be forwarded immediately, to prevent disappointment.

"Journal of Horticulture" Office, 171, Fleet Street, London, E.C.

Twenty-seventh Year of Publication.

TO IMPLEMENT MAKERS AND OTHERS.

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To Noblemen, Gentlemen, Flockmasters, and Others.

A Flock of Valuable Pure-bred Merino Sheep and Rams imported from Spain, Half-bred Merino and Southdown Ditto, White Cashmere Goats imported from St. Omer. France, and Mixed Lots Fleeces of Wool of the highest quality.

MESSRS. DANIEL SMITH, SON, AND OAKLEY have received instructions from C. T. Tower, Esq., the proprietor (the father of the Smithfield Club), to SELL by AUCTION, in the Park, close to the Mansion known as Wembi Hall, near Brentford, on THURSDAY, October 11, at 12 for 1 o'clock precisely, 120 MERINO EWES and LAMBS, 30 entire Rams and Ram Lambs, 150 Half-bred Merino and Southdown Ewes and Lambs, 3 entire ditto Rams and Ram Lambs, 1 Cashmere Goat and 2 Fleeces of Wool of the best quality from the above Sheep, also 12 WHITE CASHMERE GOATS, being from the same Stock as the Herd, presented by the proprietor to her Majesty the Queen.

The stock from which the pure Merino Sheep now offered to the public have descended, was imported into this country from the Carthusian Monastery of Paular, in Spain, about the year 1810, by Mr. Tower, and has been carefully bred from ever since at the same time, with great care and judgment, and at great expense, Rams of the purest and best blood.

Wembi Hall is situate about 2 miles from Brentford, 3 from Kensington, 6 from Chiswick, and 11 from Hyde Park Corner, and can be reached in an hour's journey thereto by the Great Eastern Railway.

Catalogues may be obtained at the White Hart Hotels, Brentford and Hounslow; the Saracen's Head, Chiswick; of Mr. Rumsey, the Bailiff, at the Mansion; of the Auctioneers, Stanwell Park, Staines; and of OAKLEY, Land Agents and Surveyors, 10, Waterloo Place, Pall Mall, S.W.

Berkshire.

HIGHLY IMPORTANT AND ATTRACTIVE FREEHOLD RESIDENTIAL PROPERTY AT READING.

MESSRS. COOPER and GOULDING are favoured with instructions from the Rector and Lives of the Parish of St. Mary, Reading, to OFFER for SALE by PUBLIC COMPETITION, at an early date (unless previously disposed of by Private Treaty), the very valuable and unique FREEHOLD ESTATE, known as HIGHBURY, Reading.

The Property consists of a well-built RESIDENCE, approached through a fine Avenue and well-grown Shrubbery, and having an excellent Garden, Greenhouses, Stabling, Yard, Lodges, Cottage, and Orchard.

The Estate, comprising a large area, were laid out by the late Proprietor in every respect one, and with the consummate taste and judgment which so eminently characterized the late Mr. Loddiges, President of the Royal Horticultural Society, which he held for many years.

The Pleasure Grounds are beautifully diversified with sloping Lawns, Intersected Walks, Fountains, a variety of large and rich Specimen Conifers, Aucuba, Portugal, Rhododendron, and Oriental Cane, Viburnums, Varieties, Orchard Trees and Shade Houses, and are also surrounded by some full-grown Forest Trees, which add greatly to their seclusion and retirement.

The Kitchen Garden is planted with the choicest Fruit Trees, which are now in most excellent cropping.

The whole occupies an area of about 7 acres, is situated rather more than a mile from the Reading Stations, and near to new District Church; and offers to a Gentleman possessing Horticultural tastes a most eligible and delightful Property for Residence.

The Property is in a county and village which is well known in Ecclesiastical circles, and either retired or effects, may be taken at a valuation by any gentleman who may become a purchaser

Descriptive particulars, with Plans and Conditions, will shortly be prepared. Information may in the meantime be obtained of Mr. W. F. BLANDY, Solicitor, or of the Auctioneers, Reading.

BY HER MAJESTY'S ROYAL LETTERS PATENT.

ORMSON'S

NEW PATENT WROUGHT IRON MULTITUBULAR HOT-WATER BOILER.

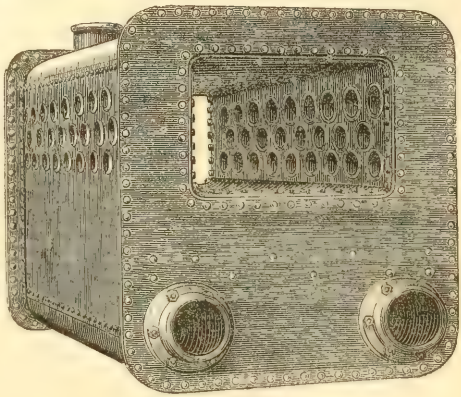
THE GREAT ADVANTAGES OF THIS BOILER ARE:—

1st. Being entirely of WROUGHT-IRON, its safety from leakage and cracks (from expansion or contraction), a danger to which all Cast-iron Boilers are more or less liable.

2d. An immensely increased surface exposed to the direct action of the fire, which passes through the tubes, thereby giving a wonderfully increased amount of power.

3d. A great saving in the consumption of fuel. Its facility for banking up the fire. Its peculiarly well-adapted construction for slow combustion, and burning many hours without attention, at a trifling expense.

4th. Its extraordinary power and safety for carrying out the One Boiler System, and small space and depth for setting.



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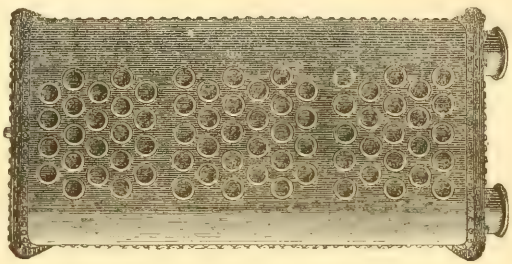

UNDERSIDE OF BOILER AND PLAN OF TUBES.

One of these BOILERS Heated the GREAT ORCHID TENT, 560 feet long, and 40 feet wide, at the INTERNATIONAL HORTICULTURAL EXHIBITION, with a remarkably small quantity of fuel, and gave the greatest satisfaction. Was highly approved of by many Scientific Men and Practical Horticulturists.

The great Power, Economy, and Safe Working of these BOILERS has been thoroughly tested for the last 12 months at the Horticultural Gardens, Chiswick, where they may be seen in action, and also at other places in various parts of the country.

THEY ARE MADE OF VARIOUS SIZES. PRICES ON APPLICATION.

HENRY ORMSON,

TRULY grateful for the very liberal and kind patronage bestowed on him, begs most respectfully to inform the Nobility, Gentry, &c., that it is his determination to spare no pains to merit a continuance of their favours; and, that he may be enabled to execute his extensive and increasing orders punctually, and at the lowest possible cost (agreeably with the best materials and workmanship), he has erected a most complete set of Steam-Power Machines, peculiarly adapted for the purposes of his Trade.

H. O. begs to call attention to his superior manner of Erecting every description of Horticultural Building, and trusts—by unremitting personal attention to the details of his business, by using only the very best materials, by employing the most skilful and efficient workmen, and by the most moderate possible charges, to merit a continuance of the patronage so kindly and liberally bestowed on him for many years past.

In the **BUILDING DEPARTMENT** his object will be (having a practical knowledge of Horticultural Science), to adapt all Erections to the particular purposes for which they are required. He will devote equal attention to the plain, inexpensive, practical Erections of Pits, Orchard Houses, Green-houses, Vineries, &c., as to the more elaborate and architectural erections of Conservatories, Winter Gardens, &c., either in Wood or Iron.

The **HEATING DEPARTMENT** always engages his especial personal attention, and he feels justified in saying that in simplicity, safety, durability, and economy of fuel, combined with thorough effectiveness, his system cannot be surpassed.

Knowing the absolute necessity for well regulated and properly arranged Ventilation, he makes it a matter of first consideration.

H. O. having competent Draughtsmen and an efficient Office Staff, is prepared and will be happy to forward Plans, Estimates, and Specifications by post or otherwise, and to wait personally on any Ladies or Gentlemen who may desire to see him on their Grounds.

H. O. is also in the habit of furnishing Estimates, and building from Drawings prepared by Architects, and is kindly permitted to refer to many of the most eminent in the profession. He has also much pleasure in stating that he can refer to many of the Seats of the Nobility and Gentry in all parts of the kingdom, where he has been employed to build some of the finest and best arranged Glass structures known at the present time.

HENRY ORMSON, F.S.A.,

HORTICULTURAL BUILDER TO HER MAJESTY, AND HOT-WATER APPARATUS MANUFACTURER TO THE COMMISSIONERS OF HER MAJESTY'S ROYAL PALACES AND PUBLIC BUILDINGS, AND TO THE ROYAL HORTICULTURAL SOCIETY,

STANLEY BRIDGE, KING'S ROAD, CHELSEA, LONDON, S.W.

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THE GARDENERS' CHRONICLE
AND
AGRICULTURAL GAZETTE.

A Newspaper of Rural Economy and General News.

No. 39.—1866.] SATURDAY, SEPTEMBER 29. {Price Fivepence. {STAMPED EDITION, 6*d*.

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NATIONAL HORTICULTURAL EXHIBITION, 1867. The above Exhibition will OPEN at MANCHESTER on JUNE 7, and continue till JUNE 15. Schedules will be ready the second week in October. By order, BRUCE FINDLAY. Botanical Gardens, Manchester.

1867.

NINTH YEAR of the GRAND YORKSHIRE GALA, YORK.—The FLORAL FETE will be held on WEDNESDAY and THURSDAY, June 11 and 12, 1867. Schedules will be published early in January next, and forwarded on receipt of addressed. JN. WILSON, Sec. 13, New Street, York, Sept. 29.

Roses.

WM. PAUL'S PRICED DESCRIPTIVE CATALOGUE of ROSES is now ready, post free on application Paul's Nurseries, Waltham Cross, N.

Rose Nurseries, Tunbridge Wells.

EDWIN HOLLAMBY respectfully begs to announce that his Stock of ROSES are as usual beautiful healthy good-rooted plants. This magnificent Collection contains nearly every variety worthy of cultivation. Early orders are solicited.

New Rose Catalogue, 1866-1867.

PAUL and SON'S NEW DESCRIPTIVE LIST is now Ready, post free on application; a faithful Guide, they believe, for the Amateur.
"Old" Cheshunt Nurseries, Cheshunt, N.

Rose Catalogue.

E. P. FRANCIS and CO.'S NEW DESCRIPTIVE LIST of the above is now ready, and will be forwarded gratis upon application. The Nurseries, Hertford, Herts.

New Tea Rose.

AMBROISE VERSCHAFFELT, NURSERYMAN, Ghent, Belgium, begs now to offer his new fine TEA ROSE, ISABELLE SPRUNT, figured in the July Number of the "Illustration Horticole." Fine strong plants, 5*s*. each.
N.B. A Coloured Drawing may be obtained on application as above.

New Catalogues

A DESCRIPTIVE CATALOGUE of ROSES.
A CATALOGUE of ORCHARD-HOUSE TREES.
A DESCRIPTIVE CATALOGUE of GRAPES.
Will be sent free per post on application to
THOMAS RIVERS & SON, Nurseries, Sawbridgeworth.

Gladioli, Roses, and Pæonies.

EUGÈNE VERDIER, Fils Aimé, NURSERYMAN, 3, Rue Dunois, Paris, has the honour to inform his numerous Friends and Patrons that he is now publishing his TRADE CATALOGUE of NEW GLADIOLI, ROSES, and PÆONIES, obtainable direct of him, or of his Agents, Messrs. BETHAM & BLACKITH, Cox's Quay, Lower Thames Street, London, E.C., upon pre-paid application.

Gladioli.

CHARLES VERDIER (late VICTOR VERDIER and CH. VERDIER), 12, Rue Duméril (late Rue du Marché aux Chevaux, 59), Paris, has just published his CATALOGUE of GLADIOLI, comprising the Novelties of the season, and which may be obtained either from M. VERDIER, or from R. SILBERRAD & SONS, 5, Harp Lane, Great Tower Street, London, E.C.

Genuine Garden and Agricultural Seeds.

JAMES CATTELL AND CO., SEED FARMERS, MERCHANTS, and NURSERYMEN, 237 & 238, High Holborn, London, W.C.

JAMES FAIRHEAD AND SON, SEED GROWERS and MERCHANTS, 7, Borough Market, London, S.E.
New and Genuine AGRICULTURAL, GARDEN, and FLOWER SEEDS. Special prices and advantageous offers on application.

New General Plant Catalogue.

B. S. WILLIAMS' NEW PLANT CATALOGUE, containing many really good Novelties, and carefully selected LISTS of STOVE, GREENHOUSE, and HARDY PLANTS, is now ready and will be forwarded free to all applicants.
Victoria and Paradise Nurseries, Holloway, London, N.

JIVERY AND SON having a few NOVELTIES now ready to send out, will be pleased to forward their PRICED DESCRIPTIVE CATALOGUES of AZALEA INDICA, and No. 10 HARDY BRITISH FERNS, which contain full particulars. Dorking Nursery.

British Fern Catalogue.

ROBERT SIM can now send, post free for six postage stamps, Part I. (British Ferns and their varieties, 56 pages including prices of Hardy Exotic Ferns) of his NEW and PRICED DESCRIPTIVE CATALOGUE of BRITISH and EXOTIC FERNS, No. 7.
*** Part II. (Exotic Ferns) will be issued as early as possible.
Foot's Cray Nursery, S.E.

AMBROISE VERSCHAFFELT, NURSERYMAN, Ghent, Belgium, begs to announce that his NEW GENERAL CATALOGUE, No. 79, is just out, and can be obtained Gratis at his Agents, Messrs. R. SILBERRAD & SON, 5, Harp Lane, Great Tower Street, London, E.C.

The Best Twenty-six Hyacinths,
As RECOMMENDED BY THE EDITOR OF THE *Gardeners' Chronicle*.
SUTTON and SONS can supply the above for £1 1*s*., carriage free.
Royal Berkshire Seed Establishment, Reading.

The Best Twelve Hyacinths Imported by SUTTON AND SONS,
for Twelve Shillings.
SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

MIXED HYACINTHS, for Beds or Open Borders, all colours, of various shades.
21*s*. per 100 (carriage free), or 3*s*. per dozen.
SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

JAMES CARTER AND CO.'S First Importation of DUTCH and CAPE BULBS has arrived in fine condition, and the Bulbs are much finer than usual.
JAMES CARTER & Co., 237, 238, and 201, High Holborn, W.C.

Dutch Bulbs.

WM. WOOD and SON'S first Importation of the above have arrived in splendid condition.
DESCRIPTIVE CATALOGUES on application.
Woodlands Nursery, Maresfield, Uckfield, Sussex.

J. SCOTT has received large Consignments of DUTCH FLOWER ROOTS, which he is offering at extremely low prices. A PRICED CATALOGUE, full of Notes on the Easy Culture of Bulbs, and other information sent free on application to J. SCOTT, the Seed Stores, Yeovil, Somerset.

Hyacinths, &c.

WM. PAUL'S SELECT LIST of HYACINTHS, EARLY TULIPS, and other SPRING-FLOWERING BULBS and PLANTS, is now ready and will be forwarded post free on application.
PAUL'S Nurseries and Seed Warehouse, Waltham Cross, London, N.

Dutch Flower Roots.

THE PROPRIETORS of ST. JOHN'S NURSERY beg to intimate that their CATALOGUE is now ready, and may be had on application.
WM. BARRATT, Wakefield.

Hyacinths and other Dutch Bulbs.

WM. CUTBUSH and SON beg to acquaint their numerous Patrons that they have received their usual Consignment of Choice HYACINTHS, TULIPS, CROCUSES, &c.
PRICED DESCRIPTIVE CATALOGUE, post free on application
Highgate Nurseries, London, N.

Dutch Bulbs and other Flower Roots.

CHARLES TURNER'S DESCRIPTIVE CATALOGUE of the above is now ready, and may be had on application.
The Roots are fine this season, and early Orders are respectfully solicited to ensure strong Bulbs.
The Royal Nurseries, Slough.

Hyacinths and other Flower Roots.

JOHN FRASER begs to intimate that his CATALOGUE of HYACINTHS, NARCISSI, TULIPS, &c., is now published, and may be had on application. A DESCRIPTIVE LIST of the best kinds of STRAWBERRIES is also ready for distribution.
The Nurseries, Lea Bridge Road, London, N.E.

Hyacinths, Tulips, &c.

BUTLER, MCCULLOCH, and CO. have the pleasure to intimate that their usual supply of DUTCH and CAPE BULBS has arrived in the finest possible condition.
PRICED DESCRIPTIVE CATALOGUES free and post paid on application. Covent Garden Market, London, W.C.

Dutch and other Bulbs.

B. S. WILLIAMS is now prepared to supply splendid roots of HYACINTHS, TULIPS, NARCISSUS, CROCUS, &c., &c. All the above are selected with great care from the best growers in Holland.
A PRICED and DESCRIPTIVE LIST sent post free on application.
Victoria and Paradise Nurseries, Holloway, London, N.

Dutch, Cape, and other Flower Roots,
ROSES, JAPANESE PLANTS, &c.

W. ROLLISSON and SONS' CATALOGUE of the above, containing many Novelties, will be forwarded free on application. The Nurseries, Tooting, London, S.

See Barr & Sugden's Advertisement
For BULBS and CLIVEDEN PLANTS for Spring Blooming, p. 920.

BARR'S PRIZE CALCEOLARIA, 2*s*. 6*d*. per packet, 10*s*. 6*d*. per ounce. The above beautiful strain of Calceolaria was saved by Mr. James, of Isleworth, from the plants which were awarded the 1st prize at the International Horticultural and Botanical Congress.

Finest Dutch Crocuses and Early Tulips.

SUTTON'S DESCRIPTIVE LIST is now ready, and will be forwarded gratis and post free on application.
SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

New Seeds for Autumn Sowing.

SUTTON'S AUTUMN CATALOGUE of GARDEN and FLOWER SEEDS for AUTUMN SOWING is now ready, and may be had gratis and post free on application to
SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

HARDY FLOWER SEEDS for AUTUMN SOWING (POST FREE).—Twelve large Packets of the most showy sorts of HARDY ANNUALS, including the splendid new Scarlet Sweet Pea Invincible, 5*s*. the 12 sorts; or the Scarlet Invincible Sweet Pea alone, 6*d*. and 1*s*. per packet (post free).
SUTTON & SONS, Reading, Berks.

Rhododendron Stocks.—To the Trade.

PAUL and SON have to offer these very fine, to the Trade, at 12*s*. 6*d*. per 100.
Old Cheshunt Nurseries, Cheshunt, N.

Hybrid Rhododendrons.

WILLIAM FLETCHER begs to inform the Trade that he has a Splendid Stock of the above to offer this season, well set with Bloom Buds, with from 6 to 12 Buds on each plant suitable for forcing. CATALOGUES sent free on application.
Ostershaw Nurseries, Chertsey, Surrey.

NEW HARDY RHODODENDRON, MICHAEL WATERER.—This Rhododendron has hitherto been exhibited under the name of ANNIHILATOR, but it will be sent out under the above name. It is undoubtedly the most brilliant-coloured late hardy free-blooming Rhododendron yet offered.
Orders are now being taken for Plants to be sent out in the Autumn at 31*s*. 6*d*. each. The usual discount to the Trade.
JOHN WATERER, American Nursery, Bagshot, Surrey.

Strawberries.

CHARLES TURNER can supply all the leading kinds, in good Plants.
DESCRIPTIVE CATALOGUE may be had on application.
The Royal Nurseries, Slough.

STRAWBERRIES, in 32-sized pots, for Forcing. All the best sorts, very strong, at 7*s*. per 100.
The LADY, 18*s*. per dozen, very strong.
JOHN & CHARLES LEE, Royal Vineyard Nursery and Seed Establishment, Hammersmith, London, W.

CASTLE KENNEDY FIG.—Plants of the above may now be had at 10*s*. 6*d*. and 21*s*. each; the usual discount to the Trade. PETER LAWSON & SON, Edinburgh and London.

Grape Vines.

B. S. WILLIAMS begs to announce that he has a splendid stock of Strong Planting and Fruiting CANES of all the best varieties. PRICED LIST may be had on application.
Victoria and Paradise Nurseries, Holloway, London, N.

Hothouse Grapes.

Queen's Graperies, and 176, Western Road, Brighton.

E. SPARY begs to announce he has a large supply of extra fine GRAPES to offer to his numerous Patrons and Visitors to Brighton. Also ORNAMENTAL PLANTS for Dinner-tables, Conservatories, &c. BOUQUETS, CUT FLOWERS to order, and Importation of DUTCH BULBS just arrived in fine condition

Pine Plants.

THOS. PAPE can supply PROVIDENCE, MONTSERRAT, JAMAICA, and BLACK PRINCE PINE PLANTS, all sizes. Undercliffe Gardens, Bradford, Yorkshire.

SUCCESSION PINE PLANTS for SALE.—RIPLEY QUEEN (30), perfectly clean and in good health.
Apply to W. R., F. Allman, Nursery, Horsham, Sussex.

Fruit Trees, Coniferæ, and Trees and Shrubs.

PAUL and SON'S COLLECTION of the above are now worthy of a visit. The Pyramid Fruit Trees for Sale are in full bearing, and the various Trees and Shrubs will be found in fine condition.
"Old" Cheshunt Nurseries, Cheshunt, N.

WALL-TRAINED TREES of BEARING SIZE.—Our Wall-Trained Fruit Trees this season are very fine, and include PEACHES, NECTARINES, APRICOTS, and FIGS, suited for planting in houses for immediate Fruiting. An inspection is respectfully invited.
T. JACKSON & SON, Nurseries, Kingston, Surrey.

To the Trade.

WINTER and SPRING-FLOWERING PLANTS.—Our stock of Soft-wooded ERICAS, EPACRIS, AZALEAS, and New Holland Plants is extra fine this year, and being much greater than we can house, we are selling at unusually low prices.
T. JACKSON & SON, Nurseries, Kingston, Surrey (adjoining the Railway Station), S.W.

TO BE SOLD, by the 100, 1000, or in one lot, about 15,000 ERICAS, in stove and thumb pots, consisting of all the leading soft-wooded sorts. They are strong healthy plants, fit for immediate potting. Will make fine flowering plants next year.
Apply to Messrs. BREFFIT, Nurserymen, Barnes, Surrey, S.W.

Railway Planting.

FIVE MILLION Transplanted QUICKS, of superior growth. Samples and prices on application to
JOHN HEMSLEY, High Fields, Melbourne, near Derby.

To Cultivators of Succulent Plants, &c.

T. COOPER, Holmsdale Road, Reigate, Surrey, has a large Collection of SUCCULENT PLANTS, &c., including about 450 varieties of CACTI, also ALOES, HAWORTHIAS, AGAVES, CRASSULAS, MARLOTHS, &c., &c.; also a great many New Plants raised from African Seeds, many of which are very interesting. Orders punctually attended to.

A QUANTITY of GHENT AZALEAS and CAMELLIAS, Cheap; DUTCH BULBS unusually fine; a choice collection of FERNS, Orchids, Gold Fish, Aquariums, &c.
R. GREEN, the Bedford Conservatories, Covent Garden Market, W.C.

Notice.

60-PAGE CATALOGUE of NEW PLANTS of 1866 now ready, free for one stamp.
WM. DILLISTONE, Munro Nursery, Nitile Heddingham, Essex.

Wholesale Catalogue of Nursery Stock.

GEORGE JACKMAN AND SON'S PRICED and DESCRIPTIVE CATALOGUE for 1866 and spring 1867, can be had free on application, comprising Fruit Trees, Roses, American Plants, Conifers, Clematises, Evergreen and Deciduous Trees and Shrubs, and transplanted Forest Trees, &c., &c.
Woking Nursery, Surrey.

RAYNBIRD, CALDECOTT, BAWTREE, DOWLING, AND COMPANY, Limited,
CORN, SEED, MANURE, AND OILCAKE MERCHANTS,
Address, 89, Seed Market, Mark Lane, E.C.; or Basingstoke.
Samples and Prices Post free on application. Prize Medals, 1851 for Wheat; 1862, for "Excellent Seed Corn and Seeds.

PURE BROWICK SEED WHEAT, grown on stiff clay soil, after the Steam Cultivator. The crop was harvested before August 25, and is in prime condition.
Price and Samples free on application to J. DICKSON, Manager J. & F. HOWARD'S Steam Cultivated Farms, Bedford.

SAMUEL COE, NURSERYMAN, Ludlow, has a large quantity of strong SEA KALE fit for forcing; also about 50 PEACH TREES, 4 years trained, fit for bearing at once.
Price on application.

To the Trade.

THE SUBSCRIBER has a surplus Stock of EAST-LOTHIAN PURPLE-TOP SWEDE, about 500 bushels, grown from carefully selected stock. Price on application.
WILLIAM DODS, Seedsman to the Queen for Scotland, Haddington.

NOW READY for PLANTING.—ROBINSON'S CHAMPION DRUMHEAD CABBAGE PLANTS (have been grown the extraordinary weight of 80 lbs. each) can be supplied in any quantity at 2*s*. 6*d*. per 1000. A remittance or reference is requested from unknown correspondents.
FRED. GEE, Seed Merchant and Grower, Biggleswade, Bedfordshire.

For Present Sowing.

TRIFOLIUM INCARNATUM, Italian Crimson Clover; TRIFOLIUM INCARNATUM TARDIFLORUM, Late Red; TRIFOLIUM INCARNATUM TARDIFLORUM, Late White.
SUTTON'S IMPROVED ITALIAN RYE-GRASS.
SUTTON & SONS can supply best Seed of the above at moderate prices.
Royal Berkshire Seed Establishment, Reading.

Hyacinths for Exhibition.

SUTTON AND SONS beg to offer—

100 in 100 very choice sorts	£4	4 0
100 in 50 ,,	3	10 0
50 in 50 ,,	2	2 0
50 in 25 ,,	1	15 0
25 in 25 ,,	1	1 0
12 in 12 extreme choice do	0	12 0
12 in 12 choice sorts	0	9 0
12 in 12 good sorts	0	6 0

All goods carriage free, except small parcels.

SUTTON & SONS,
Royal Berkshire Seed Establishment,
Reading.

Dutch Flower Roots.

ARCHIBALD HENDERSON begs to announce that he has received from Holland a large Consignment of BULBOUS ROOTS in fine condition.

DESCRIPTIVE and PRICED CATALOGUES are now ready, containing practical directions for the successful cultivation of each section of Bulbs, in Pots, Glasses, and the Flower Garden.

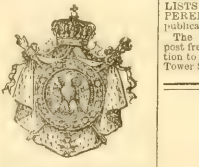
Also a DESCRIPTIVE PRICED LIST of all the best GRAPE VINES in cultivation. Catalogues may be had gratis and post free upon application.

Seed Nursery, Thornton Heath, Surrey, and at the East Surrey Seed Warehouse, College Grounds, North End, Croydon.

Dutch Bulbs and Plants.

JAMES CARTER AND CO. (Fellows of the Royal Horticultural Society of London, and the Royal Agricultural Society of England, &c.)

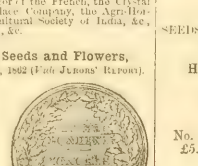
Seedsmen to Her Majesty's Chief Commissioners of Public Works and other Government Departments, the Royal Gardens, Kew, &c., &c., &c.



Seedsmen to H.I.M. the Emperor of the French, the Crystal Palace Company, the Agricultural Society of India, &c., &c., &c.

The Only Prize Medal for Seeds and Flowers,

INTERNATIONAL EXHIBITION, 1862 (*Vide* JURORS' REPORT).

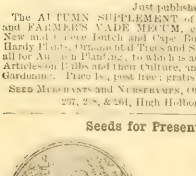


Just published,

The AUTUMN SUPPLEMENT of CARTER'S GARDENER'S and FARMER'S VADE MECUM, containing complete Lists of New and Choice Dutch and Cape Bulbs, Stove, Greenhouse, and Hardy Plants, Ornamental Trees and Shrubs, Fruit Trees and Roses, all for Autumn Planting, to which is added Original and Instructive Articles on Bulbs and their Culture, and Spring Flowers and Spring Gardening. Price 1s.; post free; gratis to Customers.

SEED MERCHANTS and NURSERYMEN, Offices and Seed Warehouses, 237, 238, & 261, High Holborn, London, W.C.

Seeds for Present Sowing.



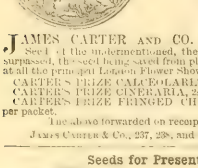
JAMES CARTER AND CO. are now offering New Seed of the undermentioned, the quality of which cannot be surpassed, the seed being saved from plants which have taken Prizes at all the principal London Flower Shows.

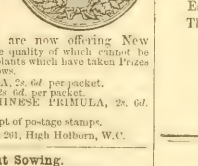
CARTER'S PRIZE CALCEOLARIA, 2*s.* 6*d.* per packet.
CARTER'S PRIZE CINERARIA, 2*s.* 6*d.* per packet.
CARTER'S PRIZE FRINGED CHINESE PRIMULA, 2*s.* 6*d.* per packet.

The above forwarded on receipt of postage stamps.

JAMES CARTER & CO., 237, 238, and 261, High Holborn, W.C.

Seeds for Present Sowing.





LOOK TO YOUR GRASS LANDS.—The month of September is the best in which to renovate Old, or Lay Down New Pastures.

JAMES CARTER & Co. offer their celebrated

RENOVATING MIXTURE at 10*s.* per lb. (sow 10 to 12 lb. per acre)
Also FINEST MIXED PERMANENT GRASSES and CLOVERS (free from weeds), mixed to suit all soils, at 30*s.* per acre.
ITALIAN RYE-GRASS (cheap) | TRIFOLIUM INCARNATUM
SWEDISH TURNIP (new crop)
All of best quality. Price on application to
JAMES CARTER & Co., 237, 238, & 261, High Holborn, W.C.

Dutch Flower Roots.

JOHN AND CHARLES LEE, SEEDSMEN to the QUEEN, have received their usual Importation of DUTCH BULBS, for which they are now executing orders. CATALOGUES post free on application.

Royal Vineyard Nursery and Seed Establishment, Hammersmith, London, W.

Dutch Flower Roots.

FRANCIS & ARTHUR DICKSON & SONS have received, from the best Growers in Holland, a very large Importation of the above, and have the satisfaction to say that the BULBS are unusually large, sound, and well ripened, and for which early orders are requested to ensure the best Roots.

Flower Roots of £2 value will be delivered free of carriage at the principal Railway Stations and Shipping Ports throughout the country.

DESCRIPTIVE PRICED CATALOGUE and all particulars free by post on application.

The Old Established Seed Warehouse, 106, Eastgate Street, Chester.

THOMAS SAMPSON (late DRUMMOND & CO.), has now to offer an unrivalled Collection of DUTCH BULBS and other FLOWERING ROOTS, of the very best quality, at the lowest prices, CATALOGUES of which can be obtained free on application. The season for planting is now at hand, and intending purchasers are invited to an inspection of the select Stock the Nurseries contain, consisting of Ornamental Coniferous Trees, Fruit Trees, Evergreen and Deciduous Trees, Forest Trees, Roses, Flowers of every description, and every requisite for the Farm and Garden. All Business Letters to be addressed to Mr. PETER DRUMMOND, Manager.

The Nurseries, Preston Road, Yeovil, Somersetshire.

LOUIS VAN HOUTTE, NURSERYMAN, Ghent, Belgium, begs to state that copies of his BULB CATALOGUE No. 111 may still be had, together with No. 115, being the AUTUMN CATALOGUE of STOVE PLANTS, PALMS, ORCHIDS, FERNS, ACHIMENES, GLOXINIAS, &c., amongst which will be found all the latest gesneraceous novelties.

CATALOGUE No. 116, containing DESCRIPTIVE PRICED LISTS of GREENHOUSE PLANTS, AZALEAS, CAMELLIAS, PERENNIALS, GLADIOLUS, LILIES, &c., is now in course of publication, and will appear towards the end of the week.

The whole of LOUIS VAN HOUTTE'S CATALOGUES may be had post free either direct from the Establishment, Ghent, or on application to his Agents, Messrs. R. SILBERRAD & SON, 5, Harp Lane, Great Tower Street, London, E.C.

New Catalogue of Plants, Dutch Bulbs, &c.

ROBERT PARKER begs to announce that his NEW CATALOGUE, containing Select Descriptive and Priced Lists of New, Rare, and beautiful Greenhouse, Hardy and Stove Plants, Hardy Ferns, Fruit Trees, Grape Vines, Roses, Rhododendrons, Sweet Violets, &c., Amaryllis, Crocuses, Cyclamens, Gladioli, Hyacinths, Liliums, Narcissus, Tulips, and other Bulbs, is now published and will be forwarded to applicants.

Exotic Nursery, Tooting, Surrey, S.

THE GOLDEN VARIEGATED WELLINGTONIA.—The Parent Tree, though stripped of some thousands of its shoots last winter, is now 12 feet high, and in great beauty. It has made a splendid pure Golden Leader, and every part of the Tree is finely marked with the same, presenting a most beautiful appearance; and Tourists interested in Coniferæ, and coming to this neighbourhood, will find it well deserving of a visit.

RICHARD HARTLAND, The Lough Nurseries, Cork.—Sept. 22.

CHOICE HARDY FLOWERING BULBS, &c.
True to name, and Blooming Roots.

SNOWDROPS, double, fine, 20*s.* per 1000, 2*s.* 6*d.* per 100
COLCHICUM AUTUMNALE, single and fine, 40*s.* per 1000, 5*s.* per 100
,, LATIFOLIUM or FLORIBUNDUM, from the Crimea; each bulb bears from 7 to 12 bright lavender-coloured flowers, very hardy and good, 12*s.* per doz.
CYCLAMEN COUM, 9*s.* per doz.
,, REPANDUM, 12*s.* per doz.
AURICULAS, ALPINE, good mixed, 4*s.* per doz. (doz.
ANEMONE NEMOROSA PLENA, double Wood Anemone, 3*s.* per
CAMASSIA ESCULENTA (Scilla), beautiful blue; large roots,
DODECATHEON ALBUM, 6*s.* per doz [8*s.* per 100
DENS CANIS (Red Dogstooth Violet), 6*s.* per 100
(Yellow American do.), 15*s.* per 100
HEPATICA, single, blue, strong, 4*s.* per doz.
LEUCOJUM ÆSTIVUM (Summer Snowflake), 2*s.* per doz.
MUSCARI BOTRYOIDES (blue Grape Hyacinth), 6*s.* per 100
,, ALBA (white Grape Hyacinth), 8*s.* per 100
NARCISSUS PSEUDO NARCISSUS (Common Daffodil, 30*s.* per 1000), 4*s.* per 100
NARCISSUS PSEUDO NARCISSUS ALBIDA, 15*s.* per 100, 2*s.* per dz
,, BICOLOR, white and yellow, fine, 3*s.* per doz., 20*s.* per 100
NARCISSUS, largest double orange, 8*s.* per 100
,, MINOR, true, dwarf, 3*s.* per 100, 1*s.* 6*d.* per doz.
,, POETICUS (single and double, Poet's Narcissus), 6*s.* per 100, 1*s.* per doz.
SCILLA AMŒNA, 4*s.* per doz.
,, NUTANS ALBA, fine variety, 10*s.* per 100, 1*s.* 6*d.* per doz.
,, ROSEA, 10*s.* per 100, 1*s.* 6*d.* per doz.
CHELONE SPLENDENS, good, much hardier and more free-flowering than barbata, 3*s.* per doz.

Early orders are requested. Post-office orders payable at Leek, to GEORGE T. FOX, The Nurseries, Wetley Rocks, near Leek.

The above prices include package

ESTABLISHED UPWARDS OF A CENTURY.

BUTLER, McCULLOCH, & CO.,

SOUTH ROW, COVENT GARDEN, LONDON, W.C.,

SEEDSMEN TO HER MAJESTY'S COMMISSIONERS OF WOODS AND FORESTS, TO THE COMMISSIONERS FOR THE COLONIES, TO THE HORTICULTURAL SOCIETIES OF THE PUNJAUB AND BOMBAY, ETC.

HOLDERS OF PRIZE MEDALS FROM INTERNATIONAL EXHIBITIONS OF 1851 AND 1862.

CHOICE COLLECTIONS of BULBS, all of the FIRST SIZE and QUALITY.

For Conservatory Decoration.					For Flower Garden Decoration.				
No. 1.	No. 2.	No. 3.	No. 4.	No. 5.	No. 6.	No. 7.	No. 8.	No. 9.	No. 10.	No. 11.	No. 12.
£5.	£2 10*s.*	£1 5*s.*	£1 1*s.*	15*s.*	10*s.* 6*d.*	£5.	£3.	£2.	£1 5*s.*	£1 1*s.*	10*s.* 6*d.*

For Conservatory and Flower Garden Combined.

No. 13, £5 5*s.* No. 14, £2 12*s.* 6*d.* No. 15, £2 2*s.* No. 16, £1 1*s.* No. 17, 15*s.* No. 18, 10*s.* 6*d.*

All Orders amounting to £1 1s. and upwards sent carriage paid.

ILLUSTRATED PRICED CATALOGUE post free on application.

NEW HARDY CLEMATISES.

Clematis rubella.

Very rich velvety claret; the deepest coloured Clematis yet offered. Very distinct, and having the advantage of flowering 60 to 70 per cent. of blooms, with five and six sepals. First Certificate, Royal Horticultural Society.

Clematis Prince of Wales.

Large flowers, of a rich deep violet purple, with red bars down the centre of each sepal. A decided improvement on C. rubro-violacea. First Certificate, Royal Horticultural Society.

MESSRS. GEORGE JACKMAN & SON

Have much pleasure in announcing that they are in a position to send out the above CLEMATISES, that are distinct, and can with confidence recommend them "amongst the best of hardy Climbers, if not the very best Ornaments for Walls, Trellis Work," &c.

Early orders will secure the strongest Plants, which will be sent out strictly in rotation first week in October.

The "Floral Magazine," in the October Number, will insert C. RUBELLA and C. LANUGINOSA CANDIDA.

Strong Plants, with bine, 1½ to 2½ feet, 21s. each.

The usual allowance to the Trade.

Coloured Drawings, by Andrews, for Twenty-four Stamps.

WOKING NURSERY, SURREY.

TAXUS HIBERNICA FASTIGIATA VARIEGATA
(THE GOLDEN IRISH YEW).

FISHER, HOLMES & CO.

Have much pleasure in offering for the first time the above really beautiful NEW YEW.

It is the exact type of the Irish Yew, with foliage of the same colour as the Old Golden Yew, and forms a most attractive and really beautiful plant.

It was exhibited at the Royal Horticultural Society's Exhibition in June, 1863, where it obtained a First-class Certificate (see *Gardeners' Chronicle*, p. 580, 1863); it was again exhibited at the International Horticultural Exhibition last May, where it was awarded another First-class Certificate.

Price 21s. each; Six Plants for £5 5s.; a few Extra Specimens at 31s. 6d. each.

☞ *Price to the Trade on application.*

HANDSWORTH NURSERIES, SHEFFIELD.—Sept. 29.

GEORGE DAVIES begs to inform the Nobility and Gentry that his very SELECT and DESCRIPTIVE CATALOGUE of HYACINTHS, TULIPS, NARCISSUS, CROCUS, &c., for the present season is now ready, and may be had post free on application.

Any Ladies or Gentlemen requiring HYACINTHS, &c., for competition, can be supplied with (specially selected) Bulbs suitable for that purpose at moderate prices.

G. D. having received his first importations of Hyacinths, &c., has much pleasure in stating that they are unusually fine this season, begs to assure those who may favour him with their commands, none but first quality of Bulbs will be sent. Equal if not superior to any house in the Trade.

G. D. has much pleasure in informing his Friends and the Public generally, that he obtained the First Prize for the best 24 Hyacinths (Nurserymen's Collections) at St. George's Hall, Liverpool, in March last, in competition with Messrs. Wm. Cuthbush & Son, for £10; also the Bronze Medal at the Royal Botanic Society, London.

My friend Mr. Cuthbush having vauntingly Challenged me last year, I now venture to Challenge him to Exhibit 24 Hyacinths at St. George's Hall, Liverpool, next March, for £5.

Green Lane Nurseries, Old Swan, near Liverpool.

New Seeds for Autumn Sowing.

PETER LAWSON AND SON,

THE QUEEN'S SEEDSMEN,

London and Edinburgh,

Can supply NEW SEEDS of all kinds for AUTUMN SOWING, selected with the greatest care, and harvested in fine condition.

28, King Street, Cheapside, E.C.

PETER LAWSON AND SON,

THE QUEEN'S SEEDSMEN,

London and Edinburgh.

NEW SEEDS FOR AUTUMN SOWING.

NATURAL GRASS SEEDS.—All sorts, for Laying Down Permanent Pasture, Lawns, Bowling, Croquet Grounds, &c.

ITALIAN RYE-GRASS and TRIFOLIUM INCARNATUM.—Early and Late varieties.

WINTER TARES, RYE, OATS, and BARLEY.

Also the NEW FORAGE PLANTS, KIDNEY VETCH, and SCHEELER'S BROME GRASS.

28, King Street, Cheapside, E.C

Fagræa imperialis.

A. VAN GEERT, NURSERYMAN, Ghent, Belgium, begs to offer this splendid New Plant, originally from Sumatra. Certainly one of the finest foliaged plants known, with thick glaucous leaves, 2 feet long.

Fine Seedling Plants, 5 to 6 inches high, 15s each. One over for every three taken. First-rate to grow for exhibition

Musa. Ensete, &c.

A. VAN GEERT, NURSERYMAN, Ghent, Belgium, begs to offer fine established Plants of the splendid MUSA ENSETE, at 42s. each; also fine Plants of MUSA REGIA, at 7s. 6d.; and nice young plants of ALSOPHILA EXCELSA, at 42s. per hundred. Good plants of ALSOPHILA CONTAMINANS at 10s. 6d. each. CATALOGUES may be had of his Agents,

Messrs. R. SILBERRAD, 5, Harp Lane, Tower Street, London, E.C.

New Caladiums.

CHARLES VERDIER (late VICTOR VERDIER and CIE, VERDIER), NURSERYMAN, 23, Rue Dumeril (late Rue du Marché aux Chevaux, 32), Paris, offers for Sale the following magnificent SEEDLING CALADIUMS, raised by M. Bleu:—

Baron Rothschild	Edouard Moreaux	Raulini
Parrel	Isidore Leroy	Rosanni
Charles Verdier	Ketelaer	Siebold

A CATALOGUE containing Descriptions and Prices may be obtained from M. VERDIER; or from SILBERRAD & SON, 5, Harp Lane, Great Tower Street, London, E.C.

New Gladioli.

CHARLES VERDIER, Fils (late VICTOR VERDIER & CHARLES VERDIER), NURSERYMAN, 12, Rue Dumeril, formerly Rue du Marché aux Chevaux, 32, Paris, begs to offer the following NEW SEEDLING GLADIOLI (Souchets):—

Adolphe Brongniart	Noémie
Annis	Princesse Marie de Cambridge
Apollon	Rev. M. J. Berkeley
Bernard Palissy	Sir W. Hooker
Félicien David	Thomas Moore
Lady Franklin	Joseph Paxton

The CATALOGUE containing the descriptions and the prices may be obtained from M. VERDIER as above; or from Messrs. H. SILBERRAD & SONS, 5, Harp Lane, Great Tower Street, London, E.C.

New Gladioli.

EUGÈNE VERDIER, Fils Aîné, NURSERYMAN, 8, Rue Dunois, Paris, has the honour to offer this Autumn to his numerous Friends and Patrons the following NEW GLADIOLI raised from seed by Mons. Souchet. Their description and prices will be found in his Catalogue, which can be obtained on application of his Agents, Messrs BETHAM & BLACKITH, Cox's Quay, Lower Thames Street, London, E.C., viz.:—Ad. Brongniart, Anais, Apollon, Bernard Palissy, Brilliant, Emilie, Félicien David, Gloire, Greuze, Lady Franklin, Le Titien, Meteor, Mirabilis, Nolly, Noémie, Princess Mary of Cambridge, Rev. M. J. Berkeley, Sir William Hooker, Joseph Paxton, Th. Moore.

100,000 Camellias.

JOSEPH BAUMANN, NURSERYMAN, Ghent, Belgium, begs to offer—

100	CAMELLIAS, with flower buds, best sorts,	£5.
100	"	"	£6.
100	"	"	stronger, £8.

The following free to the Custom House, London:—

100	CAMELLIAS, without flower buds, 1 year's grafted,	£4.
100	"	2 to 3 years' grafted,	£5.
100	"	stronger plants,	£6.
100	CAMELLIA STOCKS,	£1 10s.
100	"	stronger,	£1 15s.

SEEDS CARRIAGE FREE.

Grass Seeds for Permanent Pasture.

WM. WOOD AND SON are now supplying the finest MIXTURES of NATURAL GRASS SEEDS (8 bushels of light seeds, and 12 lb. of Clover per acre best quality, 30s. per acre.

RENOVATING MIXTURE, at 10d. per lb. (10 to 12 lb. per acre).

The best ITALIAN RYE-GRASS, at 8s. per bushel, or cheaper by the quarter.

TRIFOLIUM INCARNATUM, 12s. to 13s. per bushel.

Woodlands Seed Warehouse, Marosfield, Uckfield, Sussex.

Dickson's "First and Best" Early Pea.

FRANCIS & ARTHUR DICKSON & SONS are gratified to know that this PEA has again this season given universal satisfaction, and is pronounced by hundreds of the first Gardeners in Britain, and other competent Judges confirmed also by their own repeated trials against all the best Early Peas of the day), to be the very best First Early Pea ever offered for general good qualities, viz., earliness, productiveness, and succession of crop. "First Crop" (or "Kingcedar") may, on some soils, be a day or so earlier, but it is altogether a very inferior Pea, as every one freely admits. New Seed can now be supplied from a very large bulk, which they have grown for the great and increasing demand.

Price 1s. 6d. per quart. Price per bushel to the Trade on application.

The Old Established Seed Warehouse, 106, Eastgate Street, Chester.

FIBROUS PEAT of superior quality for Orchids, American Plants, and all Potting purposes, may be obtained from Farringdham Road Station on London, Chatham, and Dover Railway, Trucks of 10 Tons. Farringdham Road is one of the London Stations and on the Great Northern, Great Western, and Midland Railways.—THOS. JESSOP, Farringdham Road, Farringdham, Kent.

COCOA-NUT REFUSE is becoming scarce, the old reserves will soon be gone. Now sold in bags, 1 for 2s., 10 for 16s., 20 for 30s., 50 for 65s., 100 for £6.

Fourpence allowed for each bag returned carriage-paid.

A Railway Truck-load (not in bags), 40s.

Postage Stamps or Post-office Order, payable to J. BARSHAM & Co., Kingston-on-Thames, S.W.

GENUINE TOBACCO PAPER for Fumigating, in 2 lb. and 1 lb. packets. Price per cwt., 74s. net cash. Address WILLIAM RUSHWORTH, 44, Vicar Lane, Leeds.

Destroy your Insect Pests.

PRESERVE YOUR PLANTS and TREES.

YOU MAY EASILY DESTROY ALL PLANT PESTS,

RED SPIDER	GREEN AND BLACK	ANTS
MEALY BUG	FLY	SCALE
THRIP	AMERICAN BLIGHT	MILDEW,

Without injury to the most delicate Plant or Tree, by using

FOWLER'S GARDENERS' INSECTICIDE, pronounced by all who have used it to be far superior to any other remedy. One trial will prove its efficacy. Testimonials forwarded on application. Price 1s., 2s., 3s., 5s. 6d., and 10s. per Tin.

GEO. & THOMAS FOWLER, North Street, Brighton; and of HOOPER & Co., Covent Garden Market, W.C.

Red Spide

Magnified.

GISHURST COMPOUND, whether used against Insects and Mildew, on Growing Plants, or as Winter Dressing on Trees at rest, should be dissolved 48 hours before use. This gets rid of smell, and if the Solution be decanted, prevents any staining of foliage. A strength of from 1 to 2 oz. to the gallon of water is recommended for growing Plants; one from 4 to 16 oz. for Trees at rest.

Sold Retail by Nurserymen and Seedsmen, in boxes, 1s. 3s., and 10s. 6d. each.

Wholesale by

PRICE'S PATENT

CANDLE COMPANY

(LIMITED).

HOT-WATER APPARATUS, of every description, fixed complete in any part of the country, or the materials, viz., Boilers, Pipes, &c., delivered to any Station.

Estimates on application.

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Heating by Hot Water.

W. J. HOLLANDS, IRON MERCHANT, 31, Bankside, London, S.E.

HOT WATER PIPES, from 8-inch Scoop, per yard:—2-inch, 1s. 2d.; 3-inch, 1s. 10d.; and 4-inch, 2s. 4d. BENDS, from Stock, 1s. 6d., 2s. 6d., and 3s. each. THROTTLE VALVES, 1s., 1s. 3d. and 1s. 6d. each. Other Connexions at equally low prices, and all goods of first-class manufacture. Estimates given, and orders by post punctually attended to the same day.

Heating by Hot Water.

HOT-WATER PIPES, at Wholesale Prices, with Elbows, Syphons, Tee Pipes, and every other connection; Wrought and Cast-Iron Boilers, Saddle, Conical, Cylinder, Tubular, and Elliptic, from 24s. each. Improved Boilers and Iron Stands to use without brickwork, 60s. each. Valves from 16s. 6d. each. Patent Valves, improved Furnace Doors, Furnace Bars, Supply Cisterns, and Castings of every description in stock, at

MR LYNCH WHITE'S Iron Wharf, Upper Ground Street, Blackfriars Bridge, London, S. Price List on application.

JAMES WATTS AND CO., HOTHOUSE BUILDERS and Hot-WATER APPARATUS MANUFACTURERS, 353, Old Kent Road, S.E.

200 CUCUMBER and MELON BOXES and LIGHTS, and from 400 to 500 LIGHTS for PITS of all SIZES kept in STOCK. Glazed and Painted complete, ready for immediate use. Packed and sent to all parts of the kingdom. Public and Private Buildings, Warehouses, &c., heated on the most approved scientific and economical principles. References to the Nobility, Gentry, and Trade in most of the Counties in England.

The Only Stove without a Flue.

NASH AND JOYCE'S PATENT for AIRING, DRYING, and WARMING HALLS, SHOPS, ROOMS, &c., a new special Stove for Conservatories, Greenhouses, Fruit-Ripening, &c.; to Burn without re-lighting all winter by filling with fuel every 12 hours. Requires no chimney or flue. Price required, without varying. Price from 12s. 6d. to 6 guineas.

MINCING and SAUSAGE FILLING and MASTICATING MACHINES, of the best makers, 20s. 6d.

The COTTAGE KNIFE CLEANER is the only rapid Cleaner and Polisher of Knives at a moderate price. 3s. 6d. to 10s. 6d. Prospectus post paid.

CHEAP FIRES.—The Radiating Fire Balls save half the usual consumption of fuel. One Shilling packet of Four, red hot in the fire every day, lasts all Winter.

S. NASH, Ironmonger, 253, Oxford Street, W.C.; and Store Depôt, 119, Newgate Street, London, E.C.

CRANSTON'S PATENT BUILDINGS for HORTICULTURE.

"Dry Glazing without Putty."

"Glass without Laps."

"Ventilation without Moving Lights."

Highly Commended by the Royal Horticultural Society, South Kensington.

Plans and Estimates free on application. Descriptive Book fully illustrated, post free for 26 stamps, from the Author and Patentee, JAMES CRANSTON, Architect, Birmingham.

Works: Highgate Street, Birmingham.

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HOTHOUSES for the MILLION, invented by the late SIR JOSEPH PAXTON.

Manufactured at Lea Bank, Newton in Cartmel (Lancashire), Gloucester, Cirencester, Aberdeen, and Paisley.

Illustrated Circulars, with revised List of Prices, will be sent on request application to Messrs. GRAHAM & Co., 8, Cannon Street, Head Office, 7, Pall Mall East, London, S.W.

HOT WATER PIPES and FITTINGS of the best description supplied by

BURY & POLLARD, 17, New Park Street, Southwark, London, S.E.

BURY AND POLLARD'S CONICAL BOILERS for HEATING by HOT WATER fixed at Seats of Duke of Newcastle, Lord Belper, &c., at Viscount Sydney's replaced, after being 20 years in constant use. Apply at

17, New Park Street, Southwark, London, S.E.

GREENHOUSES, 42 feet by 13 wide, £50; 21 feet by 13 wide, £28; 12 feet by 10 wide, £15, glazed, ready for fixing.

A handsome CONSERVATORY, 36 feet by 19, £120

Estimates for any branch in the line, in Wood or Iron, at

H. FOLKMAN'S Works, Tranicle, Hackney, N.E.

JAMES SMITH begs to offer several well-constructed GREENHOUSES, made portable, for the convenience of taking down and refixing. A LEAN-TO, 14 feet by 5 feet 6 inches, £16 10s.; Ditto, 20 feet by 11 feet, £28; Ditto 27 feet by 12 feet 6 inches, made ornamental, £36; a SPAN-ROOF ditto, 20 feet by 10 feet 6 ins., £55; 24 PIT LIGHTS, 6 feet by 4 feet 4; ditto ditto, 6 feet 6 inches by 4 feet; 24 ditto ditto, 5 feet 7 inches by 3 feet 7 inches. One, Two, and Three-light GARDEN FRAMES, from 12s. 6d. each. HAND GLASSES from 4s. 6d. each. All Timbers warranted to be of good Yellow Deal. Apply to

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Tyes' Registered Hyacinth Glasses.

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Diameter, 30 inches;	Length 30 inches,	£7	10	0
"	24	"	"	36	"	4	10	0
"	20	"	"	22	"	3	10	0
"	16	"	"	18	"	2	15	0

Prices for Rollers fitted with shafts suitable for Pony or Horse Power, free on application.

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N.B. All Orders executed on the day they are received.

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INTERNATIONAL EXHIBITION, LONDON, 1862.

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The above Lawn Mowers have proved to be the best, and have carried off every Prize that has been given in all cases of Competition.

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AGRICULTURAL and HORTICULTURAL IMPLEMENTS and MACHINES of every description.

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HURDLES and CONTINUOUS IRON and WIRE FENCING.

Palisading Entrance and Field Gates. Plain and Galvanised Wire Netting.

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Garden Engines, Syringes, Water Barrows, Ornamental Garden Seats, Chairs, Tables, Iron Fountains, Vases, &c.

IRON and BRASS BEDSTEADS, in great variety.

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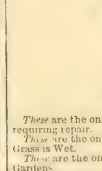
SHANKS' PATENT LAWN MOWERS for 1866.—Patronised on five separate occasions during the Season of 1864 by Her Majesty the Queen, and once by his Majesty the King of Saxony; again on four separate occasions during the Season of 1865 by Her Majesty the Queen; once by His Majesty the King of Holland; and once by His Majesty the King of Prussia.



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These are the only Lawn Mowers that will Mow properly when the Grass is Wet.

These are the only Lawn Mowers that are in use in ALL the Royal Gardens.

Every Machine warranted, and if not approved of can be at once returned. Illustrated Price Lists sent free on application.

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7, Leadenhall Street is the only place in London where intending purchasers of Lawn Mowers can choose from a stock of from 150 to 200 Machines; all sizes kept there, whether for Horse, Pony, or Hand Power.

NEW STRAWBERRY, DR. HOGG (BRADLEY).—Resembling British Queen, but very large, and a better grower than the Queen; one of the sweetest Strawberries grown, and, like Sir J. Paxton and Oscar, by the same raiser, will become a favourite, and be generally grown. It received a First-class Certificate from the Royal Botanic Society in 1865, and the same distinction by the Fruit Committee of the Royal Horticultural Society this season; was exhibited in C. Turner's successful collection of four varieties of Strawberries, and also in his Collection of Fruit at the July Exhibition of the Royal Botanic Society. Price 21s. per 100.
CHARLES TURNER, The Royal Nurseries, Slough.

A Quarter of a Million of Fruit Trees.

THOMAS WARNER begs to inform intending Planters and the Trade, that his Nurseries, which occupy upwards of 70 acres, contain the above, in addition to a most extensive stock of Evergreens, Ornamental Trees, Roses, &c. All in a high state of cultivation. An inspection is respectfully invited.
CATALOGUES, Wholesale and Retail, ready in October.
The Nurseries, Leicester Abbey, 1½ mile from the Midland Railway Station.

Fruit Trees, Roses, Evergreens, &c.

W. KNIGHT begs to inform intending Planters that he has many Thousands of the above, with every other ORNAMENTAL TREE and SHRUB, in the finest possible condition, at reasonable prices. An inspection is respectfully invited. DESCRIPTIVE PRICED CATALOGUES free.
The Nursery is within two minutes' walk of the Hailsham Station (South Coast Railway).
Floral Nursery, Hailsham, Sussex.

New Roses for 1866.

EUGÈNE VERDIER, Fils Aîné, NURSERYMAN, 3, Rue Dunois, Paris, has the honour to inform the public that he will have ready to deliver in November next, the following splendid ROSES obtained from Seed in his Establishment:—
HYBRID PERPETUALS.—Comte Litta, Jules Calot, Madame George Paul, Madame la Baronne Haussmann, Madame la Baronne Maurice des Grayers, Madame la Comtesse de Tuerene, Mademoiselle Annie Wood, Mademoiselle Eleanor Orier, Napoleon III., Velours pourpre. CATALOGUES may be obtained direct of E. V., or of his Agents, Messrs. BUTHAM & BLACKITH, Cox's Quay, Lower Thames Street, London, E.C.

CERASUS LUSITANICA var. AZORICA.—Plants of this very superior variety of Portugal Laurel (in habit, flower, and hardiness), to which a First-class Certificate was awarded by the Royal Horticultural Society on the 6th June, will be ready for distribution the ensuing Autumn. 7s. 6d. and 10s. 6d. each.
OSBORN & SONS, Fulham Nursery, London, S.W.

Tulips, Ranunculuses, &c.

C. TYSO, FLORIST, Wallingford, Berks, now offers—
TULIPS, 25 fine named late sorts, £1 5s.
" 25 fine named early double sorts, 6s.
RANUNCULUSES, 25 choice named sorts, £1
" 25 fine named sorts, 10s.
" 100 mixtures, 5s., 7s., and £1
Double ANEMONES, 25 choice sorts, named, 6s. 6d.
" 25 mixtures, 2s. 6d.
Imported DUTCH HYACINTHS, NARCISSI, TURBAN RANUNCULUS, JONQUILS, CROCUSES, SNOWDROPS, &c.
Finest RANUNCULUS SEED, 2s. 6d.; Do. ANEMONE, 1s. per pkt.
DESCRIPTIVE CATALOGUE sent free for one stamp.

CHOICE VARIEGATED PELARGONIUMS.

Sunset	Luna	Italia Unita
Mrs. Benyon	Clara	Petunia
Mrs. Pollock	Golden Tom Thumb	The Fairy
Yellow Belt	Rainbow	Princess Alexandra

The above 12 varieties, suitable for exhibition, for 21s.
The following at 7s. per doz., package included:—

Mrs. Pollock	Golden Vase	Golden
Harkaway	Burning Bush	Argus
Glowworm	Snowflake	Fotentambleau

Terms, cash. Remittances requested from unknown correspondents.
Address, ALFRED FRYER, Nurseries, Chatteris, Cambridgeshire.

PAUL AND SON'S NEW DOUBLE THORN, CRATÆGUS OXY. COCCINEA PLENA.—We have much pleasure in ordering this Autumn this unique novelty in Double Trees. It has received the highest possible Awards of Merit, viz., First-class Certificate International Exhibition, an i the same award at Royal Botanic Society's great Show. Quite distinct from the old double pink, it has the same vigorous habit and free-blooming quality.
The Gardeners' Chronicle, May 21, 1864, thus speaks of it:—"A new double Thorn, much superior to any which we had previously seen, in the combined character of depth of colour and doubleness; the blossoms were fully double, and colour a bright deep carmine red. We regard the variety as greatly superior to the old double Hawthorn with pinkish-red flowers."
Standards or Pyramids, 10s. 6d. each. Usual allowance to the Trade when three are taken.
The Old Cheshunt Nurseries, Cheshunt, N.

To the Trade.—A Good Opportunity.

JOHN J. HASLAM, Bradshaw Gardens, Chadderton, Manchester, begs to offer, in unusually fine strong well rooted Plants, the late Mr. John Holland's unequalled Collection of CARNATIONS and PICOTEES in great variety, 30s. per 100 pairs; YELLOW GROUND PICOTEES, 75s. per 100 pairs.
Also a choice assortment of LANCASHIRE SHOW GOOSEBERRY TREES, true to name, 4s. to 6s. per dozen, or 30s. per 100.
Named sorts of the best CURRANT TREES grown. Black, per dozen, 2s.; Red, per dozen, 2s.; White, per dozen, 3s. Selections of the above left to J. J. H.
CATALOGUES will be forwarded on application post free for one stamp. A liberal allowance in Plants for long carriage will be given. Post Office Orders payable to
JOHN J. HASLAM, Middleton, Lancashire.

HYACINTHS AND OTHER BULBS.

WILLIAM PAUL,

SON and SUCCESSOR to the late A. PAUL,

BEGS TO ANNOUNCE THAT HE HAS NOW READY FOR DELIVERY

HIS USUAL SUPPLY OF HYACINTHS AND OTHER BULBS,

Which he has selected from the stock of the first growers in Holland, and which he believes will be found equal to any Bulbs this year imported, and give the same satisfaction to the respective purchasers as those imported and supplied by him in previous years.

HYACINTHS, good named sorts, 50s. per 100
" choice selection, 9s., 12s., and 15s. per doz.
" new sorts, 18s. to 42s. per doz.
" for bedding, 18s. to 34s. per 100

TULIPS, early, in great variety, 1s. to 4s. per doz., 6s. to 24s. per 100
POLYANTHUS NARCISSUS, by name, 4s. to 6s. per doz., 25s. to 42s. per 100
CROCUS, of sorts, 2s. to 5s. per 100.

All other Bulbs and Spring-flowering Plants and Shrubs for Forcing equally reasonable in price.

His friends and the public generally are respectfully reminded that his Collections of these Plants obtained no less than 29 FIRST PRIZES last spring in the space of one week, from the Royal Horticultural and Royal Botanic Societies of London.

NOTICES OF THE PRESS.

"The breadth and length of spike of many of these Hyacinths are much greater than we have ever before seen, and the colours are remarkable for their solidity and clearness."—*Gardeners' Chronicle.*

"There was an air of nobility about the spikes that it is difficult to describe, but which was most striking."—*Journal of Horticulture*

"It is due to Mr. W. Paul's wonderful group of 24 Hyacinths to which was awarded the First Prize, that a tribute should be borne here to their incomparable quality."—*The Florist.*

"A Collection that were as near absolute perfection as in the present state of our knowledge we can imagine."—*Gardeners' Magazine*

"The Hyacinths were particularly fine and very numerous, the plants and flowers large and well-grown."—*The Times.*

"The Hyacinths are of giant size, the colours having a metallic lustre and an intensity which we never saw equalled."—*Morning Post.*

"The Hyacinths and Roses of Mr. Wm. Paul proved the greatest attraction at the exhibition, the varieties being good and the plants well-grown."—*Daily Telegraph.*

EARLY ORDERS ARE SOLICITED.

PAUL'S NURSERIES and SEED WAREHOUSE, WALTHAM CROSS, LONDON, N.

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UNRIVALLED COLLECTIONS OF

BULBOUS FLOWER ROOTS,

FOR BLOOMING DURING THE WINTER AND SPRING.

SEEDSMEN BY APPOINTMENT Sutton AND Sons

SUTTON'S COLLECTION of HARDY FLOWER ROOTS

FOR OPEN GROUND.

		£	s.	d.
No. 1.	A large and Choice Collection of ANEMONES, HYACINTHS, CROCUSES, TULIPS, RANUNCULI, NARCISSI, SNOWDROPS, IRISES, GLADIOLI, &c.	2	2	0
No. 2	Ditto ditto, consisting of all the same kinds, in Reduced Quantities	1	1	0
No. 3.	A Small and Choice ditto	0	10	6

SORTS for FLOWER POTS and GLASSES.

No. 4.	A splendid Collection of HYACINTHS, JONQUILS, NARCISSI, EARLY TULIPS, New large CROCUSES, &c.	2	2	0
No. 5.	The same in Reduced Quantities	1	1	0
No. 6.	A Small and Choice Assortment	0	10	6

N.B. A complete LIST of the above may be had post free, and any article specified, if not required, will be omitted, and additional quantities of others included.

The very low charges now made for the above Choice Collections of Flower Roots will, it is believed, insure a continually increasing demand.

Early Orders are requested before the more scarce kinds are all sold.

SUTTON'S DESCRIPTIVE AUTUMN CATALOGUE

is now ready, and may be had gratis and post free on application.

All Goods sent Carriage Free except small parcels, and 5 per cent. allowed for cash payments.

SUTTON AND SONS, ROYAL BERKS SEED ESTABLISHMENT, READING.

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AUTUMNAL FLORAL GUIDE TO WINTER

AND SPRING GARDENING,

Contains a Treatise on "SPRING GARDENING," with Directions for Planting a series of Beds and Borders, with Early Flowering BULBS and PLANTS, the beauty and general effect of which will bear comparison with the gayest groups of our Summer and Autumn Blooming Plants, and may be had free by intending purchasers.

Gem Plant Case.

BULBS and PLANTS for SPRING BLOOMING.

100,000 HYACINTHS, 2s. 6d. to 3s. per doz., 18s. to 21s. per 100
100,000 NARCISSUS, 6d. to 3s. 6d. per doz., 3s. 6d. to 21s. per 100
100,000 TULIPS, 9d. to 2s. 6d. per doz., 4s. to 15s. per 100
200,000 CROCUSES, 1s. 6d. to 4s. per 100, 14s. to 30s. per 1000
100,000 SNOWDROPS, 2s. 6d. per 100, 21s. per 1000
10,000 SCILLA SIBIRICA and AMŒNA, 2s. 6d. per doz., 18s. per 100
100,000 CLIVEDEN PANSIES, Blue, Purple, and Yellow, 4s. per doz., 30s. per 100
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100,000 CLIVEDEN DAISIES, Pink, Red, and White, 3s. per doz., 21s. per 100
100,000 VARIEGATED ARABIS, a fine permanent edging, 3s. 6d. per doz., 21s. per 100
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COLLECTIONS of BULBS for Blooming In-door Decoration, 10s. 6d., 15s. 6d., 21s., 30s., 42s., 63s., and 210s.
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12, KING STREET, COVENT GARDEN, LONDON, W.C.

THE CZAR VIOLET is NOW in BLOOM, and will continue so through the winter, even during frost and under snow, until May The flowers are twice as large as the Old Russian, and sweeter; on very long stout stalks. Awarded several First-class Certificates and Prizes. Strong blooming plants may be had, 10s. per dozen, prepaid, of Mr JOHN GRAHAM, Cranford, Hounslow, W. The usual allowance to the Trade.

VIOLETS.—A large stock of the different sorts of Violet Plants now in full bloom (including the GIANT, NEAPOLITAN, CRIMEA, TREE, &c.), and in first-rate condition for planting out for the winter season. The Giant, bearing a finer bloom and a more beautiful perfume than any of its kind, now in perfection Roots can be had about 21 inches in circumference, and in full bloom. LISTS of PRICES on receipt of stamp for postage.
JOHN STEDMAN, Violet Grower, Thornton Heath, Surrey.

VIOLETS, WALLFLOWERS, &c.

VIOLET (Queen of Violets), 12s. per doz.
" double red, 6s. per doz., 40s. per 100
" (Neapolitan), in 60-pots, 6s. per doz., 40s. per 100
" in small 60-pots, 4s. per doz., 25s. per 100
" double blue, 30s. per 100
" double white, 20s. per 100
WALLFLOWERS, double yellow, fine, in pots, 25s. per 100
" double dark, fine, in pots, 25s. per 100
A PRICED LIST of the best SPRING FLOWERS free upon application.
DILLISTONE & Co., Nurseries, Sturmer, near Halstead, Essex

Amaryllis.

JAMES GARAWAY AND CO., Durdham Down Nurseries, Bristol, offer, from their unequalled stock of the above-named favourite flower, strong Bulbs of unnamed Seedlings and others that have bloomed with them during the two last seasons, at 3s., 7s. 6d., and 10s. 6d. each, or 50s., 75s., and 105s. per dozen.
JAMES GARAWAY & Co.'s GENERAL BULB CATALOGUE for the coming season is in the Press, and when ready will be forwarded post free on application.
JAMES GARAWAY & Co., Durdham Down Nurseries, Bristol.

Cupressus Lawsoniana argentea.

MESSRS. WATERER AND GODFREY propose sending out this Plant in October next.
Good stout Plants, 1½ foot high and bushy, at 21s. each.
It has been awarded Three First-class Certificates by the Royal Horticultural Society of London, Royal Botanic Society of London, and at the Crystal Palace; and may be justly represented as a distinct and very beautiful plant, and one that will become a general favourite. Knap Hill Nursery, Woking, Surrey.

B. S. WILLIAMS, Victoria and Paradise Nurseries, Holloway, London, N.
CHOICE SEEDS.
PRIMULA (WILLIAMS's superb Strain).—The most noted strain of Primula in existence; same as supplied to nearly all the largest Gardens in England. In sealed packets, at 5s., 3s. 6d., and 2s. 6d. each. None genuine without B. S. WILLIAMS's name and address on the packet.
CALCEOLARIA (JAMES's Strain).—5s. and 3s. 6d. per packet.
CINERARIA (WEATHERILL's extra choice strain).—This well-known Covent Garden strain to be had genuine only in sealed packets bearing B. S. WILLIAMS's name and address. Price 5s. and 3s. 6d. per packet.

The Gardeners' Chronicle.
SATURDAY, SEPTEMBER 29, 1866.

MEETINGS FOR THE ENSUING WEEK.

TUESDAY,	Oct. 2	{Royal Horticultural (Floral and Fruit Committees), at South Kensington	11 A.M.
		{Dutch Scientific Discussion	3 P.M.
SATURDAY,	— 6	{Royal Horticultural (Weekly show), South Kensington	2 P.M.

IT is a source of satisfaction to find that the ROYAL HORTICULTURAL SOCIETY is desirous of profiting by the example of the recent Great International Show; and still more satisfactory is it to know that the Society has at last become willing to take counsel with practical men. These are promising signs, and they have become evident in this way: when the Floral and Fruit Committees last met, the opinion of the members of those bodies was sought as to the policy or impolicy of merging the two or three customary summer shows into one continuous show of some few days' duration. The question thus raised was reserved for discussion at the meeting of the Committee, which takes place on Tuesday next. It is a subject of some importance to the general body of horticulturists, and we trust, therefore, that having been courteously consulted, rather in their individual than in their corporate capacities, the members of those Committees will not only give the subject their full and serious consideration, but will also give to the Executive of the Society the benefit of an expression of their honest convictions thereupon.

What the result will be, we can scarcely doubt. With our experience of the tedium of shows which under the old *régime* recur every few days throughout the summer season, and of their general unprofitableness in a pecuniary sense, on the one hand; and on the other, with the knowledge which was gained at the International, that it is quite practicable to keep many, if not all the subjects which make up our exhibitions, without material damage, for some four or five days at the least, there can, we think, be but one opinion—that it would be a wise step to adopt the plan which is in contemplation.

We have said that this is a question of some importance—we might have said it is one of paramount importance, for it most intimately affects both the principal parties concerned in the getting up of these shows, namely, the caterers for the public enjoyment, in this instance represented by the Royal Horticultural Society, and the exhibitors, who find the materials out of which the show has to be made. The Society, it is obvious, has a deep interest in the matter, for it steps in and takes all pecuniary risks; it finds a local habitation for the exhibition, and a staff to carry out the necessary arrangements; and it finds the prize money, which on the occasion of a great show represents a considerable sum in hard cash to be risked upon the slender chance, in our fickle climate, of being recouped by a single day's receipts. The exhibitor on his part has also a great interest in the question, for he has to provide all the appliances of cultivation in the shape of structures, soils, fuel, &c.; he has to bring his skill—often his chief if not his only capital—to bear on the treatment of the exhibition subjects, and days of toil and nights of anxious watching, of which the uninitiated know nothing, have to be endured; he has to provide means of transit, and assistance in the moving from place to place of those monster specimens, which, however we may criticise them, are the glory of our British flower shows; and he risks the perils by the way, the perils of the tent, the perils of cold and the perils of heat, uncertain at the outset whether his choicest specimens may not be crippled or destroyed by accidents or unfavourable conditions; and verily for all this he should have his reward.

But looking at the question from another point view, if, as seems too often to be the case, it is found that exhibitions of the class under consideration won't pay, the caterers will hold their hand, and the exhibitors will lose the opportunity of winning both honours and rewards. The Societies will either hold shows in which there will be no life or spirit, just to keep up appearances, and in which exhibitors will necessarily gain but scanty remuneration; or they will give up their shows altogether, when the exhibitors will lose even those slender opportunities of distinguishing themselves, or of winning remuneration for their expenditure, whether of purse or talent. There is thus a mutual interest in the matter, and the question which now arises can only, as it seems to us, be satisfactorily settled by an understanding based on a full recognition of this fact, which, however, need raise no material difficulty on either side.

The leading propositions, then, which a consideration of this subject suggests, are these:—

(*a.*) To be sufficiently remunerative to justify the necessary expenditure on the part of the promoters, a flower show must be continuous over several days.

(*b.*) Such a continuity may be given to them without serious detriment to the subjects exhibited.

(*c.*) The amount of prize money must be increased, to meet the additional costs and risk incurred by exhibitors.

What the amount of that increase should be is a fair subject for discussion, and one on which many members of the Committees in question, including as they do some of the largest and most prominent of exhibitors, will be able to give sound advice. For our own parts, it seems to us that an advance of about one-third on the present average rate of prize money would meet the case, and we venture to throw out this suggestion as a starting point for the discussion.

Lest there should be any mistake on the point, we may observe that the most weighty reason for a several days' show is that it affords a fair prospect of being remunerative; and public bodies, no less than individuals, have to ask themselves the vulgar question "Will it pay?" before embarking in speculative outlay. No amount of advertising can bring in the thousands to witness a one day's or even a two days' show. By the third, or fourth, or fifth day, advertisements begin to tell upon the public, and the visitors on the earlier days influence others to become visitors in their turn. These facts are undoubted, and they point to the conclusion that the longer a flower-show can be kept open and kept attractive, the better will it pay, provided proper means are taken to make it known.

A VERY interesting communication has been received from Mr. RIVERS, which we copy below, but on which unfortunately we have but very little to say. It has been more than once remarked by keen observers that the GLAND-BEARING PEACH TREES AND NECTARINES are far less subject to MILDEW than those which are without glands. We do not, however, think that the glands have anything to do with the question, except so far as they generally accompany a more delicate foliage, and may get rid of a certain quantity of superabundant moisture. The mould which attacks the leaves and young shoots is perfectly superficial, but it is nevertheless a true parasite, not merely blocking up like the Cladosporium herbarum the breathing pores, but living by means of little suckers at the expense of the plant. The grosser plant probably contains a larger quantity of sap, and that in a fitter condition to nourish the parasite, while it is clear that the same favourable conditions do not exist in general in the case of the gland bearers. There cannot be anything in these absolutely destructive to the mould, or any chemical peculiarities which are completely antagonistic, as under certain circumstances, possibly of greater luxuriance than usual, the mould flourishes even on gland-bearing leaves. The practical nature of the question is clear, and the subject is well worth the attention of cultivators, though we do not think they will be able to discard altogether the better glandless varieties.

The inferior ones may, on the contrary, be generally dismissed, except where great variety is wanted, for though sulphur is a pretty certain remedy in most cases, it is well to get rid of the trouble of applying it. We have again observed in Wales the curious black parasite which we described and figured in this Journal in 1864, but happily only in very small quantities, as it rapidly decomposes the fruit down to the stone.

Mr. RIVERS shall now speak for himself, and we feel greatly obliged to him for calling attention to the subject:—

"The inquiry of 'Quercus' (see p. 829) is so pertinent as at once to claim attention. I therefore beg to submit to you some leaves of Peaches and Nectarines, glandless and glandular, trusting to your intimate knowledge of all the species of mildew to put the question at rest.

"I have failed in my search in several horticultural works as to the reason why the glandless leaves of Peaches are more liable to mildew than those that are glandular—the latter are not entirely exempt, but are seldom attacked.

"If I remember correctly, the late T. A. KNIGHT in some of his writings attributes the mildew which attacks such Peach trees as the Royal George, Noblesse, and others, 'to a derangement in the foliage caused by the leaves absorbing an excess of moisture from the atmosphere under certain conditions.'

"To a non-microscopic observer this seems tenable, for the leaves of the glandless Peaches seem coarser in their tissue than those with glands, as you will observe in the leaves now submitted to you, which are from the glandless Noblesse and Royal George Peaches, and from the glandular Mignonne Peach and Elruge and other Nectarines, the latter being perfectly free from mildew, and remarkably smooth and glossy." *M. J. B.*

— PROFESSOR CHARLES MARTINS, of Montpellier, in the *Revue Horticole*, in noting the FLOWERING of DASYLIRION GRACILE in the open air at Montpellier, where a plant of this species has been planted out since 1861 without sustaining any injury, gives the following interesting details as to its rate of growth. The first indication of blossoming was noticed on the 4th of June last, the spike being then 85 centimetres in height (about 33½ inches). From that time the growth was measured daily at 6 A.M. and 6 P.M. Rapid up to the 14th of June, the rate of growth diminished gradually, and no further elongation was observed after the evening of June 23, when it had attained a height of 2 m. 881 (about 9½ feet). From these data, M. MARTINS calculates that the growth began on the 1st of June, and that therefore the growth was complete in 23 days, or at the rate of 125 millimetres (about 4½ inches) a day. But the rate of growth was not uniform. For the first 11 days the growth was more active (on the average nearly 8 inches) than during the latter 12, when it averaged little more than 2½ inches in the 24 hours. The rate of growth was also more active at night than during the day, and between 3 and 6 A.M., and again between 9 and 12 P.M. A similar tendency to more rapid growth by night was observed in July, 1854, by M. MARTINS, in another plant of the same species, grown in a tub and placed in an orangery in the winter. This plant flowered again in 1862, at the end of June, when a similar tendency to grow fastest at night was observed. M. MARTINS' observations show that the excess of nightly growth over that taking place by day, is less for a plant grown in a tub than it is for the same species grown in the open ground.

A plant of Phormium tenax grown in a pot presented similar phenomena in regard to the excess of nocturnal growth, over that by day. These results differ from those observed on several plants of the Agave americana, and which always show a greater amount of growth by day than by night. In Amaryllis Belladonna a similar excess of growth by day has been observed by M. F. MEYER. It is evident that we stand in need of further observations on that point, and as M. MARTINS says, it is desirable to study separately the slow, regular, normal growth of the branches, and also the exceptionally rapid growth of the flower spikes, which often attain a disproportionate height as compared

with the rest of the plant, bear a profusion of flowers, and often cause the death of the plant.

—— A writer in the *Revue Horticole* recommends the use of LEES OF WINE as a MANURE. The discoverer happened to be washing out some old wine casks which were thickly crusted with deposit, when it struck him to pour the washings of the cask round the base of a Magnolia grandiflora which was growing very slowly. Next year the effect was so marvellous that he tried the same fertilizer on some other Magnolias with similar results. Since then he has been equally fortunate with the use of the same substance in the case of Oranges, Oleanders, Pittosporums, &c. The soil is described as of a dry sandy and gravelly nature. Though we fear we shall not be able to get Clicquot Gooseberry or Lafitte Rhubarb by such a proceeding, we see no reason to doubt the efficacy of the lees of wine as a manure.

—— We understand that specimens of the new CATTLEYA alluded to below, will be exhibited at the meeting of the Royal Horticultural Society on Tuesday next.

—— The GARDENS of the ROYAL HORTICULTURAL SOCIETY at South Kensington, which have been opened to the public free on the Wednesdays of the month of September, have, we understand, been visited by upwards of 21,283 persons on these days. Many of the visitors however were not of the class whose enjoyment was contemplated by the Fellows in granting the boon, and we are given to understand that they will not be thrown open again free this year. It seems the experience at Kew afforded no fair criterion by which to judge of the results of similar measures at Kensington. The distance of the former gardens from London opposes an obstacle to the visits of large numbers of mischievous boys which does not exist at Kensington, and it is thought that the enjoyment of the flower lovers of the working classes would be better secured by the payment of a small fee for admission, which would exclude those who go there to play and do mischief, and require police and the full attention of the officers of the Society to keep them in order.

—— An intimation has just been made to the effect that the poorer inhabitants of London are to have the SURPLUS BEDDING-OUT PLANTS in the PARKS and in the ROYAL GARDENS, KEW. If the clergy, school committees, and others interested will make application to the Superintendents of the parks nearest to their respective parishes, or to the Director of the Royal Gardens, Kew, they will receive early intimation of the number of plants that can be allotted to each applicant, and of the time and manner of their distribution. It should be observed that the bedding plants, &c., are to be distributed to the poor of London, on application being made on their behalf by the clergy, &c.; and that persons, well able to afford to purchase such plants from the nurserymen, are not expected to become the recipients of what is intended as a boon for their less fortunate brethren.

New Plants.

337. CATTLEYA DOWIANA.

THIS magnificent plant was received last year from Costa Rica, where it was collected by M. Arce for G. U. Skinner, Esq. In its colouring and general effect it is entirely unlike anything I have yet seen in the genus, the sepals and petals being of a mellow straw colour, while the lip is one uniform mass of the darkest purple velvet, streaked regularly throughout with gold threads. The expanded flowers are nearly 7 inches across, and the fringed labellum not less than 4 inches long, the latter having protruded about an inch beyond the point of the unexpanded buds. On the plant that is now in bloom at Knypersley, and which I owe to the kindness of Mr. Skinner, there are only two flowers on a scape, but the imported specimens had borne three times that number.

Distinct as is this superb plant for all horticultural purposes, I could not, until I have seen other specimens from the same country, venture to regard it as a perfectly new species; it may after all add another to the many varieties of the labiata type, but in the meantime I gladly dedicate the plant to the gallant Captain Dow (of the American Packet Service), who is always ready to render every assistance in his power to botanical collectors, and indeed to men of science generally. The entire stock of this fine plant is in the hands of the Messrs. Veitch. *J. B.*

BEDDING OUT.

(*Continued from p. 888.*)

THE first question is "Where shall it be?" strange as it may sound, and altogether superfluous, unto a florist's ear. "Where?" he will reply, surprised and indignant, "why, of course, where we may see it and enjoy it most—in front of our homes, where, with all its glowing colours, deepened by the dark foliage of solemn trees around, and by the dull rain-fraught clouds above, it may gladden the eyes continually, cheering our hearts like a merry tune, and filling them with thankful love." And yet in how many sorrowful instances is it otherwise. A large moiety of those who possess a garden seem to think that floriculture is an exercise which, like almsgiving or abstinence, should be done in secret, and, on no account whatever, to be seen of men. Or rather, I am afraid, they are ashamed of their mild little attachment to the goddess, and therefore visit her clandestinely, and woo her coldly, in occult places, behind the leafy screen. Had the mansions of England, speaking generally, any of the attractions of art, architectural beauty, grace of construction, or of exquisite carving in wood and stone, we should be the less astonished at this very dreary mistake; but as a considerable portion of the residences in question are little more, as to their external merits, than genteel barracks and highly civilised barns, requiring every adjunct which might help to break their grim uniformity, and to subdue their ostentatious ugliness, it is indeed a mystery that their owners should reject such an easy and effective method of adornment. It is depressing to survey the frontage of certain country houses, not infrequent in the land. A broad walk of monotonous gravel, between broad walks of monotonous Grass, bounded by massive balustrades of stone! And the approach, through gloomy groves of sad funereal Yews, under the shade of melancholy boughs, which imperil our coachman's hat, and suggest to our chastened spirits an impression that we are seated in a mourning coach, and approaching the portals of a mausoleum. Nothing is wanting as to internal arrangement, nothing can be more complete or tasteful than the elegant comfort of an English home; but it is the immediate vicinity of these habitations which so often makes them doleful, and for which the modern system of gardening, vulgarly known to us as "bedding-out," is so especially adapted, dispelling the gloom, and lighting up the scene, as the face of some moody and careworn man brightens and beams with a pleasant smile, when children, joyous and golden-haired, run shouting to the father's knee. The objection, ancient, and soon to be obsolete, is, that the beds are empty for the greater part of the year, "long, and lank, and brown," like the Ancient Mariner; but the argument is infirm, as I have noted elsewhere. For the money which they give for a pointer, the owners of these houses might purchase a grand collection of bulbs for the beautifying of the beds in spring; and for the price which they pay for a gun, they might have an extensive winter garden, the latter to last for years. I repeat, therefore, let Flora be no longer banished to the penal settlement of the kitchen garden, and to "deserts where no men abide," but let the lovely exile be brought back in triumph to the throne which is her royal right.

In the next place, and as regards design. I would strongly recommend simplicity. The multitudinous and intricate partitions of the geometrical draughtsman are extremely clever, and most effective on paper, but they add greatly to the perplexities of "bedding-out." Unless they can be developed on a very extensive scale (and I am not writing for very extensive gardeners, who would justly regard me as a duckling, teaching an old drake to swim), they involve a number of small divisions, which are unsatisfactory. The beds, in my opinion, should be always of a sufficient size to exhibit, amply and distinctly, the intended combinations of diverse, or masses of similar, colours. Circles, and sections of circles, are the easiest to form and to fill. The walks, whether of Grass or gravel, should be broad enough for a crinoline to travel without trespass upon the beds. It is an extremely pretty idea which our great poet, Tennyson, presents to us, when he speaks of flowers which dipped, and fell, and rose again to look at one of his heroines, making, as it were, an obeisance to her beauty, and kissing the ground on which she trod; but it is an awful reality to watch the heavy folds of some ample dress sweeping down our lovely favourites, and scattering their petals ruthlessly. It is an advantage, moreover, to those, at all events, who are constrained to preserve, even in their pleasures, Mrs. Gilpin's "frugal mind," that these simple designs and wider walks are much more easily operated upon by the mowing machine, and thus economise both work and wage.

The situation selected, and the design laid out, let good soil be put into the beds. It is a common error to be illiberal in this matter, and to fancy, because some few of the bedding-out family are extremely vigorous, such, for instance, as the Perilla and Centaurea, and some of the free-growing Pelargoniums, and will thrive, like young gipsies, upon the meanest diet, that starvation is good for the whole community, and that it is wasteful to give old Oats and Beans to horses that will work upon a diet of hay. But these economists are liable to disappointments. A hot day and a heavy load bring feeble Dobbin to the ground, blemishing his poor knees for life, and a dry summer or a damp as surely deals decay among their flowers, as drought fever, and frost ague, among the weakly, outcast, and unfed. Be generous, my brothers, unto both, and their happy smiles of gratitude will make home and garden glad.

And now that our reception rooms are ready, and our new beds duly aired, what guests shall we invite to fill them? I strongly urge upon all young beginners to set their affections, mainly, upon plants of variegated foliage. They are charming from first to last; charming in their babyhood, forming, as tiny plants, a delightful edging for the conservatory stage; charming on their first introduction to society, as soon as they are bedded out; and charming thenceforth, come storm, come sunshine, through the rest of their bright existence. Theirs is a beauty, which, like that of goodness and intellect in the human face, is brightened by the rains of adversity, and long outlives the transient prettiness of pink cheeks and glossy ringlets. From the windows of the room in which I write, I look upon a garden containing all the principal varieties of plants which are now used in bedding out; and, although some of the Pelargoniums, such as Lord Palmerston, Christine, and Trentham Rose, are still attractive, and the Lobelias, Ageratums, and some of the Calceolarias, in bloom, the chief beauty of that garden consists in its coloured leaves. All flowers have suffered from the heavy rains, but all foliage is fresh and gay. The former look much as I have seen people look towards the close of the London season. Madame Vaucher is used up completely. The splendid beauty of Stella waves, and her glowing complexion is (softly be it spoken) spotty. Purple King remains erect and handsome, but he bears, nevertheless, a strong resemblance to some good-looking swell, who is sadly wishing that he had gone to bed instead of to the smoking room when he left her ladyship's ball. The latter, on the contrary, are as full of health and vigour as the Harrow Eleven or the Oxford Eight. Mrs. Pollock (I apologise to the ladies for comparing them to young athletes) does not look a day older than she did at the beginning of the season. Miss Iresine blushes in the sunlight, wearing that untarnished Golden Chain which adds so much to her beauty. The new Chrysanthemum, with its bright yellow leaves, still creates an immense Sensation, especially upon Amaranthus, with whom she is "keeping company," and who glows with admiration near. Coleus Verschaffeltii and Centaurea candidissima, Perilla nankinensis and Cineraria maritima, brunette and blonde, Minna and Brenda, enhance by contrast each the other's charms. The Pelargoniums of golden leaf, especially the Golden Fleece, which, as an outer circle, followed by Amaranthus, is the most effective plant in my garden, retain their primal glory; and those with silver variegation, more particularly Bijou, Flower of Spring, Manglesii, Flag of Truce, and Beaton's Silver Nosegay, are still singing *toujours gai*. And to these I must add, as constant and unfailing ornaments to a garden, the Cerastium, the Santolina, the Variegated Cocksfoot, the Ivy-leaved Geranium, and several of the Ivies themselves—the Irish, the Alysaum, the Golden Sage, and the Arabis lucida. Would that I might include the beautiful Alternantheras, which Mr. Bennett, of Osberton, exhibited at the International, and which I went the other day to see. But the drenching rains had marred their beauty, and, though their guardian spoke hopefully of the future, I should have been sadly disappointed were there not so many other attractions in the beautiful gardens of Osberton to interest and delight a florist.

Let us treasure, therefore, and endeavour to increase our precious store of such plants as can resist the vicissitudes of our fickle climate. It is a sore trial and discouragement to see the most brilliant bed in a garden ruined by a night of pouring rain; and the thought of such an ordeal recalls to my mind the following truthful incident. A lady of my acquaintance was sitting in her drawing-room, the door of her conservatory, which adjoined, being open. The gardener, an old Yorkshireman, with a famous brogue, was attending, unaware of any other presence, to his plants. A short time before the date of this history a friend had presented to the lady a bulb of Tropæolum tricolorum, at that time held in estimation. Suddenly she heard a start, a growl, and then, in tones of anger irrepressible, "Dom the rots, they've etten tricolorum!" My friends, we have all lost our tricolorum, and though we have not, I hope, used his violent language, we can think leniently of the wrathful Yorkshireman, congratulating ourselves that our foliage plants defy both wet and vermin.

In my next I propose to resume, and to conclude, my observations upon bedding out. *S. R. H.*

RARE OR INTERESTING PLANTS NOW IN BLOOM AT KEW.

Stephania rotunda, Loureiro, Menispermaceæ.—A very pretty climber, with large subglobose tuberous roots, and ovate or nearly rotundate glabrous peltate leaves, from 1½-3 in. in diameter, on long petioles; flowers unisexual, small, in compound umbels; sepals 3; male flowers six, in two rows, pale yellow; petals three, bright orange; stamens sessile, arranged in a ring at the top of a column. It differs from *S. hernandiæfolia*, a closely allied species, in having pedicellate flowers. The abundance of its bright-coloured, although small flowers, entitles it to the attention of cultivators. Trained up one of the rafters of the succulent house it produces a very good effect. The plant is widely distributed in India, up to an altitude of 7000 feet in the Himalayas.

Eucalyptus calophylla, R. Brown; E. splachnicarpa, Hook. Bot. Mag. t. 4036. Myrtaceæ, tribe Leptospermeæ, subtribe Eucalypteæ.—This magnificent tree is now in full flower in the New Temperate House. It is one of the handsomest species of the genus, is of erect growth, and produces an abundance of dark green lanceolate leaves 6 inches or more in length. The flowers are white, in terminal corymbose fascicles; and the urn-shaped fruit is large and woody, about 2 inches in length, and 1 in diameter; the same tree has ripened fruits which have lately been gathered. It is confined to Western Australia, where it is plentiful in the neighbourhood of King George's Sound, and goes by the name of "Red Gum" amongst the colonists, according to Oldfield. In the Temperate House are several other species of this genus in flower or fruit, or both, as *E. corynocalyx*, F. Mueller, a very distinct South Australian species, of elegant habit, with the flowers in extraaxillary umbels, and long narrow fruits.

E. rostrata, Schlecht., known in New South Wales as Flooded Gum, in South Australia as White or Red Gum.—A very graceful tree, with long slender drooping branches, and very small round fruits. This species is said to be much used in fencing and the construction of bridges, takes French polish well, and is made into beautiful furniture.

E. cordata, Labill., Pl. Nov. Holl. ii. 13, t. 152.—A small tree, confined to Tasmania; leaves opposite, sessile, cordate, glaucous; flowers in axillary three-flowered umbels.

E. polyanthemos, Schauer, the Bastard Box and Lignum Vitæ of New South Wales, and *E. globulus*, Labill. Voyage, i. 153, t. 13, the Blue Gum of Tasmania, are also deserving of notice. The former is perfectly hardy at Kew. There is an old tree of it near No. 3 House, which flowers every season. *E. globulus* is one of the loftiest trees of the Southern Hemisphere, attaining occasionally, it is said, a height of 300 feet or more, and its timber is valuable for house and ship

building. This will also withstand the ordinary winters of the south-western counties.

Rhodamnia trinervia, Blume, Museum Botanicum, i. 79; Eugenia trinervia, Bot. Mag. t. 3223; Monocera rubescens, Benth.; Myrtus melastomoides, F. Mueller. —A handsome shrub or small tree, belonging to the Myrtaceæ; leaves opposite, ovate-oblong, 2-2½ inches long, strongly 3-nerved, as in many of the Melastomaceæ. The flowers are inconspicuous, white, arranged in small axillary clusters. This shrub was introduced in 1824 from New South Wales to this country by Allan Cunningham.

Opuntia Dillenii, Haworth; Cactus Dillenii, Ker. in Bot. Reg. t. 255; C. indicus, Roxb. Fl. Ind. 2, p. 475.— This is the species common throughout East India, by Roxburgh considered to be indigenous, but generally supposed to be an introduction from America. The present is a divaricately-branched plant, with compressed glaucous branches, studded over with tufts of yellowish spines and bristles; flowers yellow, about 2 to 2½ inches in diameter, pedunculate on the extremities of the branches. It has been in cultivation a long time, but does not appear to flower freely.

Metrosideros scandens, Banks & Solander; Melaleuca perforata, Forst. Prodr.; Leptospermum perforatum, Forst. Genera.—Described as a large climbing shrub or small tree, with spreading branches; but in cultivation it forms a neat little plant, flowering while still quite young. A Myrtaceous shrub, with distichous, variously shaped leaves, about ½ an inch long, having numerous terminal cymes of small white flowers. On account of the profusion of its flowers this is a very pretty object. It is a native of New Zealand, where it is common in the forests of the Northern and Middle Islands, and is also found in Lord Auckland's Group.

Cupella cærulea, Seubert, one of the few S. American Irideæ, and a truly noble plant.—Acaulescent; leaves glaucous, equitant, 1 to 6 feet long, 1½ inches broad, resembling gigantic swords; scape foliaceous, spathe lateral, 6 inches long, 1-flowered; outer perianth segments 2 to 2½ inches long, inner about 1½ inch long, recurved, all mottled with orange and brown at the base, and blue upwards. Received from Mr. Williams at Bahia, and probably flowering for the first time in this country. It may be found in House No. 19.

Vitis Bainesii, Hook. Bot. Mag. t. 5472.—It will doubtless be a source of satisfaction to the lovers of the curious and wonderful in the vegetable kingdom to know that this remarkable plant, as well as *V. macropus*, Hook. (Bot. Mag. t. 5479) is still flourishing at Kew, and is now flowering again. The plant in question was sent to the gardens from Namaqua Land about three years ago, by the well-known traveller and artist, T. Baines, Esq., and the other, V. macropus, a native of Benguela, was received shortly afterwards from Dr. Welwitsch. Both plants are from the littoral region inhabited by the famous Welwitschia mirabilis, and several other plants with obese stems. As they are remarkably ugly plants, the only interest attached to them is on account of their peculiar form, and as representatives of the anomalous Flora of the region they inhabit. V. Bainesii differs principally from V. macropus in having ternate, not quinate leaves. Their fleshy stems are from 1 to 2 feet high, and as much in circumference, throwing out a few short, thick branches from their crowns, terminated by the inflorescence. The flowers of both species are small and green, as in most species of the genus. For further information, and some interesting remarks on these curious plants, see Dr. Welwitsch's paper in the Journal of the Proceedings of the Linnean Society for September, 1864, p. 77. They are at present in No. 19 House.

NOTES ON CONIFERS, No. IX.

THE facts which suggest the idea that the prickle or umbo of the apophysis may be the still persistent petal, are most marked in the Cypresses. If we look at their male flowers, we see that they consist of a series of scales which are obviously the mere continuation of the leaf scales of the twig, and at their base grow a variable number of sessile stamens. Fig. 10 shows the single flower in Wellingtonia gigantea viewed sideways; fig. 11 the same parts in the male flower of a Pine. It seems pretty clear that here the scale represents the petal. If we next examine the female flowers of Wellingtonia at an early stage, we see that they also apparently consist of a continuation of the leaf-scales of the twig, and it would seem to be a legitimate inference that if the continuations of the leaf-scales are the equivalents of the petal in the male flower, it should be so in the female flower also. The only difference in their appearance is that the scales in them at an early stage become elongated. By-and-by, however, the body of the scale begins to swell, and the shoulders encroach upon the spike until it has dwindled away and all but sunk into the substance of the scale. A rather confusing circumstance in the growth of this scale is that its core is woody, and that the woody core is double, leading on a superficial examination to the belief that there is a woody core to both the upper, or inner, and under, or outer, lobe of the scale. But on following the development of the scale, and tracing its different parts when mature, we find that both lobes of the woody core belong to its upper, or inner, lobe.

Fig. 10.

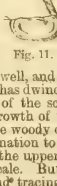


Fig. 11.

It also appears that the remnants of what we for the nonce assume to be the petal turn down behind (outside) the inferior division of the woody core, so that the apparent posterior lobe of the scale is merely a growth of chlorophyll, simulating in form the upper lobe. In other words, the disk has grown up under the cloak of the petal, which it has pushed before it until the spike and the surface of the shoulders below it are all that remain of the original petal, hoisted up as it were on the top of the disk, whose growth has gradually cut it off from its base below, leaving it on the crown of the disk as the decayed petals of the Rose rest on the crown or margin of its disk. It is also to be observed that the disk of the Rose hip has similar small woody fibres branching through the inner layer of the soft edible fleshy part of the hip, in the same way as the woody core goes through that of the scale of the cone; and, as in the Conifer, these fibres in the Rose are also disposed in double plates or layers. The hip of the Rose, if cut longitudinally, shows two layers—one, the outer covering, which is continuous with the calyx; the other the inner membrane (the disk), to which the carpels are attached. Between them, near the apex, an intermediate layer is wedged in for a short space, on the crown of which the petals and stamens grow. It would be no objection to the view in question that the bract in Conifers is not attached and applied to the disk as the calyx in Roses, because in Cunninghamia sinensis it is so attached; and we have in that tree a nearly perfect analogy to the hip of the Rose, the persistent petal in it being a slightly woolly termination to the disk which does not reach much more than half way up the inner side of the bract.

The reverse of this happens in the Yew, where the disk, the petals (two, the fruit there being solitary has the disk all round and not halved as when in a cone), and the calyx are all disunited and distinct. Neither is it any objection, supposing the petal to be part of the scale, that it seems to continue to increase in growth, *pari passu*, with the seeds, which no flower does. It does not do so, but is only hoisted up by the growth of the disk beneath it.

If the Cypresses have no bracts, and the claret-coloured crust of petaloid texture, which we have supposed to be it in Wellingtonia, does not really represent the bract, the view suggested would be still more strengthened, and we should have the presence or absence of a calyx a good specific character for distinguishing the Pines from the Cypresses.

The chief objection in our eyes, to this view of the homologies of the scale and bract is the petaloid texture of the bract behind the scale, and its brighter colour in some species, as in Wellingtonia, where it is a bright claret-coloured crust. We confess, however, to having a partiality for the above view; and although on a careful weighing of the *pros* and *cons* we have very recently elsewhere expressed our preference for the view which regards the bract as the homologue of the petal, we sometimes fear that we have chosen unwisely. The fact is, that in departing from any recognised groove, the truth only breaks in upon us partially and by degrees, and the mind vibrates backwards and forwards as objections present themselves, before finally settling in a new direction.

Whether we regard the bract as the petal and the scale as simply the disk; or the bract as the calyx and the scale a combination of disc and petal, we have at least no hesitation in maintaining that the scale and the bract represent between them the disk and the floral envelope. They cannot, in fact, well be anything else. The physiological researches of Baillon and others into the development of the seed at its earliest stages have distinctly shown that it goes through exactly the same processes of development as those of angiospermatous plants; that the testa is the pericarp, and that consequently the seeds are not naked. But it may be that although the family has no title to be called gymnospermatous on account of the seeds themselves being exposed, they have a title to be so on the score of the ovule being at an early stage more exposed than usual. It is more exposed than in most plants. Instead of the common style in the ovary, it has at first a gaping aperture, which afterwards fills up. Here we have the reverse of the practical contradiction which the facts gave to theory regarding the nakedness of the seeds. There it was plain that whether the seeds were theoretically naked or not, practically they were thoroughly well enclosed. Here, whether the ovules are theoretically naked or enclosed, practically they must, to a certain extent, be naked. The ovules of all plants must be so, in some way or other, otherwise the pollen could never reach them, which it must do before they can be impregnated. There must be a door or portal of some kind through which the pollen tubes pass. Usually it is so closely shut by the elastic cells of the stigma that it is not observable; in all, however, it must exist. It is therefore a question of relative proportion between the size of this door of access in the Gymnosperms and other plants. Now this absence of a style in the ovary, and the more immediate impregnation of the ovule by the entrance of pollinic tubes through the aperture in its apex, also occurs in a very similar manner in numerous other families where the style is hollow for its whole length, leaving a pervious opening into the cell of the ovary. For example, in Styraceæ and Olacaceæ, in Statice, Chenopodium, and Myrica, in the Resedaceæ, Cistaceæ, Tamariscineæ, and in all the Thymelæaceæ, in Canajera, Santalum, Osyris, and Loranthus, in all the Anacardiaceæ, in the Urticaceæ, the Piperaceæ and the Polygonaceæ, one or other of all of these being vouched for by such names as Mirbel, Brown, Schleiden, Griffith, Endlicher, Weddel, St. Hilaire, and Miers. And yet, as the latter remarks, no one has ventured to designate the germs so immediately impregnated in those instances as naked or gymnospermatous ovules. And why not? Why should the same structure bear a different interpretation in one plant from what it does in another? Simply because other preponderating affinities show that this is a point of only secondary value.

As to Ephedra again, the slender tubular style-like process which has been supposed to be the open passage by which the pollen reached the naked ovule in Ephedra, has been shown by Mr. Miers to be the elongated tubular apex of the seminal integument, which has protruded through a small aperture in the summit of the pericarp, left by the permeable sessile stigma of the ovary.

Then as to Gnetum, the knowledge which we have acquired of the real nature of the different parts of the flower in Ephedra enables us more justly to appreciate its floral and seminal structure, for notwithstanding that we do not consider these two genera at all closely allied, it is undeniable that there are points of analogy between them. Such men as Lindley or Brown, Endlicher or Richard, Hooker or Agardh, did not place these plants together without there being some points of resemblance. It was the very acuteness of their perception of such points that led them to overestimate them, and brought them to adopt the theory which we now question.

In Gnetum the flowers are arranged in distinct nodes, each node consisting of one general short, cup-shaped involucre which encircles the stem, and supports two close whorls of numerous florets crowded together, each in a single series, the lower series being composed of female florets, the upper one of male florets. In the female series the perianth is reduced to lacerated scales that surround each ovary; in the male flowers, which have only a single stamen, each is contained within a 2-4-fid perigonium. The fruit grows to a size often as large as a Plum, the ovary from which it originated being extremely minute. Each involucel of the spikelet in Ephedra (according to Mr. Miers), is a verticil composed of two opposite bracteiform leaflets, standing in front of each perigonium, and which are connate at their base; and in Gnetum, where instead of two, more than a score of florets are compressed in each verticil, these bracts become wholly agglutinated together by their margins into an entire cupular and annular general involucre. The precise homologues of such gamophyllous involucels are found in the Nyctaginaceæ, Thymelæaceæ, Polygonaceæ, &c.

In like manner, too, the same examples of a pervious opening existing in the ovary which we have above cited for Conifers, equally apply to Gnetum, and if we are right equally deprive it of all claim to the possession of naked ovules.

Besides those which we have already considered, the only ground for classing Gnetum and Ephedra with the Conifers is the character of their timber. On this point neither Gnetum nor Ephedra agrees with the Conifers, nor each with the other. In the longitudinal section they have disks resembling the Coniferous disks, although much smaller in proportion and more crowded, but in the transverse section they are wholly different. And what are called the Coniferous discs are greatly relied on as an essential character of Coniferous timber; but we really cannot see why more weight should be given to them (that is to the character of the structure as seen in the longitudinal section) than to the reticulations in the transverse section.

It seems to us as unreasonable to say that the Gnetaceæ are Coniferous, because in one direction their timber resembles that of the Conifers, while in another it does not, as it would be to insist that the carbonate of soda in the blue paper or the citric acid in the white paper, are each of them a Seidlitz powder, although we all know that it takes both to make one.

So far as a simple examination of the timbers of the above plants goes, we should say that they indicate 1st, that Welwitschia is neither a Conifer, a Gnetum, an Ephedra, nor a Loranthus (Misteto); 2d, that there is no true affinity between Gnetum or Ephedra and the Conifers; 3d, that there is a certain appearance of affinity between Gnetum and Ephedra; and 4th, that there is more between Gnetum and the Misteto.

The presence of Coniferous disks, too, is not a character which is so peculiar and restricted in its occurrence as is generally supposed. People talk as if there were no tree whose timber showed annularly dotted vessels on the longitudinal section, except those placed among the Gymnospermata. But it is not so. Besides these they are also found in the Winteraceæ, and in the Canellaceæ, Schizandraceæ, &c.

But other most remarkable differences occur in their timber; for example, in Gnetum, besides the occurrence of a number of large vessels, the wood is disposed in zoneless radial wedges, while that of Ephedra is zoned as in other exogenous trees; and Mr. Miers points out that in Ephedra a longitudinal section of a new branch shows that the central pith of one internode is not continuous with the pith of the next internode, nor with that of their accessory branchlets; for the ligneous fibres of the several internodes which enclose the pith and which constitute the wood, all converge to form a sort of plexus or solid diaphragm across each node, much after the manner of the stem of the Bamboo. *Gardener.*

As to the actual structure of the wood, his description is instructive. The wood is hard, formed of fine simple indurated fibrous tissue, closely compacted. These longitudinal fibres under a powerful microscope appear marked by dark glands lying across them at irregular distances, which are either transversely linear or oblong, thus giving them almost a scalariform appearance, the walls themselves being pitted with minute and almost invisible specks; these are crossed by very numerous transverse medullary rays of similar structure, which extend from the pith to the bark. In the first two or three rows of the longitudinal fibres or ducts next the pith, the markings are so very close that they have much the appearance of uncoilable tracheæ; but he had nowhere been able to find any true spiral vessels. Interspersed among the longitudinal woody fibres are many hollow air-tubes, of three or four times their diameter, which appear uninterrupted throughout the entire length of the internode; their walls are extremely thin and

translucent; and it is upon these only that we find the large circular spots (apparently fenestrations), which are well shown in Lindley's Introduction, plate 2, fig. 7. "It will hence be seen," says Mr. Mieis, "that there is no analogy between this structure and that of the Coniferæ where the annular disks which so conspicuously mark the Gymnospermous families are always found upon the ligneous fibres themselves, and not upon the air-passages, as in Ephedra."

All things considered, the presumption seems strong, that as regards Gnetum and Ephedra they are not gymnospermatous, and are not allied either to the Conifers, or to each other. *A. M.*

Home Correspondence.

Theory and Practice of Ventilation.—I am grateful to Mr. Buchanan for his criticism. It is by such means that theories are perfected and practices improved, and both may be held to be worthless unless they can pass unscathed through this crucible. With this grateful acknowledgment of the critic, I pass on to the criticism itself. And first, the title seems to have led Mr. Buchanan somewhat astray: "Roots *versus* leaves" has led him to endeavour to establish the superiority of the former over the latter, whereas "roots and leaves" would probably have induced him to define correctly the true functions and relative importance of both. From the nature of my subject I necessarily dwelt emphatically upon the importance of leaves, and only quite incidentally on the offices performed by roots. That brief reference (see p. 826), however, I hold to be perfectly correct. I have nothing to add to or subtract from the statement there made, neither am I careful to uphold any exact mathematical proportion between the feeding power of roots and leaves. Granted that they feed at all over the whole of their surface; that they eat with such constancy and power as to purify the atmosphere of all the impurities engendered by decomposition, combustion, and respiration, and I think it will be admitted that a tenfold consumptive force over that of roots will not be considered an exaggerated estimate. It is well known that Elm and other roots run to a great distance, as described by Mr. Buchanan, but what of the area embraced by the leaves, supposing them to be laid flat side by side on the ground, and this large area doubled for their second surface? But let us take some of Mr. Buchanan's cases. I think guano rather unfortunate, for it is most efficient when applied as a top-dressing, and the reason why it does most good in showery weather may not be so much that the rain washes the guano down to the roots, as that it liberates and sets free its valuable gases for the leaves to absorb as food. Then Carrots, Parsnips, Beet, &c., do much better without manure at all than with any amount buried under them, "for their tap roots to ramify among." Why, ramification of tap roots is ruin to these crops, and is carefully avoided by good cultivators. Then as to small-topped Swedes, Mangel, and Turnips, surely Mr. Buchanan is aware that crops are not grown solely, chiefly, or at all for the amount of food they can consume, but for the weight of produce they can yield. In the case of such crops, that produce is more valuable in the form of large bulbs than as bulky leaves—hence the former are preferred to the latter. The same principle holds good in other cases. Large-eared Wheat is better than long-strawed, not because the large-eared will consume more food than the other, but because grain commands a higher price and is a more valuable secretion than straw. The Vine illustration is not much better than these, and equally unfortunate. While advocating the greatest care in reference to the roots of Vines, perhaps with no plant could a careful top treatment neutralise to a greater extent a bad condition of root. Crops have been, and are, constantly gathered of good quality, almost entirely in virtue of leaf and stem feeding alone. The Vine itself, by the roots that it emits from its stems in a genial atmosphere, constantly teaches us that it can be and is fed by other methods than the ordinary root medium. It is almost equally well-known to every cultivator of Fuchsias that much more depends upon atmospheric treatment than on the soil in which they grow. They will grow well in almost any soil, if the top treatment is skilful and wise. And I believe that there would be little difference in fact between two Fuchsias, one watered with manure water, and the surface carefully covered up immediately with say 3 inches of dry cocoa-nut fibre to prevent its escape into the air; and another watered with clean water only, but grown in an atmosphere constantly charged with carbonic acid gas and ammonia. Plants under bell-glasses are altogether exceptional, and their thriving or otherwise does not materially affect the argument about their feeding through their roots or leaves. Both are present in these conditions, and doubtless the moist genial atmosphere maintained for such plants as Anæctochili causes such a decomposition of the organic matter contained in the soil as sufficiently to charge their saturated atmosphere with the elements of growth. The modicum of carbon contained in such confined atmosphere is doubtless absorbed and reabsorbed a great many times, and hence enough may readily be present for the formation of the soft cellular watery tissues of such plants. Doubtless the old roofs with their heavy timbers taught other lessons than the importance of a constant stream of fresh air, as will be shown in future papers. But this was one of great importance in relation to the air considered as plant food; hence its prominent notice in my last letter. Finally, I beg to decline with thanks Mr. Buchanan's starving experiment. Had he carefully read or thought over all I have written on ventilation, he could not have proposed it. The air is not in any sense food for man; it is essentially food for plants. The purer it is the sooner it would starve both. Charge it with carbonic acid gas and ammonia, it will feed plants. The self-same atmosphere would destroy human life. Air charged with the fumes of roast beef and plum pudding, it has been asserted, would support life, but I should not like to try even that experiment. Analogies of this kind must not be carried too far. There is, in fact, no identity or analogy between the alimentary system of animals and those of plants. Pure air or oxygen in both kingdoms alike is the agent employed to destroy, decompose, or consume organic forms. But here the analogy ends. Pure air is the life of man—it works towards death among plants. On the contrary, foul or impure air or gas is their life, and our death; hence the absurdity of asserting that, because man "cannot live upon the wind," therefore plants cannot; whereas the truth is, that just because man cannot do it, plants can. *D. T. Fish.* [Mr. Buchanan is not responsible for the heading above alluded to. EDS.]

Experiments with Mistleto on the Oak.—The following memoranda, kept while endeavouring by artificial means to establish the Mistleto on the Oak, may not be wholly without interest:—

Date.	Materials.	Mode of Operation.	Duration in a fresh state.
1858, Dec. ..	Berries.	Inserted in the bark.	Gradually shrivelled.
1859, Jan. ..	Ditto.	Inserted in crevices.	Ditto.
1860, March ..	Grafts.	By means of an incision in the side of a branch.	A few hours.
1861, April, 2d week	Small grafts.	Ditto.	One day.
1862, May, 1st week	Ditto.	Ditto.	Three days.
1864, May, last week	Ditto.	Ditto.	One week.
1865, June, 1st week	Very small bits.	Ditto.	Ten days.
1866, June, 1st week	The present year's growth split and put in similar to a bud.	The same as budding, but underneath the branch.	Twelve days.
1866, June, 2d week	One year old entire plant, taken from an Apple tree, having first removed all the bark of the Apple tree.	The same as above, except that instead of placing the plant at the end of the incision thereof, the base of the shoot, it was put near to the extremity.	Kept fresh 24 days; weather extremely hot & dry, with no protection.
1866, July .	Grafts.	Inserted by the side of the branch in the outer bark.	One day.

Although, as will be seen, these trials all proved failures, yet the case of the one-year-old plant affords sufficient inducement to continue experiments in that direction. The difference in point of duration as the season advances up to June is also worthy of notice. Allow me to add that I hope some one who resides in a locality where Mistleto abounds, and who has better opportunities of getting young Mistleto than I have, will practise on the one-year-old plants this autumn, at the time of the return of the sap, and also again next June. The occurrence of the Mistleto on the Oak is at once so rare and so interesting that a few failures in an endeavour to establish it on that tree will not be found irksome; who can say that the operator will not eventually be crowned with success? *Hy. Mills, Enys, Penryn.*

Bedding Plants.—Has any one tried Sedum Fabaria in beds? This season I have a bed of it which has been in flower ever since the beginning of August, and it is now the best bed we possess. It stands wet weather excellently, and even before it comes into flower its appearance is by no means unattractive. The way in which I grow it is to put five or six buds round a small pot inside in January, keeping them in a greenhouse, and repotting them when they require it into 8-inch pots. I stake them out when they seem to want support, using good stakes for that purpose, as their weight is considerable. About the beginning of June they may be plunged, pots and all, where they are intended to remain. I find Cerastium very useful for mixing with Lobelia and Linum; small bits of it, planted about 6 inches apart, fill the bed in which they are put by the autumn, when the Lobelia and Linum begin to go off, and the blue or scarlet peeping through the white foliage of the Cerastium has a pretty appearance. *J. D., Newton Abbot.*

Potato-haulm Fibre a Material for Paper.—I venture to suggest, as a possible source of fibre for the manufacture of paper, the stalks of the Potato in their ripening state, previous to the complete ripening of the tubers. They seem to me to contain a considerable proportion of rather a lengthy fibre, and of considerable tenacity, such as might give sufficient strength and tenacity to paper. Experience could alone determine the quality of paper, but every contribution to quantity seems desirable, and it is obvious that the Potato would afford an abundant quantity at a very small price. The Potato stalk seems to be at least as promising as straw, which is used to a considerable extent. My impression is that the Potato fibre would make a much finer paper. *K.*

Rose Stocks (see p. 900).—Common grafting wax is the best thing with which to dress the cicatrix. I have often had young immature Briars do the same as those of your correspondent, namely, die back 3 or 4 inches below the point of union. Briars with good firm spines will rarely do so. If your correspondent buds upon immature Briar stocks he must not cut back nearer the point of union than 4 or 5 inches. The stock will then die back naturally to the point of union, and probably will not exceed that point. The eyes of the Briar beyond the point of union must be cut out. *W. F. Radclyffe, Okeford Fitzpaine.*

Hard Soil for Fruit Trees.—I have read with much interest Mr. Fish's communication (see p. 779) on this subject, and as he invites facts in connection therewith, the following may probably be of service to him. In forming our nursery here in the autumn of 1861, we planted nine Peaches, two Nectarines, and one Apricot against a south wall, 200 feet in length; half of this length of wall had for many years formed the boundary of a farmyard, and with the exception of a border, some 6 feet wide, had not been disturbed to my knowledge for 30 years, and probably not for many years before that. This border had been trenched and cropped the previous summer, and consisted chiefly of mortar and brick rubbish, probably left there on pulling down pigsties, &c., which formerly ran along under the wall, with an admixture of the natural soil of the place, good Hazel loam. Against this wall we erected a 4-feet pit. The trees, maidens, were planted in the pit, and training was commenced immediately over the lights, leaving some 30 inches of clean stem; in fact the trees formed half riders. The surface of these pits has never been disturbed to any extent worth mentioning, being full of plants usually from October to June. In front of them runs a walk about 5 feet wide, upon which there is a constant traffic; then again in front of this is a low span-roofed house, with small pits in front, altogether 13 feet; and lastly, in front of this, is one of the main walks of the nursery, 4 feet wide, so that the roots of these trees would have to traverse a distance of 26 feet before meeting with any cultivated or loose soil. Nevertheless finer, healthier trees it would be difficult to find, and with one accidental exception they produce fair crops of fruit. Last season they bore from 4 to 5 dozen each of very large fruit. We never protect them in the spring, as with well ripened wood left unnailed till the blossoms are just bursting, they withstand ordinary spring frost. The other portion of the wall, of 100 feet length, was an old garden wall, the ground in front of which has always been cultivated. A pit of 4 feet wide, and a walk of 3 feet in width, runs in front of this wall, but in front of this is a 15-feet cultivated border; on one of the trees planted here, a Nectarine, there has been about seven dozen fruit, on the other four, none. I cannot say that there is much difference between the growth of the trees on the two walls, although perhaps the wood on the former is shorter-jointed, and less vigorous than that on the latter. Last year the trees on each wall bore equally well; this season each bloomed well, and yet with the exception above mentioned, on No. 2 wall there has been no fruit. I am inclined to think that the excessive wet of last winter penetrated to the roots of these trees, and caused them to cast their blooms; and yet why is it that the one tree from which I thinned out several dozen should set so well? From these facts I draw no conclusions, except that Peach and Nectarine trees will thrive and bear well in hard undisturbed soil. I may mention that this is a dry, healthy spot, and that fruit trees of all kinds succeed well with us. I may further state that the trees just referred to are well mulched during the summer in the pits for about 3 feet on each side of the stem, and several good soakings of water are given them during the season, the lights being taken off after May. *W. Windebank, jun., Bevois Mount Nursery, Southampton.*

Pelargoniums.—I feel under a personal obligation to Mr. Kinghorn for his precise and full information concerning Flower of the Day and Cerise Unique Pelargoniums. I think we shall soon have a valuable pedigree of most of our best varieties, which I may probably present to your readers in a tabulated form. In my hurriedly written note of last week (see p. 877), an entire transposition of words occurs. "Can any of your readers explain why fruit and flowers are so much more constant to their true character than leaves; and why, when the former sport," &c., should read—"why, when the *latter* sport, the *former* seldom or never sport with them." I have also to thank Mr. Wilkin, of Raynham Hall Gardens, Norfolk, for sports of Mrs. Pollock (green), Flower of the Day (white), Bijou (white), and Golden Chain. The latter are green, and wholly yellow. Could this yellow be perpetuated it would be valuable, but I fear it cannot. *D. T. Fish.*

The late International Horticultural Exhibition.—What is to be done with the surplus from the "International," which is said to be large? One thousand pounds of this has been well bestowed on the Gardeners' Royal Benevolent Institution, leaving, so it is said, still a good balance as yet unappropriated. Several of my friends, and I myself, joined the first subscription list which gave the means of starting the exhibition. We, I believe, in common with many others, thought that the great show would certainly render great service to horticulture, and possibly, though to a less extent, serve the Royal Horticultural Society. It is said that the first five days of the show, brilliant as their success was in all other respects, did not clear the necessarily great cost, that the surplus was made in the second week, and that much of its success was due to the fact that the gardens of the Royal Horticultural Society had been placed at the free [?] disposal of the Exhibition Committee. If this be so, surely the Royal Horticultural Society should benefit by some of the surplus which their action helped to create. One mode already suggested, viz., the purchase by the Exhibition Committee of the Lindley Library, to be placed in bookcases, where Fellows of the Royal Horticultural Society could easily refer to it, would, I think, be a fair one, deserving the support of those concerned in the disposal of the surplus. *Geo. F. Wilson, East Hill, Wandsworth.* [We have reason to

believe that this, among many other suggestions that have been made, will be taken into consideration as soon as the expenses contingent on the preparation of the "Report" and other outstanding liabilities shall have been discharged. EDS.]

Tritoma Uvaria.—This is one of our noblest autumn plants. We have now a row at the back of a ribbon border 50 yards long, and averaging over 20 flower-stems to the yard. I name it at present, however, merely to direct attention to its value as a decoy and a trap for wasps. Ever since it has opened its flowers it has swarmed with wasps, although not one bee seems to approach it. I find every flower tube is stored with honey of a strong flavour. The wasps, after remaining a few minutes in these tubes, become stupified or intoxicated, and can be killed with the greatest ease. Some of them also remain in the tubes or bells until the flowers wither and collapse over them, like the enclosed specimens. I picked three of these mummy wasps off one flower-stem. They are quite dead, and it really seems as if the Tritoma were worth growing for a trap. As a decoy it is most useful. Our row is close to two Vineries of ripe Grapes, and I have scarcely seen a wasp there since the flowers opened. *Querist.*

Peach Setting.—I am surprised that two such clever writers as the Rev. W. F. Radclyffe, and "Investigator," (see p. 877), should have thought that my remarks upon this subject were applicable to out-of-door culture. From the fact that Mr. Radclyffe watered his trees at the roots as a means of setting the fruit, when, as "Investigator" states, "the earth is full of water," I inferred that his trees were under glass. Certainly our climate in April is too uncertain to water fruit-tree blossoms out of doors; but in houses it is altogether different. "Diamond dusting" there is good and safe practice—a wise imitation of Nature—and one that has proved itself successful. I have nowhere stated that the moisture to be found on the top of the stigma was water. On the contrary, I said (see p. 853), that "this moisture is generated and deposited by the action of vegetable life;" and that, moreover, excessive drought may dry it up prematurely before perfect fructification is ensured. I may also inform your correspondent, in answer to his inquiries as to my nationality, that I am neither a Persian nor a Frenchman, but a canny Scotchman, taking notes, who likes to go deep down to the foundations of his instructors, and whose motto in reference to all practice is "look before you leap." Hence, when Mr. Radclyffe said that Peach and Nectarine blooms must be kept dry, his instinctive "ca canny there! a little finely distributed moisture is gude for them under glass, where ye can shield them frae the cauld." *Censor.*

Standen's Gardeners' and Amateurs' Friend Manure.—I wish to state my experience in the use of the above manure, trusting it may have an interest for many of your readers. Last autumn I planted in a somewhat exposed situation, on a piece of ground having a subsoil of London clay within 18 inches of the surface, two dozen Roses, standards and dwarfs, putting in some well-rotted manure about the roots. With a very few exceptions, though the trees were strong, and the wood appeared to be well matured, they broke to wood very late, and very weakly indeed. As soon as the dry weather set in I watered freely, but with little, if any, avail, and where I should have had plenty of flowers there were a few attenuated blooms, and I had to keep these picked off in order to infuse strength into the wood. At this juncture I was induced to apply Standen's manure. To each plant some five or six applications were made in the manner prescribed, and the result was that a complete renovation was effected in each case, and for a month past I have had splendid flowers, and there is every probability of the plants continuing to bloom should the weather hold fine. I have had during the present month blooms, fit for an exhibition table. *R. Dean, 8, Denmark Villas, Ealing, W.*

Lilium auratum and longiflorum.—These fine Lilies are now in magnificent flower in the garden of John Russell, Esq., Mayfield, Falkirk, and are growing out in the open border quite unprotected. They were planted in pots in February, and only had the protection of a cold frame till the beginning of June, when they were transferred to the mixed shrubby border. The soil in which they grow is of a friable porous nature, incorporated with a good portion of grit, and the position is not of so inviting a character in the way of "snugness" as one might suppose. Still they are growing away there in dozens, and flowering or about to flower quite as profusely as cultivated greenhouse specimens. The foliage is of that stout vigorous character betokening health, and the flower-stems each carry from three to five blossoms of very large size. Notwithstanding the drenching rains which have prevailed in Scotland for the last eight weeks, so fatal to flowers in general, and white flowers in particular, these gigantic examples evidently escaped "scot free," and that too within a stone's cast of hundreds of Pelargoniums now showing little or nothing of inflorescence but the footstalks. Imagine such Lilies as these among a host of the choice pigmy Coniferæ! This is a sight which can be seen any day in the locality referred to, and which has been for some years famous for its horticultural associations. The L. longiflorum, which was introduced along with and sold among the auratum batch at Stevens', is a very decided improvement upon the old variety, being of more gigantic growth, with much broader lanceolate leaves, and bearing flowers nearly twice the size, with as many as three in the short terminal spike. The flowers are of noble appearance, not only from their size but from their remarkable wax-like substance. I think they must be of the same character as those introduced by Dr. Seemann a few years ago, and I have no doubt but Fortune and Veitch have introduced the same variety among the auratums. Is it so? and have any of your readers grown this auratum out of doors, and with what success? *J. A.*

Crocus nudiflorus.—The question of your correspondent, Mr. W. Robinson, in last year's *Gardeners' Chronicle*, p. 916, has led me to make unsuccessful inquiry for this plant of several nurserymen. Can you assist me now to find it? that I may unearth it at the proper season (midsummer I suppose), and endeavour to naturalise it in the turf of the churchyard, to which I have already brought C. vernus from a habitat close by. Hooker, I observe, branded with five asterisks the five species—vernus, minimus, aureus, sativus, and nudiflorus. Bentham retains two species only, vernus and nudiflorus, and notes them as naturalised in the meadows about Nottingham. *Dess.* [The Nottingham meadows are at the flowering season literally empurpled with the Crocus.—EDS.]

Mushroom Spawn.—There are various methods of collecting and saving Mushroom spawn. Those who are at all familiar with its appearance may look for it in horse mill-tracks, and in dry sheds where horses are accustomed to take shelter, or may procure it artificially from the droppings of hard fed horses; and the more Beans they have in their food the more abundantly will the spawn be procured. For this purpose it is only necessary to collect the droppings from the stable, and spread them out to become partially dried, and when a sufficient quantity has been got together to pile them up in any dry corner where they can remain undisturbed for two or three months, mixing with them a portion of light dry soil. If not allowed to become heated to a temperature exceeding 60° the heap will become a mass of spawn. If the earth is taken from a pasture where Mushrooms grow, and from the part which immediately surrounds them when so growing, it is probable that pure spawn may be contained therein, and the chances are that after being dried and mixed with the droppings, the mass will become impregnated earlier with pure spawn than would be the case by the spontaneous method already hinted at. The process of making bricks for spawning is simple enough, but requires a considerable amount of care and attention. Take three parts of horse-droppings, two parts of cowdung, two parts of decomposed tree leaves, one part of decayed vegetable mould from the bottom of a wood stack, and one part of sheep's dung; mix the whole up together, adding a sufficient quantity of the drainings from a manure heap to make it of the consistence of stiff mortar: it may then be moulded in boxes, 9 inches square and 2 inches deep, and previous to being laid out upon boards to dry, three or four holes should be punched in each brick with a blunt dibble. The bricks must be carefully turned about, and in three weeks they ought to be quite firm, indicating that they are dry internally, which is of great consequence. They are then ready for spawning, which is thus performed;—Some time previously a heap of fresh horse-litter should be prepared, the same as for a hot-bed; a layer of this about 6 inches thick must be laid out in a dry shed, and on it should be placed a course of the bricks, holes uppermost, which holes must then be filled up with spawn, and another course added. The area of each course must be reduced so as to terminate with a single brick; and a space of at least an inch must be left between each brick to allow the heat to permeate. Each layer is of course spawned as the work proceeds; and then the whole is to be covered with a layer 6 inches deep of hot dung, to which after an interval of about 10 days another layer may be added, the depth of which must be regulated by the state of the temperature; 3 or 4 inches will generally be enough. At the end of a period, varying from four to six weeks, the bricks ought to be thoroughly impregnated with spawn. They should then be laid out for a few days to dry, and be stored in a very dry place for use. *C.*

Allamanda Hendersoni.—On perusing your numbers of September 15 and 22, I find opinions expressed as regards this Allamanda, and as I have grown it since November last year, I think I should not be doing justice to others if I were not to point out what I consider to be a really good plant, especially when so many bad ones are palmed upon the public. When I bought my Allamanda Hendersoni, from Mr. Bull, of Chelsea, in November, 1865, eleven months ago, it had only one stem, which measured less than 1 foot 6 in. in length. The same plant is now on a trellis, 4 feet 3 in. high by 3 feet 6 in. through, and it is so well covered as to defy any one to see through it. I have exhibited it in a collection of plants at Morley, Wakefield, and Batley shows. It commenced to bloom in June, and has been in flower ever since; and even with all the use I have made of it, it still continues to grow and form its clusters of bloom buds, which do not consist of one, two, three, or five flowers, like those of Schottii, but in many cases I have had upwards of 20 blooms issue from one point. This morning I have counted one nearly finished stem, which has had 29 blooms upon it. If a plant under 12 months old can do this, what must we expect from it next season when it gets established. I find that the blooms are much better than those of Schottii, both in form and size, and as a grower it is much superior to any Allamanda in cultivation. My gardener says that it is worth all the other Allamandas put together, so well does it please him, and in carrying to and from places of exhibition, I find it equal to any stove plant I ever had. It does well budded on stocks of A. cathartica, and I fancy this system of culture is much superior to that of striking cuttings, as in 10 or 12 weeks by this process, I can have very nice half specimen plants in little more time than they take to strike in summer and early autumn. I have several plants showing bloom that have not been budded 12 weeks, and one that has only been budded seven weeks is showing on one point; the former is showing on five or six, and would have shown on many more had my gardener not tied it down. The plants I speak about have only had one bud put in each stock, as they do equally well with one bud as with a dozen. I think it well to mention this as the result of my experience. *Jno. D. Newsome, Batley, Yorkshire.*—Would Messrs. A. Henderson & Co. kindly favour us with the history of this plant, for notwithstanding what has been written in its favour (see p. 900), I am of opinion that it is Schottii with a new name. Along with this I forward you specimens of the strongest blooming shoots off both. Henderson has shoots quite 3 feet long, and is very vigorous; Schottii is a four-year-old plant, and has this season been to several exhibitions, consequently it is rather exhausted. I may mention that a nurseryman at Birmingham who has bloomed both this season, and who is anxious for information, without disputing their being two varieties, offers to give a prize of 3*l.* 3*s.* at either the Royal Horticultural or Regent's Park exhibition, next season, to the person who exhibits the two best plants, one of Henderson and one of Schottii, should the judges decide they are two varieties. *J. Stevens.* [The flowers sent differ chiefly in the calyx. The one sent as A. Schottii has its calyx one-fourth shorter than the other, the sepals are ovate acute and perfectly glabrous. Moreover, the bell-shaped end of the tube of the corolla is shorter and less tapering than in the one marked A. Hendersoni; the latter, too, has a longer calyx with lanceolate segments slightly hairy at the base. These differences are probably not of specific importance. EDS.]

Odontoglossum grande.—As it may interest Orchid-growers to learn what can really be done with this Odontoglossum under greenhouse treatment, we send the following description of a magnificent example of this plant, which is now in flower in our neighbourhood. It has no fewer than 12 flower spikes, bearing 58 blooms, all fully expanded, and perfect both in shape and colour. It is growing in a 14-inch pot. Many of the bulbs are 4 inches long and 3 inches broad, with leaves from 12 to 15 inches in length, of a fine green colour, forming a most charming contrast with the mass of rich, high-coloured flowers, which completely cover the whole of the plant. Many of the blooms measure from 6 to 7 inches across, and are brilliant in the extreme. This plant, which we imagine to be one of the finest specimens in the country, is in the possession of Joshua Saunders, Esq., of Thornton Villa, Clifton, and has been, we understand, for the past five years strictly under greenhouse treatment. *James Garaway & Co., Durdham Down Nurseries, Bristol.*

Variegated Pelargoniums.—I have perused with great interest the various remarks recently made upon the Pelargonium, and have much pleasure in contributing the results of my experience of the last twelve years. Within this period I have raised many thousands of these plants from seed annually, and have not observed, in a single instance, a plant of the zonal, or the plain green-leaved type, to sport into variegation, unless fertilised with the pollen from a variegated sort; nor have I known variegation to be produced unless it has been perceptible in the seed leaves. For instance, seeds saved from Madame Vaucher, the flowers being crossed with pollen from Mrs. Pollock, would probably produce tricolor-leaved plants at the rate of 10 to 20 per cent. only. I feel thoroughly convinced that unless variegation is discernible in the cotyledons, the plant will always remain green, and not sport. Respecting the sports from Stella, doubtless the seed leaves on the parent plant were slightly marked, which might have been occasioned by accidental hybridisation. I have frequently observed plants which in their first stages were variegated, to become rapidly quite green, and then suddenly to receive a check, caused by a sport making its appearance. In this case both varieties have been propagated; the green-foliaged form has grown vigorously, and has produced a sport similar to that from the parent plant. Referring to Mr. Chater's remarks, I quite agree that it would be a great acquisition could we introduce copper or metallic-leaved varieties as substitutes for Perilla. This I have been aiming at, and have succeeded in raising several in that way. I enclose some leaves for your inspection. I wish Mr. C. every success in his endeavours to obtain a Pelargonium with yellow flowers; but I fear such a result will not be easily accomplished. For my part I am aspiring to obtain blue flowers, a result not more improbable, and the effect would certainly be more attractive on some of our choice tricolors. I have flowers more nearly approaching to violet or blue than I have seen any tending towards yellow. As regards the classification of Pelargoniums, Mr. Grieve's suggestion appears to be excellent; its adoption would prevent much confusion, especially in the case of plants exhibited for competition. What class would the enclosed leaves, being red and black in the centre, with narrow yellow margin, represent? *Wm. Groom, Ipswich.* [See Notices to Correspondents, p. 904.]

Transplanting Trees.—You were good enough to advise me last year as to the removal of some Apple trees of 20 years' growth, and also some Yews which were transplanted 25 years ago. The Apple trees, save one, have all done well, and the whole of the Yews are flourishing. I have taken your advice as to the removal of the Cedars, and I have this day transplanted them. The advice you gave me both about the Yews and Cedars was completely against that of the great guns of this neighbourhood, but it has answered completely. *W. E.*

Societies.

ROYAL HORTICULTURAL: *Sept. 22 (Weekly Show).*—Extensive and excellent collections of Potatoes were shown on this occasion by Mr. Dean and Mr. Higgs, both of Maybush, Shirley, near Southampton. Of these we have a full account from Mr. Dean, which will be published next week. Messrs. Young and Bartlett showed groups of miscellaneous plants, among which were fine examples of Sedum Fabaria, a most useful plant for the decoration of the greenhouse or

conservatory in autumn. Mr. Stagg, of Earl Beauchamp's at Ashridge, furnished excellent bunches of Grapes and examples of other fruit, among which was a fine bunch of the Black Monukka variety, now gradually ripening off. Hue was shown of the fruits of the Tree Tomato, which is a plant well worth cultivation, being readily raised from seed. Bananas should be cut and allowed to ripen as this has been, as they are much superior to those when ripened from their own stems. Mr. Lester, and Mr. Young also showed fruits, and from the latter came some fine Pine-apples. Messrs. Veitch and Son contributed by Mr. Cutbush, and from Mr. Ricketts, Bush Hill Park, were shown examples of Dacrium Vellowianum. From the Society's Garden at Chiswick came fruit and plants, and Mr. Young had fine specimens of the Enfield Market Cabbage.

FLOWER SHOW IN CONNECTION WITH THE WORKMEN'S EXHIBITION NOW OPEN AT THE AGRICULTURAL HALL, ISLINGTON.—This new feature in connection with London great industrial exhibitions deserves the consideration of all who take an interest in the development of the social position of the population of the working classes. Messrs. Veitch, Gordon, and Broome, the promoters of the scheme, have reason to be proud of the success which has attended the undertaking, backed means it is by such men as Mr. Williams of Holloway, Messrs. Henderson, Barr & Sugden, and a host of others. There are also to be seen contributions by E. Ratcliffe, Esq., of Highgate, Messrs. Downie Laird & Laing, of Forest Hill, contribute a large collection of seed grain. Mr. Prestoe, the gardener at Vincent Park, has sent a good collection of fine-foliage plants, as has Mr. Bull of the Chelsea Nursery. Certainly, as this land are not unlikely to prove a benefit in the solution of the question as to the influence of the surrounding, practical and forms brought thus into strong contrast with the many stiff and inelegant defects of too many English designs, and the reality of newly-inclined practical workmanship will attract hundreds of all workmen of taste and moderate limits for the accomplishment of more frequent and less unmeaning artificial details. We need only wonder into how the cultivation of plants can convert what might otherwise be a mere habitation into a home. Fresh air and cleanliness are the almost certain accompaniments of a few gay flowers, and a garden is not unlikely to the aliens.

Among Cut Dahlias are some capital flowers contributed by Mr Bent, Mr. Grimshill, Mr. Cant, Mr. Bishop, Mr. Mathews, and Mr. Turner, and Mr. Keynes showed a fine collection by Mr. Mathews, of Ivy Bridge; Mr. Rose, and Mr. Gaudy, of Layton. Of Dahlias still to be seen there is a stand from Mr. Gray, of Copenhagen Street, Islington, to which extra prize has been given, and on a Lily blossomed in Cornish by Mr. Prestoe much praise is not unworthily bestowed. On some tables of flat boards, with a little mould and sand, Mr. Powell, of Lea Bridge; Mr. Murray, of Leyton; and Mr. Sandford, of Walthamstow, have made designs of flower-beds and gardens of very considerable taste. With respect to foliage plants, Mr. Eichholz and Mr. Laing, of the East Tower Hamlets, deserve creditable mention. Mr. Green, of Greenwich, shows Balsams, and Cacti and other succulents are shown by Mr. Appleyard, Lower Holloway. Some very fine Grapes are contributed by Messrs. Reddish, of Stockport, Messrs. Rossetti, Chingford, and Mr. Sandford himself.

Most of these are the productions of working men, and when one sees the crowded state of the great Hall night after night, and week after week, one is disposed to widen the proper bounds of criticism, and to welcome anything that can prolong the existence or increase the usefulness of an institution so instructive in its character, and altogether so beneficial in its results.

EXCURSION AT SOUTHEND.—Sir John Lubbock, F.R.S., President, in the Chair. Mr. Gregson sent for exhibition Vanda tricolor, in flower, in the collection of Mr. Cassidy, Dalston. Mr. Bond exhibited some very interesting specimens of the new Chinese silk-moth which feeds on the Ailanthus, reared by Mr. Wallace, of Colchester, the largest measuring inches across the wings, the cocoons about 3 inches. Mr. S. Stevens stated that he had recently visited Lady Dorothy Neville's Ailantus farm, where she had several acres thus occupied. The caterpillars were rarely taken by birds, but were liable to crawl off the trees to pick them up and replace them on the trees when blown down by the wind. Professor Westwood stated that several of his caterpillars of this species had, when very small, been devoured by wasps this season. Mr. Drummond exhibited specimens of the Cheliffer cancroides, eight of which had been found in a common log-house. The President drew attention to the remarkable internal structure of these parasitic insects. Mr. Stainton exhibited two species of Gelechia, of which he gave an account of their habits in them devouring the pith of the lower part of the stems of Hypericum. Two species of Depressaria had been reared. A remarkable drawing by Mr. Mitchell, representing all the larvae, pupæ, and perfect insects of the Lepidoptera fully executed, was exhibited by Mr. Mitchell. A collection of coleopterous and lepidopterous insects was exhibited by Mr. Glegne was exhibited. Mr. Pascoe made some remarks on the geographical distribution of the Longicorn genus Tmesisternus. Mr. Hughes of Stockwell exhibited a remarkable variety of Cidaria fluctuat. Mr. M. read a paper on the rhythmical variation in the [illegible] of fishes, and the [illegible] of the army worm (or larva of Heliothis [illegible]). Mr. Scott, on the Dragon-flies [illegible]. Mr. Scott, on the Dragon-flies [illegible]. The next meetings of the Society would be held on [illegible]. Considering on Nov. 1st, the [illegible] Union Society; the Society's library would, however, still remain in the apartments in Bedford Row, where the librarian would be in attendance as usual every Monday afternoon.

Notices of Books.

The Lake Dwellings of Switzerland and other Parts of Europe. By Dr. Ferdinand Keller. Translated by J. E. Lee, F.S.A., F.G.S. London: Longmans-Large 8vo, pp. 418. Tab. 96.

Scarcely 10 years have elapsed since antiquarians were startled by the discovery in certain of the Swiss lakes of piles of stone chisels and hammers, of flint arrow-heads, of bone needles and other objects indicating the former presence of a race of men of whom history scarcely makes mention, and whose existence but for the accident of the waters of the Lake of Meilen being lower than usual, might long have remained unsuspected. Subsequent researches have yielded numerous and most interesting results, a general account of which is given in the richly illustrated volume before us, and which consists of a translation and condensation of certain reports by various observers, laid before the Antiquarian Association of Zurich. From these reports it is made manifest that tribes of hunters or fishers, who must also have had some knowledge of agriculture, lived in huts built on piles of Oak, Beech, Fir, Pine, or Birch driven into the beds of the lakes, at some little distance from the shore, or at other times close to the margin of the lake. The piles were sharpened by stone axes or by fire, and were driven in by large stones and mallets, several of which have been found.

To the piles was attached a platform of wood, on which the huts were built—mere mud-walled erections, strengthened by wattles or hurdles. Remains of fish, and even of nets and fish-hooks, show how important the fisheries were to these primitive people, while the great numbers of bones prove the abundance of game, and the ability of the natives to secure it; and the remains of domestic animals attest some considerable knowledge of agriculture. The Barley, of which remains exist, is of the two-ranked kind still cultivated in the East. Flax must have been grown and woven into cloth, while Crab-apples, Sloes, Hazel-nuts, Blackberries, and Raspberries seem to have been greatly affected. It would appear, therefore, that the inhabitants of these settlements were not mere savages, but were a pastoral and agricultural race; and although given to hunting and fishing, were not entirely dependent on the chace, while their capabilities are sufficiently manifested in their peculiar dwellings, which must have cost no little thought and labour.

Antiquarians divide the period which elapsed from the first appearance of man on the earth to the Christian Era into four periods or epochs, according to the preponderance of stone, bronze, or iron implements. Thus, there is the first stone age, in which, says Sir J. Lubbock, men used flint knives which were unpolished, and when they made no use of pottery or of metal. Reindeer then roamed over southern France; the rhinoceros, the mammoth, and the hippopotamus were natives of Europe. In the second stone age polished stone axes were in use, and continued to be so even after the introduction of metal. Pottery was now largely used. To this period some of the Swiss lake dwellings may be referred, and in them there is evidence that the ox, the sheep, the goat, and the pig were already domesticated, though no traces of the common fowl have been yet met with. Corn-crushers, like those described by Livingstone as still in use by some native tribes in Africa, as well as Flax-seeds, show that agriculture had made some progress. In the succeeding, or bronze age, though flint instruments were still used, bronze weapons became general, and remains of domestic animals are more numerous than those of the wild ones. Linen clothing seems to have been worn, from the presence of flaxen tissues in the remains of the huts in the Swiss villages, while glass, amber, and gold were used for ornament. To this period succeeded the iron age, in which European history begins. The lines of demarcation between these so-called ages are not always well defined, but the archæologists seem to have clearly established the existence of epochs characterised in the main by the peculiarities we have mentioned.

In the book before us the several lake dwellings are treated of according as they are representatives of the stone, bronze, or iron ages respectively. Each settlement is described in detail, both as regards its conformation and the relics found in it, and copious illustrations are given of the latter. Considerable light is thrown on the manners and customs of the inhabitants by the habits of the native races of Africa, New Zealand, &c., in the present day.

The abstract of Professor Heer's "Treatise on the Plants of the Lake Dwellings" is of such importance, that we shall take an early opportunity of reverting to the subject; in the meantime we recommend this version of Dr. Keller's work as the most complete epitome on this most interesting subject.

The Apiary.

REMOVAL OF NADIR, &c.—I am a good deal puzzled to know what to do with a stock I have in a 9-inch deep Stewarton hive. It was tenanted the 25th of last June, and has prospered so well that the inside contents weigh 51 lbs. When the upper compartment was pretty full 14 days after hiving the swarm, I gave another similar one as a nadir, and the result is as above stated. Had I thought that so much honey would have been made in July, I would have given a super before the nadir, as the swarm was exceedingly strong: but I did not expect that. Well, the lower compartment is two-thirds full of comb unsealed, and there are as many bees in it as in the top one where the combs are all full and sealed. I am debating with myself whether I should take this lower compartment away, according to custom, and put an empty box or eke instead, or leave it there for the bees till the following season. The reason I think of doing the last is because Mr. Thomson states that sometimes stocks are kept over the winter in "three boxes, the latter being often the case." This I presume is when the swarm is so strong that it appears inclined to occupy three 6-inch boxes, to which my case is similar, as two 9-inch are the same as three 6-inch ones.

By inserting an empty box between the two I believe I could cause the bees to ascend from the lower one and thus they would be either all contained in the upper box (which, however, I doubt), or be partly in it, and partly in the empty one placed beneath: but I should like to know whether it would be advisable to do this, and also what you think of the method I propose to do it by. At sunset, or a little before, when the bees are all at home, I would put a perforated zinc slide across the entrance, separate the two boxes with an oyster knife, drew a wire slowly across lest any of the combs should have been worked down to the floor, and leave the hive alone for an hour to give the bees time to recover from the disturbance. Then at dusk an assistant should raise the top compartment enough to puff in a couple of mouthfuls of smoke, then raise it altogether, when I would insert the empty box, first putting down wedges both beneath it and on it if many bees were in the way. Of course the bees in the lower box would presently ascend and join those in the upper one, when the former could be taken away.

Another thing to be considered is, that if the comb is left as it is, it will all be available the following season, while if the box is taken, and there is no money in the combs, as there probably is, the comb must be cut out, and only a little of it can be fastened in again.

I ought to have stated in my last, that Mr. Thomson's method of withdrawing slides by passing a hot iron over them answers admirably. Some slides it would be impossible to get out without it. I had a pair of small smith's pincers, with a piece of wet leather interposed to prevent breaking the wood, which answered for all the short side ones, but for the centre ones the iron was required as well.

In Mr. Thomson's obliging reply to me, which appeared on September 1st, he has disclosed apparently the principle of the extraordinary success of these hives, which appears to be that of getting up an enormous stock of bees by nadiring (and feeding) in spring, before the time for supering arrives. This is a different style of practice altogether from that which belongs to other depriving hives, and must have at least as much to do with the success of Stewarton hives as any superiority in the yield of honey in Scotland. It is a method of management too which requires a considerable degree of thought and judgment if it has to be learned by written directions. One other particular I would be glad to know from him. He says, "Give a third box with comb, which will afford the queen plenty of room for the deposition of her full complement of eggs." Does he mean that this box is to be furnished with more than mere guide combs? The latter it is easy enough to fix if only 1 inch or 1½ inch square. But pieces larger than that I find very liable to tumble down if ever so carefully fixed. For anything more than mere guides I should, therefore, have to depend on boxes laid by with the comb in them, which might not always be to be had. In the latter part of the letter he speaks of wax sheets as an alternative. What depth of sheet would Mr. Thomson use on the bars of a nadir given before supering for the purpose of encouraging breeding? *Novice.*

Drone Comb in Supers.—I have this season taken several large supers, containing in the aggregate nearly 300 lb. of honey of superb quality and colour; but it is remarkable that, with the exception of a very few pounds, the whole of this amount was stored in drone-celled comb. In one only of these supers has there been any breeding, and that consisted of a few square inches of both worker and drone brood on two or three combs, every part of which, when removed, having been filled with honey and sealed. In two supers, not included in the above category, so much brood was deposited as to necessitate their being broken up. The drone brood was destroyed, but the worker brood, which exceeded the other in quantity, was given to strengthen artificial swarms. With this exception, as I before stated, almost the entire amount of honey-combs constructed consisted of drone cells only. The bars in the supers were supplied as far as possible with worker-celled guide combs; failing that, with narrow strips of the artificial impressed sheets, or with bars previously used, already containing the rudiments of worker-celled comb. In no case was any drone comb attached as guide.

To what cause can this preponderance of drone combs be attributed? If used by the queens for depositing the eggs of drones, I could account for it on the supposition that drone combs were required, but so very small a portion was so used (in fact, with the exceptions previously mentioned, I do not think the queens ascended into the supers at all) that I think we must look further for the solution of the problem. Have any others among your correspondents had occasion this season to notice the same peculiarity with regard to the combs in supers? *Apiator.*

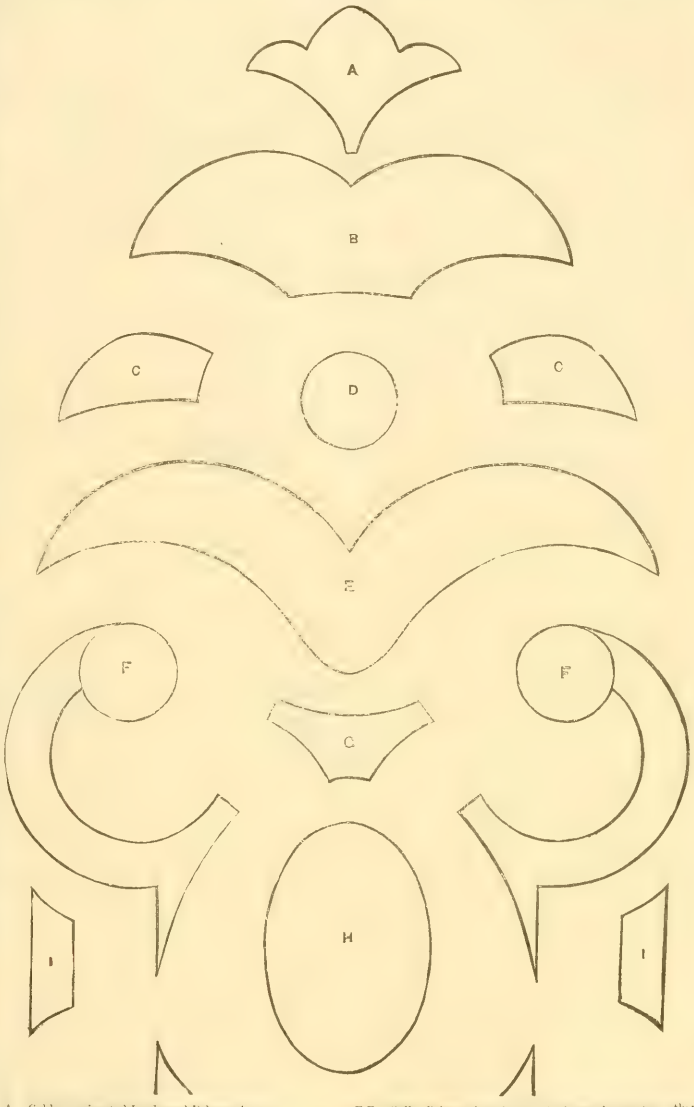
Garden Memoranda.

CULFORD HALL, THE SEAT OF THE REV. EDWARD RICHARD BENYON, M.A. (*continued from p. 904*).—Perhaps nothing adds so much to the enjoyment of a kitchen garden (always excepting a good supply of produce, which Culford is distinguished for) as some attempt to relieve the monotonous weight of heavy quarters of vegetables, and level ones of bush fruit. For this purpose various modes of planting and training are tried. One of the most effective is the formation of borders 6 feet or 7 feet wide, to be planted with pyramidal trees or bushes all round the central quarters. That is my favourite method. Mr. Grieve has adopted a different one. Oppressed at first by the dead level and large extent of garden, and having plenty of room, Yew as an alterative, a relief, and a blind, presented itself to his notice. So almost everywhere around the garden, about 4 feet from the main walks, which are 10 feet in width, a beautiful green Yew hedge, about 4 feet 3 or 4 feet 6 inches high, and 2 feet through, is found. And where the Yew is not, Beech, Privet, or Sweet Briar takes its place. Altogether there is about 1500 yards of these fences, 900 being Yew. They are clipped twice a year, in August chiefly, and looked over again in October and November. So fond is Mr. Grieve of these blinds, that where it is not convenient to have permanent screens he forms temporary ones of great beauty, of a mixture of Sweet Peas and Canary Creeper, or either by itself. In the chief parts of the garden the space from the walks to the Yew or other fence is laid down in Grass, and the fruit-tree borders on the opposite side against the walls are devoted to flowers, ribbon borders, &c. Inside the fence are temporary

earth paths for cultural purposes. The hedges do not appear to injure the crops.

On each side of the centre walk these hedges are thrown back 35 feet through the first and second garden and 20 feet in the third. This space is laid down in Grass, and occupied with about 130 flower-beds. It forms in one respect three distinct gardens, and yet one continuous whole. The walls are pierced with large circular arches without doors, and a considerable space on each side of the openings is densely covered with, in one case, green, in the other variegated, Ivy. In the centre of the walk, about half-way down, the finest filled bed at Culford, perhaps in the world, is placed. It is a raised circle, 30 feet across, arranged in different zones by the aid of bricks or tiles, which are of course entirely hidden by the plants. The central crown is Lucy Grieve Pelargonium; 2d zone Iresine Herbstii (exquisitely beautiful here); 3, Italia Unita Pelargonium; 4, Coleus Verschaffeltii; 5, Lady Cullum Pelargonium; 6, Iresine; 7, Silver Chain Pelargonium. The four best beds of variegated Pelargonium in the garden are Lady Cullum, Lucy Grieve, Mrs. Benyon, and Mrs. Pollock. These are all edged with Verbena Purple King. The next two best Pelargoniums in this beautiful garden are the Nosegays Pink Pearl and Spread Eagle. For small beds Harry Hieover is also a gem. Monitor was good, as were also some very showy beds of a peculiar Scarlet Nosegay seedling, with very dark zonal foliage; and Beauty of Guestwick. The variegated-leaved and crimson Ivy-leaved Pelargoniums were also in great perfection. Stella shone out with its usual brilliance, toned down by being placed in juxta-position with Elvedon Pink. Silver Chain was chaste and soft, as usual. Gazania splendens also does well here, and covered its little circular beds with its large bright stars of glory. A light blue Verbena, Belle de ton Songe, seems a favourite, and filled several beds, edged with the Cerastium Biebersteinii. I enclose a rough sketch of one of the divisions, to show the style of the flower gardens. All the beds are small, and extremely well filled. A very striking effect is produced by numbers of tall standard Pelargoniums, about 3 feet high, trained on small umbrella-shaped iron trellises, being used as centres to many of the beds. They are all seedlings, and it takes several years' growth to fit them up for the purpose. A little semi-tropical gardening has also been attempted here, by placing out plants of Dracæna, variegated Maize, &c., on the turf. However, the high winds have not been propitious to them, and have torn their leaves considerably. The bottom of the flower garden is finished with ribbon borders, 100 feet long and 9 feet wide. The centre is Perilla, surrounded on each side with Tom Thumb Scarlet Pelargonium; the third row is Elvedon Pink, a kind here preferred to Christine; the whole edged with Cerastium tomentosum. Near here, on one of the fruit tree borders, against the wall running east and west, is a ribbon border of annuals, planted thus. It is very effective:—1st row, Lobelia speciosa (true); 2d, Tagetes signata pumila; 3d, mixed Antirrhinum, very fine; 4th, fine double Helichrysums.

Another ribbon by the side of a wall, 300 feet long, was thus planted: 1st row, Lobelia Prince Albert, blueish; 2d, Variegated Alyssum; 3d, Tom Thumb Pelargonium; 4th, Yellow Calceolaria (integritolia) preferred here to all others; 5th, Perilla. On the opposite side of the kitchen garden is a border devoted to herbaceous plants, one of the most extraordinary things being a line of Dielytra spectabilis, 300 feet long, that must be magnificent when in flower. Near here is also a neat chain border formed with Verbenas Firefly and Purple King, in alternate scrolls, the centres being all formed of large plants of Centaurea ragusina. In other parts of the gardens we observed a new double variety of the Sanvitalia procumbens; and another new bedder which is likely to be very useful, and is nothing less than a Violet, warranted to flower all the summer, and it looks as if it would do it. The plants sown in the spring



A. Golden variegated Ivy leaved Pelargonium
B. Spread Eagle Pelargonium, edged with Cerastium tomentosum.
C. Crimson Ivy leaved Pelargonium
D. Gazania splendens.
E. Belle de ton Songe Verbena, edged with Cerastium Biebersteinii.
F F. Stella Pelargonium in terminal circular parts, other portions of the figures Elvedon Pink Pelargoniums.
G. Italia Unita Pelargonium.
H. Golden tricolor Pelargonium Lucy Grieve, edged with Verbena Purple King.
I I. Silver Chain Pelargonium.

varnished; Ada Mann, a beautiful dwarf tricolor, with light pink flowers; Ghost is a pure white-flowered, light golden tricolor. Another is a great improvement in habit on Italia Unita and White Lady. Of the older sorts the following are some of the most striking—Lady of Shalott, Indian Yellow, Magenta Queen, Excellent, Glitter, Glow-worm, Rose Perfection, Caglioste, Amy Hogg, Robert Fish, Clipper, Standard Bearer, Pink Seedling, and Culford White, the whitest of them all.

The walls of the kitchen garden are well furnished with Pear, Plum, and Cherry trees, Peaches, Apricots, &c., which, however, unless protected by glass, are short-lived, owing chiefly probably to the lightness and chalkiness of the soil. On a wall at the east side of the garden, with a west aspect, are the marks of a fine Mulberry tree, which covered 30 yards of the wall 12 feet high. It was killed by the winter of 1860. Returning up the centre of the flower garden, and looking towards the range of glass, something seems to be wanted to break the flat sky-line. Much might be done by adding ornamental chimneys of considerable elevation to the furnaces. But the greatest improvement of all, both on æsthetic and sanitary grounds, would be to add a second story to the gardener's cottage, and finish it off with an ornamental roof. Turning to the left, we pass out of the kitchen garden into the shrubbery leading to the Hall, about 400 yards distant. On the right is a small Fernery with water, &c., beautifully furnished with Ferns, herbaceous plants, &c. It contains some noble species of Pampas Grass and double Furze; also some thrifty plants of Wellingtonias and of what appear to be Juniperus excelsa, the seeds of which were sent from the Crimea by Colonel Newton. Returning to the main walk, we cross the carriage road, pass along by the churchyard wall, and enter through an iron gate into the lawn and pleasure ground. On the lawn are some fine trees of Cedars, all which, however, were injured six years ago; Spanish Chestnuts, Purple Beech, and a Lime 100 feet high. There is also a nice Pinus Pinsapo, planted 18 years ago, and doing well. It was not touched by the frost, although the Cedars of Lebanon were nearly killed. A Wellingtonia is also growing very freely. A singular effect is produced in one corner of the lawn by a large irregular group of Irish Yews, planted on the turf; they have been allowed to grow rough without training, and have a grotesque appearance.

Near the house is placed a small well-furnished flower garden, with a fountain in front, and a conservatory behind it. The flower garden and fountain are formed on a level piece of gravel, and supported by a dwarf retaining wall surmounted by very small vases. The beds are edged with green glass tiles, which are clean and neat. The conservatory is chiefly filled with Fuchsias and Zonal Pelargoniums. On the centre bed are some fine specimens of pyramidal Myrtles. These plants will be succeeded by Chrysanthemums, Camellias, and Chinese Primulas, and these again will give place to Roses and the Azaleas already named. Mr. Grieve prefers the Zonal and Scarlet Pelargoniums to the usual greenhouse Pelargoniums for decorative purposes, and certainly the beauty of many of his plants on this occasion seemed to justify his preference. They also bloom so much longer, and are much less trouble. Mr. Grieve considers the following are now a dense mass of bluish lavender-coloured flowers, with the scent of Pansies rather than Violets. The name of this little stranger is Viola cornuta.

Near here we also noticed two pretty beds of the white Madame Cornelissen Fuchsia. We now come to the testing borders for variegated and other Pelargoniums and new bedding plants. Among the latter the chief thing that struck us was a variegated Gazania, and also one with yellow flowers; Centaurea ragusina compacta is a very dwarf variety of this well-known plant; Lady Cullum has proved herself the very best of the new Pelargoniums; Lucy Grieve is also very beautiful; Beauty of Guestwick, Silver Chain, and Julia are some of the best in the way of the Flower of the Day, Julia is almost the only one that Mr. Grieve grows that has not been raised by himself; Harry George Henderson is a very beautiful tricolor, with leaves shining as if

to be the finest for pot-culture:—

Roi d'Italie, Madame Rudersdorff, Madame Leonine, Amelina Grisau, François Desbois, Robert Fish, Dr. Lindley, Dr. Newham, Culford Rose, Rose Perfection,

Clipper, Bride, Rose Rendatler, Virgo Marie, and Excellent. Part of the back of the Conservatory is shut off from the house itself by sliding glass doors, and converted into a Fernery. This is a capital imitation of rock, with water trickling down into a fountain below, and Ferns growing luxuriantly out of the crevices. It is kept at a higher temperature than the other part of the house, and its degree of humidity may be assumed from the fact that self-sown seedling Ferns are springing up all over the surface of the rocks. The effect of all this luxuriant beauty is, however, very much marred by the ugliness of the roof, which is anything but in harmony with this gem of ruralism. In fact the whole thing—house, conservatory, flower garden, and their accompaniments—however beautiful in themselves, are far too small for the regal extent of Culford. The same remark is applicable to the lawn, although I believe it contains about 4 acres. At present it is arbitrarily cut in two, as it were, by a ha-ha, surmounted by a wire fence, 3 feet high, running across about half way between the mansion and the river. Now, the natural and artistic boundaries of Culford lawn exactly coincide, and these are—the church, or, better still, the farm at one end, beyond; the bridge at the other, and 50 yards beyond, the water, or, if possible, the wood opposite the house. This would enable the water to be widened at this spot and thrown into the form of an irregular lake, with well planted islands, &c., if required. It would also afford scope for the formation of Pinetums, Arboretums, Ferneries, Shrubberies, and a second flower garden if desired, on a scale of magnificence and grandeur corresponding with, or even excelling, those portions of this fine place, already described. As the house is considerably elevated above the river, either the terrace or a more natural style might be adopted, or, better still, a combination of both. Of course fine walks or drives would be carried through in different directions, and especially towards the water. From the present lawn a fine view of West Stow Church is obtained; also of the bridge, which is however somewhat hidden by a tall tree in the line of the arch.

But whatever may be done to improve or extend this part of the grounds, it is to be hoped that the fine old kitchen garden will remain as it is; its mixed style forms a connecting link between the past and the present (all too rare in modern gardening); and while its picturesque character has not for one moment been lost sight of, its sombre fringes of Yews and brilliant setting of flowers have converted it into a pleasant promenade, as unique as it is delightful.

It is but tardy justice to add that Culford everywhere bears the stamp of talent in the gardener, and liberality in the proprietor, and is pre-eminently distinguished by those three great characteristics, without which no garden nor estate, large or small, can ever yield a full revenue of either pleasure or profit—order, neatness, and cleanliness. *D.*

Miscellaneous.

The Datura at Hardwicke.—Through the kindness of Lady Cullum, who a few days since opened her grounds for the purpose, nearly 3000 persons have had the pleasure of seeing this magnificent plant. It is impossible to convey any idea of its purity, perfume, or beauty by description; we have, therefore, the greater pleasure in stating that photographs and stereoscope views have been taken of it by Messrs. Clarke and Wallace. The plant has a gnarled stem, about 10 feet high, and the leaves and flowers cover an area of about 300 square feet. Over this area, tier after tier of pure white, long, bell-shaped flowers, 11 inches long and nine inches across the lip, are suspended. "Angel's trumpets" is the only name we have heard for them that seems at all worthy of their character. At noon the scent of the Datura arborea, or Brugmansia suaveolens—for it is known by both names—is *nil*, but it reaches its maximum at midnight. It is a native of Peru, and is also found in other semi-tropical climates, where from the overpowering character of its perfume it is known as the Fever Plant. At Hardwicke it is grown in a cool orangery, and in many parts of England it is used for centres for flower-beds in the summer months. In such positions a dozen flowers would be thought a good display, whereas we are told the Hardwicke plant has over a thousand expanded blossoms. *Bury Free Press.*

Horticultural Exhibition at Sandringham.—A horticultural exhibition was held the other day in Sandringham Park, and was very numerously attended. The visitors were permitted to roam through park, gardens, and grounds, and the church was also inspected with much interest, particularly the Royal pew, and the marble monument erected by the Prince of Wales to the memory of the Rev. George B. Moxon, his late chaplain. The band of the 1st Norfolk Rifle Volunteer Battalion played some excellent pieces. One large marquee, 75 feet long, contained the cottagers' products of flowers, fruits, and vegetables, or at least as many as it would hold, and a bench had to be rigged up outside for the remainder. The great feature of the show was another large tent, 75 feet long, which Mr. Carmichael had filled from the Royal gardens, to the general admiration of the visitors. A device by the children of the Sandringham school, with the monogram "A. E. A.," and a Swiss miniature garden by Mrs. Sherringham, were much admired. The Rev. W. Luke Onslow, M.A., the new rector of Sandringham, presented the prizes given by their Royal Highnesses for the best kept cottage and garden in the different parishes. The rev. gentleman congratulated those present upon the success which had attended the first show. It was the wish of his Royal Highness the Prince of Wales that all the gardens and grounds should be open free to the public. The committee thought it right however to charge a nominal fee for admission, the surplus of which would be devoted to charitable institutions like the Lynn and West Norfolk Hospital. The Rev. W. W. Dickenson, M.A., Rector of Wolferton, the energetic secretary of the Society, to whose endeavours the general success of the day was mainly due, then addressed those present. The object sought by every promoter of the Society, he said, from his Royal Highness to himself, was the amelioration of the moral condition of the labouring population. *Pall Mall Gazette.*

Calendar of Operations.

(*For the ensuing week.*)

NOTWITHSTANDING the unusually large amount of wet weather which we have lately experienced, flower gardens are still comparatively gay. Keep all in connection with them therefore neat and clean, so as to set them off to as much advantage as possible. Let weeds, which are plentiful this season, be removed both from borders and walks on all favourable opportunities, and keep the latter well rolled. All preparations for bulb planting should now be forwarded as much as possible, in order that active operations in reference to these matters may be commenced as soon as frost has put an end to the beauty of the bedding plants.

FLOWER GARDEN AND PLANT HOUSES.

In cool conservatories and greenhouses damp or insects soon do irreparable injury to soft-wooded plants; these must, therefore, receive careful attention if the plants are to be wintered in first-rate condition.

CAMELLIAS AND AZALEAS.—If not already done these should now be housed; see that all decaying leaves are removed, keeping the plants rather dry at the root. Allow them to have plenty of air when the weather is favourable.

CINERARIAS.—Plants for late blooming must now be kept cool and airy, and should not be allowed to suffer from want of pot-room. These must not be trusted much longer in cold pits, for they cannot endure frost without injury.

CROCUSES.—These may be planted as soon as beds are ready for their reception; they like a deep, light, rich sandy soil, but will thrive in an ordinary soil or situation. In planting, the bulbs should be covered from 2 to 3 inches with fine mould; and if an effective display during the first season is desired, plant thickly—not more than 2 inches apart. For edging borders and beds the Crocus is exceedingly useful; and, where planted in lines along the margin of walks, or in clumps of 3, 6, 12, or more bulbs each, and allowed to remain in the ground for several years, the effect of the masses of flower which they produce is all that can be desired. Care must be exercised, however, to protect them from mice, which are exceedingly partial to them, especially in winter.

DAHLIAS.—Save seed from choice kinds when ripe and dry.

HOLLYHOCKS.—Stools of choice sorts may be lifted and potted, to supply cuttings, which strike readily on bottom heat; when struck pot off in nice light rich soil.

HYACINTHS.—For blooming indoors, either in pots or in any of the various contrivances that are used instead of pots, strong bulbs should be selected and planted in succession; place them in any dark cool situation for three or four weeks, to allow of their making roots, before exciting them into growth. If pots are used—and these are doubtless the best, if not the most ornamental—use good rich sandy soil, and secure perfect drainage; for a liberal supply of water is required during the blooming period, and if the drainage is defective the soil is very apt to become soddened.

PELARGONIUMS.—Shift these should be rather cool and dry, giving whatever water may be necessary on the mornings of fine days, so that all superfluous moisture may be dried up before the evening, avoiding the use of fire-heat except when necessary to prevent the temperature falling below 40°, or to dispel damp when this cannot safely be done by giving air.

PINKS.—Finish planting these out in order that they may get well established before winter.

ROSES.—In many places these are still blooming in tolerable profusion. Examine those on pillars and trellises, and if the weather is favourable see if the soil wants renewing or the kinds changing. For choice sorts roomy holes should be made, capable of containing three or four barrow-loads of well-prepared soil. Turfy loam of good quality is the chief thing; to this add a portion of rich rotten manure, and, if at hand, a little sandy peat or leaf-mould.

TULIPS.—Prepare beds for these. Examine the bulbs, and arrange them as determined on at blooming time.

FORCING GARDEN.

MUSHROOMS.—The surface of beds coming into bearing should be sprinkled with water a week or so before the Mushrooms make their appearance; this is better than watering after the Mushrooms are through.

PINES.—Water plants in pots as little as possible at this season. Where the general stock is grown in this manner it is a good plan to cover the pots over 2 or 3 inches with the plunging material; where the bottom-heat will permit that to be done, it obviates the necessity of watering so frequently.

VINES.—The earliest house of these may now be pruned and the rods dressed. The border outside may also be covered with Fern-leaves or straw.

HARDY FRUIT AND KITCHEN GARDEN.

Trench, dig, and ridge every spare inch of ground whenever the weather will permit these operations to be advantageously performed. This is particularly to be observed in gardens the soil of which is of a clayey character.

CELERY.—Earth up as required when the weather is dry. Leaves affected with fly should be picked off and burned.

ROOT CROPS.—Onions will in most places now be stored. Let Carrots also be taken up and stored; a few Parsnips for present use may likewise be taken up; they will, however, keep well in the ground, and thus circumstanced they may have a coat of manure spread over them for the next crop and be trenched out as wanted. All root crops, including Potatoes, should be taken up and stored in as dry a state as possible. Potatos in the ground in some places are rotting. Get them up, therefore, without delay.

STATE OF THE WEATHER AT CHISWICK NEAR LONDON, For the Week ending Sept. 29, 1866 as observed at the Horticultural Gardens.

Sept.	Month's Age	Barometer		Temperature. Of the Air			Of the Earth 1 foot. 2 feet deep. deep		Wind	Rain.
		Max	Min	Max.	Min.	Mean				
Thurs	23	11	29.947	29.787	69	42	54.9	59	57	S.	.12
Fri	24	12	29.881	29.757	62	45	52.7	59	57	S W	.50
Satur.	22	13	29.841	29.672	55	39	47.0	59	57	S W	10
Sunday	23	14	29.842	29.691	60	40	50.1	59.1	56.1	S W	.08
Mon	24	○	29.91	29.801	61	42	51.7	58	56	S W	.05
Tues.	25	16	29.952	29.867	61	45	53	57	56	S.	.02
Wed	26	17	29.999	29.869	61	47	54.5	57	56	S W	.16
AVERAGE			29.787	29.731	61.0	44.7	52.9	58.4	56.5		1.01

Sept. 24—Partially overcast, cold, cloudy and boisterous.
— 25—Boisterous, fine, cloudy, moderate breeze, fine, heavy rain at night
— 26—Rain, cloudy and wet, overcast
— 27—California haze, overcast, rain at night
— 28. Rain, densely clouded, showery, rain at night.
— 29—Dense fog, very wet, overcast
— 30. Drizzly, dull and overcast, rain
Mean temperature of the week, 4½ deg. below the average.

STATE OF THE WEATHER AT CHISWICK,
During the last 10 years, for the ensuing Week, ending on the 6, 1866

Sept. and Oct.	Average Temperature of the Week	Average Amount of Rain in the Week	Average Number of Days on which it Rained	No. of Years in which it Rained	Greatest Quantity of Rain	Prevalent Winds: 1866				1856 to 1865			
						E.	S.	W.	N.	E.	S.	W.	N.
Sunday	61°	.414	.512	23	0.63 in.	2	2	4	1	0	10	1	0
Mon.	61	.150	1.1	21	0.53	2	2	3	1	2	7	1	1
Tues.	61	.165	.441	20	0.41	2	2	3	1	2	5	2	1
Wed.	61	.118	.319	16	1.01	2	2	3	1	1	2	5	0
Thurs.	61	.142	.178	10	1.06	2	2	3	1	0	2	6	2
Fri.	61	.141	.345	19	0.82	2	2	3	1	1	3	4	2
Satur.	61	.121	.127	21	0.78	1	1	4	1	1	2	4	3

The highest temperature during the above period occurred on the 1st, 1865; the lowest on the 24th of the same month, 1857.

Notices to Correspondents.

Books.—P. Hibbert Hardwicke's Arboretum is the same as that which we noticed in last week's number under the name Sargent's Manual. It is especially as you say there is plenty of heat—fine, well ventilated, plenty of air on all favourable occasions. The leaves dust in unsifted.

Dessert Pelargoniums.—Anxious. It is all a matter of taste. They are not hardy enough to withstand autumnal frosts, but for decorative purposes we think the scarlets will be useful, and they will doubtless in the course of time be very much improved. Of the Nosegays, is the best of those already sent out. The white one belongs, we believe, to another race, but we have not seen it.

Diseased Potatos.—Constant Reader. It is not a white, but belongs to the purple or red Chenistes. Strictly speaking it is not a disease, but a fungus, to be added for in the popular classification into white and red sorts.

Fuchsias.—Thos. Wheeler. Your Fuchsias are handsome, but we cannot speak in any respect to their possessing the same colours already in cultivation.

Glass.—Constant Reader. You can have the rough plate, which is much cheaper, and answers very well for plant-growing generally, excepting such subjects as Ferns, you had better have clear glass, and use some shading when shade is really required. It is not necessary to have squares; you can have the glass being very much wedge-like within brush of paste or whitening, easily washed away when not further required.

Insects.—A. B. The moths which have appeared by thousands in many parts of London, and notably the Bermondsey, belong to the genus Agrotis. Many varieties of this genus, and M. segetum in particular, are well known to do much damage to the larger species of cereal grasses, especially to the latter species with orange-coloured bases to the wings. It is probable that the former species, at least, may have been present in the unprecedented numbers from the carcases of the many cattle slaughtered and buried in your neighbourhood during the cattle plague, and infected with Aphides and red spider.—*C. H. D.* The caterpillar found on Polygonum Persicaria is that of the common buff-tip moth, *B. bucephala*. It generally feeds on different trees.—*Anon.* We cannot determine the species or even the order of an insect represented by dry.

Kidney Beans.—W. H. Jones. The Kidney Bean is distinct from the Scarlet Runner, the former being an annual, and the latter a perennial; but for all practical purposes the produce may be regarded as mere varieties of the same vegetable.

Mushroom Spawn.—Mushroom. Your request is complied with to-day. We have so far complied with your request as to give directions for making the spawn, but unless your operations are carried on on a large scale it will not pay to make your own bricks. It will be found far more economical to purchase of the best makers. Some of the latter will guarantee the pureness of the spawn if necessary.

Names of Plants.—W. L. Lathyrus pubescens. 2. Stapelia elegans.—*J. L.* 1. Opuntia quitensis. 2. Pleurothallis selvarum. 3. Oncidium macranthum.—*W. R.* 1. spurred. 2. Justicia elata. 3. Amaryllis reticulata. 4. Tuberous Leaf. 4. Epidendrum latifolium.—*Snowdon.* 1. Davallia hirta pallens, but the ring-drive is necessary. 2. Asplenium praemorsum; 3. Cheilanthes odora. 4. Blechnum, apparently accidentalis in a young state.

Pelargoniums: W. & A. The blooms were too much perished to make out the striping. By all means take care of the plant, and get seedlings from it.

Skeleton Leaves: Blackburn. Sulphurous acid, or a solution of chloride of lime, will be found to bleach these.

Smoking Cattle.—Subscriber. Mr. Hyde has communication on this subject, to which you refer, will be found at p. 845 of our volume for 1863.

Communications Received.—J. Thomas.—A. Dean.—J. Anderson.—D. T. Fish.—Quo.—P. M. H.—Professor Reichenbach.—Professor Koch.—Professor Morren.

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£7 a Ton free to Rail or Boat in Liverpool.
£7 10s delivered to Rail in Bristol.
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In Bags containing 2 cwt. each, branded
"This valuable Meal, containing above 20 per cent. of fatty matter, is recommended as an economical food to mix with home-grown produce."—See Dr. Voelcker, R. A. S. E. Journal, Vol. I., 2nd Series, page 176).
For further particulars and Analysis apply to Messrs. SMITH, or their Agents, Messrs. HUMPHRIES & Co., Bristol.
JOHN COLES, Secretary.
London Agency: 150, Leadenhall Street, E.C.

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Under this Company's Act, Landowners under Lease, Trustees, Mortgagees, Guardians, Committees of Incompetent Persons, Beneficial Lessees, Corporations (Ecclesiastical or Municipal), Incumbents, Charitable Trustees, &c., may effect Land Improvements, and charge the outlay and expenses on the estate improved, by way of rentcharge, to be paid by half-yearly instalments, viz.:—
1. All sorts of Draining, Irrigation, Warping, and Embankment.
2. The Erection of Farmhouses, Cottages for Agricultural Labourers, and all kinds of Farm Buildings.
3. The Construction of Roads.
4. The Planting and Clearing of old Woodlands, Enclosing, Fencing, and Reclaiming Land.
The owners of Estates, not entailed, who may be desirous to avail the experience of Inexperience of this Company, may also charge their Estates with an Outlay in Improvements under the simple and inexpensive process of the Company's Act.
The Term of Years for the Rentcharge is fixed by the Landowner, so as to adapt the amount of Annual Payment to the circumstances of the Tenants.
No Question of Title being required, and the Charge not being affected by Intermediate Sales, no Legal Expenses are incurred.
The Actual Agents for effecting Improvements are threefold:—
No. 1. The Works may be designed and Executed entirely by the Landowner's Agent, and the Company employed only to supply the Loan and conduct the matter through all the official Forms for Charging the Outlay on the Estate.
No. 2. The Company will supply Plans, Specifications, and Estimates for any Improvements to be executed by the Landowner's Agent as under No. 1. In each of these cases the Landowner will be solely under the control of the Enclosure Commissioners.
No. 3. The Company will undertake the entire responsibility of the Improvements, prepare the Plans, execute the Works, and finally charge on the Estate the actual amount expended, with their Commission thereon, approved by the Enclosure Commissioners.
Landowners may thus obtain what assistance they require from the Company, and no more, in effecting the objects in view.
Works of Drainage and other Improvements are also executed on Commission for Landowners, who merely require the skill and experience of the Company's Officers and Staff in constant practice.
Applications to be addressed to WILLIAM ATTWOOD, the Secretary, at the Office of the Company, 22, Whitehall Place, London, S.W.

THE LANDS IMPROVEMENT COMPANY.
Incorporated by Special Act of Parliament in 1853.
TO LANDOWNERS, THE CLERGY, ESTATE AGENTS, SURVEYORS, &C., IN ENGLAND AND WALES, AND IN SCOTLAND.
The Company is empowered to lend money, limited in amount, for the following works of Agricultural Improvement, the whole outlay and expenses in all cases being liquidate by a rent-charge for 25 years.
1. Drainage, Embanking, and Warping, Embanking, Inclosing, Clearing, Reclamation, Planting, or any Beneficial purpose, Engines or Machinery for Drainage or Irrigation.
2. Farm Roads, Tramways and Railroads for agricultural or farming purposes.
3. Jetties or Landing places on the sea coast or on the banks of navigable rivers or lakes.
4. The Erection of Farmhouses, Labourers' Cottages, and other Buildings required for Farm purposes, and the improvement of and additions to Farm Houses and other buildings for farm purposes.
Landowners assessed under the provisions of any Act of Parliament, Royal Charter, or Commission in respect of any public or general works of Drainage or other improvements, may borrow their proportionate Share of the cost, and charge the same with the expenses on the lands improved.
The Company will also negotiate the Rent-charges obtained by Landowners under the Improvement of Land Acts, 1864, in respect of their Subscription of Shares in a Railway or Canal Company.
No investigation of title is required, and the Company being of a strictly Banking character, do not interfere with the plans and execution of the Works, which are controlled only by the Government Enclosure Commissioners.
Apply to ARNOLD B. MALE, Esq., Secretary, 3, Parliament Street, London, S.W.

THE ALBERT VETERINARY COLLEGE (Limited), Queen's Road, Bayswater, London, W.
Authorised under Royal Sign Manual.—Session 1866-67.
INAUGURAL ADDRESS on MONDAY, Oct. 1, at 2 P.M. precisely.
President—His Grace the DUKE OF NEWCASTLE.
Principal—Professor John Gamgee, late Principal of the New Veterinary College, Edinburgh.
Professor of Veterinary Anatomy and Curator of Anatomical Museum—James Law, M.R.C.V.S.
Professor of Veterinary Physiology, William Ingram, M.R.C.V.S.
Superintendent of Pharmacy and Lecturer on Veterinary Materia Medica—Alexander Horne, M.R.C.V.S.
Professor of Chemistry—William J. Russell, Ph.D., F.C.S.
Infirmary Superintendent and Professor of the Art of Farriery—Joseph Gamgee, Sen.
Professor of Veterinary Medicine and Surgery—John Gamgee
FIRST SESSION.—Medicine, Surgery, Anatomy, Physiology, in the essential studies of Anatomy, Chemistry, and Physiology, all Students entering the Albert Veterinary College not later than October 1, 1866, will be afforded an opportunity to compete for a Free Studentship in April, 1867.
Free Perpetual Ticket for Winter Sessions, £6 6s.; Single-class Ticket, £2 2s.
R. B. PUSSELL, Secretary.

SMITHFIELD CLUB SHOW.
AGRICULTURAL HALL, ISLINGTON, DECEMBER 10 to 14.
The LAST DAY for receiving Applications for Space for Implements and Machinery, &c., is OCTOBER 1.
Printed Forms of Application, with Rules and Regulations, may be obtained on application to the Assistant Secretary, at the Office of the Honorary Secretary, Corner of Hall Moon Street, Piccadilly, London, W.

SMITHFIELD CLUB FAT CATTLE SHOW.
The ANNUAL SHOW of FAT CATTLE, SHEEP, and PIGS, will be held at the AGRICULTURAL HALL, ISLINGTON, on MONDAY afternoon, December 10, and Four following Days.
Intending Exhibitors are requested to apply for Certificate Forms by the reference letters as under.
CATTLE.—From A. For an OX or STEER (in any Class).
" B. For a COW or HEIFER (in any Class).
" C. For a BEAST in Extra Stock.
SHEEP. " D. For a PEN of SWEEP (in any Class).
" E. For a SINGLE SHEEP in Extra Stock.
PIGS " F. For a PEN of PIGS (in any Class).
" G. For a SINGLE PIG in Extra Stock.
ENTRIES for LIVE STOCK CLOSE NOVEMBER 1.
Prize Lists, Forms of Certificates, and all information may be obtained on application to Mr. DAVID PULLEN, Assistant Secretary, at the Office of the Honorary Secretary, corner of Hall Moon Street, Piccadilly, London, W.
N.B.—All communications respecting the Show must be addressed to the Assistant Secretary, as above, and should bear outside the words "Smithfield Show."

The Agricultural Gazette.

SATURDAY, SEPTEMBER 29, 1866.

WE receive almost daily broadsheets announcing the success of Mr. RANSOME'S ploughs and ploughmen at the local matches all over the country. The result of the day's competition is telegraphed to Ipswich, where it arrives, whether from Cumberland or Cornwall, probably by four o'clock in the afternoon; the printer at once "sets up" the intelligence, and before post time it is ready for transmission; and early next morning the postman delivers the news wherever in the island it is likely to be of the slightest interest. Messrs. HOWARD, of Bedford, are no longer competitors at these local gatherings. They adopt, no doubt, quite as satisfactory and a much less costly method of making known the merits of their manufactures. It is of course solely as an advertising agency that rival manufacturers regard these contests; whereas it is solely in reference to their influence on the improvement of tillage that they have any interest for us. Do these matches possess any agricultural importance beyond their merely local interest? The exhibition of work by a first-rate tool in the hands of a first-rate man may stimulate, or it may possibly overawe and as it were, browbeat local skill. On the whole, however, the champion class, as it is called, is a leading feature in the programme of the day's proceedings, and gives a zest to the local ploughing match which considerably increases the number of the spectators. So far, then, we may suppose that the presence of the leading plough manufacturers at these matches is desirable. Whether, however, there is anything more than an addition to the attractions of an agricultural holiday we take leave to doubt.

Take the case of a recent ploughing match at Kingscote, Gloucestershire, for example. Will Messrs. RANSOME, whose man and plough carried everything before them there, tell us what was actually accomplished? How many cubic feet of earth were turned over, in how short a time, at what a cost of labour? We think it probable that the annals of that same parish can give instances very many years ago when more was done at smaller cost within as short a time.

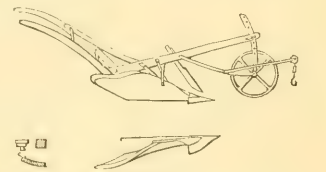
In the 12th volume of the "Transactions of the Bath and West of England Society," there is an account of a ploughing match at Kingscote, which took place close on 60 years ago. Three ploughs started for the prize. They were all of that description called Beverstone. One was drawn by two small oxen of a mixed breed, with a driver; another by two horses without a driver; and the third by one horse without a driver. They started together, and their respective half acres were ploughed in the following spaces of time, viz.:—

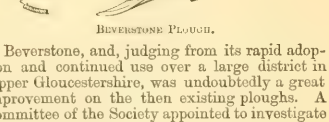
The plough with two horses, in 2 hours and 28 minutes.
That with two oxen, in 3 hours and 14 minutes.
And that with one horse, in 3 hours and 17 minutes.

Immediately after the work was performed, the umpires delivered in their adjudication, which was as follows:—

"Hunter's Hall, Kingscote, Gloucestershire, May 10, 1805.
"We the undersigned, having been this day appointed umpires, by a Committee of the Bath and West of England Agricultural Society, for managing a trial of ploughs, to determine on the respective merits of the following candidates, to wit,
" Mr. DRINKWATER HAYWARD, of Forester, a Beverstone plough, drawn by two oxen, with a driver; THOMAS COX, ploughman.
" Mr. JOHN HAYWARD, of Beverstone, a Beverstone plough, with one horse, no driver; THOMAS PEARCE, ploughman.
" Mr. WILLIAM KEDGEN, of Hunter's Hall, a Beverstone plough, with two horses, no driver; WILLIAM WILES, ploughman.
" Having carefully examined the work done by each, and judging by the rules laid down by the said Society for our direction, are unanimously of opinion, that the plough drawn by the two oxen is entitled to the first premium offered by the said Society, and the plough drawn by two horses to the second.
Signed, " ANTHONY ALLEN.
" WM. CHANDLER.
" WM. WHITE."

We give a sketch of the Beverstone plough below. It was the invention of Mr. TUGWELL,





BEVERSTONE PLOUGH.

of Beverstone, and, judging from its rapid adoption and continued use over a large district in Upper Gloucestershire, was undoubtedly a great improvement on the then existing ploughs. A Committee of the Society appointed to investigate the circumstances of this trial reported that the same ploughman who here drove the one-horse plough did, in 4 hours and 35 minutes, plough $4\frac{1}{2}$ inches deep, in a workmanlike manner, one acre of two-year-old Clover-ley; and that "Mr. TUGWELL, 22 years before, had with a similar instrument performed the same feat with a horse, which on the preceding day had been purchased for 50s., and which, in conjunction with another horse (in the possession of the same family), had continued to complete their acre with a Beverstone plough almost every day for 10 years afterwards."

The Report ends with a recommendation that the sum of 21*l.* be spent in a piece of plate, to be presented to Mr. TUGWELL, with an inscription expressive of the high sense entertained of his ingenuity in the invention of the Beverstone plough.

We are not about to back the Beverstone against the Ipswich plough; but, considering that the real test of merit in these cases is the quantity of tillage actually accomplished in a given time within a given cost, we have called attention to a contest which, 60 years before the time of Mr. RANSOME'S victory, did on the very same land result in a performance which was, we imagine, economically an even greater achievement and success.

THE full list of the Short-horns sold last week at Yardley by Mr. STRAFFORD, is given in another column. The highest average price reached by any of the families of which the herd

consisted, was realised for the seven descendants of Mr. ADKINS' *Charmer*. Two young bulls were sold for 160 guineas; *Columbine*, a 9-year old cow, fetched 51; *Cornelian*, a 7-years old, fetched 70; and two yearling heifers, *Cosette* and *Catalani*, fetched 100 guineas each. The seven cattle realised 827. 13s. each. This is a very extraordinary average price. At Mr. ADKINS' sale in 1862, 31 descendants of the same family realised about 69*l*. apiece, so that the merits of the family, to the permanence of which he so materially contributed, continue to be recognised.

The history of the original *Charmer* cow, from which the name of the family is derived, was given in our columns at the time of the Milcote sale. She was a remarkable example of the force derived from in-and-in-breeding in those cases where vigour and constitution can be maintained. This is seen especially in her relationship to the well-known bull FAVOURITE. She had of course two immediate parents, four progenitors in the second generation, eight in the third, 16 in the fourth, the number necessarily doubling each step farther back. Of the eight bulls named in the fourth generation from which she is descended one was Favourite. She is one-sixteenth Favourite therefore on that account. But the cow to which he was then put was also descended from Favourite, and so are each of the other 7 bulls and 7 cows which stand on the same level of descent with the gr.-gr.-g.-dam of Charmer. And in fact it will be found on examination that in so far as Charmer's pedigree is known, which it is in some instances to the 16th generation, she is not one-sixteenth only, but nearly nine-sixteenths of pure Favourite blood. This arises from Favourite having been used repeatedly on cows descended from himself.

In the pedigree of Charmer we repeatedly meet with Comet—Comet was by Favourite, and his dam Young Phœnix was also by Favourite; with George—George was by Favourite, and his dam Lady Grace was also by Favourite; with Chilton—Chilton was by Favourite, and his dam was also by Favourite; with Minor—Minor was by Favourite, and his dam was also by Favourite; with Peeress—she was by Favourite, and her dam also by Favourite; with Bright Eyes—she was by Favourite, and her dam also by Favourite; with Strawberry—she was by Favourite, and her dam by Favourite; Dandy, Moss Rose, among the cows, and North Star among the bulls, are also of similar descent. There is no difficulty, therefore, in understanding how this name appears repeatedly in any given generation of the pedigree of any given animal of the Short-horn breed.

In the case of Charmer we find of her gr. gr. dams one was the produce of Favourite. None of her progenitors in the immediately preceding generation were the produce of that bull, but of those in the next and successive generations preceding, there were so far as known 2, 8, 25, 58, 101, 99, respectively got by him. Of course these are not all separate individuals. When cousins marry, their offspring counts as great grandmother and father the same individuals twice; and in such intricate combinations as an in-and-in bred Short-horn exhibits, the same individuals occur repeatedly. This does not, however, affect the result—which is, that the blood of Favourite exists in even greater quantity in individual animals 10 and 12 generations from him than it did in many a calf which he got himself. Of course this tells on the permanence of the character possessed by such animals as Charmer, thus descended; and to the reality of this permanence the Yardley sale is another testimony.

The individual character of Charmer, apart from that which she has thus inherited, appears deserving of notice. Her grand-dam Sylph was bought by Earl SPENCER at Sir C. KNIGHTLEY's earliest sale in 1842, and she was sold at the Wiseton sale 17 years old, her calf Browne, by her side, fetching 70 guineas. Charmer was bred from Graceful, the daughter of Sylph, by the Hon. C. ARBUTHNOT, and for her milking qualities was taken to town with him at two years old to supply his dairy. She was bought many years ago by Mr. ADKINS from Mr. ARBUTHNOT, and at his first sale some years before, she and her produce were wisely retained by him as the foundation for a future herd—for which good dairy quality combined with pure descent was desired.

We heartily congratulate Mr. ADKINS on the increasing value of the *Charmer* family, many generations of which were the result of his own good judgment, and for much of whose permanence of merit and of type we therefore have to thank him.

ONE PECK OF WHEAT PER ACRE.

WHILE attempting to stimulate agricultural progress and amendment, I have, unavoidably, occasionally aroused opposition and awakened in some breasts uncomfortable feelings. This appears to have been the case with your correspondent "T. B.," who, under the guise of a question about the peck an acre of Wheat, vents his spleen and pours out his ridicule. It is remarkably cool and conciliatory to tell me that I am looked upon as a bar in my own county, and to endorse that idea by the tone and manner of his own observations; and then to tell me in the same breath that he is extremely anxious to "vindicate my character" (much obliged to him, but there is no occasion for that). Even my old and worthy friend "Parson" Wilkins cannot escape his ire.

He reminds me of a certain old-fashioned squire in our county, at whose mansion some friends were visiting. One of them said, "I shall go over to Tiptree to-morrow to see Mechi's Farm." "If you do," said his host with indignation, "you shall never again return to me." This occurred many years since, but it shows how strong, in some instances, is the attachment to things as they are, and how violent is occasionally the indignation against change and progress.

I never expect to be forgiven by some people for clearing the country of old worthless pollards, destroying its landscape, and growing corn instead of wood. With such folk, the rotten thatch and dripping eaves are the beau ideal of rustic landscape. The question of feeding the British people abundantly and cheaply, is with them secondary and subservient to the gratification of the eye-sight.

"A man convinced against his will is of the same opinion still," and I have long since given up all hope of bringing conviction to persons of that particular type. "I am a 3-bushel man," said one to me, "and I know that thin sowing won't do;" and yet he admitted soon after that he had never tried smaller comparative quantities, but stuck hard and fast "to the custom of the country." It took 30 years to bring the drill into general use, and the use of that implement diminished immensely the old-fashioned broadcast quantity of seed, and a like period was required to persuade people that Potatos were useful as food. After all, there are some advantages in strong prejudices, for they prevent the sudden adoption of rash measures.

I fancy "T. B.'s" mind must be rather illogical and unreasonable, for while holding me up in your columns as a falsifier, he appeals to me for further dose of untruth, and I cannot for the life of me understand what relation there can be between "his friend's dear mother's nose flattened to his face and the bridge crushed," and the sowing of "1 peck of Wheat per acre." But we all have our peculiar ways of reasoning, and so I suppose "T. B." has his.

"T. B." has not told us that either he or his enthusiastic and energetic friend had tried comparative quantities of seed Wheat, and thus arrived at sound conclusions suitable to their land, climate, &c. One would expect that an earnest and sincere searcher after truth would have done so, and communicated the results for the benefit of others.

How amusing and inconsistent is his friend's indignation at my not at once risking a whole crop in an experiment rather than gradually arriving at a safe conclusion by moderate trials! At the risk, however, of still having to make certain people unhappy or uncomfortable, I shall continue the even tenor of my agricultural way, regardless of satire or ridicule, or of such critics as Sterne's, "who 'only looked at the stop watch."

And now I will answer "T. B.'s" questions *seriatim*, on condition that he will not communicate with my unbelieving foes in Essex. If "T. B." had been an attentive reader of the *Agricultural Gazette* he would have found the information he requires in my former papers.

The quantity of land annually experimented on is half an acre, on a different field each year. The dibble holes are made in the usual manner by a man using two common dibbles walking backwards. The intervals are somewhat irregular, varying in every way about 6 to 8 or 9 inches from hole to hole. Only one kernel is dropped in each hole.

Surely "T. B." cannot be a practical farmer, or he would hardly ask if we "broadcasted" one peck per acre. Broadcasting is now one of "the lights of other days."

The yield was in 1864, 7 qrs. 2 bushels; in 1865, 7 qrs. 1 bushel; in 1866, 4 qrs. 4 bushels, and some odd measures per acre. The Wheat was club-headed Rough Chaff White—a selling Wheat of fine quality.

My object in trying these experiments is to satisfy my mind as to the most profitable quantity on my land. Had "T. B." been guided by the same motive he would never have written that paper in your columns. According to Mr. Caird (p. 522) our seed grain for England alone amounts annually to 3,800,156 qrs., on only 11,389,250 acres.

The economising or saving of one-fourth or more of that quantity is "no joke," but a serious monetary question. The quantities of seed sown have gradually diminished since the departure of broadcast; and if instead of talking about it farmers would try comparative experiments, a further reduction would speedily take place.

It seems certainly wrong and absurd that our return should be only about one-quarter, or less than one-half of an ordinary ear for each good kernel sown. On my heavy land, I have long since reduced my general quantity of Wheat-seed to 1 bushel per acre, if sown in October, with a slight increase for later periods or lighter soils, and am feeling my way down to smaller quantities, if I find, on an average of seasons, that I can safely do so. One thing is certain—that results will vary with the season, whether you put in 1 peck of Wheat or (as some still absurdly do) 12 pecks per acre. I am inclined to think that Mr. Hewitt Davis's quantity of 3 pecks of seed-Wheat was a good one, and we certainly owe to that intelligent gentleman many thanks for his recorded experiments, which I had more than once the pleasure to inspect on a large scale. I at the same time ventured at some risk to "take stock" of his old-fashioned neighbours (5 bushels of Oats men against his 2 bushels), and the contrast was so striking that I have never since put in more than 2 bushels of Oats and 6 pecks of Barley per acre.

As I see "T. B.'s" strictures are to be continued, I reserve to myself the right of reviewing his "second edition" if I think it necessary. Surely "T. B." has never read the Rev. S. Smith's charming work, "a word in season," or witnessed the results of thin sowing on his admirably-farmed plots. *J. J. Mechi, Tiptree, Sept.* 25.

A TALK WITH PROFESSOR VOELCKER ON CHEESE-MAKING.

THE following is an extract from Mr. Willard's letter to the *Utica Herald*, in which he gives an interesting account of a day spent with Professor Voelcker, chemist of the Royal Agricultural Society of England:—

Dr. Voelcker confesses that he does not understand the nature of rennet, and he has proved that the chemists before him have been wrong in their conclusions. In looking over the result of his analyses of milk, although knowing perfectly well the percentage of its different constituents, I was struck with the large amount of phosphates which it contains. He showed me the different solid constituents in a quart of milk. In one bottle was the oils, in another the casein, in another the phosphates, the milk sugar, &c. The amount of phosphates in a quart of milk is no infinitesimal quantity: but our farmers will better understand its bulk when I say that it is "quite a handful," and then consider for a moment the large number of these handfuls that are taken from the soil by our dairy farmers, and never returned.

The Doctor remarked, while showing me the bottle containing the phosphates, that they were really the manures upon which the finer Grasses feed, and that the best results always follow their application upon old dairy farms. There is an immense waste of bones in America: here they are husbanded, imported from America and other countries, and largely used. At Utica there are tons and tons of bones annually shipped by canal East. I suppose some of them find their way here. Why will not our dairy farmers make some arrangement by which these bones may be ground up, and applied to the pastures and meadows in the immediate vicinity? I am sure no investment would pay better.

I was glad to find my views of old pastures being superior for milk to newly-cultivated grounds agree with those of Dr. Voelcker. He says the quality of milk is greatly influenced by the finer Grasses, and these only are found upon the old sward. When you commence cultivating and manuring with barn-yard manures, you get an order of plants that may give quantity of milk, but of very inferior quality, and he assured me that cheese of the finest flavour could not be made upon such grasses. Nor would it possess the keeping qualities of that made upon the finer Grasses grown upon an old sward.

He said to me that one of the greatest faults of cheese-makers was in the application of heat. Many used too high heat. The lower the temperature that could be used, and the more uniform or even it could be applied, the better flavour would obtain to the cheese. Another point of importance in cheese-making, and one not generally understood, was in relation to the whey. It should be drawn off, got rid of, just as soon as possible, or as soon as consistent with the necessary operations. The reason he gave was, that you could never tell what matter you had, or what you were dealing with in the whey. It may contain taints of the worst character. You cannot well determine the degree of its acidity, and hence great risks were run in steeping the curd for a long time in the fluid. He would prefer to draw the whey as early as possible from the curd, and allow the curd to undergo its proper change and arrive at maturity, heaped up in the bottom of vat.

There is a general misapprehension among dairymen in regard to the qualities of milk. Many suppose that because a certain specimen of milk happens not be rich in butter, it must necessarily be very rich in casein—that is, what it loses in butter is made up in an extra amount of casein. Dr. Voelcker shows this assumption to be false. The casein, in different samples of milk, show a nearly uniform quantity, whether the milk be rich or poor; but the variation in butter is very great. How important, then, it is to have pastures that will add oil to the milk, rather than water! I said to him that I had been through Somerset, Wilts, Gloucester, and the great dairy districts in the south of England, and that I could easily comprehend why the American cheese contained more butter than the English. Your analysis of cheese shows that, and I think one reason is the faulty manner in which the English work or break the curds. I said, "The Americans have been studying for years how to retain all the butter possible in the curd; but here, in England, I see among your best cheese-makers a much greater waste of oily particles than at our best factories." He admitted the fact, and remarked that there was far less waste of butter by using a sharp-cutting instrument in the curd than by breaking, as practised by many of the

best cheese-makers of Cheshire and Somerset. He had proved this by the analysis of whey; and he said when a sharp-cutting instrument had been used carefully and judiciously, but the merest trifle of oil could be extracted from the whey. I explained to him our new process of "coarse curds;" but he thought better results could be obtained in flavour, by making the curds fine.

Speaking of the whey, he remarked that he would always draw it, if possible, while it was sweet; and, at our factories, it would be profitable to extract the milk-sugar by evaporation as they do in Switzerland.

I said to him, "From your analysis of different samples of choice cheese, I notice the fine quality does not depend upon the quantity of butter it contains, since your best cheese contained a considerable less per-centage of butter than our American." He said flavour and rich buttery appearance depended not only upon a nice manufacture, but upon uniform temperature in curing. It will not do to roast cheese one day and cool it down the next. The process of curing must be so gradual that all the constituents may mingle together, without detriment to either.

CATTLE PLAGUE RETURNS.

THE following Returns were issued on Sept. 27:—

This Return gives the number of cases occurring in Great Britain which have been officially reported to this Department. Column 1 only records the cases reported as having commenced during the weeks indicated by the headings. All "back cases" are included in column 2.

COUNTIES REPORTING ATTACKS.	1 Number Attacked		2 Result of Reported Cases from Commencement of Disease.			
	Week ending Sept. 15.	Week ending Sept. 22.	Attacked.	Killed.	Died.	Recovered.	Unascertained for.
"The Metropolis"	3	—	213	169	28	16	—
Kent	—	1	1,425	467	821	102	33
Buckinghamshire	7	8	2,580	1,869	504	187	20
Oxfordshire	2	3	3,786	2,152	1,190	395	49
North nptonshire	—	—	2,857	1,167	1,435	181	74
Huntingdonshire	—	—	2,494	467	1,789	156	82
Essex	1	2	2,347	561	1,461	305	110
Suffolk	—	—	2,441	1,255	967	190	29
Norfolk	1	—	6,673	3,681	2,436	294	262
Wiltshire	1	—	122	50	55	12	5
Dorsetshire ..	—	—	81	69	11	—	1
Somersetshire	2	—	311	207	94	5	5
Shropshire	—	7	7,295	3,418	2,742	788	347
Staffordshire ..	2	1	5,927	2,583	2,339	521	484
Lincolnshire (Div. of Lindsey) ..	8	5	14,079	7,661	5,068	894	457
Derbyshire	—	—	1,269	1,017	169	41	42
Cheshire	7	5	67,869	23,740	32,720	8,053	3,147
Lancashire	24	28	6,051	2,893	2,314	530	344
York, E. Riding	—	6	12,512	3,339	6,227	2,545	399
,, N. Riding	—	1	11,161	2,527	5,628	2,112	894
Total ..	58	67	151,395	59,282	68,020	16,818	7,275
Remainder of England ..	—	—	46,969	18,187	22,392	4,771	1,619
Monmouthshire & Wales	—	—	8,388	1,180	5,791	1,117	297
Scotland	—	—	46,861	6,263	28,088	10,707	1,803
Great Britain ..	58	67	253,613	84,912	124,294	33,413	10,994

Back Case reported in the week ended September 22 — Cheshire 93. (92 of these "back cases" are reported from Northwich, and refer to the four weeks from Feb. 24 to March 24.)

The Return shows that 67 attacks were reported to have occurred during the week ending September 22, being an increase of 9 on the previous return. Fresh outbreaks took place in 20 farms or places where cattle are kept: the number of such outbreaks in the previous week being 19. The number of healthy cattle slaughtered to prevent the disease extending to them, was 80 during the week. The disease is reported to have prevailed during the week in the following 16 petty sessional divisions of England, viz., Kent.—Tunbridge, 1 attack. Bucks.—Cottesloe, 8. Oxford.—Ploughley, 3. Essex.—Ilford, 2. Shropshire.—Wem, 6; Whitchurch, 1. Staffordshire.—Teleshall, 1. Lincolnshire.—Thorngumbald-on-Humber, 4; Gainsborough, 1. Cheshire.—Northwich, 5. Lancashire.—Amounderness, 5; Garstang, 2. York (East Riding).—City of York, 1; Middle Holderness, 3; South Holderness, 2. York (North Riding).—East Pickering Lythe, 1. Since the commencement of the disease 34 in every 1000 of the estimated ordinary stock of cattle in Great Britain are returned as having been attacked. 7 cases are reported during the week as occurring among sheep, making the total to the date of this return 6721.

THICK AND THIN SEEDING AT TIPTREE HALL FARM.—No. 2.

[Messrs "B" and "C," it will be remembered, were about to discuss their glasses and cigars. The following appears to have been written in the "cloud" then raised, in the midst of which it will be seen that the subject which brought them together has been nearly lost.]

IN pursuing this subject my readers will recollect that in my former article, No. 1, I introduced to them a very excellent and intelligent neighbour, one whom I consider to be the model of a country gentleman, well educated, of ample means, hospitable to a high degree, and a real friend to all the neighbourhood in every grade of life. He is likewise a Justice of the Peace, and elected chairman of our Petty Sessions, and of our Board of Guardians; and in his duties in the former of these offices, I have heard the solicitors say who attend the Petty Sessions, so watchful is he, and his knowledge of the law so extensive and accurate, that not one of them will bring a bad case before him at our Sessions with any hope of success; but at the same time he always tempers justice with mercy; and the same precisely is his conduct as chairman of our Board of Guardians, as I myself, who am also a guardian, have known him on several occasions, or, I may write correctly, on *many*, relieve applicants from any parish of our Union from his own private resources whom justice and the law did not permit him to relieve but to a small extent at the Board. I will also inform my brother farmers and country gentlemen in general that he is considered to be one of the best shots in this country, and though fond of the sport, and keeping a gamekeeper, as every one must, whatever his condition and character may be, who would have a pheasant or a hare in his woods, he is so liberal to his neighbours, that the keeper has orders not to *see* any one of them who may be honestly following a covey of birds on to his estate, unless he be the fellow who goes out sneakingly with his bag on purpose to fill it, if he can, and then rides off to the nearest game dealer, and sells what he carries, and is then off to the ale-house and gets drunk with the money. Of course my esteemed neighbour can have no sympathetic feelings for such vagabonds as these, and unfortunately there are such in this and nearly all neighbourhoods; but being fond of the sport himself—"aye," as he says, "and he himself occasionally steps over his brother farmer's hedges, as every country gentleman must who is on friendly terms with them," so he shuts his own eyes, and those of his gamekeeper also, to his hedges and a few fields occasionally being invaded in the same way by others; but he allows no man, however friendly he may be, to enter his woods and kill and carry away his pheasants, considering such an act to be too near akin to the entering his farmyard, and killing, and bagging, and carrying away, and selling his turkeys, geese, ducks, and fowls to be permitted.

But, as a sportsman, my friend appears in his true character only in the field after a pack of hounds, for the late Mr. Osbaldeston himself never went straighter over a country than he uniformly does; and never was there one who knew better when and where to ease his horse, and where to give him his rein and put him to his mettle; and no man is a better judge of a horse's qualities for the field and powers of endurance, and even before a trial; and for this knowledge he has often informed me he is very much indebted to his classical education. But to give one example of his sporting powers. Some few years ago we had a very large meet, the fullest field we had had for the season, and the morning was a very fine one, and the scent broad high; the dogs also in fine trim, and the master of the hounds in one of the very best of his naturally good humours. As I rode up to him with about 20 others, all in scarlet and well mounted, he approached towards us from the midst of a large crowd, and among them was my friend and neighbour; and raising his hat, and we of course did the same, "Gentlemen," said he, "I am delighted to see you all, and such a very full and fine field, and I think I shall show you some good sport, for, if I shall not be disappointed, we shall find at least a leash of foxes in this wood, which is always a favourite cover of mine, and we have not been here since last Friday month." On this the wood was drawn, but not a sound from a hound was heard, though all was silent and in breathless anxiety. Upon which, and as three-parts of the field were huddled together in a meadow under the wood's side, the master, coming trotting through us, said—"I am disappointed here, and I cannot tell how; for I expected there were a leash or brace of foxes at least, but I expect certain success in such a wood," naming it, "and so we will go and draw that." And so away we all went to the cover named, and when I came up the dogs were in full cry, every mouth having given tongue, and the music was the most harmonious and sweet I had ever in my life before heard. My horse was as full of fire as I could wish him to be, as were nine-tenths of all that were in the field; and presently the view halloo was heard from the other side the wood, raised by some workmen in a field, who had headed the fox, and turned him back nearly into the very jaws of the dogs, but at that moment another fox stole out of the cover nearly under the horse of the master himself, who, on quietly letting him get away, ordered the horn to be sounded, and in the quickest possible time the pack was all on the scent and away they went, and as the master followed, he shouted out at the top of his sonorous voice, "Gentlemen, this is a noble dog fox, and he will give us some sport," and sure enough he did so, for he was killed by three dogs only, after a run of 25 miles without a check, as he was trying to crawl up a bank from a ditch into a gentleman's orchard! My friend and neighbour on Meg, then just in her prime, with the huntsman alone, were at the death, all the rest, the worthy master and all, having been obliged to yield to fate one after another, and got not through half the run, three horses having met with accidents, one of which was the whip's, a very valuable one, from which they never recovered, and the rest all knocked up; and as for the dogs, four days elapsed before they all showed themselves at the kennel to stand muster for another meet. But my friend had the good fortune to bring home the brush, which he suspended to the end of his bell-rope, and as often as I call upon him, which is not seldom, he instinctively, as it were, takes hold of it, as he sits in his easy chair, and as instinctively, for he repeated the words a thousand times, says—"B—, I am glad you are come: which shall I order, a bottle of the champagne you like so much? and if so, I have some ice just fresh in; or shall we have a bottle of the Madeira which my uncle got from that island, and took with him three voyages to India and back? or a bottle of the old Port from the bin I ordered from when you were here last; or what do you say to a jug of the claret I brought home with me from the south of France? Now, say which, and before I convert my bell-rope into an Atlantic Cable, with a fox's brush at one end and a bell at the other, say the word which, at once."—"My friend," replied I, "give me a moment or two's time, will you? to reflect. You have compared your bell-rope to the Atlantic cable; and what I have been thinking of is this, that you should convert the use of it into a company—not a Limited Liability one, but into a real and *bonâ fide* Company, and if so, I will take 50 of the shares, and undertake that all the rest shall be sold before to-morrow night. What do you say?"—"Why, my friend, my answer is, that I have wine in my cellar that no one shall drink, except my wife and family and myself and friends; for I know whenever I choose to give my fox's tail a tug, and set him at liberation, he loves me so well for attending at his death-bed and closing his eyes, that he will give me and all belonging to me such sport, that no other fox, whether biped or quadruped, can elsewhere afford." Well, then, my friend, if that be your determination, it does credit to your heart and your head; and, as you always allow me to choose for myself, so on this occasion, as I am very tired and thirsty, I would, if you please, drink no wine to-day, but have a flagon of your ale from Alderman Frisky,"—and this of course was immediately ordered, and brought in by Jones, the old butler, and then descended to where thousands of flagons had gone before.

Now that my readers may understand all this, I will inform them that my friend every spring in March has brewed for four casks in his cellar ale of various strengths, according to the custom of his forefathers; but ale, even the weakest, is unusually potent. One of these casks—of the capacity of 4 hogsheads, and all the others are of the same capacity—has painted on it, "Alderman Strong;" another "Alderman Stout," another "Alderman Frisky;" and the fourth, containing the strongest ale of the whole, is "Alderman Milder." I chose my flagon to be filled from "Alderman Frisky," and if any friend had been with me, I feel he would have commended my choice, and as a proof of this, a labourer to whom my friend gave a pint, said that all the happiness he should desire in this world would be to be placed up to his chin in any one of the worthy aldermen, but "Frisky" was his peculiar choice.

I have thus, Mr. Editor, I fear played too long upon your patience and that of your readers, but my apology is, I have wished you all to know something of the gentleman I introduced to you last week as he sat with me partaking of as good a bottle of Port as I think few can boast of except himself, whose, I further think is still superior, and who with me, whilst resting in an easy chair in my sanctum, discussed the world-renowned farming at Tiptree Hall.

I need not, I conjecture, inform my readers, as my neighbour is a follower of Tull, that he is not only an advocate of, but a real practiser of thin seeding; and as such he cannot understand why Mr. Mechi, if he, as he writes, can produce over 7 quarters of Wheat per acre from single pecks of seed, does not thus cultivate more land out of his 170 acres, than his two miserable half acres. This has greatly puzzled my generous and inquiring friend.

And another puzzle to my friend is this:—Mr. Mechi has published, and prior to September 5, that his crops this year from his 4½ pecks of seed per acre, and which, it appears, were all he had, yielded exactly 5 qrs. and 1 peck an acre of produce. My friend is very anxious to obtain an answer to a question here also, as he, though a man of no mean natural talents and acquirements, is obliged to cut, cart, thresh, winnow, and measure his crops before he can tell how many quarters they are, much less how many pecks and half pecks. *T. B.*

(To be Continued.)

ON ARTERIAL DRAINAGE.

BY THOMAS ARKELL, PENHILL FARM, SWINDON.

[The following Paper, prepared some years ago, was sent to the Society of Arts at the time. It is now especially interesting, both in connection with recent Thames River legislation, and in connection with the general subject of river reform, which a wet autumn is bringing into notice again.]

HOWEVER beneficial a perfect drainage may be, I do not consider it necessary that it should be obtained at the expense of other interests that necessarily belong to the rivers of a country. These several interests of course vary much in extent on the different rivers, and even parts of rivers, but taking the River Thames above London, and its tributaries (to which my remarks will more particularly relate), I think the value of the several interests to be in the following order:—1st, Drainage; 2d, Flooding, or Watering Meadows; 3d, Mill Power; 4th, Navigation; 5th, Fishery.

In the present state of our rivers, and under their present management (if management it can be called), I have no hesitation in saying "that four out of the five interests above mentioned do not receive anything like the benefit they might under a proper and well regulated system of management," although the fishery department may receive some little injury, as rushes, flags, and other water weeds are probably beneficial to the production and preservation of fish, but the loss in this matter would be slight in comparison to the gain in other respects.

My time is employed in agriculture. I shall deal with the subject principally in an agricultural point of view.

I have placed drainage as of the first importance, being necessary to the health of man and beast, and for the increased production of their food. The object to be obtained in arterial drainage is, after the rain has fallen, and passed through the soil by springs and drains, and from the undrained clay soils over the surface, for it to pass off as soon as possible into the ocean. Of course the best way to accomplish this is to clean out, widen, straighten, and deepen the beds of the rivers, and if economically done the soil and mud thrown out in doing this should be formed into an embankment on each side, thus doing double duty, as embanking a river is tantamount to deepening the bed of it, and these banks being placed some little distance from the shore of the river, enable it to carry more

water than if its bed was deepened the height of the banks. A river in such a state, with no mills, weirs, or other impediments to obstruct its course, and with an area sufficient to carry the highest floods without breaking the banks, would be in a state of perfection as regards drainage, but at the total sacrifice of three of the other interests belonging to the water, viz., flooding the meadow land, the mill power, and the navigation; and I have no hesitation that such an alteration would be more loss to the community than letting things remain in their present state.

2d. After drainage, next in importance I consider flooding and watering the meadow land for the production of Grass and hay, consequently animal food for man. I have said nothing to show the necessity of drainage, as that is acknowledged on all hands to be beneficial: but I do not think there is that importance attached to watering of meadow land in its various forms as it deserves.

Flooded, or natural meadows, is the term given to those meadows which flood naturally, and receive their nourishment from the sediment of the water brought down from higher ground. Now a good flooded meadow (that is, a meadow that floods well) is generally mown for hay every year, cutting a good crop of the first quality for fattening cattle, and yet stands in need of no other assistance for manure but that derived from the floods; but there is a considerable quantity of the land that is flooded, perhaps the largest half, that receives very little benefit from it, and a good deal of it is considerably injured; and in many cases under present circumstances it is impossible to amend it. A good meadow is where the water flows in at its upper end, and then spreads in a regular current over the surface, with no stagnation at its lower end; now much of the land that is under water in a flood does not get a current to run over it, but the water runs in and back upon the low places, or flats, and there remains stagnant, or nearly so, until the flood is gone down, consequently the land is starved instead of being benefited by it. These remarks on stagnant water, of course, apply where the water is only moderately rich in sediment, for when the water is very muddy or receives the drainage of large towns the case would be different, provided the same water do not remain on too long.

Water or drowned meadows is the term used for those that are watered at pleasure, and not depending on floods. These are very valuable in consequence of producing a good crop of early Grass for March and April, and afterwards cutting a heavy crop of hay, though not of so good a quality as the flooded meadows. These are watered from the clear water streams, and those flowing from a calcareous soil are the best, as proved by the water meadows in Berkshire and Wiltshire from the chalk springs, and those in Gloucestershire from the colite springs; but from the continual penning of the water for the purpose of watering, a considerable injury is done to the drainage of the land adjoining, quite as much in some instances as where they suffer from floods.

Now, these flooded and water meadows are not only enriched themselves sufficiently by the water, but their crop is carried off and consumed, to enrich other land; so in reality, the water manures nearly double the quantity of land that is watered.

3d. The mill power I have put as the next greatest interest on the Thames and its tributaries. This may not be the case on the main stream itself, for there the mill power is inconsiderable in amount, not anything like what it might be, as the water is penned up mostly by weirs, to assist the navigation; but some go so far as to recommend buying up some at least of the mill property, for the benefit of drainage. I do not mean to say this may not be necessary in particular cases, but I do not think it necessary as a rule; had not steam-power become available when it did, I have no doubt we should have seen our rivers and rivulets in a very different state to what they are in at the present time, for it is more than probable that water-power would have been made available to its utmost extent; for I cannot suppose Englishmen would not have made some progress without the aid of steam, although I admit we should not have gone the pace.

4th. *Navigation.*—Inland navigation by canals and rivers was a very different interest before the railways became general through the country to what it is now, so I will not make any observations respectiug it before I speak of the subject as a whole, which I will now do as concisely as is possible to explain myself.

I have before said my remarks will go to show that an arterial river may be put in that state which would very much improve the drainage and the meadow land, and, if thought necessary, increase the mill power, and improve the navigation. I will then suppose such river to be thoroughly cleansed, widened, deepened, and straightened, where necessary, and embanked to enable it to carry off the highest floods within its banks; this will be necessary to prevent the summer floods from overflowing to the injury of the Grass and hay in the meadows. This done, the next important step would be to place weirs or mills across the stream, in the most suitable places to turn the winter floods over the meadows. On large rivers, where part of the water could be spared for mill power, and sufficient left for the meadows, mills could be erected to a considerable extent, but on the smaller tributaries where all the water could be beneficially employed on the meadows, weirs would of course be preferable, so far as the meadows are concerned, where mills are erected, instead of weirs, it would be necessary to make it compulsory to erect sufficient space of floodgates and waste weir, to pass the summer floods, and the weirs of width and depth enough for the same purpose.

We will now suppose the mills or weirs erected all down the river, which would then appear something on the same principle as a carry in a water meadow, with stops to turn the water over the different beds, only upon a larger scale. I will next state where the proper place for these weirs, &c., would be, with a description of the laying out and management of the meadows. If we take a view of the Thames, we see in certain places a wide extent of low, flat, meadow land, which floods, or if not, it may be flooded with proper attention; then again it narrows to a mere nothing, the high land approaching almost close on the river, then again expanding and contracting alternately throughout its course. This is not the case of the Thames only, but with all the rivers more or less. Now, this formation, if not actually beneficial, is not at all detrimental to flooding, and it shows plainly where the weirs and dams should be erected for the purpose, which is a short distance below the commencement of these wide tracts of meadow land, so as to turn the water out on each or either side in proportion to the quantity of land to be flooded, and then at the tail of the meadow, to return again to its course, only again to be thrown out again and again as often as necessary. The bank thrown up to help keep the water in its course in the summer will answer the double purpose of preventing the water entering its course again immediately after being thrown out for flooding, and when there is not sufficient soil thrown from the river to make the embankments, it must be taken from the meadow side of the banks which will form a carry, and if the land is higher towards the river, as is often the case, than it is towards the middle of the meadow, it will help to lead the water more regularly over it.

The next important step to take is to divide the flooded from the adjoining upland. If weirs are erected on a river, sufficiently substantial to turn the whole of the water for flooding purposes, this division may be carried higher up than where the floods reach at present; this division is to be an embanked open drain, the bank to be placed on its lower or meadow side, to prevent the flood water from reaching the drainage water of the adjoining upland; the flood waters thus thrown on the meadows enclosed between two embankments if tolerably level, may not require much more to be done to flood well, but in most cases it will be necessary to form low banks, or wide shallow carries, in various directions, across or athwart the meadow to equalise the current over them, for as I have said before, it is the regular flow of water over the surface, that constitutes a good flooded meadow. My father embanked the Thames for about 1½ miles, for the purpose of preventing summer floods, but at the sacrifice of the benefit derived from the winter floods, having little command over the river, and that little was sold by the landowner, to quiet a somewhat troublesome neighbour; still it had the desired effect, in several times saving the hay crop; once it so raised the envy of some person whose hay was spoiled, that the sluices were opened by night and the water let into the meadows. I mention these things to show the utter hopelessness now, as then, of carrying out improvements to any extent, unless supported by the iron arm of the law.

I must now return to consider the drainage of the adjoining up or dry land. It is on the land immediately adjoining the meadows, which lies between wind and water, as it may be termed, that the great injury for want of well regulated drainage is done, and which under present circumstances in many cases cannot be remedied, even by those who can see, and are willing to do what is necessary; at the same time I mean to say there is a very great deal of injury being done out of floods reach, which could now be easily remedied, if those whose duty it is to do it, could see and were willing to execute it, but it is so easy to assert (with a knowing shake of the head) that there is "no fall, it is all on a dead level" in their case, that it is almost useless to point out a remedy unless it can be easily enforced by those who suffer from their neglect, which I shall recommend being done. It is well known that on the banks of the Thames there is a great deal of low-lying land that is very much starved and injured by the water lying too near the surface, the pastures growing a scanty sour herbage, and the arable land kept in a foul Grassy state, beside being very liable to lose plant, especially the Wheat plant, in the winter and spring months; the reason of this is obvious; it is from the present watercourses in too many cases emptying themselves into the river at right angles, or nearly so, instead of their following more the direction of its course and the fall of the country. Now, the plan of cutting open drains close along the edge of the flooded land, or high water mark, sufficiently wide to carry off the drainage of the uplands, and taken down in the direction of the river far enough to be efficient, regardless of any division of parishes, or other obstacles, will drain the country as efficiently as though the mills and weirs were all abolished, and the existing outlets continued into the main stream. These open drains would not require cutting particularly large, as they should empty themselves often at the tail of the several mills and weirs. At the lower end of these drains, where they empty themselves into the main stream, their water must naturally come near the surface of the land, especially when the floods are on the meadows; this would necessitate the commencing the succeeding drain a few furlongs above the tail end of the preceding one a short distance on the upper side, but having no communication with it.

Now a river and the land adjoining, thus managed, would I have no doubt pay well for the outlay, that is, provided it is properly laid out and economically executed; the loss to the mill power would be trifling; they would lose a small district of water, as a small portion of what now flows into the river above their mill would be carried down and emptied in at the tail, but to counterbalance this their mill tail would be much lower from the improved state of the river. They might also suffer a little more from the summer floods being kept strictly within the banks, but they would gain considerably by having the winter floods kept more on the meadows, thus keeping the water at their mill tail lower.

(*To be concluded next week.*)

SALE OF MR. GRAHAM'S HERD.

THE following is a list of the animals sold by Mr. Strafford at Yardley on the 19th, with the names of the purchasers:—

1. Countess, roan, calved July 21, 1856; got by Duke of Cambridge (12,742), 80 gs. Mr. T. Henry, Wateringbury, Maidstone.

2. Lady of the Lake, white, calved October 15, 1856; got by second Duke of Bolton (12,739), 84 gs. Mr. R. E. Oliver, Sholebrook Lodge, Towcester.

3. Columbine, roan, calved December 30, 1857; got by Londonderry (13,160), 91 gs. Rev. C. Marshall, Ripley Court, Ripley.

4. Cornelian, red, calved February 1, 1859; got by Maineluk (13,239), 70 gs. Mr. C. W. Lyon, Silver Hall, near Burton-on-Trent.

5. Christine, red and white, calved April 7, 1861; got by Sir James (16,980), 41 gs. Mr. Zaccheus Walker, Handsworth, Birmingham.

6. Grafin Foggathorpe, roan, calved December 23, 1861; got by Sir James (16,980), 84 gs. Mr. C. W. Lyon.

7. Bracelet 2d, white, roan ears, calved March 20, 1862; got by Seventh Duke of York (17,754), 82 gs. Mr. R. E. Oliver.

8. Fantail, red and white, calved April 10, 1863; got by Barleycorn (17,348), 52 gs. J. P. Foster, Kilhow, Wigton.

9. Camilla, roan, calved August 30, 1863; got by Touchstone (20,986), 40 gs. Mr. T. G. Cuttler, Severe House, Worcester.

10. British Belle, rich roan, calved February 18, 1864; got by Second Duke of Thorndale (17,748), 70 gs. Mr. J. Clayden, Littlebury, Saffron Walden.

11. Graham Foggathorpe 2d, roan, calved February 21, 1864; got by Touchstone (20,986), 70 gs. C. O. Eaton, Toxover Hall, Stamford.

12. Bracelet 3d, roan, calved May 29, 1864; got by Touchstone (20,986), 80 gs. Mr. R. E. Oliver.

13. Cosette, red, with a little white, calved March 6, 1865; got by Touchstone (20,986), 50 gs. Mr. J. Clayden.

14. Graham Foggathorpe 3d, red, calved March 4, 1865; got by Touchstone (20,986), 42 gs. Mr. J. G. Cuttler.

15. Cadalan, red and white, calved April 4, 1865; got by Touchstone (20,986), 100 gs. Mr. Adcock, Farmdish, Welling borough.

16. Lady Wild Eyes 2d, roan, calved March 30, 1865; got by Touchstone (20,986), 115 gs. Mr. R. E. Oliver.

17. Florence, white, calved April 6, 1865; got by Touchstone (20,986), 50 gs. Mr. R. E. Oliver.

18. Cadalan 2d, rich roan, calved April 6, 1865; got by Cadalan (21,487), 50 gs. Mr. J. K. Fowler, Prebendal Farm, Aylesbury.

19. Countess 4th, rich roan, calved September 4, 1865; got by Touchstone (20,986), 120 gs. Mr. C. W. Lyon.

20. Bracelet, white, calved April 11, 1865; got by Touchstone (20,986), 51 gs. Mr. C. W. Lyon.

21. Grafin Foggathorpe 4th, white, calved March 18, 1866; got by Touchstone (20,986) 32 gs. Dr. Bell Fletcher, Birmingham.

22. Fantail 2d, white, calved May 24, 1866; got by Touchstone (20,986), 70 gs. Mr. Finley Dun, Weston Park, Shipston-on-Stour.

23. Fantail 3d, red and white, calved April 21, 1866; got by Touchstone (20,986) 35 gs. Mr. J. P. Foster.

24. Beauty, white, calved April 30, 1866; got by Knightley (22,051), 40 gs. Mr. R. E. Oliver.

BULLS.

1. Touchstone (20,986), rich roan, calved October 19, 1861; got by Sarawak (15,238), 36 gs. Mr. J. E. Winnall, Burton House, Ross.

2. Knightley (22,051) rich roan, calved April 18, 1864; got by Barleycorn (17,348), 100 gs. Mr. F. Leney.

3. Cæsar, rich roan, calved March 28, 1866; got by Touchstone (20,986), 60 gs. Mr. H. J. Sheldon, Brailes House, Shipston-on-Stour.

4. Blair Athol, rich roan, calved April 18, 1865; got by Touchstone (20,986), 47 gs. Mr. Thos. Burdett, Pytchley, Kettering.

5. Beadesbush, white, calved April 20, 1866; got by Touchstone (20,986), 50 gs. Mr. C. Barnes, Charleywood, Rickmansworth, Herts.

6. The Baronet, rich roan, calved August 9, 1866; got by Knightley (22,051) 35 gs. Rev. C. Marshall.

Home Correspondence.

Colchicum autumnale (Meadow Saffron).—In your last year's volume you inserted several notices of this poisonous weed, which, by the way, I find noticed (or rather named) only once in the 25 volumes of the first series of the Journal of the Royal Agricultural Society of England. Have any of your correspondents observed whether it increases by seed under the present treatment of the meadows and pastures in which it occurs? The accurate account of its propagation by root given by Jussieu, needs only the information which I now ask to complete our knowledge of the enemy's plan of attack, and to enable us with that knowledge to plan our defence. *Diss.* [We believe this plant does not *usually* propagate itself by seed, though seeds are formed in abundance in the wild state.]

Earth Closets.—I see some leading observations in the *Agricultural Gazette* of last week on the subject of earth closets. I am afraid the opinion therein expressed, that "great towns can only be washed clean," is a too general one. And it would be well if the dry earth system could be brought into general use. There is no doubt about dry earth being a perfect deodoriser. I do not myself see any very formidable reasons why the dry earth system should not be adopted in the most densely populated districts. Why not have the privies fixed up with the proper apparatus, and the whole farmed, if I may use the term, by a company for each large town, borough, &c.? or by private individuals as the case may be, whose carts would collect the deposits every morning before the public were generally astir, the whole being conveyed to a covered yard or yards, whence when more thoroughly dried to be exported as a highly concentrated and perfectly inodorous manure? The dry earth system is in operation in several large establishments in this county (Derby), though I am not aware that Mr. Moule's Patent Earth Closet itself is used. The apparatus I have seen used consists of a stout zinc pail fitted with a handle which falls down over the side of the pail when at rest; this pail is placed under the seat to

receive the deposits, whilst the dry earth is contained in a long narrow zinc trough, fitted with a scoop, which is attached to one end by a chain. This trough is fixed in a convenient position behind the seat; every time the privy is used a scoopful of the dry earth completes effectually the deodorising process. Thinking this plan of the zinc trough and scoop capable of improvement, I have introduced a novelty in the manner of the application of the dry earth, which is as nearly self-acting as possible. *Wm. Hudson, Chase Cliffe, Derby, Sept.* 24.

Twitching.—The forking out of Twitch or Couch Grass after harvest is an important and profitable operation. A stubble was ploughed and cross-ploughed, and with dry weather in September this and the cash harrows would have killed all the Couch Grass. As, however, we have had such frequent rains, we must resort to forking it out and carrying it off the land. This operation, carried on by men and women, will on some portions of the field, where there were old ditches and buildings, cost 1*l.* per acre. A few years ago it cost us 5*l.* to fork out the Twitch from 5 acres. The consequence was an increase of 1 quarter of Wheat per acre beyond the produce of the rest of the field. The forking and shaking out of the Twitch improves the cultivation of the soil as well as removing an enemy to the corn. This year, owing to so much rain, the heavy lands are unusually foul and twitchy. *J. J. Mechi, Tiptree, Sept.* 24.

The Cattle Plague in Holland.—[The following letters have been written by Professor Gamgee.] (1.) Whilst we are justly congratulating ourselves on the admirable results of the measures adopted during the past few months for the prevention of the cattle plague in Great Britain, we have an opportunity of witnessing the disastrous effects in Holland of the policy we were pursuing last year. It has been suggested by some, and believed by not a few, that we owe the rapid decline of the rinderpest to unknown and untangible influences, such as the loss of power of the cattle poison through time, and the disappearance of an epizootic influence, which, from reasons unknown, was at its height last April. The great differences between the methods adopted for the extermination of the plague in Holland and this country has consisted in a reliance on the comparative mildness and curability of the disease in the Netherlands; whereas after much labour and talking here, we succeeded in securing, early in the present year, great restrictions on the cattle traffic, and the prompt slaughter of the sick animals. The number of cases recorded weekly in Great Britain is now small, though large enough to be attended with much danger if repressive measures are not persevered in. In South Holland and the province of Utrecht the case is altogether different; and although North Holland is somewhat less infected than formerly, you will perceive from the annexed returns that, considering the progress of the plague in the three provinces mentioned, there is ample room for the most gloomy forebodings.

NUMBER OF CASES IN—

Week ending	South Holland.	Utrecht.	North Holland.	Total.
April 21	770	254	78	1102
,, 28	703	109	16	828
May 5	649	135	44	828
,, 12	572	67	75	714
,, 19	332	49	20	401
,, 26	245	81	45	371
June 2	255	107	7	369
,, 9	163	86	72	321
,, 16	215	56	23	294
,, 23	248	60	38	346
,, 30	208	84	43	335
July 7	186	200	22	408
,, 14	344	168	14	526
,, 21	530	223	17	776
,, 28	629	311	31	971
Aug. 4	617	348	24	989
,, 11	737	462	27	1226

The last line must be regarded as a truly appalling one, and many must find it difficult to reconcile their knowledge of the intelligence of the Dutch with the facts as revealed by the cattle plague returns. They do not astonish me, as when I first visited Holland to ascertain why we suffered so largely from lung disease amongst our cattle, owing to foreign importations, I found that the Dutch had no faith in human means directed against spreading pestilence, but trusted to Providence, and some thought it a sin to attempt any method which science might dictate for the preservation of their stock. That they were not stamping out the disease is clearly demonstrated by the subjoined data for the week ending the 11th ult. During that week they had 462 fresh cases in the province of Utrecht, and of the animals then attacked 228 were permitted to die, 47 were killed, and 90 recovered. This marvellous success (?) of the curative system is to a certain extent illustrated also by the returns from South Holland, where, out of 737 new cases, there were 173 deaths, 53 animals were slaughtered, 54 recovered, and no less than 457 were permitted to remain on the sick list. It must be admitted that the ominous reports published week by week at Zwolle are far from satisfactory. Every one should understand that, in addition to energetic measures at home, we should insist on stringent protective means at our ports of debarkation, and there is every reason to believe that it will be long before we can hope for a free and unrestricted cattle trade with Holland. Attention has recently been directed to the erection of slaughter-houses and quarantine sheds at the ports, and it is hoped the public will support any well-considered project for carrying this into effect.——(2.) In a recent letter I gave the weekly returns of cattle plague cases in Holland, with a view to show that the malady is not dying out, and that, if our repressive measures have served us well, the apathy of the Dutch is proving most destructive to their interests. The last week on which I reported was that ending the 11th of August, and since then the weekly number has risen to the alarming figure of 1643. The following table speaks for itself:—

NUMBER OF CASES IN

Week ending	South Holland.	Utrecht.	North Holland.	Total.
June 30	208	84	43	335
July 7	365	193	32	590
,, 14	311	168	11	526
,, 21	466	254	17	736
,, 28	629	311	31	971
Aug. 4	617	348	24	989
,, 11	737	462	27	1226
,, 18	879	555	21	1455
,, 25	848	768	27	1643
Sept. 1	650	953	51	1648

The official statistics indicate that since the commencement of the outbreak the total number of cases has amounted to 68,158. Of these, 28,702 have proved fatal; 11,537 sick animals have been slaughtered; 26,625 have recovered; and 1294 remain on the sick list. It is not unimportant to observe that, while in these islands the plague is now entirely confined to England, and while the weekly number of cases officially reported has been brought so low as 69, there are still 15 counties in which there are germs of the malady. Cases were reported from 11 in the week ended August 25th, from 10 in that ended the 1st of September, and from 15 during the last. Individual cases of rinderpest scattered from Essex to Somersetshire, Lincolnshire to Cheshire, and as far north as the North Riding of Yorkshire, are not to be thought lightly of. Our safety, doubtless, lies in the deeply-rooted conviction that wherever the plague shows itself the animals had better be instantly slaughtered. I have often said since the commencement of the disease last year that at any time the slaughter of the sick and infected animals would clear the disease out in a few weeks. Any delay is dangerous, and we are still the victims of a mistaken economy, as the 15 counties now contaminated might, by dexterous measures, be freed as thoroughly as Scotland has at last been cleared of the disease. The continued and increasing prevalence of rinderpest in Holland seems almost providentially destined to keep us alive to the fact, that something must be done in this country for the permanent protection of British stock from foreign plagues. During the past year other circumstances have tended to impress this fact on our minds, and it is somewhat to be regretted that no official data have been published regarding small-pox among sheep. Cases of ovine rinderpest, not a few of which have not been cattle plague at all, have been recorded; but bearing on the question of the constant introduction of disease from abroad, nothing can be more interesting than the several outbreaks of sheep-pox which can be traced to direct importations. I regret to say, too, that the lesson taught us in times past by this malady seems still to be lost on some. The last outbreak merits our special attention. A lot of 160 foreign sheep was purchased on the 3d of July in the Ipswich market. They came from Hamburgh, and cost about 30*s.* apiece. On the 16th of July they were shipped, and eight showed symptoms of small-pox. The disease was recognised, and the sick animals removed from the rest; but the malady continued, and two important parishes in Essex were proclaimed. Of the animals 114 still survive; but of these, several still show signs of the plague. Not only, however, was the malady permitted to take its course in this small flock, but 14 or 15 animals were inoculated. The result has been the introduction of the disease to an adjoining farm, and for two whole months an extensive district has been proclaimed, in which farmers have sheep of great value, and rams, which cannot be moved, as required at this important season. The penny wise and pound foolish system is forcibly illustrated by this remarkable case; and it appears that people refuse to learn from the past, and repeat at great sacrifice the blunders which have so often drained the farmer's pocket and endangered the flocks of this country. And now let me again ask your readers to turn their attention to the system which offers us permanent protection from the infected herds and flocks of the Continent. That system is referred to by the Cattle Plague Commissioners in their last two reports. It consists in causing 'all fat cattle to be slaughtered at the ports, and all store cattle to undergo a period of quarantine.' In their third report the Commissioners say:—'We believe that the whole system of cattle transport should be revised; that good landing places, lairs, and sheds in which the cattle may be properly housed, treated, and inspected, should at once be constructed at the ports where cattle arrive; and that the trade in foreign cattle, which has grown of late years to such vast proportions, should be subjected to proper regulations.' It is easy to demonstrate that any one engaged in carrying out the system thus wisely sketched by her Majesty's Commissioners would find it pay, and the landowners and tenant farmers of this country should take immediate steps to provide the accommodation which the ports require before such a system can be successfully inaugurated. I am happy to say that there is a good prospect of some co-operation, and whoever wishes to reap some of the benefits of early attention to this vital question should not delay in communicating with those who are now well known to be moving in the matter. I shall be only too glad to furnish all the information in my power, as I feel that the subject has been too long neglected. *John Gamgee, Albert Veterinary College, Queen's Road, Bayswater, London, Sept.* 14.

Mr. Wilkins and his Disciple.—A gentleman signing himself "T. B." in the *Agricultural Gazette* of Sept. 1, having inquired after me, and I hope in a friendly spirit, referred to my former advocacy of thin-seeding, but not so much so, he adds, as my disciple Mr. Mechi, he wishes I conclude, to know whether, "if in the land of the living," I continue the same advocacy of thin-seeding as formerly. In replying to T. B.'s inquiries, I respectfully inform him that it is upwards of 50 years since I first lent a hand in planting an acre of land with a peck of seed only, and the crop turned out a very good one; a good yield and good quality. I think, Mr. Editor, you were present when I delivered my Lecture at the Royal Agricultural College, and doubtless yourself and the other highly respectable company who were present at the Lecture, and the students will remember, that whilst I was explaining the operations gone through for sowing the peck, an elderly gentleman in the company, whom I had not seen there before for many years, rose and said he could corroborate all that I had stated, as he also had a hand in the operations of seeding that acre with the peck as well as myself, and I here add, that at that time and for many years afterwards he farmed as extensively as any gentleman in this country, and on the thin-seeding system which was the system taught by that remarkable man, Jethro Tull. But though the 1 peck an acre succeeded beyond expectation, and on an acre of land equal to the very best in this country, and in the highest condition, and under the highest possible cultivation, the ground being comminuted to full a foot deep, yet if Mr. Mechi be my disciple, I candidly write that according to his statement in the *Agricultural Gazette* of Sept. 8, his article being dated Sept. 5, the disciple has far exceeded the doings of his master from the 1 peck an acre seeding. For though the crop I have alluded to yielded about 6 qrs. an acre, this was not 6-7ths the quantity that Mr. Mechi writes he grew for the two successive years of 1864 and 1865, for his yields "were over 7 qrs. an acre, and the best in the field." I gladly yield the palm of victory therefore to my disciple, and I feel satisfied that my venerable friend whom I have above alluded to, and who, as I have stated, farmed extensively on the thin-seeding system, will in this very willingly join with me and frankly acknowledge that he has been beaten also, for I have never heard that over 7 qrs. an acre of Wheat, or even so much has—except at Tiptree—been produced from 1 peck of seed only; the most I ever grew having been from 2 pecks an acre, and that was 1 bushel below 7 qrs., and from the experience I have had (though for the last 29 years for the sake of experiments I have been making on the germinating powers of different kinds of Wheat, and as to how many years vitality can be retained, I have every year had a little land done after the rate of 1 peck an acre), I am satisfide that 1 peck, except by way of curiosity, or for experiments, such as I have been making, is full half too little for all practical purposes. But I will briefly give Mr. T. B. and my readers in general an account of my practice. Twenty-nine years since I rented a little land of an elderly man who had had it all his life. From the age of the old gentleman he was not able to cultivate it, and so it was over-run with weeds: but in other respects the land was of good quality. The first thing I did with it was to fallow it for the purpose of cleaning it, and as I have often explained, I got almost mountains of weeds from it. During this time I ploughed, scarified, rolled, and harrowed it all the summer on the Tullian system, and by a contrivance I put exactly 2 pecks an acre of seed by filling up the cups of the drill until each would contain but one or two seeds only. As the plants came up wire-worms took them fearfully, and to put a stop to them I advertised for moles at 3*s.* per dozen, and many dozens were brought me which I turned down into my land. I also drained the land to the amusement of all the neighbourhood on an average of about 5 feet deep whilst the crop was growing. During the spring I horse-hoed it several times, and hand-hoed it, keeping the land scrupulously clean. At harvest the crop was reaped, and the same farmer who with his drill assisted me in putting the seed into the land, threshed the crop for me in the field, and measured it before several invited, who also measured the land, and to make sure I employed a land-measurer also to do the same, and the result was, that from exactly 2 pecks of seed Wheat, I had 1 bushel under 7 qrs. an acre, and as the quality of the corn was very good, it was the best crop I ever had. But my lease was for 17 years, 14 of which I had of Wheat on the same land, the first having been fallow, the last but one of Barley, a very fine crop, which I sold for 46*s.* a quarter, and then followed a magnificent crop of Clover, and my lease being out, so high had I raised the reputation of the land that the new proprietor—the old man having long before been gathered to his fathers—sold the whole for about 150*l.* an acre, more than double the price that any land had been sold for before in my parish. During all that time, as I have said, I had a little land seeded after the rate of 1 peck an acre, and the yields were generally marvellously great, but not 7 qrs. an acre, but still very fine; but the average yield per acre for the 14 years of successive Wheat crops was 44 bushels. With reference to seeding land with 1 peck of seed only an acre there is no novelty at all about it; as when I was a boy, as corn was unusually dear, several gentlemen tried it, but it was not found to answer, and for these reasons. The land must be of the best quality, and in high condition, and cultivated thoroughly at least 9 inches deep or more—12 being better; the master's hand also must put the seed into the ground, or his eye must narrowly watch its being put in, or he will find that his peck of seed will not seed half an acre, for no workman, except he be watched, will drop the seeds into the ground seed by seed only, and if not so done, his peck will not last, as I have said, half an acre, and further, his rows must not be less than 12 inches asunder. On these accounts so little seed as 1 peck an acre, even if all were to grow, will never come into practice, except as a matter of curiosity—but most certainly not for general farming profits. *G. Wilkins, Wix Parsonage, Sept.* 20, 1866.

Societies.

ROYAL AGRICULTURAL OF IRELAND: *Sept.* 26.—The second National Horse Show was opened to-day on the premises of the Royal Dublin Society, Kildare Street. The number of horses exhibited at the first show, in 1864, was 400; the number yesterday was only 303. But the quality of the animals is much improved, and this show is decidedly better than anything of the kind ever held in Dublin. The total number of entries is 303, made up as follows:—Class A, thoroughbred stud horses, 14; sires calculated to get hunters, troop horses, or hacks, 9; Class B, hunters, 73; Class C, four-year-old colts and fillies, 41; three-year-old colts and fillies, 11; Class D, ladies' horses and park horses, 17; Class E, weight-carrying colts and roadsters, 11; Class F, harness horses, 6; Class G, officers' chargers, 7; Class H, troop horses, 7; Class K, ponies, 35; Class L, bread mares, 22; Class M, thoroughbred colts and fillies, 9; Class N, agricultural horses, 36. The general arrangements of the exhibition, which are most efficient, are under the superintendence of Captain J. B. Thornhill, the active and zealous secretary of the Royal Agricultural Society, and Mr. R. W. Morgan, by whom every care has been taken that foresight could suggest in the erection of the stalls, &c., for the convenience of the exhibitors and for the comfort, health, and safety of the horses.

Farmers' Clubs.

OXFORD: *The Agricultural Labour Market.*—[We publish a very excellent paper on this subject, read some years ago by Mr. Mein, then agent to the Duke of Marlborough. His doctrine is perfectly applicable to the present time.]

He said: The harvest just past, notwithstanding there have been so many reaping machines used, has been one of very great loss to the farmer in shed and damaged corn, from a want of hands to cut and carry it soon enough. Let us therefore examine the case, and try to devise a remedy before another harvest comes round, and in no way can we come better to our purpose than by discussion, as the shoe now pinches, and before the gap is too wide to close. Let us see, after reviewing the late state of the agricultural labour market, if we cannot open a door to equalise the supply and demand. It is much better, if there are at any time growing differences between masters and men (which like the snow ball, soon increase), to meet, and by reason and by listening to their grievances, be they supposed or not, and, by supposing ourselves placed in their position, see if there is not just ground of complaint, and, if so, remove it as soon as possible.

Raise the curtain ever so little and you will see the smile of thankfulness upon the face of not only the labourer himself, but of all his family. You may hear of some few crowing that they have succeeded, and by gaining their demand have beat their masters, but the majority will tell you they are thankful for your accessions, as it was only reasonable this time, "on the next they will yield to your request,"—a little persuasion is worth a good deal of force. It is full time this matter was considered; remember, gentlemen, the door of education, so long closed, is now wide open, and unless the case is met in time it may be too late to retain the services of many of those who have been so long so badly remunerated, whose employment has been so uncertain, and who, now they can read and write, have less reluctance to leave home and their relations, either to man the navy, fight our battles abroad, or assist in peopling Australia, and the finest of all the colonies, Canada, so easily reached by the efforts of Brunel and Stephenson.

Looking at Great Britain as a great factory, and that it contains a great variety of different sorts of labourers, namely—coal-heavers, cotton and wool-spinners, masons, carpenters, painters, agricultural labourers, &c., &c., we have great distress, caused by flatness in trade, the supply exceeding the demand; sometimes thousands of cotton spinners out of employ—mills shut up; sometimes coalheavers, too much coal on hand (not so much the case now with them, owing to the consumption); the furnaces in the iron country shut—thousands of them out of employ; building trade bad; discounts in the money market high, causing great failures, and complete stagnation to trade, as well as great uneasiness to the rulers of our island. Seeing so many families without the means of purchasing the necessaries of life, we have also seen all those different denominations idle from their own discontent, although in the receipt of 3*s.*, 4*s.*, 5*s.*, and 6*s.* per day; but of all those different denominations I never saw the agricultural labourers out on strike as a body. I do not deny that half-a-dozen might leave a job—that is a different affair, but I never saw agricultural labourers in large numbers inciting one another to lay idle.

I admit that in very few classes is there that provision made for the want of work which there ought to be; all is spent as it comes, "hard-earned;" if the wages are a little better, after meeting the half-yearly payments of rent, &c., if there is any surplus, it only goes to clothe and feed the family a little better and a little more respectable, all which causes more demand, more consumption, and better prices. The more bread, meat, and clothing consumed only comes back to your own tillers. Urge upon them, teach them, as many are doing, to lay aside a little of their earnings for a slackness in trade, sickness, old age, or setting their family into a way of business; and I have no doubt that in a few years we may by perseverance find all classes of labourers more prepared to meet those inevitable stagnations in trade which cause so much distress. Now all the first-named classes have had a different opportunity to be independent, at 3*s.*, 4*s.*, 5*s.*, and 6*s.* per day, to the agricultural labourer, at 1*s.* 2*d.*, 1*s.* 4*d.*, 1*s.* 6*d.*, 1*s.* 8*d.*, 2*s.*, and many of them employed only six, eight, or ten months in the year. Now, invariable was the rule the moment harvest was over to see hundreds paid off, not able to obtain one day per week; perhaps some a little more fortunate obtain four or five days or a week at intervals. What was to maintain the family? What to keep them from starvation? How to pay 4*l.* or 5*l.* rent, allotment rents, doctors' bills, coals, candles?

No wonder, gentlemen, at these wages and uncertain employment, that they brought and are bringing up their families to other trades to be better paid. Was it not this case, gentlemen, that the young single men of 18 were paid 5*s.*, 6*s.*, and 7*s.*, while the married men were paid 10*s.* and 11*s.* I know I have been found fault with by farmers for paying the single able-bodied men the same as the married. Yet I consider (and always adopted the course) that a young man of 18 or 20 is as able for work then as he ever will be, and therefore always paid them men's wages, and by that means many hundreds stayed to the harvest with me, in place of seeking it in Lincoln, Warwick, or Worcester. No wonder that many emigrated and left their native land, to take the chance of another hemisphere, being no worse if not any better. No wonder that as summer approached they left your counties, and went elsewhere for haymaking and harvest, and endeavoured to earn something to liquidate the debt at the butcher's baker's, and village shopkeeper's. No wonder, often, that they could not withstand the temptation of knocking over a good cock pheasant, or carrying home a good well-grown Swede. Very few above the labourer know what appetite is from hard work, or an empty belly. As to hunger, the pleasure of a good feed after it is unknown to them.

Before giving the remedies, I may add that there are many other circumstances which have occurred these few years past to make the scarcity of agricultural labour felt so much at harvest, viz., by the high condition the land generally is now kept in, whereby heavier crops are grown, consequently the same number of men cannot cut and carry it in the same time—one man cannot cut, pitch, or load so much per day—therefore one reason why better prices are requisite. Again, the two last harvests have been unusually hot, consequently the men could not work so many hours. I have seen it written that this season men were in the field from daylight to sunset—so they might—but in no harvest have they been able to work so short hours, and compelled to rest at so short intervals, owing to the heat of the last two seasons. Again, seeding is commenced so much sooner than it used to be, so much being sown in February now; and we must bear in mind that corn sown at intervals of three weeks in February and March ripens much nearer together than if sown at the same intervals in April and May, or, in other words, whatever interval you give it in sowing in April and May, it will ripen at nearly the same distance apart. Not so in the early planting, thereby so much of our harvest comes together. Again, there is less spring Wheat sown and more winter Beans. The earlier the harvest (in reason) the better for the farmer, and the cheaper it is done, if we can only get the hands to cut and carry it.

The remedies. I consider, are these—we must improve the condition of the agricultural labourers generally in their dwellings, by giving them more regular employment during the winter, and giving them better wages, because it resolves itself into this question, whether a farmer upon 300 or 900 acres had better spend 80*l.* to 100*l.* more in labour during the season, or lose 150*l.* to 200*l.* at harvest in shed and damaged corn? Able-bodied labourers have got tired of and rejected the union for the winter, and it is well known they cannot subsist without work, and at one time both landlords and tenants would rather pay any amount of rates than find work for them during the winter months. I hope the additions now making to some unions will never be required, and that ere many years are over our heads we may see a good long chimney added to them, converting them into manufactories of free labour. Landlords can assist and improve the condition of the agricultural labourer very much by improving their dwellings, and giving them their houses upon the farms instead of in the villages. This is a work of time, but wherever houses require rebuilding they ought to be built upon the farms. Cottage building is not a profitable investment; still what is land without them? The labourer would then be saved his walk of three or four miles to and from his work, and it is well known that the labourer who walks that distance to and from his work has no chance with the man living on the spot. If they were living upon the farms five would do the work of six, and I am almost inclined to think that four would be equal to six. There is only one drawback I am aware of if they resided upon the farms, and that is, the children would have to walk further to school, but I think this would improve their health.

We should give the labourers more task work, and allow them to earn fair prices at it. If a man can earn 14*s.* in five days so much the better; if the sixth is a wet one he can afford to lay idle, or stay at home and repair his children's shoes or clothes; and five days are as many dry days as we can count upon in the week during the winter months. In using the reaping machines, a very good method, and one adopted by some last harvest, is to find the machine and horses, and let the cutting, tieing, stooking, &c., of the corn per acre, giving them good prices; because if there are pieces of the field so much laid that the machine will not work it, they will require to use the hook; but it is certainly discouraging to see one party of men getting the cutting of the standing-up corn by contract by machine, and another party called in to cut the laid corn by hook—what they could not manage; certainly sufficient to make labourers discontented. All landlords employ a good deal of labour, irrespective of the season of the year, and of course numbers according to the size of their estates. But (consulting the interests of their tenants) they would confer a great benefit upon them, as well as reduce the rates to themselves.

If they would perform as many of their improvements during the winter months as possible—draining, road-making, planting, grubbing, &c., and they ought to (and might without any inconvenience to themselves) release every labourer they can to the Turnip-hoeing, haymaking, &c., and stretch every point to let every man go to the harvest. If I were building a house at that season, I would allow the masons to be their own labourers for one month in the year.

In addition, if tenants, looking to their own interests, give higher prices for cutting and carrying, they will draw many additional labourers to that time from the building and other trades. Even at harvest, hitherto, the prices have not been anything to compare to the daily wages of tradesmen—nay, not enough to induce Paddy to join us in this district. If wages were an inducement, many would allow their improvements to rest for a month, rather than compete with you, and be compelled to give much higher wages for so short a time; well knowing that, the brush over, they might resume their operations at their former rates.

All farms ought to be training schools for the young labourers, and there are some branches in which we are short of trained hands, such as rick-builders and thatchers; if made to put out their hand early, and build and thatch a straw rick, they soon become useful, and as they grow up would save much loss from ricks standing so long uncovered in wet weather, for want of proper hands to cover them.

I should not have ventured to have gone into this matter at such length, but I not had so much experience in the agricultural labour market in this county for so many years, having many a harvest paid 200*l.* a week, and during the winter months 50*l.*, 60*l.*, and 100*l.* a week; and I will pay the agricultural labourers of this and the surrounding districts the compliment of being always willing to learn improved methods; apt scholars, anxious to give their work, both in planting and reaping, a finish which would suit the tastes of the most capricious; the most passive and submissive under trying circumstances (namely, starving families) of any other labourers. I have one regret, which is, had I my steps of the last 12 years to retrace, I would spend double the money in labour. I always found that the more I spent in labour the better any farm paid me.

Mr. Cuming said, he wanted statistics to show whether the agricultural population was more or less than it was in the year 1851. The agricultural population was equal to what it was then, it must be borne in mind that there was more agricultural machinery needed, there were more horses employed as well as more blacksmiths. He found his black smith's bill on the increase, and in his parish, where formerly two blacksmiths were employed there were three now. The carpenters and wheel-wrights were also better employed, for there were more implements to repair. With respect to agricultural implements, they got them cheaper than if they had them made in their own villages, and by their own blacksmiths, and it was quite a matter of course for him to buy those necessary implements which were found to be most effective, and had been tested. It was quite true that they could not avail themselves in harvest time of the tailor, the shoemaker, and others, and the reason was that there was a greater demand for what they produced, and consequently they were better employed. The reason why they lacked labour was that the supply from Ireland was cut off, for famine had depopulated that country, and tens of thousands had emigrated. Ireland was now in a much better state, and fewer people came over here, for those who remained at home had steady employment and received better wages. Another reason for the deficiency of labour was that in certain districts they had two harvests ripened together, on the back of haymaking, and though it might not occur again, they ought to be prepared for the worst. Mr. Mein recommended that the labourer should be well paid, and that the young man who was capable of doing as much work should be paid as much wages as the man with a family: that was a principle which he had always acted on, and his rule was to pay every man according to his deserts, and not according to his age. He did not mean to say that he had not found that gratitude on the part of those whom he had employed in winter, for in four instances, without asking for a rise in wages, they had gone away and sought employment elsewhere. They might rest assured, that if the agricultural labour market was not supported as it ought to be, they would not find a remedy for it, unless the law of settlement was altered. Until parties were disabused of the idea that they could always fall back on the parish, be employed when out of work, and supported in case of sickness, there never would be that independence which ought to exist between the employer and the employed. He also thought that there ought to be more yearly hiring of farm labourers and farm servants, and until they did so, instead of hiring them by the week, they would run just the same risk as they had for years past. It was pleasing to Mr. Mein to see in some instances those men who had been employed in summer were discarded in winter, but those who did so could not find fault with their men leaving them in the following harvest. With regard to the personal comfort of the agricultural labourer, much was being done, and of course all could not be done at once. Cottages were being built for them, but that outlay ought to be made judiciously, instead of incurring too much expense; cottages should be built for utility, and as cheap as possible, so as to keep down the rent. With regard to education, they were not on the same footing as in Scotland, where the agricultural labourers educated their children at their own expense, and valued education, and as they valued it so they instilled it into others. It often happened that what was given gratuitously was little thought of, compared to what it was when gained by some effort; and another question arose, whether the education of the poor was on a right footing, and whether it was not worthy of the consideration of the farmer, as well as the clergyman and landlord. He thought that farmers should interest themselves in the education of the people, who should be taught its use, and not its abuse. The young people should be taught reaping and thatching, and other farm operations, for it was well known that very much of the manual labour on their farms was performed in a way which it ought not to be, and that was a shovenly way: they must insist that the labourers should be more tidy upon sheep farms they knew from experience how hurdles and stakes were injured for a want of knowing how to use them. "Every mickle makes a muckle," and if these things were duly attended to by the labourer, they would find that they were not only more skilful and better off, but more comfortated and made the best and most useful servants. They must not throw all the blame on the labourers, or deal out harsh words to them, but put their shoulders to the wheel and

try to improve their moral and social condition by the establishment of penny banks and other institutions which have that object. With all these things put together, they might do great good for the labourers, and they in return would do their employers good, while there would be less debauchery and immorality than at present exist. All these things were very important to those who employed labour, and the observations he had made were the result of 30 years experience.

Reviews.

The Present State of the Drainage Question, considered in its Sanitary, Engineering, Economical, and Agricultural Aspects. By William Menzies, Deputy-Surveyor of Windsor Forest and Parks. (Longmans.)

It is in its agricultural aspect that we are especially concerned with the subject of this pamphlet. Mr. Menzies has taken hold of the phrase—"the rainfall to the river, the sewage to the land;" and this colours, or indeed limits, all he has to say on the subject. The maxim is, indeed, probably generally right enough. In every instance of a low-lying town where the sewage must be pumped, and especially in the case of those low-lying towns which have no light and porous lands near them on which the sewage can be used, it is probable that this maxim is one which ought to be observed. The cost of pumping is measured mainly by the need of having an apparatus which shall be able to deal with a maximum flow; and when the rainfall with its irregularities is added to the comparatively uniform supply of true house-drainage the cost is necessarily very great—that is one great point on which Mr. Menzies insists. Another is the fact, as we may suppose it to be, that when drains and pumps for a great maximum flow are provided, there is a liability to deposits forming in the culverts during the times of minimum flow, and the occasional natural flushings which a heavy rainfall gives disturb the sediment and create a nuisance. A third point is that to dilute the sewage at uncertain times, and especially in wet weather, is to make it comparatively worthless for agricultural purposes.

Now it is possible surely to hold those truths which depend on circumstances in a modest and an impartial way; but this we do not think that the author of this pamphlet has done.

For example, he is driven by them apparently to urge that rain is mischievous. If we must reason from first principles, let us rather insist upon it as our datum that rain-water fertilises. That is the truer doctrine of the two, but of course in either case its influence on the produce of the soil depends on circumstances. There is another illustration of the same prejudiced, lopsided discussion of the subject in pages 36 and 37 of this pamphlet. We are told, with all the impressiveness of italic type, that if sewage will not pay for pumping "with fixed quantities of dilution, it can never do so with all the irregularities of the rainfall." But we imagine very few men doubt now that it will pay for pumping a moderate height on to suitable land wherever there is a good market for such produce as on such land it will yield; and what then becomes of the inference from the contrary idea? We are also told:—

"An experiment has been made this summer of bringing up some sand from the piece of land on the coast of Essex, proposed to be reclaimed from the sea for irrigation by the London sewage, and this sand has been spread out on a builder's yard, and Italian Rye-grass grown upon it, by watering it with the proceeds from the drainage.

"Data founded upon such a basis could not be relied upon. Sand under these conditions receiving certain quantities of liquid is a very different thing from sand flooded at some seasons, and water-logged to a certain extent twice every 24 hours. It would have been quite as much to the purpose if some of it had been put in a greenhouse, and Grapes and Pine-apples grown from it by liquid dressings."

Of course sand under the one set of conditions is a different thing from sand under the other set of conditions; but where is the other set of conditions to be found, and who wants to grow Grass from sewage so?

The experiment in "the builder's yard" proves that London sewage delivered as dilute and as irregular as the rainfall has delivered it this year, will yet produce on sheer sea-sand, 3 feet deep, 10 tons of well-grown Grass per acre in a month.

The following is Mr. Menzies' leading statement on the agricultural aspect of this question:—

"It is constantly said, where sewage irrigation works by gravitation, that the more dilution there is the better. Everyone's common sense must tell him that there must be a limit to this doctrine, or else you might as well turn the Thames itself on a piece of land. It is not the water which is the fertiliser, but the manure it conveys. No one surely would turn an uncontrolled flood upon his land in winter or early spring if he could help it.

"Again, when the farmer could beneficially take plenty of water with the sewage in summer, how could the rain help the dilution when none is falling in dry weather? but abundant flushing will be of service to him, and this abundant flushing of the drains is the very thing that ought then to be done for the sanitary benefit of the town itself.

"It must always be recollected that to make the system complete, the land must receive the liquid whether it is beneficial to the crop or not. This is a great argument for diminishing the volume of water in an agricultural light, especially in the winter; all of which benefits, as I have previously stated, affect, in the long run, the rates in the town."

The Thames itself is turned on to a "piece of land" very often, and the land is generally the better for it. If the water of this "uncontrolled flood" were properly regulated so as to flow systematically and uniformly over the surface, the fertility of that surface would be enormously increased. The water is the fertiliser as well as merely the carrier of fertilising matter. And we greatly prefer Mr. Menzies as an exponent of the sanitary aspect of this subject. His discussion of its agricultural relations, by which, after all, the ratepayers will, we imagine, insist on its being dealt with, is very inadequately conducted in his pages. Let the reader remember that the best result of sewage application we yet know is found at Lochend and Craigentinny, where 40*l.* and more are sometimes given per acre for the Grass it yields—and there both the rainfall and the sewage go on to the land—all the difficulties connected with the former being aggravated by the steep slopes, both of the town-land and the water meadows, and the rapid floods which they occasion. It is possible that the rigid and extravagant advocacy of a maxim, though it be generally true in itself, may yet tend to check the solution of the growing difficulty in which inland towns now find themselves.

Farm Memoranda.

[The following account of agricultural experience by Mr. J. Lush, of Blackham House, near Bruton, Somersetshire, is taken from a former number of the Bath and West of England Agricultural Society's Journal. It is just the kind of agricultural report which is most serviceable to agricultural readers, and we hope that Mr. Lush, if he should see this reprint, will kindly give our readers some further account of his experience since the period at which the present report terminates.]

BRUTON, SOMERSETSHIRE: *Personal Experience on a Farm.*—In writing a report of my experience, in accordance with the terms proposed by the Bath and West of England Agricultural Society, I am under the necessity of going back to the year 1837. In the autumn of that year I rented a farm, upwards of 500 acres, of the steward of the Earl of Ilchester, of the following description, viz.:—

30	acres of dry pasture.
60	do. very poor do.
51	do. dry arable.
52	do. exceedingly poor as I worked out arable, in cultivation
60	do. poorer arable, thrown out of cultivation several years.
247	do. common, that had not been cultivated in the memory of the oldest man then living, and some had never been turned.
5	do. coppice.
5	do. waste, by road sides.
506	

The land had been occupied by one family, father and son, for 35 years; and on the death of the father, the son gave notice to quit it; and at that time it was in the following state of cultivation. Of the 51 acres of best arable—

11	acres were Wheat stubbles.
16	do. Barley stubbles.
7	do. Oat do. stubbles.
3	do. Swedes.
20	do. fallows.
51	

Of the 52 acres of poorer arable

8	acres were Wheat stubbles.
21	do. Oat stubbles.
11	do. Vetch stubbles.
12	do. fallows, which had been turned nearly a year, and left.
52	

So that I cannot describe the farm to have been at that time in any regular system of management.

The arable land out of cultivation was more or less encumbered with Furze, Fern, and brambles.

The pastures bore very bad crops, and many acres of them produced an abundance of Fern.

The stock consisted of dairy cows and heifers of all ages (reared to feed on the common) of no particular breed; the heifers were generally sold with their first calves. The sheep consisted of Down ewes for breeding, and the custom was to sell the wether lambs and draft ewes in the autumn of each year, and to put the ewe lambs out to keep for the winter.

The land was generally admitted to be the worst as a farm in that part of the country. It is a mixture of gravel, clay, and sand, on a subsoil of stone, flint, and clay, with a bed of green sand below; it is several hundred feet above the level of the sea, and the climate bad, crops coming to harvest later than on most other farms even in the immediate neighbourhood.

Although I was born and lived 30 years in the middle of the farm, I had the opinion of two men eminent as farmers before I took it. One of them was, and still is, a land-valuer and appraiser of much experience. Their valuations, made at different times, were nearly the same—about 50*l.* per annum below the price asked for it. They advised me not to take it, and predicted my speedy failure if I did. They considered a considerable quantity of the land entirely useless.

With this information and advice I went to the steward, and as I could not get any abatement, I agreed to take the farm, and was promised a lease of 14 years.

I bought the crop of 1837 at a valuation. The Wheat was estimated at 20 bushels per acre, the Oats at 23 bushels per acre, and the Barley at 22 bushels per acre. In each case the estimate was rather above the quantity realised.

I determined to begin with spirit as well as with caution, and obtained, as often as I could, the opinions of my farming friends; but found that my own experience, on a few acres I had previously farmed, was generally of the most service to me.

The fences were exceedingly bad, even the boundaries; the fields were very irregular in shape and size, but the whole was tolerably level.

I commenced grubbing fences and old hedge-rows on the best arable, and increased the available measure of that part at least two acres; at the same time I began grubbing Furze, and digging a piece of about 30 acres of the best of the common, employing every man I could get, and expended nearly 300*l.* the first winter, besides my ordinary wages. I tried various ways of getting this piece into cultivation; some was dug with the spade, but in consequence of the Furze, Fern, and Heath roots, was turned over very coarsely; some was mattocked four inches deep; and some was pared and the turf moved off, and then mattocked and the turf moved back, and left on the top for burning. The whole was rather roughly performed, and when finished, was sown to Oats, which were, at a great expense with harrows and hoes, covered, and came up remarkably well, and looked all that could be wished for ten days or a fortnight, when they gradually became blue in colour and stunted in growth. It was a wet feeding season, and they rallied a little, and produced 15 bushels per acre, which was not very encouraging. I also employed a double strength of horses and oxen in cleaning the land found in cultivation, and having previously used bones and other artificial manures on a very small scale with great success, of course I applied bones on this land for all root crops, which answered well.

My stock consisted of a breeding flock of Down ewes, and in this instance I continued the custom of my predecessors of selling my draft ewes and wether lambs in the autumn of each year, and of putting my ewe lambs out to keep for the winter. The latter part of the plan I very soon discontinued, finding it more profitable to keep them on the farm, even if I had to buy food for them. My cattle were Herefords. I had been for some years previously an admirer and a keeper of that breed, and had a few good animals, which I increased as fast as I could, till I had a full stock (consisting of dairy or breeding cows, oxen, steers, heifers, and bulls). I reared all my calves, making the dairy business a secondary consideration. In 1841 I gave 50*l.* for a bull-calf at Hereford fair, which sum was the best laid out of any money I ever expended in stock. After I purchased him, on the same day he obtained the 1st prize at the show of bulls under 1 year old; 22 competed. My plan was criticised; but, after making many careful calculations, I was convinced that it was more profitable than letting a dairy. I did not fat many beasts (in that, perhaps, I erred), but sold most as barren cows, bulls, and oxen, which I generally worked two or three years. I cannot make any comparison of my stock with my predecessors, because I always occupied some pasture land, in addition to the farm they had.

In order to expedite the clearing of the common, I offered any person as much as he wished to cultivate and crop with Potatos, for two years, gratis, upon condition that, in case I chose to take it at the end of one year, I was to pay 2*l.* per acre for it. This plan answered my purpose well, and I had a considerable quantity cleared in this way. The best Oats I ever grew, indeed the only crop I ever grew profitably on the new land without lime, was after one crop of Potatos. In 1845 the Potato disease appeared, and deprived me of this mode of cleansing.

I continued to employ all the men I could get in each winter, and at other times, when labour was scarce, digging, mattocking, and paring and burning, the common land. I found that the paring and burning was the quickest way of cleansing. Some men could not use the breast-plough, and some disliked the spade. I had one man in particular, with only one arm, who worked at mattocking for 12 winters in succession, and sometimes in summer also. From the beginning to the end he never left my service, except for a temporary purpose, so that I could not confine myself to paring and burning. I did not value the ashes much, and was apprehensive that burning would deteriorate the land; but it did not do the harm I expected, as subsequent experience has proved; besides, some of it could not be pared. Where the strongest Furze grew, it could only be mattocked, which was done roughly at 3*d.* per perch, or 2*l.* per acre. The parts less encumbered with Furze were pared with difficulty. All the land was covered with Fern, and much of it with Furze and Heath. Paring and mattocking, to the depth of 3 inches, leaving the Turf on the top to be burnt, cost 6*d.* per perch, or 4*l.* per acre. Burning the Turf was so difficult, in consequence of the sand in it, that I could not get the men to undertake it by measure, and, strange to say, it cost me, in some instances, as much as 4*l.* per acre, including throwing the ashes: the surface being very uneven, it could not be cut thin, and, of course, the burning was more difficult. The expenses attending the bringing the worst part into a state to plough properly were over 10*l.* per acre. One piece, less encumbered than the rest, I ploughed, then rolled it, and allowed it to remain nearly a year, and then found it impossible to cut it across with the same implement, and was obliged to give 1*l.* per acre to have it cut in pieces with sharp mattocks. It took about two years to rot the turf.

I will state here how I was misled by a good Wiltshire farmer. I had a piece pared and burnt, and an abundance of ashes produced. I intended to have spread them, and to have drilled a small quantity of bones with the Turnip-seed, but he entreated me not to waste the bones, as he would guarantee a first-rate crop of Turnips with the ashes alone, if drilled with the seed. I tried his plan on part of the field, and bones on the other part, and found the bones, 12 bushels per acre, produce a very good crop; the ashes alone (except where the fires were) produced nothing—absolutely nothing. I invited some of my neighbours to see the effect of bones, as none had been used in the parish at that time but by myself. They ridiculed the idea that 12 bushels of bones to an acre had made the difference, and for many years afterwards some looked at my crops with as little belief as ever in the virtue of bones; but now the same parties use a little artificial manure occasionally. Eighteen or 20 years have worked a change.

After taking off the first crop of Oats on the first piece of 30 acres, I ploughed it, and found much of the

Turf as sound as ever, and the Fern-roots so thick that I could scarcely work the drags on it. After picking up and burning hundreds of loads of roots, principally of Fern, I sowed it to Oats the second time, and had a better crop than the first—21 bushels per acre. I was now convinced that nothing could be done with it profitably without lime or some artificial manure. Wherever I used lime for corn and bones for roots, it answered admirably, so that I was encouraged to hope that it would ultimately pay. I used a London-made manure one or two years before, and now tried it again, but was not satisfied with it. It was called "Carbonated Humus."

As the practice adopted with the first piece was continued with very little variation till the whole was cleared, I will state more particularly my management of it. After the second crop of Oats was off, I fallowed it, and commenced by liming one part at the rate of 30 quarters per acre: the other part I prepared for Swedes, which I drilled with bones, about 2 quarters per acre. They were tolerably good, and were fed on the land, which was sown the following year (after being well manured from the yards) with Vetches, Rape, and Turnips. Most of the limed part was also sown to Rape and Turnips; and in the autumn that part that had been limed and sown to green crops, and had been well trodden with sheep, was sown to Wheat, and produced a good crop. The part limed, and not sown to a green crop, was very light and unfit for Wheat; I therefore sowed it to Rye, which answered remarkably well, and from that time till the whole was brought into a regular course, I have grown Rye on part of my Wheat-field, if found to be loose and light, which was generally the case on the parts which had not grown Turnips or Rape. I have always found Rape after Swedes the best preparation for Wheat, and in that way I have grown upwards of 40 bushels per acre in a very good season. In the year 1854 I grew, on 109 acres and 12 perches, 1046 sacks and 2 bushels. The crop of 1837, which I bought, and the two first crops of my own growth, did not average 120 sacks a year. The crop of 1837 had a great quantity of smut in it, and I was told that I should always have smut in my crops; but for the whole 20 years I have not seen as many smut-balls. I always dress my seed Wheat with 1 lb. of blue vitriol in 4 gallons of water to 4 bushels of Wheat. I invariably sow or drill my Wheat and other corn on ridges 33 feet wide; whereas my predecessor sowed on ridges 8 feet wide, by which a loss was certain of some bushels per acre. Some of my neighbours adhere to the same plan now on land quite as dry as mine.

As I began to grow more straw and of better quality, a question, often before discussed, became important to me, *i. e.*, which was the most profitable way of using it for food. A friend of mine, a most intelligent man, a large and good farmer, with whom a mutual feeling of interest had long existed as to the result of our farming operations, often called my attention to the matter, and we found that we could not keep our cattle in condition through the winter on straw alone: they lost in the winter the gain of the previous summer. My friend tried brewers' grains, mixed with cut straw; they were very palatable to the cattle, but the supply was uncertain, which made it inconvenient. We came to the conclusion that Swedes would be the best thing to depend upon, if they could be reduced to a state that, when mixed with chaff, the cattle could not separate it. An Apple mill was tried, and used by my friend some time, but was found unsuitable. Surely "necessity is the mother of invention." Mr. Moody, whose name is now familiar throughout England, was one of our friends, and often joined us in the evening; and, being of an ingenious turn of mind, and equally interested in the cause, we advised him (not being mechanical ourselves) to make something that would answer the end we had in view. He promised to try, and in a short time produced a cumbrous, clumsy machine, made principally of wood, with which Swedes could be crushed with difficulty, and this was the first step towards the completing of "Moody's Cutters." From time to time improvements were made till he produced a perfect machine for horse power, which I use to the present time, and which I think is not equalled by any for crushing Swedes in order to mix them with inferior food.

About this time also (1839) another practice was commenced by my neighbour, and then by myself, of mixing green crops with straw for cattle; and we have continued the plan to the present time, as occasion required, although some gentlemen farmers in their public speeches, many years afterwards, took the credit to themselves of introducing the practice.

In 1841 I went from the Liverpool Agricultural Meeting to Scotland, in company with two first-rate Wiltshire farmers. We had heard much of the excellence of the farming there, and of our own ignorance; we determined to see for ourselves. We were well introduced, and spent a few days with some eminent agriculturists very agreeably. Perhaps we ought to have remained longer; but during our stay we saw nothing worth our imitation, except their Turnip-culture and the threshing by steam. We saw some very bad management, particularly in haymaking. As to rearing and feeding store-cattle and the management of sheep (an important matter here), they were certainly a long way behind us, in our opinion. The difference in cleaning and thinning Turnips attracted my attention. The practice in Wiltshire was to clean principally with the hand-hoe, about 9 or 10 inches long, made at an acute angle with the handle, which was about 3 feet long, so that the hoer was obliged to stoop, and was thus enabled to throw his whole weight and strength on the hoe to cut the soil deeply. I have known a good farmer refuse to employ men till they reduced the length of their hoe-handles, making it an indispensable condition; but in Scotland I found the hoes about 7 inches long, forming a right angle with the handle, which was at least 4½ feet long: both kinds were suitable for the different modes of culture. In Wiltshire, without the horse-hoe, all the land required to be cut, and it was generally performed by our best men; whereas, in Scotland, all the cleaning was done by horse-hoes, the hand-hoes, as above described, were used by females for thinning only, standing almost upright in their work, and the hoe was adapted for thinning the plant by pushing from as well as by pulling towards the person using it. I had some hoes made of this pattern, and having, since that time, managed many hundred acres on both plans, am of opinion that I can grow the greatest weight of roots, and best clean the land in all seasons, on the Scotch system.

In 1842 I used "Daniel's patent manure," 30 bushels per acre, in the manner directed by the patentee, without seeing any effect from its use; and this year I experienced a greater advantage from the use of bones than I had at any previous time. I prepared a piece of the new land, as well as I could, for Swedes, and drilled a little more than 16 bushels of bones per acre with the seed; and in order to demonstrate more fully to the unbelieving the benefit of bones, I ordered a manure-tape to be stopped from end to end of the piece on several parts of the field, and allowed only the seed to drop, and the difference was truly wonderful. Where no bones fell, the Swedes never attained the size of a nut, and where the proper portion of bones was deposited, they were generally from 16 to 21 inches in circumference; and even then some would not admit the good of bones. One person, farming his own estate of about 700 acres in Wiltshire, held me up to ridicule in a public company for stating the above facts, and declared that no one should ever convince him that 16 bushels of bones on an acre of land could do any good to a crop of Turnips. Nine years afterwards I saw two of that person's waggons leaving his market-town with full loads of artificial manure. On inquiry, I found that he had first used it the year previously.

(*To be Continued.*)

Miscellaneous.

The Condition of the Labourer.—Mr. Henley and after him, Lord Leigh, have lately been calling attention to the very important subject of the homes of the labouring classes. I will not pretend to decide whether those in town or country are the worst. But after long experience in Lancashire, Bristol, Gloucestershire, and now Devonshire, I am in a position to assert that there is great room for amendment both in town and country, and that as long as the homes of the poor are allowed to remain in the condition in which so many of them at present are, at least one-half of the benefit of education will be lost. But there is another almost worse evil than the above; for, in addition to tumble-down homes, without even sufficient accommodation for the decencies of life, the agricultural labourer in some parts of the country, especially in some parts of this county of Devon, in which my lot is at present cast, has also to contend against the abject poverty entailed upon him by very low wages, partly paid out in the abominable old truck system in grist or cider, instead of in the current coin of the realm. Eight shillings, and in some cases only 7*s.* a week are in such places, with few exceptions, the ordinary wages of an able-bodied farm labourer, with the addition of cider, and in some instances a little fuel, but with the drawback of not being able to make full time in bad weather, so that it not unfrequently happens that when the farmer has deducted house rent and the price of the grist or coarse flour which, though he could buy better or cheaper in the market, the labourer is in many cases forced to take at the farmer's price, the labourer carries home not more than 3*s.* 6*d.* or 4*s.* in money for his own use and that of his wife and family. The farmers of this neighbourhood are many of them very angry with me for taking up the cause of the agricultural labourers; for informing them of the much higher rate of wages in other countries, as well as in different parts of England—in Westmoreland, for instance, Berkshire, and Kent, and many other counties, in some of which as much as 16*s.* a week is given; for advising them to emigrate or remove into another county, that, by making the supply of labour here less, its price may be enhanced. But the truth is, I find that it is of little use either to preach or educate as long as the population remains at this starving point. An empty stomach in a ruinous hovel is a material on which it is most difficult to make religious or moral impression. To emigrate or to remove would undoubtedly open the door to a better state of things. But then the love of home makes it practically very difficult to prevail upon the labourer who is married and has a family to do either the one or the other, even if the pressure of extreme poverty did not make it financially impossible. There is, therefore, I am persuaded, at the present time no more fitting object for the consideration of the philanthropist than the agricultural labourer. There are white slaves in England as well as black slaves elsewhere. Will not Lord Leigh in the House of Lords, and Mr. Henley in the House of Commons, be induced to take up this crying evil and propose a remedy for it? Might not all payment of wages except in the coin of the realm be made illegal? Could not more facilities be contrived for the removal of agricultural labourers from places where there are too many to places where there are too few? Can no society be formed to emancipate the white slave? Is it not possible to bring public opinion to bear on this scandalous practice of underpayment? Combinations are generally to be deprecated as causing bad feeling, yet I would far rather see a strong agricultural labourer's union formed than that wages should remain as they are. But, best of all, cannot the farmers themselves be led to see that the change would be as beneficial to them as to the labourers; that if they put their hands into one pocket to pay a few pounds a-year more wages, they would at the same time put into their other pocket a much larger sum—their savings from the waste of weak, idle, dishonest, inefficient, because badly-paid servants, and from a poor-rate diminished in proportion to the independence of the labourers? Can the farmers be induced to see this, which to other people is as plain as that two and two make four? I do not know. All I can say is that at present, in this part of the county of Devon, the opposition to the idea of a well-paid labourer is as blind and as hot as it once was to the novelty of the threshing and mowing machine, or as it still is to the steam plough. *Edward Girdlestone, Canon of Bristol and Vicar of Halberton, Sept.* 22.

Calendar of Operations.

OCTOBER: *Pickling Wheat for Seed.*—Upon th careful preparation of Wheat for seed depends to a considerable degree the value of the future crop. Several diseases to which the plant is subject are believed or known to have their germs resident in the seed or on its surface, and to remove these should always be the object of a careful operation at seed time.

The two diseases, to avert which is the main object of steeping and otherwise preparing seed Wheat, are the smut and bunt or pepper-braud; in the latter, which is the more dreaded of the two—because the grain retains its form and appearance in the sample—the parasitic fungus which produces it has a peculiarly fœtid odour; in the former this smell is wanting, and the seed-vessels burst, dispersing their sooty contents before the general ripening of the crop. Smut is more common in Oats than in any other grain crop.

It has been known long before those who adopted the practice possessed any definite idea of the cause of these diseases, that the best method of avoiding them was thoroughly to cleanse the seed. Botanists have since informed us that the success of this operation is owing to its removing from the surface of the seed the germs of those Fungi to which these diseases are owing—germs of inconceivably small size—not above $\frac{1}{1000}$ of an inch in diameter, so small, in fact, that they are absorbed by the sprout of the young plant.

The following passages are extracted from Professor Henslow's report. Referring to the bunt or pepper-brand, he says:—

"Upon simply immersing the grain in water the infected seeds float, and on the water being poured off nothing but the sound ones remain in the vessel. This simple process, however, is never perfectly effective, because in threshing the Wheat, many of the infected grains (smut-balls) are crushed, and the spores are dispersed in the form of a fine powder, which adheres with considerable obstinacy to the surface of the sound grains, by means of an oily or greasy matter found in the Fungi. In order to detach them thoroughly, it has been considered useful to add some alkaline ley to the water in which they are washed, because oil and alkali unite and form a soapy substance, and then the spores will no longer adhere to the surface of the grains of Wheat. Lime, possessing alkaline qualities, has been long employed for this purpose. Common potash, and substances containing ammonia, as the liquid portion of stable manure, have also been used. But as some persons employ brine, sulphate of copper, arsenic, and a variety of other materials which do not possess alkaline properties, it is supposed that all these solutions act rather by destroying the vegetative properties of the Fungi, than as a means of removing them from the surface of the grains. It may therefore be worth while to institute a set of experiments to determine which supposition is really correct. Perhaps some portion of the effect may be owing to the increased specific gravity of the liquid; or perhaps some portion of the solution may be imbibed by the steeped corn, sufficient to prevent the sporules of the Fungus from germinating within the substance of the plant; just as corrosive sublimate, essential oils, and Russia leather prevent the formation of mouldiness. I may also add that the temperature at which the solutions are applied may be of some importance."

In the section "On the precautions to be taken against bunt and smut," a suggestion is offered which we think well worthy the attention of farmers. Professor Henslow says:—

"From a variety of considerations, it has always appeared to me strange that practical agriculturists are accustomed to pay so little attention to the raising of pure seed crops. There may be reasons which I do not properly appreciate that would render it inexpedient to cultivate a seed crop apart from the rest of the produce raised on a farm; but I should have thought that it was always worth while for every farmer to set aside some portion of ground to be more carefully tended than the rest, for the purpose of securing good and perfectly clean seed. Among other reasons for such a practice, he would then be able to weed his crop from every plant infected with bunt or smut before the Fungi ripened."

It is certainly the interest of the farmer either to do this or to purchase his seed from those who pay particular attention to its cultivation.

We shall make only one more extract, in which a series of experiments are recommended with a view of ascertaining what substances in solution are the most effectual preventives of these diseases. These are published here, as being likely both to lead the practical reader to a useful conclusion as regards his own practice, and also to encourage the habit of investigation generally.

"A parcel of thoroughly bunted or smutted seed should be divided into a number of small packets, each of the same weight, or if very small, each containing the same number of grains. When any of these packets are steeped or washed, the floated grains and the Fungi which rise to the surface may be kept apart

for separate experiments, being carefully labelled, 'F. 1,' 'F. 2,' &c., to show that they were obtained from the packets of seeds, 'No. 1,' 'No. 2,' &c., by this process.

No. 1. Seeds unwashed, to serve as a comparative experiment.

No. 2. Washed in cold water only—(2*) in scalding water.

No. 3. Washed in water with lime, the proportions specified.—No. 4. Washed in water and brine.

(*a*) Mixed in the proportion of 2 water to 1 saturated brine.

(*b*) Mixed in the proportion of 1 water to 1 saturated brine.

(*c*) Mixed in the proportion of 1 water to 2 saturated brine.—(*d*) Saturated brine.

No. 5. Washed in sulphate of copper.

No. 6. Sprinkled, but not washed, with lime.

"Another set of experiments may be prepared with clean corn, to be infected with the floated Fungi obtained in washing the above.

No. 7 rubbed with—

(*a*) F. 2, to serve as a comparative experiment.

(*b*) F. 3. (*c*) F. 4. (*d*) F. 5.

"Another set may be prepared with clean corn, which should first be steeped in different solutions, and then rubbed with the Fungi obtained by simply washing in water (No. 2).

No. 8. Steeped in lime, and rubbed with F. 2.

No. 9. Steeped in brine and do.

No. 10. Steeped in sulphate of copper and do.

"These last may be repeated by washing the seeds clean after they have been steeped, to remove any of the mixture that may here adhere to the surface."

In addition to brine, blue vitriol, &c., Glauber's salts, the sulphate of soda, has been recommended to be used just as the sulphate of copper, and then dried with lime, which decomposes it, and leaves caustic soda on the surface of the grain, to deal with and destroy the life of the fungal germs which may cling to it.

We may add the following report of experience on this subject, which is taken from a statement made some years ago by Mr. David to the Cardiff Farmers' Club.

"In November, 1822, I selected 3 bushels of Wheat, which I had grown that summer, and which was exceedingly smutty, but to render it still more so, I had a quantity of smut-ball rubbed into it, until the whole was much blackened. The lot was then divided into 6 half-bushels, and having dissolved half a pound of blue vitriol in boiling water, the Wheat was pickled as follows:—

No. 1. Immersed in the vitriol water for three hours.

No. 2. Washed and skimmed until it was clean, then immersed in the vitriol water as above.

No. 3. No preparation.

No. 4. Washed and skimmed well until clean.

No. 5. Washed and skimmed as above, then sifted quicklime over it, and mixed a quarter of a pound of salt with it.

No. 6. Pickled in the mode usually adopted, with a mixture of lime, salt, and water.

"The seed was sown the following day on a Clover lea, in six separate ridges, each 112 yards long, by 4 yards wide, half a bushel to each ridge, being at the rate of near 5 bushels per acre. (!)

Nos. 1, 2 and 5 came up thin, seemed to be at the rate of only 2 bushels per acre.

No. 6 appeared to be at the rate of about 2½ bushels per acre.

No. 4 appeared to be at the rate of about 3 bushels per acre.

No. 3 appeared at the rate of about 4 bushels per acre.

"Sept. 5th, 1823.—The whole was reaped, each lot being carefully kept separate, and the result proved as follows:—

No. 2. Found only two smutty ears in the whole ridge, which, notwithstanding the care taken, might have come from an adjoining ridge.

No. 1. Had several smutty ears in it.

No. 5. From 30 to 40 black ears in the ridge.

No. 6. About a 20th part smutty ears.

No. 4. About a 5th part smutty ears.

No. 3. About one-half smutty ears.

"From which it appeared that the blue vitriol, coupled with washing and skimming, proved to be an effectual cure, even to a sample of the description sown."

We have only to add that we have found the use of blue vitriol (sulphate of copper) to be perfectly efficient, though at the rate of only half a pound per bushel. But to add quicklime to the Wheat after having steeped it in this solution, as was done in one of the above trials, is entirely erroneous. Lime will decompose sulphate of copper, and to add it to the Wheat after steeping it, as above, would, therefore, be an attempt to neutralise the benefits which are expected from the use of that substance for this purpose. The recipe is as follows:—Dissolve half a pound of blue vitriol in a gallon of warm water in an earthenware vessel, and pour it over a sack of Wheat on the barn floor, and turn it over and over, so that every grain shall be thoroughly wetted. It will be dry and ready for sowing it two or three hours' time. Do a sack at a time, and do not have too much done beforehand, as it is better that it should not lie long in heaps before sowing.

Notices to Correspondents.

SPORTING OVER 2000 ACRES: *H. W., Subscriber*, asks the probable rentable value of the sporting over above 2000 acres, above 200 acres being woodland, the tenant to keep up the stock of pheasants and partridges, and pay damage to the tenant farmers for any injury sustained by them from ground game, and for any injury from pheasants above 10*l.* to each tenant farmer. The property in question is about 2 or 3 miles from a railway station, and for about 2 miles immediately adjoins the lands and coverts of one of the greatest game preserves in the kingdom. Above 2000*l.* has been made by rabbits and game in one year, and last season no less than 180 head of game and rabbits are said to have been killed in one day. The fishing consists of a good trout stream of about two miles in length, and sundry well-stocked fish pools, which may be nearly 20 acres in extent.

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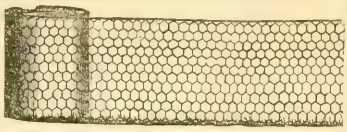

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Size of Mesh.	Mostly used for	Light. Jap Gal	Medium Jap Gal	Strong. Jap Gal	Extra Strong. Jap Gal
in.		s. d. s. d.	s. d. s. d.	s. d. s. d.	s. d. s. d.
2½	Dogs or Poultry	0 2½ 0 3½	0 3½ 0 4½	0 4½ 0 5½	0 5½ 0 6½
2	Poultry	0 3½ 0 7½	0 3½ 0 4½	0 4½ 0 5½	0 5½ 0 7
1½	Small Rabbits, Hares, &c.	0 3½ 0 4½	0 4½ 0 5½	0 6 0 6½	0 6½ 0 8
1¼	Smallest Rabbits	0 4½ 0 5½	0 5½ 0 6½	0 6½ 0 8	0 8 0 10
1	Pheasantries, Small Birds, &c.	0 8 0 10	0 9½ 1 0	1 1½ 1 4	1 7 1 10
¾	Aviaries, Window Guards, &c.	0 11½ 1 1	1 1½ 1 4	1 4 1 7	.. ..
⅝	Aviaries, Window Guards, &c.	1 7 1 10	1 10 2 0	2 0 2 3	2 3 2 6
½	Aviaries, &c.	2 3 2 6	2 6 2 8	.. ..	.. ..

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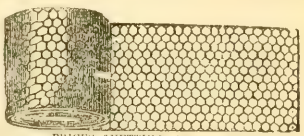

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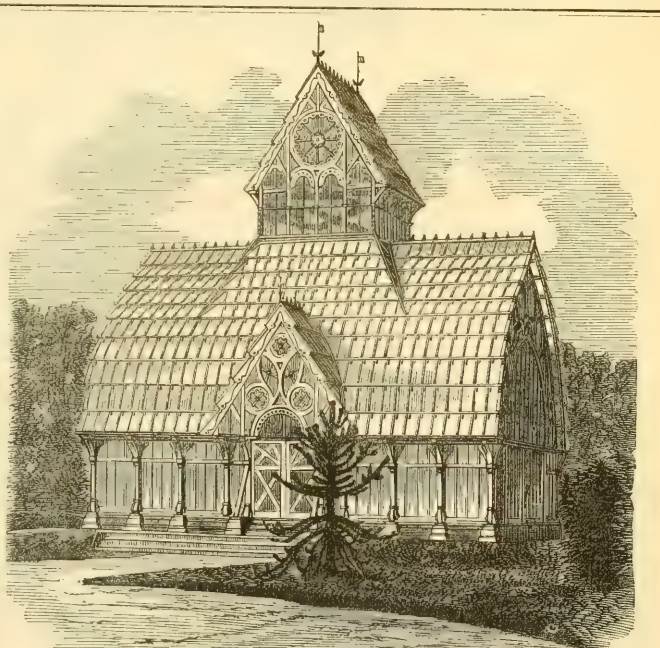

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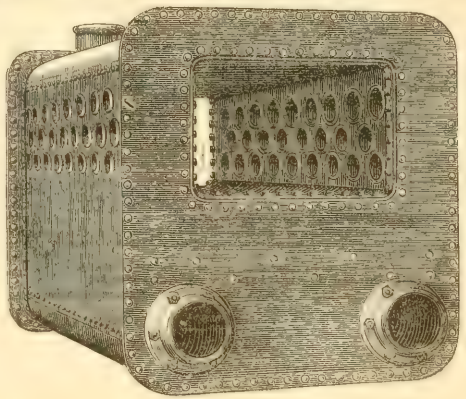

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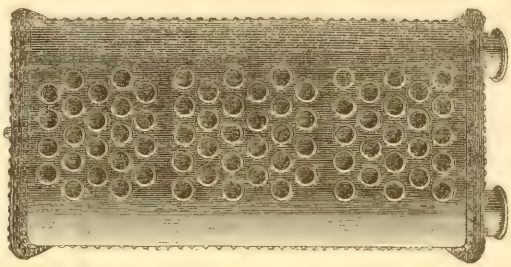

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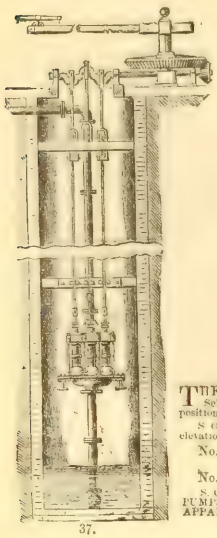

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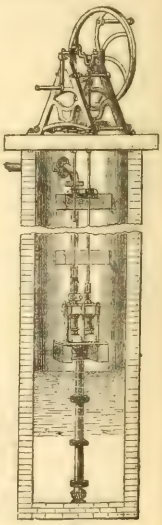

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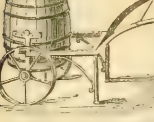

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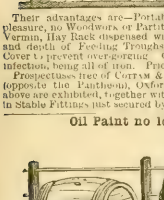

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Sold in casks of about 30 gallons each, at 1s. 6d. per gallon, at the Manufactory, or 1s. 8d. per gallon paid to any Station in the kingdom. Apply to HILL & SMITH, Brierly Hill Iron Works, near Dudley, and 23, Cannon Street West, E.C., from whom only it can be obtained.

Horticultural Agent and Valuer.

MR. A. CHANDLER (of the late Firm of CHANDLER & SONS, Nurserymen, Vauxhall) continues to LET NURSERIES and make all kinds of VALUATIONS connected with Horticulture.

1, Devonshire Terrace, Fulham Road, S.W.

Farm Poultry.

GREY DORKING FOWLS, of purest breed, in any numbers

Imported TOULOUSE GEESE, the largest and most productive breed known

Improved NORFOLK TURKEYS, large, hardy, and good breeders.

AYLESBURY and ROUEN DUCKS.

Imported BELGIAN HARE RABBITS, for size and early maturity.

BRAHMA-POUTRA, CREVECŒUR, and LA FLECHE FOWLS, for constant layers.

Priced Lists and Estimates on application.

JOHN BAILY & SON, 113, Mount Street, London, W.

BRITTANY COWS.

The only breed of Cattle that have escaped the Rinderpest.

The Nobility, Gentry, and others are respectfully informed that they can be supplied with the above beautiful and profitable Little Animals (calved and down calving), in any number, at the shortest notice. The great success and encouragement which have attended the efforts of the

Importer, in introducing the pure breed of this useful and hardy Cow into the country, has induced him to extend his connections abroad, by appointing experienced Agents throughout Brittany, and he is now enabled to offer the public a constant supply of the choicest stock that can be obtained, at prices which defy all competition. The low cost, together with the high milking qualities of this Breed, render them of great value to the cottager, as well as the fancy stock-keeper and dairyman.

YOUNG BULLS always on sale. BRITTANY SHEEP, 25s. each.

ALDERNEY and GUERNSEY COWS and HEIFERS supplied to description, as to age, colour, and time of calving.

Apply to the Agents of the Importer, Messrs. ROBERTSON & Co., 38, Crutched Friars, London, E.C.

Tothill, Plymouth.—To Gardeners and Others.

TO BE LET, by Tender, for a term of 7 or 14 years, from Christmas, 1866, all that MESSUAGE or DWELLING HOUSE, GARDEN, and PREMISES, situate near Tothill, in the Parish of Charles, Plymouth, now in the occupation of Mr. Thomas Wood, Gardener and Seedsman, as Tenant, containing by admeasurement 1a. 1r. 9p. or thereabouts. The above has been for many years occupied as a Garden, is well suited for the purpose in all respects, and well supplied with Spring Water. The taker will be required to purchase, at a valuation by a competent person to be agreed on between himself and the present Growing Crops, if any, and also the Stock of Plants, Greenhouses, and Forcing Pits, Frames, houses on the Premises, being allowed to remove the latter at the expiration of the Tenancy.

Tenders for taking the above Premises must be left at the Offices of Mr. Lyddon, Solicitor, Argus Insurance Office, Courtenay Street, Plymouth (where the terms and conditions on which they are to be let may be seen), on or before Monday next, and in the meantime the Tenant will show the Premises on application.

The Setter shall not be required to accept the highest Tender.

Argus Insurance Office, Plymouth.—September 15.

Berkshire.

THE FREEHOLD RESIDENTIAL ESTATE OF HIGHGROVE, READING.

MESSRS. COOPER AND GOULDING have to announce to the numerous applicants for particulars that they have SOLD the above-named PROPERTY by Private Treaty.

Auction and Estate Offices, Reading, Sept. 29.

Sales by Auction.

SALE THIS DAY AT HALF-PAST TWELVE PRECISELY.

Extensive Sale of Dutch Bulbs, Plants, &c.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on SATURDAY, September 29, at half-past 12 o'Clock precisely, a first-class Assortment of fine Dutch Bulbs and other, viz. HYACINTHS, CROCUSES, TULIPS, LILIUMS, IRIS, and other Bulbs, from Haarlem, 6 PATENT LAWN MOWING MACHINES, from a good maker, RUSTIC GARDEN SEATS, STOOLS, VASES, BASKETS, VINES in pots, &c.

On view the Morning of Sale, and Catalogues had.

Periodical Sale of Poultry and Pigeons.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY, October 2, at half-past 12 o'Clock precisely, 250 LOTS of PENS of first class COCHINS, DORKINGS, BRAHMAS, SPANISH, Bantams, Hamburghs, Geese, Ducks, Rabbits, Game, and a good selection of PIGEONS, the property of Messrs. Golden Dillon Laurie, being the surplus stocks of several well-known breeders and exhibitors

On view the Morning of Sale, and Catalogues had

To Noblemen, Gentlemen, Flockmasters, and Others.

A Flock of Valuable Pure-bred Merino Sheep and Rams imported from the Spanish Royal Merino and Southdown Ditto, Rams, Cashmere Goats imported from St Omer, France, and numerous Fleeces of Wool of the highest quality.

MESSRS. DANIEL SMITH, SON, AND OAKLEY have received instructions from C. P. Tower, Esq., the proprietor of the Flock, to SELL by AUCTION, on the Premises in the Park, close to the Mansion known as Weald Hall, near Brentwood, Essex, on THURSDAY, October 4, at 12 o'Clock precisely, 120 Merino Ewes, 10 ditto Lambs, 10 ditto Shearling Rams, 130 Half-bred Merino and Southdown Ewes and Lambs, 9 ditto ditto Rams and Ram Lambs, and 4 291 Fleeces of Wool of the finest quality from the above Sheep, also 20 Pure SCHMERIN GOATS, being from the same Stock as the Herd, presented by the proprietor to her Majesty the Queen.

The Stock from which the pure Merino Sheep now offered to the public have descended, was imported into this country from the Carthusian Monastery of Paular, in Spain, about the year 1810, by Mr. Tower, who has introduced into his flock, from time to time, with great care and good judgment, and at great expense, Rams of the purest and best blood.

Weald Hall is situate about 2 miles from Brentwood, 5 from Romford, 12 from Chelmsford, and 17 from London; three-quarters of an hour's journey therefrom by the Great Eastern Railway.

Catalogues may be obtained at the White Hart Hotels, Brentwood and Romford; the Saracen's Head, Chelmsford; of Mr. Barrow, the Bailiff, at the Mansion; and of Messrs. DANIEL SMITH, SON, & OAKLEY, Land Agents and Surveyors, 10, Waterloo Place, Pall Mall, S.W.

Marsh's Farm, on the Courtlodge Estates, LAMBERHURST, KENT.

IMPORTANT SALE OF FINE SHORT-HORNED STOCK, AYRSHIRE AND CROSS-BRED BEASTS, SHEEP, HORSES, AND IMPLEMENTS.

MESSRS. W. AND J. WINCH are directed by W. C. Morland, Esq., to announce his intention of DISPOSING by PUBLIC AUCTION, on TUESDAY and WEDNESDAY, October 9 and 10, at 11 o'Clock, of the whole of his HERD of PURE-BRED SHORT-HORNED STOCK, consisting of 21 Cows and Heifers and 2 Bulls, and the rest of his valuable LIVE STOCK and FARMING EFFECTS. The Short-horn Herd has been reared with great care from some of the best blood, being chiefly by Royal Butterfly 5th (18,756), Don Juan (18,860), Bernard (15,046), Lord Althorp (15,045), and Prince Albert 2nd (15,230). The Bulls are Baron Butterfly (descended from Col. Towneley's best blood), got by Royal Butterfly 5th (18,756), dam Lady Butterfly, by Great Morgan (12,121); and Prince Albert, got by Prince Albert, May 21, 1865, sire Baron Butterfly, dam a White Moss Rose by Jason (14,736), grand dam Moss Rose by Ravensworth (9,632). The Cows have been served by Baron Butterfly. A Herd of 33 Ayrshire and Cross-bred Beasts, a Lot of Sheep, 4 Cart Horses, and a large number of valuable Implements. The Short-horn Stock and Herd of Mixen Breeds will be sold the first day.

Catalogues may be had of Mr. Wickham, The Parsonage, Lamberhurst Row, at the Offices of the Auctioneers, Valuers, and Estate Agents, Cranbrook, Kent

Marsh's Farm is 3 miles from Tunbridge Wells and Paddock Wood, 6 miles from Wadhurst, and 5 miles from the Frant Station, where conveyances can be obtained. The district is and has been wholly free from Cattle Plague.

To Hop Fanciers.

MR. J. WILLMER begs to announce that he is favoured with instructions from Henry Goldham, Esq., of Mitcham, to submit to PUBLIC AUCTION, at the Auction Rooms, 38 and 39, Gracechurch Street, E.C., on SATURDAY, October 13, at 12 o'Clock precisely, the valuable COLLECTION of TULIPS, comprising many gems of the first water.

Catalogues may be had at the Rooms, and of the Auctioneer, Spruce Hill, Croydon.—September 29.

To Gentlemen, Florists, Gardeners, and Others.

Important Sale of Rare and Choice Exotic and other Plants, Horses, Carriages, Harness, Cows, Hay, Gold and Silver China Pheasants, and other out-door Effects, at Highgrove, Reading, Berks.

MESSRS. COOPER AND GOULDING are instructed by the executors of the late Mr. Blandy, Esq., one of the Vice-Presidents of the Royal Horticultural Society), to SELL by AUCTION upon the Premises, on MONDAY, October 15, and following days (unless the Plants be previously disposed of in one lot by private treaty), the remaining COLLECTION of STOVE, GREENHOUSE, and other PLANTS, including a large number of highly valuable Exotic Orchids, of which there are some fine and rare specimens; Allamandas, Vandas, Dendrobiums, Gleaphyna, Dipladenias, Begonias, Centaureas, Aphelexia (fine specimens), Camellias, Azaleas, of which there are splendid specimen show plants), Lilliums, Fuchsias, Ferns (many valuable specimen plants), Ferns (choice specimens), Lycopodiums, Amaryllis, and Cyclamens, of sorts, Pelargoniums, Primulas, several thousand Budding Plants, 1000 Roses, including the following Specimens, Chrysanthemums, and Carnations in pots, Aucubas with berries, Cows, a very fine large Standard Laurustinus, Bays, and Arbutus, in tubs, &c.

The Horses, Harness, Carriages (including a capital Break made for a race carriage, and beautifully fitted for that purpose), Cows, Hay, and Implements will be Sold on the last Day of the Sale.

The Plants, &c., may be viewed on the Sale Days, or can be seen on Thursday and Friday, October 11 and 12, on production of Catalogues only, which may be obtained (in each instance to purchasers), one week prior to Sale, by forwarding 13 stamps to, or by application at, the Offices of Messrs. Cooper & Goulding, Auctioneers and Estate Agents, Market Place, Reading.

Notice of Forthcoming Sales by PROTHEROE AND MORRIS.

Nov. 5) BRUNSWICK NURSERY, Tottenham.—Fine Evergreens, and 6) Conifers, and Deciduous Shrubs, Ornamental Fruit and Forest Trees. Clearance Sale of Railway.

Nov. 12, } HENDON.—By order of Mr. James Wright. Important 13, & 14. } Sale of handsome Evergreens, Deciduous Shrubs, American Plants, Fruit, and Forest Trees &c. American Nurseries, Leytonstone, N.E.

Shepherd's Bush.

IMPORTANT CLEARANCE, SALE OF GREENHOUSE AND OTHER PLANTS; THE ERECTIONS OF 20 GREENHOUSES, EXTENSIVE RANGES OF PITS, BOXES, SHEDS, THOUSANDS OF FEET OF HOT-WATER PIPING, PAVING BRICKS, 20 BOILERS, &c.

MESSRS. PROTHEROE AND MORRIS are instructed by Mr. F. Hopwood, Sen., who is retiring from Business, to SELL by AUCTION, without reserve, on the premises, Exotic Nursery, Shepherd's Bush, adjoining the Shepherd's Bush Station on the Metropolitan Railway, on MONDAY, October 1, and four following days at 12 o'Clock precisely each day, the remaining LEASE, 2 years from Christmas, 1866, unexpired, with the GOOD-WILL, and the whole of the valuable COLLECTION of HARD and SOFT-WOODED GREENHOUSE PLANTS, including about 10,000 Ferns, of sorts, mostly cutting with flower; 1000 Double Camellias, 1 to 5 feet; about 600 choice Azalea indica, well set with bloom; 3000 Hybrid Perpetual and other Roses in pots, 6000 Cytisus racemosa, 300 Cocculus, 2500 Acacia armata, 2000 Hydrangeas, 400 Crassula, Euphyllum serle, Daphne, 2000 Deutzia, 1000 Aucubas, Ficus elastica, 1 foot; 1 Dracæna indivisa rubrum, 2000 Silver, Gold, and French Pelargoniums, 4000 choice Seedling Cinerarias, several thousands Scarlet and Variegated Geraniums, &c., also the Erections of 20 Greenhouses, thousands of feet of Hot-water and Flow-water Piping, mostly Riddell's Patent; 19 Boilers of various kinds, several ranges of Pits and Frames, about 200,000 Bricks, York Paving, Slate Slabs, Ornamental Iron Paving, Hipping, Coping, Tank, Iron Rollers, Patent Force Pump, Iron and Slate Water Tanks, Erections of Sheds, Stables, 6 nests of Seed Drawers, Shop Fittings, Barrows, Garden Tools, 2 Vans, 1 Cart, 3 Horses, sets of Harness, Ladders and other Effects.

May be viewed one week prior to the Sale. Catalogues had, (of each fortnightly to purchasers), on the Premises, and of the Auctioneers and Valuers, American Nurseries, Leytonstone, N.E.

N.B. All Purchasers must pay into the hands of the Auctioneers a full deposit on the fall of the hammer; according to the conditions of Sale.

Tottenham, Middlesex.

CLEARANCE SALE OF NURSERY STOCK FOR RAILWAY EXTENSION.

MESSRS. PROTHEROE AND MORRIS will submit for unreserved SALE by AUCTION on the Premises, Hale Farm Nursery, adjoining the Railway Station, Tottenham, on the Great Eastern line, on THURSDAY, October 11, at 11 o'Clock, by order of Mr. T. Wait, who is compelled to make an immediate clearance for the formation of the Great Eastern and Tottenham and Hampstead Junction Railway Companies, the valuable NURSERY STOCK, consisting of fine Evergreen Conifers and Deciduous Shrubs, Ornamental and Forest Trees, amongst which may be mentioned 200 Wellingtonia gigantea, 3 to 5 feet; 500 Ivergreen Lawsoniana, 2 to 4 feet; 1000 Irish Common Laurels, 3 to 4 feet; 400 Portugal Do., 1 to 2 feet; 600 Green and Variegated Euonymus, &c.; 30,000 Manetti Stocks, 6000 Cherry, Apple, and Pear Stocks, 5000 Asiatic Asparagus; large assortment of Standard, Pyramid, and Climbing Roses, and 1000 Standard Tree Roses in pots, worthy the attention of the Trade, together with a miscellaneous collection of Greenhouse Plants.

May be viewed part Saturday. Catalogues had on the premises, and of the Auctioneers and Valuers

Shepherd's Bush.

IMPORTANT CLEARANCE SALE OF NURSERY STOCK

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, on the Premises, Exotic Nursery, Shepherd's Bush, adjoining the Shepherd's Bush Station on the Metropolitan Railway, on MONDAY and TUESDAY, October 15 and 16, at 12 o'Clock precisely each day, without the least reserve, by order of Mr F. Hopwood, Sen., who is retiring from the business, the whole of the valuable NURSERY STOCK, including fine Evergreen and Coniferæ Shrubs, Ornamental and Forest Trees, several thousands of the Fruit Trees; a large quantity of Standard, Half Standard, and Dwarf Roses, consisting of the best varieties in cultivation, quantity of Compost, &c

May be viewed prior to the Sale. Catalogues may be had on the premises; and of the Auctioneers and Valuers, American Nurseries, Leytonstone, N.E.

Mile End Nursery, Bow Road, E

MESSRS. PROTHEROE AND MORRIS are instructed to SELL by AUCTION, on the Premises, Mile End Nursery, Bow Road, Middlesex (within five minutes' walk of the Bow and Bromley Station), on THURSDAY, October 18, a portion of the Valuable NURSERY STOCK, including a large quantity of bushy Aucuba japonica, Chinese Arbutus, Variegated Box, Portugal Laurels, Sweet Bays, Green Box, Thuja aurea, Cedrus Deodara, Abies Smithii, Poplars, Laburnums, Mespilus canadensis; a choice assortment of Standard and Dwarf Roses, also some Standard Magnolias, 10 to 12 feet high; with a FERN CASE, 20 inches by 22 inches, and 12 capital PATENT LAWN MOWERS.

May be viewed prior to the Sale; Catalogues may be had on the Premises; and of the Auctioneers and Valuers, American Nurseries, Leytonstone, Essex, N.E.

Sale of Bulbs, Standard Roses, &c.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, at 67 and 68, Gracechurch Street, on FRIDAY, October 19, at 1 o'Clock precisely, during Counting House Business, and to orders requiring large quantities of thriving young stock, as well as gigantic and symmetrical specimens for effective purposes, including a splendid assortment of Evergreens, Conifers, and Deciduous Shrubs, a large Collection of Ornamental, Forest, and Fruit Trees; American Plants, Standard and Dwarf Roses, Thousands of Hardy Climbers, &c., &c. Particulars of which will appear shortly.

American Nurseries, Leytonstone, Essex, N.E.

Edmonton.

IMPORTANT SALE OF VALUABLE NURSERY STOCK.

MR. A. RICHARDS has received instructions from Mr. Weeden to SELL by AUCTION, on the Premises, Church Road, Upper Edmonton, on WEDNESDAY and THURSDAY, October 17 and 18, at 12 o'Clock each day, (a portion of the ground being required for the Railway,) 2000 FRUIT TREES, consisting of Standard, Pyramid, and Dwarf Trained Apple, Pear, Cherry, Plum and Damson Trees, Iron Half-Standard and Dwarf Trained Peach, Nectarine, and Apricot; a large quantity of Gooseberries and Currants, also an immense number of very fine specimen CONIFERS and EVERGREENS, including Cupressus Lawsoniana, 6 feet to 8 feet; Wellingtonia gigantea, 4 feet to 5 feet; Variegated Hollies; Pinus excelsior, and other Pines; China Lignum, Siberian Arborvitæ, from 3 feet to 7 feet; Cedrus Deodara; and robusta, 4 feet to 5 feet; Phillyrea; Portugal and Common Laurels, Leucothoe, Berberries, Aucuba japonica, Hollies, Thuja Lobbii, Privet, &c.; 1200 fine STANDARD and DWARF ROSES, of the very best sorts, to name; fine Limes, Poplars, Weeping Willows, Sycamores, Double and Single Scarlet Thorns, specimen Weeping Ash, &c.; strong quick, hardy Climbers in pots, &c., &c.

May be viewed two days previous. Catalogues on the Premises, and of the Auctioneer, Tottenham.

THE AERIAL CHAIR.

WONDERFUL APPLICATION OF THE PRINCIPLE OF OSCILLATION.

FOR THE GARDEN, CONSERVATORY, AND NURSERY.

Entirely "Self-acting," the operator requiring no assistance whatever, and so easy of motion that a Child can propel itself to any desired altitude without the slightest danger of accident. It has been pronounced a marvel of ingenious mechanism, and cannot fail to become a necessary adjunct to every well-appointed Garden and Nursery, while for Invalids it will be hailed as a means of recreation and hygienic exercise never before offered them. They are very easily fitted up in any ordinary-sized room, and can be attached to the ceiling by means of a few common iron bolts. The only instructions necessary for the use of this invention are, that the person upon being seated simply presses the feet against the footboard, which will at once set the Chair in motion.

For Gardens or Lawns the "AERIAL CHAIR" can be secured to the branch of a tree or to the framework of an ordinary Swing.

Manufactured of Wrought Iron, in three different sizes, to wit:—

Size No. 1, suitable for Children ... ... price £2 2s. | **Size No. 2, suitable for Youths** ... ... **£2 10s.**
No. 3, suitable for Adults ... ... **£3 3s.**

These prices include packing, but not carriage. The suspending rods are about 8 feet in length. Extra rods can be obtained, if required, at 2*s.* 6*d.* per foot. The Seat to the "AERIAL CHAIR" is of wood, and moveable. Iron Seats, in imitation of Cane, can be had at 15*s.* each.

Attached to the head-board of the "AERIAL CHAIR" is a brass label, with the following words:—"AERIAL CHAIR, SECURED BY ROYAL LETTERS PATENT. MANUFACTURED BY PEYTON & PEYTON, METALLIC BEDSTEAD MANUFACTURERS, BIRMINGHAM. CHARLES POMEROY BUTTON, PROPRIETOR, NOS. 142 AND 143, CHEAPSIDE, LONDON."

TRADE MARK—"AERIAL CHAIR."—TERMS CASH.

All Orders must be accompanied with a City Reference or Remittance to

CHARLES POMEROY BUTTON, Nos. 142 & 143, CHEAPSIDE, LONDON, E.C.

Editorial Communications should be addressed to "The Editor," Advertisements and Business Letters to "The Publisher," at the Office, 41, Wellington Street, Covent Garden, London, W.C.
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THE GARDENERS' CHRONICLE
AND
AGRICULTURAL GAZETTE.

A Newspaper of Rural Economy and General News.

No. 40.—1866.] SATURDAY, OCTOBER 6. {Price Fivepence. {Stamped Edition, 6d.

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ROYAL HORTICULTURAL SOCIETY, SOUTH KENSINGTON.

NOTICE.—A MEETING of the FRUIT and FLORAL COMMITTEES will be held on TUESDAY NEXT, the 9th inst., at 11 o'Clock; LECTURE at 3 o'Clock.

CASTLE KENNEDY FIG.—Plants of the above may now be had at 10s. 6d. and 21s. each; the usual discount to the Trade. PETER LAWSON & SON, Edinburgh and London.

Grape Vines.

B. S. WILLIAMS begs to announce that he has a splendid stock of Strong Planting and Fruiting CANES of all the best varieties. PRICED LIST may be had on application.
Victoria and Paradise Nurseries, Holloway, London, N.

Hothouse Grapes.

Queen's Graperies, and 170, Western Road, Brighton.

E. SPARY begs to announce he has a large supply of extra fine GRAPES to offer to his numerous Patrons and Visitors to Brighton. Also ORNAMENTAL PLANTS for Dinner-tables, Conservatories, &c. BOUQUETS, CUT FLOWERS to order, and Importation of DUTCH BULBS has arrived in fine condition

SUCCESSION PINE PLANTS FOR SALE.—RIPLEY QUEEN (30), perfectly clean and in good health.
Apply to W. R., F. Allman, Nursery, Horsham, Sussex.

Fruit Trees, Conifers, and Trees and Shrubs.

PULHAM AND SON'S COLLECTION of the above are now worthy of a visit. The Pyramid Fruit Trees for Sale are in full bearing, and the various Trees and Shrubs will be found in fine condition.
Old Church Nurseries, Chesham, N.

STRONG STANDARD and DWARF TRAINED APPLES and PEARS; fine Transplanted LARCH FIR, from 1½ to 5 feet; a choice collection of CONIFERS and EVERGREENS, and a General Nursery Stock. Prices on application.
CHARLES BURGESS, The Nurseries, Cheltenham.

WALL-TRAINED TREES of BEARING SIZE.—Our Wall-Trained Fruit Trees this season are very fine, and include PEACHES, NECTARINES, APRICOTS, and FIGS, suited for planting in houses for immediate Fruiting. An inspection is respectfully invited.
T. JACKSON & SON, Nurseries, Kingston, Surrey.

Railway Planting.

FIVE MILLION Transplanted QUICKS, of superior growth. Samples and prices on application to
JOHN HEMSLEY, High Fields, Melbourne, near Derby.

PLANTING SEASON.—For large AUCUBAS, PORTUGAL LAURELS, GREEN BOX, ARBOR-VITÆ, splendid MOUNTAIN ASH, WELLINGTONIAS, IRISH IVY, &c., apply to JOHN WEST, Nurseryman, Green Lanes, Stoke Newington, N.

SEEDLING WELLINGTONIAS.—Wanted, 5000 or 6000 2-year Plants for grafting. Please quote quantity and price per 1000 to EDM. HARTLAND, The Lough Nurseries, Cork.

LARGE SPECIMEN EVERGREEN SHRUBS, of all the leading kinds, in beautiful health, and trimmed with large balls or mass of fibrous roots. For prices and particulars apply to
CHAS. SOUTHBY, Nurseryman, Clapham, S.

FOREST TREES, &c., at the Nursery of the late David A. Reid, Park Attwood, Bewdley, Worcestershire:—LARCH, 2 to 2 feet, 10s. 6d. per 100; 3 to 3 feet, 15s. per 100; 2½ to 3½ feet, 15s. per 1000; 3 to 4 ft., 17s. 6d. per 1000. LISTS of other TREES sent on application. Apply, with reference or remittance, to
JAMES RIDDELL, Steward, Park Attwood.

TO BE SOLD, Cheap, 100 ARBOR-VITÆ, from 5 to 6 feet.—A fair proportion of Specimen Plants, and the greater part well furnished. They move well. Price £10 if the whole are taken.
CHAS. SOUTHBY, Nurseryman, Clapham, S.

Male Aucubas, with Flower Buds.

MAS MACULATA, MAS PYGMÆA, MAS BICOLOR, 10s. 6d., 15s., and 21s. each.
Also a large collection of Female Varieties. Prices on application to
THOMAS CRIPPS, Nurseryman, Tunbridge Wells.

To the Trade.

WINTER and SPRING-FLOWERING PLANTS.—Our stock of Soft-wooded ERICAS, EPACRIS, AZALEAS, and New Holland Plants is extra fine this year, and being much greater than we can house, we are selling at unusually low prices.
T. JACKSON & SON, Nurseries, Kingston, Surrey (adjoining the Railway Station), S.W.

A QUANTITY of GHENT AZALEAS and CAMELLIAS, Cheap; DUTCH BULBS unusually fine; a choice collection of FERNS, Fern Cases, Gold Fish, Aquariums, &c.
R. GREEN, the Bedford Conservatories, Covent Garden Market, W.C.

To Cultivators of Succulent Plants, &c.

T. COOPER, Holmsdale Road, Reigate, Surrey, has a large Collection of SUCCULENT PLANTS, &c., including about 450 varieties of CACTI, also ALOES, HAWORTHIAS, AGAVES, TESTUDINARIA ELEPHANTIPES, &c.; also a great many New Plants raised from African Seeds, many of which are very interesting. Orders punctually attended to.

Hyacinths and other Dutch Bulbs.

WM. CUTBUSH AND SON beg to acquaint their numerous Patrons that they have received their usual Consignment of Choice HYACINTHS, TULIPS, CROCUSES, &c.
PRICED DESCRIPTIVE CATALOGUE post free on application
Highgate Nurseries, London, N.

Hyacinths, Tulips, &c.

BUTLER, McCULLOCH, AND CO. have the pleasure to intimate that their usual supply of DUTCH and CAPE BULBS has arrived in the finest possible condition.
PRICED DESCRIPTIVE CATALOGUES free and post paid on application. Covent Garden Market, London, W.C.

Dutch and other Bulbs.

B. S. WILLIAMS is now prepared to supply splendid roots of HYACINTHS, TULIPS, NARCISSUS, CROCUS, &c., &c. All the roots are selected with great care from the best growers in Holland.
A PRICED and DESCRIPTIVE LIST sent post free on application.
Victoria and Paradise Nurseries, Holloway, London, N.

Hyacinths, &c.

WM. PAUL'S SELECT LIST of HYACINTHS, EARLY TULIPS, and other SPRING-FLOWERING BULBS and PLANTS, is now ready and will be forwarded post free on application.
PAUL'S Nurseries and Seed Warehouse, Waltham Cross, London, N.

The Best Twenty-six Hyacinths,

AS RECOMMENDED BY THE EDITOR OF THE *Gardeners' Chronicle*.
SUTTON AND SONS can supply the above for £1 1s., carriage free.
Royal Berkshire Seed Establishment, Reading.

The Best Twelve Hyacinths Imported by SUTTON AND SONS,

for Twelve Shillings.
SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

MIXED HYACINTHS, for Beds or Open Borders, all colours, of various shades.
21s. per 100 (carriage free), or 3s. per dozen.
SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

J. SCOTT has received large Consignments of DUTCH FLOWER ROOTS, which he is offering at extremely low prices. A PRICED CATALOGUE, full of Notes on the Easy Culture of Bulbs, and other information sent free on application to
J. SCOTT, the Seed Stores, Yeovil, Somerset.

Dutch Flower Roots.

THE PROPRIETORS of ST. JOHN'S NURSERY beg to intimate that their CATALOGUE is now ready, and may be had on application.
WM. BARRATT, Wakefield.

Dutch, Cape, and other Flower Roots,

ROSES, JAPANESE PLANTS, &c.

W. ROLLISSON and SONS' CATALOGUE of the above, containing Novelties, is now forwarded free on application. The Nurseries, Tooting, London, S.

See Barr & Sugden's Advertisement

For BULBS and CLIVEDEN PLANTS for Spring Blooming, p. 920.

BARR'S PRIZE CALCEOLARIA, 2s. 6d. per packet. The above beautiful strain of Calceolaria was saved by Mr. James, of Isleworth, from the plants which were awarded the 1st prize at the International Horticultural and Botanical Congress.

Finest Dutch Crocuses and Early Tulips.

SUTTON'S DESCRIPTIVE LIST is now ready, and will be forwarded gratis and post free on application.
SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

MESSRS. HENRY CLARKE and SONS have on hand a large stock of YELLOW CROCUS, SINGLE and DOUBLE SNOWDROPS, and which they are prepared to offer to the Trade at very moderate prices.
39, King Street, Covent Garden, W.C.

Notice.

60-PAGE CATALOGUE of NEW PLANTS of 1866 now ready, free for one stamp.
WM. DILLISTONE, Dunoro Nursery, Stoke Newington, Essex.

NEW CHRYSANTHEMUMS 1866. — All the new varieties of present year now ready, well established in pots, at 5s. per doz., or 35s. per 100.
WILLIAM HOLMES, Frampton Park Nursery, Hackney, N.E.

DOBSON'S SUPERB SEEDS. Post Free.
DOBSON'S PRIZE CALCEOLARIA, 1s. 6d., 2s. 6d., 3s. 6d., and 5s.
DOBSON'S PRIZE CINERARIA, 1s., 2s. 6d., and 5s.
DOBSON'S PRIZE PRIMULA, 1s., 2s. 6d., and 5s.
Dobson & Sons, Seedsmen, Isleworth, London, W.

Rhododendron Stocks.—To the Trade.

PAUL AND SON have to offer these very fine, to the Trade, at 12s. 6d. per 100.
Old Cheshunt Nurseries, Cheshunt, N.

Hybrid Rhododendrons.

WILLIAM FLETCHER begs to inform the Trade that he has a Splendid Stock, of the above to offer this season, well set with Bloom Buds, with from 6 to 12 Buds on each plant suitable for forcing. CATALOGUES sent free on application.
Ottershaw Nurseries, Chertsey, Surrey.

NEW HARDY RHODODENDRON, MICHAEL WATERER.—This Rhododendron has hitherto been exhibited under the name of ANNIBALE MAGNIFICUM, but it will be sent out under the above name. It is undoubtedly the most brilliant-coloured late hardy free-blooming Rhododendron yet offered
Orders are now being taken for Plants to be sent out in the Autumn at 21s. 6d. each. The usual discount to the Trade.
JOHN WATERER, American Nursery, Bagshot, Surrey.

Rhododendrons.

JOHN WATERER'S DESCRIPTIVE CATALOGUE of HARDY SCARLET and other RHODODENDRONS is now published and will be forwarded on application. It faithfully describes the colours of the new varieties exhibited by him at the Royal Botanic Gardens, Regent's Park. An Abridged List of popular CONIFERS, with heights and prices, is likewise combined.
The American Nursery, Bagshot, Surrey, near Sunninghill Station, South-Western Railway.

Notice.

TO BE SOLD, Cheap, a great Bargain, 5000 RHODODENDRON PONTICUM, 2 feet, fine bushy healthy stuff, many of them with buds, well worthy the attention of Gentlemen and the Trade. Special prices and samples on application to
T. STRACHAN, Wholesale and Retail Seed Merchant and Nurseryman, 4, High Street, Wrexham, North Wales.

Rose Nurseries, Tunbridge Wells.

EDWIN HOLLAMBY respectfully begs to announce that his Stock of ROSES are as usual beautiful healthy good-rooted plants. This magnificent Collection contains nearly every variety worthy of cultivation. Early orders are solicited.

Rose Catalogue.

E. P. FRANCIS AND CO.'S NEW DESCRIPTIVE LIST of the above is now ready, and will be forwarded gratis upon application.
The Nurseries, Hertford, Herts.

Roses.

WM. PAUL'S PRICED DESCRIPTIVE CATALOGUE of ROSES is now ready, post free on application
PAUL'S Nurseries, Waltham Cross, N.

New Tea Rose.

AMBROISE VERSCHAFFELT, NURSERYMAN, Ghent, Belgium, begs now to offer his new fine TEA ROSE, ISABELLE SPRUNT, figured in the July Number of the "Illustration Horticole." Fine strong plants, 8s. each.
N.B. A Coloured Drawing may be obtained on application as above.

New Catalogues.

A DESCRIPTIVE CATALOGUE of ROSES.
A CATALOGUE of ORCHARD-HOUSE TREES.
A DESCRIPTIVE CATALOGUE of GRAPES.
Free per post on application to
THOMAS RIVERS & SON, Nurseries, Sawbridgeworth.

Gladioli, Roses, and Pæonies.

EUGÈNE VERDIER, Fils Aîné, NURSERYMAN, 3, Rue Dunois, Paris, has the honour to inform his numerous Friends and Patrons that he is now publishing his TRADE CATALOGUE of NEW GLADIOLI, ROSES, and PÆONIES, obtainable direct of him, or of his Agents, Messrs. BUCHAN & BLACKITH, Cox's Quay, Lower Thames Street, London, E.C., upon pre-paid application.

Gladioli.

CHARLES VERDIER (late VICTOR VERDIER and CH. SOUCHET), 12, Rue Dunois (ancienne Rue du Marché aux Chevaux, 33), Paris, has just published his CATALOGUE of GLADIOLI, comprising the Novelties of the season, and which may be obtained either from M. VERDIER, or from R. SILBERRAD & SONS, 3, Harp Lane, Great Tower Street, London, E.C.

JAMES FAIRHEAD AND SON, SEED GROWERS and MERCHANTS, 7, Borough Market, London, S.E.
New and Genuine AGRICULTURAL, GARDEN, and FLOWER SEEDS. Special prices and advantageous offers on application.

Genuine Garden and Agricultural Seeds.

JAMES CARTER AND CO., SEED FARMERS, MERCHANTS, AND NURSERYMEN, 237 & 238, High Holborn, London, W.C.

RAYNBIRD, CALDECOTT, BAWTREE, DOWLING, AND COMPANY, Limited,
CORN, SEED, MANURE, AND OILCAKE MERCHANTS,
Address, 89, Seed Market, Mark Lane, E.C.; or Basingstoke.
Samples and Prices Post free on application. Prize Medals, 1851 for Wheat; 1862, for "Excellent Seed Corn and Seeds.

Wholesale Catalogue of Nursery Stock.

GEORGE JACKMAN AND SON'S PRICED and DESCRIPTIVE CATALOGUE for 1866 and spring 1867, can be had free on application, comprising Fruit Trees, Roses, American Plants, Conifers, Clematises, Evergreen and Deciduous Trees and Shrubs, and transplanted Forest Trees, &c., &c.
Woking Nursery, Surrey.

New General Plant Catalogue.

B. S. WILLIAMS' NEW PLANT CATALOGUE, containing many really good Novelties, and carefully selected LISTS of STOVE, GREENHOUSE, and HARDY PLANTS, is now ready and will be forwarded free to all applicants.
Victoria and Paradise Nurseries, Holloway, London, N.

JIVERY AND SON having a few NOVELTIES now ready to send out, will be pleased to forward their PRICED DESCRIPTIVE CATALOGUES of AZALEA INDICA, and No. 10 HARDY BRITISH FERNS, which contain full particulars.
Dorking Nursery.

British Fern Catalogue.

ROBERT SIM can now send, post free for six postage stamps, Part I. (British Ferns and their varieties, 36 pages including prices of Hardy Exotic Ferns) of his NEW and PRICED DESCRIPTIVE CATALOGUE of BRITISH and EXOTIC FERNS, No. 7.
*** Part II. (Exotic Ferns) will be issued as early as possible.
Foot's Cray Nursery, S.E.

FUCHSIAS.—BANKS & HENDERSON'S Set of 12 strong Plants, established in 60-pots, package included. And fine strong-rooted little Plants sent safe as fresh by post of all the New FUCHSIAS of 1866, at 6d. each. And all the New VERBENAS of 1866 at 3s. per doz. Also PETUNIAS, 4s. per doz. Warranted to give satisfaction.
H. CANNELL, Fuchsia Nursery, Woolwich, S.E.

THE CZAR VIOLET is NOW in BLOOM, and will continue so through the winter, even during frost and under snow, until May. The flowers grow twice as large as the old Russian, and sweeter; on very long stout stalks. Awarded several First-class Certificates and Prizes. Strong blooming plants may be had, 10s. per dozen, prepaid, of Mr. JOHN CHAHAN, Cranford, Hounslow, W.
The usual allowance to the Trade.

AMBROISE VERSCHAFFELT, NURSERYMAN, Ghent, Belgium, begs to announce that his NEW GENERAL CATALOGUE, No. 79, is just out, and can be obtained Gratis at his Agents, Messrs. R. SILBERRAD & SON, 3, Harp Lane, Great Tower Street, London, E.C.

PAMPAS GRASS SPIKES WANTED.
Apply, stating price per 100 or 1000, to
HOOPER & CO., Merchants, Covent Garden, London, W.C.

The Earliest Pea Grown is

CARPENTER'S EXPRESS, gathered on the 7th May, (see Testimonials), THE EARLIEST DATE ON RECORD, price 3s. per quart. The usual discount to the Trade.
EDWARD CARPENTER, Seed Merchant and Grower, Brighton and Sussex Seed Warehouse, 96, St. James's Street, Brighton. Oct. 6.

SAMUEL COX, NURSERYMAN, Ludlow, has a large quantity of strong SEA KALE fit for forcing; also about 50 PEACH TREES, 4 years trained, fit for bearing at once.
Price on application.

PURE BROWICK SEED WHEAT, grown on stiff clay soil, after the Steam Cultivator. The crop was harvested before August 25, and is in prime condition.
Price and Samples free on application to J. DICKSON, [Manager, J. & F. HOWARD'S Steam Cultivated Farms, Bedford.

CHOICE VARIEGATED PELARGONIUMS.

Sunset	Laura	Italia Unita
Mrs. Benyon	Clara	Picturata
Mrs. Pollock	Golden Tom Thumb	The Fury
Yellow Belt	[illegible]	Princess Alexandra

The above 12 varieties, suitable for exhibition, for [illegible].

The following at 7s. per doz., package included:—

Mr. [illegible]	Golden Vase	[illegible]
[illegible]	Burning Bush	Argus
[illegible]	Snowflake	Fontainebleau

Terms, cash. Remittances expected from unknown correspondents. Address, ALFRED [illegible], Nurseries, Chatteris, Cambridgeshire.

New Descriptive Rose Catalogue for Autumn of 1866 and Spring of 1867.

EDWIN HOLLAMBY begs to draw attention to his superb Collection of the above, containing all the new and approved old varieties in cultivation, and is happy to state that they surpass [illegible] years in quantity and excellence.

Early orders solicited to insure good plants.

CATALOGUES forwarded gratis and post paid on application.

Nurseries, [illegible], Tunbridge Wells, and Groombridge.

New Roses for 1866.

EUGÈNE VERDIER, Fils Aîné, NURSERYMAN, 3, Rue Dunois, Paris, has the honour to inform the public that he will have ready to deliver in November next, the following splendid ROSES obtained from Seed in his Establishment:—

HYBRID PERPETUALS.—Comte Litta, Jules Calot, Madame George Paul, Madame la Baronne Haussmann, Madame la Baronne Maurice des [illegible], Madame la Comtesse de Turenne, Mademoiselle Annie Wood, Mademoiselle Fleurer Gauer, Napoleon III., [illegible]. CATALOGUES may be obtained direct of E. V., or of his Agents, Messrs. [illegible] & BLACKITH, Cox's Quay, Lower Thames Street, London, E.C.

Fagraea imperialis.

A. VAN GEERT, NURSERYMAN, Ghent, Belgium, begs to offer this splendid New Plant, originally from Sumatra. Certainly one of the finest foliaged plants known, with thick glaucous leaves, 2 [illegible].

Fine Seedling Plants, [illegible] inches high, 15s. each. One over for every three taken. [illegible] to grow for exhibition.

Musa Ensete, &c.

A. VAN GEERT, NURSERYMAN, Ghent, Belgium, begs to offer fine established Plants of the splendid MUSA ENSETE, at [illegible] each, also strong Plants of KOEZLIA REGIA, at [illegible], [illegible] plants of ALSOPHILA EXCELSA, at [illegible] per hundred. Fine plants of ALSOPHILA CONTAMINANS at [illegible] each. CATALOGUES may be had of his Agents,

Messrs. R. SILBERRAD, 5, Harp Lane, Tower Street, London, E.C.

New Gladioli.

EUGÈNE VERDIER, Fils Aîné, NURSERYMAN, 3, Rue Dunois, Paris, has the honour to offer this Autumn to his Patrons and Friends [illegible] the following NEW GLADIOLI raised from Seed [illegible]. Their description and prices [illegible] Agents, Messrs. [illegible], Cox's Quay, Lower Thames Street, London [illegible], Abbé [illegible], Apollon, [illegible] Nelly, Norma, [illegible] Sir William Hooker, Joseph Paxton, [illegible].

New Gladioli.

CHARLES VERDIER, (late Victor VERDIER and Charles VERDIER), Nurseryman, 12, Rue Dunoral, formerly [illegible], 2, Paris, begs to offer the following NEW SEEDLING GLADIOLI (Seedlings):—

Adolphe Brongniart	Noémie
Abus	Princesse Marie de Cambridge
Apelles	Rev. M. J. Berkeley
Bernard Palissy	Sir W. Hooker
Félicien David	Thomas Moore
Lady Franklin	Joseph Paxton

The CATALOGUE containing the descriptions and the prices may be obtained from M. V[illegible], or from Messrs. R. SILBERRAD & SONS, 5, Harp Lane, Great Tower Street, London, E.C.

New Caladiums.

CHARLES VERDIER (late Victor VERDIER and Ch. VERDIER), NURSERYMAN, 12, Rue Dunoral (late Rue du Marché aux Chevaux, 2), Paris, offers for Sale the following magnificent SEEDLING CALADIUMS, raised by M. Bleu.

Baron [illegible]	[illegible] Moreau	[illegible]
[illegible]	[illegible]	[illegible]
Charles Verdier	[illegible]	[illegible]

A CATALOGUE containing Descriptions and Prices may be obtained of M. V[illegible], or of R. SILBERRAD & SON, 5, Harp Lane, Great Tower Street, London, E.C.

Dickson's "First and Best" Early Pea.

FRANCIS & ARTHUR DICKSON & SONS are [illegible] this PEA has again throughout a season universally [illegible] by hundreds of the first Gardeners in Britain, and other competent Judges (confirmed also by their [illegible] to be the best and earliest Early Pea of the day), to be the very best and Early Pea ever offered for general good qualities, viz., earliness, productiveness, and [illegible]. "First Crop and Best" [illegible] be a day or so earlier [illegible] admits. New Seed [illegible] demand.

Price [illegible] per bushel [illegible] on application.

The Old Established [illegible], 106, Eastgate Street, Chester.

To Farmers, Gardeners, and Others.

EXCELLENT CABBAGE PLANTS (Stocks not to be surpassed), can be supplied in any quantity as follows:—

ROBINSON'S CHAMPION (have been grown 80 lb. each), 2s. 6d. per 1000.

DRUMHEAD, 2s. 6d. per 1000.

ENFIELD MARKET, a superior stock, 2s. 6d. per 1000.

RED DUTCH, a superior stock, 2s. 6d. per 1000.

Terms cash.

FREDK. GILL, Seed Merchant and Grower, [illegible], Bedfordshire.

New Hybrid Wheat.

RICHARD'S WHEAT was obtained by crossing SHIRREFF'S BEARDED WHITE with Golden Drop, TALAVERA [illegible], neither wide nor close set, with beautiful [illegible], and supported on long stout straw. The Grain, [illegible] resembles Talavera, and in [illegible]. This Hybrid combines the [illegible] Red Wheats with [illegible] of the finest [illegible] quality.

[illegible]

SHIRREFF'S BEARDED WHITE, of the Finest quality, at market price.

Destroy your Insect Pests.

PRESERVE YOUR PLANTS and TREES.

YOU MAY EASILY DESTROY ALL PLANT PESTS,

RED SPIDER	GREEN AND BLACK	ANTS
MEALY BUG	FLY	SCALE
THRIP	AMERICAN BLIGHT	MILDEW,

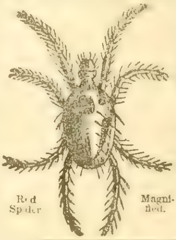
Without injury to the most delicate Plant or Tree, by using

FOWLER'S GARDENERS' INSECTICIDE, pronounced by all who have used it to be far superior to any other [illegible]. One trial will prove its efficacy. Testimonials forwarded [illegible] 1s. 6d., 3s. 6d., and 10s. per Tin. GEO. & THOMAS FOWLER, North Street, Brighton; and of HOOPER & Co., Covent Garden Market, W.C.

GENUINE TOBACCO PAPER for Fumigating, in 2lb. and 4lb. packets. Price per cwt., 74s. net cash. Address WILLIAM RUSHFORTH, 44, Vicar Lane, Leeds.

TOBACCO TISSUE, for Fumigating Greenhouses.—This article is made from Tobacco rolled into Sheets, without the addition of Paper. It will be found very superior to the article generally used, will burn without the assistance of blowing, and not injure the most tender Plants, as borne out by numerous Testimonials.

Sold in 1 lb. packets and upwards, price 3s. 6d. per lb., carriage free, by Messrs. ROBERTS & SON, Tobacco Manufacturers, 51, St. John Street, Clerkenwell, E.C., and by all Seedsmen and Nurserymen.



GISHURST COMPOUND, whether used against Insects and Mildew, on Growing Plants, or as Winter Dressing on Trees at rest, should be dissolved 48 hours before use. This gets rid of smell, and if the Solution be decanted, prevents any staining of foliage. A strength of from 1 to 2 oz. to the gallon of water is recommended for growing Plants; one from 4 to 16 oz. for Trees at rest.

Sold Retail by Nurserymen and Seedsmen, in boxes, 1s. 3s., and 10s. 6d. each.

Wholesale by

PRICE'S PATENT CANDLE COMPANY (LIMITED).

HOT-WATER APPARATUS, of every description, fixed complete in any part of the country, or the materials, viz., Boilers, Pipes, &c., delivered to any Station.

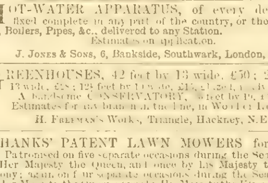
Estimates on application.

J. JONES & SONS, 6, Bankside, Southwark, London, S.E.

GREENHOUSES, 42 feet by 13 wide, £50; 21 feet by 13 wide, £28; 12 feet by 11 wide, £15, glazed, [illegible] for fixing. A handsome CONSERVATORY, [illegible] by [illegible]. Estimates for any building in the line, in Wood or Iron, at

H. FREEMAN'S Works, Triangle, Hackney, N.E.

SHANKS' PATENT LAWN MOWERS for 1866.—Patronised on five separate occasions during the Season of 1864 by Her Majesty the Queen, and once by his Majesty the King of Saxony; again on four separate occasions during the Season of 1865 by Her Majesty the Queen; once by His Majesty the King of Holland; and once by His Majesty the King of Prussia.



HAND MACHINE.

These are the only Lawn Mowers that will work for years without requiring repair.

These are the only Lawn Mowers that will Mow properly when the Grass is Wet.

These are the only Lawn Mowers that are in use in ALL the Royal Gardens.

Every Machine warranted, and if not approved of can be at once returned. Illustrated Price Lists sent free on application.

ALEX. SHANKS & SON, Dens Iron Works, Arbroath; and 27, Leadenhall Street, London, E.C.

7, Leadenhall Street is the only place in London where intending purchasers of Lawn Mowers can choose from a stock of from 150 to 200 Machines, all sizes kept there, whether for Horse, Pony, or Hand Power.

GREEN'S IMPROVED NEW PATENT GARDEN ROLLER.

The above Roller possesses many advantages over all others. They are made in two parts, and are free to revolve on the axle, affording greater facilities for turning, and the outer edges are rounded off or turned inwards, thus avoiding the unsightly marks left by other Rollers.

Diameter, 30 inches;	Length 32 inches,	£7	10	0
„ 24 „	„ 26 „	4	10	0
„ 20 „	„ 22 „	3	10	0
„ 16 „	„ 17 „	2	15	0

Prices for Rollers fitted with Shafts suitable for Pony or Horse Power, free on application.

Delivered carriage paid to all the principal Railway Stations and Shipping Ports in England.

THOMAS GREEN & SON, Smithfield Iron Works, Leeds; 54 and 55, Blackfriars Road, London, S.; and 19, Eden Quay, Dublin.

N.B. All Orders executed on the day they are received.

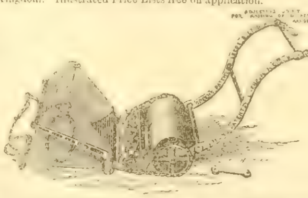
PRIZE MEDALS AWARDED to GREEN'S PATENT LAWN MOWERS.

INTERNATIONAL EXHIBITION, LONDON, 1862.

INTERNATIONAL EXHIBITION, DUBLIN, 1865.

The above Lawn Mowers have proved to be the best, and have carried off every Prize that has been given in all cases of Competition.

Sold by all respectable Ironmongers, Seedsmen, &c., in the Kingdom. Illustrated Price Lists free on application.



AGRICULTURAL and HORTICULTURAL IMPLEMENTS and MACHINES of every description.

IMPROVED IRON STABLE FITTINGS.

HURDLES and CONTINUOUS IRON and WIRE FENCING.

Palisading Entrance and Field Gates. Plain and Galvanised Wire Netting.

GREEN'S PATENT LAWN MOWERS and GARDEN ROLLERS.

Garden Engines, Syringes, Water Barrows, Ornamental Garden Seats, Chairs, Tables, Iron Fountains, Vases, &c.

IRON and BRASS BEDSTEADS, in great variety.

Washing, Wringing, and Mangling Machines.

IMPROVED SAUSAGE MACHINES and FILLERS.

Separate Illustrated Price Lists free on application.

THOMAS GREEN & SON, Smithfield Iron Works, Leeds.

Show Rooms opposite the Smithfield Cattle Market, North Street, Leeds; 54 and 55, Blackfriars Road, London, S.; and 19, Eden Quay, Dublin.

HOT WATER PIPES and FITTINGS of the best description supplied by

BURY & POLLARD, 17, New Park Street, Southwark, London, S.E.

BURY AND POLLARD'S CONICAL BOILERS for HEATING by HOT WATER fixed at Seats of Duke of Newcastle, Lord Belper, &c., at Viscount Sydney's replaced, after being 20 years in constant use. Apply at

17, New Park Street, Southwark, London, S.E.

Heating by Hot Water.

W. J. HOLLANDS, IRON MERCHANT, 31, Bankside, London, S.E.

HOT WATER PIPES, from Stock, per yard:—2-inch, 1s. 2d., 3-inch, 1s. 10d.; and 4-inch, 2s. 4d. BENDS, from Stock, 1s. 6d., 2s. 6d., and 3s. each. THROTTLE VALVES, 10s., 13s., and 14s. each. Other Connexions at equally low prices, and all goods of first-class manufacture. Estimates given, and orders by post punctually attended to the same day.

Heating by Hot Water.

HOT-WATER PIPES, at Wholesale Prices, with Elbows, Syphons, Tee Pipes, and every other connection; Wrought and Cast-Iron Boilers, Saddle, Conical, Cylinder, TUBULAR, and Elliptic, from 24s. each. Improved Boilers and Iron Stands to use without brickwork, 60s. each. Valves from 10s 6d. each. Patent Valves, Improved Furnace Doors, Furnace Bars, Supply Cisterns, and Castings of every description in stock, at

Mr. LYNCH WHITE'S Iron Wharf, Upper Ground Street, Blackfriars Bridge, London, S. Price List on application.

The Only Stove without a Flue.

NASH AND JOYCE'S PATENT, for AIRING, DRYING, and WARMING HALLS, SHOPS, ROOMS, &c., a new especial Stove for Conservatories, Greenhouses, Fruit-Ripening, &c.: to Burn without re-lighting all winter by filling with fuel every 12 hours. Temperature, any degree required, without varying. Price from 12s. 6d. to 6 guineas.

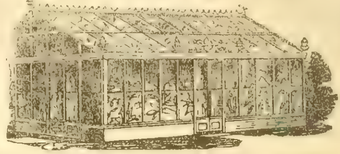
MINCING and SAUSAGE FILLING and MASHCATING MACHINES of the best makers, 10s. 6d.

The COTTAGE KNIFE CLEANER is the only rapid Cleaner and Polisher of Knives at a moderate price. 3s. 6d. to 10s. 6d. Prospectus post paid.

CHEAP FIRES.—The Radiating Fire Balls save half the usual consumption of fuel. One Shilling packet of Four, red hot in the fire every day, lasts all Winter.

S. NASH, Ironmonger, 253, Oxford Street, W.C.; and Stove Depot, 119, Newgate Street, London, E.C.

JAMES WATTS AND CO., HOTHOUSE BUILDERS and HOT-WATER APPARATUS MANUFACTURERS, 53, Old Kent Road, London, S.E.



200 CUCUMBER and MELON BOXES and LIGHTS, all sizes, Glazed and Painted complete, ready for immediate use, [illegible] sent to all parts of the Kingdom.

Strong ZINC HAND GLASSES, all sizes.

References to the Nobility, Gentry, and Trade in most of the Counties in England.

CRANSTON'S PATENT BUILDINGS for HORTICULTURE.

"Dry Glazing without Putty."

"Glass without Laps."

"Ventilation without Moving Lights."

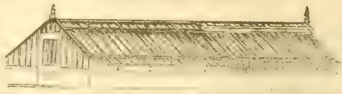
Highly Commended by the Royal Horticultural Society, South Kensington.

Plans and Estimates free on application. Descriptive Book fully illustrated, post free for 20 stamps, from the Author and Patentee, JAMES CRANSTON, Architect, Birmingham.

Works: Highgate Street, Birmingham.

HENRY J. GROWTAGE, Manager, 1, Temple Row West, Birmingham.

Midland Steam Power Horticultural and Hot Water Works, Loughborough.



T. G. MESSENGER, Midland Steam Power Horticultural Works, Loughborough, Hot-Water Apparatus and Valve Manufacturer.

Honourable Mention awarded at the International Exhibition, 1862, and at the Dublin Exhibition, 1865; also a First-class Certificate by the Royal Horticultural Society.

T. G. MESSENGER, Patentee of many important improvements in Buildings and Implements connected with Horticulture, and which meet with unqualified approbation, is prepared to give reference to hundreds of works entrusted to him, not preeminently answering the purpose for which they were constructed.

Any House Glazed single or double, with or without putty.

The mode adopted by T. G. MESSENGER for Heating and Ventilating Forcing Houses is particularly successful.

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FOR SALE, this HANDSOME CONSERVATORY, at present standing in the WORCESTER PLEASURE GROUNDS. It has not been erected more than three years, and is thoroughly sound and well ventilated with CRANSTON'S PATENT SLIDES. It is to be Disposed of on very reasonable terms, as the Grounds have been Sold for Building purposes.

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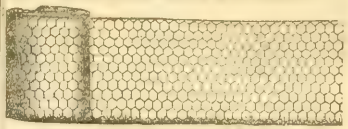

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PRICES PER LINEAL YARD 24 INCHES HIGH.

Size of Mesh	Mostly used for	Light. Jap Gal	Medium. Jap Gal	Strong. Jap Gal	Extra Strong. Jap Gal
in.		s. d. s. d.	s. d. s. d.	s. d. s. d.	s. d. s. d.
2½	Dogs or Poultry	0 2½ 0 3½	0 3½ 0 4½	0 5½ 0 6½	0 6½ 0 8½
2	Poultry	0 3½ 0 4½	0 4½ 0 5½	0 7½ 0 9½	0 9½ 0 11½
1½	Small Rabbits, Hares, &c.	0 4½ 0 5½	0 5½ 0 6½	0 8½ 0 10½	0 10½ 0 12½
1¼	Small Rabbits	0 5½ 0 6½	0 6½ 0 7½	0 9½ 0 11½	0 11½ 0 13½
1	Pheasantries, Small Birds, &c.	0 8½ 0 10½	0 9½ 0 11½	1 0½ 1 2½	1 1½ 1 3½
¾	Aviaries, Window Guards, &c.	0 11½ 1 1½	1 1½ 1 4½	1 7½ 1 10½	1 9½ 2 0½
½	Aviaries, Window Guards, &c.	1 7½ 1 10½	1 9½ 2 0½	2 0½ 2 3½	2 3½ 2 6½
¼	Aviaries, &c.	2 3½ 2 6½	2 5½ 2 8½	.. ..	.. ..

Open Lined for Yards or upwards delivered free to all Railway Stations and Shipping Ports in England.

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COTTAM'S HURDLES are made in the best manner of superior Wrought Iron. SHEEP HURDLES, from 3s. 6d. each; CATTLE HURDLES, 5s. 6d. each; CASTING SHEETS, from 8l. per ton; FIELD GATES, from 2s. 6d. each. Send for Price List on application.

ENTRANCE GATES, RAILING, and IRON WORK of every description. Designs and Estimates free.

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CHEAPEST and BEST IRON HURDLES, FENCING, Wire Netting, Cattle Cribs, Oat Bruisers, Bean Mills, Steam Engines, Lawn Mowers, Corn Crushers, Chaff Cutters, Horse Rakes, Archimedean Pumps, Iron Sheds, and Stable Fittings of all kinds for the Country.

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AGRICULTURAL IMPLEMENTS.—Steam Engines, Threshing and Dressing Machines, Waggons and Carts, Cultivators, Ploughs, Harrows, Chaff Cutters, Grinding Mills, Lawn Mowers, Garden Rollers, Water Barrows, and Horticultural Tools of every description, Corn Bins, Wire Netting, Chimes, Forges, &c.

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EXTRAORDINARY ACHIEVEMENTS OF

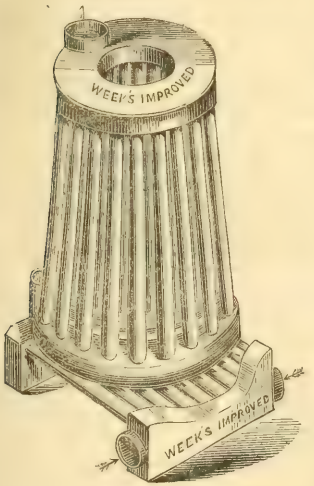
WEEKS'S ONE-BOILER SYSTEM.

THE DISTINGUISHED CAPABILITIES OF THIS LONG-TRIED SYSTEM THROUGHOUT THE UNITED KINGDOM AND THE CONTINENT, ENABLE IT NOW TO STAND FORWARD AS THE CHAMPION AND MOST SUCCESSFUL OF ALL SYSTEMS OF HEATING BY HOT-WATER.

THE FOLLOWING INTERESTING STATISTICS ARE CONCLUSIVE EVIDENCE THAT

WEEKS'S IMPROVED UPRIGHT TUBULAR BOILERS

ARE PERFORMING THE MOST GIGANTIC OPERATIONS ON RECORD, AND BANISH ALL DOUBTS AS TO WHOSE IS THE MOST POWERFUL BOILER EXTANT.



No other Boiler can have any pretensions to such an exposition of achievements as the following :—

Upwards of FOUR MILES of PIPING, fixed on WEEKS'S ONE-BOILER SYSTEM, are employed to HEAT the various COMPARTMENTS of the ROYAL HORTICULTURAL SOCIETY'S GARDENS, KENSINGTON.

TOTAL LENGTH OF PIPING IN MILES AND FEET :—

	Miles.	Feet.
ROYAL BOTANIC SOCIETY	1	700
ROYAL HORTICULTURAL SOCIETY'S GARDENS	1	900
TEDWORTH, WILTS	..	5100
HIS GRACE THE DUKE OF LEEDS	..	5000
MR WOODROOFFE'S, HARROW ROAD	..	4300
M. LOUIS VAN HOUTTE, BELGIUM	2	2100
MESSRS. E. G. HENDERSON, WELLINGTON ROAD	..	3800
MESSRS. A. HENDERSON, PINE-APPLE PLACE	..	3600
BOTANIC GARDENS, LIVERPOOL	..	3500
ZOOLOGICAL SOCIETY, LONDON	..	4500
WEEKS'S SHOW ESTABLISHMENT, CHELSEA	1	4000
MESSRS. SMITHS', DULWICH	1	3000
WHITECHAPEL UNION	1	1400
BOTANIC GARDENS, COLOGNE	..	5000
J. C. PICKERSGILL, ESQ., HOOLEY, CROYDON	1	200

And many others too numerous for publication.

AMONG ITS MANY ADVANTAGES WE QUOTE THE FOLLOWING :

1st. Being of Cast Iron it is rendered infinitely more desirable than if made of Wrought Iron.

2d. The Heating surface exposed to the action of the fire surpasses all other Tubular Boilers; hence its power for Heating Miles of Piping in one Apparatus.

3d. By this great Heating surface a vast saving of Fuel is effected.

4th. All Gardeners know that by means of Weeks's Tubular Boiler night stokering is abolished.

Illustrated Pamphlets and Estimates for Building and Heating, Free, on application to

JOHN WEEKS AND COMPANY, HORTICULTURAL BUILDERS and HOT-WATER APPARATUS MANUFACTURERS,
KING'S ROAD, CHELSEA, LONDON, S.W.

CHARLES NOBLE has a large quantity to offer of the undermentioned, by the dozen, 100, 1000, or 10,000 :—
Dwarf ROSES of all the finest kinds, large bushes, 2 to 3 feet high, and nearly as far through.
SPANISH CHESTNUTS, very fine, 1-year. } Sample and
THORN, very fine, 1-year. } price if
TURKEY OAK, very fine, 1-year. } required.
MANETTI ROSE STOCKS, very fine, 1-year.
DECTZIA CRENATA flore-pleno, very fine, 1-year.

STRAWBERRIES, 2s. 6d. per 100, or 21s. per 1000 :—

British Queen	Fragmore Late Pine	Oscar
Empress Eugenie	Jucunda	Wonderful
Sir C. Napier	Marguerite	Prince Arthur.

Sunningdale Nursery, Bagshot, Surrey.

Fruit Trees, Roses, Evergreens, &c.

W. KNIGHT begs to inform intending Planters that he has many Thousands of the above, with every other ORNAMENTAL TREE and SHRUB, of the finest possible condition, at reasonable prices. An inspection is respectfully invited. DESCRIPTIVE PRICED CATALOGUES free.
The Nursery is within two minutes' walk of the Hailsham Station (South Coast Railway).
Floral Nursery, Hailsham, Sussex.

FRUIT TREES and FRUIT-TREE STOCKS.—DWARF MAIDEN PEACHES, NECTARINES, and APRICOTS, of all leading kinds, new and old, worked on strong stocks, 30s. per 100; DWARF MAIDEN PLUMS and CHERRIES, best sorts, 45s. per 100; extra fine DWARF-TRAINED of the above, 21s. per dozen, £9 10s. per 100. CATALOGUES free on application, also samples.
MUSSEL PLUM STOCKS, 40s.; CRAB, very clean, 32s. 6d.; BROMPTON, 50s.; COMMONER, 50s.; and CHERRY, 32s. 6d. per 1000. Reference from intending purchasers.
GEORGE GRAY & SON, Nurserymen, Brox, near Chertsey, Surrey.

To Gentlemen engaged in Planting.

TOOLE AND CO. beg to call attention to their very extensive Stock of
EVERGREEN and FLOWERING SHRUBS,
HARDY ORNAMENTAL TREES,
FRUIT TREES, FOREST TREES, and CONIFERÆ,
Grown at their Nurseries, Cullenswood, Ranelagh Road, Dublin; and Wilton Brae, and respectfully solicit an inspection of the same.
CATALOGUES of the above forwarded post free on application. The usual discount to the Trade.
Westmoreland Buildings, Dublin

CUTTINGS.—The following surplus Cuttings, from a private Garden, to be Sold as long as they last, at the prices affixed. Stamps to accompany orders for post.
2s. per dozen.—QUEEN of QUEENS (true), PAUL L'ABBÉ, GOLDEN CHAIN, GOLDEN EDGED IVY LEAF, ROSE RENDATLER, LADY PLYMOUTH.
1s. per dozen:—CHRISTINE, MAD. VAUCHER, BIJOU, CLOTH of GOLD, COTTAGE MAID. Address to
Mr. STANTON, Gardener, Blagdon's Cottages, Southgate, N.

To Gentlemen, Nurserymen, Builders, and Others engaged in Planting, &c.

ROBERT PARKER begs to offer the following HARDY SHRUBS and TREES :—

Arborvitæ, American	Pinus austriaca
,, Chinese	,, excelsa
,, Siberian	Privet, Evergreen
Arbutus unedo	Rhododendron Pontieum, and named hybrids set for flower
Aucubas of sorts	Spruce Fir
Berberis Aquifolium	Thuja lutea
,, Darwini	,, Lobbii
,, fascicularis hybrida	Thujopsis borealis
Box, Green and Variegated	Tritoma grandis
Cupressus Lawsoniana	Yucca gloriosa
Gybertium argenteum	,, recurvifolia
Laurels, Green	,, of sorts
,, Portugal	Wellingtonia gigantea
Laurustinus, set for flower	&c. &c.

Plants of the whole of the above can be supplied in large or small quantities, and of various sizes, from 1 to 6 feet high. All are handsome fine well rooted plants, and have been made fit for potting or planting in the open ground. Also all have been removed within the last two years. Purchasers of large quantities will be treated liberally.
Exotic Nurseries, Tooting, Surrey, S.

Northampton Nurseries.

JOHN PERKINS, SENIOR, begs to call the attention of Noblemen, Gentlemen, and others engaged in Planting, to his Large Stock of the following :—2,000,000 BLACK THORNS, for Covert Planting, 1½ to 2, 2½ to 3 feet; 2,000,000 LARCH FIRS, 2 to 4, 4 to 6 feet; 1,000,000 SPRUCE FIRS, 1 to 2, 2 to 3, 3 to 4 feet; 2,000,000 WHITE THORN QUICK, 2 and 3 Years' Transplanted. Also large quantities of

Scotch Firs, 2 to 3 feet	Hornbeam, 3 to 4 feet
Pinus austriaca, 2 to 3 feet	Oaks, English, 3 to 4 feet
Berberis Aquifolium, 1½ to 2 feet	Ditto, Turkey, 4 to 6 feet
Ditto dulcis, 2 to 3 feet	Elms, English, 6 to 8, 8 to 10 ft
Green Box, 1½ to 2 feet	Do., Huntingdon, 6 to 8, 8 to 10ft.
Laurels, 2 to 3 feet	Chestnuts, Spanish, 1½ to 2 feet
Portugal Laurels, 1½ to 2 feet	Ditto Horse, 4 to 6, 6 to 8 ft.
Ditto ditto 2 to 3 feet	Sycamore, 3 to 4 feet
Evergreen Privets, 2 to 3 feet	Beech, 2 to 4 feet
Birch, 3 to 4 feet	Cedrus Deodara, 5 to 6, 6 to 8 ft.

J. P.'s stock of all kinds of Fruit, Forest, Ornamental Trees, &c., is very extensive, and this season remarkably fine, and in excellent condition for removal, having been frequently transplanted.
J. P. having such an immense quantity of Black Thorns, Larch, and Spruce Firs, will be pleased to make a special offer where large quantities are required. An inspection of the above is respectfully solicited.
DESCRIPTIVE PRICED CATALOGUES sent post free on application to 52, Market Square, Northampton.

To the Trade.

FOR SALE, in consequence of the expiration of a Lease, a large quantity of STOOLS, surrounded with five layers, of Mulberries, Limes, Planes, Magnolias, Azaleas, Lilacs, Aucubas, &c.; also quantities of various sized Limes, Mulberries, Poplars, Laburnums, Planes, Scarlet Thorns, Lilacs, Aucubas, Euonymus, Magnolias, White Rhododendron, Azaleas, Privet, Figs, Grape Vines, fine standard and trained Fruit Trees of all sorts, 7½ yards of clipped Beech hedge, 6 feet high 3 feet wide, and other general Nursery Stock, which has been and selected from daily at
J. FRYER'S, Clarendon Nurseries, Camberwell New Road, S.

CHEAP FERNS, &c., for FERN CASES, in fine Plants.
ALSOPHILA AUSTRALIS, 12s. per dozen, £4 per 100.
CYATHEA EXCELSA, 15s. per dozen.
ADIANTUM CUNEATUM, 6s. per dozen, £2 per 100.
BAMBUSA VARIEGATA, 8s. per dozen, £2 10s. per 100.
CHEILANTHES FULVERACEA, 30s. per dozen.
,, HIRTA, 8s. per dozen, £2 10s. per 100.
CYRTOMIUM FORTUNEI, 12s. per dozen, £4 per 100.
DAVALLIA TENUIFOLIA STRICTA, 12s. per dozen, £4 per 100.
DORYOPTERIS PALMATA, 10s. per dozen.
GYMNOGRAMMA GRACILIS, hybrids, 8s. per dozen, £2 p. 100.
,, LAUCHEANA, 8s. per dozen, £2 10s. per 100.
,, STELLENERI, 10s. per dozen.
,, WETENHALLIANA, 8s. per dozen, £2 p. 100.
LATANIA BORBONÆA, 15s. per dozen, £5 per 100.
PTERIS ARGYRÆA, 8s. per dozen, £2 10s. per 100.
,, TRICOLOR, 12s. per dozen.
BLECHNUM LATIFOLIUM, a fine species, the young fronds of a carmine colour, 12s. per dozen, £3 per 100.
The steamer Flechia will start from Ghent to London in about a week; Carriage, 5s. for each case or basket.
ADOLPH STELZNER, Nurseryman, Ghent, Belgium.

Orchis maculata superba.

OSBORN AND SONS are now taking orders for this beautiful hardy TERRESTRIAL ORCHID, for which a First-class Certificate was awarded on the 19th of June by the Floral Committee of the Royal Horticultural Society. It is of vigorous habit, 1½ to 2 feet high, has leaves transversely marked with very dark stripes, and a dense spike of spotted rose-coloured flowers 6 inches long. Price 5s. each, to be delivered in autumn.
Fulham Nursery, London, S.W.

THE QUEEN, without any exception the best WHITE RHODODENDRON yet raised.—Robust grower, deep green foliage, late and free flowering, trusses large, full, compact, and semi-circular, footstalk short and stiff, colour white, suffused with soft blush mauve, changing to the purest white, clear alabaster or wax-like, of unequalled shape and substance, reminding one of the petals of the Water Lily. It remains in bloom longer than most other Rhododendrons, a peculiarity probably accounted for by its hitherto refusing to produce seed, an advantage all Rhododendron growers well understand. All who visited the International Exhibition will remember the transcendent superiority of The Queen over every other white Rhododendron exhibited. It is proposed that The Queen should assume her throne in 1867. All and everybody who wish to enjoy her regal sway should apply at once, as all orders will be executed in rotation. The price will be 31s. 6d. each, and the Trade will have four plants given for three ordered. It need excite no surprise that its sole possession by the Advertiser should have called forth the envious jealousy of certain HONOURABLE MEN. Hence a story industriously circulated in the Trade that THE QUEEN is not a new one but an old kind, shown under an assumed name. The Advertiser would be glad to be informed WHEN, OR WHERE, AND UNDER WHAT NAME THIS RHODODENDRON has been seen, and in whose possession it is to be found. The whole undivided stock is in the hands of CHARLES NOBLE, Bagshot, Surrey.

New Seeds for Autumn Sowing.

PETER LAWSON AND SON,
THE QUEEN'S SEEDSMEN,
London and Edinburgh,
Can supply NEW SEEDS of all kinds for AUTUMN SOWING, selected with the greatest care, and harvested in fine condition.
28, King Street, Cheapside, E.C.

PETER LAWSON AND SON,
THE QUEEN'S SEEDSMEN,
London and Edinburgh.
NEW SEEDS FOR AUTUMN SOWING.
NATURAL GRASS SEEDS of all sorts, for Laying Down Permanent Pasture, Lawns, Bowling, Croquet Grounds, &c.
ITALIAN RYE-GRASS and TRIFOLIUM INCARNATUM—Early and Late varieties.
WINTER TARES, RYE, OATS, and BARLEY.
Also the NEW FORAGE PLANTS, KIDNEY VETCH, and SCHRADER'S BROME GRASS.
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Amaryllis.

JAMES GARAWAY AND CO., Durdham Down Nurseries, Bristol, offer, from their unequalled stock of the above-named favourite flower, strong Bulbs of unnamed Seedlings and others that have flowered with them during the two last seasons, at 5s., 7s. 6d., and 10s. 6d. each, or 50s., 80s., and 105s. per dozen.
JAMES GARAWAY & CO.'S GENERAL BULB CATALOGUE for the coming season is in the Press, and when ready will be forwarded post free on application.
JAMES GARAWAY & CO., Durdham Down Nurseries, Bristol.

GEORGE DAVIES begs to inform the Nobility and Gentry that his very SELECT and DESCRIPTIVE CATALOGUE of HYACINTHS, TULIPS, NARCISSUS, CROCUS, &c., for the present season is now ready, and may be had post free on application.
Any Ladies or Gentlemen requiring HYACINTHS, &c., for competition, can be supplied with (specially selected) Bulbs suitable for that purpose at moderate prices.
G. D. having received his first importations of Hyacinths, &c., has much pleasure in stating that they are unusually fine this season, and begs to assure those who may favour him with their commands, none but first quality of Bulbs will be sent. Equal if not superior to any house in the Trade.
G. D. has much pleasure in informing his Friends and the Public generally, that he obtained the First Prize for the best 24 Hyacinths (Nurseryman's Collections) at St. George's Hall, Liverpool, in March last, in competition with Messrs. Wm. Cutbush & Son, for £10; also the Bronze Medal at the Royal Botanic Society, London.
My friend Mr. Cutbush having vauntingly Challenged me last year, I now venture to Challenge him to Exhibit 24 Hyacinths at St. George's Hall, Liverpool, next March, for £5.
Green Lane Nurseries, Old Swan, near Liverpool.

Dutch Flower Roots.

FRANCIS & ARTHUR DICKSON & SONS have received, from the best Growers in Holland, a very large Importation of the above, and have the satisfaction to say that the BULBS are unusually large, sound, and well ripened, and for which early orders are requested to ensure the best Roots.
Flower Roots of £2 value will be delivered free of carriage at the principal Railway Stations and Shipping Ports throughout the country.
DESCRIPTIVE PRICED CATALOGUE and all particulars free by post on application.
The Old Established Seed Warehouse, 106, Eastgate Street, Chester.

Dutch Flower Roots.

JOHN AND CHARLES LEE, SEEDSMEN to the QUEEN, have received their usual Importation of DUTCH BULBS, for which they are now executing orders. CATALOGUES post free on application.
Royal Vineyard Nursery and Seed Establishment, Hammersmith, London, W.

THOMAS SAMPSON (late DRUMMOND & CO.), has now to offer an unrivalled Collection of DUTCH BULBS and other FLOWERING ROOTS, of the very best quality, at the lowest prices. CATALOGUES of which can be obtained free on application. The season for planting is now at hand, and intending purchasers are invited to an inspection of the select Stock the Nurseries contain, consisting of Ornamental Coniferous Trees, Fruit Trees, Evergreen and Deciduous Trees, Forest Trees, Roses, Flowers of every de-cription, and every requisite for the Farm and Garden. All Business Letters to be addressed to Mr. PETER DRUMMOND, Manager.
The Nurseries, Preston Road, Yeovil, Somersetshire.

Hyacinths for Exhibition.

SUTTON AND SONS beg to offer—

100 in 100 very choice sorts		£4	4 0
100 in 50	,,	3	10 0
50 in 50	,,	2	2 0
50 in 25	,,	1	15 0
25 in 25	,,	1	1 0
12 in 12 extra fine choice do.		0	12 0
12 in 12 choice sorts		0	9 0
12 in 12 good sorts		0	6 0

All goods carriage free, except small parcels.
SUTTON & SONS,
Royal Berkshire Seed Establishment, Reading.

Dutch Flower Roots.

ARCHIBALD HENDERSON begs to announce that he has received from Holland a large Consignment of BULBOUS ROOTS in fine condition.
DESCRIPTIVE and PRICED CATALOGUES are now ready, containing practical directions for the successful cultivation of each section of Bulbs, in Pots, Glasses, and the Flower Garden.
Also a DESCRIPTIVE PRICED LIST of all the best GRAPE VINES in cultivation. Catalogues may be had gratis and post free upon application.
Sion Nursery, Thornton Heath, Surrey, and at the East Surrey Seed Warehouse, College Grounds, North End, Croydon.

New Catalogue of Plants, Dutch Bulbs, &c.

ROBERT PARKER begs to announce that his NEW CATALOGUE, containing Select Descriptive and Priced Lists of New, Rare, and beautiful Greenhouse, Hardy and Stove Plants, Hardy Ferns, Fruit Trees, Grape Vines, Roses, Rhododendrons, Sweet Violets, &c., Amaryllis, Crocuses, Cyclamens, Gladioli, Hyacinthus, Liliums, Narcissus, Tulips, and other Bulbs, is now published and will be forwarded to applicants.
Exotic Nursery, Tooting, Surrey, S.

PLANTING.

WILLIAM PAUL

(SON and SUCCESSOR to the late A. PAUL),

Begs to call attention to the following ARTICLES, to the CULTURE of which his NURSERIES of FIFTY ACRES are principally devoted. The quality of the Stock is, he believes, equal to any in the Kingdom, and the prices low as possible.

ROSES.

STANDARDS, 15s. per dozen, and upwards		CLIMBERS, 6s. per dozen, and upwards	
DWARFS, 9s.	,, ,,	FORCING, 24s.	,, ,,

First and Second Prizes were awarded to his Collections at the International Horticultural Exhibition, and they have taken Prizes wherever exhibited.

FRUIT TREES.

Standard and Half-Standard Trained PEACHES and NECTARINES, very fine, 7s. 6d. to 10s. 6d. each.
Standard APPLES, PEARS, and PLUMS, 1s. 6d. to 2s. each.
Standard WALNUTS, very fine, 2s. 6d. each.
PYRAMIDAL APPLES, PEARS, CHERRIES, and PLUMS, 1s. 6d. to 2s. 6d. each.
Do. do., Fruiting Trees, 2s. 6d. to 5s. each.

Dwarf APPLES, PEARS, CHERRIES, and PLUMS, 1s. to 1s. 6d. each.
Dwarf-trained PEACHES, NECTARINES, and APRICOTS, 3s. 6d. to 5s. each.
Dwarf-trained APPLES, PEARS, CHERRIES, and PLUMS, 3s. 6d. each.
FILBERTS, of sorts, 4s. to 9s. per dozen.
GOOSEBERRIES and CURRANTS, 3s. to 4s. per dozen.

These are in fine health, and may be relied on as correct to name.

GRAPE VINES.

PLANTING CANES, all the best sorts, 2s. 6d. each, and upwards.
FRUITING CANES, 7s. 6d. each, and upwards.
Between 1000 and 2000 splendid Plants of these are now ready for delivery.

HARDY PICTORIAL TREES for the Decoration of Gardens, Parks, and Pleasure Grounds.—His Collection of these was the only one shown at the late International Horticultural Exhibition, and was universally admired. Collections from 18s. to 42s. per dozen, according to size and rarity.
EVERGREENS and HARDY FLOWERING TREES and SHRUBS.—1000 species and varieties, including the New AUCUBAS, the best and most popular kinds, of various sizes, by the dozen, hundred, or thousand.
WEEPING TREES and CLIMBING PLANTS in great variety.
ZONAL and NOSEGAY PELARGONIUMS.—The original Collection of Beaton's Hybrids, 9s. per dozen; his New Set of last Spring, 1s. 6d. to 3s. 6d. each.

For description and details of the above, see PRICED CATALOGUES, free by post on application. Inspection of the Stock respectfully invited.
All goods delivered free of carriage to London; if a Ton weight of Trees be ordered at one time they will be laid free of charge in the Trucks at any London Goods Railway Station.

PAUL'S NURSERIES, WALTHAM CROSS, N.

B. S. WILLIAMS,
Victoria and Paradise Nurseries, Holloway, London, N.
CHOICE SEEDS.
PRIMULA (WILLIAMS's superb Strain).—The most noted strain of Primula in existence; same as supplied to nearly all the largest Gardens in England. In sealed packets, at 2s., 3s. 6d., and 2s. 6d. each. None genuine without B. S. WILLIAMS's name and address on the packet.
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The Gardeners' Chronicle.

SATURDAY, OCTOBER 6, 1866.

MEETING FOR THE ENSUING WEEK.

SATURDAY, Oct. 13 { Royal Horticultural (Weekly Show), South Kensington .. .. 2 P.M.

A WRITER of some authority on the theory of colour remarks that "It is in the FLOWER GARDEN that the colourist may revel in the resources of COLOUR, and it is much to be regretted that our public gardens show no signs that their cultivators are acquainted with the laws of contrast of colour." If this is true of public gardens, it is quite as likely to be applicable to private gardening. Indeed there is no occasion to travel far to find numerous instances. Nor in this are gardeners probably behind other people. Incongruity seems to be the natural result of an untutored taste. Take any person, whose acquaintance with art study is slight, into a picture gallery, and he is nearly sure to admire the worst masters. There are exceptions of course, but this is a general rule. It is the same sort of feeling that probably dictates the rude arrangement of flowers that disfigures the foreground of so many of our otherwise show places. It is this that lies at the bottom of so much reaction in gardening, and that has caused a preference for the unpretending style of the cottage border, where the flowers, if wanting in general effect, at all events invite attention to their individual beauty.

A general composition may be too much for a first attempt, but hints from individual parts may serve as hints for the whole, and once a principle in flower bedding is admitted, there is hope that an improvement will follow in due course.

Now, if we are to attempt a grander style of gardening, with massive forms and masses of colour, it should be done well. The higher state of education common among all classes now seems to be making itself felt in gardening as in other things. Beds of brilliant colour no longer please merely on account of their brilliancy. There must be knowledge of colour shown; contrast of colour and harmony, for harmony and contrast are synonymous. At first sight this may seem paradoxical, but there are many pictures, of which no one denies the harmony, wholly made up of contrast of colour. Thus in nature we seldom find any of the primaries—red, blue, and yellow—in juxtaposition. In the rainbow, red, orange, yellow, green, blue, purple, and lake follow each other, with an intermediate colour between each of the primaries. By contrasting red with green, yellow with purple, and blue with orange, the greater brilliancy is obtained, capable only of being heightened by white, and far greater than could be obtained by placing red with yellow, or blue with red. Nor is there anything vulgar, as is generally supposed, in contrast of colour. In a very celebrated picture by RAPHAEL in the gallery at Bologna, the figure of St. Peter is draped entirely in green and red, the colours of the Pelargonium. We are not advocating, however, the neglect of neutral colour, as without it brilliancy becomes monotonous, and loses half its brilliancy from want of contrast of *tone*. In this respect a variety of greys is invaluable, and without reference to form, which is independent of our present contemplation, acts as a ground to the primaries. Indeed, neutral colour is of great consequence, and in gardens is not half enough employed. What painter ever worked only with scarlets, blues, and yellows? And though a garden generally has the advantage of distant sky-line, wood, and Grass, and many other advantages in its accompaniments, the arrangement of the flower beds should not be neglected.

IT is well known that Prof. GASPARRINI has for some years had his attention drawn to the subject of CAPRIFICATION, not so much perhaps to the natural process which takes place from the agency of an insect—the wild Figs which abound with the insects being simply hung over the trees of whose produce it is desirable to hasten or perfect the maturity—as to the artificial process of anointing the aperture of the receptacle with oil and other substances. Two or three years ago he published some observations on the subject, and we have now before us a very interesting pamphlet giving a detailed account of a long series of observations, and confirming his earlier notions.

He denied altogether that the application of oil to the mouth of the Fig, or in other words to the little bracts which are placed round the orifice of the receptacle, could operate as a ferment on the cellular tissue; but he was rather inclined to regard its agency as something like that of pollen on the stigma, in which case the softening and subsequent death of the stigmatic tissue, consequent on the contact of the pollen, precedes the swelling of the ovary.

He found that many substances have the same effect on the receptacle as Olive-oil. Oil of Almonds, train oil, oil of Walnuts, castor and Linseed, cod-liver oil, lard, and butter had the same effect, hastening the maturity of the fruit from eight to ten days. Milk of Euphorbia Lathyris acted more or less in the same way. Vinegar and turpentine had no effect. The above-mentioned substances gave no result when applied to the surface of the fruit.

In the second course of experiments many other substances were tried. Oil was applied to the leaves, without any effect on the fruit, but the leaves themselves, probably from the blocking up of the stomates, died in the course of a few days. Goat's milk and turpentine produced no effect, and the same was the case with iodine and solution of potash. Alcohol had no effect, probably on account of its being so volatile: in a second set of experiments, however, a greater or less effect was produced. Hydrochloric acid seemed to act most energetically. Figs plucked from the tree swelled to double the size in four days.

Sulphuric acid, lowered with different quantities of water, had also a very marked effect, and the fruit was more juicy than that ripened naturally. Tartaric acid, collodion, petroleum, benzoic acid, yeast, pepsine, gallic, acetic, and oxalic acids, and acetate of iron hastened more or less the maturity of the Figs. Strange to say, arsenic acid caused in seven days the maturation of two fruits out of three, and caustic ammonia one out of the same number. Sublimated sulphur by itself seemed inert, but when it was mixed with glycerine, which is inert by itself, after ten days, out of four Figs one was ripe and two nearly so. In some cases, however, as with formic acid, but more especially carbolic acid, the fruit became brown and produced different kinds of mould. The latter of these substances is a known antagonist to putrefaction, and possibly to other chemical changes on which the ripening of the fruit depends. Sulphate of iron, sulphate of potash, chloride of potassium, iodide of potassium, and a solution of iodine acted but weakly, if at all.

In every case the primary action seemed to be on the bracts which surround the orifice, which soon became tender, changed their colour, and dried up, effects which were not produced by natural substances, and which do not take place in fruit naturally ripened. There was no change where the substances were applied anywhere except at the orifice.

The result of the experiments, however interesting, throws little light upon the cause. A certain analogy exists between the effect of pollen and the substances in question, though the action on the Fig takes place through the cellular tissue of the receptacle, and not through the stigma, but the resemblance is one merely of analogy. When, however, we take into consideration the remarkable effects produced by insects in the formation of galls, we can scarcely be wrong in thinking that the action of these substances is very similar, though it is impossible to say what is the precise action which caused the alteration in the tissues which produces such marked changes in the production of the gall.

In practice there is no doubt that similar operations may be extremely useful even in this country, especially in orchard houses. If fruit in a proper condition is chosen, the ripening may certainly be hastened, but though (it must be confessed after a single experiment) we found this to be the case in judiciously selected fruit, no change whatever took place where the fruit was very far from maturity. *M. J. B.*

—— THE MANCHESTER NATIONAL HORTICULTURAL EXHIBITION is, we learn, to open on Friday, the 7th of June, 1867, and to close on Saturday, the 15th. This period includes the Whitsun week; and being a holiday season throughout the manufacturing districts, the population of which are great pleasure seekers, there seems to be every prospect that the show may be financially successful, the more especially as we are told that a substantial guarantee fund has already been subscribed. We recommend the promoters, if they wish their show to have any influence on the people, to go as far as they safely can in the direction of producing some grand and imposing effect, and not to fritter away their materials by showing in separate tents, such limited displays being of comparatively small interest to sight-seers, who look for something like a *coup d'œil*. The recent Nottingham Show, for example, was a monster meeting, so far as regards the quantity of subjects shown, but being distributed through some ten or a dozen tents, many of them separated, and all more or less shut off from each other, it was utterly wanting in the feature of grandeur which the materials brought together were capable of yielding.

—— We understand that the TURF used for covering the banks of the International Horticultural Exhibition of last May, is for disposal, and is in capital condition. Amongst those who are now improving their gardens are perhaps some who would like to possess such a relic of the great show. Application should be made to Mr. GIBSON, of Battersea Park.

—— Our readers will have seen from an advertisement which appeared a short time since, that the Council of the Royal Horticultural Society have made arrangements by which the well-known skill and talent of Mr. EYLES in the LAYING-OUT OF GARDENS will be made available to any Fellows of the Society who may desire to have his advice respecting contemplated alterations or improvements in their grounds. Mr. EYLES is so favourably known in the horticultural world, and has so successfully carried out the important works that have hitherto been entrusted to him, and which have given him so much experience in this branch of gardening, that we have no doubt his opinion on matters of this kind will be extensively sought, and highly appreciated. It will be a great boon to the Fellows of the Society at least, to have within their reach so conscientious and trustworthy a referee.

ABOUT POTATOS.

THE immense number of named and unnamed sorts of Potatos with which we are at present encumbered, renders it bewildering to endeavour to select, either from trade catalogues or from other sources, such kinds as are really worth growing. Not many years back one could count on one's fingers nearly all the popular and staple varieties then in cultivation. In this part of the kingdom at least the bulk of the sorts then grown consisted of the old Ashleaf, Walnut-leaf, July, Fortyfold, Lancashire Kidney, Jersey Blue, and a little later the York Regent, together with a few others, but this was prior to the first outbreak of the Potato disease. Out of evil, however, has come good, for unquestionably to the disease may be attributed the number of good new varieties which we now possess. Tired of bewailing their losses, growers thought it wise to attempt the raising of new and improved kinds that should possess a more healthy and vigorous constitution, and greater capacity to resist the attacks of the disease. How far they have succeeded in relation to the freedom from disease may be a matter of opinion; but with reference to vigour, proficacy, and quality, there can be no question that we have now many varieties that in all these respects are vastly superior to those old kinds which they have almost or entirely superseded.

There are few names probably in connection with Potato growing that have become more famous than that of Mr. Paterson, and although his labours in regard to the raising and cultivation of new varieties may not obtain a very warm appreciation in some quarters, yet, speaking for myself, I do most sincerely believe that in the course of time, when those valuable sorts which he has sent out shall become better known, they will be as justly and as deservedly popular as any varieties now in cultivation. Mr. Paterson is not, indeed, the only one whose name is favourably associated with the Potato, for we have Rivers' Royal Ashleaf, Myatt's do., Dawe's Matchless, &c., all splendid varieties.

My object however at present is to allude to what I have been doing for a year or two past in the way of growing and testing some 80 kinds of Potatos, more especially as respects the present season and its results. I grew some 50 sorts last year, mostly in a small way; but having increased that quantity this year, I thought I would give them all as fair a trial as possible. I selected the best soil and situation in my garden for the purpose; and I also got a neighbour, a good practical gardener,

with newly broken up fresh ground, to plant all the varieties I possessed, and others which he had obtained. We started in our trial with about equal quantities and although his soil was of a gravelly character, and mine a deep though not rich loam, we obtained in almost every case equal results. Therefore I think it would not be wrong to assume that, as far as this part of the country is concerned, the description now given of the various sorts of Potatos experimented upon, will be found to be correct.

The first batch which claims attention is the Early Kidney, which are unquestionably the earliest in cultivation. They consist of the Old Ashleaf, a fair cropper and good; Walnut-leaf, good in quality but very uncertain; Rivers' Royal Ashleaf and Myatt's Prolific Ashleaf, both first rate as regards produce and quality, and with very little difference except in the haulm, in which there is a trifling dissimilarity. An Improved Ashleaf of my own selection, is in every respect as good as the two just named, but with a more robust haulm, and is prized by me because I can obtain from it the best samples for early exhibition. Then come the Red Ashleaf, in all respects an excellent Potato and very early. Queen's Own, very early and a good cropper, but close; British Queen, much the same but even closer; and Mona's Pride, a Potato which, if praise could help it, should stand in the first rank of our early Potatos, but as interested praise is not always a good recommendation, so has it proved in the case of this variety, which is not even a first early, being at least a week or 10 days later than the others mentioned above; it is also very coarse, the larger tubers usually being hollow in the centre, and it boils close; it is, however, a good cropper. I have found one peculiarity about this Potato, which is, that when the tubers push young shoots some are purple and some green, but when they come up, and in digging, there is not the least difference between them; the haulm is usually single-stalked, and somewhat resembles that of the Walnut-leaf. I obtained my stock of it some years ago in the North, who imported it direct from the Isle of Man.

Thus far I have particularised only those sorts which I have grown as first early Kidneys. I believe there are many others sent out recently that are very good, but it is not my intention to say anything about what I have not tried, with this exception, that at our local exhibition in June a sample of the Early May Kidney was shown; it was very fine, and deservedly obtained a 1st prize.

First Early Rounds with me are not plentiful, the best being the Early Handsworth, the chief recommendation of which is, that it produces a very handsome tuber for early competition; it has a distinct haulm, and is a shade or two later than the Kidneys, very early round, but it is coarse, and wholly unfit for a gentleman's table.

Of Second Early Rounds there is a considerable number, but none of them are probably earlier than our old friend the Fortyfold, although much greater producers. Of course I have grown the Fortyfold, also a variety known about here as the Brown Betty, a rough, netted Potato, but in all other respects similar to the Fortyfold. Dalmahoy, also one of these, is a good cropper and first rate; so is also the mealy Early Oxford, and Sutton's Tenweek. Dunbrae's Seedling, Prince Albert, and a variety grown largely about here for market purposes, called the French White, all of which are good croppers, are but of medium quality; while among others of really good quality and handsome in their shape but not sufficiently prolific to be of much value, are the Early Gem, Early Golden, British Queen, and the old Cockadoo. There are not two Potatos in this class of which I must make particular mention; these are the Cheshire Pink-eyed and the Early Emperor, or Somerset Red. The first of these, a white Potato, with a pink eye, is very prolific, of first-rate table quality, and altogether one of the best of Potatos; the second, as its latter name implies, is a red Potato, with a remarkably handsome, pebbly shape, netted skin, and very yellow eye, is a good cropper for its quality (enormous), and is altogether a capital Potato, but loses its rank as it does as well elsewhere as it does about here, it must soon become a universal favourite.

A batch of what I have no doubt are very good Potatos was sent round by our friend Mr R. Fenn, of Woodstock, for trial with my other varieties. They consist of Fenn's Onwards, a seedling of his own, a second early round, good both as to crop and quality; Beehive, Mitchell's, Early Albion, Shutford Seedling, and Hogg's Coldstream, four second early round varieties, which with me were medium croppers, and very deficient in robustness, a quality so necessary for good crops; and two others, Daintree's Kidney and Huntingdonshire Kidney. Of these the last is a good cropper, but late, which is all I can say about it at present. With respect to Daintree's Kidney, which is certainly a very handsome Potato, and a really good cropper, I was much disappointed to find that its cooking qualities were of the worst possible description, it being both close and stringy. Mr. Fenn showed samples of all these sorts at the International Exhibition in May last, and they were most deservedly admired, both for their size and the manner in which they had been preserved; and having seen these I was not a little surprised to find that my own produce of the same kinds should have been so small compared with his or with others grown close by. I can only fancy that there must be some peculiarity in the soil at Woodstock which these Potatos have missed with me, and therefore I shall say nothing further about them until I have given them another trial.

I now come to what I shall call Second Early Kidneys, a section which comprises some of the very best Potatos in cultivation. The first I shall mention we call here Haigh's Seedling, a pebble-shaped Potato, one of the earliest of this batch; it is very prolific, and good in flavour, but it is rather yellow; then comes Wimborn Kidney, slightly netted, a good cropper and first-rate in quality; the White Blossom and Jackson's Kidney being also exceedingly good in every respect. Pink Ashleaf is a heavy cropper and good in quality; it is slightly marked with red. Maybush Prolific, a selection of my own, is also a heavy cropper, and good in flavour, but it is rather yellow in colour. Birmingham Prize-taker is a very handsome smooth-skinned Potato, a medium cropper, but good in quality. To this section must also be added Dawe's Matchless, Prince of Wales, and the King of Potatos, all as large croppers and as fine samples as any in cultivation. Dawe's Matchless is a universal favourite about here: its quality is "matchless," it is fit for any table as soon as it is dug, and it will keep as long as any variety with which I am acquainted; at our local autumn exhibition it invariably takes the first prize. The Prince of Wales is in some respects a rival to the Matchless, both as regards size and quality, but it lacks the whiteness and quality of the Matchless. The King is a smooth-skinned Potato, a large cropper and good in flavour, but, like the Prince, it is rather yellow in colour.

There are now a few late Kidneys, of which the Lapstone is one of the most prominent. Of course every one knows it as being a good cropper, and first-rate in quality. The Burmah Kidney is also very good. To a batch of four kinds of the Fluke—the King, the Queen, the Pink, and the Original Fluke, the same description will apply; they all crop well and cook well, but when cooked they do not possess any appreciable difference one from another. There are two more late Kidneys to notice, which I have not grown, but samples of them have been given to me by Mr. Cross, of Melchet, where I saw them dug up. They are West's Whytam Seedling, a purple Kidney, a large cropper, and a very fine sample; and another Kidney called Red Seedling, as fine as the other. If the qualities of these Potatos are as good as their cropping properties, they are first-rate.

We now come to the late Rounds, among which there are Walker's Improved Regent, which is nothing particular; the Scotch Regent, an immense cropper, good in quality, and first-rate for a main crop; Red Regent, a very fine Potato, a large cropper and good in quality, but very coarse in the haulm, a great objection: Arrowsmith's Seedling, a hollow-eyed Potato marked with red, crop and quality good; and three others, all of very large size, and great croppers, well adapted for field or cottage culture, but totally unfit for a gentleman's table, viz., Old Jersey Blue, Farmer's Glory or Long Pink-eye, with very deep eyes, and Irish White, an immense cropper, of fair quality, but with very deep eyes and ungainly shape.

I have yet one other lot to mention, and then I have done; these consist of 13 varieties of Mr. Paterson's raising, which I have grown. Among these are Paterson's Early White Round, a second early, a good cropper, and excellent in quality; then we have Scotch Blue, a second early, a medium cropper, but very handsome in the tuber, the colour being rich purple; it has a pebbly shape, and boils very white and mealy. Here are also two Kidneys, viz., Early Red and Buff, but neither possessing any distinguishing qualities. Four late white rounds come next, viz., Victoria, Napoleon, Albert, and Regent; these are all good croppers, and of first-rate table quality. Of coloured varieties Paterson's Blue, Irish Blue, Oval Blue, Alexandra, and Zebra, in strong soils all yield enormously, but I believe Alexandra to be the best of the batch; they are, however, more adapted for field than for garden culture.

As I alluded to the Potato disease in the earlier part of this paper, I expect that some of your readers will feel disappointed because I have made no mention of the capacity of the kinds I have grown, to withstand that malady more or less. Well, really I have not had a diseased tuber in all my garden this year, and in this respect perhaps I have been more fortunate than many others; the blight certainly presented itself in the haulm in a virulent form, but it was just at a time when the soil was very dry, and the flow of the sap was very much checked, and to these circumstances do I attribute my freedom from disease this year.

I should be very happy if one result of this paper should be to evoke from growers such as Mr. Fenn and others, some further discussion of this Potato question, and especially if it should elicit what effect differences of soil and climate have upon distinct varieties. What I have stated has only reference to my own locality, let others speak for theirs; and if no other good should result, it may at least be the means of affording useful information as to what are generally the best kinds, and the soils best suited for their growth. *A. D., Maybush.*

BEDDING OUT.

(Concluded from p. 925).

While I am praising and preferring the plants which have coloured leaves, as defying the vicissitudes of our English climate—the drought and the rain which, before their introduction, dried up and washed out the beauty of a garden, extinguishing its light like a curfew, I am not oblivious of the fact that no foliage can compete with flowers, either for brilliancy or variety of tint. Because of their constancy, I would use them extensively, nay, chiefly, in the composition of a garden; but to use them exclusively would be simply a forfeiture of the name of florist, and a piteous case of "colour blindness" past hope and cure. The true gardener, to whom, as to Wordsworth,

> "[illegible]
> Thoughts that do [illegible] too deep for tears,"

could no more repel from his garden the glowing charms of the Pelargonium, the Calceolaria, and Verbena, than Paris could have turned his back upon Venus, Juno, and Minerva, each looking her best to please him. He does not forget his beautiful Stella, as Swift the unfaithful forgot, in the sunny presence of Vanessa, the Stella of his earlier love. Comprehensive, too, as it is constant, is this great affection. Whig or Tory, he admires Lord Palmerston, who has been, and is, in the garden this season, just what the statesman ever was in the House, the freshest and most blooming of his species. Whatsoever his sentiments on the Papal question, he is delighted with Roi d'Italie. Nosegay or zonal, he loves them all, albeit his Alexandra is no more "bluish purple" (as described by Mr. William Paul) than is the nose of that fair Princess after whom the flower is named. Dear to him is his Calceolaria aurea, as to Cinderella the Calceolaria vitrea, when the Prince gazed upon her tiny foot; and no less dear the red-gold glowing Gazania, despite its unsocial retiring habits, and its strong resemblance to certain fair-weather Christians, who only come to church in sunshine. Purple King Verbena is precious in his eyes, as was the brilliant Melindres in the eyes of his father, when, 40 years ago, she came from Buenos Ayres, and was tended for some time as a greenhouse plant, too delicate for the open air. How fondly he gazes on the bright Lobelias speciosa, azurea, Paxtoni. But in this family, alas! there is a *mauvais sujet*. He is obliged to make an exception, and he has no benediction for Snowflake. He gave half-a-crown for a packet of seed, and he planted 150 good healthy plants, alternately with Lobelia speciosa, and, although the latter are blooming still, the Snowflakes have disappeared, every one of them, as if they had been the real thing. Wherefore he turns himself, as his wont, from a failure to a success, and finds complete and speedy solace in the pretty face of Viola cornuta. But what a name! A Violet with horns! And are we to have a Primula unguiata, a Primrose with hoofs, or a Bellis caudata, a Daisy with a tail?

Here I think that I may introduce appropriately my homily to the novitiate concerning novelties. I bid them to be cautious and circumspect, using their eyes and their ears diligently before they make an investment, but I urge them at the same time, and still more earnestly, to avoid meanness. Sad and strange it seems to a florist that so many who profess a fondness for flowers should be liberal in all other departments, in their houses, their equipages, in a general generosity, and yet in their gardens such very miserable screws. Inform them of something really beautiful, of which they may buy for a few shillings an established plant: the response is, and, while spouting their infinite at half-a-guinea a bottle, they will express their conviction that neighbour Smith has got it, and their incontinent declination of becoming anything. "As soon as I can afford it," said a lady to me (and she wore a new dress of sky-blue satin, all covered with costly lace) "I mean to treat myself to one of those striped-leaved Lilies of the Valley, which I saw at the International." Some "make it a rule never to purchase until they are fully satisfied of real merit." They have just come to the conclusion that Mrs. Pollock may be admitted safely, but they must have the experience of an other season before they positively decide upon writing for a three-penny packet of Amaranthus. Surely life is too short, and loveliness too rare, for such a dismal apathy. "'Tis better to have loved and lost than never to have loved at all," and 'tis better to buy and to be disappointed (you are sure to have the little refreshment of informing some more recent purchaser that he has made a fool of himself) than to be always behindhand, trailing your weapon fowling-piece two fields in rear of breech-loading friends, ever liable to be called, as Canning called Lord Sidmouth, "the sort of man who always insists upon travelling with his own horses." It is one of the chief pleasures of floriculture to surprise some enthusiastic brother with a new jewel among our garden gems, and to send him home happy with a duplicate. Moreover, stinginess in this case, as in most others, is shortsighted and unprofitable. They get little who give little, and "the liberal soul shall be made fat." I advise, therefore, that an experimental corner be devoted in all gardens to those novelties which, bought after inspection or good report, may prove a source of much interest to their possessor, and enable him to make exchanges with his floral friends to their mutual gain and pleasure. Here, too, among these "probationary fellows," may be placed those seedlings by which the florist essays, in his humble way, to aid and advance the cause of floriculture, so

> "That each
> May feel himself of service part to all,
> And not as though all were born."*

We come now, having chosen our situation, laid out our design, filled our beds with good soil, and selected our plants, to the momentous question of arrangement; and in this the simplicity of form, which I have before commended, will much facilitate our plans. Avoid by all means eccentric or intricate formation, multitudinous narrow, or diminutive beds, sharp points, stars, eels, and tadpoles.

Supposing the design to be a plain one, there are difficulties and perplexities enough. The tyro should seek aid from his seniors, and learn to write from a copy, before he is an author. Let him visit some good garden, and take notes of what he sees; or invite the presence of a teacher when he first spreads out his alphabet.

Nevertheless, let him begin, as soon as may be, to compose for himself. Few processes are more dispiriting than to go through garden after garden, with the same eternal combinations, the same monotonous lines of colour. Instead of giving "Three cheers for the red, white, and blue," I always feel a much stronger inclination to emit three dismal howls,

* Philip Bailey, "Festus."

heartily wishing these ribbon manufacturers at Coventry, their proper home. "What do you think of that, Sir?" said a gardener to me in a triumphant tone, as we entered an immense kitchen-garden, ribboned all round with the old familiar pattern. "Well," I made answer, "as nearly as I can calculate I've seen about six miles of it this summer; and, if you have no particular objection, I will cool my eyes on the Parsley."

In composing new combinations, and in making a satisfactory distribution of colours, an artist, with a paint-box, and an outline of his garden, has a very great advantage. Not being an artist, my own plan is to make experiments in the summer, with flowers and foliage variously disposed, and in the spring with small plants in pots, which give a very sufficient idea of effects on an extended scale.

I prefer flowers mixed to flowers in masses. There is less sameness, and "two are better than one." Colours help each other, like comparisons in adversity as well as in prosperity. For example, the few petals of Madame Vaucher which now remain on my plants would be a sorry sight by themselves, but appearing, as they do, here and there intermixed with Purple King, they have a very pleasing effect, making the bed look at a little distance, like a bank of blue and white Violets. On the same principle, Stella mixed with Centaurea is far more beautiful than Stella in her solitude.

Baskets of flowers and wreaths of flowers which seem to rest on a floor of level Cerastium or Lobelia have a charming aspect; but I am allowing my small boat to drift in the direction of overwhelming seas, and so row back to port.

And yet once more. Some seem to think when plants are bedded out that no more care is necessary. On the contrary, not one of the goddesses resents neglect so wrathfully, or repays attention so gracefully, as the Goddess Flora. You must water and weed, you must train and peg, you must remove dead flowers and leaves, as you hope to enjoy, in its full fruition, the happiness of "bedding out." *S. R. H.*

THEORY AND PRACTICE OF VENTILATION.

No. XII.

(Continued from p. 827.)

The air acts as a raiser, conductor, and distributor of water. It is impossible to exaggerate the importance of water in the economy of the universe. It is not only the drink, the health, the purifier of man and all forms of organised life, but it enters very largely into their very substance. Nine-tenths of the bulk of animals consist of water only, and it forms a yet larger per centage of vegetable matter. Evaporate all the water out of a man 180 lb. in weight, and about 12 lb. would remain. Do the same with a plant or a flower, and their skeleton forms would float airily through the air, light or lighter than a gossamer's web. Internally water is a stream of life to plants, externally it wraps them around as with a cool garment of beauty and glory. Dry up the one, remove the other, and the destruction or death of the whole vegetable kingdom would speedily be accomplished.

Now, as plants are not endowed with locomotive powers, and as many of them exist in regions far removed from water, it may be useful to inquire how they are supplied. It is obvious that the plant cannot walk to the sea, any more than the sea can to the plant. It seems twice a day and during great commotions as if it intended to do so, but its barriers are set, which it cannot pass, and if it could, vegetation would be anything but grateful for the visit; for I fear the salt would do more harm, than the water of the ocean would do good. Rivers, lakes, and pools are gathered together in hollow places, and as they are unmoved by tides, and but slightly agitated by storms, there is no chance of their rising up and permanently or regularly watering (they do occasionally run over) the earth. Given to all the engineers in the world the problem of a stationary earth (that is, as far as movement towards the water is concerned), covered with its burden of teeming life, whose first and last need is water, and stationary unequally distributed oceans of water at lower altitudes—how to bring the one everywhere into gentle, loving, constant contact with the other—and they would either have at once relinquished the task as hopeless, or deafened the universe with the clamour of contending schemes, and the deafening hammering din of erecting pumps, and pipes, and huge watering pots, or have darkened the sky with multitudinous machinery, to have ended in total failure. How different, how simple, how efficient was the plan adopted! Silently the Almighty spread another ocean over the first, and made it overflow the dry land as well. This second ocean of air was appointed to mediate between the waters and the dry land of the world; hence it enwraps both, and enables them to meet in peace, and mutually serve each other. It performs other functions as well, such as preserving everything on the surface of the earth; furnishing a medium for the development and sustentation of life; husbanding and distributing the heat of the sun; multiplying, moderating, and intensifying his light; but its chief mission seems to be to lift up the waters of the sea, carry them over the land, so that they may return to the sea again. And with what comparative ease and quiet it performs this gigantic task! As a rule the waters are raised and distributed without any noise whatever. Occasionally the carrying department is both heard and felt, and when a collision occurs on the atmospheric railway between two trains of heavily laden water-carriages, they flash fire with the violence of the collision, the earth is startled with the thunder of the crash, and the broken *débris* of the trains fall down in large fragments to the earth. But more frequently the carrying department proceeds smoothly; the clouds meet, and melt into each other, and descend to the earth in gentle showers of blessing.

The mode of raising and distributing the waters of the atmosphere is not more marvellous than its extraordinary selective powers. It bends down over every salt sea, putrid river, slimy pool, and sewage-polluted stream, and raises up nothing but pure water from them all. Salt and sewage are both valuable in their places, but showers of either could scarcely have been more destructive of human comfort than fatal to plant life. And it might easily have been that all the filthy pollution which the ignorance or laziness of man has allowed for years to pollute our waters, might have been upborne on the wings of the air and returned to us as rain by way of retribution. But instead of this the air drinks from the foulest sources, and returns the water to us pure. Neither does the air simply raise up the water and let it fall again, as might have been expected, in the same place; it carries the water from the bosom of the deep, where it is not needed, across lofty mountains and over burning sands to where it is required. Perhaps the greatest marvel in this fairy series of wonders, is the means that one part of the atmosphere has of communicating with all the other parts. In most things man but tardily follows and treads in the footprints of Nature. In nothing perhaps is this more apparent than in the use of electricity for signalling messages. But yesterday two continents rejoiced at their being united by an electric cable—from the very beginning Nature has telegraphed her wants along the line of the atmosphere around the world.

Looking at a hard, heavy mass of ice, nothing could be more unlikely than that it should rise up and sail like a crystal boat through the air. Examining water the difficulty is not much diminished—it is more than 800 times heavier than the air to begin with. In the helplessness of despair the water looks up to the sun. Quick as thought he flashes down his warm beams on the atoms of water. Thus furnished with wings and inflated to from 1200 to 1700 times its former size, the water springs up instantly from its lowly bed, and soars proudly with all the importance of a new mission towards heaven. Onward or upward it flies, dressed in sombre or adorned with the most gorgeous robes, forming part of the azure blue of the sky, or a gem of dazzling glory amid the inimitable scenery of the clouds, until by sheer uprising, or driven by some eddying current, it gets into a cold region. The cold ruthlessly cuts its wings, and reduces it to its original dimensions, just as the biting frost nips the tender flower, and it returns to earth again as a dew or a rain drop, a hail stone, or a snow flake. And so the great theory and practice of watering the earth by the ministry of the air goes on, and on, for ever. Not a drop of water is ever lost. The same drop rises and is secreted or deposited perhaps myriads of times. Could the travels of a rain drop be chronicled, the most daring flight of fancy could not compare with such a record of facts. Heat is the power that lifts up, and cold that puts down water, and there is as much difference between a drop of water in lake, river, or ocean, and the same drop in the air, as there is between a moth and a butterfly. In fact, water in its normal condition may be defined as water in the grub state. Vapour, on the contrary, is its highest development clothed with the livery of Heaven. The quantity of water thus raised and distributed is incomprehensible. Figures may express, but the mind refuses to grasp the enormous volume. A gross estimate has been made that it amounts to 50,000 cubical miles per annum. And yet so rapidly is it again precipitated, so vast is the entire atmosphere, and so generally is it distributed through it, that the mean quantity held by the air at any one time is not thought to exceed 1½ per cent. From one square degree of ocean Mr. Wally computed that the evaporation amounted to 33,000,000 of tons a day. Presuming that, taking the year through, almost as much water may fall into the sea as upon the land, it would seem that about 140 cubic miles of water are evaporated every 24 hours. The quantity raised and deposited varies with the climate. The higher the temperature, the nearer to the ocean, and the higher and larger the mountains, the more water is both raised and deposited, and *vice versâ*. I ought to have stated that electricity and magnetism, and the simple attraction of large masses of matter, have something to do with bringing the water down as well as the cold. The effect of temperature upon the elevation and deposition of water is well illustrated by the tables given in Lindley's "Theory of Horticulture," p. 190.

The enormous discharge of vapour in the form of rain does not however represent the total quantity raised; for in all hot climates the air with its burden of moisture rushes off to colder climes, and deposits part of its warm treasures there to the enriching of their shivering vegetation. To the fact that cold air is dry air we owe it that many of the colder parts of the world are covered with vegetable, and support animal life. Were the northern regions moist as they are cold, life of any kind would be impossible. Air conducts heat in the exact ratio of its moisture, its speed remaining the same. Hence the dry air of cold climates enwraps life round as with a thick great-coat, and refuses a free passage outwards for the heat. The external cold also passes inwards with difficulty, and thus life is preserved by a husbanding of heat unknown in warmer climates, and existence is made tolerable. In winter, too, when heat is most needed, the waters of the ocean are warmer than the land, and exert an ameliorating influence in softening the hard bitter cold of arctic, and coldly temperate climes.

But I hasten on to note that the elevation and distribution of all this water disturbs the equilibrium of the atmosphere by a displacement of its atoms, and the absorption and discharge of heat. Subtile as water in a state of vapour is, it cannot ascend into the atmosphere without a displacement of air. Hence its ascent pushes the air out of the way; and its descent, whether as hail, dew, snow, or rain, leaves a vacuum for the air to fill up. Both phenomena alike induce motion. Neither, as we have already seen, can water be lifted up or sent down without a change of temperature. An immense volume of heat is expended in its elevation. Most of the heat is latent or hidden heat, but none of it is lost. For if, say, 900° of heat are expended in the conversion of water into vapour, that heat is again given back to the air, when the vapour is once more condensed into water, and both its subtraction and addition create currents throughout the air. Now these currents are not only most important in themselves, but exert a great influence on the elevation and distribution of water; for it is found that the amount of water raised up into the air is mainly regulated by the rate of its motion and its temperature. The pressure of the atmosphere remaining the same, the amount of evaporation will be doubled by a stiff breeze. On the surface of water there may be two reasons for this—a larger surface of the fluid is presented to the air, and the vapour already formed is instantaneously removed. In still weather the slowly rising water places an effective drag on the energy of evaporation—hence, probably, the difference. That there is a great difference is conclusively proved by the experiments of Dalton and others, as well as by general observation. Every one knows that wind, that is air in motion, dries surfaces much faster than even the sun itself. Dalton, by direct experiment, ascertained the weight of water evaporated per minute from a vessel 6 inches in diameter, in all temperatures from 20° to 212°, when the air was still and in gentle and brisk motion. The results are valuable and striking. In a still atmosphere at 212°, the amount evaporated was 120 grains per minute, with a gentle motion it was 154 grains, and with a brisk motion 189 grains per minute.

Mr. Daniell, a great authority on this subject, gives even more emphatic testimony. He says, in the "Horticultural Transactions," vol. vi., p. 5, "Evaporation increases in a prodigiously rapid ratio with the velocity of the wind, and anything that retards the motion of the latter is very efficacious in diminishing the amount of the former; the same surface which, in a certain state of the air, would exhale 100 parts of moisture, would yield 125 in a moderate breeze and 150 in a high wind." To the same purport are the valuable tables of Mr. Robert Thompson, of the Royal Horticultural Society, published in its "Transactions," and quoted by Dr. Lindley in his "Theory of Horticulture." Mr. Thomson not only showed that the motion of the air increased its dryness, but pointed out the direction from which the most drying currents proceeded. We frequently found the hygrometer indicating from 20° to 30° of dryness during the prevalence of north-easterly winds. And yet, as Dr. Lindley points out ("Theory of Horticulture," p. 188), the four driest days experienced in the nine years from 1826 to 1834 were accompanied with a south wind, and during the whole of these nine years there was only one day in which the dryness was as high as the lowest of these days, 30°, with a north-east wind. Still the easterly winds are the most injurious to vegetation, not only from their coldness but also from their dryness. For while the duration of dryness with a south wind is very short, seldom exceeding one or at most two days, and invariably accompanied with great heat and succeeded by rain, the north-easters last for weeks, with a low temperature. Professor Phillips and other investigators who have recently recorded their experiments before the British Association, bring a large amount of confirmatory evidence to establish the fact, that the drying powers of the air are largely determined by its velocity. On a still day, a wet-bulb thermometer was hung at rest, then carried through the air at the rate of 2.75 miles an hour, and finally swung across at the rate of 6.18 miles an hour. The time of drying, on degree in each case, is represented by the figures 16, 12.9.

The same careful experimenter found that the cooling effects of evaporation as distinguished from condensation and radiation, is in exact proportion to the quantity of water removed in a given time, temperature, pressure, speed, and moisture of the surrounding air continuing the same. In a large room, under the ordinary pressure of 30 inches, a temperature of 53°, evaporation or wet-bulb 47.8, and consequently dew-point 38°.6, the time of cooling five degrees in seconds was as follows—at the temperatures stated:—

Temperature.	Time of Cooling.	
	Dry Bulb.	Wet Bulb.
Degs.	Seconds.	Secs.
100	14	24
95	15	24
90	16	25
85	70	25
80	25	26
75	102	28
70	128	31
65	166	34
60	256	38

It is scarcely possible to exaggerate the importance of these facts to the whole science and practice of horticulture, and especially to the subject of ventilation. They open up and explain the entire question of shelter, and do much to elucidate the wider and more difficult one of the motion and influence of the air on plant life. Whether or not Sir G. Jenner will derive any benefit from quickening the circulation of the air through our plant-houses will depend upon our wise or unwise application of these facts. *D. T. Fish.*

Home Correspondence.

Classification of Pelargoniums.—Pray tell us how our various kinds of Pelargoniums shall in future be classified. What is the meaning of a zonal Pelargonium? Is it not one bearing a dark or coloured zone in the leaf—such in fact as those known as horse-shoe-leaved? If so, why not call all with the zone leaf and

dark zone 'green-leaved zonals'; and those with green leaves edged with white, sulphur, or yellow, but having a zone in the leaf of brown, crimson, or pink, 'versicoloured zonals.' Then for 'variegated' Pelargoniums we should have all those with green leaves edged or flaked with white, sulphur, and yellow, but clear from any zone, as for example Bijou, Flower of Spring, and Golden Chain, a distinct and invaluable class for flower-garden decoration, and according to my idea far surpassing all zone-leaved kinds for a white or yellow bed, the effect being lighter, clearer, and more distinct. The clustered flowered or nosegay section could be divided into 'plain-leaved,' 'zonal-leaved,' and 'variegated-leaved:' and the Tom Thumb and Christine section into 'green-leaved scarlet,' 'green-leaved pink,' 'green-leaved white,' &c. A final decision on this question is required for the guidance of all cultivators, admirers, exhibitors, and the judges at exhibitions? What shall be called a zonal and what a variegated Pelargonium? *A Yorkshireman.*

Wellingtonia gigantea aurea-variegata.—The parent plant was received as a one-year-old seedling, along with two others, from Messrs. Low, in Sept. 1856, and was planted out immediately. A little marking was observed in the following year on a small side branch, and this marking proved to be persistent. In 1860 the variegation appeared to spread over one side of the tree, and during 1861 and 1862 it spread over the entire tree. In 1863 and 1864 the variegation became generally diffused, showing on every new shoot, and even those breaking from the stem, and coursing up to the leader, where it had not before appeared. The plant was removed four times from one place to another, which has somewhat retarded its growth. It has been in its present place, the centre of a small pinetum, during the last six years, and has since made a fine growth. Last season's shoot was 2 feet 10 inches, and this, to the present time (Sept. 24) 2 feet 8 inches. The present size of the tree is as follows: height, 13 feet 2 inches; circumference of branches, 3 feet 6 inches; circumference of trunk, 2 feet 8 inches; season's shoot, 2 feet 8 inches Last November six thousand shoots were removed for grafting and for cuttings, stripping the tree very bare; in fact, every shoot was cut but the leader, and yet now it is fully covered, and was never so beautiful; and from the leader, which is a rich gold colour, down to the branches covering the ground, there is not a shoot, small or large, to be found without its peculiarly rich variegation. The little plant exhibited at the Crystal Palace show of the 5th and 6th ult., the same which received a First-class Certificate from the Royal Horticultural Society, gives no idea of the parent tree. One remarkable peculiarity is the channel for the sap showing in lines along the sides of the shoots. Where the shoot is all gold-coloured, the stem of the shoot is of the same, where the piece is green and gold, the stem shows the channel distinctly. The parent tree has now been seen by a number of gentlemen competent to judge, and has by all been pronounced as the very finest of variegated hardy evergreens. So rich is the colouring that it is observed at a long distance, and in sunshine looks remarkably beautiful. If planted with a dark background of Pinus insignis and nobilis it would look charming. The colour remains pure and unchanged during the winter season. *R. Hartland, The Lough Nurseries, Cork.* [It is very handsome. EDS.]

Rhododendrons.—I am glad you defend the early-flowering kinds, for though they do suffer now and then from frost, they are rarely so lost as not to be great ornaments in April. There is no Rhododendron which for general beauty can be put before a good Albertus; and in addition to the fine form of the truss and the beauty of the colour, it forms a miniature evergreen tree of which a Mandarin might be proud, the trunk and head being in good proportion. The same may be said of the variety Sir Walter Scott, which flowers a little later. Of the latter there is a white variety which none of the late whites have quite equalled. It stands a good deal of frost, and will remain in bloom for three weeks. I agree with what you say as to soil. Peat and sand must be had to give a good start, but there are some kinds which when once well started, with a proper pit of peat turf, will root into the common soil like an Elm tree, especially if the bottom be cool, free, and moist. A rich sour soil kills them, or keeps them very small. Rhododendrons are much sinned against, both as to soils and in transplanting. They do not die when lifted—on the contrary, no plant lifts more easily; but whoever wishes to see the tree as it may be grown must avoid moving large plants with the greatest care. The ball ought to be very large in proportion to the size of the plant, and it ought to be lifted by the outside of the ball. To lift by the stem breaks many of the roots; and, although the plant does not die, it cannot for some years expand its mass of blooms, or keep them expanded for the natural time. Old plants I have found to move well just when the flowers are falling, so that one may select good hardy seedlings in the nursery, and get them home safely while in bloom. *A. J. A.*

Allamanda Hendersoni.—Having flowered a plant of this, and also one of A. Schottii Hendersoni, we confess that at present we are unable to detect any difference between them. Of the former we purchased eight plants at a comparatively high price, one of which was pushed forward with the view of proving its value; but its roots were confined to the pot, which was not plunged. We also fresh potted a plant of the latter, which was afterwards plunged in the cold pit of a stove. The former (A. Hendersoni) showed correctly its characteristic features of growth and bloom, but the flowers were not so large as they have been represented to be, probably in consequence of the roots being restricted to the pot; the latter, which was plunged, eventually made luxuriant growth, on account of the roots having access to the plunging material (not soil), and produced numerous flower trusses, with larger blooms than those of A. Hendersoni; these flowers were of great substance, fine outline, and were richly tinted with brown previous to their opening. The inner tube or throat of the flower is also elegantly streaked. The same plant has now bloomed continuously for these last four months, and we have no doubt that it would continue in beauty double that period if it were placed under favourable conditions as regards root temperature, which would enable it to make progressive growth. It is not perhaps generally known that Allamanda Schotti was originally sold in the shape of two forms or varieties, namely, A. Schottii of Henderson, and A. Schottii of Pince. Of these the former is distinguished from the latter, and from all other varieties of A. cathartica, by its uniformly smooth and glossy leaf-surfaces, remarkably large and richly brown-tinted flowers before opening, and by its profuse and long-continued season of bloom. All other varieties are more or less hairy, and by the features just indicated any cultivator may readily prove the distinctness of Henderson's variety from the inferior form of A. Schottii issued about the same period. *E. G. Henderson & Son.*

Unseasonable Blooming of Laburnums (see p. 900).—We have had a tree here about 8 feet high, on which there have been 12 fine bunches of flowers fully expanded, and as late as October last year the same tree was making young wood while in bloom, in the same way as it usually does in spring. In the autumn of 1864 this tree was moved, together with many others, and I attributed the blossoming in question to the very warm weather which we had here through the previous September, after rainfall in August, which caused the tree to make fresh roots, thereby inducing it to start again into growth. The same tree is now (October 1), together with others, stripped of its leaves by the rough weather which we had last month; for during the whole of this September we have not been 24 hours without rain, and occasionally we have had very cold and rough winds. *J. May, Hants.*

Abies cephalonica.—In your number for August 25 (p. 803) it is stated that at Bicton this Fir is bearing cones this year. There are some trees of it at Hampton Lodge, near Farnham, Surrey, of the same age as those at Bicton, which are bearing cones now for the third time, and young plants have been raised from seeds of them ripened in 1864 and 1865. The seedlings are perfectly hardy during the winter, but require a little protection from spring frosts. *C. H.*

Anthyllis vulneraria.—I fear that the insertion of my notice of this plant in those pages of your Journal which are devoted to *Agricultural Gazette* (see p. 910) will not procure for me seeds either of the red or the white variety, unless the growth of the plant in a red or a white clay influences the colour, as supposed by Linnæus, in which case I may possibly hear of large breadths of the two abnormal colours growing in distinct localities. But if any of your horticultural correspondents could favour me with a small quantity of seed of either red or white, I should be much obliged. *George E. Frere, Roydon Hall, Diss.*

Anagallis cærulea.—This species, or (as Mr. Bentham thinks) variety, which is considered rare with us, used to grow, 30 years ago, in the fields between Box and Corsham, above the Box Tunnel on the Great Western Railway, to the exclusion of the red variety. Can any of your correspondents inform me whether it still grows in that locality? And will any inhabitant of a similar geological position state whether the colour of the flower is similarly affected in his neighbourhood? *Diss.*

Manuring Conifers.—There seems to be a kind of wilful misunderstanding upon this point. Fresh manure from the stable and cow-house liberally applied to the better class of Conifers is certain death, and I could name the place where, whether by mistake or not, it was applied, and the plants suffered so much that they had to be replaced. But it is sometimes said, "the manure should be well rotted." Aye indeed, this is the necessary qualification, for leaf-mould is really the life-mould of Conifers; and I do not recollect any instance of their doing credit to the planter where decayed vegetable matter did not exist in the soil. But who is to judge between the two cases, and when is the ammonia in the manure weak enough to allow of its being added as compost for Conifers? Age will not do it, neither will exposure; the nose will detect it in dry Mushroom spawn after a couple of years. Age and exposure to the action of the atmosphere and moderate fermentation will generally reduce stable manure to the condition of leaf-mould in the course of a year, and then it would be invaluable as a compost for all resin-bearing and gum-bearing trees; but although all cultivators extol leaf-mould, we are all equally well aware of the fact that a barrowful of wet Oak leaves beginning to ferment, taken from a lining, would not feed any plant, yet if we give it time, and use a little discretion with it, it will lose its rank odour, and part with the water it contained and become friable, falling into decay and dust; and in this state there are very few plants indeed that will not readily feed upon it. Leaf-mould is really a compost in itself; and if silver sand were added, and a small portion of clay, we should have the ingredients that forests have risen from. In regard of the time to apply composts or manures to Conifers, autumn has immense advantages over spring, on account of the power that the rainy season exercises upon all forms of mulching or other surface dressing lightly forked in. Ground bones are so exceedingly rich, that unless they are mixed with 3 bushels of foreign matter to separate every bushel of bones effectually, there is danger of over-dosing. *A. F.*

Tagetes signata pumila and Viola cornuta.—These delightful little common things are so attractive that too much cannot be said in their favour. A packet of seed of each of them would produce plants enough to enliven with their matchless colours a small flower garden, the former with bright golden orange-coloured blossoms, and the latter with an enlivening shade of bluish mauve. Both withstand heavy rains without their beauty being impaired; at present, the Tagetes is the most attractive and showy plant to look upon in the whole garden. What a pity it is that we cannot rely upon getting seed of the true dwarf variety. Last season I had no fewer than three straggling bad varieties, and this year I have it again true, and as regards effective display in autumn I question if it has an equal. With respect to the Viola I have little to say in addition to what I said in its favour two or three years ago in your columns, but as to there being three varieties of Viola cornuta, two of them worthless, and one called Wills' variety, being the true one, I would like to know who first attached Mr. Wills' name to it, and by what right it is associated with it. I believe Mr. Wills and myself were the two first to bring this old Viola into notice; where Mr. Wills first found it I do not know, but I introduced mine to public favour from the gardens and woods of the Earl of Scarborough at Sandbeck, where it may be found growing by tens of thousands, and I have it equally plentiful at Osberton; although, however, it is probably 100 years old, and it may be found almost by the acre near here, that does not detract anything from its value as a bedding plant, but fortunately brings it within the reach of every one. For ribbon borders it is very effective, and it is also a beautiful plant for rockeries, &c. The finest beds I have had this season (or indeed seen) have been eight large mixed beds of Mangles' Variegated Pelargonium and Viola cornuta, an association which is truly lovely; the silver margin of the leaf of the Pelargoniums, and the very delicate pink flowers, told admirably along with the dark foliage of the Viola, while its flowers of light bluish-mauve seemed to light up the whole bed. Those who have not tried this combination should certainly do so. *Edward Bennett, Gardener to G. S. Foljambe, Esq., Osberton Hall, Worksop.*

Shanking of Grapes.—This evil I find is very prevalent this season. I have a house 36 feet long and 14 feet wide, in which the Vines are 20 years old, and there is not a shanked berry to be seen in it. The following is a mistake into which nine out of every ten gardeners fall, viz., beginning to force with too high a temperature, and as soon as the days become long and the nights warmer leaving off fires, by which a too sudden change is induced. Why not treat Vines as much as possible in a natural way, beginning with as low a temperature as is reasonable? Summer, let it be remembered, does not come all at once; we have spring first. As regards pinching-in considerable judgment is required; do not pinch-in to the first or second eye from the bunch, and to that confine the growth; by so doing you rob the Vine of that which it so much requires, viz., foliage, which is its lungs. Deprive a man of his breathing apparatus, and what becomes of him? Think of that, young gardeners; old ones will of course stick to their respective plans of treatment, and from among them few converts may be expected. *A. H., Foxbro' Hall, Woodbridge.*

The late Wet September.—September of last year was remarkable for its absence of rain, for its bright sunshine, and for its high range of temperature; that just closed will long be memorable for its excessive rainfall, which here has been 11.66 inches, for its cloudy skies, and for its diminished heat. The greatest fall of rain in 24 hours was that on the 24th inst., when there was 1.09 inch; up to the middle of the month we had storms of wind, with occasional thunder and lightning, from which fortunately the fine old trees round here have suffered but little damage. Excepting on the mornings of the 12th, 15th, 18th, and 23d, rainfall had to be registered every day of the month; the beauty of our September flowers has been washed away, and among stone fruits Plums especially have suffered, the fruit bursting open upon the trees, while windfalls of Apples and Pears have strewed the ground, especially of the former, of which we have good crops, though inferior in size compared with what they generally are, and from absence of sunshine deficient in quality. As regards late fruit, fine weather may, however, exercise a favourable influence. Such a continuance of heavy rains points to the advantage of having means at hand wherewith to protect Vine borders from such calamities in future; the expense of protection would soon be repaid by the saving of coal, and in the shape of better preserved Grapes. The importance of thorough drainage in every department of gardening has also this season been forcibly impressed upon us. What effect such a September may have upon the ripening wood for another year's crop I will not now stop to inquire; but I may add that we hear sad accounts of damage done to farm crops around here, more especially to Barley. *T. C. Elliott, Melbury House Gardens, Dorset.*

Insect Economy.—Having lately met with a curious instance of instinct or intelligence in a caterpillar, which has this summer infested some Plum trees which I have in pots, the case may perhaps be of interest to some of your readers. During the summer the creatures have spun their nests and laid their eggs among the Plum leaves; but now that the leaves are about to fall, their nests are no longer to be found among the leaves, but secured for the winter, in great numbers, under the rim or eaves of the pots, where, in summer, none were to be seen. *An Amateur.*

Guano v. Celery Grub.—I do not know whether Celery grub is as general this season as it was last year, but the Celery plants here were very badly attacked with it soon after they were put out into the trenches. Having a bag of fresh guano at hand, which was very dry, I took that part of the guano which was as fine as snuff, and dusted the plants all over with it. It remained on them two days and nights, when we had

sufficient rain to wash it off. This treatment appears to have killed the grub, and it has also had the effect of keeping the plants clean and strong ever since. I cannot find a single grub on any of the plants that were subjected to the dusting in question, although in the nursery bed, where there are a few plants left that were not treated as those just mentioned, I have picked several grubs to-day. If I owe the cleaning of my plants to the application of the guano, and I see no reason why I should doubt it, salt is doubtless the ingredient in the guano which has effected the destruction of the grub. While its proportion in the manure just named is insufficient to kill the leaves, it is sufficient to kill the grub, a circumstance owing perhaps to the salt having been dissolved by the dew, and to its having found its way through the aperture the maggot had made on its entrance into the folds of the leaf, thus giving it a dose of salt water sufficient to cause death in a manner which is more effectual than watering the plants with guano-water. Whether or not I am correct in this conjecture, the treatment just recorded is well worth trying by those whose Celery is infested with this pest. *Henry Mills, Esqs, Penryn.*

Passiflora quadrangularis.—Will some of your correspondents kindly inform me if Passiflora quadrangularis usually fruits in this country without the aid of artificial impregnation. We have a plant here planted in a well-prepared border in the stove; it grows luxuriantly and flowers freely, but does not fruit, *J. J.* [The flowers should be artificially fertilized.]

Pelargoniums, Sports, and Seedlings.—I have to acknowledge some further sports of Golden Chain, Flower of the Day, Brilliant, Flower of Spring, and Bijou Pelargoniums, from Mr. Ross, of Welford Park, for which I am much obliged. With these I received two very extraordinary leaves, which I enclose. The seedling No. 3 comes the nearest to Lady Cullum of any I have seen, and is a fine thing. Its pedigree is Mrs. Pollock, by Cloth of Gold. No. 10 is a seedling from Mrs. Pollock, by Madame Vaucher, and there seems nothing very distinct from Madame Vaucher in the leaf. The extraordinary thing about it is, that it has produced a sport this season of a very striking character, and of enormous dimensions, namely, a horse-shoe variety, with leaves 7 inches across, having a yellowish green centre 4 inches broad, a dark bronze tinted zone 1½ inch wide, and a lobate crenated edge over an inch broad, with lobes an inch deep—altogether it is a magnificent leaf. This sport affords great encouragement to cross breeders. The first progeny seemed worthless, but some of Pollock lingered in the strain, and attested alike its presence and its power by this marvellous production. By crossing this again with Mrs. Pollock, Lucy Grieve, or Lady Cullum, a leaf of this size, and of equal beauty to either of them, may be obtained. I shall confidently wait for this novelty from Mr. Ross. *D. T. Fish, Sept.* 27. [This enormous leaf was as described above. Eds.]

The Surplus of the International Exhibition.—Presuming that the Committee of the late International Horticultural Exhibition will before long decide as to the surplus, said to be still unappropriated, I would beg to throw out a suggestion, that having given so great a stimulus to practical horticulture, having repaid the obligation we, as a nation, were under to our Belgian and Dutch friends, and having thought of the necessities of our less fortunate brethren, something might now be done for the rising generation in the way of a scholarship fund, to be applied to the improved education in the theory and practice of horticulture of such, among the aspirants for future horticultural eminence, as manifest ability and industry to be tested by preliminary examinations, such as those already held under the auspices of the Society of Arts. I merely throw this out as a suggestion; it is the principle that I should like to see upheld, the details I leave to abler hands than those of one of the *Original Promoters.*

The Royal Horticultural a Migratory Society.—I have seen your remarks (see p. 800) in reference to this Society holding annual exhibitions in connection with the Royal Agricultural Society. There is no doubt abundant room for the Royal Horticultural Society to extend its operations beyond London, but to do so with effect it must leave off its parsimonious habits at home, and show equal liberality with the Royal Agricultural Society. The paltry prizes of a few shillings or pounds will fail to induce a good exhibition, as people in the country, at least in Yorkshire, will not bring their plants any distance for such prizes as at present given by the Society; and as for Certificates they are valueless, except as advertisements for nurserymen. Again, great stress is laid on a several days' exhibition; this will not answer. Two days at most must be the extent allowed in that direction. See what is done by the two gala days at York, and at the small town of Bishop Auckland, where 800*l.* is taken at the gate. It must be borne in mind that exhibitors will look after the welfare of their plants, and not study the pecuniary liabilities of the Society; but if the prizes are ample, and any other expenditure moderate, there can be no doubt as to repaying; at the same time, any extension beyond two days will not succeed—at least in the north. *Yorkshire.* [What about bad weather? Eds.]

Woodlice.—I am pestered with woodlice in my garden. In the spring they got into the Rhubarb pots and destroyed the young shoots. Since that they have done much mischief in my pits, and now they attack my Peaches on the walls. I have tried lime, hot water, and tar, but they seem to care very little about any of these remedies. Can any of your readers furnish me with a hint as to how I can destroy them? *H. S., Dorchester.*

Zonal Pelargoniums.—In a certain schedule I see a prize offered for 24 Pelargoniums (one collection), 12 to be zonals and 12 variegated. I am in some doubt how to exhibit; the schedule merely says 12 zonals: it does not say whether green, yellow, or versicolor. My opinion is that we can exhibit a mixed lot of zonals, all green or all versicolor, or all yellow zonals, such as Mrs. Longfield and Bicolor splendens; and I think the 12 variegated must not have a versicolor or a gold zonal amongst them; indeed the gold or yellow zonals such as Mrs. Longfield or Bicolor splendens are not, in my opinion, variegated at all, and therefore would disqualify the collection if shown as such. *F. H. S.*

Hard Soil.—Would Mr. Rivers state how he manages to get the water down to the roots of his Peaches in his hard border, as I find that in a border that was just forked up in the winter, before the season was half over, the water would nearly all run off owing to the border getting hard. What must it be therefore on a border that has been rammed down? *W. K.*

Quercus speciosa.—Can any one give me any information about Quercus speciosa, a deciduous sort mentioned in Mr. Veitch's catalogue of last year? An Oak with such a fine name should be an acquisition, if hardy and large-growing. *C. P.*

Belle Angevine Pear.—A question was asked at the late Botanical Congress as to the origin of this Pear. No answer was given, so far as I know. Can you, or any of your correspondents, furnish one? *Pyrus.*

Wellingtonias.—I have some fine plants of Wellingtonia gigantea, and have been advised by one friend to trench the ground round them some five or six feet from the stem, to encourage them to grow. Another friend advises me not to attempt such a thing, as it will be sure to injure and perhaps kill the trees, as the roots will have got too far away, the trees being 12 to 15 feet high. Which party is right? *W. K.* [It has long been a rule among practical men to consider that if a tree is growing freely, and has attained a height of, say, 20 feet, that the roots have extended 20 feet all round. I need not say how erroneous such a calculation is—still it acts as an approximate guide to planters. I need only instance a flame-shaped tree like the Lombardy Poplar, and compare it with a Mushroom-shaped tree like the Oak, to show the absurdity of the calculation, for the Oak would have ten times the amount of materials in its structure that the Poplar had, when both had attained the same height. Therefore, if the Wellingtonia has attained 15 feet in height, I should from the nature of the plant and its age conclude that its top and its roots formed an equilateral triangle of, say, 17 feet; so that if a peg were placed at 8 feet 6 in. from the stem of the tree on each side, the distance between the pegs would be 17 feet, and if we reckon this as the base line, then the apex of the triangle, the top of the tree, would be exactly 17 feet from the pegs on either side. Now as regards the digging—or rather forking, for we must discard the spade from this kind of work, and use the steel digging fork—there can be no risk whatever in preparing the soil, if we begin at 9 feet from the stem of the tree; and when we consider the style of tree that the Wellingtonia gigantea is, we shall see the need of extensive preparations. We reckon a tree that will square a foot on the side, and run to the length of 30 feet, a good-sized tree; now we read of a Cedar that squared 9 feet on the side, and that ran to the length of three 30-feet lengths, making by itself 243 good-sized trees. The Cedar is but a small tree when compared with the Wellingtonia, and consequently the latter will need an acre of land to begin with, and that acre as rich as it can well be made, and even this will count only a mere smack for the first hundred years, leaving out of the calculation its probable duration of other 1900 years. Therefore give it, as the sailors would say, a wide berth now, that it may establish itself. We shall have to commit to the keeping of this tree our credit as planters, when we have all gone the way whence we shall not return; and Macaulay's New Zealander, 1000 years hence, may perhaps adorn his sketch of London Bridge and St. Paul's in ruins, by adding a Wellingtonia on the Surrey side, scathed by lightning. *A. F.*]

Bulbs for Winter Gardens, &c.—Professor Lecoq, at the Botanical Congress, as reported in your columns (see p. 755), spoke of the value of bulbs of Colchicum byzantinum for decorating rooms, winter gardens, &c., as it was not only beautiful as to its flowers, but required absolutely no attention. There must be other bulbs that would flower in the same way on a table or a mantel-shelf. Can you give us any information thereupon? *Bulbus.*

Worms.—I have been asked whether bichloride of mercury or corrosive sublimate in the proportion of 2 drachms to the gallon, as used for destroying worms on Grass plots, would harm any plants if it should by chance get on them. Now, one of the oldest recipes for destroying worms on lawns and Grass plots is lime water, as clear as river water, obtained by allowing the lime to precipitate, and using only what the water holds in solution. No doubt some of the elder brethren of the blue apron will recollect the quack worm-doctors who made the lime-water so weak as only to bring the worms to the surface, and when the delighted owner of the Grass plot had been sufficiently astonished at this exhibition of skill, the stronger lime-water was applied, and the worms writhed their skins, having little else to writhe. I hardly know how to express the death of earthworms, for as they are always short of breath they could have no last gasp, and therefore the French idiom, "*hors de combat*," is perhaps best. As then, this form of killing earth-worms is not attended by any risk of poisoning either persons or plants, it is infinitely better than corrosive sublimate, which is certainly one of the most deadly of poisons, and one, too, which is highly concentrated. It is a fact well known to experienced cultivators that where a large tree has stood in the way of some improvement, and could not be got rid of by fair means, a little mercury applied to the trunk in a small auger hole has been found sufficient to kill a tree 100 years old. Of the best preparation of mercury we have accurate definitions, and we know its power, and can readily tell where it will kill and where it will cure. It is calomel, and one to five grains or more are frequently administered to an adult as a dose. Now, as corrosive sublimate is much more poisonous than its mercurial cousin calomel, we may well take counsel before trusting such a terrible drug. The two drachms are equal to a quarter of an ounce or 120 grains, and a gallon of water is equal to 160 fluid ounces; there will, therefore, be three-fourths of a grain of corrosive sublimate in every fluid ounce of water. It is clear that only such a person as a dispensing chemist could be trusted to weigh and mix such a highly concentrated and dangerous drug. I have no hesitation in saying that if a little of this poisonous fluid fell upon the leaves of an ornamental plant it could not be harmless, but the greater danger would be if the fluid got to the root, and the first shower of rain could not fail to carry this medicated water to the roots. The whole appears a needless risk, and one would incur a serious responsibility by encouraging the tampering with poisons, when the safe harmless lime-water, above alluded to, is equal to the work. I do not pretend to further knowledge in the action of bichloride of mercury upon plants than what I have given above. I have poisoned worms in the throat of ornamental poultry most effectually by calomel, and can therefore vouch that mercurial poison will kill worms, but I required the apothecary's scales and weights, and the whole thing is quite out of the way of either practical gardening, or every day life. *A. F.*

Bedding Plants.—It is very evident from the remarks of your numerous correspondents, that Iresine Herbstii is in great favour, particularly in the Midland counties, the climate of which must be favourable to its development. Its advocates fail, however, to give us any idea of its colour. I am so far unfortunate as never to have seen it in good colour when planted in the sun, either at home or abroad. With us, in the neighbourhood of London, it is of a dirty brown red: in fact it has a washed-out appearance, and gives a dull effect to either ribbons, diamonds, or rays—the latter it spoils completely. So much does the sun affect the colour, that in spring, when a few thousands were placed in rows to harden off, on the north side of a wall here, it could be told distinctly almost to a leaf how far the sun's rays had reached. The difference was so obvious that visitors frequently put them down as two varieties. In the shade it colours up and turns out well; and as a house plant it is both effective and interesting from the rich blood-red veins of the leaf. Although a little foreign to this subject, I may remark that I think gardeners do not make so much use of foliage plants for winter decoration as they might. If such plants as that under notice, the Coleus, the Centaureas, Mrs. Pollock Pelargonium, &c., were propagated early, nothing could be more effective in conservatories, when arranged closely behind or around specimens or designs. They are, moreover, very pleasing in houses that are lighted up at night. Iresine Herbstii is here one of the best for this purpose; and the plants, all of them, come in for propagation in the spring when other conservatory plants become plentiful. Of the Alternantheras more experience is required, both as to soil and situation. A. spathulata has a brown leathery appearance, and requires some other very decided plant to bring it out; A. versicolor has a habit to degrade it shows pale. A. sessile amœna is so very 'miffy' that I fear it will never be useful. A. paronychioides, which the Floral Committee decided last week was not good, is with us by far the most effective; I wish they could have seen it in masses by the thousand—they would then agree with me: at the same time their judgment on the plant as shown was correct. In small patches it would be hopeless to make any one believe in its effectiveness. Telekiauthera versicolor will be most effective and useful for small beds or edgings close to the eye, where a mixture of good peat can be added to coax it into good growth. *F.*

Moles.—At this place are several large manure-water tanks near the kitchen garden; in one of these, three parts full of water, I found last year eight or nine of the glossy black gentlemen drowned. This kind of trap might therefore be tried in some of their principal runs. Dig a hole the depth and width of a large flower-pot, galvanised bucket, or washing pan, glazed inside. Fill these vessels half full of water; insert one in each hole, just allowing the rim to be under the bottom of the run, and cover over with some sticks and matting, taking care to have the trap dark. There can be no harm in trying this experiment, and in reporting the result. *G. D. Drummond, Gardener, Highbridge Hill, Bath.*—An allusion has been made in your columns to the time in which moles may be found at work, I may just state that myself and two friends were standing the other day at my lodge-door conversing together, when we saw a mole at work about 12 feet from us. We therefore determined to watch how often he did work, and we made up our minds to disturb him every time we saw him in active operation. When we first observed him it was just half-past 12 o'clock in the day; we then disturbed him; in 20 minutes afterwards he was at work again. We repeated our annoyance; he was at work again in 17 minutes, and so we kept on disturbing him every time we saw him up to 7 o'clock in the evening, when we dug him out. The longest interval was 25 minutes. This mole was therefore at work from half-past 12 till 7, with the exception of a few intervals of about 20 minutes at a time. *E. Marcham, Drayton Lodge, Ealing.*

The Pinetum at Baron Dimsdale's, Essendon, Herts.—Lately, whilst inspecting competitive "cottagers' allotment gardens in Hertfordshire," I had the good fortune to witness the noble specimens contained in

the Pinetum at this place; and so struck was I with the size and characteristic symmetry of many of the trees, that I think the measurement of some of the most striking, together with the following few remarks respecting them, will not be uninteresting. The situation lies high, and much exposed to westerly winds, whose devastating influence is but too plainly shown. The grounds are planted in a most natural manner, and do credit to those who planned them. The shrubs originally planted for their protection, though ostensibly left to protect their nurslings from excessive winds, are not without their use, as they serve to enhance the general appearance of the place. Here and there amongst them are to be seen peeping forth varieties of Asiatic Berberis, with berries frosted over with white, Arbutus, Juniperus, Rhododendrons, &c. Next to a huge specimen of Pinus insignis, some 55 feet high and 2 feet 6 inches in diameter, is a noble example of Taxodium sempervirens, 30 feet in diameter and 55 feet high. There is here, also, a noble specimen of Picea nobilis, 24 feet in diameter and some 10 feet high, crowned with no fewer than 70 huge cones, growing three and six in a bunch—quite a queen among Piceas. There are, moreover, P. Webbiana, 27 feet in diameter and 45 feet high; P. Pinsapo, 20 feet by 30; also nice specimens of P. cephalonica and Picea amabilis, the last 18 feet high. P. pectinata pendula is remarkable as a weeping variety; its widest branches seldom exceed a yard in diameter, and they grow to a great height. P. glauca alba, a pleasing symmetrical tree, is loaded with small cones; it is 18 feet in diameter by 24 feet high. There is here, also, a very fine example of Pinus muricata, a species which retains its prickly cones upon its wood with such persistency, that as the branches extend in growth they become partly enveloped in the bark and even in the wood of the parent plant, which has upon its branches many cones of 20 years of age. It would be an interesting fact to know by what strange provision of Nature these cones are thus retained, and not, as is generally the case, scattered forthwith to the ground and to the winds, ready for reproduction. This fine specimen is 27 feet in diameter, and 35 feet high, the two-coloured cones when young being very conspicuous, encircling, as they do, the stems in bunches of five or six. It has been too generally understood that the Mexican varieties of Pines only thrive in this country under the partial protection of glass—a fact to a great extent true, as the lopped recumbent forms of many of these, and even of those of colder regions show, remnants of the devastating winter of 1860-61. One, however, which has been often classed with the least hardy, the long-leaved Pinus Lindleyana, has withstood all the severity to which it has been subjected. At present it looks remarkably well, and it is a very fine specimen, distinctly discernible amongst its many compeers even at a distance. I must not leave unnoticed a fine pigmy Pinus Laricio near the house named, quaint and dumpy in form. Of Abies Douglasii there is one magnificent tree, 45 feet in diameter and 65 feet in height. A plant of the Himalayan Khutrow has here reached its average native height, being at least 50 feet high, and some 24 feet in diameter. Associated with this, A. Morinda has a very pleasing effect. Cedrus Deodara may here be seen in a fruiting stage, while a plant of Cedrus crassifolia has hardly recovered from the ever-memorable winter mentioned above. *William Earley, Digswell.*

Societies.

ROYAL HORTICULTURAL: *Oct 2 (Floral Committee.)*—G. F. Wilson, Esq., F.R.S., in the Chair. Two candidates were elected Fellows. Foremost amongst subjects exhibited was an example from Mr. Bateman of the magnificent Cattleya Dowiana, of which a full account was given last week (see p. 922), and which fully bore out all that is there stated in reference to its wondrous beauty. It was awarded a First-class Certificate, which it well deserved. To Messrs. Veitch was awarded a special Certificate for a fine collection of Lapageria rosea, together with Sarmentia purpurea, and its highly coloured round-leaved variety called S. rotundifolia purpurea, and a collection of Orchids, among which were various beautiful varieties of Cattleya, chiefly hybrids raised by Mr. Dominy; and one or two well-flowered Odontoglossums. From the same firm also came a small plant of the handsome Alstrœmia ligtu-hybrida. From Mr. Bailey, of Rugby, came a Victoria, and various Pelargoniums, among the which, named Salmon King, a zonal variety, a Scarlet-less Geranium was awarded. From F. G. Hawkins, Esq., came Crocus nudiflorus, violet purple, and C. speciosus, bluish purple, now in flower; together with a collection of Zonal Pelargoniums, illustrative of the way in which they break into a variegated form; some pretty cut blooms of miniature Dahlias, and two carnation-striped Phloxes. To a Lobelia belonging to the cardinalis section, named Ruby, deep velvety crimson scarlet, from Mr. W. Bull, of Chelsea, a First-class Certificate was awarded. Mr. Rawlings showed cut blooms of Dahlia Mr. Shaddon, in good condition; and Lilium punctatum album, with fasciated stems, and cherry-pie in a state of monstrosity, came from J. T. Noakes, Esq., Brockley Hall. Mr. Tillery furnished cut blooms of Gladioli, as did also Mr. Stevens, gr. to F. E. Williams, Esq., Malvern Hall. From Messrs. Francis & Co., of Hertford, came a variety of common Jasmine, handsomely variegated with gold. This was stated to be a seedling, which had not only variegated leaves, but also a variegated stem. It would in all probability have received a Certificate; but that some of the Committee believed they had seen a form of the same Jasmine, similar to that exhibited, before. Mr. Wooster, a gentleman present, also stated that he had seen the same description of variegation, 20 years ago in the garden of the late Mr. J. C. Loudon at Bayswater, and also at Nawarth, the seat of the Earl of Carlisle, in Cumberland. He stated that at Bayswater a bud of the variegated sort, was inserted in a common Jasmine, and that although the bud did not take, the stock by inoculation of the sap afterwards broke out into the form of variegation the bud was intended to supply. From Mr. Harrison, gr. to F. Wright, Esq., came Callicarpa purpurea, covered with dense clusters of pretty purplish-red fruit. To Mr. Green, gr. to W. Wilson Saunders, Esq., was awarded a Special Certificate for a collection of plants of botanical interest. Among them were Physianthus albens, with leaves variegated with creamy white; a Prescottia from Santa Martha, a terrestrial Orchid, with prettily variegated leaves; a new variegated Sarpentaria; a Melastomad, with handsome foliage; and a Dorstenia, with leaves possessing a fine shining metallic lustre. Mr. Standish reproduced the collection of Ascidians exhibited from his splendid gathering which he showed at the last meeting. From Mr. Bull came Cypripedium schlimi, a singular and rather pretty kind, with white blossoms mottled and flushed with rose. Mrs. Spurrell, of Brighton, showed dried fronds of ferns, and one of two pairs of her plants made by collation.

Oct. 2 (Fruit Committee).—From Mr. Carr, gr. to P. L. Hinds, Esq., came a fine specimen of the fruit of Carica Papaya, in a ripe state; a fine fruit of Passiflora quadrangularis, and a hand some Apricot-coloured fruit of another Passion-flower, the name of which could not at the time be ascertained. From the garden of the Society came various Pears, among which were Suffolk Thorn, a fine variety, with a flavour like that of Gansel's Bergamot; Mignonne d'Hiver, Flemish Beauty, Hepworth, and Retour de Rome. Than the last two there are many better Pears in the season, but this year, when most Pears are but indifferently flavoured, the kinds just adverted to are really better than usual. Danvers' Yellow Onion were again shown by Mr. R. Dean, and Nuneham Park were also represented from various quarters; but upon their being compared with well-grown specimens of the same from Mr. Whiting, of The Deep-dene, the Committee concurred in the decision previously arrived at at Chiswick, viz., that the Nuneham Park and White Spanish were one and the same kind. Messrs. Veitch showed very fine Endive of various kinds, including white and green curled, and broad-leaved Batavian.

Notices of Books.

Rocks Classified and Described: a Treatise on Lithology. By Bernhard Von Cotta. An English Edition by P. H. Lawrence, with English, German, and French Synonyms. London: Longmans. 1866.

When Linnæus laid the foundations of the modern science of Geology in his "Systema Naturæ," somewhat more than a century ago, he based his classification of the materials of the earth's crust upon their structure and relative position. The improvements of Werner in Germany and of Hutton in Scotland were confined to the nature and origin of the rock masses, and the hot disputes between their disciples—the Neptunists and Vulcanists—in the end of last and beginning of the present century, went no further. It was not till the importance of Smith's "Table of Organic Remains" became recognised that the science of geology was anything more than a treatise on lithology. But Smith's discovery that the different strata could be distinguished by their contained fossils, followed up by the remarkable labours of Cuvier, Brongniart, Owen, and others, gave a new direction to the science, and made geology synonymous with palæontology. So thoroughly were the labours of the lithologists forgotten, that, except in regard to igneous rocks in which no fossils occur, the whole subject of lithology was ignored, and the lithological writings of Hutton and Playfair, of Jameson and MacCulloch, were placed very much on a level with the exploded "Theories of the Earth" of an earlier day. Within the last few years, however, some geologists have sprung up who take a more enlarged and accurate view of their science, and give both lithology and palæontology their true position. To this new phase of the science we owe the translation of Cotta's manual on Rocks. Mr. Lawrence supplies a desideratum which has for some time been much felt by English students, for with the exception of the valuable but necessarily short section of Professor Jukes' "Manual of Geology" devoted to lithology, there is nothing in our language treating on the subject since the almost forgotten writings of the Scottish geologists whom we have named. On the Continent there have been a few who have attended to this subject, such as D'Archiac and Durocher in France, and Naumann, Senft, and Cotta in Germany.

A botanist in looking into this volume will be struck with the serious injury that the subject of which it treats suffers from the want of a universally received system of nomenclature. It is often urged by the unreflecting that the Latin names, often barbarous and almost unpronounceable, which are given alike to the Daisies and Buttercups of our fields, and to the exotics of our conservatories, are great barriers to an acquaintance with the science. We would ask every such complainer to look at the confusion necessarily existing in lithology from its not having yet freed itself from the empirical nomenclature always connected with a young science. Each country here adopts a name native to it for the various rocks. Thus our trap rock is the German grunstein, and the French dolerite—at least these are the synonyms given. But that they are precisely the same rocks is not an easy matter to determine, and that mistakes are made is evident, as for example in respect to basalt (a word common to the English, French, and German languages), which Cotta says is unknown older than the tertiary strata, yet undoubted basalts, according to the British notion of the rock, are found associated with palæozoic strata, and belonging to that great period of the earth's history. It matters not that Senft considers the basalt of the Rowly Hills near Birmingham to be a melaphyr. This only makes confusion worse confounded; and until a universally accepted term is applied always and only to the same substance, lithology can never stand on the same platform with botany as a science.

The work before us consists of three parts, the principal being devoted to the classification and description of the different varieties of rocks. This is preceded by an account of their physical structure, and of the principal elementary and mineral substances which enter into their composition, and is followed by some observations on the processes of rock formation. Much has yet to be done before a satisfactory system of rock-classification is established, and, while we are compelled to take exception to many points in Cotta's classification, and to consider the association of rocks in some cases arbitrary, we nevertheless believe this to be in advance of previous systems, and to be a very important contribution towards the desired end. It is evident that the author himself considers it as only a temporary classification, for after arranging the great bulk of the rocks in several more or less natural groups, he combines a number of refractory residuaries into a motley assembly, whose only character in common is that they will not fit in with any of his already formed groups. Such rocks as schorl, coal, quartz, iron-stone, rock-salt, are in this way associated together.

The old classification into igneous, metamorphic, and sedimentary rocks is adopted for primary divisions. The fact which is at the foundation of Durocher's curious speculations, that some igneous rocks, like granite, have so much silica in their composition as to form, in a free condition, a distinct ingredient, while in the remainder it is not sufficient to saturate the metallic oxides, as in greenstone, satisfactorily divides these rocks into a silicic and a basic series. The further division of each series into volcanic and plutonic rocks is less satisfactory because entirely hypothetical.

We had thought that the notion of associating any set of rocks, because they were metamorphosed, had been exploded. Whenever we go beyond the loose superficial sand, gravel, mud, and soil, we find metamorphic action. Indurated clay, shale, schist, and slate represent but different stages in the metamorphism of clay, as do the various kinds of sandstone and quartz rock of sand. To draw a line at any stage of the process and separate the more highly altered rocks into a special group, is an arbitrary proceeding, and cannot be expected to bring together a natural series. We accordingly find primary crystalline limestone, clay-slate, and schorl—all extremely metamorphosed rocks—excluded from the section. There are some strange associations among the sedimentary and fragmental rocks. Tuffs are removed from the volcanic series, and placed as a fragmental rock with conglomerate and sandstone; and, unable to say when metamorphism has gone so far as to separate a rock from others having the same origin and the same composition, he includes in this section many that are as truly metamorphic as those associated under that title.

The great value of the manual will be found in the characters of the separate rocks; and this is perhaps all that can be expected in the present state of lithology. Not until there are a large series of clearly defined species (if we may use the word) of rocks, can we have any classification of real value, and every contribution, like the present, towards that end must be welcomed. The volume opens up a new field to the British geologist, and must be in the hands of every intelligent student of the science.

BOOKS RECEIVED.—*The Handbook of the Stars, &c.* By R. A. Proctor. (Longmans.) The maps in this little volume look pretty, but the tables are rather alarming to the uninitiated reader; nevertheless they constitute the most valuable feature of the book. Among them is one by which, with a little patience and attention, the appearances of the heavens at any particular day and hour may be read off, the table in question, showing the constellations which occupy the different quarters of the heavens for successive hours of every day in the year.—*The Scientific and Literary Treasury.* (Longmans.) A new edition of a well-known popular dictionary issued under the superintendence of Mr. J. Y. Johnson, and containing so many alterations and additions as to render it more a new work than a new edition of an old one. It will be found very useful for a reference by those to whom more bulky or costly volumes are inaccessible.—*A Synopsis of Heraldry, &c.*, by C. N. Elvin (Hardwicke), gives, as its title implies, a general view of the science of heraldry, together with a dictionary of terms and a copious series of illustrations. The precision and accuracy of expression displayed in "blazoning a coat" correctly according to the rules of heraldry bear favourable comparison with the similar qualities as manifested by descriptive naturalists. To those interested in the noble science, this will prove a valuable compendium.—The numbers of the *Technologist* for this and the preceding month, among other articles with which we are not immediately concerned, has one on the culture of salmon in Australia, wherein it is incidentally mentioned that "enclosed in the ice house with the salmon ova were two bundles of heather and a few shrubs, as an experiment to try their plan of sending trees. The six Apple trees and the two Heaths, three plants of each sort, are in a most perfect condition. There is not even a decayed leaf on the Heaths, and all the plants are in as perfect health as if they had only been lifted out of the nursery on the day they were unshipped." Speaking of the Chinese Sugar-cane (Sorghum) in another article, Mr. J. H. Smith, of Illinois, remarks as a curious instance of the manner in which momentous results often depend upon the slightest thread, that of the packages sent by Count Montigny to Paris in 1851, only one seed of the Sorghum germinated at Toulon, and if by any attack of insects or injudicious planting, cultivating, or manuring, or any one of a thousand possible mischances the plant from this one seed had been destroyed, France and America might have been for years without knowledge of the Chinese Sugar-cane. The "Imphee canes," from south-east Africa, are spoken of as far superior to all others for sugar making, their juice giving seven-tenths of sugar as compared with that of the Chinese Sorghum, which yields only two-tenths. With reference to textile fabrics Mr. Sherwood puts a question well worthy the attention of colonial botanists, as to whether it is not possible to increase the length of the down of the seeds of the Bombax, the Asclepias, &c., as has been done with Cotton. A paper on the introducers of exotic flowers, fruits, &c., deserves the attention of our readers, among whom are those best able to confirm the following expression of opinion:—"There has been a class of men whose patriotic affection, or whose general benevolence, have been usually defrauded of the gratitude their country

owes them; these have been the introducers of new flowers, new plants, and new roots into Europe. * * Monuments are reared and medals struck to commemorate events and names which are less deserving our regard than those who have transplanted into the colder gardens of the north the rich fruits, the beautiful flowers, and the succulent pulse and roots of more favoured spots." We are at a loss, not having Gassendi's "Life of Peiresc" at hand, to know what are meant by Jessamines with clay-coloured, crimson, and violet flowers; or the red-flowered Orange maybe. ——The *Pharmaceutical Journal* for September contains a long and interesting address of Professor Bentley on the relation of Botany to Pharmacy; in which not only is the importance of a knowledge of medicinal plants insisted on, but also an acquaintance with the general organisation of plants and of the circumstances that influence the formation, purity, and intensity of medicinal secretions.——Part XXXVI. of the *Dictionary of Chemistry* brings the work to the word Silica. We know of no other work wherein to find a summary of the analyses that have been made of the chemical constitution of plants belonging to so many and varied natural families. For instance, in the present number, in addition to articles on the composition of plants of economic importance, such as Salix, Saffron, or Sago, we find analyses of Salsola, Salisburia, Samadera, Salvia, Sesleria, and many others.

Florists' Flowers.

What is a Florists' Flower?—This question, asked by me some time since in your pages, has caused divers opinions to be expressed, but no one seems to have attempted to reply *in extenso*. I noticed a few weeks since that Mr. Glenny, in another periodical, seemed to think that the question was simple, and emanated from parties who ought to know better, and gave as an answer to some correspondent of his, that a florists' flower was any "herbaceous perennial that had been improved by the hybridiser, and attained to the rank of an exhibition flower." Coming from the compiler of the "Properties of Flowers," one should treat the opinion expressed with the respect due to the writer of such an excellent manual. He has, however, overlooked the fact, that Roses, Fuchsias, Rhododendrons, Camellias, Azaleas, &c., for all which he has laid down "standards of perfection," are shrubs and not herbaceous perennials. It appears to me, if the term is to be retained, it should be understood to include all flowers which the skill of the hybridiser has improved to such an extent that they become additions to the exhibition tables, whether as cut flowers or as plants in pots, as the florist will always welcome any plant that can be so improved as to repay him for the skill and attention bestowed upon it. And any fresh genus or species is doubly welcome as increasing the varied attractions of the already long list of plants and flowers staged at our numerous exhibitions.

The autumn exhibitions stand most in need of such novelties, as they rely year after year mostly upon the same kinds of flowers for a display, and the sameness causes the public to look upon their beauty coolly. The Gladiolus was a great addition to our autumn exhibitions, but since the improvement of this gorgeous flower we have only had novelties of already existing species to offer to the gaze of the crowds who attend every exhibition.

Much might be done by arrangement to alter the monotonous appearance of exhibitions of cut flowers, as year after year they still present the same straight and formal lines of table, unbroken by any light or elegant addition. If this were changed it would add greatly to the interest of displays of cut flowers. Now, were it not for the useful adjunct of fruit, I am afraid some of our autumnal exhibitions would be thinly attended. *William Heale, Upper Clapton.*

It appears that we are not yet agreed about this momentous question. You admit that the Auricula is not a greenhouse plant, but say that it is a half-hardy frame plant, referring, of course, as I did, to the species generally, not to any delicate varieties that florists may have raised from it. [No.] But I must here, in passing, notice an error in printing my last communication. I wrote *species*, not *genus*, as printed; there is no such genus as Auricula. The genus to which it belongs is, as I need not inform you, Primula. Now with the greatest deference to your superior floricultural knowledge, I must demur to your statement that the Auricula is a half-hardy frame plant, for I had only to walk into my own garden to convince myself that this statement cannot be supported, and I there had the evidence of my own senses, that the Auricula was flourishing among the hardiest of my hardy border flowers. But to be perfectly sure that my senses had not deceived me (as they have sometimes done), I have corroborated their evidence by such witnesses as Paxton, Loudon, and Lindley, none of whom call the Auricula a half-hardy frame plant; but on the contrary they all treat of it as a hardy herbaceous perennial. Lindley (whose authority you will doubtless respect), in speaking of the genus, says with poetic feeling that it is "common in the northern and colder parts of the globe, growing in marshes, hedges, and groves, by fountains and rivulets, and even among the snow and cloud-capped mountains." You are no doubt quite right in calling it a half-hardy frame plant if you look only to the mode in which it is now cultivated by florists; but this mode of culture by them only tends to verify one part of my definition, showing, as it does, that great care has been bestowed upon its culture. It does not necessarily follow that the wild plant which these florists have so much improved is a half-hardy plant. On the contrary, all the numerous varieties they have raised have had their origin from the flower border, or from such localities as those mentioned by Lindley. Therefore, I still contend that the Auricula comes entirely within the limits I have assigned to florists' flowers, and cannot be excluded therefrom by reason of its being either a greenhouse or a frame plant. It is clearly a hardy herbaceous perennial that has received careful culture.

You also state that I have "not yet given any reason why shrubby plants should not be included in the category." Now, if you will kindly refer to my communication at p. 782 of your present volume, you will there find my reason stated.

The ancient line of demarcation between florists' and other flowers having been so much broken through by modern florists, and the term "florists' flowers" conveying now such a hazy, shadowy idea, my endeavour has been to render the idea conveyed by the term more substantial and intelligible by inducing modern florists to repair the breach that has been made in the boundary, and confine themselves and their flowers within its former limits: and, in order to aid them in doing so, I have ventured to define the boundary as it existed in the time of the earlier floriculturists. But if the boundary I have defined had excluded the Auricula, it would doubtless have been erroneous. I think, however, that I have shown that it is not so excluded. If you think that I am in error, as I possibly may be, I should be quite satisfied, and consider that I have not written in vain; if I should be the means of drawing out a better definition of a florists' flower that shall be tangible and conclusive. *A. T.*

[Our correspondent has missed the gist of our remark, which was to the effect that Auriculas being tender, and being rightly included amongst florists' flowers, it was only a question of degree whether Azaleas, for instance, should be included likewise. Eds.]

The Apiary.

Mead or Metheglin.— A few weeks ago, a lady in the country asked me to do her the kindness of driving out the bees from three of her hives, as she could not bear the idea of her industrious little favourites being consigned to the death-dealing fumes of the sulphur pit. On arriving at her residence for the purpose, she informed me that her object was to obtain sufficient honey to make a few gallons of metheglin, of which she was very fond. The choice of the hives to be broken up she would leave to me. Having obtained the history of the ages and apparent present condition of the various hives from her servant girl, who seemed to be much better acquainted with the details than her mistress, I turned them all up to examine the interiors, and chose for destruction two old stocks and one swarm.

The driving of these three was accomplished with great ease in little more than half an hour; the dislodged bees were securely confined in their temporary houses by being wrapped up in coarse cheese-cloths, and were stowed away in the carriage for conveyance into town, for the purpose of being made up into stocks. I then cut out from the now tenantless hives all the combs containing any brood or eggs; these also fell to my share. During the entire foregoing proceedings I was forcibly impressed with the evidence of the size of the hive affecting the amount both of population and of honey. Although located in a good neighbourhood, the united population of all three colonies was inferior to that contained in many single hives of my own. Nor would all the honey combined equal in quantity that of one of my good-sized supers or large stock hives intended to stand the winter. But I am wandering away from the topic on which I most desire to speak. Having completed my work, I found the good lady prepared with a bottle of metheglin wine, of her own making, of which she was evidently very proud, and which she was anxious that I should taste to pass my judgment thereon. I have hitherto always fancied metheglin to be too sweet and luscious a wine to be likely to make it much of a favourite with myself or the generality of wine drinkers. But I was agreeably surprised to find that this sample was remarkably free from that drawback. This, on inquiry, I found was owing to the admixture of a small quantity of Hops, though their presence could not now be detected. The wine maker said that when the metheglin was put into the cask or large stone jars, it was so extremely bitter that she at first thought of throwing it all away; but this disagreeable bitterness entirely passed off before bottling, and the wine has changed into a very pleasant and palatable beverage. The following is her recipe for metheglin.

"To every gallon of water add 5 lb. of honey; boil for three-quarters of an hour, taking care to skim it well. To each gallon add an ounce of Hops, and again boil the liquid for half an hour. Allow it to stand until the following morning, then put into the cask, and to every 13 gallons add 1 quart of brandy. Have ready bruised spice, according to taste, consisting chiefly of ginger and cloves, which securely fasten in a long narrow muslin bag, and hang in the fluid. Let the cask be lightly fastened down until the fermentation has ceased, and then bunged down very close.

"If a large quantity is made, keep it a year prior to bottling. If only a small quantity, it may be bottled in the following March."

There is a diversity of opinion among wine makers as to whether boiling the liquid is desirable. Some also object to the addition of brandy or other spirit as deteriorating the quality of the wine. This being the season for making metheglin, I should feel much obliged if any of your correspondents who have succeeded in the manufacture of a really good beverage would give some details as to the best mode of carrying out the process. *Apiator.*

Garden Memoranda.

Hamilton Palace.—The last Duke of Hamilton interested himself very much in his Hamilton estates, and it is to be regretted that he was called away at a premature age before his servants were enabled to carry through the extensive plans that were shadowed forth, both in the farm and the garden. Very much was accomplished, from a horticultural point of view, in a short time; but as in similar instances, when the successor is a minor, operations were put a stop to, and things in general compelled to remain *in statu quo*. The present Duke "came of age" in March, 1866, and if he follows his father's footsteps in improving his extensive estates, and his garden and pleasure-grounds, it will give a stimulus to the agricultural progress of the district, and there will be few palatial residences, or noblemen's seats, so thoroughly complete in every sense of the word.

The parks and pleasure-grounds contain altogether, with Cadzow Chase and the old Oaks, somewhere about 5000 acres which never have been turned into arable land. Such a surface as this, in the land of the "hill and the flood" is, as is naturally to be expected, of a diversified character. The Palace is built in almost the lowest site of the estate, being within a few feet of the level of the bed of the river Clyde, and in close contiguity to the burgh of Hamilton. Taste and fashion vary with the age; for now the most secluded spots are selected for the mansions of our aristocracy of birth and wealth; but in ancient times there seems to have been a disposition to build in contiguity to villages or burghs, and Hamilton Palace comes under this category; as an instance of which, tradition informs us that an old henwife gave her address as "next door to the Palace." Even now the old portion of the burgh is inconveniently close to the mansion, although quantities of houses have been acquired and pulled down by the family during the present century. The north, south, and east sides of the Palace command a most extensive range of scenery. The modern château of Chatelherault, the dukedom of which is now confirmed by the Emperor Napoleon to the Hamilton family, is a prominent object in the distance, being situated on a considerable eminence, and overlooking the banks of the Avon, and the old ruin of Cadzow Castle, on the opposite side of the river. This was erected in 1702, and is an exact imitation of Chatelherault in Poitou; having beautiful gardens with fine shrubs, and an abundance of splendid specimen forest trees about and around it, with a fine pasturage surface, having bold and irregular undulations, commanding a most extensive range of Lanarkshire, with Glasgow in the distance, and the high peak of Ben Lomond towering above the Campsie range, visible on a clear day. On the opposite side, and seen from the principal front, is a spacious double line of trees on either side of an equally spacious avenue, reminding one of the unique avenue of similar character receding from Windsor Castle to the low ground, and then rising gradually until lost in the sky line. The Hamilton avenue is scarcely so long, but it is much broader, and nearly quite flat; with the splendid specimen trees of Elms, Oaks, and a few Limes that are dotted over its surface, somewhat irregularly, it has even a more imposing effect. Landscape gardeners ought to study and give effect to this; for, unless there is breadth of somewhat gigantic proportions, length is apt to become dwarfed and cease to harmonise as the trees increase in growth.

The entrance to the Mausoleum is entirely out of character with the capacity and purposes of that fine building. Its noble proportions are actually lost to the eye until you run up against it, and no suitable trees and shrubs have been introduced. Mr. Mitchell himself is fully alive to this, but his hands are tied, however well-intentioned his plans may be; and there has been so much left undone in days of yore, both in the pleasure grounds and the garden, that everything needful cannot be undertaken and put to rights at once. In the park scenery aged forest trees of great dimensions meet you at every step, the Oak and the Elm predominating, under whose umbrageous shade great herds of cattle browse. There is one blank, however, strikingly apparent, which is due to the rigour of the winter of 1861, and that is evergreen trees. All the fine clumps of Laurels, and most of the fine specimen Hollies, which were dotted over the landscape rather profusely prior to that time, have fallen a prey to extreme cold, aggravated much more around the palace by its low locality, and the fresh-water Clyde. In some instances Holly trees, quite a foot in diameter, were partly decorticated, and consequently became unhealthy and died. English and Irish Yews, however, are now towering above their evergreen fellows in their somewhat formal individuality, doubly valuable on account of their hardiness. Close by the west side of the Palace is the old garden, at considerably higher level. This is now about to be doomed, and converted into a parterre; and a little way further west on a still higher elevation are the new gardens overlooking the burgh of Hamilton. These gardens, with forcing-houses and other accessories, are in an advanced state of completion, and as they are on a comprehensive scale, and well appointed in every way, I shall attempt to describe them fully on a future occasion. *J. A.*

Miscellaneous.

Architecture and Landscape Gardening.—We extract the following from a review in the *Builder* of Mr. Hughes' book on this subject, already noticed in our columns (see p. 639):—"The alliance of architectural forms with the earthwork, and the trees, shrubs, flowers, and water, which are the chief materials in the hands of the 'landscape gardener,' as he is generally regarded, is not more important for his art, than in the presence of Nature to the highest effect of the art which is of the profession of 'architects.' Indeed in

no treatise, even including that which is now on our table, have we met with the precise recognition for which we contend, of the essentiality of contributions from Nature to architectural effect of whatever kind, and wherever it may be. Some treatment of natural foreground and base, with accessories that are architectural in detail, may indeed be deemed not unnecessary, by the qualified designer of a house in the country; though, occasionally, we have seen fit to dwell upon an importance of the elements of effect referred to, as inadequately recognised. Not every architect is a Sir Charles Barry, perfect in the details of balustrades and steps, and aware of what may be done by terraces and sunk areas; whilst the necessity for space and foreground to the buildings of towns, and for natural forms and effects, no less than those which are architecturally accessorial and tributary, requires still to be urged upon those who have to deal with sites provided, or who have to purchase the ground wherewith, along with the structure, the architect is to produce the effect expected of his art. The truth is that Nature is important for architecture, not merely as the magazine out of which principles of art can be directly taken, and forms adapted or conventionalised. The lesson from the spreading roots of the tree, so often adverted to by us as to be recollected in the art-treatment of buildings even in the street-where ground is valuable to the inch, represents not the only sort of contribution that Nature should be allowed to make to effect produced through the structural vehicle. Architectural effect, to be realised, requires the operation of Nature in the production of shadows, and variations of shade and tint on surfaces, and in the infinite combinations of light and perspective; and even where there are no trees, Grass, or flowers, it feels the aid from contrast with them, afforded by the recollection, and from the actual presence of the sky and clouds in the scene. Architecture in towns is not absolutely dependent upon the presence of trees and shrubs in the foreground; but its effect must, indeed, other things being equal, be directly proportionate, within certain limits, to the area of space about the building, or rather to the sky-background, and to the non-obscuration of the light which produces the shades and shadows, and to the clearness of the atmosphere through which the work is seen. In short, the chief reason why the appreciation of architectural art—that quality which is irrespective of such attributes as quantity of work, or of such other as the antiquity or curiosity—is so trifling, in this country, is the existence of the smoke-nuisance. The climate is more abused than it deserves to be: in gardening we are so far not behind the rest of Europe, that the *jardin anglais* has been adopted from us; and where we have not trees and flowers in our towns, the reason is that we prevent their growth. The state of the case is, that not only does architecture, as regards the exteriors of buildings, require everywhere, in town or country, clear atmosphere, and some amount of sky-background, but that it may be much served by Grass-esplanade, and by a skilful introduction or disposition of shrubs and flowers, where space permits. Note the value, to the architecture that is, of the few well-arranged flowers on a window-sill of an ordinary London house. But, on the larger scale, note the value of Grass—a foreground, soot-blackened though it be, as in the sunk area near the clock-tower of the Houses of Parliament, between the end of the building and the approach of the bridge, or the value to the neighbouring buildings of the foliaged patch of ground known as St. Margaret's Square; or recollect the added effect to any cathedral where the close has some trees within it—not sufficient to conceal the building, —and where the ground is kept in order. The illustration, however, which is next to hand, of our precise meaning, is the garden of Bridgewater House, since it exhibits at once the treatment of foreground to a building, and in itself the combination of architectural members with such gardening as there may be in limited space in London, and under the disadvantages of the destructive soot. In Paris, beautiful effects of combined architecture and gardening, in public places, or seen through a *porte-cochère*, are not uncommon. In London, space is often thrown away, being merely railed in to preserve the property on the ground. The large flagged spaces between the two lines of railing that there are to the front of the National Gallery, and the similar spaces in Great Russell Street, at the British Museum, may be mentioned. Laid out as gardens, or even as well-kept Grass-plots, the spaces at the National Gallery would impart value to the building, whatever it may be now as art-work. We shall scarcely state too strongly the case, in saying that the competent architect will be a man of much ability in landscape-gardening, and that the landscape-gardener who is capable of producing the finest effects by his art will be one possessed of an ability in architectural detail, such as there are many architects who do not possess. The forms dealt with are for situations where they may be seen from a distance, or when closely approached; therefore, whilst the outlines should be telling, the mouldings and ornamentation should not be calculated to disappoint expectation. Still, if the earthworks or walks and Grass be well managed, on plan, and by the introduction of slight differences of level of Grass or beds—the spaces themselves being each edged or bordered architecturally—even the productions of the New Road may be turned to good use."

Calendar of Operations.

(*For the ensuing week.*)

Owing to the very wet weather which we have lately experienced, the beauty of ornamental grounds has been greatly impaired; efforts should, therefore, now be made while a drier period lasts, to render the damage done to them as little conspicuous as possible, and with the view of accomplishing this object let Grass lawns and gravel walks have a little extra attention in the way of high keeping. Dead blooms from Dahlias and other plants should also be removed, and every means taken to maintain the small amount of gaiety left for as long a period as possible. If forcing-houses and their heating apparatus requiring repairs have not already been seen to, no time should now be lost in putting them in order.

FLOWER GARDEN AND PLANT HOUSES.

At this season every effort should be employed to keep up a good display of bloom in Conservatories and Greenhouses. They will now be used much more than when the weather is favourable for out-door exercise; their inmates, if attractive, will therefore be much more valued now than earlier in the season.

Camellias.—Plants started early last spring will soon be again in flower; therefore these and others should be well attended to with water.

Carnations and Picotees.—In obtaining new varieties the best plan is to have them early; better plants can generally be got in autumn than in spring, and they will have time to establish themselves before winter.

Chrysanthemums.—Care must be taken to keep these in good condition. A little weak liquid manure given occasionally will assist them.

Cinerarias.—If mildew is troublesome, dust with sulphur the moment the pest is perceived. Forward plants may require a shift, and if so, use a rich compost for the purpose, consisting of good fibrous loam and well-decayed leaf-mould, with a proper admixture of silver sand. Let the plants be placed thinly on the shelves on which they stand, and as near the glass as possible. Fumigate occasionally to kill green fly.

Japan Lilies.—As soon as the bulbs are sufficiently matured, which will be known by the decay of the leaves and stems, they had better be repotted; not that this is of importance at present, but it will economise space, and prevent the operation being neglected until after they have made fresh roots. The soil in which they have been growing ought to be entirely removed from the bulbs, and the later divided as may be thought proper, for there will always be found about the crown of the parent some small bulbs, which may be placed in 4-inch pots. If the ripening has been complete, the roots will not be troublesome: but if not, there will be found a quantity of fresh roots remaining. When such is the case, leave them to themselves for some time longer; never pot while it is necessary to cut or break the stronger roots, but run your fingers through them, in order to remove those that are decayed. The pots should be just sufficiently large to receive the bulb and strong roots adhering to it; give a moderate watering to settle the soil, and place them in a greenhouse or cool pit. They will require no further attention until the season begins to excite vegetation, when they must be regularly attended to. Water as soon as signs of growth are visible, but sparingly until they have made leaves, &c., to draw up and give off moisture.

Pelargoniums.—These should be kept rather cool and dry, giving whatever water may be necessary on the mornings of fine days, so that the superfluous moisture may be dried up before the evening; and avoiding the use of fire-heat except when necessary to dispel damp when this cannot safely be done by giving air.

FORCING GARDEN.

Cucumbers.—Stop laterals, and remove even main shoots where too much crowded. Keep up a bottom heat of about 85°, and a moist atmosphere. Let the top heat range from 65° to 70° by night, and from 70° to 75° by day.

Pines.—We may now look forward to every day dawning duller and later than its predecessor, and as the power of the sun declines, so also must our artificial temperatures be somewhat decreased, and in exact accordance with the latter must the amount of moisture be regulated. Take care that the latter is not so excessive as to condense in quantity upon the glass, &c., close up the laps, or run down into the hearts of the plants. To prevent this, evaporating troughs should be more sparingly filled. In clear favourable weather, when a greater quantity of air can be admitted, the amount of moisture may be slightly increased. Watering should be done with great care, and syringing is only admissible on the mornings of very fine days.

Vines.—In the anxiety to keep houses containing fruit sufficiently dry, be careful to avoid the extreme, even in that direction. If the houses are kept too dry by fire-heat, the berries will shrivel, an evil nearly as bad, with regard to some kinds, as decay, the result of opposite management. It is easy to comprehend what is wanted; but to regulate the atmosphere to a nicety requires more care and judgment than is generally to be found. If not already done, let all spare time now be devoted to cleaning the sashes of the different structures, pits and frames included, from the dust and dirt accumulated upon them during the summer. Nothing conduces more to the health and well-being of their occupants than the free admission of light.

HARDY FRUIT AND KITCHEN GARDEN.

Storing fruit and root crops will now require attention; Pears, we find, are anything but good this season, and in all probability they will require more than usual care in order to keep them sound. Trenching and ridging will also now or very soon be the chief work to be done here. Alterations, if any, should also be proceeded with while the weather is at all favourable.

Cauliflowers.—Let those under hand-lights have all the air possible. The lights should be quite closed during severe weather only, and the tops should be tilted in wet; but during fine mild weather they should be lifted off and set on bricks, to keep them clean. Watch closely for slugs, and check their ravages by timely applications of soot. A little finely-sifted clean coal-ash is an excellent thing for covering the surface of the soil between young plants of any kind.

STATE OF THE WEATHER AT CHISWICK, NEAR LONDON.
For the Week ending Oct 3 1866, as observed at the Horticultural Gardens.

Sept and October	Moon's Age	Barometer.		Temperature. Of the Air.			Of the Earth 1 foot deep	Of the Earth 2 feet deep	Wind	Rain.
		Max	Min.	Max.	Min	Mean				
Thurs.	27	29·804	29·583	68	43	55·5	57·1	58	E	04
Friday	28	29·846	29·632	71	48	59·5	57·3	58	S.	00
Satur.	29	29·877	29·678	70	48	59	57	58	S.	01
Sunday	30	29·681	29·383	71	51	58·5	60	57	S.	09
Mon.	1	30·064	29·788	61	50	55·5	60	57	N.E.	00
Tues.	2	29·970	29·806	59	41	50·5	59	57·1	N.E.	00
Wed.	3	30·111	30·004	71	52	61·5	60	58	N.E.	00
Average		29·794	29·599	66·7	49·4	58·5	59·3	58·0		0·0

Sept 27—Uniformly overcast, very fine, foggy at night.
— 28—Foggy and damp, very fine.
— 29—Overcast, fine, partially overcast, mild at night.
— 30—Foggy, fine, densely overcast
Oct. 1—Overcast, uniformly overcast, hazy, densely overcast.
— 2—Foggy, with heavy dew, very fine, uniformly overcast.
— 3—Foggy with heavy dew, very fine, densely overcast
Mean temperature of the week, 4·1·10th deg. above the average

STATE OF THE WEATHER AT CHISWICK,
During the last 40 years, for the ensuing Week, ending Oct 13, 1866

October.	Average Highest Temp.	Average Lowest Temp	Mean Temp.	No of Years in which it Rained	Greatest Quantity of Rain	Prevailing Winds. N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.
Sunday..	63·8	44·1	53·9	20	0·58 in.	2	6	5	2	4	15	5	1
Mon.	63·7	42·4	53·0	21	0·93	1	7	5	4	6	7	9	1
Tues.	63·6	42·5	52·7	23	0·79	—	8	2	4	5	11	6	4
Wed.	63·5	41·7	52·6	24	1·07	1	5	3	3	4	8	10	4
Thurs.	63·0	43·0	52·5	21	0·74	—	5	3	2	4	14	5	3
Friday ..	62·8	42	52·7	22	1·09	1	5	4	1	6	10	3	4
Satur. ..	62·7	42·1	51·9	23	1·07	1	2	3	1	6	9	7	4

The highest temperature during the above period occurred on the 9th, 1st thern 77 deg., and the lowest on the 11th, 1869 therm 25 deg.

Notices to Correspondents.

Books: *W. W. W.* Gordon's Pinetum and Supplement — *Amateur.* Thompson's "Gardener's Assistant," and Miss Maling's "Ladies' Companion" *—Inquirer.* "Dahlias," by Mr. Williams (sold by Messrs. Thomson's "Gardener's Assistant" will suit you better than any other book we know.

Clematises: *E. S.* Evergreens would not suit, nor is it probable that Clematis jouiniana would, but Clematis Sieboldii and C. flammula would do well. Probably you would find the Common Traveller's Joy (*C. vitalba*), so much a common variety of the same. It is possible, however, that Nos. 2 and 3 were from seeds, and not cuttings. The specimen, No. 1 arrived in a state of extreme putrescence, though still recognisable. *M. J. B.*

Gas: *J. P.* The effects described are such as would be likely to arise from gas escaping from the pipes, either from gas-pipes or drains; but if there is such an escape, it should be no great difficulty to discover it by examining the pipes, when they could be repaired if found to be faulty. Are you sure the fault is not in the compost used, or that there has been no mischievous interference with the plants or their roots?

Insects: *Insectivora.* We suppose it is the Earwig which eats your Fuchsia and Pelargonium blooms, or it may be the larva of a moth. As it is usual to catch the hare before cooking it, we must decline advice as to killing your unknown enemy.—*J. A. P.* Besides Red Spider, we only noticed a minute minute black specks on your Peach leaves, possibly excrement of flies. *W.*

International Horticultural Exhibition: *Grenadier.* You are in error as to the position of the Society, and also as to some other matters mentioned in your letter.

Manure: *Constant Reader.* See a note in another column.

Soil: *Amateur.* If a compost of 1 bushel of bones, added to 2 bushels of powdered clay, mixed with 1 bushel of sifted peat (you have the sand in excess, if we rightly understand what you say about stone-brash) be applied, your plants cannot fail to feel the benefit, as these will supply the missing links of which your poor soil is so much in want. Apply it annually, little and often, for your soil is not to be trusted to hold manure for any length of time.

Names of Fruit: *W. L.* Pear No. 2, Beurré d'Amanlis; Peaches too much damaged by carriage for identification; Nectarine Elruge: Apples not sufficiently ripe to name.

Names of Plants: *H. A.* Pinguicula pedunculata. *C. F.* Aira capillaris, a native of the South of Europe.—*G. M.* Physostegia imbricata. Print in small letters.—*T. S.* 1, white variety of Cardamine pratensis; 2, Hyperanthera pedunculata; Pentatilla reptans, double-flowered var. *Primula sinensis* in say in what kind of place, dry or moist, etc., this was found.—*J. B.* 1, Polystichum aculeatum; 2, Polystichum angulare imbricatum; 3, Drynaria Billardieri; 4, Polystichum angulare (young); 5, Lastrea Thelypteris.—*Rev. Specimens* very insufficient. The one appears to be Negundo fraxinifolia variegata, the other, Taxus adpressa.—*W. W. W.* 1, Lastrea Filix-mas; 2, Pteris [illegible]; Doodia cordata—*E. L. Goldsmith.* Nolana prostrata and Linaria bipartita.—*S. H.* 1, Asplenum marinum; 2, Selaginella pubescens; 3, Niphobolus Lingua; 4, Polypodium vulgare.

Table Plateau: *Amateur.* By this term is meant one of the flat tray-like contrivances used to hold flowers as a decoration for the centres of dinner tables, &c. There is no special name for a bouquet of dried flowers.

Trees and Shrubs: *Wm. Anderson. W. M. E.* In addition to the forest trees named in your letter, the following ornamental trees are well adapted for the purpose you name, as giving a good variety of foliage, &c.:—Acacia, Weeping Birch, Robinia Decaisneana, a new crimson Acacia, Purple Beech, Liquidambar, Tulip Tree, Allantus, Three-thorned Gleditschia, Scarlet-flowered Horse Chesnut, Flowering Ash, Negundo, Norway Maple, Scarlet Maple, Scarlet Oak, Turkey Oak, Lucombe Oak, White Poplar, Ontario Poplar.

Variegated Strawberries: *G. F.* Your sport appears to be as nearly as possible like the old Variegated Strawberry, well known amongst growers of this class of plants. Two or three other variegated forms are known, but this is the best. Fragaria grandiflora and F. chilensis are the reputed progenitors of the Pine race of Strawberries.

Vines: *J. Hay.* The Chasselas de Fontainebleau is the Royal Muscadine, an excellent and well-known hardy white Grape adapted for cool vineries, and for early forcing, and sometimes ripening on walls in the open air. It can be procured at any fruit nursery.

Worms: *Insecticide.* See some remarks in another column.

Communications Received.—A. Forsyth.—J. Thatcher.—W. P. —D. T. F.—E. M.

LAWES' MANURES.
The Manures manufactured by J. B. LAWES for the present season of 1866 are now ready for delivery at his Factories, at the following prices, per ton:—

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LAWES' PATENT TURNIP MANURE, and BONE SUPERPHOSPHATE OF LIME	6	6	0
LAWES' SUPERPHOSPHATE OF LIME from BURNT BONE or MINERAL PHOSPHATES	5	5	0
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A Prospectus will be forwarded on application to the Secretary, or may be had of the Local Agents. C. T. MACADAM, Secretary.
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MANGEL and POTATO MANURES
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PROTECTION from the SCORCHING RAYS of the SUN.
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Two yards wide	1s. 9d. per yard run.
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AGRICULTURAL EDUCATION.
The EXAMINATIONS for the SOCIETY'S CERTIFICATE and DIPLOMA will be held at the CLOSE of the WINTER SESSION of the EDINBURGH UNIVERSITY.
Candidates for the Certificate must be 18 years of age; those for the Diploma must be 21.
Candidates for the Certificate must be acquainted with Farm Accounts, Mensuration, and Surveying, and must possess a good knowledge of Practical Agriculture, and a general acquaintance with the Elements of Botany, Chemistry, and Natural History.
Candidates for the Diploma must have previously obtained the Certificate, and must possess a thorough knowledge of the Theory and Practice of Agriculture; of Mechanics and Mensuration; of the Physiology and Treatment of Domesticated Animals; and of the application of Botany, Chemistry, and Natural History to Agriculture.

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Further information in reference to the Examinations to be had on application to the Secretary of the Society, at No. 3, George IV. Bridge, Edinburgh. F. N. MENZIES.

SMITHFIELD CLUB FAT CATTLE SHOW.—The ANNUAL SHOW of FAT CATTLE, SHEEP, and PIGS, will be held at the AGRICULTURAL HALL, ISLINGTON, on MONDAY afternoon, December 10, and Four following Days.
Intending Exhibitors are requested to apply for Certificate Forms by the reference letters as under.

CATTLE.—Form A.	For an OX or STEER (in any Class).
" B.	For a COW or HEIFER (in any Class).
" C.	For a BEAST in Extra Stock.
SHEEP. " D.	For a PEN of 5 WETHERS (in any Class).
" E.	For a SINGLE SHEEP in Extra Stock.
PIGS. " F.	For a PEN of PIGS (in any Class).
" G.	For a SINGLE PIG in Extra Stock.

ENTRIES for LIVE STOCK CLOSE NOVEMBER 1.
Prize Lists, Forms of Certificates, and all information may be obtained on application to MR. DAVID PEEL, Assistant Secretary, at the Office of the Honorary Secretary, corner of Half-Moon Street, Piccadilly, London, W.
N.B. All communications respecting the Show must be addressed to the Assistant Secretary, as above, and should bear outside the words "Smithfield Show."

The Agricultural Gazette.

SATURDAY, OCTOBER 6, 1866.

THERE can be no doubt that the present restrictions on the foreign cattle trade, whatever useful purpose they may serve, are doing English agriculture a great deal of harm. Store stock, which is what our farmers want to buy, is at an outrageously high price, and the enormous imports of fat meat from abroad are completely revolutionising the trade in fat beasts, which is what they have to sell. The value of that which the English farmers want to sell is thus artificially depreciated, and the price of what they want to buy is artificially exaggerated. The carcase trade and fat meat trade with foreign ports is swamping Smithfield Market, and there has hardly ever been so large a quantity of cattle held over unsold from one market to another, as we have lately witnessed. And yet if a man wants to buy a milk-cow or a lot of beasts to feed, he has to pay a price which he can hardly hope to make a profit off. If the store stock of other countries were available for our farmers as their fat stock is for our butchers, we should retain a fair portion of that artificial premium which our Orders in Council are now putting into the pockets of foreign feeders. As the matter now stands, the English feeder is placed at a very great disadvantage.

Take the cattle trade with Denmark for example. The cattle produce of Denmark is largely in excess of her requirements—a large number is exported each year.

The present condition of the farming there is not suited to feeding stock, consequently they export them in a store or lean condition.

Last year they exported 38,934 beasts, 639 calves, 29,851 sheep, and 3905 hogs, of which 5300 beasts, 60 calves, 16,800 sheep, and 800 hogs, were shipped to this country fat and ready for slaughtering. The remaining number were sold to Hamburg and Holstein, &c., where they are fed, and thence find their way to our markets. Owing to the restrictions at present in force in regard to imported stock, lean or store cattle cannot be imported here at all, while it is clearly more to our interest to import lean cattle and feeding stuffs, than to force the foreigner to consume his produce at home, and send us over his stock in a fat condition. Denmark is and has been quite free from Cattle Plague, her geographical position enabling her to adopt precautionary measures against its chance introduction. The regulations are of the most stringent character, and its Government is willing to adopt any mode of supervision that may be thought desirable to give additional security.

The Report of the House of Commons Committee of last session contains good evidence on this point (see questions 5379, 80, 82, 88).

We understand that Denmark could at once export from 40,000 to 50,000 store beasts per annum, with a probable increase of 10,000 each year, and it could also send us large quantities of food materials, as oilcakes, &c., to aid us in fattening these animals on their arrival.

Denmark would also be a good customer to us for bulls, rams, &c., to improve the present breeds of that country.

There can be no risk whatever in admitting cattle from Danish ports, certainly less than the chances of contagion by allowing the Falkirk Trysts to be held in opposition to the opinion and wishes of the Highland Society and of the Chamber of Agriculture of Scotland.

Whatever is done should be done quickly. Farmers require store stock, and shippers are equally interested in getting them safely into port before winter sets in.

—— MR. MORLAND, of Courtlodge, Lamberhurst, is about to dispose of a portion of his Short-horn herd, owing to a diminished extent of occupation. The sale will take place at Marshe's Farm, Lamberhurst,* on Tuesday, Oct. 9, at 1 P.M. There are several families of excellent pedigree represented in the portion of the herd for sale. *Caroline* and her daughter, Lots 5 and 17, are of first-rate descent—bred from BOOTH'S *Isabella*. *Agnes*, Lot 1, is of HARVEY COMBES' breed, and has six descendants in the Catalogue. The herds of MR. CLARIDGE, Sir J. LUBBOCK, Colonel CATOR, MR. COLVIN, MR. BOOTH, MR. HARVEY COMBES, MR. MAJORIBANKS, and MR. BETTS are all represented in the selection here offered for sale. The cows and heifers are served by BARON BUTTERFLY, a TOWNELEY bull, which is also in the catalogue. There is much in this little sale of two dozen animals to deserve the attention of breeders.

—— The electors by whom the Conservators of the River Thames are to be appointed are registered during the month of October, and before the 7th of December elections must be held of four Conservators to be added to the existing body of 18. The recent Act confers large powers on this body, and it is important that no one be appointed a member who has not knowledge and experience to guarantee that no one idea or interest connected with the Thames shall have undue preference at the expense of any other. MR. BAILEY DENTON'S letter in another page discusses very elaborately one leading aspect of the subject; and we publish to-day the remainder of a very useful paper by MR. T. ARKELL, of Penhill Farm, near Swindon, from which the reader will gather how many and how varied are the other interests concerned in this subject, and how great the importance attached by an experienced and practical

* Marshes Farm, Lamberhurst, is seven miles from Tunbridge Wells and five from Frant, where conveyances can be obtained.

man to the appointment of suitable commissioners for the direction of whatever works are needed.

AGRICULTURAL STATISTICS, IRELAND, 1866

[The following is Mr. Donnelly's recent report to His Excellency the Lord Lieutenant of Ireland.]

I HAD the honour of submitting on the 18th ult. a Return of the acreage under Flax in 1865 and 1866, by counties and provinces. I now beg to submit General Abstracts which give for the same years the area under each description of crop; also the number of horses, cattle, sheep, and pigs. The emigration from Ireland, during the first seven months of 1865 and 1866, is also given.

The collection of the statistics commenced on the 1st of June and occupied about eight weeks. It was, as in former years, entrusted to the Constabulary and Metropolitan Police, who, to the number of nearly 4000, acted as enumerators with their usual efficiency. They visited about 600,000 separate holdings during the progress of the inquiry, and obtained from the occupiers, or some person in their employment, the acreage under each crop, the number of live stock, and other particulars stated in the Returns.

The Abstracts are compiled from summaries made by the enumerators for their respective districts, and may differ slightly from the revised figures hereafter to be published; I do not, however, apprehend that any change likely to affect their value for general purposes will be necessary.

The total acreage under all Crops this year was		5,619,678 acres.
The ditto ditto 1865 was (revised numbers)		5,843,403 ,,
Showing a decrease in the extent under Crops in 1866 of		128,725 ,,

The crops which diminished in area this year are—

	Decrease.	
CEREALS.	Acres.	Acres.
Oats	47,580	
Barley	26,464	76,361
Bere and Rye	99	
Beans and Peas	2,118	
GREEN CROPS.		
Potatoes	15,841	32,932
Turnips	17,091	
Meadow and Clover		77,998
Decrease on the foregoing crops		187,291

The crops which increased in acreage in 1866 are—

	Increase.	
CEREALS.	Acres.	Acres.
Wheat		34,485
GREEN CROPS.		
Mangel and Beet	374	
Cabbage	2824	12,837
Carrots, Parsnips, and other Green Crops	2661	
Vetches and Rape	1630	
Flax		12,226
Increase on the foregoing Crops		38,506
Making a Net Decrease in the area under all Crops of		128,725

Although the foregoing statement shows a decrease of 128,725 acres in the total extent under crops in 1866, there was an increase in the extent under "Grass" to the amount of 210,425 acres, and a diminution in the area under "bog and waste unoccupied" of 86,664 acres. Woods and plantations also show an increase this year, and fallow a decrease.—See Table.

The following abstracts exhibit the acreage under each crop in 1865 and 1866, and the increase or decrease in the latter year:—

ABSTRACT OF CEREAL CROPS.

	1865.	1866.	Increase in 1866.	Decrease in 1866.
	Acres.	Acres.	Acres.	Acres.
Wheat	266,989	301,474	34,485	
Oats	1,745,228	1,697,648	—	47,580
Barley	177,102	150,638	—	26,464
Bere and Rye	10,091	9,992	—	99
Beans and Peas	16,860	14,781	—	2,118
Total	2,216,309	2,175,433	34,485	76,361
Decrease in Cereal Crops in 1866			41,876 acres.	

ABSTRACT OF GREEN CROPS.

	1865.	1866.	Increase in 1866.	Decrease in 1866.
	Acres.	Acres.	Acres.	Acres.
Potatoes	1,066,260	1,050,419	..	15,841
Turnips	334,212	317,121	..	17,091
Mangel Wurzel and Beet Root	14,478	14,248	5,740	..
Cabbage	33,422	36,246	2,824	..
Carrots, Parsnips, and other Green Crops	24,140	26,791	2,661	..
Vetches and Rape	29,466	31,096	1,630	..
Total	1,502,168	1,482,091	12,855	32,932
Decrease in Green Crops in 1866, 20,077 acres.				

GENERAL SUMMARY.

	Acres.	Acres.
Decrease in Cereal Crops in 1866	41,876	
Decrease in Green Crops in 1866	20,077	141,951
Increase in Meadow and Clover in 1866	77,998	
Increase in Flax in 1866		12,226
Total decrease in the extent of Land under Crops in 1866		128,725

* In the Flax Returns published on August 18, the total acreage under Flax in 1866 was given as 11,986 acres; the exact area under Flax in the Sub-District of Newtownbreda, County of Down, amounting to 1325 acres, had not, however, been received at that date.

There has been this year a small increase in the acreage under Wheat in almost every county, amounting to 33,485 acres; and that of the "cereals" and "green crops." Oats and Potatoes are still, as formerly, the most extensively grown,—occupying respectively 1,697,648 and 1,050,419 acres.

The extent under crops, Grass, fallow, woods and plantations, and bog and waste unoccupied, in 1865 and 1866, are shown by provinces in the following Table:—

Provinces.		Extent under Crops.	Grass.	Fallow.	Woods and Plantations.	Bog and Waste Unoccupied.	Total.
		Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
Leinster	1865.	1,633,565	2,439,106	12,485	104,256	648,264	4,837,676
	1866.	1,598,150	2,457,144	12,018	104,788	650,576	
Munster	1865.	1,384,454	3,178,148	6,851	108,951	1,256,383	5,934,787
	1866.	1,345,425	3,277,877	7,491	111,552	1,222,417	
Ulster	1865.	1,895,715	2,129,591	6,616	57,971	1,224,314	5,314,267
	1866.	1,881,362	2,183,227	6,411	59,506	1,183,761	
Connaught	1865.	734,669	2,044,788	2,969	50,313	1,490,457	4,223,194
	1866.	724,741	2,068,810	2,140	51,500	1,386,004	
Total	1865.	5,648,403	9,791,633	28,951	321,491	4,529,446	20,319,924*
	1866.	5,549,678	10,007,058	28,060	327,346	4,442,782	

The area under the several crops in each year from 1862 to 1866, inclusive, was as under:—

Crops.	1862.	1863.	1864.	1865.	1866.
	Acres.	Acres.	Acres.	Acres.	Acres.
Wheat	356,221	290,311	276,483	266,989	300,474
Oats	1,977,578	1,944,888	1,841,880	1,745,228	1,697,648
Barley	192,362	173,502	172,700	177,102	150,638
Bere and Rye	12,128	8,936	8,891	10,091	9,992
Beans and Peas	15,202	15,153	16,040	16,860	14,781
Potatoes	1,018,112	1,023,414	1,039,724	1,066,260	1,050,419
Turnips	376,715	351,436	337,350	334,212	317,121
Mangel and Beet Root	23,222	16,434	14,128	14,478	20,218
Cabbage	30,543	34,125	31,821	33,422	36,246
Carrots, Parsnips, and other Green Crops	17,713	22,505	23,149	24,140	26,791
Vetches and Rape	30,830	29,998	28,829	29,466	31,096
Flax	150,076	214,099	301,695	249,474	261,700
Meadow and Clover	1,552,924	1,560,638	1,609,569	1,678,493	1,600,495

RETURNS OF LIVE STOCK.

The Returns of Live Stock for 1866 compared with 1865 show an increase in the number of Cattle of 245,384; of Sheep, 575,671; and of Pigs, 187,570; and a decrease in Horses of 12,708.

The following are the numbers for each year from 1855 to 1866, inclusive:—

Years.	Number of Horses.	Number of Cattle.	Number of Sheep.	Number of Pigs.
1855	556,287	3,704,140	4,000,317	1,117,490
1856	557,348	3,687,853	3,801,291	918,525
1857	560,782	3,676,964	3,747,292	1,255,186
1858	611,241	3,667,991	3,494,995	1,199,881
1859	620,075	3,815,709	3,982,804	1,265,751
1860	619,811	3,866,774	4,117,986	1,271,072
1861	614,232	3,871,688	3,956,040	1,162,042
1862	602,994	3,834,890	3,746,102	1,154,824
1863	577,978	3,144,231	3,306,894	1,067,458
1864	562,286	3,262,294	3,366,941	1,058,480
1865	548,990	3,407,548	3,694,406	1,395,963
1866	536,691	3,742,932	4,270,077	1,483,533
Difference in Nos. between 1865 and 1866	Decrease. 12,708	Increase. 245,384	Increase. 575,671	Increase. 187,570

The total estimated value of horses, cattle, sheep, and pigs this year is 35,178,040*l.*, being an increase of 2,361,033*l.* compared with 1865. The estimated value of live stock, in each year from 1855 to 1866 inclusive, was as under:—

ESTIMATED VALUE OF LIVE STOCK IN IRELAND in each Year from 1855 to 1866, calculated according to the rates assumed by the Census Commissioners of 1841, viz.—Horses, 5*l.* each; Cattle, 6*l.*; Sheep, 22*s.*; and Pigs, 2*l.* each.

Years.	Horses.	Cattle.	Sheep.	Pigs.	Total Value.
	£	£	£	£	£
1855	4,450,296	22,224,840	4,400,348	2,234,980	33,310,464
1856	4,458,784	22,127,118	4,181,420	1,837,050	32,604,372
1857	4,486,256	22,061,784	4,122,021	2,510,372	33,180,433
1858	4,889,928	22,007,946	3,844,494	2,399,762	33,142,130
1859	5,032,600	24,801,385	3,952,084	2,282,188	35,368,259
1860	4,958,488	23,441,431	3,896,288	1,588,840	33,885,047
1861	4,913,856	22,565,972	3,911,655	1,377,552	32,769,035
1862	4,823,152	21,146,780	3,744,442	1,154,824	31,224,587
1863	4,623,824	18,865,386	3,632,234	1,067,458	28,188,902
1864	4,497,264	21,294,011	3,704,635	1,058,480	30,728,910
1865	4,386,712	22,244,062	4,063,762	1,395,963	32,817,097
1866	4,285,048	24,329,058	4,697,030	1,866,904	35,178,040
Difference in value between 1865 and 1866	Decrease. 101,664	Increase. 2,084,996	Increase. 633,268	Increase. 470,941	Increase. 2,361,033

When submitting to the Lord-Lieutenant the General Abstracts for 1865, I ventured to observe with reference to the large increase in the number and value of live stock in that year:—"We may confidently hope that, with a recurrence of such favourable seasons as the present, the value of live stock will soon reach the large amount (35,368,259*l.*) it had attained prior to the 'hay famine' in 1859, by which, and the excessive rains of the three following years, the number of stock and the agricultural prosperity of Ireland in general were so injuriously affected;" it is now very satisfactory to find that the estimated value this year amounts to 35,178,040*l.*; and I beg to say there is at present great cause for thankfulness to a merciful Providence that Ireland has hitherto been almost entirely free from the distressing ravages of the cattle plague, by which almost every county in England and Scotland has so deeply suffered.

It appears by the Returns that there is a decrease this year in Leinster in the number of "cattle under one year old," amounting to 12,058; this may be in some degree accounted for by the operation of the Order in Council of 25th August, 1865, prohibiting the removal of cattle from Great Britain to Ireland, thus preventing, since that date, the usual importation of "calves" into the ports of Dublin, Drogheda, and Dundalk, which I am informed on reliable authority has been considerable, particularly to Dublin, for some years. The decrease of 1648 in the number of "cattle under one year old" in Ulster may perhaps also be attributed to the operation of the same Order in Council.

It is, however, to be borne in mind that the subject of the ages of horses, cattle, sheep, and pigs—more especially in an inquiry extending to upwards of ten millions of animals—must necessarily be one of much difficulty, and inaccuracies as to age, no doubt, in many cases occur; still the classification by ages, as given in the returns, is of value if it affords even a reasonable approximation to accuracy.

Emigration.—The returns obtained by the enumerators at the several Irish ports show that during the first seven months of the present year (ending 31st July last) 74,195 persons emigrated, being an increase of 11,933 persons, compared with the same period in the year 1865.

I have the gratification of stating to your Excellency that, with only a few exceptions, the particulars of tillage and live stock were readily communicated to the enumerators by the resident landed proprietors and tenant farmers of every class—to whom, as also to the clergy of all denominations, and the public press, I now beg to repeat my respectful acknowledgments for the valuable assistance which I continue to receive in connexion with these important statistics. *William Donnelly, Registrar-General, General Register Office, Dublin, Sept. 22, 1866.*

ON ARTERIAL DRAINAGE.

By THOMAS ARKELL, Pusbrel Farm, Swindon.

(*Concluded from page 892.*)

I WILL now mention a case in point, that is, of a parish lying on one side of the river where the drainage is laid out as above recommended and is tolerably efficient, when not neglected in cleansing. The parish of Kempsford, Gloucestershire, was enclosed in the year 1790. The drainage was laid out by a Mr. Webb, of Stow-on-the-Wold, and for that time it must be considered the work of a clever man; it was considered of sufficient importance to be noticed on the Ordnance Map, No. XXXIV., but the grand secret of its success in that day is the length of the parish, which is between four and five miles long, the river Thames flowing along one side of it about four and a half miles; this necessarily commands a fall sufficient for the purpose, and in that distance there are three embanked drains, as above described, one rather over two miles long, another rather under, and a shorter one not so efficient; besides these, there is a main drain cut through the parish, about four and a half miles in length, through a low wet moory soil, lying between the river Thames and the river Colne, that would be almost valueless but for this drain, which answers well, except at its lower part, adjoining the neighbouring parish of Lechlade, where it does not act perfectly, from not being carried low enough down, or for the want of the bed of the Colne being deepened.

Previous to the enclosure of Kempsford parish the drainage emptied itself at right angles in the Thames from nine or ten several drains or ditches, instead of from four as at present, and there is little doubt but such is the present state of many districts now, and the cause of much of the imperfect drainage in fact. On the opposite side of the river Thames, in Wiltshire, there are four parishes which abut against it in the same distance, and the consequence is the drainage is in a very bad state for want of drains cut in the proper direction, being prevented by the different parishes and the several owners of land.

When the river was navigated up to Cricklade, previous to the Thames and Severn Canal being made, there used to be three weirs kept up in the 4½ miles, but now two are quite gone, only one being kept up, and that more for the purpose of fishing than anything

* Exclusive of the larger Rivers, Lakes, and Tideways.

else, so that at the present time the flooding is caused more by the foul state of the river than anything erected for the purpose, and as a natural consequence, the meadows are not considered so good as they formerly were.

It only remains now to show how these advantages are to be arrived at, and who shall pay for them. To expect its being done voluntarily is quite out of the question, for the envious nature of some, with the obstinate ignorance of others, connected with the general subdivision of land by parishes and different owners, is a complete bar to that; consequently I should recommend an application to be made to Parliament for a General River Act, somewhat like the General Enclosure Act, that on application by parties interested, any river and its tributaries, including all rivulets, open drains, water-courses, and open ditches, shall be put under the authority of Commissioners for the purposes before mentioned; such Commissioners (to be chosen by the several interests on that particular river district, for which they are appointed, according to a valuation previously made for rating purposes), to carry it into effect, so that they should represent the drainage, flooding, navigation, &c., thereon. Being thus chosen, their first step should be to appoint an engineer, or engineers, to make plans, take levels, &c., to lay before the Commissioners at their meetings, and take instructions for carrying out the work. The Commissioners should be rather numerous, and selected from the different localities to be surveyed; as, unlike an Enclosure Commission, their labour would not cease at the completion of the plans to be laid out and executed, for they should continue to act as arbiters in disputes, or in case of neglect to keep the works in order as allotted. Their labour would also include making orders (or giving evidence as to the necessity of making orders) for persons to keep open their several ditches and water-courses, for the proper drainage of the country.

I should consider it much better to have commissioners appointed independent of engineering qualifications, than to have the two combined in one as for enclosures, for there are men well qualified from their practical experience and strict sense of justice (most essential qualifications for a commissioner), who may not be clever at mapping and levelling, and on the other hand a clever engineer may not make a good commissioner, as he may lack the general knowledge and bearing of the several interests to be adjudicated upon. I am thus particular in this, the most essential business, the appointment of proper parties to carry it into effect, as on this depends whether it will answer for the expense incurred or not, for a plan ever so good may be worse than useless from bad management; and having seen the waste of money expended under Government draining inspectors, makes one feel rather chary in recommending Government commissioners, for fear improper parties should be appointed to the office and just as of a boon it should turn out a job. There are Thames Commissioners, I believe, in existence whose duty is principally, if not solely, confined to the navigation, and no doubt but there are some officials connected with most of the principal rivers, so that there is the ground-work of the plan in existence, if being only necessary to increase their numbers and enlarge their powers to start the thing; besides, if a Permissive Act was passed, and the scheme tried in a few cases, it would soon be seen if it answered the expectations I have formed of it. If so, I shall never regret the little trouble I have taken in bringing it before the public, as I wish to raise my voice against sacrificing, to the sole object of drainage, the good that is now derived, and much more that may be derived, under an improved management of our rivers. For to see at one season a mine of wealth flowing by unheeded and uncared for, and at another doing an immense damage, is, to say the least of it, discreditable to the age we live in, and ought ere now to have been remedied. I will not deny but that our rivers would be in a much more efficient state for drainage if those whose duty it is to cleanse them were even only moderately to do so. From my own knowledge, I could say some very hard things on individual cases connected with the Thames, but as I am battling for an improved system, that would remove all sorts of injustice and negligence, I will not do so, as there may be (unknown to me) even greater hardships than I could mention, and a feeling of unfairness might be charged against me.

On the other hand, I gladly mention two cases where there has lately been considerable expense incurred by cutting a new drain and cleansing a tributary to the Thames, although from the state of the river they have not reached perfection. One is in the parish of Bampton, Oxford, where an inclosure has taken place under Mr. W. Bryan Wood, of Chippenham, where an inside drain has been cut in the direction of the river and carried down to a lower level; and the other is in the parish of Down Ampney, by Mr. Bravender, steward to the Earl of St. Germans, where some water meadows and a mill have been sacrificed for the benefit of drainage and tillage, and being on a very porous, gravelly subsoil, it may be judicious to have done so.

With reference to the geology of the district to be drained, I cannot exactly guess at what you require respecting it; and as to "the more rapid accumulation of water from the increase of underdraining," I rather doubt if such is the case. Where much draining has been done, the ditches and water-courses are kept in better order than previously, and carry off the water quicker, but in consequence of the draining much of the water is made to percolate through the soil that before flowed over it, therefore is longer in passing off. To make this appear clear, take the case of two different geological formations, nearly adjoining each other, in the neighbourhood of Thames Head, the great and inferior oolites and the Oxford clay. The Colne is the principal river in the former district, and it is scarcely ever known to flood, except on a sudden thaw of snow, or from thunder rain. The reason is obvious; from the porous nature and great depth of the oolitic rock, the rain passes through it, and issues at the different springs in its course, which form the river; consequently there is a more regular flow of water for a length of time than if the rain flowed off the surface and caused a flood. The Oxford clay district, being a very close tenacious clay soil and subsoil, and a considerable quantity of it not drained, after getting once saturated, the rain will pass off the surface nearly as fast as it falls, and in heavy rains immediately causes a flood: now I consider under-draining will tend to make the water flow less rapid, but for a greater length of time, acting more like springs.

It is possible to get the area of the catchment basin of the Thames, and dividing the porous soils, from which the water flows through springs, from the close clayey ones, from which it flows mostly from the surface, to give some estimate of the quantity of water to be discharged, and the size of the river, weirs, sluices, &c., necessary for the purpose; but I question if it could be so easily and correctly known as from those living on its banks, who have noticed its floods and passage through the several flood-gates, weirs, and sluices for many years past.

There is one point which I think I have not sufficiently urged on your notice, that is the necessity of straightening the rivers, especially in those parts where they have the least fall, and the floods in consequence remain out too long; nothing would remedy this evil equal to shortening the distance for the water to run, as it is not only the shorter distance, but there is a greater fall in that distance, thereby accelerating the discharge considerably.

I may not have been sufficiently explicit for those who are unacquainted with the subject of watering meadows, but those who are at all familiar with it will I think be able to understand my meaning, as in this paper, being destitute of any maps or plans referring to the subject, I wish rather to draw attention to my views, and cause the subject to be canvassed over, than to lay down the details of a plan that may be at once acted on.

MAISEMORE COURT, NEAR GLOUCESTER.

About 600 acres, somewhat scattered, are here farmed by Mr. Morris, a well-known breeder of Shorthorns. The herd and the homestead are the most noteworthy features of the occupation. The homestead has been erected within the last few years mainly from suggestions by the tenant, worked out by Messrs. Clutton. It is on the now common trident arrangement of buildings—three parallel lines of building being connected at one end by a cross building at right angles to them, and the intervening spaces being occupied as cattle-yards. The centre line is a double row of feeding houses and fatting boxes, and where it joins the cross line of buildings, there is a root-house below, and a chaff-cutting room in an upper floor. Food of both kinds is thus carried along the double central feeding house, which has a central gangway for the purpose, and along either side also, thus serving the cattle sheds and boxes at the ends of the yards, and thence down those cattle sheds which constitute one of the outer parallel lines of the farmstead; the other outer parallel line is occupied by barn and granary and cart-horse stable. The piggeries are in a detached building. There is accommodation in all for 12 horses, 30 fatting beasts, and 50 or 60 store beasts, besides calves.

We quote the following particulars from Mr. Bailey Denton's "Farm Homesteads of England," where plans and isometrical perspective of the buildings are given:—

"This homestead, which does not comprise the whole of the buildings on the farm, was erected during the summer of 1860, from the design of Messrs. Clutton, of Whitehall Place. It is built of brick and slate, and cost, inclusive of works for water supply, the sum of 1600*l*. In addition to the new homestead, there are two sets of old outlying steadings, each consisting of a barn and shelter sheds. These it has been considered desirable to retain, as they are well placed for manuring the land lying at a distance from the new buildings.

"There is stable accommodation for 12 horses, fatting boxes for 30 beasts, and open shed and yard accommodation for 50 or 55 store beasts. It should be borne in mind by all who inspect the plan of this homestead, that it was designed to accommodate dairy stock; but that, the present tenant being almost exclusively a breeder, he has adapted the arrangements of the homestead to his need as such. Should any future tenant choose to adopt the characteristic farming of the district, he can do so, and obtain the necessary accommodation for cows by turning every range of boxes into stalls. As the box-system now prevails, manure-tanks have not been made, the litter being allowed to absorb all the liquid manure.

"A spring mainly supplies the buildings with water, which is forced by a pump into the troughs in the stables, boxes, and yards. The rain-water from the roofs is conducted to a tank, and form the reserve supply.

"Ventilation is secured by raising the ridge tiles, and by circular openings filled with 'louvre' boarding, as shown in the view.

"The Turnip-cutter in the root-house, and the chaff-cutter on the floor above it, are both driven by horse-power.

"The floors of the stables, root-house, piggeries, and bullock-houses, are of stone; that of the barn is of Pitch Pine, while the head-walks of the piggery, and the flooring of the calves-pen, are paved with bricks on edge.

"*Description of the Farm.*—The farm consists of 588 acres, of which 309 are orchard, meadow, and pasture land, 250 acres are arable, and 29 woodland. The four-course system of cropping is that which is generally adopted.

"The root crops are carried to the buildings and consumed with chaff by the herd in the winter; and, in addition to the meadow and pasture land, the tenant possesses the right to feed 60 beasts on Maisemore Common, known as "The Ham," a tract of exceedingly good land, but subject to be flooded in wet seasons by the waters of the Severn.

"The Maisemore Estate is situated principally on the lias formation, with a blue clay substratum, but the soil throughout varies from a strong Wheat land to a loose sand and gravel. As a whole, this affords a good specimen of a dairy or breeding farm; the land though varying in character is of excellent quality, agreeing well in its general characteristics with that of the neighbourhood. Mr. Bravender says in his report of the Farming of Gloucestershire, 'There are several dairies in the vales of Gloucester and Evesham, but the principal portion of the Grass land is applied to rearing and grazing in connection with them. This is in some measure to be attributed to the inferior quality of the cheese and the difficulty of making it. This appears singular, because much of the land is excellent feeding land. The establishment of a Steam Plough Company in this immediate district has proved of great advantage to the tenant, since, by availing himself of the steam-driven machinery, he is enabled to cultivate the stubborn clay with better effect and at less expense than he could do with horses. The great advantage of this improved mode of cultivation is already apparent.

"Mr. Morris has by his own endeavours succeeded in raising a herd of first-rate quality, and as he holds his farm under a long lease, he is enabled to invest his capital with advantage to himself and his landlord."

It is two or three years since we had the pleasure of walking over Mr. Morris's land, and seeing his herd. The quality of it had just then become very widely and favourably known through his success at the Cheltenham meeting of the Gloucestershire Agricultural Society. A magnificent class of large-framed dairy cows, combining value as milkers with all the advantages of pure Shorthorn descent, was then exhibited by Mr. Morris. Purchasers for herds in Sweden, where dairy quality is especially desired, have since found out the Maisemore herd, and six cows purchased shortly after that show, have maintained its reputation thoroughly well in that country.

The herd is descended mainly from cows purchased many years ago from Mr. Strickland, who was himself a purchaser at Colling's sales. We well remember seeing of that herd 30 years ago as winners at the Bath Society's meetings. In the hands of Mr. Morris and his father the same stock—well-selected bulls of Lord Ducie's and Mr. Tanqueray's breeding having been employed—has maintained all the original quality of Mr. Strickland's particular strain of the breed, and considerably added to its merit for dairy quality. The great desideratum in any herd is that combination of meat with milk production which one sometimes sees in the best London dairy cows, and in which, as a whole, Mr. Morris's herd at Maisemore is probably unexcelled. Good service has been done in the Gloucestershire dairy districts by the use of young bulls from Maisemore; and, as before said, there has been a demand from other countries also which has proved profitable to both buyer and seller.

WATER SUPPLY.

It requires some courage to recur again to the water question in the face of continued rain, which is leading all good agriculturists to think rather of land drainage than water supply. But the excess of rain under which we are now suffering has a very pertinent bearing on the question, for the rainfall and atmospheric condition of August being such as to replenish the soil and replace evaporation, a very large proportion of the heavy rain which has fallen within the present month has passed away in floods to the sea, and an amount of supply quite equal to three months' flow of the rivers in a dry summer has been lost. And this has occurred while we are still discussing how we may gain a sufficiency of pure water for the Metropolis and other large towns, as if to prove irresistibly that the excess of one season will amply compensate for the scarcity of another.

I should have ventured before this to have met the remarks of those who would set aside all inquiry into local capabilities of supply in favour of bringing water from distant and more favoured places by a few figures which I think must command attention if studied, had not the question of earth-closets been raised incidentally in the columns of your contemporaries. I was in hopes that some fresh information would have resulted from the correspondence that has appeared, and that a profitable means of dealing with sewage and other nauseous refuse in a solid rather than a liquid state would at last have been found, whereby the pollution of rivers might really be "prevented." No new feature, however, has been brought to light, and the general use of earth-closets seems as far off as ever. Those who have examined Mr. Moule's invention carefully, with a view to its application where possible, are convinced that it is an excellent contrivance for sick rooms or infirmaries, and for country houses, where servants are under strict control; but as to its general adoption in towns, or even villages, the manipulation necessary to maintain health and cleanliness, ácts, and, I am afraid, must ever act, practically as a veto. Where a person, desirous of utilising the sewage of his house, will attend to its preservation himself, the invention may be carried into effect very favourably, but earth-closets for general use are open

to more objection than the French application of lime as a deodoriser and vehicle of transport. I refer to a plan adopted in France in connection with water-closets. Two pipes are used, one of which takes away the water, which has been retained in the closet pan, direct into the drain, while the other conveys to a movable receptacle (into which lime is introduced) the fæces and urine, and just sufficient water to lubricate the conducting pipe. This plan is patented by M. Mosselman, but I do not hear that it gains ground even in France, where water-closets are still scarce, and may be made to suit the invention, where the manufacture of poudrette is understood and carried out, and where therefore solidified sewage is much more likely to be acceptable than in England. But when referring to the use of solidified sewage, allow me again to repeat that neither such a system, nor the irrigation of land by sewage in a liquid state, can prevent the pollution of rivers occupying their natural position as drains; for we must not forget that ultimately some proportion of the objectionable matter must be washed into the river from the surface to which it is applied, or will find its way there in an objectionable though modified condition. This is already found to be the case where liquid sewage is directly utilised by irrigation; and though towns may be compelled, as they ought to be, to turn their sewage to profit and to acquire land for that purpose, we know, practically, that the land cannot always be in a condition to receive the sewage, nor to absorb it wholly if applied. Hence some portion of the surface washings will find its way by its natural course to the lowest point in spite of all human calculations, and as rivers occupy the lowest position in valleys, and very little fæcal matter from cholera patients will suffice to poison a stream, we may find our "purified" rivers still foul, though clear, scentless, and tasteless.

With your permission I will supply a few figures which I hope will satisfy those who would only deal with schemes of simple sprandeur, that we have in the Thames and its tributaries a means of water supply as imposing as any that has yet been brought before the public.

The total area of the Thames watershed is 3,303,680 acres. The average annual rainfall of the whole watershed may be taken at 25 or 26 inches. The Thames, as it flows over Teddington Weir, drains surfaces, which, in the whole, make up 2,352,640 acres, and the quantity of water annually discharged over the Weir is equal to about 3 inches of rain over the whole of the contributing surfaces. Thus there remains a depth of 22 or 23 inches of water, which passes away as vapour from the surface into the air, or as floods by the valleys into the sea, or as soakage into the outcropping pervious strata.

The remaining 951,040 acres, comprising the watershed, are made up of districts drained by the Yedding, Brent, Lea, Roding, and other small streams on the north, and the Wandle and Ravensbourne on the south. These streams join the Thames eastward of Teddington, and their perennial flow forms a larger proportion of the rainfall than the tributaries of the western side, although the rainfall is appreciably less. They flow out of the chalk, and are shown by Mr. Beardmore to vary from 3½ inches to nearly 10 inches discharge. Thus we see within the Thames watershed in certain instances, where Nature by affording an impermeable channel has assisted the delivery of the water rising to the surface, that the proportion of the rainfall, which has become serviceable, is double that which has been gained where the channel of delivery has been less favourable. Without attempting to reconcile these differences in detail, I am content to state generally that I know from personal observation that the upper tributaries of the Thames are much reduced in their passage over the oolitic outcrop from which they take rise, and that where they are capable, if seized before they are reduced by soakage, and before the streams they form have become polluted, of a much more extensive use than at present. The Churn, for instance, is known to lose as much as three millions of gallons per diem before it joins the Thames at Cricklade, and this is only one of some 30 or 40 tributaries, of one sort and another, which take their rise in the oolite. But if it were shown that the water thus lost could be intercepted, and conveyed to London by pipes, or other water-tight conduits, it would not be in itself sufficient to satisfy the growing demands of the Metropolis for pure water. It would be necessary that we should also have full command of the several sources which at present feed the system; and as the main river could not afford to lose from its volume the springs which now maintain its tributaries, it would have to be shown that any required quantity may be taken from the sources in their primitive purity, and repaid by means of storage to be served as the pure water is taken away. This might be done by conserving at high levels the surplus of the tributaries after a gauged quantity sufficient to maintain them in their full uses has been secured. Reservoirs in the shape of ornamental waters, such as was proposed by Randal for the Lea, and widened channels of the streams themselves where the soil was impervious, in which the surplus might be preserved at a given height by weirs placed so as not to interfere with the proper drainage of the valleys, would be all that would be required; and when we remember that 9 inches of water drawn from a reservoir of 500 acres in extent is sufficient to supply the Metropolis with the quantity it now uses, I cannot think that there will be any doubt on the point, particularly as the supply dependent upon the western tributaries of the Thames is not more than half the quantity used.

But we are now only thinking of London, while I contend it is equally necessary to consider the requirements of all towns and villages, for in the case of the former it is not a question of quantity so much as quality, whereas in many parts of the country the real question is, how the poor are to have any water at all in dry summers.

To place tangibly before your readers the value of the wasted sources of the Upper Thames, let me again recur to the "Thames head spring," which furnishes the Thames and Severn canal with water. Twenty millions of gallons per week are known to be raised at Cirencester, and practically lost to the water consumers of the Thames basin. This quantity is sufficient to supply a mixed population of at least 150,000 people. The whole population of Oxfordshire, according to the Census of 1861, is only 170,944; so that were it possible, physically, to supply the whole of that county from this one spring, it would be very nearly sufficient for the purpose. Is it just, that while we thus allow so much water to be lost, we should seek to withdraw from the mountainous districts of the north-west that water which seems to have been placed there in anticipation of the immense growth of trade and population which distinguishes that part of the kingdom? Lancashire, in 1811, numbered 828,499 people; the Census of 1861 gives to that county 2,429,440 people. Thus, then, the population has increased to treble the number it was 50 years ago; and can it be supposed for a moment that we shall be allowed, without making an effort to recover the water we suffer to go to waste in our own watershed, to rob Lancashire and the adjoining counties of their rightful supply, when there is no reason to doubt that in another 50 years the population will be trebled again.

It is curious to observe that while everybody is complaining of the condition of the water in the eastern districts of London, and thinking of going to Wales and Cumberland for a supply, an advertisement from the Essex Pure Water Company should appear in the daily papers, offering to sell several millions of gallons per diem of the purest water. I think this alone would prove that an inquiry into the whole subject is due to the country at large. *J. Bailey Denton, 22, Whitehall Place.*

CATTLE PLAGUE RETURNS.

THE following Returns were issued on Oct. 4:—

This Return gives the number of cases occurring in Great Britain which have been officially reported to this Department. Column 1 only records the cases reported as having commenced during the weeks indicated by the headings. All "back cases" are included in column 2.

Counties Reporting Attacks.	1 Number Attacked Week ending Sept. 22.	1 Number Attacked Week ending Sept. 29.	2 Result of Reported Cases from Commencement of Disease. Attacked.	Killed.	Died.	Recovered.	Unascertained &c.
The Metropolis	—	—	211	169	29	16	—
Kent	1	—	1,423	467	821	102	33
Buckinghamshire	8	1	2,581	1,870	504	187	20
Oxfordshire	3	5	3,704	2,157	1,199	395	49
Huntingdonshire	—	—	2,404	467	1,789	146	82
Essex	2	1	2,438	562	1,461	305	110
Norfolk	—	—	6,467	3,481	2,456	291	239
Wiltshire	—	—	122	56	53	12	7
Somersetshire	—	—	311	207	94	5	5
Shropshire	—	1	7,296	3,419	2,742	788	347
Staffordshire	—	1	5,927	2,883	2,559	501	484
Lincolnshire (Div. of Holland)	—	—	14,081	7,663	5,070	880	447
Do. (Kesteven)	—	—					
Do. (Lindsey)	—	—					
Cheshire	5	4	67,695	23,766	32,720	8,053	3,147
Lancashire	28	26	6,977	2,599	2,944	680	344
York, E. Riding	6	—	12,512	3,339	6,227	2,037	909
Total	66	40	133,635	53,287	59,798	14,294	6,296
Remainder of England	—	—	64,771	24,221	30,617	7,295	2,638
Monmouthshire & Wales	—	—	8,388	1,180	5,794	1,117	297
Scotland	—	—	46,861	6,263	28,088	10,707	1,803
Great Britain	66	40	253,655	84,951	124,297	33,413	10,994

Back Cases reported in the week ended September 29 — "The Metropolis," 1; Cheshire, 2. Total 3. (One inspector in the East Riding of York, who returned 3 cases last week, has not reported in time for this return.)

The Return shows that 40 attacks were reported to have occurred during the week ending September 29, being a decrease of 26 on the previous return. Fresh outbreaks took place in 11 farms or places where cattle are kept, the number of such outbreaks in the previous week being 19. The number of healthy cattle slaughtered to prevent the disease extending to them, was 61 during the week. The disease is reported to have prevailed during the week in the following 9 petty sessional divisions of England: viz., Bucks.—Cottesloe, 1 attack. Oxford.—Ploughley, 5. Essex.—Ilford, 1. Salop.—Whitchurch, 1. Lincoln (Division of Holland), 1; (Division of Lindsey), Barton-on-Humber, 1. Chester.—Macclesfield or Prestbury, 4. Lancaster.—Amounderness, 8; Garstang, 18. Since the commencement of the disease 51 in every 1000 of the estimated ordinary stock of cattle in Great Britain are returned as having been attacked. The total number of sheep reported to have been attacked up to the date of this return is 6826.

ENGLAND AND CANADA.

[The following Letter by Mr. Thomas Bryant, Chediston, Suffolk, has appeared in the *Canada News.*]

I PROPOSE, in the first place, to show that the chance of success for farmers with a capital of from 500*l.* to 1000*l.* is but a small one in England. Secondly, that in Canada their chances are not only greatly increased, but I think I shall also be able to prove that with the same energy and skill which are necessary to eke out a bare existence as a tenant-farmer in England, a man may become in Canada a tolerably wealthy landowner. And thirdly, I propose to consider Canada as a "home" for the English farmer.

First, as to the chance for the English farmer, I shall, for convenience of figures, suppose the farm to be of 100 acres; and not only that, but to be a size that will be larger than any either the men with the capital I have named, for many have undertaken to farm this quantity of land with but 500*l.*, while others have found that they had but little to spare after spending 1000*l.* My stand will therefore be, in round numbers, 100 acres and 800*l.* capital.

In working a farm in England, the first consideration will be the rent, and this on the average will be about 12*s.* The rates will amount to the same, which will be 30*s.*; rates will amount to 15*s.* 10*s.*; taxes, 3*l.*; labour, 12*l.*; tradesmen's bills (say), 15*l.*; and lastly, though not least, the cost of living, and 100*l.* will not be a high estimate for this item. Now we will see how the contra stands.

There will be 26 acres of pasture, 9 acres of Beans and Peas, 9 acres of Clover, all of which crops are, or ought to be, consumed on the farm. We have remaining 8 acres for house and yards, 18 acres of fallow, 18 acres of Wheat, and 18 acres of Barley. The Wheat will average 7 combs per acre, which at the present price of 22*s.* will be 138*l.* 12*s.* The 18 acres of Barley (average of 10 combs per acre) 180 combs at 15*s.* will be 135*l.* Let us suppose a farm eight bullocks (oxen) bought in at 12*l.* and sold at 22*l.* will be about as much as can be expected. The eight oxen will cost 96*l.* and make 176*l.*, but from this there must be deducted for artificial manures for root crop, 12*l.*; and for the following Barley crop (if 10 combs per acre are expected) another 12*l.*, making 24*l.* for manure, and for oil-cake for stock 12*l.*—in all 36*l.*, leaving on each a profit of 44*l.* The profit on pigs I set down at 20*l.*, and the account will stand thus:—

Rent	..	..	£127	0	0	Wheat	..	..	£138	12	0
Rates	..	..	12	10	0	Barley	..	..	135	0	0
Tithe	..	..	30	0	0	Profit on oxen	..	..	44	0	0
Taxes	..	..	3	0	0	Profit on pigs	..	..	20	0	0
Labour	..	..	125	0	0	Balance against farmer	..	..	72	18	0
Bills	..	..	15	0	0						
Personal	..	..	100	0	0						
Total	..	..	£410	10	0	Total	..	..	£410	10	0

Here is a balance against the farmer of 72*l.* 18*s.* Now if I have made a correct calculation, how is it possible, you will ask, that they can live? Can they live on the real income of 27*l.* 10*s.* per cent. of the capital? I think not. If so, it would be better to put their capital out at 5 per cent. Then you will ask, Sir, how it is that they get on at all? Well, that is a question that they must answer themselves, as I am not able to do so. I would, however, remark that in my opinion there is often too much blame laid upon and unkind remarks made against "the country," "the landlord," &c., &c. These charges are not true. There is no fault in the country—it is dear old England after all, the mother of half the world, that can boast of anything like freedom of thought and action. She is the same to-day as she ever was. It is no fault of hers, but rather she protects all to that degree that they can make up their minds to leave her, and the result is there are too many people for the land to support and too much competition for farms, so that as a natural consequence farms are here let for more than they are really worth. And I do not see that landlords are much in fault. Farmers do not often pay more than 4*l.* per cent. on the original outlay, besides the immense outlay on them for repairs. I have endeavoured to show the facts of the case. I may be in error, but I think, nay, I fear I am but too near the truth. There are perhaps a few small items that I have not mentioned that would be profit indeed, but there are others also on the other side of the account to outweigh them.

If then, such are the facts, I think I have made a "case" in which a man is quite justified in thinking of emigrating to improve his circumstances, and that too, without incurring the name of "visionary, rambler," &c., applied to him justly. I could say something in favour of Canada,—why I think her superior to all our colonies, and not only that but superior to any other country in the world for our agricultural population—but this has been much of late, and will pass over that and proceed to the second portion of my subject, viz., that the advantages of Canada are much greater than can be expected under the most favourable circumstances in England.

Farming in Canada in many respects differs widely from the usual English practice, and undoubtedly requires some little experience before a man can feel sure that he has done all things for the best under the circumstances, especially as regards seasons and crops. There is one thing that I would bring to your notice, viz., the mistake that is often made by English and Scottish farmers on beginning to farm in Canada in supposing that they can show the Canadians how to farm. Now, sir, it is very probable that in some, perhaps many things, the English farmer is ahead of settlers in a new country, but caution should certainly be the motto that the Canadian, having bought his knowledge by a life-long experience, practical knowledge must be preferred till the new plans (which after all are, in a new country, nothing but theory) have been found to answer the purpose.

Where are three plans recommended by Canadians for emigrants to pursue.

1st. To hire a farm of 100 acres for a short time.

2d. To hire land to the extent of capital.

3d. To purchase an estate and live upon it.

These I propose to enquire into separately, and I beg first to say that unfortunately for me, being a Canadian, I cannot of course speak personally on the subject, but from the different sources from which I have gathered my information I believe that the figures below are pretty correct. It is well worthy of note that in all works on Canada there is a wonderful unanimity as regards general description of the country. Let us read the pamphlet published by authority, Colonel S. Strickland's "Twenty-seven Years in Canada," or Mr. Hogan's Essay, not to mention other authors, and we find that all concur in telling the same story. The description by one is corroborated by another, and I have myself received similar details in all letters from private individuals and friends tell the same tale. With evidence like this no one can have doubts as to the general facts. If we find in one account that money can be invested at 8 per cent. with good security, we have but to refer to the other to find it is correct on that point; and it is just the same with the price of land, corn, wages, &c. It is generally the custom of Canadian writers in their list of prices to give two sums and say from one to the other, according to quality, situation, &c. In this I do not follow them, but I have referred to all the authorities that I possess, and taken in each case the main figure. I also keep to the same medium capital of 800*l.*

First, the renting of 100 acres as a matter of caution on landing in Canada is, in my opinion, the safest, and in the end the most economical. It gives a man time to look around, and at the same time supplies him with a means of getting a livelihood without much risk.

A farm of 100 acres, with 75 per cent. cleared, can on an average be hired at about 10*s.* per acre, payable half-yearly; and the capital required to take the farm and to farm it for a year is 200*l.*, which will include everything.

As the figures will be much the same in each of my calculations, I will go through them at once. First, 20 acres of Wheat, at 32 bushels per acre, or in all 640 bushels, and this at 6*s.* 9*d.* will give 175*l.* (I would observe here that I cannot for

the life of me quite understand the Canadian system of the rotation of crops); next, 12 acres, Barley, at 40 bushels per acre, 480 at 3s. 9d. is 90l.; Oats, 8 acres, 40 bushels, in all 320 at 2s., 32l. The following to be consumed on the farm — 11 acres hay, 15 acres pasture, and 4 acres root crop. These will produce four bullocks, with 24l. profit; four cows, 24l.; other stock, such as sheep, pigs, and young stock, 24l.—in all, 369l. It must be remembered that in this case a surplus of 600l. remains in hand, which, if invested at 5l. per cent., will add 30l. more to the net income.

The contra will be thus:—Rent, 37l. 10s.; rates (or taxes), 2l. 10s.; labour, at 1l. per acre (which I believe is more than the average), 75l.; for personal attendance and skill, 100l.; tradesmen's bills, 15l.—in all, 229l., leaving a balance in favour of the farm of 140l., or, with extra interest on 600l., 170l. As I said before, my figures (except the price of grain, which I have taken from Col. Strickland) are the average of all the writers that I have been able to consult.

The following is the balance sheet:—

20 acres Wheat—				Rent	..	£37	10 0
640 bushels ..	£175	0	0	Taxes	..	2	10 0
12 acres Barley—				Labour	..	75	0 0
480 bushels ..	90	0	0	Attendance	..	100	0 0
8 acres Oats—				Bills	..	15	0 0
320 bushels ..	32	0	0	Balance	..	139	0 0
4 oxen ..	24	0	0				
4 cows ..	24	0	0				
Other stock ..	24	0	0				
Total ..	£369	0	0	Total	..	£369	0 0

Now, sir, if I am anywhere near the mark, this is vastly superior to anything that can be done by English farming.

I will now proceed to the second plan of renting for the extent of capital of 800l. We have but to add three more farms; but, as this would be sailing too near the wind for safety, we will suppose a farm of 300 acres, which will, on the above estimate, leave the farmer a balance of 420l. besides the 300l. for personal attendance, which sum is too much; but more labour will have to be employed, as the farmer cannot do more work himself on 300 than on a 100-acre farm. I now proceed to consider the last plan, viz., of purchasing and farming his own estate. The mean price of 100 acres with 75 acres reclaimed, with medium buildings, is 6l. per acre, or 600l. for the farm; and 200l., as usual, to stock it makes one standard sum of 800l. Here the rent has to be deducted from the outgoings of the above balance-sheet and an increase in the value of the property, which may be safely put down at 20l. per year. This gives a clear yearly income of 190l. and the gratification of living upon your own estate.

Thus far I have been dealing with the subject entirely in the light of pounds, shillings and pence; but there remains one subject more that is of equal, if not greater importance to a family than, and that is the health and comfort of each and all who belong to him.

One great drawback to Englishmen against Canada is the climate, and this, in fact, is a real bugbear. It is quite an established belief amongst three-fourths of Englishmen and Americans as well, that Canada is somewhere in the Arctic regions, or a very near neighbour thereof. With many, the very mention of a Canadian winter creates a shudder, accompanied by a sensation of misery; yet the Canadians themselves tell us to a man that the reverse is the case, and that this notion is hailed as the enhancement pleasure.

In winter the frost is undoubtedly severe, but, at the same time, it is clear and bracing. There are no "cold thaws," "raw" nor foggy nights, and Englishmen, as we all know, need never fear a climate in which will grow all European fruits. Peaches especially in such abundance, and, indeed, all our crops ripen to perfection—Tobacco and Pumpkin, Millet and Indian Corn, are also cultivated, and Flax and Grapes grow wild. Toronto, the capital of Western Canada, lies in the same latitude as the south of France; whilst the summer temperature is about the same as that of Paris; and our cousins in the American States have but to look on a map to find that Canada, and especially the western province, does not lie quite so much to the north as they would fain have us believe; they will find that Upper Canada lies as far south as one-third of their great territory, and one-half of the whole in which an Englishman can live with any degree of comfort. With the exception of a very small portion, the States of New York, Michigan, and Massachusetts lie in the same latitude exactly, while Upper Canada is decidedly further south than the States of Vermont, New Hampshire, Maine, and Wisconsin, not to mention a large portion of Illinois, half of Iowa, and all the western territories of Minnesota, Oregon, Washington, &c. These facts are, I fear, too often overlooked in America; and I do not doubt that were a person to make such an assertion he would be thought to be suffering under some mental disorder. But to return to the climate in relation to English constitutions. I don't think all the arguments that can be used will speak with more convincing power than the statistical returns of mortality made by various Governments of the proportion of deaths in an average of years. In England one in every 46 dies annually; in Canada, one in 58; in the United States one in 74; while in Upper Canada only one death occurs in 102 inhabitants. Thirty or forty years ago it was a rough and a tough job no doubt to commence farming, when the land had to be cleared of trees and when there were no roads for which to carry produce to, and no towns where there many markets at which a farmer could sell his things. Yet with all these disadvantages our friends have in some way managed to become prosperous. But now towns are almost as plentiful as in England, and in many places the roads as good. Now they have railroads and steamboats all through the country. There are good schools in every village, well conducted and at very moderate charges. The laws are the laws of England modified so as to suit a young country. Their Parliament is conducted upon the same plan as our own, while their municipal institutions are infinitely superior to the prosperity of the province and to the ideas of Englishmen.

I have omitted all mention of the various openings there are in Canada for all other classes, from poor working men with no capital to the large investor of capital, and have purposely confined my remarks to the farmer, as the having this class of men above all others more likely to do well and be a boon and a blessing as well to their families as to their adopted country.

Home Correspondence.

The Sewage of Dublin.—I can say of my own knowledge that there is no description of land in Ireland within the range of my acquaintance, which is by no means limited, to which the sewage of towns as a source of great fertility cannot be profitably applied, and for growth of every description of ordinary garden as well as farm crop with advantageous results, fully as great, comparatively speaking, as for the growth of Italian Rye or any other kind of Grass, provided always that the proper conditions be observed in such application. In proof of this I could cite you many notable examples of the successful application of such liquid manuring on every description of land in Ireland, from the heavy lands of the Macamores, in the county of Wexford, Magheramore, in the county Wicklow, to the light peaty soils on the sides of Mangerton Mountains in Kerry, and of Mount Naphin in Mayo. Such being a fact, why, it may be asked, were objections raised to the utilisation of the sewage of Dublin? The objections raised against this design, important though it was and is, not alone in a national but also in an imperial point of view, were raised on the groundless supposition that the land about to be reclaimed and sewaged, if so treated, would be injurious to the health of parties resident in each respective locality in which the sewage would be applied; and injurious also to the owners of land in such vicinities, as deterrent to speculators in building suburban or marine residences; and the second objection was that the sewage as a fertiliser would cost too much in its distribution to be a profitable paying concern to those who would invest their capital in the company as shareholders. Now, sir, all these and such objections have been so often raised, and as often practically controverted from well-ascertained facts in your pages, it would be a waste of both your space and my own limited time for writing were I to attempt to go over such well-beaten ground. A few facts, ascertained on well-grounded experience, may suffice for my present purpose; and here let me, *en passant*, remark that in this important matter I have no more personal interest, present or in prospective, pecuniarily or professionally greater than if I were a native of one of the Feejee Islands, or a Maori at the Antipodes. I can tell you, firstly, from experience variedly acquired, that land so sewaged on the sea coast is far less injurious to the health of man and the lower animals than such would be when the tide is out on such beaches; and secondly, that if there could be any fear entertained regarding offensiveness from such sewage that any company established for such purposes can have laid on the spot, the best possible deodoriser at a nominal expense, a deodoriser such as would not only extinguish such supposed or real offensiveness, but also effect the greatest possible improvement in such soils both chemically and mechanically, whether combined with or apart from such sewage, but in the former case more especially. *Cost of distribution.*—If Prof. Cameron has erred in his estimate of this, he certainly erred on the safe side, as I know from practical experience also, that there is not a gallon of the sewage of Dublin that could not be sent over the lands which the company alluded to sought to get powers to reclaim that could not be sent over them by simple gravitation, did such company know the sources from which such power could be derived. And I have every reason to believe that Messrs. Barrington & Jeffers are in full possession of the secret, if such it can be called, when known to three persons at least. *Edward Carroll, Albert Training Institution, Glasnevin, Dublin.*

Working Men's Cottages.—The subject of providing suitable and respectable cottage accommodation for our labouring population has happily of late been much discussed and commented upon, and consequently received considerable attention from many benevolent persons, landed proprietors, and others. Yet we cannot travel about our rural districts without being forced to the conviction that the good work is only beginning, and that much has yet to be done—for it seems not at present to be understood by gentlemen and architects that space, real height and breath, that is room to move, room to breathe, and room to separate the sexes, or the sick from the hale, as well as lightness and smartness, are required in a poor man's dwelling; to say nothing of accommodation in the shape of necessary offices, (some cases of shameful neglect in this have of late been brought before the public); the charm of a garden is also necessary to make a man and his family really happy, industrious, and respectable. It is too often the case, that where the spirit of improvement is manifested, the cottages are treated as mere ornaments to the estate, convenient accommodation for their inhabitants being utterly ignored. For this the architect is very much to be blamed; for, in fact, many of the ornamental cottages that are built, if not built for a race of Lilliputians, are expressly intended for "servants without incumbrance." "Without incumbrance!"—nothing in my opinion can indicate so forcibly as this, and the building of small and inconvenient dwellings for their dependants, the possession of a mean and sordid disposition in those to whom God has given abundantly of the things of this life. If such persons think that those who immediately minister to their wants and their pleasures are unworthy of the degree of care they bestow upon their favourite animals, or less likely to serve them faithfully and carefully, when blessed with the choicest gift of Providence—a healthy family, I believe they take a false view of mankind, and still have their mental vision blinded by the dark cloud of prejudice that envelopes their whole soul. If there should be any reader of this who is possessed of badly constructed cottages, or about to build new ones, let me beg his attention to the following extract from a speech by the Rev. W. Elwin, before the members of the Eynsford Association on the occasion of their annual dinner at Reepham in 1865, and I think he will find the argument in favour of good cottage accommodation so fairly and forcibly put that it will require a clear argument to confute what he says:—

"Mere precautions from the weather, however, are not enough for civilised man, who has other perceptions besides those of wet and dry, warmth and cold. He must have the accommodation, the convenience, and the neatness which appeal to his better tastes, and which can alone satisfy the cravings of even the plainest, simplest, and humblest of mankind. Gentlemen, the common answer to such a statement is that good cottages will not pay. Certainly the bare rent will not afford an adequate interest for the outlay, and therefore cottages will not pay the proprietor who invests in cottages and nothing else, but it by no means follows that they will not pay the landowner, who may gain in one direction what he may lose in another, and may recover more from the land than he sinks in the house. Experience has taught us that mind—which ought to dominate over matter—is often subdued by it, and that the character takes a tincture from the physical elements which surround it. When a man lives in filth his disposition commonly contracts the defilement, and when he inhabits a mean and poverty-stricken tenement, his disposition becomes debased, like his tenement, and gets out of repair. It is notorious that wretched dwellings have a tendency to produce recklessness, intemperance, and improvidence. Now, the work which the labourer performs depends upon his zeal, which is a question of idleness or industry, and upon his power, which is a question of bodily vigour. His demoralisation impairs both power and zeal, and his strength is diminished because he is under-fed, and his care to do his best is equally enfeebled because his sense of duty is destroyed. No one who considers these things can doubt for an instant that in the long run it pays the landlord better to have good cottages and good labourers than to have bad houses and bad men. Let it be granted, for it is undeniable, that land has been given us for far higher purposes than to make money at the expense of moral, mental, and bodily welfare. If good cottages would not pay as an investment, they would pay as an act of beneficence. They would pay in the delight which the landlord must receive from having a more prosperous and more elevated peasantry. The late Duke of Bedford, who had built hundreds upon hundreds of first-rate cottages, told me towards the close of his life that the proudest and most delicious moment which he ever experienced was when he chanced to visit a distant estate where his person was unknown, and heard a woman invoke a blessing upon his head for the cheap and comfortable cottages which he had provided for the poor."

But with respect to cottages not paying, there has been a good deal of cant made use of on this point by those who think it their interest to make it appear that such is the case. If a man build cottages as a speculative investment, it is well seen what they may become when we look at the long rows of barrack-like erections in many large villages, to which the labouring population have been driven from lack of sufficient accommodation being provided on the large estates where their labour is required. But if they are to pay they should be substantially built, yet devoid of unnecessary ornament, though not absolutely ugly. But surely gentlemen who choose to lavish money on mere ornament will not seek to make the labourer pay a per-centage upon such expenditure. If the rents will pay a fair interest upon judicious outlay, surely that is all that can be expected or required. That good cottages do pay where proper supervision is exercised over providing the materials, and the workmen employed in building, can undoubtedly be proved, otherwise there would not be so many built with borrowed capital, which has first to pay interest upon the money, and then a profit to the nominal owner. I send you plans of cottages built with a view to afford the inhabitants what was considered necessary accommodation, and at the same time "built to pay." They are not what would be designed as ornamental cottages, yet they present a much superior appearance to any others in the neighbourhood, and such as no gentleman need be ashamed of. The rent may be considered high when I say that with a garden of about 30 perches in extent, 5l. per annum each; yet they are readily taken by the most respectable labourers, who evidently by their industry in cultivating their gardens look to recover a large portion of the rent from thence. This is in a locality where there is a possibility of selling the surplus produce; but in localities where no such market exists, it might be advisable to restrict the gardens to what the labourer would require for the use of his own family, and reduce the rent accordingly. Yet I would strongly urge the necessity of giving to the cottager some ground, in order that he may, when so disposed, find something about his home on which to beguile what leisure hours fall to his lot. The walls are 14 inches thick up to the bedroom floors, with 18-inch piers at the corners, and 14-inch ones towards the centre from bottom to top. Above the bedroom floor some portions of the walls are reduced to 9 inches in thickness; this economises bricks, and gives more room where it is required. The ceiling of each room is a ventilator capable of being opened or closed at pleasure. The windows are sashes made to open; these are far more comfortable than cast-iron frames or leaded windows, as the latter are rarely wind or water-tight. Another matter deserves far more attention than is usually given to it, as affecting very seriously both the health and comfort of the cottager, namely, the floors. If the soil on which they are built be not thoroughly drained and of a nature to part freely with water, the floor of the living room should be laid hollow, so as to be perfectly dry, for from neglect of this, doubtless, chronic diseases are often contracted, which render the labourer's family a burden and expense to the parish. It is not alone as a humane measure, but also as one of policy this is urged. The roof is made to project over the gables, and by having cantilever eaves all the walls are rendered dry. Finally, my apology for having the chimneys in two stacks at the ends of the building rather than in one stack in the centre, which would perhaps be the cheaper plan, is that complaints are continually being made by the inhabitants of cottages where the latter plan is adopted, that they are annoyed by each other's smoke beating down the flues *H. Howlett.*

Societies.

Bath and West of England.—At the late monthly meeting of Council, in the absence of the President, John Tremayne, Esq., the chair was taken by Mr. Acland, M.P. The list of Officers for the ensuing year, including all Committees and Stewards of Departments, was confirmed. The following are permanent appointments:—Official Superintendent, Mr. H. Spackman, Bath; Consulting Chemist, Dr. A. Voelcker, F.C.S., 11, Salisbury Square, London; Veterinary Inspector, Professor Brown, M.R.C.V.S., New Cavendish Street, London, W.; Secretary, Mr. Josiah Goodwin, Bath.

Salisbury Meeting, 1867.—A long and important discussion was originated by Mr. Neville Grenville, M.P.,

in reference to the proposed meeting at Salisbury in 1867; the question in debate being whether the Society was pledged under all circumstances to hold the meeting, and whether the Salisbury Local Committee would be satisfied with the best exhibition attainable under any special circumstances existing at the time of the meeting. The debate was brought to a close by Mr. Neville Grenville, M.P., withdrawing the motion of which he had given notice, and it was unanimously resolved—"That the Council, after full deliberation, sees no reason to alter the determination to hold an exhibition at Salisbury in 1867."

The various Committees to whom is entrusted the preparation of the Prize Sheets and Regulation Papers, were appointed to meet on Monday, the 29th of October, with the understanding that the Stock Prizes, so far as the circumstances of the year will permit, shall be on the same scale as originally arranged for the meeting in June last, and the Secretary was directed to communicate with the Hon. Local Secretary at Salisbury, with a view of obtaining information as to any local prizes the Committee may be disposed to offer.

A Deputation, consisting of the Stewards of Plant and the Stewards of Implements, attended by the Official Superintendent and the Secretary, was then appointed to visit Salisbury, in order to make all necessary arrangements with the Local Committee.

GLOUCESTER CHAMBER OF AGRICULTURE.—Mr. Holland, M.P., presided lately at a meeting of this newly formed Society, for the purpose of taking further steps towards securing the complete formation of the Chamber; the backward harvest had hitherto prevented their doing anything. After certain alterations had been made in the rules, Mr. Curtis Hayward introduced the very important question of

Turnpike Tolls.—At the last Quarter Sessions, he said, Sir George Jenkinson proposed that a memorial should be presented to the Secretary of State asking that the maintenance of turnpike roads should be thrown upon the county. The subject was so important that its consideration was adjourned till next Sessions. Since then, he (Mr. Hayward) had looked into the matter, and had been greatly astonished at what he had discovered. In this county, the repair of turnpike roads, irrespective of the road repair by the parishes, cost, last year, 22,697*l*. The tolls let for 39,537*l*. There were besides 280 toll-houses and 322 gates to maintain. Each gate, on an average, must cost 25*l* a year; that was upwards of 7000*l* a year. Putting the toll-keepers' profit at 6 or 7 per cent., that would account for another 3000*l*. a year. Therefore, speaking roughly, the amount paid annually in tolls by the people of this county was 50,000*l*. What he wanted to ascertain was how far the burden of that payment fell upon the agricultural interest. Formerly much of the amount was paid by through traffic. But the chief part of that had ceased, and a large proportion must be paid by the farmer. He did not know whether any farmer kept sufficiently accurate accounts to do so, but he should be obliged to any farmer who, before the next session, would give him a return of the proportion to his rating of the amount he paid in tolls. This was a national matter, and a committee of the House of Commons had reported upon it: but he foresaw that unless the country moved the action upon the report would be very remote. The debts of the trusts were being paid off so rapidly that before many years the roads in most districts must come into the hands of the parishes. In the Fairford district, for instance, they had paid off their debt, and all the toll-bars were taken down a short time since; he believed this had also been done in the Bristol district. He did not think it was at all fair because a turnpike road—made in days long past for the convenience of traffic now ceased—happened to pass through a parish which had its own roads, that the parish should be burdened with the cost of that road. There was now in the county a debt of 130,000*l*.—paying from five to no per cent. Of that 20,000*l*. was due to the Crown; this could doubtless be got rid of, seeing that it referred to roads in the forest made for the improvement of Crown property. Mr. Hayward repeated his statistics, showing that while the repairs cost 22,000*l*., the tolls were let for 39,537*l*.; and he again strongly urged the farmers to send him the returns before the Sessions.

Mr. Morris observed that under a turnpike act, when he now paid 10*s*. or 20*s*. a year in the 1*l*., he should be very glad to get rid of it.—Mr. Hayward moved that Mr. Morris's case was an exceptional case; there must be some alteration.—Mr. Long: Do you propose to put it upon the county rate?—Mr. Hayward: No. Oh, no.—Mr. Long: If you did we should pay twice, because we now keep our own roads in repair.—Mr. Hayward: I think the best way would be to throw all turnpike roads upon the highway district. I think it is quite unfair that the burden of a turnpike road should fall upon the parish through which it happens to run, while there are parishes on each side, which use it equally. If we have consolidated the poor-rates, there is ten times more reason to consolidate in this matter.—Mr. Holland: If you throw the roads upon the county, what an enormous staff and expenditure will result. You already have the staff in the highway districts.—Mr. Morris was glad this matter had been brought forward. He had been quivering about it for the last two years.—Mr. Hayward remarked, "I think under a different system the roads would be repaired, in some cases, at three-fourths the present cost; because, many districts are spending as much money as they can in order not to appear to have a surplus."—Mr. Priday mentioned that he paid about 8*s*. a week at the Over Gate.—In answer to Captain de Winton, Mr. Hayward said he had no doubt if the roads were managed by the highway districts, a county rate of 4*d*. in the pound would suffice.—Captain de Winton: Well, I would gladly compound to-morrow for that rate.—Mr. Hayward said some of the debts were as rotten as a pear. He knew one case in which 193*l*. was accepted in payment of 1233*l*. At least 80,000*l*. of debts had been written off in this county within the last seven or eight years.—Mr. Wheeler promised to send a circular asking farmers for the returns Mr. Hayward wanted, and the meeting was then adjourned to Saturday, the 14th Oct., the Sessions are held on the following Tuesday.

Mr. Holland subsequently presided at a dinner given in honour of Mr. Wheeler, of Gloucester, when a handsome testimonial was presented, along with the heartiest expressions of goodwill, to that gentleman for his services in connection with the late County Cattle Insurance Society.

Farmers' Clubs.

GALASHIELS.—At the late annual meeting of this Club, Mr. Adam Thompson read a paper on "The Profitable Application of Farm-yard Manure." He said:—

Fifty Years Ago.—It may not be uninteresting to take a rapid retrospect of farming for the last 30 or 40 years, and endeavour to discover if we have arrived at that point in agricultural perfection beyond which no improvements can be made. The old system of clinging to the past has been injurious to the agricultural interest. It was remarkably prominent 40 or 50 years ago. Farmers then had little notion of progress. From the want of general information, they were spell-bound by the unbroken chain of the dull routine of the past. Although Adam Smith had produced "The Wealth of Nations," and James Watt had established the utility and power of the steam-engine more than 50 years before, yet scientific knowledge of any kind was almost unknown in rural districts. Farm implements were few, and of the roughest and rudest description. The country joiner could make a wooden plough, with very short stilts and a long beam, a cart, and a wheel-barrow; and a country blacksmith could shoe a horse, make and sharp the plough irons; but there the scientific acquirements of both ended. The farmer then neither read nor studied scientific works. To the great majority of country people, science was only science, falsely so-called, and the teaching received made men believe that the less they knew of it the better. The prejudices and superstitions of the people of Scotland then, as the prejudices of the people of Spain and Ireland now, did much to retard the progress of agriculture. Farmers then never thought of attributing anything to their own want of skill or want of improvement. If they had a good or a superabundant crop, it was attributed to Divine Providence; and if they, from want of manuring or proper cultivation, had a bad or stinted crop, it was attributed to the same cause. The light of science, however, has now broken in upon the farmer. The progress that has been made in agriculture during the last 50 years has become immense. Fifty years ago, progress was the exception, not the rule. Then, nothing horrified the mind of the farmer so much as the idea of breaking up new land. They boldly and resolutely set themselves against all innovations in the breaking up and reclaiming line. They firmly maintained that it was impossible for sheep and cattle to live without old pasture, however bare and stinted it might be. Fifty years ago, if any one had proposed to plough the hill sides that are now under cultivation, 99 farmers out of every 100 would have pronounced it a thing impossible, as they were so steep that sheep could scarcely feed there. Talk, then, of reclaiming meadow land, however rich and verdant, and you would have been told that it was so soft and wet that an ox could not browse there. Talk of reclaiming a barren moor, and you would have been told that ruin would be the result, as it would not feed a sheep to the acre. But the ploughman with his team has successfully scaled the hill side, the stone and tile drains have successfully dried the meadow, and a liberal application of hot lime has so pulverised the barren moor that upon one and all of them may be seen in the autumn crops of golden grain. Fifty years ago, we had no uniform system of draining, neither regarding depth of drains nor width apart. Drains then were dug in the most crooked and serpentine forms imaginable. No one thought of drying the subsoil by a uniform system of drainage running parallel with the rigs. Tile drains were then unknown, and drains, where stones could not readily be had, were not unfrequently filled with hard turf and branches of trees, which practically undid the work of the summer. The sciences of geology and chemistry have thrown such a flood of light upon the path of the farmer that he no longer needs grope his way in the dark. Geology will teach him the nature of the soil, the subsoil, and the foundation upon which these rest; chemistry, that most useful of all the sciences, which reduces everything to its natural element, and teaches the farmer the component parts of every plant he grows—thereby enabling him, with mathematical precision, to apply these elements to the soils that tend to the greatest degree in bringing to maturity the cereal or vegetables desired. Farming, as far as the action of the farmer is concerned, may be conducted upon scientific principles as finely and timely as any other branch of industry in the country.

Prospects of the Future.—Are we to rest satisfied with the attainments of the past, instead of developing them into progress for the future? Is our scientific progress so complete that we cannot make two blades of Grass grow where only one grows at present, or rear, feed, and bring to the market four sheep instead of three? Chemistry has done much; but it has not done all. It has treated largely and well upon solid manures, both of the farm and artificial manures; and if farmers are honestly treated by manure dealers, according to the analysis given, the intelligent farmer who sows his crops with these might calculate upon them coming up to his expectations. But I am firmly convinced that chemistry will yet do as much for the farmer in treating of liquid manures as it has already done in treating of solids. I believe that the time will soon come when the chemist will prove to demonstration that every ton of liquid manure from a farm-yard (and who can calculate the millions of tons thus lost per annum?) without being applied to the soil, is a clear loss of so many cwts. of vegetable produce to the country. The application of liquid manure to the soil is nothing new, but its application has never been general. It is too often the case that we pass by that which is inexpensive and within our reach, in search of something that is expensive, and, which is often worse, useless. There are but three great sources of wealth in the world—the sea, the soil, and the mine; and, although the products of these may be wrought into a thousand forms, and made the channels of wealth, yet we cannot increase the source from which they come. The treasure of the mine, we are told, as far as coal is concerned, will soon be exhausted; and it is of the last importance that we do not exhaust the productiveness of the soil. You cannot possibly put into the soil more than what comes out of it, or, at all events, no mineral manure can successfully replace vegetable. As the depots of our best guano fields get worn out, more care and more thought ought to be expended in preserving and applying to the soil those vegetable and liquid manures that flow from all our large towns and cities, polluting our silver streams and pellucid rivers, making their waters unfit for the use either of man or beast. The application of solid and liquid manures to the soil is very different. Solid manures require a considerable time and a combination of circumstances to develop them before they can become productive, and act as food for plants. Solid manures lie where they are laid, and it is only by chance or accident that the roots of cereals find them. On the other hand, liquid manure, as soon as applied, permeates the whole.

Liquid Manure.—It seeks the plant as readily as the plant seeks it. It is cereal food ready prepared, so that it can at once be taken into the system and be digested. It is difficult to tell what amount of food the plant receives from the atmosphere, what from rain, and what from the soil. Some plants feed largely from the leaves and stems, while others appear to be supplied mostly by the roots. Some people imagine that the strong roots of plants are capable of imbibing solids; and they conclude that the more dung or the more guano they apply the more abundant will be their crop. The productiveness of a large application of either manure is entirely circumstantial. If the season is moist and humid, the crop will be large and productive; if very dry, their effect will scarcely be appreciable.

As I have already said, plants cannot imbibe solids; and although you should sow your seeds or set your plants on a dunghill, or in a bag of guano, without water they would never come to perfection. Solid manures can only become available for feeding plants when their constituent parts become so liquified that they can be easily imbibed by these small tissues, and converted into food for the plant. What gives dung from the cattle shed a superiority over, and a greater money value than, dung from the stable yard? Their constituent elements are the same or nearly so. But there is evidently a difference in the process of mastication and digestion. The one is light and porous, the other solid and heavy. The superiority of cattle shed dung consists not only in its power of absorbing moisture, but in its power of retaining it. It gives off the liquid it contains slowly and gradually, so that the plant in contact with it is fed from day to day; and, even in a very dry season, plants planted with the one kind will grow and come to maturity, while with the other they will languish and die, which, in my estimation, proves to a demonstration that the nearer we can assimilate the food of plants to their hourly wants the more certain will we be of an abundant crop. This is one of the problems that chemistry has yet to solve—how we can produce the greatest amount of human food with the smallest amount of manure, and how that manure can be applied with the smallest amount of waste or loss to the farmer. Farmers and landlords are to a great extent responsible for the food of the people. The greater the amount of food produced in the country, the greater will be the amount of our prosperity; and the greater our prosperity, the more happiness; and the more happiness, the greater will be the security of life and property. Therefore, whatever tends to diminish the people's food, tends to national disaster—hence the propriety of allowing no productive matter to run to waste—and yet it is a melancholy fact, that while our farmers are paying hundreds of thousands of pounds per annum for guano and other artificial manures, they are allowing hundreds of thousands of pounds' worth of liquid manure to run to waste. For top-dressing, there is nothing equal to liquid manure, and it may be applied with propriety, and certainly both to old and young Grasses. The extreme price of cattle and sheep that has existed for some time past ought to induce the farmer to do all that lies in his power to increase the productiveness of the soil; and, as liquid manuring is the best thing calculated to produce an early and abundant supply of young Grass, it ought not to be neglected. Every market gardener and gentleman's gardener knows the value of liquid manures; and if the application of liquid manures produces early vegetables for our markets, why not produce early Grass for our ewes and lambs? Early Grass is one of the great desiderata in stock breeding, and I think that by a liberal application of liquid manure that desideratum will be supplied. One of the great, or perhaps the greatest, advantages of liquid manuring is that you may apply dung any season of the year. From the beginning of October till the end of April, there is a considerable amount of liquid manures about all farmyards; and if there were large waterproof tanks erected in connection with these, a supply might be had for seven months in the year. On old pasture land, where there is often more fog than Grass, it would be a great advantage to commence watering in the end of autumn, and repeat it as often as possible up till the

beginning of spring. The action of the liquid would, I believe, tend to relieve the[m] og and produce a fine early Grass. But I am further convinced that it may be profitably applied to the sowing of Turnips as well as top-dressing Grass. By applying it to the Turnip land either during the winter or early in spring, I feel confident that the result will be equal to the best guano. In fact, I think the results of guano more imaginative than real. It is frequently applied to new land, where no manure is required, and is no test of its capability for producing a crop. I am confirmed in this opinion from the experiment made by Mr. Haldane, Fairnilee, when there were only about 15 cwt. more of Turnips which had been sown with the best guano, than on the same acreage sown with no guano at all, a difference in money value of from 5*s.* to 7*s.* 6*d.* per acre. A square acre of land, allowing 2 feet apart for the drills and 6 inches apart for the plants, will produce somewhere about 43,500 Turnips. Now, if we allow 5 cwt. of guano as a fair average to the acre, that gives about two-thirds of a quarter of an ounce to the Turnip, a quantity so infinitely small, that no one can expect it to produce a crop, even admitting that it was all productive matter. But we must deduct at least a quarter of an ounce for sand and other non-productive matter, which would reduce the quantity to about one-third of a quarter of an ounce of guano to the Turnip, a quantity less than an ordinary snuffer would take at a time of a pinch of snuff, and this is the quantity farmers imagine raises a crop of Turnips. As far as my own experience goes, which is confined to pot plants and garden culture, and as far as the experience of practical gardeners goes, I am convinced that liquid manure, undiluted from the cattle shed, contains as much real productive matter, weight for weight, as most guanos, and infinitely more than many of the so-called artificial manures in the market. Perhaps, in a country like ours, where we have more acres than men, we can afford to be careless about productive matter; but in some other countries, China for instance, where they have a large population living on water as well as land to support, they require to be more careful. In China, travellers inform us that every drop of liquid manure is carefully preserved and applied to the soil. There, farmers, who have lands adjoining the highways, are in the habit of placing casks or jars at intervals along the roads for the use of travellers, the contents of which are taken away and carefully applied to the land. Farmers nowhere spend their labour uselessly if they can help it; and the fact of the Chinese farmer being so careful in preserving it, is the best proof that can be given of the utility of its application. Should you ask me for further proof of the profitable application of liquid manure to the soil. I might point you to the Craigentinny meadows at Edinburgh and the Meadow Lands at Carlisle. Of course you may say there is no comparison between the capabilities of a farmyard and the sewage of a city. I admit it, but it is the principle, not the quality, I am contending for. If the Craigentinny meadows can be made to produce four crops in the year, bringing from 40*l.* to 50*l.* per acre, may not the lands on the banks of the Gala be made to produce two? The superiority of liquid manure from the farmyard is so great over city sewage, where there is so much dilution with water, that I would suppose that 1 ton of the former is equal to 20 tons of the latter. I have not time in this address to enter into the subject of collection and distribution, but I am so impressed with the utility of the matter, and the profitable results that would accrue to the farmer, and the benefits it would confer upon society, that I think it is worth the serious consideration of both landlords and tenants.

Mr. Wm. Rintoul, Rink, though agreeing with the views stated regarding the fertilising properties of liquid manure, doubted very much whether its distribution on the farms of this district would pay for expense. Mr. Thompson's remarks in deprecation of guano were unfounded—the value of liquid manure resting on knowledge to be ascertained by the experiment that they proposed to make. Each Turnip was small that it could not have any strength. On one drill this season no guano had been put, and, though the Turnips were only recently thinned, he saw that the return on that drill would be sufficient to pay the labour, while all the other drills done up with guano were looking very bad. Therefore the experiment was not a case in point. The field had been already manured to excess, and the guano had no chance of making its power seen. He had no doubt that the use of guano increased the Turnip crops to[o] full.

Mr. Grieve, Windydoors, thought there was no doubt that on the general principle the fertility of liquid farm manure Mr. Thompson was quite right, but the expense of its distribution by the suggested plan would take away all its value, and be nothing in the shape of profit. If he had been tried very carefully in Ayrshire, and it was found that horse labour employed in its distribution cost more than could be taken from the products grown by it. It was unsuitable for Grass meant for sheep or lambs, and would injure them.

Mr. Small, Gladshiels Mill, said if Lord Boyd would put up engines to throw the liquid manure to the elevated ground, so that it could be led by pipes to the field, he had no doubt that would be the best mode of distributing the liquid manure, but at present farmers had no profitable way of getting it to the soil. He had several times seen Mr. Reeve's farm near Glasgow, where immense crops of Grass were raised by pumping liquid manure to a high level and then scattering it by hose and pipes over fields. The crops were either for pasture or cutting, and the Grass was eaten by dairy cows. He understood that farm paid very well.

Mr. Elliot, Hollybush, said—Wherever liquid manure could be applied by gravitation to Grass it would pay well; but the quantity made on a farm, were much less than many people thought. He had tried the experiment for one year of using a water cart to throw it over young Grass meant for the sheep and lambs, but it did not pay him. He found that the horses' feet and the wheels did more damage than the manure did good, and the result was that he had to cut the Grass for hay. On hill slopes it would be found totally impracticable to use water carts without a great expenditure of horse power. It would not do to apply it to the land during winter, he thought; and that implied immense tanks to keep it until it was needed. The Edinburgh sewage went over the meadows in thousands of tons per acre—a very different thing from going out with a water cart and sprinkling it over rough hills. He did not think it impracticable to utilise the liquid manure on any of the farms in this district by throwing it on the dung heaps, or making it into compost heaps.

After some more remarks from Mr. Thompson, the following was declared to be the opinion of the Club on the subject:—"That while this Club is satisfied of the fertilising properties of liquid farmyard manure, when applied to the soil, they still think that, when its application by gravitation is impracticable, it will not pay to employ any of the other modes of direct application hitherto in use, all of which involve considerable expense."

Reviews.

Quarterly Journal of Science. No. XII. Churchill & Sons.

The sanitary condition of our towns continues to occupy attention in this serial; and this number is also full of interesting information derived from the meeting of the British Association. The Coal Supply is discussed in an elaborate and reassuring manner. "A New Era in Illumination" and "Adams' Recent Astronomical Discovery," are the subjects of two other articles. The chronicles of various departments of science are as interesting as ever; we give the short agricultural history of the past quarter, quoting it from this section of the book:—

"The Cattle Plague—which at the beginning of the past quarter was rapidly declining, still however attacking several hundred fresh cases every week—has at length dwindled to very insignificant proportions; and, excepting for its extreme infectiousness, it is no doubt of less account at present than many other fatal disorders to which the live stock of the farm are ordinarily liable. The returns for the weeks ending September 1 and 8 recorded only 99 and 69 attacks respectively in all Great Britain. Upwards of a quarter of a million cases had occurred during the 52 preceding weeks, of which nearly one-half had died and one-third had been slaughtered, leaving, with a certain number unaccounted for, less than one-sixth as the proportion of recoveries. The third and final report of Her Majesty's Commissioners was published in the month of June, and with the accompanying discussions of all the aspects and relations which the subject presents, it constitutes a perfectly exhaustive treatise on the disastrous experience of the past twelvemonth, which all stockowners should study. In particular, the question of disinfection, which it examines, possesses a permanent interest. This has been most elaborately investigated by Mr. Crookes and Dr. Angus Smith, whose researches are given in full detail. The following is the result of their inquiry as stated by the Commissioners:—

"'It is evident that the poison might be destroyed in the sores [illegible] of exhalation or discharge. The disinfectant must therefore not only be [illegible] and volatile, but so [illegible] as to be capable of penetrating [illegible] and of coming into close contact with the diseased [illegible] of the animal.

"'After a number of experiments which [illegible] in many other cases as disinfectants, we have put aside, as not meeting these necessary conditions, the compounds of iron, zinc, lead, manganese, arsenic, sodium, lime, or charcoal powder, and many other substances, want the volatile disinfecting power; iodine, bromine, nitrous acid, and some other bodies are too dear, or are entirely unable, or are injurious to the cattle.

"'On full consideration, it appears that the choice must lie between chlorine, ozone, sulphur, and the tar acids (carbolic and cresylic). Two of these bodies, viz. chlorine, in the shape of chloride of lime and the tar acids, have the great advantage of being both equally effective; they can be at once added to discharges, and constantly diffused in the air.

"'All these four substances—chlorine, ozone, sulphurous acid, and the tar acids—have been practically tested, either in England or on the Continent, and there is considerable evidence that they actually destroy the cattle plague poison. Their precise mode of action is still uncertain. Chlorine and ozone act, no doubt, as powerful oxidisers, converting animal poisons into simple and innocuous substances. Sulphurous acid probably destroys the virus by its strong antiseptic powers. Carbolic acids, according to the experiments of Mr. Crookes, neither interrupt nor accelerate oxidation, but they act most powerfully in arresting all kinds of fermentative and putrefactive changes, and annihilate with the greatest certainty all the lower forms of life.

"'After a full consideration of the relative merits of the four disinfectants, and after some practical trials, Mr. Crookes arrived at the conclusion that the most powerful, and at the same time most simple, process of disinfection would be to use the tar acids as constant liquid and aërform disinfectants, and sulphur in the form of sulphurous acid as an additional and occasional agency.

"'For the reason stated in Mr. Crookes's report, it appears that chloride of lime is inferior to the combined use of carbolic and sulphurous acids. But there is no doubt of the efficacy of this agent, and in certain circumstances, as for the washing of railway trucks, it may be employed in addition to boiling water or steam.

"'It is very desirable that the use of carbolic acid should become general throughout the country in uninfected as well as in infected districts. There is little doubt that even were there not the danger of cattle plague, the great purifying effect of this substance on the air of cattle sheds would contribute greatly to the health of the animals."

"We presume that a very long experience of the use of carbolic acid is necessary before its permanent efficiency can be determined; but in the mean time its cheapness, easy applicability, and power of at once arresting all kinds of putrefactive change, doubtless justify all that the Commissioners say in its favour.

"In connection with this subject we have to add that all attempts, arising out of this national calamity, to establish a National Insurance Society and Fund have failed. Dr. Farr, F.R.S., did, indeed, read a paper last June before a meeting of the English Agricultural Society, advocating a plan which he had drawn up, by which the whole live stock of the country might have been insured by Government upon the voluntary principle; but no action followed upon it. To establish such a society, the first thing necessary was that noblemen and gentlemen interested in agriculture should subscribe to a guarantee fund, on the plan adopted at the Great Exhibition, and it was proposed that Government should subscribe an equivalent amount, engaging to advance money for preliminary expenses at a moderate rate of interest. The guarantee fund was intended only to make advances or loans, and the subscriptions were to be called for by instalment only in cases of necessity. An appeal should be addressed by the Statistical Department of the Privy Council to all the principal stock owners of the kingdom, requesting their concurrence. The concurrent stock owners would then be requested to send in classified lists of their stock, and its value. The premium to be demanded would have to be sufficiently high to cover the risk, and it was believed that 1*s.* per month would insure 10*l.* on a healthy beast exposed to ordinary risks under good arrangements. No beast worth less than 5*l.* should be insured. The policy might be transferred on the sale of cattle being registered. Horses and sheep might be insured upon terms to be agreed upon. Payment of premiums might be made through the post-office. All payments on policies might be made on the authority of a specially-appointed officer in every county, acting under the inspection of the committee. The accounts should be duly audited and published annually, with a digest of the returns and report made by the actuary, to be appointed by the Home Office. All cattle imported diseased should pay adequate premiums, and if healthy, receive policies covering a term of one month or more; the premium in such cases to be collected by the officers of Her Majesty's Customs, and paid by them on account of the Society into the Bank of England. No person having cattle uninsured should under any circumstances receive compensation from any public rate. Landlords, for their own protection, might insist upon the insurance of stock, and clauses might be inserted to that effect in the leases or covenants. Under these encouragements it was probable that half the live stock in the kingdom would be insured. This would give an amount of 2,000,000*l.* or 3,000,000*l.*, which would be sufficient to cover all losses and expenses, and whatever profits might accrue should be divided among the insured upon the mutual principle.

"These were the main features of the plan; but we fear, with Mr. Torr, who followed Dr. Farr at the meeting in question, that nothing of a purely voluntary character has any chance of being taken up by the farmers of the country on a sufficiently large scale to ensure its success. The occurrence of a great calamity of this kind is so new, and has been so rare, that the lesson of self-preservation which, were it to be of frequent recurrence, it must ultimately teach cannot be expected to be learnt at once.

"To turn to the vegetable world, we have in the first place to report the marked success of the Metropolis Sewage Company in growing great crops of Italian Rye-grass upon sheer sea-sand. About 1000 cubic yards of the sand below Shoeburyness, which is to be the ultimate outfall of the North London sewage culvert, has been spread over an acre of land near Barking. The surface was sown with Italian Rye-grass in February last, and the sewage water allowed to trickle over it. Since then several heavy crops have been cut, one of which, grown in a month's time, weighed about 10 tons per acre. The efficiency of town sewage, as a feeder of luxuriant vegetable growth, is being tested at other places near the present North London culvert. Mr. Westwood and Mr. Adams, at East Ham, have also plots which are yielding enormous growths of Italian Rye-grass; and at Lodge Farm, near Barking, the Sewage Company are laying down a large extent of land for surface irrigation, so that in a year or two we may hope to see all South Essex convinced of the enormous fertilizing power which is about to be distributed through that district.

"The weather of the past summer has been more favourable for succulent growth, such as that of Italian Rye-grass, than for the ripening of seeds, and thus we have to report unfavourably of the harvest. A large proportion of recently published reports of the Wheat crop declare it to below an average, and the extremely wet weather of September has much injured grain crops in the later districts.

"One other matter of some agricultural interest may be referred to in this Chronicle. The National Agricultural Societies, both in England and Scotland, are trying by means of pecuniary premiums to ascertain with accuracy the experience of farmers in steam cultivation. As the sum of 1000*l.* has been voted for the purpose by the English Society, we may have soon to have a full report of the costs and difficulties, advantages and returns, which have been hitherto experienced in connection with the various methods by which steam power has of late been applied to the cultivation of the land."

Farm Memoranda.

Bruton, Somersetshire: *Personal Experience on a Farm*—(*Continued from page* 936).—Up to 1844, I had not made rent or taxes, having expended all in improvements; but this year I had a great breadth of corn, the summer was fine, and the crops yielded well. I had previously limed upwards of 100 acres, at 30 qrs. per acre, besides using a great quantity on the pastures, which I generally mixed with road-scrapings, of all which I now found the advantage. I had used lime from 11 different kilns, which was burnt from almost as many different kinds of stone, but could not discover much difference in the results. My plan of liming the arable land has always been to put it on fallow after it has been once harrowed, and generally at the rate of 30 qrs. per acre. If applied when the fallow is rough, a portion, more or less, according to its state, will be lost. When properly slacked, I spread it evenly, and immediately harrow it two or three ways, so that it may be thoroughly incorporated with the soil. It is an expensive dressing, and should not be carelessly applied.

I tried carbonate of soda for Wheat, with bad results. It increased the bulk of straw, but retarded

its ripening, and the corn was blighted, although it was in the middle of a field otherwise free from blight.

I tried subsoiling on some of my best land previously to sowing it with spring Beans, but it was useless; and I have never since been able to discover any difference in any crop that I have grown on it. I had previously tried Beans, without ever getting anything like a good crop.

I have grown winter Beans with rather better success. Peas of several different kinds I have tried, and given up as unsuitable for the land and climate.

I cannot grow Barley to any advantage. I may obtain a bulk of straw, but the grain is always of very bad quality.

I dislike thin crops of corn, therefore have never tried thin sowing, but have witnessed the results. A gentleman came to an estate near me from a much better climate and land, and condemned very much my practice of thick sowing. He tried the opposite system by dibbling a small piece to Wheat at the rate of 1 bushel per acre, and also by sowing three pieces of the same size to Oats:—1st, 4 bushels per acre; 2d, 6 bushels; 3d (much against his will), 8 bushels per acre. The result was no Wheat, the exact yield of Oats I never ascertained; but the bailiff told me the piece sown with 8 bushels per acre produced about as much as both the other two pieces, which, from my own frequent observation, I believe was near the truth. There is another evil attending thin sowing on my land; for I have always found that, unless I take full possession of the land with the crop I want, I am sure to have an abundance of things that I do not want. When corn is drilled, of course, the hoe may prevent the intrusion, but only to a certain extent; for the hoeing cannot be continued long enough to do so entirely. I have proved many times that I can grow more corn per acre (particularly of Wheat) by sowing than by drilling.

My improvements went on rather slowly for two or three years, as I could not obtain the promised lease. The steward of whom I took the farm died, and soon afterwards his successor followed, so that I did not feel justified in going so far as a yearly tenant as I otherwise should have done; but fortunately, my noble landlord called on me, rode over the farm, and was so well pleased that he told me at once that I should not be any longer disappointed of a lease. I then with fresh spirit took out all the remaining fences that I could on the arable land, and reclaimed the whole, making a total of 403 acres arable. I have one piece of 280 acres, without a fence, cultivated in three equal portions. All the land, as it came into a ploughable state, was managed on a five-field course, as follows:—Wheat, Swedes, grown with artificial manure; Oats, Clover, Vetches, Rape, and Turnips. All my yard-manure was applied, after the Clover was mown, for Vetches, Rape, and Turnips, on the field intended to be sown the following autumn to Wheat. This system I found inconvenient in one respect, which was that it was not economical to get my Swedes fed off sufficiently early to sow Oats in proper season, and Barley did not pay me. I tried white Oats, but they were always of a bad colour. In 1850, I altered my system to another five-field course, namely—Wheat, Oats, Clover, Vetches, and Swedes; Vetches, Rape, and Turnips. I have now changed to a four-field course,—taking Wheat, Oats, half sown to Grass; Clover and Swedes; Vetches, Rape, and Turnips. By this plan, I sow Clover but once in eight years, by which I hope to secure a better crop. I have tried Italian Rye-grass several times, first as long ago as 1843, but I have never had a thick good crop. I do not much like it (perhaps I have not sown a good and clean sample), but have found a little very useful as early feed on several occasions. Hitherto (1852) I had hired a steam-engine for threshing for some years, having been the first to introduce one in the parish; but now I have bought one, and a boulting machine, of Mr. Cambridge, which answered well; and although it was a portable engine, I built a high chimney and a house for it, which I consider a great advantage, as I can use it for any purpose in any weather, without any risk, and with less fuel. In about four years, the boulter was much the worse for wear, but the engine (which was of 5-horse power) was as good as ever; and, to keep pace with the times, I exchanged with Mr. Cambridge for a combined thresher and an 8-horse power engine, which I think, taking it in all its points, is as good as anything of the kind I have seen.

Most, I suppose, know that where lime answers well, chalk or malm will also do good; but few persons, I think, have witnessed such extraordinary results as I am about to relate from the use of the latter. In 1841, I wished to try malm on a piece of land of 26 acres, which was covered with very short heath and Fern, with a little Grass of the very coarsest kind. I agreed with a neighbouring farmer to allow me to dig some on his farm at 3*d*. per load (I have nothing of the kind on my land). I had about a mile to haul it, and I put about 35 loads per acre, at a cost of about 5*l*. After I covered about 6 acres of the worst part of the field, a circumstance occurred that prevented my continuing it; the next year it began to alter the appearance of the land, and in two or three years after, if a flock of sheep were turned into the opposite end of the field, in a few minutes three-fourths of them would be on the 6-acre malmed. In 1847, being six years after it was done, I decided on digging the whole piece, and I began with the malmed part, which turned out mellow and nice; but when the men, about 20, came on to dig on the other part, it was of quite a different colour, and such a sour and most unpleasant smell arose from it, that I could perceive it a quarter of a mile off. In fact, a gentleman walking with me at about that distance could not imagine from whence the smell came, and had to be convinced by going to the spot. The digging was taken at 2½*d*. per lug, but, when the malmed part was finished, I was obliged to advance the price to 3*d*. per lug. Some weeks after the whole field was turned, the malmed piece, and 3 acres adjoining it, was sown to Oats, the other part of the field was drilled to Swedes with dissolved bones. At harvest the Oats on the malm part were 5 feet high, and produced 63 bushels per acre: and on the adjoining 3 acres, 1½ feet high, producing 15 bushels per acre. The Swedes were not very good; I fed them on the same, and then ploughed the whole field, and found the turf but little rotted on the part not malmed. At spring I sowed it all to Oats, and the result was 59 bushels on the malm parts, and 25 bushels per acre on the remainder of the field; every drill of bones used the previous season for seeds could be easily seen by the difference in the Oats. I then folded the whole field equally over with 2000 sheep per acre, and sowed Oats again—this was the third time on 9 acres, and the second time on the other part; this crop produced 67 bushels per acre on the malmed, and 41 bushels on the other parts, showing the extraordinary difference in the average of three crops of 63 bushels against 27 bushels per acre; so that, if I had continued the malm over the whole field at first, I should have had on the three crops 1324 bushels of Oats more than I had, which, at 2*s*. 6*d*. per bushel, would be 155*l*. 10*s*. I then considered the field deserved better treatment; so I fallowed it, and limed the part not malmed with upwards of 30 qrs. per acre, brought it into a regular course with my other land, and have had good crops of all kinds on it since. For at least seven years after it was dug a person walking across it blindfolded could tell the malm part by the difference of feeling to his feet.

I have tried salt with lime, which answered well; and also salt alone on some occasions has been very beneficial, principally in preserving Vetches from the slugs. I have tried it for preventing fingers and toes in Turnips (which my land is very subject to), but I have found lime the best preventive for that disease.

I have found genuine guano very good for a top-dressing for corn, and Proctor's Wheat manure good for Wheat; but prefer doing all that is necessary to secure or to expect a crop of Wheat in the summer previous to sowing it. I have found soot, the genuine article, exceedingly useful where the wireworm or hares and rabbits have injured my Wheat. With regard to soot, I have been sadly imposed upon—in the country by adulteration, and in the large towns by short measure.

I have tried a great many sorts of Turnip manure with various results, and have dissolved bones with vitriol on the premises for several years, which proved economical; but now prefer using bones alone chiefly, and some dissolved without vitriol. I have also used the liquid manure drill with great advantage, and was one of the first that used it.

I have Saintfoin many times in small patches in my Lent corn, but never saw any come to the scythe.

I have scarcely ever grown any good winter Vetches when sown in the autumn; but have grown them very good when sown in February, and spring ones as good as I have ever seen anywhere.

From the commencement in 1837 to 1853 I continued the system of breeding cattle, regarding quality rather than milk, but not to the extent of the Hereford breeders. I merely kept my calves on milk as long as was necessary (not the whole summer), and made cheese afterwards; but in 1853 circumstances induced me to let my cows, which I have continued to the present time; and although my present dairyman makes cheese of the very best quality, and can, I presume, make the most of the milk, I do not consider it so profitable, on the whole, as my former system. When I reared all my calves, I could keep a greater number of cattle; and through the winter I invariably fed them on ground Swedes and chaff, except when Swedes were short, then cake was used instead, and sometimes boiled Peas were substituted, which are an excellent food to mix with chaff. My stock were all of good quality, and my worked oxen, barren cows, and bulls always commanded good prices.

With regard to my Grass land, I mow it and feed it alternately, and put on it as much compost as I can from time to time get together.

None of my land requires draining.

I have no orchard. I cannot grow Apple trees in my garden by any means that have yet been tried.

I cannot say much of the manufacture of dung, and I think the less that is done in that way in the yards the better. I endeavour to mix the different qualities as well as I can, and get it into the soil with as little delay as possible. From the time I finish Wheat sowing, which is in November, to the time I begin sowing in the following October, I take every opportunity of clearing the yards, and conveying it to the fields for Clover, Vetches, Rape, and Turnips as a preparation for Wheat, and I particularly desire that not an atom or drop of the excrements of any animal be allowed to drop in the yards or houses, without straw being under them to receive and absorb it.

As to the treatment of labourers, I think I stand tolerably well with them, as I seldom change. I act on the commercial principle of buying in the cheapest market, but do not consider the lowest price always the cheapest. I hire mostly by the week, but my reaping, mowing, hedging, and hoeing is done by measure, and some other work also, as occasion requires. I have for upwards of 25 years paid my labourers weekly on Friday evening, in cash separately, so that none should have an excuse to go to the ale-house or shop for change; and although the whole time I had business transactions with the landlord of the inn in the village, and received large sums in each year from him, I never sent a labourer there for wages. During the whole time of my improvements, I superintended nearly always on foot, and assisted in every operation that took place on the farm, and measured the whole of my piece-work (with very few exceptions) myself, and very seldom had a complaint of any mistake; in fact, the men generally preferred my measuring their work, as they then saved their moiety of the expense; and although I have had as many, on one or two occasions, as 100 persons in my employ at one time, I have never had a magistrate's summons for any one in my service, nor was I ever summoned by one of them on any matter whatever.

If it ever happened that I did not pay my labourers on the Friday, or that I had not change to pay every one separately, it was an exceptional case, by no means of frequent occurrence. When they are thus treated, I consider them entitled, on many occasions, to my sympathy and assistance.

Some of my labourers take Wheat, but it is at their own request; they were never asked to buy it, nor anything else, the produce of the farm.

My wages have been generally, even from the first year, about 400*l*. a year more than my predecessors.

As I stated at the beginning, the average of the different crops at the time I entered on the farm in 1837—I place it again here in juxtaposition with the state in which it was in 1857.

State in October, 1837.			*State in October, 1857.*		
18	acres	Wheat stubbles	94	acres	Wheat stubbles
82	,,	Oat and Barley stubbles	198	,,	Oat and Barley stubbles
7	,,	Clover stubbles	109	,,	50 acres Clover stubbles
3	,,	Swedes			59 ,, Swedes
11	,,	Vetch stubbles	102	acres	Vetch stubble, Turnips, Rape and fallows
82	,,	fallows			
300	,,	barren			
403			403		

The weather in summer is seldom too dry for my land, and the difference in the yield of corn in a dry season and a wet one is often much more than the value of the rent of the farm. Although I had an excellent crop, as before stated, in 1854, in the very next year I only grew 560 sacks 3 bushels, on 77 acres, 3 roods, 16 poles.

The difference also in my losses of sheep stock (which are generally great) in a hard winter and a mild one, is very observable. My stock is about 470 ewes and 220 tegs, with a few odd ones to make 700, and in the summer a few over 400 lambs. I have always found it a great advantage to dip my sheep in a solution of arsenic, black soap, &c., which is done in the autumn of each year. I keep them continually on the arable land, except at the lambing season, when the ewes are brought into a yard by night. My loss has varied, of full-grown sheep, from 4 to 10 per cent.

Below I have shown the effects of the various seasons in ripening corn and harvesting for the last 20 years. In one instance, 1846, I began cutting corn as early as July 27th, and in the year previous, Sept. 1st, showing a difference of one month and eight days; and finished harvest, in the first case, August 25th, and, in the other case, October 15th, showing a difference of one month and 23 days.

	Commenced Cutting Corn.		Harvest Finished.		Commenced Cutting Corn.		Harvest Finished.
1838,	August 25		Sept. 18	1848,	August 11		Sept. 16
1839,	,,	26	Oct. 1	1849,	,,	15	,, 15
1840,	,,	20	Sept. 15	1850,	,,	16	,, 7
1841,	,,	24	Oct. 20	1851,	,,	14	,, 10
1842,	,,	14	Sept. 12	1852,	,,	13	,, 11
1843,	,,	24	14	1853,	,,	29	Oct. 8
1844,	,,	8	Aug. 31	1854,	,,	21	Sept. 15
1845,	Sept.	1	Oct. 15	1855,	,,	27	,, 27
1846,	July	27	Aug. 25	1856,	,,	23	,, 9
1847,	August	18	Sept. 2	1857,	,,	10	Aug. 31

[We repeat that if Mr. Lush would give us his experience of the last few years by way of supplement, it would be read with great interest.]

Calendar of Operations.

October: *Value of Oilcakes.*—Dr. Voelcker, in one of his reports to the English Agricultural Society, makes the following remarks on the condition in which various cakes are offered in the market:—

We often forget that animals have appetites as we have, and that they like food in a good condition better than food in a bad one. The composition of two samples of the same food may not vary much, yet the practical effect produced by them may vary exceedingly. Animals never do well on very old cakes. In examining, therefore, the different cakes, we ought to examine particularly their condition. I allude especially to the examination of Cotton-cake; the colour affords an excellent criterion as to its freshness. The freshest Cotton-cake is as yellow as Mustard. As it gets old it gets brown; but the interior is bright yellow—very different from the part that has been exposed to the air. The deeper the brown colour has penetrated, the older the cake, and the more it has suffered by bad keeping. If it is kept in a damp place its colour and condition are rapidly deteriorated. The best Rape-cake is green German Rape. I believe it is as good as Linseed-cake for store cattle. The difference in their composition is very trifling. The proportion of oil is nearly the same. Some foreign cake, especially Indian cake, is often made of seed which is full of Mustard. Several cases of poisoning have occurred from its use. It is a safeguard against Mustard-seed in cakes to steam it before use. Of the specimens which passed through the hands of Dr. Voelcker, the chemical officer of the English Agricultural Society, last year (1860), he reported—

At least three-quarters of all the Linseed-cakes examined by me during the past season were either grossly adulterated, or were cakes of quite inferior quality. The practice of recrushing oilcakes and mixing the powder with a certain amount of bran before replacing it into the presses appears to be gaining ground. Good decorticated Cotton-cake has become much dearer, and is bought up as soon as it

arrives in this country, and is consequently rather difficult to obtain of first-rate quality. One of the most useful oilcakes is green German Rape-cake. Several excellent samples were sent for analysis, and also some samples of common and of Indian Rape-cake. The examination of these cakes has strengthened my conviction that whilst green German Rape-cake may be used with perfect safety, it is dangerous to give to cattle other kinds of Rape-cake, inasmuch as they frequently contain Mustard in injurious proportions.

Recently attention has been directed to the probable importation of Egyptian Dates in years of plenty. Of the same kind is the Locust, or Carob pod, an importation from the Mediterranean, containing a good deal of sweetening matter, and useful as a fattening food.

The advantage and the profit of these additions to the ordinary green food, straw and hay, of the farmer depend a good deal, first, on the quality of the home-grown food, and next, on the quality of the cattle bred or purchased to consume it. The Turnip crop of some districts is a great deal more nutritious than it is as grown elsewhere. The experience of Scottish feeders and Turnip-growers is thus never realised in England.

Mr. McCombie, of Tillyfour, in Aberdeenshire, says:—

"I fat from 300 to 400 beasts annually; my average price for them in London this season has been 55*l.* a-head; I never exceed 4 lb. oilcake and 2 lb. bruised Oats a beast per day; they have what Turnips they can consume, and Oat straw *ad libitum*. 12*l.* per acre is my average profit in feeding on Aberdeen yellow and Swedish Turnips. I sometimes realise less, often more. This cannot be paralleled in the South, where we often hear that feeding cattle are a necessary evil—necessary for the manure made during the feeding process, but an evil for the loss consequent upon it.

Even on the most nutritious of home-grown food, however, and perhaps then more especially, it is profitable in the case of well-bred cattle to add from 4 lb. to 8 lb. of meal and cake to the daily ration of pulped roots and chaff. But on the quality of the cattle to which this food is given more than any other thing depends the profitableness of the process.

A correspondent on this subject once called our attention to his mode of cattle feeding. He had a lot of small cattle (some of them sold fat at 42 stones each) fed on half a cwt. of pulped Turnips and 2 lb. of Rape-cake, and 20 lb. of cut Wheat straw daily. "They are always full, and seldom on their feet, except at feeding time." The account he gave indicated that they were doing very well; and he asked—"Do you think the cattle could assimilate a greater portion of nourishment? I have no wish to have my food pass through them unappropriated by the system."

Now this was a question which we were unable to answer, for the reason just referred to. The elements of the case were not before us. It was not sufficient to say that the food in question contains daily 1½ lb. of nitrogen, 11 lb. of starch, and ¾ lb. of fat—that the proportion of the nitrogenous to the non-nitrogenous elements is as one to eight—nor even, taking the more practical aspect of the question, that the daily cost of the food is about 5*d.*, while the animals which in January were in "a very lean state," were expected to be "fat by the end of May." The fitness of food depends, not on the general consideration of animal nutrition, but on the character of the animals in question, and of that we had no sufficient account. Well-bred Short-horn cattle would make the full use of a much richer diet than the one here specified, while ill-bred mongrel starvelings would waste it.

We had then before us an instance illustrative of this: a flock of mountain sheep from Lancashire had been introduced into one of the southern counties, where, on pastures richer than where they had been bred—on Swedish Turnips, too, given to them there—it was expected that their progress would be proportionably faster. This, however, had not been the case. When fed on richer food they became liable to disease, and even when the quality of the feeding was reduced so as to suit their health, the rate of improvement was not so much the quicker as to pay for the greater cost of food beyond what they would have had in Lancashire. The Grass and Swedes and hay that they had would have made more mutton on the body of a Down or Leicestershire sheep, and have yielded a larger money return.

The same holds true in other breeds and animals. The feeding which we hear of as given to well-bred Short-horn steers in the feeding yards of Yorkshire, Lincolnshire, and Norfolk may be profitable there, and wasteful under other circumstances. Shelter, warmth, and quiet are profitable everywhere, and nutritive food, of course, must make more mutton, beef, or pork than what is innutritious; but here, as in every other branch of agriculture, general rules must be accommodated to circumstances. The degree of every particular style of treatment must be accommodated to the individual character of the animal and the general character of the breed to which it belongs. The most profitable management of a well-bred animal involves outlay of shelter, food, and attendance that would be thrown away upon a Kyloe.

Notices to Correspondents.

Grasses: *Alnwyton*. Your Grass is the Holcus mollis—Soft Grass, a name sometimes erroneously applied to the H. lanatus, a woolly soft Grass. It is distinguished from the latter by its smoother and awned florets and stoloniferous—creeping—growth, which makes it a great pest both in pasture and arable ground. Its usual habitat is light sandy soil. *B.*

Leases: *W. E. G.* We don't recollect any question on this subject, unless it were one relating to the valuation of tenants' property on the land, and in answer to that we gave a fortnight ago a long extract from Morton's "Farmers' Calendar," which related the experience of Lincolnshire and Cheshire on the subject. If you have any further inquiry, we shall be happy to procure what information may be obtainable.

THE HYDROPULT,

An Invention for Throwing Water by Hand Power

(Secured by Royal Letters Patent).

PRICE LIST.

	£	s.	d.
Complete with Brass Cylinders and Japanned Stirrup	1	12	6
Complete with Brass Cylinders and Copper Stirrup	2	2	0

The Price "Complete" as above, includes 2½ feet Suction and 3 feet Delivery Hose, Galvanised Wire strainer, Rose and Small Jet.

THE HYDROPULT

is invaluable for use in the GARDEN for

WATERING BEDS,
SPRINKLING PLANTS,
DROWNING OUT INSECTS,
CLEANSING TREES FROM SMUTS,
DRESSING WITH LIQUID MANURE,
&c. &c.

CAUTION.

Important to the Public.—The extensive sale of the Hydropult has excited the cupidity of so-called respectable, but in reality unprincipled Manufacturers, who are now palming on the Public worthless imitations of the Hydropult, and through their connections are enabled to place said devices on exhibition, and for sale, in many of the principal Ironmongery and Seed Establishments throughout the city and provinces. These devices resemble in many respects the Hydropult in appearance, and are calculated to deceive the unsuspecting. The Proprietor therefore issues this Caution, and respectfully intimates that parties wishing to purchase the Hydropult should examine the machine offered for sale, and see if it has attached thereto an Iron label, with the following words: "The Hydropult, Voss's Patent, manufactured only by Griffiths & Browitt, Birmingham. Charles Pomeroy Button, Proprietor, 142 and 143, Cheapside, London." Unless this label is attached, the Machine is not the Hydropult.

Prospectuses, with Testimonials, on application.

HYDROPULT SHOW ROOM, 142 & 143, CHEAPSIDE, LONDON.

IMPERIAL BUTTER COOLER.

SECURED BY ROYAL LETTERS PATENT.

USEFUL, ORNAMENTAL, UNIQUE.

The novelty and utility of this Invention consists in a Revolving Cover, so constructed that by turning the knob on either side of the Basin, it can be covered or uncovered instantly; the lid disappearing into a receptacle or false bottom, thus not only having the lid ready for instant use, but obviating the necessity of its removal from the table. The Butter Cooler can be used for a Sugar Basin.

Price, in white metal, electro-plated, £2 2*s.*

CHARLES POMEROY BUTTON,
142 and 143, Cheapside, London, E.C.

JOHN WARNER AND SONS,
8, Crescent, Cripplegate, London, E.C.,
BELL and BRASS FOUNDERS to HER MAJESTY.

No 35.

PATENT CAST-IRON PUMP, fitted with J. W. & Sons' Metal Bucket and Valve, which cannot clog in action, for Wells not exceeding 25 feet.

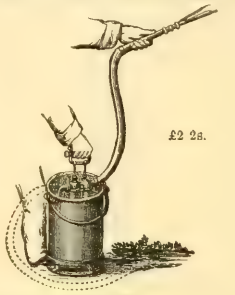
Diam.	Height.	£	s.	d.
2½ in. short	1 ft. 7 in.	1	1	0
2½ in. long	3 ft. 3 in.	1	8	6
3 in. long	3 ft. 6 in.	2	1	0
3½ in. long	3 ft. 6 in.	2	6	0
4 in. long	3 ft. 6 in.	2	14	0
24 in. short, with 15 feet of lead pipe attached, ready for fixing		2	0	0
2 in. long, do. do.		2	14	0

Price of 4-inch Liquid Manure Pump, with legs, £2 15*s.*; 2-inch Flexible Rubber and Canvas Suction Pipe, 2*s.* 1*d.* per foot. The Barrel is 27½ inches long, and the legs are 5 feet high.

No. 42.

IMPROVED LIQUID MANURE or GENERAL PORTABLE PUMP.—These Pumps are fitted with J. W. & Sons' Patent Bucket and Valve, and cannot clog in action. The Barrel is made of Galvanised Iron, not likely to corrode, and can be raised or lowered at pleasure on the stand, the legs of which fold together, and it may be carried with ease by one man to tank or pond.

WARNERS' PORTABLE FIRE or GARDEN ENGINE.



£2 2*s.*

No. 5684.

For use by one Person .. .. .. price £2 2*s.*
No. 5475, ditto ditto, on Wheels .. .. .. £2 10*s.*

The above are complete in themselves, and may be always kept filled with water, and ready for use.

Letter to The Times, *July* 23, 1866, *from* Earl Essex.

A Real Fire Extinguisher.

To the Editor of The Times.

"Sir,—I feel sure you will kindly allot a small space in the *Times* to these few lines, as the best medium through which I would urge every householder who dreads fire to have on each floor of his house one or more small Garden or other Engines on wheels, always charged and in good order, in case of fire.

"Last night, just as I was going to bed, I was startled by that most fearful of all cries, 'Fire, fire!' I soon learned that a fire was raging in a large two-windowed unoccupied bedroom. How caused is to us all a great mystery. It is my custom to keep one of these small Engines on each floor. In two minutes I was in the room with one of them. It was like a furnace. The curtains, shutters, casements, and cornices of both windows were burning and cracking from floor to ceiling. I was quite alone at the moment, yet before assistance arrived (most of the servants having gone to bed), I had completely subdued the fire of one window without exhausting the Engine, and when assistance and more water did arrive, we very soon extinguished the other.

"So fierce was the fire that the lead of the casements was melted, and the casements themselves were burnt off their hinges.

"I will only add, that by God's mercy, the house was saved by this small Engine. Had it not been at hand and in order, most assuredly Cassiobury would be now a heap of ruins.—Yours faithfully,

"Cassiobury, Watford, July 20. Essex.

"The Engine, even when full, runs so light on the floor, that any woman might draw it, and also work it."

Oil Paint no longer Necessary.

HILL AND SMITH'S PATENT BLACK VARNISH for preserving Iron Work, Wood, or Stone. This Varnish is an excellent substitute for oil paint on all out-door work, and is fully two-thirds cheaper. It may be applied by an ordinary labourer, requires no mixing or thinning, and is used cold. It is used in the grounds at Windsor Castle, Kew Gardens, and at the seats of many hundreds of the nobility and gentry, from whom the most flattering testimonials have been received, which Hill & Smith will forward on application.

From Major Rt. Bell, *Sandhoe, Northumberland.*

"I have much pleasure in saying I have known your Black Varnish to be used for some time by friends of mine, and they all speak highly of it, which has induced me to get the quantity I have from you. That I have used looks remarkably well."

Sold in casks of about 30 gallons each, at 1*s.* 6*d.* per gallon, at the Manufactory, or 1*s.* 8*d.* per gallon paid to any Station in the kingdom.

Apply to Hill & Smith, Brierly Hill Iron Works, near Dudley, and 22, Cannon Street West, E.C., from whom only it can be obtained.

SHAW'S TIFFANY.
For samples and prices apply to
J. SHAW & Co., 29, Oxford Street, Manchester.

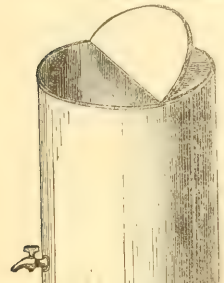
SHAW'S TIFFANY, 7s. and 8s. per piece (20 yards), for Protecting the Bloom of Wall Trees in slightly exposed situations, 4d. per piece (5½ yards), for cap or cold frames.
The Garden Repository, 52, James Street, Covent Garden, W.C.

Caution to Gardeners.—When you ask for
SAYNOR AND COOKE'S WARRANTED PRIZE PRUNING AND BUDDING KNIVES, see that you get them (bearing the mark Saynor, also the complete mark ORIDE WARRANTED, without which none are genuine).
S. & C. resist having to caution Gardeners and others, but are compelled to do so, in consequence of the immense, of common quality, knives which are sold by the unthinking, and which has caused many applicants to be made to them of Knives which were lost of them make, do not work, are warranted both by Sellers and Makers.
S. & C.'s Pruning and Budding Knives are the best and the cheapest in the market.
Paxton Works, Sheffield. Established upwards of 125 years.

SWING WATER BARROW.—This is the best and cheapest article yet introduced for use in Gardens, Farm Yards, &c. The Water may be tapped out, or the Tub tilted and poured out, or by merely raising the Handle Rain Water is spread on the ground, and the Fruit nourished. To hold about 20 or 30 gallons, price 42s. Carriage paid to any station on Great Eastern Line.

POWERFUL GARDEN ENGINE, suitable for the use of Bee IMPROVED WATER and LIQUID MANURE CARTS.
Manufactured by W. S. Bourton, Rose Lane Iron Works, Norwich.

GALVANISED IRON WATER CISTERNS.
Cheap, light, and durable, will not rust or corrode, and keep water perfectly sweet.



	Each.
5 gallons	2s. 0d.
10 „	2s. 6d.
20 „	3s. 6d.
30 „	4s. 6d.
40 „	5s. 6d.
50 „	6s. 6d.
100 „	9s. 6d.
150 „	12s. 6d.
200 „	15s. 0d.
300 „	21s. 0d.

With Lid and Brass Tap.

GALVANISED WIRE STRAND CABLE FENCING.
GALVANISED IRON ROOFING.
IMPROVED GALVANISED WIRE NETTING.
HURDLES, HURDLES, HURDLES, 1s. 6d. to 2s. 6d. per yard
PATENT SPEAKING PILLARS, &c.
GALVANISED IRON CLIMBS.
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LAWN MOWERS, GARDEN ROLLERS.
ASPHALTE ROOFING FELT, 1d. per square foot.
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Silver Medal and Cup, 1863, awarded for

JAMES'S FIRST PRIZE MANURE CART, which has been awarded 20 PRIZES, is now fitted up to answer for LIQUID MANURE, for supplying the STEAM PLOUGH, for WATERING STREETS, or for a FIRE ENGINE. Nearly 200 already sold.

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The last great improvement in Washing Machines is in Jones's new Patent PRIZE WASHING, WRINGING, and MANGLING MACHINES, awarded several FIRST PRIZES. Will Wash 20 Shirts in 20 Minutes, with much less might, than is by the hand. More than 300 Sold.
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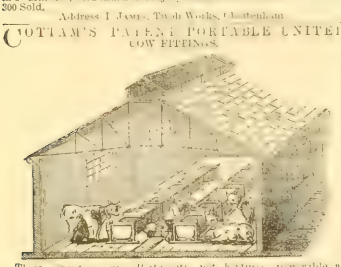


Their advantages are—Portability, not Fixtures, form value at pleasure, for Woodwork or Cast Partitions; compete Ventilation; Cleared Vermin, Has Rack suspended with as unnecessary, increased width and depth of Feeding Troughs, Water Cock, &c., and Patent Drop Cover to prevent over-goring. Cleanly, durable, and impervious to infection, being all of iron. Price of Fittings per Cow, 55s.
Prospectuses free of Cottam & Co., Iron Works, 2, Winsley Street (opposite the Pantheon), Oxford Street, London, W., where the above are exhibited, together with several important Improvements in Stable Fittings just secured by Patent.

Tyes' Registered Hyacinth Glasses.

This Shape, 1s. 6d. each.

SOLE WHOLESALE DEPOT,
CLAUDET, HOUGHTON, AND SON,
Fern Case Manufacturers, and
Horticultural Glass Depot,
80, High Holborn, W.C.

Price Lists free on application.

HOOPER AND CO.'S ETRUSCAN HYACINTH VASES
are superior to Glasses for growing Hyacinths in Water. Chaste in beauty, and an ornament all the year round.

Retail of most Seedsmen throughout the Kingdom. Wholesale and Retail of HOOPER & Co., Covent Garden, London, W.C.

Glass for Garden Purposes.
JAMES PHILLIPS AND CO. beg to submit their prices as follows:—

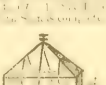
PROPAGATING GLASSES.

Inches.	s.	d.	Inches.	s.	d.	Each.—s.	d.
2 inches diameter	..	0	3	12 inches diameter	..	1	0
3 „	..	0	4½	13 „	..	1	2
4 „	..	0	5½	14 „	..	1	4
5 „	..	0	6½	15 „	..	1	6
6 „	..	0	8	16 „	..	1	8
7 „	..	0	10	17 „	..	1	10
8 „	..	1	0	18 „	..	2	0
9 „	..	1	2	21 „	..	2	6
10 „	..	1	4	20 „	..	2	8
11 „	..	1	6				

HYACINTH and FLOWER DISHES
6 inches diameter .. .. Each 1s. 6d.; 7 inches diameter 1 6
Extra Deep 2 0
Hyacinth Tubes are charged 1s. each, instead of 1s. 6d., as Tubes in Hyacinth Glasses.

LACTOMETER, 1s. Test for the Quality of Milk.
Boat Tubes .. .. 6d.
Wine Glasses, 6s. per dozen.

HAND GLASSES, WITH OPEN TOPS.



	Each.—s.	d.		Each.—s.	d.
12 inches	.. ..	6	18 inches	.. ..	9
14 „	.. ..	7	20 „	.. ..	10
16 „	.. ..	8	24 „	.. ..	12

Painted and Glazed with 16-oz. Sheet Glass.

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LINSEED OIL, Genuine WHITE LEAD, Carson's PAINTS, PAINTS of various colours, ground ready for use.
SHEET and ROUGH PLATE GLASS, SLATES of all sizes BRITISH PLATE, PATENT PLATE, ROLLED PLATE, CROWN, SHEET, HORTICULTURAL, ORNAMENTAL, COLOURED, and every description of GLASS, of the best Manufacture, at the lowest terms. Lists of prices and estimates forwarded on application to
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The entire Stock of this Manufactory comprises
180 different MODELS of VASES.
70 different MODELS of TAZZAS.
About 200 different FOUNTAINS.
74 STATUES from the Antique, and by Modern Artists, and SMALL FIGURES of CHILDREN.
22 SUN-DIAL PEDESTALS.
GARDEN SEATS.
16 BASKETS, from 12s. to Seven Guineas.
SHELLS, suitable either for WATER or ROCK PLANTS, from 18 inches to 12 feet diameter.
JARDINIÈRES, or large BOWLS for MASSES of FLOWERS
53 FIGURES of ANIMALS and BIRDS.
ORNAMENTAL RIMS to WATER BASINS.
34 BAPTISMAL FONTS.
CRESTS and other ORNAMENTS for GATE PIERS.
BALUSTRADING, in various styles.
TRIPOD, and other ANTIQUE PEDESTALS.
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GARDEN VASES, FOUNTAINS, &c., in Artificial Stone, of great durability, and in great variety of design.
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ORNAMENTAL PAVING TILES for Conservatories, Halls, Corridors, Balconies, &c., as cheap and durable as Stone, Asphalte, and both Cooler and Drier, and capable of forming a variety of designs.
Also TESSELATED PAVEMENTS of more enriched designs than the above.
WHITE GLAZED TILES, for Lining Walls of Dairies, Larders, Kitchen Ranges, Baths, &c. Grooved and other Stable Paving Tiles of great durability. Patent and Adamantine Clinkers, Wall Copings, Red and Stoneware Drain Pipes, Slates, Cements, &c.
To be had direct of F. & G. ROSSER, at their Premises as above.

SILVER SAND (REIGATE, best quality), at the above Address, 18s. per Ton, or 1s. 3d. per Bushel; 28s. per Ton extra delivered at any Railway Station, or Wharf, in or near London. Railway or Wharf. Quarter Bushel 1s.; Bushel, 1s. per Bushel.
FLINTS, for RockERIES or CLINKERS, for Rockeries or Grotto Work, &c. F. & G. ROSSER.—All Addresses to be as above.
N.B. Orders promptly executed for Railway.

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Application to be made to Mr. ARDLEY, Stationer, Chelmsford.

Asphalte Roofing Felt,
ONE PENNY per Square Foot.
CROGGON AND CO., MANUFACTURERS, 39, New Fetter Street, and 7, London, E.C.
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50, GEORGE SQ., GLASGOW; 2, GOREE PIAZZAS, LIVERPOOL.

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N.B. The Wire Rope can be unstranded to any thickness required, and supplied direct to Posts.

HOTHOUSES FOR THE MILLION.
AWARDED A PRIZE MEDAL, 1862
INVENTED AND PATENTED BY THE LATE
SIR JOSEPH PAXTON.
MANUFACTORIES: LONDON; NEWTON-IN-CARTMEL, LANCASHIRE; GLOUCESTER, COVENTRY, ABERDEEN, AND PAISLEY.

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A HANDBOOK of VINE and FRUIT TREE CULTIVATION, as adapted to the above Patent Hothouses, may be had of Mr. HEREMAN. Second Edition, price 1s.; post free, 1s. 1d.
"The instructions given for the Cultivation of the Vine and other Crops are essentially practical, and are evidently written by one who has himself performed all the operations before he attempted to instruct others."—*Cottage Gardener*, Oct. 9, 1863.

To Nurserymen and Seedsmen.—Notice.

THE GARDENERS' YEAR-BOOK, ALMANACK, and DIRECTORY for 1867, by ROBERT HOGG, LL.D., F.L.S., will be Published on December 1. Any alterations in the style and Address of Firms are requested to be sent forthwith to the Editor, so that the necessary corrections may be made in the Directory part on "Journal of Horticulture" Office, 171, Fleet Street, London, E.C.

HOGG'S GARDENERS' YEAR-BOOK, ALMANACK, and DIRECTORY for 1867.

ADVERTISEMENTS intended for insertion in the forthcoming issue, on December 1, should be forwarded immediately, to prevent disappointment.

"Journal of Horticulture" Office, 171, Fleet Street, London, E.C.

THE QUARTERLY REVIEW.—ADVERTISEMENTS for insertion in the Forthcoming Number of the above Periodical must be forwarded to the Publisher by the 6th, and Bills by the 8th Oct.

JOHN MURRAY, Albemarle Street, W.

Price Threepence, of any Bookseller.

CONTENTS of the NUMBER for SATURDAY LAST, SEPTEMBER 29, of

THE ATHENÆUM.

JOURNAL of ENGLISH and FOREIGN LITERATURE, SCIENCE, and the FINE ARTS.

Thirty-two large Quarto Pages.

Reviews of, WITH EXTRACTS FROM—

History of England from the Fall of Wolsey to the Death of Elizabeth. By James Anthony Froude, M.A. Reign of Elizabeth. Vols. III. and IV.

Religio Animae, and other Poems. By Alfred B. Richards.

History of the Atlantic Telegraph. By Henry M. Field, D.D.

The Law of the Rubric, and the Transition Period of the Church of England. By the Rev. W. H. Pinnock, LL.D.

Stonewall Jackson. A Military Biography. By John Esten Cooke.

Life of Lieut.-Gen. Thomas J. Jackson (Stonewall Jackson). By Prof. R. L. Dabney, D.D. Vol. II.

English Church Furniture, Ornaments and Decorations at the Period of the Reformation, as exhibited in a List of the Goods destroyed in certain Lincolnshire Churches, A.D. 1566. Edited by Edward Peacock.

New Novels.—Dr. Austin's Guests. By William Gilbert. The Co-Heiress. By the Author of 'Charley Nugent'—Thrown on the World; a Story. By Emma Kerr.

WITH SHORTER NOTICES OF

A Shilling Book of Old Testament History for National and Elementary Schools. By the Rev. G. F. Maclear, M.A. The Student's Manual of Modern History, containing the Rise and Progress of the principal European Nations, with a History of the Colonies founded by Europeans. By W. Cooke Taylor, LL.D. A Synopsis of Heraldry; or, a Short and Easy Method of Acquiring the Art of Blazon. By C. N. Elvin—Food for the Cerebrals. By Sir Crank Fitz-Crank, &c.

Weekly Gossip.—The Manchester Meeting of the British Association for the Promotion of Social Science—The Amenities of Literature—Mr. Shirley Brooks's New Serial Story—The 'Shilling Sensation'—Lord Palmerston's Weather Prophecy—The New Liberal Rhymes—Reformers' Song Books—Alexander Henderson's Schools and Academies—The Registrar-General's Report—Letters, Deaths, &c. [illegible] in Ireland—The Wells of St. Clare—[illegible]—Foucault's Astronomical Discovery—Science in [illegible]—Re-commencement of the Excavations at Herculaneum.

Fine Arts. Art Unions.

Fine Art Gossip.—Mr. Foley's Statue of the late John Fielden—Mr. Vernon Heath's Mallett's 'Paradise Lost'—The Marble Statues by [illegible]—Mayall's Photographs—Re-placing of the Abbot Estney's Brass—The New Cathedral at Inverness—The Church of St. Michael, St. Albans.

Science.—British Spiders; an Introduction to the Study of the Arachnidæ of Great Britain and Ireland. By E. F. Staveley—Report of the Meeting of the Entomological Society.

Original Papers.—The Workmen's Exhibition at Islington—Discovery in the East—The Lee Penny—Literary Announcements.

Music and the Drama.—Drury Lane, Olympic, and Sadler's Wells Theatres.

Musical and Dramatic Gossip.—Mr. Mellon's Concerts—The Glasgow Choral Union—Ballad Concerts at the Crystal Palace—Faust at Drury Lane—Mr. Mapleson's Italian Operas—M. Offenbach's New Opera—New Opera for Carlotta Patti—Performance of a Madrigal-play at Antwerp—Approaching début of Herr Wachtel's Son—Mr. Brownsmith.

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A DICTIONARY of BRITISH BIRDS, containing a full account of the Plumage, Weight, Habits, Food, Migrations, Nest, and Eggs of every Bird found in Great Britain and Ireland, the whole arranged under the English names and in Alphabetical order. Edited by EDWARD NEWMAN, F.L.S., F.Z.S., &c.

London: VAN VOORST, Paternoster Row, E.C.

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FACTS of INTEREST to the FARMERS. By JOHN FOWLER & Co.; Revised and Amended by WILLIAM SMITH, of Woolston, Fenny Stratford, Bucks. With an Appendix showing the present aspect of Steam Cultivation.

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Alteration of Date.

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For further particulars, see Advertisement this Day.

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MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, October 10, at half-past 12 o'clock precisely, 300 Lots of choice DUTCH BULBS from well-known Farms in Holland.

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MESSRS. PROTHEROE AND MORRIS will submit for unreserved SALE by AUCTION on the Premises, Hale Farm Nursery, adjoining the Railway Station, Tottenham, on the Great Eastern Line, on THURSDAY, October 11, at 11 o'Clock, by order of Mr. F. Ware, who is compelled to make an immediate clearance for the formation of the Great Eastern and Tottenham and Hampstead Junction Railway Companies, the valuable NURSERY STOCK, consisting of fine Evergreen Conifers and Deciduous Shrubs, Ornamental and Forest Trees, amongst which may be mentioned 200 Wellingtonia gigantea, 3 to 5 feet, 200 Cupressus Lawsoniana, 2 to 4 feet; 500 bushy Common Laurels, 2 to 4 feet; 200 Portugal Do., 1 to 2 feet; 600 Green and Variegated Euonymus, &c.; 2000 Manetti Stocks, 600 Cherry, Apple, and Pear Stocks, and 3-year Asparagus, fine assortment of Standard, Dwarf, and Climbing Roses, as well as China and Tea Roses in pots, worthy the attention of the Trade, together with a miscellaneous collection of Greenhouse Plants.

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Shepherd's Bush.

IMPORTANT CLEARANCE SALE OF NURSERY STOCK.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, on the Premises, Royal Nursery, Shepherd's Bush, adjoining the Shepherd's Bush Station on the Metropolitan Railway, on MONDAY and TUESDAY, October 15 and 16, at 11 for 12 o'clock precisely each day, without the least reserve, by order of Mr. J. Hopwood, Sen., who is retiring from the business, the whole of the valuable NURSERY STOCK, including fine Evergreen and Conifer Shrubs, Ornamental and Forest Trees, several thousands of fine Fruit Trees; a large quantity of Standard, Half Standard, and Dwarf Roses, consisting of the best varieties in cultivation, quantity of Compost, &c.

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Mile End Nursery, Bow Road, E.

MESSRS. PROTHEROE AND MORRIS are instructed to SELL by AUCTION, on the Premises, Mile End Nursery, Bow Road, Middlesex (within five minutes' walk of the Bow Railway Station on the North London Line), on THURSDAY, October 18, a portion of the Valuable NURSERY STOCK, including a large quantity of bushy Aucuba japonica, Chinese Arbor-vitæ, Variegated and Green Euonymus, Sweet Bays, Green Box, Pyracantha, Cedrus Deodara, Abies Smithii, Portugal Laurels, Mespilus, Cotoneasters; a choice assortment of Standard and Dwarf Roses; also some large Double Camellias, 8 to 10 feet high; with a FERN CASE, 50 inches by 22 inches, and 12 capital PATENT LAWN MOWERS.

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On view the Morning of Sale. Catalogues may be had at the Rooms as above, and of the Auctioneers and Valuers, American Nurseries, Leytonstone, N.E.

Wandsworth Common.

VERY IMPORTANT AND EXTENSIVE SALE OF NURSERY STOCK.

MESSRS. PROTHEROE AND MORRIS have received instructions from Mr. R. Neal to SELL by AUCTION, on the Premises, Wandsworth Nursery, Wandsworth Common, S.W., on MONDAY, October 22, and eight following days, at 12 o'Clock precisely each day (in consequence of the Land being immediately required to be cleared for Building purposes), the VALUABLE NURSERY STOCK, extending over 17 Acres, ranging all sizes, in a high state of cultivation; presenting an opportunity of rare occurrence to any one embarking in the Nursery Business, and to others requiring large quantities of thriving young stock, as well as grand and symmetrical specimens for effective purposes, including a splendid assortment of Evergreens, Conifers, and Deciduous Shrubs, comprising 4000 Aucuba japonica, 6000 Green Hollies, 1000 Variegated ditto, 2000 English Yews, 500 Laurustinus, well set, 500 Arbutus, 700 Berberis, 5 sorts, 1000 Box, 500 Portugal and Common Laurels, 10,000 Privet (Box and Oval-leaved), 500 Thuja stricta and Lobbii, 500 Thuja aurea, gigantea and Lobbii, 2000 Spruce Firs, 1000 Scotch Firs, 1000 Weymouth Pine, 1000 Cupressus Lawsoniana, nutkaensis and macrocarpa, 300 Wellingtonia gigantea, 300 Taxus [illegible], and Juniperus chinensis, Cotoneaster, Evergreen Oaks, Forsythias, Lilacs, &c.; 200 choice-named Scarlet and other Rhododendrons, well set with buds, 1000 Seedling and Pontica ditto, fine bushy plants, 1000 Yucca filamentosa, a large collection of Ornamental, Forest, and Fruit Trees, viz., 300 Weeping and other Willows, 3000 Acacias, 200 Ailantus glandulosa, remarkably fine, 1000 Poplars, 500 Laburnums, 1000 Weeping and Common Ash, 2000 Sycamore, Acer Negundo, and other Maples, Limes, &c.; 200 Standard and Dwarf-trained Plums, 250 ditto Pears, 300 ditto Apples, 700 Dwarf-trained Peach, Nectarines, and Apricots, many thousands of Hardy Climbers in pots, embracing Lonicera aureo-reticulata, flexuosa, and brachypoda, Wistaria sinensis, Ivies, Passiflora, &c.; with a beautiful collection of Standard and Dwarf Roses, &c.; also 12 New Lawn Mowers (Boyd's patent).

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MR. J. WILLMER begs to announce that he is favoured with instructions from Henry Goldham, Esq., of Mitcham, to submit to PUBLIC AUCTION, at the Auction Rooms, 38 and 39, Gracechurch Street, E.C., on SATURDAY, October 13, at 12 o'Clock, a portion of his costly COLLECTION of TULIPS, comprising many gems of the first water.

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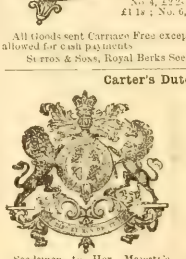

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THE GARDENERS' CHRONICLE

AND

AGRICULTURAL GAZETTE.

A Newspaper of Rural Economy and General News.

No. 41.—1866.] SATURDAY, OCTOBER 13. {Price Fivepence. {Stamped Edition, 6d.

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ROYAL HORTICULTURAL SOCIETY, SOUTH KENSINGTON.

NOTICE.—A MEETING of the FRUIT and FLORAL COMMITTEES will be held on TUESDAY NEXT, October 16, at 11 o'Clock. LECTURE at 3 o'Clock.

GRAND FLORAL FÊTE, YORK, 1867.

ALTERATION OF DATE.

This FETE will take place on WEDNESDAY and THURSDAY, June 19 and 20, 1867, and NOT on the DATES previously advertised.

Jno. Wilson, Secretary.

Committee Room, 13, New Street, York.—Oct. 13.

Rose Catalogue.

E. P. FRANCIS and CO.'S NEW DESCRIPTIVE LIST of the above is now ready, and will be forwarded gratis upon application.

The Nurseries, Hertford, Herts.

Roses.

WM. PAUL'S PRICED DESCRIPTIVE CATALOGUE of ROSES is now ready, post free on application.

PAUL'S Nurseries, Waltham Cross, N.

Rose Nurseries, Tunbridge Wells.

EDWIN HOLLAMBY respectfully begs to announce that his Stock of ROSES is as usual beautiful healthy good-rooted plants. This magnificent Collection contains nearly every variety worthy of cultivation. Early orders are solicited.

New Tea Rose.

AMBROISE VERSCHAFFELT, NURSERYMAN, Ghent, Belgium, begs now to offer his new fine TEA ROSE, ISABELLE SPRUNT, figured in the July Number of the "Illustration Horticole." Fine strong plants, 8s. each.

N.B. A Coloured Drawing may be obtained on application as above.

New Rose and Fruit Tree Catalogue.

CHARLES TURNER'S AUTUMN CATALOGUE is now ready, containing full LISTS of ROSES, including the new varieties. Select LISTS of all the leading FRUIT, CONIFERÆ, TREES, SHRUBS, &c.

The Royal Nurseries, Slough.

New Catalogues.

A DESCRIPTIVE CATALOGUE of ROSES.
A CATALOGUE of ORCHARD-HOUSE TREES.
A DESCRIPTIVE CATALOGUE of GRAPES.
Free per post on application to
THOMAS RIVERS & SON, Sawbridgeworth.

NEW CHRYSANTHEMUMS 1866.—All the new varieties of present year now ready, well established in pots, at 5s. per doz., or 35s. per 100.

WILLIAM HOLMES, Frampton Park Nursery, Hackney, N.E.

BRITISH FERNS.—Upwards of 240 species and varieties on Sale at prices considerably lower than those hitherto charged. CATALOGUES on application.

EDWARD SANG & SONS, Nurserymen, Kirkcaldy.

Genuine Garden and Agricultural Seeds.

JAMES CARTER AND CO., SEED FARMERS, MERCHANTS, and NURSERYMEN, 237 & 238, High Holborn, London, W.C.

JAMES FAIRHEAD AND SON, SEED GROWERS and MERCHANTS, 7, Borough Market, London, S.E.

New and Genuine AGRICULTURAL, GARDEN, and FLOWER SEEDS. Special prices and advantageous offers on application.

Wholesale Catalogue of Nursery Stock.

GEORGE JACKMAN AND SON'S PRICED and DESCRIPTIVE CATALOGUE for 1866-67, now in bed free on application, comprising Fruit Trees, Roses, American Plants, Conifers, Clematises, Evergreen and Deciduous Trees and Shrubs, and transplanted Forest Trees, &c., &c.

Woking Nursery, Surrey.

New General Plant Catalogue.

B. S. WILLIAMS' NEW PLANT CATALOGUE, containing many really good Novelties, and carefully selected LISTS of STOVE, GREENHOUSE, and HARDY PLANTS, is now ready and will be forwarded post free to all applicants.

Victoria and Paradise Nurseries, Holloway, London, N.

Notice.

60-PAGE CATALOGUE of NEW PLANTS of 1866 now ready, free for one stamp.

WM. DILLISTONE, Munro Nursery, Stockingham, Essex.

Male Aucubas, with Flower Buds.

MAS MACULATA, MAS PYGMÆA, MAS BICOLOR, 10s. 6d., 15s., and 21s. each.

Also a large collection of Female varieties. Prices on application to THOMAS CRIPPS, Nurseryman, Tunbridge Wells.

New Grass Seeds for Exportation.

SUTTON AND SONS have received their supply of NEW GRASS SEEDS of the present season's growth in fine condition, and will be happy to forward lowest price per ton or cwt. on application. CATALOGUES gratis and post free.

SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

Hyacinths, Tulips, &c.

BUTLER, MCCULLOCH, AND CO. have the pleasure to intimate that their usual supply of DUTCH and CAPE BULBS has arrived in the finest possible condition.

PRICED DESCRIPTIVE CATALOGUES free and post paid on application. Covent Garden Market, London, W.C.

Dutch and other Bulbs.

B. S. WILLIAMS is now prepared to supply splendid roots of HYACINTHS, TULIPS, NARCISSUS, CROCUS, &c., &c. All the roots are selected with great care from the best growers in Holland.

A PRICED and DESCRIPTIVE LIST sent post free on application.

Victoria and Paradise Nurseries, Holloway, London, N.

Hyacinths, &c.

WM. PAUL'S SELECT LIST of HYACINTHS, EARLY TULIPS, and other SPRING-FLOWERING BULBS and PLANTS, is now ready and will be forwarded post free on application.

PAUL'S Nurseries and Seed Warehouse, Waltham Cross, London, N.

The Best Twenty-six Hyacinths,

As RECOMMENDED by the EDITOR of the *Gardeners' Chronicle*, see p. 88

SUTTON AND SONS can supply the above for £1 1s., carriage free.

Royal Berkshire Seed Establishment, Reading.

The Best Twelve Hyacinths Imported by

SUTTON AND SONS, for Twelve Shillings.

SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

MIXED HYACINTHS, for Beds or Open Borders, all colours, of various shades.

21s. per 100 (carriage free), or 3s. per dozen.

SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

SUTTON'S GUINEA COLLECTION of BULBOUS FLOWER ROOTS for In-door or Out-door Cultivation.

21s., Carriage free per Rail.

SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

Hyacinths and other Dutch Bulbs.

WM. CUTBUSH AND SON beg to acquaint their numerous Patrons that they have received their usual Consignment of Choice HYACINTHS, TULIPS, CROCUSES, &c.

PRICED DESCRIPTIVE CATALOGUE post free on application

Highgate Nurseries, London, N.

J. SCOTT has received large Consignments of DUTCH FLOWER ROOTS, which he is offering at extremely low prices. A PRICED CATALOGUE, full of Notes on the Easy Culture of Bulbs, and other information, sent free on application to J. SCOTT, The Seed Stores, Yeovil, Somerset.

Dutch Flower Roots.

THE PROPRIETORS of ST. JOHN'S NURSERY beg to intimate that their CATALOGUE is now ready, and may be had on application.

WM. BARRATT, Wakefield.

Dutch, Cape, and other Flower Roots,

ROSES, JAPANESE PLANTS, &c.

W. ROLLISSON and SONS' CATALOGUE of the above, containing many Novelties, will be forwarded free on application. The Nurseries, Tooting, London, S.

SEE BARR AND SUGDEN'S ADVERTISEMENT, p. 966.

BULBS and CLIVEDEN PLANTS for Spring Blooming.
BARR'S PRIZE CALCEOLARIA
NEW VIOLA CORNUTA SEEDLING and PLANTS.
NEW LAPAGERIA ROSEA SEED.
UNBLOOMED AMARYLLIS, &c.

Finest Dutch Crocuses and Early Tulips.

SUTTON'S DESCRIPTIVE LIST is now ready, and will be forwarded gratis and post free on application.

SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

Lilium lancifolium.

SUTTON AND SONS have received several varieties of the above splendid LILY in fine condition.

For descriptions and prices of each see SUTTON'S AUTUMN CATALOGUE, which may be had gratis and post free on application.

SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

MESSRS. HENRY CLARKE and SONS have on hand a large stock of YELLOW CROCUS, SINGLE and DOUBLE SNOWDROPS, and other BULBS, which they are prepared to offer to the Trade at very moderate prices.

39, King Street, Covent Garden, W.C.

New Pelargoniums.

CHARLES TURNER is now prepared to execute orders for HOYLE'S and FOSTER'S beautiful SEEDLINGS. The DESCRIPTIVE CATALOGUE is now ready also contains LISTS of the finest ZONAL PELARGONIUMS in each class, PINKS, AURICULAS, CINERARIAS, &c.

The Royal Nurseries, Slough.

Winter Flowers.

RHODODENDRON PRÆCOX, the best of all Winter-blooming Plants, can now be supplied; Compact Bushes, with from 20 to 100 bloom buds, at 3s. 6d. to 7s. 6d. each, with usual discount to the Trade, by the Raiser.

ISAAC DAVIS, Larkfield Nursery, Wavertree, near Liverpool.

Hybrid Rhododendrons.

WILLIAM FLETCHER begs to inform the Trade that he has a Splendid Stock of the above to offer this season, well set with Bloom Buds, with from 6 to 12 Buds on each plant suitable for Forcing. CATALOGUES sent free on application.

Ottershaw Nurseries, Chertsey, Surrey.

AMBROISE VERSCHAFFELT, NURSERYMAN, Ghent, Belgium, begs to announce that his NEW GENERAL CATALOGUE, No. 73, is just out, and can be obtained Gratis at his Agents, MESSRS. R. SILBERRAD & SON, 5, Harp Lane, Great Tower Street, London, E.C.

Fagræa imperialis.

A. VAN GEERT, NURSERYMAN, Ghent, Belgium, begs to offer this splendid New Plant, originally from Sumatra. Certainly one of the finest foliaged plants known, with thick glaucous leaves, 2 feet long.

Fine Seedling Plants, 5 to 6 inches high, 15s. each. One over for every three taken. First-rate to grow for exhibition.

INGLEWOOD FOREST.—The fine Timber in those renowned forests were cultivated in our Nurseries, and we still continue to cultivate large quantities, which prove to give satisfaction. Prices, &c., on application, with free delivery in quantities.

JOSEPH TREMBLE & SONS, Penrith.

Grape Vines.

B. S. WILLIAMS begs to announce that he has a splendid Stock of Strong Planting and Fruiting CANES of all the best varieties. PRICED LIST may be had on application.

Victoria and Paradise Nurseries, Holloway, London, N.

To the Trade.

GRAPE VINES.—Strong well-ripened Fruiting and Planting Canes of the Black and Golden Hamburgh.

C. FARNESCOMB, 3, Elm Tree Road, St. John's Wood, London, N.W.

To Vine Growers.

WANTED, a quantity of extra strong BLACK HAMBURGH VINES to Fruit in pots. None but well-ripened Canes fit for immediate forcing will suit. Apply, stating price, to

Messrs. VEITCH & SONS, Royal Exotic Nursery, Chelsea, S.W.

PINES (QUEENS), very fine, in all sizes, from a Stock that never had Scale. To be Sold Cheap.

Apply to M. ROCHFORD, Page Green, Tottenham, N.

TO BE SOLD, Two STANDARD PEACH TREES, in pots, and one NECTARINE. Bore heavy crops, and are now well set with fruit buds.

Apply W. R. H., The Elms, Acton, Middlesex, W.

CASTLE KENNEDY FIG.—Plants of the above may now be had at 10s. 6d. and 21s. each; the usual discount to the Trade. PETER LAWSON & SON, Edinburgh and London.

A DESCRIPTIVE CATALOGUE of FRUITS, by THOS. RIVERS, just published, free per post for six stamps.

Nurseries, Sawbridgeworth.

WALL-TRAINED TREES of BEARING SIZE.—Our Wall-Trained Fruit Trees this season are very fine, and include PEACHES, NECTARINES, APRICOTS, and FIGS, suited for planting in houses for immediate Fruiting. An inspection is respectfully invited.

T. JACKSON & SON, Nurseries, Kingston, Surrey.

Railway Planting.

FIVE MILLION Transplanted QUICKS, of superior growth. Samples and prices on application to

JOHN HEMSLEY, High Fields, Melbourne, near Derby.

SEEDLING WELLINGTONIAS.—Wanted, 5000 or 6000 2-year Plants for grafting. Please quote quantity and price per 1000 to RICH. HARELAND, The Lough Nurseries, Cork.

FORTY THOUSAND COMMON LAURELS, all sizes from 1 to 4 feet.

WM. WOOD & SON, Woodlands Nursery, Maresfield, Uckfield, Sussex.

THIRTY THOUSAND Dwarf-trained FRUIT TREES in the finest health and vigour.

WM. WOOD & SON, Maresfield, Uckfield, Sussex.

TEN THOUSAND LAURUSTINUS, well-grown, handsome and bushy.

WM. WOOD & SON, Maresfield, Uckfield, Sussex.

SEVERAL ACRES of extra large well-grown ORNAMENTAL TREES for park planting and immediate effect. WM. WOOD & SON, Maresfield, Uckfield, Sussex.

STANDARD, HALF-STANDARD, and DWARF ROSES, by the 100, 1000, and dozen.

WM. WOOD & SON, Maresfield, near Uckfield, Sussex.

MANY ACRES of STANDARD, HALF-STANDARD, DWARF, PYRAMIDAL, and TRAINED FRUIT TREES, consisting of Apples, Pears, Plums, Peaches, Nectarines, Apricots Cherries, &c. WM. WOOD & SON, Maresfield, Sussex.

SEVERAL ACRES of well-grown EVERGREEN and DECIDUOUS SHRUBS, AMERICAN PLANTS, CONIFERÆ, and ORNAMENTAL TREES. For CATALOGUES apply to WM. WOOD & SON, Woodlands Nursery, Maresfield, near Uckfield, Sussex.

ROSES.—NEW CATALOGUE just published and sent post free on application to

WM. WOOD & SON, Maresfield, Uckfield, Sussex.

Catalogues.

H. LANE AND SON, The Nurseries, Great Berkhampstead, Herts, have published the following CATALOGUES, which may be had upon application:—

1. ROSE CATALOGUE. | 3. FRUIT CATALOGUE.
2. TREES and SHRUBS. | 4. AZALEAS (Indian) do.

Araucaria imbricata.

H. LANE AND SON, The Nurseries, Great Berkhampstead, Herts, have the finest stock in the world, from 1 to 14 feet high, suitable for Avenues or Park Planting.

The different CATALOGUES may be had up on application.

A QUANTITY of GHENT AZALEAS and CAMELLIAS, cheap; DUTCH BULBS, unusually fine; a choice collection of FERNS, Fern Cases, Gold Fish, Aquariums, &c.

R. GREEN, the Bedford Conservatories, Covent Garden Market, W.C.

TO BE SOLD, Cheap, 100 ARBOR-VITÆ, from 5 to 6 feet.—A fair proportion Specimen Plants, and the greater part well furnished. They move well. Price £10 if the whole are taken.

CHAS. SOUTHBY, Nurseryman, Hapsham, S.

WANTED, a large quantity of LAUREL WOOD.—State price per 100 Bavins, delivered to nearest Railway Station. Also a quantity of HOLLY BERRIES.

THOS. THORNTON, Heatherside, Bagshot, Surrey.

Autumn Planting.

PETER LAWSON AND SON, at the present most suitable time for Transplanting CONIFEROUS and EVERGREEN TREES and SHRUBS, have to state that their stock of those is very large and in healthy condition.

Special offers for large quantities will be made on application.

Edinburgh and London.

FOREST TREES, &c., at the Nursery of the late David A. Reid, Park Attwood, Bewdley, Worcestershire:—LARCH, 1½ to 2 feet, 10s. 6d. per 1000; 2 to 3 feet, 13s. 6d. per 1000; 2½ to 3½ feet, 15s. per 1000; 3 to 4 ft., 17s. 6d. per 1000. LISTS of other TREES sent on application. Apply, with reference or remittance, to JAMES RIDDELL, Steward, Park Attwood.

To Nurserymen, Contractors, and Others.

WANTED, TENDERS for PLANTING FIFTY ACRES of LARCH, upon Lands lately enclosed from Llanstephan Common, Radnorshire, about 2½ miles from a Railway Station. The Contractor to find all Materials and Labour.

For further particulars apply to ANDREW TEMPLETON, Glanbenwye Glasbury, near Hereford.—Oct. 13.

Cupressus Lawsoniana argentea.

MESSRS. WATERER AND GODFREY are now sending out this Plant

Good stout Plants, 1½ foot high and bushy, at 21s. each.

It has been awarded a Three First-class Certificates by the Royal Horticultural Society of London, Royal Botanic Society of London, and at the Crystal Palace; and may be justly represented as a distinct and very beautiful plant, and one that will become a general favourite. Knaphill Nursery, Woking Surrey.

The New Establishment, Ghent, Belgium.

JEAN VERSCHAFFELT begs to intimate that he has TRANSFERRED his BUSINESS to his New Horticultural Establishment, 131, Faubourg de Brueneen, and begs his numerous correspondents and friends to address all letters intended for him to

JEAN VERSCHAFFELT, Nurseryman, 131, Faubourg de Bruxelles, Ghent, Belgium.

J. V.'s NEW CATALOGUE (No 100 is now just ready, and may be had post free on application either to himself or to Messrs. A SILBERRAD & SON, 5, Harp Lane, Great Tower Street, London, E.C.

New Gladioli.

EUGÈNE VERDIER, Fils Aîné, NURSERYMAN, 31, Rue Dupuys, Paris, has the honour to offer this Autumn to his numerous Friends and Patrons the following NEW GLADIOLI raised from seed by Mons Souchet. Their description and prices will be found in his Catalogue, which can be obtained of him or of his Agents, Messrs BUTLER & HANBURY, 30, Lombard Street, Lower Thames Street, London, E.C., viz.:—Ad. Brongniart, Anais, Apollon, Bernard Palissy, Brilliant, Emilie, Feltcien David, Fusiva, Greuze, Lady Franklin, Le Titien, Meteor, Mirabilis, Nero, Nouvelle, Princess Mary of Cambridge, Rev. M. J. Berkeley, Sir William Hooker, Joseph Paxton, Th. Monte.

SURPLUS STOCK.

STANDARD and HALF-STANDARD APPLES, 20s per 100.
RED CURRANTS, 8s per 100
BLACK NAPLES CURRANTS, 8s per 100.
Best LANCASHIRE SHOW GOOSEBERRIES, 15s. per 100.

DESCRIPTIVE CATALOGUES may be had of
B. WHITHAM, The Nurseries, Reddish, near Stockport.

Fruit Trees, Roses, Evergreens, &c.

W. KNIGHT begs to inform intending Planters that he has many Thousands of the above, with every other ORNAMENTAL TREE and SHRUB, in the finest possible condition, at reasonable prices. An inspection is respectfully invited. DESCRIPTIVE PRICED CATALOGUES free.

The Nursery is within two minutes' walk of the Hailsham Station (South Coast Railway).

The Royal Nursery, Hailsham, Sussex.

FRUIT TREES and FRUIT-TREE STOCKS.—DWARF MAIDEN PEACHES, NECTARINES, and APRICOTS, of all leading kinds, new and old, warranted true, strong stout Trees, 6s per 100; DWARF MAIDEN PLUMS and CHERRIES, best sorts, 4s per 100; extra fine DWARF TRAINED of the above, 24s per dozen, £9 the 100. CATALOGUES free on application, also samples

MIXED PLUM STOCKS, 40s.; CRAB, very clean, 5s. 6d.; BROMPTON, 50s.; COMMONER, 30s.; and CHERRY, 32s. to £6 per 1000. References from unknown correspondents.

GEORGE GRAY & SON, Nurserymen, Brokers, near Chertsey, Surrey.

CERASUS LUSITANICA var. AZORICA.—Plants of this very superior variety of Portugal Laurel (an habit, flower, and hardiness), to which a First-class Certificate was awarded by the Royal Horticultural Society on the 27th June, will be ready for distribution the ensuing Autumn. 7s. 6d. and 10s. 6d. each.

OSBORN & SON, Fulham Nursery, London, S.W.

CHARLES NOBLE has a large quantity to offer of the undermentioned, by the dozen, 100, 1000, or 10,000:—

Dwarf ROSES of all the finest kinds, large bushes, 2 to 3 feet high, and nearly as far through.

SPANISH CHESTNUTS, very fine, 1-year.
THORN, very fine, 1-year.
TURKEY OAK, very fine, 1-year.
MANSETTI ROSE STOCKS, very fine, 1-year.
DEUTZIA CRENATA flore-pleno, very fine, 1-year.
} Sample and price if required.

STRAWBERRIES, 2s. 6d. per 100, or 21s. per 1000:—

British Queen	Frogmore Late Pine	Dr. Hogg
Empress Eugénie	La Constante	Wonderful
Sir C. Napier	Marguérite	Prince Arthur.

Sunningdale Nursery, Bagshot, Surrey

To Gentlemen about to Plant.

WILLIAM BARRON begs to offer the following valuable TREES and SHRUBS, of which he has a surplus stock, at very reduced rates, viz.:—

ABIES DOUGLASII, 18 in. to 2 ft., per 100, 75s.
" " 2 ft. to 3 ft., per 100, 100s.
" " 4 ft. to 5 ft., each, 2s. 6d.
CRYPTOMERIA JAPONICA, 1 ft. to 2 ft., per 100, 20s.
CUPRESSUS LAWSONIANA, 12 in to 18 in., per 100, 20s.
" " 18 in. to 2 ft., per 100, 30s.
" " 2 ft. to 3 ft., per 100, 50s.
" " 4 ft., per dozen, 12s.
PICEA NOBILIS, 9 in to 12 in., per dozen, 3s.
" " 2 ft. to 2½ ft., each, 1s. 6d. to 2s.
THUJA MENZIESII or LOBBII, 18 in. to 2 ft., per 100, 40s.
" " 2 ft. to 4 ft., per 100, 100s.
" " 4 ft. to 5 ft., per 100, 200s.
" PYRAMIDALIS, 2 ft. to 3 ft., per 100, 42s.
" SIBIRICA, 18 in to 2 ft., per 100, 25s.
WELLINGTONIA GIGANTEA, 4 in. to 6 in., per 100, 60s.
" " 9 in to 12 in., per doz., 12s.
" " 18 in. to 2 ft., per doz., 24s.
" " 2 ft. to 3 ft., per doz., 42s.
BERBERIS DARWINII, 9 in to 9 in., per 1000, 40s.
COTONEASTER SIMMONDSII, 9 in to 12 in., per 100, 20s.
" " 2 ft. to 3 ft., per 100, 50s.
DEUTZIA CRENATA FLORE PLENO, 9 in. to 12 in., p 100, 40s

Special Prices to the Trade on application.
Elvaston Nurseries, Borrowash, near Derby.

To Gentlemen, Nurserymen, Builders, and Others engaged in Planting, &c.

ROBERT PARKER begs to offer the following HARDY SHRUBS and PLANTS:—

Arborvitæ, American	Pinus austriaca
" Chinese	" excelsa
" Siberian	Privet, Evergreen
Arbutus unedo	Rhododendron Ponticum, and
Aucubas of sorts	named Hybrids set for flower
Berberis Aquifolium	Spruce for
" Darwini	Thuyas in
" stenophylla	" sorts
Box, Green and Variegated	Thujopsis borealis
Cupressus Lawsoniana	Tritoma grande
" Lawsoniana argenteum	" Uvaria glaucescens
Laurels, Green	Yuccas of sorts
" Portugal	Wellingtonia gantea
Laurustinus, set for flower	&c. &c.

Plants of the whole of the above can be supplied in large or small quantities, and of various sizes, from 1 to 6 feet high. All are handsome formed, well rooted plants, and suitable for potting or planting in the open ground. Also all have been removed within the last two years. Purchasers of large quantities will be treated liberally.

Exotic Nurseries, Tooting, Surrey, S.

Northampton Nurseries.

JOHN PERKINS, SENIOR, begs to call the attention of Noblemen, Gentlemen, and others engaged in Planting, to his large Stock of the following:—20,000 BEECH, 2 and 3 years, for Covert Planting, 1½ to 2, 2½ to 4 feet; 2,000,000 LARCH FIRS, 3 to 4, 4 to 6 feet; 1,000,000 SPRUCE FIRS, 1½ to 2, 2½ to 3, 3 to 4 feet; 2,000,000 WHITE THORN QUICK, 2 and 3 Years' Transplanted. Also large quantities of

Scotch Firs, 2 to 3 feet	Horn-beam, 3 to 4 feet
Pinus austriaca, 2 to 3 feet	Oaks, English, 3 to 4 feet
Berberis Aquifolium, 1½ to 2 feet	Ditto, Parker, 4 to 6 feet
Ditto duplex, 2 to 3 feet	Elms, English, 6 to 8, 8 to 10 ft.
Green Box, 1½ to 2 feet	Ditto, Huntingdon, 6 to 8, 8 to 10 ft.
Laurels, 2 to 3 feet	Chestnuts, Spanish, 1½ to 2 feet
Portugal Laurels, 1½ to 2 feet	Ditto, Horse, 4 to 6, 6 to 8 ft.
Ditto ditto, 2 to 3 feet	Sycamore, 3 to 4 feet
Evergreen Privets, 2 to 3 feet	Beech, 3 to 4 feet
Birch, 2 to 4 feet	Cedrus Deodara, 3 to 6, 6 to 8 ft.

J. P.'s stock of all kinds of Fruit, Forest, Ornamental Trees, &c., is very extensive, and this season remarkably fine, and in excellent condition for removal, having been frequently transplanted.

J. P. has enough in the Nurseries—quality of Beech, Birch, Larch, and Spruce Firs, will be pleased to make a special offer where large quantities are required. An inspection of the above is respectfully solicited.

DESCRIPTIVE PRICED CATALOGUES sent post free on application to 52, Market Square, Northampton.

To the Trade.

ELIZA ABRAHAM, Fort Prospect Nursery, Limerick, begs to offer unusually fine strong bushy Transplanted stock of EVERGREEN OAK, 1 to 2 feet, 1½ to 3 feet, and 3 to 7 feet. Also COMMON LAURELS, from Cuttings, 3 years, extra strong, selected, 3 to 4 ft.; Do., 3 years, from Cuttings, 2 to 4 ft., well rooted. LAURUSTINUS, from Cuttings, 1 years, 2 to 3 feet, fine and well rooted, 1st Class, 3 years, from Cuttings, 1½ to 4 feet, very fine.

1 and 2 years' seedling ENGLISH OAK, in lines, very fine

1-year TURKEY OAK, in lines, strong.

The above will be found to be the Cheapest possible prices for cash, or in exchange for Forest goods.

To Gentlemen engaged in Planting.

TOOLE AND CO. beg to call attention to their very extensive Stock of

EVERGREEN and FLOWERING SHRUBS,
HARDY ORNAMENTAL TREES,
FRUIT TREES, FOR STANDS, and CONIFERÆ.

Grown in their Nurseries, Cullenswood, Ballsbridge, Dublin; and Wilson Bray, and respectfully invite inspection of the same.

CATALOGUES of the above forwarded post free on application. The usual discount to the Trade.

Westmoreland Buildings, Dublin.

To the Trade.

WINTER and SPRING-FLOWERING PLANTS.—Our stock of Soft-wooded ERICAS, EPACRIS, AZALEAS, and New Holland Plants is extra fine this year, and being much greater than we can it use, we are selling at unusually low prices

T. Jackson & Son, Nurseries, Kingston, Surrey (adjoining the Railway Station), S.W.

To Farmers, Gardeners, and Others.

EXCELLENT CABBAGE PLANTS (Stocks not to be surpassed), can be supplied in any quantity as follows:—

ROBINSON'S CHAMPION (have been grown 80 lb. each), 2s. 6d. per DRUMHEAD, 2s. 6d. per 1000 [1000
ENFIELD MARKET, a superior stock, 2s. 6d. per 1000.
RED DUTCH, a superior stock, 6s. per 1000.
TRUE DWARF NONPAREIL CABBAGE PLANTS, 2s 6d per 1000. Terms cash.

FRED. OLD, Seed Merchant and Grower, Biggleswade, Bedfordshire.

PURE BROWICK SEED WHEAT, grown on stiff clay soil, after the Steam Cultivator. The crop was harvested before August 25, and is in prime condition.

Price and Samples free on application to J. DICKSON, Manager, J. & F. HOWARD'S Steam Cultivated Farms, Bedford.

New Hybrid Wheat.

RICHARD'S WHEAT was obtained by crossing SHIRREFF'S BEARDED WHITE with Pollen from TALAVERA. The ear is long, neither wide nor close set, with beardless cream-coloured chaff, and supported on long stout straw. The Grain, in size, form, and colour, resembles Talavera, and in quality surpasses both parents. This Hybrid combines the fruitfulness and straw of the coarse Red Wheats with the grain of the finest white varieties. The plant is hardy, congenial to the British climate, and is an important addition to the bread stuffs of the farm.

The crop of the present season having been grown on the thin-seeding system, the grain is a little coarser than it otherwise would have been, but the Stock is sound, clean, dry, and of good growing quality.

Price £1 per bushel, and quantities under half a quarter £1 1s. per bushel, delivered on the North British Railway. Terms Cash.

Haddington, Oct. 8. PATRICK SHIRREFF.

SHIRREFF'S BEARDED WHITE, of the Finest Quality, at market prices.

New Variety of Wheat.

DUNCAN'S WIND RESISTER.—A Bearded White Variety, which appears to possess the invaluable property of non-liability to shedding during high winds, and has been requested by the Subscriber from a single ear accidentally discovered in 1860, in a field of Spring-sown Wheat, his attention having been arrested by it from the fact of its remaining perfectly entire after having withstood the terrific gale of the 31 October of that year; and again in 1861 it withstood the gales of the 5th, 8th, and 9th September, which caused so much damage throughout Scotland, without any injury, although grown in a high exposed situation, and within two or three days of perfect ripeness. It has been cultivated all along as an Autumn variety, and every possible care taken to preserve it pure, and it is found to be of vigorous constitution, tillers well, and gives a good yield per acre of a beautifully white plump grain, of good weight per bushel that year upwards of 60 lb., produces long, stiff, grassy straw, not apt to lodge, has been admitted for opinion of eminent grain merchants and millers to successive years, who unanimously pronounced it an excellent milders Wheat. This season, notwithstanding been secured in fine condition, it is now for the first time Raised for sale, and will, it is expected, be ready for delivery about the middle of October

Messrs. Alex Bowie, Maurice Kelly, Arbroath, and James Swan Davidson, Carnoustie, each got a small quantity of it this season, and also inspected the Crop now offered for sale, immediately before being cut, reference to either of whom is kindly permitted.

The quantity for disposal being limited, early application is requested. Prices, including bags, 100s. per quarter; quantities under 1 bushels, 15s. per bushel. Remittances from unknown parties by Post-office Order on Carnoustie or Arbroath to accompany order.

JAMES DUNCAN, Panlathie Mill, Carnoustie, Forfarshire.—Oct. 8.

ROSES, FRUIT TREES, EVERGREENS, &c.

PAUL & SON,

THE OLD CHESHUNT NURSERIES, CHESHUNT, N.,

HAVE NOW READY THEIR

DESCRIPTIVE PRICED LISTS OF

ROSES, FRUIT TREES, BRIEF LIST of EVERGREEN and DECIDUOUS SHRUBS and TREES, BULBS, &c.

Also to the Trade, SPECIAL WHOLESALE LIST for 1866.

ROSES, VINES, FRUIT TREES (Standards, Pyramids, and Trained), LAURELS and CONIFERÆ in special quantities. Orders are solicited for

PAUL'S NEW DOUBLE THORN, C. OX. COCCINEA PLENA.

AWARDS.—First-class Certificates Royal Botanic Society and International Exhibition.

"Deep carmine red, double and vigorous, far surpassing old Double Pink."—See EDITORIAL, *Gardeners' Chronicle*, May 24, 1866.

Standards or Pyramids, 10s. 6d. each.

☞ *Usual discount to the Trade when three are taken.*

BARR & SUGDEN'S
AUTUMNAL FLORAL GUIDE TO WINTER
AND SPRING GARDENING

May be had on application.

NEW VIOLA CORNUTA SEED, the best variety.—Respecting the value and importance of this plant, see notices in the *Gardeners' Chronicle*, Sep. number 15 and 22; also October 6, pp. 886, 903, and 948, by Messrs Findlay, Drewett, Miller, and Bennett. 1s. and 2s. 6d. per packet

NEW LAGAGERIA ROSEA SEED, 1s. 6d. and 2s. 6d. per packet.

NEW COLLINSIA VERNA SEED, 6d. and 1s. per packet.

BARR'S PRIZE CALCEOLARIA.—Saved by Mr. James from his prize flowers, 2s. 6d. per packet.

UNBLOOMED SEEDLING AMARYLLIS.—Hybrids of the finest varieties cultivated, and expected to produce flowers of great beauty, 2s. each, 18s. per dozen.

VALLOTA PURPUREA, 18s. per dozen.

BULBS and PLANTS for SPRING BLOOMING.

100,000 HYACINTHS, 2s. 6d. to 7s. per doz., 18s. to 21s. per 100
100,000 NARCISSUS, 6d. to 3s. 6d. per doz., 3s. 6d. to 21s. per 100
100,000 TULIPS, 9d. to 2s. 6d. per doz., 4s. to 18s. per 100
200,000 CROCUSES, 1s. 6d. to 4s. per 100, 18s. to 30s. per 1000
10,000 SNOWDROPS, 2s. 6d. per 100, 21s. per 1000
10,000 IRIS, IXIA and AMŒNA, 2s. 6d. per doz., 18s. per 100
100,000 CLIVEDEN PANSIES, Blue, Purple, and Yellow, 4s. per doz., 30s. per 100
WINTER ACONITES, IRIS, ANEMONES, RANUNCULUS, SCILLAS, &c.

100,000 CLIVEDEN DAISIES, Pink, Red, and White, 3s. per doz., 21s. per 100
100,000 VARIEGATED ARABIS, a fine permanent edging, 3s. 6d. per doz., 21s. per 100
20,000 MYOSOTIS SYLVATICA (Forget-me-not), 1s. 6d. per doz.
100,000 STACHYS LANATA, a fine permanent edging, 2s. 6d. per doz., 21s. per 100
POLYANTHUS, WALLFLOWER, PHLOX, ALYSSUM, HEPATICAS, &c.

COLLECTIONS of BULBS for Blooming In-door Decoration, 10s. 6d., 15s. 6d., 21s., 30s., 42s., 63s., and 210s.
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COLLECTIONS of SPRING-BLOOMING PLANTS, 12s. 6d., 25s., 50s., 100s. to 200s.

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12, KING STREET, COVENT GARDEN, LONDON, W.C.

Gem Plant Case.

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RAYNBIRD, CALDECOTT, BAWTREE, DOWLING, AND COMPANY, Limited,
CORN, SEED, MANURE, AND OILCAKE MERCHANTS,
Address, 87, Seed Market, Mark Lane, E.C.; or Basingstoke.
Samples and Prices Post free on application. Prize Medals, 1851 for Wheat; 1862, for "Excellent Seed Corn and Seeds

The Earliest Pea Grown is

CARPENTER'S EXPRESS, gathered on the 7th May, (see Testimonials), THE EARLIEST DATE ON RECORD, price 3s. per quart. The usual discount to the trades.
EDWARD CARPENTER, Seed Merchant and Grower, Brighton and Sussex Seed Warehouse, 98, St. James's Street, Brighton.—Oct 6.

D ckson's "First and Best" Early Pea.

FRANCIS & ARTHUR DICKSON & SONS are gratified to know that this PEA has again this season given universal satisfaction, and is pronounced by numerous of the first Gardeners in Britain, and other competent Judges to confirmed asa by their own repeated trials against all the best Early Peas of the day), to be the very best First Early Pea ever offered for general good qualities, earliness, productiveness, and uniformity of crop. "First Crop" (or "Ringleader") may, on some soils, be a day or so earlier, but it is altogether a very inferior Pea, as every one freely admits. New Seed can now be supplied from a very large bulk, which they have grown to meet the great and increasing demand.
Price 1s. 6d. per quart. Price per bushel to the Trade on application.
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New Seeds for Autumn Sowing.

PETER LAWSON AND SON,
THE QUEEN'S SEEDSMEN,
London and Edinburgh,
Can supply NEW SEEDS of all kinds for AUTUMN SOWING, selected with the greatest care, and harvested in fine condition.
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PETER LAWSON AND SON,
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NEW SEEDS FOR AUTUMN SOWING.
NATURAL GRASS SEEDS of all sorts, for Laying Down Permanent Pasture, Lawns, Bowling, Croquet Grounds, &c.
ITALIAN RYE-GRASS and TRIFOLIUM INCARNATUM—Early and Late varieties
WINTER TARES, RYE, OATS, and BARLEY.
Also the NEW FORAGE PLANTS, KIDNEY VETCH, and SCHRADER'S BROME GRASS.
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Fourpence allowed for each bag returned carriage-paid.
A Railway Truck-load (not in bags), 40s.
Postage Stamps or Post-office Order, payable to J. BARNHAM & Co., Kingston-on-Thames, S.W.

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HENRY APPLEBY, Foreman to Messrs. Ivery & Son, Dorking, Surrey.

TOBACCO TISSUE, for Fumigating Greenhouses.—This article is made from Tobacco rolled into Sheets, without the addition of Paper. It will be found very superior to the article generally used, will burn without the assistance of blowing, and not injure the most tender Plants, as borne out by numerous Testimonials.
Sold in 1-lb. packages and upwards, price 2s. 6d. per lb., carriage free, by Messrs ROBERTS & SONS, Tobacco Manufacturers, 54, St. John Street, Clerkenwell, E.C., and by all Seedsmen and Nurserymen

Destroy your Insect Pests.

PRESERVE YOUR PLANTS and TREES.
YOU MAY EASILY DESTROY ALL PLANT PESTS,

Red Spider	Green and Black Fly	Ants
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Without injury to the most delicate Plant or Tree, by using
FOWLER'S GARDENERS' INSECTICIDE, pronounced by all who have used it to be far superior to any other remedy. One trial will prove its efficacy. Testimonials forwarded on application. Price 1s. 6d., 3s., 5s. 6d., and 10s. per Tin.
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GISHURST COMPOUND, whether used against Insects and Mildew, on Growing Plants, or as Winter Dressing on Trees at rest, should be dissolved 48 hours before use. This gets rid of smell, and if the Solution be decanted, prevents any staining of foliage. A strength of from 1 to 2 oz. to the gallon of water is recommended for growing Plants; one from 4 to 16 oz. for Trees at rest.
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Red Spider — Magnified.

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CANDLE COMPANY
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AUSTIN'S ARTIFICIAL STONE, INVENTED 1826.
The entire Stock of the Manufactory comprises
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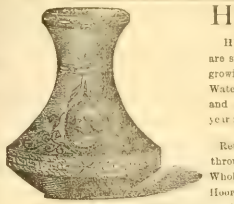

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Retail of most Seedsmen throughout the kingdom.
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Price Lists free on application.

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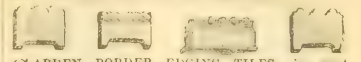

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Also TESSELATED PAVEMENTS of more enriched designs than the above.
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MR. GRAY begs to call the attention of the Nobility, Gentry, Nurserymen, Gardeners, &c., to his

NEW OVAL TUBULAR BOILER,

Acknowledged by practical judges to be a great improvement on every form of Tubular Boiler yet introduced. It has proved itself superior to all other Boilers for quickness of action and economy of Fuel, doing its work with one-third less the amount required by any other.

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"The upright form of Boiler is usually made on a circular plan, but the oval form given to Mr. GRAY'S variety of it is said to be preferable in consequence of its bringing the tubes in closer contact with the fire. The usual form of a furnace being a parallelogram, rather than a square, it seems feasible that the Boilers on the oval plan should bring the tubes more completely within range of the burning fuel; and this being so, the change, though a slight one is no doubt an improvement."

☞ *They are made of all sizes, which, with prices, may be had on application.*

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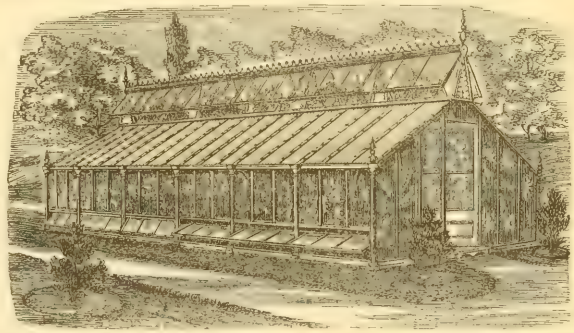
GREAT INTERNATIONAL HORTICULTURAL EXHIBITION & BOTANICAL CONGRESS.



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Showing the Patent System of perfect Ventilation and Patent Method of Glazing, whereby breakage from expansion and contraction is prevented, and facility given for immediate reparation by any ordinary labourer.

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The system is invaluable also for AGRICULTURAL BUILDINGS, as by it abundant Light and Air can be obtained, and the Ventilattion regulated to the utmost nicety in the Tops and Roofs of all Structures, where, as is well known, Impure Air constantly accumulates, and where the ordinary system of Ventilation is impracticable.

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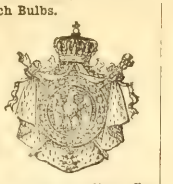
Seedsmen to Her Majesty's Chief Commissioners of Public Works and other Government Departments, the Royal Gardens, Kew, &c., &c., &c.



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Box and packing included.

The above forwarded on receipt of post-office order for 21s.; half the above for post-office order for 10s. 6d.

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Every Garden Requisite kept in stock at CARTER'S New Seed Warehouses, 237 and 238, High Holborn, London, W.C.

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SUTTON'S unrivalled COLLECTIONS of BULBOUS FLOWER ROOTS, for Blooming during the Winter and Spring.

These are every year becoming more popularly cultivated, and the HYACINTHS, ANEMONES, TULIPS, &c., which we imported last season from the celebrated Dutch Florists, Messrs. de Boom, Veen, Bruyn, and others, having been so generally admired, we have imported from the same parties, and still more extensively.

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No. 1.	A large and Choice Collection of ANEMONES, HYACINTHS, CROCUSES, TULIPS, RANUNCULI, NARCISSI, SNOWDROPS, IRISES, GLADIOLI, &c.	2	2	0
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No. 3.	A Small and Choice ditto	0	10	6

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No. 4.	A side-and Collection of HYACINTHS, JONQUILS, NARCISSI, EARLY TULIPS, New large CROCUSES, &c.	2	2	0
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FRANCIS & ARTHUR DICKSON & SONS have received, from the best Growers in Holland, a very large Importation of the above, and have the satisfaction to say that the BULBS are unusually large, sound, and well ripened, and for which early orders are requested to ensure the best Roots.

Flower Roots of £2 value will be delivered free of carriage at the principal Railway Stations and Shipping Ports throughout the country.

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The season for planting is now at hand, and intending purchasers are invited to an inspection of the select Stock the Nurseries contain, consisting of Ornamental Coniferous Trees, Fruit Trees, Evergreen and Deciduous Trees, Forest Trees, Roses, Flowers of every description, and every requisite for the Farm and Garden. All Business Letters to be addressed to Mr. PETER DRUMMOND, Manager.

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DUTCH FLOWER ROOTS.

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DESIRE TO REMIND INTENDING CULTIVATORS OF THE ABOVE

BEAUTIFUL CLASS OF PLANTS FOR SPRING DECORATION,

THAT THE BULBS SHOULD NOW BE PLANTED WITHOUT DELAY.

J. V. AND SONS' Roots are in Excellent Condition and of the very Finest Quality.

CATALOGUES will be forwarded Post Free on application.

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SOUTH ROW, COVENT GARDEN, LONDON,

Seedsmen to Her Majesty's Commissioners of Woods and Forests,
To the Commissioners for the Colonies,
To the Horticultural Societies of the Punjaub and Bombay, &c.

HOLDERS OF PRIZE MEDALS FROM INTERNATIONAL EXHIBITIONS OF 1851 AND 1862.

CHOICE COLLECTIONS of BULBS, all of the FIRST SIZE and QUALITY.

For Conservatory Decoration.						For Flower Garden Decoration.					
No. 1.	No. 2.	No. 3.	No. 4.	No. 5.	No. 6.	No. 7.	No. 8.	No. 9.	No. 10.	No. 11.	No. 12.
£5.	£2 10s.	£1 5s.	£1 1s.	15s.	10s. 6d.	£5.	£3.	£2.	£1 5s.	£1 1s.	10s. 6d.

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No. 13, £5 5s. No. 14, £2 12s. 6d. No. 15, £2 2s. No. 16, £1 1s. No. 17, 15s. No. 18, 10s. 6d.

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SON and SUCCESSOR to the late A. PAUL,

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HIS USUAL SUPPLY OF HYACINTHS AND OTHER BULBS,

Which he has selected from the stock of the first growers in Holland, and which he believes will be found equal to any Bulbs this year imported, and give the same satisfaction to the respective purchasers as those imported and supplied by him in previous years.

HYACINTHS, good named sorts, 6*d*. per 100
" choice selection, 9*s*., 12*s*., and 15*s*. per doz.
" new sorts, 1*s*. to 42*s*. per doz.
" for bedding, 18*s*. to 34*s*. per 100

TULIPS, early, in great variety, 1*s*. to 4*s*. per doz., 6*s*. to 24*s*. per 100
POLYANTHUS NARCISSUS, by name, 4*s*. to 6*s*. per doz., 25*s*. to 42*s*. per 100
CROCUS, of sorts, 2*s*. to 5*s*. per 100.

All other Bulbs and Spring-flowering Plants and Shrubs for Forcing equally reasonable in price.

His friends and the public generally are respectfully reminded that his Collections of these Plants obtained no less than 29 FIRST PRIZES last spring in the space of one week, from the Royal Horticultural and Royal Botanic Societies of London.

NOTICES OF THE PRESS.

"The breadth and length of spike of many of these Hyacinths are much greater than we have ever before seen, and the colours are remarkable for their solidity and clearness."—*Gardeners' Chronicle.*

"There was an air of nobility about the spikes that it is difficult to describe, but which was most striking."—*Journal of Horticulture.*

"It is due to Mr. W. Paul's wonderful group of 24 Hyacinths to which was awarded the First Prize, that a tribute should be borne here to their incomparable quality."—*The Florist.*

"A Collection that were as near absolute perfection as in the present state of our knowledge we can imagine."—*Gardeners' Magazine.*

"The Hyacinths were particularly fine and very numerous, the plants and flowers large and well-grown."—*The Times.*

"The Hyacinths are of giant size, the colours having a metallic lustre and an intensity which we never saw equalled."—*Morning Post.*

"The Hyacinths and Roses of Mr. Wm. Paul proved the greatest attraction at the exhibition, the varieties being good and the plants well-grown."—*Daily Telegraph.*

EARLY ORDERS ARE SOLICITED.

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TAXUS HIBERNICA FASTIGIATA VARIEGATA

(THE GOLDEN IRISH YEW).

FISHER, HOLMES & CO.

Have much pleasure in offering for the first time the above really beautiful NEW YEW.

It is the exact type of the Irish Yew, with foliage of the same colour as the Old Golden Yew, and forms a most attractive and really beautiful plant.

It was exhibited at the Royal Horticultural Society's Exhibition in June, 1863, where it obtained a First-class Certificate (see *Gardeners' Chronicle*, p. 580, 1863); it was again exhibited at the International Horticultural Exhibition last May, where it was awarded another First-class Certificate.

Price 21s. each; Six Plants for £5 5s.; a few Extra Specimens at 31s. 6d. each.

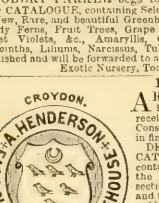
☞ *Price to the Trade on application.*

HANDSWORTH NURSERIES, SHEFFIELD.—Oct. 13.

New Catalogue of Plants, Dutch Bulbs, &c.

ROBERT PARKER begs to announce that his NEW CATALOGUE, containing Select Descriptive and Priced Lists of New, Rare, and beautiful Greenhouse, Hardy and Stove Plants, Hardy Ferns, Fruit Trees, Grape Vines, Roses, Rhododendrons Sweet Violets, &c., Amaryllis, Crocuses, Cyclamens, Gladioli, Hyacinths, Liliums, Narcissus, Tulips, and other Bulbs, is now published and will be forwarded to applicants

Exotic Nursery, Tooting, Surrey, S.



Dutch Flower Roots.

ARCHIBALD HENDERSON begs to announce that he has received from Holland a large Consignment of BULBOUS ROOTS in fine condition.

DESCRIPTIVE and PRICED CATALOGUES are now ready, containing practical directions for the successful cultivation of each section of Bulbs, in Pots, Glasses, and the Flower Garden.

Also a DESCRIPTIVE PRICED LIST of all the best GRAPE VINES in cultivation. Catalogues may be had gratis and post free upon application.

Seed Nursery, Tranton Heath, Surrey; and at the East Surrey Seed Warehouse, College Grounds, North End, Croydon.

LOUIS VAN HOUTTE, NURSERYMAN, GHENT, Belgium, begs to state that Copies of his BULB and SEED CATALOGUE, No. 11, which will be had, gratis, on the 15th, bring the Autumnal Catalogue of Stove Plants, Palms, Orchids, Ferns, Gesneriaceous Plants (Achimenes, Gloxinias, &c.), and also the CATALOGUE, No. 116, containing Descriptive Priced Lists of Greenhouse Plants, Azalea indica, Camellias, Perennials of every description, Gladiolus, Lilies, &c.

The whole of LOUIS VAN HOUTTE'S CATALOGUES may be had post free either direct from the Establishment, Ghent, or on application to his Agents, Messrs. R. SILBERRAD & SON, 5, Harp Lane, Great Tower Street, London, E.C.

Rhododendrons.

JOHN WATERER'S DESCRIPTIVE CATALOGUE of HARDY SCARLET and other RHODODENDRONS is now published and will be forwarded on application. It faithfully describes the colours of the new varieties exhibited by him at the Royal Botanic Gardens, Regent's Park, and also a good selection of popular CONIFERS, with heights and prices, is likewise combined.

The American Nursery, Bagshot, Surrey, near Sunningdale Station, South-Western Railway.

NEW HARDY RHODODENDRON, MICHAEL WATERER.—This Rhododendron has hitherto been exhibited under the name of ANNIHILATOR, but it will be sent out under the above name. It is undoubtedly the most brilliant-coloured late hardy free-blooming Rhododendron yet offered.

Orders are now being taken for Plants to be sent out in the Autumn at 31s. 6d. each. The usual discount to the Trade.

JOHN WATERER, American Nursery, Bagshot, Surrey.

Notice.

TO BE SOLD, Cheap, a great Bargain, 5000 RHODODENDRON PONTICUM, 2 feet, fine bushy healthy stuff, many of them with buds, well worthy the attention of Gentlemen and the Trade. Special prices and samples on application to

Y. STRACHAN, Wholesale and Retail Seed Merchant and Nurseryman, 4, High Street, Wrexham, North Wales.

THE QUEEN, without any exception the best WHITE RHODODENDRON yet raised.—Robust grower, deep green foliage, late and free flowering, trusses large, full, compact, and somewhat, footstalk short; self, colour pure white, suffused with soft blush mauve, changing to the purest white, clear alabaster or wax-like, of unequalled shape and substance, reminding one of the petals of the Water Lily. Such a distinct flower is worthy of another Rhododendron, a peculiarity probably accounted for by its hitherto refusing to produce seed, an advantage all Rhododendron growers will understand, the Royal Botanical and Horticultural Exhibition will remember the transcendent superiority of The Queen over every other white Rhododendron exhibited. It is proposed that The Queen should assume her throne in 1867. All and everybody who wish to enjoy her regal sway should apply at once, as the first will be executed in rotation. The price will be 31s. 6d. each, and the Trade will have four plants given for three ordered. It need excite no surprise that its sole possession by a Worcester should have called forth the envious jealousy of certain HONOURABLE MEN. Hence a story industriously circulated in the Trade that THE QUEEN is not now in the old kind, shows what an assertion it is. The Advertiser would be glad to be informed WHEN, OR WHERE, AND UNDER WHAT NAME THIS RHODODENDRON has been seen, and in whose possession it is to be found. The whole undivided stock is in the hands of CHARLES NOBLE, Bagshot, Surrey.

CHOICE VARIEGATED PELARGONIUMS.

Sunset	Luna	Italia Unita
Mrs. Benyon	Clara	Picturata
Mrs. Pollock	Golden Tom Thumb	The Fairy
Yellow Belt	Rainbow	Princess Alexandra

The above 12 varieties, suitable for exhibition, for 21s.

The following at 7s. per doz., package included:—

Mrs. Pollock	Golden Vase	Golden
Harkaway	Burning Bush	Argus
Glowworm	Sir Sidney	Fontainebleau

Terms, cash. Remittances requested from unknown correspondents.

Address, ALFRED FRYER, Nurseries, Chatteris, Cambridgeshire.

Amaryllis.

JAMES GARAWAY AND CO., Durdham Down Nurseries, Bristol, offer, from their unequalled stock of the above-named favourite flower, strong Bulbs of unnamed Seedlings and others that have bloomed with them during the two last seasons, at 5s., 7s., 10s. 6d., and 21s. per dozen, 30s., 42s., and 105s. per hundred.

JAMES GARAWAY & CO.'S GENERAL BULB CATALOGUE for the coming season is in the Press, and when ready will be forwarded post free on application.

JAMES GARAWAY & CO., Durdham Down Nurseries, Bristol.

New Double-flowered Amaryllis.

H. LAURENTIUS, Leipzig, begs to call attention to his NEW AMARYLLIS ALBERTI, double-flowered, fine and well shaped, bright scarlet and crimson-tinted, of which representations may be seen in the "Illustration Horticole," and the "Garten Magazin," Strong-flowered Bulbs, 12s

His AUTUMN CATALOGUE (No. 35) is just out, and contains a full description of the above, together with PRICE LISTS of NOVELTIES, BULBS, AZALEAS, &c., and of a large number of Plants at Trade prices. It can be had gratis on application (by prepaid letter) to him or his Agents, Messrs. BETHAM & BLACKITH, Cox's Quay, Lower Thames Street, London, E.C.

The Horticultural Establishment of H. LAURENTIUS, Leipzig, Germany.

NEW HARDY CLEMATISES.

CLEMATIS RUBELLA.—Very rich velvety claret; the deepest coloured Clematis yet offered. Very distinct, and having the advantage of flowering 60 days later, of blooms, with five and six sepals. First Certificate, Royal Horticultural Society.

CLEMATIS PRINCE of WALES.—Large flowers, of a rich deep violet purple, with red bars down the centre of each sepal; a decided improvement on C. rubro-violacea. First Certificate, Royal Horticultural Society.

MESSRS. GEORGE JACKMAN AND SON have much pleasure in announcing that their stock is in position to send out the above Clematises that are distinct, and can with confidence recommend them "amongst the best of hardy Climbers, if not the very best ornaments for walls, trellis work, &c.

Early orders will secure the strongest plants, which will be sent out strictly in rotation first week in October.

The "Floral Magazine," in the October Number, will insert C. rubella and C. lanuginosa cuneata.

Strong Plants, with bine, 1½ to 2½ feet, 21s. each.

The usual allowance to the Trade.

Coloured Drawings, by Andrews, for 24 stamps.

Woking Nursery, Surrey

New Descriptive Rose Catalogue for Autumn of 1866 and Spring of 1867.

EDWIN HOLLAMBY begs to draw attention to his superb Collection of the above, containing all the new and approved old varieties in cultivation, and is happy to state that they surpass previous years for quality and excellence.

Early orders solicited to insure good plants.

CATALOGUES forwarded gratis and post paid on application.

Nursery and Seed Establishment, Tunbridge Wells, and Groombridge.

NEW CATALOGUES for the SEASON of 1866 and 1867.

No. 1. ROSES.—A Select List of all the best varieties in cultivation, fully and faithfully described.

No. 2. FRUIT TREES.—A Descriptive List of all the choicest varieties of Fruits.

No. 3. CONIFERS, ORNAMENTAL TREES and SHRUBS.—Contains all varieties worthy of cultivation, with interesting notes of description, height, size, native country, &c.

No. 4. TRANSPLANTED FOREST TREES.—Plants for cover and underwood, &c.

No. 5. GARDEN and AGRICULTURAL SEED and ROOT CATALOGUE.

No. 6. GENERAL PLANT CATALOGUE.

The above will be forwarded free on application to JOHN CRANSTON, King's Acre Nurseries, near Hereford.

New Roses for 1866.

EUGÈNE VERDIER, Fils Aîné, NURSERYMAN, 3, Rue Dunois, Paris, has the honour to inform the public that he will have ready to deliver in November next, the following splendid ROSE to compete for the Seed Establishment:—

HYBRID PERPETUALS.—Comte Latta, Jules Calot, Madame George Paul, Madame la Baronne Haussmann, Madame la Baronne Maurice des Graviers, Madame la Comtesse de Turenne, Mademoiselle Annie Wood, Madame Prince Napoleon, Prince Napoleon III., Velours pourpre. CATALOGUES may be obtained direct of E. V., or of his Agent, Messrs BETHAM & BLACKITH, Cox's Quay, Lower Thames Street, London, E.C.

British Fern Catalogue.

ROBERT SIM can now send, post free for six postage stamps, Part I (British Ferns and their varieties, 36 pages, including prices of Hardy Exotic Ferns) of his NEW and PRICED DESCRIPTIVE CATALOGUE of BRITISH and EXOTIC FERNS, No. 7.

Foot's Cray Nursery, S.E., a mile from Sidcup Station of New North Kent Line of South Eastern Railway.

American Plants, &c.

WATERER AND SON'S NEW PRICED and DESCRIPTIVE CATALOGUE of RHODODENDRONS and other American Plants for this Autumn, will be sent on application. The Catalogue also gives a summary of their General Nursery Stock, probably the most extensive in the Kingdom.

Knap Hill Nursery, Woking, Surrey.

THE CZAR VIOLET is NOW in BLOOM, and will continue so through the winter, even during frost and under snow, until May. The flowers are twice as large as the Old Russian, and sweeter; they took six prizes, and received several First-class Certificates and Prizes. Strong blooming plants may be had, 10s per dozen, prepaid, of Mr. JOHN GRAHAM, Cranford, Hounslow, W.

The usual allowance to the Trade.

New Plant.

FITTONIA ARGYRONEURA.—The handsomest New Plant of the season, easily cultivated in any stove. Price 21s.

For full description of which, and of other New Plants, see MR. WILLIAM BULL'S CATALOGUE of NOVELTIES just issued

Establishment for New and Rare Plants, King's Road, Chelsea, S.W.

The Gardeners' Chronicle.

SATURDAY, OCTOBER 13, 1866.

MEETINGS FOR THE ENSUING WEEK.

TUESDAY, Oct. 16	Royal Horticultural Floral and Fruit Committees, at South Kensington	11 A.M.
		3 P.M.
SATURDAY, — 20	Royal Horticultural (Weekly Show), South Kensington	2 P.M.

THE beautiful autumnal Crocuses (C. nudiflorus and speciosus) have recently sent up their purple bells, and reminded us, "by most persuasive reasons," of the almost total neglect of the finer HARDY BULBS in British gardens. For ages before BEN JONSON told us—

> "It is not growing like a tree
> In bulk doth make things better be,"

or SHAKESPEARE discoursed of the "Crown Imperial. Lilies of all kinds, the Flower-de-luce being one," till a comparatively recent date, these flowers were amongst the most distinguished ornaments of our gardens; though latterly they would appear to have almost completely disappeared from them, very much to the detriment of our enjoyment therein. But that they ever have been well cultivated in our gardens, or tastefully arranged in them, we have not seen much reason to believe, and we are sure that the fine things introduced of recent years from Japan and other countries have never yet had justice done them, or been placed in suitable positions in our gardens. So surely, however, as gardening affords the simplest, purest, and most healthful of all pleasures to the human race, so surely will those noble, hardy plants be universally admired and cultivated when their full beauty is once known to the horticultural public; and then, from the opening of Crocus susianus and Bulbocodium vernum to that of the deliciously-scented, noble, and queenly flowers of Lilium longiflorum, and of those dwarf beauties of the Crocus and Colchicum families which come up fresh and vivid when the leaves of autumn begin to chase each other over the Grass, and the last blooms fail from among the Gladioli, and even the dignified Tritoma, careless of weather as she is, begins to look forlorn, we should have a succession of beauty and interest which cannot be yielded in this country by any other class of hardy plants.

Hardy Bulbs! as well might no such plants exist for all the beauty they afford to the owners of British gardens! Of what use to them is the knowledge that the temperate and colder regions of the earth are wont to be embellished by a glory of colour and beauty which the Orchid regions of Mexico or the East do not equal, and which may be freely produced in every garden in the British Isles, without the expenditure of a pound of coal or even one-tenth the attention which is required by the coarsest bedding plants? We cultivate Gladioli in profusion, it is true, but the noble Lilies, by far finer than any Gladiolus, are rarely grown in our gardens, though, when once planted, they require no attention, except to be kept clear from weeds. No gardener who had once seen what beautiful beds may be made of this family alone, could resist the temptation of such a glorious garden ornament. With such kinds as Lilium testaceum and tigrinum Fortunei in the centre, surrounded by the queenly candidum, burnished croceum, spotted canadense, pomponium, and colchicum, and the vivid chalcedonicum, and gradually worked down to the edge with such dwarf but beautiful kinds as pulchellum, eximium, longiflorum and tenuifolium, a large circular or oval bed might be made on the Grass, in some isolated spot, which, for the highest beauties of colour, form, and fragrance—for in fact almost every quality by which vegetable beauty endears itself to us—could not be equalled by any arrangement of indoor or outdoor plants that we can call to mind. The only precaution we need mention is, that to grow Lilies well they should have 3 feet, or nearly that, of free loamy earth, with a good dash of vegetable mould in it.

Some may say, such an arrangement would "interfere with our bedding;" but there are very few gardens which could not afford a quiet spot for some such arrangement as this, and it is our lot to yearly walk by scores of miles of Grass margins to plantations, and undulating fringes of turf in pleasure grounds, where select beauties of this kind might be introduced without in the least interfering with anything, but on the contrary, adding a distinct and marvellous charm to spots which before presented nothing but blank vacuity as regards floral beauty or interest. L. tenuifolium would flower very early in summer, brilliant as the Scarlet Pelargonium, and then the stately group would come in one after another, till lancifolium (which does beautifully in warm places and in light well-drained soils, in the open air) in great variety passed on her way in autumn. A charming grace, and one which would make it attractive in early spring as well as in summer and autumn, might be added by edging the bed with the Siberian Squill, and inside of that a mixture of the much stronger and bolder Scilla campanulata, the fine white variety to be equally mixed with the normal blue form; or it might be edged with many other spring bulbs, or enclosed with a little flat evergreen margin of Lithospermum fruticosum, which when densely covered with its flowers in early summer, is one of the loveliest things in Nature.

Then there are the vivid little Squills, not a few of which are equally worthy of cultivation with Scilla sibirica, and a few that are commonly cultivated, and notably S. præcox, blue and white (which is *not* sibirica, as might be inferred from our bulb merchants so often selling sibirica by that name), and bifolia, and rosea, and amethystina. How beautiful are all these for putting a graceful cærulean or roseate band round those dwarf beds of American plants and similar arrangements common in "good places," and for almost every purpose of the spring gardener. Even the Crocus, long as it has been lifting up its burnished lamp to us, is but rarely used in the dark days of early spring to produce that great beauty of effect of which it is quite capable. It is hard to say that anything can surpass the beauty of Crocus vernus, "both the yellow and the grey," as Lord BACON has it, but there is really no spring flower or no bulb whatever which exhibits pencillings of such fascinating delicacy of colour as many of the newer kinds of Crocus, and mixtures of these and of the common gold and blue, all open together, smiling joyously under the first glances of awakening Spring, form the loveliest of all margins to shrubbery borders, and make edgings of marvellous beauty in the choice geometrical garden, or indeed in any other position. Space forbids us doing more at present than merely mentioning the Anemone, Dog's-tooth Violet, Fritillaria, Iris, Jonquil, Muscari, &c., which go to form the bulk of this

class of plants; we hope to deal with the subject more extensively at some future day—to select the most worthy of culture of the many kinds known to European gardens, and point out those modes of arrangement which will best display their beauty and best meet the wants of our popular system of gardening.

At present we call attention to the subject because the time is at hand when Lilies and miscellaneous bulbs generally arrive from Holland, and the shorter period they are left to shrivel with the seedsman the better.

—— AMONG the laudable institutions to be often met with in country places, especially in the manufacturing districts, may be mentioned such SPECIAL EXHIBITIONS as Gooseberry Shows, Celery Shows, Leek Shows, &c. They stimulate horticulture as represented in the person of the artizan cultivator, and in this way confer substantial benefit on those classes of the population among which they are held, besides promoting a feeling of cordiality and good fellowship. Reports of numerous Celery and Leek Shows which have recently been held in the neighbourhood of Nottingham, have reached us, and at these, we observe, the weights of the leading samples of Celery ranged over 10 lb. per pair—10 lb. 6 oz., 10 lb. 4½ oz., 10 lb. 1 oz., 10 lb. 8 oz. being examples; while the best samples of Leeks reached 5 lb. 4 oz. the pair. The low temperature of the present season has been unfavourable to the cultivation of the Leek, and consequently the specimens produced have not been nearly so fine as in years gone by. The same may be said of Celery, for though a dripping season is considered favourable to this "denizen of the ditch," moisture without warmth does not force the plant so much as moisture with a high atmospheric and terrestrial temperature.

At Radford a new Celery, which is highly spoken of, was shown by Mr. JOHN COX. It is described as a red or pink variety, with long, broad, thick, crisp, solid, and brittle leaf-stalks, almost without any waste. It is of dwarf habit, the leaf-stalks of the specimens exhibited being 2 feet long, and averaging 7 inches in girth at the point where the leaflets branch off. This will form a fair test and criterion of the excellence of the variety as to size and form, while the cleanness of the general surface, and the smooth skin, show that when thoroughly blanched it will prove to be excellent in quality.

—— M. CARRIÈRE gives an illustration of a SPORT of a VINE which is interesting, as showing how variable plants are. A Black Hamburgh (Frankenthal) was cut down, when it produced three suckers, one of which was layered, and after a time produced much smaller berries, ripening at least a fortnight sooner than the others. This phenomenon occurs every year. Of the remaining two suckers from the same stock, one gives every year fine Grapes, while the other, although it sets abundance of fruit, only ripens a few, and those of inferior quality. From these circumstances M. CARRIÈRE insists on the necessity for exercising great caution in taking cuttings.

—— We extract the following particulars with reference to the UNIVERSAL EXHIBITION OF HORTICULTURE at Paris next year, from the current number of the "Revue Horticole." As already stated, there will be fourteen distinct but mutually related exhibitions, each lasting fifteen days. No details are given of the Thirteenth and Fourteenth Sections, nor any particulars specially relating to British exhibitors. The First Section will open on the 1st of April and is to comprise:—

11 classes for specimens in flower.
4 ,, Newly introduced Stove Plants.
2 ,, Seedling Stove Plants obtained on the Continent.
3 ,, Newly introduced Greenhouse Plants.
4 ,, Seedling Greenhouse Plants obtained on the Continent.

STOVE PLANTS.

4 classes for Orchids.
4 ,, Broncheas.
6 classes for Ferns (not Tree Ferns.)

GREENHOUSE PLANTS.

6 classes for Ericas in flower
2 ,, Acacias and Mimoseæ.
3 ,, Ferns (not Tree Ferns).
4 ,, Amaryllis in bloom.
2 ,, Cinerarias in bloom.
4 ,, Primula sinensis in bloom.
2 classes for Daphnes in bloom.
3 ,, Cyclamens in bloom.
1 class for Wallflowers in bloom.
5 classes for Misc. Greenhouse Plants.

HARDY PLANTS.

4 classes for Hollies.
3 ,, Magnolia grandiflora.
3 ,, Yuccas.
1 class for Ivies.
4 ,, Sheets of Miscellaneous Hard-wooded Plants.

FORCED PLANTS.

1 class for Early Tulips in flower.
2 ,, Crocuses in flower.
1 ,, Lilacs in flower.
1 ,, Roses in flower.
3 classes for Misc. Flowering Shrubs.
2 ,, Various New Plants.
2 classes for Pine-apples
1 ,, Fruit trees and Fruits.
1 class for Melons.
1 ,, Strawberries.
1 ,, Cucumbers.
1 ,, Misc Vegetables.
1 ,, Fruit-Conserves.

TRAINED TREES.

2 classes for Pears.
2 ,, Apples.
2 ,, Peaches.
2 ,, Cherries.
1 class for Vines.
2 classes for Plums.
2 classes for Apricots.
1 class for Miscellaneous Fruit-trees or Shrubs.
1 ,, for Standard Fruit-trees (*open to the*).

The Second Section will open on the 15th of April, and will comprise:—

CONIFERS.

12 classes for Ornamental Conifers.
2 classes for Forest Conifers

STOVE PLANTS.

4 classes for Foliage Plants.
1 class for Orchids.
10 classes for Cactuses.
3 classes for Sclaginellas and Lycopodiums.

GREENHOUSE PLANTS.

4 classes for Agaves.
2 ,, Aloes.
2 ,, Dasylirion and Bonaparteas.
1 class for Yuccas.
2 classes for Rhododendrons in flower.
2 ,, Epacrises in flower.
2 ,, Ericas in flower.
1 ,, Cinerarias in flower.

HARDY PLANTS.

2 classes for Perennial Plants.
2 ,, Hyacinths (out-door).
2 ,, Pansies.
1 class for Primula veris.
3 classes for Wallflowers
2 ,, Deciduous Magnolias.
2 ,, Standard Roses in bloom
2 ,, Dwarf Roses in bloom.
2 classes for various New Plants.

FORCED PLANTS.

1 class for Melons.
1 ,, Strawberries.
1 ,, Asparagus.
1 class for Cucumbers.
2 classes for Miscellaneous Vegetables.

The Third Section will open on the 1st of May, and will comprise:—

8 classes for Azalea indica in bloom. [um.
8 ,, Rhododendron arboreum.
4 ,, New Plants of any kinds
6 ,, Flowering Plants of any genus.
2 ,, Stove Orchids in bloom.
2 ,, Plants specially fitted for the decoration of apartments.
2 ,, Ixias and Sparaxis in bloom.
4 ,, Tree Peonies in bloom.
2 ,, Herbaceous Peonies in bloom.
2 ,, Standard Roses in bloom
2 ,, Dwarf Roses in bloom.
,, Clematis in bloom.
3 classes for Tulips in bloom
1 class for Hanging Baskets filled with Plants with pendent branches.
1 ,, for Pansies in bloom.
1 ,, Auriculas in bloom.
1 ,, Stocks in bloom.
1 ,, Mignonette.
1 ,, Dwarf Orchids in flower
2 classes for Miscellaneous New Plants.
1 class for Asparagus.
1 ,, Mushrooms.
3 ,, Miscellaneous Vegetables.
1 ,, Melons. [bles.
2 classes for Miscellaneous Vegetables (forced).
4 ,, Fruit Trees and Fruit (forced).
3 ,, Pine-apples (forced).

The Fourth Section will open on the 15th of May, and will comprise:—

11 classes for Palms.
5 ,, Cycads.
5 ,, Orchids in bloom.
2 ,, Ixeas in bloom.
2 ,, Musk Mimulus in bloom.
4 ,, Caladiums in bloom
1 class for Flower-pots for the markets.
,, Hydrangea Rosea [bloom.
,, Hydrangea Hortensis in
1 ,, Auriculas in bloom.
7 ,, Classes for hardy Pinks in bloom.
,, Hardy Azaleas in bloom.
2 ,, Kalmias in bloom.
,, Clematis in bloom.
1 class for Standard Roses in bloom.
1 class for Standard Tea Roses in bloom. [bloom
2 classes for Dwarf Roses in
4 ,, Miscellaneous hardy Flowering Shrubs.
1 ,, Perennials in bloom.
1 ,, Annuals in bloom.
,, Herbaceous Peonies in bloom. [bloom.
1 class for Tree Peonies in
1 ,, Ranunculus in bloom.
1 ,, Anemones.
1 ,, Pansies. [Plants
2 classes for Miscellaneous New Hardy Fruits.
2 classes for Grapes (forced).
3 ,, Miscellaneous Vegetables

The Fifth Section will open on the 1st of June, and will comprise:—

9 classes for Orchids in bloom
8 ,, Miscellaneous Stove Plants.
1 ,, Musa ensete or Stove Plants.
4 ,, Foliage Plants.
,, Pelargoniums.
1 class for Miscellaneous Greenhouse Plants.
3 classes for Calceolarias in bloom.
4 ,, Verbenas in bloom.
2 ,, Annuals in bloom.
2 ,, Perennials in bloom.
3 ,, Chinese Peonies in bloom.
1 class for Pinks in bloom.

HARDY PLANTS.

2 classes for Hardy Herbaceous Plants.
1 class for American Plants
,, Rhododendrons.
1 ,, Azaleas in bloom.
1 class for Kalmias in bloom.
2 classes for Standard Roses in bloom.
4 classes for Dwarf Roses in bloom.
1 class for Climbing and climbing Roses.
3 classes for Roses (cut flowers).
2 ,, Miscellaneous New Plants.
1 class for Melons.
3 classes for various Vegetables.
4 ,, Forced Fruits.

The Sixth Section will open on the 15th of June, and will comprise:—

4 classes for Standard Roses in bloom.
5 ,, Dwarf Roses in bloom.
1 class for Trailing or Climbing Roses in bloom.
4 classes for Roses (cut flowers)
4 ,, Pinks in bloom.
4 ,, Pelargoniums.
3 ,, Fancy Pelargoniums.
3 ,, Zonal Pelargoniums in bloom.
1 ,, Stove Orchids in bloom.
3 ,, Theophrasta and Clavija ,, Marantas, Caladiums, and Phrynums.
3 ,, Musas
4 ,, Begonias (tuberous).
2 ,, Begonias (not tuberous).
2 ,, Gloxinias, &c.
4 ,, Verbenas in bloom.
1 class for Calceolaria in bloom.
1 class for Perennial Plants in bloom. [bloom.
1 ,, Annual Plants in
2 classes for Delphinium in bloom. [bloom.
2 ,, Ipse asphodels.
2 ,, Stocks in bloom.
1 class for Native (French) Orchids.
2 classes for Alpine and Sub-Alpine Plants.
2 ,, Miscellaneous New Plants.
3 ,, Herbaceous Peonies in bloom.
1 class for Tree Peonies in bloom.
3 classes for Miscellaneous Vegetables.
1 class for Bananas.
2 classes for Cherries.
4 ,, Strawberries.

The Seventh Section will open on the 1st of July, and will comprise:—

7 classes for Zonal Pelargoniums in bloom.
4 ,, Zonal Pelargoniums with variegated foliage.
2 ,, Pelargoniums (tyrees).
5 ,, Tree Ferns.
2 ,, Ecotonic Tropical trees or Shrubs.
,, Stove Orchids in bloom.
2 classes for Nepenthes.
4 ,, Gloxinias in bloom.
2 ,, Bulbous Caladiums.
4 ,, Petunias in bloom.
1 class for Rechet ,,
1 ,, Crassula ,,
1 ,, Sarracenia ,,
1 ,, Agapanthus ,,
1 ,, Lilium auratum

HARDY PLANTS.

1 class for Perennial Plants in bloom.
1 ,, Annual Plants in bloom.
1 ,, Perennial Plants with variegated leaves.
4 classes for Herbaceous Ferns.
2 ,, Delphiniums in bloom.
1 class for Mignonette ,,
2 classes for Hollyhocks (*Rose trees*).
4 ,, Roses (cut flowers).
2 ,, Miss New Plants.
3 ,, Misc. Vegetables.
1 class for Mushrooms.
3 classes for Cherries.
3 ,, Strawberries.

The Eighth Section will open on the 15th of July, and will comprise:—

4 classes for Pinks, Carnations, Picotees, &c. (N.B.—The French classification of these flowers is different from our own).
2 classes for Carnations, &c. (Perpetuals).
6 classes for Stove Plants.
2 ,, exotic Fruit trees.
3 ,, Gloxinias in bloom.
4 ,, Lantanas ,,
4 ,, Petunias ,,
1 class for Hardy Perennials in bloom.
2 classes for Hardy Annuals in bloom.
2 ,, Phlox in bloom.
3 ,, Potatoes in bloom.
2 ,, Cinerarias ,,
2 ,, Hollyhocks ,,
3 classes for Gladioli in bloom.
2 ,, Delphiniums ,,
3 ,, Phlox Drummondii in bloom.
1 class for Alstrœmerias in bloom.
3 classes for Hydrangeas and Hortensias.
2 ,, Misc. New Plants.
4 ,, Stone-fruit trees.
3 ,, Berry bearing Fruit Trees and Shrubs.
3 ,, Melons.
3 classes for Miscellaneous Vegetables.

The Ninth Section will open on the 1st of August, and will comprise:—

6 classes for Fuchsias in bloom.
4 ,, Gladiolus.
5 ,, Exotic, Trailing, or Climbing Plants.
2 ,, Passifloras in bloom.
4 ,, Heliotropes in bloom.
1 class for Phyllea cricoides in bloom.
3 classes for Dahlias in bloom.
1 class for Perennial Plants.
2 classes for Annual Plants in bloom.
3 ,, Pinks (various) in bloom.
,, Hollyhocks in bloom.
3 ,, Phlox decussata.
2 classes for Lilies.
2 ,, Double Zinnias.
2 ,, Lobelias.
2 ,, Capsicums.
3 ,, Hydrangeas and Hortensias.
4 ,, Asters.
,, Marigolds.
4 ,, Berry bearing Fruit Trees and Shrubs.
3 ,, Melons.
3 classes for Miscellaneous Vegetables.

The Tenth Section will open on the 15th of August, and will comprise:—

12 classes for various Aralia.
1 class for Stove Orchids
2 classes for Gesneraceæ in bloom
3 ,, Achimenes in bloom.
1 class for Naegelia in bloom.
4 classes for Fuchsias in bloom.
3 ,, Erythrinas.
2 ,, Zonal Pelargoniums in bloom.
2 ,, Plants for hanging baskets, &c.
2 ,, Perennial Plants in bloom.
2 ,, Dahlias in bloom.
2 ,, Hollyhocks in bloom.
2 ,, Plantagineas in bloom.
1 class for Phloxes in bloom.
2 classes for Pinks, &c. (Perpetuals).
1 ,, Asters in bloom.
1 ,, Balsams in bloom.
3 classes for Double Zinnias in bloom.
2 ,, Miscellaneous Annuals in bloom
1 class for Lilliums in bloom.
4 classes for Gladioli in bloom
1 class for Native (French) Heaths.
2 classes for Exotic Aquatic Plants.
1 class for Indigenous (French) Aquatic Plants.
2 classes for Miscellaneous New Plants.
2 ,, Miscellaneous Vegetables.
1 class for Grapes.
1 class for Pippin Fruits.
3 ,, Stone Fruits.
2 ,, Peaches.
2 ,, Grapes
1 class for Figs.

The Eleventh Section will open on the 1st of September, and will comprise:—

7 classes for Dahlias in bloom.
4 ,, Dracenas and Cordylines.
2 ,, Crotons.
2 ,, Alsinastræs.
2 ,, Fuchsias in bloom.
2 ,, Veronicas in bloom.
2 ,, Hybrid Pelargoniums in bloom.
1 class for Perennial Plants in bloom.
1 ,, Dianthus sinensis (Heddewigii, &c., in bloom.
2 classes for Annual Plants in bloom.
1 ,, Asters.
1 class for Balsams.
2 classes for Roses (cut flowers).
1 class for Tea Roses.
1 ,, Gladiolus.
2 ,, Classes for Miscellaneous New Plants. [bles.
2 ,, Miscellaneous Vegetables.
3 ,, Pippin Fruit.
,, Stone Fruit.
1 class for Peaches.
4 classes for Grapes.
2 ,, Pears.
3 ,, Pine-apples.
,, Deciduous Forest Trees.
1 ,, for Specimen Undershrubs suitable for slopes or bare places.

The Twelfth Section will open on the 15th of September, and will comprise:—

4 classes for Misc. Aralliads.
2 ,, Large-leaved Stove Plants
4 ,, Cannas.
,, Solanums.
4 ,, Figs and Artocarpeæ.
2 ,, Hibiscus sinensis in bloom.
2 ,, Musa (edible).
,, Feijoa sinensis.
1 class for Zonal Pelargonium
1 ,, Perennial Plants in bloom
1 ,, Ornamental Grasses.
3 classes for Dahlias (cut flowers.)
1 class for Early Chrysanthemums.
1 ,, Asters.
2 classes for Gladiolus.
1 class for Roses (cut flowers.)
2 classes for Miscellaneous Bamboos.
1 class for Annual Plants in bloom.
2 classes for Miscellaneous New Plants
3 ,, Misc Vegetables.
1 ,, Grapes.
2 ,, Pippin Fruits.

NEW GARDEN FERN.

PTERIS SERRULATA *var.* POLYDACTYLA.

Apices of the fronds, pinnæ and pinnules multifidly forked and plate, so as to become many fingered.

This very elegant novelty, which will be a most welcome acquisition to the list of small half-hardy evergreen Ferns suitable for small greenhouses, plant-cases, or window culture, has been obtained by Mr. Cripps, of Tunbridge Wells, probably as a sport from *P. serrulata* var. *cristata*, described at p. 1180 of our volume for 1863. It differs from that variety in its tassels being longer fingered, lying in one plane, and not being like it dense and crispy. The long ribbon-like divisions of the frond are instead divided at the end in a repeatedly forked or multifid manner, and are pendent from the weight of their apical tufts. The variety was exhibited recently at South Kensington, where it had many admirers. *M.*

NOTES ON CONIFERS.—No. X.

SEQUOIA SEMPERVIRENS.

HAVING explained the points on which we differ from the received views held of the character and affinities of Conifers, we shall now set ourselves to improve our acquaintance with some of its members, and we propose to take the connection of the present vegetation with that of former geological epochs as our starting point. There are no Conifers which come nearer to the fossil species which have been found in past geological formations than the Sequoias; and in

deference to their antiquity and gigantic size we shall give them the precedence, although probably the genera Podocarpus and Dacrydium, with Arthrotaxis and its allies, can trace their origin to an elder branch of the same family.

We have already incidentally mentioned the similarity of the Red-wood of California (Sequoia sempervirens) to the remains of Sequoia Langsdorfii, found in the Miocene beds of Europe and North America. They are indeed so similar that it is perfectly possible that they may be the same, and that our S. sempervirens may actually itself have lived in the Miocene epoch. There are other species, however, besides Langsdorfii figured by Heer in his "Tertiary Flora of Switzerland," to which it is also near. Whether in the Miocene age these trees were as gigantic as the S. sempervirens, or as the Wellingtonia is now, we have no means of knowing, for the fossil remains hitherto found have been only twigs, leaves and flowers, and fruit. At the present day, however, they bear the palm away from all the rest of the Conifers in height and magnitude. It would not be true to say that they are the tallest trees in the world, for some of the Gum trees in Australia and Tasmania exceed in height any specimen recorded of the Sequoias, or that they are the thickest trees in the world, for the Adansonia digitata is thicker, but then it is only about 60 feet in height, and some of the Brazilian Leguminosæ are perhaps as thick, but they too fall far short of it in height; but, taking height and thickness together there is little doubt that they are the largest trees in the world—that they contain more cubic feet of vegetable matter than any other.

The S. sempervirens grows to almost as great size as the Wellingtonia, and it has often been confounded with it. Douglas's account of the S. sempervirens has been referred to Wellingtonia, and the first account of the age of that tree, which was published (that wherein it was calculated by Professor Asa Gray at 3000 years,) was deduced by mistake from a section of this tree. The error, by which it was made more than double its real age, arose from a large part of the interior of the trunk having been burned out, and the Professor reckoning the absent part as of equal growth to the outer part which was preserved; while in point of fact the earlier growth is much more rapid, and of course a greater diameter is attained in fewer years. Mr. Gordon (Pinetum) says that there is at St. Petersburg a horizontal slab of wood of this tree, received by the late Dr. Fischer from the north-west coast of America, which measures 15 feet in diameter, and bears 1008 annual rings.

The burning of portions of the older trees seems to have been very common in the Californian forests. In an unpublished account of a trip from San Francisco to Santa Clara, which we have received from one correspondent, the following remark occurs on the subject: "The Red-woods are immense trees, but as a general thing the old ones are not very handsome, a great many I believe the majority, having been injured by fire. Some have had the whole of their branches killed by it, and look like this" (the *this* being a rude sketch of an immense straight pole, with a few dead branches sticking out from it, and the pole itself feathered with a short close new growth, like the pruned Elm trees in many of our English hedge-rows). "There are a few, however, which are magnificent, and the younger ones are universally handsome."

Dr. Newberry (Pacific Railroad Reports) says that of all the Red-woods which he saw, there was probably none greater than 15 feet in diameter and 300 feet in height, but he was told that in the vicinity of Humboldt Bay individuals existed which were over 20 feet in diameter.

The reader may judge of the normal appearance of this tree from the accompanying sketch, which is a copy of one we have received from another correspondent. Of the fidelity of the character of the trees in this sketch any one may satisfy himself by comparing them with the largest specimens which are to be found in this country. At Highnam Court there are several large specimens, and at Dropmore a good-sized example grows near the piece of water, all of which have already assumed the character of the giants above represented.

Its great size qualifies it to figure as a representative of the Wellingtonia. It did so in the case above referred to; and when the Wellingtonia was first discovered, and before the bark of the specimen which is now housed in the Crystal Palace, was secured for that establishment, it was a question whether a section of the Red-wood should not have first represented the Sequoias there. It occurred to Sir Joseph Paxton that it would be an interesting attraction to have a section of the Wellingtonia exhibited in the Palace, and he, knowing that Mr. Charles Lawson of Edinburgh (late Lord Provost) had at that time relations with California, applied to him to see if a section could not be procured, and 300*l.* or 400*l.* was offered for the purpose. The distance of the Calaveros Grove from the sea-coast rendered it impossible to get a section for such a price, even although it had been possible to get it shipped for home, but it was possible to manage it with a cross cut out of the middle of a stem of Red-wood of almost as great size. That tree is in many places to be found growing almost to the water's edge, and had the alternative been adopted, the cross cut out of a section would have been sent. Such a section however would have given us a very feeble idea of the magnitude of the tree compared with that which we derive from the inspection of the bark set up, as at Sydenham.

The Wellingtonia seems to have been as much subject to injury from fire as the Red-wood, if not more so; but the fire would appear in it to have burned further up the core of the tree, the bark being not nearly so combustible as the timber. Many of the fallen and even of the standing Wellingtonias have their stems reduced to an empty tunnel extending many yards. That such lofty trees should have been often struck by lightning during the immense space of time for which they have faced the storm is only what we should expect, and we are more disposed to refer the frequent traces of fire which are seen upon them to that cause than to the carelessness or intentional damage done by Indians. The Indians admire these trees as much as the white man, and even add a sort of superstitious reverence to the natural awe which all feel in their presence.

One very remarkable difference between the Red-wood and the Wellingtonia is their timber; that of the Wellingtonia is worthless, or, we should rather say, has properties for which no use has yet been found; it is soft, light, and brittle. Perhaps some of our readers may remember the walking sticks of its wood, which were sold by the exhibitors of the bark skeleton of the tree now at Sydenham, when it was first brought to England—with all the appearance of solidity and strength they were as light as a feather, and if they had been tried, vastly more fragile. The timber is so brittle, indeed, that we read of one tree which on being cut down broke into three pieces before, or at any rate by the time it reached the ground.

The timber of the Red-wood, on the other hand, is first-rate. A friend in San Francisco writes us about it in these terms:—"Why is it that the Taxodium sempervirens meets with so little favour in England? It is the best timber in the country, and I heard a carpenter the other day assert that the Red-wood from Bolinas Bay is equal to the best Eastern lumber."

Mr. Brown, the collector of the British Columbia Botanical Association, reports that one of its qualities is that "it will not contract, let it be ever so wet," which, we presume, means that it does not warp. This is said by others to be one of its distinctive properties.

Dr. Newberry (Pacific Railroad Reports, vi., 1857) says that though only the second in size it is the first in importance of all the trees of California, though not far surpassing the Sugar Pine. Its value, however, to the people of California is not dependent on its size but on the excellence of its timber and the proximity of forests of it to the ocean. The wood, as its name implies, is dark red in colour, and like that of the red Cedar, Juniperus virginiana, It splits with great facility, and is frequently converted into planks and boards without the aid of a saw. Not that the saw is habitually dispensed with: so far from that being the case, there is a tradition that gold was first discovered in California by some workmen while digging a saw pit to cut up a large tree of this species. It is also said to be very durable, and though somewhat wanting in tenacity, is of the greatest value to the inhabitants.

We have seen it stated that in this country the timber is soft and inferior, but that is not our own experience—we have found it rather hard and tough. Not long since we cut down a young tree about 4 inches in diameter at the roots, and were struck with the contrast which it presented to the qualities of the timber of the old trees of Wellingtonia.

That there is such a great difference between the timber of the two Sequoias is the more remarkable that in all other respects they are as close to each other as can well be.

The reader must remember the vehement disputes which took place as to the generic distinctness of Wellingtonia. That tree was erected into a separate genus by Dr. Lindley, but the materials which he had to guide him were very imperfect compared with those which we now have. Had he possessed them we may be sure that he would have acquiesced in the opinion, now universally held by botanists, that it not only is of the same genus as the Red-wood, but also a very closely allied species. We have now (this last year) got the male flower of Wellingtonia, and find it absolutely identical with that of the Red-wood. We know that the cone and seeds differ in nothing but in size, and even in this the difference is not so great as the specimens of English-grown cones would lead us to suppose. In California the cones of the Red-wood are often 2 inches in length. Moreover, a larger collection of specimens of the foliage convinces us that the apparent difference in it is also without value. The marked distinction between the two is that the leaves of Wellingtonia are imbricated scales, while those of the Red-wood are distichously disposed as in the Yew. But the Red-wood at different ages dispenses with this character, and has its foliage exactly the same as Wellingtonia, in this respect exhibiting the tendency to dimorphism which is common among its allies the Junipers and Cypresses. The foliage is dimorphous on young trees, the leaves in them being distichous, like those of the Yew, while in the older trees they are imbricated and closely adpressed. In the British Museum Herbarium there is a specimen sent by Bridges, the Californian collector, from an old tree, and any one looking at its foliage would say that it was a branchlet of Wellingtonia. It is however undoubtedly of the Red-wood, and bears small cones. It is long since this dimorphism of the foliage of the Red-wood was known. Decaisne pointed it out when he first challenged the soundness of Dr. Lindley's characters of Wellingtonia as a genus.

This species extends from the line of 42° N. latitude to the northern limit of Mexico, but is nowhere found at any considerable distance from the sea. The Wellingtonia takes its place on the mountains more inland. It is common in the district around San Francisco, and gigantic specimens are to be met with at no great distance from that city. We copy the following account of it on Mount Diablo from a San Francisco newspaper scrap (without date) sent us by a friend some years since:—

"The peak of Mount Diablo, which rises boldly towards the clouds, high above all the neighbouring hills, forms one of the most prominent features of San Francisco scenery.

"A party of our citizens, composed of gentlemen and two ladies, lured by the green sides of the mountain, which are plainly seen from our dusty and heated streets, determined upon a visit of discovery to its summit.

"Providing themselves with the necessary tents and provisions, they crossed the bay by the ferry boat, and procuring a competent guide, penetrated boldly into the mysteries of the Contra Costa Hill range.

"We cannot stop to give a minute account of their travel, as it has been described to us. The beautiful crop of wild Oats, growing luxuriantly and covering thickly plain and mountain-side, first excited wonder, and then admiration. The forest of Arbor-vitæ, or Red-wood, next attracted attention. Among other giants of the forest, was one that measured 13 feet in diameter at the butt. Here they found men engaged in felling their large trunks, and sawing them into lumber, or splitting out shingles. A man who had sawed out an immense block for the latter purpose, was astonished to find, almost in its centre, a round hole which had evidently been years ago hollowed out by the beak of some bird, and afterwards grown over by the wood. In this hole, on examination, were found 20 acorns, in a perfect state of preservation. The rings counted in the block, outside this crevice, showed that these acorns had been thus inclosed in the heart of the tree for 120 years! The block and acorns were purchased by one of the party and brought to this city, and the latter undoubtedly afford a fine specimen of "nuts for the curious."

This at first sight seems rather an incredible story, but it is only so until it is explained, which shall be done in our next. *A. M.*

(To be Continued.)

RARE AND INTERESTING PLANTS NOW IN BLOOM AT KEW.

Bowiea volubilis, Harvey MSS.—A remarkable and distinct new genus of Liliaceæ (Anthericeæ), introduced from S. Africa by Mr. Cooper. A bulbous plant, throwing out long, intricately-twining, glabrous, slender, annual stems; leaves multifid, the lobes divaricate, fleshy, linear-terete, quite glabrous and shining; flowers few, remote, pedicellate, in long terminal naked racemes; perianth 6-partite, persistent, the segments similar, green, lanceolate, acute, ¼ inch long, at length reflexed; anthers minute; fruit capsular. A very curious and interesting little plant, resembling in habit the Australian Thysanotus Manglesianus, Kunth, but differing in its multifid leaves (which are almost unknown among Monocotyledons), and other characters from that and all other Liliaceæ. The Bowies of Haworth has been reduced to Aloe. It may be seen in the Succulent

House, where it flowered last year for the first time in this country.

Vitis cirrhosa, Thunberg, Flora Capensis, p 212; Cissus cirrhosa, Persoon.—Introduced by Mr. Cooper from South Africa, and presented to the Royal Gardens by W. Saunders, Esq. A straggling glabrescent or pilose plant, with long, weak, brittle, fleshy stems, furnished with long, bifid tendrils; leaves digitately 3-5 or 7 foliolate; leaflets succulent, subsessile, obovate, remotely dentate-serrate, quite glabrous in cultivation; flowers minute, green, in dense cymes. In woods and by rivers among bushes. Uitenhage and Albany, frequent. In the Succulent House, trained up one of the rafters.

Myrtus tomentosa, Ait., var. *latifolia*.—An elegant little evergreen shrub, 1½ to 2 feet high. The leaves in this variety are lanceolate, entire, mucronate, shining above, silky pubescent beneath; flowers numerous, solitary, axillary, pedunculate, white, tinged with pink. A native of Queensland and New South Wales. Flowering in the New Temperate House.

Areca sapida, Solander.—The only Palm found in New Zealand, and the most southern representative of the family, extending 38° 22′ S. Lat. The celebrated Betel Nut belongs to the same genus. A comparatively small tree, whose trunk is from 8-10 feet high, with a diameter of 6—8 inches, and to the top of the pinnate leaves about 15 feet. By the aborigines it is called "Nikau," and is used by them for various purposes. The colonists have given it the name of "Cabbage Palm" (which name is also borne by several other Palms in different parts of the world), on account of the young leaves and inflorescence being eaten. This is also in flower in the New Temperate House, where the New Zealand flora is well represented, and attention is directed to it, not on account of its rarity, for it has long been in our gardens, and flowers annually, but on account of the great interest attached to it. It is nearly related to the Norfolk Island species, A. Baueri, now flowering in the Palm stove.

Dammara australis, Lambert, the "Kauri" or "Kaudi Pine" of New Zealand.—It may interest some readers to know that a specimen of this magnificent and important tree is now bearing cones in the New Temperate House. It has now been introduced some years, and flowered and produced cones as long ago as 1854 in the Jardin des Plantes, at Paris. A tinted plate of it appeared in the first volume of the second series of the "Flore des Serres," together with an interesting article by M. Naudin. This noble tree attains a height of 100-160 feet or more, with a corresponding diameter, and its light compact timber (a specimen of which may be seen in the Timber Museum), is much used for masts in the navy, &c. It produces, too, a valuable gum-resin in enormous quantities which is principally exuded from the roots; but larger lumps have been dug up, it is said, in the Northern Island, to which it is now confined, than it now produces. Resin supposed to belong to this tree has also been found in the Middle Island.

Clavija sp.—This South American genus belongs to the small order Theophrastæ, which should perhaps be united with the Myrsineæ. The present is a fine species, with entire, spathulate, shortly petiolate leaves, about 2 feet long and 4 inches broad. The flowers spring from the simple trunk, as in all the other species of the genus, in short, stout, fleshy racemes, of a dull red colour. It differs from its ally C. ornata in having entire not serrate leaves, and in the shorter stouter racemes of dull-coloured flowers. It may be seen in No. 15 House, at the back of the "Old Museum." A figure of it will shortly appear in the "Botanical Magazine."

Olearia Forsteri, Hook. fil. Handbook of the New Zealand Flora; Eurybia Forsteri, Flora Novæ Zelandiæ. Compositæ.—A handsome shrub or small tree, with alternate, oblong, obtuse, entire, undulate, petiolate leaves, often oblique at the base, from 2—3 inches long, lower surface clothed with a dense, short, white tomentum. Flowers white in axillary corymbose panicles, exhaling a faint but agreeable odour; heads sessile, generally with one floret only. From the Northern and Middle New Zealand Islands. Near the western entrance in the New Temperate House.

Home Correspondence.

Ventilation.—Admiring, as I do, Mr. Fish's useful series of papers on this subject, I am sorry that any flaw should exist in his arguments. In No. XII., p. 947, column *b*, towards the foot, he says, "Hence the dry air of cold climates enwraps life round as with a thick great-coat, and refuses a free passage outwards for the heat." This is a statement which, I think, he will find to be directly contrary to fact. I believe that he will convince himself of it by consulting Professor Tyndall's "Lectures on Heat,"* where he will see that a stratum of aqueous vapour is an excellent screen against the transmission of heat. Common observation teaches us that cloudy days are cool by keeping back the suns rays, and cloudy nights warm by the retention of the earth's acquired heat, and observation of a little more recondite character will further tell us that radiation is great just in proportion as the air is disencharged of its vapour. *J. S., Streatley Vicarage.*

Tilia heterophylla and Humble Bees.—I have been interested by the remarks of your correspondent "Quercus" (see p. 925), in reference to Tritoma Uvaria being a decoy and a trap for wasps, from the fact of my having frequently observed here that below an American Lime tree (Tilia heterophylla) the lawn has been strewed with dead humble bees; but I never saw a wasp amongst them, nor yet a common bee, though the latter belongs to the honey-collecting division of the same family. In Lindley's "Vegetable Kingdom" I find it stated that if the bracts and fruit are mixed with the flowers of the Tilia, the infusion becomes astringent and confines the bowels. Be that as it may, however, there are many fine trees of great size here of the common Lime (Tilia europæa), which when in flower are quite alive with bees, &c., evidently revelling in enjoyment; and I have not observed that they suffer from it. It would therefore be interesting to know something of the nature of the fatal attraction to the humble bee in the case just mentioned. *T. C. E., Melbury.*

Pampas Grass.—Some few years ago your correspondents mentioned in your columns how many spikes their plants of Pampas Grass had. Mine this year has 138 spikes in full flower. Is this considered a large number? *C. W. Wilkinson, Sandfield, Tunbridge Wells.* [Certainly; but a plant at Messrs. Ivery's Dorking Nursery produced in 1863 (see p. 943 of that year) 150 spikes. Eds.]

Wine Lees as a Manure for Vines.—Three years ago I planted seven Vines in an orchard house, and in preparing a border for them I put bones with fresh earth of oolitic strata (principally lime and clay), and presuming that the lees of wine which I had could not be disagreeable to the Vine, I mixed in with the earth a pipe of lees (115 gallons). I do not say that I have reaped the fruits of this manure, but this spring the strong Vine rods, the laterals of which had been cut-in close in the autumn, pushed buds so full of Grapes that I counted about 35 bunches to each Vine, equalling 245 bunches on seven Vines. Of course I did not allow all of them to remain, but on each Vine I left from seven to ten bunches, which are very large. *Thos. C. Brown, Cirencester.*

Woodlice (see p. 949).—In 1863 I was very much troubled with woodlice in a Vinery of which I then had charge; they used to eat the leaves of the Vines as fast as they opened. I tried many plans for their destruction, the best of which was to get some pieces of bark, and to lay the hollow side of it on the surface of the border; in the morning it used to be full. I then knocked them out into a bucket of hot water. I have also found Potatos hollowed out to answer very well as traps, but not equal in that respect to the bark. *S. W., Wimborne, Dorset.*

Abies Douglasii.—In the grounds here we have a well-furnished plant of this Fir; its height is 82 feet, the circumference of the stem at 3 feet from the ground is 8 feet 5 inches, and the spread of the branches at the surface of the ground is 123 feet. Has any of your readers a larger specimen of this Fir? *H. J. Clayton, Hackwood Park, Basingstoke.*

Figs.—I have read your remarks on the application of oil for ripening Figs (see p. 945) with interest. I have eight Fig trees (out of doors), and have had a very fair crop of fruit. At a certain stage of its growth I selected four of the trees, and with a penknife cut a cross on the sides of the fruit. I then dropped (one drop only) sweet oil on the incision, and those thus operated on ripened quite a week before the fruit on the other four trees that were not touched. My employer told me that he could not perceive any difference in the taste of one over that of another. *S. W., Wimborne, Dorset.*

The New Rosa "Impératrice Elizabeth."—I observe that some of our nurserymen describe this as a hybrid obtained from M. azorica and M. alpestris, and are sending it out as a new plant. It is also described as of more "erect and elegant habit than the former," and more compact than the latter, with other absurdities which must have been evolved from the depths of the writer's moral consciousness. It is simply an inferior variety of Myosotis azorica, which occurs pretty often among the normal form, as may have been experienced by others who, like myself, have raised and flowered much of that plant from seed. I may add that this same M. azorica is one of the loveliest of all plants when raised in gentle heat, either in late autumn or early spring, and planted out in a somewhat shaded and sheltered place in light moist soil. Nothing can be more charming than healthy tufts of it covered with its densely produced and beautiful flowers. *Stet.*

Lilium tigrinum Fortuni.—When one has studied and grown a noble family like that of the Lily, sufficiently long to think he knows all the "really good things" in it, the pleasure of unexpectedly finding one as good or better than the best of his old acquaintances is great indeed. Such I enjoyed at the Royal Nurseries, Ascot, a few weeks ago. What seems to be a very noble, birsute, tall, and most vigorous Tiger Lily was there planted along one of the drives, among handsome young Conifers, and in the distance it looked like a new species, so bold and much branched was the inflorescence of each shoot. The plants grow 6 and 7 feet high, and the lower flower stems run out far and free from the stem, so as to give the inflorescence a pyramidal outline. A great number of flowers was borne on each stem, and as they are larger and even more finely marked than those of tigrinum, it may be readily imagined what a fine thing this is for autumn decoration. Placed here and there among choice shrubs its effect would be magnificent, but there is even a better use for it than that, *i. e.*, to take the central position in a bed of the best Lilies, which I presume to think ought to be in every garden. The bulbils are freely produced and large, so that there can be little difficulty in increasing it to any amount. Mr. Standish calls it L. tigrinum Fortunei; it was sent home for or among roots of Lilium auratum, than which it is a more valuable plant for the "hardy garden," if I may use the term. *Verturnus.*

Viola cornuta.—This is one of the finest of bedding plants; it has flowered with us from June until this time, and is still in full flower; it is hardy and easily raised from seed, and if sown now will make fine strong plants for planting out in spring. There is also a golden-yellow variety of the Viola cornuta, which is of first-class merit. I have another Violet that has flowered remarkably well this season; it is a little taller than cornuta, and is called by some Viola montana. I have found Ajuga reptans rubrifolia of great service; also Dactylis glomerata variegata. *J. G.* [The Viola referred to appears to be montana. Eds.]

Shanking of Grapes (see p. 948).—I have this year a house of Grapes in which there are numbers of shanked berries. For these last 10 years I have not had a berry affected in the same way, and I attribute the cause of the disaster to the excessive rains that have poured down, with very little intermission, upon the West Riding of Yorkshire during the last two months. The temperature has morcover been about 10° lower than that of last September. It will, therefore, be seen that we north-country gardeners have had a trying time of it, and where no artificial means is provided to protect our Vine borders from excessive wet, we must put up with the ill-effects consequent upon the neglect of such precautions. Gardeners are, however, often blamed by employers for ill-results in Grape growing, which by means of a small outlay might have been averted. Badly coloured or ill-kept Grapes set upon the table are, to say the least of it, not satisfactory; but if needful appliances are refused, who is to blame? There can be no doubt, however, that the cause of a great quantity of the ill-conditioned Grapes one sees may be traced to the want of skill in their cultivation or to want of experience. Young gardeners, therefore, would do well to let all innovation in Grape growing alone until they have put into practice the well-known rules laid down by more experienced practitioners. *J. Thomson, Wortley.*

Gardeners' Royal Benevolent Institution.—With your permission I am desirous of making a few observations as to the past and present condition of this institution, which benefits at this moment 61 pensioners; of these, the ages of at least 20 would average over the fourscore years when man's strength is but labour and sorrow, and nearly all the others are either past or close upon the threescore years and ten. They have "divided among them" 844*l.* this year. In 1845 there were only 21 pensioners on the list; in 1855, 38; this year 61. By no means an unsatisfactory rate of progress. From the commencement of the labours of this Institution, 159 aged persons have been placed on its books, 12,899*l.* has been paid to them, which is an average of about 81*l.* to each; and speaking from personal knowledge of some of these good people, I feel assured that no similar amount of money ever gave a larger amount of solace or comfort to its possessors than this has done. Of these pensioners 20 were 15-year subscribers, and were placed on the list without election; 50 were subscribers during shorter periods, 20 were widows, and 64 non-subscribers. And now as to the resources of the Institution. Let us look at them, first, as regards the stock of money in the funds. In 1845 it had 1400*l.*: in 1855, 3700*l.* It has now 7000*l.*—figures on which I need make no comment. The annual subscriptions amounted in 1845 to 415*l.*; in 1855, to 547*l.*; in 1865, to 621*l.*; of this last sum about 300*l.* is subscribed by gardeners, 200*l.* by nurserymen, seedsmen, and others connected with the trade, and the remainder by generous private friends. Every candid mind must, I am sure, admit, that taking these statements together, the progress made by this Institution during 20 years is highly satisfactory. I am far from saying all is done that might be done; but looking at the past, surely there is good hope for the future. A solid foundation has been laid for coming good, and if the present subscribers ask others to join them, the request is the very reverse of selfish; they can say with confidence, "Help in the day of your prosperity the aged and afflicted of your brethren, and then, if ever you need it (which we trust you never may), the like succour shall be freely given to you." I will only add one word in respect to the rules of the Institution. I believe that the committee are most anxious to give patient attention to any suggestions that may be made with a view to any improvements. No doubt after the lapse of 20 years, and the experience gained during that period, some alterations may be desirable; one or two have already been discussed. It should always be borne in mind that the government of the Institution is in the hands of a majority of its members. Every subscriber has a perfect right to make any proposal which he thinks proper; and if any one who does not subscribe wishes to give reasons for objecting to join, I am sure that he will be heard with respectful attention. *W. A., Homerton.*

Hard Soil.—Allow me to thank Mr. W. Windebank, of Bevois Mount Nursery, Southampton, for his valuable communication (see p. 924) on this subject. His case is most useful, not only for the fact which it confirms, but for the minute manner in which it is stated. Since writing upon this subject I have had my former impressions in favour of hard borders strengthened by a visit to Sawbridgeworth, an account of which will be found in another column (p. 976). There can be no doubt whatever that trees will thrive and fruit well in hard soil. The only question is, whether the hardness is the cause of the fertility. Unfortunately Mr. Windebank's case, exact and decisive as it may seem, hardly assists us in the settlement of this question. Had the trees all been planted in the same soil, and one part been covered with pits, walks, &c., as described, and the other not, the success of one portion and the failure of the other might have been conclusive evidence in favour of hard or against soft borders. But one lot of trees, and those that succeeded, were planted in maiden earth – hazel loam and calcareous matter—just such as Mr. Rivers would choose; and the other trees that failed, were put in old garden soil that had always been cultivated. This circumstance alone is enough to

* See No. XI., from which this single sentence may be quoted: "The tones I, for a single summer night, of the sephora vapour from the dune-plain which covers England, would be attended by the destruction of every plant which a frost or two more would kill."

account for success in the one case, and failure in the other. Why the Nectarine should have succeeded in the old soil, when the Peaches failed, is one of those teasers that we are constantly meeting with, which baffle our skill, and are therefore classed as exceptional phenomena. The pits in both cases were of the same width (4 feet), in front of this there was 3 feet of walk in the one case, and 5 feet in the other. The one set of trees had, therefore, a hard border of 7 feet, and the other of 9 feet; either of which widths are considered sufficient for fruit trees on walls in many gardens. Beyond this, the one had a loose border, 15 feet wide, to run in if they chose; the other 17 feet of foundations, floor of house, and gravel walk. It would be interesting to learn whether and to what extent the roots have run beyond the pit and the adjoining walks in each instance. Few things could be more favourable to fruitfulness than the pits over the roots as described by Mr. Windebank. And as all the trees had this covering alike, I am inclined to attribute the difference in their fertility to the dissimilarity of the soil in which they were growing, rather than to the varied hardness of the ground at distances of 7 and 9 feet from the trunks of the trees. Peaches generally make strong growth in old garden soil, but such growth, as I have already stated, is unfavourable to fertility. Difference of season might also account for the fact that one year the trees were fruitful and the other not. And with such a spring as we had this season, the plethoric blossoms on spongy wood would be injured and drop off, when those on more firmly consolidated branches would remain. Hence possibly the loss and gain of a crop on the two sets of trees this season. *D. T. Fish.*

Glandular and Glandless Peaches.—I wish to thank Mr. Rivers and "M. J. B." for their courteous answers to my query about mildew. I believe texture has a great deal to do with it, and if the glandular Peaches have finer texture, as a rule, than those without glands, this is most probably the reason of their exemption. To facilitate further observation, perhaps Mr. Rivers would give an extended list of Peaches and Nectarines with and without glands, so that a large circle of readers who are not very conversant with structure may observe and report upon the sorts in different localities, in relation to the effects of mildew upon them. In this way important facts would be established of the highest practical import, and a most troublesome disease, mildew, probably got rid of by growing only glandular varieties. I have long noticed that in most localities the Noblesse is the Peach of all others most subject to mildew. I have had this pest on it again and again when the Royal George has not been in the least affected, although both are glandless. In confirmation of the fine-textured leaves having the power probably of throwing off the germs of mildew, I have also observed that Swedes are not nearly so subject to it as White Turnips, nor Melons as Cucumbers. I should be glad of the opinion of Mr. Rivers or of "M. J. B." upon the influence of bloom on leaves as a resister of mildew; also for a scientific explanation of what bloom on leaves and fruit is; and whether one differs from another, and how both are produced? Also the supposed uses of bloom on leaves, such as that on Cabbages and the Swedes. *Quercus.*

General Tom Thumb Pelargonium.—In one of your recent numbers (see p. 901) a correspondent at Cambridge asks for the origin and history of this popular favourite. It was raised at Dullingham, near Newmarket, the seat of R. Pigott, Esq., by the person who had then the charge of the estate, Mr. B. Wilson, now agent to the Earl of Zetland, at Richmond, Yorkshire. The General was one of a batch of seedlings raised from seed gathered from plants of the old Frogmore Scarlet, growing in a basket edged by the white Ivy-leaved variety, and hence it is fair to infer Tom gained his prostrate habit and peculiar smooth leafage from a cross from that variety. Like other Generals, Tom was the little one of the family, and in his early years of very delicate constitution. However, upon the call of duty, Tom was marched to the field, or rather garden, and here an incident occurred that forms one link in the chain of his history. A bed had to be filled in the Rock Garden, and Tom and his associates marshalled in due order, when a little boy, the present occupant of the estate, fell in love with and begged so earnestly for the "tiny plant," that Mr. Wilson was obliged to yield to his importunities. Transferred to the nursery window, Tom's troubles began. Sometimes he was deluged with water, at others he lacked the necessary supply, and his leaves might be seen for days together hanging over the pot. Of course such alternations of treatment soon rendered him anything but "a duck of a plant;" and the natural consequences followed; the bloom of youth having faded, the General shared the fate of other beauties, and was thrust aside, and done to the dust he went. One morning, as Mr. Wilson was passing into the house to breakfast, he saw the tiny plant laying among the ashes in the dust-bin; and rescuing him from a fate so ignominious, he was nursed into health again, and became the starting point from which more thousands, I might say millions, of plants have been propagated and sold, than of any other plant that was ever raised. Mr. Wilson, so soon as he got a stock of the plant, gave some to his friends. Plants were sent to me, then residing at Blackheath, and through those plants Tom was introduced to London society. Grown into specimens they were shown at the Royal Botanic, Chiswick, and other London exhibitions, until the demand became so great that it was obliged to appease it by letting poor Conway, of Brompton, then the great Scarlet Pelargonium man, have a few hundreds for public distribution. I recollect perfectly the day Mr. Conway went to see the General in the open ground. It was a brilliant August day, just one of those with breeze sufficient to ripple the water but scarcely disturb a leaf, and with a cloudless sky; everything in nature seemed so quiet and ethereal as almost to give one a foretaste of Paradise. I took Mr. Conway, who was in very delicate health at the time, quietly round the exquisitely kept garden, until, emerging from a dark Laurel-covered walk, we came suddenly upon a long sloping border containing upwards of 1000 plants of the General in full dress, a "blaze of bloom" that I have never seen surpassed up to the present time. At the time we were some two hundred yards from the plants, when Mr. Conway, gazing intently, exclaimed "Is that the General?"—"It is," was my laconic reply. "Then I'll go home, I want to see no more," and back he went to my house. During the afternoon he sat in full view of the glorious sight, and looked and talked, and talked and looked again, until he made me promise to let him have all the plants I could spare. This I did to the extent of several hundreds, but if I could have converted them into thousands they would have been sold, so great was the demand. One more link and the chain of Tom's early history will be complete; his adventures throughout Europe since would form a volume—the name. I was standing discussing with some friends the propriety of some names that had been suggested, principally botanical ones, such as lucidum, from its shining leaf, prostratum, denoting its peculiar habit, and pumilum, its dwarfness; when stooping to gather a flower, a small card, one of General Tom Thumb's, then exhibiting for the first time in England at the Egyptian Hall, Piccadilly, fell from my pocket upon a leaf. The coincidence was so singular that all at once admitted a more appropriate name could not be given, and hence the origin of the name. The General, like many other Generals who have seen the same amount of service, is now voted by some a little *passé* for bedding work, but still for vases and baskets we have nothing equal to him. Well grown, as it used to be in the gardens of the late John Augerstein, Esq., and the Countess of Buckinghamshire, near Blackheath, Tom is one of the finest specimen plants in existence. There I have seen him 6 feet through, and perfectly hemispherical, the branches hanging over the sides of the tubs quite to the ground, and a ball of scarlet. Thus managed, Tom is still a sight worth looking at. *W. P. Ayres, Guardian Office, Nottingham.*

About Potatos.—Your Maybush correspondent's very interesting remarks relative to Potatos (see p. 945), induce me to respond to his request and to report "what effect differences of soil and climate have with me upon distinct varieties." My soil is strong, rather close loam, over chalk on a south down sloping north. The Bread-fruit is one-half diseased; Forty-fold (seed from Sussex), three-fourths diseased; Jersey Blues in a similar condition; Forty-folds (Hampshire seed), one-half diseased; Pink Kidneys, two-thirds diseased. This closes my seed report, the proportion of diseased being greater than I ever before experienced, whilst the culture might have left a reasonable hope that the result would have been a success, having carefully ridged up the earth last autumn, pulled down into a good tilth in the spring, when the sets were dug in without dung or strong manure of any description. If your Maybush correspondent wishes to still further prove what differences soil and climate have upon Potatos, I will have much pleasure in giving him 1 bushel of 40 folds, Jersey blues and pink kidney, and I will plant a similar quantity, the results to be respectively reported next year. I shall also have much satisfaction in buying 1 bushel of each of three, four, or five sorts that your correspondent may recommend for good quality. The effect of changing seed might thus be advantageously indicated; be that as it may, however, the question of soil and climate would be brought directly under notice. Moreover, if your correspondent has any special method of planting, perhaps he will communicate it, in order that I may arrange my beds in a similar manner. *H. A.*

Allamanda Schottii and Hendersoni.—The history of these two plants, both of which we had the honour of bringing before the public, is as follows:—The first we sent out ourselves, the second the public had through Mr. Bull, of Chelsea, who purchased the entire stock of it from us. Allamanda Schottii we had from a private establishment at Southampton about 16 years ago, and as it was distributed extensively all over the country, it was to be found in most collections; after a few years, however, owing to its strong and rampant growth, and the paucity of flowers which it produced, it got very nearly out of cultivation. About four years ago Allamanda Hendersoni came under our observation, and this we also purchased from a private collection. After growing it for two years we found it to possess all the good properties of A. Schottii without any of its bad qualities, its blooms were superior to those of that kind, both in form and substance, and in colour they were clear and attractive. The plant, moreover, was dwarf in habit, possessing in that respect a great superiority over A. Schottii. In short it can be exhibited in a comparatively small state covered with splendid flowers, which A. Schottii, even under the best cultivation, never could be. The result of all this is that A. Schottii will doubtless cease to be cultivated, while its beautiful dwarf-habited and abundant-flowering associate will be in every collection. The two Allamandas just alluded to remind us of Stephanotis floribunda, of which it may not be generally known there are two varieties; one is short-jointed, showing bunches of bloom at every leaf in great profusion, and flowering in the form of young plants, while the other is straggling and rambling in habit, producing scarcely any flowers, and these ill-shaped and small, through being borne on the extreme ends of terminal shoots. As a rule climbers should be pruned back to the main stems every year; but with such plants as Allamanda Hendersoni, much of this heavy pruning is obviated, the habit of the plant is naturally dwarf and compact, the result of which is profusion of flowers, which also appear earlier in the season than those of more loose-growing plants. *Arthur Henderson & Co., Pine-apple Place*

Unseasonable Blooming of the Marsh Marigold.—It may be worth recording the fact, that I saw a plant of Marsh Marigold (Caltha palustris) in full bloom the other day on the banks of the Thames, near Kew. *Caltha.*

Vine Borders.—I have under my care some Vines, the roots of which have got to the bottom of the border. Can any of your readers suggest a plan to entice them nearer the surface? The border was made and the Vines planted five years ago. The soil, a rather poor loam, the top spit of a common, was collected in a wet season; mixed with it was a fair proportion of crushed bones, and lime rubble. The Vines show no sign of weakness, and the wood has always ripened well. The bunches are however loose, with a few shanked berries, but, on the whole, they are well coloured. I may add that they have always had a tendency to mildew, this season more than usual, its first appearance being during the very hot weather in July last. The sorts are Muscats and Hamburghs; they are allowed to burst their buds naturally, and are subsequently assisted with fires when necessary. Some are planted inside, some outside—they can root either way—those planted outside are the least satisfactory. *Subscriber.*

Unseasonable Blooming of Laburnums (see pp. 900 and 948).—Two trees here are now (Oct. 9) in full bloom. Both have been planted seven or eight years, and have never been pruned. *R. S., Babraham Gardens, Cambridge.*

Double Potentillas.—The specimens of double Potentilla which I sent you the other day were found growing along a high wall, having a south-west aspect, in a dry, slightly-raised border close to a beaten path. A field adjoining supplies gravel and stones for the repair of the roads. On the high road, which runs parallel to the same locality, on the dry raised bank beneath the hedge having the same aspect, the same kind of Potentilla was growing freely, some of the flowers being single and others double. From its elevation and exposure to the sun it should call this bank a particularly dry one. *T. S., York.*

Foreign Correspondence.

Cotton in Egypt.—Cotton crops here have made great progress of late. Our first picking at Shoubra commenced on Aug. 30, and it proves as usual to be a fair market sample. I regret to state, however, that the cotton grub has again made its appearance in many plantations in this locality. I hear also of its appearance in the neighbourhood of Calatub and Mansura, both large Cotton districts. Should this pest continue to spread, the results will be serious to all Cotton growers, and to none more disastrous than to small landholders, who trust more to their Cotton produce than to anything else.

The Nile has risen rapidly during these last few days. Excitement is therefore great, native sentinels being placed at distances of a hundred yards apart to watch its progress. It is now 16 inches below high-water mark, that is, it is only 6 inches below the height to which it rose in 1863, when it overflowed, and did so much damage to crops and property. *William Chapman, Palace Gardens, Shoubra, near Cairo, Egypt, Sept.* 24.

Societies.

United Horticultural: *Oct* 8.—Mr. Wilson, gr. to W. Marshall, Esq., of Enfield, exhibited a very fine variety of Odontoglossum Cervantesii, in which the petals instead of being white as usually seen, were of a bright rose, presenting a charming appearance; it was called O. Cervantesii roseum to distinguish it from the species; he had also a species of Trichopilia, with white flowers having a yellow lip, and a very fine variety of Odontoglossum grande.

Mr. Ward, gr. to Lord Ashburton, exhibited a magnificent specimen of the fine old Sedum Sieboldii, somewhere about 3 feet in diameter, the foliage having the bright metallic hue peculiar to this plant, and the point of every shoot having a bunch of the pink inflorescence hanging gracefully, formed a striking contrast to the foliage; it was altogether a well-cultivated specimen. He also exhibited samples of Dewar's Short-top Beet, Henderson's Pine-apple, Lindley's and Wheeler's, all fine, grown on the same piece of ground. Dewar's was the handsomest root, but the Pine-apple would probably be found the best when dressed. Mr. Ward, of the Ipswich Rosery, exhibited drawings of Mrs. John Berners and Mrs. Ward, two new Roses to be sent out shortly, and which, if at all like the drawings, will be fine varieties.

At the September meeting Mr. Hibberd mentioned that he had purposely kept some Tuberoses until March before potting the bulbs, and then placed them in a cool house to endeavour to bloom them late in the season when flowers are scarce; he also produced specimens throwing up their flower stems. It was now stated that they were just beginning to open their blossoms in a greenhouse without fire-heat, and appeared as if they would keep in flower for a length of time, as nothing could present a more healthy appearance. Purchasers were however, cautioned to buy only the largest roots, termed extra selected, as the smaller roots do not blossom, or very rarely, and most of the complaints respecting Tuberoses not blooming doubtless arise from small roots being potted.

Notices of Books.

British Bees, &c. By W. E. Shuckard. Reeve & Co. 1866. Crown 8vo, pp. 371, tab. color. 16.

The work before us is a highly interesting introduction to the study of the natural history of those bees which are indigenous to the British Islands. It is written by an entomologist, who has paid as great attention to the habits of these insects in their wild state, as he has to their minute anatomy, without which latter study it would be vain to attempt to understand their classification. The accounts which he gives of the mode of life of the different genera bear evidence of long continued and close observation, and remind

us frequently of Kirby and Spence's Introduction to Entomology, which may safely be pronounced to be the most interesting work upon the natural history of insects which has ever appeared in any language.

The two prominent characteristics belonging to bees are, the possession of stings and the power of making honey. It is this power which separates the bees from all other allied stinging insects, of which the ant, the sandwasp, and the hornet may be instanced as examples; the three groups, which these examples represent, also differ from the bees in living chiefly upon animal matter, while the bees derive their nourishment wholly from the pollen and nectar of flowers. There is, therefore, but little difficulty in determining what is, and what is not, a bee, when its habits can be observed, but it is not always so easy to separate one bee from another.

Some parts of this work will afford food for discussion amongst those entomologists who have attempted to classify the genera of bees. To Fabricius Mr. Shuckard assigns the honour of having been the first to propose the forms of the different parts of the mouth as the basis of classification. To Rev. W. Kirby and to M. Latreille, the former in England, the latter in France, he gives the credit of being the first to apply this basis, each having worked in ignorance of the other's labours, and both having brought out their books in the year 1802. He regards the arrangements proposed by Stephens and by Curtis as being too arbitrary to be worthy of criticism. To the classification of Westwood he demurs, on the ground that he groups together genera, the parts of whose mouths are not alike; while to the more recent arrangement of Frederic Smith he takes objection on the score of other structural dissimilarities in some of the genera which are placed near to each other. After all this criticism it will not be surprising to learn that Mr. Shuckard has a classification of the British Mellicolligeric Aculeate Hymenoptera (which last three words mean simply "bees") which he considers far better than anything yet invented. It would occupy too much of our space to examine this in detail, and we must therefore refer those interested in it to the book.

Having given an elaborate description of each genus (of which he makes 27), it is somewhat disappointing to find nothing more than a list of the names of the species appended to each. It would doubtless be unreasonable to have expected a detailed account of every species; but it would not have occupied a dozen more pages to have introduced short analytical tables of the species, sufficient to give the leading differential characters, with a note of the habitat of each. These would have added so materially to the value and usefulness of the book, that we exceedingly regret having to complain of their absence.

The plates certainly to some extent make up for this deficiency. Of these there are 16, each containing six coloured illustrations of bees, executed in a manner that reflects great credit upon all engaged in producing them.

We regret having to notice certain grammatical eccentricities which "crop out" in places. After speaking of the destruction of bees by frost, and by the rapacity of birds, he says, "Connected with this last circumstance I have a personal experience to record, and which its repetition would indicate as being one of Nature's prompting acts." Again, in describing the two sections into which the genus Anthophora is divided, he tells us that one section "is subject to the parasitism of the genus Melecta, whose incursions are very repugnant to them, and which they exhibit in very fierce pugnacity." Again, we read that "The wasp boots us nothing, but is a marauder upon the hive, whose inhabitants it destroys and consumes their produce." Should another edition be called for, we may hope to see such grammatical errors corrected; and that these passages are exceptional, and might have been avoided by the exercise of more care and less haste, will be the opinion of all who peruse the following extracts:—

"Wherever we look in this wonderful Nature, we observe the most beautiful adaptations and arrangements—everywhere the correlations of structure with function; in confirmation of which I may notice that the bees are divided into two large groups, the short-tongued and the long-tongued, and it is the short-tongued which are first abroad—the corolla of the first flowers being shallow, and the nectar depositories obvious, an arrangement which facilitates their obtaining the honey already at hand. These bees are also amply furnished in the clothing of their posterior legs or otherwise with the means to convey home the pollen which they vigorously collect, and which, being borne from flower to flower, impregnates and makes fruitful those plants which require external agents to accomplish their fertility. Thus Nature duly provides, by an interchange of offices, for the general good, and by simple though sometimes obscure means gives motion and persistency to the wheel within wheel which so exquisitely fulfil her designs, and roll forward unremittingly her stupendous fabric."

The chapter upon the parasites of bees, which is an exceedingly interesting part of their natural history, begins as follows:—"Nature seems to have imposed a restraint upon the undue increase of all its creatures by creating others that prey upon them. It thus enlarges the sphere of its activity by making life accessory to life, and promoting thereby a more extended enjoyment of all its pleasures. Other forms are brought into existence, and other terms given to duration than those which the laws of life attach to specific organisation. No abatement is thereby made upon the quantity of contemporaneous vitality, for what subsides in one rises in another, and the undulation of the waves is perpetual."

We must content ourselves with one more extract, taken from the chapter upon the principles of scientific arrangements. "The problem naturalists have to solve is, 'What is the natural system?' We can clearly see that the systems adopted are not Nature's, that they are essentially imperfect, and that the science, even with all the force of the intelligence that has been applied to it, is far from having attained perfection. It still awaits the master mind that shall cope with its difficulties, determine its intricacies, and, threading the labyrinth, guide his enthusiastic disciples into the adytum of the temple."

Such expressions as these could only emanate from a thoughtful and philosophical mind, and stamp the author as a man of science of no mean abilities.

Florists' Flowers.

The China Aster (Callistephus hortensis) is a well-known flower of our gardens, and in some country districts is very popular in a dwarf form, very much unlike the original as introduced from China in 1731. Since that time a great improvement in the flower has taken place, mainly, if not entirely, on the Continent, the soil and climate of some parts of Germany being highly favourable to its culture and the ripening of its seed; in fact, it is from this part of Europe that supplies of seed are grown for the English market. Still, within the last 20 years at least, English growers who have turned their attention to the improvement of this flower, have ripened their own seed of it, and this has been found to produce flowers as fine as can be obtained from seed saved from the best strains on the Continent.

A very fine type of what is supposed to be the original character of the China Aster was shown by Messrs. Veitch & Sons at a recent meeting of the Floral Committee at South Kensington. It grew from 18 to 24 inches in height, the habit was loose and straggling, and the flower-heads were composed of bluish crimson-purple thread-like florets, and had more of the character of the single than of the double flower. It would appear that the first improvement in the China Aster was made in the direction of the quilled flowers, the centres of the blooms being filled up with a number of tubular-formed florets, the outer edging of long thread-like florets becoming flattened and widened as the march of improvement went on. The quilled flowers are generally termed German Asters, to distinguish them from the flat-petalled or tasselled kinds, which are popularly termed French Asters, the improvement in the last-named having been very successfully promoted in France. These designations, which can scarcely be considered as strictly correct, and are used in the trade for convenience sake only, have come to be regarded as indicating an appropriate classification of the two sections. Some 10 or 12 years ago Mr. R. H. Betteridge, of Abingdon, took in hand some of the quilled sorts, and effected a great improvement in them, so much so that "Betteridge's Asters" were much sought for by exhibitors and others. Mr. Betteridge has also become a very successful grower and exhibitor of the flat-petalled kinds as well. The following varieties, so-called, comprise those best known to English cultivators.

Victoria, a first-class strain, having broad flat-petalled flowers and reflexed, none of them being incurved, or only in very exceptional cases. The flower-heads are of great size, very double, and of distinct colours; of free-blooming compact habit, and growing from 12 to 18 inches in height. One of the best kinds for exhibition purposes.

Victoria Snow-white, style of the dwarf Chrysanthemum-flowered, but growing rather taller; average height 12 inches; large and full flower-heads.

Giant Emperor, a tall and very strong-growing variety; height 18 to 24 inches, producing large flat-petalled flower-heads in three or four distinct colours. A fine variety for exhibition, as the incurved blooms, of which there are generally about one-half, are remarkably fine.

Truffaut's Pæony-flowered Perfection is one of the finest and most striking of the French improvements of this flower. It grows from 15 to 18 inches in height, the flower-heads are large, very double; they afford a good variety of distinct colours, and are produced both in the incurved and reflexed forms. It is also a fine exhibition variety.

Dwarf Pyramidal is very much like the foregoing, but is perhaps a little taller, and has rather smaller flower-heads. It will be found of great service where plenty of cut flowers are required, as it blooms very freely.

Tall Chrysanthemum-flowered is a tall-growing kind, averaging about 24 inches; the flower-heads are all reflexed, and very fine. A first-class exhibition kind.

Dwarf Chrysanthemum-flowered has a very dwarf and close habit, and is one of the latest in blooming. It grows from 6 to 9 inches, and flowers remarkably free; and like the tall variety the flower-heads are reflexed. It makes a very effective bed when fine weather prevails, and it is one of the very best for pot culture. There is also a good variety of colours.

Pæony-flowered Globe appears to be the same as Truffaut's, excepting that the flower-heads should all be incurved, and the growth is a little taller.

Imbrique Pompone; habit, growth, and flowers of the Victoria; the petals appear a little broader, but it is not distinct enough to be considered a variety.

New Large-flowered Robust Dwarf, grows about 9 inches high, and bears flat-petalled flower-heads; it is very free blooming, but is of indifferent quality, not nearly so good as the Chrysanthemum-flowered.

Newest Improved Rose, a splendid large flat-petalled variety, growing about 18 inches, and producing flower-heads of very fine quality, and of good distinct colours; fine for exhibition.

Double Dwarf is a small reflexed kind, growing from 12 to 18 inches; flowers very freely, and is very useful for cut flowers.

Cocordeau, or Crown-flowered, have all white centres. The flower-heads are large and very handsome, and in good variety, and judging from the habit and height (18 inches) it appears to be a selection from Truffaut's Pæony-flowered. It very often betrays a great tendency to sport to other types; but in its best state is one of the handsomest forms yet produced.

Ranunculus-flowered is a very tall-growing kind, averaging about 2½ feet in height, and has a loose and straggling habit. The flower-heads are very close and compact, the centres quilled, the outer ring of petals flat. This is a very distinct, but by no means desirable sort.

Globe-flowered German, a tall-growing quilled variety; height about 2 feet, habit somewhat straggling, but producing good flowers.

Reid's Quilled has a very straggling habit, producing small flower-heads; height about 2 feet.

German Quilled is one of the best of the quilled kinds. It grows from 12 to 18 inches, and has much larger flower-heads than the preceding. A fine exhibition variety.

Dwarf Pyramidal Bouquet is a very free-blooming quilled sort, growing about 12 inches, and producing small flower-heads.

Double Dwarf Bouquet is about 9 inches in height; the flower-heads are very double, the centres being slightly quilled.

Globe-flowered Dwarf Imbrique Pompone is a quilled variety, growing from 9 to 12 inches, and blooming very freely, and in a good variety of colours; a capital sort for cutting from.

Newest Pompon-flowered Globe, though regarded as a distinct variety, is really identical with the foregoing.

Boltze's new Bouquet Double is the very best of the dwarf Asters. It is very dwarf, growing about 6 inches; the flowers are all bi-coloured and yield great variety of colours; small flat-petalled blooms, and very free. It is exceedingly pretty, and would make very attractive beds, and is suitable also for pot culture.

As a general rule, the French Asters, as they are termed, are hardier in their constitution than the quilled kinds; the former will also produce good flower-heads in comparatively poor soil, while the quilled sorts fail almost entirely. Some remarkably fine blooms of the Victoria Aster have been produced this season from a poor and exposed piece of ground; the quilled kinds, grown from seed saved from the finest strains, and planted by the side of the tasselled flowers, were worthless. Asters require a rich soil to bring them to perfection. Some exhibitors grow their plants in trenches like Celery, and water liberally with liquid manure. Especially must this be applied to the quilled flowers, in order to bring out the full and symmetrical blooms that are exhibited. When the plants are intended to be grown for exhibition purposes, say at the end of August or in September, late-sowing should be adopted; it is the invariable practice of Mr. Betteridge to sow in the last week in April, and the two first weeks in May. His plan is to sow the seed in a cold frame under glass; the drills should be about 6 inches apart, and the seed be used very sparingly. The plants come up in a few days, when they must have plenty of air, and as soon as the plants are about an inch high the glass should be entirely removed for three or four days, and the plants then pricked out about 3 or 4 inches apart in a slight hotbed, and here they will take root in a day or two without glass or shade. Growers usually transplant to the blooming quarters before the plants begin to run up in the stem, planting-out in rows about a foot apart, the plants about the same distance apart in the rows. In dry weather the plants should be watered, and early in August top-dressed with rotten dung from an old hotbed, and a good soaking of water should be administered if the soil is dry. The plants should be tied to small stakes, and as soon as it can be seen which buds are likely to produce good blossoms, they should be thinned out to three or four on a plant. The centre shoot is very often removed by growers; and all superfluous side shoots should be removed as soon as they make growth. Protection from rain will be required; it is much more necessary than protection from sun, still shading should be applied in very hot weather.

For general decorative purposes the seed can be sown about the end of March; the plants will then be quite strong when transplanted. If they are placed in a rich soil, and well watered when necessary, they will produce plenty of fine flowers. The Chrysanthemum-flowered kinds should be pushed on as much as possible, as they generally flower late. This variety will make very effective beds, if a little attention be bestowed on the plants. If used as an edging to a centre of Truffaut's Pæony-flowered, pegged down, the effect will be very pleasing. Where a system of spring flower-gardening is observed, Asters will be found very serviceable for summer and autumn flowering.

Some of the French growers recommend that Asters and Stocks both should be twice transplanted, and the tap-root be pinched off at the first removal, so as to cause them to throw plenty of side shoots. A free circulation of air among the plants is highly desirable.

When it is intended to save seed, early sowing should be adopted, and if the plants can be encouraged to grow on by potting them, so much the better. *Quo.*

The Apiary.

Mead or Methelin.—Your correspondent "Apiator" (see p. 951) asks for further information respecting the best methods of making this once much-prized beverage, Mead. For his benefit, and that of any others who may be interested in the subject, I subjoin the following extracts from the pages of some of our ancient and modern writers on apiarian matters, out of which I hope he may be able to select the recipe best suited to his taste and capabilities.

Though by no means the oldest writer who treats on the subject, I will first quote from Isaac's "General

Apiarian," published in the year 1803. He commences his observations by saying, "We are now to consider the mode of making that liquor which was the beverage of our ancestors, the praises of which, accompanied by the lyre, resounded through the spacious halls of the princes of Britain. But perhaps it is not at present known in what manner it was made. The use of spirituous liquors and foreign wines, which has proved the death of thousands, has brought into neglect that beverage which the God of Nature designed for the use of Britons."

He then goes on to give directions for making a beverage fit for common drink. "The must or wash of the combs," after draining, "and vessels in which combs or honey may have been, may be boiled with a little pounded spice in a linen bag over a gentle fire for about 15 minutes, and scummed just as the boiling ceases. I think long boiling prevents a proper fermentation. Let it stand to cool, and pour the fine part of it into a vessel; then filtrate the thick part, and add to the former the finer part, which you get by filtration. After fermentation takes place, which will be in a few days, bung it closely, and in a few weeks it will be fit to be used as common drink.

"To this above must, before it is boiled, some add as much honey as will make the liquid support an egg partly above the surface, and thereby have a liquor called Metheglin, which will keep many years. They boil and manage it as above.

"But the best liquor of this kind I ever tasted had been made in the following manner:—In every quart of water was boiled 1 lb. of fine honey; it was scummed as above, after which it was made to boil again, with an ounce of fine Hops to every 4 gallons for about 10 minutes, and put aside to cool. It was then tunned, and three weeks after bunged down. When 12 months old it was bottled, and when I drank of it, it had been in bottles four years, was almost as pale as gin, had something of the taste of good sherry, and was a strong and pleasant wine called mead. It was made of water, honey, and hop, without any other ingredient."

Dr. Joseph Warder, the author of "The True Anacreon," published in 1713, informs us, "How to make English Canary no way inferior to the best of Spanish wines."

"One hundred and twenty pounds will make a barrel of very good mead; but if you make it of clear honey, then your best way is to allow 4 lb. to every gallon of water. Let your quantity be much or little, which you ought to govern yourself by either considering the bigness of your cask, or the quantity of honey you have to make up into mead, mix it in your copper and then boil it an hour and scum it well, which scum you may strain through Hippocrates' sleeve, or a taper bag made of swanskin, with a hoop at the broad end, letting the narrow end come to a point. This bag will make it as fine as the other, through which you may put it. When your mead is almost cold, tun it up, clay it down, and let it stand until it is fine, and old enough to drink, which sometimes will be sooner than other according to the time of the year, and weather that comes upon it after making. This liquor is one of the choicest of wines, as well as the most wholesome of all the vinous liquors in the world, and ought to be drank and made use of in possets, &c., as Canary; and thus used, it is impossible to know whether the posset was made of your own mead or Canary."

In the making of the commoner drink from the washings of combs, or the breaking up of combs and all, we are told to "dissolve it in warm water, till an egg will swim in the mead the breadth of a shilling. But here you must be very careful, that before you break your combs into the sieve or strainer, you separate all the young bees, which you may easily know from the honey, and also the sandrack or bee-bread, which is a yellow substance, with which some of the cells are filled, which otherwise will give your mead an ill taste, and then proceed to boil, scum and tun as before. It is best if it be kept till it is a year old, and if you make it well, as before, it will keep as long as you please. I have some now by me of almost nine years old."

In Thorley's "Female Monarchy," 1744, is the following short receipt:—

"*How to make Mead not inferior to the best of Foreign Wines.*—Put 3 lb. of the finest honey to 1 gallon of water, two Lemon-peels to each gallon; boil it half an hour (well scummed), then put in while boiling, Lemon-peel. Work it with yeast, then put it in your vessel with the peel to stand five or six months, and bottle it off for your use.

"N.B. If you chuse to keep it several years, put 4 lb. to a gallon."

It will be seen that in all these recipes there is not any addition of brandy or other spirit recommended, I should therefore suppose such addition to be not at all necessary. I propose next week to continue the subject, and give further extracts from various writers.

Redmond.

Garden Memoranda.

Mr. Rivers' Nurseries, Sawbridgeworth.—I spent five hours at the Sawbridgeworth Nurseries on the 10th of September last: one would have required five days to do them justice. 100 acres of ground under fruit trees in every variety of shape, size, and species, and 40,000 feet of glass devoted to the same object, almost bewildered a hurried visitor. My first pleasing duty is to thank Mr. Rivers and his sons for their hospitable reception; my next to confess that Mr. Rivers has strengthened, if not finally established, all his points in favour of chalk, hard soil, and pot-culture. First, in reference to the chalk. There can be no doubt of its presence, although there is less of it than I expected to find. Neither does its presence strike one at first sight. The soil is not in fact what a cursory observer would designate calcareous. In the language of Mr. Rivers, no other conveying the right idea, the chalk is "finely communuted." It is so fine, and so thoroughly incorporated with the soil, as not to be very apparent. From an examination of the subsoil of part of the nursery it is obvious that the whole deposit here is sedimentary. Water has worn down the mineral substances, borne them onwards with soil and surface debris, and precipitated them here in a finely mixed stratum. Such alluvial deposits are always everywhere distinguished by great fertility. It may still be a matter of opinion how much their productiveness is influenced by the chalk, but of the great fertility of the soil there can be no doubt whatever. The whole produce of the nursery gives an emphatic testimony on this point; and as this luxuriance at least coincides with the chalk, Mr. Rivers is entitled to the presumptive evidence that it may be caused by it. The chalk, however, in Mr. Rivers' case is very *fine*. I wish to emphasise the adjective, as I believe that much chalk in a rough state, and the chalk formation generally, are unfavourable to Peaches, Nectarines, and Plums.

Secondly, in reference to the hard soil. Mr. Rivers' fruit-tree borders in his orchard houses are very hard; so much so, that it is almost impossible to thrust a walking stick into them. They are walked and trampled on in all directions to gather the fruit, pinch-in the trees, &c., until they seem as firm as a gravel walk. Mr. Rivers had kindly scraped off the dry loose surface, so that I could thoroughly examine the state of the borders. It seemed almost impossible that they could be harder; the pots were almost equally so. It may therefore be accepted as an axiom that Peaches, &c., can be and are grown to the highest perfection in the hardest possible borders on such soils as Mr. Rivers'. To prevent any misconception, I may as well remark that I should hesitate to adopt the same regimen on stiff clays. As Mr. Rivers somewhere states, in all such matters much gardening and perhaps more common sense is needed. From what I saw at Sawbridgeworth, I confidently affirm that it is almost impossible to consolidate friable loams or peaty soils too much for the successful culture of Peaches, Apricots, Nectarines, Plums, Cherries, and Pears. It would also be much better for such trees to have a hard border, say 3 or 4 feet wide, undug, unforked, unworried by cropping, than one 10 or 12 feet wide, subjected to all the vicissitudes of surface-cultivation and cropping. In nothing is the proverb "out of sight out of mind" so often verified as in the treatment of the roots of our trees in general, and wall trees in particular, the temptation is so strong to have a crop of early Peas, Potatoes, &c., or other vegetables. Our borders are so valuable for early vegetables, and manuring and deep-digging are so useful to these, that the spade is too often thrust in regardless of the roots. It is only by devoting a certain width to the roots, and looking upon that portion as already occupied with the most valuable crop, that our trees can have anything like justice. A belief in the necessity for hard soil would facilitate the adoption of this improved practice. It would be almost impossible profitably to surface-crop hard borders; hence they would be more likely to be entirely devoted to the roots. The increase of artificial south borders by the elevation of raised mounds or banks, protected by hurdles, and the devotion of ground Vineries and orchard-houses to the culture of early vegetables, would enable us to dispense with wall-tree borders for these objects, and to maintain them in the best possible condition for the trees alone.

Thirdly, Mr. Rivers proves beyond all controversy, that fruit trees can be, and are by the thousand, grown to the highest perfection of health and fruitfulness in pots. There is no doubt whatever upon this point. A visit to Sawbridgeworth is conclusive. Trees in any number in the most healthy habit, laden with the finest fruit, remove the matter beyond the region of controversy into that of clearly demonstrated, palpable, tasteable fact. I presume, however, that no one denies that the thing can be done. The controversy generally turns upon the comparative merits of the two systems—planted out or in pots? At Sawbridgeworth both modes seem best. The planted-out trees are as good as can be, and the trees in pots leave nothing to be desired. I also believe that this is the only rational way of looking at the matter. It is seldom necessary to pit the one mode against the other. Excellent fruit may be produced by both methods. Whether the trees are to be planted out or grown in pots may safely be left to be determined by those responsible for the ultimate object of both systems—the maintenance of a good supply of perfect fruit. There are special advantages incidental to each of the two modes. Less water and care, pruning and stopping, provided the trees are allowed to grow well, and, consequently, less labour, are requisite for planted-out trees. As a rule, too, the fruit will be equally fine, or finer, and if trained on a flat trellis within 18 inches or 2 feet of the glass will be higher flavoured. There is also less risk of losing a crop, and it costs less to furnish a house with trees. That, however, depends much on the mode of training adopted. It will require nearly as many standard, pyramidal, or cordon trees to furnish a planted-out house as one devoted to pot cultivation.

Per contra in favour of pots, the first great advantage of this mode of culture is their moveability. The trees can be moved out or in, and the fruit hastened or retarded at pleasure. In this way a crop of several distinct sets of trees in the same house can be insured in one season. Plums, Pears, and in warm situations even Peaches, Nectarines, and Apricots, may be placed thickly in a house until set, and then placed out of doors to ripen their fruit. Or early crops may be pushed forward, and late trees or Vines afterwards grown in the same house. Or a few pots can be placed in a warmer house or plant stove to hasten the ripening. In fact the advantages of the moveability of a crop in any stage of its growth are endless. I was very much impressed with the importance of this at Sawbridgeworth. Immense quantities of small pyramidal Pears and Apples were swelling off their fruit out-of-doors. I understood Mr. Rivers that most of them had stood closely together in a shed, until their fruit were safely set. They were then placed where I found them. Knowing something of the difficulty of setting a fine collection of pyramidal Pears in the biting north-easters that distinguish the Suffolk spring, I wished *them* in pots, so that they might be safely carried through that critical stage, and then placed out to ripen. In fact, there can be no doubt that the moveability conferred by pot culture marvellously augments the power of the cultivator, and multiplies his chances of success. This portability also recommends fruit trees in pots to yearly tenants and short leaseholders, and enables any one at a trifling expense to carry their fruit garden with them, with as much or more ease as they can their furniture or wine. It is hardly possible to over-estimate the importance of this boon. The same quality is valuable in an artistic point of view. Few objects are more ornamental than fruit trees in pots. As house or dinner table decorations, whether in flower or fruit, they are most useful, and the charms of many a garden would be very much enhanced by an occasional change of position and arrangement of its fruit trees. Pot culture has other merits, such as the greater quantity that can be grown in a limited space, the larger variety, the increased fruitfulness of many kinds, &c., but I am content to rest its claims for general adoption mainly on their moveability. The chief elements of success in pot-culture are careful watering, judicious feeding, fearless thinning, brilliant light, and abundant ventilation. An excess or a paucity of water is of course more likely to throw the fruit off in pots, than off a planted-out tree. Its root area is more limited, and therefore extremes are felt with greater force. For the same reason feeding and thinning become of more consequence. Mr. Rivers prefers feeding with solids to liquids, and he has a novel way of applying cocoa-nut fibre, malt-dust, or other such dressing to his trees. Every one knows that a flower-pot, however large, is speedily filled; but many of the pots at Sawbridgeworth are small, only from 9 to 12 inches wide. No sooner are they filled quite full than small slips of slate, from 1 to 2 inches wide, and from 6 to 10 inches long, are forced in round the rims vertically, not quite touching each other, and the additional space thus secured partly filled up with the top-dressing. These spaces will last several years, as part of the old soil is carefully removed before the new is applied, and the roots finally run up and occupy the whole of the extra layers with a fine network of fibres. Thus the capacity of the pots is almost doubled, and the luxuriance of the trees maintained. A second layer of slates might even be added, if necessary. Light and ventilation are also most important elements of success. I believe it is through a deficiency of these that pot culture has often been condemned by practical men. Nice little trees in pots have been thrust into lofty houses, with their lumbering timbers, dark roofs, and imperfect ventilation. The blossoms have dropped off, or the fruit has dwindled, or been flavourless—and the gardeners, or the system, or both, been condemned—when the fault was entirely in the structures. The houses at Sawbridgeworth are perfectly adapted for the object in view. Every possible ray of light is secured, and the ventilation is ample and efficient. *D. T. F.*

(*To be continued.*)

Miscellaneous.

The late Mr. Cooling.—Of those who have passed away from among us during the last week, the memory of an old retainer and faithful friend claims a record of grateful acknowledgment. Abraham Cooling entered the service of the late John Fellows, Esq., of Beeston, Notts., in the year 1807, as head gardener, with whom and his late son and present grandson he has continued to live for the period of almost 60 years. Characterised by great excellence in his capacity, upright honesty and sterling worth, with a wide general knowledge, he combined perfect contentment. His garden was his world, and from his duties he was never absent. He died at Beeston, on Sunday, the 30th of September, in the 89th year of his age—a loss to the present—a link to the past—respected by many, but especially by those to whom he has proved so true. His eldest son is the present proprietor of the Mile-Ash Nurseries. *Derby Reporter, Oct. 5.*

Spring Bulbs for Lawn Culture.—Many spring-flowering bulbs may be mentioned as suitable for lawn culture, but none of those yet experimented on have come up to the common single Snowdrop for modesty and gracefulness, most others being more or less inclined to the gay. Those which have been tried are—the Crimean Snowdrop (Galanthus plicatus); the two-leaved Squills (Scilla bifolia), blue, white, and pink; the Saughton Squill (Scilla bifolia major), which is, perhaps, the gayest of all plants for lawn purposes, having large heads of bright-blue flowers, 6 inches in height; the Vernal Snowflake (Leucojum vernum), the Springbell (Sisyrinchium grandiflorum), purple and white; the Grape Hyacinth (Muscari botryoides), blue, white, and pale varieties; also the little Puschkinia scilloides, with its pendent white blossoms striped with blue. Crocuses can be used for this purpose, particularly in Grass not kept in fine lawn condition. In well-kept lawns they are rather objectionable, from retaining the leaves during April and May, which continue elongating till thoroughly matured. This, however, is not the case with the Cloth of Gold Crocus (Crocus susianus), the leaves and flowers of which being produced early, soon decay. The varieties of the

Dog's-tooth Violet (Erythronium dens canis) are admirably adapted for Grass culture; they prove excellent successors to the above-mentioned bulbs, and, when in flower, assume a fine lively butterfly appearance, particularly when planted in single roots in Grass. After the flowering is matured, the foliage very soon decays, and is completely ripened and gone before the first cutting of the Grass. The Yellow Star of Bethlehem (Gagea lutea) also succeeds well, besides numerous other interesting spring bulbs. In all cases preference should be given to those kinds whose foliage is not rank and early, over kinds which are free bulbing and prolducing but few flowers, as is the case with the wild Tulip (Tulipa sylvestris) and the common White Star of Bethlehem (Ornithogalum umbellatum), when inserted in Grass lawns. *J. M'Nab, in Farmer.*

Mountain Silk of North China.—Mr. Consul Meadows, whose consular district includes Mandchuria and Eastern Mongolia, reports that mountain silk remains as yet the one article which the district is likely to furnish to England. There are two crops of the mountain cocoon, a spring and an autumn; the autumn much the largest, but the spring greatly superior in quality. In the autumn the cocoons intended for the spring crop are placed in baskets which are hung up in Chinese dwelling-rooms facing the south, but still having a temperature in the greater part of the winter considerably below freezing point. The natural heat of spring suffices to bring the chrysalis out of the cocoon in the butterfly state. The butterflies then couple, eggs are produced in four or five days, and are laid on paper spread upon mats and tables. In a few days each egg produces a very small black worm which is nourished by young Oak-leaves that are gathered and scattered over the paper. After some days the worms are transferred to the Oak bushes on the hill slopes. After its first sleep or torpor of a couple of days, the worm becomes green in colour, and larger in size. For its fifth sleep it prepares by spinning itself into a cocoon in which it assumes the chrysalis shape. When the worm begins to make its cocoon, it selects two or more Oak-leaves, more or less facing each other, and joins them together by a network of the silk thread which keeps issuing from its mouth as it moves its head from the one leaf to the other, holding on by its back claws to the twig from which the leaves grow. When the leaves are sufficiently joined to form a sort of cup or basket under the twig, the worm drops into the receptacle it has thus formed, first quite surrounding itself with the loose, flossy-like silk which forms the outer portion of the cocoons as they come to market, and then proceeds to thicken the inner surface by further thread-spinning, till its bulk is sufficiently decreased for its turning into the chrysalis shape. The best silk is produced by nourishing the worm on the leaves, not of the oak, but of the "Tseen-tso-tsze," which exists, however, only in small quantities. The chrysalids which are not kept for breeding are used by the Chinese as an article of food. Not a tenth of the hill-sides suitable for the Oak-bushes are at present planted with them. But considering the quantity of silk already produced, it may be taken that the trade could be developed into one of appreciable importance even for our great manufacturing interests, unless exactions and jealousies of the local mandarins interposed to repress it.

Pollen Showers.—These are of annual occurrence in Nova Scotia, New Brunswick, Canada, and, in fact, inall countries where there are Pine or Spruce forests of any great extent. When the trees are in bloom the pollen fills the air, and falls down in an invisible shower, coating the surfaces of the lakes and ponds, and quiet bays of the sea, collecting between the laps of greenhouses and other glazed roofs, and finding its way from the roofs of houses down through the water-spouts into cisterns and casks. A portion of the powder placed under the microscope will be seen to have the peculiar grain-form of Fir pollen, constricted by a central band. The idea of its being sulphur is an error. *Nova Scotia Journal of Agriculture.*

Calendar of Operations.

(*For the ensuing week.*)

UNGENIAL weather may soon be expected to succeed the bright sunny days which we are now happily experiencing, and labourers will be driven in-doors, where a stock of work should be provided for them. The tying of new mats, cutting and picking of shreds for the walls, cleaning old nails, drawing bast for the coming season, arrangement of herbs, examining stores, tying flower-sticks, labels, &c., washing and putting away all spare striking or other glasses, making straw or reed mats and protectors for tender plants, as well as making a stock of brooms and baskets for the ensuing year, are matters of considerable importance, and should be got forward whenever opportunity offers. All superfluous or dead things in pots should be emptied out, and the dirty pots from every part placed in a corner of the shed, ready for washing. Plenty of broken pots should also be housed in a shed corner to be broken and sorted; they may be fairly reckoned amongst the most important things connected with the potting shed. Any one having old half-worn sashes without glass, may readily make a most useful straw cover of them, well adapted for covering Endive and other salads, Parsley, &c.; as also for placing over early crops of Potatos, Radishes, Carrots, &c. When covered equally, three or four long sticks or laths should be placed on them in a line with the sash bars, and bound down to the latter in a few places by tar twine. If housed when out of use they will last a couple of years.

FLOWER GARDEN AND PLANT HOUSES.

The flower garden is now so far robbed of its beauties, that if not already done, steps should be taken to secure a desirable arrangement for the next year. Let all observations as to improper heights or misarrangement of any kind therefore be made.

BULBS.—Attention should now be paid to bulbs grown in the open air, as they ought to form a conspicuous part of every garden. This is the time for laying in a stock and planting; the latter operation, indeed, should not be much longer delayed, for it is desirable that every bulb should be well rooted before winter. Bulbs are in general planted too far apart, and there are too few of them to make a good display. Crocuses should be put in by thousands, and Tulips and Hyacinths by hundreds. Remember they all increase very readily, and with care the outlay will in time be repaid. Crocuses and Tulips multiply without much trouble. If borders are preferred to separate beds, the following plan will be found advantageous. Let the outer row be Crocuses, the next Hyacinths, and the third, or inner row, Tulips. Do not be afraid of planting too thickly, but let there be 2 or 3 inches space between each kind of bulb. The Crocuses will be out of bloom by the time the Hyacinths are in their prime, and the foliage of the former will make a pretty fringed border for the latter. Oval or round beds have a fine effect when planted in this way; the beauty is prolonged, and the whole may be cleared away in time for bedding. In planting, dig a trench about 4 inches deep around the bed, and as wide as required. Let the bottom be well loosened, and then place the bulbs in order upon it. Cover with about half an inch of rotten leaf-mould and sand. During winter be careful to guard against the ravages of mice, for they often devour thousands of Crocuses and Tulips before they are observed. The Crocuses may be mixed, or planted in alternate rows of various colours. The same plan may be pursued with Hyacinths. For planting in the open air, purchase mixed sorts, single and double white, red, and blue. These mixtures generally contain many fine sorts. Snowdrops, Crown Imperials, Narcissus, &c., may also now be placed in clumps.

CHRYSANTHEMUMS.—These will soon be coming into bloom, and care must be taken to see that they do not suffer from want of water. A little weak liquid manure given occasionally will assist them in making a better display than they otherwise might do.

FORCING GARDEN.

CUCUMBERS.—These must be well attended to, in order to ensure success. A temperature of about 70° should still be maintained, which will allow a little air to be given on comparatively cool and dull days. Stop progressing shoots at every second joint, and pinch off all tendrils and young fruit that are not wanted to swell as soon as they appear.

PEACHES AND NECTARINES.—Prune and otherwise prepare the trees in the earlier houses for forcing.

PINES.—Stock expected to furnish fruit next summer and autumn should not be too much checked, indeed it may be kept growing slowly all the winter, which is perhaps the most certain method of preventing its starting too early in spring. Where the plants likely to fruit without making further growth are considered insufficient to meet the demand until next autumn, the stronger plants of those for late fruiting should be encouraged to make growth as early as can be done without weakening the foliage, with the view of preparing them for starting in April.

VINES.—Houses which it is intended to commence forcing early should now or soon have some fermenting materials placed on the borders so as to encourage the roots a little before the Vines are excited; this will be of great service towards getting the buds to push strongly and without loss of time.

HARDY FRUIT AND KITCHEN GARDEN.

Apple stores should be often examined, picking out all that show symptoms of decay. Any of the more choice varieties of Pears that do not ripen properly, should be removed to a warm dry room for a few days, which will be found to greatly improve them. Keep all fruit as cool and dry as possible. If frost is excluded from the house it can scarcely be too cool, where the object is to preserve fruit plump and sound as long as possible.

BEET.—This may now be taken up and housed. In lifting great care should be exercised not to break off the end of the root or to wound the skin, for when this happens the colouring matter escapes in the process of boiling. Trim off the larger leaves and store the roots in dry mould or sand, like Carrots.

CABBAGES.—These may still be planted. Where they have been well looked after they will be good-sized plants, and if carefully transplanted they will be as forward next spring as if they had been put in earlier. Earth up Coleworts.

CELERY.—Take advantage of the present dry fine weather, in order to give a general earthing-up.

ENDIVE.—Let this be blanched, by placing flowerpots inverted over it when it is dry.

LETTUCES.—Plant Cabbage kinds in frames for winter use. Hardy Cos varieties may also still be planted on warm sheltered borders, to come into use in spring.

TOMATOS.—Unripe fruit, if any, should now be gathered, and hung up in a warm place, where they will ripen sufficiently to be of service.

STATE OF THE WEATHER AT CHISWICK, During the last 30 years, for the ensuing Week, ending Oct. 20, 1866

October.	Barometer at 32°		Temperature of the Air			Temperature of the Earth 1 foot deep		Wind on Average of 30 years		Rain in 24 hours	Prevailing Winds, 1866								Rain in 24 hours
	Average of 30 years	Average of 1866	Average of 30 years	Average of 1866	Difference	Average of 30 years	Average of 1866	Average of 30 years	Average of 1866		No. of Years in which it Rained	Greatest Fall in 24 hours	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	
Sunday 14	30·1	11·0	50·5	19	0·50 m.	2	2	4	1	2	8	3	5	3	0·50
Mon. 15	30·1	8·9	40·7	4·8	16	1·01	2	2	4	4	11	6	6	8	
Tues. 16	30·1	8·8	40·7	4·7	17	0·55	—	6	3	1	5	1	8	1	
Wed. 17	29·8	11·0	49·8	17	0·61	—	5	1	—	3	2	10	5	
Thurs. 18	29·6	11·2	50·1	19	0·85	—	4	4	1	2	8	14	3	
Friday 19	29·5	10·5	49·8	21	0·02	—	3	6	1	2	6	1	8	
Satur. 20	29·1	10·6	49·8	21	0·01	—	1·6	1	3	4	1	1	3	

The highest temperature during the above period occurred on the 18th, 1861—therm 80 deg., and the lowest on the 15th, 1860, and 20th, 1865—therm 24 deg.

STATE OF THE WEATHER AT CHISWICK, NEAR LONDON, For the Week ending Oct. 10, 1866, as observed at the Horticultural Gardens.

October.	Mean Height of Barometer at 32°	Temperature of the Air			Temperature of the Earth 1 foot deep	Wind	Rain in 24 hours
		Max.	Min.	Mean			
Thurs. 4	29·990	70·9	50·2	60·6	61·4	NE	0·0
Friday 5	29·580	70·3	47·5	58·9	61·0	E	0·1
Satur. 6	29·417	67·9	47·1	57·5	60·5	NE	0·0
Sunday 7	30·017	65·4	46·4	55·9	60·1	NE	0·0
Mon. 8	30·251	66·1	43·5	54·8	59·5	NE	0·0
Tues. 9	30·172	66·0	45·2	55·6	59·2	NE	0·0
Wed. 10	30·007	70·1	45·5	57·8	59·0	NE	0·0
Average.	30·251	70·3	43·5	57·8	59·5		0·1

OCT. 4—Hazy with slight rain, dull and overcast, hazy.
— 5—Hazy with heavy rain, overcast, slight drizzle.
— 6—Overcast, heavy dew, damp and overcast, almost equally cold both days and nights.
— 7—Slight fogs, overcast, easterly wind, sunless and damp, overcast.
— 8—Partially overcast, fine, but with little drawn in the air.
— 9—Overcast, fine, with cool N.E. wind, overcast.
— 10—Overcast, fine, overcast, cold at night.
Mean temperature of the week, 1 deg. above the average.

Notices to Correspondents.

APPLE TREES ON DRY CHALKY SOIL: *Shepherd or Selection Pinnes.* Next week.

ASPARAGUS KALE: *Thos. Beetham.* The spots on the Asparagus Kale are not fungoid, but merely diseased tissue. The parenchyma of the leaves, however, is full of mycelium. We should think that Asparagus Kale is more subject to the disease, which is very common, than other varieties of Brassica. The cause is unknown. It is not, we conceive, merely climatic, as it occurs almost every year. Our own Asparagus Kale is quite healthy. *M. J. B.*

BANKSIAN ROSE ON TRELLIS: *Subscriber.* Take up the tree, shorten all the coarse roots to half their length, remove entirely any that strike downwards, and replant it, making the soil very firm beneath and about the roots. If the situation is a moist one, plant high, finishing off with a slight mound; but if dry, this would not be necessary. After replanting, support the tree against heavy winds, so that its roots may not get drawn or shifted.

BRACKET: *C. Hoel* wishes to know where he can procure an ornament to hang against the wall like a bracket to hold cut flowers, and to be made either of wood, wicker-work, or of earthenware. Some of our advertising friends should enlighten him.

CARRIAGE DRIVE: *B.* There is nothing better than flints for constructing carriage drives, a portion of the stone being broken very small and placed on the road-way to form a substitute for gravel. We are unable to recommend you where to get this material conveniently; you had better advertise.

CELERY DISEASE: *Ord Sub, and F. D.* You will find an account of the Celery disease in the third number of the new series of the Journal of the Royal Horticultural Society. Your remarks about the young plants being raised under Plum trees which were mildewed is suggestive, though at present Puccinia Pruni and Puccinia Api are considered distinct. *M. J. B.*

FERNERY, CASE: *P. M. H.* Of moderate-sized elegant evergreen Ferns that will succeed in a case standing in a dining room there is ample choice; we recommend you the following:—Lastrea glabella, Pteris serrulata cristata, Pteris cretica albo-lineata, Asplenium Colensoi, Doodia caudata, Gymnogramma flavens and mives, and Pteris tremula, roundifolium. They should be planted out in soil well-drained beneath, and raised irregularly by means of pieces of sandstone, and there must be means of egress below for superfluous moisture. Under these conditions keep them rather damp than otherwise.

FUNGUS: *P. D.* Your Fungus is Helvella crispa, an excellent species if quite fresh. Roques recommends the following way of cooking this sort of Fungus. The plants must be carefully divested of all traces of soil, then washed in warm water, and thoroughly scraped to remove the sand. Then parboil in stock or milk, with butter, Parsley, a small quantity of Eschalot, pepper and salt. When tender, cream and yolk of eggs must be added. A good deal will depend upon the skill of the cook. *M. J. B.—Alpha.* The lumps on the barren stems of Marasmius androsaceus. A similar condition occurs about Marasmius Rotula, and in many other species. *M. J. B.—K.* The Fungus is the young state of Xylaria Hypoxylon. It is sometimes called the Candle-snuff Fungus. It is quite a cosmopolite, growing in almost every part of the world. *M. J. B.*

GESNERIAS: *W. M.* The flower buds of your Gesneras drop off probably from a deficiency of heat or moisture, or both, in the atmosphere in which they are growing.

HEATING APPARATUS: *J. Erdman.* Under the circumstances you describe, we should recommend you to use the upright tubular boiler (not the jointless one) and 3-inch connecting pipes. Saddle boilers are good, but will scarcely suit so well in your case.

INSECTS: *J. B.* Evidently some species of Coccus, but so smashed in the post as to be unintelligible. *W.*

NAMES OF PLANTS: *Hendfield.* 1, Aspidium macrophyllum; 2, Athyrium Filix-femina; 3, Scolopendrium vulgare; 4, Selaginella apus.—*J. B.* Pyrus Aria.—*P. C.* Hymenophyllum tunbridgense doubtless, but the specimen is not fertile. The other specimen is a singularly deformed Lastrea Filix-mas, however constant or not requires proof.—*C. H.* Apotomeria distachyon.—*P. Lee L.* Athyrium Filix-femina abortivum. *M. M.* Yucca aloifolia.—Very ill and by no means unanimous in plant.—*T. H. C.* 1, Ophioglossum vulgatum. Without fructification impossible to say what it is probably Viola calcarata.—*R. W.* Asplenium septentrionale, one of our rare British Ferns. *J. C. P.* Cyrtochilum flavescens. Stenogeron pumilum; Selaginella Martensii, var. —*C. B.* Polygonum cuspidatum.—*P. C.* Polygonum cuspidatum. It is quite hardy.—*W. A.* 1, Pandanus utilis, var.; 2, Sparganium natans; 3, Scitaminious plant, but without flowers, impossible to say what it is; 4, we do not recognise the leaves.

NOTICE TO QUIT: *Subscriber.* A tenant from year to year who has no notice to quit is not bound to go until the anniversary of the day on which the tenancy commenced. But if you are in any difficulty you must consult your solicitor.

PEACH HOUSE: *A Young Gardener.* The wood sent seems to be in a very satisfactory condition, though not over vigorous. There is no necessity to remove the roof sashes, nor would it benefit the trees to get the borders soaked by cold autumnal rains. Had the wood been less matured it would certainly not have been benefited by the exposure.

SUB-TROPICAL GARDENS: *Vide, Hull.* You must make the best of circumstances. If you have abundance of leaves, and no brick rubbish such as Mr. Gibson recommends, then try with leaves, but you must use them prepared so as to supply bottom heat, as they will not act like the bricks, or not to a like extent, in absorbing sun heat. You could so far adopt Mr. Gibson's plan as to have your beds raised; they should be not too wide, and should, moreover, range as nearly north and south as may be convenient, so as to get warmed by the sun on both sides.

COMMUNICATIONS RECEIVED.—F. Bendle.—Querist.—J. J. Chater.—James Barnes.—D. T. F. MS.—E. M.—P. T.—W. Earley.

Autumn Sowing.

ODAMS'S WHEAT MANURE,
ODAMS'S PREPARED PERUVIAN GUANO,

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The Manures manufactured by J. B. Lawes for the present season 1866 are now ready for delivery at his Factories, at the following prices, per ton:—

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LAWES' PATENT TURNIP MANURE, and BONE SUPERPHOSPHATE of LIME	6 6 0
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DOWN'S FARMERS' FRIEND, for preventing the Smut in Wheat, and the Ravages of the Slug, Grub, and Wireworm. A 9*d.* packet is sufficient for Six Bushels of Seed Wheat, which can be dressed and fit for sowing in a quarter of an hour.

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Patronised by Her Majesty The Queen, the Duke of Northumberland for Syon House, His Grace the Duke of Devonshire for Chiswick Gardens, Trustees of London Parks, for the Horticultural Society, Sir Joseph Paxton for the Crystal Palace, Royal Zoological Society, &c.

PROTECTION from the SCORCHING RAYS of the SUN.

"FRIGI DOMO," a Canvas made of Patent prepared Hair and Wool, a perfect Non-conductor of Heat and Cold, keeping, wherever it is applied, a fixed temperature. It is adapted for all Horticultural and Floricultural purposes, for Preserving Fruits and Flowers from the Scorching Rays of the Sun, from Wind, from Attacks of Insects, and from Morning Frosts. To be had in any required lengths.

Two yards wide	1*s.* 9*d.* per yard run.
Four yards wide	3*s.* 6*d.* per yard.
An improved make, 2 yards wide	1*s.* 9*d.* per yard.
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"FRIGI DOMO" NETTING, 2 yards wide, 1*s.* 6*d.* per yard run.

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The most handy, gentle, and docile are respectfully informed that they can be supplied with the above beautiful and profitable Little Animals (calved and down calving), in any number, at the shortest notice. The great success and encouragement which have attended the efforts of the importer, in introducing the pure breed of this useful and hardy Cow into the country, has induced him to extend his connection abroad, by appointing experienced Agents throughout Brittany, and he is now enabled to offer the public a constant supply of the choicest stock that can be obtained, to approve which duty all competition. The low cost, together with the high milking qualities of this Breed, render them great value to the cottager, as well as the fancy stock-keeper and dairyman.

YOUNG BULLS always on sale. BRITTANY SHEEP, 25*s.* each. ALDERNEY and GUERNSEY COWS and HEIFERS supplied to described, or forwarded on approval, and time of delivery.

Apply to the Agents of the Importer Messrs. ROBERTSON & Co. 38, Crutched Friars, London, E.C.

THE BIRMINGHAM CATTLE and POULTRY SHOW, 1866.—The EIGHTEENTH GREAT ANNUAL EXHIBITION of FAT CATTLE, SHEEP, PIGS, DOMESTIC POULTRY, ROOTS, CORN, and IMPLEMENTS, will be held in RINGLEY HALL, on SATURDAY, MONDAY, TUESDAY, WEDNESDAY, and THURSDAY, December 1st, 3rd, 4th, 5th, and 6th, when Prizes to the amount of £250 will be awarded in the following Divisions:—

FAT CATTLE, SHEEP, and PIGS	£1221 10 0
BREEDING PIGS	77 2 0
ROOTS and CORN	71 5 0
POULTRY and PIGEONS	73 0 0

Prize Lists, Certificates of Entry, and every information may be obtained from the Secretary.

THE ENTRIES CLOSE on THURSDAY, November 1.
JOHN B LYTHALL, Secretary.
Offices—Stephenson Chambers, New Street, Birmingham.

SMITHFIELD CLUB FAT CATTLE SHOW.—The ANNUAL SHOW of FAT CATTLE, SHEEP, and PIGS, will be held at the AGRICULTURAL HALL, ISLINGTON, on MONDAY afternoon, December 10, and Four following Days.

Intending Exhibitors are requested to apply for Certificate Forms by the reference letters as under.

CATTLE.—Form	A.	For an OX or STEER (in any Class).
"	B.	For a COW or HEIFER (in any Class).
"	C.	For a BEAST in Extra Stock.
SHEEP. "	D.	For a PEN of 5 WETHERS (in any Class).
"	E.	For a SINGLE SHEEP in Extra Stock.
PIGS. "	F.	For a PEN of 3 PIGS (in any Class).
"	G.	For a SINGLE PIG in Extra Stock.

ENTRIES for LIVE STOCK CLOSE NOVEMBER 1.

Prize Lists, Forms of Certificates, and all information may be obtained on application to Mr. DAVID PULLEN, Assistant Secretary, at the Office of the Honorary Secretary, corner of Half-Moon Street, Piccadilly, London, W.

N.B. All communications respecting the Show must be addressed to the Assistant Secretary, as above, and should bear outside the words "Smithfield Show."

The Agricultural Gazette.

SATURDAY, OCTOBER 13, 1866.

PROFESSOR SIMONDS declares in the very instructive address of which an abridgement is given in another page, that badly-grown food will poison animals—which is in all probability true enough, taken by itself. But, thereupon ensues an outcry among other writers against the rank Grass of sewaged meadows, which is not borne out by experience. Half-ripened Grass full of half-grown Ranunculus leaf, the poorest sort of forage one can easily imagine, is eagerly eaten all through early spring and summer in the Edinburgh cowhouses, and it costs the cowkeeper probably 14*s.* to 18*s.* a ton upon the average throughout the year.

There is no food grown in English fields that we have ever seen at all approaching what is cut off the Craigentinny sewaged meadows for the soft succulency and washy unripeness, or shall we say, in accordance with Professor SIMONDS' assertion, the "poisonousness" of its character; and yet 35*l.* to 40*l.* an acre are paid for the season's produce of this food. The fact we suppose to be, that this Grass is poisonous to animals just as a good meat diet by itself would be poisonous to man. We must give other material along with it, and the whole then becomes a perfect food.

Because the Grass of an ordinary water meadow, and still more—for its growth is still more rapid—that of a sewaged meadow, might pass through an animal, rather weakening it than feeding it when given by itself, that is no reason why we should pronounce it poisonous. Given with a due proportion of hay, with grains and meal, it will pay for these additions, and produce more than 20*s.* worth of milk for every ton. We are now giving sewaged Grass at the rate of about 80 or 90 lb. a day apiece to cows, along with grains and hay and bran, and they are doing this; and the long experience of Edinburgh is conclusive on the subject.

What the value of the ton of sewage may be, as ascertained in this way, depends on other circumstances besides the nutritiveness of its produce. Its cost depends a good deal on the quantity of the liquid needed to produce a ton of this succulent growth, and that depends on soil and management. It is probable that well and economically applied, 100 tons of sewage will produce a ton of Grass, and if so there can be little doubt of its being capable of profitable application to the land. For this ton of Grass is an addition to the produce of the district, and the gross value into which it can be converted, is thus nearly all free gain. In ordinary circumstances the net profit and the gross return made from a ton of Grass are of course very different things, and either of them is extremely variable, depending not only upon the position of the farm, but on the condition of the plant grown on it when it is consumed, and on the quality of the animals by which it is consumed.

A London dairyman pays 20*s.* to 30*s.* per ton for Grass delivered at his cowhouse. In Edinburgh cowkeepers pay 12*s.* to 15*s.* a ton for Grass on fields one to three miles away, cut it themselves, and cart it home. A Gloucestershire dairy farmer makes 10*s.* a ton of his Grass (gross), and perhaps not more than 3*s.* a ton (net). Then as to the plant itself. A ton of Grass or of Turnips may have very different feeding (intrinsic) values. Turnips grown in Essex are not nearly so nutritive as Turnips grown in Aberdeenshire. Well-grown Italian Rye-grass is full of food and abundantly productive both of milk in the cow and of flesh upon the ox; while young, half-ripe, rapidly-grown, succulent Grass, though good enough for cows, might never put a pound of flesh upon a full-grown feeding beast, unless given along with much drier and more nourishing food. The profit obtained depends also upon selecting animals adapted to the food there is for them; if this is not attended to, the food may result in a loss instead of gain.

It is, however, generally understood that the consuming value of Grass upon the farm is from 8*s.* to 10*s.* a ton, and of Turnips from 6*s.* to 8*s.* a ton. Thus we pay 4*d.* to 8*d.* a week for a sheep, 3*s.* to 5*s.* a week for a cow, when put out to "tack" upon another man's farm. Now a sheep will eat 1 to 1½ cwt. of green food in a week, and a cow from 8 to 12 cwts. in the same time—whence these values per ton are derived.—A sheep under good management will put 1 lb. of meat on for every 1½ cwt. of Turnips consumed, equal to 12 to 15 lb. of mutton (worth 8*s.* to 10*s.*) for every ton.—Hay is generally valued at 3*l.* per ton to consume on the farm. It takes 5 tons of Grass to make 1 ton of hay, and as the hay costs about 10*s.* a ton to make it, we have 50*s.* against 5 tons of Grass, or 10*s.* a ton as before.

All these are examples of gross returns, from which rent, labour, interest of capital, and various risks have to be deducted before the net value per ton of the Grass he grows is actually put in the farmer's pocket.

Of course both the gross and net value of Grass grown near London, where it can be converted into milk, is much higher than what the ordinary farmer obtains.

Lord GRANVILLE holds 300 acres, of which 260 are pasture in the parish of Hendon. He sells off this farm every year in milk and hay and arable produce probably more than 20*l.* an acre altogether, and his net profits, after all his payments, are probably equal to at least 8*s.* a ton of all the Grass he grows. This is the net value of the Grass in his case—that of a milk farmer near London. And more than this no doubt would be got upon a *sewaged* farm, as near London as Hendon is, for to take the one item of rent alone, Lord GRANVILLE's rent is probably 5*s.* a ton upon his Grass, which may not be more than 10 or 12 tons per acre, whereas upon a farm watered with sewage, with its 40 to 50 tons per acre, there will not be more than 1*s.* 6*d.* to 2*s.* per ton to deduct on the score of rent from the gross returns of the Grass.

If 40 tons of Grass (over and above the ordinary natural produce of Grass land) can be got from the use of 4000 tons of sewage, then if only Lord GRANVILLE's experience of the value of the Grass be obtained, there will be 1*s.* obtained for every 10 tons of sewage to be divided between the owners of the sewage and the tenants of the land.

And if we take the case of an ordinary Essex arable farmer depending almost wholly on Wheat and Beans for his returns, and sending his straw to London and bringing dung back (because under the dry climate of Essex it is of no use to try and grow roots and Grass for cattle), it can hardly fail that he should be a better customer for sewage than almost any other man.

Laying down 10 acres of his fallow (on which he already pays his rent, and expends much labour) so as to receive 40,000 tons of sewage in the year, we imagine that he will get 400 tons of produce, worth at least 200*l.* to him, as affording not only the ordinary meat or milk produce per ton from its consumption, but a cheaper means than any he now knows of providing during that consumption a manure heap for the rest of his land.

Those who have examined the experience of sewage elsewhere know that 40 and 50 tons of Grass per acre is not at all an excessive produce. This, though surprising enough to the ordinary farmer, is not likely to be disputed; and the only point in the discussion of the subject which is open for doubt or denial, is the possibility of growing a ton of Grass from every 100 tons of the sewage applied regularly all round the year.

—— AT a time when we have such terrible accounts from our Indian possessions of poverty and famine, consequent upon the failure of the Rice crops, and when our own good harvest has been injured in many districts by continued bad weather, we could well dispense with the gloomy accounts of the continental harvests which reach us from those countries which have been so recently devastated with war. From Austria we learn that "the unusually varying temperature of the spring of this year, and the severe cold which occurred so suddenly at the end of May, and reached in many parts 4° of RÉAUMUR, have brought upon Austria the dire calamity of an almost universal failure of the principal produce of the soil.

"Wheat, Rye, Barley, and, indeed, every kind of grain, have suffered seriously; and although later accounts, and the effects of some warm rains which immediately followed on the short-lived frost, have partially raised the depressed spirits of the agriculturist, yet many portions of the empire are still threatened with scarcity, if not famine."

With this sad intelligence it is satisfactory to know that the most considerable and laudable efforts have been made by the Imperial Government to alleviate the general suffering, and large quantities of seed were freely distributed at the earlier part of the year to the poorer peasantry, especially of Hungary, in the hopes of a more fortunate second crop being in some instances realised. *J. R. J.*

—— Having for many years lived in the valley of the Thames, and seen mills and land and navigation all doing one another mischief—floods created artificially, damaging the land—weirs and locks for mills and navigation hindering the agricultural use of water—and damage of all kinds inflicted by the unsuperintended muddle in which everything connected with the River seems latterly to have lain—we hail with satisfaction the recent creation by Act of Parliament of both authority and power for the better conservancy of the Thames in future.

Mr. ARKELL, of Swindon, lately pointed out in our columns, by reference to the many interests concerned, what need there is of choosing disinterested, energetic, intelligent, and capable men for the office of Conservator, which is now to be made efficient. We understand that our frequent correspondent, the Rev. J. C. CLUTTERBUCK, of Long Wittenham, is a candidate for this office, and we can imagine no one better fitted for the discharge of its duties. Long a student of the whole subject of water distribution, and possessed of a life-long acquaintance with the Thames throughout its course, especially interested also, both as a practical geologist and as a resident, in the relations of the River to both town and country, he is at the same time well known in the agricultural world. As President of the Oxford Farmers' Club he is the trusted representative of one great class of interests which mismanagement of the water compromises; and wherever rival interests clash, and impartiality as well as intelligence is needed for a just decision, there is no one in the whole Thames valley whose arbitration will command more confidence.

—— The East Lothian Agricultural Society passed a formal vote of thanks the other day to the Rev. PATRICK BELL, of Carmylie, Forfarshire, the inventor of the reaping machine, who has never received any benefit from his invention, since nearly 40 years ago he received the prize of 50*l.* on account of it from the Highland Society. How great the benefit which his invention has conferred on British and American agriculturists can hardly be exaggerated. There never was a more fitting occasion for a suitable testimonial of gratitude; and we hope that the vote of thanks is only preliminary to some more substantial expression of them.

CATTLE PLAGUE RETURNS.

THE following Returns were issued on Oct. 11:—

This Return gives the number of cases occurring in Great Britain which have been officially reported to this Department. Column 1 only records the cases reported as having commenced during the weeks indicated by the headings. All "back cases" are included in column 2.

COUNTIES REPORTING ATTACKS.	1 Number Attacked: Week ending Sept. 29.	Week ending Oct. 6.	2 Result of Reported Cases from Commencement of Disease: Attacked.	Killed.	Died.	Recovered.	Unaccounted for.
Kent	—	—	1,423	467	821	102	33
Buckinghamshire	1	1	2,582	1,871	504	187	20
Oxfordshire ..	5	—	3,791	2,157	1,190	395	49
Cambridgeshire ..	—	1	7,875	2,686	4,533	494	162
Essex	1	[illegible]	2,438	562	1,461	305	110
Suffolk	—	1	2,442	1,255	968	190	29
Somersetshire ..	—	1	312	208	94	5	5
Shropshire ..	1	8	7,304	3,427	2,742	788	347
Staffordshire ..	—	2	5,929	2,585	2,339	521	484
Lincolnshire (Div. of Holland) ..	1	—	14,081	7,661	5,070	893	457
Do. (Kesteven)	—	—					
Do. (Lindsey) ..	1	—					
Cheshire	4	2	67,697	23,767	32,730	8,053	3,147
Lancashire ..	26	12	6,089	2,901	2,314	530	344
York, W. Riding	—	1	11,014	2,159	6,508	1,789	558
" E. Riding	—	2	12,514	3,340	6,228	2,037	909
" N. Riding	—	1	11,161	2,526	5,629	2,112	894
Total	40	32	156,652	57,572	73,131	18,401	7,548
Remainder of England ..	—	—	41,786	19,963	17,289	3,188	1,346
Monmouthshire & Wales	—	—	8,388	1,180	5,794	1,117	297
Scotland	—	—	46,861	6,263	28,088	10,707	1,803
Great Britain ..	40	32	253,687	84,978	124,302	33,413	10,994

NOTE.—One Inspector in the county of Chester, who returned [illegible] last week, has not reported in time for this return.

The return shows that 32 attacks were reported to have occurred during the week ending October 6, being [illegible] less than in the previous return.

Fresh outbreaks took place in 11 farms or places where cattle are kept, the number of fresh outbreaks in the previous week being 11 also. The number of healthy cattle slaughtered to prevent the disease extending to them, was 12 during the week.

The disease is reported to have prevailed during the week in the following 12 petty sessional divisions of England, viz.:—Buckinghamshire.—Stokenchurch, 1 attack. Cambridgeshire.—Ely and South Witchford, 1. Suffolk.—Blackbourn, 1. Somersetshire.—Yeovil, 1. Shropshire.—Whitchurch, 8. Staffordshire.—Cheadle, 2. Cheshire.—Daresbury, 2. Lancashire.—Amounderness, 4; Garstang, 8. Yorkshire (West Riding).—Tadcaster, 1. Yorkshire (East Riding).—South Holderness, 2. Yorkshire (North Riding).—Whitby Strand, 1.

Since the commencement of the disease 51 in every 1000 of the estimated ordinary stock of cattle in Great Britain are returned as having been attacked.

The total number of sheep reported to have been attacked up to the date of this return is [illegible]. No cases are reported during the week.

THE DISEASES OF CATTLE.

[We abridge the following from Professor Simonds' address on opening the Session at the Royal Veterinary College.]

But it is a general knowledge, there are few professions which require a greater diversity of special information than ours, although the fact [illegible] by many. Among these requirements an acquaintance with the various systems of agriculture stand prominently forwards, for they have much to do with the health of farmers' stock. The diseases which prevail in heavy land districts are almost unknown in light, and [illegible] the system of farming necessarily depends on the character of the soil, and this in its turn is due to the geology of the district. If you ask me, Do we, then, require to be geologists? I answer, Yes, in so far as that science is connected with the soil and the particular substrata on which it rests. Beyond this the study may not be necessary, however elevating and ennobling when rightly used it may be. By way of illustration, look to the enervating effects of wet clay soils, and their connection with dropsical diseases, and not unfrequently with rot in sheep. Look also at the ill effects of sandy soils, deficient as they are in all the elements required to produce sufficient nutriment in the food of growing animals. There is yet another and important view to be taken of agricultural science in its connection with vegetable physiology, which is, that the present system of raising large crops from the soil by the use of artificial manures is probably productive of disease in animals. Plants may be brought into a state of plethora which will as completely unfit them for food as animals similarly placed would be unfitted to undergo severe exertion without the occurrence of disease. Besides this, plethoric animals, as is well known, are more susceptible to the influences of all the ordinary [illegible] that plants quickly forced to maturity are similarly circumstanced. It is vain to suppose that the health of animals can be long maintained when they are fed on forced or imperfectly developed vegetables. By these remarks, however, we wish not to be understood as [illegible] the use of [illegible] them to such plants as are used in their [illegible] cattle and sheep. The light land farmer, again, not unfrequently brings into operation another cause of disease, especially under certain conditions of the atmosphere. The system which he of necessity adopts of manuring the so-called artificial Grasses on the surfaces as a preparation for the Wheat crop, frequently causes the sudden death of sheep when fed thereon. The reason of this is often not to be found merely in the amount of vegetable matter, or in the rapidity with which it had been produced. The cause, indeed, would rather appear to depend on the decomposition of the manure, and the modern view of decomposition will perhaps help to explain this, and show, at the same time, the relation which exists between veterinary science and chemistry. In a lecture recently delivered by my colleague, Professor Tuson, before the Royal College of Surgeons, he showed that until 1862 the ordinary theories of putrefaction and fermentation were accepted. At that time Pasteur gave to the world the results of his laborious and masterly researches on these phenomena, proving that putrefaction and fermentation were not purely chemical, but physiological processes, and that the chemical effects observable were the accompaniments, as results of so-called vital acts. Pasteur proved, by the most sagaciously contrived and carefully conducted experiments, that the atmosphere in most situations is charged with living beings, and that they are the true exciters or causes of putrefaction and fermentation. May not the sudden death of sheep and cattle from splenic apoplexy, and its frequent extension from them to other animals on the farm, be explained by their being surrounded with myriads of these beings while feeding on Grasses manured after the manner to which I have alluded. Without referring at greater length to an abstruse subject of this kind, it may be remarked that every day's experience convinces us more fully that disease and death are often to be referred in another way directly to the food of animals. How could we expect otherwise, seeing that we have chiefly to do with herbivorous creatures, and that very many plants indigenous to the soil are springing up with their ordinary food, which possess not merely injurious, but positively poisonous properties. Instinct doubtless leads, as a rule, to an avoidance of these, or their baneful effects would be increased in a tenfold degree. The annals of veterinary medicine are replete with instances of this kind, and the pages of the *Veterinarian* often contain similar cases. It may be, perhaps, that Nature, ever wise in all her operations, thus teaches that, by the free dispersion of such plants, we possess a ready means to the removal of disease in some of its varied forms, it being an oft-repeated axiom that what is food to one creature is poison to another. Be this as it may, we see enough in the circumstances to prove that botany is intimately connected with pathology, and has a direct bearing on the progress of veterinary medicine. Again, let us look at ordinary causes in the production of diseases, and we shall find a potent one in temperature and in the more common changes of the weather. Take the present season as an example, and I venture to predict that the large fall of rain which has taken place since the middle of the year down to the present time, associated as it has been with an elevated temperature, has laid, and is laying, the foundation for an attack of rot among the sheep. You who are familiar with the natural history of the liver-fluke know how this is brought about. The rot, perhaps, may be only partial, but on our undrained clay pastures and the [illegible] valleys it is sure to obtain.

We have thus attempted to show that disease is often traceable to the nature of the food supplied to animals; besides which, that it is found to depend on the manner in which the food is prepared, and the way in which it is used. The education of the veterinary surgeon should be made, then, to embrace a knowledge of all these things. He should be as familiar with the habits of animals, and the influence of external causes over their susceptibilities, as with the nature of disease and the mode by which it is to be combated. I pass to more special matters; for, under existing circumstances, and standing as I do, it is to be expected that something be said on the still-great question of the cattle plague. The passing of the Cattle Plague Act was the real cause of the diminution which has taken place, and which emboldens us to hope that ere long the disease will be entirely exterminated. For the first time in the history of the visitation, the attacks were returned as under 100 for the week ending September 1. A few salient points in connection with this subject can only be referred to. The total attacks are returned as 198,364. The animals killed (diseased) amount to 77,469; those which died, 90,412; recovered, 21,589; unaccounted for, [illegible] which no less than [illegible] have been slaughtered healthy, to prevent the spread of the malady. These figures are truly formidable; but they fail to show a tithe part of the distress and ruin which have been brought on hundreds of thriving and industrious farmers and cattle-owners by this dreadful visitation. It appears from the official returns that the attacks in Scotland amount to 46,861, being 4841 per cent. on the entire stock of the country. Of this number there died 28,088, and were killed 6263, making a loss of 34,351. 10,707 recovered, and 1803 are unaccounted for, the larger part of which may probably be regarded as having died. Scotland, too, has lost 13,444 cattle, which were slaughtered to limit the spread of the infection. We come now to Wales. In the aggregate, [illegible] the Cambrian cattle have been attacked, and of these 5794 died, 1180 were killed, and 1117 recovered, leaving 297 unaccounted for. In Wales also 528 were also slaughtered healthy. To come next to Ireland, the disease appeared in the North of Ireland, at Drennan, near to Lisburn, county Down, in the month of April last. How the contagion was conveyed thereto has never been satisfactorily ascertained. By some it is supposed to have been taken from Scotland by drovers, whilst by others it is thought that its introduction was not altogether accidental. A fair was held about 4 miles from Drennan a week previous to the appearance of the disease; but none of the infected cattle had been taken there, nor were any drovers from either Scotland or England known to have gone into the parish. I am indebted to Professor Brown, who was specially commissioned to investigate the cases, for the following details of the outbreak. On May 13th, he states, notice was received of an outbreak of cattle plague in county Down, at a place called Drennan, about seven miles from Belfast and three from Lisburn. On inquiry, however, it was found that the disease had existed there since April 8th, on which day a cow was attacked with plague on a farm belonging to John McKee. From this time other cases occurred on the following days—April 8th, 13th, 16th, 19th, 28th, 30th, May 3d, 10th, 11th, 12th, 13th, 17th, the disease having extended during this period to three adjoining farms. Thus, from John McKee's it spread to W. J. Erskine's, 40 perches away; then to W. McKee's, 10 perches distant; and thence to Rea's, adjoining. The owners of these farms had assisted each other in drenching the sick animals, in examining, and burying the carcases, not knowing the nature of the disease. From the same centre the malady likewise extended to McCartney's, at Carnagh, one [illegible] from Drennan, and after an interval of 21 days, namely, on June 7th, it was reported to have broken out at McKetterick's farm, half a mile from Drennan. The report was not received, as just stated, until June 7th; but on inquiry it was found that three animals had died, and been buried before the inspector was called in. On his arrival he found that two others were lying dead, and two more were ill; making, in all, seven animals which had been attacked. On June [illegible] the stock on this farm was killed; and on June 15th a case occurred on Erskine's farm, whose cattle were in the next field. Professor Brown saw this cow on June 18th, and found all the symptoms of plague to be well developed, and likewise that the post-mortem appearances are perfectly characteristic of the malady. On June 20th, 21st, and 25th, the rest of Erskine's cattle were attacked. These were also examined by Professor Brown. No more cases occurred in that district, but on June 22d he was called to inspect some cattle at Ballynasken, Co. Meath. Here he found one dead from plague, and another dying. This, with three others that had been taken with the disease, were at once killed and buried. On July 5th another case occurred

on the next farm, and on Mr. Brown's arrival the animal was found to be dying. Eight others were on the farm, which were immediately killed and buried. No more cases occurred. In each case, the animal first affected was in either of these instances, the person, as in the county of Down, having been introduced in some mysterious manner. The arrangements for meeting the emergency were perfect. Cordons were drawn round infected districts, and strictly kept by the constabulary. All diseased animals were thoroughly killed and burned, and also every one that had been in contact with them. All persons going near the place were disinfected by the constabulary, and no horses nor vehicles were allowed to be taken out of a infected locality. The entire number of animals exposed to the infection was 50, and out of these 29 were attacked, and either died or were killed, and 21 were slaughtered healthy. Nothing can show more clearly the propriety of the "stamping-out process" than this result. In it we have a parallel to what took place in France, where only 43 animals, healthy and infected, were sacrificed to the poleaxe, and the country freed from the plague. It may here be remarked that the process of destroying the germ of the disease wherever it may appear has proved equally successful in Belgium. This country, after enjoying an immunity from the scourge for a period of 16 years, without the disease followed the track of the Russian and Austrian armies, received the malady from Holland in August of last year. The imports from Holland were at the time larger than ordinary, and it is known that some diseased beasts, supposed to have come from Rotterdam, passed safely through Belgium. The affection gained a footing in no less than six different provinces, notwithstanding which, the energy displayed by the Government, as soon as it had correct information on the subject, quickly succeeded in exterminating the pest with a loss of only 485 animals in all. Despite of the frontiers being the importation of cattle and sheep, with hides, &c., from Holland, and of the ports against English cattle, since then preserved Belgium free from the disease. Contrast with this the facts the vacillating policy of Holland, and the desire to treat the diseased cattle, and you have a result the reverse of rightly termed deplorable. In South Holland, and Utrecht in particular, the disease still prevails to an alarming extent, and not only has no diminution taken place in the number of weekly attacks, but a positive and alarming increase, since about the middle of the summer. The last official reports received have seen give the total weekly attacks from June 30 as follows:—

June 30	247	Aug. 11	1227
July 7	597	,, 18	1173
,, 14	986	,, 25	1379
,, 21	776	Sept. 1	1443
,, 28	971	,, 8	1849
Aug. 4	989	,, 15	—

The relative numbers in the three divisions, from Sept. 2 to 8, being as follows:—

South Holland.	Utrecht.	North Holland.
731	6	1

showing a material increase in each division. With regard to the way in which the disease was introduced into Holland, it is unnecessary here to repeat the particulars in detail. Sufficient to say, that its importation from England has never been denied, the cattle taking it being Dutch oxen which were returned to Rotterdam in consequence of not bringing a remunerative price in the London market.

Everywhere it will be seen that attempts at cure are invariably associated with a keeping-up of the disease. The mischief thus done is often ruinous to individuals, as well as injurious to the wealth of the nation. The cattle trade must have suffered most in England, and in which the disease still lingers, are those where encouragement has been given to treat infected animals, and where the local authority has been otherwise lax in enforcing the law. Cheshire is a remarkable illustration of the truth of the remark that the cattle trade in proportion as the attempts to keep alive plague-stricken animals. In this county no less than 23,742 cattle have been killed diseased, and 4660 healthy; 32,729 have died, 3147 are accounted for, and 296 have recovered. Ruin has been brought on numerous farmers and dealers, and I believe the whole county must fall for many years to come. No less than 300,000*l.* will have to be borrowed to compensate the cattle-owners. This sum has to be repaid in 30 years, and it has been calculated that it amounts to 2*s.* in the pound on all the taxable property of the county during the whole of that time. Where the duties to be assessible to replace, and it is evident that the farmers have to be taught that to emerge from their difficulties they must henceforth look to other sources of income besides cheese-making. The system of farming must be modified, and Cheshire become a cattle and sheep-grazing county as well as cheese-producing. With regard to treatment it is not a little remarkable that the plan which received most favour at the hands of the public was one that emanated from an ignorant man who had no medical knowledge. "Drowning men," it is said, "catch at straws," and this saying well illustrates the case, the readiness with which people accepted the treatment advised by Mr. Worms. This consisted chiefly of the exhibition of a mixture compounded of Onions, Garlic, and assafœtida. Little was to be expected from this odoriferous compound, except perhaps that which really did take place—viz., a rise of 1*s.* per ton in Spanish Onions, and a considerable advance in the drug market. A more modern remedy is chloroform, which, like every other, has found favour with some persons. Our experience of it is anything but favourable; nor can we see how such an agent could act beneficially in the destruction of the cattle plague poison. If any will be found likely to prove of use in such a way, it was to be expected that the sulphites might; but these, like everything else, failed completely when used on a large scale. Neither time nor the occasion will, however, allow of my dwelling on the treatment of cattle-plague, and I have no disinclination to do so, as I have said, but it appears to me that reference should be made to one system at least which was adopted as a preventive—I allude to vaccination. The system had its origin in the belief that cattle-plague was not only an exanthematous affection, but closely allied, if not identical with, variola. This belief, had its origin with some distinguished members of the medical profession, soon found favour with the public, and vaccination was at once seized upon with an avidity that would have done honour to a better cause. The great demand for vaccine lymph could not be supplied freely by means of spurious stuff by a class of persons ever ready to trade on public credulity. Ponds charged with a compound of colchicum and croton oil, or some similar irritant, were sold by the gross, and more than one person in London is said to have profited largely by the transaction. The Northwich Guardians of Cheshire was made the scene of the nefarious practice of two persons, who travelled throughout it, carrying an irritating mixture in quart bottles, with which to "vaccinate" cattle. It is said that they operated upon a thousand animals at least, making large incisions on the lower parts of the neck or shoulder, and wetting the wound with the fluid. In many cases the plague showed itself in about eight days afterwards, and its outbreak was believed to depend on these persons visiting diseased and healthy stock indiscriminately. The charge made by them was 2*s.* 6*d.* per head, so that the sum netted was very considerable. No doubt, however, that a very large number of cattle were properly vaccinated; and so many applications for lymph were made that it was found absolutely necessary for the national vaccine establishments to refuse all comers. Five shillings for a well-charged point was given in many instances, and as much as a guinea a head is said to have been paid for legitimate vaccination. The vaccination mania, no doubt, largely contributed to the spread of the plague. Three causes for this were especially brought into operation. 1st, A fancy security in the mind of the cattle owner; 2dly, The totally unprotected state of even properly vaccinated cattle; and lastly, The positive inoculation of animals with the plague virus, by persons acting under the belief that this was vaccinating the cow. But, taking the cases most to be depended upon, it appears that out of 7692 animals 4188 were successfully vaccinated, and 1775 resisted the influence of the vaccine lymph entirely. The figures here given have unaccountably been omitted from Mr. Simon's returns, like most other things connected with the cattle plague, was unique of its kind, it stated that 28,113 animals had been vaccinated; 22,464 before the appearance of cattle plague, and 5649 after a declaration of the symptoms. These figures are deducted from the total number of fatal attacks, and left upon the minds of the farmers in that ill fated county, apart from anything else which has been advanced in this address. It will be seen that no correct deductions can be made from the inquiry, and that the questions of susceptibility, the advantages or otherwise of retrovaccination, remain very much in the same state in which they were prior to the cattle-vaccination mania.

I come now to a matter of considerable importance, both in itself and as affecting the continuance of the cattle-plague—namely, the lifelight of the poison in dissection. That the poison is inert when introduced into the system of man and many of the domesticated animals we have abundant proof, but that goats and sheep are highly susceptible to its influence has been established beyond all doubt. Only a few weeks after the first outbreak of rinderpest, five goats, belonging to a dairyman in Islington, died under circumstances which rendered it very probable that they had contracted the disease from plague-stricken cattle. These cases were quickly followed by others, and goat after goat came into the College suffering from the malady. Towards the end of September, 1865, intelligence reached us that some sheep in Norfolk were dying from a disease, the symptoms of which were strongly allied to cattle-plague. The case was investigated, and left no doubt whatever as to the nature of the disease. Case followed upon case in rapid succession, and with fatal termination. Such has been the progress of the disease among sheep, that the officially reported cases now amount to 6721. This number, however, falls very far short of the real one; and I have no hesitation in saying that many hundreds would have been added to it if matters had been from the beginning properly considered. By way of illustrating the mischief done by sheep, I select the following from many similar instances: Some sheep which had contracted cattle-plague were unwittingly sold by a farmer in Norfolk. They were sent from his yards to a market, and from there to various dividend yards lots. One lot went into Suffolk, and carrying the disease with them, destroyed a large number of valuable sheep belonging to a large farmer, and two other small lots belonging to two different persons. A lamb also, belonging to one of the ewes of the original lot, contracted the disease. The 14 cows and heifers, from being taken into premises at a distance at the time it was suffering from the plague. The other division of the sheep came into Essex, and led to no less than four distinct outbursts of plague—three among sheep and one in cattle. One of these outbreaks was in Hertfordshire, two in Kent, and one in Middlesex. Facts like these are unanswerable by those who deny the liability of sheep to cattle-plague, and they would alone justify the course adopted by the Government in closing the fairs and markets, and restricting the movements of sheep in ten counties of England. I have elsewhere said, we could afford to smile at the pretended knowledge of farmers which has given origin to the statements that sheep are unsusceptible of plague, were it not for the mischief it has produced. A grave responsibility rests with these men; and should cattle-plague again attempt to break out, no excuse will be found to depend on the malady being contracted from diseased sheep. It is incumbent on the veterinary profession to show to farmers that, however perfect their education as tillers of the soil may be, however great their knowledge of breeding and feeding, however skilful they may be in the management of sheep, their importance of no small significance, as showing the increased danger to our flocks as well as our herds from imported contagious diseases, that this malady has been ascertained to have broken out no less than eleven times during the present year. The first of the cases occurred in Northumberland, although the flock in which the foreign sheep came in contact was not large, still the whole of it was sacrificed, the unattacked as well as the attacked animals being killed. The second, third, and fourth outbreaks were in Essex, and continued early to foreign sheep, the fourth of which, in point of time, was found to be attacking the malady. The fifth like wise took place in Essex among foreign sheep. Besides these during the last fortnight I have learned, from personal inspection, that the malady has been introduced into no less than six places in Cheshire, thus bringing the total number of outbreaks at present known. So much to be feared that the extent of the disaster has not yet been fully ascertained, as it is well known that many thousands of foreign sheep have been sent there for feeding on the pastures which had been emptied by the cattle-plague. Numerous as the cases of outbreak from foreign sheep have been, there cannot be a doubt but they would have been greatly added to had it not been for the vigilance displayed on a recent occasion by the inspectors at the port of Harwich. Only a fortnight since, a vessel—the *Zealous*—came into Harwich from Rotterdam, having on board 400 sheep intended to different importers. On examining the animals, by turning up each sheep, Mr. Taylor, the inspector, found that no less than 87 of them were affected with variola. The whole cargo was detained, and two days afterwards seven more cases were detected, in all 94 cases, or nearly one-fourth of the whole, and on re-examining the sheep he found nine others in the first stage of the malady, and five which presented pits. This brought the total number of cases to 108. It is worthy of remark that these sheep were all consigned to one person, and were part of a lot of 300. All the diseased animals were killed and buried, and the rest of the cargo was slaughtered for the meat-market, the skins being detained and disinfected. Since this, two other cargoes have been detained at the same port, that their true condition may be ascertained.

MEMORANDA ON HORSE KEEP.

1. At present a boll of good Beans (4 bushels) is worth 20*s.*, and one of Oats 14*s.* I find, by experience, that 3 bushels of Beans broken will bulk out to 4, of which the value will be 15*s.* They can be broken at any mill for 1*d.* or 1½*d.* per bushel, and taking carriage into account, the expense will be about equal, bulk for bulk. Now, 3 bushels of Beans will weigh 14 stone, while 4 bushels of Oats will only be 12 stone, or at most 12½ stone. What I wish to know is this: how much are the Beans better than the Oats? The price, observe, is nearly the same. I have known horses stand farm work in summer on 3 bushels of Beans whole (or 4 broken) mixed with 8 bushels of coarse bran, and though they did not get fat, yet they remained in tolerably fair condition. In my opinion, bran is little better than Wheat straw, so that the Beans alone must have done the work. *J. A.*

2. In Boussingault's work on "Rural Economy," he gives a table of the relative value in nutriment of various articles as food for animals, ranking them according to the relative quantity of nitrogen which in analysation they have been found to contain—nitrogen being one of the most important constituents of muscle; and muscle, not fat, being an undoubted essential in the capacity for the patient and effective endurance of labour. In the table in question, 100 lb. of good meadow hay are taken as the guiding standard of quantities; and it then sets forth what quantity of other descriptions of food it will require to yield the same quantum of nutriment, or, in other words, the same supply of nitrogen. I find it there stated that 68 lb. of Oats, or 24 lb. of Beans, are equal, in point of strength, to 100 lb. of hay. Therefore, the relative value, in capability of producing muscle, is, according to theory, very nearly as 3 to 1 in favour of Beans over Oats, or as 25 are to 68. In point of economy, therefore, Beans are far superior, as the difference in price per lb. between the two is only trifling. In many parts of the country I understand that 20 lb. of hay and 1½ pecks of Oats per day, or 140 lb. of the former and 10½ pecks or 105 lb. of the latter per week, are considered a good and ample allowance of food for a farming horse, equal to 294 lb. per week, or 42 lb. per day of hay alone. Now, supposing that a horse were given 9 lb. per day, or 63 lb. per week of Bean meal, this allowance would be equal, in point of strength of food, to 274 lb. hay, leaving the equivalent of 20 lb. of hay to be supplied by other means. Admitting that Beans are really a very strong food, their nutriment is in too condensed a shape, and would require dilution or expansion in bulk by adding some other food less nutritious and greater in capacity. This desideratum may be obtained by using chopped straw, which contains only about one-fourth as much nutriment as hay, and therefore 80 lb. of straw may be made use of, in order to supply the deficient equivalent of the 20 lb. of hay. But, again, 80 lb. of chopped straw would not be of sufficient bulk to distend the stomach of the animal in an adequate degree, nor afford a sufficient supply of carbon necessary to keep up the quickened respiration during the hours of work. I should therefore recommend that the quantity of chopped straw be increased to 20 lb. per day, or 140 lb. per week; and in order to correct the binding nature of the Beans, should also recommend the addition of half-a-pound per day of crushed Linseed.

3. The following are various schemes of weekly rations for a horse:—

Relative Weekly Expense of Keeping Horses.		
a.—24 cwt. of Grass hay, at 3*s.* 6*d.* per cwt. ..	*7s. 0d.*—*7s. 0d.*	
b.—24 cwt. ,, at 3*s.* 6*d.* ,, ..	7 0	
14 peck of Oats, or ½ peck per diem, at 2*s.* 6*d.* per bushel	1 1	—8 10
c.—2 cwt. of Meadow hay at 1*s.* 6*d.* per cwt. ..	3 0	
8½ pecks of Oats, or 1½ peck per diem, at 2*s.* 6*d.* per bushel	5 5½	—8 5½
d.—2 cwt. Bean-straw, at 1*s.* 6*d.* per cwt. ..	3 0	
4 pecks of Oats, at 2*s.* 6*d.* per bushel	2 6	
Cutting to chaff	0 6	—6 0
e.—160 lb. of Bean-straw, at 1*s.* 6*d.* per cwt. ..	2 0	
300 lb. of Carrots, at 1*s.* per cwt.	3 10	
1½ pecks of Oats, at 2*s.* 6*d.* per bushel ..	1 1	
Cutting straw and Carrots	0 6	—7 5
f.—1 cwt. of Meadow hay, at 3*s.* per cwt. ..	3 0	
9 pecks of small Potatos, at 2*s.* 6*d.* per sack	1 10½	
1½ pecks of Oats, at 2*s.* 6*d.* per bushel ..	1 1	
Cutting straw and boiling Potatos ..	0 8	—5 11½

Comparative Table of nutriment, according to R. L. Rham:—

350 lb. of Mangel Wurzel,	
175 lb. of boiled Potatoes,	
140 lb. of Bean-straw,	equal to 100 lb. of best Hay.
574 lb. of Wheat-straw,	
105 lb. of Oat-straw,	
59 lb. of grain of Oats,	

4. *Linseed cul.*—As an article of food it is entirely out of the question; horses will not even eat Linseed-cake from which the oil has been almost entirely extracted, unless driven to do so by hunger. They will take, however, much more readily ground Linseed, or the same boiled to a jelly and given with a bran mash. We doubt the economy of this article for horses. The best plan to save your hay is to give your horses an extra quantity of corn, mixed with some straw and cut into chaff; and straw in the rack instead of hay, with as much Swedish Turnips as they will eat. For an ordinary farm-horse, the following will be as economical a mode of feeding at the present time as we can suggest:—Oats, 1½ bush. 28 lb. per week; Beans, 1 peck per week; hay cut into chaff, 28 lb. per week; Swedes, 1 cwt., or Mangel, 2 cwt., per week. This will keep a farm-horse in good working condition, and, with straw in the rack, will cost, as near as possible, 9*s.* per week. Swedes may either be given separately in slices, or mixed with the chaff and corn; of course, we presume you have no Swedes growing on your farm. *W. S.*

5. *Indian Corn.*—I find it to answer admirably, and the horses to which I have given it for the last two months are harness horses, doing moderate work—from 12 to 18 miles a day. I have given 8 lb. of bruised Indian Corn and 12 lb. of chopped hay mixed together; a little water sprinkled over, and the quantity of 20 lb. per day at four different times, such as are found best to suit. The Indian Corn seems to be extremely nutritious, having little husk; and I have found new hay to answer well along with the very rich food of the Indian Corn. It is necessary to avoid giving water for an hour before and after feeding, as the Indian Corn is liable to expansion in the stomach, which requires a little care On this feeding my horses have improved very much, and are in admirable hard working condition; indeed, considerable work is required to keep the horses from getting too fat, therefore it is a mode of feeding which is as good as can be desired; and the next question is, at what cost it can be supplied. The cost for each horse per day is exactly 10*d.*

8 lb. Indian Corn, bruised, at 1*d.* per lb.	8*d.*
12 lb. of hay, chopped	2*d.*
	10*d.*

This is independent of the straw, which may be balanced by the value of the manure. It seems to me that this is an interesting result, and shows that if the Potato is to be an article of human food on a large scale, oatmeal may take its place; and Indian Corn may, most advantageously and economically, take the place of Oats as the food of horses.

6. *Green Tares.*—Two cart-horses in good condition were kept loose in the stable, seven days, without going out of it, kept upon green Tares and Corn. Consumed in the seven days 12 cwt. 1 qr. 8 lb. of excellent green Tares, then at the top of their growth, before they had bloomed: dry weather: no waste.

Also 1 peck of Oats per day per horse, 3 bushels ct. qr. lb.

2 pecks weighed	1	1	7
Also chaff	0	2	4
Corn and chaff	1	3	11
Tares	12	1	8
Two horses consumed in one week	14	0	19
One horse consumed in weight in 7 days ..	7	0	9

That is, 113 lb. per day for one horse. Drank 6 gallons of water

per horse per day. Two horses littered for 7 days, 1 truss of Wheat straw per day, 36 lb. per truss.

From 252 lb. of straw and the above food and ct. qr. lb. water.—Weight of manure in its raw state at the end of the week	12	2	3
Monday, 5th of August.—Weighed the muck made from the green Tares after lying in a dry stable six weeks, stirred over four times, four pails of water (that is, 16 gallons) thrown upon it, as the dry muck required it every time to prevent its moulding. It was not very rotten; it was removed with a fork, no shovel used: weighed this day	5	1	10

N.B. The stable was a sound old brick floor, with a gutter in it; a 10 gallon copper was placed at the fall of the gutter, and cemented carefully. No urine could escape. Only 21 qts. of urine in the 7 days drained into the reservoir.

7. *Green Meg.*—Two cart horses (not the same as before mentioned, but of the same size and condition) were kept in the same stable upon dry food, and not removed for seven days.

	ct.	qr.	lb.
3 cwt. of excellent Clover hay consumed in the 7 days	3	0	7
1 peck of Oats per day per horse	1	1	0
Also chaff	0	2	4
Two horses consumed in one week	4	3	11
One horse consumed in weight in 7 days	2	1	19

That is, 39 lb. per day for one horse upon dry food. Drank 12 gallons of water per day per horse.

Weight of manure in its raw state, from 252 lb. of straw, and food eaten	10	1	2

The same, after being kept in the stable 6 weeks, stirred over 4 times, 4 pails of water each time (great difficulty in preventing its getting mouldy): it weighed | 6 | 0 | 2 |

Decrease in weight	4	1	0

Only 13 quarts of urine drained from the dry food.

Observe, manure made from green food, when in a ct. qr. lb. proper state to be carted upon the land	5	1	10
Difference in weight in favour of green food	1	0	10

Notwithstanding this increase of weight in the green food, it is presumed the manure made from the dry food is of the most value.

8. The following are the modes of feeding, as well as the cost of the system practised by several farmers on light and heavy soils:—1. Soil with Clover in the early part of the summer, Grass the latter part. In winter long hay, miller's offal corn, or baked Potatoes, according to prices. 2. Soil at summer when practicable, or send out to Grass. In winter, chaff, cut hay, Oats with Carrots, at the rate of 6 bushels of Oats and 7 bushels of Carrots for four horses during the week. 3. Five bushels of Pollard with 1 cwt. of hay, half cut and half long, per horse. 4. Bruised Barley and bran, with cut hay, and a small quantity of long in the racks at night.

OF LIGHT LAND OCCUPATIONS.

No. 5.	s.	d.
1 bushel of Oats	3	3
2 stones of Bean meal	2	4
¼ cwt. of cut hay	2	0
Chaff	1	0
Per horse	8	7
No. 6.		
6 bushels of Oats	18	0
2 ditto of Beans	10	0
4 cwt. of hay	16	0
Corn, chaff, and cutting	12	0
Divided by six horses	56	0
Per horse	9	4
Extra allowance on journey	1	0
	10	4
No. 7.		
5 stones of corn (various)	6	0
75 lbs. of long hay	2	4
Chaff	2	0
Per horse	10	4
No. 8.		
1 bushel of ground Beans	5	3
4 corn, chaff, hay, cut for six horses, equal each horse to	2	8
Corn, chaff, and a few Swedes	1	0
	8	11
Extra allowance for journeys for six horses, 2 bushels of Oats in the spring, each horse about	1	0
	9	11

OF HEAVY LAND OCCUPATIONS.

No. 9.		
5 bushels of Oats	16	10½
2 ditto of Beans	10	0
5 cwt. of hay	17	6
8 bushels of bran	6	8
Cutting	2	6
Divided by five horses	53	6½
Per horse	10	8½
No. 10.		
5 bushels of Oats	16	10½
1 ditto of Beans	5	0
6 cwt. of hay	21	0
8 bushels of bran	6	8
Cutting, &c.	2	6
Divided by five horses	52	0½
Per horse	10	4½
No. 11.		
2 bushels of Oats	6	6
1 cwt. of hay	3	6
1 rootful of cut hay	0	10½
Per horse	10	10½

No. 12. I mow for them in the summer, feeding them in the stables and yard with green meat. In November feed them on Swedish Turnips, giving each horse 6 stones or 1¼ bushel daily. About 3 acres will carry my horses (16) through the winter months (about 28 weeks), till the end of May. Upon this, with ½ bushel of corn per week each horse, they will do well and consume but a small quantity of hay. *Bacon's Agriculture of Knoydl.*

9. *Winter Keep.*—My method formerly was to allow my draught horses each 2 bushels of Oats per week, together with 1 bushel of Beans and as much hay as they could eat, generally Clover-hay; but for the last three winters I have fed them almost entirely on cut Oat-sheaf, cut into half inch chaff, which to me has been a very great saving. In an Oat-crop of about 40 stooks per acre, which might yield near 60 bushels, the feed of a draught horse averages 2 sheaves per day, or 14 sheaves per week, which would be about a bushel and 3 pecks per week, if they had been threshed out, which is a saving of a peck of Oats per week each horse, from what I formerly gave them; besides, I save the bushel of bran per week, and the clover-hay, which was a very considerable item; for draught horses, you are aware, gentlemen, when they get three feeds of clean Oats in a day, when at work, they will eat a great quantity of Clover-hay besides. Now, when I first changed my mode of feeding from corn and hay to cut sheaf, the horses improved in condition wonderfully, thus showing that it suits them well. In very busy seasons, when they are very hard worked, I allow them half a peck of Oats at dinner-time besides the cut sheaf. Last winter I had only 18 acres of Oats; those kept 12 draught horses, besides four young horses occasionally. This quantity of Oats would not have served me through the year, had I not pursued this system of feeding. The mode I have adopted of preparing the cut sheaf is this: I have my straw-cutter to work from the horse-wheel of my threshing-machine, and I generally have as much cut in one day as will serve 12 draught horses for near a month. One man attends to and feeds the cutter with the Oat-sheaves, whilst another man carries the cut sheaf into the granary ready for use, when it is taken to the stable in bags as required. *Mr. Trotter of Dorham.*

10. The food during the different seasons should consist of the following provender, commencing September 29.—

		s.	d.
13 weeks—on 1½ bushels of bruised Oats		5	3
,, 2 pecks of bruised Beans		2	7
,, 1½ cwt. of hay		6	0
		13	10
13 weeks—on 2½ bushels of pollard		2	1½
,, 2 pecks of bruised Beans		2	7
,, Straw		1	9
,, 70 lbs. of Turnips		0	8
		7	1½
13 weeks—on 2½ bushels of pollard		2	1½
,, 2 pecks of bruised Beans		2	7
,, 1½ cwt. of hay		6	0
		10	8½
13 weeks—on 2 bushels of bran		2	0
,, 1 peck of Beans		1	3
,, Cut Clover, Tares, and Pascare		3	6
		6	9

—— Mr. Twynam proposed the following kind of food as an amendment, commencing in the autumn:—

		s.	d.
13 weeks—on 1½ bushels of Oats		5	3
,, 1 peck of Beans		1	3
,, 1 cwt. of hay		4	0
		10	6
13 weeks—on 2 bushels of Oats		7	0
,, 1 peck of Beans		1	3
,, 1 cwt. of hay		4	0
		12	3
13 weeks—on 1 bushel of Oats		3	6
,, 3 rods of Clover, Vetches, &c.		3	0
		6	6
13 weeks—on 1 bushel of Oats		3	6
,, 2½ rods of Clover		2	6
		6	0

11. From the middle of October till the end of May my horses get one feed of steamed food, and two feeds of Oats daily, with the best Oat or Wheat-straw for fodder. I never give Bean-straw, having often seen the bad effects of it—partly owing, I think, to its long exposure to the weather, and from the quantity of sand which adheres to it; I use it generally for litter. The steamed food used is well-washed Swedish Turnips and Potatos, in equal proportions, mixed with sifted Wheat-chaff. In those years when we had a total loss of Potatos, Swedish Turnips alone were used, but not with the same good effects as when mixed with Potatos. This year, having plenty of diseased Potatos in a firm state, I gave a larger proportion of Potatos than Turnips, and never upon any occasion gave Oat-husks, commonly called meal seeds, having often seen their injurious effects. At 5 o'clock in the morning each horse gets 2 lb. of bruised Oats; at noon the same quantity of Oats; and at half-past 7 P.M. 47 lb of steamed food. I find that it takes 62 lb. of unsteamed Potatos and Turnips to produce 47 lb. steamed; to each feed of steamed food 4 oz. of common salt is added, and mixed up with one fourth part of a bushel of Wheat-chaff, weighing about 1¼ lb. A greater quantity of Wheat-chaff than this has generally too laxative an effect. Each horse eats from 14 lb. to 18 lb. of fodder during the 24 hours, besides what is required for litter. During the spring months I sometimes give a mixture of bruised Beans and Oats, instead of Oats alone. From June to the middle of October, those horses that are required for the working of the green crop, driving manure, and harvest work, are fed with cut Grass and Tares in the house, and about 7 lb. of Oats each day, given at twice, increasing or decreasing this quantity according to the work they have to do. I turn out to pasture those horses only that are not required until the busy season. I disapprove of horses that are regularly worked being turned out to Grass, and exposed to all the changes of our variable climate. I believe it is the origin of many diseases. The expense of this mode of feeding, at present prices, in the district, for each horse per annum, is as follows:

	£	s.	d.
12 lb. of Oats per day for			
30 weeks, is 7½ qrs. of 42 lb. per bushel			
7 lb. of do. for 22 weeks, is 3½ ditto		ditto	
1½ qrs. at 17s.	0	12	6
145 stones straw consumed, at 4d. per stone of 22 lb.	2	8	4
Each horse consumes 3 tons 16 cwt. of Turnips and Potatos in 30 weeks.			
58 cwt. of Potatos at 1s.	4	7	0
58 cwt. of Turnips, at 9d.	2	7	6
5 lb. salt, 1 s. 6d. a bushel	0	0	9
Wheat chaff, 4s. 4d.	0	6	0
22 weeks on cut Grass and Tares, at 9d. per day	5	15	6
	£24	0	11

For the 30 weeks the keep of each horse per day is 7d. for Oats, 7½d. for steamed food, and 3½d. for fodder; for the 22 weeks the keep is—Grass 9d., Oats 4d., or 1s. 1d. per day. The expense of preparing the steamed food, including coals, is 4d. per day for each horse. Two hundred and sixty stones of straw will be required for litter for each horse during the year; for this no charge is made, as it is left in manure. By this mode of feeding the horses are in fine sleek condition, and able for their work. I have acted upon this system for the last 15 years, have always had from 16 to 20 horses, and during that period I have only lost seven horses, three of them being from accidental causes; and I attribute this, in a great measure, to the mode of feeding, and in particular to the steamed food. *Mr. Gibson, of Wombourn.*

12. As soon as there is a sufficient bite (which is not usually the case till the middle or end of May), the horses are turned out to Grass at nights, and receive their usual allowance of corn—three feeds of a gallon each, and perhaps a little hay during the day. This management continues till the Clover is ready for cutting, a bunch of which is substituted for the mid-day feed of corn. When the Turnips are all sown, and the hard work consequently over, most farmers reduce the allowance of Oats, and give Clover instead; and in the early part of harvest, when horses are generally quite idle, they often get no corn, when the leading-in of the crop commences they are again put upon corn; and, as the Clover is then generally all consumed, they receive Tares instead as their mid-day meal, and when these are finished, corn or hay. During all this time the horses have been constantly turned out at nights; but about the middle of October, or whenever the weather becomes chilly or unsettled, they are kept in the house, and they now receive full feeding, *i. e.*, three feeds of corn per diem, and hay *ad libitum*. This management is continued throughout the winter; but most farmers, during the short days, give Oat or Wheat-straw instead of hay for two or three months, generally those of November, December and January. Throughout the winter, too, most farmers give boiled or steamed Barley at nights twice or thrice a week; of this each horse gets about 2 gallons. To such horses as will eat them one or two Swedish Turnips are also given once a day, which tends greatly to keep them in condition. When Whit-sunday again comes round, the horses are put out to Grass. *A. J., Roxburghshire.*

THICK AND THIN SEEDING AT TIPTREE HALL FARM.—No. 3.

BEFORE I proceed further in my comments on the Tiptree Hall farming, I must inform my readers that neither I myself, nor generous, and worthy C——, is an enemy, but the reverse exactly, to agricultural experiments and improvements; and we believe, for I have heard my friend so state many times, that if the same amount of skill and science were applied to the cultivation of the soil as to manufactures and other handy-craft works, that less than half the seed for all kinds of grain generally saved would be used on given quantities of land, and that the crops would be far superior to what they now are, probably one-half more at the least; but we deprecate such published statements as are made about the before unheard-of and marvellous crops that are produced at Tiptree Hall, Essex, and from mere homœopathic quantities of seed. Such statements we do most unhesitatingly condemn as calculated to do much injury to the cause we have at heart, and especially as no one believes them; and they are, besides, unwise in Mr. Mechi, as for the sake of his reputation I wished him publicly to acknowledge that his proverbially erratic pen had gotten the complete mastery over him and written 7 quarters and 2 bushels, instead of (?) quarters and 2 bushels from his single peck of seed. Most certainly it is the glory of a man to acknowledge his fault. But here in this last letter of his in the *Agricultural Gazette* of Sept. 29, at p. 930, he even goes beyond his former statement, which was that he had "over 7 quarters an acre from his peck of seed;" but now it is that he had in one year, 1864, 7 quarters and 2 bushels; and in another, 7 quarters and 1 bushel from his peck of seed. Mr. Mechi charges me with making him "to be looked upon" as what I will not repeat, in his "own county." I charged him with not being believed at either Romford Market or at Chelmsford in these marvellous statements he publishes about his crops; and does Mr. Mechi himself believe them? and has he not from the ebullition of the over confident and sanguine temperament of his mind, published exaggerated statements, but has not the manly fortitude to acknowledge his error, and retract them? Let us examine this question. Mr. Mechi has a farm, and chiefly arable, of 170 acres, and on it in one year he had from one peck of seed 232 pecks off one single acre, and the next year a fraction only less. Now is it not clear, had this been the case, that Mr. Mechi would have had, on the following year at least, 40 or 50 acres out of his 170 seeded in the same way? But no, how much had he so done?—two miserable half acres only. And why was this? Suppose he had feared that his crops would have been so large his barns and stack-yards would not have held them, could he not have raised his ricks in the corners of his fields? Or was Mr. Mechi afraid that from the enormous quantities of corn he would have so much lowered the price of it that henceforward it would not pay for cumbering his land with it?

But, again, as to Mr. Mechi's disbelief in his own prescription, which we will examine a little more closely. Let us suppose his Wheat were worth the market price of 6*s.* 3*d.* a bushel; in that case his peck of seed would be worth only 1*s.* 6¾*d.*, and that for the acre of land, which produced 232 pecks, worth at the foregoing price of 1*s.* 6¾*d.*, just 18*l.* 2*s.* 6*d.* Now, can any reasonable man believe he could produce 18*l.* 2*s.* 6*d.* from an acre of ground, at the cost of 1*s.* 6¾*d.* worth of seed only? If he had any faith at all in his teaching, would he not, as I have stated, have had 40 or 50 acres so done, and thus have had 729*l.* 12*s.* 6*d.* in money from an expenditure of 3*l.* 10*s.* 3¾*d.* in seed only? If Mr. Mechi can demonstratively prove to me, next harvest, that he has performed the same exploits over again, I, as I have said before, put 50 acres of land, equal to his in every respect, into his hands, and he shall have all the produce above 48 bushels an acre, which would amount to 500, and 50*l.* besides, if he will enter into a deposited money guaranty that his 50 acres shall average 48 bushels an acre, or 2400 bushels only instead of 2900.

As Mr. Mechi is also a voluntary professor of agriculture, I will ask him to be so kind as to explain for

the benefit of myself and other farmers, how on the 5th of September, before I presume his Wheat crops were cut, or certainly not threshed and measured, he arrived at the knowledge that they yielded 5 quarters and exactly 1 peck an acre? I can clearly understand why his two miserable half acres produced conjointly from 1 peck of seed 4½ quarters, and half a peck only of produce might be very easily cut, carted, threshed, winnowed, and measured; all this I can understand, but my faith would have been stronger had Mr. Mechi not pretended to precision over all his area.

But Mr. Mechi astonishes me the most where he informs us that these 1 peck an acre seedings have been done by him by way of experiment!!! But what experiment? From 1712 to the present day there have been much thinner seeders than is Mr. Mechi, and all have proved that a peck of Wheat equally sown over an acre of ground may produce an excellent crop; but not 7 quarters and 2 bushels an acre, nor anything near it, nor, as I have shown, does Mr. Mechi himself believe it, or he would have at least his 50 acres so seeded. But what experiment can there be in doing what probably hundreds have done before?—but that scores have I am prepared to prove. Now, I am about to go to London by the rail, and what would people say of me, were I to say that I am about to do this by way of experiment? since scores, and even hundreds have done the same before me; and the same it is with Mr. Mechi in reference to his experiments on seeding his land, since scores, if not hundreds, in his own and other counties, as well as others, have by practice done the same as he boasts of having done. Thus the Rev. George Wilkins, whom I addressed before, has published I may say 50 times or more that he hath seeded land with a peck of seed only an acre; and a Mr. Piper, a most intelligent man, and not far from Mr. Mechi's, seeded his land with a peck of seed only an acre; and, again, a Mr. Hardy, also in Essex, did the same; and a gentleman in Sussex did the same, and others whom I could mention, and all had fine crops, but not 7 quarters and 2 bushels an acre. No, no, no! though they farmed much better than ever Mr. Mechi has done in every respect. But, again, Tull was a thin-seeder, and many others about his time, or at and about 1712; and about 1740-50, and 60, there were very many thin seeders, and at the beginning of this century thin-seeding was again revived by Cobbett, and others about the year 1813, and then and from 1820 and later there were many other clever and scientific men, really followers of Tull, who cultivated thoroughly, and even seeded with their 1 pecks, and I know one very old gentleman now alive, who farmed near 2000 acres of land, and chiefly arable, and he never exceeded 1 bushel an acre, and did much with 1 peck only. For Mr. Mechi, therefore, to talk about his experiments on a peck of seed-Wheat an acre is worse than absurd, since the result of such seeding has been proved over and over again. And what are the results? Why, that no wise farmer who farms for his living will seed his lands with such absurdly small quantities of seed. Why then does Mr. Mechi write so much of what he does in this way? I know not unless to have something to write about, he being too wise himself to practise what he recommends. *T. B.*

(To be Continued.)

Home Correspondence.

The Wheat Crop of 1866.—There can be no doubt that, owing to the long continuance of very unfavourable harvest weather, the Wheat crop has suffered considerable damage, and that a very moderate produce has been harvested, both in bad condition and at a heavy cost to the farmer. In a letter published in *The Times* about a year ago I stated that, although upon many light soils the crop of 1865 had suffered both from the frosts of the winter and from the heat and drought of the summer, I still considered that, though very inferior to the crop of either 1864 or 1863, it would prove to be upon the whole little, if any, below an average; and I showed that, upon my own farm, both the experimental and the ordinary crops (though below either 1864 or 1863) were considerably above the average of the previous 13 years. The following are the results obtained this year on some of the most important plots of the experimental field. The selection is the same as in former years, and this is the 23d Wheat crop in succession on the same land. For comparison there is also given the produce of the three preceding years, as well as the average over the last 14 years, during the whole of which period (and in some cases longer) the same description and quantity of manure have been applied year after year on the same plot:—

Bushels of Dressed Corn per Acre.

Plots.	How Manured each Year.	Harvests.				Average of 14 years, 1852-1865.
		1863.	1864.	1865.	1866.	
3.	Unmanured	17¼	16	13¾	12¾	15¾
2.	Farm-yard Manure	44	50	37¾	32½	38¾
7.	Artificial Manure	54⅜	44¾	40¼	29⅜	36¼
8.	Ditto	55⅜	49⅝	43⅜	32⅜	39¾
9.	Ditto	55½	53¼	44	32½	39½
	Weight per Bushel of Dressed Corn, lb.					
3.	Unmanured	62.7	62.0	60.1	61.3	57.3
2.	Farm-yard Manure	63.1	62.5	61 6	61.7	59.8
7.	Artificial Manure	62.6	63.1	61.0	61.0	59.0
8.	Ditto	62.2	63.5	61.1	60.1	58.5
9.	Ditto	62.1	62.6	61.3	60.6	57.8

Thus the crop of 1866 is, under each of the very different conditions as to manuring, considerably less than that of either of the three preceding years, and also less than the average of the 14 preceding years. The produce without manure, and that by farm-yard manure, are between 3 and 4 bushels, and that by each description of artificial manure is more still below the average of the 14 years. Indeed, so far as the quantity of grain is concerned, the past season has been particularly unfavourable for the action of the artificial manures, and in this respect it presents a striking contrast to the three preceding years, but more especially to 1863, when exactly the same descriptions and amounts of artificial manure gave about 23 bushels more grain per acre than in the season just past. From the progressive decline in the produce from year to year since 1863, it will, perhaps, be supposed that the result is in great measure connected with a gradually declining condition of the land, and therefore not mainly the effect and the indication of variation in the productive character of the seasons. That the results are not due to the changing condition of the land, but to the changing character of the seasons, is, however, evident from the fact that several times during the last 14 years the crops on these same plots have been as bad as, or worse than, in the present season. Thus, in 1852, they were worse, in 1853 much worse, and in 1860 very nearly equal, as the following figures will show. The respective plots gave:—

Bushels per Acre.

Plots.	1852.	1853.	1860.	1866.
3	Unmanured	13¼	5½	12¾	12¾
2	Farm-yard Manure	27½	19½	32¾	32½
7	Artificial Manure	26⅜	23⅜	27¾	29⅛
8	Ditto	27¾	23⅜	31⅜	32⅜
9	Ditto	27¼	23½	31⅜	32⅜

The variation in amount of produce from year to year may therefore safely be taken as almost wholly referable to season. The quality of the grain, as shown by the weight per bushel, is seen to be considerably above the average of the last 14 years. Turning from these experimental results to those obtained on my farm under ordinary management, I may mention that three separate fields give this year 40, 42, and 46 bushels per acre respectively, against 38, 48, 48, and 51 obtained in four last years, thus indicating a considerable decline in amount of produce. On the other hand, the weight per bushel is somewhat higher in each of the three cases this year than in either of the four last years. Upon the whole, I conclude that the Wheat crop of 1866 will prove to be decidedly below an average, and judging from the produce of both my experimental and ordinary corps, and the relation which has been observed between them and the crops of the country generally for many years past, I should estimate the deficiency at not less than 10 or 12 per cent. *J. B. Lawes, Rothamsted, Herts, Oct.* 8.

Earth Closets.—In compliance with a request from a correspondent in the *Agricultural Gazette*, I hasten to lay before him and others of its readers who may take an interest in the matter, a few remarks anent the method of applying the dry earth in earth closets, mentioned by me in the *Agricultural Gazette* of September 29. To be as brief as possible; my attention was some time ago directed to the simple but still too operose plan of applying the dry earth, which I named as being in operation in some public and private establishments in this country, to wit, the zinc trough and scoop method. I thought it simple to a fault, but simple as it was, it seemed to me to be, shall I say a too tedious and withal not too cleanly a mode of operation. My first effort was directed to the application of so much machinery as to render it all but self-acting. I substituted a flat wooden box for the zinc trough; this box I fixed behind the seat; the box was so constructed as to end in a funnel, and in this funnel a very simple piece of machinery was made to work, by simply pushing a spring. A diverse of dry earth (just sufficient to decrise each deposit) reaches down into the receptacle beneath, the end of the funnel being turned slightly and fish-tailed out, to cause the dry earth to spread itself all round. I had the little piece of machinery fitted up by a local mechanic; it works very well, but like all first efforts is capable of improvement. I have only had one here fitted up with it by way of experiment. By a modification of my present mechanism I can secure a perfect double action in the discharge of the dry earth, by which I hope to bring out a self-acting earth closet, which would be impossible to get out of order. I ought to inform Mr. Frere that my plan does not aim at dropping the earth perpendicularly upon the deposits, but the height of the pail or pan underneath is proposed to be so adapted to the mouth of the spreader, whence the dry earth issues, as to obviate all danger of the deposits not being perfectly deodorised. I am having a model closet fitted up on the plan, and when completed it will be placed on its trial before the bar of public opinion. *Wm. Hudson, Chase Cliffe, Derby.*

—Slowly but steadily the truth is spreading that the dry system is the true one, and that by its means by and by the enormous waste of manure in England will be put a stop to. I am induced to put a spoke in the wheel in addition to Mr. Hudson's, in your paper of Sept. 29. I agree with him that there is no reason why earth closets should not be generally used in towns, and a complete scavenger system devised, by which a systematic clearing away of the contents would be carried out. It has been calculated that the value of this refuse of every family of five persons is 20*s.* annually, consequently of 1000 families 1000*l.* per annum, whilst an expenditure of 200*l.* a-year would be more than the cost of removing it. Mr. Moule's patent closet no doubt is very useful, but by no means so perfect as a simple box placed on a stone on a level with the ground, with a door at the bottom for clearing out the contents, and a supply in the closet of dry earth or the ashes from the house-fires. A brush and a shovel are the only tools, which must never be omitted to be used, and then perfect deodorisation is effected. I have adopted this plan for many years with success. Not only the nuisance of a sink is removed, but my well is entirely safe from contamination. For an expenditure of 20*s.* I get pure air, pure water, and my fields are enriched without the aid and cost of Peruvian guano. *Thos. C. Brown, Cirencester.*

Farmers' Clubs.

Ballymahon: *Oct.* 1.—Mr. John Lunen, Land Steward at Newcastle, read a paper on "The Advantages of Early Ploughing." He said:—The common practice of the ordinary farmers of the country is to plough late—to plough when they should be sowing; and if you ask them why they don't cultivate earlier, you get the answer that if the land were turned up it would be "too could" for the seed. These men do not see the pernicious consequences, else they would surely change their practice. It is well for all tillers of the soil to have a wholesome conservatism of all good customs and habits which are really beneficial. But why not in farming take advantage of all the recent improvements which have been found to work so well? Late ploughing produces bad crops of every kind, unless they are forced by the strength of the land. It pauperises the tenant, or has a tendency to do so; therefore we say it ought to be given up at once, and the early ploughing adopted with all its advantages, which we will try to point out.

Before pointing out some of the advantages of early ploughing, it may not be out of place to notice the sort of ploughing we approve of. All soils should not be ploughed equally deep; and whilst we are strong advocates for deep ploughing generally, yet we say that it ought to be according to the nature of the subsoil. If there be a good subsoil on such lands as strong clays, loams, rich gravels, or deep sands, the ploughing ought to be as deep as possible, so that a considerable quantity of it may be brought up in the rotation at green cropping; but if the subsoil is bad, as on thin clays and barren sands, we would let it remain, and not bring much to the surface.

The autumn after the crops had been saved is the proper time to plough. The land then is generally dry, and cultivators cannot be too particular in getting a dry tillage. Ploughing the land wet is most injurious to the succeeding crop, and encourages the growth of weeds. The soil when wet consolidates; and instead of having the pores thoroughly opened for the reception of the gases of both atmosphere and the rain, they are closed. The ancient Romans, who excelled in agriculture, were exceedingly particular in having their land ploughed dry; and just in proportion as we advance in agricultural science, and approximate to these sage people, so will we be attentive to the state of the land in ploughing. It is the good ploughing at the right time—of the things being equal—that ensures the good crop. Pliny, the celebrated Roman writer, assigns good ploughing as the cause of the corn being so plenty in Rome in ancient times. "What," says he, "was the cause of this fruitfulness? Was it because in those times the lands were cultivated by the hands even of generals—the earth, as it is natural to suppose, delighting to be ploughed with a share adorned with laurels, and by a ploughman who had been honoured with triumphs? Or was it because these men ploughed their fields with the same diligence that they pitched their camps; and secured their corn with the same care that they formed their armies for battle?"

No matter how well ploughing is done with skilful hands and good horses; no matter how straight and well-shouldered the furrows; no matter that the plough is according to the most approved plan; yet, if the land is wet the whole is bad work, as it will not pay. In farming, as in everything else, we should ask the question, will it pay, and unhesitatingly our practice will answer in the affirmative; but wet ploughing we say emphatically will not pay. Early ploughing most generally ensures the land to be dry, and therefore the advantage. We have seen many a field of rich earth lost to the occupier in consequence of wet ploughing; poverty comes to him as an armed man, but the cause is patent that all his work is done in the same style. But autumn ploughing banishes weeds, which is another great advantage to the farmer. The greatest foes to agriculture are weeds. They not only choke the crop, but they absorb the nutriment designed for its production, and no matter what species of crop it may be, its greatest foe is that which grows beside it as weeds. In all our cultivation we should aim at the destruction of weeds, and whatever tends to their extirpation is good husbandry. As we said before, farmers ought to be radicals as well as conservatives, and tear up by the root everything that mars the growth of the crop. We have seen the farmer who considered himself perfection let all the weeds grow in his Oats until the harvest, and then separate them. The weeds had not only exhausted the soil more than the crop, but they had sown their multitudinous seeds, to produce an hundredfold the following season. Autumn ploughing turns up the roots of the weeds to be exposed to the frost, rains, and thaws of winter, and thus to perish them. And although it is very difficult to banish them—so much so that a good Scotchman, who was a better man than a farmer, once said, "Sin and the Deil ye may outcome, but weeds ye canna"—we affirm that the best antidote against these enemies of the husbandman is autumn ploughing. Fields filled with root weeds, many of which we see in the country, must be a state of greater exhaustion than if they produced a heavy crop of Oats. The productive quality of the earth must, of necessity, decrease in proportion to the quantity of the weeds grown; and early dry ploughing is one of the best methods I know, except fallowing, for expelling these unproductive plants, and preparing the land for the reception of beneficial ones. It is a pity to see so many crops destroyed by these enemies of agriculture, and to know that they are leaving the occupant of the soil

pennyless. Therefore we would entreat farmers to study their own benefit and cultivate early. I can give the experience of 60 years, 20 of my own and 40 of my father's, and, without an exception, we never found the autumn ploughing to fail in the desired results. Another advantage accruing to the tenant from early culture is bringing the land to the proper tilth. The experienced agriculturist in spring knows the good of having the land in such a state that it can be properly pulverised. The exposure of the clay to the winter frosts and rains reduces it to such a consistency that you may easily prepare it for the most delicate crop. We have seen many farmers in the spring, when dry weather sets in, turning a strong force to the fields to break the clods, that neither harrow nor roller would break; whereas if the same land had been early tilled, the frosts and atmosphere, with the heavy rains, would have been the best clod-breakers, and have the work effectually. We have read in some of the papers of the fable of the Lemon and Soda. "I could soon destroy you," says the Lemon to the Soda. "I could soon take the juice out of you," says the Soda. "Let us have at it," says the Lemon. Fiz, fiz, goes the Lemon, and fiz, fiz, goes the Soda, and the result is nothing is left behind but, apparently, a little dirty, soft material. So with the frosts and rains; fiz, fiz, goes the frost and the rain, and so carry on their battle upon the newly upturned earth, and the result is proper pulverisation. How could the land be brought to such a state were it not early ploughed? It would be impossible for the hand of men to leave it in as good a tilth as the elements; and therefore, if we are wise for ourselves, wise for those whom we are necessarily training by our example, and wise for the dependants upon good farming, we will adopt the system of early culture.

No matter what the crop may be which you are to sow in the following spring, the great advantage is to have the land brought to a good tilth for it, and, therefore, you are not afraid of it, so far as human precaution goes, being a failure. Plough early, and money will be saved in the otherwise expensive preparation of the land, and a conscientious satisfaction will cheer you amidst the gloom of your neighbours, that if heaven has designed a bad crop, it will not be for the punishment of your neglect. Another advantage is that the land is ready for the early seed. I have often grieved for their own sakes, to see farmers send out the plough to make a beginning of their work at the very time they should be sowing, as seed time is promised; but many farmers are not ready to avail themselves of it when it comes, and you hear nothing but the wail of complaints, and see their frowning countenances falling at the weather; whereas it is themselves they ought to blame. But to find fault with one's self is not a common or a pleasant practice. The laws of Nature work most orderly and harmoniously, and when men come into collision with them they are sure to be injured. The farmer should see that he does not come into collision with these laws, else misery and loss will be the consequence. We have seen such men, by not being ready to do their work in the seed time, lose much of their crop. In a well-regulated farm all the work is done in the proper time and place; and as we know there is a time for everything, so should everything be done in its time. It is an old proverb, and a true one, that the early bird catches the early worm, and the early ploughing enables the farmer to catch the proper season for everything. You will always know when there is late ploughing, late sowing, and late crops that the farmer is both lazy and indolent. Correct farming, in its details, is like a chain, one link depending upon another, thus making a beautiful whole. If ploughing, for example, is done in February and March, when the seed should be sown; if Potatos are sown in the month of May, and an early disease comes on, they are not worth taking out of the soil; if Turnips be sown in July, thinned and wed about harvest; if the turf-cutting occupies the month of June, or a part of July, when they should be ready to be drawn home; if there is not time, from a collision of things, to embrace the early good weather for hay-making, the result will be calamitous; ploughing takes the place of sowing, Potato planting takes the place of Turnips; turf-cutting takes the place of hay-making and Turnip hoeing, and hay-making takes the place of harvest. The Oats being often left so long uncut that the straw is scarcely worth reaping, and the crop materially injured. "Whence arises this collision of things?" We answer, from late ploughing. Let there be autumn ploughing, and the farmer beginning at the proper place will be enabled to do all things early, and will also be in a position to avail himself of good weather, when it comes, for the saving of his hay and grain crops. In a machine one break may cause many in the complicated machinery; so in farming. One break from the proper order may make many, and thus cause complete confusion during the entire season, with heavy loss. But a machine must be so nicely constructed that there will be little friction; if there be much friction, arising from a bad mathematical adjustment, it will lead to the breaking down of the whole machinery. So we say, all things ought to be done in farming: thus there will be as little friction of one work pressing upon another as possible, less disorganisation be the result. Early ploughing will be the first and most important step in the year's farming—obviating and preventing all the confusion and loss to which we have referred; hence its advantage. Another most important advantage arising from it is the amount of manure received from the ammonia of the atmosphere and the rain. It is a well-known fact that the plants which the farmer cultivates receive their nutriment from three sources—the soil, the atmosphere, and the rain. The opinion that the atmosphere contained only the two gases, oxygen and nitrogen, is superseded, and agricultural chemists have found that it contains a slight portion of ammonia and carbonic acid. The ammonia, containing nitrogen and hydrogen, is of the greatest importance, and may be regarded as pre-eminently required for the nourishment of plants. The early ploughing leaves the land in a fit state freely to imbibe the gases of the atmosphere; and as ammonia readily dissolves in water, the rain dissolves this gas, and the soil retains it for the nutriment of the following crop. Liebig, the celebrated chemist, made an experiment upon rain water, and found it to contain a small portion of ammonia, and he estimated that if 1 lb. of rain water contained ¼ of a grain of ammonia, a field 26,910 square feet would receive annually upwards of 80 lb. of this gas, so that a statute acre would each year receive in the rain that falls upon its surface about 129 lb. of ammonia. When such has been proved by this eminent chemist to be the probable amount of this pre-eminently nutritious element imparted to an acre surface from rain water, is it not of the greatest importance that land designed for cropping should be as early as possible turned up, that it may easily imbibe and retain that which is to be the great support and life of the future plant? The Supreme Being has made a provision in the atmosphere for manuring our fields, and thus in the silent night, as well as the busy day, it is carrying on its fertilising influence. But many prevent it from doing this work to a greater advantage by their late ploughing. Who that has ever ploughed his land has not found the immense advantage to it; and what has produced that change from comparative barrenness to great fertility? Does it arise from the frequent ploughing or the destruction of the weeds?—partly; but chiefly from being turned up the whole year to receive the ammonia of the atmosphere. Therefore the advantage of early ploughing, which admits of early cross-ploughing, so that the soil may catch the greatest amount of this most beneficial gas. The system of early tillage ensures a greater return from the crops, whether they may be Oats, Barley, Flax, Potatos, Turnips, or any other green crop. This has been the experience of the best farmers, and will be the experience of all who try the experiment.

Larger and earlier crops will be the result of early ploughing—the good harvest, when early will be embraced, and the different works on the farm not retarded. If the farmers of the country want good green crops; they want large returns of Oats and other such crops if they are to be comfortable upon their farms, then let them take the first step to such comforts, and to the obtaining of such crops—namely, plough early. Much has been said and written upon the proper management of the Turnip crop; and many have endeavoured to find an antidote to the destructive little animal that eats up the Turnip, known as the Turnip-fly. Some have proposed one cure and some another; many of the remedies have turned out mere fancies and failures. We give a preventive, which during the course of a long experience, both of my father and myself, we never found to fail—plough early, and in so doing the land will be in such a state by the fertilising influences of the atmosphere, and the pulverising power of the frosts and thaws of winter, that it can be reduced to the finest state of tillage, which is the safest and best antidote against the ravages of this insect. The land intended for Turnips cannot be too well tilled, and the precursor to that is early ploughing. It lies at the foundation of the farmer's success, as we have shown of green crops, which, when largely and carefully grown on the farm, makes the healthful young stock. Better not to rear young stock if they are not properly fed and cared. On the farm where green crops are not produced, unless there be very rich pasture, you will see poor, and, consequently unremunerative stock.

A number of very excellent papers have been read since the beginning of this Club, but the success as the first step in carrying out their recommendations and arriving at some degree of excellence depends upon early ploughing. As we have endeavoured to show, it is the origin of the good green crop, which was the subject of the Society's first paper, and whatever makes green crops plenty affords much feeding to all of the farming stock; it is the best preventive to the destruction of the Turnip-fly; the true friend to agriculture; the extirpator of its enemies the weeds; it is the remote and secondary cause of the luxuriant flax crop, the guarantee of other things favourable—of the fields waving with early and yellow grain; it enables the tenant to pay his rent, and fills the landlord's pockets at May and November with his just due; it imparts happiness to the farmer looking at his summer and autumn crops. We might, had not this paper exceeded the proper bounds, have contrasted the advantages of autumn ploughing with the disadvantages of late ploughing; but we will leave the farmer to do that for himself, and we would strongly recommend those who are fond of late tillage to a little mental exercise upon such a contrast, and they will surely be convinced of the loss sustained by late ploughing. It is a trite poetic proverb that—

> Early to bed, and early to rise,
> Makes a man healthy, wealthy, and wise;

which might be applied with all its force to early ploughing. Finally, we say, in the words of the poet, in his agricultural stanza—

> Early to plough is early to reap,
> Make the land fit and the Oats cheap.
> Destroys the Turnip-weeds, and the Turnip-fly kills;
> Puts the land in heart, and the grounds fills;
> Causes the stalks to grow small and be rank,
> Because their big bellies are raised far too high;
> Brings the fine young stock to leap and to jump,
> As he would feed from the ears of corn at the rump
> Strengthens the ewe in her delicate state
> With Turnips as good as ever were ate.
> The ducks, hens, and geese are all brought together,
> To eat up the Oats that were saved in good weather.
> The farmer looks on, and is happy to see
> That all in the yard are in such a high glee;
> He thinks of the rent, that has come by less trouble,
> And says, early ploughing has made me reap double.

Reviews.

The Journal of the Royal Agricultural Society of England. Second Series. Vol. II, Part 2. (J. Murray.)

The number just published contains a number of descriptive and very instructive papers. Mr. Moscrop describes the agriculture of Leicestershire, Mr. J. A. Clarke discusses the policy of increasing our stock of poultry, as he has already done in our columns. Mr. Dixon gives a history of our mountain breeds of sheep. The general subjects of agricultural statistics and cattle insurance are presented in very excellent papers by Mr. Lewis and Dr. Farr.

Experiments on Clovers are the subject of the more strictly scientific contributions to this number. There is a good account by Mr. Little of the improvement of waste lands connected with mines. And perhaps the best of the whole contents of a very excellent number, there is a definite and instructive account of estate improvement in the case of Mr. Ruck's property at Baydon, Wilts. From this we make the following extracts:—

Many still consider it hopeless to attempt improvement of certain pastures on the Oxford clay. Nothing daunted by such evil boders, Mr. Ruck went to work with characteristic energy, and has attained a large measure of success: his experience is one of the most interesting and encouraging for those who have to deal with land that, like the Baydon pastures, may have been condemned as hopelessly barren.

An examination of the soil in several of Mr. Ruck's fields has shown us that the Grass roots penetrate but a short distance into the stiff clay subsoil, which appears to continue a great depth. The layer of mould on the surface does not generally extend beyond 4 or 5 inches. Naturally, the soil was either like a soapy cheese or a brickbat.

The sterility of the pasture land at Baydon appears to be due mainly to two causes, namely, 1st, to want of drainage; 2d, to the poverty of the clays, or the admixture of a large proportion of fine and all but useless micaceous sand with the clay proper. It may be further observed that in this soil most of the "iron" occurs as protoxide, a sure indication of imperfect circulation of air in the soil.

Efficient drainage not only removes the evil of stagnant water, but carries air into the soil, as is evidenced by the alteration from the dull yellowish colour which distinguishes ill-drained clay, to the bright red, or light brown colour, which is characteristic of well drained and properly aerated soils.

The most superficial observer, walking on the spongy wet pasture at Baydon, would recognise deficient drainage as one of the causes of sterility. We have said that, notwithstanding the apparent impervious character of the clay, a close examination of the soil revealed the fact that there was a fair depth of surface-soil, then a more impervious clay—as was evident by the occasional stains of peroxide of iron. Beneath this was found generally a really stiff clay, uniform and innocent of water—apparently impenetrable. The theorists may smile with incredulity, but such is the fact, for we have proved it; and this is one of the lessons we learnt at Braydon, and a lesson that some of our engineers might con over with advantage—that there are soils so impervious that the water-table, if one existed, would be on, or only a few inches beneath, the surface. We regret, however, that those who believe that there is no soil so absolutely impervious but that by proper methods of cultivation it may become an absorbent. At Braydon it was quite evident that the only water-table on the undrained land was close to the surface. Consequently every shower of rain or heavy dew, not carried off by the surface, lying for, in many instances, water remains on during winter, destroying every good Grass, and leaving the weeds we have noticed masters of the field.

Drainage was, of course, the first step towards improvement—there was an abundance of pipe-clay on the spot, and draining materials might have been made for a comparatively trifling cost; but our enterprising friend determined to drain by steam and discard pipes altogether, trusting to the permanency of the opening made by the mole of the plough.

Some 10 or 11 years before this time, and soon after the Exhibition of 1851, when Mr. Fowler's invention was first exhibited, a drainage-plough had found its way into Baydon, and one occupier more intelligent than his neighbours had a good deal done with manifest advantage, inasmuch as the land was placed at short intervals in a well dried tilth and most, if not all, were in good working order at the time when Mr. Ruck entered on his occupation. We much question the wisdom of this proceeding. It is true that the cost was small, not exceeding 4l. an acre, and that where the fall is sharp and the ground frequent, they might answer fairly if drawing sufficiently so for pasture; but, inasmuch as Baydon subsoils contain a good deal of sand mixed with the clay, it follows that there will always be a risk of sand being washed in and choking up the drains. In fact I find the mole plough would not do at all, as it would be impossible to secure a regular fall. The drains must have a long draught; and if from this cause the drains thus made are not doing their work in a satisfactory manner, it will often be found beneficial to cut them in half by taking a main across the middle of the field, and thus giving an easier and more rapid vent to the upper half of a field. These mains should be carefully dug and provided with pipes of a good size, so laid in that each mole-drain is properly let into the main.

Messrs. Eddington, of Chelmsford, the present proprietors of the Steam Drainage Plough, have kindly sent us plans of their machine; and we are inclined to believe that in a homogeneous soil, and on Grass land where great depth is not desirable, their pipe-laying machine will prove of great service, and cause a considerable saving over manual labour. One great advantage in the use of the mole-using apparatus consists in the upheaving of the soil for a considerable space on either side of the drain—the water is thus enabled to penetrate more readily into the drains; the greatest depth that is practicable is about 3 feet, more often 30 inches: this may be enough for Grass, provided the drains are sufficiently short.

Mr. Ruck made use of his old 12-horse engine to drive the windlass, the distance between the drains being about 3 yards, and the depth varying from 30 inches to 3 feet. In this way from 4 to 5 acres were got over in a day, at a cost, including interest of money, of not more than 30s. an acre. We have before noticed that the surface of the land is the water-table at Baydon; and it is the fact that after the autumn rains the streams which receive the water are strongly coloured by the matters washed off the surface.

The effects of draining Grass-land is often less satisfactory than was expected. Many people imagine that it is only necessary to remove the stagnant water in order to convert a half-starved pasture into a rich nutritious herbage. Nothing can be more erroneous—for a time, at least, the effect of draining is to render land less productive than before. The Water Grasses, which have hitherto given bulk, disappear; the mineral riches of the soil are still locked up, requiring the action of the air to set them free, and there is often a decided falling off, or at any rate no visible improvement. Mr. Ruck

however, took a more sensible view; he determined to stimulate the growth of the better Grasses by the application of artificial manures, in small quantities often repeated. The soil was deficient, as our analyses show, in lime and phosphates. Bones would have produced a permanent alteration; but bones are costly and slow of action, a mixture of Peruvian guano and superphosphate of lime was then free used; 3 cwt. per acre, in the proportion of 1 cwt. of the former to 2 cwt. of the latter, appeared a suitable mixture to produce an immediate effect. This was applied in April, 1862, previous to the draining, distributed through 600 gallons of water, a dilution by which it was conveyed more immediately to the roots of the Grasses. The cost of this dressing was 26*s.* an acre, and the effect was extraordinary. We happened in in 1862, but the land was grazed with sheep and cattle eating a mixture of artificial food—that given to the sheep cost 10*d.* a head per week, and gave a return of 1*s.* 5*d.* This was the treatment for the first year. A man at 12*s.* to receive the drainage of the whole property was sent out, and the ditches were cut and deepened. The soil derived from these operations was carefully thrown up into heaps, mixed freely and thoroughly incorporated with quicklime, and allowed to lie for some time, a portion of farmyard manure was afterwards worked in, and thus a capital compost prepared for application to the Bent Grasses, though improved, were still very coarse, and the Devil's Scabious and Cammock, though much weakened, were still visible here and there. In 1863 a similar dressing of artificials was applied in the same manner, the crop was mown and fed; some 3½ cwt. of hay per acre was the result, and a heavy after-feed. In the autumn a dressing of 10 loads of the compost described above was applied. The drainage was now completed, and the mowing and feeding had tended to fine down the Grasses. The change of colour, from a dull brown to a lively green, was most remarkable. The flocks looked healthy and thriving, and altogether the face of the country was altered.

In 1864 the same artificials were again used; and it was intended to feed, and not mow. The Grass, however, grew with such rapidity that it was found impossible to eat it down, therefore hay was made, and so excellent was the quality, that a cubic yard weighed, when cut out of the stack, 340 lb.

In 1865, the last year included in our report, the same artificials were used, and more compost applied; the quality of the Grasses is now thoroughly good, and the value of the land to rent immensely increased.

Elaborate analyses are given of both soil and produce, and a detailed account of the composition of the pastures is also given, and the essay concludes as follows:—

However interesting the above facts may be in a scientific point of view, the practical landlord and the enterprising tenant will require to know whether all these improvements were profitable, whether a good interest was secured for the outlay in works of permanent nature, and a fair profit on the tenant's capital. Unfortunately for the public, Mr. Ruck has not kept any exact and separate account of expenditure and income for this farm; we have to call back upon a few particulars, from which, however, much may be gathered. Here is one. The last tenant paid 12*s.* an acre for the land, after three years in Mr. Ruck's hands, and, as far as we can judge, without a very extravagant outlay, the Grass land has become worth fully 30*s.* an acre.

The volume maintains the character of the serial as the best collection of original agricultural essays in the language.

Handbook of Dairy Husbandry. By J. C. Morton. (Longmans.)

A second edition of this little Handbook permits us to call attention to it as a closely packed record of experience, giving a very large quantity of information and dairy statistics; on the food, choice, and treatment of the cow; on milk, butter, cheese, and general dairy management; also a monthly calendar and an appendix of several useful particulars omitted from the text. We take one extract—relating to various daily rations of cow food, and another to the crops cultivated for dairy use:—

"1. *The Food of the Cow* in the common practice of our dairy districts is (1) pasturage in summer, and hay and straw with, in some cases, a few Turnips and Mangel Wurzel in winter. She will consume in depasturing probably 1¼ cwt. of Grass daily, varying of course according to age and size, or during seven months of grazing as much as 16 tons of green food. Pastures which would by July have growth enough on them to make from 20 to 40 cwt. of hay, and which will when that is cut grow probably three-fifths as much Grass after July 1 as they had grown before, will, if their growth be eaten down from week to week throughout the season, have produced from 7 to 14 tons of green food per acre. From 1¼ acre of the best Grass lands to as much as 2½ of the poorer class will thus be wanted for the summer maintenance of the cow. One acre of whole Grass and the aftermath of another acre mown for winter hay will in the former case be sufficient for a cow; and double that extent will be needed in the latter case. The cow will thus receive fully ½ of a cwt. of hay daily during the five winter months. In Gloucestershire this is generally given it in the field; the cattle being foddered morning and evening unsheltered; and 2½ tons of hay a head are considered an ample winter's allowance. (2.) In Cheshire the dairy cows are more generally received into yards and stalls during winter: 2½ or 3 acres of Grass land per cow are the general allowance in order to supply sufficient summer pasturage and winter provender; but the dairy farms in that county generally have a larger proportion of arable land attached to them, and it is common to give the cows Turnips, Mangel Wurzel, or straw, as well as hay. The Darleydale Farmers' Club in that county resolved, regarding the winter feeding of their cows after cheesemaking had ceased, 'That straw and Turnips are the best and cheapest for the early part of the winter; and as the season progresses, half the quantity of Turnips with hay and a little corn; and in a season of scarcity, or after a bad harvest, ordinary fodder (hay and straw), with steaming and cutting is recommended.' Mr. Palin, of Tarvin, near Chester, states that his cows being gradually brought into yards towards winter, as the yield of milk ceases, are fed in stalls, first on Mangel Wurzel leaves, then on Turnip-tops, and then successively on Turnips, Swedes, and Mangel Wurzel, along with cut straw and hay-chaff. (3.) Mr. M'Adam, of Silverdale, near Newcastle, Staffordshire, gives his cows 'as much pasture as they can eat in summer, and as many roots as will maintain them in good condition during winter.' If there is ample supply of good Wheat-straw for fodder, 60 lb. of Turnips daily apiece, given morning and afternoon, will suffice, but if the supply of fodder is bare, 84 lb. are given daily to each cow. (4.) The feeding of dairy cows in Wigtonshire, from which county Mr. M'Adam comes, includes 1½ acre of pasture during summer, 4 tons of Turnips during winter, and 2 bushels of Beans given as Bean-meal at spring time of the year. (5.) In Fifeshire, Mr. Haxton, a farmer of that county, puts the annual feeding of the dairy cow at 2½ acres of Grass, 9½ tons of Turnips, and 30 cwt. of Oat-straw as fodder, together with 1 ton of Wheat-straw as litter. (6.) Mr. Young, who keeps a large dairy for milk in that county, feeds his cows in Clover fields (2 acres per cow) during summer, giving them in addition a little dreg (spent liquor of the distillery), in tubs in the field. In hot weather they are fed on cut Clover and Vetches in yards, about one-sixth of an acre being required for this purpose to each cow. In autumn they receive one-third of a bushel of grains apiece daily in addition. During winter they have four meals daily each, followed by Oat-straw; the first at 8 A.M., consisting of a boiled mess of 30 lb. of Swedes, 1½ lb. of Linseed-meal, and 2 lb. of Bean-meal mixed with a quantity of chaff and light grain; the second at 10 A.M., 60 lb. of Yellow Turnips; the third at 3 P.M., one-sixth of a bushel of grains apiece, and the last at 5 P.M., 60 lb. of Yellow Turnips as before. That house feeding of cows, of which this is a very liberal example, is well adapted for the production of milk alone, the experience of London dairies testifies, and when it is combined with daily exercise for two or three hours in a pasture-field, it is admirable for all purposes. But an exclusive house feeding of dairy stock is not generally found to produce good butter or cheese. A correspondent of the *Agricultural Gazette*, writing from Waterhouse, near Bath, says:—'Dr. Playfair in his lecture (Agricultural Society's Journal, vol. iv.) states that to the effectual forming of caseine in milk, exercise is necessary to the cow. My experience has shown me the same results, having had at one time, and for several years, as many as 20 cows house-fed, or soiled, as it is termed. And it amounts to this:—That if cows are properly managed, *i.e.*, kept clean in an airy house, curry-combed and brushed often, with good fresh water at their command, plenty of food cut green and fresh as long as available, and hay and Carrots, Parsnips, and Mangel Wurzel, &c., at other periods, with salt strewed over it, they can be kept all though the year quite as well as if they were in a meadow, and that for milk only this system is superior to any other. But for butter or cheese I cannot recommend it; the former, although as good as much which is sold in cities, seldom had as fine a flavour as that from a cow grazing in a meadow. It was winter butter at all seasons. And as to cheese, it resembled the Dutch in flavour—in fact was always of an inferior kind, and sold accordingly.' (7.) When, however, the object is to obtain the largest possible supply of milk, as in the town dairies, house feeding is the best system. Here, the great reliance is placed on grains, of which a bushel a day per cow, or even more is given, together with 10 or 12 lb. of hay, and 1½ cwt. of roots, chiefly Mangel Wurzel, or in place of the two last, abundance of cut green food, Clover, Vetches, &c., during summer. This with ample supply of water forms the daily food of the large Yorkshire cows to be found in London dairies. (8.) Where this rich house feeding is combined with daily exercise, though on very poor pasture, successful dairies both of milk and butter have been established. Mr. Smith, of Chipstead in Surrey, has established a dairy of 30 cows with remarkable success* upon a poor dry chalk hill-farm of 210 acres, with only 5 acres of permanent pasture, maintained in Grass for the convenience of possessing a turn out, and not for any merit as Grass land. Here the cows for eight months in the year are fed upon cut straw, bran, Turnips, and Mangel Wurzel, having no other assistance than the food they pick up in fine weather; the other four months they are principally dependent on cut Tares and other artificially raised green food; and yet, upon this keep the butter produced is of the finest quality, and readily finds purchasers all the year round from neighbouring occupiers and owners of farms, at the prices of 14*d.* and 16*d.* per lb. according to the time of year; and so successful is the result, in a pecuniary view, that Mr. Smith is increasing the extent of his dairy as fast as the increasing fertility of the land gives him the means to keep more cows. (9.) This is indeed the system which was adopted by Mr. Cramp, in the feeding of his extraordinary cow already quoted. She consumed 8 bushels of grains, and 4 bushels of bran weekly during winter, together with half a cwt. of hay, and a few Carrots; and in summer she consumed 3½ bushels of grains, and 1½ bushel of bran weekly, together with the green food grown on 54 perches of Clover and Rye-grass, 12½ perches of Lucerne, and 2½ perches of Carrots. She had 18 perches of land, on which to walk about. (10.) A more common method however is to pasture the cows in summer, giving them cut green food towards autumn and in early summer in addition, and feeding in stalls or yards on roots, grains, and hay, and steamed messes during winter. And of this one or two additional instances may be given. Mr. Pigott of Stoke, Norfolk, speaks in the *Agricultural Gazette* of his small dairy of cows, pastured wholly during five months of summer, and receiving during winter 1 bushel of grains, 1½ bushel of cut Turnips, and 1 bushel of Mangel Wurzel, together with 2 bushels of cut hay and straw chaff, mixed and steamed, besides which they go out to a Grass field for an hour or two during mid-day. (11.) Another correspondent of the same paper, speaking of the winter feeding of his two cows, says:—'I have a boiler containing about 40 gallons, and into it I put about 50 lb. of Turnips, a considerable quantity of water, and about 12 lb. of straw cut into chaff, and this is boiled for about two hours, when it becomes a dark nasty looking mess; one-half of this is taken out into two tubs, and whilst warm 1½ lb. of Bean or Pea-meal is stirred into each, and then given to each cow at about 110° of heat. That which is left in the boiler remains till morning, and if well covered up is still warm enough for use; it is then mixed with the Pea or Bean-meal, as before, and given to the cows at break of day; this, with hay *quantum suff.*, constitutes their daily diet; and I get about 6¾ lb. of butter weekly from each cow. The butter produced in this way has no taste of Turnips, and the avidity with which the cows eat this boiled mess is a good criterion of its value. When given to the cows it should be thin and sloppy.' (12.) For small Ayrshire cows, the following has been found a sufficient winter dietary on which to keep them in full milk:—30 lb. to 40 lb. of boiled Turnips, with 6 lb. of cut straw, and 3 lb. of Beanmeal mashed up in them; straw *ad lib.* being supplied in addition. (13.) Mr. Horsfall's winter feeding is remarkably liberal, but he receives his return for it in the fattening of his cows at the time they are giving milk. The following is the report to the English Agricultural Society of his management:—He had for four years given his dairy cows Rape-cake, of the kind termed 'green' cake, which imparted to the butter a finer flavour than any other kind of cake; and in order to induce them to eat it, he blended it with one quarter the quantity of malt-dust, one quarter bran, and twice the quantity of a mixture in equal proportions of Bean straw, Oat straw, and Oat shells; all well mixed up together, moistened, and steamed for one hour. This steamed food had a very fragrant odour, and was much relished by the cattle: it was given warm three times a day, at the rate of about 7 lb. to each cow (or 21 lb. daily). Bean-meal was also scattered dry over the steamed food, cows in full milk getting 2 lb. per day, the others but little. He had found this substance to be an unfailing means of keeping up the condition of cows while giving milk. When the animals had eaten up this steamed food and Beanmeal, they were each supplied daily with 28 to 35 lb. of Cabbages from October to December, of Kohl Rabi till February, or of Mangels till Grass time; each cow having given to her, after each of the three feedings, 4 lb. of meadow hay (or 12 lb. daily). The roots were not cut but given whole. The animals were twice a day allowed to drink as much water as they desired.—Since the date of this report, Mr. Horsfall has discontinued the use of Bean-meal owing to its comparative price, and has given in its place, along with about 5 lb. of Rape-cake, an additional allowance of malt combes, and 2 or 3 lb. of Indian Corn-meal per cow. On this food, in instances actually observed, his cows have given 14 quarts of milk a day, and gained flesh at the rate of about one quarter of a cwt. per month.

"As regards the summer feeding of these cattle, Mr. Horsfall says:—'During May, my cows are turned out on a rich pasture near the homestead; towards evening on a rich pasture near the homestead; towards evening on a wet day are again housed for the night, when they are supplied with a mess of the steamed mixture and a little hay each morning and evening. During June, when the Grasses are better grown, mown Grass is given to them instead of hay, and they are also allowed two feeds of steamed mixture. This treatment is continued till October, when they are again wholly housed. In January, 1854, I commenced weighing my milch cows; and I have continued this practice once a month almost without omission. I find that cows in full milk yielding 12 to 16 quarts each per day vary but little in weight, some losing, others gaining, slightly. It is common for a cow to continue from six to eight months before she gives below 12 quarts per day, at which time she has usually, if not invariably, gained weight. The cows giving more than 12 quarts, and down to 5 quarts per day, are found when free from ailment to gain without exception. This gain, with an average yield of nearly 8 quarts per day, is at the rate of 7 to 8 lb. per week each.' This, of course, is only in the case of cows not in calf, and intended to be dried and sold fat.

* Mr. Hewitt Davis, in the *Agricultural Gazette*.

Farm Memoranda.

Keythorpe: *The Results of Drainage.*—The improvements effected by the drainage of the land, both on Grass and arable land, have been very great. In some instances, on the Grass land, where it has been followed up by top-dressing, and the consumption of cake and other artificial food by the animals depastured thereon, the annual value of second-rate pastures has been nearly doubled.

A field of this description in the vicinity of the Hall, in all nearly 16 acres, carried and fattened during the late summer 20 bullocks and 22 sheep, the artificial food given in addition being 1 lb. of Rape-cake and 1 lb. of steamed mixture per head per diem.

The amelioration of the arable is not less marked. The condition of a farm situated near "Robin-a-Tiptoes," which Lord Berners purchased and took in hand a few years ago, may be surmised, when we instance a field of Oats purchased from the outgoing tenant, one-half of which was so bad as not to be worth threshing, the other half produced 2½ qrs. of very inferior grain per acre.

This field was drained and subsoiled, and in the following year, by the aid of artificial manure, produced a very fine crop of Swedes and Norfolk Bell Turnips, which were consumed on the land by sheep, a crop of Oats following, which averaged 11½ qrs. per acre.

The pastures on this farm (Tilton) were in quite as deplorable a condition as the arable, many of them nearly covered with ant-hills, and so wet and soft that the hunters could scarce gallop across them. These

likewise were thoroughly drained, the ant-hills cut, carted into heaps, and burnt, a portion of the ashes being taken to the yards, and at last used as litter, making an excellent portable manure to drill for root crops, the remainder being carted and spread over the field. This, followed by judicious grazing with stock eating cake, &c., effected an extraordinary change in the character of the herbage; weedy worthless plants disappearing, and their places being filled up with a variety of good nutritious Grasses. From poor store land it acquired a useful fattening quality, and its value to rent increased 80 per cent. These are facts which need no comment.

Lord Berners' present occupation comprises 850 acres, 450 acres being in Grass, the remainder arable. His usual rotation is a four-course one. Autumn cultivation he has practised for 40 years, and on this heavy soil considers it most important, as essentially contributing to the general success of the farming, as well as to the immediate growth of superior root crops.

Steam cultivation, which was adopted in 1861, has afforded increased facilities for this. Fowler's self-moving engine and anchor were first tried, but owing to the hilly character of many of the fields other tackle has since been purchased, in order to work the stationary engine. Howard's cultivator has also been added, to which, by a cross iron bar, is attached Ashby's rotating harrows, which are most efficient in cleaning the land, or preparing it at one operation for a seed bed.

To supply the engine the drainage water is utilised, a well being made in the corners of the fields or other points where it is likely to stand.

Owing to numerous breakages, the first year's trial of steam cultivation was not encouraging, but experience and a better class of duplicates soon met the difficulty, and the advantages arising from the use of steam in the cultivation of these stiff soils are very great. Economy, as compared with horse labour, better drainage, better and deeper comminution of the soil, facility for cultivating a large acreage in a limited time, better crops, are all attendant results.

Improved modern implements of all descriptions are in use on the farm. The corn is all drilled with Garret's drill and hoed with his horse-hoe. Reaping machines have been used since 1852, and found to economise labour very much, besides gaining time, an important consideration in harvest and hay seasons.

The cost of machine reaping, wear and tear, and interest inclusive, is about *7s.* 6*d.* per acre, the prices paid for mowing and tying by hand averaging 10*s.* per acre.

Mowing and hay-making machines are in use, as is also the hay-cocking machine, invented by Sir John Tyrrel, of Boreham, Essex; the latter is especially serviceable in showery weather, for drawing the hay together into large cocks with great rapidity.

Some considerable portions of Grass land of a second-rate quality have of late years been converted to tillage. The practice is to pare and burn the turf; the first crop being Rape and White Turnips, which are consumed by sheep on the ground; the second crop, also roots (Swedes and Mangels), are again partly consumed on the ground. A stock of fertility is thus laid in, which subsequent judicious management retains, and from which full crops of all descriptions are obtained.

Lord Berners considers this to have been very advantageous to his occupation, as it provides roots and straw for the winter feeding, and accommodation for an increased number of cattle; besides, he finds when he wishes to let the land, that it commands a higher price, being before second or third-rate pasture land, whereas it is now, and with judicious farming may be maintained as fertile arable.

(To be Continued.)

Miscellaneous.

The Crops of 1866.—The importance of this subject, and the unusual weather which we have experienced during the last two months, will, I trust, be deemed a sufficient excuse for my troubling you with another letter. Up to last May I thought I never remembered a year when there appeared to be so little difference between the southern and northern counties in the forwardness of our grain crops, but after that time and throughout summer we have had very little sunshine in the north, and with the general coldness of our climate crops progressed very slowly, and, as had long been foreseen, a very late harvest over all the country north of Derby has been the consequence. Even the more southern counties have had a lingering harvest, and at this very time many fields of grain, especially of Barley and Oats, may be seen standing out in most of them. I have by me samples of Wheat which I have got myself, or have had sent to me by kind friends, from most of our best counties, and all those secured early are excellent in quality and in good condition. The best specimen I have is a White Wheat from Cambridgeshire—the grains in it are rather small, but they are even, plump, and with skins so fine you can see the flour through them. The continued rains during the last month especially—even where the grain has not sprouted—have deprived the Wheat of the northern counties of the quality and condition above described, and there is, unquestionably, much of our Wheat that is more or less unsound, while a considerable part of that which has been carried into the stackyard will certainly not be fit to grind before next spring. Your readers have, doubtless, heard much about crops of grain which have been flooded, and it is painful to see, as I did yesterday, Wheat standing, some cut and some uncut, in what might justly be described as a great lake. But although such floods have been disastrous to individuals, the area of land so affected is comparatively small, and the effect upon the general question of our food supply would scarcely have been perceptible had it not been joined with the great loss in quality on the whole crop over a very large extent of country. In a former letter I stated my belief that the Wheat crop was a little below an average one. That opinion was of course formed under the hope and expectation that the crop would be secured sound. Unfortunately that hope has only been partially fulfilled, and we are now to try to get some general idea of our present position. I consider that the grain over one-half of the kingdom has been exposed to the heavy rains of the last month, and according to the best evidence I have been able with much diligence to obtain, and from extended and close personal observation in various counties, I think one-fifth of the crop so exposed has been rendered useless for human food. If I am right in these *data* it follows that one-tenth of the Wheat crop over the entire kingdom has been lost. This is a serious deficiency. It is right, however, for us to remember that it was quite a fortnight later than usual before any of this year's crop could be brought into use, and should next year's harvest be at the ordinary period, we shall have only 50 instead of 52 weeks to provide for with this year's produce. Barley and Oats have suffered much in colour and in quality, and have been, and are being, stacked in very soft condition; but, owing to the cold nights and high winds, actual sprouting is not so much feared as might, from so much rain, have been expected. The roots are generally are good, but the humid season is in some districts producing a great deal of disease among Potatos. *H. J. Turner, Land Agent, Richmond, Yorkshire, Sept.* 28. (*Times*).

The Cattle Fair at Ballinasloe was well supplied, and there was a good demand. The prices ranged from 15*s.* to 20*s.* below the prices of last year, the reduction being greatest in bullocks. Heifers brought from 15*l.* to 20*l.* a-head. The following statistics of the cattle fair have been recorded:—

Years.	Sold.	Unsold.	Total.
1850	6,205	6047	12,252
1851	11,127	2228	13,355
1852	12,400	1,000	13,400
1853	15,200	2,800	18,000
1854	14,000	2,000	16,000
1855	13,000	1,000	14,000
1856	11,000	2,000	13,000
1857	11,000	1,000	12,000
1858	9,000	1,000	10,000
1859	11,000	1,000	12,000
1860	12,000	1,000	13,000
1861	14,000	1,000	15,000
1862	13,000	1,000	14,000
1863	12,000	1,000	13,000
1864	11,000	1,000	12,000
1865	12,000	1,000	13,000

Times.

The Bacon Manufactory.—We gave some years ago an account of Messrs. Hillier's bacon factory near Stroud. We learn from the *Grocer* that last year the Hillier Company slaughtered 21,874 pigs, and sent out 44,540 sides of bacon, part of which belonged to the previous year's stock. 115 tons of lard were refined and sent out, besides 215,600 pounds of sausages and about 7168 pounds of saveloys. 360 tons of salt were used in the curing of the bacon, and 700 pounds of pepper and other pungent spices in the sausage-meat. The Company paid away in round figures 111,170*l.* during the year for pigs and salt alone.

Notices to Correspondents.

Ammoniacal Gases: *T. H.*—We can say by experience to gas-us of this description.

Calomel Note: *S. S.*—We paid the 1s. 6*d.* to the collector, and does we think. [illegible] the immediate efficacy of manure.

Clover Dodder: *Scotus.*—We are asked if a solution of sulphate of iron has been found to be a remedy for Dodder in Clover, by destroying the Dodder and not injuring the Clover? Also whether the disease termed Clover sickness is the [illegible] (We [illegible] of the kind referred to, and do not in the least imagine that there is any chance of getting rid of Dodder thus. Clover Dodder [illegible] all the Clover plants it can reach. Clover sickness is a constitutional malady of either plant or soil, arising from—no one knows what.]

Gas Lime: *William W.* You will find all about gas lime in Johnston's "Agricultural Chemistry," or in Morton's "Cyclopedia of Agriculture." Lime takes up sulphur, &c., from [illegible] to the air, it becomes to that extent an inferior gypsum. You should lay it up in heaps, and turning it frequently in [illegible] with safety and benefit to the land. Or it may be spread broadcast (3 or 4 tons per acre) over the stubbles.

Manure Liquefier: *A Lover of Flowers.*—We are told that this is used in the stables, and Dr. Burney's chloride of lime in the house; the whole runs into a liquid manure tank, which liquid is sometimes used in the kitchen garden, at other times over the borders, and we are asked whether the use of the above liquid manure is likely to affect either the vegetables or the Grass in a way that might make them injurious either to man or cattle? [The answer is, No. The effect of too strong a dose may, however, be injurious to plants, though they are not spoilt as food for animals. The former ingredient, when present too strongly, does, we believe, tend to check the putrefaction of manure sufficiently to hinder the provision of that food for plants which it is the province of manure to supply.]

Sheep Salve: *J. Fryer*, speaking of an article on "Sheep Breeding," by Mr. William Davidson, Blandsford, read at a meeting of the Athy Farmers' Club, Kildare, says—"A mixture to pour sheep with is recommended of Tobacco water, soft soap, sulphur, and Castor oil, but the quantities of each ingredient are not stated." Will Mr. Davidson be good enough to tell us them, or communicate with us on the subject?

Turnips Unsatisfactory: *T. F.* It should have been sown [illegible] later. Harvest, and we fear it is [illegible] late. We would, however, rather sow now than in early spring. There are many better fodder plants to be sown then for the crop of 1867; and if you want to sow among your corn crop then, common Red or mixed Clover will answer your purpose better.

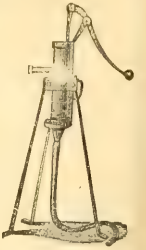
Wood and Charcoal: *A B.* asks for the price of fire-wood per cord and charcoal per ton in London. We thus advertise for him.

JOHN WARNER AND SONS,
8, Crescent, Cripplegate, London, E.C.,
BELL and BRASS FOUNDERS to HER MAJESTY.

No. 35

PATENT CAST-IRON PUMP, fitted with J. W. & Sons' Metal Bucket and Valve, which cannot clog in action, for Wells not exceeding 25 feet.

Diam.	Height.	£	s.	d.
2¾ in. short	5 ft. 7 in.	1	1	0
2¾ in. long	3 ft. 2 in.	1	8	6
3 in. long	3 ft. 6 in.	2	1	0
3¾ in. long	5 ft. 6 in.	2	6	0
4 in. long	3 ft. 6 in.	2	14	0
2¼ in. short, with 15 feet of lead pipe attached, ready for fixing		2	0	0
2 in. long, do. do.		2	14	0



No. 42.

IMPROVED LIQUID MANURE or GENERAL PORTABLE PUMP.—These Pumps are fitted with J. W. & Sons' Patent Bucket and Valve, and cannot clog in action. The Barrel is made of Galvanised Iron, not likely to corrode, and can be raised or lowered at pleasure on the stand, the legs of which fold together, and it may be carried with ease by one man to tank or pond.

Price of 4-inch Liquid Manure Pump, with legs, £2 15*s.*; 2-inch Flexible Rubber and Canvas Suction Pipe, 2*s.* 11*d.* per foot. The Barrel is 27½ inches long, and the legs are 3 feet high.

WARNERS' PORTABLE FIRE or GARDEN ENGINE.

£2 2*s.*

No. 5684.

For use by one Person .. .. .. price £2 2*s.*
No. 5679, ditto ditto, on Wheels .. .. .. „ £2 10*s.*

The above are complete in themselves, and may be always kept filled with Water, and ready for use

Letter to The Times, *July* 23, 1866, *from* Earl Essex.

A Real Fire Extinguisher.

To the Editor of The Times.

"Sir,—I feel sure you will kindly allot a small space in the *Times* to these few lines, as the test medium through which I would urge even a householder who dreads fire to have on each floor of his house one or more small Garden or other Engines on wheels, always charged and in good order, in case of fire.

"Last night, just as I was going to bed, I was startled by what most fearful of all cries, 'Fire, fire!' I soon learned that a fire was raging in a large two-windowed unoccupied bedroom. How caused is to us at present a great mystery. It is my custom to keep one of these small Engines on each floor. In two minutes I was in the room with one of them. It was like a furnace. The curtains, shutters, casements, and frames of both windows were burning and cracking from floor to ceiling. I was quite alone at the moment, yet before assistance arrived, [illegible] of the servants having come to bed), I had completely quenched the fire of one window without extinguishing the Engine, and a few seconds more water did the rest. We very soon extinguished the other.

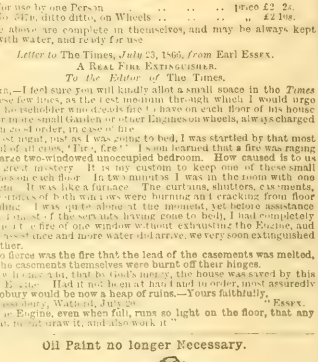
"So fierce was the fire that the lead of the casements was melted, and the casements themselves were burnt off their hinges.

"I am certain that, but for God's mercy, the house was saved by this small Engine. Had it not been at hand and in order, most assuredly Cassiobury would be now a heap of ruins.—Yours faithfully,

"Cassiobury, Watford, Herts." "Essex.

"The Engine, even when full, runs so light on the floor, that any [illegible] can draw it, and also work it."

Oil Paint no longer Necessary.



HILL AND SMITH'S PATENT BLACK VARNISH for preserving Iron Work, Wood, or Stone. This Varnish is an excellent substitute for oil paint on all out-door work, and is fully two-thirds cheaper. It may be applied by an ordinary labourer, requires no mixing or thinning, and is used cold. It is used in the grounds at Windsor Castle, Kew gardens, and at the seats of many hundreds of the nobility and gentry, from whom the most flattering testimonials have been received, which HILL & SMITH will forward on application.

From the Right Hon. Lord Greenock, *Wood End, Thirsk.*

"Lord Greenock has seen the Patent Black Varnish made by Messrs. HILL & SMITH, applied with success, and has heard it highly recommended by friends who have tested it extensively."

Sold in casks of about 30 gallons each, at 1*s.* 6*d.* per gallon, at the Manufactory, or 1*s.* 8*d.* per gallon paid to any Station in the kingdom.

Apply to HILL & SMITH, Brierly Hill Iron Works, near Dudley, and 22, Cannon Street West, E.C., from whom only it can be obtained.

HOT WATER PIPES and FITTINGS of the best description supplied by
Bury & Pollard, 17, New Park Street, Southwark, London, S.E.

BURY AND POLLARD'S CONICAL BOILERS for HEATING by HOT WATER fixed at Seats of Duke of Newcastle, Lord Belper, &c., at Viscount Sydney's replaced, after being 20 years in constant use. Apply at
17, New Park Street, Southwark, London, S.E.

HOT-WATER APPARATUS, of every description, fixed complete in any part of the country, or the materials, viz., Boilers, Pipes, &c., delivered to any Station.
Estimates on application.
J. Jones & Sons, 6, Banksido, Southwark, London, S.E.

Heating by Hot Water.
W. J. HOLLANDS, Iron Merchant,
31, Banksıde, London, S.E.
HOT WATER PIPES, from Stock, per yard:—2-inch, 1s. 2d.; 3-inch, 1s. 10d.; and 4-inch, 2s. 4d. BENDS, from Stock, 1s. 6d., 2s. 6d., and 3s. each. THROTTLE VALVES, 10s., 13s., and 14s. each. Other Connexions at equally low prices, and all goods of first-class manufacture. Estimates given, and orders by post punctually attended to the same day.

Heating by Hot Water.
HOT-WATER PIPES, at Wholesale Prices, with Elbows, Syphons, Tee Pipes, and every other connection; Wrought and Cast-Iron Boilers, Saddle, Conical, Cylinder, Tubular, and Elliptic, from 24s. each. Improved Boilers and Iron Stands to use without brickwork, 60s. each. Valves from 10s. 6d. each. Patent Valves, Improved Furnace Doors, Furnace Bars, Supply Cisterns, and Castings of every description in stock, at
Mr. LYNCH WHITE'S Iron Wharf, Upper Ground Street, Blackfriars Bridge, London, S. Price List on application.

JAMES WATTS AND CO., Hothouse Builders and Hot-Water Apparatus Manufacturers, 355, Old Kent Road, S.E.
200 CUCUMBER and MELON BOXES and LIGHTS, and from 400 to 500 LIGHTS for PITS of all SIZES kept in STOCK. Glazed and Painted complete, ready for immediate use. Packed and sent to all parts of the kingdom. Public and Private Buildings, Warehouses, &c., Heated on the most approved scientific and economical principles. References to the Nobility, Gentry, and Trade in most of the Counties in England.

GREENHOUSES, 42 feet by 13 wide, £50; 21 feet by 13 wide, £28; 12½ feet by 10 wide, £15, glazed, ready for fixing. A handsome CONSERVATORY, 20 feet by 10, £20.
Estimates for any branch in the line, in Wood or Iron, at
H. Freeman's Works, Triangle, Hackney, N.E.

HOTHOUSES for the MILLION,
invented by the late
SIR JOSEPH PAXTON.

Manufactories: London, Newton in Cartmel (Lancashire), Gloucester, Coventry, Aberdeen, and Paisley only.
Illustrated Circulars, with revised List of Prices, will be sent on prepaid application to Messrs. Hitchman & Morrison, Head Office, 7, Pall Mall East, London, S.W.

CRANSTON'S PATENT BUILDINGS for HORTICULTURE.
"Dry Glazing without Putty."
"Glass without Laps."
"Ventilation without Moving Lights."
Highly Commended by the Royal Horticultural Society, South Kensington.

Plans and Estimates free on application. Descriptive Book fully illustrated, post free for 20 stamps, from the Author and Patentee, James Cranston, Architect, Birmingham.
Works: Highgate Street, Birmingham.
Henry J. Growtage, Manager, 1, Temple Row West, Birmingham.

The Only Stove without a Flue.

NASH AND JOYCE'S PATENT, for AIRING, DRYING, and WARMING HALLS, SHOPS, ROOMS, &c., a new especial Stove for Conservatories, Greenhouses, Fruit-Ripening, &c.: to Burn without re-lighting all winter by filling with fuel every 12 hours. Temperature, any degree required, without variation. Prices from 4*l.* 6*s.* to 6 guineas.
MINCING and SAUSAGE FILLING and MASTICATING MACHINES of the best makers, 10*s.* 6*d.*
The COTTAGE KNIFE CLEANER is the only rapid Cleaner and Polisher of Knives at a moderate price. 3*s.* 6*d.* to 10*s.* 6*d.* Prospectus post paid.
CHEAP FIRES.—The Radiating Fire Balls save half the usual consumption of fuel. One Shilling packet of Four, red hot in the fire every day, lasts all Winter.
S. Nash, Ironmonger, 253, Oxford Street, W.C.; and Stove Depôt, 129, Newgate Street, London, E.C.

West's Calorific Plant Preserver.
THE PATENT GAS RADIATOR for Warming Small Greenhouses supply a want often required for. By its use the most delicate plants cannot be injured by the noxious vapour of gas, the small consumption of which is its great recommendation. A Lady can manage it and be quite independent of the carelessness of Servants. Price Three, Four, and Five Guineas.
Sold by all Ironmongers in Town or Country; and Wholesale only by Maynard & Bennett, 111, Southwark Bridge Road, London, S.E.

CHEAPEST and BEST IRON HURDLES, FENCING, Wire Netting, Chaff Cutters, Oat Bruisers, Bean Mills, Steam Engines, Lawn Mowers, Conservatories, Greenhouses, Hot-water Apparatus. Estimates furnished, and skilled workmen sent to all parts of the country.
Jones Boyd & Co., 48, Cannon Street, E.C.

Iron Hurdles, Fencing, and Gates.
COTTAM'S HURDLES are made in the best manner of superior Wrought Iron. SHEEP HURDLES, from 4*s.*; CATTLE HURDLES, from 4*s.* 11*d.* each; CONTINUOUS FENCE, from 8*d.* per foot; FIELD GATES, from 25*s.* each. Illustrated Price List on application.

ENTRANCE GATES, RAILING, and IRON WORK of every description. Designs and Estimates free of
Cottam & Co.,
No. 2, Winsley Street
(opposite the Pantheon),
Oxford Street, London, W.

BY HER MAJESTY'S ROYAL LETTERS PATENT.

ORMSON'S

NEW PATENT WROUGHT IRON MULTITUBULAR HOT-WATER BOILER.

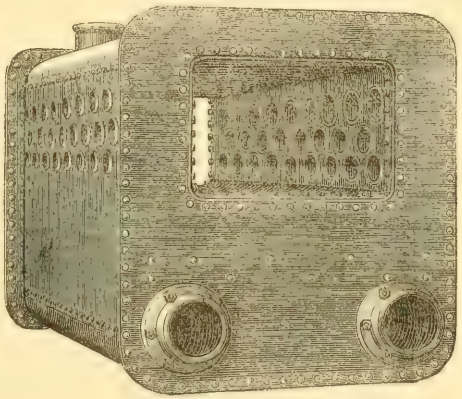
THE GREAT ADVANTAGES OF THIS BOILER ARE:—

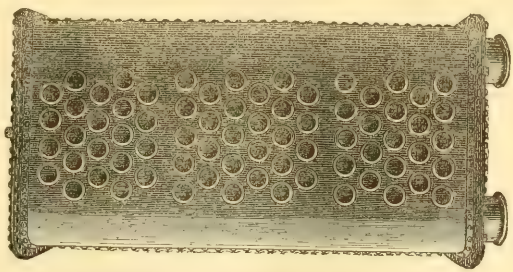
1st. Being entirely of Wrought-Iron, its safety from leakage and cracks (from expansion or contraction), a danger to which all Cast-iron Boilers are more or less liable.

2d. An immensely increased surface exposed to the direct action of the fire, which passes through the tubes, thereby giving a wonderfully increased amount of power.

3d. A great saving in the consumption of fuel. Its facility for banking up the fire. Its peculiarly well-adapted construction for slow combustion, and burning many hours without attention, at a trifling expense.

4th. Its extraordinary power and safety for carrying out the One Boiler System, and small space and depth for setting.


ELEVATION.


UNDERSIDE OF BOILER AND PLAN OF TUBES.

One of these BOILERS Heated the GREAT ORCHID TENT, 560 feet long, and 40 feet wide, at the INTERNATIONAL HORTICULTURAL EXHIBITION, with a remarkably small quantity of fuel, and gave the greatest satisfaction. Was highly approved of by many Scientific Men and Practical Horticulturists.

The great Power, Economy, and Safe Working of these BOILERS has been thoroughly tested for the last 12 months at the Horticultural Gardens, Chiswick, where they may be seen in action, and also at other places in various parts of the country.

THEY ARE MADE OF VARIOUS SIZES. PRICES ON APPLICATION.

HENRY ORMSON, F.S.A.,

HORTICULTURAL BUILDER TO HER MAJESTY, AND HOT-WATER APPARATUS MANUFACTURER TO THE COMMISSIONERS OF HER MAJESTY'S ROYAL PALACES AND PUBLIC BUILDINGS, AND TO THE ROYAL HORTICULTURAL SOCIETY,

STANLEY BRIDGE, KING'S ROAD, CHELSEA, LONDON, S.W.

Glass for Garden Purposes.

JAMES PHILLIPS AND CO. beg to submit their prices as follows:—

PROPAGATING GLASSES.

	Each.—s. d.		Each.—s. d.
2 inches in diameter ..	0 3½	12 inches in diameter ..	1 9
3 " " ..	0 4½	13 " " ..	2 0
4 " " ..	0 5½	14 " " ..	2 6
5 " " ..	0 6½	15 " " ..	3 0
6 " " ..	0 8	16 " " ..	3 6
7 " " ..	0 10	17 " " ..	4 0
8 " " ..	1 0	18 " " ..	5 0
9 " " ..	1 2	19 " " ..	6 0
10 " " ..	1 4	20 " " ..	7 0
11 " " ..	1 6		

HYACINTH and FLOWER DISHES.

6 inches diameter .. .. 1s. 0d. | 9 inches diameter 1 6
12 inches diameter .. .. 2s 6d.

Hyacinth Dishes are intended to contain a number of Root Bedded in and covered with Moss, instead of the common Hyacinth Glass.

LACTOMETERS, for Testing the Quality of Milk.
Four Tubes .. .. 4s 6d | Six Tubes .. .. 6s 6d.
With Stands complete.

HAND GLASSES, WITH OPEN TOPS.

	Each.—s. d.		Each.—s. d.
12 inches	6 6	18 inches	9 6
14 "	7 6	20 "	10 6
16 "	8 6	22 "	11 6
		24 "	12 6

Painted and Glazed with 16-oz. Sheet Glass.

London Agents for HARTLEY'S IMPROVED PATENT ROUGH PLATE.

LINSEED OIL, Genuine WHITE LEAD, CARSON'S PAINTS, PAINTS of various colours, ground ready for use.

SHEET and ROUGH PLATE GLASS, SLATES of all sizes, BRITISH PLATE, PATENT PLATE, ROLLED PLATE, CROWN, SHEET, HORTICULTURAL, ORNAMENTAL, COLOURED, and every description of GLASS, of the best Manufacture, at the lowest terms. Lists of prices and estimates forwarded on application to

JAMES PHILLIPS & Co., 180, Bishopsgate Street Without, E.C.

GREEN'S IMPROVED NEW PATENT GARDEN ROLLER.

The above Rollers possess many advantages over all others. They are made in two parts, and are free to revolve on the axis, affording greater facilities for turning, and the outer edges are rounded off or turned inwards, thus avoiding the unsightly marks left by other Rollers.

Diameter, 30 inches; Length 32 inches, £7 10 0
" 24 " " 26 " 4 10 0
" 20 " " 22 " 3 10 0
" 16 " " 17 " 2 15 0

Prices for Rollers fitted with Shafts suitable for Pony or Horse Power, free on application.

Delivered carriage paid to all the principal Railway Stations and Shipping Ports in England.

THOMAS GREEN & SON, Smithfield Iron Works, Leeds; 54 and 55, Blackfriars Road, London, S.; and 19, Eden Quay, Dublin.

N.B. All Orders executed on the day they are received.

PRIZE MEDALS AWARDED to GREEN'S PATENT LAWN MOWERS.

INTERNATIONAL EXHIBITION, LONDON, 1862.
INTERNATIONAL EXHIBITION, DUBLIN, 1865.

The above Lawn Mowers have proved to be the best, and have carried off every Prize that has been given in all cases of Competition.

Sold by all respectable Ironmongers, Seedsmen, &c., in the Kingdom. Illustrated Price Lists free on application.

AGRICULTURAL and HORTICULTURAL IMPLEMENTS and MACHINES of every description.

IMPROVED IRON STABLE FITTINGS.

HURDLES and CONTINUOUS IRON and WIRE FENCING.

Palisading Entrance and Field Gates. Plain and Galvanised Wire Netting.

GREEN'S PATENT LAWN MOWERS and GARDEN ROLLERS.

Garden Engines, Syringes, Water Barrows, Ornamental Garden Seats, Chairs, Tables, Iron Fountains, Vases, &c.

IRON and BRASS BEDSTEADS, in great variety.

Washing, Wringing, and Mangling Machines.

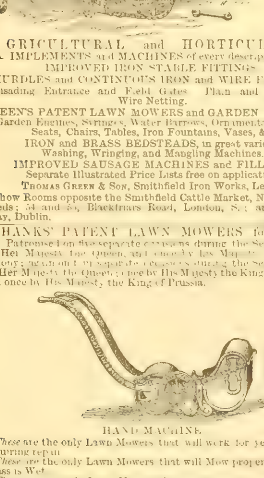
IMPROVED SAUSAGE MACHINES and FILLERS.

Separate Illustrated Price Lists free on application.

THOMAS GREEN & SON, Smithfield Iron Works, Leeds.

Show Rooms opposite the Smithfield Cattle Market, North Street, Leeds; 54 and 55, Blackfriars Road, London, S.; and 19, Eden Quay, Dublin.

SHANKS' PATENT LAWN MOWERS for 1866.—Patronised on five separate occasions during the Season of 1864 by Her Majesty the Queen, and once by His Majesty the King of Saxony; again on ten separate occasions during the Season of 1865 by Her Majesty the Queen; once by His Majesty the King of Holland, and once by His Majesty the King of Prussia.



HAND MACHINE.

These are the only Lawn Mowers that will work for years without requiring repair.

These are the only Lawn Mowers that will Mow properly when the Grass is Wet.

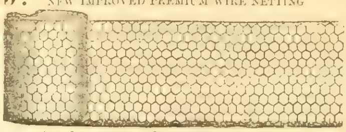
These are the only Lawn Mowers that are in use in ALL the Royal Gardens.

Every Machine warranted, and if not approved of can be at once returned. Illustrated Price Lists sent free on application.

ALEX. SHANKS & SON, Dens Iron Works, Arbroath; and 27, Leadenhall Street, London, E.C.

7, Leadenhall Street is the only place in London where intending purchasers of Lawn Mowers can choose from a stock of from 150 to 200 Machines; all sizes kept there, whether for Horse, Pony, or Hand Power.

J. B. BROWN AND CO.'S NEW IMPROVED PREMIUM WIRE NETTING.



Great Improvement.—Reduced Prices, February, 1866.
PRICES PER LINEAL YARD 24 INCHES HIGH.

Size of Mesh.	Mostly used for	Light. Jap	Light. Gal	Medium. Jap	Medium. Gal	Strong. Jap	Strong. Gal	Extra Strong Jap	Extra Strong Gal
in.		s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
2½	Dogs or Poultry	0 2¾	0 3	0 3½	0 4½	0 4	0 5½	0 5	0 6¼
2	Poultry	0 3¼	0 3¼	0 3½	0 4½	0 4½	0 5¼	0 5¼	0 7
1½	Small Rabbits, Hares, &c.	0 3¾	0 4¼	0 4½	0 5¼	0 5	0 6½	0 6¼	0 8
1¼	Smallest Rabbits	0 4½	0 5¼	0 5¼	0 6¼	0 6¼	0 8	0 8	0 10
1	Pheasantries, Small Birds, &c.	0 8	0 10	0 9½	1 0½	1 1½	1 4	1 7	1 10
¾	Aviaries, Window Guards, &c.	0 11	1 1½	1 1½	1 4	1 4	1 7	..	..
⅝	Aviaries, Window Guards, &c.	1 7	1 10	1 10	2 0	2 0	2 3	2 3	2 6
½	Aviaries, &c.	2 3	2 6	2 6	2 8	..	..	..	..

Quantities of 100 Yards or upwards delivered free at all Railway Stations and Shipping Ports in England.

_ Every description of Netting warranted to give satisfaction, and if not approved will be exchanged, or may be returned unconditionally.

J. B. BROWN & Co.—Offices, 90 (late 18), Cannon Street, London, E.C. Warehouse and Manufactory, 148, Upper Thames Street, E.C.

GALVANISED WIRE CABLE STRAND FENCING, for FARMS, PARKS, and GARDENS.

The ORIGINAL INVENTORS and MANUFACTURERS.

The CHEAPEST, STRONGEST, and NEATEST FENCING in USE

THOUSANDS of MILES of this FENCING have been SUPPLIED by us at home and abroad. It sustains no injury by being trespassed upon.

Price, with five lines of Strand and Iron-pronged Standards, and one straining post, stay and screw bolts to every 120 yards, 1s. per yard.

Five lines of Cable Strand and Staples for wooden posts 6d. per yard.

HURDLES, HURDLES, HURDLES, 1s. 9d. to 3s. 9d. per yard.

CONTINUOUS IRON FENCING, GATES of all kinds.

PATENT STRAINING PILLARS, &c.

GALVANISED WIRE NETTING for POULTRY, &c.

GALVANISED SWING WATER BARROWS.

GALVANISED IRON WATER CISTERNS.

GALVANISED IRON PUMPS.

LAWN MOWERS. GARDEN ROLLERS.

ASPHALTE ROOFING FELT, 1d. per square foot.

MOTLEY & GREEN.

Illustrated Catalogues and Estimates free on application.

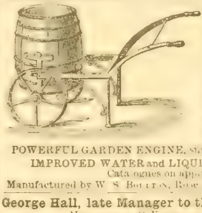
12, Great George Street, Leeds.

MELON LIGHTS, Machine made, 6 feet by 4 feet, 1½ thick, Unglazed 5s., Glazed 11s., are kept in stock at the Finsbury Steam Joining Works, 121, Bunhill Row, E.C.

GREENHOUSES, RAFTERS, SASH BARS, &c.

TO BE SOLD, the FRAME-WORK of three PINE PITS, and the HOT-WATER PIPES relating to the same, with 15 GLASS LIGHTS, in a perfectly sound state, and a large quantity of PINE PLANTS.

Application to be made to Mr. ARTHY, Stationer, Chelmsford.



SWING WATER BARROW.—This is the best and cheapest article yet introduced for use in Gardens, Farm Yards, &c. The Water may be dipped out, or the Tub tilted and poured out, or by merely raising the Handle it can be placed on the ground, and the Frame detached. To hold about 30 or 36 gallons, price 42s. Carriage paid to any station on Great Eastern Line.

POWERFUL GARDEN ENGINE, suitable for the above, price 15s.

IMPROVED WATER and LIQUID MANURE CARTS.

Catalogues on application.

Manufactured by W. S. BOULTON, Rose Lane Iron Works, Norwich.

George Hall, late Manager to the late Saynor's Firm.

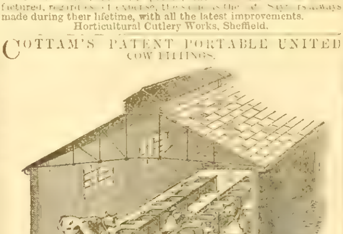
HE WAS FOR 30 YEARS IN THEIR EMPLOY.

GEO. HALL AND SON'S Celebrated PRUNING and BUDDING KNIVES, &c., may be obtained from the most respectable Nurserymen and Seed Merchants in the Kingdom, and America, France, Germany, Holland, Prussia, Russia, &c.

N.B. We only make one quality, the best that can be manufactured, regardless of expense, the same as those that G. Saynor always made during their lifetime, with all the latest improvements.

Horticultural Cutlery Works, Sheffield.

COTTAM'S PATENT PORTABLE UNITED COW FITTINGS.



Their advantages are:—Cleanliness, not fixtures, removable at pleasure, no Woodwork or Partitions to impede Ventilation or breed Vermin, Hay Rack, separate, with continuous supply, delivered without destruction of feeding troughs, Water Cistern, and Patent Trap Cover to prevent over gorging. Cleanly, durable, and impervious to infection, being all of Iron. Price of Fittings per Cow, 55s.

Prospectuses free of COTTAM & Co., Iron Works, 2, Winsley Street (opposite the Pantheon), Oxford Street, London, W., where the above are exhibited, together with several important Improvements in Stable Fittings just secured by Patent.

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THE SMOKER'S BONBON immediately and effectually REMOVES the TASTE and SMELL of TOBACCO from the Mouth and Breath, and renders smoking agreeable and safe. It is very pleasant and wholesome. Prepared by a patent process, from the recipe of an eminent physician, by SCHOOLING & Co., Wholesale and Export Confectioners, Bethnal Green, London, N.E. 1s. per box post free, 14 stamps.—Sold by Chemists, Tobacconists, &c.

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To Nurserymen and Seedsmen.—Notice.

THE GARDENERS' YEAR-BOOK, ALMANACK, and DIRECTORY for 1867, by ROBERT HOGG, LL.D., F.L.S., will be Published on December 1. Any alterations in the style and Address of Firms are requested to be sent forthwith to the Editor, so that the necessary corrections may be made in the Directory portion.

"Journal of Horticulture" Office, 171, Fleet Street, London, E.C.

HOGG'S GARDENERS' YEAR-BOOK, ALMANACK, and DIRECTORY for 1867.

ADVERTISEMENTS intended for insertion in the forthcoming issue, on December 1, should be forwarded immediately, to prevent disappointment.

"Journal of Horticulture" Office, 171, Fleet Street, London, E.C.

Price Threepence, of any Bookseller.

CONTENTS of the NUMBER for SATURDAY LAST, OCTOBER 6, of

THE ATHENÆUM.

JOURNAL of ENGLISH and FOREIGN LITERATURE, SCIENCE, and the FINE ARTS.

Thirty-two large Quarto Pages.

Reviews OF, WITH EXTRACTS FROM—

Extracts from the Diary of the Rev. Peter Walkden, Nonconformist Minister, for the Years 1725, 1729, and 1730. With Notes by William Dobson.

The Female Casual and her Lodging. By J. H. Stallard, M.B.

Confederation considered in Relation to the Interests of the Empire. By the Hon. Joseph Howe.

Newfoundland and Confederation. The Petition of the Merchants, Traders, Fishermen, and other Inhabitants of Newfoundland.

Nova Scotia and Confederation. Petitions from Inhabitants of Nova Scotia.

Catholic Orthodoxy and Anglo-Catholicism: a Word about Intercommunion between the English and the Orthodox Churches. By I. J. Overbeck, D.D.

Views and Opinions. By Matthew Browne.

Memoirs and Services of the late Lieut.-General Sir S. B. Ellis, K.C.B., Royal Marines. From his Own Memoranda. Edited by Lady Ellis.

Liber Monasterii de Hyda; comprising a Chronicle of the Affairs of England from the Settlement of the Saxons to the Reign of King Cnut; and Chartulary of the Abbey of Hyde, in Hampshire, A.D. 455–1023. Edited by Edward Edwards.

Thirty Years of Army Life on the Border; comprising Descriptions of the Indian Nomads of the Plains; Explorations of New Territory, &c. By Colonel R. B. Marcy.

New Novels:—For Ever and for Ever: a Drama of Life. By Florence Marryat.

WITH SHORTER NOTICES OF

Harper's Pictorial History of the Great Rebellion, Part I., to the Close of the Peninsular Campaign of 1862—Types from the Hebrew and Greek Scriptures, as illustrated in the Colours of the Rainbow. By Mrs. Kelly.—Memorials of Worcester. By Mackenzie E. C. Walcott, &c.

Weekly Gossip.—New Edition of Charles Lamb's Works—Dr. Beke's British Captives in Abyssinia—Dr. Lardner's Work on the Electric Telegraph—New Story by Mrs. S. C. Hall—Miss Glyn's Shakespearian Readings—Mr. and Mrs. German Reed's Entertainment—The Two Dromios at Drury Lane—A Flagrant Instance of Legerdemain—Mr. Frank Buckland's 'Hint for Ostreoculturists'—Mr. Barney Cole as Hamlet—Mr. S. Stone—The Standard of Respectability—The Russian Burns, Alexis Vasilievich Koltsof—Faust at Drury Lane—The Water Supply of the Metropolis—Mallet du Pan's Letters—M. Sainte Beuve's 'Nouveaux Lundis'—Meeting of Vegetarians in Dublin—Continental Newspapers, &c.

Fine Arts.—Sculpture Prints from the Frescoes of Raphael in the Vatican. Edited by Lewis Gruner.

Fine Art Gossip.—Flaxman's Illustrations of Dante—Photographic Portraits of Men of Eminence—Children's Toy Books—Messrs. Day & Son's 'Nature and Art'—The Alexandra Palace—The Church of Conisborough, Yorkshire—A School of Art, Cape Town.

Science.—Geological Miracle Assumers—Star Showers.

Original Papers.—The Irish Church—Derivation and Meaning of 'Bonfire'—Modern Biography—American Bibliography.

Music and the Drama.—New Publications—Drury Lane, Haymarket, Olympic, Adelphi, and the Standard Theatres.

Musical and Dramatic Gossip.—The Royal Academy of Music—Mr. Alfred Mellon's Concerts—The Crystal Palace—Handel's 'Israel'—The 'Arabella' Pianoforte—The Pyne and Harrison Company—L'Africaine at Melbourne—The New Theatre in Holborn—Music on the Continent, &c.

Miscellanea.—Church Furniture—Originators of the Atlantic Cable—Benting-time—Greenwood on Kames.

The Athenæum may be ordered of any Bookseller, or a Single Copy will be forwarded on four stamps being sent to the Office, 20, Wellington Street, Strand, London, W.C.

THE QUARTERLY REVIEW, No. CCXL., will be Published NEXT THURSDAY.

CONTENTS

I. ANCIENT LITERATURE OF FRANCE.
II. THE DUTCH SCHOOL OF CRITICISM.
III. RAILWAY SYSTEM OF INDIA.
IV. LIFE OF LORD.
V. FERGUSSON'S HISTORY OF ARCHITECTURE.
VI. OPPOSITION AT HOME AND WARFARE.
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TO BE LET, on LEASE for Seven Years from Michaelmas last, about 36 ACRES of valuable and rich MARKET GARDEN GROUND, situate in the rear of Castelnau Villas, near Barnes Station.

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Tothill, Plymouth.—To Gardeners and Others.

TO BE LET, by Tender, for a term of 7 or 14 years, from Christmas, 1866, all that MESSUAGE or DWELLING HOUSE, with the Garden and Premises thereto belonging, in the Parish of Charles, Plymouth, now in the occupation of Mr. Francis Wood, Gardener and Seedsman, as Tenant, containing by admeasurement 1a. 1r. 0p. or thereabouts. The above has been for many years occupied as a Market Garden, it was built for the purpose in all respects, and well supplied with Spring Water. The taker will be required to purchase, at a valuation by a competent person to be agreed on between the said Francis Wood and the Purchaser, the Fixtures, and also the Stock of Plants, Greenhouses, and Potting-houses on the Premises, being allowed to remove the latter at the expiration of his Term.

Tenders for taking the above Premises must be left at the offices of Mr. LUXMOORE, Solicitor, Arcus Insurance Office, Courtenay Street, Plymouth (where the terms and conditions on which they are to be let may be seen), on or before Friday, the 19th inst., and in the meantime the Tenant will show the Premises on application.

The Settler shall not be required to accept the highest Tender.

Argus Insurance Office, Plymouth.—September 16.

Sales by Auction.

Southampton. Winchester Road, Shirley.

MESSRS. PERKINS AND SONS will SELL by AUCTION, on WEDNESDAY, October 24, at 2 for 3 o'Clock, by order of Mr. Brannon, the Land being required for Building Purposes, 20,000 LAURELS, from one to four years' growth, a large quantity of RHODODENDRONS, several thousand MANETTI STOCKS, ROSE TREES, STRAWBERRY PLANTS, and various SHRUBS

On view at any time previous to the Sale. Auction Offices, Southampton, Oct. ber 10.

Lewisham.

SALE OF VALUABLE NURSERY STOCK, CLARK'S NURSERY GROUNDS, HITHER GREEN.

MR. CHARLES ARTHUR has received instructions from the Proprietor to SELL by AUCTION, on TUESDAY, WEDNESDAY, and THURSDAY, November 6, 7, and 8, at 12 o'Clock each day precisely, on the Premises, CLARK'S NURSERY GROUNDS, Hither Green, Lewisham, in consequence of the land being required for building purposes, the following VALUABLE STOCK, comprising 1200 Dwarf and Standard Trained Peaches, Nectarines, Apricots, Plums, Cherries, Pears, and Apples, 500 standard and Pyramidal Fruit Trees, comprising Plums, Cherries, Pears, and Apples, 1000 Green Box, 1000 Laurels 2 to 3 Feet, 5000 green Hollies, 500 Rhododendrons, 5000 Standard and Dwarf Roses of the most approved sorts, Clematis, Roses, Jessamines, Honeysuckles, &c.; Irish Yews, Portugal Laurels, Berberis Aquifolium, Arbutus, Aucubas, Irish Yews and the common dittos, 700 Spruce Firs, large Limes, Poplars, Laburnums, Mountain Ash, Standard Thorns, Larch, and Sycamores; also 4000 fine specimens of Conifers, 3.0 Thuja aurea and gigantea, 2 to 4 feet; Cedrus Deodara, 6 to 14 feet; Cupressus Lawsoniana, 2 to 4 feet; Thujopsis borealis, 2½ to 4 feet, Retz Cedars, 4 to 5 feet, Wellingtonia gigantea, 2 to 6 feet; Abies Douglasii, 2 to 5 feet; Chinese Arbor-vitæ, 3 to 5 feet; Pinus insignis and excelsa, 2 to 5 feet; 300 Arbor-vitæs, and 700 small ditto.

May be viewed the Saturday and Monday previous to the Sale. Catalogues had on the Premises, and of Mr. CHARLES ARTHUR, Auctioneer, 2, Bank Buildings, Blackheath, S.E.; 4, Belmont Hill, Lee, S.E.; and Rushey Green, Lewisham, S.E.

Shepherd's Bush.

IMPORTANT CLEARING SALE OF NURSERY STOCK.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, on the Premises, Exotic Nursery, Shepherd's Bush, adjoining the Shepherd's Bush Station on the Metropolitan Railway, on MONDAY and TUESDAY, October 22 and 23, at 12 for 12 o'Clock precisely each day, by order of the Executors of the late Mr. F. Hopgood, Sen., who is leaving them business, the whole of the valuable NURSERY STOCK including fine Evergreen and Coniferous Shrubs, Standard and Dwarf Roses, extensively cultivated fine Fruit Trees, a large quantity of Standard, Half-Standard, and Dwarf Roses, consisting of the best varieties in cultivation, quantity of Cottage, &c.

May be viewed prior to the Sale. Catalogues may be had on the Premises; and of the Auctioneers and Valuers, American Nurseries, Leytonstone, N.E.

Mile End Nursery, Bow Road, E

MESSRS. PROTHEROE AND MORRIS are instructed to SELL by AUCTION, on the Premises, Mile End Nursery, Bow Road, Stratford, a few minutes' walk of the Bow Railway Station on the North London Line), on THURSDAY, October 18, a portion of the Valuable NURSERY STOCK, including a large quantity of bushy Aucuba Japonica, Chinese Arbor-vitæ, Variegated and Green Euonymus, Sweet Bays, Green Box, Thujopsis, Cedrus Deodara, Abies Smithii, Pendula, Lawsoniana, Wellingtonia gigantea, Pinus excelsa, Standard and Dwarf Roses: also some large Double Camellias, 8 to 10 feet high; with LEEK CANE, 30 inches by 22 inches, and 12 capital PARENT YEW MARKERS.

May be viewed prior to Sale. Catalogues may be had on the Premises; and of the Auctioneers and Valuers, American Nurseries, Leytonstone, Essex, N.E.

Sale of very fine Dutch Bulbs and Standard Roses.

TO TAKE PLACE AT 12 O'CLOCK PRECISELY, INSTEAD OF 1 O'CLOCK.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, at 38 and 39, Gracechurch Street, City, E.C., on SATURDAY NEXT, October 13, at 12 o'Clock precisely, instead of at 1 o'Clock, a first-class Collection of DUTCH BULBS, including choice-named HYACINTHS, TULIPS, CROCUSES, NARCISSUS, IRIS, &c., also a fine collection of STANDARD, DWARF, and CLIMBING ROSES, comprising the finest varieties in cultivation; HARDY AMERICAN PLANTS, CLIMBERS, &c.

On view Morning of Sale. Catalogues had at the Rooms as above; and of the Auctioneers, American Nurseries, Leytonstone, N.E.

Wandsworth Common.

VERY IMPORTANT AND EXTENSIVE SALE OF NURSERY STOCK

MESSRS. PROTHEROE AND MORRIS have received instructions from Mr. R. Neal to SELL by AUCTION, on the Premises, Wandsworth Nursery, Wandsworth Common, S.W., on MONDAY, October 22, and following day, at 12 for 12 o'Clock precisely each day (in consequence of the Land being immediately required to be cleared for Building purposes), the VALUABLE NURSERY STOCK, comprising 1000 Aucuba Japonica, 600 Green Hollies, 1000 Variegated ditto, 2000 Irish Yews, 1000 Portugal and Common Laurels, 1000 Privet (Ibex and evelleana), 5000 Thuja aurea and gigantea, 1000 Cupressus Lawsoniana, 1000 Cedrus Deodara, 3000 Spruce Firs, 1000 Scotch Firs, 1000 Weymouth Pine, 1000 Cupressus Lawsoniana, deodara and macrocarpa, 500 Wellingtonia gigantea, 500 Thujopsis borealis, 1000 Abies Douglasii, 1000 Evergreen Oaks, Forsythia, Lilacs, &c.; 2000 choice named Seedling and other Rhododendrons, well set with buds, 1000 Seedling and Budded Standard Roses, 1000 Standard Limes, 1000 Standard Sycamores, large collection of Ornamental, Forest, and Fruit Trees, 2000 Weeping and other Standards, 3000 Acacias, 2000 Albinia Kalmiflora, remarkably fine, 2000 Poplars, 500 Laburnums, Ivies, Weeping and Common Ash, 2000 Seedling Quicks, Mowers and Rakes, other Maples, Limes, &c.; 2000 Standard and Dwarf-framed Plums, 2000 ditto Pears, 500 ditto Apples, 3000 Dwarf-framed Peach, Nectarines, and Apricots; many thousands of Raspberries, Gooseberries, Currants, Lonicera periclymenum-reticulata, flexuosa, and brachypoda; Wistaria sinensis, Ivies, Passiflora, &c.; with a beautiful collection of Standard and Dwarf Roses, &c. All the new and best Mowers and Rakes.

May be viewed until the Sale. Catalogues had its each, returnable to purchasers) on the Premises, and of the Auctioneers and Valuers, American Nurseries, Leytonstone, N.E.

Preliminary Notice of a very Important Sale at Hendon, Middlesex.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, on the Premises, Hendon Park Nursery, Hendon, Middlesex, on MONDAY, November 5, and following day, at 11 o'Clock each day, by order of the Executors of the late Mr. James Wright, to wind up the Partnership Accounts, the First portion of the NURSERY STOCK, comprising 100,000 of the finest unlimited variety of Evergreen Conifers and Deciduous Shrubs, Standard Roses, 12,000 Ornamental and Forest Trees, Fruit Trees, &c., particulars of which will be duly announced.

American Nurseries, Leytonstone, N.E.

Tottenham.

CLEARANCE SALE OF VERY VALUABLE NURSERY STOCK FOR THE GREAT EASTERN RAILWAY EXTENSION.

MESSRS. PROTHEROE AND MORRIS will submit for unreserved SALE by AUCTION, on the Premises, Brunswick Nursery, Tottenham, on Wednesday, Thursday, and Friday, November 7th and 8th, at 11 o'Clock each day, by order of Mr. J. Maher, who is compelled to make an immediate clearance for the extension of the Great Eastern Railway, the whole of the Nursery Stock, fragile and more especially remarkably fine bargains, Cupressus, Deodara, and Deodara Seedlings, including 10,000 Chinese Arbor-vitæ, 1000 bushy Aucubas, 1000 Euonymus, 1000 Ilex, 3000 Spruce Firs, 2000 Portugal and Common Laurels, 1000 Irish Yews, 1000 Rhododendrons, 5000 golden and Green Hollies, 1500 very fine Laurustinus, 1000 Rhododendrons, 5000 golden Yews, 800 Irish and English Yews, 1000 Cupressus Lawsoniana, 1000 Cupressus Deodara, 1000 Cupressus Deodara, robusta, atlantica, and Libani; 500 Thuja aurea, compacta, Lobbii, Warcana, and gigantea; 500 Wellingtonia gigantea, 1 to 6 feet; 1000 Abies Douglasii, Menziesii, Smithii, Morinda, nobilis, and Pinsapo, 1 to 5 feet; 500 Thujopsis borealis, 1 to 5 feet; 1000 Juniperus scita, 600 Juniperus scita, Abies Douglasii and Menziesii, Picea excelsa, Privet, Ibex, Ilaces, Silvanica, Standard, 5000 Deutzia gracilis, 5000 Deutzia crenata, 5000 Weigelia rosea, 5000 Berberis and Climbing Roses, Clematis, Ivies, Jasmines, 1500 Fancy Roses in pots, &c.; selected Fruit Trees, including Standard and Dwarf Apples, Pears, Plums, Cherries, Peaches, Nectarines, Apricots, 1500 strong Strawberries in pots for Forcing, 1200 yards of excellent Box Edging, an immense quantity of Prince of Wales Raspberries, 1000 Alpine Strawberries, 1000 Seedling Quicks, choice Evergreen Plants, including 700 choice named heaths Erica hyemalis, Wilmoriana and autumn, 600 Cinerarias, persian, &c. The whole Stock exhibits a most healthy appearance, and is well worthy the attention of the Trade and public, generally is well suited for great and small purchasers.

May be viewed prior to the Sale. Catalogues to be had on the Premises, and of the Auctioneers, American Nurseries, Leytonstone, Essex, N.E.

Staffordshire—Brereton,

Near Rugeley, about 2 miles from the Rugeley and Armitage Stations To Noblemen, Gentlemen, Nurserymen, and Others Planting.

IMPORTANT SALE BY AUCTION OF NURSERY STOCK.

C. GILLARD begs respectfully to intimate that he has been favoured with instructions from Mr. Whitehouse to sell by AUCTION, on the Premises, at Brereton Nurseries, on MONDAY and TUESDAY, October 15 and 16. The stock upon this occasion will comprise an extensive unsurpassed Stock of Evergreen and Flowering Shrubs, choice and rare Coniferæ, Rhododendrons, Hardy and Silver Hollies, Gold and Silver Yews, including many fine specimens fairly to be met with; Oaks and other Forest Trees, three and four-year-old strong Quicks, &c. The whole splendidly rooted, and having been recently removed will transplant with unfailing success.

Catalogues may be had from the Auctioneer, Lichfield; Mr. H. Gillard, Auctioneer, Stafford; and at the place of Sale.

Auction Office, Lichfield, Oct. 13.

Periodical Sale of Poultry and Pigeons.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY, October 16, at half-past 12 o'Clock precisely, the 295th PERIODICAL SALE OF PURE POULTRY AND PIGEONS from well-known Breeders and Exhibitors.

On view the Morning of Sale, and Catalogues had.

Bulbs and Plants.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, October 17, at half-past 12 o'Clock precisely, a Choice Collection of ESTABLISHED ORCHIDS, part the property of a Gentleman giving up their culture, including fine specimens of the following rare varieties:—

Aganisia Ruckeri	Aerides Lobbi
Cypripedium Albosum	" insectifolium
" caudatum	" Warneri,
Cymbidium Lowianum	and many others.

Full particulars of which will be found in the Sale Catalogue.

On view the Morning of Sale, and Catalogues had.

Roses, Foliaged Plants, Bulbs, &c.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on SATURDAY, October 20, at half-past 12 o'Clock, 1000 fine STANDARD ROSES, from a well-known grower, some FINE-FOLIAGED PLANTS, and a selection of DOUBLE and SINGLE HYACINTHS, TULIPS, CROCUS, NARCISSUS, and other Bulbs from Holland. Also some PYRAMIDAL and DWARF FRUIT TREES from France.

On view the Morning of Sale, and Catalogues had.

Edmonton.

TO GENTLEMEN, NURSERYMEN, MARKET GARDENERS, BUILDERS, AND OTHERS.—IMPORTANT SALE OF VALUABLE NURSERY STOCK.

MR. A. RICHARDS has received instructions from Mr. W. Wilson to SELL by AUCTION, on the Premises, Church Road, Upper Edmonton (5 minutes' walk from Angel Road Station, Great Eastern Railway, on WEDNESDAY and THURSDAY, October 17 and 18, at 12 o'Clock each day in front of the ground being required for the Railway, about 2000 DWARF FRUIT TREES, consisting of Standard, Pyramid, and Dwarf Framed Apple, Pear, Cherry, Plum, and Damson; 1000 Half-Standard and Dwarf-framed Gooseberry and Currant trees, 1000 Standard Raspberries and Currants, also an immense number of very fine specimen CONIFERS and EVERGREENS, including Cupressus Lawsoniana, 6 to 8 feet, Wellingtonia gigantea, 4 to 6 feet, Weymouth Pines, Deodars, and other Pines; Irish and Fan Yews; Chinese Arbor-vitæ, Scottish Arbor-vitæ, from 4 to 8 feet; Cedrus Deodar, and robusta, 4 to 6 feet; Phillyrea; Portugal and Common Laurels, Laurustinus, Sedges, Variegated Aquifolium, Hollies, Ivies, Privet, &c.; 12 fine STANDARD and DWARF ROSES, of the very best sorts, Laburnums, large Limes, Poplars, Weeping Willows, Sycamores, Standard and Dwarf Thorns, Mountain Ash, Lace Weeping Ash, many thousands of strong Quick, hardy Climbers in pots, &c.; also about 100 dozen strong plants of Woodyer's Seedling HORSE-RADISH, which is the best ever grown, and MRS POLLOCK; Pompons, Veronica Anderson, &c.

May be viewed till the Sale. Catalogues on the Premises, and of the Auctioneer, Tottenham, N.

Stowmarket.

IMPORTANT SALE AT THE DAIS, CROFT NURSERIES.

MR. GEORGE TURNER is instructed to SELL by AUCTION, on WEDNESDAY, THURSDAY, and FRIDAY, October 24, 25, and 26, at 11 o'clock each day, quite Unreservedly, as the Premises as above, in consequence of the place being about to be cleared and discontinued as a Nursery, all the Valuable Stock of TREES and SHRUBS for Planting and Ornamental purposes; comprising fine specimens of Cupressus Lawsoniana, Deodara, Cupressus Lawsoniana, Araucaria imbricata, Irish Yews, Pinus insignis, Pinus excelsa, Thujopsis borealis, Cryptomeria japonica, Deodara, Cupressus deodara, Cedrus deodara, Abies Menziesii, Cedrus atlantica, Thuja orientalis variegata, Juniperus virginiana, Taxus elegantissimis; splendid pair of IRISH YEWS, 12ft high and 6ft. in diameter; Aucuba, Deodara, Picea Nordmanniana, Picea excelsa, Taxus baccata, Portugal and Common Laurels, Yews, Quicks, Hybrid Perpetual Roses, Hoils, Portugal Laurels, several hundred fine specimens of Thuja Warcana, fine Laurustinus, Virgin Cork, Standard Lime Avenue Trees, Standard Thorns, Ilex Aquifolium, Berberis Aquifolium, Laurels in quantity, Birch, Spanish Chestnuts, Alder, Beech, Hazel, Standard Weeping Elms, Larch, Ilex and Fruit Espaliers, Weeping Ash Trees, Standard Hedgerages, Standard Cherries, Apples, and Pears; Gooseberries, Currants, Asparagus, Seakale, and Rhubarb; fine collection of Dahlias and Hollyhocks, Antirrhinums, Asters, Chrysanthemums, Asparagus, and other Bedding Plants, Stove and Greenhouse Plants; the Erections of Greenhouses, Propagating-houses and Pits, Boarded and Seeded Barn and Shedding, &c.

Catalogues may be obtained on the Premises, and at the Auctioneer's Offices, 18, Museum Street, Ipswich.

Paddock Wood, Kent,

Within two minutes' walk of this important Junction Station, on the South-Eastern Railway. Price of Freehold Land, with a registered and indefeasible title.

MESSRS. DEBENHAM, TEWSON, AND FARMER will SELL, at Parkers Rose and Crown Hotel, Tunbridge Town, on TUESDAY, November 6, at 4 o'clock precisely, in lots, varying from 1 Acre to 10 Acres each, about 47 Acres of FREEHOLD LAND (Land-Tax redeemed), within two minutes' walk of the Paddock Wood Station. Several of the Lots have important Building Frontages to the High Road from Brenchley to Maidstone, and the rest of the Land is well adapted for Market or Fruit Gardens, or for Accommodation purposes. Every Lot will be Sold with a Registered Title under the Land Transfer Act, affording an indisputable Title, at an almost nominal cost. Two-thirds of the Purchase money can remain on Mortgage at 5 per cent., and be paid by instalments.

Particulars at the Hotel; of T. G. BULLEN, Esq., Solicitor, 7 and 8, Barge Yard Chambers, Bucklersbury, E.C., and of the Auctioneers, 80, Cheapside, E.C.

Kent.

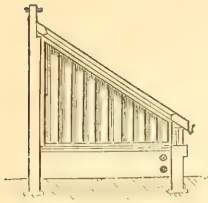
Inexpensive Freehold Land, suitable for Hop or Fruit Gardens, or for Building purposes, in the beautiful district between Sevenoaks and Tunbridge, within a few minutes' walk of the Station on the projected line to Hythe, and near a church

MESSRS. DEBENHAM, TEWSON, AND FARMER will SELL, at Parkers Rose and Crown Hotel, Tunbridge Town, on TUESDAY, November 6, at 4 o'clock, in Lots varying from 1 to 5 Acres, the FREEHOLD ESTATE, well adapted for Fruit Gardens, or for Building purposes, in the parish of Seppington, about two miles from Tonbridge, five from Sevenoaks, and ten from Maidstone, comprising 4 of Meadow and Pasture, and several Enclosures of Arable, Meadow, Hop, and Wood land. The estate is in an extremely healthy and agreeable neighbourhood, is upper soil of a rich loam, and the subsoil is of a description to bring the produce to perfection, to which the rest of the land is open, and excellent roads are let and from the upper portions it is within the limits of the ornamental Wealden district. Further and great advantages of which see *Illustrated London News* of Sept. 22, and 29 well deserving the attention of gentlemen who desire to erect houses in an attractive district, within a moderate distance of London, and are yet unwilling to pay the high prices demanded for Land in many localities. Possession will be given on completion of the purchase.

Particulars at the Hotel; also of Messrs. HAWKINS, BLOXAM, ROTHERY, and POWELL, Solicitors, 36, New Boswell Court, Lincoln's Inn; and of the Auctioneers, 80, Cheapside, E.C.

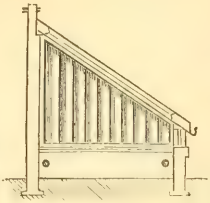
J. JONES & SONS' HOT-WATER APPARATUS.

No. 7.



Size of House.	Price.
20 by 10 feet	£9 0 0
30 ,, 12 ,,	12 0 0
40 ,, 15 ,,	15 0 0
50 ,, 15 ,,	18 0 0
60 ,, 15 ,,	20 0 0
70 ,, 15 ,,	22 0 0
80 ,, 15 ,,	24 0 0
100 ,, 15 ,,	26 0 0

No. 8.



Price.
£9 0 0
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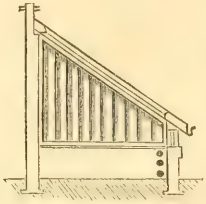
15 0 0
18 0 0
20 0 0
22 0 0
24 0 0
26 0 0

No. 9.



Price.
£13 0 0
17 0 0
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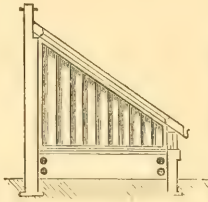
24 0 0
27 0 0
30 0 0
33 0 0
36 0 0

No. 10.



Price.
£14 0 0
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24 0 0
28 0 0
32 0 0
36 0 0
40 0 0
44 0 0

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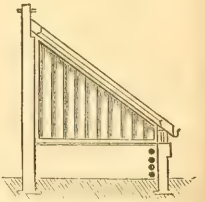

Price.
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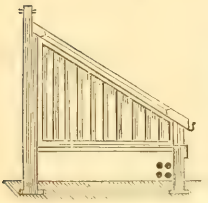

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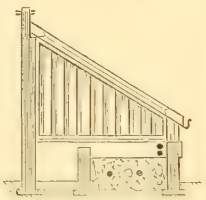

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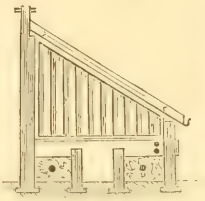

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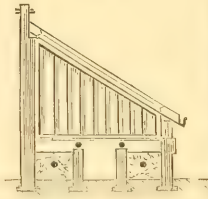
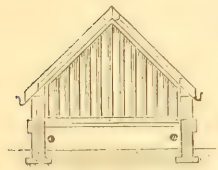


Price.
Same as No. 11.

No. 16.

Price.
Same as No. 7.

No. 17.



Size of House.	Price.
20 by 10 feet	£9 0 0
30 ,, 12 ,,	12 0 0
40 ,, 15 ,,	15 0 0
50 ,, 15 ,,	18 0 0
60 ,, 15 ,,	20 0 0
70 ,, 15 ,,	22 0 0
80 ,, 15 ,,	24 0 0
100 ,, 15 ,,	26 0 0

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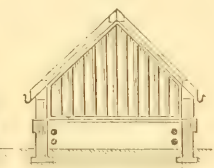

Price.
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32 0 0
36 0 0
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44 0 0

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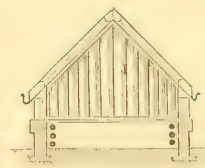

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44 0 0
49 0 0
54 0 0

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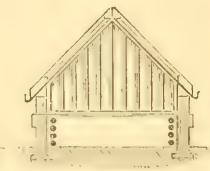

Price.
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42 10 0
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70 0 0

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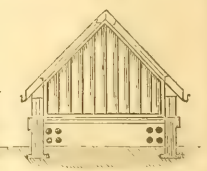

Price.
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49 0 0
56 0 0
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70 0 0

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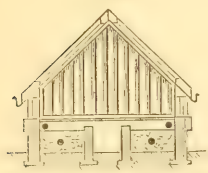

Size of House.	Price.
20 by 10 feet	£15 0 0
30 ,, 12 ,,	21 0 0
40 ,, 15 ,,	25 0 0
50 ,, 15 ,,	29 0 0
60 ,, 15 ,,	33 0 0
70 ,, 15 ,,	37 0 0
80 ,, 15 ,,	41 0 0
100 ,, 15 ,,	45 0 0

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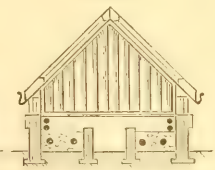

Price.
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44 10 0
51 10 0
58 0 0
65 0 0
72 0 0

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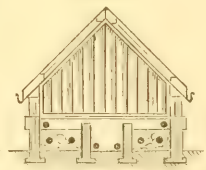

Price.
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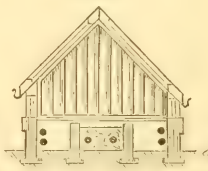

Price.
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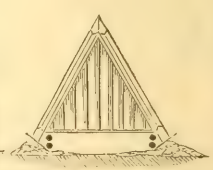

Price.
£14 0 0
19 0 0
24 0 0
28 0 0
32 0 0
36 0 0
40 0 0
44 0 0

J. Jones & Sons will be happy to supply HOT-WATER APPARATUS for HOUSES according to any of the above Plans, delivered Free to any Station in England at the prices named, which include strong CAST-IRON CYLINDER or SADDLE BOILER, FURNACE DOORS, FIRE BARS, SOOT DOORS, CISTERN and DAMPER, 4-inch HOT-WATER PIPES and CONNECTIONS, all of the best quality; or will forward ESTIMATES for WORK erected complete, with WROUGHT or CAST-IRON BOILER of any sort, at a small addition to the above prices.

☞ *The Black Circles on Sections of Houses show the arrangement of Pipes.*

ILLUSTRATED CATALOGUES and further particulars Post Free on application to

J. JONES AND SONS, IRON MERCHANTS AND HORTICULTURAL ENGINEERS,
6, BANKSIDE, LONDON, S.E.

Editorial Communications should be addressed to "The Editor," Advertisements and Business Letters to "The Publisher," at the Office 41, Wellington Street, Covent Garden, London, W.C.
Printed by James Matthews, at the Office of Messrs Bradbury, Evans, & Co. Lombard Street, Precinct of Whitefriars, City of London, in the Co. of Middlesex, and Published by the said James Matthews at the Office, No. 41, Wellington Street, Parish of St. Paul's, Covent Garden, in the said County.—Saturday, October 13, 1866.

THE GARDENERS' CHRONICLE
AND
AGRICULTURAL GAZETTE.

A Newspaper of Rural Economy and General News.

No. 42.—1866.] SATURDAY, OCTOBER 20. {Price Fivepence. (Stamped Edition, 6d.

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GRAND FLOWER and FRUIT SHOW and BAZAAR in aid of the BENEVOLENT FUND of the UNITED HORTICULTURAL SOCIETY, and the FUNDS of the ALBERT ORPHAN ASYLUM, on NOVEMBER 13th, 14th, and 15th, in the Guildhall of the City of London, by permission of the Corporation.
Schedules and all particulars may be obtained of William Heale, 14, George Terrace, Brook Street, Upper Clapton, N.E.
Schedules may also be obtained at the Office, 98, Cheapside, E.C.

Genuine Garden and Agricultural Seeds.

JAMES CARTER AND CO., Seed Farmers, Merchants, and Nurserymen, 237 & 238, High Holborn, London, W.C.

JAMES FAIRHEAD AND SON, Seed Growers and Merchants, 7, Borough Market, London, S.E.
New and Genuine AGRICULTURAL, GARDEN, and FLOWER SEEDS. Special prices and advantageous offers on application.

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60-PAGE CATALOGUE of NEW PLANTS of 1866 now ready, free for one stamp.
Wm. Dillistone, Manor Nursery, Little Heringham, Essex.

New General Plant Catalogue.

B. S. WILLIAMS' NEW PLANT CATALOGUE, containing many really good Novelties, and carefully selected LISTS of STOVE, GREENHOUSE, and HARDY PLANTS, is now ready and will be forwarded gratis to all applicants.
Victoria and Paradise Nurseries, Holloway, London, N.

Wholesale Catalogue of Nursery Stock.

GEORGE JACKMAN AND SON'S PRICED and DESCRIPTIVE CATALOGUE for 1866 and spring 1867, can be had free on application, comprising Fruit Trees, Roses, American Plants, Conifers, Clematises, Evergreen and Deciduous Trees and Shrubs, and transplanted Forest Trees, &c., &c.
Woking Nursery, Surrey.

NEW CHRYSANTHEMUMS 1866. — All the new varieties of present year now ready, well established in pots, at 5s. per doz., or 35s. per 100.
William Holmes, Frampton Park Nursery, Hackney, N.E.

BRITISH FERNS.—Upwards of 240 species and varieties on sale at prices considerably lower than those hitherto charged. CATALOGUES on application.
Edward Sang & Sons, Nurserymen, Kirkcaldy.

New Pelargoniums.

CHARLES TURNER is now prepared to execute orders for HOYLE'S and FOSTER'S beautiful SEEDLINGS. The DESCRIPTIVE CATALOGUE which is now ready also contains LISTS of the finest ZONAL PELARGONIUMS in each class, PINKS, AURICULAS, CINERARIAS, &c.
The Royal Nurseries, Slough.

Hybrid Rhododendrons.

WILLIAM FLEITER begs to inform the Trade that he has a Splendid Stock of the above to offer this season, well set with Bloom Buds, with from 6 to 12 Buds on each plant suitable for forcing. CATALOGUES sent free on application.
Uckfield Nurseries, Uckfield, Sussex.

Male Aucubas, with Flower Buds.

MAS MACULATA, MAS PYGMÆA, MAS BICOLOR, 10s. 6d., 15s., and 21s. each.
Also a large collection of Female varieties. Prices on application to Thomas Cripps, Nurseryman, Tunbridge Wells.

Autumn Planting.

PETER LAWSON AND SON, at the present most suitable time for planting CONIFEROUS and EVERGREEN TREES and SHRUBS, have to state that their stock of those is very large and in healthy condition.
Special offers for large quantities will be made on application.
Edinburgh and London.

FOR SALE, for Cash, BOX EDGING, several Hundred Yards. For price, &c., apply to
J. D. & H. Christie, Nurseries, Leatherhead, Surrey.

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SUTTON AND SONS have received their supply of NEW GRASS SEEDS of the present season's growth in fine condition, and will be happy to forward lowest price per ton or cwt. on application. CATALOGUES gratis and post free.
Sutton & Sons, Royal Berkshire Seed Establishment, Reading.

KIRKLEES HALL CUCUMBER.—Long and handsome; for winter forcing, flavour, and productiveness, this Cucumber has no equal. To be had in packets, 1s. 6d. each.
John Cattell, Westerham, Kent.

STRONG 2 years' ASPARAGUS PLANTS, 1s. 6d. per 100, 12s. 6d. per 1000; 1 year do., 1s. per 100, 7s. 6d. per 1000. Special offers for large quantities, and Trade price on application.
New 4 lb. sacks 1s. 6d. each. Terms cash
Christmas Quincey, Seedsman, &c., Peterborough.

Potato Onions.

FOWLER AND CO., Glasgow, specially offer to the Trade extra fine POTATO ONIONS, SHALLOTS, GRASS SEED, and other Scotch produce at lowest price.
Fowler & Co., Seedsmen and Nurserymen, Glasgow.

The Best Twenty-six Hyacinths,
As Recommended by the Editor of the *Gardeners' Chronicle*, see p. 88.

SUTTON AND SONS can supply the above for £1 1s., carriage free.
Royal Berkshire Seed Establishment, Reading.

The Best Twelve Hyacinths Imported by

SUTTON AND SONS,
for Twelve Shillings
Sutton & Sons, Royal Berkshire Seed Establishment, Reading.

MIXED HYACINTHS, for Beds or Open Borders, all colours, of various shades.
21s. per 100 (carriage free), or 3s. per dozen.
Sutton & Sons, Royal Berkshire Seed Establishment, Reading.

SUTTON'S GUINEA COLLECTION of BULBOUS FLOWER ROOTS for In-door or Out-door Cultivation.
21s., Carriage free per Rail.
Sutton & Sons, Royal Berkshire Seed Establishment, Reading.

CARTER'S DUTCH BULBS.
Every Garden Requisite kept in stock at
Carter's New Seed Warehouses, 237 and 238, High Holborn, London.

Dutch and other Bulbs.

B. S. WILLIAMS is now prepared to supply splendid roots of HYACINTHS, TULIPS, NARCISSUS, CROCUS, &c., &c. All the roots are selected with great care from the best growers in Holland.
A PRICED and DESCRIPTIVE LIST sent post free on application.
Victoria and Paradise Nurseries, Holloway, London, N.

Hyacinths, &c.

WM. PAUL'S SELECT LIST of HYACINTHS, EARLY TULIPS, and other SPRING-FLOWERING BULBS and PLANTS, is now ready and will be forwarded post free on application.
Paul's Nurseries and Seed Warehouse, Waltham Cross, London, N.

Hyacinths and other Dutch Bulbs.

WM. CUTBUSH AND SON beg to acquaint their numerous Patrons that they have received their usual Consignment of Choice HYACINTHS, TULIPS, CROCUSES, &c.
PRICED DESCRIPTIVE CATALOGUE post free on application
Highgate Nurseries, London, N.

J. SCOTT has received large Consignments of DUTCH FLOWER ROOTS, which he is offering at extremely low prices. A PRICED CATALOGUE, full of Notes on the Easy Culture of Bulbs, and other information, sent free on application to
J. Scott, the Seed Stores, Yeovil, Somerset.

Dutch Flower Roots.

THE PROPRIETORS of ST. JOHN'S NURSERY beg to intimate that their CATALOGUE is now ready, and may be had on application.
Wm Barratt, Wakefield.

Dutch, Cape, and other Flower Roots,
ROSES, JAPANESE PLANTS, &c.

W. ROLLISSON AND SONS' CATALOGUE of the above, containing many Novelties, will be forwarded free on application. The Nurseries, Tooting, London, S.

Hyacinths, Tulips, &c.

BUTLER, McCULLOCH, AND CO. have the pleasure to intimate that their usual supply of DUTCH and CAPE BULBS has arrived in the finest possible condition.
PRICED DESCRIPTIVE LISTS free and post paid on application. Covent Garden Market, London, W.C.

SEE BARR AND SUGDEN'S ADVERTISEMENT, p. 992.
BULBS and CLIVEDEN PLANTS for Spring Blooming.
BARR'S PRIZE CALCEOLARIA.
NEW VIOLA CORNUTA SEED and PLANTS.
NEW LAPAGERIA ROSEA SEED.
UNBLOOMED AMARYLLIS, &c.
Cliveden Nurseries, Maidenhead, Buckinghamshire.

TO FLORISTS and SEEDSMEN.—Henley Brothers, General Merchants, High Street, Holbeach, have still on hand SNOWDROPS and YELLOW CROCUSES, which they beg to offer. Samples and price sent on application. Also a quantity of SEED CROCUS to be sold at a moderate price.—Holbeach, Lincolnshire.

Finest Dutch Crocuses and Early Tulips.

SUTTON'S DESCRIPTIVE LIST is now ready, and will be forwarded gratis and post free on application.
Sutton & Sons, Royal Berkshire Seed Establishment, Reading.

Lilium lancifolium.

SUTTON AND SONS have received several varieties of the above splendid LILY in fine condition.
For descriptions and prices of each see SUTTON'S AUTUMN CATALOGUE, which may be had gratis and post free on application.
Sutton & Sons, Royal Berkshire Seed Establishment, Reading.

SUPERB LILIES, in 70 finest varieties.
BULBS CATALOGUE sent free.
Stephen Brown, Seed and Nursery Establishment, Sudbury, Suffolk.

GLADIOLI in 200 new and splendid varieties, in four sections of Early and Late kinds.
BULB CATALOGUE sent free.
Stephen Brown, Seed and Nursery Establishment, Sudbury, Suffolk.

CHOICE NAMED POYANTHUS, new and splendid.
See Stephen Brown's CATALOGUE.
Seed and Nursery Establishment, Sudbury, Suffolk.

INTERNATIONAL PRIZE CALCEOLARIA.—Good Plants of this extra fine strain now ready at 6s. per dozen; well established in pots.
Thomas Cooling, Mile Ash Nurseries, Derby.

GENERAL NURSERY STOCK of large extent, beauty, and health, and at prices to meet all purchasers.
CATALOGUES on application to
J. Scott, The Nurseries, Merriott, Somerset.

TO BE SOLD, from 3000 to 7000 strong CUTTINGS of (SCARLET) TOM THUMB GERANIUM, at 8s. per 100.
Apply to Richard Webb, Calcot Gardens, Reading.

JUST ARRIVED, GERMAN CANARIES, GOLDFINCHES, and ABERDEVINES; DUTCH BULBS, unusually fine; a choice collection of FERNS, Fern Cases, Gold Fish, Aquariums, &c.
R. Green, the Bedford Conservatories, Covent Garden Market, W.C.

Winter Flowers.

RHODODENDRON PRÆCOX, the best of all Winter-blooming Plants, can now be supplied; Compact Bushes, with from 20 to 100 bloom buds, at 3s. 6d. to 7s. 6d. each, with usual discount to the Trade, by the Raiser,
Isaac Davis, Larkfield Nursery, Wavertree, near Liverpool.

CASTLE KENNEDY FIG.—Plants of the above may now be had at 10s. 6d. and 21s. each; the usual discount to the Trade. Peter Lawson & Sons, Edinburgh and London.

Grape Vines.

B. S. WILLIAMS begs to announce that he has a splendid stock of Strong Planting and Fruiting CANES of all the best varieties. PRICED LIST may be had on application.
Victoria and Paradise Nurseries, Holloway, London, N.

THE TRUE BLACK ALICANTE.—This may be had from J. Meredith, The Vineyard, Garston, near Liverpool.

DAMASCENE PLUMS, transplanted stuff, TURKEY OAKS, 2 years seedlings; EVERGREEN OAKS, 2 years seedlings and 1 year seedling, to be Sold cheap.—Apply to
Robert H. Poynter, Nurseryman, Taunton.

A DESCRIPTIVE CATALOGUE of FRUITS, by Thos. Rivers, just published, free per post for six stamps
Nurseries, Sawbridgeworth.

PYRAMIDAL APPLES and PEARS.—Extra size Trees for Fruiting, stout, well branched, and of handsome growth. Names and prices on application.
Also the GENERAL DESCRIPTIVE FRUIT CATALOGUE.
Stephen Brown, Seed and Nursery Establishment, Sudbury, Suffolk

STRONG STANDARD and DWARF TRAINED APPLES and PEARS; fine Transplanted LARCH FIR, from 1½ to 5 feet; a choice collection of CONIFERS and EVERGREENS and a General Nursery Stock. Prices on application.
Charles Bounds, The Nurseries, London Road, Cheltenham.

WALL-TRAINED TREES of BEARING SIZE.—Our Wall-Trained Fruit Trees this season are very fine, and include PEACHES, NECTARINES, APRICOTS, and FIGS, suited for planting in houses for immediate Fruiting. An inspection is respectfully invited.
T. Jackson & Son, Nurseries, Kingston, Surrey.

AMERICAN ALOE.—A very fine Specimen Plant of American Aloe, in large tub, to be Sold Cheap.—Apply to T. Surman, Lavender Hill Nursery, Wandsworth Road, S.W.

LARGE SPECIMEN EVERGREEN SHRUBS, of all the leading kinds, in beautiful health, and well-worth with large balls or mass of fibrous roots. For prices and particulars apply to
Chas. Southby, Nurseryman, Clapham, S.

UNDERWOOD PLANTING.—A large quantity of SPANISH CHESTNUT PLANTS, 3 feet and upwards, for Sale. Samples of stock reared from mature trees. For samples and price apply to Mr. Puttick, Eastbourne, Midhurst, Sussex.

A LARGE QUANTITY of VIRGINIA CREEPERS, IVIES, RHODODENDRONS, LABURNUMS, YUCCAS, AUCUBA JAPONICA, AURICULAS (ALPINES), JASMINES, &c., to be Sold very cheap in one or separate lots to suit purchasers, the ground having to be cleared immediately.
Apply on the Premises, next Bancroft's Hospital, Mile End Rd., E.

FOREST TREES, &c., at the Nursery of the late David A. Reid, Park Attwood, Bewdley, Worcestershire:—LARCH, 1 to 2 feet, 10s. 6d. per 1000; 2 to 3 feet, 15s. 6d. per 1000; 2½ to 3½ feet, 15s. per 1000; 3 to 4 ft., 17s. 6d. per 1000. LISTS of other TREES sent on application. Apply, with reference or remittance, to
James Hodges, Steward, Park Attwood.

Railway Planting.

FIVE MILLION Transplanted QUICKS, of superior growth. Samples and prices on application to
John Hemsley, High Fields, Melbourne, near Derby.

FORTY THOUSAND COMMON LAURELS, all sizes from 1 to 4 feet.
Wm Wood & Son, Woodlands Nursery, Maresfield, Uckfield, Sussex.

THIRTY THOUSAND Dwarf-trained FRUIT TREES, in the finest health and vigour.
Wm. Wood & Son, Maresfield, Uckfield, Sussex.

TEN THOUSAND LAURUSTINUS, well-grown, handsome and bushy.
Wm. Wood & Son, Maresfield, Uckfield, Sussex.

SEVERAL ACRES of extra large well-grown ORNAMENTAL TREES for park planting and immediate effect. Wm Wood & Son, Maresfield, Uckfield, Sussex

STANDARD, HALF-STANDARD and DWARF ROSES, by the 100, 1000, and dozen.
Wm. Wood & Son, Maresfield, near Uckfield, Sussex

MANY ACRES of STANDARD, HALF-STANDARD, DWARF, PYRAMIDAL, and TRAINED FRUIT TREES, consisting of Apples, Pears, Plums, Peaches, Nectarines, Apricots Cherries, &c. Wm Wood & Son, Maresfield, Sussex.

SEVERAL ACRES of well-grown EVERGREEN and DECIDUOUS SHRUBS, AMERICAN PLANTS, CONIFERÆ, and ORNAMENTAL TREES For CATALOGUES apply to
Wm Wood & Son, Woodlands Nursery, Maresfield, near Uckfield, Sussex.

ROSES.—NEW CATALOGUE just published and sent post free on application to
Wm Wood & Son, Maresfield, Uckfield, Sussex.

Roses.

WM. PAUL'S PRICED DESCRIPTIVE CATALOGUE of ROSES is now ready, post free on application.
Paul's Nurseries, Waltham Cross, London, N.

Rose Nurseries, Tunbridge Wells.

EDWIN HOLLAMBY respectfully begs to announce that his Stock of ROSES are as usual beautiful healthy good-rooted plants. This magnificent Collection contains nearly every variety worthy of cultivation. Early orders are solicited.

Rose Catalogue.

E. P. FRANCIS AND CO.'S NEW DESCRIPTIVE LIST of the above is now ready, and will be forwarded gratis upon application.
The Nurseries, Hertford, Herts.

New Rose and Fruit Tree Catalogue.

CHARLES TURNER'S AUTUMN CATALOGUE is now ready, containing full Descriptive List of ROSES, including the new varieties. Select LISTS of all the leading FRUIT, CONIFERÆ, TREES, SHRUBS, &c.
The Royal Nurseries, Slough.

New Catalogues

A DESCRIPTIVE CATALOGUE of ROSES.
A CATALOGUE of ORCHARD-HOUSE TREES.
A DESCRIPTIVE CATALOGUE of GRAPES.
Free per post on application to
Thomas Rivers & Son, Nurseries, Sawbridgeworth.

New Rose, Marechal Niel.

JOHN HARRISON begs to inform his Friends that he has a fine stock of this splendid NEW YELLOW ROSE, in pots, at 42s. each; 24s. per dozen; or 15s. per half-dozen. The buds are all 2-eye Wood, and best Roses are the exception if anyone should show them. The Rose supplied by the Society from the Show at liberal terms. CATALOGUES for the season on application. Forest Hill, Sydenham, Surrey.

New Descriptive Rose Catalogue for Autumn of 1866 and Spring of 1867.

EDWIN HOLLAMBY begs to draw attention to his superb collection of the above, containing all the new and approved varieties in cultivation, and is happy to state that they surpass previous years in quality and freedom.

Early orders solicited to insure good plants.

CATALOGUES to named parties and post paid on application.

Nursery and Seed Establishment, Paul Bridge Wells, and Cloranbridge.

New Roses for 1866.

EUGÈNE VERDIER, Fils Aîné, NURSERYMAN, 3, Rue Dunois, Paris, has the honour to inform his Friends that he will be ready to offer, in November next, the following splendid ROSES on their own Seedlings Established:—

HYBRID PERPETUALS.—Charles Lefebvre, Jules Cadet, Madame George Paul, Madame Alfred de Rougemont, Madame la Baronne Maurice de Rothschild, Madame la Comtesse de Turenne, Madame Anne Wild, Madame de Beaucourt, Superbe, &c.

Yellows.—Jean Pierre. CATALOGUES on application (Rue de Vaugirard, Paris) or to Messrs. Mortier and Bavarez, Commissioners, Lower Thames Street, London, E.C.

Fruit Trees. Roses. Evergreens, &c.

W. KNIGHT begs to inform intending Planters that he is making Plantations of the above, in every other ORNAMENTAL TREE and SHRUB, in the finest possible condition, and respectfully invites an inspection previously to purchasing. LOW-PRICED CATALOGUES free.

The Nurseries contain two minutes walk of the Hailsham Station (South Coast Railway).

Phœnix Nursery, Hailsham, Sussex.

SURPLUS STOCK.

STANDARD and HALF-STANDARD APPLES, 30s. per 100.
EARLY STRAWBERRIES, per 100.
BLACK NAPLES CURRANTS, per 100
best LANCASHIRE SHOW GOOSEBERRIES, 15s. per 100.
DESCRIPTIVE CATALOGUES may be had of
B. WHITHAM, The Nurseries, Reddish, near Stockport

A Quarter of a Million of Fruit Trees.

THOMAS WARNER begs to remind intending Planters that he has now on his Nurseries, which comprise upwards of 70 acres, one of the largest, if not the most extensive stock of Evergreens, Ornamental Trees, Roses, &c. All in a high state of cultivation. Averages are respectfully invited.

CATALOGUES, Wholesale or Retail, may be had free on application.

The Nurseries are within two minutes walk of the Hailsham Station (South Coast Railway).

Phœnix Nursery, Hailsham, Sussex.

FRUIT TREES. The finest collection in England, consisting of upwards of a million of training, and are free from Canker and other diseases, which cannot be said of many Nurseries in consequence of the trees having been worked on the Paradise stock. Trees from such should be avoided, as when once planted they continue to suffer.

APPLES, PEARS, PLUMS, CHERRIES, and all other kinds of fruit trees, grafts, cuttings, and buds. Descriptive Catalogue, with particulars, gratis, or may be had of Messrs. Lee, Nurserymen, Margate, Somerset.

To Cultivators of Succulent Plants, &c.

T. COOPER, Holmesdale Road, Reigate, Surrey, has a fine Collection of SUCCULENT PLANTS, &c., amounting about to twenty-one thousand, and ALOES, HAWORTHIAS, AGAVES, CACTUSES, and MESEMBRYANTHEMUMS, also a good assortment of New Plants and Greenhouse Annuals, of which are very moderate. Catalogue had gratis and attended to.

Wellingtonia aurea variegata.

R. HARTLAND has to offer a good Plant of this most beautiful Tree, 5 feet, very clean, with 12 inches, 6 to 7 feet, 2 feet, 3 feet, 4 feet, 5 feet, and 10 feet Trees. Also a few from Mr. Hartland's Stock, and the History of Parent Tree, see Gard. Chron., 1866, page 19.

CHROMOLITHOGRAPH by Mesdames Bock & Son, free by post for 25 stamps.

Ivy Lane, Newington, Surrey.

CHARLES NOBLE has a large quantity to offer of the undermentioned, by the dozen, 100, 1000, or 10,000:—

Dwarf ROSES of all the finest kinds, large bushes, 2 to 3 feet high, and nearly as far through.

SPANISH CHESTNUTS, very fine, 1-year
THORN, very fine, 1-year
TURKEY OAK, very fine, 1-year
MANETTII ROSE stocks, very fine, 1-year
DEODARA CEDRATA double plants, very fine, 1-year

} Sample and price if required

STRAWBERRIES, 25s. per 100; 12s. per 50.

British Queen	Frogmore Late Pine	Oscar
Elton Pine	Keen's Seedling	Wonderful
Sir C. Napier	Marguerite	Prince Arthur

Sunningdale Nursery, Bagshot, Surrey.

To Gentlemen, Nurserymen, Builders, and Others engaged in Planting, &c.

ROBERT PARKER begs to offer the following HARDY SHRUBS and PLANTS:—

Arbutus, American	Pinus austrinca
,, Chinese	,, excelsa
,, Siberian	Privet, Evergreen
Arbutus unedo	Rhododendron, Penzance, and named hybrids set for flower
Aucubas of sorts	Spruce Fir
Berberis Aquifolium	Thuya lobbi
,, Darwinii	,, Lobbi
,, fascicularis hybrida	Thujopsis borealis
Box, Green and Variegated	Tritoma grandis
Cupressus Lawsoniana	Viburnum plicatum
Deodara cedrus	Yucca aloifolia
Laurels, Green	Yucca gloriosa
,, Portugal	Weigelia rosea, crimson
Lauristinus, set in flower	,, &c.

Planted the stock of the above can be supplied in large or small quantities, and of various sizes, from 1 to 6 feet high. All are handsome formed, well rooted plants, and suitable for potting or planting in the ground. Also all have been twice removed within the last two years. Purchasers of large quantities will be treated liberally.

Exotic Nurseries, Tooting, Surrey, S.

Northampton Nurseries.

JOHN PERKINS, SENIOR, begs to call the attention of Noblemen, Gentlemen, and others engaged in Planting, to his Large Stock of the following:—2,000,000 BLACK THORNS, for Covert Planting, 1 to 2, 2 to 3, 3 to 4 feet; 2,000,000 LARCH FIRS, 3 to 4, 4 to 6 feet; 2,000,000 SPRUCE FIRS, 1½ to 2, 2 to 3, 3 to 4 feet; 2,000,000 WHITE THORNS QUICK, 2 and 3 Years' Transplanted. Also large quantities of

Scotch Firs, 2 to 3 feet	Hornbeam, 3 to 4 feet
Planes, 3 to 4, 4 to 5 feet	Oaks, English, 3 to 4 feet
Beeches, Self-grown, 3 to 5 feet	Pedes, Pinkey, 1 to 6 feet
Ditto ditto, 2 to 3 feet	Elms, English, 6 to 8, 8 to 10 ft.
Green Box, 1½ to 2 feet	Ivy, Huntingdon, 6 to 8, 8 to 10 ft.
Laurels, 2 to 3 feet	Chestnuts, Spanish, 4 to 5 feet
Portugal Laurels, 1 to 2 feet	Ditto Horse, 4 to 6, 6 to 8 ft.
Ditto ditto, 2 to 3 feet	Sycamore, 3 to 4 feet
Evergreen Privets, 2 to 3 feet	Beech, 3 to 4 feet
Birch, to 4 feet	Cedrus Deodara, 5 to 6, 6 to 8 ft.

J. P.'s stock of all kinds of Fruit, Forest, Ornamental Trees, &c., is very extensive, and this season remarkably fine, and in excellent condition for removal, having been frequently transplanted.

J. P. being on a most extensive scale, and in the immediate neighbourhood of a railway station, can offer the above and many other kinds at very low prices, and will be pleased to make a special offer where large quantities are required. An inspection of the above is respectfully solicited.

DESCRIPTIVE PRICED CATALOGUES sent post free on application to J. P., Market Square, Northampton.

New Weeping Elms.

ULMUS SUBEROSA PENDULA, or gracilis.
ULMUS SUBEROSA PENDULA MICROPHYLLA, 7s. 6d. each.

WM. WOOD and SON would particularly beg to solicit attention to the two above-named magnificent Weeping Elms, being varieties of Ulmus suberosa, which have been raised from seeds in their Nurseries, and have been greatly admired.

The gracefully weeping branches of these new Elms are thickly covered with a cork like excrescence, presenting a very interesting and novel appearance, entirely distinct from all other varieties in cultivation.

Woodlands Nursery, Maresfield, near Uckfield, Sussex.

To the Trade.

WINTER and SPRING-FLOWERING PLANTS.—Our stock of Self-seeded HERBACEOUS PERENNIALS, ACACIAS, AZALEAS, and New Holland Plants is extra fine this year, and being much greater than we can house, we are selling at unusually low prices.

T. Jackson & Son, Nurseries, Kingston, Surrey (adjoining the Railway Station), S.W.

Special Offer to Gentlemen and Others about to Plant.

GEORGE CLARKE begs to offer, if the selection is left to himself, choice EVERGREENS in great variety, CONIFERÆ, RHODODENDRONS in 14 sorts, DECIDUOUS TREES, &c., at £2 10s., £5, and £10 per 100.

Geo. Clarke has for the last 20 years been extensively engaged in Landscape Gardening and Planting by contract; he finds that supplying plants on the above system in his very many engagements in the country, as he takes especial pains to select those of which are adapted to the situation. The Ground under cultivation for Shrubs, &c., amounts to over 10 Acres, and consists of rich loam, enabling it to plants to be lifted with good balls, ensuring their success almost to a certainty. In cases where G. C. superintends the planting he engages all failures within 12 months from the first time.

Extensive collections of all the best kinds of Roses, Fruit Trees, &c. CATALOGUES on application.

Nurseries Bruton Hill, S.E.; Leigham Court Road, Streatham; and Mottingham, Kent, S.E.

To Planters and Others.

ALFRED GOSLING, Tower Nurseries, Heathfield, Sussex, has to offer large quantities of the following healthy and well-grown PLANTS at low prices, the land being required for other purposes. Prices, Samples, &c. on application. Spruce and Silver Firs, Common Laurels, Cryptomeria japonica; strong bearing Apple and Pear Trees, Red and White Currants, Dwarf Roses, 1 and 2-year seedling Chestnuts, 2-year Laburnums, Apple Stocks, Ribes, Cornus rubra, Spiræa, &c.; 300 Black Hamburgh Vines in pots, and many other plants.

To the Trade.

FOR SALE, in consequence of the expiration of a Lease, a large quantity of STOOLS, surrounded with fine layers, of Mulberries, Limes, Planes, Magnolias, Azaleas, Lilacs, Aucubas, &c.; also quantities of various-sized Limes, Mulberries, Poplars, Laburnums, Planes, Scarlet Thorns, Lilacs, Aucubas, Euonymus, Magnolias, White Rhododendrons, Althæas, Ivies, Figs, Grape Vines, fine standard and trained Fruit Trees of all sorts; 7 yards of clipped Beech hedge, 6 to 8 high 3 feet wide, and other general Nursery stock, which may be seen and selected from daily at

J. FIVERS, Clarendon Nurseries, Camberwell New Road, S.

To Gentlemen engaged in Planting.

TOOLE and CO. beg to call attention to their very extensive stock of

EVERGREEN and FLOWERING SHRUBS.
HARDY ORNAMENTAL TREES,
FRUIT TREES, FOREST TREES, and CONIFERÆ,

Grown at their Nurseries, Cultra, Belfast, Ireland, Rathmail Road, Dublin; and Wilbert Bray, and Pembridge, Herefordshire, England.

CATALOGUES of the above forwarded post free on application.

Five per cent discount for Cash.

Westmoreland Buildings, Dublin.

To the Trade.

ELIZA ABRAHAM, Fort Prospect Nursery, Limerick, begs to offer immediate fine strong bushy Transplanted samples stock of EVERGREEN OAK, 2 to 3 feet, and 3 to 4 feet.

Also COMMON LAURELS, from Cuttings, 1 years, extra strong, selected, 18 to 24 ins., from Cuttings, 2 to 3 ft., well rooted.

LAUREL SETTS, from Cuttings, 1 years, 2 to 3 feet, fine and well rooted. Dito, 2 years, from Cuttings, 3 to 4 feet, very fine.

1 and 2-year Seedling ENGLISH OAK, in lines, very fine.

1-year TURKEY OAK, in lines, strong.

Free delivery and terms for the lowest possible prices for cash, or in exchange for other goods.

New Double-flowered Amaryllis.

H. LAURENTIUS, Leipzig, begs to call attention to his new AMARYLLIS ALBERTI, double-flowered, fine and well-formed, bright scarlet and crimson-tinted, of which representations may be seen in the "Illustration Horticole," and the "Garten Magazin." Strong-flowered Bulbs, 12s.

His AUTUMN CATALOGUE (No. 39) is just out, and contains a full description of the above, together with PRICE LISTS of NOVELTIES, BULBS, AZALEAS, &c., and of a large number of Plants at Trade prices, which may be had gratis on application (by prepaid letter) to him or to his Agents, Messrs. BETHAM & BLACKETT, Cox's Quay, Lower Thames Street, London, E.C.

N.B. Horticultural Establishment of H. LAURENTIUS, Leipzig, Germany.

New Gladioli.

EUGÈNE VERDIER, Fils Aîné, NURSERYMAN, 3, Rue Dunois, Paris, has the honour to offer this Autumn to his numerous Friends and Patrons the following NEW GLADIOLI raised from seed by Mons. Souchet. Their description and prices will be found in his Catalogue, which can be obtained of him or of his Agents, Messrs. BETHAM & BLACKETT, Cox's Quay, Lower Thames Street, London, E.C., viz.—Ad. Brongniart, Anais, Apollon, Bernard Palissy, Brillant, Emilie, Félicien David, Flavia, Greuze, Lady Franklin, Le Titien, Meteor, Mirabilis, Neily, Noémie, Princess Mary of Cambridge, Rev. M. J. Berkeley, Sir William Hooker, Joseph Paxton, D. M. More.

The New Establishment, Ghent, Belgium.

JEAN VERSCHAFFELT begs to intimate that he has TRANSFERRED his BUSINESS to his New Horticultural Establishment, 119, Faubourg de Brucelles, and begs his numerous correspondents to address all letters intended for him to

JEAN VERSCHAFFELT, 119, Faubourg de Brucelles, Ghent, Belgium.

J. V.'s NEW CATALOGUE (No. 10) is now just ready, and may be had gratis and free on application either to himself or to Messrs. A. SIMMONDS & SON, 5, Harp Lane, Great Tower Street, London, E.C.

LOUIS VAN HOUTTE, NURSERYMAN, Ghent, Belgium, begs to state that Copies of his BULB CATALOGUE, No. 114, may at all be had, together with No. 115, being the Autumn Catalogue of Stove Plants, Palms, Orchids, Ferns, Dracænaceous Plants, Amaryllideæ, Gloxinias, &c., and also the CATALOGUE, No. 116, containing Descriptive Price Lists of Greenhouse Plants, Azalea indica, Camellias, Perennials of every description, Gladiolus, Lilium, &c.

The whole of LOUIS VAN HOUTTE'S CATALOGUES may be had post free either direct from the Establishment, Ghent, or on application to his Agents, Messrs. R. SILBERRAD & SON, 5, Harp Lane, Great Tower Street, London, E.C.

S. PONSFORD AND SON are prepared to offer the following well-grown NURSERY STOCK:—Fruit Trees in all forms; Standard and Dwarf Roses; Chinese Arborvitæs, 1 to 6 feet; Aucubas, Laurels, Variegated Hollies (fine), Ligustrum ovalifolium, MULBERRIES (above 2000 well-grown of all sizes, special offers to the Trade), Azaleas and Camellias, well set with bloom; Hyacinths, Tulips, Crocuses, &c. CATALOGUES free.

Seed and Plant Department, Brixton Place; Nurseries, Loughborough Park, Brixton, Surrey, S.

OFFER TO THE TRADE.

CYCLAMEN EUROPÆUM, per 100 roots 10s. 6d.
,, HEDERÆFOLIUM, per dozen 5s.
,, AUTUMNALE, per dozen 7s. 6d.
,, NOBILE ET QUADRICOLORIFOLIUM, mixed, per doz. 9s.
,, NEAPOLITANUM, per 100 roots 25s.
,, COUM, per dozen 2s. 6d.
,, REPANDUM, per 100 roots 25s.
FRITILLARIA GRÆCA, per 100 roots 7s. 6d.
,, MELEAGRIS, per 100 roots 7s. 6d.
LEONTICE LEONTOPETALUM, per dozen 12s.
SCILLA NIVALIS, per 100 roots 7s. 6d.

FREDERICK ADOLPHUS HAAGE, Jun., Erfurt, Prussia.—Oct. 12.

Amaryllis.

JAMES GARAWAY and CO., Durdham Down Nurseries, Bristol, offer, from their unequalled stock of the above-named favourite flowers, strong Bulbs of named Seedlings and others that have bloomed with them during the two last seasons, at 3s., 7s. 6d., and 10s. 6d. each, or 60s., 90s., and 108s. per dozen.

His AUTUMN CATALOGUE (No. 39) is just out, and contains a full description of the above, together with PRICE LISTS of NOVELTIES, BULBS, AZALEAS, &c., and of a large number of Plants at Trade prices, which may be had gratis on application (by prepaid letter) to him or to his Agents, Messrs. BETHAM & BLACKETT, Cox's Quay, Lower Thames Street, London, E.C.

JAMES GARAWAY & Co., Durdham Down Nurseries, Bristol.

PLANTING.

WILLIAM PAUL

(SON and SUCCESSOR to the late A. PAUL),

Begs to call attention to the following ARTICLES, to the CULTURE of which his NURSERIES of FIFTY ACRES are principally devoted. The quality of the Stock is, he believes, equal to any in the Kingdom, and the prices low as possible.

ROSES.

STANDARDS,	15s. per dozen,	and upwards	CLIMBERS, 6s. per dozen, and upwards
DWARFS,	9s. ,,	,,	FORCING, 24s. ,, ,,

First and Second Prizes were awarded to his Collections at the International Horticultural Exhibition, and they have taken Prizes wherever exhibited.

FRUIT TREES.

Standard and Half Standard Trained PEACHES and NECTARINES, very fine, 7s. 6d. to 10s. 6d. each.
Standard APPLES, PEARS, and PLUMS, 1s. 6d. to 2s. each.
Standard WALNUTS, very fine, 2s. 6d. each.
PYRAMIDAL APPLES, PEARS, CHERRIES, and PLUMS, 1s. 6d. to 2s. 6d. each.
Do. do., Fruiting Trees, 2s. 6d. to 5s. each.
Dwarf APPLES, PEARS, CHERRIES, and PLUMS, 1s. to 1s. 6d. each.
Dwarf-trained PEACHES, NECTARINES, and APRICOTS, 3s. 6d. to 5s. each.
Dwarf-trained APPLES, PEARS, CHERRIES, and PLUMS, 3s. 6d. each.
FILBERTS, of sorts, 4s. to 9s. per dozen.
GOOSEBERRIES and CURRANTS, 3s. to 4s. per dozen.

These are in fine health, and may be relied on as correct to name.

GRAPE VINES.

PLANTING CANES, all the best sorts, 2s. 6d. each, and upwards.
FRUITING CANES, 7s. 6d. each, and upwards.
Between 1000 and 2000 splendid Plants of these are now ready for delivery.

HARDY PICTORIAL TREES for the Decoration of Gardens, Parks, and Pleasure Grounds.—His Collection of these was the only one shown at the late International Horticultural Exhibition, and was universally admired. Collections from 18s. to 42s. per dozen, according to size and rarity.

EVERGREENS and HARDY FLOWERING TREES and SHRUBS.—1000 species and varieties, including the New AUCUBAS, the best and most popular kinds, of various sizes, by the dozen, hundred, or thousand.

WEEPING TREES and CLIMBING PLANTS in great variety.

ZONAL and NOSEGAY PELARGONIUMS.—The original Collection of Beaton's Hybrids, 9s. per dozen; his New Set of last Spring, 1s. 6d. to 3s. 6d. each.

For description and details of the above, see PRICED CATALOGUES, free by post on application. Inspection of the Stock respectfully invited.

All goods delivered free of carriage to London; if a Ton weight of Trees be ordered at one time they will be laid free of charge in the Trucks at any London Goods Railway Station.

PAUL'S NURSERIES, WALTHAM CROSS, N.

British Fern Catalogue.

ROBERT SIM can now send, post free for six postage stamps, Part I (British Ferns and their varieties, 36 pages, including prices of Hardy Exotic Ferns) of his NEW and PRICED DESCRIPTIVE CATALOGUE of BRITISH and EXOTIC FERNS, No. 7.

Fern Gray Nursery, S.E., a mile from Sidcup Station of New North Kent Line of South Eastern Railway.

CHOICE VARIEGATED PELARGONIUMS.

Sunset	Luna	Italia Unita
Mrs. Benson	Clara	Picturata
Mrs. Pollock	Golden Tom Thumb	The Fairy
Yellow Bob	Golden Gem	Princess Alexandra

The above 12 varieties, suitable for exhibition, for 21s.

The following at 2s per doz., package included:—

Mrs. Pollock	Golden Vase	Golden
Harkaway	Burning Bush	Argus
Glowworm	Snowflake	Fontainebleau

Terms, cash. Remittances requested from unknown correspondents. Address, ARTHUR FRYER, Nurseries, Chatteris, Cambridgeshire.

Orchis maculata superba.

OSBORN AND SONS are now taking orders for this beautiful hardy TERRESTRIAL ORCHID, for which a First-class Certificate was awarded on the 19th of June by the Floral Committee of the Royal Horticultural Society. It is of vigorous habit, 14 to 2 feet high, has leaves transversely marked with very dark stripes, and a dense spike of spotted rose-coloured flowers 6 inches long. Price 5s. each, to be delivered in autumn.

Fulham Nursery, London, S.W.

The Earliest Pea Grown is

CARPENTER'S EXPRESS, gathered on the 7th May, (see Testimonials), THE EARLIEST PEA ON RECORD, price 3s. per quart. The usual discount to the Trade.

EDWARD CARPENTER, Seed Merchant and Grower, Brighton and Sussex Seed Warehouse, 20, St. James's Street, Brighton.—Oct. 20.

Dickson's "First and Best" Early Pea.

FRANCIS & ARTHUR DICKSON & SONS are gratified to know that this PEA, known this season given universal satisfaction, and is pronounced by hundreds of the first Gardeners in Britain, and other competent Judges transformed also by their own repeated trials against all the best Early Peas of the day, to be the very best First Early Pea ever offered for general good qualities, viz., earliness, productiveness, and succession of crop. "First Crop" for "Kingleader" may, on some soils, be a day or so earlier, but is altogether a very inferior Pea every one finds admits. New Seed can now be supplied from a very large bulk, which they have grown to meet the great and increasing demand.

Price 1s. 6d. per quart. Free per Basket to the Trade on application.

The Old Established Seed Warehouse, 106, Eastgate Street, Chester.

New Variety of Wheat.

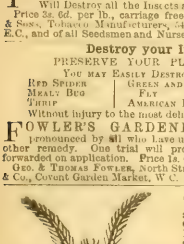
DUNCAN'S WIND RESISTER.—A Bearded White Variety, which appears to possess the invaluable property of non-liability to shed the grain during high winds, and has been propagated by the undersigned from a variety of that description discovered in 1861 in a field of Spring sown Wheat, his attention having been arrested by it from the fact of its remaining perfectly entire after having withstood the terrific gales of the 31st October of that year; and again in 1864 it withstood the gales of the 5th, 8th, and 9th September, which caused so much damage throughout Scotland, without any loss, although grown in a fully exposed situation, and within two or three days of perfect ripeness. It has been cultivated all along as an Autumn variety, and every possible care taken to preserve it pure,—ripens early, is of vigorous constitution, tillers well, and gives a good yield per acre of a beautiful sample of plump grain, good weight per bushel (last year upwards of 64 lb.), produces long, stiff, grassy straw, not apt to lodge; has been submitted for opinion of eminent grain merchants and millers in Glasgow, Perth, &c., and unanimously pronounced it an excellent malting Wheat. This season's crop having been secured in fine condition, it is now for the first time offered for sale, and, as is expected, be ready for delivery about the middle of October.

Messrs. Alex. Bowie, Mains (of Kelly, Arbroath), and James Swan (Inverquiech, Carnoustie), have grown a small quantity of it this season, and also inspected the Crop now Reaped and Stacked, carefully before being cut, reference to either of whom is kindly permitted.

The quantity for disposal being limited, early application is requested. Prices, including bags, per imperial bushel, quantities under 4 bushels, 15s. per bushel. Remittances from unknown parties by Post-office Order on Carnoustie or Arbroath to accompany order.

JAMES DUNCAN, Panlathie Mill, Carnoustie, Forfarshire.—Oct. 8.

SILVER SAND, Peat, Loam, Mould, Rotted Manure, Guano, Cocoa Nut Fibre, Grotto Material, Gravel, Turf, Edging Tiles, Pots, Sticks, Stakes, Gishurst Compound, Tobacco Paper, and other Garden requisites in any quantity, at moderate prices, at J. FRYER'S, Clarendon Nurseries, Camberwell New Road, S.



COCOA-NUT REFUSE is becoming scarce, the old reserves will soon be gone. Now sold in bags, 1 for 2s., 10 for 16s., 20 for 30s., 50 for 65s., 100 for £6.

Fourpence allowed for each bag returned carriage-paid.

A Railway Truck-load (not in bags), 40s.

Postage Stamps or Post-office Order, payable to J. BARNHAM & Co., Kingston-on-Thames, S.W.

Fumigate your Greenhouse with

TOBACCO SUE.

Will Destroy all the Insects and not Injure the Plants.

Price 2s. 6d. per lb., carriage free, to be had of Messrs. ROBERTS & SON, Tobacco Manufacturers, 54, 55, John Street, Clerkenwell, E.C., and of all Seedsmen and Nurserymen.

Destroy your Insect Pests.

PRESERVE YOUR PLANTS and TREES.

YOU MAY EASILY DESTROY ALL PLANT PESTS,

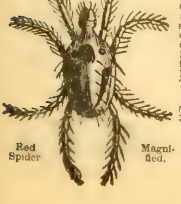
RED SPIDER	GREEN AND BLACK FLY	ANTS
MEALY BUG	SCALE	
THRIP	AMERICAN BLIGHT	MILDEW,

Without injury to the most delicate Plant or Tree, by using

FOWLER'S GARDENERS' INSECTICIDE,

pronounced by all who have used it to be far superior to any other remedy. One trial will prove its efficacy. Testimonials forwarded on application. Price 1s. 6d., 3s., 5s. 6d., and 10s. per Tin.

GEO. & THOMAS FOWLER, North Street, Brighton; and of HOOPER & Co., Covent Garden Market, W.C.



Red Spider

Magnified.

GISHURST COMPOUND, whether used against Insects and Mildew, on Growing Plants, or as Winter Dressing on Trees at rest, should be dissolved 48 hours before use. This gets rid of Mould if the Solution be decanted, prevents any staining of foliage. A strength of from 1 to 2 oz. to the gallon of water is recommended for growing Plants; one from 4 to 16 oz. for Trees at rest.

Sold Retail by Nurserymen and Seedsmen, in boxes, 1s. 3s., and 10s. 6d. each.

Wholesale by

PRICE'S PATENT

CANDLE COMPANY

(LIMITED).

Tyes' Registered Hyacinth Glasses.

This Shape, 2s. and 3s. each.

SOLE WHOLESALE DEPOT.

CLAUDET, HOUGHTON, AND SON,

Fern Case Manufacturers, and Horticultural Glass Depot, 89, High Holborn, W.C.

Price Lists free on application.

HOOPER AND CO.'S ETRUSCAN HYACINTH VASES are superior to Glasses for growing Hyacinths in Water. Chaste in beauty, and an ornament all the year round.

Retail of most Seedsmen throughout the kingdom. Wholesale and Retail of HOOPER & Co., Covent Garden, London, W.C.

HOOPER'S ETRUSCAN HYACINTH VASES, Superior to Glasses for growing Hyacinths in Water.

LIST of AGENTS in the County, (principally Seedsmen), from whom they may be obtained:—

Bath, Mr. E. Cooling
" Mr. C. Meeks
Bedford, Mr. W. Dean
Brighton, Mr. H. Smythe
" Mr. E. Carpenter
Bristol, Messrs. J. Gardner & Co.
Canterbury, Mr. C. H. Isard
Camden Town, Mr. T. Ansell
Chester, Messrs. Little & Ballantyne
Cheltenham, Mr. W. G. Siddall
Chester, Messrs. Cheese & Wenver
" Mr. McHattie
" Mr. J. A. Baker
Croydon, Mr. A. Henderson
" Messrs. Hamilton & Wright
Dover, Mr. S. Jodrell
Dublin, Messrs. J. Cuming & Robertson
Edinburgh, Messrs. Drummond Bros.
Exeter, Mr. T. Cousens
" Mr. R. T. Veitch
" Mr. T. H. Hoskins (Queen's Arms Hotel)
Hastings, Mr. A. W. Welch
" Mr. J. Gardner
Leeds, Mr. S. May
" Messrs. Scrutton & Sons
Liverpool, Mr. R. P. Ker
Liverpool, Mr. H. Brown
Manchester, Mr. T. Jones
Maidenhead, Mr. C. H. Jackson
" Mr. S. Yates
" Messrs. Dickson & Brown
Montrose, Mr. J. Mowatt
Newmarket, Mr. J. Butts, Mr. T. Sherman
Plymouth, Mrs. M. L. Bailey
" Mr. W. Pearson
" Mr. F. Gill
Preston, Mr. W. Troughton
Reading, Messrs. Sutton & Sons
" Messrs. Chapman & Son (China Warehouse)
Rochester, Mr. Rainbow
Shacklewell, Mr. C. E. Allen
Sudbury, Mr. S. Lucas
Taunton, Mr. F. Sweet
Tiverton, Mr. R. H. Squire
Torquay, Messrs. J. Pring & Co.
" Messrs. Morgan & Sons
Warrington, Mr. Durnford
Winchester, Mr. E. Hunter
" Mr. Sibling
Wisbech, Messrs. H. & F. Skeels
Weymouth, Mr. R. T. Hawkins
Yeovil, Mr. H. Raymond (China Warehouse)
" Mr. J. Scott

HOOPER & Co., Covent Garden, London, W.C.

AUSTIN'S ARTIFICIAL STONE, INVENTED 1826.

The entire Stock of this Manufactory comprises

180 different MODELS of VASES,
70 different MODELS of TAZZAS,
About 200 different FOUNTAINS,
74 STATUES from the Antique, and by Modern Artists, and SMALL FIGURES of CHILDREN,
22 SUN-DIAL PEDESTALS,
GARDEN SEATS,
15 BASKETS, from 12s. to Seven Guineas,
SHELLS, suitable either for WATER or ROCK PLANTS, from 18 inches to 12 feet diameter,
JARDINIÈRES, or large BOWLS for MASSES of FLOWERS
53 FIGURES of ANIMALS and BIRDS,
ORNAMENTAL RIMS to WATER BASINS,
34 BAPTISMAL FONTS,
CRESTS and other ORNAMENTS for GATE PIERS,
BALUSTRADING, in various styles,
TRIPOD, and other ANTIQUE PEDESTALS.

Manufactured by AUSTIN, SEELEY, & Co., at Nos. 369 to 375, Euston Road, Regent's Park, N.W.

GARDEN BORDER EDGING TILES, in great variety of patterns and material, the plainer sorts being especially suited for KITCHEN GARDENS, as they harbour no Slugs and Insects, take up little room, and once put down incur no further labour and expense, as no "grown" Edgings, consequently being much cheaper.

GARDEN VASES, FOUNTAINS, &c., in Artificial Stone, of great durability, and in great variety of design.

F. & G. ROSHER, Manufacturers, Upper Ground Street, Blackfriars, S.; Queen's Road West, Chelsea, S.W.; Kingsland Road, Kingsland, N.E.

Sole London Agents for FOXLEY'S PATENT GARDEN WALL BRICKS. Illustrated Price Lists free by post. The Trade supplied.

ORNAMENTAL PAVING TILES for Conservatories, Halls, Corridors, Balconies, &c., as cheap and durable as Stone, in blue, red, and buff colours, and capable of forming a variety of designs.

Also TESSELATED PAVEMENTS of more enriched designs than the above.

WHITE GLAZED TILES, for Lining Walls of Dairies, Larders, Kitchen Ranges, Baths, &c. Grooved and other Stable Paving Bricks of great durability, Dutch and Adamantine Clinkers, Wall Copings, Red and Stoneware Drain Pipes, Slates, Cements, &c.

To be obtained of F. & G. ROSHER, at their Premises as above.

SILVER SAND (REIGATE, best quality), at the above addresses—1s. per Ton, or 1s. 3d. per Bushel; 2s. per Ton extra for delivery within three miles, and to any London Railway or Wharf. Quantities of 4 Tons, 1s. per Ton less.

FLINTS, BRICK BURRS or CLINKERS, for Rockeries or Grotto Work.

F. & G. ROSHER, Manufacturers as above.

N.B. Orders promptly executed by Railway.

Caution to Gardeners.—When you ask for

SAYNOR AND COOKE'S WARRANTED PRIZE PRUNING and BUDDING KNIVES, see that you get them. Observe the mark SAYNOR, also the corporate mark OBTAIN WARRANTED, without which none are genuine.

S. & C. regret having to caution Gardeners and others, but are compelled to do so, in consequence of an imitation, of common quality, having been sold for the genuine one, and which has caused many complaints to be made to them of Knives which were not of their make, all of which are warranted both by Sellers and Makers.

S. & C.'s Pruning and Budding Knives are the best and the cheapest in the market.

Paxton Works, Sheffield. Established upwards of 125 years.

Glass for Garden Purposes.

JAMES PHILLIPS AND CO. beg to submit their prices as follows:—

PROPAGATING GLASSES.

	Each.—s.	d.		Each.—s.	d.
2 inches in diameter ..	0	3½	12 inches in diameter ..	1	9
3 " "	0	4½	13 " "	2	0
4 " "	0	6½	14 " "	2	6
5 " "	0	8	15 " "	3	0
6 " "	0	8	16 " "	3	6
7 " "	0	10	17 " "	4	0
8 " "	1	0	18 " "	5	0
9 " "	1	2	19 " "	6	0
10 " "	1	4	20 " "	7	0
11 " "	1	7			

HYACINTH and FLOWER DISHES.

6 inches diameter .. 1s. 6d. | 9 inches diameter 1 6
12 inches diameter .. .. 2s. 6d.

Hyacinth Dishes are intended to contain a number of Root Beaded in and covered with Moss, instead of the common Hyacinth Glass.

LACTOMETERS, for Testing the Quality of Milk.

Four Tubes .. .. 6s. 6d.
With Stands complete.

HAND GLASSES, WITH OPEN TOPS.

	Each.—s.	d.		Each.—s.	d.
12 inches	6	6	18 inches	9	6
14 "	7	6	22 "	10	6
16 "	8	6	24 "	11	6
			30 "	12	6

Painted and Glazed with 16-oz. Sheet Glass.

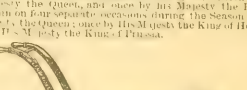
London Agents for HARTLEY'S IMPROVED PATENT ROUGH PLATE.

LINSEED OIL, Genuine WHITE LEAD, Carson's PAINTS, PAINTS of various colours, ground ready for use.

SHEET and ROUGH PLATE GLASS, SLATES of all sizes, BRITISH PLATE, PATENT PLATE, ROLLED PLATE, CROWN, SHEET, HORTICULTURAL, ORNAMENTAL, COLOURED, and every description of GLASS, of the Best Manufacture, at the lowest terms. Lists of prices and estimates forwarded on application to

JAMES PHILLIPS & Co., 186, Bishopsgate Street Without, E.C.

SHANKS' PATENT LAWN MOWERS for 1866.—Patronised on five separate occasions during the Season of 1864 by Her Majesty the Queen, and once by his Majesty the King of Saxony; again on four separate occasions during the Season of 1865 by Her Majesty the Queen; once by His Majesty the King of Holland; and once by His Majesty the King of Prussia.



HAND MACHINE.

These are the only Lawn Mowers that will work for years without requiring repair.

These are the only Lawn Mowers that will Mow properly when the Grass is Wet.

These are the only Lawn Mowers that are in use in ALL the Royal Gardens.

Every Machine warranted, and if not approved of can be at once returned. Illustrated Price Lists sent free on application.

ALEX. SHANKS & SON, Deus Iron Works, Arbroath; and 27, Leadenhall Street, London, E.C.

7, Leadenhall Street is the only place in London where intending purchasers of Lawn Mowers can choose from a stock of from 150 to 200 Machines; all sizes kept there, whether for Horse, Pony, or Hand Power.

GREEN'S IMPROVED NEW PATENT GARDEN ROLLER.

The above Rollers possess many advantages over all others. They are made in two parts, and can be free to revolve on the axis, affording greater facilities for turning, and the outer edges are rounded off or turned inwards, thus avoiding the unsightly marks left by other Rollers.

Diameter, 30 inches; Length 32 inches,	£7	10	0
" 24 " " 26 "	4	10	0
" 20 " " 22 "	3	10	0
" 16 " " 18 "	2	15	0

Prices for Rollers fitted with Shafts suitable for Pony or Horse Power, free on application.

Delivered carriage paid to all the principal Railway Stations and Shipping Ports in England.

THOMAS GREEN & SON, Smithfield Iron Works, Leeds; 54 and 55, Blackfriars Road, London, S.; and 19, Eden Quay, Dublin.

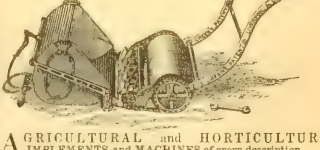
N.B. All Orders executed on the day they are received.

PRIZE MEDALS AWARDED to GREEN'S PATENT LAWN MOWERS.

INTERNATIONAL EXHIBITION, LONDON, 1862.
INTERNATIONAL EXHIBITION, DUBLIN, 1865.

The above Lawn Mowers have proved to be the best, and have carried off every Prize that has been given in all cases of Competition.

Sold by all respectable Ironmongers, Seedsmen, &c., in the Kingdom. Illustrated Price Lists free on application.



AGRICULTURAL and HORTICULTURAL IMPLEMENTS and MACHINES of every description.

IMPROVED IRON STABLE FITTINGS.

HURDLES and CONTINUOUS IRON and WIRE FENCING.

Palisading Entrance and Field Gates. Plain and Galvanised Wire Netting.

GREEN'S PATENT LAWN MOWERS and GARDEN ROLLERS.

Garden Engines, Syringes, Water Barrows, Ornamental Garden Seats, Chairs, Tables, Iron Fountains, Vases, &c.

IRON and BRASS BEDSTEADS, in great variety.

Washing, Wringing, and Mangling Machines.

IMPROVED SAUSAGE MACHINES and FILLERS.

Separate Illustrated Price Lists free on application.

THOMAS GREEN & SON, Smithfield Iron Works, Leeds.

Show Rooms opposite the Smithfield Cattle Market, North Street, Leeds; 54 and 55, Blackfriars Road, London, S.; and 19, Eden Quay, Dublin.

Rhododendrons.

JOHN WATERER'S DESCRIPTIVE CATALOGUE of HARDY SCARLET and other RHODODENDRONS is now published and will be forwarded on applicat on. It faithfully describes the colours of the new varieties exhibited by him at the Royal Botanic Gardens, Regent's Park. An Abridged List of popular GENERA, with height and prices, is likewise combined.

The American Nursery, Bagshot, Surrey, near Sunningdale Station, South-Western Railway.

NEW HARDY RHODODENDRON, MICHAEL WATERER.—This Rhododendron has hitherto been exhibited under the name of ANNIHILATOR, but it will be sent out under the above name. It is undoubtedly the most brilliant-coloured late hardy free-blooming Rhododendron yet offered.

Orders are now being taken for Plants to be sent out in the Autumn at 21s. 6d. each. The usual discount to the Trade.

JOHN WATERER, American Nursery, Bagshot, Surrey.

Notice.

TO BE SOLD, Cheap, a great Bargain, 5000 RHODODENDRON PONTICUM, 2 feet, fine bushy healthy stuff, many of them with buds, well worthy the attention of Gentlemen and the Trade. Special prices and samples on application to

Y. STRACHAN, Wholesale and Retail Seed Merchant and Nurseryman, 4, High Street, Wrexham, North Wales

American Plants, &c.

WATERER AND GODFREY'S PRICED and DESCRIPTIVE CATALOGUE of RHODODENDRONS and other American Plants for this Autumn, will be sent on application. The Catalogue also gives a summary of their General Nursery Stock, probably the most extensive in the kingdom.

Knap Hill Nursery, Woking, Surrey.

THE QUEEN, without any exception the best WHITE RHODODENDRON yet raised.—Robust grower, deep green foliage, late and free flowering, trusses large, full, compact, and semicircular, footstalk short and stiff, colour white, suffused with blush nuance, changing to the purest white, clear alabaster or wax-like, of unequalled shape and substance, reminding one of the petals of the Water Lily. It remains in bloom longer than most other Rhododendrons, a peculiarity probably accounted for by its hitherto refusing to produce seed, an advantage all Rhododendron growers well understand. All who visited the International Exhibition will remember the transcendent superiority of The Queen over every other white Rhododendron exhibited. It is proposed that The Queen should assume her throne in 1867. All and everybody who wish to enjoy her regal sway should apply at once, as all orders will be executed in rotation. The price will be 31s. 6d. each, and the Trade will have four plants given for three ordered. It need excite no surprise that its sole possession by the Advertiser should have called forth the envious jealousy of certain HONOURABLE MEN. Hence a story industriously circulated in the Trade that THE QUEEN is not a new one but an old kind, shown under an assumed name. The Advertiser would be glad to be informed WHEN, OR WHERE, AND UNDER WHAT NAME THIS RHODODENDRON has been seen, and in whose possession it is to be found. The whole undivided stock is in the hands of CHARLES NOBLE, Bagshot, Surrey.

FOR SALE, TEN STANDARD RHODODENDRONS —2 John Waterer, 2 Lady Eleanor Cathcart, 2 Mammoth, 1 maculatum ingratum, 1 ditto purpureum, 1 pictum, with handsome heads, full of bloom buds. Also 16 PYRAMID PEARS, moved last year, and in full bearing, Marie Louise, Bon Chrétien, Brown Beurre, Glou Morceau, Gansel's Bergamot, &c.

Apply to the Gardener, B. CRANE, 4, Lily Terrace, Kensington, W.

Cupressus Lawsoniana argentea.

MESSRS. WATERER AND GODFREY are now sending out this Plant.

Good stout Plants, 1½ foot high and bushy, at 21s. each.

It has been awarded Three First-class Certificates by the Royal Horticultural Society of London, Royal Botanic Society of London, and at the Crystal Palace; and may be justly represented as a distinct and very beautiful plant, and one that will become a general favourite.

Knap Hill Nursery, Woking, Surrey.

RAYNBIRD, CALDECOTT, RAWTREE, DOWLING, AND COMPANY, Limited,

CORN, SEED, MANURE, AND OILCAKE MERCHANTS,

Address, 89, Seed Market, Mark Lane, E.C.; or Basingstoke.

Samples and Prices Post Free on application. Prize Medals, 1851 for Wheat; 1862, for "Excellent Seed Corn and Seeds.

VIOLETS.—The GIANT, bearing a finer flower and a more beautiful perfume than any of its kind, now in full bloom, and will continue blooming till April. Plants can be had about 24 inches in circumference for 1s. per dozen.

A Sample Flower of the above, and PRICE LIST of all sorts of Violet Plants now in bloom, sent on receipt of stamp for postage.

JOHN STEDMAN, Violet Grower, Thornton Heath, Surrey, S.

NEW HARDY CLEMATISES.

CLEMATIS RUBELLA.—Very rich velvety claret; the deepest coloured Clematis yet offered. Very distinct, and having the advantage of flowering 60 to 70 per cent. of blooms, with five and six sepals. First Certificate, Royal Horticultural Society.

CLEMATIS PRINCE OF WALES.—Large flowers, of a rich deep violet purple, with red bars down the centre of each sepal; a decided improvement on C. rubro-violacea. First Certificates, Royal Hort cultural Society.

MESSRS. GEORGE JACKMAN AND SON have much pleasure in announcing that they are in a position to send out the above Clematises that are distinct, and can with confidence recommend them "amongst the best of hardy Climbers, if not the very best ornaments for walls, trellis-work," &c.

Early orders will secure the strongest plants, which will be sent out strictly in rotation first week in October.

The "Floral Magazine," in the October Number, will insert C. rubella and C. lanuginosa candida.

Strong Plants, with buds, 1½ to 2 feet, 21s. each

The usual allowance to the Trade.

Coloured Drawings, by Andrews, forwarded.

Woking Nursery, Surrey.

ESTABLISHED UPWARDS OF A CENTURY.

BUTLER, McCULLOCH, & CO.,

SOUTH ROW, COVENT GARDEN, LONDON,

Seedsmen to Her Majesty's Commissioners of Woods and Forests,
To the Commissioners for the Colonies,
To the Horticultural Societies of the Punjaub and Bombay, &c.

HOLDERS OF PRIZE MEDALS FROM INTERNATIONAL EXHIBITIONS OF 1851 AND 1862.

CHOICE COLLECTIONS of BULBS, all of the FIRST SIZE and QUALITY.

FOR CONSERVATORY DECORATION.						FOR FLOWER GARDEN DECORATION.					
No. 1.	No. 2.	No. 3.	No. 4.	No. 5.	No. 6.	No. 7.	No. 8.	No. 9.	No. 10.	No. 11.	No. 12.
£5.	£2 10s.	£1 5s.	£1 1s.	15s.	10s. 6d.	£5.	£3.	£2.	£1 5s.	£1 1s	10s. 6d.

FOR CONSERVATORY AND FLOWER GARDEN COMBINED.

No. 13, £5 5s. No 14, £2 12s. 6d. No. 15, £2 2s. No. 16, £1 1s. No. 17, 15s. No. 18, 10s. 6d.

All Orders amounting to £1 1s. and upwards sent carriage paid.

ILLUSTRATED PRICED CATALOGUE, containing full details of these collections, post free on application.

DUTCH FLOWER ROOTS.

JAMES VEITCH & SONS,

ROYAL EXOTIC NURSERY, CHELSEA, S.W.,

DESIRE TO REMIND INTENDING CULTIVATORS OF THE ABOVE

BEAUTIFUL CLASS OF PLANTS FOR SPRING DECORATION,

THAT THE BULBS SHOULD NOW BE PLANTED WITHOUT DELAY.

J. V. AND SONS' Roots are in Excellent Condition and of the very Finest Quality.

CATALOGUES will be forwarded Post Free on application.

TAXUS HIBERNICA FASTIGIATA VARIEGATA

(THE GOLDEN IRISH YEW).

FISHER, HOLMES & CO.

Have much pleasure in offering for the first time the above really beautiful NEW YEW.

It is the exact type of the Irish Yew, with foliage of the same colour as the Old Golden Yew, and forms a most attractive and really beautiful plant.

It was exhibited at the Royal Horticultural Society's Exhibition in June, 1863, where it obtained a First-class Certificate (see *Gardeners' Chronicle*, p. 580, 1863); it was again exhibited at the International Horticultural Exhibition last May, where it was awarded another First-class Certificate.

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AND SPRING GARDENING

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Gem Plant Case.

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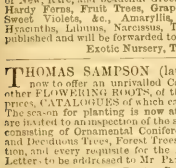

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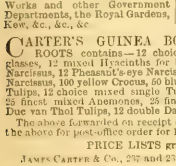

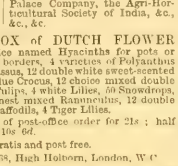

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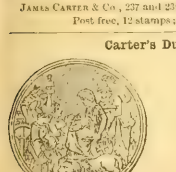

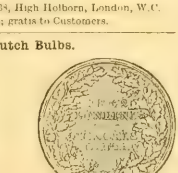

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DESCRIPTIVE and PRICED CATALOGUES are now ready, containing practical directions for the successful cultivation of each section of Bulbs, in Pots, Glasses, and the Flower Garden.

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LUSTRE.—Fine deep rich scarlet, of excellent form and good substance, 6d

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The above will be found to maintain the high reputation of the varieties previously sent out by WILLIAM BULL.

Establishment for New and Rare Plants, King's Road, Chelsea, S.W.

The Gardeners' Chronicle.

SATURDAY, OCTOBER 20, 1866.

MEETING FOR THE ENSUING WEEK.

SATURDAY, Oct. 27 { Royal Horticultural (Weekly Show), South Kensington .. .. 2 P.M

So great and so varied are the changes which the cultivator effects in the form and appearance of certain plants that it becomes exceedingly desirable, not only that a record should be kept, to enable one to ascertain the PARENTAGE and PEDIGREE of our principal garden flowers, but also that here and there at least, the original species, from which all the cultivated varieties have sprung, should be grown as far as possible in their unmodified form. Mr. HOYLE, who exhibited some Pelargonium flowers of 60 years since at the International Show, in order that the contrast between the flowers of that time and the present might be readily seen, did good service in this way; and such plant lovers and cultivators as Mr. WILSON SAUNDERS, who retain in their houses plants long since discarded by the florists, or grown only in a much modified guise, are deserving of the cordial thanks of the gardener and of the physiologist. This is one of the functions which a botanic garden, might properly fulfil. In such an establishment the original species, or if that term be objected to, the type, from which by cross fertilisation, by selection of seedlings, by sports, or by other means, the multitudinous garden forms have originated, should be cultivated side by side with varieties selected to illustrate the chief and more important of the variations just alluded to. And as the manufacture, so to speak, of these garden varieties is going on with an ardour that is not likely to be abated just yet, we venture to impress upon all those who are engaged in this most interesting and profitable department of horticulture the desirability of recording for present, or if that be undesirable, for future publication, the method and results of their experiments. The breeder of horses or of stock knows full well the value of a pedigree—the Herd Book is to such a one a volume of the greatest importance. A similar record would in its degree be of great value to the horticulturist. If successes and failures were registered with impartial regularity, what a guide for future trials would soon be formed. Instead of a series of comparatively hap-hazard experiments, the chief guiding agency in which is the mere desire to obtain a particular form, but whose production is too often a matter of uncertainty, we should in process of time be able to attain desired results with a degree of certainty and accuracy similar to that possessed by the painstaking stock breeder. As Professor HUXLEY told the naturalists at Nottingham, the methods by which to advance natural science in all its branches are comprised in observation, registration, and classification. Horticulturists must needs practise the former, from the time when they are set to wash pots, to the time when their career closes; classification, too, they necessarily practise, but registration of the phenomena they observe, is comparatively rare. That practical results must sooner or later accrue from the combined use of the means just alluded to need not be insisted upon; the results already attained are startling enough. How much more so they might be made if in all departments of garden or field culture the methods now in use for "improving" old varieties, or getting new ones, were carried on in a more systematic manner.

Nor is it necessary to do more than allude to the vast importance of such practical experiments, carried out on a large scale, to the physiologist. How many of the problems connected with the existence and inducing causes of variation in plants, the existence or non-existence of species, their fixity or their transition to other forms, their restricted or limited areas of distribution, their presence in one region, or their absence from another apparently equally well fitted for their presence, might be more or less fully resolved in course of time by a well-ordered system of experiment and registration. It cannot be said in this case that these are matters remote from the interests of practical cultivators; on the contrary, their interests in the future are bound up in them. Nor will they be disposed to undervalue such experiments when they reflect that from what appeared to some to be trifling and unimportant experiments, have originated the steam-engine and that electric link that binds an old and new world together; while in their own more special department they have effected such changes in the conformation of plants that our gardens teem with flowers of every hue and form, that thousands are enabled to live where hundreds formerly could scarcely subsist, and that millions are clothed that but for the labour and skill of the cultivator would eke out existence in little else but the garb with which Nature had furnished them.

THERE is at present in the magnificent TROPICAL FRUIT-HOUSE of P. L. HINDS, Esq., of Byfleet Lodge, near Weybridge, a plant of Passiflora quadrangularis (the Granadilla of the West Indies), bearing 22 of its large fruit, and in addition to these, 32 ripe fruit have been taken from it already this season, one of which was exhibited at the meeting of the Fruit Committee of the Royal Horticultural Society held at South Kensington on the 2d of October. Mr. HINDS has had a trellis erected over the central path for the purpose of training the plant upon it, and the effect produced on entering the house is excellent. On this trellis, rising from the side walls of the pit to the height of about 8 feet, about 3 feet broad, and 20 feet in length, the plant is trained, completely covering it with its fine healthy green foliage, while the under surface is studded with its numerous beautiful fruits. A branch of this plant is also trained in a horizontal direction across the house, and on this several fruits, in addition to those just mentioned, are suspended on branches about 2 feet long, the weight of the fruit keeping them perfectly straight; and these, associated with Bananas, Sugar-canes, and tropical fruits of many and varied kinds, give the scene quite a tropical character.

Mr. HINDS has also succeeded in fruiting the Passiflora laurifolia or Water Lemon. The fruit, which is about the size and form of a hen's egg, is borne on short laterals, which hang from the roof, and each carry three or more fruit. The plant is very ornamental, being trained horizontally to the rafters, and allowed to hang down, forming a leafy screen, studded over with its beautiful fruit, which are of a bright reddish orange colour, and contrast finely with the dark shining green leaves. It appears somewhat doubtful whether this plant has ever before been fruited in England, but whether or not, the merit of bringing it to its fullest perfection is due to the generous proprietor of Byfleet Lodge.

In the same house, planted out in the hot border, is a grand plant of the Papaw (Carica Papaya), about 20 feet high, a most perfect

specimen. This plant has been bearing fruit nearly the whole of the summer; eight dozen have already been taken from it, while it has now two dozen fruit of different sizes remaining. As a proof of its prolific properties, two young shoots from near the bottom of the stem are bearing fruit freely. These interesting plants bear testimony to the care and attention bestowed on them by Mr. CARR.

—— WE have been requested to state that the next meeting of the ROYAL HORTICULTURAL SOCIETY will take place on the 6th of November; and that there will be no meeting on Tuesday next, the 23d inst., as stated by mistake on the cover of the pocket almanacks distributed by the Society. It may prevent some inconvenience if our readers will bear these dates in mind.

—— The UNITED HORTICULTURAL SOCIETY has obtained a grant of the Guildhall for a Flower and Fruit Show, to be held simultaneously with a Bazaar for the Albert Orphan Asylum, the two Societies having for the time amalgamated in order to help each other, philanthropy being their common object. The days fixed for the exhibition are the 13th, 14th, and 15th of November.

—— We learn from the report of the GLASGOW AND WEST OF SCOTLAND HORTICULTURAL SOCIETY that that Institution, which was foremost amongst all the Horticultural bodies in the United Kingdom in the support given to the International Horticultural Exhibition, is in a highly prosperous state. Contrasting the present position of the Society with its prospects six years since, it is observed, "Then 100*l.* in debt, with an income of about 100*l.* a year, and an outlay of about 160*l.*, and only 80*l.* of prize money; now with an income of upwards of 1100*l.*, distributing about 600*l.* of prize money, and possessing an accumulated fund of upwards of 600*l.*, at the same time possessing a name and influence, inferior to no kindred Society in the country." As horticulturists, however, it is observed, the members ought not to absorb too much time in counting their cash, but should rather study the interests of horticulture in every department, and seek out the best method of ensuring the greatest good over the widest and most extended field of operations. Hitherto, it is continued, "we have accomplished this in so far as competitions are concerned. The exhibitions of the past season have been most interesting, and it is the opinion of florists in general that never before have four such exhibitions taken place in one season under the auspices of any Society in Scotland. For the last exhibition 1300 entries were received. During the year nearly all the prizes offered have been competed for, while superior productions for which no prizes were offered have often received special awards. In many instances no fewer than 20 competitors have entered for one prize, in a good few more 25 to 30, while for one prize 45 competitors entered the list." This is proof enough that the Society's affairs are carried on with spirit.

—— It is not often that the FRUIT of CALYCANTHUS OCCIDENTALIS is seen in this country. Several fruits however are ripening on a specimen of this shrub growing against a wall in the Royal Gardens, Kew.

TABLE DECORATIONS.

WHILE it is a matter for regret that the late International Horticultural Exhibition offered no arrangements of flowers for rooms which call for any especial notice, there were other parts of that memorable Show from which some lessons may be obtained, which will prove of much value in grouping cut flowers. Though captious critics were ready enough with explanations of how they would have done it all, if the arrangement had been left to them, it is very doubtful indeed if any of their plans would have resulted in such a charming *tout ensemble* as that which all so much enjoyed last May. But why was this exhibition so much enjoyed? Why were people unanimous in saying that they derived more pleasure there than at any previous Flower Show? Many answers at once suggest themselves: it was larger, there was more room to walk about, the arrangement was less formal than is usual, and there were so many extraordinarily large plants. All these circumstances doubtless combined to give pleasure, but the greatest charm of all has yet to be alluded to. The feature which essentially distinguished that great Show from any previous one, was the preponderance of foliage over inflorescence, of leaves over flowers. Whichever way you turned, you were always able to find relief for your eyes, after looking long at some highly coloured blossoms, in the close proximity of foliage of one kind or another. In most cases there was a background of evergreens, while all the plants were arranged upon grassy banks. Who has not seen the blazing terraces of Pelargoniums and Calceolarias at the Regent's Park Shows, while at the point where the finest view of these was to be obtained, the foliage-plants were all behind you, and for any effective purpose might as well not have been there at all! Far otherwise was it at the International Show.

On looking over the catalogue, it will be observed that this preponderance of foliage was owing to the presence of plants that are rarely seen except at Kew, and in the largest nursery grounds. Thus (exclusive of what were in the numerous collections of miscellaneous plants), there were shown 51 Palms, 29 Cycads and Pandanads, 30 Tree Ferns, 90 Yuccas and Dracænas, 122 Agaves, 96 hardy evergreens, and 60 deciduous shrubs, 64 standard evergreens, 180 Hollies, and 194 Conifers and Taxads; in short, there were about 1000 of these foliage plants, which, partly by their presence, but still more by their judicious arrangement, gave a character to the Show, and afforded a charming relief to the flowering plants, and the gay dresses of the ladies.

Another strongly-marked feature in this Show was the absence of any crowding, each plant being placed at a little distance from its neighbour—that distance being greater in proportion to the size of the plants, where it was desirable that each plant should be seen separately. By this means those who wished to examine and compare individual plants were enabled to do so with greater facility, and with much less fatigue to the eyes; while the general effect was thereby enhanced, and the harsh outlines, which so often accompany large masses of colour, were avoided.

The chief lessons to be learnt as regards table decorations from the International Flower Show of 1866 seem then to be, that flowers should never be crowded, and that there should always be a preponderance of foliage over blooms.

Of all the various mistakes which are made by persons in arranging flowers, the commonest is that of putting too many into a vase; and next to that is the mistake of putting too great a variety of colours into one bouquet. Every flower in a group should be clearly distinguishable and determinable, without pulling the nosegay to pieces; the calyx of a Clove Pink should never be hid by being plunged into a head of White Phlox, however well the two colours may look together. Sweet Peas never look so well in the hand as they do on the boughs over which they climb, because they cannot be carried without crowding them; but put them lightly into a vase with an equal number of pieces of Mignonette, or rather, ornament a vase half full of Mignonette with a few blooms of Sweet Peas, and you get a charming effect, because you follow the natural arrangement by avoiding crowding of the blooms, and putting them with the green foliage which they want to set them off. Few people are aware, until they try it, how exceedingly easy it is to spoil such a pleasing combination as this; a piece of Calceolaria, Scarlet Geranium, or blue Salvia would ruin it effectually. Such decided colours as these require to be grouped in another vase, and should not even be placed on the same table with the Sweet Peas; they also require a much larger preponderance of foliage to show them to advantage than is wanted by flowers of more delicate colours.

It is unquestionably difficult to resist the temptation of "just putting in" this or that flower, because "it is such a beauty:" a beauty it may be, and so may be an Apricot, but it would be out of place in a basin of green pea soup! There is at least one proper place for every flower; and let every flower be in its place.

Some flowers grow in a stiff, erect, formal manner; others in a lax, drooping, graceful way; and it is a very common thing to find persons attempting to group the two kinds together. In order to effect this we see Fuchsias with the open ends of their corollas sticking bolt upright, wedged in between erect tubes of Stephanotus and Abutilon, by which unnatural arrangement all the grace and elegance of these dependent blooms is lost. The more closely we, in grouping flowers, imitate the natural manner in which they grow, the more pleasing will be the combination produced. Men of science are well able to explain the laws which regulate the harmonies and contrasts of colours, and to dilate upon those "passing discords" which, amongst colours, are as much admired by the eye as amongst sounds they are by the ear. To expatiate here upon "tertiaries" and "complementaries" is unnecessary, and would probably be provocative of a somewhat uncomplimentary yawn. A better guide than any code of laws is the book of Nature, which is always open to us whenever we choose to exercise our powers of observation. There we never find blooms of Dahlias growing in a pyramid without leaves; nor do we meet with bunches of Grapes growing upwards. In arranging fruit as well as flowers, the same rule must be attended to; Nature must be followed, if it is to produce the most pleasing effect. Dahlias should be grouped without crowding them, and with plenty of their own leaves, or with some other foliage of a similar dark green colour. Grapes should always be produced hanging, and not be laid down in a dish, or mixed with other fruit; and some of their own leaves, when practicable, should be hung over or between the bunches. There is doubtless much difficulty in inducing either Dahlia or Vine leaves to live long in water without flagging and becoming faded; and it is in meeting such difficulties as these that the ingenuity of the table decorator is put to the trial. Fine wires are introduced to assist the foliage in supporting itself; or better still, because more lasting, the foliage of some other plant is substituted, which will live a long time in water. In making this substitution, the colour of the leaves is of more importance than the form; thus the silvery green of Pine-apple would not look well as a garnish for Strawberries, nor would the leaves of a Vine be appropriate for Medlars. Every flower and every fruit looks best with its own foliage, where that can be used; and where it cannot, then much judgment must be exercised in choosing a substitute.

There is no kind of foliage so generally useful for all purposes of decoration as that of Ferns; and next to these must be ranked the smaller kinds of the Fir-tribe, such as Arbor-vitæ, Yew, Cypress, and Juniper. In the selection of these for use amongst flowers, there is great scope for taste and judgment. The stiff-growing Ferns, such as Blechnum and Osmunda, and the branches of Thuja and Taxus, go best with spikes of tall flowers. More delicate flowers are better set off by elegant and finely-divided species of Pteris and Davallia, and by pieces of Juniper and Cypress; while the climbing Ferns and Selaginellas come in where scarcely anything else can be used, and give a charming and tasty finish. So much for the form of the foliage: but more needs to be said about the colour of the foliage, because upon the proper choice of the shade of green depends, more than upon anything else, the good effect of the grouping. There is the dark, almost black, green of the Yew, the silvery green of the Juniper, the bright decided green of the Arbor-vitæ; and others might be referred to, if gardeners did not object to having their branches cut.

Fern-fronds may be removed with greater impunity, and it is amongst these that we find the greatest variety in the shades of green. If a pale green is wanted we get it in the graceful Pteris serrulata, the elegant Adiantum assimile, the tall arching Pteris tremula; if a yellow green is required we find it in the Royal Osmunda, or the pigmy Oak Fern; if a bright, glossy, cheerful green is needed, Polystichum lobatum supplies it; for a mealy grey green we look to the Beech Fern, and Polypodium calcareum; for a blue green we may take Polypodium aureum; and for a black green we should go to the Blechnums. Between these there is almost every conceivable shade of green, and those who have access to a good fernery need never be at a loss for appropriate foliage for their flower vases, for among the choicer species the variety in form of frond and shade of colour is endless.

Some of the Blechnums give us shades of red on their young fronds, and have consequently a pleasing appearance in a fernery; but as young fronds of all Ferns are useless for decorative purposes when removed from the plant, because they so soon droop and flag, we need say no more about them here. The variegated forms which some Ferns take under cultivation come in usefully now and then when mixed with flowers, but their places could generally be well supplied by the non-variegated variety of the same Fern.

Next to the delicate kind of Ferns, there is probably no plant whose foliage (when it can be had) is more elegant and useful than that of the Asparagus—the more so now that a climbing species of it has been introduced, which ought to vie with Lygodium scandens. A plant in the half-hardy Fern-house at Kew, labelled *A. plumosa radicans*, looks likely to be available for a similar use.

Much more might be said upon these matters, and the same rules applied to the grouping of plants in conservatories as to the arrangement of flowers in a vase. For the present I content myself with the expression of an earnest hope that those who amuse themselves with floral decoration in its various details will not forget that the pleasing effect produced by the great International Flower Show of 1866 was mainly owing to the preponderance of foliage over blooms, and to the absence of crowding in the arrangements. *W. T.*

GROG.

THIS rather suggestive word is the name given to the yellow brick-gravel of the Stafford-shire Potteries. I first became acquainted with this gravel when I lived in Staffordshire. We used it at Alton Towers, for its fine yellow colour, in filling in the pattern for pieces of box embroidery; and although the colour and durability were all that could be desired, yet it made the path so rough you could scarcely walk upon it. Indeed, this is the great evil of coloured paths; they are usually made of materials so sharp-cornered that they are miniature cart-roads of cracked stones. In some instances broken glass has even been used to give the desired tint of colour, regardless of the consequences. These things usually right themselves after a time, and all well-informed plant-growers will devise a living subject to give the desired colour to the pattern, and leave the path subordinate to the main features; for the work of the path is to lead to the parterre, and not to usurp the place of its betters by making a display of inert materials, which in a garden, on a nearer view, disappoints the beholder, just as the stone lion gives way before the live lion, with fang and talon and with eye of fire. But this is not the place to enter upon such a field.

Grog is made of fine clay, and if an ordinary Stourbridge brick were pounded and passed through a sieve of one-fourth of an inch mesh it would be Grog; but the article, which has now become one of commercial importance, is generally obtained from what is technically termed "saggers," that is to say, from the fine clay ovens in which the china and stoneware of the potteries are baked. These saggers wear out in time, and their pieces are passed through a pounding mill, which crushes them to the size of peas, in which state they are sent off, either by boat or rail, from Stoke-upon-Trent to their destination.

In all suburban residences where the well-dressed flag-stone is too expensive for the front garden walks, we generally find the paths asphalted, and to make things agreeable, the asphalt is usually peppered with white Derbyshire spar. The effect of this mixture of white and black is to isolate the path, and set it at variance with everything around it; neither is it in union with itself, for the contrast of the white on the black ground is just like a shower of hailstones on one's coal heap. There is no harmony of colour; nothing to give or take. Moreover, the spar is the very worst form of stone that could be used, for it is so soft as to be easily cut with a knife; while as a companion to green Grass and the green leaves of trees and shrubs, it is clearly unsuitable; for as blue and yellow when mixed together make green, so neither blue nor yellow will ever be found in violent contrast where green preponderates. I had a fine example of these contrasts the other day at a new church near Wigan, where the walks around the church were made of asphalt, and dotted white with spar, according to what appears to be the standard recipe. The walks were edged with blue tiles, and the blue seemed to escape observation, as the preponderating colour was green, the churchyard being neatly turfed. Had the paths been yellow, all would have been in harmony, for the goodly edifice was of the colour of Bath stone.

The Grog in this case would have made all the

difference; its hardness and durability particularly recommend it; its sharp edges and rough fracture are just what the asphalt requires; and its fine yellow hue being only one remove from green would have harmonised well not only with the blue tile edging, but also with the green sward, and would have been quite in keeping with the stone colour of the church. Now, as asphalt is becoming much used for garden walks, town pavements, and the like, it is of the greatest importance to get it with a good wearing surface, for the spar wears soapy, and soon decays altogether, whilst the Grog is quite imperishable. The sooner this asphalt business is got into good working order, the better.

I find that there is the greatest misunderstanding about the way that mineral pitch and common gas-tar may be used. Leaving out all the patents and the cunning workers in gas-tar, let us compare notes with the common-sense men of our time, and from their failings and their successes we may learn wisdom. One of the most important lessons of the whole is contained in this sentence: "Gas-tar is not soluble in water." Hence the vast importance of this article, formerly counted a dirty waste—though the blackness of its darkness does not yet recommend it to the eye, neither is its smoky odour agreeable when heated. Bones may be said to consist of lime and gluten, at all events for this argument we may take these to form the bulk of the bone. Now, if we take gas-tar and lime and concoct them neatly together, as a soap-boiler would say, we shall have a compound of a bony hardness, and one of great durability. With this we may roof buildings, make floors, walks, roads, tanks, &c.; but before we jump at this bait, we must first learn another practical lesson in this "chemistry," as our Yankee neighbours would term it. When lime comes from the lime-kiln ready for use it is usually slacked, and with a little care it will be all in fine powder like flour, when if one were asked if there appeared to be any water in it the answer would be that it was dry as dust. This verdict, however, will not do, for as we had seen gallons of water poured into the lime it were useless to deny that water was there—only when we see water in a dry state we have some difficulty in recognising it. When lime is to be mixed with gas-tar it must not be slacked with water; that is to say, water whether wet or dry will not do, for "gas-tar is not soluble in water." Therefore the lime must be pounded to powder by force and effort, and that gas-tar must have the water that may be in it evaporated by boiling the tar, and when these two lessons in the chemistry of the matter have been got through, the practical part is easy enough, for it may be laid on like paint on a paper or canvas roof, or it may be mixed with hard materials for a floor, path, pavement, &c., the road making part being always the same. No gardener need be told how to do this, but the important item is the finishing off with Grog, instead of other materials.

I am not now speaking of the slovenly style of working gas-tar and cinder ashes, and calling that road-making. A gentleman showed me his factory roof done with materials as here described, and done well; and with a very little practice any gardener may do walks, &c., beautifully, and unless it is fair to see, it is of no service to him. One thing must ever be kept in view, and that is, to shun wet—wet days, wet materials; water in any form under the name of moisture, damp, or even as above stated, as flour of lime, must be avoided. Once well done it will be done for years, sweet and clean, the cheapest road-material known. Gutters and steep paths liable to be washed away can be settled in this manner at little outlay, and without infringing upon any one's patent right. *Alex. Forsyth.*

THE AUSTRALIAN TREE FERNS.

Two species of Tree Fern from Australia have long been known in our gardens; three others have been imported lately in a living state, and four more, which have very lately been discovered in the sub-tropical parts of the island, will no doubt soon follow. As, of the second three, one has already been published in three different places under different names, and the other two, both of which have had new names given them, are evidently identical with plants known elsewhere, there seems a prospect of a considerable amount of confusion arising respecting them, and in order to do what I can to prevent this, I propose to give a description of each of them, and bring together the synonyms of the same species.

First, as to their genera: about this there need be no ambiguity. Two of them belong to the genus Cyathea, which is characterised by having the sori included in a distinct cup; four belong to Alsophila, which has no cup, but only a round naked dot of fructification apparent, upon dissecting which a raised point will be found in the centre, which is the receptacle; and the other two belong to Dicksonia, which has a distinctly two-valved covering, the fruit-dot being placed upon the edge of the frond, and the outer valve of the cup being formed from the reflexed margin.

For a long time the genus Cyathea, represented in New Zealand by C. medullaris, Cunninghamii, and dealbata, was supposed to be absent from Australia. I believe the discovery of the first species is to be ascribed to Mr. Walter Hill, of the Botanic Garden at Brisbane, who gathered it at Mount Lindsay, in Queensland. This was found to be new, and was named by Sir William Hooker (Synopsis Filicum, p. 25) Cyathea Lindsayana. The trunk is stated to be 10 or 12 feet in height and a foot in circumference. The main and secondary rachides are quite unarmed, being slightly downy, and between straw-coloured and brown in colour. In the specimens I have seen, the primary pinnæ measure nearly 3 feet long by 8 inches broad. There are from 20 to 30 closely placed, lanceolate pinnules on each side, the largest of which measure 4 inches long by ¾ to ½ of an inch broad, and are cut down throughout into linear-oblong falcate segments, which are bluntly lobed half-way down to the midrib. The texture is firm, almost coriaceous, both surfaces being green and destitute of hairs, except a few upon the midrib of the pinnæ and pinnules. In most of the lobes of the segments the veins are once forked. The sori are placed in two rows contiguous to the midrib, usually one to each lobe, hiding where its vein forks, and in the most fully developed segments are 10 to 12 in number. The other species of Cyathea is still obscure. Dr. F. Mueller, in his recently published account of the Australian Ferns (Fragm., Part V., p. 116), says that he has seen only a portion of a pinna, and that is all that is contained in the Kew collection. Sir W. Hooker has referred it to C. affinis of Swartz, a plant which has been gathered in many of the Polynesian Islands, but whether this is clearly distinct from the New Zealand C. medullaris is very doubtful. Upon viewing the scrap referred to, I do not see anything to separate the Australian plant from C. medullaris. The rachis of the pinnæ is rough, with raised points; the largest pinnules are 3 inches long, by ¾ of an inch broad at the base; the segments are much narrower and more distinctly separated than in C. Lindsayana, being not more than one line broad, cut down nearly to the rachis into blunt lobes, the base of each of which, except the uppermost, is filled by the distinct cup of the fruit-dot; the texture is not so firm as in the last, and the rachis of the pinnules is clothed with small scales. It has been proposed to name this C. Wilsoni, but my own impression is as just indicated, that it will be found to be identical with the New Zealand species. It was gathered by Mr. Wilkinson at Cape Otway Ranges, in the colony of Victoria, and is said to have a trunk 50 feet in height.

Alsophila australis of Robert Brown, has long been well known in books and gardens. It has a wide climatic range, extending from Van Diemen's Land northwards along the east side of Australia to within the tropic. The trunks attain an elevation of from 25 to 30 feet in Van Diemen's Land, and are sometimes as stout as a man's body, and in South Australia they are said to reach a height of from 40 to 60 feet. The crown is clothed with the base of the old leaves as "rough as the stems of Raspberries, closely piled over each other, and pointing forward." The prickliness of the stems varies very much, and there is a variety with the rachis quite smooth, to which the aborigines are said to apply a distinct name. The fronds vary from 8 to 13 feet in length, so that the diameter of a crest may reach 9 or 10 yards. The stems are straw-coloured, very copiously clothed at the base with the long bright brown Conferva-like scales, similar to those of other species used for stuffing pillows and mattresses in the Canaries and Polynesian Islands. The lower pinnæ are often half a yard long, 6 to 10 inches broad, the pinnules being 3 or 4 inches long by half to three-quarters of an inch broad; their linear-oblong, bluntish or sub-acute, entire segments often scarcely reaching down to the rachis in the lower part. The texture is similar to that of Cyathea Lindsayana, the upper surface being deep green, the lower pale, sometimes slightly glaucous, and both naked. The two rows of fruit-dots, with often six in each, fill nearly the whole breadth of the segments. This is said to grow in more open places than Dicksonia antarctica, even flourishing where the land has been cleared and is quite open to the sun.

The next species is the Alsophila Leichhardtiana of F. Mueller (Fragm. Austr. v. 53), the A. Moorei of J. Smith (Ferns, British and Foreign, p. 245), the A. Macarthurii of Hooker (Syn. Fil., p. 40), all three different names for the same plant, of which Dr. Mueller's being the earliest, will have to take precedence. The plant was first indicated as distinct by Sir William Macarthur, of Sydney, and was sent by him to the Paris Exhibition of 1854; it was received in a living state, both from him and Mr. C. Moore, at Kew the same year. The former writes, in a letter to Sir William Hooker:—"This has very slender elongated stems, with a most elegant crown of foliage. The tallest I saw measured 22 feet long, with a crown of fronds 10 to 11 feet long." Mr. Moore assures me that on the sides of Mount Tomah, about 40 miles inland from Sydney, this, the A. australis, and D. antarctica are from 50 to 70 feet high, and in great luxuriance of foliage, this being always found the highest up, as at Illawarra. There it is always in deep shade." This plant ranges from Sydney northward to Queensland, and is known as 'Whip-stick Fern' by the colonists. The stems are as prickly as in A. australis, and their bases are persistent on the crown of the trunk in a similar manner, but here the main stem and the rachides are a beautiful deep red-brown, the latter clothed copiously with small grey scurfy scales; the texture is more coriaceous, the segments being longer, narrower, and more distinctly separated, and the under surface more decidedly glaucous. The edge of the segments is often rather sharply but not deeply toothed, the number of sori in the lower ones often reaching 12.

There does not seem to be any ground for considering the Australian Alsophila grown in gardens under the name of Cooperi as distinct from the Norfolk Island A. excelsa, with which Sir Wm. Hooker and Mr. J. Smith have in their latest works both identified it. In Norfolk Island this is said to attain a height of from 60 to 70 feet. Of the Australian plant Dr. Mueller writes:—"The stem is from 12 to 15 feet high, the circumference being about a yard, the trunk marked with scars. The fronds are not numerous, but they continue a long time, and when they fall leave smooth, oval, pale scars, by which the trunk may be known at a great distance from those of the others. In A. australis and Leichhardtiana, on the contrary, the base of the stipes is persistent." Here also the stem and main rachides are prickly, both being straw-coloured. The pinnæ are 15 to 18 inches long by often more than 1 inch broad, the linear-oblong segments being often two lines broad, cut down quite to the rachis, and slightly incise-crenate. The texture is thinner than in A. australis, both surfaces bein ; green. The young fronds are covered with a soft pubescence, so that they appear almost mealy. The fruit dots often exceed 12, and are very villose. This appears to be confined to the northern part of New South Wales, and the southern part of Queensland.

Alsophila Rebeccæ, F. Mueller (Frag. Phyt. Aust. v. 53) is a very distinct species, and a very interesting addition to the Australian list. The trunk attains a height of 8 feet, and may be seen in the Museum at Kew. The fronds are bipinnate, not tripinnate, as in all the other species. The lower pinnæ are 12 to 15 inches long, 4 to 5 inches broad. There are from 20 to 30 pinnules on each side, the lower ones being distinctly stalked, 2 to 3 inches long, three-eighths of an inch broad, acuminate at the apex, the upper part deeply and the lower less deeply inciso-crenate. The rachides are bright chestnut-brown, clothed with fibrillæ and small scurfy scales. The texture of the frond, is subcoriaceous, the lower surface scattered over with similar scurfy scales, which occasionally are placed under the fruit dots so as to look like a rudimentary involucre. The veins are pinnated in groups of four or five, the sori being placed principally in two regular rows midway between the midrib and edge. This has been gathered in Queensland by Messrs. Dallachy and Hill. It is nearest the Chinese A. podophylla, but this has the veins more copiously pinnated, and the sori scattered more irregularly, and wants the membranaceous scurfy scales of the under surface.

A. Robertsiana, F. Muell. (Frag. Phyt. Austr. v. 53), is another new species gathered in the same locality as the last by the same collectors. The trunk attains a height of 6 feet. The pinnæ are from 12 to 18 inches long, 4 to 6 inches broad, with a reddish-brown copiously tomentose rachis, and numerous pinnules from 2 to 3 inches long, by three-quarters of an inch broad, cut down to a distinctly winged rachis into linear-oblong segments one-quarter to three-eighths of an inch long by one-eighth of an inch broad, which are again cut down throughout nearly to the midrib. Both surfaces are green and hairy, especially the lower one, which is clothed with a very distinct coating of white spreading grey hairs. The sori are small, placed one each at the base of the lower segments. This is related to the New Zealand A. Colensoi. In both the segments are about equal in size, but in Colensoi they are entire, in this deeply pinnatifid, there are no scales on the rachis of the pinnæ and pinnules, and the whole plant is very much more hairy.

Of Dicksonia antarctica I need say very little, as it is so well known, and not likely to be confused with anything else. It ranges round the coast from the mouth of the Glenelg river near the western border of New South Wales up northward nearly to the tropic. "It is often very plentiful," writes Dr. Mueller, "in Australia Felix and New South Wales, especially in what are called the Fern-tree gullies, where it occupies more lowlying positions than Alsophila australis. It ascends to a height of 4500 feet, and is the most western of all our Tree Ferns. The Australian plant which has been called D. Youngiæ is evidently not safely separable from the New Zealand D. squarrosa. "The stem is slender," writes Mr. C. Moore, "never more than 4 inches in diameter, and from 10 to 12 feet high, marked by portions of old stipes remaining attached after the fronds have fallen off. The base of the stipes is rough from raised points which are not however sharp. The outer fronds are always barren." Here the stem and rachis are usually a rich bright brown, and densely fibrillose, the lower pinnæ 12 to 15 inches long, the lower pinnules 2 to 3 inches long by three quarters to seven-eighths of an inch broad, the linear-oblong segments deeply pinnatifid, those of the fertile fronds being nearly filled up with the large two-valved sori, which are quite a line broad. The texture is coriaceous, and both surfaces are very nearly naked. This was found on the banks of the Richmond River, New South Wales, in 1861, and was proposed to be named in compliment to Lady Young, the wife of the Governor of the colony. *J. G. B.*

Home Correspondence.

The Orange Trees at Holland House.—We all know what poor attenuated scraggy things Orange trees are in English gardens generally, and therefore I think it can hardly be too well known that they may be kept in good health by a simpler process than we usually adopt. I refer to the fact that Orange trees, which are allowed to make all their growth in the open air, and are kept in a cool and comparatively dark place in winter, do very much better than those grown in tubs in the conservatory. If any person doubt this, the present condition of the Orange trees under Mr. Dixon's care, on the terrace at Holland House, Kensington, will convince him immediately, for their heads are as dense as those of clipped English evergreens, and they have a tint of fresh lucid green about them not surpassed by the healthiest of Laurels near our mild southern shores. I really do not wonder that Continental people have a fancy for placing them on promenades and terraces, since seeing these specimens, and some at Arundel and a few other places, grown in like manner. Their green is so fresh and inviting, that your pleasant correspondent, "S. R. H.," might have preferred it to the Parsley for cooling his eyes upon, after gazing upon that soul-satisfying product of the British gardener—the splendacious ribbon-border. I have been to Gunnersbury and some other places where I was led to expect there were good Orange trees, and found specimens big enough for any purpose, but no better than the scaffolding, so to speak, on which a good plant would exhibit its dense leafage. They were like some of those gigantic birds at the Zoological Gardens which have evidently not made up their minds whether they shall wear feathers or not,

and just wear a few on the posterior protuberance – to ascertain how they would look over long legs, or perhaps to see how the wind blows. A specimen of branches with a few sickly leaves. And many of these have been brought from the Continent at great expense. By being placed in the open air in May, they make all their growth in the free air, and are thus, it would seem, inured to any vicissitude they may experience in our climate. Take them in in October and house in a place just impervious to frost, and cool and airy at all times. At Arundel they are housed in the pleasure grounds, in a structure which affords only a side light, and it is practically the same at Holland House, as they are there preserved in winter in what used to be a great arched stable, and which has now its opaque roof; but as there are lean-to houses thrown against its sides, the trees receive just the requisite amount of light to keep them in a quiescent state during the winter, and success of the most satisfactory kind is the result. *W.*

Ventilation : Conduction of Heat.—While determined to vindicate in every case to the utmost of my ability the truth which my papers may contain—not because I have written it, but because it is true—no one can be more ready to admit a mistake or mis-statement, supposing such to be found. Neither would it be at all surprising if in laying down so many general principles, and striving to elucidate the working of so many natural laws, mistakes should occur; for, in my anxiety to popularise this subject, I have made but sparse use of authorities. The subject has been thought, not copied out. For this reason I regret not having Tyndall (see p. 972), nor, indeed, any other authority upon heat by me. In No. 12 of my papers I stated "that the dry air of cold climates enwraps life around as with a thick great-coat, and refuses a free passage outwards for the heat." Tyndall says, "the removal for a single summer night of the aqueous vapour from the atmosphere which covers England, would be attended by the destruction of every plant which a freezing temperature would kill." The purport of "J. S.'s" note at the page referred to, is to show that these two statements contradict each other; that I am wrong and Tyndall right; and to prove that such is the case by the influence of clouds in checking the radiation of heat. I accept Tyndall's statement, and still adhere to my own. The two do not contradict each other; they refer to different things. There is also a wide distinction between the intervention of a screen of clouds as a mechanical barrier to the dispersion of heat, and the conduction or radiation of heat through a clear atmosphere laden with moisture. To gain a clear understanding of this matter it may be necessary to point out how heat is removed from one body or place to another. There are at least four modes by which a change in the relative position of caloric to surrounding bodies is effected. These are convection, radiation, conduction, and evaporation. Convection may be defined as the ebullition of fluids or gases from a centre to the circumference and back to the centre again in search of an equilibrium of temperature; for its operation demands a heating centre, cooling extremities, and a free circulating medium. It has little or no direct influence on the point in dispute, and as it has been illustrated before, need not be further dwelt on here. Radiation, on the contrary, is the point that has led to the divergence of opinion between "J. S." and myself. It may be defined as the removal or bounding off of heat from all bodies, in straight lines, from their centre into open space. It involves a direct loss of heat, without any compensating principle or circulating medium to bring any of it back again. The heat thus abstracted may be said to be, as far as the bodies from which it has been removed are concerned, absolutely lost. The energy with which radiation works is controlled by the rarity or clearness of the medium, and the difference of temperature between the body from which the heat is radiated and the surrounding air. If the temperature of the two are alike, radiation of heat ceases, however clear the air may be; therefore its power is weak or nil in Arctic climes. The scant vegetation there is frozen through, independent of the resistance of the warmth of vegetable life, and hence the living and dead surfaces assume about equal temperatures, and the chilling power of radiation is broken. The outer surfaces of the clothing of men and animals are subjected to similar laws, and even radiation itself can drive off but little heat from the surface of white furs. But nevertheless it is still true that the clearer the air the greater the radiation, and *vice versâ*, provided always the amount of moisture in the air remains the same, and that the surfaces operated upon are of a higher temperature than the surrounding air. I think, however, that "J. S." has made a mistake in this matter. There is no question at all that water, when it assumes the forms of thick vapour or cloud, offers an effective resistance to the removal of heat. The clouds form as it were mechanical barriers on the radiating lines, which the heat is unable to pass. It is in fact arrested by them, and thrown back or down again upon the earth. Hence the warmth induced or husbanded by the agency of clouds is intelligible enough. But to prove my statement wrong it will be necessary to show that in a clear sky—that is, without either fogs, clouds, or visible vapours, the loss of heat by radiation is less in a saturated atmosphere than in a dry one. Meanwhile I think a reference to the removal of heat by conduction will establish and confirm the correctness of my views. Conduction almost explains itself. It means, to lead, show, or form the way for anything to travel on. One end of a bar of iron being thrust into a fire, the heat is conducted along its whole length. The iron becomes a medium or the line of conveyance. This is conduction. It presupposes always a medium, or line to move on. And, further, the rate of speed is regulated by the character of the medium, mostly. Every article has a different rate of conveyance for heat; and even the same article in different conditions, as rough or smooth, coloured or uncoloured, polished or unpolished, foul or clean, wet or dry, has its special rate of speed. Taking air as an example, and as being the kernel of our subject, its conductive powers vary in proportion to the compactness of its mass, and the amount of its moisture, other conditions being alike. Heat passes rapidly through moist, slowly through dry air. This is a fact daily confirmed by our personal experience and observation. On a dull November day, with the thermometer only at 50°, we not only feel, but are actually, colder often than on a bright day in January with 20° of frost. The reason is obvious. In November the moist air conducts the heat rapidly from the surface of our bodies; in January, the dry air, though so very much colder, has less power of conduction, and does not actually remove so much heat. Hence we are warmer often during the sharpest frosts than in a drizzling fog with scarcely any frost at all. In fact, so well known are the non-conductive powers of dry air, that a stratum of it offers the best possible resistance to the inroads of cold. It is upon this fact that the philosophy of double-glazing, and covering of frames, houses, &c., and even the true theory of clothing is founded. We are kept warm not so much by the thickness of our clothing as by the stratum of air which it encloses around us; and this air equally, perhaps more than the clothes themselves, checks the conduction of heat outwards, and thus keeps us warm. As the atmosphere entirely surrounds and envelopes the whole surface of plants exposed to it, it is easy to see that whatever checks or breaks its power of conducting heat from them must necessarily tend to keep them warm, and as dryness does this, the propriety of comparing dry air to a great-coat, whose enwrapping folds "refuse a free passage outwards for the heat," becomes at once apparent. White is also the worst possible conductor of heat, and thus the colour of the under clothing of plants in cold climes, and the character of their outer covering of air, both favour to the utmost extent the husbanding of their heat. But an enormous amount of heat is also removed by evaporation. Evaporation may be defined as the absorption and virtual extinction of heat at the point where it takes place, by the conversion of water from a liquid into a vapour. By this process, sensible heat that could be felt on living surfaces, is converted into latent heat which cannot be felt. Worse than this, during the process, heat is exchanged for its opposite, cold—if I may allowed to speak of cold as an entity. No other mode of removing heat acts with such potency and violence as evaporation. It works with such energy that a man may be frozen to death in the middle of summer by persistently sprinkling him with ether. As a rule the force of evaporation may be measured by the volatility of the fluid raised or dispersed, the temperature of the air, its degree of humidity, and the amount of accessible moisture. The faster the process proceeds the more intense the cold. In cold climates there is everything to check its speed. The only available fluid exists in the form of masses of ice and hard-frozen snow. The temperature of the air is so low as utterly to quench its power of vapour. Its frozen tongue is incapable of licking up fluids. Thus the air continues dry, and until aroused from its dead torpor by an accession of heat, lacks the power of adding to its cold by the evaporation or elevation of water, and so it comes to pass that the cold air continues dry air. It is probable that this dryness modifies the force of radiation; it is certain that it breaks the power of conduction, and well nigh arrests the progress of evaporation. Thus of the three common modes by which solid bodies are cooled, dry air hinders, checks, almost stops two of them, and hence the justification of my assertion that the dry air of cold climates enwraps life around as with a thick great-coat, and refuses a free passage outwards for the heat. *D. T. Fish, Oct* 16.

The Double Rose-Campion.—It may interest some of your readers to know that this pretty and good old double flower is not yet lost, as I was fortunate enough to meet with it this summer in Messrs. Paul & Son's Nurseries, Cheshunt. The flowers last longer in bloom than the single one, and it looks a much greater improvement on the normal form than most duplex flowers are. Having gone to see Roses and trees and shrubs and fruit trees, I was unprepared for meeting with a really good collection of well-selected herbaceous plants. I have seen larger and more varied collections, but never better beds of the really good herbaceous things. There were long beds of golden-variegated Lily of the Valley, of the double white Achillea Ptarmica flore pleno, which they were cutting freely for wedding bouquets; of the fine autumn-flowering Statice latifolia, and other good species; of the best Anemones, and the best Asters. Planted out in good soil, and allowed to become fully developed, as they are here, these plants are far more valuable in every way to the purchaser than the tiny sickly bits of plants sold in pots by some nurserymen, and which too often make him believe that such things are not to be grown. I was particularly pleased with Lathyrus rotundifolius, a fine bright-flowered Everlasting Pea; with Rudbeckia Neumanni, one of the finest of all autumn-flowering plants; with the masses of some of the better Hellebores, and not a few other plants, which I shall not occupy your valuable space in describing, but which will be found enumerated in Messrs. Paul's catalogue issued along with their catalogue of trees, shrubs, Conifers, &c. *R.*

Japan Privet.—The beauty of this shrub is insufficiently known, though it is extensively planted by the judicious landscape gardener and planter. Large in leaf almost as a goodly Orange, and producing flowers almost as large as the white Lilac, and very sweet, it possesses first-class attractions as an ornamental shrub, but it is to its value as a London plant that I wish to call the attention of the town-gardening portion of your readers. We all know how difficult it is to get any sort of an evergreen to grow well in towns; those with the best character for good behaviour within the vile influences of smoke are too apt to become hopelessly deciduous. Well, this Japan Privet may be tried with safety in a back garden, far into what Cobbett called the great "wen." Having the advantage of flowering so sweetly and freely, in addition to being a shrub with comely leaves and good habit, I am sure such of your readers as so plant it, will not be disappointed. *Stet.*

Hard Soil and Heated Vine Borders.—Referring to the correspondence in your Paper relative to the hard ramming of soil round the roots of fruit trees in and out of pots, there remains an important question as to how far the same practice is applicable to Vines, and it will, I am sure, afford many of your readers satisfaction to have opinions upon that point. With reference to the theory of hard ramming, it would seem not unnatural that when soil is brought into closer contact with small fibrous roots—for even with the hardest ramming the contact must be imperfectly fulfilled—the roots should more readily absorb that nourishment which is favourable to fruit-growing. Now that I mention the subject of Vines, I would recall a point occasionally alluded to, but never fully discussed in your Paper, viz., whether to produce early Grapes it is well to heat the border underneath. I erected a Vinery this spring with the border upon flagstones, heated by hot-water pipes. The result so far has been satisfactory. Vines planted in April, after being cut down once to 12 feet, attained about 23 feet in their second growth, with a girth throughout of from about 2 to 2½ inches. At the end of September the wood was thoroughly ripened. There is an aperture in the house from the space under the border in which I keep a thermometer; the bottom heat I can regulate by a stop-cock, and as a further precaution I have a bottom-heat thermometer in the soil. With these arrangements, and with very moderate attention, I cannot see how any evil results can arise from bottom-heat so applied, and that much good must ensue from being able to make the heat of the soil correspond with that of the atmosphere above, there can be no doubt. To complete the arrangement I intend covering the outside border, 30 feet by 12, with glass lights, to slide up and down in frames, in order to obviate the necessity of covering it with materials which more or less exclude light and air. *Edward Chance, Lowmside, Malreen.*

Glandular and Glandless Peaches.—I never remember seeing mildew on my Peach trees. I believe, as with Roses so with Peaches, that immunity turns on two things—on the compact nature of the leaves, and also on the functions of the glands. In moist summers mildew does not prevail. It is called the "daughter of drought." By this we are not to understand that drought creates the Fungus, but it prepares the tree for it. Fungi may proceed through the circulation, but it is oftener from without. The spores float about and pitch on the leaves. After long drought the juices of the plant become viscous and sticky, and the spores falling on the leaves adhere till the time of development has arrived. A glandular tree casts off the viscid secretion by the glands, but the glandless tree casts it off by the leaves to which the spores adhere, and if the leaves are not close textured they take root. The leaves of Solfaterre Rose are very close textured. Though on a south wall, where other sorts mildew, I never remember seeing a single mildewed leaf of Solfaterre in 14 years. I have seen the Géant des Batailles as white as snow with mildew beneath its branches. I believe, unless better instructed, that immunity from mildew proceeds from one or both the causes just alluded to. Certain it is that if people kept their trees well watered at the root, and well syringed, they would escape many miseries of which they now complain. As regards Roses, mildew and Aphides vanish after a thunderstorm. The healthiest Rose foliage is that which is glazed. *W. F. Radclyffe, Okeford Fitzpaine.*

Classification of Pelargoniums.—To clear up the doubts of "F. H. S." (see p. 949), I beg to offer him my ideas on this matter. The word "zonal," used in contradistinction to "variegated," should mean a simple colour with a one-coloured zone; that is to say, a green leaf with a brown zone, be it lightly or heavily marked, or a yellow or even a white leaf with a bronze, brown, pink, or scarlet zone definitely marked. Such a plant as Madame Vaucher represents the first, and Mrs. Milford, Luna, Bicolor splendens, &c., represent the second. These latter are not variegated; or if they are, then all the horse-shoe-leaved varieties must be considered variegated. It will lead to confusion to connect the word zonal with variegated; let it rather be understood as applying to one class, which may be subdivided as green zonal, yellow zonal, white zonal, purple zonal, &c. As to variegated sorts, Golden Chain, Mrs. Pollock, and Burning Bush are certainly all variegated; but this grouping is not definite enough, although sufficient for exhibition purposes. I would suggest the following classification:—1. Zonal Pelargoniums, to include all having a zone on the leaf, of whatever colour, which colour can be named as a secondary division. Adonis, Madame Vaucher, Fair Rosamond, &c., would be heavy zonals; and Beauté des Suresnes, Feu de Joie, and Gloire de Nancy, light zonals. 2. Unicolor Pelargoniums, to comprise those in which the foliage presents apparently but one colour., viz., green, as in Tom Thumb or Christine; yellow, as Yellow Sovereign, Ingot, &c.; purple or white. 3. Bicolor Pelargoniums, to include those whose foliage presents two colours (not zoned), distinct, but in contact with each other on the surface or

margin of the leaf, as in Golden Chain, green margined with yellow; Albion Cliffs, green margined with white; Vandyke, purple brown margined with green, &c. 4. Tricolor Pelargoniums, to include those whose foliage presents three colours, viz., margin of white or yellow, zone of brown or purple, and centre light green or yellow. For instance, Attraction and Countess of Warwick would be silver tricolors; Golden Tom Thumb, a yellow tricolor; and Empress of the French, Emblem, Flambeau, Talisman, &c., green tricolors. 5. Versicolor Pelargoniums, to include those with indefinite-coloured foliage, varying on the same plant, presenting a crimson, rose, brown, and purple zone, a light and dark-green centre, a yellow or white margin, changing according to circumstances, such as Mrs. Pollock, Senior Wrangler, Sunset, George Willers, which would be respectively yellow or gold versicolors; and Mrs. J. J. Chater, Italia Unita, Minnie Catton, Picturatum, Burning Bush, &c., which would be silver versicolors. 6. Nosegay Pelargoniums, a group depending on the flower not the foliage, a definition of which can be added to form sub-divisions, as unicolor, bicolor, tricolor, or versicolor Nosegays. *J. J. Chater, Gouville Nurseries, Cambridge.*——Now that the class of Pelargoniums which used to be known as the "scarlet" or "horse-shoe" varieties have been so much improved, and have deservedly come into general favour, a difficulty has presented itself as to the name or term by which they should be distinguished. The term "scarlet" is certainly a misnomer, as the flowers are obviously of various shades of colour; and the terms "zonal," or "horse-shoe," are also objectionable, as in some of the varieties, such as Tom Thumb and Christine, no zone is to be seen, while in others it is very indistinct. Now we have among Pelargoniums what are recognised as the Show Class, the Fancy Class, and the French class; and as the foliage of the so-called zonal varieties certainly approaches nearer in form to the circle than that of any of the other sections just named, might we not term them Round-leaved Pelargoniums, instead of Zonal, Horse-shoe, or Scarlet? This term would include the sorts which have no zone, and also those sorts whose flowers are not scarlet, but which it would not be desirable to separate. And if the yellow-leaved varieties, in the way of Golden Fleece, Mrs. Longfield, &c., are considered to be of sufficient importance to constitute a class, we might have green round-leaved and yellow round-leaved varieties. With regard to the variegated varieties, I would still be inclined to call them all variegated Pelargoniums, as I fear the public will be slow to adopt, or appreciate, the terms versicolor, tricolor, and bicolor. I would, therefore, simply recommend them to be divided into two classes or sections, viz., Golden-variegated Pelargoniums and Silver-variegated Pelargoniums. But pray let us have your editorial opinion as an authority in the matter, for I am apprehensive that much confusion and misunderstanding is likely to arise on the subject. And as this is about the time when Secretaries of Horticultural Societies engage in the task of forming Schedules for the ensuing season's exhibitions, it is very desirable that a uniformity of classification should if possible be arrived at. *P. G.* [We shall have something to say on this subject shortly. Meanwhile the greatest difficulty of all is to find characteristic and invariable terms for the main groups themselves, for in truth the designations show, fancy, and spotted, as applied to various classes, are as indefinite and unmeaning or contradictory as those of scarlet or zonal to the class more immediately under discussion. EDS.]

Iresine Herbstii.—So much has been written lately respecting this beautiful plant that I need not now dwell upon its merits; suffice it to say that I have 5600 plants of it bedded out here, and that it fully bears out the high character I have previously given it. It is indeed a most effective plant. It is not quite so highly coloured with me this year as last, but we have had such a season to contend with as we never have had before. Frosts have occurred every month of the year, and there has been a continuance of wet the whole season. Indeed I may say that it has been a season of disappointment to all lovers of flower gardens, and had it not been for such plants as the Iresine, Cineraria maritima, the [Golden Fleece, and other coloured-leaved Pelargoniums, even our parterres would have been desolate indeed. Your correspondent "F." (see p. 949), in speaking of the Iresine, states that its advocates fail to give us any idea of its colour, and "I am," he says, "so far unfortunate as never to have seen it in good colour, when planted in the sun, either at home or abroad." I have, therefore, sent a boxfull for your inspection. I could say more respecting this useful plant, but as I have had so many hard battles to fight in its behalf, I leave its merits and demerits in the hands of those who wish to prolong the contest. The battle itself is virtually over, and Miss Iresine is wearing the crown of Laurels. I may just add that in this neighbourhood she is fully equal to all I have said in her favour, and I feel that I have reason to be proud of my having conducted so carefully the steps of Miss Iresine, from her first introduction to the public and the flower garden, to such high honours as most people admit she has won. *Edward Bennett, Gr., Osberton Hall, Worksop.* [The sample sent—a whole boxful—was very well coloured, but the colour is difficult to describe, and like all the reds in foliage plants requires good light to bring it out. It is a kind of bronzy-red, traversed by magenta-coloured veins. Mr. Bennett's sample is much better coloured than most of the examples we have seen about London, where it is apt to get a pale dirty coppery hue, and to lose the more vivid red tints. EDS.]——Having on a recent occasion seen this plant in great perfection at the beautiful seat of the Earl Pembroke at Dublin, I am happy to be able to speak of it in terms of unqualified praise. Grown as it is at Mount Merrion, nothing can be more suitable for lines. Mr. Welsh, the gardener there, has two borders to the right and left of a walk running down the centre of the garden, planted in the following manner, both borders being exactly alike. The 1st line, next the walk, consists of Pelargonium Mrs. Pollock; 2d, Iresine Herbstii; 3d, Pelargonium Flower of Spring; 4th, Verbena Purple King; 5th, Centaurea candelissima; and 6th, Pelargonium Scarlet Perfection, the whole being backed up with standard Roses and Hollyhocks. It is not too much to say that every plant in these two borders is beautifully grown. The dark foliage of Iresine contrasts admirably with the ever beautiful Mrs. Pollock, and the Centaurea was equally effective alongside the most regal of purples—Purple King. Much as I admired the whole of Mr. Welsh's combinations of colours, these two borders were to my eye most exquisitely beautiful. He says that he shall improve upon them next year, and I hope that I may be there to see them. To have the Iresine in perfection it must be grown in very rich material. *J. Douglas, Kilkea Castle.*

Study of Fungi: need of an Elementary Book.—Your columns have for several years past afforded much information on the subject of Fungi, and it has often been deplored that while we have a goodly number of phænogamic botanists throughout the country, very few indeed of them venture into the obscure paths which concern our cryptogamic plants, especially the Fungi. Now as the chief pleasure which the indigenous botanist derives from his pursuit of the science, is in making himself acquainted with the variety of forms which the vegetable kingdom presents to his admiring gaze, and then in ascertaining their names, properties, structure, and relations, it is obvious that there must be some reason why he should deprive himself of the happiness of keeping up his examination of Nature's treasury of varieties, just at the, to him, dull time of the year, when his favourites have "faded and gone," and a new creation (so to speak) rises from every field, every tree, and every wall to beckon him onward in the enticing pursuit. The only reason that I know of why the botanist should thus cease from his labour of love, with the departure of the Phænogams until the ensuing spring, and not carry them on through the round of the year amongst the Fungi (and I speak from my own personal experience), is nothing but the difficulty which belongs to their identification, and the want of a book to help him on his way. Much it is true, has been done by our "facile princeps" of Fungologists in his "Outlines," and M. C. Cooke is a capital worker in the same field; but I hope they will both allow me to suggest as a student that what I want, and what I feel must be the want of all others who seek to climb the hill, is a series of steps cut in the hill-side by those who have been up before us and are familiar with the way. Any one who has made himself acquainted with the fact that we have in England some 300 or 400 species of Agarici alone, and observe how like they are to each other, cannot help feeling the difficulty there must be in grouping and classifying such a number of forms, so nearly resembling one another; and yet this must be done before the "common herd" can be expected to follow. Fortunately, what to ordinary eyes presents points of resemblance only, to the skilful botanist and close observer, is found to be the existence of a botanical genius present also points of difference, by means of which latter, aided by the intuition which belongs to genius, he is enabled to place them according to their affinities, which we can see only after they have been pointed out. This task has been, I suppose, more or less ably accomplished by Fries and others, and what now remains a desideratum is the publication of a small illustrated Handbook which might be called "Genera Fungorum," in which a typical Fungus of each genus should be nicely figured, and the distinguishing characters pointed out. When this is done, and it has thereby become possible, with reasonable facility, to refer any given Fungus to its genus, we should find, I think, not an "ugly rush," but a decided tendency on the part of ordinary botanists to enter the "fields and pastures new" of cryptogamic botany, the effect of which would be, by the interest it would excite and the new species and new phenomena it would bring to light, to add greatly to our knowledge of what is confessedly at present an obscure and little worked branch of natural science. *W. Marshall, Ely.* [Our correspondent will find much of what he wants in Greville's "Scottish Cryptogamic Flora." There is a series of papers in the "Intellectual Observer" intended to facilitate the study of the vast genus Agaricus. A work illustrating a species of each genus, accompanied by dissections, would be one of considerable size, as it would be necessary to give figures not only of the very numerous genera, but of all the subgenera, or even of the principal divisions to make it really useful. If the figures were original and carefully selected, which could only be done by one thoroughly acquainted with the subject, and not by a beginner, the expense would be so great as not to repay the cost of publication. A mere compilation would be of little comparative use. Corda's "Einleitung" may be mentioned as a valuable book, but the definitions of the genera are too loose to make it sufficient without other treatises. A series of papers was formerly commenced in this Journal, with excellent woodcuts, but many of the readers complained of it as irrelevant, and it was accordingly discontinued. *M. J. B.*

Walnut Stains.—Will some one be good enough to inform me whether there is any known chemical preparation calculated to destroy the stains of the husks of Walnuts upon the hands. I lately gathered some in their green state, and cannot get rid of the stains. *F R H S*

Allamanda Hendersoni.—This fine plant will tell its own tale as compared with A. Schottii. I have a couple of plants of Schottii struck at the same time as A. Hendersoni, with shoots 6 feet long, which have never shown a flower or signs of one yet, and the plants have stood side by side. The plant of A. Hendersoni commenced flowering in May, and there are a nice lot of flowers on it now. I have seen plants bearing larger flowers than I have on mine—in fact I have met with it in nine different gardens during this month, but have not heard two opinions respecting it. *W. Howard, Bedford Hill, Oct. 17.*——As the introducer of Allamanda Hendersoni to public notice, perhaps after the different opinions that have been expressed in your columns regarding it, I ought to say something respecting it, if only in justice to those who have purchased it from me; for after what has been advanced, some, and especially those who have not flowered it, may be under the impression that they have bought a plant as new which is not so, or although new, so like an old one that the difference between the two is scarcely discernible. Allamanda Hendersoni is not only a new plant, but very much superior to any other yellow-flowered Allamanda in cultivation. Compared with A. Schottii, it is more compact in habit than that kind, and much freer flowering, especially in a young state. The flowers individually are larger, of greater substance, smoother in texture, and more evenly formed. My first acquaintance with A. Hendersoni was when it was exhibited by Messrs. Arthur Henderson & Co., of Pine-apple Place, before the Floral Committee of the Royal Horticultural Society, when it received a First-class Certificate, the highest award that a new plant can obtain, Mr. Barnes, of Camberwell, being present at the meeting in question. I mention his name, because it must be admitted that there is no better judge than Mr. Barnes of the qualities of an Allamanda. His remark to me at the time was, "There's no mistake about that being a good new plant." As I am always on the look-out for novelties of first-class quality, I went over to Messrs. Arthur Henderson & Co.'s to try and purchase the stock of it; I found that they considered it a first-rate thing, and had no wish to part with it, intending to send it out themselves; however, I eventually bought the entire stock of it. I will just call attention to the fact, that the principals of this well-known firm thought it a plant worthy of naming after themselves: they sent out the best variety of A. Schottii, and must know well the qualities of the sorts in question, more particularly as they grow the different kinds of Allamanda, not merely in the form of small plants, but in the shape of fine specimens for exhibition. A. Schottii is not now introduced to the public for the first time, it is a well-known plant that has been cultivated for years past by all plant growers, but not as A. Schottii Hendersoni; the last name has been added since my introduction of the true A. Hendersoni. A gentleman (J. D. Newsome, Esq.), writing about them in your columns (see p. 925), gives a very correct description of the difference between the two sorts. Besides the authorities I have already quoted, does the opinion of Mr. Cole (see p. 900) stand for nothing? Some may ask (but not our principal plant-growers), Why his? My answer is, that he has grown Allamandas, and similar plants, as huge specimens for years in such a style as is seldom seen elsewhere in the country. What I would ask, then, is, Whose opinion can be accepted if not that of some of our most experienced men, and best plant cultivators? Referring again to Mr. Barnes, whom I met at a late meeting of the Floral Committee of the Royal Horticultural Society, in the course of conversation I remarked, "How they are trying to write down Allamanda Hendersoni!" to which he replied, "Ah! they may write; that is a plant which will hold its head up." I am sure he will forgive me for using this quotation, for his is an opinion, than which there can be none better; but putting aside opinions, the stamp of a First-class Certificate by the Floral Committee should be a sufficient guarantee of the merits of this Allamanda, for it could have scarcely received such an award undeservedly, a fact which I have no doubt will eventually be admitted by every one, for somehow or other plants which get that distinction, do, sooner or later, manage to assert their right in public estimation. *William Bull.*

White Flowers and Thornless Roses.—In certain old traditions we are told that there were more white flowers in the world when it was younger, than there are at the present day. For instance, it is stated that there were no red Roses in Eden until man sinned. Milton tells us that the Rose was without thorns in Paradise. And it is so still, if we make a distinction between prickles and thorns. But for a good Rose we must go somewhere else, for Tom Moore asks the question—

> "Who has not heard of the Vale of Cashmere,
> With its Roses the brightest that earth ever gave?"

Archæology may some day throw light on the Botany of the Antediluvian World, when once the books of Seth are discovered; for, according to old Higden, the books were inclosed within two pillars, and the pillars which were of stone, escaped the Flood.

> "That one was made of tyles hardely bake
> Fro touche of fire to score the scripture.
> Of hard made they another did make,
> Against water stoutely to endure,
> To save of letters the prynt and the figure.
> For their cunnyng afore gan so provide
> Agayne fire and water perpetually abyde."

For some time past I have met both in the garden and field with white flowers on plants that commonly produce blossoms of a colour different from white, a circumstance which has led me to wonder whether the floral world is returning to its primeval purity, or whether the symptoms of old age are showing themselves. The Marsh Speedwell (Veronica scutellata) has commonly flesh-coloured flowers, with darker bluish veins; but I have met with a patch of it this season, with white flowers. The common meadow Lady's Smock (Cardamine

pratensis) occurs in marshy places with white double flowers; and it is somewhat remarkable that the double blue Anemone hepatica will produce double blue flowers in spring, and sometimes double white blossoms in autumn. It cannot therefore be on account of the want of sunlight that white flowers are produced in autumn. I found a double-flowered Anemone nemorosa in a wild state, with flowers of a purer white than the single-flowered kind. This list might be extended, but it may be thought too trifling a subject to dwell longer upon *P. Mackenzie.*

Polygonum cordatum variegatum.—After a fair share of experience in flower gardening, I can fully endorse what "S. R. H." has said (see p. 947) as to the wisdom of using fine-foliaged plants largely in our "bedding out." And being out of the latitude where subtropicals can be risked out of doors for months at a time, a sharp look-out is kept for more hardy plants. Among the latter I know of none that excels this grace and beauty the plant named above. For several years it has been largely employed here and greatly admired. The non-gardening public generally exclaim when they first see it, "Oh! what a pretty variegated Fern." I can as strongly recommend it as I did Centaurea ragusina some years ago, after having tried it largely, and that is saying a great deal for it. *D. Thomson, Archerfield Gardens.*

Foreign Correspondence.

French Mode of Managing Columnea erythrophlæa.—This pretty little flowering stove plant should find a place in every collection. Flowering as it does at a season of the year when bloom of any kind is welcome, it becomes doubly valuable. Last spring, from the beginning of February to the middle of March my stove was, thanks to our little plant, quite a blaze of bloom. The long tubular-shaped flowers of a bright vermilion red, inserted upon a curiously-formed 5-sepaled calyx, which almost equals the blossom itself in brightness, produced in profusion the whole length of the branches, have a charming effect, which is considerably heightened by the dark green glossy foliage, showing out to perfection the brilliancy of the flowers. I remember early in spring, when Father Frost held Dame Nature in his light embrace, having decorated the table for a grand *déjeûner* with foliage and flowering plants. I had bulbs of various kinds, Cinerarias, &c.—in fact, a good display of flowers; but my grand success on that particular, and, as it happened, important occasion, was a group of Ferns and our Columnea intermingled; it was pronounced to be *charmant*; and as the company included a great many ladies (and the French ladies are, I believe, generally supposed to have good taste in such matters), I was glad to feel that the esteem which I already possessed for my little favourite was not diminished. Whether it is that its value as a flowering plant is not generally known, or whether proper attention has not been paid to its cultivation, I cannot say, but certainly a good compactly-grown plant well covered with flowers is, as far as my experience goes, a *rara avis*. The generality of the plants that one sees, with two or three long branches and several isolated flowers upon them, give but a very meagre idea of what the plant really is when well cared for. All my plants are at this moment covered with blossom; small plants in 48-sized pots have between 30 and 40 flowers on them. The treatment I pursue is this: in April I shift them, using a compost of sandy peat; a slight shift suffices, as owing to the plant being of rather a succulent character, too much pot room causes rank growth. My plants are then well pinched back and are given a warm place in the stove, for unless an impetus is given they break shyly. In July, when their growth is made, I remove them into a temperate house, where they ripen their wood. This is necessary for the formation of the flowers, as unless a check is given, they continue growing, and do not blossom. Too much heat and want of light cause the flowers to fall before they are developed; they should therefore occupy whilst in bud a light exposed place, either in a temperate house or in a cooler corner of the stove. By the month of October they will be in full bloom, and will continue in that condition during five or six weeks, thus furnishing us with gaiety during spring and autumn. When out of flower they are put back into the stove, where they blossom the ensuing spring. *J. Cordhill, jr. at Madame Chenevière's, Elbeuf, Seine Inférieure, France.*

Societies.

Royal Horticultural: *Oct.* 16 (*Scientific Meeting*).—The Rev. George Cheere in the chair. After the election of new Members and the affiliation of the Eyrewash Valley Floral and Horticultural Society, Mr. Worster (see the Rev. M. J. Berkeley) made a few remarks, chiefly relative to the variegated form of the common Jasmine, which was shown at the last Meeting by Messrs. Francis, under the supposition that it was new. On that occasion Mr. Worster stated that he had seen the same variety of Jasmine upwards of 20 years ago in the garden of the late Mr. Loudon, at Bayswater. He did not at that time know whether or not the plant now existed there; but on this occasion he was able to say that it was still there, and in confirmation of the fact produced specimens cut from it that morning, which served to prove that the variegated form of Jasmine in question is by no means new. As to its perfect hardiness he stated that some account would be found in the "Gardeners' Magazine" for 1859, p. 60. A beautifully crested and vividly-coloured form of the common Hordeum jubatum next came under notice, as did also several other plants which were exhibited; and in reference to the fruit of Passiflora quadrangularis, shown at the last Meeting, it was stated that served up in a silver tankard, with sherry wine and a little sugar, it formed a very agreeable drink.

Oct. 16 (*Floral Committee*).—From the Garden of the Society at Chiswick came a fine collection of zonal Pelargoniums, whose showy blossoms even at this season make a small greenhouse in that establishment quite brilliant. Fittonia (Eranthemum) argyroneura, with leaves beautifully veined with white, was shown by Mr. Bull, who had also one or two Pandanads, a pale yellow-flowered Gesnera called G. chromatella, one or two Orchids and other plants, among which was Tillandsia augustea, an interesting new Bromeliad, with long and shaped leaves, covered on their upper surface with short, white hairs, which have the appearance of being coated with hoar frost. For this a First-class Certificate was awarded. From Mr. William Paul came a promising bright scarlet seedling zonal Pelargonium called Ossian, which is remarkable not only for its compactness of growth, but also for the closeness of its heads of bloom. Mr. Morris, of the Waterworks, Deptford, also sent a seedling Pelargonium named Maid of Kent, bearing compact heads of bright rosy pink flowers, fine habit, however, was a little coarse. A First-class Certificate was awarded to Mr. Morgan, Torquay, for a variegated Scolopendrium vulgare, called Morganii, a beautiful crested kind in the way of Cornutii, but larger. Messrs. Veitch also received a similar award for a new Sarracenia, S. pentaptera, with red-veined pale green pitchers about 4 inches in length, spreading and horizontally from a common centre, in the form of a wheel, all over the surface of the pot in which the plant was growing. From Mr. Leach, of Clapham, came various beautiful examples of Nerine, one of the most showy of which was N. corusca major, orange scarlet, a robust growing kind. N. crispa and N. humilis, bearing flowers of different shades of pink and rose, were also present.

Oct. 16 (*Fruit Committee*).—Mr. Turner, Royal Nursery, Slough, showed most beautiful specimens of British Queen Pear, and of Cox's Orange Pippin Apple, both in their way excellent. Apples came from Mr. William Paul, Messrs. Veitch, Mr. Leslie of Margate, and Mr. Reynolds of Oxford; and from the garden of the Society came a collection of Pears. The Society also furnished examples of Mill Hill and Dutch Hamburgh Grapes. Mr. Jones, of Petworth, had some Cranberries; and Mr. Marr, gr. to R. L. Hinds, Esq., sent fruit of Passiflora laurifolia, or Water Lemon.

Notices of Books.

Catalogus Plantarum in Algeria sponte nascentium. (Catalogue of Plants growing wild in Algiers, &c.) Auctore G. Munby. London: Taylor et Francis, 1866, 8vo, pp. 42.

In the Sherardian herbarium at Oxford are now preserved some 660 plants collected in Barbary by Dr. Shaw. Great pains were evidently taken with them, as they are mounted on thick paper with ornamental borders, and each of the covers contains a gift of Desfontaines, it is said, named these specimens, an account of which is given in the reverend Doctor's "Travels in Barbary," published in 1738. Desfontaines, in his "Flora Atlantica" (3 vols. 4to), raised the number of species to 1600, and figured a considerable number. The author of the Catalogue before us, in his "Flore d'Algérie," published in 1847, enumerated 1800 species, arranged according to the Linnean system, and some of which were figured by the author's sister. In the first edition of the present Catalogue, issued at Oran in 1849, 2600 species were cited, while in the edition now before us no less than 2964 are given. These figures will give some idea of the pains and scrutiny that have been bestowed on the Flora of this district. Our present knowledge of the botany of Algiers is due in no slight degree to the exertions of Mr. Munby, who settled as a colonist in Algeria in 1838, and remained there for several years. He is the only botanist who has published a complete specific work on the Flora of this country, having had great opportunities of studying its peculiarities, and having been entrusted by the French Government with the duty of making a tour in the province of Oran, in order to investigate and develop its resources, especially as regards its capabilities for the growth of forage plants. The French naturalists also have not neglected the botanical riches of their colony, as the numerous papers of Durieu de Maisonneuve, of Cosson, and others, in the Annales des Sciences, and in the Bulletin of the Botanical Society of France, amply testify.

Algiers seems to have a closer relationship to central Spain as to its Flora than to other countries, though in the absence of a complete Flora of Spain, it is difficult to make any accurate computation. In Wilkomm and Lange's "Prodomus Flora Hispanicæ," an excellent work, which we trust will be not allowed to remain uncompleted, we find some data given respecting the number of the species of certain natural orders, but as the figures apply to the whole of the Peninsula, they cannot usefully be compared with the corresponding statistics in the case of Algiers.

In the list before us we find 2929 flowering plants enumerated, and on further counting some of the largest groups we find—

Compositæ	391, or about 13 per cent.		
Leguminosæ	342	12	,,
Gramineæ	244	8	,,
Cruciferæ	182	6	,,
Umbelliferæ	129	4	,,
Labiatæ	122	4	,,
Caryophylleæ	104	4	,,

It is interesting to compare these figures with those from other parts of Africa as given in Alph. de Candolle's "Géographie Botanique," pp. 1190, *et seq.* Thus, taking the Compositæ, we find about the same percentage in Egypt, in Abyssinia, in Natal; while at the Cape the proportion of Composites is higher (17 per cent.); but in tropical Africa, Nubia, Sierra Leone, Congo, &c., the percentage of Composites to other flowering plants is only 4. Leguminosæ on the other hand have a higher percentage (17) in tropical Africa, and a lower one in the south (7½) than in the north.

Grasses seem very unevenly distributed—12 per cent. in Egypt and Abyssinia, 8 in Congo, Sierra Leone, 10 in Natal, and 3 per cent. only at the Cape. Crucifers, Umbellifers, and Labiates again are well represented in the north, sparingly so in Abyssinia, still less abundantly in intertropical Africa; while in the south they are again found, though not so abundantly as in the north.

Of Malvaceæ, Mr. Munby enumerates 28 species in Algiers, Harvey and Sonder mention 59 in southern Africa, of which 23 are species of Hibiscus. Our own rough computations for the whole of tropical Africa give about 90 species of Mallows, 30 or 33 of which belong to Hibiscus, excluding Paritium. The Algerian Malvaceæ are almost all of the Mediterranean type, only two extend into tropical Africa, viz., Malva parviflora, L., and Hibiscus Trionum, both widely distributed plants. By the way, we are glad to see that Mr. Munby does not raise to specific rank the many varieties of Hibiscus Trionum. Of some of the near allies of the Malvaceæ, and which are well represented in tropical Africa and also in southern Africa, such as the Sterculiaceæ, Bombaceæ, and Byttneriaceæ, not a simple example occurs in the northern provinces. These few details, given by way of illustration, support the opinion expressed by our author, by Cosson, and others, that the bulk of the Algerian Flora is European or Mediterranean in type, having also special relations with the Flora of Central Spain.

Looking at the Flora of Algiers in a commercial aspect, there is great reason to regret the destruction by fire by the Arabs, of so much of the forests. Even now, with all the vigilance that the French authorities exercise, fires break out, and in 1865 a fire occurred which destroyed valuable trees over a space of 400,000 acres. Cork trees, the Atlas Cedars, and two or three kinds of Pine are found in these forests, but which are for the most part so inaccessible as to be of little advantage to the colonists, though turpentine and other resinous products do find their way to the coast in small quantities.

The Algerian Thuja (Callitris quadrivalvis) furnishes, as is well known, a very beautiful wood for cabinet-work, which was appreciated by the Romans, as Cicero is said to have had a table of this wood, worth about 9000*l.* of our money, and Horace proposed to enshrine a bust of Venus in a temple of the same material. In our times the wood has served to deck the boudoir of the Empress Eugénie, but it is for the most part used for small articles, dressing cases, boxes, &c. The choicest samples are derived from the roots or knaurs, but these are too often burnt as firewood by the Kabyles.

To revert to the Catalogue before us, we need not direct the attention of botanists to it, but to those less familiar with the literature of the subject, to visitors or residents in Algiers, this list will be found valuable for its completeness, its accuracy, its mention of localities of the rarer plants, and its indication of the comparative rarity or abundance of the indigenous plants.

Catalogues Received.—The following trade lists of various kinds now lying before us may be advantageously consulted by those who are seeking the class of information they contain:—*W. Rollisson & Sons'* (Tooting) *Catalogue of Hyacinths*, &c., including Vines, Roses, &c.; *W. Wood & Son's* (Maresfield) *Dutch Flower Roots*; also *General Catalogue of Ornamental Trees and Shrubs*, and *Descriptive Catalogue of Roses*; *E. G. Henderson & Son's Catalogue of Bulbs*, with cultural remarks; *W. Hooper's* (Wandsworth) *List of Hyacinths, Tulips, &c.*; *Edmondson Brothers'* (Dublin) *Catalogue of Hyacinths, &c.*; *J. Carter & Co.'s* (Holborn) *Vade Mecum: Part IV. Dutch and Cape Bulbs*, containing essays on bulb culture; *G. Jackman & Son's* (Woking) *Wholesale Catalogue of Plants*, devoted to fruit trees and ornamental trees and shrubs; *C. Turner's* (Slough) *Catalogue of Roses, Fruit Trees*, &c., containing the Pitmaston Duchesse d'Angoulême, a new Pear described in our former volumes; also *Select List of Pelargoniums*; *T. Warner's* (Leicester) *Catalogue of Fruit Trees, Roses*, &c., a descriptive list; and *Trade List* of the same; *J. Jefferies & Son's* (Cirencester) *Catalogue of Nursery Stock*, comprising ornamental and forest trees and shrubs, fruit trees, &c.; *B. Witham's* (Stockport) *Catalogue of Forest, Fruit, and Ornamental Trees*; *W. Paul's* (Waltham Cross) *Rose Catalogue*; also *Hardy Pictorial Trees*, a very interesting list; *New Hybrid Noisettes and Zonal Pelargoniums*; and *Special Catalogue of Trees and Shrubs*; *Paul & Son's* (Cheshunt) *Rose Catalogue*.

Florists' Flowers.

What are Florists' Flowers?—As a complete definition of this question has not yet been given, I propose the following:—

Florists' flowers are those, which by means of seeds, sports, and hybridisation, have attained the rank of collection flowers. They are flowers which are the produce of the industry of florists, and of which special collections exist or can be made. It is quite indifferent whether they are shrubby or not, or whether they are greenhouse, stove, border, or frame plants. For example, the following are all florists' flowers, namely, Azalea, Achimenes, Amaryllis, Aster, Auricula, Begonia, Chrysanthemum, Camellia, Dianthus, Dahlia, Fuchsia, Gloxinia, Gladiolus, Hyacinth, Pansy, Phlox, Pelargonium, Rhododendron, Rose, Tulip, Verbena, and others.

If my definition is thought worth notice, it will give me much pleasure to find it occupy a place in your valued paper. *G. W. F. H., Haarlem, Oct.* 12.

The Apiary.

Mead or Metheglin.—In resuming this subject, I do not profess to give the recipes of all the authors of bee-books who have written respecting it. In the second edition of Wildman's "Treatise on the Management of Bees," published 1770, I find a short chapter on mead-making, from which the following extracts are taken:—

"All the writers who have hitherto treated on this subject have fallen into a capital error with regard to the strength of this liquor, by directing too great a proportion of honey to be dissolved in the water. The

usual practice of making it so strong as to bear an egg, is very wrong. The liquid is thereby rendered a mere stum, and this bad quality is still increased by the long boiling generally practised."

He seems to think that the only reason why the liquor should be boiled, is to remove the impurities, "bee bread, wax, or other substance, which cannot be perfectly separated from it without being subjected to this treatment. But he directs that the boiling should be of very short duration, and that the object may be more easily and perfectly attained by the addition of the whites of some eggs, mixed previously. "The longer the boiling has been continued, the less will the liquor be disposed to ferment kindly. It is perhaps owing to our too long boiling only, that mead, highly esteemed by most of the northern nations, has long lain under discredit in this country, a discredit from which it might probably be retrieved, if due care were taken to prepare it rightly." The effect of too long boiling is to prevent sufficient fermentation taking place, so as to remove the too luscious sweetness. If properly fermented the mead will "acquire a fine racy flavour." Wildman does not give any definite directions as to the process to be carried out, but says, that "some notable housewives have added Hops to their mead. This helps to take off its sweetness, and as the bitterness of the Hop goes off gives it a pleasant flavour." When fermented the liquor "is racked, fined, &c., in the same manner as other white wine."

Keys, who published a most useful work on the Management of Bees, in an addition published in 1814, has a long chapter on the subject of Mead. His directions are—"To every gallon of water add three pounds and a half of honey. Boil it as long as any scum arises, which skim off. If it boils longer the fermentation will not succeed so well, nor will the liquor prove so fine. Pour it into a cooler; at a proper degree of heat, put in a piece of bread toasted hard on both sides, covered with fresh yeast, and with it a little Lemon-peel, or any other pleasant-tasted substance, set it in a warm place, and cover it from the cold air. When it has fermented two or three days, tun it up and slightly cover the bunghole; taste it every day, till it is found to have a vinous taste and smell. Bung it slightly; and when it appears to have entirely done fermenting, stop it quite down."

If fine, it may be bottled in six months; if otherwise, draw it off the lees, drain them out without rinsing the cask, and return the liquor into it. Then take a long 2-ounce phial, put therein a quarter part of chalk in small bits, and to it a quarter of water; then tying round the neck a piece of thread, let it down into the cask till its top is on a level with the bunghole; then pour in about a quarter part of the measure of the phial of weak spirit of vitriol, and instantly let it down far enough for the bung to go in; but not so low as for any of the liquor to pass into the phial." "The fixed air generated from the phial will gradually pass into the liquor, and not only fine, but tend greatly to preserve it from acidity, and gives it the sparkling quality of champagne, taking off the disagreeable lusciousness so common in mead." It will be fit to bottle off from four to six months after the foregoing manipulation.

"Mead may be flavoured by Raspberries, Currants, &c., by a proper quantity of such articles that have been preserved with honey or sugar being infused into the liquor when set to ferment.

"The juice of Elderberries will communicate a fine claret colour and taste. An agreeable roughness may be also given by the juice of ripe Sloes." *Hydromel.*

UNITING STOCKS.—I have a Woodbury hive, containing a strong stock of bees, provided with at least 30 lb. of honey, and a common straw shilling hive, containing a rather weak stock, with about 7 or 8 lb., not sufficient of course to last them through the winter. I wish to reduce my number of stocks by driving the bees from the common hive into the Woodbury, which contains sufficient honey for both. Please answer the following questions:—1, Is it advisable to drive the bees as I propose? 2, What is the best way of doing it, taking into consideration the different shapes of the two hives? 3, What will be the probable result? *G.*

[If you desire to reduce the number of your stocks, it would be advisable to unite the bees of the weaker one to those in the Woodbury hive. There is no certain method of effecting compulsory unions so as at all times to ensure perfect freedom from fighting. The most successful plan we are acquainted with is to drive out the bees of both stocks.

If the preservation of one particular queen is desired, of course the other must be captured prior to uniting the bees; if not, the queens themselves, or the bees, will settle the matter of the sovereignty between them. Choose a warm day; first drive out the bees from the straw-hive into an empty one; then remove the top board of the frame-hive, place the common hive with the just driven bees above the frame, and drum away till all the bees have ascended. Or you may reverse the order of proceedings, and drive the box-hive first. If you are well protected you need not use any precaution in the way of preventing the bees escaping while performing the operation. A few puffs of smoke may be used with good effect prior to quite removing the cover.

By driving the bees together into the same receptacle there is little probability of much fighting taken place. After a short time, the united bees may be knocked out on the tops of the frames, when they will very quickly disappear among the combs. The top board may be gradually slid on from one of the sides, which will help to hasten the ingress of the stragglers. Remove all traces of the broken up stock and its stand. At this time of the year there is a great disposition among bees to rob, therefore get through the affair as quickly and quietly as possible; and if sufficiently fine and warm, the afternoon would be the best time of the day.

The probable result will be a more prosperous colony to commence the following season; earlier and more abundant breeding; and superior capability of taking advantage of the early honey harvest.]

Garden Memoranda.

MR. RIVERS' NURSERIES, SAWBRIDGEWORTH (*continued from p.* 975).—The roof sashes of all Mr. Rivers' houses are fixtures. This fact is the chief novelty in his mode of ventilation. The next is that the air is admitted near the base of the house; and the last, that it must make its escape at each end in the centre of the span over the doors. This arrangement secures a rapid circulation, and a constant change of air. In walking through the houses you are met with, or urged along by, a stiff breeze. In fact, in almost every house you necessarily find both, for from the centre the currents flow in opposite directions. The rapidity of the circulation insures thoroughness of ventilation, and the arrangement of fixed lights saves the expense of ventilating machinery for the roof, and all the wear and tear of moving roof sashes. The movable side lights or shutters vary in size with the size of the houses themselves, as recently explained in the *Chronicle* by Mr. Rivers. I have already stated about the gross quantity of glass at Sawbridgeworth; let me now note the number, sizes, and character of most of the glass structures, and the purposes for which they are used.

The first I entered were three noble span-roofed houses, 100 feet long, 24 feet wide, 12 feet high in the centre, and 5½ at the sides; ventilator lights or shutters on each side 18 inches deep, and a triangular opening of about 9 inches in the centre of the span. Next I passed through 15 span-roofed houses, varying in length from 60 to 95 feet each, and from 14 to 20 feet wide; the ventilators to 20-feet houses being 15 inches, to 14-feet houses 12 inches deep. Then followed about 16 lean-to houses, varying from 60 to 70 feet long by 12 wide, ventilated by sliding shutters in front and back walls 3 feet long and 1 foot wide, the front shutters being placed near to the ground, and the back ones right under the top-lights, to let the hot air pass freely out. Next, the hedge houses were visited. It seems these were not, as is generally supposed, the parents of what may justly be termed the more perfect orchard houses, but were an afterthought, and were adopted as a means of prolonging the fruiting season a fortnight or a month beyond the time of ripening on walls or in orchard houses of a closer character. There are six or eight of these houses; they consist of a glass roof merely, the back and front walls being formed of a Beech hedge, from 6 inches to a foot thick. Of course this ensures constant and sufficient ventilation. Four of the hedge houses are lean-tos, about 9 feet high at back and 4 in front; and there are also some span-roofed hedge houses. Yew or Arbor-vitæ hedges are also good for such purposes, as they bear the drip of the roofs well.

The finest orchard house at Sawbridgeworth, or any where else, remains to be noticed. It is 430 feet long, 14 wide, 10 high at back, and 5 in front, and is thus formed:—Hollow iron sockets, 5 inches by 4 inches, and 2 feet long, formed with a base about 10 inches by 8, are placed in the ground 1½ feet deep, at intervals of 6 feet. Into these the rafters that form the basis of the front and support the roof are placed, an elbow of the wood being left projecting over the iron socket. Thus, a solid, cheap, and safe foundation is secured. These iron rests or sockets only costing about 4*s.* each. One great merit of this mode of building is, that such houses are not fixtures. They are, therefore, worthy of the serious attention of all who have occasion to erect sheds, workshops, stables, or any kind of structure upon the property of others; these sockets would also form excellent foundations for metallic glass-houses, such as Beard's. The back wall of this house is formed of ¾-inch board painted white. The front at present is merely five or six thicknesses of netting. Ultimately it is to be filled in with a mixture of glass and wire netting, in such proportions as to give the requisite amount of air at all times without any movable ventilators. The roof rafters are 4½ inches by 1½ inch, and 2 feet apart; the glass used 21 oz. to the foot, which is considered the best weight for all horticultural purposes. The back wall of this magnificent house is devoted to the training of diagonal and standard Peaches, Nectarines, Apricots, &c., and the roomy floor to the same varieties in pots. Thus any one who wishes for the most perfectly ripened and consequently fruitful trained trees for walls may secure them from this house at a slight additional cost. Nothing could look better than these trees. About a dozen houses are devoted to the growth of Grape Vines in the usual form of rods, and the more uncommon one of bushes. The quantity of Grapes yielded by bush Vines is astonishing, and they have a novel appearance. Most of the other houses are occupied with Peaches, Nectarines, Apricots, Figs, Plums, or Cherries, some planted out, but mostly in pots. It is impossible by any description to convey an idea of their numbers, health, and fertility. They must be seen to be appreciated. This will be at once obvious when it is stated that over 20,000 fruit trees are growing in pots in these houses. Here they are to be found in all forms and sizes, from pyramids of surprising size, symmetry, and beauty, through every variety of tall, medium, and dwarf standards, down to cordons, knotted all over with fruit, a foot or more in height. There is a house 100 feet long, filled with pyramidal Apricots closely pinched in, which have just parted with their golden offering; then another of the same height full of standard Peaches and Nectarines, studded all over with their luscious burdens.

Again, we enter a house devoted to Figs; the next moment we are pushing through some thousands of Orange trees in a very long hothouse specially devoted to them. Presently we are engaged, knife in hand, tasting scores of seedling Peaches and Nectarines; the next moment we enter an iron Vineyard, 20 feet long, 14 feet wide, and 10 feet high, filled with Vines, trained up to stakes like Raspberry canes on the French method. There are three rows of Vines on each side of the centre walk of this house, 8 feet apart. Leaving this little iron house, we are peering under 200 feet of ground Vineries, in lengths of from 7 to 10 feet, at a Vine of Trentham Black, 45 feet long, with 70 fine bunches of Grapes. Others were almost as good. Another 80 feet of these Vineries, which are about 3 feet wide at the base, and generally about the same height, in lengths of 7 feet, was devoted to a double cordon of Peaches, Nectarines, and Apricots, trained on a wire, about 9 inches from the ground. The fruit was fine, and the young trees promising remarkably well. About 100 feet more of ground Vinery was perfecting some very fine cordon-trained Pears in the same manner, under a wall. Nothing can exceed in fruitfulness, nor perhaps in beauty, this mode of training.

Peaches, Plums, Apricots, Apples, Pears, Vines, and indeed all trees can be grown and fruited well in this form—becoming literally ropes, knotted from top to bottom with luscious fruit. The ropes of trees can also be fixed in any form, at any curve or angle, on walls, to stakes or wires, or laid on the top of bricks, tiles, or shingle, or on the ground, or at a distance of say 1 foot or 18 inches from it. This is a favourite mode with Mr. Rivers, and in this way all the walks and quarters of a kitchen garden could be edged with highly ornamental living cords of fruit. Another plan that struck me on the spot is this: Plant the cordon trees, say 3 or 4 feet apart, on walls, and train two sets of them in opposite directions, diamond fashion. This would be quite a refreshing change in the form of fruit trees, and would give a new charm to many a garden. Any kind of curve, angle, or square, might also be described; and geometry, as a science, be illustrated on our walls as well as in our flower gardens. With taste and careful painstaking even a theory of colour grouping might be exhibited on our walls with our fruit, rivalling in beauty the combinations formed with our flowers. But enough to show my enthusiasm for cordons and in fact the capabilities of this method of training are illimitable. All that is necessary to ensure the desired number of the right sort of knots on these cords, is the mode of incessant summer pinching with which Mr. Rivers has made us all familiar. Whenever the cord is prevented from extending, it has its revenge by twisting itself into a series of minute convolutions, which are simply buds, or rather fruit in swaddling bands. One great advantage of cordon training, especially for Apricots, which have such a tendency to die off suddenly, is the multiplication of independent trees. Where any tree is confined to a branch the loss of one would be but a trifling calamity, and the blank could readily be refilled. It is very different with large wall trees; and it is seldom that the whole wall of any large garden remains always covered. Cordon training would furnish it much quicker, and with, I believe, just as much again fruit of a better quality. Let every one, then, who has a blank space fill it with cordons. Let edgings be formed, fruit-tree borders wired and covered, and ground Vineries and orchard houses filled with them, until the tables of all are plentifully furnished with the finest fruit, and the denizens of both kitchen and parlour cry out, "Hold! it is more than enough." But even then the mission of cordons would be far from complete. Every cottage garden must be stocked, every cottage child comforted, with cordons. Our mechanics and mill hands and shopmen should grow them in their windows and in their yards; they must go into the dens of crime and the garrets of poverty, softening the one and cheering the other, and bettering and instructing all by their transformation of the filth and impurities of both into the most luscious and beautiful fruit. Every one who can command a yard of space and a gallon of earth can command a cordon, and may grow one or more of these cordon trees, and, moreover, ought to do it. *D. T. F.*

(*To be Continued.*)

Miscellaneous.

The Azores Islands.—The following interesting remarks are extracted from Consul Vine's report on these islands. "They are," he says, "altogether nine in number, divisible into three groups or sections, the whole occupying an area of 263 square leagues. St. Michael's is the most populous of the islands. It comprises an area of 66 square leagues, being 17 leagues in length, and from 2 to 7 leagues in width. It supports 122,000 souls, and contains an aggregate population of 115,000 souls, and contains six towns, of which Ponta Delgada, with a population of 42,000 souls, is the principal, and forms the chief shipping port and seat of commerce and government. With the exception of St. Michael's, Terceira, and Fayal (and occasionally St. George's), these islands cannot be said to be engaged in foreign commerce, being rarely visited by foreign-bound shipping, except for fresh provisions, either in case of emergency or in the leisurely career of some whaler proceeding from north to south, or *vice versâ*. Since the origin of the fruit trade (about a century ago), St. Michael's, Terceira, and Fayal had gradually asserted a supremacy for their produce in the British and North European marts, and until lately controlled the market. During the infancy of their colonial and mercantile existence (say in the first part of the century), the Azores had yielded chiefly dye and cabinet woods, besides a small proportion of agricultural produce for exportation. Favour-

able to the cultivation of Flax they afterwards became the seat of some of that rude and primitive linen manufacture which is still to be met with in Portugal and its dependencies, and furnished nearly 100,000 yards of this fabric annually for the export trade, chiefly to Brazil. With the advance of manufactures in England, the Netherlands, Germany, and France, this trade nearly died out and gave place to that in grain which formed the great feature of Azorian export trade in the middle of the last century, whilst the commerce in dye-woods was extinguished by the ascendancy of Indian indigo. It was at this period that the first shipments of fruit took place, and as the Azorians came to be rapidly outstripped in the cereal trade by the greater energy of production in other countries, they sought and secured a sort of compensation in their then undisputed advantages for the supply of Oranges and Lemons. In this branch of commerce, again, in consequence of a kind of constitutional inertness, aggravated in its results by the oppressive effect of the destructive Orange tree plagues which have ravaged these islands of late years, as well as by the comparative isolation in which they have hitherto stood, they are being rapidly supplanted by Spain, where the development of railways has become conveniently favourable to a branch of commerce, to which rapidity of transit is essential, and where the prospects of cultivation are as good. Thus it is that whilst the production of Oranges in the Azores has been grievously prejudiced by the visitation of the Coccus hesperidum, and the Lagrima, and whilst some portion of the actual harvest has been detained to rot in the store houses, or at sea during unprecedentedly tempestuous season (in the course of which vessels have been unable to load in, or even to hold on in the roadstead of Ponta Delgada, whilst some have been 30 days instead of nine days, in reaching England when laden), the people of Southern Spain have been rapidly pouring their produce into the British markets, and thus at once testing their advantages and asserting their successful rivalry. Another branch of agricultural industry, namely, the production of wine, which was one of the traditional resources of Azorians, has meanwhile also become extinct under the destructive influence of the Oidium; and although the nurture of the silk-worm would seem to be one of the most appropriate and promising of enterprises, to fill up the void created by these reiterated calamities; and, albeit, an enlightened provincial administration does not fail to caution the people that they cast about in time for new sources of wealth, the opportunity for developing the production of silk does not seem to have made the impression that might have been anticipated, whereas the obvious fitness of the climate and soil for the cultivation of the Holcus saccharatus (with its incidental results of fine dye, and cheap distillation, and food for superior breeds of cattle, and draft or pack animals, now in such increasing demand everywhere) does not appear to have occurred to anyone. The Oidium broke out in these islands coevally with its ravages on the continent of Europe, that is notably in 1854. Formerly the wine production of St. Michael's amounted to about 20,000 pipes a year, which quantity was chiefly consumed on the island, whilst the more delicate wines of Fayal and Pico found their way to America, England, and Russia. And as the wine plague has gradually moderated during the last two or three seasons, strong hopes are entertained of an ultimately perfect recovery of the Vines. In so far as cereals are concerned, although it should be accepted as a rule that the Azores can amply supply the wants of their inhabitants, it is obvious that they should not, henceforward, look to the exportation of grain as a staple resource for external commerce. There has, indeed, been the brief exceptional period of 1859, when these islands had actually to derive their staple food from abroad, owing to the destruction of their own grain by the tempest in 1857. Latterly, however, the supply has recovered its equilibrium, and the cost of sustenance has not been oppressive or even unusual."

Calendar of Operations.

(For the ensuing week.)

THE heavy rains which we have experienced have had the effect of thoroughly softening the ground to a considerable depth, a circumstance which will enable all operations in the way of planting to be pushed forward under advantageous circumstances. Root pruning may also soon be proceeded with. The principle upon which it rests, diminishing the supplies, is unquestionably correct, but the manner of applying it is in some instances as unscientific as pruning Gooseberry trees with hedge-shears. A trench is commonly dug out within a short distance from the stem and the whole of the roots—good, bad, and indifferent —are cut off without distinction: the effects of this rude mutilation are often very unsatisfactory. The same principle, however, carried out in a more efficient way, is productive of the very best results. In the case of wall trees, taking up and replanting generally gives them sufficient check. The strong downward-growing and ill-placed roots can then be removed in proportion to the vigour of the trees, while those retained can be spread out in a proper position, that is, nearly horizontal. By this method (which also affords greater facilities for trenching, raising, or draining the border) a tree suffers less, and is yet sufficiently checked to alter its habit; the roots being likewise brought to the surface and properly spread out, are less liable to penetrate too deeply in the ground, which always tends to promote luxuriant growth and consequent barrenness. Old wall trees which, from their size, it is impracticable to transplant, we would root-prune; not, however, in the way alluded to above, but by undermining the roots and cutting off the lower and stronger ones only.

FLOWER GARDEN AND PLANT HOUSES.

While the weather is favourable keep all neat and clean both in-doors and out; push forward bulb planting.

CLIMBERS.—Particular attention should be paid to securing as much light as possible in all structures containing plants; and where the rafters or roofs are used as trellises for climbers, the latter should be reduced within convenient bounds, as the growth of nearly all is or ought now to be completed. Late autumn-flowering sorts as yet unpruned, such as Mandevillas and Ipomœas, will now be sufficiently ripened for the purpose, but little more should be done after removing the changed leaves than to prune the weakest shoots; their final pruning should be deferred till March or April. If larger and stronger shoots are cut now, they are apt to commence growing, in spite of the moderate temperature, and thus expend the strength which ought to be reserved till spring. The shoots of Maurandyas should be considerably reduced in bulk, as they are affected by the slightest damp during winter. If any of the late-growing Passion-flowers or other creepers impede the ingress of light, they should be reduced; deferring, however, their final pruning until they are about to commence their new growth in spring.

PELARGONIUMS.—Give air whenever the weather will admit of it; but avoid cold draughts, and keep out frost. On the other hand, be careful not to use too much fire-heat. Training and shifting must now or soon receive attention.

FORCING GARDEN.

CUCUMBERS.—A temperature of about 70° should still be maintained. This will allow of a little air being given on comparatively cool and dull days. Stop progressing shoots, and pinch off tendrils.

PEACHES AND NECTARINES. — Cover the outside border of the early house with leaves or litter, for the purpose of excluding frost. Tie in the trees, and get all ready for starting when required.

PINES.—Where the plants likely to fruit without making further growth are considered insufficient to meet the demand until next autumn, the stronger plants of those for late fruiting should be encouraged to make growth as early as can be done without weakening the foliage, with the view of preparing them for starting in April.

VINES.—Houses which it is intended to commence forcing next month, should, if not already done, now have some fermenting materials placed on the borders so as to encourage the roots a little before the Vines are excited. This will be of service towards getting the buds to push strongly and without loss of time.

HARDY FRUIT AND KITCHEN GARDEN.

Storing fruit and root crops, and clearing up for winter, will now be the chief work to be done here. All alterations required should also be proceeded with without delay while the weather is favourable.

CELERY AND ENDIVE.—Earth up the former, and tie up the latter on dry days.

PEAS.—It is a common custom to sow Peas on a warm south border; but they are subject to so many casualties during winter, that it is much more economical to wait till spring, sow in boxes under glass, and transplant when cold weather is over. Those, however, who have not the necessary means to follow this method, may sow soon in the open ground. Spring sowings under the same circumstances will, however, come in very little later if any than those sown at this season.

WALL TREES.—Where new borders are required for these, they should now be pushed forward with expedition. Where the subsoil is cold and wet it ought to be thoroughly drained, and some means should be used to prevent the roots from going too deep.

WINTER GREENS. — Destroy weeds, which are abundant this season, among these, and stir the ground or earth up as may be deemed necessary.

STATE OF THE WEATHER AT CHISWICK, NEAR LONDON, For the Week ending Oct. 17, 1866, as observed at the Horticultural Gardens.

October	Moon's Age.	Barometer.		Temperature.					Wind	Rain
				Of the Air.			Of the Earth			
		Max.	Min.	Max.	Min	Mean	1 foot deep	2 feet deep		
Thurs. 11	3	30.092	29.987	59	34	46.5	58	58	E	00
Friday 12	4	29.977	29.892	49	29	39.0	58	57	E	00
Satur 13	5	30.112	29.961	49	29	39.0	56	56	W	00
Sunday 14	6	30.112	29.861	56	27	41.5	55½	55	N.E	00
Mon. 15	7	30.128	30.000	58	27	42.5	55	55	W	00
Tues. 16	8	30.130	30.000	53	26	39.5	54½	54½	N.E	00
Wed. 17	9	30.046	29.890	57	41	49.0	55	54	S.E.	14
Average		30.042	29.898	56.2	32.0	44.1	55.5	55.5		20

Oct. 11—Fine but cold: dry cold haze: fine: cold.
" 12—Cold with fine crystals: fine below freezing at night
" 13—Hazy: fine: frosty at night: fog at night
" 14—Slight fog: overcast: frost at night
" 15—Fair throughout: overcast: frosty at night
" 16—Cloudy: fair: rain at night: fine throughout
" 17—Very hazy: cold: overcast: fine: rain at night

Mean temperature of the week, 0.4 of an inch below the average.

STATE OF THE WEATHER AT CHISWICK,
During the last 80 years for the ensuing Week, ending Oct. 27, 1866

October	Average Temperature		Mean Temperature	No. of Years on which Rain fell	Greatest Quantity of Rain.	Prevailing Winds.						
	Average Highest	Average Lowest				N.	N.E.	E.	S.E.	S.	S.W.	W.
Sunday 21	58.2	39.9	49.0	18	0.64 in.	3	7	5	4	3	8	3
Mon. 22	58.9	42.9	50.9	23	0.98	2	2	4	1	11	11	5
Tues. 23	58.2	39.8	49.0	21	0.56	3	3	1	3	4	13	3
Wed. 24	56.1	39.4	47.7	18	0.88	1	4	4		6	12	2
Thurs. 25	58.3	38.5	48.4	19	0.80	4	6	7	3	4	7	6
Friday 26	58.0	36.8	47.4	17	0.72	8	7	3	2	7	8	3
Satur 27	57.1	39.0	47.8	25	0.92	2	7	3	1	7	8	7

The highest temperature during the above period occurred on the 24th, 1865—therm 69 deg., and the lowest on the 23d, 1859 - therm 17 deg

Notices to Correspondents.

ASPARAGUS : *J S.* A noble specimen of a twisted and fasciated stem. Can you give us any further information respecting it?

APPLE, PEERS, OR DRY CHALKY SOIL. *Shepherd of Bishop Places.* You state that notwithstanding the unusual amount of wet which we have experienced, the soil, on the 19th of September, a foot below the surface, was dust. Also that on trustworthy authority you have been informed Apple trees will not grow where their roots get into the chalk, which is the subsoil of your part of the country, where the soil varies in depth from 18 inches to 3 feet, and you mention, moreover, that the chalk is so solid that it appears impenetrable to the roots of trees. Where else where, let us inquire, could we find more favourable conditions for a 'fine border?' Probably not even in the department of Troyes, in France, nor in that part of it where the district of Champagne itself is situated; and yet with you it seems Apple trees will not thrive. The evil must therefore be attributed to something else than chalk, since chalk abounds in Kent, which is celebrated for its fine Apples and other fruits. There may be a superabundance of iron in your soil. It does crop out in some parts of the Wiltshire strata. Where much of it exists, we know that neither Apples nor Pears will thrive—not at least till it is much trenched rather deeply, and to expose the iron so as to induce its thorough oxidisation. This you could do with every probability of beneficial results. By deep trenching, moisture will also be absorbed by the mass of loosened soil sufficient to support the tree during a moderately dry season, though not a very good Apple should succeed; but in preference the Nonpareils and those with small foliage are to be recommended. For a kitchen Apple the Waltham Abbey Seedling has the smallest foliage in proportion to the size of the fruit of any variety perhaps known. You could also try it. Of the small-fruited varieties, such as the Hawthornden, are apt to overdrain themselves in consequence of the large surface which their leaves present for evaporation, and this is often more than their roots can supply from a subsoil naturally much drained or naturally very dry; still evaporation will go on whilst there is any dryness in the air, and until the fluids in the sap vessels are exhausted; then the tree suffers, and, unlike a "tree planted by a river," it cankers and ultimately dies. This may be the case solely from lack of moisture, although the soil may be naturally good, and in consequence the only preventive of the evil in question. To supply it artificially in sufficient quantity is a serious task. In many cases, however, it might be easily and well supplied by means of a gathering ground made to slope towards the roots of the trees on the principle upon which Spaniards most abound, and that is nearer their extremities than the stem. For instance, if a row of Apple or other trees be planted by the side of a border sloping towards them, and on the other side a walk from which the water passes off readily towards them, the roots of the trees on that side will grow vigorously, whilst those on level ground on a porous subsoil will be losing their leaves in a very dry season, and hence such vigorous, amply foliaged sorts as the Ribston Pippin receive the character of being worn out and subject to canker, whereas if properly supplied with moisture they might long be seen in the vigour of youth, even on Salisbury Plain.]

GLADIOLI: *Messrs. Youell & Co.* None of the seedlings sen are equal to some possessing similar colours already in cultivation. The best among them are International, showy rosy salmon; The Queen, rosy salmon, with white under petals also tipped with salmon; Gem of Yarmouth, in the same way, but larger and more striking; Lord Downshire, crimson scarlet, bright and good; Florence Nightingale, large and showy, but somewhat rough; and Magnificent, crimson scarlet with white throat, principally on account of the contrast made by the two colours just named, but too small to be very effective

HOLLIES: *Very Old Subscriber.* This is not a good time to head down your large straggling trees. It will be better done next April. You can cut them close to the lower branches mentioned, if it is desired to do so. Some pains must be taken to form a tree out of the young shoots.

LIME WATER: *J. N. B.* The proportion used is not material, as the liquid must be used in a clear state, and any excess of lime remains undissolved. From half a pint to a pint mixed up in a gallon of water, and allowed to stand till quite clear before using, will yield a liquid of sufficient strength for your purpose. In larger quantities a gallon of lime to twenty gallons of water may be used.

NAMES OF FRUITS: *Geo.* The names of your Apples are (large) Warner's King, (small) Newtown Pippin. The Pear is Uvedale's St. Germain.—*Anon.* Your Apples are—1, Blenheim Orange; 2, Emperor Alexander; 3, Flanders Pippin; 4, Dumelow's Seedling; 5, Hollow Crab Apple; 6, not known; 7, Hormead's Pearmain; 8, Sheppard's Fame; 9, not known; 10, King of the Pippins.—*T M W.* 1, Brabant Bellefleur; 2, Margil; 4, Piles Russet; 5, not known; 7, Pear supposed to be Beurré d'Amanlis.

NAMES OF PLANTS: *C.* Lunaria biennis.—*J Bunt.* Lastrea Shepherdi.—*James Kitley.* Colletia horrida.—*H J., Bothey.* Juglans cinerea.—*J V.* Sarracenia psittacina.—*J Cronswick.* 1, Crataegus coccinea; 2, Pyrus Aria.—*Erica vagans.* 1, Calluna vulgaris; 2, a tomentose variety of the same; 3, Erica ciliata.

PEACH TREES: *Old Correspondent.* No. The circumstances of different cases are often very different. In a wet season like the present, it would be preferable to rest the trees by giving all the possible ventilation day and night, and keeping their roots dry, rather than by removing the roof sashes, and running the risk of saturated borders. In a dry season it would be the reverse. In general, we may observe that the best fruit houses are now found to be those with fixed roofs, it is evident that the kind of exposure you contemplate would be an unnecessary waste of labour. Dryness induces rest quite as certainly as exposure, but the after-treatment will, of course, be somewhat different.

PELARGONIUMS: *Ignoramus.* Supposing there to be, as you say, "abundance of struck stuff," it is unnecessary to save the old large-headed plants you name unless they are of particular sorts, or are wanted next year for a special purpose. If they are for any real service, indeed, they should *not* be "headed close down" now, as from their succulent character it would render them more than ordinarily liable to rot. Such pruning would be all very well in summer, or if they were to be put into heat and started into new growth, but this is not usually done with such plants as you refer to. They should be kept nearly dry, which will cause them to shed their leaves, when they may be placed till spring on any out-of-the-way shelf or dry frost-proof situation, such as a cellar or closet. When started in spring cut them back as much as may be required.

TRICHOMANES: *Subscriber.* The young fronds probably die off, because the moisture of the atmosphere is excessive. Ventilate moderately.

WELLINGTONIA: *G. H,* as you say, there are a good many young roots from other points, you may probably cut away the worst of the gnarled and twisted roots without injury, but you can best judge as to the quantity that can be spared. It may be advisable to afford some protection to the top. The experiment is worth trying, as from your description the plant must ultimately die if left untouched.

COMMUNICATIONS RECEIVED.—J. C. N.—J. H. B.—A Member of the Committee G. R. B. I.—H. M.—W. D.—S. C.

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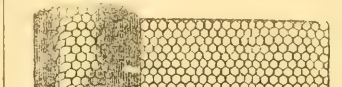
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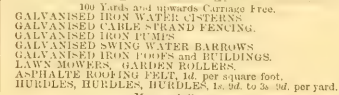
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		s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
1in.		0 2½	0 3½	0 3½	0 4½	0 4½	0 5½	0 5½	0 6½
2¼	Dogs or Poultry	0 2½	0 3½	0 3½	0 4½	0 4½	0 5½	0 5½	0 6½
2	Poultry	0 3½	0 3½	0 4½	0 4½	0 5½	0 5½	0 6½	0 7
1¾	Small Rabbits, Hares, &c.	0 3½	0 4½	0 4½	0 5½	0 5½	0 6½	0 7	0 8
1½	Smallest Rabbits	0 4½	0 5½	0 5½	0 6½	0 6½	0 8	0 8	0 10
1	Pheasantries, Small Birds, &c.	0 8	0 10	0 9½	1 0½	1 1½	1 4	1 7	1 10
½	Aviaries, Window Guards, &c.	0 11	1 1½	1 1½	1 4	1 4	1 7	..	..
¾	Aviaries, Window Guards, &c.	1 7	1 10	1 10	2 0	2 0	2 3	2 3	2 6
½	Aviaries, &c.	2 3	2 6	2 6	2 8	..	..	..	..

Quantities of 100 Yards or upwards delivered free at all Railway Stations and Shipping Ports in England.
*** Every description of Netting warranted to give satisfaction, and if not approved will be exchanged, or may be returned unconditionally.
J. B. BROWN & CO.—Offices, 90 (late 78), Cannon Street, London, E.C.
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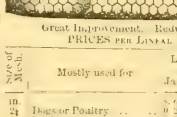
SWING WATER BARROW.—This is the best and cheapest article yet introduced for use in Gardens, Farm Yards, &c. The Water may be dipped out, or the Tub tilted and poured out, or by merely raising the Handle it can be placed on the ground, and the Frame detached. To hold about 20 or 30 gallons, price 42*s.* Carriage paid to any station on Great Eastern Line.

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IMPROVED WATER and LIQUID MANURE CARTS.
Catalogues on application.
Manufactured by W. S. BOULTON, Rose Lane Iron Works, Norwich.

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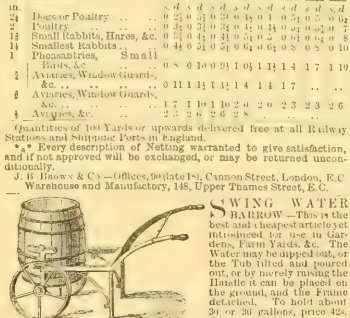

THEIR ADVANTAGES are—Portability, not FIXTURES, removable at pleasure, to Weedwood or Pathless to impede Vertilation or breed Vermin, Hay Rack dispensed with as unnecessary, increased width and depth of Feeding Troughs, Water Cistern, and Patent Drop Cover to prevent over-gorging. Cleanly, durable, and impervious to infection, being all of Iron. Price of Fittings per Cow, 55*s.*
Prospectuses free of COTTAM & Co., Iron Works, 2, Wimsley Street (opposite the Pantheon), Oxford Street, London, W., where the above are exhibited, together with several important Improvements in Stable Fittings just secured by Patent.

Farm Poultry.
GREY DORKING FOWLS, of purest breed, in any numbers.
Imported TOULOUSE GEESE, the largest and most productive breed known.
Imported NORFOLK TURKEYS, large, hardy, and good breeders.
AYLESBURY and ROUEN DUCKS.
Imported BELGIAN HARE RABBITS, of most recent importation.
BRAHMA POOTRA, CRÈVECŒUR, and LA FLÈCHE FOWLS, for cross breeding.
Priced Lists and Estimates on application.
JOHN BAILY & SON, 113, Mount Street, London, W.

THE NATIONAL DOG SHOW. The SEVENTH GREAT ANNUAL EXHIBITION will be held in CUZON HALL, BIRMINGHAM, on MONDAY, TUESDAY, WEDNESDAY, and THURSDAY, December 3rd, 4th, 5th, and 6th, Open to the World.
Prize Lists and Regulations may be obtained from the Secretary, Mr. G. Baker, 41, Temple Row, Birmingham. The ENTRIES CLOSE on NOVEMBER 1. The PRIZES offered amount to £250.

THE BIRMINGHAM CATTLE and POULTRY SHOW, 1866.—The EIGHTEENTH GREAT ANNUAL EXHIBITION of FAT CATTLE, SHEEP, PIGS, DOMESTIC POULTRY, ROOTS, CORN, and IMPLEMENTS, will be held in BINGLEY HALL, on SATURDAY, MONDAY, TUESDAY, WEDNESDAY, and THURSDAY, December 1st, 3rd, 4th, 5th, and 6th, when Prizes to the amount of £2100 will be awarded in the following Divisions:—

FAT CATTLE, SHEEP, and PIGS	£1251 10 0
BREEDING PIGS	77 2 0
ROOTS and CORN	73 8 0
POULTRY and PIGEONS	750 0 0

Prize Lists, Certificates of Entry, and every information may be obtained from the Secretary.
The ENTRIES CLOSE on THURSDAY, November 1.
JOHN B. LYTHALL, Secretary.
Offices—Stephenson Chambers, New Street, Birmingham.

SMITHFIELD CLUB FAT CATTLE SHOW.—The ANNUAL SHOW of FAT CATTLE, SHEEP, and PIGS, will be held at the AGRICULTURAL HALL, ISLINGTON, on MONDAY afternoon, December 10, and Four following Days.
Intending Exhibitors are requested to apply for Certificate Forms by the reference letters as under.

CATTLE.—Form A.		For an OX or STEER (in any Class).
	B.	For a COW or HEIFER (in any Class).
	C	For a BEAST in Extra Stock.
SHEEP.	D.	For a PEN of 5 WETHERS (in any Class).
	E.	For a PEN of 5 SHEEP in Extra Stock.
PIGS.	F.	For a PEN of 3 PIGS (in any Class).
	G.	For a SINGLE PIG in Extra Stock.

ENTRIES for LIVE STOCK CLOSE NOVEMBER 1.
Prize Lists, Forms of Certificates, and all information may be obtained on application to Mr. DAVID PULLEN, Assistant Secretary, at the Office of the Honorary Secretary, corner of Hall-Moon Street, Piccadilly, London, W.
N.B. All communications respecting the Show must be addressed to the Assistant Secretary, as above, and should bear outside the words "Smithfield Show."

The Agricultural Gazette.
SATURDAY, OCTOBER 20, 1866.

AN outspoken discourse on agricultural labourers was addressed the other day to the Midland Farmers' Club by the Rev. R. W. ESSINGTON, of Shenstone, in which the lack of good cottages, and the need of good education, were especially insisted on. Mr. LYTHALL, of the Midland Counties Association, called attention to the great evils invariably attendant on the village ale-house. Everybody who has had anything to do with farm labourers—and it matters not whether they are five or 50 miles from the metropolis—knows that the habitual drinking to excess which is there encouraged, is the great curse of the class. What is to be done for a remedy? Mr. GREIG tells us that the steam-plough is a good thing in connection with this subject. When he first went about among English farmers and their labourers, he found that beer, beer, beer, was the perpetual demand or expectation, as gratuity for extra service. Latterly, however, on steam cultivated farms, he finds the men are roused out of their degrading drinking habits, and are feeling the elevating influence of a common interest with their masters in the success of an ingenious invention. It is probable that in the course of time influences of this kind, aided by greater home attractions when comfortable cottages shall be no longer the exception, may tend to make the labourer look upon the public-house as his enemy. Meanwhile the mischief that is fostered there is enormous, and if presented as it might be, and ought to have been, before the recent Social Science gathering at Manchester, it would overshadow by its superior importance almost every other problem now awaiting a solution by philanthropic effort. We speak from very recent experience. Good-natured plodding and industrious men, known to us as such by their services, every now and then astonish a new master by coming home drunk when sent with goods to market, and for the time they are insolent, outrageous, and mad. Of course they are ultimately sent about their business; and lost character, with all the miseries of an unprovided home upon the one side, and disorganised farm-work upon the other, are an injury to all concerned that cannot be exaggerated. No wonder that at Braxted, where a capital meeting, reported in another column, was lately held; and at Birmingham, where Mr. ESSINGTON's vigorous essay was read the other day; and everywhere when the condition of the labourer comes up for consideration, this great evil of beer drinking holds the foremost place.

The following are the leading points in Mr. ESSINGTON'S paper:—

1. *Low Wages.*—That there is any saving in paying a man whom one employs less than enough to keep up his strength, no one in these days will venture to assert. But does the present rate of wages meet the requirements of a man, making all allowance for cottage lowly rented, for allotments, for piece-work, for harvest-work, and even for doles—the most wretched supplement for wages? Are 10*s.* or 11*s.*, or 12*s.* a-week sufficient to keep a human frame in vigour and to find food for a family too young to work? Would 16*s.* or even 18*s.* a-week be too much, with meat at its present price? But there are two ways of replying to this argument, the first being that it is essentially unsound, and contrary to all commercial principles, to give more for anything including labour, than you are obliged to give; the second, that men not only do live on 10*s.* a week, but also find money for the public-house out of it, and that if more were given the surplus would find its way there, and nowhere else. He admitted that the first of these reasons looked plausible, but it was open to wide exceptions, and no one would think it wise to refuse corn to a horse because hay without corn would do, whilst the horse which was stinted, not knowing that its master stinted it, acquired no ill will towards him on that account; but the labourer did know that it was his master who kept down his wages, and was likely—acting on the same principle of giving as little as one is obliged—to give as little of his labour as he could for his wages. Again as to drink, was it not possible that poor food, especially the substitution of bacon for fresh meat, drove a man to drink?

2. *On Cottages.*—Mr. ESSINGTON observed that the house accommodation of the ordinary workman, whether in town or country, was simply shocking. "The low thatched cottage in some romantic lane smiles pleasantly no doubt on the passer-by, especially if he be an artist. The Honeysuckle in front smells delightfully, no doubt; but just turn to the back door, and sniff the mixen which is close to it. The little window lying half-hid in the roof looks charmingly picturesque; but only go into that low angular chamber, which it does not light, and then say what you think of it. A man who has a house of this sort, with the ground floor, as the old song says, and a cross wife (for such dwellings are very aggravating to temper), and half-a-dozen children, and no beer of his own brewing—thanks to the abominable Malt Tax.—and nothing but salt meat, of course ought not to be tempted into the nearest public-house; but, nevertheless, he is very likely to be so tempted, and I need not say that his visits there will not tend to make him a better workman, nor to raise the rate of profit which his master may wish to get out of him." Bad cottages tend to bad habits, and these to the pothouse, and that to the poorhouse and the gaol, which cost landlords and tenants far more than good cottages would.

3. *Schools.*—The lecturer acknowledged that there was truth in the statement that education tended to raise the price of labour and to diminish the supply: for a lad who could read and write, and had heard of Birmingham, and even perhaps of America, and knew how to get to these places, would be less likely to stick to his parish than one brought up in negro-like ignorance, which, however, had its disadvantages. But schools existed, and could not be put down, even if any one thought it desirable; and he expressed regret that the farmers did not take an interest in their management, did not see that they were sensibly conducted, and did not endeavour to make them the means of supplying their wants in the shape of servants and labourers.

4. *Treatment of Servants.*—The rev. gentleman touched with much force on the use of bad language to servants, and said he believed that this was often the determining cause of labourers leaving the country; for, as he said, a man, in spite of geography in the abstract, and railways or steamers, which are its concrete exponents, clings to the spot where he was reared, to the school where he learnt his book, the church where he worshipped his God, the lane in which he first hunted for birds' nests and afterwards loitered with his sweetheart; so, although he hears of broader lands beyond the Atlantic sea, the pastures of Ohio, and the corn-fields of Erie, he turns a deaf ear to the charmer, for he thinks of sea-sickness, or possibly of the sea-serpent—he finds that "there are fevers and wild beasts in them 'ere furrin parts, and that no beer worth havin' is to be got," so he concludes to stay at home; but then, just as he has made up his mind to adopt this course, the angry oath of some unreasonable employer, or, still worse, of his bailiff, sends him off to the uttermost ends of the earth. "I believe," said Mr. ESSINGTON, "that no one, except a very raw recruit in the Yeomanry, or a merchant seaman, or a man who *will* ride into the hounds, gets so frequently sworn at as a farm labourer."

The paper went on to censure the practice of those who, whilst they never allowed their labourers to forget that they have a master on earth, appeared not to remember that they themselves have a Master in Heaven. In the discussion which followed, there was a general disclaimer of the practice of swearing being common amongst farmers, and a very general agreement with those who denounced beerhouses as the great curse of the rural districts.

WHILST little or nothing can be done to obviate the effects of the late rains, there are certain suggestions to be derived from them, which may perhaps be turned to account by the practical farmer. If the problem of particular wet and dry years be still unsolved, still a few facts have been established respecting the predominance of wet or dry years during the decades of the last 50 years, and it seems possible to reason but a sort of guidance for our future expectations from the considerations in question.

It is a curious coincidence that the summer of 1766 was similar to the last; the Earl of CHESTERFIELD, in one of his letters, says "there has been no summer as wet as this within the memory of man; since March we have not had one day without rain, until August 1st, 1766."

The proper exposition of the inquiry seems to require the preliminary consideration of the sources of our rain and their causes.

Drought and sunshine in one part of Europe may be as necessary to the production of a wet season in another, as they are found to be on the great scale of the continents of Africa and South America, where the plains, during one-half of the year, are burnt up to feed the springs of the mountains, which, in their turn, contribute to inundate the fertile valleys, and prepare them for a luxuriant vegetation. During the wet summer of 1816 in England, the middle of Europe was subjected to excessive rains, at the same time that the north, or the parts east of the Baltic, about Dantzic and Riga, were suffering from drought, and in all probability furnishing the water.

In the spring and summer, as LUKE HOWARD observed, both the direction of the winds and the relative state of temperature seem to forbid our receiving much rain from the Atlantic. It is the S.E. wind which is so intimately connected with electrical manifestations, with hail, rain, and thunder. Now, vapour brought to us by such a wind must have been generated in countries lying to the south and east of our island. It is therefore probably in the extensive valleys watered by the Meuse, the Moselle, and the Rhine, if not from the more distant Elbe, the Oder, and the Weser, that the water rises, in the midst of sunshine, which is soon afterwards to form *our* clouds, and pour down in *our* thundershowers. England probably does the same office for Ireland—nay, the eastern for the western counties of South Britain.

It is otherwise in winter. During winter, when the surface of the ocean is giving out heat to the air, it may be supposed also to give out vapour in greater quantities than the temperature of the air is prepared to retain. Hence, the Atlantic, during the winter months, or rather the interval between the autumnal equinox and the winter solstice, is probably the great source of our rains. The impetuous gales which, at this season, move over its surface and impinge upon our western shores, may possibly bring us much vapour from the superior atmosphere of the tropics in which they originate.

Such seems to be the theory of our rains: the vapour generated in our own latitudes is decomposed into rain by the S.W. winds, which are *cooler* from blowing over the ocean in summer, and during the winter the same winds come to us charged with vapour from the warmer ocean, to be decomposed by a lower temperature; the entire theory of rain being the mixture or brushing of different currents of air saturated with moisture of different temperatures.

Now, let us examine the general results of this state of things with respect to the wet years during the last 50 years, namely, from 1815 to 1864, by means of the Table drawn up by Mr. SYMONS.

Anything like absolute periodicity it is impossible to perceive; but, in the absence of this, we find something like a substitute for it in the progression of wet years throughout the entire period, from what may be taken as a maximum in the first decade, down to a minimum in the last.

In the first ten years (1815-1824) the rainfall of seven years was above the average; in the next ten (1825-1834) six; in the next (1835-1844) five; in the next (1845-1854) four; in the last (1855-1864) three.

This regular progression is remarkable, and has all the appearance of a law; and as three wet years must be considered the smallest number possible or probable in a decade, possibly we may conclude that the last decade concluded a period of minima—characterised by excessive drought—and that we are now commencing a decade which will ultimately exhibit a maximum, or, as it may be, an increasing progression in the number of wet years towards the maximum of the first decade of the previous period.

Another fact is apparent from this record: out of the first 25 years of the 50 years' period, 16 were above the average, and in the next 25 years, 16 were below it.

There is also an ominous 10-year period, or something very like it, corresponding with full, heavy, or excessive rainfall in Great Britain. Thus, in 1825, the rainfall was 26.57 inches; in 1836, 33.49 inches; in 1846, 29.57 inches. In the year 1856, it was a full average after two years below the average; but now, in 1866, it is a maximum which is likely to equal the highest.

We need scarcely state that all years of excessive rainfall have been followed by bad harvests. Thus, in 1836 (rainfall 33.49) there was a bad harvest followed by three bad harvests in succession; in 1846 (when the Corn Laws were repealed) the rainfall was 29.57, and there was a bad harvest, followed by another very bad harvest.

Finally, it appears that wet years follow each other in succession; they rarely occur singly; thus, beginning in 1827, they lasted to 1831, or rather to 1833, just seven years, more or less in excess of rainfall.

We now come to the important part of the inquiry relating to the distribution of rainfall over the country—the regions of excess or deficiency.

During the last period of ten years (1855-1864) there was a decrease of rainfall averaging 4 per cent. over the entire British Isles, but unequally distributed, the decrease being exchanged for an increase in parts of Ireland and the South of Scotland. In England the amount of decrease varied up to 18 per cent., and was never below 2 per cent.

Although at first the figures seemed very discordant, yet on drawing lines on a map of the country, some order seems to become evident, namely, that the maximum deficiency existed along a line running nearly south-west towards north-east—from Cornwall to the Wash—along which line the present year's rainfall is already greatly in excess. This is, therefore, a compensation which may always, accordingly, be sooner or later expected in districts visited by continuous drought or deficiency of rainfall.

Proceeding north-westward the deficiency became less, until the parallel line running through the centre of Ireland and passing into the North Sea at Edinburgh, marked a district in which no deficiency existed, but, on the contrary, an excess of nearly 10 per cent. This is the "main line of the country's rainfall—one part of it, Seathwaite, being the wettest spot in all Europe," having an annual rainfall of 138.46 inches, and having received during the last September an excess of 8.14 inches above its enormous average.

The next districts follow nearer to each other, and seem to involve the eventual adoption of W.—E. instead of S.W.—N.E.; possibly this is not really the the case, as we suspect, but due to errors of observation at the lighthouses, whence most of the values assigned for Scotland are derived, or it may arise from the modifying influence of Ireland not being felt in those higher latitudes.

As a general proposition the full, average, or excessive rainfall seems to be intimately connected with the nature of the country on the line, as to tall vegetation, trees, and elevated points—in a word, a region where man has not as yet shown himself as the uncompromising leveller in creation. On the other hand, the deficiency seems in some degree connected with the large drainage operations in the Midland and Eastern Counties of England.

These facts should be turned to account by all who are engaged in agricultural pursuits. It is evident that they may guide us in the cultivation of the soil, in the selection of localities for farming—in the choice of crops, and generally in adopting localities with reference to their adaptation to the requirements of health or the human constitution.

Finally, if, as it appears, a progression of wet years characterises successive decades, it seems that we should turn our attention to the *green crops* by way of compensation in such decades as that in which we appear to be, rather than trust to the chance of a bad harvest—especially with the fact that bread will never again be dear, and meat will never be cheap. *A. S.*

—— On Monday evening, Nov. 5, the winter session of the London Farmers' Club will be opened by Mr. JAMES HOWARD, of Bedford,

who has been recently travelling in the States, with a paper descriptive of what he has seen in the agricultural world of North America. Mr. J. A. CLARKE, who was to have read a paper on Steam Cultivation on that occasion, is hindered from doing so by his official connection with the Steam Cultivation Inquiry of the Royal Agricultural Society of England.

CATTLE PLAGUE RETURNS.

THE following Returns were issued on Oct. 18:—

This Return gives the number of cases occurring in Great Britain which have been officially reported to this Department. Column 1 only records the cases reported as having commenced during the weeks indicated by the headings. All "back cases" are included in column 2.

Counties Reporting Attacks.	1 Number Attacked. Week ending Oct. 6.	1 Number Attacked. Week ending Oct. 13	2 Result of Reported Cases from Commencement of Disease. Attacked.	Killed.	Died.	Recovered.	Unaccounted for.
Buckinghamshire	1	—	2,582	1,871	504	187	20
Oxfordshire ..	—	—	3,794	2,160	1,190	395	49
Cambridgeshire..	1	—	7,875	2,686	4,533	494	162
Essex	—	5	2,443	667	1,461	305	110
Suffolk	1	—	2,442	1,255	968	190	29
Somersetshire ..	1	—	314	210	94	7	3
Shropshire ..	8	—	7,304	3,427	2,742	788	347
Staffordshire ..	2	—	5,929	2,585	2,339	521	484
Warwickshire ..	—	1	744	168	435	105	36
Lincolnshire (Div of Holland) ..	—	—	14,081	7,661	5,070	893	457
Do (Westeven) ..	—	—					
Do. (Lindsey) ..	—	—					
Cheshire	2	1	67,696	23,769	32,730	8,053	3,147
Lancashire ..	12	2	6,091	2,003	2,314	330	344
York, W. Riding	1	—	11,014	2,176	6,308	1,789	538
,, E. Riding	2	—	12,514	3,340	6,228	2,037	909
,, N. Riding	1	—	11,161	2,329	5,629	2,112	894
Total	32	11	155,987	57,287	72,745	18,404	7,551
Remainder of England	—	—	42,406	20,262	17,676	3,185	1,843
Monmouthshire & Wales ..	—	—	8,388	1,180	5,794	1,117	297
Scotland ..	—	—	46,861	6,263	28,088	10,707	1,803
Great Britain ..	32	11	253,702	84,992	124,303	33,413	10,994

Back Cases reported in the week ending October 13:—Oxfordshire, 3; Cheshire, 1. Total 4.

The return shows that 11 attacks were reported to have occurred during the week ending October 13, being a decrease of 21 on the previous return.

Fresh outbreaks took place in 3 farms or places where cattle are kept; the number of such outbreaks in the previous week being 11. The number of healthy cattle slaughtered to prevent the disease extending to them, was 7 during the week.

The disease is reported to have prevailed during the week in the following 5 petty sessional divisions of England, viz.:—Essex.—South Hinckford, 5 attacks. Somersetshire.—Yeovil, 2. Warwickshire.—Warwick, 1. Cheshire.—Macclesfield or Prestbury, 1. Lancashire.—Amounderness, 2.

Since the commencement of the disease 51 in every 1000 of the estimated ordinary stock of cattle in Great Britain are returned as having been attacked.

The total number of sheep reported to have been attacked up to the date of this return is 6926. No cases have been reported during the week. Two Inspectors, who returned cases last week, have not reported in time for this return,—viz., for the county of Chester, 1; and Stafford, 1. These Inspectors reported 3 cases last week.

THE PARIS EXHIBITION OF 1867.

AGRICULTURAL IMPLEMENTS AND OPERATIONS OF TILLAGE.

THE Universal Exhibition that is to be held in Paris in 1867, has been organised for the purpose of placing before the public the products of labour, and at the same time their mode of production. It not being possible in the Palace of the Champ de Mars to reserve the necessary space for the establishment of an experimental farm, intended to show the various agricultural implements at work, and to give to the public a general idea of the operations of tillage, the Imperial Commission has chosen the Ile de Billancourt, being situated only a short distance from the Champ de Mars, about 55 acres in extent, and of a soil of moderate firmness, as well adapted for this purpose.

In order to establish on this experimental farm an exhibition of agricultural implements and modes of culture in operation, it has been found necessary to divide the surface of the island into several parts, corresponding to the principal subdivisions of rural industry.

The first part will be assigned for barn machinery. Threshing-machines, winnowing-machines, chaff-cutters, root-slicers, will be found at work under buildings specially constructed for this purpose. To these specimens of farm labour are connected exhibitions of various industries, such as the fattening of fowls, the manufacture of starch, of sugar, of alcohol, of butter and cheese, of wine, of oil, and even bee-keeping, and the preparation of wax and honey.

There also will be set up forges at work, farrier's work, basket-making, cooperage, wooden-shoe making. There also will be exhibited charcoal burning, manufacture of drain pipes, tiles, bricks, &c. Here also can be shown the preparation of artificial manures, the grinding of coprolites, the manufacture of superphosphates, and the disinfecting of animal matter suitable for manures.

The second part is to be devoted to agricultural implements in motion, either by steam or animal power. Numerous trials are to be organised, for the purpose of comparing the merits of ploughs, reaping-machines, &c. Periodical sowings will be made to enable the working of seed-drills and hoeing-machines. Measures will be taken so as to represent each month the field labours of the season.

The third part will be arranged to exhibit specimens of natural and artificial meadows, draining operations, surface and underground irrigation, with liquid manure or with pure water. The comparative effects of the use of machines for raising water will be the object of interesting trials. In this part of the experimental farm the merits of mowing-machines, hay-making-machines and horse-rakes may be compared.

The fourth part will be reserved for the cultivation of Beet-root, Potatos, Turnips, and other plants cultivated for the roots by the best known methods, and with the most improved implements.

The fifth part is to be assigned to specimens of special cultures, water plants and shrubs, Mushroom beds, Watercress beds, plantations of Roses, Gooseberries, Strawberries, Violets, and of other flowering plants or fruits, the cultivation of which is so important in the environs of large towns.

This division of the experimental farm has been adopted with the idea of organising two series of agricultural experiments, intended both for the general instruction of the public and for the special instruction of agriculturists.

The object of the first series is to give daily illustrations to show the public the principal operations and the various stages of cultivation. These experiments will be arranged beforehand between the exhibitors and the superintendent of the department, who will prepare a daily programme of that which is to take place, and this may be seen both at the Champ de Mars and the Ile de Billancourt.

The second series of experiments is intended for comparing the merits of the various systems, implements, and new machines that it is to the interest of agriculture to have made known. Competitive trials to exhibit the working of the improved machines will take place in grounds reserved for this purpose, and subject to the following rules:—

The first trial will comprise the cutting of Grasses and Lucerne by mowing-machines, hay-making and raking, stacking by machines. By means of frequent sowing of Clover, and abundant irrigation, these mowing experiments can be renewed weekly.

The second trial will be reserved for tillage by means of steam-ploughs and other machinery, that may be carried on during the whole time of the Exhibition. The important problems connected with this mode of cultivation will offer a special attraction to the experiments in this competition.

The third trial will show the results obtained by the employment of animals for clearing, ploughing, harrowing, and carting purposes.

The fourth trial will be assigned to machines for sowing, for which a piece of ground is specially set apart. For the first time it will be possible to appreciate the comparative merits and utility of these machines. The sowings by machines will give place to observations on horse-hoes and other implements used in the cultivation of young plants.

The harvesting of cereals will be the object of a fifth trial, the importance of which will be appreciated by all agriculturists. Every one will thus be enabled to perceive the advantages obtained by the substitution of harvesting-machines for manual labour.

Exhibitors will be at liberty to construct their own buildings or sheds, but in conformity with the plans laid down by the Imperial Commission. They may likewise provide themselves with teams and raw materials. Exhibitors, not possessing duplicates of their machines, may, at periods arranged previously, bring them from the Champ de Mars.

To avoid difficulties that may arise, the Imperial Commission have given orders to the superintendent of the agricultural department, to place at the disposal of agriculturists at cost price, not only raw material of every kind, but also teams of horses, and yokes of oxen, and even steam power.

Exhibitors will be permitted besides to establish at Billancourt a depôt for the sale of implements that have been worked before the public. Besides this, sales of animals will be held periodically on the Ile de Billancourt, in presence of the numerous agriculturists brought together by the Exhibition. In this respect the Imperial Commission will endeavour to meet the wishes of both French and foreign agriculturists. It may be legitimately predicted that this exhibition of agricultural labour will attract a numerous concourse of visitors of all classes. Already the plan of the Imperial Commission, obligingly communicated to several persons, has excited a spirit of enterprise for providing the public with refreshments at prices to suit all purses.

Other projects specially relating to the organisation at the Ile de Billancourt, for carrying out various naval and life-boat experiments, have been arranged so as to be seen by thousands of spectators at once. The Imperial Commission has already commenced to allot space to exhibitors. It is therefore indispensable that those desiring to exhibit at the Ile de Billancourt should hasten to send the following particulars:—

1stly. The space occupied by each implement, the number of animals required to draw it, or the amount of steam power necessary.

2ndly. The space occupied by each machine under cover, the work executed per hour, and the motive force required.

The exhibitor should likewise make known whether he intends to construct his own shed; and in this case to submit a plan for approval.

3rdly. The land necessary for each special culture, the description and method of this cultivation, the time for the dressing of the land, the planting, the cutting, the harvest, &c.

The exhibitors of manufactures intended to show the various industries connected with agriculture must provide themselves with the raw material. *Cosmos, Oct.* 10.

WHAT IS RENT?—No. III.

IN two former articles under this heading, which were inserted in the *Agricultural Gazette* (pages 810 and 835), I endeavoured to show that whereas in former times the price of corn had invariably governed the value of rents, the value of meat will probably be its measure in the future, and I arrived at the conclusion, *à priori*, that land, such as is generally cultivated, would and ought, at present prices and under good management, to produce a gross return of 10*l.* per acre annually, thereby allowing to the tenant a liberal interest for his increased expenses, and the landlord a doubled rent, or a fair return for his original outlay. To prove these conclusions practically as well as theoretically, is the task I now set myself, and I will take an example from within my own knowledge. On a farm which I have been well acquainted with as long as I have known anything about farming, there was, some 30 years ago, a very respectable tenant, who farmed well, as times were then, and used to tell me that Wheat could not be grown under 80*s.* the quarter. He held 110 acres of arable land (with about as much Grass); cultivated it on the usual four-course; was afraid of introducing any machinery, and threshed his corn by flail. His rent of the arable land (to which only I can direct attention) was under 2*l.* an acre, tithe free. His yearly produce must have been as under:—

Farm 30 acres of Wheat, at 3 qrs. per acre × 70*s.* per qr. .	£315
,, 30 ,, Barley, at 4 qrs. ,, × 30*s.* per qr..	180
,, 50 ,, in Clover, Peas, and roots, at 4*l.* per acre ..	200
	£695

From this gross produce, if we deduct his rent, 200*l.*; labour, 200*l.*; rates and taxes, 40*l.*, there will remain about 250*l.*, or 1*l.* 5*s.* per acre, to pay all the minor bills and expenses of a farm, and for the tenant to live upon and pay interest of capital. He did not sell hay or purchase manure; his horses and cattle were turned out to Grass all the summer, and trod the straw into dung in the winter, with a little hay and roots. A hundred lambs bought in at the Ilsley fair in August were penned in the Swedes, and sold after being shorn in good store condition the succeeding spring. He was thought a good farmer, but he died poor. The present occupier has only 60 acres of arable (the rest having been let off for building and market-gardening), with about the same quantity of Grass. He keeps a much larger stock of cattle and pigs; lambs down 150 ewes, which he sells fat with their lambs; and by pulping the roots mixed with chopped straw and purchased food, he is enabled to sell a quantity of hay, and make ample and rich manure from the cattle in his yards.

His average annual produce as contrasted with the former tenant's will be—

From 20 acres of Wheat, at 5 qrs. per acre, at 50*s.* the qr.	£250
,, 20 ,, Barley, at 5 qrs. ,, at 40*s.* ,, ..	200
,, 20 ,, of roots and Cabbage and Potatos ..	400
	£850

From which if we deduct an increased rent of 3*l.* 10*s.* per acre, or 210*l.*, and the same amounts for labour, rates, and taxes as before, making a total of 560*l.*, we shall have a balance of 300*l.* a year, or 5*l.* an acre for the minor bills and profit on capital. It is only the high price of meat, combined with cheaper modes of feeding, which have enabled him to carry out this system; but the manure made has so enriched the soil that the resulting corn crops are nearly double over the whole farm to what they used to be. I doubt not similar instances may be found in most neighbourhoods, with differences in detail according to the varieties of soil and situation; but the principle will hold good everywhere, that wherever the growth of meat is made the primary object, and corn only a secondary consideration, the rent of the landlord and the profit of the tenant will be doubled; and the general produce of food for the use of our fast-increasing population will be doubled also.

The same observation will apply to Grass lands, but the return will be quicker and more direct. An increased number of cattle pastured during the summer with cake or corn in the fields will produce a much larger increase of weight, and at present prices double the net result, and as the labour is comparatively light, the increased balance to be divided between the tenant and his landlord will be proportionately greater. I am informed that in many parts of the country, which have not been desolated by the cattle plague, this increase has already taken place. A curious contrast in confirmation of my statement is presented by two writers in the current Number of the *Agricultural Gazette* (Oct. 6), where one writer recommends emigration to Canada, because in England he cannot grow a gross produce of more than 3*l.* 10*s.* per acre upon land worth 30*s.* per acre tithe free; whereas, on the following page is given the actual experience of an enterprising tenant who has realised as much as 10*l.* per acre, for which I am contending, on a very inferior soil. Can it be doubted that either in England or Canada one of these gentlemen would make his fortune and the other lose one? or can it be contended that the success of one or non-success of the other was at all influenced by the rent paid for the land? The highest rents paid anywhere are in Scotland, where farming is most profitably carried out. The great difference between their system and ours is in cattle feeding. Where they make 10*l.* an acre, we have barely cleared the expenses of our root crops.

But before these improvements in our agriculture can become general throughout the country, it appears probable that there must be some ameliorations both

in the tenant farmer and in the nature of his tenure. It was stated in the first article above referred to that the tenant was entitled to such fixity of tenure as would secure to him a safe return of his capital expended. The landowner is equally entitled to receive back his property at the expiration of the tenancy in a good and efficient state of repair and cultivation. To reconcile and enforce their respective rights the covenants usually inserted into leases have been drawn. Many of these are inconsistent with the method of high farming I am advocating. A man of intelligence and education, who has both the will and the power to farm well and profitably, ought not to be tied down to any particular course of cropping. He ought not to be restricted from selling straw. On the other hand, the landlord ought not to have the right of ejecting him in the middle of a long lease without due compensation. Such stipulations have proved a hindrance to good farming much oftener than they have been a security against bad. The slovenly and needy farmer slips out of them, while the best men are afraid to risk their capital under them. Thus their tendency has been to lower rents considerably. Perhaps, as I hinted above, the best arrangement is a continuous tenancy with two years' notice, the stringent clauses to be in force only during these last two years; and any dispute being submitted to an umpire on the spot. This would give the farmer the utmost liberty, and put him, as far as may be, in the place of his landlord; combined with the necessary safeguard that he should do him no injury at last, but give up his land in good heart. Above all should the tenant farmer himself be a man of spirit, of education, and of capital. As long as landlords or their agents are content to put little men into the farms, whose only object is to get a bare livelihood with the least expenditure of trouble, labour, and money; as long as they entrust a man with 500 acres, whose capital can only properly stock and cultivate 100; as long as they seek for an obsequious politician, however slovenly he may be, or an amiable disposition which will not give trouble with the game-keepers; so long will agriculture be debarred all improvements, discouraged, and rents remain as they are. On the other hand, when a demand arises for a better article, the supply is sure to follow. There is plenty of capital seeking employment, plenty of energy and talent now forced to emigrate to our colonies for want of opportunity at home. Give to these due security and encouragement, teach it through the country that good farming is paying, and will pay, and the result will soon be realised that no cultivated crop will be worth less than 10*l.* per acre, the fifth part of which will be returned as rent to the owner of the soil.
J. B. M.

LONDON SEWAGE.

WHO is Mr. Rose, C.E.? This question is the result of the perusal of a somewhat peculiar letter to the *Times* of the 10th inst., in which certain doctrines are promulgated of a startling nature.

The sewage question is a grave one, and one in which it is important that the public should be instructed by men who have shown themselves able to cope with it. It is therefore vexatious to see facts questioned which have long since been fully proved, and statements made which are utterly opposed to the results of recent investigations.

The fact questioned by Mr. Rose is the deodorising power of ordinary mould when brought into contact with decaying animal or vegetable matter, a fact which lies at the foundation of Mr. Moule's system of earth closets, and Dr. Hawkesley's plan for at once economising valuable fertilising matters and purifying the Thames. Without espousing the cause of these last-named gentlemen, I cannot refrain from answering the objections raised to what they propose. In the first place, Mr. Rose states that Mr. Bateman, C.E., has proved that "400 acres of land to the depth of 6 feet" would be required to deodorise the night-soil produced in London alone. Now, this has already been shown by Dr. Hawkesley to be quite erroneous; first, because the estimate, owing to an error of calculation, was just double of what it was intended to be; and, secondly, because in Mr. Moule's system of earth closets the same earth is used several times over with the most perfect success.

Mr. Rose proceeds as follows:—"It has been so often affirmed of late that the earth possesses the power to deodorise sewage, that the opinion must soon be looked upon as a 'popular error.' From numerous experiments recently made I am in a position to state positively that the earth does not deodorise sewage." All this shows a profound ignorance of the laborious investigations which have been undertaken with reference to this most important subject. This is no simple *on dit*, or popular idea now to be thrown aside by advanced thinkers like Mr. Rose, but it is an old idea which has recently attracted much attention, and been subjected to the test of experiment. Mr. Way, the well-known agricultural chemist, after giving the details of an experiment in which "highly offensive stinking tank water" was rendered "quite clear and free from smell or taste" after percolating through 18 inches of soil, speaks as follows:—"These experiments sufficiently corroborate Mr. Huxtable's observations of the action of a soil upon the colouring matters and substances produced by the decomposition of animal matter." They have been repeated with many different soils and under every possible combination of circumstances, but with the same effect. It would be tedious and useless to relate all these experiments in detail, and it may be sufficient to state that similar results were obtained by acting upon putrid human urine, upon the stinking waters in which Flax had been steeped, and upon the water of a London sewer." So far from the soil being an inert mass in this particular, as Mr. Rose suspects it to be, its property of removing odour, colour, and certain organic and inorganic substances from solution, are known to be among the most difficult facts that the agricultural chemist has to explain. Mr. Rose, however, confuses the deodorising power of soils with the different property of removing certain organic and inorganic substances from solution. It would be tedious here to thoroughly explain the very peculiar changes which occur where solutions containing such materials are filtered through soil. The solution may be partially robbed of its solvable matter, or it may give up certain substances, as potash or phosphoric acid, to the soil, and at the same time wash out an equal or greater quantity of lime. It is therefore false to attempt to prove the inert nature of soil from the fact that half the quantity of inorganic matter is found in the drain water from the Croydon sewaged land that is found in the sewage itself.

Mr. Rose does not seem to have taken into account that most probably the percentage of salts composing the inorganic matter of the two waters have undergone a complete change, and that the potash and phosphoric acid will most probably have been removed by the soil, while a certain proportion of lime will have taken their place. But apart from this consideration, the objection founded upon the condition of the drainage water is most frivolous.

If water impregnated with certain salts be filtered through soil, those salts will be partially removed from solution, but on the other hand if pure (distilled) water be allowed to percolate through soil, a certain proportion of saline matter will be washed out by the water: hence the change from soft or rain-water to hard or spring-water. This is the natural condition of water after having been in contact with earth, and no one dreams that such matters are removed by the physical attraction of soils under consideration. In other words the soil cannot completely remove the soluble matters held by solutions filtered through it, but the water always retains a variable proportion of such matters which are necessary constituents of wholesome water. Such soluble matters exist in the proportion of from 20 to 25 gr. per gallon, or as nearly as possible the quantity found in the drainage water from the sewaged lands of Croydon.

As for Mr. Rose's theory that it is not the soil, but the vegetation on the surface of the soil, which deodorizes the sewage, we can only say that it is unfounded, and that if further proof is requisite, it can be easily supplied. *John Wrightson, Professor of Agriculture, Royal Agricultural College, Cirencester, Oct.* 12.

THIN SOWING.

SOME folks wonder at my peck of Wheat per acre producing an increase of 232 pecks, but what will they say to one Barley-corn producing 2460! more than 10 times my increase. I know of other such instances, and all this proves that our present over-seeding is a great mistake where land is well farmed, for we only get an increase of about nine for one.

I send you the original letter that I have just received from a perfect stranger, but not having his permission to give them I must request you to suppress his name and address. "T. B." seems surprised at my crop of 7 quarters of Wheat per acre; but last year, and also in 1864, I had several fields yielding that quantity. In 1865 my two best fields yielded 61 bushels and 64 bushels; the first Red Wheat, the second Rivett's, the latter succeeding a crop of fine White Wheat of seven quarters per acre, or 15 quarters of Wheat from the same field in two years. If it were necessary or requisite, my bailiff and labourers could testify to the accuracy of the facts related by me in your Journal as to the produce of the peck of seed Wheat per acre in 1864, 1865, and 1866; but the question is not a personal one, but one of considerable national importance, and as such must not be trifled with, or made subservient to mere personalities.

People living in an ill-farmed district can hardly realise in their minds the effects and advantages of drainage, deep cultivation, and unwashed rich manure. After all said and done, seasons have a most marked influence on the yield of our crops. This year my average of Wheat crop will probably be under or about 36 bushels per acre; last year it was, on all the heavy land (40 acres), nearly 56 bushels per acre.

If my experiments and facts were snugly concealed and known only to myself and labourers, doubt might be cast upon them; but when they have been thrown open to public inspection at every stage of the growth of the crop, it is rather too bad to cast a doubt upon them, especially as there is nothing so wonderful or extraordinary in them; for any one can make a like trial under similar circumstances, and arrive at his own conclusion.

I am, however, rather surprised at the Kinross result, because it is so far north, with a late harvest; and I have always said and thought that thin sowing appears best adapted to good farming and early harvests and climate. Many of us have seen the great multiplication of seeds in the case of Mr. Hallett's valuable experiments at Brighton. I cannot recollect the exact increase, but I know it was very considerable, owing to the great number of stems from each kernel.

A personal inspection of a peck of seed per acre testifies to its own truth when it first makes its appearance, for each kernel sends forth only one shoot, as stout as a pin, so that one could count the kernels on each square foot or yard, and at all the later stages of growth it is easy to test the number of branches or shoots from the single kernel.

I think that owing to the very wet autumn, winter, and spring, many of the Wheat roots rotted, and thus the plant lost its power of spring tillering or branching.
J. J. Mechi, Oct. 15.

P.S.—This fine weather is a real boon to heavy-land farmers. My 50 acres, coming for Wheat, have been all ploughed, the twitch taken off, and the land clean and dry. I have noticed for many years that we get 21 fine days as an average in October, in spite of a wet October once in seven years.

T. B. imagines that my Wheat was cut in September. We began Wheat cutting the latter part of July.

— The following is the letter of Mr. Mechi's correspondent:—

"By Kinross, Oct. 5, 1866.

"DEAR SIR,—I hope you will excuse the liberty I have now taken of inclosing a couple of Barley of a particular kind. I do this on account of seeing your name so pointedly taken notice of in the *North British Agriculturist*. I am an advocate for economy and improvement in agriculture as the rising generation. I have raised the enclosed Barley from one ear I found amongst my Barley four years ago; I dibbled it in the garden, which is rather a poor stiffy soil, with a bad subsoil of gravel and marl; and the place selected not the best. However, I thought I would try what it would do, and planted each grain about 6 to 9 inches apart, each grain grew well, and branched out from 20 to 82 branches each, and appeared a capital crop. I thought I should have a good seed-bag for another year, but happened to go from home for a few days, and on returning found my barley almost all eaten up with sparrows, only a remnant. Next year I put it in what I considered a better part of the garden, got a net to cover it, and when about ready, a gale of wind came over the garden wall and shook three-fourths of the whole out; the remnant I saved. I next year put in the whole of what I had, a quarter or so. I never took much as to sow an acre fully. So much for the history of the ear of Barley, but what I wish to draw your attention to is the dibbling system recommended by you. I have shown the roots of the first ears sowing to a number of friends; the largest root had 96 branches, average of each ear about 60 to 70 or one. I had a few friends from America lately, who covet the large root to surprise Jonathan when they come home. I had several others with 45 branches, the largest I have left have 400 to 500 fold. If you have any curiosity to see, I can enclose it by post, and look for the trouble and expense of dibbling it, it would produce a large crop with little seed. I do not know if any other kind of Barley would produce as well; I have not tried, but do not think it, but have proof of this. In the field this season it was sown broad-cast alongside of the common Barley, and was a much finer sample, stood the storm better and strong, and not apt to lodge with wet weather; it looks well in the sample in good weather, but this season has been much against it, being very wet. Should any part of the above meet your views, I will be glad to hear from you, and if you can ascertain the name of the Barley I will be glad to hear it, otherwise I will have to give it a new name. It may make it sell at a high price, being a rare kind, and I really think a most prolific kind, especially with the dibbling system, producing 2460 fold."

MEMORANDA ON BEET-SUGAR.

1. *Mr. Caird.*—"The manufacturers of Beet-root sugar are the great employers of labour, the capitalist farmers of this part of Germany. We have not in England any such large capitalists engaged in agriculture, for they unite the business of the farmer and cattle feeder on the largest scale with those of sugar-boiling and sugar refining. The sugar factories are very extensive and costly in construction and machinery, and are managed with great economy and skill. The business has been established here only about 15 years (30 years, but it is constantly extending under the encouragement of increasing profits, caused partly by a higher price, and partly by a greater yield of sugar under improved processes. The yield, which some years ago was as one to 16, has now been increased to one in 12. The molasses, after the sugar is extracted, are made into spirits, and the refuse, if not used on the premises for fattening cattle, finds a ready sale as food for milk cows at about 20*s.* a ton. The growth and manufacture of the crop furnishes a continuous source of employment to a large body of labourers nearly all the year round. The sugar is said to have last year yielded a clear profit to the manufacturer of 15*l.* a ton, and as a duty equal to 10*s.* a ton is levied by the Government on the raw Beet when it goes into the factory it would be difficult indeed to name an agricultural crop so beneficial to all concerned with it as Sugar Beet, which can only be produced, as I suppose, however, on a rich friable loam of the best quality; but, as under favourable circumstances the raw Beet will weigh 20 tons an acre, the gross value of this crop far exceeds that of any other agricultural crop that can be grown in this northern climate, as a source of revenue to the Government, none of our exclusive crops can approach it, for at the rate already stated it must yield a duty of nearly 10*l.* an acre to the Prussian Government. The rate of duty has been doubled within the last two years, without in any way diminishing the progress of the remunerative trade. The great landowners have built factories for the conversion of their Sugar Beet, but the bauers, or peasant proprietors, generally let their land to the sugar makers at high rents for this special crop."

2. *An Irishman.*—I find that 15 tons of roots are sufficient to make 1 ton of sugar. I find that the cost of manufacturing a ton of sugar amounts to from 7*l.* to 8*l.* The question as regards the manufacturer will therefore stand thus, assuming the price to be paid for the roots to be 15*s.* per ton.

15 tons of roots at 15*s.*	..	11	5 0
Cost of manufacture, say	..	7	10 0
Cost of producing 1 ton of sugar	..	£18	15 0

It therefore appears that Beet-root sugar could be produced at 18*l.* 15*s.* per ton, and this is the price to cover cost of manufacture or the value of the manufacture. When the duty is added to this there still remains a handsome margin for profit to the manufacturer. The manufacture of sugar from Beetroot having attracted considerable attention in Ireland during the past two years, the growth of the Sugar Beet has been carried on on a small scale by many persons, under a great variety of circumstances, and the result has been generally favourable. With good management, therefore, we calculate on 25 tons to the statute acre, a return which good tillage will produce, but even at 22 tons the return from an acre of Sugar Beet would, at 15*s.* per ton, amount to 18*l.* 15*s.*, exclusive of the leaves, which are of great value

3. *Rural Hon.* T. F. Kennedy.—My idea is, that a most beneficial use may be established in distillation from Mangel, and it is no visionary project in contemplation within the last few years the manufacture of Alcohol from Beet or Mangel has been carried on to a large extent in France, and is rapidly extending at this moment. There is, besides, the recommendation of a spirit made from Mangel, that it would be produced from a raw material not applied to the food of man; so that, in times of high prices in grain, the price of the bread of the people would not be interfered with by distillation. There are many authorities, and among them Dr. Ure, in his "Dictionary of Arts and Manufactures," by whom it is laid down that 100 lb. of field Beet or Mangel will yield 10 or 12 lb. of proof spirit (let it be taken at the smaller quantity of 10 lb.), and 10 lb. of proof spirit is equal to about 6¼ quarts (let it be taken at 6 quarts). Thus 2000 lb., or, still more, 2240 lb. (a ton), of Mangel will yield 120 quarts or bottles of proof spirit. The produce of 1 acre will thus yield of proof spirit, if the crop be 20 tons, 2400 quarts; if 25 tons, 3000 quarts or bottles. Let the Excise duty be for the present

placed out of view, and let the value of the spirit, free of duty and in bond, be adverted to, and the crop taken at 25 tons per 100 quarts at 67*l.* is 75*l.*, at 90*l.*, 112*l.* 10*s.*, at 1*s.*, 150*l.*, and I believe its value as mere alcohol would be nearer the latter than the former sum. To pursue the subject a little farther, let a farmer dispose of his Mangel to a neighbouring distiller at 20*l.* per Ton, 25*l.*, or 30*l.* per acre, as the case may be. Such a sum would amply remunerate the farmer, and if he were to raise 30 acres of Mangel, and dispose of the crop at 30*l.* per acre, he would receive a net sum of 900*l.* in hard cash for the raw produce of 30 acres of his farm; and how many of the farmers of Carrick could readily grow annually such an amount of crop, and cart it 1, 2, or 3 miles to the distiller. It will be seen that the probable result seems to be equally favourable to the distiller —the purchaser from the farmer. He would pay 25*l.* or 30*l.* for the material, which was to yield, from the smaller of these sums, a manufactured article worth 75*l.*, 112*l.* 10*s.*, or as much as 150*l.*, as the case may be, leaving to him 43*l.*, 72*l.* 10*s.*, or 120*l.* as the value of his manufactured article, free from the price of its raw material, and as the return to him for the use of his capital, risk, machinery, and expenditure of all kinds—a vast margin being afforded in these sums for any shortcoming which might take place. If, instead of either of these larger sums, only 25*l.* were realised, as the value of the spirit (or 10*l.* as the price of Mangel (after deducting the 25*l.* paid for the raw material), how good a trade, it would seem, might be carried on. I may add, as an additional item of profit, that the dry fibre and tissue of the Mangel, after the whole saccharine matter has been extracted, is worth at least 10*l.* per ton as a material for the manufacture of paper. This fact I have ascertained on the highest authority; and I imagine that 30 tons of Mangel would yield about 1 ton (but on this point, of the quantity of fibre produced, I am not so certain), thereby adding 10*l.* to be divided between the farmer and the manufacturer for each 30 tons of Mangel distilled.

4. *Agricultural Gazette* (1851).—The cultivation of Beet-root, for sugar making, is not quite so hopeless as that of Tobacco, and that is nearly all that can be said in its favour. Those who desire information respecting it should consult the work of Sir R. Kane, on the "Industrial Resources of Ireland." While treating it among the staple products of his country, he includes it with some hesitation, and it must be confessed that he has not placed it in a very inviting point of view. He has reduced to English weights and measures the information collected by Dumas for the French Government respecting the Beet-root Sugar-statistics of France; and the results are not such as would tempt us to embark either in the manufacture or in the raising of Beet-root for sale to the manufacturer. Even in France, where the climate is more favourable than that of Britain to the production of sugar, the manufacture has been watched by practical men with much fear, felt to be disadvantageous to the community; and were there not a native sugar interest already established, it would not be deemed desirable now to introduce it. It appears that the crop most productive of sugar does not exceed 12 tons per acre. Every ton of this must be forced by high cultivation, but in that case the carbon goes to the formation of woody fibre, not sugar; so that the smaller crop is ultimately the more profitable. For these 12 tons the manufacturer could not afford to pay more than 6*s.* 8*d.* the ton. If that rate, the price of the manufactured coals costing him, the ton, would be 26*s.* 8*d.* the cwt.; and that after giving the process credit for the refuse pulp, 1 40th part of the whole, at 6*s.* 8*d.* the cwt., as cattle food—for the skimmings of the boiler, as manure, at 6*s.* the cwt.—and for the treacle at 1*s.* 6*d.* the cwt. At the time these calculations were made, the average price of colonial sugar, exclusive of duty, did not exceed 31*s.* the cwt.; and amidst the subsequent alterations of duty, and the various regulations for the admission of foreign to competition with colonial sugar, it is certain that the price has not advanced. With these and cane sugar, admitted at a nominal rate of duty, it is evident that there is no very great inducement to embark capital in the manufacture; and as to the cultivation, we should, for ourselves, prefer a crop of 30 tons of Mangel Wurzel, consumed by cattle on the land, to a sugar crop of 12 tons yielding only 10*l.* an acre, delivered at the manufacturing crop requiring, moreover, much labour and some manure, and making no return of the latter to the land, except such as would be purchased out of the gross returns. The purchase of this manure, whether consisting of the refuse of the manufacture, or the 3 cwt. of guano, would raise the cost of 30 tons the acre from the 10*l.* The cultivation of the Beet-root and the manufacture of the sugar have been treated as if carried on by different parties, not only for the sake of clearness, but because the sugar would be produced more economically under that division of labour than by the accompanying combination of the trades of farmer and sugar-maker in the same hands. It must be borne in mind that in these calculations coals are only charged at 12*s.* the ton, or about half their price in the southern counties, where conditions of climate prevail more favourable to the production of sugar than in the northern counties, in which the principal collieries are situated, and where coal is about 12*s.* the ton at a few miles from the pit.

5. *Agricultural Gazette* (1851).—In the Industrial Exhibition, among the produce of the Grand Duchy of Saxony, Prussian Saxony, Brunswick, Anhault, and Thuringia, Beet-root sugar is conspicuous, with a display of 1,000 cwt. of Sugar from Beet, producing 5½ cwt. of sugar. Neither of these statements is very encouraging to the would-be grower of British sugar; and, at the recent meeting of the British Association for the Advancement of Science, a paper was read in the statistical section, by Prof. Hancock, on "The Prospects of the Beet-sugar Manufacture in the United Kingdom," which was equally discouraging to the intending manufacturer. He commenced by stating that, some little time ago, the manufacture had been attempted at Malden by a private company, but that the attempt proved a failure. More recently a manufactory had been established at Chelmsford, and contracts entered into with the farmers for a supply of Beet. What were the prospects of success to this undertaking and the Sugar-Beet Company of Ireland? The answer to these questions depended upon the answer to a number of other questions :—1, What will be the probable price of Beet for a series of years? 2, What will be the price of Beet sugar be after 1854, when the differential duty on foreign sugar, which will diminish each year, will cease entirely? and 3, With those prices of raw materials, and the manufactured article, will the manufacture be profitable? With respect to the price of Beet, it appears that it varies from 13*s.* 11*d.* the ton, in the north-east of France, to 18*s.* 9*d.* the ton, in the north-west; the average for the whole of France being 15*s.* 14*d.* In Ireland the Sugar Beet Company were stated to have contracted with the growers at 15*s.* 6*d.* the ton. The contracts in Essex were at 18*s.* to 20*s.* the ton. The present prices of the raw material were, therefore, higher for Ireland than the average of France, and higher for England than the average of the highest districts of France. The future price of sugar Prof. Hancock thinks will not exceed 28*s.* the cwt., and he anticipates even lower prices from the diminished cost of production of refined sugar consequent on the increased consumption caused by a full in its market value on the equalisation of the duties, from the removal of the absurd restrictions now imposed upon sugar refiners, and lastly from the competition between cane sugar and Beet-root sugar, should the latter be manufactured to any extent. With respect to the third question, whether it would be profitable to make sugar at the Irish price of 15*s.* 6*d.* the ton for Beet, and the Essex price of 19*s.*, the selling price of sugar being 28*s.* the cwt., the calculations most relied on are stated to be those of Mr. Sullivan, chemist to the Museum of Irish Industry in Dublin, and of M. Paul Hamain, of the firm of Serret, Hamain, Duquesne, & Co., the largest manufacturers of Beet sugar at Valenciennes, dated April 18, 1850. These estimates are given as follows:

Mr. Sullivan's Estimate for Ireland.

60,000 tons of Beet at 15*s.* per ton	.. ..	£45,000
Cost of manufacture, 9*s.* per ton of Beet..	.. ..	27,000
Total outlay	..	72,000
Produce, 5 per cent. of sugar, at 28*s.* the cwt. ..	..	93,000
Estimated profit	..	21,000

The same Estimate applied to Essex.

60,000 tons of Beet at 19*s.* the ton	..	£57,000
Cost of manufacture, at 9*s.* the ton of Beet ..	..	27,000
Total outlay	..	84,000
Produce, 5 per cent. of sugar, at 28*s.* the cwt. ..	..	93,000
Estimated profit only	..	9,000

M. Paul Hamain's Estimate for France.

61,607 tons of Beet at 19*s.* 11*d.* the ton	..	£98,500
Cost of manufacture, nearly 13*s.* the ton of Beet	..	39,900
Total outlay	..	78,300
Produce, 4½ per cent. of sugar, at 28*s.* the cwt.	..	114,000
Estimated profit for France	..	35,700

The same Estimate applied to Ireland.

61,607 tons of Beet at 15*s.* 6*d.* the ton	..	£46,080
Cost of manufacture, nearly 13*s.* the ton of Beet	..	39,900
Total outlay	..	85,980
Produce, 4½ per cent. of sugar, at 28*s.* the cwt.	..	81,430
Estimated *loss* for Ireland	..	4,550

The same Estimate applied to Essex.

61,607 tons of Beet at 19*s.* the ton	..	£58,527
Cost of manufacture, nearly 13*s.* the ton of Beet	..	39,900
Total outlay	..	98,427
Produce, 4½ per cent. of sugar, at 28*s.* the cwt.	..	81,430
Estimated loss	..	£16,997

There are several errors in the above figures, which must be obvious to those who will take the trouble of working them; but as the correction of them would interfere with the Professor's argument, we give them as we find them reported, leaving it to the reader to correct them for himself.

6. *Mr. W. R. Sullivan.*—Is Professor Hancock aware of the fact that 5 to 6½ per cent. of refined sugar can be obtained at present from the Beet, not by any new untried processes, but by processes in full operation in many continental establishments—thus, for in-tance, in the establishments of Messrs. Serret, Hamain, Duquesne, and Co., who supplied the comparative estimates relied upon by the Professor, 7 per cent. of raw sugar, equivalent to at least 5½ per cent. of refined sugar, is obtained. In the Beet-root sugar manufactory of Gotha, according to the statement of the director, Herr Mathai, the produce for the years 1840–1848 was 6.3, 6.8, 7.4 per cent. In the Baden establishment at Waghausel, one of the best conducted in Europe, according to official statements, the mean produce has been 8 per cent. of raw sugar. Now let us give the Doctor's calculation, substituting a produce of 6 per cent. instead of 4½, and we shall have as follows:—

The price of 61,607 tons of Beet, at 15*s.* 6*d.* per ton £46,080	0	0
Cost of manufacture 39,900	0	0
Making a total outlay of ..	85,980	0	0
The produce would, at 28*s.* per cwt., short price, sell for	108,488	0	0
Giving a balance in favour of the manufacturer of	£22,508	0	0

But there is really no necessity of arguing the question. Fifteen tons of roots yield one ton of sugar; and upon that supposition the following estimate would represent the profit:

To 15 tons of roots, at 15*s.* per ton	£11	5	0
Cost of manufacture, say at 9*l.* per ton ..	9	0	0
Total cost	£20	5	0
The produce would be 1 ton of sugar, at 28*s.* per cwt.	28	0	0
Deduct expenses	20	5	0
Giving a balance of profit of	£7	15	0

In this estimate I have not included the pulp or molasses, and have assumed the cost of production per ton at the very highest sum paid in any manufactory in Europe, and yet there remains the very handsome profit of 7*l.* 15*s.* per ton!

(7). *Schmidler.*—It is remarkable that the amount of sugar in the Beet-root indicates, according to the composition of the soil and the nature of the manure applied, great variations, by which in fact the culture particular and should be had. Very rich clay soils are not adapted for the cultivation of the Beet, when the object is to obtain the largest amount of saccharine matter; the bulbs in such soil become watery and yield but little sugar. Moderate clay soils containing 50 per cent. of sand, were found by Hermbstædt the best suited for this crop. Richly manured soils give a great produce per acre, but the roots in this case contain but little sugar. Beet strongly manured with horse or sheep dung often yields bulbs which do not contain a trace of sugar; but whose juice, on the contrary, is strongly impregnated with nitre. Moderate manuring with vegetable compost, and particularly with cow dung, produces Beet-roots containing the largest amount of saccharine matter; these yield, under favourable circumstances, from 5 to 6 per cent. of crystallised sugar. Juice or syrup: at the sugar manufactory at Althaltensleben, the general average produce of sugar was found to be 5.58 per cent. Not less remarkable is it, that the saccharine properties of the Beet-root become considerably diminished when it is kept too long in store. The same bulbs which in October, November, and December gave a rich yield of crystallised sugar, when worked up in January were found to contain 30 per cent. less of sugar, in February 50 per cent. less, and in March scarcely a single remaining trace of that substance; an obvious proof that during the period of development in advancing spring a change goes on in their elementary constitution. The rapidity, too, with which the juice is worked up has likewise an influence on the amount of sugar it will furnish; for if the Beet pulp remain only two hours without being put into the press, though it may produce much syrup, it will yield very little crystallisable sugar.

8. *Schmidt.*—The discovery was first made by Marggraf, at Berlin, in 1747, that the same sugar as that furnished by the sugar-cane was contained in the juice of the Beet-root, and could be extracted from it in a pure state. This discovery soon obtained the notice of parties engaged in the industrial arts; but it was not until the year 1812 that it received from France a wider diffusion, and a knowledge of it became more generally extended, especially throughout Germany and Belgium. The result of all the experiments appears to prove that the variety known under the name of the White-Silesian Sugar Beet is the richest in saccharine matter. A fertile sandy loam, deeply cultivated to the extent of from 12 to 16 inches, yields the best Beet roots. Fresh animal in nure, containing, as it does, much nitrogenous matter, is on that account not the best application adapted for its cultivation, because it increases the amount of nitrogenous components in the root at the expense of the sugar. The greater the weight of a Beet-bulb is, so much smaller, generally, is the amount of sugar it contains. Accordingly, Beet-roots of the same crop have been found to give the following results:—

Beet-root weighing a quarter of a lb. contained 13 per ct. sugar		
.. .. half a lb.	11 to 12	..
.. .. two lb.	8 to 10	..
.. .. three lb.	6 to 7	..

9. *Beaussenault.*—In France it is estimated that the average amount of white sugar obtained from the Beet is only about 4½ per cent., while the composition of that root shows so much larger a proportion of saccharine matter. This considerable loss is chiefly attributed to the action of the salts of potash contained in the juice of the Beet, as well as in that of the sugar cane, salts that are again found in large proportion in the molasses obtained from each of those juices. To this undoubted cause of the alteration of the sugar during boiling, must be added another, more powerful perhaps, and of which the effects are manifest on the juice immediately after its extraction by the press. This destructive action proceeds from the circumstance of the albuminous matter modifying itself in contact with the air into a real fermentative substance which renders the sugar uncrystallisable.

Home Correspondence.

Ducks.—Can you or any of your correspondents inform me why I am so unsuccessful with my young ducks? They hatch pretty well, but half of them (this year two-thirds) die before they are two months old. I will tell you how they are managed in order that you may point out any faults. As soon as the mother (sometimes a hen) has hatched, she is put under a coop in an outhouse if wet, and in a garden if fine. For the first three weeks they are fed five times a day on soaked bread; this year I tried Barley-meal, mixed up with milk, but made very dry; as they get older they begin to pick up the tail corn on which the mother is fed. For the first few days they have very little water, but afterwards a large pan, which is kept well supplied. When they are a few days old, they begin to look thin, miserable, and draggled, with long legs and long beaks; about half drop off one by one before they are a month old, and this year some of those remaining died quite suddenly at eight or nine weeks old. I should add that we have no pond for the old ducks, only troughs where they drink. If you can tell me why my ducks die, I shall be extremely obliged. *Campagna.* [Your ducklings require more nourishment from the first. Instead of feeding wholly on bread at first, give them some curd with bread crumbs and Onion tops chopped fine. If they appear weakly, mix a little black pepper with the food. As they get older, withdraw the curd, and substitute Barley or Oatmeal—if mixed with milk or pot liquor, so much the better. The tail corn is not adapted to them while young, and we think you would find it answer in every way to have it ground. Chopped Cabbage is good for the ducks at all times; or a whole one fastened to the ground, so that they can pick it off bit by bit, will always be acceptable to them. If possible the breeding birds should have a swim, if only for half an hour three or four times a week.]

"T. B." and Mr. Mechi.—Although I am not acquainted with either Mr. Mechi or your correspondent "T. B.," I cannot see how "T. B."'s letters can be of interest to many of your readers, as they appear to me to be chiefly a personal attack on Mr. Alderman Mechi. I trust that "T. B." 's classical friend adds to his other accomplishments a knowledge of medical science, as I feel confident that any ordinary mortal would require a strong tonic after reading such an account of himself as was given in "T. B." 's letter of the 30th ult. *Worksop.*

Societies.

SMITHFIELD CLUB.—At a Meeting of the Council of the Smithfield Club, held Oct. 16, 1866, present Chas. Barnett, Esq., Trustee, in the Chair, Messrs J. Buckley, J. Clayden, Joseph Druce, Jno. Giblett, Brandreth Gibbs (Hon. Secretary), Chas. Howard, R. Leeds, R. Milward, R. Overman, Josh. Shuttleworth, Richard Stratton, Thos. Twitchell:

1. The minutes of the last Council Meeting were read and confirmed.

2. A communication from the Council of the Birmingham Cattle Show was read.

The Hon. Secretary was requested to reply that the Council of the Smithfield Club determined to defer taking any active steps in endeavouring to obtain a relaxation of the existing orders made by the Privy Council, until the meeting of the Smithfield Club Council, on the 7th November next.

The Council proceeded to consider the precautionary measures to be taken at the ensuing Show in reference to the Cattle Plague.

It was resolved that there shall not this year be any rule on the Club's part to exclude from its Show animals which may have been exhibited elsewhere within a month previously.

(N.B. Provided this shall at the time be legal.)

It was resolved that the following of last year's regulations be again adopted:

1. That each exhibitor be required to produce a certificate from a qualified veterinary surgeon, showing that each animal is free from the rinderpest, and has not been on the same farm where infected animals have been within 21 days previously.

2. That a committee be appointed to make arrangements respecting disinfected conveyances, in which animals for the Show may be carted from the railway termini, London. The committee to consist of the Stewards, the Hon. Secretary, Professor Simonds, and the Chairman of the Agricultural Hall Company.

N.B.—The particulars of these arrangements, and instructions to exhibitors respecting the manner in which animals must be conveyed, will be communicated to exhibitors as soon as finally determined.

That every animal shall undergo an inspection on its arrival at the Hall, and that the Royal Veterinary College be requested to make arrangements for the constant attendance of veterinary inspectors.

The following were elected members of the Club:—The Right Hon. Lord Chesham, of Latimer Chesham, Bucks.; Alfred Hall, of Westbury Villa, Westbury, Wilts.

The thanks of the meeting were voted to the Chairman.

GREAT BRAXTED.—At the second anniversary of the Labourers' Friend Society held the other day, under the presidency of Lieut.-Col. Brise, M.P., Dr. Du Cane, M.P., Mr. Mechi, and others addressed the meeting. The following are passages from their speeches:—

The CHAIRMAN said he had hoped that he should have been able to congratulate them in this district on the fair harvest that they had lately gathered into their barns; but he had heard since he had been at Braxted one or two indifferent reports as to the yield in this neighbourhood. However that might be, other parts of Essex were more highly favoured; and although perhaps there was not an abundant harvest, take Essex throughout he believed they had a very fair—an average harvest. (No, no.) Well, at any rate far beyond other counties in the kingdom, for in the northern and western counties the matter had been very serious indeed. One of the greatest obstacles in the way of the farmers this year had been the scarcity of labour, particularly during the hay season; but this, however, was only temporary, owing to the large acreage of Grass throughout the country generally. The scarcity of labour, too, was increased by the absence of the usual influx from Ireland; but that also was temporary; and for the harvest he believed they had had as much assistance as they could require. With regard to the labourer himself, they, as employers and landlords, had to perform a duty towards him, and if at all times he did not please them in the duties he had to perform, they must recollect their different positions—the advantages they had themselves, and treat them with kindness and forbearance. The labourer, too, on his part, must recollect that the labour market on a farm was not guided by the law of supply and demand. He (the Chairman) knew of many employers who retained their old men after they were nearly worn out, simply for the sake of old friendships, and because they had worked on the farm many years. In the same manner he knew of many boys and lads employed on farms, though perhaps not wanted, simply because their parents were employed on the same occupation. Some people contended that education had done an injury to the labouring population, and put the blame upon education for the independent spirit that had been shown by the labourers in this and other counties; but let them not be deceived by that idea, for depend upon it that was erroneous. An educated labourer was better than an uneducated one; and they might depend upon this—that if they got discontent into a parish, and if it should so happen that a demagogue came there, the educated would be less likely to be led away by the demagogue's eloquence than the other, who would probably believe every word that was told him in order to set him at variance with his master. They must recollect, too, that if they wanted the labourer to be under an obligation to them they must go further and do more than this. They must remember him in sickness—give him the kind word and sympathising look when in distress—and although, perhaps, he might not show his gratitude—were they themselves grateful at all times for the mercies they received? What was wanted was more reverence. Mr. Carlyle, the philosopher, once said that reverence was wanted in three ways—reverence for what was above, reverence for our equals, and most of all reverence for those who are beneath us—reverence from the wealthy to those who were in poverty, sickness, and distress. Some maintained that the administration of our laws in this country was not beneficial to the labouring classes; but let them examine the stigma and see whether it was correct or not. He believed, when they looked to the legislation of past years, they would see that it had been carried out to benefit the labouring and operative classes, and they would find that little more remained that the Government could do for them. In this country, at any rate, the laws of the country were administered the same for the poor as the rich. We in this country did what was done in no other country: we maintained at the expense of the public the old and infirm. Again, we had no conscription—every man was free, co-operative associations were encouraged: in every way, no taxes were paid by the poor man that were not trebly paid by the rich man, and it was in the power of any man to obtain land. Therefore those who said the Government were in fault in not improving the condition of the labouring classes were stopping the only road to improvement. There were three things that were wanted for the improvement of the labouring class, and they, in his opinion, were economy, industry, and prudence. It was said also that our agricultural labourers were not the same stamp of men, and did not take so much interest in the welfare of the country as the labourers in the manufacturing districts; but was this true? If they looked into statistics of savings' banks, they would find that in the counties of Dorset and Wiltshire, purely agricultural counties, there were far more depositors than in the manufacturing county of Lancashire. Again, in the West Riding of Yorkshire it would be found that the operatives put far less into the savings' bank than in the rural districts. This was a strong argument for them to persevere in endeavouring to improve the condition of the labourers, for on them the stability and glory of this country must depend.

Mr. DU CANE said: We have gone through a very disastrous year, as regards some agricultural districts in this country. But next to that fearful visitation, the Rinderpest, I think the most remarkable feature of the past year has been the gradually-failing supply of agricultural labour. No doubt the numerical falling off of agricultural labour may be a very good thing to those labourers who remain, as it will inevitably assure to them higher wages and the certainty of employment at all times and seasons. But, on the other hand, if the supply of agricultural labour should continue to diminish in the present proportion, the farmers of this kingdom must lay their heads together to meet in some other way that deficiency; and I think that during the next few years we shall witness a large development of inventive power as regards new machinery, and a more thorough development and perfection of the machinery we already have in practical use. I think, too, we shall witness a much greater development of the powers of steam as applied to the cultivation of the soil—and I think, although it may sound rather chimerical to some of us—yet, when we have lately seen England and America, thousands of miles apart, united by a single wire, we cannot question the possibility of seeing parishes and districts combining together, and companies being formed, to obtain and afford the command of that machinery which the small farmer would be unable to avail himself of by purchase. And if this be the case, I really begin to think we shall find it essential to be still more earnest in our efforts as landlords, farmers, and employers of labour, to develope the skill and improve the moral habits of our labourers, in order to enable them to deal with such machinery, not only skilfully as regards its use, but with safety to those employed about them. Colonel Brise, in his address from the waggon, has given the labourers some excellent advice upon the virtue of sobriety; and I think that virtue in connection with the increased use of machinery is a very serious question indeed. I remember reading in the "Journal of the Society of Arts" an article with the ominous title, "Accidents by Machinery," and dilating, as the writer did, upon the prevalence of accidents since the introduction of machinery, he declared his conviction that the causes of three-fourths of them were comprehended in the single monosyllable 'beer': and if in my experience as a Lord of the Admiralty I have learnt nothing else, I have certainly found this—that among the sentences of courts-martial there is no offence which is punished more severely, in comparison with other similar offences, than the drunkenness of an engineer in command of an engine. Now, if this be so, surely we who are working already with the common object of increasing the skill and improving the social and moral condition of the labourer, may well congratulate ourselves upon the success which seems to attend the present efforts of the Society.

Mr. MECHI, in proposing the health of "Mr. C. Hall and the Judges," said he knew they expected he would say something about agriculture. He was often surprised, and as often regretted, that at many agricultural meetings agriculture seemed to be almost forgotten in the complimentary speeches to different individuals; not bringing to bear the real question of the progress and condition of British agriculture. He highly approved of the Society, which, he believed, were doing a great deal of good, and must congratulate Mr. Du Cane on establishing this, which might be a gratification to the recollection of that which formerly existed at Witham, and he gave great credit to Mr. Du Cane for his judgment and foresight in making that recognition. He wished it every success; he believed it would be successful, and he believed that all agricultural meetings of this kind, having for their object the improvement of the labourer, and the general improvement of the condition of agriculture, would be successful, provided they discarded from them political animosity and personal invective, which had been the ruin of many societies. Now let them look for a moment to the present condition of British agriculture. It certainly was somewhat anomalous that we had a population of nearly 30 millions, and that they were unable to produce sufficient food with which to feed themselves—although neither for want of land nor capital. Large imports every day poured into every simply with grain, poultry, and eggs, and was it right that with an abundance of land we should be in this position? The acreage of the United Kingdom was 77 millions, 61 of which were available for the production of food for man and beast; and an increase in the matter of production of 1*s.* per acre would represent three millions sterling. Surely they could improve production to that extent; and how was all this to be done? The first way to do that, he believed, would be to eradicate a number of old prejudices; secondly, to increase the education not only of the labourer, but also of the agriculturist himself; and in the third place landlords should be taught, if they did not know it already, that their interest was concurrent with that of the farmer, and that if we were to produce more food it must be by the introduction of more capital, more intelligence, and more liberality, both on the part of landlord and tenant. In speaking thus he referred to no one particular parish, but he took the great map of England, and looked to its present position and its powers of production; and if he felt humiliated at the position he had described, it was not because of what was doing in any particular parish, or through a petty feeling towards any individual farmers. Englishmen were proud of their country. We stood high among the nations of the world. We could send our ships into every port; we could wrap the whole world in calico, and undersell every nation in the world with the manufactures produced by our skill, our intelligence, and the investment of our capital; but in agriculture he was sorry to say that from many impeding causes we were not in the same honourable position. He would not go into the subject in detail, for it was a very large one; but perhaps the cause of all this was the little prejudices of landlords and tenants. Landlords often liked to have plenty of trees and fences, and they sometimes liked to have plenty of game, and did not like to part with the power over their land; while, on the other hand, the tenant fancied he was paying too much rent when he was not over-rented at all, and was perhaps also afraid to invest sufficient capital in his land. If we would produce a larger amount of food in this country we must invest a larger amount of capital. The capital exists in this country, and all that is wanted is the application to agriculture of liberal business-like views. He would put himself as an instance. He had lately parted with premises in the city upon which he had laid out a good deal of money; but he had a lease on those premises which he sold for 5200*l.* Supposing his landlord had not granted him that lease, with the right of transfer, he should have been a loser to that large extent. When landlords were prepared, as he believed they would be, to give up some small privileges, and to grant leases on liberal covenants, they would get better men as tenants, more capital would be invested in agriculture, and, as a necessary consequence, there would be a larger production. He came next to the tenants, and he knew there were farmers present who did not believe in the drainage of stiff clays. He had no hesitation in saying that that was the very soil which most required drainage; and in his experience with his own land he could say that through drainage and deep cultivation its present state was such as he could never have dreamt of when he first came to Tiptree, 22 years ago. He regretted therefore that there still remained a conviction that there was no use draining stiff clays, because water would not go through them. The absurdity of that argument was often shown in the erection of houses. He knew of one case where a builder erected a house on a stiff clay, and forgot to drain the land 4 or 5 feet. The consequence was that heat contracted, while wet expanded the foundation and threw the house out of form. Then again there was the question of the improvement and increase of machinery. It was 20 years since he put up his first steam-engine, and at that time he was very much laughed at, but since then he was glad to say some of his practical friends had altered their opinion, for, with the attractions of better wages, labour was departing from agriculture and going to the manufacturing districts. This, it was evident, would cause a great demand for machinery, and this was the real history of the cleverness of the American in this respect. The fact was that human labour was there so high that they availed themselves of every opportunity to replace it by machinery, even to Apple and Potato peeling, to avoid it. There could be no excuse for our not doing the same here; coal was cheap, and iron was cheap, and he should recommend his friends at once to adopt it; and above all to keep plenty of stock, for they must recollect that the man who kept twice as much stock made twice as much manure, and would consequently have double the crop.

Mr. HALL, in returning thanks for the Judges, said, as a farmer of between 500 and 600 acres, chiefly heavy land, he differed from Mr. Mechi as to the drainage of stiff tenacious loams. He had himself drained 300 or 400 acres from 2½ feet to 3 feet, but the drains in these loams did not carry a quantity of water, and would hold no more; and even with the wet summer he would defy Mr. Mechi to have told the difference between the drained and undrained parts.

Mr. MECHI.—Has not your mid-labour, Mr. Blyth, done a great deal of drainage?

Mr. HALL.—His was a white loam with a draught in it; in the tenacious loams he (Mr. Hall) spoke of there was no draught.

The Rev. F. WATSON proposed "The health of the Committee," coupling with the toast the name of the secretary, Mr. Carter.

Mr. CARTER, in returning thanks, congratulated the members on the increasing prosperity of the Society: their numbers had doubled, and they had been enabled to-day to distribute between 200*l.* and 300*l.* in prizes, which, though a large amount of money, represented a large amount of moral good, for some of it perhaps would go into the savings' bank, and become the nucleus of a fund that might enable its owner to raise himself to a higher rank in life. The question of the agricultural labourer was becoming a very serious one; it sometimes occurred to him that farmers were altogether wrong in their system of paying wages. Whatever differences there might be in the skill and usefulness of their men, the wages paid were uniform, 10*s.*, 11*s.*, and 12*s.* a-week. That was not the practice of the tradesman, with whom, at the same counter or in the same warehouse, one man would get his 40*l.* a-year, and another, perhaps his 70*l.* a-year. The present system of agricultural wages dragged the good man down to the level of the bad, instead of putting him in the higher level to which his merits entitled him. He confessed he had not found out the remedy for this; it was not met altogether by piece work; but it was a question which must be met, and the sooner it was met the better it would be for agriculture. As to the question of draining stiff clays, he must say he agreed with Mr. Mechi that they required draining as much as light land, as he knew from recent experience. Mr. Davis, the able inspector of the Government, contended that they could not keep water in stiff clays if they gave it an outlet; and he (Mr. Carter) was not quite sure of the way he was going on was going deep enough, so as to prevent the cracks reaching the drains. To drain heavy land it must be drained skilfully, but there seemed to be a propensity on the part of some drainers to try to make water run up-hill, which, he must be allowed to tell them, they would never succeed in doing.

The CHAIRMAN, returning thanks for the toast of his health, said he should like to make one or two remarks in reply to those which Mr. Mechi had so kindly laid before them that evening. He understood him to say that there was ample land in this country, plenty of capital, and plenty of labourers to cultivate the soil, and yet they could not produce sufficient corn to feed the people. (Mr. Mechi. "Hear, hear.") And he thought he further understood him to say that was in some measure owing to the want of capital embarked in agricultural enterprise; but according to was (the Chairman's) idea, there were other things and other objects for which Englishmen have a great affection besides the mere commercial object of making money. There were farmers and yeomen who had a great love for old associations, and there were many, himself among the number, who thought that old associations and old friendships were not to be lightly thrown away—that they were more valuable, and went further to influence our every day life and conduct than by solely making large fortunes. Many farmers and their forefathers before them, had occupied their farms for centuries. Should we like to see these old agriculturists driven out of

the country—should we like to see the Manchester men come down with a greater amount of capital than the others possessed and buy up the farms? They might, perhaps, grow more corn, but did we think that there would be any pleasure in living in such a country? Where would be all the pleasures of shooting and fox hunting, so delightful to Englishmen? With regard to the question of drainage, he would remind Mr. Mechi that drainage had been introduced into Essex years before the gentleman came into the county. While he agreed with much that Mr. Mechi had said as to the drainage of stiff clays, he could have shown him this year crops not inferior to those grown at Tiptree Hall upon land drained on the old system—30 inches deep and a rod apart. [Mr. Mechi: You are quite right.] This showed that one uniform depth of drainage was not practicable throughout the whole country. One word to his friend, Mr. Hall, if he would allow him to call him so. Here was an experienced man, farming 800 acres of heavy land, and he told him he only grew equal crops on the drained or the undrained part. It was the first time he had heard a practical man get up and express such an opinion, but he had understood that that opinion was entertained by some experienced farmers, and probably Mr. Hall might get many converts to his system yet. One word as to the payment of the skilled and unskilled labourer. Mr. Carter's observation on that point recalled to his mind the practice of a very old tenant of his own, who had now been dead some years, but in his time was as good a farmer as any they could find in Essex. He paid all his men for a week each, or whatever the rate happened to be, but those who were rather more skilled or worked harder were invariably paid 2s. or 2s. 6d., or something like that, more than the others. He did not give them this when he paid their wages, but slipped it quietly into their hands at other times, so that the other men should not know anything about it.

Mr. Mechi wished to offer one word of explanation. He had always held up Essex and Suffolk as the earliest drainers in the kingdom, but he and the Chairman were talking of two different soils. The class of soil to which he was alluding was the collapsing stiff loam with no chalk in it. When he came into Essex nobody believed that these collapsing soils could be drained, because, under the old system, the faggots and straw were immediately swallowed up, but the introduction of pipes, which could not be shut up, altered the question.

Mr. Dr. Cane said, he had heard he had done a great deal of draining in that very neighbourhood, and he had come to the conclusion that no one average depth would do throughout the county. Some time since he had drained Mr. Carter's farm under the Government loan principle at 4 ft. deep, and he was pleased to hear that his tenant was satisfied with it; but another tenant, Mr. Goodyer, whose farm he offered to do the same thing, told him that if he were to do it entirely at his (Mr. Du Cane's) expense he would not thank him for it.

Mr. Goodyer said that, as a practical farmer of many years' standing, his opinion on the drainage question was that the landlords should find the pipes, and allow the tenants to put them in at any depth they thought proper.

Reviews.

The Journal of Agriculture. No. 4, New Series. Oct. 1866. 150, Fleet Street.

The most interesting paper in the current Number of the Journal is the memoir of the late John Hall Maxwell, C.B. It is accompanied by a portrait, in which however we do not recognise Mr. Maxwell, but the memoir itself is a better picture of the man. It is the account of a most laborious, energetic, useful life.

Mr. Ewart continues his discussion of the influence on agriculture of modes of letting land. Sketches of foreign agriculture—our foreign supplies of food, acclimatisation and arboriculture provide the other contents of the Number.

Farm Memoranda.

Keythorpe.—(*Continued from p.* 984).—At about the centre of the arable, field-barns are erected (we saw three) for the accommodation of a certain number of cattle, with a cottage of a superior description attached to each; keeping in view the possibility of those pieces being let off as farms, he has so arranged the cottages that some slight additions would convert them into dwelling-houses suitable for small occupiers.

The yards for the cattle are covered, being a series of parallel sheds; the mode of management is peculiar, and, as will be seen, good.

The shed roofs are high, and afford storage room for about 50 acres of corn, which in harvest is stacked or stored under them. A fixed threshing machine occupies one corner, power being communicated by a portable engine. When the cattle require to be brought into the sheds, a section of the corn is threshed, the straw being stacked up outside, and this affords room for a given number, and as threshing proceeds, additional room for more cattle, if wanted, is provided; if not, it is used for storing the straw.

No attempt is made, by the usual mode of post and rail, to subdivide the shed internally, but the feeding racks are constructed so as to serve the purpose of both racks and division fences.

The Home Farm buildings are plain and substantial, and with no pretence to show, additions having been made from time to time as circumstances required, but on the whole the arrangement is very convenient.

A 12-horse steam engine supplies power for threshing, grinding, sawmill, chaff-cutter, pulper, cake-crusher, oat-bruiser, grindstone, &c. The straw is cut into chaff and steamed for food; the chaffcutter being placed directly over the steaming tubs, the chaff when cut falls into them.

The mixing room is conveniently placed, the pulped roots are delivered into it, the meal store opens into it, the chaff is steamed in it, while it opens into a passage from which the cattle are fed. Feeding arrangements such as these could scarcely be improved on, were the buildings ever so costly or elaborate in style.

Some large parallel sheds adjoin the threshing barn, capable of storing 150 acres of corn. From these the corn is pitched direct to the threshing draw, which greatly economises labour. Again, in harvest, the corn, when once in, is quite safe from the serious risk of losses from getting wet before it is thatched, and the cost of thatching is saved.

In wet weather, when outdoor work cannot be done to advantage, profitable labour, viz., thrashing under cover, can always be found here.

The dung from the stables, cowhouse, and piggeries is thrown into a covered shed, on which we saw a number of pigs luxuriating, and no doubt turning to good account any stray grain or non-assimilated food that might have escaped the cattle or horses.

The manure from this shed is found extremely valuable, and is carted direct to the land, without being turned over, and if not ploughed it at once, is immediately covered over with earth.*

The sawmill is conveniently situated, and the feeding appliances are novel, simple, and efficient.

Another extremely valuable contrivance is the utilisation of the waste steam from the engine to heat a floor on which is dried damp corn, green wood, &c. The first cost of this was trifling, and the expense of heating almost nil; it is universally applicable wherever there is a steam engine, and would prove a great boon to any farmer who grows corn to any extent.

Separated from the main buildings by a road is the hospital for sick animals, and feeding-pens, with sparred floors, for sheep; to which has been lately added an implement-shed and granary, also a mill house, and shed for a portable steam engine, which drives two pairs of stones and a flour-dressing apparatus, to manufacture the flour for family use, for the labourers, and such of the tenants as choose.

The premises are lighted with gas manufactured thereon—a great convenience and economy; and very interesting it is to see, in the dusk of a winter's evening, the buildings lighted up, and the works progressing as vigorously as in daylight, which but for the gas must have been stopped.

Sheep.—A breeding flock of 200 ewes of the pure Leicester breed is kept, one-fourth of which are annually put to a Cotswold, Down, or Lincoln ram, and the produce fed off for the butcher as shearlings. The other ewes are put to rams of pure breed, "theaves" from the produce being selected to keep up the flock, and the remainder fatted and sold as before, together with the draft ewes and upwards of 100 half-bred shearhogs, which are bought in.

This flock is an excellent specimen of the Bakewell type of sheep, and with symmetrical form combines size and good fleece of wool.

The Leicester wethers have for some years been successful as prize-takers at the Smithfield Club and provincial shows, and the animals for exhibition this year possess great merit, one extraordinary fine sheep being among them †

Cattle.—A dairy of 15 cows is kept, their produce reared and fed off, in addition to about 80 Hereford and Shorthorn bullocks and heifers, and also 30 Kerry cows. These, together with the sheep and pigs, are chiefly disposed of in two auction sales, held in December and April. The cattle are fed on pulped roots and steamed chaff, and a cake of home manufacture, composed of Indian Corn meal, Bean meal, and other compounds, in proportions varying according to their relative cheapness or dearness, as fat or flesh formers.

The mixture is first well boiled, and then turned into a mould to stiffen, and given when a few days old.

Horses.—Six well-bred brood mares are kept, and their produce reared for the hunting field and the road.

25 cart-horses, chiefly Suffolk breed, and 2 hacks for the bailiff, are kept at the farm. On an average, 8 of these are employed for estate work.

By the adoption of steam cultivation the farm was enabled to dispense with 15 horses.

Pigs.—In these days of low-priced grain, pigs are an important feature in the Keythorpe farming. At the time of our visit a stock of 250 was on hand. Breed, the Suffolk and Yorkshire, and crosses from them,—a very profitable sort, combining fecundity, early maturity, and a great aptitude to fatten.

From the excellent arrangement of the machinery and buildings, the food is prepared and given at a minimum expense, and keeping in view the relative prices of grain and meat, it is extremely probable that this is a good paying branch of the farm. *Journal of the Agricultural Society.*

Merse of Berwickshire: *Oct.* 13.—It is now a fortnight since we thought to have reported the close of harvest here, but that unlucky Friday's rain—a common occurrence during the month, but from time to time mended by drying breezes—was followed by the steadiest growing weather ever seen at this season. Day after day of thick wetting mist, warm, and scarce a breath of air, and the barometer above 30 inches, where it had not been for months—such has been our weather, with the exception of a lighter day or two this week; and it promises no better yet, although the barometer is down. In many instances near half the crop is still a-field, but in many more the two days would have sufficed to secure all. We must, however, face the fact, that a considerable portion of our lowland crop is quite as much spoiled as in the "wet harvests" of 1856 and 1857. Many there are, of course, who by quick reaping and slow carrying have their crop in good order; and yet last week one heard of heating and turning stacks from all quarters. This damaged corn is as yet the staple of our markets, but even sound grain is much inferior to last year's, and prices consequently are steadily rising.

The straw on rich land may bulk a little more than last year, and on poor decidedly less. As compared with former years, it may be said to vary from three-fourths down to one-half of a good crop. Wheat will be unequal and poorly filled, but it is not our time for threshing it yet, and on many places none is now grown. Barley gives well, but is very high-coloured, even where perfectly sweet. Oats were mostly cut very green, and there are some fair samples, but unusually light in the bushel. There are very few Beans in the district, and the price for feeding is monstrous. The market will not be overstocked with Tares next spring, for there can be none saved now.

The Potato disease is rapidly spreading in a good crop. *J. T.*

* Lord Berners puts great stress on covering up the manure when laid in small heaps on the land, and cites an instance where the labourers were overtaken by a thunderstorm while manuring for roots, the ridges being opened and the dung carted on and laid in small heaps. A portion was covered with soil previous to the storm, and the remainder left for a few days exposed, the manure and treatment being in every other respect the same, but the difference in the crops was most astonishing; where the manure was covered the produce was nearly double, nor did the difference end with the root crop, for the Barley succeeding was also very much better on the covered manure. This scarcely accords with the scientific conclusions of Professor Voelcker, who does not anticipate harm from exposing manure if spread on the ground. Lord Berners, however, is far too practical and acute an observer to allow us to have the slightest doubt as to his accuracy, and this is one of the instances where the teachings of science and the facts of practice cannot be easily reconciled.

† The above was written in November, and at the Smithfield Show these sheep carried off all the first prizes in their class; and the gold cup for the best Longwools in the Show was also awarded to them.

Miscellaneous.

Mr. Fisher Hobbs.—We greatly regret to announce the death of this distinguished agriculturist on the 11th inst., at Boxted Lodge, Essex, in his 57th year. Until within the last few years, when declining health compelled him to relinquish an active and laborious life, Mr. Fisher Hobbs was one of the most prominent agriculturists in England. He was a highly successful breeder of stock; farmed largely and well; and combined scientific knowledge with practical experience. He was one of the founders of the Royal Agricultural Society of England; for many years he had been one of the Society's Council; and there were few of its more important committees which were not indebted to his labour and keen powers of investigation. And his promptitude and energy were on several occasions of great service to the Society, and through it to English agriculture generally. In the smaller sphere of his own county Mr. Hobbs was equally active and useful. Every county agricultural society formed during the last 30 years was more or less indebted to his assistance in its formation and management; and of the less pretentious labourers' friend societies he was the founder of those at Coggeshall and Earls Colne, and the promoter of several others. The anti malt-tax movement also loses one of its most earnest and persevering advocates. He was never married, and had apparently a strong constitution; but the rupture of a blood-vessel brought on increasing debility, followed by partial debility of mind.

Steam Cultivation at Woolston.—Mr. Heuley tells us in your paper of the 21st of September, 1865, that "it seemed to him that the invention (the steam plough) had now come up to a certain point and there stood still, going neither backwards nor forwards." I can support his statement, for I have sold only two sets of tackle this year. Why this steam plough progress, or rather stand still, should thus stand I cannot understand, for the evidence on my farm is opposed to such sluggishness. To support this I will, with your permission, give my eleventh year's practice. On Saturday, the 29th of September, I began working my tackle, and to-day, at 9 A.M., I finished the whole of my work for the year. Here is the sum total of it:—Heavy Land.—Field, No. 2, eight acres of Bean stubble; field No. 3, 12 acres of Bean stubble. Light Land.—Field, No. 1, 12 acres of Pea stubble; field No. 2, 13 acres of Bean stubble. Total, 45 acres. These 45 acres have not only been cultivated, but have been cross-cultivated and seeded with Wheat, the crossing and seeding having been done at one operation, so that within 12½ days I have worked 90 acres, doing the seeding into the bargain, and have thus taken advantage of the last fine fortnight. The consumption of coal has been five tons nine cwt., at 15s. per ton. Here am I at the end of this wet season with the principal part of my Wheat seeding done, and the first planted coming up well. The rest of my year's work will be done by my three horses; to complete it they have to plough upon the turnover plan 11 acres of Clover hay and seed it with Wheat; 29 acres of Wheat stubble for Beans or root, and their year's work will be done. For Beans or root, and their year's work will be done. For readers may draw their own conclusions from this, keeping in mind the wet season. *William Smith, Woolston, Bletchley Station, Bucks, Oct.* 13, *in the Times.*

National Dog Show at Birmingham.—An advertisement in another column announces that the next exhibition will take place on Monday, Tuesday, Wednesday, and Thursday, the 3d, 4th, 5th, and 6th days of December next. Prizes to the amount of 750*l.* are offered. It will be seen that entries close on November 1. The new fittings for the accommodation of the dogs will not only add much to the internal appearance of the hall, but also promote the convenience of visitors by enabling them to inspect the animals with greater facilities than heretofore.

Lord R. Montagu on Earth-Closets.—Lord Robert Montagu states, on the authority of Mr. Bateman, that a general adoption of earth-closets in London would require 400 acres of soil 6 feet deep every year, and this calculation he considers to be a "stumper" to Mr. Moule, Dr. Hawksley, and all other promoters of the system. Having used an earth-closet in my house for a year and a half, perhaps I may be allowed room for a few remarks on this assertion and inference. 1. I should be disposed to ask, Why not? Has his lordship ever calculated the acreage of coal yearly supplied to London? Here is a rough calculation on the point. My own annual consumption of coal is about 20 tons,

which, piled 6 ft. high, might cover a space of about 12 ft. by 10, or say 1¼ square yards. 100,000 houses burning as much would spread their coal over a space just short of 300 acres, and if so costly a mineral can be got at this rate, surely "dirt" ought to be cheaper? 2. Lord Robert apparently forgets that the whole 400 acres would go back to the country *plus* another 50 acres or so of valuable matter, instead of being employed, like coal smoke, in the manufacture of London fog. But,—3. I think I may safely affirm that, bulk for bulk, and weight for weight, the consumption of coal in the kitchen fire alone is equal any day (alas!) to the consumption of earth in the closet. I believe that many practical difficulties stand in the way of the earth-closet system, as *e. g.*, the inability of discharging into such a receptacle the contents of the slop-pail; but among all possible objections I am disposed to rate the 400-acre difficulty very lightly. *A Country Clergyman, in the Times.*

Agriculture is the only trade which is fashionable. As soon as a merchant becomes rich—as soon as he attains a position in society—he must needs become a farmer. No one thinks of becoming a tanner or a tallowchandler for his amusement. But everyone tries to get a farm, and then swears that he loves the smell of a dungheap more than the scent of his wife's flowers. Perhaps he obtains three or four farms and throws them into one. This naturally increases the competition for farms, and raises their price. But the price of your produce is not proportionately raised. It is true that the wages of artisans are much increased, and that many of them eat beef twice a day, which they did not do before. This, however, does not enhance the farmer's prices so much, as it draws imports from abroad. Then, again, you are subject to losses by weather. If it be dry, alas for your Turnips. If it be wet, your corn is damaged. There are also losses of cattle by disease. Besides, sheep and oxen cannot be laid by until there is a demand for them in the market. An ox soon eats up his price without adding to his value. He must, therefore, be at once forced upon the market. These are all great drawbacks. What, then, is to be done? That which the manufacturer has to do in his race with other manufacturers—lose no chance of improving production by new machinery, and increasing the fertility of your land by new manures. *Lord R. Montagu.*

Calendar of Operations.

OCTOBER: *Harvesting Mangel Wurzels.*—The end of October is the proper time in which to harvest this crop. If left till later there is great risk of its being destroyed by frost. This was, in fact, the fate of a large portion of the crop in 1859, owing to its having been left in the field during two or three days of severe weather in the latter end of this month.

In illustration of the method of harvesting this and other root crops, I will describe the plan adopted on Whitfield Farm, near Berkeley, Gloucestershire, where it has been the custom to grow about 40 or 50 acres annually of Swedes and Mangel Wurzel. Less than one-half of this has been Swedes, 20 acres or more Mangel Wurzels, and 10 acres, or thereabouts, of Belgian Carrots. The whole of these crops were pulled and carted home for consumption in stables, yards, and cattle boxes during winter. It was the custom to let the whole work to five or six men, who undertook to pull and top and fill the bulbs into carts for about 7*s.* per acre for Swedes, 8*s.* or 9*s.* for Mangel Wurzels, and 20*s.* for Carrots. The last-named crop needed to be half dug when being pulled, but with reference to the others, which were grown in rows about 26 inches apart, five men would undertake the pulling, each man taking two rows, and placing the roots pulled, so that the whole eight rows lay together; eight or ten boys and women topped and tailed the roots as they lay upon the ground, cutting the head an inch or so from the crown of the root, so that the leaves fall separate; and eight or nine boys and women, with a man, filled the carts as they came up. Three carts were sufficient to keep a continual succession ready to be filled, when the distance to the store did not exceed 800 or 1000 yards; and the work was accomplished at the rate of about five acres of the Turnips daily.

The pulling is easily done in the case of a good crop. The larger the roots the easier it is to pull them out of the ground. It is in the case of stunted, ill-grown roots, with fangs and forked growth, that any difficulty arises. To meet a case of this kind, it may in some cases be advisable to undercut plants as they stand in the rows by a horse-drawn tool fashioned for the purpose; but this is more frequently needed for the Turnip crop, and will be named hereafter.

The following is an actual record of one year's experience on Whitfield Farm, when some 40 acres of each work had to be done. It includes an account of the hands employed by the contractors in lifting 40 acres of Mangels and Swedes, and the time they took to do the work, and the tons of roots placed in the store.

18–	Nature of the crops, and No. of the Field	Men pulling.	Women and boys cutting roots.	Filling the carts: Men	Filling the carts: Women and boys	Acres	
Oct.	Taking up Mangel						
15	No. 6 field	5	10	1	6	1	
18	No. 6 ..	5	10	1	9	1	10
19	No. 10 ..	5	10	1	9	1	
20	No. 10 ..	5	10	1	9	1	11
22	No. 22 ..	5	10	1	9	1	
23	No. 22 ..	5	10	1	9	1	
24	Swedes, No. 22 ..	5	10	1	9	1	14
24	No. 24 ..	5	10	1	9	1	
		30	70	7	63		

	£	s.	d.
The contract was for 29 acres of Mangel at 6*s.* 6*d.* per acre	9	8	6
Ditto, ditto, 11 acres of Swedes at 5*s.* 6*d.*	3	0	6
Total	£12	9	0
The cases crossed by the contractors and paid by them to the hands the same day.	£	s.	d.
12 days of 1 man at 2*s.* a day	1	4	0
70 days of a woman at 10*d.* per day	2	18	4
63 days of boys and girls at 9*d.* per day ..	2	7	3
Total	£9	9	7

Leaving about 2*l.* to be divided amongst the contractors more than their daily wages of 2*s.*

Horse-work in hauling the roots to the store.

No. 6,	3 days of 3 horses = 9 days,	206 tons from 11 acres.
No. 10,	11 day of 5 horses = 7½ days,	242 tons from 10 acres.
No. 7,	14 day of 5 horses = 7½ days,	190 tons from 8 acres.
No. 22, 24,	2 days of 6 horses = 12 days,	192 tons from 11 acres.
	36	930

930 loads or tons carried by 36 days of 1 horse is 26 loads per horse per day.

The expense of carting 930 tons on 40 acres of Mangels and Swedes.

	£	s.	d.
36 days of a horse and cart, at 3*s.* per day ..	5	8	0
7 days of a man to look and tip the carts in the stores at 2*s.*	0	14	0
17½ days of a boy leading carts at 8*d.*	0	11	8
Or at the rate of 3*s.* 4*d.* per acre ..	£6	14	8

The expense of pulling, cutting heads and Tailing on two.

	£	s.	d.
3 men 7 days, 21 days of a man at 2*s.* per day	2	2	0
2 boys and 2 women, 7 days each, 28 days, at 1*s.*	1	4	4
Or 1*s.* 7½*d.* per acre	£3	7	4

So that the total expense of harvesting the root crop of 40 acres was—for pulling, &c., 12*l.* 9*s.*, or 6*s.* 3*d.* per acre. For cutting 930 tons heads, tailing, topping, 3*l.* per acre. For storing them, 3*l.* 5*s.* 4*d.*, or 1*s.* 7½*d.* per acre.

The expense of harvesting 40 acres of roots, 22*l.* 8*s.*, or 11*s.* 2½*d.* per acre.

In this case the crop was taken to a plot of land close by the farm buildings, and there piled up in heaps made in the following manner:—Two rows of hurdles are placed upon a firm piece of ground, parallel to one another, and 9 feet apart. The interval between these is filled with roots, the carts bringing them from the field being backed between them, and tilted up at the proper place. The roots are piled up above the hurdles in a ridged or roof-like form, and are afterwards covered with straw, roughly drawn out as a thatch, which is kept in its place by the weight of long poles resting upon it. At intervals of two or three yards faggots are placed in the centre of the heap, inclining backwards, and reaching from the ground to the roof. These act somewhat as chimneys, and facilitate a due ventilation of the heaps, thus hindering any tendency to heating or putrefaction in the roots.

When one heap is completed, another is built within a foot of it, the passage left being intended as a channel both for the egress of the water which drops from the thatch, and for the circulation of air. No security against frost, at the sides of contiguous heaps, is required, further than that which is afforded by the interlocking of the bushy eaves of their respective roofs. When, however, a series of heaps has thus accumulated, a rough dead-wood hedge should be constructed around them, and the space between it and the hurdles, which may be 12 or 18 inches, should be loosely filled with straw.

I have annually kept many hundred tons of Swedes, Carrots, and Mangel Wurzels in this way, without losing any considerable portion by putrefaction. It fulfils the three conditions of success in the preservation of root crops through the winter—it furnishes security from the frost and wet, and at the same time provides a sufficient ventilation of the heaps.

A dozen such rows of roots, each 3 yards or more wide, and on an average 4 feet high, and perhaps 30 yards long, would hold 1000 tons. It is the work of piling up the roots as the carts bring them in, setting hurdles for them as the work proceeds, and thatching over, that is specified in the above tables as costing 1*s.* 7½*d.* per acre.

This was a systematic wholesale piece of work, and was thus conducted cheaply. To place in safety a valuable crop of roots, at a cost of less than 6*d.* a ton, is a very cheap and profitable thing; and no doubt where there is a large stock to keep on through spring and summer, the practice of storing roots will extend.

If the heaps be not hurdled round, they can be easily placed in safety by covering with earth. Let a headland be ploughed out—let the middle of it, for about 6 or 8 feet wide, have all the earth thus moved thrown on either side—then pile up the roots on the floor thus prepared, and cover the heap ten inches deep with earth. In this case, however, whether for Swedes or Mangel Wurzel, it is well to leave the heap for a week uncovered, except by leaves or straw, to allow all fermentation to cease, and the roots to partly dry, or they will be liable to heat and rot.

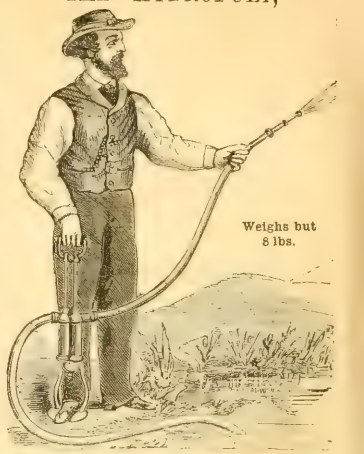
Notices to Correspondents.

DISCOLOURING EFFECT OF MOULD.—*W. C. Trevelyan.* You will find papers by Mr. Way on the absorptive properties of soils, and those by the Rev. W. Moule on the earth system of dealing with house waste, in the Journal of the English Agricultural Society; and Professor Wrightson, of the Royal Agricultural College, refers to the subject in our columns to-day.

ENGLISH AGRICULTURAL JOURNAL.—*Ibi Mellus.* There were 25 volumes of the 1st series, and there are now two volumes of the 2d series.

LAND AGENCY.—*To Landowners.* If any landowner desires a winter's assistance in the way of either suggestion, guidance, or superintendence of works of land improvement as drainage, road-making, farm buildings, or remodelled cultivation, we can confidently recommend the services of one accustomed to such works, whose lease of a large farm expired at Michaelmas, and as he takes another not to enter until Lady Day, he has six months' time on his hands, which he would gladly employ in this way.

THE HYDROPULT,



An Invention for Throwing Water by Hand Power
(SECURED BY ROYAL LETTERS PATENT).

PRICE LIST.

COMPLETE WITH BRASS CYLINDERS AND JAPANNED STIRRUP	£ 1 12 6
COMPLETE WITH BRASS CYLINDERS AND COPPER STIRRUP	2 2 0

The Price "Complete" as above, includes 24 feet Suction and 3 feet Delivery Hose, Galvanised Wire Strainer, Rose and Small Jet.

THE HYDROPULT
is invaluable for use in the
GARDEN for
WATERING BEDS,
SPRINKLING PLANTS,
DROWNING OUT INSECTS,
CLEANSING TREES FROM SMUTS,
DRESSING WITH LIQUID MANURE,
&c. &c.

CAUTION.

IMPORTANT TO THE PUBLIC.—The extensive sale of the Hydropult has exerted the cupidity of so-called respectable, but in reality unprincipled Manufacturers, who are now palming on the Public worthless imitations of the Hydropult, and through their connections are enabled to place said devices on exhibition, and for sale, in many of the principal Ironmongery and Seed Establishments throughout the City and Suburbs. These devices resemble in many respects the Hydropult in appearance, and are calculated to deceive the unsuspecting. The Proprietor therefore issues this Caution, and respectfully intimates that parties wishing to purchase the Hydropult should examine the machine offered for sale, and see if it has attached thereto a label, with the following words,—"The Hydropult, Vesta's Patent, manufactured only by GRIFFITHS & BROWETT, Birmingham. CHARLES POMEROY BUTTON, Proprietor, 142 and 143, Cheapside, London." Unless this label is attached, the Machine is not the Hydropult.

Prospectuses, with Testimonials, on application.

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IMPERIAL BUTTER COOLER.

SECURED BY ROYAL LETTERS PATENT.

USEFUL, ORNAMENTAL, UNIQUE.

The novelty and utility of this Invention consists in a Revolving Cover, so constructed that by turning the knob on either side of the Basin, it can be covered or uncovered instantly; the lid disappearing into a receptacle at the bottom, thus not only having the lid ready for instant use, but obviating the necessity of its removal from the table. The Butter Cooler can be used for a Sugar Basin.

Price, in white metal, electro-plated, £2 2*s.*

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142 and 143, Cheapside, London, E.C.

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HOT-WATER PIPES, at Wholesale Prices, with Elbows, Syphons, Tee Pipes, and every other connection; Wrought and Cast-iron Boilers, Saddle, Conical, Cylinder, Tubular, and Elliptic, from 24s. each. Improved Boilers and Iron Stands to use without brickwork, 60s. each. Valves from 10s. 6d. each. Patent Valves, Improved Furnace Doors, Furnace Bars, Supply Cisterns, and Castings of every description in stock, at

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HOTHOUSES for the MILLION,

invented by the late SIR JOSEPH PAXTON.

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HOT WATER PIPES, from Stock, per yard:—2-inch, 1s. 2d.; 3-inch, 1s. 10d.; and 4-inch, 2s. 4d. BENDS, from Stock, 1s. 6d., 2s. 6d., and 3s. each THROTTLE VALVES, 10s., 13s., and 14s. each. Other Connexions at equally low prices, and all goods of first-class manufacture. Estimates given, and orders by post punctually attended to the same day.

EXTRAORDINARY ACHIEVEMENTS OF

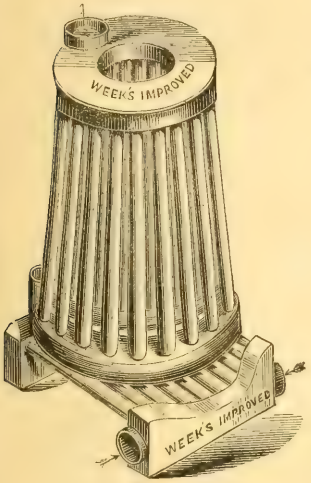
WEEKS'S ONE-BOILER SYSTEM.

THE DISTINGUISHED CAPABILITIES OF THIS LONG-TRIED SYSTEM THROUGHOUT THE UNITED KINGDOM AND THE CONTINENT, ENABLE IT NOW TO STAND FORWARD AS THE CHAMPION AND MOST SUCCESSFUL OF ALL SYSTEMS OF HEATING BY HOT-WATER.

THE FOLLOWING INTERESTING STATISTICS ARE CONCLUSIVE EVIDENCE THAT

WEEKS'S IMPROVED UPRIGHT TUBULAR BOILERS

ARE PERFORMING THE MOST GIGANTIC OPERATIONS ON RECORD, AND BANISH ALL DOUBTS AS TO WHOSE IS THE MOST POWERFUL BOILER EXTANT.



No other Boiler can have any pretensions to such an exposition of achievements as the following :—

Upwards of FOUR MILES of PIPING, fixed on WEEKS'S ONE-BOILER SYSTEM, are employed to HEAT the various COMPARTMENTS of the ROYAL HORTICULTURAL SOCIETY'S GARDENS, KENSINGTON.

TOTAL LENGTH OF PIPING IN MILES AND FEET :—

	Miles.	Feet.
ROYAL BOTANIC SOCIETY	1	700
ROYAL HORTICULTURAL SOCIETY'S GARDENS	4	900
TEDWORTH, WILTS	..	5100
HIS GRACE THE DUKE OF LEEDS	..	5000
MR. WOODROOFE'S, HARROW ROAD	..	4300
M. LOUIS VAN HOUTTE, BELGIUM	2	2400
MESSRS. E. G. HENDERSON, WELLINGTON ROAD	..	3800
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BOTANIC GARDENS, LIVERPOOL	..	3500
ZOOLOGICAL SOCIETY, LONDON	..	4500
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MESSRS. SMITHS, DULWICH	1	3000
WHITECHAPEL UNION	1	1400
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J. C. PICKERSGILL, ESQ., HOOLEY, CROYDON	1	200

And many others too numerous for publication.

AMONG ITS MANY ADVANTAGES WE QUOTE THE FOLLOWING :—

1st. Being of Cast Iron it is rendered infinitely more desirable than if made of Wrought Iron.

2d. The Heating surface exposed to the action of the fire surpasses all other Tubular Boilers; hence its power for Heating Miles of Piping in one Apparatus.

3d. By this great Heating surface a vast saving of Fuel is effected.

4th. All Gardeners know that by means of Weeks's Tubular Boiler night stokering is abolished.

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MANUFACTURERS OF

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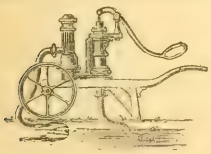

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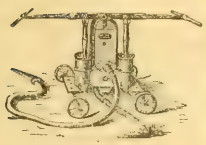

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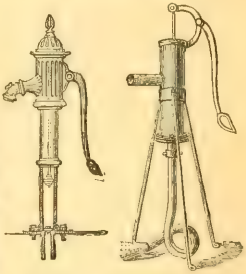
☞ *Further particulars, Estimates, and Illustrated Price Lists on application.*



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HOT WATER PIPES and FITTINGS of the best description supplied by
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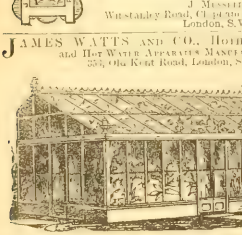

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Strong ZINC HAND GLASSES, all sizes.
Reference to the Nobility, Gentry, and Trade in most of the Counties in England.

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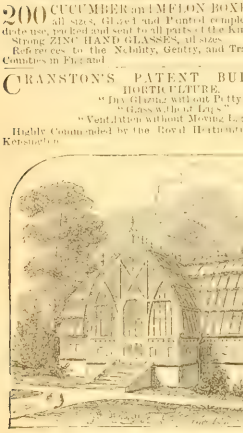
"Dry Glazing without Putty."
"Hanging Sash of Imp."
"Ventilation without Moving Ladder."
Highly Commended by the Royal Horticultural Society, South Kensington.



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Estimates for any branch in the line, in Wood or Iron, at H. FEARNSIDES & SONS, Triangle, Hackney, N.E.

GREENHOUSES, Span or Lean-to, Orchard or Plant, always in Stock, Glazed with 21-oz., and Painted ready for Fixing. To be seen erected.
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Ditto ditto same size, ornamental 35 0 0
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Also, a Lean-to 19 feet long by 10 feet 9 inches wide .. 22 0 0
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Also, a large Stock of Greenhouse and Pit LIGHTS, of various sizes, kept in stock, and a large Stock of Lights Glazed, 1, 2, 3, or 4 Light Garden FRAMES, made portable, of different shapes.
Greenhouses made to order, Glazed with 21-oz. at 1s. 3d. per square foot.
Two-inch Lights made and Glazed with 21-oz., at 9d. per square foot, three times Painted.
W. S. uses only the best Yellow Timber for Horticultural Work.
Estimates free for either Hardy Heating by Hot Water.
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CHARLES SHARPE AND CO., NURSERYMEN, Sleaford, Lincolnshire, are prepared to furnish ESTIMATES for the Formation of NEW PLANTATIONS by Contract, including Plants, Fencing, and Planting for two years.

MILLION LIGHTS, Machine made, 6 feet by 4 feet 11 inch, Unglazed 5s., Glazed 10s., are kept in stock at the Factory Steam Joinery Works, 121, Bunhill Row, E.C.
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To Noblemen and Gentlemen.
TO BE SOLD, Cheap, a Handsome GOTHIC HOUSE, made of the best Yellow Deal, 7 feet square; the sills are of Oak, 6 inches square; and a Room at the rear suitable for a Clerk Room. The Structure is suitable for a Porter's Lodge, or a Gardener's Residence on Estate or a Lunatic Asylum.
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BELL and BRASS FOUNDERS to HER MAJESTY.

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PATENT CAST IRON PUMP, fitted with J. W. & Sons Metal Lined and Valve, which cannot clog in setting, by W. & Sons undertaken.

Barrel.	Height.	£ s. d.
2 in short	1 ft 7 in.	1 1 0
3 in. long	3 ft. 3 in.	1 8 6
3 in. long	4 ft. 1 in.	1 9 0
4 in long	3 ft. 3 in.	2 6 0
4 in. long	4 ft. 6 in.	2 11 0
2 in. short, with lever of lead pipe attached, ready for bricks		0 0 0
2 in. long, do. do.		0 0 0

Price of 4-inch Lined Mansion Pump with Legs, £7 15s.; 2-inch Flexible Rubber and Canvas Suction Pipe, 2s. 10d. per foot. The Barrel is 27 inches long, and the cock of lead high.

IMPROVED LIQUID MANURE or GENERAL PORTABLE PUMP. These Pumps are fitted with J. W. & Sons Patent Packed and Valve, and cannot clog in action. The Barrel is made of Galvanized Iron, not likely to corrode, and can be raised or lowered at pleasure on the stand, the ends of which fold together, and it may be carried with ease by one man or lashed to a cart.

WARNERS' PORTABLE FIRE or GARDEN ENGINE.

£2 2s.

No. 3681.

For use by one Person .. .. .. price £2 2s.
No. 5476, ditto ditto, on Wheels .. .. .. £2 10s.

The above are complete in themselves, and may be always kept filled with water, and ready for use.

Letter to the Times, July 23, 1866, from Earl Essex.
A REAL FIRE EXTINGUISHER.
To the Editor of The Times.

"SIR,—I feel sure you will kindly allow a small space in the *Times* to these few lines, as the best medium through which I would urge every householder who dreads fire to have on each floor of his house one or more small Garden or other Engines on wheels, always charged and in good order, in case of fire.

"I, at night, just as I was going to bed, was startled by that most fearful of all cries, 'Fire, fire!' I soon gained that a fire was raging in a large two-wind wed un-occupied bedroom. How caused is to us all a great mystery. It is my custom to keep one of these small Engines on each floor. In two minutes I was in the room with one of them. It was like a furnace. The curtains, shutters, casements, and cornices of both windows were burning and cracking from floor to ceiling. I was quite alone at the moment, yet before assistance arrived (most of the servants having gone to bed), I had completely subdued the fire of one window without exhausting the Engine, and when assistance and more water did arrive, we very soon extinguished the other.

"So fierce was the fire that the lead of the casements was melted, and the casements themselves were burnt off their hinges.

"I will only add, that by God's mercy, the House was saved by this small Engine. Had it not been at hand and in order, most assuredly Cassiobury would be now a heap of ruins.—Yours faithfully,

"CASSIOBURY, Watford, July 20. ESSEX.

"The Engine, even when full, runs so light on the floor, that any woman might draw it, and also work it."

GARDEN TARPAULINGS, 8 feet by 4 feet 6 inches, set out, with brass eyelet-holes, 32s. per dozen; other sizes in proportion. Fifty Second-hand Mackintosh Railway Covers in good order, 11 feet by 10 feet, 1s. each, for covering Greenhouses, Waggons, or other Watering purposes. Waterproof Sheeting of Police Capes, 30s. per dozen. Large Mackintosh Capes, 5s. each. A lot of Second-hand Mackintosh Cart Covers, 4s. per square yard. Horse Loin Cloths, 2s. each. Tarpaulings, Hammocks, Sheeting, Rope, &c., to be obtained for Repairing Fences, &c., in lengths from 9 feet to 12 feet, at £6 10s. per Ton, in quantities not less than half a Ton.
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N.B. The Wire Rope can be unstranded to any thickness required, and stapled on to Posts

E. T. ARCHER'S "FRIGI DOMO."
By Patronised by Her Majesty The Queen, the Duke of Northumberland for 50 Years, His late Grace the Duke of Devonshire for Chiswick Gardens, Professor Lindley for the Horticultural Society, Sir Joseph Paxton for the Crystal Palace, Royal Zoological Society, &c.
PROTECTION from the SCORCHING RAYS of the SUN.
"FRIGI DOMO," a Canvas made of Patent prepared Hair and Wool, a perfect Non-conductor of Heat and Cold, keeping, wherever it is applied, a fixed temperature. It is adapted for all Horticultural and Floricultural purposes, for Vineries and Peach Houses, and Flowers from the Scorching Rays of the Sun, from Wind, from Attacks of Insects, and from Morning Frosts. To be had in any required lengths.

Two yards wide	1s. 9d. per yard run.
Four yards wide	3s. 6d. per yard.
An improved make, 2 yards wide ..	1s. 9d. per yard.
An improved make, 3 yards wide ..	2s. 8d. per yard run. Also

TRIBLE DOMO, 2 yards wide, 1s. 6d. per yard run.
ELISHA THOMAS ARCHER, Wire and Canvas Manufacturer, 7, Great Trinity Lane, Cannon Street, City, E.C., and of all Nurserymen and Seedsmen throughout the Kingdom
"It is much cheaper than Mats as a covering."

AGRICULTURAL IMPLEMENTS.—Steam Engines, Threshing and Dressing Machines, Waggons and Carts, Cultivators, Ploughs, Harrows, Chaff Cutters, Grinding Mills, Lawn Mowers, Garden Rollers, Water Barrows, and Horticultural Tools of every description; Corn Bins, Wire Netting, Corn Dusts, Forks, &c.
BURGESS & KEY, 95, Newgate Street, London, E.C.
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A HANDBOOK of VINE and FRUIT TREE CULTIVATION under GLASS, with carefully prepared Lists of Fruits and Vegetables, and Plans of Greenhouses, Hints for Heating, &c., by
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This day is published, post 8vo, pp. 272, with a Lithographic Frontispiece, 7s. 6d.,
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JOHN VAN VOORST, 1, Paternoster Row, E.C.

On Wednesday, the 31st inst., in 1 vol., post 8vo,
A HUNTER'S EXPERIENCES in the SOUTHERN STATES of AMERICA, being an Account of the Natural History of the Country, its Quadrupeds, and Birds which are the objects of Chase; and its Commerce. By WILLIAM TRACY (The Ranger).
London: LONGMANS, GREEN, & CO., Paternoster Row, E.C.

Post free for 13 stamps,
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Just published,
A CATALOGUE of REMAINDERS and REDUCED PRICE BOOKS—some of them works of much interest, and of which a few copies remain, may be had on application to
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Price Threepence, of any Bookseller.
CONTENTS of the NUMBER for SATURDAY LAST, OCTOBER 13, of
THE ATHENÆUM,
JOURNAL of ENGLISH and FOREIGN LITERATURE, SCIENCE, and the FINE ARTS.
Office: Duncan's Pages.

Reviews of, with Extracts from—
The Life of Josiah Wedgwood. By Eliza Meteyard. Vol. II. Illustrated.
Icelandic Legends. (Collected by Jon Arnason.) Translated by George E. J. Powell and Eirikr Magnusson.
Fire Prevention and Fire Extinction. By James Braidwood. Including Fire-proof Structures, Fire-proof Safes, Police Fire Brigades, &c. With Instructions, Memoir, and Portrait of the Author.
The Upper Ward of Lonsdale described and illustrated. Archæological Section by G. V. Irving; the Statistical and Topographical Section by Alexander Martin.
Sussex Archæological Collections relating to the History and Antiquities of the County. Published by the Sussex Archæological Society.
Egypt from the Conquest of Alexander the Great to Succession Bonaparte. An Historical Sketch. By the Rev. George Trevor, M.A., Canon of York.
Annales Monastici. Vol. III. Annales Prioratus de Dunstaplia (A.D. 1–1297). Annales Monasterii de Bermundesia (A.D. 1042–1432). Edited by Henry Richards Luard, M.A.
The Admission Register of Manchester School, with some Notices of the more Distinguished Scholars. Edited by the Rev. J. Finch Smith. Vol. I., 1730–35.

With Shorter Notices of
Lois Weedon Lectures on Our Old Age and Sayings. By E. Meyrick Goulburn, D.D.
The Banisters; or, a Marriage among the Mountains. By Capt. Mayne Reid.—Winged Words: Treasury of Quotation for the German People (Geflügelte Worte, &c.) By George Buchmann, &c.

Weekly Gossip.—Mr. Percy Fitzgerald's 'Life of David Garrick'—Mr. Grunessen's 'History of the Spanish War of Succession in 1875-78'—Testimonial to Mr. Planché—Mr. Belle's Strat-ajam'—Dr. Deane in Holborn—Shirley tragedy, 'Evening, or the Statue'—An Earthquake at Chagford, Devon—Street Literature—The Effect of Woods and Forests on Climate—Recitations by Mr. Arnold—Mr. Reed's New Panharmonium Company—Commons near London—Publication of the First German Weekly Newspaper—Professor Mattencci's Presentation Medal—Chemical Discoveries—Astronomical Observatories at Berlin and Bonn—The Mineral Statistics of the United Kingdom.

Fine Arts.—Battle Abbey, with Notices of the Parish Church and Town. By M. E. C. Walcott.

Fine Art Gossip.—Mr. G. Stephens' 'Memorials of Mulready'—Mr. W. McConnell—The Dudley Exhibition of Arts and Manufactures—The Loan Exhibition at Southampton—The South Kensington Museum—Designs for a Cathedral at Honolulu.

Science.—Memorabilia of the Social Science Congress—Lunar Rainbows—Ice: does it Expand or Contract by Cold?

Original Papers.—The Old Church at Recullver—Life in Spain.

Music and the Drama.—The Royal Academy of Music—The Strand Theatre, Haymarket, and St James's Theatres.

Musical and Dramatic Gossip.—Saturday's Crystal Palace Concert—The Popular Concerts—Prof. Moscheles's Pianoforte Duetts—Signor Verdi's 'Don Carlos'—Italian Opera in Paris—Signor Rossini's 'Little Solemn Mass'—The Winter Concerts at Cologne—The Brighton Theatre—Music on the Continent, &c.

Miscellanea.—Geological Miracle Assumers—Pose, Murre—The Word Bonfire—Resemblances—Distraint for Rent—Wordsworth and Southey.

The Athenæum may be ordered of any Bookseller, or a Single Copy will be forwarded on four stamps being sent to the Office, 20, Wellington Street, Strand, London, W.C.

THE QUARTERLY REVIEW, No. CCXL., IS NOW PUBLISHED.

Contents.

I. Ancient Literature of France.
II. Dr. Badham and the Dutch School of Criticism.
III. Homes without Hands.
IV. Travels in Old Japan.
V. Ferguson's History of Architecture
VI. Operations of Modern Warfare.
VII. Central Asia.
VIII. England and her Institutions

John Murray, Albemarle Street, W.

Miss Braddon's New Illustrated Magazine.

On Oct. 24, Price One Shilling,

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Book the First:—Fatal Friendship.
Chap. I. The House in Rood Square.
" II. Peter Sheldon and his Ward.
" III. Mr. and Mrs. Holliday.
" IV. A Perplexing Illness.
II. Swiss Highland Life. By Keith Johnston.
III. African Martyrdom. By W. Winwood Reade.
IV. An Adventurous Investigation.
V. Songs of Old and Old Songs.
VI. Bohemian Prose Ballads. No. I. The Emperone
VII. An Indictment. Illustrated by C. J. Staniland.
VIII. A Parisian Story. By Percy Fitzgerald.
IX. Margot Sorelle, Monomaniac. By George Augustus Sala.
X. Feast of St. Partridge at Park Hall.
XI. Stain at Sedan. By Percy Bolingbroke Anderson, M.A.
XII. The Fall of Count de Flahaut from Political Forces. Part the First. Illustrated by F. J. Skill.
XIII. Love in November. By Mortimer Collins

Office: Warwick House, Paternoster Row, London.

To Nurserymen and Seedsmen.—Notice.

THE GARDENERS' YEAR-BOOK, ALMANACK, and DIRECTORY for 1867, by Robert Hogg, LL.D., F.L.S., will be Published on December 31. All communications in the style and Address of Firms are requested to be sent forthwith to the Editor, so that the necessary corrections may be made in the Directory portion.

"Journal of Horticulture" Office, 171, Fleet Street, London, E.C.

HOGG'S GARDENERS' YEAR-BOOK, ALMANACK, and DIRECTORY for 1867.

ADVERTISEMENTS intended for insertion in the forthcoming issue, on December 1, should be forwarded immediately, to prevent disappointment.

"Journal of Horticulture" Office, 171, Fleet Street, London, E.C.

"Ouvrage Couronne"

Of the Imperial Society of Horticulture of France.

FRUIT TREES: their Scientific and Profitable Culture. With Notes From the French of M. De Bavay. Adapted for English Cultivators. Price 6s. 6d., bound in cloth.

From the *Field*:—"Will unquestionably teach how to prune and train fruit trees to perfection."

From the *Journal of Horticulture*:—"Has the rare merit of always keeping to the point, and the rare charm of lucidity. The illustrations are prodigal, and add much to some of the Work."

Wm. Wesley, 31, Fleet Street, E.C.

Steam Cultivation.

FACTS of INTEREST to the FARMERS. By John Fowler & Co.; Revised and Amended by William Smith, of Woolston, Bletchley Station, Bucks. With an Appendix showing the present aspect of Steam Cultivation.

May be had of Mr. Smith, post free, 6 7 14 postage stamps

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WANTED, a SMALL NURSERY, in or within a few miles of London. Apply by letter to Robert Bullen, Gardener, Bow Bridge, Leicester.

TO BE LET, with Immediate Possession, in consequence of the present Proprietor being bedfast, the PONTEFRACT NURSERY, containing about 12 Acres Nursery Ground, well stocked with Shrub, Fruit, and Forest Trees, in good saleable condition. The Forest Trees may be found from 200,000 to 300,000 Larch, from 2 to 4 feet.

For further particulars application to be made to Mr. John Scholey, Nurseryman, Pontefract.

To Market Gardeners and Nurserymen.

TO BE LET, with immediate entry, a very compact FARM of FORTY ACRES, part of which is stocked and used as a Market Garden and Nursery Ground. The Land is in a good state of Cultivation and mostly Drained, and the Rent and Rates are very low. The House is pleasantly situated and the Buildings are good. It is near to good Roads, and is within four miles of a first-class Town and two Railway Stations. The Nursery Stock, which is exceedingly healthy, consists of Fruit Trees, Forest Trees, Evergreens, and Seedlings to be taken by valuation by the person approved by the Landlord or his Agent.

Apply to Thomas Barrett, Land Agent and Valuer, Prior's Court Farm, Chieveley, near Newbury, Berks.

TO BE LET, a FARM of 560 ACRES in Northamptonshire.—Deep loam soil, well drained, and suitable for Steam Cultivation. Near Railway. Rent, 35s. per Acre, Tithe free. Will carry 1000 Sheep.

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LIST of ESTATES to be LET or SOLD, sent on receipt of franked address by Messrs. Bell & Robinson, Land, Mortgage, and Ecclesiastical Agency Offices, Trinity Place, 6, Charing Cross, London, W.C.

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Boston Lane, near Turnpike, Hanwell, Middlesex.

To Market Gardeners, Builders, and Others.

TO BE SOLD, the valuable LEASE of a comfortable DWELLING HOUSE, Sheds, Stable, Vinery, Greenhouses, and about 14 Acres of rich and highly cultivated MARKET GARDEN GROUND, well stocked with Gooseberry, Apple, Pear, Plum, Cherry, Walnut, wall and other fruit trees; Gooseberry and Currant Bushes, Strawberry Plants, &c. The whole held on Lease for 21 years from September 29, 1865, at the very low Rent of £50 per annum.

For further particulars, cards to view, &c., apply to Messrs Baker & Sons, Surveyors, &c., Kilburn, Middlesex, N.W.

Sales by Auction.

Edmonton.

Postponement of Sale in consequence of the Inclement Weather

MR. A. RICHARDS will SELL by AUCTION on the Premises, Upper Edmonton, N., on THURSDAY and FRIDAY, Nov 1 and 2, at 12 o'clock, by order of Mr. Charles Woolver, 7000 choice FRUIT TREES, of all descriptions, an immense number of Evergreens and Shrubs, 1000 Standard and Half-standard Roses to name, Forest Trees, &c.

Further particulars in next week's *Gardeners' Chronicle*.

Roses, Foliaged Plants, Dutch Bulbs, &c.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on SATURDAY, October 27, at half-past 12 o'clock precisely, 1000 STANDARD ROSES (held a well known grower), some FINE FOLIAGED PLANTS, and a selection of DOUBLE and SINGLE HYACINTHS, TULIPS, CROCUSES, NARCISSUS, and other Bulbs from Holland. Also some PYRAMIDAL and DWARF FRUIT TREES from France.

On view the Morning of Sale, and Catalogues had.

Imported Orchids.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY, October 23, at half-past 12 o'clock precisely, a large importation of RARE ORCHIDS, just arrived, collected by Mr. Bungé, in Brazil.

On view the Morning of Sale, and Catalogues had.

Bulbs and Plants.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDEY, October 24, at half-past 12 o'clock precisely, an assortment of DOUBLE and SINGLE HYACINTHS, TULIPS, CROCUSES, NARCISSUS, and other DUTCH BULBS, from STEVENTON EXPORT, from a well-known grower, FRUIT TREES, SHRUBS, LAURELS, and PLANTS.

On view the Morning of Sale, and Catalogues had.

Greenhouse Plants and Hardy Bulbs, Roses, &c.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on SATURDAY, October 27, at half-past 12 o'clock precisely, a fine collection of GREENHOUSE and FINE FOLIAGED PLANTS, 1000 Standard Roses, Fruit Trees, Shrubs, and a quantity of Hyacinths, Tulips, Crocuses, Narcissus, and other Bulbs.

On view the Morning of Sale, and Catalogues had.

Southampton. Winchester Road, Shirley.

MESSRS. PERKINS and SONS will SELL by AUCTION, on WEDNESDAY, October 24, at 2 for 3 o'clock, by order of Mr. Bungay, who is being required for building purposes, 2,000 LAURELS, from one to two years' growth, a large quantity of Evergreen LAURESTINUS, several thousands of Hyacinths, Tulips, Crocuses, ROSE TREES, STRAWBERRY PLANTS, and various SHRUBS.

On view at any time previous to the Sale. Auction Offices, Southampton, Oct. 1st 19.

Stowmarket.

Important Sale at the Dahlia Nurseries

MR. GEORGE ICKE is instructed to SELL by AUCTION, on WEDNESDAY, THURSDAY, and FRIDAY, October 24, 25, and 26, at 11 o'clock each day, quite Unreserved, upon the Premises as above, in consequence of the place being about to be occupied as a Gentleman's Residence, the Valuable Nursery Stock of TREES and SHRUBS for Planting and Ornamental purposes; comprising fine specimens of Wellingtonia gigantea, Picea Pinsapo, Cupressus Lawsoniana, Picea nobilis, Picea grandis, Picea cephalonica, Picea Nordmanniana, Picea Pinsapo, Picea nobilis, Picea excelsa, Thujopsis borealis, Thuja gigantea argentea, Thuja Standishii, Thuja Lobbii, Cupressus Lawsoniana, Pinus Lambertiana, several hundred of the specimens of Thuja Warreana, fine Laburnums, Yuccas, Chinese Arborvitæ, Spruce Firs, Austrian Pines, Pyramidal Cypresses, and many other Evergreens; Standard Silver Chestnuts, Abies Menziesii, Hazel, Standard Weeping Elms, Larch, Ash, Poplars, Willows, &c.; Fruit Trees, Standard Grafted Apples, Standard Pears, Standard Plums, Standard Cherries, Standard Apricots, Nectarine and Peach trees; fine collection of Dahlias and Gladioli; a very large assortment of Roses, Geraniums, Verbenas, and other Bedding Plants; Asparagus Plants, Rhubarb Plants, &c. Erection of Greenhouses, Propagating-houses and Flits, Boarded and Slated Barns and Stabling, &c.

Catalogues may be obtained on the Premises, and at the Auctioneer's Offices, 18, Museum Street, Ipswich

Lewisham.

Sale of Valuable Nursery Stock, Clarke's Nursery Grounds, Hither Green.

MR. CHARLES ATKINS has received instructions from Mr. Payne, Executor, to SELL by AUCTION, on TUESDAY, WEDNESDAY, and THURSDAY, November 6, 7, and 8, at 12 o'clock each day precisely, on the Premises, CLARK'S NURSERY GROUNDS, Hither Green, Lewisham, the valuable Stock of Trees being reserved by Building purposes, that valuable STOCK, comprising 1200 Dwarf and Standard Trained Peaches, Nectarines, Apricots, Plums, Cherries, Pears, and Apples; 2000 Standard and Pyramidal Fruit Trees, of approved Varieties; 1000 Filberts, Cobs, and Kentish Cobs; 1000 Green Box, 800 Laurels, 2500 Privets, 6000 green Holme, 500 Rhododendrons, 800 Standard and Dwarf Roses of the most approved Kinds, Ornamental Trees, Evergreens, Shrubs, &c.; 1000 Portugal Laurels, Berberis Aquifolium Atropurea, Aucubas, Irish Yews and Common Hollys, 700 Spruce Firs, large Limes, Poplars, Laburnums, Lilacs, Guelder Roses, Mountain Ash, &c.; 1000 Double Furze, 2000 Standard Roses, 1000 Standard Laurels, 1000 Arbutus, 1000 Chinese Arborvitæ, 1000 Cupressus Lawsoniana, 2 to 4 feet; Cedrus Deodara, 6 to 11 feet; Cupressus Lawsoniana, 2 to 4 feet; Thujopsis borealis, 4 to 6 feet; Abies Douglasii, 2 to 4 feet; Wellingtonia gigantea, 2 to 6 feet; Abies Deodara, 2 to 6 feet; Chinese Arborvitæ, 2 to 6 feet; Deodara and Nepaul Cedars, 2 to 6 feet; 500 Arbutus, 2 to 6 feet; and many others.

May be viewed the Saturday and Monday previous to the Sale. Catalogues had on the Premises, and of Mr. Charles Atkins, Auctioneer, 2, Bank Buildings, Blackheath, S.E.; 4, Belmont Hill, Lee, S.E.; and Rushall Buildings, Norwich.

Wandsworth Common.

Very Important and Extensive Sale of Nursery Stock

MESSRS. PROTHEROE and MORRIS have received instructions from Mr. R. Neal to SELL by AUCTION, on the Premises, Wandsworth Nursery, Wandsworth Common, S.W., on MONDAY, October 29, and following days, at 12o Clock precisely each day (in consequence of the Land being immediately required to be cleared for Building purposes), the valuable NURSERY STOCK, comprising over 17 Acres, running all sizes, in a high state of cultivation, and presenting a rare opportunity to any one embarking in the Nursery Business, and to others requiring large quantities of thriving young stock, as well as gentlemen and others requiring immediate effect in Planting, a splendid assortment of Evergreens, Conifers, and Deciduous Shrubs, comprising 1000 Arbutus repandum, 6000 Green Hollies, 1000 Variegated Hollies, 2000 Irish Yews, 2000 Common Yews, 3500 Arbutus, 3000 Berberis, sorts; 5000 Box, 1000 Portugal and Common Laurels, 10,000 Privet (Box and evaldeaved), 2000 Thuja Lobbii and Warreana, 1000 Cupressus Lawsoniana, 1000 Lobbii, 3000 Spruce Firs, 1000 Scotch Firs, 1000 Weymouth Pine, 800 Cupressus Lawsoniana, distinct, and many others; 500 Wellingtonia gigantea, 500 Cupressus nootkatensis, 1000 Cupressus thyoides, Solomoniana, Evergreen Oaks, Cedrus Deodara, &c.; 2000 Standard Laurels, and all other Rhododendrons, well set with buds, 1000 Scarlet and Portsmouth, fine bushy plants, 1000 Thuja filamentosa, a large collection of Ornamental Trees and Shrubs, 2000 Standard Weeping and other Willows, 3000 Acacias, 2000 Abutilon glaucophyllum, remarkably fine; 1000 Poplars, 500 Laburnums, 1000 Weeping and Common Ash, 2000 Standard Roses, 1000 Standard Fruit Trees, 2000 Standard and Dwarf-trained Plums, 3000 ditto Pears, 500 ditto Apples, 2000 Dwarf-trained Peach, Nectarines, and Apricots, many thousands of Quicks, Privet, Thorn, Beech, and other Maples, Limes, Acer rotundifolia, flexuosa, and brachypoda, Wellingtonia speciosa, Pæsalbra, &c.; with a beautiful collection of Standard and Dwarf Roses, &c. This Stock is all flowering and patent.

May be viewed until the Sale. Catalogues had its each, reasonable to purchasers on the Premises; and of the Auctioneers and Valuers, American Nurseries, Leytonstone, N.E.

Sale of Bulbs, Standard Roses, &c.

MESSRS. PROTHEROE and MORRIS will SELL by AUCTION, at 45 and 46, Gracechurch Street, E.C., on FRIDAY, October 26, at 1 o'Clock precisely, a first-class collection of DUTCH BULBS, including choice named Hyacinths, Tulips, Crocus, Narcissus, Snowdrops, &c.; a splendid assortment of fine some STANDARD and DWARF ROSES, comprising the finest varieties in cultivation; Hardy American Plants, Climbers, &c.

On view the Morning of Sale. Catalogues may be had of the Rooms as above; and of the Auctioneers and Valuers, American Nurseries, Leytonstone, N.E.

Mile End Nursery, Bow Road, E.

Postponement of Sale (1 Thursday, October 25, in consequence of the unpropitious weather, until the unalterable desire of those persons of most Business

MESSRS. PROTHEROE and MORRIS will SELL by AUCTION, on the Premises, Mile End Nursery, Bow Road, Middlesex (close to the Bow Railway Station), on THURSDAY, October 25, at 12 o'Clock precisely, the valuable NURSERY STOCK, including a large quantity of Standard and Dwarf Roses, Chinese Arborvitæ, Euonymus, Sweet Bay, Green Box, Thujopsis aurea, Cedrus Deodara, Abies Smithiana, large Pinus Austriaca, Picea pendula, Laurustinus, a choice Assortment of Ornamental Trees, Evergreens, magnificent specimen Camellias, 8 to 10 feet, beautifully set, fine Fruit Trees, including large Fruiting Standard and Pyramidal Apples and Pears; a Farm Cart, with 12 new capital Patent Lawn Mowers

Now on view, and Catalogues had on the Premises; and of the Auctioneers and Valuers, American Nurseries, Leytonstone, Essex.

Sale of very fine Dutch Bulbs and Standard Roses

MESSRS. PROTHEROE and MORRIS will SELL by AUCTION, at 25 and 33, Gracechurch Street, City, E.C., on SATURDAY, October 27, at 1 o'clock, a Magnificent Collection of DUTCH BULBS, including a choice named HYACINTHS, TULIPS, CROCUSES, NARCISSUS, SNOWDROPS, &c. and a splendid Assortment of STANDARD, DWARF, and CLIMBING ROSES; comprising the finest varieties in cultivation; HARDY AMERICAN PLANTS, CLIMBERS, &c.

On view Morning of Sale. Catalogues had at the Rooms as above; and of the Auctioneers, American Nurseries, Leytonstone, N.E.

Hornsey, Middlesex, N.

Sale of remarkably fine Nursery Stock.

MESSRS. PROTHEROE and MORRIS are instructed by Mr Cleall to SELL, without Reserve, on the Premises, River Bank Nursery, near to Hornsey Station, Hornsey, on THURSDAY, Nov 1, and following day, at 12 o'clock precisely, the valuable NURSERY STOCK, consisting of 2000 very handsome Chinese Arborvitæ, 4 to 6 feet; 1000 Evergreen Laurels, 4 to 6 feet, Laurustinus, Aralitus, 4 to 5 feet, Aucubas, Box, Euonymus, Portugal Laurels, Cupressus Lawsoniana, Pinus insignis, Cedrus Deodara, Spruce and Scotch Firs, Standard and Dwarf-trained Laburnums, Roses, a large quantity of Standard and Dwarf-trained Fruit Trees, comprising Apples, Pears, Cherries, Plums, Peaches, Nectarines, Limes, Laburnums, Privet; a quantity of Box Edging, &c.

May be viewed 1 prior to the Sale. Catalogues may be had on the Premises, and of the Auctioneers and Valuers, Leytonstone, N.E.

Acton Green, Middlesex.

To Gentlemen, Nurserymen, Market Gardeners, and Others

Clearance Sale of about 10,000 Fruit Trees.

MESSRS. PROTHEROE and MORRIS have received instructions to submit for unreserved SALE by AUCTION, on the Premises, Acton Green, Turnham Green, W., opposite the Catholic School, and within 10 minutes' walk of the Acton Station on the North London Line, on FRIDAY, Nov 2, at 12 o'clock precisely, the second and last portion of the Stock, required for building purposes, the whole of the Valuable Collection of FRUIT TREES, including about 1500 Standard Pyramidal and Modern Apples, 2000 dwarf-trained Pears, Plums, Cherries, Apricots, Peaches, and Nectarines, &c.; with a few Evergreen Conifers and other Shrubs, Stools, Vines, &c.

May be viewed one week prior to the Sale. Catalogues may be had on the Premises, and of the Auctioneers and Valuers, American Nurseries, Leytonstone, Essex, N.E.

Tottenham.

Clearance Sale of very valuable NURSERY STOCK for the Great Eastern Railway Extension

MESSRS. PROTHEROE and MORRIS will submit for unreserved SALE by AUCTION, on the Premises, Bonner's Nursery, Tottenham, on MONDAY, TUESDAY, and WEDNESDAY, Nov. 5, 6, and 7, at 12 o'clock each day, by order of Mr. J. Mather, who is compelled to make an immediate clearance in the extensive Railway Extension, the valuable NURSERY STOCK, including 4000 Standard Roses, consisting of Hybrid Perpetuals, Teas, and Bourbons, Standards, Half-standards, and Dwarfs, 1000 Standard Laurels, 3000 Irish Yews, 2000 Arbutus, 1000 Evergreens, 1000 Rhododendrons, 3000 Golden Yews, 500 Irish and Regalis Yews, 2000 Cupressus Lawsoniana, and many others, 1000 Portugal Laurels, Berberis Darwinii, Retinospora, and Libani; 1000 Thujopsis, compacta, Lobbii, Warreana, and Standish; 500 Wellingtonia gigantea, 1 to 6 feet; 500 Araucaria imbricata, 2 feet; Nordmannianas, nobilis, and Pinsapo, 1 to 6 feet; 500 Thujopsis borealis, 500 Retinospora ericoides, 600 Magnolias sorts, 600 Limes sorts, Abies Douglasii and Menziesii, Picea excelsa, Pinus, Ribes, Lilacs, Syringa, Spirea, 2000 Deutzia gracilis and scabra, 500 Veronica Hulkeana, Standard Laurels, Hazel, and Climbing Roses, Clematis, Ivies, Jasmines, 1500 Fancy Roses in pots, &c.; selected Fruit Trees, including Standard and Dwarf Apples, Pears, Plums, Cherries, Peaches, Nectarines, Apricots, 1000 lots Strawberries in pots for Forcing, 1200 yards of excellent Box Edging, an immense quantity of Prince of Wales Raspberries, Asparagus Roots, Rhubarb, and many other choice Fruit and Flower Plants, including 5000 important Hardy Erica hyemalis, 500 Acacia armata, 600 Cytisus racemosus, &c. The whole stock exhibits a most healthy appearance, and is worthy the notice of the Trade and public, generally lotted to suit great and small requirements.

May be viewed prior to the Sale. Catalogues to be had on the Premises, and of the Auctioneers, American Nurseries, Leytonstone, Essex, N.E.

Leytonstone, Essex.

Very Important Clearance Sale of Valuable Nursery Stock

By Order of the Executors of the late Mr. Thomas Ferry, Deceased.

MESSRS. PROTHEROE and MORRIS will SELL by AUCTION on the Premises, Fillebrook Estate Nursery, adjoining Leytonstone Station, on the Woodford and Loughton Road, on TUESDAY, the 30th October, and WEDNESDAY, and THURSDAY, Nov 1, and 2, and following days, at 11 for 12 o'Clock precisely each day, in consequence of the Land (which was sold last May) being immediately required to be cleared for Building purposes, the valuable NURSERY STOCK, consisting a splendid variety of Evergreen, Coniferæ, and Deciduous Shrubs, including 3000 Common and Portugal Laurels, 2 to 6 feet; 2000 Irish Yews, 2 to 6 feet; 1000 Irish Junipers, 1000 Cupressus Lawsoniana, 2 to 5 feet; Thujopsis borealis, 4 to 6 feet, Cedrus Deodara, 4 to 15 feet; Cedrus Libani, 6 to 15 feet; Abies Smithiana, 8 to 10 feet; Abies excelsa, Picea nobilis, Picea grandis, Picea Nordmanniana, Retinospora ericoides, 6 to 15 feet; 3 importe receives, 6 feet; Pinus Cembra, 4 to 10 feet; beautiful Weeping and Standard Ashes; Araucaria imbricata, 4 to 6 feet; 1000 Standard Laburnums, Lilacs, Guelder Roses, Privet, Standard Rose Trees; a quantity of clean grown Fruit Trees, comprising Standard and Dwarf Apples, and Pyramidal Pears, Plums, Cherries, Dwarf-trained Peaches and Nectarines, Apricots, Vines, Strawberry Plants, fine Standard Mulberries, Scarlet, hybrid and named Rhododendrons, Kalmia latifolia, large Azalea pontica, charming specimen Andromeda floribunda, with a superb collection of Standard, Dwarf and Climbing Roses, &c.

The Executors have a rare opportunity to gentlemen requiring large and handsome specimen Conifers and Evergreens, from 4 to 12 feet, for immediate effect, when having been recently transplanted, will no doubt be sold.

May be viewed any day prior to the Sale. Catalogues may be had of the principal Seedsmen in London; and of the Auctioneers, American Nurseries, Leytonstone, Essex, N.E.

Preliminary Notice of a very Important Sale at Hendon, Middlesex.

MESSRS. PROTHEROE and MORRIS will SELL by AUCTION, on the Premises, Hendon Park Nursery, Hendon, Middlesex, on MONDAY, November 12, and following days, at 11 o'Clock each day, by order of the Executors of the late Mr. James Wright, to balance the Partnership Accounts, the First Portion of the Valuable NURSERY STOCK, including an unlimited variety of Evergreen Coniferæ and Deciduous Shrubs, Standard Roses, 12,000 Ornamental and Forest Trees, Fruit Trees, &c., particulars of which will shortly appear.

American Nurseries, Leytonstone, N.E.

WILLIAM S. BURTON,

GENERAL FURNISHING IRONMONGER,

BY APPOINTMENT TO HIS ROYAL HIGHNESS THE PRINCE OF WALES,

SENDS A CATALOGUE GRATIS AND POST PAID.

It contains upwards of SIX HUNDRED ILLUSTRATIONS of his unrivalled STOCK of STERLING SILVER and ELECTRO PLATE, NICKEL SILVER and BRITANNIA METAL GOODS, DISH COVERS, HOT-WATER DISHES, STOVES, FENDERS, MARBLE CHIMNEY PIECES, KITCHEN RANGES, LAMPS, GASELIERS, TEA TRAYS, URNS and KETTLES, CLOCKS, TABLE CUTLERY, BATHS, TOILET WARE, TURNERY, IRON and BRASS BEDSTEADS, BEDDING, BED-ROOM CABINET FURNITURE, &c., with Lists of Prices, and Plans of the

TWENTY LARGE SHOW ROOMS,

At 39, OXFORD STREET; 1, 1A, 2, 3, & 4, NEWMAN STREET; 4, 5, & 6, PERRY'S PLACE; and 1, NEWMAN YARD, LONDON, W.

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Introduced more than 25 years ago by WILLIAM S. BURTON, when Plated by the Patent process of Messrs. Elkington & Co., is beyond all comparison the very best article next to Sterling Silver that can be employed as such, either usefully or ornamentally, as by no possible test can it be distinguished from real Silver.

A small useful set, guaranteed of first quality for finish and durability, as follows:—

	Fiddle or Old Silver Pattern.			Reed Pattern.			Thread Pattern			King's or Shell and Thread.		
	£	s.	d	£	s.	d.	£	s.	d.	£	s.	d.
12 Table Forks	1	15	0	2	0	0	2	4	0	2	10	0
12 Table Spoons	1	13	0	2	0	0	2	4	0	2	10	0
12 Dessert Forks	1	4	0	1	10	0	1	12	0	1	15	0
12 Dessert Spoons	1	4	0	1	10	0	1	12	0	1	15	0
12 Tea Spoons	0	16	0	1	0	0	1	2	0	1	5	0
6 Egg Spoons, gilt bowls	0	10	0	0	12	0	0	12	0	0	13	6
2 Sauce Ladles	0	6	0	0	8	0	0	8	0	0	9	0
1 Gravy Spoon	0	6	6	0	9	0	0	10	0	0	11	6
2 Salt Spoons, gilt bowls	0	3	4	0	4	0	0	4	0	0	4	6
1 Mustard Spoon, gilt bowl	0	1	8	0	2	0	0	2	0	0	2	3
1 Pair of Sugar Tongs	0	2	6	0	3	6	0	3	6	0	4	0
1 Pair of Fish Carvers	1	4	0	1	10	0	1	10	0	1	10	0
1 Butter Knife	0	2	6	0	4	0	0	5	6	0	6	0
1 Soup Ladle	0	10	0	0	12	0	0	16	0	0	17	0
1 Sugar Sifter	0	3	3	0	4	6	0	4	6	0	5	0
Total	9	19	9	12	9	0	13	9	6	14	17	3

Any article to be had singly at the same prices. An Oak Chest to contain the above, and a relative number of Knives, &c., £2 15s.; Tea and Coffee Sets, Dish Covers and Corner Dishes, Cruet and Liqueur Frames, &c., at proportionate prices. All kinds of Replating done by the Patent process.

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Buyers of the above are requested, before finally deciding, to visit WILLIAM S. BURTON'S SHOW ROOMS. They contain such an assortment of Fenders, Stoves, Ranges, Chimney Pieces, Fire Irons, and General Ironmongery, as cannot be approached elsewhere, either for variety, novelty, beauty of design, or exquisiteness of workmanship. Bright Stoves, with Ormolu Ornaments, £3 8s. to £33 10s.; Bronzed Fenders with Standards, 7s. to £5 12s.; Steel Fenders, £3 3s. to £11; Ditto, with rich Ormolu Ornaments, from £3 3s. to £25; Chimney Pieces, from £1 8s. to £100; Fire Irons, from 3s. 3d. the set to £4 4s. The Burton and all other Patent Stoves, with radiating Hearth Plates.

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The increased and increasing use of Gas in Private Houses has induced WILLIAM S. BURTON to collect from the various Manufacturers in Metal and Glass all that is new and choice in Brackets, Pendants, and Chandeliers, adapted to Offices, Passages, and Dwelling Rooms, as well as to have some designed expressly for him: these are ON SHOW over his TWENTY LARGE ROOMS, and present, for novelty, variety, and purity of taste, an unequalled assortment. They are marked in plain figures, at prices proportionate with those which have tended to make his Establishment the largest and most remarkable in the Kingdom, viz., from 12s. 6d. (two-light) to £23.

DISH COVERS AND HOT WATER DISHES,

in every variety, and of the newest and most recherché patterns, are on show at WILLIAM S. BURTON'S. Block Tin, 19s. the Set of Six; Elegant Modern Patterns, 35s. 6d. to 49s. 6d. the Set; Britannia Metal, with or without Silver-plated Handles, £3 2s. to £6 8s. the Set of Five; Electro-plated, £9 to £26 the Set of Four; Block Tin Hot Water Dishes, with Wells for Gravy, 12s. to 30s.; Britannia Metal, 22s. to 80s.; Electro-plated, on Nickel, full size, £9.

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The PATENT EIDER and ARCTIC DOWN QUILTS, manufactured by WILLIAM S. BURTON, combine lightness with warmth. They wash like ordinary Coverlets and without unpicking, and may be used either to supersede Blankets or as Ornamental Counterpanes. Prices 7s. and upwards.

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WILLIAM S. BURTON has ONE LARGE SHOW ROOM devoted exclusively to the DISPLAY of BATHS and TOILET WARE. The stock of each is at once the largest, newest, and most varied ever submitted to the Public, and marked at prices proportionate with those that have tended to make his Establishment the most distinguished in this country. PORTABLE SHOWERS, 7s. 6d.; PILLAR SHOWERS, £3 to £5 12s.; NURSERY, 15s. to 32s.; SPONGING, 14s. to 32s.; HIP, 14s. to 31s. 6d. A large assortment of GAS FURNACE, HOT and COLD PLUNGE, VAPOUR, and CAMP SHOWER BATHS. TOILET WARE in great variety, from 15s. 6d. to 45s. the set of three.

BEDDING,

Manufactured on the Premises, and guaranteed by WILLIAM S. BURTON.

For Bedsteads, Wide.	3 feet 6 ins			4 feet 6 ins			5 feet		
	£	s.	d.	£	s.	d.	£	s.	d.
Best Straw Palliasses	0	13	6	0	16	0	0	18	6
Best French Alva Mattresses	0	13	6	0	17	6	0	19	0
Best Cotton Flock Mattresses	0	18	6	1	2	6	1	6	6
Coloured Wool Mattresses	1	1	6	1	6	0	1	10	6
Best Brown Wool Mattresses	1	7	0	1	12	6	1	15	0
Best Brown ditto, extra thick	1	11	6	1	17	6	2	0	0
Good White Wool Mattresses	1	19	0	2	9	0	2	17	0
Extra Super ditto ditto	2	17	0	3	13	0	4	1	0
Good Horse Hair ditto	2	5	0	2	18	0	3	6	6
Extra Super do.	3	1	0	3	18	0	4	10	0
German Spring Hair Stuffing	3	8	6	4	4	0	4	18	0
Extra Super ditto	4	5	0	5	8	0	5	19	0
French Wool and Hair Mattress for use over Spring	2	17	0	3	15	0	4	7	0
Extra Super ditto ditto	3	11	0	4	9	0	5	0	0
Feather Beds, Poultry, in good Tick	1	16	0	2	7	0	—		
Ditto ditto Grey Goose, in Bordered Linen Tick	3	2	0	4	2	0	4	13	0
Ditto ditto Best White ditto in Best Linen	4	14	0	6	8	0	7	7	0

Feather Pillows, 3s. to 10s. 6d.; Bolsters, from 6s. to £1 9s. 6d.
Down Pillows, from 10s. 6d. to 17s. 6d.
Blankets, Counterpanes, and Sheets in every variety.

PATENT IRON BEDSTEADS,

Fitted with Dovetail Joints and Patent Sacking on Castors, from 11s. to £14s. Ornamental Iron and Brass Bedsteads in great variety, from £14s. to £45 5s.

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In Complete Suites for Bed-room of Mahogany, Birch, Fancy Woods, Polished and Japanned Deal, always on show. These are made by WILLIAM S. BURTON, at his Manufactory, 84, Newman Street, and every article is guaranteed. China Toilet Ware in great variety, from 3s. 6d. the set of five pieces.

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The most varied assortment of TABLE CUTLERY in the World, all warranted, is on sale at WILLIAM S. BURTON'S, at prices that are remunerative only because of the largeness of the sales.

Ivory Handles	Table Knives, per dozen		Dessert Knives, per dozen		Carvers, per pair	
	s.	d.	s.	d.	s.	d.
3½-inch Ivory Handles	13	0	10	6	5	0
3¾-inch fine Ivory Balance Handles	17	6	14	0	5	9
4-inch Ivory Balance Handles	22	0	16	0	5	9
4-inch fine Ivory Handles	29	0	21	0	8	6
4-inch finest African Ivory Handles	35	6	27	0	12	6
Ditto, with Silver Ferules	42	0	35	0	13	6
Ditto, Carved Handles, Silver Ferules	55	0	45	0	18	6
Nickel Electro-Silver Handles	25	0	19	0	7	6
Silver Handles of any pattern	84	0	54	0	21	0
BONE and HORN HANDLES.—KNIVES and FORKS, per dozen.						
White Bone Handles	11	0	8	6	2	6
Ditto Balance Handles	23	0	17	0	4	6
Black Horn, Rimmed Shoulders	18	0	15	6	4	6
Ditto, very strong, Riveted Handles	12	6	9	6	3	0

The largest stock in existence of Plated Dessert Knives and Forks, and of the new Plated Fish-eating Knives and Forks and Carvers.

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An assortment of TEA TRAYS and WAITERS, wholly unprecedented, whether as to extent, variety, or novelty.
NEW OVAL PAPIER MACHÉ TRAYS, per set of three, from 20s. to 10 Guineas.
Ditto IRON ditto, from 10s. to 4 Guineas.
CONVEX-SHAPE ditto, from 7s. 6d.
ROUND and GOTHIC, at comparatively low prices.

CLOCKS, CANDELABRA, BRONZES, AND LAMPS.

WILLIAM S. BURTON invites inspection of his Stock of these, displayed in two large Show Rooms. Each article is of guaranteed quality, and some are objects of pure vertu, the productions of the first Manufacturers of Paris, from whom WILLIAM S. BURTON imports them direct.

CLOCKS, from 7s. 6d. to £45.
CANDELABRA, from 13s. 6d. to £16 10s. per pair.
BRONZES, from 18s. to £16 16s.
LAMPS, MODERATEUR, from 6s. to £9.
PURE COLZA OIL, 4s. per gallon.

Editorial Communications should be addressed to "The Editor." Advertisements and Business Letters to "The Publisher," at the Office 41, Wellington Street, Covent Garden, London. W.C.
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THE GARDENERS' CHRONICLE
AND
AGRICULTURAL GAZETTE.

A Newspaper of Rural Economy and General News.

No. 43.—1866.] SATURDAY, OCTOBER 27. {Price Fivepence. STAMPED EDITION, 6d.

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EXETER CHRYSANTHEMUM SHOW, November 9. PRIZES for CUT BLOOMS, Open to all England. For Schedule apply to T. W. GRAY, Esq., Honorary Secretary, Queen Street Chambers, Exeter.

GRAND FLOWER and FRUIT SHOW and BAZAAR in aid of the BENEVOLENT FUND of the UNITED HORTICULTURAL SOCIETY and the FUNDS of the ALBERT ORPHAN ASYLUM, on NOVEMBER 15th, 16th, and 17th, in the Guildhall of the City of London, by permission of the Corporation. Schedules and all particulars may be obtained of WILLIAM HEALE, 14, George Terrace, Brook Street, Upper Clapton, N.E. Schedules may also be obtained at the Office, 98, Cheapside, E.C.

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To the Trade.—Dwarf Roses.

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A DESCRIPTIVE CATALOGUE of GRAPES.
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B. S. WILLIAMS begs to announce that he has a splendid stock of Strong Planting and Fruiting CANES of all the best varieties. PRICED LIST may be had on application.
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To the Trade.—Grape Vines.

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SEE BARR AND SUGDEN'S ADVERTISEMENT, p. 992 of *Gardeners' Chronicle*, October 20.
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To the Trade.

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STANDARD, HALF-STANDARD and DWARF ROSES, by the 100, 1000, and dozen.
WM. WOOD & SON, Marcsfield, near Uckfield, Sussex.

MANY ACRES of STANDARD, HALF-STANDARD, DWARF, PYRAMIDAL, and TRAINED FRUIT TREES, consisting of Apples, Pears, Plums, Peaches, Nectarines, Apricots Cherries, &c. WM. WOOD & SON, Marcsfield, Sussex.

SEVERAL ACRES of well-grown EVERGREEN and DECIDUOUS SHRUBS, AMERICAN PLANTS, CONIFERÆ, and ORNAMENTAL TREES. For CATALOGUES apply to
WM. WOOD & SON, Woodlands Nursery, Marcsfield, near Uckfield, Sussex.

ROSES.—NEW CATALOGUE just published and sent post free on application to
WM. WOOD & SON, Marcsfield, Uckfield, Sussex.

Autumn Planting.

PETER LAWSON AND SON, at the present most suitable time for Transplanting CONIFEROUS and EVERGREEN TREES and SHRUBS, have to state that their stock of those is very large and in healthy condition
Special offers for large quantities will be made on application.
Edinburgh and London.

To the Trade.

JOHN BLAKE and SONS, The Nurseries, Dangan, Sumnerhill, County Meath, beg to offer 6000 or 7000 CHINESE ARBOR-VITÆ, from 6 to 18 inches, and 7000 or 8000 HORSE CHESTNUT, from 6 to 18 inches.
Special offers for the above quantity on application.

LILIUM LANCIFOLIUM.—Fine large Flowering Bulbs of SPECIOSUM, RUBRUM, and PUNCTATUM ROSEUM fat 12s. per dozen.
JOHN MAIN, The Nurseries, Brentwood, Essex.

Lilium lancifolium.

SUTTON and SONS have received several varieties of the above splendid LILY in fine condition.
For descriptions and prices of each see SUTTON'S AUTUMN CATALOGUE, which may be had gratis and post free on application.
SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

CUPRESSUS LAWSONIANA, from 3 feet to 4 feet, fine healthy plants, four times transplanted, and move first rate, 24s. per dozen, or if not less than 100, £9. Also very fine LAURUSTINUS, 12s. per dozen, or £4 per 100.
CHARLES SOUTHBY, Nurseryman, Clapham, S.

TRITOMA UVARIA, very strong roots; also a large quantity of GLADIOLUS BRENCHLEYENSIS.
Lowest price per 100 or 1000 on application to
EDWARD TAYLOR, Nurseryman, Maltby, Yorkshire.

CEDRUS DEODARA.—Fine Plants for immediate effect, from 5 to 6, 7, and 10 feet high, safe to transplant, at 1s. per foot. Some extra-sized specimens, 15 to 20 feet, at 2s. per foot. Most of the plants offered are in Large Pots, making their removal certain beyond a doubt.
MAULE & SONS, The Nurseries, Bristol.

CERASUS LUSITANICA var. AZORICA.—Plants of this very superior variety of Portugal Laurel (in habit, flower, and hardiness), to which a First-class Certificate was awarded by the Royal Horticultural Society on the 6th June, will be ready for distribution the ensuing Autumn. 7s. 6d. and 10s. 6d. each.
OSBORN & SONS, Fulham Nursery, London, S.W.

New Catalogue of Plants, Dutch Bulbs, &c.

JOB. ED. PARKER begs to announce that his NEW WHOLESALE, containing Select Descriptive and Priced Lists of New, Rare, and Beautiful Greenhouse, Hardy and Stove Plants, Hardy Ferns, Fruit Trees, Grape Vines, Roses, Rhododendrons, Sweet Woods, &c., Azaleas, Orchids, Evergreens, Climbers, Shrubs, Heaths, Lilies, Narcissi, Tulips, and other Bulbs, is now published and will be forwarded to applicants

Exotic Nursery, Tooting, Surrey, S

100,000 Hyacinths, Tulips, Jonquils, Narcissus, and Crocus.

HENRY STROUD, NURSERYMAN, Green Lanes, Stoke Newington, N., having purchased in Holland the above supplies stocks, and now offers the following: Is. 6d. 4l. package included:—50 HYACINTHS, choice varieties, for cheap Early TULIPS, 50 ditto, mixed; 50 ditto, Parrot varieties; 50 choice NARCISSUS, DOUBLE JONQUILS, and LILIUM LANCIFOLIUM RUBRUM or ALBUM. Half the above for 10s. 6d. Five LILIUM LANCIFOLIUM RUBRUM or ALBUM, 6s.; per dozen, 10s. 6d. Orders to be paid.

The New Establishment, Ghent, Belgium.

JEAN VERSCHAFFELT begs to intimate that he has TRANSFERRED his BUSINESS to his New Horticultural Establishment in the Faubourg de Brabant, and begs his numerous correspondents to address their letters accordingly for him to

Jan Verschaffelt, Successeur, 134, Faubourg de Brabant, Ghent, Belgium.

J. V.'s NEW CATALOGUE (No. 1 of) is now just ready, and may be had just free on application either to himself or to Messrs. A. Siebrecht & Son, 3, Shaftesbury Lane, Great Tower Street, London, E.C.

NEW HARDY CLEMATISES.

CLEMATIS RUBELLA.—Very rich velvety claret: the deepest coloured Clematis yet offered. Very distinct, and having the advantage of flowering for 6 to 7 months, of 6 blooms, with five and six sepals. First Certificate, Royal Horticultural Society.

CLEMATIS PENICILLATA WALDS.—Large flowers, of a rich deep violet purple, with red bars down the centre of each sepal, a decided improvement on C. rubro-violacea. First Certificates, Royal Horticultural Society.

Messrs. GEORGE JACKMAN AND SON have much pleasure in announcing that they are in a position to send out the above Clematises that are distinct, and can with confidence recommend them. Strong plants, 12s. each; Cuttings, if not the very best ornaments for walls, 6s. each.

Early orders will secure the strongest plants, which will be sent out carefully packed, in rotation, as received.

The Floral Magazine, for the October Number, will insert C. rubella and C. lanuginosa candida.

St. Cuthbert's Lodge, Woking, 14 to 24 feet, 21s. each

The usual allowance to the Trade

Coloured Drawings, by Andrews, for 24 stamps

Woking Nursery, Surrey

Keele Hall Beurre Pear.

WILLIAM GEORGE CALDWELL begs to intimate that the above handsome stock of healthy Plants of this fine PEAR deserves the character given of it at page 17, December 17, 1864, page 1246, which he has procured direct from Mr. Hill, Gardener, Keele Hall Strong Plants, 8s. 6d. each; second size, 3s. 6d. each.

Knutsford Nurseries, Cheshire.

SURPLUS STOCK.

STANDARD and HALF-STANDARD APPLES, 3s. per 100

RED CURRANTS, 5s. per 100

BLACK CURRANTS, 5s. per 100

BEST LANCASHIRE SHOW GOOSEBERRIES, 1s. per 100

DESCRIPTIVE CATALOGUES may be had of

R. Williams, The Nurseries, Rainhill, near Stockport

WM. VIRGO AND SON have a large Stock of the undermentioned FRUIT, FOREST, and other TREES to offer this season, viz.:—

Apples	Alder	Withy
Cherries	Ash	Quick strong trans planted
Plums	Chestnut (Spanish)	Hollies planted
Pears	Hornbeam	Common and Portugal Laurels
Peaches and Nectarines	Hazel	Larch and Scotch Fir
Forest Trees	Oak (English)	Roses, &c.

Samples and Prices can be had on application at The Nursery, Wonersh, near Guildford, Surrey.

JNO. S. KENWAY, of Bathaston, near Bath, being about to give up his Garden Ground, offers for Sale the following sorts of STRAWBERRY RUNNERS of the past Summer's growth, at 2s. per 100:—

600 Keen's Seedling	100 Trois pots Victoria
300 Alice Maud	100 Scarlet Queen

Also a quantity of very superior Dwarf sorts of PLUM, PEAR, and APPLE TREES, which can be seen at any time in the Garden, near the Village of Bathaston.

A few Sacks of SEED POTATOES—Flukes, Prince Albert, British Queen, and Lapstone Kidney. Price on application.

Roses, Fruit Trees, Conifers, Forest Trees, &c.

JOHN CRANSTON begs to direct attention to a large and superior Stock of ROSES, FRUIT TREES, CONIFERS, FOREST and ORNAMENTAL TREES, &c.

His Nursery contains upwards of 50 Acres, situated in the centre of the county of Hereford (which is acknowledged to possess the finest soil and climate in Great Britain) and is well stocked with Trees of every description.

DESCRIPTIVE PRICED CATALOGUES will be forwarded on application, and Estimates for large quantities specially and most advantageous Prices will be given.

Planting undertaken by Contract or otherwise.

Nurseries, King's Acre, near Hereford.

NEW CATALOGUES

for the SEASON of 1866 and 1867

No. 1. ROSES.—A Select List of all the best varieties in cultivation, fully faithfully described.

No. 2. FRUIT TREES.—A Descriptive List of all the choicest varieties of Fruits.

No. 3. CONIFERS, ORNAMENTAL TREES and SHRUBS.—Containing all varieties worthy of cultivation, with interesting notes of description, height, size, native country, &c.

No. 4. TRANSPLANTED FOREST TREES.—Plants for cover and underwood, &c.

No. 5. GARDEN and AGRICULTURAL SEED and ROOT CATALOGUE

No. 6. GENERAL PLANT CATALOGUE

The above will be forwarded free on application to

John Cranston, King's Acre Nurseries, near Hereford.

Fruit Trees, Roses, Evergreens, &c.

W. KNIGHT begs to inform intending Planters that he has many Thousands of the above, with every other ORNAMENTAL TREES and SHRUBS, in the finest possible condition, at reasonable prices. An inspection is respectfully invited. DESCRIPTIVE PRICED CATALOGUES free.

The Nurseries are within two minutes' walk of the Hailsham Station (South Coast Railway).

Hurst Nursery, Hailsham, Sussex.

FRUIT TREES.—The finest collection in England. 2000 sorts, the growth in all manner of training, and are free from canker, moss, and insects, and are unsurpassed in size. Nurseries—one of the oldest and best. Trees from such should be avoided, as worthless and diseased trees can never be cured.

A 92-page CATALOGUE (gratis), copiously full of information gratis, on application to J. Scott, The Nurseries, Merriott, Somerset.

A Quarter of a Million of Fruit Trees.

THOMAS WARNER begs to remind intending Planters and the Trade, that his Nurseries, which occupy upwards of 70 acres, contain the above, in addition to a most extensive Stock of Evergreens, Ornamental Trees, Roses, &c., all in a high state of cultivation. An inspection is respectfully invited.

CATALOGUES, Wholesale or Retail, may be had free on application.

The Nurseries, Leicester Abbey, one mile and a half from the Midland Railway Station.

The Finest New Hardy Plant of the Year.

PAUL'S NEW DOUBLE SCARLET THORN, awarded Easter-less Certificate Royal Botanic Society and International Exhibition.

"Deep carmine-red, double and vigorous, far surpassing the old double scarlet."—*Gardeners' Chronicle*, May 24, 1862.

STANDARDS and PYRAMIDS, 10s. 6d. each. See PAUL & SON'S CATALOGUE

Old Cheshunt Nurseries, N.

To the Trade.

WINTER and SPRING-FLOWERING PLANTS — our stock of well-wooded ERICAS, EPACRIS, AZALEAS, and New Holland Plants is extra fine this year, and being much greater than we can house, we are selling at unusually low prices.

T. Jackson & Son, Nurseries, Kingston, Surrey (adjoining the Railway Station), S.W.

To Gentlemen and Others about to Plant.

THOMAS SAMPSON begs to call attention to his extensive stock of EVERGREENS and SHRUBS, ORNAMENTAL TREES, FRUIT and FOREST TREES of every description; ROSES, FLOWERS, and CHRYSANTHEMUMS in fine varieties; CEDRUS DEODARA from 3 to 15 feet; THUJA AUREA in fine specimens. All the above are offered at very low prices.

The Nurseries, Preston Road, Yeovil, Somersetshire.

To the Trade.

JOHN BLAKE AND SONS, The Nurseries, Dorgan, Somerhill, County Meath, beg to offer unusually fine surplus stock of 1 and 2 year LARCH, SCOTCH SPRUCE, ABIES, SILVER FIR, BEECH, THORN, PRIVET, PLUM, and EVERGREEN, THORN, QUICK, AUSTRIAN PINE, &c. The above will be Sold at the lowest possible price. WHOLESALE PRICE LIST on application.

To Gentlemen Planting.

G. FROST begs to offer large quantities of fine Transplanted LARCH, 3 to 7 feet; SPRUCE, 2 to 5 feet; SCOTCH, 1 to 2 feet; SYCAMORE, 1 to 3 feet; LAUREL, 1 to 4 feet, and 5000 to BEECH for Hedges; also an immense stock of 1 and 2 year ENGLISH OAK, 1-year ASH, 1-year PLUM, 1-year EVERGREEN do., 1-year SPANISH CHESTNUT, 1-year HORSE CHESTNUT, 1-year QUICK, 2-year SCOTCH, SPRUCE, BEECH, and APPLES.

LIST of NURSERY STOCK on application.

Nurseries, Bampton.

To Gentlemen engaged in Planting.

TOOLE AND CO. beg to call attention to their very extensive Stock of

EVERGREEN and FLOWERING SHRUBS,

HARDY ORNAMENTAL TREES,

FRUIT TREES, FOREST TREES, and CONIFERÆ,

Grown at their Nurseries, Cullenswood, Ranelagh Road, Dublin: and Welfort Bray, and respectfully invite inspection of the same.

CATALOGUES on the same being forwarded post free on application

The usual discount to the Trade

Westmoreland Buildings, Dublin.

S. PONSFORD AND SON are prepared to offer the following well-grown NURSERY STOCK:—Fruit Trees in all forms; Standard Roses; Evergreens; Forest Trees, 1 to 6 feet; Acanthus, Laurels, Variegated Hollies (fine), Ligustrum ovalifolium, MULBERRIES (above 2000 well-grown of all sizes, special offers to the Trade), AZALEAS and CAMELLIAS set with bloom; Hyacinths, Tulips, Crocuses, &c. CATALOGUES free.

Seed and Plant Department: Brixton Place; Nurseries: Loughborough Park, Brixton, Surrey, S.

Contract Planting.—To Noblemen and Gentlemen.

CHARLES SHARPE AND CO., NURSERYMEN, Sleaford, Lincolnshire, are prepared to submit ESTIMATES for the Formation of NEW PLANTATIONS by Contract, including Plants Planting, and Filling up for two years

To Gentlemen about to Plant.

WILLIAM BARRON begs to offer the following valuable TREES and SHRUBS, of which he has a surplus stock, at very reduced prices, viz.:—

ABIES DOUGLASII, 1 to 1½ ft., per 100		
"	2 ft. to 4 ft., per 100	
"	4 ft. to 5 ft., each, 2s. 6d.	
CRYPTOMERIA JAPONICA, 1 to 1½ ft., per 100		20s.
CUPRESSUS LAWSONIANA, 12 in. to 18 in., per 100		20s.
"	18 in. to 2 ft., per 100	45s.
"	2 ft. to 3 ft., per 100	60s.
"	3 ft., per dozen	4s.
PICEA NOBILIS, 8 in. to 12 in., per dozen		18s.
"	12 in. to 18 in., per dozen	15s.
THUJA MENZIESII or LOBBII, 18 in. to 2 ft., per 100		40s.
"	2 ft. to 4 ft., per 100	100s.
"	4 ft. to 5 ft., per dozen	4s.
" PYRAMIDALIS, 2 ft. to 3 ft., per 100		42s.
" SIBIRICA, 1 in. to 2 ft., per 100		25s.
WELLINGTONIA GIGANTEA, 6 inches, per 100		40s.
"	9 in. to 12 in., per doz., 12s.	
"	18 in. to 2 ft., per doz., 24s.	
"	2 ft. to 3 ft., per doz., 42s.	
BERBERIS DARWINII, 1 in. to 2 ft., per 100		42s.
COTONEASTER SIMMONDSII, 9 in. to 12 in., per 100		20s.
"	12 in. to 18 in., per 100	30s.
DEUTZIA CRENATA FLORE PLENO, 9 in. to 12 in., p. 100		40s.

Special Prices to the Trade on application.

Elvaston Nurseries, Borrowash, near Derby.

CHARLES NOBLE has a large quantity to offer of the undermentioned, by the dozen, 100, 1000, or 10,000:—

Dwarf ROSES, of all the best kinds, large bushes, 2 to 3 feet high, and nearly as far through.

SPANISH CHESTNUTS, 3 to 5 feet, very fine, 1-year.

THORN, very fine, 1-year.

TURKEY OAK, very fine, 1-year.

MANETTI STOCKS, very fine, 1-year.

DEUTZIA CRENATA flore-pleno, very fine, 1-year.

Sample and price if required.

STRAWBERRIES, 2s. 6d. per 100, or 21s. per 1000:—

British Queen	Frogmore Late Pine	Wonderful
Empress of Prince Consort	Keen's Seedling	Prince Arthur.
Sir C. Napier	Marguérite	

Sunningdale Nursery, Bagshot, Surrey.

North Road Nursery, Sleaford, Lincoln.

FRANK WARWICK begs to call the attention of Noblemen, Gentlemen, and others to his Stock of the following. Prices on application.

LARCH, 1 to 2, 2 to 3, 4 to 5 feet	BERBERIS	AQUIFOLIUM,
SPRUCE, 1 to 1½, 2 to 2½ feet	1 to 1½, 1½ to 2 feet	
SCOTCH, 1 to 2, 2 to 3 feet	BEECH, 2 to 3, 3 to 4 feet.	
BLACK THORN, 1 to 2 feet	PRIVET, 1 to 2, 2 to 3 ft.	

LISTS of other NURSERY STOCK on application.

Northampton Nurseries.

JOHN PERKINS, SENIOR, begs to call the attention of Noblemen, Gentlemen, and others engaged in Planting, to his Large Stock of the following:—2,000,000 BLACK THORNS, for Covert Hedging, 1½ to 2, 2 to 3, and 3 to 4 feet; BEECH PICS, 2 to 4 to 6 feet; 2,000,000 SPRUCE FIRS, 1½ to 2, 2½ to 3, 3 to 4 feet: 2,000,000 WHITE THORN QUICK, 2 and 3 Years' Transplanted. Also large quantities of

Plants suitable for 2 feet	Horse Chestnuts, 3 to 4 feet	
Beech plants, 2 to 3 feet	Oaks, English, 5 to 6 feet	
Ditto dukes, 2 to 3 feet	Ditto, Turkey, 4 to 6 feet	
Green Box, 1 to 2 feet	Elms, English, 6 to 8 feet	
Laurels, 2 to 3 feet	Ditto, Huntingdon, extra, 8 to 10 ft	
Portugal Laurels, 11 to 2 feet	Chestnuts, Spanish, 14 to 2 feet	
Ditto ditto, 2 to 3 feet	Ditto, Horse, 4 to 6, 6 to 8 ft	
Evergreen Privets, 2 to 3 feet	Sycamore, 3 to 4 feet	
Birch, 3 to 4 feet	Beech, 3 to 4 feet	
	Cedrus Deodara, 5 to 6, 6 to 8 ft	

J. P.'s stock of all kinds of Fruit, Forest, Ornamental Trees, &c., is very extensive, and this season unusually fine, and in excellent condition for removal having been frequently transplanted.

J. P. having such an immense quantity of Black Thorns, Larch, and Spruce Firs, will be pleased to make a special offer where large quantities are required. An inspection of the above is respectfully solicited.

DESCRIPTIVE PRICED CATALOGUES sent post free on application to 52, Market Square, Northampton.

New Weeping Elms.

ULMUS SUBEROSA PENDULA, 7s. 6d. each

ULMUS SUBEROSA PENDULA MICROPHYLLA, 7s. 6d. each.

WM. WOOD AND SON would particularly beg to call attention to the two above-named magnificent Weeping Varieties of Ulmus suberosa, which have been raised from seed in their Nurseries, and have been greatly admired.

The gracefully weeping branches of these new Elms are thickly covered with small leaves, presenting a very interesting and novel appearance, entirely distinct from all other varieties in cultivation

Woodlands Nursery, Maresfield, near Uckfield, Sussex

Berried Aucubas for Winter Decoration.

MAULE AND SONS offer nice bushy Plants, well set with Berries, from 40 to 50 Berries, at 21s. each, and upwards, according to the quantity of Fruit.

☞ The Berries sown in the Spring will furnish a large proportion of Males for Fertilising.

The Nurseries, Bristol.

To Cultivators of Succulent Plants, &c.

T. COOPER, Holmesdale Road, Reigate, Surrey, has a large Collection of SUCCULENT PLANTS, &c., including about 150 varieties of CACTI, also ALOES, HAWORTHIAS, AGAVES, MESEMBRYANTHEMUMS, and other PLANTS, which have been raised from seed in their Nurseries, and have been greatly admired. The Plants are in good condition, and will be sold at very moderate prices. Lists forwarded on application.

Willingtonia aurea variegata.

R. HARTLAND begs to offer good Plants of this most beautiful Tree, 1 foot, very choice, 5s.; 12 inches, 2s. 6d.; 24 size, good, 5 to 7 inches, 1s. 6d. Received 1st class Certificate from Royal Horticultural Society; and for History of Parent Tree, see *Gardeners' Chronicle* of October 6, page 965.

CHROMOLITHOGRAPHS by Messrs. Day & Son, free by post for 25 stamps. The Lough Nurseries, Cork.

To the Trade.

ELIZA ABRAHAM, Fort Prospect Nursery, Limerick, begs to offer unusually fine strong bushy Transplanted surplus stock of EVERGREEN OAKS, 2 to 3 feet, and 3 to 4 feet.

Also COMMON LAURELS, from Cuttings, 4 years, extra strong, selected, 3 to 4 ft.; Do., 3 years, from Cuttings, 2 to 4 ft., well rooted.

LAURUSTINUS, 2 to 3 feet, fine and well rooted; Ditto, 3 years, from Cuttings, 1½ to 3 feet, very fine.

1 and 2-year Seedling ENGLISH OAK, in lines, very fine.

1-year TURKEY OAK, in lines, strong.

The above will be Sold for the lowest possible prices for cash, or in exchange for other goods.

Stove Plants.

TO BE SOLD, a Collection of about 150 STOVE PLANTS, many good Specimens amongst them. As the premises are required for building purposes, £20 will be taken for the lot.

Apply to the Rev. FRED. FITZPATRICK, Coom Rectory, Mohill, Co. Leitrim

To Nurserymen and Others.

WANTED, from 1000 to 2000 FOREST TREES, in Lots of 50 and 100, of the following sorts:—Sycamore, Maple, Horse Chestnut, Ash, Elm, English and Plain Oaks, and Spanish green Oaks, Planes, Scotch Firs, Larch, &c., to be delivered free of carriage to the Broadstairs Station on the London, Chatham, and Dover Railway. Cash for prompt payment. Address

R. Beckmann's Office, St. Pancras Road, Camden New Town, N.W.

Special Offer to Gentlemen and Others about to Plant.

GEORGE CLARKE begs to offer, if the selection is left to himself, choice EVERGREENS in great variety, CONIFERÆ, RHODODENDRONS in all colours, DECIDUOUS TREES, &c., at 2s. 10s., £5, and £10 per 100.

Owing to the past 20 years been extensively engaged in Landscape Gardening and Planting by contract; he finds that supplying plants on this above system proves very advantageous to the purchaser, as he takes especial pains to select those only which are adapted to the situation. The Ground under cultivation for Shrubs, &c., amounts to over 40 Acres, and consists of rich loam, enabling all plants to be taken up with good balls, insuring their success almost in every case. In cases where G. C. superintends the planting he guarantees failures within 12 months from the first time.

Extensive collections of all the best kinds of Roses, Fruit Trees, &c. CATALOGUES on application

Nurseries, Raynes Park, Leigham Court Road, Streatham; and Mottingham, Kent, S.E.

ANDREW G. DALY, Nursery, Ireland, will Sell Cheaply to the Trade:—

2,000,000 strong Bedded and Transplanted LAURELS

500,000 strong 3-years' ditto ditto

10,000 strong Transplanted MAHONIA AQUIFOLIA

10,000 strong 3-year Transplanted ditto

500,000 good well-grown 1-years' Seedling ditto

10,000 3 to 4 feet SCOTCH FIR (seed from Scotland), removed last year

100,000 fine 2-years' old 1 year be lded BERBERIS DARWINII

200,000 extra 1 Seedling ditto ditto

200,000 small hardy LAURUSTINUS, from layers

2,000 strong Furnished Plants ditto

100,000 strong 1-year MANETTI STOCKS

150,000 strong RHODODENDRON STOCKS, 5 years old

1,000,000 strong 1-year Seedling QUICK

1,000,000 fine, well-grown 1-year Seedling 2 ditto

1,000 Pillar Upright IRISH YEWS, trained to one stem, 5 to 7 feet, very fine, and a large quantity of secondary variety

250,000 small IRISH YEWS, of different sizes and heights

3,000 5 to 6 feet WELLINGTONIAS, hardy, 3 to 4 ft. through, grown on debris of granite.

The Nurseries are 40 acres well-furnished Saleable Stock of AMERICAN PLANTS, CONIFERÆ, SHRUBS, and FOREST TREES, and his Six Greenhouses are replete with all the London and Continental Novelties in Stove and Greenhouse Plants.

The Stock will be offered at low prices to the Trade on application, and, if agreed on, delivered free in Liverpool or Glasgow.

The Earliest Pea Grown is

CARPENTER'S EXPRESS, gathered on the 7th May, (see Testimonials), THE EARLIEST DATE ON RECORD, price 3s. per quart. The usual discount to the Trade.

EDWARD CARPENTER, Seed Merchant and Grower, Brighton and Sussex Seed Warehouse, 96, St. James's Street, Brighton.—Oct. 20.

Dickson's "First and Best" Early Pea.

FRANCIS & ARTHUR DICKSON & SONS are gratified to know that this PEA has again this season given universal satisfaction, and is pronounced by hundreds of the first Gardeners in Britain, and other competent Judges (confirmed also by their own repeated trials), to be the best Early Pea of the kind, to be the very best First Early Pea ever offered for general good qualities, viz., earliness, productiveness, and succession of crop. "First Crop" for Exhibition Purposes, and for main crops, to be a day or no earlier, but it is altogether a very inferior Pea, as every one freely admits. Now Seed can now be supplied from a very large bulk, which they have grown to meet the great and increasing demand.

The new and pure stock Price per bushel to the Trade on application.

The Old established Seed Warehouse, 100, East-gate Street, Chester.

To Farmers, Gardeners, and Others.

EXCELLENT CABBAGE PLANTS (stocks not to be surpassed) can be supplied in any quantities at 2 Rods —

ROBINSON'S CHAMPION (an extraordinary large sort), 2s. 6d. per 1000.

DRUMHEAD (finest selected), 2s. 6d. per 1000. [1000

ENFIELD MARKET (finest selected), 2s. 6d. per 1000.

TRUE DWARF NONPAREIL (earliest and best), 2s. 6d. per 1000.

RED DUTCH for Pickling, 5s. per 1000.

Special prices given for large quantities.

A remittance or reference to accompany all orders.

FREDR. GEE, Seed Merchant and Grower, Biggleswade, Bedfordshire.

SILVER SAND, Peat, Loam, Mould, Rotted Manure, Guano, Cocoa Nut Fibre, Grotto Material, Gravel, Turf, Edging Tiles, Pots, Sticks, Stakes, Gishurst Compound, Tobacco Paper, and other Garden requisites in any quantity at moderate prices, at

J. FRYER'S, Clarendon Nurseries, Camberwell New Road, S.

COCOA-NUT REFUSE is becoming SCARCE, the old reserves will soon be gone. Now sold in bags, 1 for 2s., 10 for 16s., 20 for 30s., 50 for 68s., 100 for £6.

Fourpence allowed for each bag returned carriage-paid.

A Railway Truck-load (not in bags), 40s.

Postage Stamps or Post-office Order, payable to J. BARNHAM & Co., Kingston-on-Thames, S.W.

Fumigate your Greenhouse with

TOBACCO TISSUE.

Will Destroy all the Insects and not Injure the Plants.

Price 3s. 6d. per lb., carriage free, to be had of Messrs. ROBERTS & SONS, Tobacco Manufacturers, 54, St. John Street, Clerkenwell, E.C., and of all Seedsmen and Nurserymen.

Destroy your Insect Pests.

PRESERVE YOUR PLANTS and TREES.

YOU MAY EASILY DESTROY ALL PLANT PESTS,

RED SPIDER	GREEN AND BLACK FLY	ANTS
MEALY BUG		SCALE
THRIP	AMERICAN BLIGHT	MILDEW,

Without injury to the most delicate Plant or Tree, by using

FOWLER'S GARDENERS' INSECTICIDE,

pronounced by all who have used it to be far superior to any other remedy. One trial will prove its efficacy. Testimonials forwarded on application. Price 1s. 6d., 3s., 5s. 6d., and 10s. per Tin.

GEO. & THOMAS FOWLER, North Street, Brighton; and of HOOPER & Co., Covent Garden Market, W.C.

Red Spider — Magnified.

GISHURST COMPOUND, whether used against Insects and Mildew, on Growing Plants, or as Winter Dressing on Trees at rest, should be dissolved 48 hours before use. This gets rid of smell, and if the Solution be decanted, prevents any staining of foliage. A strength of from 1 to 2 oz. to the gallon of water is recommended for growing Plants; one from 4 to 16 oz. for Trees at rest.

Sold Retail by Nurserymen and Seedsmen, in boxes, 1s. 3s., and 10s. 6d. each.

Wholesale by

PRICE'S PATENT CANDLE COMPANY (LIMITED).

TO BE SOLD, the FRAME-WORK of Three PINE PITS, and the HOT-WATER PIPES relating to the same, with 15 GLASS LIGHTS, in a perfectly sound state, and a large quantity of PINE PLANTS.

Application to be made to MR. ARTHY, Stationer, Chelmsford.

JAMES PHILLIPS AND CO. beg to submit their prices as follows:—

GLASS for ORCHARD HOUSES,

As supplied by them to Mr. Rivers, to the Royal Horticultural Society, and to most of the Nobility, Clergy, and Gentlemen of the United Kingdom.

Each Box contains 100 feet. The prices only apply to the sizes stated.

Squares 20 by 12, 20 by 13, 20 by 14, 20 by 15.

16 oz. to the foot. 21 oz.

Fourth quality	14s. 0d.	19s. 6d.
Third ditto	17s. 0d.	22s. 6d.
Seconds	18s. 6d.	26s. 0d.
English	20s. 0d.	27s. 0d.

The above prices include the boxes, which are not returnable.

Stock size, 100 feet, in 100 feet boxes, boxes included.

These prices only apply to the sizes stated

				4lbs.	3eds.	2nds.
11 by 9	12 by 9	13 by 9	14 by 9	s. d.	s. d.	s. d.
12 „ 10	14 „ 10	14 „ 10	15 „ 10	13 6	15 6	17 0
13 „ 11	14 „ 11					
14 „ 12	15 „ 12	16 „ 11	16 „ 11			
15 „ 13	19 „ 13	16 „ 12	17 „ 12			
16 „ 13	17 „ 13	20 „ 12	..			
16 „ 14	20 „ 14	18 „ 13	..	17 0	17 0	18 6
	17 „ 14	18 „ 14	..	16 to 17 oz. to the foot.		
	20 „ 14					

SMALL SHEET SQUARES

In 100 feet Boxes.

6 by 4	6½ by 6	7 by 5	7½ by 6
8 by 6	8½ by 6	9 by 6	9½ by 7½ .. 12s. 6d.
		10 by 8	10½ by 8½ .. 13s. 6d.

Boxes 2s. each, returnable at full price

SHEET and ROUGH PLATE GLASS, SLATES of all sizes, BRITISH PLATE, PATENT PLATE, ROLLED PLATE, CROWN, SHEET, HORTICULTURAL, ORNAMENTAL, COLOURED, and every description of GLASS, of the best Manufacture, at the lowest terms. Lists of prices and estimates forwarded on application to

JAMES PHILLIPS & Co., 180, Bunhill Street Without, E.C.

Great International Horticultural Exhibition 1866.

FIRST AND ONLY PRIZE AWARDED TO

BEARD'S PATENT METALLIC NON-CONDUCTING GLASS HOUSES.

Perfect System of Ventilation and Glazing.

Manufactured by Messrs. SANDERS, FLEMER, & Co., Victoria Horticultural Works, Burr St. Edmund's.

See large Advertisement in *Gardeners' Chronicle* of June 27, 1866

AUSTIN'S ARTIFICIAL STONE, INVENTED 1826.

The entire Stock of this Manufactory comprises

180 different MODELS of VASES.

70 different MODELS of TAZZAS

About 200 different FOUNTAINS.

74 STATUES from the Antique, and by Modern Artists, and SMALL FIGURES of CHILDREN.

22 SUN-DIAL PEDESTALS.

GARDEN SEATS.

15 BASKETS, from 12s. to Seven Guineas.

SHELLS, suitable either for WATER or ROCK PLANTS, from 18 inches to 12 feet diameter.

JARDINIÈRES, or large BOWLS for MASSES of FLOWERS.

53 FIGURES of ANIMALS and BIRDS.

ORNAMENTAL RIMS to WATER BASINS.

34 BAPTISMAL FONTS.

CRESTS and other ORNAMENTS for GATE PIERS.

BALUSTRADING, in various styles.

TRIPOD, and other ANTIQUE PEDESTALS.

Manufactured by AUSTIN, SEELEY, & Co., at Nos. 369 to 375, Euston Road, Regent's Park, N.W.

MELON LIGHTS, Machine made, 6 feet by 4 feet, 24 thick, Unglazed, 2s.; Glazed 10s., are kept in stock at the Finsbury Steam Joinery Works, 121, Bunhill Row, E.C.

GREENHOUSES, RAFTERS, SASH BARS, &c.

GARDEN BORDER EDGING TILES, in great variety of patterns and material, the plainer sorts being especially suited for KITCHEN GARDENS, as they harbour no Slugs and Insects, take up little room, and once put down incur no further labour and expense, as do "grown" Edgings, consequently being much cheaper.

GARDEN VASES, FOUNTAINS, &c., in Artificial Stone, of great durability, and in great variety of design.

F. & G. ROSNER, Manufacturers, Upper Ground Street, Blackfriars, S.; Queen's Road West, Chelsea, S.W.; Kingsland Road, Kingsland, N.E.

Sole London Agents for FOXLEY'S PATENT GARDEN WALL BRICKS. Illustrated Price Lists free by post. The Trade supplied.

ORNAMENTAL PAVING TILES for Conservatories, Halls, Corridors, Balconies, &c., as cheap and durable as Stone, to blue, red, and buff colours, and capable of forming a variety of designs.

Also TESSELATED PAVEMENTS of more enriched designs than the above.

WHITE GLAZED TILES, for Lining Walls of Dairies, Larders, Kitchen Ranges, Baths, &c. Grooved and other Stable Paving Bricks of great durability, Dutch and Adamantine Clinkers, Wall Copings, Red and Stoneware Drain Pipes, Slates, Cements, &c.

To be obtained of F. & G. ROSNER, at their Premises as above.

SILVER SAND (REIGATE, best quality), at the above addresses 14s. per Ton, or 1s. 3d. per Bushel; 2s. per Ton extra for delivery within three miles, and to any London Railway or Wharf. Quantities of 4 Tons, 1s. per Ton less.

FLINTS, BRICK BURRS or CLINKERS, for Rockeries or Grotto Work. F. & G. ROSNER.—Addresses see above.

N.B. Orders promptly executed by Railway.

COTTAM'S PATENT PORTABLE UNITED COW FITTINGS.

THESE CATTLE-HOUSES are Portable, not Fixtures, removable at pleasure, to Wet or Dry Pasture, to Improve Ventilation or breed Vermin, they keep dispersed with an unnecessary, increased width and depth of Fodder in Racks, Water Cistern, and Patent Drop Cover to prevent over-feeding. Cheap, durable, and impervious to infection, being of Iron. Price of Fittings per Cow, 55s.

Prospectuses free of COTTAM & Co., Iron Works, 2, Winsor Street (opposite the Pedlar's Acre), Oxford Street, London, W., where the above are exhibited, together with several important Improvements in Stable Fittings just secured by Patent

HOTHOUSES FOR THE MILLION,

AWARDED A PRIZE MEDAL, 1862.

INVENTED AND PATENTED BY THE LATE SIR JOSEPH PAXTON.

MANUFACTORIES: { LONDON; NEWTON in CARTMEL, LANCASHIRE; GLOUCESTER; COVENTRY; PAISLEY; and ABERDEEN.

COMBINE SIMPLICITY, CHEAPNESS, AND DURABILITY.

FULFIL ALL THE REQUIREMENTS OF HORTICULTURE.

"Without any pretence to high finish or elaborate workmanship, which in such structures represent a mere waste of money, they are perfectly well made. Their arrangement is as simple as ingenuity can render them. No rafters obscure the light and make them cumbrous. No sashes have to be pushed up or let down by ever-breaking lines and weights, or by expensive mechanical contrivances; and yet all the ventilation requisite in such buildings is as perfectly secured."—*Dr. Lindley in* "THE GARDENERS' CHRONICLE," *July 28th*, 1860.

"Nothing can be more easy than to build them, nothing more simple than to remove them."—*Daily News, May 22*, 1862.

ILLUSTRATED CIRCULARS with LISTS of PRICES of the PATENT ROOFS can be had on application.

ESTIMATES given for HEATING APPARATUS, ORNAMENTAL CONSERVATORIES, GREENHOUSES, &c., to Special Designs.

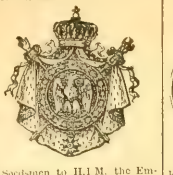
HEREMAN AND MORTON, 7, PALL MALL EAST, LONDON, S.W.

The SECOND EDITION of A HANDBOOK of VINE and FRUIT TREE CULTIVATION, as adapted to the above Patent Hothouses, containing Illustrations, Hints for Heating Houses, and General Directions for Cultivation, &c., may be had of Mr. HEREMAN, price 1s.; post free, 1s. 1d.

"The portion of the Book devoted especially to the Cultivation of Fruits will be found particularly valuable to Amateurs, and there are few Gardeners, however practical they may be, but may gain some hints from it which may be of infinite service."—*Floral World, August*, 1863.

Carter's Dutch Bulbs.

Seedsmen to Her Majesty's Chief Commissioners of Public Works and other Government Departments, the Royal Gardens, Kew, &c., &c., &c.



Seedsmen to H.I.M. the Emperor of the French, the Crystal Palace Company, the Agri-Horticultural Society of India, &c., &c., &c.

CARTER'S GUINEA BOX of DUTCH FLOWER ROOTS contains—12 choice named Hyacinths for pots or glasses, 12 named Hyacinths for borders, 4 varieties of Polyanthus Narcissus, 12 Pheasant's-eye Narcissus, 12 double white sweet-scented Narcissus, 100 yellow Crocus, 50 blue Crocus, 12 choice mixed double Tulips, 12 choice mixed single Tulips, 4 white Lilies, 50 Snowdrops, 25 finest mixed Anemones, 25 finest mixed Ranunculus, 12 double Due van Thol Tulips, 12 double Daffodils, 4 Tiger Lilies.

The above forwarded on receipt of post-office order for 21s.; half the above for post-office order for 10s. 6d.

PRICE LISTS gratis and post free.

JAMES CARTER & Co., 237 and 238, High Holborn, London, W.C.

Carter's Dutch Bulbs.

Just published,

BULBS and THEIR CULTURE. See Original Article in AUTUMN SUPPLEMENT to CARTER'S GARDENER'S and FARMER'S VADE MECUM.

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Post free, 12 stamps; gratis to Customers.

Dutch Flower Roots.

CROYDON. A. HENDERSON. EAST SURREY SEED WAREHOUSE. ESTABLISHED 1828

ARCHIBALD HENDERSON begs to announce that he has received from Holland a large Consignment of BULBOUS ROOTS in fine condition.

DESCRIPTIVE and PRICED CATALOGUES are now ready, containing practical directions for the successful cultivation of each section of Bulbs, in Pots, Glasses, and the Flower Garden.

Also a DESCRIPTIVE PRICED LIST of all the best VARIETIES in cultivation. Catalogues may be had gratis and post free upon application.

Seed Nursery, Thornton Heath, Surrey; and at the East Surrey Seed Warehouse, College Grounds, North End, Croydon

SUTTON'S unrivalled COLLECTIONS of BULBOUS FLOWER ROOTS, for Blooming during the Winter and Spring. These are every year becoming more popularly cultivated, and the HYACINTHS, NARCISSUS, TULIPS, &c., which we imported last season from the celebrated Dutch Florists, Messrs. de Boom, Veen, Bycoet, and others, having been so generally admired, we have imported from the same parties, and still more extensively.

SUTTON'S COLLECTIONS of HARDY FLOWER ROOTS for OPEN GROUND.

		£	s.	d.
No 1.	A large and Choice Collection of ANEMONES, HYACINTHS, CROCUSES, TULIPS, RA. NUNCULI, NARCISSI, SNOWDROPS, IRISES, GLADIOLI, &c	2	2	0
No 2.	Ditto ditto, consisting of all the same kinds, in Reduced Quantities	1	1	0
No. 3.	A Small and Choice ditto	0	10	6

SORTS for FLOWER POTS and GLASSES.

No. 4.	A splendid Collection of HYACINTHS, JONQUILS, NARCISSI, EARLY TULIPS, New large CROCUSES, &c	2	2	0
No. 5.	The same in Reduced Quantities	1	1	0
No. 6.	A Small and Choice Assortment	0	10	6

SUTTON'S DESCRIPTIVE AUTUMN CATALOGUE is now ready, and may be had gratis and post free on application.

All Goods sent Carriage Free except small parcels, and 5 per cent. allowed for Cash Payments.

SUTTON & SONS, Royal Berks Seed Establishment, Reading.

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FRANCIS & ARTHUR DICKSON & SONS have received, from the best Growers in Holland, a very large Importation of the above, and have the satisfaction to say that the BULBS are unusually large, sound, and well ripened, and for which early orders are requested to ensure the best Roots.

Flower Roots of £2 value will be delivered free of carriage at the principal Railway Stations and Shipping Ports throughout the country.

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The Old Established Seed Warehouse, 106, Eastgate Street, Chester.

THE EARLIEST PEA IN CULTIVATION.

SEEDSMEN BY APPOINTMENT. Sutton AND Sons

SUTTON'S RINGLEADER.

SUTTON & SONS

Have again the pleasure of offering this unrivalled EARLY PEA, which still retains its position as *the forwardest and best Early variety yet introduced*. The various trials made both in Public and Private Gardens fully confirm the confidence MESSRS. SUTTON expressed of *its superiority over every other Early Pea*. One of its merits is that the pods come into bearing all at the same time, so that the haulm can be cleared away and the ground planted with another Crop *nearly a fortnight before other Early Peas are ready*.

SEEDSMEN BY APPOINTMENT. Sutton AND Sons

Retail price, 2s. per quart.

☞ *Lowest price to the Trade may be had on application.*

SUTTON AND SONS, ROYAL BERKSHIRE SEED ESTABLISHMENT, READING.

VIOLA CORNUTA.—NEW SEEDS of the BEST VARIETY.

JAMES VEITCH & SONS

HAVE MUCH PLEASURE IN OFFERING NEWLY-HARVESTED SEED OF THIS VERY

STRIKING PLANT FOR FLOWER GARDEN DECORATION.

Full descriptions having so recently appeared in the Gardening Papers, MESSRS. V. AND SONS do not think it necessary to again refer to them, but they confidently recommend the Plant as one of the most useful ever grown for Flower Gardening.

There being more than one variety in cultivation, the Seed offered is saved from the very best only.

Price per packet, 6d., 1s., and 2s. 6d. each.

ROYAL EXOTIC NURSERY, KING'S ROAD, CHELSEA, S.W.

ESTABLISHED UPWARDS OF A CENTURY.

1862 LONDINI HONORIS CAUSA

BUTLER, McCULLOCH, & CO.,

SOUTH ROW, COVENT GARDEN, LONDON,

Seedsmen to Her Majesty's Commissioners of Woods and Forests,
To the Commissioners for the Colonies,
To the Horticultural Societies of the Punjaub and Bombay, &c.

HOLDERS OF PRIZE MEDALS FROM INTERNATIONAL EXHIBITIONS OF 1851 AND 1862.

CHOICE COLLECTIONS of BULBS, all of the FIRST SIZE and QUALITY.

For Conservatory Decoration.					For Flower Garden Decoration.				
No. 1.	No. 2.	No. 3.	No. 4.	No. 5.	No. 7.	No. 8.	No. 9.	No. 10.	No. 11.	No. 12.
£5.	£2 10s.	£1 5s.	£1 1s.	15s.	£5.	£3.	£2.	£1 5s.	£1 1s.	10s. 6d.

For Conservatory and Flower Garden Combined.

No. 13. £5 5s. No 14, £2 12s. 6d. No. 15, £2 2s. No. 16, £1 1s. No. 17, 15s. No. 18, 10s. 6d.

All Orders amounting to £1 1s. *and upwards sent carriage paid.*

ILLUSTRATED PRICED CATALOGUE, containing full details of these Collections, post free on application.

PAUL & SON'S ROSES, EVERGREENS, FRUIT TREES, &c.

Amongst EIGHTY PRIZES gained by their COLLECTIONS this year are the PREMIER PRIZES for CUT ROSES at the INTERNATIONAL, NATIONAL, BIRMINGHAM, ROYAL BOTANIC, and BRIGHTON SHOWS, AND EVERY PRIZE FOR NEW ROSES AT THE SUMMER SHOWS.

PAUL & SON,

OLD CHESHUNT NURSERIES, CHESHUNT, N.,

Beg to solicit orders for ROSES and other PLANTS now ready for delivery. That the Old Cheshunt Nurseries still stand unrivalled in the culture of the Rose, the numerous Awards of the year attest. General Prices as under:—

ROSES, from our Stock of over 100,000 Saleable Plants.

Older kinds, Standards, 2 to 4 feet, 18s. per dozen; Dwarf Standards, ½ to 1 foot, 12s.; Dwarfs, 9s. to 12s.
Newer kinds, Standards, 24s. to 30s. per dozen; Dwarf Standards, ½ to 1 foot, 18s.; Dwarfs, 18s. to 24s.
NEW ROSES of 1866, 36s. to 42s. per dozen; 3s. 6d. to 5s. each.
NOISETTE MARÉCHAL NIEL, Standards, 5s.; Dwarfs, 3s. 6d.

FRUITS, all healthy well-formed Trees.

APPLES.—Fine Standards, 18s. per dozen; Pyramids, 18s. to 24s. per dozen; Dwarf-trained, 30s. to 42s. per doz.
PEARS, PLUMS, and CHERRIES.—Standards, 24s. per doz.; Pyramids, fruiting, 24s. to 42s. per doz.; Dwarf-trained, 42s. per dozen.
PEACHES, NECTARINES, and APRICOTS.—Standard-trained, 7s. 6d. to 10s. 6d. each; Pyramids, in pots, 5s. each; Dwarf-trained, 60s. per dozen.
QUINCES, WALNUTS, MEDLARS, CRABS, SERVICE TREES.—Standards, 2s. to 2s. 6d. each.
FIGS, in pots, 3s. 6d. to 5s. each.
VINES, ex. size, Fruiting, 7s. 6d. to 10s. 6d. each; Planting, very fine, 60s. per dozen.
GOOSEBERRIES and CURRANTS, 4s. per dozen.
RASPBERRIES.—Summer, 16s. p. 100; Autumn, 30s. do.
STRAWBERRIES, 3s. 6d. to 5s. per 100.

CONIFERÆ.—Our selection of 100 varieties, 1 to 3 feet, £10. PRICED LIST on application. For extent of our Collection see Catalogue of International Horticultural Exhibition.
DECIDUOUS and ORNAMENTAL FOLIAGED TREES and EVERGREENS, for Town and Country Planting.
RHODODENDRONS and AMERICAN PLANTS at PAUL'S American Nursery, High Beech, Loughton.

☞ PRICED DESCRIPTIVE LISTS of the above now ready.

PAUL AND SON would invite an inspection of their Nurseries, extending over Sixty Acres, one mile from Cheshunt Station, Great Eastern Railway. Omnibus from Waltham Station to Nursery Gates meets certain Trains.

American Plants, &c.

WATERER AND GODFREY'S PRICED and DESCRIPTIVE CATALOGUE of RHODODENDRONS and other American Plants for this Autumn, will be sent on application. The Catalogue also gives a summary of their General Nursery Stock, probably the most extensive in the kingdom.
Knap Hill Nursery, Woking, Surrey.

Hardy Scarlet and other Rhododendrons.

W. H. ROGERS, Red Lodge Nursery, Southampton, can offer splendid named varieties of the above, strong bushy Plants, well set with blooming buds, at £10 per 100, or selected, 20s. per dozen; also a general NURSERY STOCK of FRUIT, FOREST, and ORNAMENTAL TREES and SHRUBS, extending over 60 Acres. Detailed CATALOGUES and every information may be had on application.

Rhododendrons.

JOHN WATERER'S DESCRIPTIVE CATALOGUE of HARDY SCARLET and other RHODODENDRONS is now published and will be forwarded on application. It faithfully describes the colours of the new varieties exhibited by him at the Royal Botanic Gardens, Regent's Park, and includes a full and select List of popular CONIFERS, with heights and prices, is likewise combined.
The American Nursery, Bagshot, Surrey, near Sunningdale Station, South-Western Railway.

NEW HARDY RHODODENDRON, MICHAEL WATERER.—This Rhododendron has hitherto been exhibited under the name of ANNIHILATOR, but it will be sent out under the above name. It is undoubtedly the most brilliant-coloured late hardy free-flowering Rhododendron in cultivation.
Orders are now being taken for Plants to be sent out in the Autumn at 31s. 6d. each. The usual discount to the Trade.
JOHN WATERER, American Nursery, Bagshot, Surrey.

Notice.

TO BE SOLD, Cheap, a great Bargain, 5000 RHODODENDRON PONTICUM, 2 feet, fine bushy healthy stuff, many of them with buds, well worthy the attention of Gentlemen and the Trade. Special prices and samples on application to
Y. STRACHAN, Wholesale and Retail Seed Merchant and Nurseryman, 4, High Street, Wrexham, North Wales.

THE QUEEN, without any exception the best WHITE RHODODENDRON yet raised.—Robust grower, deep green foliage, late and free flowering, the trusses large, full, compact, and semicircular, footstalk short and stiff, colour white, suffused with soft blush mauve, changing to the purest white, clear alabaster or waxlike, of unequalled make and substance, reminding one of the petals of the Water Lily. It remains in bloom longer than most other Rhododendrons, a peculiarity probably accounted for by its hitherto refusing to produce seed, an advantage all Rhododendron growers will understand. All who visited the International Exhibition will remember the transcendent superiority of The Queen over every other white Rhododendron exhibited. It is proposed that The Queen should assume her throne in 1867. All intending to exhibit will wish to enjoy her regal sway should apply at once, as all orders will be executed in rotation. The price will be 31s. 6d. each, and the Trade will have four plants given for three ordered. It does not excite no surprise that its sole possession by the Advertiser should have called forth the envious jealousy of certain HONOURABLE MEN. Hence a story industriously circulated in the Trade that THE QUEEN is not a new one but an old kind, shown under an assumed name. The Advertiser would be glad to be informed WHEN, OR WHERE, AND UNDER WHAT NAME this RHODODENDRON has been seen, and in whose possession it is to be found. The whole undivided stock is in the hands of CHARLES NOBLE, Bagshot, Surrey.

CHOICE VARIEGATED PELARGONIUMS.

Sunset	Luna	Italia Unita
Mrs. Benyon	Clara	Victoria
Mrs. Pollock	Golden Tom Thumb	The Fairy
Yellow Boit	Rainbow	Princess Alexandra

The above 12 varieties, suitable for exhibition, for 21s.
The following at 7s. per doz., package included:—

Mrs. Pollock	Golden Vase	Golden
Harlequin	Burning Bush	Argus
Glowworm	Snowflake	Fontainebleau

Terms, cash. Remittances requested from unknown correspondents.
Address, ALFRED FRYER, Nurseries, Chatteris, Cambridgeshire.

LARGE YELLOW DUTCH CROCUS, 1s. 6d. per 100, 12s. 6d. per 1000.
LARGE BLUE DUTCH CROCUS, 1s. 6d. per 100, 12s. 6d. per 1000.
DOUBLE SNOWDROPS, 2s. per 100, 16s. per 1000.
DOUBLE YELLOW ROSE TULIPS, 1s. per dozen, 7s. per 100.
DOUBLE VAN THOL TULIPS, 6d. per dozen, 3s. per 100.
CHOICE NAMED HYACINTHS, 4s., 6s., and 8s. per dozen.
TAYLOR'S 20s. and 10s. COLLECTIONS of FLOWER ROOTS.
For full particulars of them see CATALOGUE, to be had gratis on application.
EDWARD TAYLOR, Nurseryman and Seedsman, Malton, Yorkshire.

OFFER TO THE TRADE.

CYCLAMEN EUROPÆUM, per 100 roots 10s. 6d.
" HEDERÆFOLIUM, per dozen 5s.
" MARMORATUM, per dozen 7s. 6d.
" NOBILE ET QUILLOIBORIFOLIUM, mixed, per doz. 9s.
" NEAPOLITANUM, per 100 roots 25s.
" ODORATUM, per dozen 7s. 6d.
" REDUM, per 100 roots 35s.
FRITILLARIA GRÆCA, per 100 roots 7s. 6d.
" TRISTIS, per 100 roots 7s. 6d.
LEONTICE LEONTOPETALUM, per dozen 12s.
SCILLA BIFOLIA, per 100 roots 7s. 6d.
FREDERICK ADOLPHUS HAAGE, JUN., Erfurt, Prussia.—Oct. 27

RAYNBIRD, CALDECOTT, BAWTREE, DOWLING, & CO., AND COMPANY, Limited,
CORN, SEED, MANURE, AND OILCAKE MERCHANTS,
Address, Corn, Seed Market, Mark Lane, London; or Basingstoke.
Samples and Prices Post free on application. Prize Medals, 1851 for Wheat; 1862, for "Excellent Seed Corn and Seeds.

Picea Nordmanniana.

JOHN GRIER begs to inform admirers of Coniferæ that he is Commissioned to DISPOSE of a very HANDSOME SPECIMEN of the above. It is 17 feet high, perfectly shapely and symmetrical, and was planted in its present position three years ago; consequently is in a condition to remove with perfect safety. Price and other particulars may be obtained on application.
The Nurseries, Ambleside.—Oct. 27.

Orchis maculata superba.

DREGHORN AND AITKEN, NURSERYMEN, Kilmarnock, N.B., can supply fine strong flowering Roots of this very beautiful hardy Orchis, at 10s. per 100, by Parcels Post.
D. & A. possess the largest stock in the Trade of this splendid Plant, and were the first to introduce it to the Public. They received a First-class Certificate for the Exhibition Plant at the Glasgow and West of Scotland Horticultural Society's Show in July last. The Roots now offered have been grown in the soil where it is indigenous.

Amaryllis.

JAMES GARAWAY AND CO., Durdham Down Nurseries, Bristol, offer, from their unequalled stock of the above-named favourite flower, strong Bulbs of unnamed Seedlings and others that have bloomed with them during the two last seasons, at 5s., 7s. 6d., and 10s. 6d. each, or 50s., 80s., and 105s. per dozen.
JAMES GARAWAY & CO.'s GENERAL BULB CATALOGUE for the coming season is in the Press, and when ready will be forwarded post free on application.
JAMES GARAWAY & CO., Durdham Down Nurseries, Bristol.

New Double-flowered Amaryllis.

H. LAURENTIUS, Leipzig, begs to call attention to his NEW AMARYLLIS, CELEBRITY, a splendid, large, fine and well shaped, bright scarlet and crimson-tinted, of which representations may be seen in the "Illustration Horticole," and the "Garten Magazin." Strong-flowered Bulbs, 12s.
His AUTUMN CATALOGUE (No. 35) is just out, and contains a full description of the above, together with PRICE LISTS of NOVELTIES, BULBS, AZALEAS, &c., and of a large number of Plants at Trade prices. It can be had gratis on application (by prepaid letter) to him or to his Agents, Messrs. BETHAM & BLACKITH, COX'S Quay, Lower Thames Street, London, E.C.
The Horticultural Establishment of H. LAURENTIUS, Leipzig, Germany.

New Grass Seeds for Exportation.

SUTTON AND SONS have received their supply of NEW GRASS SEEDS of the present season's growth in fine condition, and will be happy to forward lowest price per ton or cwt. on application. CATALOGUES gratis and post free.
SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

Chrysanthemums.

ADAM FORSYTH begs to inform his Friends and the Public that his extensive Collection of CHRYSANTHEMUMS is NOW in FLOWER, and may be seen every day (Sundays excepted). His facilities for housing them have been greatly increased, and those interested in the cultivation of this favourite flower will find this a good opportunity for seeing the various modes in which it may be grown for the decoration of Greenhouse or Conservatory at this season.
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ROBERT SIM can now send, post free for six postage stamps, Part I. (British Ferns and their varieties, 36 pages, including prices of Hardy Exotic Ferns) of his NEW and PRICED DESCRIPTIVE CATALOGUE of BRITISH and EXOTIC FERNS, No. 7.
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CATALOGUES forwarded gratis and post paid on application.
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It has been awarded Three First-class Certificates by the Royal Horticultural Society of London, Royal Botanic Society of London, and at the Crystal Palace; and may be justly represented as a distinct and very beautiful plant, and one that will become a general favourite.
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CALCEOLARIA, 1s. 6d., 2s. 6d., 3s. 6d., 5s.
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DOBSON & SONS, Seedsmen, Isleworth, London, W

The Gardeners' Chronicle.

SATURDAY, OCTOBER 27, 1866.

MEETING FOR THE ENSUING WEEK.

SATURDAY, NOV. 3 { Royal Horticultural (Weekly Show), South Kensington .. .. 2 P.M.

IT has been suggested, and we think the suggestion a good one, that those keen observers whose practised eyes note apparently the most trifling variations among plants should turn their attention towards the inducing CAUSES of such VARIATIONS. It is undoubtedly desirable that every variation, great or small, should be chronicled, but also it is specially desirable that no more than its proper importance be given to each form so registered. Thus M. JORDAN sees in what most botanists would consider to be one species, Draba verna, nearly a hundred distinct varieties or sub-species. Our concern at present does not lie with the question as to whether it is advantageous or not to specify so many minor variations, but with the desirability of ascertaining, if possible, the why and wherefore of such differences.

If we compare wild plants with cultivated ones of the same tribe, we generally find in the former a compactness of habit, a firmness of texture, a harmony of proportion between the several organs, which in the case of the cultivated plants are replaced by a looser habit, greater luxuriance of foliage, an increased development of some organ at the expense of others, and in general a less hardy constitution.

In these instances the causes of the differences between the two sets of plants are not difficult to understand, but very often it is next to impossible to ascertain the reason for the variations exhibited among plants. Why, for instance, should two Mallows growing side by side under apparently similar conditions, the one have contracted leaves of a yellowish hue, the other broad deep green leaves? Why should one plant of Anthriscus vulgaris be of a pure green in all its parts, when its next neighbour is of a rich purple? We have chosen these illustrations from common wild plants, purposely, because we believe that from them the young gardener, if he turn his attention to them, may learn many a lesson in practical horticulture.

There is frequently a peculiar appearance or habit belonging to plants grown on one description of soil which is entirely different from that possessed by the same plant grown under other conditions. The gardener may turn such knowledge as this to good account in his choice of plants to occupy particular sites—for instance, practical men tell us to select for planting in a very dry soil such Apple trees as have comparatively small foliage, so that the amount of exhalation from the leaves may be comparatively small, and the amount of moisture supplied to the roots proportionately less. Now this is just such an inference as might fairly be drawn from the consideration of the kinds of plants found growing naturally in dry places—plants with no superabundant foliage, with dry leathery leaves, often protected by a thick rind or with a dense coating of hair, or with other means of resisting too large an amount of evaporation. It may or may not be possible for the gardener to succeed in making a plant adapt itself to a particular sort of soil; that depends upon a great variety of circumstances, and his success, if he succeed, would furnish valuable lessons to the physiologist; but practically speaking, it would be a saving of time and trouble if he had the knowledge and power to enable him to select at once the right plant for the right place.

If it were always possible to do this, we should not hear so much of this Conifer not doing well at this place, or of something else being a failure elsewhere. The kind of knowledge required to obviate this must always to a very great extent be derived from actual experience, but still it is equally certain that if the same amount of patient skill and exact observation that have been expended on determining the forms of so-called critical plants had been directed towards the investigation of the circumstances bringing about these variations, that vegetable physiology would have profited more than systematic botany is likely to do, and that the horticulturist would have had a welcome addition to his store of general information.

WE have just received from one of our correspondents (W. P. R.) specimens of MOULD on PEACH ROOTS, from some trees of unusual luxuriance, the condition of which was discovered only when they were lifted for root-pruning. In the first instance it is very possible that the fungous spawn may act as a stimulant, as it does in many cases in which plants are attacked by really parasitic fungi; in the end, however, there is great fear that it may prove destructive. We have no information as to the fact whether the young trees succeeded others; it cannot, however, be too frequently repeated that such a practice is almost certain death, a circumstance which was well-known to our forefathers, though it was attributed to a wrong cause, it being imagined that two trees of the same kind could not succeed each other in consequence of the exhaustion of the soil.

We have at this moment a striking instance of the length of time in which the old roots may prove dangerous. A Greengage tree died, and was succeeded by a Peach tree, which grew with the utmost luxuriance, but at once withered from the contact of the old roots. The ground was then most carefully trenched, but apparently not far enough, as a scarlet-flowered Chestnut, which was planted within their reach, and which for two years flowered well, though it was only a seedling of four or five years old, after flowering this year, to our great surprise died suddenly. The roots, even the merest fibres, on examination were found covered with spawn, which had run between the bark and wood, and formed a white film, exactly as in a Cupressus macrocarpa, which perished from the same cause. The specimen was thought to be so instructive that it was laid on the table at the meeting of the Committee of the Horticultural Society on the 16th inst. It is very probable that the enemy is the spawn of Polyporus igneus, which is white, and not, as might be supposed, ferruginous. We have, however, very rarely an opportunity of ascertaining to what species the destructive mycelium in these cases belongs. *M. J. B.*

PUNICA GRANATUM, the fruits of which may be seen in early winter in our fruit shops under the name of POMEGRANATES, is a small tree, native of Persia, where it is found covering large areas of ground. It is successfully grown and fruited in the southern parts of France and Spain, and in Andalusia it is said to be cultivated extensively for its fruit. It will grow and even set its fruit occasionally in the north of France and in the warmer parts of England, but we have never

heard of an instance in which the fruit has in these districts come to perfection.

The Pomegranate is cultivated largely in some parts of France for the flower-market, and plants of 3 feet high will sometimes be seen bearing from 20 to 30 blossoms. The single red-flowered variety is preferred for pot culture, on account of its flowering much more freely and with greater certainty than that which produces double blossoms. The single-flowered Pomegranate, which is very ornamental, we have seen in large numbers in the flower market at Rouen, literally covered with blossoms. The plants are kept in very small pots to render them more portable, and also to induce them to bloom the more readily. The flowers are borne on the young wood, and principally on very short spurs; and the flowering period is towards the end of the summer.

The French also cultivate the Pomegranate in tubs to associate with Orange trees, and some trees may be seen at Versailles of a very great age. These, it may be observed, are kept in very small tubs, doubtless with a view to get them to flower freely, which they do in hot seasons, but sparingly when the summers are wet and cold.

The best soil for the Pomegranate is a good rich turfy loam. When planted out, in England, they should be placed against a south wall in the kind of soil just described. The knife must be used very sparingly, or not at all, unless the young wood gets too thick, in which case it must be thinned out, the shoots that are left not being deprived of the lateral branches, as on these, as well as on short spurs from the old wood, the flowers are borne.

The Pomegranate cannot be said to flower abundantly every year when planted out in our climate, but in some seasons it will flower well. When the plant becomes old, and consequently less vigorous, it flowers more freely than when in a young and robust condition. Young plants growing freely might doubtless be induced to yield blossoms by a judicious shortening of the roots, or by confining the roots within a given limited space. This last method may be safely recommended for all shy-flowering plants, as they can be assisted during the growing season with stimulants, which should be withheld as the flowering period approaches. There is a tree of the double-blossomed Pomegranate growing against a south wall in the Royal Horticultural Society's Garden at Chiswick, which, to all appearance, may have been planted 30 years or more. The branches of this tree were formerly trained to the wall, but were cut back close to the stem a few years ago, and since then the tree has not been strictly trained, but allowed to grow out in the form of a bush. In this state it has produced a goodly number of flowers; but, as before observed, the double-blossomed Pomegranate cannot be regarded as a free-flowering plant.

—— We are sorry to learn that the proposed Country Show of the ROYAL HORTICULTURAL SOCIETY at Bury St. Edmund's has been abandoned, in consequence of the unsuitableness of the only site that could be allotted to it, in the neighbourhood of the Royal Agricultural Society's Show-yard. We trust, however, that the idea which has thus sprung into life may not be suffered to die away without result, but that the question may in future years receive earlier consideration, before the plans and arrangements of the Royal Agricultural Society—for it is probable that the two Societies may work more successfully in company than separated—have been finally settled.

—— We are glad to learn, on the authority of the *United Service Gazette*, that the authorities at Aldershot are doing everything in their power to encourage the practice of CAMP GARDENING. Already prizes for the best gardens have been given each season to non-commissioned officers and men; and now it is announced that officers and others who may wish to enclose the gardens round their huts may have materials for that purpose by applying to the military authorities. Doubtless therefore cultivation will be carried on to a considerable extent, while the various plantations which the engineers have been for some time planting around the camp, and on other parts of the manœuvring grounds, will soon add their beauties to those of the various gardens.

—— The effect of the DESTRUCTION of FORESTS upon navigable rivers within their range, no less than that upon climate, is without question extremely powerful, even the mighty Mississippi being unable to withstand it, for doubtless those persons are right in their conclusions who explain the shrinking volume of that noble stream, of which we have lately read, as being occasioned by the wholesale destruction of forests in North America. If this be so, and we see no reason to doubt it, the hint may be useful to our Australian colonists, who by extensive planting may perhaps ultimately improve the condition of their river navigation, as well as beautify their country.

—— We regret to have to announce the DEATH of Dr. SCHLECHTENDAL, Professor of Botany and Director of the Botanic Garden at Halle, and who was so well and so favourably known to botanists through his editorial labours in connection with the *Linnæa* and the *Botanisches Zeitung*.

New Plants.

338. QUERCUS RAVENSCROFTIANA.

LEAVES thick, leathery, and woolly beneath; oblong-elliptical, about 2 inches in length; sessile, disposed alternately on each side of the twig; margins entire, or very slightly sinuated, slightly curved, one side of the leaf often a little larger than the other, the lateral nerves branching off from the mid-rib nearly at right angles, appearing as depressions on the upper side of the leaf; they are short, and usually continue without divarication to the edge of the leaf, but sometimes they break into two. At the base of each leaf, where it springs from the stem, is a bud. The buds are all minute. The twig purplish brown, somewhat tomentose towards the apex. Flower and fruit not known.

This is a very remarkable species, and, although our materials are so imperfect, we make it known for more than one reason. In the first place, it has generally been supposed that no Oaks occur in South America.

There are plenty in Mexico, but hitherto, so far as we know, none have been described from the southern continent. It is, therefore, an important contribution to the geographical distribution of the Oak. In the next place, it is peculiar in its appearance and texture, and is said to be ornamental in appearance. We do not yet know whether it will prove hardy or not.

It has been named after Mr. Ravenscroft, of Messrs. Lawson & Son's establishment, whose long-continued labours for the advancement of practical arboriculture and agriculture do not the less deserve acknowledgment that they have been quiet and unobtrusive. *A. Murray.* [Can this really be an Oak? EDS.]

THE LATE PROFESSOR METTENIUS.

[We are indebted to the kindness of Professor Caspary, of Konigsberg, for the following memoir of this eminent botanist, whose lamented decease was noticed by us, p. 826. EDS.]

GEORGE HEINRICH METTENIUS was born on the 24th of November, 1823, at Frankfort-on-the-Maine, where his father was a merchant. He attended the model school, and afterwards the school of Director Stellway, both at Frankfort, and subsequently became a pupil of the gymnasium of the same city, which he attended until 1841. In the spring of 1841 he went to the University of Heidelberg, devoting himself to the study of medicine. At Heidelberg he took in July, 1845, the degree of Doctor of Medicine, his inaugural dissertation being *De Salviani* (*Francofurti ad M.*, 1845, 8vo.). In the spring of the year (1846) he became a physician, but he never practised. In the autumn of 1846 he went to Heligoland, where he studied marine Algæ; the winter of 1846-47 was spent at Berlin; the summer of 1849 at Vienna, where he attended some of the medical lectures and the clinical classes of the hospitals, but specially devoted himself to botanical studies. In the autumn of 1847 he went to Dalmatia, and studied particularly the marine Algæ at Fiume. In the spring of 1848 he settled as "Privatdocent" of Botany at the University of Heidelberg, where his public lectures were well attended. In the spring of 1851 he was called as Professor Extraordinary, in the place of Professor Alex. Braun, who had removed to Giessen, to the University of Freiburg, in Baden. There he remained only a year and a half. In the autumn of 1852 he was appointed Professor in Ordinary and Director of the Botanic Garden of Leipzig, where the chair of Botany had become vacant by the death of Professor Kunze. He married on June 14, 1859, Cecilia, the second daughter of Professor Alexander Braun [Professor Caspary himself having married the elder daughter of the same accomplished botanist on the same day].

At Leipzig Mettenius worked and studied up to the time of his death, which took place on August 18, 1866, from cholera. His last illness began at 10 o'clock in the morning. Being himself a physician, he soon felt that recovery was impossible, in spite of the exertions of two of the most eminent physicians of Leipzig. His mind, however, was clear enough to allow him to communicate to his wife his most important wishes as regarded his affairs. He died at 6 o'clock in the evening of the same day.

Mettenius was a very tall, athletic man, of great bodily strength. He led the most regular life possible. At 5 o'clock he began the work of the day, and finished it punctually at 10 in the evening. His whole mind was turned towards the study of plants, and especially of Ferns, of which he found a very good living and dried collection in the garden at Leipzig, and which had been brought together by Kunze. This he increased so greatly, that the Ferns of Leipzig are scarcely rivalled anywhere. Few directors of botanic gardens ever spent so much time and trouble in arranging the garden as Mettenius, for the inspector of the garden, Mr. Bernhardi, was in infirm health, so that Mettenius himself very generally took the whole management of the garden upon himself, being out by 6 o'clock in the morning and directing the operations of each of the labourers. He had a most intimate acquaintance with botanical literature, having great powers of reading, and he had formed an excellent library. His manners were retired and modest; he was devoted to his wife, and faithfully attached to his friends. He was one of those few persons upon whose word and deed entire reliance might be placed. He disliked public display. His candid way of thinking, combined with his keen and penetrating judgment, may have caused him to appear, perhaps, sometimes stern and too severe, in the eyes of those of whom he had reason not to hold so favourable an opinion as others may have done. It is much to be regretted that the comprehensive work to which all his labours tended, viz., a "Species Filicum," studies for which he had made at nearly all the principal herbaria, as well as at Paris and Kew, has been left unfinished. Doubtless he had the most intimate knowledge of Ferns of any one in our time. It is much to be wished that his excellent collection of dried Ferns may be added to that of Kunze for public use at the University of Leipzig.

Mettenius left the botanic garden in Leipzig in such an excellent state, that it may serve as a pattern to any other.

THE FLORA OF THE ALPS (1866).

I HAVE several times traversed the mountains and valleys of which I am about to speak, but I have never seen their "flora" nearly so rich as it has been this year, a circumstance probably owing to the abundant rains which fell in the Alps early in the summer, and the moderately warm weather which succeeded them. I may premise that I am only going to give you notes of travel, always very hastily, and perhaps not very accurately made, and that I write not for the scientific botanist, but for that section of English travellers who do not go abroad merely "to do Switzerland," but to have their hearts warmed and minds refreshed by gazing on the wonderful works of Nature, both small and great.

As, then, on a bright cheerful day we dragged our as yet untrained legs from the Valley of Lauterbrunnen up the side of the Wengern Alp, a little boy held out for sale a small bunch of flowers; they were of a deep chocolate colour, very ovate and taper-pointed (acuminate) in form, and had a strong smell, resembling Vanilla. I afterwards found several specimens of this plant, which proved to be Orchis nigritella alpina, especially I think on the Æggischorn. This is well worth looking for.

To mention another flower, which needs no looking for but can scarcely fail to be frequently looked at with great pleasure, I may come to the Sempervivum montanum, the Mountain Sedum; both this and arachnoideum are very common but never intrusive. Everywhere, under all circumstances, on high mountains, in lowly valleys, or in moist shady nooks (where, as we often said, it looked as if it had been bedded out,) or again on the dry rugged solitary rock, liberally affording one feature of gaiety to the surrounding desolation, this bright cheerful flower is to be seen, and will be welcomed. One observable matter about it is the variation of its colour from a bright red to pink and lilac, according to its position or circumstances.

Another very ordinary but very interesting flower on the Alps is the Campanula. I cannot pretend to give you a catalogue of the species there found, but may mention one or two which will strike most eyes. First, then, the large Campanula barbata, the corolla of which is densely bearded, and the colour a palish blue. This is a welcome watcher by many a mountain path. Another, not so obtrusive, and on some accounts perhaps a more interesting flower, of a deeper blue

showing a wiry stem which carries only one flower, is Campanula excisa. This, I think, will only be found in very high places, *e. g.*, the Æggischorn, Riffel, and such like, and there modestly hiding among the rocks. The leaves of this plant are linear.

But without detracting from the merits of the two Campanulas above mentioned, I must own that in the united judgment of my companions and myself the *belle* of the mountains was a lovely little flower of this family, the Phyteuma. I am afraid to give its specific name, as three or four are mentioned by Weber as found on the Alps, and on referring to my notes I find I have trusted too much to my memory. I, however, believe it to be pauciflorum. The leaves are linear, and the flower deep blue; another of the same colour has lanceolate leaves, deeply serrated.

A very pretty deep blue Veronica—bellidioides, is found in very high places, and should be looked for on the Æggischorn and the Gornergratt. The flowers will be found clustering together on an erect stem.

To change our colour, we may now speak of the Potentilla, a small but by no means insignificant item in this Alpine floral carpet. Weber mentions three kinds—grandiflora, caulescens, and Clusiana. The first is a very pretty bright yellow flower, found wherever pastures occur in very high places. It has an ascending stem, with about five flowers. This may be seen in the higher parts of the valley of Zermatt, and is very striking. The second has numerous flowers, the leaflets nearly sessile with silky hairs, and finds snug little habitations for itself among the rocks.

A very striking handsome flower of a yellow colour, not in its general aspect unlike the English Dandelion, we found to be Arnica glacialis.

A brilliant change of colour was produced in many places by the Dianthus: this continually occurred in the Rhone valley, where its colour was remarkably brilliant. I believe this to be barbatus; its flowers, of a deep pink, were in clusters. There is another, alpinus, one-flowered, and exceedingly pretty.

Two little plants belonging to the natural order Primulaceæ deserve to be especially mentioned:—

1. The Soldanella, a lovely pale blue flower, with deeply cloven corolla, and leaves somewhat reniform, which rears a most elegant and modest head on a very slender stem, by numerous pathways in the Alps.

2. Androsace helvetica, a flower that must be sought for to be found, but those that walk with open eyes and not mouth occupied with the great and beautiful around them, may find on very high rocks, peeping up from a thick bed of leaves, this very lovely but tiny unpretentious looking flower, and will not regret their search.

The Gentians are very beautiful, their colour being of the deepest, brightest blue; three or four kinds occur, all funnel-shaped in the flower, but differing in the shape and disposition of the leaves—imbricata, pumila, brachyphylla. One of these (as we afterwards found it to be) puzzled us much at the time of discovery; we found it at the base of the Æggischorn as we entered the village of Brieg. In this place (the only one in which we saw it) it was very abundant, but its pale blue colour and different form gave us little idea of what it was, viz., G. campestris. *J. T. P.*

LIQUID MANURE FOR POT PLANTS.

The extensive cultivator of pot plants, and especially of soft-wooded pot plants, usually finds a continuous supply of mild liquid manure of the utmost service; and rightly applied, it is a great aid. Many plants fill their pots with roots, and exhaust their stock of nutriment just about the time of flowering, and when it is unwise or perhaps impossible to supply them with more solid food. In such cases the application of gentle doses of clear liquid manure acts with the highest benefit. Indeed, its use is not generally desirable before that time. The good Pelargonium grower keeps his plants well in hand during the winter—dry, firm, and stubby, making regular and cautious growth, but without luxuriance, and thus in spring the shoots are set with abundant flowers; and when once that stage is arrived at, the mild dose of liquid manure supplies food and sustaining health and vigour just when it is wanted. The well-grown young specimen Fuchsia that begins to flower in early summer, does not continue to do so for a very long time, unless it is supplied with the liquid; while Chrysanthemum and Strawberry, Calceolaria and pot Vine, Cineraria and Cucumber, as well as numerous other inmates of the garden, are equally well affected by the virtues of properly diluted liquid manure.

Most gardeners have made some preparation for a supply of it—a sunk barrel or cemented tank, or such like, into which the manure is put, and then the reservoir filled up with water. This is an inconvenient and a bad way, as most people should know by this time. The cakes of slime which we too often see on pots, to which liquid manure has been applied, are one bad result—alike nasty and disagreeable to the eye, suggestive in fact of baked cowdung. But that is not all, for the supply gets low, and the dregs are fished up, and then the supply is perhaps altogether stopped to allow of the tank being cleared, and a day or so is required for the mixture to settle; the result of all which is, that the liquid manure-tank in many gardens, like the patent fumigators and other garden inventions which one may see hung up in sheds, but never used, becomes a neglected and half-forgotten receptacle. But all this may be easily remedied by having a properly constructed liquid manure-tank made as follows:—

The best material is slate, and of that an oblong tank should be made, proportioned in size to the wants of the garden. About 5 feet by 3 is a fit size for a pretty full plant collection, and it may be 4 feet deep or more. This should be sunk half way in the ground, placed against a wall in some convenient spot in the frame ground, or near the houses where its contents are most required. It should be divided by a partition of slate across the centre. The lower part of this partition, say the lower foot, should be perforated with holes about half an inch in diameter, or a little less, and then, in one side should be placed about 15 inches of rough gravel, with a few inches of fine gravel on the top of it. On that, whatever manure is preferred, is to be placed, and then the water poured in. Of course the other side will contain nicely filtered liquid-manure at all times, and there need be no cessation at any time, but a constant supply of nutriment in the best form. Always ready, there will be no hesitation or irregularity in using it.

Generally gardeners prefer sheep-droppings for liquid manure, and it is probably the best material that can be used, and the safest and most agreeable to plants generally. It need hardly be added that it should be well diluted, and applied in a clear and weak state. Strong undiluted liquid-manure, especially stable or dunghill liquid-manure, is death to many plants. *W.*

THEORY AND PRACTICE OF VENTILATION. No. XIII.

(*Continued from p. 947.*)

The moving air will do other things as well, but the chief thing it will do will be to dry up all the moisture in an incredibly short space of time. By moving the air we actually increase one half or double its drinking powers. This may become a disastrous evil or a great good, just in proportion to our knowledge or ignorance of what is happening. For the water is removed not only from dead but also perhaps most readily from living surfaces. In a properly constituted medium, under wisely ordained conditions, perhaps nothing quickens growth more than this rapid evaporation of the sap from living surfaces. On the contrary if either the medium or conditions are faulty, the quicker the motion of the air, the more fatal it becomes to health and growth. Hence liberal ventilation demands a liberal provision for providing the air with moisture. Four considerations will help us to determine the right quantity. These are—the temperature of the air, its velocity, the amount of water it already contains, and the requirements of the plants to which it is given. I have already hinted at the importance of the two former: I will now briefly allude to the latter.

Before adding to the moisture of the air, it is very desirable to know how much it contains. For this purpose various instruments for measuring the moisture of the air have been invented. Among these Daniell's hygrometer is one of the simplest and the best.

The range of this, like all other hygrometers, extends from saturation on the one hand to the most perfect dryness on the other. Calling saturation 1000, the changes of moisture in this country range from that to 389 or even as low as 120 under a south wall, occasioning a state of dryness which can hardly be exceeded on a burning sandy desert in any part of the world. The mean degree of moisture in the air of London has been found by Mr. Thomson on an average of 10 years to be 897, while the mean temperature is 50°.62. In other parts of the world it is of course very different. And it is important to bear in mind, in the language of Mr. Daniell, that the inhabitants of our hothouses are mostly natives of the torrid zone; and the climate of this region is not only distinguished by an unvarying high degree of heat, but also by a very vaporous atmosphere. Captain Sabine, in his meteorological researches between the tropics, rarely found at the hottest period of the day, so great a difference of the degrees between the temperature of the air and the dew-point, as is frequently found in this country. His observations indicated a difference of 3° to 10°; whereas here, under a south wall, or in a dry atmosphere, a difference of 20° may sometimes be found between the temperature of the air and the dew-point.

Some idea may be formed of the prodigiously increased drain upon the functions of a plant arising from an increase of dryness in the air from the following consideration. If we suppose the amount of its perspiration in a given time to be 57 grains, the temperature of the air being 75°, and the dew-point 70°, or the saturation of the air being 849, the amount would be increased to 120 grains in the same time if the dew-point were to remain stationary, and the temperature were to rise to 80°; or in other words, if the saturation of the air were to fall to 726. Such facts demonstrate the necessity of regulating, measuring, and controlling the amount of moisture in our artificial atmospheres by some correct standard. For practical use in gardening a more simple and equally as efficient instrument to Mr. Daniell's hygrometer has been provided. This is Mason's or Glaisher's dry and wet-bulb thermometer, procurable at any instrument makers. Mr. Glaisher gives a table of factors which seems almost identical with that given by Mason, by which to find from the data given by the instrument the dew-point at all temperatures, from 10° to 100°. As this table is indispensable to all who use the wet and dry-bulb thermometer as a hygrometer, Mr. Glaisher will excuse its reference to our columns. It ought to be printed as a card by thousands, and hung up in every seed room, potting shed, and gardener's room in the kingdom. The numbers have been found by numerous simultaneous observations and comparisons with Daniell's hygrometer at the Royal Observatory at Greenwich, in the climates of India and Canada. The results at the same temperatures were found alike at these different places, and therefore the figures may be received as of general application.

The following is a table of factors, by which it is necessary to multiply the excess of the reading of the dry-bulb thermometer over that of the wet, to give the excess of the temperature of the air over that of the dew-point, or saturation, for every degree of air temperature from 10° to 100°. It is by the numbers in this table that the temperatures of the dew-point in Mr. Glaisher's general tables have been calculated, and every means has been taken to render them correct. Through all Mr. Glaisher's tables saturation is stated as 100, and not a thousand as in Daniell's and others.

Reading of Dry-Bulb Thermometer.	Factor.	Reading of Dry-Bulb Thermometer.	Factor.	Reading of Dry-Bulb Thermometer.	Factor.	Reading of Dry-Bulb Thermometer.	Factor.
Deg.		Deg.		Deg.		Deg.	
10	8.78	34	3.01	58	1.94	79	1.69
11	8.78	34	2.77	57	1.92	80	1.68
12	8.78	35	2.60	58	1.90	81	1.68
13	8.77	36	2.50	59	1.89	82	1.67
14	8.76	37	2.42	60	1.88	83	1.67
15	8.75	38	2.36	61	1.87	84	1.66
16	8.70	39	2.32	62	1.86	85	1.65
17	8.62	40	2.29	63	1.85	86	1.65
18	8.50	41	2.27	64	1.83	87	1.64
19	8.34	42	2.23	65	1.82	88	1.64
20	8.14	43	2.20	66	1.81	89	1.63
21	7.88	44	2.18	67	1.80	90	1.63
22	7.60	45	2.16	68	1.79	91	1.62
23	7.28	46	2.14	69	1.78	92	1.62
24	6.92	47	2.12	70	1.77	93	1.60
25	6.53	48	2.10	71	1.76	94	1.60
26	6.08	49	2.08	72	1.75	95	1.59
27	5.61	50	2.06	73	1.74	96	1.59
28	5.12	51	2.04	74	1.73	97	1.59
29	4.63	52	2.02	75	1.72	98	1.58
30	4.15	53	2.00	76	1.71	99	1.58
31	3.70	54	1.98	77	1.70	100	1.57
32	3.2	55	1.96	78	1.69		

Example of Using the Table.—Take the reading of 58° dry-bulb and 40° wet-bulb thermometer. The difference between them is 18°. Opposite 58° dry-bulb in the table is the factor 1.90. This multiplied by 18 gives 34.20, which, deducted from 58°, gives the dew-point 23°.8, as will be found in the general tables, page 12. On page 15 of the tables, Mr. Glaisher gives the mode of finding the dew-point where fractions of a degree are concerned. But the above Table is sufficiently exact for gardening purposes, and those who have had the trouble of watching most patiently to discover the dew-point in Daniell's or other hygrometers will most appreciate the simple formula which at once decides it by this simple calculation.

Thus furnished with the means of measuring the temperature and moisture of the air, and estimating its velocity, the maintenance of any variety of artificial climate ought to become almost a matter of certainty. Nevertheless there are many disturbing causes, partly physical, and perhaps more intellectual. Among the latter the most trying is our comparative ignorance of the climatic wants of the plants we cultivate. We know something of the geographical range of plants, but almost nothing of the characteristics of the climates of different countries. Humboldt and others have, it is true, contributed some valuable information, but what is needed is a sort of meteorological, as well geographical map of the globe. We want to know not only the temperature of the earth, but also the heat and vapours to be found in the air. And all these data need to be furnished, not only at the level of the sea, but for 5000 or 10,000 feet above it. In fact, nothing can well be more deceptive to cultivators than such information as "India," or "Africa" merely as the native place of any particular plant. Altitude is the vital point needed to determine climate, and for this purpose it would be better to measure down from the snow-line than up from the level of the sea; because while the climate indicated by the latter varies all over the world, that measured down from the snow-line would be found everywhere alike with the like exposure and the same amount of sunshine. A chart giving the temperature, velocity, and moisture of the air, in zones of feet downwards from the snow-line to the level of the sea, while it would be a new feature in science, would be invaluable to cultivators. Its usefulness could only be completed by altitudinal and aspectorial circles of vegetation. Such information would render the matter of climate and culture easy. A plant is received from India, for instance—is it tender or hardy? Has it come from a north, south, east, or west aspect, a level plain or a rocky recess, a district exposed to the full sweep of the wind or spray of the ocean, or a close steaming jungle? Turning to the physical chart of climate, it is seen to be 500 feet down from the snow-line, and exposed to fierce storms and tempests, therefore it is hardy, and is treated accordingly, and so in all other cases.

In the absence of such special information, we must guess at climate as best we can. Certain well-known stove plants are not simply tropical but jungle plants. In jungles the air during the growing season is saturated with moisture, therefore for these the dry and wet-bulb thermometer should either read alike or within two or three degrees of each other. The average amount of vapour, on the contrary, contained in the air of this country throughout the year is from 80 to 83 per cent. of the total quantity it can hold. It varies from this to 55 per cent. on the saturating quantity. This causes or indicates a difference between the dry and wet-bulb thermometer of from 4° to 9°. *D. T. Fish.*

BATTERSEA SUBTROPICAL GARDENING IN 1866.

What with a cloudy, bad, cold season, such as we have had, it might be thought that the less said about the Subtropical this year the better. But an invitation from Mr. Gibson brought me to the Subtropical just as Colchicum autumnale was opening its blooms around an evergreen bush, and I was delighted to find everything looking exceedingly beautiful.

Colchicum autumnale in the Subtropical! Yes, and if we wait for another year or two we shall find Battersea Park embellished with many beautiful hardy plants (whose only drawback is that they do not require fire-heat or artificial treatment of any kind, so to speak, and consequently, not having to be taken up every year, may be neglected with impunity) that will teach a lesson infinitely more valuable than the subtropical gardening has done. English gardening will never afford the pleasure of which it is capable till we cultivate abundantly the best of the hardy bulbs, herbaceous plants, alpines, dwarf early-flowering shrubs, &c. Moreover, I have no doubt of living to see all this. People about the country are beginning to inquire where the best of these are to be bought, and there are thousands of alpine and herbaceous plants accumulated within the past yearor so in Mr. Gibson's great store-yard. A somewhat precipitous bank of stuff has been levelled into a slope there, and covered with long neat beds of many kinds of Saxifrages and Sedums, while hundreds of batches of good herbaceous things are about here and there, and more coming in every day, all with a view to extensive rockwork embellishment, herbaceous planting, and bedding out. As I intend to attempt a selection of the best hardy plants of all kinds now in the country, with suggestions towards the best way of arranging them, this part of the subject is perhaps better deferred for the present.

One of the first things seen in the Subtropical, going to the right, is an edging of the hardy Sempervivum californicum, A 1 in all respects, and with it a band of Echeveria secunda, equally good, but of course not hardy. An edge of the variegated Thyme round Castor-oils looked very pretty. Funkia subcordata in a partially shaded position, edged with Lobelia, had been much admired; also Amaranthus tricolor, which is very effective and easily raised from seed. It is needless to dilate upon the grace of the Ferns and the dignified verdure of the fine-foliaged plants, particularly as I have so minutely described the general features of the scene before, but Colea Commersonii, a plant with noble pinnated leaves, looked remarkably well suited to this kind of work, while Aralia papyrifera and the Castor-oils were as good as ever. Hedychium Gardnerianum was in fine free flower under the shade of a tree, and the Abutilons showed to greater advantage than I have ever seen them before, either indoors or out. Planted out thus, the rapidity of growth which makes them rather objectionable indoors becomes a gain, and then, when the strong free shoots suspend abundantly their finely-marked blossoms, we see the plants to full advantage for the first time. Selaginella denticulata does very well out of doors, running about freely at the base of the "subtropicals." Tradescantia discolor is used with good effect as an elevated edging; some side views of it are vivid and striking, though closely examined it would not appear to grow freely, but in any case it forms a fine edging. Bahlia imperialis is good, and the Erythrinas, especially ruberrima, which is a very fine thing, flowering abundantly. The charming Vitis heterophylla variegata, edged with gold-veined Lonicera, deserves all that has been said of it. A mixture of the elegantly cut Fern-like Sonchus laciniatus looked quite graceful among and around Wigandia and Polymnia. Some delightful mixtures have been tried with success this year; one little bed, for instance, had a small plant of Rhus glabra laciniata in the centre, beneath it a groundwork of variegated Aubrietia, and then a dense pretty margin of Sedum hispanicum—the whole bed would fit on a tray. Near it a truly graceful bed, with a neat healthy Cycas revoluta in the centre; then two rows of red Dracæna, with the variegated Cocksfoot for a groundwork, then a row of the Coleus, and finally Salvia gigantea, the value of which Mr. Gibson is quite alive. Such beds are bouquets of beauty and grace. As for the Cannas they have never done better, limbata, amœna, and peruviana having attained the height of from 8 to 9 feet, the latter covered with scarlet flowers, not much inferior to a Gladiolus. The Cannas are improving every year. The "indica breed" are being got rid of as quickly as possible. The continental people are directing much attention to the improvement of the flower and leaf of this noble class of plants, and already they have had much success. Among the very finest of their hybrids and varieties are Van Houttei, limbata hybrida grandiflora, and Triomphe de Nantes. As regards improvement of the colour of the foliage, atro-nigricans is remarkable, its leaves being nearly black.

Coleus, the finest of all dark-leaved plants where it does well, has as usual been perfect here this year. Ferdinandis has grown about 8 feet high, a little less than usual, as might have been expected; Wigandia 5 to 6 feet, and Polymnia 5 feet. Ficus elastica and other species have done very satisfactorily. Solanums have had a somewhat bad year of it, earwigs having done them much damage: S. robustum has been very fine. Erythrina laurifolia and ruberrima have been fullest of blossoms; Dracænas, even the tender ones, have done satisfactorily. As for the Iresine you might as well look for a whale in the Serpentine; it is not grown at Battersea. Coleus Gibsoni is considered a success and a useful addition for variety's sake. Among new plants Mr. Bull's variegated Chrysanthemum Sensation proves to be one of the best things that have been sent out for some time. It has improved every day since being sent out, and has regular markings of a mellow golden colour; a useful addition to the resources of the bedder. Amongst the Pelargoniums, Lucius sent out by Mr. Bull, Waltham Seedling by Mr. W. Paul, and Luna, by Saltmarsh & Sons, have proved of distinct and useful merit. The new Alternantheras have been fairly tried, A. paronychioides promising to make a most useful dwarf edging plant of a distinct tone of colour and certainty of effect, unlike the Iresine. Champaeuce diacantha, which I have recommended in your columns as a thing of most striking habit, is a great favourite here, and will be more extensively used in future years.

So much for details: the season now past may be characterised as being as bad as any we are likely to have before the setting in of another glacial epoch. Everything that the flood-gates of the clouds or the winds of heaven could let loose against the subtropical movement had full opportunity to do its worst, and therefore there could not be a better time to inquire how it has stood the test, and how far these tender plants have stood in competition with bedding stuff, which is, in fact, but a few degrees, so to speak, "hardier" than the subtropicals. Since the movement was originated at Battersea the seasons have been more or less favourable to it, and doubtless many may have thought that this season would extinguish it *in toto*. No such thing! Palms might be thought to have suffered, but they have stood well and made good growths without the least injury, and therefore their capability in connection with the subtropical garden is established beyond doubt. The same remarks apply to such things as Pothos scandis, Monstera deliciosa, Dioksonia antarctica, and many other plants. Here the structure of the beds at Battersea comes into play; they are calculated to have as good an effect or better on the plants during a wet as a dry season.

So much for the successes of the movement; but there is another element to be taken into consideration—the failures. Well, multitudinous as are the things they have tried at Battersea, I cannot enumerate so many failures as occurred to Beau Brummel during a single attempt at cravatting. They chiefly occur among the silvery-leaved plants of course, in consequence of the washing off or discolouring of the tomentum by the heavy rains. Salvia argentea, some Centaureas, and a few other things suffered in this way, but not so much as to discourage Mr. Gibson from using them as freely as ever. Another word—Centaurea gymnocarpa is not at all sufficiently recognised as an edging for large and handsome beds; it is, I think, quite as useful for this extensive bedder as pinguisina, hanging over the edges of raised beds with much grace, and, indeed, looking a noble plant in any position. *William Robinson.*

Home Correspondence.

Allamandas.—I have read with interest the different articles which have lately appeared in your columns respecting Allamanda Schottii and A. Schottii Henderson. Messrs. E. G. Henderson (see p. 948) say, "It is not, perhaps, generally known that Schottii was originally sold in the shape of two forms or varieties, namely, A. Schottii of Henderson, and A. Schottii of Pince." Now as none of your correspondents have referred to this latter variety, I will give a short account of its history. Some years ago I was entertained one of the hothouse department in Mr. Pince's Nursery at Exeter. In December, 1847, a new Clerodendron was in flower, which Mr. Pince was anxious to send to the late Sir W. Hooker, in order that a drawing might be made of it for the "Botanical Magazine." It was arranged that the flower should be sent by mail train at night, but very severe frosts setting in at the time, and fearing that there might be some delay as regards transmission from Paddington to Kew, it was agreed between Mr. Pince and the late Sir W. Hooker that the best plan was for me to take it by the morning express train, provided I could be at Kew not later than 12 o'clock, as it was on a Saturday, and Mr. Fitch, the artist, was generally absent some part of that day. I arrived at Kew at the time specified, and in Sir William's studio I saw a beautiful bunch of an Allamanda in a jug of water, and Mr. Fitch was busily engaged making a drawing of it. After my business respecting the Clerodendron was over, I asked Sir W. Hooker if the Allamanda in question was new, when he took me into the studio, and gave me every information I wanted respecting it. It came from Mr. J. Stanton, gardener to R. W. Boston, Esq., Springwood, Manchester. On my return to Exeter, and before I could finish telling Mr. Pince about the Clerodendron, I commenced talking about the Allamanda in such extravagant terms, that at last Mr. Pince exclaimed, "Why, you are Allamanda mad." Be that as it may, however, I shall never forget that beautiful bunch of Allamanda. Mr. Pince immediately put himself in correspondence with Mr. Boston and his gardener respecting it, and eventually bought the whole stock of the plant, which is figured in the 74th volume of the "Botanical Magazine," tab. 4351. After giving the usual botanical description of it, Sir W. Hooker goes on to say:—"A. cathartica alone, so far as I know, had been introduced to our collections till September, 1847, when I had the pleasure of receiving splendid specimens of a perfectly upright-growing species from Springwood. They were raised from seeds sent by Mr. Graham from Brazil to Miss Boston. Besides the size, beauty, and copiousness of the blossoms, this species has the merit of flowering when little more than two feet high, and in 8-inch pots. I think I am right in referring it to Allamanda Schottii, Pohl, though the contracted portion of the tube of the corolla being longer than in that species, it seems better to constitute a variety of it." I wish here to direct the particular attention of writers on Allamanda to the quotation just made, in which it is stated that Allamanda Schottii of Pince will flower in 8-inch pots. Will Allamanda Henderson, of Bull, flower in equally small pots? if it will I shall feel convinced, and in fact I have not the least hesitation in stating that both are one and the same plant under different names. In saying this, however, I ought to add that I have no desire to cry down Mr. Bull's plant. I have only told "a plain unvarnished tale" respecting these Allamandas. Are any of your readers acquainted with Allamanda Aubletii, which was also raised from seeds sent from Brazil, purchased by Mr. Pince, and figured in the "Botanical Magazine," tab. 4911? Notwithstanding, however, all that has been written pro and con. about A. Schottii, grandiflora is the best of all the Allamandas. I may here mention that the Clerodendron flower which I took with me to Kew was received from Sierra Leone by Mr. Pince, through Mr. Whitfield, and was named C. capitatum by Sir W. Hooker; it is spoken highly of in the "Botanical Magazine," in which it is figured in the 74th volume, tab. 4355. *W. R. Willcocks, Gr. to J. M. Aynsley, Esq., Underdown, Ledbury, Herefordshire.*

Churchyards and Spring Flowers.—Mr. M'Nab's communication to the "Farmer," inserted at p. 975 of your Journal, and your own observations, p. 969, give me some information on the subject on which I addressed you last year (see p. 388). But I fear some of the plants named by Mr. M'Nab could not be procured in quantities, and at prices such as would justify an experiment in a churchyard. I cannot find Galanthus plicatus, Sisyrinchium grandiflorum, Puschkinia scilloides, or Gagea lutea offered in any list, except at high prices; nor do I find the Saughton Squill offered by any grower at any price. I shall experiment this year, with the aid of such further information as Mr. M'Nab has given to me; and hope that in the course of years the above more choice bulbs will be brought by cultivation within the means of *A Parish Clerk.*

Walnut Stains.—My housekeeper says a quarter of an ounce of oxalic acid dissolved in a wineglassful of boiling water will take out Walnut stains. If the hands are badly stained, or the stains are of long standing, several applications may be necessary. The hands must be soaked in the liquid, and then rubbed together. It is a virulent poison, and must not be left about. *W. F. Radcliffe, Okeford Fitzpaine.*——A little common salt and raw Apple juice will effectually remove the stains left by green Walnuts on the hands. A medical friend of mine told my little boy to try the application last year, he did so, and it was successful. *Helen G. Watney, Hambledon, Hants.*

Ventilation and Radiation of Heat.—I ought perhaps to apologise for meddling with a subject to which I have not time to do justice; but I must just be allowed to say, in reply to Mr. Fish's remarks (see p. 996), that clouds do not present any greater mechanical obstruction to the upward passage of heat than the same vapour in an invisible condition, and a very few observations of a radiation-thermometer, in connection with an hygrometer, will convince any one that the effect of radiation in abstracting heat, is in proportion to the absence of vapour in the atmosphere—greatest, that is to say, when there is least vapour. I wonder, also, that it did not strike Mr. Fish that if, in those Arctic climes, the temperature of soil and vegetation is so equalised with that of the surrounding atmosphere, the radiation-theory be called into play, then there can be no need of the great-coat. Moreover the temperature of the living human body is about the same under all circumstances, and therefore the question of feeling must be quite separated, depending as it does on the store of fuel in the body and the ease with which the vital force supplies itself therefrom to contend with the abstraction of heat from its surface. Granted that in both cases the air is not in motion, much more heat will be abstracted from a body in the shade, with dry air at 20°, than in a November fog at 30°, the question is between dry and wet air at the same temperature, and both in repose. Our clothes, it is true, keep us warm not altogether by their thickness, but by their being of a non-conducting material, and part of their non-conducting power arises from the stratum of air they enclose; but then it so happens that this stratum consists of air saturated very nearly at the point of saturation with moisture. *J. S.*

Iresine Herbstii and Teleianthera ficoidea versicolor.—Mr. Bennett, of Osberton, is entitled to the thanks of the whole blue-apron fraternity for bringing the beautiful Iresine Herbstii under public notice. There can be no doubt as to its value as a bedding plant, for notwithstanding the unfavourable bedding season which we have experienced this year, it stands unimpaired. Here it is the observed of all observers, and could it speak for itself it would indignantly repudiate the aspersions which were so unmercifully cast upon it last autumn. It is equally valuable with the Amaranthus, for it is a fact, that during the past month the latter has been unsightly, while the Iresine has been more than ever beautiful. It is true the Amaranthus has the advantage early in the season, making an immediate display, but this surely does not detract from the value of Iresine. An early display is certainly essential, and is aimed at by all, but brilliancy late in the season is of equal importance, and this the Iresine furnishes in perfection. It is of a much brighter red than that of the Amaranthus, and where slugs abound it withstands their ravages better than that favourite, which is not an unimportant consideration. The Teleianthera ficoidea versicolor will, I anticipate, ere long also occupy a prominent position in the flower garden, especially where variety is a desideratum. It may consistently be placed in the first, second, or third row, as it can be pegged down flat, or otherwise, according to taste. I gave it a place as an edging. Would some of your correspondents in the West and North of England kindly record their experience of it? *Thos. Simpson, Gr. to the Rev. T. Mills, Shatton, Ipswich.*

Picea cephalonica.—In answer to "C. M.," of Hampton Lodge, I beg to state that Picea cephalonica has not only coned here, many years ago (as might have been observed by collections exhibited in London from this place), but seeds have been saved and sown, and plants have been raised, some of which are now 20 feet high, and have also borne cones for several years—long, sturdy cones full of seed, which has also been sown and yielded plants. Thus we have here

many grandchildren from the original tree of this most beautiful and distinct Conifer. I may observe that it grows here with the greatest luxuriance. The first seedlings raised from home-grown seed, many years since, are exceedingly robust, fast-growing trees, making leaders from 2 to 3 feet, or even more, in a season. They are as free and robust as a strong-growing Spruce, beautifully furnished and branched from the base to the summit. Moreover, they do not commence their spring growth so early as to be caught by the spring frosts, and thereby crippled in the way the original plants were, rendering them both disfigured and scrubby. I am satisfied that when this beautiful Picea gets planted with a little more judgment in aspects exposed to the afternoon and evening sun, and away from the first glimpses of the morning sun, it may be established as a beautiful ornament to the landscape, and valuable as a resinous, tough kind of timber, more particularly when raised from home-produced seed. Here we have the Picea cephalonica 60 feet high, with long leaders of this season's growth. Gordon says that this fine tree grows 60 feet high, but from the progress it makes here, it is likely to become double that height in a few years. Senilis says, whoever may have Picea Pinsapo requires not Picea cephalonica—which is evidently a mistake, as they are both splendid trees, and quite distinct. P. Pinsapo, a beautiful-habited tree, is not, in my opinion, likely to make progress and become a valuable timber ornamental tree, at all equal to P. cephalonica, in double the time. Doctors differ sometimes, no doubt, for lack of ocular demonstration of what there really is within the United Kingdom. In tree-culture there are many and various circumstances, such as situation, climate, and attention to various matters, which exercise considerable influence over the result. It is not likely, indeed, that any young author could produce the same amount of valuable information on such matters as an old practical observant planter of many years standing. If any one would inform me where there is to be seen in this country a Picea cephalonica from 60 to 80 feet high, a perfect pyramid from base to summit, with a crop of fine cones on it, I should hasten to see it. I am aware that at first the great drawback against this splendid tree was its habit of making early growth, liable to be cut off by spring frosts; this was also the case with P. Webbiana, and some others; but by planting them on high ground, or in situations shaded from the first rays of the morning sun, these morning frosts do not injure them, while every year they get more inured to our climate. This is, however, more particularly the case with seedlings raised from home-saved seed. *James Barnes, Bicton.*

Alternanthera paronychioides.—I send a small box of Alternanthera paronychioides that you may see how high the colour in the leaf becomes. As a dwarf bedding or edging plant it is most useful and beautiful. *J. F.* [Very pretty indeed, and exceedingly well adapted for the purpose indicated. Eds.]

Magnolia grandiflora.—What is the best treatment for the large white-flowering Magnolia? I have one growing up a south wall, where it has been recently planted. *S. L.* [The "large white-flowered" Magnolia, if an evergreen, must be Magnolia grandiflora, the Exmouth variety of which is that which flowers the most freely. This plant, although it will succeed in any good soil, delights in a deep rich turfy loam and peat, in about equal proportions; if the loam is sandy so much the better; if not, it will be preferable to mix a little sand with it, say an eighth, and about the same quantity of good rotten manure will be beneficial. If the plant has been grown in a pot, which is generally the case, the ball should be reduced so as to uncoil and lay out all the best and largest of its roots. This is indispensable for the after success of the plant. A hole should be dug out about 4 feet in diameter, and a foot and a half deep, and filled up with the compost recommended. This will be sufficient, providing the surrounding soil be tolerably good. If not, trench up, and mix a third of the compost with the soil 2 feet wider, which will make the diameter 8 feet. This will be sufficient for a plant 6 or 8 feet high. If it be planted against a wall lay out the roots in the form of a half circle, and in layers, keeping the top roots near the surface of the soil. When planted give a copious supply of water, and if in summer, cover the surface to the extent of the roots with Cocoa-nut refuse, about 2 inches thick; other kinds of mulching will do as well as this fibre, but do not look so neat. Supposing the Magnolia to be planted as above described, the after management is very easy. Fix it to the wall, and if the weather be very dry after the growth has commenced, give it copious waterings occasionally during the first season. Plants of the Exmouth variety of M. grandiflora will flower from 2 feet high and upwards. The period of flowering is from the latter end of July through the month of August. The flowers are borne at the end of the branches, and are very large, of a creamy-white colour, and emit a very powerful and agreeable odour. *E.*]

Poinsonium caryotæum variegatum.—I am pleased to confirm all that Mr. D. Thomson says about the beauty of this plant. Nothing can exceed it in elegance, and the comparison to a variegated Fern (see p. 998) is the only one that can do it anything like justice. It would confer a great favour on your readers if Mr. Thomson would give his mode of increasing and growing this lovely gem. In ordinary hands it is somewhat difficult to increase; it also looks best when planted rather thinly and confined to a single crown. It would answer the purpose of any nurseryman who has a stock to advertise in your columns. If known to your readers, 100,000 might be sold between this and next May. I believe it is quite hardy, even in Scotland; but Mr. Thomson's opinion on this point and the others indicated would be received as a personal favour by many as well as by *A Practical Hand.*

Trees for India: Black Italian Poplar.—Can the Black Italian Poplar (P. monilifera) be raised pretty easily from seed? From its reputed rapid growth I am anxious to introduce it upon some hills in India, about 7000 feet above the sea, where fire-wood is yearly becoming more scarce. Or could you recommend any other trees of quick growth for such a purpose which I could send to India in the shape of seed. *F.R.H.S.* [The Black Italian Poplar propagates so freely from cuttings that the seed is not usually saved. It could however doubtless be obtained if an order were given to any leading nurseryman in France or England not later than the month of April, as the seeds ripen in May. If you procure fertile seeds the process of raising them is easy. For other trees of quick growth try the Acacia (Robinia Pseud-Acacia), the Lime (Tilia europea), the Plane (Platanus orientalis and acerifolia), the Norway Maple (Acerplatanoides), and the Sycamore (Acer Pseudo-Platanus). Eds.]

Double-flowered Pomegranate.—How should I manage a plant of this which I have growing against a south wall? It has been planted for some years, but it blossoms shyly, and is very uncertain, *S. L.* [See some remarks in another column. If the tree is growing very vigorously, open a trench about a foot and a half from the stem, and cut off the roots, and place some slates or flat stones to prevent the roots from spreading. This will facilitate its flowering. The Pomegranate, however, flowers much more readily after its luxuriant growth is checked by age, *i. e.*, old trees flower more freely than younger ones. *E.*]

The Royal Horticultural Society.—In a leading article at p. 921, reference is made to the Royal Horticultural Society "being at last willing to take counsel with practical men." This suggests the inquiry—why it is that so few practical gardeners are members of it? and how did it come to pass that the guinea subscription for gardeners was abolished? At one period, I believe, there were a considerable number of guinea subscribers; there were also, if I mistake not, corresponding members, which included some, if not many, gardeners. I understand that the late Sir Joseph Paxton continued a guinea subscriber till his death, as well as Mr. Donald Beaton, and others. I would suggest to the authorities that the guinea membership for practical gardeners, and a corresponding membership—as a reward of and an encouragement to the development of talent,—be at once restored. I believe many gardeners would subscribe one guinea who cannot afford two or four, the present rates of subscription. They would do this all the more readily if a General Registry Office for gardeners were established in connection with the Society, as already recommended in your columns. Neither are practical men so unreasonable as to expect as much from the Society for their one guinea as other classes receive for four. Fellows paying two guineas a year, or 20 guineas for life, have about half of the advantages of those who pay four or 40; therefore Fellows subscribing 1 guinea a year, or 10 guineas for life, might reasonably claim a fourth part of them. But as several of these—such as a share of the fruit, plants, &c., would be of no advantage to gardeners, others, such as a system of registration, might be substituted for them. Free admission to one or more of the great shows might also be given in lieu of so many orders. It would, however, be desirable to have several orders to allow their friends, and young men under gardeners, to visit both Chiswick and Kensington when they wished. The right of voting at all meetings must also be preserved to the guinea subscribers. This would infuse new blood, and popularise the Society. If the thousands of practical gardeners throughout the country would become members, its prosperity would be ensured. The accession of such members would not cause a loss of those of higher rank, for nothing would tend more to the advancement of the interests of the upper classes than that their gardeners should become part and parcel of the Royal Horticultural Society, which ought to be the highest exponent and embodiment of British gardening. *D. T. F.*

Avenue Trees.—Can any of your correspondents inform me what sort of a tree the Pterocarya caucasica would make for an avenue? I recently saw what appeared to me a capital specimen in the Arboretum of the Cambridge Botanic Gardens, quite green with leaf, while the other trees were brown with autumn. What is the experience of your readers in respect to this tree? *W. M. E.*

The Scillas.—For the embellishment of the select spring garden, Squills are gems of the purest water. Hardy and easily grown as the Crocus, indeed often much more so, they are capable of producing an astonishing amount of beauty in the flower garden, the shrubbery or rockwork, or the mixed border. What can equal wide and well-established tufts of S. sibirica, looking as if it had derived its colour not from the root or the earth, but from the brightest and bluest of skies? Nothing in the way of a spring flower touches it, except its unaccountably neglected brother S. bifolia, which when seen in bloom in some quantity, is one of the very best of all beautiful hardy bulbs. It is much freer to grow and flower than sibirica, and propagates with rapidity. Then there is the diminutive starry-looking S. præcox, both white and blue, too scarce however for general adoption; the pretty little S. rosea, which must prove effective when used in quantity; the rather loose-looking S. amœna, though fine; and as good as any, the several varieties of S. campanulata, the white being a charming plant, and also the major variety. S. hyacinthoides, too, is a good free and strong kind in the way of campanulata; and patula is good in the same direction, as are the several varieties of the common Blue bell, pink and white. Of course there are many other kinds, and doubtless some of them of great merit; but they are too scarce to be talked of yet. Mr. R. Farmer has a surprising number of species, or so-called species, in his garden at Hornsey, to which they have been gathered from all sources, both British and continental; and I am not without hope of having to record that some of these are well worthy of culture, but at present our tried kinds are comparatively few. However, even those enumerated, and notably S. bifolia, are often difficult to obtain, because nurserymen do not grow them. Even some of the Dutch growers do not keep bifolia, for I remember once having given Mr. Byvoet a handful of it, he never having heard of its merits. Therefore it may be useful to state that Mr. J. B. Mackay, of Totteridge, Herts, has a large stock of this plant, and also of others of the Squills named. Beginning originally with a few bulbs of each, and being fond of the family, he has given them room to grow as they liked, and the result is that every spring a considerable portion of his garden is sheeted with various shades of blue, and also with white and pink from the vars. of nutans and campanulata. He has so large a stock of some (many large beds of bifolia, for instance), that he is ready to exchange them for other plants. *Scilla.*

Classification of Bedding Pelargoniums.—It is very requisite, now that so many new varieties of bedding Pelargoniums are being introduced, that a proper system of classification should be adopted, but the more plain and simple the terms used the better. There are many gardeners, who although exceedingly intelligent as horticulturists, would be much confused if the suggestions of your correspondent (see p. 996) were carried out. Allow me to contribute my humble ideas on the subject. I should propose that the plain-foliaged section, whether green or sulphur-coloured, should be classed as Plain-leaved, or Selfs; in this would be admitted Christine, Lady Middleton, Tom Thumb, &c. All kinds with green or sulphur leaves having zones should be called Zonal; this would include Madame Vaucher, Dr. Lindley, Luna, Mrs. Milford, &c. The type generally recognised as Golden Tricolor might be styled Golden Variegated Zonal, inch ding Mrs. Pollock, Sunset, Lucy Grieve, &c.; and the Silver Tricolors might be called Silver-variegated Zonal, these including Italia Unita, Burning Bush, &c. These terms would doubtless be better understood, as the so-called tricolors really contain more than three colours, for wherever the yellow or white radiates, and comes in contact with the zone, there red becomes apparent, making four distinct colours. The term "bicolor" cannot be used as proposed, for I possess in my own collection of seedlings not less than six kinds of varieties, quite distinct in colour and markings, to which it would apply. I should recommend those containing two or more colours, without a zone, taking Golden Chain, Golden Fleece, &c., as examples, to be still called Golden-variegated; and the class represented by Silver Chain, Alma, Bijou, &c., to retain its title of Silver-variegated. The last to be named is the metallic-leaved, not generally known to the floricultural public. In this group the leaf is almost wholly black, with a narrow margin of green, or red and black in the centre, with narrow yellow margin. A suitable term for these would be Bronze-leaved. Should any other new features be produced, they would be provided for, in the various classes I have named; for instance, we may expect to see, ere long, varieties marked entirely contrary to Mrs. Pollock, namely yellow disk, red and chocolate zone, and green edge—such might be included in the golden-variegated zonal group. *Wm. Groom, Ipswich.*

Antennaria tomentosa.—The best of all dwarf silvery-leaved plants. It is very dwarf and spreading, scarcely rises above the ground in fact, but forms a dense carpet of little flat spreading silvery leaves, and will prove a gem for those who wish for novelty and refinement in bedding-out. Of course it will not do for immediate association with strong-growing stuff, such as Verbenas, Pelargoniums, &c., but we are not for the future to be confined to such as these, and nothing will be found better for margining such exquisite arrangements as may have been seen at Battersea during the past season. This applies in a nearly equal degree to all those exquisite little Alpine plants which offer such a mine of beauty to the judicious planter. Many of us have seen how well Sempervivum californicum looked at Battersea, and not a few of the glaucous Sedums and Saxifrages are capable of producing equal or better effects when tried. This Antennaria requires to be cut off from the coarser stuff at all events, say by a line of a strongish Sempervivum or some other plant of moderate size, or by a space, and to be planted in a somewhat wide belt, as it was at the Wellington Nursery during the past summer. But if regularly planted it very soon forms that of itself. It is somewhat like our own little mountain Antennarias in size and aspect, but whiter. I had it from Mr. Niven, of Hull, about four years ago, and have found it easy of propagation. It died, however, on wet ground in winter, and though it may survive on more favourable soil, the best way will probably be to keep it during winter in small pots in dry cold frames or pits, and in light soil. For the following note with respect to its origin I am indebted to Mr. Niven:—"It is a native of the Rocky Mountains, from which it was sent along with another very pretty silvery-leaved species—even dwarfer, if that be possible—about the year 1848. We never had a specific name for either of them, and I find on referring to my notes that I could not identify either species with any described in De Candolle. So I was obliged to christen it myself; it very rarely flowers—indeed, it has not done so with us at all, though it did very sparingly at Kew one season. I should like much to get hold of the other species, but fear it is lost; it was like a very broad-leaved form of A. alpina." A choicer or a better edging plant has not been brought out for years. This, with Alternanthera paronychioides, and Chrysanthemum Sensation are the three best and most distinct bedding plants of the past season. *W. R.*

Chrysanthemum Sensation.—Having bedded out this Chrysanthemum extensively, both this season and last, I may venture to offer an opinion as to its merits. I think it will prove to be one of the most distinct and

useful plants for the ornamentation of the flower garden that has been introduced for some time. In constitution it does not differ from other kinds of Pompons. As regards height it averages from 12 to 18 inches, and by keeping it topped down, which it will bear to any extent, it soon assumes the shape of nice sturdy plants, the leaves of which are beautifully variegated, and look well even when the plants are out of flower. This variety is also easily managed. Plants of it taken up in autumn and potted will be found valuable for the decoration of the greenhouse or conservatory. It has been greatly admired here, and has, in short, become quite a favourite in this part of the country. *James Legg, The Gardens, Clumber.*

Large Cucumbers.—Three very large Cucumbers have been grown by Mr. Joseph Hamilton, of Botcherby. These measured respectively 33, 34, and 39 inches in length, and weighed 5 lb., 6 lb., and 7¾ lb. They are of the varieties called British Volunteer and Invincible. The latter took the two head prizes at the great Horticultural International Exhibition at South Kensington in May last. *James Armstrong, Carlisle, Oct.* 24.

Northern Limit of Trees in Britain.—My eminent friend, Professor Heer, of Zurich, being desirous of ascertaining the precise northern limits in Great Britain of the following trees, I should feel very much obliged if your readers in the North would help me to answer him. Our west-coast climate differs so much from the east, that I should be glad of information, through your pages, from both sides of the island, and from Ireland. It would be further interesting to add, whether the plants in question fruit, or thrive without fruiting, or merely exist; and whether they require winter protection. Sequoia sempervirens, S. gigantea (Wellingtonia), Salisburia biloba, Ficus Carica, Diospyros Lotus, Prunus lusitanica, Glyptostrobus heterophyllus. *J. D. Hooker, Kew.* [Some interesting details on these points, with special reference to Ireland, were given in the paper on the climate, etc., of Ireland by Dr. Moore and Mr. A. G. More, read at the Botanical Congress. The paper will shortly be published in the forthcoming Report.—EDS.]

Cobæa scandens variegata.—Few plants are better suited for covering rafters or trellis work in the conservatory than this. It grows amazingly fast, and when properly attended to as regards training, it is not long in running over as much of the house as may be required. In spring I procured a plant of it about 18 inches high, the stem of which was no thicker than an ordinary straw. I had a compost made up of peat, leaf-mould, loam, old mortar (sifted), and a sprinkling of silver sand, all well mixed together, and in good working order ready to plant in. The conservatory here is built low of wood, partly of iron, with girders about 10 or 12 feet apart for supporting the roof, which is 30 feet high. In the passage, perpendicular to each girder, places are cut out in the stone pavement for the introduction of climbers. I had all the old soil taken out of one of these, to the depth of 2 feet, a layer of 6 inches of brickbats put over the bottom, and over the brickbats a layer of rough peat. The compost just named was then rammed in as tightly as possible, and made altogether as hard as its soft character would allow. A hole was then cut out with the trowel, the ball was broken and the roots spread out as far as they would go, covering all over, pressing the soil down firmly with the hands, and finishing off with a slight watering to settle the mould about the roots. Thus situated the plant was not long in making fresh roots in its new quarters, and before it was done over it had grown 6 feet, indicating, at the same time, by its robustness and beautifully variegated leaves, that the compost was just to its liking. At the time I write (Oct. 22d) it has covered one of the girders 50 feet in length, and part of two others, besides having dozens of shoots hanging down in graceful festoons all over its entire length. Moreover it has blossomed freely, but the flowers are nothing compared with the fine effect produced by its leaves. I find no trouble in keeping it clean and free from insect pests, to which most climbers are subject. It wants only to be better known to find a place in every conservatory where climbers are grown. *A. Pettigrew, Richings Park.*

Societies.

JERSEY HORTICULTURAL *Oct.* 24.—The annual exhibition of this Society was held in the Vegetable Market at St. Helier's, a building very well adapted for the purpose, being light and well ventilated, till to a little attention for flowering would have been much improved in appearance, and given visitors an idea of its adaptability to other purposes than that of a market. The fruit-growers of flower shows in England would have a very sorry notion of fruit-growing in this island should they see the scanty and filled baskets generally sending besides the Pears, being shown worthy of notice. In the classes for these superb fruits, for which the Island is so justly celebrated, some wonderful specimens were produced. Among the 50 varieties shown by Mr. Thomas, of St. Helier's, which took the 1st prize, were remarkable samples of Grosse Calabasse, Beurré Bosc, Glou Morceau, Savarin, Belle de Jersey, Chaumontel, Catillac, Duchesse d'Angoulême, General Todleben, Colmar, Van Mons Léon le Clerc, Crassane, Doyenne du Comice, and Spanish Bon Chrétien. In the 24 prize collection, which fell to the lot of Mr. Pluck, of St. Helier's, were extraordinary specimens of Belle de Jersey, weighing upwards of 2 lb.; also good examples of Duchesse d'Angoulême, Chaumontel, Marie Louise, Beurré Diel, Napoléon, and others; but perhaps the most remarkable Pears were some finely-formed well-coloured specimens of Beurré Clairgeau, shown by Mr. Pendred the Vineries St. Aubins, and weighing over 1¼ lb. each. This variety is not sufficiently known in England; it ought to be planted in every garden where Pears are grown, being a most abundant bearer, even in its young state, and the fruit good in all situations. Mr. Pluck also exhibited some good Muscat and Grape finals. Grapes.

Although nearly all the varieties of Pears are grown in the Channel Islands to a much larger size than we generally see in England, yet certain kinds appear to thrive better in the Midland Counties of England than in Jersey. Among these kinds may be mentioned Marie Louise, Napoleon, and Glou Morceau, which rarely arrive at either the size or flavour we are accustomed to see.

Apples were plentiful, but there was nothing remarkable among them, as a rule they were far behind those generally shown in England, both in size and quality, and in many instances they were wrongly named.

Among plants were some good Ferns from the nurseries of Mr. C. B. Saunders, and an interesting collection of Zonal and variegated Pelargoniums from Mr. Pond, including several specimens of a seedling called Grandmaster, closely resembling Mrs. Pollock, but a much stronger grower, and no doubt valuable to make fine pot specimens. It is also of dwarf and abundant bloomer. The exhibitors of plants might gain considerable information by a visit to some of our great Horticultural Shows.

Notices of Books.

1. *The Birds of Middlesex: a Contribution to the Natural History of the County.* By J. E. Harting, F.Z.S. London: 1866. 8vo, pp. 284.
2. *A Dictionary of British Birds: reprinted from Montagu's Ornithological Dictionary.* Compiled and edited by Edward Newman, F.L.S. London: 1866. Crown 8vo, pp. 400.

Readers accustomed to look on Middlesex as a mere suburb of London, and not conversant with birds unless it be with the grubby little sparrows who are as thoroughly at home in the great metropolis as they are everywhere else, will be rather surprised to find enumerated in the book before us no fewer than 225 feathered bipeds. In spite of the encroachments of bricks and mortar, in spite of railways and factories, in spite of the army of ragged vagabonds who infest the fields in the neighbourhood of London, plying their wretched trade and ensnaring nightingales, linnets, larks, and goldfinches, by the score, and who, as if in mockery, are generally busier on the Sunday than on any other day—in spite of all these hostile circumstances, there are still enough left for a very pleasant book to be written about them. Among their enemies we might fairly have enumerated the naturalists, who on catching sight of a rare bird know no peace till it is shot. It is, we fear, quite impossible wholly to prevent this destruction, but if there is one means more than another, it must be by the perusal of such a work as that before us, wherein it may be seen—though even our author is too fond of villainous powder—how infinitely greater is the pleasure to be derived, how much more valuable the knowledge to be obtained, from the study of the habits of birds than from the possession of a glass-eyed mummy in the semblance of a bird. From what we have said it will be seen that Mr. Harting's is no mere catalogue of names, but a valuable and very interesting account of the manners and customs of the birds found in the metropolitan county, an account founded for the most part on the personal observation of the author, whose task has evidently been a labour of love. As an illustration of the author's style we extract the following account of a gull (*Larus marinus*), which he kept in captivity:—

"Nothing seems to come amiss to him,—meat, both raw and cooked, fish, mice, small birds, snails, worms, and flies, are all consumed in turns, as opportunity offers. If a live mouse is turned down on the lawn before him, he at once gives chase, and, coursing rapidly in pursuit of it, like a wagtail after a fly, seizes it with unerring aim behind the head, and after a sharp pinch or two, which crushes the skull and larger bones, the unfortunate mouse is swallowed whole. Sparrows and other small birds are treated in the same way, being invariably first crushed, and then swallowed, head first, whole. In this way I have seen him take five sparrows in rapid succession.

"A curious fact with regard to this gull is that he catches sparrows for himself very dexterously, and the way in which he does it is this:—About the time that the fowls are being fed, he makes his way to the poultry-yard, and, mingling with the hens, walks very slowly about with head drawn in, so as to make his neck look very short, and as if, in fact, he were trying to look as much like a fowl as possible. As soon as the general rush for the grain is over, the sparrows drop down one by one, and then it is that the gull, drawing gradually within reach, suddenly darts out his long neck and seizes an unfortunate sparrow by the head. So rapidly is this done that escape for the unsuspecting sparrow is hopeless, and in another second he is crushed and devoured.

"As I have said, this gull has swallowed as many as five sparrows at a meal, and his capacity in this respect is very wonderful. On one occasion a cat brought two of her kittens out upon the lawn to enjoy the sun, and while engaged in bringing the second, the first was unceremoniously carried off by the gull, who thought, no doubt, he had secured a good meal. Instead of tearing it up piecemeal, however, as a hawk would have done, he vainly endeavoured to swallow it whole, and while thus engaged he was discovered by a horrified member of the family with the kitten's head down his throat, while he was making frantic efforts to get the rest of the body to follow. Of course the poor kitten was rescued and restored to its anxious mother, and the gull was left to testify his disappointment by the most discordant cries.

"A little white terrier is extremely jealous of the gull, and whenever the latter appears at the window to be fed, the dog rushes forward, barking furiously, but always contriving to keep just out of reach of the formidable bill. One day the dog was observed in the garden, trotting slowly towards the house, while his enemy the gull was standing unseen by him behind a Laurustinus, as if watching for an opportunity to be revenged. So sooner had the dog passed the shrub than he was seized by the back, violently shaken, and carried, howling, across the lawn, without offering the least retaliation. He was then released, and probably never ran so fast in his life before as he then did, to escape. Ever since he has kept at a most respectful distance, and, whenever he is obliged to pass by the gull, his walk quickens to a trot, and the trot to a gallop, as if his ribs still smarted with the sharp digs he had received.

"In the garden this gull is very useful, feeding upon snails, worms, and beetles, and I have several times seen him running like a wagtail in pursuit of flies and moths.

"He is now so tame that he comes up to the house to be fed, and will take a sparrow from my hand. When he feels hungry he usually makes his presence known by a loud trumpeting or braying, which often has the desired effect; but occasionally, when I have passed him without taking any notice, I have received a reminder in the shape of a sharp pinch in the calf of the leg."

We have given precedence to the newer volume, as there is no need of an introduction for so well known and highly-esteemed a work as Montagu's "Ornithological Dictionary." By means of a close type and a double column, Mr. Newman, the present editor, has been enabled to retain the whole of the original text and the supplement; and to incorporate from the Zoologist and other publications the copious additional information which has accumulated since the publication of the author's supplement. We are by no means sure whether the editor would not have done better to have acted on his own convictions, and eliminated a great number of species "which have been erroneously recorded as native, but which have not the slightest claim to the title of British birds." If, as he says he believes, "the utmost injury has resulted to science from the desire to multiply the number of our species," it would have been better to have omitted the intruders altogether, for by admitting them, even with the necessary qualifications, he to a certain extent fosters the silly vanity or the disingenuous greed that he so properly condemns.

Nevertheless the thanks of British naturalists are well-earned by Mr. Newman for bringing this standard work of reference up to the present time, and presenting it to the working naturalist in a cheap and readily accessible form. We ought to add that the value of the book is enhanced by a reference to the figure of each bird in the third edition of Yarrell's "History of British Birds," and to its egg as depicted in Hewitson's "Oology."

The first Part of *Nestel's Rosengarten* (Stuttgart: E. Schweizerbart'sche Verlagshandlung und Druckerei 1866,) has just been issued. It is a quarto publication devoted to Roses, and the Part before us contains plates very well executed in chromolithography, and accompanied by descriptions of the following varieties, namely, Baron Gonella, Senateur Vaisse, Fortune's Double Yellow, and Madame Charles Wood. The illustrations are of the "artistic" class, with more depth than is usually seen in flower portraits executed by this process, though in some cases the colours are too harshly contrasted. It is rather a book for the drawing-room table, than for the garden library.

Mr. Hartland, of the Lough Nurseries, Cork, has published a coloured lithograph, showing well the appearance of his golden-variegated variety of the Wellingtonia (p. 948).—Messrs. E. G. Henderson and Son have issued a coloured plate in illustration of their double Violets—King of Violets, purple, with a whitish centre; and Queen of Violets, wholly white. The flowers are not only double, but wholly regular in form. From the same firm we have also a coloured plate of Camellias:—1, Elvira Bianchini, pale flesh-coloured, the petals rounded, incurved at the margin, and irregularly striped with pink; 2, General Caldini, flowers pink, petals pointed, striped with red; 3, Zonaide Vanzi, petals roundish, or somewhat pointed, striped with red. Of Tricolor and other Pelargoniums, Messrs. E. G. Henderson figure leaves of Sophia Dumaresque, green centre, yellow edge, intermediate zone, irregular in outline, black, edged with red, and with radiating green spots; Canary Bird, Neatness, and Mrs. Longfield, have each a yellow ground, with a purple or bronze zone; Edwin Fitzpatrick, ground yellow, centre imperfectly green, zone irregular—black, green, and red irregularly mixed; Silver Star, green centre, whitish edge, zone irregular—crimson and black; Italian Beauty, green centre, white edge, intermediate zone irregular—black, crimson, and green.

CATALOGUES RECEIVED.—Of Foreign lists we have:—*L. Van Houtte* (Ghent), *Prix Courant*, Nos. 115 and 116, devoted respectively to a general collection of stove and greenhouse plants, Azaleas, Camellias, &c.; *Amb. Verschaffelt* (Ghent), *Prix Courant*, No. 79, a general catalogue of plants; *J. Verschaffelt* (Ghent), *Prix Courant*, No. 10, also a general catalogue of plants rich in Azaleas and Camellias; *A. Leroy* (Angers), *Supplément au Catalogue*, embracing fruit and ornamental trees, and announces a "Dictionnaire de Pomologie," in five octavo volumes; *Eugène Verdier fils aîné* (Paris), *Rosiers Nouveaux pour* 1866-7.

Florists' Flowers.

THE Use of EARLY-FLOWERING TULIPS in the planting of out-door spring gardens has been contended for in more than one instance, on the grounds that they are "easily accessible, highly attractive, and deeply interesting." They are easily accessible, inasmuch as many of the most useful are what are generally denominated the cheap kinds, and can be purchased in quantity at a moderate price; they are highly attractive, comprising as they do, many colours of rich hue and depth, as well as combinations of colours in the form of edged and striped flowers, quite gorgeous in appearance, and very striking to the eye, and they moreover remain generally in bloom for a long period when

grown in masses; they are deeply interesting because of blooming at a season of the year when out-door flowers are by no means plentiful, and because there is always about them a novelty and freshness imparted by the rare combination of colours they possess, and a charm which they never seem to lose for every one. Like the Rose, the Tulip is petted by men of high and low degree alike, gracing the parterre of the magnificent terrace garden of a palatial mansion, and gilding the humble flower bed of the cottager.

From a set of about 60 varieties of early single Tulips grown by me last season, for the purpose of proving their fitness for bedding purposes, I have selected some 30 kinds, and with the names of these I shall give, what I think will be generally acceptable, some idea of the height to which each kind grows, and the order of succession in their flowering. The collection referred to was grown in a rich soil, composed mainly of loam, rotted manure, and a liberal admixture of common road sand, but the plot of ground occupied a cold position, which no doubt to some extent made them a little backward, as they were, besides which I was a little late in planting them.

I have thought it best to form them into groups; the first representing divisions of colour, as a guide to planters; the second representing the average height to which each flower attains; the last representing the order of flowering that I have invariably observed.

Of scarlet and crimson Self flowers there are Vermillon Brillant; Van Vondel, a magnificent silken rosy-crimson variety; Sunbeam, very bright; Garibaldi, Fireball, Feu Rouge, Scarlet Van Thol, and Couleur Cardinal. These are all distinct in colour, or in size and build, and can be selected from at pleasure. Excepting Van Vondel and Vermillon Brillant, they are not high-priced kinds. Self flowers of rose and lilac shades occur in Proserpine, Van der Neer, one of the darkest, and also of fine quality; Florida, and Molière. The two last will sometimes come slightly flaked with white, but they are in reality selfs. Self yellows are Yellow Pottebakker, which in rich soil will often come flaked with red; Golden or Yellow Prince, one of the best yellows; and Golden Eagle, bright canary, very distinct, but somewhat late in blooming. I cannot recommend the yellow Van Thol, it is too flimsy to stand much exposure to rough weather. Of buff-coloured Self flowers there are Thomas Moore and Duc d'Orange, the latter perhaps more properly an edged flower, but it can be classed with the Selfs, as the two colours of which it is composed bear a similarity the one to the other. Whites consist of White Pottebakker, the best white flower grown; White Eagle, a creamy white; and Rosa Mundi, white faintly suffused with rose. Queen Victoria is said to be a larger form of the last, but I have not yet found a tangible difference.

Edged, or tipped flowers, form a more select list. Those having a base of crimson, edged with gold or yellow, are Keizer's Kroon; Commandant, crimson, slightly edged with gold, a large flower; and Duchesse de Parma; the former one of the finest early single Tulips grown; Superintendent, violet purple, edged with white; Rose Grisdeline, a very pleasing shade of silken lilac rose, edged with white; Wapen van Leyden, white, heavily tipped with bright rose; and Belle Lisette, white, tipped and flaked with rosy carmine, very pretty.

The striped flowers include Bruid Van Haarlem and Royal Standard, somewhat of the same character; Couleur Ponceau, rosy crimson, with a flame of white along each petal; Clarimond, striped with white; Fabiola, rosy purple with white stripes, very fine; Mathilde, rosy scarlet, flaked with violet and feathered with white; Cerise de France, white, striped with rosy carmine, very pretty; Globe de Rigaud, pale violet faintly streaked with white, though some of the flowers will come selfs; and Marquis de Wessenrode, gold, slightly striped with red, a large, very distinct, and showy flower.

The average height of growth of the foregoing may be stated as follows. From 6 to 9 inches: Scarlet Van Thol, Vermillon Brillant, Cerise de France, Belle Lisette, White Pottebakker, Superintendent, Florida, Sunbeam, Fireball, Golden Prince, Fabiola, and Commandant. Of these I found the two first to be slightly the dwarfest. From 9 to 12 inches: Proserpine, Keizer's Kroon, Van der Neer, Clarimond, Van Vondel, Garibaldi, Rosa Mundi, Rose Grisdeline, Royal Standard, Bruid van Haarlem, Molière, White Eagle, Mathilde, and Globe de Rigaud. From 12 to 15 inches: Yellow Pottebakker, Couleur Ponceau, Feu Rouge, Couleur Cardinal, Thomas Moore, and Marquis de Wessenrode. From 15 to 18 inches: Duc d'Orange, and Wapen Van Leyden.

I found that the above-named sorts bloomed in the following order:—Scarlet Van Thol, Keizer's Kroon, White Pottebakker, Proserpine, Yellow Pottebakker, White Eagle, Yellow Van Thol, Vermillon Brillant, Clarimond, Van Vondel, Molière, Golden Prince, Duc d'Orange, Feu Rouge, Royal Standard, Garibaldi, Marquis de Wessenrode, Rosa Mundi, Florida, Fireball, Commandant, Sunbeam, Rose Grisdeline, Wapen Van Leyden, Mathilde, Fabiola, Cerise de France, Belle Lisette, Couleur Cardinal, Van der Neer, Superintendent, Duchesse de Parma, Globe de Rigaud, and Golden Eagle. The opening of this batch of flowers may be roughly stated as extending over a fortnight.

The results here set down must not, however, be taken as arbitrary or final. Generally I believe it will be found to be correct, but there will be certain exceptions to it under another trial. Soil and situation both must have much to do with the matter, and a rule must not be framed from one trial.

I found one most indispensable condition of success in blooming to consist in the application of plenty of water in dry weather. We often get very dry weather during the blooming season; and as the roots of the Tulips do not descend far into the soil, on no account must the soil about the surface be allowed to get dry. Water can easily be administered without its coming into contact with the flowers, though, judging from my own experience, I take the precaution to be of small importance. Invariably I watered over-head with a rose watering-pot.

When the flowering season is over, and the bulbs are to be removed to make room for the bedding stuff, a dry day should be selected for the purpose. The bulbs should be removed with a little soil adhering to the roots, and after being allowed to dry for a very short time in the sun, can be put away into paper bags, and placed on some dry shelf till the planting season comes round again. By this method but little trouble is incurred; there will be a good increase of roots each year; and with the occasional addition of a few more varieties, a very interesting collection can always be retained—there will be "enough and to spare." *Quo.*

The Apiary.

Hives and Supers.—I intend to have made some of those flat-topped straw hives (which are described at p. 343), to supersede, next spring, the common straw hives with which I have been working this year; and before having them made, I should be glad if you could tell me what was the result of the experiment tried by another of your correspondents (C. W. Strickland), who adopted a different size and shape (I think wider and shallower than those recommended by you), to see which would produce most honey.

Do you think if the flat top of the hive could also be of straw that it might lessen the chance of internal damp? What is the object of having the super of an octagon shape? and also what are the advantages of their being furnished with bars?

If you have not forgotten my questions about putting on supers in July, to which you kindly replied on the 7th of that month, you will perhaps be interested in hearing the result of my supers which were put on before your answer came, as I found that the bees clustering outside had also begun to build combs there. I allowed the supers to remain on four weeks, and on removing them found them to contain 5 lb. each of honey and wax. I noticed that the super from the stock hive had a good deal of pollen, while that from the swarm had only one or two cells of it; can you tell me the reason?

Only a little of the honey was sealed, and none of it was of the pure light colour which I always thought to be the property of good honey; but I was too proud of showing any harvest at all from my bees, to leave it for them to consume, which I suppose you would have advised. *A Young Apiarian, Warwick.*

[We do not know the result of Mr. Strickland's experiments with flat-topped hives of larger dimensions than those recommended and described at page 343. Perhaps he would kindly give the desired information. Unless your district is a very good one for bees, we should not think a larger hive than the one described, to be advisable.

The top being made of straw, would certainly tend to lessen the chance of moisture condensing within the hive. The chief disadvantages are, the difficulty of preventing the top sinking in with the weight of combs; and the diminished facilities for working supers. We have had these hives in use for many years, and have never had cause to complain of injury from internal moisture. If preferred, during winter the three holes for communication may be left open, and a mat of straw, or some woollen material, may be laid lightly over. This plan is conducive to the preservation of the hives from condensed moisture, to freedom from dysentery, and to the general health of the bees.

There is no particular object in having octagonal-shaped supers, except their being more handy for round hives than square supers would be. On the whole, however, we have had greater success with octagonal glass-box supers than with those of any other kind or shape.

You delayed much too long in giving room to your over-crowded bees; the best of the honey season was thus sacrificed. Had you afforded access to suitable-sized supers at the proper time, your honey harvest would in all probability have been very much larger.

It is not easy to give the reason why more pollen should have been stored in one super than another. In supers of from 40 to 80 lb., which we have been fortunate enough to obtain this season, we have had not a cell of pollen.

We hope you may have a better result to relate next year. Keep the empty comb, if worker-celled, for the purpose of inducing the bees to commence operations in the supers.]

Garden Memoranda.

Mr. Rivers' Nurseries, Sawbridgeworth (*continued from p.* 999).—Closely allied to the cordons in utility, cheapness, and universality should be Ground Vineries—not necessarily, as their name would import, for the culture of the Grape only, but for the growth of any fruit trained horizontally near the surface, or as cordons. These may be defined as miniature span-roofed houses, about 3 feet high and 4 feet wide, made in from 7 to 10 feet lengths; they can, in fact, be made to any size, 2 inches by 2 or 2 by 3, and in any length to suit the purchaser. The above is a convenient size, and would cost from 6*s.* to 7*s.* per length made with good deal, well painted, and glazed with 16-oz. sheet glass. They are complete in themselves; but like other houses with this character, may advantageously be placed on bricks: six or twelve bricks to a length will, however, suffice, according as the houses are raised one or two or more bricks from the surface of the ground. The spaces between the bricks and the ground are the ventilators.

At Sawbridgeworth the Vine rods were carried along about a foot from the ground, or on the ground itself, it being covered with slates in some of them and not covered at all in others; the Vineries were then placed on, and, except for thinning and stopping, never removed all summer. No border was made for the Vines, neither had they been watered, and yet their luxuriance was great, and their produce extraordinary. Night and day the air swept through them freely, not only without injury but apparently with positive benefit. Most of them, however, stood in more or less sheltered positions, and in colder situations it might be better to block up the bleakest side, leaving only the warmest open for ventilation. None of them, however, were so blocked here. Cordon trees were, as already stated, grown in some of these with great success. Thus any one who can invest say 10*s.* in a ground Vinery, and a Grape Vine plant or tree, may, if not sit under his own Vine, at least gather and eat his own Grapes with great delight. On wet soils and in ungenial localities a modification of ground Vineries would be invaluable on fruit-tree and Vine borders; they might be made wide enough to protect the whole, and the entire surface be covered with cordon Vines and other trees. Such practice would not only be the likeliest to ensure a crop on the walls or houses, but would certainly produce one from the surface of the border, and might be as profitable as a glass wall, and cheaper than an orchard-house. Ground Vineries, while opening up new sources of pleasure or profit to most cultivators, ought to prove a great boon to the poor, and I believe they will do more than anything that has yet been introduced to bring our best fruits within tasting reach of our toiling millions.

Before leaving the glass for the outside, I must notice an iron house constructed by Dennis, devoted to fruiting Orange trees and Vines. It is 60 feet by 12, heated with eight 4-inch pipes, two on each side under the border, and two on each side for surface heat. Mr. Rivers devotes his attention to good edible Oranges, as it is well known that Oranges well ripened in this country are much finer and higher flavoured than any that can be imported. The fruit looked remarkably well. The Tangierine, which generally ripens in October and November, just coming in, and the Maltese and St. Michael's swelling off to succeed these in December and January. I understood on the spot that Mr. Rivers is hardly ever without a supply of excellent Oranges from this house. A brisk heat is necessary to give a high flavour; for although the trees themselves will live and even thrive if merely protected from frost, the perfecting of the luscious fruit demands a degree of warmth, though we cannot command the light, somewhat approximating to that yielded by the bright skies of the south of France, Spain, or Italy. Another remarkable feature in this house was the pot Vines growing on the top of the surface pipes. By beginning in December, three sets of Vines have been, or will be, ripened in this house this season. The plants are dressed with a rich compost composed of horse-droppings and malt-dust soaked in liquid manure. This compost is heaped up over the top of the pots, and retained by pieces of slate, as already described. The roots run freely into it, and the Grapes swell and finish well. With a plentiful stock of plants not only an abundance, but a regular succession of good Grapes may thus be obtained from a single house throughout the season: a striking illustration of the advantages of the moveability of crops.

Everyone knows that Mr. Rivers is a distinguished raiser of new varieties of fruit. It is necessary, how-ever to visit Sawbridgeworth to comprehend the magnitude and success of his operations in this direction. It is literally impossible to say how many seedlings there are. Thousands of Pears, Plums, Peaches, Nectarines, Apricots and Cherries are raised. There are not many seedling Apples, as all the best sorts of American Apples are imported, and many of them are so good that they seem nearly perfect. The seedlings that have been raised are hybrids from the best American sorts. Of Pears an immense quantity has been raised. Many of them are fine, noble-looking fruit, but few distinct or good enough to be sent out. In Peaches, Nectarines, Plums, and Apricots, Mr. Rivers has been most successful, and raised many of the finest sorts in cultivation, and many more with entirely distinct and new characteristics. In Cherries his great aim has been not so much to improve their quality—for that is already very excellent—as to extend the season of this fruit by introducing earlier and later varieties than those we now possess. The Belle Agathe is likely yet to give us a first-rate late Cherry. Mr. Rivers has acted upon two distinct and opposite principles in the raising of seedlings. The one may be defined as breeding in; the other as breeding out, or cross-breeding. By the first mode the flowers are fertilised with their own pollen through several generations; by the second they are of course crossed with the pollen from other and widely dissimilar varieties. The results in both cases have been different from what might have been expected, deeply interesting and often highly satisfactory. Neither have the crosses been confined to the same species. Peaches have been crossed with Nectarines, Nectarines with Plums, and Plums with Apricots, Apricots with Nectarines, &c. In this way new flavours, qualities, constitutions, and endless combinations of colour, and characteristics peculiar to each, have been imparted. What is even more mysterious, without any crossing at all, but by simple breeding in and in, the wall of separation between Peaches and Nectarines has well nigh disappeared. Nectarine stones have often produced Peaches, and *vice versâ*. I believe I am correct in stating that most of the yellow-fleshed Peaches have been raised from Fairchild's Early, and the Pitmaston Orange Nectarines. Some o

the sorts that have come true through several generations, have at last broken into new forms.

The interest and value of all these seedlings in a scientific point of view is immensely enhanced by the fact that Mr. Rivers keeps a pedigree book of all his new stock. It was not a little gratifying to find that the course that I have lately recommended to the raisers of Pelargoniums and other flowers, has long been the daily practice of the greatest originator of new fruits. Mr. Rivers can tell in a moment the pedigree of all his seedlings. For instance, 33 × 90. means that the splendid-looking stewing Pear, Uvedale's St. Germain, has been crossed with the Marie Louise, in the hope of getting the size and beauty of the former combined with the melting and luscious excellencies of the latter. The numbers denote their names in the Nursery Catalogue. And so in all other cases. Every operation in this way is succeeded by the insertion of two figures in the pedigree book, and this information so easily acquired is invaluable. Some men succeed as it were by accident. Mr. Rivers leaves nothing to chance. His pre-eminence as a pomologist is the result of a life of studious toil, minute observation, plodding perseverance, skilful experiment, and profound investigation, hence his successes are no mere chapters of accidents, but an onward series of philosophic sequences, resting upon his special knowledge of some of the mysterious relationships and hidden mysteries of plant life. It follows that his theories of budding, grafting, &c., are not more valuable for what they have given us in the way of improved culture of old, and the introduction of new varieties of fruit, than in the profound lessons they teach of the value of theory as the twin sister of practice, and of the superlative importance of indomitable perseverance and careful painstaking as the ultimate expounder and establisher of both.

Such were the thoughts that were borne in upon my mind as I stood among Mr. Rivers' seedling Peaches and Nectarines, and admired the alacrity with which his knife ran through the fruit, and his keen eyes scanned his well-thumbed pedigree book. I was also much impressed with the high tone and extreme fastidiousness of his taste. Many seedlings that I was ready to pronounce excellent were ignominiously dismissed with an ominous shake of head. Even he however had to admit that many of them were good. Most of the new Peaches and Nectarines were large, many of the former had also a Nectarine flavour. All that are first-rate will come to the public in due time, not however until they have been thoroughly tested and passed the ordeal of their raiser's high censorship. He who has given us such Peaches as the Victoria and Albert, Prince and Princess of Wales, and Lord Palmerston, and such Nectarines as the Victoria, White, Rivers' Orange, Pine-apple, &c., may safely be trusted for the future. Neither shall we have long to wait for another batch of both. The seeds of all fruit trees are here sown as soon as gathered. The pots are stood out of doors in summer, and the surface covered with a perforated tile of the same size as the pot, about an inch down from the rim. By this simple contrivance mice and birds are set at defiance and a crop secured. When the seeds fairly vegetate the tiles are of course removed. I have never met with this simple expedient before; it is invaluable to the raiser of seeds. The quality of seeds often receive the blame of failure when they have been carried off bodily, and eaten by mice, rats, or birds. Near the seeds I observed a quantity of upright cordon Pears in pots, bearing full crops. They are on the Quince stock, and very closely pinched in. Cherries on the Mahaleb stock do well as cordons, and when planted out of doors they can readily be protected from birds by having a bag net slipped over them and tied at the bottom.

Pears on Quinces were also growing on a sloping trellis, about 6 inches from the ground in front and 2 feet at the back, according to the plan of Mr. Bellenden Ker. They were covered with glass till July, and were trained within 1 foot of the glass. The fruits were fine, and the trees in excellent health, only a little too crowded from being planted rather close, 3 feet apart. Cordon Apples for edgings were also growing and bearing freely, trained along about 9 inches from the ground.

Pyramidal Apples and Pears in pots stood in all directions, most of them bearing fine fruit or bristling with fruit-buds. Quantities of miniature fruit trees in pots for table-decoration, from 9 to 18 inches high, were seen carrying their tiny loads of fruit. *D. T. F.*

(To be Continued.)

Miscellaneous.

Oak-galls.—I can bear testimony to the rapid increase of the gall insect in this country, and also to the mischief it has done, and is doing, to the young Oak trees. Some 15 years since I first saw the galls in quantity on a scrub Oak hedge at Dawlish, Devon. At that time they had not got so far as Gloucestershire, but three or four years after I met with a few in Oakley Park, Cirencester, the seat of Colonel Bathurst. These had increased in about three years to such an extent that bushels might have been gathered in a short space of time. Subsequently, on going to a plantation on which I used to find large quantities of galls, the usual trees were almost bare of them, and the few that remained were pierced to the centre with a rough triangular hole, and the maggot was gone, and beneath the trees I found hundreds of galls that had been rifled in like manner. On close observation I was much interested to find that the common tomtit had at length discovered that a dainty fat maggot was contained in these galls, and so in eating them had done much good, as the pest has certainly been less in that district ever since. In Dorsetshire, where I at present reside, it is not uncommon to see young trees with hundreds of galls upon them. I last year made a drawing of a little twig on which were 62 galls. The tomtit is scarce here, and perhaps even the few we have have not yet found out the fact of an enclosed maggot. Gathering the galls before the insects have left them certainly mitigates this serious evil, as, from having collected a couple of sacks in 1864 on a farm of 300 acres, I have not seen them in anything like the same quantity since. They would, I think, pay for collecting, as I have made excellent ink from them; and though they do not contain the amount of gallic acid of the nut-gall of commerce, they may be obtained for the mere expense of collecting. *J. Buckman, in the "Times."*

Calendar of Operations.

(For the ensuing week.)

PROTECTION from frost will doubtless soon demand attention in every department, and particularly in regard to pits and frames. These usually contain some of the most useful plants for both indoor and out-door decoration, as well as the choicer and more tender kinds of vegetables. Protecting these structures effectually and economically, therefore, is of the first importance, and everything in connection with them should be rendered as dry as possible. This indicates the superiority of wooden shutters over mats or any other textile material which is not impervious to moisture. Another advantage is in their not lying too close to the glass, as a cavity is thus secured, which, in conjunction with the non-conducting properties of the wood, tends to prevent the escape of heat. To this we may add that they are more easily put on or removed, and prevent the breakage of glass, which is scarcely avoidable in handling frozen mats. They are a little expensive in the first outlay, but their durability, combined with the advantages just enumerated, is sufficient to obviate any objection upon that head. Where mats are used, they should be hung or spread in the most convenient place for drying them during the day, as they are by this attention rendered much more serviceable in excluding frost. During severe weather it is a good practice to place a layer of hay or straw between the mats and the glass.

FLOWER GARDEN AND PLANT HOUSES.

As soon as any of the flowering plants in the conservatory become shabby, they should be removed to make room for Chrysanthemums and others which are coming into flower. In arranging these, let the situation of each be suited as much as possible to the nature of the plant. With regard to temperature, also, some require to be placed in the warmest parts of the conservatory, while others will be satisfied with a simple protection from frost.

ACHIMENES.—A batch of these may soon be started in heat for stove and warm conservatory decoration. They may either be grown in pans or pots, according to the taste and requirements of the cultivator.

AURICULAS. — Give these air on all favourable occasions; remove dead leaves, and keep the surface of the soil free from Moss. Water sparingly.

AZALEAS.—These should now be placed in their winter quarters; but any that are not in-doors should be put under cover without delay. Before housing, however, let the drainage of the pots be examined, and, if out of condition, put in order. Let the pots themselves also be washed, the surface soil loosened, and a little fresh compost added. Thrips, if any, should likewise be killed by means of two or three successive fumigations of tobacco smoke.

CAMELLIAS.—Any now coming into blossom should be liberally supplied with water. Air must also be given whenever the weather is favourable.

CHINESE PRIMULAS.—Forward plants must be well attended to with water, and carefully kept out of the way of cold currents of air.

ORCHIDS.—These will now for the most part be at rest; but keep such as are in bloom in a dry place, in order to secure their beauty as long as possible. East Indian species always like a somewhat moist atmosphere.

PELARGONIUMS.—These should be placed as near the glass as possible. Let the night temperature be about 40°, and see that none of the plants suffer from want of water.

VIOLETS.—These will be coming into flower. Their beauty and fragrance will be increased by letting them have plenty of air whenever the weather is sufficiently mild for that purpose.

FORCING GARDEN.

CUCUMBERS.—Do not push these too much at this dull season; but keep down thrips and red spider in houses heated with hot water by maintaining a moist healthy atmosphere.

PINES.—Plants intended for fruiting during the summer must now have careful attention. Let them have a steady bottom-heat, and a top-heat of about 65° at night, allowing the thermometer to rise 10° or 15° higher during the day time.

VINES.—Let any fermenting material upon borders of the early house be examined, to see that it does not get either too hot or too cold; the former will render it necessary to open it out or remove a portion of it; but in the latter case it should be turned over and a fresh portion be mixed up along with it. Avoid a high temperature at night, and admit air freely in fine weather, using the side ventilators only when it is showery.

HARDY FRUIT AND KITCHEN GARDEN.

Pruning may soon be pushed forward should the weather be favourable. Also let trenching of vacant ground be done with all convenient despatch.

CAULIFLOWERS.—These, together with Endive and Lettuces in frames, must be frequently examined, and divested of decaying foliage. A little lime and soot sprinkled upon the ground will also be beneficial in keeping them free from the ravages of slugs.

STATE OF THE WEATHER AT CHISWICK, LONDON,
For the Week ending Oct. 24, 1866, as observed at the Horticultural Gardens.

October	Moon's Age.	Barometer		Temperature. Of the Air			Of the Earth 1 foot deep.	Of the Earth 2 feet deep.	Wind		Rain.
		Max	Min.	Max.	Min	Mean					
Thurs	18	29.858	29.830	55	46	50.5	52	53		E	.78
Friday	19	30.030	29.926	57	46	51.5	52	53		E	.00
Satur	20	30.149	30.031	62	45	53.5	56	53		E	.02
Sunday	21	29.978	29.913	63	46	54.5	55	54		S.E.	.00
Mon	22	30.085	29.856	59	29	44.0	55	54		S.	.00
Tues.	23	30.105	30.042	50	39	44.5	55	54		S.W.	.01
Wed	24	29.803	29.764	61	42	51.5	55	54		S.W	.42
Average		30.022	29.888	58.5	42.0	50.3	54.6	53.5			1.53

Oct. 18—Rain, constant rain throughout.
" 19—Fine, very fine, cloudy and fine at night.
" 20—Foggy; overcast and warm, slight rain
" 21—Hazy; fine throughout. [frost.
" 22—Light hazy clouds, foggy, heavy rain; very fine, sharp
" 23 Hazy clouds, fine, very slight rain.
" 24—Fine, partially overcast, very fine, heavy rain at night.
Mean temperature of the week, 0.8 10th deg above the average

STATE OF THE WEATHER AT CHISWICK,
During the last 40 years for the ensuing Week, ending Nov 3 1866

October and Nov	Average Highest Temp.	Average Lowest Temp.	Mean Temp.	No. of Years in which it Rained.	Greatest quantity of Rain.	Prevailing Winds. N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.
Sunday..28	51.8	36.3	45.6	24	1.66 in.	3	7	3	—	7	13	3	4
Mon. ..29	51.8	36.2	44.0	19	0.93	4	4	1	1	5	15	1	2
Tues. ..30	54.9	38.2	46.6	20	0.98	3	8	4	3	5	14	2	4
Wed. ..31	54.1	38.1	46.1	21	0.86	1	5	1	4	4	21	1	3
Thurs. . 1	54.0	37.8	45.9	23	0.58	1	2	6	3	8	11	3	6
Friday .. 2	54.3	37.4	45.8	18	0.61	1	4	6	3	2	15	3	6
Satur .. 3	53.8	37.0	45.4	19	0.82	1	2	10	1	2	8	8	2

The highest temperature during the above period occurred on the 2d, 1857—therm. 64 deg., and the lowest on the 3d, 1861—therm. 19 deg.

Notices to Correspondents.

APHELEXIS MACRANTHA, *&c.*: *Constant Reader.* Cuttings of Aphelexis may be struck at any time in sand in silver sand under a bell-glass early in March They will then be ready for putting off into small pots in May, and will have a full season in which to make growth.

BLIGHT *Subscriber.* The "blight" which has attacked your conservatory plant is the Thrips, an insect which bespeaks too dry and close an atmosphere, and possibly over-dryness in the soil. The remedy is to fumigate thoroughly, say three times at intervals of about three days, and then to let the plants have more moisture and better ventilation, these latter being of course dispensed with in accordance with the season of the year at which we have arrived.

BOOKS *L T.* We know of no book on the particular subject of your inquiry. Probably you will find what you want in Thompson's "Gardener's Assistant," or in Standish's "Hints on Planting."—*A H.* We are glad to hear that any supplement has been issued to the book you name.

DRYING FLOWERS. *W Z M.* Few flowers retain their colour in drying. The best mode we know of is to dry quickly in an oven not overheated, between layers of dry sand.

INSECTS: *R W.* The grubs and beetle which you have sent and described so well are the Otiorhynchus vastator, a very destructive kind of Weevil. The earth round your plants should be carefully sifted, to the depth of 4 or 5 inches, and the grubs, which are easily seen, picked out and burnt. We know of nothing sufficiently strong to kill the grubs without injuring the plants; you may, however, try diluted gas tar water. It is much easier to kill the perfect beetles by hunting for them on the plants with a lantern. *W.*

LIGNUM VITÆ: *L Z.* It is the wood of Guaiacum officinale, and Pereira and other allied species. What is called New Zealand Lignum Vitæ is the wood of the Aka, Metrosideros scandens.

NAMES OF FRUITS: *D Christie.* 1, Sturmer Pippin Apple; 2, Reinet ditto; 3, Beurré Bird Pear.—*M & P.* 1, Emperor Alexander Apple; 2, unknown; 3, ditto; 4, ditto; 5, one of the Pippins; 5, Normanton; 6, Greaves' Pippin.—*B R C.* 1, Grey Doyenné; 2, decayed—like Jersey Gratioli; 3, Beurré de Capiaumont; 4, ditto; Apple, Alfriston.

NAMES OF PLANTS: *T D.* Aster cordifolius probably, but without the root leaves if is not easy to tell.—*A C, Bromley.* Allosorus crispus.—*Hamlet.* 1, Pteris crenata; 2, Asplenium dimorphum; 3, Blechnum occidentale minor.—*C W M.* Probably Cathartocarpus Fistula, but the specimen sent is insufficient.—*J C M.* The specimens arrived unfit for determination, except No. 1, which is Selaginella cuspidata. —*F H & Co.* Primus Laurocerasus var. augustifolia.—*Sir W C T.* Pyrus terminalis.

PEACH TREES: *Young Gardener.* We cannot enter into personal disputes, and must decline to print the questions in full to which we have replied.

PELARGONIUMS: *S P.* The flowers belonging to the seedling sent us had all fallen to pieces before it reached us. The colour is bright and effective, but beyond that we can say nothing.

ROYAL HORTICULTURAL SOCIETY'S JOURNAL: *W T.* You had better apply to the Secretary, at South Kensington.

SYLVESTER'S FURNACE DOORS: *A R L.* These can be had, no doubt, through any of the hothouse builders who advertise in our columns, and who will be able to tell you their cost. They are preferable to any other we know of.

TOMATO PICKLE: *M M.* We don't know: it has been an unfavourable season. The following recipe for converting the unripe fruits into pickle has been recommended as suggesting a good plan for using them up, but we have not tried it. Perhaps some correspondent can speak from experience in the matter:—To 1 peck of green Tomatos, add 8 Onions and 6 moderate-sized Capsicums; cut them in slices, sprinkle thoroughly with salt, and let them remain for four night. In the morning drain off the juice, cover with vinegar, and boil 5 minutes. Again drain off the liquid, thus preventing fermentation. Place in a stone jar, and cover with cold vinegar. The lovers of high-seasoned condiments will, it is said, find this pickle very much to their taste. Cayenne Pepper may of course be used in the place of the Capsicums, if these are not readily procurable.

VINE BORDER: *A H.* The roots appear to be those of the Elm, and if there are trees within reach, there is no doubt they are so. If they have taken possession of the Vine border to any extent, the Vines must be taken up and the border protected by concrete, either applied beneath and around the border, or as a wall to cut off the Elm roots.

YUCCAS: *T T.* We scarcely understand your question. All the hardy Yuccas are fine rock plants. Y. gluuscscens, flaccida, and filamentosa, all of a herbaceous or stemless habit, are free-flowering plants, blooming every year. Of other easily procurable sorts, Y. gloriosa and recurva are the handsomest, and these flower when they have matured a good crown, after which side shoots are thrown out, which take some few years before they are strong enough to bloom.

COMMUNICATIONS RECEIVED.—Professor Bentley.—Professor Caspary.—W. B.—The Editor of the *Queenslander*, with thanks.—Dr. Ferd. Müller.—W. Nichol.—J. Fleming.—D. T. Fish.—J. Anderson (next week).—G. Eyles.—W. Bull.—Quo.

LAWES' MANURES.

The Manures manufactured by J. B. Lawes for the present season of 1866 are now ready for delivery at his Factories, at the following prices, per ton:—

	£ s. d.
LAWES' PATENT TURNIP MANURE, and BONE SUPERPHOSPHATE of LIME	6 6 0
LAWES' SUPERPHOSPHATE of LIME from BURNT BONE or MINERAL PHOSPHATES	5 5 0
LAWES' WHEAT, BARLEY, GRASS, and MANGEL MANURES	8 0 0
CONCENTRATED CORN and GRASS MANURE	12 0 0

These Manures can be obtained of Mr. Lawes, or through the appointed Agents in all parts of the United Kingdom, at prices varying according to cost of carriage.

Genuine Peruvian Guano direct from the Importers. Nitrate of Soda, Sulphate of Ammonia, and other Chemical Manures.

American and other Cakes at market prices.

Address, John Bennet Lawes, 1, Adelaide Place, London Bridge, E.C.; and 22, Eden Quay, Dublin.

Autumn Sowing.

ODAMS'S WHEAT MANURE.
ODAMS'S PREPARED PERUVIAN GUANO,

Manufactured by

THE PATENT NITRO-PHOSPHATE or BLOOD MANURE COMPANY (Limited).

Chief Offices—109, Fenchurch Street, London, E.C.
Western Counties Branch—Queen Street, Exeter.
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Directors.

Chairman—John Cuthbert, Littlebury, Essex.
Deputy-Chairman—John Collins, Argyle House, Holloway.
Edward Bell, 48, Marine Parade, Brighton.
Richard Hunt, Shadwell Abbot, Herts.
Thomas Knight, Edmonton, Middlesex.
Robert Leeds, West Lexham, Norfolk.
George Sevil, Ingatestone, near Romford.
Samuel Jonas, Chrishall Grange, Essex.
Charles Dorman, 23, Essex Street, Strand.
Thomas Webb, Hubberstone, Cumberlgeshire.
Jonas Webb, Melton Ross, Lincolnshire.

Managing Director—James Odams.
Bankers—Messrs. Barnetts, Hoares & Co., Lombard Street.
Solicitors—Messrs. Kingsford & Dorman, 23, Essex Street, Strand.
Auditor—J. Carter Jonas, Cambridge.

The Company was originally formed by, and is under the direction of Agriculturists, circumstances which have mainly earned for it another title, viz.—"The Tenant Farmers' Manure Company."

Its Members are Cultivators of upwards of 50,000 Acres of Land, which has been for years under management with Manures of their own Manufacture. The Consumer therefore has the best guarantee for the genuineness and efficacy of the Manures Manufactured by this Company.

A Prospectus will be forwarded on application to the Secretary, or may be had of the Local Agents. C. T. MacAdam, Secretary.

Chief Offices—109, Fenchurch Street, London, E.C.

THE LONDON MANURE COMPANY (Established 1859),

Have now ready for delivery in dry fine condition,
CORN MANURE, for Spring Use
DISSOLVED BONES, for Dressing Pasture Lands
SUPERPHOSPHATES of LIME,
PREPARED GUANO
MANGEL and POTATO MANURES
Also Genuine PERUVIAN GUANO, and NITRATE of SODA, ex Dock Warehouse; SULPHATE of AMMONIA, FISHERY SALT, &c.
Offices, 116, Fenchurch Street, E.C. E. Purser, Secretary.

Wheat Sowing.

DOWN'S FARMERS' FRIEND, for preventing the Smut in Wheat, and the Ravages of the Slug, Grub, and Wireworm. 9d. packet is sufficient for Six Bushels of Seed Wheat, which can be dressed and fit to sow in a quarter of an hour.

Testimonials from the largest Wheat Growers in the Kingdom, bearing testimony to its great power and efficacy, may be had of Agents, who are appointed for every district.

Full directions for use are given with each packet.

Prepared at the Manufactory, Woburn, Beds.

Caution.—To guard against fraudulent imitation and consequent disappointment, see that the signature of Henry Down is on the label.

Agents in every Town throughout England, Scotland, and Ireland.

SWING WATER BARROW.—This is the best and cheapest article yet introduced for use in Gardens, Farm Yards, &c. The Water may be dipped out, or the Tub tilted and poured out, or by merely raising the Handle it can be placed on the ground, and the Frame detached. To hold about 20 or 36 gallons, price 42s. Carriage paid to any station on Great Eastern Line.

POWERFUL GARDEN ENGINE, suitable for the above, price 45s

IMPROVED LIQUID MANURE CARTS.

Catalogues on application.

Manufactured by W. S. Boulton, Rose Lane Iron Works, Norwich.

GALVANISED IRON WATER CISTERNS. Cheap, light, and durable, will not rust or corrode, and keep water perfectly sweet.

To hold	Each.
30 gallons,	20s. 0d.
50 gallons,	24s. 0d.
80 gallons,	32s. 0d.
100 gallons,	38s. 6d.
125 gallons,	45s. 0d.
150 gallons,	49s. 0d.
200 gallons,	65s. 0d.
250 gallons,	73s. 0d.
300 gallons,	84s. 0d.

With Lid and Brass Tap.

GALVANISED WIRE STRAND CABLE FENCING.
GALVANISED IRON ROOFING.
IMPROVED GALVANISED WIRE NETTING.
HURDLES, HURDLES, HURDLES, 1s. 9d. to 3s. 0d. per yard.
PATENT STRAINING PILLARS, &c.
GALVANISED IRON PUMPS.
GALVANISED SWING WATER BARROWS.
LAWN MOWERS, GARDEN ROLLERS.
ASPHALTE ROOFING FELT, 1d. per square foot.

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12, Great George Street, Leeds.

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Great Improvement.—Reduced Prices, February, 1866.
PRICES per Lineal Yard 24 inches high.

Size of Mesh.	Mostly used for	Light. Jap Gal	Light. Gal	Medium Jap Gal	Medium Gal	Strong. Jap Gal	Strong. Gal	Extra Strong. Jap Gal	Extra Strong. Gal
in.		s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
2½	Dogs or Poultry	0 2½	0 3½	0 3½	0 4½	0 4	0 5½	0 6	0 7½
2	Poultry	0 3	0 3½	0 3½	0 4½	0 4½	0 5½	0 6½	0 7
1½	Small Rabbits, Hares, &c.	0 3½	0 4½	0 4½	0 5½	0 5	0 6½	0 6½	0 8
1¼	Smallest Rabbits	0 4½	0 6½	0 5½	0 6½	0 6½	0 8	0 8	0 10
1	Pheasantries, Small Birds, &c.	0 8	0 10	0 9½	1 0½	1 1½	1 4	1 7	1 10
¾	Aviaries, Window Guards, &c.	0 11	1 1½	1 1½	1 4	1 4	1 7	..	..
⅝	Aviaries, Window Guards, &c.	1 7	1 10	1 10	2 0	2 0	2 3	2 3	2 6
½	Aviaries, &c.	2 3	2 6	2 6	2 8	..	..	..	..

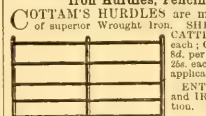
Quantities of 100 Yards or upwards delivered free at all Railway Stations and Shipping Ports in England.

*** Every description of Netting warranted to give satisfaction, and if not approved will be exchanged, or may be returned unconditionally.

J. B. Brown & Co.—Offices, 90 (late 18), Cannon Street, London, E.C. Warehouse and Manufactory, 148, Upper Thames Street, E.C.

Iron Hurdles, Fencing, and Gates.

COTTAM'S HURDLES are made in the best manner of superior Wrought Iron. SHEEP HURDLES, from 4s.; CATTLE HURDLES, from 4s. 11d. each; CONTINUOUS FENCE, from 8d. per foot; FIELD GATES, from 25s. each. Illustrated Price List on application.



ENTRANCE GATES, RAILING, and IRON WORK of every description. Designs and Estimates free of

Cottam & Co.,
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CHEAPEST and BEST IRON HURDLES, FENCING, Wire Netting, Chaff Cutters, Oat Bruisers, Bean Mills, Steam Engines, Lawn Mowers, Conservatories, Greenhouses, Hot-water Apparatus. Estimates furnished, and skilled workmen sent to all parts of the country.

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THE IMPROVED LEATHER DRIVING STRAPS for MACHINERY are stronger, more durable, drive better, and cost less than other kinds of Driving Belts. SPECIAL STRAPS for PORTABLE ENGINES. Price Lists free by post.

Turner's Patent Stitch-Unpicking Rose Company.
Manufactory: Armit Works, Greenfield, near Manchester.
Warehouse: 81, Mark Lane, London, E.C.
Mr. H. Ferrabee, Agent.

FOWLER'S PATENT STEAM PLOUGH and CULTIVATOR may be SEEN at WORK in every Agricultural County in England.

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THE LANDS IMPROVEMENT COMPANY.
Incorporated by Special Act of Parliament in 1853.

To Landowners, the Clergy, Estate Agents, Surveyors, &c., in England and Wales.

The Company advances money, unlimited in amount, for the following works of Agricultural Improvement, the whole outlay and expense in all cases being laundified by a rent-charge for 25 years.

1. Drainage, Irrigation, and Warping, Embanking, Inclosing, Clearing, Reclamation, Planting, for any beneficial purpose, Engines or Machinery for Draining or Irrigation.
2. Farm Roads, Tramways and Railroads for agricultural or farming purposes.
3. Jetties or Landing places on the sea-coast or on the banks of navigable rivers or lakes.
4. The Erection of Farm Houses, Labourers' Cottages, and other Buildings required for Farm purposes, and the improvement of and additions to Farm Houses and other buildings for Farm purposes.

Landowners assessed under the provisions of any Act of Parliament, Royal Charter, or Commission in respect of public or general works of Drainage or other improvements, may borrow their proportionate share of the cost, and charge the same with the expenses on the land improved.

The Company will also negotiate the Rent-charges obtained by Landowners under the Improvement of Land Act, 1864, in respect of their Subscription of Shares in a Railway or Canal Company.

No investigation of Title is required, and the Company being of a strictly financial character, do not interfere with the plans and execution of the Works, which are controlled only by the Government Enclosure Commissioners.

Apply to Granville R. Ryder, Esq., Managing Director, 3, Parliament Street, London, S.W.

THE GENERAL LAND DRAINAGE and IMPROVEMENT COMPANY, offices, 22, Whitehall Place.

Under this Company's Act Tenants for Life, Trustees, Mortgagees, Guardians, Committees of Incompetent Persons, Benedcial Lessees, Corporations (Ecclesiastical or Municipal), Incumbents, Charitable Trustees, &c., may effect the following Land Improvements, and charge the outlay and expenses on the estate improved, by way of rentcharge, to be paid by half-yearly instalments, viz.:—

1. All works of Drainage, Irrigation, Warping, and Embankment.
2. The Erection of Farmhouses, Cottages for Agricultural Labourers, and all kinds of Farm Buildings.
3. The Construction of Roads.
4. The Grubbing and Clearing of old Woodlands, Enclosing, Fencing, and Reclaiming Land.

The owners of Estates, not entailed, who may be desirous to avoid the expense or inconvenience of a Legal Mortgage, may also charge their Estates with an Outlay in Improvements under the simple and inexpensive process of the Company's Act.

The Term of Years for the Rentcharge is fixed by the Landowner, so as to adapt the amount of Annual Payment to the circumstances of the Tenants.

No Investigation of Title being required, and the Charge not being affected by Encumbrances, no Legal Expenses are incurred.

The Arrangements for Effecting Improvements are threefold —

No. 1. The Works may be Designed and Executed entirely by the Landowner's Agent, and the Company employed only to supply the Loan and conduct the matter through all the official Forms for Charging the Outlay on the Estate.

No. 2. The Company will supply Plans, Specifications, and Estimates for any Improvements to be executed by the Landowner's Agent as under No. 1. In each of these cases the Landowner will be chiefly under the Control of the Enclosure Commissioners.

No. 3. The Company will undertake the entire responsibility of the Improvements, prepare the Plans, execute the Works, and finally charge on the Estate the actual amount expended, with their Commission thereon, approved by the Enclosure Commissioners.

Landowners may thus obtain what assistance they require from the Company, and no more, in effecting the objects in view.

Works of Drainage and other Improvements are also executed on Commission for Landowners, who merely require the skill and experience of the Company's Officers and a Staff in constant practice.

Applications to be addressed to Hugh Broun, the Secretary, at the Office of the Company, 22, Whitehall Place, London, S.W.

THE NATIONAL DOG SHOW.—The SEVENTH GREAT ANNUAL EXHIBITION will be held in the Town Hall, Birmingham, on MONDAY, TUESDAY, WEDNESDAY, and THURSDAY, the 3d, 4th, 5th, and 6th December next.

Prize Lists and Regulations may be obtained from the Secretary, Mr G Brown, 41, Temple Row, Birmingham. The ENTRIES CLOSE on NOVEMBER 1. The PRIZES offered amount to £750.

THE BIRMINGHAM CATTLE and POULTRY SHOW, 1866.—The EIGHTEENTH GREAT ANNUAL EXHIBITION of FAT CATTLE, SHEEP, PIGS, DOMESTIC POULTRY, ROOTS, CORN, and IMPLEMENTS, will be held in the Agricultural Hall, on SATURDAY, MONDAY, TUESDAY, WEDNESDAY, and THURSDAY, December 1st, 3d, 4th, 5th, and 6th, when Prizes to the amount of £1100 will be awarded in the following Divisions.—

FAT CATTLE, SHEEP, and PIGS	£1221 10 0
BREEDING PIGS	77 2 0
ROOTS and CORN	71 8 0
POULTRY and PIGEONS	730 0 0

Prize Lists, Certificates of Entry, and every information may be obtained from the Secretary.

The ENTRIES CLOSE on THURSDAY, November 1.

John B Lyttelt, Secretary.

Offices—Stephenson Chambers, New Street, Birmingham.

SMITHFIELD CLUB FAT CATTLE SHOW.—The ANNUAL SHOW of FAT CATTLE, SHEEP, and PIGS, will be held at the AGRICULTURAL HALL, ISLINGTON, on MONDAY afternoon, December 10, and Four following Days.

Intending Exhibitors are requested to apply for Certificate Forms by the reference letters as under.

CATTLE.—Form	A.	For an OX or STEER (in any Class).
	B.	For a BULL or HEIFER (in any Class).
	C.	For a BEAST in Extra Stock
SHEEP.	D.	For a PEN of 3 WETHERS (in any Class).
	E.	For a SINGLE SHEEP in Extra Stock.
PIGS.	F.	For a PEN of 3 PIGS (in any Class).
	G.	For a SINGLE PIG in Extra Stock.

ENTRIES for LIVE STOCK CLOSE NOVEMBER 1.

Prize Lists, Forms of Certificates, and all information may be obtained on application to Mr. David Pullen, Assistant Secretary, at the Office of the Honorary Secretary, corner of Half-Moon Street, Piccadilly, London, W.

N.B. All communications respecting the Show must be addressed to the Assistant Secretary, as above, and should bear outside the words "Smithfield Show."

The Agricultural Gazette.

SATURDAY, OCTOBER 27, 1866.

There is a conference upon the sewage question proceeding at Leamington as we go to press; and the leading sanitary authorities are discussing what may be done towards a profitable solution of the difficulties in which the water-closet system is landing inland towns. Up till within the past quarter of a century the difficulty had not generally arisen. Cesspools filled and were emptied by nightmen, and immense contracts in London were taken for the clearance of nuisances in this direct way. Many thousand pounds per annum were thus paid for the scavenging of barracks and public offices in town, *i. e.* for the removal of filth for which a considerable price was afterwards paid by market gardeners and suburban farmers. And the general scavenging of houses was a costly charge upon our towns. The cesspool system was, however, a thoroughly unwholesome one, and its abandonment was inevitable. The use of water for washing all our waste immediately away has since become almost universal. But the rivers are thus becoming fouled, and our water supply is being injured. What is the remedy? No doubt the use of the earth-closet, which is virtually the old cesspool plan taken in detail and rendered perfectly wholesome, will have its vigorous advocates at Leamington. And wherever this method is carefully superintended and resolutely insisted on by the master of the house, there cannot be a doubt that it will perfectly answer its purpose. It only needs that a storage of dry earth be provided for use in this way and occasionally replenished—that the prejudices of servants be removed or overruled—and that frequent removals of the boxes be provided for. A well-organised system of scavenging would then be easily carried out, with perfect inoffensiveness both inside the house and out. And we should have a most valuable manure, which might be carried load by load to farms all round our towns, where loads of top soil would be readily obtained for it—the difference in value being paid. A considerable revenue would no doubt thus be derived in place of the heavy yearly charges which have hitherto been paid.

But the prejudices of mistresses and servants are undoubtedly a real obstacle, and we have already committed ourselves at enormous cost to the drainage of our towns. And however successfully any new scheme may be urged in villages, and detached houses, and new buildings, it is altogether improbable that earth-closets or any other novel scheme, will make any progress in large towns. The Leamington Conference is thus, we fear, shut up to the consideration of what is called Town Sewage. Sewage must not be allowed to defile our inland streams, which are the main water supply of towns; and no doubt the recommendation of H. M. Rivers' Commissioners to this effect will be enacted. The possibility, therefore, of profitably diverting town drainage, and using it as manure upon land, is thus no doubt the

point on which such conferences as that at Leamington must turn.

We have this week cut plots of Italian Rye-grass sown 11 or 12 weeks ago, which have since been watered (part of 30 or 40 acres similarly laid down) with 400 or 500 tons per acre of North London sewage. They yielded at the rate of 10 tons per acre of first-rate succulent cow food. Unless we should have a very severe November we cannot doubt that they will yield another 10 tons per acre before the winter after another similar dressing. At Worthing we hear of a single cut of 20 tons having been obtained from Rye-grass similarly treated. Near Barking they have cut in places 20 tons per acre at a single cutting; and from the surface of sheer sea-sand, dressed with the water from the North London outfall, they have cut 10 to 12 tons per acre of Grass at a single mowing as the result of four or five weeks' growth.

All these are contributions to the discussion of the subject which is occupying attention at Leamington, and they well deserve the attentive consideration of all who are seeking a way out of the difficulties which, between pure water supply and efficient drainage, are now besetting sanitary reformers.

Two addresses have been given at recent ploughing matches, to which attention should be directed.—Sir W. BOVILL, M.P., lately discoursed on the social advantages of these rural holidays before a Society in Surrey. Everything (except, by the way, the ploughing) seems to have been satisfactory at Worplesdon. The clergy, gentlemen, and farmers, employers and employed, had combined for the time in a common interest; and the wholesome influence of this occasional mingling of too widely-separated classes was certain to be felt throughout the year. All this is no doubt true enough, and so is the alleged praiseworthiness of every instance to be quoted of mutual confidence and friendship; as between a master and his servant or a landowner and his tenant. Happy the parish where the labourers remain so long in one service, and where the tenantry retain their places for so many years, notwithstanding that their relation to the owner of the land is the subject of no legal instrument whatever, but rests solely on that unwritten mutual understanding which is itself the fruit of friendly feeling.

Such was the burden of the speech. It was uttered eloquently, and heartily received. And no doubt it was intended kindly; but good as may have been its aim, we dare to say that it utterly failed of hitting any useful mark whatever. What good purpose is served by praising up the existing state of things among farm labourers, or trying to teach them that long servitude with one master is always their best lot, as if contentment and subordination were the chief end of man? Everybody who looks below the surface knows that in country villages there is generally more drunkenness and bastardy, more misery of every kind arising from gross and stupid vice, than is to be found elsewhere. Worplesdon may be a specially fortunate exception; though the examples quoted to us of great personal worth among all classes there do not in the least prove it to be so. The quasi-feudal system which prevails where landlords pretend to be the Fathers of their tenantry, and employers combine to give money prizes for petting personal worth among their men, can no doubt show many model tenants and many model labourers, but how does it stand when we take account of its failures as well as of its successes?

We shall find moral excellence as high and mutual friendship commoner among all classes, and intelligence and work and life more vigorous and energetic, and instances of utter failure rarer, where contentment and subordination are arrived at incidentally, and not inculcated as first duties — where leases of land encourage independent self-reliance as well as the employment of capital and intelligence — where men are urged by piece-work payment to industry, and by rivalry under an appreciative eye to skill—and where estate management is understood to include among its earliest duties the provision of adequate accommodation at profitable rents for the labourers by whom its cultivation is to be conducted.

We greatly prefer the speech of Sir L. PALK at a recent ploughing match in Devonshire. He had been in the North of England, whither he had noticed working men are being rapidly attracted, and he addressed his common sense to the difficulties of keeping labourers in the South. They are to be retained only by sufficient wages, good cottages, and advantages of all kinds for their children.

Let us admit that in many places (see what Canon GIRDLESTONE is telling us*) the state of things for labourers in agricultural districts is as bad as it can be. And instead of salving over shortcomings and their lamentable results, or confining ourselves to congratulating the two or three in a whole country side who may come forward for the honorary distinctions to which 20 or 30 years of service with one master may have entitled them, let us rather, with Sir LAWRENCE PALK, endeavour to find out some remedy for the horrible drunkenness and misery of which in every country side there are much more than a corresponding two or three examples at the other end of the scale.

THE LATE MR. FISHER HOBBS.

WE take the following from the columns of the *Mark Lane Express*:—

After the burial, which noticeably enough was within a few yards of the place of his birth, at White Colne, the will of Mr Fisher Hobbs was read in the presence of a number of relatives and friends who attended the funeral on Thursday last. The great bulk of his property goes to his cousin, Mr. William Hobbs, of Selinge, near Hythe, with reversion of the landed estate to another cousin, Mr. Henry Hobbs, a brother of Mr. William Hobbs, and also a native of Kent. Annuities are left to the two sisters and the housekeeper of the deceased, and small legacies to distant relatives and godchildren. To his two trustees, Messrs. J. T. Hallum and H. Trethewy, he gives 250*l.* each; to the Royal Agricultural Benevolent Institution the sum of 500*l.*; to the Colchester Hospital, 100*l.*; and to the Lying-in Asylum, 100*l.* To Messrs. Hall Dare, Brandreth Gibbs, and Henry Corbet, as the official representatives of the three national Agricultural Institutions, he directs the payment of legacies of 100*l.* each; and to another friend, Mr. de Trobriands, he leaves the selection of any single volume from his agricultural library. Mr. Hobbs, it may be added, had neither brother nor nephew.

The following is from a biographical sketch in the "Revue Agricole," published some years since:—

At the age of 22 years, Mr. Hobbs' friends considering him qualified to conduct a business for himself, took for him the farm of Marks Hall, in the parish of Cogge-hall, in Essex, containing nearly 500 acres, chiefly grazing land, which afforded him ample scope for the exercise of the knowledge he had acquired. At the first meeting of the Royal Agricultural Society, at Oxford, Mr. Hobbs took the first prize for cereals, and after that time the grain raised on his farm was always in request, as well for seed with the farmers, as with the miller and merchant. His success at Oxford encouraged him to persevere in the improvement of all kinds of grain and roots cultivated in the district; for which purpose he devoted two days of his harvest-men for every ear of Wheat containing at least 100 grains. On one occasion a workman brought him six ears containing an average of 107 grains each. These he sowed separately, and found that not only were the best ears the most prolific and produced the largest ears, but that the largest grains and the best formed also yielded the strongest and best products. In 1855 Mr. Hobbs was nominated a delegate from the Royal Agricultural Society to the Universal Exhibition at Paris. The following year he formed part of the jury at the Great Exhibition of the Palace of Industry; and in 1857 of that of the famous International Show at Poissy. Mr. Hobbs was honoured with the friendship and respect of men of the first rank in society; among others that of Lord Western, one of the contemporaries of Coke and the Duke of Bedford, and one of the most skilful agriculturists of his school. He was through the former nobleman's means that he was enabled to raise that remarkable breed of pigs for which he and the county of Essex are so famous. In a journey in Italy, Lord Western was struck with the cubic conformation and smallness of bone of the porcine race in the neighbourhood of Naples. Carefully selecting the finest boar he could find, he brought it with him to England. This he crossed with the black sows of Essex, which fully answered the expectation of Lord Western, the product possessing the same smallness of bone and great aptitude to fatten. Unfortunately, the improvement was confined to the male progeny of the cross, the series of organs constituted by the females, especially the digestive arrangements, still remaining defective in the production of flesh; so that, for want of assimilating power sufficient to counterbalance this aptitude to lay on fat, they turned from the male parent, they turned all into lard and formed no flesh. This defect Mr. Hobbs undertook to correct in the following manner. Instead of crossing the Neapolitan boar with the narrow-chested sows of the Essex breed, he selected his females from the Essex-Berkshire sub-race —that is to say, a breed produced by a cross of an Essex boar with a Berkshire sow. The influence of the Essex boar had prevailed as to colour, which still remained black; but the Berkshire element was manifested in the amplitude of the pectoral cavity, and consequently in the development of the viscera it contained. The large lungs, the deep and easy breathing of the animals of this cross, caused naturally a greater combustion of carbon, and thus a smaller assimilation of the adipose parts of the food. On the other hand, their digestive organs being more powerful, allowed them to assimilate the nutritious portions in a more complete manner; so that these animals produced more flesh than fat. It was by coupling these two elements, viz., the Naples-Essex cross, so remarkable for its fineness of bone and aptitude to fatten, with the Essex-Berkshire which Mr. Fisher Hobbs found in two neighbouring piggeries, that he eventually and permanently established, in a new breed that bears his name, the union of these two valuable qualities, the fortunate combination of which has rendered this breed so estimable with the breeders.

In 1844 Mr. Fisher Hobbs' uncle died. It was unfortunate that, on the same day, Mr. Hobbs had invited a large party of agriculturists to dine at Marks Hall, to do honour to Mr. Smith, of Deanston, who had engaged to come and explain his system of drainage. In the midst of the dinner a messenger arrived, covered with dust and perspiration, to announce to Mr. Hobbs that Mr. Fisher was at the point of death, and wished to see him before he died. Excusing himself to his guests, he arrived in time to close the eyes of his benefactor. He left Marks Hall a simple farmer, and a few days after returned a rich man, his uncle having named him his heir and only legatee.

The new position of Mr. Hobbs made no difference in the predilections and pursuits of his life. In becoming a rich landowner, he remained a farmer; and the estate of Boxted Lodge is still one of the best cultivated in the country, nothing being neglected, even to the hedges, which are kept neatly clipped and cleared from parasitic plants, giving the inclosures the appearance of gardens. It was in the transformation of this property that Mr. Hobbs displayed his deep science as a practical farmer. Up to the period of his taking it in hand, it had been neglected and unproductive. The light land wanted consistence; the heavy lands were soddened with water; the bottoms of the ravines were turf-bogs impervious to man or horse. The estate was divided into innumerable inclosures by high hedges, and a ditch on each side to carry off the water; whilst thickets occupied a large space that should have been devoted to the plough. All the farm-buildings were in ruins; and disorder and sterility prevailed throughout. Soon everything was changed. The peat-bogs were converted into fertile meadows, the old hedges disappeared, the ditches were filled up and the land drained, the springs opened and utilised, the sandy soils solidified, excellent farm-buildings erected where the old ones stood, the small inclosures converted into large rectangular fields, the mansion, the gardens, the homestead—all have been transformed; and the Boxted estate is now one of the best-managed properties of its size in the kingdom.

We close this sketch of the life of Fisher Hobbs with the following trait, which exhibits at once his benevolence and his discernment. At the time of the repeal of the corn laws, all his neighbours were struck with stupor under the apprehension of certain ruin. They dismissed their house-servants and labourers, who, having no employment, went in crowds to the union-houses, to the great increase of the parish burthens. What course did Fisher Hobbs pursue? He assembled those unfortunate labourers destitute of bread or work, whom the senseless inhumanity of the farmers had abandoned to starvation, and set them to work to clear and cut down a large wood on his estate. His neighbours thought him mad, for they were all reducing, rather than increasing, the area of their arable land. Scarcely had he finished his undertaking, when they recovered from their panic, and again took on their labourers. The field cleared by these unfortunate men is called to this day "The Free-trade Close," and is one of the most productive in the country. Mr. Hobbs sowed it with Wheat every second year, and always obtained large crops. In other respects, he generally practised a biennial course at Boxted—the reverse of the Norfolk husbandry.

THICK AND THIN SEEDING AT TIPTREE HALL FARM.

THOSE farmers who take an interest in the discussion I have now with Mr. Mechi, of Tiptree Hall, Essex, will remember that he has published several times, that on his farm as a farmer, and not as a gardener, he from single pecks of seed-Wheat has grown 7 quarters and 2 bushels an acre, and 7 quarters and 1 bushel an acre; and it will be recollected, also, that many have doubted the truth of these statements. Not that we doubt but in proper hands, and on good and well cultivated land, a peck of seed, either of Wheat, or Barley, or Oats, may be spread over an acre of land, and of course produce a crop of some kind, because many highly respectable men, who have farmed much better than Mr. Mechi ever did, have sown, some for the sake of experiment, and some for their general practice on a small scale, their single pecks on single acres of land; but as for their ever having an increase from minimum quantities of seed, such as Mr. Mechi believes that he has had, and for years following, they never, being rational men, expected such miracles, nor do they, nor can they believe, that he, being only a mortal man like themselves, has been so highly favoured above other mortal men. And if he has not been so highly favoured and endowed, and rewarded above all others, they do not believe that he has ever accomplished in the production of corn what no other men ever expected to accomplish. It is true that Mr. Mechi has always been said to have two farms, one in Essex, and another in a country called Nubibus, and that it is of the crops of the latter he writes; but as for his producing them in these lower regions among the fogs, and mists, and blasts, and snows, and sleets, and frosts of Essex, no one except the bailiff and labourers of his estate in Nubibus, to whom Mr. Mechi refers, believes one word of it; but still, if he will perform the same feats down here in this lower world which he professes to achieve among the clouds above, a monument shall be erected for him as the greatest benefactor to his race that has yet appeared upon earth. But he must again produce his 7 quarters and 2 bushels an acre from his single peck of seed, or the sun of his farming renown will descend and set in a mist, to rise no more. But is it not surprising that, if Mr. Mechi has been able to accomplish these farming marvels, he should not

* See page 1032.

reflect that, as there are other men in the world who have sown their single pecks also, and on better land than his, and far better cultivated, would they not have accomplished the same if such wonders were to be done? Fifty-eight bushels an acre, indeed, from a single peck per acre each! When was such a feat performed? I offer him 50 acres to practise upon, and all the crop he should produce above 48 bushels an acre, and which, according to his own showing, would be 500 bushels, of the value of about 170*l.*; and beyond this, I have authority from my neighbour and friend to say that he will also on the same terms add 75 of his acres to my 50, and put them in the best possible condition he can, the terms being that this autumn, before a jury of witnesses, Mr. Mechi shall seed all his Wheat land with a peck of seed only an acre, and next harvest shall reap, cart, and measure an average of 48 bushels only an acre, being 10 bushels an acre less than he proclaims aloud he can grow and has grown. Surely he cannot say but these are flattering terms —here being a small fortune offered to him nearly gratuitously; but will he accept it? No reasonable man can believe that Mr. Mechi would refuse his own medicine in such a case, except he was mortally afraid of it.

"Some folks," he writes, "wonder at his pecks producing 232 pecks, but what will they say to one Barley-corn producing 2460!" What can they say but that a single Barley-corn has been known to produce upwards of 4000! and this Mr. Mechi, a teacher of agriculture, ought to have known.

But again "T. B." he continues, seems surprised at my crop of 7 quarters an acre;—but whenever did "T. B." express such a surprise? Never! What "T. B." had no faith in, and so expressed himself, was that he did not believe that Mr. Mechi ever on his farm produced 7 quarters and 2 bushels an acre from a single peck of seed, and this is "T. B.'s" opinion now; and if Mr. Mechi had had any better opinion than "T. B." of the authority on which the statement is made, would he not long since have seeded all his land at the same reduced rate?

On the 5th ult. Mr. Mechi divided his seeding for his last crops into two quantities, namely two half-acres at 1 peck an acre, and the rest at 4½ pecks an acre, and on that day, Sept. 5, he wrote, his 4½ pecks produced 5 quarters and 1 peck an acre. Now, as these two divisions included all Mr. Mechi's Wheat crops, I asked him, as a professor of agriculture, to be so good as to inform me and others how on that day before his crops were carted, threshed, and measured, he ascertained that his yields were exactly 5 quarters and 1 peck an acre; and what is his answer? What? listen attentively—it is this. "We began Wheat-cutting the latter end of July." But what answer is this to my question? Mr. Mechi being an agricultural professor, I asked him to inform me for my own and others' benefit how before his Wheat was carted, threshed, and measured he came to the knowledge that the bulk of his Wheat crops were exactly 5 quarters and one peck an acre; and he replies, we began Wheat-cutting the latter part of July! But what was that to Wheat-threshing and measuring? I myself began rather early, but all my Wheat was in the field on September 5, and was not Mr. Mechi's the same, or the greater part of it? *T. B.*

As your correspondent "T. B." has twice referred to me by name, and as the concluding part of his last article appears to be aimed at me, as well as at my friend Mr. Mechi and other advocates of thin seeding, with your permission, though I have attempted the same many times before through your own and some provincial journals, I will make the attempt again to put him and others right. It has been thought by many that because I have so often advocated very much thinner seeding than farmers in general adopt, I consider thin seeding to be a panacea for farming of all kinds, even the very worst; but no such thing, as I have repeatedly explained. In fact, to successfully seed land with very small quantities of seed, it must be naturally good corn-bearing land, must be thoroughly cultivated, deeply and thoroughly comminuted, and kept in good heart, and scrupulously free from weeds; and further, the seed must be most accurately put into the ground, whether by dibbles of any kind or by the drill; but if by hand-dibbling, the farmer must either drop the seeds into the holes himself, or never leave the droppers whilst the operation of dropping is going on, or three, four, and more seeds will be smuggled in than the thin seeder designed should be. Thus, last spring I saw some Wheat which the worthy owner of it maintained to me was done with one peck of seed only an acre, though I pulled up tussuck after tussuck that had sprung from three, four, and even six seeds, all dropped into one hole, and the whole plot was four or five times thicker than I knew, from 50 years' experience, and from accurate and I may say mathematical calculation, a peck only would admit of. Indeed, so difficult is it to get single seeds dropped into holes, that I gave the attempt up in despair, and set to and invented my drill, which, acting by machinery, forces the seeds through holes in metal slides just large enough to admit one seed only through them at a time, unless I, by changing the slides, wish them to admit more. And further, I never put Wheat into the ground without first ascertaining how many grains a given measure of it contains, whether a peck, a bushel, or a coomb, or any greater or less quantity, and this I can do in five minutes.

Do any of my readers doubt this? If they do, I ask them to go to any workhouse school and take with them an unmeasured quantity of Wheat, and the pauper boys there will tell them in less than 10 minutes how many seeds of that Wheat or any given quantity of it will put into any given quantity of land, say a square foot, a yard, or an acre. Nor is there any novelty in this, as I have advertised it many times; and I should be ashamed to write or even talk about farming, if I could not accomplish such a trifle as this.

But it is upwards of 50 years since I myself and several others, and among them was Mr. Cobbett, and the elderly gentleman, my friend, whom you, Mr. Editor, saw at the Royal Agricultural College when I delivered my lecture there, dibbled our acres with a single peck of seed each, and ourselves chiefly assisting in the dropping the seeds in the holes one by one, or dropping them wholly ourselves; and our successes were beyond our expectations: both mine and my friend's peck producing 192 pecks, or that number fold; and since that time I myself have seeded very many pecks with the same quantity, and with success, but I never exceeded the 192-fold, or 6 quarters. My friend, also, who was on the estate of near 2000 acres, and chiefly arable, continued his thin seeding until his retirement into more private life; but he never exceeded one Winchester bushel an acre.

And for upwards of 29 years I have every year had an acre or more or less done by a peck in my parish, or at the rate of a peck an acre, and always with success; but still "T. B." does me great injustice if his censure applies to me as being one who recommends such small modicums of seed to farmers for their general practice; as I do no such thing, but the reverse exactly. Though I myself and some others—the late Mr. Piper, for example, of Colne Engaine, Essex, and another friend who does not permit me to publish his name—most successfully seeded our acres with a peck of seed each only, and I had the same down to this last year; and though we had splendid yields, reaching to near 6 quarters an acre, and in the case of Mr. Piper and my other friend reaching to quite that quantity annually, yet I should strenuously warn a young farmer against adopting such a system, or even the seeding of a single acre with his peck, unless for amusement only. But still, as I have said, I have every year had land so seeded; and why so, if I would not adopt it as a general practice? I have published the replies to this many times, but I will here give them again, as I wish to be clearly understood, whether I be right or wrong. The chief reason has been this. I have been experimenting on Wheat growing in general—not however whether a peck of it in proper hands spread over an acre of ground will produce a good yield; but my objects have been these: first, by repeated trials to ascertain how many years vitality by the art of man can be retained in Wheat, so that it may germinate when sown in the earth. This led me to a long and warm controversy with an M.D. of this neighbourhood, who professed to be able, to use his own words, "to make Wheat live for thousands of years;" and to this he added, he could so act upon it that "for it to die would be impossible." This controversy was carried on in the *Essex and Colchester Gazette* newspaper. But the longest time I have been able to keep vitality in Wheat has not reached seven years. Of course no man endowed with natural sense believes that Wheat was ever deposited in a mummy, unless by some modern quack for the sake of imposing upon the ignorant. The next trials I made were with all the different kinds of Wheat I could procure, to ascertain which of them germinated the most freely, and I entered into this in consequence of a worthy gentleman having published a table showing that on an average of all the quantities and kinds of Wheat sown, not more than one-half had the power of germination. To refute this error, for so I have proved it to be, I have sown annually small quantities of all the different kinds of Wheat I could procure, and the result has been that not 5 per cent. of the whole has failed to grow.

Other trials I have made to ascertain the tillering properties of different kinds of Wheat, and of these the Egyptian, known by the sobriquet of Mummy Wheat, has tillered so much that I have from single seeds grown from 4000 to 5000-fold without doing more than keeping the plots perfectly clean after the seeds were sown. Should any be sceptical of this I inform them that I invited all I could to come and see the crops before they were cut, and take up roots and count the seeds in the several ears, some of which ears being from 50 to 60 from a root, and 80, 90 and 100 seeds in them.

My readers will perceive, that to carry out these experiments satisfactorily it was necessary that the seeds should be singly put into the ground, and very widely apart. But for general agricultural purposes I inform "T. B." that he is sadly in error, and I hope he will acknowledge so much if he believes that I ever advocated so small a quantity of seed per acre as one single peck only; but that he may not fall into the opposite extreme, I inform him that I am still a strenuous advocate of thin-seeding, and that the finest crop of Wheat I ever grew was from 2 pecks exactly, the yield being over 6½ quarters of as fine Wheat as I ever saw.

Should you, Mr. Editor, think this explanatory paper deserving a column in the *Agricultural Gazette*, I will send you another, showing the grounds upon which I object to both large and very small quantities of seed for general agricultural purposes. I wish, also, that writers such as "T. B." would make themselves acquainted with what I really have advocated before he or they introduce my name in any of their controversial writings. *George Wilkins, Wix Parsonage, October 16.*

THE PAYMENT OF WAGES IN CASH AND KIND.

The Rev. Canon Girdlestone states, in the *Agricultural Gazette* of September 29th, "There are white slaves in England as well as black slaves elsewhere. Will not Lord Leigh in the House of Lords, and Mr. Henley in the House of Commons, be induced to take up this crying evil, and propose a remedy for it?" The Rev. Canon ought to have stopped here; but he proceeds thus: "Might not all payment of wages except in the coin of the realm be made illegal?"

It is pleasing to find the Rev. Harry Stuart, of Outhlaw, taking a common-sense view of the subject. He states, in the address he delivered in 1865 at a meeting of the Forfarshire Agricultural Association: "The married servants in the Lothians seem to be much more stationary: and this seems to be secured, in a great measure, by the way in which their wages are paid, cultivating more their powers for domestic and rural economy than can be done when their wages are almost all given them in money, or in fixed allowances as to immediate value, as is the practice in this county.

"The way in which the Lothian servants are paid, by so much grain and the keep of a cow, gives a stimulus to those powers without which it is hardly possible to raise bodies of men to much social comfort; for it is only by some such way that they can be trained to conduct themselves, and to manage their resources to the best advantage. Bodies of men cannot be thus trained by any expedient, however stringent and good, *from without themselves*; they must have sufficient accidents and incidents arising *from within* their own establishment, to call out and to foster the very same provident habits and social feelings as must be cultivated in their employers before even they, upon infinitely larger means, can prosper. And what is it but the numerous contingencies, for better or for worse, that come hourly upon the farmer from earth and sky, that make him, although generally a man of few words, yet one of the most provident, cautious managers known,—turning to the best account all the 'littles' of a concern, and so very shrewd withal, that he cannot be got to the windward of, even 'in a horse-market.'" This excellent address is published by Blackwood and Sons.

Although I approve of paying yearly servants part of their wages in kind, I feel justified in ridiculing gentlemen farmers for paying their labourers with such crude materials as unground Beans, Peas, Barley, and Oats! Fancy farmers in East Lothian giving each married ploughman only 1*l.* in the twelvemonth in exchange for labour! I am aware that some farmers give their hinds the yearly average prices for the grain which the hinds do not require, but too many farmers will not give a cash equivalent to the yearly averages. Hence the confusion.

In the belief that grievances for which no remedies can be devised ought to be submitted to as "necessary evils," I repeat that a house and garden free of rent, the cartage of fuel, a cow's keep, the liberty to feed a pig or pigs, and food in harvest, are the only items of payment of wages in kind which farmers in this locality ought to give in exchange for labour. A payment in "kind" did very well so long as it accorded with farm labourers' tastes and habits. For example, my late mother, the blacksmith's wife, and a hind's wife, were the only three women on a large farm called Fairnington, in the parish of Roxburgh, who acknowledged that they made use of tea. My late father in 1839 went to that farm, which he left in 1842. When the former and present modes of living were incidentally referred to, I remember my mother stating that she had great difficulty in inducing my father to make tea the evening meal only 40 years years ago; but now coffee or tea is the supper, and often the dinner in a great many working men's households in town and country. I had a letter ready under the heading "Farmers' Logic," but Canon Girdlestone's effusion prompted me to re-write it. For example, Mr. Munro, of Fairnington, described Roxburghshire in the *North British Agriculturist* of July 13, 1864, where he stated that "a hind's gains may be valued at 35*l.* per annum." I reduce Mr. Munro's wages to cash to show Canon Girdlestone the impropriety of his suggesting a Parliamentary prohibition:—

	£	s.	d.
4*l.* of cash	4	0	0
18 bushels of Barley, at 1*l.* 4*s.* 3*d.* per quarter ..	2	14	6
6 bushels of Peas at	1	0	0
100 stones of Oatmeal at 1*s.* 4*d.*	6	13	4
Four weeks' victuals during harvest	0	16	0
Keep of cow	6	0	0
1801 yards of Potato drills, at 8*d.* a score ..	3	0	0
The cartage of 5 tons of coals from the nearest station, and a house and garden free.			
	£24	15	10½

Thirteen shillings being the general price of a ton of coals at some of the stations in this district, 1*l.* 12*s.* 6*d.* might be added to Mr. Munro's wages: but I treat the cartage of the coals as a perquisite to enable me to contrast the wages on Tweedside with those in South Northumberland, where 15*s.* to 17*s.* a week, a house and garden free, 2 to 4 bushels of Wheat, the same of Barley, and 80 stones of Potatos were, a few years ago, the wages of those hinds who kept bondagers. This tabular account will show farmers who pay money wages, that it requires less floating capital for the labour bill in connection with a payment in kind than with weekly or fortnightly payments of cash.

I feel at a loss how to treat Mr. Munro's statement that Roxburghshire hinds' wages in 1864 were equal to 35*l.* a-year. Since it is an indisputable fact that each of two many hinds had to pay his bondager's wages of 13*l.* a-year, and also give the bondager her board, lodging, and washing, how can Mr. Munro make out a nett wage of 35*l.* to the hind? Mr. Munro then paid h's hinds only 1*s.* for every ten hours each bondager worked, which is little more than 8*d.* a day during the winter months.

For several years I have treated with ridicule the idea that the united earnings of a hind and a bondager are a hind's nett wages; and I now must also ridicule gentlemen farmers for holding up the united labours of a hind and his wife as the hind's nett wages. Farmers have no right to take the credit of the resources which are developed from the cow's milk, and from the liberty to feed pigs. The foregoing shows that it

requires a healthy, industrious wife to realise more than 10*l.* from the cow's produce and the feeding of pigs, to make up 35*l.* a year.

Although the Rev. Canon Girdlestone deserves credit for his humane efforts in behalf of labourers in the West of England, I beg to protest against his suggesting that "all payment of wages except in the coin of the realm be made illegal." I venture the statement that a good many Roxburghshire hinds are as comfortable on the wages in kind, which do not cost the farmers more than 26*l.* of cash in the 12 months, as what the hinds in South Northumberland are with their big money wages without a cow. Of course, the comparatively more comfortable condition on Tweedside is found only on those farms where the farmers are possessed of sufficient principle to feed the cows in summer and winter, so that they can produce more to the hinds than their cost to the farmers in the twelvemonth, 5*l.* and 6*l.* Since too many hinds' cows are half starved in summer, and kept on straw, Cotton-cake, and water in winter, putting even 5*l.* to the credit of farmers for a cow's keep is doing hinds an act of injustice. It would be much more in accordance with the professional duties of clergymen than contenting themselves with tranquil industry if they would try to qualify labourers educationally to reason themselves through the press with farmers. It was the power of the press that gave the bondager system in Northumberland and the south of Scotland its death blow. The late Rev. Dr. Gilby, of Norham, although dead, "yet speaketh" through his printed appeals in behalf of Northumberland hinds. *T. W. Rutherford*, 22, *Forest Field, Kelso, N.B.*

CATTLE PLAGUE RETURNS.

The following Returns were issued on Oct. 25:—

This Return gives the number of cases occurring in Great Britain which have been officially reported to this Department. Column 1 only records the cases reported as having commenced during the weeks indicated by the headings. All "back cases" are included in column 2.

Counties Reporting Attacks.	1 Number Attacked		2 Result of Reported Cases from Commencement of Disease.				
	Week ending Oct. 13	Week ending Oct. 20.	Attacked.	Killed.	Died.	Recovered.	Uncounted for.
Buckinghamshire	—	—	2,582	1,871	504	187	20
Cambridgeshire	—	—	7,875	2,686	4,5 3	494	162
Essex	5	1	2,444	568	1,461	305	110
Suffolk	—	—	2,442	1,235	908	196	23
Somersetshire ..	—	—	614	509	97	5	3
Shropshire ..	—	1	7,305	3,428	2,742	788	347
Staffordshire ..	—	—	5,929	2,585	2,339	521	484
Warwickshire ..	1	—	744	108	455	105	36
Cheshire	1	4	67,764	23,773	32,730	8,053	3,147
Lancashire ..	2	—	6,091	2,903	2,314	586	344
Yorks. W. Riding	—	—	11,014	2,159	6,508	1,789	558
,, E. Riding	—	—	12,514	3,340	6,228	2,037	909
,, N. Riding	—	—	11,161	2,526	5,629	2,112	894
Total ..	11	6	138,118	47,472	66,485	17,116	7,045
Remainder of England ..	—	—	60,341	30,083	23,936	4,473	1,849
Monmouthshire & Wales ..	—	—	8,38	1,180	5,704	1,117	275
Scotland	—	—	46,861	6,263	28,088	10,707	1,803
Great Britain ..	11	6	253,708	84,998	124,303	33,413	10,994

The return shows that 6 attacks were reported to have occurred during the week ending October 20, being a decrease of 5 on the previous return.

Fresh outbreaks took place in 3 farms or places where cattle are kept; the number of such outbreaks in the previous week being also 3. The number of healthy cattle slaughtered to prevent the disease extending to them, was 4 during the week.

The disease is reported to have prevailed during the week in the following 3 petty sessional divisions of England, viz.:—Essex.—Rochford, 1 attack. Shropshire.—Whitchurch, 1. Cheshire.—Northwich, 4.

Since the commencement of the disease 51 in every 1000 of the estimated ordinary stock of cattle in Great Britain are returned as having been attacked.

The total number of sheep reported to have been attacked up to the date of this return is 6826. No cases among sheep have been reported during the week.

MAXIMUM AND PARADOX.

Having become satisfied that a cow could be made to produce as much butter on hay in winter, as in the pasture in summer, to test the matter I had a cow come in December 15th. We commenced setting the milk on the 25th. The first nine days she made 23 lb. of butter, or 2½ lb. a day, and in 26 days we had filled a tub of 52 lb., which sold in Boston for 39 dollars, or 75 cents per lb. The following table, giving the product of the cow for the year, has already been published, but it may be well to repeat it:—

				dols.
Dec. 20, 1864 to April 20, 1865,			200 lb. at 60 dols.	.. 120.00
April	,,	Aug.	,, 180 lb. at 30 dols.	.. 50.00
Aug.	,,	Sept.	,, 40 lb. at 40 dols.	.. 16.00
Sept.	,,	Oct.	,, 34 lb. at 50 dols.	.. 17.00
Oct.	,,	Nov.	,, 30 lb. at 55 dols.	.. 16.50
Nov.	,,	Dec.	,, 20 lb. at 55 dols.	.. 11.00
Total for the year, 504 lb.			.. .. ..	.. 230.50

So you see the result in the barn has outdone that of the pasture, as the figures show. In fact the experiment has gone 50 per cent. beyond my own calculations. The cow usually goes dry about two months; she comes in again next April. I have never ascertained the quantity of her milk required to produce a pound of butter, but when she made the 2½ lb., she gave about 20 quarts per day.

How it was done.—I begin haying about the 8th of June, and finish by the 25th, if I can. Another crop is cut the last of August, and in some places a third crop in September. This makes hay that is just as good as Grass. Then my stable is double-boarded outside and in, with double doors and windows, and so ventilated that I can control it and keep up just such a temperature as I choose, even the coldest days. I throw it open all round, or shut it up, just as the weather happens to be. The door is made watertight, to save all the excrement, which is kept under cover, thus doubling both quantity and quality of the manure. This keeps the stable from freezing, even with the mercury at 38° or 40° below zero.

The cows are fed on hay three times a day, no more nor less, are watered morning and evening, and then put back into the stall and kept there night and day during the winter. The amount of hay fed to this cow did not vary a pound from 25 pounds a day; smaller cows take about 20. The hay that cattle eat does them but little good, until they raise it up and chew it over in the cud; then it goes to form milk or flesh, as the case may be. If the animals have a comfortable place to lie down in, they commence chewing it over as soon as they get their meals eaten, and when 12 o'clock comes they are ready for their meal again, and so on until evening. There should always be regularity in feeding and watering.

I sold a pair of steers last spring, 23 months old, weighing 2300 lbs., for 186 dollars. They were resold in Boston for 220 dollars. They were treated exactly as the cows—fed on this hay cut in June and August, and on nothing else. I have not fed any meal these five years. I can spoil a cow in three years by giving her only two quarts of meal a day in winter. It is most remarkable that since I laid aside mealing my cows, and adopted this rule, I have not had one single creature sick.

The cow above referred to is brindle, good size, of the native breed. When I bought her, four years ago, I considered her a very ordinary cow indeed. I have two other cows—one five, the other six this spring—that bid fair to make as good cows as the brindle, if not better. One of the steers mentioned above was this cow's calf. Steers of the same age as mine were sold last spring at prices ranging from 50 dollars to 70 dollars a pair.

The above statements, I think, show that our farming products may be doubled and even trebled, if only we will consent to leave the old beaten track a little. Permit me still farther to show this by giving some new experiments of mine in

Raising Grass.—In the first place, we can raise four tons of hay to the acre as well as two. Two years ago, in the fall, I turned over a piece of ground and harrowed-in a coat of manure. As soon as the snow was off, I sowed Clover seed and Herds-grass in equal parts, about a bushel and a half to the acre. The third day of July I mowed it, measured the land and weighed the hay, and had two tons per acre. September 7th it was mowed again, yielding a little over two tons of as nice hay as was ever put into the barn: all this, you see, from the seed the first year. A year ago, I fixed a piece of corn and Potato ground, and sowed it last spring in the same way and with the same result.

Again, on a piece of ground so run out that it cut only about half a ton to the acre, the Grass was cut the 15th of June, and a piece of about 22 square rods turned over. I had only four loads of manure, barely enough to fix the piece, but harrowed it in, however, sowed seed as above, and levelled and rolled. This was the 20th of June. On the 7th of September, the hay was mowed and cured nicely, and weighed 700 lb., or a little over two and a half tons to the acre.

These experiments, taken in connection with the matter of the steers and cow, show that our product of hay can be doubled both in quantity and quality, and that the improvement in quality doubles and trebles the growth of stock and the product of butter. If I had a cow as good as one that I spoiled with meal a few years ago, I think, with my present treatment, she would make 3 lb. of butter a day, instead of 2½ lb. as the above has done. I make these statements that your readers may look them over, and see that farming is only in its infancy yet, for I am satisfied that the results I have so far obtained can be advanced 50 per cent., and perhaps 100, yet. There have been great improvements in farming implements and the cultivation of many kinds of fruit and vegetables; but the most important part of all has been neglected, and that is the cutting of the hay crop. Instead of commencing haying about the 4th of July, and finishing in August or September, as has been the practice from time immemorial, all the Grass ought to be cut and in the barn at that time. *A. Scott, Craftsbury, Vermont, Jan. 29, 1866, in American Paper.*

Home Correspondence.

Royal Agricultural College Athletic Club.—The annual meeting of this Club took place on Wednesday, 17th inst., in Oakley Park, Cirencester. In spite of the somewhat soft state of the ground, owing to the late heavy rains, the athletic character of the students was well maintained, and some fine displays of activity, strength, and endurance were witnessed. Among the prizes, the one which excited the greatest admiration, provoking a severe contest, was a beautiful and costly silver cup, the gift and design of Professor Church. The prizes offered for competition were very numerous and valuable, comprising no fewer than 15 cups of splendid design and workmanship. The Rev. J. Constable, M.A., Principal of the College, and President of the Athletic Club, officiated as judge, and Captain Corbett as starter. The following is the order and results of the principal 'events," with the names of the successful competitors. Flat race, 100 yards—won by Mr. Albuquerque, time 10½ seconds. Flat race, quarter of a mile—Mr. Albuquerque, time 60½ seconds. Walking match, 1 mile — Mr. Swanwick, time 9 minutes 6½ seconds. Putting the 16 lb. weight—Mr. Willis, distance 30 feet 11 inches. Flat race, 200 yards—Mr. Albuquerque, time 22½ seconds. High jump Mr. St. Quintin, height 4 feet 11 inches. Flat race, 1 mile—Mr. Quare, time 5 minutes 13 seconds. Pole leaping—Mr. St. Quintin, height 9 feet 5 inches. Hurdle race, 500 yards, 20 hurdles—Mr. Pringle, time 1 minute 32½ seconds. Consolation race, 250 yards, 10 hurdles—Mr. Seaton. At half-past 6 o'clock a sumptuous dinner was provided in the College dining hall, at which Lord Bathurst presided, Canon Powell, Vicar of Cirencester, E. Bowly, Esq., Col. St. Quintin, and other friends were also present. The speeches were such as are usual on similar occasions. Lord Bathurst and the vicar in the course of their remarks spoke in flattering terms of the conduct of the students as residents in the parish of Cirencester. *W.*

Early Ploughing.—I have read the paper on "Early Ploughing" in the *Agricultural Gazette* of Oct. 13, with great interest, and as far as my knowledge goes, I agree with the writer in every thing; but I should very much like to ask the able author of the paper what he would do with his teams of horses during the spring and late winter months? It seems to me that the money you would save by early ploughing would be greatly diminished by having to keep your horses comparatively workless. Now, supposing, for instance, that you have all your fields early ploughed and brought into proper condition before seed time comes, when it does come, then you sow all you have to sow, and for the time you are happy; but what is the result if all your land is sown at the same time? Why, that when the harvest arrives your crops are all ripe at the same time, and the anxiety to be then endured getting it cut, carried, and stacked, falls much heavier upon the farmer than if they became ripe in succession. *F. S. T., Hafod-y-Coed, St. Asaph.*

Agricultural Labour and Cottage Accommodation.—These subjects are now the most popular ones at all our agricultural gatherings, and at the meetings of our farmers' clubs, and they do not escape discussion at the meetings for establishing chambers of agriculture—this excellent and newly revived feature in promoting and sustaining agricultural progress. May the movement greatly prosper! The labour question is the more important of the two. It deeply concerns the employers of labour, and it is felt by them to be surrounded with great difficulties. No man can shut his eyes to the astonishing demand for labour required to make our railroads and construct other of our amazing public works. And this has been going on throughout the past 35 years, *i. e.* a whole generation. Who can be surprised that agricultural labour should have been so little affected by it up to within a recent period? It has in fact taken nearly the whole of this long time, this generation, to absorb the excess of agricultural labour into the general labour-market of the country. Every practical farmer is well conversant with this state of things. He knows that until within a comparatively short time employment could not be found for the great mass of agricultural labourers, consequently they had to subsist upon very low wages. In many districts the wages of an able-bodied labourer did not exceed 8*s.* per week, and in others from 9*s.* to 10*s.* 6*d.* per week was considered good wages. It was impossible that this order of labour could be sustained with so many wonderful works going on all around. Of course the best and strongest men sought work on these immense undertakings, and obtained it, and at nearly double the price of agricultural labour. These employments soon became popular, and the migration of agricultural labourers to these gigantic works, and to railway employment, has been continually on the increase, till at the last it is discovered that the farming public have not wherewith to carry on the ordinary work of their farms. This then is the principal cause of the enhancement in price of agricultural labour. There is a scarcity; there is no other; and this can be supplied, and unless farmers can give something like the average of wages that can be obtained elsewhere, that scarcity will continue. There is another satisfactory cause of this enhancement in the price of labour—the general adoption of the improvements of our modern agriculture. This has led to a greatly extended expenditure in farm management of every kind, in which labour forms a very important part. These improvements are continually extending, and of course causing still further demands for labour, and to such an extent that ultimately it will absorb the whole population, *i. e.* men, women, and children. Now this climax is not to be regretted; it is just as it should be. It will enhance the condition of the agricultural labourer most satisfactorily, and will enable him to overcome all the difficulties of his position. Talk of cottage accommodation—it will be in circumstances to enable him cheerfully to pay the rent of a good and comfortable home. These comfortable cottages cannot be erected under a rental of from 4*l.* to 6*l.* annually, and the well-paid agricultural workmen can pay it. Besides, all these enhancements in the value of labour elevate the class. They will no longer subsist upon the meanest fare; they will obtain and live upon good and substantial food. Then a well-fed population increases astonishingly the demand for the common necessaries of life. This it is the especial business and privilege of the farmer to supply; this demand enhances the price. The producer, the farmer, is thus remunerated, so that in this very simple way all in the end is admirably adjusted. The labourer, from his reception of higher wages, can afford to pay the rent of a better cottage-home, and maintain his family upon better food. The farmer, owing to a vastly improved demand for his produce, receives such remuneration as to enable him to pay these higher wages; and the advocate and builder of improved cottages may rest assured that a reasonable percentage will be returned as

interest upon any outlay for cottage accommodation. Taking this homely and common-sense view and summary of the question, I see no reason why farmers should croak and grumble and despond. The thing will right itself in no very long time. If they should pay higher wages they will, as I have shown, receive in return enhanced prices. It is so now; wages are higher—so is agricultural produce. The transition state is in a great degree over. Labourers will have better homes, and they pay for them. In the district from whence I write this is decidedly the case; many old cottages are destroyed, and new ones built. All new cottages are far more comfortable. The old confined ones are alone tenanted by the very scum of the district—no respectable labourer will occupy them, and this will ere long be general. There is always a class of builders in every district who are ever ready to build cottages, provided the requisite interest on the outlay is forthcoming, and it will no doubt spread in others. I have long been a farmer—my payments for labour at the present time amount to about 25*l.* weekly—but notwithstanding I rejoice at the labourer's prospects. I rejoice in promoting his comforts, his respectability, his contentment. It costs me much, but he earns it, and my Potato, my corn, and my green-food crops, will, I trust, pay all. The heavier and better the crop, the greater the cost in labour. The sum and substance of all is in judicious culture, and a liberal order of management throughout the length and breadth of the land. British agriculture demands it. *O. F.*

The Rainfall of October.—In the last *Agricultural Gazette*, Mr. Mechi states that there is on the average 21 fine days in October, and he speaks of this month as being usually dry, whereas in this county we find on an average of many years past that it is the wettest month in the year. In 1855 we had no less than 8 inches of rain, and in many parts more during this month. And although in the dry year 1864, October was with one exception the driest month in the year, yet in the previous year we had no less than 4.25, or nearly double the monthly average; and in 1862, with the rainfall of the year 28 inches, we had no less than 5.75 of this in the month of October. Again, in this neighbourhood, during the eleven years from 1848 to 1858 inclusive, the average rainfall was 2.19, or 26.28 for the year; that of October during this period averaged 3.65, which exceeded that of the average of monthly fall during the wettest years of the eleven. On referring to the tables kept at Chiswick, I find that in the 20 years from 1841 to 1860, whilst the average monthly fall was barely 2 inches, that for October was more than 3 inches during this period. These facts I am aware are contrary to the general idea entertained, and although there are exceptions, as in the present year, when September, with its 6 inches of rain, will probably prove the wettest month of the year instead of the driest, all but three, these exceptions occur when the equinoctial gales set in unusually early. As the rain, when it comes in October, is generally very heavy, the average rainfall of the month is not inconsistent with the fact that we have a fair number of fine days, although hardly so many in these parts as the 21 stated by Mr. Mechi. Whilst mentioning this gentleman's name, in calling attention to a matter of interest, we may add that we do not think he has been fairly dealt with in some recent criticism which has appeared in your Paper. We know him to be rather enthusiastic or poetical when advocating important principles, and we may fairly make an allowance accordingly, but few readers imagined that he advocated for universal adoption the employment of so small a quantity as a peck of seed per acre, and he showed by experiment that this, under favourable circumstances, would produce a good crop, whilst on land like his own 1 bushel per acre, or one half the usual quantity, was amply sufficient to produce great results. And it is no small matter to prove this by trial year after year for 20 years and more. Then must be unusually wise, or more probably a very great fool, who on after a long course of years has no failures to acknowledge, no errors to recant. We know from experience that the majority of experiments, whether in agriculture or otherwise, end in failures, but these failures are redeemed by the fact that they are often as suggestive and almost as useful as successes. And we doubt not that if Mr. Mechi were candidly to give the agricultural world the benefit of an account of some of his principal failures in agricultural experiments (ere "the sere and yellow leaf is succeeded by the frosts of winter,") he would not only extract the poison from the fang of criticism, but would hand down some important facts as true metal free from the dross of error. *W. C. Spooner, Eling, Southampton.*

Societies.

Agricultural Chemistry Association, Belfast: *Horse-feeding.*—Mr. Robertson, of Clandeboye, was to have been present to read a paper on this subject. In the meantime he forwarded notes of the result of his mode of feeding, of which the following is the principal part:—

Last year I had the pleasure of laying before the members of the Chemico-Agricultural Society the results which had attended the introduction of a new system of horse management at Clandeboye. Having had another year's experience of the system, and feeling that the subject is one of considerable importance, I would, with your permission, briefly record the general results. But first let me glance at the system pursued. The year we divide into three periods—October, November to May inclusive, June to September inclusive. During the first period, the horses get about 18 lb. of chaff and 12 lb. of crushed Oats and Beans; "10) Oats and 14 Beans" per head per day. During the second period they get about 15 lb. of hay chaff, 12 lb. of crushed Oats and Beans, and about 3 gallons of boiled Turnips per head per day. During the third period they were turned out to graze during the night. In the day time, whilst in the stable, each animal is allowed about 50 lb. of cut Clover, and about 12 lb. of crushed Oats and Beans per day. The feeding is all under the charge of one person. He uses his own discretion in feeding the animals, though he is not allowed to exceed the quantities named. The horses to which I allude are the same on which the experiments commenced two years ago—six cart horses, one cart pony, and one riding horse. From Sept. 1, 1865, to and including August 31, 1866, the cost of maintaining these horses in good working condition; keeping the carts, harness, &c., in repair; shoeing, &c., was as follows:—

	£	s.	d.
Oats, 14 tons, at 16*s.* per cwt.	112	0	0
Beans, 2 tons, at 18*s.* per cwt.	1	0	0
Hay, 15 tons, at 3*os.* per ton	90	10	0
Green Clover	15	0	0
Turnips	5	0	0
Night soil	18	0	0
Linseed, cutting chaff, crushing Oats, &c.	7	4	0
Attendance	26	0	0
Blacksmith	5	0	0
Saddler	12	0	0
Carpenter	10	0	0
Tax per cent. interest on value, £410	5	10	0
Depreciation in value 10 per cent.	11	0	0
	427	4	0
Deduct cost of filling horse	5	0	0
	422	4	0

337. 11*s.* 10*d.* per head; if we suppose the available working days to be 300, allowing 13 for wet days, holidays, &c., the daily cost will be 2*s.* 2½*d.*; to this if we add 1*s.* 8*d.*, the wages of the driver, we shall have a total of 3*s.* 10½*d.* as the cost of a horse, cart, and driver per day. I would only add, in conclusion, that the horses are kept in good working condition; and, as a proof of their good health under this system, I may state that during the past two years we have not had occasion to require the services of a veterinary surgeon.

Gloucester Chamber of Agriculture: *Turnpike Trusts.*—At last week's meeting of this Chamber, Mr. Holland, M.P., presided; and there was a good attendance. Mr. A. C. Wheeler (the Secretary) prescuted returns from 20 farmers in the county—all, with the exception of Mr. Hewitt, of Westerleigh, near Bristol, living near Gloucester—showing that the total rateable value of their farms was 10,726*l.*, and that the total annual amount paid by them in tolls was 159*l.* 9*s.* Taking these 20 as a fair average, a rate of 3*d.* in the pound would be required to pay the present cost of maintaining turnpike roads.

Sir George Jenkinson then propounded a plan for getting rid of the existing turnpike trust debts. The total amount of debt is 130,000*l.* He would sell the houses and the toll gates for 15,000*l.*; 20,000*l.* of the debt belonged to the Crown, in the forest; that might very well be remitted. That would reduce the debt to 95,000*l.* Then the debts could not be reckoned at par, and he would take off 10 per cent. on that account—reducing the amount further to 85,000*l.*; 5 per cent. on that sum would be 4500*l.* He thought the Consolidated Fund should take its share in paying off the debt. Suppose it bore one-half, that would be 2250*l.* for the Government and 2250*l.* for the county. Taking the maintenance of the roads at 22,097*l.* a year, and adding the annual sum of 2500*l.* in respect of the debts, there would be required 25,000*l.* a year to maintain roads which now cost 50,000*l.* a year. Two county road surveyors might be employed. A 4*d.* rate would realise 30,000*l.* In 20 years the debts would be paid off; and then a 3*d.* rate would suffice.

Mr. Curtis Hayward saw great difficulty in making districts free from debt bear the burthen of less fortunate districts.

Sir G. Jenkinson said the Sodbury Trust, which had been put in the schedule as free from debt, were going to join with the Cirencester, an insolvent company. If, therefore, Sodbury was willing to pay for Cirencester, and Cirencester for Sodbury, why should not that principle be applied to the whole county?

Mr. Cadle said the debt was originally incurred to improve the through roads in order to give facilities to the Government; why then should not Government be asked for the whole of the debt?

Capt. De Winton thought the Government ought to do so; but he did not think there was the slightest chance of their doing it.

Mr. Long said, suppose they did not, then there would be only a rate of about 1*d.* in the pound to pay.

Captain De Winton said those districts which were out of debt would ask—"Why should we pay for those which are in debt?"

The Chairman said no new trusts were formed, and all were decaying by degrees. He questioned how they were to avoid injustice when they had trusts which were in debt and others which were free. He added that he should be glad to hear that the highway districts furnished the machinery by which the roads could be maintained, and gave an instance of this in the Winchcomb district.

Sir G. Jenkinson said his object was to extend the area of payment. He was satisfied the principle was a right one, and he hoped the farmers would support the magistrates, and petition for a Bill to carry out what he had hastily sketched. If the Government refused, our county members might bring in one. He (Sir George) would do so if he had but one supporter, being satisfied that all the county roads should be maintained by a county rate. By this means a large sum would be saved; and instead of exceeding their expenditure they would probably reduce it by better management.

Stock from Denmark.—The Chairman said a letter from the Royal Society of Denmark drew attention to the large quantity of stock in that country which they should be happy to dispose of to English farmers, and at the next meeting he should be prepared with details to show how this stock could be obtained without any risk being incurred from the transaction.

Worplesdon *Ploughing Match, &c.*—At the annual gathering of this Ploughing Association near Guildford, Sir W. Bovill, M.P. (the President) occupied the chair; and said he had on former occasions called attention to the progress that had been made in the parish during the time he had been a resident, and he had witnessed with pleasure the exertions that had been made and the various improvements which had been effected throughout the parish. Several years ago it was suggested that things were in that condition when a little further progress was desirable, and that the Worplesdon Ploughing Association should be established in order that some improvement might be effected in the condition of the agricultural labourers, and that more attention should be turned to the discussion of agricultural subjects. At first the number of members was small, and many persons held aloof because they thought it would not be possible to form and support an independent association. Many of the farmers looked on with a considerable degree of distrust; but as time went on they all became satisfied of the advantages which would be conferred by the society both on the employers and the employed, and an opportunity was afforded of giving prizes to the agricultural labourers. For his own part he had watched with much interest the mode in which the labourers had received the prizes, the interest with which they had looked forward to the annual meetings of the society, and the anxiety they had manifested to bring their wives and children together on such occasions. He knew of no institution which had produced greater good among the vast body of the farmers and labourers throughout the parish. He believed that every society which associated the clergy, the gentry, and all the inhabitants of a parish, and brought them into communication with the labourers, did good not only for one day, but throughout the whole period of the year. The farmers, he was happy to say, had liberally come forward on the present occasion. There were certainly some who still stood aloof, but he hoped the example which had been set them, and the large gathering which had taken place, would show them that the Ploughing Association at Worplesdon was highly appreciated by the farmers and the neighbourhood at large, and that they would assist it by increased contributions. There were few landowners in the parish, and the great proprietors in the district were generally unable to be present. He believed that the landed proprietors who could attend were glad to meet those persons who stood in a different position, and were always willing to discuss and consider the position of the landlords and tenant farmers assembling together, in contrast to that or any other parish. He himself paid some attention to the reports of the agricultural societies and the various matters which they discussed. He observed that some of the farmers were in favour of long leases, while others preferred annual tenancies. But he believed there was nothing which tended more to promote the interests of the farmers in connection with the labourer than an intercommunity of feeling between the two—that feeling which enabled a master to keep a man for 27 years, two instances of which had occurred in the parish; and there was another case in which a man had lived in his place for 16 years. He believed that such circumstances could occur only from there being a deep sympathy existing between the employers and the employed, that best bond of all good feeling and fellowship, which he hoped would continue to extend throughout the parish, producing many competitors for the prizes for length of service at every meeting of the association. Such feelings reflected as much credit on the employers as on the men, and if they could all boast of retaining servants for long periods of years, Worplesdon would be one of the happiest parishes in England. There were boys of 16 who had lived with their masters for periods varying from six to four years, setting a good example to others. There was another important matter deserving of notice, and that was the friendship which existed among all classes. He had read leases and covenants and deeds by which a man was made dependent on his landlord, but he believed there ought to be the same identity of feeling between landlord and tenant, and better than the security of leases was the feeling that each could rely on the other. He believed that every landlord in the county would be glad to have such tenants as Mr. Burt, two of whose servants had carried off prizes for length of service—a tenant with whom and position a landlord might safely rely without a lease or document of any kind. This was a sort of tenure which he should like to see prevail, and he was not sure whether for the last 50 years Mr Burt and those who preceded him had not gone on without a single scrap of paper as a security. He believed that the interests of both landlords and tenants would be best promoted by cultivating the good feeling which existed on the part of Mr. Burt and his landlord, and then they would be able to perform their relative duties without a lease as well as with one. He was glad to see such a large gathering, and if the association went on increasing as it had hitherto done, he believed that it would be necessary to erect a large tent for the accommodation of the visitors. The success of the association was complete, and he invited all present to pledge themselves by drinking "Success to the Worplesdon Association."

Albany State Fair: *Dairy Farming.*—At this annual gathering in the States, a discussion took place on this subject, which we condense as follows:—

S. S. Whitman, of Little Falls, said there were two principal interests involved in dairy farming. The first, the money-making interest on the part of the

manufacturers, and the second, the interest of the consumers, in procuring the best cheese and butter for their own consumption. He spoke with severity on the want of cleanliness in many dairies. Milk, in all its manipulations, requires more care than any other article of food. Those who are old enough to be acquainted with Webster's old spelling book, will remember the allusion to the "churn as white as ivory," and to the "butter as yellow as pure gold;" and he thought that some dairymen at the present day deserved the compliment. Their dairies were spacious and well ventilated, were kept perfectly clean, sprinkled with sawdust, and with platforms for the attendants to walk upon. The cows were allowed clean bedding or ground to lie upon, and if the udder accidentally became soiled, it was washed with water, and wiped with a towel before milking commenced. The same care was observed with the hands of the milker. When consumers witnessed such care as this, they need ask no further questions as to the quality of the cheese and butter they were about to purchase. In contrast with this perfect management, he spoke of the dirty and muddy yards too often seen, where no care could keep the milk clean—when it rained the water ran down the animals' backs into the pail—the milkers' hands being dirty and wet, added to the difficulty, and the cheese needed no annato when there was plenty of this kind of colouring. He did not think cheese factories would remedy these difficulties, because the processes of milking and making cheese are removed far from each other, and beyond the reach of the eye of supervision. Clean managers do not like to send their milk to be mixed up with poorer stuff. The remark does not apply so much to butter-making, as the cream rises and the dirt settles.

Mr. M'Graw, of Tompkins Co., said a good article of cheese or butter could never be made, unless the milk is taken care of in the best manner. He deemed it a subject of the greatest importance. He had in former years bought much cheese and butter, and had never lost anything on his purchases from the managers of clean dairies. The reverse had always been the case, where cleanliness had not been attended to. The hands of the milkers should always be previously washed and wiped with a towel, and the same care observed with the cow's udder. In addition to this, the dairy-yard should be far removed from all the offensive odours of manure heaps, pigstyes, &c. He was also satisfied that the most perfect cheese and butter could not be made where the country did not abound with soft water.

Mr. Faxton, of Oneida Co., did not agree with the last speaker in relation to the necessity of soft water. He had for more than 20 years purchased his butter of a farmer who lived on limestone land, and whose farm fences were limestone walls, and he had never found a better article. Since he had ceased to obtain his supplies from this limestone farm, he had not been enabled to procure so good an article.

Mr. M'Graw rejoined by stating that city purchasers of fine butter always made the inquiry where the butter came from; if from a soft water region, they were willing to pay a high price for it; if from the land of limestone, they did not want it.

L. F. Allen, of Erie Co., corroborated this statement. He admitted that excellent butter could be made on limestone soils, but that it would not keep long; it became rancid in less than three months. He had no doubt that Mr. Faxton had found his limestone butter excellent, because it was eaten soon. In the Western States, where limestone prevailed, a great deal of the butter when sent East, has been sold under the denomination of "grease." He cited several instances of failures where large dairies had been commenced on low limestone lands, instead of hills. He thought the dairy region of the United States very small, being confined to the hilly soft-water regions, the boundaries of which he pointed out in part.

George Geddes replied by mentioning the well-known fact that Cortland county, admitted to be an excellent dairy region, abounded with hard water, and all its valleys were covered with limestone boulders. He said this subject was thoroughly discussed several years ago and not settled, and he thought it would not be now. He ridiculed the idea of purchasers asking about the soil where the butter was made, and asked how would it do to apply the same questioning to the purchasing of wool, and instead of inspecting it, to ask whether it was grown in this county or that. He thought that butter purchasers would do best to examine the taste and odour of the packages of butter presented to them, instead of asking where it was made.

Mr. Thomas, of Herkimer Co., thought there were other causes of poor butter and bad cheese. Much depended on the diseased or healthy condition of the cows—whether the udder was kept healthy by always milking clean, and on pure air and pure water. He thought a part of the difficulty in making perfect butter arose from the use of Red Clover pasture, which does not answer so well as Grass and White Clover. Another difficulty arose from mixing second and third milkings together. The milk should always be fresh for cheese.

Mr. Hawley, of Onondaga Co., agreed with nearly all that had been said in relation to cleanliness. It was also important that no vegetables should be kept in the dairy cellar; butter in the same room with Onions would soon become tainted with their odour. Firkins should be air-tight, or their contents would become rancid. Conveying it carelessly to market, and placing it in the hot sun, often injured or spoiled it. He said that A. B. Dickinson had taken butter to Central America with the firkins put in barrels, and surrounded with salt; some had been thus kept three years and found perfectly good. Farmers were too careless in selecting the salt they used.

Mr. Thomas, of Herkimer Co., said the best way to prepare firkins for receiving butter was to soak them two days in sour milk, and then scald them; the butter would come out freely and nice. The top of the firkins should be covered with half an inch of salt, and enough water added to wet it. Care should be taken not to remove this covering to show the butter, until needed for use. He added that cheese factories are proving unsatisfactory; that some contributors had practised fraud, by dissolving salt in the milk, to give it greater weight; that honest men did not like to be placed along with them; and the factories, he thought, were destined to go down. Cheese could be made cheaper at home, and the owners see that everything was managed right. The demand for very large cheeses had passed away, and those from 40 to 60 lb. sold best. As good cows will make from 2 to 3 lb. of cheese per day, no farmer who has 20 cows can make cheeses large enough. Factories may do for those that have but five or six cows.

Mr. M'Graw advocated the advantages of cheese factories, by stating that while single farmers might find it difficult to obtain first-rate dairymen, one head man in a factory would do for many. He said that three pounds of cheese could be made to every pound of butter. Cheese had sold for 19 cents per pound, which was rather more profitable than butter-making.

Farm Memoranda.

Dairy Farming in Leicestershire.—Dairy farming is the great feature of this division of the county. From 20 to 30 cows constitute a fair-sized dairy, although in exceptional instances these numbers are doubled.

To illustrate the management adopted on these farms we give the practice of an occupier near Market Bosworth, in the centre of the dairy district.

In extent this farm is 230 acres, 80 arable, the remainder permanent Grass. 32 dairy cows are kept, the breed a coarse variety of Short-horn; and here, as in the district generally, the quality has of late years been considerably improved by the use of well-bred Short-horn bulls.

From May to December the cows are depastured in the fields. About the beginning of the latter month they are taken up at night, and turned out to the pasture during the day, their stall-food being a mixture of straw-chaff and pulped roots, seasoned with a little meal; hay or hay-chaff being substituted as they approach the calving season, about the end of February.

Although the failure of the root-crop did much to popularise chaff-cutting and pulping, the practice is yet by no means general, and in this matter this farm may be somewhat exceptional.

The cows calve chiefly in March and April, and are milked up to the second week of December, being dry on an average about three months.

Such calves only are reared as are required to fill the vacancies occasioned by drafting the old or otherwise unsuitable cows, one calf per year for every four cows kept being the usual proportion, the others being sold for veal, and to the grazing farms to rear.

The heifer calves reared have new milk until 14 days old, and are then introduced to porridge of Oatmeal or Linseed, but some give sweet whey, and others keep to new milk until weaning time. About the beginning of May, if the weather is dry, warm, and otherwise favourable, they are turned to Grass; being brought up daily for the space of a month or six weeks for their porridge or other pail food.

On the approach of winter they have a little cake or meal, with hay and straw chaff, given in a shed in the corner of a well-sheltered Grass field, to which they have free run; and this, which in some instances is varied with cut or pulped Swedes and straw, constitutes their first year's keep.

During the second summer they are grazed on the store land, and the second winter "done hard," having the run of the pastures, and in the case of a snow-storm a little straw, and if Turnips are plentiful a few are given, but this is not the rule.

In July and August of their third summer they are put to the bull. They then receive during the winter the same food as the cows, and have their first calf about the beginning of May, being then a little over three years old.

The cows are drafted according to their suitableness for the dairy, some going out after their first calf, while really good milkers are kept to 10 or 12 years of age. They are usually sold to the grazier.

Punctuality in the time of milking is considered an essential point, 5 o'clock A.M. and 5 o'clock P.M. being the usual hours. It is good policy to have a strong staff of milkers; on this farm one man to six cows is allowed.

The staple product of the dairy is whole-milk cheese, two being made per day, both in the morning, the previous evening's milk being added to that of the morning. Some prefer all new milk, and make one cheese in the morning and another at night. A very successful exhibitor at the cheese shows, who follows the former mode, takes great pains to prevent the cream from rising on the evening's milk, and attributes much of his success in the production of a superior article to his care in this respect.

The produce of cheese per cow depends much on the quantity and quality of the food, and varies from 3 to 4½ cwt., ¼ cwt. being a rather high average.

From ½ lb. to 1 lb. of whey butter per week per cow is also made, the quantity varying according to the care exercised in making the cheese. By overheating the milk, or careless manipulation of the tender curd, an excessive quantity of butter passes into the whey; and its paucity is a good criterion of careful cheese-making.

The whey is consumed by pigs (though some give it to calves). This, with the butter, is valued at from 30s. to 50s. per cow per annum.

Pig breeding and fattening forms an important branch of dairy farming. The breeds are various, the Tamworth being a favourite. When pork is the object, meal is given along with the whey, and the pigs fatted and sold at five months old, weighing about 6 score lbs.

Those designed for bacon are, for the first three months after weaning, carried on as stores, their principal food being whey; and they are then fattened off, making from 10 to 14 score lbs.

On the farm referred to, about 24 porkers, averaging 7 score, are bred and fattened per annum.

Sheep are not a leading feature of these dairy districts, but on every farm a small number, chiefly as adjuncts to the cows, are kept; usually a breeding flock. In some instances the ewes are bought annually and put to the ram in September. During the winter they have the run of the dairy pastures, a little hay being given in the case of a fall of snow. The most forward of the lambs are sold fat, and the remainder as stores; the ewes also being fattened and sold towards the autumn.

Others maintain a permanent flock, selling the wether, and keeping the ewe lambs to fill up vacancies. Sometimes the practice is varied by wintering the lambs, and selling fat as shearlings in the September and October following. On farms where the lambs are sold fat, about 30 ewes to 25 cows is the number kept.

The 80 acres of land on the above farm are cropped on a five-course rotation, viz., roots, Barley, seeds, Oats, and Wheat. The soil being very strong, six horses are required. The Swedes and Mangels are sown on the ridge, and White Turnips drilled on the flat; for the former the dressing being farmyard and also artificial manure, for the latter one or the other, but seldom both. The grain crops are all drilled, and either horse or hand-hoed.

The reaping-machine is used, and found of much service, economising both time and money.

The Oat stubble is broadshared immediately after harvest, and lime at the rate of 2 tons per acre applied and ploughed in for the succeeding crop of Wheat.

The Clover is mown for hay, as are also some watered meadows; the latter have been annually mown for the last 50 years without any appreciable deterioration, the only restorative applied being the water, which is turned on in November, or sometimes later, if at that time the Grass is not eaten close down.

In this and various other districts of the county there is a considerable extent of water-meadow, but they present nothing new or peculiar in their management.

In spring the dung of the animals depastured during the summer and winter is knocked about, but the collection of the fresh dung from the pastures is rarely practised.—*Mr. Mennegap in the Journal of the English Agricultural Society.*

Chatteris, Isle of Ely, Cambs.: *October* 22.—The time has now arrived when we can give with greater correctness a report of the produce of the late harvest. Just prior to the commencement of reaping we formed an opinion, which subsequent facts have proved to have been too sanguine. We then thought that the Wheat crop bid fair to afford something more than an average. But no sooner was that opinion expressed than adverse and ungenial weather set in, which continued for more than eight weeks. The heavy crops were laid sadly too much by the repeated storms, and were seriously affected by both blight and mildew, and are consequently yielding from one to two sacks per acre less than had previously been expected. On the whole, very few lands are there the crop was thick, and not much laid, the yield is fully as good as we expected; but as these form the exception and not the rule, we must pronounce the crop in this immediate neighbourhood below an average. Some of the earlier stacked Wheats are going to market in very good condition, and the demand for them is active; but there are many stacks which must stand until we get good drying winds ere they can be brought out for grinding. We heard a farmer remark the other day he had threshed and sold all his dry Wheats, and what were left must stand, and await suitable weather, ere they could be touched. There is therefore a strong probability that good dry sound Wheats will be very sparingly supplied for some weeks to come, and we shall not be surprised to see them selling at considerably enhanced prices before the end of the year.

We have threshed but little spring corn at present, and cannot, therefore, speak with very great accuracy as to the yield; but the little experience we have gained tends to re-assure us, and we see no reason to alter our previously expressed opinions, but still think Oats, Barley, Beans, and Peas are quite up to, if they do not exceed, an average.

The harvest was one long to be remembered. Eight weeks and one day we were engaged in harvest work every available hour when weather permitted. There was necessarily much anxiety felt, and much labour involved in such a long tedious harvest, and the cost of it was excessive. In this neighbourhood there was much less real loss experienced than might reasonably have been expected. During the first half of the time the weather was showery and the interruptions were frequent; but the rains were not heavy, and the corn was soon dry again, and was stacked in very fair condition. The weather was more hindering than hurtful, but subsequently the rains fell heavier, and sprouting became general, and would have been very serious had it not been for the cool drying winds which continued almost daily. On one day we had more than a good wind, it blew a perfect gale, and the ripe Wheats suffered severely; in some instances we believe from one to two sacks per acre were blown out.

The long continued rains making the strong lands wet and tenacious, and the late completion of the harvest, compelled us to abandon all attempts at

autumnal steam cultivation. We were therefore unable to show the committee from the Royal Agricultural Society the apparatus at work when they visited us last month. We regret our inability to perform our usual steam work, as the benefits we have derived from it in the past few years we conceive have been very considerable. A fine dry spring may enable us perhaps to accomplish to some extent what we have failed in doing this autumn.

Immediately the harvest was over we commenced preparing our Fen lands for Wheat. We find it an advantage to get these lands sown rather early, so that the plant gets a good strong root-hold before the frosts of winter. By giving our undivided attention to this work, we succeeded in getting all our Fen Wheats (226 acres) sown by the 20th inst., and with a continuance of the present warm weather they will not be long ere they are up green.

Grass keeping has been, and still is plentiful, and all stock, except lambs, are thriving; these on some farms have suffered from scouring. We have been singularly favoured. We bred 152, and from April 6 to October 11 (from Lady-day to Michaelmas) did not lose one, and up to this date have lost but one, and that a delicate and sickly animal. We have them upon Cole-seed now, and give them Oats, Pea husks (sometimes called Pea-chaff, but properly Pea-bran), and cake made from malt. We have also 230 feeding sheep upon Cole-seed, and these as well as the lambs all go into yards of a night and eat straw with their cake and corn. We have about 600 sheep altogether, which we shall use this winter as manure manufacturers. We still think in these Fen districts that sheep can be used for this purpose with greater advantage than any other animals. Where we have no roots we are buying a few Scots and yearling cart colts to tread straw down. Manure must be made even if at a loss, but we much prefer when we can do it at a profit, hence we like sheep better than cattle for the purpose. *A. S. R.*

Calendar of Operations.

Shirreff's Bearded Wheat. Talavera. Pringle's Bearded Wheat. April Wheat. Hallett's Pedigree Wheat. Shirreff's Red Wheat.

October: *Selection of Seed Wheat.*—The following figures are taken from *Morton's Farmer's Calendar*,* and are reproduced here with the accompanying descriptions in connection with the question of choosing seed Wheat which is now occupying attention. It may be well to read these notices along with the report given in our columns the other day of trials of seed Wheat, taken from the Transactions of the Highland Society:—

No. 1 is an ear of Mr. Patrick Shirreff's new Bearded White Wheat, for which he has received the Highland Society's medal. It is one of several new Wheats, some of which are named farther on, for which we are indebted to Mr. Shirreff's patience in selection and perseverance in cultivation up from single ears, until a stock of sufficient quantity and of well-ascertained quality has been obtained. No. 1 resembles very much Pringle's White Bearded Wheat, represented at No. 3. It is difficult to distinguish the ears of the two sorts, but there is no difficulty in distinguishing their seeds. The grain of Shirreff's is short and rather small, white, transparent, and pearly looking. The grain of Pringle's is a little larger and longer than Shirreff's, shining and white with a rich creamy tinge. Both are new sorts of sufficiently well-ascertained merit to deserve representation here, but without a long-established character such as other sorts possess.

No. 2 is the Talavera White Wheat, easily recognised by the distance between the sets of florets on the rachis of the ear. Col. le Couteur's Bellevue Talavera Wheat is one of our best sorts for spring sowing. It is a White Wheat of good quality, and sufficiently prolific. The straw, though short, is brittle; but it is stiff, and well adapted for cultivation on rich land.

No. 4 is another spring Wheat, a Bearded Red Wheat, commonly called April Wheat, from the time up to which it may be sown. It is a very productive sort, of fair quality; and justice is not done to it in the specimen selected for representation. It is referred to above as coming into more general adoption. This is especially the case on the chalky land of some of the southern counties.

No. 5 is Hallett's Bearded Red, another sort due to Mr. Patrick Shirreff, of Haddington, who selected it about five years ago, and thus describes it. "It is an autumn variety, ripening early, tillering freely, not apt to lodge, and characterised by a long beard. This appendage seems to have been attached to the chaff of the original Wheat plant, as a great majority of the varieties over the globe are found to have beards. The strength and elasticity of the beard of this Wheat prevents the wind shedding the grains at the apex of the ear, and by admitting air into the sheaf, the sprouting of the grains is checked in wet seasons, and the hardening of them promoted in fine weather. Under no circumstances is the beard found to be injurious, and in the fickle climate of Britain it is highly advantageous."

In the figure containing these three sorts, No. 4 suffers by its neighbourhood to the fine ears of Hallett's and Shirreff's Wheats in Nos. 5 and 6. It is unquestionably inferior to either of them, for of Hallett's sort we have seen ears 8 inches long, and containing 120 grains. The April Wheat shown on this figure appears to us, however, of less vigorous growth, not so bold, nor of such breadth of ear as it generally exhibits.

No. 7 is the common Red Lammas Wheat, the original of a great many other sorts, most of which are barely distinguishable from it. Mr. Lawson describes it as having been originally from France. It yields grain of good quality and fair productiveness, and is probably at this moment more largely cultivated as a Red Wheat than any other sort. Many sorts are hardly distinguishable from the Red Lammas except by name and local reputation. And as resembling it we may here name the so-called Nursery Wheat, a commonly cultivated sort of good quality.

No. 8 is the White Essex Wheat, of a white colour, transparent, and thin skinned; much approved by the miller; resembling many other kinds, as Uxbridge and Mungoswells (another of Mr. Shirreff's Wheats) in the form of its ear; somewhat long in straw, and not so early in ripening as some other kinds. These characteristics are taken from Lawson's account of it.

No. 9 is the Spalding Red Wheat, a coarse productive sort, strong and stiff strawed, and the original of a number of well-known sorts, among which we name Browick Red Wheat as one of the best. These are all

* Warne & Co., Bedford Street, W.C.

tall, stiff-strawed Wheats, well adapted to the rich, fenny districts where they originated, of vigorous growth and productive. Spalding Wheat is said by Mr. Haxton to have often yielded 8 quarters per acre in Fifeshire.

No. 10, Chiddam White Wheat, though represented in the drawing as almost equal in length and strength to the ear of Spalding, is rarely so long and fine. It is remarkable for the quality of its grain, which is white and starchy, round and heavy. It is well adapted to the lighter class of soils in the southern English counties, and is much cultivated on the chalk lands of Surrey.

Lammas. Essex. Stoddon Chiddon

Miscellaneous.

On Crops grown in Ridges.—I had observed that formerly in my part of the country it was the custom to ridge up land that had been neglectfully cultivated, in order to bring it back to its former good condition. This custom had almost become obsolete, and I frequently wondered why it did not become general, as it improves the soil and rids it of weeds. The dearness and rarity of manual labour caused me to reflect upon introducing on my own farm cultivation in widely set ridges. I had the hope of thus growing larger crops at less cost; meanwhile, I wanted a combined implement to enable me to do the work well. A large size of Howard's double-breasted ploughs enabled me to attain the purpose, with a drill which I had modified for sowing Beetroot, Turnips, and Colza. This mode of cultivation is at once advantageous and economical, and suits all soils. In stiff land it sweetens and fertilises the soil by exposing a maximum of surface to the action of the atmosphere. It suits also light soils with a thin layer of humus, for in heaping up the land to form the ridge the cropping depth is in some sort doubled. All my ridges are set 32 inches apart. Ridges cause the soil to mix, and fermentation to take place rapidly, because all the atmospheric principles play a double part. The time of sowing is accelerated; it can be done even in wet weather, and as well before winter as when the frosts are over. The apparatus used, and a specimen of the cultivation, will be exhibited during the time of the Paris Exhibition of 1867 on the Island of Billancourt. The only way to appreciate this mode of cultivation, and to know the result of it, is to examine it with one's own eyes. It would take a great deal of writing to enumerate all the advantages of growing crops in ridges; those who personally examine it will understand them. One of its advantages I have omitted. When we have heavy rains after sowing Beet on the flat the earth becomes glazed—a crust is formed which prevents the Beets from shooting up; the plant is then like a cork-screw in a corked bottle. This inconvenience is avoided by planting in ridges. *M. Decrombecque, of Lens, near Arras, Pas de Calais, in the Journal d'Agriculture Pratique.*

Labourers' Wages.—Mr. Herman Biddell, of Ipswich, having doubted the statement of the Rev. Canon Girdlestone that wages in his agricultural district were only 8*s.* a week, has received the following letter on the subject:—

"Canons' House, Bristol, Oct. 22.

"Sir,—I have just read your letter in the *Times* of to-day. I am not at all surprised that my statements almost surpass your power of belief. Nevertheless these statements are of facts which have passed daily before my eyes during the four years I have been Vicar of Halberton. That parish contains nearly 8000 acres, and there are in it, more or less, about 60 farmers. With very few exceptions 8*s.*, and in some cases only 7*s.* a week, are the wages given to an able bodied agricultural labourer. I believe the same scale of wages, or nearly so, prevails in a large part of the county of Devon, but I will only vouch for what I personally know. In one family, for which I am thankful to say, I have a better berth in prospect, the man—a young, strong, industrious fellow—has 8*s.* a week wages if the weather be fine, from which 1*s.* 1*l.d.* is deducted for rent; so that he brings home never more than 6*s.* 1*d.* for food, clothing, and fuel for his family, consisting of a wife, three young children, and a fourth on the way. This is not by any means an uncommon case. In many instances deduction is made not only for rent but for grist at the farmer's prices, so that the labourer sometimes does not carry home more than 3*s.* 6*d.* a week in coin. I know of two strong lads in one family, aged respectively 16 and 14, who receive from the farmer who employs them, the one 3*s.* 9*d.*, the other 2*s.* 6*d.* a week; and the farmer, reckoning these miserable earnings of the two lads together with the father's wages, stated in a public paper that he gave his labourers 14*s.* a week. In some cases the labourers are not allowed to keep pigs, lest they should steal food for them from their masters, which I verily believe they are far too honest under any circumstances to do. It is only in a very few instances, which I acknowledge with thankfulness, that in case of sickness or accident the farmers are really kind to their labourers, while it more generally happens that they leave them wholly to themselves, their club, if they have one, the poor-rate, and me. It is seldom that they can get even a pint of milk from their employer. A shepherd near me broke his ribs in his master's service. Owing to his being shepherd, he had his house rent free, in addition to his 8*s.* wages. But during his illness his rent was stopped out of his son's wages. You will see, then, that by mentioning the bare amount of wages only, without the addition of such particulars as I have now supplied, I have rather understated than overstated the case.

I send you a copy of an address I lately circulated among my parishioners, that you may see the sort of way in which a large number of Dorchester labourers have in the old-fashioned year just past had all they required. Indeed the condition of the labourer I am happy to say, however, that the work of emigration is going on steadily. Those labourers whom I have succeeded in persuading to other places were the worst that anything would induce them to return to Halberton. I have deservedly received from an answer to my appeal in my last letter in the *Times*, which I find to bring the cost of emigration to a minimum. I beg I may not be supposed addressed to me at Canons' House. Bristol is only my duties at the city I oblige me at present to reside. Your obedient servant, *Edward Girdlestone, Rector of Halberton, Vicar of Halberton.*

Notices to Correspondents.

ANONYMOUS. *No. 6th.* This effect could be produced by the cows feeding on old pasture on which the old Rye-grass stems have not been mown. A field left to itself for Rye-grass Remove the cattle and allow the field to lie as long as possible, if this has been given, then it is fresh ploughed and cleaned, and sown immediately on the ground that has absorbed, or the soil not to be so.

DORSETSHIRE. *Bowing on Grass.* *J. H.* The letter on this subject referred to by you appeared in Wednesday last week's paper, published in the *Times* of the 11th inst., and in that of the 10th, as stated.

EARL OF CRAVEN, *Combe Abbey, Coventry.* Apply to the Earl, at the Company, Bedford Street, Covent Garden, or to the Rev. H. Moule, Fordington, Dorchester.

GREENHOUSE. *Plants.* It is a mixture of caustic lime and carbonate of lime, with lime containing combined with it sulphuretted hydrogen, or sulphide lime, which gives off it out of the cells when exposed over it for a long time. In so far as it is combined with this sulphuretted hydrogen, it will, by exposure to air, become gypsum. A waggon load of as much sweetened as two waggon loads per acre, is used. Then spread it under it into contact with earth, and turn it over several times before putting it over the land. It is most commonly applied to clay land than light soil. Coal ashes may be useful to put on coarse Grass land where there is no Clover.

L'EXTINCTEUR asks for the address of the London, Manchester, or Cardiff agent for *L'Extincteur*, a French invention for extinguishing fires with water charged with carbonic acid gas.

SALT. *Salt.* (From every part are will not kill weeds on light land. You must get it weeds up by scarifying, harrowing, gathering, and burning. Earlier in the year you might have done a good deal to it by mere sunshine.

STEAM CULTIVATION OF LIGHT LANDS. *Farm. W. H. O.* We are informed that the paragraph beginning "Steam Cultivation," in the first column of page 984, is likely to cause an erroneous impression, and requires some explanation. The facts are that his Lordship had the identical First Prize set of Fowler's small tackle from Leeds, which turned out a failure; that Messrs. Howard afterwards supplied his Lordship with an engine, and one of their steam-cultivators; and that the breakage referred to happened to Fowler's, not to Howard's apparatus.

Oil Paint no longer Necessary.

HILL AND SMITH'S PATENT BLACK VARNISH for preserving Iron Work, Wood, or Stone. This Varnish is an excellent substitute for oil paint on all out-door work, and is fully two-thirds cheaper. It may be applied by an ordinary labourer, requires no mixing or thinning, and is used cold. It is used in the grounds at Windsor Castle, Kew Gardens, and at the seats of many hundreds of the nobility and gentry, from whom the most flattering testimonials have been received, which HILL & SMITH will forward on application.

From CHAS E. B. SHEDLEY, Esq., *The Grange, near Boston.*

"I have much pleasure in giving you a reply to your inquiries about the Black Varnish I have had from you for the last two years. It has answered my expectations fully, and as far as I am able to judge, it is the best material for preserving iron fencing, gates, and other wood work exposed to the air; and I can with safety recommend it as the best and cheapest article that is yet out. Wishing you every success."

Sold in casks of about 30 gallons each, at 1*s.* 6*d.* per gallon, at the Manufactory, or 1*s.* 8*d.* per gallon paid to any Station in the kingdom.

Apply to HILL & SMITH, Brierly Hill Iron Works, near Dudley, and 22, Cannon Street West, E.C., from whom only it can be obtained

JOHN WARNER AND SONS, 8, Crescent, Cripplegate, London, E.C., BELL and BRASS FOUNDERS to HER MAJESTY.

No. 39.

No. 42.

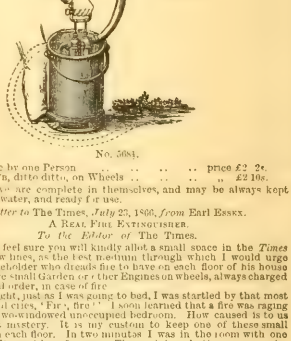
PATENT CAST-IRON PUMP, fitted with J. W. & Sons' Metal Bucket and Valve, which cannot clog in action, for Wells not exceeding 25 feet.

Bore.	Height.	£	*s.*	*d.*
2¼ in. short	1 ft. 7 in.	1	1	0
2¼ in. long	3 ft. 3 in.	1	8	6
3 in. long	3 ft. 6 in.	2	1	0
3¼ in. long	3 ft. 6 in.	2	6	0
4 in. long	3 ft. 6 in.	2	11	0
2¼ in. short, with 16 feet of lead pipe attached, ready for fixing		2	0	0
2 in. long, do. do.		2	11	0

Price of 4¼-inch Liquid Manure Pump, with legs, £2 15*s.*; 2-inch Flexible Rubber and Canvas Suction Pipe, 2*s.* 6*d.* per foot. The Barrel is 27¼ inches long, and the legs are 5 feet high.

IMPROVED LIQUID MANURE or GENERAL PORTABLE PUMP.—These Pumps are fitted with J. W. & Sons' Patent Bucket and Valve, and cannot clog in action. The Barrel is made of Galvanised Iron, not likely to corrode, and can be raised or lowered at pleasure on the stand, the legs of which fold together, and it may be carried with ease by one man to tank or pond.

WARNERS' PORTABLE FIRE or GARDEN ENGINE.



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£2 2*s.*

For use by one Person .. .. price £2 2*s.*
No. 5472, ditto ditto, on Wheels .. .. „ £2 10*s.*

The above are complete in themselves, and may be always kept filled with water, and ready for use.

Letter to The Times, *July* 23, 1866, *from* Earl ESSEX.

A REAL FIRE EXTINGUISHER.

To the Editor of The Times.

"Sir,—I feel sure you will kindly allot a small space in the *Times* to these few lines, as the best medium through which I would urge every householder who dreads fire to have on each floor of his house one or more small Garden or other Engines on wheels, always charged and in good order, in case of fire.

"Last night, just as I was going to bed, I was startled by that most fearful of all cries, 'Fire, fire!' I soon learned that a fire was raging in a large two-windowed unoccupied bedroom. How caused is to us still a great mystery. It is my custom to keep one of these small Engines on each floor. In two minutes I was in the room with one of them. It was like a furnace. The curtains, shutters, casements, and cornice of both windows were burning and cracking from floor to ceiling. I was quite alone at the moment, yet before assistance arrived most of the servants having gone to bed), I had completely subdued the fire of one window without exhausting the Engine, and when assistance and more water did arrive, we very soon extinguished the other.

"So fierce was the fire that the lead of the casements was melted, and the casements themselves were burnt off their hinges.

"I verily am, that by God's mercy, the house was saved by this small Engine. Had it not been at hand and in order, most assuredly Cassiobury would be now a heap of ruins.—Yours faithfully,

"Cassiobury, Watford, July 20. "ESSEX.

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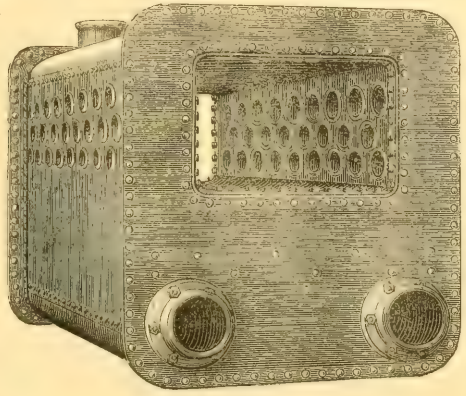

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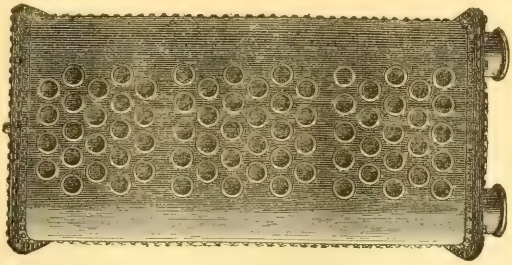

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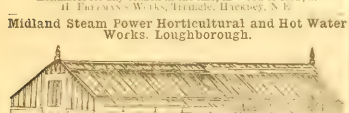

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WANTED to RENT, a SMALL NURSERY. Apply to M. J., 14, Parade, Northampton.

TO BE LET, for a Term, a good STOCK and CORN FARM, of 470 Acres, with good Residence, near Winchester. Immediate Possession may be taken, at a valuation.
Apply to Messrs. BRADDELL & PALMER, Land Agents, &c., Offices, 3, Portland Street, Southampton.

To Seedsmen, Fruiterers, &c.

TO BE LET, with Immediate Possession, an Old-established SEED and FRUIT SHOP, situate in a central position in a good Market Town, and calculated to carry on a good Trade. Stock, &c., at a valuation.
Address A. B., Post office, Horncastle.

TO BE LET, with Immediate Possession, in consequence of the present Proprietor being bedfast, the PONTEFRACT NURSERY, containing about 3 Acres. Nursery Ground, well stocked with Shrub, Fruit, and Forest Trees, in good saleable condition. In the Forest Trees will be found from 200,000 to 300,000 Plants, from 2 to 3 years old.
For further particulars application to be made to Mr. JOHN SCHOLEY, Nurseryman and Seedsman, Pontefract.

Boston Lane, near Turnpike, Hanwell, Middlesex.

To MARKET GARDENERS and OTHERS.

TO BE SOLD, by Tender, a Lease of a comfortable DWELLING HOUSE, Sheds, Stable, Variety, Greenhouses, and about 14 Acres of rich and highly cultivated MARKET GARDEN GROUND, all inclosed with the choicest Apple, Pear, Plum, Cherry, Walnut, Wall and Espalier Fruit Trees, and Quick and Bushes. Strawberry Plants, &c. The whole held on Lease for 7 years from September 29, 1865, at the very low Rent of £80 per annum.
For further particulars, cards to view, &c., apply to Messrs. BAKER & SONS, Surveyors, &c., Kilburn, Middlesex, N.W.

Tothill, Plymouth.—To Gardeners and Others.

TO BE LET, by Tender, for a term of 7 or 14 years, from Lady-day next, 1867, that DWELLING HOUSE, GARDEN, and PREMISES, situate near Tothill in the Parish of Charles, Plymouth, now in the occupation of Mr. FROUDE.
Wood, Gardener and Seedsman, at Tenant, out going by advantageous arrangement.
The above has been for many years occupied as a Garden, is well suited for the purpose in all respects, and will supplied with Spring Water. The taker will be required to purchase, at a valuation by a competent person to be agreed on between himself and the Tenant, the Growing Crops, if any, and also the Stock of Plants, Greenhouses, and Forcing and Potting-houses on the Premises, being allowed to remove the latter at the expiration of his Term.
Tenders for taking the above Premises must be left at the Offices of Mr. LEAKSMOUR, Solicitor, Argus Insurance Office, Courtenay Street, Plymouth (where the terms and conditions on which they are to be Let may be seen), and in the meantime the Tenant will show the Premises on application.
The Setter shall not be required to accept the highest Tender.
Argus Insurance Office, Plymouth.—September 15.

TO BE LET, a SMALL FARM in Surrey.—It consists of about 170 Acres, with a comfortable Residence, and is situate in a healthy and very beautiful country, close to a market, five miles from an ancient Market Town, and only twelve miles from London. It is probable that an arrangement might be made with the Tenant to act as Steward of an Estate of which the Farm is a part.
Application for terms may be made to Messrs. VEZEY, Land Agents, 4, Frederick's Place, Old Jewry, London, E.C.

Sales by Auction.

SALE THIS DAY AT HALF-PAST TWELVE O'CLOCK.

Greenhouse Plants and Hardy Bulbs, Roses, &c.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 3, King Street, Covent Garden, W.C., on SATURDAY, October 27, at half-past 12 o'clock precisely, a choice collection of GREENHOUSE and FINE FOLIAGED PLANTS, 1000 Standard Roses, Fruit Trees, Shrubs, and a quantity of Hyacinths, Tulips, Crocuses, Narcissus, Liliums, and other Bulbs.
On view the Morning of Sale, and Catalogues had.

Sale of Bulbs and Plants on October 29.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY, October 29, at half-past 12 o'clock precisely, 600 Lots of the choicest GREENHOUSE and FINE FOLIAGED PLANTS, HYACINTHS, NARCISSUS, Tulips, Crocuses, Liliums, Arum Lilies, Roman cultivated DUTCH BULBS; also some INDIAN AZALEAS and CAMELLIAS, the Property of several Growers.
On view the Morning of Sale and Catalogues had.

Orchids.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY, October 30, at half-past 12 o'clock precisely, a portion of Imported ORCHIDS, the Property of a Gentleman declining Orchidaceous plants. Also some fine Established Orchids in a good state.
On view the Morning of Sale, and Catalogues had.

Splendid Specimen Shrubs,

FINE TRAINED EVERGREEN TREES, STANDARD and WEEPING ROSES, RHODODENDRONS, AZALEAS, and HARDY PLANTS.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY and THURSDAY, October 31 and November 1, at half-past 12 o'clock precisely each day, First-class ORNAMENTAL PLANTS, from one of the best known Nurseries in England, including Standard Common Conifers; Pyramid, Green, and Variegated Hollies; Portugal and Common Laurels, Standard, Dwarf, and Weeping Roses, Rhododendrons, Standard and Dwarf Portugal and Common Laurels, Rhododendrons, Azaleas, Kalmias, and many other fine Specimen Plants, in rapid condition, and well worthy the attention of Noblemen, Gentlemen, Nurserymen, and others from Holland of Double and Single Hyacinths, Tulips, Crocuses, Narcissus, Ranunculus, and other Bulbs, in Collections or suit private buyers.
On view the Morning of Sale, and Catalogues had.

Langhedge Nursery, Edmonton.

To GENTLEMEN, FARMERS, MARKET GARDENERS, BUILDERS, AND OTHERS.—IMPORTANT SALE of VALUABLE NURSERY STOCK.

MR. A. RICHARDS has received instructions from Mr. W. Welch to SELL by AUCTION, on the Premises, Church Road, Upper Edmonton (3 minutes' walk from Angel Road Station, Great Eastern Railway), on THURSDAY, FRIDAY, and SATURDAY, November 1 and 2, at 12 o'clock each day (a portion of the ground being required for the Railway), upon which FRUIT TREES, consisting of about 1000 Standard and Dwarf Trained Apples, Pears, Cherries, Plums, and Damsons, 1000 Half-Standard and Dwarf trained Peach, Nectarine, and Apricot; a large quantity of Gooseberry and Currant Trees, a handsome collection of very fine specimen CONIFERÆ and EVERGREENS, Standard Roses, Rhododendrons, 3 to 6 feet; Weeping Standard Cupressus, 4 to 6 feet; Wentworth Pines, Ivies, Euonymus, and other trees; Rose and Fan Vews; China Lagunas, Siberian Crabs, Double-flowering Thorns, Laburnums, Portugal robusta, 4 to 8 feet; Phillyrea; Portugal and Common Laurels, Laurustinus, Berberis, Aucuba in great variety, Rubus, Thuja Lobbi, Golden Privet, &c.; also 2000 Standard and Dwarf ROSES, comprising the best sorts, Lemoine, large Limes, Poplars, Weeping Willows, Sycamores, Double and Single Scarlet Thorns, specimen Weeping Ash, many thousand Quick, Privet, Beech, and Thorn Plants, also about 10,000 one and two years old Plants of Wellgrown Seedling HORSE-SHOE, which is the best to hedge down, and MRS. POLLOCK; Dumpsons, Aspens, and Osiers.
May be viewed till the Sale. Catalogues on the Premises, and of the Auctioneer, Tottenham, N.

Lewisham.

SALE OF VALUABLE NURSERY STOCK, CLARK'S NURSERY GROUNDS, LEWISHAM.

MR. CHARLES AIKINS has received instructions from the Proprietor to SELL by AUCTION, on TUESDAY, WEDNESDAY, and THURSDAY, November 6, 7, and 8, at 10 o'clock each day, on the Premises, CLARK'S NURSERY GROUNDS, Hither Green, Lewisham, in consequence of the land being required for building purposes, the following VALUABLE STOCK, comprising Dwarf and Standard Trained Pyramid Pears, Apples, Plums, Cherries, Peaches, Nectarines, Apricots, Standard and Dwarf Roses, Standard and Pyramid Fruit Trees, comprising Plums, Cherries, Pears, and Apples, 3000 Green Box, 1000 Limes, 2000 Privets, 1000 green Hollies, 200 Rhododendrons, 1000 Laurels, 1000 Portugal, and 1000 Evergreens of sorts, Conifers, Roses, Jessamines, Honeysuckles, &c.; Lilacs, Weeping Standard Berberis Aquifolium, Arbutus, Aucubas, Irish Yews and Junipers, Standard Portugal Laurels, Laurustinus, Laburnums, Mountain Ash, Standard Limes, Birch, and Sycamores, also 1000 fine specimens of Conifers, 300 Plants on a small scale, 1 to 3 feet, Cedrus Deodara, Cupressus Lawsoniana, 3 to 5 feet, Thujopsis Borealis, 2 to 4 feet, Red Cedars, 3 to 5 feet, Wellingtonia gigantea, 2 to 6 feet, Abies Douglasii, 2 to 5 feet, Chamæcyparis Lawsoniana, 2 to 4 feet, Pinus insignis and excelsa, 2 to 3 feet, 500 Arbor-vitæs, and 500 small duplicates.
May be viewed the Saturday and Monday previous to the Sale. Catalogues had on the Premises, and of Mr. CHARLES AIKINS, Auctioneer, 3, Burnbank Villas, Lewisham, S.E.; 3, Belmont Hill, Lee, S.E.; and Rushey Green, Lewisham, S.E.

Biggleswade, Bedfordshire.—Important Sale.

MESSRS. CONDER and SON will SELL by AUCTION, with no Reserve, on MONDAY and TUESDAY, November 12 and 13, on the Premises, the Japanese Nurseries, Biggleswade, the whole of the valuable NURSERY and SEED STOCK, comprising a valuable Collection of the Ornamental Evergreen and Deciduous Shrubs, Fruit and Forest Trees, Stan and, Half-standard, and Dwarf Roses, Camellias, Azaleas, Rhododendrons, and other Choice Plants.
The Stock may be viewed on application any day prior to the Sale, and Catalogues had at the Auction Rooms, Biggleswade; and Messrs. CONDER & SON, Estate and Land Agents, Auctioneers, &c., Biggleswade.

Wandsworth Common, Wandsworth, Surrey.

CONSIDERABLE QUANTITY of IMPORTANT SALE.

MESSRS. PROTHEROE AND MORRIS respectfully announce that their SALE of NURSERY STOCK, viz., SATURDAY, MONDAY, TUESDAY, and WEDNESDAY, October 27, 29, 30, and 31, at 12 o'clock precisely each day, by order of Mr. R. S. Ayres, who is declining nursery business, and has sold the Land for building purposes. The STOCK will consist of Standard and Dwarf Roses, Conifers, and extensive Shrubs, consisting of the usual Kinds of Deciduous and Evergreen Shrubs, Green and Variegated Hollies, Cedrus Deodara, Cupressus Lawsoniana, Wellingtonia gigantea, Green Box, Weltringtonia gigantea, &c., quantities of Fruit Trees, comprising Standard and Dwarf, Pyramidal and Trained Pears, Plums, Apricots, and Peaches, Peaches and Nectarines, a large quantity of Roses, Evergreen Oaks, Weeping Willows, Bird Cherries, Broad Poplars, Sycamore, Almonds, Double-blossomed Peach, Acacias, Laburnums, &c.; also a large quantity of Hardy Climbers, Ivies, Lonicera, Jasmines, &c.; strong Asparagus.
In the last day's Sale, the 31st, there are a quantity of remarkable handsome Specimen Scarlet and other Rhododendrons, including some beautiful Standards, well furnished with bloom, admirably adapted to stand single, also some new Lawn Mowers (Boyd's Patent), &c.
May be viewed, and Catalogues had on the Premises, and of the Auctioneers and Valuers, American Nurseries, Leytonstone, N.E.

Sale of very fine Dutch Bulbs and Standard Roses.

MESSRS. PROTHEROE and MORRIS will SELL by AUCTION, at 38 and 39, Gracechurch Street, City, E.C., on FRIDAY, October 26, at 12 o'clock, a fine Collection of DUTCH BULBS, in the finest exhibiting sorts, named HYACINTHS, CROCUSES, NARCISSUS, SNOWDROPS, &c., and a splendid Assortment of STANDARD, DWARF, and CLIMBING ROSES, comprising the finest varieties in cultivation, HARDY AMERICAN PLANTS, CLIMBERS, &c.
On view Morning of Sale. Catalogues had at the Rooms as above, and of the Auctioneers, American Nurseries, Leytonstone, N.E.

Hornsey, Middlesex, N.

SALE OF REMARKABLY FINE NURSERY STOCK.

MESSRS. PROTHEROE and MORRIS are instructed by Mr. Cleall to SELL, without Reserve, on the Premises, River Lane, Nursery Grounds, Hornsey, N., Hornsey, on THURSDAY, Nov. 1, and following day, at 12 o'clock each day, the valuable NURSERY STOCK, consisting of 2000 very handsome Chinese Arborvitæ, 4 to 6 feet; 3000 Common Laurels, Portugal, Laurustinus, Arbutus, Deodara, Aucubas, Berberis, Standard and Dwarf Roses, Evergreen Oaks, Lawsoniana, Plants in pots, Cedrus Deodara, Spruce and Scotch Firs, a fine assortment of Standard and Dwarf Roses, a large quantity of Standard Dwarf trained and unbranched Fruit Trees, comprising Apples, Pears, Cherries, Plums, Peaches, Nectarines, Limes, Laburnums, Privet; a quantity of Box Edging, &c.
May be viewed prior to the Sale. Catalogues may be had on the Premises, and of the Auctioneers and Valuers, Leytonstone, N.E.

Acton Green, Middlesex.

To GENTLEMEN, NURSERYMEN, MARKET GARDENERS, AND OTHERS

SALE of VALUABLE NURSERY STOCK, and FRUIT TREES.

MESSRS. PROTHEROE and MORRIS have received instructions to submit for unreserved SALE by AUCTION, on the Premises, Acton Green, W., opposite the Potteries, No. 1, and within 10 minutes' walk of the Acton Station on the North London Railway, on TUESDAY, Nov. 13, at 12 o'clock precisely, the grand young required to be cleared for Building purposes, comprising the very valuable Stock of FRUIT TREES, including about 1000 Standard and Dwarf Pears, 2000 Apples, 2000 Cherries, 1000 Pears, Pyramids, Plums, 2000 Peaches and Nectarines, &c., with a few Ornamental Conifers and other Shrubs, Young Vines, &c.
May be viewed prior to the Sale. Catalogues may be had on the Premises, and of the Auctioneers and Valuers, American Nurseries, Leytonstone, Essex, N.E.

Tottenham.

CLEARANCE SALE of VERY VALUABLE NURSERY STOCK for the GREAT EASTERN RAILWAY EXTENSION.

MESSRS. PROTHEROE and MORRIS will submit for unreserved SALE by AUCTION, on the Premises, Brunswick Nursery, Tottenham, on MONDAY, THURSDAY, and FRIDAY, NEXT DAY, Nov. 5, 6, and 7, at 11 o'Clock each day, by order of Mr. J. Lee, who has declined to make an immediate offer to the Directors of the Great Eastern Railway Company, the valuable NURSERY STOCK, ranging in sizes, and remarkably fine Evergreens, Conifers, and Deciduous Shrubs, including 1000 Chinese Arborvitæ, 300 lovely Golden Yews, fine specimen Cupressus Lawsoniana, 500 Portugal and common Laurels, 200 lovely Aucubas, 1000 fine Variegated and Green Hollies, 100 very fine Laurustinus, 10,000 Rhododendrons, Standard Roses, 600 Hybrid and Tea-scented Roses, Common and Lawsoniana, 4 to 6 feet; Fine Cedar Deodara, Libanica, Atlantica, and Libanica, 200 Plants in pots, consisting of Lobbii, Douglasii, and Lawsoniana, 500 Standard and Dwarf Fruit Trees, 400 Ancuba indoor Plants, 500 Privet Standards, Lobbii, and Pinsapo, 1 to 5 feet, 200 Pumpeli Retards, 1 to 6 feet, 1000 Berberis Aquifolium, Ivies, Arbutus, Alaternus, Portugal, Cherry Laurels, Pinus excelsa, Picea Nobilis, Larix, Silver Firs, Abies Douglasii and Menziesii, 500 Vermeil Hedge-row Quick, Standard, Dwarf, and Weeping Roses, Cupressus, Jessamines, 1000 Ivory Reserve pots, &c., select Fruit, Standard, Pyramid, and Dwarf Trained Apples, Pears, Plums, Cherries, &c.; Acacias, Weeping Willows, 5000 Strawberries in pots for Forcing, 1000 yards of excellent Box Edging, an extensive collection of Fruit and Forest Raspberries, 1000 Alpine Aquilegias, together with some choice Greenhouse Plants, measuring 300 compact and handsome Erica hyemalis, 500 Acacia Lophantha, very valuable for Forcing, 500 Cytisus purpureus, a most healthy specimen, and is worthy the attention of the Trade and public, especially suited to suit great and small consumers.
May be viewed prior to the Sale. Catalogues to be had on the Premises, and of the Auctioneers, American Nurseries, Leytonstone, Essex, N.E.

Leytonstone, Essex.

VERY IMPORTANT CLEARANCE SALE of VALUABLE NURSERY STOCK on the FULLBROOK ESTATE, Leytonstone, Essex.

MESSRS. PROTHEROE and MORRIS will SELL by AUCTION on the Premises, Fullbrook Estate Nursery, adjoining Leytonstone Station, on the Woodford and Loughton Branch of the Great Eastern Railway, on MONDAY, NOVEMBER 5, and Two following Days, at 11 for 12 o'Clock precisely each day, in consequence of the Land (which was sold last May) being immediately required for building purposes, the valuable NURSERY STOCK, comprising a splendid variety of Evergreen, Coniferæ, and Deciduous Shrubs, including 15,000 Common and Portugal Laurels, 4 to 6 feet; 3000 Cedrus Deodara, 2 to 12 feet; 2500 spruce Firs, 6 to 8 feet; very handsome Cupressus Lawsoniana, 6 to 10 feet; Retinospor Lawsoni, 6 to 8 feet; Cedrus Deodara, 10 to 15 feet; Cedrus Libani, pyramidalis, and Atlantica, 8 to 10 feet; Abies canadensis, 6 to 8 feet; Picea nobilis, 6 to 8 feet; Abies canadensis, 8 to 10 feet; Abies Douglasii, 8 to 10 feet; Pinus excelsa, 8 to 10 feet; Juniperus virginica, 6 feet; Pinus Cembra, 4 to 6 feet; beautiful Wellingtonia gigantea, Araucaria imbricata, 4 to 6 feet; Thujopsis borealis, 4 to 6 feet; Thuja Lobbii, 4 to 6 feet; Pinsapo, 4 to 6 feet; Arbutus, Aucubas, Irish Yews, 4 to 6 feet; Andromeda, specimen Sorel Plants, extra fine, 4 to 5 feet; Abies Douglasii, Deodara, Picea Nobilis, and Lawsoniana, Pinus Austriaca, Picea Nobilis, Douglasii, and Menziesii, Cupressus Lawsoniana, Thuja Lobbii, Retinospora Lawsoni, Cedrus Deodara, Libanica, and Atlantica, Araucaria imbricata, Pinsapo, Juniperus virginica, Irish Yews, Arbutus, Aucubas, Portugal Laurels, Laurustinus, Berberis Darwinii, Mahonia Aquifolium, Ivies, Variegated Hollies, Rhododendrons, Azaleas, Kalmias, Andromeda, Standard and Dwarf Roses, Standard and Dwarf Fruit Trees, Standard and Dwarf Portugal and Common Laurels, Laurustinus, Berberis, Aucubas, Rhododendrons, Azaleas, Kalmias, and many other fine Specimen Plants, in rapid condition, and well worthy the attention of Noblemen, Gentlemen, Nurserymen, and others from Holland of Double and Single Hyacinths, Tulips, Crocuses, Narcissus, Ranunculus, and other Bulbs, in Collections or suit private buyers.
On view the Morning of Sale, and Catalogues had.

Langhedge Nursery, Edmonton.

To GENTLEMEN, FARMERS, MARKET GARDENERS, BUILDERS, AND OTHERS.—IMPORTANT SALE of VALUABLE NURSERY STOCK.

MR. A. RICHARDS has received instructions from Mr. W. Welch to SELL by AUCTION, on the Premises, Church Road, Upper Edmonton (3 minutes' walk from Angel Road Station, Great Eastern Railway), on THURSDAY, FRIDAY, and SATURDAY, November 1 and 2, at 12 o'clock each day (a portion of the ground being required for the Railway), upon which FRUIT TREES, consisting of about 1000 Standard and Dwarf Trained Apples, Pears, Cherries, Plums, and Damsons, 1000 Half-Standard and Dwarf trained Peach, Nectarine, and Apricot; a large quantity of Gooseberry and Currant Trees, a handsome collection of very fine specimen CONIFERÆ and EVERGREENS, Standard Roses, Rhododendrons, 3 to 6 feet; Weeping Standard Cupressus, 4 to 6 feet; Wentworth Pines, Ivies, Euonymus, and other trees; Rose and Fan Yews; China Lagunas, Siberian Crabs, Double-flowering Thorns, Laburnums, Portugal robusta, 4 to 8 feet; Phillyrea; Portugal and Common Laurels, Laurustinus, Berberis, Aucuba in great variety, Rubus, Thuja Lobbii, Golden Privet, &c.; also 2000 Standard and Dwarf ROSES, comprising the best sorts, Lemoine, large Limes, Poplars, Weeping Willows, Sycamores, Double and Single Scarlet Thorns, specimen Weeping Ash, many thousand Quick, Privet, Beech, and Thorn Plants, also about 10,000 one and two years old Plants of Wellgrown Seedling HORSE-SHOE, which is the best to hedge down, and MRS. POLLOCK; Dumpsons, Aspens, and Osiers.
May be viewed till the Sale. Catalogues on the Premises, and of the Auctioneer, Tottenham, N.

Lewisham.

SALE OF VALUABLE NURSERY STOCK, CLARK'S NURSERY GROUNDS, LEWISHAM.

MR. CHARLES AIKINS has received instructions from the Proprietor to SELL by AUCTION, on TUESDAY, WEDNESDAY, and THURSDAY, November 6, 7, and 8, at 10 o'clock each day, on the Premises, CLARK'S NURSERY GROUNDS, Hither Green, Lewisham, in consequence of the land being required for building purposes, the following VALUABLE STOCK, comprising Dwarf and Standard Trained Pyramid Pears, Apples, Plums, Cherries, Peaches, and Apricots, Standard and Dwarf Roses, Standard and Pyramid Fruit Trees, comprising Plums, Cherries, Pears, and Apples, 3000 Green Box, 1000 Limes, 2000 Privets, 1000 green Hollies, 200 Rhododendrons, 1000 Laurels, 1000 Portugal, and 1000 Evergreens of sorts, Conifers, Roses, Jessamines, Honeysuckles, &c.; Lilacs, Portugal and Common Laurels, Arbutus, Aucubas, Irish Yews and Junipers, Standard Portugal Laurels, Laurustinus, Laburnums, Mountain Ash, Standard Limes, Birch, and Sycamores, also 1000 fine specimens of Conifers, 300 Plants on a small scale, 1 to 3 feet, Cedrus Deodara, Cupressus Lawsoniana, 3 to 5 feet, Thujopsis Borealis, 2 to 4 feet, Red Cedars, 3 to 5 feet, Wellingtonia gigantea, 2 to 6 feet, Abies Douglasii, 2 to 5 feet, Chamæcyparis Lawsoniana, 2 to 4 feet, Pinus insignis and excelsa, 2 to 3 feet, 500 Arbor-vitæs, and 500 small duplicates.
May be viewed the Saturday and Monday previous to the Sale. Catalogues had on the Premises, and of Mr. CHARLES AIKINS, Auctioneer, 3, Burnbank Villas, Lewisham, S.E.; 3, Belmont Hill, Lee, S.E.; and Rushey Green, Lewisham, S.E.

Biggleswade, Bedfordshire.—Important Sale.

MESSRS. CONDER and SON will SELL by AUCTION, with no Reserve, on MONDAY and TUESDAY, November 12 and 13, on the Premises, the Japanese Nurseries, Biggleswade, the whole of the valuable NURSERY and SEED STOCK, comprising a valuable Collection of the Ornamental Evergreen and Deciduous Shrubs, Fruit and Forest Trees, Standard, Half-standard, and Dwarf Roses, Camellias, Azaleas, Rhododendrons, and other Choice Plants.
The Stock may be viewed on application any day prior to the Sale, and Catalogues had at the Auction Rooms, Biggleswade; and Messrs. CONDER & SON, Estate and Land Agents, Auctioneers, &c., Biggleswade.

Wandsworth Common, Wandsworth, Surrey.

CONSIDERABLE QUANTITY of IMPORTANT SALE.

MESSRS. PROTHEROE AND MORRIS respectfully announce that their SALE of NURSERY STOCK, viz., SATURDAY, MONDAY, TUESDAY, and WEDNESDAY, October 27, 29, 30, and 31, at 12 o'clock precisely each day, by order of Mr. R. S. Ayres, who is declining nursery business, and has sold the Land for building purposes. The STOCK will consist of Standard and Dwarf Roses, Conifers, and extensive Shrubs, consisting of the usual Kinds of Deciduous and Evergreen Shrubs, Green and Variegated Hollies, Cedrus Deodara, Cupressus Lawsoniana, Wellingtonia gigantea, Green Box, Weltringtonia gigantea, &c., quantities of Fruit Trees, comprising Standard and Dwarf, Pyramidal and Trained Pears, Plums, Apricots, and Peaches, Peaches and Nectarines, a large quantity of Roses, Evergreen Oaks, Weeping Willows, Bird Cherries, Broad Poplars, Sycamore, Almonds, Double-blossomed Peach, Acacias, Laburnums, &c.; also a large quantity of Hardy Climbers, Ivies, Lonicera, Jasmines, &c.; strong Asparagus.
In the last day's Sale, the 31st, there are a quantity of remarkable handsome Specimen Scarlet and other Rhododendrons, including some beautiful Standards, well furnished with bloom, admirably adapted to stand single, also some new Lawn Mowers (Boyd's Patent), &c.
May be viewed, and Catalogues had on the Premises, and of the Auctioneers and Valuers, American Nurseries, Leytonstone, N.E.

Sale of very fine Dutch Bulbs and Standard Roses.

MESSRS. PROTHEROE and MORRIS will SELL by AUCTION, at 38 and 39, Gracechurch Street, City, E.C., on FRIDAY, October 26, at 12 o'clock, a fine Collection of DUTCH BULBS, in the finest exhibiting sorts, named HYACINTHS, CROCUSES, NARCISSUS, SNOWDROPS, &c., and a splendid Assortment of STANDARD, DWARF, and CLIMBING ROSES, comprising the finest varieties in cultivation, HARDY AMERICAN PLANTS, CLIMBERS, &c.
On view Morning of Sale. Catalogues had at the Rooms as above, and of the Auctioneers, American Nurseries, Leytonstone, N.E.

Hornsey, Middlesex, N.

SALE OF REMARKABLY FINE NURSERY STOCK.

MESSRS. PROTHEROE and MORRIS are instructed by Mr. Cleall to SELL, without Reserve, on the Premises, River Lane, Nursery Grounds, Hornsey, N., Hornsey, on THURSDAY, Nov. 1, and following day, at 12 o'Clock each day, the valuable NURSERY STOCK, consisting of 2000 very handsome Chinese Arborvitæ, 4 to 6 feet; 3000 Common Laurels, Portugal, Laurustinus, Arbutus, Deodara, Aucubas, Berberis, Standard and Dwarf Roses, Evergreen Oaks, Lawsoniana, Plants in pots, Cedrus Deodara, Spruce and Scotch Firs, a fine assortment of Standard and Dwarf Roses, a large quantity of Standard Dwarf trained and unbranched Fruit Trees, comprising Apples, Pears, Cherries, Plums, Peaches, Nectarines, Limes, Laburnums, Privet; a quantity of Box Edging, &c.
May be viewed prior to the Sale. Catalogues may be had on the Premises, and of the Auctioneers and Valuers, Leytonstone, N.E.

Acton Green, Middlesex.

To GENTLEMEN, NURSERYMEN, MARKET GARDENERS, AND OTHERS

SALE of VALUABLE NURSERY STOCK, and FRUIT TREES.

MESSRS. PROTHEROE and MORRIS have received instructions to submit for unreserved SALE by AUCTION, on the Premises, Acton Green, W., opposite the Potteries, No. 1, and within 10 minutes' walk of the Acton Station on the North London Railway, on TUESDAY, Nov. 13, at 12 o'clock precisely, the grand young required to be cleared for Building purposes, comprising the very valuable Stock of FRUIT TREES, including about 1000 Standard and Dwarf Pears, 2000 Apples, 2000 Cherries, 1000 Pears, Pyramids, Plums, 2000 Peaches and Nectarines, &c., with a few Ornamental Conifers and other Shrubs, Young Vines, &c.
May be viewed prior to the Sale. Catalogues may be had on the Premises, and of the Auctioneers and Valuers, American Nurseries, Leytonstone, Essex, N.E.

Tottenham.

CLEARANCE SALE of VERY VALUABLE NURSERY STOCK for the GREAT EASTERN RAILWAY EXTENSION.

MESSRS. PROTHEROE and MORRIS will submit for unreserved SALE by AUCTION, on the Premises, Brunswick Nursery, Tottenham, on MONDAY, THURSDAY, and FRIDAY, NEXT DAY, Nov. 5, 6, and 7, at 11 o'Clock each day, by order of Mr. J. Lee, who has declined to make an immediate offer to the Directors of the Great Eastern Railway Company, the valuable NURSERY STOCK, ranging in sizes, and remarkably fine Evergreens, Conifers, and Deciduous Shrubs, including 1000 Chinese Arborvitæ, 300 lovely Golden Yews, fine specimen Cupressus Lawsoniana, 500 Portugal and common Laurels, 200 lovely Aucubas, 1000 fine Variegated and Green Hollies, 100 very fine Laurustinus, 10,000 Rhododendrons, Standard Roses, 600 Hybrid and Tea-scented Roses, Common and Lawsoniana, 4 to 6 feet; Fine Cedar Deodara, Libanica, Atlantica, and Libanica, 200 Plants in pots, consisting of Lobbii, Douglasii, and Lawsoniana, 500 Standard and Dwarf Fruit Trees, 400 Aucubas indoor Plants, 500 Privet Standards, Lobbii, and Pinsapo, 1 to 5 feet, 200 Pumpeli Retards, 1 to 6 feet, 1000 Berberis Aquifolium, Ivies, Arbutus, Alaternus, Portugal, Cherry Laurels, Pinus excelsa, Picea Nobilis, Larix, Silver Firs, Abies Douglasii and Menziesii, 500 Vermeil Hedge-row Quick, Standard, Dwarf, and Weeping Roses, Cupressus, Jessamines, 1000 Ivory Reserve pots, &c., select Fruit, Standard, Pyramid, and Dwarf Trained Apples, Pears, Plums, Cherries, &c.; Acacias, Weeping Willows, 5000 Strawberries in pots for Forcing, 1000 yards of excellent Box Edging, an extensive collection of Fruit and Forest Raspberries, 1000 Alpine Aquilegias, together with some choice Greenhouse Plants, measuring 300 compact and handsome Erica hyemalis, 500 Acacia Lophantha, very valuable for Forcing, 500 Cytisus purpureus, a most healthy specimen, and is worthy the attention of the Trade and public, especially suited to suit great and small consumers.
May be viewed prior to the Sale. Catalogues to be had on the Premises, and of the Auctioneers, American Nurseries, Leytonstone, Essex, N.E.

Leytonstone, Essex.

VERY IMPORTANT CLEARANCE SALE of VALUABLE NURSERY STOCK on the FULLBROOK ESTATE, Leytonstone, Essex.

MESSRS. PROTHEROE and MORRIS will SELL by AUCTION on the Premises, Fullbrook Estate Nursery, adjoining Leytonstone Station, on the Woodford and Loughton Branch of the Great Eastern Railway, on MONDAY, NOVEMBER 5, and Two following Days, at 11 for 12 o'Clock precisely each day, in consequence of the Land (which was sold last May) being immediately required for building purposes, the valuable NURSERY STOCK, comprising a splendid variety of Evergreen, Coniferæ, and Deciduous Shrubs, including 15,000 Common and Portugal Laurels, 4 to 6 feet; 3000 Cedrus Deodara, 2 to 12 feet; 2500 spruce Firs, 6 to

THE AERIAL CHAIR.

WONDERFUL APPLICATION OF THE PRINCIPLE OF OSCILLATION.

FOR THE GARDEN, CONSERVATORY, AND NURSERY.

Entirely "Self-acting," the operator requiring no assistance whatever, and so easy of motion that a Child can propel itself to any desired altitude without the slightest danger of accident. It has been pronounced a marvel of ingenious mechanism, and cannot fail to become a necessary adjunct to every well-appointed Garden and Nursery, while for Invalids it will be hailed as a means of recreation and hygienic exercise never before offered them. They are very easily fitted up in any ordinary-sized room, and can be attached to the ceiling by means of a few common iron bolts. The only instructions necessary for the use of this invention are, that the person upon being seated simply presses the feet against the footboard, which will at once set the Chair in motion.

For Gardens or Lawns the "AERIAL CHAIR" can be secured to the branch of a tree or to the framework of an ordinary Swing.

Manufactured of Wrought Iron, in three different sizes, to wit:—

Size No. 1, suitable for Children ... .. price £2 2s. | **Size No. 2, suitable for Youths** ... . **£2 10s.**

No. 3, suitable for Adults ... ... **£3 3s.**

These prices include packing, but not carriage. The suspending rods are about 8 feet in length. Extra rods can be obtained, if required, at 2*s.* 6*d.* per foot. The Seat to the "AERIAL CHAIR" is of wood, and moveable. Iron Seats, in imitation of Cane, can be had at 15*s.* each.

Attached to the head-board of the "AERIAL CHAIR" is a brass label, with the following words:—"AERIAL CHAIR, SECURED BY ROYAL LETTERS PATENT. MANUFACTURED BY PEYTON & PEYTON, METALLIC BEDSTEAD MANUFACTURERS, BIRMINGHAM. CHARLES POMEROY BUTTON, PROPRIETOR, NOS. 142 AND 143, CHEAPSIDE, LONDON."

TRADE MARK—"AERIAL CHAIR."—TERMS CASH.

All Orders must be accompanied with a City Reference or Remittance to

CHARLES POMEROY BUTTON, Nos. 142 & 143, CHEAPSIDE, LONDON, E.C.

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THE GARDENERS' CHRONICLE
AND
AGRICULTURAL GAZETTE.

A Newspaper of Rural Economy and General News.

No. 44.—1866.] SATURDAY, NOVEMBER 3. {Price Fivepence. STAMPED EDITION, 6d.

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ROYAL HORTICULTURAL SOCIETY, SOUTH KENSINGTON.

NOTICE.—A MEETING of the FRUIT and FLORAL COMMITTEES will be held on TUESDAY NEXT, November 6, at 11 o'Clock; LECTURE at 3 o'Clock.

Open to All England.

THE STOKE NEWINGTON CHRYSANTHEMUM SOCIETY (President, SHIRLEY HIBBERD, Esq., F.R.H.S.), will hold its TWENTIETH ANNUAL EXHIBITION on THURSDAY and FRIDAY, November 8 and 9, at the British School Rooms, opposite Abney Park Cemetery, Stoke Newington. Admission, first day, 1s.; after 6 p.m., 6d. Second day, 6d. W. T. HOWE, Down's Park Road, Shacklewell, N.E. Hon. Sec.

EXETER CHRYSANTHEMUM SHOW, November 9. PRIZES for CUT BLOOMS, Open to all England.

For Schedule apply to T. W. GRAY, Esq., Honorary Secretary, Queen Street Chambers, Exeter.

GRAND FLOWER and FRUIT SHOW and BAZAAR in aid of the BENEVOLENT FUND of the UNITED HORTICULTURAL SOCIETY, and the FUNDS of the ALBERT ORPHAN ASYLUM, on NOVEMBER 13th, 14th, and 15th, in the Guildhall of the City of London, by permission of the Corporation.

Schedules and all particulars may be obtained of WILLIAM HEALE, 14, George Terrace, Brook Street, Upper Clapton, N.E.

Schedules may also be obtained of the Office, 98, Cheapside, E.C.

All Exhibitors must Stage their Plants on Monday, November 12, and Cut Blooms and Fruit by 10 o'Clock on Tuesday, November 13.

GRAND FLOWER and FRUIT SHOW and BAZAAR at GUILDHALL. By Subscription.

A Piece of Plate will be awarded to which Nine Plants of Large-flowered Chrysanthemums, open to all Members of the Society.

Also, 10s. for the best Dish of Dessert Apples, quality and appearance to be essential points, adjudged by the President of the U. H. S.

Exhibition of Chrysanthemums.

JOHN SALTER'S magnificent COLLECTION of CHRYSANTHEMUMS is NOW in BLOOM. The Winter Garden is open every day except Sunday. Admittance free.

Versailles Nursery, William Street, Vale Place, Hammersmith, W. (near Kensington Railway Station).

NEW CHRYSANTHEMUMS 1866.—All the new varieties of present year now ready, well established in pots, at 5s. per doz., or 35s. per 100

WILLIAM HOLMES, Frampton Park Nursery, Hackney, N.E.

Hyacinths, &c.

WM. PAUL'S SELECT LIST of HYACINTHS, EARLY TULIPS, and other SPRING-FLOWERING BULBS and PLANTS, is now ready and will be forwarded post free on application.

PAUL'S Nurseries and Seed Warehouse, Waltham Cross, London, N.

CARTER'S DUTCH BULBS.

Every Garden Requisite kept in stock at CARTER'S New Seed Warehouses, 237 and 238, High Holborn, London.

JAMES CRAWFORD begs to announce that he has received his DUTCH ROOTS; they are healthy and very fine. Early Orders are respectfully solicited.

High Beech.

J. SCOTT, Importer of Dutch Bulbs, has still a choice Collection of every kind, including HYACINTHS, TULIPS, CROCUS, SNOWDROPS, LILIUMS, &c., &c., which he is offering at extremely low prices.

J. SCOTT, the Seed Stores, Yeovil, Somerset.

To Nurserymen, Seedsmen, &c.

JAMES FAIRHEAD AND SON, SEED MERCHANTS, 7, Borough Market, S.E., have on hand Double and Single varieties of MIXED HYACINTHS for Borders, of fine quality; also ENGLISH YELLOW CROCUS, and large Double SNOWDROPS. Prices on application.

MIXED HYACINTHS, for Beds or Open Borders, all colours, of various shades.

21s. per 100 (carriage free), or 3s. per dozen.

SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

Finest Dutch Crocuses and Early Tulips.

SUTTON'S DESCRIPTIVE LIST is now ready, and will be forwarded gratis and post free on application.

SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

SNOWDROPS, Double and Single, 15s. per 1000. HY. CLARKE & SONS, 59, King Street, Covent Garden, W.C.

TO FLORISTS and SEEDSMEN.—HENLEY BROTHERS, General Merchants, High Street, Holbeach, have still on hand fine samples of DOUBLE SNOWDROPS and YELLOW CROCUSES, which they beg to offer. Samples and price on application. Also a quantity of small CROCUS, a great Bargain.—Holbeach, Lincolnshire.

New Catalogues.

A DESCRIPTIVE CATALOGUE of ROSES.
A CATALOGUE of ORCHARD-HOUSE TREES.
A DESCRIPTIVE CATALOGUE of GRAPES.
Free per post on application to
THOMAS RIVERS & SON, Nurseries, Sawbridgeworth.

Grape Vines.

B. S. WILLIAMS begs to announce that he has a splendid stock of Strong Planting and Fruiting CANES of all the best varieties. PRICED LIST may be had on application.
Victoria and Paradise Nurseries, Holloway, London, N.

To the Trade.—Grape Vines.

T. J. BOOTH can supply extra strong Planting and Fruiting CANES in variety. Prices on application.
Rainhill Nursery, Rainhill, Lancashire.

TWO HUNDRED and FIFTY strong short-jointed well-ripened Fruiting GRAPE VINES, in 11-inch pots, price 5s. each; also 200 in 9-inch pots, price 3s. 6d. each.
Apply to E. MORSE, Original Nursery, Epsom.

CASTLE KENNEDY FIG.—Plants of the above may now be had at 10s. 6d. and 21s. each; the usual discount to the Trade. PETER LAWSON & SON, Edinburgh and London.

WEBB'S PRIZE COB, FILBERT and other PRIZE NUT TREES. LIST of varieties and prices to be had of Mr WEBB, Calcot Gardens, Reading.

Orchard House Trees Fruiting in Pots.

PEACHES, NECTARINES, APRICOTS, CHERRIES, PLUMS, PEARS, APPLES, VINES, and FIGS.
RICHARD SMITH, Nurseryman and Seed Merchant, Worcester.

PYRAMID APPLES, PEARS, PLUMS, CHERRIES. Beautiful Trees for Garden or Orchard Houses.
RICHARD SMITH, Nurseryman and Seed Merchant, Worcester.

FRUIT TREES, for Walls and Espaliers.—Upwards of 50,000 to select from, carefully trained, and in the healthiest condition for planting.
RICHARD SMITH, Nurseryman and Seed Merchant, Worcester.

MAGNIFICENT TRAINED CHERRIES, PLUMS, PEARS, APPLES, PEACHES, NECTARINES, APRICOTS, &c. Special prices per dozen on application.
JOHN CRANSTON, Nurseries, King's Acre, near Hereford.

FOR SALE, FOUR magnificent ORANGE TREES. Price from £20 to £25 each.
Address A., Miland's Library, Chapel Street, Belgrave Square, S.W.

A DESCRIPTIVE CATALOGUE of FRUITS, by THOS. RIVERS, just published, free per post for six stamps.
Nurseries, Sawbridgeworth.

PYRAMIDAL APPLES and PEARS.—Extra size Trees for Fruiting, clean, well branched, and of handsome growth. Names and prices on application.
Also the GENERAL DESCRIPTIVE FRUIT CATALOGUE.
STEPHEN BROWN, Seed and Nursery Establishment, Sudbury, Suffolk.

STRONG STANDARD and DWARF TRAINED APPLES and PEARS; fine Transplanted LARCH FIR, from 1½ to 6 feet; a choice lot of SILVER FIRS and EVERGREENS and a General Nursery Stock. Prices on application.
CHARLES BURGESS, The Nurseries, London Road, Cheltenham.

Railway Planting.

FIVE MILLION Transplanted QUICKS, of superior growth. Samples and prices on application to
JOHN HEMSLEY, High Fields, Melbourne, near Derby.

LARGE SPECIMEN EVERGREEN SHRUBS, of all the leading kinds, in beautiful health, and will move with large balls or mass of fibrous roots. For prices and particulars apply to
THOS. SOCTHBY, Nurseryman, Chipham, S.

ACORNS (ENGLISH), fine sound Seed. ASH, fine, 3 to 5 feet. COMMON LAUREL, very fine. Prices upon application.
WM. DILLISTONE, Munro Nursery, Sible Hedingham, Essex.

To the Trade.

SEEDLING LARCH, NATIVE SCOTCH and SPRUCE FIR, &c. An immense stock at moderate prices.
R. MORRISON, Elgin, N.B.

SEEDLING OAK, ASH, ELM, BEECH, BIRCH, SYCAMORE, FRUIT-TREE STOCKS, PORTUGAL LAUREL, QUICK, &c. A very large and fine stock very cheap.
R. MORRISON, Elgin, N.B.

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H. AND F. SHARPE have for Sale a fine Lot of 3-yr. Transplanted QUICK, 3 to 4 feet high, and well-rooted. Price very moderate.
Nursery and Seed Establishment, Wisbech.

Transplanted Larch.

JOHN CRANSTON offers splendid stout well-grown LARCH, 3, 4, 5, and 6 feet high. Price (which is very low) will be sent on application, also samples if desired.
Nurseries, King's Acre, near Hereford.

The best Evergreen Fence or Screen,
PRODUCING IMMEDIATE EFFECT.

JOHN CRANSTON can supply several Thousand AMERICAN ARBOR-VITÆ, 5, 6, to 8 feet in height, most desirable whereas immediate Fence is required. Price on application.
Nurseries, King's Acre, near Hereford.

To the Trade.

GEO. R. DAVIDSON offers Two Million 1-year-old THORNS, 9 to 15 inches, free from mildew, and healthy. Samples on application.
Newry Nurseries, Newry, Ireland.

To the Trade.

TWO-YEAR SEEDLING OAKS, 3s. 6d. per 1000.
1-year Seedling BERBERIS AQUIFOLIUM, 3s. per 1000.
CROCUS, YELLOW ENGLISH, 11s. per 1000.
FRANK WARWICK, North Road Nursery, Sleaford, Lincoln.

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WANTED, in December, 20,000 to 30,000 EVERGREEN PRIVET, Transplanted. State size and price to WOOD & INGRAM, The Nurseries, Huntingdon.

WANTED, strong Transplanted SCOTCH FIRS, PINUS AUSTRIACA, ENGLISH OAKS, BEECH, HORNBEAM, and SILVER FIRS, from 2 to 3 feet.
Address, stating lowest price and quantity, to WM. WOOD & SON, Woodlands Nursery, Maresfield, near Uckfield, Sussex.

WANTED, strong Transplanted ENGLISH OAKS, BEECH, and HORNBEAM, from 3 to 5 feet; also Common SWEET BRIARS, from 2½ to 3 feet.
Address, with price, to WM. WOOD & SON, Woodlands Nursery, Maresfield, near Uckfield, Sussex.

New Rose and Fruit Tree Catalogue.

CHARLES TURNER'S AUTUMN CATALOGUE is now ready, containing full Descriptive List of ROSES, including the new varieties. Select LISTS of all the leading FRUIT, CONIFERÆ, TREES, SHRUBS, &c.
The Royal Nurseries, Slough.

Roses.

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PAUL'S Nurseries, Waltham Cross, N.

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Dwarf Tea Roses in pots.

WILLIAM BARNES has now to offer a very fine Collection of the best TEA ROSES, all fine strong healthy Plants. LIST of sorts and prices can be obtained on application
Camden Nursery, Camberwell, S.

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Address, with price and all particulars, to WM. WOOD & SON, Woodlands Nursery, Maresfield, near Uckfield, Sussex.

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SUPERB LILIES, in 70 finest varieties.
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Seed and Nursery Establishment, Sudbury, Suffolk.

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GLADIOLI in 200 new and splendid varieties, in four sections of Early and Late kinds.
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JOHN STANDISH'S named Gold Collection is now ready for sending out, from 4s. to 60s. per doz.
CATALOGUES can be had on application to
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Gladioli.

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Botanic Nurseries, Biggleswade, Beds.

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EDWARD SHEPSTON.

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EDWARD SHEPSTON.

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BRITISH FERNS.—Upwards of 240 species and varieties on Sale at prices considerably lower than those hitherto charged. CATALOGUES on application.
EDWARD SIM & SON, The Nurseries, Cranbrook.

Genuine Garden and Agricultural Seeds.

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SEED FARMERS, MERCHANTS, and NURSERYMEN,
237 & 238, High Holborn, London, W.C.

JAMES FAIRHEAD AND SON, SEED GROWERS and MERCHANTS, 7, Borough Market, London, S.E.
New and Genuine VEGETABLE, AGRICULTURAL, GARDEN, and FLOWER SEEDS. Special prices and advantageous offers on application.

SUTTON'S RINGLEADER PEA
THE EARLIEST IN CULTIVATION.
2s. per quart.

ASPARAGUS PLANTS, in beds, 14 yards by 4 feet, 3, 4, and 5 years old, for Forcing. For price per bed apply to
FRANK WARWICK, Plant and Seed Merchant, Sleaford.

Nonsuch Lettuce.

W. IVERY begs to inform the Trade that he can now supply the above in sealed packets, with initials. Price on application. Hanover Nursery, Peckham, S.E.

To Winter Cucumber Growers.

STRONG PLANTS of TELEGRAPH, the best Winter variety, safely packed any distance, 1s. to 1s. 6d. each.
NESS & HORDAY, St. Augustine's Nursery, Norwich.

KIRKLEES HALL CUCUMBER.—Long and handsome; for winter forcing, flavour, and productiveness, this Cucumber has no equal. To be had in packets, 1s. 6d. each.
JOHN CATTELL, Westerham, Kent.

SEA KALE.—For Sale, a few hundred good strong Plants ready for forcing.—Apply to
Mr. S. GREGORY, Jun., Whittlesey, Isle of Ely.

To the Seed Trade.

A FEW QUARTERS of HARDY GREEN-TOP SWEDE, a very superior stock, may be had from
WM DRUMMOND & SONS, Seedsmen, Stirling.

DOBSON AND SONS
beg to the
NEW PELARGONIUMS, in 12 distinct sorts, 24s. per dozen; each
NEW ANEMONES, 24s. per dozen; each
COLEUS (NETTLED), in 12 distinct sorts, 24s. per dozen; each
NEW WHITE DOUBLE LOBELIA, MISS MORRELL, 1s. each
DOBSON'S PRIZE CALCEOLARIA SEED, in 6d., 1s., 2s. 6d., 5s. 6d., and 10s. 6d. packets
DOBSON'S PRIZE CINERARIA SEED, in 2s. 6d., and 5s. packets
DOBSON'S PRIZE PRIMULA SEED, in 1s., 2s. 6d., and 5s. per packet.
CATALOGUES post free.
Woodlands Nursery, Isleworth, London, W

RAYNBIRD, CALDECOTT, BAWTREE, DOWLING, AND COMPANY, Limited,
CORN, SEED, MANURE, AND OIL-CAKE MERCHANTS,
Address, Seed Warehouse, Basingstoke, Hants.
Samples and Price Lists on application. Prize Medals, 1851 for Wheat, 1862, for "Excellence of Implements."

CEDRUS DEODARA.—Fine Plants for immediate effect, from 1 to 6, 7, and more feet, safe to transplant, at 1s. per foot. CEDRUS LIBANI, 1 to 2 feet, 1s. per foot. Most of the Plants offered are in large Pots, making their removal with balls safe.
MACE & SON, The Nurseries, Bristol.

Wellingtonia aurea variegata.
R. HARTLAND begs to offer good Plants of this most beautiful Tree: 12 inches, 6s.; 18 inches, 12s.; 2 feet, 21s.; 3 feet, 42s.; 4 feet, 63s.; 5 feet, 105s.; 6 feet, 126s. Received by Grass Certificate from Royal Horticultural Society, and Bronze Medal Prize, 1865.
CHROMOLITHOGRAPHS (6 inches by 4) of the above, free by post for 25 stamps. The Lough Nursery, Bristol.

To Cultivators of Succulent Plants, &c.
T. COOPER, Holmesdale Road, Reigate, Surrey, has a large Collection of SUCCULENT PLANTS, &c., including about 150 varieties of CACTI, the ALOES, HAWORTHIAS, AGAVAS, CRASSULAS, MESEMBRYANTHEMUMS, &c., also a great many New Plants raised from African Seeds, many of which are very interesting. Orders punctually attended to.

To the Trade.
WINTER and SPRING-FLOWERING PLANTS.—Our stock of Soft-wooded ERICAS, EPACRIS, AZALEAS, and New Holland Plants is extra fine this year, and I can supply much greater than usual size, well established specimen Plants at very low prices.
T. JACKMAN & SON, Nurseries, Kingston, Surrey (choosing the Railway Station), S.W.

TRITOMA UVARIA.—A few dozens of this beautiful showy Greenhouse Perennial, of the finest Kaffir Lily plants that have been in existence, to be had.
Price 10s. 6d. per dozen, free to the Trade. Package included.
JAMES KERSLAKE, Nurseryman, Vale Nursery, Bath.

Contract Planting.—To Noblemen and Gentlemen.
CHARLES SHARPE AND CO., NURSERYMEN, Sleaford, Lincolnshire, are prepared to furnish ESTIMATES for the Formation of NEW PLANTATIONS, to Contract, including Road Planting, and Fencing, &c.

Berried Aucubas for Winter Decoration.
MAULE AND SONS offer fine bushy Plants, well set with berries, 1 to 2 feet high, 24s. per dozen; 2 to 3 feet high, 36s. per dozen; 3 to 4 feet high, 48s. per dozen; 4 to 5 feet high, 60s. per dozen; 5 to 6 feet high, 72s. per dozen.
Carriage paid to the Station. Package included.
Cash with Order.
The Nurseries, Hadley.

To the Trade.
JOHN LEAKE AND SONS, The Nurseries, Dorking, Surrey, Contractors to the Royal Horticultural Society, offer fine stock of well-grown LARCH, SCOTCH SPRUCE, ALDER, BIRCH, BEECH, SYCAMORE, ASH, OAK, SILVER FIR, THORN, QUICK, AUSTRIAN PINE, &c. The Trade will be Solicited at the lowest possible rates. WHOLESALE PRICE LIST on application.

Special Offer of Larch and Scotch Fir Plants.
TO BE DISPOSED OF, about 200,000 LARCH and SCOTCH FIR, planted as 1-year Seedlings in the Spring of 1865, but not having been required, are now to be offered at about one-third of their value.
Mr. John Wood, Forester, Hall Place, Burghfield, Reading.

Planting Season.
LARCH (Native and Tyrolese), SCOTCH FIR (Native), SPRUCE, OAK, ASH, ALDER, BEECH, PRIVET, and all kinds of FOREST and ORNAMENTAL TREES and SHRUBS, ROSES, FRUIT TREES, fine specimen ARAUCARIAS and DEODARS, and large TREES for Park Planting, now in fine condition for removal.
CATALOGUES, with sizes and prices, sent free on application to Dobson & Co., Nurserymen, Seedsmen, and Florists, 1, Waterloo Place, Edinburgh.

LAURELS for SALE. Several Thousands of well-grown and thriving Laurel Plants, 1 to 1½ feet high, delivered at the Tisbury Station, on the London and South-Western Railway, in quantities of not less than a thousand, at 4s. per 100. Either a respectable reference or the money will be required before sending the Laurels off. Post-office Orders to be made payable at the Tisbury Post Office.
Apply to Mr. John Jeffery, Old Wardour Castle, Salisbury.

Forest Trees, &c., at the Nurseries of
JOSEPH ROBSON AND SON, Bank Foot, Bedlam, Northallerton.
Twice Transplanted LARCH, 6 to 18 inches, 7s. per 1000.
2-yr. Transplanted LARCH, 12 to 24 inches, 9s. per 1000.
Four years old and twice Transplanted LARCH, 2 to 3½ feet, 20s. per 1000.
3-yr. Transplanted LARCH, 2 to 3½ feet, 15s. per 1000.
LISTS of other TREES sent on application.
Also samples of prices per rod of Beech without remittance.

IMPORTANT to the TRADE and INTENDING PLANTERS

4,000,000 1-yr. Larch.	200,000 2-yr. English oak
600,000 2-yr. Seedlings.	50,000 2-yr. Evergreen d
200,000 1-yr. Transplanted do.	100,000 2-yr. Beech
1,500,000 2-yr. Scotch Fir	100,000 2-yr. Horse Chestnut
500,000 1-yr. Transplanted do.	1,000,000 2-yr. Elms
100,000 2-yr. Transplanted do.	100,000 1-yr. Ash
1,000,000 2-yr. Spruce Fir	100,000 do. do.
400,000 3-yr. do.	10,000 1-yr. Spanish Hazel
200,000 1-yr. Pinus austriaca	50,000 1-yr. Acacia
200,000 1-yr. Pinus Laricio	100,000 1-yr. Common Broom
50,000 2-yr. Pinus Weymouthi	70,000 1-yr. Scotch Laburnum
100,000 1-yr. Silver Fir	100,000 1-yr. Cupressus (upright and lemon scented)
50,000 2-yr. Balm of Gilead	
2,000,000 1-yr. Alder	30,000 2-yr. Chinese Arbor-vitæ
300,000 2-yr. Seedling do.	20,000 2-yr. American do.
1,000,000 1-yr. Transplanted do.	1,000,000 1-yr. Plants Quick
400,000 1-yr. Sycamore	100,000 1-yr. Laurel
100,000 2-yr. do.	30,000 2-yr. do.

The Nurseries are well stocked with FOREST TREES.
PRICE LISTS, which will be forwarded on application to
MICHAEL BURNS, Drumlargan and Garradice Nurseries, Summerhill, Co. Meath, Ireland.

Special Offer to Gentlemen and Others about to Plant.
GEORGE CLARKE begs to offer, if the selection is left with himself, strong EVERGREENS in great variety, CONIFERÆ, RHODODENDRONS in all colours, DECIDUOUS TREES, &c., at £2 10s., £5, and £10 per 100.
Mr. Clarke has for the past seven years been extensively engaged in Landscape Gardening and Planting by contract; he finds that supplying plants on the above system proves very advantageous to the purchaser, as he has ample opportunity to select those only which are adapted to the soil and situation, and without additional cost, for Shrubs, &c., and plants to suit the various and contrasts of each locality, enabling all plants to be lifted with excellent balls, ensuring their success. Gentlemen's Gardens in the absence of Proprietors and the planting references of the whole Parish Districts in the locality may safely be entrusted to him.
Estimates given for all the best kinds of Roses, Fruit Trees, &c. CATALOGUES on application.
Nurseries, Bexley Heath, Loudeham Court Road, Streatham; and Mottingham, Kent, S.E.

Autumn Planting.
PETER LAWSON AND SON, at the present most suitable time for Transplanting CONIFEROUS and EVERGREEN TREES and SHRUBS, have to state that their stock of those is very large and in healthy condition
Special offers for large quantities will be made on application.
Edinburgh and London.

FORTY THOUSAND COMMON LAURELS, all sizes from 1 to 4 feet.
Wm. Wood & Son, Woodlands Nursery, Maresfield, Uckfield, Sussex

THIRTY THOUSAND Dwarf-trained FRUIT TREES in the finest health and vigour
Wm. Wood & Son, Maresfield, Uckfield, Sussex

TEN THOUSAND LAURUSTINUS, well-grown, handsome and bushy.
Wm. Wood & Son, Maresfield, Uckfield, Sussex

SEVERAL ACRES of extra large well-grown ORNAMENTAL TREES for park planting and immediate effect
Wm. Wood & Son, Maresfield, Uckfield, Sussex

STANDARD, HALF-STANDARD and DWARF ROSES, by the 100, 1000, and dozen.
Wm. Wood & Son, Maresfield, near Uckfield, Sussex.

MANY ACRES of STANDARD, HALF-STANDARD, DWARF, PYRAMIDAL, and TRAINED FRUIT TREES, consisting of Apples, Pears, Plums, Peaches, Nectarines, Apricots, Cherries, &c.
Wm. Wood & Son, Maresfield, Sussex.

SEVERAL ACRES of well-grown EVERGREEN and DECIDUOUS SHRUBS, AMERICAN PLANTS, CONIFERÆ, and ORNAMENTAL TREES. For CATALOGUES apply to
Wm. Wood & Son, Woodlands Nursery, Maresfield, near Uckfield, Sussex

ROSES.—NEW CATALOGUE just published and sent post free on application to
Wm. Wood & Son, Maresfield, Uckfield, Sussex

CHARLES NOBLE has a large quantity to offer of the undermentioned, by the dozen, 100, 1000, or 10,000:—
Dwarf ROSES of all the finest kinds, large bushes, 2 to 3 f et high, and neatly as far through
SPANISH CHESTNUTS, very fine, 1-year
THORN, very fine, 1-year
TURKEY OAK, very fine, 1-year.
MANETTI ROSE STOCKS, very fine, 1-year.
DEUTZIA CRENATA flore-pleno, very fine, 1-year.
} Sample and price if required.
STRAWBERRIES, 2s. 6d. per 100, or 21s. per 1000:—

British Queen	Fragmore Late Pine	Oscar
Empress Eugene	La Constante	Wonderful
Sir C. Napier	Marguérite	Prince Arthur.

Sunningdale Nursery, Bagshot, Surrey

FOREST TREES, &c., at the Nursery of the late David A. Reid, Park Attwood, Bewdley, Worcestershire:—LARCH, 1½ to 2 feet, 10s. per 1000; 2 to 3 feet, 12s. 6d. per 1000; 3½ feet, 20s. per 1000. SCOTCH FIR, 2 feet, 25s. per 1000. LISTS of other TREES sent on application. Apply, with reference or remittance, to
JAMES RIDDELL, Steward, Park Attwood, near Bewdley.

To Gentlemen and Others.
JOSEPH SMITH, JUN., has to offer One Million and a half Transplanted LARCH of all sizes up to 5 feet, very good. A large stock of RHODODENDRONS, ASH, ALDER, BEECH, BIRCH, CHESTNUTS, ELM, WYCH do., Narrow-leaved SILVER FIR, SCOTCH SPRUCE do., WHITE AMERICAN HAZEL, OAKS, POPLARS, PRIVET; PINUS AUSTRIACA and WEYMOUTH; QUICK, SYCAMORE, WILLOW, LAURELS, BERBERIS of sorts, &c. Price on application.
Moor Edge Nursery, Tansley, near Matlock, Derbyshire.

PONSFORD AND SON are prepared to offer the following well-grown NURSERY STOCK:—Fruit Trees in all forms; Standard and Dwarf Roses; Camelia Arborvitæs, 1 to 6 feet; Aucubas, Laurels, Variegated Hollies (fine), Ligustrum ovalifolium, MULBERRIES (above 2000 well-grown of all sizes, special offers to the Trade), Azaleas and Camellias, well set with bloom; Hyacinths, Tulips, Crocuses, &c. CATALOGUES free.
Seed and Plant Department Brixton Place; Nurseries: Loughborough Park, Brixton, Surrey, S.

PLANTING.

WILLIAM PAUL

(SON and SUCCESSOR to the late A. PAUL),

Begs to call attention to the following ARTICLES, to the CULTURE of which his NURSERIES of FIFTY ACRES are principally devoted. The quality of the Stock is, he believes, equal to any in the Kingdom, and the prices low as possible.

ROSES.

STANDARDS, 15s. per dozen, and upwards	CLIMBERS, 6s. per dozen, and upwards
DWARFS, 9s. " "	FORCING, 24s. " "

First and Second Prizes were awarded to his Collections at the International Horticultural Exhibition, and they have taken Prizes wherever exhibited.

FRUIT TREES.

Standard and Half-Standard Trained PEACHES and NECTARINES, very fine, 7s. 6d. to 10s. 6d. each.
Standard APPLES, PEARS, and PLUMS, 1s. 6d. to 2s. each.
Standard WALNUTS, very fine, 2s. 6d. each.
PYRAMIDAL APPLES, PEARS, CHERRIES, and PLUMS, 1s. 6d. to 2s. 6d. each.
Do. do., Fruiting Trees, 2s. 6d. to 5s. each.

Dwarf APPLES, PEARS, CHERRIES, and PLUMS, 1s. to 1s. 6d. each.
Dwarf-trained PEACHES, NECTARINES, and APRICOTS, 3s. 6d. to 5s. each.
Dwarf-trained APPLES, PEARS, CHERRIES, and PLUMS, 3s. 6d. each.
FILBERTS, of sorts, 4s. to 9s. per dozen.
GOOSEBERRIES and CURRANTS, 3s. to 4s. per dozen.

These are in fine health, and may be relied on as correct to name.

GRAPE VINES.

PLANTING CANES, all the best sorts, 2s. 6d. each, and upwards.
FRUITING CANES, 7s. 6d. each, and upwards.
Between 1000 and 2000 splendid Plants of these are now ready for delivery.

HARDY PICTORIAL TREES for the Decoration of Gardens, Parks, and Pleasure Grounds.—His Collection of these was the only one shown at the late International Horticultural Exhibition, and was universally admired. Collections from 18s. to 42s. per dozen, according to size and rarity.

EVERGREENS and HARDY FLOWERING TREES and SHRUBS.—1000 species and varieties, including the New AUCUBAS, the best and most popular kinds, of various sizes, by the dozen, hundred, or thousand.

WEEPING TREES and CLIMBING PLANTS in great variety.

ZONAL and NOSEGAY PELARGONIUMS.—The original Collection of Beaton's Hybrids, 9s. per dozen; his New Set of last Spring, 1s. 6d. to 3s. 6d. each.

For description and details of the above, see PRICED CATALOGUES, free by post on application. Inspection of the Stock respectfully invited.

All goods delivered free of carriage to London; if a Ton weight of Trees be ordered at one time they will be laid free of charge in the Trucks at any London Goods Railway Station.

PAUL'S NURSERIES, WALTHAM CROSS, N.

AMBROISE VERSCHAFFELT, NURSERYMAN,

GHENT, BELGIUM,

OFFERS THE FOLLOWING NEW PLANTS.

GREENHOUSE.

AZALEA INDICA CRYSTALLINA.—Bright rose salmon colour, finely spotted, very fine form and free bloomer, 12s.
CAMELLIA MRS. DOMBRAIN (figured in the "Illustration Horticole").—Beautiful rose, extremely tender, and one of the finest imbricated forms, 12s.
NEW AUTUMNAL CHRYSANTHEMUMS (published in the "Illustration Horticole").—Seven beautiful varieties; the set, 16s.

HARDY.

ALNUS AUREA (the Golden Alder Tree).—This will be one of the finest Trees. It is the common Alnus, with splendid golden leaves, 8s.
PEAR BEURRÉ DE FROMENTEL (figured in the "Illustration Horticole").—One of the best Pears sent out, 8s. This fine Pear obtained several Prizes.
RHODODENDRON ARCHIDUC ETIENNE (lately figured in the "Illustration Horticole").—Beautiful white flowers, with numerous black spots. Good plants, 12s.; strong plants, £1.

HARDY.

RHODODENDRON EXQUISITUM.—Light rose, with large red spots, very fine, 8s.
RHODODENDRON GRATIOSUM.—Lilac rose, very delicate, with large spots, very fine, 8s.
RHODODENDRON MADAME RUDOLPH ABEL.—Great improvement on Rhododendron Prince Camille de Rohan, spots more distinct, very remarkable, 8s.
TEA ROSE ISABELLE SPRUNT (lately figured in the "Illustration Horticole").—One of the best Tea Roses sent out, 8s.
WEIGELA PURPURATA.—One of the most distinct varieties obtained; the blooms are large purplish red, and of much effect, 4s.
GYNERIUM ARGENTEUM FOLIIS VARIEGATIS.—I beg to offer fine well-rooted plants, grown in pots, of this beautiful true variegated Gynerium, which is the good variety sent out by Mr. Rendatler. Good plants, 7s. 6d.; six plants, £2.

The NEW GENERAL CATALOGUE, No. 79, is ready, and may be obtained free by writing to AMBROISE VERSCHAFFELT, Ghent, Belgium. A Coloured Drawing of the New Tea Rose Isabelle Sprunt may be also obtained free.

AMBROISE VERSCHAFFELT recommends his Monthly Publication, the "ILLUSTRATION HORTICOLE." Each Number contains Three Coloured Plates of the best and newest plants. Price 14s. 6d. a year, free. A Specimen Number may be obtained free.

The Finest New Hardy Plant of the Year.

PAUL'S NEW DOUBLE SCARLET THORN, awarded First-class Certificate Royal Botanic Society and International Exhibition.

"Deep carmine-red, double and vigorous, far surpassing the old double pink."—*Editorial at Gardeners' Chronicle*, May 24, 1862.

STANDARDS and PYRAMIDS, 10s. 6d. each. See PAUL & SON'S CATALOGUE.

Old Cheshunt Nurseries, N.

New Weeping Elms.

ULMUS SUBEROSA PENDULA, 7s. 6d. each.

ULMUS SUBEROSA PENDULA MICROPHYLLA, 7s. 6d. each.

WM. WOOD AND SON would particularly beg to solicit attention to the two above-named magnificent Weeping Elms, being varieties of Ulmus suberosa, which have been raised from seed in their Nurseries, and have been greatly admired. The gracefully weeping branches of these new Elms are thickly covered with a cork-like excrescence, presenting a very interesting and novel appearance, entirely distinct from all other varieties in cultivation.

Woodlands Nursery, Maresfield, near Uckfield, Sussex.

SEEDLING and TRANSPLANTED FOREST TREES of all sorts, including a very large stock of strong Transplanted LARCH, SCOTCH and SPRUCE FIRS, SILVER FIR, and all sorts of Hard Wood PRICE LIST on application.

Through rates to all parts of the Kingdom.

R. MORRISON, Elgin, N.B.

To Gentlemen Planting.

G. FROST begs to offer large quantities of fine Transplanted LARCH, 1 to 3 feet; SPRUCE, 1 to 2 feet; SCOTCH, 1 to 2 feet; SYCAMORE, 1 to 3 feet; BEECH, 1 to 4 feet, and 500,000 QUICK for Hedges; also an immense stock of 1 and 2 year ENGLISH OAK, 1-year TURKEY do., 1-year EVERGREEN do., 1-year SPANISH CHESTNUT, 1-year HORSE CHESTNUT, 1-year QUICK, 2-year SCOTCH, SPRUCE, BEECH, and APPLES.

LIST of NURSERY STOCK on application.

Nurseries, Bampton, Devon.

To Gentlemen engaged in Planting.

TOOLE and CO. beg to call attention to their very extensive Stock of

EVERGREEN and FLOWERING SHRUBS,
HARDY ORNAMENTAL TREES,
FRUIT TREES, FOR-ST TREES, and CONIFERÆ.

Grown at their Nurseries, Ballsbridge, Rathgish Road, Dublin; and Wolfolt Bray, and respectfully invite inspection of the same.

CATALOGUES of the above forwarded post free on application. The usual discount to the Trade.

Wesmoreland Buildings, Dublin

North Road Nursery, Sleaford, Lincoln.

FRANK WARWICK begs to call the attention of Noblemen, Gentlemen, and others to his Stock of the following. Prices on application.

LARCH, 1s to 2, 2 to 3, 4 to 5 feet	BERBERIS AQUIFOLIUM,
SPRUCE, 1 to 2, 2 to 3 feet	1 to 2, 2 to 3 feet
SCOTCH, 1s to 2, 2 to 3 feet	BEECH, 2 to 3, 3 to 4 feet
BLACK THORN, 2 to 3 feet	PRIVET, 1s to 2, 2 to 3, 3 to 5 ft.

LISTS of other NURSERY STOCK on application.

Irish Yews, Hollies, and Privet.

W. WRIGHT, East Retford, Nottinghamshire, begs to offer

IRISH YEWS, 6 to 9 inches, 7s. 6d. per 100	IRISH YEWS, 2 to 3 ft., 20s. p. 100
,, 9 to 12 inches, 8s. per 100	,, 3 to 4 feet, 35s. per 100
,, 1 to 1½ feet, 15s. 6d. per 100	,, 6 to 8 ft., in fine specimens, 10s. 6d. per dozen
,, 2 to 2½ feet, 20s. per 100	100s. per dozen to 35s. 6d. and 5s. each

HOLLIES, fine plants, removed last year, 2 to 3 ft., 20s. to 35s. per 100

PRIVET (Evergreen), 6 to 9 ins., 5s. per 1000; 9 to 12 ins., 4s. per 1000

CATALOGUES of TREES, SHRUBS, &c., on application.

Terms Cash, or references from unknown correspondents.

Northampton Nurseries.

JOHN PERKINS, SENIOR, begs to call the attention of Noblemen, Gentlemen, and others engaged in Planting, to his Large Stock of the following:—2,000,000 QUICK, 1 to 2 feet, for Covert Planting, 1½ to 2, 2 to 3 feet; 2,000,000 LARCH FIRS, 3 to 4, 4 to 6 feet; 1,000,000 SPRUCE FIRS, 1½ to 2, 2½ to 3, 3 to 4 feet; 2,000,000 WHITE THORN QUICK, 2 and 3 Years' Transplanted. Also large quantities of

Pinus austriaca, 2 to 3 feet	Hornbeam, 3 to 4 feet
Berberis Aquifolium, 1½ to 2 feet	Oaks, English, 3 to 4 feet
Ditto Darwinii, 2 to 3 feet	Ditto Turkey, 3 to 4 feet
Green Box, 1½ to 2 feet	Elms, English, 6 to 8, 8 to 10 ft.
Laurels, 2 to 3 feet	Ditto, Huntingdon, 6 to 8, 8 to 10 ft.
Portugal Laurels, 1½ to 2 feet	Chestnuts, Horse, 1½ to 2 feet
Ditto ditto 2 to 3 feet	Ditto Horse, 4 to 6, 6 to 8 ft
Evergreen Privet, 2 to 3 feet	Sycamore, 3 to 4 feet
Birch, 3 to 4 feet	Beech, 4 to 5 feet
	Cedrus Deodara, 5 to 6, 6 to 8 ft.

J. P.'s stock of all kinds of Fruit, Forest, Ornamental Trees, &c., is very extensive, and this season remarkably fine, and in excellent condition for removal. Prices on application or inspection.

J. P. having such an immense quantity of Black Thorns, Larch, and Spruce Firs, will be pleased to make a special offer where large quantities are required. An inspection of the above is respectfully solicited.

DESCRIPTIVE PRICED CATALOGUES sent post free on application to 52, Market Square, Northampton.

ANDREW G. DALY, Newry, Ireland, will Sell Cheaply to the Trade:—

200,000 strong Bedded and Transplanted LAURELS
50,000 strong 3-years' ditto ditto
10,000 strong Transplanted MAHONIA AQUIFOLIA
100,000 strong 1-year Bedded ditto ditto
200,000 good well-grown 1-year Seedling ditto
10,000 3 to 4 feet SCOTCH FIR (seed from Scotland), removed last year
100,000 fine 2-years' old 1-year bedded BERBERIS DARWINII
200,000 good Seedling ditto ditto
20,000 small hardy LAURUSTINUS, from layers
2,000 strong Fuchsia Plants, ditto
100,000 strong 1-year MANETTI STOCKS
20,000 strong RHODODENDRON STOCKS, 5 years old
200,000 2-years' Transplanted THORN QUICKS
1,000,000 strong well-grown 1-year Seedling ditto
1,000 Pillar Upright IRISH YEWS, trained to one stem, 5 to 8 feet, splendid base, true Florence Court variety
20,000 small IRISH YEWS, of different ages and heights
500 5 to 6 feet WELLINGTONIAS, hardy, 3 to 4 ft. through, grown on débris of granite.

The Nurseries are filled with large well-furnished Saleable Stock of AMERICAN PLANTS, CONIFERÆ, SHRUBS, and FOREST TREES, and his SIX Greenhouses are replete with all the London and Continental Novelties in Greenhouse Plants, &c.

The above will be offered at low prices to the Trade on application, and, if agreed on, delivered free in Liverpool or Glasgow.

To Market Gardeners and Others.

CABBAGE PLANTS—lastHam, Enfield Nonpareil, Robinson's Champion Drumhead, 2s. per 1000.

RED CABBAGE PLANTS, 6d. per 1000, ex Pan. Terms, cash. I will challenge England with Plants, the Stock true, and can be warranted. All grown by

RICHARD WALKER, Market Gardener and Seed-grower, Biggleswade, Beds.

To Farmers, Gardeners, and Others.

EXCELLENT CABBAGE PLANTS (Stocks not to be surpassed) can be supplied in any quantities as follows:—

ROBINSON'S CHAMPION (an extraordinary large sort), 2s. 6d. per DRUMHEAD (finest selected), 2s. 6d. per 1000. (1000
ENFIELD MARKET (finest selected), 2s. 6d. per 1000.
TRUE DWARF NONPAREIL (earliest and best), 2s. 6d. per 1000.
RED DUTCH for Pickling, 5s. per 1000.

Special prices given for large quantities.

A remittance or reference to accompany all orders.

FREDK. GEE, Seed Merchant and Grower, Biggleswade, Bedfordshire.

The Earliest Pea in Cultivation. Sutton's Ringleader.

SUTTON AND SONS have again the pleasure of offering this unrivalled EARLY PEA, which still retains its position as the forwardest and best Early variety yet introduced. The various trials made both in Public and Private Gardens fully confirm the confidence Messrs. SUTTON expressed of its superiority over every other Early Pea. One of its merits is that the pods come into bearing all at the same time, so that the haulm can be cleared away and the ground planted with another Crop nearly a fortnight before other Early Peas are ready.

Retail price, 2s. per quart.

Lowest price to the Trade may be had on application.

SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

The Earliest Pea Grown is

CARPENTER'S EXPRESS, gathered on the 7th May, (see Testimonials), THE EARLIEST DATE ON RECORD, price 3s. per quart. The usual discount to the Trade.

EDWARD CARPENTER, Seed Merchant and Grower, Brighton and Sussex Seed Warehouse, 96, St. James's Street, Brighton.—Oct. 20.

Dickson's "First and Best" Early Pea.

FRANCIS & ARTHUR DICKSON & SONS are gratified to know that this PEA has again this season given universal satisfaction, and is pronounced by hundreds of the first Gardeners in Britain, and other competent Judges (confirmed also by their own repeated trials against all the best Early Peas of the day), to be the FIRST AND BEST EARLY PEA ever offered for general good qualities, viz., earliness, productiveness, and succession of crop. "First Crop" for "Ringleader") may, on some soils, be a day or so earlier, but it is altogether a very superior Pea, as every one freely admits. New Seed can now be supplied from a very large bulk, which they have grown to meet the great and increasing demand.

Price 1s. 6d. per pint; 2s. per quart. Price to the Trade on application.

The Old Established Seed Warehouse, 106, Eastgate Street, Chester.

THREE-YEAR ASPARAGUS PLANTS, 15s. per 1000, 2s. per 100.

ONE-YEAR ASPARAGUS, 6s. per 1000; very fine.

SEA-KALE for Forcing, 6s. per 100. Terms Cash.

RICHARD WALKER, Market Gardener and Seed Grower, Biggleswade, Beds.

Seed Potatos.

H. AND F. SHARPE are now offering MYATT'S PROLIFIC WHITE, MYATT'S KIDNEYS, EARLIEST WEBB'S IMPERIAL KIDNEY, FORTY-FOLD, FOX'S SEEDLING, EARLY OXFORD, and many other Railroad Late varieties, fine in quality, free from Disease, per 100 Terms Cash.

Seed Growing Establishment, Wisbech, Cambridgeshire.

Cucumbers, Cucumbers.

J. HAMILTON, CUCUMBER SEED GROWER, offers again two of the largest and handsomest Cucumbers ever raised in Great Britain, the BRITISH VOLUNTEER and INVINCIBLE, at 20 inches length (see *Gardeners' Chronicle*, Oct. 27). The latter took the two head prizes at the Great Horticultural International Exhibition at South Kensington, May last. Also a neat and distinct variety called the NEEDLE GUN, a great bearer, black spine, good length, the prettiest and best of all Cucumbers for Market or a Gentleman's Table, at 10s. per packet each.

Wellington Place, near Carlisle.

SILVER SAND, Peat, Loam, Mould, Rotted Manure, Guano, Cocoa Nut Fibre, Grotto Material, Gravel, Turf, Edging Tiles, Pots, Sticks, Stakes, Gishurst Compound, Tobacco Paper, and other Garden requisites in any quantity at moderate prices, at J. TATE'S, Cannon Street Road, Shadwell, near Ratcliff Cross, E.

Fumigate your Greenhouse with

TOBACCO TISSUE.

Will Destroy all the Insects and not Injure the Plants

Price 8s. 6d. per lb., carriage free, to be had of Messrs. ROBERTS & SON, Tobacco Manufacturers, 109, John Street, Clerkenwell, E.C., and of all Seedsmen and Nurserymen.

Destroy your Insect Pests.

PRESERVE YOUR PLANTS and TREES.

YOU MAY EASILY DESTROY ALL PLANT PESTS,

RED SPIDER	GREEN AND BLACK FLY	ANTS
MEALY BUG	AMERICAN BLIGHT	SCALE
THRIP		MILDEW,

Without injury to the most delicate Plant or Tree, by using

FOWLER'S GARDENERS' INSECTICIDE,

pronounced by all who have used it to be far superior to any other remedy. One trial will prove its efficacy. Testimonials forwarded on application. Price 1s. 6d., 3s., 6s. 6d., and 10s. per Tin.

GEO. & THOMAS FOWLER, North Street, Brighton; and of HOOPER & Co., Covent Garden Market, W.C.

Red Spider Magnified.

GISHURST COMPOUND, whether used against Insects and Mildew, on Growing Plants, or as Winter Dressing on Trees at rest, should be 48 hours steeped before use. This gets rid of smell, and if the Solution be decanted prevents any staining of foliage. A strength of from 1 to 2 oz. to the gallon of water is recommended for growing Plants; one from 4 to 16 oz. for Trees at rest.

Sold Retail by Nurserymen and Seedsmen, in boxes, 1s., 2s., and 10s. 6d. each.

Wholesale by

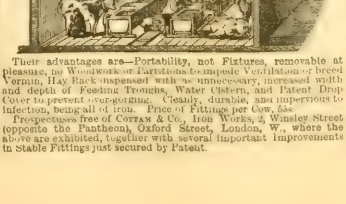
PRICE'S PATENT CANDLE COMPANY (LIMITED).

SHAW'S TIFFANY.

For samples and prices apply to

J. SHAW & Co., 29, Oxford Street, Manchester.

COTTAM'S PATENT PORTABLE UNITED COW FITTINGS



Their advantages are—Portability, not Fixtures, removable at pleasure, no Woodwork or Partitions to impede Ventilation or breed Vermin, Hay Rack suspensed with as unnecessary, increased width and depth of Feeding Troughs, Water Cisterns, and Patent Drop Cover to prevent overgorging. Cleanly, durable, and impervious to infection, being all of iron. Price of Fittings per Cow, 55s.

Prospectuses free of COTTAM & Co., Iron Works, 2, Winsley Street (opposite the Pantheon), Oxford Street, London, W., where the above are exhibited, together with several important Improvements in Stable Fittings just secured by Patent.

Glass for Garden Purposes.

JAMES PHILLIPS AND CO. beg to submit their REDUCED PRICES as follows:—

PROPAGATING GLASSES.

Each.—	s.	d.		Each.—	s.	d.
2 inches in diameter ..	0	3½	12 inches in diameter ..	1	0	
3 ,, ,, ..	0	4½	13 ,, ,, ..	1	2	6
4 ,, ,, ..	0	5½	14 ,, ,, ..	1	5	0
5 ,, ,, ..	0	6½	15 ,, ,, ..	1	7	6
6 ,, ,, ..	0	8	16 ,, ,, ..	1	10	0
7 ,, ,, ..	0	10	17 ,, ,, ..	1	12	6
8 ,, ,, ..	1	0	18 ,, ,, ..	1	15	0
9 ,, ,, ..	1	2	20 ,, ,, ..	2	0	0
10 ,, ,, ..	1	4	20 ,, ,, ..	2	5	0
11 ,, ,, ..	1	6				

HYACINTH and FLOWER DISHES

6 inches diameter .. 1s. 6d. 9 inches diameter 1 6

12 inches diameter .. .. 2s. 6d.

Hyacinth Dishes are intended to contain a number of Roots Bedded in and covered with Moss, instead of the common Hyacinth Glass.

LACTOMETERS, for Testing the Quality of Milk.

Four Tubes .. .. 4s. 6d. Six Tubes .. .. 6s. 6d.

With Stands complete.

HAND GLASSES, WITH OPEN TOPS.

Each.—	s.	d.		Each.—	s.	d.
12 inches	6	6	18 inches	9	6	
14 ,, ...	7	6	22 ,, ...	10	6	
16 ,, ...	8	6	24 ,, ...	11	6	
			30 ,, ...	12		

Painted and Glazed with 16-oz. Sheet Glass.

London Agents for HARTLEY'S IMPROVED PATENT ROUGH PLATE.

LINSEED OIL, Genuine WHITE LEAD, CARSON'S PAINTS, PAINTS of various colours, ground ready for use.

SHEET and ROUGH PLATE GLASS, SLATES of all sizes, BRITISH PLATE, PATENT PLATE, ROLLED PLATE, CROWN, SHEET, HORTICULTURAL, ENAMELLED, TILES, COLOURED, and every description of GLASS, of the best Manufacture, at the lowest terms. Lists of prices and estimates forwarded on application to

JAMES PHILLIPS & Co., 180, Bishopsgate Street Without, E.C.

Caution to Gardeners.—When you ask for

SAYNOR AND COOKE'S WARRANTED PRIZE PRUNING and BUDDING KNIVES, see that you get them. Observe the mark SAYNOR, also the corporate mark UNFAIN WARRANTED, without which none are genuine.

S. & C. respectfully beg to caution Gardeners and others, but are compelled to do so, in consequence of an imitation of common quality, having been sold for the genuine one, and which has caused many complaints to be made to them of Knives which were not of their make, all of which are warranted both by Sellers and Makers.

S. & C.'s Pruning and Budding Knives are the best and the cheapest in the market.

Paxton Works, Sheffield. Established upwards of 125 years.

SWING WATER BARROW.—This is the most cheap and effective article introduced for use in Gardens, Farm Yards, &c. The Water may be dipped out, or the Barrow filled and put out, or by merely raising the Handle it can be placed on the ground, and the Frame detached. To hold about 30 or 36 gallons, price 42s. Carriage paid to any station on Great Eastern Line.

POWERFUL GARDEN ENGINE, suitable for the above, price 45s.

IMPROVED WATER and LIQUID MANURE CARTS.

Catalogues on application.

Manufactured by W. S. BOARD, Rose Lane Iron Works, Norwich.

GREEN'S IMPROVED NEW PATENT GARDEN ROLLER.

The above Rollers possess many advantages over all others. They are made in two parts, and are free to revolve on the axis, affording greater facilities for turning, and the outer edges are rounded off or turned inwards, thus avoiding the unsightly marks left by other Rollers.

Diameter.	30 inches;	Length	32 inches,	£7	10	0
,,	24 ,,	,,	28 ,,	4	15	0
,,	20 ,,	,,	22 ,,	3	10	0
,,	16 ,,	,,	17 ,,	2	15	0

Prices for Rollers fitted with Shafts suitable for Pony or Horse Power, free on application.

Delivered carriage paid to all the principal Railway Stations and Shipping Ports in England

THOMAS GREEN & SON, Smithfield Iron Works, Leeds; 54 and 55 Blackfriars Road, London, S.; and 19, Eden Quay, Dublin.

N.B. All Orders executed on the day they are received.

PRIZE MEDALS AWARDED to GREEN'S PATENT LAWN MOWERS.

INTERNATIONAL EXHIBITION, LONDON, 1862.
INTERNATIONAL EXHIBITION, DUBLIN, 1865.

The above Lawn Mowers have proved to be the best, and have carried off every Prize that has been given in all cases of Competition.

Sold by all respectable Ironmongers, Seedsmen, &c., in the Kingdom. Illustrated Price Lists free on application.

AGRICULTURAL and HORTICULTURAL IMPLEMENTS and MACHINES of every description.

IMPROVED IRON STABLE FITTINGS.

HURDLES and CONTINUOUS IRON and WIRE FENCING.

Palisading Entrance and Field Gates. Plain and Galvanised Wire Netting.

GREEN'S PATENT LAWN MOWERS and GARDEN ROLLERS.

Garden Engines, Syringes, Water Barrows, Ornamental Garden Seats, Chairs, Tables, Iron Fountains, Vases, &c.

IRON and BRASS BEDSTEADS, in great variety.

Washing, Wringing, and Mangling Machines.

IMPROVED SAUSAGE MACHINES and FILLERS.

Separate Illustrated Price Lists free on application

THOMAS GREEN & SON, Smithfield Iron Works, Leeds.

Show Rooms opposite the Smithfield Cattle Market, North Street, Leeds; 54 and 55, Blackfriars Road, London, S., and 19, Eden Quay, Dublin.

Rhododendrons.

JOHN WATERER'S DESCRIPTIVE CATALOGUE of HARDY SCARLET and other RHODODENDRONS is now published and will be forwarded on application. It faithfully describes the colours of the new varieties exhibited by him at the Royal Botanic Gardens, Regent's Park. An Arboretum of most of popular CONIFERS, with heights and prices, is likewise combined.

The American Nursery, Bagshot, Surrey, near Sunningdale Station, South-Western Railway.

NEW HARDY RHODODENDRON. MICHAEL WATERER.—This Rhododendron has hitherto been established under the name of ANNIHILATOR, but it will be sent out under the above name. It is undoubtedly the most brilliant-coloured late hardy free-blooming Rhododendron yet offered.

Orders are now being booked for plants to be sent out in the Autumn at 5s. 6d. each. The usual discount to the Trade.

JOHN WATERER, American Nursery, Bagshot, Surrey.

Hardy Scarlet and other Rhododendrons.

W. H. ROGERS, Red Lodge Nursery, Southampton, can offer selected plants of the above varieties of the showy, bushy habit, well set with blooming buds, at £10 per 100, or selected, 20s. per dozen; also a general NURSERY STOCK of FRUIT, FOREST, and ORNAMENTAL TREES and SHRUBS, extending over 40 Acres. Detailed CATALOGUES and every information may be had on application.

American Plants, &c.

WATERER and GODFREY'S PRICED and DESCRIPTIVE CATALOGUE of RHODODENDRONS and other American Plants is now ready for Autumn, and will be sent on application. The Catalogue also gives a summary of their General Nursery Stock, probably the most extensive in the kingdom.

Knap Hill Nursery, Woking, Surrey.

THE QUEEN, without any exception the best WHITE RHODODENDRON yet raised.—Robust grower, deep green foliage, late and abundant bloomer, truss large, compact, and symmetrical, footstalk short and stiff, colour white, suffused with soft blush nuance, changing to the purest white, clear alabaster or waxlike, of unequalled substance and substantiality, reminding one of the petals of the Water Lily. It remains in bloom longer than most other Rhododendrons, a peculiarity probably accounted for by its hitherto refusing to produce seed, an advantage all Rhododendron growers well understand. All who visited the International Exhibition will remember the transcendent superiority of The Queen over every other white Rhododendron exhibited. It was pronounced that The Queen should assume her throne in 1867. All and everybody who wish to enjoy her regal sway should apply at once, as all orders will be executed in rotation. The price will be 31s. 6d. each, and the Trade will have four plants grouped for three guineas. It need scarce be surprise that its sole possession by the Advertiser should have called forth the envious jealousy of certain Hooxonian Men. Hence a story ingeniously circulated in the Provinces that The Queen was a new one but an old kind, shown under an assumed name. The Advertiser would be glad to be informed WHEN, or WHERE, and UNDER WHAT NAME this Rhododendron has been seen, and in whose possession it is to be found. The whole undivided stock is in the hands of CHARLES NOBLE, Bagshot, Surrey.

Winter Flowers.

RHODODENDRON PRÆCOX, the best of all Winter-blooming Plants, can now be supplied. Compact Bushes, with from 20 to 100 Blooms, 10s. 6d. to 7s. 6d. each, with usual discount to the Trade, by the Raiser,

ISAAC DAVIS, Larkfield Nursery, Wavertree, near Liverpool.

High Beech.

JAMES CRAWFORD has to offer a fine Collection of RHODODENDRONS and AZALEAS, fine Specimens, of good form and bloom, and well-set with buds, for Transplanting. Also 100 fine AZALEA INDICA, well set with bloom.

Rhododendron ciliatum and dauricum.

ISAAC DAVIES can supply beautiful Bushes of the above, with flower buds, suitable for Potting. Prices for large quantities very low.

Larkfield Nursery, Wavertree, near Liverpool.

GREENHOUSE PLANTS to be SOLD.—A small Collection containing prettily grown specimens 2 to 3 feet in height of the choicest sorts of AZALEA INDICA, CAMELLIA, and RHODODENDRON; some choice FERNS, MELOCACTI, &c.; also 12 Hardy Hybrid RHODODENDRONS, comprising John and Mrs. Waterer, and other fine sorts. To be seen at

Mr DANDY'S, 12, Medina Villas, Dalston Lane, Hackney, N.E.

Chrysanthemums.

ADAM FORSYTH begs to inform his Friends and the Public that his extensive Collection of CHRYSANTHEMUMS is NOW in FLOWER, and may be seen every day (Sundays excepted). His facilities for housing them have been greatly increased, and those interested in the cultivation of this favourite flower will find this a good opportunity for seeing the whole process in which it may be grown for the decoration of Greenhouse or Conservatory at this season.

Brunswick Nursery (opposite West Hackney Church), Stoke Newington, N.

British Fern Catalogue.

ROBERT SIM can now send, post free for six postage stamps, Part I. (British Ferns and their varieties, 36 pages, including prices of Hardy Exotic Ferns) of his NEW and PRICED DESCRIPTIVE CATALOGUE of BRITISH and EXOTIC FERNS, No. 7.

Foot's Cray Nursery, S.E., a mile from Sidcup Station of New North Kent Line of South Eastern Railway.

Cupressus Lawsoniana argentea.

MESSRS. WATERER AND GODFREY are now sending out

Good stout Plants, 1½ foot high and bushy, at 21s. each.

It has been awarded Three First-class Certificates by the Royal Horticultural Society of London, the Botanic Society of London, and at the Crystal Palace; and may be justly represented as a distinct and very beautiful plant, and one that will become a general favourite.

Knap Hill Nursery, Woking, Surrey.

OFFER TO THE TRADE.

CYCLAMEN EUROPÆUM, per 100 roots 10s. 6d.
" HEDERÆFOLIUM, per dozen 8s.
" MARMORATUM, per dozen 7s. 6d.
" NEAPOLITANUM, per 100 roots 25s.
" ODORATUM, per dozen 7s. 6d.
" REPANDUM, per 100 roots 25s.
FRITILLARIA GRÆCA, per 100 roots 7s. 6d.
" TRISTIS, per 100 roots 7s. 6d.
LEUCOJUM LEOJONQUILLE, per dozen 12s.
SCILLA NIVALIS, per 100 roots 7s. 6d.

FREDERICK ADOLPHUS HAAGE, Jun., Erfurt, Prussia.—Oct. 27.

Amaryllis.

JAMES GARAWAY AND CO., Durdham Down Nurseries, Bristol, offer, from their unequalled stock of the above-named favourite Bulbs, a number of unnamed Seedlings and others that have bloomed with them during the two last seasons, at 5s., 7s. 6d., and 10s. 6d. each, or 60s., 80s., and 105s. per dozen.

JAMES GARAWAY & Co.'s GENERAL BULB CATALOGUE for the coming season is in the Press, and when ready will be forwarded post free on application.

JAMES GARAWAY & Co., Durdham Down Nurseries, Bristol.

New Double-flowered Amaryllis.

H. LAURENTIUS, Leipzig, begs to call attention to his New AMARYLLIS ALBERTI, double-flowered, fine and well-shaped, bright scarlet and white striped, of which representations may be seen in the "Illustration Horticole," and the "Garten Magazin." Strong-flowered Bulbs, 12s.

His AUTUMN CATALOGUE (No. 30) is just out, and contains a full description of the above, together with PRICE LISTS of NOVELTIES, BULBS, AZALEAS, &c., and of a large number of Plants of Trade prices. It can be had gratis on application (by prepaid letter) to him or to his Agents, Messrs BUTHAM & BLACKITT, Cox's Quay, Lower Thames Street, London, E.C.

The Horticultural Establishment of H. LAURENTIUS, Leipzig, Germany.

Sutton's Unrivalled Collections of Bulbs.

Carriage Free.

SUTTON'S GUINEA COLLECTION of BULBS for BLOOMING in POTS and GLASSES.

SUTTON'S GUINEA COLLECTIONS for BEDS and BORDERS.

For particulars see SUTTON'S AUTUMN CATALOGUE, which may be had gratis and post free.

SUTTON & SONS, Royal Berks Seed Establishment, Reading.

Hyacinths and other Dutch Bulbs.

WM. CUTHUSH and SON beg to acquaint their numerous Patrons that they have received their usual Consignment of Choice HYACINTHS, TULIPS, CROCUSES, &c.

PRICED DESCRIPTIVE CATALOGUE post free on application

Highgate Nurseries, London, N.

100,000 Hyacinths, Tulips, Jonquils, Narcissus, and Crocus.

HENRY STROUD, NURSERYMAN, Green Lanes, Stoke Newington, N., has just purchased in Holland the above surplus stocks, and now offers the following Roots for £1, package included:—30 HYACINTHS, choice varieties; 150 choice Early TULIPS; 4 sorts; 200 mixed CROCUSES, in 8 splendid varieties; 12 large NARCISSUS, 12 SWEET JONQUILS, and 1 LILIUM LANCIFOLIUM RUBRUM or ALBUM. Half the above for 10s. 6d.

Fine LILIUM LANCIFOLIUM RUBRUM or ALBUM, 6s. per dozen, 40s. per 100. All orders to be pre-paid.

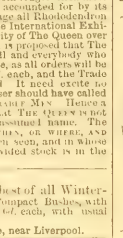
Dutch Flower Roots.

FRANCIS & ARTHUR DICKSON & SONS have received, from the best Growers in Holland, a very large Importation of the above, and have the satisfaction to say that the BULBS are unusually large, sound, and well-ripened, and for which early orders are requested to ensure the best Roots.

Flower Roots of £2 value will be delivered free of carriage at the principal Railway Stations and Shipping Ports throughout the country.

DESCRIPTIVE PRICED CATALOGUE and all particulars free by post on application.

The Old Established Seed Warehouse, 106, Eastgate Street, Chester.



Dutch Flower Roots.

ARCHIBALD HENDERSON begs to announce that he has received from Holland a large consignment of BULBOUS ROOTS in fine condition.

DESCRIPTIVE and PRICED CATALOGUES are now ready, containing practical directions for the successful cultivation of each section of Bulb, in Pots, Glasses, and the Flower Garden.

Also a DESCRIPTIVE PRICED LIST of all the best GRAPE VINES in cultivation. Catalogues may be had gratis and post free upon application to

Sion Nursery, Thornton Heath, Surrey; and at the East Surrey Seed Warehouse, College Grounds, North End, Croydon.

New Catalogue of Plants, Dutch Bulbs, &c.

ROBERT PARKER begs to announce that his NEW CATALOGUE, containing Select Descriptive and Priced Lists of New, Rare, and beautiful Greenhouse, Hardy and Stove Plants, Hardy Ferns, Fruit Trees, Grape Vines, Roses, Rhododendrons, Seed potatoes, &c., Crocuses, Ixcinanas, Gladioli, Hyacinths, Liliums, Narcissus, Tulips, and other Bulbs, is now published and will be forwarded to applicants.

Exotic Nursery, Tooting, Surrey, S.

All the New Fuchsias of 1866.

H. CANNELL has got a splendid Lot of all the above kinds, per dozen (Nonpareil excepted), strong, established Plants, and will make fine Specimens for Exhibition next season; package included. And all the above kinds in strong-rooted little plants sent free by post, and warranted to arrive safe, fresh, and in good condition to any part of the United Kingdom, 6s. per dozen. And all the best older varieties at 4s. per dozen.

H. CANNELL, Nursery, Woolwich.

CHEAP PLANTS.

12 of the best NOSEGAY PELARGONIUMS, including Pink Stella and Le Grand, 3s.

12 of the best ZONALS, including the new double Gloire de Nancy, 7s.

12 of the best NEW VARIEGATED, 5s., 12 best older varieties, 4s.

12 of the best NEW VERBENAS, 3s.

Or the above Collection, all established in small pots, for £1 5s., package included.

PELARGONIUMS, French and English show varieties, our selection, from a large healthy stock, 3s. per doz.

CARNATIONS and PICOTEES, good named sorts, 3s. per dozen, 20s. per 100.

GARIBALDI PICOTEES, fine for forcing, 3s. per doz.

PINKS, from a good collection, 2s. per doz.

ISOLEPIS GRACILIS, 4s. per doz.

NUNN & HOBDAY, St Augustine Nursery, Norwich.

NEW CATALOGUES for the SEASON of 1866 and 1867.

No. 1. ROSES.—A Select List of all the best varieties in cultivation, fully and faithfully described.

No. 2. FRUIT TREES.—A Descriptive List of all the choicest varieties of Fruits.

No. 3. CONIFERS, ORNAMENTAL TREES and SHRUBS.—Contains 30 varieties worthy of cultivation, with interesting notes of description, height, size, native country, &c.

No. 4. TRANSPLANTED FOREST TREES.—Plants for cover and underwood.

No. 5. GARDEN and AGRICULTURAL SEED and ROOT CATALOGUE.

No. 6. GENERAL PLANT CATALOGUE.

The above will be forwarded free on application to

JOHN CRANSTON, King's Acre Nurseries, near Hereford.

Picea Nordmanniana.

JOHN GRIER begs to inform admirers of Coniferæ that he is Commissioned to DISPOSE of a very HANDSOME SPECIMEN of the above. It is 17 feet high, perfectly shapely and symmetrical, and was planted in its present position three years ago; consequently is in a condition to remove with perfect safety. Price and other particulars may be obtained upon application.

The Nurseries, Ambleside.—Oct. 27.

NEW AND BEAUTIFUL PLANTS.

JUGLANS MACROPHYLLA.—From the North of China; leaves upwards of 3 feet long, and the fruit 15 to 20 in a cluster. It is perfectly hardy, and altogether one of the most beautiful foliage plants ever introduced. Strong Plants, 21s. each.

TAXUS ADPRESSA STRICTA.—Has leaves precisely like T. adpressa, but every plant is furnished with a strong lead, which it makes every year, a valuable property. Strong Plants, 10s. 6d. to 31s. 6d.

NEW ACUBAS.—JOHN STANDISH has a splendid lot of Seedling Plants of his own raising, with every form and variegation of leaf, 5s. to 21s. each. Also a fine stock of MALE PLANTS and of A. jap. vera, from 5s. to 21s. each.

ATHYRIUM GORINGIANUM TRICOLOR.—This is a most beautiful hardy variegated Fern. Quite unique, and conceive a more beautiful object than a plant of this growing on a shady bank or rockwork out of doors. Strong Plants, 21s. each.

RHODODENDRON CHIANOIDES.—This is a pure white from the opening to the fall of the flower, and having an immense compact truss has the appearance of a mass of snow. Plants 10s. 6d. each. A few extra strong, with flower buds, 21s. each.

Besides the above, JOHN STANDISH has a large and fine Collection of RHODODENDRONS, and all kinds of SHRUBS, CONIFERS, and FRUIT TREES in the finest possible condition for transplanting.

CATALOGUES of the above can be had on application to

The Royal Nurseries, Ascot.

PAUL AND SON'S ROSES and their CATALOGUE. —DESCRIPTIVE LIST is now ready. For general prices see large Advertisement last week.

PAUL & SON would remind their friends that the present time is favourable for moving Roses.

The "Old" Cheshunt Nurseries, N.

ROSES.—Extra fine Standards, at from 15s. to 18s. per dozen; 100s. per 100.

Do. Dwarf, extra fine, at from 9s. to 12s. per doz.; 63s. to 84s. per 100.

Do. New Sorts of 1866, at 24s. per doz.

DESCRIPTIVE LIST on application.

RICHARD SMITH, Nurseryman and Seed Merchant, Worcester.

Seedling Hybrid Perpetual Roses.

Handsome, new, and distinct from any previously raised.

Honorable Mention of the Horticultural Society of the Rhone (see Minutes, Sept. 1866).

DUCHER, HORTICULTEUR, Chemin des Quatre-Maisons, Guillotière, Lyon (Rhone).

64. ANTOINE DUCHER (D.).—Very vigorous; flowers erect, campanuform, full and very well shaped; bright red; finer and darker than Madame Domage; very good for forcing.

71. MADAME PULLIAT (D.).—Very vigorous; flowers medium size, globular, erect, and very well shaped; dark rose colour; blooms perpetually.

77. MADELEINE NONIN (D.).—Vigorous; flowers medium size, detached, very full, and shaped like the Cabbage Rose; salmon pink, new colour; blooms perpetually.

43. M. PLAISANCON (D.).—Very vigorous; flowers erect, very large, globular, full, and very well shaped; dark carmine; blooms perpetually; very good for forcing.

39. VILLE DE LYON (D.).—Very vigorous; flowers erect, very large, globular, very full and well shaped; dark rose; excellent for forcing.

Price 25f. each. The five varieties for 100f.

Roses, Fruit Trees, Conifers, Forest Trees, &c.

JOHN CRANSTON begs to direct attention to a large and superior Stock of ROSES, FRUIT TREES, CONIFERS, FOREST and ORNAMENTAL TREES, &c.

His Nurseries extend over upwards of 50 Acres, situated in the centre of the county of Hereford (which is acknowledged to possess the finest soil and climate for the growth of Fruit and Forest Trees of any other county in England), and is well stocked with Trees of every description.

DESCRIPTIVE PRICED CATALOGUES will be forwarded on application, and to Purchasers of large quantities Special and most advantageous Prices will be given.

Planting undertaken by Contract or otherwise.

The Nurseries, King's Acre, near Hereford.

Fruit Trees, Roses, Evergreens, &c.

W. KNIGHT begs to inform intending Planters that he has many Thousands of the above, with every other ORNAMENTAL TREE and SHRUB, in the finest possible condition, at reasonable prices. An inspection is respectfully invited. DESCRIPTIVE PRICED CATALOGUES free.

The Nursery is within two minutes' walk of the Hailsham Station (South Coast Railway).

Floral Nursery, Hailsham, Sussex.

FRUIT TREES.—The finest collection in England. 2000 sorts are grown in all manner of training, and are free from insects, mealy-bug, or chlorosis, with which trees in some Nurseries on calcareous soils are affected. Trees from such should be avoided, as when once established they are hard to be cured.

A 92-page CATALOGUE and large Supplement full of information gratis, on application to J. SCOTT, The Nurseries, Merriott, Somerset.

A Quarter of a Million of Fruit Trees.

THOMAS WARNER begs to remind intending Planters and the Trade, that his Nurseries, which occupy upwards of 70 acres, in addition to his own, contain the most extensive stock of Evergreens, Ornamental Trees, Roses, &c., All in a high state of cultivation. An inspection is respectfully invited.

CATALOGUES, Wholesale or Retail, may be had free on application.

The Nurseries, Leicester Abbey, one mile and a half from the Midland Railway Station.

MAGNIFICENT PYRAMID FRUIT TREES.—Fine-grown Bearing Trees of PEARS on Quince Stock; APPLES on Paradise; CHERRIES on Mahaleb; PLUMS, &c. Special quotations on application.

JOHN CALDICOTT, Nurseries, King's Acre, near Hereford.

Dwarf-trained Trees by the 1000, 100, or dozen.

APPLES, PEARS, PLUMS, CHERRIES, PEACHES, and NECTARINES. Fine, flat, well-trained, of best quality, and true to name.

RICHARD SMITH, Nurseryman and Seed Merchant, Worcester.

RICHARD SMITH'S FRUIT LIST contains a Sketch of the various Forms of Trees, with Directions for Culture, Soil, Situation, Pruning, Lifting, Cropping, Treatment under Glass; their synonymes, quality, size, form, skin, colour, flesh, flavour, use, growth, duration, season, price, &c. Free by post for one stamp.

RICHARD SMITH, Nurseryman and Seed Merchant, Worcester.

Fifty Acres of Fruit Trees.

APPLES, PEARS, PLUMS, CHERRIES, PEACHES, NECTARINES, and APRICOTS in every form desired for Fruiting.

RICHARD SMITH, Nurseryman and Seed Merchant, Worcester.

WELL-TRAINED TREES of BEARING SIZE.—Our Well-Trained Fruit Trees this season are very fine, and include PEACHES, NECTARINES, APRICOTS, and FIGS, suited for planting in houses for immediate Fruiting. An inspection is respectfully invited.

T. JACKSON & SON, Nurseries, Kingston, Surrey.

HOLLY BERRIES and APPLE PIPS from choicest Devon and Somerset Cider Fruit.—A large quantity for Sale.

For price, &c., apply to ROBT. H. FORSTER, Taunton, Somerset.

T. B. & C. Seign Carriers (lowest charge being guaranteed) to be forwarded through Messrs. J. W. NUTTING & SONS, Seed Merchants, 60, Barbican, London, E.C.

Keele Hall Beurre Pear.

WILLIAM GEORGE CALDWELL begs to intimate that he has a fine stock of healthy Plants of the above PEAR described in *Gardeners' Chronicle* of December 11, 1864, page 1024, which he has procured direct from Mr. Hill, Gardener, Keele Hall. Strong Plants, 5s. 6d. each; second size, 3s. 6d. each.

Knutsford Nurseries.

WIRGO AND SON have a large Stock of the following SHRUBS, viz.:—

Apples	Alder	Withy
Cherries	Ash	Quick (strong transplanted)
Plums	Birch, variegated (Spanish)	
Pears	Hornbeam	Common and Portugal Laurels
Peaches and Nectarines	Hazel	
	Larch and Scotch Fir	Privet
Forest Trees	Oak (English)	Roses, &c.

Samples and Prices can be had on application at The Nursery, Wonersh, near Guildford, Surrey.

Splendid Grape Vines of all the finest varieties in cultivation.

WILLIAM BARNES begs to announce that he has now a very fine selection of the above to offer, both FRUITING and PLANTING CANES, all very strong short-jointed, well-ripened wood, and will produce a fine crop of fruit next spring.

The great demand W. B. has had for Grape Vines these several years past, and the many applications for them being late in the season, when he found it somewhat difficult to supply the sorts and quantity required, has induced him to erect a new house, entirely for their cultivation, which has produced upwards of 200 Fruiting Plants, that cannot be surpassed in size or quality.

In addition to these W. B. has many hundreds of fine Plants to offer, grown by his usual means.

Sorts and Prices can be obtained on application.

Camden Nursery, Camberwell, S.

New General Plant Catalogue.

B. S. WILLIAMS' NEW PLANT CATALOGUE, containing many really good Novelties, and carefully selected LISTS of STOVE, GREENHOUSE, and HARDY PLANTS, is now ready and will be forwarded post free to all applicants.
Victoria and Paradise Nurseries, Holloway, London, N.

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CHARLES TURNER is now prepared to execute orders for HOYLE'S and FOSTER'S most beautiful SEEDLINGS. The DESCRIPTIVE CATALOGUE which is now ready also contains LISTS of the finest ZONAL PELARGONIUMS in each class, FINKS, AURICULAS, CINERARIAS, &c.
The Royal Nurseries, Slough

Wholesale Catalogue of Nursery Stock.

GEORGE JACKMAN AND SON'S PRICED and DESCRIPTIVE CATALOGUE for 1866 and spring 1867, can be had free on application, comprising Fruit Trees, Roses, American Plants, Conifers, Clematises, Evergreen and Deciduous Trees and Shrubs, and transplanted Forest Trees, &c., &c.
Woking Nursery, Surrey.

Early Spring Flowers.

WEBB'S GIANT POLYANTHUS and COWSLIP, with all the best varieties of Double and Single PRIMROSES, PANSIES, &c., with Seeds of single varieties. LIST of prices of different kinds on application to
Mr. WEBB, Calcot Gardens, Reading.

Azalea indica.

WILLIAM BARNES has many Thousand magnificent Plants of the above to offer, in various sizes, including every variety worthy of cultivation, all finely grown, and full of flower buds. Sorts and prices can be obtained on application.
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CHARLES NOBLE'S TRADE CATALOGUE is now ready, and can be had on application. It contains a select assortment of Roses, Rhododendrons, Fruit, Forest, and Ornamental Trees, &c.
Sunningdale Nursery, Bagshot.

SEE BARR AND SUGDEN'S ADVERTISEMENT, p. 1059.
BULBS and CLIVEDEN PLANTS for Spring Blooming.
BARR'S PRIZE CALCEOLARIA.
NEW VIOLA CORNUTA SEED and PLANTS.
NEW LAPAGERIA ROSEA SEED.
UNBLOOMED AMARYLLIS, &c.

New Grass Seeds for Exportation.

SUTTON AND SONS have received their supply of NEW GRASS SEEDS of the present season's growth in fine condition, and will be happy to forward lowest price per ton or cwt. on application. CATALOGUES gratis and post free.
SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

Lilium lancifolium.

SUTTON AND SONS have received several varieties of the above splendid LILY in fine condition.
For descriptions and prices of each see SUTTON'S AUTUMN CATALOGUE, which may be had gratis and post free on application.
SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

The Gardeners' Chronicle.

SATURDAY, NOVEMBER 3, 1866.

MEETINGS FOR THE ENSUING WEEK.

TUESDAY, Nov. 6 { Royal Horticultural (Floral and Fruit Committees) at Inwards Kensington .. .. 11 A.M.
{ Ditto (Scientific Department) .. .. 3 P.M.
SATURDAY, — 10 { Royal Horticultural (Weekly Show), South Kensington .. .. 2 P.M.

A SHORT time back one of our correspondents called attention to a remarkable GRAPE VINE growing in the Nursery Garden of Mr. KAY, at Finchley (see p. 757), and described it as not only carrying an unusual quantity of bunches of Grapes, but most of the bunches being in point of size of more than usual proportions. Many of them were described as being of 2 lb. weight and upwards, a size which is not attained under ordinary circumstances where the crop is confined to 12 or 20 bunches upon an established Vine, and certainly something very remarkable where the bunches are produced by the hundred. To this same Vine we invited attention some few years since (see *Gard. Chron.*, 1862, 739), but the melancholy death of Mr. KAY, a few weeks later, prevented our object in then referring to it, from being realised. The fine old Vines at Cumberland Lodge and Hampton Court are pretty well known, but in those gardens, though the bunches are numerous and the Grapes excellent in quality, the bunches rarely exceed from half a pound to a pound each in weight. Still the total weight produced is enormous, and leads one to ask, if a single Grape Vine, with roots uncontrolled, will assume such unusual proportions with such remarkable and desirable results, are we right in confining our house Vines to a single rafter, their roots being of course restricted in the same proportion?

This is a grave question, which is worth discussing at the present time, and we hope our great growers, our MEREDITHS, HILLS, FOWLERS, THOMSONS, SPEEDS, and others, will not shrink from grappling with it, and from giving their opinion upon its philosophy. It would also be very interesting to learn the size and history of any other large Vines in the country, and at the same time to get some account of the average weight of the crops produced. Some 30 years back, there was a forcing garden connected with the Royal Palace at Kensington, situated in what is now the Palace Gardens. Upon the foreman's cottage, an old-fashioned house of large size, was a Black Esperione Vine, which covered the whole of the south front of the house, the west gable, and a considerable length of wall at the east end of the house. Altogether something like 200 superficial yards were covered by this one Vine, and from it there were annually cut several hundreds of perfectly matured bunches, many of which found their way to the Royal table as hothouse Grapes. We forget the exact history of this Vine, but according to the statement of Mr. JOHN ATTON, who had the charge of the Kensington Gardens, it had then been planted more than half a century, and for many years had produced large crops of excellent fruit. Another Vine of unusual size for the kind, was the Muscat of Alexandria, now known in the trade as BARNES' Muscat, growing in the garden of GEORGE W. NORMAN, Esq., at Bromley Common. This Vine, 20 years back filled a house some 30 feet long and of proportionate width, and annually produced beautiful crops of splendidly matured Grapes. At the time Mr. BARNES took charge of Mr. NORMAN'S garden this Vine was in delicate health, and upon examining the border he found that the Vine had scarcely any roots in the border proper, but that one main root ran away into the subsoil—whither Mr. BARNES knew not, and he was afraid to trace it. He therefore set to work to cultivate the few surface roots which were found around the main stem, and by the judicious application of surface dressings and bottom heat, succeeded so far as to restore the old plant to complete health and remarkable vigour. Upon that Vine we saw for many years remarkable crops, dozens of bunches weighing from 3 lb. to 4 lb. each, and finished with that peculiar "mint mark" of a master cultivator, a rich transparent amber colour, and a hammered surface to each berry. At the time we speak of, 20 years back, Mr. BARNES told us that Mr. NORMAN had an account of Grapes cut from that Vine for 80 years previously, and how long it had been in bearing before that he did not know. The dates we have cited would make it more than 100 years old, and a few years back it was still in full vigour.

We might cite examples of other large Vines which we have seen in different parts of the country, but these are sufficient to show that constitutionally the most delicate, as well as the most hardy of Grapes are capable of extending themselves with a superior result much beyond the limits considered necessary, and generally assigned to them. This naturally gives rise to the question, is our modern system of confining each Vine to a single rafter the correct one, and will the practice stand the test of critical examination? We think not, and for this reason. If we trace the history of our great exhibitors we shall to a large extent find that in Grape growing their success is coeval with the youth of their Vines; that after a few years cropping they only attain superior results by concentrating the vigour of a strong Vine upon a very small crop of fruit; and that as they cease to follow this practice they inevitably retrogress in the roll of prize takers. We might intensify these facts by specifying individual examples of our theory, did we not wish to abstain from being invidious. If, however, the reader will calmly examine for himself, he will, we think, arrive at our conclusions, and if he does not, it will be in cases where there has been, or is a constant accession of new Vineries, and where consequently young Vines are regularly coming into a fruiting state.

Now, in the case of Mr. KAY'S Vine, certainly planted upon a Vine-growing soil, but without any special care to foretell its superior success, not only are large crops produced annually, but large crops of large fruit, many of the bunches (Hamburghs) weighing 3 lb. or 4 lb. each, a result rarely indeed attained upon Vines under the restrictive process of management. There must be a reason for this success, and what is that reason? Mr. KAY'S Vine is not nearly so large as the Vines at Hampton Court and Cumberland Lodge; but, as we have before remarked, it differs from them in the size of the bunches it produces, and in its remarkable vigour. The average size of the bunches at Hampton Court would scarcely exceed half a pound in weight; those at Cumberland Lodge the last time we saw them were larger, but Mr. KAY'S Vine carries 300 bunches of from 2 lb. to 5 lb. each; and therefore, taking the average, this small Vine produces as great a weight of fruit as the 2000 bunches produced upon the large Vine at Hampton Court. The Finchley Vine was planted only 10 years ago, in a span-roofed house some 90 feet long by nearly 20 feet in width. Its lateral branches leave the main stem, which crosses the house near the centre, at right angles, and are carried along to each end. The border received no particular care in making, beyond good drainage, as it is formed of such an *omnium gatherum* as results from carting in soil from any convenient building sites where the surface could be obtained, and the only manure applied is the annual surface mulching of dung.

It must, however, be recollected, that the soil in the vicinity of Finchley is peculiarly suited for Vine growing. At Colney Hatch a disciple of the late Mr. CRAWSHAY produced remarkable Grapes which were shown regularly at the Regent Street meetings of the Horticultural Society, and Dr. LINDLEY has repeatedly stated that no preparation whatever was made before planting these Vines, beyond that of trenching the ground in the ordinary manner; and the only fire-heat employed was an Arnott stove introduced into each house in the autumn season to dry the atmosphere. But the Vines found all the nutriment they required, and hence the soil was as good as if the border had been made in the most elaborate manner.

What Vines particularly require is soil that is fresh, and such as has not been previously used for garden purposes. Secure this, with the surface Grass upon it, and as it may be heavy or light, add a certain amount of material to secure porosity without making it too heavy or light, and it will be odd if Vines do not grow vigorously in it. We recollect being at the late Mr. JOHN WILLMOT'S at Isleworth, on the occasion of his planting some Hamburgh Vines on the back wall of a lean-to Pine stove, and which afterwards produced some Grapes of more than usual excellence. The pathway was formed of clinkers from the fires, and brick rubbish of all kinds, which for years had been soaking up manure-water from the adjoining dung linings. The only care taken in planting was this:—one man with a pickaxe grubbed out the holes, another threw in a barrow-load of loam, and a third planted the Vines, which Mr. WILLMOT trod in with about the same care that he would a common Laurel or Larch. But, as has been remarked in these pages, Vines in the valley of the Thames, from its rise down to Gravesend, grow with great luxuriance in the natural soil, or rather in the red sand and gravel which it overlays. The soil is of course an alluvial deposit, rich in vegetable matter, and in this plants of all kinds grow with great luxuriance—the Vine particularly so. The difficulty however in Vine management is to know at sight a soil in which a Vine will grow satisfactorily; and hence in the absence of that knowledge, it is better to make a little admixture in the shape of compost than to run any risk of ultimate success.

While on the subject of Vine soils, we may state that we have seen this season upwards of 2000 pot Vines, in a nursery establishment, not one of which was in a marketable condition. They had been potted in a sound second-spit loam, intermixed, we were told, with lime and night soil. But the roots would scarcely touch it, and where they had gone into it, they looked like anything rather than Vine roots. Now this was a soil to which we should not have objected at sight for a Vine border, and yet anything so unsuited to Vine culture we never met with. We mention the fact to show that even fine-looking soils are not always suitable for certain plants, and to point out the impropriety of one man maintaining that we want nothing but pure loam for Vine culture, because another altogether differently situated, and perhaps upon another geological formation, has succeeded from the use of that material.

—— WE have to announce the death of an eminent Spanish botanist, Don VICENTE CUTANDA, which took place on the 23d of last July. Don VICENTE CUTANDA was born in 1804, and had been Professor of Botany in the University, and in charge of the Botanical Gardens at Madrid, since 1846. He was also a Member of the Royal Academy of Sciences from its commencement, and was author of the "Flora of the Province of Madrid."

—— The papers announce the death, on the 18th ult., at Munich, of Dr. VON SIEBOLD, the well-known Japanese traveller, to whose energy and perseverance we are indebted for the introduction of so many fine plants from Japan, before the incursion on that flowery island of our own intrepid collectors, Mr. R. FORTUNE and Mr. J. G. VEITCH. He is said to have died of typhus. Dr. SIEBOLD had reached the age of 71, and we remember well with what energy only a year or two since, at the Brussels Congress, he propounded his views respecting the variegation of plants, a brief account of which we shall shortly lay before our readers, as a memorial of their author.

—— Our correspondent Mr. FISH informs us that there is still a prospect of the proposed SHOW of the

ROYAL HORTICULTURAL SOCIETY at Bury St. Edmund's taking place. The Council had indeed declined, as stated by us at p. 1018, on account of the unsuitableness of the only site which, as it seemed, was available; but a change has been brought about by local effort, and not only has a free site, close to the new railway station, and just opposite the Royal Agricultural Society's show ground, been obtained, but a very satisfactory beginning has been made in the establishment of a guarantee fund. The site has been given by Mr. GUY, of the Angel Hotel, and is better one, Mr. FISH informs us, could not be found. We also learn that still another site would be available if thought preferable to that just mentioned.

—— Professor ASA GRAY is publishing in the columns of the "American Agriculturist" a series of popular articles on the FERTILISATION OF PLANTS. In the "Queenslander" we observe that Dr. MARCH is giving a series of Letters on GEOLOGY and CHEMISTRY.

—— The *Natal Mercury*, in an article on the botanist GERRARD, who died recently at MADAGASCAR, says—"South Africa numbers many men who, devoted with an earnestness to the pursuit of botanical science, are known often than otherwise undervalued in their arduous studies and labours. The time, it is hoped, however, will come when these men—these real benefactors of the human race—will be duly and thankfully acknowledged. The discoveries of Mr. GERRARD in this Colony were acknowledged in most flattering terms by the late Dr. HARVEY and Sir WILLIAM J. HOOKER; and since his departure from Natal to Madagascar Sir HENRY BARKLY practically expressed and appreciated his services. In one of GERRARD'S last letters he says, 'Sir HENRY is more than a father to me.' In a short notice like this, it would be invidious to name all who bear testimony to our friend's perseverance and unwearied exertions in exploring the most remote nooks and corners in search of new plants. In HARVEY and SONDER'S "Flora Capensis" he has added many new genera, and upwards of 150 species, the greater number of these being discovered by his individual exertions alone. When we consider that ECKLON and ZEYHER, Professor MEYER and other eminent collectors, had been over nearly the same ground, we need not add this as another proof of the industry which gleaned so rich a harvest. GERRARD left Natal in April, 1865, and arrived at Madagascar during the following month, where he made large collections of plants, insects, birds, &c., on the coast line between Tamatave and Mahambo. At Foul Point he fell a victim to pestilential marsh fever. The death of so accomplished and indefatigable a naturalist, far away from friends and home, is with much sincerity deplored by a numerous circle of friends to whom he had endeared himself.

—— We understand that a PHOTOGRAPH of the EXECUTIVE COMMITTEE of the International Horticultural Exhibition of 1866, by Mr. VERNON HEATH, is now ready for distribution, and may be had on application to Mr. DEAN, 8, Denmark Villas, Ealing. Many persons having expressed a desire to possess some *souvenir* of the Great International Horticultural Exhibition of 1866, we may add that some views of the Exhibition have been prepared by the same artist, and also by Messrs. CUNDALL.

—— We invite the attention of our readers to the movement now on foot for the purpose of obtaining TOBACCO for HORTICULTURAL USE free of duty. The absolute necessity for the frequent fumigation of plant houses for the purpose of destroying or preventing the attacks of insects injurious to vegetation, is so well known to cultivators that we need only refer to it in order to show what a great advantage it would be to gardeners to be able to secure genuine tobacco instead of the preparations now resorted to, without being mulcted in the heavy excise duties which are properly enough imposed on tobacco when used as an article of luxury; the more especially so, inasmuch as they are not legally permitted to cultivate the plant for themselves, even for this special use. Concessions have been already made by the authorities to farmers and Hop growers, and there is reason to believe that concurrent action on the part of horticulturists would secure for them a similar boon. We shall be happy to receive letters from our readers expressing their views on the question, which would, no doubt, strengthen the hands of those who are taking an active part in promoting the movement, and who propose to proceed by memorial and deputation.

New Plants.

339. RODRIGUEZIA BATEMANI, *Pöpp. et Endl. Nov. Gen. et Sp.*, vol. i. t. 70, *alias* Burlingtonia rubescens, *Lindl. Bot. Reg.* xxiii., sub 1927.

Racemo pluriflore, bracteis triangularibus, carinatis, acutis, ovaria pedicellata non omnino æquantibus, sepalo superiori cuneato, oblongo acuto, inferiori subæquali curvulo acuto, petalis cuneato-oblongis, obtuse acutis, labello utrinque ante basin angulato, lato liguiato antice dilatato, emarginato, carinis geminis per medium, ante basin utrinque in plicam extrorsum excurrentibus, columnæ bracteis erectis lanceis acutiusculis.

This elegant plant was discovered in 1830 by Pöppig, in Southern America, growing on Calabash trees. He returned home to Leipsic in 1833, and Mr. Bateman, then a very young man, having paid him a visit, as we have no reason to doubt, Pöppig named the plant Rodriguezia Bateman. And in calling it Rodriguezia, he did well to avoid the erroneous name of Burlingtonia, a useless synonym for Rodriguezia, as any one can ascertain by consulting Ruiz and Pavon, Fl. Peruv. Prod. tab. 15. It is, no doubt, a piece of ill-placed servility to perpetuate such faults. Thirty-six years after its first discovery, we are happy to have the plant in our stoves, thanks to Mr. Linden. We owe the possession of flowers to him, and have others before us raised in the gardens of the Lord Bishop of Winchester, under the care of Mr. Lawrence. The plant has small bulbs, long leaves, and a spike of whitish flowers, with a purplish violet hue, and which are as large as those of Rodriguezia candida. It is, no doubt, a desirable plant for cultivation.

340. DENDROBIUM (PEDILONUM) PARCUM, *Rchb. f.*

Caule ramosissimo, subcompresso, ancipiti lineari, foliis lineari-ligulatis, apice obliquæ acutis, racemis pauciforis lateralibus, bracteis triangulis, scariosis quam ovaria longepedicellata multo brevioribus, sepalo dorsali ligulato, obtuso acuto, petalis angustioribus, sepalis lateralibus in mentum curvum semilunatum obtusum extensis, labello a basi ligulato dilatato bilobo, basi infima punctato, columna apice quadridentata.

A very poor-looking species, with a branching stem in the way of Dendrobium ramosissimum, R. Wight, having narrow grassy leaves 2 to 3 inches long, and racemes of small greenish-yellow flowers. It was discovered by the Rev. Mr. Parish in Burmah, and has flowered with Messrs. Low & Co.

341. BIFRENARIA INODORA (*Lindl.*), *B.* XANTHINA, *Lind. Rchb.*

It is very remarkable to see a splendid yellow variety of this well-known plant with green or purplish flowers and a purplish lip. It was introduced by M. Linden from Bahia. *H. G. Rchb. fil.*

PARISIAN GARDENING.

[The following remarks are condensed from a Report drawn up by M. A. Brongniart of a visit made by the Council of the Society for the Encouragement of Horticulture in the City of Paris, to Muette, Passy.]

IN 1855 there were introduced into the Bois de Boulogne, in order to form groups of a special character, plants with large foliage from tropical regions, such as Bananas, Cannas, &c. These plants, put in the open ground during the fine season, and watered abundantly, grew admirably, producing a fine effect by their grand and remarkable forms.

It was necessary to have an establishment to raise these plants, and glass houses to place them in during the winter. The farm Georges, at Passy, was taken for this purpose, which comprises a surface of 25,788 metres (upwards of 6½ acres). The actual commencement took place in 1856, and at the end of 1865 there were 21 glass houses of different dimensions, either in extent or height, occupying on the ground a surface of about 4500 metres (upwards of one acre), and giving 6300 metres (about 1½ acres) of glazed surface. The expense of the construction of the glass houses, completed in 1865, including the apparatus for warming, amounted to 1,000 francs (over 12,000*l*.). Eight small glass houses, occupying 800 metres of ground, are now being built; these are low buildings destined to take the place of some 5000 glazed frames, the glasses of which are turned to account. The surface of the ground covered with glass, either in houses or frames, amounts to about 1 hectare, or 2 acres 1 rood 35 perches. Each of these different glass houses has its own heating apparatus, but all are warmed by a circulation of hot water, the varied arrangement of which has allowed useful comparisons to be made.

The small glass houses now being built are to be warmed by an apparatus for the circulation of hot water, whose boilers of small size are heated by jets of gas. This manner of heating, already tried upon two of the glass houses, has given excellent results: it allows the temperature to be regulated at will without any attention to the firing so long as no change is required, it allows simplification in the heating, and at the price at which gas is furnished in Paris (15 centimes—about 1½*d*.—the cubic metre), it appears to produce an economy of 30 per cent. over other modes of heating already in use.

In 1865 it became necessary to devote a larger space to raising plants for the open air, perennial and annual; for this purpose a branch establishment was made in the Bois de Vincennes, occupying 54,560 metres (about 13½ acres), which would further be increased to 80,000 metres (about 19¾ acres) by adding to it a part of the trenches of the fortifications. From the first year the branch establishment of Vincennes produced 431,430 plants for the ornamentation of the gardens of the city. The flower garden of La Muette furnishes 1,143,995 plants, making thus a total of 1,575,425 plants distributed by these two establishments in 1865.

It was found necessary, moreover, to add to these two gardens two large nurseries, which are placed under the same management: one near the pond of Auteuil, meant principally for coniferous trees, the other at Longchamps, for trees and ordinary shrubs to supply the public gardens in Paris. Paris also established in 1859 a large nursery at Petit-Bry-sur-Marne, upon ground of 160,000 metres (about 39½ acres) in extent, the object of which is to raise plants with lofty trunks for planting in the line of streets. It contains more than 100,000 trees, which will form good stems, suitable to be transplanted when of large size for the boulevards, the avenues, and the open spaces in the city.

If a calculation be made of the cost of the plants which are sent out from the flower garden of Paris of all kinds, rare or common, large or small, for ornamenting the beautiful gardens established in all quarters of the city by the municipal administration, it will be found that each plant costs 13 centimes (about 1½*d*.); this is scarcely more than the value of the most common annual grown in the open air, while the average value of each plant sent out from the flower garden is estimated at 60 centimes (about 5½*d*.). A system of exchange has for some time been adopted by the managers of the Paris flower gardens, which, without extra expense, increases the collections, and in addition fosters the multiplication of new and rare productions. But it is well understood that these are exchanges of plants for plants, the price put on each is only for the convenience of exchange, so as never to interfere with the commerce of horticulture—a commerce so important to Paris and its environs, and which the city of Paris seeks only to encourage and not to compete with.

By good management, and by the introduction of novelties, as well as by economy, both in construction and cultivation, the management of this establishment has been able to distribute profusely in all the public gardens a great variety of plants, and thus encourage in the people a taste for flowers, and amongst amateurs a desire for the embellishment of their gardens. It has thus rendered a true service to the commerce of horticulture, and by the pupils which it forms it raises up skilled workmen possessing the best principles of science. The flower garden of the city thus becomes a real practical school of horticulture. The director who so skilfully manages these matters, taking advantage of a fortunate circumstance, has the most remarkable plants which grow in his garden painted by a Belgian gardener, M. Philippe Labotte, who entered in 1864 as a common *employé* at the flower garden of Muette, and who has been found to be a skilful artist, and at the same time a clever geologist. Formerly a pupil at the School of Mines at Namur, ruined by two successive fires which destroyed his horticultural establishment there, he was compelled to earn his livelihood by working as a common gardener. After a year of this hard labour, in which he showed himself a skilful horticulturist, M. Alphand discovered his talent as a painter in water colours, when he was employed to paint the most interesting plants in the establishment. M. Labotte's drawings are remarkable in every respect by precision in details, truthfulness in form and colour, and the ease with which they are executed; they form a collection of water-colour paintings equally interesting for the objects they represent, as well as for the artistic talent displayed in their production. M. Labotte has been already honoured with a prize at one of the Shows of the Imperial and Central Society of Horticulture.

NOTES ON CONIFERS.—No. XI.

SEQUOIA SEMPERVIRENS.

(*Concluded from p.* 971).

THE explanation of a quantity of acorns having been found in the stem of a Red-wood tree enveloped by 120 layers of annual growth, is that there is a woodpecker in California (Melanerpes formicivorus of ornithologists), the carpentero of the settlers, which has the habit of piercing the bark of Oaks and Pines with holes, in which he inserts acorns, thus storing them up for future use. The holes are nicely adjusted to the size of the acorn, which, when driven in by the energetic blows of the carpentero, can with difficulty be extracted. Dr. Newberry says that the bark of the Pinus ponderosa, or Western Yellow Pine, is particularly thick and cork-like, and is divided into plates of from four to eight inches in breadth, with smooth surfaces. Into these plates he tells us that the carpentero sometimes inserts acorns in such numbers that the trunk appears thickly studded with wooden pegs.

When the curious and unexampled habit of the woodpecker in question was first announced in this country it was received with suspicion, on the ground that there was no instance known among birds of any species making provision for the future. We had provident ants, provident bees, and various other provident insects—we had plenty of provident rodents—mice, lemmings, beavers, squirrels, dormice—but birds, so far as known, were utterly improvident; and, in truth, there seemed no particular reason why they should be provident. Their great powers of flight enable them easily to migrate to any climate they please, and if they cannot get food or comfort in one, they have the means of seeking it in another. It may be, however, that like the Red-wood itself, this woodpecker has come down to us almost unchanged from the Miocene epoch, and that this habit was one developed before migration was known to birds—for that the migration of birds was an instinct of comparatively late appearance seems pretty clear.

We ourselves received from California a piece of timber and bark cut off the outside of a Pinus ponderosa, riddled with thimble-shaped holes made by this woodpecker, each about as large as a man's middle finger, and about 1⅛ or 2 inches deep. This specimen we gave to Sir W. Jardine, in whose collection it no doubt still is.

The squirrels find these stores of acorns extremely convenient, and they become the occasion of unending battles between the carpentero and themselves. Mr. Simson, a Californian settler, gives the following account of one of these amusing scenes. He states that he had seen the birds "bore the holes, put in the acorns, hammer them well in, and take them out again in spring." (Proc. Roy. Phys. Soc., 1854, p. 1). On one occasion, in the time of a great flood, his party were encamped on a kind of island that had escaped the inundation, and having nothing better to do, watched the operations of these birds—

"There were six or eight of them at work on a tree in which there was a squirrel who had made his house in a hollow at the root of a branch. The squirrel would pop out his head and look at them; and the moment the coast was clear he would run out and tear and scratch away at the bark to get at the acorns which had been pegged in; and when the birds saw him they would all attack him and he would run like lightning down the tree, and up the other side and into his hole again, and then peep out and watch another chance to do the same, evidently having great fun. This continued for about three days, until at last one of the party knocked the squirrel's head off with a rifle ball, and rid the woodpeckers of their persecutor."

Whether the woodpecker finds a sound acorn or a

grub in the shell in spring probably does not much matter, so far as the question of food is concerned, as the Melanerpes genus of woodpecker feeds both on fruit and insects, but it would certainly be a more complicated case of instinct if it stored the acorns up to procure an insect afterwards, than if it did so only to procure an acorn.

But the Mount Diablo *trouvaille* is chiefly striking from the testimony it bears to the long continuance of the routine of Nature. A hundred and twenty-seven years ago, possibly thousands of years ago, the Californian woodpeckers were hammering acorns into the bark of the Red-wood as they do now, and but for man and his encroachments might continue to do so for thousands of years to come. Now that man has entered on the scene, it is doubtful whether any Melanerpes formicivorus will remain to hammer in acorns by the end of another 127 years, or any Red-wood trees remain in which to peg them.

Our correspondent above quoted wonders that this tree finds so little favour in England, and his surprise is not unreasonable. That a tree invested with so much interest from its antiquity, its associations, and its almost supernatural size, distinguished for the excellence of its timber, as well as the rapidity of its growth, and the seeds of which, from the accessibility of its native locality, are easily procured and consequently cheap in price, should not be largely introduced, is scarcely natural. There must be some reason for it. It can hardly be said that it is not hardy; other trees from the same locality thrive well enough in England. Pinus ponderosa, P. Sabiniana, P. insignis, Cupressus macrocarpa, and others are fairly hardy here, and so is this species. The reason probably is, that it is not equally suited to all districts.

Thanks to the kindness of Mr. Charles Palmer, of Manchester, a young Dendrologist with an especial affection for Conifers, we have in our hands materials from which to arrive at some conclusions on the subject. Mr. Palmer has with great care and labour collected a vast amount of information as to the hardiness of different species of Conifers and other trees in this country, more especially during what we may call the test-winter of 1860-61. This information he has tabulated in large ledgers, which with rare liberality he has placed in our hands, with the invitation to make use of the materials so collected, and we think that from his materials and others already in our possession we may occasionally be able to offer some practical suggestion which may be of use.

The first idea which naturally occurs to one with regard to the growth of the Red-wood in Britain is, that as in its native country it is nowhere found very distant from the sea-coast, it may be a maritime species, and will only thrive in those parts of the country which are within a moderate distance of the sea breeze.

On examining Mr. Palmer's tables we find that although in the main they lend some support to this view, the exceptions are so numerous as to render it almost certain that other circumstances have an important bearing upon the successful cultivation of the species.

The general result of Mr. Palmer's tables shows the worst effects at 113 places in England, Scotland, and Ireland to have been as follows, viz.:—

	Killed.	Much injured.	Injured.	Not injured.	Total.
England	7	22	34	23	83
Scotland	2	5	8	10	25
Ireland	..	..	1	4	5
	9	27	40	37	113

It is to be observed that in a large proportion of the cases reported (at least 14 out of the 40) as "injured," the injury consisted simply in the leaves being browned, which is a very common event in all seasons. Out of the above 113 places, 38 lie within 10 or 15 miles of the sea coast, and 75 are more inland. Of the former (those to a certain extent within the influence of the sea breezes) 30 either escaped entirely without any injury at all, or the worst injury done to them was slight, and at the remaining eight places trees were killed only at two, the others, however, having them much injured. Of the 75 places beyond the influence of the sea breeze, 47 suffered only slight injury or escaped altogether; at 21 the worst effects were serious injury to the trees, and at seven death ensued. These data give the following proportions of worst effects:—

	Uninjured, or only slightly injured.	Much injured, or killed.
Coast Districts ..	Four-fifths.	One-fifth.
More Inland districts ..	Three fifths.	Two-fifths.

showing a certain (although not a very great) preponderance in favour of the coast districts.

Another element, however, which seems to affect this species still more, is situation and exposure: of these the most prejudicial is a low and damp situation. At 21 places which are reported as having had the trees growing in high and exposed situations, and 19 others where the situations was low, the proportionate results were—

	Not injured.	Injured.	Much injured.	Killed.	Total.
High or exposed	8	10	2	1	21
Low situation ..	1	4	13	1	19

Showing that in exposed situations only a seventh were seriously hurt, while in low situations they amounted to three-fourths. The degree of injury which was sustained by those of the exposed marked 'injured' was also not severe, but chiefly fell upon those in the inland counties. It must not thence be inferred that it is a tree which should be placed in an exposed situation. The very contrary is the case—not one of the instances reported on by Mr. Palmer as having been growing in a sheltered situation was injured at all. The present Lord Advocate of Scotland found his Red-wood trees at the Cairnies so dependent on shelter as to lead him to say that they seemed to thrive best under the shade of taller trees; and Mr. Fowler, the gardener at Castle Kennedy, who has had as much practical experience as most men, gave the following as the result of his experience in 1853:—"A number of plants of Taxodium sempervirens at Castle Kennedy have suffered very much. This has been occasioned, perhaps, more by the cold winds than the severity of the frost. This is a plant which should never be placed in an exposed situation; none of the other species in the collection have been injured to any extent." But Miss Florence Nightingale has taught us that fresh air and exposure are not necessarily convertible terms. She can give the one without the other in the sick room, and there seems no good reason why we should not be equally successful in our plantations.

We are unable from our data to draw any general inference regarding the effects of aspect. The trees seem to have suffered indifferently in all kinds, and not in one more than another; at first we were inclined to expect that we should find that a northern aspect would prove better than any other, as happens with many exotics that put out their young shoots too early for this climate. But that does not seem to be the case with this tree. It puts forth its young leaves about the 15th of May, and ceases growing about the 15th of September.

There can be no mistake, however, about a low and damp situation being most unfitted for it. It likes a rich deep soil, and does not do well in poor or damp ground. Drainage may cure the latter evil, but in low situations the air may be cold and damp even after the soil is dry. What seems to fit it best is an airy position, in which it is sheltered from too powerful blasts. These often break off considerable pieces of the soft green leaders.

The species was first discovered by Menzies, in 1796; and again by Douglas in 1830; but was not introduced into Europe until 1840. No older specimens than 27 years of age can therefore be met with, and of course no very large trees can be expected. The largest that we have a note of are the following (all above 30 feet in height):—

Castle Martyr, Cork, 98 feet high (measurement taken in 1860).
Blenheim Park, Oxfordshire, 75 feet high (1862).
Stanford Court, Worcester, 40 feet high (1862).
Highnam Court, Gloucester, 85 feet high (1862).
Nettlecombe, Surrey, 98 feet high (1862).
Croxdon Hall, Lancashire, 35 feet high (1862).
Pendarn Castle, Carnarvon, 42½ feet high (1862).
Rossie Priory, Perthshire, 72 feet high (1862).
Cole Orton, Leicester, 50 feet high (1862). It was 55, but lost 5 feet blown off by wind.
Osborne, Isle of Wight, 30 feet high (1862).
Singleton, Carmarthen, 30 feet high (1862).

To which Mr. William Earley, at p. 950 of this Journal, enables us to add one which must be probably the second or third tallest in the kingdom:—

Essendon, Herts, 55 feet high (1866).

We shall be very glad if any readers of these papers will add to the list. *A. M.*

Home Correspondence.

Picea cephalonica.—It may be interesting to many to know that this very beautiful Silver Fir does well in the north of England, when planted in situations where it is shaded from the morning sun in spring, as recommended by Mr. Barnes (see p. 1021). In the grounds here is a very fine robust promising young specimen of it. It is more than 13 feet high, and the spread of the branches is 38 feet in circumference, the girth of trunk 22 inches, and the growth of the leading shoot this season 2 feet 4 inches. It is fully exposed to the west, gets all the afternoon sun, and has to bear the brunt of western gales, which are sometimes terrific. At about 50 yards' distance to the east are some very high trees, which shade it from the morning sun. It was planted 10 years ago, and during these last seven years not a bud or shoot has been injured by frost in spring. It is a well-furnished symmetrical tree, feathered beautifully with branches to the ground; and if no mishap befal it, it will in a few years be a very grand specimen. It stood the frost of December, 1860, uninjured; indeed, no winter frost, however severe, seems to damage it in the least. It is the young growth, which it makes early in spring, that suffers from late frosts. The young growth of P. Webbiana, bracteata, Frazeri, and other Silver Firs also suffers in like manner from late spring frosts. When these trees are planted on hill sides exposed to the west, or in situations where they are shaded from the morning sun, they succeed admirably; in such situations they do not generally begin to grow so early as they do in places fully exposed to the morning and midday sun: and if they do make a little growth early, and a frost comes, they do not suffer from it, as the frost is all gone and the trees are dry before the sun reaches them. I have often seen the young growths on large trees of the Cedar of Lebanon killed by late spring frosts on the side of the tree exposed to the morning sun, when not a single shoot has been in the least injured on the side exposed to the west. I have observed the same thing, not only in regard to other Conifers, but also as respects many evergreen trees and shrubs. All gardeners know what the result is if the sun comes on a plant when frozen; and that a plant, when frozen, if well syringed with cold water, shaded before the sun comes on it, and kept cool, will receive very little injury. If planters attended to these matters we should hear less complaints about trees being killed or doing badly. As Mr. Barnes very justly remarks, "In tree culture there are many and various circumstances, such as situation, climate, and attention to various matters, which exercise considerable influence over the result." I have often noticed that P. cephalonica, Webbiana, Frazeri, and others are omitted from many nurserymen's lists. I presume this is so through there being no demand for them; planters being under the erroneous impression that they are too tender for this climate, when in reality they are the hardiest of trees, standing any degree of frost in winter, and if planted on hill sides exposed to the west, or in situations shaded from the morning sun, they rarely or ever suffer from late spring frosts. These trees are so beautiful and so interesting at all seasons of the year, and especially in winter, when all is bare and desolate, that they should be extensively planted in pleasure-ground and plantation. They are perfectly hardy, and will succeed well if planted in the situations that have just been recommended for them. *M. Saul, Stanyhill, Yorkshire.*—Admitted that this beautiful Fir is at Bicton all that Mr. Barnes describes it to be; yet it may fairly ask whether he is not carrying local dictum too far unto the demands of public doctrine respecting it? Let Mr. Barnes, then, give us his experience of the "Princess Pinsapo" at Bicton; and invite all your "old practical observant planters, young authors, and converters of timber;" yes, and botanists, lovers of the beautiful, too, all over the United Kingdom, to give us their notes and experiences upon and with these beautiful trees; then it may be decided whether the "young author" is justified or no in the eulogium he has pronounced in reference to Pinsapo. *Senilis.*

Paint for Hothouses.—Twelve months ago I had a house built for the cultivation of Cucumbers and pot Vines in winter, and I have not been able to use it yet, owing to the disagreeable and poisonous smell given off by the paint when the house is closed and becomes heated. Indeed so poisonous is the smell that the plants curl up, and in a few days drops off, and the plant dies; in fact it kills everything. I have no hesitation in saying it is the paint, as there are no foul drains connected with the house, and it is not from the pipes, for they are not painted. I notice that when the house becomes warm the paint becomes soft, and a shiny substance appears to come upon it; in fact the paint has never been dry, for when warm we can scrape it off with the thumb-nail. I have left air on night and day for months, but whenever the house is closed and warm the smell comes on, and it is as bad as ever. Can you or any of your readers suggest a remedy? *T. Record, Gr. to Colonel Loyd, Hawkhurst, Kent.* [What kind of paint was used? EDS.]

Aucuba japonica.—Will some one of your many readers impart, for the benefit of the subscriber in particular, and of all interested in general, a little information upon obtaining berried plants of our common Aucuba japonica. I have a nice strong male plant just bursting into flower, and which I wish to introduce among some small potted female plants. My query is, how shall I find young plants at this time of year that are in a flowering state, or is this the season at all for such work, and if not, when shall I be likely to realise my purpose? I would not ask to occupy valuable space, if I did not feel that the same point may be of interest to others, unless, indeed, it is owing to my own stupidity. *H. D., Winton.* [Gather the pollen and keep it dry in a close paper till you can get the females in flower; then apply it with a camel's hair pencil. EDS.]——Has anybody fruited the Aucuba to perfection in the open air? I mean fertilised the plants "and all" in the open air, and ripened and coloured the berries thoroughly? *R.*

Messrs. Lane's Orange Grape House.—Messrs. Lane deserve credit for the manner in which they conduct most matters connected with cultivation. For years past their Vines and other fruit trees in pots have been the admiration of visitors to our metropolitan shows. They have however yet another treat for the public in store. They have at present a span-roofed Grape house, 120 feet in length, 24 feet in width, and some 13 feet in height, literally one mass of Grapes, from end to end, ripe and ripening, and such clusters! Why, some of them could not possibly weigh less than between 3 and 4 lb. each. They were ripe in the end of September, and with good management will last till April. Some of the sorts are not so well coloured as could have been desired, a circumstance altogether owing partly to the unusually wet and sunless season which we have experienced, and partly also owing to the low damp situation in which the house is built. The border—a very narrow one, with a hard beaten road in front of it—is certainly covered with frame lights to throw off wet, but as the house was not in the first instance intended for a Vinery, little preparation was bestowed on it. The result nevertheless has been most satisfactory; the crop, when fully ripe, being worth, at a moderate calculation, not less than 200*l.*, while the outlay has been comparatively little. The Vines were merely induced to break naturally in spring, and no fire-heat was applied until after the turn of the season. Among the sorts are Buckland Sweetwater, which being at the warm end of the house, is exceedingly well coloured; Trentham Black, not quite so satisfactory, but yet juicy and good; Foster's Seedling, an excellent late white Grape; Mill Hill and old Black Hamburgh, with wonderfully fine berries; Lady Downes' Seedling, one of the best of late Grapes; Black Alicante, another excellent late variety, which also succeeds admirably in pots. Other sorts consisted of Barbarossa; Chaoush, a white kind, with long tapering bunches, in this instance somewhat watery and by no means rich in flavour; Raisin de Calabre, fleshy and good; Bowood Muscat; Duchess of Buccleuch, excellent, the Muscat flavour belonging to it being well developed; Frankenthal, one of the most useful of all the varieties of Black

Hamburgh; Pope Hamburgh, also a fine showy Grape; West's St. Peter's and Trebbiano, the last with very large and fine bunches. Associated with these were, moreover, Muscat Hamburgh, wonderfully fine, each bunch weighing between 3 and 4 lb. They were, however, red, not black; but it ought to be mentioned that there were no fewer than 31 bunches on one rod. Amateurs, especially, should pay a visit to this house, in order that they may see with what ease, under certain circumstances, Grapes may be grown in perfection. *J.*

Pterocarya caucasica.—As this tree is comparatively rare, and probably few will answer "W. M. E.'s" query (p. 1201), I hasten to state the little I know upon the subject. I only know one other plant besides the one at Cambridge, and that is a mere bush in a gentleman's garden at Bury St. Edmund's. It would not be wise to generalise from such limited experience, but the tree seems to me but little adapted for forming an avenue; and for such an object could not for one moment compete with Ailantus glandulosus, which it much resembles, the Ailantus being by far the nobler tree of the two. A full account of the Pterocarya will be found in "Loudon's Arboretum." Reference is there made to large plants of it at Croome, in Worcestershire, and at Versailles, where it flowers every year. It is described as forming a broad-spreading tree, about 30 feet high, and although affected by frost, is sufficiently hardy to be classed among ornamental trees of the third rank. It is readily increased by layers. Care should be taken to train it to a single stem, and also to plant it on poor soil to ensure its wood ripening. Mr. Loudon also recommends its being worked on the common Walnut, either at the collar to form dwarf bushes, or standard high for trees, as probably inducing greater hardiness. If used for avenues this would be the best mode of proceeding, and so treated it would have a striking and novel appearance. *A Practical Hand.*

Lilium auratum.—Is Lilium auratum thoroughly hardy? I believe it is, but want to know how it has behaved with such of your correspondents as have planted it out. *R.*

Heckberry.—When travelling through the Lake District during the past few weeks I was several times arrested by a very sweet perfume resembling somewhat the odour of the Meadow Sweet. I was some time before I could discover from whence it proceeded, and at last found it was from the dead leaves at my feet. The tree our driver called a Heckberry tree, and said it bore dark, rough berries; certainly not Sloes. I shall be much obliged by your giving me the correct name. *R. D. S.* [The twigs and leaves sent are those of the Wild Cherry, Cerasus Avium, which bears in some districts the name of Heckberry. Eds.]

Rose and Leaves.—I have to thank Mr. Fish for his prompt and courteous replies to my questions; but as they are not satisfactory to me, I may be allowed, without any wish to occupy unnecessarily your valuable space, to make a few farther remarks. The guano is said to be an unfortunate case (see p. 924); heavy dews will readily decompose guano, and I know this to be a most unfortunate case for the farmer when such takes place without any rain to wash it into the ground. The thing is a positive loss. I believe there is scarcely a farmer in England but what would endorse this statement. It was only last spring, when we had in contemplation the top-dressing of about a hundred acres of Grass here, that a neighbour told me one season he put on 90*l.* worth of first-class guano, and he did not think he got one shilling in return, simply from the fact that it did not penetrate the dew and sun had finished the work of decomposition on the surface, where the Grass leaves had signally failed to appropriate the escaping ammonia. I believe with Mr. Fish that for the tap-root of a Carrot or a Parsnip to ramify near the surface, which it would do if it found food there, would be ruin, but to do so after it had descended a foot or 15 inches into the ground would not be ruin, but gain—hence the wisdom of burying their food so deep. Some few years ago a gardener, whose name I forget [Mr. Earley], was highly commended in the *Gardeners' Chronicle* for growing some excellent Salsify, I think; and if my memory serves me rightly, this was his common-sense plan. Many would indeed be very thankful to Mr. Fish if he could show them how to grow these crops as well (or better) without manure as with it. We should hail the information that would enable us to save between 3*l.* and 4*l.* an acre for manure, an awave that crops are not grown solely or chiefly for the amount of food they can consume, but, I repeat, if leaves have such a power of feeding as contrasted with that possessed by roots, and the food is found in the air, let us have a large leaf-surface. I do allow that large-eared Wheat is better than long-strawed, but I fail to see what this has to do with the argument. The question in my mind is this,—have the roots or the leaves most to do with the secreting of both straw and ears? The Vine illustration is said to be equally unfortunate. I quite believe much depends upon the top treatment of Vines, but I was not aware that good crops were constantly obtained from leaf and stem feeding alone. The emission of roots from the stems of Vines is a powerful evidence to me of their determined struggle to feed by root, either in the earth or in the air; it is root-feeding in either case. I am now quite convinced that I have not understood the meaning of the heading "Theory and Practice of Ventilation;" my simple idea of it was, that it was to show the necessity for, and to teach some better method of admitting the external air to horticultural buildings, but now I begin to think it means something else, and embraces the manufacture of certain gases. This I infer from what Mr. Fish says respecting the Fuchsias: he seems willing that the manure-water plant should be placed out of doors, but the clean-water plant is to be in an atmosphere charged with carbonic acid gas and ammonia (a condition only attainable by artificial means and without "ventilation")—then he thinks their growth would be nearly alike. I meant them both to be out of doors, so as to test what their roots would do for them while their leaves had the full advantage of unlimited ventilation. But even supposing them indoors, I believe it is simply impossible to grow first-rate Fuchsias without good roots and good soil. Indeed, almost every day's practice shows us the necessity of roots, not only as mechanical fixtures, but as the principal feeding media of the vegetable kingdom. Were it not so, we should not hear so much about root lifting, pruning, healthy action, &c., and I think the teaching of horticulturists has been in this direction; but if they and I have been wrong, I for one bow with submission, but without practical proofs I am likely to remain sceptical. I confess that I have not read carefully the long articles that Mr. Fish has written on ventilation, and hence, perhaps, the reason why I do not fully understand him; thus in one line he says the air is not in any sense food for man, but is essentially food for plants. I have been taught to believe it is about as much food for the one as it is for the other, and their method of using it is much the same, only one takes what the other rejects. Then it is said, the purer it is the sooner it will starve both; yet, he says, pure air is the life of man. If I understand the meaning of the expression "pure air or oxygen," Mr. Fish means that pure air is oxygen; then, I say, on the ground that the purer air is the sooner it will destroy both, pure oxygen is destructive to animal life. We often read and hear of the purity and bracing effects of mountain air, and experience proves that it is so; and as Mr. Fish says, and no doubt with truth, that an atmosphere charged with carbonic acid gas and ammonia will destroy human life. Then there must be small quantities of either in mountain air, yet we find the Pinus tribes luxuriating on their sides, and often in isolated patches there, even supposing there was a decomposition of their fallen leaves going on, the rapid current of air would sweep the liberated gases out of the patch before it could reach the living leaves in any quantity; this brings me back to the fact that the vegetable kingdom depends more upon its roots than it does upon its leaves for support, and to consider that the assertion that plants receive ten times as much food through the medium of their leaves as they do through their roots was either a stretch of the pen, or of the imagination. *D. Buchanan.*

Cotoneaster Berries.—Are the berries of Cotoncasters eaten by game? *R.*

Apricots, 2d. per peck.—In that charming and instructive book, "The Land of Israel," by the Rev. H. B. Tristram, we read (p. 615): "For nearly an hour we wound under the grateful shade of Walnut trees, or gathered melting Apricots, Plums, or Mulberries at pleasure in the overhanging boughs. There was no orchard robbing in this—the lanes were strewn with fallen fruit, and Apricots were selling at 2*d.* per peck. In many of the gardens we observed the preparation of Mush-mush." The lanes and gardens referred to are those in the environs of Damascus. Mr. T. thinks the Apricot to be the Apple of Scripture. "Apples of gold in pictures of silver." Prov. xxv., 11. In the same work are notices of plants which seem unknown in our gardens. The Rætem, Genista Rætem, is alluded to in glowing language: it may have been introduced, but it is not much known; it would probably thrive in Devon and Cornwall in the open air, and to a certainty in our greenhouses. Mount Hermon seems particularly rich in plants. "Prunus syriacus, a most exquisite little shrub," was discovered there together Hermon added 50 species to our catalogue of plants." The Lebanon seems equally prolific. Among "numbers of plants new to us, of the true Lebanon Flora, was a beautiful little Jasmine? covered with fragrant white flowers." An experienced naturalist, like Mr. Tristram, writing thus, seems to open up a new field of exploration to our professional collectors. Any enterprising nurseryman sending a collector to Palestine would be probably well rewarded. A nursery garden, or part of one, entirely devoted to the plants of Palestine, their Scriptural names, as far as possible, added to their modern botanical appellations, would soon become highly popular, and be most interesting. Many beautiful herbaceous plants seem to have come under the notice of the accomplished author of this valuable book, most of which would probably flourish in the open air in England; it is therefore quite probable that while we have been exploring the farthest corners of the earth for novelties in plants, we have had many close at home. The oft-agitated question among travellers as to what is the true Apple of Sodom seems now set at rest; it is the Calotropis procera, "the strangest and most tropical-looking shrub we ever saw, having hollow puff-balls by way of fruit, and this is the true Apple of Sodom, with cork-like thick and light bark, wrinkled and furrowed, and huge glossy leaves rounder than those of the Laurel, and almost as large as those of the Caoutchouc tree. It was now both in flower and fruit. The blossoms were like those of some species of Caper, and the fruit like a very large Apple in shape and colour, golden yellow and soft to the touch, but if ripe cracking like a puff-ball when slightly pressed, and containing only a long thread of small seeds in a half-open pod with long silky filaments." *T. R.*

Blackberries.—What is the best kind or kinds of Blackberry for cultivation in this country? Do the great American varieties do much good, or is it best to resort to our own breed? *R.*

Allamandas.—I have grown all the varieties of Allamanda with tolerable success; but the following are the kinds to which I now wish to direct attention, viz., A. Schottii, A. Schottii Hendersoni, and A. Hendersoni. There is a striking difference between Schottii and Schottii Hendersoni, in size of flower and leaf, and more particularly as regards freeness in blossoming, all points in which Schottii Hendersoni has greatly the advantage; indeed, so much is this the case that Schottii has been discarded by me for some years. I have young plants of Schottii Hendersoni from late spring cuttings in flower now, and they will continue in that condition during the greater part of the winter, so that the free way in which this variety flowers is undoubted. About 12 months ago I got from Mr. Bull a very small plant of his Allamanda Hendersoni, which was grown on through the summer; it was in bloom in May, and is in that condition now, though its beauty is nearly over, the plants having been shifted to a cool house. The blossoms are very large; some flowers of Schottii Hendersoni may equal them in that respect, but not the general bloom of the plant; nor do I think them so numerous in the cluster as in Hendersoni. My plant has also been dwarfer in habit than A. Schottii Hendersoni. A word for the much-abused A. violacea; that it is difficult to grow there can be no doubt, and unlike other Allamandas there is no hope of getting it to flower upon the sappy green wood of summer, a circumstance which naturally makes it a late autumn bloomer. Now it is somewhat difficult to ripen the summer wood of a plant well, and at the same time induce it to keep all its foliage in health and beauty. This however can be done to some extent at least, and what affords instruction and amusement to one person is a perfect "bore" to others. My plants of this variety are flowering at the end of every branch; even a cutting with two shoots has not failed to produce good coloured blooms on both shoots. To effect this there must be no summer stopping. The plants should be grown in a rather dry heat and allowed as much light as possible. The fruiting Pine stove is a good place for it. *John Richardson, Southend Gardens, Downton.*

Trillium sessile.—Is Trillium sessile a "more ornamental species than grandiflora," and how is it best cultivated? *R.*

Classification of Bedding Pelargoniums.—I cannot agree with your correspondent (see p. 996) in dividing this class of plants as he has done into bicolors, tricolors, versicolors, unicolors, &c. First, all plain-leaved varieties should be called Selfs, whether the leaf be white, yellow, green, or bronze. This would include such sorts as Christine, Madame Barre, Tom Thumb, Maréchal de Chanflourd, &c. Secondly, Zonals should all possess a zone clearly laid on, whether the leaf be green, yellow, or any other colour. This section would comprise Madame Vaucher, Clipper, White Perfection, Adonis, Vanquisher, Mrs. Milford, &c. Thirdly, variegated kinds, possessing two, three, or more colours, should be called Variegated, whether they are silver or gold-leaved. Under this head would be included Golden Chain, Golden Fleece, Flower of the Day, Burning Bush, Mrs. Pollock, Lucy Grieve, Lady Cullum, Bijou, Brilliant, and others in this way. This mode of classification would be simple and easily understood by all, the whole being arranged under three distinct classes. Mr. Groom calls such sorts as Mrs. Pollock, Lucy Grieves, &c., Golden-variegated Zonals; and Burning Bush, Quadricolor, and others in that way, Silver-variegated Zonals. Why should he call them variegated zonals? We have a true class Zonals, a class Variegated, and a class Selfs. *J. G.*

Fern-leaved Beech.—I send you a bough of a Fern-leaved Beech, thinking it may be an interesting example of the admixture of blood in grafted plants, viz, of stock and scion after years of growth, the tendency of sports (I imagine the Fern-leaved Beech to be a sport) to return to the parent type. The tree from the middle of which the branch was taken, far above Fern-leaved growths or the point of junction of stock and scion, is of goodly size, some 10 or 12 years old, and is growing on the estate of Charles Allen, Esq., of Lyngford, Taunton. The branch was removed under my superintendence, as owing to the greater vigour of the common form it seemed probable if the latter were left that it would overgrow the Fern growths, and as a likely consequence, the whole tree might revert to the normal variety. *Robert H. Poynter, Taunton.* [The bough sent divides into two branches; on the smaller of the two the leaves are all of the Fern-leaved variety, while on the other the leaves are like those of the common Beech, but coarsely toothed, so that they are in fact intermediate in form between the type and the Fern-leaved variety. Eds.]

Quercus Ravenscroftiana (see p. 1018).—I have grown what I consider to be Quercus Ravenscroftiana for some years, and it has in some seasons produced acorns which have never come to perfection. I have always called it Quercus salicifolia. The accompanying specimen of Quercus glabrata is from a tree which this season is covered with acorns, which I hope may mature themselves, if so I will make it known to you. *Wm. B. Page, Southampton.* [The specimen sent as Q. salicifolia is quite a different thing from that described by Mr. Murray. We shall be pleased to receive some of the fruits of Q. glabra when ripe. Eds.]

South American Oaks.—Mr. Murray says (see p. 1018), that "it has generally been supposed that no Oaks occur in South America." This supposition is not correct. There are districts in New Granada between 6000 and 7000 feet above the sea level, in which Oaks form a large proportion of the arborescent vegetation. I cannot vouch for there being more than one species, but probably there are more. I have also seen an Oak in the province of Caravaya in Peru, and have gathered its acorns. *J. Weir.*

Fruiting of Passiflora quadrangularis.—Some remarks have been made (see p. 993) on the tropical fruit-house of P. L. Hinds, Esq., Byfleet, in which allusion is made to a plant of Passiflora quadrangularis, or West Indian Granadilla, bearing 22 fruit, and also to 32 ripe fruit having been previously taken from it. May I be permitted to state that a plant here of the same Passion-flower, growing in a border at the back and trained to a trellis under the roof of a small lean-to

house covering a space of 120 square feet, has produced two crops this season. The first consisted of upwards of 80 fine fruits which were ripe and gathered in July, after which the plant made fresh growth, and in the latter part of August produced abundance of blossoms which were fertilised in the usual way, and on Oct. 24 the second crop, consisting of upwards of 70 fruit, was nearly ripe, one of which I have forwarded for your inspection. I may mention that quite one-third of the crop was taken off each time after the fruit began to swell off. *W. Nichol, Drinkstone Park, Bury St. Edmund's.* [Many thanks; yours we believe to be the true P. quadrangularis; that grown by Mr. Hinds bears much larger fruit. Eds.]

Yuccas.—A reply at p. 1024 induces me to remind your readers what valuable and noble aids they have towards varying and adding grace and distinction to the flower gardens by the judicious use of Yuccas. We talk about subtropical plants, but it would be desirable to know which of them surpasses in any way well-developed specimens of Yucca recurva, a plant that gives as distinct and graceful a feature to the flower garden as anything that could be carried out of the stove and greenhouse during summer, and yet which is as hardy as a British Willow, and handsome at all seasons. I need not describe the majesty of its habit and the grace of its lines, as so many must have seen those fine specimens in Mr. Veitch's flower garden at Chelsea, and those who have not seen them may soon develop others equally good by planting clean young suckers or plants in a good free soil. I have seen people stewing ragged Solanums and ghastly rubbish of the stove all the winter, and running with clouts to keep them from the cold blasts of autumn or the hailstones of early summer when in the open garden, while none of these noble Yuccas could be seen in the place, though one of them is worth a hundred of the inferior subtropical plants I have alluded to. They are equally well adapted for the geometrical and English style of laying out gardens, or in other words, they are suited for every kind of pleasure garden under the sun. Y. recurva is perhaps, the most valuable of all from its noble habit and the size to which it attains; but gloriosa is equally useful, and one called glaucescens, which has its flower buds of a pinkish tinge, looking striking among the white flowers, and with leaves of a very pleasing glaucous colour, is a handsome kind. Y. canaliculata, or concava, is also hardy enough, and fine though slow in growth; and doubtless there are others of the same family, and even others of widely different families, though like in habit, much hardier and better for outdoor gardening than we suppose, yet none of them, so far as I know, surpass or equal the first-named three. They are so pre-eminently distinct, hardy, and beautiful that no garden should be without them. Let them not be stuck in out-of-the-way by-places where sun and air cannot get at them, as is usually the case, but let them be planted well and in the open. In a picturesque garden a small irregular mound planted irregularly but tastefully with the various species would look very well indeed, particularly if the groundwork were of the fine variegated Ivies that are now being so freely propagated in many nurseries. *Recurva.*

Lilium testaceum.—This fine Lily, the L. excelsum of some catalogues, is now pretty common in gardens, but I do not think it is generally known that so far from being a native of Japan, as some authors and most trade lists inform us, there are good reasons for believing it to be a hybrid. This much is certain: Dr. Von Siebold never met with the plant in Japan; whether more recent collectors have done so would be an interesting inquiry. It appears to have been first brought into general cultivation by Mr. F. A. Haage, of Erfurth, who states that it was detected by him in a batch of Martagon Lilies received from Holland, though oddly enough the Dutch and Belgian nurserymen knew nothing of the plant, and were among the first and most eager to purchase stock. The Haarlem growers regarded it as a degenerated variety of the Martagon Lily; Mr. Haage himself believed it to be a hybrid between the common White Lily and the L. croceum, but the opinion of M. Spae, author of a "Mémoire sur les Espèces du Genre Lis," that its parents are the L. candidum and L. chalcedonicum, is far more likely to be correct. Though it does not develop its radical foliage in autumn, like the White Lily, it is one of the earliest to throw up its stem in spring; further it has much of the habit of the L. candidum, as well as its fragrance; while the influence of the pollen of L. chalcedonicum is clearly shown in its pendent flowers with their half-reflexed segments, as well as in the chamois or buff colour, naturally resulting from the admixture of its vermilion with the virginal white of the L. candidum. Moreover, the white downy margin distinguishing the foliage of the male parent is equally present in the hybrid plant in a modified degree; and it is worthy of remark, that the L. testaceum never ripens perfect seed, which in itself is a strong proof of its hybrid origin. *W. T.*

About Potatos.—Permit me to thank your correspondent "H. S." (see p. 973) for his offer to let me have 1 bushel of three distinct varieties of Potatos to test the relative effects of soil and situation in regard to them, but I must respectfully decline his proffered gift, solely on the ground that the space at my disposal will not admit of my growing such quantities of seed of varieties which we hold in this locality to be so exceedingly inferior to kinds we have, and although I fully appreciate the object he has in view, yet I fear that little good would be obtained by the course he proposes, or any interesting information elicited, unless reports of a similar character could be obtained simultaneously from all parts of the country. With regard to the quantity of diseased Potatos among his crops, he is in this respect by no means singular. Since I penned the article to which he refers (see p. 945) disease has exhibited itself with great virulence in this locality, whole crops being nearly destroyed by it. This is, however only the case with late sorts, or if with earlier ones it happened when they were needlessly left lying in the ground long after they were ripe, and might have been dry housed. My own comparative exemption from disease I attribute to planting varieties as early as possible, the bulk of which are early in maturing their produce, and also to my soil drying up quickly in warm weather, which, though somewhat limiting the crop, assists in producing one generally healthy and good-flavoured. I grow no Potatos for sale, simply for trial and home consumption. If "H. S." wishes to obtain a few improved kinds, I would advise him to select by my description in the article alluded to the best there mentioned, and get them from the trade. I have no special method of planting, but give all the room I can possibly afford. *A. D., Maybush.*

Foreign Correspondence.

Flora of Europe.—There was one subject in particular to which I was very anxious to draw the attention of the Congress, namely, the publication of a Flora of Europe. Such a work is much wanted, and a Congress could do a great deal towards its production by the joint action of delegates from the different European countries. I wrote fully on the subject, but the letter could not have arrived in time.* The subject, however, should not be allowed to drop, but should be mooted at the meeting of the British Association, or other suitable occasion. At all events I trust it will receive attention in Paris next year.

Palms.—Wherever the Nekau Palm of New Zealand is accessible to the mining population of New Zealand it is scarified for the sake of the edible central portion of the apex of the stem, and thus it must in many districts there share the fate of the Australian Cabbage Palm (Corypha australis), which is annihilated now in many localities.

Hardiness of Australian Ferns.—You appear sceptical as regards the amount of endurance of cold and even frost possessed by Ferns (see p. 865). But remark how far south in New Zealand Fern trees grow; and in our Alps I have seen them in sheltered valleys at a height of 4500 feet. Wherever Hymenophyllum tunbridgense occurs, there all the small kinds mentioned by me may be grown. After losing their fronds from the cold they will spring out again from the rhizomes; and even Tree Ferns will need in such localities but very slight protection for a few months. *Ferd. Müller, Melbourne.*

Societies.

Royal Horticultural. *Oct. 27 (Board Stock).*—On this occasion there was an excellent display of both fruits and vegetables. Of the latter Mr. Sage, gr. to Earl Brownlow at Ashridge, had a collection in which there were 24 varieties, added to which was a collection of herbs and another of salading. Mr. Earley and Mr. Young also furnished collections of vegetables. Mr. Sage had great examples of Leeks, Onions (white and red), Beet-root; a very fine dish of Tomatos, excellent Parsnips, French Beans, Scarlet Runners, Carrots, Cucumbers, some fine Cauliflowers, Red Cabbage, Curled Kale, &c. Mr. Earley contributed London Cauliflower in fair condition, Fine-apple Beet, Scorzonera, James' Intermediate Carrots, and Brussels Sprouts from home-saved seed. He had moreover some excellent Seakale, Shallots, and a dish of Peas called The Champion of Paris. This, Mr. Earley says, is one of the most useful Peas he has yet had to deal with. This collection contained moreover some fine sticks of Williams' Matchless Improved Celery, a dish of Tomatos, &c. Mr. Young contributed various kinds of Onion, also some excellent Celery, Savoys, and Cauliflowers, and very fine Potatos and Turnips. The last-named exhibitor also received extra prizes for collections of Apples and Pears; amongst the latter were fine fruit of Beurré Diel, Ne Plus Meuris, Chaumontel, and Althorp Crassane. Of Apples, the best were Alfriston, Golden Pippin, Blenheim Pippin, Scarlet Admirable, and Hawthornden. A small dish of Strawberries was exhibited by Mr. Perkins, gr. to Lord Hennikes; Mr. Earley furnished 12 dishes of Apples, amongst which were the useful little Sam Young, Cox's Orange Pippin, the Gooseberry Apple, Fearn's Pippin, Cornish Gilliflower, and others. From the Garden of the Society at Chiswick came one or two varieties of Grapes, and a large collection of Pears.

Notices of Books.

Le Jardin Fruitier du Muséum, ou Iconographie de toutes les Espèces et Variétés d'Arbres Fruitiers cultivés dans cet Etablissement, avec leur Description, leur Histoire, leur Synonymie, &c. Par J. Decaisne, Membre de l'Institut, Professeur de Culture au Muséum d'Histoire Naturelle. Paris: Firmin Didot & Co.

We have received a number of parts in continuation of this magnificent work (noticed in detail by us in previous volumes), and they equally bear out the commendations to which we considered the former portion was justly entitled, whether as regards the excellence of the drawings or the letter-press. Professor Decaisne, we are convinced, describes faithfully, without favour or flattery, the subjects as they come before him, and in many cases he gives also descriptions of the subjects by other good authorities. We shall give some extracts, with occasional remarks relating to varieties that we consider most interesting to British cultivators.

Pêcher Tardif des Mignots.—Leaves with reniform glands; flowers large, pale. Fruit large, rather longer than broad; cavity at the footstalk small; skin yellowish where shaded, washed with cherry red next the sun, and somewhat marbled; flesh parting from the stone, melting, white, except surrounding the stone, where it is rayed with violaceous red, the rays becoming bright red as they extend outwards, juicy, sugary, vinous, and rich. Stone rugged, swelled out towards the summit, where it is abruptly attenuate and mucronate. Ripens middle or end of September. This is not only an excellent Peach as regards quality —of such we have many, but it is more especially valuable for the climate of England on account of its hardiness. Professor Decaisne informs us that it ripens as a standard, that it is cultivated as such in the environs of Paris, and that the specimen figured in the work was from a standard (it is fully 9 inches in circumference); and he adds that of course when grown against a wall the fruits acquire a larger size and more colour.

Poire Seringe.—Tree pyramidal, vigorous, and productive; shoots flexuose, olive-coloured in the shade, purplish red next the sun; leaves ovate, acuminate, pubescent and dentate. Fruit middle-sized, oval, inclining to obovate, a little depressed at the ends; stalk long, moderately thick, a little thickened at its junctions with the fruit and spur; eye large, open, in a slight depression; skin citron or pale yellow, smooth, with some russet specks; flesh white, very melting, and sugary. Ripe in August. The Poire Seringe or Beurré Seringe was obtained by M. Nerard, nurseryman, Lyons, and it was awarded a Silver Medal at the Exhibition of the Horticultural Society of the Rhone. It was named in honour of Nicolas-Charles Seringe, the collaborateur of M. de Candolle, and afterwards Professor of Botany at Lyons, who was born in 1776, and died in 1859.

Poire Monseigneur Affre.—Tree pyramidal, very vigorous, and an abundant bearer; shoots erect, rather slender and flexuose; leaves oval, somewhat acuminate, and folded, slightly dentate. Fruit middle-sized, oblong or ovoid, obtuse at the stalk, which is longish and bent; eye placed in a shallow depression, rather open; skin rough, with reddish-brown russet; flesh yellowish-white, melting, buttery, rather granular, sweet and rich. This is not of prepossessing appearance, but this defect is compensated by the excellence of its flesh. Ripens in December, and keeps sometimes till March. Dedicated by M. Bivort to the memory of Denis-Auguste Affre, Archbishop of Paris, who fell a victim to civil discords, having been struck by a ball while interposing between the combatants on the lamentable 25th of June, 1848.

Pêcher-Brugnon Gathoye. Gathoye Nectarine.—Leaves with few globose glands; flowers large. Fruit middle-sized or rather small, roundish; skin brilliant red, sometimes very deep red next the sun, pale or greenish yellow on the shaded side; flesh parting from the stone, white, except near the stone, where it is slightly tinged with violet red, melting, sugary, and rich. Ripens in the end of August or beginning of September [about the same time as the Violette Hâtive and Elruge]. The only fault with which this handsome and excellent variety could be charged is that it is rather small; but this is fully compensated by the delicacy and richness of its flesh. This is a very distinct sort as to its leaves and flowers, although its flesh appears to resemble that of the Elruge; but the latter has reniform glands and small flowers, while the Gathoye is described as having globose glands and large flowers. We may further state that its flesh is white, and, unless among recent seedlings, this is the only Nectarine that has globose glands, large flowers, and melting flesh, not yellow. The Pitmaston Orange agrees with this as regards the glands being globose, the flowers being large, and the flesh melting, but it is decidedly yellow; whereas the flesh of this is pale greenish-white like that of the Elruge. It is, however, the only Nectarine with melting flesh and globose glands, except the Boston, but the latter has small flowers. The Gathoye Nectarine, therefore, differs from all others formerly known in having large flowers and pale whitish flesh, and hence must be considered a perfectly distinct variety, more so, indeed, than is generally the case with new varieties. It is described as being rather small, but on measuring the drawing we find it is 2½ inches in diameter, or fully 6⅓ inches in circumference; and it appears to have a broad luxuriant foliage, so that there is the probability that it can be grown to a much larger size. It was received into the collection of the Museum at Paris from Belgium, where it was propagated by M. Papeleu.

Pêcher-Brugnon Cerise. The Cherry Nectarine.—Leaves with reniform glands; flowers small, pale red. Fruit small, round, of a brilliant shining red next the sun, and of a delicate yellowish-white on the shaded side [in size, gloss, and tinge of colour, it very much resembles a good-sized Cherry]; flesh pale citron, parting from the stone, which is small, roundish-oval, and sometimes slightly tinged with red; flavour sweet and agreeable. Ripens in the beginning of September, and in succession. The tree is very productive, and the fruit has an elegant appearance at the dessert, from its brilliant cherry colour. [This was grown and fruited many years ago in the garden of the Horticultural Society, at Chiswick. It might be grown in pots, and would then be very ornamental for placing on the table.]

Pêcher-nain.—Leaves serrated, glandless; flowers large, tree dwarf, rarely exceeding 2 feet in height, with little distance between the leaves, and having more resemblance to a spur than a clean stem. Fruit small, roundish [colour of skin and flesh resembling that of a badly coloured Noblesse]; flesh parting from the stone, but with better flavour. Professor Decaisne states, that this variety reproduces itself almost exactly from the stone. It appears to have been long known in France, for it is mentioned in the Catalogue des Chartreux in 1752 as a sort which is put in a box, pot, or vase, and placed on the table with its fruit. [From this it appears that pot-culture of fruit-trees had been practised for more than a century, but more so for ornamental purposes than for use, which latter is but of recent date, though it has made great and rapid progress—whether to reach its highest point, and thence retrograde, less than

* It never reached its destination. Eds.

another century will determine, for things do not now go on as they used to do. The probability is, however that pot culture, or some modification of it, will continue while space can be found for the boxes of the pots, and when these are found too contracted for the roots, the sentimental press may form, when pounded, a spiral cavity, something like an Archimedean screw, in which the roots may wind their way to any length; whilst old soil can be removed, and newadded at any point.]

Poire Carmine.—This is a small early Pear, of pyriform shape, bright red next the sun, with a longish, rather slender stalk; ripe in the end of July or beginning of August. Flesh white, breaking, sweet, but usually very dry, therefore not to be recommended. Nevertheless, owing to its early ripening and brilliant colour, in which respect it resembles the Poire Vermillon, it is very remunerative, and this shows how much these properties take with those who are not connoisseurs. The original tree, it is said, still exists at Poncet, department de Seine-et-Marne. M. Armand Louis, who possesses several of these trees, two centuries old, states that the fruit of each brings annually from 150 to 200 francs.

Pêche-Brugnon, Johnston Orange.—This is the well-known Pitmaston Orange Nectarine. Professor Decaisne says it is to be recommended on account of the size and beauty of its flowers, which render it a very ornamental tree; but still more for its delicious fruit. It is, he says, a precious variety, although somewhat tender. In the climate of London it proves a free and vigorous grower, yet it has been observed that several of the fruits raised, like this, by the late Mr. Williams, although very rich, were at the same time of a rather tender habit.

The *Botanical Magazine* for the month of September and October gives us representations of the following plants:—*Rhododendron Fortunei*, described in our volume for 1859, is said to be closely allied to R. Griffithianum; it has flowered with Mr. Luscombe, of Kingsbridge, Devon, and proves to have fine trusses of lovely pale rose-coloured fragrant flowers.—*Hedelidula*, a fine Japanese Holly, hardy at Kew when trained against a wall, but not flowering there though blooming freely in a temperate house. The leaves are 6 to 7 inches long, paler than those of the common Holly; the flowers yellow-green, in dense axillary heads, and the berries globose, bright red.—*Huntleya serina*, a distinct and rather handsome Orchid from Veragua, a bulbless epiphyte, with one-flowered peduncles much shorter than the leaves, the flowers of a pale waxy straw-colour, the lip large yellow, with a semicircular ruff of plaited folds at the base of the disk.—*Nierembergia Veitchii*, a pretty little South American herb of prostrate habit, with slender branching stems, obovate-oblong leaves, and bell-shaped pale-lilac flowers having a very slender corolla-tube an inch in length; it was introduced by Messrs. Veitch & Sons from Tucuman.—*Kæmpferia Roscoeana*, a beautiful-leaved dwarf Scitaminean plant, long since introduced, and probably long since lost to our gardens. It has a pair of orbicular-oblong horizontal leaves, of a bronzy-green, zoned with pale green, and between them sessile white flowers; and has been re-introduced by the Messrs. Veitch & Sons.—*Cattleya corrugata*, a pretty white-flowered epiphyte, introduced from Ilaitiby the Royal Gardens, Kew. "It will not thrive in the East India house, but is quite at home in the coolest part of the Cattleya house." Its wrinkled pseudobulbs are peculiar, and the blossoms are in three-flowered racemes, the lip being stained with yellow, and streaked with orange on the disk.—*Calythrix fasciculatris*, a pretty succulent Cape shrub introduced by Mr. Saunders, and having obovate-cuneate cuspidate leaves, and scorpioid panicles of pendulous cylindrico-campanulate flowers, the segments of which are dull red, edged with green.—*Glyptostrobus pendulus*, from a plant which has this year flowered at Kew. "Its similarity to the Taxodium distichum is very striking. Like that plant it has pendulous spikes of male cones, with one or few female cones at the base of the spike, and sheds its ultimate branches annually, but it differs in the foliage not being distichous, in the scales of the cone not being peltate, but arising from one point at the base of the cone, and in the winged seeds. The habit too, is very remarkable, owing to the great slenderness of the twisted stem, decurved branches, and pectinately disposed branchlets." It grows 40 feet high.—*Helipterum Cotula*, a beautiful West Australian annual everlasting, growing from 6 inches to 2 feet high, with slender branches, each terminated by a large white or yellow flower-head, the white-headed form being the H. Cotula, and the yellow the H. citrinum of authors. The plant is gray with woolly hairs, and bears filiform leaves. It was introduced by Mr. W. Thompson.—*Ballantinia reticulata*, a curious Bromeliaceous epiphyte, introduced by the Messrs. Veitch & Sons. It has a prostrate rhizome, with solitary ovoid pseudobulbs at intervals, each bearing one largish, cordate ovate, pale green leaf, beautifully reticulated, the veins being marked out of a deep green colour; the flowers are white closely streaked with purple lines, and grow in short two-flowered racemes.—*Brassica Wallisiana*, "a beautiful plant introduced from Madeira to Kew about 10 or 12 years ago, where it has since flowered annually in a cool greenhouse." It is a large-leaved under shrub, with a naked stem, terminated by a crown of leaves, and pyramidal panicle, the flowers being yellow with a cylindrical tube shorter than the reflexed lobes. It is closely allied to Campanula.

In the September number of the *Journal of Botany* is a plate illustrative of Dr. Dickson's paper on the staminal arrangements of Potentilla and Nuttallia; and in that for October is a figure of *Calluna atlantica*, the Newfoundland Heather, which the editor regards as specifically distinct from the Heather of Europe, distinguishing the former by its closely adpressed leaves, its naked pedicels, and its ovate inflexed sepals and petals. The Calluna vulgaris flore-pleno of German gardens is said to agree in foliage with C. atlantica, and may possibly belong to it, as it does not stand the Continental winters in the open air, but is treated as a greenhouse plant, while in Ireland it has been observed that Newfoundland Heather always suffers from frost. The revision of the order Araliaceæ by the editor is continued.

The *Florist and Pomologist* gives in its September number a figure of the double-flowered Fern-leaved Chinese Primrose. *Primula sinensis filicifolia flore-pleno*, while that for October is illustrated by a plate of the new *Diplademia amabilis*.

In the *Floral Magazine* are figures of the Ivy-leaved Pelargonium *Silver Gem*, *H. P. Rose Mrs. Ward*, *Cycadina pendula*, and *Orchis maculata superba*; *Diplademia amabilis*, *Clematis rubella* and *Clamyginosa candida*; and *H. P. Rose Mrs. John Berners*. The two Roses mentioned are English seedlings to be let out by Mr. Ward, of Ipswich. The Clematis rubella is a fine rich reddish-violet variety, one of Mr. G. Jackman's charming race of hybrids.

Florists' Flowers.

THE GLADIOLUS.—An interesting series of papers on this most beautiful of autumn flowers, to which, though, I cannot say with the old Trojan hero, "et quorum pars magna fui," I yet was enabled to contribute something, appeared in the *Chronicle* at the close of last year, too late, I fear, to be as useful as they might have been, had the spirit moved the various writers a little earlier. With a view to improvement on this score, I venture to give a statement of my doings for 1866, in the garden, and at the exhibition tables.

I planted 500 best bulbs in five beds of 100 each (commencing about Feb. 6, and getting all in by about the 20th) in the richest soil I ever used for this flower, it being composed of about one-half of sods left to rot for two years, and the remainder of rich old manure. The beds were made in December, and the soil turned and mixed on every possible occasion up to planting time. Each bulb had sharp river sand placed under and over it as usual, and fully 4 inches of the same rich soil was placed over all. The nice green shoots began to appear about April 12, and all were well up about the middle of May (with just nine deaths), a very small percentage, but I had gone over my bulbs very carefully before planting, and thrown out every one that showed symptoms of unsoundness, little black marks on the corner of the bulb being a sure sign of future decay. I top-dressed twice in June with rich loam, and mulched all in July heavily with good old manure; I gave water moderately until about July 1st, and then very heavily for three or four weeks, during the melting weather of that period, using strong liquid about twice a week, and ceasing watering finally about August 1st, when a considerable change of temperature occurred. The results were magnificent; I had splendid spikes in profusion. I exhibited on nine occasions, taking eight first and one second prize, one of the former a silver cup. I have just taken up those 500 bulbs, with the exception of a few still (October 25) in bloom. Many came up doublets, and there were several triplets; about a dozen turned yellow just before blooming and died off, and about another dozen, which had bloomed early, were rapidly becoming black, and so of course worthless; also there was little or no spawn on this entire lot of 500. (Mem. I shall in future take up any choice sorts that bloom early, very soon after they have done flowering. It does not seem to do the slightest harm to take them up quite green and full of sap, provided about 18 inches of the stalk be left to wither gradually.)

My spawn of last season, and my undersized bulbs I grew in two large beds, in nice light rich soil, with a good deal of sand. Many of them have bloomed, giving fair medium-sized spikes, and all have taken up in prime health, nice and plump and fleshy-looking, and nearly every bulb, from the size of a marble upwards, was well laden with fine healthy well-developed spawn. These little matters are well worth of the consideration of Gladiolus growers. If you drive them, that is, grow them very rich, you obtain grand spikes of bloom, some deaths, a fair increase of bulbs, and little or no spawn. If you adopt the opposite system, and use light rich sandy soil, you obtain moderate blooms, no deaths, and an immense progeny of juveniles.

Next as to novelties. I obtained as usual all Souchet's new sorts for 1865 (three bulbs of each). Of Milton, one made no sign, never came up, and the other two grew on weakly, turned yellow in July, and died off; could not stand training (to use a sporting phrase); so I have never seen Milton, but I am informed by those who have, that it is a fine flower. Of Newton, one bulb died, and two bloomed fairly, giving a curiously colored flower, rosy crimson shaded, dark brownish red feathers, white throat, extra fine spike; will think, be a fine flower, but will require another season. Of Byron, all three bloomed well, and increased freely; colour rich ponceau, whitish straw throat, violet blotch, medium-sized bloom, middling shape. Next comes Shakespeare, a splendid flower, a rich creamy white, very light lilac feathers, throat straw and magenta shaded, shape first-rate, spike excellent. And, last of all, we have Eurydice, magnificent, white ground, rosy violet feathers, brownish shaded throat, large flower, very fine spike. I really do not know which of these last two flowers most to admire; both are light grounds, both are very beautiful, and in my opinion, a great advance on any existing variety. Our friend "D., Deal" (no mean judge of what a good flower should be) considers Eurydice as good fully as one of Standish's very best, which it resembles, namely, Eleanor Norman, but I must say I like the foreigner much more. Shakespeare and Eurydice are both fine vigorous growers, and seem first-rate in all respects. If I were pressed to choose between the two, I think I would give the palm to Shakespeare for distinctness of style and colour.

The flowers of 1864 (Souchet's) have, on the whole, done very well. Madame Furtado is very fine as a light flower; Meyerbeer very rich as a dark shaded red; Madame de Sevigné A 1 in her own way, a decided beat on such fine sorts as Le Poussin, &c.; and Fulton, a most splendid shaded scarlet, but a little too thin. My seedlings of 1864 have grown well, and many have bloomed; but while several good flowers have appeared of fair average merit, and distinct enough in themselves, still there are not more than two or three which promise to be decided acquisitions. The seed sown when ripe in September, 1865, in pans, and planted out in April, and the seed also sown in the open ground in April have done very well, having grown wonderfully during the moist weather of September. The frost which we had on two or three nights does not seem to have checked them at all. And also two beds of seedlings which I left out last winter have done very well, but were later in starting and blooming than those planted in spring. There is a numerous lot of novelties offered this autumn. Some 16 or 18 varieties have been announced by M. Souchet. I have ordered three bulbs each of these, and shall be entirely satisfied if the lot gives me half a dozen sorts as good as the gems of this season just passed.

What the famed Ascot Nurseries of Standish & Co. are about to offer this autumn I know not, but I cannot refrain from stating that several of the flowers raised by Mr. Standish at Bag-hot or Ascot pleased me very much this last season. I may particularise specially The Colonel, Ensign, Lucy Neal, and Carminata—four as distinct and good flowers in their way as any in cultivation.

Finally, I was strongly inclined last autumn to apply the pruning knife freely to the list of Gladioli at present in cultivation; however, I thought it best to wait a little, and the result shows I was correct in doing so, as it would have been very difficult, nay, almost impossible, to have made up the classes for the exhibition tables for the early shows commencing at Kingstown on August 16, without the aid of such good old standard varieties as Madame Binder, Jom of Arc, Archimedes, Isoline, Madame Souchet, Madame de Vatry, Duc de Malakoff, Comte de Morny, &c. I believe these and many other varieties of the same standing are still indispensable for those who grow and exhibit largely. *James F. Lombard, Dublin, Oct. 26.*

The Apiary.

MEAD OR METHEGLIN.—Dr. Bevan, in his admirable work, "The Honey Bee," has given a very elaborate account of the philosophy of fermentation and preparation, not only of mead, but of other descriptions of wines. To any one about to engage in the manufacture of any kind of British wines, the chapter treating on this subject will be found of very great value.

Few persons, perhaps, have any adequate idea of the importance of mead in the domestic relations of our early ancestors. No other wine was then known among the aristocracy, nor had beer or cider become the established beverage of the lower classes. At all the feasts and wassails of the princes and grandees of the early British period, mead or metheglin was the only intoxicating drink; hence it may readily be imagined how important a matter really good honey-wine was considered. It will not therefore surprise any reader of English history to be told that "at the courts of the Princes of Wales the mead-maker was the eleventh person in dignity, and took place of the physician." Queen Elizabeth is said to have been very fond of mead, but her drink was so extensively disguised by spices and herbs as to almost destroy its character as an ancient English beverage.

I cannot enter at length into Dr. Bevan's remarks relating to the principles of wine fermentation. A perusal of the entire chapter would well repay any one about to embark in the process of manufacture. A few hints here may not be unacceptable. "The best temperature for carrying on fermentation is about 54° Fahrenheit." "Dry wines and fine wines are much more durable than any others; and those that would perish in cask may be preserved years by bottling." "Cookery books and good housewives abound in receipts for wine-making, which are often very fanciful and absurd, recommending the introduction of articles which in their very natures counteract the production of good wine. Hence we are sometimes presented with such miserable mawkish stuff, as disgraces the name of wine, being only rendered tolerable by the brandy which has been added to it, and which in some degree covers the crudeness and insipidity of the compound, and moderates its hostility to the peace of our stomachs."

To make Bee's Bread.—Take one pint of Sweet Briar leaves and Thyme, each 1 bushel, Rosemary half a bushel, Bay leaves 1 peck. Seethe these ingredients in a furnace full of water (containing probably not less than 120 gallons); boil for half an hour; pour the whole into a vat, and when cooled to a proper temperature (about 75° Fah.), strain. Add to every 6 gallons of the strained liquor, a gallon of fine honey, and work the mixture together for half an hour. Repeat the stirring occasionally for two days; then boil the liquor afresh, skim it till it becomes clear, and return it to the vat to cool: when reduced to a proper temperature (about 80°?) pour it into a vessel from which fresh ale or beer has just been emptied; work it for three days, and tun.

"When fit to be stopped down, tie up a bag of beaten cloves and mace (about half an ounce of each), and suspend it in the liquor from the bung-hole. When it has stood for half a year it will be fit for use."

In a somewhat curious book on bees, by Dobrogost Chyliuski, a Pole, we find the following recipe. As the practice of mead making has continued much

more general in the northern countries of Europe than in Britain, we may naturally look for the best instructions from such a source as the author of the book under consideration, if we could consider him as quite reliable:—"To 24 gallons of water put 12 gallons of honey and 12 lb. of Hops;" (Query, is not the proportion of Hops excessive?) "boil over a very slow fire till the whole is reduced one-third. Care must be taken that the fire is not too strong, yet the heat must increase gradually; from a sudden and excessive heat, a burnt taste will be communicated to it. From the boiler empty it into a large tub or barrel, which must be deposited in a warm place during eight days, so as to undergo the process of fermentation; afterwards it must be filtered through a woollen filter into a barrel, and placed in a cellar for use. The older it is, the better and stronger it becomes. After it has been 12 months in the cellar it may be bottled, and kept for years. The peasantry (in Poland) generally keep it in barrels, where it is preserved as well as in bottles for many years. But he who wishes to preserve it for half a century or so, must bottle it."

The author believes Miodomel, as he calls the afore-described beverage, to be a most useful preservative of health, as well as an excellent remedy for many diseases; for instance, half a pint of good old Miodomel taken every second night before going to bed improves, and even restores, if weakened, the power of digestion; if the liquor be very old, a wineglassful is quite sufficient and more effective. Taken instead of ale or porter, it is a preventive against gout and rheumatism; it is also an excellent remedy for measles, given with the object of allaying the thirst of the patient. All who desire to live to a good old age should take the advice of our author and quaff miodomel: it has a very invigorating effect on the old. Who then would not drink mead? Out of the many recipes which I have collected from various authors, and related in this and preceding papers, I have no doubt that any one desirous of attempting the making of good mead will be able to select the one suited to his taste; or may, by a modification or combining of the different directions, succeed in producing a beverage not to be despised. *Hydromel.*

Removal of Nadirs.—In reply to "A Novice" (see p. 926) regarding the quantity of comb required for the third box, I beg to say that a full box of combs is what ought to be given if it can be had, and which he himself has an opportunity of having for another year if he removes the nadir from the 9-inch hive after the bees have abandoned it for the winter, taking themselves to the top one. If the bees are too numerous for the one box, a 2-inch eke may be required; then in spring remove the eke, giving them the box of comb, and this will be found of more advantage than if the nadir had been allowed to remain as it is during the winter. I may here mention that if his hive has not movable bars, it should have had, and frames to the centre, so that he could have deprived one or two full combs. As to the depth of sheet for a nadir, I commonly fill them to within 1 inch of the bottom. When I fix combs that have been bred in, to bars, I split my bar in two, paring the cells to the centre partition as far down as the thickness of the bar, and then screw the two halves of the bar together with the edge of the comb between. *Wm. Thomson, Blantyre.*

Garden Memoranda.

Peter Lawson and Son's Nurseries, Edinburgh.—Among the many interesting and instructive reports of the horticultural establishments of the country which from time to time have appeared in your columns, little or no notice has been taken, for a lengthened period, of the more important Scottish nurseries. It is my purpose to place some of the more salient features of these establishments before your readers, so as to enable them to form some idea of their extent and commercial importance, showing also the growing interest of this well-to-do people, in all branches of horticulture and arboriculture.

The nurseries of Messrs. Lawson & Son comprise the great subdivisions of Bangholm, Chancelot, Golden Acre, Lilliput, Wardie, and Windlestrawlee, and represent *in toto* 300 acres—a very large gardening farm certainly, and capable of turning out an immense quantity of nursery stock. It is scarcely possible to shut out from the imagination, considering the many contemporary nursery establishments throughout the country, the question why the market does not become glutted, and sales at a dead lock, from such large quantities of the various commodities as breadths like these unquestionably furnish. On making an observation of this kind to Mr. Syme, the principal director of this huge establishment, he smilingly rejoined, "I'll give you an instance of one item in our business, and you can draw your own conclusions accordingly. We contrive to have as nearly as possible 20 millions of seedling Larch yearly, and out of that number we have rarely left more than enough to supply our two-year-old trade." Other things appear in somewhat similar proportions, though as in all other commercial concerns an extra stock of one or more things may stand over, just as the market fluctuates, and demand decreases.

Before entering into details, one thing forces itself upon the eye and is entitled to a record. In wandering over the length and breadth of these divisions there is little or no waste ground observable; none needlessly occupied with that "drawn up" unsaleable stock which sometimes strikes the eye, and is about as unprofitable as "Wheat choked with the Tares." Fancy stock of all kinds predominates. Conifers and other choice lawn plants, both small and large, at all times find a ready sale in connection with the numerous country and villa residences which are cropping up, more numerous than the Coral Islands, round every centre of commercial importance. Transplanting is, as it ought to be, the order of the day, engendering, as it does, a density of habit, a general sturdiness of appearance, and a large proportion of additional rootlets in a circumscribed compass, which enable some, even of the more choice things, successfully to resist the rigours of a severe winter.

The Conifers have hitherto been the backbone of the outdoor establishment of this house, and they are splendidly represented in character and kind along the principal drives and avenues which intersect the ground in various ways. The additional 100 acres which have been recently secured, and which are now in course of probationary treatment for arboricultural work, give scope for carrying out the designs of the firm in providing a supply of general stock commensurate with the increase of the business. This course has been steadily persevered in for the last two or three years, and the work of reformation has been going on to such purpose as to become tangible to the occasional visitor, and doubtless profitable to those who are immediately concerned.

Among the more prominent groups of Conifers stands out Cupressus Lawsoniana. This is one of the most remarkable plants for variation from seed in the whole group. The varieties range from a straight, stiff, formal and bushy growth, through various intermediate forms to a sort of handsome loose pendent habit. One very pretty form, not generally known, which surrounded this clump, and made a very effective front row, is what is called nana. It is of pigmy size, and quite as much of a "dwarf" as Thuja aurea, but holding to the pyramidal form and feature of Lawsoniana. A fine golden form of the type is in process of propagation. It is not of that sickly wan hue which is common to most variegations in Conifers, but broad, bold, and well defined. In close alliance with Cupressus is Thuja gigantea, which is well represented here by a specimen plant of that fine dark metallic lustre which at all times commands admiration. Thuja Lobbii, too, was growing rampantly, and as seen here, and everywhere, is one of the first trees a novice would select, and not be disappointed with. Thuja Wareana is said to be very hardy, and is certainly a most attractive subject, having prominent claret-coloured stems and branchlets, very symmetrical and proportionate. Thuja Vervæneana is a fine form of the occidentalis type, and is one of the sports which occasionally occur; it is of Belgian origin. None were the Japanese, Chinese, and Hupeian forms of Arbor-vitæ, so interesting or beautiful. They are a grand group of formal-looking shrubs, well suited for the "dress portion" of a landscape. Of Junipers and Cypresses there seemed to be no end—the Caucasian, the Spanish, the Alpine, the Mexican, the West Indian, the Virginian, the Tetragonal, the common, and several other sorts of Junipers standing out here and there as we passed along; while in Cypresses we noticed the Upright and Weeping Evergreen, the large-coned, and the twisted variety from Bhotan, all in a thriving condition.

Wellingtonias are represented in considerable numbers, and seem to luxuriate well in the centre of Mid-Lothian. One of the best plants in the country, said to be the "first plant raised from a cutting," was taken from this nursery by some of the members of the Engineers' Association, at the price of 25 guineas, and presented to Robert Napier, Esq., of Shandon, in whose grounds it is now progressing satisfactorily. This is probably almost the only example of a Conifer that succeeds unexceptionably well from cuttings. If it would only realise the expectations which were first formed of its value as a hardy plant, and as a timber tree, it could be multiplied to an almost indefinite extent, and take the place of such resinous and valuable wood as Larch, which is a precarious subject in the woods and plantations of the country.

We now come to Cedars, and the very first in importance is Cedrus atlantica. The stock of this tree here is almost unlimited, from 5-feet plants to year-old seedlings. This Cedar seems to be rapidly gaining in popular favour from its general hardihood, remaining as it does quite unscathed in exposed situations. A very pertinent question was raised at a private meeting of horticulturists by Mr. Jas. M'Nab, as to what was the best Conifer of recent introduction that would withstand the rigours of our climate and remain ornamental from bottom to top 20 years hence. Some put forward Picea Nordmanniana, but the majority seemed to prefer the Atlas Cedar. The Deodar is well represented at Bangholm, but numbers of this fine ornamental tree succumbed to the rigours of 1860-61, and there has been less disposition in Scotland to plant it since. The Araucaria imbricata is open to the same remark, and there does not seem the same disposition among nurserymen to propagate it, which clearly shows a lapse in the demand. All such trees that grow, however slowly, in winter cannot resist with impunity severe frost, and this is one of the very first to feel the effects of it.

Looking at the Pinus tribe as any one stepping into a large nursery can see at a glance the popular favourites, rendered either so from their usefulness as timber trees, or for general ornamental purposes. Scotch Fir, both "native" like the oysters, and Haguenau, are represented by millions, breadth after breadth of them catching the eye and growing luxuriantly. Black Austrian too, which is a far more ornamental tree, but liable from its great weight of branches to be blown down in exposed situations, is represented in quantities. The Cembra or Swiss Stone Pine is largely grown, and from its greater elegance of form is not so objectionable as the former after attaining the dimensions of a tree. But what will some people say to a stock of between 3 and 4 millions, from one-year seedlings upwards, of the Corsican Pine—Pinus Laricio! This Conifer is valuable in the first place, because vermin—I mean game—do not destroy it so readily as some of the commoner Firs in a general plantation; and, in the second place, it has been proved to be a most valuable wood, used chiefly by the French for masts in ship-building. It would be impossible to see a finer or a more extensive batch of Larch, both common and Tyrolese, from the seedling bed to "two years' transplanted" stock—the young seedlings but sown on the 28th of April, and the beds from end to end a mass of verdure. The old plantations appeared to be free from bug, and presented a picture of health. But we must pass along these quarters of Norway and Black American Spruce, and only mention that we recognised the Weymouth, the Mountain, and the Maritime Pines growing in quantities, and evidently quite at home, to have another peep at the Pinetum, and single out some of the less common forms which tickled our fancy.

Of course Picea Nordmanniana ranks in the first place almost by universal consent, and we do not want better proof than the general scarcity of half-specimen plants in our nurseries; but the young stock is by no means limited, albeit we could easily predict it will soon be utilised; 1 cwt. of seed has been sown out of doors in this establishment, and plants progress very satisfactorily. Even a better plant than Nordmanniana is found in nobilis, in so far as growth and colour of branches is concerned, but I am afraid it will never become so handsome or symmetrical a tree. Its hardihood is a matter of general notoriety, and some of the more advanced specimens have been bearing cones here. There are two distinct varieties, the glaucous one being much the finest ornamental tree. The Douglas Fir, Abies Douglasii, is grown largely and seems to be much in demand in some quarters. We have no great faith in this Conifer for exposed situations, but where shelter can be given, it makes a most handsome specimen, such as the one at Hopetoun House for example. Abies Hookeriana is a very pretty dense form, with numerous small leaves, its glaucous colour, too, adding to its decorative importance. Abies Menziesii is a very handsome Fir, with beautiful foxbrush-like laterals, made up of leaves of the darkest green. There are several very graceful forms of Abies Morinda or Smithiana which are worthy of a place in any Pinetum. Picea amabilis is a good thing, but there are several varieties under that name, which is rather confusing—all, however, are meritorious. P. cephalonica is not in such demand, owing to its young growths being generally destroyed by late spring frosts. P. grandis, lasiocarpa, and Pinsapo are growing in quantities, and are all gems of the first water. Pinus Benthamiana is a noble stalwart-looking subject which commands admiration; and so is P. koraiensis, which is of the Cembra type, but having white incurved spines. Space will not permit me to dwell upon the different forms of Pinaster, Strobus, and other sections, each having their representatives well defined in the long borders that intersect the ground and form it into divisions. The rarer forms are being continually worked up in a series of low pits specially designed for this use, and there are thousands of these grafted plants turned out annually which have succeeded in the most unexceptionable manner. We are aware that a leading article against many Conifers that are not seedlings, but it is an indisputable fact that most of the choicer subjects grown so successfully by Mr. Fowler at Castle Kennedy are grafted plants, and we do not see any good reason why this should not be the case. It is a matter of judicious selection entirely, for if the stock be healthy and the scion and it properly manipulated upon, it ought to do as satisfactorily as a Rhododendron or an Azalea. Many may require balancing with the knife in their younger stages, but that is a very simple matter. Such sorts as Abies Cranstoni, a handsome-growing plant, with foliage much after the style of a vestita coccinea Heath, Picea bracteata, Pinus koraiensis, and numerous others, were well-formed vigorous plants treated in this way. A very magnificent plant of Abies orientalis, about 12 feet high, clothed abundantly with branchlets, arranged in the most pleasing manner, guarded the entrance to one of the departments.

Very nice scroll patterns laid out on Grass, filled with many varieties of Ivies, Yews, Cotoneasters, Heaths, and Whortleberries, appear to much advantage at the main entrance, in connection with an ornamental vestibule and waiting-room. The dumpiness of these beds was relieved by picked specimens of the Lawson Cypress; while flowering plants were introduced into detached clumps, presenting a very pleasing whole. The Rhododendron ground is hidden from this by a nice leafy screen, and contains all the choice varieties with which to furnish the annual detachment of 10,000, which is periodically prepared. Pontic sorts are to be seen in any quantity, which, along with Brambles, Rubus cæsius, fruticosus, &c., Japanese, Chinese, and Nepalese Privet (Ligustrum), the Common Berberry, Mahonia Aquifolium, the Laurel, Cerasus Lauro-cerasus (which are cultivated by the acre), form most excellent cover for game. Game clearly prefer an open cover, and any shrub that furnishes protection and does not too much shut out the light, will be found suitable.

Hollies are a capital stock, the varieties being numerous and beautiful. Among them one could not fail to admire Golden Queen, which would make a splendid decorative line of the character of the Golden Arabis. One, very prominently clouded with gold upon a large ovate pale green leaf, is named Hodginsii variegata, being a sport which originated in this nursery. Another very good one is called handsworthiensis, one originating from the stock of Fisher, Holmes & Co., of Sheffield. But what is to be said of Acer Negundo among variegated trees, or, more correctly speaking, Negundo fraxinifolia, which after all partakes more of the character of an Ash than a Maple, that is grown in such quantities here? We can easily see that it would be a splendid continental plant, but we fear

that our climate is too moist and cold for seeing it put on its best attire.

Forest trees, as may be expected in such an acreage, are largely represented. It is not so much the Larch, the Spruce, the Scotch Fir, and the Oak, which every house in the trade endeavours to keep up a stock of; but it is the Elm, and the Beech, which latter is now engaging attention for its wonderful durability under water. It is found on examination that most of the old Roman bridges, at least the buttresses of them, have been founded upon Beech; and then the Black Italian and Lombardy Poplar in this land of coal and iron of ours are valuable for pit props, and grow faster into money than any other tree. We cannot however dwell upon a mere catalogue of names unless they present some object of interest or utility to the general reader. Suffice it to say that the stock of most things is of a magnitude which people must see to form an adequate conception of. Let us not forget to mention a splendid "weather-beaten" plant, which is all but unknown, and which of all things, with impunity defies the salt-water blast: look to the quantities of that fine hoary-looking subject, something after the colour of Geranium tomentosum, with the small tiny opposite leaves, and you will find it is the Sea Buckthorn (Hippophaë rhamnoides).

Of fruit trees innumerable, from the Vine and the Castle Kennedy and other Figs in pots, to the Gooseberry and the Currant in the open border, there seems an unlimited supply. Vegetable seeds, both agricultural and horticultural, are proved in the trial ground, and many bushels of the commoner sorts are gathered on "our own" premises. There seems to be a routine of nursery cropping, very much after the same style as the rotation of agricultural husbandry. On the preparation of the ground most depended much of the success of these great breadths of seedling trees, Conifers and other sorts, which attract the eye, and show scarcely a speck or spot to mar their uniform vigorous appearance.

The plant-houses are commodious enough for the character of material with which they are filled. They by no means at all impress one, however, with that imposing grandeur which these structures in a great firm such as this, might be expected to possess. When we look at the nursery proper, and the numerous seed and business offices which honeycomb "George IV. Bridge," the floors of which are burdened with the immense supply which must be continually kept in stock, we must be excused for indulging in the comparison of the "mountain and the mouse." Business of course regulates all matters of this kind, and the cultivation and propagation of indoor plants on a large scale has never been attempted. There seems, however, to be some move making in that direction now, as a nice class of miscellaneous plants is being introduced, and, for instance, as some of the more choice dwarf Palms, which are gaining ground rapidly since brought prominently into notice in these pages. Ferns, foliage plants, and a few Orchids are to be seen, some of them doing very nicely. Camellias, Azaleas, and miscellaneous greenhouse stock are being rapidly propagated, and the stock in this way has very much improved since our last visit. We should like, however, to see a spacious house erected for showing off the beauty, the elegance, and the grace of the miscellaneous subjects above noticed. What with beautiful flowers and foliage, now handsome, and again grotesque, intermixed in artistic harmony (for although we admire the "natural" in a landscape, we must not allow a war of races to the disconfiture, if not extermination, of some of the less rampant in our greenhouses) there would be a zest created within the breasts of all who came under such influence which might be fostered, but never extirpated, and the trade and cause would thus mutually flourish.

The staff of hands occasionally employed in the nursery establishment under the spirited superintendence of Mr. Syme is 110 men, and 205 women; and even at the lowest ebb we were told that there were 70 men and 80 women constantly employed. Such is a brief abstract survey of by far the largest establishment of its kind in Scotland, or perhaps in the United Kingdom. *J. A.*

Miscellaneous.

Orange-tree Plagues.—"The Coccus hesperidum, of which mention has been made, as one of the afflictions from which the Orange trees have suffered seriously, is an insect well known to English exotic gardeners as attacking the Orange trees in greenhouses, &c. It is one of the 43 species of the genus Coccus (order Hemiptera), and is commonly known as the greenhouse bug. It is oval, oblong, brownish in colour, and covered with a sort of exuding varnish. The male Coccus of this species is a minute fly. The female having no wings when young, runs over the trees, and finally settles upon some leaf, where she deposits and hatches an infinity of eggs, and then perishes. The more distinguished species of this genus is that which feeds chiefly upon the Cactus Opuntia, which is therefore denominated the Coccus Cacti, and the origin of which has been traced to South America. This species is the valuable (though no less destructive) Cochineal insect of commerce. Frequent manipulation and treatment with any pungent insoluble powders (not injurious to vegetation), such as peppers, raw sulphur, &c., are amongst the best of corrective appliances as against the Orange-tree Coccus. The Lygrima is one of those maladies which commonly result in all organic bodies as the effect of exhaustion, and is probably due in these islands to the unchecked depredations of the Coccus. It is a degenerated form of orange dew, otherwise known as Orange manna." *Consul Vine's Report.*

To Destroy Rats.—Mr. Kelsey, of New Jersey, writes on this subject thus:—"A recipe from the *Builder* recommends a mixture of ox-gall, oil of amber, oatmeal, and flour, to the consistency of stiff paste, as an irresistible bait for rats, &c. The rats on my premises did resist it, however; but the following, which I find in Patent Office Report, Department of Agriculture, 1863 (p. 272), I have tried with the most satisfactory results. I had previously used a mixture of strychnia, corn meal, and sugar with moderate success. I keep my premises comparatively free from rats and mice by giving them poison at all seasons of the year. I never place poison for rats in my house, in summer, but give them plenty of it at the barn whenever they appear. Thus can you exterminate rats, and yet be free from the offensive results of having them dead in or about your house. The recipe from Patent Office Report is as follows:—"Mix 1 ounce of finely-powdered arsenic and 1 ounce of lard with meal into a stiff dough; put it about the haunts of the rats. They will eat it greedily, and it makes them so thirsty that they will die near the water, of which they drink until they burst!" I cannot vouch for the bursting, but they partake readily of the poison, the arsenic being sweetish and not at all offensive, and thereby I have rid my place of them repeatedly. I place pieces, the size of a large pea, on chips within their reach; being careful to put it out of the way of the poultry.

Calendar of Operations.

(*For the ensuing week.*)

AT this time of the year it is of the utmost importance so to arrange stock in houses as to secure a due proportion of space to each plant. All retarded autumn flowers should have as light a situation as possible. Above all things, if not already done, let every sash receive a thorough washing, both those of the houses and also those of the frames or pits. In order to keep glass clean as long as possible, let mats and covering of all kinds be constantly suspended on rails or posts. This is absolutely necessary, not only for the glass, but for the sake of proper economy.

FLOWER GARDEN AND PLANT HOUSES.

Conservatories will now require considerable nicety of management. Atmospheric humidity cannot by any means be entirely dispensed with, yet this if unskilfully applied will produce drip. The best plan is to keep as low a temperature as can possibly be allowed, say from 40° to 45° at night, and to leave a little back and front air on all night if the weather is at all favourable. The front air must be very moderate, or the atmospheric moisture, instead of passing quietly away by the back apertures, will be condensed as it arises. With a good roof covering in the case of small conservatories, 40° would be sufficient, and then there would be atmospheric moisture enough at all times without the special application of water.

CAPE HEATHS.—Let these have careful attention as to watering. Keep up a quiet ventilation day and night if possible; let the air steal in moderately, and give little fire heat.

PELARGONIUMS.—Give air whenever the weather will admit of it; but avoid cold draughts, and keep out frost should it occur. On the other hand, be careful not to use too much fire-heat. Training and shifting must also receive attention.

ROSES.—Tender sorts will soon require protection, and therefore materials for that purpose should be got ready. The tops of standards, worked on ordinary stocks, may be guarded by means of straw bands bound amongst and over their branches, or by light canopies firmly fixed. Beds or masses of certain kinds of Teas, or other tender kinds, should have some porous material strewed amongst them, to afford a little protection, especially during severe weather. Cocoa-nut refuse or even a coating of half-decayed leaves would answer the purpose of protecting their stems a little. Four or five inches of such materials may keep them safe in the event of a severe winter. If it is desirable to protect the tops efficiently, mats thrown lightly on them will suffice, taking care, on the breaking up of frost, to expose cautiously, and not until after they have become thawed.

SOILS.—Compost yards, if not already filled with the different soils used for potting, must have immediate attention whenever the weather is dry. One of the most important points in this department is to see that the drenching autumn rains have every facility for escape. The best of soils, be they ever so well harvested, will become soured in a very short period by the lodgment of stagnant water. A good compost yard on this account should be a steadily inclined plane, and the soils or composts should invariably run the way of the descent in parallel ridges.

FORCING GARDEN.

CUCUMBERS.—Attend closely to these; a little neglect now would render all previous pains and labour useless. Give air as often as the weather will permit, but make it a point to shut up warm. Use additional coverings on cold nights, which will save fuel, and be better for the plants.

PINES.—Much winter watering of Pines in pots is rather a doubtful proceeding; a better way with general stock is to cover over the pots with Cocoa-nut refuse, or some such material, 2 or 3 inches thick, provided the bottom-heat is in proper condition.

VINES.—If any portions of the stems of Vines about to be forced are near the influence of hot-water pipes, they should be bound with Moss, old mat, or any other material, to ward off the dry heat. Keep the temperature low at present in houses started. Do not give air unless to depress the thermometer, or to avoid a superabundance of rank steam from fermenting matter. Let the syringe be applied two or three times a day, suffering the wood to become dry between the applications.

HARDY FRUIT AND KITCHEN GARDEN.

Trench, dig, and ridge every spare inch of ground; this is particularly to be observed in gardens inclining to a clayey texture. During frost let the manure necessary be wheeled out for the whole of the spring cropping, laying it in heaps, either on the spot where it will be wanted, or as near as possible to it. That portion not required for immediate digging in should be piled in small mounds and covered over with soil to prevent loss by evaporation.

FRUIT TREES.—As soon as the leaf is fairly down, planting may be pushed forward with vigour. With regard to bush fruit, if dressings with hot lime and soot when the trees are wet were more attended to, we should not hear so much of the ravages of birds upon the buds, and we would recommend their application also to standard Plum trees wherever practicable, as they not only keep them free from Moss and Lichen, but assist in the extirpation of those insects, in the search for which birds commit such ravages.

STATE OF THE WEATHER AT CHISWICK, NEAR LONDON, For the Week ending Oct. 31, 1866, as observed at the Horticultural Gardens.

October.	Moon's Age	Barometer.		Temperature. Of the Air.			Of the Earth 2 feet deep	Wind.	Rain.
		Max	Min.	Max.	Min	Mean			
Thurs. 25	17	29·062	29·616	49	40	44·5	53	S.	12
Friday 26	18	29·979	29·822	55	29	42·0	54	S.	01
Satur. 27	19	29·969	29·919	54	34	46·5	52	S.W	06
Sunday 28	20	30·177	29·932	56	24	40·0	52	N.	01
Mon. 29	21	30·305	29·912	52	35	43·5	51	S.W	00
Tues. 30	22	29·897	29·768	49	32	40·5	51	S.	06
Wed. 31	23	30·041	29·939	55	29	42·0	52	W.	00
Average .		30·045	29·857	53·8	32·1	43·0	52·5	52·2	26

Oct. 23—Rain, cold and damp, rain at night
— 26—Fine through ut, slight frost at night.
— 27—Foggy, fine, rain at night
— 28—Slight rain, very fine throughout
— 29—Hoar frost, clear, overcast, fine at night, Barom. very unsteady
— 30—Boisterous, with rain, fine at night.
— 31—Clear quite cloudless, fine at night
Mean temperature of the week, 3 deg. below the average.

STATE OF THE WEATHER AT CHISWICK,
During the last 40 years, for the ensuing Week, ending Nov 10, 1866.

November	Average Highest Temp.	Average Lowest Temp	Mean Temp.	No of Years in which it Rained	Greatest Quantity of Rain.	Prevailing Winds. N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.
Sunday . 4	51·9	36·7	44·2	20	0·41 in	3	5	8	1	7	.	5	2
Mon. . 5	52·0	35·7	43·4	20	0·60	4	4	4	4	5	12	3	4
Tues. . 6	52·1	35·7	43·9	19	0·76	2	2	5	2	5	8	2	3
Wed. . 7	52·0	37·1	44·6	19	1·02	2	8	2	4	4	12	6	3
Thurs. . 8	50·9	31·9	42·9	18	0·88	2	6	2	2	2	10	6	5
Friday . 9	50·7	33·9	42·3	16	0·57	1	5	2	2	3	10	6	6
Satur. . 10	50·3	34·1	42·2	22	0·67	1	6	4	2	8	11	2	3

The highest temperature during the above period occurred on the 8th, 1852 and 6th, 1851—therm. 64 deg., and the lowest on the 9th, 1864—therm. 17 deg.

Notices to Correspondents.

BURLINGTONIAS: *A D B.* Your branched spike of Burlingtonia decora is quite abnormal. We never heard of anything of the kind before. Reichenbach says (Congress Report, p. 122) that panicles sometimes occur in Rodriguezia.

OPEN OR HOT HOUSES: *A D B.* Cool Orchid growing is still in its infancy, and so there is of course much to learn in regard to the best-constructed houses for the purpose; but we know of several lean-tos on Mr. Bateman's plan that are succeeding perfectly. We are also acquainted with span-roofed houses that answer their purpose exceedingly well. No doubt it will be found that some species prefer the former and others the latter, according to the degree of light or shade that they may severally affect; but it will be a work of time to ascertain these things. Meanwhile, as a general rule, it may safely be assumed that the Mexican species succeed best in a span-roofed house (which is naturally lighted from above), while the Peruvian and New Granada kinds prefer a lean-to with a northern aspect.

CUCUMBER DISEASE: *G K.* Yours is a clear case of the well-known Cucumber mildew, for which no one has yet found a remedy. The best cultivators have frequently been baffled by it, and it has occurred under almost every kind of treatment, both in the stove and in the open air. We believe that the seeds are already affected with the disease before they germinate. *M J B.*

GAME SEASONS: WORK: *J C.* In answer to your question, "Is it a gardener's work, or belonging to it, to fall timber trees on a gentelmans estate," we can only say it is a servant's duty to do, within the limit of what is reasonable and just, whatever his employer may require him to do. It would be unreasonable, without a special arrangement to that effect had been made, to require him to milk cows, but we see nothing unreasonable in his being required to cut down a tree.

HEATING GREENHOUSE: *Cucumbers* asks how "he may most economically warm a small greenhouse, 15 feet by 10 feet. He does not want heat for forcing purposes, but merely to protect his plants from frost. In his locality (Cornwall) coals are expensive, as also is charcoal." Is it so situated as to admit of its being heated by pipes connected with the kitchen boiler; or a small furnace outside, with a flue of glazed pipes well put together, might be used, using house cinders for fuel.

NAMES OF FRUITS: *J F.* Beurré Beaumont.

NAMES OF PLANTS: *F.* We cannot undertake to name plants from such fragments.—*Constant Subscriber.* Cyrtomium falcatum.—*E. O.* 3, Doodia media. 4, insufficient.—5, Lastrea lancricaulis, *alias* Polypodium trichodes.—*J K.* Next week.

PEACHES: *Lord O.* The cause of the fruits being stringy and tasteless was probably owing to some check which prevented full development of the cells of the fruit during the swelling period, succeeded by too moist and close an atmosphere when the first mischief was done. This would be very likely to happen to trees in tubs. It is impossible to judge decisively without knowing all the conditions of the case.

PEACHES AND NECTARINES: *T B.* The following varieties of Peaches and Nectarines may possibly suit you: they are arranged in the order in which they ripen, and are equally well adapted for orchard house or open wall cultivation:—*Peaches*, 1, Early York; 2, Victoria (Rivers); 4, Grosse Mignonne, 4, Royal George; 5, Noblesse; 6, Bellegarde; 7, Barrington; 8, Walburton Admirable; 9, Salway (very late, requires heat). *Nectarines*, 1, Elruge; 2, Violette Hative; 3, Ridgeway; 4, Murrey; 5, Pitmaston Orange; 6, Pine-apple (Rivers). We know but little of Poole's Late Yellow Peach, but none of the late yellow-fleshed varieties are at all comparable with the white-fleshed kinds. The chief value belonging to the Salway lies in its extreme lateness, coming into use, as it does, long after all others are past. Its flavour is not rich, and it requires a very fine autumn to get it to ripen at all out of doors, even in the neighbourhood of London.

COMMUNICATIONS RECEIVED.—W. R.—J. F. Lombard.—W. Paul, —Dr. Moore (next week).—W. Thompson.—Quo.—W. F.—R. Thompson.—S., with thanks.—D. T. F.—W. Page.

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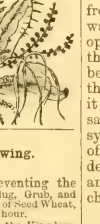

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The Agricultural Gazette.
SATURDAY, NOVEMBER 3, 1866.

MEETINGS FOR THE ENSUING WEEK.

MONDAY, Nov. 5—{Central Farmers' Club (Mr J. Howard on Things in America), at Salisbury Hotel—6 P.M.
WEDNESDAY, — 7—Royal Agricultural Society of England—Noon.

THE Leamington "Sewage Conference" seems to have been less effective than might have been expected. The time for a thorough discussion of the subject was insufficient, and the resolutions, though expressing accurately, we believe, the truth upon the subject, will not carry the weight which was anticipated.

After a preliminary address from Lord LEIGH, who presided, the proceedings opened with an elaborate and somewhat tedious paper by Dr. HAWKSLEY, in which the Earth Closet scheme was advocated, even for the metropolis, where some millions have just been spent on drainage.

Dr. HAWKSLEY proposes to divide the metropolis into 500 sections—the present water-closets to be replaced by earth-closets, 4 lb. of earth per man *per diem*, being supplied for deodorising purposes. In each section will be a number of men with horses and carts, and pails, who will call at the houses every morning, between the hours of six and nine A.M., for the removal of the soil to a general depot, where kilns will be erected for drying it, and sending it away for agricultural purposes. The value of the product he estimates to be as follows:—For each individual, 14*s.* per annum—total sum, 2,100,000*l.* Expenses of collection, 623,250*l.*, and balance of profit, 1,476,750*l.* Supposing that 7*s.* a-head was given to each person in every habitation for this refuse material, the amount would be 1,050,000*l.*, leaving a balance to pay for pails and management equal to 426,750*l.* The lecturer concluded by stating the following as the propositions he had arrived at, after considering carefully the whole question:—

1st. That the refuse organic matter cast free in human communities, is of an immense amount, that it is of great value if well applied, but that it is a source of great, varied, and increasing evils to the public health if ill applied, as well as a great drain on the resources of the wealth and food of the people. 2nd That the present mode of dealing with the refuse organic matter fails to utilise it; but on the other hand so mixes it up with the first essentials of life and health, viz., the air we breathe and the water we drink, as to lower the standard of vitality, to produce much general disease, and to convey epidemic poisons in the most fatal and widespread manner. 3rd That the mode referred to (that is, the existing sewering system) is an error from beginning to end, and is incapable of any satisfactory improvement. 4th. That the employment of earth for absorbing, deodorising, and utilising the material in question, applied on the principle of detail, affords a complete, practical, and highly profitable method of accomplishing all the objects of the sewage system.

Mr. HERON, the Town Clerk of Manchester, who argued strongly in favour of some such scheme as Dr. HAWKSLEY had described, said that the system now in operation at Manchester was to collect the refuse from the places where it was deposited at every house, and send it for miles away by rail into the agricultural districts for manure. The Corporation removed in this way about 100,000 tons annually, at an expense of about 20,000*l.*, and the sum they received from agriculturists as the price of the manure was about 10,000*l.* He believed the system in operation at Manchester was the best known plan that any large town could adopt. It was far better to have a convenient privy and dry ashpit than a water-closet, and as a sanitary arrangement it was very much superior; and until our great sanitary luminaries had shown the public a better system applicable to large towns than any yet offered, it would be held by many to be the most desirable plan for such towns to adopt. These, at any rate, were the opinions entertained at Manchester with regard to this question.

Mr. MENZIES, of Windsor, stated his experience of the agricultural demand for house waste of the kind referred to by Mr. HERON. At Aldershot the whole sewage had been collected in tanks to be dried with ashes and sold, but even in that poor district no one would buy it, and it ultimately had cost Government 500*l.* or 600*l.* a-year to cart it away. That plan has now been abolished, and Mr. BLACKBURN, who has a concession of the sewage there, is utilising it by irrigation over Italian Rye-grass, with what results as yet we do not know.

Mr. MACFARLANE, of Glasgow, stated that the plan adopted there is the daily removal of excreta by the dustman from dry closets without the use of any earth or other deodoriser. He believed medical men were of opinion that the effluvium is not injurious until putrefaction commenced, so that if it were removed once in 24 hours there would be no need of earth. We can hardly imagine anything more offensive than the plan as thus described of the Glasgow householders.—Mr. JAMES advocated the Earth Closet from his knowledge of it on Baron ROTHSCHILD's estate in Buckinghamshire.

The second day's proceedings included papers by Mr. MENZIES "On the Separate System of Sewerage," and by Dr. CARPENTER and Mr. LATHAM on the Croydon experience. The former defended and developed the maxim—"the rainfall to the river and the sewage to the land." The latter described Croydon in 1848 and 1866 respectively—its drainage having been carried out during the interval—and gave an elaborate account of the irrigation with its drainage water of Mr MARRIAGE's farm at Beddington.

The proceedings were brought to a close by an animated discussion of the various resolutions in which it was proposed to embody the results which had been arrived at. Mr. GARNETT proposed—

"That after a careful consideration of the valuable information submitted to it, this Congress is of opinion that the system of allowing excrementitious matters from houses to pass into drains and sewers and pollute the rivers, is in all cases highly objectionable, and ought, as far as practicable, to be prevented."

Mr. LATHAM urged that the words "drains and sewers" should be left out, and this, after a vigorous protest from Mr. HERON, of Manchester, was at length carried by a large majority.

A second resolution, moved by Dr. CARPENTER, of Croydon, and carried, declared that—

"The system of drainage, when carried out in a scientific manner, removes the difficulty which arises from the present noxious plan of polluting the rivers of England, but that there are circumstances under which other systems may be applicable."

After votes of thanks to Mr. HITCHMAN, of Leamington, who had organised the discussion, and to Lord LEIGH, who had presided over it, the Conference broke up. It will be seen that the Croydon experience has carried the day amongst the variety of rival opinions and contrivances which received attention during the meeting. And this, as against the advocates of Earth Closets for great towns, it undoubtedly deserved to do. An actual success, however it may fall short of the theoretical result, is certainly to be preferred to a mere promise of better things, based though it be on probability.

OF all the weeds which infest the soil there are none more trying to the farmer than the various species of Dock. Their herbage is innutritious, and the acrid and astringent nature of their seeds causes them to be neglected by every species of bird. Their large and deeply-sunken roots; their broad leaves and spreading branches, are both of them a plague, and their seed-producing power is so great that a small plant is capable of bringing to maturity several hundreds of seeds. Our more common agrarian species are distributed all over the world, tracking cultivation, for it seems impossible to get any bulk of agricultural seeds without a greater or less admixture of the Docks.

The number of native species is variously estimated at from 8 to 13. We shall however only choose to dwell upon the following:—

1. Rumex obtusifolius, Broad-leaved Dock
2. ,, crispus, Curled leaved Dock
3. ,, palustris, Marsh Dock
4. ,, hydrolapathum, Water Dock
5. ,, acetosa, Large Sorrel Dock
6. ,, acetosella, Sheep's Sorrel

1. The Broad-leaved Dock may be readily distinguished by its broad slightly waved leaves, which are more or less blunt at the apex. Of this there is a more pointed-leaved form, which has been by some named R. acutus, but we incline to consider these only as varieties. The Broad Dock is the one universally met with: it will be found on the sides of paths and under hedge-rows in the meadow, whilst the arable land is sometimes most seriously infested with it. It has tapering fusiform root-stocks, which vary in size according to age; in young plants they are about the size of a Radish, in which state, on being ploughed up and brought to the surface of the soil, they should be hand-picked, but unfortunately, from their colour being so near that of the soil, such small objects are not attended to; so, while Couch, from its whiteness, is picked up with readiness, even a worse enemy escapes. If Dock roots, of whatever size, are left on the surface of the soil, they soon send out fibrils from the side next to the ground, and with no firmer hold these plants will send up their stems, and very rapidly produce their seeds.

Again, if not ploughed up, but hoed off, it too frequently happens that several flowering branches follow instead of a single one. To understand this, we should take up a Dock of the second year just as its central axis is being grown, when it will be found that the brown tap-root is surmounted on the top by a whitish or greenish stem; if this latter be so cut as to leave any part behind, the plant will infallibly bud out again, but if we cut it below this, the tap-root can no longer send out buds; hence, then, in using the hoe, we should endeavour to cut them off low enough but not too low, or so much root will be left on the divided top that it will send out root fibrils, and our pest will not be destroyed. These remarks will apply with equal force to the next species, which, indeed, in as far as the farmer is concerned, has a very similar habit and history.

2. The Curled-leaved Dock is probably the commoner species, though it and the previously named are usually found in the same places, the former predominating where the soil is drier, the latter in moister situations, and hence road sides, on the slopes between the road and the hedge, and the damper parts of the sound hay field, always yield it in abundance. It is readily distinguished by its longer, narrower, more acute, and wavy leaves, which are crisped at the margin much after the manner of our grandfather's shirt frill. The

seed-producing powers of this and the preceding species are enormous; we have estimated on a single plant, for Rumex obtusifolius 13,000, and R. crispus 10,000 seeds—of course they will each vary in this respect.

During the present summer some of us have amused ourselves by stripping off Dock seeds of the two species just named; they grew in a field of Wheat which was not over remarkable for the thickness of its grown Docks, for we had several cartloads of the roots picked up before and after Wheat-sowing, which had grown from the seed legacy left by our predecessor. Well, we very soon got 11 pints by measure, just from following the reapers for about an hour, which we afterwards estimated to afford as many as 112,160 seeds. A friend of ours assured us that he had given 3*d*. the thousand for picking up Dock roots; what a cost might not this seeding entail!

It was the knowledge of the quantity of seed produced by these plants that induced us to offer prizes for the best collection of Docks in flower to be pulled up by the roots, and as we got large collections in this competition, it is to be hoped that some good is effected in this way. At all events it was amusing to hear the kindly gentleman who distributed the different prizes vary the nursery rhyme as follows:—

> Hick-ory-nickory Dock,
> Ye come-d-e very best stock,
> Have half-a-crown
> For cutting them down,
> Hickory, dickory Dock

A very bad stock indeed, but with powers of endurance and of reproduction to such an enormous extent that those who insist upon it that every plant has its use may well expect to discover some important end in the creation of these Docks.

3. The Marsh Dock is far too common in some of our wet marshy meadows. Its foliage is similar to that of the Curled Dock, it however differs in its fruit; at the same time the variations in this respect are so variable in all the species that we incline to think that characters founded thereon are of little value; at all events there can be but little doubt that this and perhaps other Water Docks is carried to the arable in the meadow hay, which latter, if it be allowed to get too old before being cut, will have perfected seeds of Dock which may be sown on the arable land; and wherever it is so used, a good crop of Docks, though of the two first-named forms, is certain to result, some believe this to be a constant source of the mischief.

Sometimes hay of this character finds its way to the farm from town stables. Much of the Grass land of Somerset lies on river flats, and is highly productive of hay, but it is oftentimes of a mixed and coarse description, left as long as possible before cutting to ensure bulk; this usually finds its way to the town inns, and so it happens that the farmer who supplies them with straw to bring back the manure brings back also the seeds for a plentiful crop of Docks.

4. The Dense-leaved Water Dock we take to be a water form of the R. crispus, and we have but little doubt that it, too, would develope this if its seed were transferred to the arable land, but fortunately it does not find its way to the rick to any great extent, as it belongs to the ditch and the water-course. It is here a weed, from blocking up streams, and from its mass is difficult to get rid of, the only way being to never let it perfect its leaves, and the roots will sooner or later decay. This method, indeed, can be adopted with all the perennial species when they grow in positions where they cannot well be rooted out.

5. The Sorrel Dock belongs to a division in which the foliage is intensely sour from containing a large proportion of oxalic acid, which being separated yields the "salt of sorrel" of the druggist. This plant is a weed in the pasture, inasmuch as it dilutes the herbage with innutritious, if not with injurious matter; it is got rid of by close and long-continued depasturing. In making hay year after year the Sorrel-seed ripens, and the whole plant has done its duty for that season, and so cutting it then does not injure its succession; besides, it usually seeds with other pasture weeds in the general greed for hay, by which we find that much hay is spoiled in its innate qualities, besides often being so by weather by delaying its cutting too long, and then the aftermath is never so good, while the meadow by this means receives a permanent injury and robbery.

6. The Sheep's Sorrel is a weed of the sandy arable field, which increases with great rapidity if the land be not carefully hoed and cultivated. It is said to be a sign of poverty, and with us it is held that where this Sheep's Sorrel prevails, Barley should be sown late on account of the poverty of the soil. We however took a different course this year, deeming that as the soil in question was sandy and poor, grain would want a longer time to develope itself; we were told it was wrong and would not do, but as it occurred that no one had ever tried it, we sowed this field first with 6 pecks an acre, and it was the largest crop on the farm.

Liberal manuring, constant cropping, and the never-ceasing use of the hoe will soon cure this—a matter of importance when you wish to let land well, as few people will care to give a high rent for land where the Sheep's Sorrel abounds to any great extent.

We have penned these few remarks upon Docks and Sorrels, as they are admitted to be some of the worst weed-pests of the farm, and the conclusion at which we have arrived may be summed up in a few words as follows:—

Never let Docks seed on the farm. If they have seeded and grown plants, hand-pick them as clean as possible. Do not sow them with seeds. Do not sow them with over-ripe hay. Do not sow them in your manure. *B.*

ONE PECK OF WHEAT PER ACRE.

YESTERDAY, the 26th Oct., I supervised the putting in of half a peck of Wheat on half an acre in my 11 acres chapel land. The rest of the field was drilled to-day with 4 pecks per acre (my usual heavy-land quantity), but half an acre on one side of the thin-sown was drilled with 3 pecks an acre. It is on a Clover lea, mown for hay and then manured and fed, according to my usual custom. The dibbling of the half acre employed one man to dibble and five women to drop a whole day, that is, from half-past 6 to 5 P.M. The cost is—one man, 2*s*. 6*d*; five women, at 10*d*., 4*s*. 2*d*.; or at the rate of 13*s*. 4*d*. per acre. In ordinary dibbling it only requires two women or girls to drop for each dibbler, but then the seed is hurriedly and carelessly dropped into the dibble holes, in quantities varying from five grains to a dozen. In my case one kernel only was dropped in each hole, although occasionally two would slip in, and sometimes one would drop outside. The total quantity delivered to the women was three quarters of a peck, and when their bags were emptied in the evening, and the contents accurately measured, more than a quarter of a peck was returned, so that, as on former occasions, rather less than one peck per acre was disposed of.

The Wheat was white Club-headed Rough Chaff, weighing 63 lb. per bushel. I sold 30 quarters of it yesterday at 67*s*. per quarter. The field on which it grew produced a fraction over 4½ quarters per acre, and as the peck an acre was grown in that field, it yielded quite as much as the average of the field, although somewhat less than its adjoining half acre.

Yesterday the dibble holes were all left open until they had finished, and then one stroke of the light harrows covered them.

As a certain friend of mine doubted whether one peck of seed per acre would allow one kernel to so many holes as 6 inches by 4½, I sat down quietly in the evening, weighed half an ounce of the seed we had been putting in, and then counted the kernels. The result is as follows:—Weight of seed per bushel, 63 lb.; half an ounce gave 424 kernels, therefore 1 peck would give about 213,696 grains, and as there are 43,560 superficial feet in an acre, 1 peck would give almost five kernels to each square foot.

The dibble holes, 6 inches by 5, would give about five dibble holes to each square foot, so that in fact one man in the course of a day made 108,900 dibble holes. This is done by walking backwards, and working with an iron dibble in each hand.

On looking at these dibble holes (five to each square foot) before they are covered up, every impartial observer must feel that the plants of Wheat will be fully thick enough. Liebig says, justly, that the greatest enemy to a Wheat plant is another Wheat plant, for they both require the same kind of food, and fight for it when too closely packed. The result is then the same as with an over-crowded plantation of young trees—they are crippled and stunted. Now if one peck per acre gives five plants on every square foot, one bushel per acre will give 20 plants for every square foot, and 2 bushels per acre would give 40 plants for every square foot, one fine plant of tillered Wheat will require at least half a square foot to itself. In order to get 5 quarters per acre from one peck of seed, each kernel should produce four average ears, of 40 kernels to each ear. The power to do this does not depend upon the seed but on the condition of the soil, both as to tillage and food for the plant. If these are ample, instead of four ears we shall probably get an average of six ears, or 240 for one; that is 240 pecks for one, or 7½ quarters of Wheat per acre. I hope to get nearly as much as this next year if a fine season. I lately heard that one of the women droppers was last year fractious and captious, and neglected her work on my peck an acre, so that the plant was not so regular as it ought to have been. Let me advise my brother farmers always to sow the very best seed, well dressed, and then passed through the blower to get rid of the light or imperfect grains. I know that in too many instances tail or inferior corn is sown as a matter of economy—a ruinous and false economy.

Whenever a farmer desires to get a large return of seed from some particular sort of Wheat, he carefully plants it in his garden, one kernel in a hole, gives it ample space, and gets an enormous increase. Having thus accumulated a stock, he pursues an entirely opposite course in his fields. This is inconsistent and illogical, and we must draw the inference that his field cultivation is so imperfect and inferior to his garden that he has no faith in its power of producing a great crop.

Why should not our land be gardened? It can only be done by an additional investment of labour and capital, and a diminution in tenable area. I once said to a farmer, "Why don't you farm your garden the same as you do your land?"—"Oh!" said he, "it would not pay; we should not grow enough." I never heard a stronger reason for gardening the land.

There can be no doubt but that thick sowing causes immense loss to the farmer and to the country. As soon as by high feeding and rich manuring the land becomes forcing, we hear it said, "I get my crops laid and spoiled."

I lay down as a principle that land can hardly be too rich for Wheat. Put your kernels in at a proper distance in a rich garden, and what a crop you will get! but crowd the grain in as on an ordinary field, and it will be destroyed. Some folks are afraid to sow early, because they will sow so much seed. Thin sowing, like sewage, has had many warm opponents, but the truth will ultimately prevail; and we shall probably live to see experiment and calculations overcoming mere ideas and strong prejudices arising from old customs under different conditions from those of the present day.

My hope, therefore, is in the future. *J. J. Mechi, Tiptree, October* 27.

P.S. Thin sowing won't do with bad unclean farming and imperfect tillage. In weedy undrained land, where the furrow slice presents an unbroken twitch-bound and almost inseparable slice, over which common wood harrows (rakes) with teeth worn down to a stump, dance over the clods, but make no tillage, it would be absurd to expect a great crop, even with abundant seed. On drained and deeply cultivated lands, worked by perfect implements—good iron harrows with steel teeth, you get a perfect comminution and friable intermixing of the seed-bed in which the drill can comfortably and safely deposit its seed. Really, in too many instances, the old imperfect rolls and implements are in antiquated uniform correspondence with the tumble-down dilapidated sheds and buildings.

THE CLAIMS OF VETERINARIANS.

[On the recent opening of the winter session at the Albert Veterinary College, Professor Gamgee made the following remarks:]

IN years past, at the commencement of each winter session, he had endeavoured to point out how vast and important were the scope and objects of the veterinary art. It had been his aim to secure improvements in their own ranks, and to point to that overwhelming amount of work left undone which could so profitably engage the precious time of some of the best heads in the country. It was obvious that the profession generally had not understood, and had not been encouraged to understand, how it could serve this country by controlling the spread of pestilence and securing the steady and abundant supply of wholesome animal food for a hard-working and ever growing population. They had lost upwards of 300,000 head of cattle in less than 18 months. They had lost at least 20 times that number since 1842, and by the combined and intelligent action of their veterinarians all might have been saved. He used the word advisedly. Had they known how to respect and utilise veterinary knowledge, and to marshal their available strength, not a single animal should have fallen a victim to lung disease or rinderpest. That their flocks continued to suffer from periodical invasions of small-pox, and their markets were still deluged with the poisonous saliva of the murrained oxen of the Continent, were further illustrations of their weakness and imperfect appreciation of available means. He had too much reason to know that the loss incurred for years past had been due to that ill-defined and indescribable influence which ever retards good works. In everything they found parties of action and parties of station. For years they were insisting on the great evils attendant on the importation of diseased foreign cattle. The farmers, and of course all cattle dealers, dreaded any impediments put in the way of exposing such animals in their open fairs and markets. At last the cattle plague came, culminating the disasters of nearly a quarter of a century's negligence. Veterinarians had no *locus standi*. They spoke, but spoke utterly in vain on the origin, nature, and means of extirpating the malady. A Royal Commission was appointed, and, every one must admit, with marvellous good effect. Yet that Commission brought to light no fact to prove that the veterinary advice offered in August 1865, merited the contempt it received. On the contrary, everything had tended to indicate the folly of non-reliance in the profession whose duty it was to deal with a cattle disease question. Completely their profession was ignored, as proved by the Royal Commission, which was composed of eminent men, but, with one single exception, not veterinarians. The great question of the day, as affecting veterinary medicine, was—How could they elevate the standing of a body of men whose knowledge and usefulness should command respect and encouragement, and whose obscurity was fraught with danger to the public interests? He held it as proved, that if in the summer of 1865 veterinarians had been held in the same estimation by Government as Professor Bouley and his colleagues were in France, they would have been spared the loss of several millions sterling. They asserted, and still persisted in the assertion, that such a murrain travelled in obedience to known and unchangeable laws—a knowledge of which enabled them with most positive certainty to produce or to destroy so terrible a disease. In a report presented to Parliament in 1863 special attention to the purely contagious nature of cattle and sheep plagues proper, and suggested that an inquiry, which he had the honour of conducting for the Privy Council, should be continued, with a view to develop the means at their disposal for controlling the propagation of disease amongst their domestic animals. It was deemed labour in vain, as there was no prospect of the institution of rational measures. The Government could not, and the people would not, move until taught to do so by some such events as those they were still witnessing, and now there was great danger of the benefits to be derived from hard-earned experience being lost from the forgetfulness of those who thought lightly of times past and trusted to Providence for the future. Entertaining the view that it was the primary object of their profession to study the best means for the prevention of maladies, much attention had been directed in the College to the practical working of some efficient system directed against the dissemination of foreign disorders.

Some persons had charged him with stepping from his special province in encouraging the formation of a company destined to revolutionise the wretched system of town dairy management, and another for securing the slaughter of fat foreign stock at their ports and establishing an efficient system of quarantine for foreign store cattle. He should never cease to labour

at those important subjects, and, having a fair prospect of success, would exert himself to the utmost in carrying out in the best practical method measures which had been devised and fostered for the permanent good of the country. There was ample room for astonishment that many who were expected to work with them should join the always large body of people who called out "Rest and be thankful." But, although Mr. Clode's last reports stated that in the week ending Sept. 23 the number of fresh cases of rinderpest only amounted to 67, it must not be forgotten that a small capillary tube 1 or 2 inches long might be charged with sufficient poison to exterminate, in the process of its reproduction, the whole horned stock of the United Kingdom. Not only had they it still amongst them, but Holland, that usually supplied them with enormous quantities of cattle and sheep, was suffering more and more. In the week ending the 15th of September there were 1940 fresh cases of plague in the provinces of South Holland, Utrecht, and North Holland, while for the week ending the 10th of June, the comparatively low number of 294 had been touched. It could not, therefore, be said that they should be satisfied with their labours and attempt no more. They must introduce the foreign stock markets system; they must teach their veterinarians the art of inspecting cattle alive and dead; and they should be well paid for keeping disease in check rather than for curing it; they must introduce a sound, general and efficient system of live stock insurance, and as the result they would secure cheap and wholesome meat for their people, and, at the same time, the prosperity of their farmers.

In the course of some general remarks on the status of the profession, the Professor said that the Government and the public had no right to complain of veterinarians until they had done for them far more than they already held out any hope of granting. On the other hand, he was not the one to forget that there were charms and privileges incidental to the study of veterinary science which offered in themselves much encouragement. Indeed, the number of members of the profession was so small that none need be idle. They wanted more and better men; and hard-working, intelligent students never could regret engaging in scientific pursuits which provided ample scope for intellectual development and the enjoyment of many of the best sweets of life.

In conclusion, he said the course of events was turning more and more in their favour. They had to seek encouragement in the records of other professions which had risen almost within the memory of living men. The immediate predecessors of Brunel and Stephenson were not the engineers of the present day, and although they might not be spurred on to exertion as they were by the introduction of steam power, nevertheless they must have acquired greater importance in the eyes of the Legislature and the public since the cattle disease had had to engage so much of the time and attention of her Majesty's Ministers, and had convulsed the country from one end to the other. What they must now be anxious to see was, that their will and power to save the country were appreciated. They did not aspire to form part of any commission appointed to inquire into the nature and progress of human cholera or small-pox, but when a veterinary question arose they hoped not to be treated with supreme contempt. They must grow to have that confidence in themselves which would inspire confidence in others, and people must learn to look on them as well worthy of their support. They would say with a great writer that Nature would bring "all this in time. Rotation is her remedy." "The destiny of organised nature is amelioration, and who could tell its limits? It is for man to tame the chaos: on every side, whilst he lives, to scatter the seeds of science and of song, that climate, corn, animals, men, may be milder, and the germs of love and benefit may be multiplied."

THE MANAGEMENT OF FENCES.

[The following paper was lately read before the Wenlock Farmers' Club by Mr. Hall Keary, late resident agent on the Holkham estate.]

Before I enter upon the consideration of the planting, rearing, and management of fences, it may not, I think, be unprofitable to notice generally the state of fences as they exist at present in this country. It is universally (and with great truth) admitted that the agriculture of Great Britain has been developed and extended in an extraordinary degree during the last 25 years. Our cereal crops are increased in quantity and quality, and roots are grown with success on land hitherto deemed incapable of producing anything but Wheat and Beans. Barren wastes have been successfully and profitably enclosed, and the steam plough and the reaping-machine are implements with which we are daily becoming more familiar. In addition to all this, the energy which has been shown, and the success which has been attained, in the breeding and rearing of live-stock during the above period, proves incontestably that the British farmer has not been asleep, and that he has, to some extent at least, kept pace with the industrious enterprise of his commercial neighbours. There is, however, I regret to say, a dark side to this picture. Great as have been the advances made in agriculture generally, I do not hesitate to express the opinion that our fences as a general rule throughout England and more particularly throughout the west midland counties, are in a most discreditable and neglected condition. In the first place I counted that nearly three-fourths of the existing fences upon arable land ought to be swept away altogether. For all practical purposes they are utterly useless; large, irregular, and overgrown, consuming on many farms nearly a tenth of the land, and growing moreover weeds of all sorts in the greatest abundance, they are productive of great annual loss and a continual source of expense. And what good reason can be given for their continuance? They grow no corn, they produce no live stock. Our forefathers probably planted them for shelter, and cut the ditches which frequently run parallel to them as the best method of drainage with which they were acquainted. But those days are gone; drainage and other causes have ameliorated our climate, and I am convinced that the demolition of a large proportion of our ancient hedgerows, however much such a plan might detract from the beauty of the landscape, would tend immensely to facilitate and cheapen our agricultural operations. The evils indeed of the present state of our fences must be so apparent to any reflecting mind, that it can hardly be necessary for me to do more than enumerate them very briefly. Fences are injurious—1. Because they absorb a large quantity of valuable land, which, but for them, could be brought into cultivation, and thus add largely to the resources of every farm. 2. Because they encourage the growth of all sorts of weeds, which, in too many cases, are allowed to mature their seeds, and disperse it in high winds all over the country. 3. Because they prevent a free circulation of air over our fields, and frequently cause mildew, blight, and rust. 4. Because they seriously increase the amount both of horse and manual labour, as, for instance, in the frequent turnings they occasion to the ploughman, and in the time expended in cultivating headlands, frequently difficult of access. Still further proof might easily be brought forward; but I think I have stated enough to prove that the present system of hedges in England is radically wrong. Why then are they so long maintained in their entirely to the injury of the tenant and to the loss of the community at large. The fact is that the administration of the affairs of our landed property is somewhat conservative, and because the hedgerows were planted by our ancestors, they are treated with profound respect and allowed to remain. I will consider shortly whether they may not be easily dispensed with. In one of the best cultivated and most productive parts of the county of Kent, and in several other counties also, fences are almost unknown. The fields are divided into a regular rotation of crops, and when Turnips or Clover have to be eaten off by sheep, the simple expedient of hurdles or nets confine the animals within the proper limits. No inconvenience is experienced, and, as I believe, great evils are avoided. I do not, however, advocate the entire abolition of our fences in this district; but miles of them might at once be grubbed up with great advantage, and the sizes of all the fields might be very much enlarged. Good strong, but not high fences, in our pasture fields are highly necessary and desirable, and I will endeavour to show how they may be maintained within proper and reasonable limits.

The preparation of the soil before planting is a most important process, but one too generally entirely neglected in connection with hedge fencing. Wherever it is decided to plant a new fence, the greatest pains and care should be taken thoroughly to clean from Couch and all weeds the seat of it. If this preliminary point is not carefully attended to, not only will the future growth of the young quick be seriously impeded, but great expense in weeding will be entailed. The construction of the bed where the plants are placed is also of importance, and must be regulated by the nature of the soil and local circumstances. If the soil is light and poor, and not deep in staple, I strongly advocate a low bank, formed as follows. Allow 3 feet for the seat of the bank, and throw upon it as much of the top spit or surface soil on each side as will raise the bank about 2 feet high. Upon this table the Quick sets should be laid in, with the roots downwards, and 5 inches apart. Then place carefully over the plants 12 inches more soil, and gradually narrow in the bank until the top is finished about 9 inches wide. It is a good plan, although not absolutely necessary, to prick in a small dead hedge on the top of the bank; it protects the young shoots from the cold winds of winter, and prevents injury from hares and rabbits to some extent. If some good short muck could be afforded it should be spread upon the ground before the bank is raised, at the rate of about 20 loads per acre, and it then becomes thoroughly incorporated with the soil. It is a bad plan to lay the Quick in the muck, as it is apt to cause mildew the first year, which is very injurious. On good old pastures the turf should be thoroughly well chopped and placed in the middle of the bank; the young Quick will feed well on it, and manure is not so much required. There can be no doubt that the manure is of great advantage by giving the young Quick a good and rapid growth at first. It is not always practicable to place a new fence so as to give the plants the best aspect, but where a choice can be exercised I think a west aspect is preferable, as the young Quick does not then get the north wind at the back or the east wind at the face. The best time for planting is the middle of autumn, after the fall of the leaf, or in the month of February. The age of the plants (White Thorn, of course) should be two years transplanted, and the oftener they have been transplanted in the nursery the better will be their roots. It is highly desirable to plant Quicks with clean fibrous roots, and not old long and cankered ones; and although the cost of selected plants is somewhat greater in the first instance, it is cheapest in the end, and a good strong fence is much more quickly obtained. The advantage of the early spring planting is that the January frosts are avoided, and the bank has time to settle before the drying winds of March set in. The tops should be cut off to within 2 inches of the ground-mark; for, although some nurserymen advise that the plants should be set as they come from the lines, I cannot see the advantage of it; and my own experience of many years is decidedly in favour of cutting off before planting. I think the gales of winter have a great effect on the long shoots of the uncut plants, and very seriously loosen their hold in the ground before they become well-rooted; and I am also of opinion that the young shoots are more vigorously sent forth in spring, when the tops are taken off at the time of planting. In strong and unkind soils, I advocate the same form of bank, with the addition of a ditch on one side, to carry off the water. On good deep loams the bank may be dispensed with; but great care must then be taken to open the trench with a spade sufficiently large to hold all the roots without crowding. The plan of planting with the dibble is highly objectionable, and should never be resorted to, as the roots are then crushed into too small a compass, and many of them are bruised and injured by the careless way in which they are frequently thrust into the ground. I once seriously injured several miles of fencing by allowing the dibble to be used, and so learned a lesson which I have never forgotten. The operation of planting being finished by the end of November or middle of February, as the case may be, nothing further is required, unless it is necessary that the fences should be guarded by posts and rails on one or both sides. In arable districts the guard-fence is quite unnecessary; hurdles or nets can be employed to keep off sheep, when the land is under roots or Clover. When, however, the fence is to be raised on pasture-lands, posts and rails must be used to protect it. If Larch is grown in the district, the thinnings of the plantations provide admirable fencing materials, the lower or butt-ends being used for posts, either whole or split, according to their size, and the tops serving for rails. Nothing less than four rails will keep out lambs; and it is perhaps better to give the additional rail in the first instance. I have, however, raised many miles of fences with only three rails, interweaving the two lower ones with thorns or brake, and, by taking care to replace it when it becomes rotten, a very sufficient fence can be made against all kinds of stock. I decidedly prefer morticed posts, as the rails are less likely to be displaced, and are also more easily renewed when broken or decayed. The posts and rails should not be placed too near the hedge—say at least five feet from it; if nearer, horses or colts can reach over and crop the young thorn-shoots to their great injury.

In early spring the young fence should receive careful attention. All weeds should be eradicated, and, if necessary, the top of the bank should be carefully forked. It is very desirable that these operations should be performed before the young buds are made, as it is impossible to weed the quick sets without bruising and knocking off some of the buds, which is very prejudicial, and backwards the summer shoots. During summer any docks or thistles which may appear should be cut off below the crown before seeding, and the bank will not then be disturbed or pulled down. Early in the autumn another careful weeding should take place, and throughout all the early stages of the growth of a young fence the greatest cleanliness is most desirable. Weeds rob the soil of its nourishment, choke the young plants, and prevent the rain from penetrating to their roots. The pruning of the young fence should not take place too early, and then to no great extent at first: any very wild growing shoots may be cut off, so as to level the top, but the lateral branches should not be disturbed. If at the end of the third or fourth year the young fence looks stunted, and does not grow kindly, I recommend cutting off to within three or four inches of the ground in early spring, before the sap has begun to flow. I have sometimes seen wonderful results produced by this operation, and a very accelerated growth has followed. It must, however, be performed carefully, with a very sharp tool.

I come now to the management of the fence. It has long been a disputed point as to the best mode of treating a fence when the time has arrived for cutting or forming it into a hedge—say, the eighth year after planting; and I may here remark that it is really quite lamentable to see how many promising young fences are annually spoilt by the careless and improper mode of cutting. It may not be of very great importance whether the fence is pleached and laid, or whether it is simply cut down, preparatory to its being formed into the only true and serviceable fence, viz., the hog mane or wedge-shaped—thick and strong at the bottom, and gradually tapering to a sharp top. I prefer the latter mode, as tending to produce the best future fence, although for a year or two, the pleached fence will be the strongest and most serviceable. Considerable judgment is required, and the work should be performed by an experienced workman, provided with proper tools. The thick, strong pieces should be cut down to within 6 inches of the ground, and the rest, according to their size, at different heights, but none longer than about 20 inches. Henceforward the trimming alone is required, which should be done annually, late in the autumn, after the sap has descended to the roots. I am convinced that no more injurious practice exists than the very usual one of cutting fences when in full leaf. The labourers of course prefer cutting so in sharp top. I dry in winter, but it is wrong in principle, and should not be allowed. Very strong fences on very good land may not be much injured; but, generally speaking, the early trimming of hedges materially impedes and weakens their growth. On arable land the height of 3 feet 6 inches or 4 feet is ample, and the cost of trimming such fences, provided proper tools are used, need not exceed 2½d. per chain. If all fences were therefore reduced to those dimensions, the annual cost, even upon a large farm, would not be great, and would amount to a far less sum than is now expended in pleaching large overgrown fences, and by stopping the numerous gaps which too generally exist. In pasture fields the height of the fences should be greater, say 5½ feet or 6 feet, but the same mode of cutting should still be adopted, and the same shape preserved. I have seen numerous fences of this sort which in time have become like a wall, perfectly impervious, and

presenting an insurmountable barrier to all kinds of stock. The cost of trimming these large pasture hedges will be 3*d.* per chain, if cut, as they ought to be, during the autumn or winter months of each year. I will anticipate any objection which may possibly be urged against trimmed fences, viz., that they are too often thin at the bottom, weak in many places, and forming a very inadequate fence against cattle and sheep. The cause of this is very obvious. Improper tools are used, and labourers totally unacquainted with the proper mode of trimming hedges are employed. How frequently we see on a wet morning in harvest-time men and boys all slashing away at the roadside hedges with all sorts of tools—reap-hooks, broad-hooks, antiquated bill-hooks, and, in short, every sort of weapon but the proper one. I would ask, Is it likely that the chance labourers upon a farm so provided will cut hedges with anything like skill or judgment? On the contrary, is it not the fact that, in nine cases out of ten, good hedges are spoiled? They are cut down instead of up; the bottom is cut away too much, and the top generally scarcely cut at all. No fence can long survive summer trimming and broad tops, the constant drip of which kills the roots. The lateral and lower twigs should not be cut too close, but the top should be cut away and trained into the same shape as the sketch which is before you. Even under the best system of trimming, I think it is desirable occasionally to allow the hedge to run wild for a year only; and I found it answered very well to abstain from trimming next to the Clover or Grass seeds which were to be fed with sheep in the summer; for, in the first place, the nuisance of the small pieces, which somehow or other are always left to annoy the sheep, is thus avoided, and, in the next place, there is no opportunity given to the lambs to browse upon the young shoots, which they are particularly fond of doing. Although I deprecate most strongly, for reasons already given, an unnecessary number of fences, I am convinced that true economy points to the maintenance of good strong fences, and such as really will answer the purpose for which fences are made. And this will not be found to be a work of any difficulty, if only a little attention and method are shown in their management. If possible, only one, or at most two, men should be employed to cut the hedges on a farm, and great care should be taken to furnish them with proper tools. A few lessons, and a little firmness at first, will be quite enough to teach a handy labourer how to do his work, and I believe that the very fact of his having a particular branch of labour entrusted to him operates as a stimulus to do the work well. On very light land I have sometimes observed old trimmed fences become a little cankered on their lower stems. This, however, has been entirely remedied, and at a small cost, by throwing up the soil to the roots on each side, and indeed it is not a bad plan to treat one or two fences in this way every year. The soil is naturally washed away after a lapse of time, and I know nothing that renovates a weakly fence more. The system of pleaching fences is so generally adopted in this district, that it appears necessary to say a few words respecting it. The skill of the workman is quite as important in this branch of hedge cutting, as is the one I have just considered. Great care should be taken to cut down all the large and thick pieces, and to lay or pleach only those that are likely to live under the operation. The pleachers should not be too long, and plenty of stakes should be used. On pastures I think it desirable to use binders on the top, otherwise the cattle are apt to disturb the pleachers with their horns, and materially injure the fence in its early growth after cutting. At the time of pleaching, the ditch, if any, should be well cleared out, and all weeds well cleaned away from the roots of the thorns, fresh soil should then be thrown up and worked well into the face of the bank; the back should also be reduced to its proper size, and left with a sufficient slope. Many old banks are much too large, and may be reduced with great advantage; but care and judgment are required even here; for if a bank is cut down too steep and too close, the roots of the fence are exposed, and will gradually die away. On sandy soil also the turf will not take again, and a continual raw bank will remain a great eyesore and a constant nuisance. Great injury is often done to the young shoots of the fence during the first summer by cattle and sheep, especially the latter; and wherever it is practicable I would recommend that all stock should be kept away from newly pleached hedges for the first year. Although gap-stopping can hardly be said to come under any of the three heads which form the subject of this paper, I cannot conclude my remarks without saying a few words on that branch of hedging, which I humbly think requires more attention and a better system than generally prevails. I fear it must be admitted that some gaps are inevitable, and as they must be stopped, it is desirable to ascertain the best mode of doing so. The very common, but very injurious plan, of thrusting large masses of dead thorns or trouse into the gap is very objectionable. It not only entirely destroys all chance of any of the remaining live wood from shooting out and filling up the vacant place, but it frequently increases the size of the gap by killing all the live hedge on each side of it. I believe the best, and certainly in the end the cheapest plan, is to use what is called Scotch fencing. Stout larch, ash, or hazle stakes should be driven into the ground about 18 inches, at intervals of six or eight inches, in a line with the growing fence, another piece of the same thickness being nailed upon the tops of the stakes to keep them in their places. If this work is properly done it will last many years, and long before the stakes are worn out the gap will be filled up, the natural tendency of a white thorn fence being to extend itself in all directions. This simple method thus answers two objects—that of stopping the gap, and at the same time allowing the fence to fill itself up of its own accord. All other systems of gap-stopping are merely temporary, and must be constantly renewed at considerable cost and trouble.

Mr. EVAN DAVIES said they were in a much better state with regard to the sizes of fields and the state of their hedges than they were in many other parts of the country. The plan of setting quick that was generally adopted, was that of planting it vertically, but Mr. Keary's plan was for planting it at about an angle of 45, giving the roots plenty of room. Some of the best fences he had ever seen were planted almost horizontally. He spoke very highly of a White-Thorn plan of fence, a model of which he produced. He wished to do away with those large hedges that occupied so much room, and acted as a kind of cover for partridges and other game. They wanted to grow more beef and mutton, and to do away with many useless hedges.

The Rev. R. MORE said for his own part he was very much in favour of continuous iron fencing, which could be put up at about 2*s.* per lineal yard.

Mr. KEARY said he was also much in favour of iron fencing, because it was both economical in price and the space it occupied, and was also very durable. The strained wire fencing was cheaper than the iron fencing referred to by the Rev. Mr. More, and could be put up at about 1*s.* 2*d.* a yard lineal. Ordinary posts and rails cannot be put up, and find the timber, under about 1*4d.* or 1*5d.* a yard, and they were not near so durable.

He wished to speak against unnecessarily large fences, as he believed the wedge-shaped fences were the best—thick at the bottom and tapering upward. In those large fields in Norfolk these kind of fences are the best for sheep.

CROPS FOR DAIRY STOCK.

IT will not be expected that the cultivation of these crops should be described here, nor that their relative nutritive values should be estimated by the light either of experience or of chemical analysis. At present, a mere list will be given of these crops, with a reference to their probable yield per acre, the period of year during which each is available, &c. (1.) *Pasturage.*—The Grass of old meadows of good quality is the best possible summer food for dairy cows. They will thus consume from 1 cwt. upwards of green food daily. The annual yield of Grass from meadows will vary from 2 tons per acre during the season up to 14. It is available in this climate generally from early in May till the middle of November, or later, during which time an ordinary cow will consume from 10 to 14 tons of green food. (2.) *Hay*, well made from good meadows, is the very best winter food for dairy cows. It is economised by the addition of straw and roots and meal, &c., but when given alone must be supplied at the rate of ¼ cwt. daily, or thereabouts, a head. (3.) *The Clovers* afford capital grazing for young stock, and on arable dairy farms to milch cows also. They may yield on good land, well cultivated, in two or even three cuttings if the season be favourable, 8, 6, and 4 tons respectively per acre; or from 16 to 18 tons per acre during the season. If the cattle are foddered, as in small dairies they may be, these and other green foods must be supplied at the rate of fully 1 cwt. each cow daily. They are available from June or July till October. (4.) *Vetches* sown in October, and again in April, May, and June, may be made to provide a succession of food all through the summer, commencing in May. They yield one cutting, which may furnish from 6 to 10 tons of green food per acre; a very succulent food if given before its flowers appear—then, indeed, 'less food than physic,' and they are therefore the better for being cut 12 or 24 hours before use, in order to wither and harden somewhat. They may be given with good effect cut up along with straw or chaff. (5.) *Rye* cut green is one of the earliest of spring foods; sown even shortly after midsummer some sorts will not come to ear before winter, and are available early in April, yielding perhaps 4 or 5 tons per acre of green food, and more as the crop approaches maturity, when of course it becomes less useful. (6.) *Italian Rye-grass* is one of the best forage plants for cows when cultivated liberally. If manured abundantly after each cutting, especially if the dressing can be washed in by irrigation, another cutting, weighing 12 and even 18 tons per acre, will be ready in a few weeks. And as many as five heavy cuttings have been obtained from it in the season on the liquid manure farms of Ayrshire. When sufficiently ripened, it is the best possible cut food that can be given to cows, inducing an abundant yield of excellent milk. (7.) *Lucerne*, on deep, rich, and sheltered soil will also yield a succession of cuttings of excellent food for cows, weighing, if the intervals between the rows be forked and manured after each cutting, from 6 to 8 tons per acre each time. (8.) *Sainfoin* may be classed with the Clovers as to quality and quantity of produce, but can rarely be cut more than once a year. It is available for several years on the same land, requiring of course to be manured if constantly cut; suitable for rock and calcareous soils, where Clovers are not generally so successful, and yielding probably 10 to 12 tons of green food, under ordinary management, per acre. (9.) *Holcus saccharatus*, a newly cultivated Grass, may be mentioned here as likely to be serviceable in small and household dairies late in the autumn, till when the plant is bitter. It yields an enormous weight of coarse herbage, which when ripe is sweet and palatable. (10.) *Gorse* crushed and given with other food is liked by cows, and has been successfully used in dairies. It is available during November and the winter months, and, given at the rate of 2 bushels of the bruised material along with Carrots, and a little hay, is one of the best winter foods for cows in milk. (11.) *Rape* is useful in early winter, less liable to affect the taste of the milk than some other green foods, and a very succulent and palatable food. Capable of being mown and brought in daily from the field, it is available as a daily food during September, October, and November, and indeed forms a portion of Mr. Horsfall's feeding of his well-managed dairy herd. A crop of Rape will yield from 10 to as much as 20 tons of green food per acre. (12.) *Cabbages* of various sorts, open and hearted, early and late, are liked by cows, and may be made to yield a succession of food from May all through summer, and on till the end of the year. Land yielding successive crops of Cabbages may be made to yield an enormous weight of food—even 40 or 50 tons per acre during the season. Not more than half a cwt. a day, supplemented with more substantial food, should be given to a cow; and care should be taken to remove any spoiled portions of the food, which, if consumed, would greatly aggravate the disagreeable flavour which, under the most careful management, they will give to the milk. (13.) *Turnips*, common and Swedish, are given to cows—the former in early winter, the latter on till towards spring. They will yield from 10 up to 20, and even 25 tons per acre, but they are faulty, owing to the taste which, without special management of the milk, they give to it; 60 to 80 lb. of these roots daily, along with an unlimited supply of straw, is an ordinary daily ration. These roots are less liable to affect the milk if steamed, or even if merely pulped; 15 or 20 tons of common Turnips per acre, and 12 to 15 tons of Swedish Turnips are an ordinary crop, but they are liable to so many casualties from weather, insects, &c., that no great dependence can be placed on them in a small dairy. (14.) *Mangel Wurzels* are the best root crop for winter and spring feeding of milch cows. They give a slightly bitter taste to the milk, and their extreme succulence as food is not favourable to the richness of the milk. Not more than ¾ cwt. should be given daily when they are the sole dependence along with straw; and a smaller quantity along with richer food is better management in butter dairies. Thirty tons per acre can be grown more easily than 20 tons of Turnips, and towards spring especially they are better food per ton. (15.) *Kohl Rabi*, or Turnip-stemmed Cabbage, is a hardy and useful crop on dairy farms, yielding perhaps 12 or 14 tons of stems, and a useful top as well, which cattle eat with relish. (16.) *Carrots*, especially the large Belgian sorts, can be grown with great advantage on a dairy farm, and while 12 to 14 tons are a good ordinary crop, as much as 20 tons have been grown per acre. They do not give a disagreeable taste to the milk, and are extremely palatable to the cattle. Half a cwt. a day might be given along with other food. (17.) *Parsnips*, while not so palatable as Carrots, and more proper to be given in a steamed or boiled mess, along with other food, are even more nutritive, and enrich the milk. Of the large Jersey Parsnips 10 or 12 tons per acre have been grown. (18.) *Potatos* are seldom used in the cow house. When steamed, if at hand in sufficient quantity for such a use, they, however, are excellent cow food; and even raw they have been used, but with less advantage. Now-a-days, when 4 or 5 tons per acre are a good crop, and 4*l.* a ton an ordinary price, they are not likely to be put to any other use than that of human food. (19.) *Chicory* is good food for cows. You prepare the soil by thorough cleaning early in spring, applying a good coat of rotten dung. Drill 4 lb. of seed per acre in March, in rows 9 inches apart. Single them out when 5 inches high to 6 inches apart. The crop will continue luxuriant under good management for 6 or 8 years. Let it get of full growth, and then cut it down before flowering and carry it to stock in the house. It may be also depastured with sheep, but the other is the more productive use of it. (20.) *Straw* of our various corn and pulse crops is used as winter fodder in the cow yard. Cooked Bean straw, if the crop has been well harvested and cut before it was dead ripe, is an exceedingly nutritious fodder. Pea straw, if free from mildew, is also good food; and clean Wheat and Oat and Barley straw is often almost the sole fodder of dry cows and young stock through the winter, with a very few Turnips. If a portion of the straw be cut to chaff, and wetted with a hot and salt sort of Linseed soup, made at the rate of about half a pound of the Linseed to each of the cattle, store stock can thus be kept in very good condition through the winter. (21.) *Meal* of the various grains, Wheat, Barley, Oats, Beans, Peas, also of Linseed and Indian Corn, is used more or less in cases where rich feeding of dairy cows is adopted. Bean and Barley meal are probably more commonly used than any other, and the former seems especially fitted as food for cows in milk; a pound or two sprinkled in the course of the day over the ration, cooked or otherwise, as the cow receives it, is generally well repaid. The relative uses of Barley meal and malted Barley have already been referred to. The experience of most practical men seems to be in favour of the malt. The only exact record of experience on the subject, however,—that of Dr. R. D. Thomson, of Glasgow—asserts, what theory would predict, the superiority as food of the Barley which has not undergone the malting process. Linseed, ground or bruised, forms a useful addition to the steamed or boiled mess given to the cow. The whole-meal of Wheat, so long as Wheat is no higher than 5*s.* a bushel, ought to displace some of the higher-priced foods one has been accustomed hitherto to use. (22.) *Cake* of our various oil-producing seeds is among the best of cattle foods. Linseed cake stands highest on the list, and is the most costly. The cake from crushed Rape-seed is coming into use, and Mr. Horsfall's experience with it has already been described. Cotton-seed cake produced from decorticated seed is also taking a high place among other cattle foods. (23.) *Carob Beans*, an importation from the Mediterranean, a sweet pod eaten with great relish by sheep and cattle, is spoken of as capital food for milch cows. (24.) *Molasses*, when cheap, were sometimes used as food for dairy cows, and 3 or 4 lb. thrown over a mess of cooked chaff and a few Turnips induced a larger consumption of comparatively unpalatable food. In Dr. Thomson's experiments molasses were proved to be a useful food. (25.) Of all the foods used in milk dairies, where cows are fed nearly all the year in the byre, nothing equals brewers' grains; from 2 to 4 pecks daily are given to each cow. Patience is required at first in inducing them to eat it or any other unaccustomed food; but by gradually mixing a little with their ordinary ration they will ultimately take it greedily. Grains from the smaller breweries are

believed to be the best. They and the waste liquor of distilleries are used largely in town dairies. Both, however, diminish in value with every improvement in the processes adopted for extracting the nutritive part of them in brewing or distilling. Oil-*Soft* should be placed within reach of the cow, and a lump to lick at in her manger is perhaps better than the direct addition of so many ounces daily in her food. *Morton's Handbook of Dairy Husbandry (Warne & Co.).*

THE CATTLE PLAGUE.

THE summary of Cattle Plague returns for Great Britain for the week ending the 27th ult. has been issued from the Statistical Office at the Cattle Plague Department, Privy Council Office. It shows that 15 attacks were reported to have occurred during the week ending the 27th of October, being an increase of 9 on the previous return. Fresh outbreaks took place in four farms or places where cattle are kept, the number of such outbreaks in the previous week being 3. The number of healthy cattle slaughtered to prevent the disease extending to them was 34 during the week. The disease is reported to have prevailed during the week in the following six petty sessional divisions of England, viz.: —Northamptonshire—Daventry, 1 attack; Essex—Rochford, 7; Cheshire—Northwich, 1, Prestbury, 2; Lancashire—Amoundemess, 3; Yorkshire, North Riding—West Bulmer, 1. Since the commencement of the disease 51 in every 1000 of the estimated ordinary stock of cattle in Great Britain are returned as having been attacked. The total number of sheep reported to have been attacked up to the date of this return is 6826. No cases among sheep have been reported during the week.

Home Correspondence.

Beer, Beer, Beer.—In your leading article of Oct. 22d, I read—"Everywhere when the condition of the labourer comes up for consideration this great evil of beer drinking holds the foremost place;" and so it always will, and probably will come up more and more with the rise of wages so long as it is only talked about. For instance, Mr. Essington tells us poor food and bacon possibly drive a man to drink; then, again, bad houses drive a man to drink; poor food and bad houses are the consequence, not the cause of drink in nine cases out of ten. Many years ago two men in my employment as farm labourers were found fighting in the village street at Christmas. I discharged the aggressor at once, he found employment elsewhere, and on his casual return to the village, told me that my doing so had taught him the evil of drink, and that he had given it up. I found on inquiry that the cause of the quarrel at Christmas was a dispute about beer in the previous harvest. I then said to my managing man, "I intend to give no more beer," he replied, "Then, sir, you will not get your work done." I rejoined, "I can easily give up my farm; I have made up my mind, I give no more beer." I have had neither trouble nor fighting since. Not so my neighbours, who give beer; disturbances, discontent, refusals to work; in one case the discharge of a foreman, and a sad suicide from beer given in harvest. Begin at the beginning; give no beer; discourage drinking in every way, by example as well as precept; but leave off talking of labourers driven to the beershop. The surest way to do so is to give beer, the very worst of "doles." Your readers may be referred to many articles in the Agricultural Journal and your own Paper in support of what has been said. The question must be liberally met. I give men 4*s.* [extra?] per week in the harvest; youths, 3*s.*; boys, 1*s.* 6*d.* or 2*s.* In some cases it finds its way to the savings bank, or puts clothes on the backs, or shoes on their feet. but it does not drive them to the beer-shop. *J. C. C.*

The Leamington Congress: Sewage and Earth Closets.—Mr. Hitchman deserves the thanks of every agriculturist for getting together such a Congress of intelligent men, practically acquainted with the subject to be discussed—"The Sewage of Towns." This subject is growing in importance daily, and it is a matter for congratulation that it has been so ably discussed. The proceedings will, we hope, be placed before the public in a condensed and readable form. We trust it will undergo much further ventilation, and ultimately be brought to bear practically upon the British public. "Waste not, want not" is one of our oldest and most homely aphorisms, and truly a waste of one of our most useful fertilisers, amounting in money value to some 20 or 30 millions annually, is no trifle. It is worthy to be taken up as a national question, and to be dealt with by the Legislature. We commend it to the new Chambers of Agriculture, and more particularly to the Central Chamber, as coming within its province as a commercial question for the benefit of agriculture through legislative enactment. When we look at our country's insular position, our limited boundary, and the small extent of our productive lands in connection with the millions of population we have to feed, we are sometimes impressed with fears and forebodings that there may come a time when England may have to depend much more upon her own soil for food than happily she now does. Strange things do occasionally occur. Nations [?] are uprooted and gone in "no time." These new and most awful inventions of destruction in war have placed Britain in a somewhat doubtful position compared with her former safety. Be these crude notions what they may, it behoves all classes of our countrymen to aid to their very utmost in contributing to the productiveness of British soils. The Congress at Leamington have satisfactorily shown that much good may be derived from utilising town sewage and human excreta. Not that this is a new discovery—it is as old as British agriculture, but they bring it before the public in a new form and under various phases. Irrigation, deodorisation, absorption, filtration, &c., were discussed. Irrigation from sewers obtained most favour, and earth closets for human excreta appear to stand next in estimation. All agree "that no one system can be laid down which will be suited to all towns," and further we gather that all agree that something should be attempted to prevent this woeful waste and loss of valuable fertilising matter. How then is it to be accomplished? is the question. One town may be so situated as to give unmistakeable evidence that the conversion of all sewage and excrementitious matter into fluids for irrigating purposes is best; another town may as readily prove that earth-closets and deodorising is best; a third may adopt both systems with profit in suitable districts. The thing can be done if worth the doing. Unquestionably the carrying out of this expansive system would involve much cost and domestic discomfort at first, but this would soon be got over, and the value of all such refuse would be some compensation for it. We have sanitary boards everywhere now, who compel the removal of all these "nuisances," such as at the present time. What want utilising. The great question for the consideration of Government is the compulsory one. Shall every householder be compelled to preserve his household refuse for utilisation under proper regulations? In every corporate town or where local boards are established the plan could readily be carried out, but in villages and small towns difficulties might arise—these for the present might be left out. The larger towns would present a better organisation, and soon derive a substantial benefit. Britain is yet able to maintain its large population if all is done for its agriculture that can be done. China maintains a population far more dense. The more scientific applications are brought into requisition, the greater the produce of the land; consumption of roots and cereals should increase—consumption of veal and lamb should decrease, if waste is to be avoided. *O. F.*

Societies.

ROYAL CORNWALL: *The Lamb Disease.* — Dr. Edward Crisp lately delivered to the Royal Cornwall Agricultural Association a lecture on this subject.

He commenced by observing that a great deal of mystery and obscurity prevailed about the disease in lambs, especially the disease where parasites existed in the lungs. It must not be supposed that all lambs died from that cause, although there was no doubt that tens of thousands did die from it in this country; and he especially intended to remember in speaking of the disease in lambs—that if a lamb happened to have these parasites in its lungs, then any depressing disease with which it might be attacked would be sufficient to cause a fatal result. The additional irritation, depression, and wasting which the presence of the bronchial tubes caused to it, would be more than it could bear up against. They might have known the case of a man who, while brushing his teeth, had got a piece of one of the bristles from the brush into the trachea, and the irritation caused by it had at times been such that the assistance of a surgeon had been known to be required to remove it. The irritation caused by parasites in the lungs of lambs was much of the same character. He pointed in illustration of his subject to coloured drawings of the windpipes and principal bronchial tubes of an ox, a sheep, and a lamb, exposed, as it were, by cutting open the trachea and the smaller bronchial tubes, there being 200 or 300 of them in connection with the lungs, and said that persons frequently committed a great mistake in assuming, when they found no parasites on opening only the larger tubes of a sheep or lamb, that there were none in the smaller. But very morning on opening the larger bronchial tubes of a lamb, the lungs of which had been sent him, very few parasites were found, while in the smaller tubes, portions of which he had opened, he discovered a very large quantity; in fact, the entire tubes were stuffed by them. And here he would just mention that the parasites were the same as those found in the calf. In the lamb to which he had referred, he found a great many in the lungs; and knowing as they did that one great function performed by the lungs was oxidation of the blood, and that when the minute tubes of the lungs were filled with these entozoa, the lamb must readily succumb. He referred to drawings of the four or five species of entozoa magnified found in sheep, commencing with the lowest grade, the cystica—Acephalocysts, or bladder worms, which were very common, but in the struggle to live, passed the early part of their existence in the bodies of water snails, or the larva of some insect, and were afterwards perfected in those that happened to swallow them. These flukes, it was supposed, were taken into the stomachs of sheep while grazing on wet and marshy land, and afterwards turned into animals. a great deal of suffering and destruction of animals. Some of the entozoa possessed the generative organs in one and the same individual, and this was the case with tape worms. In others the male and female organs were joined in the same individual, but in the strongyli the sexes and females were separate and distinct, the latter being rather larger than the former. He contended that the history and cause of this disease in sheep had been satisfactorily made out. The strongyli produced their young by eggs, the young, being only subsequently extruded from the eggs when leaving the body of the mother; and as they were exuded rapidly from the egg, it could be easily understood that when once they get into a few sheep, the field in which they grazed would soon be thickly sown with these eggs. If healthy lambs were turned into that field they would be sure to take some of the eggs and young worms into their system in the herbage, and thus become diseased. A very foolish thing was often done by farmers in turning their lambs into a field of Clover which had been eaten down close by sheep; because if any of these sheep had been suffering from worms, nature tried to get rid of the irritation, as in the case of poison, by evacuations, and large quantities of old and young worms, with their eggs, passed off in the mucus from the nostrils and in the excrement. In this way the ground, especially in the case of overstocked fields, became thickly sown with them; and if lambs were placed in such fields they were almost certain to obtain the eggs or embryo worms in the herbage. Since he had been in this part of the country, his friend Mr. Tucker, who took great interest in this disease, had furnished him with some practical and important facts, to which he would refer, as he was sure they would prove instructive. He had always maintained that the history and cause of this disease was tolerably well made out. They could understand that if a lamb had these worms in the bronchial tubes, worms which contained something like a thousand eggs—and if they were to put them under a microscope they would see that these eggs would burst and the worms come out, and if taken into the lungs would in a short space of time do a great deal of mischief—they could easily understand that if a field was thickly sown with these eggs, the sheep turned into that field—the lambs especially—must, in the herbage, get some of them. A very common thing was that farmers foolishly turned their lambs into pastures of second growth, on which sheep had been previously fed, as although these worms might not materially injure the old sheep, yet he believed that large numbers of old sheep had them, and that they passed to the earth through their excrement, and the sheep got rid of them in that way; for it was a curious fact that these worms did not remain long in the body, and he believed that the lambs had not passed got rid of the greater part of them. It was most important in this disease to keep up the strength of the animals—to feed them well, and so to support them that they might weather the storm. As he had said, Mr. Tucker had furnished him with some important facts, one of which was that a gentleman of the name of Rundle, who occupied Catchfrench farm, had a number of sheep which were perfectly healthy and free from the disease. He bought 20 lambs at Camelford market, however, and after these reached his farm 14 of the 20 died with every symptom of parasitic disease. The other six were in a dangerous state, but they struggled through. He now came to a most important fact which he desired to impress upon the minds of agriculturists generally. This disease had not appeared upon Mr. Rundle's farm before the arrival of these lambs; but this year his lambs were affected with the disease, having been put into the field which had been occupied by those that had died, and he had lost 20 out of 40 of them. He then sent the others to a farm near Dosmary Pool, in a different district, and they were all, he believed, doing well. This showed that it was always well to remove sheep or lambs to another locality as soon as it was found that they were affected with the disease. That morning he and Mr. Tucker had called on Mr. Hamley, of Badwa, who had until lately 70 lambs in a good state of health. He had lost 10 out of the 70. There could be no doubt, from the account given of the disease, as to what the 10 died of. Mr. Hamley allowed one of the 60 lambs to be killed for his examination. At first, on cutting into the lungs, no parasites were seen, and many persons under such circumstances would have said, "Oh, we have made a mistake—there is no parasite disease here." Such persons, however, would have been altogether wrong, for he found that the smaller bronchial tubes were full of the *strongyli*; in fact, there were thousands of them, so that the greater part of the lungs was filled up, and therefore rendered useless for the purpose of oxidating the blood. But, in addition to the *strongyli* in the lungs, he found also in the *cocum* the *trichocephalus affinis*, the hair-headed worm, in great abundance, and not only that, but the digestive stomach was also covered with parasites. Thus there were three causes to account for the illness of the animal. The worms found in the lungs only might, perhaps, occasion death, but, at any rate, the worms all tended to weaken it and to impoverish the blood, and it was almost impossible to effect a cure. He now came to the question of treatment. What was a veterinary surgeon to do? Was he to touch the worms in the lungs? and if so how was he to get at them? They had heard, no doubt, of lambs being placed in a room and made to inhale chlorine gas; but great care was required in trying this remedy, and he scarcely thought that farmers generally would take the trouble to apply it properly. If they could get a proper building or room that would allow of the admission of the requisite amount of air and no more, diseased lambs would, he believed, derive great benefit from inhaling the chlorine gas, but he had said, they must be placed great care. A gentleman in Devon whom he should visit next day, had informed him that a veterinary surgeon had nearly killed a lot of 24 of his lambs by putting them into a small cheesehouse, packed tight, and making them inhale chlorine gas, in fact, he had actually killed nearly half, and one of his labourers was very nearly poisoned in getting the other lambs out, and was under medical treatment for a week after. The treatment, however, effectually cured those lambs that could be got out directly. Another mode tried was that of placing sulphur on a large piece of iron, lighting it in a chamber, so as to keep the chamber well filled with sulphurous gas, which the lambs inhaled, and by that means he believed a great many worms were got rid of. But there was yet another, and very important medicine, and that was turpentine, for the removal of worms in the stomach and intestines. If they gave a tablespoonful of turpentine and linseed oil to a lamb about twice a week—perhaps a dessert-spoonful of turpentine would be best to begin with—the worms would be killed, and he had not the slightest doubt that the action of turpentine was positive and certain, for turpentine and oil would not only remove worms from the stomach, but also a great many from the *cecum*. Referring again to the importance of removing lambs when attacked with the disease, he said that Mr. Tucker had informed him that the steward of the East Indian Company had told him he had lost many lambs by the disease, but since he had removed them to fresh pastures he had not lost one. It was not every person who possessed a wide range of land to enable him to do this, but where it could be done he was sure such a course would be always attended with great benefit, and he attached more importance to change of locality than to any medicine that could be administered. The effect of medicine, he admitted, might in some cases be doubtful, but he did think that good food and a change of locality would, in great part, be very beneficial influences, because he believed that a good deal of lamb disease had been occasioned by that forcing and overstocking system which was far more prevalent now than it was 20 years ago.

After referring to the disease in fowls and pheasants by the same writer, he proceeded to offer a few words on the cattle plague, about which they perhaps knew less than they did about the lamb disease. There was a notion in the minds of some people that sheep could not take the cattle plague, but a more erroneous idea never existed. He himself had seen a vast number of sheep that had died of that disease. Thousands had died from it; and he knew of an instance in which Mr. Harvey, of Norwich, did not save more than 600 out of 2000 lambs, the remainder having died of the cattle plague; but there was this difference between the disease in the ox and the disease in the sheep, that in the former the paunch was generally filled with dry food, as also was the third stomach, which was often round and hard; but this he had never seen in sheep, and that was why he believed the disease was not so destructive to sheep as it was to oxen. Now the great error with the Government had been that they did not report the sheep plague, for it was only very recently that this had been done, and the week before the last it was reported that 900 cows and oxen had died of the plague, against 208 sheep, being more than double the number; and yet two or three gentlemen in the House of Commons not long since asserted that sheep could not be affected by the disease, and no person was there to contradict them; but that the disease was as positive and unmistakeable in sheep as in oxen there was now not the slightest doubt. Dr. Crisp then referred to the steps which the Government had taken to suppress the cattle plague after it had made its appearance in this country, stating that he had always from the first held that the only mode of effectually getting rid of the disease was by stamping it out.

They had been labouring under disadvantages, which he hoped would be corrected hereafter. What they wanted was a central head for agriculture, for at present they had no scientific body of any description, and he believed that had the Government taken his advice at the outset, they would have saved the country millions of pounds. He also believed that one great evil under which they laboured was that the agricultural body had no head. What they wanted was a board of agriculture, and a Veterinary College that could stand on its own merits, with scientific men to support it, and to give it repute.

WATERFORD: *Farming in Ireland.*—At a late meeting of this Society, Mr. Fisher asked, Is the farming of the district improving and extending, or is it retrograding? He said:—

You are all aware that there has been a great decrease in the production of cereals—that the exports of Wheat, flour, Barley, and Oats, have greatly fallen away; and we hoped you would at least compensate us by an increase in the exports of butter and of meat. Our shipments show that the export of cattle from Waterford in 1862 was 34,629 head; and in 1865 it had fallen to 10,622. We may well ask, what are you gentlemen farmers and tenant farmers doing with your land? The export of sheep in 1862 was 36,660; in 1865 it was 31,901. There is a slight increase in the export of pigs and of butter; but with the facts before us, we may well say, what are you doing to ensure the progress of our common country? The number of cattle exported from Ireland in 1863 was 399,264; in 1865 it was reduced to 232,652; of calves there was a reduction from 42,387 to 14,082; of sheep there was a decrease from 517,232 in 1863, to 332,831 in 1865. Mr. Thom estimates the value of live stock exported in 1863 at 8,562,219*l.*, and at his prices those of 1865 were only 6,075,000*l.*, thus showing a decrease of nearly two millions and a half. The rural population of Ireland has within late past twenty years been lessened by two and a half millions, but the value of the agricultural produce has diminished in a greater ratio. With these facts, how can the press say Ireland is progressing, or that agriculturists are performing their functions? I received a short time since a document with regard to Flax, issued by Mr. Donnelly: I found that the county Waterford, with an area of nearly half a million of acres, had only 152 acres of Flax, and that this year there were 24 acres less than in 1865. I found that counties in Ulster were growing 20,000 and 30,000, and one even 50,000 acres of Flax, and my attention was attracted to the question. I found the solution to be the want of labour. The province of Munster had an area of 6,067,721 acres, while Ulster had 5,179,858 acres, yet the population of Munster was 1,541,555 persons, while that of Ulster was 1,911,553, being a difference of 100,000 persons; and upon examination I discovered that the northern province had 270,300 families engaged in agriculture, while the south had only 118,093 families so employed. The population of Ulster exceeds that of Munster by 400,000, but the value of the agricultural produce of the former is greater by four millions; that is, about 10*l.* per head, or 50*l.* for each male adult. This proves that it is not the extent of land, but the amount of labour applied to land, which produces wealth. If we are to be wealthy and prosperous, we must apply more labour to the land, and we may depend upon it that our wealth and contentedness will largely increase. An idea has unfortunately taken possession of many landlords that it is their interest to get rid of small farmers, and encourage large holdings. I doubt the policy as regards the landlords, but I can have no doubt as to the injury to Ireland which results from this consolidation. Nay, in this farming society we have a proof of what small farmers may do. Mr. Carroll, who has only 25 acres, has distanced all competition. I would invite all the gentlemen and landowners now present to join us in getting rid of a piece of legislation which is one of the curses of the country. I mean that which encourages the removal of labourers from the country into the towns—which compels them to walk miles to their work, and thus stints the land of its labour. Proceed in your laudable task of procuring the erection of labourers' cottages, and get rid of the law which attaches a penalty to the residence of the poor in the country, while it throws the support of sick farm labourers upon the overtaxed towns. Away with the notion that labour applied to land does not pay, that the consolidation of farms increases the wealth of the country. What we want is an apportionment of land to the industrial capacity of the people. We require more farmers, more labour. Farms ought to be diminished in size, the number of farmers ought to be increased.—*Abridged from "Waterford Mail."*

Farmers' Clubs.

BARNSTAPLE: *Questions for Discussion.*—The Rev. Mr. Brereton delivered the opening address of the session, and said: I do think that this Club possesses now in a remarkable degree the two great evidences of success: the one, the satisfaction of its old members; the other, the readiness of other gentlemen not only to regard us with favour but to become members. We owe this state of things partly to our performances, though much also to our promises. With regard to our performances I do think that during the last year we have been able to obtain for the profession and occupation of farming in this neighbourhood such a public recognition as it thoroughly deserves. When the farmers of this neighbourhood formed themselves into a Club, the importance of the step taken was recognised not only by all thoughtful men in the neighbourhood but by very distinguished men indeed; yet I must acknowledge that our performances have not quite equalled our promises, and on one point I hope that during the coming year we shall be able to carry out more effectively an important part of our programme than during the past year—I mean our monthly meetings for discussion. I very much hope that the members will think it a matter of importance by their punctual attendance to encourage these meetings. We propose that they should be held on the last Friday of every month at the hour of half-past 3. Last year we drew up beforehand a programme of a series of subjects for discussion, but we think, after the experience we have had, and taking into consideration the many interruptions that may occur, it would be desirable merely to select from month to month the subject to be so discussed. I have had the opportunity of talking with some gentlemen of influence in the neighbourhood, who have expressed a desire and readiness to assist by coming to give lectures or to take part in discussions which may arise on subjects that seem of importance to the Club. Lord Fortescue will be glad at any time to come and help us in any way, and also Sir Stafford Northcote I may mention also that Mr. Nicholas Whitley has kindly promised to give us a lecture. Of course, to a certain degree, we must consult the convenience of those gentlemen; but I think we may, during the coming winter, have the advantage of listening to some gentlemen whom the agriculturists of this neighbourhood, and even in a wider circle, would be proud to listen to. Without, therefore, on the present occasion selecting a definite programme, but leaving it to the committee, according to circumstances, to choose the subject for future discussions, I would still venture to remind you that all the subjects, numerous as they are, that are of interest to the farmer can really be classed under five simple heads. First of all must be what concerns the land the farmer cultivates, including with the land questions of soil and climate, which must be primary questions, since they more than any other determine the practical bias of a farmer's business. The next great class of subjects to be considered by agriculturists will be with reference to the plants the farmer should grow on the land he occupies; and it is necessary that he should have a knowledge generally of plants, so as to form a selection, and, having formed a selection, that he should obtain an accurate knowledge of the nature of the special plants which he chooses to grow. And I may mention here that it is not only questions of soil and climate that will decide that selection of plants, but more, perhaps, than anything else, a question of market. I have read, in an old account of Devonshire, that about the middle of the last century a great deal of the land in this neighbourhood, particularly that around Combmartin, was entirely devoted to the culture of Hemp and Flax. I think there is very little Flax grown in North Devon at the present time, and the principal reason is the great difficulty in finding a market for the fibre. One of the great questions which we touched upon last year was as to whether it is better to grow corn or to grow Grass, and of course, to a certain degree, it depends on the soil and climate, but principally on the market. The point to decide is whether, even if you are very favourably situated for growing corn, the price you can obtain for it is a remunerative one. But the third great class of subjects will have reference, not to plants, but to the animals which the farmer selects for the land he cultivates; and here there is greater facility, perhaps, for change, because it is more easy to turn from keeping one class of animals to another—to change one peculiar kind of sheep or bullock to another than to change the course of cropping. But this facility of change, from the readiness with which the animals may be reared, is in fact a temptation which the farmer ought to avoid, that he ought to endeavour to be so well acquainted with the characteristics of the different kinds of animals that if, owing to a change of market, a substitution is rendered desirable, he does not make it hastily or experimentally, but knowing the nature and qualities of the animal he is about to substitute for that previously reared. Here are three great classes of subjects, then, which farmers' clubs ought to consider—the land, the crops, and the animals. But besides these there is another very large sphere for the farmer's thoughts and consideration—the men with whom he deals; and I think the subjects connected with this division ought to come under our consideration as a club. These are principally three. The farmer deals first with the owner of the land; in the next place he buys of, and sells to, a very large number of different tradesmen and others; and in the third place he hires labour. I have only to allude to these departments of a farmer's business to remind you how important it is that the relations of landlord and tenant, of purchaser and dealer, of master and servant, should be thoughtfully and carefully weighed by a body of men who in their daily life are constantly obliged to act upon considerations which may not only to themselves but to the whole neighbourhood prove to be of vital consequence. I have only just now, on turning over one of the papers lying on this table, seen my own name alluded to in an article in which the writer expresses a regret that when I was in the neighbourhood of Tiverton and an allusion was made to the question on which a controversy has sprung up between Canon Girdlestone and the farmers of that district, I had not thought it my duty as President of this Club to take a part in the discussion. In my opinion the relation between the employer and employed is such a serious one that no one ought offhand to hazard an opinion about it. However, as President of this Club I should like to introduce this as one of the special subjects of discussion—"The relation between the employer and the employed." I should not enter upon it more as the farmer's friend than as the labourer's friend; for I have long persuaded myself that the truest friend of the labourer is he who begets in him an increased interest in his employer and his real work. Well, gentlemen, I might seem to have exhausted all the subjects a farmer or a farmers' club is interested in; but I must remind you that there is one more, viz., the farmer himself—the man who, at the penalty of loss, and perhaps ruin, is obliged to deal with land, with plants, with animals, and with his fellow-men. How is he to maintain the position he holds? How is he to improve that situation and improve himself? Surely there is another great range of subjects that may in course of time occupy us as members of a farmers' club; and the allusion made to a school in this neighbourhood which I have been interested in establishing must be my excuse for venturing to say to those gentlemen present that the education of themselves—of that class to which they ought to feel proud to belong—is a subject which is well deserving their serious attention. I have made these few remarks, gentlemen, to you on the present occasion only as indicating the kind of subjects to which I think we may through the coming year—and I hope for many years to come—bring carefully and thoughtfully, and with the kindest disposition, the influence of this very important Club to bear.

DOCKING.—At a late meeting of this Club the Earl of Leicester made the following remarks upon the homes of our labourers:—Some 30 years ago there was so great a surplus of labour in this county that it was evidently to the interest of the owner and occupier of land to endeavour to diminish the population, and means were extensively taken to promote the emigration of our labourers to distant colonies. Since the Act called the New Poor Law came into operation, the supply has been about equal to the demand, but during the last year, in spite of every advantage from the application of machinery, there has been in many districts of this county a great scarcity of labour. I will endeavour to point out what I consider to be the causes of this evil and its remedy, and in doing so I will state the facts as they exist on my own estate, which I believe is a fair example of the majority of landed estates in this country. Previous to the passing of the important measure of 1865, by which the area of rating was extended, it had occurred to my mind, as well as to many of my tenants, that it would be desirable to provide houses for the labourers in the parishes in which they were employed, though by so doing the probable certainty of increased rates was incurred; after the passing of that Act, I do not think the question admits of a doubt. I am the owner of 521 cottages, supplying probably about 450 able-bodied labourers. I calculate that 950 labourers are required to cultivate my property, thus leaving 500 to be obtained who are not resident upon the estate. I will divide the labourers employed into what I will call the home and foreign supply. The home supply can always be depended upon; they have constant employment, and although wages are nominally 10*s.* per week, yet, owing to the system of piece work (a system as beneficial to the labourer as it is profitable to the employer), I think I may state their earnings to be 12*s.*, with a considerable increase in hay and corn harvest. They live in good houses, and I may say that, with hardly an exception, owing to the untiring energies of my late agent, Mr. Keary, and my present agent, Mr. Shellabear, they live in decency and comfort; they almost all have good gardens, and for these and their houses, which are let by the week, they pay an average rent of 2*l.* 17*s.* 4*d.* per annum. These men will remain on the estate; but of what does the foreign supply consist those 500 men who are required properly to cultivate the land? They have no certainty of constant employment. Under the most favourable circumstances, if living within the parish, they occupy houses that have been built upon the speculation of a remunerative return upon the outlay, and to afford this they have to pay 4*l.* or 5*l.* a-year for a meagre dwelling, in which they cannot live decently or comfortably, and they rarely have a garden. But in very many cases they have also to walk three or four miles to and from their work in all weathers; they have not the same attention in sickness or ill-health as those resident on the estate, and there is not, and cannot be, any tie to bind them to it. I say it is much to the credit of those men that they are seeking happier homes and better masters; and in these days of increasing intelligence, and, consequently, more rapid and direct communication with the rest of England, I believe that the scarcity of labour we are now experiencing is merely the commencement of what will be seriously felt in our agricultural districts unless an immediate remedy is applied; and the only remedy is to build as speedily as possible sufficient cottages for the larger proportion, if not for all those required to cultivate the land, either upon the farm or in the parish where they are employed. I have no hesitation in saying that where there is a deficiency of cottages, the supplying that deficiency is one of the best investments a landlord can make. Admitting that the rent received from the labourer would not pay a remunerative interest upon the outlay, I much question whether the existing rents of land can be maintained without further cottage accommodation, but I am satisfied that rents may be considerably increased when there is a sufficiency of homes for the labourer. During the existing lease there is not one of my tenants who is not willing to insure me 5*l.* per cent. interest upon any sum I may expend upon providing homes for his labourers where they are required, and the time is not far distant when the first requirements of a farm will be, not ample farmsteads, but sufficient cottages. Now a word as to the plans and the details of letting these cottages. It may be thought that this is solely a landlord's question, but it is not so. All that we may attempt to do upon such occasions as the present to improve the physical and moral condition of the labourer is of little avail, unless he has a home suitable to the wants of himself and his family, and I have found my tenants not only eager to promote these associations, but ever ready to co-operate with me in educating, clothing, and attending to the wants of those

they employ. I believe that my cottages are now constructed at the least possible cost, with the greatest amount of convenience and accommodation required by a labourer and his family, and I much doubt whether the cottages I have built since 1863 at Tittleshall, Dunton, Wensenham, West Lexham, and Flitcham, can in any way be surpassed. They are substantially built, of the best materials, and I have not attempted in any way to make them ornamental; the doing so would not only materially increase the original cost, but add greatly to the expense of keeping them in repair. The cost has been from 100*l.* to 115*l.* per cottage, not including carriage, which is done by my tenants, and may be estimated at 12*l.* per cottage. These cottages, as well as all others on my estate, are for the use of the labourers employed upon those farms to which they are contiguous, and I consider it right that the tenant should have the nomination of the occupant, but that in every case the cottagers should hold direct under their landlord, pay their rents to him, and not be removed except by his consent. It has been said that an Englishman's house is his castle, but this must not be applied without reservation to the cottage of the labourer. I find that, whether from an eagerness to obtain assistance towards the payment of their rent, or a dislike to turn out their children when married, over-crowding will gradually and certainly ensue, with the necessary accompaniment of want of decency and comfort, unless strict rules are laid down, and they are strictly enforced. As a rule, the children, when married, must seek another home, and no lodger should be permitted without special permission. I have now stated what I believe to be the chief cause of the evil which is beginning to affect us, and appears likely to increase. It has long been a source of misery to the labourer, and I have a firm conviction that the comfort of a convenient residence, the wages we can afford to give him, the associations, and the supervision that would not be obtained in a strange land, will retain for us that greatest source of our wealth, the muscle and sinew of the agricultural labourer.

Farm Memoranda.

BRADFORD ABBAS: *A Visit to a Model Farm.*—Professor Buckman's farm at Bradford Abbas is for the most part situate on a geological formation upon which there has been considerable discussion amongst some of the leading geologists. At the top of the upper lias, and having superimposed the freestones of the inferior oolite, is a bed of sand, in Gloucestershire about 60 feet in thickness, in Dorset more than double that—this, it is contended by some, should be considered as part of the upper lias, while others place it as part of the inferior oolite rock. The whole land, though not visited by the flint drift, is strewn with flint cores, chippings of flints (flint flakes), flint implements, such as celts, arrow-heads, scraping implements—*grattoir* of the French,—and knives and tools of various kinds, of which the Professor in his farming has gradually collected a most interesting series, which he has laid before the members of the Archæological Institute. In reference to the farming, we would say that it has been marvellously altered for so short a time as three years; Couch, Thistles, and weeds of all descriptions—which, certainly, when the Professor entered on the farm, seemed daily to rise up as if in revenge for his having written so much about them—are rapidly diminishing. Each year about 50 acres are cultivated by steam a foot deep, and the so-called Clover-sick soil yields fine Clover crops. The Barleys are remarkable for quality, and in the late awkward season were all harvested before the bad weather, a result obtained by thinner seeding, and sowing as early as possible. It would appear that on this farm every crop becomes, as it were, the subject of experiment, inasmuch as each field is cultivated according to its condition and circumstances, the time of sowing, the quantity of the seed sown, and the results are all noted in a book, and so in 1865 the different fields cropped with Barley were ascertained to give the following results, the observation of which was of signal service in arranging the crops for the following year:—

RESULTS OF BARLEY CROP FOR 1865.

No. of Field.	When sown.	No. of acres.	When Harvested.	Quantity in bushels per acre.	Value per quarter.	Remarks.
					s. d.	
No. 6	March 16	31	August 4	40	39 0	After Wheat.
,, 5	,, 28	22	,, 12	40	39 0	After Swedes and Mangels.
,, 2	April 3	12	,, 25	32	34 0	After Turnips.
Seed. 2						
,, 2	,,	12	,, 26	28	32 0	After Swedes.
,, 3	,,	13	Sept. 12	26	32 0	After Swedes.
,, 4	May 2	4	October 12	22	30 0	After Swedes.

Now these experiments seem to show that the crops were good in quality and quantity, and consequently fetched a better price in proportion to their early sowing, and it should be here observed that as the Mangels and Swedes in No. 5 were sown in alternate ridges of eight rows each, and the Mangel taken off the soil, the Barley was not so good on the Mangel ridges, nor was the Clover which followed, but from all having been well-treated with farm-yard dung and Proctor's root manure, both Barley and Clover were good crops. The results of the Barley crops for this year are expected to tell a like tale, only that they are better in quality and quantity, and none was sown as late as May. As regards roots, some notion may be formed of their cultivation when the crop of Mangels for 1865 was estimated as just under 56 tons per acre, and a hand-some silver cup was awarded, the following inscription upon which will tell its own tale: "Presented to Professor James Buckman by Messrs. H. and T. Proctor, of Bristol, as a prize for the best crop of Swedes grown in the district by the use of their artificial manure. Sherborne Agricultural Society. 1865. The crop of many acres was estimated at 41½ tons per acre." The cup is of novel design, having been modelled from a well-grown Swede, the leaves of which form a hand-some lid. We are informed that two of these were made, one for the Duke of Beaufort, who gained the prize for Swedes on a farm in his own hands, and the one just mentioned. During the present year 1866, in addition to a continuance of such observations on ordinary crops, the Professor has made trials of as many as 20 sorts of Potatos, consisting chiefly of varieties from Paterson, of Dundee, and the Messrs. Sutton, of Reading. Specimens of the whole of these were exhibited at the Cottage Garden Show which the Professor has established in his village, at which were exhibited as many as a hundred dishes of this esculent, and fine vegetables, flowers, and fruits, principally from the gardens of the smaller tradesmen and the farm labourers solely of the parish of Bradford. The table of the yield, quality, and other matters connected with these has not yet been fully made out, but when it is we may look for some interesting details. The only other crop of 1866 that we can now stop to particularise is that of a few acres of Cabbages. These consisted of the following:—1. Drumhead Cabbage; 2. Ox-heart Cabbage; 3. Buckman's Purple Winter Greens; 4. Thousand-headed Cabbage. There were all drilled in land pre-pared as for Swedes, on the 20th April, and afterwards hoed and thinned as for Swedes, and subsequently earthed up with the double mould-board plough; they have thus yielded an enormous quantity of keep, and we think more nutrition than an equal breadth of Mangels, Swedes, or Potatoes, that have been in use ever since August. Buckman's Purple Winter Green is remarkable for being one of the many sorts of Cabbage, Green, Broccoli, and the like, obtained by cultivation from the seed of the Wild Cabbage, gathered some years since by this experimenter from the rocks at Llandudno in North Wales. We are told it will bear any kind of weather, but we must look to the completion of this experiment for further information. Its yield is greater than that of the Thousand-headed Cabbage, which so long was a favourite of the Ven. Archdeacon Huxtable. It would be impossible to review all the work done, but it may easily be understood that where every step is dictated by scientific reasoning, under the constant supervision of one who religiously obeys Captain Cuttle's injunction—"When found make a note of"—advance can hardly fail to be made. *Dorchester Paper.*

WESTER ROSS: *Oct.* 29.—We have now completed harvesting a crop of which we cannot reasonably complain. True, the summer was dry, as the two previous ones have been in the north of Scotland; but our Wheat, which is not so easily affected with drought, is a full average crop of excellent quality, and of it we sow a considerable breadth. As might be expected, with a summer so bright and sunny, it threshes out satisfactorily, and has scarcely any dressings or light grain in it. Barley is considerably under an average in bulk, is not of fine quality, but yields well. Oats are miserably light all over the country. They ripened very unequally, consequently are of inferior quality, and yield greatly less than last year. Straw is once again a scarce commodity with us, and before the spring months are over will be very dear. Hay is now selling at 1*s.* 3*d.* per stone of 24 lb., and as it is disappearing rapidly, bids fair to be much higher ere a new crop arrives. Last year there was a considerable quantity of old hay to fall back upon, but this year, previous to harvest, the old stock both of hay and straw was exhausted, consequently the new supply was immediately fallen upon. Our harvest weather, although somewhat showery and broken, was on the whole comparatively good, and the crop was in-gathered in excellent condition. There was scarcely a sprouted sheaf, and with a little patience there might not have been a heated stack. On Friday, the 24th August, we began to cut 145 acres with six scythes, and finished cutting the same on September 12, work-ing in all 13 days; each scythеman thus cutting nearly 2 acres per day, and on the 19th September the whole was brought to the stackyard. Harvest operations extended over 27 days, including four sabbaths, on 18 of which we were engaged in harvest-work. Scythemen had 3*s.* per day; women for gathering, 1*s.* 9*d.*; binders, 2*s.* 6*d.*; rakers, 1*s.* 9*d.*, all without rations, and the whole cost of cutting, binding, leading, stacking, and thatching, was 22*l.* 18*s.*, or 3*s.* 2*d.* per acre. It would require to be remembered, however, that all the half-year servants were engaged in harvest work, and that the crop was mainly cut by the ploughmen. The Wheat would average nearly 5 quarters per acre. Our Potatos are an excellent crop, of superior quality, and only slightly affected with disease. Turnips were seldom if ever better; a bad crop is quite the exception, and Higher applies to the north of Scotland generally. Higher prices, perhaps, are realised this year than ever were before. From 7*l.* to 8*l.* per acre is no uncommon price for Turnips to be eaten off with sheep. Cattle are being put on Turnips, whilst sheep are enjoying an outrun on the lately cleared fields. We have been busy since harvest in preparing for, and sowing Wheat, and have now laid down upwards of 40 acres. Should the weather continue fine, we expect within the next three weeks to lay down about as much additional. A large proportion of what is already sown is after second year's Grass, which was manured, and at once seed-furrowed. We still continue to sow at the old rate of from three to four bushels per acre, even at the risk of being called old-fashioned, and irre-coverably behind the age. With the more genial climate of the south, and with a propitious spring, we believe that a much smaller quantity of seed would suffice, but with our winter weather, oftimes continued into May, with thin-seeding we should be in danger of finding ourselves cutting our few stalks of Wheat when we should be enjoying our Christmas dinner.

Miscellaneous.

THE WEATHER AND THE CROPS IN SEPT. 1866.
By A GRUMBLING FARMER.

I'm fairly beat!
I cannot plough nor harrow, sow nor shark,
To see the state of Barley, Oats, and Wheat.
Now daily drenched, keep ricks mid-leg thick.
For each fine day a rainy one succeeds
Some of Job's comforters, however, say
The heavy crops of Grass will save the hay:
But what about the crops of seedling weeds?

O dear, what weather!
I sit and watch the rain fall, shower by shower,
I see my teams go out for days together,
And all return again in half an hour,
I see the horses munching in their stables,
Eating their heads off, as the saying is;
I see the drainage in the fold-yard a rig,
From water gathering from the spouts and gables.

I'm out of hay!
And men and boys that on the bastial wait
Can only pull some armfulls, day by day,
To keep their charges from a starving state.
I sent my waggon for a fresh cut trusses—
Off coppice it soon began to blow again,
And all the lot of helps return'd again,—
The men, I'm sorry, must ring some laid cusses.

I've not a tater!
For the few earlies in my garden plot
Are rot—and all I've tried out of the later
Are found affected by the fatal rot.
What with the cattle plague and this bad weather,
The "finger and toes" in Turnips, and the game,
That eat in good or bad years all the same,
I think of putting farming altogether.

W. T.

Remedies for Rinderpest.—In the first place he found that every sound animal ought to be destroyed within 10 miles of where there had been a diseased one, and directly afterwards he found that no animal whatever ought to be destroyed. Then it was stated there was no cure at all for the disease, and immediately afterwards that the only cure was homœopathy. Next he saw the disease was caused by a fly, and the proper thing was to put up mosquito curtains in their cow-sheds; and this was followed up by the statement that it was the easiest thing in the world, for they had only to wash their faces and wipe their eyes, and it was also recommended that a pound or two of tar should be put on their noses: while the next thing recommended was port wine and whisky administered by the gallon: but unfortunately this was followed by the fact, that it had been tried on Miss Burdett Coutts' cows, and they had all afterwards died from what was called "excitement," but which he (Sir Brydges) should call drunkenness. Well, the next thing was beef-tea every half-hour, and this was followed by the real, true, and only remedy—inoculation in the tail. It might probably have occurred that the tails would have dropped off, and it suggested itself to him afterwards that the name should be changed from the rinderpest to the hinderpest. He would only trouble them with one other remedy, which no doubt would prove a very useful one to them, though he confessed it was not so to himself, for he could not understand it. He took the trouble of copying it out, and thought the first time he met his friends he should like to read it to them:

"That the therapeutic inferences drawn from the state of the pulmonic and capillary engagement of the connasum and the hyperdermic endurance of the tissues point to the organic hyposulphites and salacine with hypodermic and sub-cutaneous injection of morphine and ferruginous preparations as the best remedy."

Now he hoped they would bear that in mind, and that it would prove useful to them. He had heard of one more remedy, which he would repeat to them. One day when he was out hunting, he met a friend of his who had, as their friends the newspaper reporters would say, not a hundred miles from Great Easton. They entered into conversation about the cattle-plague, and his friend said: "Well, Sir Brydges, I saw a real, good remedy in the papers the other morning." He replied: "I don't believe in remedies; I have read them till I am tired of them, and I don't believe in them."—"Well," his friend said, "I believe this is a real, good one." Of course he was very anxious to hear it, and there was something in the explanation that he thought everybody would like. He said: "I read in the papers the other day that Mr. Tollemache called together all his tenants who had suffered from the cattle-plague and returned half their rents, and that is the only really good remedy I know of yet."

Sir B. Hennikер.

Birmingham Cattle and Poultry Show.—We have received the list of prizes offered by this Society at its Eighteenth Annual Exhibition, to be held in December next, and which is on the same liberal scale as usual. In the Cattle Department a new Class has been opened for Fat Kerry Cows or Heifers, the prizes being given by two members of the Town Council. The total amount of money offered amounts to 2100*l.*, which is appropriated as follows:—to Fat Cattle, Sheep, and Pigs, 1221*l.* 10*s.*; to Breeding Pigs, 77*l.* 2*s.*; Roots and Corn, 71*l.* 8*s.*; Poultry and Pigeons, 730*l.* With the liberal additions given by the President, the Hotel and Innkeepers, and others, we find it is possible for one animal, if bred by the exhibitor, to win 129*l.*, an amount considerably in excess of any prize to be obtained at any similar exhibition elsewhere. So in the Sheep Classes, a pen of three wethers may win 42*l.*, and we observe that the Mayor of Birmingham gives an Extra Prize of 21*l.* in this section. There will be no rule of the Smithfield Club this year excluding from their Show animals that have been exhibited at Birmingham. In the Poultry Department a great change has been made in the arrangements, the Prizes being given this

year entirely to single cock birds and pairs of hens and pullets, instead of two pens consisting of a cock and two hens as formerly. The alteration appears to have been brought about by the increased favour with which the classes for single cock birds and pairs of hens and pullets had been regarded by exhibitors, and will be highly beneficial to buyers, as they will be able to secure different strains of blood without purchasing two or three extra male birds, as was frequently the case. The poultry will be shown in entirely new pens, giving more light and greater facilities for inspecting the birds, these having been made after the prize design adopted by the Council. The Galleries, and what is now termed the Implement Bay in Bingley Hall, will be reserved for the exhibition of implements and other articles connected with the Show, of which, owing to there having been no Royal Show and the few local meetings, a large display may be anticipated.

Calendar of Operations.

NOVEMBER: *Selection of Seed Wheat (continued from p. 1032).*—The Mungoswells Wheat, No. 11, is another of Mr. Shirreff's sorts, resembling Hunter's in sample, but said to be somewhat earlier, and to tiller more freely; but apparently not possessed of that fixity of character which has given Hunter's its reputation.

No. 12 is Hunter's, one of our oldest standard White Wheats, largely grown in Scotland, where it has been known for 60 or 70 years. In some of the earliest and most extensive comparisons of Wheats, Hunter's came out in quality and quantity together, with more per acre than any other kind, and while many of its rivals have possessed but a short-lived reputation, it retains the character with which it started. The following description of it is by Mr. Hope, of Fenton Barns:—

"It is a White Wheat, though in some seasons many of the grains are very high-coloured, clear, and flinty, which might make those unacquainted with it imagine it was mixed with red. The straw is of moderate length, the ear medium-sized, the chaff smooth and thin, but with a short sharp awn, and the prickles are neither too closely nor too widely set. It possesses a hardy constitution, withstands well the winter's frosts, tillers freely in spring, and is as little liable to disease as any variety I am acquainted with. For more than a dozen of years it formed the standard by which I

tried all other varieties, and it still continues unquestionably the favourite Wheat with the great majority of farmers in the Lothians. I have tried against Hunter's various English Wheats, such as Taunton Dean, Tall Cluster and Dwarf Cluster Kent White, and other varieties without any distinctive name; but though they sometimes grew of much finer quality the first year after they were imported, they rarely yielded so much grain, and always rapidly deteriorated. The Chiddam and Pearl Wheats, though fine in quality, never yielded within a quarter per acre as compared with Hunter's."

No. 13 is Hopetoun Wheat, a variety originated by Mr. Shirreff, of Haddington. It possesses a stiff, tall straw, a long ear, and is a productive sort, of good quality, perhaps not quite so hardy as some other kinds. It is a smooth-chaffed White Wheat, and has a magnificent appearance when growing, and consequently sometimes disappoints sanguine growers. It has been extensively sown both in Scotland and England, and does not appear to be losing favour.

No. 14 is an ear of Fenton White Wheat.

About 11 years ago a plant of Wheat bearing three ears on a remarkably stiff and short straw was pulled by Mr. George Hope, of Fenton Barns, E. Lothian, out of a quarry in his farm, on the *débris* of which it had accidentally grown. The grains which these ears contained on being sown for a few successive years produced enough to seed a field; and as the Wheat retained during that time the characters which distinguished it at first, Mr. Hope sent it into the market as a new variety, and the Fenton White Wheat accordingly is now known in every part of the country. It is characterised by a moderately large ear of even shape, on a straw not only remarkably short, but remarkably various in length. The consequence of this latter peculiarity is that its yield of grain generally exceeds the expectation formed of it by those who see it before harvest for the first time. Its performance has always exceeded its promise during the years that I have known it. This abundant yield is no doubt the result of the distribution of the ears through various heights above the land; there is not that crowding of them which there would be if they stood all on one level. And this one sort accordingly exhibits in itself a result which can be obtained in other cases only by mixing two or three sorts together which grow straw of various lengths.

There can be no doubt that the productiveness of a crop is due, among other things, to the use it can make of air and sunshine; and many sorts of Wheat, the ears of which when mixed shall grow at different levels above the land, will, just as Fenton Wheat is found to do, yield all the more abundantly from this one cause. And the practice which seems to be increasing, of using mixed Wheats for seed, may receive its justification in this way.

Mr. Hope says:—"The heads of the Fenton Wheat are larger than the Hunter's, and it comes into ear a few days earlier; the grains, also, are rather more closely set; the straw is much firmer and shorter, and with the peculiarity of being different lengths from the same stem, which causes the sheaf to be a mass of heads, from the band upwards. It should be cut when the grains are soft, otherwise the appearance of the sample is impaired; but when cut green it has the clear and flinty look characteristic of Hunter's, so that it is scarcely possible to tell the one sample from the other. I confess, the quality is more easily affected by the weather than some other kinds, as, when stacked damp, the grain gets dull and dingy. It is, however, by far the most prolific White Wheat that I ever tried, whether sown in autumn or spring. It is far from being a great crop in appearance; judging it when growing, or even after it is cut, you are apt to think little of it, and it is rarely that you feel satisfied, or that its superiority is manifested until it is put into the sacks. The weight of straw per acre is frequently as great as that of crops a foot taller. I have found from several experiments that the weight of the straw averages about one-fourth more than the weight of the grain, which is just about the ordinary proportion of other kinds of Wheat. What I esteem its chief qualification, is its strength of straw; if *it* is lodged, most other kinds would be useless. It is, therefore, well adapted for high farming, which is happily now the order of the day, most farmers having discovered, that if manure is dear, land is still dearer, with its accompanying expenses. Six years ago I sowed a 24-acre field, one-half Hunter's Wheat, and the other half Fenton, the difference in favour of Fenton was fully two quarters an acre, from Hunter's being completely laid; since then, I have entirely confined myself to the growing of Fenton, except an occasional acre or two of any new well-recommended variety."

Besides the kinds thus named, we have among Red Wheats Hickling's Prolific, Golden Drop, Kentish High Back—the two last resembling the Nursery Wheat, and the Blood-red Wheat—a long and stout-strawed, large-eared kind. Piper's Thick-set Wheat is another red sort, easily recognised by its very short straw and close-set stout ear. Clover's Red is of vigorous growth, straw long but thick, so that it is not likely to fall. It is a Cambridgeshire Wheat, and is there being preferred to the Burwell Red, a variety of the Golden Drop class,

Among white Wheats, again, the Velvet-eared, a short-strawed sort, is of remarkable quality and productiveness, and very extensively grown (No. 15). Morton's Red-straw Wheat, too, best of a great number compared by Mr. John Morton, of Whitfield Farm, Gloucestershire, long cultivated there, and extensively grown elsewhere, of large and heavy grain of good quality, and characterised especially by a red-coloured straw which becomes yellow on being dead ripe. The "Eclipse," a very long-eared sort, was another kind marked out as good by Mr. Morton's experiments, which were reported in the first volume of the English Agricultural Society's Journal.

In the last we have, besides No. 15, the Velvet-eared White Wheat, one of our best sorts as regards quality of grain, two bearded Wheats of a coarser description of grain. The Cone or Rivet Wheat (No. 17—not a very characteristic ear) is a very productive, but coarse sort. The ears hang as they become ripe and lose their awns. It is later than any other kinds and not extensively grown. It is, however, often chosen by allotment cultivators and cottagers, to whom a large brown loaf is of more consequence than a smaller white one.

No. 16, Egyptian Wheat, though strongly recommended by some writers as a productive sort, does not gain way in ordinary agriculture. The appearance of its ears would lead one to believe its productiveness per acre.

On the fixity of characters possessed by these varieties of Wheat, we quote the following remarks from Mr. Shirreff, whose name has been already often referred to. He speaks thus of the failures of attempts to alter the character of varieties.

"In illustrating this it may be mentioned that a few seeds of the Fern or April Wheat, which is a summer variety, and a few seeds of two of my new bearded autumnal varieties, were put into the ground on March 15th, April 15th, and May 15th. The March seeding put forth ears and ripened in the usual way. In the case of seeding in April the summer variety eared well, while only two puny ears came forth from the autumn Wheats, the remainder being a tuft of leaves. With the May seeding the summer Wheat eared with rapidity, while the autumn varieties contained a cluster of Grass and did not ear until the following season. The non-earing of autumn varieties when sown late in spring may be held to be the chief distinction between spring and autumn Wheats, and I have witnessed the non-earing alluded to in different parts of the world, and witnessed the loss of crops by the one kind of Wheat having been sown instead of the other. These two Wheats are so distinct in their natures that I believe human power cannot impart the earing habit to an autumn variety, and *vice versâ*. But while advocating the stability of the varieties of the Wheat plant, I have lately had satisfactory evidence of more than two kinds arising from the seeds of one ear. Such a result is to me both new and unexpected; and while announcing the fact, no remark shall be hazarded without further experience. New varieties do most certainly arise from time to time, and are known as sports which have baffled investigation. The appearing of a new kind does not, however, materially affect the question of the stability of well-defined varieties, because both the old and new remain distinct, and it is only the addition of another sort without the old one being altered.

"The ear of the Wheat plant is presented in endless colours, textures, and forms. The chaff is the cradle and the clothing of the grain. The red and white, the thick and the thin, the rough and the smooth, and the bearded and the bald chaffs may all have admirers; but this diversity forms no guide whatever to the quantity and quality of the seeds. The notches on the ear also differ materially, and there is a popular and perhaps mistaken dislike to the notches being far apart. Viewing the process of evaporation, the lodging of the crop, and the beating or threshing of it by wind, a cross-set or club-shaped ear is manifestly disadvantageous. Provided the ear has a sufficient number of notches, perhaps the wider they are apart the better.

"The beard or awn which characterises some varieties of Wheat has also been the subject of popular and mistaken dislike, which doubtless arose from the Rivet Wheats having long been the only cultivated varieties with beards. But the Rivets are peculiar, having pith in the straw, a pendulous ear, and flour so coarse as to be chiefly used for dusting purposes. The beards also often disappear on the crop reaching maturity, in consequence of the pendulous ear swinging and rubbing on the elastic stalk. With other Wheats the case is different; the ears being upright and the beards projecting at an angle, form a strong spring, which is a considerable protection against wind, and is also the means of admitting air into the sheaf. In several places during the present season the effect of the beard lessening injury by wind was witnessed, and last year its drying property by admitting air made a difference of 9*s.* a quarter on the first day of new Wheat being exposed in the market of this place. While I am aware that the chaff and beards have no relation to the grain, it may be mentioned as a singular coincidence that on examining the grain of the present crop of a collection numbering about 150 kinds of British Wheat, excluding Rivets and curiosities, in every class the bearded varieties were found to have the finest qualities of grain."

Notices to Correspondents.

CHICORY FOR GRAZING: *A R T.* The soil should be prepared by thorough cleaning early in spring and a good coat of rotten dung applied. Drill 4 lb. of seed per acre in March in rows 9 inches apart. Single them out when 5 inches high to 6 inches apart. The crop will continue luxuriant under good management for six or eight years. After full growth is obtained cut it down before flowering and carry it to stock in the house. It may also be depastured with sheep, but the other is the more productive use of it.

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This admirable appendage to the Dinner Table was invented as a remedy for evils which are apt to beset the best of carvers. Attention is called to some of the advantages arising from its use, to wit —

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Diam.	Height.	£ *s.* *d.*
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Letter to The Times, *July* 23, 1866, *from* Earl ESSEX.

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"Last night, just as I was going to bed, I was startled by that most fearful of all cries, 'Fire, fire!' I soon learned that a fire was raging in a large two-windowed unoccupied bedroom. How caused is to us all a great mystery. It is my custom to keep one of these small Engines on each floor. In two minutes I was in the room with one of them. It was like a furnace. The curtains, shutters, casements, and cornices of both windows were burning and cracking from floor to ceiling. I was quite alone at the moment, yet before assistance arrived (most of the servants having gone to bed), I had completely subdued the fire of one window without exhausting the Engine, and when assistance and more water did arrive, we very soon extinguished the other.

"So fierce was the fire that the lead of the casements was melted, and the casements themselves were burnt off their hinges.

"I will only add, that by God's mercy, the house was saved by this small Engine. Had it not been at hand and in order, most assuredly Cassiobury would be now a heap of ruins.—Yours faithfully,

"Cassiobury, Watford, July 29. "ESSEX.

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Tottenham.

CLEARANCE SALE OF VERY VALUABLE NURSERY STOCK FOR THE GREAT EASTERN RAILWAY EXTENSION

MESSRS. PROTHEROE AND MORRIS will submit for unreserved SALE by AUCTION, on the Premises, Brunswick Nursery, Tottenham, on MONDAY TUESDAY, and WEDNESDAY, Nov. 5, 6, and 7, at 11 o'Clock each day, by order of Mr J Miller, who is compelled to move an account of the requirement for the extension of the Great Eastern Railway, the valuable NURSERY STOCK, [illegible] all sizes, consisting of remarkably fine Evergreens, Conifers, and Deciduous Shrubs, including 1000 Chinese Arbor-vitæ, [illegible] bushy Arbutus, 1000 Euonymus, 1000 Box, 5000 Spruce Fir, 5000 Portugal and Common Laurels, 3000 bushy Aucubas, 100 fine Variegated and Green Hollies, 1000 very fine Laurustinus, 1000 Rhododendrons, [illegible] Golden Yews, 500 Irish and English Yews, 500 Cupressus Lawsoniana and macrocarpa, 1 to 6 feet, 800 Cedrus Deodara, robusta, atlantica, and Libani ; 600 Thuja aurea, compacta, Lobbii, Warreana, and gigantea ; 300 Wellingtonia gigantea, 1 to [illegible] feet, 500 Araucaria imbricata, 500 Picea Nordmanniana, nobilis, and Pinsapo, 1 to 5 feet ; 300 Thujopsis borealis, 1 to 6 feet, 1000 Retinospora sorts, 600 Juniperus sorts, Abies Douglasii and Menziesii, Pinus excelsa, Privet, Ribes, Lilacs, Syringa, Spiræa, 3000 Deutzia scabra and crenata, 500 Veronica Hendersonii, Standard, Dwarf, and Climbing Roses, Clematis, Ivies, Jasmines, 1500 Fairy Roses in pots, &c , selected Fruit Trees, including Standard and Dwarf Apples, Pears, Plums, Cherries, &c. ; Acacias, Weeping Willows, [illegible] Strawberries in pots for Forcing, 1200 yards of excellent Box Edging, an immense quantity of Prince of Wales Raspberries, 100 Alpine Auriculas, together with some choice Greenhouse Plants, including 700 compact and healthy Erica hyemalis, 500 Acacia armata, 600 Cyclamen persicum, &c The whole stock exhibits a most healthy appearance, and is worthy the attention of the Trade and public, generally [illegible]

May be viewed prior to the Sale Catalogues to be had on the Premises, and of the Auctioneers, American Nurseries, Leytonstone, Essex, N E

Sale of very fine Dutch Bulbs, Standard Roses, &c

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, at 38 and 39, Gracechurch Street, City, E C , on TUESDAY, November 6, at 1 o'Clock precisely, a first-class Collection of DUTCH BULBS, including choice named HYACINTHS, TULIPS, CROCUSES, NARCISSUS, SNOWDROPS, &c., and a splendid Assortment of STANDARD, DWARF, and CLIMBING ROSES comprising the finest varieties in cultivation, HARDY AMERICAN PLANTS, HARDY CLIMBERS, &c

On view Morning of Sale Catalogues had at the Rooms as above; and of the Auctioneers, American Nurseries, Leytonstone, N E

Leytonstone, Essex.

VERY IMPORTANT CLEARANCE SALE OF VALUABLE NURSERY STOCK ON THE [illegible] ESTATE

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION on the Premises, [illegible] Estate Nursery, adjoining Leytonstone Station, on the Woodford and Loughton Branch of the Great Eastern Railway, on THURSDAY, November 8, and Two following Days, at 11 for 12 o'Clock precisely each day, in consequence of the Land (which was sold last May) being immediately required to be cleared for Building purposes, the valuable NURSERY STOCK, consisting of a splendid variety of Evergreen, Coniferæ, and Deciduous Shrubs, including 10,000 Common and Portugal Laurels, 1 to 6 feet , 2000 Hollies, 2 to 12 feet , [illegible] Spruce Firs, 3 to 6 feet ; very handsome Cupressus Lawsoniana, [illegible] to 8 feet , Thujopsis borealis, 4 to [illegible] feet , Cedrus Deodara, 4 to 15 feet , Cedrus Libani, 10 to 15 feet , Abies Smithiana, 8 to 10 feet , Abies canadensis, 8 to 10 feet ; Pinus excelsa, 10 to 15 feet , Taxodium sempervirens, 10 to 15 feet ; Juniperus recurva, 6 feet ; Pinus Cembra, 4 to 10 feet , beautiful Wellingtonia gigantea , Araucaria imbricata, 4 to 6 feet , fine specimen Thuja aurea , Thuja chinensis, 8 to 15 feet , splendid Irish Yews, 4 to 12 feet , Aucuba japonica, specimen Sweet Bays, 6 to 8 feet , thousands of fine Limes, Planes, Ash, Chestnuts of sorts, Double blossomed Peaches, Almonds, Lombardy Poplars, Guelder Roses, quantities of clean-grown Fruit Trees, comprising Standard and Dwarf Apples, and Pyramidal Pears, Plums, Cherries, Dwarf trained Peaches, Nectarines, Apricots, Gooseberries, Currant, Filberts, fine Standard Mulberries ; Scarlet, hybrid and named Rhododendrons ; Kalmia latifolia, large Azalea pontica, charming specimen Andromeda floribunda, with a superb collection of Standard, Dwarf and Provence Roses, &c

This Sale offers a rare opportunity to gentlemen requiring large and handsome specimen Coniferæ and Evergreens, from 4 to 12 feet, for immediate effect, which, having been recently transplanted, will move safely

May be viewed any day prior to the Sale. Catalogues may be had of the principal Seedsmen in London; and of the Auctioneers, American Nurseries, Leytonstone, Essex, N E.

Hendon, Middlesex.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, on the Premises, Hendon Park Nursery, Hendon, Middlesex, N.W , on MONDAY, Nov 12, and two following days, at 11 o'Clock each day, by order of the Executors of the late Mr James Wright, to balance the Partnership Accounts, the First Portion of the Valuable NURSERY STOCK, including an unlimited variety of Evergreen, Coniferæ, and Deciduous Shrubs in large quantities, lotted to suit the Trade and Private Buyers, comprising 11000 bushy Common and Portugal Laurels, 2 to 6 feet , 2000 Common Yews, 2 to 4 feet , 2000 Bushy Laurustinus, 2 feet , 600 Variegated Hollies, 3000 Green Hollies, 2 feet , 2000 Box, 1 to 2 feet ; 1000 Common Privet , 1000 Ligustrum ovalifolium ; 3000 Rhododendrons, 1 to 3 feet , 2000 Spruce Firs , 1000 strong Irish Ivies, Phillyreas , Armeniaca umbraculata, 2 to 4 feet , Cupressus Lawsoniana, 5 to 6 feet , Abies Douglasii, 8 feet , Thuja Lobbii , 1000 Wellingtonia, 3 feet, and some fine specimens, 6 feet , Thujopsis borealis, 2 to 4 feet ; 2000 Berberis Aquifolium, Ribes, Berberis Darwinii, Mahonia Beali, 1000 yards capital Box Edging, 50,000 Strong Quick, 2 and 3 years , Hardy Heaths , 2000 Standard Roses, consisting of the best varieties in cultivation ; 12,000 Ornamental and Forest Trees, including English and Scarlet Oaks, Sycamores , 1000 Limes, 6 to 8 feet , Spanish and Horse Chestnut, Laburnums Beech and Birch, Scotch Firs, Scarlet Thorns, Planes ; fine Fruit Trees, comprising 1000 Standard and Dwarf-trained Apples, Pears, 500 Dwarf-trained Peaches, Nectarines, Apricots, Plums, Cherries, 1000 Gooseberries, 1000 Red, Black, and White Currants, Mowing Machines, &c

May be viewed prior to the Sale. Catalogues may be had on the Premises ; the Welsh Harp, Edgware Road ; Jolly Butchers, Southgate ; of the principal Seedsmen in London, and of the Auctioneers and Valuers, American Nurseries, Leytonstone, Essex, N.E.

Matlock Nurseries, Matlock, Derbyshire.

MR. J. ELSE has received instructions from Messrs. H. & G. Farnsworth to SELL by AUCTION at the above Nursery Grounds, on SATURDAY, November 17, 500,000 LARCH (Transplanted), 1 foot to 3 feet , also 250,000 Transplanted QUICKS, 4 yr. strong, in lots, of which particulars may be had on application to the AUCTIONEER, Matlock Bridge, Derbyshire.

Lewisham.

SALE OF VALUABLE NURSERY STOCK, CLARK'S NURSERY GROUNDS, HITHER GREEN.

MR. CHARLES ATKINS has received instructions from the Proprietor to SELL by AUCTION, on TUESDAY, WEDNESDAY, and THURSDAY, November 6, 7, and 8, at 12 o'Clock each day precisely, on the Premises, CLARK'S NURSERY GROUNDS, Hither Green, Lewisham, in consequence of the land being required for Building purposes, the following Valuable STOCK, comprising 1200 Dwarf and Standard Trained Peaches, Nectarines, Apricots, Plums, Cherries, Pears, and Apples, 2000 Standard and Pyramidal Fruit Trees, comprising Plums, Cherries, Pears, and Apples, 1000 Green Box, 1000 Laurels 2000 Privets, 6000 green Hollies, 500 Rhododendrons, 3000 Standard and Dwarf Roses of the most approved sorts, Climbing Roses, Jessamines, Honeysuckles, &c ; Irish Ivies, Portugal Laurels, Berberis Aquifolium, Arbutus, Aucubas, Irish Yews and Common ditto, 700 Spruce Firs, large Limes, Poplars, Laburnums, Mountain Ash, Standard Thorns, Birch, and Sycamores , also 400 fine specimens of Conifers, 300 Thuja aurea and gigantea, 2 to 4 feet , Cedrus Deodara, 6 to 11 feet , Cupressus Lawsoniana, 2½ to 4 feet , Thujopsis borealis, 2½ to 4 feet ; Red Cedars, 4 to 5 feet ; Wellingtonia gigantea, 2 to 6 feet ; Abies Douglasii, 2 to 3 feet ; Chinese Arbor-vitæ, 3 to 5 feet; Pinus insignis and excelsa, 2 to 3 feet ; 300 Arbor-vitæs, and 700 small ditto

May be viewed the Saturday and Monday previous to the Sale. Catalogues had on the Premises, and of Mr. CHARLES ATKINS, Auctioneer, 2, Bank Buildings, Blackheath, S.E. ; 4, Belmont Hill, Lee, S.E. ; and Rushey Green, Lewisham, S.E.

VIOLA CORNUTA.—NEW SEEDS of the BEST VARIETY.

JAMES VEITCH & SONS

HAVE MUCH PLEASURE IN OFFERING NEWLY-HARVESTED SEED OF THIS VERY

STRIKING PLANT FOR FLOWER GARDEN DECORATION.

Full descriptions having so recently appeared in the Gardening Papers, MESSRS. V. AND SONS do not think it necessary to again refer to them, but they confidently recommend the Plant as one of the most useful ever grown for Flower Gardening.

There being more than one variety in cultivation, the Seed offered is saved from the very best only.

Price per packet, 6d., 1s., and 2s. 6d. each.

ROYAL EXOTIC NURSERY, KING'S ROAD, CHELSEA, S.W.

ESTABLISHED UPWARDS OF A CENTURY.

BUTLER, McCULLOCH, & CO.,

SOUTH ROW, COVENT GARDEN, LONDON,

Seedsmen to Her Majesty's Commissioners of Woods and Forests,
To the Commissioners for the Colonies,
To the Horticultural Societies of the Punjaub and Bombay, &c.

HOLDERS OF PRIZE MEDALS FROM INTERNATIONAL EXHIBITIONS OF 1851 AND 1862.

CHOICE COLLECTIONS of BULBS, all of the FIRST SIZE and QUALITY.

FOR CONSERVATORY DECORATION.						FOR FLOWER GARDEN DECORATION.					
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£5.	£2 10s.	£1 5s.	£1 1s.	15s.	10s. 6d.	£5.	£3.	£2.	£1 5s.	£1 1s.	10s. 6d.

FOR CONSERVATORY AND FLOWER GARDEN COMBINED.

No. 13, £5 5s. No 14, £2 12s. 6d. No. 15, £2 2s. No. 16, £1 1s. No. 17, 15s. No. 18, 10s. 6d.

All Orders amounting to £1 1s. and upwards sent carriage paid.

ILLUSTRATED PRICED CATALOGUE, containing full details of these Collections, post free on application.

NEW HARDY CLEMATISES.

Clematis rubella.

Very rich velvety claret; the deepest coloured Clematis yet offered. Very distinct, and having the advantage of flowering 60 to 70 per cent of blooms, with five and six sepals. First Certificate, Royal Horticultural Society.

Clematis Prince of Wales.

Large flowers, of a rich deep violet-purple, with red bars down the centre of each sepal. A decided improvement on *C. rubro violacea*. First Certificate, Royal Horticultural Society.

MESSRS. GEORGE JACKMAN & SON

Have much pleasure in announcing that they are in a position to send out the above CLEMATISES, that are distinct, and can with confidence recommend them "amongst the best of hardy Climbers, if not the very best Ornaments for Walls, Trellis Work," &c.

Early orders will secure the strongest Plants, which will be sent out strictly in rotation first week in October.

The "Floral Magazine," in the October Number, will insert C. RUBELLA and C. LANUGINOSA CANDIDA.

Strong Plants, with bine, 1½ to 2½ feet, 21s. each.

The usual allowance to the Trade.

Coloured Drawings, by Andrews, for Twenty-four Stamps.

WOKING NURSERY, SURREY.

Dutch and other Bulbs.

B. S. WILLIAMS is now prepared to supply splendid roots of HYACINTHS, TULIPS, NARCISSUS, CROCUS, &c., &c. All the roots are selected with great care from the best growers in Holland.

A PRICED and DESCRIPTIVE LIST sent post free on application.

Victoria and Paradise Nurseries, Holloway, London, N.

Hyacinths for Exhibition.

SUTTON AND SONS beg to offer—

100 in 100 very choice sorts	£4	4 0
100 in 50 "	3	10 0
50 in 50 "	2	2 0
50 in 25 "	1	15 0
25 in 25 "	1	1 0
12 in 12 extra fine choice do	0	12 0
12 in 12 choice sorts	0	9 0
12 in 12 good sorts	0	6 0

All goods carriage free, except small parcels.

SUTTON & SONS,
Royal Berkshire Seed Establishment,
Reading.

Carter's Dutch Bulbs.

Seedsmen to Her Majesty's Chief Commissioners of Public Works and other Government Departments, the Royal Gardens, Kew, &c., &c., &c.

Seedsmen to H.I.M. the Emperor of the French, the Crystal Palace Company, the Agri-Horticultural Society of India, &c., &c., &c.

CARTER'S GUINEA BOX of DUTCH FLOWER ROOTS contains—12 choice named Hyacinths for pots or glasses, 12 mixed Hyacinths for borders, 4 varieties of Polyanthus Narcissus, 12 Pheasant's-eye Narcissus, 12 double white-scented Narcissus, 100 yellow Crocus, 50 blue Crocus, 12 choice mixed double Tulips, 12 choice mixed single Tulips, 4 white Lilies, 50 Snowdrops, 25 finest mixed Anemones, 25 finest mixed Ranunculus, 12 double Due van Thol Tulips, 12 double Daffodils, 1 Tiger Lilies.

The above forwarded on receipt of post-office order for 21s; half the above for post-office order for 10s. 6d.

PRICE LISTS gratis and post free.

JAMES CARTER & Co., 237 and 238, High Holborn, London, W.C.

Carter's Dutch Bulbs.

Just published,

BULBS and THEIR CULTURE. See Original Article in AUTUMN SUPPLEMENT to CARTER'S GARDENER'S and FARMER'S VADE MECUM.

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BARR & SUGDEN'S

AUTUMNAL FLORAL GUIDE TO WINTER

AND SPRING GARDENING

May be had on application.

NEW VIOLA CORNUTA SEED, the best variety.—Respecting the value and importance of this plant, see notices in the *Gardeners' Chronicle*, September 15 and 22; also October 6, pp. 876, 900, and 948, by Messrs. Findlay, Drewett, Miller, and Bennett, 1s. and 2s. 6d. per packet.

NEW LAFAGERIA ROSEA SEED, 1s. 6d. and 2s. 6d. per packet.

NEW COLLINSIA VERNA SEED, 6d. and 1s. per packet.

BARR'S PRIZE CALCEOLARIA.—Saved by Mr. James from his prize flowers, 2s. 6d. per packet.

UNBLOOMED SEEDLING AMARYLLIS.—Hybrids of the finest varieties cultivated, and expected to produce flowers of great beauty, 4s. each, 42s. per dozen.

VALLOTA PURPUREA, 18s. per dozen.

BULBS and PLANTS for SPRING BLOOMING.

100,000 HYACINTHS, 2s. 6d. to 3s. per doz., 18s. to 21s. per 100
100,000 NARCISSUS, 6d. to 3s. 6d. per doz., 3s. 6d. to 21s. per 100
100,000 TULIPS, 8d. to 2s. 6d. per doz., 4s. to 15s. per 100
200,000 CROCUSES, 1s. 6d. to 4s. per 100, 14s. to 30s. per 1000
100,000 SNOWDROPS, 2s. 6d. per 100, 21s. per 1000
10,000 SCILLA SIBIRICA and AMŒNA, 2s. 6d. per doz., 18s. per 100
100,000 CLIVEDEN PANSIES, Blue, Purple, and Yellow 4s. per doz., 30s. per 100
WINTER ACONITES, IRIS, ANEMONES, RANUNCULUS, SCILLAS, &c.

100,000 CLIVEDEN DAISIES, Pink, Red, and White, 3s. per doz 21s. per 100
100,000 VARIEGATED ARABIS, a fine permanent edging, 3s. 6d. per doz., 21s. per 100
200,000 MYOSOTIS SYLVATICA (Forget-me-not), 1s. 6d. per doz, 10s. 6d. per 100
100,000 STACHYS LANATA, a fine permanent edging, 3s. 6d. per doz., 21s. per 100
POLYANTHUS, WALLFLOWER, PHLOX, ALYSSUM, HEPATICAS, &c.

COLLECTIONS of BULBS for Blooming In-door Decoration, 10s. 6d., 15s. 6d., 21s., 30s., 42s., 63s., and 210s.
COLLECTIONS of BULBS for Out-door Decoration, 10s. 6d., 15s. 6d., 21s., 30s., 42s., 63s., and 210s.
COLLECTIONS of SPRING-BLOOMING PLANTS, 12s. 6d., 25s., 50s., 100s. to 200s.

BARR AND SUGDEN,
12, KING STREET, COVENT GARDEN, LONDON, W.C.

Gem Plant Case.

Gem Plant Case.

Editorial Communications should be addressed to "The Editor." Advertisements and Business Letters to "The Publisher," at the Office, 41, Wellington Street, Covent Garden, London, W.C.
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THE GARDENERS' CHRONICLE
AND
AGRICULTURAL GAZETTE.

A Newspaper of Rural Economy and General News.

No. 45.—1866.] SATURDAY, NOVEMBER 10. {Price Fivepence. {Stamped Edition, 6d.

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ROYAL HORTICULTURAL SOCIETY. GARDENERS' EXAMINATIONS.

NOTICE.—The Council have appointed TUESDAY (December 18) next, for the above examinations, to be held at South Kensington. Candidates' names to be sent to the Secretary not later than Dec. 11.

For particulars of Examinations see No. 8 of Society's Proceedings in 1865. Further information may be had on application.

Genuine Garden and Agricultural Seeds.

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JAMES FAIRHEAD AND SON, SEED GROWERS and MERCHANTS, 7, Borough Market, London, S.E. New and Genuine AGRICULTURAL, GARDEN, and FLOWER SEEDS. Special prices and advantageous offers on application.

Notice.

60-PAGE CATALOGUE of NEW PLANTS of 1866 now ready, free for one stamp.
WM. DILLISTONE, Munro Nursery, Sible Hedingham, Essex.

CHARLES NOBLE'S TRADE CATALOGUE is now ready, and can be had on application. It contains a select assortment of Roses, Rhododendrons, Fruit, Forest, and Ornamental Trees, &c.
Sunningdale Nursery, Bagshot.

GENERAL NURSERY STOCK of large extent, beauty, and health, and at prices to meet all purchasers. CATALOGUES on application to
J. SCOTT, The Nurseries, Yeovil, Somerset.

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Seed and Nursery Establishment, Sudbury, Suffolk.

LILIUM LANCIFOLIUM.—Fine large Flowering Bulbs of SPECIOSUM, RUBRUM, and PUNCTATUM ROSEUM at 12s. per dozen.
JOHN MANN, The Nurseries, Brentwood, Essex.

GLADIOLI in 200 new and splendid varieties, in four sections of Early and Late kinds.
BULB CATALOGUE sent free.
STEPHEN BROWN, Seed and Nursery Establishment, Sudbury, Suffolk.

Gladiolus.

JOHN STANDISH'S unrivalled Collection is now ready for sending out, from 4s. to 60s. per doz.
CATALOGUES can be had on application to The Royal Nurseries, Ascot.

Gladioli.

SUTTON'S LIST, containing the sorts most worthy of cultivation, including those to which Prizes were awarded at the Crystal Palace and other Shows, may be had gratis and post free.
SUTTON & SONS, Royal Berks Seed Establishment, Reading.

Zonal Geraniums.

WITTY AND SON have to offer all the best sorts in cultivation, from 4s. to 6s. per dozen.
The Nurseries, Cottingham, near Hull.

NEW CHRYSANTHEMUMS 1866. — All the new varieties of present year now ready, well established in pots, at 5s. per doz., or 35s. per 100.
WILLIAM HOLMES, Frampton Park Nursery, Hackney, N.E.

IN EXCHANGE for BULBS or ROSES, several hundred Yards of excellent BOX EDGING.—Apply to the Gardener by letter, P. P., Hexton Gardens, Ampthill, Beds.

Larix Kæmpferi.

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SUTTON'S RINGLEADER PEA. THE EARLIEST IN CULTIVATION.
2s. per quart.

ASPARAGUS PLANTS.—Strong 2 and 3-yr. Asparagus Plants, 12s. 6d. per 1000.
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ASPARAGUS PLANTS, in beds, 14 yards by 4 feet, 3, 5, and 7 years old, for Forcing. For price per bed apply to FRANK WARWICK, Plant and Seed Merchant, Sleaford.

ASPARAGUS.—4000 or 5000 strong 2-yr. old at 10s. per 1000. To any one taking the whole a reduction will be made.
S. COOPER, Linkwood, Smalley, Derby.

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WIVERY begs to inform the Trade that he can now supply the above in sealed packets, with initials. Price on application. Hanover Nursery, Peckham, S.E.

To Wiser Incubator Growers.

STRONG PLANTS of TELEGRAPH, the best Winter variety, safely packed any distance, 1s. to 1s. 6d. each.
NUNN & HOBDAY, St. Augustine's Nursery, Norwich.

To the Seed Trade.

A FEW QUARTERS of HARDY GREEN-TOP SWEDE, a very superior stock, may be had from WM. DRUMMOND & SONS, Seedsmen, Stirling.

TRADE PRICES of CATTELL'S PURPLE-TOP BEET, CATTELL'S ECLIPSE BROCCOLI, KIRKLEES HALL CUCUMBER, and other Seeds of Choice Vegetables, may be had on application to
JOHN CATTELL, Westerham, Kent.

Finest Named Hyacinths.

SUTTON AND SONS can supply the above at 6s., 9s., and 12s. per dozen.
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MINIATURE HYACINTHS.—Named varieties, 4s. per dozen; Mixed, 2s. 6d. per dozen.
SUTTON & SONS, Seed Merchants, Reading.

MIXED HYACINTHS, for Beds or Open Borders, all colours, of various shades.
21s. per 100 (carriage free), or 3s. per dozen.
SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

Hyacinths, &c.

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PAUL'S Nurseries and Seed Warehouse, Waltham Cross, London, N.

Hyacinths and other Dutch Bulbs.

WM. CUTBUSH AND SON beg to acquaint their numerous Patrons that they have received their usual Consignment of Choice HYACINTHS, TULIPS, CROCUSES, &c.
PRICED DESCRIPTIVE CATALOGUE post free on application
Highgate Nurseries, London, N.

DUTCH BULBS, unusually fine: ORNAMENTAL TREES, EVERGREEN and DECIDUOUS SHRUBS and CLIMBING PLANTS. A choice Collection of FERNS, Fern-cases, Gold Fish, Aquariums, &c.
R. GREEN, the Bedford Conservatories, Covent Garden Market, E.C.

To Nurserymen, Seedsmen, &c.

JAMES FAIRHEAD AND SON, SEED MERCHANTS, 7, Borough Market, S.E., have on hand Double and Single varieties of MIXED HYACINTHS for Borders, of fine quality; also ENGLISH YELLOW CROCUS, and Large Double SNOWDROPS.
Prices on application.

J. SCOTT, Importer of Dutch Bulbs, has still a choice Collection of every kind, including HYACINTHS, TULIPS, CROCUS, SNOWDROPS, LILIUMS, &c., &c., which he is offering at extremely low prices.
J. SCOTT, The Seed Stores, Yeovil, Somerset.

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HY. CLARKE & SONS, 59, King Street, Covent Garden, W.C.

TO FLORISTS and SEEDSMEN.—HENLEY BROTHERS, General Merchants, High Street, Holbeach, have still on hand fine samples of DOUBLE SNOWDROPS and YELLOW CROCUSES, which they beg to offer. Samples and price on application. Also a quantity of small CROCUS, a great Bargain.—Holbeach, Lincolnshire.

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SUTTON AND SONS have a good Stock of the best varieties, which they can supply at 4s. per 100.
SCILLA PRÆCOX, 15s. per 100.
Royal Berkshire Seed Establishment, Reading.

Tulips.

SUTTON AND SONS can supply best varieties of EARLY, LARGE DOUBLE, and LATE TULIPS at very moderate prices, which may be had on application.
Royal Berks Seed Establishment, Reading.

SHOW TULIPS.—50 choice named sorts for £1 5s. 100 ditto, in 50 sorts, £2 5s.; 100 mixed, from the above, 10s.
The above are all guaranteed true to name, and are from one of the finest collections in the country.
JOHN MORSE, Nurseryman, Dursley.

SUPERB LILIES, in 70 finest varieties.
BULB CATALOGUE sent free.
STEPHEN BROWN, Seed and Nursery Establishment, Sudbury, Suffolk.

Roses.

WM. PAUL'S PRICED DESCRIPTIVE CATALOGUE of ROSES is now ready, post free on application.
PAUL'S Nurseries, Waltham Cross, N.

Roses.

E. P. FRANCIS AND CO.'S CATALOGUE of the above gratis upon application.
The Nurseries, Hertford.

Dwarf Tea Roses in pots.

WILLIAM BARNES has now to offer a very fine Collection of the best TEA ROSES, all fine strong healthy Plants. LIST of sorts and prices can be obtained on application.
Camden Nursery, Camberwell, S.

To the Trade.—Dwarf Roses.

HUSSEY AND SON beg to offer the above, all HYBRID PERPETUALS, on the Manetti Stock, at 35s. per 100; also DAPHNE CNEORUM in nice plants, £2 per 100; and TREE BOX, 2 to 3 feet, very bushy stuff, 30s. per 100.
Mile End Nursery, Eaton, Norwich.

WANTED, CLIMBING ROSES, budded on tall stems, from 6 to 10 and 12 feet in height; also STANDARD UNION ROSES and PRIVET FLAMMULA, from the open ground.
Address, with price and all particulars, to WM. WOOD & SON, Woodlands Nursery, Maresfield, near Uckfield, Sussex.

Just published, the Second Edition of

CULTURAL DIRECTIONS for the ROSE. By JOHN CRANSTON, King's Acre Nurseries, near Hereford.
Free by post from the Author for 20 stamps.

New Catalogues.

A DESCRIPTIVE CATALOGUE of ROSES.
A CATALOGUE of ORCHARD-HOUSE TREES.
A DESCRIPTIVE CATALOGUE of GRAPES.
Free per post on application to
THOMAS RIVERS & SON, Nurseries, Sawbridgeworth.

Planting.

WM. PAUL begs to refer intending Planters of ROSES, FRUIT TREES, SHRUBS, &c., to his Advertisement of last week, p. 990.
PRICED DESCRIPTIVE CATALOGUES on application.
PAUL'S Nurseries, Waltham Cross, N.

Autumn 1866 and Spring 1867.

GEORGE EDWARD'S CATALOGUES of FRUIT TREES, ROSES, CARNATIONS, PICOTEES, HYACINTHS, &c., are now ready, and can be had on application at 4, King Street, Castlegate, York

TRITOMA UVARIA.—A few dozens of this beautiful showy and hardy perennial, of the true kind, fine plants that have bloomed this season, 12s. per doz.
The usual allowance to the Trade. Package included.
JAMES KITLEY, Lyncombe Vale Nursery, Bath.

Grape Vines.

JOSEPH MEREDITH has a beautiful Stock of VINES for Sale, propagated from Vines which have borne the fruit which has taken from time to time so many First Prizes.
The Vineyard, Garston, near Liverpool.

Late Grape Vines.

ALICANTE, LADY DOWNES', and MUSCAT of ALEXANDRIA.
J. MEREDITH has a splendid Stock of the above sorts for Planting.
The Vineyard, Garston, near Liverpool

To the Trade.—Grape Vines.

T. J. BOOTH can supply extra strong Planting and Fruiting CANES in variety. Prices on application.
Rainhill Nursery, Rainhill, Lancashire.

Grape Vines.

B. S. WILLIAMS begs to announce that he has a splendid stock of Strong Planting and Fruiting CANES of all the best varieties. PRICED LIST may be had on application.
Victoria and Paradise Nurseries, Holloway, London, N.

TWO HUNDRED and FIFTY strong short-jointed well-ripened Fruiting GRAPE VINES, in 11-inch pots, price 6s. each; also 300 in 9-inch pots, price 3s. 6d. each.
Apply to E. MORSE, Original Nursery, Epsom.

CASTLE KENNEDY FIG.—Plants of the above may now be had at 10s. 6d. and 21s. each; the usual discount to the Trade. PETER LAWSON & SON, Edinburgh and London.

LARGE RED GRAPE and NETTLE-LEAF WHITE CURRANT PLANTS.—Several Thousand 3 and 4-yr. old, warranted true to sort, will be Sold Cheap.
THOS. MITTON, Lampton, near Hounslow, W.

WEBB'S PRIZE COB, FILBERT and other PRIZE NUT TREES. LIST of varieties and prices to be had of Mr. WEBB, Cale-st Gardens, Reading

MAGNIFICENT TRAINED CHERRIES, PLUMS, PEACHES, APPLES, PEACHES, NECTARINES, APRICOTS, &c. Special prices on application.
JOHN CRANSTON, Nurseries, King's Acre, near Hereford.

A DESCRIPTIVE CATALOGUE of FRUITS, by THOS. RIVERS, just published, free per post for six stamps.
Nurseries, Sawbridgeworth.

PYRAMIDAL APPLES and PEARS. — Extra size Trees for Fruiting, stout, well branched, and of handsome growth. Names and prices on application.
Also the GENERAL DESCRIPTIVE FRUIT CATALOGUE.
STEPHEN BROWN, Seed and Nursery Establishment, Sudbury, Suffolk.

Orchard-house Trees for Fruiting in Pots.

PEACHES, NECTARINES, APRICOTS, CHERRIES, PLUMS, PEARS, and APPLES.
WITTY & SON, The Nurseries, Cottingham, near Hull.

ACORNS (ENGLISH), fine sound Seed.
ASH, fine, 3 to 5 feet. | COMMON LAUREL, very fine.
Prices upon application.
WM. DILLISTONE, Munro Nursery, Sible Hedingham, Essex.

To the Trade.

SEEDLING LARCH, NATIVE SCOTCH and SPRUCE FIR, &c. An immense stock at moderate prices.
R. MORRISON, Elgin, N.B.

SEEDLING OAK, ASH, ELM, BEECH, BIRCH, SYCAMORE, FRUIT-TREE STOCKS, PORTUGAL LAUREL, QUICK, &c. A very large and fine stock very cheap.
R. MORRISON, Elgin, N.B.

To the Trade.

TWO-YEAR SEEDLING OAKS, 3s. 6d. per 1000.
1-year Seedling BERBERIS AQUIFOLIUM, 3s. per 1000.
CROCUS, YELLOW 1st rate, 6s. per 1000.
FRANK WARWICK, North Road Nursery, Sleaford, Lincoln.

WANTED, strong Transplanted ENGLISH OAKS, BEECH, and HORNBEAM, from 3 to 5 feet; also Common SWEET BRIARS, from 2½ to 3 feet.
Address, with price, to WM. WOOD & SON, Woodlands Nursery, Maresfield, near Uckfield, Sussex.

The best Evergreen Fence or Screen,
PRODUCING IMMEDIATE EFFECT.

JOHN CRANSTON can supply several Thousand AMERICAN ARBOR-VIT-E, 5, 6, to 8 feet in height, most desirable where an immediate Fence is required. Price on application
Nurseries, King's Acre, near Hereford.

Transplanted Larch.

JOHN CRANSTON offers splendid stout well-grown LARCH, 3, 4, 5, and 6 feet high. Price (which is very low) will be sent on application, also samples if desired.
Nurseries, King's Acre, near Hereford.

Larch, Larch, Larch.

WITTY AND SON offer 200,000 strong stout well-grown LARCH, 2½, 3, 4, 5, and 6 feet high, at low prices which will be sent on application.
The Nurseries, Cottingham, near Hull.

Strong Transplanted Quick.

WITTY AND SON have to offer strong QUICK, from 2½ to 4 feet high. Prices will be forwarded on application.
The Nurseries, Cottingham, near Hull.

TWO MILLION strong Transplanted QUICK; also stout HAZEL and HORNBEAM for Hedges. Prices on application to JOHN CATTELL, Westerham, Kent.

Strong Quick.

H. AND F. SHARPE have for Sale a fine Lot of 3-yr. Transplanted QUICK, 3 to 4 feet high, and well-rooted. Price very moderate.
Nursery and Seed Establishment, Wisbech.

Railway Planting.

FIVE MILLION Transplanted QUICKS, of superior growth. Samples and prices on application to JOHN HEMSLEY, High Fields, Melbourne, near Derby.

WANTED, strong Transplanted SCOTCH FIRS, PINUS AUSTRIACA, ENGLISH OAKS, BEECH, HORNBEAM, and SILVER FIRS, from 2 to 3 feet.
Address, stating lowest price and quantity, to WM. WOOD & SON, Woodlands Nursery, Maresfield, near Uckfield, Sussex

Contract Planting.—To Noblemen and Gentlemen.

CHARLES SHARPE AND CO., NURSERYMEN, Sleaford, Lincolnshire, are prepared to furnish ESTIMATES for the Formation of NEW PLANTATIONS by Contract, including Plants Planting, and Filling up for two years.

Splendid Grape Vines of all the finest varieties in cultivation.

WILLIAM BARNES begs to announce that he has [illegible] of the above to offer, both FRUITING and PLANTING CANES, of very strong short-jointed, well-ripened wood, and will produce a fine crop of fruit next spring.

[illegible] W. B. has had for Grape Vines these several years [illegible] when [illegible] cultivation, which has produced upwards of 200 Fruiting Plants, that cannot be surpassed [illegible].

In addition to these W. B. has many hundreds of fine Plants to offer, grown by his usual means.

Sorts and Prices can be obtained on application.

Camden Nursery, Camberwell, S.

Keele Hall Beurre Pear.

WILLIAM GEORGE CALDWELL begs to intimate that he has a fine stock of healthy Plants of the above PEAR described in the *Gardeners' Chronicle* of December 17, 1864, page 1201, which he has procured direct from Mr. Hill, Gardener, Keele Hall. Strong Plants, 7s. 6d. each; seconds, 5s. each.

Knutsford Nurseries.

W. VIEGO AND SON have a large Stock of the undermentioned FRUIT, FOREST, and other TREES to offer this season, viz.:—

Apples	Alder	Withy
Cherries	Ash	Quick, strong trans-
Plums	Chestnut (Spanish)	planted
Pears	Birch	Common and Portu-
Peaches and Nectarines	Hazel	gal Laurels
Forest Trees	Larches, Scotch Fir	Privet
	Oak, English	Roses, &c.

Samples and Prices can be had on application at The Nursery, [illegible], Surrey.

Orchard-house Trees for Planting-out in Orchard Houses.

APRICOTS.—Half Standards and Standards; fine bearing trees, from pots; average price 5s. each. Trees of extra size, 7s. 6d. each.

PEACHES and NECTARINES.—Half Standards and Standards, bearing trees, from pots; average price 5s. each. Trees of extra size, 7s. 6d. each. The above will bear a full crop next season, having been grown in [illegible].

ORCHARD HOUSE TREES for POT CULTURE.

APRICOTS.—Pyramids and bushes, bearing trees, from pots; average price, 3s. 6d. each.

PEACHES and NECTARINES.—Pyramids and bushes, bearing trees, from pots, average price, [illegible] each.

PEARS, PLUMS, and CHERRIES.—Pyramids, bearing trees, from pots, average price, 3s. 6d. each.

APPLES.—Pyramids, [illegible] trees, 2s. 6d. each.

Carriage paid to London.

Thos. Rivers & Son, Nurseries, Sawbridgeworth.

STRONG and EXTRA STRONG FRUITING VINES.—Upwards of [illegible] Canes, including all the leading varieties, with [illegible] Canes, many of which, if fruited in pots, will produce from 12 to 16 bunches of Grapes next season. Prices, &c., on application.

James Dickson & Sons, "Newton" Nurseries, Chester.

MAGNIFICENT PYRAMID FRUIT TREES.—Fine-grown Bearing Trees of PEARS on Quince Stock; APPLES on Paradise; CHERRIES on Mahaleb; PLUMS, &c. Special quotations [illegible].

John Cranston, Nurseries, King's Acre, near Hereford.

WALL-TRAINED TREES of BEARING SIZE.—Our Wall-Trained Fruit Trees this season are very fine, and include PEACHES, NECTARINES, APRICOTS, and FIGS, suited for planting in houses for immediate Fruiting. An inspection is respectfully invited.

T. Jackson & Son, Nurseries, Kingston, Surrey.

FRUIT TREES.—The finest collection in England. [illegible] sorts are grown in [illegible] of training, and are free from insects, [illegible]. A 92-page CATALOGUE and large Supplement full of information gratis, [illegible] J. Scott, The Nurseries, Merriott, Somerset.

A Quarter of a Million of Fruit Trees.

THOMAS WARNER begs to remind intending Planters and the Trade, that his Nurseries, which occupy upwards of 70 acres, contain the above, in addition to a most extensive stock of Evergreens, Ornamental Trees, Roses, &c. All in a healthy state of cultivation. An inspection is respectfully invited.

CATALOGUES, Wholesale or Retail, may be had free on application.

The Nurseries, Leicester Abbey, one mile and a half from the Midland Railway Station.

Fruit Trees, Roses, Evergreens, &c.

W. KNIGHT begs to inform intending Planters that he has many Thousands of the above, with every other ORNAMENTAL TREE and SHRUB, in the finest possible condition, at reasonable prices. An inspection is respectfully invited. DESCRIPTIVE PRICED CATALOGUES free.

The Nursery is within two minutes' walk of the Hailsham Station (South Coast Railway).

Floral Nursery, Hailsham, Sussex.

Roses, Fruit Trees, Conifers, Forest Trees, &c.

JOHN CRANSTON begs to direct attention to his large and superior Stock of ROSES, FRUIT TREES, CONIFERS, FOREST and ORNAMENTAL TREES, &c.

His Nurseries extend over upwards of 50 Acres, situated in the centre of the county of Hereford (which is acknowledged to possess the finest soil and climate for the growth of Fruit and Forest Trees of any other county in England), and is well stocked with Trees of every description.

DESCRIPTIVE PRICED CATALOGUES will be forwarded on application, and to Purchasers of large quantities Special and most advantageous Prices will be given.

Planting undertaken by Contract or otherwise.

Nurseries, King's Acre, near Hereford.

To Gentlemen and Others about to Plant.

THOMAS SAMPSON begs to call attention to his extensive stock of EVERGREENS and SHRUBS, ORNAMENTAL TREES, FRUIT and FOREST TREES of every description, ROSES, FLOWERS, &c. CHRYSANTHEMUMS in 100 varieties, CEDRUS DEODARA from 1 to 15 feet, THUJA AUREA in fine specimens. All [illegible] are offered at very low prices.

The Nurseries, Preston Road, Yeovil, Somersetshire.

Planting Season

LARCH (Native and Tyrolese), SCOTCH FIR (True Native), SPRUCE, OAK, ASH, ALDER, BEECH, PRIVET, and all kinds of FOREST and ORNAMENTAL TREES and SHRUBS, ROSES, FRUIT TREES, fine specimen ARAUCARIAS and DEODARS, and large TREES for Park Planting, now in fine condition for removal.

CATALOGUES, with sizes and prices, sent free on application to Dicksons & Co., Nurserymen, Seedsmen, and Florists, 1, Waterloo Place, Edinburgh.

Special Offer of Larch and Scotch Fir Plants.

TO BE DISPOSED OF, about 200,000 LARCH and SCOTCH FIR, planted as 1-year Seedlings in the Spring of 1863, have not since been removed, and are now from 2 to 4 feet above ground, [illegible] to

Mr. J. Woods, Forester, Rufford, near Ollerton, Notts.

LAURELS FOR SALE.—Several thousands of well-grown and [illegible] Plants from 2 to 4 feet high, [illegible] at 30s. per 1000. [illegible] the Trade. Orders to be made payable at the [illegible].

Apply to Mr. John Jervis, Old Wardour Castle, Salisbury.

Forest Trees, &c., at the Nurseries of

JOSEPH ROBSON AND SON, Bank Foot, Hexham, Northumberland.

Twice Transplanted LARCH, 15 to 18 inches, 7s. per 1000.

2-yr. Transplanted LARCH, 1½ to 2 feet, at 8s. per 1000.

Four-years Transplanted LARCH, 2½ to 3 ft., 9s. per 1000.

3-yr. Transplanted LARCH, 3 to 4 feet, 10s. per 1000.

LISTS of other TREES sent on application.

A [illegible] remittance.

JAMES SHEPPARD has a large Stock to offer of
COMMON LAURELS, from 1 to 5 feet
LIGUSTRUM OVALIFOLIUM, 1 to 5 feet
SIBERIAN ARBOR-VITÆ, 5 feet, fine specimens
AMERICAN „ 8 feet „
COMMON PRIVET, 1 to 4 feet

Prices on application.

The Nurseries, Bedford.

Araucaria imbricata.—Surplus Stock.

WILLIAM SKIRVING, Walton Nursery, Liverpool, begs to offer 10,000 of the above, from 2 to 4 feet high, healthy well-grown plants with good roots.

2 feet, 18s. per dozen; £6 10s. per 100.
3 feet, 24s. per dozen; £8 15s. per 100.
4 feet, 40s. per dozen; £12 10s. per 100.
Less per 1000.

To the Trade.

W. POWER, NURSERYMAN, Waterford, offers on reasonable terms:—

500,000 LARCH, 1½ to 2 feet	5,000 WALNUTS, 10 to 14 ins.
100,000 LARCH, 2 to 3 feet	200,000 HOLLY, 1-yr. Seedlings
20,000 LARCH, 4 to 6 feet	30,000 ASPARAGUS, 3-yr.
20,000 ALDER, 5 to 7 feet	20,000 SEA KALE, 1-yr.
10,000 HAZEL, 4 to 5 feet	Prices on application.

North Road Nursery, Sleaford, Lincoln.

FRANK WARWICK begs to call the attention of Noblemen, Gentlemen, and others to his Stock of the following Prices on application.

LARCH, 1½ to 2, 2 to 3, 3 to 5 feet	BERBERIS AQUIFOLIUM,
SPRUCE, 1 to 1½, 2 to 2½ feet	1 to 1½, 1½ to 2 feet
SCOTCH, 1½ to 2, 2½ to [illegible] feet	BEECH, 2, 3, 3 to 4 feet
BLACK THORN, 2 to 2½ feet	PRIVET, 1½ to 2, 2 to 2½, 2½ to 3 ft.

LISTS of other NURSERY STOCK on application.

Irish Yews, Hollies, and Privet.

W. WRIGHT, East Retford, Nottinghamshire, begs to offer:—

IRISH YEWS, 6 to 9 inches, 7s. 6d. per 100	IRISH YEWS, 2½ to 3 ft., 30s. per 100
„ 9 to 12 inches, 8s. per 100	„ 3 to 4 feet, 50s. per 100
„ 1 to 1½ foot, 12s. 6d. per 100	„ 6 to 8 ft., in fine specimens, from 15s. per dozen to
„ 2 to 2½ feet, 20s. per 100	3s. 6d. and 5s. each

HOLLIES, fine plants, removed last year, 2 to 3 ft., 25s. to 35s. per 100.

PRIVET (Evergreen), 6 to 9 ins., 3s. per 100	PRIVET, 9 to 12 ins., 4s. per 1000
	„ 2 to 2½ feet, 15s. per 1000

CATALOGUES of TREES, SHRUBS, &c., on application on Terms Cash, or references from unknown correspondents.

CHARLES NOBLE has a large quantity to offer of the undermentioned, by the dozen, 100, 1000, or 10,000:—

Dwarf ROSES of all the finest kinds, large bushes, 2 to 3 feet high, and [illegible].

SPANISH CHESTNUTS, very fine, 1-year.
THORN, very fine, 1-year
TURKEY OAK, very fine, 1-year
MANETTI ROSE STOCKS, very fine, 1-year
DEUTZIA CRENATA flore pleno, very fine, 1-year
} sample and price if required.

STRAWBERRIES, 2s. 6d. per 100, or 21s. per 1000:—

British Queen	Frogmore Late Pine	Oscar	
Empress Eugénie	La Constante	Wonderful	
Sir C. Napier	Marguerite	Prince Arthur.	

Sunningdale Nursery, Bagshot, Surrey.

Northampton Nurseries.

JOHN PERKINS, SENIOR, begs to call the attention of Noblemen, Gentlemen, and others engaged in Planting, to his Large Stock of the following:—2,000,000 BLACK THORNS, for Covert Planting, 1½ to 2, 2 to 3 feet; 2,000,000 LARCH FIRS, 3 to 4, 4 to 5 feet; 1,000,000 SPRUCE FIRS, 1½ to 2, 2½ to 3, 3 to 4 feet; 2,000,000 WHITE THORN QUICK, 2 and 3 Years' Transplanted. Also large quantities of

Pinus austriaca, 2 to 3 feet	Hornbeam, 2 to 4 feet
Berberis Aquifolium, 1½ to 2 feet	Oaks, English, 3 to 4 feet
Ditto dulcis, 2 to 3 feet	Ditto, Turkey, 4 to 6 feet
Green Box, 1½ to 2 feet	Elms, English, 6 to 8, 8 to 10 ft.
Laurels, 2 to 3 feet	Do., Huntingdon, 6 to 8, 8 to 10 ft.
Portugal Laurels, 1½ to 2 feet	Chestnuts, Spanish, 1½ to 2 feet
Ditto ditto 2 to 3 feet	Ditto Horse, 4 to 6, 6 to 8 ft.
Evergreen Privets, 2 to 3 feet	Sycamore, 3 to 4 feet
Birch, 3 to 4 feet	Beech, 3 to 4 feet
	Cedrus Deodara, 5 to 6, 6 to 8 ft.

J. P.'s stock of all kinds of Fruit, Forest, Ornamental Trees, &c., is very extensive, and this season remarkably fine, and in excellent condition for removal, having been frequently transplanted.

J. P. having such an immense quantity of Black Thorns, Larch, and Spruce Firs, will be pleased to make a special offer where large quantities are required. An inspection of the above is respectfully solicited.

DESCRIPTIVE PRICED CATALOGUES sent post free on application. 152, Market Square, Northampton.

IMPORTANT to the TRADE and INTENDING PLANTERS.

4,000,000 1-yr. Larch	200,000 2-yr. English Oak
100,000 2-yr. Seedling do.	20,000 2-yr. Evergreen do.
200,000 1-yr. Transplanted do.	100,000 2-yr. Beech
1,500,000 2-yr. Scotch Fir	100,000 2-yr. Horse Chestnut
500,000 1-yr. Transplanted do.	1,500,000 2-yr. Elms
100,000 2-yr. Transplanted do.	500,000 1-yr. Ash
1,000,000 2-yr. Spruce Fir	100,000 3-yr. do.
400,000 [illegible] do.	60,000 1-yr. Spanish Hazel
50,000 1-yr. Pinus austriaca	50,000 1-yr. Acacia
200,000 1-yr. Pinus Laricio	100,000 1-yr. Common Broom
50,000 1-yr. Pinus Weymouth	70,000 1-yr. Scotch Laburnum
100,000 2-yr. Silver Fir	40,000 1-yr. Cyprus (upright and horizontalis)
50,000 2-yr. Balm of Gilead	50,000 2-yr. Chinese Arbor-vitæ
100,000 1-yr. Alder	20,000 2-yr. American do.
[illegible] 2-yr. Seedling do.	4,000,000 1-yr. Thorn Quick
[illegible] 1-yr. Transplanted do.	100,000 1-yr. Laurel
400,000 1-yr. Sallow	20,000 2-yr. do.
100,000 2-yr. do.	

The Nurseries are well stocked with FOREST TREES. PRICE LISTS ready, which will be forwarded on application to Mr. [illegible], Drumlargan and Garradice Nurseries, Summerhill, Co. Meath, Ireland.

ANDREW G. DALY, Newry, Ireland, will Sell Cheaply to the Trade:—

200,000 strong Bedded and Transplanted LAURELS
60,000 strong 3-years' ditto ditto
10,000 strong Transplanted MAHONIA AQUIFOLIA
100,000 strong 1-year Bedded ditto ditto
500,000 good well grown 1 years' Seedling ditto
10,000 3 to 4 feet SCOTCH FIR (seed from Scotland), removed last year
100,000 fine 2-years' old 1 year bedded BERBERIS DARWINII
200,000 2 and 3 Seedling [illegible] ditto
20,000 small hardy LAURUSTINUS, from layers
2,000 strong Finished [illegible] ditto
10,000 [illegible] MANETTI STOCKS
[illegible] ROSE STOCKS, 5 years old
20,000 2-years Transplanted THORN QUICKS
1,000,000 strong well-grown 1-year Seedling ditto
1,000 [illegible] IRISH YEWS trained to one stem, 5 to [illegible] variety
20,000 small IRISH YEWS, in different sizes and heights
[illegible] WELLINGTONIAS, hardy, 3 to 4 ft. through, grown in debris of granite

The Nurseries are [illegible] well-furnished Saleable Stock of AMERICAN PLANTS, CONIFERÆ, SHRUBS, and FOREST TREES, and his Six Greenhouses are replete with all the London and Continental Novelties in Greenhouse Plants, &c.

The above will be offered at low prices to the Trade on application, and, if agreed on, delivered free in Liverpool or Glasgow.

FORTY THOUSAND COMMON LAURELS, all sizes from 1 to 4 feet.
Wm. Wood & Son, Woodlands Nursery, Maresfield, Uckfield, Sussex.

THIRTY THOUSAND Dwarf-trained FRUIT TREES in the finest health and vigour.
Wm. Wood & Son, Maresfield, Uckfield, Sussex.

TEN THOUSAND LAURUSTINUS, well grown, hands me and bushy
Wm. Wood & Son, Maresfield, Uckfield, Sussex.

SEVERAL ACRES of extra large well-grown ORNAMENTAL TREES for park planting and immediate effect. Wm. Wood & Son, Maresfield, Uckfield, Sussex.

STANDARD, HALF-STANDARD and DWARF ROSES, by the 100, 1000, and dozen.
Wm. Wood & Son, Maresfield, near Uckfield, Sussex.

MANY ACRES of STANDARD, HALF-STANDARD, DWARF, PYRAMIDAL, and TRAINED FRUIT TREES, consisting of Apples, Pears, Plums, Peaches, Nectarines, Apricots, Cherries, &c. Wm. Wood & Son, Maresfield, Sussex.

SEVERAL ACRES of well-grown EVERGREEN and DECIDUOUS SHRUBS, AMERICAN PLANTS, CONIFERÆ, and ORNAMENTAL TREES. For CATALOGUES apply to Wm. Wood & Son, Woodlands Nursery, Maresfield, near Uckfield, Sussex.

ROSES.—NEW CATALOGUE just published and sent post free on application to
Wm. Wood & Son, Maresfield, Uckfield, Sussex.

SEEDLING and TRANSPLANTED FOREST TREES of all sorts, including every large stock of strong Transplanted LARCH, SCOTCH and SPRUCE FIRS, SILVER FIR, and all sorts of Hard Wood. PRICE LIST on application.
Through rates to all parts of the kingdom.
R. Morrison, Elgin, N.B.

To the Trade.

WINTER and SPRING-FLOWERING PLANTS.—Our stock of Soft-wooded ERICAS, EPACRIS, AZALEAS, and New Holland Plants is extra fine this year, and being much greater than we can house, we are selling at unusually low prices.

T. Jackson & Son, Nurseries, Kingston, Surrey (adjoining the Railway Station), S.W.

To Gentlemen Planting.

G. FROST begs to offer large quantities of fine Transplanted LARCH, 1 to 3 feet; SPRUCE, 1 to 2 feet; SCOTCH, 1 to 2 feet; SYCAMORE, 1 to 3 feet; LAUREL, 1 to 4 feet, and 500,000 BEECH for Hedges, also an immense stock of 1 and 2-year ENGLISH OAK, 1-year TURKEY do., 1-year EVERGREEN do., 1-year SPANISH CHESTNUT, 1-year HORSE CHESTNUT, 1-year QUICK, 2-year SCOTCH, SPRUCE, BEECH, and APPLES.

LIST of NURSERY STOCK on application.

Nurseries, Bampton, Devon.

TO THE TRADE.

500,000 2-yr. Transplanted QUICKS, 1 to 3½ feet.
200,000 1-yr. Seedling QUICKS, 6 to 12 inches.
20,000 2-yr. CRAB STOCKS, 2 to 3½ feet.
100,000 2 and 3 yr. Transplanted LARCH, 1 to 3½ feet.
5000 RED GRAPE and VICTORIA CURRANTS.
2000 Standard PEARS, 5 to 7 feet stems.

Prices and on [illegible] application to William Cooks, Old Nurseries, Dunnington, Seaming.

To Cultivators of Succulent Plants, &c.

T. COOPER, Holmsdale Road, Reigate, Surrey, has a large Collection of SUCCULENT PLANTS, &c., including about 450 varieties of CACTI, also ALOES, HAWORTHIAS, AGAVES, TESTUDINARIA ELEPHANTIPES, &c.; also a great many New Plants raised from African Seeds, many of which are very interesting. Orders [illegible].

Autumn Planting.

PETER LAWSON AND SON, at the present most suitable time for Transplanting CONIFEROUS and EVERGREEN TREES and SHRUBS, have to state that their stock of those is very large and in healthy condition.

Special offers for large quantities will be made on application.

Edinburgh and London.

New Weeping Elms.

ULMUS SUBEROSA PENDULA, 7s. 6d. each.
ULMUS SUBEROSA PENDULA MICROPHYLLA, 7s. 6d. each.

W. M. WOOD AND SON would particularly beg to solicit attention to the two above-named magnificent Weeping Elms, being varieties of Ulmus suberosa, which have been raised from seed in their Nurseries, and have been greatly admired.

The gracefully weeping branches of these new Elms are thickly covered with a cork-like excrescence, presenting a very interesting and novel appearance, entirely distinct from all other varieties in cultivation.

Woodlands Nursery, Maresfield, near Uckfield, Sussex.

Forest and Ornamental Trees, &c.

THOMAS KENNEDY AND CO., NURSERYMEN and SEEDSMEN, Dumfries, have this season a very large and superior Stock of FOREST, FRUIT and ORNAMENTAL TREES, DECIDUOUS and EVERGREEN SHRUBS, &c., adapted either for extensive Planting, or for giving immediate effect in the formation and improving of Ornamental Parks, Pleasure Grounds, &c., and which they are selling at extremely moderate prices. CATALOGUES furnished on application.

*** Dumfries is most conveniently situated for the speedy transmission of goods to all parts of the United Kingdom.

To Gentlemen engaged in Planting.

TOOLE AND CO. beg to call attention to their very extensive Stock of
EVERGREEN and FLOWERING SHRUBS,
HARDY ORNAMENTAL TREES,
FRUIT TREES, FOREST TREES, and CONIFERÆ.

Grown at their Nurseries, Cullenswood, Ranelagh Road, Dublin; and Windy Bray, and respectfully invite inspection of the same.

CATALOGUES of the above forwarded post free on application. The usual discount to the Trade.

Westmoreland Buildings, Dublin.

To Gentlemen and Others.

JOSEPH SMITH, JUN., has to offer One Million and a half Transplanted LARCH of all sizes up to 5 feet, very good. A large stock of RHODODENDRONS, ASH, ALDER, BEECH, BIRCH, CHESTNUTS, ELM, WYCH do., Narrow-leaved SILVER FIR, SCOTCH SPRUCE do., WHITE AMERICAN HAZEL, OAKS, POPLARS, PRIVET, PINUS AUSTRIACA and WEYMOUTH; QUICK, SYCAMORE, WILLOW, LAURELS, BERBERIS of sorts, &c. Price on application.

Moor Edge Nursery, Tansley, near Matlock, Derbyshire.

S. PONSFORD AND SON are prepared to offer the following well-grown NURSERY STOCK:—Fruit Trees in all forms; Standard and Dwarf Roses, Chinese Arborvitæs, 1 to 6 feet; Aucubas, Laurels, Variegated Hollies (fine), Ligustrum ovalifolium, MULBERRIES (above 200 well-grown of all sizes, special offers to the Trade), Azaleas and Camellias, well set with bloom; Hyacinths, Tulips, Crocuses, &c. CATALOGUES free.

Seed and Plant Department, Brixton Place; Nurseries: Loughborough Park, Brixton, Surrey, S.

CEDRUS DEODARA.—Fine Plants for immediate effect, from 5 to 6, 7, and 10 feet high, safe to transplant, at 1s. per foot. Some extra-sized specimens, 15 to 20 feet, at 2s. per foot. Most of the plants offered are in Large Pots, making their removal certain beyond a doubt.

Maule & Sons, The Nurseries, Bristol.

Wellingtonia aurea variegata.

R. HARTLAND begs to offer good Plants of this most beautiful Tree. 1st size, very choice, 8 to 12 inches, £5 5s.; 2d size, good, 5 to 7 inches, £3 3s. Received 1st class Certificate from Royal Horticultural Society; and for History of Parent Tree, see *Gardeners' Chronicle* of October 6, page 948.

CHROMOLITHOGRAPHS by Messrs. Day & Son, free by post for 25 stamps. The Lough Nurseries, Cork.

New Grass Seeds for Exportation.

SUTTON AND SONS have received their supply of NEW GRASS SEEDS of the present season's growth in fine condition, and will be happy to forward lowest price per ton or cwt. on application. CATALOGUES gratis and post free.

SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

SUTTON'S CHAMPION SWEDE.

Copy of a Letter received from Mr J. W. HALSE, Secretary of the Sidmouth, Sudbury, Salcombe Regis, and Branscombe Agricultural Association:—

"Sidmouth, October 26th, 1866.

"Gentlemen,—I am happy to inform you that at the Annual Meeting of the above Association, held at Sidmouth on the 23rd inst., the whole of the Prizes for Swede Turnips were awarded to your Champion Swedes, grown from seed supplied by you during the past season.—I am, Sir, yours respectfully,

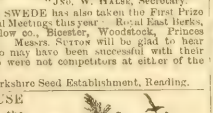
"To Messrs. Sutton & Sons." "JNO. W. HALSE, Secretary."

SUTTON'S CHAMPION SWEDE has also taken the First Prize at the following Agricultural Meetings this year:—Royal East Berks, Royal South Bucks, Carlow co., Bicester, Woodstock, Princes Risborough, and Kibworth. Messrs. Sutton will be glad to hear from other Customers who may have been successful with their Champion Swede, but who were not competitors at either of the above Meetings.

SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

COCOA-NUT REFUSE

is becoming scarce, the old reserves will soon be gone. Now sold in bags, 1 for 2s., 10 for 10s., 2 for 30s., 60 for 60s., 100 for £6.



Fourpence allowed for each bag returned carriage-paid.

A Railway Truck-load (not in bags), 40s.

Postage Stamps or Post-office Order, payable to J. BARSHAM & Co., Kingston-on-Thames, S.W.

SILVER SAND, Peat, Loam, Mould, Rotted Manure, Guano, Cocoa Nut Fibre, Grotto Material, Gravel, Turf, Edging Tiles, Pots, Sticks, Stakes, Gishurst Compound, Tobacco Paper, and other Garden requisites in any quantity at moderate prices. J. IVES'S, Carendon Nurseries, Camberwell New Road, S.

GISHURST COMPOUND, whether used against Insects and Mildew, on Growing Plants, or as Winter Dressing on Trees at rest, should be dissolved 48 hours before use. This gets rid of smell, and if the Solution be decanted, prevents any staining of foliage. A stronger Solution than 1 to 2 oz. to the gallon of water is recommended for growing Plants; one from 4 to 16 oz. for Trees at rest.

Sold Retail by Nurserymen and Seedsmen, in boxes, 1s. 3s., and 10s. 6d. each.

Red Spider. Magnified.

Wholesale by PRICE'S PATENT CANDLE COMPANY (LIMITED).

THE LONDON MANURE COMPANY
(ESTABLISHED 1840),

Have now ready for delivery in dry fine condition,
CORN MANURE, for Spring Use
DISSOLVED BONES, for Dressing Pasture Lands
SUPERPHOSPHATES OF LIME
FRUIT-GROWERS' GUANO
MANGEL and POTATO MANURES

Also Genuine PERUVIAN GUANO, and NITRATE of SODA ex Dock Warehouse; SULPHATE of AMMONIA, FISHERY SALT, &c. E. PURSER, Secretary.

Offices, 146, Fenchurch Street, E.C.

LAWES' MANURES.

The Manures manufactured by J. B. LAWES for the present season of 1866 are now ready for delivery at his Factories, at the following prices, per ton:—

	£ s. d.
LAWES' PATENT TURNIP MANURE, and BONE SUPERPHOSPHATE of LIME	6 6 0
LAWES' SUPERPHOSPHATE of LIME from BURNT BONE or MINERAL PHOSPHATES	5 5 0
LAWES' WHEAT, BARLEY, GRASS, and MANGEL MANURES	8 0 0
CONCENTRATED CORN and GRASS MANURE	12 0 0

These Manures can be obtained of Mr. LAWES, or through the appointed Agents in all parts of the United Kingdom, at prices varying according to cost of carriage.

Genuine Peruvian Guano direct from the Importers. Nitrate of Soda, Salphate of Ammonia, and other Chemical Manures.

American Refined Oils and Cakes, at market prices.

Address, JOHN BENNET LAWES, 1, Adelaide Place, London Bridge, E.C.; and 22, Eden Quay, Dublin.

Autumn Sowing.

ODAMS'S WHEAT MANURE,
ODAMS'S PREPARED PERUVIAN GUANO,

MANUFACTURED BY

THE PATENT NITRO-PHOSPHATE or BLOOD MANURE COMPANY (LIMITED).

Chief Offices—109, Fenchurch Street, London, E.C.
Western Counties Branch—Queen Street, Exeter.
Irish Branch—40, Westmoreland Street, Dublin.

Directors.

Chairman—John Caydon, Littlebury, Essex.
Deputy Chairman—Lord Claud Hamilton, Argyle House, Holloway.
Edward Bell, 48, Marine Parade, Brighton.
Richard Hunt, Stanstead Abbot, Herts.
Thomas Knight, Edmonton, Middlesex.
Robert Leeds, West Lexham, Norfolk.
George Savill, Ince Thorpe, near Stamford.
Samuel Jonas, Chrishall Grange, Essex.
Charles Norman, 23, Essex Street, Strand.
Thomas Webb, Hildersham, Cambridgeshire.
Jonas Webb, Milton Ross, Lincolnshire.

Managing Director—James Odams.

Bankers—Messrs. Barnetts, Hoares & Co.; Lombard Street.
Solicitors—Messrs. Kingsford & Dorman, 23, Essex Street, Strand.
Auditor—J. Carter Jonas, Cambridge.

This Company was originally formed by, and is under the direction of Agriculturists, circumstances that have lately varied for it another birth, viz:—"The Tenant Farmers' Manure Company"

Its Members are Cultivators of upwards of 50,000 Acres of Land, which has been for years under management with Manures of their own Manufacture. The Consumer therefore has the best guarantee for the genuineness and efficacy of the Manures Manufactured by this Company.

A Prospectus will be forwarded on application to the Secretary, or may be had of the Local Agents. C. T. MACADAM, Secretary.

Chief Offices—109, Fenchurch Street, London, E.C.

Fumigate your Greenhouse with

TOBACCINE.

Will Destroy all the Insects and not Injure the Plants

Price 3s. 6d. per lb., carriage free, to be had of Messrs. ROBERTS & SONS, Tobacco Manufacturers, 54, St. John Street, Clerkenwell, E.C., and of all Seedsmen and Nurserymen.

Destroy your Insects Pests.

PRESERVE YOUR PLANTS and TREES.

You MAY EASILY DO SO by using ALL PLANT PASTE,

RED SPIDER	GREEN AND BLACK	ANTS
MEALY BUG	FLY	SCALE
THRIP	AMERICAN BLIGHT	MILDEW,

Without injury to the most delicate Plant or Tree, by using FOWLER'S GARDENERS' INSECTICIDE, pronounced by all who have used it to be far superior to any other remedy. One trial will prove its efficacy. Testimonials forwarded on application. In Tins, 6d., 2s., 5s. 6d., and 9s. per Tin.

GEO. & THOMAS FOWLER, North Street, Brighton; and of HOOPER & Co., Covent Garden Market, W.C.

Wheat Sowing.

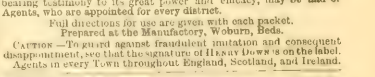
DOWN'S FARMERS' FRIEND, for preventing the Smut in Wheat, and the Ravages of the Slug, Grub, and Wireworm. A 9d. packet is sufficient for Six Bushels of Seed Wheat, which can be dressed and fit to sow in a quarter of an hour.

Testimonials from the largest Wheat Growers in the Kingdom, bearing testimony to its great power and efficacy, may be had of Agents, who are appointed for every district.

Full directions for use are given with each packet.

Prepared at the Manufactory, Woburn, Beds.

CAUTION.—To guard against fraudulent imitation and consequent disappointment, see that the signature of HENRY DOWN is on the label. Agents in every Town throughout England, Scotland, and Ireland.



GARDEN BORDER EDGING TILES, in great variety of patterns and material, the planer sorts being especially suited for KITCHEN GARDENS, as they harbour no Slugs and Insects, take up little room, and once put down incur no further labour and expense, as they require no "turning." Edgings, consequently being much cheaper.

GARDEN VASES, FOUNTAINS, &c., in Artificial Stone, of great durability, and in great variety of design.

F. & G. ROSHER, Manufacturers, Upper Ground Street, Blackfriars, S.; Queen's Road West, Chelsea, S.W.; Kingsland Road, Kingsland, N.E.

Sole London Agents for FOWLER'S PATENT GARDEN WALL BRICKS. Illustrated Price Lists free by post. The Trade supplied.

ORNAMENTAL PAVING TILES for Conservatories, Halls, Corridors, Balconies, &c., as cheap and durable as Stone, in blue, red, and buff colours, and capable of forming a variety of designs.

Also TESSELATED PAVEMENTS of more enriched design than the above.

WHITE GLAZED TILES, for Lining Walls of Dairies, Larders, Kitchen Ranges, Baths, &c., Grooved and other Stable Paving Bricks of great durability, Dutch and Adamantine Clinkers, Wall Copings, Red and Stoneware Drain Pipes, Slates, Cements, &c.

To be obtained of F. & G. ROSHER, at their Premises as above.

SILVER SAND (REIGATE, best quality), at the above 3/- addresses—14s. per Ton, or 1s. 3d. per Bushel; 2s. per Ton extra for delivery within three miles, and to any London Railway or Wharf. Quantities of 4 Tons, 1s. per Ton less.

FLINTS, BRICK BURRS or CLINKERS, for Rockeries or Grotto Work. F. & G. ROSHER. Address—see above.

NB Orders promptly executed by Railway.

JAMES PHILLIPS AND CO.

beg to submit their prices as follows:—

GLASS for ORCHARD HOUSES.

As supplied by them to Mr. Rivers, to the Royal Horticultural Society, and to most of the Nobility, Clergy, and Gentlemen of the United Kingdom.

Each Box contains 100 feet. The prices only apply to the sizes stated.

Squares 20 by 12, 20 by 13, 20 by 14, 20 by 15.

	10 oz. to the foot.	21 oz.
Fourth quality	15s. 0d.	19s. 6d.
Third ditto	17s 0d.	22s. 6d.
Seconds	18s. 6d.	26s. 0d.
English	20s. 0d.	27s. 0d.

The above prices include the boxes, which are not returnable.

Stock size, 16-oz., in 100 feet boxes, boxes included.

These prices only apply to the sizes stated.

			4ths.	3rds.	2nds.
			s. d.	s. d.	s. d.
11 by 9	12 by 9	13 by 9	14 by 9	13 6	15 6	17 0
12 „ 10	13 „ 10	14 „ 10	15 „ 10			
13 „ 11	14 „ 11	..	..			
14 „ 12	15 „ 12	15 „ 11	16 „ 11			
15 „ 13	19 „ 12	16 „ 12	17 „ 12			
16 „ 13	17 „ 13	20 „ 12	..	15 0	17 0	18 6
16 „ 14	20 „ 13	18 „ 13	..	16 to 17 oz. to the foot.		
	17 „ 14	18 „ 14	..			
	20 „ 14	..	..			

SMALL SHEET SQUARES.

In 100 feet Boxes.

6 by 4	6½ by 4½	7 by 5	7½ by 5½	.. 12s. 6d.
8 by 6	8½ by 6½	9 by 7	9½ by 7½	
		10 by 8	10½ by 8½	.. 13s. 6d.

Boxes 2s. each, returnable at full price.

London Agents for HARTLEY'S IMPROVED PATENT ROUGH PLATE.

LINSEED OIL, Genuine WHITE LEAD, CARSON'S PAINTS, PAINTS of various colours, ground ready for use.

SHEET and ROUGH PLATE GLASS, SLATES of all sizes, BRITISH PLATE, PATENT PLATE, ROLLED PLATE, CROWN, SHEET, HORTICULTURAL, ORNAMENTAL, COLOURED, and every description of GLASS, of the best Manufacture, at the lowest terms. Lists of prices and estimates forwarded on application to JAMES PHILLIPS & Co., 180, Bishopsgate Street Without, E.C.

George Hall, late Manager to the late Saynor's Firm.

HE WAS FOR 20 YEARS WITH THEM.—Portrait.

GEO. HALL AND SON'S Celebrated PRUNING and BUDDING KNIVES, &c., may be obtained from the most respectable Nurserymen and Seed Merchants in the kingdom; also America, France, Germany, Holland, Russia, &c.

NB When only make one quality, the best that can be manufactured, regardless of expense, the same as the late Saynors always made during their lifetime, and all the latest improvements.

Horticultural Cutlery Works, Sheffield.

E. T. ARCHER'S "FRIGI DOMO."

E. Patronised by Her Majesty The Queen, the Duke of Northumberland for Syon House, His Grace the Duke of Devonshire for Chiswick Gardens, Professor Lindley for the Horticultural Society, Sir Joseph Paxton for the Crystal Palace, Royal Zoological Society, &c.

PROTECTION from the SCORCHING RAYS of the SUN.

"FRIGI DOMO." a Canvas made of Patent prepared Hair and Wool, a perfect Non-conductor of Heat and Cold, keeping, wherever it is applied, a fixed temperature. It is adapted for all Horticultural and Floricultural purposes, for Preserving Fruits and Flowers from the Scorching Rays of the Sun, from Wind, Attacks of Insects, and from Morning Frosts. To be had in any required lengths.

Two yards wide	1s. 9d. per yard run.
Four yards wide	3s. 6d. per yard.
An improved make, 2 yards wide	1s. 8d. per yard.
An improved make, 3 yards wide	2s. 8d. per yard run. Also

FRIGI DOMO" NETTING, 2 yards wide, 1s. 6d. per yard run.

ELISHA THOMAS ARCHER, Whole and Sole Manufacturer, 7, Great Trinity Lane, Cannon Street, City, E.C., and of all Nurserymen and Seedsmen throughout the Kingdom.

"It is much cheaper than Mats as a coverng."

ROSES, FRUIT TREES, EVERGREENS, &c.

PAUL & SON,

THE OLD CHESHUNT NURSERIES, CHESHUNT, N.,

HAVE NOW READY THEIR

DESCRIPTIVE PRICED LISTS OF

ROSES, FRUIT TREES, BRIEF LIST of EVERGREEN and DECIDUOUS SHRUBS and TREES, BULBS, &c.

Also to the Trade, SPECIAL WHOLESALE LIST for 1866.

ROSES, VINES, FRUIT TREES (Standards, Pyramids, and Trained), LAURELS and CONIFERÆ. in special quantities. Orders are solicited for

PAUL'S NEW DOUBLE THORN, C. OX. COCCINEA PLENA.

AWARDS.—First-class Certificates Royal Botanic Society and International Exhibition.

"Deep carmine red, double and vigorous, far surpassing old Double Pink."—See EDITORIAL, *Gardeners' Chronicle*, May 24, 1866.

Standards or Pyramids, 10s. 6d. each.

☞ *Usual discount to the Trade when three are taken.*

AMBROISE VERSCHAFFELT, NURSERYMAN,

GHENT, BELGIUM,

OFFERS THE FOLLOWING NEW PLANTS.

GREENHOUSE.

AZALEA INDICA CRYSTALLINA.—Bright rose salmon colour, finely spotted, very fine form and free bloomer, 12s.

CAMELLIA MRS. DOMBRAIN (figured in the "Illustration Horticole")—Beautiful rose, extremely tender, and one of the finest imbricated forms, 12s.

NEW AUTUMNAL CHRYSANTHEMUMS (published in the "Illustration Horticole")—Seven beautiful varieties; the set, 10s.

HARDY.

ALNUS AUREA (the Golden Alder Tree).—This will be one of the finest Trees. It is the common Alnus, with splendid golden leaves, 8s.

PEAR BEURRÉ DE FROMENTEL (figured in the "Illustration Horticole")—One of the best Pears sent out, 8s. This fine Pear obtained several Prizes.

RHODODENDRON ARCHIDUC ETIENNE (lately figured in the "Illustration Horticole")—Beautiful white flowers, with numerous black spots. Good plants, 12s; strong plants, £1.

HARDY.

RHODODENDRON EXQUISITUM.—Light rose, with large red spots, very fine, 8s.

RHODODENDRON GRATIOSUM.—Lilac rose, very delicate, with large spots, very fine, 8s.

RHODODENDRON MADAME RUDOLPH ABEL.—Great improvement on Rhododendron Prince Camille de Rohan; spots more distinct, very remarkable, 8s.

TEA ROSE ISABELLE SPRUNT (lately figured in the "Illustration Horticole").—One of the best Tea Roses sent out, 8s.

WEIGELA PURPURATA.—One of the most distinct varieties obtained; the blooms are large purplish red, and of much effect, 4s.

GYNERIUM ARGENTEUM FOLIIS VARIEGATIS.—I beg to offer the well-rooted, young plants, grown in pots, of this beautiful true variegated Gynerium, which is the good variety sent out by Mr. Bendatler. Good plants, 5s. 6d.; six plants, £2.

The NEW GENERAL CATALOGUE, No. 79, is ready, and may be obtained free by writing to AMBROISE VERSCHAFFELT, Ghent, Belgium. A Coloured Drawing of the New Tea Rose Isabelle Sprunt may be also obtained free.

AMBROISE VERSCHAFFELT recommends his Monthly Publication, the "ILLUSTRATION HORTICOLE." Each Number contains Three Coloured Plates of the best and newest plants. Price 14s. 6d. a year, free. A Specimen Number may be obtained free.

Wholesale Catalogue of Nursery Stock.

GEORGE JACKMAN AND SON'S PRICED and DESCRIPTIVE CATALOGUE for 1866 and spring 1867, can be had free on application, comprising Fruit Trees, Roses, American Plants, Conifers, Clematises, Evergreen and Deciduous Trees and Shrubs, and transplanted Forest Trees, &c., &c.
Woking Nursery, Surrey.

British Fern Catalogue.

ROBERT SIM can now send, post free for six postage stamps, Part I. (British Ferns and their varieties, 36 pages, including prices of Hardy Exotic Ferns) of his NEW and PRICED DESCRIPTIVE CATALOGUE of BRITISH and EXOTIC FERNS, No. 7.
Fern's Cray Nursery, S.E., a mile from Sidcup Station of New North Kent Line of South Eastern Railway.

RAYNBIRD, CALDECOTT, BAWTREE, DOWLING, AND COMPANY, Limited,
CORN, SEED, MANURE, AND CHEMICAL MERCHANTS,
Address, 89, Seed Market, Mark Lane, E.C.; or Basingstoke.
Samples and Prices Post free on application. Prize Medals, 1851 for Wheat; 1862, for "Excellent Seed Corn and Seeds.

Climbing Devoniensis.

CLIMBING DEVONIENSIS.—This beautiful Rose having obtained a First-class Certificate at the Royal Horticultural Meeting, S. J. Pearce is induced to offer his fine plants of the above as grown by him for the last seven years, and thoroughly proved to be a distinct and most valuable climbing variety. Extra strong plants, on clean stems, each from 6 to 7 feet in length, 2s 6d each. Special offers to the Trade, when taken by the dozen or hundred.
Rose Cottage Nursery, Bathwick, Bath.

Seedling Hybrid Perpetual Roses.

Handsome, new, and distinct from any previously raised.
Honorable Mention of the Horticultural Society of the Royal Horticultural Society (see Minutes, Sept. 1866)

DUCHER, HORTICULTEUR, Chemin des Quatre-Maisons, Guillotiere, Lyon (Rhone).
54. ANTOINE DUCHER (D.).—Very vigorous; flowers erect, campaniform, full and very well shaped; bright red; finer and darker than Madame Domage; very good for forcing.
71. MADAME PUDLLE (D.).—Very vigorous; flowers medium size, globular, erect, and very well shaped; dark rose colour; blooms perpetually.
77. MARIELEINE NONIN (D.).—Vigorous; flowers medium size, detached, very full, and shaped like the Cabbage Rose; salmon pink, new colour; blooms perpetually.
43. M. PLANCHENON (D.).—Very vigorous; flowers erect, very large, globular, full, and very well shaped; dark carmine; blooms perpetually; very good for forcing.
39. VILLE DE LYON (D.).—Very vigorous; flowers erect, very large, globular, very full and well shaped; dark rose; excellent for forcing.
Price 25f. each. The five varieties for 100f.

NEW CATALOGUES for the SEASON of 1866 and 1867.
No. 1. ROSES.—A List of all the best varieties in cultivation, fully and faithfully described.
No. 2. FRUIT TREES.—A Descriptive List of all the choicest varieties of Fruits.
No. 3. CONIFERS, ORNAMENTAL TREES and SHRUBS.—Contains all varieties worthy of cultivation, with interesting notes of description, height, size, native country, &c.
No. 4. TRANSPLANTED FOREST TREES.—Plants for cover and underwood, &c.
No. 5. GARDEN and AGRICULTURAL SEED and ROOT CATALOGUE.
No. 6. GENERAL PLANT CATALOGUE.
The above will be forwarded free on application to
JOHN CRANSTON, King's Acre Nurseries, near Hereford.

Orchis maculata superba.

DREGHORN AND AITKEN, NURSERYMEN, Kilmarnock, N.B., can supply fine strong flowering Roots of this very beautiful hardy ORCHIS, at 3s. 6d. each; extra strong, 5s. D. & A. possess the largest stock in the Trade of this splendid Plant, and were the first to introduce it to the Public. They received a First-class Certificate for spikes exhibited by them at the Glasgow and West of Scotland Horticultural Society's Show in July last. The Roots now offered have been grown in the soil where it is indigenous.

Berried Aucubas for Winter Decoration.

MAULE and SONS offer nice bushy Plants, well set with from 40 to 50 Berries, at 21s. each, and upwards, according to the quality of fruit.
☞ The Berries sown in the Spring will furnish a large proportion of Males for Fertilising.
The Nurseries, Bristol.

Berried Aucubas, Berried Aucubas, Berried Aucubas.

ADOLPH STELZNER, Horticulturist, Ghent, Belgium, begs to offer in fine bushy plants AUCUBA JAPONICA, about 1 to 1½ foot high, 1½ to 2 feet through, with 20 to 50 berries, at 14s. to 21s. each; ditto, with 50 to 100 berries, 25s. to 42s. each; ditto with 100 to 200 berries, 42s. to 63s. each. Fine Specimens, 2 feet high, 3 feet through, with nearly 400 berries, at £6 each. Also fine HARDY and GREENHOUSE FERNS, in large quantities, and very cheap.

Amaryllis.

JAMES GARAWAY AND CO., Durdham Down Nurseries, Bristol, offer, from their unequalled stock of the above-named favourite flower, strong Bulbs of unnamed Seedlings and others that have bloomed with them during the two last seasons, at 5s., 7s. 6d., and 10s. 6d. each, or 60s., 80s., and 105s. per dozen.
JAMES GARAWAY & Co.'s GENERAL BULB CATALOGUE for the coming season is in the Press, and when ready will be forwarded post free on application.
JAMES GARAWAY & Co., Durdham Down Nurseries, Bristol.

New Double-flowered Amaryllis.

H. LAURENTIUS, Leipzig, begs to call attention to his NEW AMARYLLIS ALBERTI, double-flowered, fine and well shaped, bright scarlet and crimson-tinted, of which representations may be seen in the "Illustration Horticole," and the "Garten Magazin." Strong-flowered Bulbs, 12s.
His AUTUMN CATALOGUE (No. 35) is just out, and contains a full description of the above, together with PRICE LISTS of NOVELTIES, BULBS, and MALADIES of PLANTS, a large number of Plants at Trade prices. It can be had gratis on application (by prepaid letter) to him or to his Agents, Messrs. BETHAM & BLACKITH, Cox's Quay, Lower Thames Street, London, E.C.
The Horticultural Establishment of H. LAURENTIUS, Leipzig, Germany.

To Gentlemen about to Plant.

WILLIAM BARRON begs to offer the following valuable TREES and SHRUBS, of which he has a surplus stock, at very reduced rates, viz.:—

ABIES DOUGLASII, 18 in. to 2 ft., per 100, 75s.		
,,	,,	2 ft. to 3 ft., per 100, 100s.
,,	,,	3 ft. to 5 ft., each, 2s. 6d.
CRYPTOMERIA JAPONICA, 1 ft. to 2 ft., per 100, 20s.		
CUPRESSUS LAWSONIANA, 12 in. to 18 in., per 100, 25s.		
,,	,,	18 in. to 2 ft., per 100, 40s.
,,	,,	2 ft. to 3 ft., per 100, 60s.
,,	,,	4 ft., per dozen, 12s.
PICEA NOBILIS, 8 in. to 12 in., per dozen, 18s.		
,,	,,	2 ft. to 3 ft., per dozen, 15s.
THUJA MENZIESII or LOBBII, 18 in. to 2 ft., per 100, 40s.		
,,	,,	2 ft. to 4 ft., per 100, 100s.
,,	,,	4 ft. to 5 ft., per dozen, 36s.
,,	PYRAMIDALIS, 2 ft. to 3 ft., per 100, 42s.	
,,	SIBIRICA, 18 in. to 2 ft., per 100, 25s.	
WELLINGTONIA GIGANTEA, 4 in. to 9 in., per 100, 60s.		
,,	,,	9 in. to 15 in., per doz., 12s.
,,	,,	18 in. to 2 ft., per doz., 24s.
,,	,,	2 ft. to 3 ft., per doz., 42s.
BERBERIS DARWINII, 6 in. to 9 in., per 1000, 40s.		
COTONEASTER SIMMONDSII, 9 in. to 15 in., per 100, 20s.		
,,	,,	2 ft. to 3 ft., per 100, 60s.
DEUTZIA CRENATA FLORE PLENO, 9 in. to 12 in., p. 100, 40s		

Special Prices to the Trade on application.
Elvaston Nurseries, Borrowash, near Derby.

Dutch and other Bulbs.

B. S. WILLIAMS is now prepared to supply splendid roots of HYACINTHS, TULIPS, NARCISSUS, CROCUS, &c., &c. All the roots are selected with great care from the best growers in Holland.
A PRICED and DESCRIPTIVE LIST sent post free on application.
Victoria and Paradise Nurseries, Holloway, London, N.

Dutch Flower Roots.

FRANCIS & ARTHUR DICKSON & SONS have received, from the best Growers in Holland, a very large importation of the above, and have the satisfaction to say that the BULBS are unusually large, sound, and well ripened, and for which early orders are requested to ensure the best Roots.
Flower Roots of £2 value will be delivered free of carriage at the principal Railway Stations and Shipping Ports throughout the country.
DESCRIPTIVE PRICED CATALOGUE and all particulars free by post on application.
The Old Established Seed Warehouse, 106, Eastgate Street, Chester.

New Catalogue of Plants, Dutch Bulbs, &c.

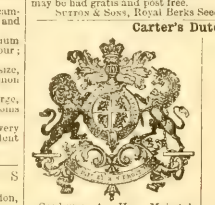
ROBERT PARKER begs to announce that his NEW CATALOGUE, containing Select Descriptive and Priced Lists of New, Rare, and beautiful Greenhouse, Hardy and Stove Plants, Hardy Ferns, Fruit Trees, Grape Vines, Roses, Rhododendrons, Sweet Violets, &c., Amaryllis, Cyclamens, Cyclamens, Gladioli, Hyacinths, Liliums, Narcissus, Tulips, and other Bulbs, is now published and will be forwarded to applicants.
Exotic Nursery, Tooting, Surrey, S.

Sutton's Unrivalled Collections of Bulbs.

Carriage Free.

SUTTON'S GUINEA COLLECTION of BULBS for BLOOMING in POTS and GLASSES.
SUTTON'S GUINEA COLLECTIONS for BEDS and BORDERS.
For particulars see SUTTON'S AUTUMN CATALOGUE, which may be had gratis and post free.
SUTTON & SONS, Royal Berks Seed Establishment, Reading.

Carter's Dutch Bulbs.

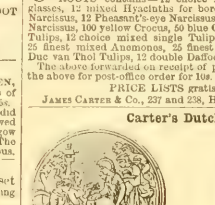


Seedsmen to Her Majesty's Chief Commissioners of Public Works and other Government Departments, the Royal Gardens, Kew, &c., &c., &c.

Seedsmen to H.I.M. the Emperor of the French, the Crystal Palace Company, the Agri-Horticultural Society of India, &c., &c., &c.

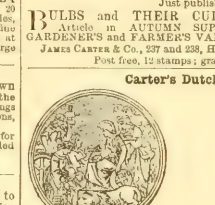
CARTER'S GUINEA BOX of DUTCH FLOWER ROOTS contains—12 choice named Hyacinths for pots or glasses, 12 mixed Hyacinths for borders, 4 varieties of Polyanthus Narcissus, 12 Peasmarsh's-eye Narcissus, 12 double white sweet-scented Narcissus, 100 yellow Crocus, 50 blue Crocus, 12 choice mixed double Tulips, 12 choice mixed single Tulips, 4 white Lilies, 50 Snowdrops, 25 finest mixed Anemones, 25 finest mixed Ranunculus, 12 double Duc van Thol Tulips, 12 double Daffodils, 4 Tiger Lilies.
The above forwarded on receipt of post-office order for 21s.; half the above for post-office order for 10s. 6d.
PRICE LISTS gratis and post free.
JAMES CARTER & Co., 237 and 238, High Holborn, London, W.C.

Carter's Dutch Bulbs.



Just published,
BULBS and THEIR CULTURE. See Original Article in AUTUMN SUPPLEMENT to CARTER'S GARDENER'S and FARMER'S VADE MECUM.
JAMES CARTER & Co., 237 and 238, High Holborn, London, W.C.
Post free, 12 stamps; gratis to Customers.

Carter's Dutch Bulbs.



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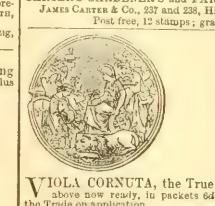
SPRING FLOWERS and SPRING GARDENING. See Original Article in AUTUMN SUPPLEMENT to CARTER'S GARDENER'S and FARMER'S VADE MECUM.
JAMES CARTER & Co., 237 and 238, High Holborn, London, W.C.
Post free, 12 stamps; gratis to Customers.



VIOLA CORNUTA, the True Stock.—New Seed of the above now ready, in packets 6d., 1s., 2s. 6d., and 5s. Price to the Trade on application.
JAMES CARTER & Co., Seed Merchants and Nurserymen, 237 & 238, High Holborn, London, W.C.

To the Trade.

FOR SALE, in consequence of the expiration of a Lease, a large quantity of STOOLS, surrounded with fine layers, of Mulberries, Limes, Planes, Magnolias, Azaleas, Lilacs, Aucubas, &c.; also quantities of various sized Limes, Mulberries, Poplars, Laburnums, Planes, Scarlet Thorns, Lilacs, Aucubas, Euonymus, Magnolias, White Rhododendrons, Althæas, Ivies, Figs, Grape Vines, fine standard and trained Fruit Trees of all sorts; 75 yards of clipped Beech hedge, 5 feet high, 3 feet wide, and other general Nursery Stock, which may be seen and selected from daily at J. FRYER'S, Clarendon Nurseries, Camberwell New Road, S.

American Plants, &c.

WATERER AND GODFREY'S PRICED and DESCRIPTIVE CATALOGUE of RHODODENDRONS and other American Plants for this Autumn, will be sent on application. The Catalogue also gives a summary of their General Nursery Stock, probably the most extensive in the kingdom.
Knap Hill Nursery, Woking, Surrey.

Rhododendrons.

JOHN WATERER'S DESCRIPTIVE CATALOGUE of HARDY SCARLET and other RHODODENDRONS is now published and will be forwarded on application. It faithfully describes the colours of the new varieties exhibited by him at the Royal Botanic Gardens, Regent's Park. An Abridged List of popular CONIFERS, with heights and prices, is likewise combined.
The American Nursery, Bagshot, Surrey, near Sunninghdale Station, South-Western Railway.

NEW HARDY RHODODENDRON, MICHAEL WATERER.—This Rhododendron has hitherto been exhibited under the name of ANNIHILATOR, but it will be sent out under the above name. It is undoubtedly the most brilliant-coloured late hardy free-blooming Rhododendron as yet offered.
Orders are now being taken for Plants to be sent out in the Autumn at 31s. 6d. each. The usual discount to the Trade.
JOHN WATERER, American Nursery, Bagshot, Surrey.

Winter Flowers.

RHODODENDRON PRÆCOX, the best of all Winter-blooming Plants, can now be supplied. Compact Bushes, with from 20 to 100 bloom buds, at 3s. 6d. to 7s. 6d. each, with usual discount to the Trade, by the Raiser,
ISAAC DAVIS, Larkfield Nursery, Wavertree, near Liverpool.

Rhododendron ciliatum and dauricum.

ISAAC DAVIES can supply beautiful Bushes of the above, with flower buds, suitable for potting; also, in pots, R. GIBSONII and DEUTZIA CRENATA FLORE PLENO. Prices for large quantities very low.
Larkfield Nursery, Wavertree, near Liverpool.

THE QUEEN, without any exception the best WHITE RHODODENDRON yet raised.—Robust grower, deep green foliage, late and free flowering, trusses large, full, compact, and semicircular, footstalk short and stiff, colour white suffused with soft blush mauve, changing to the purest white, clear alabaster or wax-like, of unequalled shape and substance, reminding one of the petals of the Water Lily. It remains in bloom longer than most other Rhododendrons, a peculiarity probably accounted for by its hitherto refusing to produce seed, an advantage all Rhododendron growers will understand. All who visit the International Exhibition will remember the transcendent superiority of The Queen over every other white Rhododendron exhibited. It is proposed that The Queen shall be assumed her throne in 1867. All and everybody who wish to enjoy her regal sway should apply at once, as all orders will be executed in rotation. The price will be 31s. 6d. each, and the Trade will have four plants given for three ordered. It need excite no surprise that its sole possession by the Advertiser should have called forth the envious jealousy of certain HONOURABLE MEN. Hence a story industriously circulated in the Trade that THE QUEEN is not a new one but an old kind, only under an assumed name. The Advertiser would be glad to be informed WHEN, OR WHERE, AND UNDER WHAT NAME THIS RHODODENDRON has been seen, and in whose possession it is to be found. The whole undivided stock is in the hands of CHARLES NOBLE, Bagshot, Surrey.

Early Spring Flowers.

WEBB'S GIANT POLYANTHUS and COWSLIP, with all the best varieties of Double and Single PRIMROSES, PANSIES, &c., with Seeds of single varieties. LIST of prices of different kinds on application to
Mr. WEBB, Calcot Gardens, Reading.

Azalea indica.

WILLIAM BARNES has many Thousand magnificent Plants of the above to offer, in various sizes, including every variety worthy of cultivation, all finely grown, and full of flower buds. Sorts and prices can be obtained on application.
Camden Nursery, Camberwell, S.

Cupressus Lawsoniana argentea.

MESSRS. WATERER AND GODFREY are now sending out this Plant.
Good stout Plants, 1½ foot high and bushy, at 21s. each.
It has been awarded Three First-class Certificates by the Royal Horticultural Society of London, Royal Botanic Society of London, and at the Crystal Palace; and may be justly represented as a distinct and very beautiful plant, and one that will become a general favourite.
Knap Hill Nursery, Woking, Surrey.

CHEAP PLANTS.
12 of the best NOSEGAY PELARGONIUMS, including Pink Stella and Le Grand, 8s.
12 of the best ZONALS, including the new double Gloire de Nancy, 7s.
12 of the best NEW FUCHSIAS, 5s.; 12 best older varieties, 4s.
12 of the best NEW VERBENAS, 3s.
Or the above Collection, all established in small pots, for £1 5s., package included.
PELARGONIUMS, French and English show varieties, our selection, from a large healthy stock, 3s. per doz.
CARNATIONS and PICOTEES, good named sorts, 3s. per dozen, 20s. per 100
GARIBALDI PICOTEES, fine for forcing, 3s. per doz.
PINKS, from a good collection, 2s. per doz.
ISOLEPIS GRACILIS, 4s. per doz.
NUNN & HOBDAY, St. Augustine Nursery, Norwich.

NEW AND BEAUTIFUL PLANTS.
JUGLANS MACROPHYLLA.—From the North of China; leaves upwards of 3 feet long, and the fruit 15 to 20 in a cluster. It is perfectly hardy, and altogether one of the most beautiful foliage plants ever introduced. Strong Plants, 21s. each.
TAXUS ADPRESSA STRICTA.—Has leaves precisely like T. adpressa, but every plant is furnished with a strong lead, which it makes even from a side branch. Fine Plants, 10s. 6d. to 31s. 6d.
NEW AUCUBAS.—Mr. Standish has a splendid lot of Seedling Plants of his own raising, with every form and variegation of leaf, 5s. to 21s. each. Also a fine stock of MALE PLANTS and of A. Dentoni, vera, from 5s. to 21s.
ATHYRIUM GORINGIANUM TRICOLOR.—This is a most beautiful hardy variegated Fern. One cannot conceive a more beautiful object than a tuft of this growing on a shady bank or rockwork out of doors. Strong Plants, 21s. each.
RHODODENDRON CHIANOIDES.—This is a pure white from the opening to the fall of the flower, and having an unusually compact truss has the appearance of a mass of snow. Plants 10s. 6d. each.
A few extra strong, with flower buds, 21s. each.
Besides the above, JOHN STANDISH has a large and fine Collection of RHODODENDRONS, and all kinds of SHRUBS, CONIFERS, and FRUIT TREES in the finest possible condition for transplanting.
CATALOGUES of the above can be had on application to
The Royal Nurseries, Ascot.

NEW HARDY CLEMATISES.
CLEMATIS RUBELLA.—Very rich velvety claret; the deepest coloured Clematis yet offered. Very distinct, and having the advantage of flowering 60 to 70 per cent. of blooms, with five and six sepals. First Certificate, Royal Horticultural Society.
CLEMATIS PRINCE OF WALES.—Large flowers, of a rich deep violet purple, with red bars down the centre of each sepal; a decided improvement on C. rubro-violacea. First Certificates, Royal Horticultural Society.
MESSRS. GEORGE JACKMAN AND SON have much pleasure in announcing that they are now sending out the above Clematises that are distinct, and can with confidence recommend them "amongst the best of hardy Climbers, if not the very best ornaments for walls, trellis-work, &c."
Early orders will secure the strongest plants, which will be sent out strictly in rotation first week in October.
The "Floral Magazine," in the October Number, will insert C. rubella and C. lanuginosa candida.
Strong Plants, with bine, 1½ to 2½ feet, 21s. each.
The usual allowance to the Trade.
Coloured Drawings, by Andrews, for 24 stamps
Woking Nursery, Surrey.

Lilium lancifolium.

SUTTON AND SONS have received several varieties of the above splendid LILY in fine condition.

For descriptions and prices of each see SUTTON'S AUTUMN CATALOGUE, which may be had gratis and post free on application.

SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

New General Plant Catalogue.

B. S. WILLIAMS' NEW PLANT CATALOGUE, containing many really good Novelties, and carefully selected LISTS of STOVE, GREENHOUSE, and HARDY PLANTS, is now ready and will be forwarded post free to all applicants.

Victoria and Paradise Nurseries, Holloway, London, N.

SEE BARR AND SUGDEN'S ADVERTISEMENT, *Gardeners' Chronicle*, Nov. 3, p. 1060

BULBS and CLIVEDEN PLANTS for Spring Blooming.
BARR'S PRIZE CALCEOLARIA, 2s. 6d. per packet.
NEW VIOLA CORNUTA SEED, 1s. and 2s. 6d. per packet.
NEW LAFAGERIA ROSEA SEED, 1s. 6d. and 2s. 6d. per packet.
UNBLOOMED AMARYLLIS, &c.
CLUMPS of LILY of the VALLEY, Winter Blooming, 1s. 6d. each; 12 for 17s.

Exhibition of Chrysanthemums.

JOHN SALTER'S magnificent COLLECTION of CHRYSANTHEMUMS is NOW in BLOOM. The Winter Garden is open every day except Sunday. Admittance free.

Versailles Nursery, William Street, Vale Place, Hammersmith, W. (near Kensington Railway Bridge.)

Chrysanthemums.

ADAM FORSYTH begs to inform his Friends and the Public that his extensive Collection of CHRYSANTHEMUMS is NOW in FLOWER, and may be seen every day (Sundays excepted). His facilities for housing them have been greatly increased, and those interested in the cultivation of this favourite flower will find this a good opportunity for seeing the various modes in which it may be grown for the decoration of Greenhouse or Conservatory at this season.

Brunswick Nursery (opposite West Hackney Church), Stoke Newington, N.

UNITED HORTICULTURAL BENEFIT and PROVIDENT SOCIETY.—The NEXT MEETING for Admission of Members will be held on MONDAY EVENING NEXT, at the Green Dragon Hotel, Bishopsgate Street, E.C., at 8 o'Clock.

WILLIAM HEALD, Secretary.

The Secretary will be in attendance on the Tuesday and Wednesday, at the Exhibition in the Guildhall, to answer any inquiries, &c.

GRAND FLOWER and FRUIT SHOW and BAZAAR in aid of the BENEVOLENT FUND of the UNITED HORTICULTURAL SOCIETY, and the FUNDS of the ALBERT ORPHAN ASYLUM, on NOVEMBER 13th, 14th, and 15th, in the Guildhall of the City of London, by permission of the Corporation.

Schedules and all particulars may be obtained of WILLIAM HEALD, 14, George Terrace, Brook Street, Upper Clapton, N.E.

Schedules may also be obtained at the Office, 98, Cheapside, E.C.

All Exhibitors must Stage their Plants on Monday, November 12, and Cut Blooms and Fruit by 10 o'Clock on Tuesday, November 13.

HORTICULTURAL SOCIETY of LIVERPOOL.—The FOURTH GREAT EXHIBITION of CHRYSANTHEMUMS and FRUIT will be held in St. George's Hall, Liverpool, NOVEMBER 21 and 22. Liberal Prizes will be awarded to Fruit and Flowers. Entries Close Nov. 19. For Schedules apply to 4, Bennett Street, Liverpool. ROBT. W. KER, Hon. Sec.

The Gardeners' Chronicle.

SATURDAY, NOVEMBER 10, 1866.

MEETINGS FOR THE ENSUING WEEK.

TUESDAY,	Nov 13		
WEDNESDAY,	— 14	United Horticultural (Flower and Fruit Show,) at Guildhall	Noon.
THURSDAY,	— 15		
SATURDAY,	—, 17	Royal Horticultural (Weekly Show), at South Kensington	2 P.M.

WE take an early opportunity to remind those of our readers who may be interested in the question, either in their own behalf or in that of their dependents, that a GARDENERS' EXAMINATION will be held in the course of next month by the Examiners of the Royal Horticultural Society. The examinations for the present year will be based on the programme of the Society of Arts' Examinations in Botany, Floriculture, and Fruit and Vegetable Culture, which has been already given in our pages, and will take place at South Kensington on Tuesday, the 18th of December. The Council of the Royal Horticultural Society have decided that only one examination shall be held during the present year; but according to the recommendations of the Education Committee of that body, as printed in the "Proceedings" of the Society for 1865 (p. 153 *et seq.*) it has been determined that two examinations, namely one at Lady Day and one at Michaelmas, shall be held in future years.

We need not stay here to point out the advantages which cannot fail to result to such of the rising generation of gardeners as may pass creditably a practical examination of this kind, held under the auspices of a body, which, whatever its shortcomings, is the chief centre of horticulture in this country. The advantages will be all the more evident when it is remembered that part of the scheme proposed by the aforesaid Committee and approved by the Council, is to keep a register of successful candidates at these examinations, which register will be made accessible to Fellows and others who may desire to consult it.

The students employed in the Society's Garden at Chiswick, have, as a matter of course, to undergo these periodical examinations; but the advantages offered are by no means confined to young men actually employed by the Society. On the contrary, they are open also to the following classes of young gardeners:—

"1. To gardeners who have been certificated by the Society of Arts in Mensuration, Book-keeping, Practical Geometry, Botany, Floriculture, or Horticulture. These candidates, if they gain certificates in respect to the culture of fruits, vegetables, and flowers, and show a fair amount of skill in surveying and plan-drawing, and of taste in laying-out gardens, will receive a diploma conferring the title of Associate of the Royal Horticultural Society. Candidates under this head, who have previously obtained the Society of Arts' Certificates in Botany and Floriculture, or in Botany and Fruit and Vegetable Culture, will have their travelling expenses paid, if they obtain the Royal Horticultural Society's Certificate in either branch of practical gardening.

"2. To any other gardeners who can present a written recommendation from either a Fellow of the Royal Horticultural Society, the President of any Floral or Horticultural Association acknowledged by the Society, or the Director of any public park or garden. Candidates of this class, however, even though they obtain a certificate, will have to pay their own expenses.

"To the candidates who enter under either of the foregoing heads, First and Second-class Certificates will be granted if they pass a satisfactory examination in respect to the practical operations of the fruit, vegetable, and flower gardens.

"A medal will be annually given to the candidate who, having taken a Certificate of the Society of Arts in Botany, Floriculture, or Horticulture, shall also gain at the examination of the Royal Horticultural Society, the highest number of marks in practical gardening."

We may add that the names of candidates must be sent in, not later than Tuesday the 11th of December, to the Secretary of the Royal Horticultural Society at South Kensington, from whom further information, if required, may be obtained, on application by letter or personally.

THE question to which we briefly alluded last week—that of obtaining TOBACCO DUTY-FREE for horticultural use—has made some progress during the time which has since elapsed; indeed, in the words of a correspondent, "it must secure the earnest and active support of all who have anything to do with gardening, whether as employers or employed." The subject was discussed last Tuesday at the meeting of the Committees of the Royal Horticultural Society; and the concession which it was proposed to take steps to obtain was considered to be one of such importance as to form the subject of a recommendation that the Council should take action thereupon. The latter body, as we are informed, realising its advanced position in the horticultural world, though desirous of further information and reserving the full discussion of the matter till its next meeting, nevertheless entertained a strong feeling in favour of the proposal, and expressed its willingness to place itself at the head of the movement should additional information prove confirmatory of its convictions. The action of such a body, representing the national head and centre of Horticulture, if well supported by the members of the horticultural profession generally, would no doubt have great influence with the authorities, when the question comes to be submitted to them. The result of the reduction of the duty would, it is estimated, be to reduce the price of horticultural tobacco to something like 8d. per lb. At present either tobacco or some inefficient substitute forms a considerable item in the annual expenditure of gardeners and nurserymen, and one which presses heavily on this branch of industry, though its influence is but little felt by the revenue. Much injury is often done to valuable crops, indoor as well as outdoor, by a habit engendered through the cost of the remedy, of doing with as little of it as possible; though it may truly be said that prevention would be far better than cure, in the case of all the evils and attacks for which tobacco is the remedy.

A correspondent has suggested to us that "an association might be formed, a small subscription being paid by members to defray working expenses; and that each member might be furnished with a list of persons likely to be interested in the question, from which he would be requested to get as many signatures as possible. Such an association would soon obtain a mass of signatures from all parts of the country, at very little expense, and which would greatly strengthen the hands of a deputation." If, however, the Royal Horticultural Society will take up the matter in earnest, such an association as that above suggested would not be required; though a proper memorial, duly signed, might very much help the Society in its action. We may suggest that such of our readers as may think the movement of importance to horticulturists, should write a brief letter to that effect; and if sent to us, we shall be very happy to place any such letters in the hands of the proper authorities. It is desirable, however, that they should be sent in at once.

IN winter the ATMOSPHERE of LONDON, and of many of our GREAT CITIES and TOWNS, is contaminated by certain minute bodies vulgarly termed "blacks." They belong neither to the vegetable nor to the animal kingdom, but they have a powerful influence on the former, for they are deadly enemies to all breathing surfaces, and though they have not yet caused civil war and bloodshed like their human namesakes, yet if the tale of death were carefully summed up, we doubt not that our own "natives" would head the fatal list by a long way. How then fares it with the vegetation subjected to their pernicious influence? Thousands of expiring and leafless shrubs furnish a reply. The once handsome and healthy Araucarias planted in front of TATTERSALL'S at Knightsbridge, and now draped with filth and soot, can answer the question. The young Pines and evergreens planted annually in the Regent's Park Botanic Gardens, to dwindle and die, could also a tale unfold; the handsome Hollies and Yews and other shrubs planted in the new Avenue Gardens in the same Park might bear witness; and many other cases which we could enumerate, were it necessary, would tell the same tale of how they are deprived of life by the vile atmosphere.

Not so with the DECIDUOUS TREE or SHRUB; not so with those beautiful Rosaceous bushes which are the glory of the grove in all temperate climes. After summer's fitful fever they "sleep well," and when "people return to town," and when the flues begin to vomit forth poison and smut, they are casting away the leaves that have done their work, and retiring within themselves, so to speak, and thus they remain till the winter is past, safer from deadly vapours than the Esquimaux in his snow-hut is from cold. The consequence is, they grow nearly as well in London as in the country! When the fires begin to go out in spring, and the air of towns becomes more free from evil humours, then they burst out into leaf and beauty—clouds of light, fresh, living, perfect green, on which the bunches of pink Hawthorns love to display themselves. What sight on earth can equal the bursting into leaf of deciduous trees in temperate and northern climes? Nothing more beautiful, nothing more magical should we see, even if it were possible to pass high over earth, like the swallow in its migration from the wolfish north, with its Pines and weird Heaths, to the south with its Vines and Oranges, and to the tropics with its Palms and giant Bamboos!

Nothing can equal the freshness and joy of an English spring. Why, then, should we not take advantage of the fact, and make our springs in town more English still, by developing those plants most suited to it, and which flourish as well in towns as out of them, instead of everlastingly purchasing evergreens which are doomed to perish sooner or later? We have repeatedly noticed that Peaches, Almonds, the double and other Cherries, and the numerous exquisite trees and shrubs allied to these, flourish and attain the same perfect shape in towns and cities that they do in the country, while beside them, valuable evergreens are but the ghosts of what evergreens should be. Supposing for a moment that evergreen trees and shrubs throve as well within city influences as deciduous ones do, it would even then be questionable practice to use them extensively, because they do not gladden us with that floral beauty which deciduous trees are wont to put on; their verdure in the parks and open spaces goes for little in winter, as at that time people do not frequent the parks, except from necessity, nor is it desirable that they should do so till our atmosphere is purified. They do not keep time with our suns and seasons, so to speak; and they are not so beautiful, because not so changeful, as the deciduous kinds. They do not flower or fruit conspicuously, as many deciduous plants do, and they tend to preserve a disagreable moisture around us in winter, which we are certainly better without.

We are quite convinced that if the expense and trouble taken to plant evergreens in towns were devoted to the best of our deciduous trees and shrubs, a beauty would result to which our towns are at present strangers. Even in parks and places where one would be led to expect a tolerable display of fine flowering trees, the shrubbery vegetation is so intolerably poor

and monotonous—so devoid of variety and interest that we do not wonder at town planters falling back on the evergreens, and planting nought else around their churches and squares. We need hardly allude to the result. A fine double Cherry, pyramidal in outline, and hung with snowy bouquets, seen against one of our dark churches, would be more beautiful than all the evergreens within four miles of Charing Cross. And it is but one of a host of beauties, many of them far more beautiful objects when leafless and at rest, than debilitated soot-varnished "evergreens." Even the genus Pyrus alone would furnish a grand array of beauty, but those who seek through all our flowering deciduous trees and shrubs, from the tall Acacias to the dwarf early-opening Daphnes, may find a selection which, judiciously arranged, would create a higher beauty in the town garden than has yet been seen in it. There is nothing to be found in this great gardening country superior to many parks where the common Hawthorn is freely planted, when it is in flower—say, for instance, the rolling park at Dropmore, or the many acres of this tree in the park at Dublin; and all who know what beauty occurs among deciduous trees will have no difficulty in imagining how beautiful our parks could be made by tastefully grouping and cultivating other fine flowering trees of equal or nearly equal merit. All the Cratæguses do well in the London clay, and indeed the same is true of the majority of deciduous shrubs, down to the pretty dwarf species of Prunus. It would be a great benefit to town gardening, if landscape gardeners were cooped in town for some weeks in the dead of winter, instead of being permitted to run about the sweet country: then they might consider our real wants. Meantime we strongly advise city planters to pay more attention to deciduous vegetation, and then their efforts will not be thrown away, as they too often are at present.

OUR readers will observe, from a letter published in another column, confirmed by an official intimation which has reached us, that notwithstanding the obstacles which at one time threatened to prevent the experiment from being tried, the ROYAL HORTICULTURAL SOCIETY will next year hold a SHOW IN THE PROVINCES. It has fallen to the lot of Bury St. Edmund's to be the first provincial town thus honoured—for we gather from the expression of local opinion on this point, that it is regarded by the townspeople as an honour—and both the local Horticultural Society and the Corporation have resolutely met and conquered the difficulties which at first seemed all but insurmountable. An unexceptionable site has been provided, free of cost, a guarantee fund of 600*l.* has been subscribed, and a working committee has been named to co-operate with the representatives of the Royal Horticultural Society. It remains only for the horticultural talent of East Anglia to bestir itself, so as to be prepared next July to assert its claim to an honourable position on the prize lists, and for metropolitan and other exhibitors to do their best to support it.

We look upon this as one of the most important movements which have ever been made for the advancement of Horticulture, and as evidence of the desire of the present advisers of the Royal Horticultural Society to do their utmost in behalf of the cause of which they are virtually the national representatives. A great Horticultural Show in the provinces cannot fail to make its influence felt; and by promoting meetings of this sort in different and widely separated localities, the great Metropolitan Society will most effectually stir up the gardening spirit of the country, already aroused by the great International Show of last May.

ORCHIDS AND THEIR CULTIVATION.
No. XIV.

(*Continued from p.* 684.)

To enumerate all the species of Lycaste and Maxillaria that have been introduced and have passed through the hands of botanists, would be a work of supererogation, looking at the subject from a horticultural point of view. It has been my aim all along to treat upon species and varieties that have been found worth cultivating from their decorative character, and the field before me, even with such a restriction, is by no means circumscribed, as witness the increasing novelties that are pouring in and swelling the already large number cultivated in the best collections of Europe. The beautiful L. Skinneri having been already noticed, I pass on to those that remain.

Lycaste aromatica (Mexico).—A plant having large pseudobulbs and leaves in the way of Skinneri, and producing from the matured growths numerous flowers of a yellowish cast pervaded by a slight tinge of green. It is one of the least ornamental of the tribe, but its flowers have a powerful aromatic fragrance.

L. cruenta (Guatemala).—The pseudobulbs and foliage of this are after the character of those of Skinneri. It is easily detected however by the practical eye from its being a little more roundly ovate in the bulb, and shorter and broader in the foliage. Some of the varieties produce large and handsome flowers having broad sepals and petals of a bright yellow colour, with a very prominent caleeolate acuminate labellum of the same ground colour, but with two deep crimson blotches on either side. It is of the easiest possible culture, requiring a large amount of water in the growing season, and the pseudobulbs will plump up and maintain a more vigorous constitution if manure waterings are occasionally resorted to. It generally blooms in March and April, and each flower will remain good for four weeks.

L. Deppei (Mexico).—This also is after the Skinneri style of growth, and is so similar to that sort in general appearance, as with difficulty to be distinguishable until the blooming season. It has very distinct and beautiful flowers, about two-thirds the size of those of Skinneri, and of same formation, having yellowish green sepals and petals, with bold sienna blotches, the petals being yellowish green towards the base, and the lip prominently adorned with dullish crimson spots on a yellow ground. Its season of flowering is August and September, and its duration about four weeks.

L. Jaliscæ (New Grenada).—This has been recently found by collectors in ransacking the Andes of New Granada for the rare and beautiful Odontoglossums. It is well worth growing in a large collection for its extremely interesting form, and the flower itself is not without beauty. In form it partakes more of the general characteristics of a Maxillaria, being closely allied in this respect to the extremely beautiful M. venusta; the placing of them, however, is not my concern, as I only give their general features and cultural hints. The pseudobulbs of this sort are more in the style of those of an Acineta, and it has pale green leaves with prominent venation. The plant is of rampant growth, the roots not only being greedy of moisture, but the pseudobulbs themselves drink it up likeso many pumpkins. The flower is composed of oblong acuminate sepals and petals, the latter a little shorter than the former, the ground colour being a raw sienna running into creamy white towards the base of the column. The labellum about half the length of petals, and of rather a brighter colour, bristling with long dense hairs, which contrast well with the long arched pure white column. Its period of flowering is March and April, and its duration about four weeks.

L. gigantea (New Grenada).—This is well-named from the immense size its bulbs attain, for they can be grown to rival many of the species of Anguloa. It is a spring-flowering plant of the Deppei type, but not at all equal to that sort for general beauty, and from the large space which it occupies it cannot be tolerated in a choice collection, and can only be admitted in large collections upon sufferance.

L. Harrisoniæ (Brazil).—This is the tetragona of Lindley, and a very beautiful plant it is, all but eclipsing the famous Skinneri itself. It is well known from the oblong, tapering, four-sided form of its pseudobulbs, which have the further distinguishing badge of a black band between the summit of the pseudobulb proper and the base of the leaf. It differs from the whole of the race in producing two and three-flowered peduncles as a rule. Most of the others occasionally produce a two-flowered but never a three-flowered peduncle. It also differs from the others in having sepals and petals roundly ovate and nearly uniform, giving it a most handsome outline. It, like the Maxillarias, has a peculiar jointed dull crimson labellum, clothed with hairs, and which is seen to advantage planted in the centre of the rich creamy white flower. It blooms best after a good long resting period, when water has been withheld; but it has this drawback—its flowers are often buried, the peduncle not being long enough to overtop the foliage. This deterioration is, by the way, peculiar to the whole race. There are many forms of this plant, which have been elevated by some to specific names, but the difference in my opinion is too infinitesimal to warrant specific distinction. It is a plant which can be grown to a very large size, and is well worthy of a place in the choicest collections. To a beginner it is most valuable, because it is not easily killed, and produces its inflorescence very regularly in the spring months under the most trying circumstances. Warm conservatory treatment suits it admirably, and it will live and endure an atmosphere occasionally oscillating between 35° and 40° as a minimum.

L. Schilleriana (Central America).—This, like Oncidium bifolium, Cattleya Aclandiæ and marginata, and even Lycaste Skinneri itself, was a rare plant until Orchido-mania seized hold of not a few of our wealthy commercial lords, who in turn induced several of our enterprising nursery firms to send out collectors to search in places almost inaccessible, and in many cases where no European foot had ever trodden, for that sort of vegetation which ambitious Europeans longed to possess. This is probably the most beautiful and withal the most curious form of the fulvescens type. It, like its compeers, is of free growth, and blooms at midsummer from the matured growth. It is larger than fulvescens, of much the same colours, with a larger and much more beautiful labellum, and as a whole presents a very grotesque configuration. It is a sort which all lovers of the curious should grow. Looking to its habitat it would not be safe to risk it in a temperature lower than 45°.

There are only three Maxillarias which are generally cultivated in the collections of this country, and all three of them are distinct and good, such as in fact call forth general admiration.

Maxillaria picta (Brazil).—This is a handsome dwarf-growing species, with conical pseudobulbs, 2½ inches long, carrying a terminal pale green leaf of from 12 to 16 inches in length, of lanceolate form. The flowers come from the matured growth in single file, as many as from three to six to a bulb; the sepals are broader than the petals, yellow in front, while the back part has a white ground stained with yellow and blotched transversely with purple; the labellum has a cream ground-colour, with rosy spotting, and is broad at the base and tapering at the extremity; while the column is very prominent and of a rich cinnamon colour. The period of flowering is September and October, and its duration from three to four weeks.

M. tenuifolia (Mexico).—This can be grown to form a beautiful specimen, and will never exceed ordinary bounds. It differs from most of the others in its mode of growth, the pseudobulbs being like so many bulbils strung together on short perpendicular footstalks. In form they are ovate, and they each carry long linear acuminate leaves, which render it a very graceful object even when out of flower. The flowers proceed from the base of the matured growths, and when the plant is in good condition come in considerable numbers. They are only about half the size of picta, but the bright crimson barrings on a yellow ground render it a very conspicuous object in a general collection. Its period of flowering is March and April, and its duration about four weeks.

M. venusta (New Grenada; Costa Rica).—This is unmistakeably in the genus of all Maxillarias, whether we regard the fragrance or the quiet beauty of its flowers. In the evening a few expanded flowers will completely fill the air of a plant-room with their fragrance; and it is one of the few rarities and novelties that at the present day engage particular attention. Unfortunately it is a scarce, and therefore a high priced plant, but it is to be hoped that some of the collectors will stumble upon a large batch of it, so as to place it within the reach of all Orchidoculturists. One or two nice pieces of it have been in the country, at least in European collections, for years; but it has been so shy in flowering that it is but recently that its merits have become known. It luxuriates in a cool atmosphere, and flowers freely in such an element. It has the long angular-pointed form peculiar to Lycaste fulvescens, Schilleriana, and that breed; the sepals and petals, however, are much more attractive, being of the purest ivory white, and of great substance. It has a small golden labellum ornamented with crimson blotches, which the long sepals and petals, and the somewhat pendent position which it naturally assumes, in some measure serve to conceal.

Such is a *resumé* of the best forms of Lycaste and Maxillaria at present in cultivation. The majority of them are first-rate plants, and well worthy of general patronage. No one, not even the veriest tyro in Orchid culture, need have any doubt about successfully cultivating them. They require the very same winter temperature which would be given to a house of Pelargoniums, and give far less trouble in successfully wintering them. I am amazed to hear the doubts that are frequently expressed by gentlemen, who say they would "go in for this sort of thing" if they could ensure the lives of the plants they buy. One thing I unhesitatingly affirm: take any of the species I have yet described in this series of papers; plant it in a pot amongst elastic fibry material such as I have endeavoured to describe; give it abundance of water during the growing season (the best part of my plan to introduce a compost which water will almost instantaneously rush through); admit air to the house as you would do to a Pelargonium house, and winter them accordingly, and I will engage for a success beyond anticipation. Of course the gardener must have his eyes open, and keep his plants proportionately dry in very cold weather, else some of the pseudobulbs in the grossness of their growth, might rot away, and the plant might succumb altogether. But the same remark is equally applicable to any race of exotic plants. Compare the lovely inflorescence of some of the more beautiful Orchids with that of other natural orders; estimate the effects they produce generally upon all who come within their influence; look at the suitability of this very group, of Lycaste Skinneri for example, for drawing-room and indoor decoration, and especially for a never-failing supply of "winter" flowers; and the cost of securing and rearing them is amply compensated by the fund of delight and pleasure which such a variety of beautiful, curious, and altogether unique forms call forth. *James Anderson, Meadow Bank.*

THE AUSTRALIAN TREE FERNS.

IN the *Gardeners' Chronicle* for the 20th October last I have read an interesting communication by "J. G. B." on the Australian Tree Ferns, in which the author states, "there seems a prospect of a considerable amount of confusion arising respecting them," and in order to do what he can to prevent this, purposes "to give a description of each, and bring together the synonyms of the same species." Than this, a more desirable task he could scarcely have set himself, and he might with truth have stated that a considerable amount of confusion already exists on the subject—among authors as well as cultivators. Having myself paid some attention to the question, and having access to a considerable number of living plants of these Australian Tree Ferns, I am obliged to differ with "J. G. B." in some of the conclusions he has arrived at. Should this meet his eye, I trust he will do me the credit to believe it is not from a querulous disposition that I make the following remarks, but simply to assist in elucidating facts.

With reference to the species mentioned in the first paragraph of the paper, I fear I cannot throw more light on the subject than "J. G. B." has done. I may, however, state that two plants exist in the collection at

Glasnevin, both of which are marked Cyathea medullaris; one is from the Polynesian Islands, the other from New Zealand. That from the former has shining black rachides to the fronds, which are covered when young with long dark-brown shaggy scales, and are smooth. The other, from New Zealand, has also fronds with dark rachides covered with shaggy brown scales, but the colour of the rachides is less dark and that of the scales light brown. The plant from the Polynesian Islands is the youngest, and has fine gracefully arching fronds, fully 16 feet long. The New Zealand plant has much shorter and stifer fronds. They are, however, evidently only varieties of the same species.

With reference to Alsophila australis, R. Brown, it is very easily known, though frequently misnamed in collections. The largest plant at Glasnevin has a stem close on 6 feet high, which is covered with the bases of the old fronds, these being very rough, with strong raised points; the interstices are crowded full of old rootlets, which latter character will at once serve to distinguish it from the species named in the paper Alsophila Leichardtiana. In younger plants beginning to make stems, the rachides of the fronds are dark brown, and only rough at their base, whereas the fruiting fronds on the large stems have their rachides light-coloured and nearly smooth.

I might here risk a conjecture, which I have no means of further proving at present, respecting the plant called A. Loddigesii, Kunze, which Baumann, in his "Index Filicum," marks Nova Hollandia, without doubt, though Kunze, as quoted by Moore in his "Index Filicum," makes the following remark, "Patr. ignot., vix dubie australis." May this not be the variety with rachides nearly or quite smooth, which "J. G. B." states the aborigines of New Holland distinguish, and apply a different name to? My reasons for so conjecturing are the following. At Glasnevin there is a plant under the name of A. Loddigesii, Kunze, which was received from a celebrated continental collection about 15 years ago. It is now just beginning to form a stem, and has fronds bearing a good deal of general resemblance to those on plants of the true A. australis, which are about the same age, but the rachides of those of A. Loddigesii are not half the diameter of those of A. australis, and are nearly quite smooth. It is altogether a more graceful plant. Another plant, which may be this species or a variety, is at Mr. Bewley's, of Rockfield, under a different name. The latter has a slender stem, about 5 feet high, with a lovely head of gracefully recurving fronds. A more beautiful object than it is, one could scarcely imagine in the whole vegetable kingdom.

Next in the paper is the plant which the author states "has been published in three different places under three different names," the meaning of which may be, that three different authors have each given a different name to the same plant, but which "J. G. B." states must henceforth be known by Dr. Mueller's name, Alsophila Leichardtiana, because it is the earliest, and must consequently take precedence. Is this the case? The question may be solved by reference to John Smith's collection now at the British Museum, in which the plant is named by that distinguished author on Ferns, Alsophila Moorei. The date attached to the label will show whether Dr. Mueller's name has precedence or no. When first found by Mr. C. Moore, of Sydney, specimens were sent to Kew, previous to its being sent in a living state, when Mr. Smith at once saw that it was a new species, and named it accordingly. Sir W. Hooker's name, A. Macarthuri, was subsequently applied, I am informed, to specimens sent to Kew by Mr. Veitch, of Chelsea. Leichardt could hardly have had much to do with this Fern, but I shall now leave the name to be finally settled on the ground stated by "J. G. B.," namely, that of priority.* The species is a very distinct one, and there are two varieties of it at Glasnevin. The one with the highest stem measures nearly 6 feet, and is clothed from base to top with the long very rough bases of the fronds, which are closely placed together, and have their interstices filled with the remains of the permanent linear brown scales, which are so abundant about the summits of the stems. I have not seen roots in the interstices, as is always the case in A. australis. The rachides are dark brown, and remarkably rough, and the lower pair of pinnæ are very distant from the next pair, and mix with the scales at the summits of the stems. The plant sent from Australia as the true A. Macarthuri, Hook., differs from the former in having the stem more slender, and bare of the bases of the fronds nearly half way up. The bare part is marked with pretty ovate scars, and the upper portion is rough with the bases of the fronds and scaly interstices, as in the former variety. The only differences I see in them are the partially naked and more slender stem of the one, the fronds of which have not shown the distant pair of pinnæ, and the pinnules are shorter; they seem to be only mere varieties of one species, and that a very beautiful one.

With respect to the plants named in collections A. excelsa and A. Cooperi, I have no reason to doubt that "J. G. B." is correct in considering them the same species. There is a fine specimen of the former at Glasnevin, with a beautiful clean stem, marked with long oval scars, but it is slender when compared with some others. It is, I believe, the first plant of the kind that was introduced living to Britain, and came from Australia, as a small plant in a Wardian case, 17 years ago. It thus affords us some means of judging of the rapid growth of this species. Many of the plants which are now distributed in European collections are the offspring of this individual. The stems of the young plants afford only a faint idea of the beauty of older stems, when they get clear of their fronds, and marked with the scars.

* Dr Mueller's name appears to have been first published. We find no publication of Mr. Smith's earlier than the present year. Eds.

There is another splendid species at Glasnevin, which bears some resemblance in form of fronds to those of A. excelsa, but the stem is altogether of a different kind. It was sent from Sydney marked Alsophila sp. nova. The stem is now 5 feet high, and bears at its apex a fine head of fronds, each from 7 to 8 feet long. It is bare of the bases of fronds and marked with oval scars, roughish but not prickly. It seems a rapid grower, judging from the great distance the bases of the scars are from each other in forming the spire, being fully 5 inches. The rachides are covered with short brown ovate acuminate scales, which are curved and strongly serrated on their margins. No fruit has yet been produced, and I do not possess further information on this plant at present.

Alsophila Rebeccæ, Mueller, and A. Robertsiana are both unknown to me, in either a living or a dead state; consequently, I pass them over, and also Dicksonia antarctica.

Respecting Dicksonia Youngii, C. Moore, I do not agree with "J. G. B.," who states that "this plant is evidently not safely separable from D. squarrosa. To me this sentence is obscure, but I presume it means that he considers the plants having the names of D. squarrosa and D. Youngii to be one species. If this be so, I cannot agree with him; nor do I suppose he can have seen fertile living plants of the latter. The differences between them are so great that any person endowed with an acute sense of touch would feel the difference, without the aid of his eyes. In D. Youngii the fronds are softer to the touch, and have not that rigid harshness so well known in D. squarrosa. The pinnæ are placed alternately on the rachis, and from 3 to 4 inches apart; whereas in D. squarrosa they are so close together as to be imbricated. The colour of their undersides is also different. In D. squarrosa, where they are turned up, they have a slight silver colour; whereas in D. Youngii they are nearly the same colour on both sides. There is little use in pursuing the distinctions further, they are so evident, both in stems, fronds, and fructification. The largest plant at Glasnevin has a slender stem, nearly 3 feet high, which is covered with the bases of the fronds, and clothed with long yellow brown hairs at its apex. It has just produced a fruitful frond, which is in the centre of the plant, the outside fronds being barren. *D. M.*

MR. T. N. MILLER'S VINERIES AT BISHOP'S STORTFORD.

As the culture of Grapes is now becoming of vast interest, I have thought a description of some vineries recently erected, may be a subject worthy of your columns. Mr. Miller's vineries are situated in the valley of the Stort, at the southern entrance of the town, and but slightly above the level of the river; the soil loose alluvial loam, and from the small flints mixed with it, evidently calcareous. It is highly fertile, as vegetables and fruit trees grow in it with great luxuriance. The site of the enclosure—3 to 4 acres in extent, is sheltered, and admirably exposed to the south-west, so that in sunny weather in summer the heat is almost tropical. The vineries at the north-east side are lean-tos, sloping to the S.W.

The first range is 190 feet long, and 16 feet, in two divisions, 65 feet in each, one for Black Hamburghs, the other for Muscat of Alexandria; the Vines are in their third year, planted outside in a raised border, 2 feet 6 inches deep, resting on a pavement of asphalte; the Grapes on all are very fine, shouldered bunches of Muscats, weighing from 3 to 4 and 5 lb. each, and the Vines are in the highest state of health and luxuriance.

The second range, in a line with the above, is 100 feet long and 13 feet wide, in three equal divisions, one for forced Black Hamburghs, one for early Muscats, and the other for pot Vines, which are plunged in a pit in front in tan, heated by 4-inch hot water-pipes; the back border of this department is planted with Muscats, trained as pyramids to upright iron rods; they are planted about 3 feet apart, and bear most abundant crops. This method of culture is not common, but seems both interesting and advantageous.

The most remarkable of the Vineries here is a span-roofed one, 200 feet long, 30 feet wide, 15 feet high in the centre, and 5 feet high at sides; there is not perhaps in England a Vinery more interesting and promising. It is divided by glazed partitions into three divisions; one 60 feet in length, planted with late Grapes—Lady Downes', Black Tokay, and one or two other kinds of late black Grapes; they are in their second year, and are allowed to bear some three or four bunches each. These are really magnificent, the berries so large, with such a dense bloom, and so finely coloured; the Vines are planted on each side, and the canes all reach and meet at the top of the roof; they are stout as a moderate-sized walking-stick, and the foliage large, healthy, and beautiful. The second division is 100 feet in length, planted with Black Hamburghs, all in the same healthy vigorous state as those just described. The third division, 40 feet in length, is devoted to Muscat of Alexandria Grapes, equally healthy and luxuriant. There is one very remarkable feature in this fine Vinery; on each side the central path, extending the whole length of 200 feet, is a row of pyramidal Vines, 3 to 4 feet apart trained to upright rods; the effect is very beautiful. They are merely temporary, as it is thought the roof will soon be too densely shaded for them to do well. This season they have ripened their fruit thoroughly, even close to the ground, from 10 to 15 feet from the glass.

As the borders of this house are perhaps on an original plan, and may be worthy of imitation, a description of them will not be out of place. There is no connection whatever with the outside; the foundations of the walls are solid brick, so that not a root can get through. The soil being a sandy loam, resting on gravel, no drainage was required so that the borders—the whole width of the house—were formed with turf pared off the surface of the enclosure, manure and bones from an inch to 1 inch, mixed with large pieces, the "screenings" of bones used for manure. This compost was then mixed with the soil in the house to a depth of 28 inches; it has now settled, and lies about 1 foot above the surface of the soil outside; it has not been stirred since the ground was prepared, and as surface, from being much trodden on, is perfectly solid. This is so contrary in practice to the mode in which Vine borders are often treated that it is worthy of inquiry if the surface of Vine borders should or should not be solid.

There is no question about it here, for Vines in more luxuriant growth and in finer health were never seen. Another question respecting the advantage of planting Vines inside instead of outside seems also set at rest; there is no doubt but that the climate of the house affects greatly the climate of the earth under its roof, and gradually warms it to a depth not sufficiently appreciated or known. As a matter of course, inside Vine borders require some attention with regard to water, but it will be found that a much less quantity is required than is generally thought necessary.

A few words as to the rather novel mode of roof ventilation practised may be acceptable. All the roofs are fixed, the rafters 21 inches apart, and all are glazed with large pieces of 21-oz. glass; every fourth piece in the span-roofed house at the apex of the roof on each side is of an extra size, 4 feet long, 21 inches wide, fixed in a frame (in a slide), which is kept closed by an iron weight fixed to a cord; when air is given the weight is lifted and the frame let down, when it is closed the frame is drawn up and the weight keeps it in its place. The sashes for the admission of air below are 3 feet by 3 feet 10 inches, and are on hinges on each side of the house, the lower part of the apertures about 18 inches from the surface of the ground outside.

There is one fact of consequence connected with this inside border 30 feet wide, and that is the water required to keep the Vines in their present robust health. On inquiry, I learnt that a sound watering was given towards the end of March last, and the same once a month till the middle of August; no water has been given since. This seems to settle the matter as to the oft-agitated question respecting the eligibility of inside Vine borders, to which no artificial coverings are required to keep off the heavy rains of winter, and no thick covering of manure to give heat when forcing is commenced. No Grape grower on seeing the Vines in this fine house would ever think of making his borders outside, and I think I may add that no expensive and often injurious contrivances for heating Vine borders need be resorted to, the climate, as in the countries where Grapes grow and ripen without artificial aid, giving sufficient heat to the soil, which is never cooled down to the temperature of the earth outside.

I have only to add that any of your readers interested in Vine culture would meet with a courteous reception from Mr. Miller or his gardener, Mr. Warden; and if it is only to witness the effects of unheated inside borders, a visit to the Bishop's Stortford Vineries will well repay the amateur. *T. R.*

ICE HOUSES.

ICE is, in sultry weather, not only a luxury, but may almost be regarded as a necessary of existence, and fortunately in most large towns (London, Liverpool, and Manchester for instance) it may be obtained at a price scarcely prohibitory even to the working man.

The Norway or Wenham Lake ice is much superior to British ice in its refrigerating influence, inasmuch as being congealed at a lower temperature its cooling properties are greater than that from our own lakes or rivers. The ice in our own ponds may be formed at the temperature of 29°, that is 12° below the freezing point, while that which we procure from abroad, from colder climates, may be congealed at zero, or even 10° to 20° below that starting point of Fahrenheit's thermometer in use, taking weight for weight, the imported ice is, to use a familiar term, three or four times colder than that congealed in our own waters.

In properly conducted establishments the dessert, after it is dished up and before it is sent to table, should be placed upon ice in a refrigerator or cellar for an hour or two, not to freeze it, but to cool it to a temperature that during the hot season will be grateful. Again, the cook, confectioner, butler, and dairymaid cannot achieve the best results without the assistance of ice; the fishmonger finds it indispensable for the preservation of his stock-in-trade; and the *Mark Lane Express* recommends ice for the cooling or setting of meat and poultry before it is sent to market. We are becoming a more luxurious people, and no doubt all these suggestions, though they look absurd at the present time, indicate what will be considered necessaries in the course of a few years. In America ice is a necessary with all who can afford it; in our large towns, where it can be procured cheaply, it is the same, and will become more so.

Practically, when ice absorbs caloric or heat it becomes water, or melts, and when the heat thus absorbed is removed, the water again solidifies and becomes ice. For a similar reason, butter and all animal fats and fluids become liquid or solid according to the quantity of caloric they absorb or give out. The farmer, whose butter in summer is so liquefied that it cannot be handled, and whose poultry, beef, mutton, and pork are so soft that in going to market the meat, by the shaking to-and-fro action of the bones, undergoes a sausage-making process by no means favourable to its market value, must bear in mind that an excess of caloric is the cause of all this loss, and that at the season of the year when the inhabitants of our towns are being almost roasted alive, an excess of caloric is

the most worthless thing in the world that he can send them.

Ice in some situations may be preserved in a very simple manner, whilst in others the utmost care is insufficient to secure a supply. I knew an ice-house near Newmarket where it was merely necessary to throw in 10 or 20 cart-loads of ice during the winter, and shut the door, and there it would be found without any further trouble through the following summer in abundance. Other wells, filled with the most scrupulous care and containing scores or even hundreds of loads, often scarcely yield a sufficient supply for an ordinary establishment. The great secret, however, appears to be that the situation where the house is formed should be dry and well drained, and then success is certain. Some few years back, when directing the improvements of a neglected estate in a Western county, I had orders to fill the ice-house, but finding it in a very dilapidated condition, without either a drain or sufficient roofing to keep out the rain, I preferred to make an ice stack. Therefore, selecting a place which was upon the island of the lake that was to supply the ice, but well protected from the sun by tall Beech trees, a large hole was excavated some 12 feet in diameter, just deep enough to allow the drain from the bottom sufficient fall to empty itself into the lake at low-water mark. This being done, a layer of faggots was placed over the bottom of the pit, and some old wattled hurdles around the sides, against which some 4 inches thick of Wheat straw was placed. Then the filling of the pit commenced, the ice being pounded as finely as possible, and run together with all the force at command. Over each layer of ice 4 inches in thickness boiling water was poured, the object being to fill up the interstices, and cement the ice into a solid lump. The process of collecting was continued until the stack was some 15 feet in height—5 feet below the ground level, and 10 feet above. It was then thatched (first covering it with hurdles) with straw to the thickness of 1 foot at the least, and was left clean and tidy for the chance of success.

About May in the following year a part of the roof fell in, but upon examination, though the ice had diminished in quantity, it was found that there was still a very considerable lump left. However, as the family was not coming that season, and as it was not expected to last two years, little care was taken to preserve it, beyond the covering of straw, and consequently the rain as it fell soaked into straw and earth alike. In the following summer the pit was examined, and the straw thrown out, when several tons of ice still remained. For more than 22 months the pit had been filled; for quite 15 months, beyond the covering of straw, it had had no protection from the weather, yet the ice had kept better than in many wells that have cost hundreds of pounds to build.

One of the greatest mistakes in the management of ice houses is that of opening them at mid-day when the air is warm. The right time is early in the morning, and then, if possible, they should be entered from the top, and not, as is the usual custom, from the side. I had some 20 years back a large ice well, but the supply, while procured by opening the side door, was not equal to the demand. Reasoning upon the fact, that each time the side door was opened a quantity of warm air was let in, and that this would liquefy a certain quantity of ice before it was reduced to the proper temperature, I determined to take the supply from a "manhole" at the top of the well, and from that time for many years afterwards the supply of ice was extended six to eight weeks longer than in preceding years; the simple fact being, that warm air being lighter than cold, it could not enter the well when opened from the apex. *W. P. A.*

ON THE PLANTS OF THE LAKE DWELLINGS.*

By Dr. Oswald Heer.

The remains of the plants of the Swiss Lake dwellings are found lying in the lake mud, or buried under a bed of peat several feet thick. Professor Heer divides those hitherto found into—1. Cereals; 2. Weeds of the corn field; 3. Culinary vegetables; 4. Fruits and berries; 5. Nuts; 6. Oil-producing plants; 7. Aromatic plants; 8. Bast and fibrous plants; 9. Plants used for dyeing; 10. Forest trees and shrubs; 11. Mosses and Ferns; 12. Fungi for kindling fire; 13. Water and marsh plants.

1. *Cereals.*—The small-grained, six-rowed Barley (Hordeum hexastichum sanctum), and the small lake-dwelling Wheat (Triticum vulgare antiquorum), were the most ancient, most important, and most generally cultivated farinaceous seeds of Switzerland. Next to them come the beardless compact Wheat (Triticum vulgare, compactum muticum), and the larger six-rowed Barley (Hordeum hexastichum densum), with the two kinds of Millet, the common Millet (Panicum miliaceum, L.), and the Italian Millet (Setaria italica). The Egyptian Wheat (Triticum turgidum, L.), the two-rowed Wheat (Triticum dicoccum, Schr.), and the one-grained Wheat (Triticum monococcum), were probably, like the two-rowed Barley, only cultivated as experiments in a few places; and the Spelt (Triticum Spelta, L.), which at present is one of the most important cereals, and the Oat (Avena sativa, L.), appeared later, not till the bronze age, while Rye was entirely unknown amongst the lake dwellings of Switzerland.

The Millets are undoubtedly spring crops; in fact all the other kinds of cereals appear to have been the same. Consequently the colonists must have prepared and sown their fields in spring, not in autumn; and the corn was probably housed at the end of summer, and no after-crops secured. The beds of goat's and sheep's dung discovered in the lake dwelling of Robenhausen seem to indicate that the fæces were allowed to accumulate in the stalls, in order to be used for manuring the fields. Bread was made only of Wheat and Millet, the latter with the addition of some grains of Wheat, and, for the sake of flavouring it, of Linseed also. Barley bread has not yet been found, and it is probable that Barley was eaten boiled, or more probably parched or roasted. The small, six-rowed Barley of the lake dwellings is the sacred Barley of antiquity. The small lake dwelling Wheat (Triticum vulgare antiquorum) is probably the oldest sort; it is the most prevalent cereal in all the older lake dwellings, and it was cultivated down to the Gallo-Roman times.

We know very little as to the agricultural tools, though several implements have been found which are considered to belong to this class. Neither do we know how the corn was gathered, though in all probability it was not cut just under the ears (a mode which is represented on some ancient Italian coins), but the straw must have been taken up with it, otherwise there would not have been the seeds of so many weeds with the corn. It was then, probably, trodden out to separate the corn from the husks (thus the Roman term *triticum* from *triturare*), and after being cleaned, the Barley may have been freed from its hard parts by a club. Implements of this kind appear on coins of Metapontum, amongst agricultural tools, and several clubs have been found at Robenhausen. The women of Southern Africa are mentioned by the Livingstones in their travels as having to perform this operation with a kind of pestle and mortar. We know how the corn was crushed and ground; it is needless here to refer to the corn-crushers and mealing-stones found in nearly every settlement. Some of the meal was then made into bread, of which charred portions are still met with. In other cases the grain was probably roasted, then crushed, and put into the pipkin, and the mass, after having been somewhat soaked, was then eaten. The Spaniards, when they conquered the Canary Islands, very singularly found this mode of preparing corn food prevalent amongst the aborigines; they adopted this custom, and have continued it to the present day. The corn there is still roasted in ovens, prepared for this especial purpose, then ground, placed in goatskins, and thus stored. This "Gofio," as corn-meal is called, when thus prepared, forms now the food of the lower orders of the people in the Canaries, and may certainly be considered as the oldest form of making use of corn.*

Parched Barley was the sacred corn of the ancients, and took a very important place in all their sacrifices.

2. *Weeds of the Corn-field.*—Some of these were indigenous, and others had been introduced with the cultivated plants, and been sown with them. The latter were either permanent or mere transitory occupants of the ground. Some are charred, and most unquestionably were mixed with the corn when it was burnt. Others are found in great abundance in the mud, and when the Wheat was cleaned, had been thrown into the lake as refuse. A fact of great interest is the occurrence of the Cretan Catchfly (Silene cretica, L.), in the remains of the lake dwellings, as it is not found in Switzerland and Germany; but, on the contrary, is spread over all the countries of the Mediterranean, and is found in the Flax-fields of Greece, Italy, the south of France, and the Pyrenees. The presence of the corn bluebottle (Centaurea Cyanus) is no less remarkable, for its original home is Sicily. As it had already appeared in the corn-fields of the lake dwellings, it indicates the way by which corn had come into the hands of the colonists.

3. *Culinary Vegetables.*—With the exception of Peas, no culinary or garden vegetables can, with any certainty, be mentioned as belonging to the stone age. The Celtic dwarf field Beans (Faba vulgaris, Mch.), appear in the bronze age of a strikingly small size, such as are never found afterwards. The Lentil also (Ervum Lens, L.), belongs to the variety known as the small or field Lentil (E. Lens microspermum).

4. *Fruit and Berries.*—Fruits like Apples and Pears are found in the lake dwellings, burnt, and in a very fair state of preservation; on the contrary, stone fruit and berries have not been burnt, and therefore only the stones and the hard seed-shells still remain. The Apples are chiefly cut into two parts; seldom into three: the smaller ones are left whole. The sour Crabs must have been of considerable importance as an article of food, as we may learn from the large quantity of their remains, and their general diffusion amongst the lake dwellings. Together with these wild Apples, there were found at Robenhausen a considerable number of a larger kind, which probably were a cultivated variety. Pears must have been less common, for only a few specimens have been found at Wangen and Robenhausen. The fruits of the Service-tree have also been found at Wangen and Robenhausen; stones of the cherry—in fact of the sweet cherry—only at the latter settlement. The Plum (Robenhausen) is the nearest to the Bullace (Prunus insititia arenaria, Fsb.). Sloes were gathered by the colonists, and also Bird Cherries (Prunus Padus, L.) in great abundance. Stones of the perfumed Cherry (Prunus Mahaleb, L.) have been found at Robenhausen and Parma. Grape-stones are found at Castione, near Parma. Raspberry, Blackberry, and Strawberry seeds are found, the latter the rarest of the three. The seeds of the Dog Rose, the common Elder, and the dwarf Elder, are met with in abundance. On the other hand the seeds of the Bilberry are rare, and the Red Whortleberry or Cowberry does not appear to have been eaten, for only its leaves are found. Stones of the Cornel Cherry are met with abundantly at Castione, and the berries of the Wayfaring tree occur in several lake dwellings.

5. *Nuts.*—Beech-nuts are found abundantly; they were probably used as food, and perhaps oil was pressed from them. The Walnut was met with at Parma. The Water Chestnut (Trapa natans, L.), which now only exists in Switzerland in a tarn in the canton of Lucerne, but which is found both at Robenhausen and Moosseedorf, formed doubtless an article of food, as it does at the present day in Upper Italy.

6. *Oil-producing Plants.*—A whole cake of the seeds of the garden or opium Poppy was found at Robenhausen; probably these seeds were pressed for oil, or they may have been eaten, scattered over the bread.

7. *Aromatic Plants.*—The Caraway seeds found at Robenhausen were probably used as condiments for the food.

8. *Bast and Fibrous Plants.*—The Flax of the lake dwellings is not the common Flax. The small-leaved Flax (Linum angustifolium, Huds.), which is a native of the countries of the Mediterranean, from Greece and Dalmatia to the Pyrenees, may be considered as the original stock of the cultivated Flax of the lake dwellings. The presence of the Cretan catchfly proves that the colonists got their Flax seed from southern Europe. A little flat slab consisting of Flax seed, wholly or partially burnt, was found at Robenhausen: possibly it may have been a kind of Linseed cake, intended to be eaten by the colonists.

9. *Plants used for Dyeing.*—The Weld (Reseda Luteola) may probably have been used for dyeing the linen cloth.

10. *Forest Trees and Shrubs.*—No great change appears to have taken place in the forest flora since the age of the lake dwellings. It is worth mentioning that at Robenhausen there were found portions of twigs and remains of the leaves of the Mistleto (Viscum album), the sacred plant of the Gauls.

11. *Mosses and Ferns.*—Moss was undoubtedly used for stopping the holes in the walls of the huts, and also for bedding.

12. *Fungi.*—The common tinder Fungus, which occurs in nearly all the lake dwellings, was probably used for procuring fire.

13. *Water and Marsh Plants.*—The character of these remains shows us that, at least at Robenhausen, the lake dwellings did not stand on the deep clear lake bottom, but on muddy shallows grown over with vegetation; and also that the growth of peat had already begun on the shore.

(To be Continued.)

* From Keller's Lake Dwellings of Switzerland.

* *Odyssey*, ii. 354. Telemachus does not take bread for his voyage, but meal in skins.

Home Correspondence.

The Royal Horticultural Society in the Provinces.—Your readers generally, and those in East Anglia in particular, will be pleased to learn that a great Horticultural Show will be held at Bury St. Edmund's next July, under the auspices of the Royal Horticultural Society, simultaneously with, and contiguous to, the Royal Agricultural Society's great Show. The question was finally decided on Tuesday at the Council Meeting at Kensington. Bury and its neighbourhood offer a fine site, a guarantee fund of 600*l.*, and all the local co-operation possible. It is presumed that this Show may involve an expenditure of 1000*l.* or 1200*l.* The terms offered are an equal division of the profits between the local guarantors and the Royal Horticultural Society. They are alike fair, liberal, and honourable to both parties concerned. The basis of the Show being thus successfully laid, or the skeleton provided, the whole energies of the provinces must be put forth to clothe that skeleton with so much substance and beauty as to make the Show itself a credit and honour to all concerned. We hope to have, and doubtless shall have, many metropolitan exhibitors, and we bid them prospectively a hearty welcome. It is of the first moment that they should come to instruct and gratify the provinces. But what is wanted is not so much that the Royal Horticultural Society should bring down bodily one of the London shows—exhibitors, plants, and all—here, as that the best productions of the provinces should also appear. There are many good things in the way of fruit and plants scattered up and down through the country that are never seen at London Shows. These might with the greatest propriety, and a good chance of success, put in an appearance at Bury. Thus, while country exhibitors will doubtless learn much from those who come from the metropolis and other large towns, these might also pick up some instruction from rural cultivators, and it is only by a happy combination of the two classes of exhibitors, that the full measure of success that this bold and generous movement demands, can be ensured. I trust, therefore, that no country exhibitor will shrink from contending for the prizes offered by the Royal from the fear of being beaten. The honour of a close run under such circumstances is infinitely to be preferred to any number of merely local prizes; and if a single prize should fall to our lot, the money value of it even will probably exceed a score of provincial prizes, as I understand the prize list will probably amount to nearly or quite 400*l.* It is also of vital moment to the future of horticulture that this first provincial show of the Royal Horticultural Society should be triumphantly successful. Perhaps nothing could give a more powerful stimulus to the improvement and extension of our art than an annual excursion of this Society into the provinces. Its mere presence would dispel, as with a gleam of sunlight, many antiquated notions, rural prejudices, and exploded practices that linger in and rule the many retired nooks and corners of the country. Neither could the country air fail to confer a reflex benefit on the Society. It would rub off the dust and dispel the smoke that is apt to adhere to and becloud the vision of everything that is permanently fixed in London. The wants of the country would be better known and more wisely met—in the matter of plants and seeds distributed, for instance. The sphere of its operations would necessarily be widened, its income

augmented, and its influence probably so much strengthened, that it might speedily become in fact and in name, the Royal Horticultural Society of Great Britain and Ireland, instead of London only, as at present. Thus every exhibitor who comes to Bury, will not only add to the richness and grandeur of the Show, but tend to establish a precedent for, and the practice of, an annual visit of the Royal Horticultural Society into the provinces, until the whole of the country has felt its quickening power, and been horticulturally revived by its presence. I therefore earnestly invite all local societies and exhibitors, not only in East Anglia, but throughout England, Scotland, and Ireland, to co-operate with us in this Show; and shall be happy to receive the names and addresses of any intending exhibitors, so that all particulars and schedules of prizes may be duly forwarded to them. *D. T. Fish, Hardwicke House, Bury St. Edmund's, Suffolk, Member of the Local Committee.*

Saxifraga Fortunei.—So freely does this flower in October, when there are not over many things wherewith to decorate the greenhouse and conservatory, that it is a decided acquisition to the indoor department. It also flowers boldly and profusely when grown in the open air; but whether it is hardy or not I cannot say. The flowers are pretty, and singular from having one petal very much more elongated than the others, like sarmentosa. It is freely cultivated in any ordinary potting soil, and grown and plunged in pots in the open air in summer will come in for a fine bloom in October, when it may be taken indoors. It blooms at a season when but few things are to be had in flower indoors, and nothing of its colour or style. *R.*

Passiflora laurifolia, or Water Lemon.—As this fruit is becoming popular, and as I have grown it successfully, perhaps a few remarks concerning its culture may be interesting. Supposing that you have a plant well established in a 6-inch pot, say in January, shift it at once into a 12-inch pot, and place it in a stove where there is a bottom heat of 80° and a top heat of 65°. If all go on favourably the plant will be well established by March, and then comes the final shift, which must be into a box or tub 5 feet in diameter, 2 feet 6 inches deep, and provided with good drainage; or, still better, into a bed suited for Pines. The soil which I find best is good turfy loam, rough peat, and silver sand in equal parts. Train the branches upwards to the roof, along the lightest part of it, and as near the glass as practicable. Let the laterals hang down from the roof, and they will grow and produce flowers freely by July. These must be fertilised with the pollen of Passiflora cœrulea, or some other common kind, as their own pollen will not fertilise them. The plant will require abundance of water at the root, and if this be supplied, the fruit will swell rapidly and be ripe in about six weeks. The fruit has a pretty appearance, being about the size of a hen's egg, and in colour a bright yellow. Of the flavour I cannot say much, as, like that of most other tropical fruits, it is rather inferior. The plant will continue fruiting until December, when it should be kept rather dry at the root, and in the temperature of a Pine-stove. About the first week in March give a good watering at the root, which will excite the plant into growth again, and the flowers will soon appear and continue all the summer. I consider Passiflora laurifolia to be one of the easiest of fruits to cultivate. *A. B.*

Pterocarya caucasica as an Avenue Tree (see p. 1021).—I may state that we have a tree of the above here upwards of 30 feet in height and the same across the branches, with a clear stem of more than 10 ft. and some 15 inches through. This tree grows in somewhat strong soil on a bank sloping to the east. Amongst other fine trees in its immediate neighbourhood are good specimens of Salisburia adiantifolia, Lucombe Oak, Purple Beech, Occidental Plane, Tulip tree, Catalpa syringæfolia, &c. The latter two flower freely, and amongst such remarkable trees the Pterocarya is conspicuous as regards its habit of growth and beauty of foliage, while during the last two seasons it has flowered freely, its long pendulous spikes adding considerably to its graceful appearance. Several years ago it lost its leader, and some strong shoots that succeeded got injured in a storm and had to be removed so that the head is bush-shaped. The branches bending outwards and upwards are well balanced upon the trunk. Of course branches had to be removed to bring the tree up to its present height; but this should be done when they are young. The leaves are now going off; they have been showing yellow amongst the green for some time. Could the young trees be induced to grow less freely, so as to ripen their wood thoroughly, it would be a desideratum; they would be better able to withstand the assaults of wind and weather. Failing that, I should hesitate to recommend their being used as avenue trees; still, an avenue of such trees as that just mentioned, rightly placed, would have a very striking appearance, and be much admired. Since writing the above, I find that one of your correspondents has thrown a little of the wet blanket upon the Pterocarya, holding up the Ailantus glandulosa as by far the nobler tree of the two. As regards this, I would only observe that each have their individuality, and the landscape gardener alive to the charms of variety will find room for both—using each effectively, according to situation and circumstances. *T. C. E., Melbury, Dorset.*

Heating.—You suggest (see p. 1048) to "Cornubiensis" that if his small greenhouse is so situated as to admit of it, he had better heat it from his kitchen boiler. I have a case in point here, and if any further details of it would be of use to him I shall be happy to supply them. I think if this matter were better understood among amateurs it would be oftener resorted to; it might also be made available for heating rooms in houses without the inconvenience and dust of fireplaces, and with very little increase in the expenditure of fuel, as the kitchen boiler will be often found distributing its precious heat along with its contents up the chimney. To the front of my house was added a small office, where it was inconvenient to carry up a chimney, so I resolved on heating it from the kitchen-boiler. The pipes in the office are made of zinc, as they take up less room and radiate quicker than cast-iron; the flow and return from these are gas pipe, at 3½*d.* per foot, and the result is everything that could be desired. In the morning I often find the pipes quite warm, showing that circulation goes on long after the fire has gone out, owing to the heat in the range and brickwork. The water in the pipes is not connected with the water in the boiler; this can only be done by keeping the pipes on a level with the boiler, or it must have a lid screwed down; indeed the plan is attended with many inconveniences. My boiler is a common cast-iron angle one, with a loose lid, with the pipes passed through it; the rapidity of circulation is very great. If the stop-cock is turned off, and the water in the zinc pipes is allowed to cool down to the temperature of the room and then turned on, in a few minutes the whole is again up to a heat little under the water in the boiler. The iron pipes are covered with felt, and let into the wall behind the chair rail. No one coming into the room has any idea that pipes are there. I believe that all this can be carried out without a boiler where the fire-place will admit of it, by a simple arrangement of one or more pipes round it. I had one made of syphons and elbows to fit the two sides and back of the fire-place in the servants' hall in my employer's house; from this the water is carried in lead pipes to a large cistern at the top of the house to supply baths, &c., and it does its work well. *D. Buchanan, Durham Park, Barnet.*

Pomegranates.—You observe (see p. 1017) with regard to the culture of the Pomegranate, that you have never heard of the fruit coming to perfection in England. Your remark, strictly speaking, refers to open-air cultivation, but it may not be uninteresting to your readers to be reminded that this fruit was successfully ripened in my garden under glass without heat last year, and sent up to the meeting of the Royal Horticultural Society for exhibition; when my gardener, Henry Downing, received a First-class Certificate for his successful culture. I may remark that the fruit was of the finest appearance and flavour; and I intend to send other specimens this month for exhibition, although the fruit is not quite so large as that which I sent on the former occasion. *T. Grissell, Norbury Park, near Dorking.*

Lilium testaceum.—I have been much interested by "W. T.'s" note on this fine plant, which is as fine and useful as any Lily in cultivation. If a hybrid between candidum and chalcedonicum it grows as freely, but stronger than either, under equal circumstances. I have planted a wide tuft of it in deep, free, and rich loam, and a similar patch of croceum and candidum beside it; testaceum came up more boldly, grew much stronger than either, and flowered nobly at upwards of 6 feet high. Though the most tall so decided or attractive as in many of the other Lilies, yet its effect is very fine and thoroughly distinct. When well grown the bulbs attain a very large size. It is admirable for the centre of a bed of Lilies, or the back part of the mixed border, or the front of the shrubbery, where it might be advantageously planted along with the late-flowering and magnificent L. tigrinum Fortunei. *W.*

The Finchley Vine.—This is well worthy the attention directed to it in your leading article of last Saturday, and it is without doubt the most remarkable Vine in the country. I have seen both the Hampton Court and Cumberland Vines, and also those of Mr. Meredith, and some other great Grape growers, but this is, both for size of bunch and tree, the most remarkable of all. Unquestionably the production of such large Vines as those at Cumberland Lodge and Hampton Court is merely a matter of sufficient space for root and top, and with that the Vine may be grown to a much larger size than it ever attains there; but the production all over an immense tree, of bunches which could not be put in one's hat without inconvenience, is quite another matter. I went to see the Vine at the latter end of August, and at that time it bore about 300 magnificent bunches of Grapes, weighing from 2 to 5 lb. each! The Vine enters at one side of a span-roofed house, and the bunches at the extreme ends of the opposite side are quite as fine as those in the most favoured part of the house—a remarkable fact when we take into consideration the discrepancy that usually exists between the bunches on an ordinary cane even with our best growers. It is remarkable, too, that no such precise pains were taken with the planting, as is usually the case where they grow Grapes well. The border is not at all raised above the level of the ground, and is annually covered with stable manure just in the old-fashioned way; it is 4 feet deep, and about 15 feet wide; it is made on a hard clay bottom, and there is a lot of brick-rubbish interposed between it and the soil; and it slopes to a drain, which runs along the front. The soil is such as could be got from any building sites in the neighbourhood, sometimes sandy, occasionally of a stiff and unctuous clayey texture, with now and then a lot of brick rubbish, in short, anything that came to hand. *R.*

Hard Soils.—The controversy which has taken place with reference to the relative merits of hard and cultivated soils has been highly instructive, but though much useful information has been adduced upon both sides, yet it appears to me that the most natural inference to be drawn from the fact that trees succeed so well upon so-called hard soils, has been overlooked, viz., that the roots are kept in a more moderately dry state than they could be in otherwise cultivated ground. It is a well-known fact, that fruit trees, say Apricots, often show a hardihood and freedom of growth, accompanied by an unwonted fertility, under what might be considered adverse treatment. This is especially apparent in some parts of the counties of Bucks, Oxfordshire, and Herts. I say in some parts, as what I allude to occurs chiefly upon an undulating ridge of marly soil, with a substratum of chalk, which runs shaft-like through these counties. In the localities just adverted to, the farther the trees are away from dug and cultivated soils, the greater is the success as regards their healthy growth and fruitfulness. Chalk is invariably an active agent in regard to matters connected with drainage; it is in fact an absorbent and a very cool substance, generally associated with a subsoil of gravel, which also abstracts moisture. The best trees with which I am acquainted have on the one hand the foundations of an old house, dry to a degree in connection with their roots—"a hard soil," in fact a walk or pathway, and below a subsoil of marl, chalk, and gravel, making on the whole as dry a soil as it is possible to conceive. The fact is that a wet soil, or indeed too much moisture in any shape, is most injurious to trees, especially Apricots. All of us know that a soil trodden hard upon the surface is little if any harder than soils generally are, at a foot in depth. The fact is, the hard upper soil carries the superficial rains away, thereby aiding in keeping the under soil dry. Dug ground, on the other hand, not only allows the rains to penetrate it, but from its looseness absorbs and retains an excessive amount of moisture. It has been recommended to ram the soil around plunged pots of Apricots firmly down, for the simple reason, that hardness keeps it dry; in that way outside moisture cannot be so readily transmitted through the pores of the pots to the roots; but, on the contrary, the harder outer soil may absorb some of the excessive moisture from the soil within, and thus act as an assistant drainage agent. Why, may I ask, are there so many failures with Apricot trees when grown in pots? The answer is, at certain seasons they are kept too wet. Apricots cannot in moderation be kept too dry during their season of rest; and a very moderate amount of moisture should only be given them whilst they are in flower. Under ordinary circumstances, as soon as they are taken into the orchard house they have to begin to copious waterings, in a soil already over sodden; they therefore soon become gorged with crude sap, of which they cannot get rid; and the already prepared sap of autumn which is by nature destined to carry the tree over its flowering period, becomes deranged; the consequence is, the embryo germs are jerked off, and the tree yields itself up to an excess of leafage and of growth — conditions wholly at variance with the requirements of a following season. *William Earley, Digswell.*

Ventilation.—I have read carefully most of Mr. Fish's articles on this subject, but I must confess myself obtuse enough not fully to understand all his assertions. The stereotyped dogmas respecting plant food especially require examination. I will go further than Mr. Buchanan, and assert that the theory of leaf-feeding rests on no scientific foundation. Allow me to refer Mr. Fish to a very able paper on the "Nutritive Constituents of Water," by Professor Schultz-Schultzenstein in the Journal of the Royal Horticultural Society, in proof of what I now advance. The Professor distinctly asserts "that the theory of nourishment by means of air is in the most decided opposition to all practical experience." This is very decided language, which, however, points in the right direction. Mr. Fish appears to me to be in error when he says that because the atmosphere influences the growth of plants, therefore it feeds them. Certain conditions of the atmosphere would be destructive to all life, animal as well as vegetable; but this is no reason why I should believe that other states of the air should induce either animals or plants to "eat it," and on that account increase in bulk. Leaves have often been compared with lungs, but Mr. Fish compares them with the stomach, or at all events to a mouth as regards its relation to the stomach. Analogies of this kind tend to obscure the subject, and mislead the reader. If Mr. Fish will clothe his ideas in language of a strictly scientific character, the difference between him and his opponents may not be so great as at present it appears to be. Of course Mr. Fish does not expect that I should prove that plants do not feed through their leaves; the shades of Aristotle and Whately forbid such a thought; it is quite sufficient for our purpose if it can be shown what the functions of the leaf really are. All that experiment has yet been able to prove, is that the leaf elaborates the sap. This has been proved by the most accurate experiments. Poisons administered at the root have been traced through the entire circulating medium of the plant. Some interesting experiments on this subject are recorded in the Journal of the Royal Dublin Society; and also, if my memory serves me rightly, in Balfour's Botany. But have any experiments been conducted to prove that plants derive any of their food through the medium of the leaf? If so, where are they recorded? I am well aware that the venerable names of Ingenhousz, Saussure, and Liebig might be quoted by Mr. Fish in support of his theory; but I will not accept the *ipse dixit* of any man, however high his name may stand, who does not clearly prove by experiment or observation a doctrine in natural science. The idol of the theatre is no less dangerous than the idol of the forum, and is no less fatal to the advancement of inductive philosophy. It has been, I believe, a favourite doctrine with the air-feeding theorists that plants grow more rapidly in the light of day than in the darkness of the night; but what do such theorists say to such facts as have lately been mentioned in the *Gardeners' Chronicle*, about some plants growing much more rapidly by night than by day? Very injurious facts these, I am afraid, to the 'aeronauts!' If, as has been long maintained, plants feed on the

carbonic acid gas of the atmosphere; and if, as has been often asserted, the process is reversed at night—that plants then throw off carbonic acid and inhale oxygen—what becomes of Mr. Fish's air-eating dogma? Verily in that case the life of man is also the life of plants. My firm conviction is a conviction founded on experience, and capable of proof, that the best ventilator for both farmer and gardener is a good-sized manure heap. *J. D., Kildare.*

The Orange Trees at Guanersbury.—Your correspondent "W." (p. 995) has scarcely stated the case fairly as regards these trees. To select two large old trees as the subject of his uncomplimentary remarks, without knowing their history, and without allusion to the numbers of other Oranges, especially to the Tangierines, all of which are in full health and beauty, is to commit an act of injustice to those who have charge of the trees. Sixteen years since the trees were all but destitute of foliage, one had received great injuries in consequence of which the trunk had been deprived of bark for a considerable distance, in fact, in so bad a state were they at that time, that they were doomed to destruction by Mr. Forsyth, however, decided for them, and has succeeded in restoring them to their present condition, which, considering the circumstances, is an anything but unsatisfactory one. In addition to the Tangierines the visitor can hardly fail to notice the fine Conifers here, especially a noble Cupressus macrocarpa, fine specimens of Pinis insignis, Pinsapo, the Golden Yew, &c. These are remarkably fine plants, all the more so when it is remembered that they have been transplanted within but a few years. *Visitor.* [We can fully endorse "Visitor's" statements. EDS.]

Iresine Herbstii.—I am ready to confirm Mr. Simpson's assertion (see p. 1020) respecting this being a first-rate acquisition as far as bedding is concerned. It does either for ribbons or edgings, and if spared I shall use it largely next season, as it puts Amaranthus ruber and Perilla nankinensis quite in the background; with me the latter is almost ineffective, while the Iresine is the admiration of all who see it. *Henry Morris, Gardener to W. P. Stone, Esq., Court Peek, Tadmarh.*

Sequoia sempervirens.—An error has inadvertently crept into my paper (see p. 1043) relating to this tree. Nettlecomb, Somerset, should have been Nettlecomb Tor, Somerset. In addition to places already recorded where fine trees of it exist, may be named Eastnor Castle, Herefordshire, where there is a tree, which in 1863 measured 33 feet in height. *A. M.*

Roots and Leaves.—I see no useful public benefit to be obtained by pursuing this discussion with Mr. Buchanan. As long as facts and principles are not attacked, every writer is entitled to enjoy his own opinion of another's productions. It was only natural, perhaps, that your correspondent's ideas upon what ventilating papers should be, and my own, should be different. When he goes down a little deeper into first principles, he will find that the true theory and practice of ventilation, and of manuring also, depends in all cases, if not a knowledge of the "manufacture," at least of the wise "application" of "certain gases." Had he accompanied me through the composition of the atmosphere, he would also have known that mountain air does not sensibly vary from that from any other district, and contains exactly the same per centage of carbonic acid gas, which I suppose even Mr. Buchanan will admit constitutes the chief and most important food of plants, whether found in the earth or the air, albeit it is "a certain gas." Doubtless plants feed through both roots and leaves, and it is of less practical importance to know the exact proportion consumed by either, than to see that both are plentifully supplied with that of the best quality. I adhere to all I have written on the subject. *D. T. Fish.*

Bedding Chrysanthemum.—The inclosed is the Golden Gem Chrysanthemum, which I find one of the best of bedders, for let the weather be ever so wet or dry it always look gay. I really wonder that it is not more grown as a bedder. I have now a bed in full beauty, which has been much admired since last July. The dark Calceolaria is not equal to it for a ribbon border or bed. *R. D.* [The specimens are very much like the variety called Bob.—EDS.]

Societies.

ROYAL HORTICULTURAL. *Nov 3 (Weekly Show).*—Mr. Forsyth, Nurseryman Stoke Newington, contributed on this occasion six pretty Gems, Young Chrysanthemums, conspicuous among which were the white and lilac varieties of Cedo Nulli. The same exhibitor also furnished six Standard Pompons, the prettiest amongst which was Andromeda, a variety well adapted for this mode of training. Mr. B. Parker, gr. to the Hon. A. F. Anderson, Hall, Enfield, had 12 cut blooms, and an extra prize was awarded to Mr. F. C. Dickens, Vine Cottage, Flood Street, Chelsea, for cut flowers of the three varieties or sports of Queen of England Chrysanthemum. As regards Vegetables, Mr. Barley had an extensive collection, in which there were some 32 varieties. Among them were Champion of Paris Pea, Tomatos, Cauliflowers, some excellent Salsafy, Beet, Scorzoners, and a dish of Black Potatos, the under-skin of which is quite black, a colour which also pervades the flesh throughout. Mr. Young, gr. to R. Barclay, Esq., Highgate, likewise showed a good collection of Vegetables, amongst which were examples of Snow's Broccoli, Cauliflower, Savoys, and a collection of Onions, amongst which one called Ox-horn, though worthless, was remarkable for its singular shape. He had moreover a very handsome lot of Cabbage Lettuce, named Admirable. Mr. Brown, gr. to R. Wyatt, Esq., Wandsworth Lodge, Upper Tooting, stood third in point of merit; his collection contained some very fine Parsnips. At this show there was a good display of fruit. Mr. Young received an extra prize for a collection, conspicuous in which there was Robson Pippin, Yellow Ingestre, Scarlet Admirable, and Montreal Pippin Apples. A first prize was also awarded to Mr. Dixon, gr. to Lady Holland, for another collection, in which were the specimens of Easter Beurré and Beurré Diel Pears; and of Rymer, Blenheim Orange, and Ribston Pippin Apples. An extra prize was also awarded to Mr. Brown for fine examples of Beurré Diel, Gilogil, and Easter Beurré Pears, and to Mr. Barley for two dozen dishes of fruit, conspicuous amongst which were Cox's Orange Pippin, Sam Young, and Golden Harvey Apples. His Winter Nelis, Glou Morceau, and Uvedale St. Germain Pears, were likewise very good. Mr. Barley had moreover, six varieties of British Ferns, among which were examples of Athyrium F. f. Parsonsiæ, Polystichum angulare grandidens, Lastrea dilatata lepidota and dilatata collina, and Scolopendrium vulgare laceratum. An extra prize was also awarded to two Pine apples, which were collected by Mr. Stevens, at Bulbeck's, Islington.

Nov. 6 (Scientific Meeting).—W. Wilson Saunders, Esq., in the chair. After the election of new members, and the usual announcement of awards had been made, the Chairman offered a few remarks on the different subjects exhibited. Cuscuta reflexa, a tree-dwelling parasite, with small white bell-like blossoms, not unlike those of the Lily of the Valley, first came under notice. It was shown by Mr. Bull, growing luxuriantly on Ivy. Various Cuscutas, especially one which gives a reddish appearance to Furze bushes, and the ordinary Clover Dodder, were then alluded to, after which Mr. Saunders said that after attempting the culture of certain tropical kinds, he was obliged to give them up, owing to the great difficulty which he experienced in confining them to the plants on which he intended them to grow. A yellow fruited variety of the Guava or Bulbeck's Guava (Psidium aculeatus) next received attention, as did also a fine specimen of the cone-like inflorescence of Gunnera scabra, a herbaceous plant with large Rhubarb-like leaves, which in judiciously-selected situations produce a very striking effect. One little drawback to its general culture is the fact that it is not perfectly hardy, but it was mentioned that if it is protected with some dry ashes, and covered with straw, or Fern leaves, on the approach of winter, it may be induced to survive even very severe weather. The leaves die down, but they come up fresh again in spring.

Nov. 6 (Floral Committee).—In addition to the Dodder mentioned above, Mr. Bull sent various other plants, among which were the charming Lapageria rosea in blossom, various dwarf Palms, and a small collection of Orchids. The yellow-fruited Butcher's Broom, to which allusion has just been made, was furnished by Mr. Shortt, gr. to Lord Eversley at Heckfield. From Messrs. Lee came cut specimens of that most beautiful Ixia-like plant, Schizostylis coccines, which even thus late in the season is producing freely out of doors handsome spikes of rich saucer-shaped scarlet flowers, and Messrs. Veitch, as large a half-crown, and densely covering the spikes on which they grow, quite 6 inches in length. This was first brought into notice by Messrs. Backhouse, of York, and when shown by them some 12 months or so ago, received a First-class Certificate. From the same came a basket of cut blooms of the silver-leaved Grass called Poa trivialis argentea elegans. This has hitherto been known under the wrong name of Cynosurus cristatus foliis variegatis, a name under which it received a First-class Certificate; now, however, that it has been seen to prove its true character, the name must be altered as just quoted. Mr. Forsyth, gr. to Baron Rothschild, at Gunnersbury Park, Ealing, showed an extremely well-flowered plant of Anthurium Scherzerianum. J. Bateman, Esq., contributed cut blooms of Clematis Jackmanni, which was stated to have been in flower without intermission for some months, and it was also said that the blossoms will bear with impunity a large amount of frost. The new purplish lilac Dendrobium bigibbum was shown by Messrs. Veitch, and interesting groups of Orchids and other plants were shown from the Society's garden, from which likewise came cut specimens of the following fruit-bearing plants, viz., Crataegus coccinea, laden with large round bright crimson fruit; C. ovalifolia, furnished with smaller and duller red fruit than that of coccinea; C. prunifolia, less effective than either of the last-named kinds; C. Aronia, with large yellow fruit; heteropliylla, still covered with its handsome oval, dull green leaves; and C. maroccana, with large red haws; the spiny C. Crus galli, with medium-sized red fruit; C. caudata, with small orange red haws; and the well-known C. pyracantha, loaded with fruit. The same collection also contained fruiting specimens of the evergreen Berberis Darwinii, the Cotoneaster Simonsii berry tree; Holly; a shrubby Hypericum; Cotoneaster frigida, loaded with beautiful dense clusters of coral-like berries; C. nummularia, well furnished with oval bright red fruit; C. obovata, bearing little black berries; C. buxifolia, with small red fruit, and C. microphylla, with oblong orange fruit; Berry's Everlasting Grab, with comparatively large red fruit, orange fruit: Snowberry tree (Symphoricarpus racemosus); common Privet, Arum colchicum furnished with compact heads of orange-coloured fruit, and Rhododendron ciliatum, also producing its fruit in heads, which are of a bright red colour.

Nov. 6 (Fruit Committee).—From Mr. Forsyth, gr. to Baron Rothschild, at Gunnersbury Park, came a magnificent fruit of Charlotte Rothschild Pine apple, the weight of which was 9 lb. Two other fruit of Smooth leaved Cayenne Pine-apple, each weighing 7 lb., were also shown by the same exhibitor. From Mr. Downing, gr. to T. Grissell, Esq., Norbury Park, near Dorking, came fair specimens of Pomegranate, which were however scarcely ripe. Some account of the conditions under which Mr. Downing produces these fruits will be found in another column (see p. 1069). From Mr. Dalrymple, Park, near Edinburgh, showed a Grape called Champion Frontignan, which was not considered so good as the Muscat Champion, raised by him some time ago. Mangos, ripened at Chatsworth, were contributed by Mr. Taplin; they were certainly not quite high coloured, but coloured as some ripened in Lord Powis' garden at Walcot in Shropshire in 1826, and figured in the Transactions of the Society, about that date. Some Royal Muscadine Grapes, ripened out-of-doors, were shown by the Rev. Geo. Kemp. From Mr. Downing came very fine specimens of Gloire de Munich, Emperor Alexander, Blenheim Orange, Wellington, Alfriston, and Barcelona Pearmain Apples. Mr. Cox, Redleaf, furnished beautiful examples of Beurré Clargeau Pear, and Mr. Whiting, of the Deepdene, had Boswater Pear, and other fruits. From Messrs. Veitch came a collection of Beets, among which Nutting's Dwarf Red was stated to be one of the best.

STOKE NEWINGTON CHRYSANTHEMUM. *November 8 and 9.*—Exhibitions, both of cut blooms and plants in pots, were tolerably plentiful on this occasion, and altogether the Show may be said to have been a very creditable one. Of Pompons, the most beautiful collections were contributed by Mr. Forsyth and Mr. George, gr. to Miss Nicholson. Of Pompons, Mr. Forsyth received a 1st prize for well managed plants of Ixiae Cedo Nulli, General Canrobert, Duruflet, and Trevenna. Mr. Bull, who had a good collection, received a 2d prize. Pompons Mr. Forsyth was again 1st, and Mr. Butcher 2d. Of Standard Pompons Mr. Forsyth, who was first, had excellent plants of Mr. Murray, Cedo Nulli, Bob, Golden Aurora in unusually good condition, and Immitable. In the class of large plants in pots, Mr. Forsyth was 1st with beautiful examples of Alma, Golden Christine, Annie Salter, Gen. Bainbrigge, and Mount Etna. Mr. Butcher also had a good collection. A Silver Cup was awarded to Mr. George for Golden Hermine, Prince of Wales, Alma, Lady Harding, Golden Christine, and Little Bob. Pompons Mr. Forsyth was likewise 1st, and in the class of plants with single stems only, Mr. Forsyth received a 1st prize for Virgin Queen, Christine and its golden variety, and Alma. Six Pompons, with single stems, were also shown by the same exhibitor; they consisted of Cedo Nulli and its like and golden varieties, Duruflet, Hebbe, and Andromeda. Cut blooms of the following were shown by Mr. Morgan, of Plymouth, to whom an extra 1st prize was awarded, viz., Juno, Princess of Wales, Mrs. Brunlees, Venus, Dr. Brock, and Hereward. Mr. James had a 2d prize for Golden Beverley, Hetewarl, Gloria Mundi, Sam Weller, Venus, and Virgin Queen. In the class of Anemones Mr. James had a 1st prize for Marguerite, Georges Sand, Prince of Anemones, Louis Benamy, Gluck, Queen, Miss Marguerite, and Madame Godereau. Mr. Snare, Balston, and Mr. Howe also showed in this class. An excellent collection of cut blooms was shown by Mr. Meehan, who furnished Lady Hambling, Prince Alfred, Queen of England, Jardin des Plantes, Novelty, Alfred Salter, Princess of Wales, Empress of India, Lady Slade, Golden Beverley, Prince of Wales, and Cherub. From Mr. Rowe, gr. to Mrs. Lewis, Roehampton, came Empress of India, Princess of Wales, Queen of England, Prince Alfred, and other equally fine blooms, for which a 1st prize was awarded. In large collections of cut blooms the 1st prize was awarded to Mr. James, who had charming examples of Prince Albert, Lady Harding, John Salter, Nil Desperandum, Goliath, Prince Alfred, Queen of England, Golden Beverley, and others equally good. Mr. Rowe was 2d.

In the Class of 6 Blooms, Mr. Abrams, Clapton, showed fine examples of Empress of India, Nil Desperandum, Lady Harding, and others. In the maiden class for the same number Mr. Norris, Kingsland, received a 1st prize for very fine blooms; and Mr. Hutchins, Stoke Newington, received a 2d prize in the same class. Mr. James received an extra prize for fine blooms of John Salter, and Mr. Snare had beautiful specimens of Golden Beverley. As regards Incurved kinds, Pirmodeus received a prize awarded to Mr. Forsyth for Princess, a sport from Prince of Anemones. A promising white variety was also shown by Mr. Morgan.

Notices of Books.

Manuel de l'Amateur de Fruits. Premiere partie: l'Arboriculture Fruitière, en Dix Leçons. Par M. Ed. Pynaert. (*The Amateur's Fruit Manual. Fruit Tree Culture, in Ten Lessons.*) Gand, 1866, 8vo, pp. 388, with many Woodcuts.

Amongst the many thoughtful contributions to horticultural literature which have emanated from Belgian authors, the work of which the above is the title deserves to occupy a meritorious position. Happily blending theoretical teaching with practical illustration, the author systematically and progressively lays before his reader all the more important facts connected with the culture of fruit trees.

The principles enunciated are sound and applicable to our hardy fruit trees, and relate to all temperate climates, and the work may be safely commended not only to English amateurs but to those who have made horticulture their profession. M. Pynaert's first lesson is an elaborate exposition of the important facts in vegetable physiology on which the various operations in fruit culture depend, describing the two systems of organs belonging to a tree, the aërial and subterranean. He explains the importance of maintaining an equilibrium of action between root and branch that primarily Nature has established, and which by a rude and inconsiderate plan of pruning is not unfrequently disturbed. Thanks to the teaching of Knight and Lindley, and to the practical and illustrative reasoning of Rivers, we, in this country, are fully alive to the value of the cultural systems which M. Pynaert describes—systems which in the culture of fruit trees tend to induce precocity, promote fruitfulness, and improve the quality of our fruits, and the practice of which distinguishes our age as a progressive one in the gardening art. In practice with the important matters that are comprised under the heads of stock and scion, we may incidentally remark that those who prepare our fruit trees have great power for good and for evil; they may by justly and carefully apportioning the various scions to the differently constituted stocks, do much to promote success in fruit culture, or they may by carelessness produce irremediable mischief.

We cannot venture in this short notice to follow M. Pynaert in the careful examination he pursues of the various parts and functions of fruit trees. The explanations he gives of the use of the tap-roots, the form and utility of the large and small ramifying roots, the structural peculiarities of the stem and the branches, &c., provide the amateur with information on any point in the practice of fruit culture that may present itself. In his second lesson the author treats of the formation and arrangement of the fruit garden, and his remarks on this important matter are characterised with good judgment, and are as applicable to this country as to Belgium. He says (p. 36): "We comprehend under the generic denomination of fruit garden all enclosures reserved specially for the culture of fruit trees, and under this title we treat equally the orchard, which is the fruit garden of the farmer. Up to this time the orchard is the sole kind of fruit garden properly called that we find in our country, because we have the habit of so completely utilising the soil, that not only are our market gardeners at the same time fruit-growers, but very often fruit trees are intermingled in pleasure gardens, amongst shrubs, plants, and flowers." And further on he says, "French cultivators, who are certainly our superiors in managing fruit trees, have long since proved that in isolating each style of culture we arrive nearer perfection, and we find the proof in the hundreds of acres exclusively devoted to Peaches and Grapes for the table at Montreuil and Thomery."

The orchard system for the permanent and extensive culture of Apple trees is one that may be commended, just in proportion as the plan of half filling our kitchen gardens with fruit trees may be condemned. We should like to see the plan recommended by M. Pynaert of devoting a space of ground exclusively to fruit trees within a garden more generally carried out. The plan of heavily cropping and manuring fruit trees is one that tends more than anything to injure the trees, and deteriorate their produce.

M. Pynaert is essentially practical in all the matters he discusses. In regard to the soil of the fruit garden he says (p. 40): "A soil deep, of a mean consistence, neither too light nor too compact, friable and a little gravelly, containing a certain quantity of lime or chalk, and equal proportions of sand or clay, is that which in general best suits fruit trees. Chalk is naturally favourable to all Nature's 'essences,' but it is

indispensable to stone fruits, such as Peaches." Here we have a confirmation of Mr. Rivers' theory concerning the value of chalk in soil for fruit culture.

Under the head of distribution the amateur has the various questions of aspect and position fairly discussed, and the requirements of different trees duly pointed out. He is further guided in his choice of varieties by carefully selected lists of the best fruits in each section—Pears, Apples, Plums, Peaches, &c.—and these are classified by their periods of ripening, their applicability for standards or espaliers, and their suitability for different aspects. The third and remaining lessons treat of the multiplication of fruit trees, and the principle and practice of pruning and training, and into these matters the author enters very fully, giving copious illustrative sketches of the systems of grafting, training, pruning, &c. In fruit tree management no point is left unnoticed, or without comment. M. Pynaert's lessons very completely elucidate the theory and practice of fruit-tree culture. He exhibits a great and accurate and varied acquaintance with the subjects he treats, and although not expounding any novel view, or facts previously unknown to English gardeners, the most enlightened may peruse his work with profit and satisfaction, and the large majority of amateurs will find in the pages of this "Manual of Fruits" an amount of instruction that will well repay a careful and considerate perusal.

Florists' Flowers.

The employment of Early Flowering Tulips especially, as well as other Spring-flowering Bulbs, for window and conservatory decoration, is a most pleasing and worthy use of this highly popular tribe. It is satisfactory to notice what a growing taste there is in London for exterior window gardening; in fact, no one can pass through the most fashionable districts of the great metropolis, with his eyes alive to note what of horticultural interest meets the line of sight, without being struck with the rapidly developing taste for ornamental window-boxes of the newest and choicest designs. To keep these gay and attractive is a very easy matter during the summer months, but to attain this much desired result during the winter and spring months is not so easy, if a judgment be drawn from what is easily to be observed. A dreary-looking and stunted Aucuba or two, or a Box plant in a like flourishing condition, unable to draw any subsistence from the dry and ofttimes starved soil about their roots, literally to them

> "——— a wretched land
> That yields them no supplies;"

for frequently water is supposed not to be needed during the winter and early spring months, albeit a rapid evaporation is constantly taking place.

Sometimes a result not much more valuable is attained by filling the boxes early in March, when nipping and husky east winds prevail, with spring-flowering bulbs from the forcing house. The consequence can easily be surmised—blighted plants, attenuated flowers, and a thorough disappointment. In one fashionable square I saw in March of the present year the tenants of three or four boxes in just such a pitiable plight; rude winds have no sympathy with or mercy for weakly constitutions in the department of the horticulturist.

Window boxes can be made very gay indeed in the early part of the year, provided the bulbs are planted in the boxes at the outset, and so become inured to all the vicissitudes of the uncertain early spring time. Hyacinths, Narcissi, Tulips, Crocuses, Snowdrops, Scillas, and Aconites can be grouped together, and a long succession of bloom secured. I have always found pieces of turf, used to the depth of 3 inches, a capital drainage for window boxes: and on these should be placed a soil well enriched with rotted manure, and rendered friable by the use of sand. Common road-sand is easily got, and "the plants delight in it" to borrow a stock phrase from the Fat Catalogues.

Plenty of bulbs should be used; they require but little root room, and will make growth however thickly they may be quartered together. Hyacinths and the Polyanthus Narcissi can be planted low down, almost on the turf drainage. Tulips should form a stratum above these, planted in the angles of the larger bulbs; a higher formation can be composed of Crocuses, Scillas, Snowdrops, and Aconites. These last should be about an inch beneath the surface of the soil, and that again 1 inch beneath the level of the edges of the box; water freely, and finally, cover the whole with a coating of coal ashes, forming a kind of sloping roof to throw off the rain, and to serve as a protection from frost. As soon as the shoots begin to penetrate the coal ashes, they can be removed, no rigour of weather will prevent their giving forth the beautiful flowers looked for; for (to use another stock phrase), "their well-being is less dependent upon the mysteries of the gardening art, than that of almost any other class of plants in cultivation." Mysteries of the gardening art! Alas, for Fat Catalogues, is gardening involved in mysteries? Well enough it might be, where these are appreciated.

I neither like Moss nor Cocoa-fibre as a covering for boxes planted in this manner. They hold too much damp. I have tried both, and fall back upon the friendly and simple coal ashes. Plants, when used among bulbs—in a box for instance, where crowding cannot be avoided—are often injurious to the latter, because of their retention of moisture beneath their foliage. There will be plenty of foliage from the bulbs themselves to relieve the colour of the flowers, if foliage be required for that purpose.

Then for conservatory decoration, how easily are Tulips and the beautiful varieties of Narcissus grown! The former particularly, as they are the most showy of the spring-flowering bulbs, and can be retained in bloom for a long time. A grower in the Midland districts, famous for the display of Tulips made in the conservatory from the middle of December till May, prolongs the bloom of his flowers by carefully tying a piece of silk round each flower, just as it reaches its full size, using a colour similar to that of the flowers. Plenty of manure from a spent hotbed, mixed with loam, leaf-soil, and sand, forms an excellent compost for Tulips. Three bulbs in a 32-pot are enough, space and display alike considered. Weak liquid manure, or diluted guano-water, can be advantageously administered as the flowers show colour, and till they are well developed. The plants like plenty of moisture, provided good drainage is secured.

Narcissi are the most accommodating things for spring use; under the most adverse circumstances they will flower. They make but little root, and are content with a small space. Yet to do them well, they should be liberally treated. Varieties like Florence Nightingale, Lord Canning, and others, will produce 15 and 20 flowers on a truss under moderately liberal treatment. They are most effective for grouping in the conservatory, and the delicious fragrance they exhale makes them the more valuable. The following varieties are fine and distinct:—Gloriosa, large pure white, with orange cup, rough on the edge, yet one of the best; Grand Primo, pale lemon, with gold cup; also the white variety of Grand Primo, with bright yellow cup, large and fine; Florence Nightingale, white, with orange cup; Bazelman Major, large white flowers, with deep gold cup, one of the best, differing from the white Grand Primo only in the deeper colour of the cup; Sulphurine, pale lemon, with gold cup; Lord Canning, lemon, with deep golden cups, larger than the foregoing; Bathurst, pure white, with bright orange cup, very good and showy; and Sir Isaac Newton, pale yellow, with deep golden cup, more showy than the majority of flowers of this ground colour. These are all well worthy cultivation.

The following 12 early single Tulips comprise the very best sorts for pot culture. Self colours: White Pottebakker; Proserpine, silken rose; Van Vondel, silken crimson, sometimes streaked with white, very fine; Vermillon Brillant, rich vermilion; Van der Neer, purplish violet, fine; and Yellow Prince. Edged flowers: Keizer's Kroon, bright red, edged with yellow, very fine; Rose Grisdeline, rose pink and white, very fine. Striped and flaked flowers: Cramoisie Royale, rosy red and white; Roi Pepin, pure white with crimson flakes, very fine; Fabiola, rosy violet and white; and Queen Victoria, pure white, pencilled and tinged with crimson. Other sorts can also be selected from the list of kinds adapted for bedding, given at page 1022.

Finally, plant early; some sorts keep well, others very badly. Plant not later than the end of November certainly for beds; for pots plant by the end of October or early in November. *Quo.*

The Apiary.

A neighbouring cottage bee-keeper being about to take the honey from three of his stocks on the 30th of September last, I offered to do it for him if he would give me the bees at 3d. a swarm. This he gladly agreed to do. I drove look over the box and apparatus for smoking them down with fungus (as the driving plan, which I should have preferred, would have been too tedious), along with three canvas bags to hold the bees. As each hive was cleared of its occupants, the latter were at once swept out of the box into a canvas bag, and hung up in an airy passage to recover; all the empty worker comb, dark as well as light, was cut out in order to be sold to me as wax, and the business got over to the satisfaction of both parties. Hanging the bags of bees round the basket in which the necessary materials had been carried, I took them to my own garden, about a mile off, and then opening them, I placed over each in the garden house a straw vat, which I had smeared with a little honey. This was in order to get them out of the bags, without doing which I could not have united them properly to my own hives. The vats were propped up with wedges all round to give air. Early the next morning the bees had ascended, all but a few dead ones, and the vats were closed all round to keep them safely till evening; the necessity of which precaution will be seen when it is told that the edge of one of the vats having been raised at midday for a few minutes, the stock—a strong one, it was the best of the lot—pounced out like a swarm, and I lost it. Wishing to unite the two remaining stocks to one weak hive, I tried the plan of knocking them both out together on the ground, over one another, having sprinkled each as they were knocked out with sugared ale. I am afraid, however, that this double union was the cause of an unusual amount of fighting, as I am sure there were a pint of dead bees, if not more, on the ground in the morning. The dead ones too extended for a greater distance from the hive than I had ever found them do in similar circumstances. In other respects this simultaneous union of two to one appears to have answered, and the hive is now the most populous in my apiary.

I have, however, some misgivings about the queen. Can it be that when three queens had to fight it out, they were all destroyed in the confusion? And what is the way of knowing in spring (or now), that a hive is queenless? *Novice.*

‖ [Instead of choosing the easiest and least tedious plan for accomplishing your object, you seem to have adopted the most difficult and tiresome, and with but very partial success. Instead of the entire affair occupying a great part of two days, the whole might have been accomplished in little more than as many hours, deducting the time spent in going to and fro. Having previously decided on uniting the bees of two of the condemned stocks to your own, you should first drive one, then as soon as possible drive the bees of the other into the same hive; they usually ascend very quickly under such circumstances. Put the hive containing the bees for a few minutes on the two stands in succession, for the purpose of allowing the stragglers to enter; then remove it, and tie it up in a coarse canvas cloth. The third stock, to be dealt with simply, may be proceeded with in the usual way. Having brought the bees to your own garden, drive out those of the hive to be strengthened into an empty one. When settled, or towards evening, as may be preferred, having spread a large cloth on the ground, tilt up a little on its edge the now tenantless but comb-furnished hive, which is to receive the united bees, then knock out in succession the two lots close to the hive, mingling them together; there will be a grand rush into the interior. In this operation sprinkling with sweetened liquor is unnecessary. Although other methods of uniting bees may very frequently succeed, yet we know of no safer course of proceeding than to thoroughly drive out the bees of the two stocks, the one to be strengthened as well as the one condemned. The same applies where two or three are united together.

To show how rapidly operations of this nature may be performed, a short time since, at 4 o'clock in the afternoon, we drove out two miles into the country. Without any assistance we turned up and inspected the interiors of seven hives, decided which three of them should be broken up, drove the bees in succession into three empty hives, tied them up in cloths, cut out the combs containing brood, which we wrapped up carefully to prevent injury to the brood, partook of a comfortable tea with the mistress of the apiary, and returned home. Having left two of the lots of driven bees at a friend's, the remaining and strongest lot was taken a little further, and transferred into a frame hive, whose queen and bees had come to grief a short time previously. The bees were knocked out and made to enter; the hive and its coverings put right and secured, and all accomplished satisfactorily by 7 o'clock; thus the entire time occupied, including the journey out and home, and the social meal, was only three hours.

It is not very easy to find out now if the hive possesses a queen. Try the effect of giving the bees a few pounds of food at night during the space of a week, and see if this excites them to collect and carry in pollen. In spring, watch and compare with other stocks the number of pollen gatherers. With common straw hives, how difficult—with moveable frame hives how easy, to ascertain all that may be desired on such points of doubt and uncertainty!]

Garden Memoranda.

Cyfarthfa Castle, Merthyr Tydfil, the Residence of R. T. Crawshay, Esq.—One of the first things that interested us here was the pretty little Campanula pumila alba, edging some Rose and other beds near the house, and very charming its little dwarf and snowy belt looked. In moist soils and climates where it does not go off too soon this is a valuable little plant for the purpose, and also for rockwork. It was pleasing to find that all the hardy things were not thrown away, and there were actually thousands and thousands of Sweet Williams among the Rose beds scenting the whole place, and here and there some pretty old plants that now-a-days are seen in your "good garden." But we suspect the dear old things have to thank Mrs. Crawshay for their lives, as she told us of having to "protect" them from the gardeners, and we noticed some planted close against the Castle, just under the windows, evidently there to be out of the way of any horticultural Vandal. It reminded one of Mr. Henry Kingsley's "Argosy" paper; and really, ladies, we advise you to follow suit, and if your gardener happens to believe in naught but tenderlings, take the Lily, the Harebell, the Flower-de-Luce, the Forget-me-Not, the American Primrose, the sweet Polyanthus, and the various spring bulbs under your own care. They are the very flowers for ladies, sweet, vividly coloured, not requiring any long-continued daily messing like pot plants, surrounded by delightful associations, and growing away rapidly when once well planted. Doubtless, too, a little perseverance and success would soon win 'over the most obdurate of those not acquainted with their beauties, and make the greatest Goth of a gardener take kindly to them.

But Mr. Crawshay, while admiring these sweet old herbs with his accomplished lady, has also an unusual degree of respect for a good old herb of the New World, Ananassa sativa. He took us to look at about 40 fine ripe Pine-apples, cut and lying on a table, and surely it was a sight to be proud of, for better fruit are seldom seen than were many of these. But we did not require the sight to convince us of the grand way in which Pines are grown here, as Mr. Crawshay's gardener, Mr. Hannan, took the first prize for the best collection of Pine-apples at the Regent's Park in July, and also for the best single specimen. There are nearly 2500 plants grown. The varieties are somewhat numerous, but although many are grown, none are liked so well as the Black Jamaica, though of course the Ripley Queen, Moscow Queen, Lemon Queen, and Smooth Cayenne are cultivated and almost indispensable. One called the Antigua Queen is admired in consequence of its resembling the Black Jamaica in eating qualities, and it is a good rich-looking fruit. The Smooth Cayenne is of course the best to swell and ripen during the winter, as Mr. Barnes so conclusively proves at Bicton. They consider the Enville a very fine handsome variety, and few people have better opportunities of judging. Black Prince is often a noble-looking fruit, numbering 14 or 15 pips deep, somewhat after the Enville in growth, but more

difficult to finish properly. It goes off at the bottom sometimes, after one has made up his mind to have a first-class fruit in a few days. Of course the Providence comes in for a good deal of space, but mostly for exhibition purposes, and not for its eating qualities. It looks well on the table or the exhibition bench, but has not the crowning virtue of a good flavour. This kind is mostly grown planted out, as it comes much larger in that way, owing, perhaps, to an excess of moisture.

The Black Jamaica is considered the best winter Pine of any kind grown. There were nearly 300 plants of it ready and preparing to fruit during the autumn and winter. Mr. Hannan hoped to have 100 fruit of it ripe on Christmas Day, and had over 70 on the last. All the plants of this variety are grown in 12, 14, and 15-inch pots, and plunged in tan beds. These are found to be quite large enough, and very often the best fruits are in the 12-inch pots. A little liquid manure is used during swelling. The plants are from 19 or 20 to 24 months old, or thereabouts, when the fruit is cut. There are, as may well be supposed, many houses devoted to Pine-growing—lean-to, span, half-span, and five-light pits.

The Grape is equally well attended to, and upwards of 70 distinct kinds grown, the greater number recently planted in very large Vineries, with borders, &c., constructed on the best principles. One magnificent lean-to, about 105 feet long and 20 wide, was recently planted with mixed kinds for late fruiting, and doubtless when they arrive at a bearing stage the sight will prove very imposing. It contains 24 different kinds of Vines—Lady Downes' Seedling, Black Alicante, Burchardt's Prince, Muscat Hamburgh, &c., among the best known, all doing well and looking in good condition. Mr. Crawshay is very fond of Barbarossa, and gives it a leading place here. The chief peculiarity of the house is that the great outside border in front is covered with a house of its own, so to speak. A well-made glass frame runs from the front of the lean-to to the front margin of the border, and covers it completely; and of course the heat is not in the least obstructed, while the border is kept among the best known, all doing well and looking in good condition. Mr. Crawshay is very fond of Barbarossa, and gives it a leading place here. The chief peculiarity of the house is that the great outside border in front is covered with a house of its own, so to speak. A well-made glass frame runs from the front of the lean-to to the front margin of the border, and covers it completely; and of course the heat is not in the least obstructed, while the border is kept perfectly dry. Such a covering might be well utilised in a garden, and what good gardener could rest satisfied to see such a great expanse of border unoccupied? Bedding plants, which usually require very little water during the dull months, might be preserved in boxes, and numerous other uses might be made of it according to the circumstances of the place. A great quantity of rain falls about here, and renders such effective protection necessary.

In another span-roofed Vinery 34 different sorts are planted, including Duchess of Buccleuch, Royal Vineyard, Tynninghame Muscat, Foster's Seedling, and others; as well as some Swiss Grapes, and Cape varieties. This house with an adjacent one will prove an excellent trial ground for many of the newest sorts recently introduced. In an adjacent house several kinds are grafted on the Hamburgh, by way of experiment. One of the Muscat houses which displayed an unusually fine crop of fruit, had the border outside, but heated and covered with glass, supported on irons driven into the border and at the sides and front. It can, of course, be warmed and protected at discretion. There is a Peach wall 380 feet long, a late Peach wall 144 feet long, and numerous other structures suited for forcing and fruit growing on a large scale, besides the plant department, to which space prevents full allusion, and all in the finest condition, with every promise of a vas increase of interest within a few years' time. *Viator.*

THE TEMPLE CHRYSANTHEMUMS.—These are now in excellent condition, and as usual form a great treat to Londoners. In Mr. Broome's best border is a fine display of flowers, among which the following are particularly worthy of notice, viz., Prince Alfred, General and Lady Slade, Mrs. Haliburton, Cherub, Aureum multiflorum, a compact medium-sized yellow, and Gloria Mundi, another charming yellow, apparently a sport from that fine flower Jardin des Plantés, than which few yellows are so bright and handsome. Conspicuous among other flowers are likewise Oliver Cromwell, Venus, Golden Beverley, Lady Harding, and Prince of Wales, all of which are at present in great beauty. Mr. Dale's best blooms, like those of Mr. Broome, are under cover. The most beautiful among them are General Slade, Venus, White Globe, Progne, Cherub, and that still fine Anemone-flowered kind Fleur de Marie. His beds this year are also excellent. The contents of two are especially worthy of record. In the centre of No. 1 is Gerbe d'Or, bright yellow; encircling which, in bands, are Aurora Borealis, orange; Mr. Murray, violet-rose; Miss Talfourd, white; Liliputienne, brown; and General Canrobert, yellow. No. 2 contains the same centre piece as the last, around which are bands of Aurora Borealis, Duruflet, pink; Salamon, crimson; M. Rousellon, and Mrs. Julia. The best self-coloured beds are Salamon, crimson; and Drin Drin, which is still one of the most effective yellows for out-door purposes.

Miscellaneous.

Plants of Ancient Egypt.—Prof. Unger, in a paper communicated to the Imperial Academy of Sciences at Vienna, shows that Egyptian bricks contain a variety of evidence, preserved, as it seems, in an imperishable form. He has examined a brick from the pyramid of Dashour, which dates from between 3400 and 3300 B. C., and found imbedded among the Nile mud or slime, chopped straw, and sand, of which it is composed, remains of vegetable and animal forms, and of the manufacturing arts, entirely unchanged. So perfectly, indeed, have they been preserved in the compact substance of the brick, that he experienced but little or no difficulty in identifying them. By this discovery Prof. Unger makes us acquainted with wild and cultivated plants which were growing in the pyramid-building days; with freshwater shells, fishes, remains of insects, and so forth, and a swarm of organic bodies, which, for the most part, are represented without alteration in Egypt at the present time. Besides two sorts of grain—Wheat and Barley—he found Teff (Eragrostis abyssinica), the Field Pea (Pisum arvense), the common Flax (Linum usitatissimum)—the latter having, in all probability, been cultivated as an article of food, as well as for spinning. The weeds are of the familiar kinds; Wild Radish (Raphanus Raphanistrum), Corn Chrysanthemum (Chrysanthemum segetum), Wartwort (Euphorbia helioscopia), Nettle-leaved Goosefoot (Chenopodium murale), Bearded Hare's-ear (Bupleurum aristatum), and the common Vetch (Vicia sativa). The relics of manufacturing art consist of fragments of burnt tiles, of pottery, and a small piece of twine, spun of flax and sheep's wool, significant of the advance which civilisation had made more than 5000 years ago. The presence of the chopped straw confirms the account of brickmaking as given in Exodus, and by Herodotus. *Journal of Botany.*

Calendar of Operations.

(For the ensuing week.)

THE advantage of getting the roots of fruit-bearing trees in some degree under command, by keeping them near the surface, is universally admitted; but even now the system is not so generally followed as it ought to be. For the formation of fruit-tree borders, no general rule can be laid down which would be applicable to all cases: the practice must be regulated by the quality of the soil and by the nature of the subsoil. That in which almost all kinds of fruit trees are the most productive and the most permanent, is what is called "strong loam;" that is, loam rather inclining to a clayey than to a sandy texture. Perfect drainage is, however, essential in such soil, more especially if the under stratum is a stiff clay. To facilitate this, and to prevent the roots from penetrating into bad soil, a layer, 6 or 8 inches thick, of stones, brick-bats, or other hard rubble, should be spread evenly over the bottom as trenching proceeds, observing particularly to make the bottom of the border quite smooth, and with a regular fall of six inches from the wall to the tile-drain, which must be laid along the front, a few inches below the bottom of the border, to carry off surplus water. The depth of soil should be governed by its texture and quality. Of such as is now treated of, two feet in medium depth will be amply sufficient for the support of any tree whatever. If of a more clayey nature, 15 inches at the wall, gradually deepening six inches to the front of the border, is a proper depth. In very light soil, a greater depth should be given, say 2 ft. or 2 ft. 6 in. Where the subsoil is not wet, nor in any other way inimical to vegetation, the layer of rubble at the bottom may be dispensed with. As we would diminish the depth, so likewise we would increase the width of wall-borders. Some writers have advised them to be as wide as the wall is high; but this is a somewhat objectionable rule. For a 12-feet wall (and for permanent trees none ought to be lower) the border should be at least 18 feet wide; if 20, so much the better; but in that case the necessary walk along the front might be made to pass over the prepared ground, so that the roots could extend beneath it. In grasses, the surface of the border ought to be somewhat higher than the level of the walk, more or less, according to circumstances. Where a garden is so unfortunately situated that thorough drainage is impracticable, the borders for the finer kinds of wall trees may with great advantage be elevated a foot or more above the general surface. It is scarcely necessary to observe, that no stimulating manure should be mixed with the soil in which fruit trees are planted. If these hints, and those we have from time to time given upon planting, be acted upon, and the branches are allowed ample space to extend, there will be but little necessity for root-pruning.

FLOWER GARDEN AND PLANT HOUSES.

Continue to remove plants getting out of flower from the conservatory, in order to make room for Chrysanthemums and others which are coming into beauty. While the present mild weather continues, let the temperature be kept as low as possible.

ACHIMENES.—A batch of these may now or soon be started. They may either be grown in pans or pots, according to taste.

AURICULAS. — Give these air on all favourable occasions; remove dead leaves, and water sparingly.

BEDDING PLANTS.—During the present favourable weather give air freely during the day.

CALCEOLARIAS.—When a shift is required it is a good practice to sink the ball a little, in order to admit of a top-dressing of fresh mould being put over the riper parts of the young wood. Thorough drainage, too, is a point to which particular attention must be paid.

CAMELLIAS.—Any now coming into blossom should be carefully attended to. Air must be given them whenever the weather is favourable.

CHINESE PRIMULAS.—Continue to keep forward plants of these well attended to with water. As soon as any in beauty have faded, replace them with others coming into flower.

PELARGONIUMS. — Plants of these intended for flowering early should be placed as near the glass as possible. Let the night temperature range between 40° and 50°, and see that none of the plants suffer from want of water.

VIOLETS.—The beauty and fragrance of these will be increased by letting them have plenty of air whenever the weather is sufficiently mild for that purpose.

FORCING GARDEN.

CUCUMBERS. — Be content with only moderate forcing at this season; but keep down thrips and red spider in houses heated with hot water by maintaining a moist healthy atmosphere.

PINES.—Plants intended for fruiting during the summer must now have careful attention. Let them have a steady bottom-heat, and a top-heat of about 65° at night, allowing the thermometer to rise 10° or 15° higher during the day time.

VINES.—Examine fermenting material upon borders of the early house, in order to see that it does not get either too hot or too cold. Avoid a high temperature at night, and admit air freely in fine weather, using the side ventilators only, when it is showery.

HARDY FRUIT AND KITCHEN GARDEN.

The prevalence of rain lately will have made heavy land much too wet to be worked with advantage; it will therefore be best to defer for a time all labour which involves the stirring of the soil. In the absence of other work, deciduous hedges might be trimmed, prunings collected and burnt, rotten leaves and dung for composts turned, stored roots examined, &c. On wet days straw mats might be made.

FRUIT TREES.—According as the weather is more or less favourable, the various operations of planting, pruning, nailing, or digging, amongst the smaller fruit-trees, should be forwarded. With regard to the latter work, the ground being lightly turned over, chiefly for the sake of neatness, and not for the purpose of cropping, it might be done when digging in other cases would be injudicious. Preserve cuttings for propagation of the best Gooseberries and Currants; also suckers of Raspberries to make new plantations.

STATE OF THE WEATHER AT CHISWICK, NEAR LONDON,
For the Week ending Nov 7, 1866, as observed at the Horticultural Gardens.

Nov	Moon's Age	Barometer. Max.	Barometer. Min.	Temperature. Of the Air. Max.	Of the Air. Min.	Of the Air. Mean	Of the Earth 1 foot deep.	Of the Earth 2 feet deep.	Wind	Rain.
Thurs. 1	24	29·947	29·854	54	42	48·0	51	51	S.W.	·01
Friday 2	25	29·798	29·749	48	39	43·4	50½	51	S.W.	·01
Satur. 3	26	29·803	29·651	58	30	44·0	49½	51	S.W.	·03
Sunday 4	27	29·839	29·904	56	40	48·0	50	51	W.	·02
Mon 5	28	29·904	29·841	60	40	50·0	50	51	S.W.	·00
Tues. 6	29	30·132	29·992	60	40	50·0	50	51	W.	·00
Wed 7	● 0	30·039	29·984	57	47	52·0	49	51	S.W.	·01
Average		29 931	29 852	58·0	41 8	49·3	50 1	51 1		·08

Nov. 1—Overcast, uniformly overcast, rain at night.
" 2—Hazy, with slight drizzle, dark heavy clouds; fine at night.
" 3—Rain, cloudy, fine at night, slight evening frost.
" 4—Fine, partially overcast, cloudy, overcast.
" 5—Fine, cloudy; overcast, and mild at night.
" 6—Fine; very fine throughout.
" 7—Overcast, brisk wind, fine, fine, but rather boisterous.
Mean temperature of the week, 4·1dth deg. above the average.

STATE OF THE WEATHER AT CHISWICK,
During the last 40 years, for the ensuing Week, ending Nov 17, 1866

November	Average Highest Temp.	Average Lowest Temp.	Mean Temp.	No. of Years in which it Rained	Greatest Quantity of Rain.	Prevailing Winds. N	N.E.	E.	S.E.	S.	S.W.	W.	N.W.
Sunday..11	50·3	34·5	42·4	15	1,02 in.	3	6	7	1	7	5	31	3
Mon. ..12	50·3	33·4	41·8	16	0·50	4	5	9	3	3	7	27	4
Tues. ..13	49·8	33·4	42·6	21	1·16	9	5	5	2	7	6	31	6
Wed. ..14	49·3	33·4	42·6	19	1·24	6	5	4	6	2	7	35	5
Thurs ..15	48·7	34·6	41·6	18	0·34	3	6	5	3	4	10	27	5
Friday . 16	48·8	33·1	41·4	14	0·34	1	9	6	3	3	10	31	3
Satur. ..17	48·1	34·2	41·1	19	0·38	1	9	5	3	1	9	8	2

The highest temperature during the above period occurred on the 12th, 1841—therm. 65 deg., and the lowest on the 15th, 1848—therm. 18 deg.

Notices to Correspondents.

GARDEN GROUND: *Constant Reader.* Your ground, which you describe as cold, wet, and retentive of moisture, wants an alterative. Give it a good dressing of fresh loam, or a dressing of lime rubbish of any kind. This would be far better than manuring. There would be no advantage in using manure in the liquid form, except in so far as it might meet the special wants of a dry season.

MUSHROOMS: *S. T.* Spawn when the bed itself, not the surface of the bed, is declining below 80°.

NAMES OF PLANTS: *Hendet.* 1, Goniophlebium subauriculatum; 2, Blechnum occidentale, large form; 3, Asplenium viride; 4 and 5, Adiantum setulosum.—*J. N. H.* The fruit of some Euonymus, probably of E. europæus, the common Spindle-tree, but without the leaf it is impossible to say with certainty.—*P. M.* 1, Arabis birsuta. 2, Juncus conglomeratus, spiral variety; we have never seen it in flower.—*J. K.* Spiræa ariæfolia. 2, Spiræa bella: 3, Symphoricarpus vulgaris.—*W.* Cestrum aurantiacum.—*P. J.* Next week.

PENTSTEMONS: *S. B.* Your seedlings did not arrive in good condition; but as far as we can see, they do not appear to be better than kinds possessing the same colours already in cultivation.

PHOTOGRAPH OF THE COMMITTEE OF THE INTERNATIONAL EXHIBITION: *C N.* The photograph in question is entirely a matter of private speculation.

REMOVAL OF PERMANENT TREES: *P L.* The landlord has the right to prevent the removal of trees or shrubs in the absence of any agreement to the contrary.

SHOWING FRUIT: *Yorks.* You should apply to the Superintendent, at the Gardens, South Kensington.

STOVES: *Perseverance.* We cannot compare with the one you allude to. Hays' stove, with peat charcoal as fuel, has been highly spoken of, and this fuel would probably answer with the stove you mention.

THE FRENCH EXHIBITION: *W. F.* We have already given (p. 970) all that has yet appeared on the subject.

TREE CUTTINGS: *Constant Subscriber.* The autumn season is preferable to spring for planting the cuttings you mention. Hollies and Wellingtonias will root if planted in frames now, and cuttings of Laurels will root in a sheltered situation in the open ground.

VEGETABLES: *C C.* It would depend on custom whether such roots as you mention (Potatos, Jerusalem Artichokes, Beet, Carrots, Turnips, &c.) were washed or not before taken to the kitchen. As a general rule, we apprehend not.

WALKS: *P C.* Concrete walks, if well made, are excellent, and quite free from weeds. You will find full information about them in previous volumes. See also an article headed "Grog," at p. 994 of our present volume.

WAMPEE FRUIT: *G S, Tonbridge.* The fruit sent has no claim to the above designation, it being the fruit of Blighia sapida, sometimes called Akee. In tropical countries the thick white cup-like aril, in which the seeds are embedded, is eaten for the sake of its agreeable flavour. Our specimen is a very fine one. The Wampee is quite different.

COMMUNICATIONS RECEIVED.—G. S. (with thanks).—S. R. H.—W. R. McN.—W. H. F.—D. T. F.—A. F. B.—J. A. (with thanks).—Prof. Oudemans.—S. C.—E. B.

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The Agricultural Gazette.

SATURDAY, NOVEMBER 10, 1866.

THE Committee of the Central Farmers' Club did well to accept for the first lecture of their session Mr. HOWARD'S account of what he had seen during his recent tour in America. Mr. J. A. CLARKE was unable, owing to his official connection with the Steam Cultivation inquiry of the Royal Agricultural Society, to read the paper on that subject with which the winter's meetings in the Club House were to have been opened; and Mr. JAMES HOWARD having devoted the comparative holiday which cattle plague and its consequences had given him, to an agricultural tour through the States, was prepared with an extremely interesting journal to takes its place. The lecture founded on this journal we have given in the following pages. Its description of "Things in America" gives a glowing account of what Anglo-Saxon energy has accomplished in the West, and it will be read with great satisfaction on both sides of the Atlantic.

Both sides were represented during the discussion which followed it. H.M. Consul at Chicago bore testimony to the high value (in the interests of international good will) of the frank and cordial admiration with which Mr. HOWARD had spoken of American industry and manners; and on the other hand there was a slight expression given to the reaction which so much praise of JONATHAN might have been expected to produce in the minds of an assembly of English farmers.

Mr. THOMAS, having heard of the great scope for agricultural enterprise in the far West, wished to know whether the sons of wealthy farmers, for example in the Eastern Counties, who might expect to be started at home with 4000*l.* or 5000*l.* apiece, would command as good a position and as great success if they should take their "portion" across the Atlantic and invest it in one of the enormous prairie farms of which we had been told. Mr. HOWARD'S serio-comic answer to this inquiry was received with great laughter. He said that, whether it was to be taken as an exact reply or not to the question, one of the first entries he had made in his memorandum-book upon the other side, was that it is of no use to send a fool to America. Of course there was immediately a somewhat peppery rejoinder to this, but it was hardly listened to, and the assembly were evidently with Mr. HOWARD when he declared, that although he had meant chiefly to amuse them with a joke, yet there was a certain amount of criticism really intended by his remark; and that if young men, distinguished perhaps chiefly as good cross-country riders, whose career hitherto had given little more than a certain amount of aptitude for the employments, and a keen relish for the enjoyments of country life, thought to succeed amid the shrewd hardworking agriculturists of the North-Western States, they would find themselves mistaken.

There is no better lesson to be got out of Mr. HOWARD'S admirable lecture than the value which American experience teaches us of a thoroughly good common education during youth, and an early introduction into the labours and responsibilities of professional life, in order to professional success, whether in agriculture or any other occupation.

The title of the lecture—"Things in America"—justified one of the subsequent speakers in his reference to other stations on the Western Continent for the agricultural emigrant. If any one desired to spend 10 or 15 years in laborious money-making, with the intention of returning to his own country for the education of an *English* family, he recommended emigration to the territory of the Argentine Republic. A correspondent there, whose letters were read to us, gives most hopeful accounts of the prospects of the sheep farmer in that country. And certainly a small capital goes a great way where 2 per cent. per month is to be had for the use of it. For 2800*l.* the tenancy of 14,000 acres had been obtained, along with the stock upon that area of 6000 sheep, 500 or 600 cattle, and 200 or 300 horses. The prospects of the Colony are improving, and if ever the question—What is the best land for the English agricultural emigrant? should be discussed before the London Farmers' Club, the experience which was thus related to us pointed all in the direction of the country to the north of the River Plate. We only add on this point that our correspondent Mr. LATHAM, who has occasionally sent us agricultural reports from that country, has written a book, giving all his experience as an agriculturist there in full detail; and that Messrs. LONGMANS have announced it for sale.

HOPING that the Cattle Plague has at length for the present time virtually ceased, we have this day given the full statistics of the disaster which has during the past 15 months befallen so many counties. The extreme inequality of the attack, which would have made a national insurance fund so valuable an assistance, will be seen on reading the figures in another page. Cheshire well-nigh ruined, while the sister dairy county Gloucestershire has been barely touched, and other contrasts in the northern counties of the Island quite as great, make us regret that public opinion was not early enough directed to mutual help as the only palliative that was possible. The results, as read in connection with the whole live stock of the country, do not appear to have been so terrible as we know them to have been in particular localities. About one-twentieth of the cattle of Great Britain have disappeared; and a charge of 5 per cent upon the whole, if it could have been levied and distributed accordingly, would have spread the burden so that it would have at least been tolerable. The following are the figures which Mr. CLODE gives us as the aggregate result of the Cattle Plague up to October 27, so far as the facts have been reported to the Statistical Office:

	Great Britain.	England.	Wales, including Monmouth.	Scotland.	
Of the Estimated Ordinary Stock of Cattle, the aggregate number of reported Attacks have been ..	5 141	5.866	1.437	4.838	percent.
Of the Number of Cattle on Farms &c where the Disease has been reported to exist, the aggregate number of Attacks have been	55.553	54.445	65.593	59.024	,,
Of the Total Number of *Attacks* whose results have been reported, there were:—					
Killed ..	35.024	40.917	14 .834	12.909	,,
Died ..	51.210	47.695	71 .610	62 .237	,,
Recovered ..	13.766	11.388	13.866	24.763	,,
	100.000	100.000	100.000	100.000	,,

PARISH ROADS.

I SUPPOSE we are all agreed that the minimum of friction, jarring, and jolting is desirable as a matter of comfort and economy. Many an old vehicle and horse might last years longer on a level well-made road, although they would soon come to grief when encountering the "jogs" and "jounces" of ill-made parochial roads, of which I am sorry to say there are still too many, even in my own neighbourhood. As turnpikes are now just abolished, one naturally asks the question—are these excellent highways (now that they have passed into parochial management) to be assimilated to the ill-conditioned state of our local roads and byeways? If so, road travelling will be still further discouraged. There are several gross and flagrant errors and omissions in parish road management that merit our censure, especially as they are both costly and injurious to traffic.

For instance, a quantity of gravel is shot down and spread, but never again attended to in any way. Horses soon establish a smooth foothold in a deep middle furrow, and a smooth track on each side for the wheels, forming two narrower furrows. As the animals very naturally avoid the intermediate ridges, we thus get two receptacles for water with shoulders to prevent its running off the road; the consequence is a saturation which penetrates and softens the road, and thus we see these ruts and ridges remaining until the road is again mended, probably for a couple of years or more, the intermediate ridges being scarcely worn. So a most important duty is neglected, viz., that of watching the road occasionally after the gravel is spread, and raking the young or newly-formed ridges into the nascent furrows, thus causing the horses to feel for a new footing, and by repeating the operation some half dozen times, getting an evenly worn surface, rounded, and highest in the middle, so that the water flows quickly to each side, thus leaving the road high and dry, the great point being to prevent water from stagnating on the surface.

Thus the road gains constantly in compactness and durability. A labourer with a common rake will regulate a long road at a very small cost. He should also be provided with a stone hammer to break any large stones that will not bind, or that form bumps above the surface. These two important operations are almost invariably omitted in most parishes, and consequently much inconvenience and loss results. Again, as to the time of road mending, I have been annoyed a whole year by a quantity of loose stones being shot down in dry March and rolling about all summer, a portion of them finding their way into the adjoining ditches. So long as parish road mending is left to the caprice or crotchets of local and annually changing surveyors, we can hardly expect much improvement, for ideas vary from brickbats to stones picked from the fields, the latter varying from the size of cricket balls to that of eggs; and as there is no raking or breaking, but merely a shooting down, it is easy to imagine the uncomfortable consequences. This is a great financial mistake, which insidiously abstracts from the farmer's pocket, through the medium of surveyors' rates, breakages, broken knees, and waste of power, a sum much greater than that required by a more perfect management, such as we see on our great public roads. It is a common thing to elect as surveyor a farmer who won't spend money; and thus neglect soon results in evidence of false economy; after a heavy shower one can at once detect the weak places on a road. Little pools, having no means of escape, except by soaking into and weakening the road, indicate the necessity for a few shovelsful of gravel. I have seen the very worst management where the road runs up and down hill. Here it is of the utmost importance that the crown of the road should be kept highest, and that the rapidly gathering water should have means of escape into a ditch at intervals on the hill. Instead of this, and for want of a grating or two and pipes under the road, the rushing torrent roars down to the bottom of the hill, or down the middle of the hollow road, carrying with it into the ditches cartloads of gravel from the torn and furrowed road.

There is one very important matter that should be observed and particularly attended to. However well made the road may be, Grass will grow on its untrodden sides, and this Grass has the power to raise the sides many inches in the course of a few years, and this is how it occurs:—Fine Grasses of the cereal tribe require much silica: this silica is prepared for them from the pounded and aerated surface of the road, and carried to them by the road-washings. Consequently these Grasses multiply their roots to such an extent among the subterranean gravel that the quantity of vegetation thus formed forces up the earth or sides of the road, and causes a high ridge, where before none existed, thus preventing the escape of water and injuring the road. This Grass should be annually removed before it takes too strong a hold of the ground.

The growth of these ridges, forced up by subterranean vegetation, suggests many reflections. Antiquaries may no longer wonder at finding the architecture of ancient nations many feet below the surface. Vegetation has forced the earth above them, or engulphed them. Place any substance on a good Grass field and it will soon disappear; neglect your gravel walks for some years and they will become a miniature pasture, with the gravel some depth beneath. Buildings are said to settle down in course of time, but it is really active vegetation, aided by worms, that swallows them up. The sides of roads are particularly encouraging to the growth of fine Grasses, because of the amount of available silica and alkalies, and particularly because the Grass thus placed avails of a rain-fall probably six times as great as on ordinary Grass, for all that falls on the bare road flows to the Grass.

A practical farmer who visited me said he always manured his Grass land with gravel from a pit, and it answered admirably. The gravel was soon "appropriated" by the Grass, whose roots envoloped and embedded it.

Besides, there is always moisture under a stone in the hottest summer day, and thus the water is retained for the thirsty Grass roots.

If you pull up a tiny plant of Grass, growing in your gravel walk, after rains when the gravel is loose, you will be astonished to find what an immense bunch of roots it has in proportion to its surface growth, and how much fine grit it has appropriated and attached to those fibres. We can thus easily conclude what soils suit fine Grasses. How soon a dressing of chalk lumps disappears from the surface, and in old Grass pasture what a tangled web of fibrous roots arrest the rainfall, and appropriate much of it. It is this power of arresting surface water that prevents the immediate action of drains in coarse water-Grass pastures. But as these are gradually superseded by a better class of Grasses (the seeds of which should be sown), drainage will act more perfectly.

To return to new roads, let us hope that more counties will avail of the new Act, by which local mismanagement will give place to uniform and sensible action. *J. J. Mechi, Tiptree, Nov.* 5.

P.S. Where roads have been long neglected, it is a good plan to pick up and sift the sides and put the gravel in the middle of the road.

A certain farmer, when surveyer, used to fill the centre or foot furrow with gravel, which caused the horses to shift their track, still there was no raking or levelling, but the middle was thus kept highest.

CATTLE PLAGUE ENQUIRY.

(This Return gives the Total Number of Cases in Great Britain, which have been ascertained from the Official Information received at the Statistical Office from Inspectors. All "Back" Cases are included in Column 3.)

DIVISIONS AND COUNTIES PROPER.	Area in Acres.	Number of Cattle enumerated to every 100 Acres.	Stock of Cattle enumerated 5th March, 1866.	Number of Cattle Killed, or Died of the Disease, up to Week ending March 31, 1866. §	Total Number of Outbreaks from the Commencement of the Disease. *See Note.*	Aggregate Number of Healthy Cattle Slaughtered to prevent the Spread of the Disease.	3. Total Number of Diseased Cattle reported since the Commencement of the Disease. NOTE.—These Columns are corrected for "Back Cases" and for any additional information received since the last Report.				Percentage of Attacks on estimated Ordinary Stock of Cattle.	Stock of Sheep enumerated 5th March, 1866.	From the Commencement of the Disease.						
							Attacked.	Killed.	Died.	Recovered.	Unaccounted for.			Total Number of Farms in which the Disease has appeared.	Total Number of Sheep Slaughtered or Healthy to prevent the Spread of the Disease.	Diseased Sheep. Attacked.	Killed.	Died.	Recovered.	Unaccounted for.
GREAT BRITAIN	56,964,260	8.4	4,785,836	149,811	27,107	52,411	253,723	85,013	124,303	33,413	10,994	5.141	22,048,281	104	419	6,826	1,092	4,640	1,031	63
ENGLAND	32,221,998	10.2	3,270,299	113,010	22,587	38,439	198,474	77,570	90,421	21,589	8,894	6.866	14,993,389	94	419	6,667	1,053	4,541	1,013	60
WALES (WITH MONMOUTHSHIRE)	5,102,885	11.3	578,136	5,565	820	528	8,388	1,180	5,794	1,117	297	1.437	1,799,821	..	..	..	..	..	..	..
SCOTLAND	19,639,377	4.8	937,401	31,236	3,700	13,444	46,861	6,263	28,088	10,707	1,803	4.838	5,255,077	10	..	159	39	99	18	3
ENGLAND AND WALES.																				
I. Metropolitan Police} District up to March 31 †	440,469	8.6	37,787	6,740	890	2,923	7,701	3,202	3,687	302	450	17.776	122,097	..	..	..	..	..	..	..
I. "The Metropolis" † from March 31 .. .. §	..	..	..	..	57	130	214	169	29	16	..									
II. South Eastern Division .	3,810,891	5.9	226,579	4,171	724	1,220	4,889	1,769	2,544	465	171	2.121	2,262,954	6	..	295	3	175	117	..
III. South Midland Division .	2,976,940	8.9	263,978	12,724	2,750	7,340	29,347	8,946	10,073	1,541	387	7.570	1,792,121	26	224	996	141	605	146	14
IV. Eastern Division	3,302,371	6.0	198,889	8,142	1,672	2,234	11,568	3,511	4,865	1,787	405	5.587	1,477,741	30	72	4,146	420	2,551	746	27
V. South Western Division .	5,075,117	12.6	639,002	1,202	235	481	1,857	756	829	207	71	1.590	2,795,595	1	50	511	359	152	..	..
VI. West Midland Division .	3,900,550	12.5	489,559	7,218	1,260	1,851	15,107	6,556	6,098	1,548	905	3.041	1,663,149	2	..	5	..	5	..	..
VII. North Midland Division	3,570,305	12.6	450,420	8,439	2,922	6,786	19,067	11,028	6,274	1,326	539	4.137	1,876,167	12	72	168	42	119	2	5
VIII. North Western Division	1,926,299	15.3	295,596	39,500	6,275	6,733	73,800	26,682	39,644	8,583	3,491	22.044	314,604	4	..	209	..	196	..	13
IX. York Division	3,896,967	9.7	373,353	20,619	4,943	5,760	34,690	8,036	18,368	5,938	2,361	8.895	1,379,087	11	1	425	88	334	2	1
X. Northern Division ..	3,358,480	8.8	295,306	4,555	854	3,381	8,636	4,931	2,613	974	118	2.880	1,402,868	2	..	2	..	2	..	..
XI. Welsh Division	5,102,885	11.3	578,136	5,565	820	528	8,388	1,180	5,794	1,117	297	1.437	1,799,821	..	..	..	..	..	..	..
SCOTLAND.																				
I. Southern Division ..	2,069,696	6.3	130,899	791	61	148	889	197	614	76	2	676	1,072,159	1	..	2	..	1	1	..
II. South Eastern Division .	1,192,524	4.5	53,890	2,559	376	1,667	3,176	367	2,196	496	111	5.618	647,967	1	..	1	1	..	..	..
III. South Western Division.	1,462,307	10.5	153,263	5,332	514	1,088	6,775	1,979	3,614	881	301	4.372	449,490	..	..	..	..	..	..	..
IV. West Midland Division .	2,693,176	3.6	98,043	3,999	413	476	5,891	2,400	3,098	1,320	523	5.778	874,736	..	..	..	..	..	..	..
V. East Midland Division .	2,780,492	4.6	128,294	17,086	2,122	9,420	26,825	2,673	16,419	6,908	825	18.461	776,891	8	..	156	38	98	17	3
VI. North Eastern Division .	2,429,594	8.1	197,090	1,578	213	646	3,310	756	1,287	1,026	241	1.513	994,714	..	..	..	..	..	..	..
VII. North Western Division.	1,739,876	1.7	31,443	1	1	..	1	1	..	..	..	.001	815,760	..	..	..	..	..	..	..
VIII. Northern Division ..	2,261,622	3.3	74,909	..	..	..	..	..	..	..	..	..	323,360	..	..	..	..	..	..	..
ENGLAND.																				
II. 1 Surrey (extra Metro.)	377,280	5.8	22,037	985	154	598	1,187	444	551	110	82	5.156	121,928	..	..	..	..	..	..	..
2 Kent (extra-Metrop.)	954,764	5.2	50,835	1,267	251	376	1,423	467	821	102	33	2.741	709,056	1	..	64	..	32	32	..
3 Sussex	999,911	8.0	74,670	1,108	180	308	1,223	320	589	97	17	1.614	485,056	2	..	26	..	17	9	..
4 Hampshire	1,070,216	4.6	42,085	367	52	117	361	127	193	38	3	.737	619,593	1	..	154	..	108	76	..
5 Berkshire	451,210	6.7	30,149	504	88	21	600	151	390	118	36	2.267	327,816	2	..	21	3	18	..	..
III. 6 Middlesex ‡ (see Met.)	..	..	..	..	22	38	130	119	8	3	..	..	..	..	..	..	..	..	..	..
7 Hertfordshire (ex.-Me.)	399,945	5.8	20,830	348	62	124	369	243	278	45	16	2.762	206,858	..	..	..	..	..	..	..
8 Buckinghamshire ..	466,932	11.1	51,840	859	172	1,470	2,582	1,871	504	187	20	4.901	263,015	7	53	141	18	113	..	..
9 Oxfordshire	472,717	8.9	42,135	1,425	337	341	3,704	2,160	1,190	305	49	8.710	333,304	2	..	7	7	..	..	..
10 Northamptonshire ..	630,358	11.8	74,269	2,194	435	1,758	2,858	1,168	1,455	181	54	3.738	435,837	7	50	124	16	105	3	..
11 Huntingdonshire ..	229,544	7.7	17,667	2,145	346	1,083	2,494	467	1,789	196	82	12.588	117,821	2	121	42	8	34	..	..
12 Bedfordshire	295,582	8.6	25,513	403	73	248	629	270	316	30	13	2.427	189,250	..	..	..	..	..	..	..
13 Cambridgeshire ..	525,182	6.0	31,504	5,370	1,161	2,498	7,875	2,686	4,533	494	162	21.226	255,036	8	..	662	92	353	143	14
IV. 14 Essex ‡ (extra-Metro.)	1,000,389	5.1	50,736	1,855	284	665	2,451	575	1,461	305	110	4.660	373,129	7	..	482	63	306	111	2
15 Suffolk	947,681	7.9	55,767	1,630	411	313	2,442	1,255	968	190	29	4.295	407,929	8	6	1,122	208	455	435	24
16 Norfolk	1,354,301	6.8	92,386	4,657	879	1,316	6,673	3,681	2,436	294	262	6.876	596,683	15	66	2,542	140	2,192	209	1
V. 17 Wiltshire	865,092	9.0	77,784	102	24	38	122	50	53	12	7	.157	596,822	..	..	..	..	..	..	..
18 Dorsetshire	632,025	11.1	70,002	12	7	10	84	60	15	..	..	.120	492,043	..	..	..	..	..	..	..
19 Devonshire	1,657,180	11.1	184,077	145	39	20	224	87	82	34	21	.122	769,126	..	..	..	..	..	..	..
20 Cornwall	873,600	15.3	133,652	803	129	287	1,113	334	585	156	38	.828	300,049	..	..	..	..	..	..	..
21 Somersetshire ..	1,047,220	16.5	173,547	140	45	126	314	210	94	2	8	.181	636,976	1	50	511	359	152	..	..
VI. 22 Gloucestershire ..	805,102	12.0	96,844	106	19	29	130	60	51	8	11	.134	356,873	..	..	..	..	..	..	..
23 Herefordshire ..	534,823	12.2	65,188	589	48	79	739	191	488	96	24	1.124	295,096	..	..	..	..	..	..	..
24 Shropshire	836,095	13.5	112,998	3,218	534	845	7,395	3,388	2,742	788	347	6.567	457,127	..	..	..	..	..	..	..
25 Staffordshire	728,468	14.7	107,298	2,621	522	669	5,929	2,585	2,359	521	484	5.534	231,946	..	..	..	..	..	..	..
26 Worcestershire ..	472,165	9.7	45,789	134	24	85	260	175	43	30	12	.566	204,164	1	..	1	..	1	..	..
27 Warwickshire ..	564,946	11.9	67,249	550	116	146	744	168	455	105	36	1.097	224,878	1	..	3	..	4	..	..
VII. 28 Leicestershire ..	514,164	17.3	89,115	226	75	171	427	219	160	46	2	.478	290,554	1	..	1	..	1	..	..
29 Rutlandshire	95,805	12.1	11,651	15	3	..	19	7	12	..	..	.163	75,755	..	..	..	..	..	..	..
30 Lincolnshire	1,775,457	9.5	168,231	6,524	2,288	5,180	14,081	7,661	5,070	893	457	8.369	1,088,204	7	15	80	27	51	2	..
31 Nottinghamshire ..	530,076	12.8	67,163	1,287	357	1,103	3,280	2,134	972	146	28	4.792	345,639	4	57	87	12	67	..	6
32 Derbyshire	658,803	17.2	113,195	387	102	332	1,260	1,017	160	41	42	1.109	176,122	..	..	..	..	..	..	..
VIII. 33 Cheshire	707,078	13.2	93,044	36,449	5,318	4,693	67,766	23,776	32,730	8,053	3,147	52.288	96,980	1	..	209	..	196	..	13
34 Lancashire	1,219,221	16.6	202,552	2,750	957	2,040	6,094	2,966	2,514	530	344	2.368	217,615	..	..	..	..	..	..	..
IX. 35 West Riding	1,709,307	11.1	189,341	7,410	1,772	2,390	11,014	2,159	6,508	1,789	558	5.598	500,196	3	..	123	..	123	..	..
36 E. Riding (with York)	771,139	8.4	64,899	6,092	1,522	1,863	12,514	3,340	6,228	2,037	909	17.502	416,853	5	1	278	88	190	..	..
37 North Riding	1,350,121	8.8	119,233	6,517	1,649	1,507	11,162	2,527	5,629	2,112	894	8.876	162,038	3	..	24	..	21	2	1
X. 38 Durham	622,476	8.4	52,322	305	72	215	503	167	262	96	38	1.068	146,696	..	..	..	..	..	..	..
39 Northumberland ..	1,249,299	6.3	78,441	989	181	645	1,125	317	675	107	18	1.417	644,487	..	..	..	..	..	..	..
40 Cumberland	1,001,273	10.9	109,275	3,221	601	2,321	6,918	4,447	1,698	741	62	6.179	396,021	2	..	2	..	2	..	..
41 Westmorland	489,342	11.4	55,828	..	..	..	..	..	..	..	..	..	224,604	..	..	..	..	..	..	..
WALES (WITH MONMOUTHSHIRE).																				
XI. 42 Monmouthshire ..	368,369	10.0	36,795	..	..	..	..	..	..	..	..	..	131,153	..	..	..	..	..	..	..
43 South Wales —																				
Glamorganshire ..	547,434	8.4	45,911	..	..	..	..	..	..	..	..	..	177,851	..	..	..	..	..	..	..
Carmarthenshire ..	606,204	13.9	84,106	..	..	..	..	..	..	..	..	..	310,293	..	..	..	..	..	..	..
Pembrokeshire ..	401,691	17.1	68,842	..	..	..	..	..	..	..	..	..	244,412	..	..	..	..	..	..	..
Cardiganshire ..	443,387	10.7	47,384	..	..	..	..	..	..	..	..	..	185,46	..	..	..	..	..	..	..
Brecknockshire ..	466,158	6.4	29,904	..	..	..	..	..	..	..	..	..	242,715	..	..	..	..	..	..	..
Radnorshire	272,128	10.3	28,006	..	..	..	..	..	..	..	..	..	181,376	..	..	..	..	..	..	..
44 North Wales —																				
Montgomeryshire .	483,322	12.1	58,628	..	..	..	..	..	..	..	..	..	220,241	..	..	..	..	..	..	..
Flintshire	154,007	10.5	16,281	3	498	278	4,343	1,061	2,612	742	188	19.837	85,187	..	..	..	..	..	..	..
Denbighshire	396,692	12.1	48,605	3,032	324	250	4,045	170	3,182	575	109	8.134	176,405	..	..	..	..	..	..	..
Merionethshire ..	385,291	8.7	33,344	..	..	..	..	..	..	..	..	..	205,091	..	..	..	..	..	..	..
Carnarvonshire ..	370,27	11.9	44,072	..	..	..	..	..	..	..	..	..	139,317	..	..	..	..	..	..	..
Anglesey	193,453	18.3	35,427	..	..	..	..	..	..	..	..	..	33,715	..	..	..	..	..	..	..

* The Metropolitan Police District includes the whole of the County of Middlesex and City of London, and parts of the Counties of Essex, Herts, Kent, and Surrey.

† "The Metropolis" includes "all Parishes and Places in which the Metropolitan Board of Works have power to levy a main drainage rate."

‡ Previous to March 31st the whole of Middlesex and parts of Hertfordshire and Essex (as well as parts of Kent and Surrey) were included in the "Metropolitan Police District." *See Note*.

§ This column shows the Number of Cattle reported to have perished on account of Plague prior to the enumeration of Stock on 5th March 1866.

Note.—If a Farm is revisited by the Disease, after having been free for 21 days, it is regarded as a fresh Outbreak, and the place is again included in this Column.

Note.—It must not be inferred because a County has not any attacks among Sheep included in this statement, that it is necessarily free from Disease, as delay occasionally takes place in reporting cases.

CATTLE PLAGUE ENQUIRY—*(Continued).*

(This Return gives the Total Number of Cases in Great Britain, which have been ascertained from the Official Information received at the Statistical Office from Inspectors. All "Back" Cases are included in Column 3).

DIVISIONS AND COUNTIES PROPER.		Area in Acres.	Number of Cattle enumerated to every 100 Acres.	Stock of Cattle enumerated 5th March, 1866.	Number of Cattle Killed or Died after being attacked by Plague, during the Week ending March 31st, 1866.*	Total Number of Outbreaks from the Commencement of the Disease.†	Aggregate Number of Healthy Cattle Slaughtered to prevent the Spread of the Disease.	3. Total Number of Diseased Cattle reported since the Commencement of the Disease. NOTE.—These Columns are corrected for "Back Cases" and for any additional information received since the last Report. Attacked.	Killed.	Died.	Recovered.	Uncounted for.	Percentage of Attacks on estimated ordinary Stock of Cattle.	Stock of Sheep enumerated 5th March, 1866.	From the Commencement of the Disease: Total Number of Farms in which the Disease has appeared among Sheep.	Total Number Slaughtered of Healthy Sheep to prevent the Spread of the Disease.	Diseased Sheep. Attacked.	Killed.	Died.	Recovered.	Uncounted for.
	SCOTLAND.																				
I.	1 Wigtown	327,000	10.9	35,703	..	..	..	..	..	..	..	..	..	118,669	..	..	..	..	..	..	..
	2 Kirkcudbright	610,343	5.7	34,658	34	3	5	39	8	26	4	..	.110	271,467	..	..	..	..	..	..	..
	3 Dumfries	702,953	6.3	44,361	689	48	102	773	146	563	64	..	1.716	371,480	..	..	..	..	..	..	..
	4 Roxburgh	428,404	3.8	16,084	68	10	41	78	43	25	8	2	.483	310,537	1	..	3	1	1	..	..
II.	5 Selkirk	166,824	1.2	2,027	15	6	13	17	5	10	2	..	.833	100,885	..	..	..	..	..	..	..
	6 Peebles	227,869	2.6	5,970	10	2	12	12	8	2	2	..	.201	125,831	..	..	..	..	..	..	..
	7 Berwick	362,951	5.0	16,192	235	32	30	340	63	172	103	2	2.204	193,388	..	..	..	..	..	..	..
	8 Haddington	179,142	5.4	9,650	546	66	387	628	31	515	50	32	6.154	91,414	..	..	..	..	..	..	..
	9 Edinburgh	294,925	5.5	13,018	1,065	213	740	1,382	189	878	245	70	9.817	113,479	1	..	1	1	..	..	..
	10 Linlithgow	81,112	9.9	8,029	668	57	485	791	71	612	94	7	9.095	23,070	..	..	..	..	..	..	..
III.	11 Lanark	568,867	9.2	56,206	4,096	382	698	5,004	1,686	2,566	580	178	8.208	160,014	..	..	..	..	..	..	..
	12 Ayr	735,202	10.3	75,544	748	58	177	1,062	137	658	157	80	1.353	262,973	..	..	..	..	..	..	..
	13 Renfrew	158,208	18.6	21,513	488	76	213	739	196	396	144	43	3.359	26,503	..	..	..	..	..	..	..
IV.	14 Bute	109,375	7.6	8,259	..	..	..	..	..	..	..	..	..	34,318	..	..	..	..	..	..	..
	15 Argyll	2,083,126	2.8	57,831	..	..	..	..	..	..	..	..	..	706,621	..	..	..	..	..	..	..
	16 Dumbarton	204,800	5.2	10,564	684	82	137	1,037	60	686	247	44	9.219	53,405	..	..	..	..	..	..	..
	17 Stirling	295,375	7.2	21,346	3,225	331	359	4,854	280	3,272	1,073	279	19.715	86,392	..	..	..	..	..	..	..
V.	18 Clackmannan	29,440	7.1	2,104	256	63	204	490	34	245	204	7	20.763	9,468	..	..	..	..	..	..	..
	19 Kinross	49,812	8.1	4,028	625	51	315	974	104	646	224	..	20.933	22,450	..	..	..	..	..	..	..
	20 Fife	328,447	8.3	27,205	3,880	407	1,264	5,605	588	3,691	1,326	10	17.978	93,685	5	..	111	31	74	4	..
	21 Perth	1,814,062	3.6	66,156	3,373	530	1,158	6,030	550	4,110	1,741	229	9.481	194,675	1	..	1	..	1	..	..
	22 Forfar	366,750	5.0	28,645	8,452	1,052	5,758	14,717	1,458	7,737	3,570	952	35.359	156,653	2	..	44	7	24	13	1
VI.	23 Kincardine	252,250	8.5	21,520	1,260	173	429	2,083	510	1,200	1,023	241	13.000	41,673	..	..	..	..	..	..	..
	24 Aberdeen	1,289,627	10.6	133,451	318	40	207	527	246	78	5	..	.244	109,292	..	..	..	..	..	..	..
	25 Banff	449,219	8.3	36,542	..	..	..	..	..	..	..	..	..	55,409	..	..	..	..	..	..	..
	26 Elgin	340,000	6.0	20,408	..	..	..	..	..	..	..	..	..	69,078	..	..	..	..	..	..	..
	27 Nairn	147,500	3.8	5,622	..	..	..	..	..	..	..	..	..	19,862	..	..	..	..	..	..	..
VII.	28 Inverness	2,733,701	1.6	47,334	1	1	..	1	1	..	..	..	.002	522,606	..	..	..	..	..	..	..
	29 Ross and Cromarty	2,016,775	1.8	36,100	..	..	..	..	..	..	..	..	..	293,754	..	..	..	..	..	..	..
VIII.	30 Sutherland	1,307,188	.9	11,262	..	..	..	..	..	..	..	..	..	164,060	..	..	..	..	..	..	..
	31 Caithness	455,708	4.4	19,999	..	..	..	..	..	..	..	..	..	82,676	..	..	..	..	..	..	..
	32 Orkney, and	598,726	7.2	43,098	..	..	..	..	..	..	..	..	..	76,624	..	..	..	..	..	..	..
	33 Shetland																				

* See Note § on previous page. † See Note on previous page.

CATTLE PLAGUE IN GREAT BRITAIN.

Week Ending	Number of Farms &c. in which Fresh Outbreaks took place.	Number of Cattle reported as having been Attacked, Killed, Died, and Recovered, during each Week from Commencement of the Outbreak. *See Note.* Attacked.	Killed.	Died.	Recovered.	Proportion, from Commencement of Disease, on the Estimated Ordinary Stock of Cattle in Great Britain. Per Cent. Attacks.	Mortality.	Proportion of Recoveries on the aggregate Number of Attacks whose Results have been Reported. Per Cent. Recoveries.
1865.								
June 24	1	30	..	28	..	.001	.001	.000
July 1	5	147	103	21	..	.004	.003	.000
,, 8	14	528	317	148	..	.015	.013	.000
,, 15	12	321	168	117	8	.022	.014	.879
,, 22	20	490	118	357	7	.032	.028	1.078
,, 29	33	757	409	286	6	.047	.042	1.008
Aug. 5	76	1,145	299	756	20	.070	.063	1.485
,, 12	95	1,291	607	453	23	.095	.086	1.625
,, 19	148	1,175	393	621	15	.119	.106	1.593
,, 26	170	1,270	440	654	35	.145	.129	1.836
Sept. 2	174	922	321	485	18	.163	.144	1.898
,, 9	197	847	325	374	9	.181	.159	1.843
,, 16	266	1,331	402	649	50	.208	.181	2.258
,, 23	248	1,393	477	506	83	.235	.202	2.812
,, 30	258	1,666	551	849	133	.269	.231	3.578
Oct. 7	315	1,436	484	719	160	.298	.255	4.418
,, 14	309	2,364	616	997	158	.346	.288	4.961
,, 21	311	1,935	694	854	147	.385	.319	5.331
,, 28	292	2,210	498	1,103	188	.420	.352	5.833
Nov. 4	412	3,188	672	1,639	345	.494	.388	6.735
,, 11	429	3,761	706	2,132	326	.570	.456	7.200
,, 18	668	4,316	790	2,634	388	.658	.525	7.605
,, 25	733	5,011	784	2,906	571	.750	.600	8.369
Dec. 2	863	5,679	598	3,328	508	.874	.689	8.899
,, 9	870	6,098	813	4,292	792	1.016	.784	9.447
,, 16	960	5,991	753	5,112	955	1.178	.902	10.074
,, 23	955	8,331	697	5,427	1,090	1.347	1.026	10.715
,, 30	1,120	9,506	729	6,338	1,278	1.540	1.169	11.306
1866.								
Jan. 6	1,075	10,922	634	7,669	1,442	1.761	1.338	11.761
,, 13	1,178	12,468	767	8,371	1,734	2.014	1.524	12.292
,, 20	1,220	13,146	815	8,853	1,967	2.280	1.719	12.574
,, 27	1,261	12,744	572	9,293	2,317	2.538	1.919	13.293
Feb. 3	1,293	13,397	724	9,297	2,059	2.810	2.122	13.661
,, 10	1,272	14,326	777	10,463	2,065	3.100	2.349	13.844
,, 17	1,237	15,706	996	10,879	2,710	3.418	2.590	14.308
,, 24	1,003	13,113	3,537	7,989	2,961	3.684	2.823	14.850

Week Ending	Number of Farms &c. in which Fresh Outbreaks took place.	Number of Cattle reported as having been Attacked, Killed, Died, and Recovered, during each Week from Commencement of the Outbreak. *See Note.* Attacked.	Killed.	Died.	Recovered.	Proportion, from Commencement of Disease, on the Estimated Ordinary Stock of Cattle in Great Britain. Per Cent. Attacks.	Mortality.	Proportion of Recoveries on the aggregate Number of Attacks whose Results have been Reported. Per Cent. Recoveries.
1866.								
Mar. 3*	899	9,814	6,914	3,641	2,311	3.883	3.037	15.086
,, 10	901	10,057	9,964	1,701	1,496	4.088	3.253	14.898
,, 17	777	8,084	7,006	883	1,124	4.220	3.414	14.783
,, 24	645	6,758	6,005	367	626	4.387	3.544	14.584
,, 31	582	6,746	6,808	196	981	4.524	3.667	14.566
April 7	477	4,728	4,234	147	348	4.629	3.754	14.408
,, 14	426	3,795	3,346	151	295	4.686	3.825	14.338
,, 21	433	3,986	3,604	114	238	4.777	3.900	14.187
,, 28	322	3,314	3,005	97	253	4.844	3.963	14.081
May 5	355	2,609	2,395	89	236	4.897	4.013	14.017
,, 12	293	2,848	2,544	56	264	4.965	4.068	12.955
,, 19	237	2,148	1,874	70	306	4.998	4.105	15.031
,, 26	192	1,380	1,317	43	133	5.026	4.133	13.918
June 2	177	1,116	1,017	48	78	5.049	4.154	13.885
,, 9	122	1,004	906	34	84	5.069	4.174	13.861
,, 16	103	506	526	23	28	5.081	4.185	13.839
,, 23	77	500	453	12	93	5.091	4.193	13.848
,, 30	68	282	271	5	26	5.097	4.199	13.842
July 7	59	327	291	15	21	5.103	4.205	13.832
,, 14	46	322	290	19	22	5.110	4.211	13.822
,, 21	38	264	209	13	18	5.114	4.216	13.816
,, 28	45	240	197	8	8	5.119	4.220	13.807
Aug. 4	45	254	227	5	10	5.124	4.223	13.797
,, 11	32	166	153	7	6	5.127	4.228	13.790
,, 18	29	129	121	7	2	5.129	4.230	13.783
,, 25	17	148	120	6	20	5.132	4.233	13.783
Sept. 1	17	101	84	4	13	5.134	4.235	13.783
,, 8	22	70	67	3	..	5.136	4.236	13.779
,, 15	19	58	55	3	..	5.137	4.237	13.776
,, 22	21	69	67	2	..	5.138	4.239	13.772
,, 29	12	45	41	2	..	5.139	4.240	13.769
Oct. 6	11	33	28	5	..	5.140	4.240	13.767
,, 13	3	11	10	1	..	5.140	4.240	13.767
,, 20	3	6	6	..	..	5.140	4.241	13.766
,, 27	4	15	15	..	..	5.141	4.241	13.766

Note.—These numbers are corrected for "back cases" throughout, but are subject to further corrections on the receipt of additional information.

* This is the first *complete* week after the passing of "The Cattle Diseases Prevention Act," dated 20th February, 1866.

CATTLE PLAGUE.

RETURNS FOR WEEK ENDING NOVEMBER 3.

THE return of the reported cases of cattle plague in Great Britain, for the week ending Saturday, November 3, states the following facts:—The cattle plague, which has prevailed in Great Britain since June, 1865, has now so nearly ceased to exist that during the week ending November 3, only two animals are reported as having been attacked; this is a decrease of 13 on the return for the previous week. It is hoped that this is the last weekly return that will be necessary in recording the progress of a disease which so recently as February in the present year attacked 15,706 cattle in one week, and which in the aggregate has attacked 253,725, or one in every 19 of the estimated ordinary stock of cattle living. A fresh outbreak took place in one farm; the number that appeared in the last return was four. Not any healthy cattle have been slaughtered during the week from having been in contact with diseased animals. The cases reported are for the following two petty sessional divisions of England—viz., (Warwickshire) Warwick, one attack; (Yorkshire, North Riding) East Bulmer, one. No cases of cattle plague in sheep have been returned during the week; the total number reported to the date of this return is 6826.

THINGS IN AMERICA.

[The following paper was read on Monday evening last by Mr. James Howard, of Bedford, before the London Farmers' Club.]

MR. JAMES HOWARD prefaced his paper by observing that since he arrived in London he had been told that a great many persons expected to hear a great deal in the way of anecdote. Much had been said and written about America for amusement and in a satirical strain, and he had no doubt that he could amuse them with a number of anecdotes; but he thought that in addressing the members of the Farmers' Club he should take a business view. He should be very sorry if any gentleman had taken the trouble to come there from a long distance in the hope of being amused: his object was to instruct. Mr. Howard then proceeded to say: Some 30 years ago, when a boy at home, a well-known American, Dr. Fisk, was a guest of my father's. At night, it was a great treat to me to sit up and listen to his glowing descriptions of that great country across the Atlantic. I formed, at that time, a strong desire to go and see the land which, to my youthful mind, seemed to present so many attractions. The occupations, however, of a busy life prevented the realisation of these aspirations. In the spring of this year circumstances (no Royal Agricultural Society's Show) seemed to favour the accomplishment of my long-cherished wish. I accordingly determined to go and see for myself a country which all the older countries of the world have begun to regard with so much interest. When I sailed across the Atlantic I had not the remotest idea of giving publicity in any account of my trip, much less of addressing this large and influential Club. I was, however, at the time in a difficulty, caused by Mr. Algernon Clarke's inability to fulfil his engagement to read a paper on the subject of steam cultivation, I very reluctantly consented to fill the gap. I may, perhaps, be pardoned in making just one remark upon the subject which was on the card for discussion this evening. I am convinced that on both sides of the Atlantic it must ere long excite more interest than it does at present. Steam has slowly, but not less surely, superseded every other power with which it has been brought into competition; and I most thoroughly believe it will, before many years, be the chief motive-power employed in tillage operations throughout the civilised world.

Extent.—America is a country which must be seen to be understood. You may read volumes of books about a distant land, but a short visit will impress the mind more deeply, and afford more correct views than all the books you can collect. I had read much and heard much about America before going, but my mind was not impressed with anything like an adequate idea of its vast extent or its great resources. I went, I should remark, from New York through Indiana, Ohio, and Illinois, to Iowa, beyond the Mississippi, and back through Illinois, Ohio, Pennsylvania to Washington, Virginia, and New Jersey, to New York again; thence to Newport and Boston, through the New England States to Saratoga, and once more to New York. The enclosed land of America—I allude to the States, I leave out Mexico, Canada, and the other territories—amounts to the enormous breadth of 400 millions of acres; the unenclosed, or uncultivated, to about a billion and a half—figures which seem to dwarf Great Britain into a mere speck upon the map of the world. The area of the United States alone is bigger than the whole continent of Europe. Notwithstanding the vast extent of the territory indicated by these figures, the whole has been surveyed, and those portions which are likely to be settled within a reasonable time are mapped, divided into townships, subdivided into "squares," sections, and again into subsections. The roads and cross-roads are also laid out, and the widths determined. These several divisions are numbered and registered both in the office of the Surveyor-General at Washington, and in the Counties Register offices of the several States. No question, therefore, of title can arise, and land in America can be transferred as readily as Bank Stock.

The People.—I have said that America is a country which must be seen to be understood. I may say the same of its people. It is notorious how little the people of France and England, although such near neighbours, understand each other; but then they speak different languages; but to me it is passing strange, that people speaking the same language, reading each other's periodicals and literature; a people of the same race, descendants in the main of the same parent stock, should entertain such erroneous views respecting each other as do the Americans and English. It is difficult to say whether the Americans know less of the English or the English of the Americans; but I incline to the latter opinion, and for this reason: where, you meet with one Englishman who has been to America, you meet with ten Americans who have been to England. Again, it has been too much the fashion with public writers to hold up the American people to ridicule, to represent them as rough, ill-mannered, boastful, unprincipled, with scarcely a redeeming feature. I cannot, of course, vouch for what they were in years gone by, nor can I say they are altogether free from the vices attributed to them. I do not maintain that in etiquette or personal manners they come quite up to the English standard. But any deficiency in this respect is more than compensated for by the absence of that stiffness and formality of the one class of English, and of the extreme servility of the other class. The Americans certainly can "brag;" but then, as J. A. Wright, a large Pennsylvanian ironmaster, whom I twitted with this propensity, replied, "Yes, we acknowledge it;" adding, "you will remember we inherit it from you." If asked the question, I should be obliged to confess they have shot far a-head of the old country in the art of bragging. But, to speak seriously, I do believe the American people have been misrepresented and traduced by some of our public writers, in a way that no other people on the face of the earth have been. Three of England's leading commercial men, who, after having visited America, have published to the world their ideas of America and its people—I allude to Mr. Whitworth, of Manchester, an engineer of the highest celebrity, and subsequently more widely known by his improvements in guns; Mr. Chambers, the great publisher of Edinburgh; and lastly, Sir Morton Peto—these gentlemen, in my opinion, have in their oooks done not only much to enlighten us upon things in America, but they have done justice to the American people. Our professional writers have done them as great injustice. I went to America with a good many of the prejudices of Englishmen, expecting to find at least the bulk of the people rough, rowdy, uncouth, and vulgar. Dickens, the Trollopes, and other writers might have dealt with the characters they have portrayed. I can only speak of the people as I found them. I travelled some 5000 miles without once being subject to insult or rudeness of any kind. I mixed with all classes—for there are no first, second, and third class on their railways or steamboats—and I met with nothing but civility and politeness. The working classes are well-behaved, and as a rule, are better educated and more intelligent than our own. The wealthier classes I found to be communicative, openhearted, and hospitable; indeed, as pleasant and agreeable a people as I could wish to mix with. I could give you many instances of what we know as "good breeding," but as it would be foreign to the objects of this Club, I forbear. I will, however, mention one circumstance. At Pittsburgh I went to the bank with my letter of credit, which I handed to a clerk, to draw some "greenbacks." A grey-headed gentleman, evidently one of the principals, came up, and I guessed I was a stranger in their city." I said, "Yes, I was from England." He asked whether he could be of assistance, in giving me letters of introduction to the manufacturers. I thanked him, telling him to whom I had letters of introduction; finding I was in good hands, he said how pleased he should have been to have facilitated the objects of my visit. This is one instance among many of people upon whom I had not the slightest claim, giving themselves trouble to make my visit pleasant and agreeable. I went to a large number of manufactories in various branches, at all of which I was received with the utmost politeness, and shown the various processes without the least reserve.

American Agriculture.—I must now direct your attention to the real business of this evening's meeting, viz., the agriculture of America.

America has been styled the granary of Europe: it is, doubtless, the largest corn growing country in the world. It is mainly upon its agriculture that the progress of the country depends; its manufactures are comparatively unimportant, as from three-fourths to seven-eighths of the population are engaged in agricultural pursuits. Although we may learn a good deal on various subjects from our go-a-head kinsmen in the art and practice of agriculture, the old country is in the position of teacher. As might be expected in a comparatively new country, the agriculture, as a rule, is far behind and far behind that of England. That the farming should not have the neat and finished appearance which it presents in England and Scotland is not to be wondered at, when the dearness and scarcity of labour are considered, and when it is remembered how large a number of the inhabitants of the soil were not brought up to the business of farming. A very large proportion of the farms in the older States have been reclaimed from the primeval forest: for hundreds upon hundreds of miles the stumps of the trees still remain in the fields, so that the date of the settlement of the country can be told by the number of the stumps remaining. In the rocky and stony districts the stones still remain piled in heaps, the plough and the reaping-machine having to thread their way between these stumps and heaps of stones. The system pursued in clearing the land of timber is as follows: In the early autumn the underwood is cut and piled. In the winter the trees are felled on to or toward the stacks of underwood, which are then set on fire. After this, the small stumps are extracted by a crab, worked by oxen or horses: the larger stumps are left to rot. The ground is then ploughed, or, as we should think, scratched over. Two or three crops of Indian Corn are taken, in order to get rid of the second growth of underwood; when it is left in Grass until the larger stumps are sufficiently decayed to be extracted. The Grass of America has nowhere the splendid, rich growth of our English pastures. Whether this arises wholly from the climate, I have some doubt. I think want of care in preparing the land, selection of seed, and subsequent stocking, have something to do with the miserable condition and appearance of the American pastures. If sheep are depastured on young permanent Grasses, a good pasture must not be expected, even in our more humid climate. After having travelled for weeks through the old forest-land, with its blackened stumps and rigzag rail-fences (or "snake-fences," as they are called), to get a view of those grand, open prairie-lands is a relief scarcely to be described. In the wooded district the toil of clearing and bringing the land into cultivation is immense. On the prairies the settler has no such labour; he has simply to plough up the ground and sow the seed. The prairie lands are of three kinds—flat, something like our fens, and about as inviting districts to live in, without an many parts a tree or a shrub as far as the eye can reach. Then there are the rolling prairies—having a slight undulating surface and some what more inviting locations than the flat, but not, to those who have an eye to beauty, so inviting as the high rolling prairies. The most beautiful country for farming I saw in America was in Iowa, across the Mississippi; indeed, it is one of the most picturesque countries I have ever looked upon. Fine land in the States is to be purchased at less than it would let for in England; but more on the price of land presently. This fine State contains 50 millions of acres, only eight millions of which are at present under cultivation. The system generally pursued in American farming is one of exhaustion. Traces of this practice are beginning to be felt in the older-settled States in the gradually and steadily diminishing yield. There can be no doubt that the evils of such a course will be much more generally and seriously felt unless a change of system be adopted. Rotation is little observed. Root crops, except Potatos, are rarely seen. Crop after crop of corn is taken from the soil without anything in the shape of fertilisers being returned. The bones of the country are either thrown away, or collected, and exported. So also of the Linseed and Cotton-cake—as there are little native demands, these are exported to Europe. The use of manures and feeding stuffs is practised by a few, but they are quite the exception. An old farmer on the banks of the Wabash, in Indiana, told me he had grown grain crops—generally Indian Corn—for 35 years in succession, with scarcely a dressing of manure, and that the last crop of Indian Corn had yielded no less than 80 bushels an acre. The land, as you may suppose, is remarkably rich; but, as a shrewd Quaker farmer from Ohio, who joined us about an hour after, remarked, such a course was too common, but that it must come to an end—that he had cleared no less than 600 acres of land himself, had brought up a large family and settled them in farms, and had found it most profitable to keep plenty of stock, to observe a proper rotation, and to deal with the soil liberally. The farms are mostly small—averaging about 100 acres. In the Western country they are larger, many being 500 to 1000 acres. One gentleman, Mr. Sullivant, in Illinois, who invited me to go and see him, farms 70,000 acres, and does it systematically and well. A large proportion of the cultivators are what may be described as working farmers—much of rough exterior; but, under the admirable public-school system, they are generally fairly educated. The immense circulation of most of the agricultural journals is a proof that they are a reading people. The *New York Tribune* issues a weekly number, in which great prominence is given to agricultural matters. The issue I found to be over 200,000; the *American Agriculturist*, 150,000. The larger and more opulent farmers are very gentlemanly and intelligent men; know well what is going on in England—I thought, sometimes, better than many English farmers. There is another, and this is a very large, class in America—I mean amateur farmers. Doctors, lawyers, bankers, merchants, manufacturers—all seem possessed with the same love for farming so general on this side. I met with many of this class, for the acquisition of land is so easy. I found, however, that they sold the same as amateur farmers do on this side—viz, that farming was a very pleasant occupation, but that it did not pay. The Wheat and other cereal crops are much shorter and lighter than we grow in England—I should say fully one-third less, 30 bushels Wheat being considered a good crop. Indian Corn yields more—100 bushels an acre are occasionally raised; but 50 to 60 bushels is considered a fair crop. It is highly prized, is often cut green for fodder, and attains a height of 12 feet. The feed in an acre is something wonderful. It is given to all kinds of stock. I find my own six horses will consume upon grain.

Agricultural Machinery.—The tillage of the land is so mixed up with the question of the implements used, that what little I have to say will be under the head of "Agricultural Machinery." In England, as you are all aware, an enormous demand has been in during the last 10 years for improved agricultural implements. This mainly arises from a more correct appreciation of the value and advantages of good machines. In America, owing to the high rate of wages and the difficulty of obtaining an adequate supply of labour, agricultural machinery calculated to save manual labour has been a positive necessity. Without it the reaping and mowing could not be harvested, and without the threshing machine they could not be brought to market. Hence the trade in agricultural implements has reached gigantic proportions. From inquiries I made I found that at least 100,000 reaping and mowing machines are made annually in the States. I was there during the harvest—everywhere the reaper was to be seen going. The scythe or the sickle was just as exceptional as the reaping machine was in England ten years ago. The threshing machines are almost entirely worked by steam power. I saw them at work on the banks of Lake Ontario, who had 10 horses yoked to his threshing-machine, seemed much surprised that in England we did all our threshing by steam power. He had never heard of such a thing. The implements of the farm, if we except ploughs, are of very inferior design to our best English machines. I thought one great want in American farming was good steerage drills and horse-hoes to follow. In a country where labour is so scarce and dear, the hoeing of the corn crop by animal power would be an immense boon. The drills are of the most rude description, and the distance by far rendering the use of the horse-hoe impracticable; and, as labour is so dear, in most cases the corn and the weeds seem to be left to grow together until the harvest. To a farmer in the north of New York State, on whose land I went to see some splendid Swedes, I said, in the course of talking about Thistles, I said, "If that crop had been in England, we should have cut out the Thistles." He replied it would not pay, adding he did not mind Thistles, for he always had a good crop of Wheat after. Nearly the whole of the ploughs used are furnished with a fork for cutting the weeds—the idea being to get more work out of the labourers. I found the prairie farmers very desirous of having a good "gang-plough," as it is called, on which the ploughman could ride. I told them if the men had easier work, it would be at the expense of the horses, as the ploughman would ride, and in consequence open furrows undesirable, the land is frequently ploughed as follows: A short ridge is set in the middle of the field, the plough passing not only up and down each side, but a furrow is taken off in going round at each end. By this means the plough is always in the ground, and the whole field ploughed without leaving an open furrow. A field may also be commenced by ploughing a furrow all round the outside, and finishing in the middle. The American farmer is not satisfied, as we are, with one team ploughing an acre per day, but has frequently three teams of a pair of horses 2 acres 3 acres. I rather doubted so much being done; but was over and over assured by both masters and men that 2½ acres were not at all an unusual day's work. The furrows I must tell you, are over a foot wide—none of your fancy ploughing-match style. The land is also generally much lighter than our English soils, and the depth of the ploughing is, according to my notions, very much too shallow—a fault not at all uncommon on this side the Atlantic. Steam ploughs have not yet been introduced. Several attempts have been

made; but as all the schemes have been with engines to travel over the surface after Romaine's plan, no wonder they have not succeeded. On the prairies there would be no difficulty in constructing machinery capable of breaking up 20 or even 25 acres of such land per day, and this with only three men. Where labour is so scarce, and time such an object, the advantage of the steam plough would be immense. In Iowa I saw a very simple and efficient apparatus called a "horse pitchfork" for raising crops on to the stack, a horse simply drawing the load over a pulley. I also saw a hay-loader attached to the rear of a waggon, and which gathered up and elevated the crop on to the vehicle, thereby saving much manual labour.

Live Stock.—Although the territory of the United States is so much greater than England, the live stock is by no means in the same proportion. The cows and other horned cattle, according to the census of 1860, amounted to about 17 millions, about double the estimated number of the United Kingdom—2¼ millions of the cattle were returned as working oxen. The sheep, on the other hand, fell short of the estimated English number by 2½ millions; whilst the pigs exceeded by 10 times our number, reaching the fabulous number of 33 millions, or just about as many pigs as people. The bulk of the cattle I saw were of the Short-horn type. Alderneys and Ayrshires are much in repute for dairy purposes; but, as in England, the Short-horn is the prevailing breed. The sheep of America are of a very nondescript character, generally miserably bred and ill-looking things, about half the size of the English. Flocks of Leicesters, Southdowns, and merinoes are to be found, but they are exceptional. There is one matter—an important one to an Englishman—viz., the quality of the meat. Whether it be the climate, the food, or the cooking, I don't know, but the beef and mutton are most inferior, tasteless, and tough in the extreme. Pork is tolerably good. The national importance of paying more attention to sheep is being urged upon the American farmer by the daily as well as by the agricultural press, an increase in the supply of wool being deemed an absolute necessity, five millions sterling having been paid to England for woollen goods in 1865. The draught horses used in America are much smaller—very different from our English type. They are well-bred, clean-legged, and active. The "Kentucky thorough-bred," as it is called, is the favourite breed. I saw an entire horse of this breed upon the farm of Mr. Emery Cobb at Kankakee, in Illinois. He was made, as our Secretary would say, "all over like a hunter." I could have picked out of Mr. Cobb's team a good many "weight carriers," which would fetch fancy prices at Tattersall's. I did not see in the whole of my travels what I call a good stout draught-horse. At the railway stations in Philadelphia and elsewhere are to be seen horses of the cart breed, "raised," as I was informed, in Ohio and Pennsylvania. When the Americans grow bigger crops, as I am sure they might do, they will want bigger horses in their reaping machines; and when they stir their land deeper, which I am sure they ought to do, they will, if they do not adopt steam, require horses of greater weight. In some districts I visited, horses are shod with malleable cast-iron shoes, which are fastened without the use of nails. They simply clip the foot, and are secured by rivets. I have a specimen on the table, which I intend to try. Dairying is an important branch of rural economy in America. A very novel feature is the introduction of the factory system. In Oneida Co., N. Y. S., there are about 40 cheese manufactories, or "Associated Dairies," as they are called, having 16,000 cows. I have only time to glance at this subject. The advantages claimed are that the farmer's family is relieved of a good deal of drudgery—that by the employment of a skilful superintendent a more uniform and better quality at less cost is obtained, and, of course, higher prices realised. Messrs. Moore, cheese merchants in Buffalo, told me that for two or three years past their shipments of factory cheese had commanded the highest prices in the Liverpool market. Three of the cities of America most interesting as agricultural centres, are, undoubtedly, Buffalo, Chicago, and Cincinnati. Buffalo is situated at the eastern extremity of Lake Erie. In this city, remarkable for many things, grain elevators have been erected to facilitate the rapid discharge of cargoes. Upwards of 20 of these gigantic automatic labourers have been built, which are capable of unloading vessels at the rate of 100,000 bushels per hour, and also of storing about 5,000,000 bushels in their capacious chambers. Watson's elevator, which I ascended, stands 260 feet above the water, worked, of course, by steam-power. Four vessels can be brought alongside it, their cargoes taken out and transhipped or stored simultaneously. By this promptitude, a whole fleet of ships has not only been cleared, but has left the port within 36 hours of its arrival. Cincinnati I did not visit, owing to the prevalence of cholera, but notwithstanding the presence of this dire enemy in Chicago, I did venture to spend several days in that most wonderful of all the American cities. Thirty years ago this place was a mere village. So recently as 1840 the population was less than 5000; now it numbers over a quarter of a million. I will not take up your time with a description of its splendid streets and public buildings, its 120 churches, nor its rising manufactories, for one might write a book upon this extraordinary city. It is at this point that the mind first becomes impressed with the vastness of the territory which lies beyond the Ohio, Mississippi, and Wisconsin—a country which, whether for area, productions, resources, or people, is becoming the noblest and grandest part of the republic. I will not weary you with statistics of the trade of Chicago in agricultural produce. Suffice it to say that upwards of 50 million bushels of corn are annually exported—that 1,400,000 pigs and 90,000 cattle are annually slaughtered in this western metropolis. The great slaughtering establishments of Chicago, the elevators, and corn stores, are as perfect in their way as any of our Lancashire factories; but I have no time to dwell upon them. One of the most prominent agricultural features is the Chicago Cattle Market; 345 acres have been laid out; an ample railway station built, into which nine great railway companies run their trains; 15 miles of sidings or branches have been laid down, water supply laid on, corn and hay barns erected; a great hotel, a bank, and a Corn Exchange have been built; in fact, every sort of convenience and accommodation for both man and beast have been well considered and provided for at this great cattle mart of the West.

Agricultural Meetings.—Soon after my arrival at New York I heard of a great trial of reaping and mowing machines by the New York State Agricultural Society at Auburn, to which I at once set out. No less than 60 machines were exhibited for the prizes offered, the Government of the State having liberally voted the necessary sum to cover the expenses of the trials. These trials were conducted in a very different style to those which prevail in England. In the first place, three weeks were set apart for the purpose of testing the machines on various crops, and under varying circumstances. A long list of instructions to the judges, directing their attention to the various points deemed essential, drawn up by a committee of makers and farmers, had been prepared and printed. The jury consisted of the old English number of 12, with a president, a secretary, and a chief marshal. These judges were subdivided into committees, some to decide on mechanical arrangements, others on the quality of the work performed. Then there was the time committee, the dynamometer committee, and the committee of description. After the trials were over, the jury remained at Auburn two or three days to draw up their report, and a second and final meeting to settle the awards was fixed to be held at New York on September 1st, the prizes being subsequently declared at a meeting held at the New York State Fair at Saratoga, on September 13th. The pains taken in preparing the points to which the attention of the judges should be directed, the various modes in which the machines were to be tested, the subdivision of the jury, the length of time devoted to the purpose, and the careful report, containing a record of facts rather than of opinions, seemed to me to be a long way in advance of our English mode of conducting such trials. One of the exhibitors said to me that the great use of these trials was that the experience gained, and the careful record of every fact elicited, were a means of teaching manufacturers their own deficiencies. This cannot be accomplished by a society unless the same care and time be taken as is the practice on the other side of the Atlantic. I was so struck with the careful preparation of the points to which the attention of the judges was directed, and with the whole arrangement, that I at once wrote to Mr. Hall Dare upon it, and I hope the implement committee of the R.A.S.E. will make some inquiry into the plans I have alluded to. We had a good deal of discussion at Auburn as to which country the invention of the reaping machine really belonged to. Of course, the Americans claim the honour. Our countrymen across the Border dispute the claim, maintaining that to Scotland the merit is due. Now, if it be a question simply of priority of invention, neither is right; I must put in a claim for England; the inventor of the main elements of the reaping machine was a Bedfordshire man, Mr. Salmon, of Woburn. In 1807 he patented the principle of the reciprocating action of the knife, without which none of our reapers would be of the least use. He also invented the finger guards and the dividing appliance, and, more still, he made his machine with a self-acting rake to deliver the corn at the side in sheaf. Notwithstanding, however, these prior English and Scotch inventions, it is undoubtedly to America that we are indebted for the reaping machine in its present practical form—indeed for a machine that can be worked economically. In America such a machine was a necessity years before any need of its assistance was felt in England, owing in the one case to a superabundance and in the other to a scarcity of labour. I met with one circumstance which reflects so much honour upon the class of agricultural machine-makers in the States, that I cannot forbear mentioning it. Two large rival manufactories stand on opposite sides of the street, belonging to two different men. The one is a sharp man, of good commercial knowledge; the other is a clever mechanic as well as a superior-minded man. The former had made money; the other had, notwithstanding his immense business, got into difficulties. His rival across the road, on hearing it, generously came forward and advanced 10,000*l.* to carry him through his difficulties. I think that a circumstance which reflects credit not only on the individual, but on the country which produces such a man. I found the American manufacturers not only intelligent, but a high-minded class of men. There appeared to be an absence of that narrowness of feeling too often observable among rivals in trade. Perhaps the breadth of country has something to do with the breadth of their views. I was struck with one arrangement which exists in America. Owing to the number of patents, the leading builders of reaping machines some years ago found themselves constantly in collision with patentees and each other. To obviate this serious difficulty a number of the principal makers and patentees united, and made a common stock of their own and a number of other patents which they bought up. W. Allen, Esq., of Auburn, was appointed their attorney and agent. Under this arrangement the maker can have the use of any or of all the patents, but he only pays a royalty upon such portion as he may choose to use. Although such a combination may look something like a "monopoly," it is not so in reality. At all events, it is in this case directly in the interest of the farmer, inasmuch as he is not the victim of the dog-in-the-manger practice; and as the patentee or man who may bring out anything good is not shut out, it is also advantageous to him, as he can join and avail himself of the general stock of inventions. At Saratoga I had an opportunity of seeing one of their great State fairs, as they are termed. Here I found a grand array of agricultural machinery, particularly of reaping and mowing machines. Large sheds were also erected in another part of the ground for the display of domestic wares and machines, such as cooking stoves, carpet-sweepers, Potato-parers, and dairy utensils. This department was the chief centre of attraction to crowds of ladies. Other sheds were devoted to horticultural products and appliances, and the separation of agricultural implements from these other branches greatly facilitated the object of the visitor who wished to see and examine the agricultural machinery. At our Royal Agricultural Meetings, owing to the mixture of agricultural, horticultural, and domestic wares, I have found it impossible to make a thorough examination of the agricultural machinery. I think the Royal Agricultural Society of England would do well to turn its attention to this subject, for these agricultural gatherings are not only marts, but great educational institutions, and every facility should be given for the acquisition of knowledge; at least it ought not to be rendered as difficult as possible. There is one feature about the agricultural meetings of America which our meetings in England are too generally assuming—namely, they are degenerating into mere gala days, instead of sober business meetings. The trotting races at Saratoga, which took place on the show ground, were well supported and absorbed much attention, whilst on the ploughing ground not a single candidate put in an appearance, although liberal prizes were offered, so little interest was felt in this practical part of an agricultural meeting. I found the American people at their agricultural meetings, as elsewhere, polite to strangers. I paid for admission, like any other visitor; but as soon as the secretary heard that I was upon the ground, he came to me with a handsome rosette with the word "guest" upon it, regretting that he had not known of my visit earlier. The exhibitors, both of machinery and live stock, were also equally polite, taking great pains to explain to me the merits of their machinery and the points of their animals. I should take up too much time to speak of their show animals. The superiority of their Short-horns is notorious. Singularly enough, the first prize Short-horn bull at Saratoga I found was got by my own brother's bull, the 2nd Duke of Thorndale. The climate evidently suits our English breeds—the Alderneys or Jerseys, the Ayrshire, the Devon, and the Hereford, all seem to thrive, and have their respective champions; but the Short-horn, as here, has the lion's share.

Schools.—The public schools are so prominent and distinguishing a feature in America that I cannot pass this subject over without a few words. Whilst religion has been allowed, as I think wisely, to take care of itself, education has been fostered and endowed. The value set upon it by all classes throughout America, and Canada too, is something we have no idea of at home: it is not compulsory, but it is enforced by public opinion, found more stringent than any law. Take a drive into the country, and every two or three miles you pass, in places often apparently without a population, neat and commodious school buildings, whilst in the cities large schools confront you in almost every street. The plan of supporting these public schools varies in the different States. In most, certain portions of land are set apart, the revenues from which are devoted to the education of the people. In the older settled States the schools are supported by a rate based upon the valuation of property or business-income of the district. In the New States the Government has invariably set apart a certain portion of the land for this object. Formerly 1-36th of all the land in the State was thus set apart; but such importance is attached to this question of education, that Congress has latterly increased the school lands to 1-18th. The affairs of the schools are under the direction of committees chosen by the people. I was assured that the religious differences of the people were not found to be a disturbing element; that the Bible was the only religious book used; that prayer was offered daily, both at the opening and the close; and that no other special religious teaching was attempted. The absence of a dominant Church, and the fact of the Government being in possession of such vast tracts of land, have rendered the dealing with this great question comparatively easy. The people of England will never be educated as they ought to be, without Government passes some more comprehensive scheme than we have at present. Let me ask you not to go away with the idea that religion is not cared for, or that nothing scarcely is done to provide for the religious wants of the people. The religious arrangements are excellent, and the church accommodation is far in advance of that in this country, notwithstanding the existence of our richly-endowed establishment.

Conclusions.—The advantages which America offers are so great, that when you consider the prospects present and future to themselves and their families, the wonder to me is that so few are willing to make a present sacrifice—that so many remain in the Old Country is most marvellous to one who has paid a visit to the New. Here we are so over-populated, that thousands of young men are unable to obtain suitable and remunerative employment, or to embark in business with any fair prospect of success. Farmers and their sons find it equally difficult to settle. The consequence is that rents in this country have been forced up to an artificial standard. What with an increased rental, the higher rate of wages, a lower standard of prices, the greater risk from disease in stock, and undiminished taxation, I cannot see how the present race of farmers, except a few favourably situated, can hope so to increase their capital as to become possessed of the means of settling their families in respectability. If we could add a Lincolnshire or a Norfolk every year to this little island, the whole position of things would be changed; there would be room for everybody. It is just this power of expansion that makes all the difference between America and England. One fact will throw some light on this part of my subject. If the United States were so thickly populated as England and Wales, the population would amount to the enormous number of 924 millions. From the natural resources of America, from its varied soil and climate, its boundless beds of coal and iron, which are in proportion to its breadth of territory, it would be as capable of supporting this immense population as is England of supporting its present number of inhabitants. Among the advantages offered by America to the agriculturist, the low price of land is unquestionably the greatest. Splendid land can be purchased in the newly-settled States at the low rate of two dollars an acre. I believe if bought direct from the Government the price is only a dollar-and-a-quarter. Of course, as the districts increase in population, the price of land goes up, so that on the banks of the Hudson and about Philadelphia I found land as dear as in England; whilst close to Dubuke, in Iowa, the finest land was not more than 5*l.* per acre. By the "Homestead Law," every head of a family who desires to settle in America, and become a naturalised subject of the United States, receives from the Government 160 acres of land, substantially as a free-gift. Each of his sons, too, on coming of age has the same advantage. Surely, such munificence is enough to tempt some of our struggling industrious, but over-weighted farmers to cross the Atlantic in search of a country where there is so much more room for their energy. The American farmer has no rent day to haunt him; he pays neither tithe nor church-rate; the poor-rate is a bagatelle, and there being no game-laws, there is no fear of being eaten up. "But how about wages?" some one will ask. Well, they are high, and that is about the only drawback I know—20 dollars a month, and board, or about a dollar and a-half a day without board. The men work long hours, and the amount expended in labour per acre, notwithstanding the high rate, is not greater than in England. Another advantage the American farmer possesses is, that his horses cost him less to keep. We say, "Idle horses eat their heads off;" over there, when not wanted, they are turned off to Grass, to grow into money. Again: very little of the hindrance and loss we have to contend with through rainy and uncertain climate are known. I have said I only know one drawback which the American farmer has to encounter, viz., wages. There is another I had well nigh forgotten: An English farmer, should he desire to purchase an American machine, does not have to pay a shilling duty upon it; but not so with the American. Just for the advantage of a few wealthy manufacturers, who are an infinitesimal portion of the community, that great country allows itself to be taxed on its iron, on its machinery, on its clothing, and in a hundred other oppressive ways. When the agricultural and consuming classes once turn their attention to this subject of Protection to the manufacturer, those duties, I do not question, will go with one fell swoop; at present public attention is distracted by the great political difficulties of the country. In Canada the rate of wages is lower, being only half-a-dollar per day, and a dollar in harvest, without beer. As they are paid in gold instead of green-backs, the difference is not so great as it appears. I found it was more common to hire land in Canada than in the States. Some very fine land near Toronto, about 12 miles in the interior, was let at 12*s.* per acre. The tenant, an Englishman, seemed well satisfied with the change he had made. Barley fit for malting is grown here, and exported at good prices to the large brewers in the States. Canada to the farmer offers a fine field, but to the trader or manufacturer it is

may be compared with the States. If I were to be asked of what is the best part of the States to settle in I should say one of the Northern or Southern Illinois, Iowa, Wisconsin, Michigan would be the best for corn growing and stock raising. I assume, however, to think that more money is to be made out of the Vine and Cotton and that there is a finer field open in North Carolina, Texas and Louisiana. Lands of land is to be had in South Carolina at 20 to 30 dollars an acre, which will produce a bale of cotton per acre. I should, however, recommend any one going out to America not to be in too much of a hurry about settling down. Travelling there is cheap. The fare from Boston to Chicago, a distance of 1,200 miles, is only 27 dollars, less than £6 in our money. In England we cannot be too near a railway in America, out West especially, the farms immediately adjoining a railway are avoided, owing to the losses through the cattle getting killed by the passing trains, from the lines not being fenced in. I could say much more on this head, but must draw my remarks to a conclusion. Although a better feeling is springing up than prevailed during the war there is not that cordiality between the two countries which should exist between two such great countries. America is our natural, and ought to be our firmest ally as we begin to know and understand each other better, let us hope that on both sides of the ocean there will be an absence both of acts and words calculated to provoke or keep up irritation or ill-feeling. There have been undoubtedly faults on both sides; 'tis to be hoped that the present Government will do all that can honourably be done to bring about a better understanding and that with all delay. When a man has visited England and America he has seen the two most wonderful countries the sun has ever shone upon. Never before, in the history of the world, was there ever gathered together upon so small an area such numbers, so much wealth, such a development of industrial enterprise, so well governed, and such a practical and common-sense people as are to be found in old England. On the other hand, never before, in the history of the world, has there been anything like the rapid growth of America: so vast a territory peopled so quickly, its resources developed so speedily, its institutions so completely and well organised, and such progress made in the industrial arts. In America, you find everywhere the same activity, the same reliant enterprise as at home. These traits of character are modified to some extent, necessitated by the circumstances and perhaps the climate of that country. When I witnessed the large amount of social prosperity throughout the States, resulting from these qualities, instead of feeling anything like national jealousy at the wonderful results everywhere visible, I was impressed more fully with the causes of the true greatness of my own country. I felt proud in the remembrance that America was the offspring of England; that the old country had been reproduced on so grand a scale in the new; that the character of the parent stock was so stamped upon and so apparent in the vigorous growth of its off-shoots: not only the blood, but the ideas, the laws, the religion of England, exist and flourish in the United States. The Anglo-Saxon race on American soil is asserting its supremacy on a gigantic scale, as well as with characteristic energy and vigour. One very remarkable phenomenon is, that notwithstanding the immense number of immigrants from the other nations of Europe, the English type of humanity is everywhere predominant. Like its own great river, the Mississippi, which receives immense numbers of tributary streams that are blended with and become one great current, so with all the races which flock to America: they feel the force of, and become blended with the grand current of Anglo-American life. In a generation or two the French, the Dutch, the Germans and the Celt, lose every thing of their foreign distinctness, and nothing is left of their national character but the name. The language, the ideas, the freedom, the enterprise, and what was so thoroughly exemplified during the late deplorable war, the courage, the pluck of England—all live in America, and seem to be uniting to form the greatest and most powerful empire the world has ever seen.

Home Correspondence.

Thick and Thin Seeding.—As there is a mistake of some importance either made by me or your printer in my letter dated Oct 16, with your permission I will correct it. In that letter the pauper boys of "any workhouse-school" are referred to. The mistake I wish to have corrected is in this little word *any*, and for which I wish to substitute *our*, or *our workhouse*, namely, the workhouse which stands on the border of my parish; and my statement must be confined exclusively to this workhouse, called the Tendring Union Workhouse. To this workhouse boys' school I have several times for nearly 20 years taken small bags of grain from heaps or sacks at random, but each of the small bags containing not less than a quart, and requested that the boys there would place a ticket on each bag, showing exactly how many grains of the Wheat in each bag a peck of it would allow to be dibbled into each square foot of an exactly measured acre of land. The last time this was done was two years since, when I took either six or eight of such bags of grain, and a ticket was made out by one or more of the boys and placed on each bag when they were returned to me, giving the exact number of seeds that a peck measure would allow for each square foot of an acre of ground. Suppose I did not make these calculations; and suppose I had a peck of Wheat which I wished to have accurately spread over a given quantity of land, say an acre for example, how should I know how far distant one seed should be put in from another?—or I may say, how many seeds to put into each square foot of the ground of the acre, unless I had previously ascertained how many grains my peck of Wheat contained? For you all know very well that a peck, or any measured quantity of one kind of Wheat, may contain as many more of seeds in number than the measured quantity of another kind, and it may be the same or nearly so in different years and under different circumstances of tillage, &c., of the same kinds of Wheat, and of any other kind of cereals; and hence, I have always previously ascertained how many seeds a given quantity of it contained before I commenced putting it into the ground. To talk, therefore, about seeding an acre of land with any measured quantity, amounts to nothing, and even less than nothing, if there be such a thing, unless the number of seeds in the measured quantity be first ascertained, and a calculation made as to how distant apart one seed is to be placed from another, but who does this among all the thin seeders? I never knew but one that did, and he was the late Mr. Piper, and he generally brought a sample of his Wheat to me for me to make the calculations for him, and hence, all that he wrote about his seeding with a peck an acre, and the increase of a peck, might be relied upon; but I place no reliance whatever upon any statements from given quantities by measure of seed, unless the number of the seeds were ascertained, and how far apart they should be put in before the seeds were sown; and for my part I should as soon require Jack Smith or Tom Jones to demonstrate for me the 47th problem of the First Book of Euclid, or to square the circle, as accurately to spread a peck of any kind of cereals over an acre, or any quantity of land, unless I had previously instructed him how wide apart one seed was to be put into the ground from another. But we hear and read about the wonderful improvement made in modern farming, but in what does it consist? I know not, as Tull cultivated far better than land is now in general cultivated; and as for seeding, Xenophon, the philosophical and learned Greek, has informed us that the perfection of sowing Wheat is to spread the seeds evenly and to separate every seed one from another. But do Englishmen do this? No; than in the art of seeding the English farmer is far behind the Greek. *Geo. W. Rose, Wax Parsonage, Oct.* 31.

The Cheapest Food.—I have seen several tables prepared as a guide to direct us in our economy of the most nutritious articles of food, both those for consumption by man and beast. I was in town last year, when the visitation of rinderpest was imminent, we should have seen some practical manual put forth for the working class, to aid them when meat seemed likely to advance to a prohibitory price, how to apply their earnings in procuring from vegetable produce the largest amount of muscle and flesh-forming elements. Besides this, those living in the country who have allotments or a bit of garden ground, might largely increase what many would term trifles in pinch of value in weight or measure merely, the best return. Potatos, the great resort in our times are, if we are rightly informed, worth only about one to seven in comparison with Beans, besides presenting the great risk of a season of blight. Gardeners, too, are much interested in the subject, and might be led to anticipate and hasten the possible change which further enlightenment might induce from Potatos and Turnips to Peas and Beans. In former times I believe poor people grew Beans and Peas in their plots, but Potatos, which brought greater returns, have greatly displaced them. There are, I am informed, a book published which from its title should supply the information I am in search of—"Practical Dietary for Families, Schools, and the Labouring Classes," by Dr. Edward Smith; but in the extract I read I observed the poor are chiefly urged to spend their money in bread and milk, and preference is even given to Maize over flour. Surely for our towns' populations this advice would end in a fanciful result, and the milk part would have little more reality than the Irish herring in the well-known dish of Potatos and point, whilst Maize is rank in Dr Playfair's Table published in "Good Words," February, 1865, in comparison with flour as 11 only to 14. Is it in the power of your correspondents to give a correct estimate of the book I have quoted, and information of the relative value of substances for food as a practical guide for both purchasers and growers? *W. H.*

Beer, Beer, Beer.—The remarks of one of your correspondents on the subject of beer in your last Number, make me venture to trouble you with a few lines on the plan of books as a counter-attraction, which we have found to work well here for many years. We have been careful to keep entirely out of our lending library the books which are so often given, simply because nobody can be found elsewhere to afford them house room, and we select the books ourselves for the various readers. From intimate knowledge of their tastes and powers we find that we can suit them much better than they can suit themselves. The books themselves we, or some one of us, almost invariably read through, to be sure that there is nothing objectionable, and we find that amongst the agricultural labourers short stories (of course founded on) real adventure or stirring poetics: history, and among the women tales such as Miss Pye's "The Leisure Hour," shilling volumes, or church stories, are invariably favourite reading. We find that the wish for "a book" is usually followed by a wish for "a Sunday book" also, and by selecting these with the greatest possible care—to be thoroughly entertaining as well as instructive—we usually find them as carefully read, if not more so, than the weekday volume. Such books as Bible history, unconsecutive harmonies, explanations of the Miracles or Parables, are most sought for. Under this system of book-lending we have found for years that our own people are much less addicted to wandering from home after working hours than where some such general amusement for the evening is not supplied; and on leaving, even to go to some considerable distance, they apply from time to time for the supply of books to be continued. Of course, in an entirely private lending library like ours, there is some expense in setting up the books at first, but a couple of pounds judiciously laid out in volumes from 1*s.* to 3*s. 6d.* each (and larger-priced books are often not suitable), would go far, and the comfort of being possibly the means of reclaiming some poorer neighbour from the temptations of the public-house, or of enlivening long and painful sickness, is an ample reward for the thought and labour requisite for the thorough working of the plan. *R. E. D.*

Michaelmas Rents on Corn Averages.—I again avail myself of the return of the close of the farmer's year to send you, for the information of your agricultural readers, and more especially those who may have adopted the system of corn rents, based on the average price of Wheat, or of Wheat, Barley, and Oats, a statement of the average prices, founded on the returns published weekly in the *London Gazette*. For the year ending Michaelmas, 1866, the average prices are as follows:—

Wheat	.. ..	.. 46*s.* 10½*d.* per Imperial qr.	
Barley	.. ..	.. 34 4	..
Oats	.. ..	.. 24 9½	..

The highest and lowest prices during the same period are as follows:—

	Highest price.		Lowest price.		Difference.
	s. d.		*s. d.*		*s. d.*
Wheat, July 17, 1866	55 10	Oct. 3, 1865	40 10		15 0
Barley, Oct. 2, 1866	40 1	Oct. 3, 1865	29 11		10 2
Oats, July 14 & 17, 1866	29 7	Oct. 3, 1865	22 0		7 7

Charles M. Willich, late Secretary and Actuary, Universal Life Assurance Society, 2, Montpelier Square, Knightsbridge, Nov. 3.—PS. I annex a table showing the fluctuations from week to week, producing the above results. The changes likely to take place before this time next year may render it useful for reference.]

WEEKLY AVERAGE PRICE PER IMPERIAL QUARTER IN ENGLAND AND WALES FOR 13 WEEKS ENDING MICHAELMAS 1866.

	Wheat.	Barley.	Oats.
1865—	*s. d.*	*s. d.*	*s. d.*
Oct. 3 ..	40 10	29 11	22 2
Oct. 10 ..	41 1	31 1	23 5
Oct. 17 ..	43	30 9	23 11
Oct. 24 ..	42 1	30 11	24 0
Oct. 31 ..	41	31 0	24 1
Nov. 7 ..	41	31 6	24 6
Nov. 14 ..	42	32 5	25 0
Nov. 21 ..	43 11	33 7	25 9
Nov. 28 ..	46 10	34 6	25 8
Dec. 5 ..	47	33 10	25 7
Dec. 12 ..	46 5	33 6	24 1
Dec. 19 ..	45	32 9	23 11
Dec. 26 ..	45	33 11	24 1
Jan. 2 ..	46 11	34 6	23 6
Jan. 9 ..	46 3	34 9	23 6
Jan. 16 ..	46 1	34 8	23 8
Jan. 23 ..	45	34 1	23 10
Jan. 30 ..	45 6	34 1	23 3
Feb. 6 ..	45 4	34 0	23 1
Feb. 13 ..	45	34 0	23 6
Feb. 20 ..	45	34 0	23 0
Feb. 27 ..	45 3	34 5	23 10
March 6 ..	45 7	34 11	23 9
March 13 ..	45 4	34 7	23 10
March 20 ..	45 6	35 10	23 10
March 27 ..	45	35 6	23 1
April 3 ..	44 11	35 6	23 11
April 10 ..	44	37 2	24 6
April 17 ..	44	36 5	24 5
April 24 ..	44	36 3	24 3
May 1 ..	44	36 3	24 6
May 8 ..	44	36 4	25 0
May 15 ..	44	36 4	24 10
May 22 ..	46 1	36 2	24 2
May 29 ..	46 4	36 6	24 1
June 5 ..	46 4	37 4	25 11
June 12 ..	47 1	37 9	25 8
June 19 ..	47 1	36 6	25 9
June 26 ..	48 5	34 4	26 7
July 3 ..	50	34 0	26 0
July 10 ..	51 6	35 5	27 7
July 17 ..	55 10	36 1	27 7
July 24 ..	54 0	35 5	28 2
July 31 ..	52 0	33 10	27 1
Aug. 7 ..	51 1	33 11	27 2
Aug. 14 ..	50 2	35 2	26 6
Aug. 21 ..	50 2	34 9	26 6
Aug. 28 ..	50 1	35 8	26 6
Sept. 4 ..	49 7	35 1	25 3
Sept. 11 ..	48 4	36 1	25 8
Sept. 18 ..	46 0	37 1	24 8
Sept. 25 ..	46 8	37 10	24 1
Oct. 2 ..	47 5	40 1	24 3
	2185 2	1833 10	1276 2
Average ..	46 10½	34 4½	24 9½

Societies.

ROYAL AGRICULTURAL OF ENGLAND.

MONTHLY COUNCIL. *Wednesday, Nov.* 7.—Present, Mr. Thompson, President, in the Chair; the Earl of Shrewsbury and Talbot, Lord Chesham, Lord Feversham, Lord Tredegar, Lord Vernon, Lord Walsingham, Major-General the Hon. A. N. Hood, Sir A. R. Macdonald, Bart., Mr. Acland, M.P., Mr. Amos, Mr. Barthropp, Mr. Bowly, Mr. Cantrell, Colonel Challoner, Mr. Clutton, Mr. Dent, M.P., Mr. Druce, Mr. Brandreth Gibbs, Mr. Holland, M.P.; Mr. Hornsby, Mr. Hutton, Mr. Milward, Mr. Pain, Mr. Pope, Mr. Rembold, Mr. Clare Sewell Read, M.P.; Mr. Rigden, Mr. Robert Smith, Mr. Torr, Mr. Wallis, Mr. Wells, Mr. Jacob Wilson, Prof. Wilson, Mr. Frere, and Dr. Voelcker.

Mr. Samuel Jonas was elected a Governor of the Society.

The following new Members were elected:—

Allison, James John, Sunderland.
Beaven, James, West Drake Farm, Swindon.
Body, John; Wattersham, Staplehurst.
Drake, Francis Hart, 43, Museum Street, York.
Huck, Thomas Francis; Kingsbow, Budgworth.
Rhodes, Arthur; Twyford House, Bishop Stortford.

FINANCES.—Major-General the Hon. A. N. Hood, Chairman, presented the report, from which it appeared that the Secretary's receipts during the past three months had been duly examined by the Committee, and by Messrs. Quilter, Ball, & Co., the Society's accountants, and found correct. The balance in the hands of the bankers on the 31st Oct. was 1208*l.* 0*s.* 11*d.* The quarterly statement of subscriptions and arrears to 30th September, and the quarterly cash account, were laid on the table. During the recess the Secretary issued a circular to those members owing 2*l.* and 3*l.* each, and the committee recommend that another circular be sent to those members in arrear for the previous and present years. The Committee recommended that the sum of 1000*l.* be sold out of the funds. As a means of inducing defaulting members of the present year to pay up their subscriptions, the Committee recommend that the last number of the Journal should be sent to each with a circular. This report was adopted.

JOURNAL.—The President reported that Mr. Coleman having travelled more than 500 miles to collect materials for a Report, which he had been requested to write for the Journal, the payment for which, at the usual rate, amounts to 12*l.* 12*s.*, the Committee recommend that an additional sum be given him for travelling expenses.

ESSAYS.—In Class V. the two competing Essays are adjudged not to possess sufficient merit to entitle either of them to the prize. This report was adopted.

HOUSE.—Major-General the Hon. A. N. Hood presented the report, informing the Council that the works for the improvement of the house have been completed, with the exception of colouring, papering, and final painting, and submitted the report of the architect, Mr. Fowler, who appears to have carried out the work in a satisfactory manner.

"Royal Agricultural Society of England,
12, Hanover Square.

(TO THE HOUSE COMMITTEE.)

"GENTLEMEN.—I beg leave to report that according to your instructions received on the 1st August last, I prepared the necessary working drawings and specification for carrying out the alterations determined on by the Council upon those tenders were obtained, and that of Mr. Manning, amounting to 870*l.*) being the lowest, was accepted. The works were commenced on the 28th August, and are now completed, and I am happy to be able to state that, notwithstanding the great disadvantage of very unfavourable weather, I consider that the work has been done in a very satisfactory manner, and I believe the alteration will be found a great improvement to the Society's premises. I may mention that the new rooms are not yet papered, as it was impossible for the new plastering to be sufficiently dry to receive the paper. I did not include that in the contract, although it was of course included in my estimate of 870*l.*, authorised by the Council. Since the completion of the works I find that a complaint has been made by the Secretary of the Zoological Society that some of their chimneys smoked, and having investigated the matter I find that the complaint is owing to two flues in a stack at the back which was thought to be disused and was not, therefore, carried up; by carrying up these flues the objection will be removed, and I therefore beg to recommend that this should be done; the expense will be about 5*l.*

"I beg leave also to certify that Mr. Manning is now entitled to receive a further payment of one hundred and thirty pounds (130*l.*) on account of his contract, making with the two previous payments the amount of 550*l.*—I have the honour to be, Gentlemen, your obedient and faithful servant,

"CHARLES FOWLER, Jun., Architect."

"12, Furnival's Inn, Nov. 1, 1866."

A claim having been made on the Society for parochial rates, the Solicitors were instructed to resist it, and by the accompanying letter it will be seen that two-thirds of the rate will be remitted on the certificate of the Registrar of Friendly Societies. The Committee recommend that such certificate be obtained.

(PAROCHIAL ASSESSMENT.)

"13, Suffolk Street, Pall Mall East, S.W., Nov. 2.

"Dear Sir,—On the further hearing of the Society's appeal this morning, the magistrates reduced the assessment on the Society's house from 240*l.* to 80*l.*, the latter amount representing the value of that portion of it which is occupied by the Secretary as a private residence—but subject to the further Certificate of the Registrar of Friendly Societies that the alterations in and additions to the Society's by-laws and regulations since the date of his former Certificate of 1841 have not affected the original Constitution of the Society or its property further than the occupation of the Society's premises. As the residential portion of the premises really represents a money interest, we felt from the first that its exemption from assessment could not be successfully maintained.

(Signed) GARRARD & JAMES."

H. Hall Dare, Esq., Secretary,
Royal Agricultural Society of England.

The Committee have also to report a claim has been made by the Metropolitan Board of Works for a Main Drainage Rate, and recommend the Solicitors be instructed to resist it. This report was adopted.

EDUCATION.—Mr. Dent, M.P., stated that the Committee have received a report from the Oxford Examiners, and have allotted the prizes offered by the Society as follows:—

TO JUNIOR CANDIDATES, who were distinguished in the General Examination.

Davis		
King	}	in First Division 14*l.*, 7*l.* each.
Lovett		
Chubb		
Higham	}	in Second Division, 6*l.*, 3*l.* each.
Day		
Sargent		
Luxton	}	in Second Division, 5*l.*, 1*l.* each.
Mortimer		

5 also passed in Third Division; 1 failed.

SENIORS.

A. Pollard			£7	0 0
J. Lake	}	First Class	5	0 0
C. J. Langley			4	0 0
Hill			£2	0 0
Bovey	}	Second Class	3	0 0
Rudd			2	0 0
Mackwood			2	0 0

10 in 3d Class—5 did not pass.

LIST II.—JUNIORS.

Pure Mathematics.—11 entered. Five obtained more than half marks; 10 others passed. 1 failed. Church, 14; King, 4; Mortimer, 4.

Mechanics and Mechanism.—2 entered: no prize.

Chemistry.—No entry.

LIST II.—SENIORS.

Mathematics.—21 entered. Five obtained more than half marks, 12 passed; 4 failed. Langley, 5*l.*; * Pollard, 5*l.*; Bovey, 2*l.*; Lake, 2*l.*; Rudd, 2*l.*

Chemistry.—2 entries: * Kingdon, 5*l.*; * Pollard, 2*l.*

Phonology.—2 entries: * Saunders, 5*l.*; Pollard, 2*l.*

Geology.—No entry.

Expenses for printing special examination papers at the last Oxford examination, postage, &c., 1*l.* 4*s.* 8*d.* to be paid.

That a grant of 5*l.* 5*s.* each should be made to Professors Price and Daubeny for conducting the Society's recent examinations at Oxford, accompanied by an expression of thanks on the part of the Society for their attention and courtesy.

50 entries for the next Cambridge examination in December.

The Committee have had before them the question of excluding from their examination those who had obtained prizes at previous examinations, and recommend that there be no restriction, except as to those who have obtained the 1st prizes in their special subjects (Mechanics and Chemistry applied to Agriculture.)

This report was adopted.

STEAM CULTIVATION.—Lord Vernon stated that the Committee have to report that, in pursuance of the plan sketched out by them in a previous report, and approved by the Council, two Committees of Inspection were appointed, consisting of the following gentlemen:—

Committee No. I.—Mr. J. Algernon Clarke, Secretary and Reporter; Mr. Robert Leeds; Mr. J. Nicholson.

Committee No. II.—Mr. Howard Reed, Secretary and Reporter; Mr. J. Hicken; Mr. J. Hemsley.

The Committee began work as soon as the state of the harvest in their respective districts would permit, and have made satisfactory progress, notwithstanding the very unfavourable character of the season for an investigation of this kind. The Committees have visited the counties of Bedfordshire, Berkshire, Bucks, Cambridgeshire, Essex, Gloucestershire, Hampshire, Hertfordshire, Huntingdonshire, Kent, Norfolk, Northamptonshire, Oxfordshire, Suffolk, Surrey, Sussex, Wiltshire and Warwickshire. In these counties more than 150 farms have been inspected, and a large amount of valuable information collected, which will be embodied in reports by Mr. Clarke and Mr. Howard Reed, and published in the next No. of the Journal. If the weather should remain favourable the Committee hope that the inquiry may be completed by the end of the present month.

BURY ST. EDMUNDS' MEETING.—Colonel Challoner reported the recommendations of the Committee: 1, that the preliminary prize sheets for Stock and Implements be distributed among the Members of the respective Committees for revision, and to be submitted to the Monthly Council in December; 2. That the Meeting be held in the week commencing Monday, July 15, 1867.

This report was adopted.

COMMITTEE OF SELECTION.—The President stated that—

1. In accordance with the instructions received by the Council in August, the Committee have to report that the six ex-officio Members of this Committee for 1866, will be—

President.—Mr. Thompson.

Chairmen of Committees.—Finance, General the Hon. A. N. Hood; Journal, Earl Cathcart; Chemical, Mr. Lawes; Stock Prizes, Lord Walsingham; Implement, Colonel Challoner; Country Meeting, Lord Tredegar.

The Committee would suggest that for the short remainder of the year 1866, the six elected members of this Committee should be chosen from those who have up to this time acted as a Provisional Committee, and they accordingly mention the names of—(1.) The Earl of Powis, (2.) Lord Vernon, (3.) Mr. Druce, (4.) Mr. Randell, (5.) Mr. Torr, (6.) Mr. Jacob Wilson.

2. The Committee recommend that the vacancy in list of Vice-Presidents caused by the death of Mr. Raymond Barker, should be filled up by the election of Mr. Jonas.

3. The vacancies in the Council caused by the resignation of Mr. Hamond and the death of Mr. Henry Wilson, have now to be filled up. The name of Major Wilson, of Stowlangtoft, having been brought before the Council by Mr. Torr, previously to the appointment of the Committee of Selection, the members of that Committee feel that the claims of Major Wilson are so great, more especially in connection with the approaching Bury meeting, that they have great pleasure in throwing their weight into the scale in favour of his appointment. The other vacancy they recommend should be filled up by the election of Sir Henry Vane, that gentleman, in addition to his other recommendations, being a resident in District A, in which there are 473 Subscribing Members of the Society. District A is at present represented by only two Members of Council.

This report was adopted.

The President having proposed that Mr. Jonas be elected a Vice-President in the room of the late Mr. Raymond Barker, the nomination was seconded by Lord Walsingham, and Mr. Jonas was unanimously elected a Vice-President of the Society.

The name of Sir Henry Vane, Bart., of Hutton Hall, Penrith, having been proposed by Mr. Jacob Wilson, and seconded by Lord Tredegar, and that of Major Wilson, of Stowlangtoft Hall, Bury St. Edmund's, having been proposed by Mr. Torr, and seconded by Mr. Milward, they were unanimously elected Members of Council, in the room of Mr. Hamond resigned, and Mr. Wilson, deceased.

The Council decided that the General Meeting of the Society should be held on Wednesday the 12th December at noon.

A minute of a meeting of the Council of the Yorkshire Agricultural Society was read as follows:—"That the thanks of the Society be given to the Council of the Royal Agricultural Society for the use of their dynamometer at the trial of implements recently held at York." The Council ordered that this be recorded on the Minute Book of the Society.

The thanks of the Society having been ordered for various presents of books to the library, the Council adjourned.

SMITHFIELD CLUB.—At a meeting of the Council held November 7, 1866. Present, The Right Hon. Lord Feversham in the Chair:

The Right Hon. Lord Walsingham, V.P.; the Right Hon. Lord Tredegar, V.P.; Major-General the Hon. A. N. Hood; Messrs. J. Clayden, Samuel Druce, Josh. Druce, Thomas Duckham, W. Farthing, John Gibbs, C. Howard, R. Leeds, R. Milward, R. Overman, E. Pope, W. Rigden, Henry Smith, Robert Smith, T. Twitchell, O. Wallis, B. T. Brandreth Gibbs, Hon. Sec.

The minutes of the last meeting were read and confirmed.

The Council came to the resolution that no steps be taken by the Council of the Smithfield Club to obtain a relaxation of the Orders of Privy Council in reference to the Cattle Plague.

The Council selected and appointed the Judges for the ensuing Show.

Mr. John Painter, of Forrest Road, Nottingham, was elected a Member of the Council, to fill the vacancy caused by the death of Mr. W. Fisher Hobbs.

The Council, in conformity with the bye laws, prepared the "House List" of eight members of the Club whom they recommend for election on the Council to succeed those who will retire by rotation in December next.

The following were duly elected Members of the Club:—

Joseph Beach, Flour Mills, Dudley.
Edmund Book, Oxwick, Fakenham, Norfolk.
John H. Cresswell, Laughton, Folkingham.
James S. Cuckadge, Stowmarket.
Thomas Horley, jun., The Fosse, near Leamington.
Alfred R. Howland, Ludgershall House, near Thame.
F. C. Matthews, Driffield.
W. Wells, Holmewood, Peterborough.
Edmund T. Woods, Stowmarket.

The best thanks of the meeting were voted to the Chairman for his lordship's conduct in the chair.

Reviews.

The Journal of Agriculture November, 1866. 150, Fleet Street.

The number for November contains papers on Ventilation and Temperature as affecting Health—on Artificial Manures, by Mr. Wallace Fyfe—on Estate Improvement by Proprietors—on Bird Life in Shetland by Mr. R. Skirving—with "Traces of Travel," and the "Veterinarian," "the Farmers' Note Book," and the "Month." Mr. Fyfe's paper on artificial manures is from a series of lectures which he gave before the Royal Agricultural College. We extract his short reference to the uses of lime.

"No more extensive manuring practice, apart from the ordinary routine of fertilisation, is known in agriculture than the application of lime, and no wonder, its effects are marked, and indeed marvellous. So great a stimulant is lime, that an overdose of it, as it is called, is a well-known method of raising scourging crops, and producing exhaustion and sterility in the soil. As mentioned that Liebig designates one class of plants as 'lime plants.' They are represented by Lucerne, Clover, Beans, Peas, and even Potatos; but lime is found only in the leaves of the Potato, very small traces occurring in the tubers which belong, under Liebig's classification, to the potash plants. The Clover sickness, to which we have so frequently referred, is sometimes occasioned by deficiency of lime in the soil, so also is anbury or finger-and-toe in Turnips, a disease which rends and rots the parenchyma of the root in consequence of its being obliged to send out shoots and tap roots in search of lime for its skin. A crop of 2 tons of Clover removes 130 lb. of lime from the soil; and the best application in Clover sickness has frequently been found to be superphosphate of lime. Gypsum or sulphate of lime is also found highly beneficial. Lime absorbs moisture from the atmosphere with incredible rapidity, and a ton of quicklime when slaked acquires three times its original bulk, and weighs 2½ cwt. The only advantage, however, gained by slaking lime is its reduction to a fine powder, which enables it to be more evenly spread. But slaked lime very soon attracts carbonic acid from the atmosphere, and becomes once more carbonate of lime, the condition in which it usually exists, and whence the most abundant supplies are obtained by driving off the carbon in burning the carbonate of lime or mountain limestone in kilns, as 100 lb. of this when pure contains 44 lb. of carbonic acid and 54 lb. of lime. Lime, therefore, by the process of burning, loses the one, and increases the other, and a ton weight is reduced whole of its carbonic acid, and a ton weight is reduced to 11¼ cwt. The general opinion regarding the presence of lime in the soil is that an arable soil ought not to possess less than 1 per cent of lime, and that 8 tons of quicklime will, however, be requisite for six or eight years. A crop at the utmost only removes from 1 to 2 bushels per acre of lime; and the land at this rate gradually reverts to the condition in which more lime is required—faster—for the lime, by its own specific

gravity, uniformly descends below the active soil, and there, upon digging a section, layer upon layer of each successive liming the land may have undergone will be found deposited. Lime not only enables crops of superior quality and bulk to be produced; it enhances the effect of undecomposed manure, by calling into action that which may have been lying dormant. Manure, however, ought never to be laid upon the land immediately after liming, because quicklime will drive off all its ready-formed ammonia. Lime destroys marsh and heath plants, such as Moss, Heath, Bent, and sour Grasses, brings up sweet herbage with natural Clover, and completely renovates the herbage. All fodder is found more nutritious when grown upon land sufficiently limed. The quantity of lime required varies in proportion to the dryness of the soil, its stiffness, and the amount of vegetable matter it contains. Poor arable lands are soon worn out by repeated liming and cropping. To exterminate Moss, sour Grass, &c., the lime must be applied in a live state. Generally speaking, the more completely and immediately quicklime is incorporated with the soil, the more effectually the slaking is accomplished in connection with the soil, the better. In overspreading Grass, however, where there is no intention of destroying the herbage, it is better first to slake the lime in the open air, reducing it to a powdery condition, and applying it in the form of mild lime. In this state the quantity of quicklime still contained in it should, however, be sufficient to effect the necessary chemical changes in the soil; from this its ultimate efficacy depends. Quicklime should never be applied to light or thin soils, sands or gravels. Magnesian limestone has an effect similar to that of the mountain limestone. It is a carbonate of magnesia, in combination with carbonate of lime, and becomes caustic in burning, but must be used more sparingly than lime destitute of magnesia, since it reabsorbs carbonic acid more slowly, and remains longer caustic. Its application is more properly made to arable than to Grass land, as Wheat, Barley, and all cereals require magnesia for the perfect development both of their straw and corn. Chemically supplying to the plant both lime and carbonic acid, lime, as an alkaline earth, neutralises the humic and other acids naturally formed in soils, converts inert vegetable matter into stimulating food for plants, and aids the mineral decomposition of iron, manganese, alumina, potash, soda, ammonia, and silica in soils. To its perhaps over-stimulating effects, in fact, may be traced the origin of the adage, "Lime enriches the fathers, but impoverishes the sons." Lime, however, does not necessarily exhaust the soil, unless applied with unsparing prodigality. The apparent exhaustion it produces is only perceptible in cases where the sole application to the land has consisted in laying on successive doses of lime, and where the supplies of other manure have been too scanty. It is where lime alone has been applied that abundant crops are followed by exhaustion. The presence of mild lime in the soil assists in the formation of nitrates; and the production of nitre or saltpetre is dependent upon those properties of lime whereby nitric acid is engendered from vegetable matter. That invaluable salt, nitrate of lime, is always to be found in old compost-heaps. 'Under ordinary circumstances,' says Professor Way (Royal Agricultural Society's Journal), 'and with the presence of moisture, lime is capable of liberating one half the ammonia contained in a soil. In the case of ammonia locked up in the soil, lime may be the remedy at the command of the farmer, his means of rendering immediately available stores of wealth which can otherwise only slowly be brought into use. In this view lime would well deserve the somewhat vague name that has been given it—namely, that of 'a stimulant'—for its application would in some sort be an application of ammonia; whilst its excessive application, by driving off ammonia, would lead to all the disastrous effects which are so justly attributable to it. I do not wish to push this assumption too far; but if there be any truth in it, it points out the importance of employing lime in small quantities at short intervals, rather than in large doses once in many years.'"

Miscellaneous.

SALE OF THE DUKE OF HAMILTON'S STOCK.

The whole of the famous stock in the Duke of Hamilton's Home Farm, Merryton, was brought to the hammer last Tuesday (6th inst.). Merryton, it may be stated, is situated on an eminence overlooking the river Clyde, about two miles distant from both Hamilton Palace and the burgh of Hamilton, and is about four miles distant from the Motherwell Station of the "Caledonian" line, and about three miles from the Hamilton terminus. Omnibuses were provided, and were continually plying to and from these stations for convenience of parties attending the sale. This was by far the largest sale of its kind that ever has taken place in Scotland, and it is below the estimate to say that 2000 people were congregated together to see it. The half of that number at least was composed of persons interested and engaged in agricultural matters, who evidently anticipated an unprecedented sale, and it is only simple justice to say that Mr. Shirlaw and his sons, who occasionally relieved one another from 9 in the morning till 5 at night, handled the hammer with much dexterity and to some purpose. The entire proceeds of the day reached the handsome aggregate sum of 4286*l.*

As it may be generally interesting we give a sort of an analysis of the stock, with the names of buyers, and particulars of the more choice lots.

There were about 220 of the swine tribe, comprising "large," "middle," and "small" breeds, from the stocks of Messrs. Wainman, Duckering, Sterne, and Finlay, which realised *in toto* upwards of 500*l.*

In sheep there were some very superior animals, comprising 4 pure-bred Leicester shearling rams, which have obtained first prizes this season at Edinburgh and Alnwick, the best one, bred by Rev. W. Bosanquet, being knocked down to Mr. Drew (who managed the Home Farm for the Duke, and who has taken a lease of it now on his own account) for 23*l.* The next best one was secured by Mr. Bruce, Aberdeen, for 13*l.*, and the other two, which realised 12*l.* 10*s.* and 9*l.* respectively, went to Mr. Fleming, Kilkerran, and Mr. Drew. The whole of the 77 Leicester ewes were secured by Mr. Drew at prices varying from 8*l.* 10*s.* to 3*l.*, the majority of them being 6*l.* and over. Cross-bred lambs, of which there were 103, fetched from 22*s.* to 24*s.* each.

The famous Ayrshire stock of cows, which has always been a prominent feature at the Home Farm, had eager buyers, especially those of them that were at all "well come." Such of them as did not fetch a price over 20*l.* had no formal pedigree, and did not impress practical buyers, who study the desirable points of excellence of the cow kind. "Jamie," says one of the on-lookers to his 'cronie,' "she'll no bring muckle siller that ane—she's nae petigree." The largest sum realised for Ayrshires was 50*l.* for "Black Cow," who had gained 1st as a 2-year old in milk at Hamilton in 1863, 1st at Kilbride for the best cow in milk, and silver medal for best of all the prize cows in 1866 at Kilbride—a place where many good animals of the kind are brought forward. The cow is a 5-year old, and was bought by Mr. Fleming, Kilkerran. "Blackhouse," now 4 years old, was the first prize heifer at the Royal Agricultural Society's Show, Newcastle, in 1864, and was knocked down to Major Hamilton, Dalzell, at 37*l.* The mother of the former, although 12 years now, obtained the premier prize at the Highland Society's Show, Glasgow, as "best cow in calf," and fetched 30*l.* from Mr. Fleming. The Duke of Buccleuch purchased a very fine 3-year-old, Airblaes, a prizetaker, too, for 35*l.* The Duchess of Athole secured "Mary" at 23*l.*, Kilbride at 20*l.*, and Castleton at 21*l.*, all very good cows. Mr. Fleming, in addition to "Black Cow," obtained Dandy at 35*l.*, one of the very best 3-year-olds in the herd, although never exhibited; and Stranger, also a capital 3-year old, at 34*l.* Sir Edward Colebrooke, Mr. Lyall, Old Montrose, Sir Alexander Maitland, and Mr. Drew, were purchasers of some of the best of the herd at prices varying from 20*l.* to 30*l.* Both 1 and 2-year-old heifers, and even calves, realized considerable sums, varying from 5*l.* to 25*l.*, one black and white calf, of considerable form and feature, realising 15*l.* Bulls were by no means much sought after, being comparatively less meritorious than the cows. Dreghorn, a four-year-old of good form, fetched 21*l.*, and Brockie and Stranger each realized 19*l.* 10*s.* and 10*l.*, by no means large prices. A very promising one-year-old, named Pettigrew, fetched 13*l.*, after some spirited bidding. In all they comprised 143 lots, and although some of them were well sold, many of them did not realise the prices anticipated.

There were 39 samples of horses of the Clydedale breed; many of them, the mares especially, of first-rate excellence. The sale, which had been kept up with unflagging animation throughout the day, seemed to have culminated at this point, and it required all the efforts of the posse of police to maintain order, all seemed so eager to be immediate spectators of the respective lots. The first one exhibited was a brown mare "Jess," 5 years old, bred by Mr. Buchanan, Coldroch; sire Sir Walter Scott, gained 2d prize at Highland Society's Show at Kelso as a 2-year-old in 1863, and 1st in Hamilton as a 3-year-old in 1864; this fell to Mr. Drew at 57*l.* "Jane," 6 years old, which gained 1st prize both at Hamilton and Glasgow in 1863, fell to Mr. Drew at 35*l.* Another 6-year-old black mare named Missie, caused considerable excitement, owing to her fine form and condition, and was eventually knocked down to Mr. J. Hunter, Auldhouseburn, at 73*l.* A fine 3-year-old bay mare "Mall," fell to the Duke of Buccleuch, at 65*l.*; and a very good one of the same colour was secured by Mr. Jas. Bell, Woodhouselee, Dumfries, at 48*l.* A 4-year-old bay mare, "Darling," was bought for Lieut.-Col. Lund, Woodford Park, Lancashire, at 44*l.*; and "Bess," a 3-year-old of the same colour, which was 1st as a 2-year-old at the Highland Society's Show in Inverness in 1865, and 1st in Kilbride a year later, was bought for Major Stapleton, Myton Hall, Yorkshire, at 47*l.* A fine-formed brown mare, "Kate," fell to the bidding of Mr. Drew, at 69*l.* "Maggie," of the same colour, an 8-year-old, which gained 1st prize at Hamilton, and 1st at Glasgow in 1862. 2d at Battersea in the same year, and 1st at Kelso in 1863, after some brisk bidding fell to Mr. Drew, at 75*l.* The next lot was a beautiful bay mare called "Rosie," the gem among the Clydesdales at Merryton, 4-years-old, bred by Mrs. Barr, Barrangray, sire Garibaldi, gained 1st prize as a 1-year-old at Kelso in 1863, 1st as a 2-year-old at Royal Society's show, Newcastle, and also at Stirling in 1864, 1st at Highland Society's Show in Inverness in 1865, and 1st at Kilbride in 1866. A buzz of admiration pervaded the multitude as they swayed to and fro to catch a glimpse of this fine piece of "horse-flesh" cantering up and down the enclosure. The first offer made was 80*l.* and then 90*l.* and 100*l.*, in 10*l.* bids, not the least faltering or vacillation up to 200*l.* The battle now remained between Mr. Drew, the enterprising tenant, and Mr. M'Inlay, the horse-dealer in Glasgow, who was evidently working on commission, and there was scarcely a murmur until the hammer fell at Mr. Drew's bidding of 220*l.*—a large sum certainly for a *draught* mare. A spontaneous and general cheer rose from the onlookers in admiration of Mr. Drew's indomitable pluck. The same buyer also secured a 2-year-old filly, bred by Mr. Pollock, sire Champion, at 73*l.*; and another one nearly as good for 66*l.* John Balfour, Esq., of Balbirnie, Blanc Kerr, Esq., of Castlehill, and Mr. Kirkwood, Killermont, also obtained good horses at prices varying from 35*l.* to 47*l.* Such are some of the more important features of the sale. The day was somewhat unpropitious, but it did not seem to damp the ardour of agriculturists, who had flocked from all quarters, many of them from considerable distances, either to see or take a more active part in the day's proceedings. A suitable and substantial repast was provided for all and sundry; in fact, everything seemed to be devised, not only in this way, but both *in transitu* back and forward to the railway stations, for the comfort and convenience of all without let or hindrance. The Duke's trustees, Lord Southesk and Major Hamilton, as well as the principal officials on the estate, were present throughout the day, and evinced unmistakeable interest in all the proceedings. *A.*

Halberton, North Devon (*Wages*).—The following correspondence has arisen out of Canon Girdlestone's letter on this subject which has already appeared in our columns:—

"Oct. 27, 1866.

"Sir,—In an account of an agricultural meeting at Woodbury, given in the *Devon Weekly Times* of the 26th of October inst., you are reported to have spoken thus:—

"'I wish to remark that I have seen, perhaps with some little degree of pain, some reflections which have passed through the public press—I don't mean the press of this county, but the press of England, for it was mentioned in a letter in the *Times* that in this county we were giving most niggard wages to our labourers. Now, I cannot endorse that opinion, because I do not believe that in this county the labourer is badly paid. I don't mean to say that he is paid as he ought to be—that is quite another question; but that he is paid small and niggard wages, and such that he cannot live on, that I absolutely deny.'

"In three letters which have lately appeared in the *Times*, after a four years' intimate personal acquaintance with every farmer and labourer in my large parish of Halberton, in North Devon, I deliberately made certain statements respecting the wages of agricultural labourers. The sum and substance of my statements briefly is—that in Halberton, certainly with rare exceptions, and to the best of my knowledge in much of the surrounding district, the wages of the common agricultural labourer are no more than 8*s.*, and sometimes only 7*s.* per week, often but partly made in coin. Will you be kind enough to do me the favour of informing me—first, whether it is to my letters in the *Times* that your remarks above quoted referred; secondly, whether in that case you intended by those remarks to question the accuracy of my statements, or merely to avow your opinion that a labourer who receives 7*s.* or 8*s.* a week, sometimes only partly paid in coin, is not 'badly paid'? "Your obedient servant,

"S. T. Kekewich, Esq., M.P." "E. GIRDLESTONE."

"Peamore, Oct. 29, 1866.

"Dear Sir,—The remarks which I made at Woodbury on Wednesday last are correctly stated in the *Devon Weekly Times*, although the report is more full in the *Exeter Gazette*, which I will take the liberty of sending to you. They had reference to two letters, the one from Mr. Biddell, near Ipswich, the other written by yourself, and both inserted in the *Times*. I certainly concluded from those statements that they applied to a large part of the county, and not merely to the district in which you reside. With regard to the cases mentioned by you of labourers in your own parish I have no reason to doubt your accuracy, but I demur to the opinion that low wages are generally paid to the labourers in this county. I well know that there are districts in which the amount is far too small; but I also believe that throughout the greater part of this county the wages of agricultural labourers were never so high.

"It is very difficult for me to give an answer to your second question, viz., Whether it is my opinion that a labourer who receives 7*s.* or 8*s.* a-week is badly paid—as it must depend on a variety of circumstances, whether he is an able-bodied labourer, capable of doing many kinds of work; whether he has task-work during a great part of the year, and the amount paid for it; whether he pays rent for his house, and whether he has perquisites, such as liquor, allotment-ground, and corn at a reduced price. You are well aware that the rate of wages depends on supply and demand, the prices of the necessaries of life, and the capacity of the labourer to do his work. One man will earn 12*s.* per week, and another only 8*s.* a-week by his labour. The question of his having a wife and family has nothing to do with the amount of his wages, although the number of his family and the want of means to provide for them must fully entitle him to the charity of his neighbours. A very respectable farmer told me a few days since that the wages which he gave were 10*s.* and 11*s.* a week, three quarts of cider a day, a cottage rent free, besides task-work, and that he believed it to be the general rate of wages in this district. My own observations, derived from the applications to the Board of Guardians, would lead me to the same conclusion. I give 11*s.* a week to those who work constantly for me. Some of them pay 1*s.* a week for rent, and others live rent free. I also hire occasional labourers at 15*s.* a week, but they are men capable of doing a great quantity of work of different kinds, and I doubt whether they are better off than others, as they pay 5*l.* a year rent, and have no allowance of liquor. I have endeavoured to ascertain the amount of agricultural wages paid in the Midland counties, and compare it with that paid in our own county, and I find that in the former wages vary from 12*s.* to 14*s.* a week, but from this must be deducted 2*s.* a week for rent; besides which, there is no allowance for liquor, which costs 1*s.* 6*d.* a week, and the necessaries of life are dearer than in Devonshire, so that I much doubt whether the labourers in the Midland counties are better off. However, I will not pursue this matter and subject further, or discuss the various matters entailed in your statement, as they would lead me far beyond the limits of a letter.

"I remain, dear sir, yours faithfully,

"The Rev. Canon Girdlestone." "S. T. KEKEWICH."

"Canons House, Bristol, Nov. 1, 1866.

"Dear Sir,—The sum and substance of your reply seems to be that in your speech you did refer to one of my letters in the *Times*; that you concluded my letter applied, not merely to the district in which I reside, but to 'a large part of the county of Devon;' and that, in your opinion, whether a man who receives 7*s.* to 8*s.* a week is 'badly paid' or not depends upon his having or not having in addition certain other so-called privileges which you enumerate. In my letter to the *Times* I plainly stated that I vouched for wages in my own large parish only; had good reason for believing that the same rate prevailed in the surrounding district, but never said a word about 'a large part of the county of Devon.' I plainly stated also in the same letter that the labourers to whom my remarks applied were able-bodied, and had not only no addition whatever to their wages of 7*s.* or 8*s.* a week, except cider, often very bad, but did not receive the whole even of that small pittance in coin. You will, I hope, therefore, agree with me that it would have been better if you had read my letters more attentively

before you made remarks in public about them. I am quite aware that in some parts of the county of Devon wages are higher than in Halberton and the neighbourhood, for I have already sent labourers for better wages into South Devon. At the same time the facts which I have before me leave me to believe that the extent of the county in which really fair wages prevail is not very large. My idea of a well-paid labourer is certainly very different from yours as expressed in your reply to me; and, as regards your comparison of wages in Devonshire and in other places, I have at this moment a very large number of applications for common agricultural labourers, from almost every part of England, at wages varying from 15s. to 20s. per week, with, in almost every case, house and garden rent free, as well as other additions too many and various to be enumerated in a letter. I shall, of course, feel myself at liberty to make what use I please of this correspondence, and remain

"Your obedient servant,

"S. T. Kekewich, Esq., M.P." "E. GIRDLESTONE."

Notices to Correspondents.

BUFFALO GRASS: *Subscriber*. We cannot find that it is known by English seedsmen. "Esparcette" is common Sainfoin.

L'EXTINCTEUR: *Cor.* The addresses are 36, Howard Street, Glasgow; and 3, Red Lion Street, St. Ann's Square, Manchester.

M. DE SORA: *B J.* This gentleman and his poultry establishment are a fiction. There is no such place or person.

NINE MONTHS' IMPORTS: *R.*—

ARTICLES.	Quantities Imported. 1865.	1866.
Animals, Living—Oxen, Bulls, and Cows .. .. .. No.	146,359	151,452
Calves	41,565	23,347
Sheep and Lambs	507,209	660,807
Swine and Hogs	79,571	56,301
Bones, burnt or not, or as animal charcoal .. .. tons	50,334	62,687
Flax (dressed and undressed), and Tow or Codilla of Flax—from Russia .. .. .. cwts.	936,578	953,136
Holland	139,430	47,875
Belgium	137,803	99,924
Other countries	68,098	70,741
Hemp (dressed and undressed) and Tow or Codilla of Hemp—from Russia	315,157	468,420
Austrian Territories	111,190	172,397
British India	6,634	23,230
Philippine Islands..	165,757	36,980
Other countries	57,458	44,857
Hides, untanned — Dry — from British East Indies	96,364	108,360
Other countries	79,538	60,422
Wet—From Argentine Confederation and Uruguay ..	129,084	278,697
Brazil	90,257	104,359
Australia	88,441	71,387
Other countries	122,114	140,996
Hides, tanned, tawed, curried, or dressed (except Russia Hides) .. .. .. lb.	4,580,495	6,248,684
Hops .. .. cwts.	44,645	31,944
Oil seed cakes.. .. .. tons	72,642	90,341
Potatos .. .. cwts.	620,287	443,653
Provisions—Bacon and Hams ..	553,734	561,309
Beef, salt	175,823	152,594
Pork, salt	130,967	149,120
Butter	747,748	787,232
Cheese	572,740	520,780
Eggs .. .. No.	296,428,920	360,247,440
Lard .. .. cwts.	93,294	219,868
Saltpetre	145,476	153,928
Cubic Nitre	660,127	736,523
Flaxseed and Linseed — from Russia, Northern ports qrs.	166,464	266,620
Ports in the Black Sea	161,876	183,810
British East Indies	500,842	162,874
Other countries	67,856	91,378
Tallow—from Russia .. .. cwts.	103,224	213,811
Timber and Wood, &c., sawn or split .. .. .. lasts.	1,391,191	1,223,614
Staves, not exceeding 72 inches long	39,771	49,358
Timber or Wood, &c., not sawn or split	1,124,651	890,707
Wool—Sheep and Lambs': from Hanse Towns and other parts of Europe	18,394,133	24,587,562
British Possessions in South Africa	17,708,620	12,444,289
British East Indies	11,719,971	16,414,105
Australia	99,793,149	102,047,664
Other Countries	12,319,741	15,642,189
Alpaca and the Llama Tribe	1,682,090	2,620,035
Yeast, dried .. .. .. cwts.	83,281	84,526
Corn—Wheat—From Russia cwts.	5,083,641	5,297,827
Prussia	3,757,907	3,127,739
Denmark	404,615	389,497
Schleswig, Holstein, and Lauenburg	197,024	147,223
Mecklenburg	405,676	573,828
Hanse Towns	357,602	659,424
France	1,037,672	3,320,351
Turkey and Wallachia and Moldavia	486,770	357,343
Egypt	10,063	14,030
United States	854,212	388,010
British North America	292,392	8,780
Other countries	786,865	2,437,302
Barley	5,907,876	5,204,198
Oats	5,709,703	6,812,542
Peas	348,309	917,591
Beans	637,517	556,237
Indian Corn, or Maize	4,047,717	12,043,628
Wheatmeal and Flour—From Hanse Towns	173,971	203,075
France	1,756,149	3,103,406
United States	214,721	206,893
British North America	159,183	26,822
Other Countries	124,276	196,412
Indian Corn Meal	5,335	10,395

POTATOS AND PEAS: *Farmer*. There is no identifying Potatos by their names, and the Lemon Kidney and Early Top are both unknown to us. The Potatos we should recommend would be the Sodon's Early Oxford, so known in the neighbourhood of Reading, a good early sort—and the Axbridge Kidney, a late Kidney of excellent quality till late in the season.

RESOLUTE: *M A R.* It is impossible to give advice founded upon a mere examination by the eye of a handful of the soil.

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PRICES PER LINEAL YARD 24 INCHES HIGH.

Size of Mesh.	Mostly used for	Light. Jap Gal	Medium Jap Gal	Strong. Jap Gal	Extra Strong. Jap Gal
in.		s. d. s. d.	s. d. s. d.	s. d. s. d.	s. d. s. d.
2½	Dogs or Poultry	0 2½ 0 3½	0 3½ 0 4½	0 4½ 0 5½	0 5½ 0 6½
2	Poultry	0 3½ 0 4½	0 4½ 0 5½	0 5½ 0 6½	0 6½ 0 7½
1½	Small Rabbits, Hares, &c.	0 3½ 0 4½	0 4½ 0 5½	0 5½ 0 6½	0 6½ 0 8
1½	Smallest Rabbits	0 4½ 0 5½	0 5½ 0 6½	0 6½ 0 8	0 8 0 10
1	Pheasantries, Small Birds, &c.	0 8 0 10	0 9½ 1 0½	1 1½ 1 4	1 7 1 10
¾	Aviaries, Window Guards, &c..	0 11 1 1½	1 1½ 1 4	1 7	.. ..
⅝	Aviaries, Window Guards, &c..	1 7 1 10	1 10 2 0	2 0 2 3	2 3 2 6
½	Aviaries, &c.	2 3 2 6	2 6 2 8	.. ..	.. ..

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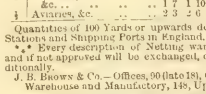
COTTAM'S HURDLES are made in the best manner of superior Wrought Iron. SHEEP HURDLES, from 4s.; CATTLE HURDLES, from 4s. 11d. each; CONTINUOUS FENCE, from 8d. per foot; FIELD GATES, from 25s. each. Illustrated Price List on application.



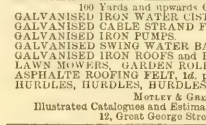
ENTRANCE GATES, RAILING, and IRON WORK of every description. Designs and Estimates free of
COTTAM & Co.,
No. 2, Winsley Street
(opposite the Pantheon),
Oxford Street, London, W.

GALVANISED WIRE NETTING.

PRICES of NETTING, 24 INCHES HIGH.

Size of Mesh.	Proof against	Light, per Yard.	Medium, per Yard.	Strong, per Yard.	Extra strong per Yard.
2 inch	Hares, Dogs, Poultry, &c.	3½d.	4½d.	5½d.	6½d.
2 inch	All kinds of Game ..	3½d.	4½d.	5½d.	7d.
1½ inch	Small Rabbits, Hares, &c.	4½d.	5½d.	6½d.	8d.
1 inch	Ditto Ditto ..	5½d.	6½d.	8d.	10d.

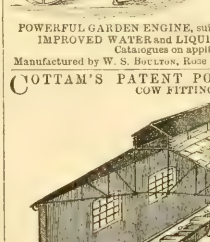
100 Yards and upwards Carriage Free.
GALVANISED IRON WATER CISTERNS.
GALVANISED CABLE STRAND FENCING.
GALVANISED IRON PUMPS.
GALVANISED SWING WATER BARROWS.
GALVANISED IRON ROOFS and BUILDINGS.
LAWN MOWERS, GARDEN ROLLERS, &c.
ASPHALTE ROOFING FELT, 1d. per square foot.
HURDLES, HURDLES, HURDLES, 1s. 9d. to 3s. 9d. per yard.
MOTLEY & GREEN.
Illustrated Catalogues and Estimates free on application.
12, Great George Street, Leeds.



SWING WATER BARROW.—This is the best and cheapest article yet introduced for use in Gardens, Farm Yards, &c. The Water may be dipped out, or the Tub tilted and poured out, or by merely raising the Handle it can be placed on the ground, and the Frame detached. To hold about 30 or 36 gallons, price 42s. Carriage paid to any station on Great Eastern Line.

POWERFUL GARDEN ENGINE, suitable for the above, price 45s
IMPROVED WATER and LIQUID MANURE CARTS.
Catalogues on application.
Manufactured by W. S. BOULTON, Rose Lane Iron Works, Norwich.

COTTAM'S PATENT PORTABLE UNITED COW FITTINGS.



Their advantages are—Portability, not Fixtures, removable at pleasure, no Woodwork or Partitions to impede Ventilation or breed Vermin, Hay Rack dispensed with as unnecessary, increased width and depth of Feeding Troughs, Water Cistern, and Patent Drop Cover to prevent over-gorging. Cleanly, durable, and impervious to infection, being all of iron. Price of Fittings per Cow, 55s.
Prospectuses free of COTTAM & Co., Iron Works, 2, Winsley Street (opposite the Pantheon), Oxford Street, London, W., where the above are exhibited, together with several important Improvements in Stable Fittings just secured by Patent.

JOHN WARNER AND SONS,
8, Crescent, Cripplegate, London, E.C.,
BELL and BRASS FOUNDERS to HER MAJESTY.

No. 35.

PATENT CAST-IRON PUMP, fitted with J. W. & Sons' Metal Bucket and Valve, which cannot clog in action, for Wells not exceeding 25 feet.

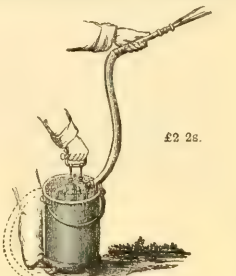
Diam.	Height.	£ s. d.
2½ in. short ..	1 ft. 7 in. ..	1 1 0
2½ in. long ..	3 ft. 3 in. ..	1 8 0
3 in. long ..	3 ft. 6 in. ..	2 1 0
3½ in. long ..	3 ft. 6 in. ..	2 6 0
4 in. long ..	3 ft. 6 in. ..	2 14 0
2½ in. short, with 15 feet of lead pipe attached, ready for fixing ..		2 0 0
2 in. long, do. do. ..		2 14 0

Price of 4½-inch Liquid Manure Pump, with legs, £2 15s.; 2-inch Flexible Rubber and Canvas Suction Pipe, 2s. 1½d. per foot. The Barrel is 27½ inches long, and the legs are 5 feet high.

No. 42.

IMPROVED LIQUID MANURE or GENERAL PORTABLE PUMP.—These Pumps are fitted with J. W. & Sons' Patent Bucket and Valve, and cannot clog in action. The Barrel is made of Galvanised Iron, not likely to corrode, and can be raised or lowered at pleasure on the stand, the legs of which fold together, and it may be carried with ease by one man to tank or pond.

WARNERS' PORTABLE FIRE or GARDEN ENGINE.



£2 2s.

No. 5684.

For use by one Person .. .. price £2 2s.
No. 5678, ditto ditto, on Wheels .. .. .. „ £2 10s.

The above are complete in themselves, and may be always kept filled with water, and ready for use.

Letter to The Times, *July* 23, 1866, *from* Earl ESSEX.

A REAL FIRE EXTINGUISHER.

To the Editor of The Times.

"SIR,—I feel sure you will kindly allot a small space in the *Times* to these few lines, as the best medium through which I would urge every householder who dreads fire to have on each floor of his house one or more small Garden or other Engines on wheels, always charged and in good order, in case of fire.

"Last night, just as I was going to bed, I was startled by that most fearful of all cries, 'Fire, fire!' I soon learned that a fire was raging in a large two-windowed unoccupied bedroom. How caused is to us all a great mystery. It is my custom to keep one of these small Engines on each floor. In two minutes I was in the room with one of them. It was like a furnace. The curtains, shutters, casements, and cornices of both windows were burning and cracking from floor to ceiling. I was quite alone at the moment, yet before assistance arrived (most of the servants having gone to bed), I had completely subdued the fire of one window without exhausting the Engine, and when assistance and more water did arrive, we very soon extinguished the other.

"So fierce was the fire that the lead of the casements was melted, and the casements themselves were burnt off their hinges.

"I will only add, that by God's mercy, the house was saved by this small Engine. Had it not been at hand and in order, most assuredly Cassiobury would be now a heap of ruins.—Yours faithfully,

"Cassiobury, Watford, July 20. "ESSEX.

"The Engine, even when full, runs so light on the floor, that any woman might draw it, and also work it."

Oil Paint no longer Necessary.

HILL AND SMITH'S PATENT BLACK VARNISH for preserving Iron Work, Wood, or Stone. This Varnish is an excellent substitute for oil paint on all out-door work, and is fully two-thirds cheaper. It may be applied by an ordinary labourer, requires no mixing or thinning, and is used cold. It is used in the grounds at Windsor Castle, Kew Gardens, and at the seats of many hundreds of the nobility and gentry, from whom the most flattering testimonials have been received, which HILL & SMITH will forward on application.

From ROBT. RAIKES, Esq., *East Dale, near Brough, Yorkshire.*

"I have used your Black Varnish for park palings and consider it to be the most durable and best thing of the kind I have ever seen. I think it might be applied with still greater advantage to iron fencing instead of paint, and it is my intention so to employ it in future."

Sold in casks of about 30 gallons each, at 1s. 6d. per gallon, at the Manufactory, or 1s. 8d. per gallon paid to any Station in the kingdom.

Apply to HILL & SMITH, Brierly Hill Iron Works, near Dudley, and 22, Cannon Street West, E.C., from whom only it can be obtained.

GRAY'S OVAL TUBULAR BOILER.

INTERNATIONAL EXHIBITION, CLASS IX., No. 2119.

MR. GRAY begs to call the attention of the Nobility, Gentry, Nurserymen, Gardeners, &c., to his

NEW OVAL TUBULAR BOILER,

Acknowledged by practical judges to be a great improvement on every form of Tubular Boiler yet introduced. It has proved itself superior to all other Boilers for quickness of action and economy of Fuel, doing its work with one-third less the amount required by any other.

Extract from Report on GARDENERS' CHRONICLE *of International Exhibition, May 24, 1862, page 476.*

"The upright form of Boiler is usually made on a circular plan, but the oval form given to Mr. Gray's variety of it is said to be preferable on account of its bringing the tubes in closer contact with the fire. The usual form of a furnace being a parallelogram rather than a square, it seems feasible that the Boilers on the oval plan should bring the tubes more completely within range of the burning fuel; and this being so, the change, though a slight one is no doubt an improvement."

☞ *They are made of all sizes, which, with prices, may be had on application.*

JAMES GRAY, HORTICULTURAL WORKS,
DANVERS STREET, PAULTON'S SQUARE, KING'S ROAD, CHELSEA, S.W.

BEARD'S PATENT.

GREAT INTERNATIONAL HORTICULTURAL EXHIBITION & BOTANICAL CONGRESS.

The FIRST and ONLY PRIZE given at the above EXHIBITION for the BEST METHOD of VENTILATION for PLANT STRUCTURES, was awarded to

MESSRS. SANDERS, FREWER, & CO.,

VICTORIA WORKS, BURY ST. EDMUNDS,

FOR THEIR MODEL OF

BEARD'S PATENT METALLIC NON-CONDUCTING GLASS HOUSES,

Showing the Patent System of perfect Ventilation and Patent Method of Glazing, whereby breakage from expansion and contraction is prevented, and facility given for immediate reparation by any ordinary labourer.

MESSRS. SANDERS, FREWER, AND CO. beg to call special attention to the high value of these great improvements in the VENTILATION, &c., of HORTICULTURAL ERECTIONS, which are also applicable to all WOODEN HOUSES, as well as to CHURCHES, RAILWAY STATIONS, PUBLIC BUILDINGS, MANUFACTORIES, &c.; and have received the highest recommendation from many of the first Horticulturists and practical men of the United Kingdom.

The system is invaluable also for AGRICULTURAL BUILDINGS, as by it abundant Light and Air can be obtained, and the Ventilation regulated to the utmost nicety in the Tops and Roofs of all Structures, where, as is well known, Impure Air constantly accumulates, and where the ordinary system of Ventilation is impracticable.

Full particulars and descriptions may be obtained on application to

MESSRS. SANDERS, FREWER, AND CO.,
VICTORIA HORTICULTURAL AND ENGINEERING WORKS, BURY ST. EDMUNDS.

HOTHOUSES for the MILLION.—Medal, 1862.
INVENTED BY THE LATE SIR JOSEPH PAXTON.
Manufactured in London; Newton in Cartmel, Lancashire; Gloucester; Coventry; Paisley, and Aberdeen.

ILLUSTRATED PRICE LISTS will be sent on application to Messrs. HERMAN & MORTON, 7, Pall Mall East, London, S.W.
Also, a HANDBOOK of VINE and FRUIT TREE CULTIVATION, price 1s.; post free, 1s 1d.

Hot-water Pipes, with Elbows and Connections,
SUPPLIED BY

BURY AND POLLARD
CONTRACTS AND ESTIMATES GIVEN FOR WARMING PUBLIC BUILDINGS.

Latest Improvements in HEATING by HOT WATER.
The Improved CONICAL BOILERS.
For Heating Pineries, Conservatories, Greenhouses, Mansions, Halls, Warehouses, &c.
Solely Manufactured by Bury & Pollard (successors to John R. Pollard, late Stephenson & Pedi).
These Boilers are adapted for setting in Brickwork, or Improved Sheet Stoves. BURY & POLLARD'S improved arrangement requiring
NO BRICKWORK SETTING.
These Boilers have for their durability and economy attained a celebrity far surpassed by any other Boiler ever marketed. They have been in many Parts of the use at many Public Establishments, Royal Botanical Gardens at Kew, at the Regent's Park, the Crystal Palace, and at most of the Nobility's and Gentry's Seats throughout the United Kingdom. References where they have been fixed for 20 years in constant use.
Plans and Estimates free on application to BURY & POLLARD, Park Iron Works, 17, New Park Street, Southwark, London, S.E.

CRANSTON'S PATENT BUILDINGS for HORTICULTURE.
"Dry Glazing without Putty."
"Glass without Laps."
"Ventilation without Moving Lights."
Highly Commended by the Royal Horticultural Society, South Kensington.

Plans and Estimates free on application. Descriptive Book fully illustrated, post free for 24 stamps, from the Author and Patentee JAMES CRANSTON, Architect, Birmingham.
Works, Highgate Street, Birmingham.
HENRY J. GROWTAGE, Manager, 1, Temple Row West, Birmingham.

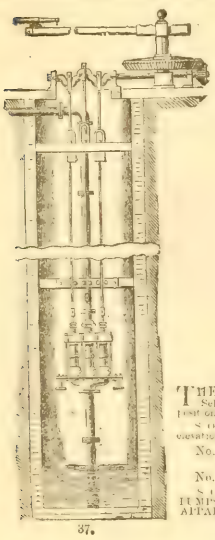
S. OWENS & CO.

(LATE CLINTON AND OWENS),

MANUFACTURERS OF

PUMPS and HYDRAULIC MACHINERY,

WHITEFRIARS STREET, LONDON, E.C.



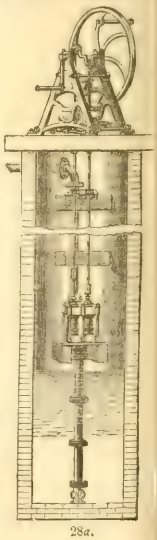
37.

THE LANDSCAPE SKETCH shows an application of THE IMPROVED HYDRAULIC RAM. This is a simple Self-acting Machine, suited for raising a Supply of Water for use in Public and Private Establishments. Its application is not confined to positions as shewn, but is suitable for any situation where a fall can be obtained from a Stream, Brook, or Spring.
S. OWENS AND CO. have fixed a great many in various parts of the country for raising from one to 6000 or more Gallons per day to elevations varying from 30 to 500 feet, and forcing through Mains 1 to 30 yards to several miles in length.

No. 37. IMPROVED TREBLE BARREL PUMPS, with HORSE GEARING for Raising Water from DEEP WELLS, for the supply of MANSIONS and PUBLIC BUILDINGS.

No. 28a. DOUBLE BARREL PUMPS for HAND-POWER for similar purposes.

S. OWENS AND CO. Manufacture and Erect every description of Engineer's Work required in Public or Private Establishments, such as PUMPS for the Supply on the largest or smallest scale, STEAM ENGINES, WATER WHEELS, TURBINES, WARMING and DRYING APPARATUS, BATHS, GAS WORKS and FITTINGS. Estimates furnished from Plans or on inspection of position.



28a.

☞ *Illustrated Catalogues Free on application.*

HOT-WATER PIPES and CONNECTIONS, SADDLE and other BOILERS.
Estimates, with Printed Price Lists, and Free Delivery at principal Railway Stations for Quantities.
J. B. Brown & Co., Warehouse and Manufactory, 148, Upper Thames Street, London, E.C.

HOT-WATER APPARATUS, of every description, fixed complete to any part of the country, or the materials, viz., Boilers, Pipes, &c., delivered to any Station.
Estimates on application.
J. Jones & Sons, 6, Bankside, Southwark, London, S.E.

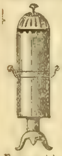
Heating by Hot Water.
W. J. HOLLANDS, IRON MERCHANT, 31, Bankside, London, S.E.
HOT WATER PIPES, from Stock, per yard:—2-inch, 1s. 2d.; 3-inch, 1s. 10d.; and 4-inch, 2s. 4d. BENDS, from Stock, 1s. 6d., 2s. 6d., and 3s. each. THROTTLE VALVES, 10s., 13s., and 14s. each. Other Connexions at equally low prices, and all goods of first-class manufacture. Estimates given, and orders by post punctually attended to the same day.

Heating by Hot Water.
HOT-WATER PIPES, at Wholesale Prices, with Elbows, Syphons, Tee Pipes, and every other connection; Wrought and Cast-Iron Boilers, Saddle, Conical, Cylinder, Tubular, and Elliptic, from 24s. each. Improved Boilers and Iron Stands to use without brickwork, 60s. each. Valves from 10s. 6d. each. Patent Valves, Improved Furnace Doors, Furnace Bars, Supply Cisterns, and Castings of every description in stock, at
Mr. LYNCH WHITE'S Iron Wharf, Upper Ground Street, Blackfriars Bridge, London, S. Price List on application.

JAMES WATTS AND CO., HOTHOUSE BUILDERS and HOT-WATER APPARATUS MANUFACTURERS, 353, Old Kent Road, S.E.

200 CUCUMBER and MELON BOXES and LIGHTS, and from 400 to 500 LIGHTS for PITS of all SIZES kept in STOCK. Glazed and Painted complete, ready for immediate use. Packed and sent to all parts of the kingdom. Public and Private Buildings, Warehouses, &c., Heated on the most approved scientific and economical principles. References to the Nobility, Gentry, and Trade in most of the Counties in England.

The Only Stove without a Flue.



NASH AND JOYCE'S PATENT, for AIRING, DRYING, and WARMING HALLS, SHOPS, ROOMS, &c., a new special Stove for Conservatories, Greenhouses, Fruit-Ripening, &c.: to Burn without rekindling all winter by filling with fuel every 12 hours. Temperature, any degree required, without varying. Price from 12s. 6d. to 6 guineas.
MINCING and SAUSAGE FILLING and MASTICATING MACHINES, of the best makers, 10s. 6d.
The COTTAGE KNIFE CLEANER is the only rapid Cleaner and Polisher of Knives at a moderate price. 3s. 6d. to 10s. 6d. Prospectus post paid.
CHEAP FIRES.—The Radiating Fire Balls save half the usual consumption of fuel. One Shilling packet of Four, red hot in the fire every day, lasts all Winter.
S. NASH, Ironmonger, 253, Oxford Street, W.C.; and Stove Depôt, 119, Newgate Street, London, E.C.

Cheap Greenhouse Stoves.
DEANE AND CO.'S Patent VENTILATING and SUSPENSION STOVES are simple, cheap, and efficient; have been largely adopted and approved; will burn many hours without attention, and at a small cost for fuel. Prices of Suspension Stoves, 0s., 30s., 35s., and upwards. Ventilating Stoves, 50s., 60s., 70s., 90s.
HOT-WATER APPARATUS for Conservatories, Greenhouses, Hothouses, Forcing Pits, &c., erected and fitted up complete.
DEANE & CO., 46, King William Street, London Bridge, E.C.
Established A.D. 1700.

MELON LIGHTS, Machine made, 6 feet by 4 feet, [illegible] kept in stock at the Finsbury Steam Joinery Works, 121, Bunhill Row, E.C.

Caution to Gardeners.—When you ask for
SAYNOR AND COOKE'S WARRANTED PRIZE PRUNING and BUDDING KNIVES, see that you get them. Observe the mark SAYNOR, also the corporate mark OBTAIN WARRANTED, without which none are genuine.
S. & C. regret having to caution Gardeners and others, but are compelled to do so, in consequence of an imitation, of common quality, having been sold for the genuine one, and which has caused many complaints to be made to them of Knives which were not of their make, all of which are warranted both by Sellers and Makers.
S. & C.'s Pruning and Budding Knives are the best and the cheapest in the market.
Paxton Works, Sheffield. Established upwards of 125 years.

GREEN'S IMPROVED NEW PATENT GARDEN ROLLER.
The above Rollers possess many advantages over all others. They are made in two parts, and are free to revolve on the axis, affording greater facilities for turning, and the outer edges are rounded off or turned inwards, thus avoiding the unsightly marks left by other Rollers.

Diameter, 30 inches;	Length 32 inches,	£7	10 0
,, 24 ,,	,, 26 ,,	4	10 0
,, 20 ,,	,, 22 ,,	3	10 0
,, 16 ,,	,, 17 ,,	2	15 0

Prices for Rollers fitted with Shafts suitable for Pony or Horse Power, free on application.
Delivered carriage paid to all the principal Railway Stations and Shipping Ports in England.
THOMAS GREEN & SON, Smithfield Iron Works, Leeds; 54 and 55 Blackfriars Road, London, S.; and 19, Eden Quay, Dublin.
N.B. All Orders executed on the day they are received.

PRIZE MEDALS AWARDED to GREEN'S PATENT LAWN MOWERS.
INTERNATIONAL EXHIBITION, LONDON, 1862.
INTERNATIONAL EXHIBITION, DUBLIN, 1865.
The above Lawn Mowers have proved to be the best, and have carried off every Prize that has been given in all cases of Competition.
Sold by all respectable Ironmongers, Seedsmen, &c., in the Kingdom. Illustrated Price Lists free on application.

AGRICULTURAL and HORTICULTURAL IMPLEMENTS and MACHINES of every description.
IMPROVED IRON STABLE FITTINGS.
HURDLES and CONTINUOUS IRON and WIRE FENCING.
Palisading Entrance and Field Gates. Plain and Galvanised Wire Netting.
GREEN'S PATENT LAWN MOWERS and GARDEN ROLLERS.
Garden Engines, Syringes, Water Barrows, Ornamental Garden Seats, Chairs, Tables, Iron Fountains, Vases, &c.
IRON and BRASS BEDSTEADS, in great variety.
Washing, Wringing, and Mangling Machines.
IMPROVED SAUSAGE MACHINES and FILLERS.
Separate Illustrated Price Lists free on application.
THOMAS GREEN & SON, Smithfield Iron Works, Leeds.
Show Rooms opposite the Smithfield Cattle Market, North Street, Leeds; 54 and 55, Blackfriars Road, London, S.; and 19, Eden Quay, Dublin.

SHAW'S TIFFANY.
For samples and prices apply to
J. SHAW & Co., 29, Oxford Street, Manchester.

Asphalte Roofing Felt,
ONE PENNY per Square Foot.
CROGGON AND CO., MANUFACTURERS, [illegible] New Earl Street, [illegible], London, E.C. [illegible]
30, GEORGE SQ., GLASGOW. 2, GORE'S PIAZZAS, LIVERPOOL.

GREENHOUSES, Span or Lean-to, Ornamental or Plain, always in Stock, Glazed with 21-oz., and Painted ready for Fixing. To be seen erected.

Span-roof, [illegible]	£31	0	0
A ditto of same size, ornamental	[illegible]	0	0
A ditto [illegible] feet wide, plain	37	0	0
A ditto same size, ornamental	[illegible]	0	0
Also, a Lean-to [illegible] feet 9 inches wide	22	0	0
A ditto [illegible] feet 9 inches wide	32	0	0

Also, a large Stock of Greenhouse and Pit LIGHTS, of various sizes, kept in stock, and a large Stock of various sized 1, 2, 3, and 4 Light Garden FRAMES, [illegible].
Greenhouses made to order, Glazed with 21-oz., at 1s. 3d. per square foot.
Two-inch Lights made and Glazed with 21-oz., at 9d. per square foot, three times Painted.
W. S. [illegible] best Yellow Timber for Horticultural Work. Estimates given for efficiently Heating by Hot Water.
☞ Note the Address—Wm. SMITH, Hothouse Builder, Furnham Green, W.

WANTED to HIRE for Three Months, a good TRANSPLANTING MACHINE.
Apply, stating terms and capabilities of Machine, to J. ANDERSON, The Gardens, Newstead Abbey, Nottingham.

BRITTANY COWS. The only breed of Cattle that have escaped the Rinderpest. The nobility, gentry, and others are respectfully informed that [illegible] Little Animals steady (and down calving), in any number, at the [illegible]. The great success and encouragement which [illegible] imported, in [illegible] Brittany Cows [illegible]. YOUNG BULLS [illegible]. BRITTANY SHEEP [illegible]. ALDERNEY and GUERNSEY COWS and HEIFERS supplied [illegible].
Apply to the Agents of the Exporter, Messrs. ROBERTSON & Co., 38, Crutched Friars, London, E.C.

TO BE LET, for a Term, a good STOCK and CORN FARM, of [illegible] Acres, with good Residence, near Winchester. Immediate Entry [illegible].
Apply to Messrs. BLUNDELL & PALMER, Land Agents, &c., Offices, 3, [illegible] Street, [illegible].

Barnes, Surrey.
To MARKET GARDENERS AND OTHERS.
TO BE LET, on LEASE for Seven Years from [illegible] ACRES of [illegible] MARKET GARDEN GROUND, situate at the rear of Castelnau [illegible].
[illegible] Messrs. [illegible], Southampton Street, Bloomsbury, W.C., or to Messrs. BAKER & SONS, Surveyors, &c., Kilburn, Middlesex, N.W.

TO BE LET, with Immediate Possession, in consequence of the present Proprietor being in ill-health, the PONTEFRACT NURSERY, containing about 12 Acres Nursery Ground, well stocked with Shrubs, Fruit, and Forest Trees, in good saleable condition. In the Forest Trees will be found from 200,000 to 300,000 Larch, from [illegible] feet.
For further particulars application to be made to Mr. JOHN SHILLITO, Nurseryman and Seedsman, Pontefract.

Tothill, Plymouth.—To Gardeners and Others.
TO BE LET, by Tender, for a term of 7 or 14 years, from Christmas, 1866, all that MESSUAGE or DWELLING HOUSE, GARDEN, and PREMISES, situate at Tothill, in the Parish of Charles, Plymouth, now in the occupation of Mr. FRANCIS Wood, Gardener. [illegible]
The Setter does not bind himself to accept the highest Tender.
[illegible], Plymouth.—September 15.

TO BE SOLD, with Immediate Possession, the LEASE of an old-established NURSERY, about 33 years unexpired, and within a few minutes of Covent Garden Market. There are Two Acres of capital Land stocked with thriving young Evergreen and Other Shrubs, Seven Greenhouses, several Pits and Frames, quantities of [illegible] Plants, a Six-roomed Dwelling House, Seed Shop, [illegible].
For particulars apply to PROTHEROE & MORRIS, Leytonstone, Essex.

Boston Lane, near Turnpike, Hanwell, Middlesex.
To MARKET GARDENERS AND OTHERS.
TO BE SOLD, the valuable LEASE of a comfortable DWELLING HOUSE, Sheds, Stable, Vinery, Greenhouses, [illegible] MARKET GARDEN GROUND, well stocked with the choicest Apple, Pear, Plum, Cherry, Walnut, and other fruit trees, Gooseberry and Currant Bushes, Strawberry Plants, &c. The whole held on Lease for 21 years from September 29, 1865, at the very low Rent of £80 per annum.
For further particulars, cards to view, &c., apply to Messrs. BAKER & SONS, Surveyors, &c., Kilburn, Middlesex, N.W.

Sales by Auction.

Fulham.
To MARKET-GARDENERS, NURSERYMEN, AND OTHERS.
MR. J. S. GOMME is instructed by Mr. [illegible], in consequence of the land being sold for building, to SELL by AUCTION, on the Premises, [illegible] Cottage, New Kings Road, formerly Crown Lane, on TUESDAY NEXT, November 13, at 12 for 1 o'clock, without the slightest reserve, all the growing CROPS, &c., comprising [illegible] Miles Roses, Laurels, Myrtles, Arbor-vitae, Vines, Tulips, Sweetbriars, Dahlias, &c., [illegible] Rhubarb, [illegible] Parsnips, three Horses, [illegible] Market Waggon, Carts, fast Pony, Cart and Harness, Market Baskets, Manure, Lead Pumps, old Iron, and numerous effects [illegible] to the Trade.
May be viewed day prior and Morning of Sale, and Catalogues on the Premises, and at the Offices of the Auctioneer and Trade Valuer, 10, Bucklersbury, E.C.

Hendon, Middlesex.
MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, on the Premises, Hendon Park Nursery, Hendon, Middlesex, N.W., on MONDAY, Nov. 12, and two following days, [illegible] the First Portion of the valuable NURSERY STOCK, [illegible] Standard and Dwarf Roses, Mahonia Aquifolium, Ribes, Berberis Darwinii, [illegible], Hardy Heaths; 2000 Standard Roses, [illegible]; 12,000 Ornamental and Forest Trees, [illegible] 8 feet; Spanish and Horse Chesnut, Laburnums, Beech and Birch, [illegible] Standard and Dwarf-trained Peaches, Nectarines, Apricots, Plums, Cherries, 5000 Gooseberries, [illegible] Red, Black, and White Currants, Mowing Machines, &c.
May be viewed prior to the Sale. Catalogues may be had on the Premises; the Welsh Harp, Edgware Road; [illegible] of the Auctioneers and Valuers, American Nurseries, Leytonstone, Essex, N.E.

Sale of Dutch Bulbs, Standard Roses, Fruit Trees, Conifers, &c.
MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, at 38 and 39, Gracechurch Street, E.C., on SATURDAY, November 17, at 1 o'clock precisely, a first-class Collection of DUTCH BULBS, including choice named Hyacinths, Tulips, Crocus, Narcissus, Snowdrops, &c.; a selected assortment of handsome STANDARD and DWARF ROSES, comprising the best varieties in cultivation; also a splendid assortment of the [illegible] FRUIT TREES of the choicest varieties, &c.; Hardy AMERICAN PLANTS, [illegible].
[illegible] Catalogues had at the Rooms, and of the Auctioneers and Valuers, American Nurseries, Leytonstone, E.

Bulbs, Greenhouse Plants, Fruit Trees, &c.
MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY, November 12, at half-past 12 o'clock precisely, some INDIAN AZALEAS, RHODODENDRONS, CONIFERS, FRUIT TREES, LAURELS, ERICAS, &c., and a large assortment of BULBS from Holland, [illegible].
On view the Morning of Sale, and Catalogues had.

Orchids.
MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY, November 13, at half-past 12 o'clock precisely, by order of [illegible], Esq., a COLLECTION of ORCHIDS from Mexico, [illegible] in excellent condition, [illegible].
On view the Morning of Sale, and Catalogues had.

Consignment of Plants from Holland.
MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, November 14, at half-past 12 o'clock precisely, Dwarf-trained and Pyramid FRUIT TREES, SHRUBS, CONIFERS, HOLLIES, Standard and Dwarf ROSES, and a fine assortment of LILIES for present planting.
On view the Morning of Sale, and Catalogues had.

Climbing Plants, Standard Roses, Specimen Conifers, AND PLANTS FROM HOLLAND.
MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on SATURDAY, November 17, at half-past 12 o'clock precisely, a Collection of CLIMBING PLANTS, consisting of Clematises, Lonicera, Jasminum, Ivies, Vines, &c.; Dwarf-trained Fruit Trees, Ornamental Shrubs, Specimen Conifers, Standard Roses, and a good selection of Plants from Holland.
On view the Morning of Sale, and Catalogues had.

Nursery Stock.
FULHAM ROAD, NEAR TO BROMPTON, HAMMERSMITH.
MR. JAMES H. GREEN is instructed by Mr. [illegible] to SELL by AUCTION on his Grounds, as above, on TUESDAY, November [illegible], at [illegible] o'clock, his well-selected [illegible] ARBOR VITÆ, from 2 to 4 feet, LIGUSTRUM OVALIFOLIUM, 4 to 6 feet, ABIES MORINDA, [illegible] HOLLY, PÆONY, RIBES, ARAUCARIA IMBRICATA, 300 AUCUBA JAPONICA, [illegible] Elm, Beech, and Red Cedar, from [illegible], Laurustinus, 100 Box, [illegible], Mahonias, Standard [illegible], Prince of Wales, Reine Marguerite, [illegible] Greengage, &c.
On view on Saturday and Monday prior to the Sale. Catalogues on the Premises and at the Offices of the Auctioneer, 74, King Street, Hammersmith, W.

Biggleswade, Bedfordshire.—Important Sale.
MESSRS. CONDER AND SON will SELL by AUCTION, without Reserve, on MONDAY, TUESDAY, and THURSDAY, November 12, 13, and 15, on the Premises, the Jasmine Nurseries, Biggleswade, at 10 for 11 o'clock precisely, each day, the NURSERY STOCK, including fine Evergreens and Conifer Shrubs, Ornamental Fruit and Forest Trees, comprising Aucubas, Euonymus, Araucarias, Green and Variegated Hollies, beautiful Specimen Chinese and other Arbor-vitæs, Green and Variegated Box, Weymouth Pines, Cedrus Deodara, English and Irish Yews, Common and Portugal Laurels, Red Cedars, Privet, Spruce Firs, Cupressus (sorts), &c.; Poplars, Weeping Willows, Ash, and Elms, Mountain Ash, Common Chestnuts; Purple, Common Beech, &c.; a large quantity of fine Fruit Trees, including Standard, Dwarf-trained and Maiden Apples, Pears, Plums, Cherries, Peaches, Nectarines, Apricots, Damsons, Raspberries, Gooseberries and Currants, 250 Standard, Half-standard, and Dwarf Roses, Rhododendrons, Camellias, and Azaleas, including the best varieties in cultivation.
May be viewed prior to the Sale, and Catalogues had on the Premises, of Mr. THOMAS ARIES, or of Messrs. CONDER & SON, Estate and Land Agents, Auctioneers, &c., Biggleswade, who will forward same on application.

To Market Gardeners and Others.
MR. W. T. ATWOOD will SELL by AUCTION, by order of Mr. [illegible], who is quitting the premises, near [illegible], Bermondsey, S.E., on THURSDAY, November 15, at 11 o'Clock, the remaining STOCK and EFFECTS, comprising [illegible] Wheel Market Carts, Brook and Spring Waggons, Chaise Cart, 80 3-Light Boxes and [illegible] Garden Tools, Barrows, Firewood, Old Iron, and various Stock.
The Crops comprise a quantity of excellent Sea Kale (for forcing) [illegible], and other Crops.
May be viewed [illegible] Morning of Sale. Catalogues [illegible] London Markets, on the Premises; and of the Auctioneer, [illegible].

Sydnope Nurseries, Darley Dale, Matlock.
MR. JOHN ELSE begs to state that he has been [illegible] from the Proprietor of the above Nurseries, to SELL by AUCTION, without reserve, on NOVEMBER [illegible], the whole of the valuable STOCK-IN-TRADE, [illegible] Forest Trees of every growth, [illegible].
[illegible] may be had gratis on application to the Auctioneer, Matlock Bridge.

Matlock Nurseries, Matlock, Derbyshire.
MR. J. ELSE has received instructions from Messrs. H. & G. Farnsworth to SELL by AUCTION at the above Nursery Grounds, on SATURDAY, November 17, 500,000 LARCH (transplanted), [illegible], also 200,000 Transplanted QUICKS, [illegible] strong, in lots, of which particulars may be had on application to the Auctioneer, Matlock Bridge, Derbyshire.

ESTABLISHED UPWARDS OF A CENTURY.

BUTLER, McCULLOCH, & CO.,

SOUTH ROW, COVENT GARDEN, LONDON,

Seedsmen to Her Majesty's Commissioners of Woods and Forests,
To the Commissioners for the Colonies,
To the Horticultural Societies of the Punjaub and Bombay, &c.

HOLDERS OF PRIZE MEDALS FROM INTERNATIONAL EXHIBITIONS OF 1851 AND 1862.

CHOICE COLLECTIONS of BULBS, all of the FIRST SIZE and QUALITY.

For Conservatory Decoration.						For Flower Garden Decoration.					
No. 1.	No. 2.	No. 3.	No. 4.	No. 5.	No. 6.	No. 7.	No. 8.	No. 9.	No. 10.	No. 11.	No. 12.
£5.	£2 10s.	£1 5s.	£1 1s.	15s.	10s. 6d.	£5.	£3.	£2.	£1 5s.	£1 1s.	10s. 6d.

For Conservatory and Flower Garden Combined.

No. 13, £5 5s. No 14, £2 12s. 6d. No. 15, £2 2s. No. 16, £1 1s. No. 17, 15s. No. 18, 10s. 6d.

All Orders amounting to £1 1s. and upwards sent carriage paid.

ILLUSTRATED PRICED CATALOGUE, containing full details of these Collections, post free on application.

THE EARLIEST PEA IN CULTIVATION.

SUTTON'S RINGLEADER.

SUTTON & SONS

Have again the pleasure of offering this unrivalled EARLY PEA, which still retains its position as *the forwardest and best Early variety yet introduced*. The various trials made both in Public and Private Gardens fully confirm the confidence MESSRS. SUTTON expressed of *its superiority over every other Early Pea*. One of its merits is that the pods come into bearing all at the same time, so that the haulm can be cleared away and the ground planted with another Crop *nearly a fortnight before other Early Peas are ready*.

Retail price, 2s. per quart.

☞ *Lowest price to the Trade may be had on application.*

SUTTON AND SONS, ROYAL BERKSHIRE SEED ESTABLISHMENT, READING.

THREE-YEAR ASPARAGUS PLANTS, 15s. per 1000; 2s per 100.
ONE-YEAR ASPARAGUS, 6s. per 1000; very fine.
SEA-KALE for Forcing, 10s. per 100. Terms Cash.
RICHARD WALKER, Market Gardener and Seed Grower, Biggleswade, Beds.

To Market Gardeners and Others.

CABBAGE PLANTS.—East Ham, Enfield Nonpareil, Robinson's Champion Drumhead, 2s. per 1000.
RED CABBAGE PLANTS, 4s. per 1000, extra fine. Terms, cash. I will challenge England with Plants, the Stock true, and can be warranted. All grown by
RICHARD WALKER, Market Gardener and Seed-grower, Biggleswade, Beds.

To Farmers, Gardeners, and Others.

EXCELLENT CABBAGE PLANTS (Stocks not to be surpassed) can be supplied in any quantities as follows:—
ROBINSON'S CHAMPION (an extraordinary large sort), 2s. per 1000
DRUMHEAD (finest selected), 2s. per 1000.
ENFIELD MARKET (finest selected), 2s. per 1000.
TRUE DWARF NONPAREIL (earliest and best), 2s. per 1000.
RED DUTCH for Pickling, 4s. per 1000.
Special prices given for large quantities not to be undersold
A remittance or reference to accompany all orders.
FREDK. GEE, Seed Merchant and Grower, Biggleswade, Bedfordshire.

Seed Potatos.

H. AND F. SHARPE are now offering MYATT'S PROLIFIC KIDNEY, DAINTREE'S EARLIEST, WEBB'S IMPERIAL KIDNEY, FORTY-FOLD, FOX'S SEEDLING, EARLY OXFORD, and many other Early and Late varieties, fine in quality, free from disease, and at low prices.
Seed Growing Establishment, Wisbech, Cambridgeshire.

The Earliest Pea Grown is

CARPENTER'S EXPRESS, gathered on the 7th May, (see Testimonials), THE EARLIEST DATE ON RECORD, price 3s. per quart. The usual discount to the Trade.
EDWARD CARPENTER, Seed Merchant and Grower, Brighton and Sussex Seed Warehouse, 96, St. James's Street, Brighton.—Oct 20.

Dickson's "First and Best" Early Pea.

FRANCIS & ARTHUR DICKSON & SONS are gratified to know that this PEA has again this season given universal satisfaction, and is pronounced by hundreds of the first Gardeners in Britain, and other competent Judges (confirmed also by their own repeated trials against all the best Early Peas of the day), to be the very best First Early Pea ever offered for general good qualities, viz., earliness, productiveness, and succession of crop. "First Crop" (or "Ringleader") may, on some soils, be a day or so earlier, but it is altogether a very inferior Pea, as every one freely admits. New Seed can now be supplied from a very large bulk, which they have grown to meet the great and increasing demand.
Price 1s. 6d. per quart. Price per bushel to the Trade on application.
The Old Established Seed Warehouse, 100, Eastgate Street, Chester.

SUTTON'S RINGLEADER PEA.
The EARLIEST in CULTIVATION.
The following Seedsmen have already ordered a supply direct from Messrs. Sutton:—
Messrs. Cooper & Bolton, 152, Fleet Street, London, E.C.
" Wm. Hurst & Son, 6, Leadenhall Street, London, E.C.
" Miner, Nash, & Nash, 60, Strand, London, W.C.
" Nutting & Sons, 66, Bathbone, London, E.C.
" Waite, Burnell, & Co., 181, High Holborn, London, W.C.
" Thorburn & Co., New York.
" Fisher, Holmes, & Co., Sheffield.
" J. & C. Lee, Hammersmith.
" James Veitch & Sons, Chelsea, S.W.
Mr. F. Allman, Horsham, Sussex.
Lowest Price to the Trade on application.
SUTTON & SONS, Seed Merchants, Reading.

TABER'S EARLY PERFECTION PEA.

IMPORTANT TO GENTLEMEN'S GARDENERS, MARKET GARDENERS, AND ALL CULTIVATORS OF FIRST EARLY PEAS.

This PEA, which is now offered to the Public for the first time, is admitted by all who have tried it to be the heaviest-cropping first early variety yet introduced. It will supply a want which has long been felt among the Cultivators of Early Peas, being surpassed by none in earliness, is very hardy, of strong robust habit, the haulm being well covered with large pods well filled with fine flavoured Peas. To Gentlemen's Gardeners and Market Gardeners it will prove invaluable, as it is a matter of great importance to obtain a crop combined with earliness; being of a much stronger growth gives it a great superiority over the present race of small and delicate first early Peas now in use; and possessing as it does the necessary quality of being a heavy cropper, will make it a valuable addition to our first early Peas. It is the opinion of many who have tried it, among whom are some of the Firms named below, that it will become the Standard Pea for general early use.

A long LIST of TESTIMONIALS could be added, but the following are deemed sufficient as showing the idea entertained of the character of the Pea by parties who have proved it against all others:—

"4, Bassett Street (Church Street), Liverpool, August 4, 1866.

"DEAR SIR,—The Peas you sent me for trial, labelled TABER'S Early Perfection, were sown beside Dillistone's, Carter's First Crop, Ringleader, and First and Best, but were not put in until 13 days after these varieties, still yours were in flower and the pods fit to gather at the same time as Carter's and Ringleader, with this difference, the crop was more than one-half larger, while the pods are also longer and better filled. I consider it the best Early Pea, and hope you will have it to send out this season.—I am, yours faithfully,

"ROBT. W. KER.

"Mr. GEO. TABER." "Hon. Secretary, Horticultural Society of Liverpool."

"West Hall, Paglesham, Sept. 6, 1866.

"DEAR SIR,—I am much pleased with your early stock of White Peas. I drilled them in on March 19, and carted them into barn on July 19, dry and hard, and think them much superior to the general sorts of First Early Peas, as they grow from 10 inches to a foot longer in the stalk, and blossom very double and certainly yield better. I sowed some of them in my garden a fortnight after some of the First Earlies, and they came ready for table just as soon as these, and longer in pod and larger Pea; when boiled, softer eating and superior in flavour.—Yours truly,

"THOMAS STEBBING."

"Braintree, February 13, 1866.

"DEAR SIR,—When you gave me a few of your New Early Peas last season, I had sown my trials about three weeks—some 10 sorts of all the Early Peas from one of the London houses, and did not expect yours to come in with the others, but to my satisfaction I found what you said about it correct; being so strong and hardy gives it a great advantage over the small and Early Peas now in use, and I found it a most abundant bearer. I never saw such fine large pods so well filled on any Early Pea before. If you can possibly let me have half a-peck for my own sowing this season, I shall esteem it a favour, as I will grow no other for an early crop if I can get yours.—Yours truly,

"JOHN CLARK, Market Gardener."

TABER'S EARLY PERFECTION PEA may be obtained from the following FIRMS, who have already ordered their Stock.

Retail price, 2s. 6d. per Quart.

Messrs. James Veitch & Sons, Royal Exotic Nursery, Chelsea, S.W.
" Chilcas & Weaver, Chester
" Peter Lawson & Son, London
" Hogg & Robertson, Dublin
" Toole & Co., Dublin
" Farrell & Co., Dublin
" A. Henderson & Co., Pine-apple Nursery, Edgeware Road, London, W.
" E. G. Henderson & Son, St. John's Wood, London, N.W.
" Sutton & Sons, Reading
Messrs. Barr & Sugden, Covent Garden, London
" Harrison & Son, Leicester
" Freer & Son, 28, Digbeth, Birmingham
" Waite, Burnell, & Co., High Holborn, London, W.C.
" Lowe & Co., Wolverhampton
" Osborn & Sons, Fulham, London, S.W.
" E. P. Dixon & Sons, Hull
" Geo. Gibbs & Co., Down Street, Piccadilly, London, W.
" Saltmarsh & Son, Chelmsford
" Miller, Nash, & Co., 60, Strand, London, W.C.
Messrs. E. P. Francis & Co., Hertford
" Fraser, Gould, & Ratford, Bishopsgate Street, London, E.C.
" Fisher, Holmes, & Co., Handsworth, Sheffield
" James Dickson & Sons, Chester
" Hurst & Son, Leadenhall Street, London, E.C.
" Tremble & Sons, Penrith
Mrs. Dixon, 48a, Moorgate Street, London, E.C.
Mr. W. Skirving, Liverpool
" John M'Hattie, Chester
" S. H. Clarke, Edgeware Road, London, W.
Mr. A. Dancer, Fulham, London, S.W.
" J. Bird, Downham Market
" T. B. Thomson, 20, High Street, Birmingham
" W. Coker, Taunton
" C. Turner, Royal Nursery, Slough
" S. Brown, Sudbury
" R. W. Ker, Bassett Street, Liverpool
" J. A. Baker, Grosvenor Street, Chester
" R. J. Veitch, 54, High Street, Exeter
" F. Gee, Biggleswade
" T. Warner, The Abbey, Leicester
" T. Brigden, King William Street, London, E.C.

☞ *This Advertisement will not be repeated.*

Price to the Trade, on application to

GEORGE TABER, RIVENHALL, WITHAM, ESSEX.

Editorial Communications should be addressed to "The Editor." Advertisements and Business Letters to "The Publisher," at the Office, 41, Wellington Street, Covent Garden, London, W.C.
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THE GARDENERS' CHRONICLE
AND
AGRICULTURAL GAZETTE.

A Newspaper of Rural Economy and General News.

No. 46.—1866.] SATURDAY, NOVEMBER 17. {Price Fivepence. STAMPED EDITION, 6d.

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ROYAL HORTICULTURAL SOCIETY, SOUTH KENSINGTON.

NOTICE.—A MEETING of the FRUIT and FLORAL COMMITTEES will be held on TUESDAY NEXT, the 20th inst., at 11 o'Clock; LECTURE at 3 o'Clock.

ROYAL HORTICULTURAL SOCIETY. GARDENERS' EXAMINATIONS.

NOTICE.—The Council have appointed TUESDAY (December 18 next) for the above Examination, to be held at South Kensington. Candidates' names to be sent to the Secretary not later than Dec. 11.

For particulars of Examinations see No. 8 of Society's Proceedings in 1865. Further information may be had on application.

*** EXAMINATION at 10 A.M.

ROYAL BOTANIC GARDENS, Regent's Park.—The days appointed for the EXHIBITIONS of PLANTS, FLOWERS and FRUIT next year are—SPRING EXHIBITIONS, SATURDAYS, March 23, April 13, and April 27. GENERAL EXHIBITIONS, WEDNESDAYS, May 29, June 13, and July 4.

By Order of the Council. J. DE C. SOWERBY, Secretary.

HORTICULTURAL SOCIETY OF LIVERPOOL.—THE FOURTH GREAT EXHIBITION of CHRYSANTHEMUMS and FRUIT will be held in St. George's Hall, Liverpool, NOVEMBER 21 and 22. Prizes will be awarded to Fruit and Flowers. Entries Close Nov. 19. For Schedules apply to 4, Bassett Street, Liverpool. ROBT. W. KER, Hon. Sec.

Genuine Garden and Agricultural Seeds.

JAMES CARTER AND CO., SEED FARMERS, MERCHANTS, AND NURSERYMEN, 237 & 238, High Holborn, London, W.C.

STUART, MACDONALD, AND CO., SEED GROWERS AND SEED MERCHANTS, Removed to 85, Southampton Row, Holborn, London, W.C.

GUNN AND PETRIE, NURSERYMEN, SEEDSMEN, AND FLORISTS, Ness Walk Nurseries, Inverness.

JEAN VERSCHAFFELT'S New Horticultural Establishment, 134, Faubourg de Bruxelles, Ghent, Belgium. CATALOGUES free on application.

JAMES FAIRHEAD AND SON, SEED GROWERS and MERCHANTS, 7, Borough Market, London, S.E. New and Genuine AGRICULTURAL, GARDEN, and FLOWER SEEDS. Special prices and sequence form on application.

EVERY GARDEN REQUISITE kept in Stock at CARTER'S New Seed Warehouse, 237 & 238, High Holborn, London.

GENERAL NURSERY STOCK of large extent, beauty, and health, and at prices to meet all purchasers. CATALOGUES on application to J. SCOTT, The Nurseries, Merriott, Somerset.

Notice.

60-PAGE CATALOGUE of NEW PLANTS of 1866 now ready, free for one stamp. WM. DILLISTONE, Munro Nursery, Sible Hedingham, Essex.

Roses.

WM. PAUL'S PRICED DESCRIPTIVE CATALOGUE of ROSES is now ready, post free on application. PAUL'S Nurseries, Waltham Cross, N.

CHOICE NAMED POLYANTHUS, new and splendid. See STEPHEN BROWN'S CATALOGUE. Seed and Nursery Establishment, Sudbury, Suffolk.

Roses.

E. P. FRANCIS AND CO.'S CATALOGUE of the above gratis upon application. The Nurseries, Hertford.

Dwarf Tea Roses in pots.

WILLIAM BARNES has now to offer a very fine Collection of the best TEA ROSES, all fine strong healthy Plants. LIST of sorts and prices can be obtained on application. Camden Nursery, Camberwell, S.

Just published, the Second Edition of

CULTURAL DIRECTIONS for the ROSE. By JOHN CRANSTON, King's Acre Nurseries, near Hereford. Free by post from the Author for 20 stamps.

New Catalogues.

A DESCRIPTIVE CATALOGUE of ROSES. A CATALOGUE of ORCHARD-HOUSE TREES. A DESCRIPTIVE CATALOGUE of GRAPES. Free per post on application to THOMAS RIVERS & SON, Nurseries, Sawbridgeworth.

To the Trade.

TWO-YEAR SEEDLING OAKS, 3s. 6d. per 1000. 1-year Seedling BERBERIS AQUIFOLIUM, 3s. per 1000. CROCUS, YELLOW ENGLISH, 1s. per 1000. FRANK WARWICK, North Road Nursery, Sleaford, Lincoln.

Larch, Larch, Larch.

WITTY AND SON offer 200,000 strong stout well-grown LARCH, 2, 3, 4, 5, and 6 feet high, at low prices which will be sent on application. The Nurseries, Cottingham, near Hull.

Grape Vines.

PAUL AND SON have their usual fine Plants of the leading kinds of GRAPES to offer. Growing a larger than usual quantity of these they can supply them, which they have not required to do—a proof of their good quality. The "Old" Cheshunt Nurseries, Cheshunt, N.

To the Trade.—Grape Vines.

T. J. BOOTH can supply extra strong Planting and Fruiting CANES in variety. Prices on application. Rainhill Nursery, Rainhill, Lancashire.

Grape Vines.

JOSEPH MEREDITH has a beautiful Stock of VINES for Sale, propagated from Vines which have borne the fruit which has taken from time to time so many First Prizes. The Vineyard, Garston, near Liverpool.

Late Grape Vines.

ALICANTE, LADY DOWNES', and MUSCAT of ALEXANDRIA. J. MEREDITH has a splendid Stock of the above sorts for Planting. The Vineyard, Garston, near Liverpool.

VINES, from Eyes.—Strong Fruiting Canes, in pots, 7s. 6d. each. J. PEED, Effra Nursery, Brixton Church, S.

TWO HUNDRED and FIFTY strong short-jointed well-ripened Fruiting GRAPE VINES, in 11-inch pots, price 8s. each; also 300 in 9-inch pots, price 3s. 6d. each. Apply to E. MORSE, Original Nursery, Epsom.

CASTLE KENNEDY FIG.—Plants of the above may now be had at 10s. 6d. and 21s. each; the usual discount to the Trade. PETER LAWSON & SON, Edinburgh and London.

LARGE RED GRAPE and NETTLE-LEAF WHITE CURRANT PLANTS.—Several Thousand 3 and 4-yr. old, warranted true to sort, will be Sold Cheap. THOS. MITTON, Nurseries, near Hounslow, W.

WEBB'S PRIZE COB, FILBERT and other PRIZE NUT TREES. LIST of varieties and prices to be had of Mr. WEBB, Calcot Gardens, Reading.

MAGNIFICENT TRAINED CHERRIES, PLUMS, PEARS, APPLES, PEACHES, NECTARINES, APRICOTS, &c. Special prices on application. JOHN CRANSTON, Nurseries, King's Acre, near Hereford.

A DESCRIPTIVE CATALOGUE of FRUITS, by THOS. RIVERS, just published, free per post for six stamps. Nurseries, Sawbridgeworth.

Autumn 1866 and Spring 1867.

GEORGE EDWARD'S CATALOGUES of FRUIT TREES, ROSES, CARNATIONS, PICOTEES, HYACINTHS, &c., are now ready, and can be had on application at 1, King Street, Castlegate, York.

PYRAMIDAL APPLES and PEARS. — Extra size Trees for Fruiting, stout, well branched, and of handsome growth. Names and prices on application. Also the GENERAL DESCRIPTIVE FRUIT CATALOGUE. STEPHEN BROWN, Seed and Nursery Establishment, Sudbury, Suffolk.

Orchard-house Trees for Fruiting in Pots.

PEACHES, NECTARINES, APRICOTS, CHERRIES, PLUMS, PEARS, and APPLES. WITTY & SON, The Nurseries, Cottingham, near Hull.

STRONG STANDARD and DWARF TRAINED APPLES and PEARS; also transplanted LARCH FIR, from 1½ to 5 feet; a choice collection of CONIFERS and EVERGREENS and a General Nursery Stock. Prices on application. CHARLES BURGESS, The Nurseries, London Road, Cheltenham.

MAGNIFICENT PYRAMID FRUIT TREES.—Fine-grown Intermediate Trees of the Finest Sorts on Quince Stock; APPLES on Paradise; CHERRIES on Mahaleb; PLUMS, &c. Special quotations on application. JOHN CRANSTON, Nurseries, King's Acre, near Hereford.

TREES and PLANTS of all sorts and sizes in very great quantity, of best quality and at moderate prices. PRICED LISTS post-free on application. JAMES DICKSON & SONS ('Old Established Nursery and Seed Business"), The "Newton" Nurseries, Chester.

LARGE PLANES and BIRCH; large SPANISH and HORSE CHESTNUTS; large POPLARS and SPRUCE FIRS; large COMMON and PORTUGAL LAURELS. R. T. PENNETT, Nursery, Park Lane, Tottenham, N.

To the Trade.

SEEDLING LARCH, NATIVE SCOTCH and SPRUCE FIR, &c. An immense stock at moderate prices. MORRISON, Elgin, N.B.

SEEDLING OAK, ASH, ELM, BEECH, BIRCH, SYCAMORE, FRUIT-TREE STOCKS, PORTUGAL LAUREL, QUICK, &c. A very large and fine stock very cheap. R. MORRISON, Elgin, N.B.

Strong Transplanted Quick.

WITTY AND SON have to offer strong QUICK, from 2½ to 4 feet high. Prices will be forwarded on application. The Nurseries, Cottingham, near Hull.

TWO MILLION strong Transplanted QUICK; also stout HAZEL and HORNBEAM for Hedges. Prices on application to JOHN CATTELL, Westerham, Kent.

Strong Quick.

H. AND F. SHARPE have for Sale a fine Lot of 3-yr. Transplanted QUICK, 3 to 4 feet high, and well-rooted. Price very moderate. Nursery and Seed Establishment, Wisbech.

Railway Planting.

FIVE MILLION Transplanted QUICKS, of superior growth. Samples and prices on application to JOHN HEMSLEY, High Fields, Melbourne, near Derby.

Transplanted Larch.

JOHN CRANSTON offers splendid stout well-grown LARCH, 3, 4, 5, and 6 feet high. Price (which is very low) will be sent on application, also samples if desired. Nurseries, King's Acre, near Hereford.

WANTED, 80 Young LIME TREES, suitable for planting along a Road. Send particulars and prices to MR. BURNABY, & DENMAN, Solicitors, East Retford

LARGE SPECIMEN EVERGREEN SHRUBS, of all the leading kinds, in beautiful health, and will move with large balls or mass of fibrous roots. For prices and particulars apply to CHAS. SOUTHBY, Nurseryman, Clapham, S.

J. SCOTT, Importer of Dutch Bulbs, has still a choice Collection of every kind, including HYACINTHS, TULIPS, CROCUS, SNOWDROPS, LILIUMS, &c., &c., which he is offering at extremely low prices. J. SCOTT, The Seed Stores, Yeovil, Somerset.

MINIATURE HYACINTHS.—Named varieties, 1s per dozen; Mixed, 2s. 6d. per dozen SUTTON & SONS, Seed Merchants, Reading.

Finest Named Hyacinths.

SUTTON AND SONS can supply the above at 6s., 9s., and 12s. per dozen. Royal Berks Seed Establishment, Reading.

DUTCH BULBS, unusually fine and cheap; ORNAMENTAL TREES, EVERGREEN and DECIDUOUS SHRUBS and CLIMBING PLANTS. A choice Collection of FERNS, Fern-cases, Gold Fish, Aquariums, &c. R. GREEN, the Bedford Conservatories, Covent Garden Market, W.C.

TO FLORISTS and SEEDSMEN.—HENLEY BROTHERS, General Merchants, High Street, Holbeach, have still on hand fine samples of DOUBLE SNOWDROPS and YELLOW CROCUSES, which they beg to offer. Samples and price on application. Also a quantity of small CROCUS, a great Bargain.—Holbeach, Lincolnshire.

SUPERB LILIES, in 70 finest varieties. BULB CATALOGUE sent free. STEPHEN BROWN, Seed and Nursery Establishment, Sudbury, Suffolk

Tulips.

SUTTON AND SONS can supply best varieties of EARLY, LARGE DOUBLE, and LATE TULIPS at very moderate prices, which may be had on application. Royal Berks Seed Establishment, Reading.

LILIUM LANCIFOLIUM.—Fine large Flowering Bulbs of SPECIOSUM, RUBRUM, and PUNCTATUM ROSEUM at 12s per dozen. JOHN MANN, The Nurseries, Brentwood, Essex.

GLADIOLI in 200 new and splendid varieties, in four sections of Early and Late kinds. BULB CATALOGUE sent free STEPHEN BROWN, Seed and Nursery Establishment, Sudbury, Suffolk.

Gladiolus.

JOHN STANDISH'S unrivalled Collection is now ready for sending out, from 4s. to 60s. per doz. CATALOGUES can be had on application to The Royal Nurseries, Ascot.

GLADIOLUS.—Good Bulbs of Seedlings from all the best varieties, £1 and 15s. per 101; £8 and £6 per 1000. Also a small quantity of VALLOTA PURPUREA. E. RODDIS, Stamford.

FLOWER SEED, for Autumn and Spring Sowing.—12 packets of the most showy Annuals for Ribbon Borders and Spring Bedding for 14 stamps, post free. NUNN & HOBDAY, St. Augustine's Nursery, Norwich.

Zonal Geraniums.

WITTY AND SON have to offer all the best sorts in cultivation, from 4s. to 6s. per dozen. The Nurseries, Cottingham, near Hull.

CHARLES NOBLE'S TRADE CATALOGUE is now ready, and can be had on application. It contains a select assortment of Roses, Rhododendrons, Fruit, Forest, and Ornamental Trees, &c. Sunningdale Nursery, Bagshot.

Larix Kæmpferii.

AMBROISE VERSCHAFFELT, NURSERYMAN, Ghent, Belgium, begs to offer beautiful Plants, 1 foot high, of the above splendid LARIX, at 10s. 6d. each.

TRITOMA UVARIA.—A few dozens of this beautiful showy and hardy perennial, of the true kind, fine plants that have bloomed this season, 12s. per doz. The usual allowance to the Trade. Package included. JAMES KITLEY, Lyncombe Vale Nursery, Bath.

SUTTON'S RINGLEADER PEA. THE EARLIEST IN CULTIVATION. 2s. per quart.

To the Trade.

THE ESSEX RIVAL PEA, in any quantity. For price, &c., apply to THOS. ELEY, Sible Hedingham, Halstead, Essex.

ASPARAGUS PLANTS, in beds, 14 yards by 4 feet, 3, 5, and 7 years old, for Forcing. For price per bed apply to FRANK WARWICK, Plant and Seed Merchant, Sleaford.

ASPARAGUS PLANTS. Strong 3-yr. Asparagus Plants, 10s. per 1000 WANTED, 200 extra strong Forcing ASPARAGUS PLANTS. F. G. GODWIN, 3 and 4, Norfolk Market Hall, Sheffield.

THREE-YEAR ASPARAGUS PLANTS, 15s. per 1000; 2s. per 100. ONE-YEAR ASPARAGUS, 6s. per 1000; very fine. RICHARD WALKER, Market Gardener and Seed Grower, Biggleswade, Beds.

Giant Asparagus.—To the Trade.

YOUELL AND CO. beg to offer strong Plants of the above at the following low prices:—

2-yr., very fine, 10s. per 1000	3-yr., extra fine, 15s. per 1000
4-yr., extra fine, for forcing, 20s. per 1000.	

Royal Nurseries, Great Yarmouth.

To Winter Cucumber Growers.

STRONG PLANTS of TELEGRAPH, the best Winter variety, safely packed by Post, 1s. to 1s 6d each. NUNN & HOBDAY, St. Augustine's Nursery, Norwich.

Nonsuch Lettuce.

W. IVERY begs to inform the Trade that he can now supply the above in sealed packets, with initials. Price on application. Hanover Nursery, Peckham, S.E.

SEA-KALE.—30,000 strong Roots for Forcing. Apply to Mr. GALLIA HEM, Sutton, Surrey, S.

Extra fine Seakale for Forcing and Planting.

GEO. CLARKE has many Thousands of the finest quality to offer this season. Price 5s., 7s. 6d., 10s., and 15s. p. 100. Nurseries, Streatham Place, Brixton Hill, S.E.; & Mottingham, Kent.

TRADE PRICES of CATTELL'S PURPLE-TOP BEET, CATTELL'S ECLIPSE BROCCOLI, KIRKLEES HALL CUCUMBER, and other Seeds of Choice Vegetables, may be had on a; plication to JOHN CATTELL, Westerham, Kent.

Rhododendrons.

JOHN WATERER'S DESCRIPTIVE CATALOGUE of HARDY SCARLET and other RHODODENDRONS is now published and will be forwarded on the receipt of 6 Postage Stamps. It distinctly describes the colours of the new Varieties obtained by him at the Royal Botanic Gardens, Regent's Park. An Abridged List of popular CONIFERS, with heights and prices, is likewise contained.

The American Nursery, Bagshot, Surrey, near Sunningdale Station, South-Western Railway.

NEW HARDY RHODODENDRON, MICHAEL WATERER.—This Rhododendron has hitherto been exhibited under the name of ANNIHILATOR, but it will be sent out under the above name. It is a dwarf habit, and will be found a desirable coloured hardy tree blooming. Rhododendron yet offered.

Orders are now being taken at 1 Plant to be sent out in the Autumn at 5s. 6d. each. The usual discount to the Trade.

JOHN WATERER, American Nursery, Bagshot, Surrey.

THE QUEEN, without an exception the best WHITE RHODODENDRON yet raised.—Robust grower, deep green foliage, late and large flowering, trusses large, full, compact, and eminently showy. Scotch shoot of a stiff, robust habit, crowned with soft leafy mantle, changing to finely shaped white, clear white and or wax-like, of the purest shade and substance, presenting one of the petals of the Water Lily. It remains in bloom longer than most other Rhododendrons, a peculiarity probably accounted for by its hitherto refusing to produce seed, an advantage all Rhododendron growers will understand. All who visited the International Exhibition will remember the handsome Group of this New Variety in Class over every other white Rhododendron exhibited. It is proposed that The Queen should assume her throne in 1867. All and everybody who wish to enjoy her regal reign, should lay out a few shillings and be crowned in imitation. The price will be 2s. 6d. each, and the Trade will have four plants given for three ordered. It need excite no surprise that so noble possessing, by the world should have called forth the encomia so justly certain. Hovering near Mrs. Heuce a story industriously circulated in the Trade that The Queen is not a new one but an old kind, shorn under an assumed name. The Advertiser would be glad to be informed where or when, and UNDER WHAT NAME THIS RHODODENDRON has been seen, and in whose possession it is to be found. The whole unlimited stock is in the hands of CHARLES NOBLE, Bagshot, Surrey.

American Plants, &c.

WATERER AND GODFREY'S PRICED and DESCRIPTIVE CATALOGUE of RHODODENDRONS and other American Plants for this Autumn, will be sent on application. The Catalogue also gives a summary of their General Nursery Stock, included in the most complete in the Kingdom.

Knap Hill Nursery, Woking, Surrey.

Cupressus Lawsoniana argentea.

MESSRS. WATERER AND GODFREY are now sending out this Plant.

Good stout Plants, 1½ feet high and bushy, at 21s. each.

It has been awarded Three First-class Certificates by the Royal Horticultural Society of London, Royal Botanic Society of London, and at the Crystal Palace; and may be most appropriately described, tinted and very beautiful, and one that will become a general favourite.

Knap Hill Nursery, Woking, Surrey.

Azaleas, Epacris, Ericas.

YOUELL AND CO. beg to inform the Trade that they are in a position to offer fine bushy Plants at reduced prices, which may be had on application.

AZALEAS, of leading sorts, to name, with buds, at 18s. and 24s. per 100.

EPACRIS, in best sorts, consisting of hyacinthiflora, in all the leading sorts.

ERICA GRACILIS, AUTUMNALIS, and HYEMALIS, in sets, comprising the 12 sorts.

Royal Nurseries, Great Yarmouth.

NEW CATALOGUES for the SEASON of 1866 and 1867.

No. 1. ROSES.—A select List of all the best varieties in cultivation, fully and faithfully described.

No. 2. FRUIT TREES.—A Descriptive List of all the choicest varieties of Fruit.

No. 3. CONIFERS, ORNAMENTAL TREES and SHRUBS.—Contains all varieties worthy of cultivation, with interesting notes where necessary to be had, native or exotic, &c.

No. 4. TRANSPLANTED FRUIT TREES.—Plants for forcing and underwood, &c.

No. 5. GARDEN and AGRICULTURAL SEED and ROOT CATALOGUE.

No. 6. GENERAL PLANT CATALOGUE.

The above will be forwarded free on application to

JOHN CRANSTON, King's Acre Nurseries, near Hereford.

NEW AND BEAUTIFUL PLANTS.

JUGLANS MACROPHYLLA.—From the North of China, leaves upwards of 3 feet long, and the fruit 1 to 2 in a cluster. It is perfectly hardy, and altogether one of the most beautiful foliage plants ever introduced. Strong Plants, 21s. each.

TAXUS ADPRESSA STRICTA.—Has leaves precisely like Yew, but every plant is furnished with a strong lead, which it makes even in a state of nature. Fine Plants, 21s. each.

NEW ACUBAS.—Seven strong in a handsome collection. Plants of last year raising, with every bold and variegation of leaf, 7s. 6d. each. A very limited stock of MALE PLANTS at 21s. each, very rare, from 42s. each.

ATHYRIUM GOERINGIANUM TRICOLOR.—This is a most beautiful hardy variegated Fern. One cannot conceive a more beautifully marked plant. Each of the pinnæ have a bold variegated band of pale yellow down the centre. Strong Plants, 21s. each.

RHODODENDRON CHIANOIDES.—This is a pure white, from the original discovered in the flowering state in Japan, and we consider it one of the finest hardy trees that has the appearance of a massive show. Plants 10s. 6d. each.

A few extra strong, well-furnished, 21s. each.

Besides the above, John Cranston has a large and fine collection of RHODODENDRONS, and all kinds of SHRUBS, CONIFERS, and FRUIT TREES in the finest possible condition for transplanting.

CATALOGUES of the above can be had on application to

The Royal Nurseries, Ascot.

Early Spring Flowers.

WEBB'S GIANT POLYANTHUS and COWSLIP, with all the best varieties of Double and Single PRIMROSES, PANSIES, &c., with Seeds of single varieties. LIST of prices of different kinds on application to

Mr. WEBB, Calcot Gardens, Reading.

Azalea indica.

WILLIAM BARNES has many Thousand magnificent Plants of the above to offer, in various sizes, including every variety worthy of cultivation, all finely grown, and full of flower buds, sorts and prices can be obtained on application.

The Nursery, Camberwell, S.

British Fern Catalogue.

ROBERT SIM can now send, post free for six postage stamps, Part I. (British Ferns and their varieties, 36 pages, including prices of Hardy Exotic Ferns) of his NEW and PRICED DESCRIPTIVE CATALOGUE of BRITISH and EXOTIC FERNS, No. 7.

Fern's Cray Nurseries, S.E., a mile from Sidcup Station of New North Kent Line of South Eastern Railway.

VIOLETS.—The GIANT, bearing a finer flower and a more beautiful perfume than any of its kind, NOW in FULL BLOOM, and will continue Blooming till April. Plants can be had, about 24 inches in circumference, at 12s. per dozen. A sample bloom of the above, and List of Prices of all sorts of Violet Plants now in bloom, sent on receipt of stamp for postage.

JOHN STODMAN, Violet Grower, Thornton Heath, Surrey, S.

Gladioli, Gladioli, Gladioli.

YOUELL AND CO. are now sending out fine Bulbs of GLADIOLUS BRENCHLEYENSIS, which is the finest and handsomest of this magnificent class. It is the most brilliant and showy variety suited for summer and autumn show, as the following report from the *Gardeners' Chronicle* of September 8, 1866, will testify:—"Messrs. YOUELL & Co., the spikes of Brenchleyensis are magnificent. Among showy autumn sorts this still stands in the foremost rank."

Samples and prices may be had post free.

CATALOGUES of their superb and extensive Collection of Named Sorts may be had on application.

A very liberal discount to the Trade.

Royal Nurseries, Great Yarmouth.

Gladioli.

J. KELWAY AND SON beg to call attention to their splendid Stock of GLADIOLI, which comprises all the sorts worth growing, and probably the largest in the Trade. As a proof of the luxuriance and excellence of their collection they have been awarded the first prizes at the Crystal Palace and Royal Horticultural Exhibition each 1864, 1865, and 1866.

PRICE CATALOGUES free to all applicants.

Selections left to J. K. & S., 3s., 6s., 10s. 6d., 21s. per dozen; 10s., 20s., to 100s. per 100.

The Nurseries, Langport, Somerset.

Exhibition of Chrysanthemums.

JOHN SALTER'S magnificent COLLECTION of CHRYSANTHEMUMS is NOW in BLOOM. The Winter Garden is open every day except Sunday. Admittance free.

Versailles Nursery, William Street, Vale Place, Hammersmith, W. (near Kensington Railway Bridge.)

Chrysanthemums.

ADAM FORSYTH begs to inform his Friends and the Public that his extensive Collection of CHRYSANTHEMUMS is NOW in FLOWER, and may be seen every day (Sundays excepted). His facilities for housing them have been great hitherto, and those interested in the cultivating of this favourite flower will find this a good opportunity for seeing the various modes in which it may be grown for the decoration of Greenhouse or Conservatory at this season.

Brunswick Nursery (opposite West Hackney Church), Stoke Newington, N.

NEW HARDY CLEMATISES.

CLEMATIS RUBELLA.—Very rich velvety claret; the deepest coloured Clematis yet offered. Very distinct, and having the advantage of flowering 6o to 70 per cent. of blooms, with five and six sepals. First Certificate, Royal Horticultural Society.

CLEMATIS PRINCE OF WALES.—Large flowers, of a rich deep violet purple, with red bar down the centre of each sepal; a decided improvement on C. rubro-violacea. First Certificates, Royal Horticultural Society.

Messrs. GEORGE JACKMAN AND SON have much pleasure in announcing that they are sending out the above Clematises, and can with confidence recommend them "amongst the best of hardy Climbers. Strong Plants, with buds, 1s to 2½ feet, 21s. each.

The usual allowance to the Trade.

Coloured Drawings, by Andrews, for 24 stamps.

Woking Nursery, Surrey.

CHEAP PLANTS.

12 of the best NOSEGAY PELARGONIUMS, including Pink Stella and Le Grand, 5s.

12 of the best ZONALS, including the new double Gloire de Nancy, 7s

12 of the best NEW FUCHSIAS, 5s.; 12 best older varieties, 4s.

12 of the best NEW VERBENAS, 3s.

Or the above Collection, all established in small pots, for £1 5s., package included.

PELARGONIUMS, French and English show varieties, our selection, from a large healthy stock, 3s. per doz

CARNATIONS and PICOTEES, good named sorts, 3s. per dozen, 20s. per 100.

GARIBALDI PICOTEES, fine for forcing, 3s. per doz.

PINKS, from a good collection, 2s. per doz.

ISOLEPIS GRACILIS, 4s. per doz.

NUSS & HOLDAY, St. Augustine Nursery, Norwich.

PAUL & SON'S ROSES, EVERGREENS, FRUIT TREES, &c.

Amongst EIGHTY PRIZES gained by their COLLECTIONS this year are the PREMIER PRIZES for CUT ROSES at the INTERNATIONAL, NATIONAL, BIRMINGHAM, ROYAL BOTANIC, and BRIGHTON SHOWS, AND EVERY PRIZE FOR NEW ROSES AT THE SUMMER SHOWS.

PAUL & SON,

OLD CHESHUNT NURSERIES, CHESHUNT, N.,

Beg to solicit orders for ROSES and other PLANTS now ready for delivery. That the Old Cheshunt Nurseries still stand unrivalled in the culture of the Rose, the numerous Awards of the year attest. General Prices as under—

ROSES, from our Stock of over 100,000 Saleable Plants.

Older kinds, Standards, 2 to 4 feet, 18s. per dozen; Dwarf Standards, ½ to 1 foot, 12s.; Dwarfs, 9s. to 12s.

Newer kinds, Standards, 24s. to 30s. per dozen; Dwarf Standards, ½ to 1 foot, 18s.; Dwarfs, 18s. to 24s.

NEW ROSES of 1866, 36s. to 42s. per dozen; 3s. 6d. to 5s. each.

NOISETTE MARÉCHAL NIEL, Standards, 5s.; Dwarfs, 3s. 6d.

FRUITS, all healthy well-formed Trees.

APPLES.—Fine Standards, 18s. per dozen; Pyramids, 18s. to 24s. per dozen; Dwarf-trained, 30s. to 42s. per doz.

PEARS, PLUMS, and CHERRIES.—Standards, 24s. per doz.; Pyramids, fruiting, 24s. to 42s. per doz.; Dwarf-trained, 42s. per dozen.

PEACHES, NECTARINES, and APRICOTS.—Standard-trained, 7s. 6d. to 10s. 6d. each; Pyramids, in pots, 5s. each; Dwarf-trained, 60s. per dozen.

QUINCES, WALNUTS, MEDLARS, CRABS, SERVICE TREES.—Standards, 2s. to 2s. 6d. each.

FIGS, in pots, 3s. 6d. to 5s. each.

VINES, ex. size, Fruiting, 7s. 6d. to 10s. 6d. each; Planting, very fine, 60s. per dozen.

GOOSEBERRIES and CURRANTS, 4s. per dozen

RASPBERRIES.—Summer, 16s. p. 100; Autumn, 30s. do.

STRAWBERRIES, 3s. 6d. to 5s. per 100.

CONIFERÆ.—Our selection of 100 varieties, 1 to 3 feet, £10. PRICED LIST on application. For extent of our Collection see Catalogue of International Horticultural Exhibition.

DECIDUOUS and ORNAMENTAL FOLIAGED TREES and EVERGREENS, for Town and Country Planting.

RHODODENDRONS and AMERICAN PLANTS at PAUL'S American Nursery, High Beech, Loughton.

☞ PRICED DESCRIPTIVE LISTS of the above now ready.

PAUL and SON would invite an inspection of their Nurseries, extending over Sixty Acres, one mile from Cheshunt Station, Great Eastern Railway. Omnibus from Waltham Station to Nursery Gates meets certain Trains.

BARR & SUGDEN'S

AUTUMNAL FLORAL GUIDE TO WINTER

AND SPRING GARDENING

May be had on application.

NEW VIOLA CORNUTA SEED, the best variety.—Respecting the value and importance of this plant, see notices in the *Gardeners' Chronicle*, September 15 and 22; also October 6, pp. 760, 760, and 765, by Messrs. Fiudlay, Drewett, Miller, and Beckett. 6d. per packet.

NEW LAPAGERIA ROSEA SEED, 1s. 6d. and 2s. 6d. per packet.

NEW COLLINSIA VERNA SEED, 6d. and 1s. per packet.

BARR'S PRIZE CALCEOLARIA.—Saved by Mr. James from his prize flowers, 2s. 6d. per packet.

UNBLOOMED SEEDLING AMARYLLIS.—Hybrids of the finest varieties cultivated, and expected to produce flowers of great beauty, 1s. each, 12s. per dozen.

VALLOTA PURPUREA, 18s. per dozen.

BULBS and PLANTS for SPRING BLOOMING.

100 to 1000 HYACINTHS, 2s. 6d. to 5s. per doz., 1s. to 21s. per 100

1000 to NARCISSUS, 1s. to 3s. 6d. per doz., 3s. 6d. to 21s. per 100

1000 to TULIPS, 1s. 6d. to 2s. 6d. per doz., 4s. 6d. to 15s. per 100

Choice PANSY ROOTS, 1s. 6d. to 3s. per 100, 12s. to 25s. per 1000

1000 to SNOWDROPS, 2s. 6d. per doz., 21s. per 100

1000 to SCILLA SIBIRICA and AMŒNA, 2s. 6d. per doz., 18s. per 100

1000 to CLEVEDON PANSIES, Blue, Purple, and Yellow, 4s. per doz., 30s. per 100

WINTER ACONITES, IRIS, ANEMONES, RANUNCULUS, SCILLAS, &c.

1000 to CLIVEDEN DAISIES, Pink, Red, and White, 3s. per doz., 21s. per 100

1000 to VARIEGATED ARABIS, a fine permanent edging, 3s. 6d. per doz., 25s. per 100

1000 to MYOSOTIS SYLVATICA (Forget-me-not), 1s. 6d. per doz., 10s. per 100

1000 to STACHYS LANATA, a fine permanent edging, 3s. 6d. per doz., 25s. per 100

POLYANTHUS, WALLFLOWER, PHLOX, ALYSSUM, HEPATICAS, &c.

COLLECTIONS of BULBS for Blooming In-door Decoration, 10s. 6d., 15s. 6d., 21s., 30s., 42s., 63s., and 210s.

COLLECTIONS of BULBS for Out-door Decoration, 10s. 6d., 15s. 6d., 21s., 30s., 42s., 63s., and 210s.

COLLECTIONS of SPRING-BLOOMING PLANTS, 12s. 6d., 25s., 50s., 100s. to 200s.

BARR AND SUGDEN,

12, KING STREET, COVENT GARDEN, LONDON, W.C.

Gem Plant Case.

Gem Plant Case.

To the Trade, &c.

L. T. DAVIS has the following to offer in good Plants :—

Double White PRIMROSES | Double Dark Crimson PRIMROSES
" Lilac PRIMROSES | " Dark AURICULA

WANTED, DOUBLE YELLOW PRIMROSES.
Ogle's Grove Nursery, Hillsborough, Co. Down.

BOUCHARLAT AINÉ, Lyons, France, offers the following Novelties, Spring, 1867 :—12 ZONAL GERANIUMS, the series, 40 francs ; 3 Large flowered do., 30 francs ; 22 SINGLE and DOUBLE PETUNIA, 80 francs ; 36 ITALIAN VERBENA, 40 francs ; 6 Selected named ditto, 20 francs ; 4 CHRYSANTHEMUM POMPON, light pink, pointed white, new, 5 francs ; 1 VERONICA, Imperial Red, the finest known, 10 francs. The whole Collection, 200 francs. A Descriptive CATALOGUE Forwarded on demand by letter prepaid.

CLIMBING DEVONIENSIS.—This beautiful Rose having obtained a First-class Certificate at the Royal Horticultural Meeting, S J PAYNE is induced to offer his fine plants of the above as grown by him for the last seven years, and the strongly proved to be a distinct and most valuable climbing variety. Extra strong plants, on clean stems, with shoots from 3 to 7 feet in length, 2s. 6d. each. Special offers to the Trade, when taken by the dozen or hundred

Rose Cottage Nursery, Bathwick, Bath.

New English Hybrid Perpetual Roses and ZONATE GERANIUMS.

ROBERT WARD, Raiser of the celebrated Rose John Hopper, has the pleasure to announce that he has again been successful in raising the three following equally beautiful varieties : MRS. WARD, MRS. JOHN HOPPER, and the DARK CRIMSON GEM. See "Journal of Horticulture," June 26, and "Floral Magazine" for September and October, in which they are figured. A Descriptive Circular may be had on application. Coloured Plates by Andrews of Mrs. Ward an 1 Mrs. Berners post free for 24 stamps

Groom's superb ZONATE GERANIUMS, allowed to be the finest varieties for form, colour, or size, ever introduced, SIR FITZROY KELLY, MISS MARTIN, and FLORIBUNDUM ALBUM NANUM See Descriptive Circular, also a faithful illustration of the three varieties, post free for 13 stamps.

Orders are now being received for the above splendid Seedlings, to be let out in the spring ; the set of Three for 21s. ; the set of Geraniums, 10s. 6d ; package included.

Rose or Ward, The Rosery, Ipswich.

Roses, Fruit Trees, Conifers, Forest Trees, &c.

JOHN CRANSTON begs to direct attention to a large and superior Stock of FRUIT TREES, CONIFERS, FOREST and ORNAMENTAL TREES, &c.

His Nurseries extend over upwards of 50 Acres, situated in the centre of the county of Hereford which is acknowledged to possess the finest soil and climate for the growth of Fruit and Forest Trees of any other county in England), and is well stocked with Trees of every description.

DESCRIPTIVE PRICED CATALOGUES will be forwarded on application, and to Purchasers of large quantities Special and most advantageous Prices will be given.

Planting undertaken by Contract or otherwise.
Nurseries, King's Acre, near Hereford

Fruit Trees, Roses, Evergreens, &c.

W. KNIGHT begs to inform intending Planters that he has many Thousands of the above, with every other ORNAMENTAL TREE and SHRUB, in the finest possible condition, at reasonable prices. An inspection is respectfully invited DESCRIPTIVE PRICED CATALOGUES free.

The Nursery is within two minutes' walk of the Hailsham Station (South Coast Railway).

Floral Nursery, Hailsham, Sussex.

RASPBERRIES.—Cornwell's Seedling, 12s. per 100 ; Cuthbush's Prince of Wales, 16s ; Scketer's Semper Fidelis, 20s ; Carter's Prolific, 10s. ; Red Prolific, 8s ; Double Bearing, 8s. ; Fenns White, 8s.

STRAWBERRIES.—British Queen, Admiral Dundas, Sir Charles Napier, Elenor, Oscar, Rifleman, Myatt's Eliza, Keens' Seedling, Prince of Wales, Black Prince, 5s. per 100 ; or 45s. per 1000

Strongly-rooted GOOSEBERRY and CURRANTS, 16s to 20s. per 100 ; ASPARAGUS, 2-year, 2s. 6d. ; 3-year, 3s ; 4-year, 4s. per 100

ROBERT, late GEORGE CORNWELL & Co., opposite Red Lion, Barnet.

Splendid Grape Vines of all the finest varieties in cultivation.

WILLIAM BARNES begs to announce that he has now a very fine selection of the above to offer, both FRUITING and PLANTING CANES, all very strong short-jointed, well-ripened wood, and will produce a fine crop of fruit next spring

The great demand W. B. has had for Grape Vines these several years past, and the present unprecedented rise in the supply of them when he found it somewhat difficult to supply the sorts and quantity required, has induced him to erect a new house, entirely for their cultivation, which has produced upwards of 200 Fruiting Plants, that cannot be surpassed in any collection.

In addition to these W. B has many hundreds of fine Plants to offer, grown by his usual means

Sorts and Prices may be obtained on application.
Camden Nursery, Camberwell, S

PINE PLANTS and VINES.—THOS. PAPE has a surplus stock of strong FRUITING and SUCCESSION PINE PLANTS to Dispose of, consisting of Providence, Jamaica, Montserrat, Black Prince, Enville, and Smooth Cayenne. Fruiting in pots this season or planting out, of all the leading kinds, all at moderate prices.—Undercliffe Gardens, Bradford, Yorkshire

Keele Hall Beurre Pear.

WILLIAM GEORGE CALDWELL begs to intimate that he has a fine stock of healthy Plants of the above PEAR (described in *Gardeners' Chronicle* of December 17, 1864, page 1040), which he has procured direct from Mr. Gardiner, Keele Hall. Strong Plants, 5s. 6d each ; second size, 3s. 6d each.

Knutsford Nurseries.

W. VIRGO AND SON have a large Stock of the undermentioned FRUIT, FOREST, and other TREES to offer this season, viz. :—

Apples	Alder	Withy
Cherries	Ash	Quick (strong transplanted)
Plums	Chestnut (Spanish)	Common and Portugal Laurels
Pears	Hornbeam	
Peaches and Nectarines	Hazel	
	Larch and Scotch Fir	Privet
Forest Trees	Oak (English)	Roses, &c.

Samples and Prices can be had on application at The Nursery, Woburn, near Guildford, Surrey.

Orchard-house Trees for Planting-out in Orchard Houses

APRICOTS.—Half Standards and Standards ; fine bearing trees, from pots ; average price 5s. each. Trees of extra size, 7s. 6d. each

PEACHES and NECTARINES.—Half Standards and Standards, bearing trees, from pots ; average price 5s. each. Trees of extra size, 7s. 6d. each. The above will bear a full crop next season, having been grown in large orchard-houses.

ORCHARD-HOUSE TREES for POT CULTURE.

APRICOTS.—Pyramids and bushes, bearing trees, from pots ; average price, 5s. each.

PEACHES and NECTARINES.—Pyramids and bushes, bearing trees, from pots ; average price, 5s. each.

PEARS, PLUMS, and CHERRIES.—Pyramids, bearing trees, from pots ; average price, 5s. 6d. each

APPLES.—Pyramids, bearing trees, 2s. 6d. each.

Carriage paid to London.

THOS. RIVERS & SON, Nurseries, Sawbridgeworth.

FRUIT TREES.—The finest collection in England. 2000 sorts are grown in all manner of training, and are free from insects, mealy-bug, or chlorosis, with which trees in some Nurseries are extensively infected. Trees from such should be avoided, as when once attacked they can never be cured

A 92-page CATALOGUE and large supplement full of information gratis, on application to J Scott, The Nurseries, Merriott, Somerset.

Dwarf-trained Trees by the 1000, 100, or dozen.

APPLES, PEARS, PLUMS, CHERRIES, PEACHES, and NECTARINES. Fine, flat, well-trained, of best quality and true to name

RICHARD SMITH, Nurseryman and Seed Merchant, Worcester.

RICHARD SMITH'S FRUIT LIST contains a Sketch of the various Forms of Trees, with Directions for Cultivation, Soil, Drainage, Manure, Pruning, Lifting, Cropping, Treatment under Glass ; also their synonymes, quality, size, form, skin, colour, flesh, flavour, use, growth, duration, season, price, &c. Free by post for 2 stamps.

RICHARD SMITH, Nurseryman and Seed Merchant, Worcester.

Fifty Acres of Fruit Trees,

APPLES, PEARS, PLUMS, CHERRIES, PEACHES, and NECTARINES, and APRICOTS in every form desired for Fruiting.

RICHARD SMITH, Nurseryman and Seed Merchant, Worcester.

Orchard-house Trees Fruiting in Pots.

PEACHES, NECTARINES, APRICOTS, CHERRIES, PLUMS, PEARS, APPLES, VINES, and FIGS.

RICHARD SMITH, Nurseryman and Seed Merchant, Worcester

PYRAMID APPLES, PEARS, PLUMS, CHERRIES. Beautiful Trees for Garden or Orchard Houses.

RICHARD SMITH, Nurseryman and Seed Merchant, Worcester.

FRUIT TREES, for Walls and Espaliers.—Upwards of 50,000 to select from, carefully trained, and in the healthiest condition for planting.

RICHARD SMITH, Nurseryman and Seed Merchant, Worcester.

ROSES.—Extra fine Standards, at from 15s. to 18s. per dozen ; 100s. per 100.
Do. Dwarf, extra fine, at from 9s. to 12s. per doz. ; 65s. to 84s per 100.
Do. New Sorts of 1865, 24s. per dozen.

RICHARD SMITH, Nurseryman and Seed Merchant, Worcester.

To the Trade.

MAIDEN FRUIT TREES, RED and BLACK CURRANTS, ASPARAGUS ROOTS, STANDARD ROSES, PRIVET, &c. A surplus stock of the above to offer. Prices and samples on application to

HARRISON & SON, Seed Merchants and Nurserymen, Leicester

WALL-TRAINED TREES of BEARING SIZE.—Our Wall-Trained Fruit Trees this season are very fine, and include PEACHES, NECTARINES, APRICOTS, and FIGS, suited for planting in houses for immediate Fruiting. An inspection is respectfully invited.

T. JACKSON & SON, Nurseries, Kingston, Surrey.

A Quarter of a Million of Fruit Trees.

THOMAS WARNER invites intending Planters and the Trade, that his Nurseries, which occupy upwards of 70 acres, contain the above, and from his most extensive stock of Evergreens, Ornamental Trees, Roses, &c. All in a high state of cultivation. An inspection is respectfully invited.

CATALOGUES, Wholesale or Retail, may be had free on application.

The Nurseries, Leicester Abbey, one mile and a half from the Midland Railway Station.

Fruit Trees.

WOOD AND INGRAM wish to call the attention of Planters and the Trade to their large stock of the following, which they are prepared to supply at very moderate rates, according to the quantity taken :—

APPLES, Standards, Half-Standards, and Dwarfs.
APRICOTS, Dwarf Maiden, cut back, and trained.
CURRANTS, Red, in bushy plants, all the best kinds.
GOOSEBERRIES, " "
GRAPE VINES, from Eyes, Planting and Fruiting Canes.
" " Pyramids, Bushes, and Standards, all round.
NUTS and FILBERTS, all sizes up to 4 to 5 feet.
PEACHES, Dwarf Maiden, cut back and trained.
PEARS, Standards, Dwarf, and Half-Standards.
PLUMS, Standards, Half-Standards, and Dwarfs.
CATALOGUES and Prices on application.
The Nurseries, Huntingdon.

CHARLES NOBLE has a large quantity to offer of the undermentioned FRUIT TREES, 100, 1000, or 10,000 :—

Dwarf ROSES of all the finest kinds, large bushes, 2 to 3 feet high, and nearly as far through

SPANISH CHESTNUTS, very fine, 1-year. } Sample and price if required.
THORN, very fine, 1-year. }
TURKEY OAK, very fine, 1-year. }
MANETTI ROSE STOCKS, very fine, 1-year. }
DEUTZIA GRACILIS, very fine, 1-year. }

STRAWBERRIES, 2s. 6d per 100, or 21s. per 1000 :—

British Queen	Frogmore Late Pine	Oscar
Empress Eugenie	La Constante	Wonderful
Sir C. Napier	Myatt's Eliza	Prince Arthur.

Sunningdale Nursery, Bagshot, Surrey

Contract Planting.—To Noblemen and Gentlemen.

CHARLES SHARPE AND CO., NURSERYMEN, Sleaford, Lincolnshire, are prepared to furnish ESTIMATES for the Formation of NEW PLANTATIONS by Contract, including Plants Planting, and Filling up for two years

The best Evergreen Fence or Screen,

PRODUCING IMMEDIATE EFFECT

JOHN CRANSTON can supply several Thousand AMERICAN ARBOR-VITÆ, 5, 6, to 8 feet in height, most desirable where immediate effect is required. Prices on application

Nurseries, King's Acre, near Hereford.

Special Offer of Larch and Scotch Fir Plants.

TO BE DISPOSED OF, about 200,000 LARCH and SCOTCH FIR, planted as 1-year Seedlings in the Spring of 1865, have not since been removed, and are now from 2 to 4 feet above ground. For particulars apply to

Mr. JOHN WOODS, Forester, Rufford, near Ollerton, Notts.

County of Cork.

FOREST TREES.—200,000 LARCH, 4 and 5-yr. old, average height 4 feet, two and three times removed, fand grown in a cold soil and exposed situation. Fair, good, well-rooted. Quick transit to Wales and South of England. For particulars apply to ARTHUR KENNY, Nurseries, Newmarket, Co. Cork.

FOREST TREES, &c., at the Nursery of the late David A. Reid, Park Attwood, Bewdley, Worcestershire :—LARCH, 4 to 5-yr. old, 2s. 6d. per 100 ; 2-yr. seed, 1s. 6d. per 100 ; 2 to 3 feet, 1s. per 100 ; 3 to 4 ft., 1½s. 6d. per 100. LISTS of other TREES sent on application. Apply, with reference or remittance, to

JAMES RIDDELL, Rhydwood, near Bewdley.

SEEDLING and TRANSPLANTED FOREST TREES of all sorts, including a very large stock of strong Transplanted LARCH, SCOTCH and SPRUCE FIRS, SILVER FIR, and all sorts of Hard Wood. PRICE LIST on application

Through the Nurseries to all parts of the kingdom.
R. MORRISON, Elgin, N. B.

JAMES SHEPPARD has a large Stock to offer of

COMMON LAURELS, from 1 to 5 feet
LIGUSTRUM OVALIFOLIUM, 1 to 5 feet
SIBERIAN ARBOR-VITÆ, 5 feet, fine specimens
AMERICAN " 5 feet "
COMMON PRIVET, 1 to 4 feet.

Prices on application.
The Nurseries, Bedford.

To Gentlemen and others engaged in Planting.

EVERGREENS.—The following will be offered at very moderate prices, all well grown and in excellent condition for Transplanting.

Arbor-vitæ, 4 to 5 feet	Euonymus, 2 to 3 feet
Box, in variety, 2 to 3 feet	Laurustinus, 1 to 2 feet
Arbutus, 3 to 4 feet	Phillyrea, 3 to 5 feet
Alaternus, 2 to 3 feet	Portugal Laurels, 2 to 4 feet
Cupressus Lawsoniana, 3 to 8 feet	Pinus austriaca, 3 to 4½ feet
" macrocarpa, 2 to 6 feet	Laricio, 14 to 4 feet

Prices, at per dozen or hundred, carriage paid to any Station on South Coast Line, on application to

ALEXANDER SCOTT, North Gate Nursery, Chichester

FORTY THOUSAND COMMON LAURELS, all sizes from 1 to 4 feet
WM. WOOD & SON, Woodlands Nursery, Maresfield, Uckfield, Sussex.

THIRTY THOUSAND Dwarf-trained FRUIT TREES in the finest health and vigour.
WM. WOOD & SON, Maresfield, Uckfield, Sussex.

TEN THOUSAND LAURUSTINUS, well-grown, bushy-and bushy.
WM. WOOD & SON, Maresfield, Uckfield, Sussex.

SEVERAL ACRES of extra large well-grown ORNAMENTAL TREES for park planting and immediate effect. WM. WOOD & SON, Maresfield, Uckfield, Sussex.

STANDARD, HALF-STANDARD and DWARF ROSES, by the 100, 1000, and dozen
WM. WOOD & SON, Maresfield, Uckfield, Sussex.

MANY ACRES of STANDARD, HALF-STANDARD, DWARF, PYRAMIDAL, and TRAINED FRUIT TREES, consisting of Apples, Pears, Plums, Peaches, Nectarines, Apricots, Cherries, &c. WM. WOOD & SON, Maresfield, Sussex

SEVERAL ACRES of well-grown EVERGREEN and DECIDUOUS SHRUBS, AMERICAN PLANTS, CONIFERÆ, and ORNAMENTAL TREES. For CATALOGUES apply to WM. WOOD & SON, Woodlands Nursery, Maresfield, near Uckfield, Sussex.

ROSES.—NEW CATALOGUE just published and sent post free on application to
WM. WOOD & SON, Maresfield, Uckfield, Sussex

The Finest New Hardy Plant of the Year.

PAUL'S NEW DOUBLE SCARLET THORN, awarded First-class Certificate Royal Botanic Society and International Exhibition.

"Deep carmine-red, double and vigorous, far surpassing the old double Pink."—*Editorial of Gardeners' Chronicle*, May 24, 1864.

STANDARDS and PYRAMIDS, 10s 6d each See PAUL & SON'S CATALOGUE.

Old Cheshunt Nurseries, N.

Autumn Planting.

PETER LAWSON AND SON, at the present most suitable time for Transplanting CONIFEROUS and EVERGREEN TREES and SHRUBS, have to state that their stock of these is very large and in healthy condition

Special offers for large quantities will be made on application.
Edinburgh and London.

Araucaria imbricata.—Surplus Stock.

WILLIAM SKIRVING, Walton Nursery, Liverpool, begs to offer 10,000 of the above, from 2 to 4 feet high, healthy well-grown plants with good roots, at

2 feet, 15s. per dozen ; £6 10s. per 100.
3 feet, 24s. per dozen ; £8 15s. per 100
4 feet, 36s. per dozen ; £12 10s. per 100.

Packages included. Cash required per post

North Road Nursery, Sleaford, Lincoln.

FRANK WARWICK begs to call the attention of Noblemen, Gentlemen, and others to his Stock of the following. Prices on application.

LARCH, 1 to 2, 2 to 3, 3 to 4, 4 to 5 feet
SPRUCE, 1 to 2, 2 to 3 feet
SCOTCH, 1 to 2, 2 to 3 feet
BLACK THORN, 2 to 3 feet
BERBERIS AQUIFOLIUM, 1 to 1½, 1½ to 2 feet
BEECH, 2 to 3, 3 to 4 feet
PRIVET, 1½ to 2, 2 to 2½, 2½ to 3 ft.

LISTS of other NURSERY STOCK on application.

To the Trade.

W. POWER, NURSERYMAN, Waterford, offers on reasonable terms :—

500,000 LARCH, 1½ to 2 feet	5,000 WALNUTS, 10 to 14 ins.
100,000 LARCH, 2 to 4 feet	200,000 HOLLY, 1½ to 3 feet, Seedlings
20,000 LARCH, 4 to 6 feet	20,000 ASPARAGUS, 2-yr.
20,000 ALDER, 5 to 7 feet	30,000 SEA KALE, 1-yr.
10,000 HAZEL, 4 to 5 feet	Prices on application.

TWO HUNDRED and FIFTY THOUSAND LARCH, 2 to 4 feet high.
200,000 handsome SPRUCE, 2 to 4 feet, 2 to 6 feet high.
Hands me SILVER FIRS, 5 to 10 feet high.
Price on application to
JOHN CATTELL, Nursery and Seed Establishment, Westerham, Kent.

To Gentlemen and Others.

JOSEPH SMITH, JUN., has to offer One Million and a half Transplanted LARCH of all sizes up to 5 feet, very good. A large stock of RHODODENDRONS, ASH, ALDER, BEECH, BIRCH, BERBERIS, EVERGREEN THORN, silver-leaved SILVER FIR, SCOTCH SPRUCE do., WHITE AMERICAN HAZEL, OAKS, POPLARS, PRIVET, PINUS AUSTRIACA and WEYMOUTH, QUICK, SYCAMORE, YELLOW, LAURELS, BERBERIS of sorts, &c. Price on application.

Moor Edge Nursery, Tansley, near Matlock, Derbyshire.

IMPROVEMENTS.—Gentlemen wishing to make Alterations or Improvements in Pleasure Garden, Kitchen Garden, Park, or Park, would do well to consult

H. LANE AND SON'S ROSE CATALOGUE.
" FRUIT CATALOGUE, and
" TREE and SHRUB CATALOGUE, &c.

which may be had on application at
The Nurseries, Berkhamsted, Herts.

An inspection of their Stock is earnestly requested. The finest and largest quantity of ARAUCARIA IMBRICATA in Europe.

CEDRUS DEODARA.—Fine Plants for immediate effect, from 5 to 6, 7, and 10 feet high, safe to transplant, at 1s per foot. Some extra-sized specimens, 15 to 20 feet, at 2s. per foot. Most of the plants offered are in Large Pots, making their removal certain beyond a doubt.

MAULE & SONS, The Nurseries, Bristol.

Wellingtonia aurea variegata.

R. HARTLAND begs to offer good Plants of this most beautiful Tree 1st size, very choice, 9 to 12 inches, 25 6s ; 2d size, good, 12 inches, 21s ; Second size, 15 inches, 15s. Cultivate from Dr. Hortichital Society : and for History of Parent Tree, see *Gardeners' Chronicle* of October 6, page 948

CHROMOLITHOGRAPHS by Messrs Day & Son, free by post for 25 stamps

The Nurseries, Cork.

Berried Aucubas for Winter Decoration.

MAULE AND SONS offer nice bushy Plants, well set with fruit, at 9s to 5s Berries, at 21s. each, and upwards, according to the quantity of Fruit.

The Berries sown in the Spring will furnish a large proportion of Males for Fertilising.

The Nurseries, Bristol.

To the Trade.

WINTER and SPRING-FLOWERING PLANTS.—A large and fine Stock of AZALEAS, EPACRIS, AZALEAS, and New Holland Plants is extra fine this year, and being much greater than we can house, we are selling at unusually low prices.

T. JACKSON & SON, Nurseries, Kingston, Surrey (a-joining the Railway Station), S.W.

To Gentlemen Planting.

G. FROST has to offer large quantities of fine Transplanted LARCH, 1 to 3 feet ; SPRUCE, 1 to 2 feet ; SCOTCH, 1 to 2 feet ; SYCAMORE, 1 to 3 feet ; LAUREL, 1 to 4 feet, and 500,000 BEECH for Hedges ; also Seedling BEECH, 1 and 2-year ENGLISH OAK, 1-year TURKEY do., 1-year EVERGREEN do., 1-year SPANISH CHESTNUT, 1-year HORSE CHESTNUT, 1-year QUICK, 2-year SCOTCH, SPRUCE, BIRCH, and APPLES.

LIST of NURSERY STOCK on application.
Nurseries, Bampton, Devon.

Planting Season

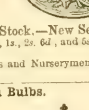
LARCH (Native and Tyrolese), SCOTCH FIR (True and Native), SPRUCE, OAK, ASH, ALDER, BEECH, PRIVET, and all kinds of FOREST and ORNAMENTAL TREES and SHRUBS, ROSES, FRUIT TREES, fine specimen ARAUCARIAS and DEODARS, and large TREES for Park Planting, now in fine condition for removal

CATALOGUES with sizes and prices, sent free on application to JACKSON & CO., Nurserymen, Seedsmen, and Florists, 1, Waterloo Place, Edinburgh.

VIOLA CORNUTA, the True Stock.—New Seed of the above now ready, in packets 6d., 1s., 2s. 6d., and 5s. Price to the Trade on application.

JAMES CARTER & Co., Seed Merchants and Nurserymen, 237 & 238, High Holborn, London, W.C.

Carter's Dutch Bulbs.



Seedsmen to Her Majesty's Chief Commissioners of Public Works and other Government Departments, the Royal Gardens, Kew, &c., &c.

Seedsmen to H.I.M. the Emperor of the French, the Crystal Palace Company, the Agri-Horticultural Society of India, &c., &c.

CARTER'S GUINEA BOX of DUTCH FLOWER ROOTS contains—12 choice named Hyacinths for pots or glasses, 12 mixed Hyacinths for borders, 4 varieties of Polyanthus Narcissus, 12 Pheasant's-eye Narcissus, 12 double white sweet-scented Narcissus, 100 yellow Crocus, 60 blue Crocus, 12 choice named double Tulips, 12 choice mixed single Tulips, 4 white Lilies, 50 Snowdrops, 25 finest mixed Anemones, 25 finest mixed Ranunculus, 12 double Duc van Thol Tulips, 12 double Daffodils, 4 Tiger Lilies.

The above forwarded on receipt of post-office order for 21s.; half the above for post-office order for 10s. 6d.

PRICE LISTS gratis and post free.

JAMES CARTER & Co., 237 and 238, High Holborn, London, W.C.

Hyacinths and other Dutch Bulbs.

WM. CUTBUSH AND SON beg to acquaint their numerous Patrons that they have received their usual Consignment of Choice HYACINTHS, TULIPS, CROCUSES, &c.

PRICED DESCRIPTIVE CATALOGUE post free on application

Highgate Nurseries, London, N.

To Nurserymen, Seedsmen, &c.

JAMES FAIRHEAD AND SON, SEED MERCHANTS, 7, Borough Market, S.E., have on hand Double and Single varieties of MIXED HYACINTHS for Borders, of fine quality; also ENGLISH YELLOW CROCUS and Large Double SNOWDROPS

Prices on application.

Sutton's Unrivalled Collections of Bulbs.

Carriage Free.

SUTTON'S GUINEA COLLECTION of BULBS for BLOOMING in POTS and GLASSES.

SUTTON'S GUINEA COLLECTIONS for BEDS and BORDERS.

For particulars see SUTTON'S AUTUMN CATALOGUE, which may be had gratis and post free.

SUTTON & SONS, Royal Berks Seed Establishment, Reading.

Dutch and other Bulbs.

B. S. WILLIAMS is now prepared to supply splendid roots of HYACINTHS, TULIPS, NARCISSUS, CROCUS, &c., &c. All the roots are selected with great care from the best growers in Holland.

A PRICED and DESCRIPTIVE LIST sent post free on application.

Victoria and Paradise Nurseries, Holloway, London, N.

Dutch Flower Roots.

FRANCIS & ARTHUR DICKSON & SONS have received, from the best Growers in Holland, a very large importation of the above, and have the satisfaction to say that the BULBS are unusually large, sound, and well ripened, and for which early orders are requested to ensure the best Roots.

Flower Roots of £2 value will be delivered free of carriage at the principal Railway Stations and Shipping Ports throughout the country.

DESCRIPTIVE PRICED CATALOGUE and all particulars free by post on application.

The Old Established Seed Warehouse, 106, Eastgate Street, Chester.

New Catalogue of Plants, Dutch Bulbs, &c.

ROBERT PARKER begs to announce that his NEW CATALOGUE, containing Select Descriptive and Priced Lists of New, Rare, and beautiful Greenhouse, Hardy and Stove Plants, Hardy Ferns, Fruit Trees, Grape Vines, Roses, Rhododendrons, Sweet Violets, &c., Amaryllis, Crocuses, Cyclamens, Gladioli, Hyacinths, Liliums, Narcissus, Tulips, and other Bulbs, is now published and will be forwarded to applicants.

Exotic Nursery, Tooting, Surrey, S.

JOHN KERNAN, SEEDSMAN, 4, Russell Street, Covent Garden, W.C., respectfully suggests this as the proper month for planting HYACINTHS, NARCISSI, TULIPS, CROCUSES, SNOWDROPS, and all other ornamental Spring-flowering Bulbs. He has a very fine collection of Hyacinths of his own selection, all named, which he is able to sell at 6s. per dozen, and which he can warrant to give more satisfaction than those puffed as bargains at 18s. per dozen. Border Hyacinths in distinct colours at 3s. per dozen. All other Garden Bulbs equally cheap. EARLY PEAS, OLIVE RADISH, SHORT-HORN CARROT, and all other early Garden Vegetable Seeds, Japan Flax, Fumigators, Syringes, Gardening Knives, and other Implements; Mushroom Spawn, Scarlet and Asparagus Plants, Lawn Grass, true imported Guano, &c.

Amaryllis.

JAMES GARAWAY AND CO., Durdham Down Nurseries, Bristol, offer Bulbs of the above, unnamed Seedlings that have bloomed with them during the past two seasons, and many of which are now showing flower, at 5s., 7s. 6d., and 10s. 6d. each, or 50s., 80s., and 105s. per dozen.

JAMES GARAWAY & Co., Durdham Down Nurseries, Bristol.

New Double-flowered Amaryllis.

H. LAURENTIUS, Leipzig, begs to call attention to his New AMARYLLIS ALBERTI, double-flowered, fine and well shaped, bright scarlet and crimson-tinted, of which representations may be seen in the "Illustration Horticole," and the Garten Magazin." Strong-flowered Bulbs, 12s

His AUTUMN CATALOGUE (No. 39) is just out, and contains a full description of the above, together with PRICE LISTS of NOVELTIES, BULBS, AZALEAS, &c., and of a large number of Plants at Trade prices. It can be had gratis on application (by prepaid letter) to Mr. Low & Co.'s Agents, Messrs BUTHAM & BRACHER, 56a, Upper Lower Thames Street, London, E.C.

The Horticultural Establishment of H. LAURENTIUS, Leipzig, Germany.

VIOLA CORNUTA.—NEW SEEDS of the BEST VARIETY.

JAMES VEITCH & SONS

HAVE MUCH PLEASURE IN OFFERING NEWLY-HARVESTED SEED OF THIS VERY

STRIKING PLANT FOR FLOWER GARDEN DECORATION.

Full descriptions having so recently appeared in the Gardening Papers, MESSRS. V. AND SONS do not think it necessary to again refer to them, but they confidently recommend the Plant as one of the most useful ever grown for Flower Gardening.

There being more than one variety in cultivation, the Seed offered is saved from the very best only.

Price per packet, 6d., 1s., and 2s. 6d. each.

ROYAL EXOTIC NURSERY, KING'S ROAD, CHELSEA, S.W.

THE EARLIEST PEA IN CULTIVATION.

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Have again the pleasure of offering this unrivalled EARLY PEA, which still retains its position as *the forwardest and best Early variety yet introduced*. The various trials made both in Public and Private Gardens fully confirm the confidence MESSRS. SUTTON expressed of *its superiority over every other Early Pea*. One of its merits is that the pods come into bearing all at the same time, so that the haulm can be cleared away and the ground planted with another Crop *nearly a fortnight before other Early Peas are ready*.

EXTRACTS FROM A FEW OF THE NUMEROUS TESTIMONIALS.

From Mr. JOHN RATTY, *Gardener to* Cotterill Scholefield, Esq., *Turvelle Park, Henley-on-Thames, Sept.* 6

"I have twice this season grown 'Sutton's Ringleader' Pea side by side with 'Daniel O'Rourke' and 'Dillistone's Early,' and on each occasion found 'Sutton's Ringleader' 7 or 10 days earlier than either of the other two."

From Mr. J. DANIELS, *Gardener to the* Rev. C. R. Keene, *Swynfombe Gardens, Henley-on-Thames, June* 20.

"I might notice that I have just finished your 'Ringleader' Pea, sown December 20, and find it first-rate, perfectly distinct, and much the earliest Pea I have ever grown. I have also another crop nearly ready, sown March 20, with 'Dillistone's,' but find them perfectly distinct."

From Mr. WILLIAM DOWELL, *Gardener to* Sir George Chetwynd, *Grendon Hall, Atherstone, May* 24.

"Your 'Ringleader' is earlier than any Pea I have ever grown. I shall gather a dish to-morrow morning, which is by far the earliest we have had."

From Mr. W. POVEY, *Gardener to* H. P. Best, Esq., *Donnington Grove, near Newbury, May* 24

"I planted your 'Ringleader' Pea on the last day of February; on the same day I planted 'Daniel O'Rourke' and other early sorts. Your 'Ringleader' is uncommonly well podded, and the pods are filling fast. I have no doubt they will be cleared, and the ground planted, before I pick from any of the other early sorts."

From Mr. JOSEPH HINSON, *High Street, Sutton, near Ely, Sept.* 15.

"I have now grown your 'Ringleader' Pea 2 years, and have found them the earliest I have ever grown."

From WILLIAM THOMAS REW, Esq., *Coombshead, Tiverton, May* 30.

"Your 'Ringleader' Pea has proved quite worthy of its name. I planted it side by side on the same day with 'Sangster's No. 1' (which has hitherto been my earliest), but now the 'Ringleader' has blossomed at least one week before the others, and from all appearance will be fit to gather quite a fortnight before them. My garden is in a very high and exposed situation, as well as rather late."

From Mr BAILEY WADDS, *Gardener, Raywell, Brough, May* 29.

"I have this year sown your 'Ringleader' Pea against your 'Early Champion,' which I have hitherto found the earliest in cultivation, and I am glad to tell you that it came into bloom 10 days earlier. It has been covered with blossoms from top to bottom. I am sure it is a valuable addition to our early Peas."

Extract from the Report on Peas grown at Stoke Newington in 1865 *and* 1866, *July* 28, 1866

"'Sutton's Ringleader.'—One of the distinguishing characters of this Pea is, that it produces pods from top to bottom in a very uniform manner, whereas 'Dillistone's Early' produces them chiefly at the top. These pods come to perfection all at once, and the haulm dies immediately afterwards, so that once in bearing it is soon over.

"There can be no doubt that this is a distinct and valuable variety, the earliest in cultivation, and as good for the table as any in the section to which it belongs. Height, 2 feet 9 inches."

Retail price, 2s. per quart.

☞ *Lowest Price to the Trade may be had on application.*

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STANDARDS, 15s. per dozen, and upwards
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Standard and Half-Standard Trained PEACHES and NECTARINES, very fine, 7s. 6d. to 10s. 6d. each.
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FILBERTS, of sorts, 4s. to 9s. per dozen.
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These are in fine health, and may be relied on as correct to name.

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PLANTING CANES, all the best sorts, 2s. 6d. each, and upwards.
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Between 1000 and 2000 splendid Plants of these are now ready for delivery.

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EVERGREENS and HARDY FLOWERING TREES and SHRUBS.—1000 species and varieties, including the New AUCUBAS, the best and most popular kinds, of various sizes, by the dozen, hundred, or thousand.

WEEPING TREES and CLIMBING PLANTS in great variety.

ZONAL and NOSEGAY PELARGONIUMS.—The original Collection of Beaton's Hybrids, 9s. per dozen; his New Set of last Spring, 1s. 6d. to 3s. 6d. each.

For description and details of the above, see PRICED CATALOGUES, free by post on application. Inspection of the Stock respectfully invited.

All goods delivered free of carriage to London; if a Ton weight of Trees be ordered at one time they will be laid free of charge in the Trucks at any London Goods Railway Station.

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SUTTON AND SONS have received their supply of NEW GRASS SEEDS of the present season's growth in fine condition, and will be happy to forward lowest price per ton or cwt. on application. CATALOGUES gratis and post free.
SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

Lilium lancifolium.

SUTTON AND SONS have received several varieties of the above splendid LILY in fine condition.
For descriptions and prices of each see SUTTON'S AUTUMN CATALOGUE, which may be had gratis and post free on application.
SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

PAUL AND SON'S ROSES and their CATALOGUE. —DESCRIPTIVE LIST is now ready. For general prices see large Advertisement last week.
PAUL & SON would remind their friends that the present time is favourable for moving Roses.
The "Old" Cheshunt Nurseries, N.

New General Plant Catalogue.

B. S. WILLIAMS' NEW PLANT CATALOGUE, containing many really good Novelties, and carefully selected LISTS of STOVE, GREENHOUSE, and HARDY PLANTS, is now ready and will be forwarded post free to all applicants.
Victoria and Paradise Nurseries, Holloway, London, N.

Wholesale Catalogue of Nursery Stock.

GEORGE JACKMAN AND SON'S PRICED and DESCRIPTIVE CATALOGUE for 1866 and spring 1867, can be had free on application, comprising Fruit Trees, Roses, American Plants, Conifers, Clematises, Evergreen and Deciduous Trees and Shrubs, and transplanted Forest Trees, &c., &c.
Woking Nursery, Surrey.

SEE BARR AND SUGDEN'S ADVERTISEMENT, page 1086.
BULBS and CLIVEDEN PLANTS for Spring Blooming.
BARR'S PRIZE CALCEOLARIA, 2s. 6d. per packet.
NEW VIOLA CORNUTA SEED, 1s. and 2s. 6d. per packet.
NEW LAGERIA ROSEA SEED, 1s. 6d. and 2s. 6d. per packet.
UNBLOOMED AMARYLLIS, &c.
CLUMPS of LILY of the VALLEY, Winter Blooming, 1s. 6d. each; 12 for 17s.

The Gardeners' Chronicle.

SATURDAY, NOVEMBER 17, 1866.

MEETINGS FOR THE ENSUING WEEK.

TUESDAY, Nov. 20 { Royal Horticultural (Floral and Fruit Committees), at South Kensington .. .. 11 A.M.
{ Ditto (Scientific Discussion) .. .. 3 P.M.
SATURDAY, — 24 { Royal Horticultural (Weekly Show), at South Kensington .. .. 2 P.M.

ALTHOUGH we do not hear the cry of *Cui bono?* so often raised as heretofore, it must still be admitted that the public in general, and properly so on its part, looks with much more favour on scientific experiments and speculations which promise practical results, than on those which are pursued from mere love of abstract science, without thought of immediate material gain. Happy, then, ought to be those workers who are able to combine the *utile dulci*, and who, from peculiar circumstances, have it in their power at once to aid the progress of science, and to confer present benefits on their fellow-men. Horticulturists are or might be in this fortunate category; their operations frequently are of the greatest importance scientifically, as well as practically. Take for instance, the case of HYBRIDISATION. The most determined practical man cannot help seeing that the experiments he makes in this department of his profession, are, provided they be carefully and honestly done, and faithfully recorded, so many gains to science. There is, moreover, a fascination in the practice of Hybridisation, calculated to endear it to the most inveterate opponent of theoretical speculations. The very uncertainty and diversity of the results obtained, to say nothing of their frequently valuable character, add additional attractions to the practice of cross-fertilisation. Let the reader, in illustration of our remarks, turn to the glowing terms in which Mr. RIVERS, in the very interesting paper on Seedling Peaches, &c., read before the Botanical Congress, describes his successes, and profits by his failures, and let him also bear in mind the practical results obtained, the valuable additions thus made to our repertory of fruits. Mr. STANDISH, in his paper on Hybridising Fruits, extracted from the last Number of the "Journal of the Royal Horticultural Society," and reproduced in another column (see p. 1091), gives similar testimony. This mention of Mr. STANDISH's paper induces us to call the attention of our readers to some experiments that have been making in America with the view of obtaining new and improved varieties of Grapes for open air culture, and an account of which, from the pen of Mr. IVES, is given in the October number of the "Gardeners' Monthly." Some 40 varieties or more, it appears, have been produced by fertilising the flowers of the "Mammoth," a variety of the American Grape (Vitis Labrusca), with the pollen of the Black Hamburgh, and of the White Chasselas. The seedlings so obtained are said to have none of the disagreeable foxy odour peculiar to the American Grape, but to retain the colour, size, and delicacy of flavour of the other parent. Crosses have also been procured between the varieties obtained as above, and the Black Hamburgh and White Chasselas, with the following curious result among others. The American Grape, as is known to botanists, produces often male flowers only, so that if seedlings from this species be raised, a certain proportion of them usually prove barren, producing nothing but male flowers; but the case is different with the Vitis vinifera, the species whence our European Grapes have been produced, and in which the blossoms are bi-sexual.

Now, in the American hybrids this tendency to produce perfect flowers is transmitted to the seedlings, all of which have proved to be fruitful. This is in itself an interesting circumstance, but what is, perhaps, of still greater importance is this, that in the new varieties the hardiness and precocity of the one parent is combined with the delicate flavour of the other. Another circumstance that may possibly turn out of very great practical importance depends upon the well-known immunity of the American Grapes from mildew, on which account their introduction into France and other Grape-growing countries has been counselled, but the plan has not hitherto been adopted to any extent, we believe, mainly on account of their peculiar taste, so disagreeable to European palates; but if this defect can be remedied in the manner just indicated, it is evident that we have here a fact of great value, not only in respect to the Vine-growing districts, but also as regards the amelioration of our own outdoor Grapes.

WE have been asked lately what is the title of a book which has been recently published respecting GROWING MUSHROOMS IN COFFEE GROUNDS. If there is such a work, it has not yet reached us, but in the mean time, we give our correspondent all the information we possess on the subject.

PERSOON published in the third Volume of the "Mycologia Europæa," an Agaric under the name of Agaricus neapolitanus, which grows on Coffee grounds at Naples. He describes it as a rather large gregarious white species, with an even funnel-shaped pileus, crowded rather narrow, decurrent gills, and a smooth equal stem, and says that it is cultivated for the table. His information appears to have been derived from TENORE, who states that the Coffee grounds are kept in a moist place from eight to ten months before the Fungus makes its appearance, and that its first discovery was accidental, some nuns in a convent at Naples having met with it on a mass of Coffee grounds which had been thrown into a shady spot of the convent garden. The Fungus proved so good that attempts were made to grow it artificially, and for this purpose large quantities of Coffee grounds were collected from different quarters. The mass was left to ferment in an unvarnished earthen vessel placed in the shade, and watered occasionally to keep up a constant degree of moisture.

The exact affinities of the species have never been determined, but it is clear that it belongs to the division with white spores, and is allied to A. subinvolutus, Batsch, which is much praised by Dr. BADHAM; but, as far as we could judge from two or three specimens cooked under his own directions, praised far beyond its merits.

Another white-spored species which has been found in wine-casks in Austria, and which has been figured by TRATTINICK under the name of Agaricus Markii, not Agaricus Marklini, as it is given by FRIES, has sometimes been confounded with it, perhaps in consequence of its name. It seems however to be a very different species, and to be a form of Agaricus lignatilis, which occurs on decayed trunks at Burnham Beeches.

There is another Agaric which also grows on Coffee grounds, of a very different affinity—A. Coffeæ. Viviani, with rose-coloured spores, figured by its describer in his work on Italian Fungi. It is closely allied to Agaricus volvaceus, which occurs occasionally in hothouses on tan, or on decayed vegetable matter in the open air. The taste and smell are not disagreeable, but as it leaves a slightly bitter taste on the palate, it must be used, if at all, with caution. VIVIANI found his plant on Coffee grounds which had been left for some months to ferment in the stove of the Botanic Garden at Genoa. Five numbers of his work have appeared under the title of "I Funghi d'Italia, descritte et illustrate dal Professore DOMENICO VIVIANI," each containing ten folio plates. We believe that no more have been published, and the letter-press breaks off in the middle of a description. *M. J. B.*

ANXIETY is felt in some agricultural districts as to the future supply of labour. The accounts of prosperity sent home by emigrants, the highest wages paid by manufacturers, the employment, as easily reached, as it is amply offered by public companies and private speculators, have made in many villages a plain decrease in the number of their working men. Houses are untenanted, and the returns of the registrars exhibit fewer marriages and births.

It is becoming a consideration of prime importance to the owners and occupiers of the land, how they may prevent any further exodus; and if they are unable to compete with manufacturers and others in the amount of money payments, they should give careful attention to all other inducements by which they may interest their working neighbour, and deepen his attachment to his home.

Some progress has been made by benevolent men with regard to the structure and convenience of his cottage, but little has been done for the COTTAGE GARDEN. The experience, nevertheless, of those who have shown a practical sympathy in the matter, amply proves that a good garden, in most instances, improves the condition, and so fixes the interest and localises the attachment of the cultivator. While it provides a wholesome occupation for his leisure, it adds to the sparse comforts of his daily life.

The owners of the soil may effectually co-operate with its tillers, by attaching better gardens, well protected and fertilised, to their cottages, and by desiring their gardeners not only to distribute seeds and roots, but to give instructions as to their management.

The occupiers of land may help by subscribing to annual exhibitions, at which the best produce, and the best gardens, should be duly rewarded, and both classes may expect to have the hearty aid of the clergy, who cannot fail to find in these cottage gardens a congenial means of promoting their work. That which endears a man to his home, keeps him safe from many temptations, and gives him a more contented and thankful heart.

—— The Schedule of the great NATIONAL HORTICULTURAL EXHIBITION, to be held at Manchester from the 7th to the 15th of June next—a continuance of eight days—is a liberal one, as it should be to secure the sympathies of exhibitors, and induce them to leave their plants on show for so long a period. In this respect the International Show of last year has done good service to the cause of exhibitions, by proving to demonstration that most plants may be so left without material injury; and this is no doubt the first and most important step towards a reformation of our shows generally. The Manchester prizes amount to an aggregate sum of 98*l.* 10s., distributed in the following proportions:—Flowers: Amateurs, 42*l.* 10s.; Flowers: Nurserymen, 18*l.*; Fruit: Open, 7*l.* The Show is to be carried out by the Manchester Botanical and Horticultural Society, and is to be held in its Botanic Garden; and as subscribers to the Society are to be admitted to the exhibition free, this consideration will no doubt lead to a great extension of membership. The prices to be charged are 10s. 6*d.* on the first day (Friday, June 7), 2s. 6*d.* on the second, and 1s. on each day of the following week.

—— It would appear from the letter annexed, received a few days since by a lady residing in London, that the store of Mr. HULLETT'S RARITIES is by no means exhausted. This gentleman's name, it will be remembered, occurred some short time ago in connection with certain mysterious communications relating to the Mangosteen, a monster-fruited Passion-flower, and other tropical fruits. As this is the first we have heard about "green Peas," we presume we have here another Passion-flower, altogether distinct from the former. In any case, such of our readers as may be disposed to be speculative, would do well to endeavour to see and taste before buying, or at least to require such a public exhibition and trial as would enable them to purchase with confidence. The letter referred to is the following:—

"Clarence Lodge, Cosham, Hants, Nov. 9, 1866.

"Madam, I have a very few plants to spare of another new magnificent *Lophora* Passion-flower from South America, and I thought you might take one. This beautiful climber grows very rapidly, and bears *most* abundantly at all times of the year. The flowers are very sweet scented and lovely, and followed by large *black* fruit of delicious flavour. It is however as a vegetable it is most valuable, for the green fruit boiled tastes just like green Peas.

"Price of each plant, guaranteed to bear next spring, *two guineas*.

"Believe me, Madam,

"Yours very truly,

"J. HULLETT."

—— *Les Mondes* tells us that the father of the FALSE ACACIAS, which has been standing in the Jardin des Plantes at Paris for two and a-half centuries, has at last fallen through age. This ancient tree, whose trunk was quite enveloped with iron plates, is regarded as the venerable ancestor or precursor of all the Robinias or False Acacias now so abundant in parks, promenades, plantations, and pleasure-grounds, and was introduced to France "in 1615, at the cost of a thousand dangers, by the naturalist JEAN ROBIN."

—— Among other curious varieties of BRITISH FERNS, Mr. S. APPLEBY, of Doncaster, has sent us one which he calls ASPLENIUM MARINUM MULTIPINNATUM, and which he well describes as a marvellous sport from the normal kind. The fronds

are deeply pinnatifid throughout, and the lobes which are widened towards the apex, present the appearance of a multitude of small crests. The rachis, moreover, is ramified near the apex, forming several branches, the pinnæ of which are divided in a similar manner. The fronds are quite sterile in consequence of the exuberance of the frondage, and bear the same relation to the species that the var. cambricum bears to the normal Polypodium vulgare, except indeed that here they are, in addition, multifidly divided at the apex.

—— The Nottingham and Midland Counties Horticultural and Agricultural Society—a new Society, which appears to owe its position to the success of the Floral Fête of last summer, held in connection with the visit to that town of the British Association—has just issued a schedule for a GRAND EXHIBITION of Fruits, Flowers, Vegetables, and Agricultural Produce, to be held in the EXHIBITION BUILDING at NOTTINGHAM, to open on Thursday next, the 22d inst., and to continue open till the 24th inst. It is expected that the show of Chrysanthemums and of Fruit will be both choice and extensive, and some fine Farm produce has been promised. The schedule extends to 122 Classes.

NEW AND SELECT PEARS.

No. 5. *Amélie Le Clerc.*—This fine and very handsome Pear was raised from seed by the late Léon Le Clerc, of Laval, who also raised that remarkable variety Van Mons Léon Le Clerc, intending by unity of names to immortalize himself and his brother pomologist and friend Van Mons. Amelie Le Clerc is a first-class Pear as to size and quality; its skin when ripe is pale yellow, dotted with small russet spots; it is perfectly melting, juicy, and very good, ripening in November. The tree which produced the fruit from which the above outline was taken came from the garden at Laval. It is a hardy variety and very fertile, growing freely on the Quince stock.

DR. HEER ON THE PLANTS OF THE LAKE DWELLINGS.

(*Concluded from p. 1068.*)

THE results of the investigation of the Lake-Dwelling Plants show that all the cultivated plants indicate a connection with the countries of the Mediterranean. Every kind of corn came to them from that quarter. We have seen that the lake colonists cultivated not only the same Barley, but even the same variety, as the inhabitants of Southern Italy. The lake colonists had the same cereals as the Egyptians. They were also clothed in the same manner, for in Egypt Flax took the first place amongst the plants used for spinning and weaving. All the mummies are wrapped in linen cloth, and in the time of Herodotus the priest could wear only linen garments. One of the plagues sent by Jehovah upon Egypt was the destruction of their crops of Flax and Barley by thunder and hail (Exodus ix. 31). The cultivation of Flax, and the art of weaving the thread may frequently be seen on the Egyptian mural paintings,* while Hemp was unknown as a plant for making thread, and it is also entirely unknown in the remains of the lake dwellings. The garden or opium Poppy is, indeed, nowhere drawn on the Egyptian monuments, but, on the other hand, it appears, together with the ear of Barley, on a very ancient coin of Smyrna, and also on one of Metapontum; and this plant must have been of some considerable importance amongst the lake colonists, as they probably procured oil from its seeds.

Now, if we take into consideration all these cultivated plants, brought into our districts by man out of the far East; and if we further consider the weeds which, contrary to his inclination, came with them, and of which some (especially the Centaurea Cyanus and the Silene cretica) also indicate a southern origin, we can hardly hesitate to assert that this agricultural knowledge came into our districts from the basin of the Mediterranean.

Even if we were ignorant of the absence of metals in the older settlements, we should be obliged, from the character of their plants, to ascribe to them a very great antiquity. The non-existence of winter corn, of most of the culinary vegetables, and of Hemp, as also of the domestic fowl, indicates a period reaching back long before the Christian era. The Greeks and the Romans had winter corn, cultivated Hemp, and had a great variety of culinary vegetables. The domestic fowl is nowhere mentioned in Homer or Hesiod, but in the time of Pericles it is spoken of as the Persian bird, and it appears in Italy on coins of Neapolis, probably struck about a hundred years before Christ. To this it must be added, that the Roman authors never mention a word about lake dwellings, and Professor Desor justly reminds us that Pliny had his villa exactly in the place where there are numerous remains of pile dwellings, but which had so completely vanished from the memory of the people that they appeared to have had no suspicion of these ancient inhabitants of the land. On the other hand, it is going too far, to estimate the age of the lake dwellings at six or seven thousand years—a view taken by M. Morlot.

If we look back three thousand years ago, perhaps in the time of Homer or David, we shall find the same cultivated plants in the East. Barley and Wheat are often mentioned in Homer, as well as field Beans and Poppies, but no mention is made of Rye or of Oats. In the book of Ruth, which probably was written in

David's time, as it relates to a family history of the royal house, Barley and Wheat are frequently spoken of; and the reapers of Boaz let Ruth have some of their master's parched corn. Consequently, Barley and Wheat were the chief kinds of corn in Palestine eleven hundred years before Christ. But they are mentioned, together with the Spelt, a good deal earlier, viz., in Genesis, as having undoubtedly in much earlier time laid the foundation of the civilisation which then existed in Egypt.

In David's time (2 Samuel xvii. 28) Beans and Lentils are spoken of as common food. And the Spelt is mentioned elsewhere; but nothing is said of Rye or of Oats. Together with these, we have the kinds of Wheat and leguminous plants which have been found in the lake dwellings of western Switzerland, belonging to the Bronze age. At that time bronze appears to have been the metal most generally in use amongst the Orientals and the Greeks. And it is mentioned everywhere in Homer. Bearing in mind the very slow diffusion of civilisation in those ages, the supposition may probably not appear too hazardous, that the lake dwellings where the use of bronze was known may be placed about this period.

The lake dwellings were inhabited during the whole year, and the cattle were stalled upon them. The manure which was found at Robenhausen proves the latter proposition, and the undigested remains of food prove the former. The cherry-stones with great probability indicate the month of June; the seeds of Raspberries and Blackberries the middle and end of summer; the Sloes and the seeds of the Dog Rose speak of the latter part of autumn or the beginning of winter, when these fruits first become eatable after they have been exposed to the frost; while the Hazel-nuts and Beech-nuts have reference to autumn and winter; as well as the seeds of weeds grown with the corn and separated from it by the colonists, and then thrown into the lake.

Although the actual determination of the age of the lake dwellings is doubtful, yet we may say with perfect certainty that they are more than 2000 years old; and, with a considerable amount of probability, that they reach back from 1000 to 2000 years before Christ. In any case the remains of plants have a very high antiquity, and they throw some light on the solution of the question, whether the species of plants have undergone any change in historic time. With respect to the wild plants, the question must be answered in the negative. The most careful investigation of them shows a surprising agreement with the recent species, and even small varieties of form have been retained, as we see in the Water Lily, the Fir, the Sloe, the Bird Cherry, and the Hazel-nut. Professor Unger has come to the same result by investigating the Egyptian plants. But the case is different with the cultivated plants, although some kinds—as the dense compact Wheat and the close six-rowed Barley—have undergone no perceptible change, yet it must be confessed that most of them agree with no recent forms sufficiently to allow of their being classed together. The small Celtic Beans, the Peas, the small lake-dwelling Barley, the Egyptian and the small lake-dwelling Wheat, and the two-rowed Wheat or Emmer, form peculiar, and apparently extinct races: they are distinguished for the most part from the modern cultivated kinds by smaller seeds. Man has, therefore, in course of time produced sorts which give a more abundant yield, and these have gradually supplanted the old varieties.

We have, therefore, to consider the latter as the original stock from which the others have sprung. Thus, probably, the small six-rowed Barley of the lake dwellings is the original form from which the four-rowed Barley has descended. The axes of the ears have become longer by cultivation, the spikelets are pushed further asunder, and therefore the longitudinal rows lie one over the other. We thus find only four rows on the ears, and the form becomes what is known as common Barley (H. vulgare). But there was also a change in another direction. In the side florets the pistils do not come to perfection, and consequently only the middle grains are productive. Thus we get only two rows of grains, which consequently become larger. And so by the lengthening of the axes of the ears we get the two-rowed Barley (H. distichum, L.), but by the shorter axes the "rice Barley" (H. Zeocriton, L.). I consider, however, all these forms of Barley only as varieties of one species; in fact, they sometimes exhibit a transition from one to another.

The same thing occurs with the different kinds of Wheat. I consider the small lake-dwelling Wheat as the primitive form from which have sprung, by cultivation, the different forms, with the axes not fragile and with the grains easily detached, as they all are very near to each other in character, and no important and decisively distinctive marks are to be found between them.*

The Flora of the Lake Dwellings consequently announces to us that all the plants that come in contact with man become changed up to a certain point, and thus man participates in the great transformations of nature, while the wild plants which surround us at the present day still grow in the same forms as they did three or four thousand years ago, and do not exhibit the smallest change.

THEORY AND PRACTICE OF VENTILATION.—No. XIV.

(*Continued from p. 1049.*)

THE quantity of water contained in the air depends very much upon its temperature. In this country, at a temperature of 50°, it will generally contain about 3 grains; at 60°, 4; and at 70°, 5 grains. With this quantity the wet-bulb thermometer will indicate 45°, 54°, and 63°, making a difference of 5, 6, and 7, between the wet and dry bulbs for three measures of vapour. Taking a wider range, and the dew-point or saturation for easier comparison, air at 32° can only hold 2.1 grains of water in a cubic foot, whereas air at 70° can hold 8 grains—a difference of nearly 6 grains to the cubic foot. Again, with the dry and wet bulbs, both at 40°, a cubic foot of air can only hold 2.9 grains—a difference of over 5 grains between 40° and 70°. Neither does this increased capacity of air for water simply keep pace with its elevation of temperature. Like a ball running down a hill, which gathers new momentum as it rolls until it acquires a speed out of all proportion to the force that started it, so the air as it gets heated drinks out of all proportion to the increase addition to its temperature. Saturated at 20° with 1.3 grain per cubic foot, it holds only 2 grains at 30°, and 2.9 at 40°. Thus for 20° there is only a difference of 1.6 grain. Starting with 2.9 for 40°, we have 4.1 for 50°, and 5.8 for 60°; showing a difference of 2.9 grains, or nearly as much again as for the first 20°. Proceeding from 60°, at 70° the air will carry 8 grains of vapour per cubic foot; at 80°, 11 grains—showing a difference of 5.2 grains. Once more starting with 80°, we find at 90° the air can carry 14.8 grains; at 100°, 19.8 grains—indicating an increase in the last 20° of 8.8 grains. These facts are sufficiently important to demand reiterating in a tabulated form:—

Capacity of the Air for Moisture at		Differences for 20 Degrees, from	
Degs.	Grains per Cubic Foot.	Degs.	Grains.
20	1.3		
40	2.9	20 to 40	1.6
60	5.8	40 to 60	2.9
80	11.0	60 to 80	5.2
100	19.8	80 to 100	8.8

According to Mr. Glaisher's sixth table, which gives the weight in grains of a cubic foot of vapour at all temperatures from 0° to 100°, under a pressure of 30 inches mercury, "the capacity of air for moisture doubles for a rise from 0° to 16°; from 16° to 33°; from

* The following is the manner in which we should place them:—Triticum vulgare, Vill. Four-rowed ears; spikelets with 3–4 grains falling off when ripe; axes not fragile.

a. Triticum antiquorum, M. —Small lake-dwelling Wheat. Ears awnless, short, the grains very much loosened, small, and closely pressed together; spikelets with 3—4 ripe grains; palea shortly carinated on the back, from the apex to the middle, shorter than the glume, and ending in a small tooth.

b. Triticum, Lam. —Common Wheat. Ears either with or without awns, spikelets with 2—3 ripe grains; palea nearly of the length of the glume, carinated all its front; grains a long oval, blunt.

c. Triticum, Desf. —Hard Wheat. Ears awned, spikelets with 3–4 grains, palea narrow as long as the glume;

33° to 52°; from 52° to 73°; and from 73° to 96°: so that if the quantities of water held in solution be taken in a geometrical progression, the temperature increases in a quicker ratio than the terms of an arithmetical progression." It thus appears that the capacity of air for aqueous vapour does not follow the same ratio as the temperature, the capacity for moisture at any temperature being less than the mean of equidistant temperatures; for example, at 50 the elastic force of vapour, measured by the column of mercury it will sustain, is 0.361 inch, and at 70, 0.733 inch; if, therefore, two masses of air, the one at 50 and the other at 70 (both saturated with water) be mixed together, the compound will take a mean temperature of 60°; but the elasticity of the mean of the two quantities of vapour will not correspond with 60, but 61.55, for the elastic force of vapour at 60° is 0.518, while the mean of the forces of 60° and 70° is 0.547. Taking a wider range the differences between the two means of temperature and vapour become more apparent. The mean of the two temperatures, 70° and 32°, is 51°. The mean of the elasticities of the vapour of these two degrees of heat is 0.457 inch. The elasticity of vapour at a temperature of 51° is 0.374 inch, whereas 0.457 inch is the amount of vapour held in suspension by the air at a temperature of 56°.5. Hence it follows that whenever two volumes of air of unequal temperatures are brought together, there will not only be an equalisation of heat and vapour, but an excess of moisture beyond what the mean temperature can carry, and part of the water must be precipitated. As these facts are of the utmost importance not only throughout the wide domain of Nature, but also within the narrower spheres of our artificial atmospheres, it may be as well to demonstrate them by a reference to the actual quantity of water existing in the air as well as by the varying elasticities of vapour at different temperatures. For instance, the mean of the two temperatures 30° and 70° is 50°. The mean quantity of vapour for these two temperatures is 5 grains per cubic foot. But the vapour per cubic foot at a temperature of 50° is only 4.1 grains. Hence nearly 1 grain per cubic foot is deposited as the result of the mingling of these two different temperatures. Upon this important fact—that the increased capacity of heat for aqueous vapour does not follow the same ratio as the temperature, the watering of the world rests. Had they corresponded, there could have been no deposit of dew, rain, or snow; the atmosphere might have been freighted with its invaluable load of water as now, and yet the thirsty riven earth, and drought-baked mountains have exerted their supplicatory, attractive, and electrical forces in vain. Temperature and vapour being exactly proportioned to each other, the air could never have relaxed its grasp of the water, and the case of the world would have been ten thousand times worse than that of the quenchless maddening thirst of those on board of a burning ship at sea. There might have been water in plenty, in the heavens above, in the earth beneath, and an ocean of water under the earth—in fact "water, water everywhere;" and yet the thirsty, scorched, blasted earth, might not have received "a drop to drink."

The present arrangement is the more marvellous as we take into account that there seems no physical reason for the present diversity of principle upon which the respective additions of heat and moisture are added to our atmosphere. Reasoning from analogy, one would have expected them to have proceeded on the same plan. Air expands in bulk in the same ratio, for every increment of heat added to it at all temperatures. On the contrary each separate temperature carries its own special quantity of moisture, and the rate of increase does not keep pace or harmonise with the increments of heat. Upon this difference the throbbing life of the world is suspended, and we can only adore the Infinite Wisdom that meets us in such nice but vitally important arrangements, and pass on.

Returning to our figures, it will be seen that there is a difference of 5.1 grains of moisture per cubic foot between a temperature of 70° and one of 40°. I choose these two temperatures advisedly, because 70° is a temperature often maintained during cold weather in plant stoves and forcing houses; and many, perhaps most gardeners, consider it safe to admit the external air at 40°. I will also adhere to them for convenience, and to prevent the necessity of frequent illustration. Of course the force of the following remarks is not dependent on these particular figures, but applies to any other variety existing between the external and internal atmosphere. One of the facts I have been anxious to impress upon all throughout this paper is, that these two atmospheres, the external and internal, vary not only in temperature, as all know, but in the quantity of water which they carry, which many seem altogether to forget. Cold air as a rule is dry air. Its dryness may generally be measured by its temperature, and exceptionally by the direction from which it comes. Glancing at the map of the world, it is easy to see why an east wind should be a dry cold wind. It sweeps across cold countries at low temperatures, and the passage over the German Ocean is too short a journey to greatly modify its character. It is equally clear why a west wind should bring us warm moist air, especially in the winter, spring, and early summer months. It comes laden with a heavy burden of water from the Atlantic, the temperature and amount of which being both sensibly augmented by the warming effect of the Gulf Stream, the ameliorating force of which is expended on our western borders. The north wind again brings with it a reminder of the Arctic regions. It is not quite so obvious why the south wind should be so cold occasionally, only that it is sometimes wafted to us across a cold continent, and sudden depressions of temperature often precede those electrical or other changes which portend rain. But apart from the accidental circumstances determining the direction of the air currents, and the ratio of speed that measure their force, the temperature of the air may be accepted as a standard measurement of its vapour. Viewed in this light the effect of admitting cold air into hothouses becomes positively alarming. Every cubic foot of air admitted at a temperature of 40° to one of 70° is prepared to steal, and does do so, over 5 grains of water from each cubic foot of the warmer air. Taking a house containing 900 cubic feet of air, and supposing that the entire volume of its atmosphere is changed only 12 times an hour, or every five minutes, for say 12 hours in the day, the quantity of water removed by the ventilation would be nearly a hundred weight—at the loss here given. This may be thought an extreme supposition; but those most conversant with the constancy and rapidity of air currents will pause before they pronounce it greatly exaggerated. The exact figures are of no particular consequence, but it is vital to cultivators to know the enormous loss of moisture which the admission of cold air involves, and to find the best means of reducing that loss to a minimum consistent with efficient ventilation and healthy growth.

The first great principle in skilful ventilation is to admit little or no cold air at all. We have already taken one step to limit its quantity. By moving the internal air much less external will be needed. All the cultural advantages of mere motion may be secured without it. Neither does the air become so speedily exhausted of plant-sustaining properties as many suppose. What is consumed in the day, under the influence of light is partly returned to the air during the darkness of the night. Besides it is easy, as I have already shown, to restock the air with plant food. If food and strength can thus be secured to plants without the external air, why should it be admitted in spring and early summer to our plant house, where its Eastern palate licks up water with the ravenousness of a tongue of fire, and the chilling coldness of one of ice? Well, it is rather humbling to our science to have to confess that it is admitted not because plants need it, but because we have not yet learned the art of controlling and regulating temperature without it. The fierce beams of the strengthening sun run up the temperature under glass, and air at any degree of cold is swept into and through a semi-tropical climate to keep it down. Now it would surely be more in accordance with philosophy and common sense to adopt some measures to prevent the temperature from rising so high. Nature's antidote to an excess of heat is not always an inroad of cold. She very often intercepts the heat by the intervention of a shade in the form of a cloud. There can be no good reason why we should not do likewise.

My first antidote then, to an excessive loss of water is shade. I meet the objection of our sunless skies in two ways. First, they are not sunless. At the very season when the danger from admitting cold air is greatest, the sky is often clear for weeks, and sometimes months. The sun's power is out of all proportion to the mean warmth of the air. Frosty nights succeed to hot days, and keep down the general temperature. But the sun's power on our glass-houses is often excessive, and our young growths frequently suffer from an excess of heat, and it may be light also. My next mode of meeting the objection against curtailing the light is the commonsense one, that of two evils we should choose the least. We suffer much more from an excess of heat, and the excessive ventilation it necessitates, than we should from a more general adoption of shading. Except in extremely bright and hot weather the shading need not be so thick or continuous as to preclude the necessity of admitting any of the external air, but it ought to be worked as a means of reducing the amount to a minimum on ungenial weather. One most effective means of lessening the amount of both shading and air to cut off the internal supplies of heat. When bright days are expected the fires should be drawn right out at 5 o'clock in the morning, and the hot-water pipes emptied of their hot and refilled with cold water. The usual mode of damping down fires for the day is most disastrous. Often the heat is kept up till after noon, and the sun and fire-heat meeting in the same atmosphere causes a strain on the juices of plants beyond all calculation. No wonder that they often droop and flag; the marvel is that they do not wholly perish in the dry scorching air. The air is inexorable in its demands for water. The heat quickens its thirst. It bends down and drinks from every available surface of water, and sucks out the juice from every living thing. In such circumstances it is becoming drier every moment. Every degree of heat quickens its absorptive power, and lessens the quantity to be absorbed. The air becomes dry out of all proportion to its temperature, for in giving the amount of vapour held by specific degrees of heat, of course it is presumed that water is accessible to the air. In glass houses this is often not the case. Little or no evaporating surface is provided, and what there is, is not disposed in the best manner for use. The living plants are probably the only sources of moisture for the parched air, and every atom of the atmosphere confronts every living cell with the demand —"your vapour or your life." And thus the living plant is converted into a mere machine for watering the air, instead of the air with its genial burdens of fluids and food ministering only to its growth. Is it any wonder that under these conditions plants prove unequal to this unnatural contest, and become stunted, checked, or withered under the insatiable demands of a thirsty atmosphere for water. The quantity taken out of them is incalculable. A single Sunflower only 3½ feet high was proved by experiment to have perspired in a warm day of 12 hours no less than 30 ounces avoirdupois. The large surfaces of Vines, Bananas, and other leaves also perspire most profusely; and other plants in proportion to the size and texture of their leaves and stems, and the motion, temperature, and hygrometrical condition of the air. *D. T. Fish.*

sharply curinated from the bottom, ending in a bread curved tooth.

T. Tr. turgidum, L. — Egyptian Wheat. Ears awned, spikelets with 2—3 grains; palea inflated, bi-ad. shorter than the glume, sharply curinated on the back, ending in a short tooth; grains large, much rounded, ovate.

These "races" again are subdivided into numerous sub races.

ON HYBRIDISING FRUITS.

HAVING been occupied for many years in hybridising plants, and being very fond of it, I at length turned my attention to fruits.

I commenced with Grapes. My object was to make the Muscat easier to cultivate, and increase the size of the Frontignan; also to make the large coarse kinds of a better flavour, and to improve the early ones. I began, in the first instance, with the Muscat of Alexandria (one of the most difficult Grapes to cultivate) and the Trovéren Muscat (a remarkably free grower, but a long time in coming to maturity). It is a most delicious Grape, though not so highly musked as the former. I expected to obtain Grapes less difficult to cultivate, and was partly right; but I was rather astonished at the final results. It should be premised that the Trovéren is a round Grape; the Muscat of Alexandria an oval one. The latter I made the female parent, and out of 30 seedlings no two were alike. The first three that fruited were black, one being a large early Grape, in shape an oval, with a fruit-stalk like a piece of wire; it was of a very fine flavour, with the slightest possible taste of Muscat, and hung well. This was a great success, and well worth all my trouble. The other two were late ones, with large round berries, but nothing else remarkable about them.

In the following year I fruited 10 or 12 more from the same lot. One of these was of a beautiful white or golden colour, and ripened quite as soon as the Hamburgh; its fine vinous flavour was exquisite, mingled as it was with a Muscat taste about half as strong as that of its parents. This also had very stiff fruit-stalks, and kept a very long time. Another—and this astonished me more than anything else—was a perfect miniature of the Muscat of Alexandria, perfectly oval, and with the strongest Muscat flavour that I ever tasted, but it was no larger than a Red Currant! I have not as yet discovered anything very remarkable among the others.

The next experiment I tried was with General Marmora (no doubt a white seedling variety of the Hamburgh) crossed by Burchardt's Amber Cluster. My object was to obtain a very early Grape, and in this I succeeded beyond my expectations, as I got a very fine white transparent Grape, like the Amber Cluster, but as large as the Hamburgh, and fully five weeks earlier than that kind. This of course is a great gain, and what has been much wanted, as the Sweetwater Grapes are very bad setters, and the Muscadine is too small for table use.

The next crosses were between Blanc de Saumur and Chasselas Musqué, and Chasselas Musqué and the Citronelle. From these two crosses I have obtained the most delicious kinds that ever came under my notice, more so even than the old Frontignan and Chasselas Musqué. Two of them are sweet-scented, smelling, when the sun shines on them, like Orange-blossom. Nothing I have ever seen can compare with them in flavour and productiveness; their size, too, is very large, some of them being as large again as the Frontignan. Two other most remarkable crosses are Chasselas Musqué fertilised by the Long Noir Durant, a large oval black Grape, on a very large bunch, but of an inferior flavour. This cross produced Grapes of various colours, black, pink, and grizzly, but all quite round. The next time I made Long Noir Durant the female parent; and, curiously enough, the result was almost identical with the former, there not being an oval berry obtained. A very slight Muscat taste is observable in a few; but in the greater number it is not observable at all. These are the results from about 500 seedlings that I have raised, and 100 sorts that I have fruited.

I next directed my attention to Peaches. My object was to obtain Peaches with Nectarine flavour, and I am glad to say I have succeeded. The Nectarines I made the female plants were the Violette Hâtive, the Pitmaston Orange, and the Stanwick, crossed with the Noblesse and Barrington Peaches. Although the Violette Hâtive Nectarine had a small flower, still, when crossed with the large-flowering Peaches, eight when crossed with the large-flowering Peaches, eight out of 12 were large-flowered; and out of 15 kinds fruited this summer, only one was a Nectarine, the others were all Peaches, most of them with the Nectarine-flavour. Two of them were especially delicious, having a beautiful Nectarine-flavour, melting like a Peach, but full-coloured like the former fruit. The stones that produced the seedlings were sown in the beginning of February, 1863; the greater part of them flowered in February, 1864; but the fruit fell off. I now have one planted out in my Peach-house that had in June 10 or 12 dozen Peaches on it. It is 10 feet high, about the same width, and covered with fine-blooming wood. *John Standish, in Journal of Royal Horticultural Society.*

Home Correspondence.

Tobacco.—I am greatly pleased with your remarks (see p. 1065) in reference to the tobacco question, and I hope that they may be the means of inducing the Government authorities to reduce the duty on tobacco, a concession which would be a great boon to horticulturists. In order to give some idea of the sums that are annually spent on tobacco for purposes of fumigation, both in large and small establishments, I may just state that

here during these last 12 months we have used no less than 94 lb. of it, costing, at 3*s.* 6*d.* per lb., 16*l.* 9*s.*, which it will be seen is no inconsiderable item of expense in a gentleman's establishment. We have about 11,500 ft. of glass to fumigate. Now, if the duty was taken off tobacco for horticultural purposes, the quantity just named, at the price you suggest, viz., 8*d.* per lb., would only amount to 3*l.* 2*s.* 4*d.*, thus effecting a saving of 13*l.* 6*s.* 8*d.* in one year's consumption. It is surely therefore, a matter of the greatest importance to all of us to aid you in obtaining for us, duty-free tobacco. I am glad to find that a movement has been made in this direction by the Royal Horticultural Society, and I trust that there will be no backwardness on the part of any who profess to have any interest in the movement to strengthen their hands in the good work which they have undertaken. *Thomas East, Gr. to W. H. P. Weston, Esq., Wolverton House, Dorchester.*—In reference to the question—"Tobacco duty-free for horticultural uses," and the obtaining signatures to a memorial for that purpose, I would respectfully suggest that in order to save expense, gentlemen interested in the question, and living in the various towns and villages throughout the country, be requested to obtain signatures (gratuitously), and forward them to you or to the Royal Horticultural Society. For myself I shall be happy to devote a few hours in and about this village towards furthering your views in this matter. *Geo. H. Jaffa, Bury Nursery, Edmonton.* [We have received numerous other letters on this important subject, and shall ourselves be happy to do all we can to further the progress of so desirable an object. EDS.]

Fruiting of Aucuba japonica.—In answer to your correspondent "R." (see p. 1043) I may state that I have fertilised a plant in the open air, and succeeded in getting fruit on the shrub "all in the open air." *R. F.*

Gardeners' Benevolent Institution.—I beg to thank "W. A." for his communication on this subject at p. 972. Will you kindly allow me to tell him why I am not a subscriber. It is simply this: because there are so many pensioners that have never been subscribers. This may be called selfishness; so be it; still I confess I cannot understand how gardeners can be expected to join an institution where the non-subscriber is allowed a pension as well as the subscriber. Suppose two men start life together: the one, frugal and homely in his way of living, and desirous that he may not be an incumbrance to any one in his old age, at once decides to become a subscriber; the other spends all as fast as he earns, laughs at his friend's careful ways, and tells him he hopes he shall never want a pension, and if he does, he has plenty of friends to get him one. I do not wish to cast any reflection on the non-subscribing pensioners, but I do say, and I am not alone in this opinion, that their admission makes young men careless, and acts as a strong preventive to their joining. What we want is this: to be entitled to a pension after a certain age, provided we are out of a situation by accident, or become physically incapable of taking one; and to let every gardener understand that he must not expect help from the Institution in his old age, if he does not put his shoulder to the wheel when he is young and able. A scale of subscriptions might easily be made to suit men of all ages. If something of this sort were done, we should hear of no rival societies, for I believe almost every gardener would join it; but as the rules now stand, others like myself find it more prudent to join some friendly society. *Ubi mel ibi apes.*

Which is the Best of the Edible Passifloras?—The recent comments in your Journal on the Water Lemon (P. laurifolia) and the Granadilla (P. quadrangularis), induce me to send a few words in favour of P. edulis, which I will venture to say is much superior to either. I have tasted the Granadilla and Water Lemon in good condition, but never found either of them at all equal in flavour to even an imperfectly ripened fruit of edulis. There is also the great fact in favour of edulis that it may be grown with the greatest ease in a cold greenhouse or conservatory; and it fruits abundantly without "artificial setting," whereas both the other species require liberal stove treatment and artificial impregnation. The long streaming shoots too of edulis look very well in a stove house or conservatory with a fruit in the axil of nearly every one of its firm glossy leaves. A dish of this fruit is a real addition to the dessert, its peculiar acidulous flavour when ripe being very agreeable to many. On the other hand, the fruit of the large kinds is frequently no better than a thoroughly well-boiled Cabbage stalk served up with a little flat ginger beer. I may add this Passion-flower is about the easiest of all fruits to grow, and hangs for a long time in perfection. Such is my opinion. Am I right? *Passiflora.*

Iresine Herbstii.—As Mr. Bennett is praising himself, and everybody else is praising Mr. B. for having "introduced this plant to the public," will you allow me to put in a word for the parties who first exhibited it at the New Plant Show of the Royal Horticultural Society—Messrs. Herbst & Stenger, who first recommended it for bedding; and for the reporters of the horticultural press, who were the first to write about this "gem for the flower garden." Notwithstanding, however, all that has been written in its favour, it is patent to most gardeners that the plant is not only a failure for the summer garden, but a decided disfigurement to it in many neighbourhoods. During the late autumn it is certainly very beautiful for a few weeks previous to being thrown away, but wherever the Coleus and Amaranthus do well, it is miserably inferior to them: they are effective from the first day; it is a nuisance for the first three months after it is put in the open air. However, a friend of mine is collecting experiences about it of which he may let you have the benefit some day, which may prevent many of your readers from being led to use a plant extensively, which in many districts of the country will prove a disfigurement to the garden during the finest part of the summer. For those who have only to provide for an autumnal effect it will prove useful. *Stet.*

Hardy Bedding Plants, &c.—The desirability of using as many hardy plants as possible in our bedding out is beginning to be fully recognised. That the practice will save horticulturists some trouble and much expense I have no doubt, and still less of its adding much to the interest and variety of the flower garden. We have as yet merely dipped into the rich mine of hardy plants with a view to finding fit subjects for bedding-out; what has been done seems merely the result of chance, and doubtless a full examination of the qualities of the great number of hardy herbaceous and Alpine plants that may be grown with ease in our climate at all seasons, will yield a good result. There is one fact that I wish particularly to point out to all who are interested in hardy bedding plants (and who is not?), and that is, that not a few of them bloom much longer—much more like bedding plants, in fact—if fresh planted every year. The fact that a plant is quite hardy does not justify us in leaving it alone for years, if by a contrary course we may produce an end that all desire—long continued bloom. Much, or nearly all of the continuity of bloom displayed by ordinary bedding plants, is the result of the fresh planting of young plants every year. Suppose our climate suffered Geraniums, Calceolarias, &c., to live through the winter, would their second year's bloom be anything like what we are now accustomed to? I think not. Their bloom would "come to a head," and perish, much like that of many herbaceous plants. Therefore, if we expect hardy plants to give us all the good they are capable of, we must treat them, in a great number of instances, pretty much the same as tender bedding stuff, *i. e.*, plant afresh every season. This particularly applies to such things as Viola cornuta, which has proved itself so useful as a bedder during the past season. Of course it will best apply to things that grow and root quickly, and that flower in proportion to the vigour and continuity of their growth. Achillea aurea is a pretty yellow species, which makes a very respectable bedding plant the first year of planting, but comes into flower and has done with it the following; therefore the way to succeed with it and plants of like character, is to take them up when the tenderlings are removed in autumn, and divide and put them in stock in some snug nursery beds of finely-pulverised earth, where they may remain till the following spring, when they may be put in positions designed for them. And what a luxury will it not prove to have one's best bedding plants so arranged during winter that a thought need not be bestowed upon them after being planted in their nursery. Of course such plants as the variegated Arabises, the beautiful Polemonium cœruleum variegatum, Dactylis glomerata variegata, Sempervivum californicum, the silvery Saxifragas, Gnaphaliums, and Cerastiums, the new Poa, the variegated Daisies, the dwarf Antennaria tomentosa, and the several kind of Pansies, are among the best bedding plants in existence. By making free use of what hardy bedding materials we are already acquainted with, the judicious gardener may save himself much trouble. By the way, the Cliveden Pansies, so famous for the spring garden, will be found equally useful for the summer season, if propagated in autumn, and planted out in spring. The blue, for instance, will be found quite as good as Viola cornuta, and the other colours are equally valuable in their way. It is very likely the blue one would prove even better than cornuta during a dry season in ordinary soils. Of course there are hardy flower-garden plants that will not bear the annual removal that I advise for the free-growing and flowering kinds—the Tritomas, for instance, and some of those above enumerated when a particular end is desired; and the flowering kinds will require the change much more frequently than those grown for the beauty of their leaves. Others, again, will prove best during the second year of their blooming, and of these I may mention two of the finest plants in existence for autumnal gardening—the fine white variety of Anemone japonica, and Rudbeckia Neumanni. These furnish a long-continued bloom, and on rich soils are truly fine for positions that require rather tall-growing subjects. *W. B.*

The Plants of Palestine.—I admire the idea of your correspondent "T. R." (see page 1044), and can imagine the pleasure and interest which such a collection as he has suggested would excite, if all the plants of Palestine were arranged in a spot where they could be seen, and have the names attached to them by which they are mentioned in sacred history, as well as the scientific names by which they are known to botanists. But I fear it is almost impossible that such a pleasing dream can be realised, especially when we consider the great difference that exists between the dry and burning atmosphere of the Holy Land, and that of the comparatively cold and variable climate of England. Even the few shrubs and plants that might flourish with us during summer in some sheltered situations in the Isle of Wight, or the warmer parts of Devon and Cornwall, would probably not be able to survive the long-continued state of moisture to which they would be subject during winter. With regard to the "Apple of Sodom," I can hardly think that this oft-agitated question among travellers can be said to be set at rest by the simple statement quoted from Mr. Tristram's work on "The Land of Israel." Nor can I conceive upon what ground the opinions of previous writers, as well as those of travellers and botanists, both ancient and modern, should have been so unceremoniously cast aside, and "Calotropis procera, a strange and most tropical-looking shrub, with hollow puff-balls by way of fruit," pronounced to be the true Apple of Sodom. Hitherto I have been led to believe that this remarkable fruit, which every traveller has noticed for its beautiful form and attractive appearance, is the produce of Solanum sodomeum, a plant which grows abundantly on the shores of the Dead Sea, and is stated by the naturalist Hasselquist, who examined it on the spot, to have its fruit attacked by a species of Cynips, which punctures the rind and converts the interior into a dry powder like ashes, while the outside retains its usual size and alluring aspect.

> ——— "like that fair fruit
> Which grew in Paradise, the bait of Eve,
> Used by the Tempter."

Now, from what has just been stated, it appears to me that the fruit of Solanum sodomeum, from being "fair without, and full of ashes within," is more likely to be the fabulous Apple of Sodom than the pod of Calotropis procera, which although resembling "a large Apple in shape and colour, and cracking like a puff-ball when slightly pressed, contains only (instead of ashes) a long thread of small seeds in a half-open pod with long silky filaments," characteristic of the natural order Asclepiadaceæ, to which Calotropis belongs. *B.*

Polemonium cœruleum variegatum.—Since I wrote the articles upon "Bedding-out" which recently appeared in this Paper, I have received from Mr. D. Thomson, of the Gardens, Archerfield, some specimens of the Polemonium cœruleum variegatum; and I cannot feel that the list which I gave of plants most deserving of culture is complete until I have added this very beautiful variety. The habit is that of a graceful, feathery Fern, having its fronds edged with a bright, silvery variegation. Its medium height and compact habit render it available alike for the centre or outer circle of a bed, and its cheerful charming appearance, which pleases the sight, without tiring it, like so many of our gaudy bedders, will make it a great and general favourite. Mr. Thomson will have from the floral brotherhood the hearty thanks, which I am already privileged to offer him, for the introduction, or rather the restoration, of this lovely plant. If I am not mistaken, he was the editor of another delightful re-publication, *i. e.*, Centaurea ragusina, and has therefore a double claim upon the gratitude of gardeners. I have also to thank Mr. Tyerman, of the Liverpool Botanic Gardens, for plants of the Viola lutea and montana. As they are not in flower, I can only say that the habit of the former is particularly neat and pretty, giving me a strong presentiment of further merit; but that the latter appears to have straggling propensities, and to be what is termed in our Nottinghamshire phrase "a rawmer." *S. R. H.*—If I mistake not somebody has been inquiring about the culture and propagation of this fine plant. On good garden soils generally I think it will be found as easy of culture as its plainly-dressed poor relation, the common Greek Valerian. It is however apt to go off on a very wet clayey soil. It flourishes finely in deep rich loam, and makes a very attractive variegated object. As regards the propagation, it is effected by simply digging up well-established old plants and pulling them in pieces, and then planting them immediately in a nursery-bed of good soil. I have "propagated it" in the month of August by digging up the old stools, pulling them in pieces quickly, and then popping the whole lot into water but for a moment, to counteract the rapid evaporation of the period. Generally speaking I should say the best plan is to divide it in early autumn, so that it may be nicely established in the nursery-bed before mid-winter; but doubtless on the majority of soils it will prove as easily managed as the variegated Cocksfoot, that is when once established. But I may remark there is much difference between getting well-established old roots and miffy specimens in small pots. *W.*

Inflorescence of Orchids.—It is stated in reply to a correspondent (p. 1048) that branched spikes of Burlingtonias are abnormal. Practically I am inclined to join issue with your finding, because it frequently occurs in both Burlingtonia decora and rigida, samples of which I now send you. Cultivation does certainly work wonders in many samples of vegetable life, and Orchids, though considered precarious as a group, form no noteworthy exception. In this particular, however, it is so decided in the specimens grown here year after year by mere ordinary routine, that I look upon branched spikes as the normal characteristic of the two plants in question. I am not inclined to fall out with Mr. Professor for dubbing them Rodriguezias, and I can confirm practically that even R. secunda occasionally produces branched spikes, but so seldom, that their appearance might be considered abnormal. There is this saving clause that ought to be taken into consideration, however, and that is that the subsidiary spikes seldom shoot forth their inflorescence until the main or terminal one has shed its flowers. It is no less, albeit, a branched spike on that account, and doubtless similar to "A. D. B.'s." With reference to Lycaste Skinneri, Pleione Wallichii, and Cypripedium barbatum, two-flowered samples of which I have enclosed, there can be no doubt that the appearance of two-flowered peduncles is purely abnormal. How to account properly for this occasional freak must, I presume, remain an open question; at least it has never been satisfactorily dealt with either by physiologists or botanists, and I cannot presume to discuss the question. As a cultivator, with my eyes open to abnormal productions of this kind, I may be permitted to say that such are not produced by cultivation, properly speaking; in proof of which I might cite that there are many plants of Lycaste at Meadow Bank with pseudo-bulbs twice the dimensions of those which have produced the two-flowered peduncles. Any increase in inflorescence dependent on bulk or rather solidity of pseudobulb shows itself in the number of distinct peduncles that are formed, and not in the branching of the original flower-stalks. I have had, for example, prior to 1866, as many as 12 peduncles proper to a

pseudobulb: but I observe that additional experience and more liberal culture has, in one instance at least, laid the basis for 15 flowers making their appearance at different stages, some in flower and some only showing. In respect to the Pleione, this is the first time I have seen the variety sent take after that fashion, and on examination I find it is the produce of the weakest bulb of the mass. In Cypripediums it is doubtless also a rare occurrence, although good instances of the kind were exhibited at the International Show in C. barbatum and C. hirsutissimum, and these did not escape the Professor's eye, as he particularly alluded to them at the Congress meeting. *J. Anderson, Meadow Bank.*

[We have to thank our correspondent for the specimens he was good enough to forward to us, on some of which we may report further at another time. In the meantime, with reference to this question of branching of the inflorescence, we think Professor Reichenbach has been misunderstood. He does not say that branched inflorescences do not occur in certain species of certain genera, but he maintains that there are other genera, of which Orchis may be mentioned as one, in which branched inflorescences do not occur, though it is hard to say why not. The tenor of Mr. Anderson's remarks as to the weaker pseudobulbs producing two-flowered peduncles in Pleione, and as to the effect of cultivation in augmenting the number of flower-stalks, rather than in causing the increased ramification of a few, is in accordance with what we know as to the formation of flowers in general. As a rule anything that tends to arrest growth, after a certain stage of development has been reached, is favourable to the production of flowers. It is worthy of remark that many of the Orchids which do not usually produce branched flower-stalks are "indefinite" in inflorescence, while the branching genera are primarily produce cymes, *i. e.* definite inflorescence. EDS.]

Hothouse Shading.—What is the best material, and what the best means of shading stove plants under glass, so as to prevent scorching on the one hand, and weak growth from too much shade on the other? I believe a discussion on this subject took place at the International Congress, but I cannot glean anything very definite from the reports I have seen of the discussion. It will, I think, be admitted by all who have any pretensions to either horticultural or floricultural knowledge, that it is a subject of paramount importance. I have from time to time visited most of our principal nursery establishments and private places where plant-growing is the great aim, but in no one instance do I remember to have seen a well-devised system of shading. The rule appears to be a permanent summer shade, either of tiffany, scrim-canvas, hessian, frigidomo, or what is worse, thin glass whitewash-brush. Is permanent summer shade the right method? or do we in our cloudy isles at times require every ray of light we can command? If roller-blinds are used, is there any material made sufficiently strong to bear the constant strain, and yet at the same time admit sufficient light into the house? Is the material better fixed on the exterior, or in the interior of the house? Is there any fabric made at the present time that will effectually answer the double purpose of shade by day, and cover by night—in the one case to moderate the solar rays, and in the other prevent as much as possible terrestrial radiation? I think I hear Mr. Warner say, "Double-glazing is the cure;" but is it really true that the hot, invisible midsummer sun's ray will never leave a nasty brown blotch upon your pet under the double glass roof? *Enquirer, Wilton.* [The model exhibited by Mr. Hewlett at the Congress for night covering and shading by day is still to be seen at the Royal Horticultural Society's meeting room. EDS.]

Viola cornuta.—Allow me to ask Mr. Bennett through your columns whether he thinks the horned Violet superior to Campanula carpatica for edgings. The latter is a great favourite, and I am somewhat fearful of dismissing the Campanula for the Violet. The scent of course is a great recommendation, but for profusion of bloom and colour, is not the old Campanula best? The Violet is perpetual-flowering I believe, but wherever I have seen it, it has not been gay. The Campanula is a blaze, and with picking the seed off it will flower pretty well for four months. It seems ungrateful to a new favourite, but I cannot help saying that, from all I have seen, the Viola cornuta has been immensely over-praised. Will Mr. Bennett and others take the Campanula as a standard of comparison, and then we shall know better what to do with it. *T. T. Fish.*

The Orange Trees at Gunnersbury.—Allow me to state that I regret having specially singled out the large Orange trees here as an illustration of my comments on those at Holland House. The words escaped me in a moment of inattention, and naturally enough, from having been led to visit Gunnersbury to see those very specimens, in consequence of a laudatory article that appeared a couple of years ago in one of your contemporaries. Even the worst of the Gunnersbury trees are better than many to be seen in good places, and therefore I must apologise to Mr. Forsyth for the seemingly ill-natured allusion which escaped me when slightly impregnated with bile. I need scarcely add that few places display better gardening than may be seen at Gunnersbury. *W.*——I was glad to see "Visitor's" statement about the Orange trees at Gunnersbury. I have known the trees at both places for many years, and was surprised at the uncomplimentary character of the remarks on the Gunnersbury trees. I am pleased to be able to confirm "Visitor's" statement, and to tell all good gardeners that they will see many other things that will repay a visit to Gunnersbury, as well as the Orange trees that "Visitor" so correctly describes. Doubtless the trees at Holland House are very fine, and have been so for many years. They are so good as to be well able to stand alone, without any attempt to bolster them up by disparaging those to be seen elsewhere. If I mistake not, many of them belonged to Louis Philippe, and were brought over by the late Lord Holland's then head gardener, Mr. Scobie, about or during 1848. They were carefully tended, and well managed for many years by him, and certainly have long been perhaps the finest to be seen in England. Your correspondent has correctly described their general appearance and winter quarters. The summer quarters of the finest—those which stand in front of the Orangery—have not been so clearly defined. Behind them is the Orangery; on the left, standing with one's back to the Orangery, is a wall I should think 30 feet high; on the right, high trees, shrubberies, kitchen garden, &c. The terrace, or rather square of gravel (on which they are placed) slopes to the south. In front of that is a kitchen garden, bounded by plantations abutting against walls, other gardens, houses, &c., right down to the Holland Arms on the Kensington Road. Thus the trees can scarcely receive a breath of wind, unless from the south, and even that is carried mostly over them by the sheltering walls, &c., in front. Mr. Scobie's great aim—and I presume the same practice is followed still, although I have not the pleasure of knowing the present gardener—was to keep the trees very cool during winter and spring. They were placed out at the end of May, and flowered and ripened their growth out of doors. Hence, I believe, his great success. There was another point: the trees seldom or never fruited. I think this had much to do with their great luxuriance. The cool regimen does not suit fruiting orange trees in this country. They will live, grow, and flower well, if merely excluded from frost in winter, and exposed in sheltered positions to the summer's sun out-of-doors, but to have fruit worth eating, or to keep fruiting Orange trees in health, more heat is needed. It is rather a singular reminiscence that some ten years ago Mr. Scobie and myself drove to Gunnersbury. He was fascinated beyond measure with some fine Orange trees laden with fruit, and came home grumbling about his own huge trees having none. Were he alive now, poor fellow, he would well remember the advice I gave him. The reasons I advanced were so convincing to him that I believe he was ever afterwards content to let his trees rest and be thankful, without their burden of golden fruit. I should be glad to learn if the fruitless (of course I do not mean absolutely) regimen is still pursued at Holland House. I should also like to hear Mr. Forsyth's opinion upon the question of fruit or no fruit for out-of-door trees. *Quercus.*

South American Orchids.—In reference to this subject, let me refer "A. M." to a notice of Mr. Linden's catalogue at p. 903, where Oncidium cucullatum is said to be found on Oaks (*trouvé sur des Chênes*), near Las Vetas, in the Colombian Cordillera. *Q.*

Study of Fungi.—When commencing the study of Phanerogamous botany, I gave up the Grasses in despair. But happening to be in France, I purchased, for local use, the "Flore Parisienne." The work was prefaced by a key, on what may be termed the dichotomous or branching method, which made everything so easy, that naming all the Grasses became comparatively child's play. Now, when I began the Agarics, I experienced the difficulties described by your correspondent Mr. Marshall (see p. 997), and it occurred to me that the same dichotomous system might be applied to them also. As a sample, I append the genus Coprinarius so treated. The mode of using the system is so self-evident on inspection, that no explanation is needed. Like all other "royal roads," it has its imperfections. If you miss a single link, the whole chain is gone, and on lately submitting the scheme to our greatest living authority, I was told that the discriminating marks of Fungi were often not sufficiently clear and definite to yield to so unbending and rigid a system. I believe this opinion to be sound. It might be difficult to find diacritical marks even between genera such as Coprinus and Coprinarius. As, however, the subject may interest other readers besides your correspondent now under reply, perhaps you will think the following paper worth printing:—

COPRINARIUS.

1. Gregarious in hundreds .. .. .. Not so gregarious	disseminatus. 2.
2. Sporules black, pileus not yellow .. Sporules ferruginous, pileus yellow (viscid)	3. 7.
3. Pileus membranaceous, gills pale pinkish brown, or brown .. .. .. Pileus subcarnose, gills clouded, cinereous black	4. 5.
4. Pileus campanulate, disk rufescent, margin pale sulcate (differs from A. plicatilis in not having a fleshy collar) .. .. Pileus hemispherical, disk dirty white, margin purplish, not sulcate	striatus. papyraceus.
5. Pileus clay-white when moist, stem whitish (viscid) .. .. Pileus cinereous when moist, stem rufescent	semiovatus. 6.
6. Margin of gills white (never viscid)	papilionaceus. fimiputris.
7. Stem pure white (not very tender, except at the margin, gills clay-coloured, moderately broad) .. .. Stem yellow	vitellinus. 8.
8. Pileus plicate, gills nearly free, reddish brown, stem equal .. .. .. Pileus not plicate, gills adnexed pale, stem attenuated	titulans. Boltonii.

S. B.

Broccoli.—To-day (Nov. 7) I have cut some fine heads of Backhouse's Winter White Broccoli; growing by its side is Snow's variety, which as yet shows no sign of flowering. Both kinds were sown on the 14th April. Have any of your correspondents cut any other early sort? *J. C. Nicholson, Thirkleby Park.*

Large Celery.—Mr. Thomas Young, Gr. to Crawshay Bailey, Esq., Aberaman Park, Glamorgan, had a stick of Celery taken up the other day in the kitchen garden there which, when properly washed and cleaned, weighed 11 lb., and the whole of the row from which it was taken was equally fine. *J. H.*

The Late International Exhibition.—The gardeners' cause generally is not to be benefited by giving scholastic prominence to a few, even of the most successful aspirants to horticultural honours. With an efficient modern education, where can a better school for an aspirant to full gardening practice be found, than those in which our gardeners receive their instructions? Such schools are capable of sending forth Paxtons, and are numerous enough in the form of first-class gardens throughout the land. Is theoretical teaching or aptness in answering questions at examinations one and the same thing with that untiring energy, and constant forethought, so necessary to carry on properly a first-class garden, or for the production of objects of first-class horticultural merit? Though these qualities may be attainable combined, they are not necessarily twin associates, and I am opposed to the principle upon the simple basis that by elevating a few you do not attain, but rather retard, the end in view, namely, that of advancing the cause of horticulture. Then, as to the International, what had the original promoters in view? Was it not the advancement of horticulture and of all associated with gardening? This, I believe, was the prevailing desire of every subscriber. Would it not, then, be promoting those views still further, to give a decided prominence to the only prevailing desire which caused the success attained? namely, that of continuing in the same groove, by having an annual exhibition of two or three days' duration, moderate in its pretensions, yet sufficiently interesting to gain the general favour. With funds in hand as a guarantee, to support any occasional reverse, I am convinced of the practicability of such a plan. It has been seen what a day or two at a shilling rate is capable of producing, and the impetus given to the calling is without question. *William Earley, Digswell.*

Classification of Bedding Pelargoniums.—Your correspondent "J. G." in p. 1044, inquires why I classify Mrs. Pollock, Burning Bush, &c., variegated zonals? Simply because there is a great difficulty in finding a more appropriate term. These and other similar varieties in that section, are certainly nothing more or less than zonals. "J. G." cannot say Lucy Grieve, Lady Cullum, or Italia Unita, are without zones, nor are they less bright in their colourings than the sorts he names. Should any of the kinds which he has selected as zonals, break into variegation, producing foliage with red and bronze zones, are these, when perpetuated, to be discarded from the zonal type? I believe it is not generally known that white and yellow margins proceed from a marking or stripe on the upper side of the "petiole," radiating to the veins at the disk, from whence it extends and disperses round the leaf. This I discovered from close observation; it leads me to cherish the hope of shortly raising, or seeing produced, varieties marked and coloured entirely contrary to the many beautiful sorts recently introduced. To obtain foliage with yellow or white disks, it only requires the marking alluded to in the leaf-stalk to be reversed to the under side. This is not improbable. I really must differ from "J. G." in respect to gold or silver-variegated being sufficiently definite. Golden Chain, with Flower of the Day, must not be classed with Lady Cullum or Italia Unita, the latter named having zones, the former being without. What is required is confusion remedied. By adopting the system of "J. G." the classification would remain as it has done for the last 20 years. As we advance in new varieties, so we must provide them with suitable classes. *Wm. Groom, Ipswich.*

Foreign Correspondence.

Age of Wellingtonias.—Will your contributor "A. M." be kind and explicit enough to indicate his authority for stating in your columns for October 13, that the age of a tree of Wellingtonia "was calculated by Prof. Asa Gray at 3000 years," that this was the first published estimate, and that it "was deduced by mistake," the Professor having fallen into the error of reckoning the earlier growth as no more rapid than the later, &c. "A. M." has been in some way misled; for all three propositions are simply incorrect. It was Dr. Lindley himself who, when he proposed the genus Wellingtonia, gave currency and credit to the idea that the large tree in question was over 3000 years old; and the first note that I published upon the subject was to show that this and similar estimates were wholly unwarranted and extravagant, pointing out also, I believe, the probable source of error by which "A. M." supposes me to have been deceived. *A. Gray, Cambridge, Mass., Oct.* 30. [With reference to this statement, it may be mentioned that Prof. A. De Candolle showed at the late Botanical Congress a slip of paper on which upwards of 1234 annual rings upon the trunk of a Wellingtonia were marked (see p. 516). EDS.]

Societies.

UNITED HORTICULTURAL. *Nov.* 14 *to* 17.—A Flower and Fruit Show, which was well supported, and exceedingly attractive, has been held this week in Guildhall, under the auspices of this Society, in conjunction with a Fancy Bazaar, which took place at the same time in aid of the funds of the Albert Orphan Asylum. It was opened by the Duke of Edinburgh on Tuesday last, when there was a large attendance, which has been well kept up during the other (three) days on which the show was open. Let us hope therefore that there may be a good surplus to hand over, not only to the Albert Asylum but also to the Gardeners' Benefit Fund associated with the Horticultural portion of the display.

Along the sides of the body of the hall, alternately with bazaar stalls, were arranged groups of Ferns, fine-foliaged plants, and Chrysanthemums in pots; in the centre was a tastefully-contrived floral design, the work of Mr. Crute, one of the Society's most active members; and right and left of this centre piece were tables covered with cut blooms of Chrysanthemums. Fruit, which was plentiful and good, occupied a room by itself, and another was chiefly devoted to

an extensive and beautiful assortment of Fern cases, contributed by Messrs. Carter & Co., of High Holborn.

Ferns and fine-foliaged plants were furnished by Mr. Tanton, of Epsom, who also had some well filled hanging baskets; by Mr Williams, of Holloway; Mr. Penny, gr. to H. H. Gibbs, Esq.; Mr. Wheeler, gr. to J. Philpotts, Esq.; Mr Wilson, gr. to W. Marshall, Esq.; and Mr. Page, gr. to W Leaf, Esq. From Messrs. Glendinning, Turnham Green, came a still excellently well grown specimen Araucaria, and Mr. Cole sent, together with a beautiful collection of chrysanthemums, an Aucuba plant loaded with fruit, the result of fertilising the flowers with pollen which had been kept for two months in folds of tinfoil. Twelve variegated leaved Pelargoniums came from Mr. Tanton; and Messrs. E. G. Hipkins contributed two examples of their pretty striped leaved Grass called Poa trivialis argentea elegans (a name which should be shortened to Poa trivialis variegata).

Chrysanthemums in pots, especially those from Mr. George, gr. to Miss Nicholson, Stanford Hill (to whom a piece of plate, raised by subscription, was awarded), were most satisfactory, the plants being large, covered with abundance of blossoms, and neatly trained. Golden Christine, from that excellent cultivator, was a magnificent specimen, and among others we noticed fine examples of Prince of Wales, Vesta, Alma, Annie Salter, Lady Harding, General Bainbrigge, and others. Mr. Forsyth, Stoke Newington, had a charmingly mixed group of Large flowered varieties and Pompons, the last both in the shape of standards and pyramids. Mr. Baker, gr. to A. Bassel, Esq., Stanford Hill, also showed a fine collection.

Cut blooms of Chrysanthemums were exhibited in excellent condition by Messrs E. G. Henderson, Mr. Forsyth, Mr. Merry, Stamford Hill; Mr. James, Stoke Newington; Mr. Slade, Kingsland; Mr. Howe, Shacklewell; Mr. Snare, Dalston; Mr. Ward, gr. to P. G. Williams, Esq., Leyton; Mr. Walker, Upper Clapton; Mr. George, Mr. Grant, and Mr. Wyness, who had a stand of clean prettily matched blossoms. Among varieties in the different collections from the exhibitors just named, we remarked charming examples of Golden Beverley, Jardin des Plantes, White Lady, Mrs. W. Holborn, Cherub, Empress of India, Queen, Lady Harding, Prince Alfred, and Princess of Wales. Among Anemone flowered sorts the most conspicuous were Prince of Anemones, Lady Margaret, Fleur de Marie, and Madame Godefroi. Mr. Wells only showed Mr. Holmes' pretty pink pompon seedling sort from Mr. Heale, Upper Clapton; and White Princess, a pure white flower from Messrs. E. G. Henderson.

In the class devoted to designs for dinner table decorations, and hand bouquets, Mr. Howard, gr. to J. Brandt, Esq., Balham, had produced a most pleasing and charming illustrations of good taste and arrangement, and his hand bouquets were the admiration of everybody. From Mr. Forsyth, gr. to Baron Rothschild, at Gunnersbury Park, Ealing, also came a beautifully-made hand bouquet. Cut flowers, consisting of Orchids, as the produce of other stove and greenhouse plants, were furnished by Mr. Wilson, Mr. Baker, Mr. Ward, and Mr. August. A neat design, covered with well executed wax flowers, was furnished by Mrs. Osman Rhodes, Sydenham.

The most remarkable features of the room devoted to Fruit were the magnificent Pine-apples which it contained from Mr. Forsyth, gr. to Baron Rothschild at Gunnersbury, and the large and fine collection of Grapes from Messrs. Lane, of Great Berkhampstead; among the latter were said to be bunches weighing 4½ lb. Of these fine fruits we must next call attention at p. 1045. The same firm also showed extremely well-fruited examples of Vines in pots, in the treatment of which they are usually most successful. From Mr. Meads, gr. to Raikes Currie, Esq., Minley Manor, Farnborough, also came three unusually fine bunches of Alexandria Grapes, and Mr. Ingram were beautifully ripened, exhibiting as they did in a high degree that fine golden hue which this Grape should have when in perfection, and they weighed collectively 12 lb. 2 oz. Mr. Tillery, gr. to the Duke of Portland, and others, also showed good examples of the Pine-apple, while Mr. Forsyth's fruit of Charlotte Rothschild Pine-apple could not weigh less than 9 lb., and he had also some beautifully ripened Cayennes. From Mr. Jefferson, gr. to J. Garnsell, Esq., Worksop, came a very fine blood Pine, which weighed 7 lb., and some good Pines also came from Mr. Page, gr. to W Leaf, Esq.

Very fine Dessert Pears came from G. F. Wilson, Esq., Gishurst Cottage, Weybridge; Mr. Sidney Ford, gr. to W. E. Hubbard, Esq., Horsham; Mr. Turner, gr. to J. Hill, Esq., Streatham; Mr. Weston, gr. to G. Graham, Esq., Enfield Chase; and Mr. Merry, Royal Nursery, Slough. From Mr. Mortimore, gr. to A. Smee, Esq., and Mr. Turner, Streatham, came collections of Baking Pears; and Mr. Neale, Stoke Newington, also showed Pears. In the collections from the different exhibitors just named, we noticed beautiful specimens of Marie Louise, Seckel, Beurré de Capiaumont, Josephine de Malines, Beurre Clairgeau, large, but somewhat bruised; Prince Albert, Trout Pear, and others equally fine.

Apples were shown in excellent condition, especially collections both of dessert and culinary fruits, from Mr. Webb, Mr. Caleno, near Reading, in which there was not only large size, but also an unusual amount of brilliant colour. His Hollandbury Pippins were of a glowing deep rich red; he had also fine fruit of Blenheim Orange, Kentish Fillbasket, and Wellington; as well as very fine, large, and beautiful, Court Pendu Plat, Ribston, and Fearn Pippins. The President's prize for the best dish of Apples was awarded equally to Mr. Turner, gr. to J. Hill, Esq., and Mr. Parsons, gr. to R. Attenborough, Esq., Turnham Green; Mr. Mortimore; Mr. Turner, Slough; Mr. Searle, gr. to T. Ronaldson, Esq.; and Mr. Newton also showed Apples.

Among Miscellaneous subjects were Filberts and Cob-nuts from Mr. Webb, Cucumbers from Mr. Barrwell, Onions from Messrs. Cutbush, Potatoes from Mr. Ford and Mr. Webb, from whom came a long kind named Webb's First Early New Telegraph, which was Commended. We also noticed a cut branch of Magnolia bearing fruit, from W. Kingsford, Esq., Wandsworth. Mr. Joseph Newton, of 74, Oxford Terrace, Hyde Park, showed numerous plans and photographs of places that are either now being laid out, or have been laid out by him.

Notices of Books.

Prodromus Systematis Naturalis Regni Vegetabilis. Editore et pro parte auctore Alph. De Candolle. Pars XV. Sectio posterior, sistens Euphorbiaceas, auctore Joh. Müller, Argoviensi. Paris, 1866, 8vo, pp. 189-1286.

The Prodromus is nearing completion. Another part will contain the remaining orders of the Exogens, and so overtake that large division of the vegetable kingdom to which the work is to be restricted. The work is a literary wonder. Not only has it been steadily prosecuted for more than 40 years, but it has occupied the attention of three successive generations of the same family. The first volume was published in 1824 by Aug. Pyr. De Candolle, who lived to see the seventh volume issue from the press. Alph. De Candolle had assisted his father during his life time, and in 1841 he took the entire direction of this great work, and has since brought out, with the help of other botanists, the remainder of the work up to the first part of the sixteenth and last volume, which contains the Cupuliferæ from his own pen. Casimir De Candolle, the son of the present and grandson of the elder botanist, has already contributed several memoirs to the Prodromus, and is now engaged in preparing a monograph of the Piperaceæ, which will form a part of the yet uncompleted sixteenth volume.

The section before us contains the whole of that numerous and difficult order the Euphorbiaceæ, except the tribe Euphorbiæ, which had been already monographed by Boissier in the first section of this part published nearly five years ago. Including both sections the volume contains nearly 1300 pages—a singular contrast to the early volumes of the work, the first 1300 pages of which contain no less than 63 orders, and a remarkable testimony to the progress of botanical discovery during the past half century. If M. De Candolle has limited the Prodromus to the Dicotyledons with the view of revising the early volumes—and we hope this is the reason, for the description of the whole vegetable kingdom, as its title implies, was the original plan of the work—it would be difficult to estimate what space would be required for the first 63 orders, when all the additions are incorporated, and the whole species are described as fully as in this monograph of the Euphorbiaceæ. Dr. Müller might have greatly increased the size of his volume had he not to a considerable extent reduced species which former authors had established to the position of varieties. Dr. Lindley in his "Vegetable Kingdom" (1847), estimated the order as containing about 2500 described and undescribed species. The two authors of this volume describe in all 3137 species.

Dr. Muller has with great care traced the synonymy, often hunting out forgotten names, and always clearing up the difficulties that beset the history of species. The extensive library of M. De Candolle has supplied him with the means of doing this most exhaustively. He has also examined all the great herbaria, and has consequently compared for himself almost all the plants described; scarcely a species wants the 'v. s.,' indicating that he has himself seen it. The work is a thorough and elaborate monograph by an able and acute botanist of a family that needed very much a complete revision, and from this point of view the work is all that could be desired. Euphorbiaceous plants are extremely variable, and no doubt the examination of so large a series as has come under Dr. Müller's inspection would tend to modify one's impression of the limits of specific forms. No less than 31 different forms of the genus Ricinus have been described, most of them as species, and all of them having permanent characters by which they can be distinguished. These are all reduced to the well-known species R. communis, the Castor-oil plant. The Greek alphabet is exhausted to find distinguishing marks for the varieties of Sebastiana (Tragia) corniculata, many of which had been considered as species. And by this process of curtailing we lose sight of some interesting plants, such as the Stringwood of St. Helena, one of the few recent plants which, like the Great Auk and the Dodo among birds, are believed to be extinct as living organisms, and are only known from dried specimens preserved in herbaria. This plant, the Acalypha rubra, was collected by Roxburgh in St. Helena in 1814, and could not be found in 1843. Dr. Müller takes from it the interest that it had derived from being believed to be extinct, by referring it, as only a variety, to A. reticulata, which besides this includes eight forms, mostly described by other authors as distinct species, and all from Madagascar, Mauritius, or the Comoro Islands, on the opposite side of the African continent.

We do not object to the limits which Dr. Müller gives to his species, but we certainly cannot agree with a novelty which he introduces into his section of the volume, and by which he appends his name to many well-known species without in any way altering the nomenclature. The definition of a species has hitherto been the description of an object in Nature. The group of plants included under a species agree so far that the specific character is a particular account of each individual. Where two or more permanent forms are recognised under one species the practice has been to consider the originally described, or the most abundant form, as the species, and to refer the others as varieties differing from that in some one or more peculiarities. Dr. Müller, on the contrary, makes some specific like generic diagnoses to consist of the characters which several groups of plants have in common, so that as the generic character includes all the species, the specific includes all the varieties. A different value is thus introduced into the definitions of allied species, for while the diagnosis of one species of which only a single form is known is a description of that form, that of another is the description of properties possessed in common by several plants, which have other points by which they can be distinguished. Were it for no other reason than the maintaining a uniform value for the diagnoses of all the species of a genus we should object to this innovation. We shall better explain Dr. Müller's method by giving our readers an example. Take Ventenat's genus Agyneia, which contains the two species A. bacciformis and A. affinis. The generic description is sufficient to separate these two plants from their nearest allies, but yet it is so general as to be equally applicable to both species. The first species contains three distinct forms, and for his specific definition our author selects those characters which they have in common, and which are not possessed by A. affinis. He does not reach the plant, but stops at some peculiarities which are true of the three groups *a*, *β*, and *γ*, and only deals with the plant in his diagnoses of the varieties. But, on the other hand, his description of A. affinis descends at once to the special form of plant with which he is dealing. In this way Dr. Müller alters the value of the specific designation. Thus Agyneia bacciformis of Ad. Jussieu is only *a*, genuina Müll. Arg.; while A. bacciformis of the Prodromus includes varieties *α*, *β*, and *γ*. Dr. Müller considers this alteration sufficient to justify him in appending his name to his improved species. Thus we have Ricinus communis, Müll. Arg., instead of Linn.; Croton scaber, Müll. Arg., instead of Willd.; Mercurialis perennis, Müll. Arg., instead of Linn.; and Jatropha urens, Müll. Arg., instead of Linn. And this love of change is carried even into the nomenclature of the genera: thus the Jatropha of the Prodromus is Jatropha, Müll. Arg. and not of Linn., although the Linnean genus covered all the subsequently established genera, which Müller includes in it; and in the same way the name of Linnæus is supplanted by Müll. Arg. after Crotch, and many other genera. We can see no satisfactory reason for such innumerable changes; they seem only to unnecessarily augment the already enormous burthen of names and synonymy with which Botany is encumbered.

Dr. Müller adopts Karsten's observations in regard to Cœlebogyne (an unfortunate hybrid word, not improved by Braun's alteration into Cælebogyne, here adopted by the author, who has not noticed that John Smith wrote it differently), which were too generally ridiculed by botanists in this country. They give the only satisfactory explanation of the ripening of the seeds in a dicecious plant, without contact with the staminal flowers. Mr. Smith succeeded in raising plants from the seeds of his female plants, and he could not discover any pollen-bearing organs connected with them. In the discussion that arose out of this curious fact it was maintained by Naudin and Decaisne that the female plants could produce perfectly ripe seeds; Klotsch held that the seed was without an embryo, and had instead a bud; Braun determined that the seed contained a true embryo, but he discovered a pollen grain on the stigma, although he could not trace its origin; Karsten noticed that some female flowers occasionally bore a somewhat deformed stamen, the anther of which contained perfect pollen; and Müller, although he has not seen a female plant that was staminiferous, sees no reason for doubting this observation, as a similar phenomenon has been frequently observed in other Euphorbiaceous genera.

The November number of the *Botanical Magazine* contains illustrations of the following plants:—*Brachystelma Barberiæ*, a most remarkable South African Asclepiadaceous plant, not yet introduced, but of which a drawing has been sent over by Mrs. Barber, of Graham's Town, after whom the species was named by the late Dr. Harvey. It has a large depressed tuberous root as large as a Turnip, a very short stem furnished with linear-oblong acute spreading leaves, 3 to 4 inches long, and a large sessile globose capitulum of dull purple flowers, specked with yellow in the disk, and further remarkable in the genus for having these five lobes extended into slender tails, an inch long, the points of which cohere, so that they form an arch over the flower, like the Ceropegias. It is a native of Kaffirland.—*Nierembergia rivularis*, a beautiful little trailing perennial, with slender rooting stems, variable oblong or oblong spathulate leaves on long petioles, and almost sessile flowers, consisting of a broadly campanulate limb, 1½ inch across, of a yellowish white, elevated on a slender tube 1 to 2½ in. long. This species, which has been introduced by Messrs. Veitch & Sons, abounds by the sides of the Plate River, within high tide mark, its flowers rising above the dwarf Grass; its flowers are sometimes tinged with rose-colour.—*Notylia bicolor*, one of the minute Orchids, often cast aside by cultivators as mere botanical curiosities, but really found on close examination to be remarkably beautiful; this is described as "a perfect gem." The whole plant is frequently not above 1½ inch high; it has equitant sword-shaped somewhat oblique leaves, and nodding racemes of numerous small flowers, which have the sepals greenish white, and the petals and lip rosy lilac spotted with purple towards the base. It is a native of Guatemala, and grows upon Oaks.—*Glyphæa Monteiroi*, a tropical shrub, belonging to the Tiliaceæ, with slender glabrous branches, ovate oblong acuminate serrated leaves, and small cymes of yellow flowers; uninteresting for garden culture; it is a native of Benguela.—*Vanda Bensoni*, a Bangoon species, allied to V. Roxburghii and V. tricolor, but differing in the length of the flower-spikes, in the absence of all tessellation, and in the spotting of the flowers; the leaves are distichous and obliquely toothed at the top, the flower-spikes much longer than the leaves, the flowers rather distant, white outside and yellowish-green, thickly dotted with reddish-brown inside, and the lip rose-coloured, terminated by a broad kidney-shaped bifid apex. It has flowered with Messrs. Veitch & Sons, of Chelsea.

The *Florist and Pomologist* for this month gives an illustration of *Pelargonium Dr. Hogg*, one of the advanced varieties raised from Beaton's stock. It belongs to the same class of colours as Amy Hogg, but is a broader-petalled flower, and has a deeper colour, with more of the suffused blue tint; altogether a very desirable addition to our present collections.

The *Floral Magazine* figures the following subjects:—*Pentstemon Jaffrayanus*, a well-known Californian species, introduced by Mr. Veitch about 10 years since, well worth bringing again into notice; it is one of the rich azure-flowered kinds in the way of P. speciosus, and probably one of the best among them.—*Pelargoniums* (Fancy) *Sylvia* and *Liberty*, two of Mr. Turner's seedlings, the former a beautiful delicate pink, the latter a rosy crimson with white centre.—Souchet's *Gladiolus Milton*, a grand-looking creamy-white variety, tinted with rose, flaked with carmine, and feathered on the

lip with purple.—*Alternanthera sessilis amœna*, one of the new dwarf coloured-leaved bedding plants, not one of which — Alternantheras' spathulata and sessilis amœna, and Teleianthera ficoidea versicolor—is, in our estimation, so good as the older A. paronychioides.

The *Journal of Botany* has two plates, representing, one the fossil *Lepidodendron* and *Calamites* restored, and the other various structural details of these and some allied plants.

Florists' Flowers.

Mr. Salter's Chrysanthemums.—A more charming exhibition of these glorious autumn flowers than that which is now on view in Mr. Salter's nursery, William Street, Hammersmith, it would be difficult to find. It fills two long houses placed in the form of a T, and there are also borders full of Pompon and other varieties in beautiful condition out of doors.

From among the dense mass of large-flowered sorts indoors the following, though not new, are well worthy of notice.

Conspicuous among Yellows were Jardin des Plantes, Mrs. Miles, Golden Hermine, Plutus, and Yellow Perfection.

Among Whites the best were Beverley, White Queen, Virgin Queen, Florence Nightingale, Mr. Haliburton, and Eve.

Blushes consisted of Her Majesty, Little Pet, Princess Marie, Queen of England, Venus, Princess of Wales, and Lady Carrey.

Rose or Lilac kinds comprised Lady Slade, Luther, Bella Donna, and Princess of Hesse.

Among Purples were Prince of Wales, finely incurved and shaded with violet; Prince Alfred, paler, and also incurved; Ranunculus, Dr. Rozas, and Mulberry.

Orages consisted of Orange Perfection, Little Harry, Rev. J. Dix, Sparkler, Golden Eagle, Antonelli, Mr. Brunlees, and Golden Ball.

Among Reds were Progne, Lord Clyde, Julie Lagravère, Sanguineum, Hercules, and Gen. Harding.

Browns comprised Gen. Slade, Saumarez, Sir Stafford Carey, and Abbé Passaglia.

Among varieties sent out last spring, the more remarkable are Sylvia, medium sized, incurved, silvery lilac in colour, and of fine form; Mr. Gladstone, reddish chestnut, finely incurved, a rich-looking fine flower; Crimson Velvet, deep velvety maroon; Hereward, rose lilac, with a silvery back; Golden Beverley, a good yellow; Countess of Granville, a useful white conservatory flower; Compactum, a small peach-coloured kind, with silvery shade; Iona, clear citron yellow, large and showy; and John Salter, reddish crimson, shading off to yellow in the centre—a bold showy flower.

Among Seedlings not yet sent out the following are worthy of notice, viz., Countess of Warwick, straw-coloured or sulphur-white, fully as large as Prince of Wales; Madonna Mary, sulphur, with a yellow centre; Lady Talfourd, peach, with a silvery back, medium-sized, and globular; Dr. Lindley, a promising orange-amber flower; Yolande, blush, with a yellowish centre; Faust, in the way of Rifleman, but darker and better in habit; Purpureum elegans, violet-purple, medium-sized, good; Ossian, lilac shaded violet rose; and Gold of Ophir, deep golden yellow, with brown tips to the petals. There are other Seedlings yet to flower, of which we may have something to say hereafter. New Pompons are also not yet in blossom.

In a border out of doors the following Pompons are now to be seen in beautiful bloom, viz.:—Salamon, rosy carmine; Madame Pauline Deschamps, rosy blush; Mademoiselle Marche, Bijou de l'Horticulture, sulphur white; Hélène, rosy carmine; Canary Bird, yellow with dark centre; Calliope, reddish brown; Citronella, clear yellow; Julia Englebeck, buff, with brown centre; Medora, rosy violet; Madame Chalonge, blush with a yellow centre; Capella, brown with a yellow centre; Mr. Shirley Hibberd, an Anemone kind, rose with golden centre; Fairest of the Fair, lilac; Mrs. Dix, rosy-lilac; Drin Drin, clear yellow; Graziella, blush, with a darker centre; Prince Victor, chestnut; and Comte Achille Vizier, buff, with a brown centre. These are all suitable sorts either for in or out-door decoration.

The Apiary.

Management of Swarms.—Suppose one obtains a swarm, which, hived in a common straw hive, itself swarms the same season, what management would be best? Would you prevent swarming, or, if unable to do that, return the swarm or swarms? If so, what would be the best mode of performing both operations? I had a fine swarm, which itself gave out two swarms the first season; I wished to return the swarms, but the mode recommended by Payne of dashing out the bees on a gravel walk appeared so formidable that I disliked trying it. I have since seen, however, at p. 189 of the 6th edition of Taylor's "Beekeeper," what appears to be a preferable mode of reunion. He says, "If a cloth is spread on a table placed in front of the old hive at dusk, the bees of the swarm can be jerked out upon it and guided to its mouth." I should, however, be glad to know whether this would do as a general mode of returning swarms, for Taylor merely says of it that it is "often the best time for making a reunion, for I have usually found that all the queens except one are ejected on the day of swarming." It appears, therefore, that it is advised only under certain circumstances. Might not swarms be returned to the old hive in the manner that one swarm, or stock, is united to another, namely, by knocking out the bees on a cloth between two sticks, and then placing over them the hive to which they are to be united? *A. B.*

[By scientific bee-masters it is generally considered judicious to endeavour to prevent the issue of a swarm from a swarm of the current season. It is wise, if possible, to neutralise the first inclination to swarm by affording the bees every help and inducement for making the best use—to their owner's advantage—of their superfluous energies.

If a swarm should issue in spite of all precautions (we are now speaking of the case as regards bees in straw hives only), we should be governed by certain considerations.

1st. If the queen should be an old one, it might be desirable, and it would be a good opportunity, to take steps to obtain a more juvenile successor.

2d. If the summer be but little advanced, there would be a fair probability of the young swarm, if allowed to stand, establishing itself as a prosperous stock, the more so, if a little timely and judicious assistance were rendered.

3d. If second or other swarms should happen to arrive about the same time, we might, by the union of one or more of them to the maiden swarm, set up such a strong population as would have little difficulty, in ordinary seasons, in filling the hive with combs, and in laying up sufficient provision for the coming winter.

4th. The decision to be arrived at would be governed by the desire on the part of the owner to increase, or otherwise, the number of his stocks. Sometimes an augmentation of the apiary, with sacrifice of honey prospects, is more a desideratum than having a fewer number of stocks of concentrated strength, with a view to honey gathering only.

If the return of the bees to the parent stock is the course determined on, the old queen at the head of the maiden swarm, or whatever it may be called, should be captured and removed. To effect this object, as soon after hiving as the emigrants are settled, knock them out on a large white cloth. Many will take wing, returning to the parent stock still stationed on its accustomed stand. Now search for the queen, who will most likely be running about on the cloth; if not at once discernible, turn over and separate any small masses of bees which may be inclined to congregate together. If still invisible, tilt the empty hive on its edge at one end of the cloth, and narrowly watch the bees as they stream towards its friendly shelter. The queen at length being captured, the rest of the community will of their own accord return to their old quarters under the parental roof.

But even now the bee-master must look out for squalls. In the course of a few days several young queens will be ready to emerge from their cells, and a swarm will, in all probability, again come off. If these returned, another issue may possibly take place in a day or two. But having once decided on returning the first swarm, it is well to go properly through with it. Pursue the same plan, only remembering that there may be two or more queens with the second exodus of the emigrants. It may therefore be advisable to knock out the bees in two or more lots on separate cloths. Those having no queen will soon return home, others that exhibit any disinclination to depart can be examined in detail, remembering that the young queens will be much more active than their mother was. The plan recommended by Taylor may often succeed very well, but we think it safer to remove the queen or queens prior to returning the swarm.

If the capture and removal of the queens is not considered important, or the necessary operations appear too formidable, though in truth they are very easily carried out, there is no doubt that the swarm may "be returned to the old hive in the manner that one swarm or stock is united to another," as described by our correspondent. There is, however, much more risk of a general fight among the bees, attended with considerable loss of life, often continued until the supernumerary queens are disposed of. In our own practice, this course has often proved quite satisfactory, but we have more than once lost a stock by it through all the queens having been destroyed in the *mêlée*.]

Garden Memoranda.

Mr. William Paul's Nursery, Waltham Cross.—Few suburban nursery establishments possess more real interest than this for all lovers of out-door stock. Its proximity to the Waltham Railway Station, and the short time it takes to reach it from London, are all points in its favour not to be overlooked, for, by means of the circumstances just named, the dingy interior of city counting houses can readily be exchanged for sweet converse with the Queen of Flowers, with whom Mr. Paul's name has been long and honourably associated. His nursery is conveniently laid out in rectangular quarters, intersected in the middle by a broad grassy promenade bordered with Conifers and choice shrubs, and decorated with beds of gay-flowered Pelargoniums, which this season, even despite the wet, have been the admiration of all who have seen them. But a few weeks ago, when our notes were made, they were in great beauty. Most of them are descendants of the late Mr. Beaton's Nosegay and Hybrid Nosegay breeds, of which Mr. Paul became the fortunate possessor, and as objects of decoration, both indoors and out, it would be difficult to overrate their value, inasmuch as they continue in flower for a very lengthened period, and appear to stand vicissitudes of weather better than any other class of bedding plants. Mr. Paul has had hundreds of varieties of Pelargoniums planted out side by side this season, partly in order to test their powers of battling with sun, wind, and rain; and never has the pre-eminence of the Nosegays for out-door work been more clearly established than it has been this year.

Of Nosegays, hybrid Nosegays, and Zonals, we noticed glorious masses of the following, viz., Rebecca, bright cherry, dwarf and compact in habit; St. George, crimson scarlet, trusses very large and compact, and well elevated above the foliage, leaves plain—one of the very best for out-door decoration; Phœnix, in the way of Punch, and a variety which withstands bad weather unusually well; Tiara, crimson with a purplish shade, leaves plain—a beautiful late autumn bloomer; Salmon Nosegay, salmon, trusses and flowers large, smooth and abundant, leaves plain, dwarf and compact, and one of the most effective amongst numerous associates; Sir Joseph Paxton, bright orange scarlet, trusses large and produced in great profusion, leaves zonate, a very showy fine kind; Cardinal, another orange-shaded scarlet, trusses large, leaves plain; Prince of Orange, also belonging to the same class, dwarf, compact, and a free bloomer; Waltham Lilac, a true Nosegay, with plain leaves and fine trusses of a lilac hue, shaded with rose; Peach Nosegay, nearly similar in colour, but not so effective as the kind last named; Nimrod, orange-scarlet, and of fine form, trusses large and produced in great profusion, leaves conspicuously zonate, one of the best, either in or out of doors; Village Maid, rich deep rose with a large white blotch on the upper petals, habit dwarf and compact, leaves zonate, a charming variety, the two colours in the flowers contrasting well with each other, and it stands wind and weather well. Among other varieties we noticed Monte Rosa, a rosy crimson of fine habit, plain leaf; Celestial, magenta-shaded crimson, compact, plain leaf; Lord Chancellor, reddish salmon, trusses large and abundant, leaves conspicuously zonate, habit good, altogether an excellent kind both for indoors and out; and Dr. Hogg, rosy crimson, darker in colour and somewhat better in form than Amy Hogg, to which it otherwise bears some resemblance, its leaves are zonate. The kinds just named may now be considered established, but of seedlings, both of last year and this, Mr. Paul has some thousands, from which something good may be looked for.

Among Pelargoniums in pots was Blue Bell, a soft bluish-lilac kind, which, on account of its colour alone, is well worth attention; as is also Waltham Seedling, which is one of the most effective of all deep crimson varieties.

Some of the best of the tricolor-leaved Pelargoniums have been grown here this season in the shape of standards, and when skilfully associated with plants of a different form they have had an excellent effect. The most conspicuous among them was Queen of Tricolors; among scarlets, Dr. Lindley made a good standard.

Of the different kinds of nursery stock under glass the young Vines in pots must not be overlooked, for finer or better canes than are here annually raised extensively from eyes, it would be difficult to find. Several houses are filled with them; and in others we noticed berry-bearing Aucubas and other choice shrubs, of which there is an excellent collection.

Roses, as may be imagined, occupy a conspicuous position in this nursery, and when in full beauty an inspection of them is indeed a treat. Among late autumn-flowering sorts some of the best we found to be Prince of Wales, Macaulay, Gloire de Dijon, Lord Clyde, Louis Odier, Sir J. Paxton, Jules Margottin, Madame Falcot, Aimée Vibert, Louise Darzens, Prince Camille de Rohan, Rubens, Glory of Waltham, Mrs. Bosanquet, La Brillante, and the well-known Souvenir de Malmaison. These and a few others have blossomed freely until very lately this year, and even now a good bouquet might be gathered from them. Of Teas and other tender kinds in pots there are wonderfully large quantities in excellent condition. Maréchal Niel, Mr. Paul is of opinion, will doubtless be found to be a good autumn-blooming Rose.

One of the most remarkable features of these nurseries is the splendid collection of evergreens and other ornamental trees which they contain, and which afford to those engaged in planting almost everything that could possibly be desired in that direction. In addition to common evergreens, of which there are several acres in various stages of growth, there are rare and beautiful trees and shrubs in abundance. In forming this collection Mr. Paul tells us that he set out under the idea that the trees and shrubs usually chosen for new plantations are too much alike in character, the result of which is tameness and monotony. To obviate this he has gathered together trees not only widely different in aspect, but also such as are varied as much as possible in the forms and colour of their leaves.

In order to show that this object has been attained, we may mention for instance that we met with forms of Oak, Ash, Acacia, Elm, &c., as pyramidal in growth as a Lombardy Poplar, and weeping trees innumerable. As regards diversity of foliage there were the needle-leaved Pines as a starting point, from which we may pass onwards to the large leaves of the Magnolia, Catalpa, Paulownia, and others with large compound leaves. We noticed many beautiful varieties of hybrid Service, and here also should be classed the Amorpha, the Aralia, the Ailantus, Walnut, and others. Form is not however the only point which has been kept in view, colour has also had a due share of attention, white, yellow, and purple being well represented. Of white or whitish-leaved shrubs the most striking were: Abies alba glauca, Chamæcyparis sphæroidea glauca, Euonymus japonicus argenteo-variegatis, E. radicans variegatus, Juniperus virginiana glauca, Ligustrum ovalifolium variegatum, Osmanthus Aquifolium variegatus, Picea nobilis glauca, Pinus Strobus nivea, Rhamnus foliis argenteis (particularly clear and bright), Acer Negundo variegatum (in large quantities), Hydrangea japonica variegata, Philadelphus coronarius variegatus, Populus argentea vera, Pyrus Aria, Shepherdia argentea, Tilia argentea, and Ulmus campestris foliis argenteis.

The following have a yellow aspect, and are equally beautiful, viz.:—Aucuba japonica limbata, A. japonica bicolor, A. japonica maculata, Chamæcyparis sphæroidea variegata, Elæagnus pungens variegata, Golden Hollies, a fine collection; Juniperus virginiana foliis

aureis, Ligustrum vulgare variegatum, L. japonicum variegatum, L. lucidum variegatum, Retinospora pisifera aurea, Taxus baccata variegata, Thuja orientalis foliis aureis, Castanea vesca variegata, Fagus sylvatica variegata, Fraxinus aucubæfolia, Quercus Cerris variegata, Sambucus nigra foliis aureis, Spiræa opulifolia lutea (very beautiful), Symphoricarpos vulgaris foliis aureis, Ulmus montana variegata.

Purple-foliaged subjects seemed less abundant than those of other colours. We however remarked Berberis vulgaris foliis purpureis, Corylus Avellana purpurea, Euonymus atropurpureus, Fagus sylvatica purpurea, and Quercus nigra, all of which are of a dark purple or blackish hue. Many trees and shrubs have now assumed their autumnal tints, and broad masses of scarlet and gold are occasionally met with. Of scarlet, the most conspicuous were—Quercus coccinea, Liquidambar, Rhus typhina, Pyrus arbutifolia, Cornus alba, and Acer circinatum; striking among yellows were Juglans amara, Gleditschias, Acer Negundo, Eriodendron, Betula, Kölreuteria, Tilia alba, Acer striatum, A. colchicum rubrum, Populus laurifolia, Cerasus Padus, Salix purpurea, Fraxinus, and others. Pyrus Malus Toringo, which is a beautiful spring-flowering tree, is now covered with bright yellow pomes; the Cratægus coccinea maxima and C. Layii have fine red berries; and a species of Cotoneaster is in places covered with berries just beginning to colour.

Collections of Hollies (84 sorts) Ivies (14 sorts), and Yews (24 sorts), are planted together by the side of one of the walks, in order that they may be seen side by side, and judged according to their respective merits.

The stock of fruit trees is another feature to which special attention ought to be directed, and to give some idea of the extent of this department we may mention that it comprises some 5000 standard Apple trees, and between 2000 and 3000 Pear trees, besides large quantities of beautiful healthy pyramids, three and four years' old, and of trees for espaliers and bush culture. In addition to these there are also Peaches, Plums, and Cherries for orchard-houses, and trained trees of all descriptions for walls.

Calendar of Operations.

(For the ensuing week.)

ALTHOUGH the weather is still comparatively favourable, all half-hardy plants intended to be wintered out of doors should now or very soon receive some kind of protection. Various materials are used for this purpose, but the principal point to be aimed at is to keep the plants dry, as well as to protect them from cold; for it is well known that they will endure a much lower degree of temperature without injury if the ground is dry below them, and if the stems are kept dry, than when in a wet soil, and exposed to rain. Deciduous plants may be tied together as soon as the leaves have fallen; the ground about their roots may be covered with ashes or Cocoa-nut fibre, and the stems thatched over with Fern or straw. Evergreens may be protected with a covering of mats, or some other material of that description, put on so as to open towards the north in favourable weather. Leaves, ashes, old tan, and many other articles are all useful, and can be got together now for the protection of tender herbaceous plants. Branches of Evergreens are also extremely valuable for tying against plants on walls. Mats should now be got in readiness for covering frames and pits.

FLOWER GARDEN AND PLANT HOUSES.

Advantage should be taken of frosty weather, should it occur, to do any rough work in the principal part of the pleasure-ground, such as pruning trees and shrubs, the doing of which involves a considerable mess, which can be more easily removed in hard weather. A similar opportunity should be taken to wheel old exhausted soil from the flower-beds, and to replace it with fresh material, as this kind of work can be done during frost in half the time that it would take if done when the ground and walks are soft, and with a tithe of the injury to both which would inevitably occur in the latter case. At this time of the year, it often happens that severe frosts follow heavy wet. When plants are overdone with moisture, they are more susceptible of frost than when moderately dry. It is therefore good policy to guard as much as possible against extremes of either one or the other.

AURICULAS.—Should frost occur, a double mat will be advisable over the Auricula frame at night, but should it be possible, even in severe weather, to give air, by all means let it be done.

BULBS.—Tulip beds will be more safe covered than exposed; and Ranunculus and Anemone beds had better be thrown up, in order to sweeten and insure the destruction of insects, &c.

POLYANTHUSES.—These will, perhaps, now claim extra notice. Those on beds, if parted at the usual time, will often have the collar exposed too much, and the roots comparatively bare; independently of this, earthworms may have drawn leaves, &c., into their holes, which, with their castings, give the beds an untidy appearance. One plan of avoiding these results is to carefully fork up the soil, so as to disturb the fibres of the plants as little as possible, removing the rotting or broken leaves; then, with a mixture of decayed leaves and cow-manure, which had been prepared, and under cover some time previously, go carefully over the bed, filling up all inequalities, placing a couple of handfuls round each plant; in fact, giving them a complete top-dressing. This operation will prove highly beneficial; and its result will be a strong and vigorous start in the spring.

FORCING GARDEN.

CUCUMBERS.—Give those growing in pits all the light possible by taking off the covering early in the morning, and keeping the glass clean. Be careful that red spider does not establish itself upon plants, which may be the case in Pine stoves, where the drier atmosphere favours its increase.

PINES.—Let the temperature of fruiting pits range from 55° to 60° by night, and from 65° to 75° during the day; bottom-heat should be about 80°. Admit as much fresh air as possible, moderating the quantity when the wind is very keen. The day temperature, and moisture, should be regulated by the clearness of the weather and the amount of air which can be admitted. Do not on any account allow the moisture to be in such abundance as to condense and run into the plants. Crowsness and deformed fruit are the result of moisture being allowed to accumulate in the hearts of the plants at the time the fruit is coming up. Where the pot system is practised, the plants in all stages should be examined once in two or three weeks, and a portion of those whose roots have made the greatest progress should be repotted.

VINES.—If the outside border of the early house is not already covered with litter, this should be done at once. Unless the roots extend into the interior of the house, the border should be covered with 18 inches of fermenting material, such as stable litter and leaves, to produce a gentle warmth in the soil before the inner temperature is raised higher than 50°. Before the litter is laid on, all loose or exhausted soil should be scraped off the border as far as the roots, and replaced by a top-dressing of charred turf, crushed bones, charcoal, and fresh horse-droppings. The inside border should also have the exhausted soil removed, and be top-dressed with a similar mixture. Commence with a gentle heat of from 45° to 50° night temperature, and from 50° to 60° by day.

HARDY FRUIT AND KITCHEN GARDEN.

Examine fruit and root stores to see if all is in a state of good preservation; any fruit still out of doors should now be gathered. Where fruit rooms are not furnished with a stove or a coil of hot-water pipes, considerable difficulty is often experienced at this season in excluding cold and damp. Of the two, perhaps, the latter is the greater enemy. It may, however, be remedied by spreading some unslaked lime in wide pans or drawers, exposing as much as possible of its surface to the atmosphere, and exchanging it for fresh as soon as its absorbing powers are somewhat exhausted. Frost should be excluded if possible; but if this is to be effected by the aid of artificial heat, the latter should always be used in connection with ventilation, that the moisture evaporated may be allowed to escape. If there are, however, no such conveniences, the simple means of matting up the doors and windows must be adopted; and if, in spite of these precautions, the internal temperature falls below the freezing point, care must be taken to prevent a sudden thaw by keeping the room close and shaded for a short period after the return of warmer weather. This points out the advantage of constructing such places on the north side of a wall, as they are thereby preserved from extreme heat in summer and from sudden variations in winter. Many of the finest dessert Pears require placing in a temperature of 60° for a few days previous to use; there they will become quite ripe and will attain their full richness of flavour, while they would have lain in the cool fruit-room shrivelling till useless.

PEAS AND BEANS.—Sow the white wrinkle in very favourable localities may now make a sowing of these for an early crop. The seeds should be sown on the leeward side of low ridges, the crowns of which will protect the young plants from cold winds, while the hollows between will aid in keeping the soil dry. Some chopped Furze, or other similar material, should be sown along with the seed, to prevent the depredations of mice. There is a chance, in warm dry localities, that these early sowings will produce good crops; but in medium or late situations the chance of success is very small. In the latter case there is less trouble, and more certainty, as has been previously stated, by sowing in boxes or turves early in spring, and planting them out with a slight shelter towards the end of March.

STATE OF THE WEATHER AT CHISWICK, NEAR LONDON, For the Week ending Nov. 14, 1866, as observed at the Horticultural Gardens.

Nov	Mean's Age	Barometer.			Temperature.				Wind		Rain
					Of the Air.			Of the Earth 1 foot deep.	2 feet deep.		
		Max	Min	Mean	Max.	Min	Mean				
Thurs.	8	29.703	29.607	29.655	60	32	46.0	50	51	S.W.	20
Friday	9	29.578	29.477	29.527	51	37	44.5	51	52	W.	00
Satur.	10	29.457	29.356	29.406	54	32	43.5	50	51	S.	31
Sunday	11	29.396	29.253	29.324	50	27	43.5	50	50	W.	09
Mon	12	29.253	29.150	29.201	50	27	42.0	50	50	S.W.	06
Tues	13	29.380	29.188	29.284	54	45	48.0	50	51	W	14
Wed	14	29.119	28.808	28.963	52	26	39.0	51	50	W.	00
AVERAGE		29.441	29.276	29.358	56.2	31.8	44.2	50.1	50.7		8

Nov. 8—Fine; cloudy, boisterous; rain
— 9—Very fine; a splendid sunset; cloudy and very fine; frosty.
— 10—Foggy; dense fog; heavy rain at night
— 11—Fine throughout; slight frost at night
— 12—Fine; cloudy; boisterous at night; rain
— 13—Boisterous, with rain; stormy, with rain, shooting stars at midnight unusually numerous
— 14—Exceedingly fine; not a speck of cloud; very fine; shooting stars again very numerous
Mean temperature of the week, 2 deg. above the average.

STATE OF THE WEATHER AT CHISWICK,
During the last 40 years, for the ensuing Week, ending Nov. 24, 1866

November	Average Highest Temp.	Average Lowest Temp.	Mean Temp.	No of Years in which it Rained	Greatest Quantity of Rain.	Prevailing Winds.						
						N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.
Sunday..18	48.0	33.1	40.5	19	0.56 in.	3	7	3	2	4	13	3	5
Mon ...19	48.8	34.4	41.6	17	0.87	1	5	4	4	5	13	2	6
Tues ...20	49.2	34.9	42.0	14	0.35	1	7	4	2	10	6	2	6
Wed ...21	49.7	36.7	43.2	25	0.44	4	5	4	3	6	12	4	2
Thurs . 22	49.3	34.2	41.7	23	0.50	3	4	6	3	4	10	8	2
Friday . 23	47.4	34.8	41.1	17	0.25	1	6	3	2	9	13	5	3
Satur. . 24	47.3	32.2	39.8	14	0.61	5	8	3	2	5	9	5	3

The highest temperature during the above period occurred on the 20th, 1863—therm. 61 deg., and the lowest on the 23d, 1858—therm. 9 deg.

Notices to Correspondents.

BOOKS: *J B B.* Probably Glenny's "Handbook to the Flower Garden," or Mrs. Loudon's "Companion to the Flower Garden," neither of which are very costly, will give the information you seek. We can scarcely recommend the one you name.

BURY SHOW: *Capitals.* The idea that special prizes, such as gold or silver cups, should be offered by the different towns and communities in East Anglia, at the forthcoming Royal Horticultural Show, would form one very good means of aiding in promoting the success of the Show. It will give more breadth to the interest felt in the meeting, as well as enrich the prize schedule. We believe something of the kind is being suggested by Mr. Fish, through the local press; and we may add to our remarks of last week that it is to the exertions of Mr. Fish especially that the question of holding the Show, when apparently falling through, was so successfully revived. The guarantee fund, we hear from a private source, has reached the sum of 825*l*.

EGG PLANTS: *T S M.* The Egg-plant, which is largely eaten in France under the name of Aubergine or Brinjal, is common in the tropics. The fruits are cut and sliced, and either broiled or fried, and flavoured *secundum artem*. The Club-gourd, a variety of Lagenaria vulgaris, is purgative; it is a native of tropical Asia.

FUNGI: *R D.* No. 1 is the Dry Rot (Merulius lacrymans) in a young state; No. 2 is the perfect plant. Remove at once every particle of the Fungus, and brush the woodwork with a strong solution of corrosive sublimate.—*R D.* The Fungus which is developed on your Yew tree is Thelephora arida. Scrape it away from the dead branch, and cautiously brush the dead wood with a solution of corrosive sublimate, or, if you are afraid that this might injure the rest of the tree, which would not, however, be the case if proper care is taken, paint it as you propose.—*J S.* Your Fungus is Phallus fœtidus.—*W R.* The curious specimen from an Elm block is the Stag's horn variety of Pol. squamosus. It sometimes assumes this form in cellars or in hollow trees, and has often been figured. A full account of the rust on the Celery plant (Puccinia Apii) will be found in the last number of the Journal of the Royal Horticultural Society. No remedy is known, nor is it certain what favours the development of the Fungus. The second leaf has been attacked by the Celery fly.—*W.* Not a Truffle, but Phallus fœtidus, which like the "Thunderdirt," a nearly allied Fungus, might be eaten in New Zealand, but certainly not in England.—*J B W.* Several instances have occurred lately of Fungus spawn running up between the bark and wood. A remarkable case was placed on the table at South Kensington on the 6th instant. *M J B.*

HOT AIR: *Old Subscriber.* Your question is scarcely horticultural. Though the result you mention would be scarcely likely to happen with ordinary care, it would be unwise to risk wood in contact with the pipes.

MELON: *T.* Too much decayed fruit to be able to form any opinion as to its merits. You had better send it again, earlier in the season. It seems to have been a pretty enough fruit, finely netted, resembling a Beechwood.

NAMES OF FRUITS: *W.*—Autumn Pearmain. Apple.—*D D.* Norfolk Paradise Apple; and Verulam Pear.

NAMES OF PLANTS: *J W.* Crataegus Pyracantha.—*J Bogue.* Adiantum fulvum.—*E L S.* From your description we should imagine your plant to be the Marvel of Peru—Mirabilis Jalapa, a common inmate of gardens.—*Carolina.* We can only vaguely guess at the plant you describe, and suggest that it may be Calla palustris.—*C W T.* Aparagia hispida.—*F J.* Rhamnus Alaternus.

NURSERYMEN'S LABELS: *T S M* writes, "Give the nurserymen a hint about writing their labels plainly when plants are sent out, as sometimes no one can read them." We need not discourse on the advantage of their doing so; it is self-evident; but some penmen rejoice in hieroglyphics.

PHOTOGRAPHS: *E W.* The photographs of the International Exhibition are not stereoscopic slides, but large views adapted for framing. They are four such by Mr. Vernon Heath, and a series of 15, somewhat varying in size, by Messrs. Cundall & Co.

SPEECHLY'S VINE-GROWING: *W.* At page 55 of Speechly's Treatise on the Vine you will find the following:—"In the year 1814 a bunch [Syrian] was produced at Welbeck that weighed 19½ lb. It was presented by his Grace the Duke of Portland to the late Marquis of Rockingham, and was conveyed to Wentworth House (a distance of more than 20 miles) by four labourers, who carried it suspended on a staff in place, by turns. Its greatest diameter, when hanging in its natural position, was 10½ inches, its circumference 4½ feet, and its length 12½ inches."

TOBACCO DUTY: *T. J.* We are quite of your opinion. The hands of the Society should be strengthened by the free expression of opinion on the part of those interested. With the concessions made to agriculturists and Hop-growers as precedents, the horticultural community have good grounds to ask for a remission.

TRANSPLANTING VINE: *J B Boyd.* It is no uncommon thing to lift Vines whose roots have wandered, which are in an unsuitable soil. You may, therefore, move yours confidently, taking care to preserve all the roots, and to replant them immediately before they have sustained any injury. The roots should be carefully sought out with a light digging fork. It will be better to move the Vine to the front than to train it down the roof. The operation may be done now, but if the roots go to the outside border, it should be protected afterwards against heavy rains. The Muscat Hamburgh is apt to be a little shy in setting.

VINES: *The Shepherd of Salisbury Plain.* There is, perhaps, no harder Grape than the true Black Burgundy or Auvergne. It ripens its wood so thoroughly, even in this climate, that the severest frost we experience, say 10° below zero, does not injuriously affect it. If any kind will succeed against your sloping bank, this is the most likely. The Miller's Burgundy is more acid; but you have probably not got the true sort, which is not remarkable for its leaves being of a claret colour, but for being very downy on both sides, giving them a hoary appearance, like a miller—hence its name of the Miller's and Meunier.—*K K.* The maldewed clusters should be cut off and burned, and the tree thoroughly washed with lime water from an engine.

WASH FOR WALL TREES: *Subscriber.* Use a mixture of sulphur, 2 lb.; soft soap, 2 lb.; tobacco, 1 lb.; and water, five gallons. The tobacco should be boiled in a portion of the water for an hour or more, then strained, and the other ingredients added and well mixed up. It is to be applied with a brush, and should be well worked into the crevices of the bark.

WAX MODELS: *C Cadle.* Apply to Mrs. Mitchell, 5, Anglesea Terrace, Bridge Road, Battersea; or to Mrs. Townley, 35, Hockney Road, Highbury; both of whom were exhibitors at the late International Show. Mrs. Osman Rhodes, Sydenham (see p. 1094) also models neatly in wax.

WHITE DIELYTRA: *W T.* The white variety of Dielytra spectabilis is tolerably pure in colour, and is really a very pretty and distinct thing, well worth growing for contrast.

COMMUNICATIONS RECEIVED.—Ah uno disce omnes (we will inquire).—J. T. B.—W. S.—F. W.—T. R.—Jasper Standstill.—W. P. (with thanks).—J. D. (with thanks).—D. T. Fish (Grapes, Food of plants, etc.).—B. Findlay.—R. Thompson.—W. R.—G. Eyles.—Excelsior (thanks).—Quercus.—E. Peak.—G. W. Norman.—P. G.—W. Earley.—J. T. Barber.

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The Manures manufactured by J. B. LAWES for the present season of 1866 are now ready for delivery at his Factories, at the following prices, per ton:—

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This Company was originally formed by, and is under the direction of Agriculturists, circumstances that have justly earned for it another title, viz.:—"The Tenant Farmers' Manure Company."
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CHARLES CLARE, Clarendon Nurseries, Cambridge New Road, S.

BINGLEY HALL, BIRMINGHAM.—The EIGHTEENTH GREAT ANNUAL EXHIBITION of FAT CATTLE, SHEEP, PIGS, DOMESTIC POULTRY, ROOTS, CORN, and IMPLEMENTS, will be held in BINGLEY HALL on SATURDAY, MONDAY, TUESDAY, WEDNESDAY, and THURSDAY, December 1, 3, 4, 5, and 6.
For Special Railway Arrangements see the Advertisements and Bills of the several Companies.

CURZON HALL, BIRMINGHAM.—The SEVENTH GREAT ANNUAL EXHIBITION of SPORTING and other DOGS will be held in CURZON HALL, Birmingham, on MONDAY, TUESDAY, WEDNESDAY, and THURSDAY, December 3, 4, 5, and 6—the week of the Cattle and Poultry show. For Special Railway Arrangements see the Advertisements and Bills of the several Companies.

The Agricultural Gazette.

SATURDAY, NOVEMBER 17, 1866.

AN Order in Council was issued in Tuesday's *Gazette*, permitting once more, under certain restrictions, the importation of live cattle from abroad. Certain landing places are to be licensed for the reception of foreign cattle, proper sheds or other receptacles are to be provided for them there, and in these they are to be kept at the sole charge of the owner or consignee, "without being in contact with any other animals whatever, subject to the supervision and control of the Commissioners of Customs, and in accordance with any regulation made by them, for such period, not exceeding in any case 28 days, as may be from time to time prescribed by the Lords of HER MAJESTY'S Privy Council."

Such cattle then need not be slaughtered at the place of landing, but may be removed at such time to such place, and upon such conditions, as the Lords of the said Council, or any two of them, may from time to time direct.

All this of course is subordinate to any existing rule with reference to the country or place permitting or forbidding importation thence.

This order reopening live cattle traffic with the Continent is thus hedged about with conditions, sufficient, we imagine, to make it not only safe but *inoperative*.

THERE is a footpath lying through certain plough-land fields in the parish of Barking, Essex, from which we venture to say the intelligent wayfarer learns more of practical and successful agriculture in a single season than is often acquired, either by farmers upon ordinary occupations, or by agricultural students in class-rooms, during a whole lifetime. Nowhere is there more energetic or successful cultivation of the soil. We have seen during the past eight months from that thoroughfare many successive crops already harvested from the same fields:—Cabbage plants which had been dibbled in 12 or 15 inches apart last autumn, "bunched" as Greens, and sold for 12*l.* to 15*l.* per acre in the months of March and April, have been followed by an early Potato crop worth 20*l.* an acre in the month of August, and these by Greens for bunching again, which will fetch 8*l.* to 10*l.* per acre before Christmas. Elsewhere triple rows of Cabbages planted last September, with wide and thick-sown rows of Rye between adjacent threes, were tied up towards the end of March, and sold as single early Cabbages in Easter time at the exceptional price which at that season they command, and realised no doubt an enormous sum per acre. The intervals between the Rye were ploughed and dunged, and towards the end of May Cucumber seed was dibbled in double rows, and the young plants, sheltered by tall rows of Rye, soon spread over all the intervals between them; and in August and September another most valuable crop was sent daily into market, and another great revenue per acre was obtained. The Rye was cut and sheafed and carried away, and the whole land was cleaned and dunged and deeply ploughed, and it is now covered with a foot or 15-inch crop of young Cabbage plants which will be ready to be sold, bunched as Greens, and worth 8*l.* to 10*l.* per acre a few weeks hence.

In yet another instance the early bunching Cabbages and subsequent Potato crop were followed by an acre or two of seed-bed, on which Cabbage plants were grown for dibbling in before October for a crop of early Cabbages next spring, or for a bunching crop of Greens during the current year. And there the tenant told us he got his plants by moonlight work. It was during one of the few dry intervals we have had this summer, when the morning's ploughing would have got too dry for seed before the evening, that, ploughing from the afternoon on till midnight, he got the seed sown in and rolled down before the drying daylight, and thus obtained a "plant" when his neighbours failed. The rain which ultimately came produced a wonderfully fine bed of plants; and the advantage of three weeks in the forwardness of the crop next spring which may thus have been secured, may make all the difference between 10*l.* and 20*l.* per acre in the sale of the produce.

The soil is light and deep on gravel, so that it has the advantage of good natural drainage; and being ploughed always to its full depth and heavily manured in the intervals of rapidly succeeding crops, we suppose that nowhere is more food for man per acre got than here. Only Cabbages, and Potatos, and Cucumbers have been named, but Onions, a wonderfully fine crop this year, though difficultly harvested, and Kidney Beans, Leeks, Savoys, Red Cabbages, Carrots, Parsnips, Celery, and Parsley, are all grown most luxuriantly. And the skill of the tenant is taxed so to allot his crops that there shall be a pretty even amount both of labour and of marketing to do throughout the year.

The farms thus managed, though generally small, require a large capital for their efficient working; but whereas in ordinary agriculture much of the tenant's means is invested for a slow return, often indeed not till halfway or more through a long lease, here much of his money is turned over twice or thrice a year. He pays for manure and horse corn and hand labour in the spring and summer, and the produce of it all is realised in three months' time. There is thus an extraordinary stimulant to everything like activity and promptitude. In London, close by, he can get by return of post the current worth of everything sent up to market; whatever it be, "ware" or "waste," the market value of what is sent is got at once. Mr. ADAMS, one of the largest market gardeners in this neighbourhood, and therefore in the world, informed us that during the first year of the Potato rot, having been early convinced that the crop was to be an utter failure, he put on every hand and horse he had, and his crop, in a half-ripe, half-rotten state, was sold before his neighbours had realised the nature of the disaster. And in ten weeks' time, on the land thus cleared, there were 20*l.* worth of Cabbages per acre. There is thus in the daily market and varying weather, and active open soil and ample supply of manure, a greater premium upon industry and energy than exists anywhere else in English agriculture. The night-work, too, which is so large a part of the London marketing, falls in with the system of constant "drive" which land, and labourer, and farmer all submit to. The result is better on the two extremes of the scale than it is on the intermediate stage. The land grows in fertility constantly. It shows no symptom of wearing out. Constant tillage and constant sale of produce do not injure it under the plan of constant dressings of town and stable-dung. Its tenants, too, grow wealthy.

The labourers share somewhat, no doubt, in the advantages of all this industry. Wages are high, 2*s.* 6*d.* and 3*s.* a day, with constant opportunities of earning much more at piece-work. And large sums are paid almost all round the year for the labour of women and children. Nevertheless expenses are very great. Cottage rent is high, and irregular work and irregular payments lead to much other irregularity. There is a great deal of excessive drinking, which tells on the majority of the labouring population. A steady man may, however, here more easily step out of the ranks of the mere labourer, or help and educate his children for an upward step more efficiently, than is possible elsewhere.

THE relations of the Agricultural Society to the subject of Agricultural Education must certainly come up again for discussion before some early general meeting of the members. Did our readers see the report of the Education Committee, given on page 1079 last week, which was adopted by the Council at their last monthly meeting? The main facts are that "a grant of 5*l.* 5*s.* each has been made to Professors PRICE and DAUBENY," and that they have conducted the Society's recent Oxford examination, and allotted, so we gather, about 100*l.* in sums varying from 1*l.* to 7*l.* among 18 of the candidates who competed. These sums were awarded for the most part for distinction in the general examinations, which take account merely of the elementary parts of preliminary education, and the chief rivalry evidently lies in the mathematical department. No fewer than 14 juniors and 21 seniors entered for prizes to be given in "Pure Mathematics;" and we see that there are 50 entries for the Cambridge examination in December. These are not many certainly out of the tens of thousands of farmers' sons who are now at school; and it can hardly be supposed that the "grant of 5*l.* 5*s.* each," which is formally published as the payment which two distinguished Oxford Professors have earned by undertaking the distribution of 100*l.* in small prizes amongst those sons of members or of farmers who have gone up for examination in pure mathematics, &c., is really a discharge of the instructions given by the Charter, and amounts to that "promotion of the education of those who are dependent on the cultivation of the land for their support" which is therein required. The only part of the Education Report that appears to us to be at all in keeping with the intention of the Charter is that which describes the competition for the Society's prizes for acquaintance with the agricultural applications of mechanics and of chemistry, of physiology and geology. But this could hardly be called a competition at all; for among the junior candidates only two entered for the questions on mechanics, and neither earned a prize, and no one appeared to answer the questions in chemistry. Among the seniors there were two candidates in the chemistry and physiology examinations—none in that upon geology.

We cannot see how it is possible to avoid the opinion that so far as this is a contribution to either the general or the professional education of country boys, the whole affair is a failure. In the first place it is impertinent to the objects of the Society; and in the second, whether pertinent or not, it is such a mere drop in the ocean of effort that is now being made as to be wholly inoperative. In so far again as it is a contribution to the professional education of farmers' sons, with which alone the Society has any right to interfere, the whole thing seems ludicrously inadequate.

Professors PRICE and DAUBENY, to whom the grant of 5*l.* 5*s.* each by special vote of the Committee, formally adopted by the Council, is officially announced, have very kindly undertaken, at the request of the leading members of the Society, a task which would have been worthy of them had any considerable body of candidates been presented to them for examination, but such a company will never be attracted by the offer of 40-shilling premiums, even though so much as

five-guinea fees be "voted" and "reported," "adopted," and officially announced, to the distinguished University Professors who undertake the award of them.

VILLAGE LECTURE.

[Fragment of a winter evening's lecture "On the Natural History of a Sunbeam."

I AM going to speak about an absent friend. Since five o'clock this afternoon we have been, as you are aware, comparatively in darkness. By the constant revolution of this earth upon itself, being carried round with it, we went just then behind it from the sun, into its shadow, which, therefore, we call our night. About 12 hours ago this daily turning of the earth upon itself brought us into daylight, and as this earth revolves from west to east, the sun, of course, appeared to rise and cross the sky from east to west, and until five o'clock this evening this neighbourhood received the full influence of its beams; but now the earth itself has come between and cut them off. In — hours time, however, we shall have again revolved within the light now beaming from the sun upon the other hemisphere, and day will break again. The Sunbeam, therefore, is to us just now an absent friend—and yet not altogether so; there are mirrors in our sky which reflect it to us. The planets and the moon receive the solar light and send it back to us. We see them by a portion of their daylight, for which, of course, they are indebted to the sun. The sunbeam is reflected from their surface to our eyes. It is a sunbeam, therefore, though we call it moonlight. Being, however, somewhat altered in its nature by its reflection from the surface of the moon, we may call the sunbeam, though it be a moonlight night, one of our absent friends. Well, I think we may venture to discuss its character, though we be behind its back. No one shall have a charge of incivility for this to bring against us, for I have nothing ill to say of it. It is our friend; our very life, let alone our luxuries and comforts, would be impossible without it. There are men, indeed, even yet I believe so convinced of this, so impressed with a sense of this wonderful influence for good exerted by the sun upon the earth, that they worship it. It is their God, and undoubtedly a knowledge of the benefits we thus derive ought to influence religious feeling everywhere. It will not lead us, with the followers of Zoroaster, to adore the God of day, as poets call the Sun, but it may surely deepen our impression of the benevolence of Him who made the sun, and moon, and earth and its inhabitants.

Let us consider how we ourselves are situated in reference to this subject. The frosts of winter, as you know, loosen our soil for us, preparing seed-beds for our husbandmen; in the cool moisture of our spring the seed we sow there germinates, and the blade appears; the summer sunshine ripens all our crops, and the calm weather of our autumn enables us to harvest them. It is the fashion to decry our English climate, and invalids, perhaps, have reason to dislike it; but in spite of fogs, and rain, and snow, we are a nation, not of invalids, but of labourers and traders. No other nation does so much from year to year in proportion to its numbers, and no other has a climate so suitable for labouring in. I believe it is the fact that in hardly any other country does a labouring man find so many days per annum fit for field work as here. How is it on other parts of the earth's surface? Tunnel through this great round ball, the world, in that direction (↘N. 26°), and in 3000 miles you would come out upon its surface at a spot where it is colder now than ever it was known to be in England in the depth of winter. It is night there now, but their last sunset happened long ago; a constant night of many months in length has now set in. Beneath the surface of the land perpetual frost prevails; above it, snow and ice accumulate for nine months of the year, melting away in June, July, and August, beneath a summer sun of six months' length, but not enough to let the Moss and Lichen grow. What causes the inhospitable rigour of that climate? How comes the contrast it presents to this? Now tunnel on the other side, and after a passage through the earth as far in that direction (S. ↘ 25°) you will emerge upon a very different scene. It may be by a river side, and all around you is unparalleled luxuriance—unrestrainable, indeed, so that man can hardly make impression on it, and the land is left for the most part to the tenancy of wild beasts; or it may be that you light upon a spot at a distance from a river, and then you are in the midst of a rocky or a sandy desert. It is night there now, just as it is with us, but day will break at six o'clock to-morrow; the sun will cross the sky right over head; its burning rays have long since parched the land, so that nothing green is seen; no vegetable life is possible, and, indeed, excepting travellers in the hurrying caravan, no other life is possible.

What causes this variety of circumstance upon the earth—this heat so destructive in dry places, so productive of luxuriance by the river side—this pleasant variety of season to which we owe the produce of our soils in England—this Arctic severity by which the polar regions of the globe are locked up in almost constant winter. The distribution of the sunbeam on the rounded surface of the earth explains it all. It is evident that if, when the sun is in the south, we take two equal parcels of sunbeam, so to speak, *i. e.*, two portions such as would be intercepted by two round balls of equal size, the one falling on the earth at the equator, and the other at the pole, that the former will strike it from the zenith of the spot where it alights, while the latter will reach it from the horizon of its landing place; the latter will thus of course have travelled through a much greater thickness of air than the former—in fact, if the one passes through 50 miles of air, the other has gone through more than 600 miles of air; and so it is that while a certain portion of the sun's light and heat is absorbed by the air at the equator, twice or thrice as much is absorbed in our latitudes, and many times as much is absorbed at the poles. And then think of the varying quantity of surface which the remainder has to serve for! If the shadow of the ball be one square foot at the equator, with the sun overhead, it will be ten or more at the poles, with the sun on the horizon. The same quantity of sunlight which falls upon a given extent of ground at the equator becomes spread over many times that quantity at the poles, owing to the increasing obliquity of the surface there to the direction from which the sunlight comes. And thus the 80 (?) per cent. of solar light and heat which reaches the earth at the equator may be all accumulated on, say, one acre of land, while the very small per centage which alone is efficient at the poles is distributed or diluted over 10 or 12 times that extent. It is the same sun in all these instances, and the sunbeam ere it enters our atmosphere, or is so unequally distributed on our surface, is as hot and bright in each—but no wonder that its influence is so small in our part of the world and so great elsewhere—and no wonder that the variations in the quantity of light and heat which fall upon the earth, owing to the varying inclination of its surface from the sun, should show themselves in differences as great of all the plants and animals living on that surface. So that, travelling from the equator to the poles, and starting from the countries of the Palm, you come to where the Cotton plant and Sugar Cane prevail, and passing these you reach the Rice plant and the Maize, and after these the Orange tree and Vine, and after these the Grasses, such as Wheat, Barley, Rye, and Oats, and the pasture Grasses of our fields, and after these you pass through woods of Larch and Pine, dwindling as you go still further north, until a stunted Willow, or perhaps a bit of Moss or Lichen struggling through the snow, is the last specimen you find of vegetable life. On this journey, too, you have seen the lion and the tiger, the elephant and camel, the hippopotamus and crocodile, succeeded by the antelope and deer, the horse, the ox, the sheep, the hog, and these by fox, and wolf, and bear, until the seal, the walrus, and the whale, are alone found able to withstand the cold. It is the varying distribution of the sunbeam then, upon the surface of the earth, that calls out these striking differences of produce which travellers record. And as regards our own case, it is the varying inclination from the sun of this part of the surface of the earth as the year proceeds, owing to the earth's daily revolution being upon an axis inclined to the plane of the orbit in which its annual revolution is performed—I say it is owing to the varying quantity of sunbeam, as the year proceeds, which therefore falls upon a given space of ground, that the different seasons follow one another. If a permanent addition to this quantity should take place here, our present mode of agriculture would be impossible; we should have to give up Wheat, and Grass, and roots, and grow the Indian Corn and Cotton plant of the hotter States of N. America. If this quantity were permanently to lessen, England would become another Lapland; our trees and hedgerows would die; our Wheat and other corn and Grass would be replaced by the Mosses and the Lichen, on which the hardy reindeer could alone obtain a sustenance. The actual mode of life and industry then, which everywhere prevail, is the consequence of that particular share of light and heat which falls upon that spot. To the sunbeam do we owe all the main comforts of our dwelling-places.

And it is not to the needs alone of human nature that the sunbeam ministers, but to its capacity for pleasure too. It gives to man a dwelling fit for living in, and it abundantly supplies his store room with the necessaries of life, but it is also lavish of the ornament with which this dwelling-place is everywhere besprinkled. Where in artificial mansions will you find the beauties of that azure ceiling which it has spread above our heads? Or where the gorgeous decorations of that splendid curtain work with which at sunset, and at sunrise, this ceiling is surrounded? In what apartments of the wealthy do you ever see the walls adorned with landscapes or with portraits so beautiful as those of Nature painted by the sunbeam, or where the pattern of a carpet, equal in the richness of its colouring to that which it has spread beneath our feet? The sunbeam is God's agent in this work of beautifying earth. The beautiful in form has, of course, a being, independent of it—but all the beautiful in colour is itself the sunbeam. The light reveals the one, but, as will immediately appear, it is itself the other. One half of this round world is necessarily always hidden from the sun. The shape and outline of the beautiful of course are there, although unseen, upon that darkened surface; but in the absence of the light no colouring is possible. No sooner does the revolution of the earth upon itself, however, bring this shaded side within the light of day, than every gratuitous form receives its tint of loveliness. The blush that comes before the morning sun, the azure sky, the verdure of the Grass, the lovely pencillings upon the leaves of flowers, the lustre of the dewdrop, the brilliancy of precious stones, and of the rainbow, and humming-bird, and butterfly, and of the thousand-coloured things which everywhere appear, then first receive their being. Light is the very paint whose colours they exhibit, and in its absence they are colourless. How wonderful the picture which it thus is always colouring within the circle of the earth upon that hemisphere of day at which the sun is always looking! The western side, with the revolving earth, always coming into light; the eastern always going. The former bringing on the scene all life refreshed by sleep; the latter taking from it man fatigued with labour, to the shaded side for rest—and all within these limits covered over with the ocean blue, or on the land with all the colours of the seasons and the climates. At either Pole the white and blue of snow and ice; over one temperate zone, the pleasant green of spring; over the other the ruddy hues of autumn; and in the torrid zone the dark rich verdure of extreme luxuriance, contrasted here and there with the blankness of the burned up desert—the whole within a gorgeous framework, painted on the one side by the rosy dawn, and on the other by the sunsets of a thousand landscapes. God has given to us minds able to receive most pleasurable impressions of the beautiful, and He has given to us bodies furnished with the means of gathering most minutely, and conveying most exactly, these impressions to the mind which dwells within; and has He not surrounded both by scenes most exquisitely fitted to gratify these finer sensibilities with which He has endowed us. The Sunbeam is indeed as much the decorator as it is the fertiliser of the earth. *J. C. M.*

SAND AND ITS MASTERS.

UNDER certain conditions, the sands which underlie the waters of the ocean, and have been formed either by agencies no longer in operation, or by running waters and other existing phenomena, heap up dunes or hillocks, and ridges along the shore. This apparently simple process is thus analysed by Jobard: "When a wave breaks, it deposits an almost imperceptible line of fine sand, the next wave brings also its contribution, and pushes the preceding line a little higher. As soon as the particles are fairly out of the reach of the water, they are dried by the heat of the burning sun, and immediately seized by the wind and rolled or borne farther inland. The gravel is not thrown out by the waves, but rolls backward and forward until it is worn down to the state of fine sand, when it, in its turn, is cast upon the land and taken up by the wind." This ordinary action is, of course, greatly intensified whenever a storm arises from the sea.

The sand thus transferred from the control of the waters to that of the air, is urged forward by the breezes, and rolled up the gentle ascent of the shore, until plants, pebbles, or other slight obstructions arrest its course, and permit the accumulation of a heap. In this way an irregular line of somewhat conical hillocks is formed, which may reach a height of even 500 or 600 feet. By the same agency a second row of dunes is built up within the first, and then a third and a fourth, until these natural ramparts may form a belt of fortifications several miles in width. Thus does the ocean rear mighty and effectual barriers against its own incursions.

But "Forwards" is as truly the motto of the sand-dune as ever it was of old Marshal Blucher, and the hillocks of the shore may become as formidable invaders as the sand-waves of the desert. The blown dunes advance landward often at a rapid pace, and if not arrested in their course, fields are rendered barren, plantations buried, and the dwelling of man overwhelmed. Instances of this on a scale of alarming magnitude may be found on the coasts of France, Prussia, and Denmark, and the total area of the sand-dunes of Western Europe has been estimated at nearly a million acres. This enormous extent of sand-covered soil would have been far less had man learned to imitate Nature—a lesson which he has had to be taught in the bitter school of experience. Where human agency has not interfered, the sand-dune and its counterbalance, if we may so speak, may often be found side by side. The rampart heaped up by winds and waves needs but to be consolidated to become a benefit instead of an injury. This is accomplished by the quiet but mighty influence of vegetable life.

A goodly number of plants hasten to make the arid ridge their chosen habitat. Chief among them is the Sand Reed (Ammophila arenaria), provincially known as the Marram or Brent, a humble Rush, growing to a height of but a couple of feet, but sending its root-fibres to a distance 20 or 30 times as great beneath the ground, binding together the loose and incoherent soil. It flourishes only in an atmosphere charged with saline particles; and the seemingly barren sand is to it a rich and nutritive earth. Having accomplished its special work, that of arresting the drifting mass, this lowly plant withers and dies, and adds to the soil its quota of fertilising matter, preparing the ground for other races of vegetable organisms, so that at length "the wilderness" may "become a fruitful field," even by means of agencies apparently so inadequate. But man's interference with these natural compensations has furnished a singular and instructive chapter in the history of physical geography. The Sand Reed is found to possess various economic properties. Cattle feed on its leaves, and poultry upon its seeds, which have also been made into a coarse kind of bread; its fibres yield material for cordage, its roots are fitted for fuel, and the entire plant is used for thatching. With a degree of blind improvidence scarcely credible, the plants thus given to check impending injury to field and dwelling are recklessly torn up by the roots, to satisfy the necessity or convenience of the moment.

This practice has been continued for centuries; and there is reason for supposing that the present condition of the coasts of France, Prussia, and the Netherlands, already alluded to, is due to the destruction of dune-plants in past ages.

"Before the occupation of the coast," says a writer * to whom we are indebted for several of the foregoing facts, "by civilised, and therefore destructive man, dunes, at all points where they have been observed, seem to have been protected in their rear by forests, which serve to break the force of the winds in both directions, and to have spontaneously clothed themselves with a dense growth of the various plants, Grasses, shrubs, and trees which Nature has assigned to such soils. It is observed in Europe that dunes, though now without the shelter of a forest country behind them, begin to protect themselves as

* Hon. G. P. Marsh, "Man and Nature," 1864.

soon as human trespassers are excluded, and grazing animals denied access to them."

Among the dunes of our own island, those of Cornwall have acquired an interest in antiquarian eyes, from the disinterment some 30 years since of an ancient church and oratory at Perranzabulo, which the drift had hid for centuries. The Scottish coast also furnishes some remarkable deposits; in one of them lies buried what Hugh Miller graphically termed "an ancient fossil barony," with remains of a manor house, and its humbler surrounding cottages; and it would appear that the catastrophe thus geographically recorded was due to the wasteful ignorance of the former peasantry of the district, for an Act of Parliament of the time of William III. details the mischief occasioned by the "bad practice of pulling the Bent and Juniper," and strictly prohibits such destructive acts in future. Similar legislative measures have had to be adopted in continental countries. In one instance, however, the fault was certainly not with the people. King Frederick Wilhelm the First of Prussia being sadly in want of cash, a certain Herr von Korff, a devoted Bismark of the olden time, offered to fill the Royal purse to overflowing if he were allowed to remove something quite useless. The delighted monarch at once gave his Royal consent (as who would not to such a proposal?), and the loyal Herr proceeded to strip the sand-hills of the "Frische Nehrung" on the coast of the forests which clothed and consolidated them. He sold the timber, raised the money, relieved his sovereign, set free the sands to march inland, fill harbours and channels, and damage fisheries, and thus completed an enterprise which the State would now give millions to undo. It is only of late years that 'nations have woke up to a sense of the folly, and danger of an indiscriminate destruction of vegetable life. On the continent the nature, laws of formation, and means of control of sand-dunes have been carefully studied, and various reparative measures adopted, mostly at public expense. The natural vegetation of dunes appears to be remarkably extensive; those of Jutland having been found to yield above 230 species, and those of the Prussian coast two-thirds as many.

Practical men have anxiously investigated the best methods of stimulating and accelerating these growths, and both in the old and new world the Sand Reed and plants of similar habit have been extensively planted on moving dunes, and afterwards, when a soil has been formed, shrubs and trees have been established on the once shifting and arid wastes. The Birch in Denmark, the Maritime Pine (P. maritima) in France, and the Ailantus (A. glandulosa) in Russia, have been employed for this purpose with great success. Many thousands of acres have thus been reclaimed, and modern science has made some progress in repairing the mischiefs wrought by ignorance in days gone by. Thus, educated man asserts his superiority to nature by improving upon her processes. Yet, we repeat, the history of sand-dunes is but an elaborate comment on the truth that if we would make Nature our friend, when she seems most adverse to our interests, it must be by a reverent study of her laws—the laws of her all-wise Creator, and an humble imitation of her methods. *W. H. Groser, B. Sc.* (*in Science-Gossip*).

EMPLOYERS AND EMPLOYED.

[The following are passages from a lecture recently given before the Barnstaple Farmers' Club, by its President the Rev. Canon Brereton.]

He who undertakes to lift a substance of great size and weight will be anxious to secure for himself at the outset two advantages, a good foot-hold and a good hand-hold. And he who attempts to form and express a comprehensive opinion respecting one of the gravest and vastest subjects of human inquiry will similarly wish to feel sure that he is himself in a position to stand under the weight of the subject he grapples with, and also that he perceives the points of the subject through which most easily the whole matter may be grasped. Certainly the subject of "Employers and Employed" is one, the discussion of which had better not be attempted at all except under favourable circumstances, for it will not be affected in the least by any superficial handling, and even when fairly lifted will, too probably, slip from the hold into its old position, before one step in advance has been taken. If the position from which I feel justified, at least in making the attempt, seems favourable, it is due to the confidence with which the members of the Barnstaple Farmers' Club have, a second time, honoured my humble self as their President. In doing so they have, perhaps, vindicated themselves from imputations to which the farmers are somewhat freely subjected, of being, as a body, indifferent to all wider and higher considerations than those of the barn and stable. They have also enabled me, should I be worthy of the task, to show that the highest aspirations, I will not say of social science, but of social religion, with regard to the welfare of the labourer, are not inconsistent with the feeling and practice of the most numerous class of employers in this country. This double position which I hold, as a clergyman and as President of a Farmers' Club, not only gives me a firm footing in approaching this subject, but also enables me to select two prominent points, by seizing which, I may, perhaps, hope to grasp the whole question involved.

1. Wages.

I differ from those who in the present day take up the labourers' cause as that of injured men. I would rather congratulate our English labourers on the position they occupy, living in a country where labour is free, and capital, comparatively speaking, abundant. I do not, indeed, say that their condition may not be and ought not to be improved—far from it. But I think that their present position is one in which this improvement is not only attainable, but is actually taking place. And, believing that improvement makes most progress in those districts where there is a simultaneous amelioration of the whole state of society, and not distinctively of any one class, I rejoice to believe that on the whole a cheerful view may be taken of the condition and prospects of those who work for wages in this country.

But it is said that the labourers of Devonshire do not receive a fair day's wage for a fair day's work. It may be replied that the farmers of Devonshire do not get a fair day's work for a fair day's wage. There is about the same amount of truth and of injustice in both statements. That the value of the money wages in Devonshire is lower than the rate in other parts of England may be true, but that this money payment is supplemented (wisely or not) by other advantages is most certain. And it is not true to say that the labourer in Devonshire is a slave who has no choice or alternative as regards his employment and its remuneration. When we consider the facilities and inducements for removal and the extent to which the labourers for many years past have migrated, we may, I think, assume that the attraction which other countries and other parts of England may be able to offer to the labourer in Devonshire, has now for some years had its full effect; and that if the wages here are still comparatively low it is for two good reasons, neither of which imply any blame to the employer. The first reason is, that the supplementary allowances and privileges which are given in addition to the money payment by the labourers so far as to keep the balance between the lower money payment here and the higher wages offered them elsewhere. The second reason is that in Devonshire an interior quality and quantity of labour, as compared with other districts, is all that the employer can afford to pay for, and that the farmer gets, and all that he can be expected to pay for. It should always be remembered that there are two and only two ways by which wages can be raised without wrong to the employers or loss to the community. You must either shrink the number of the consumers, or increase the amount of available capital. This is as certain as that there is no way of supplying the deficiency at a feast except by dismissing some of the guests, or procuring additional supplies. It is only a miracle that can make the existing supply, if too short, stretch to the wants of the guests, and a miracle is not to be looked for as a multitude. If, therefore, the wages of a district are too low, and yet the population is not excessive, the only thing to be done is, if possible, to increase the capital, or wage fund of the district. We cannot do this by miracle, but we are bound to see whether there are any natural hindrances to this desirable result. Let us suppose that Devonshire were an island without any means of communication with other regions, and our state were that which I do now assume and believe it to be—one in which, by competition and open markets, a fair proportion of the annual produce of the labourers was given to the landlord as rent, and the farmer as profit. If in this case it was felt desirable that the wages of the labourer should be increased, without robbing the farmer or the landlord, then it would be absolutely necessary to do two things (1st), to pass a law to prevent the labourers from marrying, and (2nd), to wait till, by the saving of the owners of capital, that capital should be increased; for unless some check were put upon the labourers' increase and some time given for the accumulation of capital, it would be simply impossible, out of the ordinary resources and annual produce of the land, to raise the labourers' wages. But our Devonshire is no such solitary island, and as there is every facility by road, railway, and ships for the superfluous labourers to leave the county, there is no occasion to interfere with their disposition to marry. And for a similar reason it is not, I think, necessary to wait long for the accumulation of capital, for the same facilities that are to be found for an outflow of labour are to be found also for an influx of capital, only in both cases inducements as well as facilities are necessary to produce an effect: as the labourer can only be induced to go, but not to come, by the prospect of better wages elsewhere, so it is necessary to tempt capital here by a prospect of good interest. And, therefore, the true question to be considered by those who are in earnest in wishing an improvement of wages, is this—Will the present owners of capital find a profitable profit for an increased outlay? Happily this question is one that may be considered without any sore feeling, or bad blood, or question of wrong and robbery. But certainly on the answer to it, beyond all others, depends the prospect of legitimate improvement for the labourer, but not for the labourer; and because that answer must be given practically by those who now occupy the land, therefore it is that I hold that the interests of the employed can only be promoted (except, indeed, by revolutionary violence) through the settled conviction and general good will of the employers. If there are sufficient reasons to persuade the present occupiers of the land that it would be remunerative to lay out more capital upon it, and to employ more labour, is a question well worthy of serious attention and discussion in this room. At present, I only wish to impress upon all that this is the only direction in which any considerable improvement of the labourers can be sought—that is, not by paying them more for their present work, but by being prepared to offer more money for more work and better work. A uniform and customary rate of wages is the resource of the lazy and the idle and the diligent falsely and mischievously on a level. Many a 30s. that is now paid in equal sums to three labourers for their hire would be more profitable to the employer, and much more beneficial ultimately to the employed, if one of the party found that he had truly earned a hundred pounds, and another a pound. But this supreme evidence implied in such just apportionment requires no little diligence, courage, and experience in the employer; and this again brings me to repeat that it is through the improvement of the employer that the employed will receive most real and lasting benefit. Thus is the old fable of the dividing upon the farmers the blame of the low wages of the labourer that I am only confirming the grounds of their blame; and that when I say that improvement of the employer means improvement of the labourer, I, in fact, condemn the farmer implied in such assertions as they do by direct indictment. But it is not so. They, by their blame, impute a wrong done—an actual injury inflicted—by the farmer upon the labourer, and to this accusation I believe the farmer may plead "Not guilty," and if the case be inquired into before a competent tribunal of reason and justice, he will, undoubtedly, be acquitted, both by the natural and from the facts of the case. By the nature of the case, the farmer cannot give less than its value for an article for which the market is open; and, according to the facts of the case, it will appear that the labourer is content with his present wages, partly because he is conscious that his work is not of the hardest or of the highest value; partly because these wages, beyond their money value, imply privileges and attachments which he is not prepared to surrender. Among other advantages, this is to be noticed. Owing to the numerous farms in Devonshire, and the very graduated rise from the small farms to the large, there is no bar, as in other districts, to an industrious, intelligent, and spirited labourer becoming a farmer, and certainly, if I were a labourer, I should estimate this chance of promotion as an equivalent for any deficit in money remuneration. I would rather receive 16s. where I and my children were not condemned to remain always in the bottom class of society, than 20s. where a social rise was impossible. But as another consequence from this state of things, not only may the labourer in Devonshire hope to rise and become a farmer, but he is, or may become, even as a labourer, socially connected with the farming class, and not infrequently a sharer and inheritor of the farmer's capital. I am not sure that this close connection between the employed and employing classes is, in all respects, an advantage to the farmer, though I have no doubt that it ought to be considered a very important advantage to the labourer. The same holds true of smaller and larger dues by which the labourer may rise may be the means through which the farmer's family too readily descends. But this is not now the point. The fact is, that the agricultural labourer in Devonshire enjoys advantages and opportunities from this connection between the two classes which must always be taken into account in estimating the equivalents he receives for his labour. The same state of things modifies the opinion we should form about the allowance of food by which in many cases wages are supplemented. Where there is much fuss, fussing, and even family connection, such things assume a different aspect, and ought not to be compared to the infamous truck system by which some employers of labour drive a trade out of their labourers' earnings before they pay them. On these grounds, I believe, the Devonshire farmer may stand acquitted of the charge of wrong and injury done to the labourer in many conditions. Among the others it will mention two that seem to me most important. First, increased confidence in the security that the owner of the land may be able and willing to give to the occupier, that the capital which he, in the shape of labour and manures, might put into the natural soil, will remain his own. This is a first condition of any increase in the proportion of capital to the acre, and the second condition is, I believe, the same in principle of what is a new principle in agricultural economy, one which is only just presenting itself for consideration, and remains to be perfected, that is the principle that, owing to the facilities and cheapened conveyance, the corn produce of other countries may be relied upon as an economical food, not only for our people, but for our cattle. If this should prove to be the remarkable and unexpected result of recent legislation and improved communication, then I do sincerely believe that we have before us a wonderful opening for the extension of our agricultural employment in England, and especially in this great cattle-producing county. The great barrier between agriculture and manufacture will then be broken down. If we do not bring the labourers to the towns, we need not part with any more, for we shall be able to employ all who remain and their offspring. And it is possible that the great towns of the north may yet be balanced by the thriving populous villages of the south. The opinions, then, which I venture to put before you concerning the labourer's wages are briefly these. No body of men could be better fitted than yourselves to endorse or refute them. 1. That the farmers have neither the wish nor the power to treat the labourers as slaves or to defraud them of their fair earnings. 2. That if the money earnings of the agricultural labourers are lower than in other districts, they have compensating advantages that make an equivalent; due account being taken of the shorter hours and frequently inferior work which the Devonshire labourer, as compared with other districts, is accustomed to return for his pay. That wages cannot be legitimately raised but by more capital, and that capital is only increased by the confidence felt by the employer. That this reduction of the rural population is considerable, may be shown both by the census and by the unanimous evidence of all persons acquainted with the state of the labour-market.) 4. That the second method of improving wages, by increasing the supply, that may be effected by emigration, I think, while it is the only method through which any real improvement can be effected, yet involves questions of risk and profit too serious to be hastily decided—questions which may be fairly started from philanthropic or other points of view, but which can only be practically settled by the experiments and observations of those who occupy the land. And as a corollary to these opinions I would lay down these axioms: 1. The true friend to the labourer is the improving farmer. 2. The greatest enemy to society is he who sows distrust between "Employer and Employed."

2. Cottages.

And now let us shift our attention from the point of wages to that of the labourer's home. And here I know that the instinctive feeling of all present will be, if I may metaphorically express it, to take off their hats—to acknowledge that they are entering a region within which they have no right to intrude, and only ask to be admitted as friends.

In his own house the lord of the cottage is as much to be respected as the lord of the castle; but I am much mistaken, and have lived in agricultural districts for many years under an extraordinary delusion, if the ordinary visit of the employer is not considered an intrusion by the employed; if even the squire or the clergyman are received with more cordiality in a cottager's home than the farmer. And let me ask, what interest has the farmer in the discomfort of the labourer? What pleasure can he have in seeing those houses untidy, unhealthy, indecent? Is not his interest, are not his wishes all the other way? For what do clean, wholesome, respectable houses indicate? They are the outward visible signs of inward virtue and happiness, of industry, of temperance, of honesty. And what farmer is there who does not feel and say so when he wishes to desire, to profit, or to think that in the long run he can profit by the laziness, and drunkenness, and dishonesty of those to whom he must entrust the execution of his plans, the cultivation of his fields, the tending of his stock? What right, however, have I to speak of any English house as otherwise than clean, wholesome, and respectable; or of any English labourers as lazy, drunken, and dishonest? Alas! the right of too palpable facts, of too common experience. And in the face of these facts, and in the light of this experience, I cannot be content with expressing a conviction that it is not the wish of the employers that these things should be so; but I shall be, I believe, only carrying out the wishes of those employers if I rise the question—In what most practical manner can the employers, as a body, enable the employed, as a class, to improve the neglected state into which too many of them have fallen? Permit me then, gentlemen, to suppose the case of one of yourselves with the friendliest feeling visiting the cottage of one of those you employ. Many things that perhaps would be noted at once as grievously shocking by a visitor unaccustomed to real rural life would not strike your attention at all, or if pointed out to you would not seem to you any fit matter for compassion or blame. A low roof, a lime ash floor, a rude staircase, a cob wall, you

would know to be in certain situations the tokens, not only of a wholesome, but of a comfortable home; and even scantier sleeping room than prevails in model houses would not seem to you so necessarily connected with indecency and immorality as many speakers and writers on the subject pronounce. Nor you would know that whatever might be the case with bodily health, yet decency and morality do not depend upon cubic feet or partition walls; but that virtuous families are never too poor to provide sufficient screens; while no building arrangement where virtue is absent will ensure purity. Your visit, therefore, to your landlord's cottage would not, I am well aware, produce in you at once the feelings of disgust and indignation which many express at the ordinary abode of the English labourer. If in your visit you found the inside of the cottage clean, the children healthy, the wife busy, and perhaps, the grandfather or grandmother watching, one the pot, the other the infant, you would be very little disposed to pity the inmates or condemn the home. You would not notice or look for many of those defects which a sanitary inspector finds it his daily duty to investigate, and report to your Board of Guardians. But if, instead of cleanliness and health and industry, you were to find your labourer's house filthy, his children diseased, and other indications of wretchedness, I am confident that you would wish very much that the cause of such wretchedness could be lessened or removed, and you would be disposed to listen with attention to any one who could at all point out any reasonable and hopeful means of amelioration. And there is one principle which the instincts of your own profession would peculiarly recommend to you, viz., that those seeds of evil to which so many homes owe their wretchedness should, like injurious weeds, not be merely smothered and suppressed, but searched to their very roots, and by complete and persevering exposure destroyed. Now the very point which in a happy home—I mean the healthy and the most comfortable of wretched home—I mean the utter unfitness of the house itself, and I must acknowledge I so far agree with the outcry of the day as to be convinced that in far too many instances the wretchedness of the inmates is to be traced to, or at least is inseparable from, the utter unfitness of the cottage to be a human abode. Where this is the case the employer, who would be his labourer's friend, may in many cases be so in a quiet and effective manner. An honest representation to the landlord of the true state of the case will not often be unattended to, when it comes from the employer of the labour on behalf of which the cottage was erected or is maintained. There can be little doubt that in many cases the landlord or his agent would have pleasure in responding to the appeal of the tenant; all the more if they felt that it was disinterestedly made for the sake of improving the labourer's condition, and not merely to throw upon the landlord some share of the employer's own obligation. There are other cases in which the cottage of the labourer belongs to owners on whom the employer has no claim, and who, perhaps, will not listen to any considerations of fairness or generosity, who have either no motive or no means to make their property more habitable. But even in these cases the employer can with less invidiousness than almost any man bring the power of public authority to bear. It might be a very false step for a clergyman or a medical man to become an Inspector of Nuisances, except in wilful cases when they are concerned with whole communities; but this objection would never apply to a farmer pressing the case of his own labourer's wrongs.

But after giving the utmost allowance to the argument that a bad house makes a bad home, no man who has had much experience of the more favourable aspects of the English labourer's home will hesitate to look to other causes of mischief. For, improve the houses as we will, unless other things are improved, we shall still be far from our wishes. Is all as it should be as regards those public and civilizing influences that ought to bear upon the labourer's own character; and so upon the comfort of his home? How about his education? his religion? how about his amusements and his friends? how about his shops and purchases? Is there not room in some of these things for the employer to be a friend to the employed—for the master to do good service to his servant?

[Mr. BRERETON concluded with a discussion of the political aspect of his subject, and of the possibility of a political solution of some of the difficulties surrounding it.]

DISCUSSION.

Mr. ANDREW (Park Gate) moved, "That this meeting cordially approves of the sentiments contained in the excellent lecture the President has just delivered, and would particularly impress the importance of paying wages according to merit, and that more attention be given to the improvement of labourers' cottages." He highly approved of the principle of making a distinction in the remuneration of the skilled and unskilled labourer; the better class of men would thus get better wages, and the stigma thrown on agriculturists as a body, that they did not sufficiently pay their labourers would be removed.

Mr. F. MAUNDER thought the lecturer's suggestion, that the employer should take an interest in the cottages of the labourer, and use his efforts to procure from the landlord any improvement, was a most excellent and important one, and he was sure that it would be well received by the agriculturists of North Devon.

Mr. JOHNSTON would like to be informed on two points, viz., whether there was any difficulty in obtaining the labour required by the agriculturists, and, secondly, whether, in the opinion of those gentlemen present, the wages they gave to their labourers were as much as they could afford? Now, he would tell "what had occurred on the labour question was in a colony where he resided for the greater portion of his life—what made the bulk of the emigrants, after a short experience, discontented with their new position and wish they had never left England; and that was the want of education for their children. Many were pleased, on leaving, on removing to a country which was on the borders of savage land, their children would take a step nearer to barbarism. Another thing which made the colonists discontented with their position was the want of medical advice, and it led him to suppose that if the poor inhabitants of this country could obtain greater facilities for attendance when they were sick, and if also there was a certain provision made for them when they became old, it would have very great weight with them in balancing whether they should quit the country or not.

Mr. WM. THOMPSON remarked that if any public works had been started in this neighbourhood they had always found a large number of labourers seeking to be employed—a proof in itself that there was labour abundant in the country; and if labourers were not so abundant here, we should not hear of wages being lower than in any other part of the country. There was a want in the country, however, for skilled labour. It appeared to him that if any improvement was to be made in the condition of the agricultural labourer here it must be by some system to be adopted among the farmers of doing their labour by task-work, which would enable the skilled man to earn a larger amount of wages than he now did.

Mr. J. B. ROCK said he recollected that about the year 1838 the very best labourers in this neighbourhood earned 10*d.* a-day, whilst provisions were quite as dear as now. A few years after that, they rose to 1*s.* 2*d.* a-day, and after the establishment of the Poor Law Board and the erection of union workhouses to 1*s.* 3*d.*, 1*s.* 4*d.*, and upwards. It was his opinion that the condition of the labourer, so far as wages and living went, was better now than it ever had been before. Years ago he had ground thousands of bushels of Barley for human food, but they had not heard of such a thing for the last 15 years. The labourers now ate as good bread as the farmer or the squire of the parish—that was to say, if he was industrious and economical. Then there was another thing that had been done for the labourer during the last few years. They would find in almost every parish a charity-school where the children were taught sufficient to enable them, if they had anything like thrift or talent, to get on in life. There was another fact when they looked back to the time he spoke of, there were no railways to bring such exhibitions as the Bath and West of England and the Royal near to us, and the people in the west were isolated, and had not the enjoyments they had now. Now there were cottage-garden and other exhibitions, whereas then there were the village revels, where the men tore the flesh off each other's back like wild beasts, and fought like demons. That was a bad state of things, but it was very different now. The mechanic was better educated, better fed, quite as loyal and more so, and, he believed, contented, with but few exceptions. While they had been making progress in these things, there was one thing in which they had stuck fast—the labourers lived in the same cottages which had been erected hundreds of years ago. He maintained that it was the imperative duty of the landlord or the owner of the parish to see that this was no longer allowed to continue; and he thought it was the duty of the vicar of the parish or the tenant made proper representations as to the actual condition of the cottages, the evil would be speedily remedied. In his opinion, this was where they ought to begin, if they wished to improve the moral tone of agricultural labourers as a class. Every house ought to have at least three bedrooms—one for the father and mother, one for the daughters, and one for the sons; then some sort of self-respect would be engendered. Not only were the cottages in a bad state, but the farm-houses were worse. Some of them had stood for three or four centuries, and they were built in most unhealthy situations, where no provision whatever had been made for drainage. It behoved the landlords to provide more decent accommodation for their tenantry.

The CHAIRMAN, whilst admitting the advantage of putting out a few prizes, pointed out some of the difficulties that presented themselves. There was the want by the farmers, for instance, of a system of comparison, in order to be able to satisfy themselves and the labourers that certain work was executed in a superior manner. There was also another point worthy of consideration—viz., whether early education could not be brought to bear on the excellency of future labour. In some parts of England the greater portion of the work was done by what were known as gangs of labourers; but the evil of this system was that the gang-masters were often persons who, although they were brutal in their work, were not fit to have under their control a large number of young boys and girls. This system did not prevail in Devonshire, but he had always thought that it would gradually show itself, because it was economical and successful; and he was anxious to see if it was not possible to form a feeling in Devonshire that system by endeavouring whilst the labourers' children were still at school to employ them in some useful way that would serve them as a sort of apprenticeship to their future work.

ON THE UTILISATION OF SEWAGE AT CROYDON.

[Mr. Baldwin Latham, C.E., read a paper on this subject before the Sewage Conference at Leamington, from which we make the following extracts.]

THE population of Croydon at the present time is nearly 50,000, and the sewage is disposed of at four principal outfalls:—

Croydon Town, on the land at Beddington, 270 acres of which are under irrigation.

South Norwood and part of Addiscombe, on about 37 acres of land at Blind Corner.

Thornton Heath, on about 30 acres of pasture land and market gardens.

Upper Norwood, into metropolitan sewers.

I may mention that at the two principal outfalls, viz., Beddington and South Norwood, the sewage, before passing on the land, is strained to keep back the more crude portions, which experience shows are objectionable when passed on the land at the same time as the liquid portion. The solid matter thus kept back, after being mixed with street sweepings or earth and allowed to stand for a few days until quite solid and free from odour, is used on the land in conjunction with irrigation with great advantage. The reason for keeping back the solid matter is principally to guard against nuisance, as such matter lying on the face of an irrigated field, and exposed to the action of the elements, would become a nuisance until absorbed or deodorised by the soil; there is also another reason, which is, that solid matter in a crude state, as it exists in sewage, together with the action of water, is found to injure the produce. The liquid portion of the sewage, containing all the matter in solution, and much finely-divided matter in suspension, after leaving the filter in which it has been strained, is brought to the head of each field by a channel. At the Beddington outfall the channels are all open, but at Norwood the principal channels are covered in: earthenware pipes are used for this purpose; and the sewage is afterwards distributed by open channels or carriers.

The Croydon system is very simple and most effectual, and may be carried on in various ways, according to the configuration of the land. The sewage can at all times be applied to the plant, for it never comes in actual contact with the plant itself; but runs in a thin film over the surface of the ground at the root of the plant. The result is that the sewage may be applied during all stages of the growth of the plant up to the time of cutting the crop, and it only need be withdrawn from the land a very limited period previous to the time of cutting. In carrying out this system it is absolutely necessary to prepare the land for the reception of the sewage, by carefully levelling it, so that no holes or uneven places may exist. An uneven place will certainly oppose the flow of the sewage; and if the sewage should be allowed to stagnate, owing to the unevenness of the ground, it will effectually destroy instead of invigorating the growth of the crop.

The sewage of Croydon varies in bulk from 50 to 120 gallons per head per day of the population.

In all works for the utilisation of sewage, simplicity is the great object to be attained, and it is surprising how Nature will assist the simple efforts to aid her in the fulfilment of her purposes; whilst on the other hand the most expensive systems, if not in accordance with her simple teaching, must turn out to be failures. I will now endeavour to show that the system of utilising town sewage, as practised at Croydon, is in unison with the known principles that govern the growth of plants; but to a mind trained under the present practices of the agriculturist, the presence of so much water as is contained in sewage is looked upon as baneful rather than of value, and its effects if poured upon land throughout the entire year are considered to be ruinous. The fertilising matter of sewage as applied in irrigation is principally in solution; now, as fertilising matter in this state is much more readily absorbed by the land, the plant has its food presented to it in a state ready for assimilation; the consequence is it grows rapidly, and as the period of its growth is greatly shortened, a greater number of suitable crops can be taken from the same ground in a season under the irrigation system than under the ordinary process of farm manuring. The obvious difference between the system of manuring with solid manures and with sewage is this, that the solid manures are applied to the land, while the sewage is applied more directly to the plant; in both cases the land is the medium of applying the nutriment that goes to build up the tissues of the plant, but if a given amount of fertilising matter in a dry, and also in a liquid state, are applied, the liquid manure is at once food for the plant, while delays must take place before the solid manure can be assimilated by the plant, for solid manure must be exposed to atmospheric influence until it becomes soluble, and then it must be taken into solution by water before it is food for the plant, so that it is quite obvious, all other matters being equal, that a greater number of crops can be taken from the same area of land under the liquid manure system than under the dry manure system, and which is equivalent to an increased area of land, but with this advantage, that there is but one rent or first charge upon the land.

Water alone has a special value as the medium of fertilisation, and the results the author has been able to derive at, from his experiments on extensive irrigation works in which water alone has been used, show that every thousand tons of water per acre are worth one pound sterling value per annum. Such is the enormous quantity of water that enters the roots of a plant, that common Grass with a moist soil will evaporate 10 tons of water per day, and if this rate is only carried on for half the year it gives 1800 tons of water per annum as the amount exhaled by 1 acre of Grass plants. If such is the amount of water requisite for the healthy growth of one or two crops of common Grass, how much will be exhaled by the plants on a sewage irrigation field where four, five, or even six crops are taken in the season?

It is generally supposed that sewage is not applicable to land throughout the entire year, and that the fertilising matter of sewage applied in the winter six months is lost: but this view does not accord with our experience in Croydon, for we find the purification as perfect in winter as in summer, and that we get the full benefit from the application of sewage applied throughout the entire year, which may be accounted for by the simple fact that the purification of sewage is due to the affinity soils have for separating the fertilising matter from the sewage, and holding it until required by the plant.

Clay soils have a much greater affinity for fertilising matter than porous sandy soils, and it is partly due to this property that clay soils excel in productiveness any other when treated with sewage. For utilising sewage the soil performs the three-fold action of extracting the fertilising matter, the filtering it for the food of the plant, and lastly, retaining it until required for the use of the plant. That this is the probable explanation of the process may be gathered from the fact that clay soils, though less mechanically absorbent, by having a greater affinity for fertilising matter than sandy soils, purify sewage more effectually, and produce better and heavier crops. Again at night, when the growth of the plant is at rest, and yet the circulation of the sap is going forward (being kept up by the process of evaporation from the leaves of the plant, and the capillary attraction of the roots), it is found that the guano matter prepared in the soil is partially evaporated from the plant, which would go to show that it has been fitted for it, and only needs the active property of light to properly utilise it. Again, probably the best proof that the soil attracts and retains the fertilising matter of the sewage is found in the fact that the first crop of the season on a sewage-irrigated farm will nearly equal in weight one-half of all the remaining crops of the season; which shows that the fertilising matter stored in the winter has been made use of by the plant in the spring.

The produce of the sewage-irrigated farms of Croydon, unlike that of ordinary farms, is always in a state of growth, not quite so active in winter as in summer; yet at no time can there be said to be an entire cessation of growth. This in a great measure is due to the temperature of the sewage, and also to the effects of its motion over the surface of the land. The value of the temperature of the sewage cannot be over-estimated in a country similar to this, in which excessive changes of atmospheric temperature often suddenly take place which injuriously affect both plants and animals. The value of the high temperature of sewage is more particularly demonstrated in the depth of winter, and during long and continued frosts; and it is rather a remarkable coincidence, that when the greatest degree of temperature is required the sewage possesses it; that is, the temperature of sewage has been found by the author to increase with the period of duration of frost. This is probably owing to the stagnation of surface water, and also to the habits of the people, as

much less cold water is used in the depth of winter than at other times. So great is the value of temperature, that a crop under sewage irrigation may be seen growing even at the time of severe frost. The author, from an experiment made during the winter of 1864 upon the irrigation fields at South Norwood, and carried out during a period of severe frost, was enabled to cultivate a crop of Rye-grass, which was only sown in the early part of the month of November, and when measured at Christmas the same year, was found to be 6 inches in height, and then growing luxuriantly. During the following year six crops were cut, the last of which was within one week of Christmas Day, 1865.

The 1st crop measured	..	..	35 in. in length.
,, 2d	,,	..	40 ,, ,,
,, 3d	,,	..	42 ,, ,,
,, 4th	,,	..	32 ,, ,,
,, 5th	,,	..	24 ,, ,,
,, 6th	,,	..	14 ,, ,,

Grand total 187 inches, or 15 ft. 7 in. in height, which realised about 40*l.* per acre, or when calculated by the inhabitants contributing to the sewers, the money received for the produce was equal to 6*s.* per head of the population. During the present year, five crops have been taken from the land and have realised equally good prices. Crops nearly as good have been taken for six years from the sewage-irrigated farm at Beddington.

The soil at Beddington is sandy upon a gravel subsoil, while at South Norwood the soil is clay. Prior to the application of the sewage to the clay soil at Norwood, it would not pay to take the land for ordinary farming purposes at 20*s.* per acre; but since the application of sewage to it, the Local Board of Croydon have had an offer from Mr. Cousins, the present tenant, which shows that he is willing to give 16*l.* per acre rent for the land, and sewage for a term of 12 years.

The great result to be arrived at in the utilisation of sewage is the prevention of the pollution of rivers—in short, the purification of the sewage before being turned into any stream; and upon this head the results are most satisfactory. In the case of Croydon, the sewage of that town, after being utilised, positively contains less total constituents than some of the water furnished by the public companies to the metropolis. The sewage, after passing over the land, has been found to contain the following amount of foreign matter:—

	Inorganic grains per gallon.	Organic grains per gallon.	Total grains per gallon.
October	23.40	2.40	25.80
November, after sharp frost	20.80	2.77	23.57
Mean	22.1	2.58	24.68

In arriving at a correct conclusion as to how much sewage remains in the water, it must be borne in mind that all water that has been in contact with earth, more or less, takes up some of its constituents, and thus a certain amount of matter present is due to the natural property the water has of dissolving and appropriating the elements of the soil, so that it is only reasonable to conclude that water taken from the soil of a particular district, and allowed to pass over or through that soil, would not purify itself, but would probably take up more of the constituents of the soil. Testing the sewage after purification in this way, by comparing it with the water supplied to the town, it will be shown at once when excess the sewage possesses over and above the water of the district. The following is the result of the analysis of the public water supply at Croydon:—

Inorganic Grains per Gallon.	Organic Grains per Gallon.	Total Grains per Gallon
20.02	1.09	21.11

EXCESS IN SEWAGE AFTER IRRIGATION.

Inorganic Grains per Gallon.	Organic Grains per Gallon.	Total Grains per Gallon.
2.08	1.49	3.57

The excess of constituents in the drainage water after purification must be reduced, for the drainage water represents a much larger volume of sewage; for in passing over the land a quantity of water is evaporated, which tends to condense the impurities that remain.

From experiments made by gauging the water flowing on or off the land at Croydon, a difference of 20 per cent. was often found; assuming that half this difference was due to evaporation, it tends to show that the effects of utilisation practically perfectly purify the sewage.

As to the effect of the utilisation of sewage on the public health of the town, it is quite clear that no ill has resulted from it; nor have any persons living in the neighbourhood been affected with any particular disorder in consequence of the close proximity of the works; in fact it can be clearly shown from an examination of the mortality tables of Croydon, that Norwood has been healthier since the irrigation works were established there than ever known before.

It has been alleged by some persons that the produce grown on irrigated fields is unwholesome for cattle, and unfit and incapable of being made into hay. The following letter on this subject, which has been addressed to me by Mr. Cousins, the tenant of the irrigated ground at South Norwood, in reply to some objections of Mr. Bardwell, may be of service:—

Selhurst Road, Croydon, Sept. 29th, 1866.

Sir,—I am led to write these few observations from having noticed a letter in a Norfolk paper written by a Mr. Bardwell, in which he runs down sewage irrigation wholesale; and as his observations are very wide of the truth, and must arise from a very imperfect knowledge of what he is talking so loudly about, permit me to give you my experience as occupier of the Norwood irrigation, Croydon. I cut my Grass several times a year, winter and summer, and it is preferred by cattle to any other; and as they milk better, and are in better condition than when fed on anything else, I sell to all the cowkeepers in the neighbourhood, and they evidence like it, as well that I have already had numerous inquiries from them for new hay.

I feed all my horses upon the hay in winter, giving them nothing but a handful of Beans, and one horse, by way of experiment, has never had anything else, yet they are fat, healthy, and work hard. Last year I milked 90 cows on nothing but the Grass. They milked first-rate, and when they went off their milk I gave them half-a-bushel of Swedes per day with the Grass; upon this alone they fatted better than I had ever before experienced. To another lot I gave 7 lb. of cake and a bushel of Swedes per day with upland hay, and they did not do near so well as those fed on sewage Grass.

As for the meat being tainted, and so on, I must say, from a large experience as a wholesale and retail butcher, together with my practical farming knowledge, that nobody but a penny-a-liner would write such bosh on sewage irrigation farming. I am, Sir, your obedient servant,

SAMUEL COUSINS.

B. Latham, Esq., Town Hall, Croydon.

In a financial point of view, the results at Croydon have been most successful; in fact, at one time, the Croydon Local Board were spending money in unsuccessfully treating the sewage by deodorizing with chemical agents at the rate of nearly 3,000*l.* per annum; but when they abandoned the deodorizing schemes, and adopted the natural process of utilisation, they at once made a profit. The results achieved at Croydon can be accomplished in other places; yet the process may not always yield a large profit, but generally will be found to give a fair rate of remuneration.

In reply to questions, Mr. LATHAM said it was no doubt difficult to find customers for the large crops of Grass produced by irrigation, but he thought that would in due time be overcome. They used to be told they would never be able to grow crops at all; but now the difficulty was they grew such crops that they could not tell what to do with them. They had been trying the experiment of making hay of the Grass by passing hot currents of air through it. They found they could make hay by that means in from one and a half to two hours, at a cost of 12*s.* per ton. With regard to the engineering difficulties of the question in regard to towns where the sewage could not be conveyed to the land by gravitation, but must be pumped, he thought that was almost as good and cheap as the other; as there was a great saving in the pumping process over that of gravitation, in consequence of the greater distance which it was necessary to carry the pipes in the latter case, whereas in pumping, they could lay the pipes direct to the land. There were 17 acres of land at South Norwood being let at the present moment for 15*l.* an acre. It was an error to think because the land was grass and rank the sewage was destructive to it. The fact was, that only a particular kind of crop was applicable to the manure, and experience had proved that Rye-grass was the best. For three years in succession the land would grow that crop and absorb the liquid manure; at the end of that time the manure on the surface of the land should be carted away, and a crop of Wheat put down. After that it could be sown in the same year with Mangels, and then in the autumn of the same year it could be prepared for irrigation again.

Mr. BARRY said he was told the land under irrigation at Beddington yielded 50 tons per acre, but on visiting there he found it was only 32; and he learnt that the land had formerly yielded equally as much without it had been frequently alleged that the continuous process of irrigation had the effect of deteriorating the quality of the land.

Mr. LATHAM said the decrease in the quantity of the crop was owing to their having neglected to carry out the first principle of irrigation—that the land should be ploughed up every three years. The great object which must never be lost sight of in carrying out the irrigation system was to exhaust the rich soil so produced to the utmost possible extent, so as to prepare it for the continuous reception of the fertilising liquid. The irrigating operations were usually performed at Croydon that sewage received into a closet in the morning would, in from four to six hours afterwards, be actually laid upon the land. Mr. Latham further stated that it was imperative that land should be prepared for the reception of the sewage; if applied to ordinary pasture land without previous preparation, it would answer at all. At Croydon they originally applied the sewage to pasture land without previous preparation, and they were obliged to give it up.

Home Correspondence.

Thin Seeding.—At present, and so far as I can discover, this controversy has mainly been productive of words, without eliciting many facts in the interests of agriculture. The actual questions at issue for the production of practical results (and this consideration has been too much lost sight of) I take to be the following:—1. At what distance apart should a given number of Wheat grains be planted in the soil so as not to waste space, and without deteriorating from the healthy growth of each other? 2. What description of soil is most favourable to the production of Wheat? 3. What is the most expeditious means of sowing in accordance with the results arrived at in the previous questions? Nature, unerring in her operations, cannot be forced into an immediate gain in one direction without a corresponding loss in another; hence all experiments in farming should run in the direction of finding the maximum of Nature's powers in reference to any particular grain, taking soil into consideration, and then register the facts obtained as rules of agriculture for general guidance; whereas most Calendars of Operations are in the position of a physicion who can tell the proper time to take medicine, and the proper description, without being able to prescribe the quantity. A dozen grains of Wheat would better answer the purposes of experiment than half a peck; because the object being to find distance and condition of soil, observation could be better concentrated on a few grains, over a small surface, than upon half an acre. Impressed with the belief that Nature should be the basis of agricultural pursuits, and that success will follow only in proportion as her laws are understood, and that chemistry or artifice should only step in to correct or counteract local circumstances, it is my intention to request a gentleman favourable to agricultural education to deliver a lecture under this heading with a view to show that Nature, being always perfect and profuse when left to herself, it only remains for man to discover and remove local obstructions. If the foregoing conclusions are correct, experiment might be more widely extended, seeing that no capital is required for purposes of investigation. *H.* [Our correspondent is no doubt right in supposing that from comparatively small areas, carefully observed, very useful agricultural data may be obtained. Both Dr. Voelcker and Dr. Anderson have lately urged this in lectures on agricultural experiments. But it must be always borne in mind in experiments on the produce of plants thickly or thinly sown, that it is not a scientific but a commercial result that must guide practice. And the balance of profit per acre may be greater from produce which is only 16-fold a thick seeding than from a crop yielding 160 times a thin seeding. ED.]

Gorse.—I am 74 years of age. As a farmer and a cow-leech I have been practically acquainted with the use of Gorse as food for cattle since I was a boy. When milch cows are fed with Gorse the produce in milk and butter is always better than when they are kept on hay. Mr. Nicholas Burnett says he can vouch for that. My father died about 63 years ago, and my mother was left in the occupation of a small farm called Climelyn, in the parish of Bangor, with myself, then 11 years old, and two younger brothers. The rent of that place, though now 12*l.* 12*s.*, was only 1*l.* 5*s.* There was no winter fodder whatever for the three cows that my mother had, and hay was at that time sold at 2*s.* 6*d.* the cwt. My mother set me and my two younger brothers to gather and to chop Gorse, promising to each of us a new pair of shoes on May-day if we did our work well. We gathered the Gorse on the borders of a common; and with two mallets and an axe, which I fancy I see before me now, we chopped and bruised what was required to keep the three cows up to May-day. We received the promised new shoes; and the cows when turned out to Grass were in a far better condition than when they used to be fed with hay. My mother always afterwards used to say that her cows never yielded such good profit as they did the winter they were fed with Gorse by her boys. *T. Williams.*

Societies.

CHEMICO-AGRICULTURAL OF ULSTER: *Grass Lands in Ireland.*—Mr. W. R. Robertson read a paper on this subject:—In this country, at the present time, I know of no subject which has greater claims upon the agriculturist than the great increase of the acreage under pasture, and the gradual decrease, during the past few years, of the area under arable culture. From the tables of the Registrar-General we learn that in 1865 there were in this country 9,821,862 acres under pasture, and 5,648,120 acres under cereals, green crops, &c.—nearly 85 per cent. more under Grass than tillage. Let us for a moment inquire is there anything peculiar in the atmospheric condition of the country, or special in the circumstances of the Irish farmer, to account for such a large area being under Grass? At the present time it is the fashion to state that the climate of Ireland is only suited for the growth of Grasses, and to condemn all attempts at arable culture as only a waste of time and capital. That in some parts of the country you will find a climate more suited to the growth of Grass than for the ripening of the cereal crops I will admit; but because in certain localities we find a climate of this character, is the climate of the whole island to be condemned? Because in Westmoreland the annual rainfall sometimes reaches 65 inches, are the Durham, Northumberland, and Cumberland farmers to lay their land all down in Grass? A system of cultivation suited to one county may be quite unsuited to an adjacent one. The average rainfall varies greatly in different localities; in Dublin it is 26 inches, in Cork 39 inches, and in Londonderry 30 inches. The average annual rainfall alone I do not think affords sufficient evidence of the climate of a locality. While it is important to know how many inches fall annually, I hold it to be of far greater importance to know how, and in what manner, this rain is precipitated. In some localities, showing a large annual rainfall, the climate may be much drier than in a locality where the fall is not half so great—in the one case rain only falling in heavy showers, at long intervals, whilst in the other falling in light, but frequent showers. Again, in some localities it is found that rain only falls during the prevalence of certain winds, at certain periods of the year, leaving the remainder of the year comparatively dry. That the average yield of the cereal crops, grown on well cultivated soils, is as good in this country as over the greater part of England and Scotland, grown under similar conditions of soil and management, I think you will admit; and that our green crops, under similar circumstances, are not excelled in any part of the British Isles I think you also will admit. I believe that the physical condition of soils has a great deal more to do with this question than is generally supposed. Thus, whether the soil is porous or retentive, whether moisture passes off by gravitation or evaporation—if this moisture, instead of passing off by gravitation or drainage, has to be all evaporated into the atmosphere, at the expense of the temperature of the soil, it must follow that the ripening of cereal crops on such soils must be a slow process. The quantity of water absorbed by a soil is important to its fertility, in as far as it prevents it becoming too rapidly dry after rain. However, important as this property is, it must not be possessed in

too high a degree, but must allow of the evaporation of water with a certain degree of rapidity. A retentive soil, on becoming saturated with moisture during winter, lies too long in a wet and unworkable condition, in consequence of which such soils cannot be prepared and sown until late in the season. We may thus have in one locality a fall of 40 inches per annum producing less injurious effects than a fall of only 25 inches in another locality, where the soil is of a more retentive character. I need discuss this point no longer; for it cannot but be evident to all that to form any conclusions as to the suitability of the climate of this island for the cultivation of certain crops, we must know not merely the average annual rainfall, but also something of the manner in which this rain was precipitated, and the nature of the soils—whether porous or retentive, whether drained or undrained. Without such evidence no trustworthy conclusions can be arrived at. That there is anything special in the circumstances of the Irish farmer, rendering pasture land more valuable to him than arable, I have yet to learn. In fact, whatever special circumstances are at work, the result is more likely to be the reduction of the area under Grass than its extension. Capital of late has been made out of the statistical tables of the year 1841, in an attempt to prove that the great increase in the area under Grass is entirely due to the conversion of a large area of waste land into Grass land, and not to the reduction of the area under arable culture. That a large area of land has been reclaimed during the past few years I think you will all admit; but I doubt whether you will place any reliance upon calculations grounded on the statistical tables of 1841. Even had these statistics been reliable, it is important to know where the line of demarcation was drawn between Grass and waste lands. I fear in the present day many would be puzzled to know under what division to classify their land. That the difference at the present time between Grass and waste land is very slight, I think is proved by the following extract from a speech delivered in the House of Lords in March last:—"125,000 acres of land which last year was noted as waste, have this year been added to our Grass lands." Now, gentlemen, with this fact before us, need we longer puzzle ourselves to account for the great increase of the area under Grass? It appears, after all, but a very simple process—merely subtraction from one column and an addition to another; for gentlemen like you, versed in such matters, need not be informed that it is an utter impossibility to convert waste land into Grass, "worthy of the name of Grass," in the space of one year. I need not, however, go into the realms of uncertainties in search of evidence in support of my position, but would ask your attention for a moment while I quote from the admirable statistics of Mr. Donnelly for the years 1865 and 1866. Under the head "Grass Land in 1865," we find 9,791,633 acres; and in 1866, 10,002,058 acres: being an increase in one year of 210,425 acres of Grass. Now, in referring to the area of waste lands, we find there were in 1865, 4,529,446 acres, and in 1866, 4,442,782, being a decrease in the 12 months of 86,658 acres; but against this we have 210,425 increase in the acreage under Grass. Supposing these 86,658 acres of waste land were actually converted into Grass, we still have 123,767 acres to account for; and this can be accounted for in no other way than on the supposition that the acreage under arable culture has been reduced to this extent. That this is the true explanation is proved by an inspection of the cropping statistics of 1865 and 1866. In 1865 there were 5,648,403 acres under crop, and in 1866, 5,519,678 acres, showing a decrease of 128,725. Whatever, then, the great increase of the Grass was formerly due to, I think the fact cannot be denied that during the past year, at any rate, the increase is entirely due to the reduction of acreage under arable cultivation. I believe it is neither to the circumstances of the Irish farmer, the physical features of the soil, nor the climate of the country that we may look for the explanation of such a large area of the country being under Grass. I think it is rather in this direction the explanation may be sought—the unsettled state of the country, and the poverty and non-residence of the great body of the landed proprietors. In confirmation of this view, let me take you back to the statistical table. The value of the grazing stock in Ireland is 29,660,000*l.* If we have 9,821,862 acres of Grass, this will represent a capital of 60*s.* 4*d.* per acre. We must not, however, overlook the fact that this portion only maintains this stock, with the exception of sheep and young cattle, for one half of the year; for the remainder there being at least one million acres of green crops yearly at disposal. I feel, therefore, perfectly justified in putting the capital per acre of Grass at 2*l.* I will not trouble you with any inquiry as to what per acre we should place the capital on an arable farm. I think if I say 6*l.* I shall be certainly under rather than over the mark. If I am correct in my calculation, then it would appear that, during the past twelve months, by a conversion of 123,767 acres of arable land into Grass, a capital of nearly 500,000*l.* has been removed from agriculture. All along, you will have observed, I make this a proprietor's question. I do not believe the *bonâ fide* tenant has anything to do with the increased acreage under Grass. While the proprietor is laying down his hundreds of acres in pasture, how few tenants are putting their land in Grass! A large proportion of land held by tenants has been put into Grass during the past few years, but it has almost entirely been done through the agency of the landlord. You ask me what has the residence or non-residence of the landowner to do with this question? Well, it has this much: the landlord at a distance, unconscious of the great value his capital is, when circulating over his property, employing an abundance of labour, causing a good home demand for farm produce, thinks his returns of 5 per cent. on his capital sunk on grazing as good as his 5 per cent. on his capital sunk in arable culture; while on the area under Grass he only risks one-third of the amount of capital he does on the area under cultivation. You may ask why, if it is a risk, does he allow any of his capital to be thus employed? I answer, it is employed simply because he recognises that property has "its duties as well as its rights," and that he must make some show of his recognition of these claims. I think, however, the day is not far distant when this view of his duties will be exploded, and landlords will learn that to hold large areas of half-cultivated land in their own possession is not the way to benefit a country or a people; and that, if they are not prepared to invest their own capital in the proper cultivation of the soil, they will confer a great boon on their country, their tenantry, and themselves, if they will let it to those who, with capital, industry, and intelligence, are prepared to undertake the task.

BRAINTREE.—At the annual meeting of the Labourers' Friend Society the other day Colonel Western, who presided, said he should be glad to see landlords and tenants meet together to see whether they could not find some means by which they could bring about an extensive employment of machinery in this district. They had advantages there for such work which were not seen in many counties. Essex was a flat county, and most of the farmers held large fields, and he thought that considering the great difficulty they had in finding labour, and considering also the opportunities afforded to the labouring classes of getting better wages than it was the interest of the farmers to pay here, they ought to think whether they would not be driven somewhat into a corner unless they adopted some such plan as he had suggested for bringing machinery more into play. He thought also they might well consider whether they should not try to keep their labourers at home, by having comfortable cottages for them, and showing, as he had no doubt most of them already did, that they really felt an interest in their welfare. When he saw what was going on in this and other counties it seemed to him that the time was arriving when the cultivation of the land would be carried on under a different system than at present. Of course landlords must give long leases to make it worth the while of the tenant to expend his money, for it was utterly impossible to expect a man, who held his tenure on an uncertainty, to lay out any amount of capital.

Sir T. B. WESTERN, M.P., said: When he came down there to-day his first question was as to the number of candidates for the prizes and the opinions of the judges, and he was happy to hear that an old man in his employ had received a prize for long service. It was an unusually long service of 56 years and 2 months, and he was exceedingly glad to find there was another man who had served almost as long, namely 52 years, and there were some of 30 years, and other long services. One great benefit derived from these societies was the encouraging long services, more especially among agricultural labourers. It had been said the supply of labour was falling off, but what was the reason for this? Why did their labourers leave them? They left them because they could get better wages elsewhere, and if this continued, it would be absolutely necessary that they should supply their places by other means. As to the question of machinery, he should not enter into that, in the presence of his friend Mr. Mechi, who not only enlightened them by his speeches, but whom they also welcomed there with the greatest pleasure.

The CHAIRMAN gave "The Visitors," with the health of Mr. Mechi, whom they were always glad to see among them, for whatever might be their own individual opinion as to Mr. Mechi's theories, they could not but be sensible of the services he had rendered by his experiments, and his pleasant, genial speeches, to the cause of agricultural improvement.

Mr. MECHI said they were met there to-night on an occasion which occurred very frequently, he was happy to say, all over the kingdom. In times to come, when these societies were more fully developed, their influence on Agriculture would be immense, and indeed it was already very great. Well, passing from this to the condition of British Agriculture generally, which was a very large subject, he could only say it behoved them to endeavour to progress commensurately with the other great industrial occupations of the kingdom, and they knew this could only be done by the investment of a much larger capital, and certainly also by the investment of a considerable amount of intelligence. This of course implied that a great many old prejudices must be given up, and so far as his own personal position was concerned, he confessed he was not surprised that some 20 years ago, when he dashed into Agriculture with a number of mercantile principles imbued in his mind, he should have received a very large amount of opposition. It was now 25 years ago since he put up his first steam engine, which he believed was the first fixed steam engine in Essex. Next he began draining stiff, collapsing clays—not their hard chalky clays, but collapsing clays, which he was told would swallow his pipes and everything else; and then he went into garden cultivation, cultivating deep, not bringing up the bad soil to the top, but after it had been stubbed up leaving it to the influence of the air, that great fructifier of all soil. Then again he did not see the benefit of hundreds of ugly Pollards and large fences which took up a deal of land, and stood in the way of the plough. Was he to be told now that any one of these things was useless or unprofitable? Certainly not. He saw they all agreed with them, because they were now constantly practising them. He came to-day through a country where he saw a collection of Pollards such as he believed did not now exist in the county, and he said to a friend with him, a practical man and once the steward of a large estate, "What is the value of those great ugly Pollards, taking up such a space of land, and spreading their roots far into competition with the growing corn?" He replied, "They are not worth half-a-crown a-piece when they are cut down," and he believed him, for he remembered selling many for a shilling a-piece when he cleared a farm for his own tenant. Timber was a landlord's prejudice; but he (Mr. Mechi) did not want to deprive the land of trees in their proper places. He liked a good plantation in its proper place, for it was a refuge to those small birds which were so useful to them, and without which their crops would be destroyed by insects. But he could not agree with a little four, five, six, or seven acre field, where there were no end of gates for the landlord to keep in repair, and where the farmer could not plough the headland on account of the trees, and yet had to pay rent for all these, including half the roadway round his land, for the tenant could not be expected to prosper with such a state of things, and it would thus also be more difficult for the landlord to get a fair rent for his land. When he told them he had pulled down almost every fence on his farm, and had now 132 acres without a fence, except a small one beside a ditch, would they not agree that he was in an advantageous position compared to those who were surrounded by small fields with very large fences? He was able in this way to make it pay, and it was a very difficult question as they knew how to make farming pay. He was on a farm to-day, and was told by the occupier, a practical farmer, that he was doing very badly with the farm, for he paid a high rental, and had uncomfortable fences and small fields, and he was losing money by it every year. He named no names, but the spot was not a hundred miles from that place. Before he left this point let him say that there was one thing which must be done in agriculture if they wished to make it pay, and that was, that a larger capital than was now generally the case must be invested by both tenant and landlord. If he had made many valuable changes on his farm it had not been done without a large expenditure of money, and if they would produce more corn and stock they must invest more capital in the soil. He, with his modern ideas about farming, had come to the conclusion that if they wanted to make a profit out of the farms it must be by a very large addition to their live stock. With deeper cultivation, which could only be attained by using more horses or steam-ploughs, he could not farm his land profitably under a tenant's capital of 14*l.* per acre, but 16*l.* would be better. The capital of the United Kingdom was not more than 4*l.* per acre, and therefore there was room for vast improvement in this direction. There was one other point which their Chairman had already eloquently descanted on, and that was the increasing scarcity of labour. Labour was slipping away from them, and while the men were paid better wages and were better fed in other parts, it would continue to slip away. Statistics showed that the number of people employed in connection with agriculture remained stationary, or rather diminished, whereas in the manufacturing districts it was increasing from something like 15 to 18 or 20 per cent. This was very important to their interests as agriculturists, and it behoved them to see if they could not by some means retain the services of those men who were so necessary on their farms. Now came the question, What was to be done? and their Chairman had very properly said that the supply of good cottages was the first consideration, and if they regarded the health of the labourers and their families, he (Mr. Mechi) should say, good water secondly—and he was exceedingly pleased in going over the Maynard estate to find a pump of pure water placed against every cottage. By neglecting the health of the labourer and his family they would bring them on the parish rates, and these would become, insidiously but certainly, a great tax on the farmer, who had to pay them. There was another means which he hoped many of them had adopted for keeping their labourers at home, and that was paying them by piece-work. He had a character perhaps among his agricultural friends of being expensive, but he maintained, and he was prepared to prove, that the labour on his farm was done as cheaply as on any farm in the county of Essex. But he paid for everything by piece-work, and what was the result? They heard great complaints in the *Times* and other places of the low wages paid to agricultural labourers, but he rather thought that those complaints were sometimes grossly exaggerated, and though the weekly rate of wages was said to be 11*s.*, his men earned on the average, taking all circumstances together, not far short of 40*l.* a year, or 16*s.* a week. One great benefit of piece-work was having a large quantity of work done in a short space of time, while the men were also able to be better fed, and their physical condition was much improved, and they were able also to pay an extra shilling a week for a good cottage, instead of living in a tumble-down rickety tenement. The result was that these men did them a full amount of work for their money, and their physical and moral condition were improved by their earning more wages, without any deterioration or loss to themselves. He spoke strongly on this point, because he knew that by these means they would secure the services of men of superior power and judgment, and able to do a large amount of work. They might depend upon such men, and he might mention that many of his own men had been with him 22 and 23 years, and had dug the foundations of his new buildings, dug his drains, and everything. They were strong young men when they came to him, and piece-work would always bring them strong useful men, for men of that kind would of course go where they would have the opportunity of making the best of their own powers, of which they were conscious: and they might depend upon it that if they paid all their men alike they paid dearly for their labour. He had had no difficulty with his men excepting this year—when so many had experienced similar difficulties, and they then seemed to have the slightest possible idea that they were not so well paid as they might be. A very curious fact was stated the other day by Mr. Bright—he was not going into politics—about the ownership of land. He stated that the greater part of half the land in England was owned by 162 persons, and half the land in Scotland by 10 or 12. That seemed a monstrous proposition, but he believed it was quite true. He was visiting some years ago a great agricultural duke in Scotland, and after he had driven him about with two pair of horses all day he said to him, "Well, your Grace, how much land have you in Scotland?" His reply was, "I don't quite know, but taking water, and waste, and moors, and so on, something about a million acres, but my neighbour has a great deal more than I have." That was independent of his estates in this country, and therefore he did not at all discredit the assertion that half the land in Scotland was held by 10 or 12 individuals. But he did not think there was any disadvantage in this, agriculturally speaking, for he was bound to say that this very nobleman was among the foremost in improvement, not only in Scotland, but in England, and he was surprised at the amount of energy which he displayed in regard to agricultural improvement. He said to him, "Mr. Mechi, I have taken a large slice of the Government loan for drainage, and if they would have allowed me I would have taken all the money they offered, but they would not let me have it." He (Mr. Mechi) might add that he recollected that Scotchmen took the whole of the first Government loan for drainage, and the Englishmen who had let the opportunity slip took care that on the next loan a reserve should be made that only so much should go to Scotland, and a certain proportion to England. This only showed that their Scotch friends were somewhat sharper in the great matter of drainage than they were. The nobleman he had referred to was a most spirited and liberal landlord, and he said to him (Mr. Mechi), "My tenants beat me now." Now what a pleasant thing that was. He had heard of one large landlord who had improved his estate 25 per cent., and he only hoped the profits of the farming were such as to allow an equal percentage of improvement on the farmer's part. He had the pleasure of knowing many people with large estates, and he was bound to say the greatest improvements were going on in those estates. Let them look, for instance, at the Duke of Bedford's estate.

Every cottage there was a model one. His Grace gave long leases, and valuations, and did not interfere politically with his tenants, and the consequence was that the best class of men on his farms who were able to invest a large amount of capital, and the estate became of greater value, and the country generally was benefited by the large amount of money laid out, and the large extent of labour employed. For 23 years he had been talking about what some people called a nasty subject, but which he called a nice one, and he was glad to find that in that neighbourhood they had remedied their deficiencies in this respect, and the sewage of the town was applied to its proper object, the fertilisation of the land, and at Bridgmarsh farm, only 16 miles off, 150 men with a 20-horse-power engine were employed in merely making bricks for the new tunnel which was to come into Essex through the London sewage, and Mr. Otho, who was a large farmer, told him the tunnel would come through a mile and a half of his land, and he had made arrangements to take some, and possibly he should be a large customer of the sewage from London. There was another point also, which he should like to mention. He feared that a great calamity was likely to befall British manufactures and agriculture, and that to a great extent machinery and implements were likely to be rated. He understood that already a gentleman near that town, whose machinery was used for the purposes of manufacture, had been rated at 70 per cent., and in Essex he only knew something like 200 per cent., and it was quite clear that if this held good as regarded the implements of manufacture, it would equally hold good as regarded the implements of agriculture, and perhaps even their scientific friends who used the scalpel might be assessed. He concluded by cordially thanking them for the kindness with which they had listened to his remarks, and he would add that if he could do anything to forward agricultural improvement it would afford him the greatest possible pleasure. He believed himself that the most important work in England was filling the bellies of the people, and if they asked their manufacturing friends there whether they would go without coats or their dinners for a month, he was afraid the coats would suffer.

The CHAIRMAN next gave "The Vice Presidents," with the health of Mr. Toovey, Court-poft.

Mr. COURTAULD, in responding, said a certain section, he was sorry to say, of the radical press was very fond of crying down societies of this kind; and their arguments amounted to something of this kind—The landlord and the farmer, when they had been all the evening at the theatre for 30 years and found they had no further use for him, just before they turned him out either to mend the roads, or find an asylum in the union-house, brought him up, made a speech over him, and gave him a pair of breeches. Well, he thought perhaps there was a little sense with that speech in all this. He did not mean to say there were not hard masters in the agricultural world, as there were in the manufacturing world, but he was glad to think that such were the exceptions and not the rule.

FAVERSHAM, KENT: *Nov.* 14.—At the annual ploughing match this day a novel feature was exhibited, in a competition among steam ploughmen. It was mentioned at the subsequent dinner that William the Conqueror had said, "I subdued the inhabitants of other counties, but with the men of Kent I formed an alliance." Whether the agricultural implement makers can say, "we have subdued the farmers of other counties" in respect to the use of machinery or not, we cannot say; but it is plain from a report of the proceedings of this Society, which we have received just as we go to press, that they may say, "with the farmers of Kent we have formed an alliance."

This year's competition lay amongst 31 horse-ploughs, all of which were "turn-reist,"—4-horse teams with ploughman and driver to each.

In steam ploughing there were seven sets of tackle in competition. The Kentish men do not believe in "cultivation;" that is, the use of "diggers," or that form of scarifier termed a "cultivator." The ploughs were all of Fowler's patent. The windlasses and tackle were—five of them by Messrs. Howard, of Bedford; another partly after the Bedford system, and partly Fowler's; while the seventh was Fowler's complete, which includes the engine. The other six engines were all made by the well-known firm in connection with traction engines, viz., Messrs. Aveling and Porter, of Rochester.

No. 1 was ploughed by Messrs. Blaxland and Marten, of Faversham. They had a double-furrow plough and Howard's windlass, standing porters, snatch-blocks, and anchors, with Aveling's running porters on the ploughing side. This work was well done, but the "pitch" of the skates was not exactly regular, so that the furrows were not equally pressed. The quantity done on this piece was 3 acres 1 rood, per measure, the time 3 hours 55 minutes. There were seven men employed.

No. 2 was ploughed by Mr. James Lake, of Minster, with the same porters, rope, and anchors, but the windlass was fitted with Fowler's compensating brake. The plough was started for the first furrow, but the "pitch" of the skates had to be altered to be removed. These drawbacks caused so much delay that at 2.15 P.M. only 2 acres 1 perches were ploughed in 4 hours and 50 minutes. There were five men and two boys.

No. 3 was ploughed by Mr. Henry Pye, of St. Mary's, his engine being the same as was used at the Salisbury meeting in 1857, and it has passed through the operations of Mr. Fowler's ingenuity suggested up to the present clip drum. The anchor to which this engine worked is of wooden frame, and was also made by Messrs. Ransome for the Salisbury meeting. It has never been any expense, and although it is crude in appearance, it has left more of the soil level, did its office well. This tackle altogether worked well. The time here was three and a half hours for 3 acres 27 perches. This work was easily done by five men.

No. 4 was ploughed by Captain W. Gillow, of Woodnesborough, near Sandwich. Although the commencement of his work was not good, his man pulled himself together so well afterwards that the 3d prize was awarded for this work. The furrows were well turned; 3 acres and 20 perches were done in exactly four hours.

No. 5 was done by Messrs. Robert Neame and Abbot. This work was remarkably even, and the ends were so well carried out that the judges awarded for it the 1st Cup. It was done in 4 hours and 50 minutes, and the land measured 3 acres and 15 perches.

No. 6 was Mr Thomas Lakes, of Tong, Kent. This plough was an old wooden one, and one of the first made by Messrs. Ransome & Sims after Fowler's patent. It was fitted, too with Kentish mould-boards, or "reists." The work, was, however, capitally done, excepting that the furrows were "coupled," that is, two lay closer together than the others. The quantity done was 2 acres 3 roods and 5 perches in 4 hours and 25 minutes.

No. 7 was done by Mr. Mansfield. This was exceedingly good work, apart from the ends; but the headlands were ridiculously large, and the quantity done less than that for which was awarded the 1st prize. The judges said they were very loth to pass this work by without conferring on its executors the first honour, and it was only on the grounds of lesser quantity and inferior ends that they did so. The main part of the work was beautifully straight and regular.

The men who were the successful tackle had 7*l.*, 5*l.*, and 3*l.* awarded them respectively, and Mr Lake's engineer had 1*l.* presented to him for the excellent condition of his engine and machinery. Some of the engines travelled 32, 28, and 27 miles, drawing their tackle after them. Their owners were paid 5*s.* per mile for travelling expenses. Everything passed off without a break down or accident.

Reviews.

The States of the River Plate: their Industries and Commerce. By Wilfrid Latham. Longmans, Green, & Co.

The speech of the Rev. E. Smythies at the Farmers' Club last week was an opportune advertisement for just such a book as this. He told us that for 2800*l.* his son had obtained the occupation of about 22 square miles in one of the territories here described, and the ownership of the stock with which the occupation of that area could be commenced, namely 6000 sheep, 500 or 600 cattle, and 300 horses. And he read to us a letter in which the prospect of getting good fortunes in a very few years was confidently entertained. Mr. Latham, who has been long resident in the country which he describes, and who has been kind enough frequently to communicate of his experience to our columns, gives in detail his conclusions on this subject, and they appear to agree very fairly with the judgment at which Mr. Smythies' correspondent, after a much shorter stay, has arrived.

The very promising account which has been laid before the Farmers' Club will no doubt lead to many inquiries about the countries bordering on the River Plate, and Mr. Latham's book is just in time to answer them. It describes the country in detail; Buenos Ayres, the capital of it, its railways and industries; the aspect of the territory around it; the sheep and cattle estancias in which its agriculture is prosecuted; and in particular the business of sheep farming, giving full particulars of management. There are chapters on the utilisation of River Plate beef; on agriculture, or the cultivation of the soil of the country; and on the ample and profitable field which it affords for capital and labour. The book is intended for residents in the country as well as for intending emigrants to it. And there is much therefore on that true economy of management which is prescribed by science, which is calculated to instruct and benefit the resident agricultural population, as well as on the commercial aspects of their business which is meant for capitalists about to invest in it. It is the latter of the pages which the English farmer must study for the benefit of any son whom he proposes to send out; and he will find in them plenty of encouragement and instruction.

We shall from time to time give passages from Mr. Latham's pages for the purpose of keeping his work before our readers; and to-day we give an account of the great sheep estancias to which so large a part of his very instructive volume relates.

Farm Memoranda.

SHEEP ESTANCIAS NEAR BUENOS AYRES.—Sheep estancias are of various extents from half a square league to four and five or more square leagues. There are combined cattle and sheep "estancias" of very much greater extent; many proprietors count from 20,000 to 100,000, and in some instances a still greater number, of sheep in their possessions.

An establishment of this sort consists of an estancia house of more or less pretensions in size, round about which there generally are plantations of Paraiso, Acacia, Poplar, Willow, Mulberry, and some few sturdy "Ombú" trees; also in some cases Peach plantations, out-offices, sheds or "galpones," horse "corrales" or pens, and sheep "corrales." These "poblaciones," habitations, with their foliaged surroundings, stand out clear in the plain, and are seen for considerable distances. Travelling farther and farther out into the plain they become fewer and further apart. On different parts of an estancia there are erected the huts of the shepherds, with their "corrales," called "puestos" or stations, which, with a certain extent of ground, are allotted to the different shepherds or "puesteros" for the run of the flock under his care. For the maintenance of the "puesteros," the meat of a wether (capon) is allowed between three or four of them, the rest, tallow, and grease being set apart for the proprietor, and collected periodically. The "puestero" provides his own "Yerba" (Paraguay Tea) and sugar, and, if he indulges in the luxury, his own biscuit and salt.

Fuel he provides himself with from the stems of the hard Thistle, "bisnaga," or the excrement of the sheep, cut out of the corrales in solid cakes and dried, dried cattle droppings, and animals' bones. He makes his fire either in the open air, in the centre of his hut, or under a shed outside; he runs a long spit, "asador," through the meat, and sticks it in the ground with an inclination over the fire. There are many, however, chiefly foreigners, who show more refinement, and possess a table and chairs, fryingpan and saucepans, plates, knives and forks, and will set a benighted traveller, seeking their hospitality, down to a good stew, with rice and eggs, in addition to the customary exceedingly sweet roast or "asado," laid out on a clean table cloth, a cup of genuine congou or souchong, with ewe's milk, and the never failing "drop" of spirit to drive the cold or keep the heat out; and last, and best of all, a hearty English, Irish, or Scottish welcome. If there is a tidy "wife" in the cabin, a clean pair of sheets and a blanket, and a gay quilt to sleep under. In some rare instances, a "beautiful *fither* bed," brought all the way from the "Ould Conthry," will be produced for highly honoured guests, in which, if the temperature happens to range at about 80° Fahr., the perspiring guest is fairly smothered, and overwhelmed with the intended kindness.

The life of a shepherd in the camp is solitary enough: a man who does his duty should never leave his flock, until, at least, they are shut up at night; and then not for long. It is not always that a flock is shut up in the "corral;" in fine weather they are left on the "rodeo," a bare piece of ground near the house, to which they are driven to pass the night, where they have more space, are kept cleaner, and can rest perfectly quiet; in wet and dirty weather it becomes impossible, without serious prejudice, to put them into "corral," on account of the accumulation of excrements and mud. Under these circumstances, on stormy nights, the shepherd is required to be up with his flock, riding or walking round them ("rodeando" them), to prevent their driving before the wind and rain; in heavy gales there have been instances of large numbers being swept away, running before the blast, and, encountering a swollen brook, plunging head foremost into it, under the influence of the hindermost, and perishing to the last.

In the daytime, in a storm, they are very apt to drive, and especially in a dust storm, by which, occasionally, great losses and considerable inconvenience through the mixing of the flocks is incurred.

The ordinary routine of the shepherd's duties is to take out his flock of a morning, as early as possible in the summer time, while the dew is on the thirsty Grasses, and return with them at sundown, taking them to the natural drinking places, when there are any; and in droughts, on those establishments where wells are sunk for the purpose, to drinking troughs supplied by drawing water with what is called a "manga" (or sleeve), a long canvas bag, with a hoop at the upper end, and a rope at each extremity, so arranged that the "manga" fills (in part) and comes up doubled until out of the well, when the upper end or mouth is elevated, and the lower drawn out, shooting the water into the trough or drinking pool. The drawing of the water is done by a horse.

In the winter time, and especially while hoarfrosts and cold dews are on the tender Grasses, the sheep are not taken to the pasture until the sun is well up and the frost dispelled.

The events of the sheep-farmer's year are those of "señalando," or the marking, the cutting of male lambs, and the shearing.

All the men and women of the district are put in requisition for the shearing, for which they are paid per 100 head the usual price of 90*s.*, making, with the tying of the fleeces, a cost of about 1*l.*, or 2*d.* per sheep.

All districts possess their musical geniuses, "gaisanos," or country folk, who "strike the light guitar," and sing impromptu ditties. These gentlemen bring their guitars to the shearing, and, the work of the day over, a fire is lit in the open, the "asado" is put down to cook, and the "ting-ting" commences; laughing, chaffing, singing, and dancing are the order of the night, until the fires go out, and the parties stretch themselves out to sleep.

In the majority of flocks, there is no separation of young or old, and the rams run all the year round with the flocks exposed to the same vicissitudes; there are, in consequence, lambs the progeny of under-aged half-grown ewes, and aged and toothless ones; and though the lambing falls chiefly in the spring and autumn, there are more or less lambs dropped throughout the year: the rams, too, are put into the flocks at, or left in them from, an early age. These various practices are very great stumbling-blocks to the improvement of the sheep, precluding the weight of fleece, the soundness of the wool, development of the animals; a marked tendency—indeed a positive degeneracy—to delicacy, is the consequence, which a modification of system, practice, and the use of stronger and healthier rams will alone correct.

The true principles of breeding are little known, and less practised. On many establishments of some pretensions there is a flock of finer sheep kept at the estancia house for the purpose of furnishing rams to the other flocks. These sheep are of Merino origin, and certainly are as fine in wool as the average of Spanish Merino fleeces. These, though having a little extra attention, and in some instances sheds for protection, have been treated as breeding flocks in the same way as the others, all ages procreating and lambing, and all seasons of lambing. These fine-wool flocks have almost everywhere diminished in the weight of wool yielded, in some instances not averaging over 2½ lb. per fleece. From such flocks the rams for the cross-bred flocks (Mestiza flocks) have been drawn; hence it is easy to account for the general character and deficiencies of the wools of these countries; and it accounts for the still (compared with other wool-producing countries) small value of the individual sheep.

There are other estancias, on which a much higher class of sheep are bred, for the sale of rams. A considerable number of fine Saxony and Negretti and Rambouillet rams and ewes have been imported, the rams of which in most instances have been put into the Merino flocks with great advantage, though by no means as the rule, with all the benefits that would have been attained on a better system of management. The same practice, as described, as that with the Merino flocks has been followed with these higher classes in the majority of cases.

There are other establishments again where the pure breed of these imported varieties is maintained, and where there are large, and in some cases, costly sheep-houses and sheds, "galpones," and paddocks fenced in. On these "cabañas," pure-bred and various grades of crosses are produced for sale of rams. Pure Negretti or Rambouillet, and crosses of the two: crosses of one or the other with the Merino, and with cross-breeds to meet the fancy of the buyers. I do not hesitate to pronounce this intermixture of breeds as very bad

practice, tending to obliterate anything like a definite type. The sheep-farmers are inconstant; one year they will put into their flocks rams of Rambouillet cross, another year they will supplement these with Negretti, and another Merinos, in the same flock.

It is true that, with the rapid extension of sheep-farming, and the comparatively small proportion of high cast rams at present bred, and, moreover, the comparatively recent introduction of the Negretti and Rambouillet breeds, something of this was inevitable. The rams and ewes imported from Germany and France possess various degrees of merit, and, sold by auction, fetch prices accordingly. Sums equivalent to from 15*l.* to 150*l.*, even 200*l.*, have been paid for rams.

Some few of the British breeds have been likewise introduced, Leicester, Southdown, and Shropshire, and there are cross-bred flocks from these.

Miscellaneous.

The Earth Closet.—Among other benefits conferred on us by the Irish convict system, we may rank the adoption of Mr. Moule's earth closets, and the application to the land of sewage thus deodorised. Coal ashes from the prison fires are used, and the medical officer of Smithfield and Lusk says that "the closets have proved a complete success. They yield a large quantity of manure rich in carbon, nitrogen, phosphorus, and other useful elementary principles. The manure is applicable to many of the ordinary purposes of guano, and is extensively employed on the farm," where, the Roman Catholic chaplain adds, "the produce is truly wonderful." We cannot tell whether Lord Robert Montagu will accept this as a stumper. But it is well to have the experiment tried under the direction of a good agriculturist, and with the help of men who may at some future time be of service to the farming interest. There will be less temptation to crime if our dangerous classes learn practically the meaning of the "O fortunati nimium," and if they once have a stake in the land, they will have some respect for its laws. *Economist.*

Calendar of Operations.

NOVEMBER: *On Wintering Store Cattle.*—This was the subject of a capital practical paper by Mr. Ford, of Rushton, near Blandford, read before the Blandford Farmers' Club. The following is the substance of the advice he gives:—

"It is acknowledged by all practical men, that it is advantageous to keep as much stock as we can possibly accommodate; and it especially behoves farmers to adopt the best and most economical system of wintering their flocks of sheep, as they are one of the mainstays of farms, especially of very poor farms.

"I winter my sheep on Turnip land (in favourable weather), and let them lie as regular over the land as I can, for the benefit of the succeeding Barley or Oat crop, giving them straw with a liberal allowance of roots, and hay once a day, until my ewes began to lamb. I then give them hay twice a day, and roots as before; in bad weather taking them off the land at night, and putting them in some sheltered situation near, knowing that the health of all animals depends much on protection from the inclemency of the weather.

"I believe that lambing well much depends on the regularity of feeding through the winter. On many occasions I have remarked how much food is wasted by ill-bred animals of every kind, especially by those that have bad constitutions, and by those also that have an inaptitude to fatten; whilst at the same time I have also observed, that a well-bred animal with good constitution has been damaged, or ruined for want of proper food and general good management. How necessary, then, is it, that the farmer should attend to these matters and keep his eye daily on his flock, and also upon his shepherd and upon his herdsmen.

"Frequently has it occurred to me that we suffer great injury by neglecting our flocks, even for the shortest period; a day or two's neglect may require weeks of reparation.

"The same principles apply to cow stock. It is necessary that they should have a yard and a comfortable well-strawed shed to lie in, and it is essential that the shed should lie open to the south. You will find that in good and well-littered lodging-places the stock will thrive much faster than they will do even with a greater quantity of food consumed in discomfort and in undue exposure to the weather. I have often seen stock in winter 'stuck' up under a hedge with unhealthy coats, especially in damp situations, with food apparently plenteous; but owing to exposure to the rigours of winter they have been so poor in the spring as to be worth less money than they were worth in the preceding autumn.

"I am fully persuaded that there is more profit arising from good feeding and nursing stock well, than there is from keeping them in the open fields the greater part of the winter, or in wintering them with straw alone (a most cruel way) in the straw yard. I feed a quantity of stock with straw, to which is added a small quantity of roots and cake. The winter months being the proper time for threshing Barley especially, and also a good portion of other crops, we can always afford to give the stock plenty of straw for food, and for bedding to make them comfortable.

"You will find that by giving store stock in the straw-yard 1 bushel of pulped roots (which is inexpensive) mixed with straw chaff or husks of corn, and 2½ lb. of Linseed-cake per day, or 4 lb. of green German Rape-cake, the cost would be for cake about 3*d.* per day per head. There are different opinions respecting the most economical cake. I am inclined to give the preference to Linseed-cake; but if the manure from the Rape-cake is equal to the manure from the Linseed-cake, the Rape-cake may possibly be the more economical cake of the two, as its cost is less.

"It is highly necessary that we should be very particular as to what stuffs we purchase for feeding purposes, as there are so many advertised as being something extraordinary."

Mr. Ford then refers to Thorley's cattle condiment, as having failed, in his case, to be of any service. He proceeds:—

"A judicious outlay of money and a proper application of the food purchased will always well repay us. One thing is certain, that an animal starved in winter will require half a summer to get it into store order; but an animal well wintered is half-summered; the converse also being true, viz., that a well-summered animal is half wintered. This then shows us the necessity of proper feeding, and also of general good management, and regularity of feeding."

To the above remarks we add an extract on a subject to which Mr. Ford refers, from another lecture given during the previous month before another Dorsetshire Farmers' Club, by Mr. W. C. Spooner, of Southampton. Mr. Spooner's remarks related principally to the subject of winter food for a breeding flock, and in the course of it he compared Linseed-cake with Rape-cake. The experience of Mr. Lawrence, of Cirencester, has been already quoted; and his method of avoiding the risk attending the use of the latter has been described. The following sentences compare it and other cakes in point of composition merely.

Rape-cake has 23 per cent. of starch, gum, and sugar, but of albumen 29 per cent. or nearly 2 per cent. more than Linseed-cake, and about the same of fatty matter. But notwithstanding this, we know from a number of experiments that Rape-cake will not put on the same amount of fat as Linseed-cake, however desirable it may be for young animals at an early stage, given in the straw-yard, and for milch cows, the cost being considerably less. There are some cakes, however, which contain a much larger amount of albuminous matter. Poppy-cake has 35 per cent. as compared with 27 in Linseed-cake, but only 5 per cent. of oil; and this points strongly to the fact, which has been proved, that this is excellent food for lambs or ewes for the production of milk. The decorticated Cotton cake is still richer in flesh-making properties, also in oil; which may be accounted for in this way, that it contains less woody fibre. As I have observed, however valuable Rape-cake may be for young animals, containing as it does so large a proportion of flesh-making properties, yet in the latter stages of fatting it does not produce the result that may be expected from the increased quantity that can be given for the same money, as compared with Linseed-cake. The same observation will apply, in a somewhat less measure, even to decorticated Cotton-cake, which however contains 16 per cent. of oil, and a very large quantity of albumen. This may be obtained by the fact that it can readily be digested by one animal is not suitable to others. The taste and digestibleness of food as well as its mere composition affect its influence in the feeding process. It has been found advantageous to mix various kinds of food together, and whenever a change is made it should be gradual, whether from Grass to roots, from Turnips to Swedes, or from one kind of cake to another; and thus decorticated cotton-cake has been found to produce greater results if given with Linseed-cake than if given alone. One thing should be borne in mind, that its value is greater for the manure heap than Linseed-cake, because so large a portion of albuminous matter passes through the animals. The same remark also applies to Rape-cake, which can be bought at a cheaper rate than Linseed-cake.

Mr. Spooner has also given his opinion on concentrated cattle foods. He says, "When horses get old their teeth often get out of order and become sharp and irregular at the edges so as to wound the gums; or perhaps a molar tooth gets broken off, so that its antagonist becomes long and projecting, and in time prevents its neighbours from doing their duty. Whilst the old animal under such circumstances can resort to the dentist, or to soup, or to the sausage machine, the old horse is expected to masticate as well as ever. Here then is a case for the cattle food; and hence the marvels it effects in such a case by supplying nourishment in the form of meal, doing that for the old horse that he could not do for himself. Again, when a horse gets old his digestive organs frequently become weaker, and advantage is often derived from giving him tonics and cordials. Although the best tonics are bitter, hot, and disagreeable, such as gentian, ginger, Peruvian bark, or preparations of iron or copper, yet, fortunately for the compounders of cattle food, there are others, though less potent, that are by no means disagreeable, such as liquorice, cascarilla bark, aniseed, caraways, and a few others; so that by giving meal thus sweetened and slightly flavoured with salt, the digestion of the old horse is stimulated and coaxed, and his condition improved. It is true that this effect can be produced as well by giving the animal his food properly ground, or in the form of meal, and if need be assisting him occasionally with some tonics or cordials; but there would be nothing mysterious in this, and John Bull is fond of the marvellous."

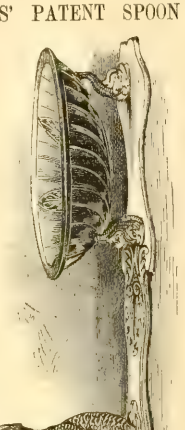
Notices to Correspondents.

CHARCOAL AND SALT. *A. M. Sees.* Either of them may be useful as a manure. 50 bushels of soot broadcast per acre over growing Wheat is the best way of applying the former; and 1 cwt. or two cwt. per acre, also over the ground where Wheat, or even a growing Mangel or Turnip crop, is the best way of applying the latter.

DECORTICATION OF SEWAGE. *M. F.* Mr. Hyde's letter has appeared before in these columns this week.

LIME ON MARL. *J. G. B.* The answer to your question depends first, on the composition of the marl; and 2d, on the composition of the soil. If the latter is light, and the former richly calcareous, we would rather lay marl upon the land than put lime for lime.

ROBERTS' PATENT SPOON REST.



This admirable appendage to the Dinner Table was invented as a remedy for evils which are apt to beset the best of carvers. Attention is called to some of the advantages arising from its use, to wit:—

1st. There is much more room in the dish for the operations of the carver.

2d. There is no fear of the handle of the spoon getting into the dish, and it is consequently kept clean.

3d. The spoon is always in its place, and ready for use.

4th. The dinner cloth is kept much cleaner; and finally, the Spoon Rest is an ornament worthy of a place on every well-furnished table.

It may also be considered a handsome and acceptable present.

Price in German or Nickel Silver .. £1 10*s.*

Packing Cases, 1*s.* each.

The Spoon Rests are made in a variety of Elegant Patterns.

Orders accompanied by remittances will receive prompt attention.

This Invention is Manufactured exclusively by Messrs. HOOPER & BROWETT, Birmingham, to whom all Trade Orders should be addressed.

THE PATENT AMERICAN CAMP STOOL.

This is a most simple and durable little Chair for Cricket Grounds, Excursionists, Tourists, Croquet Players, and Volunteer Camp Grounds.

It can be folded into the most compact form, and stowed away into the smallest possible compass for Travelling.

Price for Single Chair .. .. .. 5*s.* each.

Price for Lots of SIX or upwards .. £2 10*s.* per dozen.

"THE RANTOONE."

(SECURED BY ROYAL LETTERS PATENT.)

Manufactured in Wrought Iron of different sizes, with all the Latest Improvements.

It is Light, Compact, and Symmetrical in appearance. Can be propelled at the rate of from 8 to 12 miles per hour, and will be found unequalled as a means of healthy, agreeable exercise and amusement.

The simplicity of this invention is its great recommendation. Heretofore carriages of this kind, known by the name of Velocipedes, have lacked power, and have been found to be cumbersome, bulky, and laborious to work. By an ingenious Combination of Hand Levers and Treadles connected to the Cranked Axle, those objections are overcome, and the operator is enabled to work with the hands and feet at one and the same time. To one of the Hand Levers are attached a Brass Chain and Pulley, which communicate with the Axle of the Guide Wheel, and by this simple contrivance the Carriage may be turned in any direction required, and with the utmost ease.

It is in itself a gymnasium in miniature, for by its peculiar action all the principal muscles of the body are brought into play, and thus judiciously developed, none being overtaxed, as is often the case in rowing, fencing, dumb-bell exercise, &c.

Price, with 2 ft. 6-in. Driving Wheels, for Youths, £10 10*s.*

,, 3 ft. ,, Adults, £12 12*s.*

,, 3 ft. 6 in. ,, ,, £14 14*s.*

Closed Packing Case extra, £1 1*s.*; Skeleton ditto, 18*s.*

THE ELEVATOR RIFLE.

DESIGNED for TRAVELLERS, EMIGRANTS, ORNITHOLOGISTS, SPORTSMEN, &c

INVALUABLE for HOUSEHOLD DEFENCE

Great Reduction in Price.

36 or 32-bore now selling at £4 4*s.*

CHARLES POMEROY BUTTON,

142 and 143, Cheapside, London, E.C.

DUNCAN'S WIND-RESISTER WHEAT.—The Subscriber begs to intimate that as the limited supply of the above is already nearly exhausted, the price will be now One Guinea per Bushel, or Seven Guineas per Quarter. Cash to accompany order. For description see previous Advertisement in *Gardeners' Chronicle*, p. 991.
JAMES DUNCAN, Paniathie Mill, Carnoustie, Forfarshire.—NOV. 17.

To Market Gardeners and Others.

CABBAGE PLANTS.—East Ham, Enfield Nonpareil, Robinson's Champion, Drumhead, 2s. per 1000.
RED CABBAGE PLANTS, 4s. per 1000, extra fine. Terms, cash. I will challenge England with Plants, the Stock true, and can be warranted. All grown by
RICHARD WALKER, Market Gardener and Seed-grower, Biggleswade, Beds.

To Farmers, Gardeners, and Others.

EXCELLENT CABBAGE PLANTS (Stocks not to be surpassed) can be supplied in any quantities as follows:—
ROBINSON'S CHAMPION (an extraordinary large sort), 2s. per 1000
DRUMHEAD (finest selected), 2s. per 1000.
ENFIELD MARKET (finest selected), 2s. per 1000.
PRIZE DWARF NONPAREIL (earliest and best), 2s. per 1000.
RED DUTCH for Pickling, 4s. per 1000
Special prices given for large quantities not to be undersold
A remittance or reference to accompany all orders.
FREDK. GEE, Seed Merchant and Grower, Biggleswade, Bedfordshire.

Seed Potatos.

H. AND F. SHARPE are now offering MYATT'S PROLIFIC KIDNEY, DAINTREE'S EARLIEST, WEBB'S IMPERIAL KIDNEY, FORTY-FOLD, FOX'S SEEDLING, ASHLEY OXFORD, and many other fine and Late varieties, fine in quality, free from disease, and at low prices.
Seed Growing Establishment, Wisbech, Cambridgeshire.

The Earliest Pea Grown is

CARPENTER'S EXPRESS, gathered on the 7th May, (see Testimonials), THE EARLIEST DATE ON RECORD, price 3s. per quart. The usual discount to the Trade.
EDWARD CARPENTER, Seed Merchant and Grower, Brighton and Sussex Seed Warehouse, 96, St. James's Street, Brighton.—Oct. 20.

Dickson's "First and Best" Early Pea.

FRANCIS & ARTHUR DICKSON & SONS are gratified to know that this PEA has again in this season given universal satisfaction, and is pronounced by a hundreds of the first Gardeners in Britain, and other competent Judges (confirmed also by their own repeated trials against all the best Early Peas of the day), to be the very best Early Pea ever offered for general good qualities, viz., earliness, productiveness, and succession of crop. "First Crop" (or "Ringleader") may, on some soils, be a day or so earlier, but is altogether a very inferior Pea, as every one freely admits. New Seed can now be supplied from a very large bulk, which they have grown to meet the great and increasing demand.
Price 6d. per quart. Prices per bushel to the Trade on application.
The Old Established Seed Warehouse, 106, Eastgate Street, Chester.

To Gentlemen engaged in Planting.

TOOLE AND CO. beg to call attention to their very extensive Stock of
EVERGREEN and FLOWERING SHRUBS,
HARDY ORNAMENTAL TREES,
FRUIT TREES, FOREST TREES, and CONIFERÆ.
Grown at their Nurseries, Cullenswood, Ranelagh Road, Dublin; and Wilford Bray, and respectfully invite inspection of the same.
CATALOGUES of the above forwarded post free on application.
The usual discount to the Trade.
Westmoreland Build ngs, Dublin.

Irish Yews, Hollies, and Privet.

W. WRIGHT, East Retford, Nottinghamshire, begs to offer:—

IRISH YEWS, 6 to 9 inches,	IRISH YEWS, 2½ to 3ft, 30s. p 100
7s. 6d. per 100	,, 3 to 4 feet, 35s. per 100
,, 9 to 12 inches, 8s. per 100	,, 6 to 8 ft., in fine specimens,
,, 1 to 1½ feet, 15s. 6d. per 100	from 15s. per dozen to
,, 2 to 3 feet, 20s. per 100	3s. 6d. each

HOLLIES, fine plants, removed last year, 2 to 3 ft., 25s. to 35s. per 100
PRIVET (Evergreen), 6 to 9 ins., | PRIVET, 9 to 12 ins., 4s. per 1000
3s. per 1000 | ,, 2 to 2½ feet, 12s per 1000
CATALOGUES OF TREES, SHRUBS, &c., on application.
Terms Cash, or references from unknown correspondents.

IMPORTANT to the TRADE and INTENDING PLANTERS.

4,000,000 1-yr. Larch	200,000 2-yr. English Oak
600,000 2-yr. Seedling do.	20,000 2-yr. Evergreen do.
200,000 1-yr. Transplanted do.	100,000 2-yr. Beech
1,500,000 2-yr. Scotch Fir	100,000 2-yr. Horse Chestnut
500,000 1-yr. Transplanted do.	1,500,000 2-yr. Elms
100,000 2-yr. Transplanted do.	600,000 1-yr. Ash
1,000,000 2-yr. Spruce Fir	100,000 3-yr. do.
400,000 3-yr. do.	60,000 1-yr. Spanish Hazel
200,000 1-yr. Pinus austriaca	50,000 1-yr. Acacia
200,000 1-yr. Pinus Laricio	100,000 1-yr. Common Broom
50,000 2-yr. Pinus Weymouth	70,000 1-yr. Scotch Laburnum
100,000 2-yr. Silver Fir	40,000 1-yr. Cyprus (upright and horizontal)
100,000 2-yr. Balm of Gilead	
2,000,000 1-yr. Alder	30,000 2-yr. Chinese Arbor-vitæ
300,000 2-yr. Seedling do.	20,000 2-yr. American do.
100,000 1-yr. Transplanted do.	4,000,000 1-yr. Thorn Quick
400,000 1-yr. Sycamore	100,000 1-yr. Laurel
100,000 2-yr. do.	30,000 2-yr. do.

The Nurseries are well stocked with FOREST TREES.
PRICE LISTS ready, which will be forwarded on application to MICHAEL BURKE, Drumlargan and Garradice Nurseries, Summerhill, Co. Meath, Ireland.

Huntingdon Nurseries.

WOOD AND INGRAM offer the following at extremely moderate rates, according to the quantity taken:—
ASH, 2-yr. Seedling, and in Drills, 1½ to 2 feet.
BLACKTHORN, 1-yr., fine.
CHESTNUT, HORSE, 1-yr., and 6 to 8 feet, transplanted.
ELMS, NARROW-LEAVED ENGLISH, 2 and 3-yr. Seedling and transplanted, 1½ to 2 feet.
FIR, SPRUCE, 1 to 1½, 1½ to 2, 2 to 3, and 3 to 4 feet.
FIR, WHITE and BLACK AMERICAN, 2 to 3, 3 to 4, 4 to 5, and 5 to 6 feet
FIR, BALM of GILEAD, 1½ to 2, and 2 to 3 feet
FIR, WEYMOUTH PINE, 2 to 2½, 4 to 5, and 5 to 6 feet.
HAZEL, 1½ to 2, and 2 to 2½ feet.
HORSE, 1-yr. Seedling.
HOLLY, 3-yr. bedded, transplanted, 6 to 9 inches, 9 to 12 inches; 1 to 1½, 1½ to 2, and 2 to 2½ feet.
HOLLY, VARIEGATED, 9 to 9, and 9 to 12 inches.
MAPLE, COMMON, 1½ to 2 and 2 to 2½ feet.
MAPLE, COMMON, 1-yr. Seedling, extra fine.
JUNIPERS, 2½ to 3, 3 to 3½, 3½ to 4, and 4 to 5 feet; extra fine, and bushy.
OAKS, 2-yr. Seedling, and drills, 2 to 3 and 3 to 4 feet.
OAKS, TURKEY, 2-yr. Seedling, fine.
POPLAR, BLACK ITALIAN, 2 to 3, 3 to 4, 5 to 6, 6 to 7, and 8 to 10 feet.
POPLAR, ONTARIO or AMERICAN, 2 to 3 and 12 to 16 feet.
WHITE THORN QUICK, 2-yr. Seedling.
ARBORVITÆ, AMERICAN, 1½ to 3½ feet.
ARBORVITÆ LOBBII, extra fine specimens, 3 to 7 feet.
ARBORVITÆ, SIBERIAN, 1 to 1½, 1½ to 2, 2 to 3½, and 3 feet.
AUCUBA JAPONICA, extra fine hardy specimens, 1 to 1½, 1½ to 2, 2 to 2½ and 3 feet.
BEECH, PURPLE and COPPER, 5 to 6, and 6 to 8 feet.
BERBERIS DULCIS, 1 to 2, and 3 to 4 feet.
BERBERIS AQUIFOLIUM, 1 to 1½, 1½ to 2, and 2 to 2½ feet.
CUPRESSUS LAWSONIANA, very fine, 3 to 4, and 4 to 5 feet.
CUPRESSUS MACROCARPA, potted, 2 to 3, and 3 to 4 feet.
LAUREL, COMMON, 1 to 1½ and 2 feet.
LAUREL, PORTUGAL, very fine, 1 to 4 feet.
PLANE, ORIENTAL, 2 to 3, 4, and 5 feet; extra, 9 to 10 feet.
PLANE, OCCIDENTAL, 3 to 4, 5 to 6, 6 to 7, and 8 to 9 feet.
YUCCA RECURVA, fine specimens, 1½ to 2½ feet.
ROBINIA INERMIS, 3 feet, 3 to 4 stems.
WILLOW, WEEPING, 6 to 7 feet, and fine Standards.
N.B. CATALOGUES sent free on application.

TRAINED FRUIT TREES, from 30s. per dozen for Cash; consisting of PEACHES, NECTARINES, APRICOTS, PEARS, APPLES, PLUMS, CHERRIES, &c., all in excellent condition, and fit for immediate planting. Also general NURSERY STOCK at very low prices.
ELIZA THOMPSON, Lewisham Park Nursery, Kent.

To Gentlemen and Planters.—Surplus Stock.

LARGE Transplanted EVERGREENS and CONIFERS, from 4 to 8 feet high; 20,000 COMMON LAURELS, 2 to 4 feet; 500,000 ASH, from 2½ to 4 feet; One Million LARCH, from 3 to 5 ft.; One Million HAWTHORN QUICK, from 2 to 4 feet; large APPLE TREES, for Orchards; PYRAMID and TRAINED FRUIT TREES, in full bearing.
CATALOGUES and Special Prices may be had on application.
GEO DAVISON, White Cross Nurseries, Hereford.

TO THE TRADE.

500,000 2-yr Transplanted QUICKS, 1 to 3½ feet.
200,000 1-yr. Seedling QUICKS, 6 to 12 inches.
20,000 2-yr. CRAB STOCKS, 2 to 3½ feet.
100,000 2 and 3-yr Transplanted LARCH, 1 to 3½ feet.
5000 RED GRAPE and VICTORIA CURRANTS.
2000 Standard PEARS, 5 to 7 feet stems
Prices and samples on application to WILLIAM COCKS, Old Nurseries, Donington, Spalding

To the Trade.

JAS. GARAWAY AND CO. offer

Alder, 1½ to 2 & 2 to 3 transplanted	Chestnut, Horse, 1 to 2 feet, transplanted
Ash, 1, 2, and 3-year Seedlings	Elm Wych, 1 to 2, 2 to 3, and 3 to 4 feet, transplanted
Ash, transplanted, 2 to 3 feet	Larch, extra fine, 1 to 1½, 1½ to 2, 2 to 3, and 3 to 4ft., transplanted
Acanthus Mollis, strong	
Beech, 1 and 2-year Seedlings	
Birch, 1 to 2 feet, transplanted	FRUIT TREES.
Apples, very fine dwarf-trained	Peaches, very fine dwarf-trained and standard-trained
Apricots, do. and standard-trained	Pears, very fine dwarf-trained
Cherries, do., do.	Plums, do.
Nectarines, do., do.	

Prices on application.
JAS GARAWAY & Co., Durdham Down Nurseries, Bristol.

COCOA-NUT REFUSE is becoming scarce, the old reserves will soon be gone. Now sold in bags, 1 for 2s., 10 for 16s., 2 for 30s., 50 for 63s., 100 for £6.
Fourpence allowed for each bag returned carriage-paid.
A Railway Truck-load (not in bags), 40s.
Postage Stamps or Post-office Order, payable to J. BARNHAM & Co., Kingston-on-Thames, S.W.

Fumigate your Greenhouse with

TOBACCO TISSUE.
Will Destroy all the Insects and not Injure the Plants
Price 3s. 6d. per lb., carriage free, to the Iron of Messrs. ROBERTS & SON, Tobacco Manufacturers, 38, Old Bath Street, Clerkenwell E.C., and of all Seedsmen and Nurserymen

GISHURST COMPOUND, whether used against Insects and Mildew, on Growing Plants, or as Winter Dressing on Trees at rest, should be dissolved 48 hours before use. This gets rid of smell, and if the Solution be decanted, prevents any staining of foliage. A strength of from 1 to 2 oz. to the gallon of water is recommended for growing Plants; one from 4 to 16 oz. for Trees at rest.
Sold Retail by Nurserymen and Seedsmen, in boxes, 1s. 3s., and 10s. 6d. each.
Wholesale by
PRICE'S PATENT
CANDLE COMPANY
(LIMITED).

SHAW'S TILE FANY.
For samples and prices apply to
J. Shaw & Co., 29, Oxford Street, Manchester.

George Hall, late Manager to the late Saynor's Firm.
Has for 30 YEARS in the Neighbourhood of Dorking

GEO. HALL and SON'S Celebrated PRUNING and BUDDING KNIVES, &c., may be obtained from the most respectable Nurserymen and Seed Merchants in the kingdom; also America, France, Germany, Holland, Prussia, Russia, &c.
N.B. We only make one quality, the best that can be manufactured, regardless of expense, the same as the late Saynors always made during their lifetime, with all the latest improvements.
Original Central Cutlery Works, Sheffield.

JAMES WATTS AND CO., HOTHOUSE BUILDERS and HOT-WATER APPARATUS MANUFACTURERS,
353, Old Kent Road, London, S.E.

200 CUCUMBER and MELON BOXES and LIGHTS, all sizes, Glazed and Painted complete, ready for immediate use, packed and sent to all parts of the Kingdom.
Strong ZINC HAND GLASSES, all sizes.
References to the Nobility, Gentry, and Trade in most of the Counties in England.

GREENHOUSES, Span or Lean-to, Ornamental or Plain, always in Stock, Glazed with 21-oz., and Painted ready for Fixing. To be seen erected.

Span-roof, plain, 20 feet 9 inches long, by 13 feet wide..	£31	0	0
A ditto of same size, ornamental	35	0	0
A ditto 33 feet long by 13 feet wide, plain	47	0	0
A ditto same size, ornamental	54	0	0
Also, a Lean-to 10 feet long by 10 feet 9 inches wide ..	21	0	0
A ditto 28 feet long by 10 feet 9 inches wide	32	0	0

Also, a large Stock of Greenhouse and Pit LIGHTS, of various sizes, kept in stock, and a large Stock of various-sized 1, 2, 3, or 4 Light Garden FRAMES, made portable, of different shapes.
Greenhouses made to order, Glazed with 21-oz., at 1s. 3d. per square foot
Two-inch Lights made and Glazed with 21-oz., at 9d. per square foot, three times Painted.
W. S. uses only the best Yellow Timber for Horticultural Work.
Estimates given for effectually Heating by Hot Water.
☞ Note the Address—
WM. SMITH, Hothouse Builder, Turnham Green, W.

HOT-WATER APPARATUS, of every description, fixed complete in any part of the country, or the materials, viz., Boilers, Pipes, &c., delivered to any Station.
Estimates on application.
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Heating by Hot Water.

W. J. HOLLANDS, IRON MERCHANT, 31, Bankside, London, S.E.
HOT WATER PIPES, from Stock, per yard:—2-inch, 1s. 2d.; 3-inch, 1s. 10d.; and 4-inch, 2s. 4d. BENDS, from Stock, 1s. 6d., 2s. 6d., and 3s. each. THROTTLE VALVES, 8s., 12s., and 14s. each. Other Connexions at equally low prices, and all goods of first-class manufacture. Estimates given, and orders by post punctually attended to the same day.

Heating by Hot Water.

HOT-WATER PIPES, at Wholesale Prices, with Elbows, Syphons, Tee Pipes, and every other connexion; Wrought and Cast-Iron Boilers, Saddle, Conical, Cylinder, TUBULAR, and Elliptic, from 24s. each. Improved Boilers and Iron Stands to use without brickwork, 60s. each. Valves from 1s. 6d. each. Patent Valves, Improved Furnace Doors, Furnace Bars, Supply Cisterns, and Castings of every description in stock, at
MR. LYNCH WHITE'S Iron Wharf, Upper Ground Street, Blackfriars Bridge, London, S. Price List on application.

HOT-WATER PIPES and CONNECTIONS, SADDLE and other BOILERS.
Estimates, with Printed Price Lists, and Free Delivery at principal Railway Stations for Quantities.
J. & W. BOWDEN & Co., Warehouse and Manufactory, 148, Upper Thames Street, London, E.C.

Cheap Greenhouse Stores.

DEANE AND CO.'S Patent VENTILATING and SUSPENSION STOVES are simple, cheap, and efficient; have been largely adopted and approved; will burn many hours without attention, and at a small cost per hour. Inverted Suspension Stoves, 6s., 10s., 38s., and upwards. Ventilating Stoves, 50s., 60s., 70s., 80s.
HOT-WATER APPARATUS for Conservatories, Greenhouses, Hothouses, Forcing Pits, &c., erected and fitted up complete.
DEANE & Co., 46, King William Street, London Bridge, E.C.
Established A.D. 1700.

MELON LIGHTS, Machine made, 6 feet by 4 feet, 1¼ thick, Unglazed 5s., Glazed 11s.; are kept in stock at the Finsbury Steam Joining Works, 121, Bunhill Row, E.C.

HOT-WATER APPARATUS (Portable) for Heating Greenhouses, Pits, Frames, Fern Cases, Churches, Chapels, Schools, Halls, &c., with expedition and economy, from £2 10s. complete.
Illustrated Price List, with testimonials, to be had on application. Enclose a stamp.
J. MUSSETT,
Winstanley Road, Clapham Railway Junction, London, S.W.

The Only Stove without a Flue.

NASH AND JOYCE'S PATENT, for HEATING, DRYING, and WARMING HALLS, SHOPS, ROOMS, &c., also a new special Stove for Conservatories, Greenhouses, Fruit-Ripening, &c.: to Burn without re-lighting all winter by fusing with fuel every 12 hours. Temperature, any degree required, without varying. Price from 12s. 6d. to 6 guineas.
MINCING and SAUSAGE FILLING and MASTICATING MACHINES of the best construction, 6s. 6d.
The COTTAGE KNIFE CLEANER is the only rapid Cleaner and Polisher of Knives at a moderate price. 3s. 6d. to 4os. 6d. Prospectus post free.
CHEAP FIRES. The Radiating Fire Balls save half the usual consumption of fuel. One Shilling packet of Four, red hot in the fire every day, lasts all Winter.
S. NASH, Ironmonger, 253, Oxford Street, W.C; and Stove Depôt, 119, Newgate Street, London, E.C.

Hot-water Pipes, with Elbows and Connections,
SUPPLIED BY
BURY AND POLLARD.

BURY AND POLLARD.
CONTRACTS AND ESTIMATES GIVEN FOR WARMING PUBLIC BUILDINGS.
Latest Improvements in HEATING by HOT WATER.
The Improved CONICAL BOILERS,
For Heating Pineries, Conservatories, Greenhouses, Mansions, Halls, Warehouses, &c
Solely Manufactured by
BURY & POLLARD (Successors to John R. Pull), late Stedman & Pull).
These Boilers are adapted for setting in Brickwork, or annexed Sketch shows Bury and Pollard's improved arrangement, requiring
NO BRICKWORK SETTING.
These Boilers have for their durability and economy attained a celebrity far surpassing any other Boilers ever invented. They have been for many years past in use at many Public Establishments, Royal Botanical Gardens at Kew, at the Regent's Park, the Crystal Palace, and at most of the Nobility's and Gentry's Seats throughout the United Kingdom. References where they have been for 20 years in constant use.
Price Lists on application to BURY & POLLARD, Park Iron Works, 17, New Park Street, Southwark, London, S.E.

CRANSTON'S PATENT BUILDINGS for HORTICULTURE.
"Dry Glazing without Putty."
"Glass without Laps."
"Ventilation without Moving Lights."
Highly Commended by the Royal Horticultural Society, South Kensington.

Plans and Estimates free on application. Descriptive Book fully illustrated, post free for 20 stamps, from the Author and Patentee JAMES CRANSTON, Architect, Birmingham.
Works: Highgate Street, Birmingham.
HENRY J. GROWTAGE, Manager, 1, Temple Row West, Birmingham.

Oil Paint no longer Necessary.

HILL AND SMITH'S PATENT BLACK VARNISH for preserving Iron Work, Wood, or Stone. This Varnish is an excellent substitute for oil paint on all out-door work, and is fully two-thirds cheaper. It may be applied by an ordinary labourer, requires no mixing or thinning, and is used cold. It is used in the grounds at Windsor Castle, New Gardens, and at the seats of many hundreds of the nobility and gentry, from whom the most flattering testimonials have been received, which HILL & SMITH will forward on application.

From Major-Gen. BELL, *Sandhoe, Northumberland.*

"I have much pleasure in saying I have known your Black Varnish to be used for some time by myself at home, and they all speak highly of it, which has induced me to get the quantity I have from you That I have used ones remarkably well."

Sold in casks of about 30 gallons each, at 1s. 6d. per gallon, at the Manufactory, or 1s. 8d. per gallon paid to any Station in the kingdom.

Apply to HILL & SMITH, Brierly Hill Iron Works, near Dudley, and 22, Cannon Street West, E.C., from whom only it can be obtained

JOHN WARNER AND SONS, 8, Crescent, Cripplegate, London, E.C., BELL and BRASS FOUNDERS to HER MAJESTY.

No. 5

No. 42

PATENT CAST IRON PUMP, having Solid W. & S. Metal Bucket and Valve, which cannot close in addition, for Wells not exceeding 25 feet

Diam.	Height	£ s. d.
22 in. short	1 0 7 in.	1 1 0
28 in. long	2 0 7 in.	1 8 0
3 in. long	3 0 6 in.	2 1 0
34 in. long	3 0 6 in.	2 6 0
4 in. long	5 0 6 in.	3 11 0
24 in. short, with 15 feet of lead pipe attached, ready for fixing		2 0 0
2 in. long, do. do.		2 14 0

IMPROVED LIQUID MANURE or GENERAL PORTABLE PUMP.—These Pumps are fitted with J. W. & SONS' Patent Bucket and Valve, and cannot clog in action. The Barrel is made of Galvanised Iron, not likely to corrode, and can be raised or lowered at pleasure on the stand, the legs of which fold together, so it may be carried with ease by one man to tank or pond

Price of 4-inch Liquid Manure Pump, with legs, £2 15s.; 2-inch Flexible Rubber and Canvas Suction Pipe, 2s. 10d. per foot. The Barrel is 27½ inches long, and the legs are 3 feet high

WARNERS' PORTABLE FIRE or GARDEN ENGINE.

£2 2s

No. 5081.

For use by one Person .. .. price £2 2s
No. 5170, do. do. on Wheels .. .. „ £2 10s.

The above are complete in themselves, and may be always kept filled with water, and ready for use.

Letter to The Times, *July 23, 1866, from* Earl ESSEX.

A REAL FIRE EXTINGUISHER.

To the Editor of The Times.

"SIR,—I feel sure you will kindly allot a small space in the *Times* to these few lines, as the best medium through which I would urge every householder was desirable to have on each floor of his house one or more small Garden or other Engines on wheels, always charged and in good order, in case of fire

"Last night, just as I was going to bed, I was startled by that most fearful of all cries, 'Fire, fire!' I soon learned that a fire was raging in a large two-windowed room next door to mine. How caused is to me all a great mystery. It is my custom to keep one of these small Engines on each floor. In two minutes I was in the room with one of them. It was like a furnace. The curtains, shutters, casements, and cornices of both windows were burning and cracking from floor to ceiling. I was quite alone at the moment, yet before assistance arrived (most of the servants having gone to bed), I had completely subdued the fire of one window without exhausting the Engine, and when assistance and more water did arrive, we very soon extinguished the other.

"So fierce was the fire that the lead of the casements was melted, and the casements themselves were burnt off their hinges.

"I will only add, that by God's mercy, the house was saved by this small Engine. Had it not been at hand and in order, most assuredly Cassiobury would be now a heap of ruins.—Yours faithfully,

"Cassiobury, Watford, July 20. "ESSEX.

"The Engine, even when full, runs so light on the floor, that any woman might draw it, and also work it."

J. B. BROWN AND CO.'S NEW IMPROVED PREMIUM WIRE NETTING.

Great Improvement.—Reduced Prices, February, 1866.
PRICES PER LINEAL YARD 24 INCHES HIGH.

Size of Mesh.	Mostly used for	Light.		Medium		Strong.		Extra Strong.	
		Jap	Gal	Jap	Gal	Jap	Gal	Jap	Gal
inch.		s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
2½	Dogs or Poultry	0 2½	0 3½	0 3½	0 4½	0 4½	0 5½	0 5½	0 6½
2	Poultry	0 3½	0 5	0 5	0 6½	0 6½	0 8	0 8	0 9½
1½	Small Rabbits, Hares, &c.	0 5	0 6½	0 6½	0 8	0 8	0 9½	0 9½	0 11
1½	Smallest Rabbits ..	0 6½	0 8	0 8	0 9½	0 9½	0 11	0 11	1 0
1	Pheasantries, Small Birds, &c. ..	0 8	0 10	0 9½	1 0	1 0	1 1½	1 1	1 2
¾	Aviaries, Window Guards, &c.	0 11	1 1½	1 1	1 3	1 4	1 6	1 7	1 10
⅝	Aviaries, Window Guards, &c.	1 7	1 10	1 9	2 0	2 0	2 3	2 3	2 6
½	Aviaries, &c.	2 3	2 6	2 6	2 8	..	..	..	..

Quantities of 100 Yards or upwards delivered free at all Railway Stations and Shipping Ports in England.

*** Every description of Netting warranted to give satisfaction, and if not approved will be exchanged, or may be returned unconditionally.

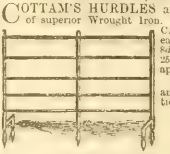
J. B. BROWN & CO.—Offices, 90 (late 1), Cannon Street, London, E.C. Warehouse and Manufactory, 148, Upper Thames Street, E.C.

CHEAPEST and BEST IRON HURDLES, FENCING, Wire Netting, Chaff Cutters, Oat Bruisers, Bean Mills, Steam Engines, Lawn Mowers, Conservatories, Greenhouses, Hot-water Apparatus. Estimates furnished, and skilled workmen sent to all parts of the country.

JOHN HOOPER & Co., 48, Cannon Street, E.C.

Iron Hurdles, Fencing, and Gates.

COTTAM'S HURDLES are made in the best manner of superior Wrought Iron. SHEEP HURDLES, from 4s. 9d. each; CATTLE HURDLES, from 4s. 11d. each; CONTINUOUS FENCE, from 8d. per foot; FIELD GATES, from 25s. each. Illustrated Price List on application.



ENTRANCE GATES, RAILING, and IRON WORK of every description. Designs and Estimates free of

COTTAM & Co.,
No. 2, Winsley Street
(opposite the Pantheon),
Oxford Street, London, W.

WANTED to HIRE for Three Months, a good TRANSPLANTING MACHINE.

Apply, stating terms and capabilities of Machine, to J. ANDERSON, The Gardens, Newstead Abbey, Nottingham.

Caution to Gardeners.—When you ask for SAYNOR AND COOKE'S WARRANTED PRIZE PRUNING and BUDDING KNIVES, see that you get them. Observe the name SAYNOR, also the corporate mark OBTAIN WARRANTED, without which none are genuine.

S. & C. regret having to caution Gardeners and others, but are compelled to do so, in consequence of an imitation, of common quality, having been sold for the genuine one, and which has caused many complaints to be made to them of Knives which were not of their make, all of which are warranted both by Sellers and Makers.

S. & C.'S Pruning and Budding Knives are the best and the cheapest in the market.

Paxton Works, Sheffield. Established upwards of 125 years.

CUMMING & EDMONDS,

HORTICULTURAL BUILDERS AND HOT-WATER ENGINEERS,

LILLIE BRIDGE, RICHMOND ROAD, FULHAM, LONDON, S.W.

CONSERVATORIES, GREENHOUSES, and GLASS STRUCTURES of every description (either in Wood or Iron) Manufactured by Steam Power Machinery.

HOT-WATER APPARATUS fitted up complete with their PATENT TUBULAR ARCHED SADDLE BOILER and all the latest improvements.

Designs and Estimates prepared and forwarded free on application.

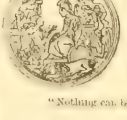
HOTHOUSES FOR THE MILLION.

AWARDED A PRIZE MEDAL, 1862.

INVENTED AND PATENTED BY THE LATE

SIR JOSEPH PAXTON.

MANUFACTORIES—LONDON, NEWTON-IN-CARTMEL, LANCASHIRE; GLOUCESTER, COVENTRY, ABERDEEN, and PAISLEY.



"Nothing can be more ... than to build them, nothing more ... than to remove them."—*Daily News*, May 22, 1862.

COMBINE SIMPLICITY, CHEAPNESS, AND DURABILITY

FULFIL ALL THE REQUIREMENTS OF HORTICULTURE.

Illustrated Price Lists will be sent on prepaid application. Estimates given for Ornamental Conservatories, &c., to special sizes and designs; also for Heating Apparatus, fixed complete.

HEREMAN AND MORTON, 7, PALL MALL EAST, LONDON, S.W.

A HANDBOOK of VINE and FRUIT TREE CULTIVATION, as adapted to the above Patent Hothouses, may be had of Mr. HEREMAN. Second Edition, price 1s.; post free, 1s. 1d.

"The instructions given for the Cultivation of the Vine and other Crops are essentially practical, and are evidently written by one who has himself performed all the operations before he attempted to instruct others."—*Cottage Gardener*, Oct. 6, 1863.

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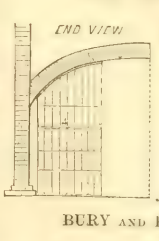
BURY & POLLARD

CALL ATTENTION TO ANNEXED SKETCHES OF THEIR WINE BINS.



Noblemen, Gentlemen, Wine Merchants, and Hotels are now being supplied by BURY & POLLARD with their

WROUGHT-IRON BINS,

made to any size for their Cellars, economising space, cost, &c.

Apply, giving dimensions of Cellar,

BURY AND POLLARD, PARK IRONWORKS, 17, NEW PARK STREET, SOUTHWARK, LONDON, S.E.

Estimates Free. Cellars fitted complete in any part of the Kingdom.

Glass for Garden Purposes.

JAMES PHILLIPS AND CO. beg to submit their REDUCED PRICES as follows:—

PROPAGATING GLASSES.

	Each.—s.	d.		Each.—s.	d.
2 inches in diameter ..	0	3½	12 inches in diameter ..	1	9
3 " ..	0	4½	13 " ..	2	0
4 " ..	0	6½	14 " ..	2	3
5 " ..	0	6½	15 " ..	3	0
6 " ..	0	8	16 " ..	3	6
7 " ..	0	10	17 " ..	4	0
8 " ..	1	0	18 " ..	5	0
9 " ..	1	2	19 " ..	6	0
10 " ..	1	4	20 " ..	7	0
11 " ..	1	6			

HYACINTH and FLOWER DISHES.

6 inches diameter, .. 1s. 0d. | 9 inches diameter 1 6
12 inches diameter .. 2s. 6d.

Hyacinth Dishes are made to contain a number of Roots Bedded in and covered with Moss, instead of the common Hyacinth Glass.

LACTOMETERS, for Testing the Quality of Milk.
Four Tubes .. 4s. 6d. | Six Tubes .. .. 6s. 6d.
With Stands complete

HAND GLASSES, WITH OPEN TOPS.

	Each.—s.	d.		Each.—s.	d.
12 inches ..	7	6	18 inches ..	9	6
14 " ..	7	6	20 " ..	10	6
16 " ..	8	6	24 " ..	12	6

Painted and Glazed with 16-oz. Sheet Glass.

London Agents for HARTLEY'S IMPROVED PATENT ROUGH PLATE.

LINSEED OIL, Genuine WHITE LEAD, CARSON'S PAINTS, PAINTS of various colours, ground ready for use.

SHEET and ROUGH PLATE GLASS, SLATES of all sizes, BRITISH PLATE, PATENT PLATE, ROLLED PLATE, CROWN, SHEET, HORTICULTURAL, ORNAMENTAL, COLOURED, and every description of GLASS, of the best Manufacture, at the lowest terms. Lists of prices and estimates forwarded on application to

JAMES PHILLIPS & Co., 180, Bishopsgate Street Without, E.C.

Asphalte Roofing Felt,
ONE PENNY per Square Foot.

CROGGON AND CO., MANUFACTURERS, 67, New Earl Street, } London, E.C.
31, Bread Street, }
59, GEORGE SQ., GLASGOW; 2, GORBE PIAZZAS, LIVERPOOL.

Important Reduction in the Prices of Portable Engines for 1866.

CLAYTON, SHUTTLEWORTH AND CO., ENGINEERS, Manufacturers of Portable and Fixed Steam Engines, Machinery for Dumping, Hoisting, Grinding, Sawing, &c.; Engines for Steam Cultivating, and Improving Engines of Common Road and Agricultural Purposes generally.

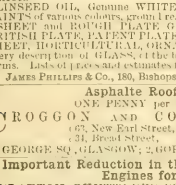
Stamp End Works, Lincoln; and 78, Lombard Street, London; also at Lowengrund No 41, Landstrasse, Vienna; and Gegenuber dem Bahnhof, Pesth.

Descriptive, Illustrated, and Priced Catalogues Free per Post. Special Drawings when required. The best Steam Threshing Machinery made.

FOWLER'S PATENT STEAM PLOUGH and CULTIVATOR may be SEEN at WORK in every Agricultural County in England.

For particulars apply to JOHN FOWLER & Co., 71, Cornhill, London, E.C., and Steam Plough Works, Leeds.

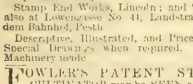
COTTAM'S PATENT PORTABLE UNITED COW FITTINGS.



Their advantages are—Portability, not Fixtures, removable at pleasure, no Woodwork or Partitions to impede Ventilation or breed Vermin, Hay Rack disconnected with as unnecessary, increased Width and depth of Feeding Trough, Water Trough, and Patent Drop Cover to prevent overpouring. Cleanly, durable, and impervious to infection, being all of iron. Price of Fittings per Cow, 50s.

Prospectuses free of COTTAM & Co., Iron Works, 2, Winsley Street (opposite the Pantheon), Oxford Street, London, W., where the above are exhibited, together with several important Improvements in Stable Fittings just secured by Patent.

GARDEN BORDER EDGING TILES, in great variety of patterns and material, the planner sorts being especially suited for KITCHEN GARDENS, as they harbour no Slugs and Insects, take up little room, and once put down incur no further labour and expense, as do "growing" Edgings, consequently being much cheaper.



GARDEN VASES, FOUNTAINS, &c., in Artificial Stone, of great durability, and in great variety of design.

F. & G. ROBBER, Manufacturers, Upper Ground Street, Blackfriars, S.; Queen's Road West, Chelsea, S.W.; Kingsland Road, Kingsland, N.E.

Sole London Agents for the NEW AND PATENT GARDEN WALL BRICKS. Illustrated Price Lists free by post. The Trade supplied.

ORNAMENTAL PAVING TILES for Conservatories, Halls, Corridors, Balconies, &c., as cheap and durable as Stone, in blue, red, and buff colours, and capable of forming a variety of designs.

Also TESSELATED PAVEMENTS of more enriched designs than the above.

WHITE GLAZED TILES, for Lining Walls of Dairies, Larders, Kitchens, Ranges, Backs, &c., Grooved and other Stable Paving Bricks of great durability, Dutch and Adamantine Clinkers, Wall Copings, Red and Stone-ware Drain Pipes, Soil-es, Cements, &c.

To be obtained of F. & G. ROBBER, at their Premises as above.

SILVER SAND (REIGATE, best quality), at the above addresses—18s. per Ton, or 1s. 3d. per Bushel; 2s. per Ton extra for delivery within three miles, and from any London Railway or Wharf. Quantities of 4 Tons, 1s. per Ton less.

FLINTS, BRICK BURRS or CLINKERS, for Rockeries or Grotto Work. F. & G. ROBBER.—Addresses see above.

N.B. Orders promptly executed by Railway.

GREEN'S IMPROVED NEW PATENT GARDEN ROLLER,
LAWN MOWERS.

The above Rollers possess many advantages over all others. They are made in two parts, and are free to rock one on the axis, affording greater facility for turning, and the cutters are so handled off or tunnel inwards, thus avoiding the unsightly marks left by other Rollers.

Diameter,	20 inches;	Length	32 inches,	£7	10	0
"	24 "	"	26 "	4	10	0
"	20 "	"	22 "	3	10	0
"	16 "	"	17 "	2	15	0

Prices for Rollers fitted with Shafts suitable for Pony or Horse Power, free on at placation.

Delivered carriage paid to all the principal Railway Stations and Shipping Ports in England.

THOMAS GREEN & SON, Smithfield Iron Works, Leeds; 54 and 55 Blackburn Road, London, S.; and 19, Eden Quay, Dublin.

N.B. All Orders executed on the day they are received.

PRIZE MEDALS AWARDED to GREEN'S PATENT LAWN MOWERS.
INTERNATIONAL EXHIBITION, LONDON, 1862.
INTERNATIONAL EXHIBITION, DUBLIN, 1865.

The above Lawn Mowers have proved to be the best, and have carried off every Prize that has been given in all cases of Competition.

Sold by all respectable Ironmongers, Seedsmen, &c., in the Kingdom. Illustrated Price Lists free on application.

AGRICULTURAL and HORTICULTURAL IMPLEMENTS and MACHINES of every description.
IMPROVED IRON STABLE FITTINGS
HURDLES and CONTINUOUS IRON and WIRE FENCING.
Palisading Entrance and Field Gates. Plain and Galvanised Wire Netting.
GREEN'S PATENT LAWN MOWERS and GARDEN ROLLERS.
Garden Engines, Syringes, Water Barrows, Ornamental Garden Seats, Chairs, Tables, Iron Fountains, Vases, &c.
IRON and BRASS BEDSTEADS, in great variety.
Washing, Wringing, and Mangling Machines.
IMPROVED SAUSAGE MACHINES and FILLERS
Separate Illustrated Price Lists free on application to
THOMAS GREEN & SON, Smithfield Iron Works, Leeds.
Show Rooms opposite the Smithfield Cattle Market, North Street, Leeds; 54 and 55, Blackburn Road, London, S.; and 19, Eden Quay, Dublin.

SWING WATER BARROW.—These are the best and cheapest article yet introduced for use in Gardens, Farm Yards, &c. The Water may be dipped out, or the Tub tilted and poured out, or be merely raising the Handle it can be placed on the ground, and the Frame detached. To hold about 20 or 25 gallons, price 42s. Carriage and Train station on Great Eastern Line.

POWERFUL GARDEN ENGINE, suitable for the above, price 40s
IMPROVED WATER and LIQUID MANURE CARTS.
Cata gues on application.
Manufactured by W. S. BOTTOMS, Bank Lane Iron Works, Norwich.

GALVANISED IRON WATER CISTERNS.
Cheap, light, storage-like, will not rust, rot, or corrode, and keep water perfectly sweet.

To hold	Each.
50 gallons,	20s. 0d.
50 gallons,	24s. 0d.
80 gallons,	32s. 0d.
100 gallons,	38s. 6d.
125 gallons,	45s. 0d.
150 gallons,	49s. 0d.
200 gallons,	65s. 0d.
250 gallons,	73s. 0d.
300 gallons,	84s. 0d.

With Lid and Brass Tap.

GALVANISED WIRE STRAND CABLE FENCING.
GALVANISED IRON ROOFING.
IMPROVED GALVANISED WIRE NETTING.
HURDLES, HURDLES, 6s. 9d. to 8s. 9d. per yard.
PATENT STRAINING PILLARS, &c.
GALVANISED IRON PUMPS.
GALVANISED SWING WATER BARROWS.
LAWN MOWERS, GARDEN ROLLERS.
ASPHALTE ROOFING FELT, 1d. per square foot.
MORLEY & GREEN.
Illustrated Catalogues and Estimates free on application.
12, Great George Street, Leeds.

E. T. ARCHER'S "FRIGI DOMO."
Patronised by Her Majesty The Queen, the Duke of Northumberland for Syon House, His Grace the Duke of Devonshire for Chiswick Gardens, Professor Lindley for the Horticultural Society, Sir Joseph Paxton for the Crystal Palace, Royal Zoological Society, &c.

PROTECTION from the SCORCHING RAYS of the SUN.
"FRIGI DOMO," a Canvas made of Patent prepared Hair and Wool, a perfect Non-conductor of Heat and Cold, keeping, when even it is applied, a level temperature. It is adapted for all Horticultural and Floricultural purposes, for Preserving Fruits and Flowers from the Scorching Rays of the Sun, from Wind, from Attacks of Insects, and from Burning Frosts. To be had in any required lengths.

Two yards wide .. .. 1s. 3d. per yard run.
Four yards wide .. .. 2s. 6d. per yard.
An improved make, 2 yards wide .. 1s. 9d. per yard.
An improved make, 3 yards wide .. 2s. 6d. per yard run. Also
FRIGI DOMO" NETTING, 2 yards wide, 1s. 6d. per yard run.

ELISHA THOMAS ARCHER, Wholesale and Sole Manufacturer, 7, Great Trinity Lane, Cannon Street, City, E.C., and of all Nurserymen and Seedsmen throughout the Kingdom.

"It is much cheaper than Mats as a covering."

BOROUGH of LIVERPOOL.
SEFTON PARK COMPETITION
To LANDSCAPE GARDENERS AND OTHERS.

The Council of the Borough of Liverpool offer TWO PREMIUMS for the best PLANS for LAYING out the SEFTON PARK, viz.—a First Premium of Seventy Guineas, a Second Premium of Fifty Guineas. On and after the 3rd November, the Plan to succeed the Competition, together with a Table employed in the Plan of the Park, will be sent to any address on receipt of Post Office Order for One Guinea, which latter will be returned if Plans are received according to the conditions.

Applications to be made to Mr. F. R. RENSON, Architect and Surveyor, Town Hall, Liverpool.

Horticultural Agent and Valuer.

MR. A. CHANDLER (of the late Firm of CHANDLER & SONS, Nurserymen, Vauxhall) continues to LET NURSERIES and make all kinds of VALUATIONS connected with Horticulture. 28, Finsbury Road, N.

WANTED to RENT, a SMALL NURSERY and SEED BUSINESS, or FLORIST and SEED BUSINESS. Address A. B., care of Messrs. NEITING & SONS, 90, Bishopsgate, London, E.C.

TO BE LET, a SMALL NURSERY, with every convenience; Greenhouses, Pits, Stock, &c. Twenty-one years' Lease, at a moderate Rent.
Address X. Y., 9, Church Road, Upper Edmonton, N.

Barnes, Surrey.
To MARKET GARDENERS and OTHERS.

TO BE LET, on LEASE for Seven Years from Michaelmas last, about 18 ACRES of valuable and rich MARKET GARDEN GROUND, situate in the rear of Castleton Villas, near Hammersmith Suspension Bridge.

For particulars as to Rent, &c., apply to Messrs SPILMAN & STAFF, Solicitors, 16, Southampton Street, Bloomsbury, W.C.; or to Messrs. BAKER & SONS, Surveyors, &c., Kilburn, Middlesex, N.W.

TO BE LET, with Immediate Possession, in consequence of the present Proprietor being bedfast, the PONDEROSA NURSERY, containing about 4 Acres Nursery Ground, well stocked with Shrub, Fruit, and Forest Trees, in good saleable condition. In the Forest Trees will be found from 200,000 to 300,000 Hazel, from 2 to 4 feet.

For further particulars application to be made to Mr. JOHN SCHOLEY, Nurseryman and Seedsman, Pontefract.

Boston Lane, near Turnpike, Hanwell, Middlesex.
To MARKET GARDENERS AND OTHERS.

TO BE SOLD, by Auction, the Valuable LEASE of a comfortable DWELLING HOUSE, Stable, Cowery, Greenhouses, and about 14 Acres of rich and highly cultivated MARKET GARDEN GROUND, well stocked with the choicest Apple, Pear, Plum, Cherry, Walnut, Filbert, and Red Currant Trees, Gooseberry and Currant Bushes, Strawberry Plants, &c. The whole held on Lease for 21 years from September 29, 1865, at the very low Rent of £30 per annum.

For further particulars, cards to view, &c., apply to Messrs. BAKER & SONS, Surveyors, &c., Kilburn, Maddlesex, N.W.

Sales by Auction.

Climbing Plants, Standard Roses, Specimen Conifers, and Bulbs from Holland.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on SATURDAY, November 17, at half-past 12 o'Clock precisely, a Collection of CLIMBING PLANTS, consisting of Clematises, Lonicera, Jasmines, Roses, Vines, &c.; Dwarf and Standard Trees, Ornamental Shrubs, Specimen Conifers, Standard Roses, and a good selection of Bulbs from Holland.

On view the Morning of Sale, and Catalogues had.

Standard Roses, Fruit Trees, and Dutch Bulbs.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY, November 19, at half-past 12 o'Clock precisely, 1000 Fine-budded STANDARD ROSES, choice named sorts, from a well-known grower in Kent; 500 Pyramid and Dwarf FRUIT TREES, HARDY SHRUBS, and an immense assortment of BULBS from Holland.

On view the Morning of Sale, and Catalogues had.

Periodical Sale of Poultry and Pigeons.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY, November 20, at half-past 12 o'Clock precisely, a first-class assortment of PIGEONS and POULTRY, being the surplus stock of several well-known Fanciers and Breeders.

On view the Morning of Sale, and Catalogues had

Dutch Bulbs, Hardy Shrubs, Roses, Fruit Trees, &c.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, November 21, at half-past 12 o'Clock precisely, 500 HARDY SHRUBS, STANDARD and DWARF FRUIT TREES, Standard Roses, Climbing Roses, &c.—also a fine collection of BULBS from Holland, and some Rustic Vases, Flower Rack, &c.

On view the Morning of Sale, and Catalogues had

Consignment of Plants from Holland.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on SATURDAY, November 24, at half-past 12 o'Clock precisely, an immense assortment of SPECIMEN CONIFERS, HARDY and ORNAMENTAL SHRUBS, PYRAMIDAL VARIEGATED HOLLIES, STANDARD, DWARF and WEEPING ROSES, FRUIT TREES, and other Plants from one of the first Nurseries in Holland, and well within the attention of gentlemen engaged in Ornamental planting.

On view the Morning of Sale, and Catalogues had.

Consignment of Plants from Ghent.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY, November 27, at half-past 12 o'Clock precisely, 200 CAMELLIAS, 200 INDIAN AZALEAS, 300 HARDY RHODODENDRONS, 100 GHENT AZALEAS, 200 PÆONIES, 150 STANDARD ROSES, 300 GLADIOLUS GANDAVENSIS, 50 ACERS, 50 GLYCINE SINENSIS, &c.

On view the Morning of Sale, and Catalogues had.

Sale of Dutch Bulbs, Standard Roses, Fruit Trees, Conifers, &c.

MESSRS. PROTHEROE and MORRIS will SELL by AUCTION, at 58 and 59, Gracechurch Street, E.C., on THURSDAY, November 22, at 1 o'Clock precisely, a First-class collection of DUTCH BULBS, including choice named Hyacinths, Tulips, Crocus, Narcissus, Snowdrops, &c.; a splendid assortment of handsome STANDARD and DWARF ROSES, comprising the finest varieties in cultivation; a fine assortment of fine Evergreens, selected FRUIT TREES of the choicest varieties, &c.; Hardy AMERICAN PLANTS, beautifully furnished with Bloom Buds of Rhododendrons, &c.

May be viewed Morning of Sale. Catalogues had at the Rooms, and of the Auctioneers and Valuers, American Nurseries, Leytonstone, N.E.

A Rare Chance for Nut Planters.

VINE COTTAGE, GERRARDS CROSS, BUCKS.

HOOK'S celebrated SEEDLING COB NUT and other FRUIT TREES, &c., in convenient Lots.

MR. G. C. HETHERINGTON is favoured with instructions from Mr. W. HOOK to SELL by AUCTION, at Vine Cottage, Gerrards Cross, on TUESDAY, November 27, at 1 for 10 o'clock, in consequence of the number of Lots, about 10,000 Hook's celebrated SEEDLING COB NUTS, layered in Beds, bearers, ever before offered. The Hooks well-known SEEDLING COBS, one of the hands most Nuts grown fall the above fine seedlings are from Hook's own growth); 1000 fine young Black Currant Trees; a number of young Damson Trees; a quantity of fine Delphiniums; about a Bushel of Sweet Peas; Canariensis Seeds, Scarlet Runners, 50 Bushels of Potatos, known as the Farmer's Glory; two Stacks of Hay Faggots; a powerful MARE, suitable for a Mare or other Cart; several strong Hives of Bees, &c.

On view, and Catalogues may be had six days previous to the Sale of Mr. Hetherington, Gerrards Cross; of Messrs. Perkins, Chandler; and at the Auctioneer's Offices, 136, Gower Street, London; and High Street, Eton, Bucks.

NEW TARIFF OF GLASS AND HORTICULTURAL GOODS.

THOMAS MILLINGTON,

GLASS AND COLOUR MERCHANT,

87, BISHOPSGATE STREET WITHOUT, LONDON, E.C.

SHEET GLASS.

In Sheets for Cutting up, averaging from 6 to 9 feet super.

15 oz.

4ths quality	.. ..	per 300 feet case	40*s.* 0*d.*	or about 1½*d.* per foot super.
3ds ,,	.. ..	,,	50 0	,, 2 ,, ,,
2ds ,,	.. ..	,,	62 0	,, 2½ ,, ,,
Best ,,	.. ..	,,	92 0	,, 3¾ ,, ,,

21 oz.

4ths quality	.. ..	per 200 feet case	40*s.* 0*d.*	or about 2½*d.* per foot super.
3ds ,,	.. ..	,,	50 0	,, 3 ,, ,,
2ds ,,	.. ..	,,	66 0	,, 4 ,, ,,
Best ,,	.. ..	,,	96 0	,, 6 ,, ,,

26 oz.

4ths quality	.. ..	per 200 feet case	60*s.* 0*d.*	or about 3¾*d.* per foot super.
3ds ,,	.. ..	,,	78 0	,, 4¼ ,, ,,
2ds ,,	.. ..	,,	99 0	,, 6 ,, ,,
Best ,,	.. ..	,,	110 0	,, 6½ ,, ,,

SHEET SQUARES, Cut to Order.

15 oz.

Not exceeding	9 in. by 7 in.	12 in. by 9 in.	1 ft. 6 in. super.	2 feet.	3 feet.	4 feet.	6 feet.	8 feet.
4ths quality	1½*d.*	1¾*d.*	2*d.*	2½*d.*	3*d.*	3*d.*	3¼*d.*	3½*d.*
3ds ,,	1⅝	2	2¼	2¾	3¼	3½	4	4¼
2ds ,,	2	2¼	3	3¾	4	4½	5½	5½
Best ,,	2¼	3	3½	4½	6	6½	7	7½

21 oz.

4ths quality	1¾*d.*	2¼*d.*	3*d.*	3½*d.*	3¾*d.*	4*d.*	4¼*d.*
3ds ,,	2	2½	3¾	4	4½	4¾	4¾
2ds ,,	2¾	3½	4½	5½	5½	6	6¾
Best ,,	3½	4¾	6	6¾	7¾	8	9

26 oz.

4ths quality	2¾*d.*	3½*d.*	4¼*d.*	4¾*d.*	4¾*d.*	5½*d.*	5½*d.*
3ds ,,	3¾	4½	5½	6	6	6	6½
2ds ,,	4½	5¾	6	6¾	6¾	7¾	8¾
Best ,,	5	5¾	7½	8	8½	9	9¾	11¼

32 oz., 36 oz., and 42 oz. are also supplied in various quantities.

EXTRA WHITE or CRYSTAL SHEET GLASS, very superior for Pictures and best Glazing.

RUBY, GREEN, BLUE, YELLOW, COLOURED, ENAMELLED, GROUND, and FLUTED GLASS.

Squares of the following Sizes are usually kept in Stock in 100 feet and 200 feet Boxes.

ORCHARD HOUSE SIZES, as supplied to Mr. Rivers and the leading Horticulturists.

AVERAGE THICKNESS, 15 oz.

20 Inches by 12 Inches.					
20 ,, 13 ,,					
20 ,, 14 ,,	Per 100 feet ..	13*s.* 2*d.*	15*s.* 4*d.*	17*s.* 6*d.*	21*s.*
20 ,, 15 ,,					
20 ,, 16 ,,					

AVERAGE THICKNESS, 21 oz.

20 Inches by 12 Inches.					
20 ,, 13 ,,					
20 ,, 14 ,,	Per 100 feet ..	18*s.* 3*d.*	21*s.* 6*d.*	25*s.*	27*s.* 6*d.*
20 ,, 15 ,,					
20 ,, 16 ,,					

SMALL STOCK SQUARES, 15 oz., per 100 feet.

in. in.	in. in.	in. in.	in.	4ths.	3rds.	2nds.	Best.
.. by 4	7 by 5	8 by 6	9 by 7	11*s.* 4*d.*	13*s.* 3*d.*	15*s.* 0*d.*	18*s.* 0*d.*
6½ by 4½	7½ by 5½	8½ by 6½	9½ by 7½				

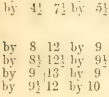
Per 100 feet.

10 by 8	12 by 9	12½ by 10½	14½ by 10½	12*s.* 4*d.*	14*s.* 3*d.*	16*s.* 0*d.*	19*s.* 0*d.*
10½ by 8½	12½ by 9½	13 by 10	15 by 10				
11 by 9	13 by 9	13½ by 10½	13 by 11				
11½ by 9½	12 by 10	14 by 10	14 by 11				

LARGE STOCK SQUARES, 15 oz., per 100 feet.

in. in.	in. in.	in. in.	in. in.	4ths.	3rds.	2nds.	Best.
15½ by 10½	14 by 12	22 by 12	22 by 16	13*s.* 2*d.*	15*s.* 4*d.*	17*s.* 6*d.*	21*s.* 0*d.*
16 by 10	14½ by 12½	17 by 13	24 by 16				
14½ by 11½	15 by 12	23 by 13	20 by 17				
15 by 11	15½ by 12½	18 by 14	22 by 17				
15½ by 11½	16 by 12	22 by 14	24 by 17				
16 by 11	16½ by 12½	24 by 14	20 by 18				
21 by 11	17 by 12	22 by 15	22 by 18				
13 by 12	18 by 12	24 by 15	24 by 18				

The above Prices are only for the Sizes stated, but if a quantity of any other Size be required, a Special Price will be given.



*ZINC HAND GLASSES.

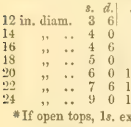
	Unglazed. Each.—*s.*	*d.*	Glazed. *s.*	*d.*
12 in. diam.	3	2	5	6
14 ,, ..	3	8	6	4
16 ,, ..	4	0	7	3
18 ,, ..	4	6	8	3
20 ,, ..	5	0	9	3
22 ,, ..	5	6	10	3
24 ,, ..	6	0	11	3

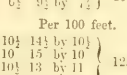
IRON HAND GLASSES.

	s.	*d.*	*s.*	*d.*
12 in. diam.	3	6	5	10
14 ,, ..	4	0	6	9
16 ,, ..	4	6	7	9
18 ,, ..	5	0	8	9
20 ,, ..	6	0	10	3
22 ,, ..	7	6	12	3
24 ,, ..	9	0	14	3

*If open tops, 1*s.* extra.

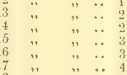
HYACINTH and CROCUS GLASSES.





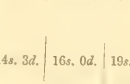
PROPAGATING GLASSES.

	Each.—*s.*	*d.*
3 inches diameter	0	4½
4 ,, ,, ..	0	5½
5 ,, ,, ..	0	6½
6 ,, ,, ..	0	8
7 ,, ,, ..	0	10
8 ,, ,, ..	1	0
9 ,, ,, ..	1	2
10 ,, ,, ..	1	4
11 ,, ,, ..	1	6
12 ,, ,, ..	1	9
13 ,, ,, ..	2	0
14 ,, ,, ..	2	6
15 ,, ,, ..	3	0
16 ,, ,, ..	3	6
17 ,, ,, ..	4	0
18 ,, ,, ..	5	0
19 ,, ,, ..	6	0
20 ,, ,, ..	7	0



HYACINTH DISHES.

	Each.—*s.*	*d.*
6 inches diameter	1	0
9 ,, ,, ..	1	6
12 ,, ,, ..	2	6

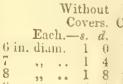


PRESERVE JARS.

In. diam.	Without Lids.		With Lids.	
3 ..	0*s.* 4½*d.*		0*s.* 6½*d.*	ea.
4 ..	0 6		0 9	,,
5 ..	0 8		0 11	,,
6 ..	0 10		1 2	,,
7 ..	1 0		1 4	,,
8 ..	1 4		1 8	,,
9 ..	1 8		2 2	,,
10 ..	2 0		2 8	,,

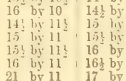
CREAM POTS.

	Without Covers. Each.—*s.*	*d.*	With Covers. *s.*	*d.*
6 in. diam.	1	0	1	3
7 ,, ..	1	4	1	8
8 ,, ..	1	8	2	0
9 ,, ..	2	0	2	6
10 ,, ..	2	6	3	3
11 ,, ..	3	0	4	0
12 ,, ..	3	6	4	9
13 ,, ..	4	0	5	6
14 ,, ..	5	0	6	6



CUCUMBER GLASSES.

From 12 inches long and upwards, at 1*d.* per running inch.



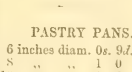
MILK PANS.

6 inches diam.	*s.*	*d.*	each
8 ,, ,,	0	9	,,
10 ,, ,,	1	0	,,
12 ,, ,,	1	3	,,
14 ,, ,,	1	9	,,
16 ,, ,,	2	3	,,
18 ,, ,,	2	9	,,
20 ,, ,,	3	3	,,
22 ,, ,,	3	9	,,
24 ,, ,,	4	6	,,

Intermediate sizes in proportion.

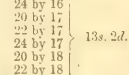
PASTRY PANS.

6 inches diam.	*s.*	*d.*	each
8 ,, ,,	1	0	,,
10 ,, ,,	1	6	,,
12 ,, ,,	2	0	,,
14 ,, ,,	2	9	,,
16 ,, ,,	3	6	,,
18 ,, ,,	4	6	,,
20 ,, ,,	5	6	,,



ROLLING PINS.

From 12 inches long and upwards, at 1½*d.* per running inch.



BEE GLASSES,

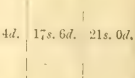
With Ventilating Hole through knob.

4 inches diam.	*s.*	*d.*	each
5 ,, ,,	0	8	,,
6 ,, ,,	0	10	,,
7 ,, ,,	1	1	,,
8 ,, ,,	1	4	,,
9 ,, ,,	1	8	,,
10 ,, ,,	2	0	,,
11 ,, ,,	2	6	,,
12 ,, ,,	3	0	,,

FLAT-TOP BEE GLASSES.

Height.	Width.	Each. *s.*	*d.*
4½	by 7 ..	1	6
4½	by 7½ ..	1	9
5	by 7½ ..	2	0
6½	by 8 ..	2	3
7½	by 8½ ..	2	10

Larger sizes can be made.



FISH GLOBES.

In. diam.	Qts.	*s.*	*d.* each
7 ,,	¾ filled,	2½	0*s.* 9*d.*
8 ,,	,,	3	0 10
9 ,,	,,	4	1 3
10 ,,	,,	6	1 11
11 ,,	,,	8	2 1
12 ,,	,,	9	2 2

Larger sizes can be had up to 16 inches.

If on feet, 50 per cent. more.

AQUARIA.

	With Stands. Each.—*s.*	*d.*	Without Stands. *s.*	*d.*
8 in. diam.	2	9	1	3
9 ,, ..	3	0	1	6
10 ,, ..	3	3	1	9
11 ,, ..	3	9	2	0
12 ,, ..	4	0	2	3
13 ,, ..	4	6	2	6
14 ,, ..	5	0	3	0
15 ,, ..	6	3	3	9
16 ,, ..	7	0	4	6
17 ,, ..	9	6	5	0
18 ,, ..	10	6	6	0
19 ,, ..	12	3	7	0
20 ,, ..	13	3	8	0

GENUINE WHITE LEAD, 34*s.* per cwt.
SECONDS ,, 32*s.* ,,
GROUND PATENT DRYERS, 3*d.* to 4*d.* per lb.
,, OXFORD OCHRE, 3*d.* to 4*d.* per lb.
,, RAW UMBER, 4*d.* to 6*d.* per lb.
,, BURNT do., 5*d.* to 9*d.* per lb.
GREEN PAINT, all shades, 28*s.* to 60*s.* per cwt.
BLACK PAINT, 24*s.* to 36*s.* per cwt.
RED PAINT, 28*s.* to 36*s.* per cwt.

Dry Colours.

LAMP BLACK, 28*s.* per cwt.
YELLOW OCHRE, 10*s.* per cwt.
ENGLISH UMBER, 10*s.* per cwt.
RED LEAD, 30*s.* per cwt.
LITHARGE, 28*s.* per cwt.
PURPLE BROWN, 28*s.* to 56*s.* per cwt.

MILLED LEAD, in Sheets and Pipes, of all kinds. OLD LEAD Bought or taken in exchange. LIFT PUMPS, WATER CLOSETS, & PLUMBER'S BRASS WORK of all kinds.

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This Paint adheres firmly to the walls, resists the weather, and is free from the glossy appearance of Oil Paint, resembling a stone surface, and can be made any required shade. It is mixed with rain or pure river water.

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Special Dryers for this Paint.

Improved Anti-Corrosion Paint, 28s. to 34s. per cwt.

Anti-corrosion Paint is extensively used for all kinds of work in exposed situations, on Brick, Stone, Compo, Iron, Iron Bridges, Conservatories, Greenhouses, &c., and is easily laid on by any ordinary workman.

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LINSEED OIL, 5*s.* 9*d.* per gallon
BOILED OIL, 4*s.* 3*d.* per gallon
TURPENTINE, 4*s.* per gallon
LINSEED OIL PUTTY, 38*s.* per cwt.
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Fine CARRIAGE VARNISH, 12*s.* to 14*s.* per gallon
Fine CRYSTAL or PALE do., 10*s.* to 12*s.* per gallon
Fine COPAL, 16*s.* per gallon
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PATENT GOLD SIZE, 10*s.* per gallon
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GRAINING COMBS | GRAINING BRUSHES

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THE GARDENERS' CHRONICLE

AND

AGRICULTURAL GAZETTE.

A Newspaper of Rural Economy and General News.

No. 47.—1866.] SATURDAY, NOVEMBER 24. {Price Fivepence. STAMPED EDITION, 6d.

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Prices on application.

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BULB CATALOGUE sent free.
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MAGNIFICENT PYRAMID FRUIT TREES.—Fine-grown Bearing Trees of PEARS on Quince Stock; APPLES on Paradise; CHERRIES on Mahaleb; PLUMS, &c. Special quotations on application.
JOHN CRANSTON, Nurseries, King's Acre, near Hereford.

WEBB'S PRIZE COB, FILBERT and other PRIZE NUT TREES. LIST of varieties and prices to be had of
Mr. WEBB, Calcot Gardens, Reading.

CASTLE KENNEDY FIG.—Plants of the above may now be had at 10s. 6d. and 21s. each; the usual discount to the Trade. PETER LAWSON & SON, Edinburgh and London.

JAMES FAIRHEAD AND SON, SEED GROWERS and MERCHANTS, 7, Borough Market, London, S.E.
New and Genuine AGRICULTURAL, GARDEN, and FLOWER SEEDS. Special prices and advantageous offers on application.

Genuine Garden and Agricultural Seeds.

JAMES CARTER AND CO.,
SEED FARMERS, MERCHANTS, and NURSERYMEN,
237 & 238, High Holborn, London, W.C.

GUNN AND PETRIE,
NURSERYMEN, SEEDSMEN, and FLORISTS,
Ness Walk Nurseries, Inverness.

JEAN VERSCHAFFELT'S New Horticultural Establishment, 134, Faubourg de Bruxelles, Ghent, Belgium.
CATALOGUES free on application.

SUTTON'S RINGLEADER PEA.
THE EARLIEST IN CULTIVATION.
2s. per quart.

To the Trade.

THE ESSEX RIVAL PEA, in any quantity.
For price, &c., apply to
THOS. ELEY, Sible Hedingham, Halstead, Essex.

To the Trade.—Raphanus caudatus (True).

SUTTON AND SONS can supply the above on liberal Terms. Lowest price on application.
SUTTON & SONS, Seed Merchants, Reading.

RAPHANUS CAUDATUS, True.—Sealed Packets, containing 12 Seeds of this NEW RADISH, will be forwarded post free on the receipt of 2s. 6d. in postage stamps, with address.
. The Trade supplied by 100 or 1000.
WM. MAULE & SONS, Nurserymen and Seedsmen, Bristol.

ASPARAGUS, 2, 3, and 4-yr. old, very strong, to be Sold Cheap. Inquire of
M. ROCHFORD, Market Gardener, Page Green, Tottenham, N.

ASPARAGUS PLANTS.
Strong 3 yr. Asparagus Plants, 10s. per 1000.
WANTED, 200 extra strong Forcing ASPARAGUS PLANTS.
J. G. GODWIN, 3 and 4, Norfolk Market Hall, Sheffield.

THREE-YEAR ASPARAGUS PLANTS, 15s. per 1000; 2s. per 100.
ONE-YEAR ASPARAGUS, 6s. per 1000; very fine.
RICHARD WALKER, Market Gardener and Seed Grower, Biggleswade, Beds.

TRADE PRICES of CATTELL'S PURPLE-TOP BEET, CATTELL'S ECLIPSE BROCCOLI, KIRKLEES HALL CUCUMBER, and other Seeds of Choice Vegetables, may be had on application to
JOHN CATTELL, Westerham, Kent.

SEA-KALE.—30,000 strong Roots for Forcing.
Apply to Mr. GALLACHER, Sutton, Surrey, S.

Extra fine Seakale for Forcing and Planting.

GEO. CLARKE has many Thousands of the finest quality to offer this season. Prices 5s., 7s. 6d., 10s., and 15s. p. 100.
Nurseries, Streatham Place, Brixton Hill, S.E.; & Mottingham, Kent.

Orchard-house Trees for Planting-out in Orchard Houses

APRICOTS.—Half Standards and Standards; fine bushy trees, 4s. 6d. each.
NECTARINES.—Half Standards and Standards, bushy trees, 4s. 6d. each.
PEACHES.—Half Standards and Standards, bushy trees, 4s. 6d. each.
The above are extra fine, transplanted seasons, having been grown in pots for orchard-house.
THE HARD-WOOD TREES for POT CULTURE.
APRICOTS.—Pyramids and bushes, bearing trees, from pots; average price, 3s. 6d. each.
PEACHES and NECTARINES.—Pyramids and bushes, bearing trees, from pots; average price, 3s. 6d. each.
PEARS, PLUMS, and CHERRIES.—Pyramids, bearing trees, from pots, average price, 3s. 6d. each.
APPLES.—Pyramids, bearing trees, 2s. 6d. each
Catalogues on application.
THOS. RIVERS & SON, Nurserymen, Sawbridgeworth

To Market Gardeners and Orchardists.

DONALD and SON, of the Godworth Nurseries, Woking, Surrey, have in unusually large stock of Standard, Half-standard, and Dwarf APPLES, PEARS, PLUMS, and CHERRIES. The most choice and popular kinds, which they are now prepared to offer in quantities at a considerable reduction on the usual Trade prices; a portion of the stock is planted in light sandy soil, which have expired. A PRICED LIST may be had, and samples of sorts can be inspected.

WM. VIRGO and SON have a large Stock of the most approved FRUIT, FOREST, and other TREES to offer this season, viz.—

Apples	Aster	Withy
Cherries	Ash	Quick strong transplanted
Plums	Cytisus (Spanish)	Beech
Pears	Laburnum	Common and fortugal Laurels
Peaches and Nectarines	Hazel	Privet
Vines	Lombardy Poplar	Roses, &c.
Forest Trees	Weeping Ash	

Samples and Prices can be had on application at The Nursery, Woodham, near Guildford, Surrey.

To the Trade.

MAIDEN FRUIT TREES, RED and BLACK CURRANTS, ASPARAGUS ROOTS, STANDARD ROSES, FRUIT TREES, &c. A quantity stock of the above to offer. Prices and samples on application to

HARRISON & SON, Seed Merchants and Nurserymen, Leicester.

TRAINED FRUIT TREES, from 30s. per dozen for Each, consisting of PEACHES, NECTARINES, APRICOTS, PEARS, APPLES, PLUMS, CHERRIES, &c., all in excellent condition, and fit for immediate planting. Also general NURSERY STOCK at very low prices.

ELIZA THOMPSON, Lewisham Park Nursery, Kent.

WALL-TRAINED TREES of BEARING SIZE.—Our Trade List of WALL-TRAINED TREES are very fine, and include PEACHES, NECTARINES, APRICOTS, and FIGS, suited for planting in houses for immediate Fruiting. An inspection is respectfully invited.

T. JACKSON & SON, Nurserymen, Kingston, Surrey

FRUIT TREES.—The finest collection in England. 2000 sorts to be grown in all outdoor training, and are free from insects, mildew, or old moss, with white roots to some Nurserymen's collections are accustomed. Those only which should be avoided, as which are attacked they can never be cured.

A large CATALOGUE, and List of the Supplemental Information gratis, on application to J. SMITT, The Nurseries, Mansfield, Notts.

Fruit Trees, Roses, Evergreens, &c.

W. KNIGHT begs to inform Nurserymen, Planters and others that he has more Thousands of the above, with other ORNAMENTAL TREE and SHRUB, in the finest possible condition, at reasonable prices. An inspection is respectfully invited. DESCRIPTIVE PRICED CATALOGUES forwarded.

The Nursery is within two minutes walk of the Hailsham Station (South Coast Railway)

Hailsham Nursery, Hailsham, Sussex.

Roses, Fruit Trees, Conifers, Forest Trees, &c.

JOHN CRANSTON begs to direct attention to a large and superior Stock of ROSES, FRUIT TREES, CONIFERS, FOREST and ORNAMENTAL TREES, &c.

His Nursery, extending over upwards of 100 Acres, situated in the centre of the county of Hereford (which is acknowledged to possess the finest soil and climate for the growth of Fruit and Forest Trees of any other county in England), and is well stocked with Trees of every description.

DESCRIPTIVE PRICED CATALOGUES will be forwarded on application; and to Purchasers of large quantities special and most advantageous Prices will be given.

Planting undertaken by Contract or otherwise.

Nurseries, King's Acre, near Hereford

Extra strong Trained Fruit Trees.

SALTMARSH and SON have a Large Stock of the above to offer at moderate prices, consisting of Dwarf and Standard-trained PEACHES, NECTARINES, and APRICOTS. Disbudded MORELLO and MAYDUKE CHERRIES, PLUMS, PEARS, &c., difficult to train, and comprising the best varieties in cultivation. CATALOGUES with further particulars and Price on application to Market Nurseries, Chelmsford

A Quarter of a Million of Fruit Trees.

THOMAS WATERER begs to remind intending Planters and the Trade, that his Nurseries, which occupy upwards of 70 acres, contain the largest and most extensive stock of Evergreens, Ornamental Trees, Roses, &c., and in a large variety of each class. All the plants are respectfully invited. CATALOGUES, Wholesale or Retail, may be had free on application

The Nurseries, Leicester Abbey, one mile and a half from the Midland Railway Station.

Fruit Trees.

WOOD and INGRAM wish to call the attention of Planters and the Trade to their large stock of the following, which they are prepared to supply at very moderate rates, according to the quantity taken—

APPLES, Standards, Half Standards, and Dwarfs.
APRICOTS, Dwarf Standard, and Fan-trained.
CURRANTS, fine bushy plants, all the best kinds.
GOOSEBERRIES.
GRAPE VINES, from Eyes, Planted and Fruiting Canes.
" Layers, well-rooted. Canes 1 inch round.
NUTS and FILBERTS, all sizes up to 11 to 14 feet.
PEACHES, Dwarf Maiden, or Cordon and trained.
PEARS, Standards, Dwarfs, and Pyramids.
PLUMS, Standards, Half-Standards, and Dwarfs.
CATALOGUES sent free on application.
The Nurseries, Huntingdon.

CHARLES NOBLE has a large quantity to offer of the undermentioned, by the dozen, hundred, or thousand:—

Dwarf Roses of all the best kinds, large bushes, 2 to 3 feet high
Standard Roses
SPANISH IRIS'S, 1s. per doz., fine, 1-year
TUBEROSES, very fine
TURKEY Ranunculus, very fine, 1-year
MANETTII and STAR Anemones, very fine, 1-year
DOUBLE and SINGLE Petunias, very fine, 1-year
STRAWBERRIES, 2s. 6d. per 100, or 20s. per 1000—

Bicton Queen	Keen's Seedling	Oscar
Filmer's Seedling	La Constante	Waterloo
Sir C. Napier	Magnificent	Prince Arthur

Sample and Price, 1s. Prepaid.

Sunningdale Nursery, Bagshot, Surrey

To the Trade.

FOR SALE, in consequence of the expiration of a lease, a large quantity of SPOOLS, surrounded with fine layers, of Mulberries, Limes, Planes, Magnolias, Azaleas, Lilacs, Aucubas, &c.; also quantities of various sized Limes, Mulberries, Poplars, Laburnums, Planes, Scarlet Thorns, Lilacs, Aucubas, Euonymus, Magnolias, White Rhododendrons, Althæas, Ivies, Figs, Grape Vines, fine standard and trained Fruit Trees of all sorts, 7 yards of clipped Beech hedging, 5 feet high, 2 feet wide, and other general Nursery Stock, which may be seen and selected from daily at

J. EVANS, Clerkenhow Nurseries, Camberwell New Road, S.

Hardy Ornamental Trees, Shrubs, Roses, &c.
NEW PLANT.

PAUL and SON'S NEW DOUBLE SCARLET THORN. See former Advertisement. Standards, 10s. 6d. each DESCRIPTIVE LISTS of the above post free on application to PAUL & SON, Old Chesthunt Nurseries, N.

SEEDLING and TRANSPLANTED FOREST TREES of all sorts, including very strong Transplanted LARCH, SCOTCH and SPRUCE FIRS, SILVER FIR, and all sorts of Hard Wood. PRICE LIST on application

Through rates to all parts of the kingdom.

R. M. MASON, Elgin, N.B.

LARCH, &c., at the Nursery of the late David A. Reid, Park Attwood, Bewdley, Worcestershire.—LARCH, 1 to 2 feet, 10s. per 1000; 2 to 3 feet, 15s. per 1000; 2½ to 3 feet, 18s. per 1000; 3 to 4 feet, 16s. per 100; PEAR STOCKS, 2½ to 3 feet, 16s. to 40s. per 1000. LISTS of the other TREES sent on application. Apply, with reference or remittance, to

JAMES RIDDELL, Steward, Park Attwood, near Bewdley

County of Cork.

FOREST TREES.—200,000 LARCH, 4 and 5-yr. old, average height 4 feet, two and three times removed, and grown in a cold soil on a much exposed situation. Hardy and well-rooted. Quick transit to Wales and South of England. For particulars apply to ARTHUR KNOX, Nurseries, Newmarket, Co. Cork.

CEDRUS DEODARA. Fine Plants for immediate effect, from 8 to 6, 7, and 10 feet high, safe to transplant, at 1s per foot. Some extra-sized specimens, 15 to 25 feet, at 2s per foot. Most of the plants offered are in Lane Pots, making their removal certain beyond doubt.

MALLE & SONS, The Nurseries, Bristol

Wellingtonia aurea variegata.

R. HARTLAND begs to offer good Plants of this most beautiful Tree. 1st size, very choice, 8 to 12 inches, 25s.; 2d size, good, 5 to 7 inches, 12s. Received 1st class Certificate from Royal Horticultural Society; and Full History of the Tree, see *Gardeners' Chronicle* of October 6, page 948.

CHROMOLITHOGRAPHS by Messrs. Day & Son, free by post for 25 stamps. The Rough Sun of the Tree, Cork

To the Trade.

WINTER and SPRING-FLOWERING PLANTS.—Our stock of Soft-wooded ERICAS, EPACRIS, AZALEAS, and New Holland Plants as extra fine this year, and being much greater than we can flower, we are selling at unusually low prices.

T. JACKSON & SON, Nurseries, Kingston, Surrey (adjoining the Railway Station), S.W.

New Catalogue.

THOMAS S. WARE'S GENERAL AUTUMN CATALOGUE, containing Lists of EVERGREEN and DECIDUOUS TREES and SHRUBS, CONIFERS, HERBACEOUS, and ALPINE PLANTS, &c., is now ready and will be forwarded post free on application

The Nurseries adjoin the Railway Station, Tottenham, Middlesex.

ONE THOUSAND COMMON MONTHLY ROSES, strong blooming plants, 20s. per 100. 100 CRAMOISIE SUPÉRIEURE, do., 25s. per 100; HORSE CHESTNUT, extra-good, 2000, 6 to 9 feet, 4s. 6d. per 100. 1000 Busby PORTUGAL LAURELS, well rooted, 1, 2, and 3 feet, 20s. per 100. 500 ENGLISH YEW, 2 to 3 feet, 30s. per 100; 500 extra fine well-rooted and beautifully furnished HEMLOCK SPRUCE, fit for single specimens, 4 feet, 12s. per doz. BERBERIS DARWINII, 2 to 3 feet, 12s. per 100.

A. GIBBINS & SON, Ashbourne, Derbyshire.

This Advertisement will not be repeated.

Autumn Planting.

PETER LAWSON AND SON, at the present most suitable time for Transplanting CONIFEROUS and EVERGREEN TREES and SHRUBS, have to state that their stock of those is very large and in healthy condition.

Special offers for large quantities will be made on application.

Edinburgh and London.

Contract Planting.—To Noblemen and Gentlemen.

CHARLES SHARPE AND CO., NURSERYMEN, Sleaford, Lincolnshire, are prepared to furnish ESTIMATES for the formation of NEW PLANTATIONS by Contract, including Plants Planting, and Filling up for two years

JAMES SHEPPARD has a large Stock to offer of COMMON LAURELS, from 1 to 5 feet
LIGUSTRUM OVALIFOLIUM, 1 to 5 feet
SIBERIAN ARBOR-VITÆ, 1 feet, fine specimens
AMERICAN " 8 feet "
COMMON PRIVET, 1 to 4 feet.
Prices on application.
The Nurseries, Bedford.

Araucaria imbricata.—Surplus Stock.

WILLIAM SKIRVING, Walton Nursery, Liverpool, begs to offer 10,000 of the above, from 2 to 4 feet high, healthy well-grown plants with good roots.

2 feet, 18s. per dozen; £6 10s. per 100.
3 feet, 24s. per dozen; £8 15s. per 100.
4 feet, 36s. per dozen; £12 10s. per 100.
Less per 1000

TO THE TRADE.

500,000 2-yr. Transplanted QUICKS, 1 to 3½ feet.
200,000 1-yr. Seedling QUICKS, 6 to 12 inches.
20,000 2-yr. CRAB STOCKS, 2 to 3½ feet
100,000 2 and 3-yr. Transplanted LARCH, 1 to 3½ feet.
5000 RED CRAB, extra fine, 2 to 3½ feet.
2000 Standard PEARS, 5 to 7 feet stems
Prices and samples on application to WILLIAM COATES, Old Nurseries, Dungton, Gainsborough

TWO HUNDRED and FIFTY THOUSAND LARCH FIR, 2 to 6 feet high.
200,000 handsome SCOTCH FIRS, 2 to 6 feet high.
Handsome SILVER FIRS, 3 to 10 feet high
Price on application to
JOHN CATTELL, Nursery and Seed Establishment, Westerham, Kent.

To Gentlemen and Others about to Plant.

THOMAS SAMPSON begs to call attention to his extensive stock of EVERGREENS and SHRUBS, ORNAMENTAL TREES, FRUIT and FOREST TREES of every description, ROSES, FLOWERS, &c. CHRYSANTHEMUMS in 100 varieties: CEDRUS DEODARA from 3 to 15 feet; THUJA AUREA in fine specimens. All the above are offered at very low prices.

The Nurseries, Preston Road, Yeovil, Somersetshire.

IMPROVEMENTS.—Gentlemen wishing to make Alterations or Improvements in Pleasure Garden, Kitchen Garden, Lawn, or Park, would do well to consult

H. LANE and SON'S ROSE CATALOGUE,
" FRUIT CATALOGUE, and
" TREE and SHRUB CATALOGUE, &c.
which may be had on application, mentioning
The Nurseries, Berkhampsted, Herts

An inspection of their Stock is cordially requested. The finest and largest quantity of ARAUCARIA IMBRICATA in Europe.

SUPERB NEW LATE GRAPE—MRS. PINCE'S BLACK MUSCAT.

LUCOMBE, PINCE, & CO.

Beg leave to call the attention of the Public to this exceedingly fine and highly valuable GRAPE, which may now be seen in great perfection at their Nursery. It has been awarded a First-class Certificate by the Royal Horticultural Society of London, and elicited the praises of numerous eminent Horticulturists. It is *essentially* a LATE Grape, possessing high Muscat flavour. It will keep in perfection until April.

VINES will be ready to send out in August, 1867, at the following prices:—

Strong Canes, £1 1s. each; Fruiting, £2 2s. each; Extra strong, £3 3s. each.

☞ *Orders will be executed in strict rotation as received.*

Copies of the numerous Testimonials now in their possession will be forwarded upon application.

EXETER NURSERY, EXETER.

NEW SEEDS in SEALED PACKETS for SEASON 1867.

B. S. WILLIAMS,

VICTORIA and PARADISE NURSERIES, UPPER HOLLOWAY, LONDON, N.,

HAS PLEASURE IN OFFERING

THE FOLLOWING NEW KINDS OF VEGETABLE SEEDS.

The Orangefield Dwarf Prolific Tomato.

This variety was a sport from the old Large Red Tomato, selected and perpetuated by Mr. M'Lachlan, Gardener to J. B. Houston, Esq., Orangefield, near Belfast, Ireland. After 4 years' careful trial it has been proved to be undoubtedly the finest Tomato we possess.

Description.—Very dwarf, but strong in habit; never shows any signs of being stunted or unhealthy; bearing a greater quantity of fruit than has ever been seen on a Tomato. Is well adapted for indoor culture in those parts where (through the humidity of the climate) Tomatoes have refused to perfect fruit out of doors. It will stand being cut back or drawing, and any amount of culture will not destroy its fruit bearing. The following Testimonials from well-known practical gardeners, to whom it was sent for trial, testify to its superior merits.

From Mr. W. THOMSON, *Head Gardener to* His Grace the Duke of Buccleuch, *Dalkeith Palace, Scotland*.

"The Orangefield Tomato is to produce in Mr. M'Lachlan I have grown for the two preceding years. It is the best of the large fruiting Tomatoes very much in habit compact in growth, either planted out in a border or in pots; is a great bearer, and Orangefield excellent."

From Mr. W. ALLAN, *Head Gardener to the* Right Hon. Lord Lurgan, *Brownlow House, Lurgan, Ireland*.

"Having grown the Orangefield Tomato during the past season in a house with the Large Red, I consider it superior to that variety, for the following reasons:—It is particularly dwarf; equally as productive; fruit quite as large and (with me) much earlier than the Large Red. As the Tomato seldom ripens out of doors in this climate, I can confidently recommend the Orangefield variety to all those who wish an abundant supply in a moderate space."

From Mr. GEORGE GRIEVE, *Head Gardener to the* Most Noble the Marquis of Londonderry, *Mount Stewart, Ireland*.

"I have great pleasure in bearing testimony to the superior qualities of the Orangefield Dwarf Prolific Tomato. From its great productiveness, combined with its dwarf compact habit of growth, I consider it a great acquisition for indoor culture."

From Mr. BURNS, *Head Gardener to* J. L. W. Naper, Esq., *Loughcrew, Oldcastle, Ireland*.

"I feel much pleasure in being able to testify to the good quality of your Tomato. It is the very best I ever grew; very dwarf; an excellent bearer; fruit large, of beautiful colour."

Price 2s. per packet.

Williams' "Alexandra" Broccoli.

An excellent new variety, a truthful description of which is subjoined. We fully anticipate that this kind, when tried, will take the leading place amongst the many varieties of Broccoli now in existence.

Description.—No doubt a cross between Snow's Winter White and Knight's Protecting. It has a very hardy constitution; the merit of forming large solid heads, somewhat conical in shape, and so white as most Cauliflowers, and of excellent quality. Leaf with quite characteristic. The crown, as it becomes large, is most firmly enveloped in abundance of leaves until it approaches maturity, and as it is best for cooking when the upper parts of the flowers (which are in more immediate contact with the apex of the conical-shaped crown) flex abruptly and reveal, for the first time, the tip of pure white. As the finest of White Broccoli is without a parallel, and for cold northern localities, owing to its constitutional hardihood, it will be looked upon as a boon.

If sown at the latter end of April, it will come in for use the first week in May of the following year

Price 2s. 6d. per packet.

A List of the "Trade" who have ordered their supply direct from here will be advertised in the Horticultural Papers in a short time.

AMBROISE VERSCHAFFELT, NURSERYMAN,

GHENT, BELGIUM,

OFFERS THE FOLLOWING NEW PLANTS.

GREENHOUSE.

AZALEA INDICA CRYSTALLINA.—Bright rose salmon colour, finely spotted, very fine form and free bloomer, 12s.

CAMELLIA MRS. DOMBRAIN (figured in the "Illustration Horticole").—Beautiful rose, extremely tender, and one of the finest imbricated forms, 12s.

NEW AUTUMNAL CHRYSANTHEMUMS (published in the "Illustration Horticole").—Seven beautiful varieties; the set, 16s.

HARDY.

ALNUS AUREA (the Golden Alder Tree).—This will be one of the finest Trees It is the common Alnus, with splendid golden leaves, 8s.

FEAR BEURRÉ DE FROMENTEL (figured in the "Illustration Horticole").—One of the best Pears sent out, 8s. This fine Pear obtained several Prizes.

RHODODENDRON ARCHIDUC ETIENNE (lately figured in the "Illustration Horticole").—Beautiful white flowers, with numerous black spots. Good plants, 12s, strong plants, £1

HARDY.

RHODODENDRON EXQUISITUM.—Light rose, with large red spots, very fine, 8s.

RHODODENDRON GRATIOSUM.—Lilac rose, very delicate, with large spots, very fine, 8s.

RHODODENDRON MADAME RUDOLPH ABEL.—Great improvement on Rhododendron Prince Camille de Rohan; spots more distinct, very remarkable, 8s.

TEA ROSE ISABELLE SPRUNT (lately figured in the "Illustration Horticole").—One of the best Tea Roses sent out, 8s.

WEIGELA PURPURATA.—One of the most distinct varieties obtained; the blooms are large purplish red, and of much effect, 4s.

GYNERIUM ARGENTEUM FOLIIS VARIEGATIS.—I beg to offer five well-rooted plants, grown in pots, of this beautiful true variegated Gynerium, which is the only variety sent out by Mr. Rendatler. Good plants, 7s. 6d.; six plants, £2.

The NEW GENERAL CATALOGUE, No. 79, is ready, and may be obtained free by writing to AMBROISE VERSCHAFFELT, Ghent, Belgium. A Coloured Drawing of the New Tea Rose Isabelle Sprunt may be also obtained free.

AMBROISE VERSCHAFFELT recommends his Monthly Publication, the "ILLUSTRATION HORTICOLE." Each Number contains Three Coloured Plates of the best and newest plants. Price 14s. 6d. a year, free. A Specimen Number may be obtained free.

HILL'S JUNE BROCCOLI.

E. P. FRANCIS & CO.,

HAVE GREAT CONFIDENCE IN RECOMMENDING THE ABOVE BROCCOLI

TO THE GENTRY AND PUBLIC GENERALLY.

They have had the opportunity of seeing it grow during the last three seasons in the gardens of R. Hanbury, Esq., Poles, Ware, and they have no doubt but that its local reputation will soon become generally established.

Its special value is derived from the fact that its season extends from the last week in May to the end of June—thus supplying a want that has long been felt, by filling up the time between the ordinary Broccoli and Cauliflower seasons.

Its habit is strong; the heads of a medium size, and exceedingly close and white; and the flavour all that could be desired.

Numerous Testimonials have been received, but the following from MR. MERRICK, *Gardener to* Russell Ellice, Esq., *Brickendonbury, Herts, has been selected.*

"I have seen Hill's June Broccoli growing the last three seasons, and think it the very best yet brought out. It is hardy and strong in growth, has close white heads of a medium size, and comes in the end of May and continues through June, so much wanted to join the Broccoli and Cauliflower season together. This year I saw it as late as the 16th of June in the open quarters, and have no doubt it could be kept till the end of June by moving it to a cool border, by which time Cauliflowers are well in. Be bound to be grown in every garden."

Price in Sealed Packets, 2s. 6d. each. Post Free.

THE NURSERIES, HERTFORD.—1866.

Price to the Trade upon application.

New Grass Seeds for Exportation.

SUTTON AND SONS have received their supply of NEW GRASS SEEDS of the present season's growth in fine condition, and will be happy to forward a parcel, one per ton or cwt on application. CATALOGUES gratis and post free.

Sutton & Sons, Royal Berkshire Seed Establishment, Reading.

DUNCAN'S WIND-RESISTER WHEAT.—The Subscriber begs to intimate that as the limited supply of the above is already nearly exhausted, the price will be now One Guinea per Bushel, or Seven Guineas per Quarter. Cash to accompany order. For description see previous Advertisement in *Gardeners' Chronicle*, p. 901.

JAMES DUNCAN, Portlethie Mill, Carmuirie, Forfarshire. Nov. 17.

To Market Gardeners and Others.

CABBAGE PLANTS.—East Ham, Enfield Nonpareil, Robinson's Champion Drumhead, 2s. per 1000.

RED CABBAGE PLANTS, 4s. per 1000, extra fine. Terms, cash. I will challenge England with Plants, the Stock true, and can be warranted. All grown by

RICHARD WALKER, Market Gardener and Seed grower, Biggleswade, Beds.

Seed Potatos.

H. AND F. SHARPE are now offering MYATT'S PROLIFIC KIDNEY, DAINTRIES EARLIEST, WEBB'S IMPERIAL KIDNEY, FORTY-FOLD, FOX'S SEEDLING, EARLY OXFORD, and many other Early and Late varieties, fine in quality, free from disease, and at low prices.

Seed Growing Establishment, Walsherly, Cambridgeshire.

The Earliest Pea Grown is

CARPENTER'S EXCELSIS, gathered on the 7th May, (See Testimonials), THE EARLIEST DATE ON RECORD, price 3s. per quart. The usual discount to the Trade.

EDWARD CARPENTER, Seed Merchant and Grower, Brighton and Sussex Seed Warehouse, No. 38, St. James's-road, Brighton.—Oct. 20.

The Earliest Pea in Cultivation. Sutton's Ringleader.

SUTTON AND SONS have again the pleasure of offering this unrivalled EARLY PEA, which still retains its position as the best and most early Pea yet introduced. The various trials made both in Public and Private Gardens may confirm the conclusion Messrs. SUTTON expressed of the superiority over every other Early Pea. One of its merits is that the haulm can be cleared away and the ground planted with another Crop nearly a fortnight before other Early Peas are ready. Retail price, 2s. per quart.

Lowest price to the Trade may be had on application.

SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

To the Trade.

SUTTON'S RINGLEADER PEA.

The EARLIEST in CULTIVATION

The following Seedsmen have already ordered a supply direct from Messrs. SUTTON:—

Messrs. Cooper & Bolton, 152, Fleet Street, London, E.C.
" Hurst & Son, 6, Leadenhall Street, London, E.C.
" Miller, Nash, & Nash, 60, Strand, London, W.C.
" Nutting & Sons, 60, Bartholomew Close, E.C.
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Lowest Price to the Trade on application.

SUTTON & SONS, Seed Merchants, Reading.

UNDER THE PATRONAGE OF HER MOST GRACIOUS MAJESTY THE QUEEN,

AND MOST OF THE NOBILITY AND LANDED PROPRIETORS THROUGHOUT BRITAIN.

FRANCIS & ARTHUR DICKSON & SONS,

THE OLD ESTABLISHED SEED WAREHOUSE,

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THE BEST EARLY PEA IN CULTIVATION—DICKSON'S "FIRST & BEST."

FRANCIS AND ARTHUR DICKSON AND SONS are gratified to find that this Pea has again this Season (1866) given universal satisfaction, and is pronounced by the most experienced Gardeners in Britain, and other competent Judges (confirmed also by their own *repeated* trials against all the Early Peas of the day), to be the very best *FIRST* EARLY PEA ever offered for general good *qualities*, viz., EARLINESS, PRODUCTIVENESS, and SUCCESSION OF CROP.

Retail Price, 1s. 6d. per Quart. Price to the Trade on application.

The following TESTIMONIALS, which have been received with many others of an equally satisfactory nature, will sufficiently establish its claim to be considered the "FIRST & BEST" EARLY PEA:—

From Mr. GEORGE EDWARDS, *Gardener to the* Hon. E. COKE.

"Longford Hall, Derbyshire

"Your 'First and Best' Early Pea is quite ten days earlier than Daniel O'Rourke: very productive, of good flavour, and in every respect a first-class Early Pea."

From Mr. J. GARDNER, *Gardener to the* Hon. E. S. P. JERVIS.

"Little Aston Hall, Warwickshire

"I have great pleasure in giving you my opinion on the merits of your 'Fordham's Best' Early Pea. I sowed it by the side of Sangster's No. 1 on a south border, where it proved to be fully 10 days earlier than that variety. Your Pea grows about 2 feet in height, is very productive, of excellent quality, and, I may add, very hardy."

From E. C. WALKER, Esq.

"Head Works, Cheadle.

"The new Pea you sent me was sown on March 2, by the side of a row of Daniel O'Rourke. I gathered a good dish from yours on June 12, and was unable to gather from Daniel O'Rourke until June 21. I consider your Pea a most valuable introduction. It is a good bearer, and exceedingly on the table."

From Mr. W. HILL, *Gardener to* R. SNEYD, Esq.

"Keele Hall, Staffordshire

"I have great pleasure in reporting favourably of the Early Pea you sent me on trial. They were sown on the same day (March 17) as Sangster's No. 1, Carter's First Early, Sutton's Early Champion, and Dobbie's Early Prolific, and proved earlier by some days than either. Dobbie's comes in next to it, but it is not so prolific as yours."

From Mr. JAMES TURNER, *Gardener to* BASIL FITZHERBERT, Esq.

"Swanmore Park, Staffordshire

"I was much pleased with your 'First and Best' Early Pea. It was not late on the same soil and by the side of Sangster's No. 1, and it was the first gathering and the best. Indeed, I have not yet tasted a better. It is very productive, the flavour is excellent. I consider it the best Early Pea in cultivation."

From Mr. WILLIAM BROWN, *Gardener to* W. S. DUGDALE, Esq.

"Merevale Hall, Warwickshire

"Your Early Pea came into bearing in 3 days to the Sangster's No. 1. It appears to be the best Early Pea that we have. It is an excellent kind for planting in pots, &c. for forcing in the early season."

From Mr. WILLIAM LANDON, *Gardener to* A. R. B. KNIGHT, Esq.

"Downton Castle, Ludlow, Shropshire

"I beg to state that your Early Pea has proved itself to be, as it is represented, a most valuable and excellent variety. It was sown by the side of Sangster's No. 1, and it came into bearing fully nine days earlier. I consider it the best Early Pea in cultivation."

From Mr. WM. WHITAKER, *Gardener to the* Right Hon. Lord CREWE.

"Crewe Hall, Cheshire

"I can bear my testimony to the earliness, good flavour, and productiveness of your new Early Pea, which I consider to be the very earliest and best Pea out in this country. It came into bearing ten days before Sangster's No. 1. Your Pea is much superior to Dobbie's in every respect."

The "FIRST and BEST" EARLY PEA can be had TRUE from the following SEEDSMEN, who have already ordered a supply direct:—

Messrs. Hurst & Son, 6, Leadenhall Street, London, E.C.
" Cooper & Bolton, 152, Fleet Street, London, E.C.
" J. & C. Lee, Hammersmith, London, W.
" Dickesons & Brown, 43, Corporation Street, Manchester
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" Sutton & Sons, Reading
" Dickson & Turnbull, Perth, N.B.
" Platz & Son, Erfurt, Prussia
Messrs. Simon Louis Freres, Metz, France.
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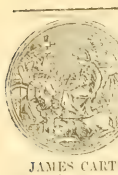

CARTER'S

LIST OF NEW AND CHOICE SEEDS FOR 1867.

JAMES CARTER AND CO. have much pleasure in introducing their important SET of ENGLISH and CONTINENTAL NOVELTIES for 1867, and they think it is due to themselves to state that they have not in any former year offered a SET of NOVELTIES of such comparative excellence and intrinsic merit.

VISCARIA CARDINALIS.

A seedling Viscaria, of an exceedingly brilliant and showy character, colour brilliant magenta (a new colour in Viscaria), the flowers being bright blood-crimson, contrasts effectively with the very brilliant blooms, of which there was no previous example. In its way, this Viscaria is quite as important an introduction as was the Scarlet Linum, to which it is a very suitable companion.

WHITLAVIA GLOXINIOIDES.

A very elegant novelty, having the same habit as W. grandiflora, with the addition of a much larger size of Gloxinia-like blossoms, of which the tube of the corolla is a pure white, as if the limbs a delicate blue. In this

NASTURTIUM TOM THUMB ROSE.

An entirely new race of the Nasturtium; habit similar to Scarlet Tom Thumb, but attaining [illegible] the exact counterpart of Tom Thumb Rose-coloured.

LUPINUS HYBRIDUS ATROCOCCINEUS.

Certainly the most showy Lupin ever introduced; large and handsome spikes of bloom, colour of the richest crimson-scarlet, with white tip. This Lupinus is not to be confounded with Lupinus atrococcineus, introduced by us in 1854, from which it is quite distinct.

TROPÆOLUM LILLI SCHMIDT CRIMSON.

A bright crimson variety of Lilli Schmidt.

* * *A Coloured Drawing of the above will be published in November.*

SCHIZANTHUS OCULATUS ATROPURPUREUS.

A Seedling of S. grandiflorus oculatus, with large handsome blooms of rich crimson purple, with black eye.

SCHIZANTHUS GRANDIFLORUS ALBUS.

An fine Seedling of S. grandiflorus oculatus, with large pure white blooms, with sulphur eye.

The above varieties are by far the most showy of the hardy Schizanthus, and will take rank in the front class of hardy Annuals.

CHRYSANTHEMUM DUNNETTI. New Double Golden.

A seedling from the annual Chrysanthemum tricolor, with flowers as double as Ten-foot, [illegible] bright golden yellow, similar in habit and bloom to the Chrysanthemum Dunnetti, a well-known variety introduced by us in 1865, and gave such general satisfaction, and to which it forms a very suitable companion.

CLARKIA INTEGRIPETALA, New Double White.

A new double white variety of the white-petalled Clarkias, pure white, and very double.

NEMOPHILA MACULATA GRANDIFLORA.

A seedling from the popular N. maculata. The flowers of which are of the circumference of a crown piece, very showy.

Viola cornuta.

Although it has been said and written about this splendid novelty, that only a certain class of soil and locality is necessary to insure success, I must, notwithstanding the last unfavourable season, have proved to many some first-rate seed from the true stock, which we now offer at a very low price.

Begonia Pearcei (Veitch).

A beautiful species introduced from South America, with large bright green leaves, and slender stems well above the leaves, the upper side of which is of a dark velvety green traversed by pale straw-coloured veins, while the under side is of a dull red colour.

Linum Macrayi.

A new perennial from Chili, with large orange coloured flowers. The plant is of dwarf habit, and will no doubt prove quite hardy.

Schizostylis coccinea.

New bulb, attaining a height of 20 to 24 inches, with Tritoma-like flowers of a beautiful bright crimson, which are pleasing a success very much, from the Bog-type down, until late in the autumn. A very good bulbous plant of easy culture, either for pots or the open ground.

Dianthus denatus.

Herbaceous Perennial, [illegible] [illegible] The plant is dwarf, [illegible] with a mass of pretty [illegible] blue flowers. Very valuable for edgings or to [illegible] borders or rockwork.

Chrysanthemum Louise Honnoraty.

Originated in Belgium, raised from the Pompon type, but so very different that we consider it a decidedly very entirely different class of Carnation-flowered. The [illegible] petals perfectly [illegible] from 10 to 12 inches long [illegible] inches broad. The small flowers, disposed in [illegible] are [illegible] and are produced in such quantity, that the whole plant forms a single [illegible].

Chrysanthemum japonicum flore pleno.

(New Double Japanese [illegible] Yellow.)

This new [illegible] Chrysanthemum [illegible] and will, no doubt, be [illegible] this season, with always [illegible] vary in shape and [illegible] flowers.

Coreopsis phlædelphica.

Perennial Composite, which flowers the first year when sown, its large flowers [illegible] of a fine yellow, and very ornamental.

Aucuba japonica.

Berries gathered from plants hybridized with the different newly introduced varieties from Fresh.

Celosia pyramidalis nana aurantiaca.

Annual, from Cochin China; erect, from 15 to 18 inches, leaves oval acuminated, of a bright green. Trusses pyramidal, of a brilliant but yellow. Fine novelty for forming masses which will contrast nicely with the following.

Celosia pyramidalis versicolor.

Annual, from Cochin China, from 24 to 3 feet high, bushy from the bottom, with oval leaves, acuminated, of red colour. All the species [illegible] to the forest cuminae trees [illegible] opening pass [illegible] to vessel cuminae. Handsome plant for masses.

Celosia pyramidalis versicolor var. hybrida foliis atrobrunneis.

A variety which we [illegible] hybrid of C. p. versicolor and C. p. nana aurantiaca. It is distinct from the former by its leaves, of a darker colour, and its erect trusses, which are more or less [illegible] of orange. Whether a hybrid or not, it is at all events a pretty foliaged plant, which will [illegible] grass edges in beds.

SUB-TROPICAL NOVELTIES, WITH ORNAMENTAL FRUIT OR FOLIAGE.

Giant White Egg Plant.

The fruits of this variety are three times larger than those of the old variety. Half-hardy trailer, and very ornamental.

Giant Striped Egg Plant, from Guadaloupe.

The fruits are equally of extraordinary size, and their variegation is very constant. Like the foregoing, it will be found very effective when planted as a single specimen than in masses. It is desirable that the curious fruits of these two varieties are well exposed to view. Half-hardy trailer, and very ornamental.

Black Egg Plant, from Pekin.

(Solanum melongena chinense.)

This plant, in an 8 to 9 feet high, the stems and large fruits of which are black and shiny, as before we are equally of a black skin green. Handsome plant, which, by its tall habit, may be classed among the picturesque ornamental kinds. Very effective as a [illegible] or in groups of two or three, on lawns, &c. Half-hardy trailer, and very ornamental.

Chamæpeuce diacantha.

A beautiful silvery spiny herbaceous plant, of magnificent effect as a single specimen on the lawn, when much admired during the past summer in the sub-tropical gardens at Battersea Park.

Datura gigantea.

Annual species, resembling D. [illegible] from which it differs, how [illegible] very much [illegible] the [illegible] flowers, which render it very desirable [illegible] and [illegible] the town.

Digitalis tomentosa.

Herbaceous plant, [illegible] from its purplish-brown flowers, which are more erect, of dark purple colour spotted with bright carmine, hairy.

Nicotiana grandiflora purpurea.

Quite the annual plant, which by its large purple-coloured flowers is almost as showy as [illegible] of tobacco. Amongst [illegible] possessing [illegible] are now so much in favour for the decoration of parks, &c.

ORNAMENTAL GOURDS.

Cucurbita maxima verrucosa.

A very [illegible] very remarkable [illegible] green fruits, with warty [illegible] Quite as an ornamental [illegible] trailing work, &c.

Lagenaria angolensis.

Plant not less [illegible] than L. sphærica, which it resembles nearly. The [illegible] small [illegible] in the latter species, are white [illegible] pretty fruits, [illegible] globular, of the size of an Orange, [illegible] [illegible] [illegible] green ground. A very well adapted for covering trellis-work, &c.

Lagenaria natalensis.

A plant very much like the foregoing, only its fruits are a little smaller, and largely blotched with white on a dark green shiny ground.

Lagenaria sphærica.

Flowers large and white, open, showy white, with bright yellow stamens. Fruit of the size [illegible] Orange, and [illegible], of a dark green colour, marbled all over with white.

Melothria cucumerina.

Small cucumber from Cuba, with smooth fringe and yellow flowers. The fruits very smooth, of the thickness of the finger, and about 1 inch long, can be pickled like Gherkins.

NEW ORNAMENTAL GRASSES.

Chloropsis Blanchardiana.

Herbaceous, 3 feet and more in height, of bright green. The great beauty of the plant consists in its [illegible] flowers, in the shape of [illegible] which, when fully developed, [illegible] and the plant [illegible] remarkable effect.

Eleusine tristachya.

From the Indies. An [illegible] [illegible] very pretty and ornamental.

Eragrostis elongata.

[illegible] them up [illegible] large plants. [illegible]

Panicum compressum.

Long narrow foliage, plumes of medium size, firm, full of seeds, [illegible] A beautiful green. This [illegible] and a very ornamental kind.

Panicum frumentaceum.

From [illegible] Herbaceous annual, according to the situation and moisture [illegible] [illegible] and [illegible]; panicles [illegible] green, compact and erect, producing plenty of [illegible] seeds.

Panicum jumentorum.

Herbaceous, of the same habit as P. compressum, with which it is nearly allied, differs from it by its plumes being twice as large, more open, and more rich in seeds. A pretty plant, which might become a fodder plant.

Pentameris airoides.

Plant very much like Agrostis Stevenii, with which it could be confounded if it were not for the plumes, which are not so large.

Phleum Boehmeri.

Herbaceous, [illegible] inches, [illegible] almost deprived of leaves, terminated by 6 to 8 very long [illegible].

Setaria persica.

Annual, [illegible] [illegible] little tufts, leaves [illegible] long, truss-compact, in [illegible] cylindrical ear. Long. Pretty plant, of which the seeds may be used in different ways.

Uralepis Cuprea.

Herbaceous, 20 to 30 inches high, with long narrow leaves of a handsome green; a fine plant for edgings.

Lappago racemosa.

From the South of Europe, annual or perennial. According to circumstances, remarkable for the silkiness of its ears, which are finely bearded. Border plant.

Panicum marginatum.

Annual; [illegible] 12 inches high.

Panicum proliferum.

Annual, very much like [illegible] P. frumentaceum, described before, but [illegible] half its size, handsome panicule, fine plant for [illegible] meadows; rich in seeds, which may be used for various purposes.

Carex Granji.

Perennial plant, with long recumbent leaves of a handsome green, fine plant for moist situations, and to grow alongside ornamental water.

Carex pendula.

Herbaceous plant, of which the habit represents that of a Drawcansir; it is [illegible] handsome in foliage, with flower stems about 3 feet high; a handsome plant for moist shadows.

Cyperus killengioides.

Dwarf and very tufted plant, scarcely 10 inches high, producing a number of flower stems; pretty plant for the neighbourhood of artificial water.

Andropogon bombycinus.

From Persia, 12 to 15 inches high. A plant highly recommended for window gardening.

Cenchrus lævigatus.

Annual, from the South of Europe, reminding very much of Lappago racemosa, described before, differing from it by its long ears. Plant for edging.

Dactyloctenium ægyptiacum.

Annual, and handsomer than Eleusine rigida, of which the description follows. This latter grass, of which the haulms may reach 15 inches, may be used for the same purposes.

Eleusine ægyptiaca.

Small annual scarcely [illegible] high, in close tufts, with three short ears. Pretty plant for edgings or to plant along running water.

Eleusine rigida.

Annual, very pretty, in close tufts about 12 inches high, the numerous stems terminating in a bunch of 3 or 4 ears. Its [illegible] habit renders it very applicable for edgings and even pot culture.

Price of the above to the Trade on application.

JAMES CARTER AND CO., SEED MERCHANTS, 237 & 238, HIGH HOLBORN, LONDON, W.C.

Dwarf-trained Trees by the 1000, 100, or dozen.

APPLES, PEARS, PLUMS, CHERRIES, PEACHES, and NECTARINES. Fine, flat, well-trained, of best quality and true to name.

RICHARD SMITH, Nurseryman and Seed Merchant, Worcester.

RICHARD SMITH'S FRUIT LIST contains a Sketch of the various Forms of Trees, with Directions for Cultivation, Soil, Drainage, Manure, Pruning, Lifting, Cropping, Treatment under Glass; also their synonymy, quality, size, form, skin, colour, flesh, flavour, use, growth, duration, season, price, &c. Free by post for one stamp

RICHARD SMITH, Nurseryman and Seed Merchant, Worcester

Fifty Acres of Fruit Trees,

APPLES, PEARS, PLUMS, CHERRIES, PEACHES, NECTARINES, and APRICOTS in every form desired for Fruiting

RICHARD SMITH, Nurseryman and Seed Merchant, Worcester.

Orchard-house Trees Fruiting in Pots.

PEACHES, NECTARINES, APRICOTS, CHERRIES, PLUMS, PEARS APPLES, VINES, and FIGS.

RICHARD SMITH, Nurseryman and Seed Merchant, Worcester

PYRAMID APPLES, PEARS, PLUMS, CHERRIES. Beautiful Trees for Garden or Orchard Houses.

RICHARD SMITH, Nurseryman and Seed Merchant, Worcester.

FRUIT TREES, for Walls and Espaliers.—Upwards of 50,000 to select from, carefully trained, and in the healthiest condition for planting.

RICHARD SMITH, Nurseryman and Seed Merchant, Worcester.

ROSES.—Extra fine Standards, at from 15s. to 18s. per dozen; 100s per 100.

Do. Dwarf, extra fine, at from 9s. to 12s. per doz.; 63s. to 84s. per 100.

Do. New Sorts of 1866, at 24s. per dozen.

DESCRIPTIVE LIST on application.

RICHARD SMITH, Nurseryman and Seed Merchant, Worcester.

FORTY THOUSAND COMMON LAURELS, well-grown, handsome and bushy.

WM. WOOD & SON, Woodlands Nursery, Maresfield, Uckfield, Sussex.

THIRTY THOUSAND Dwarf-trained FRUIT TREES in the finest health and vigour.

WM. WOOD & SON, Maresfield, Uckfield, Sussex.

TEN THOUSAND LAURUSTINUS, well-grown, handsome and bushy.

WM. WOOD & SON, Maresfield, Uckfield, Sussex.

SEVERAL ACRES of extra large well-grown ORNAMENTAL TREES for park planting and immediate effect. WM. WOOD & SON, Maresfield, Uckfield, Sussex.

MANY ACRES of STANDARD, HALF-STANDARD, DWARF, PYRAMIDAL, and TRAINED FRUIT TREES, consisting of Apples, Pears, Plums, Peaches, Nectarines, Apricots, Cherries, &c. WM. WOOD & SON, Maresfield, Sussex.

SEVERAL ACRES of well-grown EVERGREEN and DECIDUOUS SHRUBS, AMERICAN PLANTS, CONIFERÆ, and ORNAMENTAL TREES. For CATALOGUES apply to WM. WOOD & SON, Woodlands Nursery, Maresfield, near Uckfield, Sussex.

ROSES.—NEW CATALOGUE just published and sent post free on application to

WM. WOOD & SON, Maresfield, Uckfield, Sussex

RASPBERRIES.—Cornwell's Seedling, 12s. per 100; Carter's Prince of Wales, 16s.; Sclater's Semper Fidelis, 20s.; Carter's Pioneer, 10s.; Red Perfection, 8s.; Double Bearing, 8s.; Evans' White, 8s.

STRAWBERRIES.—British Queen, Admiral Dundas, Sir Charles Napier, Elcanor, Cæsar, Rifleman, Myatt's Eliza, Keens' Seedling, Prince of Wales, Black Prince, 4s. per 100; 30s. per 1000

Strong bearing GOOSEBERRIES and CURRANTS, 10s. per 100, 2s. per 100; ASPARAGUS, 3s. per 100; 25s. per 3s.; 42s. per 4s. per 100.

ROBERT, late GEORGE CORNWELL & Co., opposite Red Lion, Barnet.

Splendid Grape Vines of all the finest varieties in cultivation.

WILLIAM BARNES begs to announce that he has now a very fine selection of the above to offer, both FRUITING and PLANTING VINES, of very strong, well-jointed, well-ripened wood, and will produce a fine crop of fruit next spring.

The great demand W. B. has had for Grape Vines these several years past, and the many applications for them being late in the season, when he found it somewhat difficult to supply the sorts and quantity required, has induced him to erect a new house, entirely for their cultivation, which will produce thousands of 200 Fruiting Plants, that cannot be surpassed in size or quality.

In addition to these W. B. has many hundreds of fine Plants to offer, grown by his usual means.

Sorts and Prices can be obtained on application.

Camden Nursery, Camberwell, S.

LARGE YELLOW DUTCH CROCUS, 10s. per 1000.

LARGE BLUE DUTCH CROCUS, 10s. per 1000.

LARGE WHITE DUTCH CROCUS, 10s. per 1000.

GLADIOLUS BRENCHLEYENSIS, 10s. per 100, 4s. per doz.

SEA KALE, 2 years, 1s. 6d. per 100, 10s. per 1000.

GOOSEBERRIES and CURRANTS, in fine bearing sorts, 4s. per 100

TRADE NURSERY LIST gratis on application to

EDWARD TAYLOR, Nurseryman, Malton, Yorkshire.

CHEAP PLANTS.

12 of the best NOSEGAY PELARGONIUMS, including Pink Stella and Bright Rosa.

12 of the best ZONALS, including the new double Glaucie Nancy, 7s.

12 of the best NEW FUCHSIAS, 5s.; 12 best older varieties, 4s.

12 of the best NEW VERBENAS, 5s.

Or the above Collection, all established in small pots, for £1 5s., package included.

PELARGONIUMS, French and English show varieties, our selection, from a large healthy stock, 3s. per doz.

CARNATIONS and PICOTEES, good named sorts, 3s. per dozen, 20s. per 100.

GARIBALDI PICOTEES, fine for forcing, 3s. per doz

PINKS, from a good collection, 2s. per doz.

ISOLEPIS GRACILIS, 4s. per doz.

NUNN & HOWARD, St. Augustine Nursery, Norwich.

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The above will be forwarded free on application to

JOHN CRANSTON, King's Acre Nurseries, near Hereford.

NEW HARDY CLEMATISES.

CLEMATIS RUBELLA.—Very rich velvety claret; the deepest coloured Clematis yet offered. Very distinct, and having the advantage of flowering 60 to 70 per cent. of blooms, with five and six sepals. First Certificate, Royal Horticultural Society.

CLEMATIS PRINCE OF WALES.—Large flowers, of a rich deep violet purple, with red bars down the centre of each sepal; a decided improvement on C. rubro-violacea. First Certificates, Royal Horticultural Society.

MESSRS. GEORGE JACKMAN AND SON have much pleasure in announcing that they are sending out the above Clematises, and can with confidence recommend them "amongst the best of hardy Climbers. Strong plants, with roots, 21s. each. 21s. each.

The usual allowance to the Trade.

Coloured Drawings, by Andrews, for 24 stamps.

Woking Nursery, Surrey.'

British Fern Catalogue.

ROBERT SIM can now send, post free for six postage stamps, Part I (British Ferns and their varieties, 36 pages, including Genera of Hardy Exotic Ferns) of the NEW and PRICED DESCRIPTIVE CATALOGUE of BRITISH and EXOTIC FERNS, No. 7

Foot's Cray Nursery, S.E., a mile from Sidcup Station of New North Kent Line of South Eastern Railway.

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B. S. WILLIAMS' NEW PLANT CATALOGUE, containing many really good Novelties, and carefully selected LISTS of STOVE, GREENHOUSE, and HARDY PLANTS, is now ready and will be forwarded post free to all applicants.

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Early Spring Flowers.

WEBB'S GIANT POLYANTHUS and COWSLIP, with all the best varieties of Double and Single PRIMROSES, PANSIES, &c., with Seeds of single varieties LIST of prices of different kinds on application to

Mr. WEBB, Culcot Gardens, Reading

Azalea indica.

WILLIAM BARNES has many Thousand magnificent Plants of the above in fine, various sizes, including every variety worthy of cultivation, all finely grown, and full of flower buds Sorts and prices can be obtained on application.

Camden Nursery, Camberwell, S.

VIOLA CORNUTA, the True Stock.—New Seed of the above now ready, in packets 6d., 1s., 2s. 6d., and 5s. Price to the Trade on application.

JAMES CARTER & Co., Seed Merchants and Nurserymen, 237 & 238, High Holborn, London, W.C.

Amaryllis.

JAMES GARAWAY AND CO., Durdham Down Nurseries, Bristol, offer bulbs of the above, unnamed Seedlings that have been flowered with them during the past two seasons, and many of which are now showing fl. st., at 5s., 7s. 6d., and 10s. 6d. each, or 50s., 70s., and 100s. per dozen.

JAMES GARAWAY & Co., Durdham Down Nurseries, Bristol.

Gladioli.

J. KELWAY AND SON beg to call attention to their splendid Stock of GLADIOLI, which comprises all the sorts worth growing, and probably the largest in the Trade As a proof of the high merit and excellence of their collection, they have been awarded the First Prizes offered at the Royal Palace and Royal Horticultural Exhibitions in 1864, 1865, and 1866

PRICE CATALOGUES free to all applicants.

Selected Bulbs, 1st to 3d in size, 2s. to 2s. 6d. per dozen, 1s., 2s., & 10s. per 100.

The Nurseries, Langport, Somerset

To the Trade, &c.

L. T. DAVIS has the following to offer in good Plants.

Double White PRIMROSES | Double Dark Crimson PRIMROSES

" Lilac PRIMROSES | " Dark AURICULA.

Prices on application

WANTED, Double Yellow PRIMROSES.

Ogle's Grove Nursery, Hillsborough, Co. Down.

CLIMBING DEVONIENSIS.—This beautiful Rose having obtained a First-class Certificate at the Royal Horticultural Meeting, S. J. PAVITT is induced to offer his fine plants of the above as vigorous as Standard Roses in habit, and thoroughly proved to be a distinct and most valuable climbing variety. Extra strong plants, on clean stems, with shoots from 5 to 7 feet in length, 2s. 6d. each. Special offers to the Trade, when taken by the dozen or hundred.

Rose Cottage Nursery, Banstead, Bath

NEW HARDY RHODODENDRON, MICHAEL WATERER.—This Rhododendron has hitherto been known under the name of ANNIHILATOR, but it will be sent out under its proper name of MICHAEL WATERER. The most brilliant-coloured late hardy flowering Rhododendron yet offered

Orders are now being taken for Plants to be sent out in the Autumn at 21s. 6d. each. Descriptive circulars on application to

JOHN WATERER, American Nursery, Bagshot, Surrey.

THE QUEEN, without any exception the best WHITE RHODENDRON yet raised. Robust grower, deep green foliage, tube and free flowering, trusses large, full, compact, and semi-circular, bottom shoot and stud, colour white, suffused with soft blush mauve, changing to the purest white, clear and distinct or white as it first expands, and delightfully fragrant, reminding one of the perfume of the Water Lily. It remains in bloom longer than most other Rhododendrons, a peculiarity probably accounted for by its hitherto refusing to form seed, and consequently all Rhododendron growers well understand. All who visited the International Exhibition will remember the transcendent superiority of the Queen over every other white Rhododendron in the exhibition. It is proposed This Queen should assume her throne in 1867. All and everybody who wish to enjoy her royal sway should apply at once, as all orders will be executed in rotation. The price will be six 6s. each, and the Trade will have four plants given for three ordered. It need excite no surprise that its sole possession by the Advertiser should have called forth the envious notice of certain Rhododendron Man Hesean story notoriously circulated in the Trade that The QUEEN is not a new one but an old kind, shown under an assumed name. The Advertiser would be glad to be informed where, on what Nursery, and under what name, the impostor has been seen, and in whose possession it is to be found. The whole undivided stock is in the hands of CHARLES NOBLE, Bagshot, Surrey.

American Plants, &c.

WATERER AND GODFREY'S PRICED and DESCRIPTIVE CATALOGUE of RHODODENDRONS and other American Plants for this Autumn, will be sent on application. The Catalogue also gives a summary of their General Nursery Stock, probably the most extensive in the kingdom.

Knap Hill Nursery, Woking, Surrey.

Cupressus Lawsoniana argentea.

MESSRS. WATERER AND GODFREY are now sending out this Plant.

Good stout Plants, 1½ foot high and bushy, at 21s. each.

It has been awarded Three First-class Certificates by the Royal Horticultural Society of London, Royal Botanic Society of London, and at the Crystal Palace; and may be justly represented as a distinct and very beautiful plant, and one that will become a general favourite.

Knap Hill Nursery, Woking, Surrey.

Rhododendrons.

JOHN WATERER'S DESCRIPTIVE CATALOGUE of HARDY SCARLET and other RHODODENDRONS is now published and will be forwarded on application. It faithfully describes the colours of the new varieties exhibited by him at the Royal Botanic Gardens, Regent's Park, and contains a full List of popular CONIFERS, with heights and prices, is likewise combined.

The American Nursery, Bagshot, Surrey, near Sunningdale Station, South-Western Railway.

Lilium lancifolium.

SUTTON AND SONS have received several varieties of the above splendid LILY in fine condition.

For descriptions and prices of each see SUTTON'S AUTUMN CATALOGUE, which may be had gratis and post free on application

SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

SEE BARR AND SUGDEN'S ADVERTISEMENT, *Gardeners' Chronicle*, Nov. 17, p. 1046.

BULBS and CLIVEDEN PLANTS for Spring Blooming.

BARR'S PRIZE CALCEOLARIA, 2s. 6d. per packet

NEW VIOLA CORNUTA SEED, 1s. and 2s. 6d. per packet.

NEW LAPAGERIA ROSEA SEED, 1s. 6d. and 2s. 6d. per packet.

UNBLOOMED AMARYLLIS, &c.

CLUMPS of LILY of the VALLEY, Winter Blooming, 1s. 6d. each; 12 for 15s.

Exhibition of Chrysanthemums.

JOHN SALTER'S magnificent COLLECTION of CHRYSANTHEMUMS is NOW in BLOOM. The Winter Garden is open every day except Sunday. Admittance free.

Versailles Nursery, William Street, Vale Place, Hammersmith, W. (near Kensington Railway Bridge)

Chrysanthemums.

ADAM FORSYTH begs to inform his Friends and the Public that his extensive Collection of CHRYSANTHEMUMS is NOW in FLOWER, and may be seen every day (Sundays excepted). His facilities for housing them have been great y increased, and those interested in the cultivation of this favourite flower will find this a good opportunity for seeing the different sorts in which it may be grown for the decoration of a Greenhouse or Conservatory at this season.

Brunswick Nursery (opposite West Hackney Church), Stoke Newington, N.

Dutch and other Bulbs.

B. S. WILLIAMS is now prepared to supply splendid roots of HYACINTHS, TULIPS, NARCISSUS, CROCUS, &c., &c. All the roots are selected with great care from the best growers in Holland.

A PRICED and DESCRIPTIVE LIST sent post free on application.

Victoria and Paradise Nurseries, Holloway, London, N

Dutch Flower Roots.

FRANCIS & ARTHUR DICKSON & SONS have received, from the best Growers in Holland, a very large importation of the above, and have the satisfaction to say that the BULBS are unusually large, sound, and well ripened, and for which early orders are requested to ensure the best Roots.

Flower Roots of £2 value will be delivered free of carriage at the principal Railway Stations and Seaports throughout the country.

DESCRIPTIVE PRICED CATALOGUE and all particulars free by post on application

The Old Established Seed Warehouse, 106, Eastgate Street, Chester.

New Catalogue of Plants, Dutch Bulbs, &c.

ROBERT PARKER begs to announce that his NEW CATALOGUE, containing Select Descriptive and Priced Lists of New, Rare, and beautiful Greenhouse, Hardy and Stove Plants, Hardy Ferns, Fruit Trees, Grape Vines, Roses, Rhododendrons, Sweet Violets, &c., Amaryllis, Crocuses, Cyclamens, Gladioli, Hyacinths, Liliums, Narcissus, Tulips, and other Bulbs, is now published and will be forwarded to applicants.

Exotic Nursery, Tooting, Surrey, S.

Sutton's Unrivalled Collections of Bulbs.

Carriage Free.

SUTTON'S GUINEA COLLECTION of BULBS for BLOOMING in POTS and GLASSES

SUTTON'S GUINEA COLLECTIONS for BEDS and BORDERS.

For particulars see SUTTON'S AUTUMN CATALOGUE, which may be had gratis and post free.

SUTTON & SONS, Royal Berks Seed Establishment, Reading.

The Gardeners' Chronicle.

SATURDAY, NOVEMBER 24, 1866.

MEETING FOR THE ENSUING WEEK

SATURDAY, Dec. 1 { Royal Horticultural Weekly Show ... at South Kensington ... ... 2 P.M.

FEW subjects connected with Horticulture have provoked so much discussion as the question of the ACCLIMATISATION OF PLANTS. This is of paramount importance to gardeners in every climate, and as there is still much to be said on either side, we need make no apology for reverting to the subject. As in all similar controversies, a great deal of unnecessary difference of opinion has arisen from the vague and even somewhat contradictory interpretations of terms in common use. For our own part we consider acclimatisation to imply not merely the introduction of any given plant or animal into a country presenting but little or no difference in its climatal conditions from those of its native one, but also such an amount of change in the habit and conformation of the plant, as to enable it to accommodate itself to different climatal conditions.

At first it may be that great care on the part of the cultivator is necessary, or the existence of the plant will be imperilled; while in not a few instances, the plant is so little pliable, or our ignorance of the proper means of making it so is so great, that nothing in the way of acclimatisation can be effected, but in the face of the numerous instances familiar to every cultivator of alterations having taken place in particular plants, in respect to their degree of hardiness, their period of flowering, their habit, &c., we are somewhat at a loss to account for the objections that have been raised to acclimatisation.

When we find such names as those of DE CANDOLLE, LINDLEY, REGEL, on the one hand, and DARWIN, SCHÜBELER, CLOS, HABERLANDT, on the other, we are inclined to think that the main reasons for the difference in opinion must reside in the different way in which the word 'acclimatisation' has been understood by these writers and observers; and in truth, if by acclimatisation be meant a process whereby something entirely new and heretofore foreign

to the plant is set up, we should side with LINDLEY and others who dissent from the possibility of such an occurrence. But if, as we believe, this acclimatisation process merely rouses and promotes the development of qualities generally latent, or manifest to only a slight extent, we cannot see the force of the objections raised against it. Looked at in the light we have just mentioned, acclimatisation is merely a result of that inherent power of variation which all organised beings have; and as our knowledge, now most incomplete and fragmentary, of the causes inducing variation increases, so will our power of acclimatising plants become greater. A paragraph in one of Mr. RIVERS' papers presented to the Botanical Congress (see p. 782, is to our mind very suggestive in this respect. He observed during a spring frost that some Cherry blossoms with widely-spreading petals had the tips of their pistils killed by the frost, and that although the germs swelled, after a little while they all dropped off. In other flowers, the petals of which were incurved so as to protect the pistils, the fruit set healthily; and hence, asks Mr. RIVERS, "would it not be possible to originate varieties of fruits from seed, giving blossoms with large incurved petals, so as fully to protect the parts of fructification?" To this question the answer must surely be in the affirmative.

If we look to the Potato, what a difference there is between the reputed wild form from the Andes, and the varieties now grown. Where the haulm used to die off in late autumn, there are now many varieties in which it shrivels in early summer, and not only are they earlier, but they are more productive. Dr. SAGOT, to whose treatise on the effects of cultivation and domestication in plants and animals we may have again occasion to refer, mentions a fact of some importance with reference to acclimatisation, namely, that variation is more likely to take place in individual plants grown near the northern limits of their distribution, and that from such, therefore, ameliorations of race can most easily be obtained.

Looking, then, at acclimatisation as a result of that inborn capacity for variation and adaptation to circumstances which all living creatures have to a greater or less extent, we cannot but believe that with time, method, and perseverance, far greater things may be accomplished in this way than are yet dreamed of.

NOT long since it would have been impossible to have given a satisfactory reply to a question, which at this season of the year is frequently asked, WHY DO THE LEAVES FALL? Time, there were plenty of reasons cited, but they were for the most part merely hypothetical. Some said, that as the leaves were gorged with sap, their functions became in consequence impeded, and at last the leaves died and were pushed off from the tree by the current of the sap. Others said it was the bud, that nestled in the axil of the leaf, that quietly removed the parent leaf as itself increased in bulk—a strange theory, when it is considered how many more leaves there are than buds! A third notion was, that as the leaves died mortification ensued, a line of demarcation was formed, and the dead portions became separated from the living—a notion evidently derived from the experience of the surgeon rather than from that of the vegetable anatomist. Another of these guesses, and one apparently which finds much favour with compilers of "popular" books, attributes the fall of the leaf to an incrustation or deposit of earthy matters in the cells of the leaf in autumn; this goes on, according to our theorists, to such an extent, that the cells become blocked up, lose their powers, hence dry up, shrivel, and fall to the ground true enough, but not sufficient to account for all the phenomena. On turning from these speculative explanations to others offered in more recent times by scientific observers as the result of personal observation, we find so great a conformity of statements in all more important particulars, that it can hardly be doubted that we can now, at least in a general way, answer the question as to why the leaves fall. Several independent observers, among whom Dr. INMAN, of Liverpool, is one, have arrived at the conclusion that the fall of the leaf is due to the formation of a layer of cells, arranged in a plane different from that of the rest of the tissues, thus gradually severing the leaf from its support, much as a knife-blade would do, and moreover serving as a thin skin to protect the surface of what would, otherwise, be an open wound. The cells of this dividing layer, as shown by INMAN and confirmed by MOHL, contain a quantity of starch, a substance not found in the adjacent cells. This dividing layer seems first to have been clearly observed by LINK; INMAN, SCHACHT, and MEITENIUS confirmed its existence, and MOHL has added largely to our knowledge of it. We have yet to learn why this peculiar layer is formed. As to the period of its first appearance, that is known to precede the fall of the leaf by but a short interval, though indications of its future formation exist from a very early period. The first stage in the development of the leaf, as shown by EICHLER, and recently confirmed by Dr. W. R. MCNAB, is constituted by the appearance on the side of the stem, of a minute process called the "hypophyll," from which, and not directly from the stem itself, the leaf originates. Whether when the leaf falls, the separation takes place immediately from the stem, or between this hypophyll and the leaf it supports, is not a matter of practical importance, and does not affect the explanation above given as to the cause of the defoliation.

—— WE have to draw the attention of those of our readers concerned in the DISEASES AND INJURIES OF FOREST TREES to two important German publications recently issued.

Dr. RATZEBURGH'S "Waldverderbniss" (Destruction of Forest Trees), of which the first volume has just appeared, is a quarto book with 37 lithographic and numerous woodcuts illustrative of the diseases and injuries of forest trees, and especially of those caused by insects, squirrels, and other creatures *feræ naturæ*. Dr. MORITZ WILKOMM'S treatise, "Die Mikroscopischen Feinde des Waldes," is, as its title implies, particularly devoted to those injuries, or "enemies," as the title has it, which need the use of the microscope for their investigation, such as fungous moulds, &c. It likewise is well illustrated by coloured plates. Both works may be obtained through Messrs. WILLIAMS & NORGATE.

—— Two names ought before to have found a place among our OBITUARY notices—one that of Professor GASPARINI, of Naples, a well-known botanist, and one of whose latest contributions to science was recently noticed in our columns (p. 945); the other that of M. HEYLAND, a veteran artist, to whom the elder DE CANDOLLE owed the illustration of a large number of the plants described by him.

A GARDENER'S DREAM.

I BELIEVE that tobacco was made to be smoked, and not being an aphis, nor a red spider, nor a mealy bug, nor the Dean of Carlisle, I smoke it. I had attached myself, consequently, the other evening to the slimmer end of a big Broseley pipe, and my mind in musing about many things,

"Full of low reflections,"

settled finally, like a weary butterfly upon a Rose, on the recreations and amusements of life. And when I asked myself which of them all brings the longer and the larger happiness, there appeared amid the smoke, a medium of communication so frequently adopted by our old friends the Genii in the "Arabian Nights," the vision of a man. A bright, pleasant, healthful face smiled beneath a cap of glossy velvet; two diamond eyes sparkled in the head of a golden fox, which fastened the folds of a snowy neckerchief, white and smooth as the petal of a Camellia; a coat of scarlet, glowing like a Poinsettia, was buttoned over a blue bird's-eye vest; and warm, easy, well-fitting, thick-ribbed "cord-" disappeared into a pair of pale brown "tops." "There never, my boy," he gaily observed, "can be the faintest whimper of a doubt that the greatest fun in all the world is the fun of riding to hounds. To leave a discomfited host of skirters and craners, drawn up aghast at a scowling stile, or galloping ruefully by some chilly stream in search of ford or bridge; and then pressing on pasture, and pulling in plough, to have 40 minutes, and 'who-op' in the open! By Jove, old fellow" (and here he fenced at my ribs with his hunting-whip),

"Kings it makes gods, and meaner creatures kings."

And I made answer to this festive phantom in breeches, and I said, "True, crimson spectre, true. Hunting is undoubtedly of sports the Pope, but, alas! not more infallible. It happens to its keenest sons sometimes, to be yearning for a start at one particular corner of a gorse, just when the fox goes away best pace in a precisely opposite direction; and then, O brother of the gamboge boots, the riding after hounds is vanity. And the wind of horses is an uncertain thing; and the stub, and overreach, and pointed stake, are perils, great and hateful; and banks are treacherous, and ditches blind; and there is ever a maniac, or a rushing chesnut to jump upon us when we fall; and clays are succulent, and many blacksmiths fools, and it saddens the horseman's heart to hear, 'Mr. Jones, sir, you've lost a shoe;' and the dogs of shepherds are accursed things; and bird-tenters, holloaing as though they saw the fox, are men unfit to live: and——yes, I see your derisive smile, and I quite agree that hunting is, despite these drawbacks, the cheeriest pastime and the bravest exercise that stirs the sportsman's heart; but after all, sweet vision of the speckled vest, it lasts but four months of the year, and much of this time may be lost and null, being 'sullied by a frost;' and tell me, what shall mournful hunters do when lambs are bleating for their mas, 'and the green leaves come again?'"

Then the hunting-cap changed into a soft "billy-cock," and the pink, and the cords, and the tops, into a Norfolk jacket, and knickerbockers, and ankle boots; and another apparation, stalwart and ruddy as the first, stood, with a breech-loader on his broad shoulder, and said, "Let me suggest the gun: think of the pure, bracing, moorland air; of the grouse, rising with a whir and with a crow, and then tumbling with a thud among the heather; of the dinner and the rubber in our cozy shooting lodge; of the weed and the whisky, 'as ye tell how they fell.' Think, O think, of the grand excitement of deer-stalking! the first distant sight of some glorious stag, the antlered monarch of the waste; of the long, the subtle, the laborious stalk, when brain and body, mind and muscle seem to glow, like the wheels of swift machinery, and to gain from the grand excitement of the hour a strange, victorious energy; and then the crisis, the awful ectasy, when the rifle is raised, and the stricken deer takes his last wild leap, and falls with a crash to die. Think, too, of quiet, pleasant days with genial friends in bright sunny September; of truthful 'Don,' stanch upon his point, and 'Belle' backing him, 60 yards off; of the panniered pony with the welcome lunch, and the laughing girls who spread it for us beneath the brave old oak. Recall those frosty mornings in December, quickening the blood and sharpening the wits, and the cheery congress of shooters, keepers, beaters, and retrievers, forming into line along the grassy 'riding.' Listen again to the nimble sticks, clattering amid the trees, gaily as shillelaghs in an Irish row, and ever and anon beating a mad tattoo, with an accompaniment of yells, hardly to be surpassed by betting-men, or any other lunatics, and called forth by an ambition, ever fruitless, to 'stop that rabbit back.' Hearken once more, for there is a lull, a still intenser interest; a voice as full of deep emotion as if the owner had roused a buffalo, or flushed his uncle's ghost, is heard to shriek, 'Mark woodcock!' and we bring him down, as he glides into the open, to the immense disgust of Smith, outside the covert, who has just raised his gun to fire. Think, finally, of wild ducks, quacking out of sedgy streams, and of glad retrievers springing from the bank, and shaking the water from their glossy curls, as they lay the mallard at your feet!"

And I said, "O Knickerbockers, thy words are true, but they tell not all the truth. Thou hast been reticent with reference to mournful hours, when the lordly stag was startled by thy rifle, a moment sniffed the tainted gale, and then trotted quietly away, disdainful, as the gillies winking near, and the deerhound growling at thy side. Thou hast said nothing of other feverish and fretful days, when, owing to 'that confounded old Madeira,' or 'that weed of Greenock,' or that fixed determination to take the conceit from out of that bumptious Brown, thou didst never shoot so infamously, and thy gun seemed to be under a fiendish power, and would not bear upon the game. Reserve has padlocked thy sweet lips, my friend, and memory lost the key, as regards a certain other woodcock, which, twice spared by thy mercy, fell stone dead for Brown—Brown, the vain-glorious—Brown, the hateful, who last night flirted with thy lady-love, and will to-night proclaim to a large assembly how splendidly he wiped thine eye. Thou art oblivious, moreover, of mornings wretched, when thou camest home to breakfast, blue with cold and black with disappointment, and the great retriever had snarled significantly, eying thy gaitered calves. And thou hast not forgotten to forget those chilly nights, when 'flight time' found thee shivering like the Willow above thee; and the ducks had a prior engagement. Thou hast not been garrulous how poachers poach; how foxes (not that I love them less) abduct the sitting partridge, and mowers smite them with the ruthless scythe; how chough and crow, and chattering pies and jays feast on the pheasant's egg; how weasels drink, like Freshmen wine, the dying coney's blood. 'Silent, oh Moyle,' hast thou been on pointers, chasing recklessly the flying leveret, and barking, as though they sang to their keepers, 'Whistle, and I'll come to thee, my love,' when I've put up all the game.

"And yet as the old lady, improving Cowper, was kind enough to say of her country—

England, with all thy faults, I cannot help loving thee still;'

so, *malgré defauts*, I rejoice with you in dog and gun. Shooting (I exclude of course, the unmanly massacre of tame pheasants, driven into a corner and there shot down, 50 yards from a dozen breech-loaders, amid a villanous stench of saltpetre), shooting is one of those exercises which make Englishmen quick and capable of work above more sedentary folk; but I am inquiring now for some recreation of a more sure and a more lasting quality, one which may reasonably refresh body and mind, not only in the autumn and winter, but in the spring and summer of the year."

As the word "summer" passed my lips, "a change came o'er the spirit of my dream." I stood by a broad river, now flowing in such lucid transparency over its shallows, that every pebble, polished bright, was seen distinct and clear, the larger stones rising above the stream, half wet, half dry, like those timid bathers who dread their primal plunge, and now deepening into darker pools, where the swift waters seemed to rest and pause, on their journey to distant seas. And I was admiring the trees, which came down the sloping banks, as it were, to see their loveliness in that shining mirror, and the great mountains far away beyond, when a shout of jubilation drew my gaze to a gentlemen, in ecstacies and a Tweed suit, who stood, or, more truthfully speaking, capered, upon the opposite bank. He pointed to a magnificent salmon, its silvery scales shimmering in the sunlight (this beautiful example of Sigmatismus is entered at Stationers' Hall, and to imitate it much is felony)—such a one as you have

Sigmatismus is entered at Stationers' Hall

seen at Mr. Grove's in Bond Street, and weighing over 30 lb. He roared across the river Kingsley's line,

"Was ever salmon yet that shone so fair?"

together with an invitation to dine; and in two seconds, as ever in dreams, we had dined excellently, and were sitting in his snuggery, an apartment adorned with rods, and nets, and gaffs; with fishing-boots, which he called his "Wade-Meemus;" with a small library of books, all filled with fly-leaves; with boxes of feathers, fluffs, and furs: and having, over the mantel-piece the usual perch, enormous, with his eyes half out of his head, from surprise at his own obesity. Forthwith he commenced an elaborate dissertation on the life of a complete angler. It was a life, he said, of calm contentment, and of a sweet and thankful peace. It was passed amid scenes of surpassing beauty, the wild grandeur of Connemara's mountains, the solemn stillness of Norwegian fiords, the cheerful loveliness of Scotland's lakes, the sunny song-fraught charms of England's meadow-streams. To enhance, at intervals, these simple joys, there were such excitements as I had seen that day—the giant fish, fast hooked, and fighting for his life, now shooting away like a meteor, now flinging himself in noble rage above the stream, now dropping, plumb and ponderous, down—testing in every way, not only hook and line, and rod, but human pluck and skill—at last defeated, gaffed, and brought ashore! Then spake he glowing words of trout and grayling, perch, and monstrous pike. He showed me flies, which the oldest, wiliest, most abstemious fish could not find in his heart to pass, rushing blindly to his mournful doom, just as one sees some ancient bachelor go mad for Miss in her teens. For several he had special names. That was "The Barmaid," sure to charm the topers of the deep; this was "Syren;" there "Bonne-bouche;" and here was "Look-and-Die."

He gazed as fondly on his Limerick hooks as though they were Irish eyes. Then he showed me knots which were never loosened, and nooses which were ever free. He taught me how to gather and to throw the castnet; and I, his pupil apt, caught—my first cast—his lamp, cigars, and whisky. Finally he declared me, by his rods, to fish—fish always, and be blessed.

"O Pescatore," I answered sweetly, "in this alone our hearts conspire, that if I do, I'm blest. Your line is not mine, O friend. My angle has been obtuse, my fishing common plaice, from my youth. I shall never be a judicious Hooker. I get entangled in the branches of trees, my king-fisher; I bring ashore decaying sticks, and long, green, trailing weeds. And when, at last, the long-sought crisis comes, and the float, supine and motionless so many dreary hours, awakes to active life; and my happy heart beats in unison, pit-a-pat, with its rise and fall, until down it goes, disappearing in the deep; and I give him time, 'to make assurance surer,' and finally strike and bring out my prey; it is always the old eternal snig, which, but a size larger than the bait itself, not only contrives to gorge it wholly, but to fix it by some disgusting process in the centre of its slimy form. I can bear no more. Dissolve, vision. Vanish, gentle Angler. Go!"

(To be Continued.)

NOTES ON CONIFERS.—No. XII.

SEQUOIA (WELLINGTONIA) GIGANTEA.

WERE we writing a full account of the different species on which we touch, we should have to occupy many columns with information relating to this tree, with which the reader either already is or ought to be familiar, and which he can easily acquire by turning back to the past numbers of this Journal. Not having such a task here before us, we shall confine ourselves to some of the less generally known points, and chiefly to those which involve some correction of previous conceptions; and it is right to mention that some of our information is taken from the last number of the "Pinetum Britannicum."

The correction of the extreme age at first allotted to it by Dr. Lindley, although a correction of previous misconception, certainly cannot be called a point little known, for every one now knows that the number of annual rings in any of the stumps of Wellingtonia which have yet been counted, does not exceed 1200 or 1300.* And it is generally assumed that as the stumps of which the annual rings have been counted belong to trees of the first rank in size, that therefore 1200 to 1500 is the measure of the individual life of trees of this species; and consequently Lindley's eloquent burst of enthusiasm on the subject when he first heard of their dimensions and supposed age has been sneered at or ridiculed as absurd. "What a tree is this," said he: "of what portentous aspect and almost fabulous antiquity! They say† that the specimen felled at the junction of the Stanislaus and San Antonio was above 3000 years old; that is to say, it must have been a little plant when Samson was slaying the Philistines, or Paris running away with Helen, or Æneas carrying off good Pater Anchises upon his filial shoulders."

Now, although the individual specimens whose rings have been counted were only about 1200 years old, we do not think that it by any means follows that some of their neighbours may not have been a great deal older—nay, that they may not have almost reached the pooh-poohed antiquity of 3000 years; and we are able to cite Prof. Asa Gray himself as to a certain extent supporting a more extended age than 1200 years. In his paper already referred to, although he repudiates 3000 years as its age, he gives it one far beyond the age shown by the counted rings. He admits 2066 years as possible (the highest possible), but considers that more probably it did not antedate the Christian Era. Now in the first place there is no physical impossibility opposed to their reaching 3000 years. As is pointed out by Prof. Gray and other writers on the subject, we know Yew trees which are on good grounds believed to be 2000 years old, and when we come to the Cedars we expect to be able to prove to the reader's satisfaction that reckoning by the rate of growth of younger plants at Lebanon, of which there are portions in this country, the old trees in the Cedar grove there should be at least 2500 years old. The growth of the annual rings misleads us in our calculations of age only when it is misapplied. If we take the outer rings, and finding that so many occur in an inch, estimate the whole interior of the tree at the same rate, we shall greatly overrate the number of rings, in the same way that we should equally underrate their numbers if we started from the centre and reckoned only from the breadth of a few of the inner rings.

The following were the rates of growth in a stump examined by Dr. Torrey, and as it corresponds with the general result obtained from the stump whose dimensions Professor De Candolle gave at the recent International Congress, we may take it as fairly representing the average rate of growth:—

The 1st inner 100 rings occupied		17½	inches.
,, 2d	,,	14	,,
,, 3d	,,	12	,,
,, 4th	,,	13	,,
,, 5th	,,	09½	,,
,, 6th	,,	8¾	,,
,, 7th	,,	7½	,,
,, 8th	,,	11	,,
,, 9th	,,	1·0	,,
,, 10th	,,	11	,,
,, 11th	,,	11½	,,
,, 12th	,,	1	,,

Dr. Torrey's stump measured 21½ feet in diameter, and Professor De Candolle's 26 feet 5 inches, or about 75 feet in circumference. But there are trees still larger than these; there are several 90 feet in circumference. The tree at Calaveros known by the name of the "Miner's Cabin," is 80 feet in girth; the "Three Graces," growing on one root, is 92 feet in united circumference; and the one known as the "Father of the Forest," which, although long since fallen, is still a cumberer of the ground, measures 112 feet in circumference (Dr. Bigelow says 110, or about 36 feet in circumference), and, it is said, must have been 450 feet in height.

This tree must therefore have had a diameter of 11½ feet more than Dr. Torrey's; which, to equal it, would require a circlet of 6 feet additional to be applied all the way round the trunk of his tree. How many years would it take to grow this? How many annual rings must be applied outside of his specimen to make it so much larger?

It is clear that if we take the rate of growth at which his tree was growing when cut down, that is, the outer rings, we shall not over-estimate the number. We must take it fairly, however; and as in it there was a sudden diminution of active growth during the last 100 years, it having only grown an inch during that period, in opposition to about a foot in each of the previous 100 years for some centuries, we think it would be scarcely fair to take the inch as the standard for every future 100 years growth. We regard the inch in the final 100 as rather the indication that the tree had reached its full maturity and had stopped growing; and that until it reached this period of decadence, it went on growing at the rate of about a foot in breadth (3 feet in diameter) in 100 years, without allowing for any small addition after having stopped growing. This would give us upwards of 2000 years as the period of life of the "Father of the Forest;" but as we have 100 years to add in Dr. Torrey's for an inch after cessation of active growth, some allowance of a similar nature should be made in it too, which might bring its age up a few hundred years farther. Those who doubt the possibility of trees reaching such a great age, should be thankful that we let them off so easily, for we might have taken our stand upon the inch rate of growth in the last 100 years in Dr. Torrey's tree, as the normal rate after a tree had reached 25 feet in diameter, and on the strength of it have reised the age of the "Father of the Forest" to 3200 years, or even more, for the breadth of the annual rings has to go on progressively diminishing *ad infinitum*.

Some correction has also to be made upon our old ideas regarding the distribution of this tree in California. Until within the last few years it was thought that the Wellingtonia was limited to two stations. Four, or perhaps five (possibly more) are now known, all lying on the western slope of the Sierra Nevada, at the same altitude, and extending with interruptions for 120 miles or more, apparently indicating that at one time it had occupied the whole of the western flank of that range at a certain height, forming a belt along the mountain, which had been subsequently broken up by the creation of valleys, ravines, gullies, &c.

The localities now known are—1, the Calaveros, or "Mammoth Tree Grove," where the tree was first met with, near the head waters of the Stanislaus and San Antonio Rivers, lat. 38° N. and long. 120° 10′ W., and about 4590 feet above the sea. The number of trees still standing there is about 200, of which 92 are of large size.

2. The Mariposa Grove, above 50 miles distant from the Calaveros Grove to the south-east, and about 5000 feet above the level of the sea. The trees are spread along a lateral valley, on the flank of the main ridge, in two groves about half a mile apart, known as the upper and lower grove. The number of trees of fair size in the upper grove is said to be 450, in the lower nearly 200, or about 600 in all.

A third grove, known as the Fresno Grove, lies eight miles south-east of the Mariposa Grove in Fresno county. It lies in a sheltered valley, and consequently the trees are of great size; two of the largest measure each 81 feet round the trunk at 3 feet from the ground.

Another grove has been discovered further south and east, about 50 miles from Visalia. Mr. Blake, who reports its discovery (Proc. Calif. Acad. Nat. Sc. i., p. 201, 1853), says that it lies upon the Kaweeah or Four Creek river. We do not find any river called Kaweeah in our maps, but there is one spelt Caweha about the place, and we imagine that must be it. This is probably the same station as that noted by Prof. W. Brewer, of the State Geological Survey of California, in a letter to Sir Wm. Hooker, published in the Proceedings of the Linnean Society, vol. viii., p. 274, Jan. 1865, in which he says, "An interesting discovery this year has been made of the existence of the big trees in great abundance on the western flanks of the Sierra Nevada, in about lat. 36° or 37°. They are very abundant along a belt at 5000 to 7000 feet altitude for a distance of more than 25 miles, sometimes in groves, at others scattered through the forests in great numbers." He adds that he found trees there larger than they occur in the Calaveros and Mariposa groves, and concludes, "There seems no danger of the speedy extinction of the species, as it is now known in quite a number of localities, and contrary to the popular notion there are immense numbers of younger trees of all sizes, from the seedling up to the largest."

Where this "number of localities" is he does not mention, and we have failed to discover any other well-authenticated stations than those above mentioned. The tree has been said to have been also met with in Carson Creek, a few miles to the north of the Mammoth Tree Grove; and Carrière (Traité Gen. de Conif.) states that an officer of the French navy brought cones identical with those obtained in California from a latitude about 10° north of those localities; but the identity of those cones with those of the Wellingtonia has been doubted. Vague unauthenticated statements have also been made that it has been met with in various other parts of the Sierra Nevada, but without attaining the gigantic dimensions of those in the Groves above mentioned.

Various reports of its having been found in other more distant districts have also from time to time got into currency. For example, in an account of the Alpes Californiennes given in a San Francisco Bulletin newspaper of 17th November, 1861, and professing to be derived from the "Bureau de la Commission Géologique de Californie," it is stated that Dr Cooper says that he saw in the mountains of San Diego, some trees of which the foliage, according to his belief, was intermediate between that of the Wellingtonia and Redwood. These must have been old trees of the Sequoia sempervirens, which we have already explained in our notice of that tree assume the imbricated foliage of the Wellingtonia. In the same article it is said that "the author saw in 1849" (that is the year before the discovery of the Wellingtonia) "upon the lofty plateaux which are crossed by Lassen's route (now part of the county of Shasta) trees, the bark of which had all the characters of that of the Wellingtonia, notwithstanding that their size did not exceed 3 or 4 feet in diameter."

The tree which this gentleman saw may be something new, still to be sought for, but the locality is too far out of the range of the Wellingtonias, so far as yet authentically ascertained, to allow us to assume (without better evidence) that it can have been that tree—rather that the range of the Wellingtonia has a well-defined position in relation to the geological, geographical, and climatal features of the country inconsistent with its occurrence at Shasta.

The mention of the date of the discovery of the trees suggests the inquiry who really did first discover them. Of course the native Indians were the first actual discoverers. They knew them, admired them, and cherished a superstitious reverence for them long ere Columbus set sail for the West. They call them Wa-wo-nah, or Great Tree, and speak of groves not yet discovered by the settlers, where are trees still more gigantic than any yet seen by the white man. But who of the reading and writing races first cast observant eyes upon them?

It has been said that Douglas had done so. In speaking of the Red-wood and its dimensions he had characterised it in terms which were not inapplicable to the Wellingtonia. "The great beauty of Californian vegetation is a species of Taxodium, which gives the mountains a most peculiar, I was almost going to say, awful appearance" (Hooker's Companion to Botanical Magazine). But this deceived no one at the time. Nuttall properly referred the remark to the Sequoia sempervirens, and it was only afterwards, when the Wellingtonia was discovered, that it was suggested that Douglas's remark applied to it. Mr. William Lobb has shown, however, from the route followed by Douglas, and which is perfectly well known, that he

* We owe an apology to Prof. Asa Gray (which we beg him to accept) for having in one of our previous papers (Oct. 13) stated that he was the author with whom originated the idea that the age of this tree might be 3000 years. On referring to the Professor's paper which we had in our minds to cite for confirmation of his statement, which we need scarcely say we at once admitted, but to find a clue to the origin of the error), we are unable to find any probable explanation of it, nor can we trace its origin.

† Why say? It is obvious that Dr. Lindley must have heard of some calculation. Even supposing "they say" to be an editorial fiction, he could not have imagined 3000 years, which comes so near the incorrect number that might be deduced from Prof. Gray's tree, that the Professor himself says in his prologue to its correction in the paper above referred to (Asa Gray, in "American Journal of Arts and Sciences," 2d Ser., xvii., p. 440, 1854), "If the tree increased in diameter at the same rate throughout, there would have been 2976 annual layers, which, allowing 24 years for the tree to have attained the height of 25 feet (the height at which the section was taken) would give it an age of 3000 years from the seed. This corresponds so closely with Dr. Lindley's estimate that we may suppose him to have employed equivalent data in a similar manner." But at the time Dr. Lindley wrote there were no equivalent data, nor data of any kind, in this country. It seems more probable that he had received some garbled account of the number of annual rings from America, and it would be curious if the Dr., although not misled by Prof. Gray, were after all misled by inaccurate information drawn from the very tree counted by the Professor. *A. M.*

never came within 120 miles of the nearest habitat of Wellingtonia.

The credit was at first given to Mr. Lobb of having been its discoverer, the seeds which he sent home to Mr. Veitch having been the means of spreading its renown far and near throughout the world; but it was already well known in California before he visited the grove—in fact, it was the reports he heard of it, which drew him there,—still it was he who was the means of the discovery being made known to scientific men, and on that ground, although not actual first discoverer, his name must always go down to posterity in connection with the history of the tree. The claim to actual first discovery, we believe, lies between three gentlemen, named respectively Mr. Dowd, Mr. Wooster, and Mr. Whitehead. Mr. Dowd's claim to the credit was first brought forward in a recent article in "Blackwood's Magazine." It is there said that in 1850 Mr. Dowd when out hunting was led by a herd of deer which he was following into the Big Tree valley. "He stopped as one enchanted, feeling like Gulliver when lost in the field of Barley in Brobdignag—the deer were forgotten, and he gazed with utter astonishment on monsters of vegetation, such as he had never even dreamed of as existing in the world. He told his companions of this adventure on his return, but all laughed at his story as a bare-faced attempt to impose upon their credulity. It was with the greatest difficulty he succeeded in inducing some of them to accompany him to the spot and verify his statements by actual inspection and measurement."

This narrative does not leave on our minds the impression of genuineness. It reads like the account that might be given by some person who had not been there, trying to describe the effect which he imagines the sight of the trees would have upon him. But it is a curious thing about all the works of Nature, that however grotesque, singular, and contrary to rule they may be, and however much surprised the description of them would lead us to expect to be, we are never so when we see the things themselves. We may feel awe or curiosity, but we never feel wonder or surprise. The whole thing is so well put together, and every part is so well proportioned and fits so well into its place, that we see the most unusual forms without the least amazement. We feel as if we had not come upon anything out of the way. A cameleopard or an elephant seem the most natural things in the world, and when we go to Sydenham to see the Wellingtonia, our surprise, if any, is that it is so much smaller than we expected. Its proportions are so perfect that we have a difficulty in realising the fact that it is 31 feet in diameter at the base.

We therefore doubt the tale of Mr. Dowd's sensations. We do not dispute that he may have been the discoverer of the trees—we only cannot believe that he felt as the writer in "Blackwood" says he felt.

Mr. Wooster's claim rests upon his having inscribed his name (*more Anglico*) upon the bark of one of the trees—E. M. Wooster, June, 1850;" but it appears that Mr. Wooster disclaims the credit, and gives it to a companion of his, Mr. W. Whitehead, and the account given of his discovering them strikes us as vastly more accordant with human nature than that of Mr. Dowd. He made it while tying his shoe! Mr. Hutchins, in his "Scenes of Wonder and Curiosity in California," speaking of Mr. Wooster's title to the discovery, says, "Since writing the above we have made the acquaintance of Mr. Wooster, who disclaims all title to the discovery, although of the same party, and gives it to W. Whitehead, Esq., who, while tying his shoe, looked casually round him and saw the trees, June, 1850." This is far more natural than the magazine writer's conception of the proper mode of making the discovery. It obviously would never have occurred to that writer that men might pass through the grove without noticing the gigantic size of the trees; and yet what more likely than that men, not botanists, who have been in the habit of passing through forests, many of them of great trees like the Red-wood or Sugar Pine, and with their minds full of something else, and neither thinking of trees nor accustomed to bestow a thought upon them, might pass these giants without observing them? It would only be when something gave them pause and allowed their attention to wander to surrounding objects, that the extraordinary magnitude of the trees might strike them.

It is very probable that Mr. Dowd and Mr. Whitehead may have both made their discovery within a very short time of each other; we have the date of Mr. Whitehead's, but in the absence of precise data for fixing the time of the year 1850, when Mr. Dowd made his, we for our parts rank ourselves on the side of the man who made it when tying his shoe. *A. M.*

NEW STRAWBERRY PAN.

IT will readily be admitted that in forcing Strawberries it is a matter of the very greatest importance to secure to the plants as far as possible those natural circumstances they enjoy and thrive under in the open borders. To guide us in the management of the Strawberry when introduced into the forcing house, we should make ourselves acquainted not only with the circumstances that act favourably and conduce to the highest development of the fruit when grown in the open air, but also to those peculiarities of soil and conditions of climate that exert a prejudicial influence upon it. We find the Strawberry luxuriant and fruitful in rich retentive loams, which afford unfailing supplies of moisture; and weak and unfruitful when grown on poor sandy soils, or where the subsoils are gravelly or open and stony, rendering the supplies of moisture, so much required by the plants from the time of flowering to the maturity of the fruit, failing or uncertain. Strawberries grown in pots and placed in the forcing-house are liable to suffer, even under the best management, from dryness, and occasionally from too much water. To prevent the too rapid drying up of the soil of the Strawberry pot, and to afford an additional evaporating surface two plans are called into use, one consists of the employment of slips of turf cut to the width of the shelf and placed upon it, the pots resting directly upon the turf. The other is to place an ordinary shallow pan beneath the Strawberry pot: the objection to this is that the water passing through the soil of the pot is retained by the pan, and the roots often stand in water. The pan I have invented is not liable to this objection; but in keeping the lower roots cool, and in affording a certain amount of evaporation, it presents the same advantages as the turf, and is superior in convenience.

The accompanying figure may assist the following explanatory description of the pan. The pan is made to suit the ordinary 32-sized or 6-inch pot; it is 4 inches high, 7½ inches in diameter, and it is thus large enough to allow the Strawberry pot to be placed within it, leaving a space of about an inch all round, which can be filled with sand or soil. The pan has a hole at the bottom, but a circular rim, 1 inch in height, surrounds the hole, and on this the pot rests. Between the circumference of the pot and the ring there is a space which holds water enough to keep the sand moist if

replenished about twice a week. The obvious advantages of the use of this pan are the greater security of the roots from dryness and the additional evaporating surface afforded by the soil in the pan, which being immediately beneath the foliage provides a congenial atmosphere for the plant, and this has the effect of keeping down that pest in the Strawberry pot—red spider. *William Ingram, Belvoir.*

Home Correspondence.

Old Muscat of Alexandria Vine.—Having remarked in your columns some inaccuracies in the account given of my old Alexandria Muscat Vine, I think it may be agreeable to you to have them corrected. The Vine in question does not fill a house, nearly half the house being occupied by a plant of the same variety, which I have been always told was raised from a cutting. No bottom-heat was ever applied. I can say nothing decisive as to the age of the older, or indeed of either plant. My friend, Mr. W. Barnes, to whom it is so greatly obliged, and who has never ceased to regard it with a kindly interest, has an impression that I told him many years ago, that I was in possession of a book which belonged to my grandmother, which mentioned the weight of the Grapes about 80 years previously. This may have been so, but at any rate, I have no recollection of the circumstance, and have searched for the book in vain. My full belief however is that the Vine was planted by my grandfather, who was a most ardent horticulturist, and probably about the year 1765, when he was making extensive alterations in the house and grounds. He died in 1787. I may add that my recollection of the Vine extends back to my infancy, say for 65 years, and that it has always been a large plant in my time. I do not even recollect the planting of the younger Vine. The berries in former days were much smaller than at present. Pines were grown in the pit below the Vine, but not in my time. *Geo. W. Norman, Bromley.*

Arrangement of Plants at Exhibitions.—The early announcement of horticultural exhibitions to be held in the ensuing year on an extensive and costly scale, and the preparations for others, not yet advertised, which are making in many places, denote the progress of that spirit of enterprise which is becoming so general in the gardening world, and which is watched with so much interest by those who know the happiness and believe in the influence of horticulture. It is to them a high gratification that the excellence attained by the industry and skill of the gardener should be more worthily appreciated, and such appreciation should be to the cultivators and exhibitors themselves a very great encouragement, not only to hold fast the vantage ground which they have won, but to press on to further conquest. Among the chief of recent improvements, the more graceful arrangement of plants and flowers for exhibition is one to be specially retained and promoted. Calmly and complacently for many years we florists enjoyed the sweet conviction that all our public displays were managed with consummate elegance and taste. We went on ordering our tables by the mile, and our green baize by the acre, and when our plants and our spectators were compressed together in a small tent, like biffins in a barrel, we knew that we were heroes, and our hearts were glad. The English flower show somewhat resembled the English dinner of the period, at which huge joints and massive corner dishes were set at once upon the board; and you were as sure to meet the Pimelea, Chorozema, &c., in the same form and in the same proximity at the one, as the saddle of mutton and boiled turkey, *vis-à-vis*, at the other. At last there was heard an uncomfortable whisper, that our system was a trifle heavy and monotonous, and that they did these things better in France, preferring beds and banks, and thus imitating Nature more, and serving tables less. And then we saw with our eyes that which we had heard with our ears; and at the shows of the Royal Botanic Society, at the beautiful exposition of American plants, and, finally, at the triumphant International Exhibition, all doubts were dispelled. That there is no difficulty in following these excellent examples, and no additional expense, the writer of this article has proved in practice. If the money, usually expended in wood and drapery, is appropriated to the making of beds and mounds, a clever gardener with some good spadesmen will soon make, under an ample canvas roof, a pretty miniature garden, adapted to display the plants entered for competition to the greatest possible advantage, and to enhance an hundredfold the comfort and enjoyment of the spectators. *H.*

Iresine Herbstii.—I have forwarded to you some shoots of this plant, in order that you may judge of its merits when grown for indoor decoration. I cultivate it in a cool greenhouse along with Chrysanthemums, &c., and it is very effective, the colour being almost all that can be desired, and it succeeds in a low temperature, when neither the Amaranthus nor the Coleus would live. *J. Watson, Casewick.* [The shoots sent are very well coloured. EDS.]

Age of Wellingtonias.—Now that the question as to the age of the "big tree" is again raised, it may be presumed that we shall soon have this vexed subject cleared up; for it cannot be denied that there is no phase of vegetable physiology more in want of a thorough investigation than "annual rings." All unsophisticated lovers of Nature, and students of her mysterious laws, must hail with joy the prospects of a thorough clearing away of the mountains of mist that still envelop this hazy subject. *Senilis.*

Pelargonium Sports.—I enclose a sport taken from the old Purple Unique, which I think may be of interest in connection with the enquiry, lately made in your columns, with reference to "sports." The pink variety of Unique Pelargonium enclosed was taken from a plant of the old purple variety, which is a standard some five feet high, and rather aged; it was produced upon a rather unusually robust shoot, which had been somewhat abruptly bent back. Does not this imply a possibility that one of these two varieties originated in a sport from the other? I am indebted to my friend Mr. Ruffett, of Brockett Hall, for the specimens in question. *William Earley, Digswell.* [Of the origin of this and sports of a similar character from Unique, some account will be found in our volume for 1861 (p. 945.)—EDS.]

The Orange Trees at Holland House.—In answer to your correspondent "Quercus" (see p. 1093), I beg to state that the nearly fruitless regimen is still carried on here, which I believe to a certain extent accounts for the healthy appearance of the trees. The system I pursue is to keep the house in which they are placed during winter quite cool, giving just enough fire to keep out frost. The trees are turned out to their summer quarters about the end of May, when they are top-dressed with a mixture of cow-dung and horse-droppings, well mixed together some time previous to use; and two or three times during the summer, before watering, I sprinkle a little guano over the top-dressing, allowing one handful to each tree. They are well watered overhead with the garden-engine occasionally during hot dry weather, and they are taken into their winter quarters about the beginning or towards the middle of October. Some of the largest trees which had become rather sickly were submitted to a severe cutting back during the spring of 1864, and the result has been very satisfactory, as their present appearance denotes, for they have made free growth and large healthy foliage. I consider the past summer to have been very advantageous for the well-being of Orange trees out of doors. I shall be pleased to make the acquaintance of "Quercus," and to show him the trees at any time he can find it convenient to call here. *C. Dixon.*—If "Quercus" had recently visited Holland House, and had "the pleasure of knowing the present gardener," he might have saved himself the trouble of wrongly explaining my explanation, by telling your readers that these fine Orange trees stood where they did not stand, and that they were protected and sheltered by high surroundings which were scarcely within sight of the very beautiful and healthful large specimens that took my attention so much. The smallest and worst specimen of the collection—and very different they are to those fine plants I have described—stood in the position described by "Quercus." The fine specimens had no more shelter than they would receive in any ordinary well-placed garden. So that instead of not receiving a breath of wind, as stated by "Quercus," they had an abundant share of it, and looked none the worse. Of course "the cool regimen does not suit 'fruiting' Orange trees in this country." If you want to fruit the Orange well, the treatment must be different in every way. Hundreds of gardens exhibit specimens of fruiting Oranges; very few indeed such densely headed fresh green flower-garden ornaments as those trees at Kensington. *W.*

Adiantum farleyense.—I have heard from many that Adiantum farleyense does not come true from seed, and a small plant purchased from Mr. R. Veitch, of Exeter, has grown to be a nice plant of Adiantum cuneatum. Of course I was very much disappointed, but knowing Mr. Veitch to be a gentleman who would shrink from anything like unfair dealing, I made up my mind to call at his nursery, and when he took me to one of his houses, the moment the door was opened my eyes sparkled with delight to see a most beautiful specimen of Adiantum farleyense, surrounded by a fine healthy stock of young ones. It was not till then that I made my complaint, which was soon explained by the information that the plants then before my eyes, and my plant (cuneatum) were from the same seed batch. It appears that these were the first to grow away in the seed pans, and were pricked off to give room for those which were very slightly advanced. The first pricked off grew away freely, and were sent out at a high price, but in a short time were sent back, being nothing but cuneatum; those which were the most sluggish in their growth, have

nearly all turned out to be true farleyense. The pinnules on the young plants are nearly as large as those on the large specimen plant. No lover of Ferns should be without this plant, which is as free to grow as it is beautiful. *W. C.*

Ventilation.—Will you allow me to remark—just merely to insinuate, as Captain Marryat would say—that a great number of your readers would be extremely obliged to Mr. Fish if he would condescend to alight from the very elevated regions which he is traversing, and settle himself for a few hours on a range of forcing or plant-houses. Even the humblest thought of the "ventilation of the spheres" is beyond the grasp of the minds of most men. I have been quite appalled by Mr. Fish's flights through the awful region called space, or what the philosopher of Chelsea calls the "Cathedral of Immensities;" and can think of nothing celestial that can illustrate his grasp of the subject, though perhaps of small earthly things, the description in Mr. Lowell's book of the American Eagle may be compared to it: "His right wing dips in the Atlantic, his left in the Pacific Ocean, his beak threatens Canada, and his tail throws a 'shadder' o'er the Gulf!" I admire Mr. Fish's energy and ability as much as any of your readers, but surely a paper or two would suffice for treating of the theory of the subject as elaborately as the most scientific readers could desire! Unfortunately at present I find the majority of gardeners avoid and despise "theory," and no wonder when one considers how much unproved, and vague, and unprofitable matter they have been told to accept. But so far as I understand, the best efforts of our leading men in science are in search of stern ascertainable facts and clear understandable truth, and I think anybody who has paid even the least attention to the works, lectures, or experiments of such men as Professor Tyndall, must confess that though dealing with the deepest mysteries of Nature, they are practical to the backbone, and by no means to to be classed with what a great number of educated and half-educated Englishmen call theory. There is no dividing gulf between our highest and most accomplished workers in science, and the humblest searcher after truth. *A. B.*

Allamanda Schottii.—Mr. Willcocks will pardon me for correcting a mistake he has made at p. 1020, under the head "Allamandas." At the time A. Schottii was raised at Springwood, it was the seat of Richard Watson Barton, Esq., not R. W. Boston, Esq. *D. Walker, gr. to H. Reed, Esq., Dunorlan, Tunbridge Wells.*

Grape Mildew.—I have a house of Grapes (chiefly Hamburghs) almost entirely destroyed with mould or decay, and that too in a very short time—two days. Is it in consequence of the wet season? The house has been gently warmed for this past month, and appears dry and in good condition for the preservation of Grapes; the Lady Downes' stands it better, but I am afraid of its keeping. Have you heard of any other case of this description? *T. S.* [The attacks of Grape mildew, which yours probably is, are very rapid. You can do little now beyond clearing away the decayed Grapes, and applying sulphur to any which is not much injured. EDS.]

The Plants of Palestine.—In recommending a garden of these interesting plants (see p. 1044) I had in mind only those of Hermon and of the Lebanon, many of which are in our gardens; and if we may believe what we read in "The Land of Israel," many are yet to be introduced, and are well worthy of it. As to the plants of the almost tropical valley of the Dead Sea, they would require very different treatment; they were entirely absent from my mind when I recommended a Scriptural garden. I was indeed so taken with the botany of the mountains, as to forget the valleys. There has probably never before been such a thorough botanical exploration of Palestine as that carried out by the Tristram expedition; and this induces me to doubt if the Solanum sodoneum which was once found perforated by species of Cynips, and its interior dust, is the true Apple of Sodom. The valley of the Dead Sea was so thoroughly gone over by the above-mentioned botanists that no such plant as the Solanum, with the remarkable tradition attached to it, would have escaped such explorers. They were there at different times for weeks, and the plant if not in fruit would have been noticed in some of its stages of growth if it existed there. The Calotropis grows in Nubia and in the valleys of Abyssinia, and is remarkable for its deceptive fruit. There is, however, no end to controversy on Scriptural plants and trees: witness the "Lily of the Field," about which no two agree; and again, the "Mustard Tree." The late Dr. Royle identified it as the Salvadora persica, the Moomen or Tooth-brush tree of Abyssinia, the fruit of which "grows in clusters of mucilaginous berries, the size of our Red Currants, each containing a seed about as large as Peppercorn." These if eaten in quantity leave a warmth in the palate like pepper. I do not remember the argument Dr. Royle used, but I presume it might be the hot nature of its seeds. "It forms a dense bush, and its thick, velvety, round leaves, of a bright green, form an excellent shade." Many years since the Broussonetia papyrifera was thought to be the "Mustard Tree," owing, as far as I can recollect, to its seeds being of the same size, and so exactly like the seeds of our common yellow Mustard, when a little faded from age; yet the tree, even in this country, attains a height of 20 feet. The question is—Is it found in Palestine? I almost fear not. *T. R.* [One of Dr. Royle's arguments as to the identity of the Salvadora with the Mustard of Scripture was founded on an alleged close similarity between the Arabic name applied to the Salvadora and the Greek word for mustard. EDS.]

The National Horticultural Exhibition at Manchester.—The schedule of prizes (see p. 1089) has, undoubtedly, been prepared by wise heads and generous hearts, and it reflects much credit on the taste and liberality of the floral brotherhood at Manchester. *Quod facio, valde facio*, was the motto of the great commercial city when she collected together the Treasures of Art, and there is no declension in her munificence, now that she essays to assemble the masterpieces of floral skill. There can be no fear as to the success of the experiment, with regard to the exhibition itself; but every true horticulturist must feel an anxious hope that the confidence which the promoters have shown in the sympathy and support of the public, by an outlay of nearly 1000*l.* in prizes alone, may be cheerfully and amply justified. It is interesting and important to the gardening world that such a noble enterprise should prosper. I have scrutinised the schedule critically, and can find but one omission, which I ask permission to notice, as being a very loyal subject of the queen of flowers, unworthily called to assist in her councils, and to exercise judicial powers in her courts. There are no prizes offered for the Roses of amateurs; and there are no prizes (although Roses in pots are to be very handsomely rewarded) for the cut Roses of nurserymen. The contributions of the former might not render material aid, although several must feel, in common with myself, a desire to co-operate in such an undertaking, were the invitation given, and the season propitious; but the southern nurserymen would readily bring many boxes of beautiful Roses, which would greatly enhance the attraction of the Show, at all events upon its opening day. As surely as on the "shilling days," when the great pictures of the country were at Manchester, a crowd might be seen gazing intently upon "the poor young chap as pisoned hissen" (the Death of Chatterton), so would there be certainly an admiring throng around these lovely realities, which none can paint. So prophesies *S. R. H.*

Radiation of Heat.—At p. 1020 "J. S." states that clouds do not present any greater mechanical obstruction to the upward passage of heat than the same vapour in an invisible condition. This statement is surely opposed to all experience. How many times have gardeners found that as soon as the clouds disappear the thermometer runs down with an ugly rush, and artificial heat has to be instantly generated to counterpoise the loss of the heat-preserving and heat-reflecting cloud screen. And all this difference is experienced without any change in the hygrometrical condition of the encircling air. Even the mere mechanical texture—if I may so speak of such aerial productions—of clouds is different from invisible vapour. The moisture is at least gathered together in thicker masses. This is demonstrated by the mere visibility of clouds and the invisibility of vapour. The augmented power of clouds over that of mere vapour as conservers of heat is nightly proved to thousands of observant gardeners. During a cloudless and therefore dewless night, let the clouds be suddenly rolled off the sky, and dew at once falls. Why? Simply from the increased energy with which radiation would in the absence of such mechanical barriers. Were it true that invisible vapours offer the same resistance to the removal of heat as clouds, then no more dew would be deposited in the one case than in the other. But not only does observation show a difference between the two, but I believe science reveals the cause of this difference. Looking at the theory of dew, as being based on the principle of a mutual exchange of heat between bodies, it is obvious that the rate of exchange must be affected by the relative position of the contracting parties. A clear air, whether wet or dry, is a grasping trader in heat. It takes all it can from everything, and gives but little back. Clouds, on the contrary, trade on the principle of reciprocity; they give and take in about equal proportions. In many places they give back to particular spots more than they receive; in most, nearly all, they give as much. Hence, when plants, which radiate heat rapidly, send forth their caloric, it impinges against the surface of the cloud, and is sent back again. Consequently the surface of the earth and the surface of the cloud, radiating with nearly equal force, tend to maintain an equilibrium of temperature, and no dew can, under such circumstances, be deposited. The absence of dew proves that there has been no loss of heat. Thus the clouds act as mechanical barriers to the removal of heat. Were they formed of tinfoil itself perhaps they could hardly act with more energy as conservers of heat than their light fleecy masses do now. But, although water in all states radiates heat, it is doubtful whether in the state of invisible vapour, it radiates more powerfully than air atoms themselves. Unless it can be proved that it radiates more heat down to the earth than air, or as much as clouds, I do not see how "J. S.'s" statement can be sustained. I have said that clear air takes much heat, and radiates but little back. It is extremely doubtful, however, whether cold dry air radiates as much heat as cold wet air, both being still and in the same state of transparency, for dry air is more compact than moist air. The effect of compression on air, as on more solid substances, is to raise its temperature. The heat distributed over or among the air is concentrated into less space, consequently there is more of it in a given spot. Just as hammering contracts the atoms of iron together, and brings the caloric into a burning focus, so does compression tend to warm the air. In this way dryness would add to its warmth. And so far dry air would actually be warmer than wet air under the same conditions. And in reference to radiation, its energy must be largely determined by the medium in which it takes place. The thinnest screen will destroy half its power. It works with greater or less force according to the difference of temperature between the cooling body and other things contiguous to it. It is quite possible, too, that its energy is checked by the adhesive power of the atoms of atmospheric air. That force would be greater in dry air than in moist. In this way dry air might check radiation. There is only one fact that seems to me at all to favour "J. S.'s" theory, which is to the effect, as I understand it, that moist air is a better heat-preserver than dry, all other conditions being the same. It is this, that when the air deposits moisture, the heat that vaporised the water is set free. This latent heat, that converted the water into vapour, is liberated, and becomes sensible heat. The liberated caloric will have some influence upon the air, little or none upon the plant, which will be covered over with the chilled water robbed of its heat; and it will be observed that the influence upon plants of the two airs—wet and dry respectively—is the point under discussion. It must also be borne in mind that although heat radiates from bodies in all directions, virtually the heat radiated from living bodies on the surface of the earth into the air becomes, when there is much disparity between the two and in the absence of clouds, an upward current. The clear sky has not consistence enough to intercept or send the heat back, for it is a bad radiator. In reality, it is almost impossible to separate radiation from conduction. It is easy enough to speak of the darting off of heat from any part of the surface or substance of bodies in straight lines; but how does the caloric get away? It can only be removed by the ministry of the air. And the air is not a vacuum nor unresisting spirit, but a radiating, conducting, reflecting, absorbing, tangible—I had almost said active agent in the matter. As a rule, the power of matter to conduct heat may be said to be determined by the compactness of its atoms or its solidity. Hence iron conducts heat faster than wood, solids than fluids, fluids than gases; and possibly cold dry air in this one respect, faster than moist air. The atoms are more closely compacted together, and heat might be supposed to pass more readily from the one to the other. The effect of moisture added to the air is to lighten it. The air atoms are thus further separated by the intervention of vapours between, or the mixing of water among them; but the time occupied in travelling from one spot to another is not wholly, nor chiefly determined by the distance between the two—more often depends upon the character of the road and the motive power employed. It is so in this instance. Heat travels faster on the moist road than on the dry one, and for this reason, that water conducts heat faster than air; and this increased velocity, induced by moisture, more than counterbalances the closer proximity of the atoms, or curtailment of the distance in drier air. Hence it happens that moist places, at times, not only feel (which I admit is a rather uncertain guide), but actually are so much colder than dry ones. Within a mile of where I write, at only about 100 feet lower down, the night temperature averages five degrees below that of this place. Fogs are also constantly heavier in a damp situation than in dry ones. These may safely be accepted as a measure of the energy of radiation. The faster heat is radiated from living surfaces the more copious the deposition of dew, and *vice versâ*. The heavier the dew the greater the loss of heat. Hence, where there is most dew, there also has been the greatest loss of caloric. It thus follows that moist air loses heat by some means at least faster than dry air. Allow me to clinch these arguments with a statement from the *Pall Mall Gazette* of October 23. It is taken from the Report of the Metropolitan Sanitary Commissioners:—"For every inch of water drained off which would otherwise pass into the air as vapour, we are told as much heat is saved per acre as would raise 11,000 cubic feet of air one degree in temperature. The dew point is also raised, hence less mist and dampness and greater comfort. A farmer, says the Parliamentary Report on Drainage, was asked the effect of some new draining. 'All I know is,' he replied, 'that before it was drained I never could go out at night without a great-coat, and now I never put one on. It just makes all the difference of a coat to me.'" I must say I thoroughly agree with the farmer, and still believe in my protecting great-coat of dry air. *D. T. Fish.*

Societies.

ROYAL HORTICULTURAL: *November* 20.—G. F. Wilson, Esq., F.R.S., in the chair. After the election of three new members and the affiliation of two Societies, the Rev. Joshua Dix offered a few remarks on the different objects exhibited. Alluding to the yellow-fruited variety of Butcher's Broom (Ruscus aculeatus), which was shown at the last meeting (see p. 1070), it was stated that it was found by Mr. Shortt in the woods at Heckfield, an interesting fact, inasmuch as we have in this yellow-fruited variety not only a new form of a well-known shrub, but a new British plant.

Nov. 20 (*Floral Committee*).—Mr. Bateman furnished a cut flower spike of Odontoglossum Hallii, a fine kind in the way of hystrix; from the collection of Mr. Turner, of Manchester. From Mr. Ward, gr. to Arthur Berrington, Esq., Pantyllodre, near Abergavenny, came the branched spike of Burlingtonia decora picta, to which reference has been made in our columns (see pp. 1048, 1092). In this instance the terminal and the subsidiary spikes were all in perfection at the same time. It was stated that the terminal spike was not fully opened before the others began to expand. A Lycaste came from Mr. Richards, gr. to Lord Londesborough, and "Mesinopsidium sanguineum" from Messrs. Backhouse. Two Ipomœas, one a blue variety, and Begonia phyllomaniaca, of which a full account has been given at p. 313, were contributed by Mr. Earley, gr. to F. Fryer, Esq., Digswell. Mr. Salter received First-class Certificates for Chrysanthemums Faust, Countess of Warwick, and Lady Talfourd, three kinds described by us last week (see p. 1095). Mr. Salter also exhibited a sport of a new colour (rosy purple) from Cedo Nulli, which promises to be an acquisition. From the Garden of the Society came various Chinese Primulas, a bright red-flowered Bouvardia named Hogarth, the useful Justicia speciosa, various Zonal Pelargoniums, Libonia floribunda, covered with orange and red Cyphea-like flowers, and various little plants of Erica hiemalis in full flower. From Mr. Lawrence, gr. at Farnham Castle, came a basketful of

Cocoxylon ferruginum, a little trading plant, ornamented with handsome leaves [with a dotted surface. May 1. Clark continued the examination of the Hymenophyllaceæ, which, in spite of the new arrangement of the genera, will probably remain in Hooker's Synopsis Filicum. Mr. Fish exhibited a fruit of the Water Lime. From Mr. Ingram came examples of the Strawberry Pan, of which a full account will be found in our correspondence, page 1100.

Nov. 6.—Mr. Rutherford, gr. to Lady Palmerston, at Brocket Hall, showed 11 dishes of Apples, among which were Court of Wick, Cox's Orange Pippin, Margil, Coe's Golden Drop, Braddick's Nonpareil, Sam Young, and Ribston. He also sent some good Autumn Pears. From Mr. Cox, Redleaf, came Waltham Abbey Seedling and Golden Noble Apples, and very good Chaumontel and Winter Nelis Pears. Mr. Lindley likewise sent a collection of Apples, consisting of Cox's Orange Pippin, Teams Pippin, King of the Pippins, and Sam Young Pear. Mr. Veitch sent fifteen different kinds of Apples, among which the best whites were Ingestre parabli, and Veitch's Silver White; and the best reds, Ivery's Nonesuch and Cobbe's Incumbent. Wonderfully fine Salsafy and Scorzonera, grown in the warm ground at the seed-sowing season for 1866, were shown by Mr. Cockley, who had also a most excellent Brussels Sprout called Earley's Selected Prize Brussels Sprout. The stems of this variety were quite 4 feet in length, and covered with sprouts from top to bottom. Mr. Stewart, gr., Nuneham Park, showed Nuneham Park and other Onions.

LINNEAN Nov. 1.—G. Bentham, Esq. President, in the chair. C. Fison, Esqs. M.D. Gothard Kieffer, Esq. G. Maw, Esq. and H. Woolf, Esq., M.D., were elected Fellows. The following papers were read:—*On the Structure of the Sclerotium Equisetinum, and Spores of Equisetum*, by J. Sherrit. The native Indian names for the Ferns are Pottu Manga and Pattu Kai. It is said with it all the deserted hills of the white ant, and is found only in the perpicuous and impenetrable forests, springing from their roof, or occasionally from the floor, never from the cells occupied by the ants themselves. Some grow with long stalks, others are sessile. It is not commonly found in the ant hills, but in the Coimbatore district it is met with in about one out of every six. When fully grown the Fungus attains the size of an Orange.—*On Fungus of Hedgehoard collected by Dr. Bird Veitch, R.N., during the Voyage of the Northern coast of Borneo*, by F. Kitton, Esq.; communicated by Dr. Hooker.—*On Lichens collected in Labrador, Hare and Newfoundland*, by Dr. Cobbold.—*On Lichens of the Species of Acarospora in India, Ceylon, Burmah, and the Malay Peninsula*, by Dr. T. Anderson. The author having revised the African and most of the Asiatic species, though hesitating to decide on the limits and affinities of the genera that, from the numerous species have been also examined, nevertheless is of opinion that the limits of the Asiatic genera, and of the larger groups, such as sub-orders and tribes, will not be materially altered when the entire order comes to be revised. The views he has adopted concerning the limits and affinities of genera, and the grouping of them into tribes and sub-orders, are essentially different from those of Nees von Esenbeck, whose division of the group into two sub-orders, by the nature of the placental processes of the seed, he considers exceedingly unequal. In accordance with this view he proposes, the sub-order Thunbergiæ be separated from the Ruellideæ and Acanthideæ by the nature of the calyx, the estivation of the corolla, and the peculiar processes which support the seeds; while the Ruellideæ and Acanthideæ, almost co-extensive with Nees von Esenbeck's sub-order Ruellideæ, are readily distinguished from each other by the estivation of the corolla, which is strongly contorted in the first, and imbricated in the second. In Ruellideæ the tribes are established on characters taken principally from the calyx and fruit, while the tribes of the Acanthideæ are separated chiefly by the form of the corolla, the number of stamens, and the condition of the anthers. The paper, which was a very lengthy one, was chiefly occupied by a technical account of the species.

November 15.—G. Bentham, Esq., President, in the chair. E. Atkinson, Esq., and the Rev. H. Baddeley, were elected Fellows. Mr. Stainton exhibited two living specimens of Stathmopoda Guerinii, a small moth not previously seen alive in this country. Mr. Couch exhibited specimens of a seaweed, Halyseris polypodioides, found attached to a stone brought up by a Cornish fisherman from a depth of 15 fathoms, in September, 1865. The following papers were read:—1. *Monograph of the Genus Mesembryanthemum*, by N. E. Brown, Esq., and Mr. Baker. The author has separated it with certain and 106 species of the genus Ruschia, which, in the tribe Ruschieæ, Aizoaceæ, is retained, Ruschia, Prenia, Lampranthus, Mesembryanthemum, the Ruschieæ, Delosperma, Stoeberia, and Sphalmanthus. 2. A couple of Tabasheer, burnt out of Dongla Bamboo from Cachar, was exhibited [illegible] specimens [illegible] shewing [illegible] *Monograph of the genus Impatiens*, by Mr. Hooker, showing the species [illegible] *Notes on the Flora of Mauritius and its Affinities*, by A. G. Bailey, communicated by Dr. Hooker. 4. *Notes on Mr. Bateman's Orchids*, by Mr. Hooker, on the large collection of orchids, described, under the name of Wyman's, in Mrs. Hooper's Letter addressed to Dr. Lindley, who has made an especial study of the Orchids of Derbyshire. It has a common stem, 3 inches high and 1 inch thick, and is repeatedly divided upwards, its subdivisions being elongated into earshaped cups of 2½ to 3 inches long, smooth externally but wrinkled within, and bearing innumerable minute, variously divided, and being sometimes proliferous. The substance was described as being totally different from that of Peziza, though the fungus itself was closely allied to P. leporina and P. onotica.

Fossil Wood from Egypt, by Andrew Murray, Esq. A fine specimen, produced by Mr. Murray, showing the [illegible] layers like an agate. It was found on the sea coast, and hence it was argued that it was probably washed out of the ground below the sea by the waves, like amber; and, if so, it would follow that there must have been a comparatively recent depression of the surface of the earth in that region.—*Letter addressed to Dr. Hooker from Mr. Moss, H.M. Consul at Gaza, on Fossil Nummulites discovered near Gaza, Capital of Lower Tree Gaza of that Country.* Miss Hamilton, referring to Dr. Welwitsch's paper on the Copal gum (see p. 994, 1865), states, in reference to the Neocrotonoid trees, that if an incision be made in the bark the gum flows out, hardens, and is as clear as amber, but whether an incision be made or not, the gum will flow, and generally exudes from the root, sinking of course into the earth, where it remains until dug up either purposely or by accident. In the earth it becomes encrusted, and is harder and more brittle than when taken fresh from the tree. As the gum flows every year, enormous quantities are often found in the earth, but that it does grow upon trees now, and is not (in that country at least) a fossil resin, was stated to be a positive fact.

Notices of Books.

Fungi Britannici exsiccati, a M. C. Cooke collecti. Cent. I., II. 8vo. London: R. Hardwicke, 192, Piccadilly.

The utility of collections like the present, when correctly named, and the specimens well selected, can scarcely be exaggerated. Several very extensive collections, as those of Desmazières, Mougeot, and Nestler, &c., have had a good sale on the Continent; but all attempts of the kind have hitherto failed in this country, partly from want of support, and partly from the large percentage which is charged for selling books which are published by the authors themselves. Mr. Cooke has made a good beginning, and we sincerely hope that he may meet with such encouragement as to enable him to continue his very useful undertaking. At present the specimens are almost entirely confined to Epiphytal Fungi, but he will doubtless give others as he proceeds. Unfortunately the octavo form which he has selected is not well calculated for every tribe of Fungi, and has in all probability prevented his giving duplicate specimens, which are extremely desirable where they require microscopical examination. It should be remarked that the specimens are merely placed in a common covering, so that, where it is wished, each may at once be transferred to the Herbarium, which is often the best way of disposing of such collections, especially where one is so fortunate as to possess duplicate copies. Amongst the more interesting species we may notice Torrubia entomorrhiza, Peronospora obliqua, Venturia Myrtilli, Ustilago Salveii, and Æcidium Parnassiæ. There are several other species in the collection which an advanced Mycologist would be glad to have, while the student will find a safe guide everywhere. We have great pleasure in recommending the work to such of our readers as are interested in these obscure but very curious plants.

BOOKS RECEIVED.—*Outlines of Political Economy:* by G. H. Smith. (Longmans. 8vo, pp. 70). A treatise written in an easy familiar style, so as to render it serviceable to junior students. It may be recommended as a desirable addition to the garden library, treating as it does on the subjects of Labour, Value, Demand and Supply, Wages, and the like, in which gardeners, like other people, are not a little interested.—*The Englishwoman's Review.* (Kent & Co.) Under this title a serial has made its appearance, destined to appear monthly, with the main object of improving the condition of working women—a praiseworthy object enough. In an article on the scarcity of good maid-servants the writer points out, among other causes of degeneration, the want of supervision over the female servants in farm-houses.—*Belgravia* is the contested title of a new "monthly," issued under the editorship of Miss Braddon. There are so many similar serials now, that a new comer should possess greater claims to a right to compete in the race for public favour, than we find in the present publication.—*Walks and Rides, No. II. Spain in 1866* (pp. 30). (Edinburgh: Edmonston & Douglas.) A very readable account of the present condition and prospects of Spain. If the writer dispels some of the illusions that invest our notions of Spain, he at least holds out some hopes for the future. The aridity and desolation which form so unpleasant a feature of large tracts of this country are attributed in some degree to the "innate hatred" of the Spaniard for a tree. "If he does not cut it down for firewood, he cuts it down because it only serves as a harbour for sparrows that eat his grain." Nothing can remedy the evils caused by devastating torrents of water, sweeping everything before them, and leaving barrenness and aridity, but a "strong energetic action on the part of the people to replant and irrigate."

TRADE LISTS RECEIVED. We have before us the following trade catalogues:—*Hooper & Co.'s* (Covent Garden) *Autumn Catalogue of Flowering Bulbs. W. Chater's* (Saffron Walden) *Catalogue of Hollyhocks. Maurice Young's* (Milford) *Catalogue of Nursery Stock*, in which we notice a new Weeping Birch, found in the neighbourhood of Milford, said to be one of the most beautiful of weeping trees; its habit is to creep on the ground, in which condition it was discovered; it has been with some difficulty grafted, and now forms a most ornamental plant, its branches being not larger than a fine string, drooping for several feet: it is now offered for the first time. *John Cranston's* (Hereford) *Catalogue of Transplanted Forest Trees*; also by the same, *Descriptive Catalogue of Conifers, &c.*, and *Descriptive Catalogue of Selected Roses. Thomas Sampson's* (Yeovil) sheet list of *Flower Roots. George Edward's Catalogue of Roses, Fruit Trees, &c. Dreghorn & Aitken's* (Kilmarnock) *Catalogue of Bulbs*; also *Catalogue of Gladioli and Roses. Louis Van Houtte's* (Ghent) *Catalogue d'Oignons à Fleurs.*

Florists' Flowers.

THE cultivation of the HYACINTH IN WATER is a practice so generally followed as almost to require an apology for a reference to it, seeing that "cultural hints" are widely diffused on every hand from a host of horticultural teachers. Judging from a perusal of some of these, there arises before me a sense of superficial theorizing, as though but few of the writers had ever mastered the practice for themselves, and had hurriedly caught at any waif or scrap of information that came floating down the stream of time, irrespective of its relative value to those so advised. It is a pleasant "labour of love" during the winter months to watch the gradual development of roots, then foliage, and lastly spike and blossoms of a Hyacinth in a glass, and numbers do it with more or less of success attending their pains, with a real zest and a quiet enthusiasm only known to those who thus attempt to anticipate within doors the "charms of returning spring."

Hyacinths can be easily grown in water, and grown well. As soon as the bulbs are obtainable they can be placed in glasses, but September and October is a good time for doing this. Wasted and shrunken roots bring disappointment, so do those that have begun too much to exhibit their shoots. Easy as is the process, yet I think the conditions under which Hyacinths are grown in glasses are really less favourable than those under which they are cultivated in pots, and in order to ensure success, good and sound bulbs should be used. Therefore don't defer getting the bulbs. To say "Nature has undoubtedly declared herself in favour of planting the Hyacinth in October and November," and then to go on thus—"yet, without disputing her authority, we would say to the lovers of this flower, make your first planting as near the 1st of September as possible, and your last about the 31st of December," is just so much "bosh," for the last planted roots will flower nearly as soon as the former. You cannot keep them back, they will flower at their appointed time, for "Nature has undoubtedly declared herself" as plainly on this point, as on the other.'

I have adopted the practice for several years of using fresh rain-water, into which I place a few pieces of charcoal, just sufficiently small to pass through the neck of the glass. I rarely ever change the water, and simply keep the glasses filled up as evaporation takes place, using however for this purpose water of the same or even a little higher temperature. The water from the very outset should submerge the base of the bulbs; and when the plants make rapid growth, as they will do when they have grown about 2 inches, the glass should be filled to the brim with water. I have found this an excellent practice; the bulbs absorb water freely. Light and air are indispensable—the latter can be given in a sitting room at intervals without inconvenience. When the glasses are placed in a window, light shelves can be thrown across for that purpose, and a slight iron rod will keep them quite secure. In the early stage of growth any amount of air, cold as it may be, so that it does not produce frost, can be given; but when the spike is pushing, a little caution must be observed, for a certain susceptibility appears to be apparent, and cold draughts will sometimes do injury.

The "prepared Cocoa-nut fibre and charcoal" recommended as a substitute for water, does not, in my experience, so completely "supersede water" as is asserted. I tried it in half a dozen glasses, against water in a like number, and I am compelled to take exception to two statements made respecting it, viz., "that the bulbs root freely into it," and "produce much finer spikes of bloom than when cultivated in water." In a glass filled with the preparation referred to, it really becomes a soddened solid mass, which the roots did not penetrate, rather they forced the bulb upward. I had to tie my bulbs down like soda-water corks to cause the roots to penetrate the preparation. My flowers in water were quite as fine as those in the preparation, and I had not to run the risk of breaking the glasses, and of injuring the bulbs, after the blooming season was past, when I sought to clear them of their contents.

Manures, or stimulants of any kind, should be altogether avoided by those unacquainted with their properties. I once settled in a very summary manner the fair prospects of several bulbs in glasses by the incautious use of a fancy manure.

Anything else in water except Hyacinths and Polyanthus Narcissus will bring disappointment. Crocuses, Tulips, and even miniature Hyacinths may be said to have begun in vanity; certain it is they end in vexation of spirit. Even Narcissus in water grow so tall that they get beyond the range of the Hyacinth support, and lop over in an unwieldy manner, like a man with an insecure foothold because of a slight derangement at the other extremity.

Some sorts of Hyacinths in water do not do well. The high coloured varieties of the red class are difficult to manage; there seems to be a weakness of constitution associated with high, or rather deep colours in this section. Argus, one of the single blue class, is in the same category; how seldom is a really good spike of this variety seen in a pot, even when grown by Messrs. Cutbush or Paul. I have tried this variety in a glass on several occasions, and have not succeeded in getting a creditable spike; it will flower prematurely. I am trying it again this year, and am endeavouring to avoid any premature development by keeping a glass inverted over the crown of the bulb. So far the development looks more encouraging than formerly. The inverted glass is often useful in partially arresting premature flowering.

With the exception of Lord Wellington, a beautiful double-blush variety, one of the easiest for cultivation in water that I know of, and which invariably comes fine, the single varieties should always be selected for cultivation in glasses. Among those unacquainted with their relative value there is a strong prejudice in favour of double varieties, the popular opinion being that double are always superior to single flowers. This is the opposite of the truth in regard to the Hyacinth. Thomas Hogg gave in 1822 a list of Hyacinths which comprised 124 double varieties, but only 30 single flowers. Until recently the Dutch raisers turned their attention to double in preference to single flowers; now, in every dozen so-called new Hyacinths, a very small proportion indeed are double flowers.

A few varieties well adapted for glasses are contained in the following list:—Annie Lisle, Duchess of Richmond, La Dame du Lac, Robert Steiger, Princess Charlotte, and Madame Hodson, single red; Baron von Tuyll, Mimosa, Prince Albert, Grand Lilas, Charles Dickens, and Regulus, single blue; Grand Vainqueur, Mont Blanc, Kroon Princess, Themistocles, Anna Paulowna, and Grandeur à Merveille, single white; and Anna Carolina, Heroine, and King of Holland, single yellow. This is intended as a popular list; there are plenty of higher-priced kinds. Generally, the above can be obtained at a moderate cost. *Quo.*

Gladioli.—The Editor of the "Floral Magazine" remarks that he has found this year more certainly

than ever, that small bulbs produce as effective spikes of bloom, and even perhaps more effective than larger bulbs. Have our leading growers yet determined upon the best time to plant Gladioli? I notice an account of very successful early planting, and have seen this season a fine collection that was not planted till June. Would Mr. Laue or some of our good growers kindly state the best time to plant on the generality of soils? *Brenchleyensis.*

Gladiolus Spawn.—The "spawn" of Gladioli, that is to say the young crop of corms formed around the old one, should never be allowed to dry. The whole crop of the young corms should be separated and placed in a pan of rich sandy soil, and placed in a cold frame protected from frost; or it may be planted in a bed in the open ground if the bed is provided with protection from frost by means of a surface covering. The great point is to keep the young progeny from ever becoming dry. *W. R. S.*

The Apiary.

QUESTIONS ON MANAGEMENT.—I am much obliged to you for so kindly answering my former queries, and if not trespassing too much on your space and courtesy, should be glad of still further assistance from you.

You would do a service to many bee-keepers by giving general instructions how to manage the common swarming straw hives of the cottagers most profitably without depriving. In Dublin very pretty dishes of white honeycomb are carried about for sale on men's heads; it brings a good price per lb. This has evidently from its shape been taken from the common straw hives, and must be the best part of several joined together in one dish, although from the combs being set up on end, one against the other, the larger in the centre, they appear as if they were all out of one.

What is the best mode of carrying full glass supers, whether framed octagon ones, or bell-glasses? And whether top or bottom up?

Do you manage to get off your supers without smoke? It would be desirable to do it, as tobacco or other smoke gives a taste to any unsealed or liquid honey.

Is seeing brood in supers through the glass sides, or windows, the only way of knowing that it is there? And must all the bees be driven out before it can be cut out?

When one window only is put in a hive, which do you consider the most useful place, the back or front?

When deciding on the proper time for putting on a super, is crowding at the mouth the only sign by which to be guided in the case of a hive unfurnished with windows?

In the November Number of last year you say you usually before winter remove a frame from each side of your bar-and-frame hive, and replace it in spring; do you mean that you lay by the frame and comb full of honey, and replace them both in the spring?

In the same Number you mention that the bees in a populous bar-and-frame hive, the top of which had been so ill-made that the tops of the frames were virtually exposed, passed through the winter unhurt. Did this take place in a winter of ordinary severity? That it did so appears almost impossible.

What cement do you use to cement down the covers of the bar-and-frame hives before winter?

[We cannot attempt now to enter into the general management of bees in common hives, as the subject would require more space than we have at present at command. The Irish hives are made very deep, wide at the base, and narrowing to a cone shape at the top. In the latter part of the receptacle the honey, almost entirely free from pollen or brood, is stored. The hive is also elevated to a considerable height by ekes or "raisers," as they are called, of which two or more are sometimes added. The Irish are, we believe, alive to the advantage of taking up the swarms of the current year instead of old stocks, which latter is the usual English custom. Hence the superior quality of the honey brought to market.

Full supers, whether of glass or any other material, if to be carried any distance, had better be reversed.

We do not use any smoke in the removal of supers. To timid operators the use of a few puffs of fungus smoke will often be found of some service in rendering the bees less irritable.

The presence of brood in supers is of course usually discovered through the glass, but any super may, if liked, be taken off and turned up for inspection. This, however, we should be slow to recommend for general adoption. We never try to dislodge the bees to cut out the brood comb, but simply reverse the super, and with a curved comb knife, excise every portion of it. The combs being at this stage of their construction very fragile, are incapable of bearing much disturbance in the way of driving out the bees.

The window can be placed in any part of the hive most convenient for the owners. The back is usually the best situation if easy access can be obtained.

Crowding at the mouth of the hive is one of the signs of the desirability of at once giving additional room, but it cannot be said to be the only sign. The general appearance of activity and strength will enable the observer to arrive at a safe decision.

When, before winter, we remove side frames from our large hives, we either make the combs available for our own use, or for adding to the stores of less amply supplied stocks. Combs with honey, sealed or unsealed, are never put by to be replaced in the following spring. In April frames, with or without empty combs, are inserted. We usually have a large number of such combs in readiness for this and other purposes. Those who work frame hives extensively soon become alive to the great importance of having a large reserve of such combs ready for any emergency.

We had some extremely cold weather in the winter alluded to. The hive was about the strongest in the apiary when we saw it in the March following. We have known other instances in which bees have passed safely through the winter in hives with the tops very much exposed. It is probable in such a condition that injury from internal moisture is altogether avoided. The bees of course should be strong in numbers.

We use no cement for covers or any other part of our hives. Of late years we have even discontinued altogether any screwing down of our covers. The use of screws was found to interfere seriously with speedy manipulation. A small weight may, if liked, be temporarily put on, but is not necessary if the tops are properly made, according to the directions given in former Numbers.]

Garden Memoranda.

MR. RIVERS' NURSERY, SAWBRIDGEWORTH (*concluded from page* 1024).—Another striking feature at Sawbridgeworth is the training walls for standard or rider trees. These are about 10 feet high, the upper 4 only being formed of boarding. They are made of poles firmly placed in the ground at convenient distances, and weather boarding nailed across them. All the bottom space between the poles is left vacant. Standard trees are then planted on each side of these wooden walls; the south side being devoted to Peaches, Apricots, &c., the north to Pears, Plums, or Cherries. These wooden walls possess two great advantages over brick or stone; they are cheaper, and they are moveable. No sooner do the borders appear to get tired of any particular tree, than down come the walls, and they are erected on new and fresh soil. Such walls for dwarf or standard trees might readily be placed in the iron sockets already described, and tenants' trees in pots or tubs be trained against them; trees and walls alike to be removable at pleasure.

It used to be said that men planted Pears for their grandchildren, whereas grafted plants bear plentifully the second season. Mr. Rivers, by his skilful grafting, &c., can now taste his seedlings in a few years. Good-sized orchards can also be furnished at once, and a plentiful crop immediately produced. A year or two ago several acres of ground were planted with pyramidal Pear trees from 10 to 18 feet high, and 3 or 6 feet through, and the trees look admirable, notwithstanding a severe cutting in, and promise waggon loads of fruit next season. Apples, Cherries, Plums, and in the southern counties even Peaches, Nectarines, and Apricots, may all be treated in the same way, and fruitful gardens introduced at once.

Much of Mr. Rivers' success is owing to the care that he has exercises in the selection of stocks. It has been found extremely difficult to find a suitable stock for some varieties of fruits. The Quince, for instance, valuable as it is for most, does not suit all Pears. In cases of this kind the expedient of double-grafting has been most successfully adopted. The object of this is twofold: one is to secure a congruous union, causing the stock and scion to grow or expand in equal ratio; the second and chief object is to induce greater fertility. The intervention of a middle or mediating stock between the root and bearing top or branches, certainly has this tendency. Double budding is also practised here with the same results. Seedling Peaches are budded with a sort of Magnum Bonum Plum, with large leaves and good habit, and on the shoots of this the desired varieties of Peach are again budded. The union effected in this way is most perfect and healthy. For strong-growing Bigarreau Cherries the Mahaleb stock is grafted with a kind of Morello, which is then worked with the Bigarreau.

Those Pears, again, that do not bear freely on the Quince are treated thus. Any of the numerous varieties that unite freely with the Quinces are regrafted with, say Gansel's Bergamot, and on this the shy bearers or indifferent growers on the Quince, are worked. The results of this double grafting are most satisfactory. It has not been found necessary to treat Apples in this manner. Both the two varieties of the Paradise stock—the Nonsuch and the broad-leaved—root freely close to the surface, are very healthy, and keep pace in their growth with most varieties of Apple grafted upon them. Neither has a dwarfing fertility-inducing stock yet been found for Plums, although it is hoped that the small Mirabelle Petite may prove of great value for this purpose. Perhaps the development of this theory of double grafting is the most important service that Mr. Rivers has yet rendered to horticulture. As a rule, grafting has merely been practised as a mode of increase. Those stocks most easily raised from seed or propagated by cuttings have been used. The rapid growers have been in greatest favour; the stocks that would push the scions or buds a yard long the first season were held to be the best. In a word, young trees have been raised especially to sell. Mr. Rivers combines in his own person the functions of both raiser and producer of fruit. Hence, without sacrificing an atom of vigour, he resolves upon securing fertility. He grows trees, it is true, for sale, but before parting with them he lays in them the basis of fruitfulness. They are brought up, educated, bred in fact, for this express object, and under ordinary circumstances, with common skill, they not only may, but must be fruitful. I believe that double or treble budding or grafting with a view to the improvement of constitution, and as a direct means of promoting fertility, is still in its infancy. I look to it with confidence as a means of delivering us from the evils of Grape shanking, the shy blooming of various plants, and many other cultural difficulties. Possibly too by the intermixture of sap through a wider diversity of conducting and modifying tissues than has yet been attempted, it may ultimately yield us hybrids of greater value and certainty than those recently described in your columns, and perhaps equalling those we now obtain from seed.

The measure of Mr. Rivers' success may be gathered from the fact that his demand treads hard upon the heels of his supply. The character of that supply may be judged from the fact that the number of fruit trees grown here will average from 10,000 to 12,000 per acre; and particular varieties are grown by the acre. I noticed probably 20,000 pyramidal Cherries of the Duke tribe in one place; they were beautiful trees on the Mahaleb stock. The two kitchen Plums, Belle de Septembre and Prince Englebert, are also grown by the thousand as standards for orchards; the same may be said of favourite Apples and Pears as pyramids. In addition to all these, Quinces, Raspberries, Strawberries, and a large collection of Currants and Gooseberries are grown. The latter is especially extensive, and I understand that in addition to a large home and European trade, that a very large business was done in Gooseberries with America before the war. Almonds and Mulberries are also grown largely in pots and otherwise, and I observed in one of the orchards some good plants of several varieties of the Service (Sorbus domestica), prettily furnished with their large showy fruit. Walnuts of several varieties are also grown in quantities. Nor must I forget to note the new Blackberry, or Bramble, an ever-bearing kind of Rubus, with large fruit of good flavour and extraordinary fertility; and the Belle Agathe Cherry, which is worth growing as an ornamental tree, independently of furnishing a dish of Cherries all through September and October. The flavour is distinct and peculiar, although not first-rate. All this may be inferred from the fact that the birds refuse to eat, while the wasps were greedily devouring it at the time of my visit. Of the peculiarities of the tastes of the latter I have had another striking example this year, in the fact of their eating all the honey out of the Tritoma, while no other insects, except one or two of the large humble-bees and the peacock butterflies, would touch it.

Placed upon a considerable elevation, and bounded on one side by the road from Sawbridgeworth, and a well-wooded park beyond, the nursery is well sheltered from the south-east. The other boundaries seem to melt into arable or pasture land, and the whole surface is diversified with here a gentle slope, there a fine valley, and again a stretch of level ground. The cultural and climatic advantages of such a surface will be at once obvious to practical pomologists. Some of the south banks are almost as good as orchard houses themselves for tender varieties of trees. Ground disposed in this irregular manner is also sure to be thoroughly drained. Nearly the whole nursery had that appearance of friability which is one of the most valuable results of a dry bottom. The soil itself is well-nigh as varied as the surface. Large portions of it consist of light loam resting on sand; others alluvial loam, with a substratum of brick-earth; and a stronger loam, resting on a solid calcareous clayey bottom. These soils are not only found more or less here through large tracts of the nursery, but are also intermixed in all possible proportions. Hence almost everything can be well grown here.

About 20 acres are devoted to Roses, and other ornamental shrubs and trees. An enormous quantity of Roses are grown in pots; they are placed on dung during summer to give them vigour. There were some fine plants of Maréchal Niel, and the climbing Devoniensis, which is equal in all respects to the other, and makes shoots from 3 to 6 feet long the first season. Nothing can exceed the beauty of these two Roses, and everyone should plant them on walls forthwith. A large collection of Tea and other Roses in pots for forcing is grown. I also noticed some enormous breaks of standard Roses. I found, however, that these are not so extensively grown as formerly, and I was glad of it. Few things can be more stiff and inartistic amid garden scenery than a Rose bush elevated at the top of a straight stick. At one time the higher they were the better they were liked; so that a lady would have required to walk on stilts either to see the beauty or enjoy the perfume of her Roses. For some years past we have been getting closer to the ground, and I believe the Rose will speedily get back to mother earth, which it ought never to have left. Instead of standards we shall have pyramidal Roses worked low on the Manetti stock, with the collar of the buds just covered. When they are planted in a strong clayey loam they become objects of great beauty in an incredibly short time. There can be no question about the superiority of pyramids over standards as objects of artistic beauty; and just as light expels darkness, so will pyramids drive standards out of our gardens.

Having mentioned the Manetti stock, it is only right to state that Sawbridgeworth may be considered its English birthplace. Some 40 years ago a single cutting was sent to Mr. Rivers, with the intimation that it might prove a valuable stock. Now about 100,000 are annually raised here for home demand and for exportation. I also observed some select and valuable trees and shrubs, one of the most striking and useful being the smooth-leaved Purple Beech. The leaves are much larger than the common variety; they differ from it also in coming copper from the first, and continuing so till they drop in the autumn, whereas the other has a semi-green period of shorter or longer duration at both ends of the season. This was very apparent at the time of my visit, as a fine tree of the common Purple Beech (Fagus ferruginea), nearly the common Purple Beech (Fagus ferruginea), nearly the 80 years old, was nearly green, whereas the other was of the deepest purple. A large stock of the last sort is grown. Another very peculiar-looking Beech was growing on the lawn; this was the Crested Beech (Fagus cristata), which produces its leaves in whorls, and has a grotesque appearance. Sawbridgeworth is also rich in Maples. Acer colchicum is a vigorous-growing

tree, whose shoots were assuming the brightest crimson hue, and were highly ornamental. On the lawn near the house, are some stout bushes 3 to 4 feet high, and from seven to eight years old, of the Acer japonicum atro-purpureum, the purple-leaved Japan Maple, whose leaves are very beautiful, although not so brilliant as usual this summer. The hot dry summer of last year also changed the usual bright crimson leaves, which almost equal flowers in their brilliancy, into a brownish red. Mr. Rivers is anxious to find a stock that will impart greater vigour to this Maple. In 1859 he succeeded in budding it on the Acer palmatum, and it produced shoots of great beauty, but all the plants were killed by the winter of 1860. The variegated Maple (A. Negundo variegatum) is grown in immense quantities, both as standards of all heights, and as pyramids. Standards have also here a noble effect as a back ground to shrubberies. Kept down it would also form a capital row for the back of a wide ribbon border. It bears cutting well, and few plants could look better in juxtaposition with monster plants of Perilla. Another rare and beautiful sight here is a hedge of the Osage Orange, nearly 300 yards long, a hedge of the kind we rarely met with, either as a hedge plant or in specimens.

Several varieties of Weeping trees were very striking, few more so than the two Poplars—tremula pendula and grandidentata pendula. The young shoots of the latter in spring are tinged with purple, giving it a very distinct character. There were also some very ornamental kinds of Elms. Ulmus microphylla pendula is a pretty variety. Ulmus monumentalis, a variety of the campestris, almost as compact as the Lombardy Poplar. There are also good specimens on the lawn of Ulmus glabra pendula and U. rugosa pendula, as well as U. americana pendula, an imported tree that refuses to be grafted on any other variety. I also noticed some very distinct-looking varieties of Robinias and Oaks. Quercus pyramica is perhaps the grandest-looking Oak of any. There is a curious-looking standard tree of a Weeping Chesnut, with its branches sweeping down to the ground, which Mr. Rivers stated had come from Loddiges, of Hackney. It is probably new, and every spring it is said to be laden with small flowers of a dull crimson colour. The true Weeping Thorn, Crataegus pendula, forms a most distinct and graceful tree. I noticed another Thorn, Crataegus Lavii, forming nice little trees in pots in one of the orchard houses, furnished with large red fruit the size of Damsons. It was still hard, so I could not judge of its quality, but it is said by Mr. Fortune to be sold in the markets in the north of China as an edible fruit.

The pretty Siberian shrubs Calophaca vulgaris and Caragana frutescens and pygmæa, are largely grown here; grafted on C. arbores they form nice pendulous standards. A white variety of jubata is treated in the same manner. A new variety of arborea, named C. has lately been added to these, which weeps as freely as the Weeping Ash, and forms a highly ornamental dwarf tree when worked on the common arborea, on stems from 6 to 8 feet high. The whole of the Caraganas are very useful, and prolong the season of yellow flowers when the glorious Laburnums, with their copious streams, of gold have passed away. Purple Laburnums are also largely grown, both as trees and for stocks. Cytisus purpureus elongatus, a hybrid between these two varieties, and all other varieties of the purple Cytisus, of which there are several, take freely on the purple Laburnum, and form most interesting pendulous trees. The dwarf Cotoneaster Simmonsii is also elevated by grafting on to the stem of C. frigida, and is thus enabled to exhibit with charming effect its bright scarlet berries throughout the winter.

Prunus triloba and P. sinensis, the double white and double red Plums, grafted on Plum stocks, are being prepared for effective shrubbery decoration. Another tree of nice compact habit, which is reported to be literally covered with its bright pink flowers in the spring, is Malus floribunda, for which I prophesy an important future. A few more of the most striking novelties were a new Tamarix—libanotica I think it was called, nearly 18 feet high, and with a stem 2 feet in circumference. It was growing on a sandy mound resting on a substratum of clay some distance from the lawn. It resembles a very delicate pendulous Cypress, and in September it is usually clothed with a profusion of bright pink flowers. Mr. Rivers believes it to be a distinct and entirely new variety. It came, he thinks, from the north of Syria, is about 20 years old, and is exquisitely beautiful. Near here was a very fine Pinus Pinsapo, one of the first raised in England, nearly 40 feet high; also a peculiar and distinct variety of Deciduous Cypress. In foliage it resembles the Chinese species, Taxodium distichum imbricatum, but it has quite a distinct fastigiate habit, and is accordingly named T. distichum fastigiatum. Another far too rare and striking tree is the Virgilia lutea, which produces quantities of its straw-coloured flowers throughout the summer.

Having often admired the Siberian Lilacs as a standard, I was pleased to meet with a fine specimen of the red in that form, and to learn that large quantities of both the red and white are annually grafted on the common Lilac. They are not so liable to form suckers treated in this way, and in fact it is the only way to see this delicate variety in perfection. It naturally droops and gracefully begs for a strong, sufficiently high support to enable it with effect to exhibit its graceful beauty. In another part of the nursery, which I had no time to visit, quantities of deciduous Magnolias, &c., are grown. I observed a very fine stock of Magnolia grandiflora propagating by shoots in the front borders of several of the hedge orchard houses. Nothing could exceed their health and vigour, and these structures seem admirably adapted for such purposes. A new sweet-scented Brome Grass, Bromus odoratus, is worthy of the attention of all cultivators, not only for its perfume, but as being likely to prove a valuable permanent pasture plant on dry calcareous soils. I understand it had been introduced from the north-west American hills.

I conclude with noting two things, both illustrative of the character of the proprietor of this nursery. These were a shoe-cleaner, and some model cottages. Old brooms are thrown down at many doors to rub one's shoes upon; they soon get full of dirt, and consequently worthless for the object intended. Mr. Rivers mounts them on a pointed stick driven firmly into the earth, with their sweeping end downwards, just touching the ground. As the shoe is rubbed against them they revolve, presenting a clean surface at every touch. The dirt also falls or is emptied out of them on to the ground, and can be removed; the broom lasts long, and is ever ready for use. In a word, theory and practice combined have converted the old birch broom into a perfect shoe-cleaner. Practice unaided had consigned it to inefficiency, dirt, and rottenness for years. The moral and the broom are alike obvious. And the model cottages? I rather think one of Mr. Rivers' sons should have the credit of these; but shall we not accept them as a reflection of the spirit of the firm? The improvement of fruit is their business, but that is not accepted as an excuse for neglecting the elevation and comfort of their workmen. These model cottages, and more are to be forthwith built, have each three bed-rooms, and are furnished with good cooking capacities, and excellent domestic arrangements. They were also in the nursery, so that the men will live close to their work; and that work will be all the better and more cheerfully done because of the kind thoughtfulness of their employer. Thus I trust the model cottages will return as good or better a percentage than the new orchard houses, and yield a larger revenue of pleasure, in the sight of happy, contented, cheerful, moral, industrious men, made better for earth and meeter for heaven by the humanising and purifying influences of comfortable homes. *D. T. Fish.*

Miscellaneous.

Saffron.—Saffron was one of the perfumes most in favour with the Romans. They not only had their apartments and banqueting-halls strewed with this plant, but they also composed with it unguents and essences which were highly praised. Some of the latter were often made to flow in small streams at their entertainments, or to descend in odorous dews over the public from the *velarium* forming the roof of the amphitheatre. Lucan, in his "Pharsalia," describing how the blood runs out of the veins of a person bitten by a serpent, says that it spouts out in the same manner as the sweet-smelling essence of Saffron issues from the limbs of a statue. *Rimmel's Book of Perfumes.*

Calendar of Operations.

(For the ensuing week.)

When out-door work cannot be carried on, let the Fig house, Cherry house, and all late forcing houses be made ready for work when required. The walls should be whitewashed, and the trellises either washed or painted. Fig trees that have been properly managed during the summer will not now need much pruning; a few of the thickest branches may, however, be taken out if necessary. Fruit trees in pots which it is intended to force next spring should be mulched in order to protect the roots from frost. If Strawberries in pots are not under cover, some may now be taken into any of the late houses, in order to prepare them for being forced after Christmas.

FLOWER GARDEN AND PLANT HOUSES.

Look carefully over rock plants, and protect the roots of such as are tender. When the walks are dry, manure may be wheeled on borders, to be dug in during winter as opportunity offers. Land that is naturally very stiff should receive a coat of sand or lime rubbish to lighten it, but by no means disturb the soil unless it is dry and in a fit state for digging. Cabbage and Provins Roses might now be pruned if the weather continues mild; but Chinese and other tender kinds should be left till winter is over. Roll walks and lawns, sweep up leaves, and keep all clean and orderly. If the soil in the pots of plants in pits has become green on the surface, it should be carefully removed while the weather is mild. Scarcely any water will be required at this season; if the plants flag, a little should, however, be given in fine weather. Remove decaying leaves, and give air every fine day.

Azaleas.—These should be kept comparatively cool, and not in too damp an atmosphere. Let the plants stand as near the glass as possible.

Carnations and Picotees.—Keep these clear of dead leaves, and give them as much air as possible while the weather is favourable.

Cinerarias.—Let plants intended for specimens have a final shift. Water, when necessary, should be given in the morning in order that the leaves may get dry before night. Thin out superfluous shoots in order to allow those that remain to have more light and air. Keep the plants as near the light as possible, and avoid frosty draughts.

Dahlias.—Examine tubers now out of the ground in order to see that they are in a proper condition to stand the winter. Any seed which may have been saved should be wintered in a dry place.

Pelargoniums.—Plants which require shifting should now receive attention. Keep them close for a short time after the operation; but when established do not allow the temperature to rise above 40°. In short, if frost is excluded, that will be sufficient. Fancy varieties like a little more heat. Water in the morning, and let the plants stand thinly on the stages. Train as often as the shoots indicate that that operation is necessary.

FORCING GARDEN.

Pines.—Turn linings, and add to them if required. Let them also be protected by some kind of covering; if possible, indeed, let them be entirely enclosed, that they may of themselves supply a sufficient amount of heat to do away with the necessity of keeping the pits covered during any portion of these short days. Young Pines are frequently much drawn during winter, and the mischief is not noticed until they are taken out in the spring to be repotted or planted; and then it is that the gardener repents not having given more air, and more light, by keeping the glass close. If the bottom-heat is 80°, the top may occasionally be as low as 55°, without the plant suffering; and particular care should be taken that no injury occurs from excessive dampness at the root from any cause.

Cucumbers.—Attend closely to these; a little neglect now would render all previous pains and labour useless. Give air as often as the weather will permit, but make it a point to shut up warm. Use additional coverings on frosty nights, which will save fuel, and be better for the plants.

Vines.—Let any fermenting material upon borders of the early house be examined, to see that it does not get either too hot or too cold; the former will render it necessary to open it out or remove a portion of it; but in the latter case it should be turned over and a fresh portion be mixed up along with it. Avoid a high temperature at night, and admit air freely in fine weather, using the side ventilators only when it is showery.

HARDY FRUIT AND KITCHEN GARDEN.

Dig or trench all vacant ground, and protect the most forward Celery ridges from frost and too much wet.

Peach Trees.—Carefully scrape the branches of any trees that may happen to be affected with scale, with some blunt instrument that will not injure the bark, and then give them a good scrubbing with a strong solution of Gishurst compound. Washing with water heated to 160° is also stated to kill scale.

Pear Trees.—In pruning very young trees, the object should be to encourage the growth of wood in proper directions. The form in which the tree is to be trained must be first decided upon. For walls and espaliers the horizontal disposition of the branches is the best; therefore, if the tree be a maiden plant, it must be headed back to the three buds best situated for producing a horizontal branch on each side, whilst the third or uppermost is trained upright. If the tree is a year older, and has been treated as above in the former season, the upright is to be cut 1 foot, or four courses of bricks higher than it was formerly. Sometimes a little deviation will be necessary on account of the buds; but generally the upright should be cut immediately above that bud which is nearest the line of brick-work along which it is desirable the horizontals should be trained. The buds to produce the latter will of course be situated below that line; it is proper they should be so, in order that the shoots may grow diverging upwards a little way before they take a strictly horizontal direction. These directions with regard to the management of the upright leading shoot are applicable every year till it be finally stopped on reaching the top of the wall or espalier. If the horizontal shoots be weak, it will be advisable to shorten them about one-third. Other hardy fruit trees may also now be pruned and trained.

STATE OF THE WEATHER AT CHISWICK, NEAR LONDON, For the Week ending Nov 21, 1866, as observed at the Horticultural Gardens

Nov.	Month's Age.	Barometer. Max	Barometer. Min.	Temperature. Of the Air. Max.	Of the Air. Min.	Of the Air. Mean	Of the Earth 1 foot deep.	Of the Earth 2 feet deep.	Wind	Rain.
Thurs 15	0	30.121	29.788	56	43	49.5	50	49	S.W.	.02
Friday 16	1	29.441	29.313	57	27	42.0	50	49	S.W.	.00
Satur. 17	2	30.257	30.022	51	29	40.0	50	49	S.W.	.00
Sunday 18	3	29.835	29.791	52	30	41.0	484	48	S.	.14
Mon. 19	4	29.860	29.847	54	23	38.5	48	48	N.W.	.00
Tues. 20	5	30.171	29.960	45	19	32.0	47	48	N.W.	.00
Wed. 21	14	30.119	30.041	48	24	36.0	46	464	N.W.	.00
Average		29.975	29.825	51.5	26.8	39.2	48.5	48.2		0.16

Nov. 15—Slight frost early A.M., uniformly overcast, slight rain.
— 16—Overcast, cloudy and boisterous, slight frost at night
— 17—Clear, quite cloudless, and very fine; Barometer very unsteady for a week past
— 18—Partially overcast, cloudy, overcast, slight frost, rain.
— 19—Rather boisterous, fine, very fine, clear, frosty at night
— 20—Clear and frosty, very fine, cold wind, sharp frost at night.
— 21—Fine, clear with bright sunshine, very fine, frosty.
Mean temperature of the week, 2½ deg. below the average.

STATE OF THE WEATHER AT CHISWICK.

During the last 10 years, for the ensuing Week, ending Dec 1, 1866

November and December	Average Max. Temp.	Average Min. Temp.	Mean Temp.	No. of Years in which it Rained.	Greatest Quantity of Rain.	Prevailing Winds. N	N.E.	E.	S.E.	S.	S.W.	W.	N.W.
Sunday..25	46.4	33.6	40.0	21	0.34 in.	3	4	7	3	8	9	3	3
Mon. ..26	47.1	33.0	40.0	21	0.70	2	6	6	2	4	15	1	4
Tues. ..27	47.0	34.2	40.6	19	0.88	1	1	6	5	1	7	9	7
Wed. ..28	48.4	35.1	41.7	20	1.21	2	4	4	2	10	7	7	4
Thurs. .29	47.9	34.1	41.0	20	0.56	1	4	8	3	6	10	3	2
Friday ..30	49.5	34.1	41.2	21	0.50	1	5	4	3	4	10	8	2
Satur. .. 1	48.4	35.1	41.8	18	0.25	2	3	3	4	5	8	11	4

The highest temperature during the above period occurred on the 25th, 1865, and 1st, 1857—therm. 62 deg., and the lowest on the 30th, 1866—therm. 14 deg.

Notices to Correspondents.

Acrolus: *M. A. Gillum.* We have handed your letter to one of our best practical men.

Fern Spores: *J. S., Bracegfield,* wishes to know if any one has experimented upon Fern spores, in order to ascertain what coloured light is most favourable to their growth, and to be informed of the result of such experiment.

Names of Plants: *Enos.* Thyrsacanthus Schomburgkianus, better known in gardens as T. rutilans.—*C. P. I.* Cereus Padus; 2, Leycesteria formosa; 3, Holly with abortive pistil. We cannot undertake to name Oaks from one or two leaves only.

Communications Received.—Dr. Moore.—J. A.—D. T. Fish.—W. P.—Amateur.

THE LONDON MANURE COMPANY
(ESTABLISHED 1840).
Have now ready for delivery in dry fine condition,
CORN MANURE, for Spring Use
DISSOLVED BONES, for Dressing Pasture Lands
SUPERPHOSPHATES of LIME
PREPARED GUANO
MANGEL and POTATO MANURES
Also Genuine PERUVIAN GUANO, and NITRATE of SODA, ex Dock Warehouse; SULPHATE of AMMONIA, FISHERY SALT, &c. E. PURSER, Secretary.
Offices, 116, Fenchurch Street, E.C.

LAWES' MANURES.
The Manures manufactured by J. B. LAWES for the present season of 1866 are now ready for delivery at his Factories, at the following prices, per ton:—

	£ s. d.
LAWES' PATENT TURNIP MANURE, and BONE SUPERPHOSPHATE of LIME	6 0 0
LAWES' SUPERPHOSPHATE of LIME from BURNT BONE or MINERAL PHOSPHATES	5 5 0
LAWES' WHEAT, BARLEY, GRASS, and MANGEL MANURES	8 0 0
CONCENTRATED CORN and GRASS MANURE	12 0 0

These Manures can be obtained of Mr. LAWES, or through the appointed Agents in all parts of the United Kingdom, at prices varying according to cost of carriage.
Genuine Peruvian Guano direct from the Importers. Nitrate of Soda, Sulphate of Ammonia, and other Chemical Manures.
American and other Cakes at market prices.
Address, JOHN BENNET LAWES, 1, Adelaide Place, London Bridge, E.C.; and 22, Eden Quay, Dublin.

TAN, GRATIS, in the immediate neighbourhood of Covent Garden Market.
Apply to ESSEX & SONS, 58, Stanhope Street, Clare Market, W.C.

SILVER SAND, Peat, Loam, Mould, Rotted Manure, Guano, Cocoa Nut Fibre, Grotto Material, Gravel, Turf, Edging Tiles, Pots, Sticks, Stakes, Syringes, Garden Compound, Tobacco Paper, and other Garden requisites in any quantity at moderate prices, at
J. FRYER'S, Clarendon Nurseries, Camberwell New Road, S.

COCOA-NUT REFUSE is becoming scarce, the old reserves will soon be gone. Now selling in bags, 1 for 2s., 10 for 16s., 2 for 30s., 50 for 66s., 100 for £6.
Fourpence allowed for each bag returned carriage-paid.
A Railway Truck-load (not in bags), 40s.
Postage Stamps are Post-office Order, payable to J. BARSHAM & Co., Kingston-on-Thames, S.W.

Farm Poultry.
GREY DORKING FOWLS, of purest breed, in any numbers.
Imported TOULOUSE GEESE, the largest and most productive breed known.
Improved NORFOLK TURKEYS, large, hardy, and good breeders.
AYLESBURY and ROUEN DUCKS.
Imported BELGIAN HARE RABBITS, for size and early maturity.
BRAHMA-POUTRA, CREVECEUR, and LA FLECHE FOWLS, for constant layers.
Priced Lists and Estimates on application.
JOHN BAILY & SON, 113, Mount Street, London, W.

BRITTANY COWS. The only breed of Cattle that have escaped the Rinderpest. The nobility, gentry, and others are respectfully informed that they can be supplied with the above beautiful and profitable Little Animals (calved and down calving), in any number, at the shortest notice. The great success and encouragement which have attended the efforts of the importer, in introducing the pure breed of this useful and handy Cow into the country, has induced him to extend his connection abroad, by appointing experienced Agents throughout Brittany, and he is now enabled to offer the public a constant supply of the choicest stock that can be obtained, at prices which defy all competition. The low cost, together with the high milking qualities of this Breed, render them of great value to the cottager, as well as the fancy stock-keeper and dairyman.
YOUNG BULLS always on sale. BRITTANY SHEEP, 25s. each.
ALDERNEY and GUERNSEY COWS and HEIFERS supplied to description, as to age, colour, and time of calving.
Apply to the Agents of the Exporter, Messrs. ROBERTSON & Co., 38, Crutched Friars, London, E.C.

SWING WATER BARROW.—This is the best and cheapest article yet introduced for use in Gardens, Farm Yards, &c. The Water may be dipped out, or the Tub lifted and poured out, or by merely raising the Handle it can be placed on the ground, and the Frame detached. To hold about 30 or 36 gallons, price 42s. Carriage paid to any station on Great Eastern Line.
POWERFUL GARDEN ENGINE, suitable for the above, price 45s
IMPROVED WATER and LIQUID MANURE CARTS.
Catalogues on application.
Manufactured by W. S. BOULTON, Rose Lane Iron Works, Norwich.

COTTAM'S PATENT PORTABLE UNITED COW FITTINGS.

Their advantages are—Portability, not Fixtures, removable at pleasure, no Woodwork or Partitions to impede Ventilation or breed Vermin, Hay Rack dispensed with as unnecessary, increased width and depth of Feeding Troughs, Water Cistern, and Patent Drop Cover to prevent over-gorging. Cleanly, durable, and impervious to Infection, being all of Iron. Price of Fittings per Cow, 55s.
Prospectuses free of COTTAM & Co., Iron Works, 2, Winsley Street (opposite the Pantheon), Oxford Street, London, W., where the above are exhibited, together with several important Improvements in Stable Fittings just secured by Patent.

New Grass and Other Seeds for Exportation.
THE SEEDS OF THE GROWTH OF 1866 BEING NOW ALL HARVESTED AND IN FINE DRY CONDITION FOR EXPORTATION,
MESSRS. SUTTON solicit the favour of Orders from those about to send or take out SEEDS to the COLONIES, and submit the following from among many Testimonials recently received, as to the GREATLY SUPERIOR quality of their Seeds to the so usually exported from this country, as well as to the very different manner in which their export packing is carried out:—
July 9, from A. N. ELLA, Esq., *Queenstown, Cape of Good Hope.*
"I may mention that the case referred to was in splendid order, looking as fresh after three months' sea and six weeks' land carriage as if only yesterday packed."
From HUGH ROMNEY, Esq., *Shanghae, China, May 5, 1866*
"The box of seeds and roots have arrived, and nothing has given me greater pleasure for a long time than the excellence of these seeds."
From Mr. Z. W. WELLS, *New Plymouth, New Zealand, May 7, 1866.*
"The Grass and other seeds sent by the Shallustine to me, have come safe to hand. I have tried samples of the Grass seeds, and am happy to inform you that they have come up quite to my satisfaction."
From Mr. JAS. DALE, *Orange, New South Wales, September 20, 1866.*
"I have the pleasure to inform you that your seeds have given great satisfaction, and I enclose a larger order."
All Seeds properly packed and delivered free to ship side. Special quotations given for large quantities. A liberal allowance made to Shippers. SUTTON & SONS, Seed Growers, Reading.

CURZON HALL, BIRMINGHAM.—The SEVENTH GREAT ANNUAL EXHIBITION of SPORTING and other DOGS will be held in CURZON HALL, Birmingham, on MONDAY, TUESDAY, WEDNESDAY, THURSDAY, December 3, 4, 5, and 6—the week of the Cattle and Poultry Show. For Special Railway Arrangements see the Advertisements and Bills of the several Companies.

BINGLEY HALL, BIRMINGHAM.—The EIGHTEENTH GREAT ANNUAL EXHIBITION of FAT SHEEP, PIGS, DOMESTIC POULTRY, ROOTS, CORN, and IMPLEMENTS, will be held in BINGLEY HALL, on SATURDAY, MONDAY, TUESDAY, WEDNESDAY, and THURSDAY, December 1, 3, 4, 5, and 6, when Prizes amounting to £2166 will be given.
The Exhibitors and the Public will be admitted to Bingley Hall to witness the JUDGING of the Sheep, Pigs, Roots, and Corn, on Saturday, December 1, at 9 A.M., upon payment of 10s. each. There will be no admission to the Poultry Department until after the Judging is completed.
The PRIVATE VIEW will take place on Monday, December 3. Admission to Non-subscribers until 6 o'clock, 5s.; after that hour, 1s.
The Exhibition will then be open on Tuesday, Wednesday, and Thursday. Admission 1s.
For Special Railway Arrangements see the Advertisements and Bills of the several Companies. JOHN B. ISTHAM, Secretary.
Offices—Stephenson Chambers, New Street, Birmingham.

THE ROYAL BERKSHIRE ROOT SHOW.—The TWELFTH ANNUAL EXHIBITION of MANGEL WURZEL, SWEDE and other TURNIPS, KOHL RABI, &c., will be held at READING on SATURDAY, December 1.
Latest day for receiving Roots, THURSDAY, November 29.
For further particulars apply to SUTTON & SONS, Reading.

The Agricultural Gazette.

SATURDAY, NOVEMBER 24, 1866.

MEETINGS FOR THE TWO FOLLOWING WEEKS.

SATURDAY, Dec. 1,		
MONDAY,	— 3	Exhibition of the Midland Counties
TUESDAY,	— 4	Agricultural Society at Bingley Hall,
WEDNESDAY,	— 5	Birmingham.
THURSDAY,	— 6	

IT is instructive to contrast the proceedings of the Royal Horticultural and the Royal Agricultural Societies in the matter of Education. The former, in obedience to its general retainer in behalf of horticultural progress and improvement, feels bound to promote the education of gardeners; the latter, in obedience to special instructions in its Charter, feels bound to promote the education of farmers. Their courses are, however, divergent from the beginning. At the very outset they part. The former confines itself to gardeners. No inquiry is made into the education of gardeners' sons; but lads who have chosen the occupation of a gardener for their life's maintenance and pursuit are the body to whom its efforts are directed. The latter looks after the education of the sons of farmers, whether they are to be agriculturists or not. There is no security whatever that the boys whom it desires to see well educated shall become "cultivators of the soil." The Society does not confine itself to farm apprentices or agricultural students—of whom a noble constituency exists worthy of all its efforts. But whoever has been bred upon a farm or whoever is recommended by a member is open to the rewards it offers and the examinations it conducts.

In a second particular the two Societies differ even more than in the first. The Royal Horticultural Society addresses itself (1) "to gardeners who, &c."—and (2) "to any other gardeners who, &c." And having these before it, their knowledge of their art is tested. They are examined in respect to their knowledge of the culture of fruits, vegetables, and flowers, their skill in surveying and plan drawing, and their taste in laying out gardens; and thereupon proceed the awards. They are nominated "associates," and receive the payment of their expenses, or they receive class certificates—and every year a medal is awarded to the man who stands highest on the lists. And "who are the gardeners who may thus come forward?" They are such as have passed the Society of Arts' examination in Mensuration, Book-keeping, Practical Geometry, Botany, Floriculture, or Horticulture.

The Royal Agricultural Society gives no such honorary distinction as "association" with itself; no diploma is conferred, and no practical knowledge is tested. It seeks for small boys who are still at school, and these it tests in the elements of preliminary and general education, and to them it gives small sums of money as prizes; and the five-guinea fees which the distinguished examiners whose aid it seeks, receive, loom largely as they are paraded on the general field of the winnings it confers.

It makes no inquiry into knowledge of soil, or plant, or animal. The Society will not lend itself to the application of mere technical tests. That would degrade and vulgarise its connection with the education of those "who are dependent on the cultivation of the land for their support." It is not content with "Practical Geometry"—nothing less than "Pure Mathematics" will satisfy it.

Let no one imagine that those who protest against all this are not alive to the need of a thorough general education; that, for example, we do not sympathise with Mr. ACLAND when he longs to see all the boyhood of our agriculture thorough masters of the first two books of Euclid, or thorough masters in any other field where the general powers of mind have been tried and educated, and equipped. Everybody knows that nothing can make up for the want of a good preliminary and general education before the boy takes up the work of preparing for the ultimate special occupation of the man. Where we believe that Mr. ACLAND and his friends are wrong, is in dragging an Agricultural Society in where it has no business to be—in presuming that the existing agencies, whose proper field it is, are inadequate, or if inadequate can be helped by such a mere impertinence as a farmers' club necessarily is in such a place.

The whole thing, as, judging from the reports of the Education Committee of the Society, its present action now appears to be, betrays the ludicrous and paltry pettiness which is sure to be displayed wherever grand ideas and small means are attempted to be developed or administered together—wherever, indeed, any one, whether he be individual or Society, steps out of the homely field of proper duty, and aims at the heroic or ideal with means and aptitudes barely adequate to the discharge of its daily and undoubted obligations.

THE questions connected with Cottage Allotment Ground so closely affect both the proprietor and occupier of land, that a few remarks upon them cannot here be out of place.

The most important considerations a landlord should have in view in appropriating ground for allotments should be those of inducing tidy and industrious habits, and so assisting those in whom such virtues are found by giving them the opportunity of properly and profitably spending any spare moments in providing a stock of vegetables to supply their daily wants.

To this end, then, only just so much ground should be let to each as he can well manage, for if he has often to quit his daily work to attend to his garden, the results, it is to be feared, will be hardly such as to be profitable to him. One object, then, being to induce tidy habits, it is a matter of great importance that a landlord should in the first place see that the piece of ground is well and neatly laid out, and to this end it is advisable that it should be traversed in its centre by a hard road wide enough for the passage of a cart. By neglecting this we find that there is a waste piece of ground used as a general road, which if not here and there occupied with heaps of manure and compost, is made a receptacle for weeds, being itself a weed nursery. Next we would have the plots divided by hard paths, either of gravel or any material that would bind and be easily kept clean. If these paths are of turf they will be certain to have weed Grasses, such as Couch, Fiorin, Lop, and others, perhaps mixed with Bindweed, Knotgrass, Dandelion, and many other weeds, all of which only afford trouble by preparing seeds for the garden itself. Now, if a garden so divided could be inclosed with a strong iron fence, all the better, as thus would be got rid of a harbour for small birds, snails, and slugs, as well as vegetable pests, which, as it belongs to no one in particular to keep in order, either is wholly neglected, or as each may do his bit at different times and in a different manner, the result is a very ragged untidy appearance. Now a garden

so carefully arranged might properly command a little more rent than the undivided field could be let at, and at the same time an allotment would be a coveted acquisition, so much so indeed that some restrictions might be enforced, such as the following:—

Allotments to be let to sober industrious men. They are to be well cultivated and kept free from weeds. There should be a periodical application of manure. The same crop should not be grown perpetually. In order to stimulate to a due observance of such rules we have found the establishment of a Cottage Garden Society having for its object the awarding of prizes, consisting of tools, garden seeds, or even money, for some of the best tended and cultivated allotments, productive of great good; more especially if combined with a village show of vegetables, fruits, and flowers, as on the giving of the prizes the cottagers can all be called together, and some kind remarks can be made upon either progress or short-comings and their causes, and remedies be pointed out.

It was at a meeting of this sort that we took occasion to point out the short-sightedness of a cottager growing only the three following crops: Potatos! Potatos! Potatos! Year after year have we seen the whole allotment solely occupied with Potatos; or if Cabbage have been planted, it has been at the edge of the ground, with the Potatos, or, if Beans, in the rows with the same crop. Thus it is that the crop is oftentimes small both in quantity and size, little heed being paid to the fact that the garden, like the fields in which they work, requires a rotation.

Why should not the poor man have a choice of vegetables, such as Peas, Beans, Parsnips, Carrots, French Beans, Greens, Cabbages, &c.? They are all even more nutritious than Potatos; their seed is cheaper, and cultivation less laborious; and however scanty may be the fare that the cottager can afford to eat with them, other vegetables are equally good if not better with the scrag of mutton, bit of pork, and bacon than the everlasting Potato. Still it is true that this tuber is easy of growth, and it yields a quantity of so-called satisfying food, but we quite incline to the belief that but for this, better things would have been grown, and the poor man, instead of relying upon the Potato, which really is of low feeding value, would have had recourse to more muscle-making vegetables, and, further, if he could be but properly taught, he would renounce much of his beer and cider, and exert himself to gain more of a nourishing meat diet.

As regards this affair of meat, it is curious to find that as the labourer learns to be satisfied merely with what fills his stomach, the more he wants of stimulants; thus the *Times* Correspondent, speaking of the recent increase of the consumption in Ireland of whisky and beer, says:—"There is no doubt that drunkenness in Ireland is to some extent increased by the high price of animal food." Poor food quite increases the appetite for drink, and hence we shall find drunkenness ever attendant upon poverty.

It is then an important point to teach the labourer to prefer a better kind of food than the mere Potato affords, and there is scarcely another kind of vegetable that does not possess higher nutritive powers than the Potato. Let, then, the landlord, the clergy, the farmers look to this, by aiding the poor in their garden work, teach them to want better food and less drink, and they will ultimately become worth better wages; but as a farmer we have no hesitation in saying that a labourer who is satisfied with a stuffing of Potatos, and can only work upon the stimulation of drink, is scarcely worth employing at all.

We pen these remarks in all earnestness, as food seems likely to be dear this winter; the Potatos are decaying, let the cottager then see to putting in some winter Cabbages. Let us all look to him in spring, and give him some better seeds than he can buy. Thanks to the Messrs. SUTTON, who have kindly aided us in doing this, we have a show of vegetables, solely from the villagers of a small parish, better than can be shown in many large towns, and we feel quite sure that there are few seedsmen who would not aid in so good a work. We want then allotments to be put into the occupation of the poor man, in a nice tidy state, so that they can be so kept. We want the cottager to be encouraged to vary and increase his vegetable food, both in quality and quantity, to which end we would give assistance in seeds, in prizes for the best vegetables, flowers, &c., and best kept allotments, taking care that even the worse kept should have a memorial of some sort; this our Cottage Garden Society last year provided in the shape of *three Wooden Spoons*. These, we are happy to find, have not been deserved this summer. *B.*

—— It was an extraordinary account that Mr. HOWARD gave the other day at the Central Farmers' Club of the enormous circulation of agricultural journals in America. Of the *American Agriculturist* no fewer than 150,000 copies are sold. No wonder Mr. TUXFORD was astonished, and strove to explain the contrast which is presented in this respect by the two English-speaking peoples on opposite sides of the Atlantic. According to him, the reason why the American farmer reads is because he has nobody to talk to. Men who live miles apart and rarely meet find books and papers to be more necessary than those who are continually in each other's society, and hear every market day whatever may be stirring in the agricultural world. We fear the different circumstances which are thus insisted on are insufficient to account for the difference to which Mr. HOWARD adverted. We have before us Mr. ALLNUTT'S list of new books published up to November 7 during the current year, which is issued by him in connection with the useful agricultural library he has now for several years established*, and what a miserable list of agricultural publications does it present! A few shilling manuals, chiefly on Poultry, seem with the weekly or monthly periodicals to represent nearly all that has been issued from the English press for agricultural readers. And we believe neither authors nor publishers have any reason to be proud of their connection with this particular department of English literature. The standard works on English agriculture, those of LOUDON, LOW, and STEPHENS—Agricultural Cyclopædias, such as that issued 12 or 14 years ago by BLACKIE—are 10, 15, and 20 years old, and while the whole face of English agriculture has been renewed during that period, no sufficient work exists which adequately represents the progress and the change. BLACKIE'S "Cyclopædia of Agriculture" ought to have been rewritten long ago. We presume, however, that lack of purchasers and readers among English farmers and farm students and apprentices, render it an unprofitable undertaking.

—— In the National Agricultural Report recently issued at Washington, we read of a new method of preparing bones as a manure, which does not, however, we imagine, differ materially from that process of reduction by fermentation, which as Mr. PUSEY pointed out, bones undergo when thrown together along with damp ashes. Professor BLIENHOF, in Russia, we are told, lately discovered a method of dissolving them, which must prove highly economical and suitable wherever wood-ashes are cheaply secured. This new process of treating bones consists in mixing them with wood-ashes and slaked caustic lime, and keeping the mixture constantly moist. As in the preparation of lye for manufacturing soap, the alkaline carbonates in the ashes, such as carbonate of potash, are, by the action of caustic lime, converted into free, caustic potash, attacking and quickly dissolving the bones. Suppose the wood-ashes to contain about 10 per cent. carbonate of potash, and that 4000 lb. of bones are to be worked up: then we take 4000 lb. of ashes, 600 lb. of caustic lime, and 4500 lb. of water; a ditch some 2 feet deep, of such width and length as to hold 6000 lb. of the mixture, is dug, and near it a second ditch, being some 25 per cent. larger, and both lined with boards. The lime is then slaked, and, when crumbled to a powder, mingled with the wood-ashes, and 2000 lb. of bones are piled up in layers and covered up with the mass in the smaller ditch, 3600 lb. of water added, and the whole left to itself. From time to time small quantities of water are added to keep the mass moist. As soon as it is found that the bones are so far decomposed that when pressed between the fingers they are soft and crumble, the second portion, *i. e.* the other 2000 lb. of bones, is brought into the larger ditch and covered in layers with the first mass, and left to decompose. After the whole mass has undergone decomposition, it is suffered to dry by removing it, and lastly, to facilitate its reduction to powder, mixed with 4000 lb. of dry turf, or some other dry vegetable earth. The mixture is repeatedly stirred about with a shovel, and may at once be brought upon the fields.

—— We are glad to report an instance of justice vigorously administered in a case where heavy penalties are much oftener deserved than inflicted. On Saturday last, at the Shire Hall, Norwich, WILLIAM WORDSWORTH, a cattle dealer, was charged by the Royal Society for the Prevention of Cruelty to Animals with "cruelly abusing and treating" four steers. It appeared that the defendant consigned four steers to the clerk of the railway station at Kendal on the 24th of September, after having inquired by what train they would go. He was told that they would go if he liked by a special, which would reach Melton, in Suffolk, much sooner than an ordinary goods train; but he preferred the latter, and the animals were despatched accordingly. The cattle did not arrive at Trowse station (Norwich) until 48 hours had elapsed; they were detained some time at the station, and were ultimately driven about 16 miles to the village of Banningham, but during the whole time of their being *in transitu* they were unprovided with food, and on their arrival at their destination they suffered very much from exhaustion, to which one of them succumbed. The ground of complaint, therefore, against the defendant was that he neglected to avail himself of the fast train, and sent his beasts on a long journey without making any provision for their sustenance. The evidence of three veterinary surgeons showed that the death of the animal at Banningham on the 27th September was due to its having been deprived of food for a long period. They also agreed in stating that ruminant animals require food at more frequent intervals than other animals, and that gastro-enteritis and other diseases had been more frequent of late in consequence of the long journeys which cattle had to take without food and water being provided. The defendant, who stated that he had understood that the beasts would not be delayed in transit, was fined 5*l.* and costs, amounting to 26*l.* 6*s.* 6*d.* The money was paid. On Saturday the Norwich magistrates also adjudicated upon a charge of cruelty, arising out of the circumstances already detailed, against Mr. ALDOUS, a railway official. The defendant was fined 5*l.* and costs, amounting to about 30*l.*—We have known cases of recently calved cows 24 hours and more upon their railway journey, unfed and unmilked all that time, where excessive cruelty to animals has been permitted, and heavy penalties as much deserved as were properly inflicted on Messrs. ALDOUS and WORDSWORTH.

—— The Bingley Hall Exhibition, for which such a promising list of entries had been announced, including the usual proportion of Short-horn, Hereford, Devon, and other cattle, will this year be shorn of this portion of its attractions. A deputation from the Council of the Show—Messrs. C. M. CALDECOTT, G. C. ADKINS, and HOWARD LUCKCOCK, with Mr. LYTHALL, the Secretary, attended by appointment at the Offices of the Privy Council, in Downing Street, London, on Tuesday last, with the object of procuring a relaxation of the recent Orders in Council referring to cattle shows and markets. Mr. CALDECOTT having stated the object of the deputation, and fully explained the precautions taken by the Cattle Show authorities to prevent the communication of infection to the animals to be exhibited, his Grace promised to forward the decision of the Privy Council by that night's post, which was accordingly done in the following communication:—

"Privy Council Office, Cattle Plague Department.
Princes Street, Westminster, S.W.,
November 20, 1866.

"Sir—I have been directed by the Lords of the Council to inform you that they have considered the subject brought under their notice this morning by a deputation from the Birmingham and Midland Counties Cattle Show Society, and that their Lordships do not consider it prudent to grant a licence for a cattle show on the ground proposed, as the County of Warwick cannot be deemed to have been free from disease for a sufficient period to justify the issue of a license, either for a market for store animals or for an exhibition, consistently with the provisions of the Orders of Council of the 7th and 13th inst. I am, Sir, your obedient servant,

"H. B. HARRIS.

"John B. Lythall, Esq., Cattle and Poultry Show Offices, Stephenson Chambers, Birmingham."

The deputation were informed by the President that in the event of permission being refused for the exhibition of cattle there would be no restriction whatever placed upon the other departments of the show. The exhibition this year will, therefore, consist of Sheep, Pigs, Roots, Corn, Poultry, and Agricultural Implements and Machinery, the entries of which are sufficient to fill the building.

—— The *Pall Mall Gazette* gives an interesting account of a contest between his Grace the Duke of ARGYLL and H.M. Commissioners of Woods and Forests in reference to the assumed right on the part of the QUEEN to the foreshores of the country—that part of the soil of the realm which lies between high and low-water mark, on the seashore and in tidal rivers. "The process," we are told, "by which the Commissioners operate in establishing their claims, as described by the Duke of ARGYLL, is well worthy the attention of the public. They attack such individuals as are least likely to resist; preferring, in the first instance, claims of so small an amount as to be scarcely worth resisting. If, however, the claims are resisted, the Commissioners quickly drop their proceedings in that particular instance, and betake themselves to some fresh field for their operations, where they may happen upon less troublesome customers; their present object being rather to establish precedents than to obtain any immediate increase of revenue. The example in which the Duke of ARGYLL has been concerned quite bears out the extraordinary account which is thus given of the proceedings of a public office. A prolonged correspondence has been published in a Parliamentary Paper, claiming on the one side a rental or fine for the liberty which the Office was prepared to grant to his Grace to build a pier upon the foreshore of his own property, and resisting on the other, by a reference to the practice of the Office in other cases, the attempt to establish by force of accumulated precedents claims up to that date new in Scotland, which when resisted are immediately dropped, lest one conspicuous failure should seriously affect the success of the whole scheme. The protest of the Duke of ARGYLL on this subject addressed to the Lords Commissioners of the Treasury has resulted in an amendment of "the law relating to the Woods, Forests, and land revenues of the Crown, which will transfer all such parts and rights and interests as belong to the Crown of and in the shore and bed of the sea, &c., from the management of the Commissioners of Woods to the management of the Board of Trade."—"Whether," adds the *Pall Mall Gazette*, "the Board of Trade is about to tread in the footsteps of the Commissioners of Woods and Forests in the matter of the foreshores of the United Kingdom, time will show. The subject is one of incalculable importance both to landowners and to the Crown; for, if the claims of the Crown are established, the loss and inconvenience to private individuals may be enormous, and the gain to

* At 200, Fleet Street, E.C.

the Crown proportionably great; the price placed on the foreshores being an arbitrary price, small whilst the right is being insidiously established, but capable of being boldly increased *ad libitum*, as soon as it has been established by a sufficient number of precedents."

DRYING OF GRAIN.

THE continued wet weather during the late harvest directs attention naturally to the importance of systematic and effectual arrangements for drying and storing of corn. Hitherto there has been little or no advance in this direction in this country, and the method usually adopted has been that of the ordinary kiln, without any or with scarcely any improvement which modern science and skill have adopted in other operations. Various plans have been at different times suggested, and many years ago Mr. Bodmer had a plan which he patented for submitting the corn to a stream of dry air, the corn being kept continually in motion, so that every grain was brought into contact with the air. There were also other plans on the same principle brought forward, but the idea never seems to have taken root in this country. It appears, according to the *Times* correspondent at Verona, that there the Government have adopted a system of this character. He says, "It is a patent of a Frenchman, Devaux by name, and is most complete.

"Everyone knows how difficult it is to preserve grain for a long period from damp, worms, rats, and other 'small deer,' and a system that will effect this is worth much expense when this is compared with the value of the lives that depend on a due supply of wholesome food. The reservoirs intended to convey the corn are 130 in number, each of them being 12 feet (Austrian) in height, and 7 feet square, made of iron plate pierced with small holes all over its surface. A hollow cylinder of the same metal, also pierced with holes, runs up the centre of each reservoir, and communicates at the bottom with a tube through which a blast of air can be driven by a fan when required. I was informed that each reservoir will contain 1000 measures of 45 lb. When a new supply of grain is to be brought in it is run into the establishment in railway trucks, and the sacks are emptied into square receptacles, consisting of large iron boxes let into the ground, and from this time forth the food is touched by no hand of man till it is taken hot out of the oven in the form of the excellent bread supplied to the soldier. To carry the corn to the top of the reservoirs an endless leather band, covered on its exterior surface with a number of buckets, is employed. The apparatus on this principle most familiar to the general reader is probably the machine used to clear the channel of a river from mud. As the hand revolves by the action of a steam engine, each bucket scrapes up its share of grain and conveys it to the top of the house, dropping it into long iron troughs, which pass over the tops of all the reservoirs.

"On each trough works an Archimedean screw, which passes on the corn without ceasing to its furthest end, or drops it into any selected reservoir by the opening of a small door in the bottom of the trough. There is, of course, a door above each reservoir. When one is filled the door is shut and the next opened, and so on. If the Wheat or Oats are dry and clean when put in, the natural circulation of air through the centre shaft and the holes in the exterior of the iron reservoir cases is sufficient to preserve it for some time; but if more drying is needed, or it be required to guard against worms, &c., the top of the centre tube is closed, and air blown into it from underneath. The draught, having no means of exit except through the numerous small holes, is thus driven through the corn, and not only dries it, but creates such a vibration as to render the life of any worms that may be in it such a burden to them that they cannot enjoy domestic ease or bring up their young, but are driven, Tantalus-like, to despair in the midst of plenty. But even this is not considered sufficient. The great weight in each reservoir might cake some of the corn at the bottom, and in any case a little circulation is good for it, so shutters are provided at the bottom of the reservoirs, near the ground, to let out the corn when necessary. Spouts under the shutters convey the grain into troughs with Archimedean screws; and these lead it, tumbling over and over, to the endless band and buckets which raise it again to the top, where it goes through the usual routine, having been well mixed on its way. Then there are steam mills for grinding, steam apparatus for mixing the dough, and small carriages to run the bread into the ovens, of which there are 12."

A commencement, however, seems to have been made in introducing this system into England, and a company is carrying it out on a large scale. A granary has been erected at Canada Wharf, Rotherhithe (capable of holding about 50,000 qrs.), which granary is likely to be considerably increased. The invention, it is hoped, will be a great boon to the grain trade and the public at large. Since the granary was opened in June, 1865, its value has been tested in bringing into condition, in a very short space of time, and at a very moderate expense, parcels of grain arriving after a long sea voyage in a heated condition, and by keeping in good condition the grain warehoused in the granary.

The secretary of the company writes as follows:—

"To show that this system of granary is now beginning to be appreciated as it should be, I may mention that the Lombardo-Venetian Railway Company constructed three years since a granary at Trieste capable of storing 100,000 qrs. of grain, which is now working to the entire satisfaction of the company. It is probably the largest granary in the world. The Austrian Government constructed for military purposes two granaries of between 30,000 and 40,000 qrs. each, one at Bruck and the other at Verona, the latter described by the *Times* correspondent. Another of 12,000 qrs. exists at Liverpool; and I may say that in all these granaries, hard labour being superseded by steam power, the cost of working is less, and the work is better done, and they thus give the greatest satisfaction to their owners and the public. The directors will have pleasure in allowing any of your readers to inspect their premises on applying to me for an order for that purpose."

"A Colonist," writing to the *Times*, refers to the means adopted in Ceylon as regards the Coffee crop, and says:—

"Coffee is cultivated in Ceylon at from 1000 to 4000 feet of elevation above the sea. The lower grown Coffee is ripe some weeks before that grown on the higher ranges, and the weather and climate of the lower lands are generally more favourable to the processes which have to be adopted. These, so far as they are carried on at plantations, are to pass it through a machine which deprives it of its pulpy, juicy covering, to wash the mucilaginous matter from the beans (still covered with a parchment skin), and afterwards to dry them.

"As often happens after a few partial gatherings, a crop of many thousand bushels becomes ripe altogether, and requires to be gathered at once, or the fruit will fall to the ground; much anxious care and watchfulness is required to dry all off without injury to the quality and value of this very delicate staple. On the lower estates, thanks to a powerful sun, this is generally accomplished by spreading the Coffee to dry on the barbecue or mortar-laid platform, or even on mats. But on the higher plantations, where the rains fall almost continuously during the earlier monsoon months, artificial means have to be resorted to so as to dry the produce that it may be sent to the shipping port in good condition, to be finally prepared and sent to Europe. Mr. Cleriher's patent, of which a model appeared at the Exhibition of 1851, accomplishes this object perfectly, and is almost universally adopted in this island. It consists of fanners, worked by a water-wheel or any other power, to draw a stream of dry air through the floors of a building on which the wet parchment Coffee is laid, sometimes 18 inches thick. By these simple means crops which would otherwise have rotted in the store are made to reach the port in the most excellent condition. Cannot something like this be applied to corn in wet seasons, first to the ears accurately taken off by a machine for that purpose, and then to the straw?"

The importance of the subject at the present time cannot be overrated, and the suggestion is thrown out that to each corn-milling establishment, where the business is sufficiently large to warrant it, an arrangement of a similar kind to the above should be attached in lieu of the old-fashioned kilns which some of them now possess. The proprietors would then be enabled to apply the system to and turn to account the home-grown damp Wheat of their own neighbourhood, which without it could not be used. *Journal of the Society of Arts.*

THE CATTLE PLAGUE.

THE Weekly Return of the reported cases of Cattle Plague in Great Britain, published by authority of the Lords of the Privy Council, for the week ending Saturday, November 10, intimated that five attacks of cattle plague had occurred in Great Britain during the week ending November 10, being an increase of three on the Return for the week preceding. The Return of the reported cases for the week ending Saturday, November 17, makes the following statements:—During the week two attacks of cattle plague are reported to have occurred in Great Britain, being a decrease of three on the previous return. Fresh outbreaks took place in two farms or places where cattle are kept; the number in the week preceding was three. No healthy cattle were slaughtered during the week from having been in contact with diseased animals. The attacks reported are for the following two petty sessional divisions of England—viz. (Lincolnshire, Kesteven Division) Ness, one calf; and (Cheshire) East Bucklow, one heifer; both these animals were slaughtered by order of inspector. The number of animals attacked since the commencement is 253,732, and 53,415 healthy cattle have been slaughtered to prevent the spread of the disease.

INCOME OF THE WORKING CLASSES.

[The following is an estimate of the earnings of the Working Classes of the United Kingdom, prepared by Professor Leone Levi for Mr. Bass, M.P.]

IN accordance with your instructions, I have instituted a careful and searching inquiry into the earnings of the working classes of the United Kingdom, and I have now the honour to give you an estimate of those earnings, which I have arrived at after extensive personal inquiry, and the use of the best and most trustworthy information within my reach.

I shall next state the sources of such information and the principles I have adopted in pursuing the inquiry. For the number of labourers employed in the different occupations I have taken the census of 1861, adding for the increase of population since that year 6 per cent. for England and Wales (the increase in the last decennium, 1851-1861, having been at the rate of 12 per cent.) and 4 per cent. for Scotland, the increase in the same decennium having been 8 per cent. 6 per cent. and 4 per cent. are given for Ireland, where the continued depletion and other causes keep the population stationary, if not retrograding. It is to be regretted that the Census tables no distinction between masters and men in giving the numbers employed in the leading manufactures. In the Census of 1851 a full average given showing the number of masters in trade and men in their employ; but owing to the difficulty of obtaining an accurate return without making a complete industrial census, the enumeration was not made in 1861. Still, the table of 1851, which recorded 129,000 masters, furnishes some guide for estimating the present number of employers in relation to the number of men.

The wages have been obtained from the following sources. In most cases I have ascertained the present rate of wages by personal inquiries from the employers and employed. The wages of the agricultural classes have been given in a return to the House of Commons for 1860. The miscellaneous statistics published by the Board of Trade give the current wages in different centres of industry, mostly supplied by the chambers of Commerce. Much information I have derived from papers on wages read to the Statistical Society by Mr. Chadwick and Dr. Watt, of Manchester, Mr. Purdy, of the Poor Law Board, and Dr. Strang, of Glasgow, and to the Society of Arts by Mr. Ashworth and others, and I have made use of the information given in the newspapers respecting strikes and meetings of journeymen in different industries.

In estimating the earnings of the working classes from the number of persons employed and the wages obtained, attention must be paid to broken time, short work, holidays, idle days, wakes, wet weather or frost stopping agricultural work and house building, time when seamen are ashore, time wasted from accidents in or changes of machinery, and other causes, which diminish the sum total nominally earned. The time thus lost differs in every industry, according to the state of trade and the habits and character of the working classes. Without attempting to calculate for this item in each case, I have deemed it best to adopt the principle of excluding from the population all persons of 60 years of age and upwards. We may assume that at that age the proportion of infirm persons is necessarily great, and any number beyond that, thus excluded, will provide for those between 20 and 60 years of age, not actually at work, or earning less than 52 weeks' wages. The deductions made by masters for different purposes, such as hire of machine or power, schools, doctors, &c., expenses for tools, and payments made by working men to their pieceis, helpers, or apprentices, must also be calculated in order to obtain the net earning. In the earnings of those under 20 a distinction should be made between children and youths, but I have taken an average for the entire period of minority, making allowance where necessary for apprenticeship, fees, &c.

Much may be said as to the classes of persons included within the term "working classes." The electoral statistics only included in it persons supporting themselves by daily manual labour. Some have limited the meaning to such as are in the receipt of weekly wages, and some would limit the term "workers" to such as are employed in the production of wealth. It might seem also a condition of the appellation, that the person should stand in the capacity of servant or worker for others, and not as worker on his own account. On the other hand, we must remember that in many industries the workers are paid by the month or quarter, such as seamen and domestic servants. The practice is very general also of paying by piecework rather than by the day or week, in many cases the master contracting with one workman, and the workman making a sub-contract with other workers. In the same manner, though in a strictly economic sense, we should consider only workers only such as produce wealth; we cannot exclude from the general appellation and received meaning of working classes, large numbers of domestic servants, soldiers, police, &c. For practical purposes, therefore, we must take within the meaning of working classes all who, whether as workers for others or as workers for themselves, are employed in manual labour, be it productive of wealth or not.

Properly to appreciate whether the wages are high or low, we should have regard to the nature of the education and training necessary before a person is in a position to earn full wages, the fatigue, the discomfort, wear and tear, and danger attending different kinds of labour, its healthiness or unhealthiness, and the pleasure or repugnance with which the labourer performs it. But our object is not to estimate the remunerative character of wages, but simply to ascertain the amount of earning of the labouring classes. In so doing, however, it is not sufficient to consider the amount of money wages, but we must add the money value of food, house accommodation, or other perquisites usually given in some districts. Such are, generally, the principles I have adopted in the following estimates.

Upon the basis I have already mentioned, the numbers of workers or earners of wages in the different occupations in the United Kingdom are as follows:—

Ages.	England.	Scotland.	Ireland.	United Kingdom.
Males, 20 to 60 ..	4,500,000	644,500	1,180,000	5,823,500
Males under 20 ..	950,000	155,000	240,000	1,355,000
Females, 20 to 60 ..	1,830,000	328,500	513,000	2,671,000
Females under 20 ..	870,000	110,500	189,000	1,147,000
	7,460,000	1,104,000	2,127,000	10,697,000

The wages details of which are given in connection with each branch of industry, seem to amount to the following general averages:—

Ages.	England.	Scotland.	Ireland.
	s. d.	s. d.	s. d.
Males, 20 to 60	22 6	20 6	14 4
Males under 20	6 6	7 8	6 3
Females, 20 to 60 ..	12 6	10 6	9 9
Females under 20	8 6	8 2	7 4
Total average ..	16 2	14 10	11 9

And the total earnings are as follows:—

Ages.	England.	Scotland.	Ireland.	United Kingdom.
	£	£	£	£
Males, 20 to 60 ..	217,300,000	29,000,000	43,500,000	289,800,000
Males under 20 ..	15,900,000	2,400,000	4,000,000	22,300,000
Females, 20 to 60 ..	59,500,000	8,950,000	13,000,000	81,450,000
Females under 20 ..	18,000,000	2,350,000	3,600,000	24,750,000
	311,500,000	42,700,000	64,100,000	418,300,000

A total annual earning of 418,000,000*l*., by one class of the community, is very large, and is considerably greater

In 1861, in a total population in England and Wales of 20,066,214, there were 1,160,936, or 7·22 per cent., of 60 years of age and upwards. The time wasted, or during which no wages are earned, may safely be estimated, on an average, at four weeks in 52, or in the proportion of 7·69 per cent.

† The census divided the occupations of the people into six classes—viz., professional, domestic, commercial, agricultural, industrial, indefinite, and non-productive. The whole of the professional, the greater part of the domestic, and the commercial classes do not enter in this inquiry.

‡ The annual amount of property and income charged

* The estimated population in England and Wales in the middle of 1861 was 20,119,466, and in 1865, 20,990,946. Increase in four years, 4·34 per cents.

† The estimated population in Scotland in the middle of 1861 was 3,066,733, and in 1865, 3,136,057. Increase in four years, 2·26 per cent.

than the estimate made by Mr. Gladstone, who placed the amount at nearer 250,000,000*l.* than 200,000,000*l.*, and still greater than the estimate I have made myself in a paper read before the Statistical Society, "On the Distribution and Productiveness of Taxes," founded, however, principally on the Census of 1851,* previous to the great advance in wages, † and exclusive of the entire number in the receipt of parochial relief. ‡ In this calculation, moreover, the wages of domestic servants, soldiers, and police, &c., are included, with the money value of food, &c.

The distribution of the total earning, according to industries, has been found to be as follows —

	England.	Scotland.	Ireland.	United Kingdom.
	£	£	£	£
Agriculture	44,000,000	8,000,000	23,000,000	75,000,000
Textile fabrics ..	33,000,000	6,000,000	8,000,000	47,000,000
Metal manufactures ..	27,000,000	3,000,000	1,500,000	31,500,000
Building trades ..	35,000,000	4,000,000	3,500,000	42,500,000
Shipping, railways ..	25,000,000	1,500,000	1,200,000	27,700,000
Articles of dress ..	24,000,000	5,000,000	7,000,000	33,000,000
Mining	13,000,000	2,000,000		15,000,000
Domestic service ..	47,000,000	5,000,000	8,000,000	60,000,000
Labourers indefinite	17,000,000	2,000,000	7,000,000	26,000,000
Others	32,000,000	6,200,000	4,900,000	60,600,000
	311,500,000	42,700,000	64,100,000	418,300,000

From these estimates, it appears that the average income of a working man is, in England, 22*s.* 6*d.*; in Scotland, 20*s.* 6*d.*; and in Ireland, 14*s.* 4*d.* per week. Frequently, however, there are more workers than one in a family. In a family of five, generally two, or even three, persons are earning something. Assuming then, that there are two earners in each family, and taking the average wages of men, women, and children as a basis, the average income per family may be estimated at 32*s.* 4*d.* in England, 29*s.* 6*d.* in Scotland, and 20*s.* 6*d.* in Ireland. These are the general results I come to. At best, it is an estimate; but it is carefully calculated, and will be found as near the truth as the nature of such an in quiry admits of. I should add to the earnings by wages the income of the working classes from saving banks, a considerable portion of the 38,440,000*l.* deposits belonging to them, from friendly societies, building societies, freehold land and garden, co-operative societies, benefit clubs, sick and burial clubs, &c. But of these we have very imperfect accounts, though, on the whole, the amount will be found considerable.

TRIAL OF MOWERS AND REAPERS.

[The following are the regulations by which this competition at Auburn, Devon, will be conducted this year.]

1st. No machines will be allowed to enter after the second week preceding the time fixed for the commencement of the trial. The object of this regulation is to allow ample time for the arrangement of the grounds.

2d. The judges, the president and secretary, and a committee of the officers of the Society will be on the grounds at the beginning of the week preceding the trial. They will cause—(*a*) The grounds to be staked off into lots of exactly one acre, by stakes 3 feet long by 2½ inches wide; the number from No. 1 upwards will be placed on the top of the stake and turned inwards towards the lot; there will be a space of 2 feet in width between each lot. (*b*) To cause a headland six rods in width to be mowed, and the hay removed from the lot before the commencement of the trials. (*c*) To have the following implements ready upon the grounds before the commencement of the trial:—A platform scale; a pair of small scales; a speedometer (in case one of the judges can not be seen distinctly from the other, poles will be provided as guides); a dynamometer; a measure for side draught; a 2-foot rule; a measure tape 100 feet long; two of 5 feet long; a portable forge; a pair of compasses; a machine for testing the temper of knives; a sector; blank books and lead pencils for each of the judges; a carriage for the conveyance of the judges to and from the grounds to their lodgings, if the trial grounds are too far from their lodgings. Dinner will be furnished on the field. A carpenter with his tools to be present. A sufficient number of policemen will be provided to keep intruders off the ground.

3rd. The chairman of the board of judges will prepare a series of slips of paper numbered from one upwards. Each competitor will draw one of these, and the number so drawn will be the number of the lot to be mowed by him.

4th. The judges will be subdivided into the following committees:—

1. *Grasses and Grasses.*—They will report to the chairman of the judges the following points: (*a*) The kinds of grain and Grass growing in each field. (*b*) If there are different kinds of grain or Grass growing in the field, they will give their names, and estimate the proportion which each kind bears to the whole amount. (*c*) State the average length of each kind of Grass or grain, also thickness on the ground. (*d*) Give the names of the weeds growing in the field, their proportions, average length, and their toughness of stalk. (*e*) Estimate the total amount of Grass or grain on an acre, by measuring a small area of which an acre is an exact multiple. Weigh the Grass or grain on such area, from which weight the amount on an acre may be calculated.

2. *On Weight and Power.*—This Committee will ascertain: (*a*) The exact weight of each machine when ready for work. (*b*) The price of the machine at the shop of the maker. (*c*) If any extras are sold with the machine, they will say what they are. (*d*) If there is a difference in price when extras go with them, they will state what it is. The Committee of Judges will (*e*) give a general description of each machine; (*b*) They will describe minutely those portions of the machine which are peculiar to it, and which constitute its individuality; (*c*) They will point out any departures from established mechanical principles in its construction, giving their reasons in full.

3. The Committee on *Mechanical Arrangements* will ascertain and record: (*a*) The number of horses required for each machine. (*b*) The number of men, and the capacity in which they are employed. (*c*) The adaptation of the machine in the construction of each machine, and the opinion of its durability. (*d*) Examine the workmanship of each machine, and state the nature, locality, and probable consequence of each defect. (*e*) The metals that are used for journal bearings. (*f*) Observe the machine after it has been used, and state what parts have been heated, and to what extent. (*g*) Examine them carefully after they have been used, to see if any part has been unduly rubbed or worn. (*h*) Observe the facilities for oiling each part of the machine, and for easiness of access to each bolt, screw, and nut. (*i*) What lubricants are used in oiling the cutting stubble at different lengths. (*j*) In what manner are the gravels delivered, behind or at the side. (*k*) The relative portability and compactness of the machines. (*l*) The contrivances adopted for the security and comfort of the driver. (*m*) Ascertain the temper of each knife. This committee will adopt some scale of numbers, by which they may express the relative values of the machines on such of the above points as are relative in their scope.

4. The Committee on *Quality of Work* will—(*a*) Assume the number 40 to represent the best work that can be done. The number 30 as representing the best work that can be done with a hand scythe. The number 20 as inferior to any work that would be tolerated by a respectable farmer. The gradation of work will be expressed by numbers intermediate to these. (*a a*) Ascertain the number of acres which can be expected to conform, in 1 acre per hour. (*b*) They will pay particular attention to the speed of the machine at the time of clogging. For this purpose they will be furnished with a speedometer, which, in connection with the time occupied, will enable them to ascertain the speed of the machine when moving at which each will operate usefully. (*c*) Observe the evenness of the cut; whether it is higher at one end than the other, and whether it is scalloped. This observation to be made when the machine is moving at the natural speed of horse per hour. (*d*) The unbroken length of Grass—when it is cut; whether it is easily spread or in ridges. The length on which it leaves the Grass in the best condition for drying is the most perfect. (*e*) The length of stubble left by each machine. To accomplish this, numerous measurements should be made in at least 10 different portions of each lot, average taken. (*f*) See if any spears of Grass have been drawn down by the cutters; if so, state the proportion. (*g*) What is the appearance of the cut end of the machine stubble; is it clean cut or torn off? (*h*) The closeness with which the machine cuts up to obstacles, such as stones, stumps, and fences. (*i*) State the condition in which the machine leaves the Grass, whether in the best condition for the binder or not. (*j*) Is the grain beaten out by the action of the machine when moving at the standard speed? (*k*) The condition of the Grass or grain with respect to wetness or dryness. The Committee on *Time* will note—(*a*) The time occupied in sharpening. They will observe the time occupied by each stoppage, stating its cause, and specifying those which were occasioned by the fault of the machine, and those which were not connected with the machine. N.B. It will be distinctly understood that no credit will be given for rapidity of work by hurrying the horses. It is the desire of the society that the manufacturer should move the machine at the speed which he deems best adapted to show its merits. (*c*) The time of final stoppage of each machine. (*d*) In the dynamometer trials they will ascertain the length of time the dynamometer is applied to the machine while in motion. (*d d*) In these trials the machine will be set to cut the stubble 3 inches in length. (*e*) In the trials of minimum speed, they will note the exact time a machine is passing over a given space.

5. The Committee on *Dynamometer* will record the following measurements:—(*a*) The length of cut. This measurement will be in all cases the length of the actual cut, not the Grass gathered by the divider. (*b*) The diameter and breadth of the driving wheel. If the wheel is not smooth, state the length, breadth and thickness of each cog or projection by which each other. (*c*) The number of vibrations of the knife to each revolution of the driving wheel; also the length of each vibration. (*d*) The advance of the machine while making one vibration. (*e*) The length of the base of each tooth of the cutter, and the distance of the apex from the cog. (*f*) The breadth and thickness of each end of the cutter bar. The material, whether of wood, steel, or iron; also the same dimensions for the finger bar. The weight of the knife and cutter bar will be noticed. (*g*) The distance between the fingers or guards; length of the vibrations, and whether it is greater or less than the distance between the centres of the guard fingers. (*h*) Is the knife sickled-edged or smooth? (*i*) The diameter of the reel, and the number of its revolutions in relation to the driving wheel. (*j*) The pitch of the gearing. (*j j*) The angle at which the cutter and guard finger meet in several parts of the machine. (*k*) The main parts and their weight and material. (*k k*) The width of the finger at the point where the face of the cutter section meets it, and at the point where the apex meets it.

6. The *Dynamometer* Committee will—(*a*) Ascertain the total power required to operate each machine while cutting. (*b*) The power required to draw the machine over a smooth surface with the knife in motion but not cutting. (*c*) The power required to draw the machine over a smooth surface, the knife being in repose. (*d*) Measure the side draught. The dynamometer will be applied across the land, and back. The four machines consuming the least power on the first trial shall be tried again; and if the consumption of power remains relatively the same, the trial will be final. If otherwise, the trials will be repeated until the committee satisfy themselves by the average of a number what is the least consumption of power. When all these points have been accurately determined, the judges will consider them and decide—(*a*) Which is the cheapest machine; (*b*) The most simple in its construction; (*c*) The most durable; (*d*) Which requires the least power; (*e*) Which is the least side draught. This will be determined by its capacity to perform a given amount of work, in a workmanlike manner, in a given time, in the most economical way. (*f*) Which does the work in the least time; (*g*) Which does the best work; (*h*) Which is managed with the most facility. In determining the best machine, they will consider—(*i*) Which is the most portable when in operation, or otherwise; (*j*) The arrangement for throwing in or out of gear; (*k*) Accessibility of parts for convenience of oiling, tightening nuts, &c.; (*l*) Convenience and safety of the driver; (*m*) Readiness with which the machine may be brought into perfect operation from a dead stand, and quality of work with slow motion; (*n*) Time and room occupied in turning and avoiding abrasion of the turf; (*o*) Adaptation to uneven surfaces, cutting at different heights, and to cutting different kinds of Grass. When the judges have determined these questions, they will proceed to decide which of the machines is best adapted to the use of the farmer, by having the greatest number of merits and the fewest defects.

5th. In case two or more machines should approach very near to each other in merit, the judges will give such machines new trials, as in tangled Clover, on soft bottoms, on stony surfaces, and such other places as seem best adapted to settle their relative merits.

6th. Only four machines shall be in operation at once, and each machine shall be attended by a member of the Time Committee all the time that it is in action.

7th. The machines will be tried in the order of their numbers. Lot No. 1 will be cut first, No. 2 next, and so on.

8th. The trials will commence at 8 A.M., and continue until 6 P.M., with an intermission of one hour for dinner.

9th. Each competitor will furnish his own team and driver.

10th. It is of importance that each machine be put in complete running order before coming on to the ground, and the knives should be perfectly sharp before the dynamometer trial takes place. No allowance will be made by the judges should this precaution be neglected. Competitors should be well supplied with oil, wrenches, and duplicate parts of the machine.

11th. A lot will be provided in which competitors may try their machines previous to entering upon the regular trial.

12th. No persons will be permitted to go upon the grounds while the trial is proceeding, except competitors and judges.

13th. The police will prevent all persons handling the cut grain, except the owner and his men.

14th. The chairman of the judges will tabulate the reports of the sub-committees, and will draw up a full report of the trial.

15th. Exhibitors shall present no other machines for trial than those which they habitually furnish from their shops to their customers. The object of the Society is to furnish for farmers the best machines in actual use, and they do not wish to countenance any other, and they desire none others for trial than those in market for farmers' use.

Entries to be made at the Secretary's office at least one week previous to the trials.

VILLAGE LECTURE.

The following is a fragment of a winter evening lecture, given some time ago in a country schoolroom, on "Wages and Savings Banks."]

No doubt labouring men have an influence on the rate of wages, but it is a roundabout one. They cannot directly influence the rate of wages by merely intimating their dissatisfaction with it. It is not so much by direct action here that they can benefit themselves, as it is by the direct and indirect influences of all that numerous class of institutions which may be called savings banks, that this is to be done. Wages are the market-price of labour. Goods are cheap or dear according to the relations between the supply of them and the demand for them. If the market be full of any sort of commodity demanding a sale, and there be few buyers, of course the value of that commodity will fall, altogether relatively of the original cost of the commodity itself. To be sure, if that be very high, then no further supply will be brought in until, the stock being cleared, the unsatisfied demand begins again to raise its price; but the truth is that the price of any article is determined simply by the relation between the demand for it and the supply of it—and labour is just like any other commodity in this respect. The value of labour is beyond any direct control, for just as the price of English Wheat or American Cotton rises or falls according to the proportion between the quantity wanted and the quantity offered in the market, between the demands of the purchaser and the supplies of the seller—so the value of labour rises or falls according to the proportion between the number of men wanting employment and the number of employers wanting men. Take the agricultural districts of England, and you will find ample and abundant illustration of this fact. Some years ago I obtained information about the rate of wages paid for agricultural labour in all the counties of England, and most of those of Scotland, and there were wonderful differences between them, not only in the value of day labour, but in the prices paid for piece work. And the causes of these differences are perfectly obvious. Wages were lowest in those counties where the least employment was offered, where no manufactures were carried on, and where, the land being wholly in Grass, there was the least agricultural labour to do well. In Durham with its coal pits, or Lancashire and its cotton mills, or Berwickshire with its energetic arable farming, and you have higher wages than in the cases of Dorset, Wilts, or Somerset, without manufactures, or with plenty of Grass land. It is not the fault of the labourers themselves that the proportion of the population which obtains among the labourers themselves for what work there is for them. If you were to *force* a farmer to pay more wages than the natural rate according to the supply of labour in the market, you would simply diminish his ability to employ labour at all. The same principle holds the same in the manufacturing as it does in the agricultural business. There is a certain proportion of the produce which, when turned into money, must be reinvested in the labour necessary for the production of the next crop. If that proportion has to be divided among a greater number of men, there will be less for each; if among a smaller number, each will have the more. Take the case of Ireland, where 10*d.* and 1*s.* a-day are first-rate wages. There is a certain population upon the land who must find support upon it. If we abruptly raise the rate of wages among that large number of people to the rate of more favoured districts, we shall have abstracted all the produce of the land to pay for the existing crop, and we shall have nothing left either for their maintenance or ours for another year. Hard-hearted farmers of Somerset, Wilts, or Dorsetshire! why, they are as good-natured and as willing to benefit their neighbours as those of Durham or of Berwickshire—it is not their fault that wages are low; if with their agricultural population wages were forcibly raised to the rate at which they stand in the Northern counties they would be ruined, and what is more to our present purpose, the business of farming would be ruined, by which any wages at all are provided. Farming, of course, like any other business, must be profitable to be kept going—the more profitable it is, the more energetically will people engage in it, and the greater will be the demand for labour, and the higher will be its value in the market. In this way no doubt the rate of wages may be influenced; but let us not think that they can be raised by main force or by the mere carrying out of a resolution. They are a *growth*; we may sow the seeds of the plant—labourers

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with income-tax, being incomes of 100*l.* and upwards, was, in the year ended the 5th of April, 1864, England, 276,814,250*l.*; Scotland, 27,137,918*l.*; Ireland, 23,125,333*l.*; United Kingdom, 326,775,501*l.* Assuming that a very small proportion, if any, of the income of the working-classes is charged with income-tax, the total income of the United Kingdom thus ascertained would be—

	Earned by Working Classes.	Assessed to Income-tax.	Total.
	£	£	£
England	311,500,000	276,500,000	588,000,000
Scotland	42,700,000	27,100,000	69,800,000
Ireland	64,100,000	23,100,000	87,200,000
United Kingdom ..	418,000,000	326,700,000	745,000,000

* The increasing population, even on the estimate then given, is upwards of one million and a half.

† An advance of 5*s.* per week on 11,000,000 workers gives a total, per annum, of 143,000,000*l.*

‡ Nearly one million in number, whose income, even at 10*s.* per week, would give 26,000,000*l.*

may do that far more efficiently than employers, and what they are we shall consider presently, but we cannot call it full-grown into existence at once. If we do, it will die all the sooner for our pains, and we shall find that it has exhausted the soil from which it drew its nourishment.

Now of course these remarks apply to labour in other trades and businesses as well as that of farming. Wages everywhere are just the market value of labour, and that is arrived at by simple agreement between the buyer and the seller. Sometimes farmers refuse to supply the markets because grain is low in price. Well, I admit most thoroughly the right, and I rejoice that night can to some extent be exercised. I admit most thoroughly that labourers have a right to refuse to take their labour to the markets at any existing prices with which they may be dissatisfied. As regards their strikes, however, of course I do not admit the right of the majority of any body of working men who may think their labour is insufficiently remunerated to coerce a minority who may be satisfied to continue at existing wages. The conscience of any man in his sober moments will tell him as plainly as it does me, however absolute the right before, his own labour except for a higher wage, or to join with others who may think with him upon the subject, he has no right whatever to force any one who may not be of his opinion on the subject. And if we leave the question of the right to strike for higher wages, and come to think upon the wisdom or the expediency of doing so, which after all is practically the most important point, we shall find that we are not justified indeed find that these strikes have been of any use to labouring men. The fact is that with the keen and constant competition amongst employers it must be very rarely indeed—I should say never, except to withstand some similar move among the men—that any will have to raise wages in order to get their working man; and it is in this competition amongst his employers as hindering their union, and in the importance which it is to them that their capital should be kept fully at work—it is in these rather than their power to strike that the safety of the workman lies. Well, but to return to the farmer. He is bound to sell his Wheat before the rent day comes, on which the landlord and the tradesman will be presenting their claims upon his purse, and then he must just take the market price for his goods, whether that may have been affected or not by the keeping all back by the men, or not. And I do imagine, find themselves bound to accept employment too, *i. e.*, to sell their labour before their rent day comes as well, at whatever wages the labour market offers, whether their resolution hitherto to keep at home shall have raised the rate or not. And owners, farmers, manufacturers, and trades all must submit to this law. There is no such thing as a duty to pay a high price for corn upon land because farmers and landowners are complaining, neither is there any such thing as a duty to pay a higher price for labour because at any existing rate labourers may be very much "put upon" by it. The reverse, excepting where kept back by fraud, involve no question of duty at all—they are the simple commercial results arising out of the demand for and the supply of the article of which they are thus the value.

Well, now, how can wages be raised? In only one, as I believe, of two ways—either by diminishing the quantity of labouring power offered, or by increasing the quantity of employment for it offered. And we may depend upon it that emigration is beneficial, not only to those who go, but also to those who remain at home. It increases infinitely the means of labourers can be increased so as to enable them to return their labour and a [illegible] wages be raised. And as regards the demand for labour, that may be increased by everything which tends to increase intelligence and prosperity amongst us. We have heard of landowners requiring tenants to pay a certain rate of wages to their men. Now it needs no prophet to foretell the failure of any such attempt as that to interfere with the natural condition of the labour market. Nobody can permanently alter the prevailing rate of wages by means of will; but landlords *may* influence the rate of wages by anything which shall tend to the energetic cultivation of their land. Let the methods to be adopted, however, be what they may, they must act, not arbitrarily or by mere force of will on the one hand, but upon each party in the labour market that result—the quantity of labour offered on the one side, and the quantity of employment for it offered on the other—upon the relation between which the whole affair hinges. And here let us make a remark on the relations of machinery to labour. Workingmen are apt at times to imagine that machinery is their enemy; they understand how wages depend upon there being but few labourers offering their services perfectly well, and when a machine is constructed which can do more work by itself than a hundred hands could do by themselves, they can see plainly enough that it will supersede them as if 100 fresh labourers had come to compete with them for their work, and so to reduce wages; but then they forget that wages also depend upon the quantity of work there is to be done, and if any one fact within the limits of observation be unquestionably and undeniably true, it is that the use of machinery has had a most marvellous influence in increasing the quantity of work to be done. It does, no doubt, in effect add to the quantity of labour, but it adds far more to the quantity of employment for that labour than would any 1000 fresh hands, and so tends to [illegible] wages. It reduces the cost of the manufactured article, it stimulates the demand for that article that far more work comes to be done than the 1000 fresh hands can overtake. So I do, therefore, from machinery taking labour out of the hands of the industrious, it has increased it a hundredfold. Take a single acre, and a score of towns in the north, are ready to prove as much. Listen to the history of one case. Ninety years ago two men were employed in the cotton manufacture. Well, Richard Arkwright, a barber of Sheffield I think, invented contrivances by which the spinning of cotton was taken out of the hands of all these people, so that whereas *before* it was done by hand labour it was now done by machinery. Did he, therefore, injure the working man? So far from that, it is the truth that whereas 50,000 hands used to be employed in the manufacture of cotton, there are now more than 400,000 hands employed in it; and I believe in the history of the silk, the woollen, the iron manufacturer proves with equal force that so far as the interests of society are concerned, well considered self-interest may be safely left to its own guidance in the matter of machinery as in every other thing. And in agriculture the same law holds true. It will prove no less to the rule. I can just remember the year 1829, when I believe, threshing machines were first introduced into these parts, and I can remember the incendiary fires of those times in consequence of the ignorant rage, for so it was, of the people against these machines. Well, but who threshes them machines now? Are agricultural labourers any the worse off because the flail has been taken out of their hands? I will venture to say that more wages have been paid by the farmers of England during this year 1866, with all the machinery they employ; and he may depend upon it that good machinery in agriculture, as in every other manufacture, is part of that system which employs the most labour.

What I am trying to do is to impress upon individual working men that so far as the general rate of wages is concerned, it is almost beyond their individual influence; of course every one can, by increasing his own skill and his own habits of attentiveness and carefulness, render his own labour more valuable, but he gets higher wages by increasing the quality of his services; and what I say is that, take any given quality of labour, its value is almost beyond the control of individuals—it is the result of the general state of the labour market, the general relation of supply and demand as regards that particular commodity which we call labour. You see the effect of this relation between supply and demand in the different wages obtained by different styles of workmen, as for instance farm labourers, gardeners, mechanics. The simple reason here, as everywhere else, lies in the quantity of labour to be had compared with the number of the labourers who are qualified to do it. And if you ask me further why the number of such labourers does not increase at equal rates in all sorts of labour so that wages might be alike in all, the answer appears in the necessary attending the acquirement of knowledge of the different trades. It costs a father nothing to send his son to the plough, and the boy begins to receive wages according to his ability at once; but it does cost him something to apprentice his son to a blacksmith, a carpenter, or painter, and this lad must be content to receive nominal wages for several years before these higher wages can be had at all. Well, then, the point to which we are brought I believe to be this, that while, of course, everyone can improve himself in skill and all the other things which make up excellence as a workman, and so acquire a higher rate of payment for his labour, yet that as regards the working classes generally the rate of wages is beyond direct control. Before leaving this point, I would just refer to the existence of co-operative societies of workmen clubbing together to provide the necessary capital, and formed with the view of not only earning their ordinary wages, but also of sharing among themselves the profits of the business also to which, being their own masters, they are of course entitled. I should be very glad if these societies were all in a flourishing condition, as I have heard of some that they are. But I confess I do not expect to see them generally successful. I see too many instances where masters, having the entire control of their own business, fail under circumstances in which others have succeeded, not to know that a promptitude and vigour and unity of action, so to speak, are needed in the conduction of business which a co-operative society of workmen, each with a voice in the conduction of affairs, is not so likely to exhibit. It may be opposed to this, that this co-operative system is just that to which all our railroads owe their existence—that a railway company is just a co-operative society of workmen. Very true, and may the prosperity of these railway companies be taken as full proof of what I have said on the subject? How many of *them* have satisfied their shareholders? They are no exception to the general rule of ill-success, which holds true, I believe, of the co-operative societies of *other* labourers which exist. And I confess I look for more influence both on the condition of working men and on the rate of wages too in the operation of savings banks than in any of those schemes which workmen have devised for escaping the harshness and hardness of their masters by taking the business of masters on their own shoulders. *J. C. M.*

Home Correspondence.

London Sewage.—My attention has just been drawn to a letter which appeared in your Paper a few weeks since, from the pen of Professor Wrightson, in answer to one of mine which was inserted in the *Times*. Allow me a few words in reply. After reiterating a truism, to the effect that the "sewage question is a grave one," the Professor goes on to say that it is very "vexatious to see facts questioned which have long since been fully proved." My idea, Mr Editor, is, that if they have been so "fully proved," it is scarcely worth his while to be "vexed" that they should now be called in question; but does not the truth ooze out a little further on, when he tells us that this so-called "fact" lies at the very foundation of Mr. Moule's system of earth closets? And the Professor exults no little to find me tripping over a "clerical error" of Mr. Bateman, C.E.; but really if Mr. B. be correct in all other particulars, it does not so much matter whether the 400 acres are removed to the depth of 3 feet or 6. Besides which, a Professor of Agriculture should be aware that there are not many places where the soil is 6 feet deep, or 3 either; and therefore it is probable that much more than 400 acres would be required; indeed, if Mr. Moule's idea of having a "barrowful or two of earth" to empty all slops into is to be realised, why then 4000 acres will not suffice, notwithstanding that the earth is to be used "several times over." But does the Professor in reality think that there will be no escape of ammonia or other gases in that delightful process of drying of which he speaks so complacently? If he does, I do not; and yet I am not so "profoundly ignorant" as Mr. Wrightson has written of he imagines. Let the Professor place a shallow dish containing dilute acid in an earth closet,—or still better amongst the mixture from one when being dried —cover the whole with a bell-glass; and after it has been standing for a few hours, if upon evaporating off the acid he does not find salts of ammonia formed I will frankly confess that even such "advanced thinkers" as myself may occasionally be in error. So also if he uses a bell-glass with a ground stopper and finds that upon removing this he cannot divine the contents of the glass by the odour from the same, I will again make a like concession. Of course the Professor has many times explained to his pupils the nature of the chemical change which takes place when the fumes of hydrochloric acid and the vapour of ammonia come in contact. Let him make this very simple experiment by dipping a glass rod in the above acid, and then inserting it into the bell-glass already described, and he will detect an abundance of ammonia present, proving to a demonstration, whatever may be said to the contrary, that the earth does not deodorise; or these gases would not find their way through it, but would be retained within its pores. No one will dispute that if a "pint and a half" of earth be thrown upon a fœcal deposit there will be a less amount of smell got from it in a given time—that does not prove it to have been deodorised however: if the same matter were put into a bottle it would not smell through it, but I should be loth to say that the bottle had deodorised it nevertheless. But inasmuch as the soil, being porous, will not wholly prevent the escape of noxious gases, I imagine that danger might arise were earth closets to be generally adopted, for it must be remembered that the germs of disease often exist where no smell is appreciable. Again, the Professor is wrong in asserting that I "confuse the deodorising power of soils with the different property of removing certain organic and inorganic substances from solution." To put him right in this particular I would just observe that the above refers to deodorisation, and what follows will have reference to the other thing. He says water "may be partially robbed" of its potash or phosphoric acid in filtering through the soil, and at the same time wash out an equal or greater quantity of lime from it; in answer to which I would say that it is exceedingly improbable, seeing that both potash and phosphoric acid are very soluble in water, and lime only sparingly so. If my "objection" is more "frivolous" than this refutation, it is not worth much at any rate. The Professor pulls me up very unceremoniously for doubting the infallibility of Mr. Way; but is he not treading upon that gentleman's corns when he says, "no one dreams that such matters are removed by the physical attraction of soils under consideration?" Now Mr. Way says distinctly that the soil has the power to attract these substances from sewage and store them up for the use of the plant. What does the Professor mean by his concluding paragraph? Does he mean that my theory is at present unfounded, but can easily be proved to be correct? or that proofs of its erroneous teaching could be easily supplied? Really these Professors should write more reliable English. *Thomas Rose, C.E.*

["Reliable English" is itself most *untrustworthy* if offered as a specimen of the language in which Professors should address us. ED.

The New Water Drill.—On the 17th of November last year I wrote you a letter respecting a new principle of water drill, which had just been patented by Mr. C. S. Billups. In that letter I ventured to express a very decided opinion upon the merits of the drill. But, perhaps, I had better quote *in extenso* the words I then used. "It is so much superior in every sense to any other principle I have witnessed, that I conceive many who possess old slide drills will feel disposed to pay the patentee a fee, and have them adapted to the new system, and assuredly all who purchase new drills will not fail to do so, if they are wise, until they have carefully examined Mr. Billup's most simple, light, and efficient implement." Strange enough, on the 17th of November I again find myself similarly occupied; but this year, instead of employing terms of prediction, I have to communicate words of fact. I may, however, in passing, observe that the predictions I ventured upon 12 months ago have received a literal fulfilment, and several old slide drills have during the year been altered to the new principle, and I believe some parties, who at that time were contemplating the adoption of the water-drill system, have wisely waited, seen, been convinced, and as the result purchased drills *à la mode* Billups. But I write more particularly now to give the results of my own experience during the last few months. Although fully convinced of the superiority of Billups' principle, I yet felt the desirableness of those convictions being confirmed by actual experiment, made on my own farms, and which would be under my own observation and inspection, without let or hindrance, during the whole of the season. On Thursday the 15th of March, I accordingly sowed one acre of Poland Oats in the middle of an 18-acre field with this new drill, the remainder being sown with my old cup drill. I watched these narrowly from seed-time to harvest, but without at any time or in any particular discerning the slightest drawback. The manure was distributed with the greatest possible regularity; the plant was as good, and the growth as vigorous and uniform as could be desired, and in no sense was the acre inferior to the remainder of the field. But to be doubly sure, or rather quadruply sure, I did not allow this single experiment, conclusive as it appeared, to satisfy me, but repeated it in three fields sown with Colesecd early in July, a 30-acre field and two 20-acre fields. In each case a certain number of drills were sown in the middle of the field, the remainder being sown with the old cup drill. To be brief, I would simply say that in each the results were equally satisfactory, and fully confirmatory of my previously expressed opinions. I am therefore driven to the inevitable conclusion, that if Billups' drill discharges the liquid with equal regularity, and secures as vigorous and uniform a growth of the crop, and is withal much lighter and easier of draught than any other yet invented, it must be the best drill for the farmer to use. In this drill you get rid of the great cumbersomeness of the cup drill, and without the sacrifice of any of its good qualities. I don't know what Mr. Billups' arrangements are with manufacturers, or whether his drill will be shown at the Agricultural Hall next month; but doubtless any one seeking information, or contemplating the adoption of the water-drill system, now so constantly increasing in favour, will experience no difficulty in obtaining the requisite particulars. *Alfred S. Ruston, Aslesby House, Caistors, Nov. 17.*

Things in America.—Though much pleased with Mr. Howard's paper on "Things in America" (p. 1076), there is one point, and a serious one, which requires correction. We are told that American farmers pay no rent, are exempt from tithe, Church-rate and game, and that their poor-rates are a mere bagatelle. Some lines lower it is stated that iron, clothing, and a hundred other things, are taxed for the benefit of the manufactures, but that when public attention ceases to be distracted by the present political difficulties, these taxes will be done away. Now, it is well known that long before the war, protective duties formed the great bone of contention between the North and South, and probably contributed, quite as much as the slave question, to cause the civil war. It may, therefore, fairly be doubted whether the North, now victorious, will be willing to reverse a policy which has been maintained for years with increasing perseverance. But putting this aside, any one would infer from Mr.

Howard's paper that, bating the taxes on consumable articles, an American has only a trifling poor-rate instead of the heavy burthens under which we poor Englishmen groan. But did Mr. Howard never hear in America that, in addition to income-tax, there are heavy local rates, besides direct taxes, paid to the State in which the property is situated? I am not in a position to give the particulars of these taxes, nor have I had the advantage of visiting America, but it would be interesting if some impartial person would give us, in figures, the sums actually paid in direct taxation by a farmer in New York or Pennsylvania, holding a farm worth, say, 10,000 dollars. Even before the war it was a fallacy, though a general one in England, to suppose that there were few or no taxes in America. *G. S.*

The Period of Education for the Working Classes.—It is much to be regretted that the children of the working classes are taken so early from school, for it often happens that according as their school influences weaken, other and wrong influences strengthen, and the former soon drift away. We may have the most improved implements and machinery on our farms, but in order to have the land thoroughly cultivated, clean and free from weeds, two things are necessary: first, the size of the farm should be suitable to the machinery employed, and sufficient time should be given for the machinery to operate. And so it should be in reference to educating children who have but a limited time allowed for their schooling; for to make satisfactory progress, the number of children to be taught should be suited to the teachers employed; and by having a school in every parish, the evil arising from a large number of children going and coming a long distance to and from school would be avoided, and there would be a great advantage in making use of the same school for the older boys of an evening during the winter months. And to establish sound views and right principles in the minds of the young there must be a prolonged application of useful information applied to the mind, for giving the young hungry growing minds a good helping to education, is the best way to teach them how best to help themselves in their course through life; and in order to appreciate the importance of prolonging the period of education to the working classes, we must feel and acknowledge the true relationship we owe to one another. So that whatever amount of wrong may attach itself to any part of the community, arising from inefficiency and ignorance, is sure to affect the interest of the whole, either directly or indirectly, and therefore we cannot benefit the younger members of the working classes and ourselves at the same time in any way so much as by doing all we can to prolong the period of their education, even beyond the time when they leave school and enter upon the duties of life, by exercising our influence as employers, farmers, masters, mistresses, and others; for we should all remember that in advising and enforcing what is best for others, we are also doing at the same time what is best for ourselves. *B. Ransley, Perrysfield Farm, Oxted, Surrey, Nov. 17.*

An Appeal to Non-Resident Landlords.—There is a subject of great importance to the agricultural classes, and which I think has been, in many instances, overlooked by the landlords, and I beg to draw your attention to it. I do not mean to assert that country gentlemen as a body are guilty of neglecting the comfort and well-being of their labourers, or that they do not attend to the wants of the poor and aged on their estates; but I fear that this remark will not hold good in numerous instances where the landlords do not reside on their property. They are apt to consider that the Poor-law provides sufficient relief in these cases, or that it is the duty of the clergyman to make up the deficiency if any exists. I believe that this is a great error. The Poor-law undertakes (and perhaps wisely) to provide only the bare necessaries of life; it does not contemplate giving any comforts. The outdoor allowance of a sick labourer is never equal to his full wages when in work, nor would it be right that it should. Consequently, he is under the necessity of running into debt, and those who have been much among labourers can alone know what privations sickness, even for a few weeks, entails upon a family. These are the occasions when the resident landlord's assistance is so useful, and it is seldom refused. It is quite true that the clergyman and his wife are most anxious to render every assistance in their power; but how limited are their means of doing so! The livings vary from 100*l.* to 400*l.* a year, the smaller sum being the more general one, and the clergy have great difficulty in providing for their own families. Is it just then that the landlord should throw the duty of assisting the sick and the aged upon them? Is he not equally bound to attend to the wants of his labourers, whether he resides on his estate or not? The parish allowance to an old man or woman who is past work, is 2*s.* 6*d.*, and sometimes 3*s.* a week, and the sum of 8*l.* a year is to provide them with lodging, food, fire, and clothing! It is evident that if they obtain no relief beyond this pittance, they must suffer severely both from cold and hunger. Would it be too much to ask the landlord to give 2 per cent. of his income as a fund to be entrusted to the clergyman of the parish for the relief of the sick and the aged? The clergyman is generally well acquainted both with the character and the necessities of his parishioners. Supposing the rents of a parish to amount to 5000*l.* a year, 2 per cent. would only be 100*l.* a year, a sum that it is hardly believed would be grudged, and yet it would greatly tend to diminish the sufferings of the poor were all non-residents to give that amount. It would increase the clergyman's influence in his parish, and would enable him to establish provident clubs, which are the best mode of assisting the poor. I have resided for above 40 years in a neighbourhood where there are few resident landlords, and I know how much their assistance is required. *B. L.* [It is certainly desirable that every one should do his duty,—landlords, whether resident or not, as well as other people; and there is no harm in any one recommending 2 per cent. as the measure of a man's charities. We imagine, however, that the fund for relief (whoever had the administration of it) would be shorn of its existing dimensions if it were limited to one-fiftieth of income. And we believe that more is better done by men looking after their own gifts than by entrusting them to another, even though he be the clergyman. ED.]

Societies.

MORAYSHIRE: *Nov. 9.*—*Reaping by Machinery.*—The following report on this subject was adopted at the recent meeting of this Society:—

In terms of the remit made to them, your committee inspected some 20 machines at work on 15 different farms in the county, and beg to report as follows. They think it unnecessary to describe the reapers examined by them in detail, as, doing so, in many cases the description would only be a repetition. They conceived that it was not so much their duty to report on the comparative merits of the different reapers as on the general character of the work performed by the various classes now in use. All the machines cut well, almost all equally well, after making allowance for variety of soil and the difference in the preparation of fields. The great distinction in the work lay with the person who tilted the sheaves from the manual delivery, so also in the self-delivery, as much depended on the completeness and adaptation of the delivering apparatus. The reapers examined may be divided into three classes; 1st, The one horse manual; 2d, The two horse manual; and 3d, The two horse self-delivery. As to the one horse reaper, although the work done by it is equal to that of any of the others, yet, from the less breadth cut, the heavy draught, and its requiring a driver and man for tilting the same as a two horse machine, the difference in price is not sufficient to recommend its extensive use on the larger farms. As to the two-horse manual delivery machine, the work done was very satisfactory; and from the care and workmanlike manner in which some of the men turned off the sheaves, the most perfect work was done by this class of reapers. We may instance Miss Paul's farm at Hatton of Kinloss. Everything was done in a very neat and superior manner, and such as left nothing to be desired. One thing recommends itself very strongly in the management of this machine. A hand is exclusively employed in walking before the machine along the edge of the uncut corn to lift up any stalks which may have fallen over in a different direction from the general lay of the corn, the effect of which quite perfectly prevents any straggling of stubble. Your committee now come to the two-horse self-delivery. The cutting with this machine is equal to the others, and the delivery into sheaves very fair, and, with a little further improvement in the delivering arrangement, will very probably come into general use. The work done at the Home Farm of Altyre by two of these reapers was fully equal to the average of the whole work inspected. From the superior work done by all the classes of reaping machines, we do not hesitate to recommend the employment of them on all farms. At the same time, to do full justice to both machine and crop, a careful preparation of the land is necessary, broad ridges, thorough harrowing, furrows well filled up, large stones carted off, and the land well rolled. It is also of the utmost importance to have the knives regularly and properly sharpened, and the bearing of the machine frequently oiled. Your committee must not, however, omit to mention that this has been a favourable year for the trial of reapers, crops being generally light. Notwithstanding this advantage, we inspected several fields where machines were at work in heavy crops, and the work done was sufficient to recommend their general use. Some disadvantage attending the use of reapers is caused by occasional breakages, and, from the closeness and compactness with which the stalks are put together in a sheaf, it is more difficult in a harvest like the past to get the crop into condition for stacking than when it is cut with the scythe; but it is more than compensated by the neat, clean, and tidy way in which the crop can be lifted. The sheaves should be of a small size. In many of the reapers examined, the draught was heavy, and in others the horses had to go too fast, in order to get up the requisite cutting speed; while some, from the small breadth of travelling wheel, were liable to sink in soft soils, thereby increasing the draught, as well as injuring the young Grass. The two-horse reapers cut, in favourable circumstances, from eight to ten acres per day, employing eight or ten hands besides the raker and men employed about the machine. Your committee estimated the expense of cutting with the machine at about [illegible] per imperial acre. The machines examined were made by Samuelson, manual and self-delivery; Hallilay, manual; Bray and Hussey, do.; Johnston, Newmill Iron Works, Elgin, do.; Falconer, East Grange, do.; Brigham & Bickerton, do.; Gardiner & Lindsay, do.; Peter Wanton, Thorn, Falkirk, self delivery—and cost from 17*l.* to [illegible] each. The machines were inspected on the following farms, viz.: Home Farm, Altyre; Grange-green, Middlefield, Netherton, Hillhead, West Grange, East Grange, Hatton, Coltfield, Arlay, Kintrea, [illegible], Shempston, Spynie, Linksfield, Orbliston, Mains of Orton. While your committee hope that improvements on reaping machines may be effected by the makers, they would urge on farmers and their servants to see as to the proper preparation and culture of the land, and the working of the machines, so that they may be more extensively used throughout the country. For this end, your committee would recommend that prizes of a fair value should be given for competition to servants in charge of machines, who would excel in the management and keeping of them in repair, as well as in the tilting of sheaves a proper size, and that arrangements should be made by another harvest for this purpose. The committee take this opportunity of conveying their thanks for the great courtesy shown by all the gentlemen on whose farms the machines were at work, and their willingness and readiness to afford every information as to the working and expenses.

GEORGE BROWN, Westerton.
ROBERT WALKER, Altyre.
JOHN FERGUSON, Grange.

MR. GEDDES, in proposing the health of their patron, the Duke of Richmond, said: In his Grace's presence I need not say what I could say; but I can bear testimony to the just and liberal manner in which he acts towards his tenantry. I can say that he wishes no man to sit upon his land who would not be able to pay his rent and make a livelihood from his land besides. I am sure his Grace will continue to give us his assistance as he has hitherto done, and I hope we shall never do anything to forfeit that kindness and that attention which he has hitherto given us.

The Duke of RICHMOND said: I can assure you that it will be, as it has always been, my great desire to do all in my power to promote the interests of the Morayshire Farmers' Club; because, by promoting their interests in whatever way I can, I believe I am promoting the interests of agriculture in this part of the country. I certainly have inherited large possessions in these parts; and if I speak for a moment of myself, I must apologise to you, and confess that it was in consequence of the words which were used by my friend Mr. Geddes in introducing my health, which has induced me to do so. I received from my father, I may call it, a very loyal tenantry with the property; and one of the pieces of good advice which he gave me and which I have, and which I shall always endeavour to act up to, was—"Keep on good terms with your tenantry, and they will prove the very best friends you have, and the only way you can keep on good terms with them is by treating them as they ought to be treated. Treat them as your friends and as your equals, and not as your servants. Give them the land upon terms which they ought to have it on—terms on which they will be able to pay you such a rent as it ought to command, and leave them an ample margin to live in happiness, in comfort, and in prosperity." In these times, a great deal is talked of about setting the tenantry of the country at variance with their landlords; but I myself do not believe in anything of the kind. It may be that, in some small corners of the empire, such a state of things does exist; and if it does exist, I feel perfectly certain that the landlord is as much at fault as the tenants in those parts. I believe if the tenants are treated as they deserve to be treated—as a large and important body of the community, as a body who have it in their power to exercise a great deal both for the weal and for the woe of those who are dependent upon them, if they are made to feel the position which they do occupy and which they ought to occupy, and if they are made to feel that the landlord depends upon them quite as much as they depend upon the landlord, we shall hear few of those mischievous addresses in which it is intended to place the two classes at variance. I believe if you have a prosperous and happy and contented tenantry, it goes a great deal further than it at first sight appears to do—it permeates, if I may use the expression, down through the tenantry to the labourers of the country; and there is nothing more certain, as may be instanced from what has taken place for many years in the country, than that we are all apt, I do not care in what station we are—we are very apt to ape the habits of those immediately above us. If the tenants upon the property are such as I believe the tenantry upon the Gordon estates to be, then the labourers have a good example set before them, and one which they would do well to imitate; and if the tenantry are such as they ought to be, the labourers will be found happy and comfortable, and they will strive to act up to all the good qualities which they see in the tenantry whose servants they are. I believe by this means the three classes I have spoken of—the landlords, the tenantry, and the labourers of the country—being united together in one common bond of amity and friendship, we need not fear anything like a democratic revolutionary feeling getting hold of the country; but that we have one of the best means for the welfare and stability of the country.

Farmers' Clubs.

FARRINGDON: *Nov. 6.*—*Manual Labour and its Relations to Agriculture.*—Mr. Charles Belcher, of Little Coxwell, gave a lecture on this subject. He said:

The Past.—I am old enough to remember the times gone by, when agricultural labourers were greatly in excess of the demand for them—when the words "surplus population" were frequently heard—when plans for emigration were made, to draw to other countries the strong and sturdy labourers that could not obtain employment on their native soil—times when spade husbandry was recommended, and allotment gardens were planned and set on foot, for the purpose of employing the strength, the bone and sinew of the men who were frequently seen in the market places of the towns, and in the streets and lanes of our villages, "standing all the day idle" because "no man had hired them." These were days when arrangements were made in parishes for some of the men who had no regular work to go from farm to farm, to be paid at a low price, and put to any work the farmers thought proper, that the parish rates might be kept down, and something had in return for the maintenance the law compelled us to give. Men at that time were sent in gangs to work on the roads where there was no one to superintend them, and where their time was frequently worse than wasted. Their weekly pay was then gradually doled out to them, and received without thanks or gratitude. Those were times when a man received at the end of a week's work scarcely enough to keep body and soul together; and the labourers' children had few schools to go to, but spent their time in petty pilfering and pulling the hedges for firewood; their clothing, too, consisted chiefly of the left off garments of their richer neighbours, regardless of material, colour, shape, or fitness. Picturesque, animated scarecrows they were, but at the same time objects of pity to all who had hearts that could be pained at the signs of want and misery. In those days an unmarried man usually received lower pay than one who had a wife; and the man who had a large family could go on a Saturday night to the overseer, make a report of the number of his children, and demand of the parish officers a certain sum per head, to add to his wages and make the total amount equal to what the district magistrates considered enough to keep them all above starving point. They were times when a horse-power threshing machine was looked on by the labouring man as a formidable rival in the labour market, and their dislike to machinery at last grew so strong that they banded themselves together, committed acts of violence, smashed some of the threshing machines to atoms, and in many places lighted up the flames of the incendiary in the stackyards of their employers. Those were times when agriculture had not advanced so far as to show that heaths and commons could be profitably cultivated by a judicious application of labour; or if it was known to the few, still there were impediments in the way, such as the tithes, the game, and the tenant at will system; there were also many other obstacles in the path of improvement, but time will not allow us to particularise them; enough for the purpose to say those days are gone, and with that thought we may couple the hope that "we may never see their like again."

The Present.—As a contrast to the past, we know that no honest, steady man, who is able and willing to work, need be long without employment. Year after year there is an increasing demand for farm labourers; in fact, in nearly every department of labour the general remark is—more work-people are needed. I do not say that in the dead time of winter, men who prefer chance piece-work to steady regular

employment to not sometimes find difficulty in obtaining a new contract; but the contrary is generally the case. I suppose that in no time past was the expenditure for manual labour in connection with agriculture so great as now, and although much has been said and written about the low rate at which farm labourers are paid, I believe it might with truth be asserted that farmers, after deducting rent and taxes, give their work people a greater share of the net returns of their business than manufacturers, or any other employers of labour. As I remarked just now, there is an increasing demand for labourers: the clearing of woods and forests, the reinclosing of hedge-rows, reclamation of heaths and commons, the culture of land that formerly was considered worthless, extensive works of drainage and irrigation, additional care in the cultivation of green crops, all combine to increase the demand for labourers, while at the same time many are drawn away for employment elsewhere. In the cities and towns, building is rapidly progressing, and for new ages are being carried on—roads are improved—manufactories are extended and multiplied—the railways absorb thousands and thousands of work people—mining operations are pushed forward—commerce increases—ships are multiplied—the trade and competition grow stronger and stronger, and the true working man is now in a far different position to that he formerly occupied; for now he may, from many would be masters, select the one that suits his inclination, instead of, as formerly, anxiously wait to be selected from the many seeking work to do. All this is especially true at the same time that machinery of all kinds is to economise labour is in free use. Let me ask in what state would agriculture now be, without the steam threshing machines—with out the horse-rakes, the horse-hoes, the scarifiers, and reel pulpers, the chaff-cutters? In what state would agriculture be, without the Grass-mowing machines, the hay-tedders, and hay-making machines? And yet, with all these means and appliances in operation, what was the true state of many districts during the recent haytime and harvest? Why, Grass on thousands of acres was standing uncut in the field long after it ought to have been under the knife, and then it was cut and carried off in showers. Thousands of acres of Barley and other grain lay rotting and spoiling on the land long after it might have been in the barns, if labourers enough could have been engaged to gather it together. I will mention an instance—I dare not call it upon myself, which I have from the lips of a North Lincolnshire farmer. A liberal paymaster, he told me that last year he had one 30-acre piece of Oats to cut, and he could only spare one man for the work, that one man mowed 16 acres before he could have another to help him. The consequence was, that the crop was over-ripe and fell down on the land and was wasted was 1 quarter per acre—probably in value equal to the rent of that piece. Let me ask another question; your answer will perhaps prove the correctness of much that I have stated. Is there a farmer in this room who would not gladly have employed many labourers, if he could have well-trained part of the previous year, if he could have obtained them? I believe that no farmer in this room who was not obliged to have to-done or postponed some work on his farm simply because he could not, at the proper time, obtain a sufficient number of hands.

The question, What can be done? is a plain one; what can be done to enable us to do more farm work at the proper time, and thus prevent loss, waste, and disappointment? My opinion is summed up in a few words: "The more extensive use of machinery;" and should the case be met in that way, what effect will be produced? The answer is—to the country generally, a saving of much that at present is wasted in the field. If we by the aid of machinery increase the quantity of grain and hay secured in good condition, it will show itself again in increased supplies of beef, bacon, and mutton; a common material though they may be, they are not altogether unpalatable to Englishmen; and if our supplies of these good things can be increased, who will be benefited? All, but more particularly agricultural labourers—and these will at present get but a limited and meagre supply. I once heard of a gentleman of this neighbourhood who told the members of a benefit club, that it was fortunate that rich men could not eat more than poor ones; for if their powers of consumption were not limited, they would eat up all that there was to be had. I, for my part, do not agree with him, in thinking that the upper classes would if they could prove themselves to be like Egyptian locusts; but I repeat my opinion that a more extensive use of machinery will be more beneficial to the so-called lower classes, than to those who at present have a monopoly of the good things. Again, I mean to maintain that all other articles, is regulated by supply and demand. Is beef, demand, coupled with a small supply, must result in chicher prices, and cur has been proved, all manual labour costs more than it did formerly. Will not a good result also show itself in the following way:—Machinery, the farmer's friends, afore, skilful labourer will be made likely to have a suitable and comfortable habitation provided and offered to him, near to his work, that as home comforts may help to make him more inclined to retain a good situation; and if so, cottage improvement must progress, as is of necessity. I trust that the foregoing observations will show to you, not only here and there decent habitations springing up, the work of benevolent and philanthropic individuals, for if we depend alone on such good people for cottage improvement, the work will progress at a comparatively low and dragging pace—but let the labourer once arrive at a knowledge that he has the right to reject a situation, unless a suitable place of abode can be obtained near to his work (not as a right, but to be rented by himself), then, and not till then, will the miserable hovels we frequently see be swept away, and decent houses erected in their stead. An extension of the use of machinery will, I believe, always been sooner or later coupled with an increased demand for labourers, and a proportionate advance in the workmen's earnings. We cannot enforce thrift and providence on those who have the power of laying by for a rainy day, but we can recommend temperance and economy, and I trust that, in the future, drunkenness and its consequences, pauperism, will decline; that young working men will provide for sickness and old age; that, when affliction comes on them, they will not, as at present, be so willing to lean on the relieving officer and the parish for support, but, on the contrary, will be able to turn on their own savings which they collected,

"Not for to hide them in a bank,
Nor for a train attendant,
But for the glorious privilege
Of being independent."

And now, if I shall not be trespassing too much on your time, I will add a few words on hiring and hiring-fairs. I have always considered the system of hiring, or yearly-work contracts, to be good, both for employers and employed, more particularly so in the case of young unmarried servants, for by it is prevented the roving and rambling about from place to place for work. It prevents the unsettled habits of some of the working class, and whether a regular wage or a somewhat even week is better than occasionally more, or frequently less; and I think if you test the two systems by the results, you will generally find that the hired servant is more steady, careful, and orderly than the wanderer. The hired servant has respectable lodgings to which he retires at night, while the other too often spends his time and his money in those vile debasing places, the beershops! And when Michaelmas comes, the hired servant receives a few pounds as wages, when the wanderer has empty pockets and a damaged character.

Hiring Fairs.—Hiring-fairs have been by many persons condemned in the strongest manner as productive of nearly all the evils that pass on the labouring classes; and they almost say that no good can possibly result from these annual gatherings. I do not hold such an opinion; and I have never heard of any proposal likely to work well, and effect the true intent and meaning of a hiring-fair. I think that a better plan should be laid down before we break up that at present in use. I am aware that much evil exists in connection with these fairs; but I would ask, are there any large gatherings of people, whether the crowds consist of the upper, middle, or lower classes, where no good can be done? Regattas and annual advertisements of land that never is wanted, afford the only machinery that will possibly work well. I have been informed that at Cirencester, on the fair day, the Corn Exchange is open for all female servants seeking employment, and all persons wishing to engage servants. A small charge is made for admission; and there is none of that crowding and pushing and struggling and uproar that is experienced where the market place is the only place of meeting, and where brazling ballad singers and shouting showmen make it almost impossible to hear anything but their hideous noises. Could not similar plans be adopted here with the Corn Exchange, in connection with our Agricultural Library? I come now to other points objected to by many,—viz., the noise of the so-called music, the songs of the ballad-singers, the dancing of the lads and lasses, the shouts and laughter of the children, and the irregularity that occurs in going to and returning from the fair. But let me ask again, are there any large meetings of the rich or middle classes of society where there is unmixed purity of thought, word, and deed? Is not poor human nature such that unmixed good is not to be found associated with it? Doubtless much takes place in connection with hiring-fairs, that is not right; much that might be prevented, if fathers and mothers of the young people who go to fairs would go with them, and not leave their children to go where they please, with whom they please, and return home when they please. Before we attempt to put it down, let us remember that the country fair is at present almost the only place where the poor have amusement and recreation, and I would say, let us not too hastily rob them of that little. If the rich have their balls and concerts, their picture-galleries, their fox-hounds, and field sports, shall the agricultural poor have nothing? For my part I should regret to see the abolition of hiring-fairs, unless some well-considered practical plan for the business part could be devised; and I should regret the putting down of the astonishing shows, the shooting galleries, the swings, the throwing at snuff-boxes, the fine-shaped figures of the round-about horses, that cause such laughter and merriment, unless some thing different, as harmless, as attractive, could be esta blished on their ruins.

The Rev. H. BARNE said, in regard to hiring-fairs, he would endeavour to put the matter before them as it presented itself to him, as the chairman of a large parish. He felt himself, when every hiring-fair came round, that on that one day he got the hones work of the year almost entirely undone. The evil produced amongst his parishioners was of the most fearful character. He could quite concur in those fairs were formed in the manner suggested as regarded the hiring of servants, but what he felt was this, that the evil connected with them was enormously great that it more than counter balanced the advantages which might be otherwise derived. With all due respect, and with a knowledge of 30 years in the ministry, he would make his appeal, his respectful appeal, to the employers, that if these hiring fairs were judged by them to be necessary they would use all their efforts to remedy if they could the evil, and that they would take care and endeavour to impress upon their servants the fearfulness of the danger to their homes, and give them an affectionate warning of the evils into which they were likely to be led. They should also use their best efforts to induce the parents to counsel their children, and in that way much evil and wrong-doing would be avoided.

BALLYMAHON *Stall Feeding.*—At the last monthly meeting of this Club Mr. VIZARS read a paper on this subject, from which we make the following extracts:—

Before entering into the system of feeding, it is necessary briefly to describe the sheds for tying up the cattle. The best position, we think, will be the north and east side of the yard, the floor of the shed should be considerably higher than the yard; there should be a passage at the heads of the cattle of about 3 feet, which can be entered at either end; some recommend the sheds to be open in front, but, from experience, we recommend the front wall to be built up half-way, and shutters so placed that they can be opened or closed at will, as we have found that when frosty, cutting winds prevail, the cattle thrive better when protected from the cold than when left exposed. The time to put the cattle in the stalls, we would say, is the beginning or middle of October. The description of stock, the best we could get in the neighbourhood—Short-horns or Devons, in good condition; the time to feed, 6 in the morning, 12 o'clock, and 6 in the evening; quantity at each feed must be partly regulated by the size of the animal and the judgment of the feeder. We would say about three stones at each meal, always taking care that none is left in the feeding trough after the animal leaves off eating. Whilst feeding they should be well curried and cleaned, as nothing will make a beast in the stall thrive better than cleanliness and good currying. The beds should be carefully looked to, and no wet litter left under them; they should then be left to themselves, and not disturbed till feeding time again, when the same process should be gone through. After the cattle have been six weeks or two months feeding they should get about 4 lb. of cracked Oats each as a separate feed every day. Some mix the cracked Oats with the Turnips, dividing it over each feed, which we believe to be very good, the Turnips being sliced, as should always be the case. The cattle will fill themselves quicker, and with less labour than if the Turnips were given whole, and will have more time to sleep.

Mr. GERRARD's mode of feeding:—Turnips sliced raw, as much as the beast will eat; Linseed per day, about 2 lb.; bruised Oats per day, about 5 lb.; and chopped straw about 10 lb. How prepared: place 5 lb. of chopped straw and 2½ lb. of ground Oats on a flagged or tiled floor; boil 1 lb. of Linseed in 1½ gallon of water for about two hours, gently; pour water and all, boiling hot, over the heap of straw and Oats; mix well with a shovel, let it stand for one or two hours, and give to the cattle while warm, to be multiplied according to the number of beasts feeding. Time of feeding: 5 or 6 in the morning, a feed of raw Turnips; from 3 to 4, straw according to appetite; 9 or 10, the cooked food, as above; 12 or 1, a feed of raw Turnips: and at 5 a second feed of cooked food, and at night a little straw in the rack.

Farm Memoranda.

AYRSHIRE: *Rental of Cows.*—The practice of letting the milch cows "showing" is pretty common throughout Ayrshire, particularly in dairies on a larger scale. This consists in the farmer letting his whole stock of cows—or, if he holds two farms, the stock pasturing on the out-farm, it may be—to a professed milkman at so much per head per annum. The farmer provides all requisite accommodation for the cows, and for manufacturing and storing the produce; a dwelling-house for the "bower" and family; all the dairy vessels and implements; and as much summer grazing, with certain specified weights of house food, as may be agreed upon, fodder and chaff being usually allowed at discretion; whilst the bower takes the whole charge and management of the cows, and runs the risk of a greater or less return from the season or other causes, but permitted to change the produce into cash by whatever system seems to him best. Any cow getting blind in the paps, or otherwise hurt, is removed by the owner and a fresh one supplied; and the number of calves to be brought up is according to bargain, or else a drawback is allowed for each calf reared. Present rents per cow range between 8*l.* and 11*l.*, but the rent much depends on the quality of the Grass and the quantities of feeding stuffs and roots bargained for. These rents enable us to see that the cows set abowing must generally give rather more than 5 Scotch pints per day for out-season; but "the bowers" are sharp fellows, seldom taking cows but on really good grazing farms, and with them the Grass is always supplemented by good allowance of house food.

By the above practice the utmost is realised out of the cows. The bower and his wife, and daughters as well perhaps, giving their undivided and most careful attention to the dairy, can make more by it than the owner possibly could do, with all his other branches of farm business resting on his mind; and these, as well as the dairy-servants, needing constant and separate oversight. Hardly will a dairy stock of cows make sufficient return of profits for even the moderate maintenance of a family, unless under the daily and steady supervision of the farmer himself occasionally, and of his wife and daughters at all times.

From one-third to one-half of all the calves are annually reared on each farm. These are generally quey-calves, excepting perhaps one or two bulls at most. The others are usually sold to butchers as "slinks," and a wretched state of meat it is to set before any rational being. The newly-dropped calves or "slinks" ordinarily fetch from 5*s.* to 7*s.* each, although presently (March, 1865) they are selling at from 7*s.* to 9*s.*, and the farmer receives back the "yearning," or stomach. There are always a few calves fed here and there, but veal feeding is far from being common in Ayrshire. With the good demand existing, it is probably more profitable to make butter in the fore-part of the season, till the cows are all calved and the Grass well forward. It is the gastric juice with which the skins of the stomachs are impregnated that gives out to the water in which they are steeped (forming "rennet") the coagulating virtue, and the stomach of a calf fed for a fortnight or so must of necessity be more strongly impregnated than that of one having got only two or three meals. Occasionally the "slinks" do not get even one meal of milk, but are sent off direct. Slink veal has at least one good property, however—that of moderating the surgeon's bill for salts (Epsom)! Too little attention, generally, is bestowed in the selection of those quey calves for rearing only from the known good milchers of the stock. Cows occasionally "pick-calf" (abortion), and when that happens with one, the other calvers in the byre from involuntary sympathy are prone to follow suit. A cow having once "picked-calf" may as well be immediately fattened off or parted with, as she is not likely to be profitable for the future; and that is another good quality of the Ayrshires, that they at any time and any age readily fatten and pay well as beefers.

The young calves get warm milk morning and evening for the first six or seven weeks—drinking out of "luggies," as no suckling is allowed—and for some time longer a less rate of milk or whey, with Linseed-meal, bruised oil-cake, or other food, stirred in; and getting latterly during the daytime the run of some sheltered croft or paddock near the homestead. Till rising three years old the younkers get in most cases just the run of the farm, lying out generally the whole year round; but where not regularly housed during winter, having at least partly enclosed sheds for winter, having at least partly enclosed sheds for shelter, and receiving allowances of the usual nourishing yett-straw diet. Many steadings now comprise "straw-yards" with roofed sheds surrounding, in which the queys are wintered on the Oat-straw and water; and during their third summer a large proportion of them are grazed on old Grass taken for that purpose at some of the public lettings. The queys having been mostly brought up on very bare pastures, when exported to Ireland, for instance, thrive amazingly afterwards upon the luxuriant Grass lands of Erin. Making due allowance for all fatted off,—either young or old, male or female,—for deaths and abortions, &c., there must be from 8000 to 10,000 head of cattle annually exported from Ayrshire, and presently fetching high prices, higher than they

have been for many years back, queys ranging from 8*l.* to 12*l.* each, and milch cows from 10*l.* to 16*l.*, or more. At Mr. Ivie Campbell's annual sale (May, 1865) at Dalzeg, ten of his young Ayrshire cows averaged 19*l.* 5*s.* 9*d.* each, for Mr. Campbell is hardly less widely known for his good Ayrshire stock than he is for his celebrated breed of greyhounds. Since the "International show" at Paris in 1855, many herds of first-class Ayrshires have gone to France and other parts of Europe, and an increasing demand has existed through more years back from all parts of our own kingdom and colonies. Many of the upland (or hill-country, rather) farmers, who have all good extents of old Grass, bring up all their calves, besides buying in from their neighbours lower down; and those breeders who have acquired a name for prize cattle act in a like manner, purchasing wherever and whenever they come across a fancy young animal to their minds. The county has almost been clear of pleuro-pneumonia or other cattle diseases for several years past.

In all dairies of from 15 cows and upwards a bull is kept for service. The bulls are generally fattened, and sold when from four to five years old. If very good, or prize-takers, they may be and are kept for several years longer, seldom becoming vicious when ageing, as in most other breeds. "Geordie," by the more attentive farmers, is usually confined to the house during the "rutting-season," and literally kept on Clover, so as to be in good fettle for "officiating," and the farmers (and haply their wives even more) thus know to a day almost when each cow should calve. The heifers usually take or get the bull when rising three years old, and properly ought not to breed at an earlier age, as it stints their growth. An Ayrshire milch cow is in her prime about six years old, and continues in good milking condition till 12 years or upwards; but that depends greatly upon constitution. *Mr. Sturrock's Report, in the Highland Society's Transactions.*

Miscellaneous.

Food Imports.—The quantities of the various principal articles of food below mentioned, and now admitted duty free, were, according to a Board of Trade return, as follows for the respective periods:—

		1862.	1863.	1864.	1865.
Horned cattle	No.	Prohibited	125,276	130,656	283,271
Sheep	No.		439,189	439,788	414,177
Bacon and hams	Cwts.		1,305,667	1,677,813	1,069,390
Butter	Cwts.	177,176	163,280	980,708	1,054,617
Eggs	No.	1,234,000,000	2,060,000,000	1,030,000,000	1,030,000,000
Rice	Cwts.	511,414	1,504,029	3,070,292	1,941,580

The Agricultural Customs Committee of 1848.—It may occur to a reader who does not know much of farmers that if they want compensations, they should stipulate for them when they take their farms. But a perusal of this report will show that what appears simple and obvious is very difficult. A farmer who went to a landlord's agent to prescribe the new conditions on which he would take a farm would be told that, if he did not choose to take it upon the old conditions, some other farmer would. Improvement must originate with landlords who have intelligence to see what is wanted, and pecuniary means to accomplish it. Notwithstanding the great change which English agriculture has made since 1848, there are probably many districts which might be benefited by adopting the methods of improvement described in this report, which is also valuable as showing the most hopeful remedy for the ills of Ireland. Both countries want landlords like Lord Yarborough, who transplanted the Lincolnshire tenant-right, with modifications, to the Isle of Wight. Experience has justified the opinion expressed by the Committee, that a liberal system of compensation to the outgoing tenant is beneficial to agriculture, to the landlord, and to the farmer; that it leads to great increase in the productiveness of the soil, and to extended employment of the rural population. But any attempt to make the general adoption of such a system compulsory would be met by great practical difficulties, and the Committee could do no more than express their hope that it would be adopted by voluntary arrangement between landlords and tenants. This is the only reasonable answer that can be given to the demand for statutory tenant-right, whether in England or in Ireland. *The Saturday Review.*

Calendar of Operations.

November: *Turnips.*—Where it is the practice to harvest this crop, it should be done in November. It facilitates the work, for Swedes and Turnips have generally a firmer hold of the ground than Mangel Wurzel, if the rows be undercut by a broad-shared plough, or a plough whose share has had an extra sword-shaped flange or wing welded on to it. This, if the tool be held carefully as it is drawn along by a single horse, will cut the tap-root of the Turnip without overturning the root, and will thus render the work of lifting it the easier. When it is desirable to do two rows at once, this may be easily managed by using the horse-hoe for the purpose, shifting the hinder teeth, so that the blades shall project outwards, or if it be necessary, first getting them fashioned expressly to suit the work of under-cutting the row on either side of them as the tool is drawn down the interval.

The work of harvesting the Turnips differs generally from that of the Mangel crop, in that the former is generally consumed for the most part on the land. In this case the crop, or so much of it as is left for sheep to eat upon the ground, is, after the tops have been cut off, thrown into heaps, about one for every fold, and then piled up conically and covered with earth enough to keep the frost out of them. It is often the case that one-third or one-half of the crop is carried home for consumption in yards. In that case the rows to be removed, every alternate six, or thereabouts, are pulled first, and topped and tailed and filled into carts before the remainder is lifted and thrown into heaps.

Ploughing Stubbles before winter should be prosecuted with diligence as long as the land is dry. It is the advantage of steam-power for cultivation that a larger portion of this work can be done in the dry autumn months earlier in the season. Especially on clay soils is this work advantageous. Such soils are a fuller storehouse of the food of plants than any other—what is wanted is a key which shall unlock these stores of wealth. Water is the key by which such stores are made accessible in other cases—or rather it is the messenger or warehouseman who enters and dispenses or administers the contents. On light and well drained soils it has free ingress and egress, and performs its office perfectly. But on clays it cannot enter; in fact, its influence there often is to shut the door the firmer against attempts at entrance. What is wanted is some master key, by which admission may be obtained—steam tillage accompanying land drainage is, we firmly believe, such a master key, and by its influence on clay lands they are to receive an immense increment to their productive powers. To plough lands when wet, even though it be before winter, is turning the key upon the stores of food clay lands contain, and locking them up the firmer from the roots of plants.—The ploughing of lea land for Oats or Beans to be sown in the following February and March should be completed as soon as possible. It is well to use the skim coulter, and so provide for the complete burial of the green surface.

The Hop-Garden.—On farms where Hops are grown, the work in October and November includes stripping off and tying up the haulms from the Hop-poles after the picking, and stacking away the poles; in cutting larches for Hop-poles, cleaning out ditches in plantations, commencing winter's draining in all instances not less than 4 feet deep, and throwing and sorting Hop-poles. Teams are employed in carting off poles from grubbed Hop-grounds, in carrying the Hop haulm to our fold-yards, and in ploughing and autumn-sowing of Tares and Wheat.

Forest.—This is the first month for hedging and ditching. After you have once brought your fences into good order, which should always be effected within the first three years of a lease, the best way is to divide the length of hedging into eight to twelve parts, and to make it a rule to re-make one portion every year afterwards; by which means the whole will always be kept in good order. The best method for old hedges, consisting not wholly of White Thorn, is the plashing (pleaching), in which, by leaving as many hedge-stakes alive as possible, and by laying down much growing wood, the hedge is constantly impenetrable.

Water Meadows.—In this month you may begin to water the meadows and pastures wherever it can be done; and be assured that no improvement will pay better; a winter's watering will answer in the hay, fully equal to a common manuring of the best stuff you can lay on the land; and the expense, in some situations, is trifling.

Woods.—Now, too, begins the business of wood-cutting. In some parts of the kingdom this is a profitable part of husbandry; but, in many others, it pays very indifferent returns. If there is a long carriage to the wood, it rarely answers well enough to induce a spirited farmer to apply his attention and money to it; arable and Grass land will pay better. But, if it is expedient to keep woods, it is worth attention to apply them to the best use. Hop-poles, hoop-stuff, hurdles, short faggots, long ones, bushes, stakes, and edders; each of these articles is, in some places, more profitable than any of the rest; and I believe, on an average, those will be found most beneficial for which the purchasers come to take them away. The carriage of so cheap and bulky a commodity as wood is a very great deduction from the product.

Grass Fields should be furrowed and ditched, if necessary, this month. Cattle should be taken from them into yards. The ewe flock may be thinly scattered on dry pastures, but otherwise no live stock should be allowed to poach them during winter.

The commencement of a hard frost should be selected for cutting ant hills, as that will destroy such ants as may be exposed to its influence. At such a time let a labourer with a common spade make a deep cross over the top of an ant-hill, and then by horizontal cuts made level with the surface of the ground, turn the four quarters of the hill bottom upwards; then cut the nests of ants from the bed on which the hill had stood, as well as from the four quarters of it, and spread them about. Near the end of the winter the grassy part which remains of the dissected hills may be returned to their former places, in such a manner as to produce a level surface.

Notices to Correspondents.

Horses. *M. P.* We have been lately giving 12 horses a sack of oats and 4 trusses of hay daily. They get now 12 sheaves of winter Oats (which contain 2 bushels of grain) cut into chaff; 2 bushels of Oats mixed with the chaff, 2 trusses of hay, and a few Carrots. They do hardly so well as they did. It will probably be better to mix 1 bushel of Beans with the chaff instead of 2 bushels of Oats.

E. G. HENDERSON and SON have pleasure in offering the following as first-class NOVELTIES in their respective classes. Full descriptions are given in their CATALOGUE, forwarded on application.

POA TRIVIALIS ARGENTEA ELEGANS (First-class Certificate). —The most elegant silver-leaved Meadow Grass. 2*s.* 6*d.* each, 75*s.* per 100.

NEW PERPETUAL-FLOWERING PINK, MOSTWELCOME, 3*s.* 6*d.*

NEW FLAKED-FLOWERED CHINESE PRIMULA (First-class Certificate), 3*s.* 6*d.*

NEW ANEMONE-LEAVED CHINESE PRIMULA (First-class Certificate), 7*s.* 6*d.*

NEW CAMELLIA JAPONICA ELVIRA BIANCHINI, GENERAL CIALDINI, ZORAIDE VANZI, 21*s.* and 42*s.* each.

CALADIUM EMPEROR NAPOLEON, 10*s.* 6*d.*; C. ALPHONSE KARR, 10*s.* 6*d.* Certificates unanimously awarded.

Allamanda Henderson, 7*s.* 6*d.*
" Schottii Henderson, 3*s.* 6*d.*, 5*s.*
Anthurium grande, 7*s.* 6*d.*, 10*s.* 6*d.*
" regale, 42*s.*
Bertolonia marmoratocærea, 63*s.*
Bigonia argyræa violascens, 3*s.* 6*d.*, 5*s.*
Bougainvillea lateritia, 3*s.* & 7*s.* 6*d.*
Bowerdeodopsis corallina, 3*s.* & 7*s.* 6*d.*
Camellia conspicua flore pleno
" lotus variegata, 5*s.* to 10*s.* 6*d.*
Camellia japonica variegata, 3*s.* 6*d.*, 5*s.*
Camelia Sasanqua variegata, 3*s.* 6*d.*, 5*s.*
Cissus Gibsoni, 2*s.* 6*d.*, 3*s.* 6*d.*
Croton lanuginosa nivea, 5*s.* and 7*s.* 6*d.*
Clematis rubella, 21*s.*
" Prince of Wales, 21*s.*
Dicrytis glomerata elegantissima, 5*s.* and 7*s.* 6*d.*
Dipladenia amabilis, 3*s.* 6*d.*, 5*s.*
" Houttoana, 3*s.* 6*d.*, 5*s.*
Dorstenia Barnimiana
Dracæna sanguinea, fine spider-scarlet, 21*s.* or more-red flower, 3*s.* 6*d.*
Geranium de Nancy, best low double-flowered
FUCHSIA NORFOLK HERO.—A magnificent double-flowered variety, of colossal size and of wonderful proportion, combining good form, rich colour, and constitution of the first order. The sepals are bold, standing, and of great substance. The tube is very of-blue colour, is proportionately large, the folds or petals even and neat. It is by far the most remarkable flower in its group ever offered, and will become a favourite in effect.

VIOLA CORNUTA (White and best variety), per dozen, 3*s.* 6*d.* and 1*s.*

Wellington Nurseries, St. John's Wood, London, N.W.

Huntingdon Nurseries.

WOOD and INGRAM offer the following at extremely moderate rates, according to the quantity taken:

ASH, 2 or 3 yrs. fine, and 1 to 1½ yrs. 1 to 2 feet
BLACKTHORN, very fine
CHESTNUT, HORSE, fine, 1 to 2 feet, to transplant
ELMS, NARROW-LEAVED ENGLISH, 2 and 3 yrs. fine
FIR, SCOTCH, 1 to 2 feet, and 2 to 3 feet
FIR, SPRUCE, 1 to 2 feet, and 2 to 3 feet
FIR, WHITE and BLACK AMERICAN, 1 to 2 feet, and 2 to 3 feet
FIR, BALM of GILEAD, 1 to 2 and 2 to 3 feet
FIR, WEYMOUTH PINE, 2 to 3, 3 to 4, and 4 to 5 feet
HAZELS, 1 to 2 and 2 to 3 feet
GORSE, for Seeding
HOLLY, very bushy, transplanted, 9 to 9 inches, 1 to 1½ feet, 1½ to 2 feet, and 2 to 3 feet
HOLLY, VARIEGATED, 6 to 9, and 9 to 12 inches
MAPLE, COMMON, 1 to 2 and 2 to 3 feet
MAPLE, COMMON, for Seeding, extra fine
PLUMBERS, for Seeding, 1 to 2 feet; extra fine, and 2 to 3 feet
OAKS, for Seeding, and thick, 2 to 3 and 3 to 4 feet
OAK, TURKEY, for Seeding
POPLAR, BLACK ITALIAN, 2 to 3, 3 to 4, 4 to 5, 5 to 6, and 6 to 7
POPLAR, ONTARIO or AMERICAN, 2 to 3 and 3 to 4 feet
WHITE THORN QUICK, for Seeding
ARBORVITÆ, AMERICAN, 2 to 3 feet
ARBORVITÆ LOBBII, extra fine specimens, 3 to 4 feet
ARBORVITÆ SIBERIAN, 1 to 1½, 1½ to 2, 2 to 2½, and 2½ to 3 feet
AUCUBA JAPONICA, extra fine bushy specimens, 1 to 1½, 1½ to 2, 2 to 2½, and 3 feet
BEECH, PURPLE and COPPER, 3 to 4 feet, and 4 to 5 feet
BERBERIS DULCIS, 1 to 1½, 1½ to 2, and 2 to 2½ feet
BERBERIS AQUIFOLIUM, 1 to 1½, 1½ to 2, and 2 to 2½ feet
CUPRESSUS LAWSONIANA, very fine, 3 to 4, and 4 to 5 feet
CUPRESSUS MACROCARPA Lobbii, 2 to 3, and 3 to 4 feet
LAUREL, COMMON, 2 to 3 feet
LAUREL, PORTUGAL, very fine, 1½ to 2 feet
PLANE, ORIENTAL, 2 to 3, 3 to 4, and 4 to 5 feet, extra, 9 to 10 feet
PLANE, OCCIDENTAL, 2 to 3, 3 to 4, and 4 to 5 feet
YUCCA RECURVA, fine specimens, 1½ to 2½ feet
ROBINIA INERMIS, fine standards, 6 to 7 feet stems
WILLOW, WEEPING, 6 to 7 feet, fine standards

N.B. CATALOGUES sent free on application.

A. VAN GEERT, Nurseryman, Ghent, Belgium, has much pleasure in offering the following articles at the very moderate quoted prices, viz.:—

100 young INDIAN AZALEAS, choice varieties, with buds, ready for sorts, pots, 18*s.*
100 Double CAMELLIAS, best varieties, 1 foot high, 18*s.*
100 YUCCA ALOIFOLIA, nice plants, 30*s.*
10 ALSOPHILA EXCELSA, fine plants, 42*s.*
50 " small, 21*s.*
25 GYMNOGRAMMA WEIENHALLII, 12*s.*
100 LATANIA BORBONICA, a Palm to cool house, 42*s.*
25 CHAMÆROPS HUMILIS, fine young plants, 21*s.*
20 Choice ORCHIDS, 50*s.*
30 GLOXINIAS of sorts, 21*s.*
50 ACHIMENES of sorts, 10*s.*
12 DASYLIRION of sorts, fine plants, 7*s.*
6 AGAVE SCHIDIGERA, strong, 42*s.*
100 Choice FERNS of sorts, 21*s.*
12 Choice PALMS, different sorts, 30*s.*
12 PASSIFLORA of sorts, 9*s.*
12 HIBOTHENDRON GRANDIFALLII, strong plants, 7*s.*
6 ROEZLIA, strong plants, 21*s.*
25 WOODWARDIA ORIENTALIS, 12*s.* per 100, 84
12 Hardy RHODODENDRONS, in fine named varieties, 24
12 MAGNOLIA THOMPSONIANA, strong plants, 24
12 " MACROPHYLLA, 1 foot high, 24
12 " PURPUREA, strong bushy plants, 18*s.*
100 ASCLEPIAS TUBEROSA, strong roots, 21*s.*
25 Sorts of Choice HERBACEOUS PÆONIES, 12*s.* 6*d.*
12 " TREE PÆONIES, 18*s.*
100 TULIP TREES, 2 feet high, 18*s.*
50 VIRGINIA CREEPERS, 12*s.* 6*d.*
50 GLYCINE SINENSIS, strong plants, 25*s.*
50 CHAMÆCYPARIS LAWSONIA ELEGANTISSIMA AUREA, 25*s.*
12 ACER NEGUNDO FOLIIS ARGENTEIS, 9*s.*
12 AKEBIA QUINATA, 6*d.*
100 GHENT AZALEAS of sorts, 63*s.*
25 BERBERIS ELEGANS, 9*s.*
25 BIGNONIA RADICANS, strong, 10*s.*
100 EUONYMUS of sorts, 25*s.*
25 CAMPANULA GRANDIFLORA, strong roots, 2*s.*
50 CLEMATIS of sorts, 20*s.*
100 DELPHINIUM, in 24 varieties, 18*s.*
25 DIELYTRA SPECTABILIS FLORE PLENO, 12*s.*

References required from unknown correspondents.

A. V. G.'S CATALOGUE, just out, may be had on application from his Agents, Messrs. R. Silberrad, 6, Harp Lane, London, E.C.

Planting Season

LARCH (Native and Tyrolese), SCOTCH FIR (True Native), SPRUCE, OAK, ASH, ALDER, BEECH, PRIVET, and all kinds of FOREST and ORNAMENTAL TREES and SHRUBS, ROSES, FRUIT TREES, fine variegated ACACIAS and DEODARS, and large TREES for Park Planting, now in fine condition for removal

CATALOGUES, with sizes and prices, sent free on application to DICKSONS & Co., Nurserymen, Seedsmen, and Florists, 1, Waterloo Place, Edinburgh.

To Gentlemen and Planters.—Surplus Stock.

LARGE Transplanted EVERGREENS and CONIFERS, from 4 to 5 feet high; 20,000 COMMON LAURELS, 2 to 4 feet; 500,000 ASH, from 2½ to 4 feet; COMMON MOUNTAIN ASH, from 2 to 5 ft.; One Million HAWTHORN QUICK, from 2 to 4 feet; large APPLE TREES, for Orchards; PYRAMID and TRAINED FRUIT TREES, in full bearing.

CATALOGUES and Special Prices may be had on application.

GEO DAVISON, White Cross Nurseries, Hereford.

To Gentlemen and others engaged in Planting.

EVERGREENS.—The following will be offered at very moderate prices, all well grown and in excellent condition for Transplanting.

Arbor-vitæ, 4 to 5 feet	Euonymus, 2 to 3 feet
Box, in variety, 2 to 3 feet	Laurustinus, 1 to 2 feet
Arbutus, 2 to 4 feet	Portugal Laurels, 3 to 5 feet
Alaternus, 2½ to 4 feet	Portugal Laurels, 2 to 4 feet
Cupressus Lawsoniana, 3 to 5 feet	Pinus austriaca, 5 to 15 feet
" macrocarpa, 2 to 6 feet	" Laricio, 15 to 25 feet.

Prices, per dozen or hundred, carriage paid to any Station on South Coast Line, on application to

ALEXANDER SCOTT, North Gate Nursery, Chichester.

To Gentlemen engaged in Planting.

TOOLE AND CO. beg to call attention to their very extensive Stock of

EVERGREEN and FLOWERING SHRUBS,
HARDY ORNAMENTAL TREES,
FRUIT TREES, FOREST TREES, and CONIFERÆ,

Grown at their Nurseries, Cullenswood, Ranelagh Road, Dublin; and Wilford, Bray, and respectfully invite inspection of the same.

CATALOGUES of the above forwarded post free on application. The usual discount to the Trade.

Westmoreland Buildings, Dublin

Forest and Ornamental Trees, &c.

THOMAS KENNEDY AND CO., NURSERYMEN and SEEDSMEN, Dumfries, have this season a very large and superior Stock of FOREST, FRUIT and ORNAMENTAL TREES, DECIDUOUS and EVERGREEN SHRUBS, &c., to offer, suitable for extensive Planting, or for giving immediate effect in the formation and improvement of Ornamental Parks, Pleasure Grounds, &c., and which they are selling at extremely moderate prices. CATALOGUES (published on application).

*** Dumfries is most conveniently situated for the speedy transmission of goods to all parts of the United Kingdom.

To Gentlemen and others.

JOSEPH SMITH, JUN., has to offer One Million and a Half Transplanted LARCH (4 to 6 feet), very good. A large stock of RHODODENDRONS, ASH, ALDER, BEECH, BIRCH, CHESTNUTS, ELM, WYCH do., Narrow-leaved SILVER FIR, SCOTCH SILVER do., WHITE AMERICAN HAZEL, OAKS, POPLARS, PRIVET, PINUS AUSTRIACA and WEYMOUTH; QUICK, SYCAMORE, WILLOW, LAURELS, BERBERIS of sorts, &c. Price on application.

Moor Edge Nurseries, Cloudside, near Matlock, Derbyshire.

Irish Yews, Hollies, and Privet.

W. WRIGHT, East Retford, Nottinghamshire, begs to offer

IRISH YEWS, 6 to 9 inches, 7s 6d per 100	IRISH YEWS, 2½ to 3 ft., 30s p. 100
" 9 to 12 inches, 9s per 100	" 3 to 4 feet, 35s per 100
" 1 to 1½ feet, 15s per 100	" 4 to 5 ft., also specimens, fine and well furnished, dozen to 3s 6d, and 5s each
" 2 to 2½ feet, 20s per 100	

HOLLIES, fine plants, transplanted last year, 2 to 3 ft., 25s to 35s per 100

PRIVET (Evergreen), 6 to 9 ins., PRIVET, 9 to 12 ins., 4s per 100
" 1 foot, 5s per 100 " 2 to 2½ feet, 12s per 1000

CATALOGUES on TREES, SHRUBS, &c., on application.

Terms Cash, or references from unknown correspondents.

To the Trade.

JAS. GARAWAY AND CO. offer

Alder, 1 to 2 and 2 to 3 transplanted	Chestnut, Horse, 1 to 2 feet, transplanted
Ash, 1, 2, and 3 year Seedlings	Elm Wych, 1 to 2, 2 to 3, and 3 to 4 feet, transplanted
Ash, transplanted, 2 to 3 feet	Larch, extra fine, 1 to 2, 2 to 3, and 3 to 4 ft., transplanted
Acacia, 3 sprouts, budded	
Beech, 1 and 2 year Seedlings	
Birch, 1 to 2 feet, transplanted	

FRUIT TREES.

Apples, very fine dwarf-trained and standard-trained
Apricots, do., and standard
Cherries, do., do.
Nectarines, do., do.
Peaches, very fine dwarf-trained
Pears, very fine dwarf-trained
Plums, do.

Prices on application.

JAS GARAWAY & Co., Dunbham Down Nurseries, Bristol

To Gentlemen about to Plant.

WILLIAM BARRON begs to offer the following valuable TREES and SHRUBS, of which he has a surplus stock, at very moderate rates, viz.:—

ABIES LOWIANA, 18 ins. to 2 ft., per 100, 75s			
"	"	2 ft. to 3 ft., per 100, 100s.	
"	"	3 ft. to 5 ft., each 2s. 6d.	
CRYPTOMERIA JAPONICA, 18 to 24 in., per 100, 20s.			
CUPRESSUS LAWSONIANA, 12 to 18 in., per 100, 20s.			
"	"	18 in. to 2 ft., per 100, 40s	
"	"	2 ft. to 3 ft., per 100, 50s.	
"	"	4 ft., per dozen, 12s.	
PICEA NOBILIS, 9 in. to 12 in., per dozen, 18s.			
"	"	18 in. to 2 ft., per dozen, 30s.	
THUJA MENZIESII or LOBBII, 18 in. to 2 ft., per 100, 40s.			
"	"	2 ft. to 4 ft., per 100, 100s	
"	"	4 ft. to 5 ft., per dozen, 36s.	
"	PYRAMIDALIS, 3 ft., per 100, 42s		
"	SIBIRICA, 18 in. to 2 ft., per 100, 25s.		
WELLINGTONIA GIGANTEA, 4 in. to 6 in., per 100, 60s			
"	"	9 in. to 12 in., per dozen, 12s.	
"	"	18 in. to 2 ft., per dozen, 24s.	
"	"	2 ft. to 3 ft., per doz., 42s.	
BERBERIS DARWINII, 9 in. to 12 in., per dozen, 12s.			
COTONEASTER SIMMONDSII, 9 in. to 12 in., per 100, 20s.			
"	"	2 ft. to 3 ft., per 100, 5 6	
DEUTZIA CRENATA FLORE PLENO, 9 in. to 12 in., p. 100, 40s			

Special Prices to the Trade on application

Elvaston Nurseries, Borrowash, near Derby

IMPORTANT to the TRADE and INTENDING PLANTERS.

4,000,000 1-yr. Larch	200,000 2-yr. English Oak
600,000 2-yr. Seedling do.	20,000 2-yr. Evergreen do.
200,000 1-yr. Transplanted do.	100,000 2-yr. Spruce
1,500,000 2-yr. Scotch Fir	100,000 2-yr. Horse Chestnut
500,000 1-yr. Transplanted do.	1,500,000 2-yr. Elms
100,000 2-yr. Transplanted do.	500,000 1-yr. Ash
1,000,000 2-yr. Spruce Fir	100,000 1-yr
400,000 3-yr. do	60,000 1-yr. Spanish Hazel
200,000 1-yr. Pinus austriaca	50,000 1-yr. Acacia
200,000 1-yr. Pinus Laricio	100,000 1-yr. Common Broom
50,000 2-yr. Pinus Weymouth	70,000 1-yr. Scotch Laburnum
100,000 2-yr. Silver Fir	40,000 1-yr Cupressus (upright and horizontal)
80,000 2-yr. Balm of Gilead	30,000 2-yr. Chinese Arbor-vitæ
2,000,000 1-yr. Alder	20,000 2-yr. American do.
300,000 2-yr Seedling do.	4,000,000 1-yr. Thorn Quick
100,000 1-yr. Transplanted do	100,000 1-yr. Laurel
400,000 1-yr. Sycamore	30,000 2-yr. do.
100,000 2-yr. do.	

The Nurseries are well stocked with FOREST TREES.

PRICE LISTS (read), which will be forwarded on application to MICHAEL BERRY, Dunlavan and Garradice Nurseries, Summerhill, Co. Meath, Ireland.

To Land Owners and the Trade.

FOR SALE, 200,000 CRAB, strong, for Stocks or Gaps to old Fences—cheap, with transplanted FOREST TREES, &c., very reasonable.

WANTED, 40 cords Pegs. Bedded WELLINGTONIAS, QUICK, and Wrought HOLLIES, in quantities.

JOSEPH THOMAS & SONS, Penrith, Cumberland

Seed Potatos. Edgcote Second Early Kidney.

D. J. PERRY, NURSERYMAN and SEED MERCHANT, Banbury, has much pleasure in introducing the above valuable Potato, which may be described as the finest flavoured and most productive Second Early variety in cultivation.

It was raised by Mr. Aubrey Cartwright, Esq., Edgcote House, near Banbury, by whom it was exhibited at the Royal Horticultural Society's Great Show of Fruit and Vegetables, Saturday, July 22, 1865, and was awarded the First Prize in Class 7.

The *Gardeners' Chronicle*, July 29, 1865, in noticing the above Show, states:—"POTATOS: These were largely contributed, and many of them were unusually fine for the season of the year. Among Kidneys the most valuable was Edgcote Second Early, a very perfect Potato, which obtained the First Prize for a single dish."

Price per peck, including bag, 6s.

D. J. PERRY has also a limited stock of the following valuable varieties to offer :—

NE PLUS ULTRA.—The earliest Potato in cultivation.

ROYAL ALBERT.—One of the finest and most productive Early White Round Potatos known

EARLY EMPEROR, or SOMERSET RED.—Of the Potato, Mr Maitland writes, in the *Farmers' Chronicle*, October 6, 1860, as follows: "This may be described as one of the best Second Early Round Potatos known. It has a beautifully netted skin, both perfectly white, and the flesh of the finest quality."

Price of the above three sorts, 5s per peck.

The Nurseries, Banbury.

THOMSON'S STYPTIC prevents the Bleeding of Vines after Pruning or Grafting, the Damping of Grandmas and other Cutworms. Sold by Seedsmen, &c. Pamphlet gratis. Manufactured and sold wholesale by JOHN THOMSON & SONS, Dalkeith, N.B., and may be had of all Nurserymen and Seedsmen in the kingdom, at 6d. each, with directions for use. None is genuine without the signature of WM. THOMSON.

Fumigate your Greenhouse with TOBACCO TISSUE.

It will destroy all the Insects and not injure the Plant. Prices 6s. 6d. per lb., cwt. 50s., ton 90s. Sold by the trade. Manufactured and sold wholesale by JOHN THOMSON & SONS, Dalkeith, N.B., and may be had of all Nurserymen and Seedsmen in the kingdom, at 6d. each, with directions for use. None is genuine without the signature of WM. THOMSON.

Winter Dress all Fruit Trees with GISHURST COMPOUND.

Red Spider Magnified.

Copy of a Letter from Mr RIVERS, *Nurseries, Sawbridgeworth, Herts, 23rd Oct., 1865.*

"I must tell you what I heard to-day from a very clever gentleman farmer, Anthony Bubb, Esq., residing in Wonston Court, Gloucester. He has a wall to which Peach trees are trained. Well, last autumn the trees were in a wretched blighted state. As a desperate remedy he mauled them all, early last February, and gave the wall and trees a thorough painting with Gishurst Compound, 1 lb to the gallon of water; his trees, all but the one, commenced to grow favourably in spring, and are now pictures of health. The tree not painted is in a half-dead blighted state. He used the same dressing to his Apple trees; it killed the woolly Aphis entirely, and has made his trees clean and vigorous in their growth. We intend to paint his wall trees shortly, and will be friends to do the same. I shall certainly screw all my young Peach trees against my walls in the same manner. The Compound is, I believe, more efficacious than the usual dressing of soft soap, sulphur, &c.; and it does not blacken the shoots on the walls."

For Orchard-house Trees, 4 ozs. to the gallon will be found a good strength, when used stronger some buds on weakly trees may be injured.

GISHURST COMPOUND is sold Retail by Nurserymen and Seedsmen, in boxes, 1s., 3s., and 10s. 6d. each

Wholesale by PRICE'S PATENT CANDLE COMPANY, LIMITED, Belmont, Vauxhall, London, S.

Gishurst Compound has more recent testimonials to its efficacy, but none more conclusive than the above, which has been published before

GARDEN BORDER EDGING TILES, in great variety of patterns and material, the pioneer sorts being especially suited for KITCHEN GARDENS, as they harbour no Slugs and Insects, take up little room, and once put down incur no further labour and expense, as no "grown" Edgings. Consequently being much cheaper

GARDEN VASES, FOUNTAINS, &c., in Artificial Stone, of great durability, and in great variety of design.

F & G. ROSHER, Manufacturers, Upper Ground Street, Blackfriars, S.; Queen's Road West, Chelsea, S.W.; Kingsland Road, Kingsland, N.E.

Sole London Agents for FOXLEY'S PATENT GARDEN WALL BRICKS. Illustrated Price Lists free by post. The Trade supplied.

ORNAMENTAL PAVING TILES for Conservatories, Halls, Corridors, Balconies, &c., as cheap and durable as Stone, in blue, red, and buff colours, and capable of forming a variety of designs.

Also TESSELATED PAVEMENTS of more enriched designs than the above.

WHITE GLAZED TILES, for Lining Walls of Dairies, Larders, Kitchen Fireplaces, Baths, &c. Grooved and other Stable Paving Bricks of great durability, Dutch and Adamantine Clinkers, Wall Copings, Red and Stoneware Drain Pipes, Slates, Cements, &c.

To be obtained of F. & G. ROSHER, at their Premises as above.

SILVER SAND (REIGATE, best quality), at the above address—41s. per load; 2s. per sack; 2s. per Ton extra for delivery within three miles, and to any London Railway or Wharf. Quantities of 4 Tons, 1s. per Ton less.

FLINTS, BRICK BURRS or CLINKERS, for Rockeries or Grotto Work. F. & G. ROSHER, Upper Ground Street, Blackfriars, S.E.

N.B. Orders promptly executed by Railway.

Asphalte Roofing Felt,

ONE PENNY per Square Foot.

CROGGON AND CO., MANUFACTURERS, 63, New Earl Street, 124, Broad Street, } London, E.C.

29, GEORGE ST., LIVERPOOL. 29, GOREE PIAZZAS, LIVERPOOL

GARDEN TARPAULINGS, 32s. per dozen, 8 feet by 4 feet, with brass eyelet-holes; various other sizes; a large quantity of second-hand RAILWAY TARPAULINGS made up to any size, 1s. per square yard: also a large quantity of second-hand Macintosh Carts and Waggon Covers, 1s. per square yard; also Waterproof Capes, 4 yards round, 3 feet deep, as each; Long Leggings, 2s. 6d. per pair. Aprons for Carriage, 8s. each; Horses Loin Cloths, 4s. 6d. 600 London Policemen's Capes, nearly new, 20s. per dozen; Capes with sleeves, 6s. 6d.; Large Capes lined with woollen, 6s. 6d.; COATS, &c. Patent Felt, 1d. per foot.

F. RICHARDSON, 69, Euston Road, London, N.W.

GREEN'S IMPROVED NEW PATENT GARDEN ROLLER.

The above Rollers possess many advantages over all others. They are made in two parts, and are free to revolve on the axis, affording greater facilities in turning, and the smaller ridges are rounded off or turned inwards, thus avoiding the unsightly marks left by other Rollers.

Diameter.	Length.	Price.
24 ins.	20 ins.	£4 10 0
20 "	22 "	3 10 0
16 "	17 "	2 15 0

Prices for Rollers fitted with Shafts suitable for Pony or Horse Power, free on application.

Delivered carriage paid to all the principal Railway Stations and Shipping Ports in England.

THOMAS GREEN & SON, Smithfield Iron Works, Leeds; 54 and 55 Blackfriars Road, London, S.; and 10, Eden Quay, Dublin.

N.B. All Orders executed on the day they are received.

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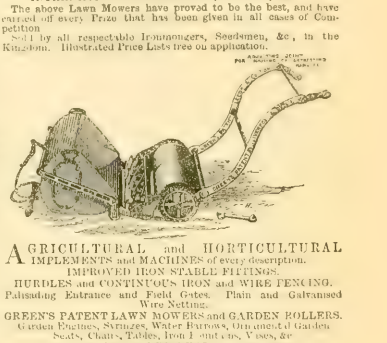
The above Lawn Mowers have proved to be the best, and have carried off every Prize that has been given in all cases of Competition

Sold by all respectable Ironmongers, Seedsmen, &c., in the Kingdom. Illustrated Price Lists free on application.



AGRICULTURAL and HORTICULTURAL IMPLEMENTS and MACHINES of every description.

IMPROVED IRON STABLE FITTINGS.

HURDLES and CONTINUOUS IRON and WIRE FENCING. Palisading Entrance and Field Gates. Plain and Galvanised Wire Netting.

GREEN'S PATENT LAWN MOWERS and GARDEN ROLLERS.

Garden Engines, Syringes, Water Barrows, Ornamental Garden Seats, Chairs, Tables, Iron Tanks and Vases, &c.

IRON and GRASS HURDLES, in great variety.

Washing, Wringing, and Mangling Machines.

IMPROVED SAUSAGE MACHINES and FILLERS

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Show Rooms opposite the Smithfield Cattle Market, North Street, Leeds; 54 and 55, Blackfriars Road, London, S.; and 10, Eden Quay, Dublin.

George Hall, late Manager to the late Saynor's Firm.

HE WAS FOR 30 YEARS IN THEIR EMPLOY.

GEO. HALL AND SONS' Celebrated PRUNING and BUDDING KNIVES, &c., may be obtained from the most respectable Nurserymen and Seed Merchants in the kingdom; also America, France, Germany, Holland, Prussia, Russia, &c.

N.B. We only make one quality, the best that can be manufactured, regardless of expense, the same as the late Saynors always made during their lifetime, with all the latest improvements.

Horticultural Cutlery Works, Sheffield.

CHEAPEST and BEST IRON HURDLES, FENCING, Wire Netting, Chaff Cutters, Oat Bruisers, Bean Mills, Steam Engines, Lawn Mowers, Conservatories, Greenhouses, Hot-water Apparatus. Estimates furnished, and skilled workmen sent to all parts of the country.

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GALVANISED WIRE CABLE STRAND FENCING, for FARMS, PARKS, and GARDENS.

THE ORIGINAL INVENTORS and MANUFACTURERS.

The CHEAPEST, STRONGEST, and NEATEST FENCING in USE THOUSANDS of MILES of this FENCING have been SUPPLIED by us at home and abroad it sustains no injury by being trespassed upon.

Price, with five lines of Strand and Iron-pronged Standards, and one strand on post, stay and screw bolts to every 12th yards, 1s. per yard.

Free instead Cable Strand and Standard for wooden posts, 6d. per yard

HURDLES, HURDLES, HURDLES, 6s. 6d. to 7s. 3d. per yard

CONTINUOUS IRON FENCING, GATES of all kinds.

PATENT STEAMING PILLARS, &c.

GALVANISED WIRE NETTING for POULTRY, &c.

GALVANISED SWING WATER BARROWS.

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LAWN MOWERS, GARDEN ROLLERS.

ASPHALTE ROOFING FELT, 1d. per square foot.

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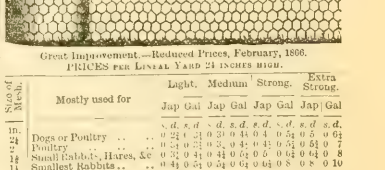
J. B. BROWN AND CO.'S NEW IMPROVED PREMIUM WIRE NETTING.



Great Improvement.—Reduced Prices, February, 1866.

PRICES per LINEAL YARD 24 INCHES HIGH.

Stout Mesh.	Mostly used for	Light. Medium	Strong.	Extra Strong.
		Jap Gal Jap Gal	Jap Gal	Jap Gal
in.		s.d. s.d. s.d. s.d.	s.d. s.d.	s.d. s.d.
1	Dogs or Poultry	0 2½ 0 3½ 0 4½	0 5½	0 5 0 6½
1½	Poultry	0 2½ 0 3½ 0 4½	0 5½	0 6½ 0 7
1½	Small Rabbits, Hares, &c.	0 3½ 0 4½ 0 5½	0 6½	0 6½ 0 8
1½	Smallest Rabbits	0 4½ 0 5½ 0 6½	0 8	0 8 0 10
1	Pheasantries, Small Aviaries, Window Guards, &c.	0 8 0 10 0 9½	1 0	1 1½ 1 4 1 7 1 10
½	Aviaries, Window Guards, &c.	0 11 1 1½ 1 4½	1 4	1 7 .. ..
½	Aviaries, Window Guards, &c.	1 7 1 10 1 0 2 0	2 3	2 3 2 6
½	Aviaries, &c.	2 3 2 6 2 8 ..	..	.. ..

Quantities of 100 Yards or upwards delivered free at all Railway Stations and Shipping Ports in England.

*** Every description of Netting warranted to give satisfaction, and if not approved will be exchanged, or may be returned unconditionally.

J. B. BROWN & Co.—Offices, 90 (late 81), Cannon Street, London, E.C. Warehouse and Manufactory, 148, Upper Thames Street, E.C.

JOHN WARNER AND SONS.
8, Crescent, Cripplegate, London, E.C.,
BELL and BRASS FOUNDERS to HER MAJESTY.

No. 41.

No. 42.

PATENT CAST-IRON PUMP, 9ft. to 20ft. Metal lined, and Valves, not exceeding 1½in. bore	IMPROVED LIQUID MANURE or GENERAL PORTABLE PUMP—These Pumps are fitted with J. W. & Sons' Patent Bucket and Valve, and cannot clog in action. The Barrel is made of Galvanised Iron, not likely to corrode, and can be raised or lowered at pleasure on the stand, the legs of which fold together, and it may be carried with ease by one man to frame if required.

Bore.	Height.	£ s. d.
2½ in. short	5ft. 6in.	1 1 0
2½ in. long	5ft. 6in.	1 8 6
3 in. short	5ft. 6in.	2 2 0
3 in. long	5ft. 6in.	2 6 0
4 in. long	5ft. 6in.	2 14 6
2½ in. short, with 15 feet of leather attached		3 3 0
2½ in. long, do. do.		3 11 0

Those of 3-inch and Lead Machine Barrel, with Legs, £2 17s.; 3-inch Flexible Rubber and Canvas Suction Hose, 2s. 6d. per foot. The Barrel is 27 inches long, and the Legs 32 inches high.

WARNERS' PORTABLE FIRE or GARDEN ENGINE.

£2 2s.

No. 5684.

For use by one Person ... ... Price £2 2s.
No. 5676, ditto ditto, on Wheels ... ... £2 16s.

The above are complete in themselves, and may be always kept filled with water, and ready for use.

Letter to The Times, *July 3, 1866, from* Earl Essex
A REAL FIRE EXTINGUISHER
To the Editor of The Times.

"Sir,—I feel sure you will kindly add a small space in the *Times* to these few lines, as the best medium through which I would urge every householder who prides us to have (each for his house) one or more small garden or other Engines on wheels, always charged and ready for use, in case of fire.

"Last night, just as I was going to bed, I was startled by that most fearful of all cries, 'Fire, fire!' I soon learned that a fire was raging in a large two-windowed un-occupied bed-room. How caused is to us all a great mystery. It is now useless to keep Cow of the Station Engines on each floor. It two minutes I was in the room with one of them. It was then in full force. The curtains, shutters, casements, and two-thirds of the window were flaming and licking both floor and ceiling. I was quite alone at the moment, yet before assistance arrived the staff of the servants having a meeting bell, I had completely subdued the fire. A single window only was broken, and the Engine, and when assistance and more water did arrive, we very soon extinguished the other.

"So fierce was the fire that the level of the casements was melted, and the cresent cuts themselves were burnt off their hinges.

"I will only add, that to God's mercy, the house was saved by this small Engine. Had it not been at hand, I, and in order, most assuredly Cassebury would be now a heap of ruins.—Yours faithfully,

"Cassebury, Watford, July 29. "ESSEX

"The Engine, even when dark, runs on light on the floor, that any woman might draw it, and also work it."

Oil Paint no longer Necessary.

HILL AND SMITH'S PATENT BLACK VARNISH for preserving Iron Work, Wood, or Stone. This Varnish is an excellent substitute for oil paint on all outdoor work, and is full two-thirds cheaper. It may be applied to an ordinary bit-mel requires no heating or thinning, and is used cold. It is used in the grounds at Windsor Castle, Kew Gardens, and at the seats of many hundreds of the nobility and gentry, from whom the most flatter in testimonials have been received, which HILL & SMITH will forward on application.

From the Right Hon. LORD GRANVILLE, *Hall and Fuel, Tunbridge.*

"Lord Granville has seen the Patent Black Varnish made by Messrs. HILL & SMITH, applied with success, and has heard it highly recommended by friends who have tested it extensively."

Sold in casks of about 30 gallons each, at 1s. 6d. per gallon, at the Manufactory, or 1s. 8d. per gallon paid to any Station in the kingdom.

Apply to HILL & SMITH, Brierly Hill Iron Works, near Dudley, and 22, Cannon Street West, E.C., from whom only it can be obtained.

HOTHOUSES for the MILLION.—Medal, 1862.
INVENTED BY THE LATE SIR JOSEPH PAXTON.
Manufactured in London: Newton in Cartmel, Lancashire; Gloucester; Coventry; Paisley, and Aberdeen.

ILLUSTRATED PRICE LISTS will be sent on application to Messrs. HORNE & MORTON, 7, Pall Mall East, London, S.W.

Also, a HANDBOOK of VINE and FRUIT TREE CULTIVATION, price 1s.; post free, 1s. 1d.

HOT-WATER APPARATUS, of every description, fixed complete in any part of the country, or the materials, viz., Boilers, Pipes, &c., delivered to any Station.
Estimates on application.
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Heating by Hot Water.

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HOT WATER PIPES, 4-in. Stock, per yard:—2-inch, 1s. 2d.; 3-inch, 1s. 10d.; 4-in. 2s. 4d. BENDS, from Stock, 1s. 6d., 2s. 6d., and 3s. each. THROTTLE VALVES, 10s., 13s., and 14s. each. Other Connexions at equally low prices, and all goods of first-class manufacture. Estimates given, and orders by post punctually attended to the same day.

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"Dry Glazing without Putty."
"Glass without Laps."
"Ventilation without Moving Lights."
Highly Commended by the Royal Horticultural Society, South Kensington.

Plans and Estimates free on application. Descriptive Book fully illustrated, post free for 20 stamps, from the Author and Patentee, JAMES CRANSTON, Architect, Birmingham.
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HOT-WATER PIPES, at Wholesale Prices, with Elbows, Syphons, Tee Pipes, and every other connection; Wrought and Cast-Iron Boilers, Saddle, Conical, Cylinder, TUBULAR, and Upright, from 24s. each. Improved Boilers and Iron Stands to use without brickwork, 40s. each. Valves from 10s 6d. each. Patent Valves, Improved Furnace Doors, Furnace Bars, Supply Cisterns, and Castings of every description in stock, at
Mr. LYNCH WHITES Iron Wharf, Upper Ground Street, Blackfriars Bridge, London, S. Price List on application.

JAMES WATTS AND CO., HOTHOUSE BUILDERS and HOT-WATER APPARATUS MANUFACTURERS, 353, Old Kent Road, S.E.

200 CUCUMBER and MELON BOXES and LIGHTS, and from 400 to 500 LIGHTS for PITS of all SIZES kept in STOCK. Glazed and Painted complete, ready for immediate use. Packed and sent to all parts of the kingdom. Public and Private Buildings, Warehouses, &c., Heated on the most approved scientific and correct radical principles. References to the Nobility, Gentry, and Trade in most of the Counties in England.

Cheap Greenhouse Stoves.

DEANE AND CO.'S Patent VENTILATING and SUSPENSION STOVES are simple, cheap, and efficient; have been largely adopted and approved; will burn many hours without attention, and at a small cost for fuel. Prices of Suspension Stoves, 20s., 25s., 30s., and upwards. Ventilating Stoves, 50s., 90s., 70s., 90s.
HOT-WATER APPARATUS for Conservatories, Greenhouses, Hothouses, Forcing Pits, &c., erected and fitted up complete.
DEANE & Co., 46, King William Street, London Bridge, E.C.
Established A.D. 1700.

The Only Stove without a Flue.

NASH AND JOYCE'S PATENT, for AIRING, DRYING, and WARMING HALLS, SHOPS, ROOMS, &c., a new eyesight Stove for Conservatories, Greenhouses, Fruit Rooms, &c. To Burn without re-heating all winter by filling with fuel every 12 hours. Temperature, any degree required, without burning. Cost for fuel, 1d. per day.
MINCING and SAUSAGE FILLING and MASTICATING MACHINES of the best makers, 10s. 6d.
The COTTAGE KNIFE CLEANER is the only rapid Cutler and Polisher of Knives at a moderate price. 5s. 6d. to 10s. 6d. Prospectus post paid.
CHEAP FIRES.—The Radiating Fire Balls save half the usual consumption of fuel. One Shilling packet of Four, red hot in the Fire every day, lasts all Winter.
S. NASH, Ironmonger, 256, Oxford Street, W.C.; and Stove Depôt, 119, Newgate Street, London, E.C.

Hot-water Pipes, with Elbows and Connections,
SUPPLIED BY
BURY AND POLLARD.
CONTRACTS AND ESTIMATES FOR WARMING PUBLIC BUILDINGS.
Large Experience in
HEATING by HOT WATER.
The Improved
CONICAL BOILERS,
For Heating Pineries, Conservatories, Greenhouses, Mansions, Hall, Warehouses, &c.

Sole Manufactured by
BURY & POLLARD (Successors to John R. Pierce & Co.), Engineers, & Boiler Makers, Pimlico, S.W.
Illustrated Catalogue, 19 Inches, on Improved Section shows Bury & Pollard's improved arrangement, free.
NO BRICKWORK SETTING.
These Boilers have for their durability and economy obtained a celebrity unsurpassed by any other Boilers ever invented. They have been for many years past in use at many Public Establishments, Royal Botanical Gardens at Kew, at the Regent's Park, the Crystal Palace, and at most of the Nobility's and Gentry's Seats throughout the United Kingdom. References when they have been in 20 years in constant use.
Price Lists on application to BURY & POLLARD, Park Iron Works, 17, New Park Street, Southwark, London, S.E.

GRAY'S OVAL TUBULAR BOILER.

INTERNATIONAL EXHIBITION, CLASS IX., No. 2119.

MR. GRAY begs to call the attention of the Nobility, Gentry, Nurserymen, Gardeners, &c., to his

NEW OVAL TUBULAR BOILER,

Acknowledged by practical judges to be a great improvement on every form of Tubular Boiler yet introduced. It has proved itself superior to all other Boilers for quickness of action and economy of Fuel, doing its work with one-third less the amount required by any other.

Extract from Report in GARDENERS' CHRONICLE *of International Exhibition, May 24, 1862, page 476.*

"The upright form of Boiler is usually made on a circular plan, but the oval form given to Mr. Gray's variety of it is said to be preferable in consequence of its bringing the tubes in closer contact with the fire. The usual form of a furnace being a parallelogram rather than a square, it seems feasible that the Boilers on the oval plan adopted bring the tubes more completely within range of the burning fuel; and the result is the same, though a slight one is no doubt attained."

They are made of all sizes, which, with prices, may be had on application.

JAMES GRAY, HORTICULTURAL WORKS,
DANVERS STREET, PAULTON'S SQUARE, KING'S ROAD, CHELSEA, S.W.

WROUGHT-IRON WINE BINS.

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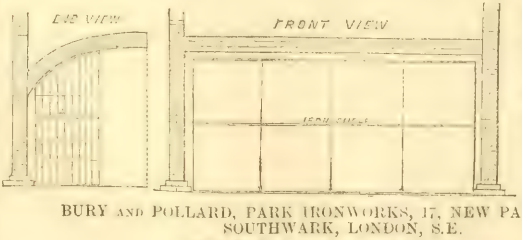
CALL ATTENTION TO ANNEXED SKETCHES OF THEIR WINE BINS.



Noblemen, Gentlemen, Wine Merchants, and Hotels are now being supplied by BURY & POLLARD with their

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THE CHRISTMAS NUMBER OF ONCE A WEEK.

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HOT-WATER PIPES and CONNECTIONS, SADDLE and other BOILERS.
Estimates, with Printed Price Lists, and Free Delivery at principal Railway Stations for Quantities.
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COTTAM AND COMPANY,
CONSERVATORY AND HORTICULTURAL BUILDERS, &c.,
Iron Works, 2, Whitsley Street, Oxford Street, London, W.
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1s. 6d. 2s. 3d. 2s. 9d. per yard.
Materials supplied as above, or Estimates given. Black galvanized Pipe, on application to
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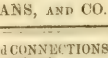
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MELON LIGHTS, Machine made, 6 feet by 4 feet, 14 thick, Unglazed 5s., Glazed 11s., are kept in stock at the Finsbury Steam Joinery Works, 141, Bunhill Row, E.C.

Great International Horticultural Exhibition 1866.

FIRST AND ONLY PRIZE AWARDED TO
BEARD'S PATENT METALLIC NON-CONDUCTING GLASS HOUSES.
Perfect System of Ventilation and Glazing.
Manufactured by Messrs. SANDERS, FREWER, & Co., Victoria Horticultural Works, Bury St. Edmunds.
See page A 8 of this Journal in *Gardeners' Chronicle* of Nov. 10, 1866.

JAMES PHILLIPS AND CO.
beg to submit their prices as follows:—
GLASS for ORCHARD HOUSES.
As supplied by them to Mr. Rivers, to the Royal Horticultural Society, and to most of the Nobility, Clergy, and Gentlemen of the United Kingdom.
Each Box contains 100 feet. The prices only apply to the sizes stated.

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	1 oz. to 0 in foot.	21 oz.
Fourth quality	.. .. 1s. 6d.	.. 1s. 9d.
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The sizes, or prices, include the box, which are not returnable.
Stock sizes, 24 by 16 feet boxes, boxes included.
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					4ths.	3rds.	2nds
11 by 9	12 by 9	13 by 9	14 by 9	)	s. d.	s. d.	s. d.
12 „ 10	14 „ 10	14 „ 10	15 „ 10	)	13 6	15 6	17 0
13 „ 11	14 „ 11	.. ..	.. ..				
14 „ 12	15 „ 12	15 „ 14	16 „ 14				
15 „ 12	19 „ 12	16 „ 12	17 „ 12				
16 „ 13	18 „ 13	18 „ 13	.. ..		15 0	17 0	18 6
16 „ 14	20 „ 14	18 „ 14	.. ..	)	16 to 17 oz. to the foot.		

SMALL SHEET SQUARES.
In two feet Boxes
6 by 4 6 by 4½ 7 by 5 7½ by 6½ .. 12s. 6d.
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10½ by 8 .. 10½ by 9 .. .. 12s. 6d.
Boxes 2s. each, returnable at full price.
London Agents for HARTLEY'S IMPROVED PATENT ROUGH PLATE.
LINSEED OIL, Genuine WHITE LEAD, CARSON'S PAINTS, PAINTS of various colours, ground ready for use.
SMILES' and ROUGH PLATE, PATENT PLATES of all sizes, BRITISH PLATE, PATENT PLATE, ROLLED PLATE, CROWN, SHEET, HORTICULTURAL, ORNAMENTAL, COLOURED, and every description of GLASS, of the best Manufacture, at the lowest terms for cash. Prices and estimates forwarded on application to
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Caution to Gardeners.—When you ask for
SAYNOR AND COOKE'S WARRANTED PRIZE PRUNING and BUDDING KNIVES, see that you get them. Observe the mark SAYNOR, also the corporate mark OBTAIN WARRANTED, without which none are genuine.
S. & C. respectfully having to caution Gardeners and others, but are compelled to do so, in consequence of an imitation, of common quality, having been sold for the genuine one, and which has caused many complaints to be heard of Knives which, on examination, bear not the mark, all of which are warranted both by Sellers and Makers.
S. & C.'s Pruning and Budding Knives are the best and the cheapest in the market.
Paxton Works, Sheffield. Established upwards of 125 years.

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E. T. ARCHER'S "FRIGI DOMO."
Patronised by Her Majesty The Queen, the Duke of Northumberland for Syon House, His Grace the Duke of Devonshire for Chiswick Gardens, Dr. Lindley for the Horticultural Society, Sir Joseph Paxton for the Crystal Palace, Royal Zoological Society, &c.
PROTECTION from the SCORCHING RAYS of the SUN.
"FRIGI DOMO," a Canvas made of Patent prepared Hair and Wool, a perfect Non-conductor of Heat and Cold, Raining, wherever it is applied, a fine Temperature. It is adapted for all Horticultural and Floricultural purposes, for Preserving Fruits and Flowers from the Scorching Rays of the Sun from Heat, from Attacks of Insects, and from Morning Frosts. To be had in any required length.

Two yards wide	.. 1s. 9d. per yard run.
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An improved make, 2 yards wide ..	1s. 9d. per yard.
An improved make, 3 yards wide ..	2s. 8d. per yard run. Also

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"'Tis much cheaper than Mats as a covering."

THE IMPROVED LEATHER DRIVING STRAPS for MACHINERY are stronger, more durable, drive better, and cost less than other kinds of Driving Belts. SPECIAL STRAPS for PORTABLE ENGINES. Price Lists free by post.
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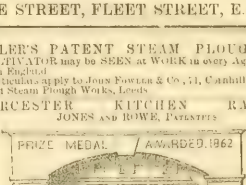
JONES AND BOWE, PATENTEES



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THE SMOKER'S BONBON immediately and effectually REMOVES the TASTE and SMELL of TOBACCO from the Mouth and Breath, and renders Smoking agreeable and safe. It is very pleasant and wholesome. Prepared by a patent process from the recipe of an eminent physician, by SCHOLING & Co., Wholesale and Export Confectioners, Bethnal Green, London, N.E. 1s. per box post free, 14 stamps.—Sold by Chemists, Tobacconists, &c.

DINNEFORD'S FLUID MAGNESIA.—The Medical profession for 30 years have approved of this pure solution of Magnesia as the best remedy for Acidity of the Stomach, Headache, Heartburn, Gout, and Indigestion, and as a mild aperient it is especially adapted for ladies and children. Prepared by DINNEFORD & Co., Chemists, &c., 172, New Bond Street, London, W., and sold throughout the world by all respectable chemists. CAUTION.—See that "DINNEFORD & Co" is on each bottle and red label over the cork.

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. Sold Wholesale and for Export by the Proprietors, Worcester; Messrs. CROSSE & BLACKWELL; Messrs. BARCLAY & SONS, London, &c., and by Grocers and Oilmen universally.

CURE (THIS WEEK) of SEVERE COUGH by DR. LOCOCK'S PULMONIC WAFERS.—Mr. Malcolm, Publisher, *Christian News*, Glasgow, writes, Jan. 13, 1866:—My mother had a very severe cough, and from almost everything without effect, and we were astonished to find that the second night after using the Wafers her cough was relieved. They are also most effective in Asthma, Consumption, and all Disorders of the Lungs. Sold by all Chemists

Horticultural Agent and Valuer.

MR. A. CHANDLER (of the late Firm of CHANDLER & SON, Nurserymen, Walworth), continues to UNDERTAKE SALES and make VALUATIONS connected with Horticulture
30a, Fulham Road, S.W.

Boston Lane, near Turnpike, Hanwell, Middlesex.

To Market Gardeners and others.

TO BE SOLD, the valuable LEASE of a comfortable DWELLING HOUSE, Shops, Stable, Vinery, Greenhouses, and about 14 Acres of rich and highly cultivated MARKET GARDEN GROUND, well stocked with the choicest Apple, Pear, Plum, Cherry, Walnut, Wall and other fruit trees; Gooseberry and Currant Bushes, Asparagus Roots, &c. The whole held on Lease for 21 years from September 29, 1865, at the very low Rent of £50 per annum.
For further particulars, cards to view, &c., apply to Messrs. BARNES & SONS, Surveyors, &c., Kilburn, Middlesex, N.W.

Tothill, Plymouth.—To Gardeners and others.

TO BE LET, by Tender, for a term of 7 or 14 years, from Christmas, 1866, all that MESSTAGE or DWELLING HOUSE, GARDEN, and PIECE of LAND, situate near Tothill, in the Parish of Charles, Plymouth, now in the occupation of Mr. James Wood, Gatherer and Seed Man, as Tenant, containing by admeasurement in it or its appurtenances. The above has been for many years occupied as a Market Garden, is well suited for the purpose, and is well supplied with Spring Water. The Tenant will be required to purchase, at a valuation by a competent person to be agreed upon between himself and the Tenant, the Growing Crops, Implements, and also the Stock of Plants, Greenhouses, and Forcing and Potting-houses on the Premises, being allowed to remove the latter at the expiration of his Term.
Tenders for taking the above Premises must be left at the Offices of Mr. LEAMAN, Solicitor, Argus Insurance Office, Courtenay Street, Plymouth, to whom the terms and conditions on which they are to be Let may be seen, and in the meantime the Tenant will show the Premises on application.
The Setter is not to be required to accept the highest Tender.
Argus Insurance Office, Plymouth.—September 16.

Kingsland, Middlesex.

TO BE SOLD, in consequence of the ill-health of the Proprietor, the LEASE and GOODWILL of the KINGSLAND NURSERY, with Convenient Dwelling, and Range of Pits. Apply on the Premises, Kingsland Green, N.E.

To Seedsmen, Potato Growers, &c.

TO BE LET, till Michaelmas, 1867, about 60 ACRES of productive ARABLE LAND in Lincolnshire. Immediate possession.
For terms apply to Messrs. DRIVER & Co., Auctioneers, Surveyors and Land Agents, 4, Whitehall, S.W.

Barnes, Surrey.

To Market Gardeners and Others.

TO BE LET, on LEASE for Seven Years from Michaelmas last, about 30 ACRES of valuable and rich MARKET GARDEN GROUND, situate on the road to Castelnau Villas, near Hammersmith Suspension Bridge.
For particulars as to Rent, &c., apply to Messrs. SHEPHERD & NEWTON, Solicitors, 10, Southampton Street, Bloomsbury, W.C.; or to Messrs. BAKER & SONS, Surveyors, &c., Kilburn, Middlesex, N.W.

TO BE LET, with Immediate Possession, in consequence of the death of the late Occupier, the PONTEFRACT NURSERY, containing about 12 Acres Nursery Ground, well stocked with Standard Fruit, and Fruit Trees trained against a Paling and Brick Walls. Business carried on for the present proprietor for some years, and is now retiring from business. The Ground is Stocked with a good Collection of Handy Dwarf Fruits, Shrubs, &c. A most desirable opportunity for any industrious Man with a small capital.
For further particulars apply by letter to J. P., Post Office, Roxeth, Harrow, Middlesex, N.W.

Sales by Auction.

Sale of Dutch Bulbs, Standard Roses, Fruit Trees, Conifers, &c.

MESSRS. PROTHEROE and MORRIS will SELL by AUCTION, at 28 and 30, Gracechurch Street, E.C., on THURSDAY, November 29, at 1 o'clock precisely, a Large Class Collection of DUTCH BULBS, including choice named Hyacinths, Tulips, Crocus, Narcissus, Snowdrops, &c.; also a select assortment of handsome STANDARD and DWARF ROSES, comprising the finest varieties in cultivation; also a splendid assortment of fine Evergreens, selected FRUIT TREES of the newest varieties, &c.; Hardy AMERICAN PLANTS, beautifully furnished with Bloom and Berry, &c.
May be viewed Mornings of Sale. Catalogues had at the Rooms, and of the Auctioneers and Valuers, Ansell, Nurseries, Leytonstone, S.E.

Consignment of Plants from Ghent.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY, November 27, at half-past 12 o'clock precisely, 200 CAMELLIAS, 200 INDIAN AZALEAS, 50 HARDY HYBRID RHODODENDRONS, 100 HARDY AZALEAS, 50 PŒONIES, 150 STANDARD ROSES, 200 GLADIOLUS GANDAVENSIS, 50 ACERS, 50 GLAZINE SPIRÆAS, &c.
On view the Morning of Sale, and Catalogues had.

Consignment of Plants from Holland and Ghent.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, November 28, at half-past 12 o'clock precisely, a large Consignment of IMPORTED PLANTS, comprising STANDARD and DWARF ROSES, and SPECIMEN CONIFERS from Holland: Camellias, Azaleas, Rhododendrons, Erics, and Lilacs from Belgium; Hardy and Ornamental Shrubs from Middlesex, and Pyramid and Dwarf Fruit Trees from France.
On view the Morning of Sale, and Catalogues had.

A Rare Chance for Nut Planters.

VINE COTTAGE, GERRARD'S CROSS, BUCKS.
HOOK'S celebrated SEEDLING NUT TREES, and other FRUIT TREES, &c., in convenient Lots.

MR. G. C. HETHERINGTON is favoured with Instructions from Mr. W. Hook to SELL by AUCTION, at Vine Cottage, Gerrard's Cross, on TUESDAY, December 27, at One o'clock precisely, in consequence of the number of Lots, about 1000 Hook's celebrated SEEDLING NUT TREES, the finest bearers ever introduced; 100 He's well-known SEEDLING COBS, and 100 of the renowned NEW KENTISH COBS. These Seedlings are from the very best growth; notwithstanding Black Currant Trees; a number of young Damson Trees; a quantity of fine Espalier Trees; about a Hundred of Select Gooseberry Trees, Seedling Runners, Hundreds of Potatoes, known as the Farmer's Glory; two Stacks of Dry Fagg; a powerful Mare, suitable for a Market or other Cart; several strong Harvest Hacks, &c.
Catalogues may be had six days previous to the Sale of Mr. Hook, Gerrard's Cross; of Mr. Ebbage, Printer, Uxbridge; and at the Auctioneer's Offices, 136, Gower Street, London; and High Street, Eton, Bucks.

Putney Road, Putney.

To Market Gardeners and Others

MR. W. T. ATWOOD will SELL by AUCTION, by direction of Mr. Dailey, on the Premises, Putney Road, on TUESDAY, November 27, at 12 o'clock precisely, the LIVE and DEAD STOCK, comprising a Capital Inch Wheel Spring Market Van complete, a neat New Inch Market Cart, Lissett's Tail Ladder, Long Dung Carts, Timber Carts, Set of Hand Rabbits, Two Carts, Iron Wheels, Pumps, Harness, Ewan's, Barrows, Tools, Watering, quantity of Baskets, Crockeryware, Machine, Set of Harness, Heaps of good Manure and Litter, Seeds, and Cart Timber, Firewood, Old Iron, and Sundries.
May be viewed the day before and Morning of Sale. Catalogues had on the Premises, and of the Auctioneer, Mortlake, Surrey.

Taunton, Somerset.

To Nurserymen and Others

Important Sale of a Very Valuable Nursery and Stock.

MR. BARRAGE will SELL by AUCTION at the Nursery, a THURSDAY, November 29, at 12 o'Clock noon, (unless the whole shall be previously disposed of by Private Contract), the Nursery Stock and Premises will be then produced, as an One Lot, all the Ground cultivated and occupied NURSERY, situated in the Parish of Taunton-St. James, in the Occupation of Mr. North, the Lessee, comprising about 22 Acres of Land, together with the Valuable Stock in the same. Nursery, including Fine Evergreens, Coniferæ, Shrubs, Ornamental Trees, Standard Fruit Trees, Grafting Cuttings, Stocks, Quinces, Fruit Trees, Grafted, Budded, and Inarched Stocks, beautiful specimen Clumps and other Articles, Green and Variegated Hollies, beautiful specimen Clumps and other Articles, Green and Variegated Box, Westmarsh, Pines, Cupressus, Standard, Dwarf, and Pyramidal, and Market Apples, Pears, Plums, Cherries, Nectarines, Apricots, Peaches, Vines, Gooseberries, Currants, and Raspberries. Also the Herb tree, Evergreen, Privet, and Thorn Hedges, Quick, Privet, Beech, Hornbeam, Pines, and Firs, including the Plants and Stock thereon, containing a Splendid collection of almost every description of Fruit. The Nursery is now in a high state of cultivation, and a most profitable business may be carried on.
The greater portion of the Nursery is held under a lease for 21 years, commencing from the 25th of March, 1864, and determinable at the end of the 14th year, by either landlord or tenant, subject to the payment of the yearly rent of £60, and the remaining part is held under a yearly tenancy, subject to the annual rent of 20s., and the one will be for all the estate and interest of the present lessee in such tenancies.
The present affords a rare opportunity to persons who are desirous of taking a thoroughly good Nursery.
To view the Nursery and Stock application may be made on the premises on any day between the hours of 9 and 1, and for further particulars apply to the Auctioneer, High Street, Bridgwater; or to Messrs. READ & COOX, Solicitors, Bridgwater.

THE AERIAL CHAIR.

WONDERFUL APPLICATION OF THE PRINCIPLE OF OSCILLATION.

FOR THE GARDEN, CONSERVATORY, AND NURSERY.

Entirely "Self-acting," the operator requiring no assistance whatever, and so easy of motion that a Child can propel itself to any desired altitude without the slightest danger of accident. It has been pronounced a marvel of ingenious mechanism, and cannot fail to become a necessary adjunct to every well-appointed Garden and Nursery, while for Invalids it will be hailed as a means of recreation and hygienic exercise never before offered them. They are very easily fitted up in any ordinary-sized room, and can be attached to the ceiling by means of a few common iron bolts. The only instructions necessary for the use of this invention are, that the person upon being seated simply presses the feet against the footboard, which will at once set the Chair in motion.

For Gardens or Lawns the "AERIAL CHAIR" can be secured to the branch of a tree or to the framework of an ordinary Swing.

Manufactured of Wrought Iron, in three different sizes, to wit —

Size No. 1, suitable for Children ... ... price £2 2s. | Size No. 2, suitable for Youths ... ... £2 10s.

No. 3, suitable for Adults ... ... £3 3s.

These prices include packing, but not carriage. The suspending Rods are about 8 feet in length. Extra rods can be obtained if required, at 2s. 6d. per foot. The Seat to the "AERIAL CHAIR" is of wood, and movable. Iron Seats, in imitation of Cane, can be had at 15s. each.

Attached to the head-piece of the "AERIAL CHAIR" is a brass label, with the following words:—"AERIAL CHAIR, secured by ROYAL LETTERS PATENT. MANUFACTURED BY PEYTON & PEYTON, METALLIC BEDSTEAD MANUFACTURERS, BIRMINGHAM. CHARLES POMEROY BUTTON, PROPRIETOR, NOS. 142 AND 143, CHEAPSIDE, LONDON."

TRADE MARK—"AERIAL CHAIR."—TERMS CASH.

All Orders must be accompanied with a City Reference or Remittance to

CHARLES POMEROY BUTTON, Nos. 142 & 143, CHEAPSIDE, LONDON, E.C.

Editorial Communications should be addressed to "The Editor." Advertisements and Business Letters to "The Publisher," at the Office, 41, Wellington Street, Covent Garden, London, W.C.
Printed by JAMES MATTHEWS, of the Office, No. 41, Wellington Street, Parish of St. Paul's Covent Garden, in the City of London, and published by the said JAMES MATTHEWS at the Office, No. 41, Wellington Street, Parish of St. Paul's Covent Garden, in the said County.—SATURDAY, NOVEMBER 24, 1866.

THE GARDENERS' CHRONICLE
AND
AGRICULTURAL GAZETTE.

A Newspaper of Rural Economy and General News.

No. 48.—1866.] SATURDAY, DECEMBER 1. {Price Fivepence / Stamped Edition, 6*d*.

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ROYAL HORTICULTURAL SOCIETY, SOUTH KENSINGTON.
NOTICE.—A MEETING of the FRUIT and FLORAL COMMITTEES will be held on TUESDAY NEXT, December 4, at 11 o'Clock; LECTURE at 3 o'Clock

NATIONAL HORTICULTURAL EXHIBITION, 1867.—The above EXHIBITION will open at Manchester on JUNE 7, and continue till JUNE 15.
Schedules, &c., may be obtained on application to Mr. B. FINDLAY, Curator, Botanic Garden, Manchester; or from the undersigned
HENRY WHITWORTH, Secretary.
Carlton Buildings, Cooper Street, Manchester.

Genuine Garden and Agricultural Seeds.
JAMES CARTER AND CO., SEED FARMERS, MERCHANTS, and NURSERYMEN, 237 & 238, High Holborn, London, W.C.

JAMES FAIRHEAD AND SON, SEED GROWERS and MERCHANTS, 7, Borough Market, London, S.E.
New and Genuine AGRICULTURAL, GARDEN, and FLOWER SEEDS. Special prices and advantageous offers on application.

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JOHN HOLMAN, NURSERYMAN and SEEDSMAN, Burgess Hill, Sussex.

JEAN VERSCHAFFELT'S New Horticultural Establishment, 134, Faubourg de Bruxelles, Ghent, Belgium. CATALOGUES free on application.

Genuine Garden, Agricultural, and Flower Seeds.
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SPECIAL PRICED LIST of NEW SEEDS, in English weights and money, post free on application.

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WM. PAUL'S PRICED DESCRIPTIVE CATALOGUE of ROSES is now ready, post free on application.
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WANTED, STANDARD HYBRID PERPETUAL ROSES, by the 100 or 1000. Address, stating lowest price, to X. Y. Z., *Gardeners' Chronicle* Office, W.C.

Just published, the Second Edition of
CULTURAL DIRECTIONS for the ROSE.
By JOHN CRANSTON, King's Acre Nurseries, near Hereford.
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Notice.
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CALCEOLARIA, Herbaceous, of choicest strains, established plants in small pots, 20*s.* per 100.
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FINE DOUBLE HOLLYHOCKS, a magnificent strain, 20*s.* per 100; BOX EDGING, 3*s.* per dozen yards: BOX TREES, in sts. or 24 ins., 18*s.* per 100. Terms cash.
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T. J. BOOTH can supply extra strong Planting and Fruiting CANES in variety. Prices on application.
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JOSEPH MEREDITH has a beautiful Stock of VINES for Sale, propagated from Vines which have borne the fruit which has taken from time to time so many First Prizes.
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ALICANTE, LADY DOWNES', and MUSCAT of ALEXANDRIA.
J. MEREDITH has a splendid Stock of the above sorts for Planting.
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FOR SALE, 70 PINE PLANTS, some Fruiting and Successions; also some RHODODENDRONS and RHODODENDRON ARBORETUM, and five others, best varieties; also EIGHT MUSCAT HAMBRO' VINES.
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CASTLE KENNEDY FIG.—Plants of the above may now be had at 10*s.* 6*d.* and 21*s.* each; the usual discount to the Trade. PETER LAWSON & SON, Edinburgh and London.

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TEN THOUSAND handsome-grown SPRUCE FIR, from 3 to 5 feet. Price per dozen, 100 or 1000, on application to
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Strong Quick.
H. AND F. SHARPE have for Sale a fine Lot of 3-yr. Transplanted QUICK, 3 to 4 feet high, and well-rooted. Price very moderate.
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FIVE MILLION Transplanted QUICKS, of superior growth. Samples and prices on application to
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SPLENDID LARCH, 3 to 4 ft., at unprecedented prices; HAWTHORN QUICK, do. do.; AVENUE TREES; large EVERGREENS and CONIFERS; magnificent TRAINED PYRAMID and STANDARD FRUIT TREES. Special prices given.
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THE EARLIEST IN CULTIVATION.
2*s.* per quart.

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PRESIDENT POTATO (Webb).
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WHEELER'S MILKY WHITE is the BEST of all POTATOS

THE ORANGEFIELD DWARF PROLIFIC TOMATO. WILLIAMS' "ALEXANDRA" BROCCOLI.
To be had of all Seedsmen, and of
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SUTTON AND SONS can supply Seed of the TRUE STOCK of RAPHANUS CAUDATUS, in packets at 1*s.*, 2*s.* 6*d.*, and 5*s.* each. Free to the Trade on application.
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EXTRA STRONG SEAKALE and ASPARAGUS for FORCING, exceedingly fine and clean grown.
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GEO. CLARKE has many Thousands of the finest Quality to offer this season. Price per 25 7*s.* 6*d.*, 100, and 1*s.* per 100.
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EVERY GARDEN REQUISITE kept in Stock at
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Prices according to number required, on application to
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Finest Named Hyacinths.
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SUPERB LILIES, in 70 finest varieties. BULB CATALOGUE sent free.
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SUTTON'S LIST, containing the sorts most worthy of cultivation, including those to which Prizes were awarded at the Crystal Palace and other Shows, may be had gratis and post free.
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TREES and PLANTS of all sorts and sizes in very great quantity, of best quality and at moderate prices.
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THE QUEEN, without any exception the best WHITE RHODODENDRON yet raised. Robust grower, deep green foliage, late and free flowering, trusses large, full, compact and firm, smooth, finishing short and stiff, cup-set white, suffused with soft rosy mauve, changing to the purest white, clear as wax-set or wax-like, of very quaint shape in substance, resembling one of the petals of the Water Lily. Remains in bloom a long time, and most other Rhododendrons, a peculiarity probably accounted for by its hitherto refusing to produce seed, an advantage all Rhododendron growers will appreciate. Those who visited the Chiswick Fruit Exhibition will remember the transcendent superiority of The Queen over every other white Rhododendron exhibited. It is expected that The Queen will flower in pots in 1867, and as a matter of duty we wish to enjoy her regal presence, should apply at once, as all orders will be executed in rotation. The price will be 63s. 6d. each, and the Trade with three loud plants extra for three ordered. It need excite no surprise that these can be procured by the purchaser so early, when called forth the anxious enquiry of certain Hamburgh Mrs. Hence a story undistressingly unruinted in the Trade that The Queen is not a novelty but an old sort, shown under a new name. The Advertiser would be glad to be informed when, or where, and under what name this Rhododendron was been seen, and in whose possession it is to be found. The whole individual stock is in the hands of CHARLES NOBLE, Bagshot, Surrey.

VIOLA CORNUTA, the True Stock.—New Seed of the above now ready, in packets 6d., 1s., 2s. 6d., and 5s. Price to the Trade on application.

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CEDRUS DEODARA.—Fine Plants for immediate effect, from 5 to 6, 7, and 10 feet high, stake to transplant, at 1s. per foot. Some extra-sized specimens, 15 to 20 feet, at 2s. per foot. Most of the plants offered are in Large Pots, making their removal certain beyond a doubt.

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WM. CUTBUSH AND SON beg to acquaint their numerous Patrons that they have received their usual Consignments of Choice HYACINTHS, TULIPS, CROCUSES, &c.

PRICED DESCRIPTIVE CATALOGUE post free on application.

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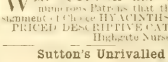

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TULIPS, Choice Bizarre and Bybloemen, mixed, 2s. per 100.

EXTRA STRONG TOBACCO PAPER, 4d. per lb.

TOBACCO CORD, extra strong, free from sulphur, the most effectual and economical mode of fumigating, 1s. 6d. per lb.

TOBACCO WATER: strength, 2½ lb. duty-free Tobacco to the gallon, at 2s. 6d.

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Now Ready.

NEW and HARDY CLIMBING PLANTS, well adapted for Covering Verandahs, Trellis Work, Walls, Fences, Pillars, and Festoons; also a good Hardy and Permanent Bedding Plant—

CLEMATIS RUBELLA. Very red, velvety scarlet, the almost coloured Clematis in cultivation. Awarded 1s. 6d. per lb.

CLEMATIS PRINCE OF WALES. Large flowers of a rich deep violet purple, with red bars down centre. First-class Certificate R.H.S.

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" Lee, J. & C., Hammersmith.
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" Oddy, G., H. J., Shrewsbury.
" Peed, John, Son, North-ampton.
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" Shaw & Co., & Manchester.
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Strong Plants, with blue 1½ to 2½ feet, 21s. each. The usual allowance to the Trade.

Coloured Drawings, by Andrews, for 24 stamps.

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VIOLET, QUEEN of VIOLETS. This variety has proved itself to be the most beautiful Double Violet ever sent out in every respect. It is quite hardy, an abundant bloomer, and has a most delightful fragrance. The flowers are unequalled Colour white, tinged with violet; in size and shape of flower it resembles very much the well-known large double-blossomed Cherry. It has received the highest testimonials. See *Gardeners' Chronicle*, April 28, 1866, page 404, and *Florist*, Magazine, April 28, 1866, p. 156.

The undermentioned Trade Firms have been supplied in quantity:—

Abbott, Mr. E., Ardleigh.
Backhouse & Sons, Messrs., York.
Barr & Sugden, Messrs., Covent Garden.
Bause, Mr. M. S., Sudbury, Suffolk.
Boshell, Mr. F., Borough, London.
Bunyard & Sons, Messrs., Maidstone.
Carter & Co., Messrs. J., Holborn.
Cuff, Mr. R., Colchester.
Cunningham, Mr. E., Belfast.
Cox, Mr. E., Newport, Isle of Wight.
Cobbold, Messrs H & C., Woking, Surrey.
Cutbush, Mr. J., Tunbridge Wells.
Davies, Mr. J. T., Ellesmere.
Davies, Messrs. James & Co., Wavertree, Liverpool.
Dicks and Sons, Messrs. F. & A., Chester.
Dickson, Messrs. James, Chester.
Dillistone & Sons, Messrs., Sturmer.
Dillistone, Mr. J., Saffron Walden.
Dillistone, Mr. James, Royston.
Downie, Laird, & Laing, Messrs., Edinburgh and London.
Dugmore, Mr. A. M., Rodney Exeter, Mr. J. W., Norwich.
Fenton, Mr. C., Erdington, Birmingham.
Fisher, Holmes, & Co., Messrs., Sheffield.
Goswell, Mr. A., Southend.
Gibbons, Messrs. T. & Sons, Blandcote, Notts.
Hanbridge, Mr. F., Edinburgh.
Henderson, Messrs. W. G., St. John's Wood, London.
Harrison, Mr. J., Darlington.
Hume, Mr. R. J., Gloucester.
Kirtland, Mr. J. Downs-Somerton.
Knight, Mr. W. B., Battle, Sussex.
Lee, Messrs J. & C., Hammersmith.
Lucombe, Pince, & Co., Messrs., Exeter.
Meikle, Mr. J., Folkestone.
Morse, Mr. W., East Dereham.
Morris & Mr. R., Elgin, N.B.
Oxbrough, Mr. H. J., Saxmundham.
Paul, Mr. Wm., Waltham Cross.
Parker, Mr. R., Tooting.
Parsons, Mr. J., Bonnington.
Pilgrim, Mr. Ed., Cheltenham.
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Poisford & Son, Messrs., Bruton.
Perry, Mr. F. J., Aylesbury.
Press, Mr., Hornsey, London.
Rollisson & Son, Messrs., Tooting.
Scarff & Mein, Messrs., Kelso.
Smith, Mr. R., Worcester.
Smith, Messrs. F. & A., Bulwich.
Sweater & Co., Messrs., Heavitree, Exeter.
Sutton & Sons, Messrs., Reading.
Stegman, Mr. A., Thornton Heath.
Tebo, Mr. E., Bath.
Tomkins, Mr. F. H., Birmingham.
Veitch, Messrs J. & Sons, Chelsea.
Wait, Mr. R. S., Holt-wood.
Webb, Mr. R., Reading.
Watt, Mr. H., Burnley.
Wait, Mr. J., Tetbury.
Wood & Sons, Messrs., Maresfield, Sussex.

Including purchasers ordering now can be supplied in extra strong Pots 14 days. Flowering Plants, 21s. each; 12s. per dozen; 42s. per 100. The usual discount to the Trade.

A List of additional Trade Customers will be published in future Papers. A CATALOGUE, containing List of names, 29 other varieties of Violets, &c., free on application. Post Office Orders pay. to CHARLES ELLIOTT, Malvern.

WM. BULLIMORE, Market Nursery, Shoe Hollingham, Essex.

New Catalogue of Plants, Dutch Bulbs, &c.

ROBERT PARKER begs to announce that his NEW CATALOGUE, containing Select Descriptive and Priced Lists of New, Rare, and beautiful Greenhouse, Hardy and Stove Plants, Hardy Ferns, Fruit Trees, Grape Vines, Roses, Rhododendrons, Sweet Violets, &c., Amaryllis, Crocuses, Cyclamens, Gladioli, Hyacinths, Liliums, Narcissus, Tulips, and other Bulbs, is now published and will be forwarded to applicants

Exotic Nursery, Tooting, Surrey, S.

RASPBERRIES.—Cornwell's Seedling, 12s. per 100; Carter's Prince of Wales, 10s.; Seleter's Super Pobles, 2s.; Carter's Prolific, 10s.; Red Prolific, 8s.; Double Bearing, 8s.; Evans' White, 12s.

STRAWBERRIES.—British Queen, Admiral Dundas, Sir Charles Napier, Eleanor, Oscar, Rifleman, Myatt's Eliza, Keens' Seedling Princess of Wales, Black Prince, 2s. per 100; 15s. per 1000.

Strong bearing GOOSEBERRIES and CURRANTS, 16s. to 20s. per 100; ASPARAGUS, 2-year, 2s. 6d.; 3-year, 3s.; 4-year, 4s. per 100

ROMNEY, late GEORGE CORNWELL & Co., opposite Red Lion, Barnet.

W. VIRGO AND SON have a large Stock of the undermentioned FRUIT, FOREST, and other TREES to offer this season, viz.:—

Apples	Alder	Witch
Cherries	Ash	Quick (strong trans-planted)
Plums	Chestnut (Spanish)	Thorn and Portugal Laurels
Pears	Hornbeam	
Peaches and Nectarines	Hazel	
	Larch and Scotch Fir	Privet
Forest Trees	Oak (British)	Yew, &c.

Samples and Prices can be had on application at The Nursery, Woburn, near Guildford, Surrey

To Market Gardeners and Orchardists.

DONALD and SON, of the Goldworth Nurseries, Woking, Surrey, have an unusually large stock of Standard, Half-standard, and Dwarf APPLES, PEARS, PLUMS, and CHERRIES, of the most choice and popular kinds, which they are now prepared to offer in quantities, at a moderate reduction on the usual Trade prices. Having grown for many years a portion of the land, the Leases on which have expired, A PRICED LIST may be had on application, and early orders are requested

Dwarf-trained Trees by the 1000, 100, or dozen.

APPLES, PEARS, PLUMS, CHERRIES, PEACHES, and NECTARINES. Fine, flat, well-trained, of best quality and true to name.

RICHARD SMITH, Nurseryman and Seed Merchant, Worcester.

RICHARD SMITH'S FRUIT LIST contains a Sketch of the various Forms of Trees, with Directions for Cultivation, Soil, Drainage, Manure, Pruning, Lifting, Cropping, Treatment under Glass; also a Selection of Fruits, classified, form, skin, colour, flesh, flavour, use, growth, duration, season, price, &c. Free by post for one stamp.

RICHARD SMITH, Nurseryman and Seed Merchant, Worcester.

Fifty Acres of Fruit Trees.

APPLES, PEARS, PLUMS, CHERRIES, PEACHES, NECTARINES, and APRICOTS in every form desired for Fruiting.

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Orchard-house Trees Fruiting in Pots.

PEACHES, NECTARINES, APRICOTS, CHERRIES, PLUMS, PEARS, APPLES, VINES, and FIGS.

RICHARD SMITH, Nurseryman and Seed Merchant, Worcester.

PYRAMID APPLES, PEARS, PLUMS, CHERRIES. Beautiful Trees for Garden or Orchard Houses.

RICHARD SMITH, Nurseryman and Seed Merchant, Worcester.

FRUIT TREES, for Walls and Espaliers.—Upwards of 50,000 to select from, carefully trained, and in the healthiest condition for planting

RICHARD SMITH, Nurseryman and Seed Merchant, Worcester.

ROSES.—Extra fine Standards, at from 15s. to 18s. per dozen; 100s. per 100.

Do. Dwarf, extra fine, at from 9s. to 12s. per doz.: 63s. to 84s. per 100.

Do. New Sorts of 1866, 18s. per doz.

DESCRIPTIVE LIST on application

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Roses, Fruit Trees, Conifers, Forest Trees, &c.

JOHN CRANSTON begs to direct attention to a large and superior Stock of ROSES, FRUIT TREES, CONIFERS, FOREST and ORNAMENTAL TREES, &c.

His Nurseries extend over upwards of 50 Acres, situated in the centre of the county of Hereford (which is acknowledged to possess the finest soil and climate in England), and is well stocked with Trees of every description.

PRICED LISTS will be forwarded on application, and to Purchasers of large quantities Special and most advantageous Prices will be given.

Planting undertaken by Contract or otherwise.

Nurseries, King's Acre, near Hereford.

FRUIT TREES.—The finest collection in England. 2000 sorts are grown in all manner of forming, and are free from insects, mealy-bug, or chlorosis, with which trees in some Nurseries on calcareous soils are affected. Trees to all such should be avoided, for planting in such soils they are never cured.

A 92-page CATALOGUE and large Supplement full of information gratis, on application to J. SCOTT, The Nurseries, Merrist, Surrey.

WALL-TRAINED TREES of BEARING SIZE.—Our Wall-Trained Fruit Trees this season are very fine, and include PEACHES, NECTARINES, APRICOTS, and FIGS, suited for planting in bases for immediate Fruiting. An inspection is respectfully invited

T. JACKSON & SON, Nurseries, Kingston, Surrey.

Extra strong Trained Fruit Trees.

SALTMARSH AND SON have a large Stock of the above to offer at moderate prices, consisting of Dwarf and Standard trained PEACHES, NECTARINES and APRICOTS; Dwarf trained MORELLO and MAYDUKE CHERRIES, PLUMS, PEARS, &c., all true to name, and comprising the best varieties in cultivation. CATALOGUES, with full particulars and price on application

Moulsham Nurseries, Chelmsford

A Quarter of a Million of Fruit Trees.

THOMAS WARNER begs to remind intending Planters and the Trade, that his Nurseries, which occupy upwards or 70 acres, contain the largest and best assortment of Dwarf and Standard Pyramids, Bushes, and Espaliers, of Evergreens, Ornamental Trees, Roses, &c., &c. All in a high state of cultivation. An inspection is respectfully invited

CATALOGUES, for Retail, may be had free on application

The Nurseries, Leicester Abbey, one mile and a half from the Midland Railway Station.

Fruit Trees.

WOOD and INGRAM wish to call the attention of Planters and the Trade to their large stock of the following, which they are prepared to supply at very moderate rates, according to the quantity taken:—

APPLES, Standards, Half Standards, and Dwarfs.

APRICOTS, Dwarf Maiden, cut back, and trained.

CURRANTS, fine bushy plants, all the best kinds.

GOOSEBERRIES.

GRAPE VINES, for Eyes, Planting and Fruiting Canes.

Lawns, well-rooted, Canes 1 inch round.

NUTS and FILBERTS, and sizes up to 4 to 5 feet.

PEACHES, Dwarf Maiden, cut back and trained.

PEARS, Standards, Half Standards, and Dwarfs.

PLUMS, Standards, Half Standards, and Dwarfs.

CATALOGUES and Prices on application.

The Nurseries, Huntingdon

County of Cork.

FOREST TREES.—20,000 LARCH, 4 and 5-yr. old, from 2 to 3 feet high, two and three times removed, and grown in good soil on an open exposure, although Hardy and well-rooted. Quick transit to Wales and South of England. For particulars apply to ARTHUR KENNY, Nurseries, Newmarket, Co. Cork.

The Finest New Hardy Plant of the Year.

PAUL'S NEW DOUBLE SCARLET THORN, awarded First-class Certificate Royal Botanic Society and International Exhibition.

"Deep carmine-red, double and vigorous, far surpassing the old double THE."—*Editor of Gardeners' Chronicle*, May 24, 1866.

STANDARDS and PYRAMIDS, 10s. 6d. each. See PAUL & SON'S CATALOGUE.

Old Cheshunt Nurseries, N.

LARCH, &c., at the Nursery of the late David A. Reid, Park Attwood, Bewdley, Worcestershire:—LARCH, 1½ to 2 feet, 10s. per 1000; 2 to 3 feet, 12s. per 1000; 2½ to 3½ feet, 15s. per 1000; 3 to 4 feet, 16s. per 1000; PEAR STOCKS, 2½ to 5 feet, 15s. to 20s. per 1000. LISTS of other TREES sent on application. Apply, with reference or remittance, to

JAMES RIDDELL, Steward, Park Attwood, near Bewdley

To Gentlemen and Planters.—Surplus Stock.

LARGE Transplanted EVERGREENS and CONIFERS, from 4 to 8 feet high; 20,000 COMMON LAURELS, 2 to 4 feet; 500,000 ASH, from 2½ to 4 feet; One Million LARCH, from 3 to 5 ft.; One Million HAWTHORN QUICK, from 2 to 4 feet; large APPLE TREES, for Orchards; PYRAMID and TRAINED FRUIT TREES, in full bearing.

CATALOGUES and Special Prices may be had on application.

GEO. DAVISON, White Cross Nurseries, Hereford.

Forest Trees, &c.

HENRY MINCHIN has the following to offer Cheap, all Transplanted and well rooted:—

SPRUCE FIR, from 2 to 3 feet | ASH, from 3 to 5 feet.
LARCH FIR, from 3 to 5 feet |
PINUS AUSTRIACA, 4 to 5 ft. Large Specimen and other CONIFERS.

The Nurseries, Hook Norton, Oxon.

Tansley Nurseries, near Matlock, Derbyshire.

JOSEPH SMITH, SEN., invites Planters and the Trade to inspect his Nursery of 80 Acres of high land. The soil is of a fibrous nature, and the Plants taken up with excellent roots, such as to ensure the best success in their removal.

The Nursery contains many Hundred Thousands of RHODODENDRONS, COMMON and PORTUGAL LAURELS, BOX, BROOMS, BERBERIS, HOLLIES, PRIVETS, YEWS, &c. The FOREST TREES are very extensive, of all the leading kinds; there are 15 Acres of LARCHES, of different sizes, and all others in proportion. Prices moderate, which can be had on application as above.

To the Trade.

WINTER and SPRING-FLOWERING PLANTS.—Our stock of Soft-wooded ERICAS, EPACRIS, AZALEAS, and New Holland Plants is extra fine this year, and being much greater than we can house, we are selling at unusually low prices.

T. JACKSON & SON, Nurseries, Kingston, Surrey (adjoining the Railway Station), S.W.

To the Trade.

FOR SALE, in consequence of the expiration of a Lease, a large quantity of STOOLS, surrounded with fine layers, of Mulberries, Limes, Planes, Magnolias, Azaleas, Lilacs, Aucubas, &c; also quantities of various sized Limes, Mulberries, Poplars, Laburnums, Planes, Scarlet Thorns, Lilacs, Aucubas, Euonymus, Magnolias, White Rhododendrons, Althæas, Ivies, Figs, Grape Vines, fine standard and trained Fruit Trees of all sorts; 75 yards of clipped Beech hedge, 5 feet high, 2 feet wide, and other general Nursery Stock, which may be seen and selected from daily at

I. FRYER'S Clarendon Nurseries, Camberwell New Road, S.

BLACKTHORN, LARCH, and SPRUCE, LARCH, 3 to 4 feet. SPRUCE, 3 to 4 feet.
4 to 6 feet. BLACKTHORN, 1½ to 2 feet
SPRUCE, 2 to 3 feet. " 2 to 3 feet.

JOHN PERKINS, Sen., having an immense stock of the above, will be glad to give special quotations to any parties who contemplate planting, on application to

82, Market Square, Northampton.

To the Trade.

JAS. GARAWAY AND CO. offer

Alder, 1½ to 2 & 2 to 3 transplanted	Chestnut, Horse, 1 to 2 feet, transplanted
Ash, 1, 2, and 3-year Seedlings	Elm Wych, 1 to 2, 2 to 3, and 3 to 4 feet, transplanted
Ash, transplanted, 2 to 3 feet	Larch, extra fine, 1 to 1½, 1½ to 2, 2 to 3, and 3 to 4 ft., transplanted
Aucuba japonica, berried	
Beech, 1 and 2-year Seedlings	
Birch, 1 to 2 feet, transplanted	

FRUIT TREES.

Apples, very fine dwarf-trained	Peaches, very fine dwarf-trained
Apricots, do. and standard-trained	and standard-trained
Cherries, do., do.	Pears, very fine dwarf-trained
Nectarines, do., do.	Plums, do.

Prices on application.

JAS. GARAWAY & CO., Durdham Down Nurseries, Bristol.

PLANTING.

WILLIAM PAUL

(SON and SUCCESSOR to the late A. PAUL),

Begs to call attention to the following ARTICLES, to the CULTURE of which his NURSERIES of FIFTY ACRES are principally devoted. The quality of the Stock is, he believes, equal to any in the Kingdom, and the prices low as possible.

ROSES.

STANDARDS, 15s. per dozen, and upwards	CLIMBERS, 6s. per dozen, and upwards
DWARFS, 9s. " "	FORCING, 24s. " "

First and Second Prizes were awarded to his Collections at the International Horticultural Exhibition, and they have taken Prizes wherever exhibited.

FRUIT TREES.

Standard and Half-Standard Trained PEACHES and NECTARINES, very fine, 7s. 6d. to 10s. 6d. each.
Standard APPLES, PEARS, and PLUMS, 1s. 6d. to 2s. each.
Standard WALNUTS, very fine, 2s. 6d. each.
PYRAMIDAL APPLES, PEARS, CHERRIES, and PLUMS, 1s. 6d. to 2s. 6d. each.
Do. do., Fruiting Trees, 2s. 6d. to 5s. each.

Dwarf APPLES, PEARS, CHERRIES, and PLUMS, 1s. to 1s. 6d. each.
Dwarf-trained PEACHES, NECTARINES, and APRICOTS, 3s. 6d. to 5s. each.
Dwarf-trained APPLES, PEARS, CHERRIES, and PLUMS, 3s. 6d. each.
FILBERTS, of sorts, 4s. to 9s. per dozen.
GOOSEBERRIES and CURRANTS, 3s. to 4s. per dozen.

These are in fine health, and may be relied on as correct to name.

GRAPE VINES.

PLANTING CANES, all the best sorts, 2s. 6d. each, and upwards.
FRUITING CANES, 7s. 6d. each, and upwards.

Between 1000 and 2000 splendid Plants of these are now ready for delivery.

HARDY PICTORIAL TREES for the Decoration of Gardens, Parks, and Pleasure Grounds.—His Collection of these was the only one shown at the late International Horticultural Exhibition, and was universally admired. Collections from 18s. to 42s. per dozen, according to size and rarity.

EVERGREENS and HARDY FLOWERING TREES and SHRUBS.—1000 species and varieties, including the New AUCUBAS, the best and most popular kinds, of various sizes, by the dozen, hundred, or thousand.

WEEPING TREES and CLIMBING PLANTS in great variety.

ZONAL and NOSEGAY PELARGONIUMS.—The original Collection of Beaton's Hybrids, 9s. per dozen; his New Set of last Spring, 1s. 6d. to 3s. 6d. each.

For description and details of the above, see PRICED CATALOGUES, free by post on application. Inspection of the Stock respectfully invited.

All goods delivered free of carriage to London; if a Ton weight of Trees be ordered at one time they will be laid free of charge in the Trucks at any London Goods Railway Station.

PAUL'S NURSERIES, WALTHAM CROSS, N.

AMBROISE VERSCHAFFELT, NURSERYMAN,

GHENT, BELGIUM,

OFFERS THE FOLLOWING NEW PLANTS.

GREENHOUSE.

AZALEA INDICA CRYSTALLINA.—Bright rose salmon colour, finely spotted, very fine form and free bloomer, 12s.

CAMELLIA MRS DOMBRAIN (figured in the "Illustration Horticole").—Beautiful rose, extremely tender, and one of the finest imbricated forms, 12s.

NEW AUTUMNAL CHRYSANTHEMUMS (published in the "Illustration Horticole").—Seven beautiful varieties; the set, 10s.

HARDY.

ALNUS AUREA (the Golden Alder Tree).—This will be one of the finest Trees. It is the common Alnus, with splendid golden leaves, 8s.

PEAR BEURRÉ DE FROMENTEL (figured in the "Illustration Horticole").—One of the best Pears sent out, 8s. This fine Pear obtained several Prizes.

RHODODENDRON ARCHIDUC ETIENNE (lately figured in the "Illustration Horticole").—Beautiful white flowers, with numerous black spots. Good plants, 12s.; strong plants, £1.

HARDY.

RHODODENDRON EXQUISITUM.—Light rose, with large red spots, very fine, 8s.

RHODODENDRON GRATIOSUM.—Lilac rose, very delicate, with large spots, very fine, 8s.

RHODODENDRON MADAME RUDOLPH ABEL.—Great improvement on Rhododendron Prince Camille de Rohan; spots more distinct, very remarkable, 8s.

TEA ROSE ISABELLE SPRUNT (lately figured in the "Illustration Horticole").—One of the best Tea Roses sent out, 8s.

WEIGELA PURPURATA.—One of the most distinct varieties obtained; the blooms are large purplish red, and of much effect, 4s.

GYNERIUM ARGENTEUM FOLIIS VARIEGATIS.—I beg to offer fine well-rooted plants, grown in pots, of this beautiful true variegated Gynerium, which is the good variety sent out by Mr. Rendatler. Good plants, 7s. 6d.; six plants, £2.

The NEW GENERAL CATALOGUE, No. 79, is ready, and may be obtained free by writing to AMBROISE VERSCHAFFELT, Ghent, Belgium. A Coloured Drawing of the New Tea Rose Isabelle Sprunt may be also obtained free.

AMBROISE VERSCHAFFELT recommends his Monthly Publication, the "ILLUSTRATION HORTICOLE." Each Number contains Three Coloured Plates of the best and newest plants. Price 14s. 6d. a year, free. A Specimen Number may be obtained free.

To the Trade.

RHODODENDRON, for Covert or Underwood Planting, or otherwise.—Fine strong Plants, 1 to 2 feet high, of the common varieties, from 12s. to 20s. per 100; 2 to 3 feet, 1 year's growth, cash. Samples sent if required.

Apply to Mr. ELDRIDGE, Nurseryman, Leeds.

Contract Planting. To Noblemen and Gentlemen.

CHARLES SHARTE AND CO., NURSERYMEN, Seedsmen, and Florists, are prepared to make ESTIMATES for the Formation of NEW PLANTATIONS, Covert, Underwood, Park Planting and Filling up of the same.

The best Evergreen Fence or Screen,

Producing IMMEDIATE EFFECT.

JOHN CRANSTON has ready several Thousand AMERICAN ARBOR-VITÆ, 3 to 4 feet, to which the most desirable whereon immediate effect is required. For application to Nurseries, King's Acre, near Hereford.

TO the TRADE and OTHERS.

LARCH, 1,000,000, 2 to 3 feet	OAKS, 250,000, 2 to 3 feet
ALDER, 200,000, 2 to 3 feet	ELMS, 100,000, 2 to 3 feet
SPRUCE, 300,000, 1½ to 2 feet	ASH, 100,000, 2 to 3 feet

LAURELS, LILACS, SYRINGAS, in the finest possible CATALOGUE, with Prices, gratis.

MARTIN & SON, Cheshunt, and No. 7, Market Place, Hull.

TO THE TRADE.

500,000 2-yr. Transplanted QUICKS, 1 to 2 feet
200,000 1-yr. Seedling QUICKS, 6 to 12 inches
50,000 2-yr. CRAB STOCKS, 2 to 4 feet
100,000 2-yr. Transplanted ASH, 2 to 3 feet
2000 RED CHAMPAGNE GOOSEBERRIES
1000 Standard PEARS, 5 to 7 feet stems.

Prices and samples on application to WILLIAM COOKE, Old Nurseries, Donington, Spalding.

To Nurserymen.

WANTED, several Hundred good healthy Plants of the ABIES DOUGLASII (Vancouver's Island kind), from 6 inches to 2 or 3 feet high. Address quantity, size, age, &c., and lowest price delivered at St. David's Station, Exeter, to Messrs. H. & B. LAING, Nurserymen, Exeter.

Planting Season

LARCH (Native and Tyrolese), SCOTCH FIR (True Native), SPRUCE, OAK, ASH, ALDER, BEECH, PRIVET, and all kinds of FOREST and ORNAMENTAL TREES and SHRUBS, ROSES, PERENNIALS, fine specimen ARAUCARIAS and DEODARS, and large TREES for Park Planting, now in fine condition for removal.

CATALOGUES, with sizes and prices, sent free on application to DICKSONS & Co., Nurserymen, Seedsmen, and Florists, 1, Waterloo Place, Edinburgh.

CHARLES NOBLE has a large quantity to offer of the undermentioned, by the dozen, 100, 1000, or 10,000:—

Dwarf ROSES of all the finest kinds, large bushes, 2 to 3 feet high and equally as far through
SPANISH CHESTNUTS, very fine, 1-year
THORN, very fine, 1-year } Sample and
TIMBER OAK, very fine, 1-year. } price if
MANETTI ROSE STOCKS, very fine, 1-year. } required
DEUTZIA CRENATA flore-pleno, very fine, 1-year.

STRAWBERRIES, 2s. 6d. per 1-score 24s. per 100:—

British Queen	Frogmore Late Pine	Oscar
Empress Eugenie	La Constante	Wonderful
Sir C. Napier	Marguerite	Prince Arthur.
Dr. Hogg	Sunningdale Nursery, Bagshot, Surrey	

Game Covert, Forest Planting, &c.

JAMES SMITH offers the following:—

The RHODODENDRONS are the busily well rooted Plants, fit either for Woods or Pleasure Grounds; the LARGE in the best Plants, better qualified to go anywhere. NATIVES, LAURELS, BERBERIS (in sorts), SCOTCH, SPRUCE, and SILVER FIRS, ASH, OAKS, BEECH, BIRCH, PINUS AUSTRIACA, &c., all strong well-rooted plants, a PRICED CATALOGUE of which will be forwarded on application.

LARCH, good stout plants, per 1000—1 to 2 feet, 11s.; 2 to 3 feet, 15s.; 3 to 4 feet, 18s.; 4 to 5 feet, 30s.
RHODODENDRON PONTICUM, bushy, well-rooted plants, 6 to 12 inches, 10s. per 100.
Do. do., 9 to 15 inches, 15s. per 100; 10s. per 1000; £70.
Do. do., 1 to 1½ feet, 25s. per 100; 20s. per 1000, £190.
Do. do., 1½ to 2 feet, 30s. per 100; 25s. per 1000.
Do. HYBRIDUM, 6 to 12 ins., 8s. per 100, 20s. per 100.

Price to the Trade on application to

JAMES SMITH, Tansley Dale Nurseries, near Matlock.

IMPORTANT to the TRADE and INTENDING PLANTERS.

4,000,000	1-yr. Larch	200,000	2-yr. English Oak
60,000	2-yr. Seedling do.	20,000	2-yr. Evergreen do.
200,000	2-yr. Transplanted do.	200,000	2-yr. Beech
1,500,000	2-yr. Scotch Fir	100,000	2-yr. Horse Chestnut
50,000	1-yr. Transplanted do.	1,500,000	2-yr. Elms
100,000	2-yr. Transplanted do.	600,000	2-yr. Ash
1,000,000	2-yr. Spruce Fir	100,000	3-yr. do.
400,000	3-yr. do.	60,000	1-yr. Spanish Hazel
50,000	1-yr. Pinus austriaca	60,000	1-yr. Acacia
200,000	2-yr. Pinus Laricio	100,000	1-yr. Common Broom
50,000	2-yr. Pinus Weymouth	70,000	1-yr. Scotch Laburnum
100,000	2-yr. Silver Fir	40,000	1-yr. Cytisus purpuriand laburnoides)
50,000	2-yr. Balm of Gilead		
2,000,000	1-yr. Alder	30,000	2-yr. Chinese Arbor-vitæ
300,000	2-yr. Seedling do.	30,000	2-yr. American do.
100,000	1-yr. Transplanted do.	1,000,000	1-yr. Thorn Quick
400,000	1-yr. Sycamore	100,000	1-yr. Laurel
100,000	2 yr. do.	30,000	2-yr. do.

The Nurseries are well stocked with FOREST TREES.

PRICE LISTS ready, which will be forwarded on application to MICHAEL BORKE, Drumlargan and Garradice Nurseries, Summerhill, Co. Meath, Ireland.

Huntingdon Nurseries.

WOOD AND INGRAM offer the following at extremely moderate rates, according to the quantity taken:—

ASH, 2-yr. Seedling, and in Drills, 1½ to 2 feet.
BLACKTHORN, 1-yr., fine.
CHESTNUT, HORSE, 1-yr., and 6 to 8 feet, transplanted.
ELMS, NARROW-LEAVED ENGLISH, 2 and 3-yr. Seedling and transplanted, 1 to 2 feet.
FIR, SPRUCE, 1 to 1½, 1½ to 2, 2 to 3, and 3 to 4 feet.
FIR, WHITE and BLACK AMERICAN, 2 to 3, 3 to 4, 4 to 5, and 5 to 6 feet.
FIR, BALM of GILEAD, 1½ to 2, and 2 to 3 feet.
FIR, WILMOTTII PINE, 2 to 3, 3 to 4, 4 to 5, and 5 to 6 feet.
HAZEL, 1½ to 2, and 2 to 2½ feet.
GORSE, 1-yr. Seedling.
HOLLY, 3 to 6 feet, transplanted, 6 to 9 inches, 9 to 12 inches 12 to 18, 1½ to 2, and 2 to 2½ feet.
HOLLY, VARIEGATED, 6 to 9, and 9 to 12 inches.
MAPLE, COMMON, 1½ to 2, and 2 to 2½ feet.
MAPLE, COMMON, 2-yr. Seedling, extra fine.
JUNIPERS, 2½ to 3, 3 to 3½, 3½ to 4, & 4 to 5 feet; extra fine, and bushy.
OAKS, 2-yr. Seedling, and drills, 2 to 3 and 3 to 4 feet.
OAK, TURKEY, 2-yr. Seedling.
POPLAR, BLACK ITALIAN, 2 to 3, 3 to 4, 4 to 5, 6 to 7, & 8 to 10 ft.
POPLAR, ONTARIO or AMERICAN, 2 to 3 and 12 to 16 feet.
WHITE THORN QUICK, 2-yr. Seedling.
ARBORVITÆ, AMERICAN, 1½ to 3½ feet.
ARBORVITÆ, LOBBII, extra fine specimens, 3 to 7 feet.
ARBORVITÆ, SIBERIAN, 1 to 1½, 1½ to 2, 2 to 2½, and 3 feet.
AUCUBA JAPONICA, extra fine hardy specimens, 1 to 1½, 1½ to 2, 2 to 2½ and 3 feet.
BEECH, PURPLE and COPPER, 5 to 6, and 6 to 8 feet.
BERBERIS DULCIS, 1 to 2, and 3 to 4 feet.
BERBERIS AQUIFOLIUM, 1 to 1½, 1½ to 2, and 2 to 2½ feet.
CUPRESSUS LAWSONIANA, 2 to 3, 3 to 4, and 4 to 5 feet.
CUPRESSUS MACROCARPA, pots, 1, 2 to 3, and 3 to 4 feet.
LAUREL, COMMON, 1 to 1½ and 2 feet.
LAUREL, PORTUGAL, very fine, 1 to 4 feet.
PLANE, ORIENTAL, 2 to 3, 3 and 5 feet; extra, 9 to 10 feet.
PLANE, OCCIDENTAL, 3 to 4, 5 to 6, 6 to 7, and 8 to 9 feet.
YUCCA RECURVA, fine specimens, 4 to 5 feet.
ROBINIA INERMIS, fine Standards, 6 to 7 feet stems.
WILLOW, WEEPING, 6 to 7 feet, on fine Standard stems.

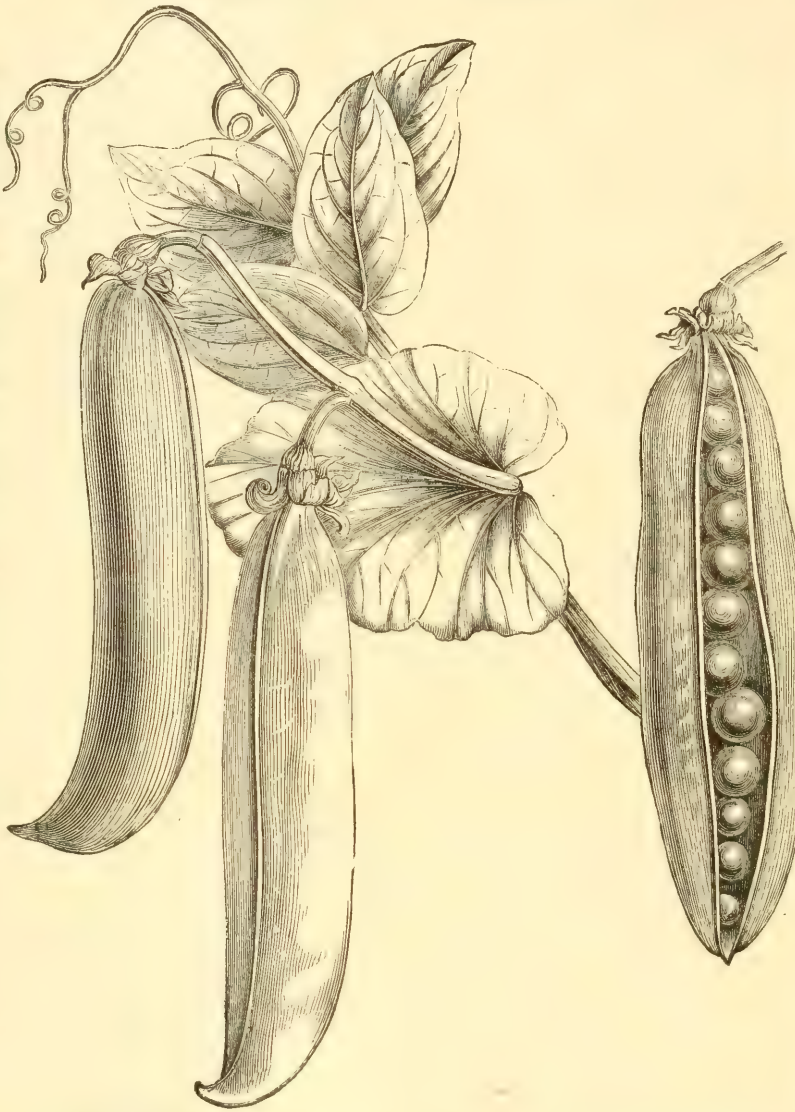
N.B. CATALOGUES sent free on application.

TO THE TRADE.

CARTER'S

NEW AND CHOICE VEGETABLES FOR 1867.

LAXTON'S PROLIFIC EARLY LONG-POD PEA.



We have much pleasure in introducing this valuable variety, raised by THOMAS LAXTON, Esq., Stamford, to the notice of the Trade. Some pods (in a green state) were exhibited by us at Mark Lane in June, 1865, averaging 11 and 12 Peas in a pod, and they were pronounced by several eminent members of the London Seed Trade to be an exceedingly fine variety. For a second Early Pea, and a Pea for early sowing in autumn, there is no Pea of a similar class in cultivation to equal it, and we feel every confidence that it will be in general cultivation in a very few years. The Pea has the same habit and character as "Dickson's Favourite" and "Auvergne," excepting that the pods are nearly DOUBLE the size of these varieties. The additional Testimonials received by us during the past summer fully corroborate our own opinion as to its being a "First-class Pea."

In Sealed Quarts and Pints.

Extract from "Journal of Horticulture," Sept 4, 1866.

"As the raiser of this Pea, my object in writing to you is not to combat the opinions expressed in letters from 'An Amateur' and others in your Numbers of the 14th and 21st of August, as I am contented to let the Pea stand or fall by the voice of public judgment alone; but that the condemnations contained in the letters alluded to are not universal, I have proof abundant in flattering reports of the successes of other growers who have volunteered their opinions. 'An Amateur' appears to have assumed that it has been announced as the best Pea in cultivation, and to have condemned it as not answering that description; he may have been disappointed, as many others must be who look for improvements in all points in a new Pea or plant.

"Had Messrs Carter announced it as such they could hardly have been liable to a charge of deception; but they have in their description of it, I think, been singularly moderate and faithful.

"My object, however, in troubling you is to explain what I believe to be the origin of the three so-called varieties in the seed alluded to by 'An Amateur.' The variety in question is the result of a cross between 'Beck's Prize-taker' (true), and 'Sangster's No. 1;' and although the appearance of the seed, as evinced in my own sample, would lead one to suppose there were three varieties, yet the produce in the growing state will show but one character, with very slight variations, and this is not the only Pea which exhibits such a tendency. 'Dickson's Favourite'* has been likened by high authority to the variety in question, and has probably originated from crossing two Peas of a similar class. Dickson's partakes of a like mixed character of seed, and the variations in the growing produce are also insignificant. It is a characteristic of many crossed Peas to show in their produce after the second generation seeds like both parents and intermediate, and possibly this may explain the appearances alluded to" – THOMAS LAXTON.

* This is incorrect, as "Laxton's Prolific Early Long-pod" is distinct in seed and growth from "Dickson's Favourite," and all other sorts.

New Tom Thumb Peas.

THE PEABODY.—A very dwarf prolific branching late variety, of Tom Thumb habit; height 15 inches; good flavour, and very productive. "The Peabody" is a later variety than the Dwarf Waterloo, to which it forms a good succession. Offered for the first time in sealed packets.

"DWARF" WATERLOO LATE BRANCHING MARROW.—A dwarf variety of tall Royal Victoria or Waterloo Marrow, of Tom Thumb habit; height, 15 inches; the most valuable dwarf Pea for general and late cropping ever offered; very dwarf, good flavour, and very productive. Offered for the first time in sealed packets.

Carter's Summer Broccoli.

A new variety, with enormous close white heads, having the desirable merit of being fully a fortnight later than Carter's Champion (from which it was selected, and which has hitherto been considered the latest variety in cultivation). Carter's Summer Broccoli may be had fit for use in June, thus filling up the gap which formerly existed between Broccolis and Cauliflowers. The seed of this variety is distinct from all other sorts. In sealed packets.

Sims's Mammoth Tomato.

Mammoth variety of the Cherry Tomato, very early, of extremely robust habit; requiring little support; fruit very large and smooth, in Grape-like bunches, averaging from 4 to 30 fruits. This variety was raised by Mr. Sims, Gardener to — Weddowson, Esq., Dulwich Common, and is much recommended. In sealed packets.

New Potato, The Ash-top Fluke.

A hybridized Seedling from the Ash-leaf and the Fluke Potato raised by a Bedfordshire gardener, who has grown it for 5 years. The stock was purchased by J. C. & Co. in 1865, and grown by them last season at their St. Osyth Seed Farm, where they have thoroughly proved its excellent qualities.

The Raiser correctly describes The Ash-top Fluke as follows:—"I can recommend it with perfect confidence as a second early Potato—considerably earlier than the ordinary Fluke Potato—with handsome tubers; it is a good keeper, and when boiled is very mealy and of most excellent flavour. I have grown this Potato for the last 5 years, and during that time I have shown it against all the leading sorts and it was always considered to be the best."

A nurseryman in the neighbourhood where The Ash-top Fluke was raised describes it as "a genuine Seedling Potato, selected from a batch of Seedlings sown in 1860, and grown on since then by the Raiser. It comes on directly after the Ash-leaf, is a good cropper for the garden, but does not produce like coarse field sorts; it is in good condition up to the end of January or middle of February. I have seen the Potato several times at a Cottage Show and admired it much; you may depend upon what the Raiser says about it, as I have known him for years."

PRICES OF THE ABOVE TO THE TRADE ON APPLICATION.

*** **A List of Wholesale Purchasers will shortly be Advertised in these Columns.**

JAMES CARTER AND CO., 237 and 238, HIGH HOLBORN, LONDON, W.C.

THE VERY EARLIEST AND BEST PEA IN CULTIVATION

IS

SUTTON'S RINGLEADER.

This unrivalled EARLY VARIETY still retains its position as *the forwardest and best Pea yet introduced*. The various trials made both in Public and Private Gardens (reports of which will be found below) fully confirm the confidence we had of *its superiority over every other Early Pea in cultivation*. The Plants are thickly and uniformly covered with well-filled Pods. One of its chief merits is that the haulm can be cleared away, and the ground planted with another Crop *nearly a fortnight before other Early Peas are ready*.

Retail Price 2s. per quart.

☞ *Lowest Price to the Trade on application.*

EXTRACTS FROM A FEW OF THE NUMEROUS TESTIMONIALS RECENTLY RECEIVED.

Extract from the Report on Peas grown at Stoke Newington in 1865 and 1866. *August 22.*

"'Sutton's Ringleader.'—In 1866 the sample was true throughout, the growth quite regular, wiry, the leaves a light green and small as compared with 'Dillistone's Early,' or 'Sangster's No 1'; or, in other words, it is decidedly less leafy than either of those varieties. The pods are regular in outline, with a neat beak, and are produced both in pairs and singly. One of its distinguishing characters is, that it produces pods from top to bottom in a very uniform manner, whereas 'Dillistone's Early' produces them chiefly at the top.

"There can be no doubt that this is a distinct and valuable variety, the earliest in cultivation, and as good for the table as any in the section to which it belongs. Height, 2 feet 9 inches.

"In 1865 and 1866 'Dillistone's Early' and 'Sutton's Ringleader' stood side by side, and these two Peas are as distinct as Oranges are from Lemons, or as 'Sangster's No. 1' is distinct from 'Bishop's Longpod.'"

From Mr. James Duckett, *Gardener to the* Rev. J Wilder, *Sulham, August 22.*

"I have proved your 'Ringleader' Pea to be the earliest. I sowed 'Ringleader' side by side with 'Daniel O'Rourke,' and gathered the 'Ringleader' nine days earlier than 'Daniel O'Rourke.'"

From Mr. John Batty, *Gardener to* Cotterill Schofield, Esq., *Turville Park, Henley-on-Thames, Sept. 6.*

"I have twice this season grown 'Sutton's Ringleader' Pea side by side with 'Daniel O'Rourke' and 'Dillistone's Early,' and on each occasion found 'Sutton's Ringleader' 7 or 10 days earlier than either of the other two."

From Mr. Joseph Hinson, *High Street, Sutton, near Ely, Sept. 15.*

"I have now grown your 'Ringleader' Pea 2 years, and have found them the earliest I have ever grown."

From Wm. Thompson, Esq., *Weymouth, January 12.*

"I tried your 'Ringleader' Pea last year against 'Sangster's No. 1:' they were each sown on the same day, but your 'Ringleader' was 10 days earlier in ripening than 'Sangster's No. 1.'"

From Mr. William Dowell, *Gardener to* Sir George Chetwynd, *Grendon Hall, Atherstone, May.*

"Your 'Ringleader' is earlier than any Pea I have ever grown. I shall gather a dish to-morrow morning, which is by far the earliest we have had."

From Mr. W. Povey, *Gardener to* H. P. Best, Esq., *Donnington Grove, near Newbury, May 21.*

"I planted your 'Ringleader' Pea on the last day of February; on the same day I planted 'Daniel O'Rourke' and other early sorts. Your 'Ringleader' is uncommonly well podded, and the pods are filling fast. I have no doubt that it will be cleared, and the ground planted, before I pick from any of the other early sorts."

From Mr Bailey Wards, *Gardener, Raynell, Brough, May 29.*

"I have this year sown your 'Ringleader' Pea against your 'Early Champion,' which I have hitherto found the earliest in cultivation, and I am glad to tell you that it came into bloom 10 days earlier. It has been covered with blossoms from top to bottom. I am sure it is a valuable addition to our early Peas."

From Mr. J. Daniels, *Gardener to the* Rev C. R. Keene, *Swyncomb Gardens, Henley-on-Thames, June 20.*

"I might notice that your 'Ringleader' Pea, sown December 20, is first-rate, and the earliest I have proved in the earliest. Pea I have ever grown. I have also another crop nearly ready, sown March 20, with 'Dillistone's,' but find them perfectly distinct."

From Mr. James Pearson, *Gardener to* H Bentley, Esq., *Woodlesford, Leeds, May 25.*

"Your 'Ringleader' Pea is 6 days earlier than 'Dillistone's,' and is the most promising Pea I have grown."

From Mr. H. Harrison, *Dedham, May 26.*

"Your 'Ringleader' Pea has proved with me by far the earliest, and will be cleared off the ground before the others have done blossoming. I consider the 'Ringleader' the quickest Pea of any of the early sorts grown."

From the Rev. Robert Taylor, *North Hazleton Vicarage, May 26.*

"Your 'Ringleader' is most certainly the earliest Pea I have seen."

From Mr. M. Mathew, *Gardener to* Dr. Stephens, *Gothic Lodge, Twickenham, May 26, 1865.*

"Your 'Ringleader' is the earliest Pea I have ever met with, and a good cropper."

From Mr. George Scrymger, *Home Park, Sonning, May 23.*

"I have great pleasure in reporting favourably of your new early Pea 'Ringleader.' They were sown the same day as five of the most popular early sorts. I gathered from it on the 26th of May, which is 14 days earlier than I shall off any of the other varieties. It is also very prolific."

From John Ford, Esq., *Morton Hall, Warwick, May 31.*

"My gardener sowed on the 12th January, side by side, 'Sutton's Ringleader,' 'Sutton's Champion,' 'Essex Rival,' and 'Dillistone's Early Prolific' Peas. 'Sutton's Ringleader' was just coming in the 3d of May; the others a week or so later."

From Messrs. Dobson & Sons, *Woodlands Nursery, Isleworth, October 21.*

"We tried your 'Ringleader' Pea last season with 'Dillistone's,' and it was from a week to 10 days earlier. It is certainly the earliest Pea that has come under our notice."

The following Seedsmen have already ordered a supply direct from Messrs. Sutton:—

Messrs. Cooper & Bolton, 152, Fleet Street, London, E.C.
" Wm. Hurst & Son, 6, Leadenhall Street, London, E. C.
" Minter, Nash, & Nash, 80, Strand, London, W.C.
" Nutting & Sons, 60, Barbican, London, E.C.
" Waite, Burnell, & Co., 181, High Holborn, London, W.C.
" Thorburn & Co., New York.
" J. Dobson & Sons, Hounslow and Isleworth.
" Henry Clarke & Sons, Covent Garden, London, W.C.
Messrs. Fisher, Holmes, & Co., Sheffield.
" J. & C. Lee, Hammersmith.
" James Veitch & Sons, Chelsea, S.W.
" Austin & McAslan, Buchanan Street, Glasgow
" Osborn & Sons, Fulham, S.W.
Mr. W. B. Sinale, Barton, Torquay.
" P. J. Perry, Banbury.
" F. Allman, Horsham, Sussex.

SUTTON AND SONS, SEED GROWERS and MERCHANTS, READING.

SUPERB NEW LATE GRAPE—MRS. PINCE'S BLACK MUSCAT.

LUCOMBE, PINCE, & CO.

Beg leave to call the attention of the Public to this exceedingly fine and highly valuable GRAPE, which may now be seen in great perfection at their Nursery. It has been awarded a First-class Certificate by the Royal Horticultural Society of London, and elicited the praises of numerous eminent Horticulturists. It is *essentially* a LATE Grape, possessing high Muscat flavour. It will keep in perfection until April.

Undoubtedly the very best late Grape, with true Muscat flavour.

VINES will be ready to send out in August, 1867, at the following prices:—

Strong Canes, £1 1s. each; Fruiting, £2 2s. each; Extra strong Fruiting, £3 3s. each.

☞ *Orders will be executed in strict rotation as received.*

Copies of the numerous Testimonials now in their possession will be forwarded upon application.

EXETER NURSERY, EXETER.

VIOLA CORNUTA var. PURPLE QUEEN.

The Purple variety of this beautiful Bedding Plant, so much admired during the past season. This variety is the one grown by Mr. Bennett, Head Gardener to G. S. Foljambe, Esq., Osberton Hall, Notts, and was lately the cause of some controversy in the Horticultural Papers. At one time it was supposed to be identical with the better known variety grown by Mr. Wills, but upon comparison a decided difference was found both in the colour of flower and habit of growth (*vide Journal of Horticulture* of November 20, page 384). In the article here referred to, Mr. Wills suggests that Mr. Bennett's variety should be called "Purple Queen," and his own "Mauve Queen."

B. S. Williams has secured Mr. Bennett's entire stock of Seed, and can therefore warrant it the variety grown by him; he has also taken up Mr. Wills' suggestion by calling it PURPLE QUEEN, in contradistinction to the Mauve variety now in general cultivation.

Per Packet, 1s. and 2s. 6d.

None genuine unless bearing B. S. Williams' *name and address.*

VIOLA CORNUTA (the MAUVE QUEEN variety), 6*d*., 1s., and 2s. 6*d*. per packet.
RAPHANUS CAUDATUS (the Wonderful Radish), 1s. per packet, containing three good seeds.

A LIST of VEGETABLE SEED NOVELTIES for 1867 free by post on application.

All Packets of Seed post paid. Heavier Seeds carriage free to all parts of Great Britain and Ireland.

B. S. WILLIAMS, VICTORIA and PARADISE NURSERIES, UPPER HOLLOWAY, N.

British Fern Catalogue.

ROBERT SIM can now send, post free for six postage stamps, Part 1. (British Ferns and their varieties, 36 pages, including prices of Hardy Exotic Ferns) of his NEW and PRICED DESCRIPTIVE CATALOGUE of BRITISH and EXOTIC FERNS, No. 7.
Fool's Cray Nursery, S.E., a mile from Sidcup Station of New North Kent Line of South Eastern Railway.

Wholesale Catalogue of Nursery Stock.

GEORGE JACKMAN AND SON'S PRICED and DESCRIPTIVE CATALOGUE for 1866 and spring 1867, can be had free on application, comprising Fruit Trees, Roses, American Plants, Conifers, Clematises, Evergreen and Deciduous Trees and Shrubs, and transplanted Forest Trees, &c., &c.
Woking Nursery, Surrey.

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WEBB'S GIANT POLYANTHUS and COWSLIP, with all the best varieties of Double and Single PRIMROSES, PANSIES, &c., with Seeds of single varieties. LIST of prices of different kinds on application to
Mr. Webb, Calcot Gardens, Reading.

Lilium lancifolium.

SUTTON AND SONS have received several varieties of the above splendid LILY in fine condition.
For descriptions and prices of each see SUTTON'S AUTUMN CATALOGUE, which may be had gratis and post free on application.
Sutton & Sons, Royal Berkshire Seed Establishment, Reading.

Exhibition of Chrysanthemums.

JOHN SALTER'S magnificent COLLECTION of CHRYSANTHEMUMS is NOW in BLOOM. The Winter Garden is open every day except Sunday. Admittance free.
Versailles Nursery, William Street, Yale Place, Hammersmith, W. (near Kensington Railway Bridge.)

Amaryllis.

JAMES GARAWAY AND CO., Durdham Down Nurseries, Bristol, offer Bulbs of the above, unnamed Seedlings that have bloomed with them during the past two seasons, and many of which are now showing flower, at 5s., 7s. 6d., and 10s. 6d. each, or 50s., 80s., and 105s. per dozen.
JAMES GARAWAY & Co., Durdham Down Nurseries, Bristol.

Gladioli.

J. KELWAY AND SON beg to call attention to their splendid Stock of GLADIOLI, which comprises all the sorts worth growing, and probably the largest in the Trade. As a proof of the luxuriance and excellence of their collection they have been awarded the First Prizes offered at the Crystal Palace and Royal Horticultural Exhibitions in 1864, 1865, and 1866.
PRICE CATALOGUES free to all applicants.
Sole agents for J. K. & S., 3s., 6s., to 21s. per dozen; 10s., 20s., to 100s. per 100.
The Nurseries, Langport, Somerset.

CLIMBING DEVONIENSIS.—This beautiful Rose having obtained a First-class Certificate at the Royal Horticultural Meeting, S. J. Pavitt is induced to offer his fine plants of the above as grown by him for the last seven years, and thoroughly proved to be a distinct and most valuable climbing variety. Extra strong plants, on clean stems, with shoots from 3 to 7 feet in length, 2s. 6d. each. Special offers to the Trade, when taken by the dozen or hundred.
Rose Cottage Nursery, Bathwick, Bath.

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A DESCRIPTIVE CATALOGUE of ROSES.
A CATALOGUE of ORCHARD-HOUSE TREES.
A DESCRIPTIVE CATALOGUE of GRAPES.
Free per post on application to
Thomas Rivers & Son, Nurseries, Sawbridgeworth.

PAUL AND SON'S ROSES and their CATALOGUE.—DESCRIPTIVE LIST is now ready. For general prices see large Advertisement, p. 1153.
Paul & Son would remind their friends that the present time is favourable for making Roses.
The "Old" Cheshunt Nurseries, N.

New General Plant Catalogue.

B. S. WILLIAMS' NEW PLANT CATALOGUE, containing many really good Novelties, and carefully selected LISTS of STOVE, GREENHOUSE, and HARDY PLANTS, is now ready and will be forwarded post free to all applicants.
Victoria and Paradise Nurseries, Holloway, London, N.

Surplus Imported Bulbs.—See

BARR AND SUGDEN'S large Advertisement, page 1153.

The Gardeners' Chronicle.

SATURDAY, DECEMBER 1, 1866.

MEETINGS FOR THE ENSUING WEEK

Tuesday,	Dec. 4	{ Royal Horticultural (Floral and Fruit Committees), at South Kensington	11 A.M.
		{ Ditto (Scientific Discussion)	3 P.M.
Saturday,	— 8	Royal Horticultural (Weekly Show), at South Kensington	2 P.M.

A FEW weeks since we called attention to some VINES OF EXTRAORDINARY GROWTH, and we did so for the purpose of raising the question whether or not the plan now so commonly adopted of limiting the development of the plant to the length of a single rafter is a good one, supposing the object to be the production of a continued succession of sound fruit, highly flavoured and well coloured, with berries and clusters of average size and weight. The Vine, we know, is a plant of almost unlimited growth: indeed, some scarcely credible dimensions have recently been ascribed to one growing near Santa Barbara, in California; the stock of which, it is stated, is 10 feet in circumference, while the branches are trained on a trellis 60 feet in diameter, and the crop, consisting of several thousand bunches, has been estimated to yield 18,000 lb. of fruit. Whatever credence may be given to this trans-Atlantic story, the well-known fact remains that it is the natural habit of a Vine to extend itself freely in all directions, and to produce an enormous surface of leaf, which leafage, exerting as it does a powerful influence on the juices of the plant, must also materially affect the character and quality of the fruit. Now to limit the growth of a Vine within so narrow a compass as is the case when the single rod and spur principle is adopted, must be to disturb if not to revolutionise the constitution of the plant: and although the matter may right itself

to some extent by the reciprocity of action which the roots and leaves of a particular plant will set up between themselves, yet we cannot resist the conviction that something of the old nature will remain in the stock, and that to the violence offered to this surviving element is often due the shanking, the bad-colouring, the deficient flavour, and other such-like evils of which Grape growers have to complain. The balance of power is destroyed, and the living machine will no longer work as it ought to do.

That great results may be achieved by the restrictive system we admit, and, indeed, the annals of Grape growing supply abundant evidence of this fact. Monster bunches may be caught just when the Vine has been worked up to its highest pitch of vigour; but then follows the decadence to which we formerly referred, and without a succession of Vines we are apt to look in vain in the future for similar extraordinary produce.

We have been led to revert to this subject through reading an account given in a northern contemporary, *The Farmer*, of a large and vigorous Vine which is to be found among the Scottish Highlands. This Vine, which is growing at Kinnell, in Perthshire, is described as being 36 years old, and fills a lean-to Vinery, which is 89 feet long from east to west, and has a perpendicular front elevation of 5 ft., and a sloping roof of 18½ ft., equal to about 229 superficial yards of glazed surface. It covers the whole house; and its stem before branching off is 6 feet long by 16 inches in circumference. It is in healthy vigorous growth, produces highly-coloured fruit of sufficient excellence to carry off first prizes, and has for the last four seasons borne an average crop of about 600 bunches. Mr. MURRAY, the excellent gardener at Taymouth Castle, gives the following particulars respecting this great Vine of the Grampians. "The estate of Kinnell was purchased by, I believe, the first Marquis of BREADALBANE. In the year 1830 the late Marquis, who then resided at Auchmore and Kinnell, planted this Vine, a true Black Hamburgh, in a small lean-to greenhouse, the then gardener being Mr. ROBERT GARDINER, late general manager at Eglinton Castle, whom I succeeded in 1832, and had the pleasure of training the young Vine 'how to shoot' for two years. The natural soil at Kinnell is of a light sandy texture, the subsoil being gravelly, and consequently dry; but a good border for the Vine, or rather Vines, for there were at first more than one, was made with soil taken from the old grounds of Finlarig, where there were then some rich deposits of vegetable mould from the old trees which still adorn the grounds around that ancient ruined residence, and last resting place of 'The CAMPBELLS.' But, apart from this border, I consider that the extraordinary luxuriance and success of the Vine is owing to a wide excavation that was at one time made immediately in front of the border for an Asparagus plantation, and which was filled up to the depth of 4 feet with the same rich soil from Finlarig; hence the abundant range for the roots of the Vine, and in proportion to which so have its branches extended.

"The original house has been added to, the last 'eke' having been made a few years since; and from the vigorous rampant growth, even at the extreme ends of the branches, I make no doubt but that, were the Vinery much farther extended, its present spread might soon be doubled. I may state that, in regard to regular annual crops, I have never known this Vine to fail, either in quantity or quality, the first being invariably highly coloured, and such a thing as shanking, or any other disease that the Vine is heir to, has never yet found its way to Kinnell."

The important question, to which we should be glad to find our leading Grape-growers addressing themselves, is whether or not, for general purposes, such instances as the Vines at Kinnell, Finchley, and Cumberland Lodge, do not indicate that Vines might very well be permitted to occupy more space—to be allowed, in fact, to approach something nearer their natural habit—than is generally allotted to them at present; and whether this mode of giving vent to pent-up energies might not be curative of some at least of the evils from which, under the highly artificial conditions in which they are grown, we too often see them suffering.

THE fall of the leaf (see p. 1114) is not the only phenomenon in the Vegetable Kingdom which depends on the formation of a new set of cells, making a line of demarcation between a part which has performed its functions and the parent stock. The SEPARATION OF FRUIT when ripe is strictly of the same nature, as also the FALL OF BRANCHES, which in Vegetable Pathology is known under the name of CLADOPTOSIS. If we take the Pear as an example, and examine the surface from whence the stalk has separated, with a pocket lens, we shall see that it is sprinkled with a quantity of shining meal-like cells, which however do not form a continuous stratum. It is very possible that there may be something more than mere mechanical agency in the separation of the fruit, for as every one knows who has attended to fruit gathering, the merest touch is often sufficient to cause the separation, so slight indeed that one can hardly believe that without some vital action, so great an effect could be produced.

In the instance of the Pear the case is not ended by the separation of the stalk. A rough, unsightly budless base still remains, which decaying might prove injurious to the shoot below, and the removal of this is effected by the successive splitting off of several little discs, the separation of each of which depends on the formation of intermediate cells, as in the case of the leaf and the fruit.

A similar phenomenon on a large scale takes place in many other trees, especially in the Oak and Willow. In the former the separation of branchlets generally takes place while the upper portion is still living; in the latter more frequently where decay is already completed. In either case the ground under the trees may often be found thickly strewed with twigs or large branchlets, each of which presents a clean transverse section through the bark and wood. In the Willow it is not always easy to detect the separating cells, but in the Oak there is often no more difficulty in doing so than in the Pear.

The subject is well worth a more minute examination. The explanation possibly consists in the fact that the part to be separated no longer sends back anything, and is not capable of receiving a further supply, and in consequence the tips of the cells beneath throw out a distinct growth, which ultimately effects the separation. As far as we have seen, the production of the scattered cells is confined to the wood, but we would not assert positively that this is the case.

The premature fall of sterile or superabundant flowers, or of imperfectly formed fruit, belongs to the same category; or even where there is no superabundance, deficient or redundant nourishment arising from continued drought or moisture may have a precisely similar effect. *M. J. B.*

—— WE have to record the DEATH OF MR. JOSEPH HENDERSON, which took place on the 22d of November, at Wentworth Woodhouse, where he terminated a long service of nearly 50 years under the late and present Earl FITZWILLIAM. He was a man of a very high tone of mind, and acquired a surprising stock of knowledge on various subjects, notwithstanding the constant demands on his time as superintendent of the Gardens, first at Milton, and afterwards at Wentworth. He had a fair knowledge of Latin and French, was an admirable draftsman, and besides possessing very extensive botanical information, he was a good ornithologist and entomologist. His botanical researches were not confined to Phænogamous plants, as he made the minute structure of Cryptogams an especial study, and was one of the first to discover the antheridia of Ferns, though he failed to recognise their real nature. His paper on the germination of Ferns in the "Magazine of Botany and Zoology" in 1837 made him generally known amongst botanists, and in consequence of this and other researches he was elected an Associate of the Linnean Society, an honour which he well deserved. Ferns were certainly his favourites in the vegetable world, and the collections at Milton and Wentworth were amongst the most important in the country. He was happily encouraged in his pursuits by his employers, and he was not the only domestic in the establishment who did good service to science, for Mr. ARTIS, the house steward, was well-known for his archæological researches, and his work on the "Vegetation of the Coal Measures," while the discoveries of Mr. SIMMONS are recorded in CURTIS'S "British Entomology." Mr. HENDERSON'S health unhappily failed about three years since, and for the last year he never left his bedroom. He has left behind him few more useful members of society, and none more deservedly loved for his kindly disposition and numerous sterling qualities. *M. J. B.*

—— M. EUGÈNE FORNEY, in a paper lately read before the Société Impériale d'Horticulture at Paris, seeks to establish as a general rule, that the more northern the latitude whence our FRUIT TREES have originally sprung, the longer is the time requisite for them to form their flowers. Thus, fruit trees originally natives of warm counties produce their flowers on the young shoots; those derived from temperate countries on the wood of last year, and those indigenous to higher latitudes on the three-year-old wood. M. FORNEY cites many instances in proof of his assertion, maintaining that many of the apparent exceptions are due to the trees say of tropical latitudes being natives of the mountains, &c. Still, making due allowance for these sources of error, we cannot but think the exceptions to the rule laid down by M. FORNEY are so numerous as to outweigh the rule itself. Nevertheless the subject is one that has been too much neglected, and promises to reward the observer with valuable results both in a practical and a scientific point of view.

—— We understand that the magnificent collection of ORCHIDS at MEADOW BANK will furnish to the meeting of the Royal Horticultural Society on Tuesday next, the 4th inst., among other things, a spike of Cymbidium giganteum with 11 flowers, and possibly also a spike of the lovely Odontoglossum Alexandræ with 12 flowers, the largest number that has yet been seen on plants grown in this country. A most magnificent new Saccolabium will, we hear, also be shown from Messrs. VEITCH & SONS' establishment.

—— Mr. BULL has sent us flowers of one of M. VAN HOUTTE'S charming hybrid Gesneraceous plants, the EUCODONOPSIS NÆGELIOIDES. They are very beautiful, and combine the elegant form and size of the drooping Gloxinia, with the soft colouring and elegant markings of some of the rosy-flowered Tydæas. The habit is dwarfish, resembling that of Gloxinia. It was raised from Eucodonia Ehrenbergii (Schieeria lanata) crossed with Nægelia zebrina splendens.

—— We are glad to be able to announce, that owing chiefly to the exertions of our indefatigable correspondent Mr. FISH, the GUARANTEE FUND in support of the Royal Horticultural Society's Show at Bury St. Edmund's, next summer, now exceeds 1000*l*. Mr. FISH'S suggestion that local and other special prizes, in the form of Cups, should be added to the Schedule, which we reprint in another column, is also, we learn, being well responded to. The Ladies' Cup of 25 guineas for Orchids is already secured, as also is the Town Cup, and the Borough Members' Cup; while the Suffolk Gardeners' Cup and others will be forthcoming in due time.

SARRACENIAS.

PITCHER PLANTS are so quaint in their organisation, so striking in their appearance, that they attract the attention, both of the professional and the amateur. It is hardly necessary to remind the reader that under the common name of Pitcher Plants, several very distinct groups of plants are included, and that sometimes Cabbages, Lettuces, and other plants become exceptionally, and for the nonce, entitled to the designation, inasmuch as they occasionally produce pitchers. Sometimes the pitcher is formed from the mere rolling in and union of the edges of a leaf, sometimes from the dilatation of a leaf-stalk into a funnel or horn-like tube.

The North American Sarracenias afford good illustrations of the latter, and with the closely allied Darlingtonia from California, and the Heliamphora from Surinam, Guiana, constitute a very well marked natural group, confined to the American continent, and in the case of Sarracenia purpurea extending from Canada to Florida, and thus evincing a capacity for existence under widely different climatal conditions. The headquarters of the genus may, however, be considered to be the Southern States of the great trans-Atlantic republic. The flowers of the Sarracenias are remarkable for their large petal-like, umbrella-shaped stigmas, which conceal the stamens, much in the same way as those organs are covered in Iris by the petaloid styles; but this great size of the stigma only exists in Sarracenia, and is not found in Heliamphora, while Darlingtonia is intermediate between the two in having a slightly five-lobed stigma.

The structure of these pitchers, judging from that of S. purpurea, is broadly this: there is an outer and an inner epidermis, or skin, consisting of cells with a wavy outline, and permeated by stomata or pores on both surfaces. From the inner epidermis, or that forming the lining of the pitcher, project numerous coarse, conical hairs, whose points are directed downwards, as if to prevent the escape of any insect that may be enticed into the pitcher by the water therein, though it is hard to see what benefit can accrue to the plant by its thus serving as a beetle-trap. The cellular tissue of the pitcher is loose and spongy, permeated by pitted ducts and thick-walled wood cells, but destitute, so far as we have observed, of true spiral vessels. The structure of the stem is decidedly exogenous,—a point of some consequence in a botanical point of view, as it was at one time questioned whether these plants were truly Exogens or no. Since then, however, the germination of some of the species has been observed, and two long linear cotyledons have been seen. Seedlings do not appear to be common, and are unknown in this country.

Doubts have sometimes been raised as to whether the water that is found in the pitchers is secreted by those organs, or whether it comes from without. Certainly in some of the species drops of water may be seen through the transparent tube, while the mouth of the tube is still closed by the lid.

The different species of Sarracenia are distinguished one from the other by the form and arrangement of their pitchers, and the size and colour of their flowers,—the latter probably being of more consequence than the former; for instance, the pitchers of Sarracenia flava vary a good deal in size and form, sometimes being scarcely distinguishable from certain varieties of Sarracenia Drummondii; but Sarracenia flava has, as its name implies, a yellow flower, while S. Drummondii has a purple one.

S. psittacina, the Parrot-like Sarracenia, is new in cultivation, having been only recently introduced into this country. We shall take an early opportunity of giving, by permission of the Messrs. Veitch, a woodcut of this pretty species. Of S. purpurea there are two varieties, one wholly green, the other with the pitchers

of a rich purple. Of S. flava there are, as already said, apparently many forms. We need not here give the synonyms for the generally accepted names; they may be found by those who care to seek them in Torrey's and Gray's "Flora of North America," vol. i., p. 59, wherein the substance of Croom's monograph of these plants is embodied.

Some little while since the S. purpurea was recommended as useful in cases of small-pox; but the most that can be said of it is, that it is harmless. According to the old doctrine of signatures, the spotted S. variolaris, or S. Drummondii, ought to be useful in this complaint, but we suspect they are as inert as their purple brother.

All the species of Sarracenia are now, we believe, to be met with in cultivation in this country, and it may be of service to some of our readers to give the following table, by which the different kinds may be easily recognised:—

1.	Pitchers erect	2.
2.	Pitchers spreading horizontally	S. psittacina.
	Pitchers distended in the middle	S. purpurea.
	Pitchers trumpet-shaped	3.
3.	Lid of pitcher erect	4.
	Lid of pitcher bent over the mouth of the tube	S. variolaris.
4.	Pitcher spotted at the upper end	S. Drummondii.
	Pitcher not spotted	5.
5.	Flower yellow	S. flava.
	Flower purple	S. rubra.

THE AUSTRALIAN TREE FERNS.

IN the *Gardeners' Chronicle* (see p. 1066) there are some notes from me on the Tree Ferns of Australia, one statement in which I now wish to amend, in consequence of having received further information on one of the species by the last mail from Australia. By reference to the notes in question, it will be seen that I have coincided with "J. G. B." in considering Alsophila excelsa and A. Cooperi as one and the same species. It may also be observed that I mention a large-growing plant in the Glasnevin collection, which was received under the name of Alsophila species nova, which I considered very distinct from any of the other kinds mentioned by either "J. G. B." or myself, but knew nothing more of its history when I wrote. Being desirous to obtain as much information as possible on this plant, Mr. Moore, of Sydney, was requested to furnish it, as far as he clearly could. His reply just received is the following:—"The Tree Fern resembling Alsophila excelsa, sent to you as sp. nova at the time, is a native of this colony, and was named by the late Sir W. Hooker, Alsophila Cooperi, in compliment to Sir Daniel Cooper, who took home with him some fine plants, and presented them to Kew." This being the case I have no doubt of the two plants, A. excelsa and A. Cooperi at Glasnevin, being distinct specifically. It is most difficult to form a critical opinion on many Tree Ferns, judging of them only from young plants or from pieces of the fronds of old ones. It is necessary that the whole plant, when well developed, should be seen before a sound judgment can be given on them. As the two plants in question now stand at Glasnevin, A. excelsa and A. Cooperi, each with a stem fully 5 feet high, well marked with the scars of the fallen fronds, there is no difficulty in recognising them as distinct; but judging from young plants, it is very difficult to distinguish them. Probably one of the best characters of distinctness is to be found in the scales, which are so abundant on the rachides. In A. excelsa they are nearly twice the length of those of A. Cooperi, of a pale fawn colour, almost pellucid under the microscope, with ciliate margins, and soon becoming deciduous and falling off the rachides; whereas in A. Cooperi they are dark brown in colour, of thicker consistence, falcate in shape, with the margins strongly serrated, but not so much so as to deserve the term ciliated. They are, moreover, persistent on the rachides.

The pinnæ of A. Cooperi are longer than in A. excelsa, with the pinnules wider, and the plant is of softer texture. I should hope the fruit will display some further good characters. I have thought it right to follow up my observations at once with this note, which may be taken for what it is worth. *D. M.*

[We may expect that some matters connected with Australian Tree Ferns will be cleared up satisfactorily soon, Mr. Moore, of Sydney, having been appointed by the Government of New South Wales, to take charge of the goods from that colony to the Paris International Exhibition, which are expected to reach France in March or April. EDS.]

HARDY PICTORIAL TREES.—No. I.

IN the autumn of 1864 I endeavoured to show (see p. 770), that the scenery of gardens, parks, &c., might be improved by introducing more pleniliives trees with white, yellow, and purple leaves. The natural outlines of different trees was also pointed out as worthy of more attentive consideration, and the use of berry-bearing trees, especially for winter, strongly recommended. The interest which the public took in my collection of "Hardy Pictorial Trees," shown at the International Horticultural Exhibition in May last, has again drawn my attention to this subject, and I propose now to enter into fuller detail, and to furnish descriptions of a few of the most prominent and interesting kinds, under the heads of "Form," "Colour," and "Berry-bearing Trees." In the present paper I shall confine my remarks to "Form," and assuming that the spreading form, which is the commonest in Nature, is already more than sufficiently recognised, I will pass that by in order to dwell more fully on the "Pyramidal" and "Weeping" forms.

TREES AND SHRUBS OF PYRAMIDAL GROWTH.

Abies excelsa pyramidalis.—Evergreen. Height, 100 feet. This is a vigorous-growing variety of the Spruce Fir, of close habit, presenting to the eye a dense mass of dark impenetrable verdure. It forms a fine single tree, and is quite worthy of a good position on a lawn.

Cupressus sempervirens (the common Cypress).—Evergreen. Height, 30 feet. One of the handsomest and most vigorous of pyramidal evergreens, but suitable only for sheltered or elevated situations, as in exposed and low damp places the tree is usually injured or destroyed by frost in a young state. Once it becomes old and loses the vigour of growth consequent on youth, the tree is hardy enough.

Cupressus torulosa.—Evergreen. Height, 30 feet. This is somewhat similar to, but of smaller growth than the preceding, pleasing by the refinement of its beauty rather than by its boldness and rigidity. It is also somewhat tender in a young state north of London, although some beautiful old trees are often met with there.

Ilex Aquifolium argentea stricta (the Upright Silver Holly).—Evergreen. Height, 20 feet. The only naturally pyramidal form of the variegated Holly with which I am acquainted, although Hollies in general, improving under a free use of the knife, may be cut into this form if required. This kind has leaves broadly edged with bright silver.

Ilex Aquifolium ovata.—Evergreen. Height, 30 feet. One of the handsomest of the green Hollies. The leaves are rather small, dark green, ovate, of great substance, and thickly set on the branches.

Ilex balearica (the Minorca Holly).—Evergreen. Height, 30 feet. This is of free and rapid growth, and quite distinct from all other kinds. The leaves are broad, pale green, smooth, and the branches are usually thickly set with berries, which remain on the tree during winter; a very handsome tree.

Juniperus excelsa.—Evergreen. Height, 20 feet. We have here a very beautiful and hardy Juniper of close growth; the whole tree of a greyish tint. Like most of the Junipers, it appears to thrive best in a lightish soil.

Juniperus fragrans.—Evergreen. Height, 30 feet. Similar to the last, but of more rapid and diffuse growth; the branches powerfully fragrant.

Juniperus ericoides.—Evergreen. Height, 12 feet. A very neat plant, with reddish leaves, producing a distinct and pleasing effect among other shrubs and trees, especially in the winter.

Juniperus hibernica (the Irish Juniper).—Evergreen. Height, 20 feet. A greyish-looking plant of close compact growth, and neat in the extreme. Excellent for light sandy soils.

Juniperus virginiana stricta (the Upright Red Cedar).—Evergreen. Height, 30 feet. This is a very beautiful close-growing variety of the Red Cedar, apparently but little known, but valuable for its dense tufts of rich dark foliage and great hardihood, and thriving in almost any soil.

Pinus Laricio.—Evergreen. Height, 100 feet. The true Corsican Pine is one of the grandest and most beautiful of strictly pyramidal Pines, so hardy and so free that it deserves a fuller recognition than it has hitherto met with at the hands of planters. Some splendid columns of it exist at Pamperford Hall, near Cambridge, which are worth going many miles to see.

Quercus Ilex Fordii (Ford's Evergreen Oak).—Evergreen. Height, 30 feet. A tree with small dark green leaves, quite distinct from the other kinds of evergreen Oak, and very hardy.

Taxus baccata fastigiata (the Irish Yew).—Evergreen. Height, 20 feet. One of the most rigid and darkest of evergreens, the leaves being of a blackish green. Good for groups, lines, or avenues. Very hardy, growing in any soil.

Taxus baccata pyramidalis.—Evergreen. Height, 20 feet. This is apparently a hybrid between the common and Irish Yew, less rigid and dark than the latter, more diffuse, but still of pyramidal growth. A handsome tree, of free growth, and very hardy.

Thuja gigantea.—Evergreen. Height, 30 feet. A beautiful tree, the colour a rich Grass green. It should be removed yearly in the nurseries, or does not transplant well.

Thuja pyramidalis.—Evergreen. Height, 20 feet. This tree, comparatively but little known, is one of the loveliest of the Arbor-vitæs, and very hardy. The branches, which are pale green and fan-shaped, turn their edges outwards, which character is at one distinct and pleasing.

Alnus asplenifolia.—Deciduous. Height, 30 feet. The handsomest of the Alders; the growth is regular and the leaves finely cut.

Fraxinus monophylla.—Deciduous. Height, 20 feet. A large simple-leaved Ash, of a dark green hue. Very effective in mixed plantations.

Populus fastigiata (the Lombardy Poplar).—Deciduous. Height, 100 feet. A most desirable tree for breaking the sky outline of plantations, being of distinct form and rapid growth. Hardy, thriving in any soil, the leaves dying off bright yellow.

Pyrus Aria (the White Beam Tree).—Deciduous. Height, 40 feet. A handsome tree, with large simple leaves, white on their under side. Hardy, free, distinct, and effective.

Quercus pedunculata fastigiata (the Pyramidal Oak).—Deciduous. Height, 50 feet. A very desirable large pyramidal tree, of regular growth and great beauty.

Robinia Pseud-Acacia pyramidalis (the Pyramidal Acacia).—Deciduous. Height, 40 feet. A beautiful tree; leaves clear light green, hardy, and of rapid growth.

Sambucus pyramidalis (the Pyramidal Elder). Deciduous. Height, 12 feet. A distinct tree, producing dense tufts of dark green leaves.

Ulmus monumentalis.—Deciduous. Height, 30 feet. Apparently an upright variety of the English Elm; of regular, rapid, and handsome growth.

Ulmus montana fastigiata (the Pyramidal Mountain Elm).—Deciduous. Height, 30 feet. A hardy free-growing kind, with large dark leaves. Distinct and effective.

As already stated, I have in the preceding brief list selected only a few of the most marked in character, and those which I conceive to be the most generally useful. This list might, if desired, be considerably extended.

WEEPING TREES AND SHRUBS.

Cotoneaster microphylla.—Evergreen. Height, 4 feet. This is a beautiful plant for beds or the front of shrubberies, the dark green leaves and scarlet berries producing a nice contrast in the winter. There are several other kinds, of which C. buxifolia and C. marginata may be instanced, which, as well as the species described, form beautiful evergreen weeping lawn trees when grafted on 5-feet stems of the Hawthorn.

Ilex Aquifolium pendula (the Weeping Holly).—Evergreen. Height, 20 feet. A really pendulous variety of the common Holly, producing its bright red berries in great profusion. It may be grown from its own roots as a weeping pyramid, or be budded on tall stems of the type, and in either case it is a valuable addition to our hardy evergreens.

Ilex Aquifolium alba-marginata pendula (the Weeping Silver Holly).—Evergreen. Height, 12 feet. Equally valuable with the preceding, either as a standard or pyramidal weeping tree.

Abies excelsa pendula (the Weeping Spruce Fir).—Evergreen. Height, 40 feet. There are several varieties of this tree, which doubtless have been selected at various times by different observers. They vary much in character, and while all are interesting, some only possess the regularity of growth and finished beauty which make them desirable in formal gardens.

Glyptostrobus pendulus.—Evergreen. Height, 12 feet. A distinct and beautiful weeping tree, with light green leaves.

Juniperus communis pendula.—Evergreen. Height, 12 feet. A weeping form of the common Juniper, of free elegant growth, and very hardy.

Juniperus oblonga pendula.—Evergreen. Height, 10 feet. A variety of smaller growth than the preceding, with long flexile branches, producing a small tree of perfect beauty.

Juniperus virginiana viridis.—Evergreen. Height, 20 feet. A weeping variety of the Red Cedar, with bright grass-green leaves, far superior to all other weeping forms of this tree. This and the two preceding varieties of Junipers rank among the most beautiful of small weeping trees, and should abound in all suitable positions.

Taxus baccata Dovastoni.—Evergreen. Height, 12 feet. A dark green, almost black-leaved weeping Yew, of vigorous growth, distinct form, and very hardy.

Taxus baccata Jacksoni.—Evergreen. Height, 10 feet, another form of the Weeping Yew, of smaller growth; leaves pale green, very elegant.

Amygdalus communis pendula (the Weeping Almond).—Deciduous. Height, 12 feet. A distinct form of a well-known and valuable spring-flowering tree.

Betula alba pendula (the common Weeping Birch).—Deciduous. Height, 50 feet. These trees, being raised from seed, vary in character, some being much more pendulous than others, and assuming the weeping habit at an earlier age.

Betula laciniata pendula (the Cut-leaved Weeping Birch).—Deciduous. Height, 50 feet. The most beautiful of the genus, the bark white; hardy, and free, the leaves finely cut.

Cratægus Oxyacantha pendula (the Weeping Thorn).—Deciduous. Height, 12 feet. So regular in growth and so pendulous is this variety that it forms a very elegant tree for planting singly on lawns, when grafted on stems of the common Hawthorn. It is also very suitable for planting in shrubberies.

Cerasus Chamæcerasus (the Weeping Cherry).—Deciduous. Height, 10 feet. This also is a beautiful lawn-tree; when worked on 5-feet stems of the common Cherry it forms a neat and compact pendulous head.

Fagus sylvatica pendula (the Weeping Beech).—Deciduous. Height, 30 feet. This, when worked on stems of the common Beech, 8 or 9 feet high, forms a capital arbour, the branches soon reaching to the ground, the broad leaves forming a complete screen.

Fraxinus excelsior pendula (the Weeping Ash)—Deciduous. Height, 30 feet. A noble weeping tree, also suitable for arbours, hardy, and of rapid growth.

Fraxinus lentiscifolia pendula (the Chinese Weeping Ash).—Deciduous. Height, 20 feet. Of smaller growth than the preceding; the branches small and flexile, very pendulous.

Fraxinus excelsior aurea pendula (the Gold-barked Weeping Ash). — Deciduous. Height, 15 feet. A beautiful half-pendulous tree, the yellow bark of the branches having a fine effect in the winter, when the tree is denuded of its leaves.

Gleditschia Boysii.—Deciduous. Height, 10 feet. One of the most graceful of small pendulous trees.

Ligustrum vulgare variegatum (the Variegated Privet).—Deciduous. Height, 6 feet. When worked on 5-feet stems of the Common Privet this forms a very graceful pendulous tree, the golden hue of the leaves showing to great advantage.

Populus grandidentata pendula (the Weeping Poplar).—Deciduous. Height, 30 feet. There are several varieties of Weeping Poplars, but this is one of, if not the best.

Quercus pedunculata pendula (the Weeping English Oak).—Deciduous. Height, 40 feet. This forms a fine feature in the landscape when of some size and age. There are also weeping forms of Quercus Cerris (Turkey Oak) and Quercus Tauzin, both highly ornamental.

Salix babylonica (the Weeping Willow).—Deciduous. Height, 40 feet. One of the commonest and most beautiful of pendulous trees, which can scarcely

be misplaced in planting where the weeping form is desired.

Salix americana pendula (the American Weeping Willow).—Deciduous. Height, 20 feet. Of finer growth and more decidedly pendulous than the preceding; forms a graceful lawn tree when worked on stems of the common kind.

Salix Caprea pendula (the Kilmarnock Weeping Willow).—Deciduous. Height, 10 feet. Leaves larger and shoots stouter than either of the preceding; forms a dense umbrageous tree when worked on stems of the common kind.

Salix Wolsoguna.—Deciduous. Height, 10 feet. Certainly one of the prettiest weeping trees when worked on stems of the common kind; the leaves are of medium size, almost round, and thickly set on the branches.

Sophora japonica pendula.—Deciduous. Height, 12 feet. A decidedly pendulous tree, with dark green leaves.

Tilia alba pendula (the Weeping Lime).—Deciduous. Height, 20 feet. A beautiful weeping tree; the leaves white on the under sides.

Ulmus microphylla pendula.—Deciduous. A weeping Elm, with very small leaves, forming a pretty tree when worked on 6-feet stems of the common Elm.

Ulmus montana pendula (the Weeping Mountain Elm).—Deciduous. Height, 20 feet. A handsome broad-leaved variety, with dark green leaves. Distinct and remarkably effective.

Ulmus rugosa pendula.—Deciduous. Height, 25 feet. This is more thoroughly weeping than either of the preceding forms, often making shoots many feet in length in a single year.

As with the pyramidal forms, so also with the weeping, it would be easy to extend the number of varieties; the preceding list is merely a selection of those which seem to me the most valuable.

If it were desirable to extend these descriptions, proceeding from the form of the tree to the form of the leaf, I might associate together the following:—

Trees and shrubs with large compound leaves, including Mahonia Aquifolium, Amorpha fruticosa, Ailantus glandulosa, Aralia japonica, Æsculus of sorts, Fraxinus of sorts, Juglans of sorts, Rhus typhina, and the like.

Trees and shrubs with large simple leaves, including the Aucubas, Laurels, Portugal Laurels, Photinias, Yuccas, Maples, Spanish Chestnuts, Catalpas, Tulip Trees, Magnolias, Paulownias, Planes, Poplars, &c.

Trees and shrubs with small simple leaves, embracing the Conifers, with their needle-shaped leaves; and the Berberis, Box, Phillyreas, Yews, and the like.

I apprehend, however, that these are so familiar to all likely to be engaged in planting, that to describe them would be superfluous. Suffice it then to record them here, and to remark that the best forms of them should not be lost sight of when making arrangements for planting. Let it be remembered that well-arranged plantations should comprise the widest possible diversity both in form and colour. *William Paul, Paul's Nurseries, Waltham Cross, N.*

WIGANDIA CARACASANA.

"If well-grown, and formed into a bush, feathered to the surface of the ground, this plant must have a very beautiful appearance with its large clusters of delicate lilac flowers, which continue to open in succession for a long time. But if potted into a sort of stake with a few leaves and flowers at the top, as is too frequently the case with stove plants, it will be found to possess little claim to attractiveness." So wrote Sir J. Paxton, in his "Botanical Dictionary," of this useful, but then little-known plant. The Wigandia caracasana now takes its place in the front rank of fine-foliage plants for the decoration of the subtropical garden during the summer season, and even at an advanced period of the year it is almost the only plant that retains all its freshness and beauty—not a leaf was injured by the cold nights and slight early frosts of the present autumn. Its power of resisting cold is greater than that of the well-known Castor-oil plant, for after many of the young leaves and a few of the old ones of the latter have suffered, the former remain quite fresh and good. This simple fact proves in the strongest possible manner, how indispensable it is that collectors of plants should be most careful in noting exactly the localities in which they are found, and giving every particular respecting climate.

Treated as a stove plant, the Wigandia never attains to its full beauty. It stands perfectly the temperature of the conservatory. It is not, however, in the stove or conservatory, but in the subtropical garden, that this plant is found in all its grandeur and beauty. It there attains in one season a height of from 3 to 4 feet, with leaves 2 feet 6 inches long and 1 foot 6 inches broad; and in this state it may be considered as more ornamental and better suited for beautifying the subtropical than when grown for several successive seasons. This last remark refers to the plants when used for beds, but as single specimens on Grass larger plants have a very noble appearance.

The propagation of the plant is of the easiest kind. Side shoots taken off in February or March make excellent plants for turning out into the beds in May or June. It may also be extensively propagated by cutting up the roots, for small portions of 2 or 3 inches in length, inserted in pots and placed in heat, grow freely. I have been informed that by a good coverage of ashes or any other protecting material placed round the base of the plants, they might be preserved through an ordinary winter, and that from the roots a number of young plants would come up in the following summer. This plan however is not recommended, as the plants would be prominently scattered over the bed, and the regulating process that must take place would very much retard their progress.

The Wigandia delights in a rich light soil, and if the bottom is well drained so as to admit of very copious watering, success is certain. *E.*

Home Correspondence.

Doyenné du Comice Pear.—Of this, one of our newer French Pears of first-class excellence, in season in October and November, a representation was given in your columns early this year (see p. 31). The fruit is large and obovate, the skin is smooth, and of a pale greenish colour, with here and there irregular patches of russet on the sunny side, which is also frequently flushed with red; the eye is small, and set in an even basin; the stalk is short and thick, and is inserted obliquely; the flesh is white, very juicy, tender, buttery, rich, and melting. Specimens of this variety were submitted for the opinion of the Fruit Committee of the Royal Horticultural Society at their meeting a short time since, and were "pronounced to be excellent." In short it is one of the finest Pears of its season, and is eminently deserving of recommendation. In size it is equal to a Duchesse d'Angoulême, but it is much superior to that variety in flavour, which is more like that of Marie Louise, or Glou Morceau. It keeps longer fit for use than most varieties, a point not to be overlooked, for many good Pears have only a very short season in which they can be called eatable. This is not the case with Doyenné du Comice, for if ripe and good to-day it will be good to-morrow, and for many days afterwards. The tree is hardy and a good bearer, succeeding well on the Quince as a pyramid or standard. *F. B.*

The Tritoma.—The Tritomas are so conspicuously beautiful when other things begin to succumb before the gusts and heavy rains of autumn, that no excuse is needed for recommending them. It is not alone as component parts of large back ribbons and in such positions that these grand plants are useful, but in almost any position in the garden. Springing up as a bold close group from the green turf away from brilliant surroundings, they are more surprisingly beautiful than when associated with bedding plants; and of course many such spots may be found for them near the margins of the choice shrubbery in the generality of pleasure grounds. It is as an isolated group flaming up amid the verdure of trees and shrubs and Grass that their dignified aspect and brilliant colour are seen to best advantage. My object in writing this note is to say a few words about the desirability of paying more attention to the two better kinds—glaucescens and grandis, and to make a few remarks on others of the family. T. Uvaria became very common some years ago; but though a good kind it is superseded by T. glaucescens, which is a most free and abundant bloomer, continuous to flower too if the soil is deep and moist. One of the most effective displays of colour I have ever beheld was at Mr. Parker's nursery at Tooting, where there are large numbers of this plant in long beds; the effect being as fine as if a line of the 1st Life Guards in scarlet tunics were displayed across the nursery. I believe Mr. Parker has a large stock of these plants, and he has done very wisely in increasing them so as to make them cheap for us. It seems to me we do not sufficiently appreciate the advantage of good hardy plants, however much we may grumble at the consumption of coals. Here are the finest of all autumnal flowers, never causing a farthing of expense for wintering, planting, replanting, &c., but merely asking for a little ordinary preparation of the soil at first, and yet they are merely grown as adjuncts even in good gardens, and in many you can scarcely find them. There can be little doubt but glaucescens is the most generally useful plant, flowering profusely no matter what the weather, in August and September, and coming in at a time when people frequent the country garden so much. Next to it in importance, and greater than it in stature, is T. grandis, which comes in very late, and flowers till the late autumn. The stems grow to six or even seven feet high, sometimes throw out a side spike, and flower away if the season prove mild, till Christmas or even till the end of January. T. Rooperi, with which this has been confounded, appears to me quite a different plant, one of very strong Agave-like habit of leaf, and flowering very late—so late indeed that it is all but useless for open-air work, though I am told it makes a useful pot plant, and flowers indoors in winter. Do any of your readers know anything about it in this way? T. serotina would seem to be a variety of Uvaria, and not far removed from "Parker's grandis." T. media is not worth growing, so far as I have observed, in consequence of sending up its stems so very late in autumn. The best of all those dubious kinds is one called grandiflora, which is more distinct than the others, forming a sort of large corm-like base, and producing, when in good soil, large heads of finely coloured flowers. So much for these not often seen kinds or species. The important fact is that we have two kinds, glaucescens and grandis, that make a splendid display on any soil, and only require tasteful planting and arrangement to produce a noble feature in the flower-garden in autumn. The London clay is highly inimical to most kinds of herbaceous plants, but by making some preparation in it for these plants I have found them do nobly, and have no doubt that they may be grown to perfection in all parts of these islands without any trouble beyond planting in good and deep soils, and with some deepening and "making" of the soil in poor and very shallow ones. *W. R.*

Autumn Flowers.—The great Statice latifolia, with its large spherical head of minute lavender flowers, is a fine autumnal plant; a remarkably fine plant indeed in heavy soils, and may be grown well everywhere. Lobelia Tupa, on good warm soils, makes magnificent bushes, almost rivalling the Tritoma in attractiveness. I have failed to keep it alive during the winter on the London clay, but in the two Dublin Botanic Gardens it forms great stools like any ordinary hardy herb. Doubtless it would do likewise on most well-drained and good garden soils. The new white Anemone Honorine Jobert is one of the best plants in existence for autumn work. In rich soil it flowers for months, and the fine white flowers, with yellow centres, produce a most pleasing effect when seen in quantity. It is as freely propagated as anything in the way of a plant, and becomes established at once, though it is best when about a year planted. Anemone japonica, too, is well known to be a very useful autumn plant, but when I say that it is quite inferior to the foregoing, your readers may have some idea of the value of the white one. The Aster family, though weedy as a rule, furnish some good things that flower at the same season, and among the best of them elegans, turbinellus, Amellus, Novæ-Angliæ, repertus, and versicolor, all really good, particularly the first, second, and sixth. Polygonum Sieboldii flowers in autumn, and often makes an imposing object, though the colour is not striking. Of course, and finally, we must not forget Rudbeckia Newmanni and Sedum Fabaria, both excellent for the open garden in autumn. *R.*

Cups for the Royal Horticultural Society's Bury Show.—We are requested to publish the following letter, which has appeared in the *Bury Post*:—It is of the utmost importance to the future of horticulture in this county that the first show of the Royal Horticultural Society in the provinces should be successful. The wider the interest excited, and the more attractive the prizes offered, the more certainly will success be achieved. The giving of local and provincial prizes in kind will do much to widen the one, and enhance the value and increase the attractiveness of the other. In fact, the more cups given for special objects the more exhibitors, and *vice versâ*. No mere money prizes, although on this occasion they will be liberal, have such an attractive power as gold or silver cups, or other prizes in kind. Therefore from the Royal Society downwards I hope cups will be given. Perhaps the Royal would venture on a 20 guinea gold cup for Orchids, which would bring some of the large growers to Bury. The local Societies in East Anglia are ready to follow suit with cups for their special favourites. We have already the promise of five guineas from Woodbridge for Picotees. Doubtless they will readily change their guineas into a silver cup if desired, and it is almost equally certain that Ipswich, Cambridge, Norwich, Eye, &c., will each present their cups. Then their are the boroughs in East Anglia. Bury will no doubt take the lead. Ipswich, Cambridge, Sudbury, Stretford, Norwich, &c., will follow. Other large towns, such as Stowmarket, Newmarket, &c., ought also to be represented by their cups. The borough and county members would join in this graceful service to the constituency and the county. And this is an object in which all parties might combine. Instead of each member presenting a cup, the two for each borough—where there are two—and each division of the county might present one. The counties themselves should also be represented at the Bury Show. There is no desire to make this specially or exclusively a Suffolk show. Suffolk in general or Bury in particular will have the honour of the real presence of the Royal, but the influence and benefit of the show are designed for the whole of the provinces, and, indeed, for all England. It will be open to all England, and therefore prizes may be given by Lincoln, Cambridge, Norfolk, Essex, &c., as well as Suffolk. Professional prizes, such as Law, the Army, Medicine, &c., horticulture, and agriculture, might also be offered. The University of Cambridge should also share in this matter, either the different colleges offering cups, or the University as a whole. The Albert College at Framlingham, the Grammar Schools of Bury and Ipswich, and the various scholastic institutions throughout the county, should be invited to participate in the offering of cups. Thus an interest for horticulture would be excited among the young that might be of the highest importance as an antidote to vice, and a source of the highest gratification and the most refined pleasure in after life. I shall be happy to receive the names of gentlemen, Societies or Institutions, towns or counties, who are prepared to participate in the honour and pleasure of presenting prizes in kind, and cheques for this purpose will be handed over to Mr. Cooper, the banker, and acknowledged by him, as Treasurer to the Local Committee, or by the Secretary. A list of such subscriptions will also be published by me weekly. The wishes of the donors will be as much as possible consulted in the objects for which these prizes are given, but in case of two or more cups being offered for one prize the final decision must rest with the Exhibition Committee, consisting of the Local Authorities and the Royal Horticultural Society. I will receive subscriptions for the Suffolk Gardeners' Cup, in postage stamps and money orders. To allow as many as possible to join in this prize, I suggest that the subscriptions do not exceed 5*s.* per gardener. *D. T. Fish, Hardwick House, Bury St. Edmund's.*

Relations of Welwitschia.—The papers on Conifers publishing in your pages rather go beyond my powers of reception and intelligence. They are too strongly Darwinian for me. I am beginning to think that there may be something in Mr. Darwin's speculations; but it seems to be unphilosophical to use "a hypothesis which is probable but cannot be verified" (as John Stuart Mill describes it) to establish the relations of Welwitschia to the Gnetaceæ. Surely that ought to be done by the plants themselves. *S.*

Clematis Jackmanni.—At a recent meeting of the Floral Committee, Mr. James Bateman, of Biddulph Grange, Congleton, produced some blossoms of the above excellent out-door creeper, which were stated to have been taken from a plant that had been in con-

tinuous bloom for three months previously. It was also said that the blossoms would bear with impunity a large amount of frost. I can corroborate both these particulars, as at the end of July last I obtained from Messrs. Jackman & Son a small plant of C. Jackmanni, and planted it on a south-west wall, but in an exposed situation. It soon threw a shoot of 3 feet in length, which produced about 20 blossoms. They began to expand in the second week of September, and the last of them are opening to-day (November 28th) under the influence of the bright sunshine. The colour on opening is a glossy crimson purple, becoming paler with age. It is a free and continuous bloomer, and having borne without the slightest symptom of check in any way the sharp frosts of the past three weeks, its hardihood is beyond doubt. On the same wall, and under exactly similar conditions, C. lanuginosa, planted in December last, has flowered very freely and continuously. Though not such a rapid grower as the preceding, its blossoms (opening with a beautiful shade of mauve lilac, likewise paling in colour with age) are produced in large clusters, making a fine display on a wall. The last-named ceased blooming about a month ago; it wants more sunshine than the other variety. The roots will be covered up with some litter in a few days. I imagine this will afford sufficient protection in very bad weather. It is to be hoped that the fine hybrids of C. lanuginosa produced by Mr. Cripps, of Tunbridge Wells, will prove equally hardy with the species (C. lanuginosa) from which they are evidently mainly derived. Where slow-growing creepers are required for covering walls of dwelling houses, the varieties of the Clematis above-mentioned are invaluable in suitable aspects. They deserve to be used extensively for the purpose, as there is no doubt they soon will be. *Richard Dean, Ealing, W.*

Poinsettias.—In growing the Poinsettia pulcherrima, what is the best method of causing it to break so as to form a bush? I have tried pinching and tying down the shoots, but have hitherto failed to obtain more than two or three shoots from a plant. *J. Stanley, Beckenham.* [The Poinsettia is not easily induced to break freely when headed down or stopped, and large bushy plants are often made up of several smaller ones grown together in a mass. EDS.

Crops at Bicton.—We have been favoured so far with a beautiful November, scarcely any rain, but sunshine daily, the nights ranging from 48° to 56°. On Thursday morning, the 22d ult., we had a slight frost, which touched a little the out-door beds of Heliotropes and Dahlias, French Beans, and Scarlet Runners; till then we had it summer-like, gathering Scarlet Runners, &c., out of doors daily. It has been a splendid autumn for storing roots in fine condition. The Potato crop in this locality for miles around is, taking the average, fully half rotten and gone, and the tubers are still rotting in store. We had here but little rot from the 1st of June till the first week in September, and the Potatos, though small in size, were most abundant, and of excellent quality. It rained little or much every day throughout September, after which disease and decay set rapidly in. The change was certainly very favourable for Turnips, Swedes, and Mangel. The pasture Grasses have been and still are most abundant and good, and our corn harvest in this locality was one of the most beautiful ever remembered, the corn being good both in quantity and quality, and saved without trouble and with very little expense. I never before saw it and the straw of such a fine bright brimstone colour. The Apple crop, where the orchards were in a healthy condition, was heavy, and the fruit fine and juicy, yielding more cider than was expected. *James Barnes, Bicton.*

Broccoli.—Mr. Nicholson (see p. 1093) inquires if any one has cut any earlier sort of Broccoli than Backhouse's Winter White, which is very late. He also states that he has Snow's variety growing by its side that was sown at the same time, viz., April 14th, which showed no sign of flowering. Surely, therefore, your correspondent cannot have Snow's variety true. I enclose for your inspection two heads of Snow's Winter Broccoli, the seed of which was sown April 16th, from which we have been cutting heads as fine as those sent ever since the first week in October (a good month before Mr. Nicholson), and we shall be able to cut similar heads for another month to come, so that I cannot think Backhouse's kind superior to Snow's, even in point of earliness. I have a spurious kind of Snow's Broccoli sown at the same time, which shows no signs of flowering yet, but this is from purchased seed. The former, which is genuine stock, I have grown and saved for these last 25 years. *D. Judd, Hawkstone, Salop.* [The heads in question were of medium size, white, close, and good. EDS.]——Permit me to inform Mr. Nicholson that we have been cutting Osborn's Broccoli, White Cape, Purple Cape, Snow's Winter, and Walcheren, since the last week of October, up to which time we had a plentiful supply of Cauliflowers. We have strung up in a cool shed a large quantity of Broccolis by their heels, which will keep good three weeks. I prefer this mode to laying them amongst sand or soil. Osborn's Broccoli is one of the best earlies, only it must be planted very early or very late, and be well exposed to the sun's influence, otherwise it damps off. *P. Middleton, The Gardens, Wynnstay, Rhuabon, North Wales.*—— Seed of Snow's Winter White Broccoli was sown here the last week in March and again in the middle and end of April; between 500 and 600 heads have been cut from the first sowing, about the same number is now in use from the second, and we have a similar piece to follow, in December and January, from the last sowing. We find that there is no variety of Broccoli for autumn and winter use which suits us so well as Snow's. *E. N., Hants.*——I sowed Snow's Winter Broccoli on the 30th of March, planted it out on the 3d July, and cut a few very fine heads on the 9th November. I had the seed from Dublin. Till this year I generally sowed the seed of this and several other sorts in the last week of April or first week of May, and the result was that I could never cut a respectable head of Snow's variety before the middle of February. Mr. Nicholson will doubtless find his crop of Snow's a useful succession to Backhouse's variety. *Angus McIntosh, The Castle, Castleton, Ireland.*

Radiation of Heat.—I can only very briefly again make my protest against Mr. Fish continuing to assert that clouds (*i. e.* visible vapour) present a mechanical obstacle to the passage of heat in any sense which is not also true of invisible vapour. As I said before, any one may convince themselves by actual observation that the rate of loss of heat by radiation depends on the hygrometrical state of the air, and that it is greatest when the air is driest. A slight frost with much vapour is much more injurious to vegetation than a much greater amount of cold with dry air; that is to say, the amount of damage done to tender vegetation on a cold night is no measure of the amount of cold. Again, drainage improves the climate, but this is because the soil is capable of being warmed to a greater depth, and so more heat is stored up to be yielded again to the atmosphere; the closeness of the undrained soil prevents the heat from travelling downwards. *J. S.*——Atmospheric air, absolutely humid, holds dissolved at the temperature—

Of 32° the $\frac{1}{215}$	part of its weight of water.		
59 the $\frac{1}{96}$	"	"	"
86 the $\frac{1}{49}$	"	"	"
113 the $\frac{1}{26}$	"	"	"
140 the $\frac{1}{14}$	"	"	"
167 the $\frac{1}{8}$	"	"	" (*Leslie*).

Consequently—

32° + 27 = 59°		
59 + 27 = 86		
86 + 27 = 113	}	As above.
113 + 27 = 140		
140 + 27 = 167		

Consequently, as the heat increases in arithmetical progression, the capacity of atmospheric air for water increases in geometrical progression. *Old Subscriber.*

Mason Hall Grange.—Mr. Hullett would seem to be the favoured child of Flora and Pomona, for there really seems to be no end of the rarities placed at his disposal! As it were a thousand pities that such marvels should be dispersed or lost sight of altogether, I would suggest the formation of a museum or museum-catalogue, in which everything that he has at any time offered to anybody should at once be inducted. I shall, myself, be able to contribute largely, and so, I doubt not, will other of your correspondents. *Rusticus Expectat.* [We have some materials for such a catalogue, and should like to make it as complete as possible before publication. EDS.]

Early Peas.—As the season has again come round when we have to think about sowing Peas for an early crop, it is rather puzzling to know which kind to sow, for if we take up your Paper we there find that Sutton's Ringleader is advertised as the earliest in cultivation; Carpenter's Express as the earliest Pea grown; Dickson's First and Best is stated to be the very best first early Pea; and Taber's Early Perfection, offered for the first time, is recommended as the heaviest-cropping first early variety yet introduced. Here we have many qualities recommended, but it is not convenient to the majority of cultivators to purchase so many kinds, and my experience leads me to affirm that this is not necessary. Of Taber's Perfection Pea I know nothing except from the advertisement, and if the fact can be established that by sowing one of the three first all the qualities belonging to the others can be obtained, I consider that it will be an advantage to everybody. It is to be regretted that the trial of Peas at Chiswick this season proved a failure, otherwise cultivators of Peas would have had some standard to go by. Still I think much good may be done by gardeners recording their experience in the matter. In furtherance of that object I will mention a few facts. On the 1st of December, 1865, I made a sowing of six sorts of Peas, one long drill of each in an open quarter of a garden exposed to the east-north-east winds. The sorts were Sutton's Ringleader, Dillistone's Early Prolific, Dickson's First and Best, Carpenter's Express, Daniel O'Rourke, and Advancer. On the 25th of April, 1866, Ringleader, Dillistone's Prolific, and Dickson's First and Best, were in full flower, while Carpenter's Express and Daniel O'Rourke were just showing their flower-buds. On the 25th of May a dish of Peas of good quality and fit for use was gathered from the three first, and from the two last Peas were gathered on the 4th of June, and from Advancer one week later. This variety, although a little later, is by far the best Pea. No doubt soil and situation will make a difference in the time of gathering; but I am convinced, and I do not hesitate to state, that Ringleader, First and Best, and Dillistone's Prolific, are the same Pea. I am also of opinion that Express and Daniel O'Rourke are identical. *G. T., Stansted, Sussex.*

The Tobacco Question.—Apropos of the endeavour to obtain tobacco free of duty for the use of the horticulturist, and the many suggestions already made as to the manner in which it may be possible to distribute it amongst those who require it for such a legitimate use, permit me to suggest, that much of the "damaged weed," periodically taken from the bonded warehouses to the public destroyer—especially as much of this has been of the very best quality originally—may be of the utmost worth for horticultural purposes. And further, whether it may not be possible, by mixing this with proper quantities of undamaged tobacco, to make it unfit for humanuse. Let us do all that is necessary in the way of keeping out unprincipled speculators, and at the same time let us try to save much which has hitherto been destroyed with no benefit to the Government, and a loss to the public. Would not sprinkling with salt water suffice to simply damage tobacco without destroying its necessary qualities? *William Earley, Dogwell.*

Black Alicante Grape.—Those who were present at the Great Fruit and Flower Show held the other day in St. George's Hall, Liverpool, must have been struck with the magnificent specimens of this Grape from Mr. Rabone, gr. to C. M. Campbell, Esq., Woodseat, Derbyshire, and also from Mr. Freeman, gr. to the Earl of Derby, at Knowsley. The former showed two bunches, weighing 9½ lb.; they were in every respect perfect examples of good cultivation, and well deserved the 1st prize which was awarded them. These, as well as those from Knowsley, were from Mr. Meredith's stock at Garston. The whole Show was a great improvement on that of former years, both as regards Chrysanthemums and fruit, and well deserved the support it received from an overflowing stream of visitors. *H.*

Saxifraga cordifolia.—Amongst the many pretty and useful plants that have been brought to light of late for early spring decoration in outdoor beds none are superior to this purple Siberian Saxifrage, which produces large masses of shining evergreen heart-shaped leaves of large size; it withstands the most severe winter, and in April pushes up purple Hyacinth-like spikes of flowers, which are most pleasing in appearance. It is well adapted for single beds, edged with Arabis, Pansy, or similar flowers, or for the central rings in bedding-out designs. Besides, as an old perennial, it divides most readily, and becomes itself freely to the many shifts necessary to this class of plants, in order to make room for the gayer occupants of summer. *William Earley.*

Anacharis Alsinastrum.—This weed has lately become very troublesome in the Aisne, and in the canals near Hamburgh. I should be glad of any information respecting the best means of destroying it. *P. on Ewes.*

Our correspondent will find much information relating to this pest in former volumes, and also in a pamphlet published by Mr. Marshall, of Ely. We may state a singular fact that has recently come to our knowledge with reference to this pest. For what we do some time since it was very abundant in the Lea, but from the Paan Hooghly Railway it has now all but supplanted by Naiadaceæ. EDS.

Exhibition Arrangement.—Agreeing as I do with the remarks of "H." (see p. 1116) in regard to the arrangement of plants at exhibitions, I may add that the failures of many of our provincial Societies, to say nothing of Chiswick, are doubtless due in some measure to the unvarying sameness of the subjects exhibited, and to the stiff formalities that characterise flower-show arrangements generally. What is wanted by all societies as aids to the exhibition, is what is called in stage parlance a good property-room—a reserve, in fact, of decorative plants and trees to make backgrounds, assist in the formation of groups, and to fill up gaps in the little landscape which a show should represent. Those of your readers who attended the meeting of the Royal Association at Nottingham, and took part in the *conversazione* at the Exhibition building, will remember the charming floral arrangement of the annexe, designed and carried out by Mr. Ingram, of Belvoir. The tent poles, which are generally so unsightly, were in this case made effective features in the enclosure, being formed by means of a succession of circular beds into pyramids filled with flowers, producing a striking and at the same time pleasing effect. Could not this idea be carried out in some of our forthcoming exhibitions? *T. S., Mansfield.*

Sequoia sempervirens (see p. 1045).—A tree of this Sequoia, growing at Shuckburgh Park, Warwickshire, measures 38½ ft. in height and 5 ft. 4in. in girth at the base. It lost from 2 to 3 ft. from its leader by frost in 1861. Cupressus macrocarpa and C. Lambertiana are of the same height as the Sequoia just alluded to. *T. M., Shuckburgh Park, Warwickshire.*

Foreign Correspondence.

Garden Labels.—Can you not induce some of your manufacturers to produce some good permanent metallic garden-labels, with fused metallic writing, or with the coloured letters burnt in, as in glass-work, by igneous fusion? Assuredly the process would not require extraordinary ingenuity, and with British appliances could be readily carried out. Labels of all the readily cultivated trees and shrubs would sell well, even at a high price, and how much would they add to the beautiful appearance of any garden of public instruction! Indeed, smaller labels of such sorts would be bought for every collection of house plants possessed by intelligent proprietors. The fifth volume of my "Fragmenta" will appear before the end of the year. *Ferd. Mueller.* [The realisation of our correspondent's wishes might be founded if the Royal Horticultural Society, or the Society of Arts, would offer a prize for the best labels of the kind mentioned. EDS.

Societies.

ROYAL SOCIETY OF EDINBURGH.—Monday, November 26.—Prof. Balfour, M.D., F.R.S., in the Chair. The following communications were read:—1. "On Plants collected in Otago, New Zealand." By W. Lauder Lindsay, M.D., F.R.C.P., F.L.S., Professor of Botany, Queen's College, Dundee, and H.M. Botanical Commissioner for Otago. In speaking of Tree Ferns, the author remarked that 61 per cent. of Otago Ferns were arborescent. These Tree Ferns rank, as regards beauty and frequency, as regards botanical rank, and usefulness, with the exogenous forest trees with which they are generally more or less intermixed. Cyathea Smithii is the most common species in Otago. Dicksonia squarrosa and D. antarctica are also marked Tree Ferns of the district. In the South Island of New Zealand, Tree Ferns are associated with glaciers, snow, and other coldnesses of an alpine and high-latitude climate. There are also found, being evidently glacier trees and Cabbage Palms associated with Arabian-e, Myrtaceæ, and other trees usually recorded as denizens of comparatively warm climates. The

largest glacier, Mount Cook (13,000 feet elev., in lat. 43 deg.), which gives rise to the Waitan river, descends as low as 700 feet above the sea level on the west coast of Canterbury, and within eight miles from the coast, on the south side of the Rakaia River, grows Ferns exactly like those of the Canterbury Plains, and not a single tropical type are found. At no great distance from these glaciers are found true Palmas (Areca sapida), in the mountainous forests and ravines of Nelson Tree Ferns second in gigantic size only to Australian. The introduction of New Zealand Ferns in Britain has been lately attracting the attention of horticulturists. Dr. Lindsay, however, doubts whether these plants will be hardy enough to stand the severest British winters, although not perhaps. The classification and nomenclature of New Zealand Ferns furnish us with some notable instances of the proneness to error in reference to climate, and in the definition of genera, species, and varieties. Dr. L. states that 40 species have been made out of Asplenium Hookerianum, and different names are given to Doris (pulling their common Bracken), and about a dozen species have been manufactured out of Lycopodium clavatum. The variability of the species of New Zealand Ferns is remarkable. This was illustrated by species of Asplenium, Lomaria, Aspidium, Hymenophyllum, &c.—II. *On the Succession of Species noticed in the Royal Botanic Garden, Edinburgh.* By Dr. W. R. M'Nab. The author gave a revision of the Sclaginella cultivated in the Edinburgh Botanic Garden; the Royal Gardens, Kew; Messrs. Veitch & Sons' Nursery, Chelsea; and Messrs. Jackson & Sons' Nursery, Kingston, London. He pointed out the confusion that existed regarding the names of the different species, and gave a table of the synonymes. The species were arranged according to Professor Brown's Revised Selaginellæ Imperfectæ, and included 41 species. Thirty-seven species had been carefully examined, and the author had not met with the other seven species included in Brown's list in cultivation in this country. The paper was illustrated by dried specimens from the different collections examined.—III. *On Sclerotium Rhizoctonia.* By J. Sadler. Mr Sadler read a communication from Dr. Dickson on the preparation of skeleton leaves. A solution of caustic soda is made by dissolving 1oz. of carbonate of soda (washing soda) in about 2 pints of boiling water, and adding 1oz. of quicklime previously slaked with a little water, decant the clear solution and boil it in the flask. The ebullition add the leaves; boil briskly for some time, say an hour, occasionally adding hot water to supply the place of that lost by evaporation. Take out a leaf and put into a vessel of water, rub it between the fingers under the water. If the epidermis and parenchyma separate easily, the rest of the leaves may be removed from the solution and treated in the same way, but if not, then the boiling must be continued for some time longer. To bleach the skeletons, make about a drachm of chloride of lime with a pint of water, adding sufficient acetic acid to liberate the chlorine. Steep the leaves in this till they are whitened (about 10 minutes), taking care not to let them stay in too long, otherwise they are apt to become brittle. Put them into clean water and float them out on pieces of paper. Lastly, remove them from the paper before they become quite dry, and press them in a book or botanical press. Specimens so prepared by Dr. Dickson were exhibited, and presented to the Museum.—Sir W. Jardine, Bart., sent ripe specimens of the fruit of Passiflora edulis, P. quadrangularis, and P. macrocarpa, produced at Jardine Hall. They had been used as articles of dessert, and pronounced to be good. Mr. Gorrie exhibited a ripe fruit of Passiflora laurifolia, or Water Lemon of the West Indies, grown and sent to him by P. L. Hinds, Esq., of The Lodge, Byfleet. In a letter which accompanied it, Mr. Hinds remarks:—"I have been rather amused by observing the inaccuracy of description handed down by various writers in regard to the orange-coloured meat of this Passiflora. On this fruit, during a long if time, he has seen many thousands, and never detected a white spot on any one of them. With respect to the Passiflora macrocarpa, he questions the statements made of its being a new fruit, being of opinion that it is neither more nor less than the true P. quadrangularis, with which he has been acquainted for upwards of 60 years, and is now freely producing it at his place from plants originally imported from the West Indian Islands, and his fruit has varied from the 1 to 2 lb. weight. He has also successfully grown in this country as P. quadrangularis is quite a different species, much smaller fruited, and such as he has seen imported from Madeira.

Notices of Books.

Contributions to the Flora of Mentone. Parts I. and II. By J. Traherne Moggridge. London: Reeve & Co. 8vo. 1866.

Some of our readers may remember the pleasant letters from Mentone, written by Dr. Bennett, and published in our columns. To many also the volume published by the same accomplished physician, under the title of "Mentone and the Riviera," may be familiar. The glimpses of the vegetation of this delicious region thus afforded us often led us to wish for a more detailed account from the pen of a professed botanist. Our wish bids fair to be fulfilled. Two Parts of an illustrated work on the Flora of Mentone are now before us, the result of the labours of Mr. Traherne Moggridge, who has had the advantage of the assistance of M. Ardoino, who is preparing a flora of the "Alpes maritimes." Each Part contains 25 coloured illustrations, with accompanying letterpress. The plates are beautifully executed by the author himself, and though artistically rendered, are faithful portraits. In most instances (it had been better in all) carefully drawn analyses showing the more important structural peculiarities are given. In the letter-press the author not only gives the characters of the plants he figures, together with references to various authors who have written on them, but adds comments of his own, which show not only his ability as an observer, but also his appreciation of scientific botany. While he does not neglect the critical examination and comparison of the plants before him, he is evidently fully alive to the exceeding interest attaching to their life history—and thus he does not set before us a mere technical description, which, however desirable, is after all only a means to an end, but he takes the opportunity to intercalate among the descriptive portions of his book notes on the manners and customs, so to speak, of the plants he has met with. The calling renewed attention to these points constitutes one of the obligations which lovers of natural history are under to Mr. Darwin, who, by his papers on the processes of fertilisation in plants, on the habits of climbing plants, &c., has, together with others who have been stimulated by his example, not only added substantial benefits to vegetable physiology, but opened up a most interesting department of science, and one in which the amateur may work pleasantly and profitably. Many persons attracted by the beauty and charm of flowers have desired to learn something of botany, but have been dismayed by having a "Flora" put into their hands, containing nothing but a dry technical description of the various plants, without a hint that botany comprised anything beyond the discrimination of a broad-leaved plant from a narrow-leaved one, and so on. As well might the medical student when he "grinds up the bones," imagine that having learnt their conformation he had nothing more to learn as to their uses, or as to the appearance and functions of the other portions of the economy. Even the stamp collectors invest their hobby with more interest than many botanical writers do theirs. It must not be imagined that we wish to depreciate the importance of descriptive botany, but we regret that it has been made to appear as if it were the end of botanical studies, instead of as a most potent means to an end. A few more papers such as those to which we have alluded, the introduction into descriptive works of points of physiological interest, a showing forth of the fact that there is a science of homologies for plants as well as for animals, will go far to redeem Botany from the charge of being a mere science of names, and will attract to it votaries now repelled by the uninviting aspect it is made to wear. We have not space for many comments on Mr. Moggridge's plates, but we may call attention to the series of forms of Ophrys which he figures, and which show that the Bee Orchis, the drone, the spider, and other varieties are forms of one species, the Ophrys insectifera of Linnæus. Mr. Moggridge's remarks on the relation that exists between the forms of these flowers, and the order in which they flower are exceedingly curious and worthy of attention. His statements are confirmed by the experience of the Rev. G. E. Smith, as related in his delightful book on the plants of South Kent many years ago. We have ourselves seen a monstrous flower of O. aranifera, Hud., with 3 lips; one, the normal one, had the ✓ shaped marking characteristic of the aranifera-form, while the supernumerary lips were more like those of the common Bee Orchis.

Many of the plants figured by Mr. Moggridge are already in cultivation here, as the Anemones, the Fritillaries, Narcissus, &c., but others might be introduced with advantage.

Florists' Flowers.

IN a preceding paper on the cultivation of the HYACINTH IN WATER, occurs a passage which reads somewhat oddly, and which requires a slight amplification in order to present the exact meaning I intended it to convey. The passage referred to the placing of an inverted glass over the crown of a Hyacinth, in order to avoid "premature development." This was a comically negative and somewhat Milesian method of stating the point. By "premature development" I meant the putting forth of an ill-developed spike of bloom before any growth was made by the foliage. This would, I fear, be the inevitable fate of a great many of the Hyacinths planted (in water) "on the 31st of December," unless they had been preserved in a very different manner from that usually observed in the London seed houses; it is frequently the fate of strong bulbs planted at the most favourable time, and this "premature development" arises generally from some defect in the constitution of the plant, or the soundness of the bulbs, or to the water having become fetid, and the rootlets decayed in consequence. When the roots remain sound, an inverted glass will bring up the foliage, and so the flowering will be partially arrested, and to some extent postponed, and the spike thereby strengthened. A wine-glass or a child's tumbler answers this purpose remarkably well.

A few varieties betray a strong tendency to become rotten at the roots. Voltaire, a well-known blush white single flower, and a very vigorous grower, will often go off in this way; the roots become soft and pulpy, and the water emits a most disagreeable odour. In this state the plant is apparently beyond recovery, and if not at once thrown away, a miserable apology only for a spike rewards the labour of the grower. It would seem that no rinsing or cleansing of the roots, or frequent renewings of the water, changes the fatal conditions. But that they may be changed is shown by the following fact:—About the middle of October I placed in a glass a very strong bulb of Voltaire, S. W., which readily rooted, as it always does—lustily, as well as plentifully. A few days ago I observed that the roots had all become pulpy, and the water highly disagreeable. The roots were entirely removed, and the base of the bulb thoroughly cleansed by the use of a soft brush; the glass was well scoured, and the bulb again placed in fresh water, where it is rooting freely, with an entire absence of its former unfavourable conditions.

In common with all window plants a little attention must be given to the occasional cleansing of the foliage of the Hyacinths. Dust will gather, and requires removal. The leaves being concave in form, readily allow of dust being deposited on their surface. A small piece of sponge and some clean water can be used for the purpose of keeping in good health these "little apostles and botanic ministers at large," as Theodore Parker termed window plants, in one of his exquisite sketches.

The style of glass used for the growth of Hyacinths should be that represented by the pattern registered by Tye, of Birmingham. Handsome vases of the same shape are also among the samples of the recently introduced Etruscan pottery. It is time the old-fashioned chimney-glass—so difficult to provide with a support for the spike, and still more so to keep in an erect position—was entirely banished from our houses. The modern form is now produced, both from glass and pottery, of very handsome designs, and when not used for the Hyacinths, forms a capital receptacle for cut flowers.

I fear that the present method of exhibiting Hyacinths in glasses is one open to grave objection. The bulbs are often grown in pots, and some days previous to the show transferred to the glasses. That this method is adopted was very evident at the spring show of Hyacinths of the present year at the Royal Horticultural Gardens, South Kensington. Not only should the Hyacinths be grown in the glasses from the commencement, but there should be a stipulation that they have been cultivated within doors, and not in a greenhouse. When resource can be had to the greenhouse it places the exhibitor at a decided advantage, while they are not fair specimens of indoor cultivation. There will be no more effectual guarantee for the observance of such a rule than there is in the case of the prizes offered by the proprietors of the *Gardeners' Chronicle* for indoor plants: but there is an indirect appeal to the honour of the exhibitor, which it is to be hoped, for the sake of our profession, will not be altogether disregarded. *Quo.*

Gladioli.—As my name has been mentioned by "Brenchleyensis" (see p. 1118) in reference to Gladioli, I would, in proof of my statement as to small bulbs producing as good spikes as large ones, mention one or two facts in corroboration of this. When I received the bulbs of Souchet's new varieties last autumn, I was half-inclined to write to Paris, and complain of their size, for not one of them was larger than a well-grown Dutch Crocus. However, having had experience of the blooms produced by small bulbs, I did not do so, and from all of them I had fine spikes of bloom—some of them even threw up two and three stems. Again, there was one of Mr. Standish's varieties I was very anxious to keep, but of which I had lost the large bulbs. I had five or six of the spawn, not one of them larger than the kernel of a Filbert; they were planted in a pot and turned out into the border, and every one of them threw up a good flower-stem.

I do not think the precise time for planting is a matter of much importance, and it must depend on soil and situation; if these be damp, I should say defer planting until April, but if otherwise, plant in March. I do not find that they suffer if they have 'speared' 2 or 3 inches before they are put into the ground. The cause of the disease to which they are subject I do not know, but never plant, in the main beds at least, any bulbs that have black spots on them, for if you do, the chances are a hundred to one that there will be a blank in the bed. The spawn bought never to be allowed to get dry. *The Editor of the Floral Magazine.*

The Apiary.

THE EGYPTIAN BEE.—The introduction into this country of the Egyptian bee has naturally excited considerable interest among lovers of bee-culture. Having, since the early part of this past summer, been in the possession of three stocks of this beautiful species, it has occurred to me that a short description of it, and of its introduction into Europe and England, with the results of the experiment, will not be uninteresting to your readers.

To Mr. Woodbury, of Mount Radford, Exeter, we are indebted for the successful naturalisation of this species, so far as England is concerned; and I also must here acknowledge my indebtedness to his researches and writings, for the greater part of my own knowledge respecting it. I shall have to draw largely from his experience in the course of the following paper or papers, and shall not further allude to my authority, or apologise for the frequent use I may thus have to make of it. My own immediate opportunities for observation have only tended to prove the correctness of all that has been advanced by him.

For some years past, Dr. Gerstäcker, a German, has advocated the acclimatisation in Germany of the Egyptian bees, Apis fasciata, believing them to be possessed of attributes, which would render them a very valuable acquisition. These attributes are their great beauty, and their supposed unwillingness to use their stings. Mr. Woodbury himself endeavoured to procure three colonies direct from Egypt, but failed, owing to the unwillingness of the Egyptian people to permit of any apiarian emigration.

At length the Berlin Acclimatisation Society took the matter in hand, and their agent, Herr Vogel, succeeded in overcoming all difficulties. From his account I will give a few extracts. Ages ago, bee-keeping must have been extensively practised by the Egyptian people, but as civilisation has sunk, bee-culture has also greatly lessened, and is now almost entirely confined to a few Arabs who are settled on the land, and to a few Copts. The majority of the bees are in Upper Egypt, while in Middle and Lower Egypt there are very few apiaries. The hives used are chiefly of earthenware, and are sometimes of a cylindrical form, made of the Nile mud. These cylinders are about 3 feet in length, by 15 inches in diameter inside. "The hive is closed at both ends by means of circular discs made of the same material; and the entrance, which is but small, is made in one of these discs. * * * The cylinders lie in a horizontal position, and are placed, like draining tiles, under the shade of a tree." * * * The hive of the stock imported into Germany was a cylinder only about one-third of the size of the usual hives, made so small purposely for transportation. The imported stock was a second small swarm, which issued in the latter end of March. An artificial increase of stocks is not known. Bee-caps are unknown. The Egyptian bee-keepers always approach their bees with their faces unprotected, hive the swarms, and deprive the bees of honey according as they have gathered."

"As but a few Fellahs and Copts keep bees, it requires a good deal of time to find out an apiary. A European who does not know the Arabian language, can discover an apiary mostly only by chance. Moreover, the Fellah are so intolerant as often to throw great difficulties in the way of discoveries of this kind in Egypt, which difficulties cannot often be overcome; and travellers are frequently attacked by robbers. In Manzur a Copt keeps bees, and is said to be the Egyptian master of bee-keeping. Herr Hammerschmidt, a photographer, went to this man in 1863 to buy a stock for the Berlin Acclimatisation Society; the gloomy, distrustful, and very superstitious Egyptian did not, however, give a decided answer. Not even a dead bee, which was to be sent to Berlin as a sample, could Mr. Hammerschmidt obtain from him. For 15 to 20 thalers (2*l.* 5*s.* to 3*l.*) only was he willing to part with a dead bee. Herr Hammerschmidt fortunately succeeded, in 1864, in finding out a small apiary in Old Cairo. The proprietor, a Fellah, who had been brought up in a European family, gave a bee as a sample, and parted with a small swarm for a considerable sum of money." He could only be induced to do so, however, by being told "that his name would not only be mentioned in Europe, but become immortal. This alone had the desired effect.

"The Egyptian bee, which is distinguished from all other known varieties by its small size and light pubescence, is spread over the whole of Egypt; Arabia, in nature African, has likewise the Egyptian form of honey bee. The Syrian bee differs only from the Egyptian in being somewhat larger, and having a hairy yellow corselet; it is in other respects so much like the Egyptian variety that it may be considered as belonging to it.

"As the sub-tropical zone is the home of the Egyptian bee, it was feared that this variety, which exists only in hot countries, would soon perish in the climate of Germany." Herr Vogel however does not believe that if introduced into Germany or England the bee would perish on account of the climate. In this supposition he has been proved to be perfectly correct, as hitherto they have been propagated with facility, and have thriven remarkably well. But we must not anticipate what will have to be related in due course.

Herr Vogel draws comparisons between the climate and temperature of North Germany and Egypt, and comes to the conclusion that "the Egyptian bee is quite at home in our summer." He also gives a series of reasons, much too long to be quoted here, to prove that it is able to bear the winter of North Germany equally well with our northern bee. He says, "The Egyptian stocks are quiet in winter. During only the most severe cold (3rd and 4th January), they caused a low humming to be heard, just like the German and Italian stocks." Accordingly experience, the production and supply of animal warmth is intimately connected with the process of breathing and nutriment. The more severely the bee is attacked by cold in winter the more food it consumes, and the more it accelerates its breathing, until by actual roaring it produces that degree of warmth necessary for its existence." In the centre of a dense cluster of bees in the heart of the hive, the temperature can be sustained at from 53° to 59° Fahrenheit, while a severe frost prevails outside. Herr Vogel examined an Egyptian stock on the 16th of January, 1865. Observing the bees flying very strongly he could not repress his curiosity. He says, "When I merely looked over the floor of the hive, I was greatly delighted, for but a few dead bees lay there. The stock was perfectly healthy, and the queen, with her abdomen full of eggs, paraded the combs as if in summer. In 200 to 300 cells, eggs and larvæ were found." No trace of any dysentery was to be discovered in any of the Egyptian stocks on the 28th of January. He adds, "these observations speak strongly for a fortunate wintering of the Egyptian bee." *S. Bevan Fox.*

(To be Continued.)

Garden Memoranda.

MR. BATEMAN'S ORCHIDS, &c., AT KNYPERSLEY.—Mr. Bateman's name has been so long associated with the progress of horticulture as to have become familiar to all who have interested themselves in this useful branch of science and art. As a country gentleman he has poured out his wealth in embellishing the gardens at Biddulph Grange, and reforming the general configuration of the surface to so good account as to form an interesting theme and study to every landscape gardener. The general undulating surface which is in so much demand at the present day for decorative gardening, had long ago engaged his consideration, probably not so much from the general diversity of surface point of view, as more especially to secure shade and shelter for plants that cannot endure the rays of a scorching sun, or the torturing blasts of trying winds. As these gardens have been so minutely described and commented upon in the *Gardeners' Chronicle* from 1857 to 1863, it is no part of my plan or project to wander over the same ground. It may be here remarked however *en passant* that Mr. Bateman has not contented himself with simply providing the funds; but, like the bees about which we hear and read so much, he has been a hard-working student all his life, from the time he matriculated at Oxford and attended the botanical classes of Professor Daubeny, up to the organisation of the Tuesday scientific meetings of the Royal Horticultural Society, at which he has all along taken a prominent part.

Among Orchid growers and Orchid amateurs he is well-known from the interest which he has ever manifested in the popularisation of this tribe, and the diligence of his researches regarding local habitat, as to altitude, temperature, condition of growth, and other essentials which go so far to render their cultivation more easy. His collection of this tribe is almost, if not altogether, at Knypersley Hall, which lies some two miles distant from the Grange, and where Mr. Bateman's eldest son has resided since his marriage.

In looking over the Orchidaceous collection under the superintendence of Mr. Sherratt, there are many things that attract observation, and engage the attention. There is evidently a certain originality of thought brought to bear upon the construction, form, and position of the houses which does not stop short here, but is recognisable in the several contrivances which have been specially designed to carry out the ideas of the experimentalist with reference to modes of growth. The great feature of the establishment is novelty, combined as far as possible with a certain degree of elegance, which is at all times very pleasing. There is great incongruity in having valuable plants, producing beautiful inflorescence, huddled together in rickety houses, ill-constructed both as to exterior and interior, and with finishings and fittings, pots, pans, blocks, and such like, *ex dehabille*—everything, in fact, positively ugly but the flowers themselves. Much of the success of an exhibition, for example, depends upon a methodical and systematic arrangement, and the principle of order in all its details ought to be fully recognised, at all events in the cultivation of flowers and beautiful foliage, which are grown for the different phases of beauty they present to the eye. A certain degree of neatness, without any approach to extravagance, is manifest at Knypersley.

Another characteristic feature, in so far as regards the cultivation of Orchids, is the smallness of the houses; indeed many of them, so to speak, are like rabbit warrens. So far as my experience goes, they have their advantages and disadvantages. It is highly desirable, in order that success may be ensured for a large and general collection, to have a variety of climate, and that must have been the leading idea of Mr. Bateman and his gardener, when they planned the construction of them. It is also an advantage to have a circumscribed atmosphere, as presenting less obstruction to the permeation of light, which acts such an important part on the life and well-being of a plant. No matter how efficient a system of heating and ventilation may be, if the houses be lofty and the plants proportionately far from the glass, so much more will the physical system be weakened, and the vigour of the plants affected. But we must debit against this the sudden vicissitudes of such a climate, which is the greatest drawback that it presents. The argument might be successfully resisted for cool-house temperatures, where artificial heat is not in such demand. It comes, however, with irresistible force, and must break every barrier of opposition, where a tropical temperature must be maintained. With the thermometer out of doors oscillating between 10° and 20°, and a minimum heat of 60° to be maintained, there is the strongest argument possible for the volume of heated air being somewhat regular, which cannot be the case in small narrow houses, unless they be double glazed, which I hold to be neither necessary nor efficacious. Upon the whole, having seen and reported upon, aforetime, the best collections in the country, I am confirmed in the opinion, and will give my vote in favour of, a limited atmosphere where the pressure of cold does not act with such force as to necessitate a great play of artificial heat. In other words, tropical and semi-tropical houses may be from 20 to 24 feet wide; temperate and cool houses 10 or 12 feet. The height may be regulated in accordance with the stature of the plants. Houses should never be lofty for this tribe of plants. Mr. Bateman fully recognises this as an axiom, and so do Messrs. Rucker, Day, and Warner, as well as most other holders of "valuable stock."

Then as to houses with a northern aspect for cool Orchids, Mr. Bateman himself is the originator and expounder of the idea. I was inclined, at first, to reject the whole thing *in toto*, but in the very hot months of June, July, and August, both in England and on the Continent, I can see some appreciable advantages to be gained. The tropical sun pumps out the sap to such a degree by evaporation, that the corresponding process of absorption at night fails to drink in an adequate supply, unless the gardener resorts to frequent syringing overhead as the sun wanes in the atmosphere. "Ayont the Tweed" there is little difficulty in replenishing all the sources of demand. As winter houses, in any climate where artificial cultivation is going on, they cannot be desirable, because a full play of light when the sun is low in the horizon, is one of the greatest blessings in the economy of plant life, and it brings with it a degree of heat which is extravagantly rejected. The question is narrowed to this issue, and it is not at all a doubtful one, for it stands in the relative proportion of 9 to 3. It is a matter for consideration whether these houses could not be utilised for the preservation of bedding plants, for instance, and proper winter houses for Orchids provided. Were this done it would be an unquestionable gain, but that is a pound, shilling, and pence question, about which gentlemen can think and act for themselves. Some Orchids grow and thrive in very unlikely places; but if a general collection is formed, unless the whole be broken up into sections, and treated systematically, there would be more hospital plants than a "board of health" would like to cater for.

In one of these "north houses" was growing the cool section of Orchids. All, or nearly all of them, were planted into rather elegant-looking pots, with abundance of holes round them at the sides, some of a round and others of square outline. Each was furnished with a saucer for keeping up water supply, and many of the plants so treated seemed quite at home. In the hands of a novice this mode of treatment would not be a safe one, because it is equivalent to haphazard watering, charging as it does the atmosphere with a volume of moisture by day sufficient to upset and endanger the system, and totally at variance with the laws of physiology. In the hands of a skilled practitioner, like Mr. Sherratt, who knows when to give and when to withhold, there is not the same objection, but for all practical purposes the table surfaces (if covered with pebbles all the better) is of itself sufficient, with such auxiliaries as evaporation troughs and paths to provide a requisite supply. Here was growing a very nice plant of Odontoglossum Warneri. It is of the Cervantesii type, with a very prominent labellum, white ground with strong pots, the basal portion yellow. One of the best plants I know of. Epidendrum vitellinum majus, was growing luxuriantly, with numerous flower spikes. This is clearly a warm greenhouse Orchid, and when it attains specimen size few plants are more striking or better adapted for winning general applause; the soft concolored vermilion tint which pervades it is prepossessing. Epidendrum myrianthum is a good growing plant, and worthy of a place in general collections; the handsome appearance which it presented here might serve to establish its renown. Odontoglossum nævium was finely represented, and no member of this choice family is more relished than this, unless it be the charming O. Phalænopsis, which up to this date is worth more than its weight in gold, and is likely for many years to continue so. Maxillaria venusta had not escaped Mr. Bateman's critical eye, and he must have been early in the field to secure such a prize, a splendid example, which must have been in his plant room under cultural care for years. It was growing in one of the perforated pots referred to in a cool temperature, and to say the least, that other growers may profit by it, it was "at home." Dendrobium speciosum, which many, at one time, pooh-poohed from its shyness in producing inflorescence, and from its questionable character as a decorative plant, should be proved to be appreciated. Some of the varieties of it are unquestionably beautiful and less shy than others, and Mr. Bateman's plant, we understand, is one of that number. Its vigorous pseudobulbs, and the gigantic size to which it has attained, clearly show that it holds a marked place in the estimation of the Orchidophilists at Knypersley. Epidendrum cnemidophorum, too, in which Mr. Skinner so greatly delights, is growing here well, but its tall gaunt ungainly appearance is "dead against it," and the flowers, although beautiful enough, are scarcely a recompense, or rather a set-off, to vindicate a claim for general cultivation. The famous Dendrobium Falconeri, which obtained a special mark of distinction at the "International" for the profusion of its blossoms and the cultural skill brought to bear upon it, was "resting" here for a short time preparatory to the summer campaign of growth. Seemingly all that is necessary to induce inflorescence is a long period of rest, and a period of rapid growth; and in respect to this, which baffles some of the most experienced growers, Mr. Sherratt is entitled to speak with a great degree of confidence.

In the Mexican house was one of the best examples of Aerides affine to be seen anywhere, with five branched spikes each a yard long, forming graceful festoons of that captivating purplish rose colour, which it takes some effort to withdraw the eye from. Epidendrum prismatocarpum was growing and flowering with profusion, and nothing can be a better representation of quiet loveliness than this. E. fragrans was producing fine racemes of dark-coloured flowers. Some people sneer at Oncidiums, but any one who knows the group well, and has seen it well represented, would summarily rebut any impeachment of them as a whole. Oncidium sessile is a most beautiful thing, and so is O. crispum, both of which were in fine condition. I wish I could say as much for O. Lanceanum, which holds a queenly place in the family, but is so subject to disease as to be scarcely ever in a position to be out of "quarantine." Vanda Batemanni is almost a traditional plant at Knypersley, Mr. Bateman holding one of the very earliest, if not the first of the importations to the country. It is a smaller-leaved variety, shorter in the internodes, and probably a freer bloomer than some others at present under cultivation. It was in process of blooming when I saw it, and I was told that it never fails in doing so, which may be partly owing to its being wintered in a temperate house. It is a grand plant, worthy of a first place; its noble appearance, without inflorescence at all, strikes every one. Cypripedium caudatum and Uropedium Lindenii, two cognate species, and two of the most wonderful plants in cultivation, exciting as they do when in flower much curiosity and universal admiration, were well represented as to variety and cultivation. Odontoglossum angustatum possesses a conical sort of pseudobulb, with a clear shining skin, and is not at all unlike the beautiful macranthum, which is exciting so much attention now.

In the East Indian house Dendrobium taurinum at once attracts observation. There are very few plants of it in the country now alive, some of them having succumbed in our best collections. It is evidently a critical subject in any hands, but Mr. S. finds it "to do well and bloom regularly." Angræcum caudatum is a pretty minute form of this interesting family, not at all of course to be compared to sesquipedale, which commands admiration wherever seen, and like a trustworthy friend improves on acquaintance. Saccolabium curvifolium, guttatum, &c., were in considerable numbers, and so too the beautiful Aerides Lobbii, Schroederi, and all the finer and rarer things common to East Indian collections. Cœlogyne pandurata must not be omitted in this enumeration, as it has for a length of time been so well handled at Knypersley. It is more curious and grotesque-looking than beautiful, but it has many admirers.

In another temperate house were among others specimens of the following:—Ada aurantiaca, a fine semi-terrestrial plant of free habit, that blooms in autumn, and which is not generally found in collections; Cymbidium Hookerianum, which is a form of gigan-

teum, but of course very rare; Epidendrum nemorale, producing panicles of flowers larger and much after the same form and colour as Barkeria spectabilis, a gem of the first water—*E. amabile* is, in its way, scarcely less beautiful: Leptotes of sorts—the common bicolor had been artificially fertilised and produced a marvellous array of capsules. Mr. Bateman's idea was to test the value of some suggestion thrown out that these seed-pods were a capital substitute for Vanilla. *Disa grandiflora* was well grown, and so of course was the famous Dendrobium Wardianum, a specimen of which, covered with its gorgeous flowers, was exhibited at one of the spring "Tuesday meetings" of the Royal Horticultural Society. Two plants of Orchids remain now to be specially noticed, that were subjected to such a degree of sufferance as quite exceeded the bounds of contemplation; they were Vanda teres and Peristeria elata. The latter exceeded in dimensions and density of pseudobulb anything that I had ever seen: and the wonder is how, with the apparent drawbacks of three months' warm greenhouse temperature, such a size could be produced in tropical vegetation. The practical eye could at once see the wisdom of this treatment, and could estimate the amount of flowers which each spike of this plant will produce. Vanda teres is treated in exactly the same way, with the same success. Instead of being a shy-flowering plant it only wants a correct mode of treatment to induce inflorescence.

So much for the Orchids, but that only presents a quota of what is to be seen even at Knypersley. A large orchard house 182 by 20 feet, of span-roofed form, and furnished with hot-water pipes, was like a miniature fruit garden, with a little of all sorts: Grapes were planted in the centre and doing luxuriantly, while Figs, Peaches, and Strawberries, each had a place in this artificial grove. Of Figs there seemed to be almost an unlimited supply, for there were some of them to be seen in most of the fruit houses. Peaches, Nectarines, and Vines each had houses for themselves. Tropical fruits of all kinds, from the Passionflower to the Mangosteen, hold a place in the establishment; and warm and suffocating as some of the tropical Orchid houses are, they are temperate in comparison with the one in which the miscellaneous collection of tropical fruits was growing. A very convenient and spacious luncheon-room formed a portion of the block in which the glass houses stood. Alterations and improvements are continually going on. A new set of office houses, with commodious gardener's cottage, have been recently erected. Road making and macadamising is going on with spirit, so that Mr. Bateman, while active abroad in promoting a love for horticulture, is no less energetic at home, employing labour in no limited degree, and thus rendering many a humble home happy and comfortable. *J. A.*

Miscellaneous.

Sicilian Ferns.—A very interesting work has lately been published by M. Auguste Todaro, on the Ferns that grow spontaneously in Sicily, and in the adjoining islands. The author deserves much praise for his work, more especially as the study of Cryptogamous plants is generally too much neglected by botanists, even in countries better known than Sicily as regards natural history. Amongst the species described in this work there are but few new ones, and many are equally common in France, such as the Polypodium vulgare, Asplenium Filix-mas, Asplenium Ruta-muraria, Scolopendrium vulgare, Ceterach officinarum, Pteris aquilina. This last, one of our commonest Ferns, is not rare in Sicily, where it likes shady places. It is to be regretted that the author has not divided his Flora by zones: a little more detail in botanical geography would have broken the uniformity of an arrangement almost exclusively descriptive. *Cosmos.*

Borage.—Borage is a rough plant, with fusiform roots, oblong or lanceolate leaves, and blue panicled or drooping flowers. The plant came originally from Aleppo, but is now naturalised in most parts of Europe and America. It is frequently found on dunghills and heaps of rubbish. Parkinson, who died about 1640, states that it grew plentifully in Kent in his day. Borage was formerly in great request, being reckoned one of the four cordial flowers. "Very light," says an ingenious author, "were those sorrows which could be driven away by Borage." Yet Borage flowers are at least innocent, which is more than can be said of many other general remedies for care. The whole herb is very succulent, and very mucilaginous, having a peculiar faint smell when bruised. The plant is now seldom taken inwardly. The young tender leaves may be used as a salad, or as a pot herb. The flowers are one of the chief constituents in the composition of a cool tankard. Borage is a pretty annual, and is raised from seeds, and in order to have it young all the year, it should be sown in spring, summer, and autumn, either in drills or broadcast, from March to May. When the plants come up thick, they must be thinned to nine inches asunder. They will not bear transplanting, in consequence of the length of their tap roots: at all events, if the operation be attempted, it must be done when the plants are very young. It sows itself in autumn, and likes a dry soil. Borage ought to be cultivated in the vicinity of every apiary, as it is a plant to which the bees resort with great avidity, it being excessively rich in honey. *Journal of Agriculture, N. S.*

Wine Plants.—An enterprising firm in Pennsylvania has been doing a brisk trade in "wine plants" at 40 dols. per 100—the said wine plants being, it appears, bits of Rhubarb roots. *Journal of Agriculture, N.S.*

Rushes.—Mr. Dutton Cooke, in "Once a Week," ascribes the origin of the phrase "not worth a rush," to the practice of strewing the guest rooms in country houses with "rushes" before carpets were invented. Distinguished guests were always honoured with the greenest and freshest rushes as a matter of course, while worthless guests were obliged to be content with the second-hand rushes which had been laid down in honour of their predecessors.

Calendar of Operations.

(For the ensuing week.)

THE season of the year has arrived when everything in the shape of flowers is scarce. Fruit-bearing plants will therefore now be in requisition, and foremost among them may be mentioned the different kinds of Aucuba, Solanums of various sorts, and last but not least, the small fruited sorts of Oranges. These will all form plants suitable either for room or conservatory decoration. A very good effect may also be produced by bringing prominently into view plants with handsome foliage. What can be finer, for example, than Ferns when well grown? The Poinsettia pulcherrima, Calathea zebrina, Dracæna terminalis, and many other plants of a similar description are also valuable, on account of their beautiful and highly-coloured leaves or bracts.

FLOWER GARDEN AND PLANT HOUSES.

While the weather is still favourable look carefully over half-hardy stock, and if any has not already received sufficient protection, let no time be lost in rendering it as secure as possible for the winter.

CARNATIONS AND PICOTEES.—These are apt occasionally to have small portions of soil lodge in the axils of the leaves. These must be carefully removed, for should they be damp and wet, serious injury to the plants will most certainly be the result. Carnations and Picotees, too, if kept close, will contract mouldiness, being liable to the attacks of parasitical Fungi. The leaves affected must be cut away; and, if possible, the affected plants removed from the others, giving plenty of air, the want of which, and late planting, superinduce these evils.

CLIMBERS.—Attention should now be paid to securing as much light as possible in all plant-houses; where the rafters or roofs, therefore, are used as trellises for Climbers, the latter should be reduced within convenient bounds. Late-flowering sorts as yet unpruned will now be sufficiently ripened for the purpose, but little more should be done after removing the decayed leaves than to prune the weakest shoots; their final pruning should be deferred till March or April. If larger and stronger shoots are cut now, they are apt to commence growing, in spite of the moderate temperature, and thus expend the strength which ought to be reserved till spring. The shoots of Maurandyas should be considerably reduced in bulk, as they are affected by the slightest damp during winter.

PANSIES.—Those on beds should, if in exposed places, be protected if severe weather should set in; the best material for the purpose consists of small branches of the Spruce Fir.

PELARGONIUMS.—Give air whenever the weather will admit of it; but avoid cold draughts, and keep out frost. On the other hand, be careful not to use too much fire-heat. Training and shifting must also receive attention.

SOLANUM CAPSICASTRUM.—As even small plants of this bear berries freely, the following hints as to its cultivation may be worth attention:—If good-sized specimens are wanted in a comparatively short time, let the young plants be introduced into warmth early in spring, and as soon as they have started freely into growth shift them into larger sized pots. When potted place them again in heat, giving little water for a time; but syringe overhead occasionally in order to keep the atmosphere moist. After that, water with water of the same temperature as that of the house in which they are growing. They will now succeed perfectly well under the kind of treatment usually given to plants in a growing state, paying attention to stopping all straggling shoots, so as to induce a compact pyramidal habit. For ordinary purposes 6-inch pots are large enough. About the end of June they should be placed out of doors in as hot and sunny a situation as possible, when they will keep flowering and set fruit better than they would indoors. In September let them be moved under glass, where, when covered with brilliant orange-scarlet berries, they are extremely ornamental. Indeed few plants can be compared with this for winter decoration, and what is important, the berries are so permanent that the bushes bearing them retain their vivid colouring for several months at a time. The soil most suitable for this Solanum is a light fibry loam intermixed with a little peat and sand.

VERONICAS.—Andersoni, Lindleyana, and meldensis, are charming plants for the decoration of conservatories at this season, and should be everywhere grown for that purpose. They may be made to form standards, and in that shape produce a good effect when intermixed with low-growing plants.

FORCING GARDEN.

CUCUMBERS.—Give those growing in pits all the light possible by taking off the covering early in the morning, and keeping the glass clean. Be careful that red spider does not make its appearance, which may be the case in Pine stoves, where the drier atmosphere favours its increase.

PINES.—Do not allow cold weather, should it occur, to seal up the ventilators; the admission of air must, of course, be gradually reduced in accordance with the season, but this is a very different matter from almost discontinuing it. Let water be very sparingly used during the present dull weather, but have an eye to those plants which stand near flues or hot-water pipes, as they are liable to get dry before their neighbours.

VINES.—In some instances houses from which the fruit has been cut will long before this time have been converted into greenhouses; the Vines under such circumstances require to be kept cool and dry, and the plants want very nearly the same treatment; frost, however, must be carefully excluded. While the plants are in these temporary situations, particular care should be taken to keep them perfectly clean and free from insects of all descriptions, or these latter will leave broods behind them, which will be very troublesome another season.

HARDY FRUIT AND KITCHEN GARDEN.

Examine fruit and root stores to see if all is in a state of good preservation. The dressing of fruit trees against walls with Gishurst Compound, or a mixture of a little lime, soot, and tobacco water (water in which tobacco has been boiled), with a small quantity of glue to fix the mixture to the trees, should now be proceeded with. Few troublesome pests to fruit trees can withstand this simple recipe; and as fruit trees are so liable to the attacks of insects, it is well worth the trouble of applying it. After the trees are dressed, proceed actively with re-training. Take grafts of any good kinds of Pear and Apple which it may be desirable to increase, and lay them well into the ground on the north side of a wall. The wood for this purpose should be the well-ripened shoots of this year; and care must be taken to provide only such as are healthy and free from all kinds of insects. Cuttings of choice Gooseberries and Currants may be put in Handsome standard Currant trees may be quickly obtained, by splitting up old bushes that have many stems. Take them up wholly with plenty of roots, divide them into single stems, trim the roots, and spur the shoots up the stem, as it will bear all the way up; shorten in the shoots which are to form the future head to within 5 or 6 inches; plant in good rich soil, and tie them to a stout straight stake, and a standard is at once obtained.

STATE OF THE WEATHER AT CHISWICK NEAR LONDON,

For the Week ending Nov 28, 1866, as observed at the Horticultural Gardens.

Nov	Moon's Age	Barometer Max	Barometer Min	Temperature of the Air Max.	Temperature of the Air Min	Temperature of the Air Mean	Temperature of the Earth 1 foot deep	Temperature of the Earth 2 feet deep	Wind	Rain
Thurs.	22	29·440	29·065	43	27	41·5	43	45	S.W.	04
Fri.	23	29·668	29·241	50	23	40·0	45	45	W.	01
Satur.	24	29·688	29·215	49	32	41·0	46	45	N.W.	01
Sunday	25	29·626	29·345	45	31	41·1	45	45	W.	00
Mon.	26	29·939	29·585	44	35	42·5	46	45½	N.W.	01
Tues.	27	30·035	29·818	50	25	39·5	46½	45½	N.W.	00
Wed.	28	30·237	30·064	42	27	35·5	45	45	W.	00
Average		29·951	29·817	46·1	31·1	41·2	45·7	44·1	—	·07

Nov
- 22—Light clouds and fine, overcast, rain at night
- 23—Overcast, lightly overcast, fine, slight shower at night
- 24—Fine throughout, overcast, slight rain at night
- 25—Fine, cloudy, fine at night
- 26—Cloudy, clear and fine, overcast at night
- 27—Overcast, clear, with a few white clouds, very fine, frosty
- 28—Hoar-frost, clear, cloudless and very fine, foggy, frosty

Mean temperature of the week, 1° deg. above the average

STATE OF THE WEATHER AT CHISWICK,

During the last 40 years, for the ensuing Week, ending Dec 8, 1866

December	Average Highest Temp.	Average Lowest Temp.	Mean Temp.	No of Years in which it Rained.	Greatest Quantity of Rain.	Prevailing Winds. N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.
Sunday..	47·7	34·0	40·8	17	0·51 in.	2	1	4	2	5	13	3	3
Mon ..	47·1	35·3	41·2	22	0·76	1	0	6	2	2	13	8	1
Tues ..	47·0	36·1	42·0	17	0·69	4	2	2	3	7	10	6	1
Wed. ..	48·8	34·8	41·8	23	0·25	2	3	2	1	5	13	11	4
Thurs ..	48·1	36·5	42·3	19	0·76	2	1	3	1	6	18	9	2
Friday ..	48·5	36·5	42·5	20	1·02	1	0	2	3	5	11	6	3
Satur ..	49·9	34·2	42·0	18	0·58	2	5	1	2	2	17	6	3

The highest temperature during the above period occurred on the 10, 1857—therm. 61 deg., and the lowest on the 5th, 1841—therm. 11 deg.

Notices to Correspondents.

BOOKS: *B B.* To do as you suggest would be to advertise goods for sale, which it is the business, and we may add the interest, of the vendors to do. The first you mention costs two or three shillings; the second a few francs.—*J S.* Mr. Thomson's book can be got through any bookseller, at a cost of four or five shillings.

CAMELLIAS: *H G.* A moderate amount of shade in summer is not prejudicial. It would have been better to have used a proportion of soil similar to that in which they had been grown rather than to have changed it entirely. Any such change in the case of sluggish plants like the Camellia should be made gradually. As to peat, a little loam in the proportion you mention—one part in eight—will be useful when they are well established. The necessity or otherwise of using sand depends on the quality and kind of peat used.

CERATITES: *J B.* It is reputedly hardy.

GRAPES: *J W.* The fungus on your Grapes is Penicillium glaucum. It is not the cause of disease but the consequence of decay. The constant moisture of the season has been very trying, and few Grapes are affected more than the variety which has suffered. *W. J. B.*

HOLLIES: *H G.* Your letter has been unfortunately mislaid. May is a safe time for transplanting, as witness the great bushes moved to and from the International Show last spring, but in the case of small plants like yours, so recently planted, they may, with proper care, be moved quite safely at any convenient time between this and March.

INSECTS: *F.* The insects on the Orange tree are the common Orange scale, Coccus Hesperidum. The trees should be washed carefully with soft soap and warm water. *W.*

NAMES OF PLANTS: *Moss.* We cannot undertake to name Mosses.—*S.* Spiranthes aristata.—*J G.* Chamæanthe ranum Beyrichii, var. variegatum.—*C Tucker.* Your plant is apparently a species of Batatas, but we cannot say which from leaves only.

PEACHES: *E J H.* The spotting of your Peaches in all probability does not arise from anything injurious in the soil. The sample you have sent is unobjectionable, except, perhaps, in having too much Grass fibre amongst it, the larger pieces of which have fungous spawn upon them. It would be better to rake them out. We should not recommend sitting. *M J B.*

RICE PAPER: *Odd Sock.* We should think that seeds of this might be obtained through some of the large Continental nurserymen.

ERRATA.—In the description of Sawbridgeworth, p. 1120, col. *a*, for Magnolia "shoots" read "stools;" and in line 20 of col. *b*, for "broom" read "besom."

COMMUNICATIONS RECEIVED.—J. Anderson.—Quo.—H. C. C.—J. Stanley.—W. Earley.—D. T. Fish (no plan).—Fair Dealer should send name and address as a guarantee of good faith.—J. Barnes.—P. Grieve.—T. Simpson.—A. H. Squires.—A. F. B.—J. Miller.

LAWES' MANURES.
The Manures manufactured by J. B. Lawes for the present season of 1866 are now ready for delivery at his Factories, at the following prices, per ton:—
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CORN MANURE, for Spring Use
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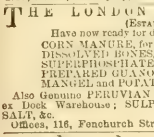

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TOBACCO TISSUE.
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Winter Dress all Fruit Trees with
GISHURST COMPOUND.

Red Spider Magnified

Copy of a Letter from Mr. ROPERS, Nurseries, Sittingbourne, Kent, 22d Oct., 1861.
"I must tell you what I heard to-day from a very clever gentleman farmer, Anthony Bubb, Esq., and Wife of the Court, Chedgrave. He has a wall to which Peach trees are trained. Well, last autumn they were in a wretched blighted state. As a desperate remedy he unnailed them all, early last February, and gave all but one a thorough painting with Gishurst Compound, 1 lb. to the gallon of water; his trees, all but the one, commenced to grow favourably in spring, and are now in free vigour of health. The tree not painted is in a half-dead blighted state. He used the same mixture single to Apple trees; it killed the woolly Aphis entirely, and has made his trees clean and vigorous in their growth. He intends to paint his wall trees annually, and tells all his friends to do the same. I shall certainly serve all my young Peach trees against my wails in the same manner. The Compound is, I believe, more efficacious than the usual offensive mixtures—clay, soot, sulphur, &c.; and it does not blacken the shoots on the walls.

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Their advantages are—Portability, not Fixtures, removable at pleasure, no Woodwork or Partitions to impede Ventilation or breed Vermin, Hay Rack dispensed with as unnecessary, increased width and depth of Feeding Troughs, Water Cistern, and Patent Drop Cover to prevent over-gorging. Cleanly, durable, and impervious to Infection, being all of iron. Price of Fittings per Cow, 55s.
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NOTICE.—Owing to an accidental neglect AVELING AND PORTER'S MODEL TRACTION LOCOMOTIVE ENGINES will NOT be EXHIBITED this year at the SMITHFIELD CLUB SHOW; but they will be represented at Messrs. CROSSKILL'S IMPLEMENT STAND, No. 33, near the Liverpool Road Entrance, underneath the large Clock.

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Share Department.
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II. FARMING of WESTMORELAND.
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THIRTY SOVEREIGNS will be given for the best Essay on Farming Customs and Covenants existing in England.
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CURZON HALL, BIRMINGHAM.—The SEVENTH GREAT ANNUAL EXHIBITION of SPORTING and other DOGS, and will be held in CURZON HALL, Birmingham, on MONDAY, TUESDAY, WEDNESDAY, and THURSDAY, December 3, 4, 5, and 6, the week of the Cattle and Poultry Show. For Special Railway Arrangements see the Advertisements and Bills of the several Companies.
JOHN B. LYTHALL, Secretary.
Offices—Stephenson Chambers, New Street, Birmingham.

CENTRAL CHAMBER of AGRICULTURE.
NOTICE of ANNUAL MEETING of MEMBERS.
MR. A. PELL, *Chairman*.
Notice is hereby given, that the ANNUAL MEETING of MEMBERS will take place at the SALISBURY HOTEL, Fleet Street, London, on WEDNESDAY, December 12, at 3 P.M.
CHARLES CLAY, Hon. Sec. pro tem.
BUSINESS.
To Confirm the proposed Constitution and Laws of the Chamber.
To Receive the Report of the Council.
To Elect the Officers for next year.
To Consider Regulations respecting the Importation of Foreign Cattle, and the general Cattle Trade of the Kingdom.
And other general business.
Temporary Offices, Walton, Wakefield, Nov. 30.

ROYAL AGRICULTURAL SOCIETY of ENGLAND.—The GENERAL MEETING of Members will be held at the Society's House, 12, Hanover Square, on WEDNESDAY, December 12, at 12 o'clock, for the election of the Council.
London, December 1st, 1866.
H. HALL DARE, Secretary.

ROYAL AGRICULTURAL SOCIETY of ENGLAND.—The President requests that any Members of the Royal Agricultural Society who will honour him with their presence at CONVERSAZIONI to be held at his House on TUESDAY the 11th, and WEDNESDAY the 12th of December, will intimate their intention to the Secretary of the Society, 12, Hanover Square, when Cards of Invitation will be sent.—Kirby Hall, Nov. 1866.

The Agricultural Gazette.
SATURDAY, DECEMBER 1, 1866.

MEETINGS FOR THE TWO FOLLOWING WEEKS.

MONDAY,	Dec. 3		
TUESDAY	— 4	Exhibition at Bingley Hall, Birmingham.	
WEDNESDAY,	— 5		
THURSDAY,	— 6		
MONDAY,	— 10		
TUESDAY,	— 11	Smithfield Club Cattle Show, at the Agricultural Hall, Islington.	
WEDNESDAY,	— 12		
THURSDAY,	— 13		
FRIDAY,	— 14		

WE are authorised to say that Mr. H. S. THOMPSON, President of the Royal Agricultural Society of England, proposes to make the Smithfield Show the occasion of a reunion of the members at his house. He therefore requests that any members of the Society who will favour him with their presence at Conversazioni to be held at his house on two of the evenings of the Smithfield Show week, will intimate their intention by letter addressed to the Secretary of the Society, 12, Hanover Square, when a card of invitation will be sent.

Mr. THOMPSON will, we are also informed, endeavour, by a short address to the members of the Society at the half-yearly General Meeting (to be held on the 12th of December), to initiate a discussion on some points of prominent interest to agriculturists. We hope, therefore, that the General Meeting of Members at the Society's Rooms on Wednesday, December 12th, will be larger than it has hitherto generally been.

THERE is no name better known as an exhibitor at the Great Midland Poultry Show, which is this day opened, than that of Mr. J. K. FOWLER, of the Prebendal Farms, Aylesbury. His geese, weighing 70 lb. and 80 lb. the three (a single bird has been known to weigh more than 34 lb. at three years old); his Dorkings, weighing 8 or 9 lb. each at 12 months old; his ducks, kept at the very maximum of size and weight by having the choice of many thousand birds annually at his disposal—many other breeds of poultry exhibited by him, for he keeps and breeds them nearly all, are known not only in Bingley Hall, but in Australia, in the States, in Canada, on the Continent, and in almost every county in the United Kingdom, for he sends them everywhere. And yet it is not the poultry yards or the various breeds of birds kept in them which most strikes the visitor to these Farms—it is the general aspect of good management shown over 400 acres or thereabouts of good rich land which he here sees well drained, well fenced, well divided, well cropped, well stocked, that is both gratifying and instructive.

The Prebendal Farms include nearly 400 acres, of which 200 are plough land—a rich adhesive loam on the Kimmeridge clay. The heavy clay

is drained 4 feet deep and 11 yards apart, and the lighter land is upwards of 20 yards apart. The general level of the land is flat, affording very imperfect surface drainage; but the underdrainage, combined with the ordinary ploughing in lands, keeps the whole in dry and working order. The original quality of the soil is well brought out by this drainage, and maintained by liberal manuring from the town close by, and from the manure dealer also (for nitrate of soda and superphosphate and guano are purchased in considerable quantities), and from a large stock of cattle, sheep, and pigs kept on the place. It is also maintained by deep and thorough tillage, for the steam cultivator has been long employed; and it is exhibited in magnificent crops of Wheat and Beans, and Barley, roots, and Cabbages, and Clover.

The rotation of crops adopted is as follows:—(1) Roots, (2) Wheat, (3) Barley, (4) Beans, (5) Wheat, (6) Clover, (7) Wheat. The Wheat stubble receives 15 to 20 tons of farmyard or town dung, and is then cross-cultivated deeply by steam-power in the autumn,—SMITH'S grubber and windlass, manufactured by HOWARD of Bedford, being driven by a 10-horse power engine. In the spring the land is again scarified by steam power, and thereafter 1 cwt. of guano is sown per acre, and harrowed under. After this the land is either ribbed by horse ploughing, and sown with Mangel Wurzels and with Swedes upon the ridgelets, or these are sown upon the flat in rows 29 inches apart. The whole of the roots are carried off the land, and large quantities of Mangel Wurzels are sold to dairymen in the town and neighbourhood. The land is then ploughed up, so as to cover the leaf of the crop, and drilled with Wheat. After Wheat the stubble is cross-cultivated by steam power—one cwt. of guano or nitrate of soda per acre is sown in spring, and Barley is drilled. The Barley stubble receives 10 loads of dung per acre, and is cross-cultivated, "smashed up," as Mr. SMITH calls it, 8 or 10 inches deep, and left till January. It may or it may not then receive a horse-ploughing, and the Beans are dibbled by hand in rows 22 inches apart and 4 inches between the dibs. Horse-hoe and hand-hoe keep the land clean; and the Bean stubble is ploughed and drilled with Wheat. This is hand-hoed clean in spring, and sown with 12 lb. of Red Clover-seed—the Clover crop is mown twice for hay in the following year, and horse-ploughed and sown with Wheat. There are thus three crops of Wheat and one of Beans, Barley, Clover, and roots, respectively, in the seven years. And when we saw them before harvest was completed there was an enormous bulk of every-thing upon the land.

The steam power used in cultivation is a great advantage to the farm in point both of efficiency and of cheapness. Mr. FOWLER was for some years in the habit of hiring apparatus for steam cultivation, and paid 15*s.* an acre for one smashing up, and 25*s.* an acre for double cultivation. The cost, now that he has purchased his own set of tackle and engine, does not exceed 7*s.* an acre; and 40 to 50 days' work in the year virtually accomplishes the whole tillage of the farm.

The stock of the farm includes a capital herd of Short-horns, which is rapidly growing in interest and importance, including now about three dozen animals. It originated in purchases at Sir C. KNIGHTLEY'S sales, and from Mr. LAWFORD of Southcott. The bulls latterly employed have been PRINCE CHRISTIAN (22,582) of the Yardley herd, which Mr. STRAFFORD lately sold at such very high prices, and 8th BARON WETHERBY, from Siddington, a son of 7th DUKE OF YORK (17,754). Great and massive substance, and good quality and colour—all the beauties and merits of the breed—are well illustrated.

The flock includes 120 cross-bred (Cotswold and Down) ewes, of which about 40 are displaced every year by as many ewe tegs, and the lambs are sold fat off the Grass every year. It is attempted to unite long wool with dark faces and Down quality of mutton, by using rams, either Cotswold or Oxfordshire, according to the tendency of the flock in any year. If the wool gets close and short a Cotswold ram is employed, as it has been this season.

Pure Berkshire pigs are bred, and Mr. FOWLER'S stock, like those of his neighbour Mr. ALLENDER, have been well known for their quality. About eight sows are generally kept in farrow, and a ready sale is obtained for their produce at 3 months old for breeding purposes.

The Poultry we have already referred to. All the large breeds of fowls are kept—Dorkings, Cochins, Brahma Pootras, Crêvecœurs, Houdans, Toulouse and Emden geese—also Aylesbury, Rouen, and East Indian Ducks. The Dorkings are originally from the stocks of Lady HOLMESDALE and Admiral HORNBY, and make great weights—good chickens, 7 months old, reaching 14 lb. a couple. The Brahma Pootra breed are believed to be the best for the farm, being capital layers and nurses, and becoming very heavy at an early age.

The Aylesbury duck is of course the favourite at its home,—20,000*l.* worth of these are annually sold out of the district; early birds fetch 12*s.* to as much as 16*s.* a couple, and are fit for table at 8 weeks old. The villages and cottages are full of them. All round Aylesbury in March and April—reared under hens, coddled up in baskets, wrapped in flannel by the fire-places, fed on boiled greaves, Barley-meal, bullock's liver, and making an awful mess everywhere. Among so many, and there are thousands in a single village, Mr. FOWLER, a resident, has the first offer of any birds which turn out of unusual size, and his flock is thus always kept at the highest standard of quality.

One more point must be mentioned. The allotment system is in vigorous and most liberal exercise for the benefit of the labourer on the farm. A fair agricultural rent is charged for the allotments, but it goes to a prize fund; and the land devoted in this way is thus a clear addition to the wages, given, too, in a manner which acts as a stimulant upon industry, neatness, and providence—all of them qualities of the highest importance to the master as well as to the man. The whole occupation is a capital specimen of good and thorough management, and one leaves it with the feeling of having received a most satisfactory lesson on the advantages to the farmer and the farm, of sufficient capital liberally and intelligently administered.

We see that Mr. FOWLER is to state his experience in steam cultivation at an early meeting of the Royal and Central Bucks Agricultural Society, and we shall take care to lay his statement immediately before our readers.

—— THE suddenness, and even the quantity, of recent floods has been attributed to the extension of land drainage. This is not altogether fair. The ordinary agricultural drainage of land increases its capacity for water. Undrained land is more likely to present an impervious surface, off which water will flow at once, than it if had had 4-feet drains every eight or ten yards apart cut in it. Any improvement, however, of outfalls, and straightening of surface-ditches—arterial drainage, in short—no doubt does tend to hasten the flow of surplus water; and to this extent Mr. CROMPTON, of Manchester, may be right in the following letter which he has addressed to the *Times*:—

"Excuse me for pointing out that, owing to the extensive drainage of land, the rivers of the country will in future be subject to sudden risings to a degree which has little to do with very unusual, and that if the residents on the banks look back for the causes of many years, and do not take into account the disturbing cause which, I name, they will probably suffer from great disasters. I pointed this out to an old friend of mine, Mr. ROBLEY, who told me that he had lately been to his native place in Cumberland, and found a brook, very wide in his memory, but a very tiny stream; and that on making inquiry he was told that the drainage of the lands above enabled the water to pass off so quickly that the old-fashioned slow percolation which rendered this brook a stream through the summer had ceased, and the brook is, at that season, dry. In former days there were hollow places on the surface of fields where in heavy rain the water would form pools, and not disappear for days or weeks; but at the present time these places have been so drained that the water passes off at once into the rivers. Again, the soil formerly absorbed an enormous amount of moisture which could not escape from it till it was either overcharged, and then the water formed pools on the surface, or slowly found its way to the rivers; but now the rain, almost as fast as it falls, can be seen issuing from the tile drains and flowing into the streams, rendering floods in the rivers intense, but brief."

—— The proper incidence of road charges was well put by the Chairman of the Edinburgh Chamber of Agriculture the other day:—"What is the value of land without roads to it?" was pertinently asked. The owners of real property are the persons for whose benefit roads are made and maintained. Their rent roll is in proportion to the means of access and of intercourse with which their land is provided. Tenants pay annually, in their rents, the sum which the original and annual costs of roads amount to. Mr. M'COMBIE'S view therefore is that the benefits and the losses of making and maintaining, or not making and maintaining, public roads are primarily an owner's question, and that the burden falls naturally on owners. The better the access for stock and folk and for the commodities which both require—and for the transmission of which roads were made and are maintained, the higher the rent the land and house must yield to the owner. The inference of course must be that the necessary revenue now collected in so expensive a manner by toll-bars must be displaced by a rate upon real property.

—— We must for the present be content with merely directing the attention of our readers to the very able letter of Mr. RANSOME on the "All England" Ploughing Matches, in which his firm have during the past autumn taken so prominent a part, and won so much distinction. We may hereafter re-discuss the points at issue between us, meanwhile it must suffice to admit that we greatly prefer the status here, where agricultural energy is proved to be everywhere in operation by the rivalry of local matches—where the adjudication is distributed, varying, it may be, with every kind of local circumstance, or constant, it may be, in spite of varying circumstances—where experience proves that life pervades the whole agricultural body, and is exhibited often most vigorously at parts furthest from any centre—to the state of things in France, or even in the United States, where the organisation of agricultural competition may be far more perfect, and the scheme of adjudication completer and more exhaustive —but where the whole effort of the country seems to be concentrated, and the judgment of the ordinary working farmer, for whose benefit the affair must be if it is to be of any use at all, is in danger of being altogether shut out by the elaborate nature of the scheme devised for his instruction.

—— The advance in the price of meat during the past few years is of course explained by the greater quantity of meat consumed, and the wide margin for better housekeeping" which improved wages have given the labouring class. A Northamptonshire correspondent of the "Journal of Sanitary Improvement" writes:—

"I have for some years had an opportunity of watching the trade of a baker's shop, four or five years ago the dinners sent by working people to the baker consisted of nothing but Potatos, but during the last two years the dishes of Potatos have been replaced by meat and pudding, meat and Potatos, meat pies, bullocks' hearts, rabbits, ducks, fowls, sent by persons whose parents never tasted such luxuries. The reason is that into this town of 6000 inhabitants there have been introduced, in addition to the staple trades of shoemaking and silk-weaving, the manufacture of stays, men's clothing, the ornamental kinds of ladies' boots and shoes by the sewing-machine, which are largely employed in the making of these several trades, giving wages to hundreds of boys and girls who formerly, at the same age, earned little or nothing. If this can be done in a small town, what must be the additional wages earned in Lancashire and in the great manufacturing towns of the kingdom?"

On this the *Farmer* says:—"Let us turn this suggestion into figures. Professor LEONI LEVI puts down the total workers in the United Kingdom at over 10,000,000. Suppose we allow 5,000,000 only to have shared in the great increase of wages, and that these consume, as they would at the least, an extra 2 lb. of meat per week, this would give an extra consumption of 10,000,000 lb. per week. Now, according to the latest statistics, we have about 5,000,000 horned beasts on our farms. Beef is the favourite food of working men, and eating more meat is the first luxury to which a hard-working man naturally turns." Of course such an increase in the demand where there is so limited a supply, is quite enough to account for enhanced prices.

—— Mr. HUDSON, of Castlecare, Norfolk, has made a fruitless protest against reopening markets for store stock. His letter to Colonel HARNESS, C.B., of the Cattle Plague Office, has been published. In it he says:—

"I hope you will not permit the markets and fairs to be open again for store cattle for at least six months to come. The cattle plague seems nearly stamped out, but we shall, if you open the markets and fairs we shall again, suffer from the horrid disease. There will be many ruined men who will send stock about through the country, and disseminate the disease throughout the land again. Already the drivers and dealers are commencing the Orders of the Privy Council. Hundreds of Irish cattle are being brought weekly to Trowse, Norwich, and East Dereham by rail. They are then put into the fields near the station, and on the following day two are sold, and driven by road through the county without being there 28 days. Depend upon it, if this system is suffered to go on, we shall soon have the plague raging in this county again. Therefore I hope you will not allow the fairs and markets in this county to be opened again for at least six months."

—— Mr. GEYELIN, C.E., Author of "Poultry Breeding in a Commercial Point of View," asks how it is that we import about 400 millions of eggs per annum from continental markets, and yet poultry fetches higher prices there than in the London wholesale market. He believes the reason to be that there is something radically wrong in our system of selling poultry, and that if we can introduce a more equitable system to the poultry breeders, the supply of poultry will at all times be equal to an increasing demand at prices far more remunerative to the breeders and far less onerous to the public.

"When a breeder or dealer consigns a quantity of poultry to a salesman, and fixes the selling price, it is more than probable that he will never receive a farthing for the consignment, as he will be informed that the market being overstocked, the quoted prices could not be obtained, consequently his poultry was sent back for human food, and was condemned as such by the Sanitary Inspector to be destroyed. On the other hand, if he consigns without fixing the selling price, he trusts entirely to the honour of a tradesman, who not having to dread an investigation as to the truthfulness of his account of sales, can charge one price to the purchaser, and return a considerably less one to the breeder, charging, besides, the usual commission. Salesmen are moreover of a most independent disposition, the more so because they do not deal in their own perishable property, and are therefore indifferent to its utter destruction if they cannot get the price they quote to poulterers: thus the inevitable result is that tons of our choicest animal food are now annually destroyed, and the breeding of poultry considered unprofitable. Well may the French be puzzled to explain how it is that two millions eggs per annum are exported from Normandy where poultry is so cheap as to the account of sale they received their consignment), that they cannot buy them at the same price in the cheapest market of France."

The remedy proposed by Mr. GEYELIN is simple enough. The system of Dutch or Drawback Auctions for the sale of poultry, he says, in the Paris markets has greatly promoted poultry breeding in France, and

cannot fail to do so here, as the breeder will then be able to rely on a true account of sale; knocks out, and favouritism by the auctioneer will be impossible, as the first bidder (which is necessarily the highest bid in a descending scale) becomes the purchaser. The following, therefore, is his scheme:—

Considering the extraordinary development of poultry breeding in England within the last two years, as is evidenced by the thousands of exhibitors in upwards of 100 annual poultry exhibitions, and that most poultry breeders are persons of high social position, who, on this account, are often at a loss how to dispose of their surplus stock to the best advantage, it would seem a comparatively easy matter to form a sufficiently powerful Association of Poultry Breeders with the following objects:—

1. To establish and promote the Dutch or Drawback Auction System in selling wholesale the produce of poultry farms.
2. To receive consignments of live and dead stock in large or small lots for the daily sales, and of choice breeding stock for a weekly sale. The produce of sale, less the usual commission, to be remitted the same day to the consigner.
3. To promote the sale of dead poultry by weight, so as to enable the public to judge between the comparative cost of fowls, meat, and poultry.
4. To become a medium of intercommunication between poultry breeders in this and foreign countries, and to promote poultry breeding generally.

The Association could also with great advantage to itself and the breeders in general enter into contracts with hotels and public institutions for the supply of poultry, eggs, &c., and by purchasing the necessary daily stock for these contracts at their sales by auction would thus promote the success of the new system at once.

Spacious and convenient premises centrally situated for a wholesale poultry market can easily be found in London; therefore it must depend on the breeders and public themselves whether they continue to submit to the present unfair system of selling, or whether by a well-organised Association they will substitute the Dutch Auction sales—and sales by weight to fancy prices in the sale of poultry.

RECENT PLOUGHING MATCHES.

ABOUT a month ago there appeared in the *Agricultural Gazette* a leading article upon the subject of our attendance and success at the autumnal ploughing matches, and, although the writer was complimentary to my firm in his remarks upon our ploughman's performances, the tone of the article was condemnatory of the idea that such competition by the ploughmen of implement makers was advantageous to the progress of agriculture, and after citing, in support of this view, portion of a record of a trial which occurred at Kingscote 60 years ago, the writer appealed to my firm to say what quantity of earth was moved and at what cost, in the trial for which our ploughmen won the prize at Kingscote on Sept. 6, 1866. It so happened that in the two weeks succeeding the one on which the article appeared we were prevented from preparing a suitable reply to the question, and the article as a whole; but, although somewhat tardily, I write now to write to you the substance of what is to be said on the other side of the view raised by the article in question.

The land ploughed by us at Kingscote on Sept. 6, 1866, was half an acre in area, disposed in a piece 210 yards long by 11½ yards wide. This was ploughed with a furrow 8 inches broad, of which there were 50 in the piece. The depth being 5 inches, the soil moved was therefore 336 cubic yards. The cost of doing this was the value of the time of two horses and the ploughman for 4½ hours—the time in which the work was accomplished. By Morton's book on "Farm Labour," page 85, the value of the horses may be put at 3*s.*; the ploughman at 18*s.* per week is, say 3*s.* 6*d.*; in all 4*s.* 6*d.* The distance walked by the horses in ploughing would be at least 7 miles, including the turnings.

To compare this with the Beverstone plough two very important points are omitted in the article, namely, the length of the land and the width of the furrow on that occasion. For presuming the acre ploughed by that plough were laid out in a slip of the same width in 1808 as in 1866, say 11½ yards, it would be 420 yards long, there would be no more turnings for the whole acre than there were in our half-acre, and consequently much time would be saved—say, at 1 minute for each turning, there would be 50 minutes saved. Again, assuming the furrow in 1808 to have been double the width, say 16 inches, that we took in 1866, precisely the same result as regards turning would be the case; and again, the horses would in this instance walk no further for the whole than ours did for the half acre.

But assuming that in 1808 the land was laid out of the same length, viz., 210 yards, that it was in 1866, it would then be double the width; and assuming that the furrow was then as now 8 inches in width, the calculation will stand thus:—

	h.	m.
Total recorded time	4	35
Deduct for turning, say one minute each furrow, on 100 furrows	1	40
Net time left for ploughing	2	55

in which time the horses must walk 12½ miles, which, with 1½ mile allowed for turnings equals the total distance travelled per acre. This gives a speed of 4¼ miles per hour, which, so far as I know, exceeds the capability of the best horses, even if a man could be found to perform it, and is almost twice as fast as horses usually walk in ploughing.

The conclusion, then, is that in 1808 the furrow must have been wider, or the land laid out much longer, or possibly both; but in either case what becomes of the very extraordinary merit of the Beverstone plough? And, again, if it were such a wonderful implement, what has become of it? Why has it passed out of use, and is now an unknown implement?

We manufacture for export iron ploughs in considerable numbers which turn a furrow 13, 15, and 18 inches wide, and from 4 to 6 inches deep. But although they are figured in all our catalogues, of which we circulate thousands of copies, these ploughs are not asked for by the British farmer. From the diagram we think possibly the Beverstone was of this character, and probably the same reason which prevents our wide furrow ploughs being asked for has caused it to be forgotten.

To my mind it is clear, upon the evidence before me, that the case cited by the writer of the article must offer other features before it can lay claim to any extraordinary merit, and I fancy if you have read thus far you will think there is scope for further examination or for a revision of the conclusions of the article.

I apprehend the writer does not intend to question the value of ploughing matches to the farmer and his men—on that I believe there can be no two opinions; and this being admitted, it is difficult to avoid the conclusion that the higher the quality of ploughing shown on such occasions, the greater will be the stimulus and interest of the matches. If, by opening a class for all comers, skilful ploughmen can be brought from a distance, a similar effect is produced to that of International Exhibitions. These ploughing matches are organised by farmers who may be fairly presumed to know their own interests better than any one; they regulate the conditions of entry, the style of work to be done, and every other detail, and the very general adoption of an open All England class, is a tolerable proof of their estimate of its value. These classes are for the reward of the highest merit produceable; not merely for local merit—that finds its reward in other classes, from the boys' class up to the class for winner in previous years, so that it has its full scope. The competitors in the All England class are often those who have won in every other class in previous years—farmers' sons, or unusually good men who go almost at a bound to the top of the tree; and generally the ploughing in this class is most strikingly superior, not only in general style but in all the essential points of good ploughing, to that done in any other class in the field. Our men stand on exactly the same footing as other competitors in these classes. We sell to any one who chooses to buy them the best ploughs we make. We are members of every society where that is necessary for competition, we pay the entrance money where that is necessary, and our men keep the whole of the money they win without any alteration in their wages, whether they win much or little, and without deduction of any sort for expenses. "Browbeating of local men" is a thing totally unknown. We always receive a hearty welcome not only from masters but from men, each enjoying to see such work as we must do to win the prize, and also enjoying to see any local man do better. Through all our contests during the last few years I assure you that between our men and local men there has never been the least ill feeling or disagreement. I can scarcely imagine any contest more genuine than a well-conducted ploughing match, and I am persuaded it would be a valuable help to the improvement of agricultural mechanics if other classes of machinery could be subjected to similar competitions. Each match lasts some hours; from first to last it is open to the inspection and criticism of all classes, and it is curious to note towards the end of the contest how the crowd draws towards the best piece; but before even the judges come near the field the competitors with their tools and horses, and, in some instances, the general public, are removed from the field; even the secretary rarely is present during the judging.

As a natural result I know that these contests have greatly improved the ploughing of the men against whom we compete in the All England classes—partly because their masters have bought them better ploughs, and partly because they have striven more to do their best. They have also greatly improved our ploughs. How could they fail to do so? Competing in every county in England, on all kinds of soil and doing all sorts of work, such a body of experience becomes collected together as is attainable in no other way, and must produce improvement. You, I think, will not be the one to say that taking England through there is not yet room for the improvement of ploughs and ploughing. How often must you have seen in your rambles through the country, an ill-constructed plough, drawn by four horses in a line, doing work at a great cost to the farmer, which was so imperfectly done that it had better have been left alone. And how can manufacturers better or more legitimately show their productions than by exhibiting them at work all over the kingdom? What way can be devised so likely to winnow out all fancy improvements, and lead to the introduction of all that are good and substantial? We find no advertisement so effective, because no other is so genuine, and so free from all the objectionable failings of printed advertisements. Our ploughs are finding their way into districts where they never were before; where I might almost say there were none but local-made ploughs before, and whether in our hands or not, they come out prize winners. By the last mail we heard that at the last match at Northam, Australia, one of our Newcastle ploughs had won the Champion prize. This was not sent out by us for that purpose. It is one taken from an ordinary importer's stock, without our knowledge or interference in any way, and was the only plough of our make in the field. How could they stand thus, after the sharp contests of the last four years, unless they possessed very great merit? If they possess this merit, how has it been obtained but by constant competition, and has not that competition then been of real service both to the agriculturist and to us?

This is the conclusion denied by the writer of the article with which I commenced, and I hope I have without unnecessary prolixity shown that there is at any rate a good deal to be said against the correctness of his conclusions.

I trust you will excuse my troubling you with this long letter. The authority of the *Agricultural Gazette* is so great that I did not like an article so nearly concerning us to pass without remark, although too late to expect publication. *Robert Charles Ransome, Ord.* 1866.

VILLAGE LECTURE.

[The following are the syllabus and extracts from a village winter evening's lecture on a "Drop of Water."]

Most of the objects and of the abstract ideas, I think, owing generally rather to the associations of the subject than to its own mere self—more to the chords it strikes than to its unintended note. Yet we have a subject which, though well stored mind and merely takes its place; chords of harmony are struck with those already there—its companions we bound it with music. And the pleasures of intelligence certainly are in a great measure due to this connection and relationship of ideas. Our little drop of water will perfectly illustrate this:

"The very law that moulds the tear
And bids it trickle from its source—
That law has made the earth a sphere,
And holds the planets in their course."

However, it is not to the associations only which it has that a subject owes its power to please. And it is for the object of this lecture to show how a drop of water may communicate enjoyment, whether directly or by the associations it suggests. It is well before commencing the discussion of a subject to have a mind full of its merits and importance. Here is our present subject—a small affair, not visible from the further end of the room; and yet this drop could be distributed through this large room so that every cubic inch should have its part. A grain of musk, they say, has filled for 20 years successive rooms full of air without diminishing in weight; every breath there during all that time contained some of it, as the smell could testify, and yet no waste could be detected by the balance. And a drop of water too, we may believe, contains an inconceivable number of atoms. A small building, certainly, but who shall say how many building stones are used in its construction? Interesting to the understanding, and yet in the light of the associations to which I have referred, 'tis not too much to say the architecture is magnificent.

Let us approach our subject then with a due idea of its dignity; as we would a great building to study its architecture, its material, its inhabitants; as we would a curious instrument to learn its structure and its uses; or rather as a mighty territory of which we have to learn the geography, its shape, its origin, its nature, its products, its population.

First, the Shape of this great territory. The drop, as everyone knows, is globular, a portion of a sphere. Take a volumne of ice of any solid, three cornered shape you choose, pull it where there is nothing that it can stick to; as soon as it has melted, as soon as its particles are free to move on one another, it will gather itself up into the round mass of water we call a drop. Water may exist in visible solid, and it will run into the same manner. A leaden shot which *was*, and a drop of quicksilver which *is*, a drop of molten metal, are spherical as drops of water. The cause of this in every instance is the molecular attraction, or attraction of cohesion which exists between the particles touching one another, of which the water substance is composed. In solids this attraction exhibits itself in the strength of material; in a wire or string, for instance, it is measured by the strain borne with out breaking. In a liquid, again, it is measured by the difficulty which a swimmer would find in passing through it. In a solid are particles have no power to move over one another, any shape it has it retains: in all its oddities—the attraction between its particles exhibiting itself merely in the difficulty of sundering them; but in a liquid, where the particles have this motion over one another, it induces them to collect in that form in which they are upon the whole the nearest to one another. Each particle of the liquid body is an individual in a crowd, free to move about within that crowd. Now it is not in consequence of any central influence that they all arrange themselves around a common centre. A speaker might get up in the middle of the crowd and call everyone trying to hear him. The whole would soon become a circle, he being in the centre. There is, however, nothing of this kind to explain the roundness of the drop. That may be more accurately illustrated in another way. In North Wales I have sometimes come, an unexpected visitor, on a flock of sheep straggling over the wide, bare, grassy acres of the upland heath. Immediately on seeing me they ran together. They had no leader, no central object to guide the movement and towards whom they looked. It was the instinctive clinging of sheep to sheep in obedience, and not to any one round a leader, that gathered the crowded forms in which they trooped together and scampered off. It is the attraction, then, of particle to particle which explains the roundness of the drop of water.

There is another species of attraction with which this attraction of cohesion must not be confounded—I mean the attraction of gravitation. It is the latter attraction which exists between masses at a distance. It is the former which exists within a single mass between its particles. "The law which moulds a tear" is not the law which bids it trickle from its source. It is the molecular attraction which suffuses the whole eyeball with the tear which overflows at one side of it; but it is the attraction of gravitation—the attraction of this great 8000-mile-thick mass on which we stand, that pulls the drops one after another out from between the eyelid, and bids it trickle from their source. It is the same law of attraction—the intimate influence of particle on particle within a liquid mass that makes it round; it is the attraction of gravitation that makes that rounded mass draw towards another mass elsewhere. The law that moulds a tear and that makes the earth a sphere is one thing. The law which makes tears trickle from their source, and that holds the planets in their course, is another and altogether different thing.

The attraction of gravitation, which is the cause of weight—the force by which the earth pulls towards itself all its outside things, is known to exist at distances among the stars, and there is no reason to doubt that this molecular attraction is also common to matter everywhere; and the roundness of the earth and moon and sun is evidence that all were liquid once, and that those which now are solid cooled after their molecular attraction had the full influence on their shape which it has on any other drop.

This, then, is the principle of the architecture of this great building, the drop of water, and thus same molecular attraction is in operation in many other ways. It makes the drop, but it will also destroy its work, and dissipate it over the surface of the blotting paper; it is this force which makes the water rise in the sponge or in a lump of sugar, which spreads the shower throughout the soil, or which in drought waters the roots of surface plants from stocks of moisture to which the drought has not had access. And this attraction is of most important use in the processes of animal as well as vegetable nutrition, as might be illustrated at length, but I am afraid of getting prosy, so let us turn to what is generally connected with poetry enough.

[Here follows a discussion of the properties of Light, and of the explanation of the Rainbow.]

Secondly, now for the Origin of the drop. I shall continue to treat our drop of water as a great territory. I do not forget that I have to treat it geographically. Notwithstanding that, it is quite proper that I should ask about its origin. We may speak of the origin of an island and even of a continent. Some countries have had their origin in volcanic action; the very

substance on which their natives walk was sent from below by subterraneous agency. Some have been made by coral insects, and are growing now around their shores by the labours of those wonderful architects. Others again are the result of tides and river waters; their substance has been washed together. I will take Holland as an instance, the history of which is marvellous. Holland, they say, is a great board of sand. You cannot take up a handful of its soil that does not contain the remains of myriads of animalcules. It is a great mud ground, and has risen from the waters as the level of the Channel rises with every fresh hillock. A very considerable proportion of its substance is the bodies of dead animalcules. The Rhine and other rivers which there flow into the sea contain in their waters vast myriads of fresh water animalcules, and the water of the ocean there contains vast quantities of salt water animalcules, and when these waters mingle, as neither class of animalcules can live under the conditions proper to the other, an inconceivable destruction of life ensues, and the skeletons of the slain form one-third or even more of the whole substance of the land. It is proper to refer to this in a lecture on a drop of water, for it is the inhabitants of these drops of water that have the credit of erecting Holland. That is the origin of that one territory. Now what is the origin of this other mighty territory, our drop of water? It falls from the clouds. Well, what is the origin of the cloud? The atmosphere surrounding the earth is a mixture of different sorts of air or gas, but besides these there is an atmosphere of watery vapour. Water dries up and disappears; it is not the air which dissolves it, as sugar is dissolved in water; this drying up of water would go on even more rapidly if there were no air pressing upon it. The rapidity of this drying up depends, however, mainly on two things, the quantity of water already in the space about it, and the quantity of water which that space can contain in an invisible form. And this—the quantity of water which can exist as air in air—depends wholly on the temperature. A certain quantity can exist as invisible vapour at a temperature of 60° of the thermometer, a larger quantity at 80°. There is much more water in an apparently dry July breeze than in a misty November air. The moistness depends not on the actual quantity of water present in a given space, but on the quantity which that space is still able to take up, and the quantity which can exist invisibly in air increases very rapidly as the heat increases. A sudden fall of heat will easily reduce the ability of the space to hold water in an invisible form below the quantity actually present, and then the difference becomes visible, is squeezed out, as it were, into the form of cloud or fog. And the fall of temperature necessary to produce this cloud may easily arise in various ways. Thus a wind sweeps over the country, up the valley, over the hill top, and down the other side; it is warm enough below to hold all its moisture clear, but up above it falls below the necessary temperature, and so a cloud-capped summit shows itself. That cloud is not stationary, though it seems so. Why does the cloud retain its place, while every particle of which it is composed is blowing away at such a rate? The air, as it comes up the one side of the hill, loses its warmth, and its moisture is condensed, and as it blows down the other side, laden with the watery particles, it regains its warmth and there again dissolves, the cloud making on one side as fast as it loses on the other, and so the appearance remains. This falling of temperature then is the cause of the cloud. And the misty particles multiply and thicken as more vapour forms, and uniting as they fall, a shower of rain takes place, the drops increasing in size as they fall. A rain gauge on the top of York Minster gave less rain in the year than one at the foot, and the explanation is, that a rain drop taken out of the clouds and brought to the earth is like a wine bottle taken from the cellar and brought to the dining room, both come from a colder place, and so they both receive moisture condensed upon them from the air around them; they both become bedewed, and the drop that reached the ground would generally be larger than that which fell upon the tower, because it would have a longer time during which to receive this deposit of dew upon its surface. Well, then, that is the origin of the rain-drop; it rises from the surface of the earth, obedient to the laws which regulate the process of evaporation; it exists as vapour in a clear, transparent state, and as it cools it assumes the form of these little vesicles or water bladders, which together form the cloud, and these then break, and drops are formed and fall, and if there be a sun we have the rainbow. And here you may see the poetry of the thing, the pleasurable association of ideas to which I referred. Every drop is taken from its sphere of earthly usefulness, snatched away from tasks of driving mills, or floating ships, or feeding plants and animals; it may be bitter, muddy water here defiled by many an impurity, but when it leaves this earth its dross is left behind, it mounts invisible to heaven, and there, resplendent in the face of the great source of Light, it shines, a jewel in a heavenly diadem—So much then for the second part of the subject—the origin of the drop.

The third point I have to name is the Nature of the drop of water; and here again it is quite consistent with the geographical treatment of our subject that we ask about its nature. The Bass on the coast of East Lothian is a volcanic rock. Iceland is a little better than a cake of slag over a smouldering fire. Holland is an oozy flat saved from the waters, made up of particles once endowed with life. What is our drop of water? it also is made up of particles, an inconceivable number collected in the spherical form. What are they? Why, they are watery particles, no doubt. Well, but suppose you know exactly how many particles existed in this drop—what is each of them made of?

[Then follows a discussion of the Chemistry of Water.]

But water never is a mere union of oxygen and hydrogen, it is so powerful an absorbent and a solvent that it always does contain a number of substances which do not properly form part of its own substance, and therefore our next question, which inquires into the products or contents of a drop of water, is a most important one. There is not a drop of water in the world, unless it be fresh from the hand of the chemist, which does not contain many things besides itself. A rain-drop is the purest water naturally that is, but it contains many a thing beside water. You have seen how vegetation revived with the first shower after a season of drought, how the thirsty ground drank up the welcome draught, and how the drooping plants regained their vigour. Did you think that all this was just a case of thirst removed and satisfied? That shower was meat as well as drink. Each drop contained within it particles of food for plants. The air contains a kind of gas which I have not named as yet—carbonic acid gas, and on this plants feed. Water will absorb it. I have a jar full here. I pour in a little water and shake it up. If the water now has absorbed any, it will show it by converting this lime water into chalk and water, as you see it does. And air contains ammonia, the vapour of spirits of hartshorn—in very small quantity to be sure, but though little in quantity, enough, and water absorbs that too.

Well, among the things that every drop of rain-water brings down, are carbonic acid gas and ammonia, and these are the two substances out of which the most of every plant and tree is made. A tree is not made out of the soil—a part of it is, but only a small part. The air above a tree is 20 times as heavy as the soil below it, so that there is plenty of stuff in the air out of which it may build itself up, and it is not only heavy enough, but it contains the right things too, and these are the carbonic acid gas and ammonia to which I have referred. If you burn a tree up you send back into the air all that came from the air, and you restore to the soil the ashes, which are all that came from the soil. The charcoal or carbon of the tree unites with the oxygen of the air, and passes off in the form of carbonic acid gas, and it is this burning and rotting of vegetable matter in the soil that, with a similar burning of food in our bodies by means of our lungs, which are in fact a little furnace inside our bodies to keep us warm, it is in this way, I say, that the air is kept supplied with this carbonic acid gas, out of which plants build up their structure; and it is by their leaves, which absorb this carbonic acid directly; and by their roots, which suck up the rain drop laden with it, that the process of vegetable nutrition is kept up. Well, this CO^2 and NH^3 are among the products of the rain-drop; but suppose we take our drop of water just before it enters the roots of a plant, shall we find nothing else in it but these? Yes, it will contain portions of every soluble substance it has met with in the soil—it will contain a little phosphorus, that singular substance that burned so brilliantly in oxygen gas, a little common salt, a little lime, a little flint, a little potash, a little iron, all of which the plant needs for food.

Well, our drop of water which fell from the clouds has traversed air and soil before it reaches the roots of the plant it is destined to feed, and has picked up a little here and a little there, till it is in itself quite a respectable bill of fare for the plant to pick and choose from. And you will observe that while no doubt it is in itself useful as food at the dinner table of the plant, its chief importance arises out of its being such an excellent waiter; it is not so much for what it is as for what it brings, and its importance as a mere vehicle of food for plants cannot be overrated. I may say that as a farmer, because I know from experience the enormous increase of fertility that arises in a soil, I do not mean from adding manure, or from growing better sorts of plants, or from adopting a more thorough cultivation, but from simply enabling our drops of rain water to put forth all the activity as waiters at the dinner table of the plants of which they are capable, for that is the simple effect of draining the land, which is the improvement to which I allude. To drain the land is not to get rid of water, but to make use of water. For fancy a soil full of water, so that any rain which falls on it just rolls over its surface into the next ditch. Why, the plants on such a soil would starve. For you must remember that a plant in the soil is just like a man would be who was chained by the leg in the larder. The larder may be full of food, but as soon as the man had eaten all that was in his reach he would starve, though in the midst of plenty, that is he would do so if there were not a contrivance in operation for carrying the different dishes by him as he stood, so that he might take a bit now and a bit then, just as they passed, just as he pleased. Now in a well-drained soil our drops of rainwater are just such a contrivance as this. They dissolve out the nutritive part of the soil and carry it by the roots of the plants on their road to the outlet or drain, so that they may take a bit here and a bit there, just as they please, and thus they are fed; but if the land be not drained the water soon fills it, and then no more rain will sink in and the water is stagnant in the land; there is no current through it; the dishes in the larder are lying still on their shelves, and as soon as the poor plant has eaten up all the food around it, it must starve, for it cannot go in search of food like an animal; it is like an animal chained by the leg; it is stationary, and must die if food be not brought to it. The fact is, the plant finds in the soil the very particles it needs as building material. Our drops of water in a well-drained soil are the waiters or the hodmen who bring this building material to the growing plant. Plants are at once the masons who put them together, and the building that is in process of erection, and the whole procedure goes on under the eye and according to the laws of that Great Master Builder who contrived the whole wonderful system of vegetable growth, and confers the life which puts it in exercise. Well, then, the products—the contents of our drop of water form not the least important section of the subject.

And now we come to the last point for consideration, the Population of this vast territory. Now in the very little that I shall say on this subject I shall speak of what has been seen in particular drops of water. It is not asserted that with every draught of water we swallow myriads of living animals, at any rate I shall confine myself to what has been seen in selected drops. We must not, however, approach this part of our subject in the spirit of mere catalogue writers or enumerators. The common way which is adopted to excite one's wonder in a general view of Nature is to take some small particle of matter as a starting point, and to think of Nature spreading upwards, as it rises, into stage after stage of greater magnitudes, until you are lost amid the distances and vastness of astronomy. Would not the better method be to select as unit one vast mass and to state, and to think our way from it down through successive and increasing orders, reaching a tolerable station on the scale, as one would think, where we reach a point to which our unassisted senses are adapted, for what a multitude of objects present themselves to them; reaching, however, far beyond their power to see, so that with every fresh addition to their power fresh numbers become visible, and reason allows the imagination to go beyond what the utmost aid of art makes visible, so that I think the wonders of the microscope are even greater than the wonders of the telescope. Sometimes a single statement strikes more effectually than a long harangue. Well, in the space of many a single cubic yard more than 70,000,000,000,000 of animalcules are believed to live and move and have their being. Why, there are not half so many blades of Grass in any English county.

[Then follows a reference to Microscopic Discoveries.]

Well, we have referred to some of the points which a drop of water includes:—its shape as caused by the attraction among its particles, and as producing the brilliancy of the dewdrop and the glories of the rainbow; its origin in the condensation or cooling of the invisible watery vapour of the air, its nature, a compound of the two gases, oxygen and hydrogen, its products, a little of everything that is soluble which air or earth contains, its inhabitants, and that too which no man can number. Every one of these points might, of course, be discussed in large detail; but slight as our examination may have been, it will deserve a heavier censure than it incurs by that, if it should it fail to lead the mind from Nature up to Nature's God. Think of the wondrous picture which all this gives us of His power and care. Take as two most extremes united in Him—power over magnitudes and care for particles. As regards the former, see how one law affects all magnitudes alike, providing with equal certainty for the form of a sun and for the shape of a drop. And as regards the latter, look at attention bestowed upon minutest points. Surely the wondrous detail of His providence is taught us by the microscope. And a drop of water, whether as throwing light upon the constancy of one great plan, or as making manifest the minuteness of detail into which every portion of that plan is carried, may furnish a useful contribution to the science of natural theology; and I will end accordingly with a reflection (a conceit, as perhaps it may be called) which is, however, fairly enough suggested by our subject, in which (itself and its associations) we have seen there is so much. It may be a little subject, notwithstanding all its fulness; but there is no magnitude, however great, that is not made of littles; and just as the whole of earthly matter is a collection of particles appearing but one to an eye at a distance great enough to see the whole at once, so I believe it may be said of all kinds of truth, how many soever the departments under which it has been studied, they exhibit perfect harmony and unity of design to those whose mental eye can take in all. There may be subjects innumerable and diverse external to the mind, just as the drops are countless in the shower, but let the sun of knowledge rise and brighten up the scene, and there shall spread through all the glorious bow, connecting all in one, and making each to yield its share of the beauty, brilliancy, and harmony of all. They may be separate and different sets of truths on which the minds of different observers work, just as every eye which sees the rainbow, [illegible], looks at its own particular set of drops, but to every one who has that sun that bow will show itself, the highest and most glorious of earthly things, resting, indeed, at either end upon the earth, but culminating yonder—leading the mental eye where heaven alone is visible.

The man who has no sunshine of this kind, and looks upon such facts as press themselves upon him, sees but the gloomy shower,—or feels it, rather,—and hears the thunder of the storm, and thinks that all is evidence of evil influence and God's displeasure; while he on whom the sun of knowledge has arisen sees every fact a gem of beauty, and all together form the many-coloured beautiful harmonious arch of truth, a glorious monument, which (as He remembers of the rainbow) God himself has built to teach His truthfulness and mercy. *J. C. M.*

CORN GROWING IN IRELAND.

A PAPER read by Mr. Robertson before the Chemico-Agricultural Society of Ulster, given in your Paper of the 17th, tries very laboriously to establish that corn-growing in Ireland is more advantageous than Grass.

Whatever may be the case on the north-eastern side of Ireland, such is certainly not the case in the south and west.

A glance at the rain-map in any Physical Atlas will show that the rain-fall of most part of Munster is the largest in Europe, a few small patches (the extreme end of Cornwall and Brittany, &c.,) alone equalling it. And the uncertainty of the Wheat crop and ill-ripening of fruit, even wall fruit, show that this heavy rain-fall is accompanied by a want of sunlight and heat. Any one who has lived in the south of Ireland knows that it is a mild, damp climate, with little heat in summer, or cold in winter.

A better climate for Grass can hardly be conceived. No one who has not seen it could believe the sole of Grass that can be got in the third year on land laid down in high condition. It grows nearly all the year round, and with the present prices of stock and dairy produce, gives a return under this climate nearly double that which would be attainable under a drier climate, or by arable culture. Some arable culture is necessary, no doubt, for the sake of straw and roots in winter, and as a means of further improving future Grass. But practically, that is the limit of its profitable use.

As to employment of the people in tillage, there is far more profitable employment, certainly for one generation, and probably for two, in draining the land that wants it, and getting rid of useless fences and making good ones.

But it is said that the landlord is to blame for the increase of Grass, and that the "*bonâ fide* tenant" (whatever he may be) "has nothing to do with the increased acreage under Grass."

The fact is, that even before the famine the better class of tenants in the south, I mean those holding more than 20 or 25 acres, were increasing their Grass and tilling less. They had found out that it paid to manure less, tillage better, and leave more in Grass. The tillage crops were better and the Grass afterwards better still in consequence of the previous heavier manuring. Then, lower prices of corn consequent on the repeal of the Corn Laws, increased this disposition. Then the improved price of butter, nearly double, and lastly the late great advance in the price of cattle and sheep, have completely established the greater profit of Grass, even on light land, that under another climate would be far fitter for tillage.

The consequence is, that in spite of old habits of Potato tillage, tenants are yearly tilling less, and the common recognised sign of a failing farmer is, "he is tilling a deal of his land."

Landlords are no doubt running a race with their tenants in laying down land to Grass, for the simple reason that it pays. Even inferior Grass, much as it deserves blame for other reasons, pays more than the rent the land was formerly thought worth. If it did not, nothing is more certain than that self-interest would soon force the great majority to let it.

But there is an increasing number of resident landlords, who are farming fairly well, and find that they are making a clear profit over all expenses and interest of 50 per cent. and upwards above the former rent of their land.

In many districts a class of dairymen has sprung up, who hire the cows annually at 8*l*., 9*l*., and even 10*l*. per cow. They give really good security for the rent, and many have so prospered as to be able to pay in advance half the rent of 20 or more cows to needy owners. The result is so paying, that many of the larger tenants thus let their cows, and landlords of course do the same, and even from inferior Grass thus make a large profit.

This is the true explanation of the increasing inclination of Irish landlords to take land into their own hands. On the great estates, no doubt, it cannot be done to any appreciable extent; but on the smaller estates, of say 5000 acres, whenever the landlord is resident, it will almost invariably be found he is increasing steadily the land in his own occupation. Capital enough to buy as many cows as the farm will feed, is all that is wanted. However poor and worn out, it will pay more than the old rent the very first year, and as the Grass improves it will give a large profit, the calves bred supplying the increased stock wanted. Of course there are drawbacks and sometimes losses, but so there are with tenants. So large and safe, however, has this system become, that I am certain nothing but the mutual good-will between landlords and tenants, which, in spite of talk and agitation to the contrary, I am thankful to say prevails on the great majority of estates, hinders landlords from getting rid of tenants to a very

large extent for the sake of the additional profit to be thus made.

I have troubled you at some length on this subject, because it lies at the root of the Irish land question. I do not care to ask any one to adopt my views, though they are the result of many years' practical experience. If they are true, and there is the profit to be made out of the land in the way I have above described, and which I have made myself for many years past, they will undoubtedly prove themselves. It is simply impossible to stop the force of self-interest, where a large and rightful profit can be made. It is clear even that any Landlord and Tenant Act that should unduly press on the landlords, would react most injuriously on the tenants themselves, because without any purposed ill-will or intention to resist the altered law, it will add another silent and still stronger motive to those already leading landlords to take every opportunity that offers of farming their own land.

As a sincere well-wisher to Irish tenants, I am convinced there is no possible substitute for good-will between them and their landlords. *An Irish Landlord.*

THE CATTLE PLAGUE.

[We last year, about this time, published the reference to this subject made in the opening address to the Society of Arts by the Chairman of its Council. We now give the remarks which Sir T. Phillips, Q.C., the present Chairman, made on the same subject at the meeting last Wednesday, which commenced the Society's current session.]

IN the opening address of the last session my predecessor directed the attention of our members to a disease which had appeared amongst cattle in this and other countries, to which the name rinderpest or cattle plague had been given. On that occasion extracts were read from a paper on the murrain which appeared among our cattle in 1769–70, written by Mr. Dossie, a member of one of the then acting committees of the Society, and printed in 1771.* Although the disease is believed to have visited this country on several occasions in the 17th and 18th centuries, it is doubtful whether it prevailed here from 1771 until the recent outbreak.

In 1665, 1714, 1745, and 1769, the disease appeared in England, and on some of those occasions proved for a considerable period extensively fatal. The disease which appeared in 1745 continued its ravages until 1757; and previous to each outbreak here the disease prevailed in Western Europe, and is believed to have been imported into this country on each visitation. Wherever, during war, herds of Russian or Austrian cattle followed the movements of armies, the plague appeared and spread through various countries, and France received the disease many times in the last and present centuries.

It has been stated, on reliable authority, that from 1711 to 1714 Western Europe lost 1,500,000 head of cattle by the plague, whilst from 1745 to 1748 three millions of cattle are believed to have perished from the disease in Western and Central Europe. No accurate record exists of the mortality in our own country, but in Cheshire, which then as now experienced the severity of the disease, 30,000 head of cattle died or were destroyed in a few months during the pestilence which commenced in 1745.

The recent outbreak began in the summer of last year, and the disease was first recognised in the neighbourhood of the metropolis in the month of June, under circumstances which indicated that the metropolitan market was the centre from which it radiated, spreading with much rapidity to the dairies of the metropolis and its vicinity, and extending with fatal and alarming celerity throughout the greater portion of the kingdom. That it was introduced from abroad is a conclusion now generally admitted. The experience have obtained identifies the English cattle plague with the cattlepest of Eastern Europe, which has usually received the disease through cattle sent into Poland and Hungary from the Asiatic steppes, where they are fed in large numbers in the provinces watered by the Dnieper and its tributaries. Large herds are yearly driven to Poland, Galicia, Hungary, and other portions of the Austrian dominions; and those countries were, in 1862 and 1863, visited by the disease, and lost large portions of their herds.

The cattle plague may be described as a disease of the class of contagious fevers. How long the morbific matter may remain inactive, or how rapidly, or to what distances it may be diffused, is unknown, but that it is contagious in a remarkable degree, and may be conveyed in a virulent form by almost any animal or substance with which it has been in contact, are conclusions supported by all the experience we have acquired.

No specific has been discovered which neutralises or expels the poison, and the disease has hitherto proved fatal to a very large proportion of the cattle attacked.

The progress of the disease in this country was for some time most rapid, and it was regarded with terror in many parts of the kingdom: the following extracts, showing the number of cattle attacked in particular months, are taken from the returns published weekly under the authority of the Privy Council, and are inserted in order to show first the increase, and next the diminution of the disease:—

1865.	July	2,290
,,	October	7,965
1866.	January	49,280
,,	February	36,342
,,	May	8,285
,,	August	114
,,	October	21

It will thus be seen that the progress of the disease was slow from July to October, and most rapid from that time to February, when it attained its maximum severity, and afterwards rapidly diminished.

The stock of cattle in Great Britain before the outbreak has been thus returned:—

England	3,837,309
Scotland	968,637
Wales, with Monmouthshire	583,701
	4,935,647

The numbers attacked in each of those divisions are thus given:—

	Attacked.	Per cent. of the Entire Stock.
England	198,476	5.586
Scotland	46,861	4.838
Wales	8,388	1.437
	253,725	5.141

The numbers that either died of the disease, or were killed to arrest its progress, are enumerated thus:—

	Died.	Killed.
England	99,425	77,570
Scotland	28,068	6,263
Wales	5,704	1,180
	133,197	85,013

The numbers recovered or unaccounted for are thus enumerated:—

	Recovered.	Unaccounted for.
England	21,589	8,894
Scotland	10,707	1,803
Wales	1,117	297
	33,413	10,994

The results thus supplied present some remarkable features, of which we may notice, in the first place, the great severity of the disease in some districts, and the partial or total immunity of others from its ravages.

Before the plague appeared, the county of Chester possessed 129,493 cattle, of which 67,706 were attacked between the end of June, 1865, and the end of October, 1866, being 53,288 per cent. of the cattle of that county. During the same period the cattle attacked in the whole of England, excluding the Welsh counties, numbered 198,476, or 5.8 per cent of the whole of its stock. Whilst great havoc occurred amongst the choice herds of several English counties, the cattle attacked in Scotland numbered 46,861, or 4.8 per cent. of the stock of that portion of the kingdom.

In Scotland the attacks varied from 35 per cent. in one county (Forfar), to a small decimal point of 1 per cent. in other counties, both north and south of the Forth; and from 13 per cent. in Kincardine to .244 per cent. in the adjoining county of Aberdeen; whilst with the exception of a single attack in Inverness, the disease did not appear in any county north of Aberdeen; and 11 Scotch counties escaped its ravages.

In England the severity of the disease varied from 52 per cent. in Cheshire, and a large but not equal visitation in other counties to .290 per cent. in the South-Western division of England, whilst total immunity was enjoyed by two English and 10 of the 12 Welsh counties, those alone being visited by the disease which border on Cheshire, namely, Flint and Denbigh. Some persons have attributed the immunity from the disease in portions of England, Wales, and Scotland, to the lofty and mountainous character of much of those districts. Many parts of the counties thus spared border, however, on the sea-coast, and it seems a more probable conclusion that the inhabitants being for the most part exporters of stock and rarely importers of any, the disease was never introduced within their borders, and could not infect their cattle.

The official returns notify that of the cattle attacked in Great Britain, 253,725 in number, only 33,413 recovered from the disease. What portions of that number were cured by medical treatment and what variations of treatment were employed, do not appear in the official returns, but those gentlemen whose opinions seem entitled to the most weight think that medical remedies have proved of small or no value.

The proportion of recoveries to attacks differed largely as well between the several divisions of the kingdom, as between different counties in the same division.

Thus in England the proportion of recoveries to attacks did not quite amount to 11 per cent., and in different English counties the proportion varied from 4 per cent. in the Metropolis, 4.5 per cent. in Norfolk, 6 per cent. in Lincolnshire and Cambridgeshire, 7 per cent. in Kent and Buckinghamshire, and 8 per cent. in Suffolk, to 10 per cent. in the East and West Ridings of Yorkshire, 17 per cent. in Berks and Durham, and 17 per cent. in the North Riding.

In Scotland the difference between recoveries and attacks was still greater; for whilst in that part of the kingdom they amounted to 22 per cent., in Aberdeen the proportion of recoveries to attacks did not exceed one per cent., and in Dumfries and Haddington did not exceed eight per cent., they amounted in Edinburgh to 18, in Stirling to 22, in Dumbarton to 23, in Fife to 24, in Forfar to 25, in Perth to 26, in Kincardine to 28, in Berwick to 30, and in Clackmannan to 42 per cent.; and Aberdeen, where there were scarcely any recoveries, adjoins Kincardine, where the recoveries were numerous.

The first report of the Commissioners appointed by her Majesty to inquire into the origin and nature of the plague, made on the 31st October, 1865, contained the following passages:—"The practical conclusion at which foreign physicians and foreign Governments have arrived—the conclusion that it is better always to kill a diseased animal, or a few diseased animals, where by so doing you can kill an isolated germ of disease, instead of suffering that germ to linger and fructify whilst you are attempting a cure, for the precarious prospect of an insignificant saving—is justified by reason; it is also directly justified by experience, which shows that whilst the plague propagated from a single germ speedily becomes unmanageable, spreads from herd to herd, from province to province, and from country to country, multiplies in a continually increasing ratio, and exhausts itself only after a ruinous havoc and a long course of time, it may be effectually eradicated by prompt and unsparing measures. The experience of Prussia is especially valuable in this respect. The plague has often appeared, says Professor Gerlach, in the provinces bordering on the Russian Empire, in East Prussia, Posen, and Silesia, but it has never, since 1815, penetrated eastwards, even so far as Brandenburg."

Loud murmurs followed the publication of that Report, and remonstrances were freely offered against the suggestion that medical science was powerless in the presence of this great calamity; and yet, after a year's further experience, the destruction of the herd in which the disease has appeared is the remedy still employed. It must not be forgotten that from the time this was authorised by the legislature the disease rapidly diminished. In fact the policeman and the pole-axe are our only aids, the one to ensure the separation of healthy from diseased animals, the other to slaughter not only diseased animals, but also stock which have been exposed to the contagious influence of diseased animals, although the disease may not have been manifested in the stock thus exposed. In the weekly return for the 3d inst. it is intimated that hope is entertained that it is the last that will be necessary in recording the progress of a disease which so recently as February last attacked 15,706 cattle in one week.

It seems to be now the received opinion that cattle plague may be transmitted from the ox to the sheep; but sheep are far less susceptible to the disease than cows or other cattle of that species, and a larger proportion of sheep recover than of cattle. The returns published under the authority of the Privy Council contain the following tables in relation to sheep:—

Stock in Great Britain in March last	22,048,381
Attacked	6,826
Killed	1,029
Dead	4,649
Recovered	1,031
Unaccounted for	63

Ireland suffered from the visitation of the cattle plague to a very inconsiderable extent, the disease having appeared only in small districts of two counties, Down and Meath; and the loss of stock in that country was limited to 50 beasts, of which 29 were diseased and 21 healthy animals which had been exposed to the infection.

It may be thought by some of my hearers that the subject of the cattle plague has occupied more than its due share of this address. The food, and dwellings, and education of the people, are all, however, subjects to which this Society has given frequent and earnest attention, and the magnitude of the visitation of which I have been treating gives to the subject a national importance, and warrants me in extending the inquiry beyond what might otherwise be its natural limits. The actual destruction of meat has been so vast; the effect of this large destruction of food upon the breeding and rearing of cattle is so formidable; the possible return of the disease is a subject of so much apprehension; and the serious increase in price, and the scarcity of animal food from the effects of so wide-spread a malady, are so certain, that the Society could not regard the subject with indifference, and the Council, at a recent meeting, resolved:—

"That a Committee be appointed to inquire and report respecting the food of the people, especially, but not exclusively, the working classes of the people; and that, having regard to the publications of the Privy Council and other documents which illustrate the defective amount of nutritious food available for the population at large, the said Committee do report as to the means by which the resources of food may be rendered available for the production, importation, and preservation of substances suitable for food; and for improving the methods of cooking in use among the working classes."

The Council trust that the patient and careful investigation of a very important subject may conduce to the realisation of plans whereby the food of the people may be increased in quantity, and rendered more adequate to the wants of the community, or whereby the nutritious qualities of food may be increased, and the consumption economised, so that an equal quantity may be found capable of supporting a larger number of people in health and vigour. The Council are gratified to be able to state that the Right Hon. H. A. Bruce, M.P., late Vice-President of the Committee of Council on Education, has consented to act as Chairman of the Committee which it is intended to nominate.

Return of the Week.—The return of the reported cases of cattle plague in Great Britain, issued by authority of the Lords of the Privy Council, for the

* See "Journal," vol. xiv., p. 105, &c.

* Since this address was written, I have been favoured by Professor Simonds with a copy of the address delivered by him at the Royal Veterinary College, on the opening of the present session. His narrative of the appearance of the cattle plague in limited districts of two Irish counties, and the success with which it was stamped out, with the loss of 29 diseased, and 21 healthy animals; and his contrast between France and Belgium on the one hand—the sacrifice in the former kingdom being 43 animals, and in the latter 455 animals slaughtered to prevent the spread of the disease—and Holland on the other, where the destruction of infected animals has been wanting in promptitude, and the disease still prevails to an alarming extent, may be commended to all who regard the prevention of the cattle disease as an object of great national importance.

week ending Saturday, the 24th of November, makes the following statement:—"The present return shows an increase in the number of reported cases of cattle plague; during the week ending the 24th of November seven attacks are returned as having occurred in Great Britain, being an increase of five on the previous return. Fresh outbreaks took place in two farms or places where cattle are kept; the number in the week preceding was also two. Nine healthy cattle were slaughtered during the week from having been in contact with diseased animals. The attacks reported are for the following two petty sessional divisions of England—viz. (Lincolnshire, Holland division) Kirton and Skirbeck, two bullocks and two heifers; and (Lancashire) Bury, one cow, one heifer, and one calf; of these animals two bullocks and one cow died, and the others were slaughtered by order of inspectors. The number of animals attacked since the commencement is 253,739, and 52,424 healthy cattle have been slaughtered to prevent the spread of the disease."

Societies.

HEREFORDSHIRE CHAMBER OF AGRICULTURE: *Regulations for the Sale of Cattle.*—Mr. Duckham read a paper on this subject at a recent meeting of this Association. He said:—That pleuro-pneumonia and foot-and-mouth disease with cattle, and small-pox with sheep, were imported, is, I consider, placed beyond doubt from the following facts:—First, they were not known in England a few years ago. Youatt, in his "Treatise on Cattle," published in 1834, does not even mention the foot-and-mouth disease, and only gives what he terms "an interesting account of pleuro-pneumonia," extracted from a veterinary work by M. Lecoq, of Lyons, who stated it to be "a malady confined to a certain district in France called Franche Comté." Yet the names of each of those diseases are now become as familiar to the ears of the English farmer as household words, and last year and the early part of the present year they were extremely rife throughout England. Secondly, their speedy extermination under the recent sanatory and restrictive regulations for the removal and sale of cattle, furnishes strong presumptive argument that they are of foreign origin, and capable of being guarded against. As regards the small-pox in sheep, that, too, appears to have been unknown to Youatt, as it is not mentioned in his treatise on sheep, published in 1837; and, thanks to the judicious regulations this year adopted at the ports of disembarkation, our flocks have recently been more than once saved from that virulent, contagious, and infectious disease. In the Session of 1863, Mr. Holland introduced a Bill with those objects in view, which was withdrawn under a promise from the late Government that a similar measure should be submitted by them during the next session. That promise was fulfilled; but principally owing to its dealing with that contagious and infectious disease, commonly called "foot-and-mouth disease," it was successfully opposed; and each time that I had the honour of forming one of a deputation to wait upon Sir G. Grey, in January and February last, for the purpose of urging the painful necessity of more stringent measures being adopted to prevent the introduction and spread of disease throughout the kingdom, that gentleman told us that when the Government introduced a Bill with those objects in view the farmers themselves opposed it; whereas, the opposition to the Bill was raised first by the cattle salesmen of the London market; secondly, by the city authorities; and thirdly, by a few farmers who were connected with that market. Thus, a measure which had so much good attached to it (and I have no hesitation in stating would, had it passed, have proved a great blessing to the nation), was frustrated. The arguments used to obtain that end were:—First, the serious consequences which the passing of such a measure would entail upon those connected with the cattle trade; secondly, that the public would not be benefited by such an Act; and lastly, that the disease did not affect the meat of animals killed whilst under its influence. There can be no question that the first of those reasons was perfectly correct; the cattle trade would have been materially affected by the Act, for at that period such was the disgraceful state of the packets, the railway trucks, and other conveyances used in the trade, that animals, however healthy they may have been when they left their pastures, rarely escaped falling under its influence within a very brief period of their importation; it was, therefore, obvious that they would most probably have had to undergo a quarantine upon their arrival, before they could be submitted for competition—besides which, should they fortunately have escaped contagion, and then have met a dull market, such was the poisoned state of the atmosphere of the Metropolitan and other great markets from that continued feeding of disease, that the holding over of animals from one market to the following was usually attended by its symptoms, and therefore a compulsory sale would almost invariably have to be submitted to. Much of this would have been corrected by the sanitary regulations provided for in the Bill.

. . . . . The development of the railway system abroad, as well as at home, renders preventive measures more than ever requisite; and it becomes a matter worthy of the serious consideration of the Government, whether the slaughtering of imported foreign cattle should not continue to be enforced at the ports of disembarkation; and I am certainly inclined to endorse the opinions expressed by the Earl of Lichfield at the Staffordshire Quarter Sessions, viz., that none but fat stock should be imported from abroad. On the other hand, I know that there are many who feel that a resumption of the general trade must take place as soon as possible. In that case I think certain ports should be licensed for importation, that each animal should be branded, showing the date of its landing, and be submitted to a quarantine of 28 days before being removed inland. That the thorough cleansing and disinfecting of all packets, canal boats, railway cattle-trucks, and cattle-pens should be provided for. That the offering for sale in any public market or fair, or driving along any highway, or depasturing upon any common or unenclosed land, any animal whilst suffering from any known contagious or infectious disease shall be considered a punishable offence.

Ultimately the following resolutions were adopted, the last three being submitted by the Chairman, and the first by Mr. Carpenter, seconded by Mr. Vaughan:

"That in the opinion of this meeting the recent Order of Privy Council empowering the opening of markets and fairs was premature."

"That the regulations at present in force requiring the slaughtering of foreign cattle at the ports of disembarkation should be continued as the future regulations for the foreign cattle trade."

"That the thorough cleansing and disinfecting of all packets, canal boats, railway trucks, and pens used in the cattle trade should be strictly enforced under Government inspection."

"That the offering for sale in any public market or fair, or driving along any highway, or depasturing upon any common or unenclosed land any animal whilst suffering from any known contagious or infectious disease, should be a punishable offence."

In the course of the discussion it was stated that the license had been granted for the opening of the Hereford market; and the Mayor said the Town Council were anxious to open the market, but he was sure they would do everything in their power to meet the views of the agriculturists.

HADLEIGH.—At the recent annual dinner of this Society Mr. Hawkins reminded the members that they had begun 20 years ago with the intention of carrying out the objects of a farmers' club. They had however fallen away from that idea, and, as such a club, they were now a sort of nonentity. He should like them to do either one thing or another—either resuscitate this "dead man," or sink the idea of a farmers' club altogether. He thought a farmers' club ought to agree with the motto adopted by the Royal Agricultural Society—"Practice with Science;" these being the tributary streams to feed that great Society. The first thing such a club should possess was a good library. When their forefathers died all their knowledge died with them, because they never recorded any facts; a man spent half a lifetime in acquiring knowledge, in the other half he used it for his own benefit, and when he died his knowledgeall went with him. And that was the way they would still go on, unless they adopted the system of recording results. When he looked round and saw so many young men who wanted to look into the subjects that might come before them in their avocations, he thought there ought to be books to which they could refer. It was now more essential than ever. Suppose, instead of spending 50 guineas a-year about a stock show, they were to spend 30 guineas for a set of botanical works, to make the farmers acquainted with what they saw in the fields. A man who knew the habits of a plant, they knew how to destroy it; and when they knew the soil to which it was indigenous, they would know whether it would grow with their crop. He fancied that an agricultural library, giving the result of experiments, and a knowledge of what was going on, was of the utmost importance to a farmers' club. Many topics were brought before them in an erroneous point of view, which farmers' clubs ought to correct. If they had read the speeches at the agricultural meetings during the year, they would have found that the aristocracy had come to the universal conclusion that their lands were not half-tilled, and that it was owing to the ignorance and poverty of their tenants. There were a great many things that were called agricultural improvements that were not undertaken by tenants—things which their landlords thought they ought to do—because they did not know how to do them. It was the business of a farmers' club to show them. There was not a land-valuer or farmer who could get up and state the value of agricultural improvements. Suppose they took draining. Just look at the diversity of opinion that existed upon that subject. One said that a farmer who drained his land ought to have 10 years' security for the improvement, and another said he ought to have 20 years'. If a gentleman took a Government loan to improve his estate, he had to pay 6½ per cent. for 21 years, *i. e.*, 3½ per cent. for interest, and 3 per cent. sinking fund; and if that principle were correct, surely a farmers' improvement must be worth 21 years to him. But he had never known any gentleman who was able to make interest on his money; he generally had to lose about 3 per cent., and the tenant paid it. Why was that? If they spent 100*l.* in improvement, about 35 per cent. went in engineering, and plans, and superintendence, that was of no earthly use to the farmer. In fact, half the people who came to drain land did not know half as much about it as the farmers themselves. These were things that ought to be taken up by a farmers' club, because, whatever they might say of the aristocracy, avarice was a thing they could not bring to bear upon them; he never saw a gentleman who wished to take advantage of an improvement if he was convinced it was wrong to do so. Suppose a farmer were to drain a 10-acre field, and leave one acre in the middle undrained, and the club paid him the loss, the advantage of the drainage would be made clear; but there was no man who could say what was the value of drainage. In very dry seasons the drain did not pay a farthing, and there was interest and compound interest to be added to the account for those years; and if a farmer had only a year's interest in the improvement, his security would be gone before he began to reap the advantage. Then, again, there was chalking and draining the land: look at the diversity of opinion there was. They had seen in the *Economist* a paper on the late Mr. Pusey's tenant-right system, and this showed the ignorance of the land-valuers and land-agents examined before the House of Commons. Mr. Tollemache's steward was asked how long chalk would be of benefit to the land, and he said it would work out in about four or five years, but every farmer knew that was just when it began to pay. When men who were supposed to know things made such assertions as that, and such ridiculous answers were given, it proved that they did not know anything about it. If they would read "Corbet's Digest of Tenant Right" they would find that hardly a land-agent that was examined knew what customs prevailed 25 miles away from his home. These people were not fit to take the management of estates, and that was how the country gentlemen got so misled about agricultural improvements. Therefore he thought it was the business and the duty of farmers' clubs to enter upon these inquiries. This would be far better than having their stock show, at which there was never anything worth looking at, except two or three horses that had much better be shown at the county meeting. There was one thing that must force itself upon landed proprietors, viz., the position of tenants and labourers. There had been long discussions about paying low wages, and Mr. Girdlestone wrote about the wages in Devonshire; but Mr. Brereton had taken up the subject, and based his arguments upon political economy, which was the only thing a man could do to estimate the value of labour. The farmer had no more control over the price of labour than the manufacturer, or anybody else. Now, they could not secure much labour on their farms except that of a migratory kind; they were men who lodged at beer-houses, and if they read one evening in a penny paper that good wages were given 15 miles off, the next morning they were off. Other men did the same thing, and so it happened that just at this focus there were four or five times as many men as were wanted. That could not be the case if they had sufficient cottage accommodation, because they would then be able to make their men comfortable and well off. But as long as they had that migratory class of labourers, the moment they heard that hay-making was begun by somebody who was a week earlier than themselves they were off, and they had to depend upon men who came up from more backward districts. That was a thing that must force itself upon the consideration of the agricultural classes of the country.

Reviews.

Occasional Essays. By Charles Wren Hoskyns, Author of "Talpa; or, the Chronicles of a Clay Farm," "Inquiry into the History of Agriculture," &c. Longmans, Green & Co.

None of our readers need an introduction to the author of this little volume. His graceful pen and admirable powers of illustration have often adorned our pages. The "Occasional Essays" here collected have, however, none of them previously appeared in these columns; and we are the more anxious that the charming papers here bound up together—a lecture "On the Invisible World," an "Address to the Warwickshire Natural History Society," papers on "Agriculture" and on "Landlord," and a lecture on the "Battle-line of History,"—should be made known through the *Agricultural Gazette*. We have occasionally urged in reviews the great advantage to the farmer and the countryman of occasional excursions outside the hard and beaten path of daily personal experience, and he could not have a better or more delightful guide than Mr. Hoskyns.

We take two passages from his pages in illustration of this—both of them having a connection with country life, and both therefore the fitter for extract here. The first is taken from the lecture on the "Invisible World."

Vegetable growth.—"When people look at the bulky stem of an Oak or Elm tree, they commonly speak of it as one of the productions of the earth. They could hardly for a moment be led to suppose that the phrase they use is, in the sense in which they mean it, incorrect. They can see the tree, and they see the ground it grows on; both are solid, and tangible, and visible to the eye, and they can see nothing but the most obvious conclusion, that the ground produced the plant. It bears it, at any rate; so it does our beautiful spire of Ross Church; but inasmuch as that is built of stone, the earth may with more physiological accuracy be called the producer of the spire than of any tree that ever grew. For, in that invisible ocean of air which bends the branches of the tree, and stirs the weathercock of the spire, there wanders about a little insignificant-seeming quantity of a certain gas which we have not yet named, so scantily distributed as to form only one part in 2500 of the atmosphere, and though perfectly invisible, yet so heavy compared with the rest, that it may be poured from one glass into another, like water. Its name is carbonic acid, and if I omitted to name it to you before, you will believe it is not for its want of importance, when I tell you that to this invisible tenant of the air, and not to the solid ground, is due the growth and bulk of the timber tree, and of all the forests upon the face of the earth, and of all the coal-beds under it.

"To those who may not be already familiar with the process, I fear I shall hardly have time to describe here, in sufficient detail to make it fully intelligible, the system of the nutrition of plants from the atmosphere. This you can get from books, and we must hurry on to other realms of the Invisible World. Mrs. Marcet, Dr. Carpenter, Professor Lindley, the Baron Dutrochet, and the experiments of the great De Candolle will best furnish this beautiful chapter of natural history; how the little leaf, stimulated by the action of the sun upon its surfaces, sucks in

carbonic acid from the air, decomposes it, rejecting the oxygen (for which we who want it are much obliged), and retaining the carbon (for which again we are obliged, it being poison to our lungs, and constantly thrown off by them); and how the water pumped up from the ground through the vascular tissue of the stem and branches undergoes similar decomposition in the clever laboratory of the leaf—yields up its oxygen to the air, and its hydrogen to the carbon, which now begins to organise as real 'sap,' and commences its downward journey through every portion of the tree laden with liquid wood, and forming the new tissue of this year's growth underneath the bark; just as a bee gives its honey to the hive, forming the cell and its rich contents, as dear old Dr. Watts used to tell us.

"You will see, from this very brief explanation, enough to make it understood that the growth (that is, the new deposition of wood) of a tree is not upwards from the ground, but downwards from the leaves, the water drawn up from the earth being chiefly for its use as water—in fact, a moistener and vehicle for the conveyance and distribution of the food to every portion of the plant, much in the same manner as our food is moistened in the mouth by saliva to smooth its passage down the throat."

We take another delightful extract from the "Address to the Warwickshire Natural History and Archæological Society."

Field Meetings.—"I believe that every member who was present at last year's meetings of the Field Branch of the Society will admit that I am appropriating no vain or rash compliment to it in congratulating it upon its progress and the heightening interest of its transactions. I think we have done wisely in assembling at last, at a winter meeting, in order to enjoy a review (to which the contrast of season brings additional force) of the warm, sunny holidays of summer; the cheerful and healthy rambles through new and varying scenery; the broken and lost country paths, where every blunder of the way aided the purpose of exploration; and, by disclosing some object, or eliciting some remark, made the loss a gain. Perhaps we are too apt to undervalue the accidents of nature—that beautifully-dishevelled array—that 'discordia concors,' in which she presents herself to the inquiring eye of the naturalist. It is necessary to keep reminding the indoor student that the jealous divisions of natural knowledge into distinct sciences is the work of books. It is their office and their duty; but we should use them as servants, not as masters. Nature is all one—indivisible though infinite; and, so to speak, innumerable. It is the limitation of our faculties, not of anything in Nature herself, that compels separation of pursuit and subject, and subdivision into chapter and verse. This is more powerfully felt, though vaguely and insensibly conveyed to us, by one day out of doors, surrounded by men of science (however each may have wisely compressed the channel of his studies in a special direction) than it ever can be inculcated by books themselves; and in this lies the special and felt privilege of these field meetings. If man be the 'Interpreter of Nature,' here we are at the very shrine of knowledge—all high priests, if we choose to become so—ministering to, and necessary to, each other; for the very limitation of our faculties to special paths of knowledge becomes the self-evident bond of natural union between mind and mind—between man and man. The narrowness of our capacities—this element of our weakness, displays itself as a source of power in compelling union.

"For I am not one of those who think that knowledge puffeth up. I hold the diametrical opposite of that idea; and believe there never was a greater heresy in the world of secular truth. It is ignorance alone that can exalt a man's knowledge in his own estimation. And I make bold to say that, whoever has met with that strange phenomenon, a really learned and clever man, proud and boastful, has met with a chimera whose relative organisation his eye misapprehends. The inflation, he remarks, is not in the learning of the man, but in the ignorance of the beast. 'With all thy getting, get understanding'—appeals most truly and most beautifully to the moral unity and reality of all knowledge—let me say of all true science. The Hand of Creation is not divided and at buffets with itself. 'Intellectual' and 'moral' are terms of our manufacture—the coinage of our poor mint, that can only strike one image and superscription at a time. It is not so in nature. There is no antetype to be found for any such separation there. We do not even know that matter itself can be dissociated from its effects upon the perceptive faculties of the mind any more than on our outward senses; much less can the impressions and operations of the mind, which knowledge generates, be divided off and kept apart, and labelled 'intellectual' and 'moral,' except in the mere nomenclature of language, as the physiologist professes to divide the names and functions of those vital organs of our bodily structure, which we well know to be co-ordinate in their functions and co-essential—in reality inseparable.

"The realms of natural science are so boundless—its structure so indivisible and perfect in itself, that the tiny threads by which we strive, each upon his own small tract, to trace out the parts of the great pattern, furnish, as we climb them, the best of all antidotes to self-conceit. At every step the path widens—the horizon opens—the breadth and complexity of the pattern increases—'Alps rise on Alps,' and the scale of creative power outgrows the reach even of imagination to follow, till to know that we indeed know nothing is the only formula in which the petty thing that we call knowledge can measure or express itself."

Let this charming passage tempt all our readers to procure the little volume from which it is taken; and they will join with us in the expression of our gratitude to one who has now for so many years done so much to open the eyes of agriculturists to the hitherto invisible world of beauty and enjoyment in the midst of which their daily occupations lead them.

Farm Memoranda.

MR. RANDALL'S FARM AT CHADBURY: "*Sheep versus Cattle.*"—In the admirable practical lecture given by Mr. Torr last summer before the English Agricultural Society on this subject, the following account was given of Mr. Randall's management:—

On all second-rate Grass lands sheep have been and can be made far more profitable than cattle; and in the improved state of such lands by draining, &c., sheep can now flourish and do well, where in former times it would have been folly to have placed them. There is not a greater improvement in farming than an allowance of oilcake to grazing sheep. I have used oilcake largely, both for cattle and sheep on first-rate land, and sold bullocks last year under four years old at 45*l.* each from Grass. Mind you, the land was worth over 100*l.* per acre, and the beasts had 8 lb. of oilcake per day, and they paid well for their summer grazing. This system only applies, perhaps, to feeding off the cattle or sheep more quickly, and on real good pastures; on second-rate land young steers are grazed, without the oilcake, mixed with sheep. Now, it is here that a vast improvement may be made, simply by increasing the number of sheep and lessening the number of cattle—thus, say, instead of having one steer on 2 acres, and two sheep per acre, we put one steer on 4 acres, and four to six sheep per acre, and give the sheep oilcake. This opens a large field, and in all tolerably dry districts it can be done to greater profit, as will eventually be found, than the absurd process of breaking up Grass land because it does not improve. Why, how can it do so if farmers won't do anything to it? This I know too well is often the case in my own immediate neighbourhood. The next, and perhaps a greater necessity, is that of keeping sheep on the cold strong lands of England, supposing such lands have been well drained, without which it is useless to suggest any improvement of the sort. The drains on Grass land need more expense, because they should be as deep, and more close, even than on tillage, which has advantages as to percolation and atmospheric influence from cultivation, especially with the use of the steam plough.

When the water is thoroughly taken out of Grass land, and you dress with almost anything, say common Wheat chaff, cut straw, lime and salt, or, better still, a few crushed and rotten bones, and put on plenty of sheep, with oilcake, the change is magical (as I could show you on many a score of acres in my own occupation), this management befitting almost all the second and third-rate Grass land. I aver that now is the golden opportunity for putting this great—I may say national—experiment in practice; fewer cattle and more sheep, and larger remuneration for the tenant.

I have not had very great experience myself in keeping a large number of sheep on cold clay lands, because that is not the character of my farms—I am in a much better position in respect of sheep. I shall, therefore, refer to the practice of Mr. Charles Randall, who carries it out better than any one I know; and I shall speak of his experience in detail, and tell you exactly how things are done on a portion of the Duc d'Aumale, at Chadbury, near Worcester. 1st. Where the land is exclusively in Grass. 2d. Where there is some arable land, or where some of the Grass land may be broken up. And I shall assume that it is strong land, because there is no need to tell people how to grow food for sheep upon light land.

As to the first, I believe there is no mode of sheep farming practicable but to buy in ewes, sell off the lambs, fat as many as can be made so, the rest as stores, then feed off as many of the ewes as are too old, or otherwise unfitted, to breed again. Lambs cannot be wintered with any certainty of success upon Grass land, more especially where that Grass land has been thickly stocked with sheep during the previous summer. Assuming, then, that this is to be the sort of sheep management adopted, the question is how to keep the greatest number in the most profitable manner—or in other words, how to make the most money per acre by them. Three-fourths of the land should be kept entirely free from stock from the end of October, by which time the rams will be taken from the ewes, until the lambing begins. On the other fourth the ewes will be wintered, hurdling it over as a green crop, at the rate of about one quarter of an acre per day to 100 ewes, and giving with it sufficient hay, cut into chaff, to keep them in condition. When near to lambing, ½ lb. of oilcake per day should be given to each; or if the Grass land is poor, this may be done throughout the winter with benefit both to the land and sheep. The land upon which the ewes have been thus wintered should then be mown. As the ewes drop their lambs, turn them into the fresh pastures, continuing the daily ½ lb. of cake with a little hay-chaff. When about a month old, the lambs will try to join the ewes at the troughs, and then a small piece of the field should be hurdled off, and a little oilcake and chaff placed in low troughs, the lambs having access to them by means of a "lamb-gate"—viz., a hurdle with upright revolving bars, 9 inches apart. As the lambs take to the cake, the allowance to the ewes must be reduced, so that the ½ lb. per ewe will not be exceeded for ewe and lamb together. In this way one-third more ewes and lambs may be kept upon the same land than could be maintained in good condition without assistance. A larger proportion of the lambs will be ready early for the butcher, making the best price; and such as do not get fit to kill will pay for their cake by being strong, healthy stores. Every grazier knows that such lambs will go on and thrive with little risk or loss; while he equally well knows that little stunted scouring lambs are dear at any price. The ewes will be in forward condition, and may soon go to the butcher, making room for a new lot; and the land will, by this consumption of cake, gradually and certainly become capable of keeping a greater stock.

The chief objection to this kind of sheep farming is, the having to buy in annually fresh ewes; for, be it remembered, they are not sold for their good qualities they are either of ill-formed, have lost a quarter, or are otherwise bad sucklers.

To obviate this objection I will adopt the second proposition: If there is no arable land, break up some of the Grass land—the worst—breed and feed off the wethers at a year old and the draft ewes, keeping on the ewe lambs for stock. The management of the ewes and lambs will still be much the same up to the middle of June, after which, time the lambs must depend upon the produce of the arable land. They cannot be made to do well after they are weaned upon the pastures where they have been kept with the ewes.

Assuming, then, the worst—that the land in tillage is clay, the crops to be grown upon half of it (the other half alternately being Wheat) will be Mangels, Cabbages, Kohl-rabi and Vetches. These crops may with certainty be grown upon clay land, where it is always difficult, and sometimes quite impossible, to grow Swedes or Turnips. In the northern portion of the kingdom, where the climate is more favourable to the latter crops than to Mangel, these would be substituted. At present we leave the men of the "far north" to take care of themselves, as they are well able to do. The Vetches will be useful to put the yearling ewes upon, and the old ones when their lambs are weaned, and should be eaten through iron hurdles. While this crop is being got through, the pastures will get fresh, the best of them to feed off the draft ewes, the others to carry the stock ewes till tupped. Of Kohl Rabi a few acres should be grown and stored as Mangels, *i. e.*, with the roots and crowns left on, and covered with soil only, and kept until a fortnight before the ewes begin to lamb. These pulped and mixed with chaff will greatly improve the milk, and should be continued after the ewes have yeaned, until an abundance of Grass makes them no longer necessary. Early Cabbages, planted in October upon Wheat stubble, well mashed, will be ready when the lambs are weaned, and with them must be given some hay-chaff, and to the wether lambs ½ lb. of cake; some cut Mangel of the previous year (for these may be kept till July) may also be added, and will make the Cabbages last out as long as may be necessary. The late York and Drumhead Cabbages will succeed the early ones, and carry on the lambs until it is time to plough up the land for Wheat and put the lambs to Mangels. This should be done in yards; the roots being pulped and mixed with Wheat-chaff, and Wheat-straw cut into chaff. If a little hay can be spared to mix therewith so much the better, but it is not essential. It is quite necessary, however, that feeding sheep should have cake or corn (the former the better), and hay-chaff mixed with it. Malt coombs and bran are useful additions, where they can be bought at 5*l.* per ton. In this way all the Wheat-straw that is not required for cutting in chaff will be converted into good manure, and in order to economise the straw it is well to cover the yards a foot, and the shedding 2 feet thick, with dry soil. It will rarely happen upon a farm such as we are assuming that clay cannot be found to burn. There is usually plenty of such raw material to be obtained from road-sides, hedge and ditch banks, borders, &c. The portion of this with which the open yard is bottomed will absorb the urine, and improve the quality, while it increases the quantity, of the dung-heap, and that which goes dry, as it should do, into the shed, must be turned as often as required until it becomes so saturated with dung and urine that turning no longer provides dry bedding for the sheep. It is desirable, then, where practicable, to cover these ashes over with fresh ones, but this cannot always be done. Carting upon that sort of land in winter is a question of frost or no frost; but it is not material beyond the saving of straw. If fresh ashes cannot be obtained, straw must be used upon the old ones. When the feeding is over, they are mixed, mixed with superphosphate, to apply by the drill to the green crops.

It must not be supposed that the sheds necessary for this purpose are expensive erections. A thatched roof upon posts 5 feet high, the spaces between the posts on the north side being filled in with two rows of wattled hurdles, one on each side of the posts, and rammed between with straw, is all that is required.

Such is the practical experience of Mr. Randall with a large flock of sheep on a very cold clay soil, a soil that is a good deal below the average of land which may be termed sheep land. Of course I need hardly say he has not a large number of cattle; but he has a considerable lot of sheep—sometimes from 600 to 800 feeding sheep.

Here let me put on what I call the crowning point of wool, now the staple, not only in a mill but on a farm. Sheep, as it were, standing still, grow wool; and all anything like late prices of this article, and under a certain zone of latitude, it is doubtful whether a wether could not be more than self-supporting, by yielding annually his fleece, and thus pay a profit for two succeeding summers. This I advance not against early return and maturity, but to illustrate my views as to the advantages of sheep under favourable circumstances. To take another point, a friend of mine, who has had 18 sheep of me during the past 18 years, and has engaged the 19th ram to put on his old time-honoured Lincoln flock, realised at the April fair of Lincoln 5*l.* each for 200 hoggets, barring a "tenner" returned for luck. Well, now you have here, say three hoggets, making 15*l.*, *versus* a very good year and a-half old steer, or, in many counties, a two years' old.

Just for one moment see the great disparity in value. Referring to use of artificials; these hoggets, of course, had all they liked, and a little more, in their feeding-troughs: my bullocks had not quite their fill. Still, I freely admit, the profit is on the improved Lincolns, and not on the Short-horns, or any of the other cattle tribes.

I was going to say something about the soil on which wool grows best. On my own farm I find that I can grow better wool on some portions of it than on others. In the south of Lincolnshire, about Spilsby, wool grows in a most extraordinary manner; if you go further north, say as far as Fifeshire, or further south than the English Channel, the quality of the wool falls off. It then becomes hair or moss. The valuable fine lustre wool is pretty nearly confined to a few degrees of latitude, not only in England, but nearly all over the world. So that the space being limited, there is little or no danger of wool ever glutting the market any more. The present unjust warfare, however, is against its price; but on this I will not dwell. Wool will ever bear a great value; and even if 800 sheep be kept where 600 were kept formerly, there are 800 men, and far more, perhaps, in comparison with the 600, who now wear a good broad-cloth coat instead of miserable fustian; and so it will continue to be. And let me add to this requirement of the outer man, that the inner man tends to a mutton chop against a dear piece of roast beef, for reasons that the Inland Revenue could explain.

Miscellaneous.

Smithfield Club Cattle Show.—Yesterday extensive preparations were made at the Agricultural Hall for the ensuing Smithfield Club Cattle Show, which, in consequence of there being no show for cattle this year at Birmingham, will be larger than that of any previous occasion. The Show will be divided into 56 classes—viz., 34 devoted to various specimens of cattle, 18 for various breeds of sheep, and four for pigs. Among those who have made entries are the Prince of Wales, who, it is understood, will this year send stock from his own estate at Sandringham, while the Hon. Colonel Hood's name will represent that contributed from the Royal Flemish and Home Farms of Windsor. The Duke of Richmond, President of the Club this year, competes in the South Down sheep classes, Lord Walsingham in the Leicesters, and the Marquis of Exeter, Lord Berners, the Earl of Faversham, the Earl of Yarborough, Lord Tredegar, and other members of the aristocracy in the Devons, Short-horns, and other classes of cattle; while Earl Radnor, with his celebrated Coleshill breed, will compete for the pigs, to which classes the minor hall will be in the main devoted. The stalls for the cattle and sheep in the grand area have been enlarged, and a variety of improvements made in the shape of ventilation and water supply, as well as for the general convenience and comfort of the public. The implements will have to be in their places in the galleries by Thursday night next, and the cattle and other live stock not later than 10 P.M. on the night of the Saturday following. The judges will make their awards on Monday, December 10, after which the Show will be open to exhibitors, the members of the Club, and such of the public as are disposed to pay an entrance fee of 5*s*. On Tuesday and three following days the general public will be admitted as usual at the charge of 1*s*.

The Exhibition Week in Birmingham.—The annual exhibitions in Birmingham, which are so attractive to those who are interested in agricultural and other rural pursuits, take place in the course of the ensuing week, the private view botbin Bingley Hall and Curzon Hall being fixed for Monday next, the 3d of December. The show in Bingley Hall will this year lose what has hitherto formed one of the most important divisions, in the absence of the cattle classes, the Privy Council having felt compelled to withhold the requisite license. But while all who take part in these meetings must regret this, there is every reason for thankfulness that the cattle plague has now almost entirely disappeared, and we may fairly hope that in another year the show will be again complete in all its departments. Notwithstanding the restriction we have referred to, the exhibition in Bingley Hall will be one of very great interest, the entries of sheep and pigs being most satisfactory; while the entries of poultry are more numerous than on any former occasion, with, we believe, a single exception. Additional space will be available for this part of the show, and this means will thus be afforded for making a complete and satisfactory inspection of the several varieties. When we add that there will be a large collection of agricultural implements and machinery, a good show of roots, grain, &c., we shall have said enough to prove that there will be sufficient within the Hall pleasantly and profitably to occupy the time and attention of visitors. With regard to the prospects of the exhibition of dogs, we can speak with equal satisfaction; the entries exceed in number those of last year; all the leading breeds will be well represented, and there will be a marked improvement in the fittings and general arrangements. This show, like the one in Bingley Hall, is now firmly established in public favour, and the gentlemen who undertake its management possess, as they well deserve to do, the entire confidence of the exhibitors, the prize list and regulations having been judiciously arranged, and every detail of the exhibition receiving the most careful attention. We may add that, as usual, the railway companies have decided upon very liberal arrangements for special trains, this accommodation being, in fact, extended from year to year to new localities.

Notices to Correspondents.

ROYAL AGRICULTURAL SOCIETY. *Subscriber.*—Get any member to propose you for membership, or write to the Secretary, and he will at once remove any difficulty.

ROBERTS' PATENT SPOON REST.

This admirable appendage to the Dinner Table was invented as a remedy for evils which are apt to beset the best of carvers. Attention is called to some of the advantages arising from its use, to wit:—

1st. There is much more room at the side for the operations of the carver

2d. There is no fear of the handle of the spoon getting into the dish, and it is consequently kept clean.

3d. The spoon is always in its place, and ready for use

4th. The dinner cloth is kept much cleaner; and finally, the Spoon Rest is an ornament worthy of a place on every well-furnished table.

It may also be considered a handsome and acceptable present.

Price in German or Nickel Silver .. £1 1*s*.

Packing Cases, 1*s*. each

The Spoon Rest, over 30 inches in length of Pattern.

Orders sent immediately on remittance will receive prompt attention

This Invention is Manufactured exclusively for Messrs. HOBBS & BROWITT, Birmingham, to whom all Trade Orders should be addressed.

THE

PATENT AMERICAN CAMP STOOL.

This is a most simple and durable little Chair for Cricket Grounds, Excursionists, Tourists, Croquet Players, and Volunteer Camp Grounds.

It can be folded into the most compact form, and stowed away into the smallest possible compass for Travelling.

Price for Single Chair .. .. .. 5*s*. each.

Price for Lots of Six or upwards .. £2 10*s*. per dozen.

"THE RANTOONE."

(SECURED BY ROYAL LETTERS PATENT)

Manufactured in Wrought Iron of different Sizes, with all the Latest Improvements.

It is Light, Compact, and Symmetrical in appearance. Can be propelled at the rate of from 8 to 12 miles per hour, and will be found unequalled as a means of health, exercise, and recreation.

The simplicity of this invention is its great recommendation. Heretofore carriages of this kind, known by the name of Velocipedes, have lacked power, and have been found to be cumbersome, bulky, and labori ous to work. By applying the combination of Hand Levers and Treadles connected to the Cranked Axle, these objections are overcome, and the operator is enabled to work with both hands and feet at one and the same time. To one of the Hand Levers are attached a Brass Chain and Pulley, which communicate with the Axle of the Guide Wheel, and by this simple contrivance the Carriage may be turned in any direction required, and with the utmost ease.

It is in itself a gymnasium in miniature; for by its peculiar action all the principal muscles of the body are brought into play, and thus judiciously developed, none being overtaxed, as is often the case in rowing, fencing, dumb-bell exercise, &c.

Price, with 2 ft. 6 in. Driving Wheels, for Youths, £16 10*s*.

" 3 ft. " Adults, £12 12*s*.

" 3 ft. 6 in. " " £11 11*s*.

Cased Packing Cases extra; Skeleton ditto, 1*s*.

THE ELEVATOR RIFLE.

DESIGNED for TRAVELLERS, EMIGRANTS, ORNITHOLOGISTS, SPORTSMEN, &c

INVALUABLE for HOUSEHOLD DEFENCE

Great Reduction in Price.

36-or 52-bore now selling at £4 4*s*.

CHARLES POMEROY BUTTON,

142 and 143, Cheapside, London, E.C.

New Grass and Other Seeds for Exportation.

THE SEEDS OF THE GROWTH OF 1866 BEING NOW ALL HARVESTED AND IN FINE DRY CONDITION FOR EXPORTATION.

MESSRS. SUTTON solicit the favour of Orders from those about to send or take out SEEDS to the COLONIES, and submit the following from among many Testimonials recently received, as to the GREATLY SUPERIOR quality of their Seeds to those usually exported from this country, as well as to the very efficient manner in which their export packing is carried out:—

July 9, from A. N. EDEN, Esq., *Queenstown, Cape of Good Hope.*

"I may mention that the case referred to was in splendid order, looking as fresh after three months' sea and six weeks' land carriage as if only yesterday packed."

From HUGH ROMSAY, Esq., *Shanghae, China, May 5, 1866*

"The box of seeds and roots have arrived, and nothing has given me greater pleasure for a long time than the excellence of these seeds."

From Mr. Z. W. WEEKS, *New Plymouth, New Zealand, May 7, 1866.*

"The grass and other seeds sent by the Shelburne to me, have come safe to hand. I have tried samples of the grass seeds, and am happy to inform you that they are come up quite to my satisfaction."

From Mr. JAS. DALE, *Orange, New South Wales, September 20, 1866.*

"I have the pleasure to inform you that your seeds have given great satisfaction, and I now send you a larger order."

All Seeds properly packed and delivered free to ship side. Special quotations given for large quantities. A liberal allowance made to Shippers. SUTTON & SONS, Seed Growers, Reading.

To Market Gardeners and Others.

CABBAGE PLANTS.—East Ham, Enfield Nonpareil, Robinson's Champion Drumhead, 2*s*. per 1000.

RED CABBAGE PLANTS, 4*s*. per 1000, extra fine. Terms, cash.

I will challenge England with Plants, the Stock true, and can be warranted. All grown by

RICHARD WALKER, Market Gardener and Seed-grower, Biggleswade, Beds.

Seed Potatos.

H. AND F. SHARPE are now offering MYATT'S PROLIFIC KIDNEY, DAINTREE'S EARLIEST, WEBB'S IMPERIAL KIDNEY, FORTY-FOLD, ROX'S SEEDLING, EARLY OXFORD, and many other Early and Late varieties, fine in quality, free from disease, and at low prices.

Seed Growing Establishment, Wisbech, Cambridgeshire.

Choice Seeds, worthy the attention of all Gardeners and Seedsmen.

BACKHOUSE'S WINTER WHITE PROTECTING BROCCOLI. Crop very short. 2*s*. per packet.

MATTHIOLA BICORNIS.—This much-scented Stock has proved itself a delightful acquisition to the number of our Hardy Annuals. The power it and yet delicate perfume of its flowers resembles that of the Stock and Sweet-scented Clematis combined, and the effect of a large bed thereof in the summer evenings was so strong as to arrest special attention at several hundred yards' distance. 6*d*. per packet.

MALCOMIA INCRASSATA.—A distinct species of Virgin Stock resembling the well-known M. maritima in general appearance. It is, however, of more robust habit, with larger, brighter coloured, and more enduring flowers—points of much importance to an Annual so deservedly cultivated. 6*d*. per packet.

VERONICA GLAUCA. A hardy Annual from Greece, forming dense tufts 3 to 4 in. high, covered with deep and brilliant blue flowers. When sown in a mass the effect is very pleasing. 6*d*. per packet.

INVINCIBLE SCARLET SWEET PEA. 6*d*. per packet; 1*s*. 6*d*. per ½ pint.

LINARIA ALPINA. One of the prettiest of dwarf Rock plants. Pure and very extensive in flowering. Perennial in favourable situations. 6*d*. a packet.

True Plants will be supplied on application.

JAS. BACKHOUSE & SON, York Nurseries.

New Seeds in Sealed Packets for Season 1867.

B. S. WILLIAMS, Victoria and Paradise Nurseries, Upper Holloway, London, N., has pleasure in offering the following New and Valuable Seeds:—

THE ORANGEFIELD DWARF PRIOLIFIC TOMATO.—This variety was a sport from the old Large Red Tomato, selected and perpetuated by Mr. McLachlan, Gardener to J. H. Houldson, Esq., Orangefield, near Belfast, Ireland. After many years' careful trial it has been proved to be most valuable by the fine Tomato we possess.

Description.—Very dwarf, but strong in habit; never shows any sign of being stunted or weakly, but a greater quantity of fruit than has ever been seen on a Tomato. Is well adapted for indoor culture in those parts where (through the humidity of the climate) Tomatoes rarely come to perfection out of doors. It will stand forcing without drawing, and any amount of culture will not destroy its productiveness. The following Testimonials from well-known practical Gardeners, to whom it was sent for trial, testify to its superior merits.

From Mr. W. THOMSON, *Head Gardener to* His Grace the Duke of Buccleuch, *Dalkeith Palace, Scotland.*

"The plants you sent me of your Dwarf Prolific Tomato fruited abundantly. Its being so dwarf, while its fruit is as fine as the tall variety, makes it a great acquisition."

From Mr. J. BISSET, *Head Gardener to the Right Hon. the Earl of Sefton, Croxteth Park, near Liverpool.*

"The Dwarf Prolific Tomato introduced by Mr. McLachlan I have great pleasure for the two preceding years in recommending for its large fruiting Tomatoes, being dwarf and compact in growth, either planted out in a border or in pots, is a great bearer, and the quality excellent."

From Mr. W. ATLASS, *Head Gardener to the Right Hon. Lord Lurgan, Brownstown House, Lurgan, Ireland.*

"Having grown the Orangefield Tomato during the past season in a house with the Large Red, I consider it superior to that variety, for not only is it a prolific bearer, but equally as productive, fruit quite as large, and of a much richer colour. The Prolific seldom ripens out of doors in this climate, I can confidently recommend the Orangefield variety to all those who wish an abundant supply in a moderate space."

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"I have great pleasure in bearing testimony to the superior qualities of the Orangefield Dwarf Prolific Tomato. From its great productiveness, and its dwarf compact habit of growth, I consider it a great acquisition for indoor culture."

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"I feel much pleasure in being able to testify to the good quality of your Tomato. It is the very best I ever grew; very dwarf, an excellent bearer; fruit large, of beautiful colour."

Price 2*s*. per packet.

WILLIAMS' "ALEXANDRA" BROCCOLI.—An excellent new variety, a truthful description of which is subjoined. We fully anticipate that this kind, when trued, will take the leading place amongst the early White Sprouting Broccoli now in existence

Description.—Needs not a cross between Snow's Winter White and Knight's Protecting. It has a very hardy constitution; the merit of forming large solid heads, somewhat conical in shape, and as white as most Cauliflowers, added to a distinct pecularity of growth quite characteristic. The crown, as it becomes enlarged, is most finely enveloped in leaves until it approaches maturity, and is at its best for cooking when the upper parts of the leaves (which are in more immediate contact with the apex of the conical-shaped crown) reflex abruptly and reveal, for the first time, the tip of pure white. As the finest of White Broccolis it is without a parallel; and for cold northern situations, owing to its constitutional hardihood, it will be found quite a boon.

It comes in the latter end of April, it will come in for use the first week in May of the following year

Price 2*s*. 6*d*. per packet.

☞ A List of the "Trade" who obtained their supply direct from here, will be advertised in the Horticultural Papers in a short time.

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Amongst EIGHTY PRIZES gained by their COLLECTIONS this year are the PREMIER PRIZES for CUT ROSES at the INTERNATIONAL, NATIONAL, BIRMINGHAM, ROYAL BOTANIC, and BRIGHTON SHOWS, AND EVERY PRIZE FOR NEW ROSES AT THE SUMMER SHOWS.

PAUL & SON,

OLD CHESHUNT NURSERIES, CHESHUNT, N.,

Beg to solicit orders for ROSES and other PLANTS now ready for delivery. That the Old Cheshunt Nurseries still stand unrivalled in the culture of the Rose, the numerous Awards of the year attest. General Prices as under:—

ROSES, from our Stock of over 100,000 Saleable Plants.

Older kinds, Standards, 2 to 4 feet, 18*s.* per dozen; Dwarf Standards, ½ to 1 foot, 12*s.*; Dwarfs, 9*s.* to 12*s.*
Newer kinds, Standards, 24*s.* to 30*s.* per dozen; Dwarf Standards, ½ to 1 foot, 18*s.*; Dwarfs, 18*s.* to 24*s.*
NEW ROSES of 1866, 36*s.* to 42*s.* per dozen; 3*s.* 6*d.* to 5*s.* each.
NOISETTE MARÉCHAL NIEL, Standards, 5*s.*; Dwarfs, 3*s.* 6*d.*

FRUITS, all healthy well-formed Trees.

APPLES.—Fine Standards, 18*s.* per dozen; Pyramids, 18*s.* to 24*s.* per dozen; Dwarf-trained, 30*s.* to 42*s.* per doz.
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PEACHES, NECTARINES, and APRICOTS.—Standard-trained, 7*s.* 6*d.* to 10*s.* 6*d.* each; Pyramids, in pots, 5*s.* each; Dwarf-trained, 60*s.* per dozen.
QUINCES, WALNUTS, MEDLARS, CRABS, SERVICE TREES.—Standards, 2*s.* to 2*s.* 6*d.* each.
FIGS, in pots, 3*s.* 6*d.* to 5*s.* each.
VINES, ex. size, Fruiting, 7*s.* 6*d.* to 10*s.* 6*d.* each; Planting, very fine, 60*s.* per dozen.
GOOSEBERRIES and CURRANTS, 4*s.* per dozen.
RASPBERRIES.—Summer, 16*s.* p. 100; Autumn, 30*s.* do.
STRAWBERRIES, 3*s.* 6*d.* to 5*s.* per 100.

CONIFERÆ.—Our selection of 100 varieties, 1 to 3 feet, £10. PRICED LIST on application. For extent of our Collection see Catalogue of International Horticultural Exhibition.
DECIDUOUS and ORNAMENTAL FOLIAGED TREES and EVERGREENS, for Town and Country Planting.
RHODODENDRONS and AMERICAN PLANTS at PAUL'S American Nursery, High Beech, Loughton.

☞ PRICED DESCRIPTIVE LISTS of the above now ready.

PAUL AND SON would invite an inspection of their Nurseries, extending over Sixty Acres, one mile from Cheshunt Station, Great Eastern Railway. Omnibus from Waltham Station to Nursery Gates meets certain Trains.

A. VAN GEERT, NURSERYMAN, Ghent, Belgium, has much pleasure in offering the following articles at the very moderate quoted prices, viz.:—

100 young INDIAN AZALEAS, choice varieties, with flower buds, and in small pots, 63*s.*
100 Double CAMELLIAS, in best varieties, 1 foot high and bushy, 105*s.*
100 YUCCA ALOIFOLIA, nice plants, 25*s.* [bushy, 105*s.*
50 ALSOPHILA EXCELSA, fine plants, 42*s.*
50 ,, small, 21*s.*
25 GYMNOGRAMMA WETENHALLII, 12*s.*
100 LATANIA BORBONICA, a Palm for cool houses, 35*s.*
25 CHAMÆROPS HUMILIS, fine young plants, 21*s.*
20 Choice ORCHIDS, 50*s.*
50 GLOXINIAS of sorts, 21*s.*
50 ACHIMENES of sorts, 10*s.*
12 DASYLIRION of sorts, fine plants, 36*s.*
6 AGAVE SCHIDIGERA, strong, 42*s.*
100 Choice FERNS and LYCOPODS, 12*s.*
12 Choice PALMS, different sorts, 30*s.*
12 PASSIFLORA, of sorts, 9*s.*
12 RHODODENDRON NUTTALLII, strong plants, 30*s.*
6 ROEZLIA, strong plants, 24*s.*
25 WOODWARDIA ORIENTALIS, 12*s.* [bushy, 81*s.*
100 Hardy RHODODENDRONS, in fine named varieties, bushy, 81*s.*
12 MAGNOLIA THOMSONIANA, strong plants, 30*s.*
12 ,, MACROPHYLLA, 1 foot high, 24*s.*
12 ,, PURPUREA, strong bushy plants, 18*s.*
100 ASCLEPIAS TUBEROSA, strong roots, 21*s.*
25 Sorts of Choice HERBACEOUS PÆONIES, 12*s.* 6*d.*
12 ,, TREE PÆONIES, 30*s.*
100 TULIP TREES, 2 feet high, 15*s.*
50 VIRGINIA CREEPERS, 12*s.* 6*d.*
50 GLYCINE SINENSIS, strong plants, 25*s.*
50 CHAMÆCYPARIS SPILÆROIDEA FOLIIS AUREIS, 25*s.*
12 ACER NEGUNDO FOLIIS ARGENTEIS, 9*s.*
12 AKEBIA QUINATA, 6*s.*
100 GHENT AZALEAS of sorts, 63*s.*
25 BERBERIS ELEGANS, 9*s.*
25 BIGNONIA RADICANS, strong, 10*s.*
100 EUONYMUS of sorts, 25*s.*
25 CAMPANULA GRANDIFLORA, strong roots 20*s.*
50 CLEMATIS of sorts, 20*s.*
100 DELPHINIUM, in 30 varieties, 18*s.*
25 DEUTZIA CRENATA FL.-PLENO, 12*s.*
References required from unknown correspondents.

A. V. G.'s CATALOGUE, just out, may be had on application from his Agents, Messrs R. SILBERRAD, 5, Harp Lane, London, E.C.

TAN, GRATIS, in the immediate neighbourhood of Covent Garden Market.
Apply to ESSEX & SONS, 28, Stanhope Street, Clare Market, W.C.

SILVER SAND, Peat, Loam, Mould, Rotted Manure, Gunno, Cocoa Nut Fibre, Grotto Material, Gravel, Turf, Edging Tiles, Pots, Sticks, Stakes, Gishurst Compound, Tobacco Paper, and other Garden requisites in any quantity at moderate prices, at J. PETER'S, Clarendon Nurseries, Camberwell New Road, S.

ANTHURIUM SCHERZERIANUM.

HUGH LOW & CO.

HAVE JUST RECEIVED FROM THE NATIVE LOCALITY IN COSTA RICA A SUPPLY OF

ROOTS OF THE ABOVE-NAMED RARE AND BEAUTIFUL DWARF FLOWERING STOVE PLANT.

They are in the finest possible condition, varying in length from 3 to 12 inches, and are admirably adapted either for growing into Specimens or for the purposes of propagation. The roots break freely both from the crown and also from eyes, which are plentifully distributed along their whole length.

H. L. & Co. have also received from the same country a fine CATTLEYA, which they have every reason to believe is CATTLEYA DOWIENSIS, but until they receive flowers it is offered as CATTLEYA SPECIES from Costa Rica.

PRICES ON APPLICATION.

CLAPTON NURSERY, LONDON, N.E.

RICHARD DEAN

(ASSISTANT SECRETARY TO THE LATE INTERNATIONAL HORTICULTURAL EXHIBITION AND BOTANICAL CONGRESS),

SEEDSMAN AND FLORIST, EALING, LONDON, W.,

DEPOT FOR NEW AND CHOICE VEGETABLE AND FLOWER SEEDS, &c.

RICHARD DEAN begs to inform his numerous Friends and the Public generally that he has secured several very desirable NOVELTIES, which will shortly be offered for the first time.

A CATALOGUE OF NEW AND CHOICE VEGETABLE AND FLOWER SEEDS

is now in course of preparation, and will be forwarded post free to any address.

Gem Plant Case.

SURPLUS IMPORTED BULBS,

IN FINE CONDITION.

20 PER CENT. LESS THAN CATALOGUE PRICE.

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TULIPS, Mixed Early Single, Paxton Bedding do., fine Named do.
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CROCUS, Purple, Striped, Golden Yellow, White, Cloth of Silver, Scotch, Versicolor, and Mixed.
CROCUS, New Seedling Varieties, such as Albion, Albertine, La Majestueuse, Mont Blanc, Ne plus Ultra, Prince Albert, Queen Victoria, Sir Walter Scott, Sulphureus, New Golden Yellow, Vulcan, and Mixed.

SINGLE SNOWDROPS	IXIAS	TRITONIAS	CROWN IMPERIALS
BULBOCODIUM VERNUM	SPARAXIS	BABIANAS	SCILLAS.

Best Variety of VIOLA CORNUTA, 1*s.* and 2*s.* 6*d.* per packet.
Imported LILY of the VALLEY, clumps, 1*s.* 6*d.*, or 12 for 17*s.*

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HOT-WATER APPARATUS Patented for Heating Greenhouses, Pits, Vineries, Peach Houses, Conservatories, Shops, &c. Hot-water Cisterns, Cottage Boilers, Flat-backed Saddle Boilers, Cast-iron Pipes and Connections, from 4-inch to 9-inch.

Illustrated Price List, with testimonials, to be had on application. Enclose a stamp.

J. Weeks & Co.
Westbourne Road, Clapham Railway Junction, London, S.W.

JAMES WATTS AND CO., Horticultural Builders and Hot-Water Apparatus Manufacturers, 466, Oxford Road, London, N.E.

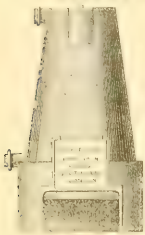
200 CUCUMBER and MELON BOXES and LIGHTS, all sizes, glazed and Painted complete, ready for immediate use, packed and delivered per Railway Kingdom.

Strong ZINC HAND GLASSES, all sizes.

Rebuilt and Repaired by Nobbs, Gebby, and Trees in most of the Counties in England.

Hot-water Pipes, with Elbows and Connections, supplied on

BURY AND POLLARD,
CONTRACTORS AND ESTIMATES GIVEN FOR WARMING PUBLIC BUILDINGS



Latest Improvements in HEATING by HOT WATER.

The Improved CONICAL BOILERS,

For Heating Pineries, Conservatories, Greenhouses, Mansions, Halls, Warehouses, &c.

Sole Manufacturers by Bury & Pollard in Succession to John Weeks & Co., Horticultural Builders & Engineers.

These Boilers are adapted for setting in Brickwork, or arranged Saddle Shape. Bury & Pollard's improved arrangement, as below.

NO BRICKWORK SETTING.

These Boilers have for their durability and economy obtained a celebrity unsurpassed by any other Boilers ever invented. They have been for many years used with extraordinary Public and Private success, and Testimonials and Testimonials can be had from the Royal Botanical and Horticultural Society at Kew, the Regent's Park, the Crystal Palace, and of numerous Noblemen and Gentlemen, and the United Kingdom.

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CRANSTON'S PATENT BUILDINGS for HORTICULTURE.
"Dry Glazing without Putty."
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Highly Commended by the Royal Horticultural Society, South Kensington.

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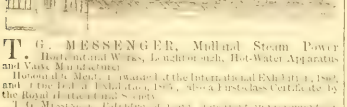
Midland Steam Power Horticultural and Hot Water Works, Loughborough.



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Honourable Mention awarded at the International Exhibition, 1862, and First Class Certificate by the Royal Horticultural Society.

T. G. Messenger, Patentee of many important improvements in Buildings and Implements connected with Horticulture, and which must add much to their efficiency, is prepared to give reference to hundreds in the neighbourhood of Loughborough, who are using the principles which they have introduced.

Also Hot-water Apparatus on the saddle, with or without puttying.

The Patent Plant for Heating and Ventilating Forcing Houses is particularly successful.

Hot-water Pipes constructed to the Patented Ventilating principle to open the joints, and to pull each through the close screw simply removed, or one or more of the pipes in the extent, at any spot.

T. G. Messenger's Boilers possess all the advantages of the Tubular Boiler, and are made loose to be conveyed by hand, requiring no skilled labour, and extensions can be made to any desired section of the fire-surface, possibly to contain, the whole of which can be easily cleaned, and it is maintained that the principle of construction and mode of working upon the simple and natural principle is the most economical.

T. G. Messenger's Valve for glass or double is effective, simple, easy to work, and is manufactured on the principle attached.

Designs and Estimates supplied for the various kinds of Horticultural Work, and guaranteed to answer the purpose for which they may be intended.

HOTHOUSES for the MILLION.—Medal, 1862.
INVENTED BY THE LATE SIR JOSEPH PAXTON.
Manufactured in London, Newton-le-Cartmel, Lancashire, Gloucester, Coventry, Paisley, and Aberden.

ILLUSTRATED PRICE LISTS will be sent on application to Messrs. HUGHMAN & MORTON, 7, Pall Mall East, London, S.W.

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COTTAM AND COMPANY,
CONSERVATORY and HORTICULTURAL BUILDERS, &c.,
Iron Works, 2, Wrisley Street, Oxford Street, London, W.

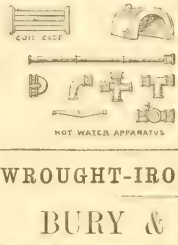
SADDLE BOILERS.

20	24	30 inches long.	
18s.	26s.	32s. 6d.	each.

HOT-WATER PIPES.

2	3	4 inch.
1s. 6d.	2s. 1d.	2s. 9d. per yard.

Materials supplied as above. Estimates given for complete fixing, or application to COTTAM & Co., Iron Works, 2, Wrisley Street, Oxford Street, London, W.



HOT-WATER APPARATUS, of every description, fixed complete in any part of the country, or the materials, viz., Boilers, Pipes, &c., delivered to any Station.

Estimates on application.

J. JONES & SONS, 6, Bankside, Southwark, London, S.E.

HOT-WATER PIPES and CONNECTIONS, SADDLE and other BOILERS.

Estimates, with Printed Price Lists, and Free Delivery at principal Railway Stations for Quantities.

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Cheap Greenhouse Stoves.

DEANE AND CO.'S Patent VENTILATING and SUSPENSION STOVES are simple, cheap, and efficient; have been largely adopted and are well suited to many localities without attention, and at a small cost for fuel. Prices of Suspension Stoves, 20s., 30s., 35s., and upwards. Ventilating Stoves, 50s., 60s., 70s., 90s.

HOT-WATER APPARATUS for Conservatories, Greenhouses, Hothouses, Forcing Pits, &c., erected and fitted up complete.

DEANE & Co., 46, King William Street, London Bridge, E.C.
Established A.D. 1700.

The Only Stove without a Flue.

NASH AND JOYCE'S PATENT, for AIRING, DRYING, and WARMING HALLS, SHOPS, ROOMS, &c., a new especial Stove for Conservatories, Greenhouses, Frame-heating, &c.; to Burn without replacing all winter by filling with fuel every 12 hours. Temperature, any degree required, without smoke. The Stove lasts 40 to 50 minutes.

MINCING and SAUSAGE FILLING and MASTICATING MACHINES, of the best makers, 10s. 6d.

The COTTAGE KNIFE CLEANER is the only rapid Cleaner and Polisher of Knives at a moderate price, 3s. 6d. to 10s. 6d. Prospectus post paid.

CHEAP FIRES.—The Radiating Fire Balls save half the usual consumption of fuel. One Shilling packet of Four, red hot in the fire every day, lasts all Winter.

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WROUGHT-IRON WINE BINS.

BURY & POLLARD

CALL ATTENTION TO ANNEXED SKETCHES OF THEIR WINE BINS.

Noblemen, Gentlemen, Wine Merchants, and Hotels are now being supplied by BURY & POLLARD with their

WROUGHT-IRON BINS,

made to any size for their Cellars, economising space, cost, &c.

Apply, giving dimensions of Cellar,

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Estimates Free. Cellars fitted complete in any part of the Kingdom.

NOVEL INVENTION.

WILL BE EXHIBITED AT R. BOBY'S STAND, No. 10, BINGLEY HALL, BIRMINGHAM; and at STAND 103, SMITHFIELD CATTLE SHOW, ISLINGTON HALL, LONDON,

GRETTON & ABBOTT'S

PATENT INVENTION FOR REMOVING BROKEN BARLEY,

ADAPTED TO BOBY'S PATENT SELF-CLEANING CORN SCREEN.

AWARDED FIRST PRIZE MEDAL AT THE INTERNATIONAL AGRICULTURAL EXHIBITION AT VIENNA, 1866.

For Farmers, Merchants, and Maltsters these Machines are of especial value. In consequence of the above adaptation a sample of Barley can now be rendered perfect in one operation. Messrs. GRETTON AND ABBOTT'S Patent Apparatus removing all the Barley broken by the Threshing Machine (which up to the present time has been an impossibility), and BOBY'S Patent Self-cleaning Corn Screen removing all the thin and refuse Grains, Stones, &c., in one operation. It is equally well adapted for Wheat.

Several of these Machines are now at work at Messrs. Bass & Co.'s, Burton-on-Trent, and at Messrs. Gilstrap's, Newark, and at other large Breweries and Maltings, to whom intending purchasers can be referred if required.

An Illustrated and Descriptive Catalogue of the above Invention will be forwarded post free on application to the Inventors,

MESSRS. GRETTON AND ABBOTT, BURTON-ON-TRENT;

or to the Sole Manufacturer, ROBERT BOBY, St. Andrew's Works, Bury St. Edmund's, Suffolk.

The above Machines can also be obtained from all respectable Ironmongers and Implement Agents.

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WILL BE EXHIBITED

BOBY'S

PATENT SELF-CLEANING CORN SCREENING MACHINES

WHICH HAVE OBTAINED SIXTY FIRST-CLASS PRIZES AND MEDALS.

Six Thousand of these Machines are now in use, and continue to give great satisfaction.

Nearly Two Hundred of these Machines have been supplied to Messrs. Bass & Co., and Messrs. Allsopps, of Burton-on-Trent, and Messrs. Gilstraps, of Newark; to whom intending purchasers can be referred if required. It is impossible for any good Corns to pass through with the light. They are very simple and easily worked, and not liable to get out of order. Price from £24 and upwards.

Also will be exhibited on the same Stand, BARLEY AVELLERS, BOBY'S NEW SCREEN for SCREENING MALT, and BOBY'S PATENT DOUBLE-ACTION HAY-MAKING MACHINES, which have obtained more Prizes in four years than all those received by other Makers put together.

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Heating by Hot Water.

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HOT WATER PIPES, from Stock, per yard:—3-inch, 1s. 2d.; 3-inch, 1s. 10d.; 4-inch, 2s. 4d. BENDS, from Stock, 1s.6d., 2s. 6d., and 3s. each. THROTTLE VALVES, 10s., 15s., and 16s. each. Other Connexions at equally low prices, and all goods of first-class manufacture. Estimates given, and orders by post punctually attended to the same day.

Heating by Hot Water.

HOT-WATER PIPES, at Wholesale Prices, with Elbows, Syphons, Tee Pipes, and every other connexion; Wrought and Cast-Iron Boilers, Saddle, Conical, Cylinder, Tee-cross and Elliptic, from 24s. each. Improved Boilers and Iron Stands to use without brickwork, 25s. each from two of each. Patent Valves, Improved Furnace Doors, Furnace Bars, Supply Cisterns, and Castings of every description in stock, at

Mr. LYNCH WHITE'S Iron Wharf, Upper Ground Street, Blackfriars Bridge, London, S. Price List on application.

Asphalte Roofing Felt,

ONE PENNY per Square Foot.

CROGGON AND CO., MANUFACTURERS, 63, New Earl Street, } London, E.C.
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Caution to Gardeners.—When you ask for

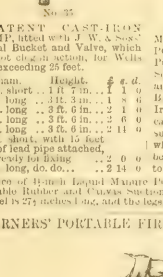
SAYNOR AND COOKE'S WARRANTED SURFACE PRUNING and BUDDING KNIVES, see that you get them. Observe the mark SAYNOR, also the corporate mark ORNAMENTAL WARRANTED, without which none are genuine.

S. & C. correct having to caution Gardeners and others, but are compelled to do so, in consequence of an imitation, of common quality, having been sold for the genuine one, and which has caused many complaints to be made to them. Knives which were not of their make, all of which are warranted both by Sellers and Makers.

S. & C.'S Pruning and Budding Knives are the best and the cheapest in the market.

Dalton Works, Sheffield. Established upwards of 125 years.

JOHN WARNER AND SONS, 8, Crescent, Cripplegate, London, E.C., BELL and BRASS FOUNDERS to HER MAJESTY.



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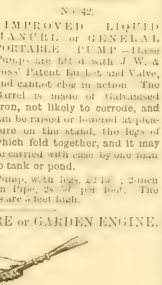


No. 32.

PATENT CAST-IRON PUMP, fitted with J. W. & SONS' Metal Bucket and Valve, which cannot clog in action, for Wells not exceeding 25 feet.

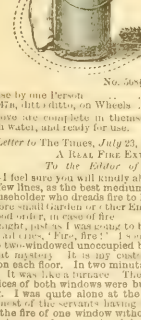
Diam.	Height.	£	s.	d.
2½ in. short	1 ft. 7 in.	1	1	0
2½ in. long	3 ft. 3 in.	1	8	0
3 in. long	3 ft. 6 in.	2	1	0
3½ in. long	3 ft. 6 in.	2	6	0
4 in. long	3 ft. 6 in.	2	11	0
2½ in. short, with 15 feet of lead pipe attached, ready for fixing		2	0	0
2 in. long, do. do.		2	15	0

To tank or pond.

IMPROVED LIQUID MANURE, or GENERAL PORTABLE PUMP.—These Pumps are fitted with J. W. & SONS' Patent Inlet Valve, and cannot clog in action. The Barrel is made of Galvanised Iron, not likely to corrode, and can be raised or lowered at pleasure on the stand, the legs of which fold together, and it may be carried with ease by one man

Price of 4-inch Liquid Manure Pump, with legs, £7 15s.; 2-inch Flexible Rubber and Canvas Suction Pipe, 2s. 3d. per foot. The Barrel is 27½ inches long, and the legs are 3 feet high.

WARNERS' PORTABLE FIRE or GARDEN ENGINE.



No. 3684.

£2 2s.

For use by one Person ... ... price £2 2s.
No. 3674, ditto ditto, on Wheels ... ... ,, £2 18s.

The above are complete in themselves, and may be always kept filled with water, and ready for use.

Letter to The Times, *July* 23, 1866, *from* Earl Essex.

Arlington Park, Chiswick.

To the Editor of The Times.

"Sir,—I feel sure you will kindly allot a small space in the *Times* to these few lines, as the best medium through which I would urge every householder who dreads fire to have on each floor of his house one or more small Gardener's or Fire Engines on wheels, always exhausted and in good order, in case of fire.

"Last night, just as I was going to bed, I was startled by that most fearful of all cries, 'Fire, fire!' I soon learned that a fire was raging in a large two-windowed unoccupied bedroom. How caused is to us all a great mystery. It is my custom to keep one of these small Engines on each floor. In two minutes I was in the room with one of them. It was like a furnace. The curtains, shutters, casements, and cornices of both windows were burning and cracking from floor to ceiling. I was quite alone at the moment, yet before assistance arrived (most of the servants having gone to bed), I had completely subdued the fire of one window without exhausting the Engine, and when assistance and more water did arrive, we very soon extinguished the other.

"So fierce was the fire that the level of the casements was melted, and the casements themselves were burnt off their hinges.

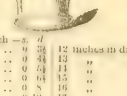
"I will only add, that by God's mercy, the house was saved by this small Engine. But it not being at hand and in order, most assuredly Cassiobury would be now a heap of ruins.—Yours faithfully,

"Cassiobury, Watford, July 23. "ESSEX.

"The Engine, even when full, runs so light on the floor, that any woman might draw it, and also work it."

Glass for Garden Purposes.

JAMES PHILLIPS AND CO. beg to submit their REDUCED PRICES as follows:—



PROPAGATING GLASSES.

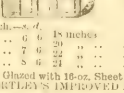
	Each.	s.	d.		Each.	s.	d.
2 inches in diameter	..	0	3½	12 inches in diameter	..	1	7
3 " "	..	0	5	13 " "	..	2	0
4 " "	..	0	6½	14 " "	..	2	6
5 " "	..	0	8½	15 " "	..	3	0
6 " "	..	0	10	16 " "	..	3	6
7 " "	..	0	10	17 " "	..	4	0
8 " "	..	1	0	18 " "	..	5	0
9 " "	..	1	1	19 " "	..	6	0
10 " "	..	1	4	20 " "	..	7	0
11 " "	..	1	6				

HYACINTH and FLOWER DISHES

	Each.	s.	d.		Each.	s.	d.
6 inches diameter	..	1	6	10 inches diameter	..	1	6
12 inches diameter	..	2	6d.				

Hyacinth Dishes are intended to contain a number of Roots Bedded in and covered with Moss, instead of the common Hyacinth Glass.

LACTOMETERS, for Testing the Quality of Milk.
Four Tubes ... ... 15 6d. | Six Tubes ... ... 6s 6d.
With Stands complete.



HAND GLASSES, WITH OPEN TOPS.

	Each.	s.	d.		Each.	s.	d.
12 inches	..	0	6	18 inches	..	0	9
14 "	..	0	7	20 "	..	0	10
16 "	..	0	8	24 "	..	1	0

Painted and Glazed with 16-oz. Sheet Glass.

London Accessories to HARTLEY'S IMPROVED PATENT ROUGH PLATE.

LINSEED OIL, Genuine WHITE LEAD, CARSON'S PAINTS, PAINTS of various colours, ground ready for use.

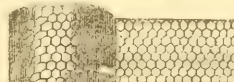
SHEET and ROUGH PLATE GLASS, SLATES of all sizes, BRITISH PLATE, PATENT PLATE, ROLLED PLATE, CROWN, SHEET, HORTICULTURAL, ORNAMENTAL, COLOURED, and every description of GLASS, at the lowest Manufacturers', at the lowest terms. Lists of prices and estimates forwarded on application to

JAMES PHILLIPS & Co., 189, Bishopsgate Street Without, E.C.

CHEAPEST and BEST IRON HURDLES, FENCING, Wire Netting, Chaff Cutters, Oat Bruisers, Bean Mills, Steam Engines, Lawn Mowers, Conservatories, Greenhouses, Hot-water Apparatus, Verandas furnished, and skilled workmen sent to all parts of the country.

JOHN BOAD & Co., 18, Camden Street, E.C.

GALVANISED WIRE NETTING.



PRICES of NETTING, 24 INCHES HIGH.

Size of Mesh.	Proof against	Light, per Yard	Medium, per Yard.	Strong, per Yard.	Extra strong per Yard.
2 inch	Hares, Dogs, Poultry, &c	3d.	4½d.	6d.	8d.
2 inch	All kinds of Game	3d.	4½d.	6d.	7d
1½ inch	Small Rabbits, Hares, &c	4½d.	6d.	7½d.	9d
1 inch	Ditto ditto	6d.	8½d.	9d.	10d.

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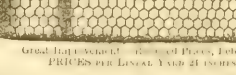

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		s. d.	s. d.	s. d.	s. d.
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2	Dogs or Poultry	0 3	0 3½	0 4½	0 5½
1½	Poultry	0 3	0 4½	0 5½	0 6½
1½	Small Rabbits, Hares, &c.	0 3½	0 4½	0 5½	0 6½
1½	Small or Rabbits ...	0 4½	0 5½	0 6½	0 8
1	Pheasantries, Small Birds, &c.	0 8	0 10	0 11½	1 1
1	Aviaries, Window Guards, &c.	0 10	1 1	1 4	1 7
½	Aviaries, Window Guards, &c.	1 1	1 4	1 7	1 10
½	Aviaries, &c.	1 7	1 10	1 20	2 0
		2 3	2 6	2 9	3 0
		2 3	2 6	2 9	3 0
		2 20	2 23	3 0	3 3
		2 23	2 26	3 3	3 6
		2 26	2 28	3 6	3 9

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TO BE LET, the Midsummer, 1867, about 60 ACRES of productive ARABLE LAND at Leytonstone. Immediate possession.
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To Market Gardeners and Others.

TO BE LET, on LEASE for Seven Years from Michaelmas last, about 36 ACRES of valuable and rich MARKET GARDEN GROUND, situate in the rear of Castlenau Villas, near Hammersmith Suspension Bridge.

For particulars as to Rent, &c., apply to Messrs. SHEPHERD & SLADE, Solicitors, 16, Southampton Street, Bloomsbury, W.C.; or to Messrs. HOSKYNS & SON, Surveyors, &c., Kilburn, Middlesex, N.W.

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To Market Gardeners and Others.

TO BE SOLD, the valuable LEASE of a comfortable DWELLING HOUSE, Shed, Stable, Vinery, Greenhouses, and about 11 Acres of rich and high-cultivated MARKET GARDEN GROUND, all stocked with the choicest Apple, Pear, Plum, Cherry, Walnut, Wall and other fruit trees, Gooseberry and Currant Bushes, Standard Plants, &c. The whole held on Lease for a Term from Sept. next 29, 1865, at the very low Rent of £80 per annum.

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SALE THIS DAY AT HALF-PAST 12 O'CLOCK PRECISELY.
First Standard and Dwarf Roses, Fruit Trees, Bulbs, &c.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on SATURDAY, December 1, at half-past 12 o'clock precisely, 1000 STANDARD ROSES from Kent, 500 DWARF ROSES from France, Lambkins' Specimen CONIFERS for Lawns, FRUIT TREES, and 10 LOTS of BULBS.
On view the Morning of Sale, and Catalogues had.

Bulbs from Holland.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY, December 3, at half-past 12 o'clock precisely, fourteen Cases of fine Bulbs *direct* from Holland, the most select Importation in Holland, and One PYRAMID and DWARF FRUIT TREES from France.
On view the Morning of Sale, and Catalogues had.

Plants and Bulbs from Holland.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, December 5, at half-past 12 o'clock precisely, an assortment of first-class ORNAMENTAL TREES and SHRUBS from the most noted Nurseries in Holland, and well worthy of attention, also a consignment of DUTCH BULBS, FRUIT TREES, ROSES, &c.
On view the Morning of Sale, and Catalogues had.

600 Lots of Choice Plants and Bulbs from Norfolk and Holland.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on SATURDAY, December 8, at half-past 12 o'clock precisely, an extensive assortment of HARDY and ORNAMENTAL TREES and SHRUBS, consisting of Specimen Conifers, Kalmias, Rhododendrons, Ivies, Vibrnas, Laurels, Leycesterias, Berberis, Privet, Cotoneasters, Deutzias, Jasminums, Lilacs, standard, dwarf, and Pyramid Fruit Trees, Standard and Dwarf Roses, Raspberry Canes, Rhubarb and Asparagus Roots, Standard and Dwarf Bays, Camellias, Pinetree, Phlox, Hyacinths, Tulips, Narcissus, Crocuses, beautifully named Snowdrops, &c., all in capital condition and ready for immediate planting.
On view the Morning of Sale, and Catalogues had

Sale of Dutch Bulbs, Standard Roses, Fruit Trees, Conifers, &c.

MESSRS. PROTHEROE and MORRIS will SELL by AUCTION, at their Rooms, 67, Gracechurch Street, E.C., on WEDNESDAY, December 5, at 1 o'clock precisely, A Last-class Collection of DUTCH BULBS, including choice named Hyacinths, Tulips, Crocus, Narcissus, &c., also a splendid assortment of Standard and DWARF ROSES, comprising the finest varieties in cultivation; also a splendid assortment of fine Evergreen Conifers, viz. ABIES PICEA, LARIX EUROPÆA, THUJA AURICULATA, AMERICAN PLANTS, beautifully furnished with Bloom Buds, Climbers, &c.
May be viewed Morning of Sale. Catalogues had at the Rooms, and of the Auctioneers and Valuers, American Nurseries, Leytonstone, N.E.

Consignment from Ghent for absolute Sale.

MESSRS. PROTHEROE and MORRIS will SELL by AUCTION, at 8 and 9, Gracechurch Street, City, E.C., on WEDNESDAY, December 12, at 12 o'clock precisely, in Lots, a splendid consignment of DOUBLE CAMELLIAS and AZALEA INDICA, compact plants 1 to 2 feet, consisting of all the most approved kinds, beautifully furnished with Bloom Buds; ERICA in all SORTS, LILIUM LANCIFOLIUM, all sorts, in STANDARD and DWARF ROSES, selected FRUIT TREES, a rich Assortment of AMERICAN PLANTS, viz., Rich Rhododendrons, Azaleas, Kalmias, Andromedas, &c., well established HARDY BULBS.
On view the Morning of Sale. Catalogues may be had at the Rooms as above, and of the Auctioneers and Valuers, American Nurseries, Leytonstone, Essex, N.E.

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KING'S ROAD, CHELSEA, S.W.

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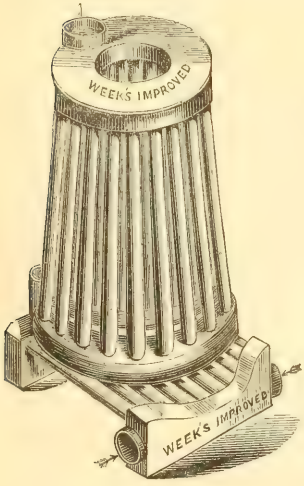

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TOTAL LENGTH OF PIPING IN MILES AND FEET :—

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AMONG ITS MANY ADVANTAGES WE QUOTE THE FOLLOWING :—

1st. Being of Cast Iron it is rendered infinitely more desirable than if made of Wrought Iron.

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HORTICULTURAL BUILDERS AND HOT-WATER APPARATUS MANUFACTURERS,

KING'S ROAD, CHELSEA, LONDON, S.W.

Editorial Communications should be addressed to "The Editor." Advertisements and Business Letters to "The Publisher," at the Office, 41, Wellington Street, Covent Garden, London, W.C.
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THE GARDENERS' CHRONICLE AND AGRICULTURAL GAZETTE.

A Newspaper of Rural Economy and General News.

No. 49.—1866.] SATURDAY, DECEMBER 8. {Price Fivepence / Stamped Edition, 6d.

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THE GARDENERS' CHRONICLE and AGRICULTURAL GAZETTE of SATURDAY NEXT, December 15, will contain full particulars of the SHOW of STOCK and IMPLEMENTS at the AGRICULTURAL HALL, ISLINGTON.

ADVERTISEMENTS for this Number should be sent to the Office not later than THURSDAY. A Copy sent for Six Stamps.

41, Wellington street, Strand, W.C.

NATIONAL HORTICULTURAL EXHIBITION, 1867.—The above EXHIBITION will open at Manchester on JUNE 7, and continue till JUNE 15.

Schedules, &c., may be obtained on application to Mr R. Dudley, Curator, Botanic Garden, Manchester; or from the undersigned,

Henry Whitworth, Secretary.

Carlton Buildings, Cooper Street, Manchester.

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BARR AND SUDEN'S large Advertisement, page 1160.

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Notice.

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Planting.

WM. PAUL begs to refer intending Planters of ROSES, FRUIT TREES, SHRUBS, &c., to his Advertisement of last week, p. 999

PRICED DESCRIPTIVE CATALOGUES on application. Paul's Nurseries, Waltham Cross, N.

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Late Grape Vines.

ALICANTE, LADY DOWNES', and MUSCAT of ALEXANDRIA.

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VINES, from Eyes.—Strong Fruiting Canes, in pots, 5s. 6d. each J. Peed, Effra Nursery, Brixton Church, S.

PYRAMID APPLES, PEARS, PLUMS, CHERRIES. Beautiful Trees for Garden or Orchard Houses. Richard Smith, Nurseryman and Seed Merchant, Worcester.

MAGNIFICENT TRAINED CHERRIES, PLUMS, PEARS, APPLES, PEACHES, NECTARINES, APRICOTS, &c. Special prices on application. John Cranston, Nurseries, King's Acre, near Hereford.

WITTY AND SON have to offer strong RED CURRANT TREES at low prices, by the 100 or 1000. The Nurseries, Cottingham, near Hull.

CASTLE KENNEDY FIG.—Plants of the above may now be had at 10s. 6d. and 21s. each; the usual discount to the Trade. Peter Lawson & Son, Edinburgh and London.

WEBB'S PRIZE COB, FILBERT and other PRIZE NUT TREES. LIST of varieties and prices to be had of Mr Webb, Cale at Gardens, Reading

HOLLY BERRIES and OAK NUTS. For price per Bushel apply to D. H. Higgins, Clonmel, Ireland.

Fifty Acres of Fruit Trees,

APPLES, PEARS, PLUMS, CHERRIES, PEACHES, NECTARINES, and APRICOTS in every form desired for Fruiting. Richard Smith, Nurseryman and Seed Merchant, Worcester.

Orchard-house Trees Fruiting in Pots.

PEACHES, NECTARINES, APRICOTS, CHERRIES, PLUMS, PEARS, APPLES, VINES, and FIGS. Richard Smith, Nurseryman and Seed Merchant, Worcester.

FRUIT TREES, for Walls and Espaliers.—Upwards of 50,000 to select from, carefully trained, and in the healthiest condition for planting. Richard Smith, Nurseryman and Seed Merchant, Worcester.

MAGNIFICENT PYRAMID FRUIT TREES.—Fine-grown Bearing Trees of PEARS on Quince Stock; APPLES on Paradise; CHERRIES on Mahaleb; PLUMS, &c. Special quotations on application. John Cranston, Nurseries, King's Acre, near Hereford.

A DESCRIPTIVE CATALOGUE of FRUITS, by Thos. Rivers, just published, free per post for six stamps. Nurseries, Sawbridgeworth.

Christmas Trees.

TEN THOUSAND handsome-grown SPRUCE FIR, from 3 to 5 feet Price per dozen, 10s. or 1000, on application to Wm Knight, Floral Nurseries, Hailsham.

Hardy Ornamental Trees, Shrubs, Roses, &c.

NEW PLANT

PAUL AND SON'S NEW DOUBLE SCARLET THORN. See former Advertisement. Standards, 10s. 6d. each DESCRIPTIVE LISTS of the above post free on application to Paul & Son, Old Cheshunt Nurseries, N.

TREES and PLANTS of all sorts and sizes in very great quantity, of best quality at moderate prices PRICED LISTS post-free on application.

James Dickson & Sons, (Old Established Nursery and Seed Business,) The Newton Nurseries, Chester.

ACORNS (ENGLISH), fine sound Seed Price upon application to W. Dillistone, Munro Nursery, Sible Hedingham, Essex. N.B. 50,000 strong ASH PLANTS to offer

PORTUGAL LAURELS, 5 to 7 feet, well furnished Plants Price per dozen or 100 on application. James Dodd, Nursery, Romford.

ONE MILLION 2-yr. SCOTCH FIR for Sale, one of the finest Samples in Europe, 2s. and 2s. 6d. per 1000 cash, at Wm. Pollard's, Nurserymen and Seedsmen, Ferrybridge.

Strong Quick.

H. AND F. SHARPE have for sale a fine Lot of 3-yr. Transplanted QUICK, 2 to 4 feet high, and well-rooted. Price very moderate. Nursery and Seed Establishment, Wisbech.

Railway Planting.

FIVE MILLION Transplanted QUICKS, of superior growth Samples and prices on application to John Hemsley, High Fields, Melbourne, near Derby.

TREMBLE'S FOREST and ORNAMENTAL GROUNDS. Prices and every information free. Messrs. Joseph Trimble & Sons, Penrith, Cumberland.

Planting Season.

TRANSPLANTED LARCH and other Nursery Stock offered cheap by Wm. Urquhart & Sons, Dundee

SPLENDID LARCH, 3 to 4 ft., at unprecedented prices; HAWTHORN QUICK, do. do.; AVENUE TREES; large EVERGREENS and CONIFERS; magnificent TRAINED PYRAMID and STANDARD FRUIT TREES. Special prices given. George Davison, Hereford.

EIGHT MILLION FOREST, EVERGREEN, and other TREES of every size and sort in cultivation, fine rooted hardy stuff. CATALOGUES on application, with terms for free delivery. Prices very low. H. & R. Stirzaker, Skerton Nurseries, Lancaster.

ADIANTUM FARLEYENSE True), 21s. each; extra size, 31s. 6d. Usual allowance to the Trade. Robt. T. Veitch, The Nurseries, Exeter.

Early Spring Flowers.

WEEKS'S GIANT POLYANTHUS and COWSLIP, [illegible] PREMROSES, PANSIES, &c. [illegible] list of [illegible]

Exhibition of Chrysanthemums.

JOHN SALTER'S magnificent COLLECTION of CHRYSANTHEMUMS, now in Bloom in the Winter [illegible]

Amaryllis.

JAMES GARAWAY AND CO., Deadman's Down [illegible]

Gladioli.

J. KELWAY AND SON have [illegible] to their [illegible]

American Plants, &c.

WATERER AND GODFREY'S PRICED and DESCRIPTIVE CATALOGUE of RHODODENDRONS and other American Plants, containing [illegible] for the Royal Botanic Gardens, Regent's Park. An Abridged List of popular CONIFERS with [illegible] prices, is likewise compiled.

The Nursery, Knaphill, Bagshot, Surrey, near Sunningdale Station, South-Western Railway.

New Catalogue of Plants, Dutch Bulbs, &c.

ROBERT PARKER begs to announce that his NEW CATALOGUE, containing Select Descriptive and Priced Lists of Greenhouse, Stove, and Hardy Herbaceous Plants, Hardy Ferns, Dutch Bulbs, Roses, Rhododendrons, Sweet Peas, Verbenas, Coreopsises, Cinerarias, Pelargoniums, Calceolarias, Fuchsias, Lilliums, Narcissus, Tulips, and other Bulbs, is now published, and [illegible] application.

Exotic Nursery, Tooting, Surrey, S.

Excellence and Economy.

H. BROWN has to offer [illegible] as follows:—GOLDEN YELLOW (Golden Queen), per 100 [illegible]; per 1000 [illegible]. YELLOW (Yellow Queen), per 100 [illegible]; per 1000 [illegible]. WHITE, PURE WHITE, and STRIPED, [illegible] per 100. Twelve best sorts, name [illegible] per 100. DOUBLE and SINGLE SNOWDROPS, 1s. per 100, 6d. per 100. TULIPS, mixed, 1s. per 100. Other [illegible]. EXTRA STRONG TOBACCO PAPER, 9d. per lb. TOBACCO CORD, extra strong, free from sulphur, the most effectual [illegible] for fumigating, 1s. per lb. [illegible]. TOBACCO WATER, [illegible], 2s. per gallon, 7s. per [illegible] gallon, 12s. per [illegible] gallon. SHADES, 2s. per set. POTATO ONIONS, 5s. per bushel. Special offers to the Trade on application. CATALOGUES, post free, on application.

H. BROWN, 4, Commutation Row, Liverpool.

NEW CATALOGUES

Are the SEASON'S Issue and [illegible]

No. 1. ROSES.—A Select List [illegible] cultivation, fully and faithfully described.

No. 2. FRUIT TREES.—A Descriptive List of all the choicest varieties of Fruits.

No. 3. CONIFERS, ORNAMENTAL TREES and SHRUBS.—Contains all varieties worthy of cultivation, with interesting notices of [illegible].

No. 4. TRANSPLANTED FOREST TREES.—Plants for cover and [illegible].

No. 5. GARDEN and AGRICULTURAL SEED and ROOT CATALOGUE.

No. 6. GENERAL PLANT CATALOGUE.

These will be forwarded on application to

JOHN CRANSTON, Kyrnes Ash Nurseries, near Hereford.

CALCEOLARIA, HERBACEOUS, of choicest strains, established plants in small pots, 20s. per 100; MONOCHÆTUM FISHERIANUM and SEDIFOLIUM, [illegible] per 100; [illegible] per 100; ALONSOA GRANDIFLORA, [illegible] per 100; TACSONIA VAN VOLXEMII and MOLLISSIMA, 12s. per dozen; RED FAIRY ROSES, [illegible]; PHLOMIS CUMULA, 9s. per 100; [illegible] per 100 and 1000, on application to H. AR [illegible], Skerton Nurseries, Lancaster.

A. VAN GEERT, NURSERYMAN, GHENT, [illegible], has much pleasure in offering the following [illegible] at very moderate quoted prices, viz.:—

[illegible] ANDREANUM, [illegible] with [illegible] buds, and in small pots, 63s.

[illegible] CAMELLIAS, in best varieties, [illegible] each.

[illegible] AZALEAS, in [illegible] each.

[illegible] ALSOPHILA EXCELSA, [illegible] each.

[illegible] small, 21s.

[illegible] MARANTA ZEBRINA, 12s.

[illegible] LATANIA BORBONICA, [illegible] each.

[illegible] CHAMÆROPS HUMILIS, fine young plants, 21s.

[illegible] ARECA LUTESCENS, [illegible] each.

[illegible] CORYPHA AUSTRALIS, [illegible] each.

[illegible] ACHIMENES, [illegible].

[illegible] CYCAS REVOLUTA, [illegible] each.

[illegible] SEEDLING PALMS, [illegible].

[illegible] CALMS, [illegible].

[illegible] CROTONS, [illegible].

[illegible] RHODODENDRON NOBLE, strong plants, 30s.

[illegible] GLORIOSA, [illegible] each.

[illegible] ANTHURIUM CRYSTALLINUM, [illegible].

[illegible] Hardy RHODODENDRONS, in fine named varieties.

[illegible] MAGNOLIA THOMPSONIANA, in fine plants, [illegible].

[illegible] MACROPHYLLA, 1 foot high, 24s.

[illegible] PURPUREA, strong bushy plants, 18s.

[illegible] AUCUBAS THEODORA and [illegible].

[illegible] BOX, [illegible].

[illegible] EVERGREEN [illegible].

[illegible] LILIUM [illegible].

[illegible] ANDROMEDA CALYCULATA, [illegible].

[illegible] VERSICOLOR, [illegible].

[illegible] VARIEGATA, [illegible].

[illegible] CALCEOLARIA GRANDIFLORA, [illegible].

[illegible] PLANTS, [illegible].

[illegible] PLANTS, [illegible].

[illegible] PLANTS

FOR SEASON 1867.—NEW SEEDS in PACKETS, Post Free.

B. S. WILLIAMS,

VICTORIA and PARADISE NURSERIES, UPPER HOLLOWAY, LONDON, N.,

HAS PLEASURE IN OFFERING

THE FOLLOWING NEW KINDS OF VEGETABLE SEEDS.

The first two named are both valuable acquisitions. WILLIAMS' MATCHLESS RED CELERY is still the best, and the DIGSWELL PRIZE ENDIVE has given great satisfaction this season.

The Orangefield Dwarf Prolific Tomato.

This variety was a sport from the old Large Red Tomato, selected and perpetuated by Mr. McLachlan, gardener to J. B. Houston, Esq., Orangefield, near Belfast, Ireland. After 4 years' careful trial it has been proved to be undoubtedly the finest Tomato we possess.

DESCRIPTION. Very dwarf, but strong in habit; never shows any sign of being stunted or diseased; bearing a greater quantity of fruit than has ever been seen on a Tomato; a well adapted for indoor culture in those parts where (through the humidity of the climate) Tomatoes rarely come to perfection out of doors. It will stand forcing without drawing, and any amount of culture will not destroy its productiveness.

Williams' Alexandra Broccoli.

An excellent new variety, a truthful description of which is subjoined. We fully anticipate that this kind, when tried, will take the leading place amongst the many varieties of Broccoli now in existence.

DESCRIPTION. No doubt a cross between Snow's Winter White and Knight's Protecting. It has a very hardy constitution; the merit of forming large solid heads, somewhat conical in shape, and as white as most Cauliflowers, added to a distinct peculiarity of growth quite characteristic. The crown, as it becomes enlarged, is most finely enveloped in abundance of leaves, until it approaches maturity, and is at its best for cooking, when the upper parts of the leaves (which are in more immediate contact with the apex of the conical-shaped crown) reflex abruptly and reveal, for the first time, the true future white. As the finest of White Broccolis (to walk at a parallel) and for cold northern situations, owing to its constitutional hardihood, it will be looked upon as a boon.

If sown at the latter end of April, it will come in for use the first week in May of the following year.

Price 2s. 6d. per Packet.

Williams' Matchless Red Celery.

This variety still maintains its reputation. It is now universally grown and everywhere approved of. New Seed, saved from the original stock,—

Price 1s. per Packet.

Digswell Prize Endive.

A Green Curled variety very much superior to the old "Green Curled."

Wherever this valuable Endive has been grown it has given the greatest satisfaction. It is invaluable for its hardiness and great hearting qualities. It is advised that plants for out-door winter use be dibbled out in a light border early in September, the crowns an inch below the surface, with light earth pressed to them. Seed from original stock,—

Price 1s. per Packet.

Malvern Hall Melon.

Scarlet flesh; a valuable variety. This kind has been proved by the side of 30 of the best to be the earliest to ripen and the freest in setting its fruit. The following description of it by Mr. Edlington, head gardener to the Earl of Stradford, Wrotham Park, in the *Scottish Gardener*, conveys a very just idea of its properties. He writes:—

"I have no hesitation in asserting that the above Melon is second to none in cultivation; I might even go a step further, and not err in placing it first on the list of market fleshed kinds. Gem, grown in the same house and subjected exactly to the same treatment, bore no comparison in any one point. The Malvern Hall is most deliciously flavored, remarkably thin skinned, a very free setter, and early. These properties, in my judgement, constitute a first-class Melon. The Malvern Hall is nicely ribbed and moderate in size; those I grew this season averaged 7lbs. A size I consider amply large enough for ordinary desserts. Those who have not grown the Malvern Hall I recommend to do so, and those who have will, I think, agree with my remarks."

Price 1s. 6d. per Packet of 6 Seeds.

The following Seedsmen have obtained their supply direct from here:—

Messrs. Cockbowse & Sons, York
" Barr & Sugden, 12, King Street, Covent Garden, W.C.
" Barnard & Sons, T., Maidstone
" Butler & Mc Culloch, Covent Garden, W.C
" Cooper & Birkin, Fleet Street, E.C
" Cutbush & Son, Highgate, N
" Dickson & Sons, F. & A., Chester
" Downie, Laird, & Laing, Edinburgh
" Dreghorn & Aitken, Kilmarnock, N.B.
" Farrell & Sons, Feargus, Dublin
" Fisher, Holmes, & Co., Sheffield
" Garaway & Co., Bristol
" Hamilton & Wright, Croydon, S.

Messrs. Hogg & Robertson, Dublin
" Hooper & Co., Covent Garden, W.C.
" Hurst & Son, 6, Leadenhall Street, London, E.C.
" Roberts & Sons, J., Denbigh
" Sutton & Sons, Reading
" Veitch & Sons, Chelsea, S.W.
Mr. Barratt, Wakefield
" Barratt, Bury St. Edmund's
" Dean, Richard, Ealing
" Godwin, F. G., Sheffield
" McMillan, H., Kingston-on-Thames
" Turner, C., Slough
" Watkinson, F., Manchester

NOTICE TO FRUIT GROWERS.

J. HOUSE,

EASTGATE NURSERY, PETERBOROUGH,

IS NOW PREPARED TO SEND OUT

THE SEEDLING APPLE "LORD BURGHLEY,"

FOR WHICH HE WAS AWARDED

A FIRST-CLASS CERTIFICATE AT THE ROYAL HORTICULTURAL SOCIETY, MARCH 21, 1865.

In the "Journal of Horticulture and Cottage Gardener" of March 28, 1865, the following Notice appears in connection with the Fruit Committee of the Royal Horticultural Society (Geo. F. Wilson, Esq., F.R.S., in the chair:—"A seedling Apple, of unusual excellence at this season of the year, was exhibited by Mr. HOUSE, of Peterborough, and which has been named 'Lord Burghley.' It is of medium size, roundish, and slightly flattened; is somewhat bluntly angular on the side, and ridged on the apex, this being caused by the prominent termination of the side angles. The skin, on the shaded side, is of a deep golden yellow, and on that next the sun of a deep clear shining crimson. The whole surface is dotted over with large russet specks, like the Golden Reinette. The eye is somewhat closed, and set in a pretty deep basin, which is uneven in consequence of the angles which terminate there. Stalk half an inch to three quarters long, frequently a mere knob. Flesh yellowish, very tender, leaving but little mark in the mouth, very juicy, sweet, and with a fine Pine flavour and rich aroma. This delicious Apple is now in perfection, and has the appearance as if it would keep for two months hence. Apart from its excellent quality, it is highly ornamental, and has a tenderness of flesh and a flavour similar and equal to Cox's Orange Pippin. It was awarded a First-class Certificate."

In the *Gardeners' Chronicle* of March 25, 1865:—"A valuable hardy-looking seedling Apple, named 'Lord Burghley,' from Mr. HOUSE, of Peterborough, to which a Certificate was awarded."

The following TESTIMONIALS have also been received by Mr. HOUSE:—

Messrs. RIVERS & Co., *Sawbridgeworth, March* 16, 1865.
"SIR,—Your Apple is remarkably handsome and sound, and one of the finest dessert Apples known."

Messrs. LEE & Co., *Hammersmith, March* 22, 1865
"SIR,—The Apple you exhibited yesterday was very sound and good flavoured."

Mr. J. R. PEARSON, *Chilwell, March* 17, 1865.
"SIR, Your Apple is the best I know of."

Mr. MATHESON, *Gardener at Burghley Hall, Stamford, March* 24, 1865.
"SIR,—Your dessert Apple is the best I have ever seen."

Mr. DAVID, *Gardener at Orton Hall, April* 7, 1865.
"SIR,—Your Apple is remarkably sound, handsome, and excellent in flavour."

After the Testimonials from such eminent Fruit Growers as those enumerated, nothing more need be added by J. H. to assure those who plant this Apple that they may anticipate the most satisfactory results.

Price of fine Maiden Trees, 5s. The usual allowance to the Trade.

The Stock being limited, the Price cannot be reduced before the year 1868.

EASTGATE NURSERY, PETERBOROUGH.—December, 1866.

To the Trade.

WINTER and SPRING-FLOWERING PLANTS.—Our stock of well worded ERICAS, EPACRIS, AZALEAS, and New Holland Plants is extra fine this year, and being much greater than we can honour, we are selling at unusually low prices. T. Jackson & Son, Nurseries, Kingston, Surrey (adjoining the Railway Station), S.W.

Forest Trees, &c.

HENRY MINCHIN has the following to offer Cheap, all Transplanted well rooted:—

SPRUCE FIR, from 2 to 4 feet	SCOTCH FIR, from 2 to 3 feet
LARCH FIR, from 2 to 4 feet	ASH, from 2 to 3 feet

PINUS AUSTRIACA, &c., all Large Specimens and other CONIFERS. Prices on application.
The Nurseries, Hook Norton, Oxon.

CEDRUS DEODARA.—Fine Plants for immediate effect, from 5 to 6, 7, and 10 feet high, safe to transplant, at 1s. per foot. Some extra-sized specimens, 15 to 20 feet, at 2s. per foot. Most of the plants offered are in Large Pots, making their removal certain beyond a doubt.
MAYES & SONS, The Nurseries, Bristol

BLACKTHORN, LARCH, and SPRUCE.

LARCH, 3 to 4 feet	SPRUCE, 3 to 4 feet
" 4 to 6 feet	BLACKTHORN, 1½ to 2 feet
SPRUCE, 4 to 5 feet	" 2 to 3 feet

JOHN PEARSON, Sen., having an Immense stock of the above, will be glad to give special quotations to any parties who contemplate planting, on application to
62, Market Square, Northampton.

To the Trade.

JAS. GARAWAY AND CO. offer

Alder, 1½ to 2 & 2 to 3 transplanted	Chestnut, Horse, 1 to 2 feet, transplanted
Ash, 1, 2, and 3 year Seedlings	" 2 to 3, and 3 to 4 ft., transplanted
Ash, 1 to 2 feet, transplanted	Elm, Wych, 1 to 2, 2 to 3, and 3 to 4 feet, transplanted
Aucuba japonica, berried	Larch, extra fine, 1 to 1½, 1½ to 2, 2 to 3, and 3 to 4ft., transplanted
Beech, 1 and 2-year Seedlings	
Birch, 1 to 2 feet, transplanted	

FRUIT TREES.

Apples, very fine dwarf-trained	Peaches, very fine dwarf-trained
Apricots, do. and standard-trained	" at standard-trained
Cherries, do., do.	Pears, very fine dwarf-trained
Nectarines, do., do.	Plums, do.

Prices on application
JAS. GARAWAY & Co., Durdham Down Nurseries, Bristol.

Planting Season

LARCH (Native and Tyrolese), SCOTCH FIR (True Native), SPRUCE, OAK, ASH, ALDER, BEECH, PRIVET, and all kinds of FOREST and ORNAMENTAL TREES and SHRUBS; FRUIT TREES, &c. Fine Specimen ARAUCARIAS and DEODARS, and large TREES for Park Planting, now in fine condition for removal.
CATALOGUES, with sizes and prices, sent free on application to Dickinsons & Co., Nurserymen, Seedsmen, and Florists, 1, Waterloo Place, Edinburgh.

LARCH, &c., at the Nursery of the late David A. Reid, Park Attwood, Bewdley, Worcestershire:—LARCH, 1½ to 2 feet, 15s. per 1000; 2 to 3 feet, 25s. per 1000. ASH, 1½ to 2 feet, 15s. per 1000; 3 to 4 feet, 16s. per 1000; PEAR STOCKS, 2 to 5 feet, 15s. to 40s. per 1000. LISTS of other TREES sent on application. Apply, with reference or remittance, to
JAMES REID, Steward, Park Attwood, near Bewdley

CHAS. DALY AND SON, Coleraine, Ireland, will Sell 1-yr. Seedling THORNS, at 1s. 6d. per 100; 1-yr. fine, 2s. per 1000; 2-yr. Transplanted, 4s. per 1000; 1-yr. do., 3s. 6d. per 1000. COMMON LARCH, 1 to 2 feet, 25s. per 1000. PORTUGAL do., twice Transplanted, 1 foot, 5s. per 100; CRAB STOCK, fit to work, 20s. per 1000; CHINESE ARBOR-VITÆ, 2 to 3 feet, 1s. per 100; IRISH YEWS, 1 to 2 feet, Transplanted, 1s. per 100. FOREST TREES and SHRUBS Cheap.
All orders through Hurst & Son, Seed Merchants, London, to whom all accounts will be made payable, will receive our prompt attention.

TO THE TRADE.

500,000 2-yr Transplanted QUICKS, 1 to 3½ feet.
200,000 1-yr. Seedling QUICKS, 6 to 12 inches.
20,000 2-yr. CRAB STOCKS, 2 to 3½ feet.
10,000 2 and 3-yr Transplanted LARCH, 1 to 3½ feet.
5000 RED GRAPE and VICTORIA CURRANTS.
2000 Standard PEARS, 5 to 7 feet stems.
Prices and samples on application to WILLIAM Cocks, Old Nurseries, Donington, Spalding.

IMPORTANT to the TRADE and INTENDING PLANTERS.

4,000,000 1-yr. Larch	200,000 2-yr. English Oak
600,000 2-yr. Seedling do.	20,000 2-yr. Evergreen do.
200,000 1-yr. Transplanted do.	100,000 2-yr. Beech
1,500,000 2-yr. Scotch Fir	100,000 2-yr. Horse Chestnut
500,000 1-yr. Transplanted do.	1,000,000 2-yr. Elms
100,000 2-yr. Transplanted do.	60,000 2-yr. Ash
1,000,000 2-yr. Spruce Fir	100,000 3-yr. do.
400,000 3-yr. do.	60,000 1-yr. Spanish Hazel
200,000 1-yr. Pinus austraca	50,000 2-yr. Acacia
200,000 1-yr. Pinus Laricio	100,000 1-yr. Common Broom
50,000 2-yr. Pinus Weymouth	70,000 1-yr. Scotch Laburnum
100,000 2-yr. Silver Fir	40,000 2-yr. Cyprus (upright and horizontals)
50,000 2-yr. Balm of Gilead	30,000 2-yr. Chinese Arbor-vitæ
2,000,000 1 yr. Alder	20,000 2-yr. American do.
300,000 2-yr. Seedling do.	4,000,000 1-yr. Thorn Quick
100,000 1-yr. Transplanted do.	100,000 1-yr. Laurel
400,000 1-yr. Sycamore	30,000 2-yr. do.
100,000 2-yr. do.	

The Nurseries are well stocked with FOREST TREES.
PRICE LISTS ready, which will be forwarded on application to MICHAEL BURKE, Drumlargan and Garradice Nurseries, Summerhill, Co. Meath, Ireland.

Huntingdon Nurseries.

WOOD AND INGRAM offer the following at extremely moderate rates, according to the quantity taken:—
ASH, 2-yr. Seedling, and in Drills, 1½ to 2 feet.
BLACKTHORN, 1-yr., fine.
CHESTNUT, HORSE, 2-yr., and 6 to 8 feet, transplanted.
ELMS, NARROW LEAVED ENGLISH, 2 and 3-yr. Seedling and transplanted, 1½ to 2 feet
FIR, SPRUCE, 1 to 1½, 1½ to 2, 2 to 3, and 3 to 4 feet.
FIR, WHITE and BLACK AMERICAN, 2 to 3, 3 to 4, 4 to 5, and 5 to 6 feet.
FIR, BALM of GILEAD, 1½ to 2, and 2 to 3 feet.
FIR, WEYMOUTH PINE, 2 to 2½, 4 to 5, and 5 to 6 feet.
HAZEL, 1½ to 2, and 2 to 2½ feet.
GORSE, 1-yr. Seedling.
HOLLY, 2-yr. bedded, transplanted, 6 to 9 inches, 9 to 12 inches 1 to 1½, 1½ to 2, and 2 to 2½ feet.
HOLLY, VARIEGATED, 6 to 9, and 9 to 12 inches.
HOLLY, AQUIFOLIUM, 1½ to 2 and 2 to 2½ feet.
MAPLE, COMMON, 1-yr. Seedling, extra fine.
JUNIPERS, 2 to 3, 3 to 4, 4 to 5, and 5 to 6 feet; extra fine, and bushy.
OAKS, 2-yr. Seedling, and drills, 2 to 3 and 3 to 4 feet.
OAKS, TURKEY, 2-yr. Seedling, fine.
POPLAR, BLACK ITALIAN, 3 to 3, 3 to 4, 5 to 6, 6 to 7, 8 to 10 ft.
POPLAR, ONTARIO or AMERICAN, 2 to 3 and 12 to 16 feet.
WHITE THORN QUICK, 3-yr. Seedling.
ARBORVITÆ, AMERICAN, 1½ to 3 feet.
ARBORVITÆ LOBBII, extra fine specimens, 3 to 7 feet.
ARBORVITÆ, SIBERIAN, 1 to 1½, 1½ to 2, 2 to 3, and 3 feet.
AUCUBA JAPONICA, extra fine hardy specimens, 1 to 1½, 1½ to 2 2 to 2½ and 3 feet.
BEECH, PURPLE and COPPER, 5 to 6, and 6 to 8 feet.
BERBERIS DULCIS, 1 to 2, and 3 to 4 feet.
BERBERIS AQUIFOLIUM, 1 to 1½, 1½ to 2, and 2 to 2½ feet.
CUPRESSUS LAWSONIANA, very fine, 3 to 4, and 4 to 5 feet.
CUPRESSUS MACROCARPA, potted, 2 to 3, and 3 to 4 feet.
LAUREL, COMMON, 1 to 1½ and 2 feet.
LAUREL, PORTUGAL, very fine, 1 to 4 feet.
PLANE, ORIENTAL, 2 to 3, 4, and 5 feet; extra, 9 to 10 feet.
PLANE, OCCIDENTAL, 4 to 4, 5 to 6, 6 to 7, and 8 to 9 feet.
YUCCA RECURVA, fine specimens, 1½ to 2½ feet
ROBINIA INERMIS, fine Standards, 6 to 7 feet stems.
WILLOW, WEEPING, 6 to 7 feet, and fine Standards.
N.B. CATALOGUES sent free on application.

The Earliest Pea Grown is

CARPENTER'S EXPRESS, gathered on the 7th May, (see Testimonials), THE EARLIEST DATE ON RECORD, price 3s. per quart. The usual discount to the Trade.

EDWARD CARPENTER, Seed Merchant and Grower, Brighton and Sussex Seed Warehouse, 96, St. James's Street, Brighton.

POYNTER'S EARLIEST and BEST PEA, the hardiest and earliest out, price only 1s 3d per quart. See Advertisement, p. 1151 of this week's *Gardeners' Chronicle*.

To be obtained Retail in London of Messrs. Jas. Veitch & Sons, Chelsea, S.W.; and Mr. H. S. Williams, Holloway, N.; and through any Seedsman, in one quart packages only, with Trade Mark, the Crown and Royal Oak, and blue label. None other genuine.

ROBERT H. POYNTER, Seedsman, &c., Taunton, Somerset.

To Market Gardeners and Others.

CABBAGE PLANTS – East Ham, Enfield Nonpareil, Robinson's Champion Drumhead, 2s per 1000.

RED CABBAGE PLANTS, 4s per 1000, extra fine Picture, cash. I will challenge England with Plants, the Stock true, and can be warranted. A trial is all I ask.

RICHARD WALKER, Market Gardener and Seed-grower, Baggieswade, Beds.

SUPERB NEW LATE GRAPE—MRS. PINCE'S BLACK MUSCAT.

LUCOMBE, PINCE, & CO.

Beg leave to call the attention of the Public to this exceedingly fine and highly valuable GRAPE, which may now be seen in great perfection at their Nursery. It has been awarded a First-class Certificate by the Royal Horticultural Society of London, and elicited the praises of numerous eminent Horticulturists. It is *essentially* a LATE Grape, possessing high Muscat flavour. It will keep in perfection until April.

Undoubtedly the very best late Grape, with true Muscat flavour.

VINES will be ready to send out in August, 1867, at the following prices:—

Strong Canes, £1 1s. each; Fruiting, £2 2s. each; Extra strong Fruiting, £3 3s. each.

☞ *Orders will be executed in strict rotation as received.*

Copies of the numerous Testimonials now in their possession will be forwarded upon application.

EXETER NURSERY, EXETER.

CLEARING OFF

SURPLUS STOCK OF IMPORTED DUTCH BULBS.

THEY ARE IN FINE CONDITION.

20 PER CENT. LESS THAN CATALOGUE PRICE.

CATALOGUE ON APPLICATION.

Gem Plant Case.

HYACINTHS, Mixed Border, Paxton Bedding, Pompon, fine Named Varieties for Indoor Decoration.
NARCISSUS, Garden Varieties.
TULIPS, Mixed Early Single, Paxton Bedding do., fine Named Varieties for Indoor Decoration.
TULIPS, Mixed Early Double, fine Bedding do., Late and Parrot Varieties.
CROCUS, Striped, Golden Yellow, Cloth of Silver, Scotch, Versicolor, and Mixed.
CROCUS, New Seedling Varieties, such as Albion, Albertine, La Majestueuse, Mont Blanc, Ne plus Ultra, Prince Albert, Queen Victoria, Sir Walter Scott, Sulphureus, New Golden Yellow, Vulcan, and Mixed.

SINGLE SNOWDROPS	IXIAS	TRITONIAS	CROWN IMPERIALS
BULBOCODIUM VERNUM	SPARAXIS	BABIANAS	SCILLAS.

Best Variety of VIOLA CORNUTA, 1*s.* and 2*s.* 6*d.* per packet.
Imported LILY of the VALLEY, fine large clumps for Winter Blooming, 1*s.* 6*d.*, or 12 for 17*s.*

BARR AND SUGDEN,
12, KING STREET, COVENT GARDEN, LONDON, W.C.

Gem Plant Case.

UNDER THE PATRONAGE OF HER MOST GRACIOUS MAJESTY THE QUEEN,

AND MOST OF THE NOBILITY AND LANDED PROPRIETORS THROUGHOUT BRITAIN.

FRANCIS & ARTHUR DICKSON & SONS,

THE OLD ESTABLISHED SEED WAREHOUSE,

106, EASTGATE STREET, and the **"UPTON"** NURSERIES, CHESTER.

THE BEST EARLY PEA IN CULTIVATION—DICKSON'S "FIRST & BEST."

FRANCIS AND ARTHUR DICKSON AND SONS are gratified to find that this Pea has again this Season (1866) given universal satisfaction, and is pronounced by the most experienced Gardeners in Britain, and other competent Judges (confirmed also by their own *repeated* trials against all the Early Peas of the day), to be the very best *FIRST* EARLY PEA ever offered for general good *qualities*, viz., EARLINESS, PRODUCTIVENESS, and SUCCESSION of CROP.

Retail Price, 1s. 6d. per Quart. Price to the Trade on application.

The following TESTIMONIALS, which have been received with many others of an equally satisfactory nature, will sufficiently establish its claim to be considered the "FIRST & BEST" EARLY PEA:—

From Mr. GEORGE EDWARDS, *Gardener to the* Hon. E. COKE.

"Longford Hall, Derbyshire.

"Your 'First and Best' Early Pea is quite ten days earlier than Daniel O'Rourke; very productive, of good flavour, and in every respect a first-class Early Pea."

From Mr. J. GARDNER, *Gardener to the* Hon. E. S. P. JERVIS.

"Little Aston Hall, Warwickshire.

"I have great pleasure in giving you my opinion on the merits of your 'First and Best' Early Pea. I sowed it by the side of Sangster's No. 1 on a south border, where it proved to be fully 10 days earlier than that variety. Your Pea grows about 2 feet in height, is very productive, of excellent quality, and, I may add, very hardy."

From E. C. WALKER, Esq.

"Lead Works, Chester.

"The new Pea you sent me was sown on March 2, by the side of a row of Daniel O'Rourke. I gathered a good dish from yours on June 12, and was unable to gather from Daniel O'Rourke's until June 24. I consider your Pea a most valuable introduction. It is a good bearer, and excellent on the table."

From Mr. W. HILL, *Gardener to* R. SNEYD, Esq.

"Keele Hall, Staffordshire.

"I have great pleasure in reporting favourably of the Early Pea you sent me for trial. They were sown on the same day (March 17) as Sangster's No. 1, Carter's First Early, Sutton's Early Champion, and Dillstone's Early Prolific, and proved earlier by some days than either. Dillstone's comes in next to it, but it is not so prolific as yours."

From Mr. JAMES TURNER, *Gardener to* BASIL FITZHERBERT, Esq.

"Swynnerton Park, Staffordshire.

"I was much pleased with your 'First and Best' Early Pea. It was sown here on the same day, and by the side of Sangster's No. 1, and it was fit to gather quite a fortnight before that variety. It is very prolific, the flavour is excellent; I consider it the best Early Pea in cultivation."

From Mr. WILLIAM BROWN, *Gardener to* W. S. DUGDALE, Esq.

"Merevale Hall, Warwickshire.

"Your Early Pea came into bearing ten days before Sangster's No. 1. It appears to be the best Early Pea that we have. It is an excellent kind for forcing in pots, or for orchard-house culture."

From Mr. WILLIAM LANDON, *Gardener to* A. R. B. KNIGHT, Esq.

"Downton Castle, Herefordshire.

"I beg to state that your Early Pea has proved itself to be a great acquisition as regards earliness; it is very prolific and of excellent flavour. It was sown by the side of Sangster's No. 1, and it came into bearing fully nine days earlier. I consider it the best Early Pea in cultivation."

From Mr. WM. WHITAKER, *Gardener to the* Right Hon. Lord CREWE.

"Crewe Hall, Cheshire.

"I can bear my testimony to the earliness, good flavour, and productiveness of your new Early Pea, which I consider to be the very earliest and best Pea for a first crop. It came into bearing ten days before Sangster's No. 1. Your Pea is much superior to Dillistone's in every respect."

The "FIRST and BEST" EARLY PEA. can be had TRUE from the following SEEDSMEN, who have already ordered a supply direct:—

Messrs. Hurst & Son, 6, Leadenhall Street, London, E.C.
" Cooper & Bolton, 152, Fleet Street, London, E.C.
" J. & C. Lee, Hammersmith, London, W.
" Dicksons & Brown, 44, Corporation Street, Manchester
" Fisher, Holmes, & Co., Sheffield
" Hogg & Robertson, Mary Street, Dublin
" Downie, Laird, & Laing, Edinburgh
" Sutton & Sons, Reading
Messrs. Dickson & Turnbull, Perth, N.B.
" Platz & Son, Erfurt, Prussia
" James Veitch & Sons, King's Road, Chelsea, S.W.
" Jacob Wrench & Sons, London Bridge, London, E.C.
" Minter, Nash & Nash, Strand, London, W.C.
" Henry Clarke & Sons, King Street, Covent Garden, W.C.
" P. S. Robertson & Co., Edinburgh
Messrs. Simon Louis Frères, Metz, France
Mr. Thos. Charnes, High Street, Exeter
" Samuel Williams, Widemarsh, Hereford
" John Jones, Rhyl
" Ernst Benary, Erfurt, Prussia
" Wm. Dean, Bradford
" P. Tollard, Paris, France

TO THE TRADE.

CARTER'S

NEW AND CHOICE VEGETABLES

FOR 1867.

LAXTON'S PROLIFIC EARLY LONG-POD PEA.

We have much pleasure in introducing this valuable variety, raised by THOMAS LAXTON, Esq., Stamford, to the notice of the Trade. Some pods (in a green state) were exhibited by us at Mark Lane in June, 1865, averaging 11 and 12 Peas in a pod, and they were pronounced by several eminent members of the London Seed Trade to be an exceedingly fine variety. For a second Early Pea, and a Pea for early sowing in autumn, there is no Pea of a similar class in cultivation to equal it, and we feel every confidence that it will be in general cultivation in a very few years. The Pea has the same habit and character as "Dickson's Favourite" and "Auvergne," excepting that the pods are nearly DOUBLE the size of these varieties.

The additional Testimonials received by us during the past summer fully corroborate our own opinion as to its being a "First-class Pea."

Extract from "JOURNAL OF HORTICULTURE," *September* 4, 1866.

"In February last I purchased a quart of LAXTON'S Prolific Peas, sent out by Messrs CARTER. With me I find it is a very good second early variety, certainly much larger in the pod than the other Peas of its class; quite equal to them in flavour, and ripening about the same time. I have now growing three rows, 12 yards in length, and each row is loaded with fine large pods. I intend to cultivate this variety largely next season."—W. WOOLLEY, *Bunburg, September*, 1866.

From Mr. H. MAY, *The Hope Nurseries, Bedale, Yorkshire, August* 29, 1866.

"I observe a person styling himself 'Amateur,' in the *Journal of Horticulture*, speaking disparagingly of your Pea, Laxton's Prolific. I had some of it last season, in sealed packets, and have found it a first-class Pea, pods immense, 10 to 12 peas in a pod, and the crop extremely heavy; it is a fine exhibition Pea; what I had came very true."

Extract from "JOURNAL OF HORTICULTURE," *Sept.* 4, 1866.

"As the raiser of this Pea, my object in writing to you is not to combat the opinions expressed in letters from 'An Amateur' and others in your Numbers of the 14th and 21st of August, as I am content to let the Pea stand or fall by the voice of public judgment alone; but that the condemnations contained in the letters alluded to are not universal, I have proof abundant in flattering reports of the successes of other growers who have volunteered their opinions. 'An Amateur' appears to have assumed that it has been announced as the best Pea in cultivation, and to have condemned it as not answering that description, in any have been disappointed, as many others must be who look for improvements in all points in a new Pea or plant.

"Had Messrs. Carter announced it as such they could hardly have been liable to a charge of deception; but they have in their description of it, I think, been singularly moderate and faithful.

"My object, however, in troubling you is to explain what I believe to be the origin of the three so-called varieties in the seed alluded to by 'An Amateur.' The variety in question is the result of a cross between 'Beck's Prizetaker' (true), and 'Sangster's No. 1,' and although the appearance of the seed, as evinced in my own sample, would lead one to suppose there were three varieties, yet the produce in the growing state will show but one character, with very slight variations, and this is not the only Pea which exhibits such a tendency. 'Dickson's Favourite'* has been likened by high authority to the variety in question, and has probably originated from crossing two Peas of a similar class. Dickson's partakes of a like mixed character of seed, and the variations in the growing produce are also insignificant. It is a characteristic of many crossed Peas to show in their produce after the second generation seeds like both parents and intermediate, and possibly this may explain the appearances alluded to."—THOMAS LAXTON.

* This is incorrect, as "Laxton's Prolific Early Long-pod" is distinct in seed and growth from "Dickson's Favourite," and all other sorts.

In Sealed Quarts and Pints.

New Tom Thumb Peas.

THE PEARODY.—A very dwarf prolific branching late variety, of Tom Thumb habit; height 15 inches; good flavour, and very productive. "The Peabody" is a later variety than the Dwarf Waterloo, to which it forms a good succession. Offered for the first time in sealed packets.

"DWARF" WATERLOO LATE BRANCHING MARROW.—A dwarf variety of tall Royal Victoria or Waterloo Marrow, of Tom Thumb habit; height, 15 inches; the most valuable dwarf Pea for general and late cropping ever offered; very dwarf, good flavour, and very productive. Offered for the first time in sealed packets.

Carter's Summer Broccoli.

A new variety, with enormous close white heads, having the desirable merit of being fully a fortnight later than Carter's Champion (from which it was selected, and which has hitherto been considered the latest variety in cultivation). Carter's Summer Broccoli may be had fit for use in June, thus filling up the gap which formerly existed between Broccolis and Cauliflowers. The seed of this variety is distinct from all other sorts.

In sealed packets.

Sims's Mammoth Tomato.

Mammoth variety of the Cherry Tomato, very early, of extremely robust habit; requiring little support; fruit very large and smooth, in Grape-like bunches, averaging from 4 to 20 fruits. This variety was raised by Mr. Sims, Gardener to —Weddowson, Esq., Dulwich Common, and is much recommended.

In sealed packets.

New Potato, The Ash-top Fluke.

A hybridized Seedling from the Ash-leaf and the Fluke Potato raised by a Bedfordshire gardener, who has grown it for 5 years. The stock was purchased by J. C. & Co. in 1865, and grown by them last season at their St. Osyth Seed Farm, where they have thoroughly proved its excellent qualities.

The Raiser correctly describes The Ash-top Fluke as follows:—"I can recommend it with perfect confidence as a second early Potato—considerably earlier than the ordinary Fluke Potato—with handsome tubers; it is a good keeper, and when boiled is very mealy and of most excellent flavour. I have grown this Potato for the last 5 years, and during that time I have shown it against all the leading sorts and it was always considered to be the best."

A nurseryman in the neighbourhood where The Ash-top Fluke was raised describes it as "a genuine Seedling Potato, selected from a batch of Seedlings sown in 1860, and grown on since then by the Raiser. It comes on directly after the Ash-leaf, is a good cropper for the garden, but does not produce like coarse field sorts; it is in good condition up to the end of January or middle of February. I have seen the Potato several times at a Cottage Show and admired it much; you may depend upon what the Raiser says about it, as I have known him for years."

Prices of the above to the Trade on application.

The following Seed Merchants and Nurserymen have already ordered a supply direct from our Establishment —

Allman, Fredk., Horsham
Brotherton, William, Chapel Town, Leeds
Brown, Robert, Low Fell, Gateshead
Cashon, Jno., Abbey Nursery, Spalding
Cookson, Jno., Meriden, near Coventry
Cooper & Bolton, 102, Fleet Street, E.C.
Crossland, B., Richmond, near Sheffield
Dicksons & Brown, 43 & 45, Corporation Street, Manchester
Dickson & Sons, F. & A., 106, Eastgate Street, Chester
Dickson & Sons, James, 102, Eastgate Street, Chester
Dods, W., Haddington
Dreghorn & Aitken, Kilmarnock
Drummond Brothers, George Street, Edinburgh
Edmondson Brothers, Dame Street, Dublin
Fowler & Co., Argyle Street, Glasgow
Godwin, F. G., Norfolk Market Hall, Sheffield
Haywood, James, Tealby, near Market Rasen
Hume, W. F., Exotic Nursery, Gloucester
Hurst & Son, 6, Leadenhall Street, E.C.
Jenkinson, M., Higherlands, Newcastle-under-Lyne
Jones, Ellis, 13, Market Place, Wrexham, N.W.
Jubike & Co., Perranel, Erfurt
Lawson & Son, Peter, 28, King Street, Cheapside; and Edinburgh
Low, F. C., Dragery, Northampton
Mackintosh, R. T., Melbourne Place, Edinburgh
Marshall, James, Montrose, N.B.
May, Samuel, Wade Lane, Leeds
Mellor, Matthew, Bad Haye Garden, Leek
Methven, Thomas, Prince's Street, Edinburgh
Morriss, Mr. F., Philadelphia, U.S.A.
Newton, W. C., 12, Beaumont Place, Bristol
Nutting & Sons, Barbican, E.C.
Palmer, J., Market Cross, Wake
Plowman, James T., Mallow
Pontey, Mrs. Plymouth
Porter, R., Seedsman, Oswestry
Rose, George, Barnsley
Sang & Sons, E., Kirkcaldy
Saunders, W., Seedsman, &c., Aberdeen-ony
Shaw, Jno., 29, Oxford Street, Manchester
Small, Francis, Glasgow
Smith & Simons, Buchanan Street, Glasgow
Sutton & Sons, Reading
Thomas, W., Exchange Street, Worcester
Thomson & Sons, James, Union Street, Glasgow
Thorburn & Co., New York, U.S.A.
Troughton, R., Fishergate, Preston
Turner, C., Royal Nursery, Slough
Waite, Burnell, & Co., 181, High Holborn, London, W.C.
Washbourn & Co., Boston, U.S.A.
Watkinson, Henry, Market Place, Manchester
White, George, Moss Street, Paisley
Williamson, George, Euston, near Thetford
Veitch & Sons, James, Chelsea, S.W.
Vick, James, Rochester, U.S.A.

JAMES CARTER AND CO., 237 and 238, HIGH HOLBORN, LONDON, W.C.

Surplus Imported Bulbs.—See BARR AND SUGDEN'S large Advertisement, page 1160.

Hyacinths and other Dutch Bulbs.

WM. CUTBUSH AND SON beg to acquaint their numerous Patrons that they have received their usual Consignment of Choice HYACINTHS, TULIPS, CROCUSES, &c. PRICED DESCRIPTIVE CATALOGUE post free on application. Highgate Nurseries, London, N

VIOLETS.—The GIANT, bearing a finer flower and a more beautiful perfume than any of its kind, NOW in FULL BLOOM, and will continue Blooming till April. Plants can be had, about 24 inches in circumference, at 12s. per dozen. A sample bloom of the above, and List of Prices of all kinds of Violet Plants sent on receipt of stamp for postage.
JOHN STEDMAN, Violet Grower, Thornton Heath, Surrey, S.

New General Plant Catalogue.

B. S. WILLIAMS' NEW PLANT CATALOGUE, containing many really good Novelties, and carefully selected LISTS of STOVE, GREENHOUSE, and HARDY PLANTS, is now ready and will be forwarded post free to all applicants.
Victoria and Paradise Nurseries, Holloway, London, N.

British Fern Catalogue.

ROBERT SIM can now send, post free for six postage stamps, Part I. (British Ferns and their varieties, 36 pages, including Prices of Hardy Exotic Ferns) of the NEW and PRICED DESCRIPTIVE CATALOGUE of BRITISH and EXOTIC FERNS, No. 7.
Fosh's Cray Nursery, S.E., a mile from Sidcup Station of New North Kent Line of South Eastern Railway.

Wholesale Catalogue of Nursery Stock.

GEORGE JACKMAN AND SON'S PRICED and DESCRIPTIVE CATALOGUE for 1866 and spring 1867, can be had free on application, comprising Fruit Trees, Roses, American Plants, Conifers, Clematises, Evergreen and Deciduous Trees and Shrubs, and transplanted Forest Trees, &c., &c.
Woking Nursery, Surrey.

Roses.

CHARLES VERDIER Fils (ex-Partner in and Successor to the late FIRM of VERDIER Frères & Père, and Cie. VERDIER FILS, NURSERYMAN, 12, Rue Dumeril, Paris, begs to inform Amateurs and the Trade that he has just published his NEW CATALOGUE of ROSES, which may be obtained free on application to his Agents, Messrs. R. SILBERRAD & SON, 3, Harp Lane, Great Tower Street, London, E.C.

ROSES.—Extra fine Standards, at from 15s. to 18s. per dozen; 100s. per 100.
Do. Dwarf, extra fine, 9s. to 12s. per doz.; 63s. to 84s. per 100.
Do. New Sorts of 1866 at 24s. per dozen.
DESCRIPTIVE LIST on application.
RICHARD SMITH, Nurseryman and Seed Merchant, Worcester.

Lilium lancifolium.

SUTTON AND SONS have received several varieties of the above splendid Autumn-flowering Lily in fine condition.
For descriptions and prices of each see SUTTON'S AUTUMN CATALOGUE, which may be had gratis and post free on application.
SUTTON & SONS, Royal Berkshire Seed Establishment, Reading.

The Gardeners' Chronicle.

SATURDAY, DECEMBER 8, 1866.

MEETING FOR THE ENSUING WEEK.

SATURDAY, Dec 15 { Royal Horticultural (Weekly Show), at South Kensington .. .. 2 P.M

THERE is so much justice in the remarks of our *confrère* M. CARRIÈRE as to the nature of what botanists are pleased to call SPECIES, that we lay the substance of some of his recent observations on this knotty point before our readers for their consideration. Species, says (in substance—we do not here quote *ipsissima verba*) the Editor of the "Revue Horticole," are a contrivance of human ingenuity, individuals and not species having been the work of the Creator. Alluding, then, to the way in which so-called species are made by naturalists, good, bad, or indifferent, according to the degree of sagacity and research of their authors, or to the excellence of the material at their disposal, M. CARRIÈRE puts an imaginary case of plant derived say from China, and supposed to be a new or undescribed form. Finding no trace of the plant either in books or herbaria, the botanist describes it carefully, puts it into what he considers to be its proper position in the arrangement he adopts, gives it a name, and thus launches the supposed novelty into the sea of botanical literature. But the individuals examined so carefully are frequently very imperfect, or they may be mere local variations from some other form, known or unknown. When it is remembered how wonderful is the variation that frequently manifests itself among seedlings derived from the same source, it must be admitted that species making is rather hazardous employment. What, asks M. CARRIÈRE, would happen if seedling varieties of our supposed new plant could be sent to some Chinese botanist? Would he not, provided he were ignorant of their source, pronounce them to be new species? Could he be blamed if he did so? Assuming the correctness of this, we perfectly coincide with M. CARRIÈRE, that naturalists would do well more fully to realise that they are not so much species-makers as nomenclators; that they attach names to forms, often upon very insufficient grounds, upon the basis of characteristics (characters as a botanist would say) which are really not characteristic, but fleeting, trivial, mutable, mere accidents, so to speak, pertaining to the individual, and not to any aggregate of individuals as a whole. Turning to some practical illustrations of M. CARRIÈRE'S

views, we find that he considers that Acer Opalus, A. opulifolium, and A. polymorphum are merely forms of A. monspessulanum, and this again he considers to be probably a variety of A. creticum. M. CARRIÈRE also considers Cytisus alpinus to be merely a variety of C. Laburnum, as seedlings from the former always produce a certain number of forms referable to the Laburnum type. Indeed, in some seasons, the seeds, though carefully selected, produce C. alpinus, while at another time they yield C. Laburnum. Hybridisation, says M. CARRIÈRE, is all but impossible in this case, from the peculiar structure of the flowers. Basing his inferences on similar premises, our ingenious *confrère* refers all the true Mulberries to one and the same type.

Now all this may be true, but it would be undesirable for scientific purposes, still more so for horticultural or commercial objects, to lose sight of these forms, and to swamp them all under one common designation. Names they must have, but they should be names about which there should be no mistake, such as should not mislead the student, nor beguile unwary purchasers—names expressive of the reputed degree or quality of the form to which they are applied; and if Latin words must be used for international convenience, then, as it will be otherwise often impossible to avoid the confusion created by the similarity of scientific with garden or commercial nomenclature, we can only repeat the suggestion to add the word "Hort." after the name of the plant, to indicate its degree, a plan long since partially adopted in technical books, but capable of much more extensive application.

A CORRESPONDENT puts before us the following inquiry concerning the PLANTING OF CHURCHYARDS:—

"We have lately, at a considerable expense, established a cemetery in our parish. We are anxious to keep the churchyard (which is very extensive, and now permanently closed) in excellent order. We are widening the paths, removing the old iron rails round monuments, and levelling where possible, at the same time paying every respect to the feelings of the parishioners. Now, with regard to planting, what do you recommend? We are rather against flowers, but in favour of Cypress, Deodars, Berberis, &c., but a few hints from experience would be thankfully received."

It seldoms falls to the lot of even great men to have such important duties assigned to them as the planting and beautifying of a fine old churchyard. The old sepulchral Yews have held their own in our churchyards for hundreds of years against all comers, and as we venerate the trees, we unconsciously honour the planter who had the generosity and the forethought to do us such signal service.

As we have no other guide than the above somewhat meagre outline of what is required, we will proceed as if the venerable edifice were before us, running east and west, and as if the western door were in the centre of the churchyard, so that a walk, running north and south, would be the grand promenade. The north entrance would, therefore, be the point from which the best effect is to be produced. Be the other paths as they may, this one should be the midrib, and should take the church with its surroundings on one side, and on the other side the effect should be that of an amphitheatre, and not that of an avenue, avoiding that egregious blunder we see everywhere of planting tall-growing and wide-spreading trees near buildings, which in time they must bury beneath their shade. The outline of the ground only should be planted with the largest trees, and the furniture of the general platform should be made up of two kinds—the bushes or tufts, and the starers or more ornamental plants.

The Deodar (Tree of God) can hardly be excluded from the post of honour when we come to consecrated ground, although it is a large-growing tree, and may eventually cumber a good deal of ground. At the extreme points, therefore, near to the wall of the churchyard, let these be planted at not less than a chain length (66 feet) apart. The Cedar of Lebanon is, but for the name, a better churchyard tree than the Deodar; its dignity and bearing when old are beyond all praise, and we should plant or rather scatter three or four through the open spaces. The planting of a churchyard should not make it a wood, or even a shrubbery; for although the tombs should be shaded like a good picture, still the "summer sun should shine sweetly on the graves." Then comes the Yew—and when we speak of the Yew, we mean the English, and not the garden Yew—for there is a great deal in a name. In the days of the Bowiers (Bowmakers) and Fletchers (Arrowmakers), Yew tree was war material. The triumphant entry into the Holy City was celebrated annually on Palm Sunday by the distribution of small twigs of Yew and Willow; and the honoured dead were borne through the Lych Gate, and under the churchyard Yew trees to their last resting place. The Yew has therefore prescriptive rights and important claims to our regard, for it gave the palm to gladness, a brand to warfare, and a canopy to death. It is extremely suitable for the present purpose, being a tree of small size and of evergreen habit, very long lived, and hardy in the highest degree, bearing the most inclement weather without flinching. It has moreover been pruned, clipped, and mutilated perhaps more than any other tree. In the tier next to the Cedars the ground should be well studded with English Yew trees. The tree commonly called Irish Yew is specially excluded: it is all too stiff and club-shaped. Next comes the Juniper family (not Cypress); they are to be had of all sizes, from the mere dot up to that of a small flame-shaped tree, and the creeping and dwarf bushy kinds are invaluable for covering the ground like some thick carpet. The creeping Cotoneasters will hang over banks handsomely; and the blue and gold of the Periwinkle and St. John's Wort may be used for the same purpose for the sake of variety. All herbaceous plants, and whatever is not of the nature of permanent planting, should be excluded. Tufts of Box may dot the ground; and this being a very slow-growing plant, and inconspicuous, might occupy waste spaces profitably near the eye. The main ornamental features should be got from the double-flowered English Gorse, and the Rose family; the Gorse to be so scattered in small groups as to produce in its season the "gold" amid the "green." When the Gorse is not in flower it is always neat, and wears no varnish on its foliage like the Holly and the Berberry; it is therefore easily kept in harmony with the small leaves of the Cedar, the Juniper, and the Yew. About three pairs of Laburnums might be planted, and weeping trees might be introduced at discretion, as space would admit, the Weeping Elm being by far the most appropriate. We should plant a grafted Elm tree (the Chichester Elm) between each Cedar, on the outline, as it is a time-honoured practice to have these tall Elms in churchyards. The Ayrshire Rose will be found useful to run up against walls to any height, or to cover disagreeables, being a spiny shrub of rapid growth. Other Roses on stems, never to be cut back till they get as large as haycocks, may be planted here and there in open spots. The Rose harmonises with other shades of colour, and the ground strewn with Rose leaves, whilst some blossoms are still perfect and some in bud, will be so well suited to the place and to its associations as to bear us harmless against the charge of excess of love in recommending the introduction of the Queen of Flowers.

—— M. BRONGNIART has recently laid before the French Academy, in the name of M. ARTHUR GRIS, an account of a series of researches on the DEVELOPMENT and RESORPTION of AMYLACEOUS MATTER contained in the tissues of trees. His conclusions are that the nutritive substances occupy the amyliferous tissues of the trunk of trees during the greater part of the year; and that the time during which the tissues are deprived of it is of short duration, and ought to be counted not by months but by days. The starch secreted in summer seems to remain unchanged during the ripening of the fruits. There are only two great movements of the nutritive matters in the interior of the trunk of trees: the genesis of these matters in summer, and their resorption in spring. In studying this important phenomenon more closely, M. GRIS has observed that the resorption of the amylaceous matter was at its height during the development of the leaves; that it also accompanied the development of the flowers in those trees where the flower precedes the leaf, as in the Almond, the Plum, the Apple, &c., though then less abundant and less deep, inasmuch as it did not extend to the older tissues; but that it did not occur at all during the development of the fruits. These facts are, he observes, easy of explanation, for it is well known that during the development of the leaves and flowers, the respiration of the plant, which absorbs carbon and exhales oxygen, is very active.

— The plantations of Majorca Island, says *Les Mondes*, have given this year an abundance of COTTON of better quality than the most excellent Cottons of America.

—— Professor BREWER states that plants of the lower order grow well in the hot salt-springs or GEYSERS of California. They are more abundant in the water whose temperature is from 52° to 60°, but the highest temperature in which they are met with is 93°. They are monocellular in the hottest, filamentous in the coolest waters.

—— Those who are desirous of availing themselves of the EXAMINATIONS of the Royal Horticultural Society are reminded that Tuesday, the 11th inst., is the last day for giving notice of their intention to present themselves for examination on this occasion. The examinations are to commence on the 18th.

—— We may again mention that the site of the late International Horticultural Show, being about to be levelled, the TURF used for covering the banks must be at once removed. The turf itself is in capital condition, the Grass having been cut several times during the summer. Mr. GIBSON will give any information required respecting it.

—— We learn that the Royal Horticultural Society propose to give a Cup at the ensuing Show at Bury, and it is further proposed that the award for the Cup in question shall be made by the "Ladies of Bury."

A GARDENER'S DREAM.

(*Concluded from p.* 1115.)

THE Angler vanished, and was followed by a succession of tableaux vivants, representations of our sports, pastimes, and recreations. The gentleman rider, pale from training, and excitement too, but cool and brave as Curtius, came down at speed to the broad, sullen water, and cleared it, while a thousand cheered. The gentleman "whip" sat upon his dark handsome drag, driving with a quiet and graceful ease his high-bred four-in-hand. Cricketers, rejoicing in youth and health, lithe of limb and springy as deer, made magnificent hits to square leg for six, and ran with the speed of Fortunio's Lightfoot to achieve the distant catch. The yachtsman, all sails set, steered past the winning buoy, and great guns boomed his victory. The oarsman pulled his long, steady stroke, and his eye flashed with a righteous pride, as the men of his university, or the boys of his school, were shouting his well-won praise. The tennis-player stood, racket in hand, watching the ball as it came bounding from "the service-side," foreseeing all its varied course, calmly waiting its final fall, sending it like a bullet into the Dedans (friends will be pleased to accept this intimation, and to duck their heads if they want their eyesight), and so winning the set. Archers, with yew bows, and arcberesses, with beaux' eyes, were filled with the "sacra auri fames," and yearned to hit the gold. The billiard-player, a little over-perfumed by stale tobacco and gas, but with a marvellous eyesight and power of cue, screwed in from spot, and played from half a dozen cushions, or with "no end of side," his clever cannon-game. The skater glided on the frozen lake, at ease and happy on a single leg, as the still heron on its distant shore. Bowls slowly travelled towards the "jack" along the level sward, while solemn faces, smoking long pipes of clay, watched the insipid, though once royal game. Croquet-players, with smiles too thin to veil the scowls beneath, and with tones which said, "I assure you, darling," but which meant, "Oh you horrid cheat!" placed lovely boots upon the boxwood ball, and routed the flying foe. Skittles fell with a dull, rumbling sound; quoits rang upon the iron "hob;" single-sticks resounded like the brattling horns of deer; and every sport, amusement, recreation, game, went on in full force before me.

Not one of them fulfilled my heart's desire; and yet I was interested in them all (barring the bowls), experienced in most, and expert in some. Horses have I loved fondly ever since a subtle groom slipped noiselessly from his seat behind me; and, fear giving way to pride, I cantered in alone to my applauding friends, as Gladiateur won the Derby. Guns I have held since, a mere child, I stole away to neighbouring corn fields, making friends with a youthful "bird-tenter," who loaded a long single barrel with the bowl of a broken pipe, and who taught me, after many twitchings and blinkings, to bring down the sedentary "spink." All English sports and games I have loved and love, and yet they satisfied not my present need. Give me," I cried, "something more continuous than these—something which may occupy the thoughts, and employ the actions of my leisure, not in summer only, as cricket, nor in winter only, as the chase, but alike in every season of the year; and, more than this, through all the different phases of my life—youth, manhood, and old age."

Whereupon, and as in a dissolving view, the whole scene faded from my sight, and in its place appeared before me the semblance of a man. He wore a loose picturesque costume of velvet, and had a pleasant, handsome, intellectual presence, despite a superfluity of hair, which showed that the proprietor was not enrolled in Mr. Truefitt's "Toilette Club." "Essay," he said, "some nobler exercise, worthier the mind of man. Try painting,—try 'the art which baffles Time's tyrannic sway,' which lives exultingly in a glorious world of its own, which, lodging in an attic, and looking out on a London fog, can surround itself with the magnificence of a palace, and the scenery of an Italian lake. Or try music—music, which evokes the heroism, exalts the piety, and soothes the sorrows of mankind."

"Alas!" I replied, "I have tried, and failed; and you might as well essay to teach a boot-jack chemistry, or listen for a symphony from your garden roller, as tell a man to be an artist. Art is not precisely what the old lady thought it was, when she asked the son of Canova 'whether he meant to carry on his father's business?' It is indigenous to the soil in which it grows, and there only can it be seen in its perfection. You may transplant, and by incessant care you may obtain a similitude; but there will ever be the same sad difference which exists between two plants of

Coleus Verschaffelti—the one in a stove, the other in a cold clay soil; or between a golden eagle, rising from his aerie, like a king from his throne, with a solemn grace and beauty, and the same bird, heart-broken, diseased, and draggled in a cage. No, friend, earnestly as I admire and love the arts, I am not to be an artist. When I had progressed as far as 'Home, sweet home' on the flute, I felt that I had climbed my height; and as a painter, my career was stayed by an incapacity, stubborn and chronic, to prevent the distant objects of my landscape from advancing boldly in a line and occupying the entire foreground."

He favoured me with a smile, half pity, half disdain, as though I were one of those unhappy cripples whom one meets sometimes, strapped to a board upon castors, and propelling themselves along our pavements; and then he was gone.

Then came, last scene of all to end this strange, and to me eventful history, the final ghost; and I felt a presentiment, nay, a conviction, as he took the chair opposite to mine, and filled the large white bowl of his pipe, that he possessed the power to dispel my doubts, and to reveal the object for which my spirit yearned. He gave me that assuring smile which one sometimes sees upon a partner's face, when, wanting the odd trick to win a rubber, and having realised six, he holds the last trump card in his hand. The smile lit up a face which you could not mistrust, frank and truthful, "fresh as English air could make it," and bright with the afterglow of sixty summers. He was tall, erect, and active, and though Time's snow lay on his broad brow, his winter days were those of a merry Christmas, when the air is pure and bracing, and the heart full of love and hope. He took a few preliminary puffs to test the quality of my Latakia, and then addressed me thus:—"You probably possess among your paternal pictures the portrait of a gentleman, looking for his spectacles, with the object of his search on the top of his forehead; at all events, you are his true kinsman, and the family likeness is very interesting. Permit me to suggest an addition to the gallery—yourself with a brace of greyhounds, the trio gazing, heads up, over distant fields, while a hare squats close to your feet. You should read the story, one of the most charming ever told, of the French gentleman who came home one day in a melancholy, discontented mood, envying his rich neighbour, whom he had just left, starting for a tour in an elegant equipage, with courier and valet, and every luxury, and complaining bitterly of his own scanty means, which keeping him a wretched prisoner at home, like a donkey tethered on a common. In this unmanly and unthankful temper, his eye happened to turn towards the western heavens, and there he saw that wondrous spectacle of beauty, the sun going down in glory. Awed by that sublime splendour, the dark spirit of evil fled, as from Saul, when David took a harp, and played with his hand; and gratitude and sweet content returned with the thought that not in the whole world could traveller find a lovelier scene than this. The sun set upon a wiser and a happier man. Henceforth his eyes, and ears, and heart were opened, to see, not only such scenes of grandeur as that which had just passed away, but traces of a divine beauty in the minutest works around him; to hear 'the manifold soft chimes' of bird, and breeze, and stream; to love them one and all. The next morning Monsieur Alphonse Karr began that 'Tour round my Garden,' which I now urge you first to read, and then to realise. You call yourself a gardener and a florist, but if you were so, earnestly and thoroughly, you would not be now inquiring what recreation brings to man, the longer and larger happiness. You would have known ere this that 'gardening,' as Lord Bacon tells us, 'is the purest of human pleasures, the greatest refreshment to the spirit of man,' and that 'the life and felicity of an excellent gardener is' as truly now as when Evelyn wrote, 'to be preferred before all other diversions.'

"Hear evidence which you cannot dispute, but must sign, seal, and deliver, as your own act and deed. This very day, in the most dismal month of our English year—

> 'No sun, no moon,
> No morn, no noon,
> No—nothing.'

you have had your chief enjoyment from your garden. After breakfast you went into your rosery, and you cut a bouquet from Gloire de Dijon, Madame Masson, Jules Margottin, Madame Domage, Senateur Vaisse, and Souvenir de la Malmaison,* which, placed on your writing table, brightened your room throughout the day. Tired with a long correspondence and other business, you refreshed your spirit with a survey of your little greenhouse, gay with Chrysanthemums, with those Hybrid Pelargoniums, which recall so pleasantly dear, quaint, old Donald Beaton, with Epacris, Primula, and Fuchsia, and sweet with Violets, Mignonette, Genista, and Heliotrope. At luncheon you feasted on the half of a Maréchal de la Cour Pear, whose growth you had watched for weeks, and which weighed 18 oz. when it fell. In the afternoon you opened, with the keen, glad interest which a schoolboy feels when he cuts the string of his hamper from home, a bundle of new Rose-trees from one of the great nurseries, disposed them in your rosarium, and helped to plant. Then you superintended the arrangement of your small winter garden, the Thujas, Aucubas, Gold and Silver Hollies, Arabis, Ivies, and Heaths, which you keep in pots for the purpose, and which are to 'cheer the ungenial day,' until the Snowdrop and Crocus, the Tulip and the Hyacinth, proclaim, as heralds, another festival of flowers. Then, having looked into your fruit room, and counted, like a miser, your golden store; having glanced with a paternal pride over your numerous progeny of 'nursery' stock, the rising generation of dandies and belles, who are to rule the beau-monde of 1867, you went into your vinery, and cut those grand bunches of Muscats and Hamburghs, which not only made you a dessert fit for an emperor, but, taken in part to a sick neighbour, brought you a far greater luxury—'the luxury of doing good.'

"And so it is, that every day brings to a gardener its special interests. There is always something worthy of his care and admiration, some new development of beauty, some fresh design to execute, some lesson to learn, some genial work to do. Stormy days, which mar the sportsman's hopes, affect him not. In his stove, gay now with Achimenes, Dracænas, Crotons, Ardisias, Begonias, Ipomœas, Amarylli, and with many a lovely Fern and Lycopod, he finds perpetual summer; in his orchard house and in his conservatory, perpetual spring.

"And not only is the gardener's happiness thus in its duration sure, but it is in its peculiar essence of a very sweet and gracious quality. It ministers health to the body, and it ministers health to the mind. It brings pure air to the lungs, and pure, reverent thoughts to the heart. It makes us love our home, content and satisfied with those true pleasures which neither sting nor pall; and yet, when we leave that home, it follows us wheresoever we go. As

> 'All places, which the eye of Heaven visits,
> Are to a wise man ports and happy havens;'

so in all gardens, and in all gardeners, we find a home and brothers. There is always a welcome, always a sympathy. In horticulture there is less rivalry, less jealousy, than in other enterprises, because, first of all, the very practice of it tends to make men generous and wise, and because the arena is so large, and the spheres of excellence so numerous, that none need interfere with his neighbour, or insist on riding his hobby. I can thoroughly enjoy White's Orchids and Black's Pinetum, Brown's Orchard House, and Green's Fernery. They in turn rejoice in my Roses. I do not say that there are no envyings and no disappointments, but that these are fewer in horticulture than in any other recreation; and it is so, because 'Nature never did betray the heart that loved her,' never failed to instruct the humble student of her wisdom, nor refused to smile upon the fond admirers of her beauty."

I looked up to express my consent and penitence, but my ghostly adviser was gone. I awoke from my dream, and from my doubts. My eyes were opened from a darker blindness than sleep, and I had learned to verify in the happiness of a life, the lessons of my Gardener's Dream. *S. R. H.*

* These Roses are before me, in excellent condition, Nov. 15.—S. R. H.

ZONAL PELARGONIUMS IN WINTER.

THE rain of a gloomy December day has driven me into my house of Zonal Pelargoniums, now in full bloom. I am temporarily a prisoner, but cannot be idle. How beautiful these Pelargoniums are! how gorgeous the colours! and what a contrast they present to the leafless trees and sombre evergreens which I have just quitted. Scarlet and other warm-coloured flowers which abound here, seem to me particularly cheering in winter. I know of no flower, not even the varied and gorgeous Chrysanthemum, more lovely; and there is none so useful for bouquets at this season of the year. Conspicuous among them for freedom of flowering, and variety and novelty of tint, are Beaton's Hybrids and their successors, which are literally covered with trusses, and seem as if they would go on blooming throughout the winter. Judging from present appearances I think I am right in assuming that these hybrids bear the same relation to the ordinary Zonals that the Perpetual Carnations and Perpetual Roses do to the common kinds of those flowers. On analysing them and arranging them as to colour what a charming variety they afford! Of pure whites, Madame Vaucher and Virgo Maria are perhaps the best; Bride is white with a crimson eye, and Madame Werle is creamy white laced with crimson; Peach Nosegay, dark lilac, is particularly lovely; and Village Maid, which is of a clear deep pink with a large well-defined white spot on each upper petal, is a very decided advance on Helen Lindsay and Mrs. Whitty; Mrs. Wm. Paul, for size and form, is conspicuous among the light pinks. Alexandra and Dr. Hogg are the best among the bluish purples. Perhaps the greatest gain among Beaton's hybrids and their descendants, is the multiplicity of rose colours of various shades—colours previously unknown among Zonals; Monte Rosa, Naiad, Zephyr, Dryad, Amy Hogg, Celestial (very lovely), Wood Nymph, and Tiara are beautiful in this class. Indian Yellow is still alone as a yellowish orange, and Salmon Nosegay is a distinct and pleasing colour, prolific, and showy. Among the various shades of carmine and cherry-colour, Duchess, Banneret, Minstrel, Rebecca, and Waltham Nosegay are pre-eminent. Of orange, Nimrod, Sir Joseph Paxton, Prince of Orange, and Orange Nosegay are the best. Of scarlets, we select Cardinal, Waltham Pet, and Dr. Lindley. And, lastly, of blood-crimsons, remarkable for depth and solidity of colour, there are Ossian, Crimson Queen, and St. George. Here are 34 varieties selected for perpetuity of flowering, and described as they now are, which it will be readily conceived is not exactly as they appear out of doors in summer. But though different they are equally beautiful, many of them even more beautiful. The rain having ceased, I end my sojourn in this Pelargonium house by gathering a bouquet of the flowers, adding thereto a few leaves of the plain green, the black zone, the red zone, the gold, and the silver, which the above or others in company with them furnish. While doing so I have been brushing against Shrubland Pet (Beaton's again!), and the house is filled with odour. I add a few leaves of this, and walk off with a bouquet fit for a princess. Meeting a great amateur gardener in my way, he supplies me with a practical deduction from the principles revolving in my mind by saying, "Well, well, this is beautiful. I intended these flowers for my future winter list." "Yes, my kind friend, indeed you must; at least, if I mistake not, you are not likely to reject a new race that will add so much to the beauty of your garden in winter."

But something remains to be said as to the culture and management of these plants, which fortunately involves no new study or complicated arrangement. Buy or strike young plants in May or June. Continue to repot them into larger pots as the roots fill the pots they occupy, till the end of July. Pick off the trusses of flower before expansion during June, July, and August, encouraging a free growth, till by the end of September the plants are covered with new trusses beginning to expand. Now, wherever the plants may have been grown, whether out of doors or indoors, remove them to a light airy house, continuing to water freely, and using just so much artificial heat as may be necessary to dry up the moisture of the house, which if in excess, damages the flowers. Do not water the leaves nor spill water about the house. Give plenty of air in fine weather. By following this plan certain Pelargoniums may be had under glass at mid-winter, as gay and beautiful as in our parterres in summer. *Wm. Paul, Waltham Cross, N.*

CLIVEDEN IN AUTUMN.

LIKE a transfer from Earl Street, Seven Dials, to some cosy spot in Arcadia, was this autumnal Cliveden visit to me, though Mr. Fleming protested against the selection of the time. But I could not have gone at a better, because I saw the spring flowers in their nursery quarters, and the planting going on; besides, the leafage of the trees did me as much good as the sight of the beautiful mixed Primroses and Pansies unfolding their blooms pretty freely under the influences of autumn.

I do not wish to tell of the Asparagus beds, but of a seedling plant about an inch and a half high with which the alleys between them were filled densely. That is our friend Myosotis sylvatica, the delightful Wood Forget-me-not, which for many weeks next June will do more to beautify with its exquisite blue these shady wood walks and great flower-garden beds than any exotic plant in the garden. There seems to be as much of it here as would plant a dozen large gardens. Mark how easily it is grown, how often unused Asparagus alleys. And so with the white variety of this Myosotis, not so fine as the blue, but still useful as affording variety, and also the Silene and Wallflowers; while here and there a 4-foot bed, or two or three of them, are seen among the vegetable slips filled with the pretty double Daisies which flower so profusely here. Nothing in the world is easier of culture and propagation than these. After taking them out of the beds in spring they are popped into the kitchen garden ground, and they increase almost as fast as greenfly. For instance, six plants of a new kind were obtained here in spring, and now they have increased to nearly 500! Along borders in the several divisions of the kitchen garden are numerous rich beds of Polyanthuses and Primroses casting up fresh blooms, and those clearly-coloured thoroughly useful and hardy Cliveden Pansies are also dotted over with fine flowers, and probably these will go on flowering during the winter if it prove mild.

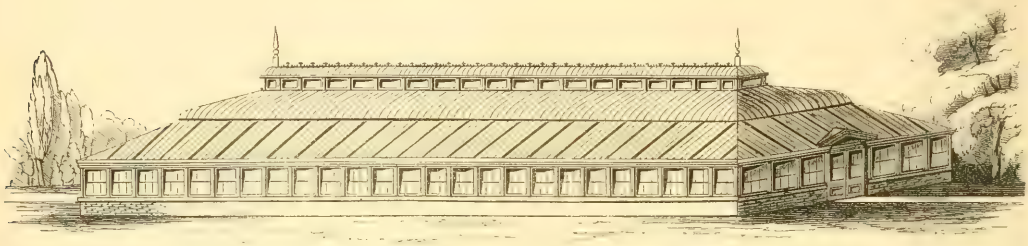
Such quantities of seedling and cutting and divided spring plants! Where are they all going to? There was not one put in the great garden that runs from the house to the Thames, but they had just planted the "Duke's Garden," and soon the large one would have its winter stock. This was the time for arranging the garden for spring, and certain it is that if all your readers could see even the effect of the arrangements immediately after being planted, they would never doubt the success of the movement nor its adaptability to every British garden in some degree. Most innovations of this sort are met with a doubt, and often with a sneer. But this little garden, with its beds on the turf and borders around, is not the place to talk of doubts and sneers, for it was alight with diminutive and in many cases beautifully-marked vegetation, though it was but a few days since the bedding plants were taken away. Here, for instance, is a border that catches the eye at once from its neatness and the polished tone of earth-biting vegetation that enlivens it. The margin of the border is a slope, a foot wide or so, of Aubrietia, inside of which runs a dense line of healthy Arabis lucida variegata; then there are little triangles of dwarf Phlox, met by others of Aubrietia grandiflora, the divisions between the triangles being of the same dwarf polished Arabis, while a line of the larger A. albida variegata backs that, followed by red Daisies, then blue Pansies, and finally, dwarf yellow Wallflower. This, as well as other borders here, was quite ornamental at the end of October, and will continue so more or less till the final burst of vivid colour in April, May, and the early part of June. The dwarf plants of best kinds are used here in nearly every bed, and with good taste too, as the beds and garden are small and select. The new variegated Aubrietia is used as a tiny edging round Daisies and Hepaticas, and looks very well indeed; while the finely variegated Arabises glint in diagonal lines through Gentiana acaulis, and run round beds of Hepatica, and there are other pretty arrangements which hesitation to occupy your valuable space forbids me to describe.

A few words for summer and other subjects. Alternanthera paronychioides has proved very good indeed here, as it has elsewhere. It is very dwarf, but unlike the Iresine quite decided in its tone, and seems hardier than that, because, while the Iresine is frost-bitten, this Alternanthera is as bright as ever, and, planted in little squares with rich soft edging of Arabis swelling up around it,

looked like little troops of Strawberries floating in cream. Subtropical plants have done famously here this season. Ferdinandas have grown to 30 feet high from 6 feet! Ferns did remarkably well; I allude to such as Polypodium aureum, Davallia canariensis, and Aspidium molle, while Isolepis gracilis grew as free as a native Grass. Solanum cinereum is a very remarkable species the largest and most singular I have ever seen, as grown here. The leaves are 2 feet 6 inches by 2 feet, and very imposing, the stem being covered with short stiff down, just barely covering short sharp spines. It had been taken up a week or so with the other tender plants, and is now in a cool house, looking very grand. Cannas have been perfectly luxuriant, and associate grandly with the Pampas Grass. There was a splendid bloom of Gladioli at the time of my visit, thousands of Brenchleyensis and the vars. of Gandavensis. They were all planted in the month of June. They are planted *ad lib.* in the kitchen garden and out-of-the-way places, and if you ask why, because a couple of armfuls were wanted for cutting every morning. *W. R.*

A CAMELLIA HOUSE.

IN these days, when so much attention is being paid to horticultural structures, and when so many of them are springing up mushroom-like around us, it may be well to bring before the notice of your readers the

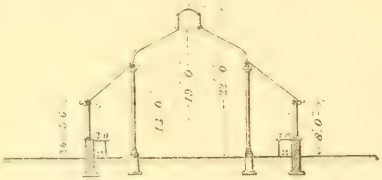


present engraving, as representing an erection which I consider well suited, not only for Camellia culture, but for plant purposes generally. As a greenhouse or stove conservatory it is commodious enough for any of the gigantic Ferns and Dracænas, most of the Cycads, and the great majority of the less majestic Palms, which comprise the most beautiful and picturesque of all tropical foliage. The Rhododendrons from the Himalayas, and the Aloes and Yuccas, which are geographically distributed over a large portion of the temperate and semi-tropical zones, if well attended to in other respects, would find a suitable home in this artificial climate. Chinese Azaleas, and those New Holland and other plants which find so much favour with exhibitors at our great shows, could be successfully cultivated and shown off to much advantage in such a house, because it is specially designed to afford accommodation for a much greater variety of plants, as to stature, than most of those generally erected.

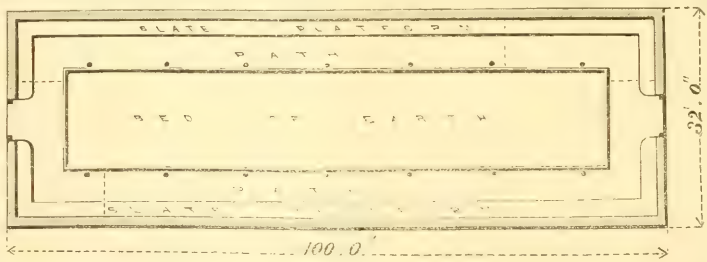
Architects in general, when preparing plans for conservatories contiguous to mansions, are apt to lose sight of utility in their desire for elegance and profuse embellishment, and on that account very costly erections are raised, totally unsuitable, not only for encouraging the growth of plants, but for keeping them in a decent state of inflorescence for a few days. It is a well-known fact that many of the hardier Coniferæ, however well prepared, in a few months look miserable, mainly through the influence of subdued light, which is one of the most detracting conditions a plant could be subjected to, engendering a feeble constitution, plant sickness, and death. All this is brought about by those fine "architectural lines" and "æsthetic proportions," which may present, when put into form, a noble exterior, but lamentably fail to secure the object for which they were expressly designed. What can be more incongruous and ugly than an elaborately finished interior, gaudy with colours of blue and gold, tesselated pavement of various shades, marble statues, and great mirrors reflecting the poverty of condition of the plants themselves, as represented in their etiolated stems, flaccid foliage, and substanceless flowers. Could such a scene or wreck be tolerated for a week out of doors? and yet thousands of pounds will be expended in rearing such structures.

I claim then for this plan utility combined with elegance, which ought to be recognised as the fundamental groundwork of all horticultural erections. I press it upon the consideration of thoughtful men, and especially upon those whose experience entitles them to speak with confidence, whether we ought not to discuss a few of the modes in practice of greenhouse engineering, more especially with reference to adaptibility for plant cultivation, so that landed proprietors and other gentlemen of affluence may the less readily err in sanctioning unsuitable erections. Much of the success of plant cultivation is due to a practical recognition of the question, and it falls within the province of every horticulturist.

Such a house as the engraving represents would not be "out of place" in any position in the demesne. It is admirably suited for construction on a lawn as a detached building, or at either side of a mansion, to which it could be joined by a corridor or corridors of similar construction. It is 100 feet long, 22 feet 6 inches in height from the floor to the highest point, and 8 feet to the lowest. As will be observed from the section, there are slate tables 30 inches from the floor, and 3 feet in width, for specimen plants of dwarfer dimensions. The centre bed is about 16 feet in width, and is represented as a bed of earth, either to receive permanently such specimens as Camellias, or for plunging such things as Tree Ferns, Palms, and the like in pots. There is abundance of head room, and sufficient breadth for either of these subjects becoming under wise culture conspicuous objects of attraction. The outline is so planned as to keep the smaller subjects on the stage surrounding the house as near the light as possible, and this can be done by a break in the centre of the roof, which instead of detracting from, rather enhances its beauty. A set of cast-iron ornamental pillars is rendered absolutely necessary by this mode, but something of the sort would have been required under any circumstances, and I am not sure, for horticultural purposes, if these are not more suitable than



girders or tie rods, forming, as they do, splendid groundwork for climbers, which could be fastened from pole to pole if necessary. Probably the house would have been better 34 instead of 32 feet in width—if for



no other purpose than to keep the pillars off the path, but that is a matter entirely of detail, not interfering with the main object of the design.

As wood is by far the best non-conductor, where there is such a quantity of glass I should deem it desirable to introduce it, at all events in the astragals where practicable, forming the main stays or rafters of iron, partly from necessity where the outline is somewhat curvilinear, and partly for the sake of elegance. Of course nothing less than 21-oz. glass should ever be employed in a house of this kind, and I have no objection that it should be introduced in the way Mr. Fish suggests.

As to ventilation, which is scarcely less important than configuration, ample provision has been made, and as there are so many methods in practice in the mere mechanical application of an apparatus, that can be best left to the engineer employed. What we have to advise upon more particularly is, how we should set air in motion—the particular points of ingress and egress; and with all deference to Mr. Fish's powerful advocacy of auxiliary contrivances to induce variety or velocity in the currents, at the will of the cultivator, which is an exceedingly clever hypothesis, I am inclined to look upon them not as acquisitions, nor yet as embellishments, but as an unnecessary luxury. The greenhouse architect, in my opinion, can easily provide for ample ventilating media; if not deemed sufficient by the ordinary mode of moveable top and bottom sashes, what is easier than to resuscitate the Polmaise system? The numerous recesses in accordance with that system keep up, if not controlled, a perpetuity of motion not at all times agreeable to the senses. For a common greenhouse temperature the ventilation provided for here will be sufficient, and so will the heating power. If, however, a stove temperature should be in demand, it would require nearly double the amount of pipes. Bottom-heat could be secured by introducing four additional pipes in the centre bed, and were the house to be used in this way, I would recommend that ventilation should be carried on by an aperture on a level with the hot-water pipes, running the entire length, so that the air could be heated before finding its way among the plants on the stages and in the bed. This is a matter of so much importance that it cannot be too forcibly enjoined. Mr. Thomson of Dalkeith, when he was so successful in forcing Grapes for his employer's table at Christmas, introduced the external air by means of pipes into a perforated tube running lengthways parallel to, and on a level with, his heating pipes. Mr. Carmichael's plan at Sandringham, as detailed at p. 735, of introducing top air at night in his Vineries through gratings inserted in the wall, is also an advantage which fruit culturists would do well to note and recognise.

Such are a few of the more salient points that occur to me in detailing the plan and placing it before your readers. I shall be glad to explain any abstruse or moot point that may be raised. As to the probable cost of such a building, that depends entirely upon the specifications, but I have no doubt that Mr. Ormson, who has carried out my views in the annexed engraving, would furnish to any one an estimate thereof. *A.*

THEORY AND PRACTICE OF VENTILATION.—No. XV.

(*Continued from p.* 1091.)

NEITHER is the loss of the water the only evil. The indirect effects of its removal are almost equally injurious. For every particle of water removed, two or three particles, supposing the air had been material, of cold is left behind in the place of the heat absorbed, and it is deposited just at and upon the very spot from which the water has been removed (scientific readers will please excuse this mode of putting it, for the sake of the vividness of the illustration). Hence the plants are not only robbed of their sap, which is their life blood, but chilled with cold as well, just when heat is drawing out the sap with greatest force: the rapid evaporation of it from their surfaces is well nigh freezing them with cold. And this happens over the whole surface. Flowers are drained and chilled as well as leaves, and it is therefore no wonder that these, especially of stone fruits, often droop and die in consequence. Their outside covering being generally thinner than that of leaves, they are more speedily drained of their juices. Sudden depressions of temperature are also more fatal to flowers than leaves. It is hardly possible to estimate the whole cooling effect of evaporation from the surfaces of plants. The table I have given, showing the rapidity with which the wet-bulb thermometer cooled, may give some idea of it; but the effect of a moving current of cold air sweeping over warm surfaces, or through a hot moist atmosphere, must be seen to be appreciated. Ice can also readily be produced in the hottest weather by evaporating liquids of stronger volatility than water. And something very like ice is often formed on the surface of leaves and flowers in hothouses by evaporation alone. When the surfaces of living plants are sprinkled over with water, as is sometimes done during bright sunshine to check evaporation, what is termed scalding frequently occurs. So much is this the case that the

practice is universally condemned, and dead surfaces only should be sprinkled or syringed under such conditions. But the scalding is seldom more or less than severe frosting. Evaporation produces sufficient cold to chill the tissues, and the symptoms, nay more, the thing itself, are analogous to ordinary frost. The upper surface of Vine leaves often suffers in the same way, hence sufficient air should be given early, even if it involves a considerable sacrifice of heat to gradually dry their leaves before the sun acquires great power. Otherwise the heat will dry them so fast that they will be not so much scalded as chilled.

My general remedies for all these evils would be moderate shading and a cool inside; shading, in fact, as a means of perpetuating that coolness, and by such means protecting our watery vapour alike from the encroachments of a cold dry outside and a hot dry inside air. Another help in the same direction is to keep the internal air moving. A moving atmosphere will not get heated to excess so rapidly, and will be less injurious if even over-heated than a stagnant one. Vegetation in a moving atmosphere will also be in a better position for resisting an excess of heat or drought; but it ought to be easy to guard against an excess of either, for neither, nor all of these expedients, are designed to supersede the necessity of efficient ventilation by the admission of external air. Only they will enable us to limit the amount admitted, and to exclude it altogether when it would obviously be injurious. Presuming, however, that it is to come in, the foregoing facts and principles will have established the necessity of making these preliminary arrangements. First, it must be warmed before it comes in; secondly, it should be watered in all cases, and washed where needful, before it is admitted; and thirdly, drinking fountains should be kept running for it inside, lest it should not have got enough water outside, so that it may quench its thirst on pure water, and not upon excessive draughts of the sap of plants. The heating of the air, and the modes of doing so before admission, will be more properly discussed hereafter. Perhaps no better idea of the best mode of watering and washing the external air before admission could be given than the Polmaise wet blanket. For watering only very coarse flannel, wool netting, or even rough canvas would suffice. In towns, or near iron furnaces or large manufactories in the country, where the air is laden with soot, dust, or other impurities, the sifting material must be close enough in texture to keep out the impure atoms. In all cases and at all seasons where it is necessary to admit cold air to houses at high temperatures, I would recommend that the ventilators be protected with some textile fabric kept moist by capillary attraction, or a gentle flow of water from a perforated pipe. Two great advantages would result from this arrangement. One is, the air would absorb in its passage through, at least that portion of water (perhaps more) that was due for the mean of the two temperatures—the outside and the in; so that it would enter furnished with part of the supply complement of water. The next advantage is that the obstruction to this passage of the air would partially heat it before it got through. In cases where the air is very foul, and water and expense no object, a delightfully salubrious atmosphere may be prepared in a heated chamber with jets of water intercrossing each other in all directions. In that case the air would enter the house through drains in a saturated and perfectly clean state.

Presuming, however, that this would seldom be done, I recommend drinking fountains for the air after it is admitted. Advisedly I have stated that the water should be kept moving. One reason for this is, that the air will lap up more water when the water is in motion than when at rest. Another is for effect. It is 'generally said that English landscape gardeners fail in the disposition of water. It is certain we have lost one of the rarest pleasures in exotic gardening for want of the employment in a running form in plant houses. There is no reason, either of a physical or monetary kind, why some of them should not be enjoyed in almost every glasshouse. Leaving this hint to work out its legitimate fruit, I hasten to notice another reason why such a liberal provision for water in the atmosphere should be made. The cold roof, as well as the hot and cold air, is constantly robbing the air of water. The temperature of the roof, unless covered or double-glazed, must of necessity be much colder than the air it encloses. Its heat can never exceed the mean of the outside and inside atmosphere. Thus in a frosty night, with the inside at 60° and the outside at 20°, the mean of the roof could not exceed, in a clear night it would not amount to 40°. The heated air is of course constantly beating against this cold surface, and every time it touches it it leaves its moisture sticking fast to the glass. The quantity of water abducted in this way is very great, and obtrusively intrudes itself upon our notice in the form of a deposit, ending in drip on the inside of the glass. Every cubic foot cooled from 60° to 40° would lose one-half, or 2.9 grains of moisture, and as the whole internal atmosphere is constantly impinging upon and presenting fresh surfaces to the cold glass, it is probable that at least two-thirds of the entire aqueous vapour is thus lost.

In my next paper I shall endeavour to point out a remedy for this state of things, but in the mean time it is desirable to bear this heavy abstraction in mind in making provision for a proper supply of water in the air. Where flues or stoves are used for heating purposes, they also absorb water, and their drying powers must be counteracted by placing evaporating pans on their hottest surfaces. The same contrivances are equally useful although not so essential with hot water pipes. A few weeks' use of the dry and wet bulb thermometer will determine how much evaporating surface is required for a given space at any temperature. Of course the hotter the water becomes the faster it will evaporate, and *vice versâ*. In pans placed on hot-water pipes there is no danger of the steam or vapour ever getting too hot. Those, on the contrary, cast on the pipes may sometimes send forth steam hot enough to scald near the boiler. The safest way is to empty them entirely when there is any danger. I also recommend the general air moisteners to be distinct from the heating apparatus. A small pipe from the boiler, however, to heat the water at will would be a great improvement. It would give us the option of distributing any amount of vapour by simply raising the temperature of the water, and thus prevent the general warmth of the house from being expended in its elevation. Of course advantage might also be taken of the usual modes of damping stages, floors, walls, &c., the spots where the sun's rays strike being the grand focusses for lifting the water.

Having said so much about furnishing the air with water, it must not be supposed that I advocate this being done to excess. For some purposes, such as Fern and Orchid culture, at certain seasons a saturated atmosphere is best. Then the wet and dry bulb thermometers will read alike. From this point the drier the air becomes, the greater the diversity between them. For quick succulent growth, whether of flowering plants or fruit, the wet bulb should read 4° lower than the dry. Plants grown for their foliage should also have more moisture than those grown for flowers or fruit. The ripening period, whether of flowering or fruit-bearing plants, should also be drier, indicating 10° or 15° between the wet and dry bulbs. But even in this stage excessive dryness, especially at night, should be avoided. In nature we find that although the ripening season is seldom or ever a rainy one, it is generally distinguished by heavy dews. Our leaves under glass are deprived of this, and I believe some of the difficulties we occasionally experience in finishing off fruit—Grapes especially, arise from their being kept too dry. Possibly the sap becomes too inspissated to convey the delicate food which, to give the final piquancy to the fruit, through the daily contracting, because rapidly consolidating interstices of vegetable tissue. Be that as it may, I cannot believe that Nature sends her copious dews in vain, and an equivalent for them ought to be furnished in artificial culture. Again, in the dormant stages of life of succulent plants, Orchids, &c., great dryness is necessary. The absence of water can only keep them at rest; and as rest at one period seems to be the one thing needed for successful growth at another, of course it must be enjoyed. The wet bulbs may then read from 15 to 30°, if so much disparity can be obtained in our climate, lower than the dry. Again, in dull weather in winter the whole of the conditions necessary to secure the proper amount of moisture must often be reversed. When ripe fruit is hanging in houses, or succession Pine plants growing in pits, any surface that could possibly evaporate water should be covered over. I saw a powerful illustration of the necessity of this last year; a house of fine Muscat Grapes went off suddenly, as if from damp. The whole floor was perfectly hard and dry; air in abundance had been given, frequent fires used, no rain admitted, nor a single pot left in the house. One thing only was forgotten: a small square tank in one corner of the house was left uncovered. The dry air had travelled often enough, and with such good effect to this tank, as to lift and distribute throughout the whole house sufficient water to rot most of the Grapes. There was positively no other cause, and this proved sufficient. *D. T. Fish.*

Home Correspondence.

Heat and Ventilation.—In common with many of your readers, I have felt not a little interest in Mr. Fish's papers on Ventilation. One cannot help admiring the fulness, the fluency, and occasionally the vigour of his style, which would often do honour to a practised professional writer. It is to be regretted, however, I must say with "A.B.," that he has not limited himself to the more practical departments of his subject; for he has shown that at present he is not master of the *theory* of ventilation. Besides, having strayed into the sciences of heat and meteorology, and having speedily got beyond his depth, he has fallen into various errors of no common magnitude. It was, to say the least, venturesome to write on matters for the successful treatment of which he has probably had no scientific training, and in reference to which he did not possess the most recent information. It is true that he understands Dr. Wells' Theory of Dew. That is now so well known that Mr. John Stuart Mill, in his great work on Logic, employs it as an illustration of both the inductive and deductive methods in scientific inquiry. I do not wish to undervalue his attainments, but the knowledge he possesses, seems to make up but a poor preparation for the discussion of some of the most difficult questions in physics. To go no further back than his answer to "J. S.," printed at p. 1117 of your Journal, that paper contains more errors than he could count on the fingers of one hand. It would be easy, did your space permit, to prove this in detail; but it may be sufficient to point, as a specimen, to the error into which he has fallen as to the modes of the propagation of heat, in col. 3, p. 1117. In a former paper he recites, I might say, parades the terms radiation, conduction, and convection, as if he understood them. In the passages referred to at p. 1117 he ascribes the ascent of currents of heated air to conduction, whereas every tyro in the science knows that they are due to convection, and indeed are employed as one of the most common illustrations of the latter principle. It is impossible, he says, to separate radiation from conduction, still confusing, I suppose, conduction with convection; and if not, the difficulty must be wholly peculiar to himself, for most people are aware that no two properties of heat are more distinct in nature. Then, in the matter of radiation, he asks, how does the calorific ray? It seems he has never heard of the rival theories of the propagation of heat, viz., the emission theory and the vibration theory, corresponding to the two theories of light which have divided the suffrages of the scientific world, since the times of Huygens and Newton. With this confusion of ideas and paucity of information, one cannot be surprised that he has refused to accept the view of the action of aqueous vapour on radiation, tendered to him by "J. S." I am not concerned to defend "J. S." throughout. If he has said that visible clouds and invisible aqueous vapour offer precisely the same amount of obstruction to radiation, he has affirmed what has not yet been ascertained, and what perhaps can never be proved. Perhaps all that "J. S." meant was that aqueous vapour presents a barrier to radiation as well as cloud vapour. However that may be, "J. S.," or rather Professor Tyndall, is unquestionably right in maintaining that invisible aqueous vapour has a much greater power of intercepting and returning radiant heat than dry air has. If Mr. Fish has been confounding only the older books, it is not wonderful that this principle is totally new to him, for it is only recently that it has been discovered and established. I cannot find a trace of it in the works of Daniell, Humboldt, or Lindley. Probably it was dimly seen, or at least suspected, by the observers in the Gardens of the Royal Horticultural Society at Chiswick. I have reason to know that Mr. Robert Thompson (whose 40 years' services to meteorology have not yet received the public recognition which they deserve) was in the habit of dreading clear nights and very dry air in spring, when there was no moisture in the air to obstruct the escape of heat by radiation. Indeed, one can scarcely have attended to the phenomena of the red moon (*la lune rousse* of the French) in April, and the nip which Rhododendrons annually suffer between the 20th and 30th of May—in my neighbourhood it is generally on the 27th—without forming some rude guess of the kind. Be that, however, as it may, it is now admitted by all men of science that Dr. Tyndall has established the principle referred to by demonstrative experiments; and that, by the aid of the superb apparatus at his command in the Royal Institution of London, he has done so in a manner which precludes all dispute. I refer for details to his interesting volume on "Heat considered as a Mode of Motion." His method is substantially this: he directs a stream of radiant heat (say from a cubical vessel with boiling water or a red-hot ball within it) through a tube, open at both ends, and directed to the pole of a galvanometer or thermo-electric pile, which of all instruments is the most sensitive to heat. Into the tube (which however he did not find essential) he in his experiments at first admitted in succession first dry air, and then air in varying states of humidity. The increase of moisture invariably caused an augmented recession of the index of the galvanometer, corresponding to the fall of a thermometer. In short, these numerous and varied experiments showed that, in intercepting radiation, moist air, in the proportion of the aqueous vapour present, acted with 30, 40, 50, 60, 70 times the energy of the dry air in which it was diffused. And comparing the action of one atom of vapour with that of one atom of air, he calculates that the power of the former is 16,000 times that of the latter. However these quantitative results may be modified by future inquirers, there cannot be the slightest doubt that the principle, viz., that aqueous vapour possesses a vastly greater power of intercepting radiant heat than atmospheric air simply considered has been fully and incontrovertibly established. The fact is allowed by all men of science, and is confirmed by everything that is known in meteorology. As an established truth it has been introduced into Dr. Atkinson's excellent edition of "Ganot's Physics," which is now used as a text-book in the universities, and into the admirably arranged and clearly reasoned "Treatise on Heat," by Dr. Balfour Stewart, the highly accomplished Superintendent of the Observatory at Kew. Dr. Tyndall, according to his wont, contents himself with a popular enunciation of the practical results of his discovery, in words already cited by "J. S.," but which are of sufficient importance to warrant their repetition. He says—"No doubt can exist of the extraordinary opacity of this substance (aqueous vapour) to the rays of obscure heat, particularly such rays as are emitted by the earth, after being warmed by the sun. Aqueous vapour is a blanket more necessary to the vegetable life of England than clothing is to man. Remove for a single summer night the aqueous vapour from the air which overspreads this country, and you would assuredly destroy every plant capable of being destroyed by a freezing temperature. The warmth of our fields and gardens would pour itself unrequited into space, and the sun would rise upon an island held fast in the iron grip of frost." ("Heat Considered as a Mode of Motion," p. 403.) Now, Mr. Fish has probably heard that "facts are chiels that winna' ding, and dinna' bear disputing." Let a fact be established, as Dr. Tyndall has established his, and any general argument against it, however plausible, must either be fallacious in itself, or must be deduced from false premises. Mr. F.'s attempts, in the present instance, do not touch it. He is indeed a doughty controversialist. He will not yield an inch, he says, till he is convinced that he is wrong; in which resolution I decidedly sympathise with him; but then he should be open to conviction, and be willing to receive it from any quarter. If he will take my counsel—and it is most friendly, I assure him—he will read carefully the books above mentioned, particularly those by Tyndall and Balfour Stewart. If he declines, it will only be because he is not willing to be convinced;

and if he does read them and is not convinced, it is to be feared that some will say that he is incapable of understanding the subjects he professes to discuss. Some of these subjects are of no inconsiderable difficulty. Dr. Tyndall has shown a different spirit. After a careful and copious statement of his remarkable discovery, he modestly expresses his regret that the incompleteness of his knowledge prevented him from making application of it to meteorology. This mighty climber of the Alps, who did not shrink from attempting the Matterhorn, is too cautious, it seems, to soar to heights of science to which his knowledge and culture do not amply warrant him to wing his flight. But Mr. Fish has already rushed in where Tyndall feared to tread. Mr. F., I think, is bound to excuse, or at least palliate his temerity by more careful study, and if he has not magnanimity to acknowledge in print that he has erred—that is an amount of virtue not to be expected from most men—the world perhaps, ill-natured as it is, will be satisfied if he observes a sacred silence on the subject. *J. S. Secundus.*

New Late Grape.—Will any of your gentle readers and impartial correspondents give me the benefit of their opinion as to the merits of Mrs. Pince's Black Muscat Grape, which is said to keep well till April? *W. L.*

Evergreen Beds.—Beds and borders which often lay bare for many months in winter, may be made to wear a very pleasing aspect, with little expense or trouble, by introducing Evergreens, which may be had at most places. Small points from shrubberies, cut into lengths of say 6 inches, and set upright, either ribbon fashion or formed into beds according to taste, have a very good effect. I would suggest Variegated Holly, Common Holly with berries on it, Variegated Box, Aucuba japonica, Yew, Common Laurel, Berberis, and Scotch Fir. Stachys lanata, and Cerastium, might be used for edging or for small corners with advantage. The shrubs just named will retain their colour from November until March, and I consider them much better suited for the purpose than Variegated Kale. *T. T., Warwick.*

Sarracenias.—Your Paper of the 1st inst. contains (see p. 1138) an interesting article on "Sarracenias," relating to which the writer has made a mistake of considerable importance, which I trust he will pardon me for noticing. At the end of the second paragraph in the article alluded to, it is stated that "seedlings do not appear to be common, and are unknown in this country." It might, as the sequel will prove, have been better for the writer, when treating on so doubtful a subject, to have stated, that in so far as he was then aware of, the case was such. I have now to state positively that seedlings of Sarracenias are not unknown in this country, presuming that Ireland is included in the "this country." On two occasions seedlings of Sarracenias have been raised at Glasnevin, first in the autumn of 1850, and again in the spring of 1851. I have however freely to confess, that I was not then aware of any particular interest being attached to the matter, thinking the same thing had been frequently done at other plant establishments, and, consequently, no further notice was taken of it than the appertaining to the mere botanical question of the plants being exogenous or endogenous. Mr. D. Orr, who sowed the seed and managed the young plants until they were distributed pretty freely in exchange for other plants, states that he sowed the seeds on the surface of rotted Sphagnum, which was placed in a common flat or pan for pots to stand in, and slightly covered them with a very thin dusting of propagating sand, covering all with an ordinary bell-glass, at the outer edge of which he occasionally poured water, so as to keep the Sphagnum within the glass constantly saturated. We are not now sure how many days it took until the seeds germinated, not having made any note of the circumstance at the time; but so far as we can now reckon, it may have been about four weeks. The young seedlings came up quite thickly, and progressed favourably, so as to make plants about 1½ inch high the first summer. The species was Sarracenia variolaris, which at all times requires more heat than the other sorts ordinarily met with in cultivation; consequently, the young plants were kept in a warm house during the first winter, which had the effect of preserving them. With reference to the botanical question, the cotyledonary leaves were slender, awl-shaped, solid projections, one longer than the other, but not such as to leave any doubt that the plant was exogenous. The solid awl-shaped leaves continued to get longer according as they were produced, to the number of 6—8, when they became tubular, but no lids were produced on them until the plants were more than half an inch high. *D. M.* [Will "D. M." when he has an opportunity, be good enough to forward us some seedling Sarracenias in different stages? EDS.]

Broccoli.—Seeing in your Paper of the 17th of November (see p. 1093) that Mr. J. C. Nicholson, of Thirkleby Park, had cut some fine heads of Backhouse's Winter White Broccoli on the 7th of that month, I beg to state that I have cut the same kind from the 20th of October up to the present time. To-day (December 1) I have cut my largest head, which measures 8 inches in diameter. Backhouse's is the earliest and hardiest kind of Broccoli I have ever grown. There are several heads of it coming forward. It was sown the last week in April and planted out in June. *Robert Stokoe, Gardener to H. C. Marshall, Esq., Westwood Hall, Leeds.*

Village Maid Pelargonium.—In your report of Mr. W. Paul's nursery (see p. 1095), Village Maid is described as "a rich deep rose, with a large white blotch on the upper petals; habit dwarf and compact, leaves zonate—a charming variety, the two colours in the flowers contrasting well with each other, and it stands wind and weather well." I may add that this variety merits the description just given, for out of 70 varieties that I proved this summer, none looked better than it, and in wet weather this kind was gay, while the other varieties had done flowering. It is well worthy of a place in all gardens. *R. D., Sunderland.*

Hardy Bedding Plants (see p. 1092).—Have any of your correspondents employed the different varieties of Clematis as bedding plants, or have they only used them for covering walls, trelliswork, verandahs, &c.? If they have not tried them as bedding plants, my last season's experience of them treated in that way may not be without interest. About three years ago I noticed that several of our "stooleries" flowered profusely in the autumn close to the ground. I therefore concluded that if Clematises were pegged down like Verbenas they would make good and permanent bedding plants. Last summer I tried the experiment, which has proved a perfect success—so much so, indeed, that I intend to use Clematises next season on a larger scale than I did last year, and to note the result. Being interested most in the hybrid seedlings raised in our establishment, of which Clematis Jackmanni and rubro violacea are the type, I experimented upon these autumn-flowering varieties, for which I shall prepare beds during the winter months by turning in a liberal quantity of first-class rotten manure, and, if near at hand, a fine mixture of calcareous soil. By the end of March or beginning of April, I hope to plant out the Clematises, pruning them back to within five or six breaking buds—that is from 4 to 6 inches from the surface—in order that the plants may start from the back buds. I will then peg them down as they progress, as one would Verbenas, taking care that this is done before they have made too much growth to get entangled with each other. By the first week in July they will commence flowering, and will continue profusely in blossom till the end of October. Should any one wish to have a succession-bed, instead of pruning back early in April, he should merely cut back the young wood by the end of May. This will induce the back dormant buds to burst, and the plants will come into flower about August, and will continue in beauty till the blooms are destroyed by frost in November. The advantage which the hybrid seedlings possess over some of the other varieties, is that after they are once established you can prune them by the end of November or near the bed of the bine, and allow winter bulbs (which can be planted amongst them) to flower before they make growth in the spring. *G. J., jun., Woking Nursery.*

The Food of Plants.—In reply to "J. D.," I may observe, that it is a fact proved beyond all controversy that leaves give out both water and gases. The strong probability is that as their structure is so pervious they also take them in. The likelihood of their doing so is strengthened by the fact that the size, vigour, and healthfulness of leaves is largely dependent upon the quantity of suitable food present in the air; and that dews and rains seem to have a direct and immediate effect upon foliage; but, leaving presumptive evidence, I come to direct experiment. Begonia, and many other leaves laid upon pure silica, or suspended in a moist atmosphere, will not only push, but emit roots and form plants. How are they fed for a months or two in the absence of roots? Even "J. D." must admit, solely through the leaves themselves. The same is true of cuttings. Some cuttings continue three or four months without roots How are they fed during that period? Many cuttings again will root much sooner the more numerous the leaves left upon them. How can that fact be accounted for, except on the principle of leaf-feeding? Again, suspend leaves of many Ferns in a moist atmosphere, and they will live, and produce young plants on their extremities. Such varieties as the Platycerium or Acrostichum, alcicorne and grande will live for years suspended on a hard block of wood or impenetrable stone, their large prostrate fronds growing down and entirely covering the roots with a thick, and as far as a passage through is concerned, impenetrable sheath. They are solely sustained by the atmosphere. Then there is the case of evergreens newly transplanted. It is not true that they imbibe water and food from the air? and are not over-head watering, genial showers, and a saturated atmosphere desired for them for that reason? I am aware that it will be contended that these act chiefly as checks to perspiration, and that the tree lives or thrives in the interruption of root action, in virtue of the husbanding of its internal resources and the expenditure of the organisable matter it already contains. While attributing all due importance to these, I think the facts here stated amount in their accumulated force to all but a positive demonstration that leaves inspire as well as perspire both water and gaseous food. Even Mr. Knight, perhaps the most careful experimenter we have ever had, believed in leaf feeding, and distinctly states that, "if a branch be taken from a tree when its leaves are matured, and one leaf be kept constantly wet, that leaf will absorb moisture and supply another leaf below it on the branch." *D. T. Fish.*

Lime for Peaches.—The more proofs of successful culture on chalky soils the better. I have never doubted that fruit trees may be, and are successfully grown on soils in which chalk is found. The difficulty over large tracts of this country would be to find soil *not* calcareous to grow them in. The fact is, chalk, in some of its forms, is an important constituent of probably nine-tenths of the soil of this country. Fruit trees, per force, grow in it whether they like it or not. The question, then, is narrowed to this—is the presence of chalk a mere coincidence? or does it sustain the important relation of cause to the gratifying effects of health and fruitfulness? I cannot admit that this question is by any means settled. For first, it is well proved that an excess of chalk is unfavourable to successful Peach growing. I have never seen them long lived or healthy on the chalk formation. The roots (I write from actual observation) seem to skim over and turn away from it. Lumps of chalk in the soil are scarcely ever encased in roots—old mortar frequently is, but probably the roots are in quest of the hair, of which they are ravenously fond, and care nothing for the lime which is incorporated with it. Again, it must also be granted that Peaches grow and fruit well in soils almost destitute of chalk. Consequently chalk is not essential to their well-being. Further, Peach trees cannot consume chalk as such. It is surely possible for Peach trees growing in ordinary earth to manufacture their modicum of chalk, without having the ready-made article thrust upon them whether they need it or not. When our most eminent cultivators are laying down a law, that whatever is found in plants or other produce should be applied to the soil in the form in which it is found, it is time to return to the study of first principles, and reconsider the whole subject of the action of inorganic manures. Deferring this to a more convenient opportunity, I will only state here that the action of these is more chemical and mechanical than manurial. Not but what the addition of lime, magnesia, alkalies, &c., to soils entirely without them may be of service, but their chief functions are solvent and texturial. In no case can they be absorbed and assimilated at once, or in their perfect state, as hinted at by your correspondents. And hence I repeat the reason assigned for the use of chalk by M. Bréhaut, namely, that it would enable Peaches to set without dropping, because it formed part of their stones, is "unphilosophical and insufficient." The additional cases cited by "Facile Princeps," prove that both Peaches and Vines will grow on chalky soils, which I have nowhere denied. It remains, however, to be proved that they grow in virtue of the chalk. In reference to the French Vineyards—a dry bottom, a warm position, and the bright sun, have probably more to do with the quality of the wine than the chalk; whereas the choice of the French husbandman may be determined solely by use, custom, or upon economic grounds, as soils too thin and poor to grow aught else produce good wines. Besides, I believe chalk is more suitable for Grapes than it is for Peaches; although I have yet to learn that they contain as much lime as Peach stones, or that the best wines owe any of their excellence to an excess of lime in the Grapes. *Excelsior.*

Pyrifère Pear Tree.—I have in my garden a pyramidal Beurré de Capiaumont, which nearly every year, since it was planted in 1855 or 1856, has yielded two distinct crops. This year it did not wholly cease flowering, from the usual period up to about the middle of September, the greatest quantity of bloom being in July. I have already gathered from the tree two crops as formerly; the first, early in October, not a good one, as many of the blooms were destroyed by frost and chilling winds; the second, last week, better as to quantity, and there now remains upon the tree (22d Nov.) a profusion of little Pears, varying from the size of the egg of a linnet to that of a pheasant, and some rather bigger. Although these are all as hard as stones, strange to say they are attacked by multitudes of little birds, which have eaten up numbers of them entirely, and damaged many others, even of the smallest size. I have, however, now protected the fruit, and as the tree still retains its foliage, although those around it are for the most part leafless, it is very probable that I may yet obtain a third crop, fit for dessert, of fairish size and more numerous than the two others put together, without reckoning the very small ones, which, of course, will come to nothing. Is not this a most singular occurrence? The tree has never been root-pruned, but is regularly pinched during the summer, and it grows upon a 'rab' subsoil, overlaid with carted loam about 20 inches in depth, and is exceedingly healthy, without the slightest appearance of canker or moss upon it which attack its associates; yet the shoots are less exuberant than those upon them. Upon examining the roots, I find that although the tap ones have penetrated into the rab, there is an immense cluster of newly-formed ones in the upper soil, which do not extend far, and to that circumstance, I suppose, may be attributed its extreme healthiness and fecundity. *Amateur.*

Double Cropping Vines.—In your volume for 1861, p. 733, will be found a full account of a Vine on which I am about to make a few remarks. Several other papers have also appeared in that and other years on the same subject; I think the last notice of how it was going on was in December, 1863. I have no doubt that some, like myself, have thought that the Vine in question could not continue to ripen two or three crops in one season for many years, and my saying nothing about it for so long a time is very likely to have led them to think they were right. The bearing of three crops in one season I have never attempted to repeat, but it has borne two crops with undiminished vigour till this summer. In early spring of this year I fancied the buds were going to break very weakly, and that the Vine had done its work. Being anxious to save it, however, I determined to sacrifice the crop, whatever it might be, by rubbing off all buds as fast as they appeared, except some at the root end. This I continued to do till that bud had formed a shoot with leaves enough to prevent bleeding when I should cut out the old stem. In due time this was done without bleeding, and in order to show you that my fears as to its weakness were groundless, I send you a leaf from the warm end, and a tendril gathered at 30 feet from the commencement of growth; also a piece of bark at the same point of growth to show its colour, which indicates its ripeness. The shoot is now 36 feet long, having been accidentally broken off twice, which, of course, has prevented it attaining a greater length. Probably I should not have sent you this just now had you not asked for instances where fruit trees were growing in hard soil. This Vine, as you

will see by the reference given, has been planted nine years. It is planted close to the corner of the house or pit, on the northern side, and being in the framing ground, we are continually walking and wheeling over its roots. It has nothing to save it, and it has never had a handful of anything to help it since it was planted in natural soil, if it can be called soil, as previously described. The leaf measured, when fresh gathered, 15 inches each way. *Jasper Standivill.* [A fine leaf. EDS.]

Societies.

ROYAL HORTICULTURAL. *Dec.* 4 (*Scientific Meeting*).—J. Bateman, Esq., F.R.S., in the chair. After the election of new members, and the usual announcement of awards made or to be made, the Chairman offered a few remarks on the different subjects exhibited. A case of hermaphroditism in the common Aucuba, furnished by Mr. Standish, of the Royal Nurseries, Ascot, first came under notice. The plant in question, a seedling with the cotyledons still attached to it, contrary to the usual habit of Aucubas, bore hermaphrodite flowers, a circumstance of considerable importance, provided the peculiarity can be perpetuated, inasmuch as artificial fertilisation will not have to be resorted to, as it is now; but in time, it is hoped that bees and other insects may effect the impregnation for us. It was considered worthy of a Certificate, which however the Committee ultimately decided on withholding until it had borne fruit. Attention was next directed to a nice collection of berry-bearing plants, and others remarkable for the beauty of their bark, from Mr. Wm. Paul, of Waltham Cross; and then an upright-growing variety of Taxus adpressa, called T. a. stricta, from Mr. Standish, was adverted to in terms of praise, inasmuch as it was said that any new addition to hardy evergreens is invariably received with delight, especially in the north; and as the variety in question is strictly growing evergreen, with a much better habit than Taxus adpressa, it could not fail to receive a more than ordinary welcome. Concerning a fruit of Passiflora macrocarpa which was exhibited by Mrs. Tennant, The Glen, Innerleithen, it was remarked that it was as large as any Melon, and it was only wished it was as good; but the eatable part, the jelly-like pulp in which the seeds are embedded, is small and not very agreeable to the palate. It was stated to be nearly allied to P. quadrangularis, and to occupy an intermediate position between P. maliformis and P. edulis. The fact, it was said, was still a fine fruit, and grown for the sake of their fruit, a remark which Mr. Bateman immediately recalled; for he said that at that moment he had forgotten Mr. Hullett's variety, which, however, he had no doubt was the same as P. macrocarpa. An extract from a Trade list, in which the wonderful properties of Mr. Hullett's fruit were set forth, was then read, and it was hoped that some gentleman who had tasted Mr. Hullett's fruit, would kindly come forward at the next meeting of the Society and state his experience in reference to it, as well as any one who may have seen those Durions and Mangosteens, which, according to Mr. Hullett, have been fruited in this country. Attention was then turned to Orchids, which were shown in considerable profusion, illustrating that by means of a collection of them, plant-houses might be kept nearly if not quite as gay in December as in June. Both Cattleyas and Dendrobiums especially were stated to be at present in wonderful beauty. From that collection were exhibited spikes of the hybrid Calanthe Veitchii, one of the most effective of winter Orchids, far outstripping in beauty even its parents, the Calanthe vestita and deep-flowered Calanthe Masuca. Mr. Dicker also came the true Epidendrum vitellinum majus of Lindley's "Sertum Orchidaceum," and other fine Orchids. A plant of the Mexican Laelia furfuracea, which was shown by Mr. Low, of Clapton, was stated to be the true kind, most of the varieties so named being but albumaliis, which is very different from furfuracea. From Mr. Low also came a plant of Eriopsis rutidobulbon, a flower-spike of which was shown by Mr. Bateman, and of a yellow Oncidium, contributed by Messrs. Backhouse; it was stated that it was deliciously sweet-scented. A new Epidendrum, shown by Mr. Cooper, 46 Kent Road, was named by Mr. Bateman E. Cooperi, in compliment to that gentleman. Mr. Anderson's fine spikes of Odontoglossum Alexandræ, and of Cymbidium giganteum alluded to last week (see p. 1138), were then adverted to; it was stated, concerning the latter, that the glorious O. Alexandræ, that they were not only the finest that had ever been shown in this country, but that no such beauty as they exhibited had ever been approached even in the countries of which they are natives. From Mr. Anderson also came some charming varieties of Lycaste Skinneri, which formed an agreeable contrast with a pure white-flowered variety of the same plant which was shown by Mr. Wilson, gr. to W. Marshall, Esq., of Enfield. After alluding to certain obscure small-flowered Orchids which were to be sent to Mr. Wilson Saunders to be figured in his "Refugé" for botanical curiosities of little horticultural interest, Mr. Bateman referred to a Masdevallia, which he said occupied one extremity of a large genus, in which are some most remarkable Orchids not yet imported, but which he hoped some day to see in cultivation. At present we have only two fine kinds, one white, the other scarlet, and attention was then directed to a drawing of M. elephanticeps, a showy kind well worth introducing, as well as to others. Masdevallias, it was stated, being somewhat tender, required special care in importing; M. Warscewicz was said to to have brought one of them safely to this country in a cigar box. It was came Mr. Veitch's magnificent Dendrobium called 'giganteum, concerning which the following letter from them was read:—

"We send for exhibition to-day a fine new Saccolabium, imported from India during the spring of the present year under the name of Saccolabium giganteum. It is evidently a free grower and an abundant flowerer, besides which, as will be easily discovered, it is most delightfully scented. The credit of its introduction is due to Lieut.-Colonel Benson of the Indian army, who was also the fortunate introducer of the fine Vanda Bensoni, lately figured in the "Botanical Magazine." We also send a specimen of Sacolabium violaceum for comparison."

To the last it is evidently allied; but in beauty it greatly supersedes it. The name proposed for it is Saccolabium densiflorum. Attention was then directed to the number of fine new Orchids which had been exhibited to the Society during the year now about to close. There were, Mr. Bateman stated, no fewer than five. First came Dendrobium thyrsiflorum, shown in June last by Mr. Wilson, gr. to W. Marshall, Esq., a mass of white and gold, which at the time was mistaken for a white variety of D. densiflorum. Next came D. MacCarthiæ, which has been exhibited by Mr. Bateman; but at that time he had no idea that it would prove to be a plant of so much beauty as it has done, its flowers keeping fresh and good for two months at a time. A third is Cattleya Dowiana, also shown by Mr. Bateman, but a plant with which Messrs. Veitch's name must likewise be associated. A fourth is the Saccolabium densiflorum mentioned above, from Messrs. Veitch; and the fifth and last is the Mesospinidium sanguineum shown at the last meeting by Messrs. Backhouse, of York—all Orchids of great beauty and easy management; it was hoped that next year might be equally fertile in the production of first-class novelties.

As this was the last meeting of the year, the Rev. Joshua Dix moved a vote of thanks, which was seconded by Mr. Wilson, to all who had contributed to these meetings during the year, and he trusted that during next season they might be equally well supported. A vote of thanks was also given to the Chairman for the interest he had always evinced in matters connected with these fortnightly meetings, to the success of which he has largely contributed.

Dec. 4 (*Floral Committee*).—To Messrs. Veitch was awarded a First-class Certificate for their Saccolabium densiflorum. They also exhibited Odontoglossum Ehrenbergii and other Orchids. Messrs. Low showed, among other things, a good example of the true Odontoglossum Insleayii. Saxifraga tricolor, a charmingly-variegated kind, was shown by Mr. Standish, who received for it a Special Certificate, and also a First-class Certificate for his new Yew. A yellow-flowered Cruciate of Colchis, Aurantiaca came from Mr. Buchanan, gr. to Captain Trotter, Dyrham Park, Barnet; and Mr. Turner of Slough showed a basketful of seedlings of Adiantum farleyense, most of them bearing fruit, and all differing more or less from the parent. From Mr. Cooper came the pretty little Sophronitis grandiflora, fine flowered plants of which also came from the Society's garden. To Mr. Marshall was awarded a First-class Certificate for his pure white variety of Lycaste Skinneri. Mr. Bull furnished a fine panful of the silver-tipped variety of Selaginella denticulata, and Mr. Wilson put out flowers of his hybrid Nosegay Pelargonium, of which further notice will be taken in a future Number. From the garden of the Society came Bouvardias, Primulas, and Orchids.

Dec. 4 (*Fruit Committee*).—Mr. Cox, Redleaf, received a Special Certificate for a collection of Apples in which were good fruit of Ribston Pippin, Court of Wick, Golden Harvey, Golden Russet, Golden Winter Pearmain, Scarlet Pearmain, Harvey Apple, Nonpareil Russet, Sam Young, Cox's Orange Pippin, Christie's Pippin, Golden Reinette, Blenheim Orange, Ivy Kent, Golden Knob, Hoover, Pippin, Kirk's horse, Seek-no-Further, and Bedfordshire Foundling. From Mr. Smalley, gr. to the Hon. A. Seymour, Norton Hall, Daventry, came a spike of Bromelia Commelyniana, 22 inches in length, covered with fruit, not unlike that of Cook's Golden Drop Plum. The plant on which it was grown was stated to have occupied for five or six years a position among other plants, which it overtopped, in the centre of a temperate plant stove, where it was allowed to grow without any restriction or disturbance. Two fine Pine-apples, to which Special Certificates were awarded, were shown by Mr. Douglas, gr. to F. Whitburn, Esq., Loxford Hall. They consisted of Charlotte Rothschild, 8¾ lb.; and Smooth-leaved Cayenne, 7 lb, 10 oz. From Mr. Jack, gr. to the Duke of Cleveland, Battle Abbey, Sussex, came the pink Brinjal-like fruit of Holbollia latifolia, of Cole's Golden Drop Plum. The plant on which it was grown was stated to have occupied for five or six years a position among other plants, which it overtopped, in the centre of a temperate plant stove, where it was allowed to grow without any restriction or disturbance. Two fine Pine-apples, to which Special Certificates were awarded, were shown by Mr. Douglas, gr. to F. Whitburn, Esq., Loxford Hall. They consisted of Charlotte Rothschild, 8¾ lb.; and Smooth-leaved Cayenne, 7 lb, 10 oz. From Mr. Jack, gr. to the Duke of Cleveland, Battle Abbey, Sussex, came the pink Brinjal-like fruit of Hollbell

in compliment to Elisa Berkmans d'Heyst-op-den-Berg, wife of a Belgian pomologist. We have observed that in the case of a fruit or flower being named in compliment to a lady, and more especially to a Madame, such fruit is generally found to possess considerable merits. There may be two reasons for this: first, were it not so, it would not likely be published; and second, there is the strong probability that the compliment would not be accepted if the subject were not possessed of some worthy qualifications. Near the Pear Madame Elisa is described, in the *Journal de Pomology*, *Belge* as having the flesh fine, melting, buttery, its juice very abundant, sweet, with a most agreeable perfume; and doubtless when thus found it had received its name. But Professor Decaisne informs us that the variety varies much; according to soils and seasons it is middle-sized or large, with the skin green or yellow, with flesh melting or half-melting, white or tinged with rose-colour, sugary or very acid.]

Poire Triomphe des Mons.—Tree vigorous, and an abundant bearer; shoots of medium thickness, very flexuose; leaves glabrous, or slightly pubescent, cordiform ovate, acuminate. Fruit large oblong pyriform, obtuse at the stalk, which is short and of medium thickness; eye large, placed in a regularly-formed shallow cavity; skin very smooth, greenish-yellow, changing to citron-yellow at its complete maturity, finely dotted with brown, and marked with a large patch of fawn round the insertion of the footstalk; flesh white, fine, very melting, sugary and rich, with somewhat of a citron perfume. Season, October, and will keep till towards the end of November. This is one of the many seedlings raised by Dr. Van Mons, and named after his son, Conseiller à la Cour d'Appel de Bruxelles.

Poire Grand Soleil.—Tree pyramidal, very fertile; shoots fawn or somewhat ash-coloured; leaves lanceolate, rounded at the base, and acuminate, their margins crenulated or nearly entire. Fruit above middle size, oblong obtuse at the eye and stalk; the latter is short, thick, and fleshy; eye open in a shallow depression, skin covered with cinnamon russet, intermixed with ferruginous spots; flesh yellowish white, very melting and sugary, with a rich acidulated, perfumed juice; it resembles in flavour the Beurre Bosc—and this says much for it. Season, November, and sometimes keeps till January. This excellent variety was raised in the garden of Major Esperen at Dukel, at the foot of the wall of a brewery called the "Grand Soleil," and from this the tree takes its name.

Outlines of the Comparative Anatomy of Vertebrates. Vols I. and II. Fishes, Reptiles, Birds, &c. By Richard Owen, F.R.S., &c. 8vo. London: Longmans.

It was a happy thought of the Messrs. Longman when it occurred to them to place at Professor Owen's disposal all the blocks employed in illustrating the articles on the comparative anatomy of the higher animals given in Todd's Cyclopædia of Anatomy and Physiology. There is no department of human knowledge which requires so much illustration as that of the kindred sciences of Zoology and Anatomy; and perhaps, we may also say, that as regards the highest groups of animal life, there is no one single individual in this or any other country *capable* of doing such justice to the subject before us as Prof. Owen. We are glad, for his own sake, that the author has not attempted a complete treatise, embracing the structure of the lowermost creatures, for it is quite impossible, now-a-days, that any one person should be able to do justice to the whole science, except it be treated in a very rudimentary manner. Fortunately, however, the publishers, with a very legitimate view to their own interests, as well as to those of the public, have cast this new work into a shape very closely corresponding with the previous "Lectures on the Invertebrate Animals," by the same author; so that any person having in his library the former work will naturally be desirous, on grounds independent of the intrinsic merits of the present treatise, of possessing the present volumes, which, in some sense, may be regarded as a continuation. From what we have above stated, however, it must not be concluded that all the woodcuts are taken from the Cyclopædia referred to, for we recognise some from other works, and several which appear to be entirely new. At all events, by the result we obtain two (and are to have three) beautifully illustrated volumes, forming an indispensable constituent of the library of every man of science, and of every properly educated gentleman.

Turning to the matter of the first volume, we may as well say at once that a detailed criticism in these pages would be quite out of the question. Nevertheless we entertain quite our own views about Professor Owen's manner and method. We doubt either the necessity or policy of introducing the microscopic characters and illustrations. We do not share his opinions as to the "ideal archetype skeleton," or as to his "ideal vertebra," or his notions respecting the nature and position of limbs. We regret to see that when [illegible] on Mr. Goodsir's terms—"myotome," "sclerotome," &c., the author remarks "If the [illegible] be unobjectionable, I would suggest 'osteomere,' 'scleromere,' 'neuromere,' &c." For our own part we prefer Professor Goodsir's nomenclature to Professor Owen's, and are at a loss to perceive why the latter authority is so anxious to set aside the well-chosen words of the former. Again, making due allowances for the extent of the subject, we think that Professor Owen has not done that justice to other labourers which he ought to have done. Thus, when he describes (p. 437) the structure of the tongue of the chameleon, he speaks favourably enough of the writings of Dr. Hyde Salter, but makes no allusion whatever to the elaborate memoir of Mr. Zaglas, which appeared in Goodsir's "Annals of Anatomy and Physiology." One more word and we have done. Figs. 210 and 211 are attributed by Prof. Owen to Windischmann; but to the best of our recollection, the illustrations in question represent appearances which Mr. Drummond himself showed us when he was engaged in writing the article "Sympathetic Nerve" for the Cyclopædia before referred to. In fact, they are Mr. Drummond's own original drawings, and the omission of his name is a serious slip of the pen. *Pereant qui ante nos fecerunt*.

The remarks above made in reference to the first volume are for the most part applicable to the second. In some respects, however, the second volume is an improvement on the first, several new and useful woodcuts having been introduced. We are not among the number of those who demand that every work of this comprehensive kind should be supplied with new figures. Of course, in original memoirs and papers communicated to scientific societies, such a feature is essential. The last figure in this volume exhibits a restoration of the Archeopteryx, a mere glance at which must be sufficient to convince any non-anatomical reader that the animal is a genuine mesozoic bird, having very little in common with the reptiles. Drs. A. Wagner and H. von Meyer, it will be remembered, were of opinion that this interesting relic represented a sort of feathery reptile allied to the Pterodactyles or flying lizards. The researches of Professor Owen, and the clear expositions given by Mr. Henry Woodward, have finally set this point at rest. The long tail, consequent upon the increased number and axial development of the conjoined vertebræ, indicates a more generalised type than we now commonly find to obtain in birds, but in the young of the Struthionidæ or ostrich-tribe, we have a somewhat similar attempt at this kind of development. Speaking of ostriches, one sees in Professor Owen's work the disadvantage of employing old figures which are in any respect inaccurate. The woodcut No. 11, p. 13, certainly conveys to the general reader the notion that the ostrich is furnished with two claws or talons, one at the end of each toe of the didactyle foot. This error has been handed down from book to book from the time of Cuvier, in whose "Règne Animal" it appears at least in the English edition, and also in Mr. Dallas's reprint of articles in the "Circle of the Sciences," where the same figure is employed. We remember a gentleman bringing the foot of an ostrich to a learned Society, to show this absence of the claw on the smaller toe, which (in consequence of his having been misled by these figures) he regarded as an abnormal development. Indeed, we fear the majority of naturalists who have trusted to "authority," and have not taken the trouble to examine the foot for themselves, are still convinced of the existence of two claws on each foot of this bird.

We do not care to revive the old controversy respecting man's position in the scale of animated nature, but certainly there are no such distinctive cerebral or other zoological characters as would warrant his separation into a subclass under the title of Archencephala. Let us say, therefore, that we do not think the "Cerebral System of Classification" will stand. It is essentially relative. Referring to the homologies of the bones of the limbs, Professor Owen makes the following remarks in a foot-note:—

"The fact of the homologous bones being determinable in the pelvic limb * * * * does not make the grasping organ of the ape the less a 'hand,' nor does it prove the lacerating organ of the lion to be no paw, nor the swimming organ of the seal to be no fin. Professor Huxley, however, by pointing out those homologies between man and the ape, under colour of a new element in the question, probably persuaded the 'working men,' for whom, as Government Professor in the School of Science, he selected such subjects of instruction, that it was an important argument in favour of their ape-origin. So speciously, indeed, was this old elementary fact in zootomy set forth, that the propounder succeeded in deceiving some non-anatomical authors into a belief that he had really made a discovery" (p. 293).

However refreshing passages of this kind may be to the reader who has waded through pages of dry anatomical detail, we cannot but express regret that the distinguished author should still continue to display so much animus towards his not unsuccessful anatomical rival. At p. 273 two other well-known anatomists (Mr. Flower and Professor Rolleston) are alluded to in scarcely less significant terms.

Florists' Flowers.

THE ZONAL PELARGONIUM is generally speaking of free and easy growth, possessing colour in flowers or foliage of almost every hue: it is as well suited for the cottager's window of six panes of glass, as for the Italian terrace of some noble lord's mansion. What would our gardens be without it?

The first point in its culture is to secure nice healthy plants as early as possible in the spring—say February; not merely any varieties which come first to hand, for I am afraid it requires to grow the best of everything in its class, as it is a very fine one. I admit that there is sometimes a difficulty in knowing which are the best, but a beginner, who would not require more than six plants, I should recommend to commence with the following:—

1, Dr. Lindley, orange scarlet; 2, Beauté de Suresnes, lively rose pink; 3, White Perfection, pure white; 4, Madame Ninette Sachero, salmon suffused with scarlet; 5, Fair Rosamond, salmon, crimson centre, white margins; 6, Festival, bright rose cerise. If 12 plants and 12 varieties are required, add—7, Inquisitor, brilliant scarlet; 8, Eunice, rosy scarlet; 9, Marion, soft pink; 10, Maréchal Forey, deep scarlet, white eye; 11, Roi d'Italie, orange shaded rosy-salmon; 12, Beauty, white, salmon tinted centre; or Masterpiece, rose salmon shaded. The above are all finely-shaped flowers, with bold and solid trusses, free habit and good growth; possessing good foliage, and not to be beaten in their respective colours.

Supposing, then, plants are in possession, and only in 48's or 60-size pots, and require shifting, the most suitable soil would be a mixture consisting of one-third loam of a yellowish turfy nature, or from the top-spit of an old pasture laid up for two years, and turned over to the action of the atmosphere; one-third of thoroughly decayed manure from an old Cucumber bed, or, what is better, cow-dung well-weathered; one-third silver sand, adding a good proportion of fine charcoal and peat earth. Cocoa refuse, or leaf-mould. It is not well to give too great a shift at first; if well rooted in a 48-pot, the change from a 48 to a 24 will not be too great—pots which have been well-burnt and new ones are preferable, at the bottom of which cover the hole with an inverted oyster shell, or piece of crock, over which, to preserve good drainage, take either the coarse siftings of peat or turf, about the average size of a Walnut, and on the top of this lay a few pieces of charcoal with about two dozen pieces of ½-in. bones or a small quantity of bone-dust; transpose the plant, first carefully removing all the crocks it previously had; fill up and around firmly with prepared soil; place in a frame or greenhouse as near to the glass as possible, in a temperature of 50° to 60° Fahr., allowing air, pure and fresh, to circulate freely about each plant on all occasions.

If the plant is intended for exhibition in June, it will require shifting in April into the blooming pot or pan; and to make the shoots pliable, and to bring it into whatever form or shape is thought best, delay giving water till the shoots show signs of withering; a slight twist with a tie will bring it to the required place. The most desirable form for an exhibition table would be that of a mushroom. I would strongly urge upon growers the conical or pyramidal form, a new feature for the growth of these plants, which when well organised, will prove exceedingly interesting and highly appreciable. So soon as the plants become well-rooted (better understood as pot-bound), liquid manure may be given to them twice a week. Do not allow the plant at any time to droop for want of water, and bear in mind always that plenty of air—not currents of air passing through or around the plant, but a free and general circulation, is conducive to the health, free-flowering, and full development of colour in the leaf and flower.

Perhaps the Cape varieties will never be so much in vogue as pot plants—they do not possess such bold and showy nor so well-formed flowers; still there is a great diversity both of colour and foliage amongst them, and many will ever remain favourites for the variety of scent in their foliage. To grow them successfully, the soil prescribed will suit them well, with the addition of a little more peat earth, and a drier and rather warmer temperature for the freer flowering of them. Many being tuberous-rooted are better grown in pans, and kept nearer the surface of the soil. The more succulent kinds must not be watered so freely.

After the season has passed by—one, however, can hardly call it such an expression, for the Pelargonium is always in season, so diversified and bright is it either in foliage or flower; when October's sun hastens through its meridian, and its shadows are long, still on and on it lingers, through November, even at Christmas a wee bit still lingers, till spring time is brightened by its beauty—there must be a period of rest; and if the Pelargonium is a good-natured plant, and does not require so much as many of its congeners, it must not be over-worked. So soon, then, as it has effected the purpose of growing into a good plant, covered itself with bloom, and taken off the first prize on account of superiority of growth, let it have rest; cut off all flowers; stop back the growth to the required form; expose the plant to mature the wood before housing it again, and so soon as new signs of life appear, reduce the plant into a smaller pot, keep close in a cool frame or house till it begins to grow; afterwards give all the encouragement that can be afforded, fostering the lawful ambition and desire to surpass and excel; and when the plants are to grace an exhibition table or not, bear in mind if worth growing they are worth growing well. *J. J. Chater, Gonville Nurseries, Cambr.*

HYACINTHS IN WATER.—Your correspondent "Quo" is in error when he says (p. 1118), that some Hyacinths, and particularly the high-coloured or dark-red varieties, are difficult to manage if cultivated in water; and that single Blue Argus is in the same category. The only good reason that can be given for this mismanagement is, that some varieties of Hyacinths are extremely scarce, on account of the demand every year being greater than the supply. The bulbs sometimes furnished also want the age required to give full satisfaction.

The fact is, that all Hyacinths, old as well as new, with the exception of extra late-flowering double sorts, can be grown very easily in water in glasses, and do admirably in it under proper treatment. In September or October let the bulbs be placed in glasses filled with rain-water, keep the glasses filled up, if by means of evaporation, the water should subside in them, and change the water if it becomes foul, which seldom occurs. The glasses should be placed in a window or Wardian case, the cause of which should be open as much as possible, only closing it at night and in time of frost. Give air, and allow them to have as much sunshine as possible.

All the single and double-flowered early varieties can be grown, without exception, extremely well in this manner.

For miniature Hyacinths I would recommend not half-grown bulbs, which are now used for that purpose, but full-grown Hyacinths with small bulbs. Among double-flowered kinds especially are some marvellously fine things in all colours, well worth attention. It

would be something new to see at exhibitions small bulbs, some of which are scarcely larger than a nut, bearing great spikes of beautiful blossoms; and as far as price is concerned, with a few exceptions, they are within the reach of everybody.

I recommend also, as something extremely beautiful, the following association: place seven bulbs of the single white La Candeur to water in a china dish or vessel, covering the bulbs with green Moss as the flowers appear. When fully developed, the latter standing up above the Moss have a fine effect, scarcely surpassed by anything in the way of flowers.

Scilla sibirica, treated in the same manner, does well in water in a dish; also the garden Iris, you Tiny Tulips, such as the red, the rose, the yellow, and the gold-striped varieties, together with Vermillion Brillant, as well as all the varieties of Crocus versicolor.

Sprekelia formosissima placed in water in a glass, as soon as the flower buds appear, does likewise exceedingly well. Narcissi, too, can be grown very dwarf if they are placed in a window near the glass, and kept cool; too much warmth makes them become tall. *G. W. F. H., Haarlem.*

The Apiary.

THE EGYPTIAN BEE (*continued from p. 1143*).—Mr. Woodbury having ascertained the fact of the successful introduction of the Egyptian bee into Germany, put himself into communication with Herr Vogel, and after a short delay received from him a letter signifying the transmission of a fertile Egyptian queen. Accordingly, on the 30th of July, 1865, there arrived a weighty deal box, in which the queen and her few retainers were supposed to be imprisoned. Not a sound, however, could be heard, so that it was with considerable doubt and anxiety that he forced open the cover, to the under side of which, on removal, he found a small cluster of bees attached. They had congregated here to be removed as far as possible "from a large square piece of dark-coloured honey-comb, out of all proportion to their wants, a portion of the contents of which having escaped, had so clogged and soiled the unfortunate little prisoners, that few indeed were able to use their wings. On separating and carefully examining this cluster, I found it to consist of worker bees, so similar to Ligurians that I could not at first time detect the slightest difference; two or three small but very handsome drones, the whole being in good plight; and what seemed to be a diminutive Ligurian queen, in nearly as bad a case as the rest. This certainly appeared very small change for my outlay, and it was with no very pleasant feelings or agreeable anticipations that I proceeded to make the necessary attempted pleasing to forlorn Semiramis at the head of a small lot of Italians, which, having themselves failed in the attempt to raise a queen, can ill brook their new chiefs tender their allegiance to an alien monarch. I, of course, took the precaution of presenting to them this aspirant to the vacant throne in a queen cage, through the bars of which her future subjects were at liberty to make her acquaintance." It was well he did so, as her attendants were immediately violently assailed, and dragged out dying or dead. The following day, finding the hive tolerably quiet, the queen was liberated from her cage. Suffice it to say that the experiment was successful, in so far as that she was received by her new subjects in a very satisfactory manner. Mr. Woodbury, by careful strengthening of the stock by the addition of combs containing well-matured brood, succeeded in strengthening the colony sufficiently to be able to raise a few queens from the foreigner before the season was too far advanced. On the 7th of August he first commenced queen-raising operations. I cannot here enter into details of his manipulations, but the course of procedure was much the same as that described in our early articles on Artificial Swarming. "The first queen was hatched on the 22d of August, just 15 days after the formation of the little artificial colony."

During the latter end of August and the first week in September seven more young queens were hatched out. One of these perished, the rest were fecundated by Italian drones. The eldest princess commenced laying eggs on the 9th of September, and the rest followed in due course.

To quote Mr. Woodbury: "The spring of 1866 was of course looked forward to with great interest, and found me in possession of eight fine Egyptian colonies, which had passed the ordeal of an English winter perfectly unscathed. In point of fact, the original Egyptian queen (owing doubtless to the extra care and pains bestowed upon her), was at the head of by far the strongest colony in my apiary, whilst the seven others would compare advantageously with any seven of my Italian stocks that could be selected, and I looked forward with much delight to the accomplishment of the pleasing task of propagating what I at that time believed would turn out to be a race of bees superior even to the Italians in docility and beauty. But here occurred a misfortune which in its result gave me the first hint as to the true character and [illegible] my Nitrous prodigies." *S. Bevan, Esq.*

(*To be continued.*)

Feeding Bees.—I want your advice on a small matter concerning my bees. Some three weeks ago I made my man lift some of the hives that I could not see into, to ascertain how they were as to weight. He fancied some to be light, so having several small supers of honey not finished (and unsealed some of it), I put one on each hive; in some hives the bees went at it with great vigour, in others hardly at all. How is this? What conclusion am I to draw, and how long shall I leave them on? One of the supers is a Neighbour's glass globe, and I see there is a considerable amount of steam generated within it. Does this matter? *G. W.*

We always consider it to be bad practice to put on, or to leave on, supers for feeding ill-provisioned hives, unless with the intention of inducing the bees to abstract the honey and convey it below. Supposing a hive to be almost entirely destitute of food in the stock-box, and a partly-filled super is given, unless the whole mass of the bees ascend and take up their quarters in the super, the food is of no use to them at the very time that it is most wanted. In seasons of great cold, when a very large consumption of food is necessary for enabling the bees to sustain the requisite amount of heat, not a bee could leave the main cluster to ascend into the super for food without being quickly chilled to death. Therefore, although in the immediate vicinity of ample stores, the bees must perish of starvation. This will frequently occur during long-continued hard frosts, even in the main body of the hive. The bees will have consumed all the stores within their reach, but if they attempt to shift their quarters to another part of the hive, great numbers of them fall victims to the chilling temperature even of the interior of their domicile.

We should recommend the immediate removal of the supers, unless in any cases where the bees are actually quartered in them, and even then you run the almost certain risk of the queens breeding in them in the spring. Remove, therefore, and if you are really apprehensive of a hive being without enough food to last till February, choose a fine warm day, and give an inverted bottle containing 3 or 4 lb. of sugar syrup, removing the emptied bottle the following day. This quantity may do till February, or if you can give a second bottle full, so much the better.

The condensation of steam in the super will tend to make the interior of the hive damp, particularly if the water be not readily carried off outside the glass. At any rate the super cannot be otherwise than injurious to the bees.

Garden Memoranda.

GRAPES AT COOMBE ABBEY, THE SEAT OF THE EARL OF CRAVEN, NEAR COVENTRY.—More remarkable Grapes than those at Coombe Abbey, taking everything into account, it would be difficult to find; and Mr. Miller, the gardener there, may well be proud of his success in Grape growing. His Vineries are all lean-to houses, in one long handsome range, which we believe, almost have been built by Mr. Gregg, of Chelsea; they are about 10 feet high at back, 5 feet high in front, and about 15 feet wide. The front wall rests on piers, the borders being made both outside and inside. The first and greatest care in making these borders was to have them well drained. Along the front of the border outside runs a large main drain, into which transverse drains are led; then there is a bottoming of some 2 feet in thickness of brick rubbish, and on the top is placed the soil, which was put in with but little preparation, in the shape of large fresh turfs, rough and unbroken almost, just as they were dug from the fields.

The Vines are planted inside, but their roots are at liberty to travel outside if they choose, and which they [illegible]. The Hamburgh, Muscats, and other white kinds are planted, 8 feet apart: the Lady Downes' and other late black kinds, 4½ feet apart. Mr. Miller being of opinion that Black Grapes require more room to bring them to perfection than white kinds. In early houses the Grapes were all cut, but the Vines themselves were in capital condition. The first houseful of fruit entered was one of Muscat of Alexandria and Canon Hall Muscat, with which were associated a few white Tokays. The Alexandrian Muscats were a splendid crop, regular both in bunch and berry, the former averaging about 2 lb. each, and exhibiting that fine amber colour which can only be obtained under first-class cultivation.

The next house to which we came is considered the pride of the place, and wonderful indeed it is. It is filled principally with Lady Downes' Seedling in fine condition, the crop being heavy and the bunches about 15 in. in length, well shouldered, and averaging about 2 lb. in weight per bunch; some even exceeded 3 lb. (a very heavy weight for Lady Downes'). The berries were large, bluish black, and covered with a fine bloom. Grown in this style, what a splendid late Grape this is! Oldaker's West's St. Peter's, although good, looked a dwarf beside it; Trentham Black was very good; and when it is well grown, few Grapes can equal it in flavour. Barbarossa was also grand (Gros Guillaume is, however, the proper name of this Grape, the true Barbarossa being red or grizzly). One Vine of this was bearing 11 noble bunches, each averaging 7 lb. and upwards, finishing off well. Mr. Miller prunes it somewhat on the long rod system, observing it to bear best on young canes. There are, moreover, two Frankenthals, young plants, bearing enormous crops. It is an event worthy of notice to get one bunch of Frankenthal to weigh anything like 6 lb.; here hung bunch after bunch, each averaging from 5 to 6 lb.; the berries were large, and almost black, but not quite perfect in that respect, which was not surprising, the Vines being too heavily cropped; but who could have the heart to destroy a bunch like one of these?

The next house is principally filled with Black Hamburghs and Frankenthals, also bearing heavy crops averaging about 3 lb. per bunch. The Golden Hamburgh was doing well here, being large both in bunch and berry, and very beautiful. Foster's White Seedling was also very fine, and it is a variety much esteemed by Mr. Miller. It is a fine Grape, and well flavoured, and when grafted on the Hamburgh, as Mr. Hill of Keele Hall has it, it is magnificent, equalled only in point of beauty by a Muscat of Alexandria. Several other sorts are grown by Mr. Miller, but these are the most important. Black Alicante, which is the best late Black Grape of all, appeared to be absent. Fine examples of this kind were grown last summer by Mr. Rawlence, gr. to J. Campbell, Esq., Woodcat, near Rocester; they were really magnificent, and did Mr. Rawbone much credit.

Mr. Miller has thus far been very successful in Grape cultivation; but the Vines, it must be remembered, are all young. It therefore becomes a question how long they will continue to produce such noble crops, grown in the manner in which they are at present, and confined to the same space. Experience has proved in other cases that after a few years they begin to produce smaller and smaller bunches every season. As was stated in a leading article a few weeks ago (p. 1041), the Vine requires more head room—more space in which to develop itself, than is generally allowed it, in order that it may continue to produce the splendid bunches which it furnishes in a younger state; but is it not the same with the Apple, the Pear, the Plum, &c.? By allowing root and branch both to grow, do we not get a greater, a longer continuance of crops of fine large fruit than we can obtain by any pinching or dwarfing system? The noble Vine at Finchley is a case in point. In the large conservatory in the Royal Horticultural Society's garden at Chiswick, the Vines while young nearly all produced crops of about equal merit; but during these last two seasons the largest bunches, and the best fruit, have been produced on those Vines which have been allowed to develope themselves most. Some say that with only one Vine it takes long to fill a house; but this need not occur. Take, for example, vineries as they are usually planted—those at Coombe Abbey, for instance. What should be done is to select one or two of the strongest and most promising Vines in each house, and encourage growth in them by every possible means. By taking up one or two fresh branches from the bottom every year, and cutting away the other Vines as room might be required, in the same manner as is frequently practised with regard to fruit trees on garden walls, a Vine might in a very short time be induced to fill a very large house, without loss. What says Mr. Miller to this plan? *A. F. B.*

Miscellaneous.

Treatment of Amaryllises for Autumnal Blooming.—The great scarcity of flowers during the months of October, November, and the early part of December, for decorating the conservatory and drawing-room, induced me to try the experiment of so far altering the habit of some of the varieties of the genus Amarylis, as to enable me to depend on their blooming in those months as strongly and regularly as they usually do in the spring. Success attended my practice. The opinion of the late Mr. Knight on the growth of bulbous plants in general, furnished me with an admirable groundwork for cultivation. "Bulbous roots increase in size, and proceed in acquiring powers to produce blossoms only during the periods in which they have leaves, and in which such leaves are exposed to light; and these organs always operate most efficiently when they are young, and have just attained their full growth." Bearing these important facts in mind, we will suppose a moderate collection is in hand, and the object is to induce the bulbs to bloom in autumn. In the first place they should be potted in December, using pots in proportion to the size of the bulbs. The soil I have found best suited for their growth is two-thirds light turfy loam, and one-third of half-rotten leaves and coarse river sand, draining the pots well, and using the compost in as rough a state as possible. If additional stimulus is required, it may be supplied, when the leaves are fully formed, in the shape of manure-water every second or third watering. In potting them, keep two-thirds of the bulb above the earth in the pot. They should now be plunged in a pit or frame near the glass, and where there is a moderate bottom heat to encourage the bulbs to root freely before they commence growing by the leaf; and to accomplish this, the bottom heat should be considerably in advance of the top. When the roots have made considerable progress towards filling the pots, they should be removed to a light house, and be placed near the glass. The temperature should be kept between 60° and 75°. The increase of both light and heat will cause the bulbs to grow rapidly, and great care should be taken not to injure the foliage; if any blooms appear they must be removed, and water supplied when requisite. By this treatment the plants will in a short time possess a strong and healthy foliage, at which time manure-water may safely be applied with the best effects. Whenever the appearance of the leaves indicates suspension of growth, water should be gradually withheld; but they must still be exposed to the utmost amount of light and heat, until the leaves become of a partially brown or yellow colour, when they may be removed to a dry cool place until wanted for blooming. By the above treatment they will generally be in a perfectly ripened state by the end of April or early in May. I do not agree with those who advise that, during the period of the plants' rest, they may be shaken completely out of their pots, for I find they bloom much stronger by being allowed to remain in the pots in which they grew. It is not material where they are kept during their repose, provided they are kept dry. Towards the end of August preparations may be made by commencing with all or part of the stock; the pots should be well soaked with water, and then plunged in a mild bottom heat in any pit or frame that may be at work. When the flower stems have advanced 6 or 7 inches in height they may be removed to a stove to open their flowers, and afterwards placed either as ornaments for the conservatory or turned out into vases or ornamental pots for decorating the drawing-room. By the above management I have found those varieties enumerated below bloom quite as strong as they usually do in the spring; Johnsoni, reginæ, vittata, reticulata, and their allies, frequently have three or four spikes of bloom, and attain the height of from 3 to 5 feet. Immediately after

they have done blooming they should be partially shaken out, disturbing the roots as little as possible, and repotted as before advised; placing them in a bottom heat until the roots have taken hold of the soil

List of varieties grown to bloom in the autumn:—Johnsoni, Johnsoni-regine, regine, reticulata, vittata, Ackermanni, concinna, grandis, insignis, picta, Solandriflora vittata, Swedii, marginata conspicua nobilis, marginata acuminata, aulica, and others. *Spencer, to Journ. Hort Soc.*

Moles at their Meals.—It is hardly possible to conceive, and quite impossible to describe, the fury with which the mole eats. It hunches its back in a most curious manner, retracts the head between the shoulders, and uses its fore paws to assist it in pushing the worm into its jaws. In this respect there is a singular resemblance between the mole and the carnivorous chelodines of America. I have kept several of these reptiles, and have always noticed that they ate exactly after the fashion employed by the mole, seizing their food in their jaws, and tearing it to pieces by the aid of the armed fore paws—one foot being applied at each side of the mouth, so as to push the food forwards, while the head draws it back. How the mole assumes this peculiar attitude I cannot conceive. I have often seen it engaged in eating, and have sketched the creature while so employed; but, when the mole has been dead, I have been unable to place it in the proper attitude, though anxious to do so in order that the artist might be able to make his drawing properly. From seeing the animal eat, I can readily conceive the fury with which it must be animated when it fights, and can perfectly appreciate the truth of the assertion, that it has been observed to fling itself upon a small bird, to tear its body open, and to devour it while still palpitating with life. Nothing short of this fiery energy could sustain an animal in the lifelong task of forcing itself through the solid earth; and it may well be imagined that when two male moles of equal strength happen to meet, the combat must be of the most furious kind. *Homes without Hands.*

Physiological Effects of Perfumes.—Criton, Hippocrates, and other ancient doctors, classed perfumes among medicines, and prescribed them for many diseases, especially those of a nervous kind. Pliny also attributes therapeutic properties to various aromatic substances, and some perfumes are still used in modern medicine. Discarding, however, all curative pretensions for perfumes, I think it right, at the same time, to combat the doctrines of certain medical men who hold that they are injurious to health. It can be proved, on the contrary, that their use in moderation is more beneficial than otherwise; and in cases of epidemics they have been known to render important services, were it only to the four thieves who, by means of their famous aromatic vinegar, were enabled to rob half the population of Marseilles at the time of the great plague. It is true that flowers, if left in a sleeping apartment all night, will sometimes cause headache and sickness, but this proceeds not from the diffusion of their aroma, but from the carbonic acid they evolve during the night. If a perfume extracted from these flowers were left open in the same circumstances, no evil effect would arise from it. All that can be said is that some delicate people may be affected by certain odours; but the same person to whom a musky scent would give a headache might derive much relief from a perfume with a citrine basis. Imagination has, besides, a great deal to do with the supposed noxious effects of perfumes. Dr. Cloquet, who may be deemed an authority on this subject, of which he made a special study, says in his able "Treatise on Olfaction:"—"We must not forget that there are many effeminate men and women to be found in the world who imagine that perfumes are injurious to them, but their example cannot be adduced as a proof of the bad effect of odours. Thus Dr. Thomas Capellini relates the story of a lady who fancied she could not bear the smell of a Rose, and fainted on receiving the visit of a friend who carried one, and yet the fatal flower was only artificial." Were any other argument wanting to vindicate perfumes from the aspersions cast upon them, I would say that we are prompted by a natural instinct to seek and enjoy pleasant odours, and to avoid and reject unpleasant ones, and it is unreasonable and unjust to suppose that Providence has endowed us with this discerning power, to mislead us into a pleasure fraught with danger, or even discomfort. *Rimmel's Book of Perfumes.*

Calendar of Operations.

(*For the ensuing week.*)

THE chief thing to be attended to in reference to glasshouses at the present time is to keep as low a temperature as is consistent with the health of the inmates, as a hot close atmosphere would, in a few days, do more injury than could be repaired during months of care after the mischief is done. Ventilate with judgment; but let there be ventilation even where the most tender plants are kept, although it be at the cost of a little extra fuel, to maintain the necessary temperature in connection with a circulation of fresh air. Watering will also require to be done with great caution, and we cannot perhaps do better than repeat the directions which we have so frequently given, viz., never to water till the soil immediately below the surface is sufficiently dry to warrant a full supply. Be careful to prevent sourness; as, if this takes place, and is not rectified, the loss of the roots will be the inevitable consequence. Avoid spilling water on the floor, and endeavour to maintain a sweet and not over-damp nor overdry atmosphere.

FLOWER GARDEN AND PLANT HOUSES.

Should the weather prove unfavourable for out-door work, prepare labels for all ornamental trees and shrubs; and when well painted, and thoroughly dry, they can be put in their proper places. Crocuses and other bulbs should be protected from the ravages of mice, for which traps should be employed before they do any mischief. If there be any choice seeds of Rhododendrons or Azaleas which it is desirable should be saved, they must be seen to at once before the seeds drop out.

AURICULAS.—These should now have little water and plenty of air; keep the plants clean both of dead foliage and green fly. If the soil become green on the surface it should be loosened, but not so deeply as to disturb the roots. Should severe frosts occur, a slight covering will be necessary at night.

CARNATIONS AND PICOTEES.—Keep the pits or frames containing these as open as possible whenever the weather is at all favourable. Water sparingly. Too much moisture and not sufficient air are sure to induce spot: cut away all decayed foliage.

CINERARIAS.—Give those intended for flowering in May their final repotting; they should have plenty of room, and the side shoots should be tied or pegged out as soon as they are long enough. Never use more heat than is sufficient to keep out frost.

DAHLIAS.—Examine the roots of choice kinds occasionally, to see that they are not rotting at the stem; if so it will be best to cut away the part affected, and to dry the root, if at all damp. Much depends, however, on the convenience at command for wintering them; under a stage of a greenhouse is the most general practice, but here it is often too damp; neither should they be placed in a situation that is too airy, as many kinds will dry up. They must be placed beyond the reach of frost.

PANSIES.—Those in pots must have plenty of light and air; the lights should be taken quite off on all favourable opportunities.

TULIPS.—Hoop over beds, and cover should severe weather occur. The tops of the spikes being near the surface, this precaution is absolutely necessary.

FORCING GARDEN.

CUCUMBERS.—These must now have careful attention. By a proper arrangement of the ventilators a constant circulation of air should, if possible, be secured whenever the weather is at all favourable.

PEACHES.—Those in pots may soon be brought into the house, and plunged in Oak leaves that are in a slightly fermenting state: from 55° to 60° in the plunging material, whatever it may be, will be sufficient during the first month. The atmosphere should range from 45° to 50° by night, and from 55° to 60° by day. Syringe during fine weather, but never when it is damp.

STRAWBERRIES.—Where very early Strawberries are required, some of the strongest plants of Keens' Seedling may be brought into a pit for starting, but no artificial heat need be applied for the first week or 10 days. Let the plants be freed from decaying leaves, and top-dress the surface with rich loamy soil, having a sprinkling of soot in it, to drive out any worms which may be in the pots.

VINES.—Let the heat of the litter about the roots of Vines recently started be daily examined; and see that it is regularly kept at a temperature of 60°, until the rods are coming into leaf, when a slight increase of heat should be obtained. It will be well, however, not to exceed 70° for some time yet, as too great an amount of root-heat produces a weakly growth. The temperature of the atmosphere should be kept at 50° by night and 60° by day until the buds are all starting, when a rise of one degree each night may be indulged in until it reaches 58° or 60°, with a corresponding increase by day. It will not, however, be safe to go beyond 60° by night, and a small portion of air should be always allowed, to keep the atmosphere sweet and in motion. With sun-heat, should it occur, a rise of 10°, with a gradual increase of air, must be obtained as often as possible, and to assist in this the heat in the pipes must be increased early whenever there is the appearance of sunshine. Vines in pots are greatly benefited by being plunged in a gentle bottom-heat, and their shoots should be depressed, so as to cause them to break all the buds. The atmosphere for these should be similar to that for Vines established in the border.

HARDY FRUIT AND KITCHEN GARDEN.

The fruit room will now require daily attention. Fruit least likely to keep should be picked out for immediate use, or when they decay they will injure that which is sound. Let an uniform temperature be preserved, and give sufficient ventilation to allow damp to escape.

ROTATION OF CROPS.—Previous to the general manuring and trenching of vacant ground, the rotation of crops which are to be cultivated upon it during the ensuing summer should be decided upon. One of the first principles to be attended to in this arrangement is that no annual crop be grown for two successive years on the same plot of ground. Another variation should be made by taking care that those crops which immediately succeed each other are not such as are liable to be preyed upon by the same kind of insect, as their increase is encouraged to a fearful extent by thus putting in their way the food of which they are most fond. It is important that both the manuring and the depth of the trenching be regulated by the requirements of the crops; and their rotation should be so arranged, that the ground be not trenched to the same depth for two successive seasons, but so that different portions of the soil be brought to the surface in turns. The perennial or permanent crops will of course form a class by themselves, as they do not require a change of situation for many years; but when this is necessary with any portion of them, the ground from which they are removed will fall into the ordinary rotation in the way of a regular exchange. By cultivating the Celery and Cardoon on the Scotch or wide-bed system, a large ridge of soil is thrown up between the trenches, the surface of which is very well adapted for the cultivation of dwarf Peas, Beans, Spinach, Turnips, and similar vegetables; observing, however, that only the earlier sowings of these several crops should be made on these ridges, that they may be removed in due course before the ground is required for earthing up the principal crop. As a matter of course this arrangement must not interfere with the very earliest crops of Peas, &c., which are generally allowed a place on the side borders near the walls. For the Celery and Cardoon ridges, will generally amount to about one-third of the ground occupied by annual vegetables. The extensive turning over which the Celery and Cardoon soil undergoes acts admirably in preparing the ground for deep-rooting plants, such as Turnips, Carrots, Onions, &c., and in the following year may be devoted to the cultivation of the Cabbage family, whose roots are confined more nearly to the surface. If the vegetable garden is so large as to allow of the cultivation of a portion of the general Potato crop within the walls, it will form a fourth course in the rotation, and will come in after the Brassica tribe. Working upon this system, Cabbages have been planted during the autumn on ground which had been occupied by late summer Turnips; and the ground which now requires trenching is that from which the later Turnips, Onions, Carrots, Beet, &c., have been removed, and which will next spring be planted with Cauliflower, Broccoli, &c. Preparation for these should be made by trenching in a very heavy dressing of manure, which shall serve for that and the succeeding crop; as the last few years have fully convinced us of the impropriety of planting Potatos on ground recently manured.

STATE OF THE WEATHER AT CHISWICK, NEAR LONDON,
For the Week ending Dec 5, 1866, as observed at the Horticultural Gardens

Nov. and Dec.	Day of Month	Barometer. Max	Barometer. Min.	Temperature. Of the Air. Max.	Min.	Mean	Of the Earth 1 foot deep	Of the Earth 2 feet deep.	Wind	Rain.
Thurs	29	30.214	30.138	51	26	38.5	44.9	45	W	00
Friday	30	30.092	29.887	45	30	37.5	45	44.8	S.E.	.00
Satur	1	29.789	29.751	51	31	41	45	44.6	E.	.20
Sunday	2	29.798	29.747	45	32.5	38.5	44.8	44.6	S.W	.08
Mon	3	29.788	29.703	52	18	35.5	44	45	S.W	10
Tues	4	29.693	29.600	56	30	43	44.8	44.8	S.W	.14
Wed	5	29.789	29.745	56	44	50.0	44.4	46	S.W	.48
Average		29.910	29.805	49.9	30.3	41.1	44.4	44.8		1.00

Nov. 29—Foggy, clear and very fine, overcast at night. slight frost
— 30—Light hazy clouds, clear, very fine.
Dec 1 Overcast, cold uniform haze, overcast, rain
— 2 Hazy, with slight drizzle, overcast, rain at night, frost
— 3—Overcast, rain, drizzly, rain
— 4 Rain, overcast and boisterous, much vapour driven by warm S.W. wind
— 5—Densely clouded, rain, rather boisterous and wet throughout.
Mean temperature of the week, 41 deg. above the average

STATE OF THE WEATHER AT CHISWICK,
During the last 40 years, for the ensuing Week, ending Dec 15, 1866

December	Average Highest Temp.	Average Lowest Temp.	Mean Temp.	No of Years in which it Rained.	Greatest Quantity of Rain.	Prevailing Winds.						
						E.	S.E.	S.	S.W.	W.	N.W.	N.
Sunday.. 9	46.8	35.4	41.1	18	0.40 in.	3	4	3	3	5	11	4
Mon ..10	48.8	32.9	39.8	24	0.67	2	7	3	2	9	11	3
Tues. ..11	49.0	32.8	41	16	1.02	3	5	6	1	7	12	2
Wed. ..12	49.2	33.7	41.5	17	0.56	3	5	7	4	7	9	2
Thurs .. 13	46.7	32.4	39.6	22	1.16	2	10	4	3	6	5	4
Friday .. 14	46.1	31.9	39.0	19	0.24	5	7	3	3	8	8	4
Satur .. 15	45.9	34.3	40.1	16	0.21	3	6	5	3	5	11	2

The highest temperature during the above period occurred on the 12th, 1841—therm. 63 deg., and the lowest on the 13th, 1848—therm. 14 deg.

Notices to Correspondents.

APPLES: *Spider.* Dumelow's Seedling or Wellington is very distinct from Alfrist m.

ASPARAGUS: Will *W. S. Greatheed*, kindly furnish us with his correct address? We have a packet for him, which can be forwarded by post.

CENTAUREAS: *Old Subscriber.* To propagate Centaurea ragusina compacta and candidissima, cut off the heads of your stock plants so near the points as just to cut into the solid part of the stem; thus all the leaves will be removed, and the stools induced to break at nearly every eye from the naked stems; place the stools on a shelf in the greenhouse, and by spring they will produce a quantity of side shoots, which are soon as they are large enough strike freely.

CORYANTHES: *W. S.* Your supposed curious parasite growing on the side of a Coryanthes bulb is nothing else than a pollen mass.

DRACÆNAS: *W. H.* The Dracæna terminalis blossoms occasionally, but its beauty resides chiefly in its leaves; the flowers are not much prized.

GARDENERS' BENEVOLENT INSTITUTION: *T. D.* We have not received your letter.

NAMES OF FRUIT: *F. Kelly.* Your Pear, which is small and worthless, is unknown.—*J. D.* We do not consider your seedling Apple equal to many others already in cultivation. We would therefore recommend its being grafted with some good variety.

NAMES OF PLANTS: *F. P. D.* Eunymus europæus—common Spindle-tree.—*G. S. S.* Viburnum Tinus, Laurustine.—*A. B.* Both female plants of Pampas Grass.—*R. J. H.* Callicarpa purpurea.

PASSION-FLOWER: *C.* The native country of the "magnificent" Passion-flower, with "flowers a foot in diameter," is not, as you might have imagined, Brobdignag, neither does the "noble climber" bedeck the walls of any "chateau en Espagne," but it is to be found at Cosham, or at Carlisle, the difficulties in the way of the adventurous naturalist who desires to see this and other wonders of the same region are, however, great indeed.

PRIMULA *Bonjeani.* If you refer to the Chinese Primula, there are one or two distinct variegated forms, one of them, as far as we remember, very nearly agreeing with your description.

SCHIZANTHUS *Anstiana.* Schizanthus oppositifolius is a beautiful annual, native of the Swan River, whence it was introduced to Kew, and flowered there about 20 years since. We are not aware if it is still in cultivation, but if not, it is well worth re-introducing. You will find a figure in the "Botanical Magazine" for 1851, tab. 4560.

SEEDS: *W. Evans.* We cannot recommend dealers.

COMMUNICATIONS RECEIVED.—W. Paul.—Dr. Smith.—W. R.—J. Fleming.—R. Dean.—J. S. Secundus.—J. B. Clare (next week).—F. B.—R. J. H.—E. B., Osberton (next week).—J. C., Byfleet (many thanks).—D. B. (next week).—J. Barnes.

CENTRAL CHAMBER of AGRICULTURE.
NOTICE of ANNUAL MEETING of MEMBERS.
MR. A. PELL, *Chairman.*

Notice is hereby given, that the ANNUAL MEETING of MEMBERS will take place at the SALISBURY HOTEL, Fleet Street, London, on WEDNESDAY, December 12, at 3 P.M.
CHARLES CLAY, Hon. Sec. pro tem.

BUSINESS.

To Confirm the proposed Constitution and Laws of the Chamber.
To Receive the Report of the Council.
To Elect the Officers for next year.
To consider Regulations respecting the Importation of Foreign Cattle, and the general Cattle Trade of the Kingdom.
And other general business.
Temporary Offices, Walton, Wakefield, Nov. 30.

ROYAL AGRICULTURAL SOCIETY of ENGLAND.—The GENERAL MEETING of Members will be held at the Society's House, 12, Hanover-square, on WEDNESDAY, December 12, at 12 o'Clock. By order of the Council,
London, December 1st, 1866. H. HALL DARE, Secretary.

SMITHFIELD CLUB CATTLE SHOW.—The SIXTY-EIGHTH ANNUAL SHOW of FAT STOCK, SHEEP, PIGS, ROOTS, SEEDS, and AGRICULTURAL IMPLEMENTS, will be held at the AGRICULTURAL HALL, LONDON, 10th, 11th, 12th, 13th, and 14th DECEMBER (opening day, MONDAY, TWO P.M. Admission, Five Shillings. Other days, One Shilling.
By order, S. SIDNEY, Secretary.

SMITHFIELD CLUB CATTLE SHOW, AGRICULTURAL HALL, LONDON.—Opening day, MONDAY, 10th December, Two o'clock. Admission, FIVE SHILLINGS.

SMITHFIELD CLUB CATTLE SHOW, AGRICULTURAL HALL.—TUESDAY, WEDNESDAY, THURSDAY, and FRIDAY, 11th, 12th, 13th, and 14th December. Admission, One Shilling.

CATTLE, viz.:—DEVON BREED, HEREFORD, SHORTHORNS, SUSSEX, NORFOLK, LONG-HORNED, SCOTCH HORNED, SCOTCH POLLED, IRISH BREED, WELSH BREED. Admission, One Shilling.

SHEEP, viz.:—LEICESTERSHIRE BREED, COTSWOLDS, LINCOLNS, ROMNEY MARSH, SOUTH DOWNS, HAMPSHIRE DOWNS, SHROPSHIRE DOWNS, OXFORD DOWNS, MOUNTAIN BREEDS, YORKSHIRE, BERKSHIRE, ESSEX, SUFFOLK. PIGS. Admission, One Shilling.

THE GARDENERS' CHRONICLE and AGRICULTURAL GAZETTE of SATURDAY NEXT, December 15, will contain full particulars of the SHOW of STOCK and IMPLEMENTS at the AGRICULTURAL HALL, ISLINGTON.

ADVERTISEMENTS for this Number should be sent to the Office not later than THURSDAY. A Copy sent for Six Stamps.
41, Wellington Street, Strand, W.C.

The Agricultural Gazette.

SATURDAY, DECEMBER 8, 1866.

MEETINGS FOR THE ENSUING WEEK.

MONDAY,	Dec	10	
TUESDAY,	—	11	Great Show of the Smithfield Club in the Agricultural Hall, Islington.
WEDNESDAY,	—	12	
THURSDAY,	—	13	
FRIDAY,	—	14	
MONDAY,	—	10	Central Farmers' Club (Dr. Voelcker on Manures, &c.), at the Salisbury Hotel—7 P.M.
TUESDAY,	—	11	General Meeting Smithfield Club at the Agricultural Hall, Islington—1 P.M.
WEDNESDAY,	—	12	General Meeting Farmers' Club at the Salisbury Hotel—3 P.M.
			General Meeting of the English Agricultural Society at Hanover Square—Noon

IT will be seen in our short report elsewhere of the Show during the past week at Bingley Hall, that a pen of pigs exhibited by Messrs. HOWARD, of Bedford, has been disqualified because their dentition is pronounced by the veterinary referee to indicate that the animals are not of one litter. It is impossible that this "indication" can much longer be allowed to override and quash all other evidence which may be offered of the truthfulness of the certificate of age on which animals are now admitted to these shows. We have now particular knowledge of at least three examples in which we cannot doubt that the certificates were true, notwithstanding that on the veterinary report of the dentition of the animals they were pronounced false. One of these was the case of a pen of pigs exhibited at Carlisle some years ago by Mr. SCOTT HAYWARD, of Folkington, Sussex, whose name is mentioned in another column. Another was an instance of pigs exhibited by Mr. BENYON, M.P., of Englefield, Reading, whose Bailiff, the late Mr. HORSBURGH, was known to us as a perfectly trustworthy man. We have not forgotten Colonel PENNANT'S entry at Bingley Hall two years ago. And now Messrs. HOWARD are paraded as defaulters in this good company. It is plain that we cannot tie honesty and carelessness so constantly together as is necessary to explain this perpetual failure of honourable men in the hands of Professor GAMGEE and his coadjutors.

Our live stock are improving year by year; there are many indications of age which no longer hold true in agricultural experience. Size and weight and maturity are attained earlier from generation to generation; and this dentition is no exception to the general rule of progress—it is both earlier and uneven—and on both grounds its indications ought not to be trusted. There have been pens of sheep in Bingley Hall whose dentition was just as inconsistent with the idea that they were of one age as that of Messrs. HOWARD'S pigs. A rule which, by its rigid application, should single out the rogues who might intrude themselves amongst a company of honest men would be serviceable; but this is a rule which seems hitherto to have selected for its victims the exhibitors of most unquestionable honour.

On general grounds the indication which it rests upon must be pronounced altogether doubtful—in particular instances it has proved beyond a doubt to be altogether untrustworthy—and in its result it mixes up rogues and honest men without distinction. Need we offer any other reason why it should be at once abandoned?

As the growth of Cabbage for farm purposes is yearly extending, a few notes upon experiments in its cultivation can hardly fail to interest the agriculturist.

During the past season it was determined to set apart a piece of ground which had last year been cropped with Rape, and fed off by sheep—with Cabbage, but as we had no plants, and if they could have been procured the expense of transplantation, added to the cost of the plants themselves, would have been serious, we were led to try the effects of drilling the seed, and afterwards thinning them out in the same manner as we proceed with Mangels and Swedes.

As a preparation for the crop the ground was ploughed to the depth of 7 inches, and then well dragged down and cleaned. Upon this was drilled the following four sorts of Cabbage, in rows 20 inches apart:

1. Oxheart.
2. Thousand-headed Cabbage.
3. Drumhead Cabbage.
4. Buckman's Purple Winter Green.

These forms it may be interesting to shortly describe.

1. The Oxheart is a somewhat small heart-shaped Cabbage, quick in growth; it has the property of readily turning in and hearting, and when young it is a delicious table vegetable just at the time that other sorts are too hard and strong flavoured.

2. The Thousand-headed Cabbage is not a hearting species, and should more properly be called a "Green." It is quick in growth, branches into many heads; but though it looks large, its loose growth renders its weight of produce less than would at first be supposed. This is the *Chou à mille têtes* of the French; it is a very hardy variety, and has been cultivated for spring feed for sheep, which are very fond of it, as indeed they are of all the Brassica tribe.

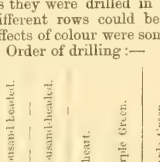
3. The Drumhead is well known as an agricultural Cabbage, and is more especially treated by transplantation—in fact the young plants frequently have two shifts from the seed bed.

4. This Purple Winter Green was derived in our series of experiments upon Wild Cabbage seed obtained from the rocks at Llandudno in North Wales, and is curious amongst others as an evidence of the almost endless varieties which this wild plant is capable of assuming under cultivation. As yet, indeed, this variety is by no means fixed, as from this, which is our first crop from the selected plants which were seeded, we have what might become several very distinct varieties of Greens.

Broccoli from this source has proved so hardy as almost to defy our winters, and this Green, which makes a large heavy head of loosely packed leaves, will in spring shoot up as many branches as the Thousand-headed.

Such were the different kinds of Cabbage employed in one experiment of about 3 acres; they had no properties of growth in common, but as they were drilled in the following order the different rows could be well observed, and the effects of colour were somewhat curious.

Order of drilling:—



The drilling in this way was easily effected by a little management in placing the separate sorts in the cups, and the small quantity of seed employed, namely, 2 lb. to the acre, renders this part of the business very manageable. The seed came up well, and the last week in May the young plants were sufficiently advanced for transplantation, for which some were used to fill up vacancies.

They were hoed and singled at the same time, leaving the plants about 20 inches apart in the rows. In this respect the sorts were all treated alike, but it was found that the Thousand-headed and Purple Greens required a partial thinning-out afterwards; and so would the Drumhead if it occupied parts of two years in its progress, but sown in this way it did not for want of time attain any great size. In June it was found that the growing plants had a tendency to fall down, to correct which a double mould-board plough, such as is often used to earth up Potatos, was employed, and acted very well in earthing them up and keeping the plants in place, after which they grew very rapidly.

Early in August we commenced cutting the delicate Oxheart Cabbages for domestic use, and on the 3d of September there was a weighing and an estimate made of the three following, as under:—

Estimated Weight per Acre.	Tons.	Cwt.
Oxheart Cabbage	14	7
Thousand-headed	7	18
Buckman's Purple Green	11	7

At this time the Drumhead had not hearted; by November 1st, however, it was loosely so, and as the crop was being used it was then estimated at 11 tons 11 cwt. per acre. Lambs were folded on the crop the first week in September, and now where they were first placed we have a second crop which promises to be very luxuriant.

Now, it will be seen from these notes and figures that a small variety of Cabbage in a short space of time yielded a much larger amount of feeding matter, and we think of a better quality, than other kinds which take greater space and more time to arrive at maturity. The Oxheart, and probably some others, hearts most readily, evenly, and perfectly, without transplanting.

That a greater crop of Cabbage than those of our experiments can be grown by first growing the plants in seed beds and then transplanting them in heavily manured ground is certain, but then the time it takes for them to arrive at perfection, and the expense of the whole crop, are great drawbacks. Cabbage, at best, we are not inclined to rank very high as a feeding crop: it certainly contains more water than Swedes or Mangels; indeed, the following table shows that Cabbages contain a very large percentage of water. Quoting from Dr. VOELCKER we find the following estimate:—

Cabbage	93.40 per cent. of water.
White Globe Turnips	90.430 ,,
Norfolk Bell ditto	92.280 ,,
Swedes	89.260 ,,
Ditto (Voelcker's analyses)..	88.367 ,,
Mangels, average (Cameron)	85.17 ,,

Viewed in this light, then, Cabbages are not better than Swedes or Mangels in point of feeding value, for, without entering minutely into the matter, the large per centage of water is at least no argument in its favour. If it were also generally true, as it has been in our experience described above, that we can in the same time grow twice the weight of Swedes and three times the weight of Mangels, these latter must be the more valuable crops.

We all know, however, that far greater crops than we have here described are grown of Cabbages, but it is with heavy manuring and much more costly cultivation.

A great objection to the growth of Cabbages is that the large stems must for the most part be carted away before the next crop be planted, and the gathering and removing them is a serious expense. After all then it follows that though the chemist may tell us how much water we grow in our crops of Swedes and Mangels, we have still to seek for a plant which can afford us a greater amount of nutritive matter in the same length of time; or that can be better kept or so easily and inexpensively grown and utilised as the Swedish Turnip. *B.*

—— AT the Smithfield Club's Annual Show, which opens on Monday, upwards of 2,000*l.* will be awarded in prizes to the various classes, in the following proportions:—1,325*l.* to cattle, namely, Devons, 250*l.*; Herefords, 250*l.*; Shorthorns, 250*l.*; Sussex breed, 150*l.*; Norfolk or Suffolk polled breed, 50*l.*; Longhorn, 30*l.*; Scotch horn breed, 70*l.*; Scotch polled breed, 70*l.*; Irish breed, 30*l.*; Welsh breed, 45*l.*; cross or mixed breed, 130*l.*5—60*l.*, in the sheep classes, as follows: Leicesters, 50*l.*; Cotswolds, 40*l.*; Lincolns, 40*l.*; Kentish or Romney Marsh, 50*l.*; Southdowns, 100*l.*; Hampshire or Wiltshire Downs, 40*l.*; Shropshire breed, 55*l.*; Oxfordshire breed, 40*l.*; Mountain breed, 50*l.*; Ryelands, Cheviot, Dorset, &c., 35*l.*; cross-bred sheep, 55*l.*; and 120*l.*, in four classes, to pigs. The whole of the implements are already in their places on the galleries and floor, and the live stock will be all placed before 10 o'clock to-night. To-morrow Divine service will be held for the herdsmen and attendants.

—— At a recent meeting of the Inverness Farmers' Society, when the use of "artificial" food for stock was discussed, Mr. KEMP, of Balnaglash, repeatedly

asserted that milk sucked from the mother was more nourishing than milk taken from the pail. Of course good digestion, as we all know, depends on the manner of taking our food, and an enforced slowness of feeding may be useful in that way, but more than this was asserted. "My opinion," said Mr. KEMP, "is that sucking from the cow ensures a stronger animal, and one that will bring most money in the end. And what is remarkable in connection with this plan is the fact that one-third less milk than that which is necessary from the pail will suffice. I cannot explain this; but may it not arise from the milk passing direct into the stomach, and not coming in contact with the atmosphere?" Again, with reference to the sheep, he said:—"Except in the case of some unfortunate ones, the lambs are all allowed to follow their dams. And what is remarkable in connection with the milk taken by the lamb direct from the udder is that one-half is found more nutritious than double the quantity of cow's milk given from a pail or keg." None of the subsequent speakers referred to this point, and we should be glad to know in what way it was ascertained by Mr. KEMP that this is so. The rest of the discussion reasserted what is the ordinary experience, we believe, in all parts of the island. Thus Mr. KEMP said:—

"When the calf fed from the pail is between four and six weeks old it will be well to commence artificial feeding. Farmers are not agreed as to the best kind of artificial food, but, so far as my experience goes, nothing is safer or more nourishing than a mixture of ground linseed and Rye meal. But before they are weaned a small quantity, say 1 lb. daily, of dry oil-cake should be given, and continued until they are turned out to Grass the following spring. At this rate, and assuming that the animal is then 14 months old, the expense of artificial food will be 1*l.* 13*s.* This sum does not include the value of ground linseed and Rye meal. The animal here mentioned, of continuing to give oil-cake from the time of weaning until sent out to Grass, would be the means of strengthening the constitution, ensuring a rapid growth, and rendering the animal less liable to many diseases prevalent in this country, such as quarter-ill, &c. If he be fed on Grass and two years, 1 lb. of oil-cake and 5 lb. of grain daily (Oats or Rye) should be given during the last three months. If the animal be not fed off until the end of his third year, he should receive no oil-cake or grain during his second winter. But even in these circumstances the usual feed of grain in the third year will, on account of his losses having come nearly to their full size, take on a more readily and at less expense, than in his second year, and less artificial food will do. I have known cows fed on hay and 5 lb. of cake daily, thrive and milk well."

Mr. HENDRIE said, "With regard to artificial feeding, he agreed very much with Mr. SCOTT. He would not go altogether into artificial feeding, but some was necessary for stiff cattle that had not good breeding, to try to put them last into condition. *If there was to be a cold fall, the summer was made the better; and if there was to be a loss, the Grass of it was over the latter.*"

—— A very animated discussion has lately been proceeding in the columns of the Edinburgh Agricultural papers, on the valuation of manures by the chemist—the assertion on the one side being that, various as the commercial value is of many of the ingredients used in their manufacture, the attempt to force a fixed formula of valuation on the public mind is necessarily mischievous. Of course the value to the farmer of any manure that he employs can be known and realised only by himself. It depends on the price of his produce, on the character of his soil and crops, and on his own skill in cultivation; but having to buy certain ingredients in manures for the necessities of his land or of his plants, he is certainly assisted by a formula, which, applying fixed valuations as nearly accurate as may be to those ingredients, enables him to judge by the difference between the resultant estimate and the actual market price, where he can get these ingredients cheapest. In a recent letter, which appears to bring the discussion to a conclusion, Professor ANDERSON says:—

"It was at one time a common practice with chemists to make use of certain tables for calculating the value of manures, which were originally devised by Mr. WAY a good many years since. I have always maintained the principle on which these tables are based in my 'Elements of Agricultural Chemistry,' published in 1860, remarking at the same time that they must not be implicitly relied on, but must be liable to constant modifications; and I have since, more than once, stated that I no longer use them, but that when I am asked to give an opinion on the value of a manure, my results are founded on the current market price of similar articles at the time. I have always maintained that it is not the business of the chemist to fix the system on which a manure should be valued, but that it should be a matter of mutual arrangement between buyer and seller; and this is the case in agriculture department of commerce except the manure trade; so that when the chemist is asked to give an opinion as to the value of any other article there are well recognised rules on which he can fall back. The two interested parties and the farmer have come to no arrangement, and the chemist has been forced to form for himself the best estimate he can, by comparison with one another of manures of known composition and price, and, if his experience is sufficiently extensive, I believe his estimate is generally a fair one. For my own part, I avoid giving an opinion on the value of a manure (unless it be specially adulterated or inferior) except where it is specially demanded, and I am bound to say that, for once that the request comes from the manufacturer, it comes from the farmer; and, as cases I can judge, the latter is assessed as generally more satisfactory to the latter than to the former, and often protects him from serious loss."

—— Among a number of adulterating substances specified in a paper read before the last meeting of the Social Science Association is one called Concentrated Ale and Porter Wort, manufactured by the Concentrated Wort Company of Margate, to which has been given the name of "Grainstone." This concentrated wort is made of malt and Hops, in the ordinary way, and reduced by a patent process to a solid hard substance. To convert this substance into beer, porter, ale, or stout, more or less water has to be added, according to the strength required, and when thus liquified, it is fermented and racked, off into casks, in exactly the ordinary way.—Why this apparently honest character should be paraded on the same form with a number of undoubted rogues we do not understand. "Grainstone" does not seem to be more dishonest than dried milk. There is plenty of roguery in the milk trade as well as in the beer trade, but concentrated essences of the genuine article are in neither case deserving of anything but commendation.

—— The agricultural Editor of the *Field* thus describes his experience in the cultivation of Fenugreek, the drug which is so largely used in the manufacture of spiced cattle foods:—

"We have experimented on its growth in this country in two very opposite districts, namely on the cold and stony Cotteswolds and in the mild west of England—and in both have succeeded in raising the seeds with as much certainty as that of the Sainfoin, and for this purpose the new stock of seed from the druggist will always answer. We have found it best to drill the seed in April in rows of about 15 inches apart. It comes up very readily, and as it advances is simply hoed to keep it clean. In October the seeds in the long foliate pods become ripe, and these and the whole herb have then the strong aromatic smell for which the plant is remarkable. [illegible] do with horses frequently employ this seed somewhat extensively; but at the present time it is deserving the especial attention of the agriculturist from the fact that it forms the principal flavouring in the much-vaunted and be-puffed "cattle feeds," of which we have now so many manufactures. It is not surprising that these should multiply, when it is known that ordinary feeding stuffs, worth scarcely more than one penny the pound, are said to be highly concentrated cattle foods when Fenugreek, and sold at from [illegible] the ton weight. Still, that the carter will make a sickly horse eat his food with relish when only a small portion of [illegible] powders—of which this is a constant ingredient—is stirred up with it, is quite certain, and we all know how much sweetmeat has to be disguised before a sample without such savour, and its consequence, flavour. Reasoning from this, we have this year sprinkled some powdered Fenugreek seed over some seed hay that had been much exposed to weather, and the result is a sample that certainly smells and eats sweetly. Let it be added that of a little powdered Fenugreek seed in pigs' food makes these animals eat with a decidedly greater relish; so that, from all the circumstances of the case, there seems to be little else for the Fenugreek will naturally become an important item in farm-yard economy. As well even for human food little reason for submitting to the exaction of so large a price as is demanded for its mixture when we can so easily [illegible] it ourselves, and in all our experiments herewith we may be certain that what we have to deal with is perfectly harmless."

—— On Friday of last week a very handsome service of plate was presented to Mr. H. SCOTT HAYWARD, to whose farm at Folkington, near Eastbourne, we have more than once referred in these columns. Mr. HAYWARD has for a number of years filled the office of Chairman to the Eastbourne Board of Guardians, and they have thus united, with his other friends, to give him a testimonial of their esteem and regard on the occasion of his leaving Sussex for the occupation of a farm in Gloucestershire, which had been for many generations tenanted by members of his family.

TRADE IN FOREIGN CATTLE.

MR. IRMAN read a paper on this subject last Wednesday before the Society of Arts, from which, as reported in the *Journal* of the Society, we make the following extracts:—

1. *Relations to Cattle Disease.*—Why the foreign stock should, in the minds of thousands of our agricultural population, be placed under a species of ban, I cannot understand, unless it is that the importation prevents the high prices which would inevitably have ruled had we not been permitted to resort to our neighbours, and avail ourselves of such surplus quarity as they can afford us, although it has become almost an accepted fact that the cattle plague, of which we are now happily all but free, was brought to us from abroad, I cannot find any direct evidence to that effect, neither can I trace any bearing on the direct importation of either pleuro-pneumonia or foot-and-mouth disease, much anterior to both diseases being well known as existing in England and also Ireland; and as far as the rinderpest is specially concerned, the Royal Commission of 1865 failed to establish anything conclusive as to direct importation; and the veterinary authorities, to whom we look for a satisfactory solution, are even now undecided, and, what is not unusual, very far from undivided in their opinions on the subject.

With a peculiarity essentially English, the rinderpest, when it first broke out, was at once pronounced to be a foreign importation—that, at all events, was agreeable to our notions of purity in our own herds, and, luckily for the tinsists, the Revel cargo had been in the Metropolitan Cattle Market some few days prior to the disease having been first observed, and it was concluded, as a matter of course, that our alleged first direct Baltic importation had subjected us to the ravages of a terrible scourge. Granting that the opinion of an eminent veterinary authority is indisputable, viz., "that the first time cattle should be introduced direct from countries east of a line from about Memel on the Baltic to Trieste on the Adriatic, we should undoubtedly have the steppe-murrain, or cattle-plague," I am at a loss to understand how we have escaped the pestilence for so many years, for the Revel cargo was not the first direct importation from Russia *viâ* the Baltic, but the third, though not in such large quantities, and although [illegible] report seem to attach no importance to the theory of the Revel cargo having done the mischief complained of, it may be as well to state that some 10 or 12 years ago a quantity of cattle from St. Petersburg was landed at Hull, and, I believe, sent into Lincolnshire; a second direct importation was brought to London in 1860 from St. Petersburg, the cargo from Revel being the third instance—part of the latter having been sold in the Metropolitan Cattle Market about the 2nd June, 1865, and, coincidentally, the disease was first observed some 17 or 18 days after, on or about the 19th June, and, subsequently spreading, had by the 14th October extended to 29 counties in England, 2 in Wales, and 16 in Scotland, and was still advancing; the early cases in the provinces being said to have been traced to cattle which had been exposed in the Metropolitan market for sale, a noteworthy circumstance, inasmuch as part of the Revel cargo was sold at Hull, and thence sent to Manchester and other places, whence no rinderpest was said to have been communicated to the adjacent districts. In the meantime, the disease had been imported into Holland—also by cattle sent from the Metropolitan market—whence it spread to Belgium and France, but in the two last-named countries the stamping-out measures which were at once put in force, had the effect of preventing any alarming spread, whereas the temporising policy permitted in Holland and Great Britain, has had a most disastrous effect, some of the Dutch provinces still suffering severely.

2. *Quantity Imported.*—After the removal of the prohibition and the almost equally restrictive duty on cattle, no material importation was received in this country till 1846, the numbers standing as follows:—

	Neat Stock.	Sheep and Lambs.	Pigs.
1843	1,521	216	361
1844	4,889	2,817	265
1845	16,864	15,057	1,500
1846	46,043	94,624	3,856
1847	75,717	142,720	1,242
1848	64,748	130,681	2,119
1849	53,410	129,266	no return.
1850	68,462	143,498	no return.

after which there was no material increase till 1860, when the numbers were as follows:—

1860	104,569		320,219
1861	107,296		312,925
1862	87,887		299,472
1863	150,555		420,788
1864	251,251		480,243
1865	211,171		344,170

I am not prepared with returns showing what portions of the above were sold in London; but it may be roughly taken that of all the importations into Great Britain, more than half the total number are sent to the Metropolitan Cattle Market; and the following figures will give a general idea of the quantities sold in the market alluded to:—

In 1842 there were 191,207 head of neat stock and 1,373,683 sheep exposed for sale in the Metropolitan Cattle Market, and after the expiration of 15 years, say in 1857, there were 261,477 head of neat stock, 1,330,630 sheep, 23,078 pigs, the proportion of British to foreign being then very much less than it has since become, the relative quantities being:—

Date.	Beasts.		Sheep.	
	English.	Foreign.	English.	Foreign.
1857 ..	[illegible]	44,758	1,194,975	135,655
1862 ..	240,051	31,166	1,213,800	288,370
1863 ..	220,302	56,228	1,152,225	328,405
1864 ..	220,294	109,171	1,199,075	353,100
1865 ..	177,435	144,281	[illegible]	657,080

Date.	Calves.		Pigs.	
	English.	Foreign.	English.	Foreign.
1857 ..	8,970	19,565	22,833	248
1862 ..	8,888	20,230	28,780	600
1863 ..	6,259	26,795	23,500	3,530
1864 ..	6,175	20,422	27,202	5,110
1865 ..	4,327	32,131	25,758	5,255

A rate of increase which is most marked, the increase in 1866 over the preceding years being still more so.

3. *Mode of Sales and Importation.*—Cattle from continental countries, which I will shortly mention, come almost exclusively on account of dealers abroad, who consign them to the various salesmen in the Metropolitan Cattle Market, the shipments being arranged so as mostly to arrive in London in time for the Monday's market, some few arriving for the Thursday's market, but the major portion for the former. The market is open in summer about 4, and in winter about 7 o'clock, and, with a brisk trade, it is no unusual occurrence for one salesman to have disposed of 400 to 600 oxen by 10 o'clock in the morning, when he at once proceeds to make up his account sales, to be sent away the same evening along with Bank of England post bills covering the value of each sender's consignment. The dealings in live cattle are almost without exception conducted verbally, and it is a feature, creditable not only to the seller but the buyer, that disputes or repudiations are almost unknown; the number of salesmen to whom the bulk of the cattle are consigned being about 12 or 14, who have their drovers in attendance at the various landing-places when boats are expected, to receive such cattle and sheep as may be forwarded to their respective consignees, and convey them to the market or lairs in the neighbourhood to await their being sold.

The principal ports whence we derive our importations are as follows:—

Port of Shipment.	District where Cattle are bred.	Average Duration of Voyage.
Harlingen ..	North Holland ..	24 to 36 hours.
Rotterdam ..	South	18 to 24 hours.
Antwerp ..	Belgium (and German) districts, from the Hungarian frontier ..)	12 to 18 hours.
	Oldenburg and part of the German districts)	48 hours
Bremerhaven ..		
Hamburg ..	Berlin, Magdeburg, &c.	48 hours.
Flensing ..	Schleswig-Holstein ..	48 hours.

From all of which, in their respective seasons, we

obtain a steady and reliable supply, in addition to occasional shipments from—

Port of Shipment.	District where Cattle are Fed.	Average Duration of Voyage.
Oporto ..	Portugal	3 days.
Carunna ..	North of Spain ..	3 to 4 days.
Various French ports, from Boulogne down to Cette ..	North of France ..	12 to 36 hours.
Aarhuus ..	Jutland	3 to 4 days.
Gothenburg ..	South of Sweden	3 days.
Revel and St. Petersburg ..	Esthonia	5 to 6 days.

—which, however, are not reliable, especially from the last named, owing to the unprofitable nature of the trade.

From the ports named the cattle are, as a rule, brought in paddle-steamers (paddles being considered preferable to the screw for cattle), which have mostly been built for the express purpose, and fitted with every contrivance calculated to give the animals the best possible chance of going through the discomforts of transit with as little suffering as possible, so much so that I believe whatever pressure of a legislative character is brought to bear on this particular traffic, it will be found that nothing of a compulsory nature can be suggested which would not—if it has not been anticipated—be voluntarily adopted by all steam-ship owners connected with the trade, inasmuch as they are, above all people, most interested in bringing the cattle, not only alive, but in as good a condition as they possibly can; for, not only is their freight dependent upon the cattle being delivered alive, but they have an object in obtaining and retaining for their vessels a good name as cattle carriers, it being beyond question that shippers give a decided preference to vessels which are known to be "good boats." Assuming, then, that an individual or company devotes a certain amount of capital in providing cattle-boats for any particular service, it follows naturally that unless the latest improvements are adopted, the chances are some more forward competitor will not only take away all the honour but all the freight; and consequently competition does, not only for the comfort of the animal but the pocket of the dealer, all and more than any mere Government interference could bring about.

Moreover, in the matter of the comfort and safety of the animals as carried in the paddle-steamers now engaged in the service, I am quite certain, from my intimate knowledge of the sea traffic in cattle, that as a rule, the sea fares better than inexperienced lookers-on are in the habit of believing. In stormy weather great discomfort must necessarily exist, but for this there can be no remedy for either man or beast. On shipment, cattle are carefully walked into the holds of the vessels in which they are to be conveyed, the holds being divided into stalls or pens by means of strong boards and stanchions, each stall carrying from three to ten bullocks, according to arrangement, the plan adopted being to stow the cattle and pen them off so closely as to prevent them from lying down, this being found in practice to be not only the most comfortable way for the cattle, but the surest manner of bringing them safely to their destination.

(To be Continued.)

FARM LABOUR.

[The following paper was lately read by Mr. T. Chandler, of Aldbourn, before the Swindon Farmers' Club.]

Farm Labour Fifty Years Ago.—I shall commence by taking a retrospective view of what farm labour was 40 or 50 years ago. At that time sheep farming was but a secondary affair, grain crops being reckoned as most profitable. Our manufacturing labourers were not then the meat-consuming people they are now. Before the old "tenantry" or common field system was abolished and the parishes laid, which became general about the commencement of this century, scarcely any Turnips were sown. The system of tenantry was compulsory. It was in most parishes on the three-field system, viz., Wheat, Barley, and Grass, without any variation whatever. The only manure applied was the straw rotted in the yard, with the droppings from the horses, and occasionally of a few cows, and a fold by the sheep, which grubbed hard for their living as best they could. With this state of things, notwithstanding the absence of machinery for any other purpose than in rare instances for threshing, it may readily be anticipated that there was a super-abundance of labour, and, consequently, wages were very low; and had it not been that the spinning of wool was done by hand-labour, which gave profitable employment to the women and children, the poor must have been nearly starved. In the majority of parishes none but a few of the strongest and most able-bodied men could obtain work, whilst the less competent were "stemmed out," each farmer taking them for a given time in proportion to his acreage. Pauperism amongst the rural population was universal, and the poor-rates rapidly increased, in some instances nearly to the amount of the rent.

The Dawn of Improvement.—I shall now endeavour to show that improvement in farming is as proportionately beneficial to the labourer as to the farmer, and to illustrate this point I could name a parish which —at the time I have mentioned one of the worst farmed in the county — has, under the present occupiers, made such progress that I will take upon myself to say that now they pay more wages to occasional labourers than were formerly paid to those of their own parish. Immediately on the division of the "tenantry" lands, the owners of these lands were prevailed on by their tenants to enlarge their farms and make them more compact, by which they would be enabled to keep larger flocks, and, consequently, enrich the soil, growing larger crops of Turnips and corn. Being unfettered by the absurd restrictions which before shackled the farmers, the four-field system was substituted for the starve-all plan they had been compelled to practise, and various kinds of sheep food were introduced generally, hitherto known but to few. Amongst the foremost of them were Turnips and Sainfoin. The growth of the former was very rapidly extended, and I need scarcely remark that the preparation of the land for that crop and the hoeings very much increased the demand for labour. During the period we are now considering many philanthropic plans were suggested for the alleviation of the burdens of the poor, such as spade husbandry, Flax cultivation, and, above all, emigration. The first of these was a practical failure, inasmuch as no labour that is unremunerative can be lasting; the second, as far as regards the manipulation of the fibre, may be placed in the same category; whilst the latter has, I have no doubt, in most instances been a permanent advantage, and has been the means of raising many an honest industrious family from comparative starvation to a status in life which their children may by their future conduct continue to advance.

The Introduction of Machinery, some years ago, was looked on by the labourers as a damaging innovation, likely to throw them back into their former depressed condition. Hand threshing at seed time was of that pressing nature, before the introduction of horse threshing machines, that the men so employed were either fed at the master's house or paid extra wages, and on some farms a relay of men was adopted. It may reasonably have been thought that labour would have been so displaced by machinery that it would have been at a very heavy discount; but an overruling Providence provides for the poor, and, contrary to their expectations, turned that into a blessing which they anticipated as a curse. Without machinery how could we get our clothing at the price it now is? Could we now see a photograph of our labourers in the last century, and one of our young men of the present day, and see the difference of their "turn out," we might congratulate ourselves on the improvements in machinery. To bring it nearer home, let us compare the manual labour of the former generation before the steam threshing machine appeared in our stack yards to what it is now. I hope we may see the day when the original curse of man—"In the sweat of thy face shalt thou eat bread," will be very much alleviated by getting all our heavy manual labour done by machinery, for it is the skilled labourer that earns most money.

We will now look at the Labour Question in its present position, and inquire by what means we can best advance the interests, both respectively and collectively, of landlord, tenant, and labourer. It may not be out of place to give a few hints as to what tends greatly, in my opinion, to keep up a proper and kindly feeling between the employer and the employed. In the first place there must be a courteous and civil demeanour towards each other at all times. When about to give an order, the master should first be careful to understand himself in what way he would wish the work to be done, and in the next to be sufficiently explicit, that he may make himself understood by the labourer, and afterwards take good heed that the work has been well performed. Vacillation in giving order sinks the master in the servant's estimation. As an inducement to young men on the farm to perform their duties properly, some have been into better situations at the end of their term of agreement, although at a great personal inconvenience to the master, will have its good effects by encouraging others to follow their example. Lastly, I would recommend that money be paid for extra labour in lieu of victuals and drink as far as possibly can be done, and that wages should not be governed entirely by the price of Wheat, but as labour is as much a marketable commodity as other things, it should be regulated by the more commercial system of demand and supply. We now come to a very essential point of comfort to the labourer—his cottage. In farms situate at a long distance from the village it is both to the advantage of landlord, tenant, and labourer that suitable and convenient cottages should be erected on the estate. To the landlord—inasmuch as without good labourers to conduct the operations of the farm the tenant would not be in a position to give him a full rent for his land; to the tenant—the benefit of having intelligent and skilful labourers that will take a pride in the work they are employed in—the advantage of this matter is too apparent to require any further comment. This fact is patent to every one, that the best labourers are most sought after, and as a consequence, they would engage themselves to those masters whose farms are nearest their own dwellings. In addition to the moral responsibility on the part of landlords to build cottages (which need not exceed 100*l.* each), the more civilised appearance of the district will in some degree help to repay the outlay. The system of letting the cottages requires some little consideration, to prevent a too arbitrary feeling on the one side, and on the other to insure the services of those occupying them. Having selected for tenants men who have previously borne good characters, it would be but fair to presume that they would so conduct themselves, that there would be no necessity for a change till the expiration of the year, and in that case there would be no cause for an agreement that they should give up their houses at a very short notice on leaving the farm during the year. The idea of being turned out at a day's notice, which may be occasioned by a hasty word on either side, has been the means of preventing to a certain extent labourers accepting the better accommodation proffered them. A week's notice is scarcely long enough; a month would not be too long, as it would only be in an extreme case that this stipulation would be necessary; and there must be a certain amount of good faith between the master and servant, or they will not be useful to each other. Mr. Stephens in his paper says, "I should like to hear your several opinions on the expediency of pensioning agricultural labourers," *i. e.*, for long servitude and good character. Instead of a few pounds being given by some agricultural society to a labourer who has worked on the same farm for many years, I should like to see in every parish a cluster of respectable cottages, in proportion to its population, with nice gardens before them, in which should be located as many of the old well-conducted labourers as they were intended to contain, rent free.

The Future of Labour.—I trust the good time is coming when the agricultural labourer may be enabled by his own industry to earn sufficient money to lay by something to comfort him in his declining years. In the past we have seen the demoralising and degrading effects of pauperism. Happily this is fast disappearing, and the manly spirit of independence is taking its place. Instead of wages where a man has a large family being as a rule made up from the poor rate, every man now is bringing them up by his own earnings; and in a few years, I have little doubt that, except in extreme cases of misfortune and distress, our workhouses will be uninhabited, and the heavy establishment charges be reduced to a minimum. Who is there, then—not only in this club, but all over England—who would not rather pay his money in fairly earned wages than even a much less sum in poor rates? Let us, therefore, hail with delight rather than despondency the change that is taking place, and endeavour as masters so to do our share of the "Labour of the farm," as to embrace every improvement in agriculture, that we may have the satisfaction of increasing our own resources and those of our labourers.

[We recommend the perusal of Mr. Cox's paper on the same subject, which appeared in our columns a week ago.]

POULTRY AND DOGS AT BIRMINGHAM.

POULTRY.—A bold stroke of Messrs. Adkins, Wright, Mapplebeck, and their brother stewards, has set a new fashion in the showing of fowls; they have summarily put every "cock and two hens" through the divorce court—and no such thing as the old pen of three birds is now visible—the males, no longer permitted to be bigamists, all appear as solitary widowers or celibates, while the matron hens and blooming maiden-pullets solace one another in broken-hearted pairs. That the novel regulation is not unpleasing to fanciers is proved by their sending several hundred more entries than before; though the total number of birds is probably less. The effect upon the funds of the exhibition is good; and no doubt the sales will be favourably influenced, seeing that breeders will not be able to buy single birds of any sort to match with blood of a different strain. A step forward, too, has been taken in the all-important matter of selecting judges—always a heavy responsibility upon the shoulders of the managers, when so much depends upon taste as well as rule, and a decision is often a ticklish matter, giving rise to an infinity of small discontent and personal criticism. John Baily's name is known all the world over, as that of an expert in poultry craft, whose zeal was mainly instrumental in winning for the Birmingham Show its early fame; other names in the list of umpires command universal respect, and, by a wise choice of the Committee, we are now enabled to welcome into office Mr. Richard Teebay, whose searching technical knowlege was needed to balance the more old-fashioned predilections of some who, year after year, have gone through the routine of the Bingley Hall awards. Time also has been thought of on this occasion: and with a division of the arduous labour between seven in place of only five gentlemen, there will be less of racing against the clock, and not so much likelihood of a leisurely review next day, making a judge in some cases "wish that he hadn't."

Another much-needed improvement has been effected in the lodging of the birds, by emancipating them from confinement in clumsy, darkly-shadowed, deep recesses of cells, which concealed many specimens from view, and made quite a farce of "showing" ducks. The Council having offered a 10*l.* prize for a design, Mr. Lythall, the Secretary, succeeded in winning it against a dozen competitors; and the result is the accommodation of the birds in light airy cages, giving each one a chance of displaying its beauty. The pens, constructed of wood framing, board, and upright galvanised iron wires, are made in twos or threes, the front and top hinged and the partitions opening out like the legs of a table, so as to fold flat or to be set up almost instantaneously. They are arranged in two tiers, both upper and lower pens placed at exactly the right heights for the eyes of most visitors, and there is a comfortable width for the public in the avenues between.

The expression of the judges' choice does not seem that this is the grandest show that has ever been seen. Among the Dorkings Mrs. Arkwright is at the top of the tree with male birds, leaving Admiral Hornby quite in the shade; indeed, if it were not for his 1st prize pair of hens, this victor of a thousand fights would be left almost nowhere. And on carefully inspecting the birds, we fully agree with the fate accorded to him by the judges. Viscountess Holmesdale does not show at all; nor does Captain Heaton appear with his renowned Cochins, leaving the field to be won by Mr. Yardley, Mr. Tomlinson, Mr. Causer, Mr. Howard Mapplebeck, Mr. Fell, Mr. Fenton, Mr. Stretch, and Mr. Tudman. There is a fine show of Brahmas; Mr. J. C. Cooper wins with Malays; Messrs. Lowe and Pelden with Spanish; Mr. G. C. Adkins makes a clean sweep with his Silver Polands; and Messrs. William, Sales, Sir St. George Gore, &c., are great with game fowl, the two "extra prizes" for game going to Mr. Burgess and to Mr. Wood, the pullets of the latter exhibitor

* The twin-screw Mary, owned by Messrs. Dudgeon, the eminent shipbuilders, performs the passage under 48 hours.

being a wonderfully fine pair. Mrs. Seamons is again the *Times rectrix* of Aylesbury ducks, her 1st prize, drake and one duck, weighing 18 lb.; the 2d prize, drake and duck, 16½ lb. The Rouens have at last beaten the white birds, Mr. Shaw's 1st prize pair weighing 19 lb., and Sir St. George Gore's 2d prize pair, 18½ lb. Mrs. Seamon's white gander and goose, weighing 37½ lb., are surpassed in the scales (or, in strict fact, on the steelyards) by Mrs. Arbuthnott's grays, weighing 39½ lb. Mrs. Seamon's 8 months old white gander and goose weigh 42½ lb., Mrs. Arbuthnott's 6 months old gray gander and goose weigh 42½ lb. Mr. John Smith is again the champion with turkeys, one cock and hen weighing 49½ lb., and a 6½ months old pair weighing 39½ lb.

The days of extravagant prices for fancy poultry may be said to have departed, but that breeders enjoy a large demand for high-class birds appears from the sales of last year, the particulars of which have been kindly supplied to us by Mr. Lythall, the Secretary. A pen of three Cochins was sold for 25*l.*; two Cochin cocks made 10*l.* each; one game-cock was sold for 20*l.*; a pen of three Rouen ducks for 15 guineas, and a pen of three game-bantams for the same. But ordinary prices ran as follows:—23 Dorking cocks made 4*s.* per bird, and 100 other Dorkings averaged 26*s.* per bird—the class in by far the largest demand. Spanish was of limited sale—two cocks fetching two guineas each, and 20 other Spanish 35*s.* per bird; 11 Cochin cocks, beside the above-mentioned special ones, made 7*s.*, 7*d.* per bird, and 63 other Cochins, 36*s.* per bird; 30 Bantams were sold for 28*s.* per bird, and five Brahma cocks at 38*s.* per bird. Only six Malays found customers, at 24*s.* 6*d.* per bird; the same number of Crêve Cœurs at 2 guineas per bird; nine Hamburg cocks make 39*s.* per bird; and 62 other Hamburgs, 21*s.* 6*d.* per bird. Nine Polish fowls were sold at 19*s.* 5*d.* per bird; and one cock at 4 guineas. Three Cuckoo Dorkings were sold at 28*s.* per bird; three La Flèche at 33*s.* 4*d.* per bird; and three Andalusians at 21*s.* 8*d.* per bird. Thirty-two game fowls fetched 33*s.* 6*d.* per bird. Thirty-three bantams sold at 25*s.* each, and 6 bantam cocks at 52*s.* 9*d.* per bird.

Forty-five ducks (being the high-priced pen) sold for 23*s.* 9*d.* per bird, 12 geese at 31*s.* 3*d.* per bird, and 18 turkeys at 37*s.* per bird. It must be remembered that the great majority of the pens in Bingley Hall remain unsold because the prohibitory figures set upon them by their owners, of the best of the specimens here competing for honours being the best brood stock from the various parks, yards, and establishments,—so that the actual value of the birds shown is very greatly above what we might infer from these averages, which are, with a few exceptions, only ordinary trade prices for really well-bred fancy stock.

We naturally find the pigeons in a loft, and here they occupy about 40 cages more than usual in their favourite gallery. Of course, the settlement of comparative merits is in the very best of hands. Mr. Cottle has no superior in the abstruse and delicate learning which treats of myriad points and markings, and Harrison Weir has the same unrivalled eye and pencil for a homing or tumbling "dow" as for a wild bird whirring from a brake. There is a very close competition in every class; the most extraordinary merit being observable among the pouters, runts, white fantails, other fantails, owls, barbs, and dragoons. Mr. John Baily's runts weigh within a shade of 5 lb. the pair; and conspicuous for rare merit are Mr. Wicking's white fantails, and a complete novelty appears in the shape of some wholly "black Jacobins" in the class for new varieties.

Dogs.—The seventh display of canine merit in Birmingham is bigger, better, richer, and more promising than ever. No matter that the managers have sought to limit the show by admitting only three instead of four dogs for a guinea subscription, and by raising the 4*s.* entrance fee to 5*s.*, the entries have come in some 60 stronger than last year, now numbering 830; and Curzon Hall is so inconveniently full that a yard at the back has been converted into a menagerie of mastiffs, Newfoundlands, and St. Bernards, relieving the galleries, we suppose, of the weight and power of the show, on the same principle which in an implement exhibition always places the steam-engines and heavy work down stairs, and at the same time enabling each dog in the hall to stretch himself over a few inches more space than was enjoyed before. A main attraction this year is provided in the new "fittings," while the new "star" gaslights decidedly add to the prettiness of the whole spectacle. Running very rapidly through the classes we note an increased number of bloodhounds, Mr. Harrison's "Dalesman" and Mr. Cowen's "Druid" being still unapproachable (metaphorically, we mean; by no means in reality). Mr. Stock's "Empress" also is here, with her children and grandchildren pervading this division of the Show. Deerhounds are more numerous and improved, Colonel Inge showing again his matchless old "Caliath," and again the fine bitch "Vengeance." Greyhounds are not particularly meritorious here; about as many as usual, and including Mr. Faulkner's "Felix" and Mr. Muggleston's "Fellmonger," that were winners last year. Foxhounds are few, not only because of the time of year, but because all the local packs have just now changed mastership—the Albrighton, Worcestershire, Warwickshire, and Bicester hounds being thus in changed hands. Other hounds and harriers don't show. The beagles are in good force, and of considerable merit. Large classes, numbering no fewer than 83 entries, present the public with plenty of the favourite spry fox-terriers, and scarcely one is to be found that is not really good. One aim of the managers has been to provide many classes as a means of distributing numerous prizes. When the Show was first established there were but two classes for pointers; now we have classes for large, medium, and small; for champions of each size, and again for two sexes of each, or 12 classes of pointers in all. Major Stapylton's "Pero" is here; but we miss Mr. Smith's old lemon-coloured dog "Major." The lemon-and-white pointers again attracted much of the attention of the judges, so that this sort is still the fashion. Mr. Whitehouse has contributed a good many specimens. The setter classes have been subdivided so as to suit all tastes as much as possible; and it is observable that the Irish have decidedly advanced in merit, though it has been feared that they were retrograding. Last year the retrievers were divided into two classes, "wavy" and "curly" coated; this year a new class of "other than black" gives the liver-coloured a chance. The curly dogs have generally been the favourites, but on the present occasion they are distanced by the wavy, the judges reporting that they have rarely seen so good a class. There are large entries of spaniels of all sorts, generally equal in merit to those of last year, which is saying a great deal, seeing that these classes are always good at Birmingham. The "sporting" half of the exhibition winds up with a curiosity class of foreign dogs. Among the "other dogs" we find a grand class of mastiffs, much improved now people have learnt that every big and threatening dog is not a mastiff. The grand St. Bernards appear for the first time in a class to themselves, and a superb show they are, both the rough and smooth varieties. In fact, a great feature in the hall is the presence of Mr. Macdona's rough dog "Bruno" and his "Victor" and "Bernard." The Newfoundlands are hardly as fine as usual, the sheep-dogs more numerous and good. Since the demise of old "King Dick," and the suffocation of Mr. Price's "Romany" on the railway when going to Sheffield, the bulldog show lacks superlative merit; still, it is large, and is evidently highly appreciated. Bull-terriers were not recognised at the first starting of these shows; now they fill two classes of large and small, and Mr. Hinks takes the 1st and 2d prizes in both. Smooth-haired and black and tan terriers abound for their admirers, and if you think that you know a Skye from a Dandie Dinmont, or a broken-haired dog, study the separate sorts here, and you will find that you are mistaken. Pugs are as gruff-looking and as dear as ever, Italian greyhounds are so extremely fine that their whole class is "generally commended," and after a bit of fun, a capital lot of toy-terriers, we find something novel in the foreign class, consisting of some specimens from China and Japan. *From the Times of December* 3.

VILLAGE LECTURE.

[The following are fragments of a winter evening's Lecture given in a village school-room many years ago on "Our Relationships."]

1. *Self-love.*—I believe that an intelligent regard to self-interest, and the rivalry and competition which arise out of it, are right in themselves, and productive of good, and that any one who says that they are contrary to sound morality only needs to carry out his principle far enough, and he will find himself very soon in the ranks of the socialist or the communist. The instinct of self-preservation, in which all this rivalry originates, is doubtless an original and essential principle of human nature, and however it may clash, like every other good thing, to abuse, its results on the whole are beneficial; and whether we see labouring men in their numbers bidding against one another for work, and so reducing wages, or merchants in their rivalry bidding against one another for customers, and so reducing profits, or communities, or manufacturers in their competition with one another introducing machinery, and so reducing costs; as we believe that, however liable to abuse it may be, and however liable to degenerate into mere selfishness and self-gratification, yet this instinct of self-preservation, which all this striving originates, is of God and not of Satan—so we may be sure in its results it will be good, and not evil. Surely it only needs for the vindication of this principle that I point out how after all it resolves itself into a mere case of faithful stewardship, for when a man asks himself whether whether he is to be mental or in material wealth, I am but putting to their proper uses the opportunities, abilities, and faculties—in short the "talents" which have been committed to my care. And let me remind you that this principle of self-love is sanctioned and endorsed by the Gospel itself—it is made the very measure of our benevolence, and every one of us is commanded—"Thou shalt love thy neighbour *as* thyself." If there be one verse which more than another on that subject might be made the text or the motto of a sound political economy, I believe it to be the one just quoted. It sanctions the principle of self-love, which, whether ignored or condemned, as it is by Christian socialists—so called—*will* operate, to the confusion of all the misguided but benevolent schemes they have imagined. I understand it to say—the stronger this self-love may exhibit itself in you the better, provided, whatever its degree, that too be the degree of your love to your neighbour.

2. *Master and Servant.*—I wish in this Lecture to illustrate the power and the importance of this principle of self-interest, and the way in which it comes into operation in our relations to those around us. The first thing needed by anyone who would discuss the relation between the employer and the employed obviously is a spirit of the most thorough impartiality and evenhanded fairness, for if there be one general idea with which anyone may safely commence the study of the subject, it is this—that human nature is the same in all classes, in the rich and in the poor, in the labourer and his employer; and though some may have been called patient and enduring, and others hard and overbearing, some benevolent and others cruel, and so on, yet, take a crowd of the very men who are admiring or condemning, as the case may be, and place them in the circumstances at which they are looking, and we may confidently assert that on the average and in the long run they will themselves turn out in the very way which they are praising or condemning in others. Human nature is alike in all, and the influence of circumstance does on the great scale tell on all alike—a useful truth to be convinced of, first, whether the student of our subject be a servant or a master, for whatever his opinion be, if he could only be induced, when thinking of this subject, to say within himself, whether of his servant or his master, "Let me only stand in that man's shoes, and ten to one I shall see out of his eyes," it would in a great measure tend to the removal of all that anger and bitterness which in times of adversity is very apt to accompany the discussion of the relations between them. I believe, then, that a man ought to prosper without being beholden, i. e., bound in gratitude to any one whatever for it under God except himself. I consider it must be proof of something essentially bad in the state of things if the *charity* of a neighbour be needed before I can manage to maintain myself, and I feel sure that benevolence is not the real nor the proper origin of employment. Labour is offered on the one side, and employment for it is offered on the other, in 99 cases out of every 100, not by benevolence but by self-interest. Every one of us, you know, is endowed with certain means and abilities, and is possessed of certain wants and desires. Well! it is *these* independently, I do not say unaccompanied by, but independently of anything like kind feeling and benevolence, that are the great causes of the work that is done from year to year in any country. It is in the operation of these abilities and wants possessed in various degrees by different people, and in the exercise of their sympathies and charities that employment is provided. The farmer, the manufacturer, and merchant are all pursuing their own interest, and so is every labourer, in the work they do and hours they labour. And I am not saying anything in disparagement either of any class of men or of human nature generally in saying this. There is a sort of selfishness which is a duty. No man's conscience ever smote him for paying attention to his personal and family interests. "If any man provide not for his own, and especially for those of his own household, he hath denied the faith." Well, employment being thus provided, not by the charity of my neighbour, but by the ordinary instincts and abilities of human nature, I, a labouring man, as every one among us is who does his duty, take my place in their employment, and I receive my wage without being beholden to any man whatever for it. The value of my work is determined just in the way in which the value of every other marketable commodity is settled, namely, by the relation between the supply of it and the demand for it. I receive the value in money, I have given it in labour, the balance is exact, and let me say it, for it is the simple truth, I OWE! *no* man even *thanks*. There are few things, I feel sure, that tend more to the substantial welfare of working men than the maintenance of goodwill between them and the other classes of society, but, valuable as this feeling may be, let us not aim at the maintenance of it by pretending what is not the case, that anything like indebtedness exists, or that gratitude is due in the matter of wages and employment. The labour given is worth the wages received. I believe that every man, whether labourer or employer, acts on the average as he thinks best for his personal interest, and it is well for us all, we may be sure, that we are guided thus, for I have little doubt that the mass of mistaken and officious benevolence which would otherwise be let loose among us would produce but bitter and mischievous fruit. The fact is, as I have said, landowners and farmers, farmers and labourers, manufacturers and mechanics, are all guided in the great scale and in the long run just by the average of those ordinary self-interested principles which are every day resulting in the infinitude of separate bargains between individuals of either class. Let no one think that in translating this beautiful motto, "Live and let live," into the mercantile principle of each acting for his own interest, I aim at destroying what some might say was all the morality of our business relations—the sense of justice, and honesty, and other essential principles to guide us here, but why should any one wish to fix the idea of personal obligation on either party to a purely business transaction. Why should the idea of Protector on the one side, and Protected on the other, be so dear? I see no sanction for it in the Bible. It is not that the rich employer is to take care of his comparatively poor labourer, but that, every one of us is to love his neighbour as himself; it is not that special gratitude is due from any one class to any other, but that we are to honour all men. We may be sure there is room enough for neighbourly kindness between classes and individuals without assuming what is not the case, that generosity, or charity, or kind-hearted patronage, or anything of the sort, has ought to have any immediate influence in the ordinary affairs of business. And let us not fear that this doctrine altogether puts benevolence out of sight or operation. I feel sure that the most intelligent labourer will sanction what I have said, though of course it will include far other than the subject too. The whole truth as regards master and servant presents two aspects—in the one it exhibits to us two honest men who are actuated by no other sentiment than that sense of justice which claims its due in exchanging with one another labour for money, according to the exact value of the employer; and in the other it presents to us these same men as equals in a far higher sense than that in which they are respectively master and servant, as *neighbours* claiming mutual sympathy, and the expression of that sympathy to the extent of their respective abilities. I believe that in the relationship of master and servant is precisely that of any other two who are dealing with one another in any commodity whatever.

3. *Individuality.*—I must confess that I have referred in this Lecture more to that independent individuality of which we are the subject, than to the relationships in which we ought to maintain towards one another. I have not by any means been running away from my subject in doing this. People are mistaken if they think that relationships can be created and made up at the mere word of command—they are a natural growth arising out of the relations between individuals between whom they exist. I have often heard of men, respectable years, in station, and in wealth, lamenting the failure of those relationships to which they had been accustomed amongst the different classes of society in years gone by—lamenting the loss of that deep respect which they conceived was no longer exhibited as it used to be by young men towards their elders by labouring men towards their employers—by the middle and the lower classes of society towards the upper. Now let me say it by the way, I believe they are mistaken in all this. Of course they knew their manners in a village by, but then we younger men have the written records of the time of history they refer; and I believe that so far as any real, sincere, intelligent, and *independent*—let me use that word once more—so far as any intelligent and independent feeling of goodwill between the different classes is concerned, it never was stronger than it is at present. But their great error was in another direction—they thought the thing was to be corrected by insisting on the observance of those forms of relationship of which they lamented the decline. It might surprise you to be told that their error in this particular is precisely that of all those whose radical or revolutionary ideas are their most extreme abhorrence; for what are all in search of but just an improved set of relationships which they think are real and positive existences in themselves alone, and obtainable by mere force of number through Parliament or otherwise. But relationships are not actual things; they are, to repeat the word, mere relationships between actual things; you cannot obtain them by labouring for them directly, but only by labouring upon the things themselves between whom you want the relationships to arise. It is just by working upon individuals, by the development of their independent individuality, and by bringing such motives to bear upon them as shall alter their wills and tendencies, that the relationships between them are capable of alteration. Let us not then look so much to Government or Parliament, or Politics to effect any alteration in our social position which seems desirable. Government has very little power—I might say no power at all—in this respect; all that it can do for our good, besides restraining the wrongdoer, is to abstain from meddling with that natural play of affinities out which, of *course*, the safest and most lasting because the least artificial relationships can alone arise, whether in the matter of our social or commercial interests. People talk much of the evils which they find in society, but the only way to correct them is to correct the evils which exist in the individual pieces of which society is composed. Society is faulty because individuals are at fault; as individuals rise, society on earth will improve, and when

individuals shall be perfect, it will be the advent of heaven. Society is just, as it were, one of those compound substances of which the chemist instructs us. It is made up of atoms each of which has an individual existence, and is possessed of certain properties; and as are the atoms, so is the compound which they unite to create. The chemist knows that it is of no use to complain of the relationships as being at fault between the atoms; these relationships are the necessary—the unavoidable consequence of the characters possessed by these atoms. If he could alter the character of the atoms themselves, then the relations which exist between them might change to his mind, and the result might be different; but so long as the atoms maintain their character, their compound will maintain its nature. Well, then, I believe I have been right in speaking less of relationships than of the atoms themselves between whom they may be supposed to exist. Let no one think that by settling the *relations* of the different classes in society he will put everything to rights. Government may be related to subjects, taxers to the taxed, those who make the laws to those who obey them, capitalists may be related to labourers, masters to servants, with absolute justice, and yet I believe that society might tumble to pieces and anarchy result out of it all, as it has done with monarchies and empires and republics enough before now. The Millennium of happiness for which we look will not be the result of mere political tinkering, whatever the instrument, whether a Reform Bill or a charter, by which they expect to accomplish it. It is not by the correction of mere relations that everything is to be put right. Masons know this well enough. The curve, as has been well said, may be turned most truly, and may be laid in brick most perfectly, the relations of the parts may be absolutely correct, and yet, remove the centering, and the arch shall tumble. The fault was not in the relations of the parts, but in their individual quality. The bricks had not been burnt perfectly, or the material used had not sufficient strength, and no skill in putting them together could make up for that. Just so in human society—the work of improvement must proceed in individuals before it will show itself in nations. The requisite standard of quality must exist in the individual pieces before the politician can carry out of them his perfect arch, true, useful, and elegant, to which a well regulated state of society may be compared. Millennium must come in the hearts of individuals before it will show itself in the condition of nations. No doubt there is a good time coming—good materially as well as morally and intellectually; for prophets as well as poets tell us that; but let us not think that it is to be the surprising consequence of some new discovery which is all at once to remodel the form of society. It will be but the latter end of a process which has long since begun. The time of it will not come upon us all at once; it will not arrive with a rush of the intervening minutes, with all its efforts and results, shall have passed us by, and neither will the goodness of it come upon us by surprise. The standard of excellence which shall then prevail will have been achieved by the successive experience of all the individuals in the range of quality. Like all other growths, the result will be produced by the continual addition of atoms, and the man who has crushed an evil habit in himself, and done one single act for the real benefit of his neighbour, may be more truly said to have helped on that good time for which all mankind are looking than the wisest or most of political speechifiers; for it is just as *each* of us improves that *all* of us improve; it is just as individuals rise that the whole body will rise in the scale of excellence and happiness. That is the great lesson for each of us to keep in mind. Our individuality on the one side, and our relations to society on the other. Companionships and friendships distract our attention from the one, and innate self-liness makes us apt to forget the other. But each *one* of us must remember that in a most tremendous sense he is *all-one* among men beyond all human ties, depending on himself, on his good or ill-doing, on his success or failing for ever according to his own will and conduct, with no possibility of help from relatives or friends, or those who now surround him and now appear so near. And he must also remember that he is one of a body of persons bound together by strong sympathies, on whom mutual influence is not only a possible but an unavoidable thing—a body which in virtue of these sympathies and this influence rises or falls in the scale of excellence with every step in advance or retreat of every one of its members. *J. C. M.*

HARVEST IN RUSSIA.

The year 1866 may be considered as one of the most remarkable years in the annals of agriculture in Russia. No harvest to be compared to it for plenty can be remembered, especially in the southern provinces of Russia. The quality however of the corn, although excellent, has been surpassed in other years. The most favoured provinces are—

1. Podolia, where the harvest of Wheat and Rye is, especially in the valley of Kodgma, most abundant. In ordinary years, where 10 to 13 hectolitres have been produced, this year 13 to 21 hectolitres have been grown. The supply from Podolia to the Odessa market, before the closing of the navigation, has been estimated at more than 2 millions of hectolitres, or 5½ million bushels.

2. A great abundance of corn of the second quality has been produced from the province of Kiev, at the price of 7 francs 45 centimes to 10 francs 40 centimes the hectolitre, taking into account the distance of the places of production from the ports of exportation. Odessa calculates on an arrival of two millions of hectolitres, one this autumn, the other next spring.

3. The province of Cherson, of which 75 per cent. of the total production (more than two millions of hectolitres) will be delivered at Odessa before the closing of the navigation. A considerable quantity has already been despatched to England.

4. Bessarabia, of which the southern part has been especially favoured. Whilst, taken as a whole, the harvest in this province, as in Cherson, is far beyond the average, both as regards quality and quality, it will be difficult to state precisely the quantities which may be expected to arrive at Odessa from Bessarabia, as that must depend on the state of the navigation of the Dniester. It is calculated that the arrivals, which have already commenced, will give a supply of 52,000 hectolitres before the closing of the navigation.

5. The province of Ekaterinoslaw has only had an average harvest. The ports of the Sea of Azov are the principal outlets for the produce of this province, and therefore it is expected that it will not add to the supply of the port of Odessa more than 200,000 hectolitres. It appears from these statements that the total export of corn of this year's growth, from the port of Odessa, during the current autumn, will exceed six million hectolitres. The arrivals are effected without interruption, and although the exportation may be diminished for want of ships, the stock, which is very considerable at this time, is almost entirely in the hands of exporters, and consequently not available. The prices are very high. However, this tendency to rise, we are assured, will not be prolonged; the abundance of the harvest, the want of ships, and besides, the approach of the dull season will necessarily cause the price, if not to be lowered, at least not to rise. *From "Cosmos," 21st November*, 1866.

Home Correspondence.

The Birmingham Show Pigs.—For some years past farmers and veterinary professors have been at variance as to the state of dentition being an infallible test of the age of pigs, especially when these animals are not only highly-bred but highly-fed from their birth. Several of our most distinguished noblemen, landed proprietors, and farmers of the highest respectability, have been subjected to the annoyance at the Birmingham and other shows, of having their pigs disqualified by the veterinary surgeons on the ground that the state of dentition did not accord with the age stated in the entry. In our case, the finest pen of pigs in the class was disqualified, not on the score that the age was understated or incorrectly entered, but on the ground that the state of dentition indicated that the animals were not all of one litter. It happens in our case there is proof conclusive that the pigs are of one litter. We have three farm homesteads, each a mile asunder. The show pigs were bred and reared at our smallest homestead, where only one sow is kept, and where no other litter has been bred for 12 months. The show pigs have never been mixed with, nor had they ever seen, any other pigs until sent to Birmingham. We offered to the committee to prove this by many witnesses, but the members of the committee present expressed themselves satisfied with our statement without hearing the evidence with which we were prepared. By the rules of the show the decision could not be reversed. We publish these facts not so much in defence of ourselves as in the interest of science, and in order that some reliable experiments may be set on foot to test the veterinary theory. We intend, at the next Birmingham Show, to exhibit the heads of six pigs of the same litter, and to invite the Veterinary College to have the pigs marked at the time of their birth, in order that there may be no mistake. Hoping that other exhibitors will also make experiments of this kind. *James and Fred. Howard, Bedford, Dec. 4.*

Societies.

ROYAL AGRICULTURAL OF ENGLAND.

Monthly Council: *Wednesday, Dec.* 5.—Present—Mr. H. S. Thompson, President, in the Chair: the Earl of Powis, the Earl of Shrewsbury, Lord Chesham, Lord Tredegar, Lord Vernon, Lord Walsingham, Major-General the Hon. A. N. Hood, Sir Watkin W. Wynn, Bart, M.P.; Mr. Barthropp, Mr. Cantrell, Colonel Challoner, Mr. Druce, Mr. Brandreth Gibbs, Mr. Hornsby, Mr. Jonas, Colonel Kingscote, M.P.; Mr. Lawes, Mr. Milward, Mr. Pain, Mr. Randell, Mr. Read, M.P.; Mr. Rigden, Mr. Torr, Mr. Wells, Major Wilson, Mr. Jacob Wilson, Mr. Frere, and Dr. Voelcker.

The following New Members were elected:—
Allender, Henry James, 6, Belmont Road, Liverpool.
Chandler, W. B., Sutton, Woodbridge.
Clarke, John Algernon, Long Sutton.
Oakley, George, Ickworth Park, Godstone.
Ward, F. W., The Lea Farm, Cleobury Mortimer, Salop.

Finances.—Major-General the Hon. A. N. Hood, Chairman, presented the report, from which it appeared that the Secretary's receipts, during the past three months, had been duly examined by the Committee and by Messrs. Quilter, Ball, & Co., the Society's accountants, and found correct. The balance in the hands of the bankers on the 30th November was 1110*l.* 13*s.* 8*d.* The Committee think it their duty to the Council to mention the fact that the present rate of expenditure exceeds the income, and beg to suggest that this subject may become one for future consideration. This report was adopted.

Journal.—The President reported that the prize of 10*l.* in Class VIII. Miscellaneous—"Experiments on the Potato crop," had been awarded to the Essay bearing the superscription (G. M.) The Committee entertained some doubt whether these letters can be considered a motto as required by the conditions of competition, but as they have not been seen by either of the judges it is thought sufficient to announce that for the future, letters, whether the initials of the writer or not, will not be considered a motto, and essays bearing letters only as marks of distinction will be disqualified. The writer was ascertained to be George Maw, Esq., F.S.A., Benthall Hall, Broseley, Staffs.

Chemical.—Mr. Wells reported that Professor Voelcker delivered last season the following lectures: 1, on Disinfectants; 2, On the conditions to be observed in carrying out Agricultural Experiments in the Field.

Dr. Voelcker reported on the experiments which were made under his direction on different farms. In no instance was the use of potash-salts for root crops found beneficial, and in some cases crude potash-salts somewhat diminished the produce. He ascribes this to the cold and wet season, and the Committee suggest that the same experiments should be repeated for a succession of years on light as well as on heavy land. The instructions for carrying out field experiments will be printed in the next volume of the Journal, and persons willing to undertake them are requested to communicate direct with Dr. Voelcker, who will gladly render every information and assistance in this desirable work, which, in order to be practically useful, should be taken in hand by as many as possible.

Dr. Voelcker contributed the following papers to the Society's Journal for 1866:—1, On Disinfectants and Experiments on Carbolic Acid; 2, On the Composition of Orange Globe Mangels—Bulbs and Tops; 3, Field Experiments on Clover-seeds; 4, First Report with Prof. Coleman on the Improvement of Grass-land on the Manor Farm, Braydon, Wilts.

Dr. Voelcker has in preparation for the next volume of the Journal—1, A Paper on the changes which take place in Grass and Clover during hay-making and in the stack; 2, A short Paper on Field Experiments with crude potash, salts and common salt on Mangels.

Dr. Voelcker reported that in a recent visit to Switzerland he found that irrigation with town sewage on meadow land had been practised for more than 300 years in the immediate neighbourhood of Lausanne, and that the general experience there agreed well with that in England.

The following analyses were made by the consulting chemist for members of the Society.

Analyses made for Members of the Royal Agricultural Society of England in 1866.

Guanos	21
Superphosphates and similar artificial manures	92
Nitrate of soda and salts of ammonia	20
Refuse manures	27
Bone-dust	14
Limestones, marls, and other minerals	32
Soils	27
Waters	36
Oilcakes	51
Feeding meals and vegetable productions	13
Examination for poison	2
	335

This report was adopted.

House.—Major Gen. the Hon. A. N. Hood reported that the certificate of the Registrar of Friendly Societies, with regard to the rating of the house, had been received. The builder's alterations in the house having been completed according to the contract, the balance due now recommended to be paid, together with the architect's commission, amounting to 49*l.* 17*s.* This report was adopted.

Implements.—Colonel Challoner reported that the committee recommended that the words "including steam engines not qualified to compete for the above prizes" be added to the miscellaneous awards in the prize sheet.

Education.—The Earl of Powis reported that the Committee had followed out the scheme of prizes offered in the last Report, in connection with the Oxford Local Examinations, and had made the following award of prizes:—

List I.—*Persons as Candidates who obtain Certificates, regard being had to their place in the General Class List.*

Seniors.

Three at Oxford First Division.—A. Pollard, Liverpool Institute, 7*l.*; J. Lake, Alfred House Sc., Bow, Middlesex, 5*l.*; C. J. Langley, Abington House Sc., Northampton, 3*l.*

Four in Oxford Second Division.—Thomas Hill Grammar Sc., Wolverhampton, 2*l.*; H. T. Bovey, Clevedon Coll., Northampton, 2*l.*; C. O. Mackwood, Clarendon House, Kennington Road, 2*l.*; R. P. Rudd, Clarendon House, Kennington Road, 2*l.*

Juniors.

Two in Oxford, 1st Division.—W. H. Davies, Manchester Gr. School, 7*l.*; E. King, Abington House Sc., Northampton, 7*l.*

Seven in Oxford, 2d Division.—F. Chubb, Mansion House Sc., Exeter, 3*l.*; G. B. Lovett, Ramsgate Coll. School, 3*l.*; C. A. Day, Clevedon Coll., Northampton, 1*l.*; C. Higham, Clevedon Coll., Northampton, 1*l.*; J. Layton, Devon County School, 1*l.*; W. Mortimer, Devon County School, 1*l.*; J. C. Sargent, Abington House Sc., Northampton, 1*l.*

List II.—*Persons given as Candidates who, having passed the Preliminary Examination, are distinguished in any of the subjects mentioned in the R. A. S. E. Prize List.*

Seniors.

C. J. Langley, Abington House Sc. (Mathematics), 5*l.*; A. Pollard, Liverpool Institute (Mathematics), 5*l.*; H. T. Bovey, Clevedon Coll. (Mathematics), 2*l.*; J. Lake, Alfred House Sc., Bow (Mathematics), 2*l.*; R. P. Rudd, Clarendon House (Mathematics), 2*l.*; F. B. Kingdon, R. A. Coll., Cirencester (Chemistry), 5*l.*; A. Pollard, Liverpool Institute (Chemistry), 2*l.*; J. W. Sanders, Ullesthorpe House (Physiology), 5*l.*; A. Pollard, Liverpool Institute (Physiology), 2*l.*

Juniors.

F. Chubb, Mansion Ho. Sc., Exeter (Pure Mathematics), 4*l.*; E. King, Abington Ho. Sc., Northampton (Pure Mathematics), 4*l.*; W. Mortimer, Devon County Sc. (Pure Mathematics), 4*l.*

List III.—*Mechanics applied to Agriculture.*

F. B. Kingdon, Royal Agr. Coll., Cirencester, 5*l.*; H. R. Goddard, Royal Agr. Coll., Cirencester, 4*l.*; T. J. Elliott, Royal Agr. Coll., Cirencester, 3*l.*; J. L. Waldon, Devon County School, 2*l.*

Chemistry applied to Agriculture.—F. B. Kingdon, Royal Agr. Coll., Cirencester 5*l.*; J. L. Waldon, Devon County School, 4*l.*; H. R. Goddard, Royal Agr. Coll., Cirencester, 4*l.*

In all these lists, where prizes of the same value are given to more than one candidate for the same subject, the candidates' names are arranged in alphabetical order.

The whole number of candidates was 45. The number entered for the first Cambridge Examination in 1865 was 120.

Those entered at the first Oxford Examination in 1866 were 45. This apparent diminution arises from the fact that at first it was supposed that every agricultural candidate who passed the examination would receive some prize. The masters therefore entered all their agricultural pupils for Cambridge; but finding afterwards that the prizes were limited, entered for the Oxford Examinations only their best scholars.

Mr. Pinches, Hon. Sec. of the London district for the Oxford Examinations, informs our Hon. Sec. that the Prizes offered by the Society at the last Oxford Examination had not become sufficiently known, and that should the Society offer any Prizes for the year 1867, he would be able to assist in distributing the notices.

With regard to the Cambridge Local Examinations to be held during the present month, the Council have determined upon offering the following Prizes:—

1. To Candidates who answer papers to be set in Mechanics and Chemistry as applied to Agriculture. Open to Seniors and Juniors who have passed the Preliminary

Examinations above, and also to any young men under the age of 16 (duly recommended).
Mechanics applied to Agriculture .. .. 10*l.*
Chemistry applied to Agriculture .. .. 10*l.*

II To Candidates who obtain certificates, regarding had to their place in the General Class List.
Second-class prizes .. .. *5l.*
Third-class prizes .. .. *5l.*

III To candidates who, having passed the Preliminary Examination, are distinguished in any of the following special subjects:—
Section D. (Pure Mathematics, a 1st prize of .. *5l.*
(Applied Mathematics, a 1st prize of *5l.*
Section E. Chemistry, a 1st prize of .. *5l.*
Section G. 1. Zoology and the elements of Animal Physiology, a 1st prize of *5l.*
2. Botany and the elements of Vegetable Physiology, a 1st prize of .. .. .. *5l.*
3. Geology, including Physical Geography, a 1st prize of .. .. *5l.*
No student will be examined in more than one of these three divisions (1, 2, 3).

Junior Examinations.
Section 7. Pure Mathematics, a 1st prize of .. *5l.*
Section 8. Mechanics, a 1st prize of .. .. *5l.*
Section 9. Chemistry, a 1st prize of .. .. *5l.*
Section 10. (*a*) Zoology, a 1st prize of .. .. *5l.*
(*b*) Botany, a 1st prize of .. .. *5l.*
No Student will be examined in more than one of the two divisions (*a*) and (*b*).

A sum of *30l.* will be given away in secondary prizes of not less than *2l.* each, according to the discretion of the Committee.

Seventy-four Candidates are entered for these prizes. Of these, 21 are Seniors and 45 Juniors, while 10 are entered for the Special Prizes in Mechanics and Chemistry applied to Agriculture, of whom two are also entered amongst the Seniors.

The Council also offer (besides the foregoing prizes) 1 Senior Scholarship of *50l.*, and 4 Junior Scholarships of *20l.*, to be competed for at the ensuing Cambridge Local Examinations in December, 1866, limited to sons of tenant farmers, or of owners, if not exceeding 500 acres, occupying their own land, on the following conditions:—

That the Senior Scholarship shall only be given on condition that the scholar spend a year with a practical agriculturist, to be approved by the Education Committee, or at one of the agricultural colleges, such as Cirencester, Glasnevin, or the Agricultural Department at Edinburgh, and that the money shall not be paid until a testimonial as to good conduct and industry be produced, at the end of the year of scholarship, from the body or person under whom the scholar has studied.

That the Junior Scholarships shall only be given upon condition that the scholars spend a year at a school to be approved by the Education Committee, and that the money shall not be paid until a testimonial as to good conduct and industry be produced at the end of the year of scholarship from the person under whom the scholars have studied.

These Scholarships will be awarded according to the order in which the candidates stand at the Cambridge Local Examinations.

Seven candidates present themselves for the Junior Scholarship.

The Council have again obtained the assistance of Mr. Besant, of St. John's Coll., Cambridge (Senior Wrangler, 1850), to examine in Mechanics applied to Agriculture, in conjunction with Mr. Amos, the Society's Consulting Engineer; Mr. Liveing, Professor of Chemistry in the University of Cambridge; and Professor Voelcker, the Society's Consulting Chemist, will conduct the examination in Chemistry applied to Agriculture.

BURY ST. EDMUND'S MEETING.—The Earl of Powis stated that the Committee had accepted the offer by the Local Committee, of prizes for plans for Labourers' Cottages, subject to Mr. Randell's suggestions, of which the Local Committee present approved. The Local Committee were requested to provide corn in the straw for trials, hay, straw, cabbages, clover, and other forage as agreed on last year. The Secretary to confer with Mr. Brandreth Gibbs, and send information as to the kind and quantities required. They recommended that the Society's surveyor go down forthwith to stake out the roads and approaches to the show yard, and that he submit a plan for a smaller size of boxes for ponies to the next meeting. This report was adopted.

POULTRY PRIZES.—Major-General the Hon. A. N. Hood having advocated the offer of a sum not exceeding *200l.* in prizes for Poultry at the Bury Show, the motion was seconded by Mr. Barthropp, and opposed by Mr. Torr and Mr. Milward; the motion was ultimately carried by 12 ayes to 5 noes, and a Committee, consisting of Major-General the Hon. A. N. Hood, Mr. Read, M.P., Mr. Barthropp, Mr. Cantrell, Mr. Druce, Mr. Brandreth Gibbs, and Major Wilson, was appointed to carry out the necessary arrangements.

COMMITTEE OF SELECTION.—The President stated that the Committee recommend Sir Edward Kerrison be elected a Vice-President to fill the vacancy caused by the death of Mr. Fisher Hobbs, and take this opportunity of expressing their deep sense of the great services rendered by that gentleman to this Society from the time of its formation, and beg to suggest that a paragraph be inserted in the Report to the General Meeting on Wednesday next, expressive of the great regret occasioned by his death to all his late colleagues on the Council.

Mr. Davies, of Mere Old Hall, Cheshire, having been proposed by Mr. Dent to fill the vacancy caused by the election of Mr. Jonas as Vice-President, and the Committee, having ascertained that District (C) in which Mr. Davies resides, contains 502 members of the Society, and is represented by only 4 members of Council, Mr. Davies is recommended by the Committee accordingly. As the names of the six elected members of the Committee have been so recently before the Council for election, it is proposed that they shall continue in office for the coming year, with the exception of Lord Vernon, who is going to the continent, and Mr. Jacob Wilson, in consequence of his great distance from London, thus leaving two vacancies to be filled up by the Council.

On the nomination of Mr. Torr, seconded by Mr. Randell, Sir Edward Kerrison, Bart., M.P. was unanimously elected a Vice-President of the Society in the room of the late Mr. Fisher Hobbs, whose loss was deeply felt by the Council; and Lord Walsingham took occasion to pronounce an eloquent eulogium on the capacities for business and the straightforward honourable character of Mr. Fisher Hobbs, who was always ready to give the Society his best advice and assistance.

The President, in the absence of Mr. Dent, M.P., proposed, and Mr. Milward seconded, Mr. D. R. Davies, of Mere Old Hall, Knutsford, Cheshire, as a Member of Council in the room of Mr. Jonas, elected a Vice-President.

CATTLE PLAGUE.—Lord Walsingham reported that the Committee had drawn up a series of resolutions as follows:—

The points to which the Committee particularly wish to draw the attention of the Council are:—

1st. The Importation of Foreign Cattle;
2d. The re-opening of Fairs and Markets; and
3d. The necessity of extending the time during which the powers granted to the Privy Council under the Acts of the last Session may be exercised.

With respect to the first point the Committee believe that the existing restrictions are probably sufficient for the present, but they think that unless they are made permanent, it will not be considered worth while to erect fairs for the purpose of carrying out regulations which may be only of a temporary nature, and that consequently such as relate to quarantine will become inoperative. The constant presence of the disease in various parts of the Continent of Europe, makes it extremely probable that except under very stringent regulations the disease will constantly be re-imported, and they believe that it will eventually be found that nothing short of permanent regulations for killing animals intended for slaughter at the ports at which they are landed will prevent its introduction, and that with respect to Store Cattle, the Regulations should be of such a permanent character, as will lead to the provision of such buildings as will be necessary for carrying out an efficient system of quarantine.

With respect to the 2d point adverted to by the Committee, they think considerable danger will be incurred by re-opening fairs and markets at the present time, except under the restriction of immediate slaughter. With reference to these and the remaining point submitted by the Committee, they recommend that a deputation be authorised by the Council to seek an interview with the President of the Council, to represent their opinions on this subject, and to call the attention of the Government to the importance of obtaining, if necessary, parliamentary powers, so that the trade in cattle may be placed upon such a footing as may ensure the greatest amount of security to owners of cattle, and that at the same time, the dealers and importers may know under what restrictions the trade is to be carried on, and be encouraged to provide such appliances as may enable them to conduct their business with the least possible inconvenience to themselves, and the smallest risk to, and interference with, public interests.

This report was adopted, and it was resolved that a deputation from the Society should wait on the Lord President of the Privy Council, at the Privy Council Office, on Friday the 7th inst., and impress on his Grace the above resolutions.

The Annual Reports of all the Standing Committees were presented by the respective Chairmen.

The Standing Committees for 1867, viz., Finance Committee, Journal Committee, Chemical Committee, House Committee, Implement Committee, Veterinary Committee, Stock Prizes Committee, General Bury Committee, Show-yard Contracts Committee, and Education Committee, were appointed.

The Live Stock and Implement Prize Sheds for the Bury Meeting were settled at a Special Council, which met by order of the President at the rising of the monthly Council.

BATH AND WEST OF ENGLAND.—The usual monthly meeting of this Society was held on Tuesday last.

Salisbury Meeting, 1867.—This meeting was fixed to commence on Monday, June 10th: the entries for Stock and Implements to close on April 18th; those for Poultry, on the 10th of May.

The Stock Prize Sheet was accepted and confirmed, and ordered to be printed and circulated, subject to the condition that in case any description of stock shall be forbidden by legal authority to be exhibited, or if exhibited, shall be required to be slaughtered, the prizes for such stock will not be given. The Society's prizes for stock amount to *1100l.*; those offered by the Local Committee to *50l.*, with an additional sum of *100l.* towards the expenses of a Dog-show, supposing the Society should consider it desirable to hold one, which, however, they have decided not to do, unless owing to legal difficulties or prudential considerations they are unable to hold a full show of cattle, sheep, horses, and pigs. In the prize sheet, Devons, Herefordshire, and Short-horn Cattle are placed on the same footing. In the Sheep Classes several additions have been made to those of the Hereford Show: prizes are now offered for Leicester, Cotswold, other long-wool, Southdown, Hampshire Down, Shropshire, Oxford Down, Somerset and Dorset Horn, and Mountain Sheep. In the Horse classes there are prizes of *30l.* and *15l.* for agricultural stallions, foaled before 1865; *20l.* and *10l.* for agricultural stallions foaled in 1865; *15l.* and *5l.* for mares and foals or in foal; *20l.* and *10l.* for pairs of agricultural horses foaled before 1862; and *20l.* and *10l.* for ditto, foaled after January 1st, 1862. In the Hunter classes, *25l.* and *10l.* for mares or geldings foaled before January, 1863; *25l.* and *10l.* for ditto foaled in 1863; and *15l.* and *5l.* for fillies or geldings foaled in 1864. In the Hack classes, *10l.* and *5l.* for mares or geldings to carry not less than 15 stones; *10l.* and *5l.* for ditto to carry not less than 12 stones; and *10l.* for the best mare or gelding pony, not exceeding 13 hands high. The prizes offered by the Salisbury Local Committee are *10l.* and *5l.* for five four-teeth Hampshire Down Sheep, to be shown in their wool, and afterwards shorn in the yard; and *10l.* and *5l.* for five six-teeth or full-mouthed ewes, subject to the same conditions; also, *20l.* in sums varying from *5l.* to *2l.* *10s.* for Berkshire pigs; and *3l.* *10s.* for sheep-shearing. In order to assimilate the practice of this Society to that of the Royal Agricultural Society of England, it is one of the special conditions on the prize sheet that sheep exhibited for any of the Society's prizes must have been really and fairly shorn bare after the 1st of May in the year of exhibition, and a certificate of the date of such shearing must be forwarded to the Secretary on or before the 1st of June.

The Poultry Prize Sheet was accepted and confirmed; and the Stewards of Horticulture and Music were authorised to make arrangements on the same scale as those of last year.

MIDLAND COUNTIES AGRICULTURAL.

BINGLEY HALL, BIRMINGHAM.—The absence of the Cattle classes from the area of Bingley Hall is a great blow to the interest of the Show; and through it a blow at the interests also, it would appear, of some of the showmen whose stands are generally so attractive. The cattle being absent, it has apparently been assumed that agriculturists would not attend; and the seedsmen in particular appear to have therefore thought it was not worth their while to make the usual exhibition of their wares. Messrs. Sutton, of Reading, promise, we believe, and others no doubt also engage to make up for this at the Agricultural Hall, but their absence on the present occasion may in the meantime be taken, we imagine, to illustrate in a more naked form than it generally appears, the motive which lies at the bottom of all the effort and display that is annually made; and one is left-to regret that public spirit is not sufficient to take the place of mere personal interest, when the latter, as on the present occasion, may have proved inadequate. After all, the attendance in the Hall has not fallen so much below that of previous years as might have been expected. We learn from the *Midland Counties Herald* that the attendance has really fallen little short of that of 1865, while the business transacted has been even greater.

Certainly it is not because there are not as good specimens as ever of our green crops in the country that they do not appear upon the seedsmen's stands this year at Birmingham. The show at Reading, by which Mr. Sutton's customers are induced to send their roots for use at Islington and at Bingley Hall, was, we believe, finer than ever; and Messrs. Griffin & Co., and Proctor & Ryland, the manure manufacturers, have a remarkably fine display of roots beside the superphosphates, &c., on which they are supposed to have been fed. The general display of roots in competition for the prizes offered by the Society and others, has, however, not been so good as usual. Mr. Moore's collection of Mangels, Swedes, and Carrots, for Messrs. Proctor's Silver Cup, is, however, first-rate — the Mangels weighing 32 lb. apiece, the Swedes 11 lb., and the Carrots nearly 9 lb.; and Sir W. Heathcote's is very good; but there are only three competitors. There is a good show too in competition for Messrs. Griffin's Cup, and the Cabbages shown are generally splendid, Sir W. Heathcote carrying off the prize. Mr. Robinson, of Derby, shows as usual the best Cabbages in the Hall, and extraordinary growths they are, weighing 45 lb. apiece. For the rest, the Kohl Rabi are good, the Mangels and Swedes and Turnips pretty well—the Potatos few but fine. On the whole, this part of the Show is shorter than it has been in previous years.

We presume that on the whole, even excluding the Cattle classes, which fill so large a space in the Catalogue, but are excluded from the Hall, the same must also be said of the other portion of the exhibition. Excepting Shropshires, which are shown in unusual excellence and evenness of character, the Sheep classes are hardly up to the mark of previous years, while the Pig classes are evidently much below par. Among eight pens of Leicester wethers Mr. Foljambe as usual takes the prizes, and Mr. Walmsley, of near Bridlington, is 3d; Mr. Bradshaw's sheep are commended; and so are Mr. Herrick's. Five awards in a class of 8 show considerable merit.—Five entries of Long-woolled Sheep, "not Leicesters," include Mr. Wigmore's and Messrs. West's grand upstanding Cotswolds, with wonderfully fine wool. Mr. Tombs' pen is commended. Mr. Bradshaw's sheep are apparently the so-called "Barmshire" breed of large-framed white-faced Leicesters, which evidently cannot hold an equal place in such a class with well-bred Cotswolds.—In the South Down classes we have the usual display of beautiful quality, and more than usual size. Lord Radnor's sheep are this year 1st in the younger class, owing their place to the greater size and excellent quality they exhibit, and also probably to the fact that the majority of the judges are Shropshire men, who look for greater size and weight than in the highest quality of South Down sheep is generally exhibited. Anyhow, Lord Walsingham's beautiful pen stand 3d in the place of 1st, where hitherto they have been.—The Shropshire sheep make a capital display, with less variety

of character than has been sometimes seen; still even now there are evidently two sorts—one with black faces and coarser heads, the other with lighter faces and altogether greater quality; the latter, however, carry quite as much mutton as the former, and nothing can be better than Mr. Smith's pen of five fat wethers under 22 months old, which carried off the prizes in their class.

There is a very large class of pens of three fat wethers of this breed, and here Mr. Nock, of Sutton Maddock, takes 1st prize, and with it a number of other distinctions, for which our prize list must be consulted. They certainly were a pen of remarkable quality and weight. Among the single wethers, for which Messrs. Mapplebeck & Lowe offer a prize, Mr. Beach, of the Flour Mills, Dudley, carries off the cup, and his sheep is at the same time a good advertisement of "Beach's Farinaceous Food."—There are short classes, but very good ones, of the Oxford Down breed—and a very excellent sort they are shown to be. The Duke of Marlborough and Mr. Treman are 1st in the two classes of these Downs and the cross-bred sheep alongside them, which are virtually the same description. Mr. Caswell shows some very excellent Lincoln sheep; and there are good classes of ewes in all the breeds, excepting perhaps the Shropshires, which are not in any force.

THE PIG CLASSES, as we have already said, are inferior. Very few 10 months' fat pigs are exhibited; and of these, one pen, Mr. Cartwright's, are alone thought worthy of a prize. Larger classes of older pigs are shown. Major-Gen. Hood's, from the Prince Consort's farm, are as heavy and good as ever, and take the 1st and 2d prizes. In the oldest class, Mr. Stearn is 1st with a splendid black pig, showing first-rate constitution and hair as well as splendid quality; Lord Radnor is 2d; and Mr. Duckering, of Kirton Lindsay, is 3d with his enormously large sort.

One of Messrs. Howard's entries is disqualified, because the dentition indicates that the pigs are not all of one litter, as they are declared to be. Messrs. Howard's protest will be seen in another page, and we cannot doubt that the system which makes these indications overrule all other evidence of truth and honesty must ultimately be abandoned. The classes of breeding pigs are better than those of fat pigs. The Berkshire, that most useful of all the breeds, makes as usual a very fine show. The other large-breeds class is not so good, and extremely various; it is here Messrs. Howard's pigs are disqualified, and a very fine pen they are. Mr. Turner, of Uppingh am; Gen. Hood, of Windsor; and Mr. Mangles, near Ripon, are respectively 1st, 2d, and 3d in a small class of the smaller breeds.

The Implement department is larger than usual, and it must suffice to say that all the leading manufacturers are exhibitors. We did not notice any novelties, and as we shall no doubt have a splendid collection of implements to record next week—already collected in the Agricultural Hall at Islington, we shall defer our remarks upon them.

The Poultry show, which has been of unrivalled excellence, is referred to in another column.

The following is the List of Awards:—

SHEEP.

JUDGES.—George Curcton, Beam House, Shrewsbury; Henry Fookes, Whitechurch, Blandford, Dorset; Edward Gough, Gravel Hill, Shrewsbury.

LEICESTERS.

Three Fat Wethers, not exceeding 22 Months old.—1st, 15*l.*, and Silver Medal as breeder, G. S. Foljambe, Osberton Hall, Worksop, Notts; 2d, 10*l.*, G. S. Foljambe; 3d, 5*l.*, George Walmsley, Rudston, Bridlington, Yorkshire. Commended: William Perry Herrick, Beau Manor Park, Leicestershire; Christopher James Bradshaw, Alstoe House, Burley-on-the-Hill, Oakham; William Browne, Highgate Farm, Home-on-Spalding Moor, York.

LONG-WOOLLED SHEEP NOT BEING LEICESTERS.

Three Fat Wethers, not exceeding 22 Months old.—1st, 15*l.*, extra prize of 10 guineas, given by W. D. Bromley, Esq., M.P., for the best pen of Long-woolled Sheep, and Silver Medal as breeder, John Wigmore, Bickerton Court, Much Marcle, near Dymock, Herefordshire; 2d, 10*l.*, Thomas George West, Green Hill Farm, Bletchington, Oxford; 3d, 5*l.*, John Wigmore, Bickerton Court. Commended: John King Tombs, Langford, Lechlade, Gloucestershire.

SOUTH AND OTHER DOWN SHEEP.

Three Fat Wethers, not exceeding 22 Months old —1st, 15*l.*, the Birmingham Linen and Woollen Drapers' prize of 10*l.* as the second-best pen of three fat wethers, and Silver Medal as breeder, the Earl of Radnor, Coleshill, Highworth; 2d, 10*l.*, Lord Sondes, Elmham Hall, Thetford, Norfolk; 3d, 5*l.*, Lord Walsingham, Merton Hall, Thetford, Norfolk. Highly Commended: Lord Walsingham.

Three Fat Wethers, exceeding 22, but not exceeding 34 Months old.—1st, 10*l.*, and Silver Medal as breeder, Lord Walsingham, Merton Hall; 2d, 5*l.*, the Earl of Radnor, Coleshill, Highworth. Commended: Lord Walsingham.

SHROPSHIRE SHEEP.

Five Fat Wethers, not exceeding 22 Months old.—20 guineas (given by Edwin Yates, Esq., ex-Mayor of Birmingham), and Silver Medal as breeder, Henry Smith, Sutton Maddock, Shiffnal, Shropshire. Highly Commended: Lord Wenlock, Bourton Cottage, Much Wenlock. Commended: Lady Willoughby de Broke, Compton Verney, Warwickshire; Lord Wenlock, Escrick Park, York.

Three Fat Wethers, not exceeding 22 months old.—1st, 15*l.*, extra prize of 15*l.* (given by the Linen and Woollen Drapers of Birmingham as the best pen of three Fat Wethers; extra prize of 10 guineas, given by C. N. Newdegate, Esq., M.P., for the best pen of Shropshire Sheep in this and the following class; and Silver Medal as breeder), Thomas Nock, Sutton Maddock, Shiffnal; 2d, 10*l.*, George Anderson May, Buford Park, Isleworth; 3d, 5*l.*, Lady Willoughby de Broke, Compton Verney, Warwick. Highly Commended: Lord Wenlock, Bourton Cottage, Much Wenlock. Commended: Lady Willoughby de Broke; the Earl of Aylesford, Packington Hall; Thomas Mansell, Adcott, Salop.

Three Fat Wethers, exceeding 22 but not exceeding 34 Months old.—1st, 10*l.*, and Silver Medal as breeder, Joseph Beach, The Hattons, Brewood, and Flour Mills, Dudley. No other pen sent.

Single Shropshire Wether of any age.—Prize 5*l.* 5*s.* (given by Messrs. Mapplebeck and Lowe) for best Shropshire Wether, and Silver Medal as breeder, Joseph Beach, The Hattons, Brewood. Highly Commended: Henry Smith, Sutton Maddock, Shiffnal. Commended: Earl of Aylesford, Packington Hall.

OXFORDSHIRE DOWNS.

Three Fat Wethers, not exceeding 22 Months old.—1st, 10*l.*, and Silver Medal as breeder, the Duke of Marlborough, Blenheim Palace; 2d, 5*l.*, Nathaniel Stilgoe, Adderbury, Oxfordshire. Very Highly Commended: Samuel Druce, Eynsham, near Oxford. The Class Highly Commended.

CROSS-BRED SHEEP.

Three fat Wethers, not exceeding 22 Months old.—1st, 10*l.*, and Silver Medal as breeder, John Overman, Burnham Sutton, Burnham Market; 2d, 5*l.*, Nathaniel Stilgoe, Adderbury, Oxfordshire. Commended: Nathaniel Stilgoe.

LEICESTER EWES.

Fat Ewe of any age, having bred one or more Lambs.—1st, 5*l.*, Silver Medal as breeders, James and Edward Findall, Knapton Hall, near Rillington, York; 2d, 3*l.*, William Browne, Highgate Farm, Holme-on-Spalding Moor, York. Highly Commended: Christopher James Bradshaw, Alstoe House, Burley-on-the Hill, Oakham. Commended: James and Edward Findall.

LINCOLN AND COTSWOLD EWES.

Fat Ewe of any Age, having bred one or more Lambs.—1st, 5*l.*, and Silver Medal as breeder, John Henry Caswell, Laughton, Folkingham, Lincolnshire; 2d, 3*l.*, F. and G. West, Green Hill Farm, Bletchington, Oxford. Highly Commended: John Henry Caswell. Commended: John Henry Caswell; Executors of Thomas B. Marshall, Branston, near Lincoln.

SOUTH AND OTHER DOWN EWES,

Fat Ewe of any Age, having bred one or more Lambs.—1st, 5*l.*, and Silver Medal as breeder, Lord Sondes, Elmham Hall, Thetford, Norfolk; 2d, 3*l.*, Duke of Marlborough, Blenheim Palace, Woodstock. Highly Commended: Lord Walsingham, Commended: Lord Walsingham.

SHROPSHIRE EWES.

Fat Ewe of any Age, having bred one or more Lambs.—1st, 5*l.*, and Silver Medal as breeder, Joseph Beach, The Hattons, Brewood; 2d, 3*l.*, Samuel Wilkes, Tong Norton, near Shiffnal.

FAT PIGS.

JUDGES.—John Moon, Maristow, Roborough, Plymouth; John B. Spearing, Newport, Co. Mayo, Ireland.

Three Fat Pigs of one Litter, not exceeding 10 Months old.—1st, 10*l.*, Thomas L. Melville Cartwright, Melville House, Fife, and Newbold Verdon, Northamptonshire. No other prizes awarded from want of merit.

Three Fat Pigs of one Litter, not exceeding 15 Months old.—1st, 10*l.*, and Society's extra prize of 5*l.* 5*s.* as best pen in this and preceding class, Major-General Hon. A. N. Hood, Cumberland Lodge, Windsor, Berks; 2d, 5*l.*, Major-Gen. Hon. A. N. Hood; 3d, 3*l.*, Thomas Henry Ashton, Cliff Hall, Tamworth.

Fat Pig exceeding 15 Months old.—1st, 6*l.*, Samuel G. Stearn, Brandeston, Wickham Market, Suffolk; 2d, 4*l.*, Earl of Radnor, Coleshill, Highworth; 3d, 2*l.*, Richard Elmhirst Duckering, Northorpe, Kirton Lindsey, Lincolnshire. Highly Commended: James and Frederick Howard, Britannia Farms, Bedford. Commended: T. S. Wilkins, Peddemore Hall, Sutton, Coldfield; Richard Elmhurst, Duckering.

BREEDING PIGS.

BERKSHIRE BREED.

Five Pigs of one Litter, exceeding 3 and not exceeding 6 Months old.—1st, 10*l.*, extra prize of 3*l.* 5*s.*, given by Society as best pen of Berkshires, and Silver Medal as breeder, Joseph Smith, Hoobrook House, Worcester; 2d, 5*l.*, Thomas Dixon, Birches Green, Birmingham; 3d, 3*l.*, John Edwards, Aston Road, Birmingham; Silver Medal, John King Tombs, Langford, Lechlade, Gloucestershire. Highly Commended: William Yells, Round Robin Farm, Highworth, Wilts.

PIGS OF OTHER LARGE BREEDS.

Five Pigs of one Litter, exceeding 3 and not exceeding 6 Months old.—1st, 10*l.*, and Silver Medal as breeder, Thomas Bantock, Merridale House, Wolverhampton; 2d, 5*l.*, W. B. Wainman, Carhead, near Cross Hills, Yorkshire; 3d, 3*l.*, W. B. Wainman.

PIGS OF A SMALL BREED.

Five Pigs of one Litter, exceeding 3 and not exceeding 6 Months old.—1st, 10*l.*, Society's extra prize of 3*l.* 5*s.* as best Pen of Pigs of any Breed, and Silver Medal as breeder, Samuel G. Stearn, Brandeston, Wickham Market, Suffolk; 2d, 5*l.*, Major-General Hon. A. N. Hood, Cumberland Lodge, Windsor; 3d, 3*l.*, George Mangles, Givendale, Ripon, Yorkshire.

CORN.

JUDGES.—J. Mathews, Edgbaston House, Birmingham; Edward Davenport, Erdington.

WHITE WHEAT: Samples of 1 bushel each.—1st, 2*l.* 2*s.*, John Wigmore, Bickerton Court, Much Marcle, near Dymock, Herefordshire (Talavera); 2d, 1*l.* 1*s.*, Colonel Loyd Lindsay, M.P., Lockinge, Wantage, Berks (Talavera).

RED WHEAT: Samples of 1 bushel each.—1st, 2*l.* 2*s.*, Colonel Loyd Lindsay, M.P. (Nursery); 2d, 1*l.* 1*s.*, Thomas Horley, jun., The Fosse, near Leamington (Nursery).

BARLEY: Samples of 1 bushel each.—1st, 2*l.* 2*s.*, Joseph H Clark, Altwood House, Maidenhead (Golden Melon); 2d, 1*l.* 1*s.*, Robert Raymbird, The Grange Farm, Hengrave, Bury St. Edmund's (Page's Prolific, second selection).

OATS: Samples of 1 bushel each.—1st, 2*l.* 2*s.*, Frederick Lythall, Spittal Farm, Banbury; 2d, 1*l.* 1*s.*, George Dunkley, Kingsthorpe, Northampton.

BEANS: Samples of 1 bushel each.—1st, 2*l.* 2*s.*, Frederick Lythall, Spittal Farm, Banbury; 2d, 1*l.* 1*s.*, Frederick Lythall.

PEAS (White): Samples of 1 bushel each.—1st, 2*l.* 2*s.*, Joseph H. Clark, Altwood House, Maidenhead; 2d, 1*l.* 1*s.*, James & Frederick Howard, Britannia Farms, Bedford.

PEAS of any other variety: Samples of 1 bushel each.—1st, 2*l.* 2*s.*, Frederick Lythall, Spittal Farm (Blue Field); 2d, 1*l.* 1*s.*, George Dunkley, Kingsthorpe, Northampton (Maple).

ROOTS.

JUDGES.—J. Mathews, Edgbaston House, Birmingham; Edward Davenport, Erdington.

A Silver Cup, or any other article of plate, of the value of 10 guineas, given by Messrs. Proctor and Ryland, of Birmingham, as a prize for the best collection of the four following varieties, namely—Long Mangel Wurzel, Globe Mangel Wurzel, Swedes, and Carrots; six roots of each to be shown for this prize alone. —John Moore, Warwick.

A Silver Cup, or other article of plate, of the value of 10 guineas, given by Messrs. Griffin, Morris, and Griffin, of Wolverhampton, for the best collection of Long Mangel Wurzel, Globe Mangel Wurzel, Swedes, and Ox Cabbage; six roots of each kind to be shown for this prize alone; the Mangel Wurzel to be selected from crops of not less than 2 acres, the Swedes not less than 5 acres, and the Cabbage to be field culture.—Sir William Heathcote, Bart., M.P., Hursley Park, Winchester.

KOHL RABI (6 specimens).—1st, 2*l.* 2*s.*, Joseph H. Clark, Altwood House, Maidenhead, Berks; 2d, 1*l.* 1*s.*, Colonel North, M.P., Wroxton Abbey Farm, Banbury (Green).

LONG MANGEL WURZEL (6 specimens).—1st, 2*l.* 2*s.*, Lord Boston, Hedsor, Maidenhead; 2d, 1*l.* 1*s.*, Samuel Robinson, Shaw House, Melbourne, near Derby (Robinson's Improved Long Red) Commended: Colonel North, M.P., Banbury.

GLOBE MANGEL WURZEL (6 specimens).—1st, 2*l.* 2*s.*, John Moore, Warwick; 2d, 1*l.* 1*s.*, Colonel North, M.P. Commended: Lord Boston, Hedsor, Maidenhead.

SWEDES OF ANY VARIETY (6 specimens.)—1st, 2*l.* 2*s.*, Allan Pollok, Lismany, Ballinasloe, Ireland (Laing's Hogg and Robertson's Improved); 2d, 1*l.* 1*s.*, Allan Pollok (Hogg's Select Purple-top). Commended: Zachariah W. Stilgoe, Adderbury Grounds, Banbury, Oxfordshire (Green-top Yellow); Charles Frederick Clark, Pirton Grove, near Wolverhampton.

COMMON TURNIPS (6 specimens).—1st, 2*l.* 2*s.*, R. H. Masfen, Pendeford, Wolverhampton (White Norfolk); 2d, 1*l.* 1*s.*, George Mangles, Givendale, Ripon. Commended: Allan Pollok, Lismany, Ballinasloe, Ireland (Prentice's Improved Yellow); Sir William Heathcote, Hursley Park, Winchester (Grey Stone); George Dunkley, Kingsthorpe, near Hampton (Green Barrel).

CARROTS OF ANY VARIETY (6 specimens).—1st, 2*l.* 2*s.*, G. S. Foljambe, Osberton Hall, Worksop (Altringham); 2d, 1*l.* 1*s.*, G. S. Foljambe (Altringham). Commended: John Moore, Warwick.

OX CABBAGE (6 specimens).—1st, 2*l.* 2*s.*, Samuel Robinson, Melbourne, near Derby (Robinson's Champion); 2d, 1*l.* 1*s.*, Frederick Lythall, Banbury (Robinson's Champion).

KIDNEY POTATOS (12 specimens). —1st, 2*l.* 2*s.*, George Dunkley, Kingsthorp, Northampton; 2d, 1*l.* 1*s.*, George Dunkley. Commended: George Mangles, Givendale, Ripon; Samuel Robinson (Prince of Wales).

ROUND POTATOS (12 specimens).—1st, 2*l.* 2*s.*, John K. Fowle, Prebendal Farms, Aylesbury; 2d, 1*l.* 1*s.*, George Dunkley, Kingsthorpe, Northampton (Victoria). Commended: John Shackel, Blenheim House, Small Heath, near Birmingham (Red Regents).

EDINBURGH CHAMBER OF AGRICULTURE: *Road Reform.*—This subject was discussed before the late meeting of the Chamber. Mr. M'Combie in the chair.

Provost PAGAN, of Cupar-Fife, who 20 years ago stirred up the country on this subject by his publications and most able advocacy, moved

"That the Chamber deeply regret the failures of the several attempts which have been made to pass a General Road Act for Scotland. But the Chamber have the satisfaction of knowing that so many as 12 Scottish counties have promoted and obtained Acts for the immediate or prospective abolition of all tolls and pontages within their own bounds."

In supporting this resolution he gave a detailed narrative of the movement for the abolition of tolls from the time that he published his work upon the subject in 1845, directing particular attention to the report of the Royal Commission on the question, and to the Act which was brought in by the Lord-Advocate, giving it as his opinion that perhaps one reason why that Act failed was that it did not adhere sufficiently close to the recommendations of the commissioners. He also referred to the abolition of tolls in Ireland, and to the various local road-acts which had been passed of late years, pointing out the peculiar provisions of these local acts, and the defects of each. He deprecated the practice of counties going into Parliament for local acts, on account of the expense and the trouble they gave rise to, and he was sanguine that country gentlemen might now be persuaded to go in for a general bill.

Mr. GEORGE HENDERSON, Bean Park, seconded Provost Pagan's resolution, referring to his able exposure of the evils and errors of the present road system, which would be looked back upon as one of the strangest anomalies of the present age. He alluded to the enormous expense of keeping up the tolls, the inconvenience and often danger to which they subjected people at night, and the discreditable shifts that were often resorted to in order to avoid them.

Mr. P. M'LAGAN, M.P., moved:—

"That the Chamber are of opinion that a General Road Act for Scotland should be forthwith prosecuted and passed by Government on the principles and recommendations contained in the report of the Royal Commissioners on Scottish roads, viz.:—1, The liquidation of road debt by owners of lands and heritages; 2, The consolidation of turnpike, statute labour, and bridge trusts: 3, The abolition of tolls and pontages, statute labour, assessments; 4, The maintaining and repairing of roads to be borne equally by owners and occupants of lands and heritages; 5, The expense of new roads and bridges to be borne by owners of lands and heritages."

Mr. M'Lagan thought there was a good reason why the Chamber should go forward at present with a memorial to the Government, seeing that Lord Derby was in power when the Road Commission was appointed; and his Government would be inclined to do something in the way of carrying out the recommendations of the Commissioners.

Mr. DUNCAN M'LAREN, M.P., said that Mr. M'Lagan had remarked that the fact that Lord Derby's Government was in power when the Royal Road Commission was appointed made the present time peculiarly favourable for pressing the Government to bring in a Bill upon this subject. There was a still stronger reason in the same direction to be found in the fact that Mr. Walpole, the new Home Secretary, was the same Home Secretary that issued the Royal Commission. They could now go to Mr. Walpole, and tell him that he appointed the Commission, and that they had now a strong claim upon him to urge him to carry into effect the report of the Commission which he appointed. They had, in the report of the Royal Commission, a nucleus of legislation which had received great consideration from all the commissioners. The best policy was to stick entirely to the recommendations of the report without amendments or qualifications. He thought that they had a capital opportunity at present of pressing the question. That Association was a power in the State, if it was discreetly worked. He wished them all success in the cause; and he should be very glad if he could lend a helping hand, along with Mr. M'Lagan, to carry on the proposed measure.

Mr. SCOT SKIRVING proposed the adoption of the last resolution, which was as follows:—

"That a memorial to the above effect be submitted by the Chamber to the Right Hon. the Home Secretary, the Lord Advocate, and other members of her Majesty's Government; and petitions presented to both Houses of Parliament, praying

Mr. SKERTCHLY referred to the unanimity which prevailed at the meeting as a proof of the growing strength of the feeling against tolls, as he was perfectly certain that 10 years ago many of those present would have supported tolls. Railways would knock the tolls down in the end, because they cut away the argument that he who used the road should pay for it. The present system, by placing bars close to the railway gates, was to force the people who used the railways to pay for the roads.

Mr. M'CORMAC, before putting the resolutions, said—

After the Report of the Royal Commissioners in 1859, and the evidence then had, I don't suppose that any one, unless, it may be, a landowner, can be found to support the present system of turnpike and road rating. The Commissioners' reports and evidence are not to be considered with all freshness of interest now, as it is five years and more since they were published, and they already rank in the loss of a million of money to the ratepayers, and 2 per cent. in the value of the property of the landowners, as compared to the sum of 2,922,000*l.*, while the trusts were only able to pay 45,000*l.* of interest, which represented a capital of not more than 1s. per pound of the real debt. Hence a dead loss of upwards of a million of money; and hence, I say, it may be assumed that the present system is doomed. I concur heartily in the recommendation of the Royal Commissioners that all roads, bridges, and ferries trusts in every county should be consolidated into one trust—that the toll system should be abolished, and a system of collecting money on an equality and according to rateable value, by means of the poor-rate, substituted in—inconsistent with the necessities of the system it grew out of—existing, terminated when the turnpike roads were disturned to the parishes, the opening of the rails was and altogether a thing of the past, which the present and future have no call for, and which they should not be called upon to pay for. But how is this to be done—how, regard being had to all the interests involved, is this great and necessary reform to be brought about? The difficulty does not lie in the conception—it is not even in the execution. The Lord Advocate brought in an excellent bill in 1861, showing how it could be done; and for myself, I have no difficulty as to the *how* or the *who* either. The various county-trusts being consolidated into one, and tolls abolished, the making of new roads, and the maintaining of old and new, should be borne by the county at large, and for the benefit of the roads are made and maintained. Now, whom they? I understand it several that are the owners of landed property of all kinds, whether landed proprietors, house proprietors, and [illegible] whether [illegible] and [illegible] require—and for the transmission of which mainly roads were and are made and maintained—the higher the rent the land produces to the landlord. Had the landowner not invested in the making and maintaining of roads for his property, his rent-roll must have been greatly less than it is. His tenants just pay annually the sum his investment in roads is worth in addition to what his land would have been worth without it. The [illegible] [illegible] [illegible]

the finest crops of Turnips I ever saw on the Cotswolds, were grown with nothing but ashes; and as the organic matters which are left in the soil in the shape of roots, half-decayed stems, leaves, &c., are destroyed in pulling and burning, and as these matters under ordinary circumstances produce ammonia or decomposition, it appeared to me at once most probable that ammonia was not wanted for Turnip manure on our thin, brashy, Cotswold hill soils, and as I found, moreover, in the red ashes a very considerable proportion of phosphate of lime, it struck me that purely mineral phosphate (provided it be applied to the land in an available condition) might supply most crops more than any other kind of manure. The remarkable fact that Turnips can be grown profitably with red ashes alone, gave the first impetus to a series of Turnip experiments which I continued and varied year after year on the Coln farm. To my astonishment, I found that on light Lower Limestone soils, Turnips are kept back by nitrogenous manure to an extent that, in years when the Turnip fly is particularly busy, the young plant grows so slowly that the fly has time to devour the plant completely, whilst on land not containing it its growth is much more rapid, so that a good many plants escape the ravages of the fly, even in unfavorable seasons. I have seen land manured in spring, sown three times over, and the plants of each sowing eaten off by the fly before it had a chance of making a fair start, whilst adjoining it, and on precisely the same sort of land manured, the fly very recently did little or no damage to the Turnip plant, or, rather, I should say, the plant on the land not dunged made more growth than the fly could eat. Moreover, I found that on such light land the direct application of ammoniacal salts, instead of pushing on the plant as generally assumed, in reality retarded the final growth of the crop, even in a somewhat striking manner, and that on our hills, nitrogen applied to the land, either in the shape of nitrogenous organic matters, or in the shape of ammoniacal salts, rarely if ever is beneficial to Turnips, and frequently did an injury to the plant in its infancy from which it did not quite recover afterwards, so that in my experiments I got invariably less produce in roots with than without ammonia in the artificials which I tried. Again, I found that a superphosphate, rich in soluble phosphate, and entirely free from nitrogenous or ammoniacal constituents, gave a better crop than the more expensive superphosphates which are made entirely from bone, or from bone material with the addition of ammoniacal matters. I remember well the time when superphosphate was sold in Cirencester market, which was considered very good when it contained 20 per cent. of soluble phosphate and the same proportion of insoluble phosphate of lime, and which was sold for rather more than farmers attending Cirencester market can get at present, with a guarantee that it shall contain not less than 30 per cent. of soluble phosphate. That certainly is a great improvement in a matter of so much importance to the Cotswold farmers. If farmers were always wise, and if they did not sometimes buy the cat in the bag, I am quite sure that even 20 per cent. superphosphate would be cheap enough for Turnips at £6 per ton, but in such a dose I have found does not produce an effect at all corresponding to the greater outlay for manure. And as I believe a farmer, when he buys salts, should always get them back again with a good per-centage for the outlay he pays for which he applies them, so I am not at all sure that with Lower Limestone soils it would not be advisable to apply rich in soluble phosphate—I could point out where it is wise to apply more than 2½ to 3 cwt. at the most to one thin lime-stone hill land. Dung is far better applied to seeds, than to the Turnip fallow. Applied as a top dressing to young seeds, it helps them on wonderfully; and you know, when the seeds are good, the Wheat is sure to do well afterwards. My advice, therefore, is simple this:—Top-dress your seeds with dung, and grow your Turnips with nothing but 2½ cwt. of good mineral superphosphate.

A. PURDEY, Jun. "FORLCKER."

11, Salisbury square, Fleet street, Oct. 15, 1866.

I trust that we may have time briefly to discuss how far steam cultivation is adapted to our light soils. My own experience on a somewhat deeper and better staple is that it is most desirable for deep winter ploughing and for cross cultivating in the spring. Having done more than 700 acres, I have had good opportunities of watching, and I am personally satisfied with the results, but hope to hear the opinions of those more experienced this afternoon.

The best Tenure of Land.—With regard to the tenure of land best adapted to the Cotswolds, it is impossible to do more than take a passing notice. It is of the greatest importance to the comfort and well-being of all concerned, and one of such wide scope that I dare hardly mention it in so short a paper. It has, however, struck me that the same taking on which both estates of Lord Yarborough are held on the Lincolnshire wolds, and which has been the means of increasing their value tenfold in less than a century, is particularly applicable to our light lands. I can speak from actual knowledge that it is one under which the tenants thrive and do well, and that the same families have occupied the farms for several generations; and that, moreover, the very best relations exist between landlord and tenant. In no country do I know any tenantry apparently more prosperous, or any who spend so much money in artificial food, chiefly oilcake, and certainly none who ride such excellent hunters, and, keeping large and well-bred studs of fashionable horses, induce the dealers frequently to visit their fairs, and I feel confident that by their management in this respect they combine a good profit with much pleasure. I wrote to one of their first men to send me down the exact terms of tenure of their hill land, and I cannot do better than read his answer:—"You will observe that everything is left to arbitration and the custom of the country, and if a tenant improves the land he is fairly remunbursed. I think this is the best and fairest arrangement, and next to this the Scotch plan of 19 years' lease, which leaves the tenant to do pretty nearly as he likes till the last four years, when he is strictly bound down." On this subject also I particularly invite discussion this afternoon. The Lincolnshire tenure is the following:—Yearly tenancy; no agreement as regards the quantity of acres and the amount of rent; the land to be farmed in a good and husbandlike manner; allowances, the custom of the country; the incoming tenant to pay for oilcake consumed by cattle and sheep (not by horses) as follows—one-third of last year's cakes, one-sixth of year before; marling allowed on a seven years' scale running out one year for every year; bones or other approved artificial manure, on the following scale—two-thirds for the last year, one-third for year before; underdraining when tiles are found by the landlord; no allowance provided one crop is taken, when no crop is taken the whole cost is allowed; when the tenant finds tiles and labour, the whole allowed on a five years' scale; the outgoing tenant to sow all the land in due course for Wheat, or allow the landlord or incoming tenant to do it, and the same on land for spring corn; the outgoing tenant has the power of doing all the work on the farm according to the wish of the landlord or incoming tenant, which is to be allowed for; the outgoing tenant can stock the new seeds up to Nov. 23 with lambs, and be allowed the seed bill, or stock up to the end of his tenure without any allowance; herbage on lands broken up for corn or fallow allowed up to the end of his tenure; all matters are to be settled by arbitration, one to be appointed by each side, they appointing their umpire before entering on their business: if the outgoing tenant neglect to appoint an arbitrator at a certain time named, the landlord can appoint a valuer, and his award to be final; all hay, straw, Turnips, and green crops to be consumed on the premises. Under this agreement many tenant farmers spend a full rent in corn and cake consumed on the Turnips and on the seed in summer. Our own land abounds in the carbonate of lime, and I fully believe it will honestly and fully repay a liberal expenditure in oil-cake, which contains so large a per-centage of phosphate of lime. And this, I think, is even more valuable when consumed on our Grass grounds in summer, and will improve them more rapidly than any other treatment. In conclusion, gentlemen, let me beg of you not to imagine that in mentioning Lincolnshire I wish in any way to draw an undue comparison. I am personally acquainted with most counties in England, and I know of no two which so much resemble each other as this county and Lincolnshire. They both have their rich low lands, and they severally contain about 200,000 acres of light land of very similar character, producing large numbers of the finest sheep in the world. Less than a century ago the wolds of Lincolnshire were mere rabbit warrens let at from 2*s.* 6*d.* to 5*s.* per acre. Now there is the greatest competition for farms at upwards of 25*s.* per acre. Each county rejoices in kind and liberal landlords, and an intelligent and improving tenantry. Gloucestershire boasts a Beaufort, and Lincolnshire responds with a Yarborough. Both these noblemen have for many years kept a first-rate pack of hounds at their sole expense, and it is indeed a pleasant and truly English sight to see them surrounded by their friends and tenantry on a November morning by the cover side, or, later in the year, when they assemble as efficient and well-mounted yeomanry; or once again, when in the summer the tenants compete in the show-yards of Badminton and Brocklesby, under the immediate presidency of their respective landlords. If a stranger goes on the Cotswolds in the summer he will find the names of Hewer, Lane, Garne, Fletcher, Barton, and many others associated with the finest flocks of sheep in this or any other county. If he visits the same district in the winter he will as surely find on the bleak hills, and with but little shelter, the wildest and staunchest foxes. In the more fertile plain he will see the leader of steam cultivation in our county, who, though he has levelled miles of fences for his steam ploughs, still retains some well-known hedge-rows—a more sure find than many large covers in less favoured counties. Such tenants, I say, combining the energy for business with the manly feeling for sport, will always command the good-will and respect of their neighbours and landlords, and as long as such good feeling exists, Gloucestershire may indeed be proud to have landlords who, by their kindness, consideration, and liberality, command such tenants, and tenantry who, by their skill in their profession, their true love of sport, and their success in always having so good a show of foxes, make Gloucestershire equally well-known as a sheep-breeding and fox-hunting county.

[We think we may well offer our congratulations to the Managers of the energetic Farmers' Club at Cirencester, upon the very excellent Papers which have been read and discussed before it since its re-establishment last year.]

Reviews.

Journal of Agriculture, No. VI.; Third Series. December. Office: 150, Fleet Street.

We have here a very readable and satisfactory number of this useful monthly periodical. The Brittany Cow, described by a French writer, and well illustrated; the Breeding and Management of Cattle, not a very detailed or practical treatise, but an enumeration and description for the general reader; Mr. Scot Skirving's Bird Life in Shetland is a very graphic and extremely interesting paper, with good wood-engravings; Mr. Ewart's capital and practical discussion of Methods of Permanently Improving Estates; the Veterinarian, with monthly notices, and statistics, fill the pages of one of the best numbers of the Journal of Agriculture that we have seen. We quote the following account of a herd of Brittany cows:—

"I here produce the result of my herd, generally consisting of 40 cows, a bull, and some calves. This note gives a summary of the produce, and the most exact idea of the medium value of the breed; for my herd is selected from specimens of medium size, but embracing the highest milking qualities.

"The herd also comprehends a great many young animals in calf for the first or second time. The produce is evidently diminished by this circumstance.

"The heifer grows and gives milk. The milk gives up a part of the food to the muscles and the bones. The full-grown cow, on the contrary, turns all into produce at each milking, and gives the sum total of its milking value.

"This condition of the Kergonan herd is to be noted in estimating it, and forming a judgment on the Brittany breed.

	From 1st October to 4th September.				
	1861.	1862.	1863.	1864.	1865.
Number of days' milkings during the trial	336	341	346	345	349
Average number of cows milked daily	8	14	14	26	26
Milk, measured in dairy, the weed-cakes not included	Litres. 9,434	Litres. 15,582	Litres. 18,133	Litres. 31,1	Litres. 30,429
Daily average	28	47	54	90	87.19
Average of 365 days' milking	1.171	1.115	1.299	1.214	1.170
Average milking per cow for 11 months	1.064	1.021	1.188	1.114	1.074
Daily average per cow	3.16	4.04	4.36	4.30	4.25
Milk used fresh	365	1.455	1.455	929	400
Milk for butter-making	8,874	13,747	17,678	22,374	30,029
Butter produced	Kilog. 305.22	Kilog. 480.87	Kilog. 620.62	Kilog. 939.07	Kilog. 1,352.02
Quantity of milk giving one kilogramme of butter—2 lb. 7 oz.	Litres 24.9	Litres 21.76	Litres 24.50	Litres 24.80	Litres 22.25

Litre = 1¾ pint.

"197 animals have passed through my byres; 83 were bought at Quimper, or in the neighbourhood; 114 born at Kergonan have been reared or sold young. I do not reckon those which, purchased by me, have been sent to different places without staying in my byres.

"The average duration of lactation in the herd is from 11 to 12 months. I have animals which, with full Grass, cannot be dry for 15 days without being inconvenienced.

"The generality give a calf every 10 or 11 months. Few reach a year. The slow breeders are quickly sold; there are few of them.

"Cows of from four to seven years, 11 hands high, and weighing about 6 cwt., give with me, in a good season, from 1 gallon 6 pints to 3 gallons ½ pint of milk per day, during two or three months; afterwards from 1 gallon 2½ pints to 2 gallons 1½ pint; and finally from 5¼ pints to 7 pints, up to the seventh month of gestation. The most inferior give from 1 gallon 2½ pints to 1 gallon 6 pints after their first and second calving during two or three months; then at the seventh month of gestation from 3½ to 1¾ pints. When animals come to age are fatigued, the milk is suppressed about the seventh month. The size of the mother enlarges rapidly after that.

"My cows, as indicated by the measurement, are of moderate size. The Brittany cow, in fact, varies from 11 to 11½ hands, whereas the average of my herd is about 11 hands, according to age. But their weight is greater than that of ordinary animals of the same size.

"I like a straight full trunk, a light head, and short legs; fine bones, useless parts awanting; a square udder, full behind, spread out in front; the skin supple and yellow, the marks good; butter animals; milk and animals with rich milk, butter fine.

"One of my masters, Count Kergorlay, who possesses the many fine cows, has somewhere written that the Cotentin breed is the best breed for milk in the world, and that he has nowhere tasted better butter than that of Isigny. I agree with him. The Cotentin breed in Cotentin—famous butter, exquisite, well-made, and made from the Grass of Cotentin or Canisy.

"The Brittany breed, in the same kind of pasture, produces the same butter; her udder swells, and she becomes, in her turn, in proportion to her size and her food, one of the best milkers in the world.

"The Brittany cow is met with in all the Cotentin markets.

"In order to compare the digestive power of breeds—that is to say, the faculty of transforming food into produce—we have taken a term of comparison which is deficient in fixedness, and consequently in positive value. We have inquired as to the milk produced by each breed in 'different localities, from a determinate quantity of hay and its equivalents.

"The same kinds of forage varying in nutritive value according to soil and preparation, a hundred kilogrammes of a particular kind of food do not produce the same results in the same animals in different localities, in consequence of these elementary differences.

"There is often a difference of from 10 to 15 per cent. in the value of the hay in different meadows—of good quality, nevertheless, and well made besides.

"But in order to establish the quality of the Brittany breed as to rent-paying and food-transforming power, I use the mode of comparison which has been adopted at Kergonan. The hay of the first quality was sold in 1864-65, on account of the extraordinary price which it brought, namely, 3*l.* 18*s.* 4½*d.* the ton. The horses only ate of it. The second quality of hay was consumed by the cows and the sheep. I consider it 15 per cent. inferior to the first. It was caught in a storm, and slightly discoloured. The cows consume about 22 lb. of hay, or its equivalents, per day and per average animal, or 4 per cent. of their weight. The average produce of milk per cow being rather more than 5½ pints, in 1865 the consumption rose to 6 lb. 9¾ oz. of hay per 1¾ pints of milk.

"But in the 26 cows milked during 1865 there are 14 or 15 young animals from two to three years old. Hardly half of the food passes into milk, the other half passes into the body. There remains nearly 3 lb. 5 oz. of hay per 1¾ pints of milk. And, reckoning the quality of the hay, and its proportion to the total food, it is fair to reduce this figure 4 per cent. The next remainder, therefore, is about 2 lb. ¾ oz. of hay per 1¾ pints of milk.

"The value of 1¾ pints of milk is about 1½*d.*; 2 lb. ¾ oz. of hay cost nearly 1*d.* at 2*l.* 7*s.* 7½*d.* per ton, the average price at Quimper. There remains a halfpenny

per 1¾ pints for various expenses and for profit, in addition to the manure; say nearly 5½ pints of milk at nearly 1½*d.* per day, or nearly *2l. 7s. 7½d.* per year and per cow, exclusive of manure.

"I am no enthusiast; I am captivated by nothing rural; the nett gain is my economical programme; the drawer full, economy, comfort. Therefore I value the Brittany cow. She is a milker; she lives on anything; she fattens on little; she suits everywhere; in abundance she grows and continues good. She maintains herself on the heath, and in the evening she sleeps beside her master, whom she nourishes. I know her; I know no fault in her."

Farm Memoranda.

MERSE OF BERWICKSHIRE: *Dec.* 1.—The month just closed has been the best of its year. The 2½ inches of rain which fell in the first half were rendered harmless by a succession of hard breezes; and two or three days of dry frost served to check the growth of Turnip shaws, without imparting much of a wintry character to a month otherwise so fine and mild. With a root crop so very late and promising, farmers may be excused if they have left their Swedes, at least, to the chances of winter growth. On strong clays, where the roots are miserable in the extreme, there is the more need of hope, and this delays Wheat sowing. We have cleared a piece of our best Swedes, and intend to proceed while good weather lasts. The crop is some 12 tons where we have seen the double, which speaks largely to blanks and small. The quality is fine, and nothing lost by mildew, as there was last year.

On poorer land, White Turnips have come to be a fair crop, and hoggs have a beautiful lair. Fattening cattle are few—little more than half of what used to be fed—and it cost a world of trouble to get those few. Our usual trade over the border was prevented by arbitrary authority, although disease was extinct; and many of us were fain to buy mongrels and Irish at forced prices. Relaxation, when it came, could only benefit a few. The worst feature of Privy Council Orders is the administration thereof. "Justice" makes no distinction between wilful and unwitting transgression. The accused is condemned already.

Corn is much improved in condition lately. A good deal of Oats and late Barley was out in October, and seemed little better than muck. Much, too, was no better in the stack. Corn would seem to be our "sheet anchor" just at present. The "all Grass" idea of theorists is at a discount. *J. T.*

Calendar of Operations.

DECEMBER: *Theory of Cattle Feeding* — The following is extracted from "Morton's Farmers' Calendar":—It has not been attempted in this work to give such detailed explanations of agricultural influence in scientific terms, as are generally referred to by the farmer under the common name of "theory;" but the use of such terms in past pages on cattle food makes it necessary to refer to the explanation which the chemist gives of the process of cattle feeding. The question—What is the value of a ton of Turnips?—is one to which half a dozen men will give half a dozen answers. Its power to produce meat, on which its value depends, is due not only to its composition, which varies in the half dozen different cases, but on the character of the machines through which it is passed, and on the skill with which the process is conducted.

I suppose that two lots of rags of equal quality may be served out to two paper-makers, and the one shall make more profit of them than the other, owing to the two last considerations. But if the rags are of different quality to begin with, the difference in the result would be greater still. And this is the position of the farmer:—The food he grows differs wonderfully in its quality, according to soil and climate; the machines he uses differ exceedingly in their character; the judgment and skill he employs vary between the extremes of folly and wisdom. No wonder then that we have not yet agreed as to what is the value of a ton of Turnips, or of any other article of food. Mr. Mechi tells us in the south that no profit is to be made of feeding meat—that the meat manufactureis, in fact, as regards the farmer, useful merely as a manufacture of manure. There is many a farmer, both south and north, who knows better. In order to the attainment of their experience, probably the first particular rule is to have special regard to the capabilities of your machines for converting the raw material—the food—which you are to manufacture into flesh.

It is only a well-bred animal which can make the full use of liberal feeding. You must be acquainted with the needs and the powers of the breeds you feed, as well as with the general rules and truths of animal nutrition. And now let us consider what those general rules and truths are. It is only within the past few years that the theory of food in relation to growth has been fully developed, and growth has been recognised as a simple building up and aggregation of the materials which the food contains.

The chemist divides the constituents of food into three great classes. The first two include all that may be burned away; the incombustible part—the ash—is the third. This ash is soluble or insoluble; the latter part consists chiefly of phosphoric acid and lime, which, constituting two-thirds of the bones of animals, is called bone earth. This earthy part of the ash thus supplies the animal with the materials for the formation of its bony skeleton. The saline soluble part of the ash of food is made up chiefly of common salt and phosphate of soda, which two combinations enter largely into the composition of blood. It also contains salts of potash, which abound in the juices of flesh. The saline matters thus supply the blood, the flesh, and various animal juices with their necessary mineral constituents.

The organic part of food which burns away is made up of a number of organic substances, as starch, gum, sugar, fibre, albumen, &c., and these may be grouped into two classes—the first including constituents rich in nitrogen, and the second constituents free from nitrogen.

The nitrogenized ingredients include albumen, gluten, casein, legumin—substances nearly identical with each other. The second class includes oily matters, starch, sugar, gum, pecten—a jelly-like substance found in Carrots, Mangel Wurzel, Turnips, and other roots—and cellular fibre. The nitrogenized compounds generally contain about 16 per cent. of nitrogen and small quantities of sulphur, or phosphorus, or both; and are hardly, except in this last particular, distinguishable from each other. They are all made up of a substance, protein, and this sulphur or phosphorus, and so they are called protein compounds.

These protein compounds are necessary to the food of animals. Dogs fed on starch alone will die. A sheep feed with food perfectly free from protein compounds died on the 20th day. The practical value of oilcake, Beans, grain, &c., as compared with foods poorer in nitrogenous matter, proves the assertion that protein compounds are needed. The non-nitrogenous compounds are also necessary. A goose was fed on albumen—white of egg—without the addition of any other food, and died in about six weeks, having lost a great deal of weight. All classes of ingredients are needed to make a perfect food.

The non-nitrogenous compounds contain large quantities of carbon, and their use is to burn as fuel in the lungs, and so to maintain the heat of the body; or to be placed as fat in the fatty tissues of the growing body; or to be converted into fat and placed there. The protein compounds, on the other hand, which are almost identical in composition with flesh, go to build up the flesh of the animal. You have in food, as stated by Dr. Voelcker:—

1. The earthy substances, phosphates of lime and other bone materials. The saline substances—chlorides of sodium and potassium, sulphate and phosphate of potash and soda, and some other mineral matters occurring in food—supply the blood, juice of flesh, and various animal juices with the necessary mineral constituents. 2. Albumen, gluten, legumin, and other nitrogen-containing principles of food, furnish the animal with the materials required for the formation of blood and flesh; they are called, therefore, flesh-forming substances. 3. Fats and oily matters of the food are employed to lay on fat, or to support respiration and animal heat. Starch, sugar, gum, and a few other non-nitrogenised substances, consisting of carbon, hydrogen, and oxygen, are used to support respiration—(hence they are called elements of respiration)—or they produce fat when given in excess. Starch, sugar, and the other elements of respiration alone cannot sustain the animal body. Albumen, gluten, or any other albuminous matter alone does not support the life of herbivorous animals. Animals fed upon food deficient in earthy phosphates or bone-producing principles, grow sickly and remain weak in the bone. The healthy state of an animal can only be preserved by a mixed food which contains flesh-forming constituents, as well as heat-giving principles, and earthy and saline mineral substances in proportion, determined by experience, and adapted to the different kinds of animals, or the particular purpose for which they are kept.

That, then, is the theory of growth, and the practice agrees with it. Thus: a child grows ricketty, its bones are not well built and vigorous if fed perpetually on arrowroot and starch food; milk, containing the phosphate of lime, its bone earth, must be supplied along with such food.

Again, food rich in albuminous matter, in protein compounds, as Bean-meal, oilcake, &c., is in practice found the most productive of rapid and muscular growth. Again: food rich in oily and starchy matters is in practice found the most fattening of any sorts of food.

Again: animals exposed to cold—breathing a colder and therefore a denser air, containing more oxygen or fuel-burner per cubic foot—animals exposed to cold, requiring therefore greater expenditure of fuel to maintain the animal heat—do not in practice prosper as if kept in warmth and dryness; most of their food goes as fuel; a great deal of their food is wasted and burned up within them.

Again: animals allowed to run about and take muscular exercise, thereby increasing the rapidity of respiration, keeping the bellows blowing at the fire within the lungs, do not in effect increase in fat or flesh as when kept within bounds and hindered from running to and fro. In all these particulars, then, the experience of the farmer tallies with the theory as laid down by the chemist and animal physiologist.

Notices to Correspondents.

ABORTION. *Wife.* This serious evil is often produced by the cows feeding on old pastures on which the old Rye-grass stems have not been mown, and which often contains Ergot. Remove the cattle at once to the best pasture as much as possible. If hay have been given, change it for straw and oil-cake, and separate immediately the animals that have aborted, or threatened to do so.

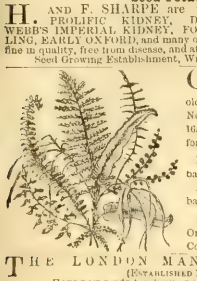
BARREN FIELD. *Constant Reader.* If not poisoned you should be able to fertilise it by adding vegetable and mineral manures. Stones have not been removed, and which often contains Ergot. Remove the cattle at once to the best pasture as much as possible. If hay have been given, change it for straw and oil-cake, and separate immediately the animals that have aborted, or threatened to do so.

SUB SOILING. *Constant Reader.* If not poisoned you should be able to fertilise it by adding vegetable and mineral manures, and probably the use of lime will be very beneficial; and probably the use of lime will be very beneficial and probably the use of lime will be very beneficial. If you can get a compost made of lime and any vegetable refuse at a cheap rate, apply it liberally. We do not suppose it has ever had a dressing of lime for a year or two.

SUB SOILING. *A Constant Reader.* If not poisoned you should be able to fertilise it by adding vegetable and mineral manures, and probably the use of lime will be very beneficial;

Seed Potatos.

H. AND F. SHARPE are now offering MYATT'S PROLIFIC KIDNEY, DAINTREE'S EARLIEST, WEBB'S IMPERIAL KIDNEY, FORTY-FOLD, FOXS SEED-LING, EARLY OXFORD, and many other Early and Late varieties, fine in quality, free from disease, and at low prices.
Seed Growing Establishment, Wisbech, Cambridgeshire.



COCOA-NUT REFUSE is becoming scarce, the old reserves will soon be gone. Now sold in bags, 1 for 2s., 10 for 16s., 2 for 30s., 50 for 68s., 100 for £6.

Fourpence allowed for each bag returned carriage-paid.
A Railway Truck-load (not in bags), 40s.

Postage Stamps or Post-office Order, payable to J. BARSHAM & Co., Kingston-on-Thames, S.W.

THE LONDON MANURE COMPANY
(ESTABLISHED 1840).
Have now ready for delivery in dry fine condition,
CORN MANURE, *for Spring Use*
DISSOLVED BONES, for Dressing Pasture Lands
SUPERPHOSPHATES of LIME
PREPARED GUANO
MANGEL and POTATO MANURES
Also Genuine PERUVIAN GUANO, and NITRATE of SODA, ex Dock Warehouse; SULPHATE of AMMONIA, FISHERY SALT, &c. E. PURSER, Secretary.
Offices, 116, Fenchurch Street, E.C.

LAWES' MANURES.
The Manures manufactured by J. B. LAWES for the present season of 1866 are now ready for delivery at his Factories, at the following prices, per ton :—

	£ s. d.
LAWES' PATENT TURNIP MANURE, and BONE SUPERPHOSPHATE of LIME	6 6 0
LAWES' SUPERPHOSPHATE of LIME from BURNT BONE or MINERAL PHOSPHATES	5 5 0
LAWES' WHEAT, BARLEY, GRASS, and MANGEL MANURES	8 0 0
CONCENTRATED CORN and GRASS MANURE	12 0 0

These Manures can be obtained of Mr. LAWES, or through the appointed Agents in all parts of the United Kingdom, at prices varying according to cost of carriage.
Genuine Peruvian Guano direct from the Importers. Nitrate of Soda, Sulphate of Ammonia, and other Chemical Manures.
American and other Cakes at market prices.
Address, JOHN BENNET LAWES, 1, Adelaide Place, London Bridge, E.C.; and 23, Eden Quay, Dublin.

THOMSON'S STYPTIC prevents the Bleeding of Vines after Pruning or Grafting, the Damping of Geraniums and other Cuttings after they are potted; and it has been used successfully in Grafting Fruit Trees of all descriptions.
Manufactured and sold Wholesale by JOHN YOUNG & SON, Dalkeith, N.B., and may be had of all Nurserymen and Seedsmen in bottles at 3s. each, with directions for use. None is genuine without the signature of WM. THOMSON.

Winter Dress all Fruit Trees with
GISHURST COMPOUND.

Copy of a Letter from Mr. RIVERS, *Nurseries, Sawbridgeworth, Herts, 22d Oct., 1861.*

"I must tell you what I heard to-day from a very clever gentleman farmer, Anthony Bubb, Esq., of Witcombe Court, Gloucester. He has a wall to which Peach trees are trained. Well, last autumn they were in a wretched blighted state. As a desperate remedy he unnailed them all, early last February, and gave all but one a thorough painting with Gishurst Compound, 1 lb. to the gallon of water; his trees, all but the one, commenced to grow favourably in spring, and are now pictures of health. The tree not painted is in a half-dead blighted state. He used the same dressing to his Apple trees; it killed the woolly Aphis entirely, and has made his trees clean and vigorous in their growth. He intends to paint his wall trees annually, and tells all his friends to do the same. I shall certainly serve all my young Peach trees against my walls in the same manner. The Compound is, I believe, more efficacious than the usual offensive mixtures of clay, soot, sulphur, &c.; and it does not blacken the shoots on the walls."

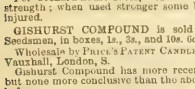
Red Spider Magnified.

For Orchard-house Trees, ozs. to the gallon will be found a good strength; when used stronger some buds on weakly trees may be injured.

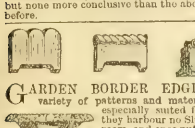
GISHURST COMPOUND is sold Retail by Nurserymen and Seedsmen, in boxes, 1s., 3s., and 10s. 6d. each.

Wholesale by PRICE'S PATENT CANDLE COMPANY, LIMITED, Belmont, Vauxhall, London, S.

Gishurst Compound has more recent testimonials to its efficacy, but none more conclusive than the above, which has been published before.



GARDEN BORDER EDGING TILES, in great variety of patterns and material, the plainer sorts being especially suited for KITCHEN GARDENS, as they harbour no Slugs and Insects, take up little room, and once put down incur no further labour and expense, as do "grown" Edgings, consequently being much cheaper.



GARDEN VASES, FOUNTAINS, &c., in Artificial Stone, of great durability, and in great variety of design.
F. & G. ROSNER, Manufacturers, Upper Ground Street, Blackfriars, S.; Queen's Road West, Chelsea, S.W.; Kingston Hill, Kingston, S.E.
Sole London Agents for FOXLEY'S PATENT GARDEN WALL BRICKS. Illustrated Price Lists free by post. The Trade supplied

ORNAMENTAL PAVING TILES for Conservatories, Halls, Corridors, Balconies, &c., as cheap and durable as Stone, in blue, red, and buff colours, and capable of forming a variety of designs.
Also TESSELATED PAVEMENTS of more enriched designs than the above.
WHITE GLAZED TILES, for Lining Walls of Dairies, Larders, Kitchen Ranges, Baths, &c. Grooved and other Stable Paving Bricks of great durability, Dutch and Adamantine Clinkers, Wall Copings, Red and Stoneware Chimney Pipes, Slates, Cements, &c.
To be obtained of F. & G. ROSNER, at their Premises as above.

SILVER SAND (REIGATE, best quality), at the above addresses—14s. per Ton, or 1s. 3d. per Bushel; 2s. per Ton extra for delivery within three miles, and to any London Railway or Wharf. Quantities of 4 Tons, 1s. per Ton less.
FLINTS, BRICK BURRS or CLINKERS, for Rockeries or Grotto Work. F. & G. ROSNER.—Addresses see above.
N B. Orders promptly executed by Railway.

TAN, GRATIS, in the immediate neighbourhood of Covent Garden Market.
Apply to ESSEX & SONS, 28, Stanhope Street, Clare Market, W.C.

BARLEY, OATS, &c., CLEANSED, PURIFIED, and BLEACHED by a Patent process, without the slightest injury to growth, &c.
Apply to Rev. R. POTTER, M.A., Bedworth, Nuneaton.

Greenhouses of Improved and Portable Construction
MAY BE SEEN ERECTED AT
JOSEPH SMITH'S HORTICULTURAL WORKS,
New Road, Hammersmith.

SPAN-ROOFS	24 ft. by 11 ft. 6 in., with Stage	..	£32 0s.
,,	24 ft. by 9 ft. 6 in. ,,	..	27 0
,,	22 ft. by 12 ft. 9 in. ,,	..	27 0
,,	20 ft. by 10 ft.	..	20 0
LEAN-TO	12 ft. by 7 ft.	..	15 10
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,,	24 ft. by 12 ft. 9 in	..	33 0
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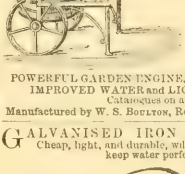
Fifty strong 2-in. Lights, 5 ft. 8 in. by 4 ft., Glazed 21-oz., and well painted, £40.
Twenty ditto, 5 ft. 8 in. by 3 ft. 7 in., ditto, £14 10s.
CONSERVATORIES, GREENHOUSES, or VINERIES made to order at 3s. per foot.
MELON FRAMES of an improved make, ready at low prices.
Estimates for Heating effectually by Hot-Water.
A VINERY or PEACH-HOUSE, 41 ft. by 9 ft., with 14 ft. Rafters, £15

Caution to Gardeners.—When you ask for
SAYNOR AND COOKE'S WARRANTED PRIZE PRUNING and BUDDING KNIVES, see that you get them. Observe the mark SAYNOR, also the corporate mark OBTAIN WARRANTED, without which none are genuine.
S. & C. repeat having to caution Gardeners and others, but are compelled to do so, in consequence of an imitation, of common quality, having been sold for the genuine one, and which has caused many complaints to be made to them of Knives which were not of their make, all of which are warranted both by Sellers and Makers.
S. & C.'s Pruning and Budding Knives are the best and the cheapest in the market.
Paxton Works, Sheffield. Established upwards of 125 years.



SWING WATER BARROW.—This is the best and cheapest article yet introduced for use in Gardens, Farm Yards, &c. The Water may be dipped out, or the Tub tilted and poured out, or by merely raising the Handle it can be placed on the ground, and the Frame detached. To hold about 20 or 30 gallons, price 42s. Carriage paid to any station on Great Eastern Line.

POWERFUL GARDEN ENGINE, suitable for the above, price 45s
IMPROVED WATER and LIQUID MANURE CARTS.
Catalogues on application.
Manufactured by W. S. BOULTON, Rose Lane Iron Works, Norwich.

GALVANISED IRON WATER CISTERNS.
Cheap, light, and durable, will not rust or corrode, and keep water perfectly sweet.

To hold	Each.
30 gallons,	20s. 0d.
50 gallons,	24s. 0d.
80 gallons,	32s. 0d.
100 gallons,	38s. 0d.
125 gallons,	45s. 0d.
150 gallons,	49s. 0d.
200 gallons,	65s. 0d.
250 gallons,	73s. 0d.
300 gallons,	84s. 0d.

With Lid and Brass Tap.

GALVANISED WIRE STRAND CABLE FENCING.
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IMPROVED GALVANISED WIRE NETTING.
HURDLES, HURDLES, HURDLES, 1s. 9d. to 3s. 9d. per yard.
PATENT STRAINING PILLARS, &c.
GALVANISED IRON PUMPS.
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LAWN MOWERS, GARDEN ROLLERS.
ASPHALTE ROOFING FELT, 1d. per square foot.
MOTLEY & GREEN.
Illustrated Catalogues and Estimates free on application.
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Oil Paint no longer Necessary.

HILL AND SMITH'S PATENT BLACK VARNISH for preserving Iron Work, Wood, or Stone. This Varnish is an excellent substitute for oil paint on all out-door work, and is fully two-thirds cheaper. It may be applied by an ordinary labourer, requires no mixing or thinning, and is used cold. It is used in the grounds at Windsor Castle, Kew Gardens, and at the seats of many hundreds of the nobility and gentry, from whom the most flattering testimonials have been received, which HILL & SMITH will forward on application.

From CHAS. E. B. SMEDLEY, Esq., *The Grange, near Boston.*
"I have much pleasure in giving you a reply to your inquiries about the Black Varnish I have had from you for the last two years. It has answered my expectations fully, and as far as I am able to judge, it is the best material for preserving iron fencing, gates, and other wood work exposed to the air; and I can with safety recommend it as the best and cheapest article that is yet out. Wishing you every success."
Sold in casks of about 30 gallons each, at 1s. 6d. per gallon, at the Manufactory, or 1s. 8d. per gallon paid to any Station in the kingdom.
Apply to HILL & SMITH, Brierly Hill Iron Works, near Dudley, and 22, Cannon Street West, E.C., from whom only it can be obtained.

Asphalte Roofing Felt,
ONE PENNY per Square Foot.
CROGGON AND CO., MANUFACTURERS,
{ 63, New Earl Street,
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59, GEORGE SQ., GLASGOW; 2, GOREE PIAZZAS, LIVERPOOL.

COTTAM'S PATENT PORTABLE UNITED COW FITTINGS.

Their advantages are—Portability, not Fixtures, removable at pleasure, no Woodwork or Partitions to impede Ventilation or breed Vermin, Hay Rack dispensed with as unnecessary, increased width and depth of Feeding Troughs, Water Cistern, and Patent Drop Cover to prevent over-gorging. Cleanly, durable, and impervious to infection, being all of iron. Price of Fittings per Cow, 55s.
Prospectuses free of COTTAM & CO., Iron Works, 2, Winsley Street (opposite the Pantheon), Oxford Street, London, W., where the above are exhibited, together with several important Improvements in Stable Fittings just secured by Patent.

JOHN WARNER AND SONS,
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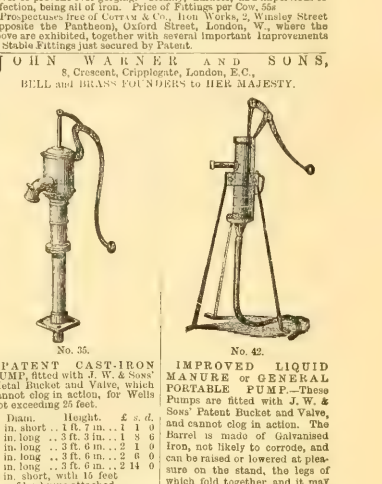
BELL and BRASS FOUNDERS to HER MAJESTY.



No. 35. No. 42.

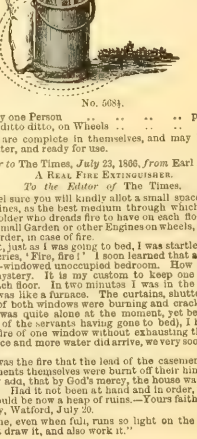
PATENT CAST-IRON PUMP, fitted with J. W. & Sons' Metal Bucket and Valve, which cannot clog in action, for Wells not exceeding 25 feet.

Diam.	Height.	£	s.	d.
2½ in. short	1 ft. 7 in.	1	1	0
2¾ in. long	3 ft. 3 in.	1	8	6
3 in. long	3 ft. 6 in.	2	1	0
3½ in. long	3 ft. 6 in.	2	6	0
4 in. long	3 ft. 6 in.	2	14	0
2½ in. short, with 15 feet of lead pipe attached, ready for fixing		2	0	0
2 in. long, do. do.		2	14	0

Price of 4½-inch Liquid Manure Pump, with legs, £2 15s.; 2-inch Flexible Rubber and Canvas Suction Pipe, 2s. 5d. per foot. The Barrel is 27½ inches long, and the legs are 5 feet high.

IMPROVED LIQUID MANURE or GENERAL PORTABLE PUMP.—These Pumps are fitted with J. W. & Sons' Patent Bucket and Valve, and cannot clog in action. The Barrel is made of Galvanised Iron, not likely to corrode, and can be raised or lowered at pleasure on the stand, the legs of which fold together, and it may be carried with ease by one man to tank or pond.

WARNERS' PORTABLE FIRE or GARDEN ENGINE.



£2 2s.

No. 568½.

For use by one Person .. .. price £2 2s.
No. 647½, ditto ditto, on Wheels .. .. £2 10s.

The above are complete in themselves, and may be always kept filled with water, and ready for use.

Letter to The Times, *July* 23, 1866, *from* Earl ESSEX.

A REAL FIRE EXTINGUISHER.

To the Editor of The Times.

"SIR,—I feel sure you will kindly allot a small space in the *Times* to these few lines, as the best medium through which I would urge every householder who dreads fire to have on each floor of his house one or more small Garden or other Engines on wheels, always charged and in good order, in case of fire.

"Last night, just as I was going to bed, I was startled by that most fearful of all cries, 'Fire, fire!' I soon learned that a fire was raging in a large two-windowed unoccupied bedroom. How caused is to us all a great mystery. It is my custom to keep one of these small Engines on each floor. In two minutes I was in the room with one of them. It was like a furnace. The curtains, shutters, casements, and cornices of both windows were burning and cracking from floor to ceiling. I was quite alone at the moment, yet before assistance arrived (most of the servants having gone to bed), I had completely subdued the fire of one window without exhausting the Engine, and when assistance and more water did arrive, we very soon extinguished the other.

"So fierce was the fire that the lead of the casements was melted, and the casements themselves were burnt off their hinges.

"I will only add, that by God's mercy, the house was saved by this small Engine. Had it not been at hand and in order, most assuredly Cassiobury would be now a heap of ruins.—Yours faithfully,

"Cassiobury, Watford, July 20. "ESSEX.

"The Engine, even when full, runs so light on the floor, that any woman might draw it, and also work it."

HOTHOUSES for the MILLION.—Medal, 1862.
Invented by the late Sir Joseph Paxton.
Manufactured at Leamore, Newton in Cartmel, Lancashire, Gloucester, Coventry, Paisley, and Aberdeen

ILLUSTRATED PRICE LISTS will be sent on application to Messrs. HARKNESS & MORTON, 7, Pall Mall East, London, S.W.
Also, a HANDBOOK of VINE and FRUIT TREE CULTIVATION, price 6s.; post free, 6s. 6d.

HOT-WATER PIPES and CONNECTIONS, SADDLE and other BOILERS.
Estimates, with Priced Price Lists, and Free Delivery at principal Railway Stations for Quantities.
W. & H. Skirrow & Co., Warehouse and Manufactory, 148, Upper Thames Street, London, E.C.

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DEANE AND CO.'S Patent VENTILATING and EXPANSION STOVES are simple, cheap, and efficient; have been largely adopted at the Royal Gardens, Kew, burn many hours without attention, and at a very low cost for fuel. Proposal Inspection Stoves, 20s., 30s., 50s., and 70s. each. Ventilating Stoves, 50s., 60s., 70s., 90s.
HOT-WATER APPARATUS for Conservatories, Greenhouses, Hothouses, Forcing Pits, &c., erected and fitted up complete
DEANE & Co., 46, King William Street, London Bridge, E.C.
Established A.D. 1700.

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CONSERVATORY AND HORTICULTURAL BUILDERS, &c.,
Iron Works, 2, Winsley Street, Oxford Street, London, W.
SADDLE BOILERS

20	24	30 inches long
45s.	60s.	92s. 6d. each.

HOT-WATER PIPES.

4	5 inch
1s. 6d.	2s. 1d. per yard.

Materials supplied as above, or Estimates given for complete to Plan, on application to
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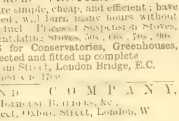


The Only Stove without a Flue.
NASH AND JOYCE'S PATENT, for AIRING, DRYING, and WARMING HALLS, SHOPS, ROOMS, &c., a new special Stove for the safe heating of Greenhouses, Forcing Pits, &c., which will work without re-lighting all winter for 5 days with 100 cwt. of coals. Proper heat, and degree required, with all Calorie. Saving of 75 per cent. Prospectuses post free.
MINCING and SAUSAGE FILLING and MASTICATING MACHINES of the best makers, for sale.
The COTTAGE RANGE is the only rapid Cleaner and Polisher of Knives at a moderate price. 3s. 6d. to 5s. 6d. Prospectus post free.
CHEAP FIRES.—The Rotating Fire Bills save half the coals, distinguished logs. The Stables packet of Four, red hot in the fire every day, last all Winter.
S. NASH, Bedford street, 295, Oxford Street, W.C.; Linster Terrace, Haymarket; and Stove Depôt, 119, Newgate Street, London, E.C.

Hot-water Pipes, with Elbows and Connections,
SUPPLIED BY
BURY AND POLLARD.
CONTRACTS AND ESTIMATES GIVEN FOR WARMING PUBLIC BUILDINGS.

Latest Improvements in HEATING by HOT WATER.
The Improved CONICAL BOILERS,
For Heating Pineries, Conservatories, Greenhouses, Mansions, Halls, Warehouses, &c.
Solely Manufactured by Bury & Pollard (successors to John R. Pell), late Stephenson & Pedley.
These Boilers are adapted for setting in Brickwork, or annexed Sketch shows Bury & Pollard's improved arrangement, requiring
NO BRICKWORK SETTING.
These Boilers have for their durability and economy attained a celebrity far surpassing any other Boiler ever invented. They have been in universal use in most of the Public Establishments, Royal Botanical Gardens at Kew, at the Regent's Park, the Crystal Palace, and throughout the United Kingdom, Nobility's and Gentry's Seats throughout the United Kingdom. References—Where they have been in use 20 years in constant use.
Price Lists, on application, to Bury & Pollard, Park Iron Works, 2, New Pye Street, corner of Tothill Street, S.W.

CRANSTON'S PATENT BUILDINGS for HORTICULTURE.
"Dry Glazing without Putty."
"Glass without Laps."
"Ventilation without Moving Lights."
Highly Commended by the Royal Horticultural Society, South Kensington.

Plans and Estimates free on application. Descriptive Book fully illustrated, post free for 26 stamps, from the Author and Patentee, JAMES CRANSTON, Architect, Birmingham.
Works—Highgate Street, Birmingham.
HENRY J. GROWTAGE, Manager, 1, Temple Row West, Birmingham

HOT-WATER APPARATUS, of every description, fixed complete in any part of the country, or the materials, viz., Boilers, Pipes, &c., delivered to any station.
Estimates on application.
J. JONES & SONS, 6, Bankside, Southwark, London, S.E.

Heating by Hot Water.
W. J. HOLLANDS, IRON MERCHANT, 31, Barnside, London, S.E.
HOT WATER PIPES, from Stock, per yard:—2-inch, 1s. 2d.; 3-inch, 1s. 10d.; 4-inch, 2s. 4d. ELBOWS, from Stock, 1s. 6d., 2s. 8d., and 3s. each. THROTTLE VALVES, 1os., 15s., and 14s. each. Other Connections at equally low prices, and all goods of first-class manufacture. Estimates given, and orders by post punctually attended to the same day.

Heating by Hot Water.
HOT-WATER PIPES, at Wholesale Prices, with Elbows, Syphons, Tee Pipes, and every other connection; Wrought and Cast-Iron Boilers, Saddle, Conical, Cylinder, Tubular, and Elliptic, from 24s. each. Improved Boilers and Iron Stands to use without brickwork, 60s. each. Valves from 10s. 6d. each. Patent Valves, Improved Furnace Bearers, Furnace Bars, Supply Cisterns, and Castings of every description in stock, at
MR LYNCH WHITE'S Iron Wharf, Upper Ground Street, Blackfriars Bridge, London, S. Price List on application.

JAMES WATTS AND CO., HOTHOUSE BUILDERS and HOT-WATER APPARATUS MANUFACTURERS, 353, Old Kent Road, S.E.
TWO HUNDRED CUCUMBER and MELON FRAMES and LIGHTS, ranging from 3s. 6d. to £3 10s. FULL SIZES kept in STOCK. Glazed and Painted complete, ready for immediate use. Packed and sent to all parts of the kingdom. Public and Private Buildings, Warehouses, &c., Heated on the most approved scientific and economical principles. References to the Nobility, Gentry, and Trade in most of the Counties in England.

MELON LIGHTS, Machine made, 6 feet by 4 feet, 1¼ thick, Unglazed, 3s. 6d. each; 11 are kept in stock at the Finsbury Steam Joining Works, 121, Bunhill Row, E.C.

Seed Drawers Wanted.
WANTED, a CASE of GARDEN SEED DRAWERS, to suit a space to fact [illegible] about Eighty Drawers. Apply, stating particulars and price, to R. & C., Gardeners' Chronicle Office, W.C.

SHAW'S TIFFANY.
For samples and prices apply to
J. Shaw & Co., 29, Oxford Street, Manchester.

JAMES PHILLIPS AND CO.
beg to submit their prices as follows:—
GLASS for ORCHARD HOUSES,
As supplied by them to Mr. Rivers, to the Royal Horticultural Society, and to most of the Nobility, Clergy, and Gentlemen of the United Kingdom.
Each Box contains 100 feet. The prices only apply to the sizes stated.
Squares 20 by 12, 20 by 14, 20 by 15.

	16 oz. to the foot.	21 oz.
Fourth quality	.. .. 14s. 0d.	18s. 0d.
Third ditto	.. .. 15s. 0d.	22s. 6d.
Seconds	.. .. 18s. 6d.	26s. 0d.
English	.. .. 20s. 0d.	27s. 0d.

The above prices include the boxes, which are not returnable.
Stock size, 16-oz., in 100 feet boxes, boxes included.
These prices only apply to the sizes stated.

				4ths.	3rds.	2nds.
11 by 9	12 by 9	12 by 9	11 by 9	s. d.	s. d.	s. d.
12 „ 10	13 „ 10	14 „ 10	15 „ 10	13 6	15 6	17 0
13 „ 11	14 „ 11	.. ..	.. ..			
14 „ 12	15 „ 12	15 „ 11	16 „ 11			
15 „ 12	16 „ 12	16 „ 12	.. ..			
16 „ 13	17 „ 13	20 „ 12	.. ..			
16 „ 14	20 „ 14	18 „ 13	.. ..	15 0	17 0	18 6
	17 „ 14	18 „ 14	.. ..	16 to 17 oz. to the foot.		
	20 „ 14					

SMALL SHEET SQUARES.
In 100 feet Boxes.

6 by 4	6½ by 4½	7 by 5	7½ by 5½	.. 12s. 6d.
8 by 6	8½ by 6½	9 by 7	9½ by 7½	
		10 by 8	10½ by 8½	.. 13s. 6d.

Boxes 2s. each, returnable at full price.
London Agents for HARTLEY'S IMPROVED PATENT ROUGH PLATE.
LINSEED OIL, Genuine WHITE LEAD, CARSON'S PAINTS, PAINTS of various colours, ground ready for use.
SILVERED and ROUGH PLATE GLASS, SLATES of all sizes, BRITISH PLATE, PATENT PLATE, ROLLED PLATE, CROWN, SHEET, HORTICULTURAL, ORNAMENTAL, COLOURED, and every description of GLASS, of the best Manufacture, at the lowest terms. Lists and prices and estimates forwarded on application to
JAMES PHILLIPS & Co., 180, Bishopsgate Street Without, E.C.

GRAY'S OVAL TUBULAR BOILER.
INTERNATIONAL EXHIBITION, CLASS IX., No. 2119.

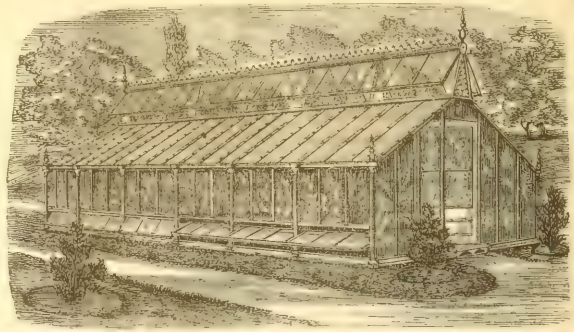
MR. GRAY begs to call the attention of the Nobility, Gentry, Nurserymen, Gardeners, &c., to his
NEW OVAL TUBULAR BOILER,
Acknowledged by practical judges to be a great improvement on every form of Tubular Boiler yet introduced. It has proved itself superior to all other Boilers for quickness of action and economy of Fuel, doing its work with one-third less the amount required by any other.

Extract from Report on GARDENERS' CHRONICLE *of International Exhibition, May 24, 1862, page 476.*
"The upright form of Boiler is usually made on a circular plan, but the oval form given to Mr. GRAY's variety of it is said to be open to the inconvenience of its bringing the tubes nearer to the fire. The usual form on a furnace being a parallelogram rather than a square, it seems feasible that the Boilers on the oval plan should bring the tubes more completely within range of the burning fuel, and this being so, the change, though a slight one is no doubt an improvement."

They are made of all sizes, which, with prices, may be had on application.

JAMES GRAY, HORTICULTURAL WORKS,
DANVERS STREET, PAULTON'S SQUARE, KING'S ROAD, CHELSEA, S.W.

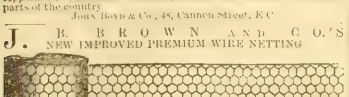
BEARD'S PATENT.
GREAT INTERNATIONAL HORTICULTURAL EXHIBITION & BOTANICAL CONGRESS.



The FIRST and ONLY PRIZE given at the above EXHIBITION for the BEST METHOD of VENTILATION for PLANT STRUCTURES, was awarded to
MESSRS. SANDERS, FREWER, & CO.,
VICTORIA WORKS, BURY ST. EDMUNDS,
FOR THEIR MODEL OF
BEARD'S PATENT METALLIC NON-CONDUCTING GLASS HOUSES,
Showing the Patent System of perfect Ventilation and Patent Method of Glazing, whereby breakage from expansion and contraction is prevented, and facility given for immediate reparation by any ordinary labourer.
MESSRS. SANDERS, FREWER, AND CO. beg to call special attention to the high value of these great improvements in the VENTILATION, &c., of HORTICULTURAL ERECTIONS, which are also applicable to all WOODEN HOUSES, as well as to CHURCHES, RAILWAY STATIONS, PUBLIC BUILDINGS, MANUFACTORIES, &c.; and have received the highest recommendation from many of the first Horticulturists and practical men of the United Kingdom.
The system is invaluable also for AGRICULTURAL BUILDINGS, as by it abundant Light and Air can be obtained, and the Ventilation regulated to the utmost nicety in the Tops and Roofs of all Structures, where, as is well known, *Impure Air* constantly accumulates, and where the ordinary system of Ventilation is impracticable.
Full particulars and descriptions may be obtained on application to
MESSRS. SANDERS, FREWER, AND CO.,
VICTORIA HORTICULTURAL AND ENGINEERING WORKS, BURY ST. EDMUNDS.

CHEAPEST and BEST IRON HURDLES, FENCING, Wire Netting, Chaff Cutters, Oat Bruisers, Bean Mills, Steam Engines, Lawn Mowers, Conservatories, Greenhouses, Hot-water Apparatus. Estimates furnished, and skilled workmen sent to all parts of the country.
JOHN BOYD & Co., 48, Cannon Street, E.C.

J. B. BROWN AND CO.'S NEW IMPROVED PREMIUM WIRE NETTING



Great Improvement. Reduced Prices, February, 1866.
PRICES PER LINEAL YARD OF ANY'S WIDTH.

Size of Mesh.	Mostly used for	Light.		Medium.		Strong.		Extra Strong.	
		Jap Gal		Jap Gal		Jap Gal		Jap Gal	
		s d	s d	s d	s d	s d	s d	s d	s d
2 ins.	Dogs or Poultry	0 4	0 6	0 5	0 7	0 6	0 8	0 7	0 9
1½	Poultry	0 5	0 7	0 6	0 8	0 7	0 9	0 8	0 10
1¼	Small Rabbits, Hares, &c.	0 5	0 6	0 6	0 8	0 7	0 9	0 8	0 10
1	Smallest Rabbits, Pheasantries, Small Birds, &c.	0 6	0 8	0 7	0 9	0 8	0 10	0 9	0 11
		0 8	0 10	0 9	1 0	1 1	1 4	1 7	1 10
½	Aviaries, Window Guards, &c.	0 11	1 1	1 1	1 4	1 4	1 7	..	..
⅜	Aviaries, Window Guards, &c.	1 7	1 10	1 10	2 0	2 0	2 3	2 3	2 6
¼	Aviaries, &c.	2 3	2 6	2 6	2 9	..	..	..	..

Quantities of 100 Yards or upwards delivered free at all Railway Stations and Shipping Ports in England.

*** Every description of Netting warranted to give satisfaction, and if not approved will be exchanged, or may be returned unconditionally.

J. B. BROWN & Co., Offices, 90 late 18, Cannon Street, London, E.C.
Warehouse and Manufactory, 148, Upper Thames Street, E.C.

FOWLER'S PATENT STEAM PLOUGH and CULTIVATOR may be SEEN at WORK in every Agricultural County in England.
For particulars apply to JOHN FOWLER & Co., 71, Cornhill, London, E.C.; and Steam Plough Works, Leeds.

THE IMPROVED LEATHER DRIVING STRAPS for MACHINERY are stronger, more durable, drive better, and cost less than other kinds of Driving Belts. SPECIAL STRAPS for PORTABLE ENGINES. Price-list free by post.
TURNER'S Patent Strap and Hose Company.
Manufactory: Aunt Works, Greenfield, near Manchester.
Warehouse: 81, Mark Lane, London, E.C.
Mr. H. FERRABEE, Agent.

By Appointment
TO THE INTERNATIONAL HORTICULTURAL SHOW AND FLORAL CONGRESS, MAY, 1866

J. GEORGE, ARCHT and BUILDER in NATURAL and ARTIFICIAL ROCKWORK of every Description
11, Harcourt Street, Marylebone Road, London, W.

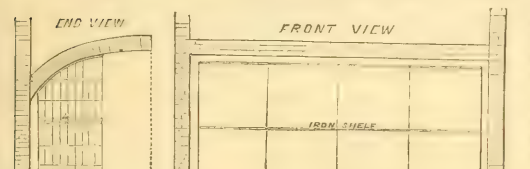
BOROUGH of LIVERPOOL
SEFTON PARK COMPETITION
To LANDSCAPE GARDENERS AND OTHERS
The Committee of the Borough of Liverpool offer TWO PREMIUMS for the BEST PLANS for LAYING OUT the SEFTON PARK, viz.:
A First Premium of 200 Guineas, and a Second Premium of 100 Guineas.
On and after the 24th November the establishment of the Competition, together with a lithographed Outline Plan of the Site, will be sent to any address on receipt of Post Office Order for One Guinea, which latter will be returned if Plans are received according to the conditions.
Applications to be made to Mr. E. R. ROBSON, Architect and Surveyor, Town Hall, Liverpool.

Farm Poultry.
GREY DORKING FOWLS, of purest breed, in any numbers
Imported TOULOUSE GEESE, the largest and most productive breed known
Imported NORFOLK TURKEYS, large, hardy, and good breeders
AYLESBURY and ROUEN DUCKS
Imported BELGIAN HARE RABBITS, for size and early maturity
BRAHMA POOTRA, CREVECŒUR, and LA FLECHE FOWLS, for constant layers
Priced Lists and Estimates on application.
JOHN BAILY & SON, 114, Mount Street, London, W

WROUGHT-IRON WINE BINS.

BURY & POLLARD

CALL ATTENTION TO ANNEXED SKETCHES OF THEIR WINE BINS.



Noblemen, Gentlemen, Wine Merchants, and Hotels are now being supplied by BURY & POLLARD with their

WROUGHT-IRON BINS,

made to any size for their Cellars, economising space, cost, &c.

Apply, giving dimensions of Cellar,

BURY AND POLLARD, PARK IRONWORKS, 17, NEW PARK STREET, SOUTHWARK, LONDON, S.E.

Estimates Free. Cellars fitted complete in any part of the Kingdom.

NOVEL INVENTION.

EXHIBITED AT R. BOBY'S STAND, No. 10, BINGLEY HALL, BIRMINGHAM; and at STAND 103, SMITHFIELD CATTLE SHOW, ISLINGTON HALL, LONDON,

GRETTON & ABBOTT'S

PATENT INVENTION FOR REMOVING BROKEN BARLEY,

ADAPTED TO BOBY'S PATENT SELF-CLEANING CORN SCREEN.

AWARDED FIRST PRIZE MEDAL AT THE INTERNATIONAL AGRICULTURAL EXHIBITION AT VIENNA, 1862.

For Farmers, Merchants, and Maltsters these Machines are of especial value. In consequence of the above adaptation a sample of Barley can now be rendered perfect in one operation, Messrs. GRETTON AND ABBOTT'S Patent Apparatus removing all the Barley broken by the Threshing Machine (which up to the present time has been an impossibility); and BOBY'S Patent Self-cleaning Corn Screen removing all the thin and refuse Grains, Stones, &c., in one operation. It is equally well adapted for Wheat.

Several of these Machines are now at work at Messrs. Bass & Co.'s, Burton-on-Trent; and at Messrs. GILSTRAPS', Newark; and at other large Breweries and Maltings, to whom intending purchasers can be referred if required.

An Illustrated and Descriptive Catalogue of the above Invention will be forwarded post free on application to the Inventors,

MESSRS. GRETTON AND ABBOTT, BURTON-ON-TRENT;

or to the Sole Manufacturer, ROBERT BOBY, St. Andrew's Works, Bury St. Edmund's, Suffolk.

The above Machines can also be obtained from all respectable Ironmongers and Implement Agents.

AT STAND No. 10, BINGLEY HALL, BIRMINGHAM CATTLE SHOW; AND STAND 103, SMITHFIELD SHOW, ISLINGTON HALL, LONDON,

WILL BE EXHIBITED

BOBY'S

PATENT SELF-CLEANING CORN SCREENING MACHINES

WHICH HAVE OBTAINED SIXTY FIRST-CLASS PRIZES AND MEDALS.

Six Thousand of these Machines are now in use, and continue to give great satisfaction.

Nearly Two Hundred of these Machines have been supplied to Messrs. Bass & Co., and Messrs. ALLSOPPS, of Burton-on-Trent; and Messrs. GILSTRAPS, of Newark; to whom intending purchasers can be referred if required. It is impossible for any good Corns to pass through with the light. They are very simple and easily worked, and not liable to get out of order. Price from £9 and upwards.

Also will be exhibited on the same Stand, BARLEY AVELLERS, BOBY'S NEW SCREEN for SCREENING MALT, and BOBY'S PATENT DOUBLE-ACTION HAY-MAKING MACHINES, which have obtained more Prizes in four years than all those received by other Makers put together.

MANUFACTORY: ST ANDREW'S WORKS, BURY ST. EDMUND'S, SUFFOLK.

FOR SALE (the Land being required for Building purposes), GREENHOUSES, Garden Frames, about 60 feet long by 12 wide; also a number of GREENHOUSE and other PLANTS, TREES, &c. Apply at
Mr. CHARLTON, Stone Farm, Mark Lane, Forest Gate, near Stratford, E.

WANTED to RENT, a SMALL NURSERY and SEED BUSINESS, or ESTABLISHED SEED BUSINESS
Address A. B., care of Messrs. NEILSON & SON, 99, Bathurst, London, E.C.

To Seedsmen, Potato Growers, &c.
TO BE LET, till Michaelmas, 1867, about 60 ACRES of productive ARABLE LAND at Leytonstone. Immediate possession.
For terms apply to Messrs. DRIVER & Co., Auctioneers, Surveyors, and Land Agents, 4, Whitehall, S.W.

TO BE LET, with Immediate Possession, in consequence of the death of the Owner, the POND, HEATH NURSERY, containing about 12 Acres of Nursery Ground, well stocked with Stands, Fruit, and Forest Trees, in good saleable condition. In the Forest Trees will be found about 200,000 Lombardy Poplars, from 2 to 12 feet.
For further particulars apply to Mr. T. JOWETT, or Mr. L. STONES, Trustees of the late J. Stones, Pondhead.

To Market Gardeners and Others.
TO BE LET, the Extensive GARDENS attached to a Nobleman's Residence, containing about 4 Acres. They are situate between the Great Western and South Western Railways, and only eight miles from London, with two high roads (the Acton and Hammersmith roads) close by. Recently planted with large Walled Gardens and Orchards, with range of Graperies, Hot-houses, &c. A good Dwelling and Cottages for Labourers, Sheds, Store-houses, and all the necessary Outbuildings.
Apply to Messrs. MURRAY & 24, New Street, Spring Gardens, S.W.

Tothill, Plymouth.—To Gardeners and Others.
TO BE LET, by Tender, for a term of 7 or 14 years, from Christmas, 1866, as that MESSUAGE or DWELLING HOUSE, GARDEN, and PREMISES, situate near Tothill, in the Parish of Charles, Plymouth, now in the occupation of Mr. Francis Wood, Gardener and Seedsman, as Tenant, containing by admeasurement ½a. 1r. 0p. or thereabouts. The above has been for many years carried on as a Garden, a Nursery, and Seed Business, and is well supplied with Spring Water. The taker will be required to purchase, at a valuation by a competent person to be agreed on between himself and the Tenant, the Growing Crops, of Fruit, and also the Stock of Plants, Ornamental and Forest Trees, and Potting Leases on the Premises, being allowed to remove the latter at the expiration of his Term.
Tenders for taking the above Premises must be left at the Offices of Mr. Lavington, Solicitor, Argus Insurance Office, Courtenay Street, Plymouth (where the terms and conditions on which they are to be let may be seen), and in the meantime the Tenant will show the Premises on application.
The Letter shall not be required to accept the highest Tender.
Argus Insurance Office, Plymouth.—September 15.

Sales by Auction.

Consignment from Ghent for absolute Sale.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, at the City Auction Rooms, 38 and 39, Gracechurch Street, on WEDNESDAY NEXT, December 12, at half-past 12 o'clock precisely, about 400 choice DOUBLE CAMELLIAS and AZALEA INDICA, compact plants, 1 to 3 feet, consisting of all the approved kinds, handsomely furnished with flower buds; ERICAS, PRIMULAS, LILIUM LANCIFOLIUM, and very handsome STANDARD, HALF STANDARD, and DWARF ROSES, in endless choice of varieties in cultivation; selected FRUIT TREES, specimen of each assortment; HARDY AMERICAN PLANTS, DUTCH BULBS HARDY CLIMBERS, &c.
May be viewed Morning of Sale. Catalogues may be had at the Rooms as above; and of the Auctioneers and Valuers, American Nurseries, Leytonstone, Essex, N.E.

SALE THIS DAY AT HALF-PAST 12 O'CLOCK PRECISELY
600 Lots of Choice Plants and Bulbs from Norfolk and Holland.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on SATURDAY, December 8, at half-past 12 o'Clock precisely, an immense assortment of HARDY and ORNAMENTAL TREES and SHRUBS, consisting of Specimen Conifers, Kalmias, Honeysuckles, Evonymus, Box, Yuccas, Laurels, Euguluses, Berries, Privet, Cotoneasters, Forsythias, Jasminums, Lilacs; Standard, Dwarf and Pyramid Fruit Trees, Currant and Gooseberry Bushes, Raspberry Canes, Rhubarb and Asparagus Roots, Standard and Dwarf Roses, Carnations, Picotees, Pinks, Tulips, Crocuses, Narcissi, Gladioli (many varieties), &c., all in capital condition and ready for immediate planting.
On view the Morning of Sale, and Catalogues had.

Bulbs from Holland, Fruit Trees, Roses, Shrubs, &c.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, December 12, at half-past 12 o'Clock precisely, an assortment of HARDY BULBS; also 1,000 STANDARD and DWARF FRUIT TREES, SPECIMEN CONIFERS for Lawns, 1000 DWARF ROSES, Rustic Stools, Baskets, &c.
On view the Morning of Sale, and Catalogues had.

Standard Roses, Bulbs from Holland, Fruit Trees, &c.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on SATURDAY, December 15, at half-past 12 o'Clock precisely, 1000 Fine class STANDARD ROSES, HARDY TREES, and SHRUBS from Surrey; STANDARD and DWARF FRUIT TREES and BULBS from Holland.
On view the Morning of Sale, and Catalogues had

To Private Buyers and the Trade.

THOMAS BUNYARD AND SONS beg to announce that in consequence of the Land being Sold, they have instructed Mr. Tootell to effect SALE by AUCTION in 100 Lots, the Valuable Eighty-weeks' Stock, now growing on their Upper Nursery, Tonbridge Road, Maidstone. From its extent and proximity to the Railway it is well worth the attention of buyers. The Sale will take place on the Premises on WEDNESDAY, THURSDAY, and FRIDAY, the 12th, 13th, and 14th of December, and a Luncheon will be provided.
Catalogues sent on application to the Nurseries, or Mr. TOOTELL, Auctioneer, Rose Street, Maidstone.
N.B.—Messrs. B. beg to state that this Sale will not affect their regular Trade, as their home Nurseries at Maidstone, as well as their Ashford business

Goldworth, Woking, Surrey.
VALUABLE NURSERY STOCK, A FEW of VALUABLE FREEHOLD BUILDING LAND

MESSRS. WATERER AND SONS will SELL by AUCTION on THURSDAY, December 20, at 11 for 12 o'Clock precisely, on the premises, at Goldworth, one mile from the Woking Station, the property of Mr. Chandler, under an Assignment for the benefit of his Creditors, a surprising forward GREEN HOLLY, in upwards of 150 sorts, including many extra large specimens, several large HOLLY, 11 STANDARD STRIPED HOLLY, 200 STRIPED HOLLY, 40,000 BEDDED QUICK, 3000 Cupressus Lawsii, 2000 Yews, 9 large Yews, 250 Laurustinus, 200 Box, Standard and Dwarf Laurels, 300 Aucubas, 500 Arbor-vitæ, 100 Portugal Laurels, 5 Araucaria imbricata, 200 Rhododendrons, 4 Abies Douglasii, 7 to 6 feet each; 12 Standard and Half-Standard Perpetual Roses, and a variety of other lots, in small quantities, including Seedling Birch and Holly, Heaths, Daphne cneorum, Ivy (silvered), Striped Box, Magnolias, Savin, &c.; a handsome Chestnut Pony, very fast, and quiet to drive or ride, 14½ hands high; 1 load of Meadow Hay, and Garden Tools, &c.; also a piece of valuable FREEHOLD BUILDING LAND, containing 6 rods, more or less, nearly at Hook Heath, near the Star Public-house, about ½ mile from Woking Station with a south aspect and a perfectly healthy situation, commanding extensive and picturesque views, which cannot be managed unless sold.
May be viewed one week previous to the Sale, and Catalogues had upon the Premises, and of Messrs. WARNER & SONS, Auctioneers and Valuers, Chertsey, Surrey, who will forward them on application by Post.

GOOD SEEDS.—CARRIAGE FREE.

SUTTON & SONS,

SEEDSMEN TO THE QUEEN,

ROYAL BERKSHIRE SEED ESTABLISHMENT, READING.

THE VERY EARLIEST AND BEST PEA IN CULTIVATION IS

SUTTON'S RINGLEADER.

Retail Price, 2s. per quart.

EXTRACTS FROM A FEW OF THE NUMEROUS TESTIMONIALS RECENTLY RECEIVED.

Extract from the Report on Peas grown at Stoke Newington in 1865 and 1866.

"'Sutton's Ringleader'—In 1866 the sample was true throughout, the growth quite regular, wiry, the leaves a light green and small as compared with 'Dillistone's Early,' or 'Sangster's No. 1'; or, in other words, it is decidedly less leafy than either of those varieties. The pods are regular in outline, with a neat beak, and are produced both in pairs and singly. One of its distinguishing characters is, that it produces pods from top to bottom in a very uniform manner, whereas 'Dillistone's Early' produces them chiefly at the top."

"There can be no doubt that this is a distinct and valuable variety, the earliest in cultivation, and as good for the table as any in the section to which it belongs. Height, 2 feet 9 inches.

"In 1865 and 1866 'Dillistone's Early' and 'Sutton's Ringleader' stood side by side, and these two Peas are as distinct as Oranges are from Lemons, or as 'Sangster's No. 1' is distinct from 'Bishop's Longpod.'"

From Mr. JAMES DUCKETT, *Gardener to the* Rev. J. Wilder, *Saltham, August* 22.

"I have proved your 'Ringleader' Pea to be the earliest. I sowed 'Ringleader' side by side with 'Daniel O'Rourke,' and gathered the 'Kingleader' nine days earlier than 'Daniel O'Rourke.'"

From Mr. JOHN RATTY, *Gardener to* Cotterill Scholefield, Esq., *Turville Park, Henley-on-Thames, Sept.* 6.

"I have twice this season grown 'Sutton's Ringleader' Pea side by side with 'Daniel O'Rourke' and 'Dillistone's Early,' and on each occasion found 'Sutton's Ringleader' 7 or 10 days earlier than either of the other two."

From Mr. JOSEPH HINSON, *High Street, Sutton, near Ely, Sept* 15

"I have now grown your 'Ringleader' Pea 2 years, and have found them the earliest I have ever grown."

From Mr. BAILEY WADDS, *Gardener, Raywell, Brough, May* 29.

"I have this year sown your 'Ringleader' Pea against your 'Early Champion,' which I have hitherto found the earliest in cultivation, and I am glad to tell you that it came into bloom 10 days earlier. It has been covered with blossoms from top to bottom. I am sure it is a valuable addition to our early Peas."

From Mr. J. DANIELS, *Gardener to the* Rev. C. R. Keene, *Swyncomb Gardens, Henley-on-Thames, June* 20.

"I might notice that your 'Ringleader' Pea, sown December 20, is first-rate, perfectly distinct, and much the earliest Pea I have ever grown. I have also another crop nearly ready, sown March 20, with 'Dillistone's,' but find them perfectly distinct."

From Mr. JAMES PEARSON, *Gardener to* H. Bentley, Esq., *Woodlestead, Leeds, May* 25

"Your 'Ringleader' Pea is 6 days earlier than 'Dillistone's,' and is the most promising Pea I have grown."

From Mr. H. HARRISON, *Dolham, May* 28

"Your 'Ringleader' Pea has proved with me by far the earliest, and will be cleared off the ground before the others have done blossoming. I consider the 'Ringleader' the quickest Pea of any of the early sorts grown."

From the Rev. ROBERT TAYLOR, *North Hasketon Vicarage, May* 26.

"Your 'Ringleader' is most certainly the earliest Pea I have seen."

From Mr. M. MAYHEW, *Gardener to* Dr. Stephens, *Gothic Lodge, Twickenham, May* 29, 1866.

"Your 'Ringleader' is the earliest Pea I have ever met with, and a good cropper."

From Mr. GEORGE SCRYMGER, *House Park, Sonning, May* 29

"I have great pleasure in reporting favourably of your new early Pea 'Ringleader.' They were sown the same day as five of the most popular early sorts. I gathered from it on the 26th of May, which is 14 days earlier than I shall off any of the other varieties. It is also very productive."

From JOHN FORD, Esq., *Morton Hall, Worcester, May* 31.

"My gardener sowed on the 12th January, side by side, 'Sutton's Ringleader,' 'Sutton's Champion,' 'Essex Rival,' and 'Dillistone's Early Prolific' Peas. 'Sutton's Ringleader' was just coming in the 31st of May; the others a week or so later."

From Messrs. DOBSON & SONS, *Woodlands Nursery, Isleworth, October* 21.

"We tried your 'Ringleader' Pea last season with 'Dillistone's,' and it was from a week to 10 days earlier. It is certainly the earliest Pea that has come under our notice."

From WM. THOMPSON, Esq., *Weymouth, January* 12.

"I tried your 'Ringleader' Pea last year against 'Sangster's No. 1;' they were each sown on the same day, but your 'Ringleader' was 10 days earlier in ripening than 'Sangster's No 1.'"

From Mr. WILLIAM DOWELL, *Gardener to* Sir George Chetwynd, *Grendon Hall, Atherstone, May.*

"Your 'Ringleader' is earlier than any Pea I have ever grown. I shall gather a dish to-morrow morning, which is by far the earliest we have had."

From Mr W. POPEY, *Gardener to* H. P. Best, Esq., *Donnington Grove, near Newbury, May* 24.

"I planted your 'Ringleader' Pea on the last day of February; on the same day I planted 'Daniel O'Rourke' and other early sorts. Your 'Ringleader' is uncommonly well podded, and the pods are filling fast. I have no doubt they will be cleared, and the ground planted, before I pull from any of the other early sorts."

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THE GARDENERS' CHRONICLE
AND
AGRICULTURAL GAZETTE.

A Newspaper of Rural Economy and General News.

No. 50.—1866.] SATURDAY, DECEMBER 15. {Price Fivepence. STAMPED EDITION, 6d.

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NATIONAL HORTICULTURAL EXHIBITION, 1867.—The above EXHIBITION will open at Manchester on JUNE 7, and continue till JUNE 15

Schedules, &c., may be obtained on application to Mr. B. FINDLAY, Curator, Botanic Garden, Mancheste r; or from the undersigned,

R. BAY WHITMORE, Secretary.

Carlton Buildings, Cooper Street, Manches'er.

Zoological Gardens, Clifton.—Rose Show.

THE BRISTOL, CLIFTON, and WEST of ENGLAND ROSE SHOW will be held in the above Gardens, TUESDAY, June 25, 1867.

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Allamanda Hendersonii, 21s.
Begonia insignis, 21s.
Bougainvillea glabra, 5s. & 7s. 6d.
Clerodendron squamatum, 21s.
Dracæna Lindenii, 21s.
Eranthemum pulchellum, 21s.
Gardenia florida, 21s.
Gastroneura sanguinea, fine apricot-scarlet, or orange-red flower, 3s. 6d.
Hex Fortunei, 2s. 6d., 3s. 6d.
Monochætum Lemoinianum, beautiful, 3s. 6d.
Orchis maculata superba, 5s.
Passiflora racemosa, 7s. 6d.
Passiflora Buonapartea, 7s. 6d.
Pentstemon Hendersonii, 21s.
Primula sinensis alba, 5s.
Rhododendron Princess Alexandra, 7s. 6d.
Rondeletia speciosa, 21s.
Salvia patens, 21s.
Sanchezia nobilis, 21s.
Statice profusa, 21s.
Thunbergia grandiflora, 5s. & 7s. 6d.
Tydæa Victoria, 21s.
Vriesia Poelmanni, 21s.
Zygopetalum Mackayi, 21s.

Standard Fuchsias, 21s. per dozen.
Standard Heliotropes, 21s. per dozen.
Standard Pelargoniums, 21s. per dozen.
Standard Roses, 21s. per dozen.
Standard Scarlet Geraniums, 21s. per dozen.

Pittonia Verschaffeltii, 21s.
Selaginella Lyallii, 21s.
Tricolor Pelargoniums, 21s. per dozen.
Variegated Pelargoniums, 21s. per dozen.

Bedding Plants, 21s. per 100.
Cuttings of Bedding Plants, 10s. per 100.
Double-flowered Pelargoniums, 21s. per dozen.
Double-flowered Petunias, 21s. per dozen.
Fuchsia Norbella Hero, a magnificent double-flowered variety, 42s. per dozen.
Fuchsias, 21s. per dozen.
Heliotropes, 21s. per dozen.
Pelargoniums, 21s. per dozen.
Petunias, 21s. per dozen.
Verbenas, 21s. per dozen.

Descriptive CATALOGUE of Bedding Plants, Stove and Greenhouse Plants, Roses, Fruit Trees, Forest Trees, Evergreens, &c., sent on application.

Nurseries, Hammersmith, W.

Huntingdon Nurseries.

WOOD and INGRAM offer the following at extremely moderate rates, according to the quantity taken:—

ASH, 2-yr. Seedling, and in Drills, 1½ to 2 feet.
BLACKTHORN, 1-yr., fine.
CHESTNUT, HORSE-, 2-yr., and 6 to 8 feet, transplanted.
ELMS, NARROW-LEAVED ENGLISH, 2 and 3-yr. Seedling and transplanted, 1½ to 2 feet.
FIR, SPRUCE, 1 to 1½, 1½ to 2, 2 to 3, and 3 to 4 feet.
FIR, WHITE and BLACK AMERICAN, 2 to 3 feet, 3 to 4 feet, and 5 to 6 feet.
FIR, BALM of GILEAD, 1½ to 2, and 2 to 3 feet.
FIR, WEYMOUTH PINE, 2 to 2½, 4 to 5, and 5 to 6 feet.
HAZEL, 1½ to 2, and 2 to 2½ feet.
GORSE, 1-yr. Seedling.
HOLLY, 2-yr. Seedling, transplanted, 6 to 9 inches, 9 to 12 inches 12 to 18, 18 to 24, and 2 to 3 feet.
HOLLY, VARIEGATED, 6 to 9, and 9 to 12 inches.
MAPLE, COMMON, 1, 2, and 2½ feet.
MAPLE, COMMON, 1-yr. Seedling, extra fine.
JUNIPERS, 1 to 1½, 1½ to 2, 2 to 3, 3 to 4, 4 to 5, and 5 to 6 feet, extra fine, and bushy.
OAKS, 2-yr. Seedling, and 2-yr. Split, 2 to 3 and 3 to 4 feet.
OAKS, TURKEY, 2-yr. Seedling, fine.
POPLAR, BLACK ITALIAN, 5 to 6, 6 to 7, 7 to 8, & 8 to 10 ft.
POPLAR, ONTARIO, or AMERICAN, 2 to 3 and 3 to 4 feet.
WHITE THORN QUICK, 3-yr. Seedling.
ARBORVITÆ, AMERICAN, 1½ to 2½ feet.
ARBORVITÆ, SIBERIAN, 1 to 1½, 1½ to 2, 2 to 2½, and 3 feet.
AUCUBA JAPONICA, extra fine hardy specimens, 1 to 1½, 1½ to 2 and 2 to 3 feet.
BEECH, 1 to 1½, and COPPER, 3 to 6, and 6 to 8 feet.
BERBERIS DULCIS, 1 to 2, and 3 to 4 feet.
BERBERIS AQUIFOLIUM, 1 to 1½, 1½ to 2, and 2 to 2½ feet.
CUPRESSUS LAWSONIANA, very fine, 3 to 4, and 4 to 5 feet.
CUPRESSUS MACROCARPA, potted, 2 to 3, and 3 to 4 feet.
LAUREL, COMMON, 1 to 1½, and 2 feet.
LAUREL, PORTUGAL, 1½ to 2, 2 to 3, and 3 to 4 feet.
PLANE, ORIENTAL, 2 to 3, 4, and 5 feet; extra, 9 to 10 feet
PLANE, OCCIDENTAL, 3 to 4, 5 to 6, 6 to 7, and 7 to 9 feet.
YUCCA RECURVA, fine specimens, 1½ to 2½ feet.
ROBINIA INERMIS, fine Standards, 6 to 7 feet stems.
WILLOW, WEEPING, 6 to 7 feet, and fine Standards.

N.B. CATALOGUES sent free on application.

CALCEOLARIA, HERBACEOUS, of choicest strains, 2s. 6d. each; the plants in small pots, sent post free for 30 stamps.
MONOCHÆTUM INSIGNE and SERICEUM MULTIFLORUM, blooming plants, 5s. per dozen.
PASSIFLORAS, hardy varieties, 12s. per dozen; TACSONIA VANVOLXEMII and MOLLISSIMA, larger sorts, 18s. per dozen.
RED DAISY, 18s. per dozen. TRITOMA UVARIA, 2s. per doz.
Trade price per 100 and dozen on application to H. & R. STREZAKER, Skelton Nurseries, Lancaster.

To the Seed Trade.—Continental Flower Seeds, &c.

H. W. WENDEL, SEED GROWER, &c., Erfurt, Prussia, begs to announce that his WHOLESALE CATALOGUE of the above for 1866 is ready and may be had free and post paid on application to his Agent,

GUSTAV MANSCH, Seedsman, &c., High Road, Hammersmith, W.

Dwarf-trained Trees by the 1000, 100, or dozen.

APPLES, PEARS, PLUMS, CHERRIES, PEACHES, and NECTARINES. Fine, flat, well-trained, of best quality and true to name.

RICHARD SMITH, Nurseryman and Seed Merchant, Worcester.

RICHARD SMITH'S FRUIT LIST contains a full Sketch of the various Forms of Trees with Decisions for Cultivation, Soil, Drainage, Manure, Pruning, Lifting, Cropping, Treatment under Glass; also their synonymes, quality, size, form, skin, colour, flesh, flavour, use, growth, duration, season, price, &c. Free by post for one stamp.

RICHARD SMITH, Nurseryman and Seed Merchant, Worcester.

Roses, Fruit Trees, Conifers, Forest Trees, &c.

JOHN CRANSTON begs to direct attention to a large and superior Stock of ROSES, FRUIT TREES, CONIFERS FOREST and ORNAMENTAL TREES, &c.

His Nurseries extend over upwards of 50 Acres, situated in the centre of the county of Hereford (which is acknowledged to possess the finest soil and climate for the growth of Fruit and Forest Trees of any other county in England), and is well stocked with Trees of every description.

DESCRIPTIVE PRICED CATALOGUES will be forwarded on application, and to Purchasers of large quantities special and most advantageous Prices will be given.

Planting undertaken by Contract or otherwise.

Nurseries, Kings Acre, near Hereford.

WM. VIRGO and SON have a large Stock of the undermentioned FRUIT, FOREST, and other TREES to offer this season, viz:—

Apples	Alder	Withy
Cherries	Ash	Quick (strong transplanted)
Plums	Chestnut (Spanish)	Common and Portugal Laurels
Pears	Hornbeam	
Peaches and Nectarines	Hazel	Evergreens
Forest Trees	Larch and Scotch Fir	Privet
	Oak (English)	Roses, &c.

Samples and Prices can be had on application at the Nursery, Wonersh, near Guildford, Surrey.

WALL-TRAINED TREES of BEARING SIZE.—Our Wall-Trained Fruit Trees this season are very fine, and include PEACHES, NECTARINES, APRICOTS, and FIGS, suited for planting in Houses for immediate Fruiting. An inspection is respectfully solicited.

T. JACKSON & SON, Nurseries, Kingston, Surrey.

FRUIT TREES.—The finest collection in England. 200 sorts are grown in all manner of training, and are free from insects, mealy-bug, or chlorosis, with which trees in some Nurseries are infested, and the Plants I supply are such should be avoided, as when established they can never be cured.

My large CATALOGUE is full of useful and valuable information, and on application to T. RIVERS, The Nurseries, Sawbridgeworth, Herts.

Fruit Trees.

WOOD and INGRAM beg to call the attention of Planters and the Trade to their large stock of the following, which they are prepared to supply at very moderate rates, according to the quantity taken:—

APPLES, Pyramids, Half-Standards, and Dwarfs.
APRICOTS, Dwarf Maiden, cut back, and Trained.
CURRANTS, the bushy plants, all the best kinds.
GOOSEBERRIES, ditto.
GRAPE VINES, from Eyes, Planting and Fruiting Canes.
" Layers, well-rooted, Canes 1 inch round.
NETS and TILBURIES, best sorts, all sizes.
PEACHES, Dwarf Maiden, cut back, and Trained.
PEARS, Standards, Dwarfs, and Pyramids.
PLUMS, Standard and Half-Standards, and Dwarfs.
CATALOGUES and Prices on application.
The Nurseries, Huntingdon.

BLACKTHORN, LARCH, and SPRUCE.

LARCH, 3 to 4 feet	SPRUCE, 3 to 4 feet
" 4 to 5 feet	BLACKTHORN, 1½ to 2 feet
SPRUCE, 2 to 3 feet	" 2 to 3 feet

JOHN PERKINS, SEN., have an immense stock of the above, will be glad to send special quotations to any parties who contemplate planting, on application to them.

32, Market Square, Northampton.

To the Trade.

JAS. GARAWAY and CO. offer

Alder, 1 to 2, 2 to 3, and 3 to 4 feet, transplanted	Chestnut, Horse, 1 to 2 feet, transplanted
Ash, 1 to 2, 2 to 3, and 3 to 4 feet, transplanted	Elm, Wych, 1 to 2, 2 to 3, and 3 to 4 feet, transplanted
Ash, transplanted, 2 to 3 feet	Larch, extra fine, 1 to 1½, 1½ to 2, 2 to 3, and 3 to 4 ft., transplanted
Aucuba japonica, berried	
Beech, 1 and 2-yr. Seedlings	
Birch, 1 to 2 feet, transplanted	

FRUIT TREES.

Apples, very fine dwarf-trained	Peaches, very fine dwarf-trained
Apricots, do. and standard-trained	Pears, very fine dwarf-trained and standard-trained
Cherries, do., do.	Plums, do.
Nectarines, do., do.	

Prices on application.

JAS. GARAWAY & Co., Dundham Down Nurseries, Bristol.

The Finest New Hardy Plant of the Year.

PAUL'S NEW DOUBLE SCARLET THORN, awarded First-class Certificate Royal Botanic Society and International Exhibition.

"Deep carmine-red, double and vigorous, far surpassing the old double Pink."—*Editorial of Gardener's Chronicle*, May 24, 1862.

STANDARDS and PYRAMIDS, 10s. 6d. each. See PAUL & SON'S CATALOGUE.

Old Cheshunt Nurseries, N.

CHAS. DALY and SON, Coleraine, Ireland, will Sell by Auction Seedling THORNS, at 1s. 6d. per 100; 1-yr. fine, 2s. per 1000; 2-yr. Transplanted, 6s. per 1000; 4-yr. do., 12s. 6d. per 1000. COMMON LAUREL, 1 to 2 feet, 12s. 6d. per 100. PORTUGAL do., twice Transplanted, 1 foot, 5s. per 100; CRAB STOCK, fit to work, 20s. per 1000; CHINESE ARBORVITÆ, 2 to 3 feet, 15s. per 100. IRISH YEWS, 1 to 2 feet, Transplanted, 10s. per 100. FOREST TREES and SHRUBS Cheap.

All orders through HURST & SON, Seed Merchants, London, to whom all accounts will be made payable, will receive our prompt attention.

LARCH, &c., at the Nursery of the late David A. Reid, Park Attwood, Bewdley, Worcestershire:—LARCH, 1½ to 2 feet, 10s. per 1000; 2 to 3 feet, 12s. per 1000; 2½ to 3½ feet, 14s. per 1000; 3 to 4 feet, 16s. per 1000; PEAR STOCKS, 2½ to 5 feet, 15s. to 40s. per 1000. LISTS of other TREES sent on application. Apply, with reference or remittance, to

JAMES RIDDELL, Steward, Park Attwood, near Bewdley.

Planting Season

LARCH (Native and Tyrolese), SCOTCH FIR (True Native), SPRUCE, OAK, ASH, ALDER, BEECH, PRIVET, and all kinds of FOREST and ORNAMENTAL TREES and SHRUBS, ROSES, FRUIT TREES, fine specimen ARAUCARIAS and DEODARS, and large TREES for Park Planting, now in fine condition for removal

CATALOGUES, with sizes and prices, sent free on application to DICKSONS & Co., Nurserymen, Seedsmen, and Florists, 1, Waterloo Place, Edinburgh.

To Gentlemen and Planters.—Surplus Stock.

LARGE Transplanted EVERGREENS and CONIFERS, from 4 to 8 feet high, 20,000 COMMON LAURELS, 2 to 3 feet; 500,000 ASH, from 2 to 4 feet; One Million LARCH, from 2 to 3 feet; One Million HAWTHORN QUICK, from 2 to 4 feet; 10,000 APPLE TREES, for Orchards; PYRAMID and TRAINED FRUIT TREES, in full bearing

CATALOGUES and Special Prices may be had on application.

GEO. DAVISON, White Cross Nurseries, Hereford.

Forest Trees, &c.

HENRY MINCHIN has the following to offer Cheap, all Transplanted and well rooted:—

SPRUCE FIR, from 2 to 4 feet | SCOTCH FIR, from 2 to 3 feet
LARCH FIR, from 3 to 5 feet | ASH, from 3 to 5 feet.
PINUS AUSTRIACA, 4 to 5 ft. Large Specimen and other CONIFERS.

Prices on application.

The Nurseries, Hook Norton, Oxon.

Tansley Nurseries, near Matlock, Derbyshire.

JOSEPH SMITH, SEN., invites Planters and the Trade to inspect his Nursery of 80 Acres of high land. The soil is of a fibrous nature, and the Plants being well rooted, such as to ensure the best success in their removal.

The Nursery contains many Hundred Thousand of RHODODENDRONS, COMMON and PORTUGAL LAURELS, BOX, BROOMS, BARBERIS, HOLLIES, PRIVETS, YEWS, &c. The FOREST TREES are very extensive, of all the leading kinds, from age 15 Acres of LARCHES, of different sizes, and all others in proportion. Prices moderate, which can be had on application as above.

Game Covert, Forest Planting, &c.

JAMES SMITH offers the following:—

The RHODODENDRONS are fine bushy well-rooted Plants, fit either for Woods or Pleasure Grounds; the LARCH are fine stout Plants, better cannot be grown; also PRIVETS, LAURELS, BERBERIS (in sorts), SCOTCH, SPRUCE, and SILVER FIRS, ASH, OAKS, BEECH, BIRCH, PINUS AUSTRIACA, &c., all strong well-rooted plants, a PRICED CATALOGUE of which will be forwarded on application.

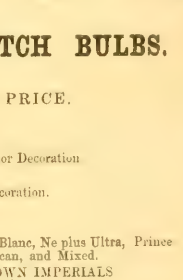
LARCH, good stout plants, per 1000:—1½ to 2 feet, 14s.; 2 to 3 feet, 16s.; 2½ to 3½ feet, 18s.; 3 to 4 feet, 20s.

RHODODENDRON PONTICUM, bushy, well-rooted plants, 6 to 12 inches, 15s. per 1000.

Do. do., 9 to 15 inches, 18s. per 100; 160s. per 1000; per 10,000, £79.
Do. do., 1 to 1½ foot, 23s. per 100; 220s. per 1000; per 10,000, £105.
Do. do., 1½ to 2 feet, 30s. per 100; 280s. per 1000.
Do. HYBRIDUM, 9 to 12 ins., 20s. per 100; 200s. per 1000.

Price to the Trade on application.

JAMES SMITH, Darley Dale Nurseries, near Matlock.



COCOA-NUT REFUSE is becoming scarce, the old reserves will soon be gone. Now sold in bags, 1 for 2s., 10 for 16s., 2 for 30s., 50 for 68s., 100 for £6.

Fourpence allowed for each bag returned carriage-paid.

A Railway Truck-load (not in bags), 40s.

Postage Stamps or Post-office Order, payable to J. BARSHAM & Co., Kingston-on-Thames, S.W.

CLEARING OFF

SURPLUS STOCK OF IMPORTED DUTCH BULBS.

THEY ARE IN FINE CONDITION.

20 PER CENT. LESS THAN CATALOGUE PRICE.

CATALOGUE ON APPLICATION.

HYACINTHS, Mixed Border, Paxton Bedding, Pompon, fine Named Varieties for Indoor Decoration
NARCISSUS, Garden Varieties.
TULIPS, Mixed Early Single, Paxton Bedding do., fine Named Varieties for Indoor Decoration.
TULIPS, Mixed Early Double, fine Bedding do., Late and Parrot Varieties.
CROCUS, Striped, Golden Yellow, Cloth of Silver, Scotch, Versicolor, and Mixed.
CROCUS, New Seedling Varieties, such as Albion, Albertine, La Majestueuse, Mont Blanc, Ne plus Ultra, Prince Albert, Queen Victoria, Sir Walter Scott, Sulphureus, New Golden Yellow, Vulcan, and Mixed.

SINGLE SNOWDROPS	IXIAS	TRITONIAS	CROWN IMPERIALS
BULBOCODIUM VERNUM	SPARAXIS	BABIANAS	SCILLAS.

Best Variety of VIOLA CORNUTA, 1s. and 2s. 6d. per packet.

Imported LILY of the VALLEY, fine large clumps for Winter Blooming, 1s. 6d., or 12 for 17s.

Gem Plant Case

BARR AND SUGDEN,

12, KING STREET, COVENT GARDEN, LONDON, W.C.

Gem Plant Case.

BARLEY, OATS, &c., CLEANSED, PURIFIED, and BLEACHED by a Patent process, without the slightest injury to growth, &c.

Apply to Rev. R. Potter, M.A., Bedworth, Nuneaton.

APPLEBY'S GENUINE TOBACCO PAPER, in 2 lb. and 4 lb. packets.

Copied from the "Journal of Horticulture and Cottage Gardener," October 16, 1866, page 293.

"Destruction.—This is always a safe principle to the plant grower, and various are the means adopted for getting rid of that horrid pest the Green Aphis. I have lately tried a fumigating pot of very simple construction, invented by Mr. H. Appleby, the well-known foreman of Mr. Ivery, of Dorking; and used with it the Tobacco Paper which he manufactures. It is, I am glad to say, very efficacious, and has completely cleared my small house. The pot is very simple, and answers equally well for the cold pot; while the Tobacco Paper is free from any deleterious matter which can affect even the most tender plants."—*D., Deal.*

Price on application to Henry Appleby, Foreman to Messrs Ivery & Son, Dorking, Surrey.

Winter Dress all Fruit Trees with GISHURST COMPOUND.

Red Spider Magnified

Copy of a Letter from Mr. Rivers, Nurseryman, *Sawbridgeworth, Herts, 22d Oct., 1861*

"I must tell you what I heard to-day from a very clever gentleman farmer, Anthony Babb, Esq., of Witcombe Court, Gloucester. He has a wall to which Peach trees are trained. Well, last autumn they were in a wretched blighted state. As a desperate remedy he painted them all, early last February, and gave all but one a thorough painting with Gishurst Compound, 1 lb. to the gallon of water; his trees, all but the one, continued to grow favourably in spring, and are now pictures of health. The tree not painted is in a half-dead blighted state. He used the same dressing to his Apple trees; it killed the woolly Aphis entirely, and has made his trees clean and vigorous in their growth. He intends to paint his wall trees annually, and tells all his friends to do the same. I shall certainly serve my young Peach trees against my will in the same manner. The Compound is, I believe, more efficacious than the usual offensive mixtures of clay, soot, sulphur, &c.; and it does not blacken the shoots or the walls."

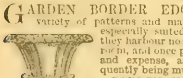
For Orchard-house Trees, 40*z.* to the gallon will be found a good strength; when used stronger some buds on weakly trees may be injured

GISHURST COMPOUND is sold Retail by Nurserymen and Seedsmen, in boxes, 1*s.*, 3*s.*, and 10*s.* 6*d.* each.

Wholesale by Drury's Patent Candle Company, Limited, Belmont, Vauxhall, London, S.

Gishurst Compound has more recent testimonials to its efficacy, but none more conclusive than the above, which has been published before.

GARDEN BORDER EDGING TILES, in great variety of patterns and material, the planer sorts being especially suited for KITCHEN GARDENS, as they harbour no Slugs or Insects, take up little room, and once put down incur no further labour and require no "grass" Edgings, consequently being much cheaper.



GARDEN VASES, FOUNTAINS, &c., in Artificial Stone, of great durability, and in great variety of design.

F. & G. Rosher, Manufacturers, Upper Ground Street, Blackfriars, S.; Queen's Road West, Chelsea, S.W.; Kingsland Road, Kingsland, N.E.

Sole London Agents for FOXLEY'S PATENT GARDEN WALL BRICKS. Illustrated Price Lists free by post. The Trade supplied

ORNAMENTAL PAVING TILES for Conservatories, Halls, Corridors, Balconies, &c., as cheap and durable as Stone, in blue, red, and buff colours, and capable of forming a variety of designs.

Also TESSELATED PAVEMENTS of more enriched designs than the above.

WHITE GLAZED TILES, for Lining Walls of Dairies, Larders, Kitchen Ranges, Baths, &c. Grooved and other Stable Paving Bricks of great durability, Dutch and Staffordshire Clinkers, Wall Copings, Red and Stoneware Drain Pipes, Slates, Cements, &c.

To be obtained of F. & G. Rosher, at their Premises as above.

SILVER SAND (REIGATE, best quality), at the above addresses—14*s.* per Ton, or 1*s.* 3*d.* per Bushel; 2*s.* per Ton extra for delivery within three miles, and to any London Railway or Wharf. Quantities of 4 Tons, 1*s.* per Ton less.

FLINTS, BRICK BURRS or CLINKERS, for Rockeries or Grotto Work. F. & G. Rosher.—Addresses see above.

N.B. Orders promptly executed by Railway.

Oil Paint no longer Necessary.

HILL AND SMITH'S PATENT BLACK VARNISH for preserving Iron Work, Wood, or Stone. This Varnish is an excellent substitute for oil paint on all out-door work, and is fully two-thirds cheaper. It may be applied by an ordinary labourer, requires no painting or thinning, and is used cold. It is used in the grounds at Windsor Castle, Kew Gardens, and at the seats of many hundreds of the nobility and gentry, from whom the most flattering testimonials have been received, which Hill & Smith will forward on application.

From Richard Hemming, Esq., *Bordesley Park, Worcestershire.*

"Gentlemen,—I have great pleasure in stating that I highly approve of your Black Varnish, as a substitute to be paid for farm buildings, barn doors, gates, and especially when the wood has been previously painted in the usual way a few years before; in this particular case it leaves a very nice glazed surface, thus which nothing could be better. The same observation also applies to ironwork of every description, such as iron hurdles, &c. The Wrought-iron Barrow with apparatus for heating gas tar has been found most useful, and so great a convenience do I consider it that I shall beg you to send me another, as well as a cask of the Black Varnish, for the use of the property which I have in Warwickshire. Please to send the whole by the same conveyance as before."

Sold in casks of about 30 gallons each, at 1*s.* 6*d.* per gallon, at the Manufactory, or 1*s.* 8*d.* per gallon paid to any Station in the kingdom.

Apply to Hill & Smith, Brierly Hill Iron Works, near Dudley, and 22, Cannon Street West, E.C., from whom only it can be obtained.

HOT-WATER APPARATUS, of every description, fixed complete in any part of the country, or the materials, viz., Boilers, Pipes, &c., delivered to any Station.

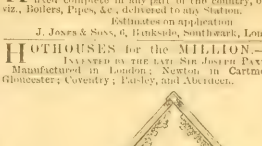
Estimates on application

J. Jones & Sons, Bankside, Southwark, London, S.E.

HOTHOUSES for the MILLION.—Medal, 1862.

Invented by the late Sir Joseph Paxton.

Manufactured in London; Newton in Cartmel, Lancashire; Gloucester; Coventry; Paisley, and Aberdeen.



ILLUSTRATED PRICE LISTS will be sent on application to Messrs. Hareman & Morton, 7, Pall Mall East, London, S.W.

Also, a Hothouse for VINE and FRUIT TREE CULTIVATION, price 1*s.*; post free, 1*s.* 3*d.*

COTTAM AND COMPANY,

Conservatory and Hothouse Builders, &c.,

Iron Works, 2, Wansley Street, Oxford Street, London, W.

SADDLE BOILERS.

20	24	30 inches long	
45*s.*	60*s.*	92*s.* 6*d.*	each.

COIL CAST

HOT-WATER PIPES

2	3	Each	
15*s.* 6*d.*	23*s.* 6*d.*	31*s.* 6*d.*	per yard

Materials supplied as above, or Estimates given fixed complete to Plan, on application to

Cottam & Co.,

Iron Works,

2, Wansley Street,

(opposite the Pantheon),

Oxford Street, London, W.

HOT WATER APPARATUS

JAMES WATTS AND CO., Horticultural Builders and Hot-Water Apparatus Manufacturers,

353, Old Kent Road, London, S.E.

200 CUCUMBER and MELON BOXES and LIGHTS, all sizes, Glazed and Painted complete, ready for immediate use, packed and sent to all parts of the Kingdom.

Strong ZINC HAND GLASSES, all sizes.

References to the Nobility, Gentry, and Trade in most of the Counties in England

Smithfield Club Cattle Show.

PORTABLE WIND WHEEL

At BURY and POLLARD'S STAND, No. 123, GALLERIES.

Hot-water Pipes, with Elbows and Connections,

SUPPLIED BY

BURY AND POLLARD.

Contracts and Estimates given for

WARMING PUBLIC BUILDINGS.

Latest Improvements in HEATING by HOT WATER.

The Improved CONICAL BOILERS,

For Heating Fineries, Conservatories, Greenhouses, Mansions, Halls, Warehouses, &c.

Solely Manufactured by

Bury & Pollard (successors to John R. Peill, late Stephenson & Peill).

These Boilers are adapted for setting in Brickwork, or annexed. Sketch shows Bury & Pollard's improved arrangement, requiring

NO BRICKWORK SETTING.

These Boilers have for their durability and economy attained a celebrity far surpassing any other Boilers ever invented. They have been for many years past in use at many Public Establishments, Royal Botanical Gardens at Kew, at the Regent's Park, the Crystal Palace, and at most of the Nobility's and Gentry's seats throughout the United Kingdom. References where they have been for 20 years in constant use.

Price Lists on application to Bury & Pollard, Park Iron Works, 17, New Park Street, Southwark, London, S.E.

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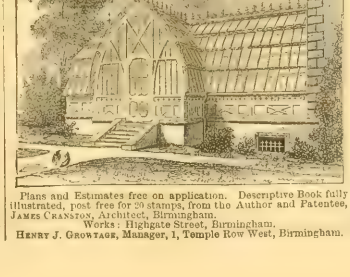

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5 ,, ,, ..	0	6½	16 ,, ,, ..	3	0	
6 ,, ,, ..	0	8	16 ,, ,, ..	3	6	
7 ,, ,, ..	0	10	17 ,, ,, ..	4	0	
8 ,, ,, ..	1	0	18 ,, ,, ..	5	0	
9 ,, ,, ..	1	2	19 ,, ,, ..	6	0	
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One of the most useful as well as most beautiful plants used for flower-garden decoration. The foliage is bright and striking, and contrasts most effectively with its lovely mauve-coloured blossoms, with which the plant is loaded. This Violet will prove a real acquisition. 1s. and 2s. 6d. per Packet.

Xeranthemum annuum caryophylloides flore pleno.
A really striking variety of this well-known and favourite Everlasting. The dense double flowers are of a reddish white colour, striped or marbled with rose, red, crimson, and purple. The plant is of a regular compact habit, and a profuse bloomer.
1s. per Packet.

Pentstemon Jaffrayanum.
A magnificent variety, with flowers of a brilliant azure blue.
1s. per Packet.

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Sent out by other Firms have been procured direct, and can be supplied at the Advertised Prices:—

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BROCCOLI, CATTELL'S ECLIPSE.
" BACKHOUSE'S WINTER PROTECTING.
LETTUCE, ALL THE YEAR ROUND.
ONION, NUNEHAM PARK.
" TREBON.
PEA, LAXTON'S PROLIFIC.
" POYNTER'S EARLIEST.
" THE PRINCE.
TOMATO, ORANGEFIELD.

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PECTIS GRANDIFLORA.
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PRICED DESCRIPTIVE CATALOGUES post free on application.
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BARR AND SUGDEN'S
large Advertisement, page 1186.

The Gardeners' Chronicle.
SATURDAY, DECEMBER 15, 1866.

MEETING FOR THE ENSUING WEEK

SATURDAY, Dec. 22	Royal Horticultural (Weekly Show), at South Kensington	2 P.M.

THE information to be obtained concerning the HORTICULTURAL DEPARTMENT of the great FRENCH INTERNATIONAL EXHIBITION of 1867 is not only exceedingly meagre and unaccountably tardy, but as public journalists having the interests of English exhibitors at heart, we are bound to add, altogether unsatisfactory, even so far as it goes. Months and months ago the English cultivators were invited to pledge themselves to become exhibitors, and up to the present time they have sought in vain for anything like a detailed schedule or guide, such as would enable them to set about making definite preparations. Now indeed, in the month of December, they get a general programme, as it is called, in which 14 consecutive exhibitions, extending over the whole period from the beginning of April to the end of October, are announced in terms so "general" that the document is utterly useless as a guide in preparing subjects for the respective shows. One of the announcements of this belated paper, is that a "detailed programme of the 14 competitions will be published before the end of the month of July, 1866!" But such a programme is not forthcoming. It would seem indeed that some document of this kind is in existence, for, thanks to the French horticultural press, we were ourselves enabled, some two months since, to give much fuller information as to the subjects invited to make up a certain number of the shows, than is contained in the official papers only now issued in this country; but even that information is incomplete and practically useless, the number of plants in the respective classes not being stated. How is it, if this detailed schedule is within the reach of French horticulturists, that it is not also placed in the hands of those who are invited to exhibit as foreigners? Or, supposing that the document, whatever it may be, which the French journalists have quoted, is not sufficiently descriptive of the several classes to supply what is wanted—how is it that the detailed programme, which was to be provided so long ago as last July, is not yet circulated? The practical men amongst the managers should at least know that it is utterly impossible for exhibitors to prepare the respective subjects they desire to exhibit, unless this information is supplied to them forthwith; and we may assure them, from some experience in the matter, that it is utterly

impossible that so comprehensive an Exhibition can be a success, unless greater promptitude in these practical matters—matters of detail, is displayed.

This, however, we regret to add, is not the only, nor indeed is it the chief complaint we have to lodge against those concerned in the management of this Exhibition—whether it be Imperial Commissions or Committees of Advice which are at fault. Perhaps, for the reason we shall presently state, it is, after all, of little moment to our own plant and fruit growers, and those of other foreign countries, whether the detailed particulars we have just been referring to are supplied to them or not, and possibly this may have been discovered at head-quarters, and may account for the delay. We invite attention to the matter now because it may not be too late, even yet, to adopt a remedy.

The great fault, then, of the whole scheme, and that of which foreigners may justly complain, since on the preceding occasions of an International Exhibition the whole show has been laid open to all comers, is that foreigners are virtually shut out from that to be held in Paris. We say advisedly—shut out, because the conveyance of exhibition plants to long distances such as are here involved, is so expensive a matter, that no cultivator can be expected to incur the outlay unless he has a reasonable chance of getting some return for it by sharing in the rewards. Now, the arrangements in this case absolutely cut off all foreigners from any hope of gaining any tangible reward whatsoever. What says the too brief programme before us? At each of the 14 separate shows nominal prizes only are to be given, and these are to be credited to the exhibitor until the end of October as so many marks towards furnishing a title to obtain a share of the great or substantial prizes which are then, and then only, and on these conditions only, to be distributed. In this counting up of sectional prizes, what chance has the foreign grower against the man who is on the spot, or sufficiently near to take part in the several competitions? No foreigner could possibly join in all or even in most of the separate shows. If he is able to attend one or two, or possibly three of them, as the special subjects he may cultivate may happen to determine him, and if he is willing to meet the expenses of such a limited attendance, it is as much as can be expected from him; whereas the home grower has an opportunity to drop in at every show, and at last, from the very fact of foreigners being necessarily absentees, would find himself in an overwhelming majority on the poll. That we may not be charged with forcing an interpretation foreign to the words of the programme, we extract those passages which bear on the point, and which we think fully bear out all we have said:—

"The duty of these Jurors will be to judge the products exhibited * * * and to class them according to their merit in four categories, under the heads of first, second, and third competition prizes, and honourable mentions.

"These prizes and honourable mentions will not be awarded after each competition, but will be noted against the name of the exhibitor, as titles towards obtaining one of the great prizes which will be awarded and distributed at the close of the Universal Exhibition, on the recommendation of the International Jury.

"The Jury for the Horticultural group will make on the 20th October, 1867, a general return of the competition prizes of various kinds, and of the honourable mentions awarded after each of the 14 competitions. On the basis of this return, taking into account the number and the order of the prizes, and the honourable mentions obtained by the same exhibitor, the Jury of the group will award the grand prizes, money prizes, and gold, silver, and bronze medals, which the Superior Council may place at their disposal."

Verily, if the object has really been to produce an International Exhibition, our neighbours have hit upon a most ingenious plan of "how not to do it;" for under such conditions, we repeat, it is hopeless to expect that any foreigner will take more than a very trifling part, if any, in the affair; whereas we know, from information which has reached us, that had a fair opportunity of carrying off the honours they might win been afforded, a few at least of our leading exhibitors would have gone over, and contested keenly some of the first positions in the show.

A similar objection applies, with almost equal force, in the case of scientific botanists and horticulturists who may desire to take part in the gathering as visitors. There is to be no one point of attraction, and, so far as the published information goes, nothing to draw them together at any one time; but instead thereof a continuous series of minor shows, spread over half a year, not one of which, judging by the programme before us, would have importance enough, in itself, to induce them to leave their homes, or to waste their time and substance in travelling to see it. Thus one of the most beneficial influences of an International Meeting — that of facilitating friendly intercourse amongst *confrères* from many distant lands, men who seldom have opportunities of meeting but for such general inducements as these, must on this occasion be almost unfelt.

The only possible way, so far as we can see, in which foreign exhibitors and foreign visitors interested in the Botanico-Horticultural section of the show could now be brought to take more than a casual part in it, would be to change the programme so far as to convert one of the 14 shows—that at the opening perhaps (though the time is rather early for a good show), or possibly that at the beginning of May, into a grand show, to which foreign contributors should be specially invited, and at which the rewards should be substantial, and held by the winners; and then to let the prizes for the remaining shows fall, as appears to be intended, to be competed for by the home growers among themselves.

NOTHING can be more desirable about a residence than good dry ROADS AND WALKS, that can be used at all times with pleasure and comfort; and to accomplish this should be one of the great aims of those concerned in laying out gardens. In accordance with the wish of a correspondent we therefore offer a few general remarks and hints bearing on the subject.

A carriage-drive may be from 10 feet to 15 feet wide, according to its length and position. If short, and the estate circumscribed, 10 feet will be sufficient; if large, and there is much traffic, 15 feet will not be too much. If the situation is tolerably dry, the earth should be taken out to a depth of 15 inches at the sides, rounding up in the centre to 12 inches. The road should have a 4-inch drain on one side, and gratings should be placed at about 50 feet apart, to take away the surface water. Under these gratings should be made bricked holes or lodges, which should be carried down one foot lower than the drain-pipe, for the purpose of receiving the sediment (which should be occasionally removed), while allowing the water to pass off by the drain. Rough stones may now be placed over the whole surface of the drive 10 inches thick, and over this 2 inches of stone broken small, 3 inches of good binding gravel being placed on the surface and well rolled down until it becomes solid. The depth of material will thus be 15 inches over the whole surface, and the road will be 3 inches higher in the centre than at the sides, which will admit of the water passing off freely and will thus keep it always dry. Gratings will be required on both sides of the road, but on one side the pipes may be taken across to the drain on the opposite side. Should the locality be very wet, the road may be made upon the surface of the ground, the same thickness of material being used, and the same shape adopted as before described. In this case the sides should be soiled and turfed up to the height of the drive. This makes a dry road, and in many places is not objectionable.

Garden walks should always be convex; but not to such an extent as to make them unpleasant to walk upon. Two inches rise in the centre will be sufficient for a walk of 4 feet width, the surface of which should be half an inch below the verge at the side, and one and a half inch above it at the centre. If the walk be 6 or 8 feet wide, 3 inches will be quite sufficient rise in the case of straight walks, while those that are curved may be a trifle more, if in very damp situations. Garden walks should be drained as recommended for carriage drives, but the drain-pipes may be smaller, and the gratings more or less frequent, as the walk may be narrow or broad.

We have seen excellent walks in our public parks and elsewhere, made with a layer of brick-rubbish about 9 inches thick, broken fine at the top and covered with shell gravel. This material when rolled down, becomes very solid, and makes a good dry walk, from the fact of its being all drainage underneath. This is a good method in all places, but is especially recommendable where gravel cannot be readily obtained.

No plan, however, can be better for making the walks than that described for carriage roads, provided stone and gravel are obtainable. The depth of 9 inches, instead of 15, will be sufficient for these, viz., 6 inches of stones and 3 inches of good binding gravel, well rolled down until it is firmly set.

When there is a quantity of sand in the gravel, and consequently it is deficient in binding properties, it is advisable to mix with it about one-fifth part of loam of the same colour. The drier the loam is when mixed the better. This, after repeated rollings, will become very hard, and will make one of the very best and driest of walks. A thin coating of shell gravel will add neatness and finish, and make it very pleasant at all times to walk upon.

Where materials for making walks such as those above described are only obtainable at a high price, resort has been had to cement concrete, and asphalte walks as a substitute. To make the former the earth should be taken out 6 inches deep at the sides and 4 inches in the centre, and the bottom should be made very firm with any rough material—stones, brickbats, clinkers, or such-like, broken tolerably small; with these mix one-sixth part of fresh lime, and fill in to the depth of 4½ inches. For the remainder mix one part of good Portland cement to six parts of finely broken stones, and lay this over the surface to the thickness of an inch and a half. This will make a good solid walk, and will be free from weeds. Drains must be provided to carry off the surface water in all cases. The following is a plan recommended by the late Mr. BEATON for making concrete walks, and which is said to answer the purpose perfectly. A layer of stones, brickbats, clinkers, or similar rough materials, 6 inches deep, is first put in to form a dry bottom; then a layer of chalk or lime, in the proportion of one to ten of the stones, this being well rolled and watered, to the thickness of 3 inches, with a rise of 2 inches in the centre; over this half an inch of gravel and lime, or fine chalk, to be watered and well rolled, and finally a thin sprinkling of the best coloured gravel, again rolled until quite solid. The walk should be 2 inches wider than necessary on each side, to check turf or weeds from encroaching, and to prevent rain water from getting to the foundation.

Asphalte walks, as they are called—at least those of a cheap character, for the genuine material is more costly—can be made by adding coal-tar to gravel, or pebbles, or stones broken small. The quantity of tar should be just sufficient to make the hard material adhere, and if the tar is heated before mixing, it will become more solid than if mixed cold. The bottom should be prepared as recommended for cement, and one inch thickness of asphalte will be sufficient for the surface, which should be well rolled down immediately. A walk made after this manner will be quite free from weeds, but the colour will be very dark and heavy and no surface mixture will permanently prevent this. The disagreeable smell arising from the coal-tar, especially in hot weather, is perhaps the greatest objection to their use, and is especially noticeable if there is any excess of tar.

We remember some few years since when at Brighton seeing some men employed on the Marine Parade, making that popular promenade. The materials used were pebbles from the beach, mixed with roughly-pounded chalk, such as was carted out from the foundations of the houses. These ingredients were made up like mortar, and laid on about 6 inches in thickness, and, judging from the finished portions, some of which had been used for a long time, the result was all that could be desired. As it often happens that where chalk is found in abundance, there is a great scarcity of gravel, this method of using it as a substitute might sometimes be turned to great advantage.

Shell gravel, which makes a very neat finish, may be used to surface all kinds of concrete walks, and if renewed occasionally will to a great extent counteract the hardness of surface which is one of the most objectionable features in walks of this kind. *E.*

— IT is hardly possible to over-estimate the importance of the FORESTS IN INDIA, or to speak too strongly as to the necessity of active supervision over them, not only as regards the revenues to be derived from them, but also in reference to climatal conditions. We shall take another opportunity of alluding to a recent report of Dr. ANDERSON'S on the subject, and in the meantime we beg to call attention to the following circular which has just been issued, the terms of which, though open to hostile criticism, constitute a move in the right direction:—

"The Secretary of State for India in Council having resolved to send out five young men, properly trained and well educated, from this country for service in the forests of India, with a

view to their being ultimately promoted to the superior posts in that department, the following are the conditions required of persons seeking to be nominated to one of these appointments, and the advantages held out to them :—

"Candidates must be British subjects, and must be above 17 years of age. They must personally deliver the following documents at the Revenue Department of the India Office before noon on the 1st day of February, 1867 :—

"1. Their names and parentage, a certificate of their birth, and, if under age, a statement of consent from parent or guardians.

"2. A statement of the places of education at which they may have been since they were nine years old, accompanied by testimonials of good conduct during the last two years, and proof of their having mastered the following branches of knowledge :—

"I. English writing from dictation, and English composition.

"II. Arithmetic.

"III. Algebra, elementary principles, simple and quadratic equations, ratios and proportion, logarithms, arithmetical and geometrical progression.

"IV. Geometry (1st, 2d, 3d, 4th, and 6th books of Euclid) and plane trigonometry.

"3. A good colloquial knowledge of either German or French, with the facility to read and translate the works of some classical writer in these languages.*

"The candidates will then be directed to appear for medical examination before the Indian Medical Board.

"Should such appear expedient, the candidates will also be directed to appear before one or more examiners to test their proficiency in the various branches of knowledge mentioned above.

"Those of the candidates who will be accepted by her Majesty's Secretary of State for India must then agree to undergo a regular course of training of two years and a-half in the management of forests and the science of Forestry, in surveying, road-making, and the natural sciences. For this purpose those candidates who possess a sufficient knowledge of German will be directed to proceed to Germany; and for those who are acquainted with the French language, the course of training will be arranged in France.

"The course of training will commence on the 1st of March, 1867, and be concluded on 1st September, 1869. The arrangements made for this purpose are detailed in a memorandum appended to this paper; but her Majesty's Secretary of State reserves to himself the right from time to time to make such alterations in the course of studies and training as may appear expedient.

"During the course of training the candidates will be expected to conduct themselves throughout in a proper and gentlemanlike manner, to obey the injunctions of the officers and professors appointed to instruct them, to use due diligence in the practical work and in their studies, and zealously to improve every opportunity for learning that may be offered them. Candidates who do not conduct themselves in a proper and gentlemanlike manner, or who do not show satisfactory progress in their studies, will be removed from the list of candidates on the report of the officer intrusted with the general direction of their studies.

"After completing the course prescribed, an examination will be held by the officers and professors intrusted with the instruction of the candidates. Those who give proof of a satisfactory progress in the subjects in which they had been instructed will be nominated junior assistants in the Forest Department in India.

"According to the estimates framed, the cost of this training, whether in Germany or in France, will not exceed 500*l*. This sum will, it is believed, cover the cost of board, lodging, and instruction for the whole term of two years and a-half. To those candidates whose conduct and progress are satisfactory her Majesty's Secretary of State engages to pay a stipend at the rate of 30*l*. for each half-year. This stipend will be paid half-yearly on the recommendation of the officer intrusted with the general direction of the studies and training of the candidates.

"Within a month of his nomination each nominee must sign a covenant (in the form appended to the circular), describing the terms and conditions of his appointment, and must embark for India when required to do so by the Secretary of State in Council, who will provide for the expenses of his passage. Any nominee not embarking when required will forfeit his appointment. Otherwise he will be allowed pay at the rate of 250 rupees (which is about the equivalent of 25*l*. in English money) a month from the date of his signing the covenant.

"On arrival in India the nominee will be required to report himself to the Government of India, or to the Government of Bombay or Madras, in case he should be sent to one of those presidencies, and he will then be posted to such part of the forests as the service may require.

"On joining his post the nominee will become entitled to all the rights and privileges in respect of pay and promotion accorded to officers of the Forest Department by the rules and regulations for the time being, and to leave of absence and retiring pensions under the leave and pension rules of the Uncovenanted Service for the time being. No rule or promotion will, however, take place previous to his passing an examination in such one of the native languages as may be prescribed by the Government under which he is serving.

"*1.—Memorandum on the Course of Instruction proposed.*

"Those candidates who possess a sufficient knowledge of German will proceed to Hanover and report themselves to Mr. BURCKHARDT, the Director of Forests in the former kingdom of Hanover, who will undertake the general direction of their studies and practical training.

"During the first year the candidates will be placed with an executive forest officer in charge of a forest district (Oberförster), where they will serve their apprenticeship in the practical work of a forester, and at the same time receive instruction in the science of Forestry. They will be provided with board and lodging in the family of the 'Oberförster.' The Director will from time to time see them, and they will occasionally accompany him on his tours of inspection.

"During the remaining three half-years the candidates will live at Hanover, where they will receive practical instruction in surveying, land-measuring, and road-making, and be taught those branches of the natural sciences and the science of Forestry which are requisite for a forest officer in India. Certain portions of pure and applied mathematics will also be studied.

"They will live either with the Director, or with another of the principal forest officers at Hanover; they will occasionally accompany these officers on their journeys, and will from time to time be sent to different forest districts, to become acquainted with the different kinds of forests, and the various methods adopted for their management. Should such hereafter appear expedient, part of the time assigned to Hanover may be spent at a forest school or at an university, as may be arranged by the Director.

"At the end of the course of training the candidates will be required to pass an examination in the subjects of their studies.

"The cost of board, lodging, journeys, and instruction has been estimated as follows :—For the first year 1000 thalers, for the second year 1500 thalers, for the last half-year 750 thalers; total, 3250 thalers, or 487*l*. 10*s*.

"Those candidates who are not acquainted with German, but possess a sufficient knowledge of French, will proceed to Paris and report themselves to one of the principal officers at the '*Direction Générale des Forêts*.' They will first spend eight months in a forest district for practical training. By the 1st November, 1867, they will proceed to Nancy, where they will be received as students at the Imperial Forest School. The course is biennial, and closes on 1st September, 1869. Before leaving they will be required to pass an examination in the subjects in which they have been instructed."

* A preference will be given to those candidates who, in addition to the above, have attained to a certain degree of proficiency in chemistry and physics, and who are practised in free-hand and plan drawing.

NEW AND SELECT PEARS.

No. 6, Dana's Hovey Pear. — This pretty and excellent Pear was raised from seed in the United States by Mr. Dana, who dedicated it to his friend and brother pomologist, Mr. Hovey, of Boston, Mass. It is of the Seckle race, and like it in shape; the tree is of the same compact growth, but even more fastigiate, equalling in that respect the Lombardy Poplar; it is of a free hardy habit, and bears well as a pyramid, either on the Pear or Quince stock.

The outline given is that of a small specimen, owing

to the wet season; under favourable circumstances it will attain nearly to a medium size. It is quite green when taken from the tree, but in ripening its skin changes to a pale yellow, completely covered with light russet. Its flesh is melting and juicy, its flavour more delicious than that of any Pear known, being that of the Winter Nelis, with a slight smack of the Seckle; its season is December till January. When this pretty and delicious Pear becomes known, a dish of them at the dessert will be as much sought after as a dish of old Golden Pippin in the last century.

WINTER-FLOWERING EPIPHYLLUMS.

IT is much the fashion to seek after "good winter-flowering things," but with all that, the finest of early winter-flowering plants are but very imperfectly known. These are the varieties of Epiphyllum truncatum. There is no other winter-flowering plant whatever that possesses half the useful qualities of this, and yet how rarely is it seen well grown in gardens! I have seen specimens of it 4 feet high and nearly as much through, and as the branchlets hung pendulously, as is their wont, and nearly hid the pot, while the top was perfectly well furnished, it needs but a very slight effort to imagine what pre-eminently beautiful things they must have been when in flower, just before and about Christmas, according to the temperature to which they are treated. And they have been grown larger than that, and particularly well by Mr. Barnes, now of the Camberwell Nurseries, who worked his Pereskia stock so that the Epiphyllum formed a diversified pyramid. Of course they must be on the Pereskia or on some equally good stock, to make them worth growing; for, judging from what is usually to be observed, they make about as much growth in one year on the Pereskia, as they do in six on their own roots. I know of nothing more tractable and more thoroughly useful in the gardener's hands than a batch of these exquisitely coloured and profuse-flowering winter Cacti. When grown to a large size and well flowered, no "stove or greenhouse plant" surpasses them in beauty or in symmetry; but the Epiphyllums assume a most graceful outline without any training or trouble, and instead of going back when they arrive at "a certain age," like the usual run of specimen plants, they go on improving from year to year with very ordinary cultivation indeed. Established plants will flourish away without potting for three or four years at a time, requiring only to be watered moderately, and if they be top-heavy from free development of branchlets, to be firmly staked—which latter is best done with a few iron stakes, supporting a strong wire ring or two, concealed under the drooping mass of shoots. This, of course, applies to large plants.

As regards temperature, the most suitable is that of an intermediate house or warm Vinery. The best plants I have ever had to do with were in a stove Vinery, *i. e.*, a stove with Vines overhead, and where they were of course pretty effectively shaded during the summer months. But they are not fastidious, and will flourish in any warmish house, provided they be on the Pereskia. They may be worked on this at any height that may be desired. When young, and as small standards on clean little slim stems, they are unsurpassed for table decoration, naturally assuming the paras-like outline so often sought in such plants; indeed, they seem specially calculated for table decoration. It is astonishing how quickly nice plants may be grown from grafts. The other day I saw at Mr. Barnes' Nursery neat batches of symmetrical plants, from 12 to 18 inches across, just opening into flower, that were only grafted about this day twelvemonth. They were grown on rapidly, and shifted into 32's during the first summer of their existence, and in those 32-pots they will remain for several years without requiring a shift, and be just the very things for setting off a table.

The Poinsettia is our great gun at this season of the year, and everybody takes some pains to have it nice, but it is quite inferior to Epiphyllum. By the way, it should be noticed that these last are often kept too cool, and that intermediate or stove temperature is that in which they best flourish. I would recommend that no one should be satisfied with E. truncatum alone, but should grow along with it the charmingly-coloured varieties, Bridgesii, violaceum, spectabile majus, &c., and in fact any other variety that may be met with, for a diversity of colour among these Epiphyllums very much enhances their value. *Vertumnus.*

NOTES ON CONIFERS.—No. XIII.

SEQUOIA (WELLINGTONIA) GIGANTEA.

(*Concluded from p.* 1116).

So much for the actual discovery of the tree; but there is another point on which general opinion is also at fault, viz., who first introduced it into Europe? The credit of doing so is generally given to Mr. Lobb and his employer, Mr. Veitch, for whom he was collecting. But, if our information be correct, it belongs to Mr. John D. Matthew, son of Patrick Matthew, Esq., of Gourdie Hill, near Errol.

Mr. Lobb returned from California in December, 1853, bringing his seeds with him, as appears from the following remarks by Dr. Lindley in this Journal on December 24 in that year :—

"The other day," says he, "we received from Mr. Veitch branches and cones of a most remarkable Coniferous tree, also Californian, seeds and a living specimen of which have also been brought him by his excellent collector Mr. W. Lobb, who, we are happy to say, has returned loaded with fine things." The extraordinary Conifer referred to was the Wellingtonia, and this announcement was the first of several notices by the Doctor regarding it.

Six months before that, however, Mr. Matthew's son had written to his father, informing him of the discovery of the giant trees, and forwarding a sketch of some of them, a small branch and some of its seeds. His letter was dated 10th July, 1853, and was received along with the seeds on the 28th of August following. The letter was published *in extenso* in this Journal in the following year (10th June, 1854). It contains little but details which, then fresh and full of interest, are now old and well-known, but it fixes the date of the first *envoi* of seeds. The seeds all succeeded, and 11 of the plants reared from them have been traced, and details regarding them given in the "Pinetum Britannicum." They are distributed as follows :—

2 at Gourdie Hill, by Errol.
2 at Magquick Castle, by Errol.
2 at Ballendean, by Inchture.
1 at Kinnoul Nursery, Perth.
1 at Dr. Lyall's, Newburgh, Fife.
1 at Balbirnie, Fife.
1 at Inchry House, Fife.
1 at Eglinton Castle, Ayrshire.

Perhaps some of our northern readers may be able to add to the list of these, the oldest plants in Europe* of Wellingtonia gigantea.

The interest which attaches to these trees however as the oldest does not extend to them as the tallest. They have been far outstripped by much younger plants. The tallest of them is one of those at Ballendean, which is 13½ feet high, while we shall presently see that there are trees of 18, 19, and 20 feet in height growing elsewhere in Britain.

As might be expected from such growth (in little more than 10 years) the climate of this country is admirably suited to the Wellingtonia. Mr. Palmer's tables of the worst effects of the winter of 1860-61 give the following results derived from 122 places taken indiscriminately.

Places at which plants were	Killed.	Much injured.	Injured.	Not injured.	Total.
England	3	6	15	60	84
Scotland	1	1	4	29	35
Ireland	—	—	—	3	3
	4	7	19	92	122

It thus appears that out of 122 places deaths occurred at only 4, and at two of these Mr. Palmer's notes show that the deaths were due, not to the weather, but to the plants. That at two places plants actually succumbed to the cold, however, does not mean that all the plants died at these two places, but only that some of them which occupied the most unfavourable position did so. One of these places is the Cairnies, in Perthshire. It is situated on one of the southern ranges of the Grampian Hills at 600 feet above the level of the sea, and the soil where the plants grew was poor and shallow, with an impervious till for the subsoil. Mr. Paterson, the gardener, wrote as follows :—"Our Wellingtonias are all small; some of them are in quite sheltered places, others are more exposed. Those most exposed suffered the most, other things being equal; some were only browned, others were killed or hurt so much that they have never fairly recovered. In the latter case the soil was shallow, and the subsoil so hard that the surface water could not sink away freely."

* Mr. Lobb's "living specimen" excluded. EDS.

The only other place where the Wellingtonias were killed by the cold was at the other extremity of our island—Basing Park, Hampshire. The situation is high, and the valleys between the hills are cold, and the currents of air there very destructive to trees, and it was in them that the plants which suffered stood; Larches, too, which had been planted 25 years were killed there in that fatal winter. We therefore look upon both the Cairnies and Basing Park as containing sites which are exceptionally unfavourable to all trees in very severe winters, and no conclusion can be drawn from them as to the general hardiness of Wellingtonia throughout the country.

There is one thing, however, which forces itself somewhat unwillingly upon our attention, and that is that if this country be such a capital place for Wellingtonia it cannot be an equally good one for the Red-wood. In their native country we see that the Wellingtonia is the mountain representative of the Red-wood; each has its own climate and its own conditions of life; what is favourable for the one is unfavourable for the other, and *vice versâ*; hence it would rather look as if we could not have both—at all events that as the general climate suits Wellingtonia so well, it is only in the warmer parts of the kingdom that we can expect the Red-wood to thrive.

In another point, our climate seems equally to disagree with both, and that is—exposure to high winds. Both are constantly browned by these, and although they recover, it is a great disfigurement, and in a succession of years must be seriously injurious. If only it is a fault which we can provide against. We can always take care to plant them in situations where they are sheltered from the prevailing blasts, and at the same time to give them air from those quarters where they are free from much danger of wind.

The following is a note of the height of some of the best plants in England. They are chiefly taken from a valuable return published in the "Transactions of the Scottish Arboricultural Society," vol. iii., p. 58 (1865); and some of them from measurements made two or three years ago, the most of the measurements having been taken about 1864. But the supposed ages of the trees are given so far as known; and as the earliest importations of seed have been above specified, there can be little difficulty in fixing an approximate date to the measurements.

	Height.		At supposed years of age.
	Ft.	in.	
There is at Windsor Castle a plant ..	21	0	10
Also at ,, one ..	13	0	13
At Bicton, Devonshire	13	0	9
,, ...	18	0	9
At Goodwood Park, Sussex	18	0	11
At Witcomc	18	0	7
At Murthly Castle, Perthshire ..	13	0	—
At Castle Martyr, Cork	18	0	7
At Bagshot (Mr Waterer's Nursery) ..	18	6	10
At Redleaf, Kent	17	2	—
At Elvaston, Derbyshire	16	6	11
At Tortworth Court, Gloucestershire ..	16	0	11
At Darlington Park, Kent	16	0	8
At Rosehall, Stirling	16	0	11
At Singleton, Caermarthen	15	6	8
At Bedgebury Park, Kent	15	1	—
At Highnam Court, Gloucester	15	0	11
At Bryanston, Dorset	15	0	11
At Fordell, Fife	15	0	—
At Cecil, Tyrone	15	0	6
At Lambton Castle, Durham	14	6	8
At Riccarton, Mid-Lothian	14	0	11
At Basing Park, Hampshire	14	3	6
At Bowood, Cornwall	14	0	10
At Dunbigh	14	0	10
At Eggesford, Devonshire	14	0	—
At Kew, Surrey	14	0	10
At Halston Hall, Shropshire	14	0	10
At Welbeck Abbey, Nottingham ..	13	0	—
At Ambleside, Westmoreland	14	0	8
At Castle Ashby, Northamptonshire ..	13	6	8
At Taymouth Castle, Perthshire ..	13	0	11
At Dalmaik, Monedan	13	0	13
At Dropmore, Buckinghamshire ..	12	0	8
At Norcliffe, Cheshire	12	0	8
At Rolleston Hall, Staffordshire ..	12	0	9
At Balgowan, Perthshire	12	0	7
At Templetown, Durham	12	0	11
At Greenock Cemetery, Renfrew ..	12	0	10
At Castle Kennedy, Wigtonshire ..	12	0	9
At Somerville, Meath	12	0	11
At Charlesfort, Meath	12	0	8
At Biddulph Grange, Staffordshire ..	11	0	8
At Eastnor Castle, Hereford	11	0	6
At Osborne, Isle of Wight	11	0	11

Before leaving Wellingtonia we should wish to say a word or two against its employment as a memorial tree in cities, or within the influence of their smoke. It has of late years been the favourite tree for such purposes, and of course has been selected from the expectation that its great size and long life will make it a prominent and enduring monument. But the way to secure such a monument is certainly not to plant a tree in a place where it will not thrive. As a rule Conifers have an antipathy to smoke, and the dirty struggling Cypresses which we see in suburban gardens can scarcely be cited as an argument to the contrary. Their success is not so great as to warrant it, and if it were, it would only be the exception which proves the rule. At any rate the Wellingtonia is not such an exception; and we anticipate that in a few years not one of the much-prized Victoria-planted or Albert-planted Wellingtonias will remain in any city to show the spot which it was intended to mark for ages to come. The two planted by the Queen and Prince Consort in the Royal Horticultural Society's Gardens at South Kensington, notwithstanding all the care taken of them there, are beginning to look bare and black and dirty, the sure premonitory symptoms of decay. If a tree is to be planted as a memorial in a city, let it be something that will bear the city smoke. No doubt we should all prefer something striking and remarkable—something for its rarity, its cost, and its beauty, worthy of the planter and the event to be commemorated. But if we cannot get this we must do without it. A living dog is better than a dead lion; and a thriving Plane tree than a moribund Wellingtonia.

Among the merits of this tree is that of being raised without difficulty from seed; of growing readily from cuttings, of being easily transplanted, and of being hard to kill.

One remarkable fact, illustrative of its Willow-like readiness to grow from cuttings, came under our own notice. We had taken a young cone and hung it head downmost in a phial of water for the purpose of macerating and rotting off the chlorophyll, so as to make a skeleton of the ligneous core (which can be done with a little patience while the cone is green; when it is mature and brown we suppose it may be done too, but we never had patience to pursue the experiment to the end—it would be one "of many days," we might almost say years). To our surprise this cone actually sent a young rootlet out into the water from its very apex. A seed or plant put in the ground upside down pushes out a shoot from its apex, which works its way round up to the surface, but it is a shoot (buds and leaves) which it so sends forth, not a root, while here it was not a shoot, bud, or leaf, but actually a rootlet.

Pot-cramping is very common in young plants of Wellingtonia which have been reared in pots, as is usually the case with those bought from nurserymen. The rapid growth of the species makes it very subject to this. Let not the planter hesitate however to untwist and unravel the Gordian mass. If he does not do so the tree cannot thrive—but if he carefully opens up the distorted roots and compels them to come asunder (using even the knife where necessary to effect his purpose), and spreads them all around delicately, laying out the smallest fibres and ramming the earth well in, so as to prevent them going back by force of elasticity to their old posture, the tree will do well. Our London readers may see an instructive evidence of this in a specimen planted near the gate of the Royal Horticultural Society's Garden at Chiswick. That plant was pot-bound, and was treated as we recommend by Mr. Barron, the Society's intelligent superintendent of the Chiswick Garden, who planted it, and the result now is that a finer specimen plant can be seen nowhere, although for a couple of years after the operation the plant made little or no progress. Had it not been so treated it would either have been dead by this time, or all its life been a sickly and unsatisfactory plant. *A. M.*

BEDDING-OUT.

DOUBTLESS most of your readers have enjoyed the literary treat recently provided by "S. R. H." in connection with this subject. I confess to a feeling of provoking pleasure in the perusal of his papers. His fertility of illustration, elegance of style, and, be it frankly confessed, useful hints, sufficed to prevent his being laid prostrate in the Parsley or sent straight to Coventry, for so offensively flaunting in our faces those heart and mind-satisfying ribbons, that at once afford an index of our taste and a test of our power, while they constitute (let who will say nay) the chief charm of most flower gardens. Hoping that forbearance in this matter will teach "S. R. H." gentler manners for the future, I pass on to discharge a running fire of criticism through his charming papers. It is a pleasure to agree with him in his preference for the new style of furnishing flower gardens over the old; in his estimate of the usefulness of elegant foliage-plants in combination with flowers, as producing a more immediate and more permanent effect; and in his advocacy of simplicity rather than intricacy of form and furnishing for flower gardens. I think "S. R. H." might have even strengthened his case in favour of "bedding-out" by showing that it does not necessarily destroy the ancient mode of flower gardening. In most large gardens there is room enough for both. And both, like Agnes and Edith (see p. 874), have charms enough to win and keep our hearts; and unlike the two sisters, both may be possessed and loved, without any unpleasant consequences. In such cases it is not at all necessary to have done with the old, before taking on with the new love. Few changes (I speak from daily experience) can be more satisfying than the transition from a blaze of beauty on an acre of flower beds, to a charming herbaceous border, filled on the old style. "S. R. H." would find this change much more delightful because less violent than the Parsley-bed. I hope he may come and test it, and I will undertake to take him from a ribbon 12 bands wide, straight to an old-fashioned border filled with herbaceous plants and annuals, backed up with green Box and Holly. The old and the new style, however, if either are to be enjoyed in perfection, must not be mixed together on the same ground at the same time. If the two are attempted in the same garden, let separate beds be devoted to each. In this way any one with two flower beds may enjoy the pleasures of both the old and the new styles in contrast or harmony. And even the old style is now much more enjoyable than it was. There can be no satisfactory reason why such large spaces should be given up to weeds, or to the hoe and the rake, as used to be found between plants. As long as choice plants not in flower, or the leaves of bulbs, are not unduly infringed upon, these spaces might be filled with the usual bedding plants, singly, or in groups of the stereotyped of old, three in a triangle—to the great enhancement of the beauty of the old style. Great forbearance will, however, be necessary here, or that very mixing of the two styles which deals latent destruction to herbaceous plants, and which I have just strongly condemned, will ensue. In all cases, too, where any bedding plants are introduced amongst herbaceous plants and bulbs, the borders must be recouped for what they have taken from them by an annual dressing of manure. However, such expedients for beautifying the old style will probably be less needed every year. The fact is, we are daily taking away more and more of a permanently beautiful character from the old and fitting it into our new arrangements; and with the aid of these and movable spring flowers, shrubs, bulbs, and early annuals, the ultimate triumph of our skill will probably adorn the flower garden with beauty of form and colour, if not of actual flowers, throughout the year. Already this desideratum is almost within the grasp of wealth and skill, and when it is generally accomplished, I shall be curious to hear what can be further urged against bedding out.

One word of warning about fine-leaved plants. They are beautiful at once and are less changed by the weather than flowers, but "S. R. H." almost makes it appear as if they were unchangeable unless by frost. This is, however, far from being the case. Some of the very best of the new Geraniums are very much influenced by the weather. Even Golden Chain, the most constant of them all, looked washy this September. That gem under glass, Italia Unita, was no better than Flower of the Day the last six weeks out of doors, and others change so much that no one would have recognised them this autumn. The same is true of most other plants, with the exception of Perilla, which nothing short of 6° of frost seems to injure. As for Miss Iresine, she is the most capricious of all beauties. She not only varies in different places, but I have seen her this summer exquisite on one spot, and on the same bed, within 6 inches, rusty, worthless, and so on provokingly round six different beds. Even the Cerastium has succumbed to the wet this autumn, and the Centaureas have lost some of their whiteness through the incessant downpour. The Cineraria maritima, on the contrary, seems to have bleached whiter. As "S. R. H." confesses that the examples of bad colouring, given at page 898, were in his own garden, nothing need be said about them, except that I have never seen any quite so bad.

The all-important question of where shall the flower garden be placed, comes next, and is not so easily answered as your correspondent supposes. His reply is, "under the windows, where it can always be seen." Here, also, it would afford the necessary adornment to the architecture of the house. This however is doubtful and slippery ground. Are flowers proper architectural embellishments? Are not trees or large shrubs infinitely more congruous and suitable? Have bedded-out flower-beds dignity or stature enough to set off or light up large buildings? This much is certain, that in numerous instances, by the common consent of architects, landscape gardeners, and owners, flower gardens are placed at a distance from mansions. Even those who, like Mr. Nesfield, or the late Mr. Loudon, may have brought them near, have been compelled to sink them down beneath the surface, or give them an architectural base, lest their close proximity should mar the effect of the house, or detract from the massive grandeur of lawn, park, or wooded scenery. Besides, people do not live in their picture galleries. An excess of ever present beauty is apt to pall and satiate the appetite. Having the garden a little way removed favours exercise, and becomes an inducement to go out; it provides a new pleasure and surprise for friends. It is doubtful taste, to say the least, to exhibit all our treasures at once; it is certainly more gratifying to have them gradually revealed. The house, outside and in, ought to be educated into standing alone; there is something faulty in its style or form if it must lean upon the garden for support. A garden under the window is also robbed of one of its chief charms—a sense of security and solitude. Peering eyes, and intruding visitors, often mar the enjoyment of a garden. Milton, who might have distinguished himself almost as much in this line as his own, illustrates this idea well. Tie

> "Rural mound and verdurous wall of Paradise,
> Which to our general sire gave prospect large,"

gives the idea of safety from intrusion as well as immunity from being overlooked. Even the necessary work that must be performed in a flower garden is not always pleasant immediately under windows. It may bring on that awful disease, fidgets, to the onlookers, and is often inconsistent with that feeling of calm repose that ought to breathe around a country home.

I have assumed all through that "S. R. H." would place the garden on the opposite side from the carriage entrance. He can never mean, although his words would certainly bear that interpretation, to place the garden under the windows there; if so, it might almost as well be on the side of a public road. Even on the other side there are often weighty reasons, as I have shown, why it should not be placed too near the house. And there never was a greater mistake than he commits in measuring the affection of the inmates for flowers by the proximity or otherwise of the garden to the house. Frequently, just where flowers are most enjoyed, the garden will be found furthest off, as the best means of realising their full fruition of blissful pleasure, and also on the grounds of high architectural and landscape art. *A Practical Hand.*

(*To be Continued.*)

MUSEUM HULLETTIANUM.

MANY of our correspondents have received communications from time to time from a *gentleman* named Hullett, whose success in the importation and culture of tropical fruit trees and other rarities has been, *according to his own account*, very remarkable. The site of the establishment in which these extraordinary novelties have been cultivated has not yet been distinctly ascertained, though it is apparently

at the present time situate at Waterloo near Cosham in Hampshire, but whether from the necessity of giving the plants change of air, or from what other cause we know not, they, or some among them, seem to have been grown at Carlisle, some in Derbyshire, others at Stony Stratford, and a few perhaps at Hastings. The enterprising and somewhat mercenary "amateur" whose name we have above mentioned does not appear to have published any general catalogue of the novelties and extraordinary plants he has imported and offered for sale. He does not, to the great loss of the horticultural community in general, make his plants known in the ordinary way, nor has he, so far as we are aware, exhibited any specimens at the meetings of the Fruit or Floral Committees of the Royal Horticultural Society, or at any of our large metropolitan flower shows. We are sure that we give expression to the feeling of the horticultural community when we express our regret that Mr. Hullett should not have competed for the Royal Horticultural Society's Lindley Medal.

Such being the case, we have thought it desirable in the interests of Horticulture to draw up, from a large number of letters that have reached us, a notice of what appear to us to be the most novel and important of the plants introduced so modestly. We must, in justice to the importer as well as to our readers, say that our list is necessarily a select one, our space not allowing us to go further into detail. We must add that the terms in which the plants and fruits are described, are those made use of by the vendor himself, and that we are not by any means responsible for their accuracy. Mr. Hullett does not, moreover, do himself full justice, for the fortunate possessor of so many truly extraordinary novelties must surely be over-modest when he says, as he does in a letter before us, that he has "nothing grand or splendid, but very commonplace." But this may have been in the infancy of his career. Now, his collectors are spread over every land. His ships are continually arriving from Borneo, from Java, from South America, and elsewhere, freighted with what even Mr. Hullett himself, as we shall see, admits to be splendid things. On the Mangosteens and Mangoes offered by Mr. Hullett, there is the less necessity to dilate, as he has himself alluded publicly to their wonderful qualities, and to the facility with which cuttings may be raised and fruit obtained. Under such circumstances it is no wonder that a much higher price than ordinary is put upon them. Nor can we be surprised that "hundreds of applications have been received, from the humble amateur up to Royalty itself." From a long list of other tropical fruit trees we cull the following as being the most important:—

Platonia insignis grandiflora.—Tree very ornamental; flowers lovely, rose-like, of delightful fragrance, "followed by a fruit about as big as a large Pear, and of the most delicious flavour imaginable," &c. This is warranted to bear "fruit within 12 months," and cannot be dear at 3 guineas.

Mostera deliciosa.—Variety without prickles (!) "MOST DELICIOUS" (the capitals are not our own), and far superior to the common sort, and of a "bright gold colour."

"*Wonderful Fruiting Cactus.*—The flowers magnificent in the *extreme*, and the fruit exquisite. It is perfectly new."

"*Entirely new Guava, imported by my collector direct from Rio Negro.*—This noble tree will grow in either stove or greenhouse, and in the stove bears two abundant crops every year. The fruit is EXQUISITE, with a delicious Pine-apple and Grape flavour, and the scent of the ripe fruit very fragrant. The fruit is as big as a small Melon, of a deep crimson, and MOST abundantly borne by even young trees. Price of plants, 2*l.* 2*s.* each; or very extra, 5*l.*"

"*An entirely new and delicious fruit from Java*, of which the Emperor Napoleon has had several, and has expressed himself highly gratified with the plant." This beautiful tree grows easily; "the flowers are sweet-scented and large, followed by one of the most splendid fruits known." "The Emperor's letter can be sent to be read, if liked."

"*New Seedling Grape, All the Year Round.*"—"I have now," says our lucky horticulturist in a letter dated September 20, 1866 (it is to be noticed that, from absence of mind probably, many of the circulars are not dated), "I have *now* new fruit, and the last *old* was cut on the first of *this* month!!!"

These ejaculations are not ours, dear reader; we have hardly breath enough left wherewith to ejaculate; but to continue the description of this Grape—"It will hang any time whatever without bursting, and is a fine noble Grape, with a peculiarly sweet scent. The plant was raised from Lady Downes', and a Grape from Brazil * * * *I know* you will marvel at its wonderful keeping qualities, hanging 10 months on the Vine." After this we do *not* marvel that the moderate sum of 5*l.* 5*s.* should be asked for a plant.

Of Passion-flowers, Mr. Hullett seems to have a large assortment, since some are described with fruits having the flavour of green Peas, some with fruit more exquisite than that of the Pine-apple, some with magnificent blossoms 7 inches in diameter, and with fruit from 9 to 10 lb. in weight, while others are mentioned as having "magnificent flowers a foot in diameter, followed by one of the most splendid fruits known." Of this latter kind, we presume, is the specimen with which we ourselves were favoured in May last, and which we transmitted to the Royal Horticultural Society's Garden at Chiswick, where we hope soon to see it in flower, as it is described as "nearly like P. macrocarpa, only *much* larger." To be sure, we are not quite clear what P. macrocarpa really is. We have lately seen some very large fruits of a Passion-flower, so-called; and if Mr. Hullett's fruits are much larger than these, we should run a risk of confounding them with Pumpkins.

We have not at present space enough at command to quote more fully from this catalogue of rarities—even a "crimson Phalænopsis" and other wonderful Orchids, must not tempt us further.

In these days of marvels we should no more believe all we see than we should disbelieve everything that we cannot see, but it may not be unnecessary to suggest that "rarities," such as those above mentioned, are much better purchased from recognised members of the trade.

Home Correspondence.

Oriental Mysteries.—These are sold in envelopes or packets at 1*s.* per packet, each of which contains 25 "mysteries." In the state in which they are purchased, they are of no apparent shape or make. Some appear like pieces of a common lucifer-match; others like little dirty, irregular chips of a soft wood; and others, if I may so express myself, like nothing at all. In this state they appear quite useless, and certainly are not worth 1*s.*, but immediately upon dropping one of them into a cup or saucer of hot water, it changes into a star, a fish, a flower, or some other tangible form. The change is instantaneously effected by coming in contact with the water, and the worthless looking splinter of dried wood expands to many times its original size, and what is more, the specimens, when so enlarged, are, many of them, highly coloured, representing, more or less accurately, not only the form but the colour of the objects for which they are intended. As might be supposed, the quickness of the expansion and the power of increasing to so many times the original bulk, has caused many inquiries to be made as to what the material could be of which these "mysteries" are made, and whether that material, whatever it might be, is treated chemically. I was fortunate enough to have put into my hands a "mystery" of large size, containing more solid material than those sold in the London shops, and on close examination I was enabled to determine the nature of the substance, which is a simple vegetable tissue without any preparation whatever. The plant yielding it is a common one in the East, and is known as the Shola (Æschynomene aspera), belonging to the Leguminosæ or Pea family. It is a marsh plant, and grows in abundance in the lakes and jheels of Bengal, as well as in other parts of India. If the objects are veritably of Japanese manufacture, it would seem that the stems of the Shola must have been obtained in the first place from the East Indies, as the plant is not known to grow either in China or Japan. It seldom attains a greater height than 8 or 10 feet, and the diameter of its stems is not more than 2½ inches. The wood is remarkably soft and light—so light indeed as to appear nothing more than a mass of cellular tissue, and might readily be mistaken for pith; but upon microscopic examination the annular rings and medullary rays are distinctly visible, though exceedingly fine. It is the large amount of cellular tissue present which causes so great a degree of expansion to take place. When dry, and submitted to pressure, the cell walls collapse, and are pressed against each other, but upon coming in contact with heat and moisture when placed in hot water, the cells immediately absorb the moisture, and regain their natural bulk; the effect of the moisture also expands the vascular tissue or woody fibre, and in that way causes the instantaneous opening of the chip-like objects. The material is in common use amongst the natives of the East Indies for the manufacture of various articles, both of dress and domestic use; its extreme lightness recommends it for many purposes, such as fishing floats, swimming jackets, bottle cases, but more especially for hats, as it is a bad conductor of heat, and the hats can be made of almost any thickness, and still be exceedingly light. For modelling it is a favourite material with the natives, who turn out some really beautiful articles with it. There is a very fine model of a temple made of the Shola in the East India Museum, and another in the Kew Museum. The stems are usually cut about the months of April and May, and are commonly sold in the bazaars at Calcutta. From the foregoing description it will be seen how simple in structure these startling "mysteries" are, and how easily and cheap they may be made. From a very thin slice of the wood a large number could be produced, and many such slices could be cut from one stem. I believe that the "mysteries" hitherto sold in London have all been imported from India or Japan, but there is no reason why they should not be made in this country, and perhaps at a cheaper rate than purchasing them of the Eastern manufacturers. The material, if the demand for the articles continued, could be imported in almost any quantity from the East Indies, and by cutting the stem up into thin slices, and then stamping the objects out with a kind of die, thousands could be produced and rolled into a small compass in a very short space of time. *J.*

Hard Soil.—I think one or two of your correspondents who took exception to Mr. Rivers' recommendation of hard-rammed soil for fruit trees, could scarcely have been acquainted with what actually takes place under the circumstances. I will relate an observation of my own in this matter:—Some years ago, while working out the cultivation of large-bulbed Cape and other Amaryllids, and acting upon the Dean of Manchester's advice to use strong unmanured soil, I built up the material in the pots as follows:—The stiff but rich Wheat loam of my neighbourhood was pulled into pieces of various sizes, from that of a Walnut to two or three times that size; these were mixed together, and strongly rammed into the pot in successive layers, finally also round the sides of the bulb. Strange to say, so complete was the drainage structure of the mass that water passed rapidly through it at once, and the soil retained this property for years. I have also made the lumps form their own drainage, merely using a small garden pot to cover the hole in the larger one, and this with perfect success. I remember that A. Josephinæ thrived wonderfully under this treatment, and flowered most seasons. The great thing to be observed is the hygrometric condition of the soil. It should be about half dry; the lumps in this case, although pressed together into a mass, do not really adhere—any two may be pressed together with the hand and pulled asunder again. The surfaces have adapted themselves to each other, but there remains a film of air between. Doubtless, also, a series of spaces of non-contact, such as exist amongst the lumps of sugar in a basin, are never wholly obliterated; indeed, I found this to be the case on turning out the soil after several seasons' growth of the plant. I have seen Camellias potted in the same way with perfect success. I do not, however, recommend the system in a general way for Amaryllids, as I believe they are upon the whole better grown in a light rich compost. *R. T. C.*

Hardiness of Ferns.—As I said a few words (see p. 412) respecting the hardiness of Adiantum Capillus-veneris, I now beg to send you a pair of fronds cut about a month ago, for the double purpose of showing the progress which this Fern has made during the season, and also of asking if you consider it the true kind. It is what I have always looked upon as the true Maiden-hair, and I am not acquainted with any hardy variety like it. Two days after I wrote I had a farther comparative proof of its hardiness. We had then sufficient frost to destroy the young fronds of Lastrea dilatata, and also other hardy sorts, but the tender-looking undeveloped fronds of A. Capillus-veneris remained unhurt, and now (November 28) we have had frost enough to finish the deciduous fronds of Athyrium Filix-fœmina, but A. Capillus-veneris has fronds in all degrees of development seemingly unhurt. The patch has been growing through a carpet of Lycopodium denticulatum, and has been much admired. I hope that Dr. Mueller is right in saying that the list of Ferns which he gives at p. 365 will grow where Hymenophyllum tunbrigdense occurs. We know that it occurs in England, and a small plant I had in the end of summer is growing in the Fernery under a bell-glass. Hardy Ferneries would become doubly interesting by means of the introduction of exotics. The only protection a very small plant of Woodwardia radicans had here last winter was the Oak leaves that fell upon its crown. Its fronds became brown through the winter, but the plant has thrown up some fine fronds during the summer, and it promises when full-grown to be a beautiful object. Since writing the above I have had the pleasure of reading the notice of Dr. W. Lauder Lindsay's communication to the Botanical Society of Edinburgh. Surely it is enough to make parties interested in the matter try again. If these Ferns of Otago are associated with glaciers and snow, surely we may expect some of them to pass through our winters with little protection; but I rather suspect that the glacier Mount Cook exists somewhat upon the same principle that we see short icicles sometimes, in very severe frost, hanging from the glass in plant-houses in a temperature considerably above the freezing point. They exist there because of their connection with the glass; but detach them, and they soon disappear. And I suppose the same thing would happen with the glacier in question if a lower portion was disengaged from the upper, even but a few feet, so that it is quite possible that a temperate climate exists within a few feet of the positive ice a long way up the mountain. The matter however is capable of proof; I suppose the question will be—who will be the first to risk a fine plant of Cyathea Smithii, or Dicksonia squarrosa, or D. antarctica, out through the winter. Although these may never stand, I believe that many exotic Ferns that have been considered unfit for out-door cultivation, will yet be found well adapted for the purpose. I infer this from the vigorous growths which they make in the cold months of spring and late in autumn. We see some tender plants used for flower-garden decoration begin to decline as soon as summer heat is on the wane, but not so the few exotic Ferns which I have had under my notice. They keep throwing up young fronds until actually stopped by frost. *D. Buchanan, Dyrham Park, Barnet.* [The fronds are those of A. Moritzianum, which is merely a large form of A. Capillus-veneris. EDS.]

Large Poplar.—A fine specimen of Poplar that stood in the grounds here was blown down on the morning of the 7th ult. Its dimensions were as follows:—At 6 feet from the base the circumference was 15 feet; at 38 feet high it was 12 feet, and the tree was upwards of 120 feet in height. *Robert Sowerby, jun., Gardener, Newburgh Park, Yorks.* [Our correspondent will oblige us by stating what kind of Poplar he refers to. EDS.]

International Exhibition Fund.—Will the Committee entertain the idea of retaining the surplus, to aid in carrying out a similar exhibition again to be held in London? There is no doubt that the Great Show to be held at Bury will prove most attractive, and bring numbers of people together to witness it; but after all, London is the place and head centre for horticultural exhibitions, for the visitors are at hand, and on account of their numbers profit is sure to be realised; therefore I should be glad to know that the money already in hand was retained for the express purpose of aiding in carrying out another International Show for 1868, if possible, on a grander scale than that which was held in 1866. Great praise is due to Mr. Fish for the zeal he is displaying towards the success and importance of the first show to be held in the provinces under the auspices of the Royal Horticultural Society. The offer of gold and silver cups, as prizes, is good, and should be encouraged in every way; but I would insert them in the schedule principally as prizes for amateurs and private growers, as cash in

many instances is of more importance to nurserymen than articles of plate. *F., North Hants.*

Winter Flower Beds.—One of your correspondents (see p. 1166) recommends the use of cut branches or evergreens for the decoration of beds in winter. I myself many years ago adopted that system; but I must confess that I did not like to look upon beds or borders treated in that way, the plan being too decidedly artificial; and frequently after a gale of wind large portions of the cut branches would be strewn about all over the place. Your correspondent says he considers cut evergreens to be much better suited for the purpose named than Kale, or Variegated Greens. I do not know who your correspondent is, but I am convinced that if he saw a flower garden done up with the true improved varieties of Treble-curled Garnishing Greens (or Kale), intermixed with dwarf evergreen shrubs, or the flower beds, say, paneled and vandyked with dwarf evergreens into different compartments, filling the same with distinct shades of colour, duly arranged and blended together, he would say that they looked splendidly. Or the Black Siberian Kale might be used say for a ground colour, then variegated Hollies, either promiscuously or otherwise, other Kales to give colour might also be employed, such as white, crimson, &c. Many sorts of plants could be used for edging, even dwarf green Ivy is an excellent ground colour for the different varieties of Kale as well as for winter decoration. And again, the same beds or borders would during the summer look gay with Scarlet or Variegated Pelargoniums in pots, whether in flower or not, plunged among the Ivy. I consider that variegated Greens or Kale are not appreciated so much as they ought to be. Were people to see Miss Hope's winter flower garden at Wardie Lodge, done up chiefly with Kale and evergreen shrubs, it would induce many to follow the example. Many are not aware, or, rather, do not think, that the green Kale when planted should be all laid down flat on the ground, the head resting on the earth, and the stem covered out of sight. This, I mean, should be done in the case of flower beds. But as ornamental plants, in shrubberies, they might be planted so as to grow more naturally. There is a perennial Green which if improved in colour would be valuable for the winter decoration of shrubberies. I have just now a good many young plants from the perennial sort, crossed carefully with the pure curled white and crimson varieties. The young plants appear as if crossed, for severalare coming whitish and assuming various other shades of colour. Therefore I think I have advanced a step in the right direction. *William Melville, Edinburgh.*

Orchids.—I think Mr. Anderson is in error (see p. 1143) in stating that Odontoglossum angustatum is like the beautiful macranthum; I presume he means Oncidium macranthum, which has not conical pseudobulbs, but rather flat ones, and which in habit is not unlike Burlingtonia decora, making a rhizome 5 or 6 inches long from one pseudobulb to the other. Probably he has only seen what has been sold for it; his plant will doubtless turn out to be Odontoglossum coronarium. *T. H., Gravelly Hill, Birmingham.*

Passiflora cærulea.—As you have lately been talking about edible and reputedly edible Passifloras, perhaps you will allow me to put in a word for a highly ornamental Passiflora, grown pretty freely in the neighbourhood of Dublin and elsewhere, in the open air; but not so often seen about London as it ought to be, though it flourishes very satisfactorily there, as I write to state. I am in the habit of "taking a breathing" round the outer circle of the Regent's Park, and for some weeks past have been much struck with the conspicuously beautiful aspect given the front of the superintendent's house in the Zoological Gardens, by a plant of this Passiflora, which covers it. It is dappled over with golden fruit, and at once catches the attention of all passers by. Now, if it is so grown on the cold and very bad clay of the Regent's Park, is it not equally well suited to cover the southern sides of countless houses about London that are now devoid of a decent "creeper"? Mr. Stubbs, the gardener at the Zoological, planted this about four years ago, in the ordinary soil of the spot. Having fruited so well this year, it cannot be want of heat that it lacks in our summers generally; and if occasionally cut off by a hard winter, we need not be defeated by that, as it is a very rapid grower, and a young plant will soon again cover the wall. *Passiflora.*

Glazing without Top Putty.—When lately with Mr. Barnes, in his nursery in Southampton Street, Camberwell, I had an opportunity of examining some of his houses that are glazed without any top putty, so to speak, and felt convinced of the soundness of the practice. Instead of putting any putty over the glass, the pane is simply pressed down into the under bed of the putty; that squeezes up, is cleaned off quite level with the pane, none being left in the angle, of course. The woodwork is well painted, and the brush allowed to pass over the putty at the side of the pane, and a little on to the edge of the glass; and thus done, the water shoots down it without obstruction from the mass of cracked putty at the side, and finally, there is no washing down of old putty, always a nuisance to the gardener. I have no doubt the general structure of the roof will last all the longer from being exempt from the erratic slippings in of water between open cracks. At all events, the sashes have been done four years, have given our great Azalea producer much satisfaction, and are worthy of a trial by gardeners generally. *S.*

A Seedsman's Plea.—Do, Mr. Editor, lend your influence on behalf of a body of men who really have a grievance to put before you. I mean the seedsmen,—those who are employed in the seed shops both in town and country. We (by this I mean the body of assistants) hold a somewhat singular position in relation to the great horticultural world; we are in it, but scarcely of it. We rarely, if ever, take part in any of its movements, or directly assist its actions, though we, notwithstanding, perform some very important work for it every week of our lives. Somehow or the other, the principals of the strictly seed establishments appear to take but little interest in what goes on among horticulturists; they stand aloof from them as if they had no identity of interest, not to mention the higher principle of love of their art. The recently established Horticultural Examinations—a very worthy and valuable movement—give to gardeners and assistants in nurseries a fitting opportunity to raise themselves in the social scale; for the possession of a certificate is a moral lever, the worth and utility of which will become apparent by and by. But this worthy movement passes by us in our less favoured circumstances. We are out of the sphere of its operations, for it is *practical knowledge* that can alone gain the coveted honour; and how rarely can we obtain practical knowledge! Look at our "surroundings"! as Robert Owen used to term it. Long hours of labour within doors—a somewhat dirty and monotonous occupation, unrelieved by any of those elements of poetry and beauty, and that peculiarly pleasurable excitement, that waits on the occupation of the gardener and the nurseryman's assistant,—too often in low, ill-ventilated, and unhealthy shops and offices, pregnant with a vitiated atmosphere, lighted with flaring gas early in the day, and in dull autumn and winter weather all day long, and late into the night,—poorly remunerated, under the very unexceptional circumstances; and, moreover, expected to have a good knowledge of plants of all kinds (theoretically at least), and to be able to answer all the many questions proposed to us by persons who, strangely enough, appear to fancy that our life has already been expended in cultivating the very things this stage of existence is devoted to selling. The seed trade is one dull, continuous, wearisome round of monotonous employment, with little of interest to enliven the toil, too often of a very unsatisfactory character both to the employer and the employed, as is the grievance complained of. To the honour of some of the seed houses, both wholesale and retail, be it said, that very liberal efforts are made to mitigate, as far as possible, during the summer months, by the introduction of short hours and terms of absence, the disadvantages of the winter and spring months. To labour from 9 a.m. to 5 or 6 p.m. is indeed then a relief, and no firm suffers in any way by such an arrangement; but the large majority of the seed houses have yet to learn, in some sense, the value of the injunction, "muzzle not the ox that treadeth out the corn;" for long hours are the rule both during the winter and summer months. And when the day of labour closes, the wearied mind and jaded body, not yet recruited for the waste in the dark season, is unfitted for any physical, much less intellectual recreation. In these days of excessive competition, the evil is unfortunately furthered; and employment is sought in a more congenial atmosphere, and under more attractive conditions. It will be so until employers find it to be their interest, by liberal treatment, and a shortening of the hours of labour during the summer months, to set off the long toilsome days of the busy season, *i. e.*, the winter and spring months. *Seedsman.*

Downton Castle Early Dwarf Cabbage.—Do any of the readers of the *Gardeners' Chronicle* know aught of an early Cabbage under the above name? It is said to have been raised at Downton Castle, Ludlow, and is offered by two of the leading seed houses at Chester. As I cannot find it in any other seed lists, I presume the entire stock is in their hands, but the one house must either have a larger stock of it, or else set a higher value on the quality of the Cabbage than the other, as in one list it is quoted at 1*s.* per packet, in the other at 1*s.* 6*d.* per ounce. A piece of it, spring-sown, is now "turning in" in my garden. It appears to be a passable dwarf Cabbage, but the stock is much mixed, as I find plants of Kale and some late Brocoli among them. I infer that my stock is true, as it came from one of the Chester houses. I am further testing it against Sutton's Imperial and Beck's Improved Nonpareil from autumn-sown seed. A winter test of Cabbage from spring-sown seed is hardly a reliable one. Plants from seed sown in August, and which "turn in" in the spring, give a much more reliable test of the true qualities of the varieties under trial. For an early Cabbage I have as yet found nothing so good as Beck's Improved Nonpareil, and a true stock of Wheeler's Imperial. *E. W.*

Autumn-flowering Roses.—I gathered on December 3 from a dwarf plant in the open ground a magnificent half-expanded flower of H. P. John Hopper, having plenty of substance, and great depth of colour. It occupies a position fully exposed to the north-west, and has no shelter whatever. It has made wonderful growth this season on a strong clay subsoil, very retentive of moisture, because somewhat low, and has flowered very freely. Out of a collection of 40 varieties of Roses it is the only one flowering at the present time. This flower has been sometimes well praised, and sometimes well-abused, but as a late-flowering hardy variety, it is invaluable. *Richard Dean, Ealing.*

Over-estimating Stock.—May I beg to call your attention to a bad practice pursued by some of the trade, viz., that of over-stating their stock offered for sale—thousands where there are not hundreds. I went the other day to the grounds of a party advertising plants by the hundred of thousands, but he could not show ten thousand. This I believe was done with a view to gain fictitious credit with the trade. One bad effect of this practice will be to make buyers suppose the market over done, and consequently to set little value on the goods. *Fair Dealer.*

Ventilation: Radiation of Heat.—I am almost equally obliged to those who have publicly found fault with my papers on Ventilation as to others, and there have been many among all ranks, from the highest in the land to the toiling rank and file of gardeners, who have spoken well of them privately. If in travelling over such a wide field I have at any point taken a wrong route, my best thanks are frankly tendered to all who have attempted to set me right. I do not pretend to be *master* of the subject. I have only attempted to pick up some pebbles by the sea of science and the wider ocean of Nature, and to present them, as well as I could, to your readers. Appealing to my papers to refute the charges of ignorance, shallowness, and presumption which have been so freely made or inferred, I pass at once to the subject under discussion. It is twofold, and may be stated thus: That moist air retains or preserves heat better than dry air; and that invisible vapour offers the same amount of resistance to the loss of heat by radiation as clouds. If this is not a correct definition of the points in dispute, of course "J. S." will correct me. Now, the discussion is narrowed to the first proposition, as "J. S. Secundus" gives up the second, which in fact, was opposed to all observation and experience, as pointed out by me at page 1117. It was to this point chiefly that my opposition was directed; and any one re-reading my letter at the above page will perceive that I wrote with much greater diffidence about the effects of radiation through a clear atmosphere, whether wet or dry. Now I wish frankly to confess, that Dr. Tyndall's experiment seems to confirm "J. S.'s" first proposition—that the more moisture there is in the air the less heat is lost by radiation. I shall probably have more to say upon this part of the subject when I have read the works so kindly recommended to me by "J. S. Secundus." If Dr. Tyndall is right, then our whole practice in reference to the protection of tender plants is wrong. Let it be known from the Land's End to John o'Groat's that an atom of water resists the removal of heat with a 1600 times greater power than an atom of dry air, and all tender plants must at once be placed in the wettest localities. Will Dr. Tyndall's theory save them from destruction by frost? We know that it will not. I leave it for "J. S." to explain why it is, that just where radiation is nearly *nil*, on his hypothesis, the cold is most severe. That it is so just where the "aqueous blanket is the thickest," every gardener in England knows. It is obvious then that the blanket, whatever effect it has upon radiation, does not keep in the heat nor out the cold. And this is the sum of what I have asserted in the matter, at p. 1117: — "That moist air loses heat by some means at least faster than dry air." It was this fact that led me to write of the different modes by which caloric is removed from one body or place to another. I question very much if my critics can answer the question of how the caloric gets away? Certainly neither the emission nor vibratory theories can help them much in the matter, as no one can certainly say whether heat comes to us or is taken from us by the one mode or the other. That it comes and goes or abides with us, and has certain effects upon all bodies, is about the sum total of the philosophy of heat, so far as it is known. I think also that even "J. S. Secundus" will admit that the change in the relative position of caloric by convection, is affected by the character of the fluid operated upon. The medium in which convection takes place affects the process itself; it forms, in fact, the carriage of conveyance. And in conveying the warm passenger it becomes warmed itself. It is in this special sense that I spoke of the difficulty of separating radiation from conduction. The heat radiating from bodies warms the medium through which it passes. And even in convection itself there is not only the bubbling up or flowing off of hot atoms, but these atoms part with their heat to others that they meet with or touch on their journey. At the point of junction, part of the heat is exchanged and transmitted from one to the other. Thus the two modes which "J. S." pronounces so sharply, at least touch at one point. The value of Tyndall's experiments depends entirely upon the medium in which they were performed. If that medium, when charged with moisture, was transparent as the natural atmosphere when laden with the same complement of water, it may be held to settle the question. Other explanations must then be sought for the fact that the more moisture on the surface of the earth or in the air the greater the damage done by cold. Probably they might be found in the accelerated power of conduction or increased energy of evaporation. But if the artificial atmosphere experimented upon was charged with visible vapour, or vapour of a greater degree of opacity, than that found in the natural atmosphere, why then (I write it with the utmost diffidence) they have no value whatever, and only prove what has long been well known—that the thinnest screen (as that of clouds) will check the dispersion of heat by radiating most of it back again. It will also be necessary to note what becomes of the heat. Is it absorbed by the water, or reflected or radiated back to the centre? Another vital point in the experiment is the time the water or red-hot ball takes to cool in the different media. To complete the chain of reasoning, a thermometer was as needful in the centre as at the extremities of the tube or apartment in which the experiments were conducted. If the ball or water absolutely cooled fastest in the dry air, then I have erred; if not, then, notwithstanding all that may or may not be proved about radiation, I am right in my main conclusions. This cooling body represents the plant in the conditions under discussion, and the practical question is narrowed to this—does that body cool by any means faster in a dry atmosphere than a moist one? I humbly submit that possibly "J. S. Secundus" misapprehends the nature of Mr. Thompson's dread of clear frosty nights, and the dry air in the spring. I have a strong impression that he dreaded the latter by day and the former by night. I have shown at the page already quoted why clear nights are so cold. Clear air is a bad radiator as far as returning heat is concerned, and the currents of heated air become upward

ones. Hence the earth is rapidly cooled and tender vegetation frosted. But this frost is less severe—at least it does less mischief, when the air is dry than when it is moist. Such is the life-long experience of every gardener. On the other hand, under the growing power of a strengthening sun in the spring, tender blossoms, leaves and shoots may occasionally be injured by an excess of drought, especially on south walls or on dry southern aspects. It was this, I believe, that Mr. Thompson dreaded, and not dry frosty nights. Few things can put a greater strain on the energies of vegetable life than the extremes of heat and cold following each other in such rapid succession. The heat of the sun will occasionally wither up, as with a breath of fire, the delicate organs of fructification, and blast into utter barrenness the most promising prospect of fruitfulness. But it is the two extremes—the one by day and the other by night, and not the cold air and the dryness together at night, that are dreaded by practical men. *D. T. Fish, Dec.* 10.

Sports.—Since last wrote to you I have had several more very curious sports from my Pelargoniums. One of the seedlings which showed no signs of sporting all through the summer threw out two distinct sports in the autumn. One is a beautiful golden tricolor, the other is a silver tricolor. These sports appeared one on each side of the stem, just above the position of the cotyledon, and between them there were several green branches. There are now three gold tricolor sports on the plant, and one silver tricolor. The female parent of this seedling was a green kind, with a very dark zone; the male parent was a variety known by the name of Queen's Favourite. The silver sport is very much like Queen's Favourite, but what has caused the plant to produce a golden tricolor? I shall carefully preserve this plant, and will exhibit it at one of the Scientific Tuesday Meetings in the spring if I am spared. I am still of opinion that variegated forms cannot be produced with any degree of certainty by seed from variegated plants. Since writing my paper on the sporting of plants I have tried some thousands, on which I have bestowed every possible attention, and I have not succeeded in saving any seedlings which came up pure Albinos. I have found it impossible to perpetuate any that have not more than three parts of chlorophyll in the cotyledon. *J. Wills, Huntroyde, Burnley.*

Flowering of Knight's Dunmore Pear.—Among several very fine healthy young standard Pear trees growing in the gardens here, is a plant of the Dunmore, every flower bud on which is now bursting into full bloom. The tree is in most robust health, and has for several years past borne excellent crops of fruit. This season the crop was an average one, and the fruit was therefore larger than usual. I have generally gathered the crop towards the end of September; it being an early Pear the equinoctial gales blow it down, if not gathered before they set in. This season, owing to the absence of any strong winds, the crop was not gathered until the beginning of October; since then nothing has been done to the tree. A few days ago my foreman drew my attention to it, and on examining it I found some of the flower buds in full bloom, and all the others all over the tree bursting into blossom. I do not remember having ever seen anything like it before; I have oftentimes seen blossom buds on a few spurs burst into bloom at this season, both on Pear and Apple trees, as well as on trees of other kinds, but I never saw all the flower buds on a tree bursting into bloom at this season before. I cannot account for it. Not a single blossom bud on any of the other trees shows the slightest indication of breaking. Of course the crop for next year is gone. Can any of your pomological correspondents throw any light on the subject? *M. Saul, Stanetun, Yorkshire.*

Planting Churchyards.—There is an objection to planting many trees in churchyards, especially if the space is limited. Families like their dead to lie together. In order to gratify this natural desire, in due time it would be necessary to cut into the roots of the trees. The same objection does not so much affect cemeteries, which are larger, and more convenient for large trees with wide-spreading roots. As the churchyard mentioned at page 1162 is to be closed, of course the objection just alluded to does not apply to it. I beg to recommend for such places Cypress, Deodars, Irish Yew, Chinese Arbor-vitæ, Cedar of Lebanon, Weeping Ash, Weeping Willows, and variegated Hollies; and if trees which shed leaves are not objected to, Red Beech. For blinding unsightly walls, I would recommend Irish Ivy, and a still handsomer Ivy with broad and large polished leaves, called Hedera Rægneriana. I gave this latter to my friend the late Mr. Sturt, to ornament an unsightly building at Critchill. Cotoneaster, when in berry, is also good for the purpose, and highly ornamental. The stoneless Barberry, so valuable for preserving, is likewise a very ornamental tree. I have a fine tree of it here, and also a beautiful funereal Deodar. I am likewise in favour of Roses, of which the following are strong growers and abundant bloomers, viz.:—*White:* Acidalie. *Yellow:* Gloire de Dijon, Triomphe de Rennes, and Céline Forestier. *Rose colour:* Anna Alexieff, Baronne Prevost, Souvenir de la Reine d'Angleterre, John Hopper, and Madame Clemence Joigneaux. *Salmon-rose:* W. Griffiths. *Silvery rose:* Cecile Chabrillan. *Dark crimson:* Charles Lefebvre, Duc de Cazes, and Vicomte Vigier. *Very dark crimson:* Prince Camille de Rohan and Empereur de Maroc. *Vermilion-red:* Duc de Rohan, and Maurice Bernardin. *Scarlet-crimson:* Senateur Vaisse. *Clear red:* Madame Louise Carique. *Purple-crimson:* Triomphe de Paris. *Blush:* Souvenir de la Malmaison. These are beautiful and very hardy. It is of no use to plant less hardy and less vigorous growers in exposed churchyards. They should be on the Manetti Stock. Briar Roses are unsightly objects. *W. F. Radclyffe, Okeford Fitzpaine.*

Gardeners' Benevolent Institution.—As I am a subscriber to this Institution, I should be glad to see it in a more flourishing condition, but I fear this cannot be, unless Rule 6 is so revised that it may be clearly understood that every gardener, conforming with the rules, should, after subscribing 15 years, make himself secure in the event of his requiring the pension, provided he was upwards of 60 years of age. I have been a subscriber for nearly 20 years, and have many times solicited my brother gardeners to become subscribing members; but their reply has been that they would do no such thing, so long as the rules remained as they were, for non-subscribers were allowed equal privileges with the subscribers. On that point I quite agree. I consider the rule in question is unjust, and there are many members of the same opinion. I am well aware that some would say that to alter the rule I have mentioned would be making it too much like a benefit institution. I would just ask them what else it ought to be? Surely the voice of so many members ought to have some bearing on a point that requires reforming. *D. T.* [Our correspondent may be reminded, that a majority of members can alter any rules from which they dissent at a general meeting, if the proper forms are observed. But as bearing on on "D. T.'s" view of the case, it may be observed, that a large proportion of the funds have been subscribed by patrons who do not object to the present constitution of the Institution. "D. T." must be aware that candidates who have been subscribers for 15 years now come on the pension list without election unless they are more in number than the number of vacancies, when of course an election is inevitable; but if all "D. T.'s" friends and gardeners generally subscribed, the number of pensioners might probably be so far increased that the trouble of an election would seldom be necessary. —ED.S.]

Classification of Pelargoniums.—Though several letters have of late appeared in your columns on this subject, as yet no definite understanding has been arrived at. Perhaps you will therefore kindly allow me to submit the following system of classification for approval or otherwise. I propose to divide the cultivated varieties of this genus into 12 classes or sections. The varieties comprising the first five classes are adapted for pot culture only; while the remaining classes comprise the most useful of our bedding plants, and most of them are also very useful as pot plants, &c. The proposed classification is as follows:—

1. Cape species of Pelargoniums.
2. Scented Pelargoniums.
3. Show Pelargoniums.
4. Spotted or French Pelargoniums.
5. Fancy Pelargoniums.
6. Hybrid Perpetual Pelargoniums.
7. Round-leaved Pelargoniums.
8. Nosegay Pelargoniums.
9. Yellow or Gold-leaved Pelargoniums.
10. Golden-variegated Pelargoniums. Ignoium.
11. Silver variegated Pelargoniums.
12. Ivy-leaved Pelargoniums.

The 1st class would comprise species such as ardens, semperflorum, echinatum, abrotanifolium, &c.; the 2d, such varieties as capitatum, citriodorum, Lady Scarborough, &c.; the 3d, would include those known as show varieties; the 4th, spotted or French varieties, distinguished from the show sorts by the spots on the lower petals; the 5th, the sorts known as Fancy varieties; the 6th, varieties adapted for bedding out, including such as Diadematum, Rollisson's Unique, Shrubland Pet, &c.; the 7th would include all varieties hitherto known as scarlets, zonals, &c., such as Tom Thumb, Christine, Madame Vaucher, Adonis, Clipper, &c.; the 8th, distinguished only from the 7th by the form of the flowers or petals, would contain such varieties as Stella, Cybister, Amy Hogg, Le Grand, Indian Yellow, &c.; the 9th, a new and very distinct class, would comprise varieties with and without zones, such as Golden Fleece, General Longstreet, Beauty of Oulton, Mrs. Milford, &c.; the 10th would include all the yellow or golden-variegated varieties, irrespective of zones, such as Golden Chain, Mrs. Pollock, Sophia Dumaresq, Sunset, Lady Cullum, &c.; the 11th would include all white or silver-margined or variegated varieties, with or without zones, such as Flower of the Day, Italia Unita, &c.; and the 12th would comprise all the Ivy-leaved varieties, with plain or variegated foliage, such as the common White, the Crimson, peltatum elegans, &c. Your intelligent correspondent, Mr. Groom, has intimated the probability of being able ere long to reverse the arrangement of the markings in the foliage of such varieties as Mrs. Pollock, Sunset, &c., and certainly leaves similar to the two I enclose quite justify him in arriving at this conclusion. *P. Grieve.*

Veronicas, hardy.—Can you recommend to me any shrubby species of this genus likely to prove hardy for planting on graves in a churchyard about midway between Norwich and Ipswich, and within 25 miles of the eastern coast? V. Andersoni, Lindleyana, salicifolia, speciosa, and others are, I observe, included in nurserymen's catalogues of greenhouse plants. Does V. Hulkeana (*Gardeners' Chronicle*, 1864, p. 1206 c.) fulfil the hopes of its hardiness, which were then and there expressed? *P. P.* [We fear the shrubby Veronicas can only be considered as hardy in mild winters and in favourable situations, and then several of them stand without suffering material injury. We have no experience of their behaviour in the eastern counties, but V. Andersoni does well by the sea in Kent.—ED.S.]

Foreign Correspondence.

PALACE GARDENS, GAZEEREH, CAIRO, EGYPT, *July* 28, 1866.—*Tropical Fruits.*—I have just finished gathering a fine crop of the Eugenia Jambos or Rose Apple. The plant partakes more of the character of a shrub than that of a tree, being very full of branches, which have a weeping appearance. The leaves are of a long narrow lanceolate shape; the flowers are of a greenish yellow colour, and are formed like those of the common Myrtle, but are much larger, and very sweet-scented. They are produced in terminal bunches, which are succeeded by fruit about the size of a hen's egg, the white fleshy rind of which is very agreeable to eat, and partakes strongly of the odour of Roses. The shape is oblong, round with a crowned calyx, like the Pomegranate, and a large internal cavity containing generally one, and sometimes two seeds; the eatable portion is only a shell, as the flesh is seldom more than a quarter of an inch in thickness. This Eugenia is a native of the East Indies; it grows well here. It is propagated by layers, or by means of seeds and it will succeed well in any good garden loam.

I may add that the white Guava (Psidium pyriferum), which is a native of the West Indies, also succeeds well in this country, as does likewise P. Cattleyanum, and other varieties. P. pyriferum produces fine large fruit of a greenish-yellow colour in abundance; its pulp has a sweet aromatic flavour. This is a most delicious fruit, either for dessert or for preserving. The tree generally attains a height of from 10 to 12 feet. The wood is very hard and strong; the leaves grow in pairs opposite each other; they are of a lanceolate form, and measure about from 4 to 5 inches in length. The flowers are like those of the Myrtle, to which family the Guava belongs, and they are very sweet-scented. P. Cattleyanum often produces two crops in the year; but I need not say much about its cultivation, as this Guava is so well known at home, or, at least, ought to be, as both it and the white Guava are well worthy of a place in every collection where there is accommodation for growing tropical fruit. They grow well in good loam, and are easily propagated from cuttings or by means of seeds. *James Hardie.*

Societies.

LINNEAN: *December* 6.—G. Bentham, Esq., President, in the chair. H. Bickle, Esq., G. T. Skinner, Esq., J. Gault Veitch, Esq., and H. J. Veitch, Esq., were elected Fellows. The following papers were read:—1. *On Botanical Notes of Gardens*, by Sir John Lubbock, Bart. 2. *On the Relations of the Hymenoptera*, by Thomas Edward, Esq. A report of the Transactions of the Society was placed on the table for distribution.

ENTOMOLOGICAL: *November* 19.—Sir John Lubbock, F.R.S., President, in the chair. Professor Westwood exhibited the pupa case of Thecla Betulæ, reared by Herr Dembski near Oxford, remarkable for being destitute of a girth round the middle of the body, being attached only by the tail. likewise several new and rare Brazilian species of Papilio from the Bowdichian Collection, presented to the University Museum of Oxford. Mr. Jenner Weir exhibited a portion of the nest of an exotic species of ant, with a paper like lining. Mr. Gregson sent for exhibition several varieties of Pieris Napi, sinapis, Cardamines, &c., also a new species of Galleria. Mr. Stainton exhibited living specimens of Stathmopoda Guerinii, a remarkable minute moth; also Atkinsonia Clerodendronella. Mr. Crotch exhibited no less than 60 species of minute Coleoptera, new to the British lists; some of these had however been hitherto confounded with other well-known species. Dr. Knaggs sent for exhibition several new and rare British moths. Mr. Stevens exhibited a pair of the fine Eucheiria Dupontianus from the Philippine Islands. Mr. Hewitson sent a note on the diversity of the structure of the tibiæ and tarsi of the wings of the Australian species of Pieridæ (P. Thestylis, Autothisbe, &c.), for which it would be necessary to form a separate genus; also some masses of eggs attached to Ling. Mr. Jenson exhibited Macrocyclus tuberculatus, a genus new to Britain, taken by Mr. Barris, near Bristol. Professor Westwood exhibited a remarkable monstrous specimen of Pieris Pyrrha, in Mr. Hewitson's collection, three of the wings of which resembled those of an ordinary white Pieris, whilst the fourth wing was coloured like those of the Heliconidæ. He took occasion to comment on the structure and supposed origin of such anomalies, considering them as exaggerated instances of those analogies, which occur throughout nature, dissenting from Mr. Bates' views as laid down in the Transactions of the Linnean Society. These were on the other hand upheld by Mr. Wallace, who exhibited a very extensive series of specimens of Eastern butterflies, of the genus Diadema, in which the sexes varied, the females resembling various species of the genus Euploea. Mr. Bates also maintained the views which he had laid down, and supported them by the instance of Papilio Zoroastor, of which he stated that he had collected two forms of the female, each of which mimicked the group of Papilio most dominant in the district where each variety occurred. Dr. Sharp opposed these views, and suggested several grounds to which the development of these mimetic species was to be attributed. Mr. M'Lachlan observed that the veining of the wings in the Psocidæ was very inconsistent, whence he was led to infer that the various species had descended from one antecedent type.

NOTTINGHAM AND MIDLAND COUNTIES HORTICULTURAL: There is perhaps no town in the kingdom which exhibits the same love for horticulture as that of Nottingham. Around it are innumerable gardens, of all sizes and shapes, with glass houses, frames, and pits to a frequent; the weary artisan delighting as much in his tiny conservatory as a lord does, multiplied by 20—as the cheerful countenance in his cottage window testifies to his greenhouse. There are excellent nurseries close at hand, and skilled workers in glass, and iron, and wood. The material for an exhibitor is there in abundance, as was shown at the third fete which was held in honour of the British Association; and the Nottingham Horticultural and Botanical Society have thrown displays of scientific culture which have latterly become less frequent. To Mr. Lowe, of the Observatory, Beeston, the gratitude of all interested in ornamental trees, and beautiful ferns and flowers, and fruits, is due for the extensive and interesting Exhibition in August, which was again (Mr. W. P. Ayres, a well known horticulturist, for the successful Show in the Exhibition building, which commenced on the 22nd ult. Successful, so far as the season permitted, it must certainly was, and if as much as the dense fogs of early November, we had not well look forward with bright hopes to the second Show, which is announced to take place next July.

The centre of the large building was occupied by some good specimens of shrubs and trees, among which were a beautiful Weeping Holly and silver-variegated Yew, large plants of Pampas Grass, and a Weeping variety of the Cupressus Lawsoniana. These were sent by Messrs. Frettingham & Son, from their nurseries at Stapleford. The Messrs. Edwards, of Nuttall, sent an interesting collection of hardy Ferns. The varied and glowing colours of the Chrysanthemums contrasted most effectively with this, foliage and fronds being placed very tastefully in juxtaposition. Mr. Needham, of the Nottingham Arboretum, was the hero of the day, with fine handsome plants of this winter favourite; and in cut flowers the first prize was awarded to T. Hibbs, Esq., of Bristol. Mr.

Gadd, gardener to Lord Middleton, contributed a good collection of leaves and membrane plants. The fruit was excellent, and could hardly have been surpassed. Mr. W. Ingram, of Belvoir, sending perfect collections of Pears and Apples; and Messrs. Veitch & Sons, which in admirable order by Mr. Gadd, Mr. Dobson, gardener to J. S. Gregory, Esq., Mr. Mitchell, gardener to T. Cross, Esq., Mr. Needham, Mr. Edwards, and others.

Owing to the short notice given, the show of agricultural produce was a limited one, but a very choice collection of cereals was sent in by Messrs. Brown & Son, of Holme New Hall; and Mr. Robinson's prodigious Drumhead or Ox Cabbage, together with a selection of Roots contributed by the Nottingham Mills Company, and some gigantic Turnips from Linby, were objects of great interest.

An excellent band was in attendance.

Notices of Books.

De Genere Saxifraga, L. By Adolph Engler. (*The Genus Saxifraga, &c.*) Halle, 1866. 8vo, pp. 66.

For certain purposes cultivators are almost compelled to have recourse to the genus Saxifraga, and the consequence is that there is scarcely a little patch of ground anywhere in the island devoted to the growth of flowers in which one or more of the species is not to be seen. But when it comes to a question of naming the plants, it is very seldom that a name is to be had, and when one is forthcoming, it is often very wide of the mark. The pamphlet, the title of which we have just given, is the production of a young German, a pupil of two well-known botanical professors, Goeppert and Koerber, and a student at the University of Halle. Upon taking his degree a student is called upon to defend verbally certain theses, and to furnish a written dissertation upon some subject falling within the sphere of his studies. With his theses Herr Engler has taken care to be tolerably safe; and we will not on the present occasion attempt to meddle with them. For the subject of his essay he has chosen the genus Saxifraga. In the first place he gives an outline of its history, beginning with Theophrastus and Dioscorides, criticising briefly the various works in which it has been treated, or in which species have been described, down to Haworth and Sternberg. The number of European species which he admits is 98, which are divided out into sections as follows:—

1	Stems with leafy shoots	2
	Stems without leafy shoots	10
2	Leaves furnished with crustaceous pores at the edge	3
	Leaves without crustaceous pores	7
3	Leaves opposite	4 Cotyledon, Gaud.
	Leaves alternate	4
4	Leaves flat, strap-shaped	5
	Leaves not flat, terete or angular	6
5	Leaves obtuse, edge toothed	2 Cotyledon, Gaud.
	Leaves acuminate, edge entire	3 Kabschia, Engl.
6	Leaves opposite	4 Porophyllum, Gaud.
	Leaves not in pairs	5 Trichophyllum, Gaud.
7	Ovary adhering to the calyx	6 Dactyloides, Tausch.
	Ovary not adhering to the calyx	8
8	Filaments wedge-shaped	9
	Filaments linear	7 Hirculus.
9	Hairs of the leaves not articulated, filiform	8 Arabidia.
	Hairs of the leaves articulated, club-shaped	9 Hydatica.
10	Stem leafy	11 Micranthes.
	Stem leafless	13
11	Ovary adhering to the calyx	12
	Ovary not adhering to the calyx	14
12	Annual	11 Nephrophyllum.
	Perennial	12 Ligularia.
13	Perennial	13 Micropetalum.
	Annual	14 Cymbalaria.

Running over these rapidly, and selecting the indigenous or commonly cultivated species, Section 1 is represented by oppositifolia; 2, by Cotyledon and Aizoon; 4, by cæsia; 7, by stellaris; 8, by umbrosa and Geum; 9, by Hirculus and aizoides; 10, by granulata and tridactylites; 11, by cernua and rivularis; 12, by rotundifolia; 13, by hederacea and Cymbalaria; 14, by nivalis; and the others, except 6 only, by little-known species. Section 6 is the hypnoides group, to which nearly all the species commonly used for rockwork belong.

As the pamphlet is not published, and this is the first time, so far as we are aware, that the group has been treated in this way, we will quote in preference to any further remarks of our own, the author's analysis of this section, trusting, as we part from him, what indeed we do not doubt, that he won the doctorial honours that we are sure the treatise shows he deserves.

DACTYLOIDES GROUP.

1	Petals with claw	2
	Petals not clawed	4
2	Root shoddy, limb of leaf oblong, the base cuneate	pedemontana, All.
	Shrubby; limb of leaf ovate or suborbicular	3
3	Petiole many-nerved	pedatifida, Sm.
	Petiole one-nerved, woolly	geranioides, L.
4	Root shoddy	5
	Shoots not shoddy	7
5	Leaves distinctly nerved; sepals obtuse, nerveless, Lap.	
	Leaves not nerved; sepals subacute	6
6	Limb ovate, the base cuneate, lobes lanceolate	Cymbalaria, Gaud.
	Limb fan-shaped, lobes linear	pentadactylis, Lap.
7	Leaves ciliate	8
	Leaves not ciliate	27
8	Shoot-leaves, lanceolate	9
	Shoot-leaves, fan-shaped, lobes linear	13
9	Leaves of the buds involute, keeled	hypnoides, L.
	Leaves of the buds obovate, not keeled	10
10	Sepals acuminate	geminulosa, Boiss.
	Sepals obtuse	11
11	Buds confined to the radical leaves	Hostii, Tausch.
	Buds not confined to the radical leaves	12
12	Radical leaves short-stalked	Reuteriana, Boiss.
	Radical leaves long-stalked	globulifera, Boiss.
13	Sepals obtuse	14
	Sepals acuminate	23
14	Lobes of the leaves obtuse	15
	Lobes of the leaves acuminate	21
15	Leaves distinctly nerved	16
	Leaves not distinctly nerved	18
16	Petals more than twice as long as the calyx	17
	Petals twice as long as calyx	exarata, Vill.
17	Whole plant pubescent	pubescens, Pourr.
	Whole plant glabrous	intricata, Lap.
18	Calyx not pubescent	19
	Calyx pubescent	adscendens, Don.
19	Leaves dark green, deeply toothed	Irsana, Schultz.
	Leaves pale green, trifid at the apex	20
20	Petals longer than the calyx	muscoides, Wulf.
	Petals shorter than the calyx	crocea, Gaud.
21	Stem ascending, thick multifid	aquatica, Lap.
	Stem procumbent, slender	22
22	Leaves long-stalked	aquifolia, L.
	Leaves sessile	Jardiniana, W. & K.
23	Lobes of the leaves obtuse	24
	Lobes of the leaves acuminate	25
24	Leaves 3-partite, plant glabrous	caespitosa, L.
	Leaves bifurcate, plant hispid	biternata, Boiss.
25	Leaves indistinctly nerved	26
	Leaves distinctly nerved	Camposii, Boiss.
	Leaves 3 or 5 parted	decipiens, Ehrh.
26	Leaves trifurcate, the lobes again trifurcate	trifurcata, Schrad.
27	Sepals obtuse	28
	Sepals acuminate	31
28	Stem naked, leaves linear	29
	Stem leafy, leaves spathulate	30
29	Petals equalling calyx	planifolia, Lap.
	Petals twice as long as calyx	Facchini, Koch
30	Petals twice as long as calyx	androsacea, L.
	Petals equalling calyx	Seguieri, Spreng.
31	Petals acuminate	aphylla, Sternb.
	Petals obtuse	32
32	Stem naked	sedoides, L.
	Stem leafy	Hohenwarthii, Sternb.

Floral Loto.—As holiday time is approaching, we may mention that Mr. Jacques, of Hatton Garden, has brought out a new round game called *Floral Loto*, designed to familiarise children and young persons with popular flowers, of which some 120 sorts are elegantly printed in colours, while the common name, the Latin name, and the sentiment connected with each flower are given. It forms an amusing and instructive game, especially interesting to juvenile gardeners.

BOOKS RECEIVED.—As signs of the season we have to mention the publication of various Almanacks, some of general interest like the *British Almanack* (Knight & Co.); others of more special interest to horticulturists, such as the *Gardeners' Year Book for* 1867, by Robert Hogg, LL.D. (Office of the Journal of Horticulture), which will be found very serviceable as a handy book of reference on general business matters, as well as on more strictly horticultural subjects. A companion volume, comprising an extended "directory," is announced for publication early in the spring.——*Glenny's Garden Almanac* (Lemaire) is heralded by an introduction as well as by a preface. In these, as well as in some of the articles that follow, the author gives a few autobiographical details which are less likely to be appreciated than are the useful practical hints that succeed them. —— In a volume entitled *The Elements* (Longmans), Mr. W. L. Jordan sets himself the task of investigating the nature and action of the forces which determine the position and movements of the ocean and atmosphere. The first sentence in the Preface will suffice to show what the author's theory is. "The theory of 'Counter-attraction' does not supplant the Newtonian theory of centripetal and centrifugal forces, but simply defines the nature of the latter force; maintaining that the former is attraction proceeding from solar gravitation, and the latter attraction proceeding from astral gravitation." The work is illustrated with numerous maps and diagrams. —— *A Hunter's Experience in the Southern States of America.* By Captain Flack. (Longmans.) This is a very pleasantly-written account of life under the greenwood tree, not, indeed, as depicted on the stage, or described by the ballad-singer, but of actual experience in Texas. The descriptions of the various birds, beasts, and fishes, and of their manners and customs, show the author to be a keen observer. Without disparaging his powers as a naturalist we could have wished him to have been something less of a sportsman. Our interest in the various habits of the various creatures, so graphically described, is too often shocked by the records of merciless slaughter. Still the book is fresh and genuine, and so interesting in its details that we cordially recommend it to the perusal of naturalists.——*The New Testament History*, edited by Dr. William Smith (Murray), needs only to be mentioned, the well-earned reputation of the editor rendering detailed notice of this volume unnecessary.——*Benedicite*, by G. Chaplin Child, M.D. 2 vols, small 8vo. (Murray.) Dr. Child has here taken the separate verses of this well-known hymn as so many texts for a popular account of the marvels of creation. Written in a reverential spirit, these volumes contain an excellent account in simple language of the main facts in astronomy, and of certain leading phenomena in physics and natural history. Though written in a "popular" style, the book is for its scope very trustworthy. We can conscientiously recommend it to the notice of our readers as well suited to foster a taste for natural history, and to inspire feelings of awe and gratitude towards the Author of creation. We should have been glad if some slight evidences of sectarianism which manifest themselves here and there had been suppressed—not that they are in themselves offensive, but they are somewhat out of place in a work of natural theology, and may prejudice some against a really excellent work.——As an introduction to the study of the microscopic anatomy of animal tissues, Mr. Brown's edition of Dr. George Harley's *Histological Demonstrations* (Longmans) may be recommended. It purports to contain the substance of some lectures delivered at University College, London, and gives concisely an account of the manner of using the microscope, and of preparing objects for examination. It is abundantly illustrated, and will serve well as an introduction to more complete treatises.——We have also to announce a revised and enlarged edition (the fourth) of *Mr Darwin's Origin of Species* (Murray), which now comprises an historical introduction to the whole subject, a classified list of the principal additions, some of great importance, that have been made to this edition. Full justice is done to Mr. P. Matthew, who in 1831, and in our own columns in 1860, put forth views very similar to those of Mr. Darwin.

Florists' Flowers.

PELARGONIUMS FLOWERING IN WINTER.—Considerable interest attached to two stands of trusses of Pelargoniums, from Mr. Wm. Paul, of Waltham Cross, shown at the last meeting of the Floral Committee. I should imagine they were shown for the purpose of demonstrating that this class of Pelargoniums can be had in bloom during the winter months, and certainly for winter decoration nothing can be more charming and attractive than plants having plenty of such trusses of bloom as those referred to. At this season of the year, when there is a dearth of "flowering stuff," as the nurserymen term it, there is no reason why Pelargoniums of this character should not be had in flower in the greenhouse and conservatory, as well as stowed away in pits merely for stock plants. I don't know what Mr. Paul's method may be with his plants, but some growers are in favour of a change of pots in August, only just parting off the outside of the ball, and not shifting into a larger sized pot, as that would encourage too much growth, but merely adding a slight stimulus, as it were, in the shape of some fresh soil.

There was a delightful freshness of colour noticeable about the flowers produced, though some were a little changed in character from being bloomed within doors. Thus, in the case of Dr. Hogg, it was difficult to discover the darker shade of colour over Amy Hogg claimed for it, but judging, partially at least, from what I saw at Waltham Cross, the new variety requires exposure to the open air to touch up into more appreciable effectiveness the deeper shade of purplish rosy pink it undoubtedly possesses. The petals are broader and a little larger than in Amy Hogg, and the trusses are larger and more showy. Ossian, with its pale "Cloth of Gold" leaves, and rich crimson scarlet flowers, slightly suffused with violet, would be specially attractive in a conservatory row. Beauty of Waltham was remarkably fine; the large trusses of flower, of a kind of magenta crimson, of a very pleasing shade, formed one of the most conspicuous objects in the stands; and this, with Crimson Queen, one of the deepest shades of crimson to be found in the Nosegay section, the flowers large but somewhat loose, and yet more than compensated for by the profusion in which they are produced in the truss, are worthy companions of the preceding. Tiara, rich magenta crimson, suffused with purple, was very fine; the colour—one of the most striking shades of crimson yet produced—wanted the density it attains out of doors; and the trusses are not so large as lighter shades of this colour, but they are freely produced. Minstrel has a very novel shade of salmon crimson; the colour is a little dull, but the petals are broad and of a good substance, and the trusses large.

Of scarlet shades of colour there were Sir Joseph Paxton, having more of salmon than orange, but very showy; Cardinal, which has apparently as little of the Nosegay about it as any, flower very bright; Nimrod, a beautiful shade of soft orange scarlet, the flowers being of good form; Pillar of Beauty, scarlet, pencilled with crimson in the centre of the flowers, there being also a just perceptible shade of purple about the petals. I hardly like Mr. Paul's designation of "brick red" when describing the colour of this flower, but he may be justified in the use of the term from his experience of it out of doors. Other shades of scarlet were represented by Dr. Lindley, soft salmon scarlet, flowers large, and trusses very showy; and Fulgens, bearing a great resemblance to Cardinal, but with more fire in it. Fulgens has foliage distinctly zonate; Cardinal has plain leaves. Salmon Nosegay has a looseness and irregularity about the truss, that in the case of cut blooms somewhat mars its effectiveness; it has, however, a novel shade of colour, and there is a good deal of purple distributed about its petals. Prince of Orange is of a very rich shade of orange scarlet, having one of those striking hues a florist would denominate "telling;" the flowers are of good form, and the trusses fine.

Of Lilac shades, there were Monte Rosa, bright rosy lilac, medium-sized flowers, good truss; and Peach Blossom, rosy violet, the lower petals white at the base—the colour appears to pale with age, but yet has at any time a nice freshness appertaining to it. Amy Hogg and Dr. Hogg have been already referred to.

Madame Vaucher, White Perfection, and Bride represented the white flowers; the first-named has larger flowers than White Perfection, but lacks its purity of colour. The flowers of Bride are pure white, but have the centre prettily pencilled with carmine.

The foregoing sorts are mostly, though not exclusively, of Beaton's race. It may also be remarked that at this season the blue hues in those colours which possess them come out more distinctly than in bright summer weather. After what was seen on this occasion there can be no doubt but that this class of Pelargoniums will be brought largely into use for winter decoration, the proofs of their fitness having been so unmistakably demonstrated. *R. D.*

[In the garden at Chiswick a house is still gay with a collection of these flowers.]

Gladioli for Winter Bloom.—By planting at different periods, we obtain a succession of these in bloom all the summer months. The first lot is potted in February, and turned out: planting is then continued at intervals up to July. These latter are in bloom now, in December,

My object in writing this is to call the attention of gardeners who have much winter decoration, to the merits of this flower for such a purpose. It will be found that the bulbs planted in July will have thrown up spikes, about to open into bloom, near the time we generally expect frost. If they are carefully lifted, and as many of them introduced into a thirteen-inch pot as it will contain, they will take very little harm by the operation, particularly if placed in a cold Peach house or pit, and well watered over head. Every spike will open; and the effect of these in a conservatory, among Chrysanthemums, &c., or in rooms, has only to be seen to be appreciated. Bowiensis is much the best for purposes of this sort. I also find it superior to Brenchleyensis in throwing up a succession of bloom and producing many more flowers to each spike. In our soil, moreover, there is little difference in these colour. I should be inclined to consider that a little pruning of the lists of this flower would be useful. Among a collection of 200 different varieties of the Gandavensis breed, I find many only different in name—some not worth growing, and several of the new ones not so good as many of the older varieties. *Bowiensis.*

The Apiary.

THE EGYPTIAN BEE (*continued from p.* 1169).—The mischance alluded to in my last chapter, as having given Mr. Woodbury the first insight into the true character and disposition of the African strangers, was a regicidal attack made by the bees of one of the artificial swarms on their queen, which ended in her being cast out dead. As Egyptian drones had made their appearance, this occurrence was in itself a small matter in the eyes of so experienced a bee-master, and he at once proceeded to adopt measure for compelling the bees to raise a pure-bred queen. The victim to the attack of her subjects was only a hybridised queen, and as she had left brood in all stages of development behind her, it was necessary to exchange these broodcombs for others from the original stock. This, however, which is usually a very simple proceeding, when carried out with Italian or common bees, proved with these little Egyptian furies to be a very formidable business. They poured out upon the operator with desperate malignity, searching out every weak place in his armour, and persistently followed up their attacks even into the house. After the exchange had been effected, it was thought that the bees would become quiet and peaceable, and quickly forget this little interruption of their equanimity. But no! "these indomitable little Amazons would have no truce, but attacked and stung all and sundry that ventured into the garden, until I became convinced that it was in vain to indulge further a hope for peace, and was ultimately compelled to banish them to a secluded position a mile and a half distant. The remarkable display of spirit on the part of my recent acquisition caused me to pause in the attempt to propagate Apis fasciata; but it required much more than this to force me to the course which I was afterwards compelled to adopt."

Mr. Woodbury having ceased to propagate these bees, and having parted with a few stocks to some of his friends, who were desirous of possessing the variety, and were willing to brave all risks, found the Egyptian element in his apiary to be considerably diminished; nevertheless the few hives that remained possessed quite a sufficient army of warriors eager to do battle on the slightest possible provocation. "At length the unwelcome conviction slowly, but surely, forced itself upon me, that Egyptian bees were wholly unsuited for experimental purposes when kept in a garden adjoining a public and well-frequented throughfare. So long as they were not meddled with, they were peaceable enough; but let but a crown-board be removed, and every bee that could fly was instantly on the wing to resent the invasion, leaving the hive and combs in the occupation only of the queen and such juveniles as had never taken wing. How they searched out and penetrated every weak point in the bee-armour—how they crept under the sleeves, and crawled up the trousers, it boots not here to relate; suffice it to say, that if they had confined their attentions to the actual aggressor all might have been forgiven, but such, unfortunately, was not the case." The slightest operation upon an Egyptian stock provoked the bees to such a degree of exasperation, that no one within a considerable radius was safe from their onslaught. A great number of the passers-by in the adjoining public road were attacked and stung; dogs and children were put to mortal terror and pain; and "a large school of young ladies was not only frightened from its propriety, but put to the most utter and ignominious rout." This state of things could not be permitted to go on, and Mr. Woodbury determined, at any sacrifice, to "stamp out" the Egyptian element of discord, to the very great delight of the members of his own household, who had for a long time been almost totally debarred from the pleasures of their garden. Mr. Woodbury concludes his graphic account of these bees, and of their introduction into this country, and of their subsequent career while in his possession, by stating how he disposed of them. "After transforming some, by an exchange of queens, I had yet five remaining, which I disposed of in the following manner:—three were exchanged for common stocks with my friend Mr. S. Bevan Fox; one I presented to Mr. George Fox, of Kingsbridge; and the last, which was a nucleus without a queen, I fairly stifled and buried, thanking Heaven, as I trod the earth over the grave, that I was at length happily quit of the Egyptian Bee."

This, therefore, was the way in which I became the proprietor of some of the discarded beauties. In the case of two out of the three swarms I drove all the bees out from two of my stocks, giving the bees only for the small artificial swarms. These were transferred to the vacated combs, and, helped on by the brood, have become tolerably populous colonies. The third being a fully established stock in a 10-frame hive, was received as it stood, and a somewhat similar colony was given in exchange, it being, however, necessary to adapt the bars and combs to my frames, which differ in dimensions from those of the Woodbury. Of my subsequent experience with these bees, and of how I have fared with them, as well as how they have fared with me, I must leave for a future chapter. *S. Bevan Fox.*

(*To be continued.*)

A Cat catching Bees.—I was much amused to-day (Dec. 11) with the vagaries of a cat among my bee-hives. In front of a capacious shed in which several hives are located, there is an alighting board for the bees, running the entire length. On this the cat careered to and fro, and having first eaten the few bees that were lying out dead, commenced darting its paws into the entrance of the hives. The bees came out to see, and if necessary, to punish the cause of this unwelcome disturbance, but Pussy quickly pounced upon these vigilant pickets, and apparently caught and ate several of them; not, however, without receiving a slight sting from one of the luckless victims, as she shook her head, looking considerably astonished. But even this only seemed to restrain her for a short time, as she quickly returned to the assault. How long this little game might have continued, I cannot say, but I thought it quite time to endeavour to put a stop to the murderous propensities of this feline bee-eater. *S. Bevan Fox.*

Disposal of Honey Harvest.—In reply to "A Cottager," we may state that we are always ready and pleased to assist any inquirers who may desire information on any points connected with the details of bee-management. Messrs. Neighbour, of Regent Street, London, and other firms, are in the habit of purchasing honey-comb of first-rate quality; but it must be unbroken and sent in the boxes or caps in which it was deposited. We do not think that the small quantity named by you, 12 lb., would make it worth the expense and trouble of transit. It will be better for you to dispose of it, even at a very moderate price, in your own neighbourhood. When you have a larger supply and early in the season, write to this firm, and you may possibly find them ready to purchase. Is there any small shop in your vicinity, or in an adjoining town, in which, either with or without a commission to the shopkeeper, you could put your honey for sale?

Garden Memoranda.

METHVEN CASTLE, PERTHSHIRE, THE SEAT OF WILLIAM SMYTHE, ESQ.—This fine old residence is pleasantly situated in the midst of a noble park, on the sunny side of that wood-crowned range of somewhat lofty hills which skim the southern banks of the river Almond, five miles north-west of the city of Perth. The Castle occupies a fine position on the depressed summit of a knoll which projects from the hill-side, the ground from which undulates gracefully downwards. It is a lofty, massive square pile of building in the Scotch baronial style of architecture, with four bartizans or watch towers, one at each angle. The modern part of the Castle is supplemented by a neatly-arranged and admirably-kept flower garden laid out on Grass. Its walks and beds are well proportioned, and the whole is sparsely interspersed with statuary. From the Castle are delightful views of considerable extent. That to the east is over a fertile and well-cultivated district, which is bounded by high grounds in the distance. Immediately in front the scene is enriched by meadows and ornamental plantations. Beyond, however, and onwards to the right, the aspect of the country is of a somewhat bleak and sterile character. The park contains some 400 or 500 acres, and is irregular both in form and surface, stretching out, as it does, over the tops of the hills to the precipitous banks of the Almond, which is its boundary in that direction. On the southern side the public road from Perth to Crieff runs along the edge of the valley for some considerable distance. The high ground by which the Castle is backed, is admirably clothed with excellent Oak, amongst which are Birch and Scotch Pine, together with an undergrowth of Hazel coppice, and these woods have long had the reputation of being so well managed as to produce a rental equal to the best cultivated land on the estate. The other portion of the park is magnificently wooded in the shape of well-disposed groups and masses of trees, and there are also numbers of remarkable single specimens scattered about, which add a charm to the picturesque character of this beautiful place. Amongst the latter we noticed a huge Spruce Fir, 110 feet in height, and altogether a very giant of its race. Through these fine woods 6 miles of broad walks are led, so as to display to advantage the interesting scenery of the adjacent country.

The approach road from Perth is more than a mile and a-half in length. It enters the park by a neat gate and handsome lodge at the village of Almond Bank, immediately opposite a cascade, over which the waters of the Almond pour with a pleasing murmuring sound. At the entrance are some fine Spruce Firs, and a good example of Copper Beech. For some distance the road passes through an avenue of stately Oaks, on the left of which is a curling pond, on which the national game is played in time of hard frost. As we proceed the road sweeps past a silver-faced lake, in which are well-clad islands, the sinuous shores of which are ornamented with many examples of beautiful trees, amongst which Salix, Spruce Fir, and Weeping Birch were most conspicuous. From this point the road is judiciously led onwards across rising ground through the park, displaying on either hand many fine examples of stately trees, until it reaches the Castle. Another broad carriage drive enters the park by a neat lodge and gate from the village of Methven on the western side. This approach is rather more than half a mile in length, and is ornamented on both sides with many gigantic examples of fine timber trees. The two admirable drives just alluded to, unite in a broad expanse of gravel at the western front of the Castle, near which are some famous examples of Yews and Hollies. On the base of a tree of the latter, which had been cut down, 190 concentric rings could be counted with the naked eye. Another admirable specimen girths 6 feet in circumference at some little distance from the ground. Scattered about on the sloping ground near the Castle are also nice examples of Deodars, Hemlock Spruce, Chilian and Cembran Pine, together with ancient Thorns. Associated with these are moreover some good examples of Lucombe, Mossy Cup, and other Oaks, as well as many ancient examples of Ash, Walnut, and Chesnut. Of the latter, a fine grotesque old specimen girths 14 feet at some distance from the ground. There are also good specimens of Weeping Ash and Copper Beech. Cryptomeria japonica is here a beautiful tree, the delicate pale green colour of its foliage assimilating nicely with the weeping pensile form of an Abies Smithiana with which it keeps company. A noble Ash which we noticed girths 20 feet. Here and there many thriving specimens of Coniferæ occur, conspicuous amongst which are good examples of Thuja borealis, the broad-leaved variety of Douglas's Fir, Lambert's and Lawson's Cypress, the Pinus excelsa, and others. Here, too, as at the "Cairnies" (see p. 55) are many examples of Sikkim Rhododendrons, which apparently find a congenial home on the sloping sides of these granite-formed Scottish mountains. Close at hand is the famous "Pepperwell Oak," said to be the largest tree of the kind in Scotland. "In 1722, 100 marks were offered for it; in 1796 it was 14½ feet in circumference; in 1835 it girthed 18 feet in circumference, and contained 700 cubic feet of timber the spread of its branches covered an area of 300 feet in circumference." It is now said to girth 22 feet. There is also here a noble example of the Cedar of Lebanon, which contrasts admirably with the multitude of round-headed deciduous trees with which it is associated. On the low ground to the west of the Castle, immediately in front of the kitchen garden, is a lofty group of Ash trees, which overtops everything in its neighbourhood. Some of the stems of the trees of which it consists girth 14 feet in circumference. Adjoining the Ash trees just named is a wall covered with climbing plants, amongst which are some beautiful Roses, intermixed with many examples of Clematis, Calycanthus, Aristolochias, Variegated Ivy, and winter-berried creeping shrubs.

A broad walk leads from the Castle through a considerable width of shrubbery plantation to a well-sheltered portion of lower ground, sloping to the south-west, on which the kitchen garden is situated. It contains an area of 5 acres of excellent soil, its form is that of a parallelogram running from east to west; it is inclosed by lofty brick-lined walls, and is subdivided by another wall, running from north to south. The north wall of the western division of the garden is a flued wall 400 feet in length. These gardens were formed some 70 years ago, by the late Mr. Bishop, an excellent cultivator, who attained considerable eminence as a planter and landscape gardener, and to whom we are indebted for some of those beautiful outlines of dark Pine woods which now grace so effectively the northern slopes of the Ochill mountains. The whole management of this fine property, too, had long been intrusted to his care. In the western garden is a very handsome recently erected range of forcing houses. It is 180 feet in length, and is in several divisions. Its central portion is 16 feet in width, the end houses of the range being 2 feet narrower. The whole is admirably heated by hot water, and the aeration is effected by means of the upright glass in front, as well as by the upper portion of the roof being made movable. In the first house are annually grown excellent crops of first-class Grapes, consisting of Lady Downes' Seedling, Black Prince, and Black and Golden Hamburgh. This latter variety, however, seemed here to become unsightly, by reason of the berries becoming brown and shanking off, except a single bunch, which enjoyed a position almost in contact with the heating apparatus, and which was all that could be desired. The Vines in the second house were also heavily laden at the time of our visit with well-ripened Black Hamburgh, Grizzly Frontignan, and Muscat Grapes. Another house was well furnished with Black Hamburgh, Royal Muscadine, Black Prince, and Muscat Grapes, and they too were faultless both as regards colour and size. The last house through which we passed was devoted to the cultivation of Peaches and Nectarines, which were chiefly produced on trees growing in the free soil, and from which an ample crop had been obtained. There were also some good pot specimens, and they, too, were producing an excellent crop of well-coloured fruit.

A broad walk in front of the houses extends the whole length of the garden, and is ornamented on either side with gay flowering plants; in some cases the ribbon style is adopted, and beautiful variegated plants are seen in contrast with the best varieties of Pelargoniums, Verbenas, Calceolarias, the whole being diversified with rows of such dark-foliaged plants as Perilla, Amaranthus, &c. In other parts the borders are planted with herbaceous varieties of Phloxes, Delphiniums, Lythrums, alternating with Roses, Hollyhocks, Dahlias, and Sweet Peas. German Stocks too and Asters, as well as the finer varieties of that glorious bulbous plant, the Gladiolus, were most effective in enlivening the gorgeous display of these long beautifully ornamented borders. On the northern side

of the eastern division of the garden is a span-roofed greenhouse of considerable length, and 18 feet in width, which, when we saw it, was tenanted with many good examples of Liliums, Fuchsias, Pelargoniums, Heaths, Achimenes, &c. Immediately in front are two long ranges of wide pits, in which Melons are most successfully grown. The ground in front of these pits is laid out ornamentally, and the beds were bordered with broad bands of golden-foliaged and other Pelargoniums, including masses of Gladiolus and other choice flowering plants.

The lofty walls of this excellent garden are well covered with healthy, admirably-trained trees, which usually produce good crops of Pears, Peaches, Plums, or Apricots; many of the latter consisted of the same trees which were planted at the time when the garden was formed; there were also some excellent examples of half-standard Apple trees, which were laden with fine fruit. Gooseberries and Currants, too, were in great abundance, and in the deep soil of this garden produce most excellent fruit. The whole of the quarters of the kitchen gardens were, at the time of our visit, fully cropped, and producing vegetables of superior quality, the garden having a full exposure to the sun, and screened, too, in all directions from the wind.

These extensive gardens and interesting grounds are in the best style of keeping, under the active management of Mr. Whitton, the intelligent superintendent, who has for the last 16 years carried out effectively the whole of the improvements that have been carried on here, as well as all the more ordinary gardening operations. *D.*

Miscellaneous.

Flowers of Speech.—Prof. De Candolle, at the late horticultural banquet at Guildhall, drew attention to the flourishing condition of science in countries with a free political system, and said that with a day's pay of the millions of soldiers massed on the Continent a conservatory might be constructed reaching from Paris to Berlin. Yes! and instead of the "blood-red blossom of war," they might grow "everlasting Peas." *Queenslander.*

Food Value of the Potato.—There is probably no other vegetable food, except wheaten bread, of which so much can be fairly said in its favour. Its merits, however, vary much with the kind of "seed," the period of maturity, and the soil in which they are grown. That kind should be preferred which becomes mealy on boiling, and which, when well cooked, can be thoroughly crushed with the finger. The Potato which is known as "waxy," and those which remain somewhat hard when boiled, do not digest so readily as the mealy kind, but for that very reason they are said to be more satisfying. . . It is not material in reference to nourishment, whether the Potato be boiled or roasted, since in both methods it should be well cooked. In point of economy and convenience, however, it has been found better to boil than to roast them; for whilst the loss in boiling upon 1 lb. of Potatos scarcely exceeds half an ounce, that in the most careful roasting is 2 oz. to 3 oz. It is also more economical to cook them in their skins, and to peel them immediately before they are eaten; but this is not very convenient in many families, and the colour of the Potato is not quite so agreeable as that of those which have been boiled after peeling. When they are peeled before boiling, and particularly when they are small, and the operation is performed carelessly, from one-third to one-fourth of the whole weight of the Potato is lost, and if there be no pig to eat the peelings the whole is wasted; whilst the weight of the peel which is removed after boiling would not amount to more than 1 oz. in the pound. When Potatos have been roasted, the loss in weight from the skin and drying is more than one-fourth of the weight before cooking. An average sample of Potato, after it has been peeled, contains 11 per cent. of carbon and 0.35 per cent. of nitrogen; and hence in each pound there are 770 grains of carbon and 24 grains of nitrogen, and it is greatly inferior to bread. The economy of its use depends upon its cost, so that in times when Potatos are sold at ½*d.* and 1*d.* per lb. they are a very dear food as compared with household flour, whilst they are a very cheap food when produced by the labourer at the cost of the "seed" and the rent of land. Thus, at ½*d.* per lb., only 1024 grains of carbon and 32 grains of nitrogen will be obtained for 1*d.*; when the cost is 1*d.* per lb., the quantities will be reduced to 770 grains and 24 grains. When the labourer, however, can obtain 50 bushels of Potatos from a quarter of an acre of land, at a cost of about 30*s.* for seed and rent, he will have more than 7 lb. of Potatos for 1*d.*, and the quantity of carbon and nitrogen thus obtained for that sum be 5770 grains and 200 grains. If, however, he were to sell a large part of his crop at the market price, he could procure with the money thus obtained far more nutriment in the form of flour than would have been derived from that portion of his Potatos. The weight of Potatos which alone would supply the daily nutriment required by a man would be about 6 lb. in reference to the carbon, and 8 lb. in reference to the nitrogen; but when a labourer in the west of Ireland lives upon this food he is allowed 10 lb. daily, besides a large supply of butter-milk; and as both of these kinds of food are cheap in that locality, the proceeding is even then an economical one. *Dr. E. Smith's Practical Dietary.*

Calendar of Operations.

(*For the ensuing week.*)

As the weather still continues favourable, if not already done, trimming and cleaning out hedges should receive attention before the season commences, when other things will occupy all spare time. As neatness should always be a leading feature in every garden, everything that can be done to promote this should be forwarded now, when little else can be performed. Anything that appears unsightly, and that will make manure, should be removed to the rot heap; this should be turned over occasionally and covered with a little soil to prevent all noxious effluvia from escaping. The soil also mixes among the decaying vegetables, and becomes excellent compost. Soapsuds have a good effect on many kinds of vegetables, and should not be thrown away; they act beneficially on soils where Cabbages are infested with the club, and in some instances have been known to entirely cure that disease.

FLOWER GARDEN AND PLANT HOUSES.

Seldom have we had such a fine season for out-door improvements or alterations as that now about to close. Tender plants are, however, in a somewhat forward state, and it is necessary to keep them securely protected at night, as frost may come upon us when we little expect it.

CARNATIONS.—Continue to give these all the air possible. If green-fly begins to be troublesome, remove it with a camel-hair brush.

PANSIES.—In some places these are showing a tendency to bloom, arising from the past mild weather. The blossoms, however, will be better removed, as their being allowed to remain will only weaken the plants.

PELARGONIUMS.—Give air whenever the weather will admit of it; but avoid cold draughts, and keep out frost. On the other hand, be careful, however, not to use too much fire-heat. Training and shifting must also receive attention.

PINKS.—Soon after the shortest day the wireworm gets more active and mischievous. If there is reason to suspect that any of these lurk in the beds, cut a Potato into quarters, inserting a skewer in each; place them in various parts just below the soil, and examine them daily. This is an effectual trap.

TULIPS.—As yet there has been but little frost to affect these. As they advance they will, however, require strict attention to guard them from its ill effects, as well as from those of heavy wet.

FORCING GARDEN.

CUCUMBERS.—Prepare fermenting materials for the growth of these in frames.

PINES.—If in looking over the succession plants any are observed to be unhealthy, the sooner they are disrooted and repotted the better, choosing a mild day for the operation. They will soon begin to make new roots in the fresh soil, and will be re-established before they are required to make a start. Those plants that are in good condition at the roots, and not likely to require the soil to be shaken from them, but merely shifted into larger-sized pots, will do better if this is deferred for some time yet.

VINES.—If there is ample means of obtaining a moist atmosphere, it will be necessary to pay some attention to this point during damp close weather; as it is possible to have more than is necessary for the health of the Vine after it is in leaf. Keep watch sticks in the fermenting material upon the borders, and examine them frequently to see if the heat is regular.

HARDY FRUIT AND KITCHEN GARDEN.

Continue to trench, dig, and ridge every spare inch of ground when frost permits, during which let the manure necessary be wheeled out for the whole of the spring cropping, laying it in heaps, either on the spot where it will be wanted, or as near as possible to it. That portion not required for immediate digging in should be piled in small mounds and soiled over, to prevent loss by evaporation. Much useful information on this subject will be found in the Agricultural portion of to-day's Paper (see p. 1206).

FRUIT TREES.—With regard to bush fruit, if, as we have stated before, dressings with hot lime and soot when the trees are wet were more attended to, we should not hear so much of the ravages of birds upon the buds, and we would recommend their application also to standard Plum trees wherever practicable, as they not only keep them free from Moss and Lichen, but assist in the extirpation of those insects, in the search for which birds commit such ravages. There will, doubtless, be opportunities for proceeding with winter pruning during this and next month, when other work cannot be advantageously carried on. Thin out the heads of standard trees, removing in the first instance dead branches, and then all those which are badly placed and which obstruct the free access of air and light. Scrape off moss and rough scaly old bark from the stems; for the former grows at the expense of the trees, and the latter serves as a hidingplace for insects and their eggs. To destroy scale apply Gishurst Compound at the rate of 8 oz. to the gallon of water. Shorten the shoots of espalier and pyramid trees so as to secure the development of the buds; likewise the points of the secondary shoots, to favour the formation of fruit-buds. In doing this, however, due attention must be paid to the habit of the variety and the degree of vigour which the individual tree possesses, otherwise barrenness instead of fertility may be the result, in consequence of the energies of the tree being directed towards the formation of shoots instead of fruit-buds. Prune and nail wall trees, and be careful not to encourage too much the more upright-growing branches, and those situated near the top of the tree, otherwise those which have a nearly horizontal position, or which are situated near the ground, will be apt to die off. When this is the case they are not easily replaced, and valuable wall space is wasted. Proceed with transplanting when the ground is in a favourable condition; if not, better defer planting till it be so. Mulch after planting. Prune, stake, and mulch Raspberry plantations. Unnail Fig trees, tie the branches up in bundles, and protect with mats and straw.

STATE OF THE WEATHER AT CHISWICK, NEAR LONDON, For the Week ending Dec 12, 1866, as observed at the Horticultural Gardens

Dec	Moon's Age	Barometer.		Temperature. Of the Air.			Of the Earth 1 foot deep	2 feet deep	Wind		Rain.
		Max.	Min.	Max.	Min.	Mean					
Thurs. 6	29	29.854	29.529	57	45	51.0	47	45¼	W.		.16
Friday 7	●	29.717	29.458	51	29	40.5	46	47	W.		.00
Satur. 8	1	30.120	30.126	49	20	34.5	44	47	N.W.		.00
Sunday 9	2	30.435	29.994	53	31	43.0	43½	46½	S.		.06
Mon. 10	3	30.128	29.195	53	24	38.5	44	45¼	N.W.		.02
Tues. 11	4	29.230	29.152	52	28	40.0	44	45	S.E.		.12
Wed. 12	5	29.841	29.311	56	44	50.0	44	45	S.W.		.14
Average .		29.936	29.589	53.0	31.5	42.5	44.5	45.8			.40

Dec. 6—Rain through the day, boisterous at night.
— 7—Uniformly overcast, boisterous and showery, fine at night, slight frost.
— 8—Clear and very fine, with bright sun, frosty at night.
— 9—Uniformly overcast, overcast, rain at night.
— 10—Partially overcast, very fine, fine at night, frosty.
— 11—Foggy, hazy, rain at night, slight frost.
— 12—Densely clouded, cloudy and windy, overcast, heavy rain at night.

Mean temperature of the week, 1½ deg. above the average.

STATE OF THE WEATHER AT CHISWICK,

During the last 40 years, for the ensuing Week, ending Dec 22, 1866

December.	Average Highest Temp.	Average Lowest Temp.	Mean Temp.	No of Years in which it Rained	Greatest Quantity of Rain.	Prevailing Winds.						
						N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.
Sunday..16	45 4	31 0	38 2	13	0.34 in.	6	4	4	3	6	8	7	2
Mon. ..17	47 5	33 2	39 4	18	0.28	10	5	3	1	7	8	3	3
Tues. ..18	47 3	32 4	38 3	19	0.36	7	3	3	2	5	11	3	6
Wed. ..19	44 9	33 1	39 0	16	0.87	1	4	4	5	4	12	3	7
Thurs. ..20	44 3	33 8	39 1	15	0.47	3	9	1	2	6	11	4	3
Friday ..21	44 0	33 9	38 7	15	0.20	11	8	2	2	5	5	3	6
Satur. ..22	44 5	32 6	38 5	19	0.37	6	8	3	1	2	12	6	2

The highest temperature during the above period occurred on the 17th, 1832—therm. 57 deg., and the lowest on the 19th, 1850—therm. 7 deg.

Notices to Correspondents.

BOOKS: *Flowers of Speech.* You will find such a work as you require advertised in another column of to-day's Paper.

DISEASED APPLES: *E B.* We shall be obliged by your sending us specimens for examination.

DISEASED ASPARAGUS AND KALE: *B.* The diseased Asparagus and Purple Kale never reached us in September last. Asparagus suffers from a very pretty beetle (Crioceris Asparagi), and from the Copper Web Fungus. We have seen no other disease in this country. The Copper Web Fungus when it once takes possession of a bed can only be eradicated by carefully digging out the bed of the land affected. It is sometimes very destructive at Ely, and attacks other plants, as Lucerne, Potatos, &c. It has once been found in a state of fructification on Mint, and, we believe, only once. As regards the Kale, it is almost impossible to say anything decidedly from the specimens sent. There are several Fungi which attack the plant, amongst which the most destructive perhaps is Peronospora parasitica, a mould very nearly related to that which causes the Potato murrain, though distinguished by several decided characters. Your leaves have probably been attacked by this, though no trace remains upon them now. This requires to be carefully distinguished from the white bloom which is so common in Turnip fields in dry seasons, which belongs to a very different mould. There are, however, other Fungi which attack the Kale, one of which was published many years ago under the name of Cylindrosporium, but which is now referred to the genus Glœosporium, which may be known by its resembling, when examined with a pocket lens, little volcanoes, spouting out rough threads consisting of little spores; and three or four other minute Fungi which are destructive. No remedy is known for any of these, and the peculiar conditions of weather and soil which favour their growth are at present equally unknown, and will probably in great measure remain obscure. To make sprays other affections, patience is the only alleviator, and we fear that no better suggestion can be made. *M J B.*

EVERGREENS: *M Smith.* The best time for removing Evergreens such as you mention is September and October,—the earlier the better, if the weather is propitious; that is to say, not too dirty.

HEDGE-SCREEN IN ROYAL HORTICULTURAL SOCIETY'S GARDEN: *J B, Clare.* The Hedge referred to is not of Poplar, but of common Laburnum. The trees are planted in line, close together in pairs, at intervals of 16 inches. One of each pair is then inclined diagonally in the line of the fence at an angle of about 45° to the right hand the other to the left, so that in crossing the stems form a diamond pattern. The trees were some 6 or 7 ft. high when planted. The shoots are trained or pruned in as required to keep the whole furnished with short flowering spurs, and thus a light and very elegant fence, or screen, is formed with little trouble.

MONSTERA DELICIOSA: *M I T.* This is a large rambling stove-plant of the Orontiad family, bearing a curious club-shaped fruit, of which we gave a representation at p. 803 of our volume for 1858. We have not examined the pollen microscopically, but the fruit is remarkable for the number of fine spicules which are to be found just beneath the outer rind.

NAMES OF FRUITS: *F W. Pears* 1, Beurré d'Aremberg; 2, Fondante du Bois; 3, Beurré Diel; 4, Beurre Rance; 5, Glou Morceau. *Apples*: 1, unknown; 2, Dutch Mignonne; 3, Alexander; 4, Celini; 5, Yorkshire Beauty.

NAMES OF PLANTS: *P C.* An acutely toothed form of Asplenium Adiantum-nigrum.—*W R.* 1, Pteris fabellata; 2, Vaccinium erythrinum.—*F B.* 1, Ionopsis utricularioides; 2, Dendrobium micranthum. Both are amongst the most inconspicuous of Orchids.

VINES: *Franklin.* Either Foster's White Seedling or Royal Muscadine will suit your purpose for growing in a house along with Black Hamburgh where little heat is applied. In a border which has been in wear for over 20 years, however, you will find it somewhat difficult to get young Vines to grow. It will be necessary to renew a portion of it, and to keep it clear of the roots of the older Vines, which, if allowed, would rob those which are newly planted. If your Hamburghs are strong and healthy, the best way would be to inarch the fresh sorts on them, which is easily done when the leaves are fully developed in spring, about the time when the fruit is setting. The sap is then fully elaborated; the plants do not bleed, and the union takes place very quickly. It is not advisable to force newly-planted Vines much until they get fairly established, but gentle firing, as in your case, will do them no harm, provided you do not crop them, and keep them growing.

VINE LEAVES: *J L.* The affection on the Vine leaves is quite new to us. It is very singular, and we should be glad to see a few *fresh* leaves sent in a little tin box by post, directed after the 22nd to M. J. B., King's Cliffe. It is impossible to examine it satisfactorily from dried specimens. *M J B.*

COMMUNICATIONS RECEIVED.—E. O.—J. E.—J. D. H.—D. M.—D. B.—P. le N. F.—Quo.—W. R.—Delta.—W. Dean.—D. T. Fish. R. Thompson.—J. Anderson.—A Novice.—G. F.; with thanks.

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	£ s. d.
LAWES' PATENT TURNIP MANURE, and BONE SUPERPHOSPHATE OF LIME	6 6 0
LAWES' SUPERPHOSPHATE OF LIME from BURNT BONE or MINERAL PHOSPHATES	5 5 0
LAWES' WHEAT, BARLEY, GRASS, and MANGEL MANURES	8 0 0
CONCENTRATED CORN and GRASS MANURE	12 0 0

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The Agricultural Gazette.

SATURDAY, DECEMBER 15, 1866.

IF an agricultural newspaper is ever read, it must be at the end of such a week as has just elapsed, when those who have not been able to attend the agricultural meetings which have been held during it wish to learn how they have passed off, and those who were present may desire to know how their live stock, or their implements, or perhaps their speeches, have been reported. It is probable, therefore, that a larger proportion than usual of those who take this Paper into their hands may really read it, and it is even possible that the President and members of the Council of the Royal Agricultural Society of England may condescend to look at our account of the past week's proceedings, whether at the Farmers' Club, the Chamber of Agriculture, the Agricultural Hall, or Hanover Square. We are the more anxious that they should do so, because it is only to the last-named meeting, in which they are personally interested, that we shall here refer.

We there heard a very admirable history and discussion of the current events and main features, whether of achievement or defeat, of British agriculture. The President has certainly offered for future adoption a very admirable precedent, and it will be a great thing for the utility and authority of the Society if his successors shall discharge, with equal ability and tact, the duties of their high position, as he himself has read them. After Mr. THOMPSON'S lecture there followed a vigorous and interesting discussion, in which Mr. C. S. READ, M.P., Mr. SIDNEY, Dr. CRISP, Mr. CAIRD, Mr. ALBERT PELL, Mr. DUCKHAM, and others took part; and such a report of it as our limits permit, is given in another page.

Before the delivery of the President's address the REPORT of the COUNCIL was read, and moved, seconded, and adopted without any discussion; and it is to this Report, read before a company gathered evidently for the sole purpose of hearing Mr. THOMPSON'S statement, that we wish at present to refer.

Mr. SIDNEY spoke very forcibly of the importance to agriculturists that they, their interests and their proceedings, should be understood by the outside world, and he urged that a wider publication on all these points than at present exists, should be instituted by the Society—so that Englishmen might know how much of their national rank and character is due to the position and performances of the English farmer. Now, what will such an outsider as Mr. SIDNEY had in his mind think on reading this Report? We can imagine him, before beginning it, saying to himself—of the body speaking in it:—

"We have here the very best mouthpiece which English agriculture can be imagined to possess—noble lords, large landowners, well-known farmers, successful implement makers, intelligent and practical men, and men of science. You cannot conceive a body to exist which should speak at once with more intelligence and more authority to English agriculturists."

And this, which he supposes, we know to be the truth. In the President of the Agricultural Society, and in the members of the Council, all the interests of the land are most worthily represented—he is quite right there.

And of the body whom these address through their annual Report, he might further say:—"The Royal Agricultural Society of England, perhaps more than any other that can be imagined, is the very audience which such a mouthpiece must most anxiously desire. They are scattered over the counties in which, and amongst the men through whom alone, the work of the Society can be done. They are themselves a considerable section of the farmers of England, whose practice it is desired to improve; and being generally each of them the leading man in his own locality, any influence brought to bear on them will be most effectively distributed and exerted."—And he is quite right here as well. The members of the Royal Agricultural Society who are annually addressed by the Council are generally the leading landlords and the leading tenant farmers of the country; and, including as they do men who have been in business, as you may say, during the whole of the Society's career, they have a knowledge of the past as well as of the present, and know the progress which English agriculture has made, the direction in which it is at present tending, the position it has achieved, and the chief deficiencies of which it still complains.

Well! then, may not our "outsider," the spectator of this Society's proceedings, say—"In the annual address of such selected representatives to such an important agricultural constituency, we may certainly look for the very weightiest agricultural utterance of the year. Every twelvemonth has its special agricultural history and lessons, which we shall find recorded here."—Certainly there has been no want of eventful agricultural history or lessons in 1866. Even a mere spectator must know that. The cattle plague, the restrictions both on cattle importation and on the home cattle traffic, the price of meat, the miserable harvest weather, the condition of the agricultural labourer—above all, the movement towards an improved organisation, by which the tenants of the land, through Chambers of Agriculture, can urge their views on the Government of the day—all this is known to every one outside the agricultural world. "It is these leading facts," he will therefore say, "and the pregnant guiding principles which they illustrate, to which alone, amid the press of many urgent topics, we can expect attention given in the short annual statement of the Council to the members of the National Agricultural Society."

And is he not right here also? Unquestionably he ought to be.

We confess it was nothing less than startling to ourselves, and no doubt to many others also, to find that among the leading agricultural facts of the year recorded in the Report read last Wednesday is the important announcement that "F. CHUBB," "E. KING," and "W. MORTIMER" had won 4*l.* at a recent examination in Pure Mathematics; and that HILL, MACKWOOD, RUDD, and many others had won similar distinctions at recent examinations into their general educational attainments. We read also that these young gentlemen were educated at Clevedon College, Abington House, Devon County School, &c.; and nearly one-half the annual Report of the Council of the Society is taken up with announcements of this kind. Does anybody doubt that if a reference to the occurrence in the annual Report of this extraordinary history of detail, with which an agricultural society has nothing whatever to do, had been made at the crowded meeting in the Society's Rooms last Wednesday, it must have startled the company of practical and intelligent agriculturists, who, no doubt, thought they were there united for the sole purpose of improving the Practice and Science of Agriculture. If this outrageous anomaly had been referred to there instead of here, the criticism must have commanded unanimous assent, and a weighty protest from all the members present might perhaps have awakened the practical agriculturists, both landlords and tenant farmers, seated at the Council table, to the wild guidance to which they have hitherto submitted on this subject. We must add that there is a serious side to this subject, for the statement in the Report indicates both perversion of the Society's funds and neglect of the Society's duty—but, otherwise, it would be simply ludicrous.

Undoubtedly there is a large body seated at the Council table who must know that they are being altogether led astray in connection with this question of Agricultural Education. They must know that a strictly professional Society ought not, and that their leaders therefore have no right, to devote any of the funds at their disposal to the promotion of general education. They must know that even if general education be selected as the object to be aimed at, the petty effort which alone can be made by them is not only (strictly speaking) an impertinence, but a ridiculously small contribution to the general effort which is now everywhere being made. And they must also know that the question of professional agricultural education is now so large and so increasingly important as to fully occupy and engage every effort which, among the many objects justly claiming their attention, they can possibly put forth.

The Council of the Agricultural Society, so far as their position there is concerned, are nothing if not agricultural. The members whom they lead have united for agricultural objects only; and if they are themselves misled we necessarily go all astray together, and the body must ultimately disperse. We submit to the agricultural majority of the Council that they must insist upon a stricter limitation of their proceedings to professional agricultural aims and objects. What the sanguine educational movement led by Mr. ACLAND, and permitted by themselves, has hitherto accomplished, may be seen in the grotesque absurdity of the fact that, in their annual address to the great national agricultural interest for the year 1866, there is positively more said about the 5*l.* prizes won by a lot of schoolboys than there is about the Cattle Plague!

—— WE are informed that a deputation on the Cattle Plague from the Central Chamber of Agriculture will wait upon the Lord President of the Privy Council on Monday at 3.30 P.M. The deputation will meet at the Salisbury Hotel, Salisbury Square, E.C.

—— Owing to the urgency and quantity of other reports we extremely regret that we are unable to give the discussion which followed Dr. VOELCKER'S admirable lecture on Manures before the London Farmers' Club. It will appear next week.

—— Mr. CHAWNER proposed to the Midland Farmers' Club the other day the question of union with a Central Chamber of Agriculture. Farmers' Clubs, he urged, were of comparatively little value unless through a central mouthpiece by which their views could be urged upon Government. But if they were to expect Government to provide a corresponding Board or Minister with whom to discuss the points in which they were interested, they must be prepared to provide that Board or Minister with all the information that might be asked; for—

"Although they were under that great commercial system which promised to become universal throughout the civilised world, agriculturists had not had the benefit of the principle of free trade in too many instances. He, therefore, asked that the agricultural community should be put in as good a position as was occupied by the trading and commercial bodies. They could not ask for a Minister or for a Board of Agriculture, or for a portion of the present Board of Trade, unless they were prepared to do that which the trading or commercial part of the country did. If they had a Minister or a Board they must furnish to him all the facts they could collect connected with their position as cultivators of the land, because it was upon the collection of facts that good sound legislation could alone be based. He had before him two or three reports on agricultural matters relating to Ireland, from which it appeared that little or no difficulty had been experienced in collecting statistics there."

The malt tax, the turnpikes, the law of settlement, the guano monopoly, and other points needed discussion; but if we want a central mouthpiece of our own, and a special governmental department with which to discuss them, there must be no flinching as regarded agricultural statistics. If they asked for a Minister of Agriculture they must be prepared to place before him the facts, the only facts, on which he could influence the Legislature, or exercise any power in the Executive Government. These opinions were cordially adopted by the meeting, the Earl of LICHFIELD, Messrs. MASFEN, PELL, MAY, and others assenting, and a deputation was appointed to the meeting of the Central Chamber of Agriculture, which has been held in town this week, a report of which appears in another column.

—— The Rev. R. W. MARMION, of Kilmeen, moves the Registrar-General of Ireland to move the Royal Agricultural Society of Ireland to move the small

farmers of Ireland to keep their farms clear of weeds. In a lately published letter to Mr. DONNELLY, he says:—"I wrote to you about a year ago that my glebe of 25 acres would be ready for inspection on 1st of June of this year, and that my handy man would undertake to have it free from weeds. I was anxious to know if the Agricultural Society give prizes for Ireland's *raræ aves*—farms without weeds. It would be an encouragement, not only to my outward, but to the encouragement, not only to my outward, but to other-s, if notice were taken of such farms, and prizes (according to size and condition of farms) awarded. If I live, I undertake to have my glebe lands (25 acres) clean as *croquet* ground on the 1st of June next." This letter was forwarded to the Agricultural Society, and read at a late meeting of their Council, whereupon Sir PERCY NUGENT observed that there was nothing so much required in Ireland as clean farms. Lord JAMES BUTLER understood that there was a law by which a man could be fined for allowing weeds to grow wild in his fields, to the injury of his neighbours. Major BORROWES said he was perfectly right. If his next neighbour had a good crop of Thistles, and he refused to pull them up after warning him to do so, he could be summoned before the magistrates, and fined. He had in fact known a case of that kind. Moreover, road contractors were obliged to keep their roads free of weeds.—The Secretary was directed to reply that no prize was allocated for such a purpose. We fear that if the personal interest of the tenants is insufficient to promote a good fallow, the medals and prizes of a Society will be ineffectual.

——A considerable increase in the number of cases of Cattle Plague was shown in last week's Return; during the week ending 1st December, 32 attacks are stated to have occurred in Great Britain, being an increase of 25 on the previous Return. Fresh outbreaks took place in 6 farms or places where cattle are kept; the number in the week preceding was 2. Twenty-six healthy cattle were slaughtered during the week from having been in contact with diseased animals. The attacks reported are for Chippenham, 1 heifer; East Bucklow (*Cheshire*), 1 calf; Amounderness (*Lancashire*), 1 bullock; and (*Yorkshire, East Riding*) South Holderness, 1 bull, 1 bullock, 9 steers, 4 cows, 11 heifers, and 3 calves. Of these animals, 1 heifer in Wiltshire died, 1 calf in Cheshire was killed by order of the owner, and the others were killed by order of the inspector. During the week ending Dec. 8, 14 fresh cases occurred, chiefly in Yorkshire, being a decrease of 18 on the previous week.

THIN SEEDING AT TIPTREE FARM.

IT will be recollected by my readers that in my first letter on Tiptree Hall farming I introduced to them, as far as I considered I had authority to, a most worthy neighbour of mine, who had become a farmer through a fearful accident he met with in a railway carriage in which he was travelling, which made it impossible for him to follow his profession, which it will be remembered was the clerical one; therefore, by the advice in the first place of a very excellent and wealthy female relative, as I have previously explained, he laid aside the clerical gown and turned farmer, at first on a moderate-sized farm which he rented, but now, by the munificence of the lady to whom I have above referred, and his own inherited property, he is become of the wealthiest landed proprietors and the most extensive farmer of the neighbourhood in which he resides.

No man keeps his land in better heart or condition, both the arable and grazing, than my friend does his, and though few men see more farms and farming than I myself do, and in various parts of the kingdom, I unhesitatingly state that there is not in all England a farm more skilfully cultivated in every respect, and which is paying better acre for acre, than is my friend's at this time; and the whole estate also is on a piece, homestead and all; in fact, everything is kept in the very best possible order, and every operation on the farm done in the best possible workmanlike way. But my friend is also blest with one of the best farming bailiffs, though only a working man, I anywhere know, having the most methodical head and being a good manager of workmen.

Thus my readers will perceive that on such a farm, under such management, and all the land kept in such condition, the crops must be of the best kind, the best yields, and the best quality; and so they all are; but still not equal to what Mr. Mechi publishes his crop by an average of full 10 or 12 bushels an acre at the least. It is therefore worth our serious inquiry as to how Mr. Mechi produces these marvellous crops, for if they are so abundant, and from what has been called mere modicums of seed, it is quite certain that the lands in England are not let at half their real value, and that landowners are hood-winked or kept under a cloud by their agents. But perhaps my readers may have forgotten what Mr. Mechi writes his crops are, and so here are his statements:—From one peck of seed, he writes, he has grown 7 qrs. and 1 bushel an acre; and again, from another one peck he has grown 7 qrs. and 2 bushels an acre; and again, from 4½ pecks, his maximum quantity, in one year he produced 8 qrs. of Wheat per acre, and from double that quantity of seed in two successive years he produced 15 quarters, or 120 bushels an acre! Now I merely quote the quantities of seed as Mr. Mechi himself gives them, as I care not whether he for pecks means bushels of seed or not; but what I write is this, that if Mr Mechi at Tiptree, in Essex, does produce these marvellous crops, he is undoubtedly the most extraordinary farmer the world has ever produced; and it is quite certain that when his race shall have been brought to a close, and his candle burnt out, the agricultural world will be again in darkness, and the sun itself for ever afterwards enveloped in mist or fog. But a certain apologist of Mr. Mechi, Mr. W. C. Spooner, informs us in the *Agricultural Gazette* that the above described crops, which appear so extraordinarily large to other persons, are only "failures" with Mr. Mechi among his experiments, and should be acknowledged as such, because, if I understand Mr. Spooner correctly, he writes, we know Mr. Mechi to be enthusiastic and poetical when advocating important principles. Now we know, and experience has proved it countless numbers of times, that enthusiasts and poets do take great licenses in most things with which they meddle, but here we are discussing matters of fact, and not enthusiasts' and poets' licenses, namely, as to whether Mr. Mechi has on his farm at Tiptree produced the crops which he proclaims he has, and which Mr. Spooner designates as mere "failures." This is the subject to the inquiry into which we are now engaged.

But to return to my friend and his farming bailiff, the latter of whom, with a first-rate ploughman, has just arrived at my house, having at my request been sent to me by their master. But before I admit them into my study, as I intend to do, I must state that they have brought a letter from their master, in which he laments that he is not able nor permitted to leave his house, in consequence of the injury which had never been completely healed, having broken out afresh, or he would have been here.

But the bailiff and the ploughman are here, and now, having desired them to be sent into my study, here they are. "Well, bailiff, how was your master when you left?"—"Very bad, zir; I haven't zeed un for vour days."—"I am very sorry."—"It is a zad job, zir."—"But what will Samuel (the ploughman) and you have? A jug of my best cider, or some of my best ale?"—"If you please, zir, we prevur zum zider." The cider was then brought in, and the bailiff and his ploughman having helped themselves to a tumbler-full each, I put to them the following questions:—

"Your master, near two years since, sent you into Essex, I remember; and so his note to me states—first, to go to Mr. Mechi's, at Tiptree Hall, and then to Mr. Fisher Hobbs's beyond Colchester, for two breeding hogs, a boar and sow you went. I know, and brought away the boar, for the sow proved in pig, and I have one of the litter, a sow which is now also in pig, and will pig in about a fortnight. Well, you think of Essex?"—"Why, zir, I can't tell, zir, for varmers, being too tchort, the vlitch too tchort."—"So I thought, bailiff. I do not ask you anything about Mr. Hobbs's farm. I have been at it with you more than once, with Mr. Hobbs was very friendly. But did you see Mr. Hobbs?"—"No, zir, he were away for his health, but zeed his bailiff" (farm bailiff), who gave us the hogs, and zent um to Colchester in a cart to th' train.

"Well, but what I want you for is to know what you saw at Mr. Mechi's?"—"Nothin, zir."—"Nothing?"—"No, zir."—"Did you see Mr. Mechi?"—"The varmity were not at home, zir; nobody but a zarvant, and zo we ax'd um if we might zee tha Weeat and tother crops, Peeas and Beeuns, an all, and he zed he spozed we might. And I zed, whur be th' veelds of yiam veeld? And he zed he could not know, but pointed out the Weest veelds near Hall, and then to Mr. Fisher Hobbs's he zed thur war nun. We zed Mr. Mechi put in print he zeeded wi' nun peck an acre, an had 232 peck of crop from ut; an then he loof'd an zed Mr. Mechi zeeded thicker nor othur varmurs did. An then we ax'd un whur th' eight quarters an zore wur grown in, and they zed wi'out an hur Weeat wur just six inches from row ta row, whur we wur told by another mon it wur thin zeeded, and about zeven whur it wur thick, and tha zeed in tha rows wur dree times thicker nor we put ours in at hum."

"But, bailiff, have you not said to some one that Mr. Mechi grew 15, 16, and 17 quarters of Wheat from 1 peck of seed?"—"No! I zed tha mon we zeed zed Mr. Mechi zed zo tacke. I didn't zay tha mon zed zo ta we, I zed tha mon zed th' gentleman zed zo ta he."

"But what did you hear about Mr. Mechi's crops in general, and what estimate did both of you make about them?"—"Tha mon wi tha big an gun zed tha war about vive and a-half quarters an a peck tha virst an no more, and a few zeeths, he zed he knew zix an zeven peck, an zumtimes more, wur tha usual quantity. We then zed to him, how do ye know as such large crops got into print? He zed tha looker (farm bailiff) told Mr. Mechi what ta put in print, and if he zes a pint a zeed an acre only wur used, an tha crop wur vifteen or zixteen quarters an acre. Mr. Mechi would print ut."

"Then, bailiff, you said nothing by going to Tiptree in Essex?"—"Nothin; but that all in print about it is made up by Mr. Mechi's looker, an Mr. Mechi puts all in print he zes."

"But did you not see the noted looker, nor the workmen?"—"No, we zeed nither late, and it were gone to bed. But as we left the varm we ax'd a man whur we could get zum zider and bread and cheese? An he zed no zider wur zold there, but the best old beer wur on the heath, and he wud go' with us, and when we cum to tha Inn it wur tha Spotted Dog, and zo we went in and had zum good old ale an bread and cheese, and thur we hurd all about Mr. Mechi's warmaing agin; and all zed he wur a good master an' an exient man, but we zes we zeed an havin eight quarters of Weeat from one zeed, and zum his land wi a peck a zeed an acre, dree or vowur times, who wur in the Inn, zed they had vifteen an tha vare' how zore, and had never zeed less zeed put in nor other varmers put in, an as vor yield, they had nivir zeed zich crops, nivir zeed crops wur better, and they told thur names, but I have zed zo much in bailiff, and no other mon knows, and I have learnt nothing by going to Tiptree in Essex!"—"Nothing, cept all that's in print is—&c."

But enough, and more than enough. *T. B.*

Home Correspondence.

The Atmospheric Churn.—In case you have not had anything about the atmospheric churn in your columns, I send a brief notice of my impressions about it. Having an hour to spare when in London last week, I paid a visit to No. 119, New Bond Street, where the churn is to be seen in operation daily at 1 and 4 o'clock P.M. That which I saw at work was made of tin, cylindrical in shape, and capable of working a couple of gallons of milk. It was worked on the principle of the common plunge churn, only the handle of the plunger was a hollow tube, into the top of which a perforated wooden plug was inserted with a valve, so that when the plunger was pressed down, air was forced into the milk, and the effect was that in 11 minutes by my watch butter was produced. The milk, about 5 quarts, from a London dairyman in the vicinity, was warmed to about 68° Fahrenheit. I tested it before and after churning, and found it equally sweet on both occasions; the quantity of butter made seemed to be about ¾ lb., very white, but quite sweet. I took a similar churn down with me to the country, and the next day tried it with 2 gallons of milk which had stood about 20 hours. In 10 minutes the butter came, but only ½ lb. I had the milk taken out of the churn and let it stand 24 hours more, when a good coating of cream appeared on the surface; this was churned again, but I think it was quite heated, and only 14 oz. of butter was obtained; again it was allowed to stand for 48 hours longer, when cream was again formed on the surface, and rather more than a pint was skimmed off. The milk was then of course sour, and given to the pigs. From this single experiment it would seem that the churn does not take all the butter out of the milk at once; but I propose to make further experiments with both cream and milk, which I will communicate if you think it desirable. *Jas. Arch. Campbell, Rugby.* [Thanks.]

Cattle Plague in Lancashire: New Precautions.—The Justices have lately put forth a manifesto in respect to the cattle-plague, with a view to prevent any outbreak on the taking up of cattle for the winter. The Justices inform the owners of cattle in their jurisdiction that any neglect to take proper precautions will be considered in awarding compensation should their cattle become afflicted. They advise that all shippons and sheds should be disinfected by chlorine gas in the manner directed by them as a local authority, and practised by the county police (the Surveyor of Professor Stone, of Manchester); and the Justices urge this chlorine fumigation whether the farm premises have been visited with the plague or not. They also strongly urge that the farmers should prevent strangers coming on their premises. The chief police stations, 19 in number, and several of the subdivisions, have been made depots for the sale of the drugs and apparatus used in making chlorine, and plain instructions how to make and apply the gas have been set forth in a pamphlet by Mr. Stone, the advising chemist to the Justices. *S.*

Societies.

ROYAL AGRICULTURAL OF ENGLAND.

THE Annual General Meeting of this Society was held on Wednesday last at their house in Hanover Square, Mr. H. S. Thompson in the chair. There was an unusually large attendance of members, including Lord Walsingham, Earl of Shrewsbury and Talbot, Lord Berners, Lord Tredegar, Sir Massey Lopes, M.P.; Mr. Acland, M.P.; Mr. Holland, M.P.; Mr. C. S. Read, M.P.; Sir J. H. Maxwell, Bart., Sir W. Stirling, Major-General the Hon. A. N. Hood, Colonel Challoner, Major Wilson, Captain Barthropp, Professor Voelcker, Dr. Crisp, and Messrs. S. Sidney, Torr, Arkell, Wren Hoskyns, Frere, J. G. Sheppard, Hulton, Sandy, Corbet, Bowly, B. Gibbs, J. Baldwin, Barnett, Duckham, Moore, Stevens, and J. Gray.

Mr. H. Hall Dare, the Secretary, read the Report of the Council as follows:—

During the last half year 6 governors and 114 members have died, while 1 governor and 32 members have been elected, so that the list now comprises 76 life governors, 88 annual governors, 1160 life members, 2052 annual members, 15 honorary members—making a total of 3391.

The Council have elected Sir Edward Kerrison, Bart., M.P., and Mr. Jonas, to supply the vacancies in the class of Vice-Presidents caused by the decease of Mr. Thomas Raymond Barker and Mr. Fisher Hobbs. In filling these vacancies the Council avail themselves of the opportunity of recording on their minutes an expression of their sincere regret at these losses, and their deep sense of the valuable services which these gentlemen had uniformly and unwearyingly rendered to the Society.

Major Wilson, of Stowlangtoft Hall, Bury St. Edmunds, has been elected a Member of Council in the room of Mr. Hamond, resigned; Sir Henry Vane, Bart., of Hutton Hall, Penrith, in the room of Mr. Wilson, deceased; and Mr. D. R. Davies, of Moreton Hall, Knutsford, Cheshire, in the room of Mr. Jonas, elected Vice-President.

The statement of accounts for the half-year ended 30th June, has been examined and approved by the Society's auditors and accountants, and has been furnished to all members in the last number of the Journal.

The funded capital has been reduced by the sale of 1000*l.* stock, and now stands at 13,977*l.* 1*s.* 1*d.* in the New Three per Cents. This sale has been rendered necessary partly by the cost of the erection of a new store to the Society's house, which materially affect the values of the premises, and partly by the appropriation of H. M. Maxwell, Esq., to thorough investigation into the results of the cultivation of the soil by steam driven machinery in various parts of the country. To the latter object the sum of 1000*l.* has been voted, but not exceeding 1000*l.*, and notwithstanding the wet autumn considerable progress has been made in the inquiry, the result of which will be fully made known in the first number of the Journal for next year.

The implements for which Prizes will be given in the ensuing year consist of fixed and portable steam engines, fixed and portable threshing machines, finishing machines, land dressing machines, Barley hummellers, chaff cutters, mills, cutters, cake breakers, turnip mills, turnip cutters, and liquid manures; and at the next trial will have elapsed since the trial of some of these classes of implements, it is to be hoped that many improvements will be exhibited at Bury St. Edmunds.

The Country meeting next year will be held in the week commencing Monday the 15th July. Prizes to the amount of 500*l.* are offered by the Society for Live Stock, and 300*l.* for Implements, while 97*l.* are added by the Suffolk Agricultural Society and the Local Committee. It is also proposed to offer 200*l.* in prizes for Poultry, the Eastern Counties having long been famous for their success in this department.

The Education Committee have followed out the scheme of prizes offered in the last report in connection with the Oxford Local Examinations, and have made the following award of prizes :—

LIST I.—*Prizes to Candidates obtaining First Places, regard being had to their places in the several Class Lists.*

SENIORS.

Three in Oxford First Division.—A. Pollard, Liverpool Institute, 7*l*. ; J. Lake, Alfred House Sc., Bow, Middlesex, 5*l*. ; C. J. Langley, Abington House Sc., Northampton, 5*l*.

Four in Oxford Second Division.—Thomas Hill, Grammar Sc., Wellingborough, 4*l*. ; W. Bennett, Russell School, 3*l*. ; A. Day, Clevedon Coll., Northampton, 2*l*. ; R. P. Rudd, Clarendon House, Kennington Road, 2*l*.

JUNIORS.

Two in Oxford First Division.—W. H. Davies, Manchester Gr. School, 7*l*. ; E. King, Abington House Sc., Northampton, 5*l*.

Seven in Oxford Second Division.—F. Chubb, Manston House Sc., Exeter, 4*l*. ; G. H. Bassett, Russell School, 3*l*. ; A. Day, Clevedon Coll., Northampton, 1*l*. ; C. Higham, Clevedon Coll., Northampton, 1*l*. ; J. Luxton, Devon County School, 1*l*. ; W. Mortimer, Devon County School, 1*l*. ; J. C. Sargent, Abington House Sc., Northampton, 1*l*.

LIST II.—*Prizes given to Candidates who, having passed the Preliminary Examinations, are distinguished in any of the subjects mentioned in the R. A. S. Prize List.*

SENIORS.

C. J. Langley, Abington House Sc. (Mathematics), 5*l*. ; A. Pollard, Liverpool Institute (Mathematics), 5*l*. ; H. T. Bovey, Clevedon Coll. (Mathematics), 2*l*. ; J. Lake, Alfred Ho. Sc., Bow (Mathematics), 2*l*. ; R. P. Rudd, Clarendon House (Mathematics), 2*l*. ; R. Kingdon, R. A. Coll., Cirencester (Chemistry), 5*l*. ; A. Pollard, Liverpool Institute, (Chemistry), 2*l*. ; J. W. Sanders, Ulleshorpe House (Physiology), 5*l*. ; A. Pollard, Liverpool Institute (Physiology), 2*l*.

JUNIORS.

F. Chubb, Manston Ho. Sc., Exeter (Pure Mathematics), 4*l*. ; E. King, Abington Ho. Sc., Northampton (Pure Mathematics), 4*l*. ; W. Mortimer, Devon County Sc. (Pure Mathematics), 4*l*.

LIST III.—*Medals awarded to Agriculture.*

F. B. Kingdon, Royal Agr. Coll., Cirencester, 5*l*. ; H. R. Goddard, Royal Agr. Coll., Cirencester, 4*l*. ; T. J. Elliott, Royal Agr. Coll., Cirencester, 3*l*. ; J. L. Waldon, Devon County School, 3*l*.

Chemistry applied to Agriculture.—F. B. Kingdon, Royal Agr. Coll., Cirencester, 5*l*. ; J. L. Waldon, Devon County School, 4*l*. ; H. R. Goddard, Royal Agr. Coll., Cirencester, 4*l*.

In all these lists, where prizes of the same value are given to more than one candidate for the same subject, the candidates' names are arranged in alphabetical order.

The Medals are of Gold, and are Worn.

With regard to the Cambridge Local Examinations to be held during the present month, the Council have determined upon offering prizes for the same subjects as before.

Seventy-four candidates are entered for these prizes. Of these, 42 are Seniors and 45 are Juniors. It is also entered for the special prizes in Mechanics and Chemistry applied to Agriculture, of whom two are also entered amongst the Seniors.

The Council also offer (besides the foregoing prizes) one Senior Scholarship of 50*l*., and four Junior Scholarships of 20*l*., to be competed for at the ensuing Cambridge Local Examinations in December, 1866, limited to sons of tenant farmers, or of owners, if not exceeding 500 acres, occupying their own land, on the following conditions :—

That the Senior Scholarship shall only be given on condition that the scholar spend a year with a practical agriculturist, to be approved by the Education Committee, or at one of the Agricultural Colleges—such as Cirencester, Glasnevin, or the Agricultural Department at Edinburgh—and that the money shall not be paid until a testimonial is received from the agriculturist to be produced, at the end of the year of scholarship, from the body or person under whom the scholar has studied.

That the Junior Scholarships shall only be given upon condition that the scholars spend a year at a school, to be approved by the Education Committee, and that the money shall not be paid until a testimonial as to good conduct and industry be produced at the end of the year of scholarship, from the person under whom the scholars have studied.

These Scholarships will be awarded according to the order in which the Candidates stand at the Cambridge Local Examinations.

The Council have again obtained the assistance of Mr. Besant, of St. John's College, Cambridge (Senior Wrangler, 1850), to examine in Mechanics applied to Agriculture, in conjunction with Mr. Alfred Bidder, C.E., to Consulting Engineer, Mr. Liveing, Professor of Chemistry in the University of Cambridge, and Professor Voelcker, the Society's Consulting Chemist, will conduct the examination in Chemistry applied to Agriculture.

While heartily uniting with the whole kingdom in the thanksgiving for the abatement of the Cattle Plague, the Council are at the same time sensible of the importance of continuing many of the existing restrictions on the traffic in live stock, and with this view have instructed a deputation to wait on the Lords of the Privy Council to draw their attention to the following points :—1st. The importation of Foreign Cattle ; 2d. The re-opening of Fairs and Markets ; and 3d. The necessity of extending the time during which the powers granted to the Privy Council under the Acts of the last Session may be exercised.

With respect to the first point, the Council believe that the existing restrictions are probably sufficient for the present, but that unless they are made permanent, it will not be considered worth while to erect lairs for the purpose of carrying out regulations which will be only of temporary duration, and that consequently such as relate to quarantine will become inoperative. The constant presence of the disease in various parts of the Continent of Europe makes it extremely probable that, except under very stringent regulations, the disease will frequently be re-introduced, and they believe that it will eventually be found that nothing short of permanent regulations for killing animals intended for slaughter at the ports at which they are landed will prevent its introduction, and that with respect to Store Cattle, the regulations should be of such a permanent character as will lead to the provision of suitable buildings for carrying out an efficient system of quarantine.

With respect to the 2d and 3d points adverted to by the Council, they think considerable danger will be incurred by reopening fairs and markets at the present time, except under the restriction of immediate slaughter (hear, hear), and they wish to call the attention of the Government to the importance of obtaining, if necessary, additional Parliamentary powers, so that the trade in cattle may be placed upon such a footing as may insure the greatest amount of security to owners of cattle, and that at the same time, the dealers and importers may know under what restrictions the trade is to be carried on, and be encouraged to provide such appliances as may enable them to conduct their business with the least possible inconvenience to themselves, and the smallest risk to, and interference with, public interests.

On the motion of Mr. CALDWELL, seconded by Mr. ELLMAN, the Report was unanimously adopted; after which the PRESIDENT read the following Address, which was frequently and warmly applauded :—

ADDRESS OF THE PRESIDENT.

The Royal Agricultural Society not having held a country meeting this year, the Council lost their customary opportunity of meeting the members of the Society, and of manifesting, by the success of their show, both the vitality of the Society and the steady progress of British agriculture. I, therefore, take this opportunity of making a few remarks on some of the topics which possess most interest for agriculturists at the present time, in the hope that other gentlemen may join in the discussion, and give the meeting the benefit of their experience and their opinions on those subjects. I wish first to mention that I shall only advert to those topics which possess a common interest for all our members, and shall avoid all such as may be likely to rouse feelings of antagonism and class interest. I press this point strongly, because some of these forbidden topics involve questions of great importance, and, as Chairman of the Journal Committee, I have frequently been urged to take steps to procure articles on such questions as leases, tenant right, preservation of game, &c. These and other similar questions are, no doubt, deeply interesting to both landlords and tenants, and nothing can be more reasonable than that men who have a common interest in any subjects of this nature should meet and discuss them; should, if they think fit, write pamphlets and newspaper articles, and endeavour, as much as possible, to enlist public opinion in support of their particular views; but when all is done, landlord and tenant must in the future, as in the past, settle their mutual rights and privileges by individual negotiation and agreement; and in the great majority of cases such negotiations will assuredly end in land being let at its market value, such market value varying in some measure according to the security afforded to the tenant, that if he lays out his capital on land that is not his own he will get it back with fair profit. Whilst, however, admitting the full importance of this class of subjects, I do not hesitate to state that the consideration and discussion of them were not the objects with which this Society was founded. I am one of those who took an active, though a very subordinate part in its formation, and have been a member of the Council from that time to this, and I can safely say that the principal aim of the founders was to promote the improvement and development of those two great branches of industry known as stock and crop farming, upon which the prosperity of both landlords and tenants must ultimately depend, and in the prosecution of which landlords and tenants can heartily pull together. I must here guard myself against the supposition that I mean to exclude from the list of subjects properly occupying the attention of this Society such questions as the education of the agricultural classes, the best construction of labourers' cottages, and many other kindred subjects. Nothing can be farther from my intention. These subjects were set forth in our charter, and naturally and properly occupy the attention of the Society at the present moment; but improvements in all these matters, in addition or in farm buildings and cottages, require ample means, and I repeat, therefore, that the first great object of the formation of this Society was to increase as much as possible the amount of wealth to be extracted from the soil, leaving the apportionment of it between landlords, tenants, and labourers, to be settled between man and man at fitting time and place. Nor is the sphere of our operations thus defined either a narrow or an ignoble one. We may well be content to devote our energies to the production of the great staple products which must always form the principal bulk of the food of man, and to produce this food in greater quantity and of better quality than heretofore is one of those highly gratifying results which, whilst improving the position of the agriculturist himself, adds at the same time to the comfort and well-being of even the humblest classes of his countrymen.

Having thus limited myself at the outset, I will first advert to the Cattle Plague. At this time last year the Council of this Society were exerting themselves to bring the collective weight of this and other leading agricultural societies to bear in inducing the Government to adopt certain stringent regulations for preventing the movement of cattle generally and for killing promptly those attacked by the disease. The resolutions unanimously adopted by the Council with this view were, as nearly as may be, subsequently embodied in the Cattle Diseases Prevention Act; and, looking at the immediate check given to the cattle plague when that Act came into force, and its subsequent rapid and continuous decline, few persons are now found to question the soundness of the policy then pursued. The cattle plague has now for a considerable period been brought into such narrow compass that we may reasonably hope soon to see it altogether extinguished; and it seems to me important that, whilst its disastrous effects are still fresh in our memories, we should not allow our attention to be diverted from the true character and results of this calamity until such regulations be permanently adopted—be made, in fact, part of the law of the land—as may give us all the security against its recurrence which the nature of the case will admit of. The late attack of rinderpest may be said to have lasted little more than a year, for though the first cases were observed at the end of June, 1865, it had not made very great progress before August of that year, and by the end of August, 1866, the attacks of the disease had been reduced within very narrow limits. In point of duration, therefore, the great visitation of rinderpest of the last century, which lasted from June, 1744, to 1757, or thereabouts, varied materially from this. But rinderpest, like other things, travels by railway in these days, and in little more than three months from its first appearance it had invaded more than half the counties of England and a large portion of Scotland. The number of diseased animals which have died or been killed amounted on the 24th of November last to 209,352. No return of their value can yet be obtained, but taking the average value of 1851 head slaughtered in the West Riding of Yorkshire, and applying that average to the whole number, we obtain a total of 2,630,000*l*. This, however, does not represent the whole of our loss, as a considerable number died before the passing of the Cattle Diseases Prevention Act, whose deaths were not reported to the inspectors. Heavy losses were also incurred by the forced sales and premature slaughter of young animals in store condition, in consequence of the panic caused whenever the disease made its first appearance in a new neighbourhood. On the whole I cannot rate the national loss caused by the cattle plague at less than three millions sterling. It is mortifying to reflect that (humanly speaking) this great loss might have been in great measure prevented if we had not been too proud to profit by the experience of our own and other nations who had frequently had to battle with this terrible scourge, and who had uniformly come to the conclusion, after repeated attempts at cure, that immediate isolation and slaughter of all animals attacked by rinderpest was the only mode of escaping heavy loss. No doubt some will be found to dissent from my conviction that this great loss might have been almost entirely prevented if our existing machinery for stamping out cattle plague had been set to work on its first outbreak. It will be difficult, however, to escape from this conclusion if we compare the results of the "laissez aller" and the "stamping-out" methods in the summers of 1865 and 1866. Compare, for instance, the month of July, 1865, with the month of September, 1866. In the former month there were 79 fresh outbreaks of the disease, in the latter there were 74; so that the number of new centres of infection created were in each of these months nearly the same. In the latter case, however, the stamping-out principle was applied to these new sources of infection, in the other they were left to increase and multiply. And what was the consequence? Two months later the full effect of these new outbreaks would be fully seen; and we find in September, 1865, 954 fresh outbreaks attacking 5200 animals; whilst in November, 1866, there were only 8 fresh outbreaks attacking 16 animals. Why should not the 74 fresh outbreaks in September, 1866, have done as much mischief proportionately as the 79 in July, 1865? Some will say that the disease was worn out, had become less intense or less contagious than it was a year before. This, however, is not the case, as throughout the whole of this visitation the nature and character of the attacks have been remarkably uniform, and in the very latest cases, the disease has shown itself just as contagious and just as fatal as at the first commencement. I have already shown that we, as a nation, have incurred a very heavy loss rather than admit that our scientific means and appliances are as insufficient now to cure or even mitigate this disease as they were a century ago, in this country, or as they are in other countries up to the present day, but having paid so dearly for our experience, it would be totally inconsistent with the business-like and practical character of Englishmen if we did not take steps to profit by our past error, and to prevent our having to buy our experience over again at the same heavy cost. With this view the Council have within the last few days sought an interview with her Majesty's Government, and we stated our unanimous conviction that so far as the present attack of rinderpest is concerned, it would be highly impolitic to relax the restrictions which have proved so effective until a sufficient time shall have elapsed without the occurrence of a single case to afford a reasonable probability that the disease is extinct in Great Britain. With reference to the future, we also pointed out the importance of obtaining from Parliament, in a permanent form, the power to revive at any time when required the existing machinery. That this machinery is efficient for its purpose is proved by the fact that in any of the later outbreaks the disease has rarely extended beyond the farms where it first appeared, unless from great apathy and negligence on the part of the local authorities. If the provisions of the Cattle Diseases Prevention Act are not renewed they will expire next June, or at the end of the then session of Parliament, and on any new outbreak of the disease Parliament would have to be called together, or, if then sitting, the tedious process of passing a bill through both Houses would have to be started before any effective measures could be taken, and we should assuredly have again to pay dearly for our want of foresight. The third point, which the Council consider of equal, if not greater, importance than either of the two former, is that the importation of foreign cattle should be permanently placed on a safe footing. The whole character of this trade has been changed by the continued extension of railways on the Continent of Europe, occurring, as it has done, simultaneously with a great increase in the price of cattle in the English markets. These two causes combined make it answer to the importer to bring cattle from much greater distances, and we can no longer consider Rotterdam and Hamburgh as the ports from which only Dutch or North German stock are brought here; but they have become the termini of a great network of railways, at the other end of which lie the great steppes of Eastern Europe, from which the rinderpest is rarely absent; and we are placed in nearly as much danger as countries like Austria and Prussia, which, geographically, lie much nearer to the sources of infection, and which have only kept themselves free from the most calamitous losses since they have adopted very stringent regulations as part of their permanent code, ready to be put into active operation at the shortest possible notice,

The store cattle imported are so limited in number that it would not be difficult to establish an efficient system of quarantine for them, and there can be little doubt but that if it were once thoroughly understood that in future all fat cattle must be slaughtered at the ports of disembarkation, arrangements would soon be made by which it could conveniently be carried out; and I am sanguine enough to believe that after a time it would be conducive to the interest of the importer, as it assuredly would be to that of the consumer. Let it be assumed that convenient slaughter-houses were constructed at the ports both of export and import. In winter, when the passage is rough and tedious, and the importers suffer great losses by general deterioration and numerous deaths amongst their live cargoes, they would slaughter the cattle at Rotterdam, Antwerp, Ostend, and other convenient ports, and during the winter months the meat could be brought over in capital condition. During the summer months, when fresh meat would not bear a sea voyage, the animals must be brought over alive, but at that time of year the passage loses half its terrors, and the cattle would be slaughtered at Hull, Harwich, or the port of London. Even now fresh meat is becoming an article of daily importation, and from the Board of Trade I learn that in the month of October last no less than three millions four hundred and twenty-eight thousand pounds of meat, salted and fresh, were imported, of which the greater portion was fresh mutton.

The next question to which I shall allude is the Labour difficulty. All who are engaged in rural pursuits are aware that wages have risen very much during the last few years, and that not only has labour become a more costly item in farm expenditure, but it is extremely difficult in many districts to obtain a sufficiency of the right sort of men. Some years ago it was very common to hear farmers severely blamed for not giving high enough wages to their labourers, and now it is equally common to hear the labourers found fault with for asking extravagantly high wages. In each case the complaints are equally unreasonable. A farmer who should from kindness of heart give much higher wages than his neighbours would soon find himself in the *Gazette*, and it would be equally unbusiness-like to expect that labourers should ask lower wages than they think they can obtain. Several causes have contributed to bring about the present scarcity of labour in particular districts: the rapid expansion of trade, the successive alterations which have been made in the law of parochial settlement, and, above all, the great increase in the facilities and cheapness of locomotion. The change is, therefore, likely to be permanent, and it is an interesting question how best to deal with it. A noble lord at an agricultural dinner in one of the Midland counties, a few months ago, was so much impressed with the importance of the question as to suggest the possibility of applying the co-operative system to agricultural labour. Judging from the newspaper report of his lordship's speech, he did not do more than throw out the idea with the view of eliciting discussion. It does not appear to me that the labourer could be made a sharer in the farmer's profits in good seasons unless he could also bear his share of the farmer's losses in bad ones, which he would clearly be unable to do, but there is one mode in which the farmer might admit his labourers to be partners in his farm, which would, I think, go some way towards surmounting the present labour difficulty, and would, with little cost to the farmer, be of incalculable benefit to the labourer. The plan I would suggest is that the farmer should let to a certain number of his labourers sufficient Grass land to enable each of them to keep a cow, and that these allotments should be the rewards of industry and sobriety. I have for some years watched the operation of two modes of carrying this out, one plan being to let each man a separate field of two or three acres, which is much preferred by the men; the other being to devote two fields of considerable size to a number of men, who use one in common as a summer pasture for their cows, and mow the other for hay, the separate holdings being marked out by a post at each corner. The latter method is suitable for large farms on which it might be difficult to find, or to form, a sufficiency of small fields for separate allotment. Both plans work well. The cost to the farmer is trifling, as the cottagers are always willing to pay a fair rent for the land. To labourers with families the advantage of keeping a cow can hardly be overrated, but I do not think it advisable to confine it to fathers of families, as a steady married man without children is thus enabled to save a little money, and becomes so much interested in his cow and his pig that the alehouse is no longer the chief source of attraction during his leisure hours. Those who are best acquainted with agricultural labourers will, I feel confident, bear me out in the assertion that a man who can ensure regular work, at fair wages, with sufficient land to keep a cow and a pig, and obtain even a moderately good cottage among the friends and neighbours whom he has known from his childhood, will seldom be found willing to exchange his position for the crowded courts and alleys of large towns, even by the temptation of considerably higher money wages.

The Council have, during this year, devoted attention to the organisation of a critical inquiry into the results of Steam Cultivation on selected farms in most of the counties of England. The high price of mutton and wool for several years has given such a stimulus to light land farming that the strong Wheat lands have receded in public estimation, and are at present most in need of improvement. Yet Mr. Lawes has proved that even by the ordinary methods of cultivation, about 2 qrs. of Wheat per acre may be grown on strong land for 20 years in succession, without manure; and Mr. Smith, of Lois Weedon, has carried this further, and shown that by a thorough disintegration of the soil, and repeated exposure of a fresh surface to the fertilising effects of the atmosphere, at least 4 qrs. of Wheat per acre may be calculated upon as the average produce of moderately good Wheat land for an equally long period. The only drawback to this gratifying result consists in the heavy cost of cultivating the stiff clays. The steam plough is the most likely agent to get over this difficulty, and the able men who are at present engaged in arranging the great mass of information they have collected on this subject will, we trust, be able in their reports to show us the extent to which the employment of steam machinery in the cultivation of strong land has been commercially successful, and also to point out any special causes which have retarded its introduction and diminished its beneficial effects, whether arising from the imperfections of the machinery, or from modes of applying it.

One of the most promising features in the agricultural prospects of the present day is the almost unlimited demand which exists for many of those products which our soil and climate are specially adapted to produce in perfection. The western sides of Great Britain and Ireland are peculiarly well fitted for the breeding and rearing of live stock, yet our constantly increasing imports show that the home supply is by no means equal to the demand. If our acute but misguided fellow-countrymen in Ireland would abandon their Fenian follies and devote themselves heartily to the cultivation of green crops and the improvement of their pasture lands, they might appropriate a large portion of the vast sums which are now expended in bringing live stock from the most distant parts of Europe. Even now there are more cattle in Ireland than in England, 3,493,000 against 3,307,000, and that number might with ease be very largely increased. Dairy produce, too, has for some years borne a very remunerative price, and needs fear no competition from distant countries. The effect of the cattle plague on the supply of milk to large towns is remarkably illustrated by the quantity of milk now conveyed by railway for the supply of the metropolis. The seven great Railway Companies, who principally conduct this trade, have kindly furnished me with the following interesting particulars. One Company says that the increase in the quantity carried in 1866 above that in 1864 is 86 per cent.; another Company says their increase is 120 per cent.; a third, 352 per cent., and the London and North-Western and Brighton Companies state their increase at 50 and 60-fold respectively. There are now more than 220 stations sending milk to London by passenger or special milk trains, from distances varying from 7 to 190 miles, for a charge varying from a minimum of a *½d.* to a maximum of *2d.* per gallon for the whole distance. In the last three months, September, October, and November, 1866, which are the worst months in the year for the milk trade, 1,000,000 gallons of milk have been brought into London by rail, showing that we should probably underrate the total quantity carried for the year 1866 if we stated it at 7,000,000 gallons. This is a remarkable instance of the rapidity with which so extensive a trade in an article which is difficult to move in large quantity, and which yet will not bear delay, has been transferred to new and distant localities, when circumstances required it. It is to be hoped that this large introduction of good country milk will effect some improvements in the very unsuccessful mixture which has hitherto been sold under the name of London milk. The favourable prospects of which I have spoken are by no means confined to the western side of England. The drier climate of the eastern counties is specially adapted for the growth of first-rate Barley, and the high price and little extra quality in the sample was never more highly rewarded than in the present season. The landowners of the eastern counties, however, must pardon me for saying that they do not make full use of their advantages. Barley growers will all tell you that they can only grow good Barley on good land, but a large portion of the light sands have marl or clay in their immediate neighbourhood, and that marled sand will grow good Barley is well known and extensively acted upon by many of the leading agriculturists in that district; but there are still thousands of acres of poor weak sands with marl in their midst which only require a liberal application of it to double the value of the land, and to grow better Barley than any yet imported.

To watch for and promptly seize any opening for a profitable trade which the changing circumstances of the times may afford, and especially to turn thoroughly to account any peculiar advantages of soil, climate, or position, requires not only the shrewd sagacity for which our farmers are distinguished, but also a cultivated intellect, the result of a really good education, which, unfortunately, many of our farmers have not been able to obtain. In the endeavours which the Council have lately made to fix the attention of the agricultural world on this subject, they have naturally felt that the amount of funds which could be spared for this purpose was so small as to be utterly inadequate to provide, or even materially assist in providing, the means of education for the most limited number of youths. They have therefore adopted the only course which was open to them—that, namely, of offering a few prizes of moderate amount for general competition, in the hope that this practical expression of opinion on the part of the Royal Agricultural Society would, at any rate, draw attention to the question, and might be of some value as an indication of the kind of education which is most required for young farmers, and in which they are most deficient at present. By way of recapitulation I wish, first, to urge strongly the importance of treating cattle plague like a conflagration, and that it is as much a matter of ordinary prudence to keep up the machinery for stamping out the one as it is to keep fire-engines and firemen ready at a moment's notice to extinguish the other. Secondly, I hope to see the method I have suggested of dealing with our labourers generally adopted, and supplemented by others of a similar character, whereby we may give the men local interests, and the strongest possible inducement to establish a kind of savings-bank each in his own pigstye and cow-house, which is not unlikely to lead eventually to the savings-bank in the neighbouring town; but at all events this will increase the self-respect of the labourers themselves, and enable them to bring up their families in health and comfort. Thirdly, the education of the rising generation of farmers requires thoroughly overhauling and adapting to the wants of the day. This movement has already begun in one or two counties; but there are many deep-seated prejudices to be removed, and there is much *vis inertiæ* to be overcome before our middle-class education is brought up to the present high standard of English civilisation. Lastly, under the good providence of God, who has promised us a return of "seed time and harvest" so long as the world endures, the present prospects of English agriculture are highly encouraging. By means of the improved facilities of transport, both by sea and land, we are continually obtaining access to whole nations of new customers, and as long as our foreign trade continues to increase so long will the consumption of our home-grown commodities be such as to provide a remunerating demand for all the beef and the beer, the milk, butter, and cheese which the combined practice and science of our farmers may enable us to supply.

Mr. THOMPSON concluded by inviting discussion upon any of the points touched upon in his address.

Mr. READ, M.P., was sure that all the members of the Society must feel deeply indebted to the President for his very able, learned, and valuable address, and for giving them the opportunity of making that meeting something more than an occasion for the transaction of mere routine business. The President had referred to the farmers of the Eastern counties as growers of the best quality of Barley, but there were greater breadths of it grown on the Western than on the Eastern side of England, and it was impossible with the present oppressive restrictions that the growers could do as they would otherwise be able to do. With regard to the President's very able advice about giving labourers an interest in farms by appropriating to them a certain quantity of pasture, the farmers in the Eastern counties were now badly off for pasture that they could not find enough for their own cows. The way to deal with the labour question was to give the men more task work and less day work. The farmers of Norfolk had been taunted with paying their agricultural labourers only 10*s.* or 12*s.* a week. Now he had gone through the figures with respect to a thousand acres of arable land for the last four years, during which the price of Wheat averaged 5*s.* 6*d.* a bushel, and the labourers were supposed to have received 10*s.* a week, and he found that all these agricultural labourers had actually earned from 30*l.* to 40*l.* a year, which would give an average of something like 13*s.* 6*d.* a week. There were certain classes of labour, such as the tending of stock and the care of the improved implements, in which a man's head must be worth as well as his hands to him, and for them farmers must pay, not according to the amount of labour got through, but according to the ability devoted to it. There were other classes of work, such as ditching, draining, and that sort of thing, in which a man required not only a head but a very strong one, and at this work good labourers could usually earn long wages. But the system had been to bring all men down to a certain level by paying so much a day or a week instead of trying to raise men to the highest level by resorting as much as possible to task work. The present Report did not appear to him to go far enough. Outside that there had been vague and uncertain reports with regard to the condition of the Society, and it was pleasing under these circumstances to know, that notwithstanding all they had gone through, instead of the number of members decreasing by hundreds or thousands, there was only a falling off of 200, and that they had still, after all their expenditure, 18,000*l.* in hand, which was fully enough for their wants. Then again it was pleasing to hear that the addition to their house, which had been considered by some a nuisance to the neighbourhood and a disfigurement to the Square of Hanover, was a very valuable source of investment for their funds. There were other people who contended, that after having selected the most out-of-the-way and smallest town in the Eastern Counties to hold their next year's meeting, the Council were endeavouring to get up the largest possible show, now they were told that the town was not big enough to hold them, and that the railway could not accommodate them. But although the Eastern Counties were bad enough, they had expansive power sufficient to make all the necessary provision for the show. Others thought that if it were desirable to devote the 500*l.* to prizes for the education of those who depended upon the cultivation of the soil for their support, it would be better to expend that amount in Christmas-boxes to National Schoolmasters; and looking down the list of prizes it was certainly encouraging to find that such subjects as botany, especially upon agriculture, geology and chemistry—were so little patronised by those who entered into the competition. Still, on the whole, the Society had good ground to be satisfied and it was past progress to be thankful for its present condition, and to look hopefully for its future.

Mr SCRIVEN said he attended the meeting for the purpose of repeating a suggestion which he made on a former occasion, and which at the present time seemed to him of great importance, both as regarded the prosperity of the Society and the progress of agriculture. It was evident from the admirable and exceedingly useful address they had just heard, that no one was more convinced than their President that no Society, whether scientific or political, could flourish in this country unless it depended not only upon what it had been doing, but upon what it was going to do. Their Society had just passed through a year of trial. Many persons were prepared to prophesy that because they could not hold their great annual gathering this year, the Society would at once fall into a state of dissolution, but it was evident from the Report now presented, that although the Council had not done all that he thought they were able to do, they had yet done something very important, and no step it had taken could be more important than the arrangement of an admirable machinery by which the public would be furnished with an authentic Report upon that important branch of agriculture—steam cultivation. But they might go a great deal further. The Society had been established more than a quarter of a century. Those who had had the opportunity, time, and inclination to wade through the 20 volumes of essays published from time to time, were aware of what the Society had done, but the great body of the public were not aware of the important services they had rendered not only to British agriculture but to the whole world. The time had arrived when with the influence they possessed they might build up such a monument to what had been done, and teach such a lesson of what ought to be done, as would prove the greatest possible advantage to agriculture, and confer

eternal honour upon this Society. His suggestion was that they should undertake what Sir John Sinclair attempted long ago, in which they would have the advantage of the aid of many thousands of subscribers from all the counties of England, and a large Council, representing every description of agricultural improvement. The Council should begin by framing itself into a Committee to consider the best means of carrying out the suggestion, and they would probably come to the conclusion that the proper course would be to appoint a number of sub-committees, one to take up the case of live stock, another that of cultivation, a third manures, and a fourth mechanical progress. These committees to frame a series of questions to be sent to all parts of the country, and to prepare for the purpose a map of England, divided, not according to counties, but agricultural districts. They would then find themselves, by the working in connection of a staff of voluntary and zealous standing Committee in every district, through whom, by means of these questions, they would be able to obtain information as to what was the position of agriculture in all its branches when the Society was established, and what had been done since, and then they would be enabled to give valuable information to the world. Some years ago he endeavoured himself to make a sketch of British agriculture, but he felt during the whole time he was engaged upon the work, and when he had completed it, that if a great Society like the Royal Scottish, with resources in the same direction, the result would have been the collection of a quantity of information far more extensive and authentic. They had connected with this Society gentlemen who were all of great agricultural knowledge but of very considerable influence. He named Mr. Pell, of Pelham Manor, whose services had been secured in drawing up the report on steam cultivation, and to Mr. Morton, whose "Encyclopedia of Agriculture" was one of those works that did credit to the country. Something, therefore, had been done to carry out the principle he advocated, but it was one of those works which no private individual could accomplish as effectually as a Society like this, and it was the duty of these Societies to undertake valuable works which could not prove remunerative to individuals. He merely threw out the idea for the Society to take up in a practical form, as he was strongly important that the Royal Agricultural Society should take some such step in order to put themselves right with the outside public, who were ignorant of what they had been doing. Nothing struck more those who studied year by year the progress of agriculture than to see when they went into society which was not agricultural how little justice was done to landlords and tenants with regard to the progress of agriculture. This was not a time when they could afford to despise public opinion, or to allow it to be said that the Society was not doing its work. An illustration was to be found in the case of the cattle plague. It was extraordinary to see amongst men of a high class of intellect the fallacy gaining ground that agriculturists asked for compensation for compulsory slaughter of their animals in order to pay their rents. Nothing was further the object was to secure the supply of meat throughout the kingdom. In his opinion a great agricultural Report such as he referred to might be drawn up and published in something like two years, and although it would cost something every year, the money would be well spent in the increasing value of the Society, one effect of which would be to add to the number of subscribers. It had been suggested that the Society could not afford to spend money on this object, but they had 18,000*l.* in the funds, and he was quite sure that if they undertook such a work they would receive a large amount of assistance from other sources. He had heard it suggested that they had no right to take the money paid for life annuities till the expiration of the lives. Every insurance company ought to, and every sound one did, invest all the money paid into their funds to pay the claims of the annuitants or insurers, and the liability of this Society consisted not only in holding a Show, which was a most expensive undertaking, and circulating the Journal among the subscribers, but when those objects were provided for, they were entitled to apply the surplus of the remaining funds to purposes likely to be useful to agriculture. He apologised for offering these observations in the presence of so many authorities on the subject, but he had done so in the hope of raising the position of the Society, not only among agriculturists, but the whole country.

Dr. Crisp had had something to do with the questioning system, and he thought if such a plan were adopted by the Society in this case, they would obtain a chaotic mass of information which would be difficult to sift, and in which it would be almost impossible to separate the wheat from the chaff. He for one felt that he got a great deal for his money in the shape of print, and he did not think any man could object to paying the 1*l.* for the quantity of information the Society gave him. He had always thought, however, that this Society had been the great obstacle to the progress of agricultural science. He acknowledged its good intentions, and the value of the information it distributed, but he thought that it had prevented Government doing what they ought to do, and that until the Government took up the question of agricultural education and progress, they would not have a good agricultural system; that until professors were appointed and remunerated by the State, and their time given exclusively to the objects which interested this Society, they would never have agricultural improvement. The President had stated the losses by the cattle plague at 3,000,000*l.*, but it was of little moment to the animals which they had to consider; and if they took into account the loss the farmer sustained by having his stock confined to a certain district, and the suspension of breeding, he believed the loss was nearer 9,000,000*l.* Instead of this matter being taken up in the first instance by the Government, Professor Simonds and Mr. Earne were appointed by this Society and the Societies of Ireland and Scotland to investigate the cattle plague, and they had a very short time in which to discharge the duty intrusted to them. No doubt under the circumstances they did the best they could, but the Government had had good warning from their ambassadors of the approach of the disease, and yet it was left at last for two gentlemen to make a hasty investigation, and to report that the plague could never reach our shores. The supply of animal food was a matter most important with regard to the health of the people, and they knew positively that it was impossible that this country could provide the necessary quantity. He had not the slightest doubt that before many years steamers would be fitted out to bring meat from South America, Canada, Australia, and other parts of the world, in immense quantities; but let them look at the present condition of our farmers as regarded the importation of disease. Four diseases had specially claimed attention during the last few years—pleuro-pneumonia, foot-and-mouth, cattle plague, and small-pox. He went down a few weeks ago to investigate a case of small-pox in sheep at Harwich, to which port a vast number of sheep were brought from the Continent. A farmer who had small-pox amongst his sheep was prohibited from selling to a certain district, and various restrictions imposed upon him, but no compensation was given for animals destroyed by the disease; and unless a very different system was adopted, and all the animals were killed at the port on landing, or underwent proper inspection, there would never be an effectual check upon the spread of the disease. It was a very hard thing that a farmer, through importing his stock from this district, should have his sheep afflicted with small-pox, or any contagious disorder, and should be denied compensation.

Sir Massey Lopes mentioned one fact in confirmation of the good advice of the President with reference to the restrictions that ought to be maintained upon fat cattle coming into our ports. He lived at Plymouth, where a large number of fat cattle were brought into this country, and it was a singular fact that whereas, previous to the time that the cattle plague restrictions were imposed, that district had suffered much from foot-and-mouth disease, they had hardly had a single case of the sort during the last twelvemonths. He mentioned this to show the importance of retaining the restrictions.

Mr. A. Pell was of opinion that next to having the cattle plague in the country, the greatest curse that could exist was reference to it now. Passing to a question upon which he had considerable experience, namely, that of labour, the excessive price of which had been referred to in the President's address, he observed that the law of settlement in the county where he lived (Northampton) had the effect of forcing the labouring people into other neighbourhoods without any respect to the price of labour at all. This evil was now happily abated, cottages were being built upon the sites of those pulled down, and every inducement was offered to bring back those who had been so foolishly driven away. He only hoped that the principle upon which they were now acting might extend far and wide. But they had established also the principle of co-operation among the labourers. He could not for a moment believe that the principles of co-operation, as they understood them, were carried to such monstrous like excess, between the capitalist and the labourer, and in his own case, the system had worked most usefully. He became connected with a very poor parish in the Midland Counties—a parish which was a bye-word in the neighbourhood for drunkenness and disorderly and irregular habits, although the people were employed in one of the most lucrative trades now carried on in England. On going amongst them he put himself in communication with some of the originators of the co-operative stores with a view of trying how it would act in this parish. They had established there now, nearly 18 months, a small Store, and with the result of inducing a habit of saving among these men, who he was told had never anything in their pockets. But he had carried the principle further, and had introduced, against the advice of a good many, a system of allowing people, now and in the face of three or four public-houses to a population of 6000 people, the sale of an Englishman's legitimate drink, and the store now did a very large trade in very excellent beer, at from 6*d.* to 2*s.* per gallon, the very clergyman who cautioned him against it was so acknowledging that the streets were quieter for it. Moreover, they had closed one of the public-houses. They had established a reading room in connection with the store, and though there was not a squire resident in the neighbourhood, only a small sum of one guinea a year was required to be made to support this movement. With regard to the question of education, that was more a subject for Parliament than for them, but still they might make some suggestion of practical effect with regard to the instruction of children in the union houses. Many of them had the misfortune to be but too well aware that the system by which the money of the ratepayers was applied in this direction was a very bad one. The teachers were in many cases imperfectly educated, if educated at all, and the children were frequently brought into contact with the very worst of characters. He struck him, and he suggestion had been made to him by one of the most excellent noblemen of England, to whom the country was very largely indebted in the suppression of the cattle plague, that they might in this matter follow to some extent the metropolitan system—that the guardians of every county a school to which poor children should be removed for education the moment they come into the house, one or two efficient teachers being provided for their instruction. This was done in the parish of St. George in the East in London with the most satisfactory results. He was not desirous abroad that an attempt was to be made to alter the character of this Society by a change in that portion of the Charter which prohibited them from dealing with questions pending in Parliament. He had been a member of this Society for something like 26 years, and his own feeling was that nothing could be more injudicious than such a step, but he was anxious to hear from the President whether there was an intention on the part of the governing party to propose any change in that direction.

Mr. Edmonds, Rugby, complained that the Society persisted in offering prizes for what they had already got. Prizes were offered for an improved Turnip-cutter, though in Gardner's they had got all that was required. It was a very proper time to offer prizes for implements when the Society first formed, when that which they had got was not doing its work properly, in order to put makers on their mettle; and if they were to form a committee to look through the prizes, and only retain them where improvements were wanted, it would be a long stride to the improvement of agriculture in this country generally. The question of the education of the poor scarcely came within the scope of their objects, and in his opinion that class was as well cared for by the Government system as it was possible for it to be. Almost the whole agricultural class it was their own fault if they were not well educated. What this Society was interested in was the education of farmers. Millions of money had been spent for the education of the poor, but no corresponding movement had been made for the middle-class. The Society had done much by their Journal, and in other ways to promote the education of the kingdom, and he only now asked them to do as the rest of the world was doing, and move on. Mr. Pell seemed very much afraid of an alteration of the Charter, but if the Society was to represent agriculture generally, it must take up every question connected therewith, whether or not if it should have a political bearing. Instead of 5000 members they ought to have 50,000, and unless they made the Society a great one, which could make its influence felt as commerce did when commercial questions arose, they were not told that the manufacturing interest possessed any power, but when any question was mooted affecting agriculture, they were met with a statement that there was a party to protect their interest. He wanted this Society to represent the whole of the agricultural kingdom, and to be able to approach the Government with a weight which should insure a speedy redress of their grievances.

Mr. Woods, as a practical man, was of opinion that Gardner's Turnip-cutter was capable of great improvement, and that the Society ought to offer prizes for such improvements. He had for many years been an advocate of sound practical education for farmers' sons, for he felt convinced that from the number of amateur farmers in the country attempting to teach practical men how to cultivate their land great mischief had been done. His experience was that that man was the best farmer who made the most money out of his farm, and kept his land in the best condition. In the part of the country with which he was connected there was some years ago a farm, which was considered to be the best farm in the kingdom, after which the farmer was ruined it was considered a case of great hardship. Another farmer came in at an increased rent, but he was a sound practical man, though he pretended to no scientific knowledge; and not only did he get a living out of the land, but he placed five or six sons, who were now occupying something like 2000 acres, and were men of influence and affluence, and he was himself at the present moment in a position to retire. That man began with only sufficient capital for his farm, which he had since made a perfect model. Teachers of agriculture in the present day had too much science and theory and too little practice.

Mr. Caird had heard with great admiration the exceedingly able and practical paper read by the President, but there was one question which did not fall within the scope of the address, but which, as applicable to the objects of the meeting, he wished to say a word upon. No doubt most of those present must have observed from the newspapers that there seemed to be a prospect of a cessation of the supply of Peruvian guano. That was a subject of importance to the agriculture of this country. About 15 or 16 years ago a good deal of agitation arose from this question, and the Government of that day gave orders to the Admiral on the Pacific station to make some inquiry as to the probable extent of the available supply. A report was made to the effect that in about eight years from 1852 the supply would be at an end in the rate of consumption then going on. The rate of consumption had rather increased, and still they had no proof that the supply had been materially affected. Recently, however, a report had come into this country, that the prognosticated cessation was about to be about to be fulfilled. He understood that information of an authentic character on the point was now in the hands of the Government, and he suggested that the Council might do a service to agriculture if they asked the Government for any information they might possess on the subject. If it were true that the supply was nearly exhausted, all other manures would be considerably enhanced in price.

Mr. J. Lawson said he was a farmer in the North of England, where he had applied, in the case of his labourers, a plan similar to that spoken of by Lord George Manners the other day. He began the beginning of this year to determine to give one-tenth of his income for the year, to be divided among them in proportion to the amount of their wages.

A Member: The profits of the farm?

Mr. Lawson: The profits of my business—chiefly farming. With regard to what had been said by Mr. Pell upon the subject of co-operative societies, he observed that, although there were 600 societies in the country, not half a dozen of them thought it to their advantage to co-operate in supplying themselves with beer.

Mr. Moss had always understood that model farmers always benefited the country by spending uselessly the money which they could do very well without. He did not see how farmers could raise the price of labour unless with increased profit; and he deprecated as an interference with the independence of labour any Government compensation for the loss of their stock, against which the proper provision was by insurance.

Mr. Torr observed that the price of labour would, like anything else, regulate itself by the law of supply and demand. What he knew was that formerly a farmer had a far better and more than any other interest during the last seven years, but at the same time a better class of labour was required. Emigration in the rural districts had tended to this increase. Formerly emigration was looked upon as a sort of boon, removing the inferior labourer, and that therefore favouring the poor rate; but now emigration took the best men, and inferior labour of every description was the dearest. Higher wages were paid in the north than in the south, but in the former case the labour was cheaper in the end. Anything they could do for the labourer was an admirable system, but he had a far more than any other interest during the last seven years, but at the same time a better class of labour was required. Emigration in the rural districts had tended to this increase. Formerly emigration was looked upon as a sort of boon, removing the inferior labourer, and therefore favouring the poor rate; but now emigration took the best men, and inferior labour of every description was the dearest. Higher wages were paid in the north than in the south, but in the former case the labour was cheaper in the end. Anything they could do for the labourer was an admirable system, but he had a farm which had two cottages which he had converted into one, and he found the cottager who had cows of his own was almost universally not a first-class labourer, because he took more interest in his own affairs than in the farmer's. He kept 12 or 14 cows, and he gave a man who had a large family the milk of one of them. That was fairly valued at eight guineas a year, but was now equal to 10*l.* It would be a great advantage if the landlords and tenants of England were to go hand-in-hand in providing better and cheaper cottages for the labourer, which cottages should be detached to, and not included in, the rent of the farm, and should be let at three rooms and half at two rooms. He allowed every labourer 600 or 800 square yards of Potato land in the field, which was far more valuable than in the garden; and he provided the manure, but the labourer found the seed.

Mr. Denman concurred with Dr. Crisp that the actual loss by the cattle plague amounted to three times the sum mentioned by the President, and in some cases first-class pedigree stock, which could not be replaced, had been swept away. He could not see how the question of cattle had been said respecting the prevention of contagious diseases. Very severe losses had been sustained throughout the kingdom from pleuro-pneumonia, exceeding, since its first visit to this country, the losses from the cattle plague. Neither pleuro-pneumonia nor foot-and-mouth disease were known in this country 30 years ago, yet both had been attended since with great loss to the farming interest, and he thought this Society could give very valuable aid to the agriculturist by the expression of an opinion to the Home Office, in favour of establishing a better system of inspection of cattle and animals on our own market, as well as in the importation of foreign cattle. Under the existing regulations both foot-and-mouth disease and pleuro-pneumonia, and, thank God! the slaughtering system, had nearly stamped out the plague. He trusted that the noble lords and gentlemen of influence on the Council would exert themselves to prevent the exposure of animals suffering from other contagious or infectious disorders.

The President, in reply, adverted to the difficulty of finding Grass land for the labourers in certain districts, and suggested that if inferior Grass land were put into their hands they would be found to be the best improvers. As to Mr. Torr's plan of giving milk to the labourer, of course the principle might be carried out effectively if different neighbourhoods, and it was to be wished that the gentlemen should not condemn a plan before they had given it a trial. Mr. Sidney's suggestion as to the survey would be referred to the Council to be dealt with upon its merits. With reference to what Mr. Pell had said upon the subject of the Charter, he had not a favourable impression had got abroad, that the object of dealing with the Charter was to do away with the restrictions upon the discussion of political questions in the Society. The intention really was to remove any restriction, if any such existed, which prevented the Society discussing any subject which, although they might be before Parliament, were not of a political character, as, for instance, the question of the cattle plague, with which they had to deal last winter. Mr. Edmonds thought they should not offer prizes for such implements which already approved perfectly unless they could be had made thought perfect had been obliged to give place when brought into competition with some new invention or modification. It was a great object that all who went into their Show-yard to buy should see established there the very best implement of the kind that could be got, whether it was an old or a new one. The suggestion with reference to the supply of guano he considered a very useful one, and he should take the opportunity of ascertaining whether any useful information was to be obtained upon the subject, and if no information had yet been received by the Government, a suggestion might possibly be made that the Consuls on the spot should make inquiries, in order that an authentic statement might be obtained.

Mr. Holland, M.P., stated that the Committee upon the subject of the Charter met that morning and determined not to recommend any alteration. In practice they had been acting upon an amended Charter, and in the case of the cattle plague they had been upheld in their proceedings by the Privy Council, from whom they received the Charter. On

the other hand the Committee in coming to their conclusions had regard to all the dangerous questions that might be brought before them if the present restrictions were removed.

Dr. Crisp suggested that a question of this kind ought to be submitted to a General Meeting of the Society.

Mr. HOLLAND said the Charter pointed out how many members could call a General Meeting.

The Rev. J. Nodder moved, and Mr. Arkell seconded a vote of thanks to the Auditors, which was carried, and Mr Ashbury and Mr. Corbet were re-elected to that office. Mr. Sherborn was appointed a third Auditor in the place of Mr. Stirling.

On the motion of Sir W. Stirling, seconded by Mr. Cohen, the most hearty thanks of the meeting were accorded to the President, whose acknowledgment of this compliment brought the proceedings to a close.

SMITHFIELD CLUB CATTLE SHOW.

AGRICULTURAL HALL, ISLINGTON.—This great annual exhibition happily is not shorn, as its predecessor at Birmingham has this year been, of its chief attraction, and the Hall has, accordingly, been filled with crowds of spectators. The show is remarkable rather for quality than quantity. Although the Devon classes are as numerous as ever, and the Short-horns not far off their usual standard, the show upon the whole is short, and this is owing chiefly to deficient Hereford and Scotch and Cross-bred classes.

THE DEVONS are as good and beautiful as ever, owing their attractiveness almost wholly to perfection of form for ordinary spectators, and to quality of meat for the more professional spectators. The long line of apparently uniform and admirable excellence which their classes exhibits, is one of the chief features of the show. Nine young steers, as many 3-year-olds, 13 older oxen, and 16 in the two female classes, form a hitherto unequalled exhibition of the breed. In the youngest class of oxen Mr. Overman's prize steer is a wonderful specimen of mature growth for two years and a half—showing well-covered rib and loin and heavy flanks, and remarkable size for its age. Mr. Smith's (Exeter) younger ox, with a curly coat and even finer quality, is another extraordinary forward animal.

In the three-year-old class the 1st prize goes to Mr. Bond, of North Petherton, for an animal of extraordinary size, very heavy and thick over back and loin and rib, and with deep and heavy hind quarters.

The older class of oxen is a very good one.—Mr. Farthing's 1st prize ox showing first-rate quality, along with a very heavy and profitable covering of flesh, owing, perhaps, some of the favourable impression it makes to its close neighbourhood to a larger and coarser beast which might very well have appeared in the Sussex class.

The Female Classes are well filled, the younger class being headed by a great beauty shown by Mr. Dashwood, of Ride, and the older by Mr. Farthing's well-bred and well fed-cow.

The HEREFORD CLASSES are unusually short, but contain some animals of great excellence. And one sent by Mr. Betteridge, of Wantage, which promised to stand highest in her class, was killed on the road to the Show. Striking against a head bar as she was being driven into the truck, she slipped back, and so wrenched and ruptured herself that she had to be destroyed. Three younger steers, placed 1st, 2d, and 3d, are shown by General Hood and Messrs. Shirley and Taylor. Three 3-year-olds shown again by the former two gentlemen and Mr. Betteridge are again 1st, 2d, and 3d, and there is no difficulty in placing them in this order, General Hood's steer being uncommonly good both in form and substance. The five older oxen are a very good class, Mr. Beach's 1st prize being a capital specimen of the breed, and Mr. Heath's 2d prize beast uniting good quality with enormous size. It is in the Hereford heifer class, however, that the chief beauty of the breed is shown. Mr. Arkwright's heifer is wonderfully thickly covered, but perhaps rather small for its age; at any rate, beaten by many for its size, but extraordinarily thickly covered with very fine and excellent quality of flesh all along its back and sides.

It is the SHORT-HORN Classes, after all, which are the great beauty of the exhibition, owing their position in this respect to the beautiful variety of colour as well as faultless symmetry and extraordinarily early maturity. Fifty-six entries compete for the prizes in five classes.

In the class of Younger Steers, containing six entries, Messrs. Leney, of Kent, took the 1st prize with a very well-grown ox, not fatter than, as generally seen, breeding stock is exhibited at the Royal Agricultural Society's Show, but evenly covered. It is in the older class of oxen, however, that we see the wonderfully grand and massive character of the breed.

Mr. Taylor's 1st prize ox, and Mr. Bult's 2d prize ox in the class of 3-year-olds, are remarkably fine specimens, and there is to our thinking no finer class than that of the older oxen, in which Mr. Packe takes the 1st prize with a great and thickly covered white ox, and the 2d goes to Mr. Rowland Wood's beautiful roan, pressing in even better form the character of a good Short-horn.

The female classes are very admirable indeed. The roans shown by Mr. Stratton and Lord Feversham are great beauties, and it is a thousand pities that they should be sacrificed to the butcher at 3 years old.

Among the Cows, Mr. Stratton's celebrated cow *Diadem* attains the summit of her many honours by carrying off not only the first prize in her class, but the Gold Medal for the best cow or heifer in the yard. She is a roan, showing great quality of breed, and even greater skill in the feeder, of great length, and wonderfully heavily loaded over back and loins.

The Sussex Classes are pretty well filled; some of the entries very superior in quality to some that could be selected in the older Devon classes, from which indeed they cannot be distinguished where the heavier specimens of the latter breed are taken for comparison.

The Norfolks are a first-rate class, Mr. Hudson's polled ox being a capital specimen of good breeding and feeding. There is a very good but small show of Longhorns.

The Scotch Horned Classes are very short, and the Scotch Polled classes as good as have for many years been seen. And the polled ox shown by the executors of the late Mr. A. P. Gordon Cumming is an animal of extraordinary quality, which contested for the honour of being pronounced the best in the yard. This distinction was, however, ultimately awarded to Mr. Harris's extraordinary heavy and well-made cross-bred (Short-horn and Polled) 4-year old, which had travelled 500 miles to the Show, girthing 9 feet 11 inches, and measuring 5 feet 11 inches or 6 feet in length, and as remarkable for the evenness of its covering as for the extraordinary width and expanse of back and rib and weight of flesh with which it is covered.

The following is the Award of Prizes in the Cattle classes :—

CLASS 1. Devon Steers, not exceeding 2 Years and 6 Months old.—1st, 20*l*., John Overman, of Burnham Sutton, Burnham Market, Norfolk; Silver Medal to the breeder, Mrs. Clarke, of Burnham Market, Norfolk; 2d, 10*l*., William Smith, of Higher Hoopern, Exeter, Devon.

CLASS 2. Devon Steers, not exceeding 3 Years and 3 Months old.—1st, 30*l*., Thomas Bond, of Park, North Petherton, Bridgewater, Somerset; Silver Medal to the breeder, Thomas Bond; 2d, 20*l*., William Smith, of Higher Hoopern, Exeter, Devon; 3d, 10*l*., Walter Farthing, of Stowey Court, Bridgewater, Somerset.

CLASS 3. Devon Steers or Oxen above 3 Years and 3 Months old.—1st, 30*l*., Walter Farthing; Silver Medal to the breeder, Walter Farthing; 2d, 20*l*., Major-General the Hon. A. N. Hood, of Cumberland Lodge, Windsor, Berks; 3d, 10*l*., John Tinger, of Billingham, Aldeboro', Norfolk. Highly Commended, Mr. Paul, Yarmouth, Isle of Wight.

CLASS 4. Devon Heifers, not exceeding 4 Years old.—1st, 25*l*., John Dashwood, of High Street, Ryde, Isle of Wight; Silver Medal to the breeder, Stephen Bailey, of Hornshay, Barton, Wellington, Somerset; 2d, 15*l*., Walter Farthing; 3d, 10*l*., Rowland Gibbs, of Farrington Farm, North Petherton, Bridgewater, Somerset.

CLASS 5. Devon Cows above 4 Years old.—1st, 25*l*., Walter Farthing; Silver Medal to the breeder, Sir A. A. Hood, Bart., M.P., of St. Andries Farm, Bridgewater; 2d, 15*l*., Robert Farthing; 3d, 10*l*., Lord Sondes, of Harptree Court, Bristol. Commended: J. H. Buller, Downes, Crediton.

CLASS 6. Hereford Steers, not exceeding 2 Years and 6 Months old.—1st, 20*l*., Richard Shirley, of Baucott Munslow, Church Stretton, Salop; Silver Medal to the breeder, Richard Shirley; 2d, 10*l*., William Heath, of Ludham Hall, Norwich.

CLASS 7. Hereford Steers, not exceeding 3 Years and 3 Months old.—1st, 30*l*., Major-General the Hon. A. N. Hood; Silver Medal to the breeder, Major-General the Hon. A. N. Hood; 2d, 20*l*., Richard Shirley, Salop; 3d, 10*l*., H. Bettridge, of East Hanney, Wantage, Berks.

CLASS 8. Hereford Steers or Oxen above 3 Years and 3 Months old.—1st, 30*l*., Joseph Beach, of The Hattons, Brewood, Stafford; Silver Medal to the breeder, Richard Shirley; 2d, 20*l*., Vaughan Edwards Nightingale, of Burway, Ludlow; 3d, 10*l*., William Heath, of Ludham Hall, Norwich. Class commended.

CLASS 9. Hereford Heifers, not exceeding 4 Years old.—1st, 25*l*., John Hungerford Arkwright, of Hampton Court, Leominster; Silver Medal to the breeder, J. H. Arkwright; 2d, 15*l*., Philip Turner, of Kenchester Bridge, Leominster; 3d, 10*l*., James D. Allen, of Tisbury, Salisbury, Wilts. Highly Commended: Major-General Hood.

CLASS 10. Hereford Cows above 4 Years old.—1st, 25*l*., Major-General the Hon. A. N. Hood; Silver Medal to the breeder, Sir A. A. Hood, Knighton; 2d, 15*l*., H. Bettridge, of East Hanney; 3d, 10*l*., J. M. Read, of Ekistone Farm, Cheltenham.

CLASS 11. Short-horned Steers, not exceeding 2 Years and 6 Months old.—1st, 20*l*., Frederick Leney & Son, Waterdingbury, Kent; Silver Medal to Mr. Reynolds, Frederick Leney & Son; 2d, 10*l*., the Earl of Radnor, of Coleshill House, Highworth.

CLASS 12. Short-horned Steers, not exceeding 3 Years and 3 Months old.—1st, 30*l*., George Taylor, of Sewerby Cottage, Bridlington, Yorkshire; Silver Medal to the breeder, George Taylor; 2d, 20*l*., James S. Bult, of Dodhill House, Kingston, Taunton; 3d, 10*l*., William Shaw, of Far Cotton, Northampton. Highly Commended: E. L. Betts, Aylesford. Commended: W. Sigman, Kimbolton.

CLASS 13. Short-horned Steers or Oxen above 3 Years and 3 Months old.—1st, 30*l*., C. W. Packe, M.P., Prestwold, Loughborough; Silver Medal to the breeder, C. W. Packe, M.P.; 2d, 20*l*., Rowland Wood, of Clapton, Thrapston, Northampton; 3d, 10*l*., Richard Newcomb Morley, of Leadenham, Grantham. Highly Commended: W. Heath, Ludham Hall.

CLASS 14. Short-horned Heifers, not exceeding 4 Years old.—1st, 25*l*., Richard Stratton, of Walls Court, Bristol, Gloucestershire; Silver Medal to the breeder, Richard Stratton; 2d, 15*l*., Lord Feversham, of Duncombe Park, Helmsley; 3d, 10*l*., Sir C. Hampson Mordaunt, Bart., of Rowfant, Crawley. Highly Commended: Earl Radnor. Commended: T. Ferris, Manningford Bruce, Pewsey; R. Swinnerton, Nuneaton.

CLASS 15. Short-horned Cows about 4 Years old.—1st, 25*l*., Richard Stratton, of Walls Court; Silver Medal to the breeder, Richard Stratton; 2d, 15*l*., Lord Feversham; 3d, 10*l*., Richard Stratton, of Walls Court, Bristol. Highly Commended: Earl Radnor, Coleshill House, Highworth. Commended: Charles Ade, of Charleston, Seaford, Sussex; 2d, 15*l*., George Jenner, of The Parsonage House, Udimore, Rye.

CLASS 20. Norfolk and Suffolk Polled Steers or Oxen of any age.—1st, 15*l*., Thomas Moore Hudson, of Castleacre, Brandon, Norfolk; Silver Medal to the breeder, Thomas Moore Hudson; 2d, 10*l*., D. Walker, of Panxworth, Norwich, Norfolk.

CLASS 21. Norfolk or Suffolk Polled Heifers or Cows of any age.—1st, 15*l*., William Postle, of Smallburgh Hall, Norwich; Silver Medal to the breeder, Henry Birkbeck, Stoke Holycross, Norwich; 2d, 10*l*., Lord Sondes, of Elmham Hall, Thetford.

CLASS 22. Long-horned Steers or Oxen of any age.—1st, 10*l*., R. H. Chapman, of Upton, Nuneaton, Warwick; Silver Medal to the breeder, R. H. Chapman; 2d, 5*l*., Sir John Harpur Crewe, Bart., of Calke Abbey, Derby.

CLASS 23. Long-horned Heifers or Cows of any age.—1st, 10*l*., R. H. Chapman, of Upton; Silver Medal to the breeder, R. H. Chapman; 2d, 5*l*., Sir John Harpur Crewe, Bart.

CLASS 24. Scotch horned Steers or Oxen of any age.—1st, 30*l*., James Stewart, of 1, 2, and 3, New Market, Aberdeen; Silver Medal to the breeders, the Executors of the late Charles Smith, of Dufftown, of Banffshire; 2d, 15*l*., the Duke of Roxburghe, of Floors Castle, Kelso.

CLASS 25. Scotch horned Heifers or Cows of any age.—1st, 15*l*., John S. Crawley, of Stockwood, Luton; Silver Medal to the breeder, Allan Pollok, of Ronachan, Argyll; 2d, 10*l*., the Duke of Sutherland, of Dunrobin Castle.

CLASS 26. Scotch Polled Steers or Oxen of any age.—1st, 30*l*., the Executors of the late Sir A. P. Gordon Cumming, Bart., of Altyre; Silver Medal to the breeders, the Executors of the late Andrew Drury, of Milton, Duff, Elgin; 2d, 15*l*., William McCombie, of Tillyfour, Aberdeen, N.B. Highly Commended: J. Stephens, Conglass, Aberdeen. Commended: Duke of Grafton and E. Ling, North Repps, Norwich.

CLASS 27. Scotch Polled Heifers or Cows of any age.—1st, 15*l*., James Reid, of Grayestone, Alford, Aberdeenshire; Silver Medal to the breeder, William Hosie, of Archballock, Alford; 2d, 10*l*., the Duke of Buccleuch. Commended: J. Shaw Leigh, Luton.

CLASS 30. Welsh Steers or Oxen (Runts) of any age.—1st, 20*l*., Henry Platt, of Bryn-y-Newydd, Bangor; Silver Medal to the Breeder, Hugh Hughes, of Crymlyn, near Aber, Bangor; 2d, 10*l*., the Right Hon. Lord Penrhyn, of Penrhyn Castle, Bangor.

CLASS 31. No Entry.

CLASS 32. Cross or Mixed-bred Steers, not exceeding 3 Years old.—1st, 25*l*., James Stewart, 1, 2, and 3, New Market, Aberdeen; Silver Medal to the breeder, William Thomson, of Miltown, Dumbreck, Udny, Aberdeen; 2d, 15*l*., John K. Farthing, of Curryprool, Charlynch, Bridgewater, Somerset; 3d, 10*l*., Robert Mohr, of Meikle Tarty, Ellon, Aberdeen.

CLASS 33. Cross or Mixed-bred Steers or Oxen, above 3 Years old.—1st, 25*l*., Richard Heath Harris, of Earn Hill, Forres; Silver Medal to the breeder, Alexander Cowie, of Crombly-Bank, Ellon, Aberdeen; 2d, 15*l*., Walter Scott, of Glendronach, Huntly, Aberdeen; 3d, 10*l*., J. and W. Martin, of Aberdeen. Highly Commended: J. Napper, Horsham.

CLASS 34. Cross or Mixed-bred Heifers not exceeding 4 Years old.—1st, 20*l*., Peter Beattie, of Dunnydeer, Insch, Aberdeen; Silver Medal to the breeder, Alexander Cormock, Udny, Aberdeen; 2d, 10*l*., Robert Moir, of Meikle Tarty, Ellon, Aberdeen.

SHEEP.

The Sheep in regard to quality have never been surpassed, and in respect to size and substance many classes have never been equalled. But in the pure breeds—the Leicesters and Southdowns—there were several pens where symmetry and fine quality of flesh would have been far better displaced with the more substantial realities which give increased weight to the butcher and a larger cut to heads of households.

The Leicesters, as usual, stand first in the Catalogue, and the decisions of the judges were undoubtedly sound, as they conferred the honours at their disposal on sheep that possessed every indication of purity of breeding. This was not the case in every instance, for the old question—"Where do Leicesters end and Lincolns begin?" might again have been fairly asked. The 1st prize pen of Lord Berners were remarkable for good size and substance, with quality both of mutton and fleece, the latter being also of great weight for this pure breed. This pen had conferred on it the additional honour of the 20*l*. cup, "for the best Leicester, Lincoln, Cotswold, or any other long-woolled breed." The honour of this prize is increased, when the almost perfect animals in the Cotswold class shown by Mr. Wingate are considered. Mr. Foljambe, of Worksop, Notts, who took 1st and 2d prizes at Birmingham, was here unnoticed. In the class for light weights (under 220 lb. live weight) Lord Berners was again 1st with a pen of firm sheep, of very fine character, but the fleeces of which were rather thin, while Mr. Foljambe was again fairly beaten. Mr. Walmsley's pen, from Bridlington, Yorkshire, in the heavier class, and Mr. Bradshaw's, from Burley-on-the-Hill, Oakham, in the lighter class, and both of which were respectively 2d, were admirable specimens of this valuable, though, at present, unfashionable breed.

The Cotswolds were only four pens, and the 1st and 2d, viz., Mr. Wigmore's and Mr. West's, stood just as they did at Bingley Hall. Taking form, size, and feeding together, we have never seen a better pen than Mr. Wigmore's.

The Lincolns were only two pens, the 1st being fine, woolly, and well fed; and the 2d, good and well fed, but irregular in size. The Kentish were also only two pens, but this somewhat peculiar breed—remarkable for the way it is appreciated on its own ground, and for the manner in which it is despised when abroad—presented some signs of improvement in regard to the relative positions of back-bone and muscle, the former in this instance appearing not to have been deserted, and left high up in the cold by the latter.

The class for "Long-woolled Sheep, not being Leicesters, Cots, Lincoln, or Kentish," was an interesting one of five pens, for the 1st prize was taken by the winner in the Lincolns, and although here the declaration was "Lincoln and Leicester," the type of both were so much alike that it was difficult to distinguish them.

The Southdowns of course always form a most interesting class. Lord Walsingham, it is clear, reserved his greater force for this show, for he has in some measure recovered his loss of position last week at Birmingham. Here the Merton flock wins the 1st prize in the heavy-weight yearlings, to which pen is also awarded the Cup for the best pen of short-woolled sheep. In the light weights, too, the Merton flock is 1st. Lord Sondes was 2d in both the above classes; the Earl of Radnor and Mr. Foljambe coming in 3d with weak but very pretty pens. Too much attention has been paid to form and symmetry in this breed, as above represented, and also as further represented by Mr. Rigden's pens. Fineness of quality and form will not do in these days, when these traits are attained at the expense of that size and substance which belong to thick "scrags," stout legs and (on the male sheep) good broad foreheads. The

Merton flock seemed four years since to have arrived at the happy combination which belongs to form, size, substance, and fine quality. If this flock be required to resume its recent high position, former conditions must be returned to. The Duke of Richmond's 1st 2-shears were a grand pen, but this flock, if the younger animals be fair specimens, needs to have its weight and substance looked to if its present position in this particular would be repeated.

The Hants and Wilts Downs were well represented, the backs and rumps of Mr. King's sheep being as good as need be, a great thing to say in respect to these usually defective points of this breed. Colonel Lindsay's, M.P., and Mr. Canning's were also fed up to an admirable touch. This large and hardy breed will grow more and more in request as it becomes improved by selection, and particularly as in-and-in breeding and crossing cause flocks to degenerate from want of stamina in their constitution, and want of substance, as compared with the flabby fat to which they, under these conditions of expediency, are sure to run.

The Shropshires here, as well as at Birmingham, contained the most useful pens, taking weight with quality of meat, of any class. Lord Chesham's 1st prize shearlings contained one sheep as good as was ever produced, another that could not well be better, but the third sheep, although good, was comparatively mean. Thus a very irregular pen was placed 1st, against Mr. Smith's very even trio, all of which were better than Lord Chesham's mean one, and but little if any inferior to the medium sheep of his lordship's pen. Mr. Beach's capitally fed pen were greatly disfigured by their shepherd attempting to add to the width of their backs by cutting their wool as level as a table! Mr. Smith's 2-shears were a grand pen, for while they were of the best quality they were fairly estimated to weigh 25 stone, or 50 lb. per quarter net.

The Oxfordshire sheep filled only one class, and that for shearlings, the number of pens being six. Mr. Druce's pen were great for weight of both mutton and wool, and the Duke of Marlborough's were but little their inferior. The Mountain, Ryeland, Cheviot, and Dorset breeds filled three classes, containing eight pens in all, the first kind having two to themselves, and the last three being mixed together, the 1st honour going to the Ryelands.

The "Extra Stock Sheep" consisted for the most part of single animals, and although the list was long, it did not create a very large amount of interest. In the long-woolled sheep, however, Mr. J. H. Casswell, of Laughton, exhibited an extraordinary ewe as a specimen of his flock of Lincolnshire sheep. This sheep was 1st here, as well as at Bingley Hall, against Cotswolds and other breeds, and some wethers as well as ewes. In cross-breeds, Mr. John Overman was 1st, as usual, but his Leicester Down sheep on this occasion were not equal in appearance to his previous elegant specimens. The 2d in this, the Shearling Class, went to a cross upon a cross, viz., to Cotswold and Oxford Downs.

The entries of sheep this year were 150 pens against 173 in 1865.

The following is the Award of Prizes in the Sheep classes:—

CLASS 37. Fat Wether Sheep of the Leicester Breed, 1 Year old (under 24 months).—1st, 20*l.*, Lord Berners, of Keythorpe Hall, Leicester; Silver Medal to the Breeder, Lord Berners; 2d, 15*l.*, George Walmsley, of Rudston House, Bridlington, Yorkshire; 3d, 5*l.*, to William Browne, of High Gate Farm, Homeson Spalding Moor, York. Commended: C. J. Bradshaw, Burley-on-the-Hill.

CLASS 38. Fat Wether Sheep of the Leicester Breed, 1 Year old (under 24 Months) each Sheep not to exceed 220 lb. live weight.—1st, 20*l.*, Lord Berners; Silver Medal to the Breeder, Lord Berners; 2d, 15*l.*, Christopher James Bradshaw, of Alstoe House, Burley on the Hill; 3d, 5*l.*, William Browne. Commended: G. S. Foljambe, Osberton Hall.

CLASS 39. Fat Wether Sheep of the Cotswold Breed, 1 Year old (under 24 Months).—1st, 20*l.*, John Wigmore, of Bickerton Court, Much Marcle, Hereford; Silver Medal to the Breeder, John Wigmore; 2d, 15*l.*, Thomas and George West, of Greenhill Farm, Bletchington, Oxon; 3d, 5*l.*, John King Combs, of Langford Lechlade, Gloucester.

CLASS 40. Fat Wether Sheep of the Lincoln Breed, 1 Year old (under 24 Months).—1st, 20*l.*, John Edwards, of Buckworth, Kimbolton, Huntingdonshire; Silver Medal to the Breeder, John Edwards; 2d, 15*l.*, John Pears, of Mere Branston, Lincoln.

CLASS 41. Fat Wether Sheep of the Kentish or Romney Marsh Breed, 1 Year old (under 24 Months).—1st, 10*l.*, Frederick Murton, of Smeeth, Ashford, Kent; Silver Medal to the Breeder, Frederick Murton; 2d, 10*l.*, Marshall Cox, of Walnut Tree Farm, Waltham, Canterbury.

CLASS 42. Fat Wether Long-woolled Sheep (not Leicesters, Cotswolds, Lincolns, or Kentish), under 2 Years old (under 25 Months).—1st, 15*l.*, John Edwards, of Buckworth, Kimbolton, Silver Medal to the Breeder, John Edwards; 2d, 10*l.*, Joseph Newman, of Harrowden, Bedford.

CLASS 43. Fat Wether Sheep of the Southdown Breed, 1 Year old (under 23 Months).—1st, 20*l.*, Lord Walsingham, of Merton Hall, Thetford, Norfolk; Silver Medal to the Breeder, Lord Walsingham; 2d, 10*l.*, Lord Sondes; 3d, 5*l.*, The Earl of Radnor. Highly Commended: H. H. Penfold, Chichester.

CLASS 44. Fat Wether Sheep of the Southdown Breed, 1 Year old (under 23 Months), each Sheep not to exceed 200 lb. live weight.—1st, 15*l.*, Lord Walsingham; Silver Medal to the breeder, Lord Walsingham; 2d, 10*l.*, Lord Sondes; 3d, 5*l.*, G. S. Foljambe, of Osberton Hall, Worksop. Highly Commended: Earl Radnor. Commended: H. H. Penfold.

CLASS 45. Fat Wether Sheep of the Southdown Breed, 2 Years old (above 23 and under 35 Months).—1st, 20*l.*, the Duke of Richmond, of Goodwood; Silver Medal to the breeder, the Duke of Richmond; 2d, 10*l.*, Lord Walsingham; 3d, 5*l.*, the Earl of Radnor. Commended: W. Rigden, Brighton.

CLASS 44. Fat Wether Sheep of the Hampshire or Wiltshire Down Breed, 1 Year old (under 23 Months).—1st, 20*l.*, Stephen King, of Bockhampton, Lambourne, Berks; Silver Medal to the breeder, Stephen King; 2d, 15*l.*, Colonel Loyd Lindsay, M.P., of Lockinge, Wantage; 3d, 5*l.*, William Brown Canning, of Elston, Devizes. Commended: J. & A. Arnold, Petersfield.

CLASS 45. Fat Wether Sheep, of the Shropshire Breed, 1 Year old (under 23 Months).—1st, 20*l.*, Lord Chesham, of Latimer Chesham, Bucks; Silver Medal to the breeder, Lord Chesham; 2d, 10*l.*, Henry Smith, of Sutton Maddock, Shiffnall; 3d, 5*l.*, Joseph Beach, of The Hattons, Brewood, Dudley. Commended: Earl of Aylesford.

CLASS 46. Fat Wether Sheep of the Shropshire Breed, 2 Years old (above 23 and under 35 Months).—1st, 15*l.*, Henry Smith, of Sutton Maddock, Shiffnall; Silver Medal to the breeder, Henry Smith.

CLASS 47. Fat Wether Sheep of the Oxfordshire Breed, 1 Year old (under 23 Months).—1st, 20*l.*, Samuel Druce, of Eynsham, Oxon; Silver Medal to the breeder, Samuel Druce; 2d, 15*l.*, the Duke of Marlborough, of Blenheim Palace, Oxon; 3d, 5*l.*, Edwin Freeman, of Chilton, Thame, Oxon. Highly Commended; A. Rogers, Bedford. Commended: J. A. Mumford, Thame; F. Street, Bedford.

CLASS 48. Fat Wether Sheep of any White-faced Mountain Breed, of any age.—1st, 15*l.*, John Tapp, of Tuckenhay, South Molton, Devon; Silver Medal to the breeder, John Tapp; 2d, 10*l.*, William Smith, of Higher-Hoopern, Exeter.

CLASS 49. Fat Wether Sheep of any Black-faced or Speckle-faced Mountain Breed, of any age.—1st, 15*l.*, Jonathan Peel, of Knowsham Manor, Bridgwater, York; Silver Medal to the breeder, Jonathan Peel; 2d, 10*l.*, James McGill, of Rotchell, Dumfries.

CLASS 50. Fat Wether Sheep of the Ryeland, Cheviot, Dorset, or any other Pure Breed, not specified in any of the foregoing divisions.—1st, 15*l.*, J. B. Downing, of Holme Lacey, Hereford; Silver Medal to the Breeder, J. B. Downing; 2d, 10*l.*, James McGill, of Rotchell.

CLASS 51. Long and Short-woolled Cross-bred Fat Wether Sheep, 1 Year old, under 23 Months.—1st, 20*l.*, John Overman, of Burnham Sutton; Silver Medal to the breeder, John Overman; 2d, 15*l.*, Zachariah W. Stilgoe, of Adderbury Grounds, Banbury; 3d, 5*l.*, John White, of Parsonage Farm, Rickmansworth, Herts. Commended: G. Hine, Bedford.

CLASS 52. Long and Short-woolled Cross-bred Fat Wether Sheep, 1 Year old, under 23 Months, each Sheep not to exceed 220 lb. live weight.—1st, 10*l.*, John Overman; Silver Medal to the breeder, John Overman: 2d, 5*l.*, George Hine, jun., of Oakley, Bedford.

PIGS.

This department was slightly more extensive than on previous occasions, the number of pens being, compared with last year, as 57 in 1865 and 61 in 1866. In the aggregate form and quality there was, too, a decided improvement; as there was an entire absence of anything unsightly in the form of monster sows with their flabby continuations, and of coarse hogs, with leathery appearances at parts which long ago ought to have been converted into York hams, rashers, and "nice bits of streaky." The first prize pen under 6 months were neat whites, the breed of which is called "Improved Warmington," a name that will be foreign to most of our readers; but as they come from Warmington, in Northamptonshire, the native village of the swine probably suggested the distinction. The 2nd were Berkshires. The class between 9 and 6 months was a capital one, the 2nd prize being again Berkshires, and they were enormous for size for their age, while their feeding had been most skilful. Between 9 and 12 months there was again an extraordinary jump in size, Mr. Cattle's "Improved Lincolns," the 1st prize, fully supporting the character of the large breed. The hogs, as a rule, were not behind-hand in asserting their reputation, for there were some monsters in the class between 12 to 18 months. Mr. Coate, who had got his swine herd too fine and delicate two or three years since, returns like a breeder refreshed with experience, and carries off the cup for the best pen in the Hall, and, of course, the first prize in this class. The Earl of Radnor's 2nd were also great and well fed, as were Mr. King's 3rd prize, "Improved Berkshires," the latter being very firm and fleshy. The Messrs. Howard's Bedford pen were also admirably fed; but the company of the older hands was too strong for these comparatively young beginners. Mr. Sexton's were also well done, but they were very uneven. The extra stock pigs were single specimens, Mr. Stearn again taking 1st with his perfect 17 months black pig, which was in the same position at Bingley Hall. The sight-seeing visitors, on shilling days, and particularly the ladies, appear to look upon this division of the show as the sensational department. It is certainly a very funny as well as astonishing sight, for the perfect rolls of flesh and fat—animate, certainly, but yet scarcely able to move, resembling bolsters and woolsacks with pantomimic-looking countenances and limbs—cannot but greatly add to the pleasurable novelty which is afforded by the "Cattle Show" to town-bred visitors, while the judgment in breeding and skill of feeding cannot but at the same time redound to the credit of British agriculturists.

The following is the Award of Prizes in the Pig classes:—

CLASS 53. Pigs of any Breed, not exceeding 6 Months old.—1st, 15*l.*, John A. Underwood, Manor House, Warrington, Dunstable, Northampton; Silver Medal to the breeder, John A. W. Underwood; 2d, 10*l.*, John Mitchell, of Iver Lodge, Iver, Uxbridge; 3d, 5*l.*, Captain Richard Pelham Warren, of Worting House, Basingstoke. Highly Commended: Major-General Hood; A. F. Shield, Guisborough.

CLASS 54. Pigs of any Breed, above 6 and not exceeding 9 Months old.—1st, 15*l.*, T. L. M. Cartwright, of Melville House, Lady Bank, Fife; Silver Medal to the breeder, T. L. M. Cartwright; 2d, 10*l.*, John Biggs, of Cublington, Leighton Buzzard; 3d, 5*l.*, the Earl of Radnor. Highly Commended: J. A. W. Underwood; Major-General Hood.

CLASS 55. Pigs of any Breed, above 9 and not exceeding 12 Months old.—1st, 15*l.*, Christopher Cattle, of Wiseton Grange, Bawtry, Yorkshire; Silver Medal to the breeder, Christopher Cattle; 2d, 10*l.*, Captain Richard Pelham Warren; 3d, 5*l.*, George Mumford Sexton, of Wherstead Hall, Ipswich. Highly Commended: A. Mainwaring, Basingstoke. Commended: J. Biggs, Leighton Buzzard.

CLASS 56. Pigs of any Breed, above 12 and under 18 Months old.—1st, 15*l.*, John Coate, of Hammoon, Blandford, Dorset; Silver Medal to the breeder, John Coate; 2d, 10*l.*, the Earl of Radnor; 3d, 5*l.*, John Pittman King, of North Stoke, Wallingford, Berks. Highly Commended: G. M. Sexton.

EXTRA STOCK.

Silver Medal to the exhibitor, for the best Steer or Ox in Extra Stock, also 5*l.* prize, to Walter Farthing, of Stowey Court, Bridgewater, Somerset.

Silver Medal to the exhibitor, for the best Heifer or Cow in Extra Stock, also 5*l.* prize, to J. M. Read, of Elkstone, Cholteham, Gloucester.

Silver Medal to the exhibitor, for the best Leicester Wether Sheep in Extra Stock, to George Walmsley, of Rudstone House, Bridlington, York. Commended: W. Browne, Holme-on-Spalding Moor.

Silver Medal to the exhibitor, for the best Leicester Ewe in Extra Stock, to Christopher James Bradshaw.

Silver Medal to the exhibitor, for the best Long-woolled Sheep (not Leicester) in Extra Stock, to John Henry Casewell, of Laughton. Highly Commended: executors of T. B. Marshall, Messrs. West. Commended: J. Edwards, Kimbolton.

Silver Medal to the exhibitor, for the best Southdown Wether Sheep in Extra Stock, to G. S. Foljambe. Highly Commended: Duke of Richmond. Commended: J. Overman.

Silver Medal to the exhibitor, for the best Southdown Ewe in Extra Stock, to Lord Sondes. Highly Commended: G. S. Foljambe.

Silver Medal to the exhibitor, for the best Short-woolled Sheep (Southdown) in Extra Stock, to George Wallis, of Old Shifford, Bampton, Farringdon. Highly Commended: S. King, Lambourne, Berks; W. B. Canning, Devizes. Commended: J. Tapp, South Molton.

Silver Medal to the exhibitor, for the best Cross-bred Sheep (Long and Short-woolled Cross) in Extra Stock, to John Overman, of Burnham Sutton.

Silver Medal to the Exhibitor, for the best Pig in Extra Stock, to Samuel Genter Stearn, of Brandeston, Wickham Market, Suffolk. Highly Commended: C. Cattle, J. H. Clark, Maidenhead. Commended: G. Saunders, Dorchester; Earl Radnor, W. H. Dunn, Hungerford.

SILVER CUPS.

A Silver Cup, value 40*l.*, to the exhibitor, for the best Steer or Ox in any of the Classes, to Richard Heath Harris, of Earn Hill, Forres, Morayshire. Gold Medal to the breeder, Alexander Cowie, of Crombly Bank, Ellon, Aberdeen.

A Silver Cup, value 40*l.*, to the exhibitor, for the best Heifer or Cow in any of the Classes, to Richard Stratton, of Walls Court, Bristol, Gloucester. Gold Medal to the breeder, Richard Stratton.

A Silver Cup, value 20*l.*, to the exhibitor, for the best pen of Leicesters, Cotswolds, Lincolns, Kentish or other Long-woolled breed, in any of the Classes, to Lord Berners, of Keythorpe Hall, Leicester.

A Silver Cup, value 20*l.*, to the exhibitor, for the best pen of 1-year-old Southdowns, Hampshire, or Wiltshire Downs, to Lord Walsingham, of Merton Hall, Thetford, Norfolk, Oxon.

A Silver Cup, value 20*l.*, to the exhibitor, for the best pen of Shropshire, Oxfordshire, Cross-bred, or any other breed of Sheep (not specified in Prize List) in any of the Classes, to John Overman, of Burnham Sutton, Burnham Market, Norfolk.

A Silver Cup, value 20*l.*, to the exhibitor, for the best pen of Pigs in any of the Classes, to John Coate, of Hammoon, Blandford, Dorset.

The following are the Live-stock Judges:—

CATTLE.

DEVONS, HEREFORDS, SUSSEX, NORFOLK OR SUFFOLK, LONG-HORNS, IRISH, AND CROSS OR MIXED BRED CATTLE.—J. Buckley, The Cottage, Loughborough; J. Moon, Marlstow, Roborough, South Devon; R. J. Newton, Campsfield, Woodstock, Oxon.

SHORT-HORNS, SCOTCH, AND WELSH CATTLE.—Francis Fowler, Henlow, Biggleswade, Beds; J. B. Thompson, Anlaby, Hull; Richard Milward, Thurgarton Priory, Southwell.

SHEEP.

LEICESTERS, COTSWOLDS, LINCOLNS, KENTISH, OR ROMNEY MARSH, OTHER LONG-WOOLS, CROSS-BRED, OXFORD, AND MOUNTAIN SHEEP.—Robert Garne, Aldsworth, Northleach; George Mann, Scawsby Hall, near Doncaster, York; John Painter, Forest Road, Nottingham.

SOUTHDOWNS, HAMPSHIRE OR WILTSHIRE, SHROPSHIRE, RYELAND, CHEVIOT, AND DORSET SHEEP.—C. Randell, Chadbury, Evesham; John Clayden, Littlebury, Saffron Walden; J. S. Turner, Chington, Seaford, Sussex.

PIGS.

A. F. M. Druce, Burghfield, Reading, Berks; John Brown, Uffcott, Swindon, Wilts; John Slater, North Carlton, near Lincoln.

IMPLEMENTS.

The Implement Trade is well represented this year at the Smithfield Club Show, considering the limited space which the Agricultural Hall affords for this branch of our national industry, which is annually growing in popularity and importance. The exhibition of seeds and roots is also highly satisfactory; while the *et ceteras* upstairs, downstairs, and in the arcade, from "Extractum carnis" down to "the celebrated American cocktail bitters," may not inaptly be said to be indescribable. The fact that there was no summer meeting of the Royal Agricultural Society held during the past season, gives to the whole *omnium gatherum* something more than its ordinary Christmas welcome and relish to both sight-seers and exhibitors.

In the Hall there are 33 stands downstairs, 133 in the galleries, and about 52 in the Arcade, with one or two outside; thus making a total of about 200.

To pay a passing notice individually to such a number of exhibitors is, we fear, more than we can condense into the limited space at our disposal; and yet there is hardly a single stand we can pass by in silence without expressing an unfeigned degree of reluctance. Some things, however, must be noticed at length. On this head the orders of the day are imperative, and therefore a long list of useful things must be taken for granted, as it were, as well known and familiar to everybody.

"Muck's the mother of meal," says the old proverb, and the first entry in the Catalogue is a liquid manure cart, in Stand No. 1, of Mr. Baker, of Compton, Berks, along with pumping apparatus. Ruston, Proctor, & Co., Lincoln, exhibit their well-known engines, threshing machines, and sawing benches. Wallis, Haslar, & Steevens, Basingstoke, show an engine and threshing machine, with a long list of barn implements and apparatus. Richard Garrett & Sons and Richard Hornsby & Sons, on Stands 4 and 5, have each a very valuable assortment. The former exhibit portable and traction engines for all kinds of work, agricultural and engineering, with threshing machines; also their celebrated drills, manure distributors, and horse hoes. The latter, besides their usual show of field and barn machinery, come out strongly this year in reaping machines and mowing machines in great variety, single and combined, both manual and self or mechanical, delivering the corn in swathe or sheaf; the grass outspread, and leaving a clear track for the return team. Their self-raker is on the rocking lever or spindle principle. Thus, on the top of a standard four or any other desirable number of rakes revolve on a rocking spindle, and gearing so constructed as to sweep or rake the corn clean off the platform with a horizontal movement—the rakes in the opposite quadrant rising at the same time as high as the standing corn, thereby performing the movement and function of the hand rake, or perhaps, speaking more correctly, we should say, a close approximation to the automatic action of the hand-rake from the time it enters the corn to the delivery of the sheaf. It would require both mechanical and mathematical drawings to do justice to the details of mechanism of this self-raker reaper, and its *modus operandi*, which is more than we can devote to it. The endless spike-armed chain swathe delivery is both simple and effec-

tive. Their mowers also merit a favourable notice. With regard to the knife or cutting apparatus and movement, opinion has recently assumed a controversial spirit, in which the facts of the case are not very easily followed at times. We hail this as a favourable omen for the future, without being in the slightest degree prejudicial to the present, for, as in many similar controversies, all sides of the question have such much to say in its own favour. Thus the long stroke has something in its favour, so has the short stroke—long cranks *v.* short cranks; long shanks *v.* short shanks, *alias* "fitmen" or connecting rod. But further with this controversy we are not at present. How can we find space for a separate paragraph after we have noticed the other reapers and mowers, we shall return to it briefly. Suffice it to say at present, that Messrs. Hornsby have adopted the common or short stroke, &c.

W. Tasker & Sons, Andover, show portable engines and threshing machines; Mr. Burrell, Thetford, a traction engine and straw elevator; Tuxford & Sons, Boston, have a fine show of engines and threshing machines, and they also exhibit their patent straw stacker and improved circular sawtable.

On Stand No. 9, John Fowler & Co., of London and Leeds, exhibit two of their superior traction engines—the one an 8-horse and the other 10—with a steam plough and cultivator. Steam culture requires machinery of a very solid, substantial, and effective kind, and this is what always characterizes the Stand of this now well-known firm, presenting to the eye of the most common observer a very interesting and instructive contrast as compared with the horse ploughs, cultivators, and tackle of our forefathers, no later than the commencement of the present century, while to the scientific mind it must afford a very satisfactory index to the march of improvement in modern agriculture.

Passing over the next two Stands (10), Catchpool & Thomson, Colchester, threshing machine (11), and Aerman & Co., Spalding, fire engines, with a favourable notice, we come to the well-known traction and portable engines of Clayton, Shuttleworth, & Co., which never fail to command the admiration, and even to impress the mind with a just sense that the powerful arm of steam has at length been successfully raised in the cause of agriculture, both in the stackyard and field. There must be something very wanting in the high spirit of the agriculturist who leaves this Stand with any other conclusion. Besides the attractive exhibition of steam engines, this firm has a full average of the kind of articles usually shown at our Christmas meetings.

W. Mell & Sons, Rothwell, Northamptonshire, show their waggons, carts, horse ploughs, and cultivators, which have long been favourably received, and J. J. Rawlings exhibits a large portable grinding mill, with a fluted roller, the two bearing a somewhat singular contrast to each other. The one for breaking corn, the other cracking bones.

The Messrs. J. & F. Howard, of Bedford, have an extensive and highly valuable assortment of their steam and horse culture implements, and hay harvest machinery. The latter set of articles comprises some with their patent tracking or steering gear, which, with the long experience and tackle complete, and complete subsoil trenched and moister for testing drought, at this early period is not studied, it is happily unique, and practically instructive. The whole Stand exhibits a very high standard of perfection in agricultural mechanism, and proves, practice with science in here very successfully exemplified.

Henry Kinsey shows horizontal and vertical steam engines, and Holmes & Sons, of Norwich, show a fair sample of their tried and highly-prized barn machinery, seed and manure drills. The Silverlee Co. exhibit their well-known self-acting reaping machine, sometimes termed the father of this class of implements; also their wheels, carts, and waggons, the latter two with the necessary furnishings for harvest and other work. These are all too well known to our readers to require a single word of remark, and we must also suggest the liquid manure carts and other articles shown.

Ransomes & Sims have an excellent selection of their portable engines, threshing machines, and rotary screens. They also show a new stone grist mill, on iron frame, of merit; likewise Bean, Oat, and oilcake mills; light horse and general purpose ploughs, too well known to require any commendation at our hands in this place.

Brown & May, Devizes, exhibit superior portable engines.

Woods & Cocksedge, Stowmarket, show vertical steam engines and grinding mills with their well-known corn crushing. There is obviously a growing demand for machinery of this kind, and it affords us great pleasure in bearing testimony to the greater supply exhibited at our show meetings to meet this increasing demand, and we do not think any will find fault with our remarks under this head when coupled with the name of R. Hornsby & Sons, Grantham, who also exhibit superior grinding mills, with their well-known corn crushing and Bean mills, linseed and malt mills, &c. They also exhibit portable and fixed steam engines, threshing machine, chaff cutters, &c., &c. Also Ashby & Jeffries exhibit grinding mills, Oat, Bean, and oilcake mills. We can also speak from experience as to the value of their haymaking machines. They also show fixed and portable steam engines, threshing machines, &c. Mr. Humphries, of Pershore, Worcestershire, has only one entry, a portable combined threshing machine.

The Reading Iron Works, Berks, have a very large and very fine exhibition of portable and fixed engines, threshing and dressing machines. Their far-famed portable horse gear threshing machine, a sample of their saw benches, another of their French burr stone grinding mills, haymaking machines and horse rakes, Barley avellers, Oat, Bean, and oilcake mills, chaff cutters, &c.

Burrows & Carmichael, Banbury, show an excellent portable engine and an American grist mill, and Philip & Henry Philip Gibbons, Warwick, a fixed threshing, corn and threshing machine. Marshall, Sons, & Co., of Gainsborough, Lincolnshire, a young firm of rising merit, exhibit portable engines and sawing tables, circular saws. W. Aichin & Son, Northampton, a portable engine mounted on steel springs.

Wm. Cressall & Sons, Beverley, show their serrated clod-crushers, also a plain roller, wheels, carts, and waggons, a patent Victoria reaping machine, a bone mill, &c. Robey & Co., Lincoln, show portable engines, a fixed vertical engine, and a threshing machine. Mr. John Tye, of the same place (Lincoln), a grinding mill, with two pairs of French burr stones, another with one pair of French burrs, and a Bean mill.

Here ends the downstair show of Implements, and we must postpone the remainder of our report until next week.

——— Among the novelties of the Implement department is a corn screen which Messrs. Ransome are bringing out. It is an oscillating sloping sheet of pierced zinc, across which and lying loosely on it at intervals of 6 or 8 inches, are light rollers which can move freely up and down in slots at either end, according to the thickness of the grain that comes down to them, which thus receives hindrance to too rapid a motion off the screen—a sort of thumb pressure above each grain as it passes under—and at the same time a surface rubbing, which helps to clean the sample. It appeared to do very good work, and seems likely to be a success. At another Stand we heard of a contrivance for hindering the deposit of earth inside steam boilers. It is said to act by setting up a particular electrical condition—using for that purpose difference of temperature inside the boiler itself—by which a cake if already formed becomes detached, and by which such deposits are hindered for the future. They said the patent for America had been sold for some fabulous sum, and that a company was to be formed for the utilisation of the patent here.

——— The general conclusion regarding the Implement department at which we arrive is favourable, and to this rule there are very few exceptions. The show of seeds and roots was fully more than a fair average. The prime movers, or steam-engines, if not more numerous, are well represented. Steam and horse ploughs and cultivators are probably below par in point of numbers; but not so in other respects, as to intrinsic and effective merit. Hay and corn harvest implements and machinery were never so numerous or effective, more especially the latter; reaping machines also, and to such we may add horse-power mowing machines. Scythes, bagging and reaping hooks are fast disappearing from our exhibitions, and it is high time that an effort should be made to discontinue them in the field; for working them is a species of slavery which requires a week's very trying twisting of the ribs, backbone, and spinal marrow to comprehend what it practically meant. In the stack-yard and barn department the show is highly satisfactory; and in the preparation of food for live-stock, including grinding-mills, chaff and Turnip cutters, corn and cake mills, steaming apparatus, there is unusual excellence; while the commercial and manufacturing firms of the capital have overcapped all the previous Christmas meetings held by the Smithfield Club, both as to the number and character of the indescribable *et ceteras* which they have poured into the Agricultural Hall.

ANNUAL MEETING: *Dec.* 11.—The Duke of Richmond presided, and there were present, among the members, Lord Walsingham, Lord Tredegar, Lord Berners, Lord Feversham, Major-General Hood, Mr. C. Barnett, Mr. Druce, Mr. O. Wallis, Mr. J. Baldwin, Mr. C. Howard, Mr. Moore, Mr. R. Smith, Mr. Overman, Mr. Wilson, Mr. Wrigley.

Mr. BRANDRETH GIBBS, the hon. secretary, read the minutes of the last annual meeting, which were confirmed, and he then proceeded to read the annual Report. In this there was no point of general interest or importance, except a reference to the cattle plague. It stated that the Report last year that the Council had considered it their duty to give their most serious attention to this subject, it being a matter of vital importance not only to all persons [illegible] but also to the public at large, and after the most mature consideration the following resolutions had been agreed to:—

"That his Grace the President and the Hon. Secretary be requested to wait upon the Privy Council to present three recommendations—viz., that no fair or market for store stock should be opened before the 1st of April, that the greatest care should be taken that the regulations as to quarantine were strictly carried out, and that permanent lairs should be established at the ports of disembarcation."

On the motion of Mr. Moore, seconded by Mr. George Turner, the Report was unanimously adopted.

Lord Hardwicke was then elected as President of the Club for 1868.

The following gentlemen were elected by ballot to serve on the Council in room of the eight retiring members:—Mr. John Baldwin, of Luddington, Stratford-on-Avon; Mr. Richard Hornsby, of Spittlegate, Grantham; Mr. E. W. Mowle, of Coles-[illegible] Mr. [illegible] Mr. [illegible] Mr. [

cultural novelties, emanating from scientific men, I am sorry to say, seldom are such as to inspire good farmers with much confidence in the wisdom, judgment, and sound business character of their originators. If, however, the subject on the discussion card has not the doubtful merit of an agricultural novelty, nor the charm of an ingenious invention, I believe it has the advantage of giving gentlemen a good opportunity of discussing the pros and contras of certain prevailing practices of applying natural and artificial manures to the land, or of reconciling many apparent contradictions in the actual practice of different farmers. In inviting discussion to-night, I hope those taking part in it will not be satisfied by merely stating the results of their actual experience, but that they will also point out the reason why they prefer one practice to another, and why the plan which is generally adopted by intelligent farmers is not resorted to in their case. Our practice as regards the best time and most approved mode of restoring fertility to the land by means of manures, evidently must greatly be modified, according to the chemical composition and properties of the fertilizers which we wish to employ, the chemical and physical properties of the soil, and the requirements of the plants which we wish to cultivate. In order to be of any practical use, agricultural matters should be treated rather in detail than in a general way. It may be very useful to a country gentleman to have some general ideas of farming; but I very much question whether such ideas alone would be of much use to the rent-paying farmer, who, amongst other particulars, must know exactly how and when to apply the various fertilizers which practice has pointed out to him as the most profitable for raising good crops of Wheat, Barley, or Turnips. I therefore propose to treat my subject less from a general or theoretical point of view, than to enter somewhat into details respecting the most approved modes and periods of applying manures to the land. In the first place, I shall have to speak of the circumstances which ought to regulate the manner and the time in which farmyard manure is most usefully employed, and then it will devolve upon me to offer similar remarks on guano, bones, superphosphate, nitrate of soda, and a few other artificial manures.

FARM MANURE.

The principal questions on the mode in which farmyard manure should be used, and the best time at which it should be incorporated with the soil, appear to be the following. Should it be used long and fresh or short and rotten? Should it be carted into the field and ploughed in at once? or may it not be spread on the land, and ploughed in at the convenience of the farmer, without deterioration of its qualities? Is it desirable to distribute manure in a field in small heaps, and to leave it in that state for days or weeks? or should the manure be spread at once, and may it be left exposed to the air in such a state for some time, in case heavy rains should set in, and the wet condition of the land render the ploughing-in of the manure undesirable? What is the best time of the year for carting manure on the land? Should this be done in autumn or in spring? or may it be done at any convenient time, no matter what is the period of the year? To what crops of a rotation should farmyard manure be used, where a sufficient quantity is not produced for meeting the requirements of the crops intended to be grown, and the deficiency has to be eked out by the employment of artificial manures? On all these questions great variety of opinion prevails. Allow me to state at once that I have always been an advocate for putting the manure on the land as soon as possible after it is produced, and that I believe autumn manuring, as a general rule, will be found more advantageous than spring manuring. It is not enough, however, merely to give expression to these convictions, for you will naturally expect me to support them by such proofs as will carry with them also conviction to your minds. In attempting to do this, I do not wish to weary you with chemical details; but it will be necessary for a clear understanding of the subject, that I should speak as briefly as possible of the composition of fresh farmyard manure, and the changes which it undergoes in keeping, or by exposure to the air. Chemically considered, farmyard manure has to be regarded as a universal and perfect manure. It unites in itself all the elements it contains all the constituents which our cultivated crops require to come to perfection, and it is suited to almost every description of agricultural produce. As far as the inorganic fertilizing substances are concerned, we find in farmyard manure potash, lime, magnesia, oxide of iron, silica, phosphoric acid, sulphuric acid, hydrochloric acid, and carbonic acid; in short, all the materials, not one excepted, that are found in the ashes of agricultural crops. Of organic fertilising matters we find in farmyard manure some which are readily soluble in water, and contain a large proportion of nitrogen; and others insoluble in water, and containing, comparatively speaking, only little nitrogen. The nitrogenous matters are principally present in the droppings and urine of animals, and yield ammonia on decomposition. The straw or litter in the manure hardly contains any nitrogen, and on decomposition produces brown vegetable organic acids, which pass under the name of humic acids. These organic acids—which, as we have just seen, are produced simultaneously from straw, with the ammonia arising from the putrefaction of excrementitious matters—have a great affinity for ammonia, in consequence of which they fix it as readily as sulphuric or any other mineral acid. For this reason I may observe, in passing, that chemical fixers of ammonia are perfectly unnecessary in farmyard manure in which a due proportion of litter is used. Farmyard manure is a perfect manure, because experience, as well as chemical analysis, shows that the fertilizing elements are present in it in states of combination which seem to be specially favourable to the luxuriant growth of plants. And I would direct special attention to the fact that fresh farm-yard manure, although it has a strong smell, practically speaking contains no volatile or free ammonia; and I may add that I have also found none worth mentioning in perfectly rotten dung; and, of course, where no free ammonia exists, chemical fixers of this substance are quite out of place. It is true ammonia is produced abundantly on the decomposition of the urine and solid excrements of animals; but it is equally true that during their decomposition peculiar organic acids are formed in the rotten straw, which effectually bind the ammonia and prevent its escape into the air. We have thus good grounds for maintaining that artificial fixers of ammonia are neither required for fresh nor rotten dung, and also for asserting that both fresh and rotten dung may be freely exposed to the air without loss in ammonia, for the former contains hardly any ammonia in any form, and the latter contains it in the form of ammoniacal and volatile salts. Farmyard manure, as is well-known, is subject to the process of spontaneous decomposition, which generally is called fermentation, but more appropriately putrefaction. The nature of this process consists in the gradual alteration of the original organic matters, and in the formation of new compounds. All organic matters, separated from the living organism, are affected by putrefaction, some more readily, others more slowly. These organic matters, which, like straw, contain but little nitrogen, on exposure to the air and moisture at a somewhat elevated temperature, decompose spontaneously and slowly, without disengaging any noxious smells. On the other hand, the droppings of animals, and especially their urine, which is rich in nitrogenous compounds, rapidly enter into decomposition, producing disagreeable-smelling gases. In a mixture of nitrogenous and non-nitrogenous matters the former are always first affected by putrefaction; the putrefying nitrogenous matter then acts as a ferment on the other organic substances, which by themselves would resist the process of spontaneous decomposition much longer. The disagreeable-smelling gases which are produced during putrefaction arise from the sulphur and phosphorus of the nitrogenous compounds present in dung. A considerable proportion of this sulphur and of the phosphorus combines with hydrogen, and form sulphuretted and phosphoretted hydrogen—two extremely nauseous gases—which both escape from fermenting dung heaps. The relative proportions of inorganic to the organic matters in well-rotten dung is much greater than in fresh. This increase in mineral matters can have only been produced at the expense of organic substances, the quantity of which during the process of fermentation must decrease in a corresponding degree. Thus, whilst I found in fresh dung, dried at 212° Fahrenheit, organic matters 83.48, inorganic substances 16.52 per cent.—rotten dung shows in 100 parts, organic matters 68.24, mineral or inorganic matters 31.76. It is clear, therefore, that during the fermentation of dung much of the organic substances must become changed into compounds which are readily soluble in water, and easily washed out by heavy rains, or into gaseous products which are readily volatilised. In point of fact, both volatile gases and readily soluble organic and inorganic compounds are formed. By far the largest proportion of the gases which escape into the air consists of carbonic acid gas, a oxide of carbon and light carburetted hydrogen, or marsh gas: and it is worthy of special notice that no appreciable amount of ammonia is dissipated. Now this is not a mere assumption, but a fact which can be readily ascertained by any one who has the skill of discerning the amount of ammonia with accuracy. The practical result of the changes which take place in fermenting dung is, that fresh manure in ripening becomes more concentrated, richer in nitrogen weight for weight, more soluble, and consequently more easily available to plants, and more energetic in its action.

The percentage composition of fresh and rotten manure, however, does not throw much light on the question whether a dung derives any loss in ammonia during ripening, and to what causes are really due its deterioration by exposure to wind and weather. But if a given weight of manure is put up in a heap, and its composition ascertained from time to time, and its loss in weight is simultaneously determined, then it is clear it is possible to ascertain whether the rotten dung which is produced from a given weight of fresh contains the same, or less, nitrogen than was originally present; and, by exposing the rotten dung afterwards to heavy rains, we can also determine the reason why it deteriorates so rapidly under their influence. This I have done a great many years ago. Two cart-loads of fresh farmyard-manure were placed in a heap set against a stone wall, but otherwise exposed to the influence of the weather.

Without entering much into particulars, I may observe that, in the first experimental period, the fermentation of the dung proceeded with rapidity, but was unattended with any material loss of ammonia, nor, indeed, any appreciable amount of the more intrinsically valuable constituents of dung. At the end of April (as will be seen), the whole heap contained almost precisely the same amount of nitrogen which it contained when put up fresh in the preceding November. During that period little rain fell, and this never in large quantities at a time; whilst in the interval of April and August rain was more abundant, and fell several times in continuous heavy showers. In consequence of this, soluble matters in the heap were washed out, and with them a considerable portion of available nitrogen and the more valuable mineral constituents of dung were wasted. The general conclusion which may be drawn from these experiments is evidently that manure loses no valuable fertilising matters by simple exposure to dry air, and, I may add, nor even by exposure to a broiling sun, but that it is rapidly deteriorated by rain. Now it is upon these undeniable facts that I found an argument for carting the manure on the land as soon as can be done conveniently. Once placed there, neither sun nor wind will hurt it, I believe, in the slightest degree; and when rain falls, the soluble matters will be washed into the soil, where they are wanted, and stored up there for the use of plants; for all soils—some in smaller, others in larger degree—as is well known, possess the power of absorbing and retaining, in a comparatively speaking insoluble condition, the more valuable soluble fertilising constituents of dung. If the manure is carted on the field during the autumn or winter, and spread at once, it will, even when perfectly fresh, become sufficiently decomposed by the time it is required by the spring crops, and the unnecessary expense of putting up manure in heaps, and turning them over once or twice, and the loss attending such turning, may be entirely avoided; and this may be done at a time when the horses have little or nothing to do, and the fields are not injured by the horses' hoofs. I advocate autumn and winter manuring because autumn and winter, generally speaking, are the most convenient periods for carting manure. There is, however, not the slightest reason why this may not be done at any convenient time through out the year; for, as I have said before, not even a broiling sun dissipates any valuable fertilising matter from manure.

Many persons, if I am not mistaken, entertain rather erroneous views with respect to the desirability of ploughing in the manure directly it is carted on the field. I have, of course, no fault to find with this, if their anxiety to plough-in the manure directly arises from the wish that whatever can be done at once should be done without delay; but if this is due to the fear that manure, if not ploughed-in directly, will lose in fertilising quality, I cannot share their anxiety; and go so far as to say that often it would be much better to leave the manure freely exposed on the land in wet weather, than to plough it in, and make a mess on the land when horses and men ought to be kept from it. Others take a middle course; and distribute the manure in small heaps, and leave it in this state until a convenient time occurs for spreading and ploughing it in. Now this, I do not hesitate saying, is an objectionable practice; for if heavy rain should fall continuously for a number of days, these small heaps will be washed out—at least partially, in consequence of which the portions of the field where the heaps were placed will receive too much of the soluble and most fertilising matters, and the crops there become too rank, and the produce on the field will ripen unequally. I have observed over and over again the injury which may be caused by the objectionable practice of distributing manure in small heaps on the land, and leaving them for weeks together before spreading the manure. I would therefore advise the manure to be carted on the field whenever convenient, to spread it directly, and not to trouble about ploughing it in at once if rain should set it, even if the wet state of the land should render it advisable to keep horses and men from it for weeks or months. The views which I have advanced, I am aware, are not accepted as correct by some agricultural authorities. Thus, for instance, I find in an article on the farming of Leicestershire, in the last vol. of the Journal of the Royal Agricultural Society, the following passage: "Lord Berners puts great stress on covering up the manure when laid in small heaps on the land, and cites an instance where the labourers were overtaken by a thunderstorm while manuring for roots, the ridges being opened and the dung carted on and laid in small heaps. A portion was covered with soil previous to the storm, and the remainder left for a few days exposed, the manure and treatment being in every other respect the same; but the difference in the crops was most astonishing. Where the manure was covered the produce was nearly double. Nor did the difference end with the root crops, for the Barley succeeding was also very much better on the covered manure. This scarcely accords with the scientific conclusions of Professor Voelcker, who does not anticipate harm from exposing manure to spread on the ground. Lord Berners, however, is far too practical and acute an observer to allow us to have the slightest doubt as to his accuracy, and this is one of the instances where the teachings of science and the facts of practice cannot be easily reconciled." In explanation of this passage, I would observe that I have not the slightest doubt about the accuracy of Lord Berners's observation; but that I cannot recognise in it either an instance which shows that the teachings of science and the facts of practice cannot be easily reconciled, nor a proof that manure sustains any loss by evaporation. Incidentally I may also observe that I never taught to leave manure in small heaps in a field, but that it should be spread out at once. The real cause why, no doubt, Lord Berners got a bad Mangold and Barley crop on that portion of the field where the labourers were overtaken by a thunder-storm appears to me a very simple one. The field was a heavy clay land, and therefore it is not at all surprising that where the manure was got on the land and ploughed-in before the rain interfered with the operation, the Mangel and succeeding Barley were good, and these crops turned out bad on the other portion of the field simply because the land was messed about after the thunder-rain, and not because the manure lost in quality by exposure to the air. At all events it is a fact well known to clay-farmers that on stiff land a better crop is often obtained without any manure when worked dry than with manure when worked wet. With regard to the crops to which farmyard manure is best applied, I would observe that time does not permit me to dwell on particulars, I therefore will only notice that on farms on which farm-yard manure is scarce, and recourse must be had to artificials the most economical plan to use the manure appears to be to grow the root crops mainly with artificial

manures and to spread the yard-dung on the seeds or Clover-lay.

Artificial Manures.—I now must hasten on, to offer very briefly some observations relating to the manner in which some of the more important artificial manures should be used on the farm. All concentrated manures, such as guano, nitrate of soda, or superphosphate, should always be mixed with some diluent or the other, and applied in a finely divided state. Artificial manures may be conveniently divided into nitrogenous and phosphatic manures. The former, as is well known, are specially useful for cereals and grass crops, and the latter for root crops. Concentrated nitrogenous manures, such as guano, nitrate of soda, sulphate of ammonia, &c., I am of opinion should never be ploughed-in deep, or applied with the drill, but be spread, properly diluted with dry and fine soil or burnt clay, vegetable ashes, or sifted coal ashes, by hand, or better by the broad-cast distributer, and harrowed-in very lightly. Superphosphate and bone manures, on the other hand, should be drilled-in at the time of sowing the seed. When the land is very light, or out of condition, so that rather a heavy dose of manure is required, it seems to me advisable to sow a portion broadcast, and to drill-in the remainder of the manure with the seed. The state of preparation in which artificial manures are sold by dealers often is not what it ought to be, and particular care should be exercised by the farmer not to use any which are wet, lumpy, or otherwise badly-prepared. This remark applies especially to bone-superphosphate. Even some of the most respectable manure-manufacturers, I find, sell badly-prepared bone manures—that is to say, manures in which pieces of bone an inch long and longer, and scarcely acted upon by acid, are plainly visible. This arises from a desire to convey the impression that the manure is made from bone; frequently, however, so-called bone-superphosphates are in reality made from mineral phosphate and acid, to which a few plums of bone have been added. But, even should the manure be made entirely from bone, it would be far better if it were thoroughly disintegrated, and sold in a dry pulverent state. As regards the quantity of superphosphate used for root crops, I may mention that sometimes mistakes are made by employing too much. As a general rule, 2½ to 3 cwt. of a really well made and good superphosphate appears to me an amply-sufficient quantity for raising a good crop of Turnips or Swedes, on land in a fair agricultural condition, provided the superphosphate is properly diluted with ashes or dry soil before drilling, or applied with the liquid manure drill. Considering the great advantage of distributing much more uniformly Turnip manures by means of the liquid-manure drill than by the dry drill, I am surprised that the former implement has not superseded to a greater extent the employment of the latter. There can be little doubt that where water is at hand the application of superphosphate by means of the liquid manure would effect a great saving in the purchased manure, for we possess trustworthy experimental evidence that half the usual quantity of superphosphate gave as large a crop of roots as double the quantity applied with the dry drill.

Bones.—Bones in the shape of 4-inch and even 1-inch pieces are still used by some farmers. I do not think this is the most profitable plan of applying this important fertiliser to the land. As long as bone-dust was comparatively cheap, and prepared bone-manure dear, the practice of using bones in a raw condition was perfectly defensible; but at the present time the altered circumstances of the manure market have the effect of superseding more and more completely the use of ½ or 1-inch bones. Even for permanent pasture I believe bones partially dissolved by sulphuric acid, will be found more profitable than raw bone-dust; but the latter lasts longer than the former; but it should be borne in mind that the purpose for which manure is put on the land is not that it should remain there, but that it should produce heavy crops. Now, bone-dust requires a season or two before its action becomes complete, and increased produce, and all the while the capital invested in the purchase of the manure remains on the land without bearing much interest, which surely cannot be an advantage. "Quick returns and small profits" should be the motto of the enlightened agriculturist, if he wishes to make the most of purchased manures. The profits of farming, I believe, in comparison with those realised in other pursuits of life, are, and probably always will be, small; hence, the greater the necessity appears to be to secure quick returns, and not to lock up capital useless in the soil. I would, therefore, suggest the addition of about 25 per cent. of sulphuric acid, which will make a portion of the bone-dust soluble, and directly available for the use of plants. The addition of acid to bone-dust, moreover, in localities where crows abound, effectually prevents the depredations of these feathery manurial scratchers-down, which carry off a good many bits of bone-dust from recently buried potatoes.

Nitrate of Soda.—Nitrate of soda is usefully mixed with about double its weight of common salt before sowing. 1 cwt. to 1 cwt. of salt is a fair top dressing for Wheat or Barley. Top-dressings with nitrate of soda should be only used in winter, but delayed till about the beginning or middle of March. The precise time when nitrate of soda should be put on the land depends on the more or less advanced state of the season, and the proper time of using this top-dressing I found, by many years' actual experience on the field, is the period when the young Wheat crop is just beginning to make its first perceptible start in spring. I have used nitrate of soda as late as the middle of April with advantage, and in other years as early as the middle of February with equally good effects. If there is a fair prospect of March being a moderately dry month, I should not hesitate to top-dress with nitrate of soda as early as the end of February; but should the weather at that time and in March be very wet, I would delay the application of nitrate of soda till the beginning, or even middle of April. There are two good reasons why nitrate of soda should be applied to the land in spring and not during the winter months. First, experience has shown the period pointed out by me to be the best; secondly, it is well known that no soil, whatever its composition may be, has the power of absorbing and retaining nitrates; and these highly soluble salts, therefore, are quickly washed away by the rain into the subsoil, where they are not wanted, if they are applied to the land during the winter or early part of spring; and hence it is only reasonable to delay top-dressings with nitrate of soda until the time when the Wheat begins to make its first perceptible spring growth. It is well to bear in mind, that soils do not possess the property of fixing nitrates. Unlike salts of ammonia, nitrates pass unchanged through the soil into the drains, and are lost to vegetation in a great measure, if they are applied to the land in autumn or winter.

Ammoniacal Manures, such as sulphate of ammonia and guano, on the other hand, can be used in autumn or during winter, and not too late in spring. Even on light land, it is not desirable to apply guano too late in the season for corn-crops. Autumn-dressings with guano generally produce more healthy and equal crops than when manured in spring; and, as all soils seem to possess the power of eliminating ammonia from soluble salts, guano, sulphate of ammonia, and other ammoniacal manures, may be applied during the winter, without risk of losing valuable fertilising matters.

In conclusion, allow me to throw out a few hints as regards the mode in which guano should be applied to the land. Much more guano should be taken than is bestowed upon it, to apply it in a good mechanical condition. Guano should never be sown without having been first sifted, and any hard lumps in it reduced to powder. It is a good plan, before sowing, to mix the sifted guano with about the same bulk of salt, or double its weight of dry soil or ashes. Salt is a useful distributing agent of the fertilising constituents of guano in the soil, and, moreover, prevents the dusting and loss of finer particles of guano during sowing, in the field. The mechanical preparation of guano is not quite so easy as it appears to some farmers, and this, I believe, is the reason why very few farmers perform it properly. Allow me briefly to describe a plan which I have found to answer well in preparing guano for use: First sift off all the fine guano-dust. Then put the lumps through a sieve which will admit twice their bulk of sharp sand. Spread the mixture on an even floor, and pass a heavy garden-roller over it, or beat down the lumps with a wooden mallet. (The admixture of sand prevents the caking of the guano, and greatly facilitates its reduction to fine powder.) After which has passed through the sieve, add salt in the proportion of two parts, by weight, to one of guano. The moisture imparted to the guano by the salt prevents the dusting, which is a great inconvenience in sowing by hand. Salt in conjunction with guano, moreover, has a specific action on vegetation, which is especially beneficial to corn-crops on light soils. I cannot too strongly impress you neither to spare trouble nor expense in preparing guano properly before sowing it: ten shillings or fifteen shillings or even a pound, per ton will be well laid out, should the labour of preparation be so suggested by the cost as much. Peruvian guano contains no more than three fourths to one-and-a-half per cent. of free ammonia, and hence there is no necessity of adding sulphuric acid to it, with a view of fixing the ammonia. Nevertheless, the addition of sulphuric acid to guano can be strongly recommended, for this reason that it greatly increases the chemical energy which the manure is capable of producing in the field. As little as 10 or 15 per cent. of sulphuric acid, added to guano, I find, has an extraordinary effect upon its composition. Sulphated Peruvian guano, on account of the large amount of soluble phosphate which it contains, is certainly more efficacious than guano in its natural condition, especially for root crops. However, the mixing of guano and oil of vitriol, if I am not mistaken, is not a pleasant operation for the farmer, and I therefore do not advise you to attempt it; but if you will procure 1 cwt. of guano, and gradually, in the way described just now, and then mix it with a good dry coprolite superphosphate, rich in soluble phosphate, you will secure all the chemical benefit which sulphuric acid itself produces on guano, much more conveniently, and thus be able to prepare, yourself, a really good guano-superphosphate more economically than you can buy them all prepared. For root crops, one of guano and three of coprolite superphosphate from coprolites, and containing, as it should do, not less than 20 per cent. of soluble phosphates, is an excellent mixture, and a fair dose per acre. For corn-crops, the quantity of guano and superphosphate should be reversed—that is to say, one of phosphate and three of guano should be employed.

CHESTER-LE-STREET, DERBYSHIRE: *The Condition of the Farm Labourer.*—Mr William Davidson, of Bunkerhill, read the following paper. It has been remarked that the British labourer is the best of all tools; not as implying that the labourer is to be regarded or in any way treated as a mere machine, but that, as in respect to no instrument, however skilful constructed or adjusted, can ever surpass or even equal the human voice, so no machine, however well adapted, can ever in skill or dexterity equal the human hand backed by at least a modicum of brain. Seeing then the important position occupied by the farm-servant, it may be interesting to glance, very briefly, at the condition of the farm labourer, and some things which may improve or ameliorate that condition.

Wages.—No class of agricultural statistics is more varying and conflicting than those relating to the labourer. To begin at the bottom of the list, we have the "Dorsetshire peasant," who is expected to keep body and soul together, to feed, clothe, and educate his family, and pay for fuel and doctor's bills on 8*s.* per week. The one who, perhaps, occupies the other end of the scale, is the north country hind who occupies a position and enjoys emoluments very different from his brethren in the south. With 18*s.* per week (which may be assumed as the average wage in the north), Wheat, Barley, Oats, Potatoes, and Wheat, the farm labourer in Berkshire and Northumberland has a comparatively snug berth. Of course the average wage throughout the country will be found to be somewhat less than in the latter case, but as it is the rate of remuneration obtained in this district I have chosen the latter as the basis. I do not mean to open up the inquiry as to whether this may or may not be enough, but would rather venture to suggest that some improvement might be made on the system of equal payments. We all know the value upon a farm of a man who can not only turn his hand to everything, but can do everything he turns his hand to well. And yet, how invariably is such a workman remunerated at the same rate as the stupidest clodhopper on the farm!

Cottages.—A great deal has been spoken and written on the subject of labourers' cottages, but the subject has by no means been exhausted. In England I think the evil is much worse than in Scotland; the grievance principally complained of there is inferior cottage accommodation; but here, in how many cases is there no cottage accommodation at all! In how many instances are the labourers engaged, for want of cottages on the farm, to reside in the nearest village or town, which may be two or more miles from the scene of their labours; thus involving a serious loss of power alike to the employer and the employed. The exigences of modern agriculture, with its improved machinery and modern education, absolutely require some improvement on the old-fashioned agricultural labourer, whose rule of work often was, "the way his father before him did it;" and if we are to obtain this—if we are to see our labourers keeping pace with the improvements and requirements of modern farming, they will be justified in demanding better house accommodation than has on most estates, hitherto been afforded them. When we look at the miserable one-roomed hovels in which large families have lived and slept, can we wonder that the decencies of life are so little regarded, and immorality and illegitimacy so fearfully common amongst us? It may be objected that this subject is more fitted for the consideration of the owners of the soil than for the tenant who has only a temporary position on the farm, and who cannot be expected to invest his capital in the erection of cottages, which he must leave without receiving any compensation for the capital so invested. Perhaps it is; but it must be remembered that all outside pressure upon the landlord must come from the tenant-farmer and not from the labourers themselves. Another means of improving the condition of our labourers, and one which has not received the attention it merits, and one which, as far as I can see, has never been tried on a farm servantship, is that of giving them allotments to cultivate. During the greater part of the year the labourer has a good deal of time at his own disposal, and which might be employed in cultivating a quarter or even half an acre of ground rented to him by the employer or his own master. No doubt there would be numerous practical difficulties to be overcome before such a scheme could be fairly set agoing, but there can be no doubt of the various practical advantages which would be obtained from it; first, to the landlord, in the improvement of his soil by the use of the spade; to the farmer, by giving the labourer a direct interest in the soil, and thus, in some measure, overcoming the strong tendency to migrate evinced by our labouring population; to society at large, by the increase of food, the greater industry it induces, and the improved character it confers on the labouring man, and most of all to the allotment holder himself, by the increased comforts to his family which the profits would enable him to procure, and by enabling him to turn to good account those leisure hours which hitherto have hung so heavily on his hands, and which in many cases have been wasted and abused in the beer-shop.

Education.—We now approach a part of our subject of paramount importance to all, viz., the better education of our farm servants. The time has, we trust, gone by when the more ignorant a man was the better servant he was accounted, and when schoolcraft was reckoned a disqualification rather than otherwise for one occupying a subordinate position. In strict justice, however, this remark can only be applied to England, as north of the Tweed, among all classes, education has always been regarded as one of the greatest blessings, and the school cherished as one of our best national institutions. In the rural districts of Scotland the average time that a youth is attended to school is about six years, and although towards the close of that time he is often obliged to work during the summer, care is always taken that he spend the winter months at school. A plain but substantial English education is thus received by all, and there is many a man who can read, write, and work the common rules of arithmetic, would, if fully *compos mentis*, be regarded as a disgrace to the parish he belonged to. How different it is here, where the labouring population is better able to pay for education, and enjoy at least equal facilities for obtaining it, must have been painfully and frequently impressed upon every one. How few of our labourers are able to calculate and write out an account of piece work performed by them! and how many of them are obliged, when receiving payment of such, to append their mark instead of their name! It is very difficult to discover any reason for this state of things, for surely there is nothing in the general character of the people which predisposes them to ignorance, and we very much question whether for industry, honesty, or shrewdness they are equalled or surpassed by the peasantry of any country. We will anything in their circumstances or surroundings which so fosters it, for although, as Scott says, "How can he get understanding that holdeth the plough, and giveth his mind to make furrows, and that glorieth in the goad, that driveth oxen, and is occupied in their labours, who is employed to prick the line holder, and whose talk is of bullocks?" there is little in their daily duties to depress their mental faculties, and much in the scenes with which they are surrounded to elevate their minds. We suppose that it is because they have been able to get along without book-learning; because they have never experienced the benefits, that they can feel for others who are in the same position. Then, is the duty of every employer of labour, who is desirous of seeing a better educated peasantry in our land, to encourage everything which may tend to produce this desirable result. By inculcating the blessings of education, by discouraging the employment of boys on a farm who have not been to the school, by encouraging the establishment of night schools and similar institutions, and by fostering the taste for reading where it has been acquired, everyone may contribute something towards the elevation of our labouring classes.

Emigration.—When we remember that "service is no inheritance"—that a man may be, when disabled by infirmities, or when past work, unless he has been more fortunate or more provident than the great majority of his class, must become a burden on those who, in all likelihood, have enough to do with themselves, or be content to spend the evening of his days in that miserable pauper-ward, the workhouse—we need not wonder that so many of the most active and intelligent of our agricultural labourers elect to leave the land of their birth, and endure for awhile the hardships and privations of pioneer life on the plains of New Zealand or amid the backwoods of Canada, in order that they may not only secure a competency for the present, but make that provision for old age which their circumstances prevented them from doing at home. Indeed, when we consider the strong inducements which the working man has to carry his labour to a foreign field, we wonder that more have not been tempted to leave home. In the case of the colony I have named the best of hopeful prospect of not only becoming his own master, but of filling his own acres. He will be able to bring up his family under his own roof-tree, and will certainly have a more satisfactory way of seeing them all settled in life than equal to his own, instead of seeing them leave home at an early age for farm service, which would fain many have been the case had he continued to be a farm labourer in England.

Miscellaneous.

Winter Butter.—The colour of late-made butter may be improved, and the taste will prove to be much fresher and sweeter, by adopting the following recommendation:—The night before the cream is to be churned, take two good-sized red Carrots to each gallon of cream; after washing grate them, and stir the pulp with the cream. The juice will mix with it, and the pulp will remain in the cloth or strainer when the cream is poured into the churn. The flavour of the butter will be thus improved, and the appearance changed for the better. The Carrot, as a colouring, is far less expensive than annatto, which is sometimes used for this purpose.

Calendar of Operations.

DECEMBER: *Field Work.*—We take the following notes of the field work of the month from *Morton's Farmer's Calendar*:—

The Ploughing of Stubble should be completed; and that of lea for Oats and Beans should be finished as

soon as possible. This and subsoil-stirring may be done either by steam-power or horses; in either case it ought to be done before winter.

Claying and Marling is work proper for the winter months, though if it can be completed before the frost has left, so much the better. Let us quote an actual experience on peaty and light land soils, thus described by Mr. Almack, in the *Agricultural Society's Journal*. He says:—I have no hesitation in saying that the value of many millions sterling is buried under what is now comparatively unproductive soil, in England alone. As an instance, I was shown in Norfolk what a gentleman called his "hidden jewel," so near the surface, that one plunge of his walking-stick convinced me that it would be practicable to bring up sufficient by merely ploughing deeply with the common plough the first time he broke up the land, which he said he intended doing immediately after the tithe rent-charge was apportioned. On the surface was light "fen," to a common observer apparently of little value, yet immediately below was the valuable little-coloured clay, ready for its improvement. In the fens near Downham this clay is from 4 to 6 feet below the surface. Pits are dug about 6 ft. by 3, and 3 ft. apart, in rows, generally two rows in a chain (of 22 yards), and they take out two or three spits deep of clay from each pit. In digging one pit, part of the peat is put in that which was last made. The cost varies, being under or over 50*s.* per acre, according to circumstances; but it is very well repaid by the crops of Red Clover, Wheat, and Beans which the land will afterwards grow.

The farm of Mr. Cambridge, of South Runston, may be named as a favourable specimen of what has been done for the soil of Norfolk, and to account for its present productive state; but so far from being a solitary instance of such improvements, the practice has been almost universal throughout the county, the quantity of clay applied varying according to circumstances. 54,055 loads of clay have been applied on this farm to 286 acres, or, on an average, 188 loads per acre. Mr. Keppel, of Lexham Hall, has made great improvement in his light sandy land by claying at the rate of 50 loads per acre. Near Swaffham I observed some men claying a field from a pit nearly in the centre of it; they were paid at the rate of one halfpenny per barrowfull, or 7*d.* per "load," their orders being to apply 80 such loads per acre, making the cost of it under 50*s.*, though the work was done without the use of horses; employment was thus found for more labourers, without fear, too, of injury to the land by its being cut in using carts when not sufficiently dry.

Chalk, also, as well as clay and marl, may be dug and spread on light sandy soils in the winter months.

Fences give some work to do in December. It is well to plant the Quicks for young fences as early as possible in the winter months—though February will also do very well—and to postpone the cutting back and relaying fences till February.

Odds and Ends.—The following is a picture of farm management about this time of the year, on a Hampshire farm, already often quoted in these columns:—

We have now finished Wheat sowing, with the exception of about 12 acres, which we intend to sow as soon as the Swedes and Turnips are fed off. We have been also engaged in carting loamy earth, to be spread about 6 inches in thickness over the bottom of the farm-yard, which is our regular practice after removing the dung; there to remain until the next autumn, when it will either be removed with the dung and carted on to the leas for Wheat, or else carted separate from the dung on to the pasture land, for which it proves an excellent dressing, with a slight quantity of superphosphate of lime and Peruvian guano, applied just previous to spreading the earth. Some of our men have been employed in planting young Thorn plants, and cutting and making fences for the protection of recently-planted Quicks. We find a good and cheap fence can be made of stout wire, strained from posts placed quite firm in the land, about 50 yards apart. At intervals of 3 yards stout stakes are driven into the land, to which the wires are fastened by staples: a sheep and cow fence requires five wires, the top wire being about 3 feet from the ground, &c. Our stock of sheep on the sand farm consists of 200 Southdown ewes to bring lambs, which are folded every day on Italian Rye-grass and one change on to dry pasture, and 40 dry ewes fatting on Turnips, Dutch Clover hay, &c., and half a pound Linseed cake each per day. Fifteen ewes have dropped their lambs, and, from appearances, we expect 100 lambs by the 14th of December. Our stock of sheep on the clay farm consists of 170 horned Somerset ewes, about 60 of them dropped their lambs last October, which, with the ewes, are now feeding on cut Swedes, and Dutch Clover hay, the lambs having Linseed cake and cracked Peas in addition. We have 40 horned ewes also, dry, and fatting on cut Swedes, hay, and half a pound Linseed cake each per day.

The women have been employed preparing and stacking Swedes in readiness for the cutter, gathering acorns for the pigs, assisting the men spreading manure, and forking out Grass from the fallows.

Notices to Correspondents.

BARKING TREES; *Z.* Kill the hares and rabbits. If you may not, take as much thoroughly skimmed milk as required, and mix it up with soot till about as thick as paint. With this paint over the tree with a whitewash brush. It lasts well one season.

CIDER: *M N.* asks if any of our readers will tell him the best way of making cider, also the after treatment. He may be surprised to learn that most of the cider that is made makes itself, and is just old Apple juice.

GORSE: *M. G.* It is usually grown from seed—hoe in 20 lb. per acre in March in rows about 18 inches apart. Cut every other row during alternate winters. We believe some kinds are propagated by cuttings.

ROBERTS' PATENT SPOON REST.

This admirable appendage to the Dinner Table was invented as a remedy for evils which are apt to beset the best of carvers. Attention is called to some of the advantages arising from its use, to wit:—

1st. There is much more room in the dish for the operations of the carver.

2d. There is no fear of the handle of the spoon getting into the dish, and it is consequently kept clean.

3d. The spoon is always in its place, and ready for use.

4th. The dinner cloth is kept much cleaner; and finally, the Spoon Rest is an ornament worthy of a place on every well-furnished table.

It may also be considered a handsome and acceptable present.

Price in German or Nickel Silver .. £1 10*s.*

Packing Cases, 1*s.* each.

The Spoon Rests are made in a variety of Elegant Patterns.

Orders accompanied by remittances will receive prompt attention.

This Invention is Manufactured exclusively by Messrs. HOWES & BROWETT, Birmingham, to whom all Trade Orders should be addressed.

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PATENT AMERICAN CAMP STOOL.

This is a most simple and durable little Chair for Cricket Grounds, Excursionists, Tourists, Croquet Players, and Volunteer Camp Grounds.

It can be folded into the most compact form, and stowed away into the smallest possible compass for Travelling.

Price for Single Chair .. .. .. 5*s.* each.

Price for Lots of Six or upwards .. £2 10*s.* per dozen.

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(SECURED BY ROYAL LETTERS PATENT.)

Manufactured in Wrought Iron of different sizes, with all the Latest Improvements.

It is Light, Compact, and Symmetrical in appearance. Can be propelled at the rate of from 8 to 12 miles per hour, and will be found unequalled as a means of healthy, agreeable exercise and amusement.

The simplicity of this invention is its great recommendation. Heretofore carriages of this kind, known by the name of Velocipedes, have lacked power, and have been found to be cumbersome, bulky, and laborious to work. By an ingenious Combination of Hand Levers and Treadles connected to the Cranked Axle, these objections are overcome, and the operator is enabled to work with the hands and feet at one and the same time. To one of the Hand Levers are attached a Brass Chain and Pulley, which communicate with the Axle of the Guide Wheel, and by this simple contrivance the Carriage may be turned in any direction required, and with the utmost ease.

It is in itself a gymnasium in miniature; for by its peculiar action all the principal muscles of the body are brought into play, and thus judiciously developed, none being overtaxed, as is often the case in rowing, fencing, dumb-bell exercise, &c.

Price, with 2 ft. 6-in. Driving Wheels, for Youths, £10 10*s.*

,, 3 ft. ,, Adults, £12 12*s.*

,, 3 ft. 6 in. ,, ,, £14 14*s.*

Closed Packing Case extra, £1 10*s.*; Skeleton ditto, 1*s.*

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DESIGNED for TRAVELLERS, EMIGRANTS, ORNITHOLOGISTS, SPORTSMEN, &c.

INVALUABLE for HOUSEHOLD DEFENCE.

Great Reduction in Price.

36 or 52-bore now selling at £4 4*s.*

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Mr. H. FRANKHAM, Agent.

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Descriptive, Illustrated, and Priced Catalogues Free per Post, Special Drawings when required. The best Steam Threshing Machinery made.

SWING WATER BARROW.—This is the best and cheapest article yet introduced for use in Gardens, Farm Yards, &c. The Water may be dipped on, or the Tub tilted and poured out, or by merely raising the Handle it can be placed on the ground, and the Frame detached. To hold about 20 or 30 gallons, price 42*s.* Carriage paid to any station on Great Eastern Line.

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Their advantages are—Portability, not Fixtures, removable at pleasure, no Woodwork or Partitions to impede Ventilation or breed Vermin, Hay Rack dispensed with as unnecessary, increased width and depth of Feeding Troughs, Water Cistern, and Patent Drop Cover to prevent over-gorging. Cleanly, durable, and impervious to infection, being all of iron. Price of Fittings per Cow, 65*s.*

Prospectuses free of COTTAM & Co., Iron Works, 2, Winsley Street (opposite the Pantheon), Oxford Street, London, W., where the above are exhibited, together with several important Improvements in Stable Fittings just secured by Patent.

CHEAPEST and BEST IRON HURDLES, FENCING, Wire Netting, Chaff Cutters, Oat Bruisers, Bean Mills, Steam Engines, Lawn Mowers, Conservatories, Greenhouses, Hot-water Apparatus. Estimates furnished, and skilled workmen sent to all parts of the country.

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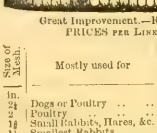

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Size of Mesh.	Mostly used for	Light. Jap	Light. Gal	Medium Jap	Medium Gal	Strong. Jap	Strong. Gal	Extra Strong. Jap	Extra Strong. Gal
in.		*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*
2½	Dogs or Poultry	0 2½	0 3½	0 3½	0 4½	0 4	0 6½	0 5	0 6½
2	Poultry	0 3	0 3½	0 3½	0 4½	0 4½	0 6½	0 6½	0 7
1½	Small Rabbits, Hares, &c.	0 3½	0 4½	0 4½	0 5	0 6½	0 6½	0 6½	0 8
1	Smallest Rabbits	0 4½	0 5½	0 5½	0 6½	0 8	0 8	0 10	0 10
1	Pheasantries, Small Birds, &c.	0 8	0 10	0 9½	1 0½	1 1½	1 4	1 7	1 10
¾	Aviaries, Window Guards, &c.	0 11	1 1½	1 1½	1 4	1 4	1 7	..	..
½	Aviaries, &c.	1 7	1 10	1 10	2 0	2 0	2 3	2 3	2 6
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Quantities of 100 Yards or upwards delivered free at all Railway Stations and Shipping Ports in England.

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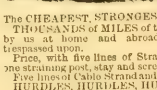

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THOUSANDS of MILES of this FENCING have been SUPPLIED by us at home and abroad. It sustains no injury by being trespassed upon.

Price, with five lines of Strand and Iron-pronged Standards, and one straining post, stay and screw bolts to every 120 yards, 1*s.* per yard.

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HURDLES, HURDLES, HURDLES, 1*s.* 9*d.* to 3*s.* 9*d.* per yard.

CONTINUOUS IRON FENCING, GATES of all kinds.

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ASPHALTE ROOFING FELT, 1*d.* per square foot.

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Illustrated Catalogues and Estimates free on application.

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For particulars apply to John Fowler & Co., 71, Cornhill, London, E.C.; and Steam Plough Works, Leeds.

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ONE PENNY per Square Foot.

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The above Rollers possess many advantages over all others. They are made in two parts, and are free to revolve on the axis, affording greater facilities for turning, and the outer edges are rounded off or turned inwards, thus avoiding the unsightly marks left by other Rollers.

Diameter, 30 inches; Length 32 inches,	£7	10	0
,, 24 ,, ,, 26 ,,	4	10	0
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The above Lawn Mowers have proved to be the best, and have carried off every Prize that has been given in all cases of Competition.

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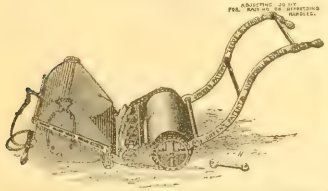

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ALEXANDER SHANKS AND SON would suggest to their numerous friends the desirability and importance of having their Lawn Mowers put into proper order before the Commencement of the Mowing season. If attention be paid to this hint some disappointment may be avoided, because in the early spring the necessary time for repairing Machines is to some extent denied them, on account of the press of business connected with the manufacture and despatch of New Machines.

Machines for Repair can be addressed, ALEX. SHANKS & SON, 27, Leadenhall Street, London, E.C. (where Repairs are executed), or to the Manufactory, Dens Iron Works, Arbroath, N.B.

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S. & C. regret having to caution Gardeners and others, but are compelled to do so, in consequence of an imitation, of common quality, having been sold for the genuine one, and which has caused many complaints to be made to them of Knives which were not of their make, all of which are warranted both by Sellers and Makers.

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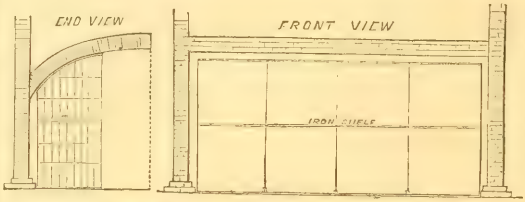

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Apply, giving dimensions of Cellar,

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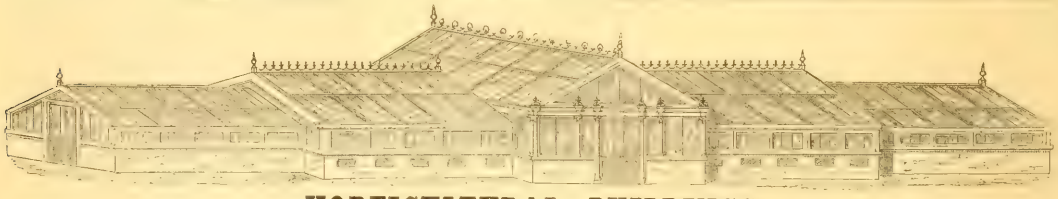

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SPAN ROOFS—21 ft. by 11 ft. 6 in., with Stage ... £52 0s.
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LEAN-TO.—17 ft. by 7 ft. £10
" 20 ft. by 9 ft. 6 in. 21 0
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Fifty other 2-3rd. Lights, 6 ft. 8 in. by 4 ft. Glazed 21-oz., and well painted, £10.

Twenty others, 6 ft. 8 in. by 3 ft. 7 in., ditto, £14 10s.

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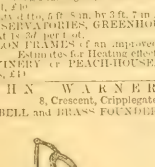

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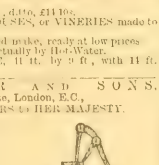


No. 42.

PATENT CAST-IRON PUMP, fitted with J. W. & Sons' Metal Inlet and Valve, which cannot get out of action, for Wells not exceeding 25 feet.

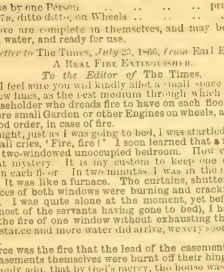
Diam.	Height.	£ s. d.
2¼ in. short	1 ft. 7 in.	1 1 0
2¼ in. long	2 ft. 3 in.	1 8 6
3 in. long	2 ft. 6 in.	2 1 0
2¼ in. Bored	2 ft. 6 in.	2 2 0
4 in. long	3 ft. 6 in.	2 14 0
2¼ in. short, with 15 feet of lead pipe attached, ready for fixing		2 0 0
2 in. long, ditto ditto		2 11 0

Price of 4-inch Lapid Magnet Pump, with legs, £2 15s.; 2-inch Flexible Rapid, as 11 Cows, Special Price, £2 2s. per Dozen. The Barrel is 27½ inches long, and the base 9 feet high.

IMPROVED LIQUID MANURE or GENERAL PORTABLE PUMP.—These Pumps are fitted with J. W. & Sons' Patent Bucket and Valve and cannot clog in action. The Barrel is made of Galvanised Iron, not likely to corrode, and can be raised or lowered at pleasure on the stand, the legs of which fold together, and it may be carried with ease by one man or two boys.

Price of 4-inch Lapid Magnet Pump, with legs, £2 15s.; 2-inch Flexible Rapid, as 11 Cows, Special Price, £2 2s. per Dozen. The Barrel is 27½ inches long, and the base 9 feet high.

WARNERS' PORTABLE FIRE or GARDEN ENGINE.



No. 5684.

£2 2s.

For use by one Person ... ... price £2 2s.
No. 5474, ditto ditto, on Wheels ... ... £2 10s.

The above are complete in themselves, and may be always kept filled with water, and ready for use.

Letter to The Times, *July* 23, 1866, *from* Earl Essex.

A REAL FIRE EXTINGUISHER.

To the Editor of The Times.

"SIR,—I feel sure you will kindly allot a small space in the *Times* to these few lines, as the vast medium through which I would urge every householder who dreads fire to have on each floor of his house one or more small Garden or other Engines on wheels, always charged and in good order, in case of fire.

"Last night, just as I was going to bed, I was startled by that most fearful of all cries, 'Fire, fire!' I soon learned that a fire was raging in a large two-windowed unoccupied bedroom. How caused is to us all a great mystery. It is my custom to keep one of these small Engines on each floor. In two minutes I was in the room with one of them. It was like a furnace. The curtains, shutters, casements, and cornices of both windows were burning and cracking from floor to ceiling. I was quite alone at the moment, yet before assistance arrived (most of the servants having gone to bed), I had completely subdued the fire of one window without exhausting the Engine, and when assistance and more water did arrive, we very soon extinguished the other.

"So fierce was the fire that the lead of the casements was melted, and the casements themselves were burnt off their hinges.

"I should add, that, by God's mercy, the house was saved by this small Enemie. Had it not been at hand and in order, most assuredly Cassiobury would be now a heap of ruins.—Yours faithfully,

"Cassiobury, Watford, July 20. "ESSEX.

"The Engine, even when full, runs so light on the floor, that any woman might draw it, and also work it."

DISORDERS of the CHEST and LUNGS appear to be most peculiar to this climate, especially in damp, foggy weather, and during the winter months, whilst perhaps in every age and station of life are alike subject to attack. The only safe and prudent remedies to be adopted are those which assist Nature in her work, by loosening phlegm, and allaying irritation and spasm. SPENCER'S PULMONIC ELIXIR is admirably adapted to promote expectoration, ease the breathing, loosen the phlegm, abate fever, allay the tickling sensation which occasions the cough, with the tightening the chest, and for all temporary and local affections, such as wheezing, irritation of the throat, inflammation of the heart, hoarseness of the voice, influenza, &c., SPENCER'S ELIXIR affords immediate relief. While in more chronic disorders, as periodical coughs, or inveterate asthma, it is equally valuable in its effects, though, of course, longer perseverance in the use of the medicine is required. Ask for SPENCER'S PULMONIC ELIXIR. Prepared with great care by the Proprietors, T. ROBERTS & CO., 8, Crane Court, Fleet Street, London, E.C. May be had of all Medicine Vendors in the Kingdom, in bottles of 1s. 1½d. and 2s. 9d. each.

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SCHOLL'S PATENT PLATINUM GAS-LIGHT PERFECTER more than Doubles the Light without causing Smoke. Price 1s. each for Light of Burner.

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Glass Dessert Services for 12 persons, from £2.

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A small assorted set, guaranteed of first quality for finish and durability, as follows:—

	Full Size Old Silver Pattern.	Bead Pattern.	Thread Pattern.	King's or Shell and Thread.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.
12 Table Knives	1 1 0	2 0 0	2 4 0	2 10 0
12 Table Spoons	1 1 0	2 0 0	2 4 0	2 10 0
12 Dessert Spoons	1 1 0	1 10 0	1 12 0	1 15 0
12 Dessert Forks	1 1 0	1 10 0	1 12 0	1 15 0
12 Tea Spoons	0 12 0	1 0 0	1 2 0	1 5 0
6 Egg Spoons, gilt bowls	0 10 0	0 17 0	0 19 0	0 15 6
2 Sauce Ladles	0 6 0	0 8 0	0 8 0	0 9 0
1 Gravy Spoon	0 6 0	0 9 0	0 9 0	0 11 0
1 Soup Spoon	0 6 0	0 10 0	0 12 0	0 15 0
1 Mustard Spoon	0 1 6	0 2 0	0 2 0	0 2 6
1 Pair of Sugar Tongs	0 2 6	0 3 6	0 3 6	0 4 6
1 Pair of Fish Carvers	0 5 0	0 7 6	0 7 6	0 10 0
1 Butter Knife	0 2 6	0 4 0	0 5 6	0 6 0
1 Soup Ladle	0 5 0	0 12 0	0 13 6	0 17 6
1 Sugar Sifter	0 4 3	0 4 6	0 4 6	0 5 0
Total	9 19 9	12 9 0	13 9 6	14 17 3

Any article to be had singly at the same price. Any article to contain the above, and a relative number of knives, &c., 27, 15s. Tea and coffee sets, dish covers and corner dishes, cruet and liqueur frames, &c., at proportionate prices. All kinds of replating done by the patent process.

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Ivory Handles.	Table Knives per Dozen.	Dessert Knives per Dozen.	Carvers per Pair.
	s. d.	s. d.	s. d.
3¼-inch ivory handles	13 0	10 6	5 0
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Ditto, with silver ferules	42 0	33 0	14 6
Ditto, carved handles, silver ferules	55	45	18 6
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Silver handles, of any pattern	84 0	54 0	21 0
Bone and Horn Handles—Knives and Forks per dozen.			
White bone handles	11 0	8 6	2 6
Ditto, balance handles	23 6	17 0	4 6
Black horn rimmed shoulders	18 0	15 6	4 6
Ditto, very strong riveted handles	12 0	9 6	3 0

The largest stock in existence of Plated Dessert Knives and Forks and of the New-plated Fish-eating Knives and Forks and Carvers.

WILLIAM S. BURTON, GENERAL FURNISHING IRONMONGER by appointment to H.R.H. the Prince of WALES, sends a Catalogue gratis and post paid. It contains upwards of One Hundred Illustrations of his unrivalled Stock of Sterling Silver and Electro Plate, Nickel Silver, and Britannia Metal Goods, Dish Covers, Hot-water Dishes, Stoves, Fenders, Marble Chimney-pieces, Kitchen Ranges, Lamps, Gaseliers, Tea Trays, Urns, and Kettles, Clocks, Table Cutlery, Baths, Toilet Ware, Turnery, Iron and Brass Bedsteads, Bedding, Bedroom Cabinet Furniture, &c., with Lists of Prices, and Plans of his Sixteen Show Rooms, at 39, Oxford Street, W.; 1, 1a, 2, 3, and 4, Newman Street; 4, 5, and 6, Perry's Place; and 1, Newman Yard, London, W.

THE SMOKER'S BONBON immediately and effectually REMOVES the TASTE and SMELL of TOBACCO from the Mouth and Breath, and renders Smoking agreeable and safe. It is very pleasant and wholesome. Prepared by a scientific process, from the recipe of an eminent physician, by SOMERTON & Co., Wholesale and Export Confectioners, Retinal Green, London, N.E. In packets of 1s. and 2s. each. Sold by Chemists, Tobacconists, &c.

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JOHN GIBSON, JUN., begs to announce that he is prepared to Furnish PLANS and ESTIMATES for LAYING OUT GROUND attached to Mansions and Villas or other Residences, or for the FORMATION of PUBLIC PARKS or GARDENS, and to carry out the same by Contract or otherwise.

Address Mr. JOHN GIBSON, JUN., Surrey Lane, Battersea, S.W.

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SEFTON PARK COMPETITION.
To LANDSCAPE GARDENERS AND OTHERS.

The Council of the Borough of Liverpool offer TWO PREMIUMS for the best PLANS for LAYING OUT the SEFTON PARK, viz.:—
A First Premium of 300 Guineas; a Second Premium of 150 Guineas.
The conditions of the Competition, together with a Lithographed Contour Plan of the Site, will be sent to any address on receipt of Post-office Order for One Guinea, which latter will be returned if Plans are received according to the conditions.
The time for sending in the Plans has been extended to Tuesday, the 26th of March.
Applications to be made to Mr. E. R. Robson, Architect and Surveyor, Town Hall, Liverpool.

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GREY DORKING FOWLS, of purest breed, in any numbers.
Imported TOULOUSE GEESE, the largest and most productive breed known.
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AYLESBURY and ROUEN DUCKS.
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WANTED to RENT, a SMALL NURSERY and SEED BUSINESS, or FLORIST and SEED BUSINESS. Address A. B., care of Messrs. NUTTING & SONS, 99, Barbican, London, E.C.

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TO BE SOLD, in consequence of the ill-health of the Proprietor, the LEASE and GOODWILL of the KINGSLAND NURSERY, with Conservatories, Seed Shops, and 3 Ranges of Pits. Apply to Mr. WM. HARRINGTON, The Nursery, Dalston, N.E.

To Seedsmen, Potato Growers, &c.

TO BE LET, till Michaelmas, 1867, about 60 ACRES of productive ARABLE LAND at Leytonstone. Immediate possession.
For terms apply to Messrs. DRIVER & Co., Auctioneers, Surveyors and Land Agents, 4, Whitehall, S.W.

TO BE LET by Tender, a FARM in HERTS, near Watford, 18 miles from London, 212 Acres of Sound Arable Land in good condition. Residential and healthy situation. In hand Immediate possession. Tenant's valuation light.
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Sales by Auction.

Sale of Dutch Bulbs, fine Camellias, Azalea indica, Fruit Trees, Roses, &c.

MESSRS. PROTHEROE and MORRIS will SELL by AUCTION, at the City Rooms, 25, Gracechurch Street, on WEDNESDAY NEXT, December 19, at 12 o'Clock, a first-class Collection of DUTCH BULBS, including the finest DOUBLE and SINGLE HYCINTHS, TULIPS, CROCUS, NARCISSUS, SNOWDROPS, fine STANDARD and DWARF ROSES, FRUIT TREES, AMERICAN PLANTS, with some choice DOUBLE CAMELLIAS, AZALEA INDICA, &c.

On view the Morning of Sale. Catalogues had at Rooms as above; and of the Auctioneers, American Nurseries, Leytonstone, Essex, N.E.

GENUINE SEEDS.

JAMES VEITCH & SONS

BEG TO ANNOUNCE THAT THEIR

CATALOGUE of KITCHEN GARDEN and FLOWER SEEDS for 1867,

WITH LIST OF IMPLEMENTS AND OTHER GARDEN REQUISITES,

Is now Published, and will be forwarded Free on application.

THE ROYAL EXOTIC NURSERY, KING'S ROAD, CHELSEA, LONDON, S.W.

TO THE TRADE.

CARTER'S

NEW AND CHOICE VEGETABLES

FOR 1867.

LAXTON'S PROLIFIC EARLY LONG-POD PEA.

We have much pleasure in introducing this valuable variety, raised by THOMAS LAXTON, Esq., Stamford, to the notice of the Trade. Some pods (in a green state) were exhibited by us at Mark Lane in June, 1865, averaging 11 and 12 Peas in a pod, and they were pronounced by several eminent members of the London Seed Trade to be an exceedingly fine variety. For a second Early Pea, and a Pea for early sowing in autumn, there is no Pea of a similar class in cultivation to equal it, and we feel every confidence that it will be in general cultivation in a very few years. The Pea has the same habit and character as "Dickson's Favourite" and "Auvergne," excepting that the pods are nearly DOUBLE the size of these varieties.

The additional Testimonials received by us during the past summer fully corroborate our own opinion as to its being a "First-class Pea."

Extract from "JOURNAL OF HORTICULTURE," *September* 4, 1866.

"In February last I purchased a quart of Laxton's Prolific Peas, sent out by Messrs Carter. With me I find it as a very good second early variety, certainly much larger in the pod than the other Peas of its class; quite equal to them in flavour, and ripening about the same time. I have now growing three rows, 12 yards in length, and each row is loaded with fine large pods. I intend to cultivate this variety largely next season."—W. WOOLLEY, *Bunbury, September*, 1866.

From Mr. H. MAY, *The Hope Nurseries, Bedale, Yorkshire, August* 29, 1866

"I observe a person styling himself 'Amateur,' in the *Journal of Horticulture*, speaking disparagingly of your Pea, Laxton's Prolific. I had some of it last season, in sealed packets, and have found it a first-class Pea, pods immense, 10 to 12 peas in a pod, and the crop extremely heavy; it is a fine exhibition Pea; what I had came very true."

Extract from "JOURNAL OF HORTICULTURE," *Sept* 4, 1866.

"As the raiser of this Pea, my object in writing to you is not to combat the opinions expressed in letters from 'An Amateur' and others in your Numbers of the 14th and 21st of August, as I am content to let the Pea stand or fall by the voice of public judgment alone; but that the condemnations contained in the letters alluded to are not universal, I have proof abundant in flattering reports of the successes of other growers who have volunteered their opinions. 'An Amateur' appears to have assumed that it has been announced as the best Pea in cultivation, and to have condemned it as not answering that description; he may have been disappointed, has many others also? he who looks for improvements in all sorts in a new Pea or plant.

"Had Messrs Carter announced it as such they could hardly have been liable to a charge of deception; but they have in their description of it, I think, been singularly moderate and truthful.

"My object, however, in troubling you is to explain what I believe to be the origin of the three so-called varieties in the seed alluded to by 'An Amateur.' The variety in question is the result of a cross between 'Beck's Prizetaker' (true), and 'Sangster's No. 1;' and although the appearance of the seed, as evinced in my own samples, would lead one to suppose there were three varieties, yet the produce in the growing state will show but one character, with very slight variations, and this is not the only Pea which exhibits such a tendency. 'Dickson's Favourite'* has been likened by high authority to the variety in question, and has probably originated from crossing two Peas of a similar class. Dickson's parentage of a like mixed character of seed, and the variations in the growing produce are also insignificant. It is a characteristic of many crossed Peas to show in their produce after the second generation seeds like both parents and intermediate, and possibly this may explain the appearances alluded to."—THOMAS LAXTON.

* This is incorrect, as "Laxton's Prolific Early Long-pod" is distinct in seed and growth from "Dickson's Favourite," and all other sorts.

In Sealed Quarts and Pints.

New Tom Thumb Peas.

THE PEABODY.—A very dwarf prolific branching late variety, of Tom Thumb habit; height 15 inches; good flavour, and very productive. "The Peabody" is a later variety than the Dwarf Waterloo, to which it forms a good succession. Offered for the first time in sealed packets.

"DWARF" WATERLOO LATE BRANCHING MARROW.—A dwarf variety of tall Royal Victoria or Waterloo Marrow, of Tom Thumb habit; height, 15 inches; the most valuable dwarf Pea for general and late cropping ever offered; very dwarf, good flavour, and very productive. Offered for the first time in sealed packets.

Carter's Summer Broccoli.

A new variety, with enormous close white heads, having the desirable merit of being fully a fortnight later than Carter's Champion (from which it was selected, and which has hitherto been considered the latest variety in cultivation). Carter's Summer Broccoli may be had fit for use in June, thus filling up the gap which formerly existed between Broccolis and Cauliflowers. The seed of this variety is distinct from all other sorts.

In sealed packets.

Sims's Mammoth Tomato.

Mammoth variety of the Cherry Tomato, very early, of extremely robust habit; requiring little support; fruit very large and smooth, in Grape-like bunches, averaging from 4 to 20 fruits. This variety was raised by Mr. Sims, Gardener to — Weadowson, Esq., Dulwich Common, and is much recommended.

In sealed packets.

New Potato, The Ash-top Fluke.

A hybridized Seedling from the Ash-leaf and the Fluke Potato raised by a Bedfordshire gardener, who has grown it for 5 years. The stock was purchased by J. C. & Co. in 1865, and grown by them last season at their St. Osyth Seed Farm, where they have thoroughly proved its excellent qualities.

The Raiser correctly describes The Ash-top Fluke as follows:—"I can recommend it with perfect confidence as a second early Potato—considerably earlier than the ordinary Fluke Potato—with handsome tubers; it is a good keeper, and when boiled is very mealy and of most excellent flavour. I have grown this Potato for the last 5 years, and during that time I have shown it against all the leading sorts and it was always considered to be the best."

A nurseryman in the neighbourhood where The Ash-top Fluke was raised describes it as "a genuine Seedling Potato, selected from a batch of Seedlings sown in 1860, and grown on since then by the Raiser. It comes on directly after the Ash-leaf, is a good cropper for the garden, but does not produce like coarse field sorts; it is in good condition up to the end of January or middle of February. I have seen the Potato several times at a Cottage Show and admired it much; you may depend upon what the Raiser says about it, as I have known him for years."

Prices of the above to the Trade on application.

The following Nurserymen have already ordered a supply direct from our Establishment, in addition to those advertised last week:—

Stewart, J. & Sons, Dundee
Oldcroyd, W., Shrewsbury
Veitch, J., & Sons, Chelsea
Wood & Son, Maresfield
Hollamby, E., Tunbridge Wells
Austin & McAslan, Glasgow
Henderson, P. G. & Son, St. John's Wood
Godwin, F. G., Sheffield
Lee, J. & C., Hammersmith
Platz & Son, Erfurt

*** *A Complete List will be published shortly.*

JAMES CARTER AND CO., 237 and 238, HIGH HOLBORN, LONDON, W.C.

CARTER'S SELECT LIST of KITCHEN GARDEN and FLOWER SEEDS, including the choicest NOVELTIES of the season, now ready, and may be had gratis and post free, on application to

JAMES CARTER & Co., Seed Merchants and Nurserymen, 237 & 238, High Holborn, London, W.C.

The Earliest Pea Grown is

CARPENTER'S EXPRESS, gathered on the 7th May, (see Testimonials), the EARLIEST DATE on record, price 3s. per quart. The usual discount to the Trade.

EDWARD CARPENTER, Seed Merchant and Grower, Brighton and Sussex Seed Warehouse, 29, St. James's Street, Brighton.

POYNTER'S EARLIEST and BEST PEA, the hardiest and earliest out, price only 1s 3d per quart. See Advertisement, p. 1. Proof that Mr. Poynter's *Gardener's Companion*

To be obtained Retail in London of Messrs. Jas Veitch & Sons, Chelsea, S.W.; and Mr. R. S. Williams, Holloway, N.; and through any Seedsman, in one quart packets only, with Trade Mark, the Crown and Royal Oak, and blue label. None other genuine.

ROBERT H. POYNTER, Seedsman, &c., Tenston, Somerset.

New Dwarf Kidney Bean—Dickson's Eclipse.

JAMES DICKSON AND SONS have continued confidence in again offering this *new, distinct, and thoroughly superior* DWARF KIDNEY BEAN, the finest season beans, although in my additional proofs of its *great superiority* and *excellence*. In sealed packets, pints, 1s. 6d.; quarts, 2s. 6d.

J. DICKSON & SONS can this season spare a limited quantity to the Trade. Seed Warehouse and Nursery, Upper Street, Chester.

Seed Potatos.

H. AND F. SHARPE are now offering MYATT'S PROLIFIC KIDNEY, DAINTREE'S EARLIEST, WEBB'S IMPERIAL KIDNEY, FORTY-FOLD, FOX'S SEED-LING, RADSTOCK FORTY-FOLD, and many other Early and Late varieties, fine in quality, free from disease, and true to sort.

Seed Grown: Establishment, Wisbech, Cambridgeshire.

To Market Gardeners and Others.

CABBAGE PLANTS.—East Ham, Enfield Nonpareil, Robinson's Champion Drumhead, 2s per 1000.

RED CABBAGE PLANTS, 4s. per 1000, extra fine. Terms, cash. I will challenge England with Plants, the Stock true, and can be warranted. All grown by

RICHARD WALKER, Market Gardener and Seed-grower, Biggleswade, Beds.

HENRY DEWAR AND SON beg respectfully to offer Seed of their very superior IMPROVED SHORT-TOP RED BEET, which was not only awarded Extra-class certificates at the Gardens of the Royal Horticultural Society, South Kensington, on Nov. 7 and Dec. 6, 1865; also Seed of their solid crop, NORTHUMBERLAND CHAMPION CELERY, which was awarded a First-class Certificate at the International Show, South Kensington, Dec. 9, 1865. In addition to the First-class certificates, the Silver Banksian Medal of the Royal Horticultural Society was awarded for the above Beet and Celery.

In scale; packets only, stamped with our names in full, at 1s. per packet each. Price to the Trade on prepaid application.

Seed Establishment, 37, Grey Street, Newcastle-on-Tyne.

Conqueror Broccoli.

WITTY AND SON have the honour of Introducing to the Public and the Trade the above excellent BROCCOLI, which has been in the possession of Colonel Archibald, of Thirtelby, in Holderness, for several years, and they have no doubt that its well reputed qualities will soon be generally established. Its good qualities are from the Plant itself. It comes in about the latter end of May to the end of June, thus supplying a want that has long been felt, by filling up the time between the ordinary Broccoli and Sprouts for the season.

Its habit is very dwarf, compact, and close to the ground; is very hardy, never being known to be cut in the severest winter, the heads are large, often getting to the extraordinary weight of 12 to 14 lb. each; is very close and white, and the quality excellent.

The following Testimonials will confirm the description given of it.

Sealed packets, price 1s. 6d. each.

From Mr. DAVID WADDINGHAM, *Market Gardener, Tuesday*

"GENTLEMEN,—I have known the Conqueror Broccoli for several years, and consider it the best and latest Broccoli in cultivation, coming into the market after other Broccolis are done."

From THOS. SPREDDON, Esq., *Hull*

"GENTLEMEN,—I have known the Conqueror Broccoli many years, and have never seen another to equal it as a late Broccoli."

Seed Establishment, Witty and Son, Hull.

"All the Year Round" Lettuce.

DICKSONS AND BROWN, Seed Merchants, Manchester, have pleasure in introducing the above as the hardiest Winter Lettuce grown. It grows very compact, and is beautifully white. Highly recommended also as a Summer Lettuce.

To be had in Sealed Packets only, price 1s. 6d. each, from D. & B., or the undermentioned Seed Merchants, who have received supplies from them

Mr. WHITE, *Gardener to* T. Weld Blundell, Esq., *says*:—

"I thanks a cutting of it, alongside the Hardy Green Hammersmith. Both came up well. The latter ran to seed: All the Year Round remained solid and good."

Mr. J. EASTWOOD, *Gardener to* John Platt, Esq., M.P.

"The quality of Dickson's & Brown's All the Year Round Lettuce is the best in cultivation."

Mr. OWEN, *Gardener to* John Felder, Esq., M.P., *says*.—

"It is very white and solid, and stands better than any other winter Lettuce I have ever grown."

List of Seed Merchants who have obtained supplies:—

Messrs. Hurst & Son, London	Messrs. P. & R. Robertson & Co., Edinburgh
,, James Veitch & Sons, Chelsea	,, F. Farrell & Sons, Dublin
,, Frances & Arthur Dickson & Sons, Chester	,, S. Fenwick & Co., Gateshead-on-Tyne
,, J. & C. Lee, Hammersmith	,, Downie, Laird & Laing, Edinburgh
,, Cooper & Bolton, London	,, R. Sydenham, Bailey Hough
,, Stuart & Mein, Kelso, N.B.	Mr. Edwards, Slough
,, James Backhouse & Son, York	,, Charles Turner, Slough
,, Dickson & Co., Edinburgh	,, James McIntrim, Kendal
,, G. G. Hetherington & Son, London	,, W. J. Watson, Newcastle-on-Tyne
,, James Garaway & Co., Bristol	Mrs. L. M. Fontey, Plymouth
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THE GARDENERS' CHRONICLE
AND
AGRICULTURAL GAZETTE.

A Newspaper of Rural Economy and General News.

No. 51.—1866.] SATURDAY, DECEMBER 22. {Price Fivepence. {Stamped Edition, 6d.

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ROYAL HORTICULTURAL SOCIETY.—The following are the DATES of the SHOWS for 1867, viz.:—FIRST SPRING SHOW, TUESDAY, March 19; SECOND SPRING SHOW, TUESDAY, April 16; SPECIAL PRIZE SHOW, TUESDAY, May 7; GREAT SHOW, TUESDAY, June 4, to SATURDAY, June 8; ROSE SHOW, TUESDAY, July 2.

ROYAL HORTICULTURAL SOCIETY.—The EXHIBITIONS for 1867 will be HELD in the SOCIETY'S GARDENS, SOUTH KENSINGTON, on the following TUESDAYS:—SPRING SHOWS: CAMELLIAS, HYACINTHS, and other SPRING FLOWERS, March 19; AZALEAS, ROSES, and other SPRING FLOWERS, April 16; SPECIAL PRIZE SHOW, May 7; GREAT SUMMER SHOW, June 4, 5, 6, 7, and 8; ROSE SHOW, July 2.
GREAT SHOW at BURY ST EDMUND'S, July 15th to the 19th.
Schedules will be ready early in January

NATIONAL HORTICULTURAL EXHIBITION, 1867.—The above EXHIBITION will open at Manchester on JUNE 7, and continue till JUNE 15.
Schedules, &c., may be obtained on application to Mr. B. FINDLAT, Curator, Botanic Garden, Manchester; or from the undersigned,
HENRY WHITWORTH, Secretary.
Carlton Buildings, Cooper Street, Manchester.

Zoological Gardens, Clifton.—Rose Show.

THE BRISTOL, CLIFTON, and WEST of ENGLAND ROSE SHOW will be held in the above Gardens, TUESDAY, June 25, 1867.
For particulars, apply to the SECRETARY, Zoological Gardens, Clifton.

SUTTON'S AMATEUR'S GUIDE IS NOW READY.
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Retail Price, 1s. 6d. per Quart. Price to the Trade on application.

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"Longford Hall, Derbyshire.

"Your 'First and Best' Early Pea is quite ten days earlier than Daniel O'Rourke, very prolific, of good flavour, and in every respect a first-class Early Pea."

From Mr. J. GARDNER, *Gardener to the* Hon. E. S. P. LEVESON

"Little Aston Hall, Warwickshire.

"I have great pleasure in giving you my opinion in the merits of your 'First and Best' Early Pea. I sowed it by the side of Sangster's No. 1, in a north border, where it proved to be the longer cropper than the other. Your Peas was about 2 feet in height, is very productive, of excellent quality, and, I may add, very hardy."

From E. C. WALKER, Esq.

"Lead Works, Chester.

"The new Pea you sent me was sown on March 5, by the side of a row of Daniel O'Rourke, and gathered a good dish from yours on June 12, and was unable to gather from Laxton's, Veitch's, and June 24. I consider your Pea a most valuable introduction. It is a good bearer, and excellent on the table."

From Mr. W. HILL, *Gardener to* R. SNEYD, Esq.

"Keele Hall, Staffordshire.

"I have great pleasure in reporting favourably of the Early Pea you sent me to try. The [illegible] sown on the same day (March 17) as Sangster's No. 1, Carter's First Early, Sutton's Early Champion, and D. Jones's Early Prolific, and proved earlier by some days than any of them. Dillistone's comes in next to it, but it is not so prolific as yours."

From Mr. JAMES TURNER, *Gardener to* BASIL FITZHERBERT, Esq.

"Swynnerton Park, Staffordshire.

"I was much pleased with your 'First and Best' Early Pea. It was not here on the same day, but by the side of Sangster's No. 1, and it was fit to gather quite a fortnight before that variety. It is very prolific, the flavour is excellent; I consider it the best Early Pea in cultivation."

From Mr. WILLIAM BROWN, *Gardener to* W. S. DUGDALE, Esq.

"Merevale Hall, Warwickshire.

"Your Early Pea came into bearing ten days before Sangster's No. 1. It appears to be the best Early variety we have. It is an excellent bearer, and I feel much pleasure in recommending it."

From Mr. WILLIAM LANTON, *Gardener to* A. R. R. KNIGHT, Esq.

"Downton Castle, Herefordshire.

"I have much pleasure in stating that your Early Pea has proved itself to be a very great acquisition to us. It is the earliest and finest flavoured Pea I have ever grown, and came into bearing only nine days after Sangster's No. 1, and two days before Dillistone's. I consider it the best Early Pea in cultivation."

From Mr. WM. WHITAKER, *Gardener to the* Right Hon. Lord CREWE.

"Crewe Hall, Cheshire.

"I can bear my testimony to the earliness, good flavour, and productiveness of your new Early Pea, which I consider to be the very earliest and best Pea for a first crop. It came into bearing 3 days before Sangster's No. 1. Your Pea is much superior to Dillistone's in every respect."

The "FIRST & BEST" EARLY PEA can be had TRUE from the following SEEDSMEN, who have already ordered a supply direct:—

Messrs. Hurst & Son, 6, Leadenhall Street, London, E.C.
" Cooper & Holt, 65, Fleet Street, London, E.C.
" J. & C. Lee, Hammersmith, London, W.
" Dickinson & Brown, 35, Gerrard Street, Manchester.
" Fisher, Gibbons, & Co., Sheffield.
" H. & C. Bibby, Mary Street, Dublin.
" Dobbie, Leith, & Laing, Edinburgh.
" Smith & Sons, Rothesay.
" Jackson & Turnbull, Perth, N.B.
" Pfaff & Son, Erfurt, Prussia.
Mr. Geo. James Veitch & Sons, Kings Road, Chelsea, S.W.
" James Wrench & Sons, Islington, London, N.
" Mantell, Nash & Nash, Strand, London, W.C.
" Henry Cuthbert & Co., King Street, Covent Garden, W.C.
" P. & R. Kerr son & Co., Edinburgh.
" T. Jackson & Sons, Kingston, Surrey.
" James Gardner & Co., Bristol.
" Dougherty & Arthur, Northampton.
" Simon Louis Fréres, Metz, France.
Mr. Thos. Charmes, High Street, Exeter.
" Charles Wilkinson, Worcester, & Hereford.
" John Jones, Ludlow.
" Ernst Benary, Erfurt, Prussia.
" Wm. Dean, Tadcaster.
" J. Toward, Paris, France.
" J. Perkins, Northampton.
" J. & W. Woods, The Nursery, Hoxton.
" H. Watkinson, Manchester.

Rhododendrons.

JOHN WATERER'S DESCRIPTIVE CATALOGUE of HARDY SCARLET and other RHODODENDRONS is now published and will be forwarded on application. It faithfully describes the colours of the new varieties exhibited by him at the Royal Botanic Gardens, Regent's Park. An Abridged List of popular CONIFERS with heights and prices, is likewise combined.

The American Nursery, Bagshot, Surrey, near Sunningdale Station, South-Western Railway.

Wholesale Catalogue of Nursery Stock.

GEORGE JACKMAN AND SON'S PRICED and DESCRIPTIVE CATALOGUE for 1866 and Spring 1867, can be had free on application, comprising Fruit Trees, Roses, American Plants, Conifers, Clematises, Evergreen and Deciduous Trees and Shrubs, and transplanted Forest Trees, &c., &c.

Woking Nursery, Surrey.

GERANIUM "CHILWELL BEAUTY."—This really fine variety may now be seen in flower. It was raised this season from seed sown last Autumn, and will be sent out next Spring, at 10*s.* 6*d.* each.

Orders will be executed in the order they are received, and the price will not be reduced by me till the Spring of 1868. The Trade will prefer this mode of putting it *in commerce*, to buying it associated with inferior kinds. As the stock is not large, it must be small, no discount will be allowed.

Blooms were sent to the Editors of the "Journal of Horticulture and Cottage Gardener," and received the following notice:—

"The seedling Pelargonium 'Chilwell Beauty' is first-rate, its intense shade of colour is distinct from any other kind; if a free-flowering variety it is one of the best hybrid Nosegays we have seen. It is darker than Amy Hogg, Dr Hogg, or Rebecca, and will prove a very effective shade of colour for bedding purposes."

J. R. Pearson, Chilwell, Notts.

"Mile. Ada Smierciec, Derby, November 16th, 1866.

"DEAR SIR,—Having seen a notice of your Geranium 'Chilwell Beauty,' in 'The Journal of Horticulture,' I was very anxious to see the growing plant, as we are inundated with new varieties, the majority of which are really not worth growing. I had the pleasure of seeing your plants yesterday, and was glad to find that it was of first-class habit, and that for size, shape, and substance, the flower is superior to any I have ever seen, and I am in the habit of growing all the new ones as they are introduced. The colour is also quite new, and will have a very pleasing effect in the flower garden. I shall be glad to have plants of it as soon as they are ready for distribution. I am, dear Sir, Yours very truly, "EDWIN COULSE."

Now Published.

ARCHIBALD HENDERSON'S DESCRIPTIVE and PRICED CATALOGUE of FRUIT TREES, VINES, ROSES, and GENERAL NURSERY STOCK, is now ready Can be had Gratis and Post-free upon application.

Sion Nursery, Thornton Heath, Surrey; and at the East Surrey Seed Warehouse, College Grounds, North End, Croydon.

W. VIRGO AND SON have a large Stock of the undermentioned FRUIT, FOREST, and other TREES to offer this season, viz.:—

Apples	Alder	Withy
Cherries	Ash	Quick (strong transplanted)
Plums	Chestnut (Spanish)	
Pears	Hornbeam	Common and Portugal Laurels
Peaches and Nectarines	Hazel	Privet
Forest Trees	Larch and Scotch Fir	Roses, &c.
	Oak (English)	

Samples and Prices can be had on application at
The Nursery, Wonersh, near Guildford, Surrey.

TO THE TRADE.

Strong Transplanted CRAB STOCKS; Two years' SEEDLING ASH
GOOSEBERRIES and CURRANTS in 200 varieties
Dwarf-trained APRICOTS, PLUMS, CHERRIES, PEACHES, and NECTARINES, very fine
Siberian, Chinese, and American ARBOR VITÆ, various sizes
Common Green HOLLIES, 1 to 1½ and 2 feet.
LAURUSTINUS | YEWS | Box-leaved PRIVET
2 and 3 years' GIANT ASPARAGUS ROOTS
GLADIOLUS (Sorts) | TRITOMA UVARIA, &c., &c

Quotations will be given on application to EDWARD TAYLOR, Nurseryman, Malton, Yorkshire.

RICHARD SMITH'S FRUIT LIST contains a Sketch of the various Forms of Trees, with Directions for Cultivation, Soil, Drainage, Manure, Pruning, Lifting, Cropping, Treatment under Glass; also their synonymos, quality, size, form, skin, colour, flesh, flavour, use, growth, duration, season, price, &c. Free by post for one stamp

RICHARD SMITH, Nurseryman and Seed Merchant, Worcester.

Roses, Fruit Trees, Conifers, Forest Trees, &c.

JOHN CRANSTON begs to direct attention to a large and superior Stock of ROSES, FRUIT TREES, CONIFERS FOREST and ORNAMENTAL TREES, &c.

His Nurseries extend over upwards of 50 Acres, situated in the centre of the county of Hereford (which is acknowledged to possess the finest soil and climate for the growth of Fruit and Forest Trees of any other county in England), and is well stocked with Trees of every description.

DESCRIPTIVE PRICED CATALOGUES will be forwarded on application, and to Purchasers of large quantities special and most advantageous Prices will be given.

Planting undertaken by Contract or otherwise.
Nurseries, King's Acre, near Hereford

To the Trade.

JAS. GARAWAY AND CO. offer

Alder, 1½ to 2 & 2 to 3 transplanted	Chestnut, Horse, 1 to 2 feet, transplanted
Ash, 1, 2, and 3 year Seedlings	Elm Wych, 1 to 2, 2 to 3, and 3 to 4 feet, transplanted
Ash, transplanted, 2 to 3 feet	Larch, extra fine, 1 to 1½, 1½ to 2, 2 to 3, and 3 to 4ft., transplanted
Aucuba japonica, berried	
Beech, 1 and 2 year Seedlings	
Birch, 1 to 2 feet, transplanted	

FRUIT TREES

Apples, very fine dwarf-trained	Peaches, very fine dwarf-trained and standard-trained
Apricots, do. and standard-trained	Pears, very fine dwarf-trained
Cherries, do., do.	Plums, do.
Nectarines, do., do.	

Prices on application.

JAS. GARAWAY & Co., Durdham Down Nurseries, Bristol.

FRUIT TREES.—The finest collection in England. 2000 sorts are grown in all manner of training, and are free from insect, canker, &c., &c. Fruit Trees from other soils should be avoided, as when once attacked they can never be cured.

A 24-page CATALOGUE and large Supplement of bulbs and carnation gratis, on application to J. SCOTT, The Nurseries, Merriott, Somerset.

WALL-TRAINED TREES of BEARING SIZE.—Our Wall-Trained Fruit Trees this season are very fine, and include PEACHES, NECTARINES, APRICOTS, and FIGS, suited for planting in houses for immediate Fruiting. An inspection is respectfully invited.

T. JACKSON & SON, Nurseries, Kingston, Surrey.

BLACKTHORN, LARCH, and SPRUCE.

LARCH, 3 to 4 feet	SPRUCE, 3 to 4 feet
" 4 to 6 feet	BLACKTHORN, 1½ to 2 feet
SPRUCE, 2 to 3 feet	" 2 to 3 feet

JOHN PERKINS, Sen., having an immense stock of the above, will be glad to give special quotations to any parties who contemplate planting, on application to

62, Market Square, Northampton

LARCH, &c., at the Nursery of the late David A. Reid, Park Attwood, Bewdley, Worcestershire.—LARCH, 1½ to 2 feet, 10*s.* per 1000; 2 to 3 feet, 12*s.* per 1000; 2½ to 3½ feet, 14*s.* per 1000; 3 to 4 feet, 16*s.* per 1000. PEAR STOCKS, 2½ to 5 feet, 15*s.* to 40*s.* per 1000. LISTS of other TREES sent on application. Apply, with reference or remittance, to

JAMES RIDDELL, Steward, Park Attwood, near Bewdley

Planting Season

LARCH (Native and Tyrolese), SCOTCH FIR (True Native), SPRUCE, OAK, ASH, ALDER, BEECH, PRIVET, and all kinds of FOREST and ORNAMENTAL TREES and SHRUBS, ROSES, FRUIT TREES, fine specimen ARAUCARIAS and DEODARS, and large TREES for Park Planting, now in fine condition for removal.

CATALOGUES, with sizes and prices, sent free on application to DICKSONS & Co., Nurserymen, Seedsmen, and Florists, 1, Waterloo Place, Edinburgh.

Tansley Nurseries, near Matlock, Derbyshire.

JOSEPH SMITH, SEN., invites Planters and the Trade to inspect his Nursery of 80 Acres of high land. The soil is of a fibrous nature, and the Plants take up with excellent roots, such as to ensure the best success in their removal.

The Nursery contains many Hundred Thousands of RHODODENDRONS, COMMON and PORTUGAL LAURELS, BOX, BROOMS, BERBERIS, HOLLIES, PRIVETS, YEWS, &c. The FOREST TREES are very extensive, of all the leading kinds; there are 15 Acres of LARCHES, of different sizes, and all others in proportion. Prices moderate, which can be had on application as above.

CEDRUS DEODARA.—Fine Plants for immediate effect, from 5 to 6, 7, and 10 feet high, safe to transplant, at 1*s.* per foot. Some extra-sized specimens, 15 to 20 feet, at 2*s.* per foot. Most of the plants offered are in Large Pots, making their removal certain beyond a doubt.

MALLE & SONS, The Nurseries, Bristol.

WANTED, ENGLISH OAK, 7 to 9 feet; AUSTRIAN PINE, 1½ to 2 feet, and 2 to 2½ feet; GREEN HOLLIES, 1½ to 2 feet, 2 to 2½ feet. They must all be good strong clean-grown Plants, frequently transplanted, and that lift with good roots. State quantities and prices to

FRANCIS & ARTHUR DICKSON & SONS, "Upton" Nurseries, Chester.

Forest and Ornamental Trees, &c.

THOMAS KENNEDY and CO., NURSERYMEN and SEED-MEN, Dumfries, have this season a very large and superior Stock of FOREST, FRUIT, and ORNAMENTAL TREES, DECIDUOUS and EVERGREEN SHRUBS, &c., adapted either for extensive Planting, or for giving immediate effect in the formation and improving of Ornamental Parks, Pleasure Grounds, &c., and which they are selling at extremely moderate prices. CATALOGUES furnished on application.

*** Dumfries is most conveniently situated for the speedy transmission of goods to all parts of the United Kingdom.

Forest Trees.

FREDK. PERKINS begs to offer the following extra fine Transplanted FOREST TREES.

	Per 1000	£	d
ASH, 2 to 3 feet, very fine	18	0	
" 3 to 4 feet, do.	20	0	
ALDER, 4 to 5 feet, do.	18	0	
ENGLISH OAK, 2 to 3 ft.			
do.	40	0	
HORNBEAM, 2 to 2½ feet, very fine	20	0	
HAZEL, 2 to 3 feet, do.	30	0	
LARCH FIR, 3 to 4ft., do.	12	0	
" 4 to 6 ft., do.	15	0	

Transplanted QUICK, 6*s.* per 1000.

Samples of the above forwarded on application to
The Hedford Road Nurseries, Northampton.

New Seeds.

HAMILTON AND WRIGHT'S PRICED CATALOGUE of NEW and CHOICE VEGETABLE and FLOWER SEEDS, and PRICED LIST of GARDEN IMPLEMENTS and REQUISITES, is now published, and will be forwarded gratis and post free on application.

Collections of VEGETABLE SEEDS for large and small Gardens, for one year's supply, at 63*s.*, 42*s.*, 21*s.*, and 10*s.* 6*d.* each.

For varieties and quantity in each Collection, see CATALOGUE.

Surrey Seed Warehouse, Thornton Heath, S.

Seed Drawers Wanted.

WANTED, a CASE of GARDEN SEED DRAWERS, to suit a space 6 feet broad by 9 feet high, to contain about Eighty Drawers. Apply, stating particulars and price, to H. & C., *Gardeners' Chronicle* Office, W.C.

TRADE NOTICE.—SURPLUS STOCK.

TWICE TRANSPLANTED { SCOTCH PINE, 1½ to 2, and 2 to 3 feet / SPRUCE FIR, 1 to 1½, and 1½ to 2½ feet } at 20*s.* per 1000.

SEEDLING SCOTCH PINE, 2-yrs. old, prime stuff, at 3*s.* per 1000.

Samples, Terms, &c., on application to the Undersigned,

J. E. NELSON, THE NURSERIES, RINEFIELD, LYMINGTON, HANTS.

GENUINE SEEDS.

JAMES VEITCH & SONS

BEG TO ANNOUNCE THAT THEIR

CATALOGUE of KITCHEN GARDEN and FLOWER SEEDS for 1867,

WITH LIST OF IMPLEMENTS AND OTHER GARDEN REQUISITES,

Is now Published, and will be forwarded Free on application.

THE ROYAL EXOTIC NURSERY, KING'S ROAD, CHELSEA, LONDON, S.W.

CLEARING OFF

SURPLUS STOCK OF IMPORTED DUTCH BULBS.

THEY ARE IN FINE CONDITION.

20 PER CENT. LESS THAN CATALOGUE PRICE.

CATALOGUE ON APPLICATION.

Gem Plant Case.

HYACINTHS, fine named, in 20 varieties, at 20*s.* per 100.
NARCISSUS (Garden), in 12 varieties, at 30*s.* per 1000.
TULIPS, splendid named Early Single, in 30 varieties, at 40*s.* per 1000.
TULIPS, splendid named Early Double, in 30 varieties, at 40*s.* per 1000.
CROCUS, Striped, Golden Yellow, Scotch, Versicolor, and Mixed.
CROCUS, New Seedling varieties, such as Albion, Ne plus Ultra, Sir Walter Scott, Sulphureus, New Golden Yellow, and Mixed.

SINGLE SNOWDROPS	IXIAS	TRITONIAS	CROWN IMPERIALS
BULBOCODIUM VERNUM	SPARAXIS	BABIANAS	SCILLAS.

Best Variety of VIOLA CORNUTA, 1*s.* and 2*s.* 6*d.* per packet.
Imported LILY of the VALLEY, fine large clumps for Winter Blooming, 1*s.* 6*d.*, or 12 for 17*s.*

Gem Plant Case.

BARR AND SUGDEN,
12, KING STREET, COVENT GARDEN, LONDON, W.C.

ROSES.—Extra fine Standards, at from 15s. to 18s per dozen; 100s per 100.
Do. Dwarf, extra fine, at from 9s. to 12s. per doz.; 63s. to 84s. per 100.
Do. New Sorts, Dwarf and Standard, to order.
Descriptive and PRICE LIST on application.
RICHARD SMITH, Nurseryman and Seed Merchant, Worcester.

Roses.

CHARLES VERDIER Fils (ex-Partner in and Successor to the late Firm of Victor Verdier Père, and Cie Verdier Fils), Nurseryman, 12, Rue Dunnerol, Paris, begs to inform Amateurs and the Trade that he has just published his NEW CATALOGUE of ROSES, which may be obtained free on application to his Agents, Messrs. R. SILBERRAD & SON, 5, Half Lane, Great Tower Street, London, E.C.

NEW CATALOGUES
for the SEASON of 18 5 and 1867.
No. 1. ROSES.—A Select List of the best varieties in cultivation, fully and faithfully described.
No. 2. FRUIT TREES.—A Descriptive List of all the choicest sorts.
No. 3. CONIFERÆ, ORNAMENTAL TREES and SHRUBS—
Containing all varieties worthy of cultivation, whether tender or hardy, for the Shrubbery, Pleasure Ground, &c.
No. 4. HEDGE PLANTS and FOREST TREES.—Plants for hedges and underwood, &c.
No. 5. GARDEN and AGRICULTURAL SEED and ROOT CATALOGUE.
No. 6. GENERAL PLANT CATALOGUE.
Any one will be forwarded free on application or post free to
Messrs. Cocks, Kirke & Co., Nurserymen, near Hereford.

SELECT FLOWERING TREES for SMALL LAWNS and SHRUBBERIES.
CARAGANA ALTAGANA, ARENARIA (Weeping), CHAMÆCYTISUS ALBUS (Weeping), JURATA, 30s. to 60s. each; AUSTRIACUS, LENTISCUS, 15s. each; CALOPHYLLUS, 21s. each; and MALTHANIANUS ARGENTEUM, 2s. 6d. each.
Large specimen Standard trees of Laburnum, flowering in early May, at 42s. each; 3 for 7 guineas; 6 for 12 guineas.
CYTISUS ELONGATUS, PURPUREUS ELONGATUS (new and superb), PURPUREUS, PURPUREUS ELEGANS ALBO, PURPUREUS GRANDIFLORUS, PURPUREUS MAJOR, SUPERB ROSEUS, VERSICOLOR, SESSILIFOLIUS, SESSILIFOLIUS SIBIRICA, SIBIRICANS, and GENISTA FLORIDA, 3s. 6d. each.
Extra large specimens of these and species are grafted on straight 5-ft. stems (the Purple Laburnum).
LILACS.—NEW DARK BLUE, TRIOMPHE DE LOUVAIN, COUSIN DE MARLY, DE MOULINS, DE NANCY, and the CHOICEST DOUBLES, PHILEMON, GRANDIFLORA RUBRA, VALLOTIANA, PRINCE IMPERIAL, WHITE SIBERIAN and RED SIBERIAN.
These three are low Standards with straight 4 to 5 feet stems, and have a fine ornamental
PRUNUS SINENSIS ALBA and RUBRA, 3 feet stems, 2s. 6d. each.
THOS. RIVERS & SON, Nurserymen, Sawbridgeworth.

"All the Year Round" Lettuce.

DICKSONS and BROWN, SEED MERCHANTS, of Manchester, have pleasure in introducing the above as the hardiest Winter Lettuce known. It grows very compact, and is beautifully white. Highly recommended as a first-class Summer Lettuce.
To the following Seedsmen we supply it, price 1s. each, from D. & B.'s, or the undermentioned Seed Merchants, who have received supplies from them:—

Mr. WHITE, *Cambridge*.—T. Weld Bunkell, Esq., *same*.—"I have made a good trial of the above under Mr. Brown's recommendation both in spring and autumn. The latter ran to seed; All the Year Round remains a long time good."
Mr. J. EVERSON, *the Nurseries, Ipswich*.—John Pitt, Esq., M.P.
"Pray accept our thanks for Dickson & Brown's All the Year Round Lettuce—the best we ever had."
Mr. OWEN, *Sandringham*.—John Pitt, Esq., M.P., *same*.—"It is very white and solid, and stands better than any other winter Lettuce I have ever grown."

List of Seed Merchants who have obtained supplies:—
Messrs. Hurst & Son, London.
" James Veitch & Sons, Chelsea.
" Thomas & Arthur Dickson & Sons, Belfast.
" J. & C. Lee, Dumbarton.
" Cooper & Co., Dublin.
" Smart & Moon, Kendal.
" James Backhouse & Son, York.
" Dickson & Co., Edinburgh.
" T. Laurence & Son, Dorchester.
" James Garaway & Co., Bristol.
" Fisher, Holmes & Co., Sheffield.
Messrs. P. & W. Robertson & Co., Edinburgh.
" P. Farrell & Sons, Dublin.
" S. Perry & Co., Gateshead-on-Tyne.
" Downie, Laird & Laing, Edinburgh.
" Charles Turner, Slough.
" James Methven, Kendal.
" W. Rutson, Newcastle-upon-Tyne.
Mrs. L. M. Penter, Plymouth.

HENRY DEWAR and SON beg respectfully to offer Seed of their very superior IMPROVED SHORT-TOP RED BEET, which was awarded Two First-class Certificates at the Gardeners' Royal Benevolent Society's Exhibition, held in Nov. 7 and Dec. 9, 1865; also Seed of their celebrated NORTHUMBERLAND CHAMPION CELERY, which was awarded a First-class Certificate at the Exhibition held in South Kensington, Dec. 9, 1862. It attained to the First-class Certificate, the Silver Banksian Medal of the Royal Horticultural Society was awarded for the best Celery in the Exhibition.
In sealed packets only, stamped with our name in full, at 1s. per packet each. Free to the Public on prepaid application.
Dewar's Depôt, 97, Grey Street, Newcastle-on-Tyne.

SPLENDID NEW LARLY GIANT KING ROUND SPANISH, unrivalled true; several Sacks to offer. Price on application.
ASCOT GRAND FRENCH BRANCHING TENNIS, as per list.
ASCOT GRAND ROSES, SHRUBS, FRUIT TREES, FERNS, and SEEDS.
CATALOGUES on application to
J. ANDREW, Jun., Ascot Nursery, Ardleigh, near Colchester, Essex.

Seed Potatos.

H. and F. SHARPE are now offering MYATT'S PROLIFIC, WEEDS IMPROVED EARLIEST, WEEDS IMPERIAL KIDNEY, FORTY-FOLD, FOX-SEED LING, EARLY OXFORD, and various other Early and Late varieties, true to name, free from disease, and of fine growth.
Seed Grown, Fern-hill Summit, Whitchurch, Cambridgeshire.

New Dwarf Kidney Bean—Dickson's Eclipse.

JAMES DICKSON and SONS have continued to endeavour to attain offering this *most distinct, and thoroughly* valuable DWARF KIDNEY BEAN, the past season having afforded most satisfactory proof of its *extreme productiveness and excellence*. In sealed packets, 1 pint, 1s. 6d.; quarts, 2s. 6d.
J. DICKSON & SONS can this season spare a limited quantity to the Trade. Seed Warehouse, 102, Eastgate Street, Chester.

The Earliest Pea Grown is

CARPENTER'S EXPRESS, gathered on the 7th May, 1866, from seed sown on the 3rd of February previous. Price 2s. per quart. Immediate orders and cash per Return.
EDWARD CARPENTER, Seed Merchant and Grower, Brighton and Sussex Seed Warehouse, 9a, St. James's Street, Brighton.

PAYNTER'S EARLIEST and BEST PEA, the heaviest cropper and most true, price only 1s. 6d. per quart. See Advertisement, 1st of December, *Gardeners' Chronicle*.
PAYNTER'S PEAS are in London at Messrs. Jas. Veitch & Sons, Chelsea; Messrs. Sutton and Mr. R. S. Williams, Broadway, S.W.; and Dunmow and neighbourhood, in sealed quart packets only, with Trade Mark, the Crown and Royal Oak, and blue label. None other genuine.
RICHARD PAYNTER, Seedsman, &c., Dunmow, Somerset.

VEITCH'S PERFECTION PEAS, True, 12s. per bush., 3s. per peck, 70s. per quarter.
GLADIOLUS BRENCHLEYENSIS, fine full-sized flowering Roots, 5s. per doz., 7s. per doz.; large bulbs, best for show purposes, 10s. per doz.; extra large Roots, 21s. per doz., 12s. per 100.
ESPÉRIS DIVAE (Sweet Rocket) PEAS, introduced in the London and Paris Exhibitions of 1862, 1s. per packet, per post free.
R. DEBOIS, West End Nurseries, Ely.

SUTTON'S RINGLEADER PEA.

THE VERY EARLIEST AND BEST PEA
IN CULTIVATION IS

SUTTON'S RINGLEADER.

Price 2s. per quart.

The following are Extracts from a few of the numerous Testimonials recently received:—

Extract from the Report on Peas grown at Stoke Newington in 1865 and 1866.

"'Sutton's Ringleader'.—In 1866 the sample was true throughout, the growth quite regular, very, the leaves a light green and small as compared with 'Dillistone's Early Pea' 'Sangster's No. 1'; or, in other words, it is decidedly less leafy than either of those varieties. The pods are regular in outline, with a neat beak, and are produced both in pairs and singly. One of the distinguishing characters is, that it produces pods from top to bottom in a very unusual manner, whereas 'Dillistone's Early' produces them chiefly at the top.
"There can be no doubt that this is a distinct and valuable variety, the earliest in cultivation, and as good for the table as any in the season to which it belongs. Height, 2 feet 9 inches.
"In 1865 and 1866 'Dillistone's Early' and 'Sutton's Ringleader' stood side by side, and 10 cwt two Peas are as distinct as Oranges are from Lemons, or as 'Sangster's No. 1' is distinct from 'Bishop's Longtest'."

From Mr. JAMES DICKETT, *Gardener to the* Rev. J. Wilder, *Sutham, August 22.*

"I have pr ved your 'Ringleader' Pea to be the earliest. I sowed 'Ringleader' side by side with 'Daniel O'Rorke,' and gathered the 'Ringleader' nine days earlier than 'Daniel O'Rourke.'"

From Mr. JOHN RATTY, *Gardener to* Cotterill Schofield, Esq., *Tweedie Park, Hendon-on-Thames, Sept. 6.*

"I have twice this season grown 'Sutton's Ringleader' Pea side by side with 'Daniel O'Rourke' and 'Dillistone's Early,' and on each occasion found 'Sutton's Ringleader' 7 or 10 days earlier than either of the other two."

From Mr. JOSEPH HINSON, *High Street, Sutton, near Ely, Sept. 15.*

"I have now grown your 'Ringleader' Pea 2 years, and have found it to be the earliest I have ever grown."

From Mr. GEORGE SCRIMSHIRE, *Home Park, Sonning, May 29.*

"I have great pleasure in reporting favourably of your new early Pea 'Ringleader.' They were sown the same day as five of the most popular early sorts. I gathered a dish from it on the 26th of May, which is 14 days earlier than I shall off any of the other varieties. It is also very prolific."

From JOHN FORD, Esq., *Morton Hall, Warwick, May 31.*

"Mr. gardener sowed on the 12th January, side by side, 'Sutton's Ringleader,' 'Sutton's Unique,' 'Essex Royal,' and 'Dillistone's Early Prolific' Peas. 'Sutton's Ringleader' was just coming in the 31st May; the others a week or so later."

From Messrs. DOBSON & SONS, *Woodlands Nursery, Isleworth, October 24.*

"We tested your 'Ringleader' Pea last season with 'Dillistone's,' and it was from a week to 10 days earlier. It is certainly the earliest Pea that has come under our notice."

From WM. THOMPSON, Esq., *Wentworth, January 12.*

"I tried your 'Ringleader' Pea last year against 'Sangster's No. 1' they were each sown on the same day, but your 'Ringleader' was 10 days earlier in ripening than 'Sangster's No. 1.'"

From Mr. WILLIAM DOWELL, *Gardener to* Sir George Chetwynd, *Grendon Hall, Atherstone, Mon.*

"Your 'Ringleader' is earlier than any Pea I have ever grown. I shall gather a dish to-morrow morning, which is by far the earliest we have had."

From Mr. W. POTTS, *Gardener to* H. P. Best, Esq., *Donnington Grove, near Newbury, May 24.*

"I planted your 'Ringleader' Pea on the last day of February; on the same day I planted 'Dillistone's Early' and other early sorts. Your 'Ringleader' is uncommonly well podded, and the pods are nearly first. I have no doubt they will be cleared, and the ground planted, before I pick from any of the other early sorts."

From Mr. BAILEY WARDS, *Gardener, Rempell, Brough, May 29.*

"I have this year sown your 'Ringleader' Pea against your 'Early Champion,' which I have hitherto found the earliest in cultivation, and your 'Ringleader' is at least a week earlier than the latter. It has been covered with, from the bottom to top. I am sure it is a valuable addition to our early Peas."

From Mr. J. DANIELS, *Gardener to the* Rev. C. R. Keene, *Swyncomb House, Dorchester, Thursday, June 28.*

"I thought I must tell you 'Ringleader' Pea, sown December 20, is the earliest, but only one day, and much the earliest Pea I have ever grown. I left Langford Rectory yesterday, sown March 20, with 'Dillistone's,' but find them perfectly distinct."

From Mr. JAMES PEARSON, *Gardener to* H. Bentley, Esq., *Woodhouse Hall, Leeds, May 25.*

"Your 'Ringleader' Pea is 6 days earlier than 'Dillistone's,' and is the most promising Pea I have grown."

From Mr. H. HARRISON, *Dullingham, May 29.*

"Your 'Ringleader' Pea has proved with me by far the earliest, and will be cleared off the ground before the others have done blossoming. I consider the 'Ringleader' the quickest Pea of any of the early sorts grown."

From the Rev. ROBERT TAYLOR, *North Hasleden Vicarage, May 26.*

"Your 'Ringleader' is not certainly the earliest Pea I have seen."

From Mr. M. MATHEW, *Gardener to* Dr. Stephens, *Gothic Lodge, Twickenham, May 26, 1865.*

"Your 'Ringleader' is the earliest Pea I have ever met with, and a good cropper."

Price 2s. per quart.

Lowest price to the Trade on application.

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and may be had Gratis and Post Free on application.

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Royal Berkshire Seed Establishment, Reading.

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ROBERT PARKER begs to announce that his NEW CATALOGUE, containing Select Descriptive and Priced Lists of New, Rare, and beautiful Greenhouse, Hardy and Stove Plants, Hardy Ferns, Fruit Trees, Grape Vines, Roses, Rhododendrons, Sweet Violets, &c., Amaryllis, Crocuses, Cyclamens, Gladioli, Hyacinths, Liliums, Narcissus, Tulips, and other Bulbs, is now published and will be forwarded to applicants.
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ACHYRANTHES (IRESINE) AUREO-RETICULATA, the new Golden-rayed Achyranthes.
Per dozen Plants, 10s.; 25 Plants, 18s.
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F. W. WENDEL, SEED GROWER, &c., Erfurt, Prussia, begs to announce that his WHOLESALE CATALOGUE of the above is now ready, and may be had free and post paid on application to his Agent,
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MESSRS. C. PLATZ AND SON, Erfurt, Prussia, Seedsmen to H. M. the King of Prussia, beg to inform their Friends and the Trade that their SEED CATALOGUE for 1867 is now ready, and may be had post free on application to
Messrs. JUNG & SONNTAG, Seedsmen, Cheltenham.
WELLINGTONIA GIGANTEA, new seed, per 1000 seeds, 6s.
PINUS NORDMANNIANA, new seed, per lb., 30s. 6d.

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H. CANNELL has got 500 Dozen in fine condition of both PURPLE QUEEN, direct from Mr. Bennett, and MAUVE QUEEN, which originally came direct from Mr. Wills, therefore must be true. Six of each kind sent safe, fresh, and free per post for 30 stamps; £1 per 100.—Fuchsia Nursery, Woolwich.

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Just published, post free, 12 stamps,

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On the Cultivation of Hardy Flowers from Seed.
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On Laying down Grass Seed for Permanent Pasture.
JAMES CARTER & Co., 237, High Holborn, London, W.C., and all Booksellers.

Now Ready.

NEW and HARDY CLIMBING PLANTS, well adapted for Covering Verandahs, Trellis Work, Walls, Porticoes, Arbours, and Festoons; also a good Hardy and Permanent Bedding Plant—
CLEMATIS RUBELLA.—Very rich velvety claret, the deepest-coloured Clematis yet offered. First-class Certificate R.H.S.
CLEMATIS PRINCE OF WALES.—Large flowers of a rich deep violet purple, with red bars down centre. First-class Certificate R.H.S.
Messrs. GEORGE JACKMAN & SON have much pleasure in informing the Public that they may now apply on the undermentioned Firms having the above New and Hardy Clematises true to name:—

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Mr. Barker, J. C., Godalming	Mr. Morrison, R., Elgin
" Cutbush, J., Barnet	Noble, Alan, Bristol
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" Cantley, F. W., Bermingham	" Peters, John, Son, North Allerton
" Cranston, Peter, Forfar	" Peed, Wm., Waltham Cross
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" Henderson, P. G. & Son, London	" Verschaffelt, A., Ghent
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An original List will be advertised.
STRONG Plants, with nine to 12 to 24 feet, 21s. each. The usual allowance to the Trade.
Coloured Drawings, by Andreæ, for 24 stamps.
Woking Nursery, Surrey.

UNITED HORTICULTURAL SOCIETY.—

The Committee of the above Society emphatically deny the statements embodied in an article in the "Gardeners' Magazine" of December 1st, headed "United Horticultural Society," and signed by the Editor, Shirley Hibberd, reflecting most unjustly upon the Financial Management of the Society.
We stigmatise the attack in question as being an unwarrantable attack upon a gentleman who, by his urbanity, and admirable courtesy in every application under all circumstances connected with our interests, has been the principal instrument in bringing the Society to its present flourishing condition.
We have hitherto considered Mr. Hibberd to be a consistent representative of the United Horticultural Society, and we form no "Secret Conclave" when no statement regret in being compelled to censure his erroneous and egotistical assertions, as we sincerely deplore his sudden and unaccountable infatuation.
But as Guardians of the important interests for which the Society was first established, we feel we have the responsibility of protecting its honour.
By order of the Committee.
(signed) WILLIAM HEATH, Sec.

*** This Advertisement was sent to the "Gardeners' Magazine" for insertion, to refute the statements made on the Editor in an article in the "Magazine" of Dec. 1. The Publisher having declined inserting it, we have adopted the present course of bringing it before the Public.

British Fern Catalogue.

ROBERT SIM can now send, post free for six postage stamps, Part I. (British Ferns and their varieties), 36 pages, including prices of Hardy Exotic Ferns) of his NEW and PRICED DESCRIPTIVE CATALOGUE of BRITISH and EXOTIC FERNS, No. 7.

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J. KELWAY AND SON beg to call attention to their splendid Stock of GLADIOLI, which comprises all the sorts worth growing, and probably the largest in the Trade. As a proof of the luxuriance and excellence of their collection they have been awarded the First Prizes offered at the Crystal Palace and Royal Horticultural Exhibitions in 1864, 1865, and 1866.

PRICED CATALOGUES free to all applicants.

Selections left to J. K. & S., 3s., 6s., to 21s. per dozen; 10s., 20s., to 100s. per 100

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Why Pay so High for Gladioli?

FIVE THOUSAND GLADIOLI, in 200 named sorts, from 3*d* each.

100 GLADIOLI, sound strong Roots, for 30s.

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All best Imported Roots

See PRICED LIST (new feature in the arrangement) of W. P. LAIRD & SINCLAIR, Nurserymen and Seedsmen, Dundee, N.B.

Amaryllis.

JAMES GARAWAY AND CO., Durdham Down Nurseries, Bristol, offer Bulbs of the above, unnamed Seedlings that have bloomed with success during the past two seasons, and many of which are now showing flower, at 5*s*., 7*s*. 6*d*., and 10*s*. 6*d*. each, or 50*s*., 80*s*., and 105*s*. per dozen.

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Surplus Imported Bulbs.—See

BARR AND SUGDEN'S large Advertisement, page 1215.

The Gardeners' Chronicle.

SATURDAY, DECEMBER 22, 1866.

MEETING FOR THE ENSUING WEEK

SATURDAY, Dec. 29 { Royal Horticultural (Weekly Show), at South Kensington .. .. 2 P.M.

SOME time ago (see p. 873) we took occasion to direct the attention of our readers to Professor CASPARY'S paper on GRAFT HYBRIDS, in which he attempts to show that by grafting, a form intermediate between that of the scion and of the stock may occasionally be produced. The occurrence of a few apparently anomalous cases of this kind ought not, and certainly will not, induce our practical men to discard at once the notion of the comparatively little *visible* influence of the stock upon the graft. But, on the other hand, it is difficult, if not impossible, to conceive that no such influence takes place, even if we cannot detect it. To put the matter in a more tangible form, let us ask the question—Is the perpetuation of any given form secured by grafting? The answer to this question always has been in the affirmative. No doubt practical men will be of this opinion still. They will, and properly so, disregard the exceptions and cling to the rule—a rule upon whose precepts they have always acted, and with the most satisfactory results. On the other hand, the exceptional cases are assuming an importance and an interest which alike demand on the part of those who have the requisite ability and leisure the most careful investigation; a great principle is at stake, and one whose bearings on the practice of the future are probably not one whit less important than they are on the future of plant physiology.

We need not do more now than allude to the cases cited by Professor CASPARY, with which the following similar and very singular instance lately recorded by M. CARRIÈRE must be classed. The plant which exhibited the phenomena now to be described is Aria vestita, better known in English gardens perhaps as Sorbus nepalensis. Wishing to propagate this plant by grafting, M. CARRIÈRE himself, with due precaution, performed the operation. On what he worked the scion is not stated, but after a time, on examining the grafts, some of them were found entirely different from the parent plant or stock, and indeed from any plant known in cultivation. The experiment was repeated with even greater precautions, but the result was still the same. The grafts, in place of reproducing the parent form, in certain cases produced something quite different. The new comer was covered with leaves and flowers, while the parent plants had scarcely begun to expand their buds, and indeed, according to the comparative table given by M. CARRIÈRE, there was a striking dissimilarity in almost all the organs of the plants. While the parent plant is tender, checked by frost, and only begins to grow in the neighbourhood of Paris from the 10th to the 15th of May, and continues to do so till towards the end of August, the new form is not injured by frost, begins to grow a month earlier, but stops completely about the 5th of June. The flower-buds of the two plants differ in form, those of the parent plants being elongated and covered with down, while those of the sport, if it may be so called, are short and glabrous. The bark and the leaf-buds are very different: the leaves in the parent plant are thick and downy, like those of Eriobotrya japonica, while those of the interloper are thin, slightly downy, and on a long and slender stalk, contrasting in this respect with the short, thick petiole of the parent plant. A similar difference exists between the flower-stalks of the two plants. The petals, broad and sessile in Aria vestita, are narrow and stalked in the form to which M. CARRIÈRE gives the name of pseudo-vestita.

We refer our readers to a recent number of the "Revue Horticole" for further details concerning this most extraordinary instance of mutability, merely adding, that possibly some clue may be found to the explanation of these singular appearances by the fact stated by M. CARRIÈRE, that the Aria vestita, although it produces fruit, does not perfect its seeds, and hence possibly it may be of hybrid origin.

WE threw out a few suggestions at p. 945, on the advantage that would accrue to the FLOWER GARDEN from a more general study of the principles of COLOUR. That a gardener should be an artist is evidently a fallacy, as his talent would probably find itself wider scope than the arrangement of flower borders; but a man may have considerable taste without being either painter, sculptor, or a proficient in any other branch of art, and any gardener has an opportunity of proving it. In many races we find great natural perception of colour, while among individuals, some appear insensible to the most apparent facts. Of the Arabs it is said, that when any of their children became possessed of numerous colours they were sure to arrange them in pleasing concord, while CATTERMOLE, the painter, and a great one in his line, used to assert that there was no such colour in Nature as green. But whether with or without taste, and in this we must wait for the verdict of others, in studying general composition it is well to bear in mind certain rules—as not to overload the parterre with any one colour, although a dominant colour can be selected according to taste, provided the accessories are interesting and of sufficient importance; nor at the same time to mix colours to their mutual disadvantage, so as to produce disturbed impressions. An interlaced grouping, skilfully contrasted, produces a brilliant *ensemble*, without detracting at all from the beauty of the different beds. Thus scroll-work patterns, confined to flower-beds only, afford means of display that long borders and detached beds can never hope to rival; but the latter are capable of successful treatment by ringing the changes, making each bed, though different, a link in continued harmony.

Now, Purple King Verbena is one of the most useful in the garden. Place it against Scarlet Pelargonium, and it is quiet and pretty; against yellow Calceolaria or gold-leaf Pelargonium, and it is striking as its contrast. Greys go well with it, and it is even at home against blue Lobelia, with the assistance of an intermediate colour. Take an oblong bed as an easy mode of illustration; fill the centre with Purple King, and let it grow; border by Tropæolum Lobbianum elegans, kept pegged, and blue Lobelia outside that. If the bed is margined with stone so much the better, but if not, keep a broad margin of mould between the Lobelia and the Grass, and see what approval it meets with. The Amaranthus melancholicus is a beautiful, though less easily adapted purple. Against yellowy-green it looks its best (as against dwarf Privet); and Mint, Centaurea candidissima, and Cineraria maritima increase its effect. Against yellow Calceolaria it is not inharmonious, but it is the better for an intermediate. Scarlet Pelargonium, as contrasting the colour of the Grass, is always effective, reminding us of Poppies in the fields; Ivies, Dwarf Holly, Cerastium, Centaurea, contrast and enhance it. Blue Lobelia is of most general use: its natural associate is the Scarlet Tropæolum, which contrasts it, but it can be mixed with Mint or Cerastium, or associated with Scarlet Pelargonium, Christine, Rose Queen or Victoria Rose. Viola cornuta requires much the same treatment as the preceding, only, being of rather a pale hue, it bears contrast (as with a yellowy orange) better than association with reds and other colours. Calceolaria aurea floribunda, or GAINES' Yellow, against the dark Perilla leaf, used in proximity to purple and white, or with an intermediate colour, as purple, between it and a bed of scarlet, should never be omitted. A dead set (irrespective of the uncertainty of the growth) has been made against Calceolarias, but why yellow should be less beautiful than any other colour (unless misused) it is difficult to imagine. Gazania splendens is suitable as a grey edging to purple, and derives occasional lustre from its warm yellow flowers.

These few examples may serve to explain our meaning, though instances of arrangement according to the material at hand, could be multiplied indefinitely. This is a season

> "When fickle ingenuity is mostly seen
> In decking all our churches up with green,"

but though our readers are neither Arabs, nor Indians, or Chinese (but members of the most civilised gardening community in the world), it is trusted that pondering over the arrangements of the flower garden for next season, with the assistance of our few remarks, may rather add to than detract from the pleasures of a merry Christmas.

—— A very SINGULAR GROWTH has just occurred to us in a TOMATO which is apparently unrecorded. On the first glance it seemed as if an unusually large Grape-stone had accidentally fallen on the upper surface of the fruit, and was attached by the narrow base. The process was, however, five lines long and much narrowed below, besides which, though it was pale green above, the base was coral red, like the Tomato itself. It grew on a narrow and shallow crack on the surface of the fruit, and was found below to communicate directly with a fibro-vascular bundle which entered into the composition of a portion of the placenta. On making a vertical section, instead of being succulent, as we expected, it was white and spongy within, with several lacunæ, and one or two irregular fibro-vascular bundles, with highly-developed spiral vessels threading the centre. These vessels, moreover, were tinged with brown, as in many cases of diseased tissues. There was not the slightest appearance of placentæ or anything indicating an abortive fruit. On closer examination the cuticle was found to consist of thick walled cells, exactly like those of the Tomato, while the spongy mass consisted of a similar tissue to the fleshy portion of the fruit, but with far less wrinkled walls and more indistinct intercellular spaces. The most striking point, however, was the immense quantity of very irregular and unequal starch grains with which they were gorged, which gave a peculiar sparkling appearance to them when seen *en masse*. We are inclined to regard the body rather as an abortive axis than an undeveloped fruit. In almost all, if not all, these cases of abnormal growth, whether from leaves, petioles, fruit, or other portions of the plant, we find an immediate connection with one or more spiral vessels, which if not existent at first are developed sooner or later. In the present case the connection of the fibro-vascular tissue of the fruit and abnormal growth was plain enough, but whether it existed when the body was first given off we are unable to say, as it was fully developed when the fruit was brought to us. *M. J. B.*

—— In a recent number of the "Revue Horticole" M. RIÉSEK throws out a suggestion that BAMBOOS are monocarpic, that is, that they flower and fruit only once during the term of their life, let its duration be what it may, and that after having flowered they forthwith die. At least such was the case with some Bamboos received from China by M. RIÉSEK, who goes on to relate that some plants of B. Metake (referred by our distinguished graminologist Colonel MUNRO, to Arundinaria japonica), which had been growing vigorously, suddenly burst into flower, after which their growth seemed to be completely checked, so that there is reason to fear that the plant will gradually disappear from cultivation. On referring this case to Colonel MUNRO, he was obliging enough to state his opinion in the following terms:—"Doubtless M. RIÉSEK is quite right in considering that many Bamboos are monocarpic, and that in some instances the whole plant dies away after flowering; but the case of Bambusa Metake, or more correctly Arundinaria japonica, is different. The real stem of Grasses generally must be considered to be the underground stem or runners, and the portion which flowers in Arundinaria and such other genera, is merely the culm of the year, from which in the case of ordinary Grasses no one would attempt to propagate. If the leaf-bearing stems are all cut away, and the flowering stem only left, the plant will certainly perish when the flowering stem has completed its functions." M. RIÉSEK would seem to have endeavoured to propagate the plants by dividing the flowering tufts, which produced, says he, only a few weak almost leafless shoots, which produced flowers immediately. There is, then, hope that M. RIÉSEK'S lugubrious forecast will not be realised.

—— We are glad to be able to state in general terms that the GARDENERS' EXAMINATIONS of the Royal Horticultural Society at South Kensington, during the past week, have been of a very satisfactory character. The candidates have, as a rule, we are informed, given intelligent answers to the varied questions submitted to them; and they will have their reward, not only in the distinctions they may gain, but in the consciousness of having their minds well stored with the knowledge which will help them to attain success in the practice of their profession. We shall hope to record the names of the successful competitors as soon as the awards have been completed.

—— We have received from M. CHATIN as this sheet is passing through the press, a detailed PROGRAMME of the PARIS INTERNATIONAL HORTICULTURAL EXHIBITION, which was promised in

July last, but which has only just been published. We hope to make our readers acquainted with its contents in our next impression. M. CHATIN further tells us that some of the objections we raised last week are met in a circular that is about to be issued. For the competition in the case of the great prizes the award will be made thus:—The total number of marks won by any exhibitor in any of the "concours" will be divided by the number of the "concours" or competitions in which he takes part; hence Mr. A., who only exhibits twice, and gains the first time 10 marks, and the second time 8, 10+8=18, will have in the final reckoning for the great prizes 9 marks, or 18 divided by 2, the number of "concours" in which he has taken part. Mr. B., on the other hand, who obtains 48 marks in 6 "concours," will at the final reckoning for the "grand prix" have 8 marks only, that is to say, 48 divided by 6.

As regards the Congress, that is a matter beyond the jurisdiction of the Imperial Commission, but M. CHATIN informs us that the Botanical Society of France intends to organise an International Botanical Congress, the programme of which will shortly be issued.

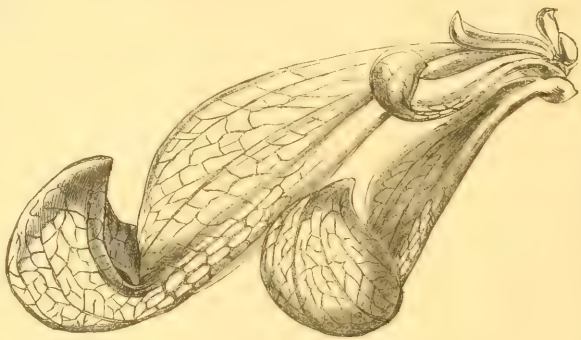
—— The task of laying down with GRASS SEED that part of the Park around the PARIS EXHIBITION which is called the English quarter has been entrusted to Messrs. CARTER & Co., High Holborn.

New Plants.

342. SARRACENIA PSITTACINA, *Michaux*.

Leaves short (2–4 inches), reclined, marked with white spots, tube inflated, with a very broad semi-obovate wing; lamina veniniose, nearly as much reflexed as to close the tube. Flower purple. *Torrey and Gray, Flora of N. America*, i., p. 79.

This elegant little species has been recently introduced by Mr. Consul Schiller, of Hamburgh. Our drawing was made from a plant in the collections of Messrs. Veitch. As will be seen from our reference, the species has long been known, but it does not appear to have made its way into cultivation. It is easily recognised by its comparatively small pitchers, which spread horizontally, and by the lid, which is hood-like, continuous with the tube, and so much curved over its mouth as to leave only a small nearly circular opening. The colour is a purplish red, spotted with white, in the way of S. variolaris. The flowers, of which we have seen only herbarium specimens, are about the size of those of S. purpurea, and of a dark blood-red colour. The plant is a native of Florida, Georgia, &c. *M. T. M.*



THE FORESTS OF INDIA.

SOME imperfect forms of forest conservancy have been in existence for some few years; and in 1865 the "Government Forests Act," which came into operation on the 1st of May of that year, was passed. It extends to the whole of India, and gives power to the local authorities to make certain rules, which are to have the force of law, for the preservation of trees, and for keeping clear the streams and canals passing through or coming from Government forests, and which serve for the transport of timber. Previously, however, to this, the Government of Bengal had organized a system of forest conservancy, and had appointed Dr. Anderson, superintendent of the Botanic Gardens at Calcutta, as Conservator of Forests. The first step taken by Dr. Anderson was to issue a series of questions to the commissioners of all the divisions of Bengal, requesting information as to the extent of forest tracts, the nature of the timber grown, and its value for building and other purposes; the method of transport, and whether in any of the Government forests there existed any restrictions as to the cutting of timber. The answers to the circular, published a short time back, are very voluminous, and in some cases contain valuable information. One fact appears to be abundantly clear, viz., that large forests of Sâl (Shorea robusta) and other valuable trees have been greatly injured by a system of cultivation called in Madras the *kumari* system, and in Eastern Bengal the *joom* system. It may be defined as the clearing of a patch of forest for cultivation by felling and burning the trees, the patch being deserted, after it has yielded one or two crops, for freshly-cleared patches. Where such a barbarous and wasteful method of cultivation prevails, it is easy to be understood that the forests have been seriously injured. The assistant commissioner of Dacca says, in his reply, "Joom cultivation is in full play and is the greatest enemy of the timber. Tea cultivation has also cleared much of the forest." It may be urged that the forest tracts of India are so enormous that the destruction of a comparatively small portion is of no consequence, and that the natural fertility of the soil would be sufficient to replace the timber thus destroyed. It appears, however, that in many parts of Bengal the timber near the great roads or rivers is exhausted; and although immense tracts of valuable trees still exist, the cost of transporting them over the cleared portions of forest to the river or highway is too great to admit of being carried on at a profit. The Government lessees appear to be fettered with very few restrictions, except in the case of India-rubber leases, where there is generally a clause to prevent the extraction of the sap except between the 1st of November and the 30th of April in each year. Directions have also been issued in one district that th persons employed in extracting the resin from the Sâl trees should be required to do so by incisions not likely to prove injurious to the trees.

The chief difficulties in the way of preventing the waste of valuable timber appear to consist in the apathy and obstinacy of the zemindars. They are jealous of interference, and also fond of gain, and are not sufficiently advanced to appreciate the value of preserving their timber if they could sell it. The forests on the estate of the Palgunge Raja "are very valuable, and are being utterly ruined." An attempt was made to obtain a lease of the forests of another of the proprietors of the Hazareebaugh district, but it fell through in consequence of the innumerable under-tenures and conflicting claims which it was found impossible to reconcile.

Dr. Anderson has also prepared a forest budget, containing a scheme for working the forests of Bengal in three divisions, each to be under the control of an assistant conservator. Great difficulty was experienced in procuring suitable men as overseers. A nursery of temperate forest-trees was established at Darjeeling (where, it may be remembered, the cultivation of the Cinchona plant is carried on with so much success) in March, 1865, and is now in a thriving condition. The plants consist of Pine, the valuable Deodar, Cypress, Oak, Chestnut, and others. Arrangements have been made through the Colonial Office for the supply of 20,000 seeds of Mahogany from the West India Islands for the formation of Mahogany plantations in the Terai. The successful cultivation of Mahogany near Titalyah, raised from seed produced in the Calcutta Botanical Gardens, proves that this most valuable timber tree will find a suitable soil and climate in the Terai. The trees raised in the Darjeeling nursery will be planted on the surrounding hills, which, says Dr. Anderson, have, by indiscriminate felling, been stripped of the trees with which they were covered a few years ago.

We may add that the destruction of our Indian forests has several times been brought before the authorities; and, in 1825, Dr. Wallich was sent to the Upper Provinces, to inquire into and watch over the extensive forests of the Empire, which were found to be undergoing most wasteful and rapid decay. His report was placed by the supreme Government with the Agricultural and Horticultural Society of India. Mr. Onslow, superintendent of the Nuggur Division, reported so far back as 1847 that the splendid Teak forests mentioned by Buchanan in his "Journey through Mysore in 1800," had almost entirely disappeared. An officer at Hydrabad was in want of some light-coloured wood for picture frames, and he applied to the regimental contractor. He was surprised "to find that every third or fourth log in his great store of firewood was most beautiful Satin-wood of large size! Only imagine the victuals of a whole regiment, not to say of a large community, being cooked with Satin-wood!" Efforts have been made from time to time by the Agricultural and Horticultural Society of India, by the offer of prizes for plantations, and in other ways, to check the reckless waste of timber, but apparently with little effect.

There is another point of immense importance connected with the destruction of forests besides the scarcity of wood which it creates. We refer to the effects on the climate. "By felling trees which cover the tops and sides of mountains," says Humboldt, "men in every climate prepare at once two calamities for future generations—the want of fuel and the scarcity of water." The presence of forest tracts tends to mitigate the extreme heats of summer, and generally to render the climate more equable. There are cases, of course, in which the rapid march of civilisation absolutely demands the destruction of forests; but, on the other hand, there are many instances in which forests may be preserved, and, by proper cultivation, made to yield a valuable and lasting supply of timber.

BEDDING-OUT.

(*Concluded from p. 1194.*)

IT is a relief to turn from this utter divergence of opinion between "S. R. H." and myself, to heartily endorse his views in favour of room between flower beds. Nothing adds more to the enjoyment and dignity of a garden than wide spaces of turf between and wide walks of gravel round the beds. I know many fine places spoilt utterly from contraction in these matters. No general rules can be laid down. Such things must be determined by the extent of the garden. Yet I will risk the statement here, that Grass between flower beds should never be narrower than 3 feet, and need seldom be wider than 3 or 4 yards, and that walks may vary from a 4-feet minimum to a 12-feet maximum, according to their length and importance.

I wish to concentrate all the practical skill of the country into a burning focus, that will utterly consume all pointers, dogs, vermin, and game, that compete with our flowers in the matter of money, so that we may lay the foundation of true success in a liberal diet for our bedded-out flowers. If "S. R. H." will help us to this, and he has done his best here, we will forgive him even his preference for Parsley. Bedding plants take more out of the soil than a crop of Cabbage. To grow them in perfection the ground requires an annual dressing of manure. Nothing can exceed the niggardly folly of some employers in this matter. A farmer would laugh in the face of any one who would order him to grow Mangels or Turnips without dung; but in hundreds of cases the gardener is required to cover his garden with beauty without an atom thereof. Making bricks without straw is nothing to this. It is more like attempting it without clay; and yet in such cases scores, perhaps hundreds of pounds are spent in plants, pots, storage, skill, all to be lost or but imperfectly enjoyed for want of the basis of success—fresh soil or manure. "Be generous, my masters, in this matter, and our happy smiles of gratitude will make house and garden glad." Meanwhile, let us also practise the utmost economy. As the new style of flower gardening has doubled our demand for manure, much may be done to meet it by saving every particle of short Grass, all decaying flowers, leaves, weeds, &c., and mixing them with soil, to be persistently soaked with liquid manure or sewage, and frequently turned during the summer. This makes a valuable dressing. Liquid manure is also invaluable, the daintiest and sweetest flowers licking it up with a relish, and, if applied early in the morning, they will be all the sweeter and the purer for their black draught, and ready to welcome with their brightest smiles their yet sweeter sisters in crinoline when they arrive on the scene.

I venture, even in the presence of "S. R. H." to call for three cheers—yes, three times three (to drown his dismal howl), for the red, white, and blue, and challenge him to place these colours better for brightening the effect of each than in the order here stated. In fact, he no sooner condemns them than he immediately proceeds to practise what he has condemned, by mixing Purple King with Madame Vaucher, and Stella with Centaurea. With all due respect, I must add that his criticism of our ribbon-borders is altogether unworthy of his great talents. He has seen 6 miles of ribbon of the same pattern this summer forsooth! Well, what of that? So much the better, say I, if it was all beautiful. Is his wife's bonnet-ribbon less beautiful because there are miles of the same pattern at Coventry, or any length of it to be seen on bonnets any day in Cheapside? Is his picture by Rubens less valued because others by the same master adorn the picture galleries of every capital in Europe? No, no, if he is tired of seeing ribbons, let him stay at home; that is my remedy. Comparatively few of those who possess these ribbons and enjoy them have ever seen a mile, or 10 yards of such in their lives. And if they had, their own would not be a whit less beautiful on that account. "S. R. H.'s" criticism amounts to nothing, only that he has been satiated with beauty. The same feeling may be engendered by exquisite pictures, sculpture, or even poetry. The remedy is not that any of these or all of them should be destroyed or removed, but that the mind should rest. While deprecating in the strongest manner the making of all gardens alike, I am yet perfectly aware that a thing of beauty is not only a joy for ever, but the common property of all as soon as it assumes a tangible form in a garden. And just because it is the former, the more widely diffused it can be the better, as only thus can it augment to the full the sum total of human happiness.

But your correspondent rushes off in a pet from our ribbons to mixtures, on the ground that two are better than one, and that mixtures produce less sameness than masses of single colours. I demur to both conclusions. Two are not always better than one; take for instance two desperate burglars in a dark night in a lonely house. Or, more to the point, take Heliotropes and Ageratums, crimson Salvias and Scarlet Geraniums, or Perilla and Coleus. It is obvious that for two to be better than one, the one must have need of the other. And there must be congruity or sympathy between them. Mixtures then are a confession of inability to stand alone, or of weakness. Occasionally they are lovely, but they cannot be justified on the grounds taken by your correspondent. He has been wisely chary of examples, and of the two given one fails for want of congruity. Stella mixed with Centaurea is a beautiful crimson-decked lady stooping down to comfort a blanched dwarf. Edged with it, the combination would be perfect. The assumed greater variety of mixtures is altogether a mistake in large gardens. If I have only six beds to fill, and mix two sorts in each, of course there would be 12 instead of six varieties present. And in this sense "S. R. H." may be literally right. But let any one try to fill an acre of

flower beds on the mixed style, and I care not how well it is done, intolerable sameness would be the result. Only distinct masses can impart variety. As a rule, wherever the number of beds exceeds twelve, 8 or 10 of them should be massed with single colours. If they are large the effect may often be heightened by a broad edging of an opposite colour, or they may be cut up into different forms or planted ribbon fashion, but if most of them are mixtures, the garden will lack that distinctness and satisfying breadth of colour which constitutes the chief charm of every well-grouped flower garden.

While keeping my little craft all taut, ready at the shortest notice to launch forth at the bidding of you or your readers on the troublous sea of practical illustration, I conclude at present by emphatically endorsing and strengthening if possible all that "S. R. H." has said of the importance of future culture and care, as being essential to the full fruition of the happiness of bedding-out, for "none of the Goddesses resents neglect so wrathfully, nor repays attention so gracefully, as the Goddess Flora."
A Practical Hand.

THE VINES AT COMBE ABBEY.

IN reply to "A. F. B." (p. 1169), who has been pleased to give so flattering an account of my success in Grape growing at Combe, I must endeavour to say what I can for or against the "one-Vine system." I am yet a young gardener, but have had many opportunities of seeing the various plans adopted for the construction of Vineries, and likewise for planting Vines. Like many others, I have had wild fancies about constructing houses, and planting; yet, when the task of putting up a range of Vineries fell to my lot, I did not see that I could do better than adhere to the lean-to principle, at the same time that I took advantage of every means within my power of making houses, borders, drainage, and planting, satisfactory to my own mind. I have not chambered any of the borders here. I am not an advocate for chambering, nor do I believe in such extremes for bottom heat, either from fermenting material or hot-air chambers. I do not like the idea of thus suspending the roots, as it were, between heaven and earth. In this way there are two atmospheres brought to bear on the border containing the roots, namely the natural on the surface, and the unnatural from the pipes in the chamber, so that the chances of extremes of temperature or of drought, from either of the surfaces, or from both together, is very probable, and such as to be likely to do the work of injury to the health of the Vines long before the danger is even apprehended.

The mania for bottom-heat for Vines was at its zenith about the time I was putting up the houses here. I so far believed in a system of heating, although not going to the extreme of chambering, that I laid a series of hot-water pipes amongst the rubble drainage of four of the early houses, one pipe inside and three outside. These pipes are seldom used, but I do not regret having put them in, as heat can be applied at pleasure, and when they are not used the border is still resting on a natural bed of drainage.

With respect to the one-Vine system, so far back (as nearly as I can remember) as 1857 or 1858, I was seized with the one-Vine mania, now so contagious, and communicated my ideas to one of the gardening journals. I believe the article, which I cannot now find, consisted mainly of a tirade against the present system of close planting and pruning, and advocated instead thereof the more natural method of having but one Vine to a house, that Vine to be planted at the end, and trained horizontally backwards and forwards until the house was filled. This was, then, my theory of endeavouring to maintain a more healthy reciprocity of action between the roots and upper branches of the Grape Vine. I should not like to try it here without the full approval of my employer, as my faith in the idea after a few years' experience is considerably shaken; and apart from novelty, I fear there is little to recommend it. We may rest assured that the Vine at Hampton Court has not existed there for so many years, without having its merits as a single Vine, in a profitable point of view, freely and shrewdly discussed by many who have visited it, both of present and past generations. Most of the large Vines are more the result of accident than purpose, for in connection with their history we generally read of "ekes" being made to the original box by which they were protected. The older the Vines the smaller are the bunches,* but, if it followed as a rule that the older and larger the Vine the heavier proportionately were the bunches, then the large Vine system would have no obstacle to its adoption. We should all be rather pleased to follow it. On the other hand, when we find that we can cut from Vines two years planted bunches weighing 5, 6, or 7 lb., and that these weights are realised for several years, then the argument turns in favour of the universal system of planting.

I do not question the probability of large old Vines having better general health and more regular crops than Vines planted closely and confined to space. Large Vines, if allowed to ramify over illimitable space, are sure to meet in some direction with abundance of good assimilable food, and cannot fail to be healthy when beyond the influence of the gardener's confined borders, chambering, heating, tampering, and the other anti-natural mysteries of quackish practice.

I am an admirer of Thomson's "Book on the Vine," but this, be it observed, was not written until after he had had many years practical experience, and given to the world invincible proof of his abilities as a successful cultivator of the Grape Vine. It would be well if more of our acknowledged Grape growers would give a few desultory articles on their experience. This would be something for us to go by, and far better than the nonsense of striplings who too often fill up the pages of our periodicals, and who are ready to boast of results long before they have had the shadow of existence. The above is my opinion of the "one-Vine system." Allow me now to ask "A. F. B." what he would advise me to do with the roots of the cut-away Vines, to enable space to be given to the one or two Vines he proposes to leave. They are already so mingled together in the border that separation would be impossible without disturbing those to be left. "A. F. B." is perhaps not a disciple of the late Dr. Lindley, "M. J. B.," and others. I am not myself, and would not hesitate to cut away the Vines, leaving in the border such roots as could not conveniently be got out. If death followed as a rule, when live roots came in contact with dead ones, fallen timber, or other similar woody debris, then the face of this globe would have long ago appeared minus that glorious vegetation without which it would be impossible for man or animal to exist. *Wm. Miller, Combe Abbey Gardens, Dec. 14.*

* Mr. Norman, at p. 1110, gives an instance which proves the possibility of improving the quality of the fruit on an old Vine. Eds.

PLANTING CHURCHYARDS.

THE planting of churchyards and other cemeteries (see p. 1162) is one of those religious subjects, unhappily so few, which may be considered "without controversy." Men are agreed, and always have been, that a great respect should be paid to the burial places of the dead. The only question is how it may be paid most worthily.

Mere natural religion, the knowledge of good which came with the knowledge of evil, taught mankind this reverence. In a barren and dry land, where no water is, the heathen has remembered dimly, and desired earnestly, the fountains of eternal Truth. Gentiles, not having the law, but doing by nature the things contained in the law, have been a law unto themselves.

The Egyptians, who come first upon the stage of history, as a great and a wise people, and whose earlier records are written upon their tombs, not only embalmed their dead with so much costly skill, that their relics are extant unto this day, but erected over them the grandest monuments which the world has ever seen.

The Greeks accounted it the greatest dishonour

> . . . . for bodies to lie,
> Tombless, with no remembrance over them;"

and their belief, that the spirit of an unburied body could not enter Elysium, is beautifully brought before us by Sophocles, in the sad story of Antigone, who sacrificed her life to save her dead brother from such a fearful doom. They accompanied their dead to sepulture with solemn processions and with mournful music; they spoke over them in fine grand ovations, which are still the admiration of the scholastic world; they erected such costly monuments, in the form of pillars, statues, and temples, that Solon passed a law to restrain and limit their extravagance; they crowned their tombs with flowers; they preserved them with the greatest care and veneration, ever esteeming them among the most sacred ties which endeared to them their home and country. The term by which we still describe any detached sepulchre, on an unusual scale of size and workmanship, is taken from the grand and elaborate tomb which Artemisia raised to the memory of her husband, Mausolus, King of Caria.

The Romans treated their dead with the same pious affection. They carried them forth with the same solemnities, sometimes upon couches of ivory, with draperies of purple and gold. They erected monuments by the roadside out of the city, where the bones or the ashes were laid, until one of their highways, the Via Appia, was like an avenue or street of tombs. The marble monuments of the rich were enclosed and planted round with trees, and some of them were of such a costly character (the Pillar of Trajan was 140 feet in height), that restrictive laws, as in the case of the Greeks, were passed by the two Antonines. On the anniversaries of death, and on other occasions, they visited their burial grounds, bringing offerings of flowers and other sacrifices. It was death to remove a body, or even bones. The most depraved shrank from such a violation,

> "Sacrilegæ bustis abstinuere manus."

That which natural religion, conscience yearning for truth, had suggested to thoughtful hearts, revealed religion, being the Truth itself, had always explained and taught. Good men, under the Old Covenant, were persuaded and convinced of a better land than Canaan, and of a soul which should not die. They buried their dead with a sure and certain hope, and they loved the burial ground. So it was that the last thoughts of Jacob turned, as he lay a dying, to that distant place of rest, which Abraham bought, "with all the trees that were in the field," for himself and for his children, dead; and Jacob "charged them, and said unto them, I am to be gathered unto my people. Bury me with my fathers, in the cave that is in the field of Ephron, the Hittite . . . . for there they buried Abraham and Sarah his wife; there they buried Isaac and Rebekah his wife; and there I buried Leah." So it was, that old men prayed with good Barzillai, "Let thy servant, I pray thee, die in mine own city, and be buried by the grave of my father and my mother." And so it was, that no heart could feel, nor tongue express, a more tender, more devoted love than Ruth's,—"Where thou diest, will I die; and there will I be buried."

We know, moreover, that it was a custom of the Jews, from hypocritical, as well as from real affection, to "build tombs and to garnish sepulchres," and they erected monuments, after the example of Jacob, who raised a pillar over the grave of Rachel. Their sepulchres, generally, were hewn in rocky, subterraneous chambers, but they had other places of burial. Manasseh, we read, and Amon his son, and Josiah his grandson, were buried "in the garden of his house." And in the garden of Joseph, the Arimathæan, rested awhile that Sacred Body, which in dying overcame death, regaining and re-opening for us the Eden and the Paradise of God.

After that victory, and when persecution had so far ceased that Christians might come forth from catacombs and caves of the earth, where the tombstones of the dead had been the altars of the living, to worship their risen Lord, we know with what exceeding reverence they honoured the graves of their dead. They loved to revisit those secret scenes to which they had been driven by the enemies of the Cross, and where, "with doors closed for fear of the Jews," they had offered prayer and praise. They built churches over the graves of the martyrs. They set apart burial grounds, which, with a truthful, truthful wisdom, they called "Cemeteries," homes of rest and of peaceful sleep until the Resurrection.

But the reverence of Christians differed as much in form and character, as in its depth and wisdom, from that which other men had shown for the bodies and for the graves of the dead. Not by night, as with the heathens, themselves in darkness, but in the glorious light of day, went forth the funeral train; not with mournful music, the monotonous wail of hired mourners, and the dismal sighing of despair, but with triumphant psalms, Palm-branches of victory, and the bright "hope, full of immortality." And, having this hope, the Christian cared not for gorgeous monument, nor for pompous tomb, only that the graves of the dead should be held sacred, and kept with reverential love.

Churchyards became, about the beginning of the seventh century the place of Christian burial, and ever since that time "God's Acre," "the field of God sown with seeds of the Resurrection," has been reverenced or neglected, just as Religion itself has prevailed or declined among us. We are now shaking off a great apathy and disrespect in this matter, which had allowed our grave-yards to be blocked by unsightly tombs, inscribed with fulsome flatteries of the dead, to be clothed with rank Grasses and noxious weeds, to be crossed by footpaths wheresoever men willed to go, and to be a public lounge and playground. Partly from necessity, but still more from a righteous sense of our duty, we are come to a better mind. The full churchyard is closed, and the old edict of the Twelve Tables, "*Ne in urbe sepelito*," a law commended in all ages to the common sense of mankind, has been revived in force.

At such a stage of reformation it becomes a consideration of high interest, how our cemeteries, disused, or just now completed, may be most decorously treated, so that they may give comfort to mourners, and offence to none. *S. R. H.*

(To be Continued.)

NEGLECTED PLANTS.

THERE are in our gardens not a few rare and beautiful plants, chiefly among the hardy and half-hardy classes, which are theoretically beautiful, so to speak. We find many among those who know such plants pretty well fully aware of their beauty and even enthusiastic about it, but how often do we see the plants in beauty? I allude to such things as Trillium grandiflorum and Cypripedium spectabile, plants that even under the most miserable conditions are fine when in flower, but when well grown are surpassingly beautiful. But how very rarely they are seen so.

I will begin with the fine North American *Cypripedium spectabile*, so often imported by London nurserymen, so often added to Orchid collections, and so often shown in a pot or pan among cool Orchids. When well developed in the open air I know of no hardy plant to equal this in nobility of chiselling, and delicate purity of colour. The plant is as hardy as the common Rhubarb! It is a strong deep-rooting thing when in a congenial soil and position, and therefore to attempt its culture in shallow pans, Orchid fashion, as I often see some do, is quite useless. Doubtless a few good plants may be highly desirable in pots, if these are tolerably large and deep, and afford good room for root-development; but the truest and most satisfactory way is to establish it as a free-growing hardy perennial in the open garden. Good strong roots should be procured, and in doing this, above all avoid the bulb man, whose hardy Orchids are generally dried to death or just prepared for rotting when put into the ground. I have grown the plant very well in free sandy soil mulched with cocoa fibre, and in but a partially shaded spot; but it does not do much good in London latitudes generally, if not accommodated with a shady nook and deep moist soil. Doubtless in the north and west, and in moist north-bourhoods generally, it will be found to do with pretty full exposure, or in fact as a border plant; but to grow it well I would not recommend that course for gardeners generally. There are few gardens that do not afford some shady nook near the houses, where a deep hole might be dug and filled with rich peat or spongy free loam mixed with plenty of decayed vegetable matter. In such a position it would luxuriate, but also in any shady place where a deep and somewhat unctuous soil exists. The best plants I have ever seen were at Glasnevin, behind one of the ranges of plant-houses there, planted close against the wall in deep good dark soil—a mixture of free rich loam and peat. There is plenty of water about at all times, and I never saw plants so well developed or so fine. I think they grew nearly a yard high, and the flowers of such strong plants surpass in beauty any other species we cultivate.

Trillium grandiflorum is not by any means so difficult to grow freely as the former, and yet it is very rarely seen in full beauty, though it flowers freely

enough even in large 60-pots. But what a difference between it in that state, and when its leaves get large and fat, and the plant assumes its natural proportions and becomes a free-growing herb of goodly size! I have grown it beautifully in deep peat, shaded over during the time the leaves were above-ground with a dimmed hand-light, and in sure position it produced flowers as large as a Lily and white as the driven snow. But it was at Biddulph Grange that I first saw this plant in its true glory, forming bushes of the softest and fattest green, more than 2 feet high, and spreading out as freely as any border herb. Every stem bore traces of flower, and I can easily imagine what pictures of beauty these plants must have been in spring. They were planted in a very shady moist spot, shaded by highly-raised root and rockwork and shrubs, and perfectly sheltered by the same. I have occasionally seen it in a less perfect, though fine condition, in shady spots among American plants in peat beds. There can be no doubt as to its requirements—a free deep soil full of vegetable matter, and a shady position either in the hardy Fernery or some depressed nook or other. Once established, no trouble is required—no more than with the noble Cypripedium.

Triteleia uniflora is not by any means a difficult plant to grow, but hitherto it has been a neglected one. I used to see it flower most profusely in pots, and thought it not hardy, but having put a bit out in pure clay in a most unfavourable situation, I was surprised to find my single weak root flowering boldly after two bad winters in succession, and have now no doubt of its thorough hardiness, and full confidence in its value as an ornamental plant. In any ordinary soil it will be found to grow and increase abundantly, and it is distinct and beautiful enough to be associated with the very cream of our spring flowers. It is capital for rock-work, for edgings, for arrangements in the choice spring garden. Its white flowers, faintly banded with pale lilac, open only during bright days, and it looks at its freshest and best precisely on those days and hours when we feel most disposed to admire and visit it. In fresh free soil in sheltered positions it throws up flowers and leaf to a height of a foot or even more, but not quite so much so in poor soils and exposed positions. I have found it increase as freely as I could desire—like Garlic in fact.

Lithospermum fruticosum is a comparatively new plant, but one of the most precious gems ever introduced to alpine or herbaceous collections, and a very boon for rockwork. It traverses one of the beds near the entrance of the subtropical garden at Battersea, and Mr. Gibson can surely tell a tale of its beauty. Some people are very fond of blue flowers, and this is the truest of the true blues. Gentianas are all very well no doubt, but difficult to cultivate, and never presenting such a mass of exquisite colour as this does. I shall never forget the beauty of a small mass of it on the rockwork at York this year. It is a perfectly hardy evergreen, cheap, and one of the best rockwork plants ever introduced, not only for the beauty of its lovely blue and freely-produced inflorescence, but also because so easy of culture, and so safe when once established. It requires to be pretty well established, however, before it flowers profusely. If planted on rockwork the roots should have an opportunity of descending into a body of suitable soil, as it is fond of rooting very deeply. On the ridiculous "pockety" or rather pock-marked rockworks so common in our gardens, especially about London, it would have a poor chance, for even the poor British weeds cannot find a home in them, so badly are they suited to meet the wants of plants.

Scilla bifolia is decidedly a neglected but most valuable plant, on which I have expatiated elsewhere. It increases much more rapidly than sibirica, and when seen in beds or large masses is very beautiful. It is decidedly the best Squill, next to sibirica, and, all things considered, I think it quite equal to that species, flowering more regularly and profusely, and increasing more rapidly.

Lilium testaceum (sometimes called excelsum and Isabellinum) is one of the noblest hardy Lilies we have, when grown well, and makes a magnificent companion to the orange and white kinds. I put a large patch of it under exactly the same conditions as the white and orange, viz., with about 3 feet of free good rich loamy soil, and found that it grew a foot higher and stronger than either, flowering nobly on every stem. It is as hardy as the common horse radish! Therefore it should be sought for and well planted by every cultivator of Lilies.

Between the preceding and *Lilium tenuifolium* there is as much difference as between a humming bird and a barn-door fowl—one being a rich creamy buff, and nearly 7 feet high when finely grown, the other not more than about a foot high, and with flowers as bright as the flashing blooms of a Clianthus, and having the distinguishing advantage of flowering in early summer before any of the common Lilies think of opening. However I must not dwell too much upon its beauties, as it is very rare and dear, and therefore cannot be enjoyed by many till it has been freely propagated.

I must include *Thalictrum minus* among neglected plants, knowing it and having proved it to afford as beautiful an effect in the flower garden as if the Maiden-hair Fern were planted there. It only requires to be established and to have the poor blooms pinched off in their early youth. It is wild in many parts of the British isles, and rather abundant in some.

Finally, I will name *Trollius napellifolius*, *Iberis "corræfolia,"* *Fuchsia grandiflora*, and *Ranunculus bullatus* or *grandiflorus fl. pl.* The first is I think the best of the fine family to which it belongs; it is of a dark tone of golden yellow, and quite easy of culture. The second is pretty freely grown in a few places about London, but not at all in proportion to its merits, as it is one of the finest and noblest of all spring flowers, being white as white can be, large in truss and pip, and perfectly hardy; coming in too after the common Iberis saxatilis goes out of flower, and thus prolonging Iberis saxatilis goes out of flower, and thus prolonging the beauty and interest. It is sold in the nurseries as corræfolia, and named in Botanic Gardens gibraltarica, but neither of these have anything to do with its true name. It is not unlikely to be *I. contracta*. However there is not much in a name to the gardener, but there will be found a great deal in this plant, which should be well represented in every garden. The Ranunculus is of the common Crowfoot type, but has a splendid double flower of glistening bronzy gold, nearly as large as some of the Persian kinds; and is quite a remarkable plant, easy of culture and free to flower—a fine thing for all good collections of herbaceous plants. The sweet and pure white Funkia grandiflora is the last on the roll, and it is indeed, when well flowered, a lovely plant; I wish somebody would tell us how to flower it. I can only say that it is hardy, has flowered pretty freely with me in a light very sandy spot, and that wherever it can be found to flower freely it will prove one of the most charming of herbaceous plants, being so purely white, and very sweet. *W. R.*

GRAPE GROWING IN THE OPEN AIR AT BURY ST. EDMUND'S, SUFFOLK.

THE fact that Vine growing was once common in England and is now comparatively rare, is often adduced in favour of the theory of a gradually cooling earth, and a deteriorating climate. Others meet the apparent difficulty between past and present practice by asserting that the Grapes and the wines produced by our venerable ancestors were both alike worthless. It is needless to add that such an opinion cannot be sustained by any appeal to facts. In estimating the comparative worth of home and foreign wines in the olden times, it is necessary to bear in mind that the chief home-growers were the abbots, monks, and friars; that the wealth of the nation was then in their hands; that many of them were foreigners; that most had travelled in France, Spain, or Italy, and that consequently they not only knew, but had the power of procuring much of the best, from abroad. And yet wherever these men formed a monastery, they planted a vineyard, and not only ate of the fruit, but drank of the wine thereof. They did this on a large scale at Bury St. Edmund's, where the extensive Vine Fields hold their imperishable name, near to the grand ruins of what was one of the finest monasteries of old England. That they succeeded in growing Grapes well can not only be proved by the records of the past, but by the more forcible demonstrations of the actual present. Grapes are still grown to great perfection, and excellent wine made in Bury. Through the kindness of Mr. John Darkin, of St. Peter's Vineyard, the largest, but by no means the only Grape grower in the town, I send specimens of both. I think you will agree with me that the Grapes equal, and even excel, many grown under glass. Such a fact seems worthy of illustration and confirmation by a description of the character and culture of this Vineyard in the *Gardeners' Chronicle*.

There are at least two modes of testing character, the external and the internal; the accompanying surroundings, or the spontaneous outgrowth of the person or thing judged. This Vineyard will come safely through both tests. It keeps company with only sheltering walls, genial skies, and warm dry foundations. It refuses to admit either north, east, or west winds, let them sweep past ever so fiercely, or pipe ever so softly. It will only receive or fraternise with southern breezes. It also does all it can to keep off and out surly John Frost, by baring its bosom to every gleam of sunshine, and husbanding it up during the day to fight John with during the night. Of course in this contest the Vines sometimes fail, unless assisted by artificial clothing in the form of canvas, which, I believe, they never have received here; but they are more frequently successful in husbanding heat enough to ensure a crop. In this warfare with the elements the Vines are considerably assisted by the nature of their heat preservers, and the character of their foundation. They rest upon a thick wall formed of lime and flints, backed up by a solid roadway, foundations of stones, and risings of ground, 90 feet high beyond. Hence all the heat absorbed is preserved. Such a bank of deposit for caloric cannot be broken, nor the wall ever be frozen through. It also overhangs the Vines 6 inches beyond the perpendicular, and thus throws off much of the frost. The nature of the soil behind the wall prevents it from becoming wet, so that there is little or no cooling by chilling evaporation on its surface. The entire subsoil is solid chalk, the soil light, the site naturally drained very dry; consequently the growth of the Vines is thoroughly ripened. The wood cuts in the autumn like a section of a stag's horn. This imports compactness, hardness, strength. Even the young shoots on such wood are much hardier than those on soft spongy growths; they can resist moderate frosts. The sap seems—I believe is—thicker from the first.

But it is time to leave the accompaniments, and speak of the Vines themselves. And first of their number and variety. The Vines cover a south wall 270 feet long by 22 feet high; and a 7-feet border, nearly 200 feet long, with cordons a yard apart, trained about 1 foot from the ground; there are also about 200 standard bushes a yard apart and a yard high, trained to stakes on the French system. From the base of the wall to the extremity of the cordons the ground falls about 3 feet. First comes a path of about 6 feet, between the bottom of the wall and the cordon border; then the cordon Vines sloping to the south; and lastly the bush Vines. It would be quite impossible to manufacture a place more suitable for a Vineyard. On Nov. 6th, with a brisk wind blowing, the thermometer indicated 76° at noon. In the summer it often reaches 130°, and in ordinary winters it seldom freezes under this wall unless during very severe frosts. Some of the Vines here are as much as 80 years old. The mode of training is a mixture of spurring and long rod.

1, cordon rail: 2, support, one foot in the ground.

The wall being so high, it requires four or five years for the rods to reach the top; but the matter is so managed that a portion of the old rods is cut out annually. Others are constantly taken up to succeed them, and the wall is admirably covered—a credit to Mr. Kemp, who has managed them for the proprietor for years. The cordons and bush Vines only bear once on the same rods, so that on each one or more rods of bearing wood and of the current year's growth to succeed it is found, the old being of course cut out annually. Mr. Darkin does but little in the way of manuring. The borders are mostly of the natural garden soil. Some parts of them have been treated to loam, and occasionally they have had a rich top-dressing of soil or well-spent manure. The wide path under the wall is as hard as a turnpike road, and the cordon border is also solid. The training rail for the cordons is formed of deal 1½ inch square, placed diamond fashion into iron stands, made of ¾-inch iron, 1½ inch wide, and 2 feet long. They have a twisted bottom to prevent them going too easily into the soil, and a notched top thus V to receive the rail. This gives the whole a neat appearance.

A stout wire would be preferable to the wooden rails, and cheaper in the end. The chief sorts used on the cordons and for bushes are the Black Cluster, Claret, Miller's Burgundy, and Muscadine. I counted on one bush of Miller's Burgundy, 60 bunches. When these escape the spring frosts they are generally laden with fruit.

The wall most seasons presents a fine display of bunches, flavour and weight often equalling, sometimes excelling hothouse Grapes. The following kinds are cultivated on this magnificent wall:—Claret, Sweetwater, Grizzly Frontignan, White Frontignan, Black Frontignan, Ciotat or Parsley-leaved, St. Augustine, a fine black; White Muscadine, Miller's Royal Muscadine, Miller's Burgundy, Black Muscadine, Dutch Sweet-water, and Esperione.

There is also a good White and Black Grape from Balaklava, of which a soldier, after eating of the Grapes on those famous slopes, sent the eyes to the proprietor. They are both good Grapes of vigorous habit, and seem distinct from any English varieties I know. Besides these there is a nice red Grape from a Geneva Vineyard, and a small oval-berried very early sweet Grape from Brighton.

A more interesting sight is rarely met with than this wall presents when covered with ripe Grapes. The whole of the varieties do well. The smaller ones of course are perfect, and many of the others, such as the Esperione, Frontignans, and Muscadines are as good or better than they are in Vineries. The Frontignans are especially fine without the least tendency to shanking or premature shrivelling.

The gross produce is very large; this season the wall has yielded 15 cwt. of Grapes. From that to a ton may be taken as an average crop. The cordons and standards have yielded about 5 cwt.; some seasons they reach 7 or 8 cwt. This spring several of these were cut off by the frost. I think this might be easily kept off by tying a little loose straw along the cordons and up against the bush plants, until the middle of May. This would also tend to retard their starting, and thus lessen their danger indirectly, as well as by its direct protection.

The Grapes, with the exception of those that are eaten or presented to friends, are all made into wine for family use. This wine, which has been pronounced by many competent judges to be very excellent, has been the usual drink of Mr. Darkin and his family for years. It, I understand, entirely supersedes beer and other beverages. *D. T. F.*

Mr. Darkin has been good enough to send us samples of the Grapes grown in this Vineyard, and of the wine produced from them. The Grapes consisted of Black Hamburgh, Esperione; a very good oblong Black Grape from Balaklava; Claret, Black Cluster, Grizzly Frontignan, Muscadine, Miller's Royal Muscadine; and a white Grape from Baclaklava, more oblong in shape than the Muscadine. They were all good samples, well-ripened for out-door Grapes, and of good flavour. The wine was slightly sparkling, and pleasant, though scarcely equal in our opinion to some of the samples recently submitted for judgment at the Horticultural Society's Saturday shows, by Mr. Fenn, of Woodstock. EDS.

(*To be Continued.*)

Home Correspondence.

Cups for the Royal Horticultural Society's Bury Show.—Allow me to inform those exhibitors who have written to me on the subject, that these special awards will by no means supersede the giving of handsome money prizes. The rewards in kind will all be over and above the money prizes given. The usual schedule, which will soon be issued and forwarded to every intending exhibitor, will probably amount to nearly 400*l.* The special prizes may ultimately reach to about one-half of that sum. Funds for the following cups, or other articles if preferred, are already in hand:—the ladies of Bury, from 25*l.* to 30*l.* for Orchids; the town of Bury, nearly 40*l.* for Ferns, &c., say three or four cups at 15*l.*, 10*l.*, 7*l.*, and 5*l.*; the borough members, 10 guineas for 1st and 2d prizes for hand

bouquets for ladies; Stowmarket, a 10-guinea medal for the three heaviest bunches of Grapes; Woodbridge Horticultural Society, a five-guinea cup for the best Picotees grown by an amateur; the county of Suffolk, cup of nearly 30*l.*, not yet finished nor appropriated; and the Suffolk Gardeners' Cup, now over 6*l.*, not finished nor appropriated. The Rev. F. Cheere, President of the Bury Horticultural Society, will place a guinea cup at the disposal of the Committee—it may probably be given for an essay on some branch of gardening. The Royal Horticultural Society will offer a cup of 25 guineas, I hear, for fine-foliaged plants. Others will yet be forthcoming. I have recently appealed to all the neighbouring counties and towns, and shall doubtless have favourable answers from some. It occurs to me that intending exhibitors might offer a special prize; and nurserymen also. The more that interest themselves in this way the more successful the Show will be. Now that everything else is secured, your readers will be pleased to learn that there will be no lack of exhibitors. Already the best plant-growers in England are writing to me for information and offering their support. At Cheshire, Manchester, or Liverpool growers come to Bury there can be no lack of metropolitan exhibitors, and with these alone the success of the show, in a cultural point of view, will be complete. And doubtless they will come. Every facility will be given to those who so largely contributed to the success of the International, to bring their best to Bury, and these master growers may rest assured that the schedules and every possible information will be sent to them at the earliest moment after the arrangements are completed. Efforts will also be made to secure the same terms of transit per rail, as was given for the great show of last year. Any suggestions from the large exhibitors will be thankfully received, and as far as possible carried out. Communications may be addressed to Mr. Eyles, at the Royal Horticultural Gardens, Kensington; G. P. Clay, Esq., the Local Secretary, Bury St. Edmund's; or to myself, Mr. Samuel Barrett, of Hardwicke, has undertaken to give or collect the following special prizes for cottagers:—For the best collection of vegetables grown by a labourer, a three-guinea watch; for the best kept and cultivated allotment within the boundary of the borough of Bury St. Edmund's, 1st prize, a guinea and a half; 2d ditto, one guinea. *D. T. Fish, Hardwicke House, Bury St. Edmund's, Suffolk.*

Mrs. Pince's Black Muscat.—I know not whether your correspondent "W. L." (see p. 1166) will consider me an "impartial" person, but inasmuch as I have recently, by the kindness of Messrs. Lucombe, Pince, & Co., been favoured with a bunch of the Grape in question, you will perhaps allow me to give my opinion upon it, and not my opinion only, but that of many ladies and gentlemen who tasted it. Of its keeping qualities of course I can only speak from its appearance, but inasmuch as there are qualities essential in a Grape to make it a good keeping variety, I believe this to possess them in an eminent degree. First, a Grape must be of strong and healthy constitution, with the power of retaining its foliage late into the winter; for so long as the foliage is upon a Vine the functions of the plant must be going on, and the sap be in active motion, as witness the Black Barbarossa and Alicante, always two of the last Grapes to cast their leaves, and (mark another fact) two of the last Grapes upon which the fruit will shrivel. While the foliage remains healthy, and dry fire-heat is not supplied beyond what is necessary for the drying of the atmosphere, Grapes of the autumn crop will retain their plumpness; but the moment the foliage is off, the active circulation of the sap ceases, and day by day the juices of the Grapes evaporate and the bunches decrease in weight. I have always considered it of the utmost importance in keeping late Grapes to retain the foliage as long as possible, and plenty of it, a practice rather different to that of those cultivators who cut away the laterals and reduce the foliage to a minimum just at the time when the fruit is fully matured. Now this Black Muscat, from the leaves upon the branch which I received, strong, green, and downy as a Syrian, will I can see, retain its foliage late into the winter, and hence I have faith in its keeping qualities. Secondly, the berries have strong footstalks, which it has been remarked "do not know how to shank." Thirdly, the berry is firm, with a strong, but not thick skin; and, finally, the footstalks, and this is a very important point, are sufficiently strong to support the berries, one might almost say at "arm's length," and without pressing against each other. Compare this with a Black Hamburgh or Muscat, with the berries overlaying, and you will see in the free circulation of air through the bunch of the Black Muscat the reason why it should be a good keeping variety. I have entered thus fully into these characteristics of the new Grape because I believe them to be essential to its maintaining the character which Mr. Rivers has already assigned to it, that of being an early spring rather than a winter Grape, and I need scarcely say if his anticipations should be realised it will form a link in the chain of supply of keeping Grapes of the utmost importance,—a chain that a few years hence will bind the supply of old and new Grapes together every spring as surely as the telegraph when set in motion conveys intelligence from one place to another. In form the bunch partakes of the character of Black Prince or West's St. Peter's, handsomely but not heavily shouldered. The berries are medium-sized oval, and nicely set on; the colour purplish black in the specimen received, but no doubt it will be quite black under proper management. The flesh is firm, rich, and sugary, with sufficient juice, and possessing a decided Muscat flavour; in fact, unseen, it is questionable whether an ordinary observer would know it by flavour from the Muscat of Alexandria. I am confirmed in this opinion by a number of first-rate judges who tasted the Grapes I received, and hence I have no hesitation in pronouncing the Black Muscat a decided acquisition and a first-rate variety. I cannot conclude without stating that the above opinion is founded upon a bunch of Grapes by no means well grown, and not quite ripe, so that under proper management I have not the slightest doubt the Black Muscat will be found very superior to what I have described it. So satisfied, however, am I of its quality that I shall not hesitate to plant a house with it directly it is let out. *Wm. P. Lowe, Nottingham, Dec.* 13. [For our own opinion on the crop of last year, see p. 1107 of our volume for 1865. The sample sent to us was of excellent quality. Eds.]——Having had practical experience of Mrs. Pince's Black Muscat, and also having seen it in great perfection in April, permit me to express my candid opinion of it. It was raised by Mr. Pince of Exeter, I believe in 1860. It has the hardihood of Bidwell's Seedling, and sets quite as freely; in form of bunch it resembles Lady Downes', and in flavour Canon Hall Muscat. Bidwell's Seedling and Canon Hall Muscat are in fact in all probability its parents. I consider it to be the best late Grape yet introduced, being of general purpose and first second to none. I have forced it in pots with great success. My only surprise is, that a Grape possessing such good qualities should have remained so long in comparative obscurity. *T. S. Piller, Gardener, Llangattock Park, Crickhowell.*——As a late Grape too much cannot be said in favour of Mrs. Pince's Black Muscat, for if planted in a house facing more east than south it will hang well to the end of April. If required to be kept longer, the bunches can be cut off and hung in a dry room, where they will keep good to the end of May without anything like waste. I saw the Vine in 1863, fruiting in a tub, smothered among hundreds of pot Vines, growing on for sale. Even in that unfavourable situation it looked quite at home, producing five handsome bunches of jet-black oval berries. In the spring of 1864 I saw 24 not at all fine canes planted in the front of a small half-span-roofed house, 26 feet long and 10 feet wide. I watched the character of the Vine, which broke and bore fruit freely. The berries swelled off and stoned in perfection; then I saw the bulk of fruit the Vines were expected to ripen. Judging from the size of the canes, I only expected to see the bunches colour like the old Warrington Gooseberry, or shank, but such was not the case. The bunches and berries were of the size and form of a well-filled bunch of Alexandrian Muscat. In 1865 these Vines were more prolific, the bunches and berries were much finer, keeping firm and free from rot up to April, 1866. The Vines being impatient of being longer retarded, what fruit was left was cut off and hung in a dry room; and in this month (December, 1866) I have had the pleasure of eating some of the fruit of 1865. This year, 1866, the Vines have over 3 cwt. of fruit on them; the bunches are as large as in the previous year, but the berries are not quite so fine nor so well coloured. The flesh is as firm and crackling as an Alexandrian Muscat. The Muscat flavour is easily detected, but it is not so high as it was last year. The want of colour is not owing to the heavy crop, but to improper treatment. As soon as the fruit showed colour the moisture both in the air and at the roots was withheld, which was too soon for any of our solid-fleshed Grapes, and this is the most solid of our solid-fleshed Grapes, and this is the most solid of any with which I am acquainted, and is a long time after showing colour before it is perfectly ripe. The constitution of the Vine has been thoroughly tested by over-cropping and less than ordinary treatment. It has not shown the least signs of shanking (and it has had a good chance to do so), nor does red spider care to attack the foliage. It must and will grow into favour. *W. Craggs, Larkbeere, Exeter.*

Broccoli.—Observing in your Paper (see p. 1141) different statements about Broccoli, I should like to state that I have cut Backhouse's Winter White as early as the 9th of October, being 11 days earlier than Mr. Stokoe, of Westwood Hall, Leeds (see p.1166), and I have been cutting from this variety every week since that date. I have had a large north border planted with it, and I have cut five heads to-day, the 12th inst. My seed was sown in the beginning of April. I consider that Backhouse's Broccoli is the earliest variety which I have ever grown, and the hardiest. If Mr. Nicholson (see p. 1093) would sow his seed in the beginning of April, he would doubtless be able to cut much earlier than the time he mentioned. *George Fairbanks, The Palace Gardens, Ripon.*

Large Poplar (see p. 1193).—The Poplar, of which I sent an account last week, I believe to be the Aspen, or Populus tremula. I enclose a leaf. *Robt. Sowerby, jun., The Gardens, Newburgh Park, Dec.* 19. [It is P. tremula. Eds.]

Oncidium macranthum.—Will "T. H." kindly state his authority for saying that the above Orchid has a long rhizome between the pseudobulbs, because if he is correct all the plants sold this year for it are wrongly named, and yet Messrs. Backhouse's collector sent home a coloured drawing of the plant made abroad, the bulbs being conical and wrinkled; and at the same time a drawing of Odontoglossum coronarium, the bulbs answering to "T. H.'s" description of the Oncidium. Linden has also sent over similar plants as coronarium. The creeping rhizome and flat bulbs certainly look much more like an Oncidium, but if so, what is the wrinkled bulb? My answer must be—wait and see when it flowers. By the bye, has any one had a spike of O. luteo-purpureum (bystrix) quite pendulous, with 12 or 13 flowers on it? *W. Marshall, Clay Hill, Enfield.*

Odontoglossum angustatum and Oncidium macranthum.—I am indebted to "T. H." (see p. 1194) for giving me an opportunity of explaining more precisely what Oncidium macranthum is, and my allusion, in an off-hand way, to its similarity to Odontoglossum angustatum. "T. H.," however, does not render my quotation quite accurately; and, while I am far from arrogating any special exemption from inaccuracy of description and illustration, I am entitled, within the fair bounds of criticism, to be quoted correctly. I said (see p. 1143) "Odontoglossum angustatum possesses a conical sort of pseudobulb, with a clear shining skin, and *is not at all unlike* the beautiful macranthum, which is exciting so much attention now." It was only therefore, in general terms that I alluded to it at all. We have several plants at Meadow Bank which have been guaranteed as the true Oncidium macranthum, and we have several others of unnamed species, which look so similar in pseudobulb and young growth, as at the present stage to be almost undistinguishable. Of course it has never bloomed in this country, but if the inflorescence be at all approaching to the grandeur of the sketches I saw at Stevens' Rooms, it will be one of the brightest gems of our Orchid stores. Along with the sketches I saw living plants for the first time about the beginning of last July, with pseudobulbs very much after the character which "T. H." describes. They however are not quite so long in the rhizomes as Burlingtonia, nor even as Coelogyne pandurata, but the plants unmistakably show in a slight degree the characteristic. After growing them for several months I find them plump up to be so fat and shining as in this respect to imitate the "skin" or coat of Mr. Bateman's Odontoglossum angustatum; while at the same time they present a compressed conical outline. Like all other plants they vary in form of pseudobulb as well as in flower, which gives colour for varied descriptive outline. Coming as this does from Ecuador, at an altitude of 11,000 feet above sea-level, it is likely to succeed in a moderately cool temperature. *J. A.*

Autumn-flowering Roses.—In a small collection in my garden, which is a rather light soil, fully exposed, and at something like 400 feet above sea-level, I have this month gathered fine beautifully coloured and highly perfumed blooms of B. Souvenir de la Malmaison, N. Ophirie (half a dozen blooms at least), H. P. Gen. Jacqueminot, and T. Gloire de Dijon—the two last on Tuesday, the 11th inst. During the last three autumns Souvenir de la Malmaison has bloomed with me in perfection till stopped by severe frost, and even now there are several buds in various stages of progress which will in all probability open during the present month unless prevented by severe frost. *A Resident within three miles of Birmingham.*

Shaky Timber.—"How do you account for shaky timber?" is a pertinent question, and one which is often put to cultivators and converters of wood; but what the answers given are in most cases more convergent than consonant and convincing. How often do we see an Oak or a Spanish Chestnut, when felled, apparently perfectly sound and thoroughly matured; but in a few months after, on being cut, presenting to the eye nothing but a mass of fissures and rends, and altogether, comparatively speaking, a log of match-faggots, fit only for fuel! Surely our foresters, geologists, or physiologists can afford us some reason why timber becomes shaky, and thus remove this matter from the category of mooty subjects? *J. S.*

Large Vines.—The following are particulars respecting a large Vine at the Viceregal Lodge, Dublin. When I saw it six or seven weeks ago it was a perfect picture of beauty. The whole house from end to end and from top to bottom was black with highly-coloured finely-flavoured Grapes. The following particulars have since been kindly furnished to me by Mr. Smith, who is gardener at the Lodge. He says:—"In the spring of 1854 I planted the house with Figs, and took up a Vine shoot at one end, training it along the top to economise the space until the Figs could take full possession. In a few years it showed such fruitfulness that I was induced to take other shoots along horizontally, and move out the Figs one after another. It now fills the house, which is 75 feet in length and 18 feet in width. The number of bunches this year is about 600, each weighing on an average nearly 2 lb. Ours is not a Grape-growing soil—subsoil stiff clay, holding water to the entire exclusion of air. This of course is cleared out and the border prepared. The outside border was remade in 1858, and the roots laid along in the same direction as the branches. The inside border has been renewed since then." I may add that Mr. Smith is about to extend the magnificent ranges of glass already under his charge, for the purpose of plant growing, as the stoves and greenhouses are now overcrowded. *J. D., Kildare.*

A Seedsman's Plea.—Your correspondent "Seedsman" complains (see p. 1194) that the occupation of assistants in seed shops is monotonous, uninteresting, and in the winter and spring months very enervating, from the number of hours in which young men employed in that way are occupied. These evils are by no means imaginary or unimportant, but they are almost inseparable from the seed trade, for several reasons which doubtless are understood by the writer of the letter in question and others actually engaged in the business. It is most reasonable, however, that all should be done which is practicable to ameliorate the condition of seedsmen's assistants, and during the last 10 or 20 years we have repeatedly enlarged and improved by means of thorough ventilation the premises occupied by our clerks and warehousemen. We were also among the first to adopt the Saturday half-holiday, early closing, and terms of absence in the summer and autumn months movement. We moreover provide facilities for cricket for summer evenings, and a commodious reading room, furnished with a library and two daily papers for all seasons of the year. It has also been our annual custom to increase our number of assistants as fast as increased trade required it, so as to curtail the hours of labour as much as possible during the busy season, which may be said to continue from January to April inclusive; and this latter object, which is the most important and the most difficult to carry out, (viz., the

shortening the day's labour in the busy season), could be further and greatly if the public would send in their orders as early as convenient after the publication of the new seed catalogues, for the late hours are caused principally by the too common practice of deferring orders until the seeds are actually wanted for sowing. Your correspondent compares his occupation with that of the gardener or nurseryman's assistant, adding that it is less remunerative and far less interesting. The latter may be true, but we think the cases must be exceptional where the seedsman's assistant is not well paid; our custom is to raise annually, as a rule, the salaries of all persons whom we retain in our service, upon the principle that as they become more intelligent and useful to us their services are intrinsically more valuable. It should not be entirely lost sight of, however, that in the garden and nursery there is plenty of work to be done every day of the year, whereas the seed merchant has to pay a whole year's salary, though he has only five or six months season for transacting his business, and one of the results of this peculiarity of the seed trade is, that though the principal and one or two of his chief assistants have close work throughout the whole year, his clerks and shopmen generally have a very considerable leisure for prosecuting their studies and recreations. *Sutton & Sons.*—Our last week's correspondent has truthfully set forth the claims of "a body of men who really have a grievance to put before you." That we as seedsmen belong to, and occupy a position by no means the least important in the great horticultural profession, will, I think, be readily admitted by all who are conversant with the practice and details of the trade. Through whom, I would ask, have cultivators of the soil been supplied with those marvellous productions in the class of root crops which have recently gratified our sight as part of the Smithfield Club Exhibition? Assuredly through the seedsman, who has grown, selected, hybridised, improved, striven to excel other competitors not less assiduous than himself, and has diffused throughout the country the article which is produced as the result. Through whose agency have those changes in our cereal crops been effected, which, working hand in hand with advances in other branches of science, have, within a few years, wrought a revolution in the agricultural world? Surely that of the seedsman, who must be admitted to a share in the credit; his position in this case being, perhaps, more especially that of a medium between the practical experimentalist, and the general public who profit by his labours. Whence, again, have been distributed the valuable acquisitions to the kitchen garden which have so increased the variety of tastes and forms with which our tables are furnished at every season of the year? Assuredly, in great part, from the shop of the seedsman. In what form have been originally given to the public very many of the plants which, within the last dozen years, have imparted to the gardens of our chilly clime a semi-tropical richness and magnificence? In the form of small paper packets, which, though perhaps uninteresting in themselves, still contain the germ which is to expand into such "a thing of beauty" in the hands of our skilful brother, the gardener! Lastly, through whose efforts chiefly have our spring gardens been converted from a bare and dreary wilderness, to a scene of such tender fragrance and loveliness? No mean part of the display has been created by the class of plants known as "bulbs," which form part of the stock of a seed shop. If, then, the seedsman occupies so prominent a position in the profession, may we not claim for him the sympathy and fellow-feeling of those who are engaged in its other branches? Speaking as an assistant in the London seed trade, in which capacity I have been employed for the last six years, I think I express the feelings of a numerous and respectable body of men, when I assert that, in comparison with any other class in the same social scale, our privileges are few, and our position unsatisfactory. A good education, some amount of practical knowledge, which has to be acquired among plants themselves, a clear brain, a quick hand—all are necessary in order to make a good seedsman; and then, what is our reward! In these days of "strikes" and "trades unions" on the one hand, when the mechanic, it may almost be said, does just as much work, obtains just as much remuneration, and labours just as many hours as he pleases; and of our "Early Closing Associations" on the other, by whose efforts hundreds of establishments are closed in the middle of the day on a Saturday, and comparatively early on other days—in the midst of all this the seedsman's assistant finds himself, with few praiseworthy exceptions, still unaided by any such influences, and with longer hours and usually less remuneration than a mechanic. We would (I think I may say, speaking for seedsmen's assistants as a body) willingly give to our employers the usual amount of extra time which they find so valuable in the busy months, if in return they would show a desire to extend to us a little consideration during the quieter season. We would cheerfully make any reasonable amount of gratuitous "over-time" on every other night, if they would only leave us the one evening in the week, which in almost every other occupation on a footing with our own has become an acknowledged institution. To ask then, that, subject to these conditions, we may be permitted to leave business at 5, or even 6 o'clock, during the summer months, to have our Saturday half-holiday throughout the year, except at periods of extreme pressure, and to enjoy a fortnight's leave of absence at a time of the year when our services may, with the least inconvenience, be dispensed with, surely cannot be considered unfair or unjust. *J. F.*

Shrubby Mimulus.—Can you obligingly inform me if Diplacus can be hybridised with the herbaceous Mimulus. I have tried hundreds of times to do so in various ways, but have not succeeded. Failure, perhaps, however, was owing to my want of skill in conducting the operation. I should like to know whether or not any one else has ever made the attempt, and if so, with what result? My reason for asking is because I think were the beautiful markings of the finer herbaceous Mimulus introduced into the flowers of Diplacus, there would scarcely be found a more decorative plant than the latter for the conservatory, and instead of the blooms falling off soon, as they do in the case of the Mimulus, they would doubtless remain on for a much longer time. Last summer, I had a Diplacus with large orange-coloured flowers, in my greenhouse, nearly 4 feet in height, trained in the shape of a regular pyramid, literally covered with blossom from top to bottom, which produced a splendid effect, and it remained in beauty throughout the greater part of the season. What a gorgeous appearance, therefore, would plants of this kind display if they possessed the spots and stripes of the herbaceous Mimulus! I am aware that there are many varieties of Diplacus now to be obtained from nurserymen, but none of them, as far as I know, possess the markings I speak of. Is there any reason, may I ask, why the Diplacus should not be designated a shrubby Mimulus in the same way as in the case of shrubby Calceolarias? *Amateur.*

Wellingtonia gigantea.—In addition to the sizes of various trees of Wellingtonia growing in different parts of Great Britain, mentioned at p. 1192, we think it may interest some to know that there are now growing in the grounds which were formerly the nurseries of the late Mr. Veitch, at Exeter, two trees of the following dimensions, raised from the seed originally sent home by Mr. William Lobb. No. 1., 28 feet high, girth of stem at base 5 feet 9 inches, circumference of branches 43 feet. No. 2, 24 feet 6 inches high, girth of stem at base 6 feet 3 inches, circumference of branches 46 feet. Both these trees were planted in their present positions about 11 years ago, and are considerably larger than any named in your report last week. *James Veitch & Sons, Royal Exotic Nursery, Chelsea.*——There is a Wellingtonia here 21 feet in height, and it measures 27 inches in girth at 3 feet from the ground—it was planted in 1858. We have several trees of Wellingtonia here, ranging from 13 to 17 feet in height, and they are all well feathered quite down to the ground. *W. A. Spreadbury, Egesford, Wembworthy, North Devon.*——Your readers may like to know the heights of 12 Wellingtonias which were planted here from seed in 1855. I have also given the circumference just above the ground, and at 3 feet from the ground.

Height.		Circumference just above Ground.		Three feet from the Ground.	
Ft.	In.	Ft.	In.	Ft.	In.
22	0	1	4	0	7
21	6	1	3	0	8
19	9	1	1	0	6
18	1	1	1½	0	4
15	10	1	0	0	3
17	8	1	3	0	6
16	8	1	1	0	5
15	4	0	9	0	2½
14	2	1	0	0	3
14	1	1	0	0	3
14	0	1	0	0	3
11	4	0	7	0	1½
11	2	0	4	0	1½

My brother when at the Italian lakes this year, saw a plant 12 feet high, which was planted from seed only five years before. *S. Gurney Buxton, Catton Hall, Norwich.*

Determination of Climate.—Mr. Fish, in his instructive papers on Ventilation, in referring to this subject (see p. 1019) states that altitude is the vital point needed to determine climate, and for this purpose it would be better to measure down from the snow-line than up from the level of the sea; because "while the climate indicated by the latter varies all over the world, that measured down from the snow-line would be found everywhere alike with the like exposure and the same amount of sunshine." Now, although the last few words of this paragraph qualify to a certain extent the former part, still it appears to require further explanation. If the snow-line had an uniform mean temperature throughout the world, it would not be difficult to understand Mr. F.'s statement, but since it is found that at different stations the mean temperature of the snow-line varies to the extent of 15 or more degrees, it is somewhat difficult to conceive how climate can be found everywhere alike when computed from it, or why it would be preferable to do so rather than from the sea-level; and further, it is said that the presence of perennial snow—or a predominance of the causes which tend to its accumulation over those which tend to its waste, is very complicated, and cannot be taken as a true guide to any one of the elements of climate. My apology for asking a further explanation of Mr. F. is, that it is a subject which we know too little of, and to the want of a proper knowledge of which one-half of our failures in the cultivation of the plants committed to our care may, I think, be fairly attributed. *Thomas Challis, Wilton House Gardens.*

Solidago appositifolia.—I infer from an answer to a correspondent in your penultimate number, that an inquiry has been made relative to this plant. It may save your correspondent some trouble if I state that this Composite has been frequently introduced, and found to be unmanageable. I have myself received it several times, and spared no pains to acclimatise it, but invariably with the same result. I happen to know, further, that the same ill-success has attended the attempt to cultivate it in Germany. It succeeds tolerably the first year, but gradually dwindles in each successive season, the plant becoming "small by degrees, and beautifully less," until it disappears altogether. The same thing occurs with the Lawrencella rosea, a much more elegant plant than the Schœnia; and some other of the Swan River annuals are equally intractable. The very pretty Isotoma Brownei is still more obstinate than the two Composites already named; and it is remarkable that even in the colony it refuses to lend itself to culture, though flourishing in the wild state on the Darling Range. *W. T., Ipswich.*

New Zealand Ferns.—As there is a good deal of interest taken at the present moment in the New Zealand Ferns, I send two fronds of a Tree Fern, and another, which were sent me direct from New Zealand some four or five years ago. As we have only a very small greenhouse, they got too large for it, and this spring I put them out in the hardy Fernery. They have been looking magnificent all the summer, and growing far better than they did in the house. I intend leaving them out this winter and letting them take their chance. They are now making new fronds, and are in great beauty. I have several plants of the Davallia novæ-zelandiæ growing most luxuriantly in the same hardy Fernery. We have very little frost here in winter; and the following Ferns grow beautifully, and have been out for some years without any protection in winter:—Woodwardia radicans, Cyrtomium falcatum, Lastrea opaca, Onoclea sensibilis, Lomaria lanceolatica and chilensis, besides many others. *L. T., Kilronan.* [The two Ferns sent with this note are Cyathea medullaris and C. dealbata].——At p. 1193, Mr. D. Buchanan asks, "who will be the first to plant out a fine plant of Cyathea?" Some five years since I had three large plants of Dicksonia antarctica, including one that would not go up with a stem, although it occupied a pot 24 inches across, and took up more room than I could spare. I planted this out on a rockery in the month of June; it grew away all right through the summer and far into autumn, but the first frost cut up the fronds very much, and by the spring following it was quite dead. I would not, therefore, advise any one to risk out a plant upon which any special value was set. *D. W.* [With us, both Dicksonia antarctica and Cyathea dealbata, with caudices as thick as one's wrist, have been left in a cold house, to which some 7° or 8° of frost penetrated. It is true the plants were comparatively young, and were newly planted, but the roots were well covered with soil, and better protected than they would have been in a pot. Hence our doubt of their succeeding out-doors, unless it be in some exceptionally mild locality, such as that from which "L. T." writes. EDS.]

Sarracenias.—Will you allow me to request some of your contributors to be good enough to explain the winter treatment of Sarracenias? I have three kinds bought in late this autumn, very small plants, so that I should like advice from an older hand, how to winter them safely. *D. W.*

Asphalte Walks (see p. 1190).—Another method for asphalting walks is the following:—After making them of the proper form, roll them until the surface is quite hard; then with hot coal-tar give them a good thick coat, put on by a brush like paint—afterwards apply from a quarter to half an inch of fine gravel, and roll until it is perfectly set and hard. *E.*

Butcher's Broom.—Three years ago I saw in a house at Hove, near Brighton, several twigs of this plant (Ruscus aculeatus), with bright red berries, used instead of Holly for the Christmas decorations. I was told that it had been bought in the market. Having seldom seen it in berry before, and never in such profusion of fruit, I would ask any of your correspondents who will kindly inform me, whether the plant grows wild in the neighbourhood of Brighton? and if so, where? or whether it is cultivated in the nurseries for the purpose I have named? *Diss.*

Foreign Correspondence.

Winter Aspect of the Vegetation of Yokohama, Japan.—If I were asked as to the general character of Japanese vegetation, I should say that the Flora was marked by a scantiness of flowering herbs, and by a predominance of low shrubs and evergreens. During a long walk I went to-day, I did not see a single flower of any description, except the common Camellia and a species of leafless Prunus. The Rice fields were bare and sad-looking, with their half-rotten clumps of cut Rice-stalks dotted over the dark mud of the paddy fields; the Wheat on the slopes of the hills was about half a foot high, and had no vigour or promise in its appearance; the Raphanus sativus, the Potatos and Yams had only been lately planted; Sesame, Millet (I have never seen Maize), and Brassica chinensis have not yet been sown; the Cotton bushes looked dead; the Tea-plants were destitute of the young growing leaf, from which alone a good beverage is to be made; and the hand of the husbandman seemed to be now everywhere idle. The aspect of the landscape was universally dismal, and was relieved only by the bright green of the Pines and Camellias, the Bamboo and other evergreens, mingled with the darker tints of the Firs, and contrasting strongly with the leafless Oaks, &c., scattered amongst them. *From a Private Correspondent.*

Societies.

ROYAL HORTICULTURAL: *Dec. 8 (Weekly Show).*—Prizes were offered on this occasion for mixed collections of plants in bloom, and also for collections of fruit. Mr. Earley, gr. to F. Fryer, Esq., Digswell, had the best group of plants, in which were a well-grown Dendrobium chrysanthum loaded with blossom; Begonia incarnata, a mass of lively pink flowers; and an excellent specimen of Asplenium cicutarium. Mr. Brown, gr. to R. Wyatt, Esq., Wandsworth Lodge, stood next with a good variety of Zygopetalum Mackayi, Cypripedium venustum and insigne, and others. Mr. Young, gr. to R. Barclay, Esq., also had a collection of plants, in which were Genistas, Epacrises, and two nice varieties of Agave. Of fruit Mr. Brown had the best collection, consisting of some 22 varieties of Pears, among which the following were remarkably fine, viz., Easter Beurré, Glou Morceau, Bergamot d'Esperen, Beurre Diel, and Gilogil, his collec-

tion also contained small dishes of Black and White Grapes, and a dish of Oranges. Mr. Earley had well-grown specimens of Uvedale's St. Germain Pear, also some fine Glou Morceau and Passe Colmar Pears, together with Ashmead's Kernel, Starmer Pippin, Cox's Orange Pippin, and other Apples. Mr. Young had some good specimens of Blenheim Pippin and other Apples, and a dish of Medlars. Mr. Marcham, gr. to E. Oates, Esq., Hatwell, also received a prize for a collection of some 16 dishes of Apples. Mrs. Inwood-Jones, Ockham Place, Sloane Street, received a first-class Certificate for a dish of Scarlet Crofton Apples. This lady also exhibited a bunch of Italian grass, gathered from the garden of the Comte de Christ here, a curry villa on the Lido, near Venice. Mr. Webber, Esq., Winsland, Totnes, Devon, received a First-class Certificate for examples of Black Worcester and Uvedale's St. Germain Pears. Mr. Rivers, Sawbridgeworth, furnished two beautiful dishes of English-grown Tangierine Oranges. Mr. Young likewise received a First-class Certificate for an excellent collection of vegetables.

Dec. 5. (*Weekly Show.*)—Most of the plants shown on this occasion came from the Society's Gardens. A small plant and stand of cut blooms of a seedling Pompon Chrysanthemum Alfred Chapman was sent by Mr. Chapman, Great Warley, Essex. In the collection of plants from Chiswick were Poinsettia pulcherrima, Solanum pseudo-capsicum, and Cineraria platanifolia. Among plants at present in flower in the Conservatory is a fine specimen of Luculia gratissima, whose fragrance scents the whole house.

Florists' Flowers.

HYACINTHS IN WATER.—There is a kind of pleasant confusion in the opening paragraph of the paper of "G. W. F. H.," under the above heading (see p. 1168). He informs me at the outset that I am in error, and then, strangely enough, goes on to furnish a most cogent reason to justify my position. I simply stated (very tenderly and carefully, for it is dangerous ground to tread on), "that there seems to be a weakness of constitution associated with the deep-coloured flowers of the red class," and that consequently they are difficult to manage in water. This was the result of my uniform experience for the past five years, as a cultivator of Hyacinths in glasses. "G. W. F. H." has assigned a most excellent reason for such difficulty, namely, that there is a great demand for these high-coloured flowers, and that they have to be exported before they are properly matured; hence, an impaired constitution, and the failure I have alluded to, making it seemingly inevitable — the very reason that I suspected was the true cause of the difficulty, but I did not like to state it, fearing that I should lay myself open to the accusation of reflecting on our Dutch friends. Take a case in point: I am again growing this season L'Etincellante, S. R., a very deep-coloured flower. I have never succeeded in getting a good spike of this variety in a glass; the attempt has always resulted in an abortion. This season it has rooted well, but I have to tend it carefully to induce it to make its precious growth; it is a decided case of debility of some kind (not mis-management, "G. W. F. H.")—the case is hopeful, and that is all. It is a case of "over-sweating" for which your Harlem correspondent is responsible, not I. Till I saw his explanation, I thought I might have "coddled" it too much. I am glad to find there is no ground for fear on that point. Voltaire, Crown Princess of the Netherlands, Prince Albert, La Belle Africaine, Charles Dickens, Princess Clotilde, Lord Wellington, and Anna Carolina have galloped away from it in the race of life, and left it far in the rear. And then, S. B. Argus, the favourite of my protégés, spoken of so touchingly by me at p. 1118, the centre of my dearest hopes, has quietly "skedaddled." "Where," asks the representative of the spasmodic school among Fat Catalogue compilers, "where in the whole range of Flora's gifts will be found anything more delicious than the Hyacinth?" I looked for this rich delicacy in my Argus, and suddenly, as it were, from the base of the bulb to the crown of the inflorescence shoot, it had become a mass of corruption. The bulb was beautifully rooted — it always does root well with me, but it does not get upward. Why is it that under the most careful treatment this has been my fate as a grower for five successive years?—and always internal decay! Importers of this variety know to their cost how many of the bulbs perish in this way before they have an opportunity to sell them.

I should like to see the "marvellously fine things in all colours," "among the double flowering kinds" of which "G. W. F. H." writes; and which are said to be "full-grown Hyacinths with small bulbs," "scarcely larger than a nut"*—bearing great spikes of beautiful blossoms," and within the reach of everybody, as far as price is concerned.

"O, brother, speak with possibilities,
And do not break into these deep extremes."

Would Messrs. Paul or Cutbush like to send out to their customers full-grown Hyacinths about the size of a nut? Already both these celebrated growers catalogue three times as many single varieties as they do double, and of these double kinds scarcely a third are what are popularly termed cheap kinds; and then the term "all colours," as including double yellows—why, Mr. Cutbush catalogues only one variety, and Mr. Paul five varieties, not one of which are worth growing. There is a popular liking for large bulbs, and importers must follow this instructive preference; and so, how often does such a phrase as "the bulbs are unusually fine and sound, and well matured" appear in the introduction to the catalogues! In the case of single flowers, though the large majority of them have large bulbs, yet in a few cases small bulbs and fine spikes are associated, but rarely in the double kinds, as far as my experience has gone. If "G. W. F. H." will send to the office of the *Gardeners' Chronicle* a collection of these "marvellously fine things," I shall be happy to grow them in glasses next season, and exhibit them at one of the meetings of the Royal Horticultural Society. Perhaps "G. W. F. H." is stating what may be done with small bulbs in Holland. That I think is no reliable rule for us, looking at their differences of soil and climate, and bearing in mind our cold and late springs of the past few years.

I have simply to add that if any of the readers of the *Gardeners' Chronicle* should be induced to make a trial of growing the varieties of the true Van Thol Tulip in water in a dish, as recommended by "G. W. F. H.," it will in all probability be the alpha and the omega of their attempts at Tulip growing. The red, the rose, the yellow, and the gold-striped, are not worth the trouble; and they will be very much disappointed. I have attempted to grow Tulips otherwise than in pots—in sand, moss, water, and cocoa-fibre, and have never succeeded to my satisfaction. They are easily and simply grown in pots in a window, but good soil and drainage are needed. Three or four bulbs in a 32-pot will give a head of bloom worth a dozen in water, if properly tended. There are plenty of good and cheap kinds of early single Tulips, far more worthy attention than the small Van Thols, such as Bruid Van Haarlem, La Belle Alliance, Canary Bird, Couleur Cardinal, Couleur Ponceau, Keizer Kroon, Molière, the white, striped, and yellow Pottebakkers, Reine des Cerises, Rosa Mundi, Royal Standard, Thomas Moore, and Yellow Prince, large in size, dwarf-growing generally, varied in colour, and more brilliant and diversified than any other class of winter and spring-flowering bulbs. *Quo.*

THE CHRYSANTHEMUM is one of the most useful of all flowers, producing its blossoms at a season of the year when conservatories and greenhouses would afford little beyond a green show, if cultivators had not this easily managed and much abused flower to fall back upon. Instead of being roughly treated as it often is, it ought to be tended carefully and have every encouragement given to it by liberal cultivation. Thrown into some odd corner, uncared for, it often remains until the growing season is nearly past; and then a sudden fit of enthusiasm prompts its possessor as he sets to in earnest to prepare for a grand autumnal display. This is how the Chrysanthemum too often gets treated in the country.

The great friend of the Chrysanthemum is the London and suburban gardener, not because it thrives better in the vicinity of the metropolis, but, truthfully speaking, because he has studied the habits and characteristics of this favourite flower, and treats it accordingly. He does not begin to propagate about the middle of June or early in July, but selects his cuttings immediately the blossoms begin to fade, and takes especial care to keep the crown of the cutting uninjured. These cuttings are planted in 48-sized pots, four or five in a pot, and placed in a cool frame, abundance of air being given on every favourable opportunity. The time when the cuttings are taken off has more to do with the successful production of the splendid flowers annually exhibited at Stoke Newington, the Guildhall, Stratford, Brixton, and other suburban shows than gardeners generally are aware of.

I do not in the present instance intend to write a treatise upon the cultivation of this flower, although I may at some future time give my "experiences" as a Chrysanthemum grower. My object now is mainly to point out that a great deal depends upon the manner and time of propagating, and also to bring under the notice of the readers of the *Gardeners' Chronicle* the different ways of training, and the best varieties that have come under my notice during the past season.

On a former occasion Mr. Salter's fine collection was noticed, as also his new varieties. Those who wish to see a large collection, both of old and new varieties, will find no place where they can spend their time more profitably than in admiring and noting the varied collection at the Versailles Nursery. Most of the best varieties have been sent out by Mr. Salter; and he has introduced so many good ones, that it is difficult to find a new variety that surpasses those we already possess. The raisers of seedlings should turn their attention to high-coloured flowers, and should take Lady Harding as a model.

Mr. Forsyth, of the Brunswick Nursery, Stoke Newington, has during the last few years been one of our largest exhibitors of Chrysanthemums; and his *forte* has been more especially manifested in producing trained specimens. At his nursery are to be seen during the season a large quantity of standard, bush, and pyramid plants, including all the best large-flowered and Pompon kinds, especially adapted for exhibition purposes. He has been very successful as an exhibitor. I have for some years taken stock, if I may so term it, of his productions, and I was pleased to see this year that in addition to the conservatory he had a new span-roofed greenhouse some 200 feet in length, with a wide path down the centre, fringed on each side with specimens. From the high road this had a novel and pleasing effect, as one could see the whole length, and catch at a glance the different hues, the colours being arranged so as to prevent anything like monotony. Visitors were thus tempted to make a closer inspection, and could not fail to be impressed with the fact that the Chrysanthemum is one of our most useful flowers.

Immediately on entering, on either side was a fine plant of White Trevenna, one of the most beautiful Pompons yet added to collections. The white is so pure and the blossoms so abundant and of such exquisite shape that no one could fail to be struck with this variety. Mr. Forsyth told me it began blooming by the middle of August, and he intended to propagate it largely, and no doubt it would be found useful to fill beds that had received injury, or been destroyed by an unfavourable season such as the past. There are several other autumn-flowering varieties which would probably be found adapted for the same purpose. *W. H.*

(To be Continued.)

* There are nuts—and nuts. Walnuts and Cocoa-nuts among others. Eds.

The Apiary.

THE EGYPTIAN BEE (*continued from p. 1169*).—Mr. Woodbury, having determined to get rid of the Egyptians, made me what I then considered to be the very liberal offer of two small artificial swarms, in exchange for the bees only of two moderately strong common stocks; nor have I seen any cause to alter my opinion, as he could easily have disposed of them to greater advantage to himself, to certain of our scientific brethren, who would have been glad of the opportunity of possessing and studying, to English bee keepers, a new race.

Having had abundant opportunities of watching the Egyptians and becoming acquainted with their peculiarities of disposition and conduct during the whole time of Mr. Woodbury's possession of them, I naturally at first somewhat hesitated to undertake their guardianship; but considering that my apiary is more retired, and that my various hives are not subject to such frequent manipulation and interruption as is absolutely necessary with Mr. Woodbury's requirements for the rearing of queens and rapid increase of artificial swarms, I determined to give them a trial, and see what the result might be if the bees could be allowed as much immunity from molestation as would be compatible with a due regard for their prosperity. I therefore took them into my possession with a full knowledge of their previous character—much as a mistress would take a doubtful servant, with the hope that she might improve under a new system of tutelage —being fully resolved to discard them without mercy should they prove to be the cause of much annoyance either to my own household, or to my neighbours.

The two small artificial swarms previously mentioned were headed by queens bred from the original imported Egyptian. It is somewhat singular that both these queens were discovered by Mr. Woodbury at liberty at the same time in the parent stock, and were secured by him probably before they had an opportunity of coming together in mortal conflict. As there were as yet few, if any drones of Italian or other stocks, and as Egyptian drones were then present in considerable numbers, it was fair to suppose that these queens should breed perfectly pure bees. They were, therefore, more valuable than the majority of the queens previously raised by Mr. Woodbury; and had I been inclined to embark largely in the propagation of the species, I could have done so with every prospect of success. This, however, I was unwilling to do, fearing to transform my town apiary of docile and well-behaved Italian and common bees, among whom it was a pleasure to manipulate, into a perfect nest of furies, among whom no one could venture without running a great risk of paying a very severe penalty. I resolved not to attempt to increase their numbers; but after building up the weak swarms into populous colonies, to allow them to remain as little disturbed as possible, to see if, under such circumstances, the bees would be worse behaved than any others. This principle I have carried out; no attempt at any increase of the stocks has been made, and I have still the two original stocks, and in addition one which I subsequently had from Mr. Woodbury. But I must go back to the time of their first arrival under my care.

No. 1, the first matured of the two princesses, was at the head of a small artificial swarm, limited, at the time of my receiving it, to four frames in what is styled a nucleus box. Mr. Woodbury did not send the bees to me until he had ascertained that the queen had actually commenced laying eggs, and he was desirous of being as certain as it was possible to be, that she was fertilised by an Egyptian drone, of which, as I said before, he had an abundance in his apiary, no other drones having then made their appearance. When she had clearly demonstrated her capabilities of performing all the functions of a fertile mother, the little swarm was sent to me. The bars which sustained the comb, being shorter than those which fitted in my own frames, I was obliged, previously to transferring them into my own hive, to fasten them by wires or screws to the lower side of my bars. I took every precaution of being thoroughly protected from the attacks of the bees, and, although every individual bee that could fly seemed to leave the combs, and endeavour to wreak its vengeance on my person, I escaped without a scratch, and was enabled to effect the transference with comparatively little difficulty to what I had anticipated. I was, during the operation, much afraid for the safety of the queen, as she was almost entirely deserted by her subjects, and was racing about the combs and the hive in a way that made me fear she would either be attacked by stray bees, or come to grief from the excitability of her own subjects. At length all was satisfactorily effected, and having made all snug I left the hive for a few days to receive some acquisition of population from the young bees which were rapidly hatching out from the brood combs with which the nucleus was furnished. *S. Bevan Fox.*

(To be Continued.)

Garden Memoranda.

GRIMSTON PARK, NEAR TADCASTER.—This is a well-known seat of Lord Londesborough, and at any other season of the year a full account in the *Chronicle* of the flower garden and grounds would be no more than the place deserved. Knowing that Lord Londesborough was forming a good collection of Orchids, I called there a few days since to see what could be found in bloom. A new span-roofed house in two divisions has just been erected purposely for Orchids, and those who advocate a close and dark structure for these plants would get a shock to their nervous system by dropping in at Grimston. There the Orchids have plenty of light in winter, which can be reduced at

pleasure in summer by shading, and they can get plenty of ventilation at all times by the admission of air between the pipes under the side stages. The plants certainly like the treatment they get, for they are in capital health, and growing freely.

I noticed in bloom a superb block of Barkeria Lindleyana; the lovely little Pleione maculata (by-the-by I have seen the pots of this covered with Lycopod, which adds much to its beauty), Cœlogyne Rhodiana, Odontoglossum maculatum, Lælia albida; Odontoglossum gloriosum, a very fragrant and beautiful kind; and a fine strain of Odontoglossum Alexandræ in bloom, and showing a spike of 12 buds. There were also several varieties of Lycaste Skinneri, the pretty Oncidium cucullatum, and Oncidium racemosum—the upper lip of a pale brownish violet colour, and the lower lip deep lilac spotted with dull crimson. What a gem is Lælia anceps grandiflora as seen here! and Oncidium bicallosum is a fine variety and a free bloomer. I saw here a very fine plant of Cymbidium Mastersii superba; it was in fine bloom, and is really a glorious Orchid. The finest strain of Sophronitis grandiflora, called "superba," shone like a meteor, if one of a brilliant scarlet colour has ever been met with. It is a beautiful thing, but not very plentiful. Then there were Dendrobium luteolum, Angræcum sesquipedale, Phalænopsids, and Oncidium Cavendishii, with others "all in their glory." Some weeks since I saw Cattleya maxima blooming at Grimston, and must confess to a disappointment in it. I think a good strain of Cattleya Mossiæ superior to it, unless indeed we are to have several varieties of maxima, and I have seen one of the worst. I hope so at all events.

Just a word about the conservatory, which is a large and lofty structure adjoining the drawing-room. Seeing it as I did, early in December, I never saw so much flower in the same space at the same time of the year. There were Tree Mignonette, Camellias, Epacrises, Ericas, Scarlet Salvias, the invaluable Early Roman Hyacinth, Monochætums, Chrysanthemums, Tree Carnations, Violets, and other things, forming a beautiful bank of considerable length on either side, which it would be difficult to match. Violets are largely grown here and well, the Czar and Neapolitan especially. These are planted out on north borders in the spring, and are potted up in September. *W.*

Miscellaneous.

Vegetable Products of the Tocuyo River.—There are several species of indigenous Palms, and one, the Cocoa-nut, is cultivated to some extent. Nearly all the houses are thatched with the leaves of the Palma redonda (Copernicia tectorum), and from the same material straw hats are made. An excellent beverage, resembling champagne, and quite as intoxicating, is made of the Palma, or Corozo de vino (Acrocomia sclerocarpa) by felling the trunk, and cutting a hole just below the crown of the leaves. When I was at Guadima, the people had cut down several of these spiny Palms in order to supply themselves with "wine" for the Easter holidays. More useful still is the Mapora, or Cabbage Palm (Oreodoxa oleracea), which attains 60 feet in height, and is one of the leading trees on the banks of the Tocuyo. The young leaves yield an excellent Cabbage, which is so highly esteemed in the West Indies, where the tree has become scarce, that they are sent as acceptable presents from one island to another. The full-grown leaves are used for thatching, but by far the greatest value of this Palm consists in the wood, which is esteemed in Venezuela for shingling. A full-grown tree I am told, will often yield 100 planks (each 6—7 varas long and 1 inch thick); and 100 of these planks sell on the banks of the river for 36*s.*, and in Porto Cabello for 3*l.* or 3*l.* 15*s.* One of the most common trees is the Mora (Broussonetia, or Morus tinctoria), which yields the dyewood known as Fustic. A ton of timber of this wood brought to the river bank is paid for in Tocuyo at the rate of 1*l.* 4*s.* (8 pesos del pays), and fetches in Liverpool from 5*l.* to 6*l.* It is a quickly-growing tree of middle-size, only the heart of which is used, and the fruit is eaten by the children. Guayacan (Guaiacum officinale) is found in considerable abundance. It is sold on the banks of the river for 15*s.* the ton, and at San Miguel de Tocuyo for 1*l.* 1*s.* to 1*l.* 4*s.* per ton. The tree yielding the so-called "Balsam of Tolu" (Myrospermum toluiferum) is sufficiently common to be of commercial importance. The natives call it "Balsamo," and attach great value to the resin obtained from the pods. The resin exuding from the straw sells in London at the rate of 3*s.* per pound. An allied species, known as Sereipo in the country (Myrospermum frutescens), is equally common. The balsam produced by this tree is entirely neglected. The wood has, however, been exported; and Mr. Polly, of Porto Caballo, was named to me as one of those who sent considerable quantities of it to Hamburg. The Castor-oil plant, or Tartago (Ricinus communis and R. inermis), is seen about all the settlements, and supplies the inhabitants with oil for their lamps, the wicks of which are made of home-grown cotton. It seems to be the only oil-yielding plant of the district, of which I noticed three distinct varieties. Sarsaparilla (Smilax sp.) is seen wherever the forest is not too thick; and a species of Vanilla, somewhat inferior to the cultivated one, yet sufficiently good for export, is frequently met with, and to some extent collected by the natives. In times of scarcity the people make bread of the root-stock of a Palm-like plant (Zamia muricata), and they also eat the farinaceous root-stock of a white Water Lily (Nymphæa ampla), which they call "Naya." About Guadima and the upper hills all the streams are full of Water-cresses. Crin vegetal, or Vegetable Horsehair (Tillandsia usneoides), covers some of the trees in the greatest profusion, and is used for stuffing sofas, mattresses, cushions, &c. The fruits cultivated are Nisperos, Bananas, Plantains, Tamarinds, Papaws, Soursops, Breadfruit, Cocoa-nut, Cacao, Coffee, &c. The esculent roots principally grown are Sweet Potatos, Yams, Taros, Cassava root (two kinds), etc. The only grain I noticed was Indian Corn, or Maize. *B. Seemann, Report on the Tocuyo Estate of Venezuela.*

Burrowing Spiders.—Many of the true spiders are among the burrowers; and, even in our own country, it is possible to see a sandy bank studded with their silk-lined tunnels. There is such a bank that skirts a Fir-wood near my house, the material being the loosest possible sandstone, scarcely hard enough in any place to resist a pinch between the fingers and thumb. About an inch or two beneath the soil this sandstone is quite excavated by the spiders; and as the sandy sides of their tunnels would fall in were they not supported in some manner, every tunnel accordingly is lined by a coating of tough webbing, very strong, very elastic, very porous, and yet not suffering one particle of sand to pass through its interstices. From the opening of each burrow a web is spread, looking very much like a casting net, with a hole through its middle. From this again, radiate a number of separate threads, which extend to a considerable distance from the entrance. At the very bottom of its silken tunnel the living architect lies concealed, its sensitive feet resting on the web, so that it is enabled to perceive the approach of the smallest insect that crosses the spot which it has so elaborately fortified. *Homes without Hands.*

American Dried Fruits.—It is estimated that the crop of dried Apples, Blackberries and other fruit, which will be shipped from North Carolina during the present season, will amount to more than 1,000,000 lb., worth at the North over 300,000 dols. At High Point depôt alone, 75,000 dols. worth of dried Blackberries have already been shipped. *Public Opinion.*

Calendar of Operations.

(For the ensuing week.)

THE weather being still comparatively mild, a good opportunity is afforded for forwarding arrears, if any, of late autumn work. At this time of year, when home enjoyments occupy more than usual attention, let every gardener make it his particular business to contribute, as far as lies in his power, to the gratification and pleasure of his employers and their friends. The plant houses and their occupants will be of the first importance at this dull season; and to be appreciated, they should be arranged in such a manner as to display themselves to the best advantage. Great care should be taken of plants now in flower, in order to preserve them in that state as long as possible; due attention should also be paid to bringing others forward, in order that a proper succession may be kept up. Let perfect order and neatness be evident in everything; for if this point be attended to, it will compensate in a great measure for the absence of a more extensive floral display.

FLOWER GARDEN AND PLANT HOUSES.

Let perfect neatness prevail out as well as indoors, in order to compensate for the absence of more brilliant attractions. Remove fallen leaves, and let the surface of the soil in borders and clumps be forked over, or made clean with the rake. The walks should be put into perfect order, and, if necessary, receive a slight sprinkling of clean fine gravel. Let drains and grids be examined and cleaned; and if in very rainy weather the water lies on any parts of the walks, let the defect be remedied by introducing a new drain, or by filling up the low places with new gravel; nothing interferes so much with the enjoyableness of any place, at this season, as damp dirty walks. If the turf is wet in any part of the pleasure ground, the winter season, during weather like the present, is an excellent time for remedying it, by cutting drains wherever they are required. In doing this, keep the drains at the greatest possible distance from trees, to prevent their being choked up by the roots; but in parts where the proximity of trees is unavoidable, let them be filled with broken rubble to within 12 or 15 inches of the surface, in order that a passage may be secured for the water, even if roots do enter the drains. In filling the latter up with soil, let it be well rammed in, to prevent any after sinking of the surface.

CARNATIONS AND PICOTEES.—During the present favourable weather keep the frames open as much as possible, and do not water unless the plants absolutely require it. Keep green-fly down by means of fumigation.

DAHLIAS.—Let ground intended for these next year be well trenched, throwing the surface up in ridges with the view of exposing as much as possible to the frost. Examine roots of choice sorts now and then to see whether or not they are in good condition.

PANSIES.—Where these are grown in pots, prepare soil for them now, in order that it may be ready and in good condition when they receive their final shift. Keep the plants hardy, and as near the glass as possible.

PELARGONIUMS.—Continue to give air whenever the weather will admit of it; but avoid cold draughts, and keep out frost. On the other hand, be careful not to use too much fire-heat.

FORCING GARDEN.

PINES.—During the next few weeks care should be taken to limit the application of exiciting influences, or the plants will be induced to grow at a rate very disproportionate to the amount of light they are at liberty to enjoy. The object to be aimed at in Pine-growing, is not the producing a large plant with gross exuberant foliage, but rather the production of small yet healthy plants, with short sturdy leaves, while the roots are revelling in rich compost, which they will continue to do even through the winter months, if the bottom-heat is kept at from 80° to 85°. This end is not, however, to be obtained through starving the plants by an inadequate supply of water and soil, but by affording, along with a proportionate quantity of these requisites, a free circulation of air. If this point, in connection with a proper supply of water, be duly attended to, and if a healthy root-action be secured, the plants, though small, will be filled with highly-elaborated sap; and, as a natural consequence, will produce large, well-swelled and highly-flavoured fruit.

VINES.—Be content with moderate progress for the present; but take advantage of every fine day to allow the temperature to rise 15° or 20° higher than that at which it is kept during the night. Where the buds are not yet broken, the rods may be syringed daily with water, the temperature of which is about 70°; and, after the buds break, it should be used from 10° to 15° warmer. When sharp frost is expected during the night, syringing in the afternoons should be avoided; as the water becomes congealed about the laps of the glass, sometimes breaking it, and the front gutter or spout for carrying away the water from the roof becomes choked up with ice. Too much steam from the vapour troughs has also a similar tendency. Admit air on every favourable opportunity; and proportion the moisture in the atmosphere to the amount of daylight. Be careful that the fermenting material over the roots does not get too hot—a moderate warmth, not exceeding 75° or 80° in the dung, is sufficient; but, at the same time, it should be frequently examined, that it does not fall too low during cold weather, or the check will injure the roots. Where Grapes are still hanging, remove the faded leaves, which are no longer of any service to the Vines, and prune in at once all spurs on which no fruit is hanging.

HARDY FRUIT AND KITCHEN GARDEN.

To prevent any difficulty in digging up Celery or Cardoons, when the ground is hard frozen, let a portion of each, about as much as will suffice for a couple of weeks, be always under protection, either by means of loose litter, Fern, or thatched hurdles, or some other convenient material which will exclude frost. These coverings should be put on while the ground is in an uncongealed state, as it would otherwise do harm rather than good, by preventing the sun and air from acting upon the soil in case of a change of weather. It must, however, be understood that the portion which is covered up is not to be left untouched till the arrival of frosty weather, but used in the regular rotation; and as the covering is taken off the part for present use, it is to be moved forward to a similar space beyond, so that a supply for the next ensuing fortnight shall always be under protection, except of course when the ground is in a frozen state. If, by means of spare frames or other contrivances, a portion of such crops as Parsley, Spinach, &c., can be protected, the plan will be found very convenient when the ground is covered with snow. Some Horse-radish, Jerusalem Artichokes, Parsnips, &c., should be got up and laid in moist soil for present use.

STATE OF THE WEATHER AT CHISWICK, NEAR LONDON,
For the Week ending Dec 19, 1866, as observed at the Horticultural Gardens

Dec	Moon's Age	Barometer.		Temperature. Of the Air.			Of the Earth 1 foot deep.	Of the Earth 2 feet deep.	Wind.	Rain.
		Max	Min.	Max.	Min.	Mean				
Thurs.	13	29·521	29·335	56	35	45·5	45½	45¼	S. W	20
Friday	14	7	29·470	29·377	50	28	39·0	46	45	W	10
Satur.	15	0	29·452	29·372	51	38	44·5	46	45	W	15
Sunday	16	9	29·382	29·262	51	25	38·0	46	45	S. W.	00
Mon	17	10	30·186	30·142	52	42	47·0	45	44	S. W.	01
Tues.	18	11	30·218	30·123	51	40	45·5	45	45	S. W.	00
Wed	19	12	30·281	30·215	56	50	53·0	48	45	N.W.	00
Average .			29·866	29·746	52·5	32·3	42·5	46·1	44·6		0.36

Dec 13—Rain, cloudy, slight rain, fine at night.
" 14—Overcast, very fine, slight frost.
" 15—Fine, constant rain, showery at night.
" 16—Rain, cloudy, fine throughout, slight frost.
" 17—Hazy, slight rain, very fine at night.
" 18—Hazy clouds, densely cloudy, very fine.
" 19—Exceedingly fine, very mild for the period of the season, frost.
Mean temperature of the week, 3 deg. above the average.

STATE OF THE WEATHER AT CHISWICK,
During the last 40 years, for the ensuing Week, ending Dec 29, 1866

December	Average Highest Temp.	Average Lowest Temp.	Mean Temp.	No. of Years in which it Rained	Greatest Quantity of Rain.	Prevailing Winds. N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.
Sunday...23	44·0	32·0	38·0	20	1.13 in.	6	2	2	2	12	3	4	
Mon. ...24	43·6	31·5	37·5	16	0.91	4	5	4	2	1	16	4	4
Tues. ...25	44·4	29·1	36·2	9	0·43	3	7	2	4	—	7	13	5
Wed ...26	45·0	31·4	38·2	14	0·76	4	3	2	3	4	11	6	3
Thurs. ...27	42·8	29·4	36·1	14	0·40	5	5	2	2	2	8	8	4
Friday ...28	42·2	29·4	35·8	14	0·60	3	5	3	2	3	5	8	4
Satur. ...29	44·1	30·4	37·3	18	0·62	2	5	3	4	3	11	7	5

The highest temperature during the above period occurred on the 29th, 1847 and 28th, 1855 - therm 58 deg., and the lowest on the 28th, 1860 - therm 1 deg below zero

Notices to Correspondents.

ACUBAS: *F. R. K.* Several instances have occurred of the old Aucuba producing imperfect fruits. In your specimens, as in all similar ones, the seeds are abortive.

CAPE JASMINE: *A. H.* If by the large flowered Cape Jasmine you mean Gardenia florida, it has long been grown in this country, and you will find no difficulty in getting it from any good nursery; nor its fine double variety—perhaps the finest of all, G. Fortunei.

FUNGI: *Exon.* The substance is not a fungus, but probably hydrous red oxide of iron mixed with Conferva ochracea, Dillw. Without analysis it is, however, impossible to speak positively. *M. J. B.*

RADISH: *W. C.* What you mean is probably the same as that called Madras Radish, which you may get in Paris, if not in this country. We do not know it under the name of Maugri, which you quote.

ERRATUM.—In p. 1164, col. *c*, fourth line of article on Ventilation, for "supposing the air," read "supposing the heat."

COMMUNICATIONS RECEIVED.—W. Miller.—G. Eyles.—J. E. G. (we will ascertain if possible). J. S.—M. Clatin.—J. C. & Co. (with thanks).—Mr. Hullett.—S. B. F.

THE GENERAL LAND DRAINAGE and IMPROVEMENT COMPANY. Offices, 22, Whitehall Place.

Under this Company's Act Tenants for Life, Trustees, Mortgagees, Guardians, Committees of Incompetent Persons, Beneficial Lessees, Corporations (Ecclesiastical or Municipal), Incumbents, Charitable Trustees, &c., may effect the following Land Improvements, and charge the outlay and expenses on the estate supposed, by way of rentcharge, to be paid by half-yearly instalments, viz :—

1. All works of Drainage, Irrigation, Warping, and Embankment.
2. The Erection of Farmhouses, Cottages for Agricultural Labourers, and all kinds of Farm Buildings.
3. The Construction of Roads.
4. The Grubbing and Clearing of old Woodlands, Enclosing, Fencing, and Reclaiming Land.

The owners of Estates, not entailed, who may be desirous to avoid the expense or inconvenience of a Royal Mortgage, may also charge their Estates with an Outlay in Improvements under the simple and inexpensive process of the Company's Act.

The Term of Years for the Rentcharge is fixed by the Landowner, so as to adapt the amount of Annual Payment to the circumstances of the Tenants

No Investigation of Title being required, and the Charge not being affected by Encumbrances, no Legal Expenses are incurred

The Arrangements for Effecting Improvements are threefold —

No. 1. The Works may be Designed and Executed entirely by the Landowner's Agent, and the Company employed only to supply the Loan and conduct the matter through all the official Forms for Charging the Outlay on the Estate.

No. 2. The Company will supply Plans, Specifications, and Estimates for any Improvements to be executed by the Landowner's Agent as under No. 1. In each of these cases the Landowner will be solely under the control of the Enclosure Commissioners.

No. 3. The Company will undertake the entire responsibility of the Improvements, prepare the Plans, execute the Works, and finally charge the Estate the whole amount expended only to their Commission thereon, approved by the Enclosure Commissioners.

Landowners may thus obtain what assistance they require from the Company, and no more, in all cases, the objects in view.

Works of Drainage and other Improvements are also executed on Commission for Landowners, who merely require the skill and experience of the Company's Officers and a Staff in constant practice.

Applications to be addressed to HORACE BEAR, the Secretary, at the Office of the Company, 22, Whitehall Place, London, S.W.

THE LANDS IMPROVEMENT COMPANY.
Incorporated by Special Act of Parliament in 1853.
To LANDOWNERS, THE CLERGY, ESTATE AGENTS, SURVEYORS, &c., IN ENGLAND AND WALES, AND IN SCOTLAND.

The Company advances money, unlimited in amount, for the following works of Agricultural Improvement, the whole outlay and expenses in all cases being liquidated by a rent-charge for 25 years.

1. Draining, Irrigating and Warping, Embanking, Inclosing, Clearing, Reclamation, Planting, for any beneficial purpose, Engines or Machinery for Drainage or irrigation.
   Farm Roads, Tramways and Railroads for agricultural or farming purposes.
2. Jetties or Landing places on the sea-coast or on the banks or navigable rivers or lakes.
3. The Erection of Farm Houses, Labourers' Cottages, and other Buildings required for Farm purposes, and the improvement of and additions to Farm Houses and other buildings for Farm purposes.

Landowners assessed under the provisions of any Act of Parliament, Royal Charter, or Commission in respect of any public or general works of Drainage or other Improvements, may borrow their proportionate share of the cost, and charge the same with the expenses on the lands improved.

The Company will also negotiate the Rent-charges obtained by Landowners under the Improvement of Land Act, 1864, in respect of their Subscription of Shares in a Railway or Canal Company.

No investigation of title is required, and the Company, being of a strictly financial character, do not interfere with the plans and execution of the Works, which are controlled only by the Government Enclosure Commissioners.

Apply to GRANVILLE R. RYDER, Esq., Managing Director, 3, Parliament Street, London, S.W.

The Agricultural Gazette.

SATURDAY, DECEMBER 22, 1866.

THE following is an abstract of the discussion which followed Dr. VOELCKER's paper before the London Farmers' Club last week on the Application of Manures. The main lesson of the lecture, it will be remembered, was the unprofitableness of dung-heaps, owing to losses not so much by evaporation as by the washing effect of rains. No ammonia flies off from a dungheap during its putrefaction. There is as much actually of ammonia in the reduced mass of a rotten dung-heap as there was "potentially," to use Dr. URE's phrase, in the original bulk of the fresh manure there hauled together. The loss by washing, however, is very considerable; and on this ground it was recommended that dung should be carried out to the field and spread, whether it were frost or rain, or even scorching summer drought. This recommendation, put in the extreme form in which we thus heard it, is a rather startling doctrine to those who have hitherto been accustomed to manage their manure as they supposed according to the received lessons by the agricultural chemist. The lessons taught by Dr. VOELCKER's more recent analyses were however sufficiently supported by the experience of many of the gentlemen who subsequently addressed the meeting.

Mr. MECHI advocated the covered shed, which hindered the washing of manure by rain, and recommended the immediate application of what comes from the bullock, just as in the fold there is the immediate application of what comes from the sheep. If dungheaps are to be advocated because they bring the dung into the state in which it can be spread and covered in—this can be effected satisfactorily by using as litter straw which has been cut into short lengths. His own experience of Wheat after Clover, which had been mown and then manured in this way, proves that the immediate application of fresh dung is an economical process. He had often had, (in the two crops), 15 quarters of Wheat in two years from an acre of Clover lea treated in this way.

Mr. READ, M.P., rather controverted the idea that autumn is equally efficient with spring manuring. He thought that the alleged safety of manure, when once it is used on the soil, depends a good deal upon the character of the soil. On his light land he know that the autumn sheep-fold is not so rich as the spring sheep-fold; one-half the Turnip fed off in the spring does as much to fertilise the land as the whole quantity fed off before winter.

Mr. HUDSON, of Castle Acre, also referred to the experience of the Norfolk light land farmer, and particularly to his own, as that of a man who had been 40 years engaged as a farmer of arable land, both light and heavy. He concurred very much in what Dr. VOELCKER had said with regard to the time and manner of putting manure upon the land. He had always found that when manure was put on the land and spread immediately, it acted very differently from what it did under Lord BERNERS' system of covering it up in heaps, and not suffering the worms to pull it in. Practical men know that if they spread it on the land the worms will soon have a great deal of it in. He firmly believed that if the manuring of their Clover leas in preparation for their Wheat crops were done early, the result would be so much the better. He had never found the sun produce any detrimental effects. He had some very tenacious land in Norfolk, bought by his father in 1826, which he had occupied ever since. It had grown Wheat and Beans alternately during the whole period. He had had manure for Beans lying on the land for six weeks before it was ploughed in, and he had never found manure producing so good a crop when it was ploughed in immediately. With regard to what Dr. VOELCKER called artificial manures (he would rather that name were changed to fertilisers; for there was in fact nothing artificial about them)—he was not now a great advocate (though he was some time ago) for applying nitrate of soda in large quantities. He preferred mixing a little nitrate of soda with 2 cwt. of Peruvian guano and 2 cwt. of salt an acre for the Wheat crop; and he would rather apply this mixture in two dressings than in one. If, indeed, they could tell what the weather was going to be in the last fortnight in June and the first fortnight in July, they might grow almost what they liked; but they could not know that; and in trying to get what their friend Mr. MECHI did—namely, 6 or 7 quarters per acre—they might get only three. If the season were a dry one, they might be able to grow as much as Mr. MECHI; but if there should be a great deal too much wet, even he might find that he had too much straw and too little corn. He had several times with advantage mixed a small quantity of superphosphate or dissolved bones with Peruvian guano before it was applied for Wheat. And as regards farm-yard manure for Wheat, it could not be put on too soon after the first crop of hay was off. To put the manure on as soon as possible, and let the second crop be well grown before it was fed off, was, he believed, the best preparation they could have for Wheat.

Here was the testimony of 40 years' experience to the value of top-dressings and the truth of Dr. VOELCKER's teaching. It was borne out by speeches from Mr. EVERITT, of Norwich, Mr. PH. FREERE, of Cambridge, and Mr. HOWARD, of Bedford. Perhaps the most important criticism which Dr. VOELCKER's statement received was from Mr. E. LITTLE, of Lanhill, Chippenham, who is the President elect of the Club for the ensuing year. He had suffered for many years from the rotting of root crops grown with artificial manure. For the last two or three years the evil had largely increased, particularly in connexion with the use of superphosphate of lime. Swedes and Turnips had rotted to a great extent in the present year. He had a piece of land used for Swedes, on which he mixed vegetable ashes with 3½ cwt. of superphosphate of lime, and the result was that one-third of the crop was rotten and not fit for use. He found that roots did not rot with farm-yard manure combined with a certain proportion of artificial manure. Whether the result in the other cases were owing to the use of too large a mixture of artificial manure with the ashes he could not tell; but when a small quantity of artificial was combined with a large quantity of farm-yard manure there was no sign of disease. Dr. VOELCKER had recommended them to give up in a great measure the use of bones, on the ground that it took two or three years to bring out the value of that manure. He differed from the Professor on that point. He had found of late years that when he used superphosphate he did not get so great a quantity of Barley or Clover as resulted from the use of bones, nor did he think the Wheat crop was so good. He believed that bones were as good a manure as they were 21 years ago, and he intended to continue using them.

Professor VOELCKER closed the discussion with a reply to many of the questions which had been put to him in the course of it.

He would not say with Baron LIEBIG that they must manure the subsoil, but was inclined to think that they should do all they could to keep the manure as near the surface as possible, for the manuring matter constantly found its way into the subsoil. But they must modify their practice according to the character of the soil. What Mr. SEWELL READ said about some light soils not holding manure for any length of time was perfectly correct. On the light soils of Norfolk, of the Lothians, and some other parts of Great Britain, it would, he believed, be well to manure just before the sowing of the crop which it was intended to grow. But, even with respect to the light soils, they might modify their practice according to the system pursued in managing the manure. On light lands he should not hesitate to cart perfectly fresh manure on the land early in the season, because in fresh dung very little of the fertilising matter was in a condition to be immediately available for the plant. On such land he would avoid carting rotten or turned-over manure in autumn; but he should feel less scruple in carting manure just as it came from the stable on to the land during winter, believing that it might be left on the land in that condition for some time without undergoing any serious loss. He thought the subsoil was often poor because it was not properly cultivated, and was in an unfit state for the reception of manuring matters; perhaps the best remedy against this evil was to work it well with the steam-plough. With respect to the proper time of putting manure on the Clover lea, he still believed that it could not be applied too early. As to the application of nitrates to light land, he would observe that he had seen very great benefit arise from dividing artificial manures, like nitrates or guano, into two portions. On very light land he had seen manifest advantage resulting from making the application of the top-dressing in two doses. He also agreed with his friend Mr. HUDSON that nitrates—and this remark applied to nitrate of soda especially—should not be used very frequently on poor light land, and that on such land guano, especially if mixed with superphosphate and salt, was a better dressing for Wheat. With respect to the application of dung to heavy land, he was perfectly satisfied that nothing was lost by evaporation—that neither the sun nor the wind nor rain could expel anything valuable from the manure when it was once put on the land. But, at the same time, it must be borne in mind that dung, when ploughed-in immediately on very heavy land, produced a mechanical benefit which ought not to be neglected by the intelligent farmer. On very heavy land he would certainly advise the ploughing-in of the dung as soon as possible, if the land were not too wet, for when that was not done on wet land the injury of ploughing it in during winter might be worse than that of not manuring at all. The mechanical harm that was done by the consolidation of stiff clay land was sometimes infinitely greater in amount than the good done by manuring it.

He believed with Mr. LITTLE that bones were as good now as they ever were, and if they were as cheap as they were five or six years ago he would not use a particle of superphosphate, or of any prepared bones. But, as bones were at the present time getting dearer and dearer, they must try and make the most of them, and this would be done by partially dissolving them in sulphuric acid. Of course they could not expect to derive the same advantage from 3 cwt. of superphosphate of lime as they derived from a heavy dressing of good bone-dust. With respect to the rotting of roots, which he was aware was often seen where artificial manures had been applied to the land, he would observe that he thought the time at which the seed was sown had a great deal to do with the preservation of roots. Sometimes a fortnight earlier or later would make all the difference as to whether roots kept well in the land or not. Mr. LITTLE observed that on land which was manured with farmyard manure, roots did not go off so rapidly. This might be due to the fact that farmyard manure rather kept the early growth of roots in check than promoted it; whereas the application of special manures like superphosphate promoted an unhealthy growth, and brought on the young plant too rapidly. If it were not supported in its growth sufficiently, there would be a sudden check, and they well knew that plants could not, any more than animals, stand such a check.

— A CORRESPONDENT of the *Pall Mall Gazette* calls attention to the fact that Westmoreland is almost the only English county which has absolutely escaped the cattle plague, and he gives the following account of the exertions of the local authorities which at any rate contributed to this end. It will be seen, however, that he does not give much credit to the justices for their present course of proceedings in connection with the subject:—

"Early in the course of the epidemic regulations were enacted relating to the exclusion of cattle from other counties, the police force was augmented to carry out these orders, and a sort of martial law was enforced on tramps and pedlars coming into the county. When one of these gentry happened to cross the boundary on any of the roads leading from the seats of infection, he found himself accosted by a guardian of

the police, who requested him to step into an adjacent hut, where he was subjected to a process of fumigation, which so exasperated his persecutors that it soured his temper. Horsemen coming over the borders were also stopped, while the herds of their horses were carefully cleaned and washed. A similar system of obstruction on the movement of cattle within the county was adopted, bearing hard on the farmers, whose holdings frequently consist of lands widely separated from each other; but rendered tolerable by the clearness of the language in which the orders were expressed, and by the practice adopted by many of the magistrates of making out the licences themselves, and handing the applicant all duplicates free. Now that the cattle plague is so nearly extinct, the time would seem to have come for the abolition or mitigation of these annoying restrictions on the movement of cattle from one part of a farm to another. So long as the entry of cattle from other counties was prohibited there could be little danger in permitting the movement of cattle already within the borders. But the sessions, with that propensity to put the cart before the horse which appears to be innate in such bodies, have, I observe (by a majority of one), decided to abolish all the special regulations for excluding cattle from other counties, and to retain all the vexatious and now unnecessary restrictions on movement within the county. In other words, these sapient justices, who have never had disease in their house, restrict the inmates from moving from room to room, but open wide the front door, and ask their neighbours across the street, who are not yet clear of infection, to come in."

—— The following is the memorandum issued by the agents of the Peruvian Government respecting the existing supply of guano, about which Mr. CAIRD urged at the recent meeting of the Royal Agricultural Society of England, that inquiry should be made by Government:—"In the year 1853, in consequence of a publication made in Lima, and which, like that now occupying attention, gave very short duration to the guano of the Chincha Islands, the Government directed that a Commission composed of national and European engineers should make a measurement of them. That Commission, after a scientific and lengthened labour, valued the stock of guano at 12,500,000 tons. Taking this unquestionable antecedent, and seeing that there have been extracted in the 12 years since elapsed a maximum of 400,000 tons per annum, or, say in all, 4,800,000 tons, the stock at the present time must be 7,200,000 tons, or sufficient for 18 or 20 years from this period. Moreover, supposing for a moment that this were not so, yet Peru not only possesses the guano stations of the said islands, but also those of the south, those of Bahia de la Independencia, those of Santa, Guadalupe, Malabrigo, and the enormous ones of the islands of Lobos, without taking into account others not yet well known, of which not a single ton has yet been extracted, and which contain guano of the best quality."

—— On Monday last a deputation from the Central Chamber of Agriculture had an interview by appointment with the Lord President of the Council (the Duke of BUCKINGHAM and CHANDOS, K.G.), to draw attention to the following points:—Firstly, the importation of foreign cattle; secondly, the re-opening of fairs and markets; and thirdly, the necessity of extending the time during which the powers granted to the Privy Council under the Acts of the last Session may be exercised. The deputation consisted of Mr. E. D. HOLLAND, M.P.; Mr. C. S. READ, M.P.; Mr. ALBERT PELL, of Haselbeach, Northamptonshire, and others. The opinion of the deputation was in favour of the abolition or alteration of the present restrictions upon the importation of cattle, and the embodiment in a Government Bill of the recent Orders in Council, so that the English producer should be placed on the same footing with his continental rivals in trade. Mr. PELL called the attention of his Grace to the constant evasion of the Orders in the inland districts, which drew from the LORD PRESIDENT the observation that the evasions of the Orders were almost entirely confined to Great Britain, the foreigners being much more scrupulous. His Grace said finally, that the present state of the cattle plague would necessitate some Parliamentary legislation in the ensuing Session; but that, meanwhile, the Lords of the Privy Council would be glad to receive intimation of any infractions of Orders, and also such further suggestions as agricultural societies could furnish, those bodies bearing in mind how much they could aid the Government by enforcing in their own localities those regulations which had been framed for the benefit of all parties.

FOWLER AND CO. IN NORFOLK.

WE beg to forward you the result of a trial of steam cultivation on the light land of Norfolk. This trial was undertaken to show the farmers of light land that steam could compete with horse power under any circumstances whatever; our calculation being that by displacing the same number of horses on a farm of light land, the pecuniary result would be equally as favourable as on a strong land farm. This can only be done by widening the implement to such a degree as to make the draught equal to that required to pull it in heavier soils, so that the full power of the engine may be employed. If this be done, and it is quite practicable to do it, the acreage of land ploughed will be increased in proportion to the force required. It will, moreover, be found that light soils can be ploughed at a less cost per cwt. draught, than heavy land; and for this reason, that the machine is often able to work when it would be impossible on heavier soils, so that there is a saving both in time and wages, with less risk of breakage to the machine itself. Mr. Read's letter only gives a summary of the work done on his own farm, but the subjoined report, of which the details are taken from the diary of the manager of the tackle, will no doubt be corroborated by the other gentlemen on whose farms the machine was afterwards employed. In reading this report it will be observed that we do not take a given number of hours, but the total time for which the men were paid. Satisfactory as these experiments have proved, we are more than ever convinced that the implement used was not wide enough, and that the machine has not yet got over the amount of work it is capable of doing. The fairest way of ascertaining the value of cultivation done by steam power would be to find the exact strain on the rope, and pay for the work done according to the horse power per acre used. Farmers would then be much better able to judge of the real value of steam in the cultivation of the soil. *John Fowler & Co.*

MR. C. S. READ'S LETTER.

For some time past, whenever I have met Mr. Greig, he has endeavoured by able and ingenious arguments to convince me that the cultivation of our light soils in Norfolk could be performed at a cheaper rate by steam power than by horses. I was always ready to admit that steam cultivation was much better, and in the end much cheaper, on stiff clays; but I much questioned if shallow ploughing and grubbing by steam would answer on light land. I suggested to Mr. Greig that the best way of converting me from what he considered my erroneous opinion, was to give us in Norfolk a practical illustration of the amount of work steam power could accomplish. To this he readily agreed, and proposed to send down one of Fowler's double engine sets of tackle, consisting of two 10-horse power winding engines, which should work in various parts of Norfolk, leaving me to fix the value of the cultivation on my farm.

Our harvest in Norfolk was late and lingering; so that it was not until the evening of the 25th of September that the steam tackle arrived at Honningham. The following morning the engines steamed into a long 20-acre field of Wheat stubble, which, as it proved somewhat too lengthy for the wire-rope, was divided into two portions. The field I wished to have grubbed seven inches deep, and the work was performed to my entire satisfaction. Considering that the tackle had not previously been at work, it was wonderful how soon all was set in order, and how very little time was lost in adjusting the implement. A few stoppages, of course, occurred at first; but after the tackle was fairly started, there was no further hindrance, and the work was finished in about 12 hours.

The next field was an Oat stubble of heavy land, and very full of long Crab Grass. The weather was unfavourable, as it rained more or less all day. Now and then the scarifier showed signs of choking up from the accumulation of Crab Grass around the tines; but not above two or three stoppages occurred. This field also had to be done in two divisions; 20 acres were well grubbed at a depth of 8 inches. The enclosure contained a large clay pit and some stacks, which together with the headlands, occupied nearly 3 acres. The tackle was 14 hours in this field. Another field of Wheat stubble (14 acres) was capitally cultivated at a depth of 9 inches, the time occupied being nearly six hours. This was one of the best and quickest bits of steam grubbing I ever saw. The tackle was now removed into a large Barley stubble of 54 acres, which I wanted ploughed 8 inches deep; 50 acres were nicely ploughed in 41 hours, and the field now looks very well, without a furrow or seam in it.

The five-furrow digger was then set to work, and it tore up and tossed about 9 inches of stiffish clay soil over a surface of 9½ acres in 12½ hours.

I purposely left three acres of this field to test subsoiling with horses against the steam culture. All who witnessed the digging considered it the perfection of steam cultivation, and agreed that the land was left in the best possible condition for either dry or wet weather.

The three-furrow plough was now put to work on one of the stiffest fields I have on my farm. The plough turned over a 12-inch furrow regularly, leaving it rather too much on its edge, and consequently it did not bring so much dead soil to the surface as I expected. Wishing to try the effect of deep cultivation for Wheat, I pressed the land with a two-horse Cambridge roller, applied a dressing of farmyard manure and Rape-cake, and drilled it with seven pecks of Essex Wheat per acre. I shall be interested to watch the growth and yield of the crop on this field.

The digging-breasts were then put on the three-furrow plough, and set to work in a 22-acre field intended for Mangels in the spring. It rove up 12 inches of the stiff soil, and left the surface a sea of great clods, which is surely a capital preparation for any fallow on such land.

The last performance of the steam tackle on my farm was digging a small bit of Bean stubble, which will be planted next year with Barley. It remained last winter, and has not yet recovered from the treading and puddling it then received. This field had a singularly stiff subsoil, and was hard work for the engines to turn up at a depth of 10 inches. I am more than satisfied with all the work that was done. I prefer the digger for heavy land, and the grubber for lighter soils. Ploughing is the least perfect operation, as there is some difficulty without skimming in burying all the stubble, manure, and Grass which may be on the surface, or make neat work when the plough is driven at a rapid speed. The large cultivator leaves the land well broken, and in a good state for the eradication of Couch Grass and other weeds; and it is only when the engines are driven at different speeds that any ridging takes place.

Well, now to the question of cost. I have made the following calculation of what I ought to pay for such tillage, namely:—

	5 in.	6 in.	7 in.	8 in.	9 in.	10 in.	12 in.
Cultivating,	4s.	5s.	6s.	7s.	8s.	9s.	10s.

Ploughing, from 7s. 6d. to 12s.

Digging, from 9s. to 12s.

And I have not changed it, although I am sure that it is most unfair when applied to the deep cultivation of stiff lands. I am equally certain that the shallow work on medium soils can be done easily by farm horses at the price I have named, but cultivating clays a foot deep is something horses can rarely do, and therefore comparisons are less satisfactory and more difficult. I tried what it would cost to work the corners of those stiff fields a foot deep by manual labour, and found, to my disgust, that it came to 6*d.* per rod, or over 4*l.* per acre.

This is my account with Messrs. Fowler & Co.:—

Depth.	Acres.	Rate.	Total Price.
CULTIVATING—		s. d.	£ s. d.
7 inches	18	6 0	5 8 0
8 ,, ...	20	7 0	7 0 0
9 ,, ...	13	8 0	5 4 0
PLOUGHING—			
8 inches	50	7 6	18 15 0
12 ,, ...	9½	12 0	5 14 0
DIGGING—			
9 inches	9½	9 0	4 5 6
12 ,, ...	20½	12 0	12 3 0
12½ ,, ...	6½	10 0	3 5 0
			£61 14 6

The actual time consumed in cultivating the 147 acres of land was 133¼ hours; and including removals, breakages, and stoppages, which are given below, the total time was 165 hours, or somewhere about 14 good working days.

List of time occupied in removals, stoppages, &c.:—

Twelve removals	6 hours.
Meal times	14 ,,
Mould-board broken against a tree	1 ,,
Altering ploughs for digging	2 ,,
One skife and two digging breasts broken by tree }	1 ,,
Waiting for coal and water	13 ,,
Waiting for deep plough and cleaning boilers ..	6 ,,
	31½ hours.

It may be remarked that the headlands are unusually large, but much of the land I had to square up with horses had been partially ploughed by steam power; and though the fields were a good size and fairly square, almost all of them have a tree or two standing in them as well as a good-sized clay pit.

Mr. Greig assures me that he is perfectly satisfied with my prices for the light land, and is more than ever certain, from the result of this trial, that steam will answer well in Norfolk.

I cheerfully admit that I am a convert to the belief that, where anything like constant work is to be had, a company or an individual who would let out steam machinery of this description might secure a very decent living, and make a good return for the capital invested in the purchase of the tackle.

During the time Mr. Fowler's steam tackle was at Honningham it did some very good work for my neighbour, Mr. Stephen Hipkin. It ploughed a field of Pea stubble 8 inches deep, and dug another enclosure at a depth of 11 inches, and made most beautiful work. The time occupied in ploughing these two fields of 16 and 10 acres each was 23 hours.

Mr. Hipkin expresses himself perfectly satisfied with the steam cultivation, and is delighted at the state in which his fallow field is left to receive the full benefit of the "wets and drys" and the frost and snow of winter. From Honningham the steam tackle retraced its steps to Norwich, and in the immediate neighbourhood of that city, at Crown Point, it ploughed over 200 acres of the park that had been laid down to Grass some three or four years since, and which will long be remembered as the scene of the wholesale ravages of the plague last year amongst the cattle and sheep. As the land was intended for a Wheat crop, it was the desire of the tenant, Mr. Woolsey, to have the ley furrow turned over as flatly as possible. I confess I was rather sceptical as to the favourable result of this experiment. I questioned if any advantage could arise from the application of so ponderous a power to such shallow ploughing, and I also feared that the operation would not be performed with that evenness and neatness which are necessary in preparing ley land for Wheat. That my fears were groundless, and that the experiment was a complete success, the following letter from Mr. Woolsey will at once testify:—

"Kirby Bedon, Norwich, Nov. 28, 1866.

"DEAR SIR,—Having been asked how Mr. Fowler's steam plough did the work on the Crown Point Farm, I beg to state I ploughed 200 acres with it, which it did in a most satisfactory manner. The Grass, in some places nearly 12 inches long, it turned in very well about 4 inches deep, and although the land was hilly, it ploughed it all an uniform depth.—Yours sincerely,

"J. W. WOOLSEY."

Mr. Dodd, who also farms upon the Crown Point estate, had 20 acres of land cultivated 8 inches deep in eight hours. The quality of the work, and the time occupied in performing it, are spoken of in terms of high approval by Mr. Dodd. A removal of the tackle to a distance of 22 miles was next determined on, as it was considered desirable to exhibit the superiority of steam cultivation in all parts of the county. On the Dillington Hall Farm 50 acres of land were cultivated 10 inches deep. This is what Mr. Everington himself says of it:—

"With regard to the steam cultivation, I am perfectly satisfied at the way in which the work was executed, the only fault being that I ought to have had it directly after harvest. Putting all the expenses together, the work of cultivating 10 inches deep does not cost quite 10*s.* per acre, which, if not cheaper, is certainly much more effectually done than it could be performed by horses.

"Dillington Hall." "W. D. EVERINGTON."

The next journey was to Castle Acre, that classic ground of Norfolk agriculture, which will ever be associated with the name of our champion farmer, Jno. Hudson. It would be presumption on my part to add any remarks on what Fowler's plough did at

Castle Acre, and I therefore bring these rambling notes to a conclusion by appending the following letter from Mr. Hudson. CLARE SEWELL READ.

"Castle Acre Lodge, Brandon, Dec. 3, 1866.

"My dear Sir,—You ask my opinion of Fowler's steam plough and cultivator. There can be but one opinion as to the value of such an implement to the farmer. The chief thing against it is the great outlay, 1200*l.* for two engines and a four-furrow plough seems a large sum. Yet for a young man beginning business on a large farm I think it would pay, as the saving in the purchase of horses and horse-keeping would be great. I think upon a farm that requires 30 horses, 20 might do where the steam cultivator is always at hand; and the threshing might be done by one of the engines; besides, a good deal of money might be earned by letting it out to work on other farms in the neighbourhood.

"It was at work four and a half days on my farm here in

Particulars of Work, from September 25th to the 14th November, 1866:—

NAME AND ADDRESS OF EMPLOYER.	Description of Work.	Removals. Number of Removals.	Removals. Time Occupied.	Removals. Distance.	Time not at Work. Meal Times.	Time not at Work. Breakages.	Time not at Work. Wet Weather.	Removals from Farm to Farm. Time.	Removals from Farm to Farm. Miles.	Time actually at Work.	Acres Ploughed.	Depth in Inches.	Description of Soil.
C. S. Read, Esq., M.P., Honningham	Cultivating Ploughing Digging	12	6 hours	..	14 hours	6½ hours	Cleaning Boiler, &c., 6 hours	5 hours	8	hours 133½	52 50 46½	7 8 10 to 12	Light .. Strong
S. Hipkin, Esq., Honningham	Ploughing Digging	2	1 ,,	..	2 ,,	..	..	6 hours	10	23	16 16	8 11	.. ..
T. W. Woolsey, Esq., Kirby Bedon	Ploughing	8	3 ,,	..	13 ,,	3 ,,	Waiting for Coal & Water 4 hours	..	..	120	200	5	Light
R. T. Dodd, Esq., Whittingham	Cultivating	1	½ ,,	..	1 ,,	..	..	1 day	22	8	20	8	..
W. D. Everington, Esq., Dillington Hall	Cultivating	3	1 ,,	..	8 ,,	1 day	..	1 day	12	27	50	9	Strong
J. Hudson, Esq., Castle Acre, Brandon	Cultivating Ploughing	4	2½ ,,	..	5 ,,	..	1½ hours	..	..	42½	40 50	9 6	Medium
	..	30	14 ,,	..	38 ,,	18½ hours	11½ hours	31 hours	52	354	514½	..	..

NOTE.—This does not include the 20 acres done for Mr. Hudson, Jun. It will be seen from this Table that there were 514½ acres cultivated in 354½ hours.

November, and ploughed 30 acres of Mangel land, which I have sown with Wheat. It smashed up 40 acres of Wheat stubble 6 inches deep with the cultivator. This and the digging I consider the best part of it.

"The digger turned up more than 2 acres of strong land on my son's farm, the best I ever saw done, 12 inches deep, and with ease.

"You may make what use you like of this.

"JOHN HUDSON."

VILLAGE LECTURE.

[The following are fragments of a winter's evening lecture on "Natural Analogies," read nine years ago in a village lecture room.]

IF a person could by any conceivable means have thrown into his mind at once a statement of all the facts which have been ever witnessed by the senses or the consciousness of man—a knowledge of all the events recorded in his memory or in history—I suppose he would be as much bewildered as by chaos itself with what would seem to him an almost infinite and incoherent mass of incongruities. And yet it cannot be denied that the resemblances among the events of history and the facts of nature are much more striking than their differences. The lapse of a little time for thought and observation would suffice to prove it. Day unto day would not utter jargon, it would utter *speech*. Year after year would present a tolerably uniform recurrence of the very same succession which the first had witnessed. One human lifetime with another would for the most part seem a record of very similar series of events; and historians tell us that wider cycles still have been observed in the records of empires and of nations. And it is not merely in the case of animated or of human nature that we witness the continual succession of daily, yearly, periodical series resembling one another. If we could follow particles of matter in their courses as we can the masses of astronomy, we should see them travelling round and round upon the steps of a continually recurring series—moving in an orbit, as it were, with as much apparent obedience to rule as the sun or moon exhibits in its course. Just "as the sun ariseth and the sun goeth down, and hasteth to his place where he arose; as the wind returneth according to his circuits; the rivers run into the sea, yet the sea is not full, for unto the place whence the rivers come, thither they return again; and the thing that hath been, it is that which shall be, and that which is done is that which shall be done." Take Solomon's own illustration. That particle of water which helps to swell the rivulet and hastens to the sea has been there before; it was drawn up from the ocean then—it has glittered in the dewdrop—it has helped to shroud the hills in mist—it has shone resplendent in the rainbow, and has been drunk in by the thirsty ground, and it will go through the same steps of all this course again. That particle of carbon which I swallow in my food to feed the flame in the furnace of my lungs by which the warmth of my body is maintained; it will there unite with and, as it were, destroy a particle of oxygen in the air which I inspire. The gas which I breathe out at the moment of expiration will find its way among the leaves of plants and trees, and being absorbed by them will again be decomposed in the light of the sun, the oxygen will regain its life and freedom, as it were, once more, and the carbon will go to the growth of food, again to feed my body—and so it will repeat its course continually. The fertile particles of the soil are built up in Wheat and Grass and other crops; these feed man and beast, and thence again return to fertilise the earth. The periods of all these orbits may be unknown, but they are real and regular successions nevertheless; and the length of time involved in their completion does not spoil the beauty of that regularity into which they all resolve themselves. Indeed the most absolute exactness of recurrence is to be observed when the cycle of events is longest, for astronomers inform us that there are periods following one another in the movements of the heavenly bodies, of exactly similar duration, which tax our powers even to imagine, during which the very same commencement anticipates the very same succession, and ends with the very same conclusion, only to begin again. The confusion into which the mind was thrown by the sudden accession of all the knowledge of everything external to itself was not, therefore, in the objects then suddenly made known, for now not only does that which was bewildering and seemed chaotic exhibit itself in the transparent beauty of perfect guidance and arrangement when looked at from the point of the present only, but the constancy of the occurrences we have noticed enables us even to anticipate the future. We reason from analogy. That which is done it is that which shall be done. We, indeed, have had a promise handed down to us that seed-time and harvest shall not fail us, but mankind would be never heard of such a promise anticipate the recurrence of those periods as confidently as ourselves. They are guided by the analogies into which their past experience has shaped itself unconsciously.

And it is not only by the ease of time that the mind is able to detect resemblances and observe analogies where everything at first appeared confused. Take those facts only which happen together at any one moment, and they shall be found upon examination as much within the grasp of one hand, as much under the sovereignty of one rule, as those which follow one another. Things, indeed, apparently the most distinct thus prove after all to be related. For instance, the fall of an Apple, the flight of a meteor, the revolution of the moon around our earth, or of a comet round the sun, are all of one kind. Thus, too, the polarity of the compass, the brilliancy of the northern lights, the telegraphic message, and the lightning's flash, may be said to have a common cause. And thus, too, again, there is an obvious thread connecting all the facts even of life and death, of growth and decay. We speak of the several sciences of chemistry and mineralogy, of geology and astronomy, of botany and zoology, and so on. These, however, are but terms under which the multifarious facts of nature naturally arrange themselves, according to those resemblances among them on which (notwithstanding their variety) I am now insisting. We speak of the several kingdoms of Nature—the animal, vegetable, and mineral kingdoms—and thus our very words betray our consciousness that there is underlying, and in spite of all that multitudinous confusing variety and change observable in Nature, the guidance and the rule of superintending, regulating Law—indeed, that very word is the commonest in the vocabulary of science. All these terms, then, do but intimate the resemblances existing among events and facts and the classification of them which therefore is possible. And these resemblances justify the argument founded on analogy. We reason from the knowledge present to the unknown future, because of our reasonable faith in that consistency of procedure which we have witnessed in the past. We reason from the known to the unknown, even of things contemporaneous with us, for the plan of this great Building, which contains them all, proves to us as we have traversed it) to be so simple and consistent that it furnishes an easy and sufficient clue and key even to the apartments which we have not entered.

Well, then, my object is to gather together and in some sort describe instances in which analogy has been used on the one side to infer from what we know of the present that which is still unknown of things about us now, and on the other, to infer from that which we know of the past as well as of the present some particulars of that future which is necessarily still hidden from us. There are two principal instances of analogical reasoning, one of inhabiting those classes respectively, of which I wish more particularly to direct such attention as may be given in a single lecture. The first instance, the analogics marshalled by Sir David Brewster, Dr. Whewell, and others, which bear upon the question, whether or not the other planets of our solar system are inhabited like our second kingdom, comprises the analogies brought by Mr. Isaac Taylor to bear on the physical theory of another world. But before referring to these two series of arguments, let me say another word or two on the uses and abuses of analogy more generally as influencing human life.

Among its uses may, I think, be reckoned that pleasure which its contemplation gives us, and which is one of the chief incentives to the pursuit of knowledge. Another use is the clue with which it frequently provides us in that pursuit, and its grandest use of all is that by which we gather from it to the existence and the government of God. That it is also liable to abuse under each of these divisions is capable of easy illustration. In the first place—of the pleasures which we feel in contemplating natural resemblances and analogies—whatever be its cause, fanciful or real, I leave it to you to say. Who can doubt, for instance, the enjoyment felt by Bishop Butler when comparing the Book of Nature with the Book of Revelation—Providence with Christianity—and finding how fully and completely the analogies presented by the former corresponded with those presented by the latter, even to minutiæ in the latter, on account of which exception to it had been taken. For the resemblances I have referred to exist not only among individual facts, leading to their classifications under separate sciences; but between the classes or sciences themselves, even when so wide apart as the description of facts in different books, or even being different worlds. The Book of Nature and the Book of Revelation—the world of matter and the world of mind—are full of such resemblances, proving thus their common origin—resemblances so entire, indeed, that oftentimes the same language will apply to both, teaching different lessons according to the sense in which it is taken. There is a fine illustration of this in a sentiment attributed to Coleridge, and I quote it because it will give that pleasure which is conferred by analogical illustration, to which I am now referring. He said "that as astronomical observations of that trustworthy terrestrial charts can be constructed," words which, applying them to the Book of Nature, intimate the simple connection existing between astronomy and geography. But in their reference to the Book of Revelation possessing a much nobler meaning, namely, that in the journey of life, as in journeys to and fro upon the earth, we are dependent on higher influences for guidance than those which earth can furnish.

And as comparing the world of matter with the world of mind, let me quote the beautiful simile adopted by Mr. Hoskyns when endeavouring to show how existing human knowledge indicated both the scope and sketch of its own futurity—he compared it all to those few and scanty determinations, the astronomer makes with respect to a comet in the inner curve of its orbit, which are all that generally he can obtain, but which yet suffice to indicate to him with certainty both the consistent pathway and the mighty stretch of its onward outward course almost beyond the reach of thought. But, indeed, as Mr. Hoskyns adds on this very subject, the relation between the world of mind and the world of matter, we do not sufficiently consider that He who made the mind of man addresses it continually without the aid of language—that the whole creation is His book of symbols, replete with analogies which penetrate through the bodily to that inward vision which sees more in earth than its adaptation to our mere bodily and daily need.

[Then followed a further discussion of the subject under the two first heads into which it had been divided, referring especially to the history of Astronomy, and Kepler's part in it, and to the works of Isaac Taylor, Sir David Brewster, and Dr. Whewell as affording the noblest specimens of reasonings from analogy.]

It only remains for me in conclusion to make one remark on that nobler use than even as a guide to unknown truth to which analogy may be put. I refer to the testimony which it gives to the existence and government of God. If Sir J. Herschel saw in that identity of atoms which is taught by chemistry the same sort of proof that the particles of matter are under the guidance and the rule of an Almighty will which is given of the discipline and obedience of a regiment by the exact resemblance in the appearance and behaviour of its individual soldiers, surely an argument of even higher value for the existence of one mind and will in the government of the world may be gathered from the universal prevalence of resemblances and analogies amongst truths of Nature. The spontaneous readiness of the mind to admit the reasonableness of an argument founded on analogy is indeed an instinctive homage paid to that unity of plan which indicates the government of one God. And if in this aspect of natural analogies, like every other, they are liable to abuse, it is not that we can err in our confidence in the lesson which we thus derive. The abuse to which I refer lies quite the other way. It consists in attributing to law and Nature that which can only be properly attributed to God. How often do we not hear facts and circumstances attributed to the laws of Nature as if Nature were a deity, or her so-called laws anything but mere terms to express the observed resemblance among the individual facts. The facts remain individual facts notwithstanding human classification of them, and the cause of each lies simply in the will of God. There is (no doubt) abundant evidence of law in everything around us, but let us speak of it as it is, not of law as if it were God, as if it were the giver of them. I remember, when receiving first lessons in Botany, I used to think that the words which named the different classes and genera in which plants are capable of being arranged, had a sort of parental relationship to all the plants contained in each. Take the genus of Violets for example—that Viola was the name of the original from which Viola odorata, the sweet Violet; V. canina, the dog Violet; V. tricolor, the Pansy, and so on, had descended. The fact, of course, however, is that Viola is a mere word and nothing else; it is a word used as a common name to indicate a number of plants between which there are certain observed resemblances, but there is no more blood relationship, so to speak, between Viola canina and V. odorata—than between a Primrose and a Fir tree. They are as entirely separate and distinct creations as a Thistle and a Fig tree. All that we can say of Viola as indicating these resemblances is that its use is a human invention for assisting the memory and calling attention to those resemblances. It, and other means of a similar kind, such as the use of classes, orders, kingdom, science, law, are mere human contrivances, founded of course on observed natural resemblances, for arranging the facts of Nature in the mind. The facts are separate and individual facts, notwithstanding their obedience to this classification. I believe indeed it may be said as truth that every separate item in the sum total of natural truth, and as an extreme illustration of what I mean, let me say, every new and separate position of a body in motion, as of an arrow in its flight, as a planet in its orbit, is an immediate and direct expression of God's will and power. That it is all capable of description by means of class, analogy, and law is simply in accordance with Kepler's noble faith that the unity and harmony of the Divine Nature are to be seen reflected and illustrated in the works of God. While then we enjoy the analogies and the possibility of this classification as the very groundwork of natural theology, they need not and they do not interfere with our entire belief in the existence of a particular Providence. *J. C. M.*

STEAM CULTIVATION.

THE following lecture was delivered by Mr. J. K. Fowler, of the Prebendal Farms, Aylesbury, at last Wednesday's meeting (December 19) of the Discussion Club connected with the Royal and Central Bucks Agricultural Association.

IT was wisely determined last year that the Royal and Central Bucks Agricultural Society should set apart certain days for discussion on matters relating to agriculture. We therefore upon several occasions had papers read of considerable importance to breeders and rearers of stock, and on the whole the Society had cause to congratulate itself on its first annual results. This year the season of discussion very appropriately commenced by the Ven. the Archdeacon reading a most interesting paper on the geological formation of the County of Bucks, and considerable discussion took place, and many points of importance were elicited relative to the products of various parts of the county. When it was announced that the Ven. Archdeacon intended to open the ball—I mean the sphere or ball called mother earth—I thought the next discussion might be on the best means of rendering the surface of that ball the most profitable as a commercial speculation, and I therefore concluded that no better means could be adopted than to read a paper, and raise a discussion on that most important of all subjects relating to the profitable culture of the land, I mean Steam Cultivation. Now, you must all allow that this great country could not have made those immense strides in advance of

other nations in manufactures and commerce, and also navigation, if it had not been for the adaptation of steam to manufacturing and other purposes, and I want to know why agriculture should be exempt from that great advance more than the other interests of the kingdom. I am not at this time about to inflict on you a long paper upon the mighty influences of steam as a civilising power, but I shall simply allude to it as bearing on the study and science of agriculture. I shall, therefore, pass over the enormous results of steam-power in providing food for the people—first, by threshing the corn, then in grinding it for the consumption of the inhabitants of these islands. I shall leave also for further consideration the uses of steam in the various meat-producing systems of our country; such as pulping and cutting roots, and cutting chaff, and steaming various condiments for the uses of our cattle both in winter and in summer; and although these subjects are of immense importance in an economic point of view, I shall confine myself to the effects of the use of steam in cultivation.

It may not be generally known that the attempt to cultivate land by steam has been suggested for more than two centuries. From a most interesting paper read by Mr. James Howard at the Farmers' Club in March, 1862, I learn that in 1618 one David Ramsey, and a Thomas Wildgoose obtained a patent for "News, apte, and compendious forms or kindes of engines or instrumentes and other profitable invencons, wayes, and meanes, for the good of our Commonwealth, as well as to ploughe grounde without horses or oxen, and to enrich or make better and more fertill, as well barren peate, salte, and sea sande, as inland and upland grounde, within our kingdomes of England and Ireland, and our Domvnyon of Wales; as alsoe . . . . to make boates for the carryage of burthens and passengers runn vpon the water as swifte in calmes, and more saff in stormes, than boates full sayled in greate wynes." This same genius, David Ramsey, took out other patents in 1630 and 1631, embracing the same objects; and from the titles of his patents, it is probable that he purposed not only to plough, but also to deposit manure and seed, by steam power. What ever may now be thought of steam machine, the wags of those days doubtless indulged in facetious remarks at the ominous fact that such an extravagan' scheme as that of ploughing without horses, and by some mysterious agency, should be associated with a name so near to that of "Wildgoose." By the bye, a very old family in Aylesbury still bears the name of "Wilgoss," and it is doubtless the same name of Wildgoose gradually corrupted. In the same year that Ramsey took out his last patent, a William Parham and others had a patent granted for a "certaine newe and readie way for the good of our Commonwealth, for the earinge and ploughinge of land of what kinde soever, without the vse or helpe of horses or oxen, by meanes of an engine, by them newly invented and framed, and not formerly practized or vsed within our Kingdome of England or Dominion of Wales, by the labour and strength of two men onlie to drive or enforce the saide engine, and of one other p'son to hould or guide the plowe or sullo've to be drawne with the same engine, whereby greate benefitt and comodytie may arise to our lovinge subiectes." About 40 years after Ramsey and Wildgoose, another genius arose, named Francis Moore, who took out no less than three patents, having for their object "the dispensing with animal power in tillage, navigation," &c. &c. Mr. Moore states "his machine to go without horses," is adapted not only to the traction of coaches, waggons, &c., but to ploughing, harrowing, and to every other branch of husbandry, as well as to "various branches of manufacture where horses are now employed." It is recorded in a periodical of that day, that Mr. Moore had such faith in his inventions, that he not only sold his own horses, but by his advice many of his friends imitated his example, fearing their value would be affected by the general introduction of his machine. About the same time (1770) another inventor appeared, a Mr. Richard L. Edgeworth (father of the celebrated Maria Edgeworth), who patented an engine with an "endless railway," almost identical with that patented by the late lamented Mr. Boydell. I will not burden you with a description of any more of the numerous schemes of the last, or the earlier ones of the present century, which, although perhaps amusing, would take up your time, without affording an adequate amount of information; but I will bring you down to 1810, in which year a Major Pratt obtained letters patent for a steam-ploughing apparatus. Numerous patents were taken out and attempts made to use steam for cultivating the land in the years 1832, 1834, 1836, 1837, 1843, and in 1849. In 1849, Mr. H. Hannam, of Burcote, near Abingdon, a well-known agriculturist, in connection with Messrs. Barrett & Exall, constructed an apparatus for steam ploughing which may be regarded as the first attempt to work ploughs or cultivators by the ordinary portable engine, and also to be the first attempt to plough the land by an engine stationed at one corner or outside the field. Again, although ropes were mentioned in some of the earlier specifications, we have no evidence that wire ropes were ever employed for steam ploughing until those supplied to Mr. Hannam by Messrs. Barrett & Exall. Still, steam culture had many difficulties and much obloquy to encounter, and in reference to this subject, I now again quote from Mr. Howard's paper:—"Political economists tell us that the 'machinery of a country will naturally correspond with its wants, and with the history and state of its people.' This is undoubtedly true, the schemes we have described having been invented before they were really wanted or before their need was felt. For instance, not longer ago than the Shrewsbury meeting of the Royal Agricultural Society of England in 1845, a model of Atzlar's American steam plough was exhibited in a room at Shrewsbury, and the town placarded informing the visitors of the fact, and yet no one went near except two Russians, who dropped in towards night to look at it."

However, jumping over a great gap of time, I shall now plunge *in medias res*, and say that in 1856, a shrewd, clever, practical Buckinghamshire farmer, "William Smith," of Woolston, put these crude theories into practice, and commenced really the cultivation of heavy clay land by steam power. Now gentlemen, I must at once say that one of the greatest mistakes that has been made has been in calling this system "steam ploughing." It is not, and it never was intended to be in any way ploughing. Mr. Smith, of Woolston, like many others, had observed that for many years past all our great agricultural machine makers had been inventing scarifiers, scufflers, grubbers, skim ploughs, to raise to the surface those curses of all strong land farmers—Couch Grass, Docks, and Thistles—so that the autumnal suns and the frosts of winter would kill them; but what was the process? What is the process now carried on? First the land is broken up by four or five great heavy horses, then it is, to use a country word, "thwarted" or crossed, and when that is done, all the above implements are put in requisition, to say nothing of my ancient friend that most elegant and easily moved implement, the drag harrow, to do what? Why, to effect that which Smith's steam cultivator does at its first operation, lay all the weeds on the surface. Now, this is no exaggeration. Mr. Smith saw he had a new power to use in the cultivation of the land; and he said we must have a new implement; henceforth the plough must go, and he then uttered this most truthful agricultural dogma, "The plough is the farmer's best filth planter." Any practical man must see at once that the first operation of a plough is to plant all the filth in the land, and that all succeeding operations are but the means of getting it again to the surface, that it may be more easily destroyed. I shall not enter into the *vexata quæstio* about priority of invention, or which is the best system to be adopted; it has been so constantly before the public, that I shall leave the agriculturists themselves to judge from the effects they see on land which has been under steam cultivation which plan they deem the best for their purpose; but in a paper of this description, some account should be given of the several systems now in use.

I think I may say there are three plans in general use which at present take the lead—Smith's, Fowler's, and Howard's. There are others of considerable merit, such as Savory's, Coleman's, &c.; but the above three are in full operation, and have each produced extraordinary results. The main features in these systems are—1st, Smith's is essentially a grubber or cultivator, and is worked by an ordinary stationary engine at any part of a field, generally placed as conveniently as possible for water, and then snatch-blocks or anchors are placed at different angles of the field, and a steel wire rope is passed round or across the field round these anchors, and is wound and unwound on two separate drums of a windlass placed near the engine and turned in the ordinary way by a strap round the driving wheels of both engine and windlass. The main difficulty Mr. Smith had to encounter was to know what to do with the slack rope, so as to pull the grubber back again after it had first crossed the field, and he at last succeeded in inventing a very simple plan, which he called a "turnbow," and on which he charged, I believe, a royalty of 20*l*. This plan of Smith's was called the roundabout system. Mr. Fowler's may be described as the direct system, as he places his engine, a very expensive one, and not an ordinary farm engine, on the headland of a field, and a travelling anchor on the opposite headland, a wire rope being attached to the plough, which is generally one of four or five furrows, and hangs on the balance principle. The rope passes round a most ingeniously constructed apparatus, called a clip-drum, affixed under the boiler of the engine, and winds up the rope, drawing the balance-plough after it; the furrow-plough, which has been up in the air as it comes to the engine, being on its return to the windlass on the opposite side of the field placed into work by a simple movement of the driver, and the furrow-plough, which has been in the ground, takes it place in the air back again; the windlass also, in a most singular manner, being attached to an anchor at one corner of the field, moves itself along simultaneously with the engine. Mr. Howard's plan is like Mr. Smith's, viz., the roundabout system, but he has a frame for his implement carrying four or five cutters, with points and shares both in front and behind, so that this peculiar cultivator simply is moved backwards and forwards across the field, without the necessity of using Mr. Smith's turnbow. Mr. Howard has made several most important improvements in his windlass, snatchblocks, and anchors; and the perfection to which he has brought the manufacture of the steel wire rope has been to a great extent the cause of the successful adaptation of steam to the cultivation of the land. Amongst others is that of a steam-engine with the boiler placed transverse or across the carriage, which enables the engine to travel up and down hills with great facility. I shall only say that it seems to me one of the great advantages of Smith's and Howard's plans over Fowler's is, that it matters not if the field be triangular, five-cornered, or ever so oddly shaped, or whether it be up hill, down hill, or with high ridges across the field, this roundabout system accomplishes its work thoroughly, and by crossing every bit of the land can be moved; but with Fowler's system, moving on the headlands, the fields must be square, and the water-cart must follow the engine; and on strong clay lands, where steam cultivation is of such vast importance, the kreading and treading of the headlands is a matter of great detriment. The advantages which the supporters of Fowler's system claim are—that the traction being direct, the power of the engine to be exerted is less, and that only about one-half the rope is required to be used that the other two use. I have thus roughly and very imperfectly given you a slight sketch of each of the rival systems, and will now shortly give you two or three examples of each plan where put into practice in different parts of the country. I shall then conclude with my own practical results of this mighty power now put in operation for tilling land.

From a paper read before the Farmers' Club by Mr. Chalmers Morton, as far back as 1863, I learn that with Mr. Smith's apparatus—

"Messrs. Druce, of Eynsham, farm about 900 acres of arable land and 300 of pasture. They used to work 27 horses and 22 oxen; they now work the same land with 19 horses—8 horses and 22 oxen have been put down since the purchase of Smith's tackle three years ago. They get over about 700 acres of grubbing on the two farms each year. This spring, on the lighter farm of the two, Mr. Samuel Druce has grubbed about 70 acres worked one way, and has crossed the same 70 acres 6 and 7 inches deep in 20 days, including removals, five in number. Coals, 8 to 10 cwt. a day; oil, 1s. 6d.; wages, 15s. 2d.; water, nothing, being provided in every case by wells close by. The whole cost of wages and fuel is 23s. 8d. a day. The 140 acres done in 20 days were at the average rate of 7 acres a day, or about 3s. 6*d.* per acre."

Mr. Sawerby, of Aydeby, Grimsby, who has had Smith's tackle since September, 1861, has had grubbed 1300 acres with one rope, and is now using his second rope, which has done 1000 acres up to last winter, and has done 300 acres this spring. Last year he grubbed 1075 acres, 6 to 8 inches deep, in 116 days, having paid 178*l.* for wages, coals, and oil, and 10*l.* for repairs, or 2*s.* per acre. The beginning of his experience. This 1866 amounts to close on 3*s.* 6*d.* an acre over the whole. This spring 300 acres, that is 150 acres grubbed one way and crossed, have been done in 33 days, at a cost of 12*l.* 17*s.* 6*d.* for coals, and 2*l.* 10*s.* for oil, 55*l.* 5*s.* for wages, and 2*l.* for repairs —70*l.* in all, or about 4*s.* 8*d.* an acre."

This, I think, is conclusive enough of Smith's tackle —now I will take Mr. Howard's apparatus:—

"Mr. Pike, of Stevington, Bedford, also on a heavy soil, has grubbed 157 acres once, and 107 a second time—264 acres altogether—6 to 8 inches deep, in 42 days, or about 6 acres a day, spending about 25*l.* in coals, 1*l.* 15*s.* in oil, 30*l.* in wages, and very little on repairs—57*l.* in all, or very little more than 4*s.* an acre.

"Mr. Bray, of Pyrgo Farm, Romford, has grubbed 72 acres, and crossed them, about 9 inches deep, in 20 days. He has done it at a cost of 8*l.* 4*s.* 8*d.* in coal, 1*l.* in oil, 10*s.* in repairs, and 24*l.* in wages, making all but 4*s.* an acre, including fuel, renewals, &c., being at the rate of about 4*s.* 8*d.* an acre.

So much for Mr. Howard. Let us now take corresponding examples of Fowler's work.

"Mr. Fowler's apparatus is more costly than either Smith's or Howard's. A larger capital is invested, and it ought therefore, according to a very general rule, to accomplish more and cheaper work than its rivals. So costly is it, they say, that it is not preferred by tenant-farmers.

"Mr. S. Plummer, of Peasemore, who holds 750 acres of very stiff soil on the chalk near Newbury, bought Fowler's engine and tackle in 1860, costing 780*l.* He has bought 800, 500, 500, 200, and 500 yards of rope in all, at and since that date, for whole cost of repairs, including all the alterations, and the rope since purchased, he estimated to 220*l.* He had ploughed 675 acres, and grubbed 2,078 acres, up to the end of 1862. The depth of the work varied from six to nine inches. The filth of the soil could not be better; and the produce is much improved. The work of the tackle is now in good order, and the rope will last another year. Having last year by itself, 310 acres were ploughed, and 615 grubbed six to nine inches deep, in 118 days, averaging nearly eight acres a day, at a cost of 87*l.* in wages, 60*l.* in coal, 9*l.* in oil, and 98*l.* in repairs, including cost of rope and chains—or altogether, or 8*s.* per acre, one-third of which is ploughing; and the land, remember, this includes the cost of rope, which the other returns do not.

"Mr. Frampton, of Benson, near Wallingford, has ploughed 196 acres and grubbed 119 acres in 51 days, at a cost of 42*l.* for coals, 2*l.* 11*s.* for oil, 25*l.* 6*s.* 5*d.* for wages, and hardly any repairs—70*l.* in all, 4*s.* 6*d.* all round, or if 6*s.* is charged for ploughing, about 2*s.* 6*d.* for the grubbing."

So much for Mr. Fowler's apparatus. You will observe that in neither of the above statements is anything charged for interest of capital or wear and tear, except in Mr. Plummer's.* This, most persons think, should be charged; and in the statement I am about to make to you, you will find that I have added that important item to it. But I hope when gentlemen try to put these statements in comparison with the expense of horse labour, they won't forget wear and tear there, and that, on an average, a man is very lucky if his horses last four years each, which, at £50 per horse, and selling him then at £6, is 10 per cent. depreciation on each horse; to say nothing of repairs of plough tackle, harness, grease, oil, &c. Now, about five years ago, having seen and fully made up my mind that deep tillage was in future to be the sheet-anchor of good farming, and autumn cultivation to be the means of thorough cleansing the land, and having torn to pieces two teams of horses, and broken lots of harness and implements in this attempt, I went to see Mr. Smith's stiff land at Woolston smashed up, and I came away determined to use it as soon as I had an opportunity; but as my occupation at that time was only 200 acres, about 105 being arable, I did not feel justified in purchasing my own set of tackle, and I hired of Mr. Moores, whose implements and rope were very weak, and who broke up about 40 acres each year, at 2*l.* per acre twice over. The following year Mr. Lewis Taylor having purchased a new set of Messrs. Howard, I engaged him to break up all my land that required it at the same price, and he did most excellent work; this convinced me, from the splendid crops of the next year, how thoroughly efficacious the plan was. The next year I took another farm of the same size, and at once bought a set of Smith's tackle, and set to work in earnest, and the first year—that is in 1864—I smashed up 150 acres twice over, at a depth of from 8 to 9 inches. The land was generally very tenacious clay, and being a very dry hot year, it was as hard as iron, pieces of clay came up weighing some cwts., and the dry autumn killed nearly all the Couch-grass and weeds of the farm. The year 1865 I did the same, doing about the same amount of work, but this year (1866) much more easily, and breaking it up 1 inch deeper; and I will now give you the result of my operations as regards expenses. I must tell you that I hire my steam engine, not having as yet a threshing

* The subject is however referred to in the paper in question.

machine, and that is a heavy item. I will give it per diem:—

	£	s.	d.
Hire of engine—12 horse power	0	14	0
Engine-driver	0	5	0
Windlass man	0	2	6
Two anchor-men	0	4	6
Two lads with rope porters	0	2	0
Oil and waste	0	1	6
Screen cart, of coal	0	5	0
Beer 10 pints per day (plus malt tax) ..	0	1	8
Interest on cost of apparatus, 220*l*., and wear and tear, at 12½ per cent., on 40 days when used	0	14	6
Water cart, horse, and boy	0	4	0
	£2	12	2

Average 7 acres per day, or about 7*s.* 6*d.* per acre. Now, gentlemen, let me at once say that I consider price has nothing to do with the question, but I mention this, that there shall be nothing to carp at afterwards, that I was afraid to show my figures; the great point was that I had smashed up and made useful thousands of tons of soil that had never been disintegrated before, and never seen daylight. I had broken the pan of the earth that had been trodden and puddled for perhaps centuries by heavy horses year after year, and by means of this smashing up had rendered drainage on these stiff clays perfect. The water which formerly stood up the furrows and all over the land is now never seen; and above all, I had broken up all my land and completed everything in the way of autumn cultivation by the middle of October. I am convinced that subsoils are often poor because they are not properly cultivated, and they are in an unfit state to receive manure; but this system will alter all that, and these poor clay subsoils will be found rich in the best constituents of useful land. Now, gentlemen, I am prepared for the remarks that probably some persons this evening may mention. "What have you done this year?" I will tell you. This autumn I have done nothing; but I will answer this question by asking another—"What have you all been doing this autumn with your Bentall's, your scarifiers, your Coleman's, your Turner's, &c." I am aware that in the majority of cases, where our harvest was so late, it was not economical to bring it out; but I know that Mr. Smith of Woolston, Mr. Howard, and scores of others have done lots of work this autumn. But I will tell you what I did this spring: I had 32 acres of as stiff clay as any in this county, which had been underdrained, and only completed by the middle of April. It lay in such a rough state, and was so wet and soft, that it was almost impossible to put a horse upon it, and I fetched out my good friend Smith, of Woolston, and I smashed the whole of it up and made a good tilth in less than a week; I drilled it with Oats and Barley, and had as good a crop as could be seen in the neighbourhood, and I am fully confident, if I had not had steam, I should not have had a quarter of corn on those 32 acres. Now, gentlemen, I am sure I have tired your patience, but I hope the interest you all feel in this most important subject will be my apology for keeping you so long. All honour, then, to the back-ploughing Mr. Smith, of Woolston, for his indomitable pluck in bringing this system to perfection, and to those public and spirited men, Messrs. John Fowler and Howard, for the patience and skill with which they have succeeded in still farther working out this difficult problem.

The following discussion ensued:—

Mr. John Lucas said some of his land was in such a condition that a grubber could not do the work, and that this must be done by the plough, the land was so stiff and wet; even the plough would scarcely touch it with two men sitting on the end of it. He had some Clover ley, and this he ploughed, harrowed, and drilled by steam. Last year he ploughed Beans in by steam, and they were not the worst crop in the district, but the season was so wet that he could not have got them in had he not used steam. He then read a report of the result of a trial of steam cultivation on the light land of Norfolk, the result being that "the surest way of ascertaining the value of cultivation done by steam power would be to find the exact strain on the rope, and pay for the work done according to the horse-power per acre used."

Mr. Bartrop said he had seen Fowler's plough at work on some stiff loam in Middlesex, and he never saw work more beautifully done, and the cost was 8*s.* 6*d.* per acre. He had only once seen it in Surrey, where the fields were too small for its use, and it would not pay for the moving.

Mr. J. Taylor gave the results of steam culture on Sir Anthony de Rothschild's farm at Aston Clinton. They had been at work all the autumn, and found it impossible to use the cultivator in the way it was ordinarily used; and they were using the plough. He would say, "Use your cultivator to clean your land." But they would find that the cultivator would not supersede the plough; but let them turn over the land as deeply as possible, for the more they exposed the land to the atmosphere the better it would be. He agreed with Mr. Fowler that steam cultivation was not altogether a question of cost, and recommended to any steam user for the cultivation of the land, they would not get the result all at once; but he would be bound to say that they could trace for years afterwards land that had been treated by steam. He was pleased to find that Mr. Fowler did not omit to give honour to Mr. Smith, who had done more to develop steam cultivation than any other man. As to the difficulties of steam appliances he did not see any. Sir Anthony's farm was at the top of Aston Hill, and, notwithstanding the quality of the land, there was not a square pole that they could not get on with their implements, whether harrow, or plough, or cultivator. In one place, the engine was 150 feet higher than the implement at work, which he ascertained by the use of a spirit-level; and on one occasion, by an arrangement of rope they could do an acre an hour. During the short days of winter they worked 10 acres a day. But then it required only one operation, and it was with the view of sowing Oats in the spring. That was an example of what could be done by steam. They could not perform impossibilities by steam any more than by any other agency; but the fact was, the difficulty of breaking up the land was greatly reduced by the employment of steam; and he had no fear that farmers employing that agency would ever regret it. He hoped never to be obliged to farm otherwise. Indeed, if they got a steamer, there was other work on the farm that could be done by it, such as threshing and grinding. He dared venture to say he could find employment on a farm for a steam engine every day in the year. He was much amused by the remark of a pedlar who travelled past Aston for 20 years past, that he used to see the scythe flash through the corn, but since they had taken to the reaping machine it at all, but the crop were better, as was instanced by the fact that he grew 4 or 5 quarters of Barley per acre on the same land.

Mr. J. W. Griffen alluded to the comparison between steam and horse power. If he had a farm like Mr. Fowler's, he would not go to buy more powerful engines to do it easily, and wear one out and then sell it for 50*l.* He would not want to lose 50*l.* a year for four years by his horses, and then they to be useless at last. Mr. Fowler's calculation that a horse would only last four years was scarcely correct.

Mr. W. H. Read hoped to have heard an account of Mr. Fowler's experiments on land adjoining, where it had been manured in the same way and cultivated by horse power, and information on the crop afterwards produced on the two pieces. He would ask both Mr. Taylor and Mr. Fowler whether they did not think the better results of which they spoke were partly owing to the manuring and high dressing. That was the way to arrive at a correct idea of the relative worth of the two systems.

Mr. Taylor said of course they had used manure and dressing, but there was a great deal of the land on the Aston Hills that could not be ploughed by horses, which could scarcely drag themselves up some of the steep sides of the hills; and even if they could, a man could not hold the plough there and walk up. He had no hesitation in attributing by far the greatest part of the profit of the crops to the agency of steam. There was one view of steam-power that had not been alluded to—the moral effect. Of all the agencies of civilisation there was nothing like steam; and he was safe in saying that it made all connected with it civilised.

Mr. Read asked if Mr. Taylor could not plough the land with horses, on the hills, how did he manage to cart off the crop?

Mr. Taylor replied that wheels were very different from dragging a plough.

Mr. J. K. Fowler said it was not to be understood that after farmers adopted steam they should keep no horses on their farms; for there were certain operations in which horses would always be wanted. But it was not profitable to keep the horses still in the stable merely because they had a steam engine. Clover ley, for instance, was one of the things for which they might fairly be used for the turning over of the land. The entire superseding of horses by steam was never intended by Mr. Smith or any of the promoters of steam culture. Looking at the comparison in a pecuniary light, it is unnecessarily in favour of steam power here to say that it would not be impossible that all the horses in England could do what the steam engine could do. There was no invented implement that could go deep enough. There was no invented harness that could move the masses of earth that steam could; and the very machine, if there was one had been well limited, the cost of the steam engine should not be charged to steam ploughing alone, for other work could be done by steam. As to Mr. Griffin's remark about horses, he (Mr. Fowler) once used the same objection to Mr. Smith, but he replied that he was now grateful to any person if he could make a profit out of the work of his horses. His horses were intended to do the work of the farm, and not to be pampered and sold for a lot of money afterwards. Perhaps he had overstated the case in saying a horse would not last over four years. As to Mr. Rose's overweighted engines, he had not seen them, but he answer that by asking him how many times he—Mr. Rose—as a judge of that Society, had awarded him the silver cup for his steam cultivated crops? Mr. Meehi once said at a dinner that he never had seen furrows made by horse-power, deeper than a wheeless; and he afterwards took a wheeless and placed it in the furrow in the ploughing field; and in no case was the furrow deeper. He had heard of people ploughing by horse-power 10 inches deep; but he would be glad to go any distance to see it. What he would say was, "Let us stick to this principle:—whatever is to be obtained, be educated and have deep cultivation, especially on your heavy clay lands."

Mr. J. Crouch moved a vote of thanks to Mr. J. K. Fowler, which was seconded by Mr. Bartrop, and carried.

A similar compliment was paid to the Chairman, Colonel Caulfeild Pratt, on the motion of Dr. Hoosier, seconded by Mr. Richard Fowler, and the meeting ended.

Home Correspondence.

Beet Sugar.—As the subject of Beetroot sugar is at present attracting considerable attention in Natal, I do myself the pleasure of enclosing you herewith an extract, and copy of letter which we have received by the last mail from the General Manager of the Natal Land and Colonization Company at Durban, and we would feel obliged by your giving it publicity in the *Gardeners' Chronicle*. As this subject affects the interests of the Colony in a very important degree, hope that through the medium of your columns, some of your correspondents may be able to give us some information as to the date supplied by these letters from Natal. *G. E. Bretfit, Secretary*, 41, *Threadneedle Street, E.C.*

(Extract of a Letter from the Hon. T. Shepstone, President of the Maritzburg Agricultural Society, to the Editor of the *Maritzburg Times*, containing letters from Mr. Erich Landsberg, on the cultivation of the Mangel Wurzel, or Sugar Beetroot, in the "thorn" valley of the Mori River, Natal.)

"Pietermaritzburg, Oct. 3, 1866.

"Mr. Landsberg's plants are grown 18 inches apart in the rows; the rows themselves have the same distance between, and the plants have the advantage of irrigation.

"These particulars, added to the details given by Mr. Landsberg's letter, will enable any one to calculate for himself the produce of an acre, and he will find that it realises the prodigious quantity of 170 tons, taking the lowest weighing roots he mentions, as an average.

"Mr Landsberg is one of our oldest colonists, and, from my knowledge of his character, I rely implicitly on the truth and moderation of his statements.

"It must be borne in mind, that this experiment was but on a small scale, say four or five rows, 50 or 60 feet long, in a garden, but, as Mr. Landsberg says, 'without manure or great care, the soil just dig-ged with a spade.'

"Anyone acquainted with what colonists call the 'thorn' valleys of the Mori, and other of your rivers in Natal, will know that much of their soil is extremely fertile, arising probably from the various compounds of lime being mixed in such abundance with it. There are thousands of acres of land in those valleys belonging to public companies and private persons, which, although capable of so much, are not yielding one sixpence per annum to their owners.

"I believe the variety of Beetroot, experimented on by Mr. Landsberg, to be the yellow Silesian, which I find is ranked second as a sugar producing beet.

"The proportion of sugar it contains rea hes from 8 to 11 per cent., but the quantity actually produced in the manufactory is stated by authorities to be between 5 and 6 per cent. of the weight of the beet. Molasses is the name given to the uncrystallisable portion of the molasses, and from the refuse of this process a potash is produced averaging about one sixth of the weight of the sugar.

"It is also stated that the pulp of the root, after the sugar has been extracted, is an excellent food for all kinds of stock. It is suggested that the extensive breeding of pigs and fattening them on this substance for boiling them down and exporting lard oil, would be a lucrative addition to the cultivation of Beetroot and its manufacture, and form another valuable article of export from the inland districts. We are at present obliged to pay from 8*d.* to 10*d.* per gallon for this article imported, could we not export it profitably at 3*d.* or 4*d.*?

"If, after satisfying themselves of these results, and on a large scale, companies or individuals could be found willing and able to establish factories on such lands, for the manufacture of Beetroot sugar, what a great facility would be afforded to the settlement of immigrants in communities around them. Two or three hundred acres would be sufficient to produce a comfortable income, and afford employment to

"I am of course ignorant of the cost of such an establishment, but one source of economy would be found in the fact that where this root thrives best, water is available, not only for the purposes of irrigation, but as a motive power.

"Another consideration would be for the manufacture of the sugar to the port, but I have no doubt that the supply would grow with the actual demand, and if not, we shall be furnished with a better excuse than we have ever yet had for agitating for a railway.

"The foregoing relates exclusively to the especially fertile lands situated in the "thorn" valleys of our principal rivers, because I think no other will equal them in the production of the Beetroot. I am, however, satisfied from what I have seen and heard that this plant will yield a far heavier crop of food for stock than any other I know of, upon all ordinary well-cultivated l nd in the colony, and if this is the case, we have the means within our reach to an almost unlimited extent.

"I commend these results of Mr. Landsberg's experiments to the consideration of all engaged in the welfare and progress of the colony, to land companies, and private landholders especially; and as I believe that the success of stock farming depends more upon cultivation than upon extensive pasturage, I ask the serious attention of farmers to a product which seems to promise solution to questions which have hitherto puzzled the wisest among us.

"I have addressed this communication to you because you have devoted especial attention to the agricultural progress of the colony.

(Signed) "T. Shepstone."

(Copy of Letter from Mr. Erich Landsberg to the Honble. T. Shepstone, President of the Agricultural Society in Natal:—

"Erichstein, October 1, 1866.

"Dear Sir,—As I have seen in the *Natal Mercury* something about the cultivation of the Mangel Wurzel or Sugar Beetroot, I think it to be of great importance and benefit for the Colony. I have cultivated now for about three years, and it has grown remarkably well and quick, last year I had only a small quantity of seed, sown month of October, and transplanted month of November. After four months' growth I took them up by twos and threes, and as they were grown to such a large size, I was desirous to know the weight, and without picking them they were 2½ pounds each before 20, 7*l.* and 30 lb.

"Of the planting of 1864 I left three plants for raising seed, as they only give seed the second or third year. I expect they will give seed this year, and the weight at present is at least from 70 lb. to 80 lb. each.

"Of the three large plants standing from 1865, from the above mentioned, the weight thus second year about 50 lb. All those cultivated till now without manure or great care, the soil first digged with a spade. The colour of the root is yellow outside as gold, the inside not quite so dark; the stems standing out. The root yellow, gradually turning green to the top; the leaves green.

"The seed was sent to me by Mr. Daniel Clode from the Cape Colony, as the real Mangel Wurzel or Sugar Beetroot cultivated in Germany; but whether it is the same they have in Natal I cannot find out as I do not know. If I can give you any more information on that subject, I know I will do it with the greatest pleasure.

"I remain, &c.,

(Signed) "Erich Landsberg."

Societies.

Smithfield Club.—We continue our report of the Implement Department in the galleries:—

George Whitworth & Co. exhibit a large assortment of samples of various kinds of manures. Lanksworthy & Co., of Lowesmoor Ironworks, Worcester, ploughs and harrows, of Lowesmoor Ironworks, Worcester, ploughs and harrows, land presser, &c. Wm. Peirce, Hammersmith, London, cattle, sheep, and pig troughs, water cart and pumping apparatus, barn, stable, and garden machines, &c. Penny & Co., Lincoln, combined fan adjustable corn screens, malt and gravel screens, washing, wringing, and mangling machines.

Thos. Gibbs & Co., corner of Half Moon Street, London (Seedsmen to the Royal Agricultural Society), have a splendid collection of dried specimens of the permanent pasture and meadow Grasses, beautifully and instructively arranged, and also collections of specimens of English and foreign Wheats, Barleys, and Oats, &c., in the sheaf. In general, their samples of seed are the highest degree attractive, but by far too numerous to notice individually or even in groups. Their show of roots is also good. This being the first of the seed and root stands in the order of the Catalogue, we counted pass the continuing the pleasant and agreeable relief it affords to a successful stock and cattle breeder who has plodded through the previous stands of implements and machinery.

Mr. Unite, of Edgware Road, London, shows rick cloths, for sheep netting, and articles of this kind; and passing over for the continuing the next stand, we come to No. 43, the well-known firm of Frederick Edgington & Co., who, as usual, have a splendid assortment of rick cloths, tarpaulins, sheep netting, sacks, &c.

J. Wheeler & Son, Gloucester, exhibit a very superior collection of roots and seeds. Some of the former possess very high merit. The Messrs. Gibbs & Co., of 25 and 26, Down Street, Piccadilly, London, exhibit dried specimens, roots, and seeds in great variety. The Cabbages are splendid, Kohl Rabi also superior. As a whole, the collection possesses no ordinary merit.

Mr. R. W. Paget, of Myddelton Street, Clerkenwell, London, has a large show of et ceteras, amongst which we can only mention rick cloths, tarpaulins, horse covers, and articles of a kindred character. The next is a small assortment of seeds

and roots by Isaac Wright & Son, Great Bently, Colchester. Messrs. Rendall, Caldecott, & Co., have a capital stand illustrative of their trade as sellers of all kinds of agricultural seeds. Francis Morgan & Co., of Liverpool, exhibit fine specimens of their corn dressing and machine forage in the shape of models of iron buildings, barns, &c. Dowding & ——, a small collection of seeds and roots, with samples of manures. Mr. Barr & Sugden, of King Street, Covent Garden, London, exhibit seeds, roots, and a variety of flowering plants. Mr. Alwyne Wilkinson, of Pendlebury, a large and excellent assortment of dairy utensils, by far the numerous to refer separately, and too uniform to make a selection. Henry Allnutt, of the Agricultural Library, 286, Fleet Street, agricultural books. Arnold & Son, mechanical instruments, &c., and a large assortment. Stand No. 33, Mr. Angell, another Fleet Street publisher of agricultural and horticultural books.

The Atmospheric Room Co., London This popular Stand was literally crowded from morning to night. Quantities of cattle cakes were shown, and to the delight of visitors and purchasers one was every now and then shown in operation, with a liberal distribution of the contents; hence the press to get a tasting of half a cwt. cake at a knowing distance.

Mr. Herbert, of Gray's Inn Road, shows on Stand 75 an excellent assortment of weighing machines and articles of this kind; and Mr. Brown, Lambeth, steel-spring lever weighing machines; Mr. Courtney, of Caledonian Road, useful brushes for cleaning horses &c., and Creggan & Co., asphaltic roofing felt; and Mr. Jones, of Wellington Road, Stratford, rick cloths, sheep and rabbit netting, &c. The Messrs. Day, Son, & Hewitt, of Dorset Street, Baker Street, stock breeders' medicine chests, &c. Henry Denton, of St. Peter's Works, Wolverhampton, sets of chain harness; and The Driffield and East Riding (of Yorkshire) Pure Linseed Cake Company, cake feeding machine.

Alfred Hall, of Westbury Farm, Westbury, Wilts, exhibits a most superior collection of roots of almost incredible weights; the heaviest specimens possessing their natural purity of form. It is very rare that such a case, as in the present, too, as a whole, is at the same time very uniform; the Swedes vying with the Mangels, and so on, as to the normal purity of the different kinds. Altogether we had very great pleasure in the inspection of this Stand, which received general marks of public approbation.

On Stand 64, the Gutta Percha Company show an interesting variety of their manufactures; Mr. Hardon, of Manchester, artificial feeding cake, but not to high a price for its intrinsic dietetic value, we fear. Mr. Mason, Ipswich, shows boilers and steamers; Mr. Reynolds, of London, poultry fencing, game netting, &c. Holgate & Co., Dove Road, mill-boards; Spratt & Co., Holborn, London, dog biscuits and poultry meal; Tilbury & Co., brass manufacturers, Upper Marylebone Street, sets of gauge mountings, steam fittings, &c. Salkeld's, a corn grist mills and washing machines, mincing and sausage machines, wine and cider presses; and Mr. White, of the Borough, great variety of oil feeders. Mr. Rosher, of Blackfriars, paving bricks and glazed tiles for cattle houses, &c.; Robinson & Neave, Barton-on-Humber, pipes for sewerage and manure carts; Mr. Johnston, of Oxford Street, his familiar assortment of churns and butter prints. Mr. John Milton Jones, Gloucester, foot dressing and harness composition. F. C. Mathews, Son, & Co., Driffield, Yorkshire, artificial feeding cake.

The Messrs. Ransome & Sims show their combined reaper and mower known as "The Monitor;" an American invention and manufacture. It is reported to be a rival to another American made machine, viz. Wood's. As a reaper it is a band rake machine, and its peculiarities of mechanism demand an experimental investigation, which they will no doubt in due time receive.

Mr. Hodgson, of Louth, Lincolnshire, exhibits an assortment of hay forks, rakes, and other hand tools: and Mr. Hitchcock, of Southgate Tannery, Bury St. Edmunds, patent leather driving bands &c. Mr. Hall, Driffield, Yorkshire, washing, wringing, and mangling machines, lawn mowers, &c.; Hooper & Co., Covent Garden, seeds and roots; James Carter & Co., Holborn, exhibit dried specimens of seeds and roots of fair quality in the next Stand, Benjamin Edgington's well-known rick cloths. Edgington, of West Smithfield, also shows rick cloths and similar articles of this kind; and so does Mr. King, of Tooley Street; Mr. Humphries, of Walton on Thames, continuous action lifts and force pumps.

Mr. Skirving, of Liverpool, exhibits a good selection of his Swedes and very excellent Yellow Globe Mangels. As usual the Messrs. Sutton & Sons, Reading, Berks, have an extensive and fine display of dried specimens of the Natural Grasses, and also samples of seeds, and fine selections of roots. Cabbages of great weight are shown, also fine specimens of their improved Mangels, Swedes, Potatoes, &c.

Two large London firms S. Owen & Co., and the St. Pancras Iron Work Company, cover the next two stands, the former with hydraulic machinery and apparatus, and the latter with stable furniture, &c.

Messrs. J. & F. Hancock, Dudley, Worcester, exhibit their patent machines for the removal of the milk from butter. The washing of butter when newly churned to free it from the butter milk often does an immense amount of harm to the quality of the article, leaving in it much milk—which unfits either for immediate use or for salting. The object of Hancock's patent machine is thus manifest; for those who do not seen it, we may observe that its mode of action is to press the butter through a finely perforated medium, in threads as it were; these afterwards being compressed, and worked in the usual way with butter hands. Lendon, Penrith, Cumberland, long an exhibitor at these and other agricultural shows, exhibits several of his simple patent churns. Messrs. Nalder & Nalder, of Wantage, Berks, dressing machines and corn screens; and Ed. Weir, or Holborn, draining instruments, dairy utensils, and laundry machines for washing, wringing, and mangling. J. & A. Deane, London Bridge, a large assortment of saddlery, stable furniture, &c., and Mr Read, of Regent Circus, garden engines, and apparatus for watering and fire purposes, and also veterinary syringes, probangs, stomach pumps, &c. Bunnett & Co., Mill Street, Bought ridge reservoirs, corn bins, cattle troughs, &c. Cottam & Co., stable furniture and fittings—a large assortment. J. Coultas, Grantham, Lincolnshire, drills for corn and general purposes. Mr. Roby, Bury St. Edmund's, corn screens and dressing machines; and Mr. Downing, of Swan Lane, London, chaff and Turnip cutters, corn bruising mills, &c. Thos. Lloyd & Son, Bromley, Middlesex, London, sets of flour mills, corn crushers, and corn grinding meal mills. J. B. Brown & Co., Upper Thames Street, London, lawn mowers, of various sizes, washing and wringing machines, wire netting, &c. Tangye & Co., Whitmore Street, pumps and fire engines, garden engines, &c., and a large assortment. John G. Rollins, Old Swan Lane, London, a variety of American churns, weighing machines, pumps, &c. The Messrs. Pickslay, Barnes, & Co., Leigh, Lancashire, chaff cutters, Oat, Bean, and oil-cake mills, Turnip cutters, combined reaper and mower. Stacey & Sons, Uxbridge, chaff cutters, horse-power, and harrows. Thos. W. Wedlake, Hornchurch, Essex, portable engine, threshing machine, and various well known light gear. Hay making machines, &c. Mr. Warren, Maldon, chaff and Turnip cutters, corn, cake, and Bean mills. J. W. Beresford & Son, March, Cambridgeshire, horse hoes, washing, wringing, and mangling machines Messrs. Amies, Barford, & Co., Peterborough, grinding mills, steaming apparatus, field and garden rollers, &c. Smith & Grace, Thrapston, grist mills, root-pulping machines, and chaff cutters. Benjamin Kittmer, Fulston, Lincolnshire, combine hilling and dressing machine.

Multer & Wood, Upper Thames Street, London, reaping and mowing machines. These American-made machines are now so familiar to most readers, as to render it less necessary than a passing notice in a running report of this kind. In the United States they have made themselves equally well-known, so to speak, and we shall only further add, that they reflect no little credit on their enterprising manufacturer

Brigham & Bickerton, Bawtry, Yorkshire, show reaping and mowing machines; and S. & L. Ransome & Co., Essex Street, Strand, show a variety of differential pulleys, lifting jacks, with a long list of other articles too numerous to mention, among which are some good chests of tools.

Burgess & Key, of Newgate Street, London, have specimens of their reaping and mowing machines, including their well-known screw swathe delivery reaper. M'Cormick's sheaf-delivering reaper, also Grass mower and combined mower and reaper. M'Cormick's combined reel and rake has been before the public for more than two years, and its peculiar automatic mechanism is now generally familiar to farmers. From the successful position which this firm has long held in the hay and corn harvest, their mowers and reapers never fail to receive a corresponding fair share of criticism, and the more than usual amount of interest which has been excited at this meeting is overflowing with pro and con. opinions, which form, as already stated, a very interesting, and by no means uninstructive controversy, in which all parties have, if we can believe them, "the right sow by the tail." Some of the more recently introduced machines have either shielded the crank which actuates the knife, or else a highly set crank and angular connecting rod, so as to prevent it from choking. This is one of those attractive new things that catch the eye, and as the minutes of the Messrs. Burgess & Key work with a low-set unshielded crank, no less than seven have been discovered. Into this controversy we shall go more at length by-and-by if we have time and space; suffice it to say at present, that as the cranks in question have been tried without choking being experienced, or an objection raised, what becomes of the objections now raised on the contrary? We have not yet used any of these reapers, so that we cannot speak personally from experience, but we have not found any who ever raised the objection at issue, hence the conclusion; but of this more hereafter, when we turn to the consideration of the trials.

W. Sawney, Beverley, Yorkshire, exhibits corn dressing and screening machines, now for many years before the public, with some other things, and A. C. Bamlett exhibits his Grass mower and combined reaper and mower. Bury & Pollard, Southwark, show a great variety of machines, cranes, &c.; and W. Smith, of Kettering, Northamptonshire, his horse hoes, winnowing machines, &c. W. M. Nicholson, Trent Iron Works, Newark, Notts, haymaking machines, horse rakes, and a number of barn implements; and E. Page & Co., Bedford, draining pipe and tile machine, chaff cutters, ploughs, harrows, &c.

Samuelson & Co., of Banbury, exhibit an American Dorsey self-raking reaping machine, with improvements. Like Dorsey's machine of 1856, the rakes revolve on the top of a high driving shaft, and are actuated by cams and a guideway so constructed as to give to the rakes the required movements in rising and falling, and sweeping the cut corn horizontally from off the platform. The crank of the knife is well shielded, the length of the knife bar and stroke of the knife both double or long; the latter giving to it a considerable vibratory angle, with a corresponding loss of time in crossing centres and inequality of velocity and effective force of the knife. They also show a manual delivery reaper, a swathe delivery one, Grass mowers. The workmanship is first-rate, and we have great pleasure in leaving the firm show in the hay and corn harvest field with so much promise.

Mr. G. Ball, of Kilworth, Rugby, has a single entry in the Catalogue, of "Cart for Agricultural purposes." R. Mason, Alford, Lincolnshire, shows weighing machines of different kinds, &c. Joseph Sharp and Rose Company, Mark Lane, London (H. Ferrabee, agent), exhibit a large assortment of leather driving straps of different sizes and strength; and W. J. Irwin a very miscellaneous assortment, including atmospheric churns, garden implements, sausage and mincing machines. Richard Price & Co., Woolnough, Kingston-on-Thames, Surrey, show their drills, broad-cast sowers, and manure drills, &c. Thomas Treloar, Ludgate Hill, sheep-netting and stable brushes, &c.; and Mr. Bentall, of Maldon, Essex, chaff and root cutters, root pulpers, corn, Bean, and cake mills, his well-known cultivators and scarifiers. T. & R. Sheen, of Aylesbury, Bucks, chaff and Turnip cutters, Bean mills, &c. R. Maynard, of Whittlesford, Cambs., a portable steam-power sifting machine; and Mr. James, of Cheltenham, liquid manure carts, &c. Thos. Green & Son, Blackfriars, a vertical steam engine, lawn mowers, &c. W. Pickford Wilkins, Ipswich, corn grinding mills, &c. C. Trowbridge, London, weighing machines; and Henry Strafford, Euston Square, set of Coate's Herd Book, &c. Taylor & Co., London Bridge, Chaff cutters, Oat and Bean mills, corn bins, American box churns, &c. Carson & Tooke, Warminster, Wilts, chaff cutters, cake bruisers, Bean mills, &c.

John Whitmee & Co., Clerkenwell, corn crushers, chaff cutters, corn grinding mills, and domestic flour mills. Ray, Mead, & Co., Upper Thames Street, London, engineers, corn bins, &c. Hill, Smith, Brierley Hill, Staffordshire, gates and fences, &c. Burchfield & Son, West Smithfield, London, chaff cutters, weighing machines, &c. Jas. Peeni & Rayner, Essex, root graters, &c. and Jas. Smyth & Sons, Peasenhall, Suffolk, and Witham, Essex, their well-known lever seed and manure drills. John Boyd & Co., Queen Street, London, lawn mowers, chaff and Turnip cutters, Oat, Bean, Barley, and malt mills, corn bins, iron hurdles, wire fencing, &c.

W. Brenton, Polbathic, Cornwall, a manual delivery reaping machine, with a revolving cylinder, upon which the cut corn falls, and is thus easily discharged by the rakes, owing to the leverage and velocity of the cylinder. The delivery is therefore a back delivery, and consequently in the return path of the team, unless a track clearer is used.

J. Hughes & Sons, Great Dover Street, Borough, and Mark Lane, City, their French burr and Peak millstones, with the rest of the machinery and apparatus used in the milling art. W. R. Dell, of Mark Lane, another well-known house in the same line of business as the above, shows millstones, with the various set-outs of this branch of manufacture.

Charles Clay, of Wakefield, exhibits his patent cultivators, horse hoes, &c.; and Dobson & Mitchell, Gateshead, Lancashire, his brick and tile machines. R. & R. Hunt, Earls Colne, Essex, a steam power Clover dressing machine, corn and seed dressing machine, horse gear, Turnip cutters, &c.; and Chas. Upham, Basingstoke, turnip hoes, horse hoes in variety. Jas. Tree & Co., Blackfriars Road, cattle gear, harnesses, &c. Webb & Son, Combs Tannery, Suffolk, leather bands, buckets, &c. Thos. Smith, Ipswich, horse rake, cultivator, harrows, &c.

Richmond & Chandler, Salford, Manchester, show their celebrated chaff cutters, various sizes to suit their customers, also corn crushers, root washers, &c. Robert & Pickering, Leicester, chaff and Turnip cutters, cake breakers, and root pulpers, farm and garden implements. John Baker, Wisbeach, Cambs, blowing and dressing machines. Robert & John Reeves, Westbury, liquid manure drills, broadcast manure distributors, corn, seed, and manure drills, &c. And the last stand in the gallery, No. 166, Coleman & Morton, Chelmsford, Essex, on which are shown various sizes of Coleman's cultivators, Hanson's Potato digger, horse gear, &c.

In the Arcade we have to notice samples of Baron Liebig's extract of meat, washing machines, kitchen ranges, horse shoes, knife cleaners, ambulance vans, sewing machines, waterproof clothing, and coffee mills, pianos and chicken hatching apparatus, Christmas presents, and compressed fodder; and immediately outside the checktakers' entrance, W. Young, Edwards, & Co., of London, exhibit in operation their heated air engine.

Such is the running record we give of the Smithfield Club Christmas Show of the current year, 1866. On taking a re-perusal of it, there is something very monotonous in its style—enough to weary the patience of anybody. But then mention one name, and fair play immediately demands another, and so the story runs, and so we have waded through the whole from No. 1 to 166, one or two stands being empty. But full of repetition as it may read, it is very remarkable how few things are shown that farmers now-a-days can do without! Were the yeomanry of old England in the time of good Queen Bess to come up and enter the Agricultural Hall, it would bother them sadly to comprehend the use of the one-tenth part of what is exhibited. But we need not go so far back to find perplexities in the minds of farmers as to the utility of modern machinery. Enough of this!

Returning now, according to promise, to the reaping machine controversy, can we say a word in conclusion on this subject calculated to stimulate progress, so as to drive Yankee-made reapers out of the Agricultural Hall and our harvest fields next summer? If nothing can be done, much may be said, and some rather terse and ticklish questions asked, why they are so conspicuous in strength and number at present? for the expense of conveyance to the American shipping ports, and from thence to England, is something considerable, to say nothing of the higher wages of the Union, as the balance in this latter respect is probably not far now from a state of equilibrium. The practical solution of the question probably hinges upon the greater length of experience which the American agriculturists have of reaping and mowing machines:—the greater necessity which exists on the other side of the Atlantic for perseverance in the hay and corn harvest field, and the greater concord that exists for combining inventions so as to improve individual reapers, with the greater choice of selection of special mechanisms from expired patents. All this is evidently against us, but such, after all, is only the more significant and pressing a reason for our own farmers, inventors, and implement makers, doubling their progressive endeavours for the future, and to be guided more by fact and field practice than John Bull opinions, at which our trans-Atlantic cousins laugh so profusely.

This naturally brings us to the crank question. Why does not the crank of the Messrs. Burgess & Key's machines choke? Simply because it is out of the way of the standing crop or anything to choke it. If the long stroke machines choke, the admission is a fair practical confession that they do not cut so clean and low, or else that they throw, by some objectionable means or other, the newly cut corn or Grass over towards and on upon the crank and connecting rod. In all other respects the rectilineal movement is better than the angular, or rather the less angular and vibratory and more uniform motion and velocity are better than the greater angular and vibratory and less uniform motion and velocity. There can hardly be two opinions as to the soundness of this. No doubt other mechanical questions at issue may be raised, but only to be as easily solved in the field. As the Editor of the *Scientific American* said in 1855, a good reaper or mower "may be summed up in two words, viz., 'a sharp knife,' and the maxim, we own, comes home with more telling significance on this side the Atlantic than the other.

CENTRAL CHAMBER OF AGRICULTURE.—At the first general meeting of the members of this recently-formed association, shortly reported in our last week's Paper, Mr. ALBERT PELL, the Chairman, in opening the proceedings, said that that was the first general meeting of the Central Chamber of Agriculture—an institution which had had its origin within the year 1866; but although its origin had been so recent, the want of it was not of so late a date as the present year. For a long time an almost universal feeling had been entertained that something of the nature of that which they were inaugurating that day was required for the advance and support of the interests of the landowners and farmers of this country, usually termed the landed interest; but it was chiefly to the labours and exertions of their honorary Secretary, Mr. Charles Clay, of Wakefield, that the meeting they were then holding was due. After an address referring to the cattle plague, the following report from the Council to the Chamber was read:—

"Your Council have to congratulate the members on this their first annual meeting, on the very successful and influential position which the Central Chamber of Agriculture has attained in so short a period. It is sufficiently evident from this success that such an association was much wanted: in fact, the very existence of the requirement is proved by the readiness with which the country has responded to the invitation of the promoters. It is scarcely 12 months since the first communications were issued to public notice; and at the present time it numbers 90 subscription members, and about 20 local societies working in conjunction with and subscribing to the funds of this Chamber and sending deputies to its meetings. These local chambers may fairly be taken as averaging 150 members each, which will give 3000 members, making with the Central Chamber 3090 as the number of agriculturists now co-operating with the Central Council, whose opinions may thus readily be obtained on any subject affecting the agricultural interest. This your Council believe is a position never attained in so short a period by any other agricultural society, and we may confidently expect that another year will at least double the influence of this Chamber.

"The Council report that the chairman has received a letter from the secretary of the Scottish Chamber of Agriculture announcing the resolution of that important industrial institution to co-operate with the Central Chamber, and to contribute to their funds, doing us the honour of giving a seat *ex officio* at their Council board for our chairman and vice-chairman or

secretary, and requesting the same opportunity to be afforded to them in our Council.

"There is one feature of the establishment of the Central Chamber of Agriculture which it would be well not to lose sight of. The Council conceive that they afford an opportunity for giving effect to the opinions of members of farmers' clubs and agricultural societies on questions pending in Parliament or to be brought before the Government, by their deputies, if appointed, appearing in the Council to represent their views. The exclusion of the political element from these clubs as a general rule appears, though inseparable from their actual existence in the country, to have in many instances a deadening effect, which, it is possible, some co-operation with our Chamber might modify or remove.

"The Council have pleasure in stating that, although only in their infancy, yet they are able to meet all their liabilities up to the present time, and have a balance in hand to begin the next year with. A full statement of the accounts will be published according to the rules, at the end of this month.

"A Council meeting was held on the 6th of November last, when it was resolved that the Chairman should convey to the Privy Council the unanimous opinion of the Council of the Central Chamber in favour of continuing the then-existing restrictions upon cattle traffic to the end of this year. Your Council regret to say that, almost simultaneously, the Privy Council, entertaining different views, issued orders modifying the old ones, and tending to a greater freedom in the trade and movement of cattle. Your Council are of opinion that this action of the Government was premature, ill-advised, and likely to prove a source of future trouble, by a revival of the cattle plague; and they wish particularly now to call the attention of the Chamber to the consideration of measures of a permanent character, to be recommended for adoption by the Government and Legislature, to guard against foreign infection, and any future outbreak of the cattle plague or other contagious disease."

Mr. C. S. READ, M.P., in moving a series of resolutions containing suggestions for the future permanent regulation of the trade and traffic in live stock, adverted to what had been remarked by a previous speaker on the subject of dealers. They had found out in Norfolk that they could not only do without the dealer, but, in a great measure, without markets; for the graziers went direct to the breeders, and the cattle came home to their farms in much better health and condition, and at a comparatively much cheaper rate than they had ever done before. On the other hand, the result of having no markets was that they had had no disease, and up to the last fortnight there had been a marked cessation of the foot-and-mouth disease. Norwich Hill was re-opened about a month ago, and now they had the foot-and-mouth disease pretty generally amongst them again. He then moved the resolutions as follows:

"The Central Chamber of Agriculture, deeming it necessary that permanent arrangements should be made by the Government to regulate the trade and traffic in live-stock, so as to prevent as far as possible the further introduction and spread of contagious and infectious disorders, respectfully recommend the following suggestions:—1. That the importation of foreign stock should be confined to certain ports specially licensed by Government, which ports should be provided with suitable markets, slaughter-houses, quarantine grounds, and officers. That all foreign fat stock should be forthwith slaughtered at such markets, and that all foreign store stock should be subjected to 28 days' quarantine before they are permitted to remove from the port of landing or disembarkation. 2. That animals be again imported or break out afresh, slaughtering and compensating powers, similar to those of the Cattle Disease Act of February last, should at once be put in force, and the district proclaimed. 3. That stringent regulations should be made and enforced to the effect that animals are not to be conveyed on railways, and that a thorough cleansing of all trucks, pens, and layers, and the proper space and ventilation of the holds of cattle boats should be enforced by Government inspection. 4. That the wilful exposure of any animal suffering from such contagious and infectious diseases as rinderpest, pleuro pneumonia, sheep pox, scab, glanders, or foot and mouth disease, upon any highway, boat, or railway, or in any market or fair, should be an offence punishable with fine or imprisonment. 5. That a more stringent inspection of all dead meat, especially that imported from countries known to be suffering from cattle plague, should be enforced by Government."

These resolutions having been seconded by Mr. MASPEN, considerable dissussion ensued as to the propriety of including in the 4th resolution, as an offence punishable with fine or imprisonment, the wilful exposure of animals suffering from "foot-and-mouth disease;" and the balance of opinion being against the retention of these words, they were eventually struck out.

A unanimous vote of thanks having been passed to the CHAIRMAN, that gentleman, in acknowledging the compliment, seized the opportunity to remove the impression which rather widely prevails, that there is some feeling of pique between the Farmers' Club in London and the Central Chamber of Agriculture. He could assure the meeting that there was not the slightest particle of such a feeling existent, so far as he knew. The two institutions, it was true, were moving in the same direction, but not in the same groove. They were like two great armies, one on each side of a river, moving in parallel lines in the same direction to the attack on the same enemy. Whether they would be able to bridge over the river and unite at a common point hereafter, remained to be seen. At all events, no effort should be wanting on his part to accomplish that object, if he believed it would be for the benefit of this Society and the older institution in Salisbury Square.

Thanks were also voted by acclamation to the Honorary Secretary, and the proceedings terminated.

Reviews.

The Twenty-second Annual Report of the Botley and South Hants Farmers' Club.

The contents of this little publication reflect more truly the agricultural events of the year than that has been done by the Annual Report of the Council of the Royal Agricultural Society.

We have here (1) the Cattle Plague; (2), the Root Show; (3), the Cattle Plague; (4), the Game Laws; (5), the Rinderpest in South Hants; (6), the Cattle Show. First, the Cattle Plague; second, the Cattle Plague; third, the Cattle Plague. And this is how it has filled not only the pages of this little book, but the thoughts of all English farmers. The Committee of the Club have reason to address the members of their Society with confidence, and we will back their Report against that of the Royal Agricultural Society of England as the better exposition of the agricultural proceedings of the year.

"In presenting our members with the 22nd annual Report, we have to explain, if not to apologise for, the paucity of subjects that have, during the last session, been brought before you—two only, the Rinderpest in Cattle, and the Preservation of Game. The all-absorbing character of the former subject, affecting as it did the means and the welfare of agriculturists, seemed to deprive all others of present interest, and by its many phases proved sufficient to occupy the time of our meetings. And now that we have reason to rejoice at the disappearance of this fell disease, and to be thankful that its visitation in this county has been comparatively so light, we can refer with satisfaction to the recorded fact that all the measures to which the stamping out of the disease is due were advocated and approved of by this Club. The discontinuance of the sale of cattle in markets and fairs; the closing of cattle traffic on roads and railways, and more particularly the discontinuance of the practice of sending cattle out of London; the general appointment of inspectors; the increased restriction on foreign importations, and extra vigilance at the ports of embarkation and disembarkation; the immediate slaughter of all diseased animals, as well as for food those also that had been exposed to contagion; the reimbursements to the owners of a large portion of the loss; the absence of belief in any of the alleged cases of cures;—all these subjects found favour with the Club, and it is now almost universally acknowledged that they have all aided materially in consummating the object in view.

"In addition to these, we urged the payment of the moderate compensation of the carcase value for all cattle buried through the disease, and a system of Government insurance for the whole cattle of the kingdom; and whilst the former measure would, we believe, have greatly lessened the severity of the calamity, the latter would have spread the loss more equally over the whole kingdom, saved many from ruin, and relieved all from an oppressive load of anxiety. It would, no doubt, have shortened the visitation of the disease, and this without the expenditure of a single penny by the Government, save the expenses of management, a result which may be shown by an examination of the statistical tables, which prove the loss to be within our estimate of 5 per cent.

"The subject of Game Preservation was ably handled by Mr. John Twynam, who carefully separated the use from the abuse of the privileges connected with land, and pointed out how far national and individual rights were affected. The subject of rating land on which game is unduly preserved led to much discussion and some difference of opinion, and it was thought that this part of the subject might again be ventilated with much advantage. The card for the present session will show that our subjects are not yet exhausted, and we respectfully invite the more diligent attention of our members to their discussion.

"The results of the harvest, although by no means favourable with respect to Wheat, are materially enhanced by an improvement in prices which serve opportunely to mitigate the many losses which the business of agriculture has of late received, and to afford a somewhat more favourable aspect for the future."

Farm Memoranda.

DAIRY FARM MANAGEMENT.—1. *Dairying* v. *Grazing.*—A tenant of Grass land has the choice of many modes of turning it to account. If it be very rich grazing ground, he may devote it wholly to the feeding of beef: if very poor Grass land with some arable attached, he may devote it wholly to the rearing of young stock, bringing up at least 10 calves to every cow he keeps: under more ordinary circumstances he may keep either a butter dairy or a cheese dairy, or it may be his interest to use the milk in fattening veal. The nature of the market for his produce will probably determine his choice. It is no part of our plan to discuss the relative merits of grazing and dairying here, but there is one point of the comparison which ought to be alluded to, and that is the immense draught made upon the resources of the land by any system which involves the annual sale of the milk, either whole or manufactured, as the sole produce of the land.

Milk contains a good deal of those parts of the earth of soils on which their fertility very much depends. As the sole food of young, it feeds their bones as well as their flesh, and in its mineral part, therefore, is to be found the mineral part of bones, as well as the alkaline and other mineral substances held in solution in the juices of the living animal.

If a cow yields 600 gallons of milk a year, then, whether this be sold away altogether, or converted into cheese for sale, or set for cream and made into butter and skim milk cheese, or given to young stock to be afterwards sold, these products being sold off the farm, it loses in this way from 30 to 40 lb. of mineral matter from its soil.

This is no doubt a small quantity; but continued for a long series of years it undoubtedly tells upon the fertility of the soil, and is a loss to which rich grazing grounds, where full-grown animals are brought simply to be fattened, are not subject. In illustration of the perpetual drain of phosphates which the cheese manufacture entails upon the soil, it may be mentioned here that the dairy pastures of Cheshire have been wonderfully improved by the addition of bonedust as a top-dressing to the land, a manure which supplies just those ingredients of which the cheese had deprived it. But it must suffice here to say, in illustration of the great benefits derived from boning pastures in Cheshire, that the answers of the three principal prize takers at the Chester show of cheese to the question: Has any part of your dairy land been manured with bones? were respectively as follows:—

(1.) "30 acres were hoged in 1851, etc. in 1855, and 15 in 1857—boiled bones." (2.) "All the pastures have been boned twice, and some thrice. The last time, partly, in 1853, 1855, and 1866." (3.) "With raw bones, the greater part three times over."

2. *The most Profitable use of Milk.*—This necessarily depends altogether on the market. (1.) To sell the whole milk direct to the consumer is of course much the most profitable method. One penny a pint is a common wholesale price to the cowkeeper. His cows may yield under varying treatment from 600 to 1000 gallons annually, and thus return from 20*l.* to 33*l.* annually apiece. (2.) To make milk into butter and skim milk cheese, may, at the yield of 600 gallons annually, and calculating 22 pints per lb. of butter and 1½ gallon per lb. of skim milk cheese, yield as follows:—

	£	s.	d.
600 gallons of milk = 60 gallons of cream = 240 lb. of butter, at 1*s.*	11	10	
540 gallons of skim milk = 360 lb. of cheese, at 2½*d.* per lb.	4	10	
Total annual yield per cow	£16	0	

(3.) To make milk wholly into cheese, may, with a yield of 600 gallons of milk, result in 5 cwt. of cheese per annum; a very unusual produce however, and this at 3*l.* per cwt., a very good price, results in an annual produce of 15*l.* per cow, to which must be added, perhaps, 2*l.* worth of butter and bacon, or 17*l.* in all. The more common produce, however, is

	£	s.	d.
4 cwt. at 3*l.*	12	0	0
Together with the extras	2	0	
Or, in all	£14	0	per cow.

(4.) To use the milk wholly for fatting veal, at the rate of 10, 16, 20, 24, 27, 30, and 32 gallons in seven successive weeks, using 100 gallons or thereabouts in that time for the addition of 1 cwt. of veal to the weight of the calf, will enable each cow thus to fatten 4 cwt. or more of veal per annum; and this at the present Smithfield price for good veal, 7*d.* per lb., would yield 13*l.* and upwards annually per cow. From this, however, must be deducted the cost (not much) of whatever other food the calves consume, and also a certain sum at which the risk attending the management of young stock must be valued—a risk which does not accompany the other modes of turning milk into money.

It may thus be assumed, after making sundry deductions, that 20*l.*, 16*l.*, 15*l.*, and perhaps 13*l.*, may be taken as the produce of well-managed cows, in milk, butter, cheese, and veal respectively; the value of the calf, 10*s.* or 15*s.*, when a week or 10 days old, has to be added. It will, however, be generally felt that, excepting, perhaps, the first of these cases, these figures stand too high for ordinary experience; and certainly that which is true of well-managed individual cows is not necessarily true of a whole herd, however perfect the management may be. In illustration of this, two facts may be mentioned, one of which entirely corroborates our estimate; but the other, the more trustworthy of the two, considerably discounts it. 1. The dairy statistics of 15 farms in Gloucestershire already referred to, prove that in the year of their collection 439 cows produced 1604 cwt. of cheese, 5268 lb. of milk-butter, 11,420 lb. of whey-butter, besides a sale of 354 calves and of 1756 score lb. of bacon. The total sales at present prices would stand thus:—

	£	s.	d.
1604 cwt. of cheese, at 3*l.*	4812	0	0
5268 lb. of butter, at 1*s.*	263	8	0
11,420 lb. of butter, at 9*d.*	428	5	0
354 calves, at 10*s.*	177	0	0
1756 scores of bacon, at 10*s.*	878	0	0
439 cows produced	£6558	13	0

This was equal to 14*l.* 18*s.* per cow, corresponding very nearly to the figures given as true of the money produce of cheese-making. 2. The other fact is that in many large dairy districts it is common for the farmers to let their cows for the year to a dairyman, agreeing to set apart certain pastures for them, and to give them certain quantities of fodder, and of green and other food. The hirer of the cows has the use of all the accommodation which the farmery affords, the use of dairy utensils, &c., and he undertakes the entire management of the animals and of their produce, which belongs to him while they remain in his hands. And the fact to which we allude is, that the farmer is willing to let his cows to the "bower," as he is called in Wigton, for from 8*l.* to 9*l.* 10*s.* apiece, which, if their average produce realises 14*l.* or 15*l.*, seems to leave too large a margin for the labour and the profit of the dairyman who hires them.

3. *The Cropping of a Dairy Farm.*—We refer to this section to insist on the great advantage to large dairy farms of a considerable portion of the land being arable. The ability to maintain cows during the winter season, when dry or not yielding milk enough for the maintenance of the general dairy management, on roots and straw, instead of hay, and thus to set apart a larger portion of the Grass for summer pasture to its own great advantage and to the greater productiveness of the cows at their most productive period, cannot be overrated. If every 100 acres of Grass land, being at the rate of more than 1½ acre per cow of whole summer pasture, together with the aftermath of a corresponding quantity needed for winter hay, will maintain a herd of 30 dairy cows, then any source of winter feeding which will displace two-thirds of the hay required will set free for pasturage two-thirds of the extent of Grass-land to be mown. It is not too much to say that by 30 acres under arable culture as much winter food will be provided as by 50 acres of Grass-land mown. Supposing, then, these 100 acres to be divided into 80 acres pasture and 20 acres arable, it is plain that of the half of this pasture (40 acres),

which ordinarily would fall to be mown, at least two thirds (26 acres), would be set free by the winter food (straw and green crops) yielded by the 20 acres arable and the stock capable of being kept on the remaining 80 acres pasture, as compared with that on the 100 acres of whole pasture, depends on the relative summer produce of 66 acres whole Grass and 14 acres aftermath as compared with that of 50 acres whole pasture and 50 acres aftermath. There cannot be a doubt that the former will yield more food than the latter, and at the most productive time of the year, while the land will at the same time, under this plan, be more likely to increase from year to year in value. It thus appears that a larger dairy stock can be kept upon a farm so managed, while, at the same time, one-half of the arable land will be yielding its valuable produce of grain for sale. *Morton's Dairy Handbook.* (Warne & Co.)

(To be continued.)

Miscellaneous.

Hitchin Mart for Fat Stock.—The past success of Messrs. Page, Harding & Eve has been somewhat checked at the above institution, by the orders touching the cattle plague. But from the excellence of their arrangements, and their known trustworthiness to carry out any engagements they may make, they were enabled to obtain a special licence to hold a sale of Christmas fat stock, that included cattle as well as sheep and pigs. This sale came off on Tuesday last, and although the day on which they were able to announce this concession on the part of the authorities was late, a capital show of beasts was brought together. The number, however, was less than usual, the beasts being only 87, yet, in point of size and quality, a number of them could not well be surpassed, as the prices below will show. The sheep composed 110 pens, and mostly of four or five each. Among these there were some ordinary fold-fed sheep, some of which were pure Hants, others were crosses of various kinds, as Cots and Hants, Leicester and Hants, Lincoln and Hants, or Wilts, and so on. The big Hants or Wilts Downs are held in great favour in this neighbourhood, where great size, combined with a fair share of lean, are found to be more profitable for producing for the London market. Where these sheep are not bred or fed in their pure form, the hardiness, quality, and size of the short-coated Down are retained, or sought in connection with more wool, and the earlier maturing qualities which belong to Leicesters or improved Cots and Lincolns. The sheep reared and fed in the field and fold in the common way, and which, owing to the past wet season, were not so good as usual, made prices ranging from 65*s.* to 75*s.* each. Mr. Inskip's (Knees worth) were well-fed crosses, apparently Leicester-Hants, and they made an average of 61*s.* 5*d.* each. Mr. Bates, of Pigot's Hill, had some plain Hants, which averaged 72*s.* 9*d.* each. Mr. Sworder, of Westmill, had five pens of immense Hants, and which were so full of meat and firm in hand that they made respectively 91*s.*, 85*s.*, 88*s.*, 101*s.*, and 95*s.* each. Mr. Marsh, of Little Offley, had seven pens of two sheep, short-legged, admirably-fed Hants, which made an average of 106*s.* each. Mr. Sworder, of Willian, had twelve lots of shearling Hants and Cots wold-Hants, which made an average of 85*s.* 7*d.* each, while four pens of five each were cross breds under 12 months of age, which made an average of 67*s.* 9*d.* each! As the latter had been clipped as lambs, and were of course sold as mutton, it will be concluded these were extraordinary for their age. Mr. Oakley's (Lawrence End) half-breds made from 53*s.* 6*d.* to 82*s.*, or an average of 74*s.* Mr. Woodward, of Aspenden, sent three fat Lincolns, which were sold at 102*s.*, 104*s.*, and 103*s.* The biddings for the oxen were not so spirited as they had been on previous occasions. This is no doubt partly owing to the large foreign supplies of middling and inferior carcasses, and, in some measure, to the dull state of business generally. Mr. Crouch, of Caiuhoe, sent 12 Herefords, which averaged 25*l.* 5*s.*; Mr. Horn, of Clophill, six young Herefords, which made 26*l.* 15*s.* each, and four young Short-horns, which made just 30*l.* each. Mr. Fossey, of Cumberlow Green, had an extraordinary three-year-old Short-horn, which was fed to the finest possible touch and evenness of fat; he made 47*l.* 5*s.* A short fat cow from the same stall made 40*l.* Mr. Oakley, of Lawrence End, sent a good red Short-horn, which made 42*l.* Mr. Lavender, of Bromham, had three Short-horns, sold at 44*l.*, 39*l.* 5*s.*, and 41*l.* Mr. Bolton, of Putnoe, sent a large and highly fed Short-horn; but although he was several scores heavier than Mr. Oakley's young ox, as he was more over-done and far less even, he made only 2*l.* 15*s.* more, or just 50*l.* This is one of the practical lessons which these public sales—where practical farmers meet practical butchers—are so admirably calculated to teach. When farmers have been further taught, by the difficulties of the cattle plague restrictions, to deal more with each other, in regard to store stock; and when the Government have been convinced of the necessity for licensing cattle-dealers, that the present loose traffic in cattle may be checked; then a central auction mart for fat stock, like that at Hitchin, will be more than ever appreciated.

Calendar of Operations.

WEST SUSSEX: *Dec.* 17.—There is at present little doing on the farm but the usual routine. Wheat sowing has all been done for some time, except small pieces after Rape, not fed off in time. And most of it looks well: in some cases the slugs have attacked it, and the weather being damp and mild favours them. Mangel has been all got well up, and is rather a light crop, and other roots are not so large as we expected them to be, but are so regular that we have a fair crop of them. Potatos were a good crop, but were much damaged by the disease before being taken up, and many of them have rotted since, and it is not likely that so many of them will be planted next year.

The cattle market is not yet open, but still there are plenty of beasts to be got on commission, and at fair prices. But there is a fear that the Orders in Council may be evaded too much, and allow the disease to spread again. But both butchers and farmers have some difficulty in meeting with each other and coming to terms, and the prices vary very much. Mutton is still dear, but there is a good supply, and the sale is slow. But fat pigs get cheaper, and it appears that fewer eat pork than used to do so; there does not appear to be so many pigs fatted, and what are, are hard to dispose of, and lean ones are lower than they have been for a long time. Stock sheep are very dear, but in fair supply.

Our stock market that has been held in the streets of Chichester, is now likely to be removed out of the town, and not before time, as it has vastly overgrown the room which it can legally claim. And it would have been better had it been done before, as no doubt the market might have been larger than it is now, as many have been unwilling to bring stock, owing to the difficulty of finding room for it. But, like many necessary changes, it will cause a loss to some; and has been strongly opposed by the citizens. But a sanitary commissioner has hinted rather strongly that a change must be made, and that the city may be made to be drained, which will be a great expense. The Council have agreed to remove the market, and are likely to get a supply of water from a distance, hoping that drainage may not be pressed upon them.

Our Christmas show has passed, but was a rather tame affair, as there were no cattle, and but few sheep, though they were good. The show of roots was good; but there were few exhibitors. There was some good Wheat shown, and Barley that perhaps could hardly be excelled; but there are so few that show that the competition is not great. *G. S.*

The following are good remarks on *Fences* by Mr. Martinson, before the Newcastle Farmers' Club. He says:—The ground intended for a line of new fence should undergo deep ploughing or trenching at least 12 months previous to planting, and have all the weeds and rubbish as nearly as possible eradicated; and a little lime might be advantageously employed in ecomposing any vegetable matter which may remain. The stem of each plant, before being deposited, is cut through to about 6 or 8 inches long, and then these plants are placed as firmly as possible in their bed; a furrow with the spade being made, in which the plants are inserted, the roots are covered with soil, and that soil compressed by the foot, more mould being applied, to fill the furrow. A sharp knife is used in cutting off the stems close by the surface, and you cover these cuts with a very light sprinkling of earth, merely to preserve them from frost. They come away beautifully in the spring after being planted now. About seven or eight plants to a yard are enough. One advantage of this mode of planting is that much less room is required, as you dispense with the usual cast or mound, and you can cultivate and crop your land much nearer to the fences. This mode may be objected to on wet land, but such land should be drained, and that not by an open ditch along the line of fence, but by a systematic underground drainage. The proper season for planting is from about the middle of October till the end of March, or during the inertness of the sap.

The Thorns being now planted, it is desirable, and necessary, that they should be protected from injury by the trespass of cattle and sheep. The best protection is wooden railing. This precaution should be taken immediately on the completion of the fence, or at least before any animals have access to it. The protection of these young hedges by railing is expensive, but yet I am certain that the young hedges come to perfection much sooner when thus protected. The hedge being planted and protected, great care is to be exercised in opening out those Thorns in spring which have been covered up. This is best done by loosening the earth with the hand, or with a small stick; and lest injury be done in this way to the buds, neither a spade nor any other sharp instrument ought ever to be used in this operation. The most essential point afterwards is to keep the plants clean and free from weeds.

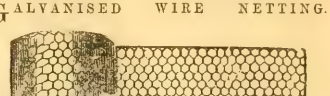
Mr. Martinson adds:—I have endeavoured to ascertain the best time for cutting old hedges, in order to secure the quickest growth, which is a very desirable object. I have found that those cut from about the middle of February to the end of March have shot away again most vigorously, whilst those cut from November to the beginning of February have been much more tardy in shooting forth, and their shoots have been neither so strong nor so numerous. In these cases the hedges were much the same in appearance and age previous to cutting. I am therefore determined to confine the time of cutting, in future, from the beginning of February to the end of March, or to cut as nearly as possible to the rising of the sap, and then the cuts or wounds have not so long to struggle with the inclemency of winter storms.

Notices to Correspondents.

BOOKS *&c.*—We do not know any work which will teach both gardening and farming, unless indeed it be the *Gardeners' Magazine*.

RAILE PARKS. *T. J.* says, I have some land adjoining the Severn in Shropshire, just above its junction with the Verniew. The river rises in floods, and in winter is nearly 20 feet above its summer level. The banks there have are exposed to much wear. The soil is a mixture of sand and clay. I should be glad to know what plant or tree it would be best to cultivate on the sloping banks to protect them from abrasion. A tree such as a Willow on the opposite bank, surely makes a deep indent on the further side, as well as the banks. Probably some of our readers may have an experience to relate which would be serviceable to our Correspondent. We imagine that Willow stakes driven in will take root and so hold the crumbling bank together.

GALVANISED WIRE NETTING.

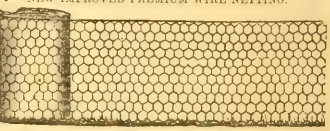


PRICES of NETTING, 24 INCHES HIGH.

Size of Mesh.	Proof against	Light, per Yard.	Medium, per Yard.	Strong, per Yard.	Extra strong per Yard.
24 inch	Hares, Dogs, Poultry, &c.	3*d.*	4*d.*	5*d.*	6*d.*
2 inch	All kinds of Game ..	3*d.*	4*d.*	5*d.*	7*d.*
1½ inch	Small Rabbits, Hares, &c.	4*d.*	5*d.*	6*d.*	8*d.*
1 inch	Ditto	5*d.*	7*d.*	8*d.*	10*d*

100 Yards and upwards Carriage Free.
GALVANISED WATER CISTERNS.
GALVANISED CABLE STRAND FENCING.
GALVANISED IRON PUMPS.
GALVANISED SWING WATER BARROWS.
GALVANISED IRON ROOFS and BUILDINGS.
LAWN MOWERS, GARDEN ROLLERS.
ASPHALTE ROOFING FELT, 1*d.* per square foot.
HURDLES, HURDLES, HURDLES, 1*s.* 9*d* to 3*s.* 9*d.* per yard.
MORTLEY & GRAIN
Illustrated Catalogues and Estimates free on application.
12, Great George Street, Leeds.

J. B. BROWN AND CO.'S NEW IMPROVED PREMIUM WIRE NETTING.

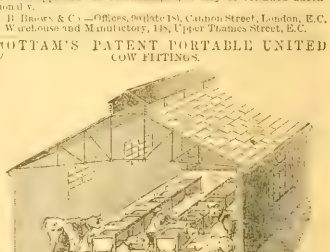


Great Improvement.—Reduced Prices, February, 1866.
PRICES PER LINEAL YARD 24 INCHES HIGH.

Mostly used for	Light.		Medium		Strong		Extra Strong	
	Jap	Gal	Jap	Gal	Jap	Gal	Jap	Gal
	s.d.	*s.d.*	*s.d.*	*s.d.*	*s.d.*	*s.d.*	*s.d.*	*s.d.*
24 Dogs or Poultry ..	0 3	0 3	0 4	0 4	0 5	0 5	0 6	0 6
2 Poultry ..	0 4	0 3	0 5	0 4	0 6	0 5	0 7	0 6
1½ Small Rabbits, Hares, &c.	0 5	0 4	0 6	0 5	0 7	0 6	0 8	0 7
1 Smallest Rabbits ..	0 6	0 5	0 7	0 6	0 8	0 7	0 9	0 8
1 Pheasantries, Small Parks, &c. ..	0 8	0 7	0 10	0 9	1 0	0 9	1 1	0 10
1 Avenues, Wind or Guards, &c. ..	0 11	0 10	1 1	0 11	1 2	1 1	1 3	1 2
2 Avenues, Wind or Guards, &c. ..	1 7	1 5	1 10	1 8	2 0	1 11	2 2	2 0
3 Avenues, &c. ..	2 2	2 0	2 6	2 3	2 8	2 5	2 10	2 8

Quoted rates of 100 Yards or upwards delivered free at all Railway Stations in Great Britain.
Special designs to order. Netting warranted to give satisfaction, and if not approved will be exchanged, or may be returned unconditionally.
J. B. BROWN & CO.—Offices, Suffolk-lane, Cannon Street, London, E.C.
Warehouse and Manufactory, 138, Upper Thames Street, E.C.

COTTAM'S PATENT PORTABLE UNITED COW FITTINGS.



These advantages are—Portability, not Fixtures, removable at pleasure, no Woodwork or Partitions to impede Ventilation or breed Vermin, Hay Racks dispensed with as unnecessary, increased width and depth of Feeding Troughs, Water Cistern, and Patent Drop Cover to prevent over-gorging. Cleanly, durable, and impervious to infection, being all of Iron. Price of Fitting, per Cow, 55*s.*
Prospectuses free of COTTAM & Co., Iron Works, 2, Wimsley Street (opposite the Pantheon), Oxford Street, London, W., where the above are exhibited, together with several important Improvements in Stable Fittings just secured by Patent.

Oil Paint no longer Necessary.

HILL AND SMITH'S PATENT BLACK VARNISH for preserving Iron Work, Wood, or Stone. This Varnish is an excellent substitute for oil paint on all out-door work, and is fully two-thirds cheaper. It may be applied by an ordinary labourer, requires no mixing or thinning, and is used cold. It is used in the grounds at Windsor Castle, Kew Gardens, and at the seats of many hundreds of the nobility and gentry, from whom the most flattering testimonials have been received, which HILL & SMITH will forward on application.

From JOHN RAINES, Esq., *East Dale, near Broomb, Yorkshire*
"I have used your Black Varnish for park palings, and consider it to be the best of the kind I have ever seen. I think it might be applied with still greater advantage to iron fencing, instead of paint, and it is my intention so to employ it in future."

Sold in casks of about 30 gallons each, at 1*s.* 6*d.* per gallon, at the Manufactory, or in 8*s.* 6*d.* per gallon paid to any station in the kingdom.
Apply to HILL & SMITH, Patentees, Hill Iron Works, near Dudley, and 22, Cannon Street West, E.C., from whom only it can be obtained.

HOTHOUSES FOR THE MILLION.

AWARDED A PRIZE MEDAL, 1862.

INVENTED AND PATENTED BY THE LATE

SIR JOSEPH PAXTON.

MANUFACTORIES:—LONDON; NEWTON IN CARTMEL, LANCASHIRE; GLOUCESTER, COVENTRY, ABERDEEN, and PAISLEY.

"Nothing can be more easy than to build them, nothing more simple than to remove them."—*Daily News*, May 22, 1862.

COMBINE SIMPLICITY, CHEAPNESS, AND DURABILITY.

FULFIL ALL THE REQUIREMENTS OF HORTICULTURE.

Illustrated Price Lists will be sent on prepaid application. Estimates given for Ornamental Conservatories, &c., to special sizes and designs; also for Heating Apparatus, fixed complete.

HEREMAN AND MORTON, 7, PALL MALL EAST, LONDON, S.W.

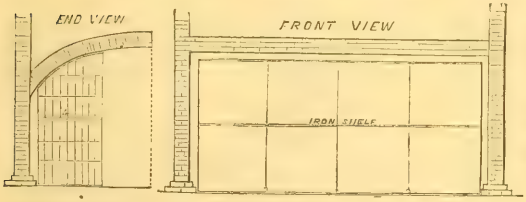
A HANDBOOK of VINE and FRUIT TREE CULTIVATION, as adapted to the above Patent Hothouses, may be had of Mr. HEREMAN. Second Edition, price 1s.; post free, 1s. 1d.

"The instructions given for the Cultivation of the Vine and other Crops are essentially practical, and are evidently written by one who has himself performed all the operations before he attempted to instruct others."—*Cottage Gardener*, Oct. 6, 1863.

WROUGHT-IRON WINE BINS.

BURY & POLLARD

CALL ATTENTION TO ANNEXED SKETCHES OF THEIR WINE BINS.



Noblemen, Gentlemen, Wine Merchants, and Hotels are now being supplied by BURY & POLLARD with their

WROUGHT-IRON BINS,

made to any size for their Cellars, economising space, cost, &c.

Apply, giving dimensions of Cellar,

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Estimates Free. Cellars fitted complete in any part of the Kingdom.

Asphalte Roofing Felt,

ONE PENNY per Square Foot.

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59, GEORGE SQ., GLASGOW; 2, GOREE PIAZZAS, LIVERPOOL.

Caution to Gardeners.—When you ask for

SAYNOR AND COOKE'S WARRANTED PRIZE PRUNING and BUDDING KNIVES, see that you get them. Observe the mark SAYNOR, also the corporate mark CROWN WARRANTED, without which none are genuine.

S. & C. regret having to caution Gardeners and others, but are compelled to do so, in consequence of an imitation, of common quality, having been sold for the genuine ones, and which, in consequence, many complaints to be made to them of Knives which were not of their make, all of which are warranted both by Saynor and Makers.

S. & C.'s Pruning and Budding Knives are the best and the cheapest in the market.

Paxton Works, Sheffield. Established upwards of 125 years.

Lawn Mower Repairs.

ALEXANDER SHANKS AND SON would suggest to their numerous friends the desirability and importance of having their Lawn Mowers put into proper order before the commencement of the Mowing season. If attention be paid to this hint, some disappointment may be avoided, because in the early spring the necessary time for repairing Machines is to some extent absorbed by the pressure of business connected with the manufacture and despatch of new Machines.

Machines for Repair can be addressed, ALEX. SHANKS & SON, 57, Leadenhall Street, London, E.C., who will undertake the Repairs (if executed) or to the Manufactory, Deer Park Works, Arbroath, N.B.

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The above Rollers possess many advantages over all others. They are made in two parts, and are free to revolve on the axes, offering greater facilities for turning, and the outer edges are rounded either turned inwards, thus avoiding the unsightly marks left by other Rollers.

Diameter, 30 inches; Length 32 inches,	£7	10	0
" 24 " " 26 "	4	10	0
" 20 " " 22 "	3	10	0
" 16 " " 17 "	2	15	0

Prices for Rollers fitted with Shafts suitable for Pony or Horse Power, free on application.

Delivered carriage paid to all the principal Railway Stations and Shipping Ports in England.

THOMAS GREEN & SON, Smithfield Iron Works, Leeds; 54 and 55, Blackfriars Road, London, S.; and 19, Eden Quay, Dublin.

N.B. All Orders executed on the day they are received.

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INTERNATIONAL EXHIBITION, LONDON, 1862.
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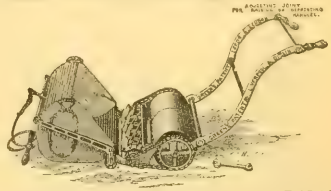
The above Lawn Mowers have proved to be the best, and have carried off every Prize that has been given in all cases of Competition.

Sold by all respectable Ironmongers, Seedsmen, &c., in the Kingdom. Illustrated Price Lists free on application.



AGRICULTURAL and HORTICULTURAL IMPLEMENTS and MACHINES of every description.
IMPROVED IRON STABLE FITTINGS.
HURDLES and CONTINUOUS IRON and WIRE FENCING.
Palisading Entrance and Field Gates. Plain and Galvanised Wire Netting.
GREEN'S PATENT LAWN MOWERS and GARDEN ROLLERS.
Garden Engines, Syringes, Water Barrows, Ornamental Garden Seats, Chairs, Tables, Iron Fountains, Vases, &c.
IRON and BRASS BEDSTEADS, in great variety.
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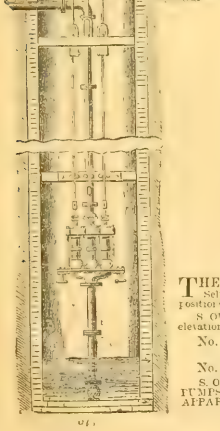
S. OWENS & CO.

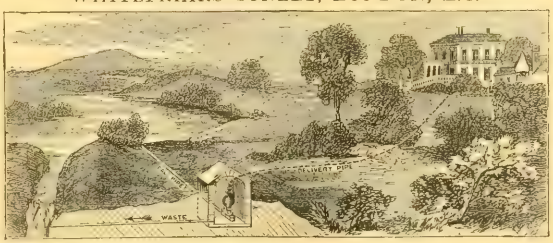
(LATE CLINTON AND OWENS),

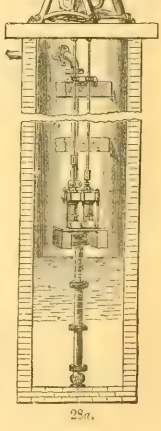
MANUFACTURERS OF

PUMPS and HYDRAULIC MACHINERY,

WHITEFRIARS STREET, LONDON, E.C.







THE LANDSCAPE SKETCH shows an adaptation of THE IMPROVED HYDRAULIC RAM. This is a simple Self-acting Machine, suited for raising a Supply of Water for use in Public and Private Establishments. Its adoption is not confined to positions as shown, but it is suited for any situation where a Fall can be obtained from a Stream, Brook, or Spring.

S. OWENS AND CO. have fixed a great many in various parts of the country for raising from 600 to 6000 or more Gallons per day to elevations varying from 30 to 300 feet, and forcing through Main Pipes 50 yards to several miles in length.

No. 37. IMPROVED TREBLE BARREL PUMPS, with HORSE GEARING for Raising Water from DEEP WELLS, for the supply of MANSIONS and PUBLIC BUILDINGS.

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S. OWENS AND CO. Manufacture and Erect every description of Engineer's Work required in Public or Private Establishments, such as PUMPS for any purpose on the largest or smallest scale, STEAM ENGINES, WATER WHEELS, TURBINES, WARMING and DRYING APPARATUS, BATHS, GAS WORKS and FITTINGS. Estimates furnished from Plans or on inspection of position.

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28*a*.

HOT-WATER APPARATUS, of every description, fixed complete in any part of the country, or the materials, viz., Boilers, Pipes, &c., delivered to any Station.
Estimates on application.
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Heating by Hot Water.

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HOT WATER PIPES, from Stock, per yard:—2-inch, 1s. 9d.; 3-inch, 1s. 10d.; and 4-inch, 2s. 4d. BENDS, from Stock, 1s. 6d., 2s. 6d., and 3s. each. THROTTLE VALVES, 10s., 13s., and 14s. each. Other Connexions at equally low prices, and all goods of first-class manufacture. Estimates given, and orders by post punctually attended to the same day.

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HOT-WATER PIPES, at Wholesale Prices, with Elbows, Syphons, Tee Pipes, and every other connection; Wrought and Cast-iron Boilers, Saddle, Conical, Cylinder, TUBULAR, and Elliptic, from 21s. each. Improved Rotary and Iron Stands to use without brick work, 60s. each. Valves from 10s. 6d. each. Patent Valves, Improved Furnace Doors, Furnace Bars, Supply Cisterns, and Castings of every description in stock, &c.
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TWO HUNDRED SECONDHAND and MELON HOUSES and LIGHTS, and from 400 to 500 LIGHTS for PITS of all SIZES kept in STOCK. Glazed and Painted complete, ready for immediate use. Plans sent to all parts of the kingdom. Public and Private Buildings, Warehouses, &c., Heated on the most approved scientific and economical principles. References to the Nobility, Gentry, and Trade in most of the Counties in England.

COTTAM AND COMPANY,
CORNICE-POLE and HOTHOUSE BUILDERS, &c.,
Iron Works, 2, Winsley Street, Oxford Street, London, W.
SADDLE BOILERS.

20s.	24 inches long.	
45s.	60s.	92s. 6d. each.

HOT-WATER PIPES.

2 inch.	3 inch.	
1s. 6d.	2s. 1d.	2s. 9d. per yard

Materials supplied as above, or Estimates given fixed complete to Plan, on application to
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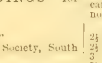

CRANSTON'S PATENT BUILDINGS for Horticultural Purposes.
"Dry Glazing without Putty."
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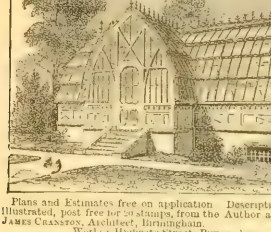
"Ventilation without Moving Lights."
Highly Commended by the Royal Horticultural Society, South Kensington.



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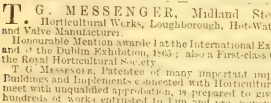
Midland Steam Power Horticultural and Hot Water Works, Loughborough.



T. G. MESSENGER, Midland Steam Power and Valve Manufactory.
Horticultural Works, Loughborough, Hot-Water Apparatus
Honourable Mention awarded at the International Exhibition, 1862, and at the Dublin Exhibition, 1865; also a First-class Certificate by the Royal Horticultural Society.
T. G. MESSENGER, Patentee of many important improvements in Boilers and Implements connected with Horticulture, and which meet with unqualified approbation, is prepared to give reference to hundreds of works entrusted to him and promptly answering the purpose for which they were constructed.
Any House Glazed like a Conservatory, with or without putty.
The mode adopted by T. G. MESSENGER for Heating and Ventilating Forcing Houses is particularly successful.
Houses are constructed on his Patented Ventilating principle to open the whole of roof and sides as though the glass were entirely removed, at the same time admitting the plants in the open air to a genial atmosphere.
T. G. MESSENGER'S Boiler possesses all the advantages of the Tubular and Saddle, as hitherto made, but is both a furnace and boiler, a shallow stoke hold and expensive as much surface to the direct action of the fire as can be obtained, the inside of which can be easily cleaned; and it is also important fact that out of upwards of 500 now at work made upon the improved principle not one has cracked.
T. G. MESSENGER'S Valve (single or double) is effective, simple, easy to work, and as durable as the pipe to which it is attached.
Designs and Estimates supplied for all kinds of Horticultural Works, and guaranteed to answer the purpose for which they may be intended.

Greenhouses of Improved and Portable Construction
May be seen Erected at
JOSEPH SMITH'S HORTICULTURAL WORKS, New Road, Hammersmith.

SPAN-ROOFS—	21 ft. by 11 ft., with Stage	£32 0s.
"	15 ft. by 10 ft. 6 in.	27 0
"	12 ft. by 12 ft.	25 0
"	10 ft. by 10 ft.	20 0
LEAN-TO—	17 ft. by 7 ft.	15 10
"	20 ft. by 9 ft.	21 0
"	21 ft. by 12 ft. 9 in.	31 0
"	21 ft. by 13 ft.	37 0

Fifty strong Iron Lights, 4 ft. 4 in. by 4 ft., glazed 21 oz., and well painted, £10.
Iron Lights, 4 ft. by 4 ft., glazed 21 oz., at 11s.
CONSERVATORIES, GREENHOUSES, or VINERIES made to order at 3s. per foot.
MELON FRAMES, of an improved make, ready at low prices.
Estimates for Heating Buildings by Hot-Water
A VINERY or PEACH HOUSE, 21 ft. by 9 ft., with 11 ft. Rafters, £15.

HOT-WATER PIPES and CONNECTIONS, SADDLE and other BOILERS.
Estimates, with Printed Price Lists, and Free Delivery at principal Railway Stations for Quantities.
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Cheap Greenhouse Stoves.

DEANE AND CO.'S Patent VENTILATING and SUSPENSION STOVES are simple, cheap, and efficient; have been largely adopted and approved; will burn many hours without attention, and at a small cost for fuel. Prices of Suspension Stoves, 20s., 30s., 38s., and upwards. Ventilating Stoves, 50s., 65s., 70s., 90s.
HOT-WATER APPARATUS for Conservatories, Greenhouses, Hothouses, Forcing Pits, &c., erected and fitted up complete.
DEANE & Co., 46, King William Street, London Bridge, E.C.
Established A.D. 1700.

MELON LIGHTS, Machine made, 6 feet by 4 feet, ¼ inch thick, Unglazed 5s., Glazed 6s., are kept in stock at the Finsbury Steam Joining Works, 121, Bunhill Row, E.C.

JOHN WARNER AND SONS,
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BELL and BRASS FOUNDERS to HER MAJESTY.

No. 55.

No. 42.

PATENT CAST-IRON PUMP, fitted with J. W. & Sons' Metal Bucket and Valve, which cannot clog in action, for Wells not exceeding 25 feet.

Diam.	Height.	£ s. d.
2¼ in. short	7 in.	1 1 0
2¼ in. long	3 ft. 3 in.	1 8 6
3 in. long	3 ft. 6 in.	2 1 0
3¼ in. long	3 ft. 6 in.	2 5 0
4 in. long	3 ft. 6 in.	2 14 0
2¼ in. short, with 15 feet of lead pipe attached, ready for fixing		2 0 0
2¼ in. long, do. do.		2 14 0

Price of 4¼-inch Liquid Manure Pump, with legs, £2 15s.; 2-inch Flexible Rubber and Canvas Suction Pipe, 2s. 3d. per foot. The Barrel is 27½ inches long, and the legs are 2 feet high.

IMPROVED LIQUID MANURE or GENERAL PORTABLE PUMP.—These Pumps are fitted with J. W. & Sons' Patent Bucket and Valve, and cannot clog in action. The Barrel is made of Galvanised Iron, not liable to corrode, and can be raised or lowered at pleasure on the stand, the legs of which hold together, and it may be carried with ease by one man to tank or pond.

WARNERS' PORTABLE FIRE or GARDEN ENGINE.

No. 5684.

For use by one Person ... ... price £2 2s.
No. 5678, ditto ditto, on Wheels ... ... £2 18s.
These above are complete in themselves, and may be always kept filled with water, and ready for use.

Letters: The Times, *July 23, 1866, from* Earl EGBERT.
A REAL FIRE EXTINGUISHER.
To the Editor of The Times.
"SIR,—I feel sure you will kindly allot a small space in the *Times* to these few lines, as the best medium through which I would urge every householder who dreads fire to have on each floor of his house one or more small Garden or other Engines on wheels, always charged and in good order, in case of fire.
"Last night, just as I was going to bed, I was startled by that most fearful of all cries, 'Fire, fire!' I soon learned that a fire was raging in a large two-windowed unoccupied bedroom. How caused is to us all a great mystery. It is my custom to keep one of these small Engines on each floor. In two minutes I was in the room with one of them. It was like a furnace. The curtains, shutters, casements, and cornices of both windows were burning and cracking from floor to ceiling. I was quite alone at the moment, yet before assistance arrived (and I'm certain, having gone to bed, I had completely subdued the fire of one window without exhausting the Engine, and when assistance and more water did arrive, we very soon extinguished the other.
"So fierce was the fire that the lead of the casements was melted, and the casements themselves were burnt off their hinges.
"I will only add, through God's mercy, the house was saved by this small Engine. Had it not been at hand in order, most assuredly Cassiobury would be now a heap of ruins.—Yours faithfully,
"Cassiobury Park, July 20. "EGBERT.
"The Engine, even when fully in use, runs so light on the floor, that any woman might draw it, and also work it."

E. T. ARCHER'S "FRIGI DOMO."
Patronised by Her Majesty The Queen, the Duke of Northumberland (for whose House, His Grace the Duke of Devonshire for Chiswick Gardens, Professor Lindley for the Horticultural Society, Sir Joseph Paxton for the Crystal Palace, Royal Zoological Society, &c.
PROTECTION from COLD WINDS and MORNING FROSTS.
"FRIGI DOMO," a Canvas made of Patent prepared Hair and Wool, a perfect Non-conductor of Heat and Cold, keeping, wherever it is applied, a fixed temperature. It is adapted for all Horticultural and Floricultural purposes, for Preserving Fruits and Flowers from the Scorching Rays of the Sun, from Wind, from Attacks of Insects, and from Morning Frosts. To be had in any required lengths.

Two yards wide	1s. 9d. per yard run.
Four yards wide	3s. 6d. per yard.
An improved make, 2 yards wide ...	1s. 8d. per yard.
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11	by	9	12	by	9	13	by	9	14	by	9	s.	d.	s.	d.
12	,,	10	13	,,	10	14	,,	10	15	,,	10	13	6	15	6
15	,,	11	14	,,	11										
14	,,	12	15	,,	12	15	,,	11	16	,,	11				
18	,,	12	19	,,	12	16	,,	12	17	,,	12				
16	,,	13	17	,,	13	20	,,	12		,,					
16	,,	14	20	,,	13	18	,,	13		,,		15	0	17	0
			17	,,	14	18	,,	14		,,					
			20	,,	14										

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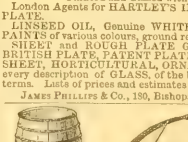

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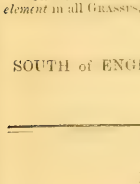

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12 Dessert Spoons	1	4	0	1	10	0	1	12	0	1	15	0
12 Tea Spoons	0	16	0	1	0	0	1	2	0	1	5	0
6 Egg Spoons, gilt bowls	0	10	0	0	12	0	0	12	0	0	13	6
2 Sauce Ladles	0	6	0	0	8	0	0	8	0	0	9	0
1 Gravy Spoon	0	6	0	0	9	0	0	10	0	0	11	0
2 Salt Spoons, gilt bowls	0	3	4	0	4	0	0	4	0	0	4	6
1 Mustard Spoon, gilt bowl	0	1	8	0	2	0	0	2	0	0	2	3
1 Pair of Sugar Tongs	0	2	6	0	3	6	0	3	6	0	4	0
1 Pair of Fish Carvers	1	4	0	1	10	0	1	10	0	1	10	0
1 Butter Knife	0	2	6	0	4	0	0	5	6	0	6	0
1 Soup Ladle	0	10	6	0	12	6	0	16	0	0	17	0
1 Sugar Sifter	0	3	3	0	4	6	0	4	6	0	5	0
Total	9	19	9	12	9	0	13	9	6	14	17	3

Any article to be had singly at the same prices. An Oak Chest to contain the above, and a relative number of Knives, &c., £2 15s.; Tea and Coffee Sets, Dish Covers and Corner Dishes, Cruet and Liqueur Frames, &c., at proportionate prices. All kinds of Replating done by the Patent process.

FENDERS, STOVES, FIRE IRONS, AND CHIMNEY PIECES.

Buyers of the above are requested, before finally deciding, to visit WILLIAM S. BURTON'S SHOW ROOMS. They contain such an assortment of Fenders, Stoves, Ranges, Chimney Pieces, Fire Irons, and General Ironmongery, as cannot be approached elsewhere, either for variety, novelty, beauty of design, or exquisiteness of workmanship. Bright Stoves, with Ormolu Ornaments, £3 8s. to £33 10s.; Bronzed Fenders with Standards, 7s. to £5 12s.; Steel Fenders, £3 3s. to £11; Ditto, with rich Ormolu Ornaments, from £3 3s. to £25; Chimney Pieces, from £1 8s. to £100; Fire Irons, from 3s. 3d. the set to £4 4s. The Burton and all other Patent Stoves, with radiating Hearth Plates.

GASELIERS IN GLASS OR METAL.

The increased and increasing use of Gas in Private Houses has induced WILLIAM S. BURTON to collect from the various Manufacturers in Metal and Glass all that is new and choice in Brackets, Pendants, and Chandeliers, adapted to Offices, Passages, and Dwelling Rooms, as well as to have some designed expressly for him; these are ON SHOW over his TWENTY LARGE ROOMS, and present, for novelty, variety, and purity of taste, an unequalled assortment. They are marked in plain figures, at prices proportionate with those which have tended to make his Establishment the largest and most remarkable in the Kingdom, viz., from 12s. 6d. (two-light) to £23.

DISH COVERS AND HOT WATER DISHES,

in every variety, and of the newest and most recherché patterns, are on show at WILLIAM S. BURTON'S. Block Tin, 19s. the Set of Six; Elegant Modern Patterns, 35s. 6d. to 49s. 6d. the Set; Britannia Metal, with or without Silver-plated Handles, £3 2s. to £6 8s. the Set of Five; Electro-plated, £9 to £26 the Set of Four; Block Tin Hot Water Dishes, with Wells for Gravy, 12s. to 30s.; Britannia Metal, 22s. to 80s.; Electro-plated, on Nickel, full size, £9.

COMFORT AND WARMTH IN BED.

The PATENT EIDER and ARCTIC DOWN QUILTS, manufactured by WILLIAM S. BURTON, combine lightness with warmth. They wash like ordinary Coverlets and without unpicking, and may be used either to supersede Blankets or as Ornamental Counterpanes. Prices: Eider Down, from 16s. to £6; Arctic, 7s. to 30s.

BATHS AND TOILET WARE.

WILLIAM S. BURTON has ONE LARGE SHOW ROOM devoted exclusively to the DISPLAY of BATHS and TOILET WARE. The stock of each is at once the largest, newest, and most varied ever submitted to the Public, and marked at prices proportionate with those that have tended to make his Establishment the most distinguished in this country. PORTABLE SHOWERS, 7s. 6d.; PILLAR SHOWERS, £3 to £5 12s.; NURSERY, 15s. to 32s.; SPONGING, 14s. to 32s.; HIP, 14s. to 31s. 6d. A large assortment of GAS FURNACE, HOT and COLD PLUNGE, VAPOUR, and CAMP SHOWER BATHS. TOILET WARE in great variety, from 15s. 6d. to 45s the set of three.

BEDDING,

Manufactured on the Premises, and guaranteed by WILLIAM S. BURTON.

For Bedsteads, Wide.	3 feet 6 ins			4 feet 6 ins.			5 feet.		
	£	s.	d.	£	s.	d.	£	s.	d.
Best Straw Palliasses	0	13	6	0	16	0	0	18	6
Best French Alva Mattresses	0	13	6	0	17	6	0	19	0
Best Cotton Flock Mattresses	0	18	6	1	2	6	1	6	6
Coloured Wool Mattresses	1	1	6	1	6	0	1	10	6
Best Brown Wool Mattresses	1	7	0	1	12	6	1	15	0
Best Brown ditto, extra thick	1	11	0	1	17	6	2	0	0
Good White Wool Mattresses	1	19	0	2	9	0	2	17	0
Extra Super ditto ditto	2	17	0	3	13	0	4	1	0
Good Horse Hair ditto	2	5	0	2	18	0	3	6	6
Extra Super do.	3	1	0	3	18	0	4	10	0
German Spring Hair Stuffing	3	8	6	4	4	0	4	18	0
Extra Super ditto	4	5	0	5	8	0	5	19	0
French Wool and Hair Mattress for use over Spring	2	17	0	3	15	0	4	7	0
Extra Super ditto ditto	3	11	0	4	9	0	5	0	0
Feather Beds, Poultry, in good Tick	1	16	0	2	7	0	—		
Ditto ditto Grey Goose, in Bordered Linen Tick	3	2	0	4	2	0	4	13	0
Ditto ditto Best White ditto in Best Linen	4	14	0	6	8	0	7	7	0

Feather Pillows, 3s. to 10s. 6d.; Bolsters, from 6s. to £1 9s. 6d.
Down Pillows, from 10s. 6d. to 17s. 6d.
Blankets, Counterpanes, and Sheets in every variety.

PATENT IRON BEDSTEADS,

Fitted with Dovetail Joints and Patent Sacking on Castors, from 11s. to £1 4s. Ornamental Iron and Brass Bedsteads in great variety, from £1 4s. to £46 5s.

FURNITURE.

In Complete Suites for Bed-room of Mahogany, Birch, Fancy Woods, Polished and Japanned Deal, always on show. These are made by WILLIAM S. BURTON, at his Manufactory, 84, Newman Street, and every article is guaranteed. China Toilet Ware in great variety, from 3s. 6d. the set of five pieces.

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The most varied assortment of TABLE CUTLERY in the World, all warranted, is on sale at WILLIAM S. BURTON'S, at prices that are remunerative only because of the largeness of the sales.

Ivory Handles	Table Knives, per dozen			Dessert Knives, per dozen.			Carvers, per pair		
	s.	d.		s.	d.		s.	d.	
3¼-inch Ivory Handles	13	0		10	6		5	0	
3¾-inch fine Ivory Balance Handles	17	6		14	0		5	9	
4-inch Ivory Balance Handles	22	0		16	0		5	9	
4-inch fine Ivory Handles	29	0		21	0		8	6	
4-inch finest African Ivory Handles	35	6		27	0		12	0	
Ditto, with Silver Ferules	42	0		35	0		13	6	
Ditto, Carved Handles, Silver Ferules	55	0		45	0		18	6	
Nickel Electro-Silver Handles	25	0		19	0		7	6	
Silver Handles of any pattern	84	0		54	0		21	0	
BONE and HORN HANDLES.—KNIVES and FORKS, per dozen.	s.	d.		s.	d.		s.	d.	
White Bone Handles	11	0		8	6		2	6	
Ditto Balance Handles	23	0		17	0		4	6	
Black Horn, Rimmed Shoulders	18	0		15	6		4	6	
Ditto, very strong, Riveted Handles	12	6		9	6		3	0	

The largest stock in existence of Plated Dessert Knives and Forks, and of the new Plated Fish-eating Knives and Forks and Carvers.

PAPIER MACHÉ AND IRON TEA TRAYS.

An assortment of TEA TRAYS and WAITERS, wholly unprecedented, whether as to extent, variety, or novelty.
NEW OVAL PAPIER MACHÉ TRAYS, per set of three, from 20s. to 10 Guineas.
Ditto IRON ditto, from 10s. to 4 Guineas.
CONVEX-SHAPE ditto, from 7s. 6d.
ROUND and GOTHIC, at comparatively low prices.

CLOCKS, CANDELABRA, BRONZES, AND LAMPS.

WILLIAM S. BURTON invites inspection of his Stock of these, displayed in two large Show Rooms. Each article is of guaranteed quality, and some are objects of pure vertu, the productions of the first Manufacturers of Paris, from whom WILLIAM S. BURTON imports them direct.

CLOCKS, from 7s. 6d. to £45.
CANDELABRA, from 13s. 6d. to £16 10s. per pair.
BRONZES, from 18s. to £16 16s.
LAMPS, MODERATEUR, from 6s. to £9.
PURE COLZA OIL, 4s. per gallon.

Communications should be addressed to "The Editor," Advertisements and Business Letters to "The Publisher," at the Office, 41, Wellington Street, Covent Garden, London, W.C.
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THE GARDENERS' CHRONICLE
AND
AGRICULTURAL GAZETTE.

A Newspaper of Rural Economy and General News.

No. 52.—1866.] SATURDAY, DECEMBER 29. {Price Fivepence. STAMPED EDITION, 6*d*.

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Notice.

The rapidity with which the Market Prices are now transmitted by Telegraph, and printed in the Local Papers has led the Proprietors of the AGRICULTURAL GAZETTE *to the conclusion that it would be desirable to call attention to the Monday Edition of this Journal was* DISCONTINUED. *The Transposition of Articles so as to find space for the Monday's Market News causes its pages to be incomplete in its form; and they have therefore decided that after the 31st, only one Edition should be published. The News Agents will transmit the Saturday Edition to all Subscribers.*

ROYAL HORTICULTURAL SOCIETY.—The following are the DATES of the SHOWS for 1867, viz:—FIRST SPRING SHOW, TUESDAY, March 19; SECOND SPRING SHOW, TUESDAY, April 16; SPECIAL PRIZE SHOW, TUESDAY, May 7; GREAT SHOW, TUESDAY, June 4, to SATURDAY, June 8; ROSE SHOW, TUESDAY, July 2.

NATIONAL HORTICULTURAL EXHIBITION, 1867.—The above EXHIBITION will open at Manchester on JUNE 7, and continue till JUNE 15.
Schedules, &c., may be obtained on application to Mr. B. FINDLAY, Curator, Botanic Garden, Manchester; or from the undersigned,
HENRY WHITWORTH, Secretary.
Carlton Buildings, Cooper Street, Manchester.

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New and Genuine AGRICULTURAL, GARDEN, and FLOWER SEEDS. Special prices and advantageous offers on application.

Genuine Garden and Agricultural Seeds.
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Notice.
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T. ANSELL, Camden Nursery, Grafton Road, Kentish Town, N.W.

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JHOUSE, Eastgate Nursery, Peterborough, is now prepared to send out his SEEDLING APPLE "LORD BURGHLEY." For particulars of which see his long Advertisement in the *Gardeners' Chronicle* of December 8.

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The Vineyard, Garston, near Liverpool.

Late Grape Vines.
ALICANTE, LADY DOWNES', and MUSCAT of ALEXANDRIA.
J. MEREDITH has a splendid Stock of the above sorts for Planting.
The Vineyard, Garston, near Liverpool.

LADY DOWNES' SEEDLING, HAMPTON COURT, BLACK HAMBURGH, and MUSCAT of ALEXANDRIA GRAPES. Good Fruiting Canes, 7*s*. 6*d*. each; good Planting Canes, 3*s*. 6*d*. each.
T. JACKSON & SON, Nurseries, Kingston, S.W.

W. VIRGO AND SON have a large Stock of the undermentioned FRUIT, FOREST, and other TREES to offer for Autumn Sale, viz. :—

Apples	Alder	Wahy
Cherries	Ash	Quick (strong trans-
Limes	Chestnut (Spanish)	planted)
Pears	Elm (common)	Common and Portu-
Peaches and Nectarines	Hazel	gal Laurels
Plums	Larch (Scotch or Silver Fir	Privet
Forest Trees	Oak (English)	Roses, &c

Samples and Prices can be had on application at The Nursery, Woking, near Guildford, Surrey.

RICHARD SMITH'S FRUIT LIST contains a Sketch of the various Forms of Trees, with Directions for Cultivation, Soil, Drainage, Manure, Pruning, Lifting, Cropping, Treatment in the Garden, also their synonyms, quality, size, form, soil, colour, flesh, flavour, use, growth, duration, season, price, &c. Free by post for one stamp.

RICHARD SMITH, Nurseryman and Seed Merchant, Worcester.

FRUIT TREES.—The finest collection in England. 200 sorts are grown in all manner of training, and are free from insects, mealy-bug, or chlorosis, with which trees in some Nurseries on calcareous soils are affected. Trees from such should be avoided, as once once attacked they can never be cured.

A 96-page CATALOGUE and large Supplement full of information gratis, and post free on application to J. Scott, The Nurseries, Merriott, Somerset.

The Finest New Hardy Plant of the Year.

PAUL'S NEW DOUBLE SCARLET THORN, awarded First-class Certificate Royal Botanic Society and International Exhibition.

"Deep crimson-red, double as full vegetation, far surpassing the old double Pink."—*Gardeners' Chronicle*, May 26, 1866.

STANDARDS and PYRAMIDS, 10s. 6d. each. See PAUL & SON'S CATALOGUE.

Old Church Nurseries, N.

LARCH, &c., at the Nursery of the late David A. Reid, Park Attwood, Bewdley, Worcestershire.—LARCH, 10 to 15 feet, 10s. per 100; 2 to 3 feet, 12s. per 100; 3 to 4 feet, 15s. per 100; 3 to 4 feet, 20s. per 100; PEAR STOCKS, 2 to 3 feet, 15s. to 20s. per 100. LISTS of other TREES sent on application. Apply, with reference or remittance, to

JAMES REDDELL, Steward, Park Attwood, near Bewdley.

Planting Season

LARCH (Native and Tyrolese), SCOTCH FIR (True Native), SPRUCE, OAK, ASH, ALDER, BEECH, PRIVET, and all kinds of FOREST and ORNAMENTAL TREES and SHRUBS, ROSES, FRUIT TREES, CONIFERÆ, EUCARIAS and DEODARS, and large TREES for Park Planting, now in fine condition for removal.

CATALOGUES, with sizes and prices, sent free on application to DICKSONS & CO., Nurserymen, Seedsmen, and Florists, 1, Waterloo Place, Edinburgh.

Game Covert, Forest Planting, &c.

JAMES SMITH offers the following — The RHODODENDRONS are fine bushy well-rooted Plants, fit either for Woods or Pleasure Grounds; the LARCH are fine stout Plants, better cannot be grown; also EVERGREENS, LAURELS, BERBERIS (in sorts), SCOTCH, SPRUCE, and SILVER FIRS, ASH, OAKS, BEECH, BIRCH, PINUS ATTENUATA, &c., all strong well-rooted plants, a PRICED CATALOGUE of which will be forwarded on application.

LARCH, extra stout plants, per 100—1½ to 2 feet, 15s.; 2 to 3 feet, 20s.; 3 to 4 feet, 30s.; 4 to 5 feet, 40s.

RHODODENDRON PONTICUM, bushy, well-rooted plants, 6 to 12 inches, 10s. per 100.

Do. do., 9 to 15 inches, 15s. per 100, 12s. per 1000, £5.

Do. do., 1 to 2 feet, 25s. per 100, 23s. per 1000, £20.

Do. do., 1½ to 2 feet, 40s. per 100, 30s. per 1000.

Do. HYBRIDUM, 6 to 12 inches, 20s. per 100, 20s. per 100.

Price to the Trade on application.

JAMES SMITH, Parley Dale Nurseries, near Matlock.

To the Trade.

JAS. GARAWAY AND CO. offer

Alder, 1½ to 2 & 2 to 3 transplanted	Chestnut, Horse, 1 to 2 feet, transplanted
Ash, 1, 2, and 3 year Seedlings	Elm, Witch, 1 to 2, 2 to 3, and 3 to 4 feet, transplanted
Ash, transplanted, 2 to 3 feet	Larch, extra fine, 1 to 1½, 1½ to 2, 2 to 3, and 3 to 4 ft., transplanted
Aucuba japonica, berried	
Beech, 1 and 2-year Seedlings	
Birch, 1 to 2 feet, transplanted	

FRUIT TREES.

Apples, very fine dwarf-trained	Peaches, very fine dwarf-trained and standard-trained
Apricots, do. and standard-trained	Pears, very fine dwarf-trained
Cherries, do., do.	Plums, do.
Nectarines, do., do.	

Prices on application.

JAS. GARAWAY & CO., Bush-in-Down Nurseries, Bath.

Tansley Nurseries, near Matlock, Derbyshire.

JOSEPH SMITH, SEN., invites Planters and the Trade to inspect his Nursery of 80 Acres of high land. The soil is of a thoroughly sandy nature, and the Plants take up with excellent roots, such as to ensure the success in their removal.

The Nursery contains many Hundred Thousands of RHODODENDRONS, COMMON and PORTUGAL LAURELS, BOX, BROOMS, BERBERIS, HOLLIES, PRIVETS, YEWS, &c. The FOREST TREES are very extensive, of all the leading kinds; there are 15 Acres of LARCHES, of different sizes, and all Clean in proportion. Prices moderate, which can be had on application as above.

SUTTON'S GUINEA BOX

OF

KITCHEN GARDEN SEEDS

For one whole year's supply is forwarded carriage free by rail on receipt of post-office order for 21s.

PRICED LISTS gratis and post free on application.

SUTTON & SONS,
Royal Berkshire Seed Establishment,
Reading.

Just published, post free, 12 stamps,

GRATIS TO CUSTOMERS.

CARTER'S GARDENER'S and FARMER'S VADE MECUM for 1867, contains a large amount of useful and original practical information for the Garden and Farm, together with the following Original Articles:—

On the Cultivation of Hardy Flowers from Seed.
How to Raise Hardy Flowers from Seed.
Ornamental Annuals.
Fine-foliaged Plants from Seed. And,
On Laying down Grass Seed for Permanent Pasture.
&c. &c. &c.

JAMES CARTER & CO., 237, High Holborn, London, W.C., and all Booksellers.

CARTER'S

NEW AND CHOICE VEGETABLES

FOR 1867.

LAXTON'S PROLIFIC EARLY LONG-POD PEA.

We have much pleasure in introducing this valuable variety, raised by THOMAS LAXTON, Esq., Stamford, to the notice of the Trade. Some pods (in a green state) were exhibited by us at Mark Lane in June, 1866, averaging 11 and 12 Peas in a pod, and they were pronounced by several eminent members of the London Seed Trade to be an exceedingly fine variety. For a second Early Pea, and a Pea for early sowing in autumn, there is no Pea of a similar class in cultivation to equal it, and we feel every confidence that it will be in general cultivation in a very few years. The Pea has the same habit and character as "Dickson's Favourite" and "Auvergne," excepting that the pods are nearly DOUBLE the size of these varieties.

The additional Testimonials received by us during the past summer fully corroborate our own opinion as to its being a "First-class Pea."

Extract from "JOURNAL OF HORTICULTURE," *September* 4, 1866.

"In February last I purchased a quart of Laxton's Prolific Peas, sent out by Messrs. Carter. With me I find it is a very good second early variety, certainly much larger in the pod than the other Peas of its class; quite equal to them in flavour, and ripening about the same time. I have now growing three rows, 12 yards in length, and each row is loaded with fine large pods. I intend to cultivate this variety largely next season."—W. WOOLLEY, *Bunbury, September*, 1866

From Mr. H. MAY, *The Hope Nurseries, Bolsle, Yorkshire, August* 29, 1866.

"I observe a person styling himself 'Amateur,' in the *Journal of Horticulture*, speaking disparagingly of your Pea, Laxton's Prolific. I had some of it last season, in sealed packets, and have found it a first-class Pea, pods immense, 10 to 12 peas in a pod, and the crop extremely heavy; it is a fine exhibition Pea; what I had came very true."

Extract from "JOURNAL OF HORTICULTURE," *Sept.* 4, 1866.

"As the raiser of this Pea, no object in writing to you is not to combat the opinions expressed in letters from 'An Amateur' and others in your Numbers of the 14th and 21st of August, as I am content to let the Pea stand or fall by the voice of public judgment alone; but that the condemnations contained in the letters alluded to are not universal, I have proof abundant in flattering reports of the successes of other growers who have countenanced their opinions. 'An Amateur' appears to have assumed that it has been announced as the best Pea in cultivation, and to have condemned it as not answering that description; he may have been disappointed, as many others must be who look for improvements in all points in a new Pea or plant.

"I shall Messrs. Carter announced it as such they could hardly have been liable to a charge of deception; but they have in their description of it, I think, been singularly moderate and faithful.

"My object, however, in troubling you is to explain what I believe to be the origin of the three so-called varieties in the seed alluded to by 'An Amateur.' The variety in question is the result of a cross between 'Beck's Prizetaker' (true), and 'Sangster's No. 1;' and although the appearance of the seed, as evinced in my own sample, would lead one to suppose there were three varieties, yet the produce in the growing state will show but one character, with very slight variations, and this is not the only Pea which exhibits such a tendency. 'Dickson's Favourite'* has been likened by high authority to the variety in question, and has probably originated from crossing two Peas of a similar class. Dickson's partakes of a like mixed character of seed, and the variations in the growing produce are also insignificant. It is a characteristic of many crossed Peas to show in their produce after the second generation seeds like both parents and intermediate, and possibly this may explain the appearances alluded to."—THOMAS LAXTON.

* This is incorrect, as "Laxton's Prolific Early Long-pod" is distinct in seed and growth from "Dickson's Favourite," and all other sorts.

Per Quart, 3s. 6d.; Per Pint, 2s.

New Tom Thumb Peas.

THE PEABODY.—A very dwarf prolific branching late variety, of Tom Thumb habit; height 15 inches; good flavour, and very productive. "The Peabody" is a later variety than the Dwarf Waterloo, to which it forms a good succession.

Per quart, 3s. 6d.; per pint, 2s.

"DWARF" WATERLOO LATE BRANCHING MARROW.—A dwarf variety of tall Royal Victoria or Waterloo Marrow, of Tom Thumb habit; height, 15 inches; the most valuable dwarf Pea for general and late cropping ever offered; very dwarf, good flavour, and very productive. Per quart, 3s. 6d.; per pint, 2s.

Carter's Summer Broccoli.

A new variety, with enormous close white heads, having the desirable merit of being fully a fortnight later than Carter's Champion (from which it was selected, and which has hitherto been considered the latest variety in cultivation). Carter's Summer Broccoli may be had fit for use in June, thus filling up the gap which formerly existed between Broccolis and Cauliflowers. The seed of this variety is distinct from all other sorts.

Per packet, 2s. 6d.

Sims's Mammoth Tomato.

Mammoth variety of the Cherry Tomato, very early, of extremely robust habit; requiring little support; fruit very large and smooth, in Grape-like bunches, averaging from 4 to 20 fruits. This variety was raised by Mr. Sims, Gardener to —Weddowson, Esq., Dulwich Common, and is much recommended.

Per packet, 1s.

New Potato, The Ash-top Fluke.

A hybridized Seedling from the Ash-leaf and the Fluke Potato raised by a Bedfordshire gardener, who has grown it for 5 years. The stock was purchased by J. C. & Co. in 1865, and grown by them last season at their St. Osyth Seed Farm, where they have thoroughly proved its excellent qualities.

The Raiser correctly describes The Ash-top Fluke as follows:—"I can recommend it with perfect confidence as a second early Potato—considerably earlier than the ordinary Fluke Potato—with handsome tubers; it is a good keeper, and when boiled is very mealy and of most excellent flavour. I have grown this Potato for the last 5 years, and during that time I have shown it against all the leading sorts and it was always considered to be the best."

A nurseryman in the neighbourhood where The Ash-top Fluke was raised describes it as "a genuine Seedling Potato, selected from a batch of Seedlings sown in 1860, and grown on since then by the Raiser. It comes on directly after the Ash-leaf, is a good cropper for the garden, but does not produce like coarse field sorts; it is in good condition up to the end of January or middle of February. I have seen the Potato several times at a Cottage Show and admired it much; you may depend upon what the Raiser says about it, as I have known him for years."

Per peck, 6s.

Prices of the above to the Trade on application.

The following is a complete List of Seed Merchants and Nurserymen who have already ordered their supplies direct from our Establishment up to the present time:—

Austin & M'Askar, Glasgow
Allman, Frodk., Horsham
Brotherton, W., Chapel Town, Leeds
Brown, Robert, Low Fell, Gateshead
Balfour, A., Newcastle-on-Tyne
Barr & Sugden, King Street, Covent Garden
Bridgford & Son, Dublin
Casbon, Jno., Abbey Nursery, Spalding
Chivas & Weaver, Chester
Cookson, Jno., Meriden, near Coventry
Cooper & Bolton, 152, Fleet Street, E.C.
Crossland, B., Richmond, near Sheffield
Dickson & Co., Waterloo Place, Edinburgh
Dickson & Brown, 43 & 15, Corporation Street, Manchester [Chester
Dickson & Sons, F. & A., 106, Eastgate Street,
Dickson & Sons, James, 102, Eastgate Street,
Dods, W., Haddington [Chester
Dreghorn & Aitken, Kilmarnock
Drummond Brothers, George St., Edinburgh
Edmonds & Brothers, Dame Street, Dublin
Fowler & Co., Argyle Street, Glasgow
Fisher, Holmes & Co., Sheffield
Fennessy & Son, R., Kilkenny
Godwin, F. G., Norfolk Market Hall, Sheffield
Gregory, J. J. H., Marblehead, Mass., U.S.A.
Henderson, F. G. & Son, St. John's Wood
Hannaford, W., Teignmouth
Harwood, James, Toadby, near Market Rasen
Hulme, W. T., Exotic Nursery, Gloucester
Hurst & Son, 6, Leadenhall Street, E.C.
Hollamby, E., Pantiles, Tunbridge Wells
Jenkinson, M., Higherlands, Newcastle-under-Lyne
Jones, Ellis, 13, Market Place, Wrexham, N.W.
Juhlke & Co., Ferdinand, Erfurt, Prussia
Lawson & Son, Peter, 28, King Street, Cheapside, and Edinburgh
Low, F. C., Dippery, Northampton
Lee, J. & C., Hammersmith
Milne, T., Doncaster
Maule & Son, Bristol
Mackintosh, E. T., Melbourne Place, Edinburgh
Marshall, James, Montrose, N.B.
May, Samuel, Wade Lane, Leeds
Melior, Matthew, Ball Haye Garden, Leek
Methven, Thomas, Princes Street, Edinburgh
Morries, F., Philadelphia, U.S.A.
Newton, W. C., 12, Beaumont Place, Bristol
Nutting & Sons, Barbican, E.C.
Oldroyd, W., Shrewsbury
Palmer, J., Market Cross, Wales
Plowman, James T., Mallow
Pontey, Mrs., Plymouth
Porter, R., Seedsman, Oswestry
Piatz & Sohn, Erfurt, Prussia
Rose, George, Barnsley
Rose & Sons, E., Kirkcaldy
Saunders, W., Seedsman, &c., Abergavenny
Stewart & Son, J., Dundee
Smith, R., Worcester
Shaw, Jno., 20, Oxford Street, Manchester
Small, Francis, Glasgow
Smith & Simons, Buchanan Street, Glasgow
Sutton & Sons, Reading
Thomas, W., Exchange St., Wolverhampton
Thomson & Sons, James, Union St., Glasgow
Thorburn & Co., New York, U.S.A.
Troughton, H., Fishergate, Preston
Turner, C., Royal Nursery, Slough
Veitch & Sons, James, Chelsea, S.W.
Vick, James, Rochester, U.S.A.
Waite, Burnell, & Co., 181, High Holborn, W.C.
Washbourn & Co., Boston, U.S.A.
Watkinson, Henry, Market Place, Manchester
White, George, Moss Street, Paisley
Williamson, George, Brixton, near Thetford
Wood & Son, Marcsfield, Uckfield

PAUL & SON'S ROSES, EVERGREENS, FRUIT TREES, &c.

Amongst EIGHTY PRIZES gained by their COLLECTIONS this year are the PREMIER PRIZES for CUT ROSES at the INTERNATIONAL, NATIONAL, BIRMINGHAM, ROYAL BOTANIC, and BRIGHTON SHOWS, AND EVERY PRIZE FOR NEW ROSES AT THE SUMMER SHOWS.

PAUL & SON,

OLD CHESHUNT NURSERIES, CHESHUNT, N.,

Beg to solicit orders for ROSES and other PLANTS now ready for delivery. That the Old Cheshunt Nurseries still stand unrivalled in the culture of the Rose, the numerous Awards of the year attest. General Prices as under.—

ROSES, from our Stock of over 100,000 Saleable Plants.

Older kinds, Standards, 2 to 4 feet, 18*s.* per dozen; Dwarf Standards, ½ to 1 foot, 12*s.*; Dwarfs, 9*s.* to 12*s.*
Newer kinds, Standards, 24*s.* to 30*s.* per dozen; Dwarf Standards, ½ to 1 foot, 18*s.*; Dwarfs, 18*s.* to 24*s.*
NEW ROSES of 1866, 36*s.* to 42*s.* per dozen; 3*s.* 6*d.* to 5*s.* each.
NOISETTE MARÉCHAL NIEL, Standards, 5*s.*; Dwarfs, 3*s.* 6*d.*

FRUITS, all healthy well-formed Trees.

APPLES.—Fine Standards, 18*s.* per dozen; Pyramids, 18*s.* to 24*s.* per dozen; Dwarf-trained, 30*s.* to 42*s.* per doz.
PEARS, PLUMS, and CHERRIES.—Standards, 24*s.* per doz.; Pyramids, fruiting, 24*s.* to 42*s.* per doz.; Dwarf-trained, 42*s.* per dozen.
PEACHES, NECTARINES, and APRICOTS.—Standard-trained, 7*s.* 6*d.* to 10*s.* 6*d.* each; Pyramids, in pots, 5*s.* each; Dwarf-trained, 60*s.* per dozen.
QUINCES, WALNUTS, MEDLARS, CRABS, SERVICE TREES.—Standards, 2*s.* to 2*s.* 6*d.* each.
FIGS, in pots, 3*s.* 6*d.* to 5*s.* each.
VINES, ex. size, Fruiting, 7*s.* 6*d.* to 10*s.* 6*d.* each; Planting, very fine, 60*s.* per dozen.
GOOSEBERRIES and CURRANTS, 4*s.* per dozen.
RASPBERRIES.—Summer, 16*s.* p. 100; Autumn, 30*s.* do.
STRAWBERRIES, 3*s.* 6*d.* to 5*s.* per 100.

CONIFERÆ.—Our selection of 100 varieties, 1 to 3 feet, £10. PRICED LIST on application. For extent of our Collection see Catalogue of International Horticultural Exhibition.
DECIDUOUS and ORNAMENTAL FOLIAGED TREES and EVERGREENS, for Town and Country Planting.
RHODODENDRONS and AMERICAN PLANTS at PAUL'S American Nursery, High Beech, Loughton.

☞ PRICED DESCRIPTIVE LISTS of the above now ready.

PAUL AND SON would invite an inspection of their Nurseries, extending over Sixty Acres, one mile from Cheshunt Station, Great Eastern Railway. Omnibus from Waltham Station to Nursery Gates meets certain Trains.

HENRY DEWAR AND SON beg respectfully to offer Seed of their very superior IMPROVED SHORT-TOP RED BEET, which was awarded Two First-class Certificates at the Gardeners' of the Royal Horticultural Society, South Kensington, on Nov. 7 and Dec. 9, 1866; also Seed of their gold-crisp white NORTHUMBERLAND CHAMPION CELERY, which was awarded a First-class Certificate at the International Show, South Kensington, Dec. 9, 1866. In addition to the First-class Certificates, the Silver Banksian Medal of the Royal Horticultural Society was awarded for the above Beet and Celery.
In sealed packets only, stamped with our name in full, at 1*s.* per packet each. Price to the Trade on prepaid application
Seed Establishment, 97, Grey Street, Newcastle-on-Tyne.

Seed Potatos.

H. AND F. SHARPE are now offering MYATT'S PROLIFIC KIDNEY, DAINTREE'S EARLIEST, WEBB'S IMPERIAL KIDNEY, FORTY-FOLD, FOX'S SEEDLING, EARLY OXFORD, and many other Early and Late varieties, fine in quality, free from disease, and at low prices.
Seed Growing Establishment, Wisbech, Cambridgeshire.

Seed Potatos—Early Reliance.

HENRY MINCHIN has much pleasure in introducing the above Potato. It is a first-rate cropper, and good flavour; fit for use about the same time as Myatt's Ashleaf, but a better cropper. The following Testimonial is from Mr. C. Turner, who has obtained a supply:—

"The Royal Nurseries, Slough, Oct. 12, 1866.

"DEAR SIR,—The Potato we found a very good one. As a cropper it is very good; in flavour, &c., it is a very capital variety.—Yours, very truly, "CHARLES TURNER."

Price 3*s.* 6*d.* per peck. Price to the Trade on application.
PRICE LISTS of PATERSON'S and other varieties free.
The Nurseries, Bush Norton, Ongar.

SPLENDID NEW EARLY GIANT KING ROUND POTATOS, warranted true; several Sacks to offer. Price on application.
Also GLADIOLUS BRENCHLEYENSIS, 5*s.* per 100.
Also fine Collection of ROSES, SHRUBS, FRUIT TREES, FERNS, and SEEDS.
CATALOGUES on application to
E. ARNOTT, Jun., Railway Nursery, Ardleigh, near Colchester, Essex.

POYNTER'S EARLIEST and BEST PEA, the hardiest and earliest out, price only 1*s.* 3*d.* per quart. See Advertisement, p. 1180 of this week's *Gardeners' Chronicle*.
To be obtained Retail in London of Messrs. Jas. Veitch & Sons, Chelsea, S.W.; and Mr. B. S. Williams, Hedloway, N.; and through any Seedsman, in one quart package only, with Trade Mark, the Crown and Royal Oak, and blue label. None other genuine.
ROBERT H. POYNTER, Seedsman, &c., Taunton, Somerset.

New Dwarf Kidney Bean—Dickson's Eclipse.

JAMES DICKSON AND SONS have continued confidence in again offering this *new, distinct, and thoroughly superior* DWARF KIDNEY BEAN, the past season having afforded many additional proofs of its *great superiority and excellence*. In sealed packets, pints, 1*s.* 6*d.*; quarts, 2*s.* 6*d.*
J. DICKSON & SONS can this season spare a limited quantity to the Trade. Seed Warehouse, 102, Eastgate Street, Chester.

UNDER THE PATRONAGE OF HER MOST GRACIOUS MAJESTY THE QUEEN,

AND MOST OF THE NOBILITY AND LANDED PROPRIETORS THROUGHOUT BRITAIN.

FRANCIS & ARTHUR DICKSON & SONS,

THE OLD ESTABLISHED SEED WAREHOUSE,

106, EASTGATE STREET, and the **"UPTON"** NURSERIES, CHESTER.

THE BEST EARLY PEA IN CULTIVATION—DICKSON'S "FIRST & BEST."

FRANCIS AND ARTHUR DICKSON AND SONS are gratified to find that this Pea has again this Season (1866) given universal satisfaction, and is pronounced by the most experienced Gardeners in Britain, and other competent Judges (confirmed also by their own *repeated* trials against all the Early Peas of the day), to be the very best *FIRST* EARLY PEA ever offered for general good *qualities*, viz., EARLINESS, PRODUCTIVENESS, and SUCCESSION of CROP. It will become as universally grown as their "DICKSON'S FAVOURITE," which they had the pleasure to introduce some years ago.

Retail Price, 1s. 6d. per Quart. Price to the Trade on application.

COMPLETE ASSORTMENTS OF CHOICE CONTINENTAL AND ENGLISH FLOWER SEEDS.

No. 1. A COMPLETE COLLECTION of the best and most approved Continental and English varieties, £2 2*s.*

No. 2. A COMPLETE COLLECTION of ditto ditto	£1 10 0	No. 4. A COMPLETE COLLECTION of ditto ditto	0 15 6
No. 3. A COMPLETE COLLECTION of ditto ditto	1 1 0	No. 5. A COMPLETE COLLECTION of ditto ditto	0 10 6

COMPLETE ASSORTMENTS OF CHOICE VEGETABLE SEEDS FOR ONE YEAR'S SUPPLY.

No. 1. A COMPLETE COLLECTION of SELECT VEGETABLE SEEDS for ONE YEAR'S SUPPLY	£3 3 0
No. 2. A COMPLETE COLLECTION of ditto ditto, in smaller proportionate quantities	2 2 0
No. 3. A COMPLETE COLLECTION of ditto ditto, in smaller quantities	1 1 0
No. 4. A COMPLETE COLLECTION of best kinds for a Small Garden	0 10 6
No. 5. A COMPLETE COLLECTION of the most select kinds for an extra large Garden, in proportionate quantities to No. 1	5 5 0

The above Collections contain the very best varieties of VEGETABLE and FLOWER SEEDS of the respective kinds, and are recommended to Amateurs and others who do not keep a professed Gardener, and are themselves at a loss to select.

FRANCIS & ARTHUR DICKSON & SONS'

CATALOGUE OF VEGETABLE AND FLOWER SEEDS, ETC., FOR 1867,

with practical Cultural Directions, is ready, and will be sent *Post Free* on application.

Their Seeds are all of the *most select* character, each variety being saved from the *best* stock *known* of its kind.

All Seeds of £2 value delivered Carriage Free at any Railway Station. Flower Seeds sent Post Free, except heavy articles, such as Sweet Peas, Lupins, &c.

106, EASTGATE STREET, CHESTER.—Dec. 29, 1866.

VIOLA CORNUTA, MAUVE QUEEN, and PURPLE QUEEN.—Now Seed of the above now ready, in packets 6d., 1s., 2s. 6d., and 5s. Price to the Trade on application
James Carter & Co., Seed Merchants and Nurserymen, 237 & 238, High Holborn, London, W.C.

Viola cornuta.

H. CANNELL has got 500 Dozen in fine condition of both PURPLE and MAUVE QUEEN, direct from Mr. Bagnall, and MAUVE QUEEN, which originally came direct from Mr. Wills, therefore must be true. Six of each kind sent safe, fresh, and free for 24 Stamps; £1 per 100.—Fuchsia Nursery, Woolwich.

VIOLA CORNUTA (TRUE).—The quickest and best way of getting into a large and true stock. 100 Plants of Mr. Bennett's variety of the above beautiful and hardy Bedding Plant sent on receipt of Postoffice order for 12s. 6d., package included. The Plants are nice and tufty, by separating them now and by cuttings the stock is quickly made into thousands by spring.—Apply to SHARP & MOIR, Nurserymen and Seedsmen, Kelso, N.B.

THE LONDON SEED COMPANY will publish a New Edition of the GARDEN and SEED PRICE CURRENT on January 1, 1867.
Copies can be learned on application to the Manager, 68, Welbeck Street, Cavendish Square, W.

THE PRICE CURRENT and SEED DIRECTORY of the LONDON SEED COMPANY will appear on January 1 next, and will be forwarded gratis on application to the Manager, 68, Welbeck Street, Cavendish Square, W.

COLLECTIONS of GARDEN SEEDS, suitable for Large or Small Gardens, can be obtained free at 10s., 20s., 30s., 42s., and 63s.
A reduction of 20 per cent. will be allowed on all Orders for Six and more Collections. Friends in a neighbourhood should therefore unite and obtain the Garden supplies on the lowest possible terms.
Twenty per cent. will be allowed to purchasers of Garden Seeds, when SIX or more Collections are obtained at the same time, by the London Seed Company, 68, Welbeck Street, Cavendish Square, W.C.

WANTED, COMMON BRAMBLE. State Height and Age, with price per 100 or 1000, to SHARP & MOIR, Nurserymen, Kelso, N.B.

Gladioli.

J. KELWAY AND SON beg to call attention to their splendid Stock of GLADIOLI, which comprises all the sorts worth growing, and probably the largest in the Trade. As a proof of the luxuriance and excellence of their collection they have been awarded the First Prizes offered at the Crystal Palace and Royal Horticultural Exhibitions in 1864, 1865, and 1866.
PRICE CATALOGUES free to all applicants.
Selections left to J. K. & S., 3s., 6s., to 21s. per dozen; 10s., 20s., to 100s. per 100.
The Nurseries, Langport, Somerset

MESSRS. C. PLATZ AND SON, Erfurt, Prussia, Seedsmen to H.M. the King of Prussia, beg to inform their Friends and the Trade that their SEED CATALOGUE for 1867 is now ready, and may be had post free on application to
Messrs. JAMES & SCRIMSHIRE, Seedsmen, Cheltenham
WELLINGTONIA GIGANTEA, new seed, per 1000 seeds, 6s.
PINUS NORDMANNIANA, new seed, per lb., 10s. 6d.

To the Seed Trade.—Continental Flower Seeds, &c.

F. W. WENDEL, SEED GROWER, &c., Erfurt, Prussia, begs to announce that his WHOLESALE CATALOGUE of the above is now ready, and may be had free and post paid on application to his Agent,
Geo. Mackenzie, Seedsman, &c., High Road, Hammersmith, W.

NEW CATALOGUES for the SEASON of 1866 and 1867
No. 1. ROSES.—A Select List of all the best varieties in cultivation, fully and faithfully described.
No. 2. FRUIT TREES.—A Descriptive List of all the choicest varieties of Fruits.
No. 3. CONIFERS, ORNAMENTAL TREES and SHRUBS.—Contains all varieties worthy of cultivation, with interesting notes of description, height, size, native country, &c.
No. 4. TRANSPLANTED FOREST TREES.—Plants for cover and underwood, &c.
No. 5. GARDEN and AGRICULTURAL SEED and ROOT CATALOGUE.
No. 6. GENERAL PLANT CATALOGUE.
The above will be forwarded free on application to
JOHN CRANSTON, King's Acre Nurseries, near Hereford.

SELECT FLOWERING TREES for SMALL LAWNS and FLOWER GARDENS.
CARAGANA ALTAGANA, ARENARIA (Weeping), CHAMLAGU, FRUTESCENS (Weeping), JURATA, all 2s. 6d. each; ARBORESCENS PENDULA, new, 5s. each. CALOPHACA WOLGARICA and HALIMODENDRON ARGENTEUM, 2s. 6d. each.
The above are all Siberian trees and shrubs, flowering in early summer, grafted on 5-feet stems of Caragana.
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Roses.

CHARLES VERDIER Fils (ex-Partner in and Successor to the late Firm of VICTOR VERDIER Père, and Cie.) VERDIER Fils, Nurseryman, 12, Rue Dunéril, Paris, begs to inform Amateurs and the Trade that he has just published his NEW CATALOGUE of ROSES, which may be obtained free on application to his Agents, Messrs. SILBERRAD & SON, 5, Harp Lane, Great Tower Street, London, E.C.

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DESCRIPTIVE PRICED CATALOGUES will be forwarded on application, and to Purchasers of large quantities Special and most advantageous Prices will be given.
Planting undertaken by Contract or otherwise.
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FOR ONE YEAR'S SUPPLY.

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Are now prepared to receive Orders for the above, the prices of which are as follows:—

For the Kitchen Garden.

No. 1. A COMPLETE COLLECTION for ONE YEAR'S SUPPLY, with Instructions on Cultivation, £3 3s.
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No. 3. A COMPLETE COLLECTION, ditto, £1 11s. 6d.
No. 4. A COMPLETE COLLECTION, ditto, £1 1s.
No. 5. A COMPLETE COLLECTION, ditto, 15s.
No. 6. A COMPLETE COLLECTION, ditto, 10s. 6d.
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No. 1. A COMPLETE COLLECTION of the choicest kinds GERMAN and ENGLISH SEEDS, £2 2s.
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The very EARLIEST and BEST PEA in cultivation is
SUTTON'S RINGLEADER, price 2s. per quart.
SUTTON'S COMPLETE CATALOGUE of GARDEN and FLOWER SEEDS sent Gratis and Post Free on application.

SUTTON AND SONS, SEED GROWERS, READING.

1867.

FIRST WEEK IN JANUARY WILL BE PUBLISHED,

FIRST EDITION, 25,000,

OF

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☞ *For full particulars of these Collections, see the* GUIDE.

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In it, among other articles of sterling merit, especial attention is directed to the following:—

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LETTUCE, SCOTT'S WHITE COS.—A very superior variety o Paris Cos. Per packet, 1s. 6d.

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FULHAM NURSERY, LONDON, S.W.

Wholesale Catalogue of Nursery Stock.

GEORGE JACKMAN AND SON'S PRICED and DESCRIPTIVE CATALOGUE for 1866 and Spring 1867, can be had free on application, comprising Fruit Trees, Roses, American Plants, Conifers, Clematises, Evergreen and Deciduous Trees and Shrubs, and transplanted Forest Trees, &c., &c.

Woking Nursery, Surrey.

Amaryllis.

JAMES GARAWAY AND CO., Durdham Down Nurseries, Bristol, offer Bulbs of the above, unnamed Seedlings that have bloomed with them during the last two seasons, and many of which are now showing flower, at 5s., 7s. 6d., and 10s. 6d. each, or 60s., 80s., and 105s. per dozen.

JAMES GARAWAY & Co., Durdham Down Nurseries, Bristol.

British Fern Catalogue.

ROBERT SIM can now send, post free for six postage stamps, Part I. (British Ferns and their varieties, 36 pages, including prices of Hardy Exotic Ferns) of his NEW and PRICED DESCRIPTIVE CATALOGUE of BRITISH and EXOTIC FERNS, No. 7.

Foot's Cray Nursery, S.E., a mile from Sidcup Station of New North Kent Line of South Eastern Railway.

Rhododendrons.

JOHN WATERER'S DESCRIPTIVE CATALOGUE of HARDY SCARLET and other RHODODENDRONS is now published and will be forwarded on application. It faithfully describes the colours of the new varieties exhibited by him at the Royal Botanic Gardens, Regent's Park. An Abridged List of popular CONIFERS with heights and prices, is likewise combined.

The American Nursery, Bagshot, Surrey, near Sunningdale Station, South-Western Railway.

New Catalogue of Plants, Dutch Bulbs, &c.

ROBERT PARKER begs to announce that his NEW CATALOGUE, containing Select Descriptive and Priced Lists of New, Rare, and beautiful Greenhouse, Hardy and Stove Plants, Hardy Ferns, Fruit Trees, Grape Vines, Roses, Rhododendrons, Sweet Violets, &c., Amaryllis, Crocuses, Cyclamens, Gladioli, Hyacinths, Liliums, Narcissus, Tulips, and other Bulbs, is now published and will be forwarded to applicants.

Exotic Nursery, Tooting, Surrey, S.

The Gardeners' Chronicle.

SATURDAY, DECEMBER 29, 1866.

WHAT is called SUBTROPICAL GARDENING is now somewhat firmly established amongst us. It has withstood as severe a test during the past summer and autumn as any it is likely to experience, and we may now with confidence discuss the modifications and benefits it is capable of lending to our popular style of garden decoration, and suggest how far it may be wise or tasteful to adopt the system in gardens generally.

First, then, as to its teachings. It has taught us the value of grace and verdure amid masses of low and brilliant and unrelieved flowers, or rather reminded us of how far we have diverged from Nature's ways of displaying the beauty of vegetation.

Previous to Mr. GIBSON's inauguration of this movement in England, our love for rude colour had led us to some extent to ignore the exquisite and inexhaustible way in which plants are naturally arranged—Fern, flower, grass, shrub and tree, sheltering, supporting, and relieving each other. We cannot attempt to reproduce this literally in gardens, nor would it be wise or convenient to do so; but assuredly herein will be found the source of true beauty in gardens, and the more the ornamental gardener keeps the fact before his eyes, the nearer truth and success will be attained. Nature *in puris naturalibus* is not a beauty to be added to our gardens, but Nature's laws should not be violated, and but few human beings have contravened them more than the British horticulturist during the past 20 years. We must compose from Nature, as the best landscape artists do, not imitate her basely. We may have all the shade, the relief, the grace, and the beauty, and nearly all the irregularity of Nature seen in every blade of Grass, in every sea-wave, and in every human countenance; and which may be found, too, in some way, in every garden that affords us lasting pleasure either from its contents or design. Well, then, subtropical gardening has taught us that one of the greatest mistakes ever made in the flower garden was the adoption for culture on a vast scale of a few varieties of plants, to the exclusion of interest and variety, and too often of beauty or taste. We have seen how well the pointed, tapering leaves of the Canna carry the eye upwards; how refreshing it is to "cool the eyes" in the deep umbrage of those thoroughly tropical Castor-oil plants with their gigantic leaves; how grand the Wigandia, with its wrought-iron texture and massive outline, looks after surveying brilliant lines and richly painted leaves; how greatly the sweeping Palm leaves beautify the British flower garden;—and, in a word, the Garden at Battersea has shown us the difference between gardening that interests and delights all the public, as well as the mere horticulturist, and that which is too often offensive to the eye of taste, and pernicious to every true interest of gardening.

But are we to adopt this system in its purity? Certainly not. All practical men see that to accommodate it to private gardens an expense and a revolution of appliances would be necessary, which are in nearly all cases quite impossible, and if possible hardly desirable. We can, however, introduce to our gardens much of the beauty *suggested* by Battersea; we can vary their contents, and render them more interesting by a cheaper and a nobler system. The use of all plants without any particular and striking habit or foliage, or other distinct peculiarity, merely because they are "subtropical," should be tabooed at once, as tending to make much work, and to return—a lot of weeds; for "weediness" is all that we can write of many Solanums and stove plants of no real merit which have been employed in this movement. Selection of the most beautiful and useful from the great mass of plants known to science is one of the most important of the horticulturist's duties, and in no branch must he exercise eclecticism more thoroughly than in the one under discussion. Some plants used in it are as indispensable—the different kinds of Ricinus, Cannas in great variety, Polymnia, Colocasia, Uhdea, Wigandia, Ferdinanda, Palms, Yuccas, Dracænas, and fine-leaved plants of coriaceous texture generally. A few specimens of these may be accommodated in many large gardens; they will embellish the houses in winter, and, transferred to the open garden in summer, will lend interest to it when we are tired of the houses. Some Palms, like Seaforthia, may be used with the best effect for the winter decoration of the conservatory, and stood out with the best effect, and without danger in summer. The many fine kinds of Dracænas, Yuccas, Agaves, &c., which have been seen to some perfection at our shows of late, are eminently adapted for standing out in summer, and are in fact benefited by it. Among the noblest ornaments of a good conservatory are the Norfolk Island and other tender Araucarias—these may be stood out for the summer much to their advantage, because the rains will thoroughly clean and freshen them for winter storing. So with some Cycads and other plants of distinct habit—the very things we wish to see added to the present beauties of the flower garden. Thus we may enjoy all the benefits of what is called subtropical gardening without creating any special arrangements for them.

But what of those who have no conservatory, no hothouses, no means for preserving large tender plants in winter? These too may enjoy in effect the beauty which may have charmed them in a subtropical garden. We have no doubt whatever that in many places as good an effect as any yet seen in an English garden from tender plants, may be obtained by planting hardy ones only! There is the Pampas Grass—when well grown unsurpassed by anything that requires protection. Let us in planting it take the trouble to plant and place it very well—and we can afford to do that, since one good planting is all that it requires of us, while tender things of one-tenth the value may require daily attention. There are the hardy Yuccas, noble and graceful in outline, and thoroughly hardy, and which if planted well, are not to be surpassed, if equalled, by anything of like habit we can preserve indoors. There are the Arundos—conspicua and Donax, things that well repay for liberal planting, and there are fine hardy herbaceous plants like Crambe cordifolia, Rheum Emodi, Ferulas, and various fine umbelliferous plants that will furnish effects equal to those we can produce by "stove plants." The Acanthuses, too, when well grown, are very suitable to this style; one called lusitanicus, which is beginning to get known, being of a peculiarly firm, polished, and noble leafage. Then we have a hardy Palm—very much hardier, too, than we suppose it to be, because it has preserved its health and greenness in sheltered positions, where its leaves may not be torn to shreds by the storm through all our recent hard winters, including that of 1860. And when we have obtained these we may associate them with not a few things of much beauty among trees and shrubs—with elegant tapering young Pines, many of which, like Cupressus nutkænsis, have branchlets finely chiselled as a Selaginella, not of necessity showing close resemblance, but sufficient to carry the eye and mind from the minute and pretty to the beautiful and dignified. By a judicious selection from the vast mass of hardy plants now obtainable in this country, and by, where convenient, associating with them house plants stood out for the summer, we may arrange and enjoy a beauty in the flower garden to which we are as yet strangers, simply because we have not sufficiently selected from and utilised the vast amount of vegetable beauty at our disposal.

—— WE have already explained to our readers the principal arrangements hitherto made with reference to the INTERNATIONAL HORTICULTURAL EXHIBITION to be held in PARIS next year (see pp. 730 and 970). A detailed Programme now before us, enables us to add some further particulars. The Programme itself is too lengthy for us to insert as a whole, but we have no doubt that copies may be obtained on application to R. G. WYLDE, Esq. (the Assistant-Secretary of the Exhibition), South Kensington Museum.

In so far as the general arrangements go, but little alteration has been made in the original plan (see p. 730), but the following are among the more important additions:—

Each plant must be correctly labelled with its scientific name (species and variety). In the case of a new plant, the label must indicate the name of the plant, the place from whence imported, and the date of introduction. In the instance of a new seedling variety, the exhibitor may attach to the plant a sealed envelope containing the name that he proposes to give to the plant, which envelope will not be opened, unless with the sanction of the exhibitor, if the plant is not deemed worthy of an award. Plants that appear to have no section in which they can appropriately be exhibited may be specially allocated, on application being made to the Committee of Advice (*commission consultative*), who will make arrangements accordingly. In those classes where a definite number of plants is mentioned, no exhibitor must show more or fewer than the number fixed. In the case of "*collections*" where no special indications are given in the Programme, it is to be understood that only one plant of a kind is to be exhibited. In the "*lots*" several plants of the same variety or species may be exhibited where no indication to the contrary is given. It is expressly to be understood that all plants exhibited as new plants, either seedlings or new importations, must not have been previously let out in commerce. Intending exhibitors must notify before the 28th of February, 1867, the classes in which they intend to exhibit, and give full details upon the points already mentioned by us at p. 730.

In the case of British exhibitors the applications for space, and announcement of intention to exhibit, should be sent to R. G. WYLDE, Esq., South Kensington Museum.

As to the fourteen consecutive sections or "concours" into which the whole Exhibition is to be divided, the plan adopted is, to have one leading feature for each concours, and several accessory ones; thus each section is divided into "concours principaux" and "concours accessoires." We subjoin a literal translation of some of the particulars relating to the first Exhibition, which is to begin on the 1st of April and end on the 15th day of the same month, translating the French *concours* by the corresponding term made use of in English schedules, viz., class.

FIRST EXHIBITION.

PRINCIPAL CLASSES.

General Exhibition of Conifers and Plants in Bloom (11 classes), viz.:—1. Species and varieties in collections. 2. "Lot" of 50 plants, select [*choisis*] varieties. 3. Lot of 25 select varieties. 4. Lot of 12 plants remarkable for their growth [*développement*]. 5. Lot of plants remarkable for good cultivation. 6. Plant of choice sort and good cultivation. 7. Lot of 25 varieties introduced into commerce during or since 1864. 8. Lot of 12 varieties sent out during or since 1865. 9. Lot of 6 varieties sent out in 1866. 10. Lot of new seedling varieties. 11. One new seedling variety.

ACCESSORY CLASSES.

Newly introduced Stove Plants (4 classes).—1. Lot of new plants, various. 2. Lot of 5 new plants, various. 3. Lot of plants of the same genus. 4. Plant remarkable in an ornamental point of view.

New Seedling Stove Plants (2 classes).—1. Lot of various seedlings. 2. Seedling plant obtained on the continent (three specimens of the same kind may be exhibited in this class).

New Greenhouse or Hardy Plants (3 classes).—1. Lot of new plants, various. 2. Lot of new plants of the same genus. 3. Ornamental plant of any kind, species or variety.

Seedling Greenhouse or Hardy Plant obtained on the Continent (4 classes).—1. Lot of various plants. 2. Woody plants remarkable for their foliage. 3. Lot of species of the same genus. 4. Plant remarkable for its flower or foliage.

Stove Plants (14 classes.)

Orchids in Bloom (4 classes).—1. Collection of species and varieties. 2. Collection of Palaonas (2 specimens of each kind should be exhibited). 3. Lot of plants remarkable for their growth. 4. Single plant remarkable for its development.

These extracts will show in what way the outline already given by us at p. 970 is filled up. For further details we must refer to the Programme itself, which consists of no fewer than 44 quarto pages.

—— It appears that the Parisian horticulturists are not much better pleased with the arrangements for the forthcoming INTERNATIONAL than are our own exhibitors. A memorial has been addressed to the President of the Committee of Advice, pointing out some of the objectionable features in the scheme, and suggesting certain alterations.

—— We have on various occasions invited attention to the choice novelties which have from time to time been obtained amongst CHINESE PRIMROSES, and we have now one or two more to notice. One is a double fringed-flowered sort, with blossoms of a lilac-rose colour, which, so far as we can judge from one or two cut blooms, is distinct, and therefore will make a desirable, as it is a pleasing addition to the sorts already cultivated. A second is single-flowered and fringed, and is to be called SPLENDENS GRANDIFLORA; it has large flowers of a dark magenta crimson, with a yellow eye, and will be a showy variety when vigorously grown; while a third, remarkable for delicacy of tint, and to be called BEAUTY, has the flowers of a pale soft blush, with a

large yellow eye, very charming in its way. These have been sent to us by Mr. R. DEAN.

— We learn with great satisfaction that Dr. ALEXANDER DICKSON has been appointed to the post of PROFESSOR OF BOTANY IN TRINITY COLLEGE, DUBLIN, in the place of the late Dr. HARVEY. We venture to hope that the duties of the office he has so appropriately been called on to fill, will not impede the prosecution of those researches on the development and growth of plants which Dr. DICKSON has so successfully carried on. It is a field of vast importance, in which we English have few observers, and certainly none who have done so much as Dr. ALEXANDER DICKSON.

— M. CARRIÈRE continues to add interesting details, from which we may hope in due time to arrive at some more definite conclusions as to the phenomena of VARIATION. Having sown seeds of Salix vitellina, many of the seedlings turned out to be different one from another, and from the parent plant. Some seedlings with yellow bark, and others with very dark rind, alike produced large, smooth, or glabrous leaves; but some of them formed buds the leaves of which were small and hoary from the presence of silvery hairs. In another instance the leaves were spirally twisted, as in the Salix babylonica annularis. M. CARRIÈRE, however, does not tell us what, if any, precautions he took to prevent the flowers of the mother plant from being influenced by the pollen from some other Willow.

WINDOW FLOWER GARDENS.

[THE gradual extension of the movement for fostering a love of flowers among the working classes, and for diffusing a charm over their too often ill-conditioned residences, is matter for congratulation. Not only in London, but in Dublin and other large towns, efforts are being made in this direction; and from a report before us, we learn that Hull is not behindhand in the good work. Nearly 4000 plants have been distributed among 724 applicants, under the superintendence of Mr. J. C. Niven, the curator of the Hull Botanic Garden, and Mr. Peak, the superintendent of the People's Park in the same town. The directions for the culture of these plants, drawn up by Mr. Niven, are so well adapted to the end in view, that we republish them here in the hope that they may serve as hints to others who are engaged in a similar task. EDS.]

Watering.—The first and most important point is to guard against over-watering; this remark is more especially applicable to the first month or two—as it will be readily understood that in the process of removing a plant from the ground where its roots are widely spread, and placing them in the narrow limits of a flower pot, a certain amount of injury is unavoidable, and in order to allow the roots to recover their power of healthy action, just sufficient water must be given to keep the soil moist, not wet—and to insure this a watering once a week will be quite sufficient until about the beginning of the year—or, if the plants are in a room where there is no fire, once a fortnight may suffice. One maxim in connection with watering which ought always to be borne in mind is, when you do water, do it well and thoroughly, allowing all the surplus to escape at the bottom of the pot. It is usual to stand the pots in saucers, and as a matter of cleanliness it is advisable to do so, but never allow the surplus water to remain in those saucers for any length of time, as the air is thereby prevented from acting on the soil, and the result is that it becomes sour, and rots the roots.

Decayed Branches.—Should branches decay, as some will do even under the most favourable circumstances, cut them back to a sound joint, that is, to that part of the stem where there either is or has been a leaf. This being neglected, the decay may from a single branch extend itself through the whole plant. For the same reason it is advisable to remove any decaying leaves, or those that have turned yellow —the latter by a gentle pressure downward, will generally break off at the bottom of the leaf-stalk.

Ventilation.—A word now about ventilation. Let the window be open as much as possible during the day, especially if there be a fire in the room, and at night, when it would be impracticable to have the window open, place the plants on the floor, where they will be coolest. Above all things avoid putting them on a high shelf for the oft-repeated reason that "they are nicely out of the way,"—such a course would lead to their being very soon out of the way altogether.

Spring Growth.—As the spring advances, and the plants show signs of growth in the form of healthy young leaves, take every opportunity of setting them out of doors during the day in a sheltered corner, where they will get a little sun, and above all things never miss an April shower, which will be all the more acceptable should it occur in March. A nice genial shower will do them more good in an hour than all the artificial waterings and washings you can give.

Air Purified by Plants.—There is with many persons a prejudice against having plants in a bedroom, under the erroneous impression that they poison the atmosphere. The very reverse is the case. The leaves of plants purify the air, filtering all the poisonous matter out of it, and appropriating that poisonous matter to their own growth. The same remark does not, however, apply to cut flowers. These, beautiful as they may be, do to some extent add to the impurity, and consequently ought always to be removed from a sleeping apartment at night. I mention these facts for the reason that a bedroom window is generally better adapted for the growth of plants than a kitchen window, owing to the atmosphere being less hot and dry.

Effects of Frost.—A word now as to frost—the arch-enemy of floriculture. When it is at all severe, the plants should be removed from the window-ledge either to a warmer room, or, failing that, to the warmest and farthest-removed corner from the window. As soon as you see those beautiful crystals form on the glass you may be sure that it will not be long before the frost makes itself felt in the inside. Should this precaution not be taken, and the soil and plants become frozen, let them then thaw gradually; and the most effectual way to do this is to place them in a dark cupboard (not a warm one), and sprinkle them well overhead with *cold* water.

NEW AND SELECT PEARS.

No. 7. Beurré Clairgeau.—It is now several years since this, the most beautiful of all Pears, was introduced. In size it is one of the largest, and in a warm sunny climate, when its skin is covered with a fine crimson tint, it is most ornamental as a dessert fruit. With regard to its flavour, till 1865 it was disappointing, as its juice was watery, with a great lack of sugar

and flavour, but last year it was not only most beautiful, but very good indeed. This season it has lapsed into its usual character, thus showing that it requires a warm exposure and good climate. The tree is very hardy, and a most abundant bearer, and if well grown is unrivalled as a market Pear in December, its usual period of ripening. It does not succeed on the Quince stock in all soils, but bears most abundantly even when grafted on the Pear stock.

THE PHILOSOPHY OF PRUNING.

PRUNING is one of the most important operations to be applied to plants, especially to woody plants. Pruning in some sort has to be performed at all periods of their existence and growth; and upon all, from the lordly forest tree, or the fruit-bearing orchard tree, of whatever kind, to the humble bushes and brambles that yield us their abundant and most welcome fruits, or the trailing Vine that adorns our arbors, and covers our trellises with its rich and tempting clusters of luscious Grapes. Many herbaceous plants are also submitted to judicious pruning, and yield in consequence an increased product of fruit. Our ornamental gardeners and plant growers practise pruning most admirably upon their house plants, and by their successful methods of pursuing the practice, they produce the most wonderful effects in the vigour, thrift, symmetry, and blossoming of their specimens, as may be seen especially at our noble exhibitions. And yet, when we come to travel about the country, and see the shrubberies, the parks, the orchards, fruit gardens, and Vineyards, as they are, we shall be struck with the great amount of ignorance or neglect which is manifested in what we everywhere behold. Still more shall we be surprised when we hear nurserymen and orchardists, men who have had opportunities for extended observations, and those, too, who are considered successful cultivators, advocate the idea that trees should not be pruned at all. An apology may be found for them in the many instances of bad pruning that may frequently be met with—they may say that no pruning is better than such mutilation—and with some varieties they may have a share of reason on their side, since there are many sorts that will very naturally produce an open head, every where provided with abundant fruit-spurs, those great desiderata of the fruit grower.

We prune our plants for the most opposite purposes. We prune to make them assume some desired form; we prune to produce symmetry; we prune to torture them as much as possible from their natural habit. Again, we prune to make them grow vigorously, at one time; and we perform other pruning operations in order to dwarf and stunt our specimens, and to make them as diminutive as possible. The experienced orchardist will tell you to prune the barren but thrifty tree in order to make it productive of fruits, and he may also tell you to prune one still more severely, which has expended all its energies in fruit-bearing, and appears likely to exhaust itself to its own destruction. Upon very high authority, supported by universal and annual practice, the Vine-dresser will advise you to prune your Vine in order to make it fruitful, and he will also urge you to prune in such a manner as to prevent over-production—he will further insist that you shall prune again during the season of growth to promote the same objects.

Thus it appears that the ends to be attained by pursuing the practice of this important operation are exceedingly diverse and apparently contradictory; nor is it any wonder that the novice should feel bewildered in the midst of directions so opposite, nor even that those who have grown grey in the orchard, should have arrived at conclusions so strange as those just mentioned—not to prune at all. And yet, notwithstanding these apparent contradictions, there is a reason for each of these various modes, as well as for the different seasons that have been recommended for performing the several operations of pruning.

It may be said that in the natural trees, whether standing alone in the midst of a prairie, thinly grouped as in the "Oak-opening," or crowded together in the dense forest, we may behold the most perfect models of beauty and of fruitfulness—yet these have never been subjected to the action of the knife, the saw, nor the hatchet. True, and yet they have all been pruned by Nature—she prunes and trains magnificently, and gives us the finest models for imitation, whether for park scenery, as in the lone tree of the prairie, or in the scattered groups of the island-groves that are so often seen to rise above the level of the broad savannahs of the West; or for a forest of noble shafts, to be gazed at with admiration, then felled by the ruthless axe, and converted to man's economic uses, she shows us a pattern in the dense Pineries and other timber tracts of our country. All these have been pruned into their present condition by the hand of Nature. In the single specimen, free access of air and light have enabled it to assume its full proportions, developing itself on every side, and giving us the grand, majestic and beautiful object we behold with so much pleasure. The winds have tossed its branches and shaken its sturdy boughs—some have been broken in the rude embrace, the lower ones have quietly and gradually yielded to the smothering influence of those above them, which, in turn, have swept downward their depending branchlets towards the green turf beneath. In the groves, the scattered trees have for a while enjoyed the same opportunities for development, but at length their branches have met together and interlocked in friendly embrace. Those that were nearest the ground had already begun to suffer from the effects of the denser canopy above them, but the great sturdy boughs that had shot upward so as to form a part of the crown—these are able to maintain their vantage ground, and continue to be important members of the trees. In these illustrations we have seen more of Nature's training than of her pruning, but it must be remembered that training is one of the objects, and indeed a leading element of pruning, and is very properly a matter for our consideration.

In the dense primæval forest we see Nature's pruning exhibited upon a grand and perfect scale: tall, straight and noble trunks rise majestically on every hand; not a twig nor limb appears to break the symmetry of the gradually tapering shafts, that are clothed in bark which does not indicate that they had ever been furnished with branches: and yet they have been so provided from their bases to their summits, and Nature has so neatly removed them that we cannot detect the marks of her pruning saw. How this has been effected may be seen in any dense thicket of forest growth. It is simply a smothering of the lower branches by those next above them, which has destroyed their vitality, and their decay has soon followed; while a new growth of branches at a higher point, in turn performs the same office of destruction upon those next below them. As there is no outlet for the wood-growth but in an upward direction, so upwards they must needs go, and as there is no light nor air for lateral branches under such a canopy of shade, death and decay ensue, and down these must needs come.

If it be asked why we must prune, it may be answered, in general terms, that in the orchard, our objects in performing this operation are two-fold

1st. We prune for shape and comeliness, and for the removal of dead and dying branches, in aid of Nature, but working in sympathy with her. 2d. We prune for the sake of inducing fruitfulness. Let us consider some of the principles that are to guide us in these operations.

The first object, that of producing the desired shape of the future tree, is chiefly done upon the young subject—even in the nursery row. The judicious pruner, being well aware of the upward tendency of young growth, and that this is increased by the crowded condition of the trees in the nursery square, seeks to overcome the evil by proper pruning. If the growth be altogether upward, with no side branches the first season, the stem will be slender, often so much so as to bend with its own weight. The wise nurseryman carefully avoids disturbing the leaves or the lateral branches, well knowing their importance in forming the woody trunk. At the proper season he trims his trees down instead of trimming them up; this he does by heading them back to the height at which he desires them to form their branches—at the same time he shortens-in the laterals, his object being, in both instances, to check the upward tendency of growth by removing the strong, terminal buds which would naturally have formed the new shoots the coming season. The result of this treatment is to call into action several buds at the upper part of the stock. These are to form the arms of the tree, and hence, a very important part of the pruning and training of the plant is thus performed at once by this heading-back of the young nursery tree. But further attention is needed as these arms develop themselves during the next season of growth; they should not be too numerous, nor too much crowded together; they should not be too nearly matched in strength; and a single one among them, centrally situated, should be kept as a leader, which should be stronger than the rest. Never allow two shoots to remain, contending for the mastery, but subordinate one of them by cutting, breaking or twisting, so soon as it is observed, for, how beautifully developed soever such a tree may appear when well balanced, there is always danger of its splitting down when heavily laden with fruit. This very common error of our orchards used to be quaintly illustrated by a dear friend on the prairies of Illinois, who cited the advice of a Scotch wikey to whom he had applied for counsel in the purchase of a piece of horse-flesh. "Ne'er buy a horse whose twa fore legs coom oot fra ane hole;" said he, and my friend Mr. Stewart applied the same rule to his young fruit trees by never allowing them to form two equal leaders starting from one point. It is also important to have the lateral branches regularly distributed on different sides. The height at which the heading-back should be done will depend very much upon the object of the cultivator, and whether he desires to produce a high or a low head—a standard, half-standard or a dwarf or a conical tree, such as are often called pyramids. He will study the wants of his customers, and will flatter their fancies in this matter; but we of the West have learned the importance, for us at least, of trimming our trees down and not trimming them up, as is often done by those who anticipate plowing and planting crops under the shade of their orchards. We prefer low heads, and often train them so that the branches reach the ground when laden with foliage and fruit. The proper point for bringing out the branches and forming the head will very much depend, however, upon the habit of the variety, whether it be drooping, spreading, or upright—the former will require the branches to be started at a higher point.

The proper season for performing this kind of pruning is in the early spring, after the severe frosts of winter have been passed; and with some kinds of orchard trees, at the time of planting, when they should always receive a severe pruning and a reduction of their limbs, somewhat in proportion to the shortening of their roots.

The second object of pruning being to promote fruitfulness in the trees, it should be done chiefly in the summer, or during the period of growth. At the same time, or during the growing season, much may be done to advantage both in thinning out and shortening in such parts of the tree as may need these plans of treatment. Various methods are pursued to produce fruitfulness, all of them depending upon the fact that this condition arises from the natural habit of the tree to make its wood growth very freely for a series of years, and then, while the growth by extension is curtailed, to take on that wonderful change by which the wood-buds are transformed into those that expand into flowers and produce fruit. The study of these changes is called morphology; and when the tree has reached this condition, it is said to have arrived at its maturity.

After the tree has built up a complicated structure of limbs and branches, with some consequent obstruction to the flow of sap, dependent upon the hardening of the woody tissues and contraction of the cells, as well as upon the tortuous course of its passage, it appears to reach its maturity, and to come into bearing condition. It ceases to make such free wood growth, and prepares a set of buds which develope flowers and fruit.

Now, this period of growth and unfruitfulness may continue for a longer or shorter period in different varieties of fruits, and the curtailing of this period is the great object of the leading operations of summer pruning, and of other methods of producing fruitfulness that may be classed with it under the second head of the objects of pruning.

To appreciate their importance and the mode in which the effect is produced, we must bear in mind the two great acts of vegetable life, the production of wood and that of fruit, the one, multiplying the associated buds or plants that make up the community of buds which constitute the tree; the other, producing the germs of new plants that are to be separated from the organism, and which are prepared to set up a separate existence. These two acts are in some sense antagonistic. The first is essential to the production of timber, to the building up of the tree, and should be encouraged to do its work undisturbed to a certain point, that we may have a substantial frame work by which our fruits can be supported. The latter, however, is the ultimate desideratum with fruit-growers; and in our impatience to reap a quick reward, we often resort to measures that tend to curtail the usefulness, size, and beauty of our trees, as well as their performance. This is an illustration of the axiom that whatever threatens the vitality of a plant tends to make it fruitful—calls into activity the instinctive effort to perpetuate the species by the production of seed that may be separated from the parent, and establish a distinct existence to take the place of that, the life of which has been threatened.

The operations of summer pruning and pinching constitute an interference with the growth by extension, and threaten the life of the tree. The entire removal of all the new shoots and their foliage, and the repetition of this operation upon the successive attempts at their re-production by the tree, will cause its death in a little while; their partial abstraction as practised in these operations of summer pruning and pinching being an attack of the same kind in a smaller degree, results in the formation of fruit-buds. The operations of budding and grafting upon uncongenial stocks, interrupting the circulation of the sap by ringing, by ligatures, by hacking, twisting, and bending downwards, all tend to the same end—they check the growth by extension, they interfere with the wood growth, and they are attended by similar results, since they are antagonistic to the mere production of wood, or to the growth of timber. Shortening-in the branches of some species, which form their fruit-buds upon the shoots of the current year, has the effect to give them a fuller development, if performed at the proper season, but if deferred to a later period, this process will have a directly opposite result, and will cause an increase of the wood growth, at the expense of the flowers and fruit.

The reason for pruning has been made the subject of much discussion, and different periods have been advised which are in accordance by different authorities. From this diversity of views it may be inferred that all are somewhat right, or may be supported by good reasons. This refers, of course, to pruning in its general sense of trimming, and applies to the removal of limbs of greater or less size. We always desire to avoid ablation of large limbs, and we should endeavour to provide against the necessity for their removal, as much as possible, before their production, by a proper thinning out of the branches in the young tree, taking them away when they are yet small; but when such removal becomes absolutely necessary, from their decay or injury, the operation should be performed late in the autumn, when the tree is at rest, and the circulation almost nil, because it is found that such large wounds, which cannot be healed over by the deposit of new growth, will, if formed at this season, dry in and resist the action of the elements better than if the section had been made when the wood was full of sap.

Mild winter weather, or the early spring time, is a favourite time for pruning, because it is comparatively a period of leisure; the absence of foliage affords us an opportunity to see the work before us, and to anticipate its effects upon the configuration of the tree. So soon as the buds begin to swell, and the foliage to expand, pruning should be arrested, unless in small trees, because the sap is in active motion, and the material called cambium is not yet developed; hence, the wounds will bleed, and are not so readily healed over; besides, the bark at this season is very readily separated from the wood, and bad wounds are thus frequently produced by the pruner, which may seriously damage the tree. Then comes a period when pruning had better be suspended until we know the trees have completed their growth by extension, and formed their terminal buds at the ends of the shoots. The precise date cannot be given, but it is indicated with sufficient accuracy by this mark in Nature's Calendar—the formation and full development of the terminal buds, and by the copious deposit of woody matter throughout the tree; the annual layer of fibres is then being produced, and the tissues are in the formation stage; the tree now possesses, in its own organism, the best of all plasters to cure and cover the wounds made by the saw and knife—it now possesses the true *vis medicatrix naturæ* in the highest degree.

For the removal of small limbs from young trees, hardly any time can come amiss. Twere better to do it out of season than to neglect it; and it is a good rule to have a sharp pruning knife always at hand when passing among our young orchard trees. There is but one time when pruning should be absolutely interdicted, and that is all the time that the wood is frozen. When so circumstanced it should never, on any account, be cut or disturbed or handled in any manner, not even to gratify your best friend by helping to a few grafts from your tested tree of some coveted variety. Let him wait for a thaw, or go away without them, rather than commit such an outrage upon your tree as to approach it when frozen.

While considering the question of the proper season for pruning, there is one axiom of great importance which should be firmly impressed upon the mind of the orchardist. Much will depend upon which of the two leading objects he may have in view—vigour of growth and symmetry of form, or simply fruitfulness, as the result of his labours in pruning his trees. Pruning at one season will induce the former effect; at a different period of the year, the same work will conduce to the latter results. Hence, the value of this postulate, which is pithy, and easily remembered—Prune in winter for wood, in summer for fruit. *American Gardener's Monthly.*

THE CULTIVATION OF THE SOIL.

THERE is something wonderful in the capabilities, fertility, and inexhaustibleness of the soil. I am not one of those who believe in the exhaustion of the soil, practical observation having taught me that the land would never get exhausted, but that it would become more and more fertile and productive, if proper foresight and persevering industry were brought to bear upon it. What is good husbandry or cultivation? 1st, thorough methodical drainage; 2d, deep culture; and 3d, frequent surface stirring, maintaining, that is, a constantly open, loose, sweet pulverised surface, which is not only the best means of eradicating noxious insects, and their progeny, but also a preventive of weeds having a chance to make their appearance; establishing, moreover, and fully maintaining the most natural fallow for all succeeding crops. No rest or further fallow is ever required when a healthy open surface is maintained. Then the soil is at all times and immediately in a condition for succeeding crops; and by constantly changing the crops as they succeed each other, and returning to the soil in the shape of manure, or in some other form, some of the properties taken from it, the land never gets tired, but greatly improves in fertility. Thus I maintain that thorough methodical drainage, deep cultivation, and thorough surface stirring, form the basis of all good gardening and farming.

To rest or fallow the soil for any length of time is just so much loss; but the greatest practical benefit results from at all times maintaining a healthy surface. I am convinced that the more industry we expend judiciously on the soil, the more gratefully and bountifully will it yield to us in return its beautiful or useful productions. The soil itself, I repeat, would in my opinion never get exhausted if properly managed, but would continue to improve in depth and fertility in proportion to the well-directed labour bestowed upon it. It is true that the food of plants may be exhausted by a continual succession of crops of any one family, especially if through neglect or want of skill the addition of such properties or elements as the soil stands in need of, through this system of cropping, is omitted. All cultivators well know the value of manure, when judiciously applied, in assisting the luxuriance, health, and vigour of their produce. Still, manures are only a secondary consideration. In the open ground they may be supplied very liberally, but without a good system of drainage much of their fertilising properties will be lost. Deep culture, that is, the breaking through the subsoil to a considerable depth, so as to provide for a free circulation of air and water; maintaining an open clean surface, which is the best preparation for succeeding crops, besides extirpating troublesome insects and their larvæ; sowing and planting moderately thin, according to the staple of the land, and the preparation made;—to carry out these works efficiently, is the masterpiece of cultivation. When such operations are fairly performed, the soil will but rarely fail to yield a satisfactory and bountiful return to the industrious cultivator. *James Barnes, Bicton.*

THE MEXICAN AGAVE.

THE American Aloe (Agave americana) is a native chiefly of Mexico, but it is found in other parts of America. The precise date of its introduction into this country is not known, but it is recorded that one flowered in Lambeth in 1698. It grew to a height of from 12 to 15 feet, and was considered very choice and rare. The plant appears to have flowered in Paris in 1663, and at Leipsic in 1700. In 1729, and again in 1743, two plants flowered at Hampton Court, it still being considered a great rarity.

There is a popular notion regarding the Agave that it flowers but once in a hundred years. The plants cannot be said to flower more than once during their life, but this flowering period may be at any age, and is influenced by the soil and position in which they grow. After flowering, the plants die, but new ones are produced by suckers. Though the Agave itself is of comparatively slow growth, the flower spike, which shoots up from the centre of the tuft of leaves, on the contrary grows very rapidly, gaining a height of from 20 to 30 or even 40 feet, from the upper portion of which small branches are given off, which are crowded with the yellowish-green flowers. At the base these flower spikes are nearly as thick as the wrist; the longest one ever recorded was 40 feet, and grew in the King of Prussia's garden. The flower spike which runs to this great height is a very striking object, being of a remarkably straight growth, and remaining in flower for several weeks; it contrasts favourably with the great fleshy, rigid leaves, which apparently spring from the ground without any stem intervening; these leaves sometimes grow to a length of 6 feet, and remain perfect for many years. Interspersed through the fleshy substance of these leaves is a large quantity of strong fibre, much used for a great variety of useful purposes in all countries where the plant grows. It makes excellent twine and cord of any thickness, and is exceedingly strong and of a very clean appearance; the fibres themselves are very regular and even. Hammocks are constantly made of this twine, and very strong and durable articles they are. The fibre has also been imported into this country of late years under the name of Mexican fibre, and it is much used in the manufacture of nail brushes, scrubbing brushes, and similar articles. Humboldt speaks of a bridge in Quito over the Chimbo, the span of which was upwards of 130 feet, and the principal ropes, which were 14 inches in diameter, were made of this fibre. It is separated from the fleshy part of the leaves by bruising them, then macerating them in water, and afterwards beating them. This fibre has also been used for paper making. Important as is this product of the plant, the most valued of all is the sap, which, when fermented, is

known as pulque in Mexico, where it is much used as a beverage.

"There are three or four species of Agave, all of which yield a vinous sap, but A. americana is the most important; of this, however, there seems to be many varieties, for in a very lengthy report received at the Foreign Office from the Consul at Mexico upon the cultivation and uses of the plant, he says that as many as 10 varieties yield neither juice nor fibre, and are consequently of no other use but for making hedges: he then enumerates 20 other varieties, each yielding juice in greater or less abundance, or of different degrees of quality.

"The introduction of the use of pulque into Mexico is said to have been between the years 1045 and 1050, in the reign of the eighth King of the Taltec tribe, named Tepancaltzin, at whose court a relation of his, named Tepanaltzin, presented himself, and informed him that his daughter had discovered that a sweet and aromatic liquid sprung forth from the Metl plants in her garden. The King ordered her into his presence, and she brought him a 'Tecometl,' or vase, of the liquid she had discovered, which he tasted, and then ordered her to bring him more; and subsequently becoming enamoured of the maiden, whose beauty was great, and whose name was Xochil, or 'flower,' he married her; of which union a child was born, to whom was given the name of Meconetzin, or 'son of the Metl,' or Maguey, in allusion to the circumstance which was the origin of his parents' first interview.

"Whether the discovery of the use of the juice of the Maguey be really attributable to the god Izquiticatl, or to the Queen Xochil, there is no doubt that the divers properties of the plant itself were known many years before the discovery of Mexico by the Spaniards, for not only is it mentioned as furnishing thorny scourges as well as whips made of the fibres of the plant's leaves, for the multitudes who annually met to celebrate a festival in honour of the god Texcatlipuca, in the great temple of Tenochtitlau (the modern Mexico), but the use of the juice became so general that many severe laws against the drunkenness resulting from it were issued by the ancient Mexican kings, mention being made of a widow who sold it promiscuously having been put to death by order of the King Netzahualcoqual; only women suckling infants, old people, and soldiers upon the march, being allowed to drink it.

"To the various uses to which the Maguey plant was turned by the ancient Mexicans, and which were so much commented upon by the writers of the period, may be added that of the making of paper from the skin of the leaves, many curious old documents still existing of that material, as well as the manufacture of a kind of soap from the root. As to the extent of the lands appropriated to the culture of the plant, the writers in question give scanty information, but still sufficient to show that it was cultivated on an extensive scale in various districts of Mexico, where the vassals paid a great part of their tribute-money in clothes and sandals made of 'ixili,' or Maguey fibre, and it is worthy of observation that the districts in question were the most thickly populated of the ancient Mexican territory, which is stated, perhaps somewhat vaguely, by the old Spanish writers to have contained more than 30,000,000 inhabitants."

"Dr. Hernandez, a botanist who was sent to make researches in Mexico by Philip II., in the year 1570, makes mention of 10 different species of the Maguey plant as existing within the Mexican territory, assigning to each, under their Indian names, some peculiar medicinal properties or domestic uses, while ancient tradition, as well as the assertions of such of the rural population as are employed in this branch of industry, testifies to the existence of 30 different varieties of the plant in the chief Maguey-producing district of the plains of Apam.

"The plant may be cultivated to a height of 10,000 feet above the level of the sea, but is cultivated with greater success at a somewhat lower elevation, about 9000 feet, but ceases altogether to grow at 5800 feet. It requires an average temperature of 15° R. (66° F.), and flourishes from that to 26° (92° F.), the most favourable quantity of humidity in the air being about 35° to 50° of De Saussure's hygrometer in dry weather. For the complete development of its flowers it requires about 62° of heat (Centigrade) as a diurnal maximum. The juice of the plant is the least mucilaginous in a somewhat clayey soil, but, if the soil be too dry, so many mucilaginous particles are secreted in the juice that an inferior kind of pulque, called 'ilachique,' can alone be manufactured from it.

"The vast Maguey district (calculated to comprise 600 square leagues) is now entirely destitute of trees, although vestiges remain of Cedar forests having formerly existed there, the soil being light, stony, and apparently arid in many places; indeed, nothing can be less agreeable to the eye or promising in its general aspect than these or any other Maguey plantations, although so surprisingly productive."

There are few branches of agriculture, indeed, so productive in any country as is the growth of the Maguey, as is proved by the calculations given in the report from which these extracts are made.

"The mode of propagation of the Maguey is extremely simple. Before it dies the plant leaves a family around it of six, eight, or more suckers, which are left to grow for two or three years, and then dug up with great care, so as not to injure the stem; and after all the leaves but three have been cut off, the plants are spread out on the ground for two or three months, in order that they may partially dry, for if the Maguey be planted too moist it rots, and a destructive worm is often generated in it. The young plants are afterwards planted out at little distances apart, and in rows; Barley, which is believed rather to favour their growth, being very commonly sown between. The formation of the leaves of the plant is admirably adapted for supporting all meteorological variations. A hail-storm which would suffice for the destruction of the Maize or corn crop, scarcely leaves a trace of its passage upon their hard tissues; rain falls off from them, sun does not parch them, neither does frost dry them up or cause them to wither; and the plant would appear, as if were, to secure just so much of the various elements of the atmosphere around it as is necessary for its nurture and development, and to cast off the rest. It is only towards the close of its life that it begins to exhibit symptoms of being affected by the influence of the different seasons, yielding less juice in cold, rainy, or tempestuous weather. In a good soil the Maguey plant requires a period of from 10 to 12 years for attaining maturity, but at least 15 years in soils of an inferior quality; and thus the capital which it represents, although eventually yielding so high a return, remains unproductive for a lengthened period."

The plant, upon attaining its full growth, which is easily discernible by its height and the prodigious extension of its leaves, brings forth a tall stem crowned with yellow flowers, and then a certain amount of pruning becomes necessary, so as to form a kind of reservoir in the centre, and what is technically termed a "cara" or face around it, so as to cause the juice to flow towards the same spot, and to facilitate the extraction of it by removing some of the interior leaves and thorns.

The belief which exists in the efficacy of the medicinal properties of the plant is universal among the Mexican peasantry, to whom it has been handed down from times of remote antiquity. Thus, the juice of the leaf is said to be a specific for bruises and contusions; the gum which is engendered in the lower part of the stem to be a cure for toothache; whilst various experiments upon the curative properties of the plant under different forms have been made by members of the medical profession in Mexico with satisfactory results. *J.*

ARTIFICIAL HEAT.

By far the most important agent in the culture of indoor plants is heat. The supplies of light and water are more or less intermittent, but in the absence of heat plants cannot live.

The management of artificial heat has been more misunderstood than any other subject that the gardener has had to deal with. Scientific treatises on heating seem to have been aimed too high, and consequently to have missed their mark, for in my time horticulture had but very rude heating gear. A brick and tile flue, with a rusty door and bars, usually placed in a vault like the dungeon described by Sir W. Scott, in a vault like the dungeon described by Sir W. Scott, in a vault like the dungeon described by Sir W. Scott, "where damp and darkness seemed to strive," was our ordinary heating apparatus; and I must here remark that excellent Grapes and Pines were grown in houses thus heated, but extraordinary care and attention were needed, for as the flues were over-heated or otherwise, the heat would be sulphurous or ambrosial. I am not, however, going to rake up the embers of all the systems of heating that have come under my notice during the last 30 years, nor I am going to praise or to blame manufacturers.

Well may we admire the pious recluse who inscribed on his sun-dial—

"I only count the hours that are serene."

This text applied to horticulture would set us all on the right track, for unless such plants as the Vine can get a certain number of halcyon days, they could not fruit. The great disturber of serenity is wind, but under glass we can easily and effectually exclude that; where, however, this is done it is not all gain, for without a breath of air blossoms are barren of fruit. It is, therefore, much easier to find fault with the want than to find a substitute for it. A well-managed Vinery in this country will, for Grape-growing, surpass any climate in the world. The artificial supply of heat we give is only to supplement the natural heat; indeed, the sun-heat, when bottled up in a glass-house and brought under some sort of control, must be looked upon as decidedly artificial. The culture of Alpine plants is positively impracticable on account of the difficulty of imitating their comforts in their native habitats. Under the snow they enjoy dryness and a perfect calm for months, and they are never in darkness, for I remember right well that when the snow-drift had made a clean sweep over my cottage in the far north, there was still a "dim (if not a religious) light" like that of frosted glass, to be seen through the windows. The cold and the dryness that the Alpine plants experience is quite constant; we have no such comforts to offer them in our gardens, and the calmness and the light under the snow is perfectly inimitable by anything that we could do. The man who has plodded through life on level ground can form no idea of the serenity of a wintry day in a wood of full-grown Scotch Fir trees, as it is seen and felt on some spur of the Grampians. The calmness and dryness during the times marked on barometers as 'fair and frosty' are delightful. I have been assured by a gentleman who had spent some years in Siberia that the dryness of the air during the long frosts moderated the severity of the cold; and we have it from those who accompanied Captain Parry that they suffered most from wind and thaws.

The summer treatment of Alpine plants is simple enough, generally speaking. Their growth is sudden and their growing season is soon over, and we all know to our cost too well, that it is the winter season that tries the skill of the grower of Alpines—damp, with its train, or rather its trail of evils, slugs, snails, mice, *cum multis aliis*, destroyers all, preying upon the defenceless plant during what ought to be its period of rest: "the pause between the world destroyed and world restored." Now mark here how beautifully all these evils are fenced off by three or four months of perfect safety under the snow; while they are ruined by one or other of the various forms in which artificial heat reaches them. I recollect once seeing a collection at the Rectory, Trentham, where shutters were so arranged as to keep the sun and rain off, and the plan succeeded admirably.

In using artificial heat to keep frost out of any glasshouse, it is of the greatest service for the health and welfare of the plants to have sufficient heating-power to dry the house by day without raising the temperature too much. This of course must be done during the hours that the house can be ventilated. I dare not enter here upon the subject of wintering half-hardy plants, *alias* bedding plants. If plants could be said to suffer cruelty like animals, I should point out to the Society for Prevention of such Cruelty, the London "cold frame," where our summer flowers are wintered under glass with a foot of stable litter over the glass to keep the frost out. In mild winters the plan succeeds pretty well, but in severe frosts the loss is enormous. As it is the wind that carries the frost through every cranny, and the damp that predisposes the plant to freeze, it is easy to see that since very dry peat will not take water, it is an excellent material to plunge plants in, where dryness is needed. Hence the success of peat turf pits with glass overhead, as may be seen in the reserve gardens at some of our most noted show places for wintering such plants as Calceolarias, and for early spring work.

From the time that the Lancashire Gooseberry fancier placed pans of water under his choice bushes that the vapour rising might feed the foliage and so swell the fruit, the vapour theory and practice has been held in high repute; and I need scarcely remark that this "cunning device" has been imitated indoors in all manner of ways. Now I have often wondered what kind of a burning desert it could be in Nature that could yield such vapour as we see raised constantly from hot flues or cast-iron pipes—for the article that produces dry heat is not by any means thereby qualified to produce vapour in a healthy state of plants. The hot dry day with its full glare of light is unquestionably right, but the hot dry night with its darkness is as unquestionably wrong. If we take the Vine for example, we have a plant that will bear more ill usage than most plants, and yet live; but, on the other hand, we have in the Vine a plant that tells better than most other plants can do, when it is well used. When a Vinery has been steamed like a brewer's vat, it will not injure the plants—it may even be of some service, a little better than so much dry heat; but surely this can be no reason why the foliage should not be supplied with colder vapour, just as it would be in Nature after a hot bright day. It may be difficult to explain to a superficial observer the difference between a Vine leaf after a hot and dry night in a house rightly called a forcing house, and a Vine leaf that has been grown under glass without any fire heat. There will be a crispness about the leaf of the natural Vine that is not to be found in the forced one, and in the early morning the hairs of the natural Vine leaf will wear the sun dew like a crown of jewels, and feel stiff as if it had been clear-starched. Whilst, therefore, it may be necessary to sprinkle the walls and pathways 50 times a day to get healthy vapour, the hot pipes should not be sprinkled when they would raise clouds of steam—when they are only warm, it is quite another matter. The Vine for a high temperature at night is certainly gone by. On the other hand, I may state that exotic plants like the Pine-apple will bear, not only with impunity but with much benefit, a temperature higher than we have generally given them—even an amount of bottom-heat apparently perfectly unnatural has been found to forward their growth and swell their fruit; but such is the rigid character of the foliage of the Pine-apple, that we look in vain to its prickly selvage for nice tests of climate, and I have often thought that the Pine-apple got more support from the water stored in its sockets than it did from the few roots and the hatful of soil that it had in the 12-inch pot. If space would permit I might instance the support that Hyacinth flowers get from a glass of water; and the gouty leaves of the American Aloe would help my case, as they seem to bide their time, till they are big enough to risk the flower and seed business principally on their own account, and certainly without much dependence upon their roots for support. I may have more to say on this subject at some future time. *A. Forsyth.*

GRAPE GROWING IN THE OPEN AIR AT BURY ST. EDMUND'S, SUFFOLK.

(*Concluded from p.* 1220.)

HAVING described the character and produce of this model Vineyard, it is important to inquire—can similar results be obtained in others? In many counties of England, and in most parts of Suffolk, they can. Few or none can command such a regal wall or just such an excellent sheltered site. But these are not essential to the production of good Grapes. In hundreds of gardens in Bury, and on the gable-ends, sides, fronts, or backs of houses, good Grapes are produced under common circumstances. The Muscadines, Claret, Burgundy, and Black Cluster ripen well anywhere in the district on a fence or common wall. As an instance among many others, the Muscadines of Mr. Clark, of College Street, are as fine as Mr. Darkin's. In fact, Grapes are commonly grown in Bury and its neighbourhood. Numerous cottage homes are embowered in the beautiful foliage, and enriched by the luscious fruit of the Grape Vine. What is possible in Suffolk is practicable in many counties where it is scarcely attempted. As a source alike of pleasure and profit Grape culture ought to be extended. As an antidote to beer good Grapes should be placed within the reach of the labourer, and this cannot be done while the expense of glass is necessary to produce them.

Of course we owe something, perhaps much, to our climate. Bury is so salubrious that it has been called the Montpellier of England. It is also dry. It rests entirely on the chalk, and the rainfall only averages about 22 inches. The average rainfall for the whole county is 21 inches, and it varies from 15 to 35 inches; the latter it may probably reach this year. The rainfall for the past six years within a few hundred yards of St. Peter's Vineyard was as follows:—

Years.	Inches.	Years.	Inches.
1860	31·62	1863	18·71
1861	19·59	1864	15·88
1862	23·48	1865	28·23

The temperature of Suffolk takes a wide range between the two extremes; it is colder in winter and hotter in summer than most parts of England. The summer's heat seems also to have increased of late years, owing to the clearance of wood and drainage of land. From 1833 to 1842 the greatest heat recorded was from 85° to 90°, and these at long intervals. Since that period scarcely a year has passed without the thermometer reaching to from 80° to 90°. In 1844 and 1846 the temperature reached 92° and 93° respectively in the shade. Again, on the 23d of June, 1865, the thermometer reached 90° in the shade at Bury. The following Table gives the maximum and minimum and mean temperature at a few miles from Bury for the last seven years. A degree or two should be added for the district around Bury, as it is generally warmer and colder than the surrounding country:—

	1859.	1860.	1861.	1862.	1863.	1864.	1865.
Maximum	89° July 18	76° July 15	85° August 12	80° May 6	83° July 7	87° July 20	90° June 23
Minimum	5° December 28	0·3 December 24	0° January 7	12½° January 18	22° March 20	9° January 9	12° Feb. 14
Mean	50°.2	47°	49°.3	49 .9	49°.4	47°.8	48°.9

The mean average for Bury may safely be pronounced 50°. Upon the whole, therefore, the town has a genial atmosphere and a temperate climate. The chief drawbacks are the piercing east winds in spring, and the intense heat at Midsummer. From March until the middle of May the east winds blow coldly, often reaching to a gale. Neither this, however, nor indeed the cold of winter, affect the Vines except now and then when it comes on or continues after they have started. On the contrary it is often useful in keeping them back, and no amount of cold can injure them in winter if the wood has been well ripened. This the hot summer generally effects thoroughly. It must be borne in mind however that it is nearly 20° colder near the coast in summer than it is in the centre of the county, and that I do not recommend Vines being grown there. A dry bottom and high summer temperature are the chief things needed to bring Grapes to perfection in the open air in England, and wherever these are enjoyed and a favourable site chosen, Vines may be grown for pleasure, if not for profit, without artificial heat.

This brings me to my last question—will it pay commercially to grow Grapes in the open air in England? I think with proper care and skill it might. In the southern and eastern counties (probably the west might prove too moist) there are acres of dry warm soil which might be planted with Vines; watered with the sewage and manured with the now worse than lost pollutions of towns and villages, and possibly a good return would be yielded on the capital employed. The probability is that corn and meat will yearly become cheaper. The wide lands and broad pastures of the world will pour their produce into the thickly populated countries of Europe, and tend to cheapen home produce. Free importation has already cheapened corn nearly one half, and as soon as a thoroughly trustworthy system of preserving fresh meat is brought into general use, the rich Grass lands of South America and elsewhere will glut our markets with fresh beef and mutton. It may therefore be wise of our farmers to turn their attention to Grape growing as a means of paying their rent. It would be a new branch of husbandry, giving an entire change to the land, would introduce another supply of food in the form of Grapes, which support large populations in Italy and France, and might prove an antidote to brutalising, sot-creating beer, which transforms so many of their labourers into something but little removed above the clods they cultivate. I trust, therefore, that amid the many sights that will be seen by the assembled agriculturists and horticulturists at Bury next July, visitors will not forget to see, nor be too excited to learn how to grow, Grapes in the open air. *D. T. F.*

Home Correspondence.

Bedding Out.—Although I have not the pleasure of knowing the proprietor of "A Practical Hand," (pp. 1192, 1218), I should very much like to shake it; and if, after this mutual manipulation, we should proceed, as in the Ring, to a few lively rounds, I sincerely trust (my fighting weight being 16 stone), that we may not fall among the flower beds, as it is more than probable we might leave a mark. There are two points in which we seem to differ, but in reality only one. First, as to ribbon-gardening. I never condemned it generally, as "A Practical Hand" assumes. I protested, and protest, against "the same eternal combinations, the same monotonous hues of colour," which many gardeners, with abundance of material, copy one from the other year after year, and repeat acre upon acre. They, the weaker brethren, seem to elect unanimously some favoured friend as the floral belwether of the district, and scrupulously to follow his tinkling lead. But the owner of that "practical hand," which can arrange a ribbon of "twelve bands" for its own, can have no sympathy nor fellowship with these plagiarists; and though he is angry with me for expressing a desire "to cool my eyes on the Parsley," he can hardly help joining in the indignant protest of flower-loving Horace,—

> "O imitatores, servum pecus, ut mihi saepe
> Bilem, saepe iocum vestri movere tumultus!"

Nay, he does join in it, "while deprecating in the strongest manner" (p. 1218) "the making of all gardens alike." I do not denounce ribbons *en masse*, only stereotypes and wearisome repetitions. On the contrary, there are gardens and positions in which, arranged with originality and taste, they are most effective and beautiful. As a rule, nevertheless, I prefer mixtures, as being less formal and artificial. Nature mixes, but never ribbons. As to the second point, namely, the situation of a garden, there certainly exists the "utter divergence of opinion" alluded to by "A Practical Hand." I have expressed my views on the subject (p. 922), and I confidently ask your readers, the floral brotherhood, to compare them with those adduced at p. 1192, and to judge between them. The question is simply this. Shall we have our gardens in sight, or out of sight? And, unwilling as I am to divide the House, I can have no doubt as to the result of a division. The *eyes*, which rejoice to have flowers ever before them, the eyes would have it. The floral body would be as the body of Argus, Eyes 100, Nose 1. "Are flowers proper architectural embellishments?"

Unseasonable Blooming of Pear Trees.—Mr. Saul (see p. 1195) reports a case of autumn blooming in regard to a Pear tree at Stourton, Yorkshire. I may mention that a bush tree of a variety called "Beurré de la Daille" (received here from Guernsey) was about the middle of November last as full of bloom as I ever saw a tree. At first this occurrence rather puzzled me, but on giving the matter a little more consideration, I arrived at the following conclusion. The tree in question had borne good crops of fruit for the last three years, and had been summer pinched; consequently it had not made much wood, except short spurs which were covered with good bloom-buds. The fruit of this tree, which is an early kind, was gathered on the 2nd or 3rd of October. At that time the tree had made no second growth whatever, its heavy crop of fine fruit having taken all active vitality out of both wood and leaf; but as soon as the tree was deprived of its fruit it immediately began to show indications of swelling its bloom buds, which all burst at the time above mentioned. I, therefore, conclude that the tree, being deprived all at once of what had imbibed its whole supply of sap, now found itself overcharged with fluid, which, for the want of a better outlet, took possession of the bloom buds, and, aided by the favourableness of the season for autumn blooming, forced them to expand. Such is my opinion of the cause of this freak of Nature, of which I never before saw a similar case, though there are several solitary blooms on some of the trees here now. *John May, gr. to G. G. Sandeman, Esq., Westfield, Hayling, Hants.*

Royal Horticultural Society's Show at Bury St. Edmund's.—We often and with some truth hear it said that collections of blooming plants exhibit too great a blaze of colour. How is it that our leading horticultural societies do not make more classes for mixed blooming and fine-foliaged plants? Those who in time past witnessed the grand effect produced by plants shown in a mixed state at the opening show of the Crystal Palace, at Sydenham, will not soon forget the sight. I admit that it is possible to tone down masses of colour, by staging collections of Ferns and other fine-foliaged plants, near collections of blooming plants; but the effect is very inferior to that produced by classes of mixed blooming and foliaged plants. The Royal Horticultural Society ought to be first in the field in this matter, and make the principal class at its forthcoming show at Bury a mixed one of say half bloom and half foliage. It might, I think, also with advantage do as the Royal Agricultural Society does, viz., give, in addition to money prizes, a medal in the principal classes. Cups are anything but the most acceptable prizes to offer. I beg to differ from your correspondent "F.," that they are more suitable for private growers than nurserymen—with the exception of those who reside near the place of exhibition, and consequently have not to incur heavy expenses. It is to be hoped that the Schedule, when issued, will be sufficiently comprehensive to induce exhibitors from all parts of the kingdom to display their treasures in full force, as I believe nothing the Society has yet done is more calculated to promote horticultural progress throughout the kingdom than its present determination to hold shows in the provinces. *Exhibitor.*

Downton Castle Early Cabbage.—In reply to your correspondent "E. W." (see p. 1194), I may say that I secured a sowing of this valuable early Cabbage, and planted it in my garden—a good deep loamy soil—the first week in August, 1860, and transplanted it in rows on the 29th March. The crop came in in May, three weeks before the Enfield Market, Improved Nonpareil, and Cattell's Dwarf Barnes, and was of very fine quality, the heads being very compact, pure white, and exceedingly mild and tender when cooked. It has a very dwarf stem, and the foliage up to its hearting is of a very delicate green colour. I find that the finest and most carefully selected stocks of Broccoli and Cabbage will at all times, more or less, contain a few rogues, which no doubt is attributable to the high state of hybridisation and delicate constitution of many of our new varieties of vegetables. *H. D. M., Chester.*

Sequoia sempervirens.—A tree of this at Esher Place, Surrey, was 25 feet 10 inches high in 1859, and 26 feet 3 inches in 1860 (*Gardeners' Chronicle*, Jan. 12, 1861). If this tree has grown at the same rate that it did in 1860, it must now be more than 40 feet high. I am told that this species was slightly injured at Esher in December, 1860. *C. P.*

Butcher's Broom (see p. 1222).—The Butcher's Broom, used for Christmas decorations, is chiefly supplied to the Brighton market from Hailsham

Forest, near Lewes, Sussex, where it grows plentifully and in great perfection. *S. W. O.*—Ruscus aculeatus, commonly known as Butcher's Broom and Knee Holme, is abundant in the New Forest, Southampton Common, and woods in Wiltshire. *W. B. P.* It is common on the chalk in East Kent. Eos.

Uncommon Butterflies. It may interest your entomological readers to be informed that I this day (December 25) captured in the garden of this rectory a fine specimen of the Brimstone Butterfly. *G. Hayes, M.D., Walden House, near St. Mary Cray, Kent.*

Grand Aux Batailles and Gloire de Dijon Roses.—Where cut flowers are largely in demand all the year round, as they are here, a good stock of these Roses will be found very useful for cutting from. From a plant of Gloire de Dijon growing against my cottage, I have cut a succession of beautiful flowers from the early part of last May up the present time. Some of the blooms were really superb, but the heavy and constant rains we had this autumn disfigured many of the late ones. When grown in the shape of dwarfs and standards I find it a good plan to stop all the strong early shoots when about 10 or 12 inches long, instead of leaving them to grow their full length; this stops the plants bushy, and all the young shoots that grow after the stopping will bloom freely. The plants are later in flowering, but the quantity of blooms is very considerably augmented. On plants treated in this manner I have had a grand display of flowers and bud this autumn, which would have been really magnificent if the rains had not spoiled so many of them. The fine fawn-coloured flowers of this Rose, if cut before they are fully expanded, last a very considerable time in a cool room when kept in water. Géant des Batailles is well known. A large bed of it when in full bloom is a very dazzling sight; the beautiful brilliant crimson colour of the flowers, approaching almost to scarlet, is striking in the extreme. A stock of plants furnish a supply of flowers constantly from June to December. I have this day (December 24) cut some flowers that would be no disgrace to a prize stand in June. There not having been any rain lately, and the weather being very mild, the flowers are very beautiful, and the colour exceedingly delicate. These Roses are almost as readily increased by means of cuttings, as Laurels. About this time last year, when cleaning among some Roses, I cut off a quantity of the straggling long shoots, to prevent the plants being blown about by the wind. These I made into cuttings, 4 to 5 inches long, and planted them in common garden soil in a south-east aspect. No more care or attention was given them, and about one-third of them grew. They flowered nicely this autumn, and are now very good plants. They root freely, put in any time during the autumn or winter, but they do best when put in early in the autumn. Most other kinds of Roses root equally well in this way. There are few people who do not appreciate the beauty of the Rose. Cut flowers for vases and indoor decoration are invaluable, filling the rooms, as they do, with delicious perfume. Few flowers are more easily grown than the Rose; it delights in good strong loamy soil, and likes shelter, but should not be overshadowed by trees. *M. Saul, Stourton, Yorkshire.*

Wellingtonias.—In your notes on Conifers (see p. 1192), allusion is made to a Wellingtonia growing here, the then height of which, 12 feet, was communicated to the Scottish Arboricultural Society I think in 1864. I have this day had the dimensions taken of the same tree, and they are as follows:—Height, 17 feet 5 inches; circumference of branches at ground, 36 feet 5; circumference of trunk at base, 9 feet 7 inches. The soil here is a loamy clay on limestone; many Conifers grow well, but the Wellingtonia in particular seems to thrive in it. *A., Somerville, Meath.*—In your list (see p. 1192) a Wellingtonia appears as growing at Singleton, Caermarthenshire, which is doubtless intended for Singleton, Glamorganshire, there being, I believe, no such place in Caermarthenshire. I beg to say that in measuring the highest specimen in the Pinetum here, I find it to be 19 feet in height. I may add that a similar mistake occurred in your Paper of Nov. 3d (see p. 1043). The following are the heights of a few of our best Conifers, viz.:—Abies Douglasii, 28 feet; Araucaria imbricata, 24 feet; Cryptomeria japonica, 28 feet; Cupressus macrocarpa, 44 feet; Pinus insignis, 35 feet; P. Montezumæ, 20 feet; and Sequoia sempervirens, 37 feet. *F. Lee, Gardener, Singleton, Swansea.*—In your p. 1192 the heights of two specimens of Wellingtonia are given from Devonshire—both referred to Bicton—only one of these, however (18 feet high) is at Bicton; the locality of the other (19 ft. 9 in. in 1863) should have been Mr. Veitch's Nursery, Exeter. *A. M.*—Can any of your correspondents give us the present dimensions of the following Wellingtonias? Uffculme Vicarage, Devon, 7 feet 10 inches high in September, 1858; Hillersdon House, Devon, 7 feet 8 inches high; Congleton, Cheshire, 7 feet 6 inches high; Acton Green, Middlesex, 6 feet 9 inches high; and Messrs. Backhouse's Nursery, York, 5 feet 9 inches high. The above are all mentioned in the *Gardeners' Chronicle*, March 12, 1859, p. 228, and some in the list quoted from are mentioned in your Volume for 1858, pp. 702 3. Also the following—At Turkey Mills, Maidstone, Kent, 9 feet high in October, 1861 (*Gardeners' Chronicle*, October 19, 1861). At Kenfield Hall, near Canterbury, 13 feet 6 inches high in October, 1861 (*Gardeners' Chronicle*, October 19, 1861). At Penny Hill, Bagshot, 11 feet 6 inches high in November, 1861 (*Gardeners' Chronicle*, November 2, 1861). At The Grove (query Theydon Grove), Epping, 14 feet 6 inches high in September, 1861 (*Gardeners' Chronicle*, October 12, 1861); see also December 9, 1865, p. 1157, and a number two or three weeks previous). *C. P.*—The following is the height and age of a Wellingtonia growing in the grounds of Musgdrum. Its height is 19 feet 6 inches; the circumference of the trunk at 6 inches from the ground is 3 feet 2 inches. It is in its eighth year. I saw Dr. Lyall's tree (see p. 1191), and on measuring it, found it to be 14 feet 7 inches in height, but the Dr. stated that it had thrice lost its top. Its circumference at 6 inches from the ground is 3 feet circumference at 6 inches from the ground is 3 feet 4 inches. The Dr., in answer to "A. M.," states that he thinks plants of it were sent to Methven's nursery, Edinburgh, and to Archerfield, East Lothian; but perhaps some of your correspondents in these quarters may be able to give you correct information on the point. *David Spiers, gr. to the Hon. Mrs. Paterson, Mugdrum House, Newburgh, Fife.*

Malformed Cyclamens.—I have a number of examples of Cyclamen persicum, mostly strong plants with large roots, in 5 and 6-inch pots. They flowered abundantly last season; but many of the plants had the petals of the flowers much twisted and contorted in a curious and very disfiguring manner; instead of having fine erect petals on straight and upright stems they were crooked bent stems, bearing flowers with mis-shapen imperfect petals. Often the flowers hid amongst the foliage instead of standing clear over it, and indeed many of the leaves and leafstalks partook of the same character, and were puckered and ugly looking, such as Currant leaves often are when attacked by insects. On close examination there were no insects found to cause the defect, and indeed I do not think the cause can be attributed to either soil or treatment, as some of the plants were almost perfect specimens, without any signs of disease or malformation so apparent in others. The same plants are now again coming into bloom, and I am sorry to say that they are almost more deformed than last season. Can you throw any light on the cause of the affection, or its cure? *J. E. G.* [The defective growth and bloom of your plants appear in part to be attributable to a check which they have experienced from a severe attack of aphides or greenfly while in a weakly state, induced from a defective condition of the fibrous root-growth. If the bulbs have been previously neglected for any length of time, it is probable that the root-fibres, upon which vigour and health depend, would be much injured, and in a great measure lost, and until a proportionately healthy condition of these root-fibres is restored, the after season's growth cannot produce or sustain healthy leaves, or natural-sized flowers, even though the bulbs be judiciously after-potted, and in suitable soil. The healthy condition of the leaves so as to form secretions necessary for the production of bloom, will depend more upon a healthy state, and a due amount of root-fibre, than upon the size of the bulb or tuber, between which and the fibres there should be an uniform and relative condition of health, other conditions being equal. The size of the pots in Cyclamen culture, therefore, should be regulated by the quantity of healthy fibres and vital leaf-germs on the crown rather than by the mere size of the bulbs. The puckered leaves and contorted stems and petals are the usual indications of the effects of an attack from green-fly, in one stage or another, and if not removed by the usual remedies, the parts so affected do not recover in the same season. The injurious effects of bad potting in plants is an evil often underrated, and seldom traced to its source, but which, as regards injury to the roots, often prevents the efficacy of external applications for the removal of injuries produced by insects. Any impeded circulation or secretion in plants impairs growth, by vitiating those elements of nutrition which alone are productive of healthy leaves and flowers. Some years ago it was customary to keep the bulbs of Cyclamen for two or three years in the same pots, but with the utmost attention this was only productive of bloom annually diminishing in size and value. The most recent results in their cultivation have shown that the most healthy development of leaf growth for after bloom has been the invariable result of adopting an annual transfer of C. persicum in its varieties to fresh soil by re-potting, and placing it in a genial greenhouse temperature, where, preserved from all stagnant air, damp, or frost, a slow but progressive development of their growth and bloom takes place. *W.*]

Vines and Peaches.—I have a vinery, 20 feet long, in which I planted the Vines in July, 1865. They are now about the size of one's little finger, and have ripened about 10 or 12 feet of wood. Will you kindly state how many bunches I may let them bear this year, and if I may begin to force soon after Christmas? I also planted a Peach-house at the same time. This year I removed two from a trellis to the back wall. This was done about three weeks ago, and the trees had good roots. May I expect a crop from them this year, and what is the earliest time at which I may begin to force? *C. J.* [Your Vines being young and not strong, we would recommend you in the first place to cut them back to within 2 or 3 feet of where they were pruned to last year. To do them justice, they should not be cropped at all next season; you may, however, if a little fruit is an object to you, take one or two bunches from each rod; but do not force them; allow them to break as naturally as you can, which they will do about the beginning of March. Then assist them with a little gentle fire-heat. With regard to your Peaches, as you do not mention the age or size of your trees when planted last year, we are unable to say whether you may expect a crop this season or not. The fact of their having been removed lately will not prevent them from bearing, all other conditions being favourable. If your trees are young (which we imagine they are) we would recommend you not to force them for a year or two, until they have acquired some size. *B.*]

Shaky Timber.—A correspondent (see p. 1221) asks "How do you account for shaky timber?" I would beg to suggest one cause which I have ascertained, viz., lightning. I had under my management for several years a large extent of plantation, covering several thousand acres; and it happened on this large area that trees were frequently struck by the electric fluid, which entered at the top and forced an irresistible pathway down the whole length of bole, leaving, in most instances, only a slight groove in the bark, but generally shattering and loosening the internal tissues to such an extent as to produce the very condition your correspondent describes. I have frequently seen trees in a wood struck, and being left they would in a few years heal over, and to the unobservant would present a sound outward appearance; but generally a practised eye will detect these lightning-struck trees without difficulty, as in most cases a ridge, less or more apparent, is formed by the closed and cicatrised bark. I have had several of these trees cut down, and sawn through, and nearly in every case have found them shaky to the very centre, and I have regretted that, when I had the opportunity, I never cut down a fresh-struck tree. Perhaps some of your readers may have this done when an opportunity presents itself, and let us know in what state the tree is found immediately after the fluid has passed through it. I can say that I never have found a tree with the outward mark just mentioned but what was shaky. I do not say that every shaky tree has been struck, but I think that the subject is worthy of being inquired into, although we might not be able materially to prevent the evil. If lightning is the cause, the only remedy that strikes me would be lightning conductors, and these could only be used with effect in large woods, and very possibly they might cost more than all the timber that would be struck. I have examined many trees in various parts of the world, and I have found that a greater percentage is struck than is generally supposed. In mountainous districts, such as the Caucasus, the Carpathians, and other alpine and wooded districts, where thunder and lightning are upon a grand scale, hundreds, I may say thousands of trees are to be found lightning-struck, and I have no doubt "shaky" enough. *John Scott, Merriott, Somersetshire.*

Foreign Correspondence.

PALACE GARDENS, GAZEEREH, CAIRO, EGYPT: *Tropical Fruits.*—I would beg to submit to your notice a few remarks upon the Plantain tree (Musa paradisiaca), which is now (August) in full fruit with us; indeed I may say it is seldom out of fruit, yielding excellent and abundant crops all the year round in Egypt. The bunches of fruit are sometimes of a very large size. Last year I made a new plantation, the plants at the time being from 4 to 5 feet high. They are now from 15 to 20 feet in height, and producing a splendid crop.

The tree has a soft conical stem, produced from the stalks of the leaves, the leaves, as they naturally decay, being always cut off as the tree advances in height. The leaves at the top are from 6 to 8 feet long, and about 2 feet broad, from the centre of which the fruit spike issues. Male and female flowers are produced on the same spike. When the fruit is gathered the tree is cut off close to the ground, and is reproduced by plenty of suckers from the root, which, if not disturbed, ultimately become large stools. This Plantain is a very ornamental as well as useful tree, the fruit being much esteemed for its fine soft luscious flavour.

Musa Cavendishii is also grown here with much success, and produces fine large clusters of fruit. Musas delight in a light rich loam, and require a very liberal supply of water during their season of growth, without which they will not furnish fine fruit. I may also mention that the dried bark or outside fibre of the tree is much used by the natives for tying; indeed it is an excellent substitute for Bass.

The Sweet Sop (Anona squamosa), or Custard Apple, is grown to some extent in this country, especially in the neighbourhood of Alexandria, where it thrives well, and produces fine crops. The tree attains to the height of from 12 to 14 feet, but has somewhat the form of a bush. It is a native of the East and West Indies, and bears one of the most delicious fruits I ever tasted; it grows fully the size of a man's fist, has a greenish-yellow colour, and a rough scaly appearance, the rind being covered all over with small knobs, like the point of a lady's finger. The pulp is most luscious, and is of the consistence of thick cream. It has a fine aroma, and tastes like cream, mixed with sugar. In a communication I had from Mr. Rivers, Sawbridgeworth, some time ago, he expressed a doubt about our Anona being the same as a variety in his possession. Upon thorough investigation, I find that he is correct, his being the Anona Cherimolia, a native of South America and Peru, where it grows to be a tree of considerable dimensions. The fruit is rough on the outside, of a greyish brown or nearly black colour when ripe. It is considered one of our very best fruits, and is much esteemed by both natives and travellers. *James Hardie.*

Societies.

ENTOMOLOGICAL: *December* 3.—Sir J. Lubbock, F.R.S., President, in the chair. Six new members of the Society were elected. Mr. W. F. Evans exhibited a considerable number of specimens of insects of different kinds, chiefly beetles, especially the pretty Lagcidium pygmæum festivum found in wood imported from New Zealand. Mr. Stainton exhibited a minute moth, Gracillaria scalariella, reared from the larvæ which mine the leaves of the common Echium in the South of France, detected by M. Millière at Cannes; also another Dipterous larva, which resides in galls on Pistacia Lentiscus, from Mount Ida. Mr. Janson exhibited a box of insects, chiefly beetles, captured by Mr. Ham near Rio Janeiro; and Mr. Duer a chrysalis of the common tortoise-shell butterfly, from each shoulder of which depended a long and slender filament. The Secretary forwarded a note on the use of mahogany wood of Western Australia, which is not attacked by white ants. Dr. Sharp exhibited a new species of Staphylinidæ taken at Southend. Professor Westwood presented a short biographical memoir on the late S. Stone, Esq., whose collections of wasps' nests, &c. (as well as his antiquarian collections), had been presented to the Museum at Oxford. He also read a letter from Edward Holdsworth, Esq., of Shanghae, giving a description of the

caterpillar of Bombyx Selene; and exhibited a number of specimens of Liparis dispar, reared by Mr. Briggs, of St. John's College, Oxford, showing the variations which had resulted from feeding some of the individuals on White Thorn and others on Lilac. The females of the latter were crippled and the whole brood sterile. A considerable discussion took place on the subject. The discussion commenced at the preceding meeting on the question of mimetic analogies was resumed, Dr. Sharp, Messrs. Bates, Belt, Stainton, Weir, Wallace, M'Lachlan, Westwood, and the President taking part in it; during which the immunity of the Heliconiidæ from the attacks of birds was confirmed by Mr. Belt, who had observed a nest of a pair of insectivorous birds at Maranam in Brazil, and had noticed that although they carried other butterflies, dragon-flies, &c., to their young, not a single Heliconian butterfly was taken, although flying about in great numbers at the time close to the spot. Mr. M'Lachlan read descriptions of a new genus of exotic Hemerobiidæ, and of a new genus of Psocidæ.

Notices of Books.

Le Jardin Fruitier du Muséum, &c. Par J. Decaisne, Membre de l'Institut.

(*Continued from p.* 1168).

Pêcher-Brugnon Stanwick. The Stanwick Nectarine.—This is very well figured and described. It appears to acquire at Paris a much darker colour next the sun than that of any specimens we have seen produced in England; but at the former place it exhibits the same general fault as here—that of cracking or splitting before maturity. The account given of it in the "Journal of the Horticultural Society" is quoted, and also that in the "Revue Horticole." In the latter the "Duc de Devonshire" is by mistake substituted for the "Duc de Northumberland," when referring to the generosity of the latter nobleman, in presenting the stock of trees propagated from this unique variety, for the benefit of the Gardeners' Benevolent Institution. Professor Decaisne, without wishing to raise any doubt as to its having been raised from a stone obtained from Mr. Barker, near Aleppo in Syria, is inclined to believe that the Stanwick Nectarine may have been derived from a European garden variety, and remarks at the same time that no Nectarine has been received from any ultra-European country; that the Peach has not been found in a wild state in either the cold or temperate parts of the extreme of Asia, in China, or Japan; and that the only species in the south of Persia is the Ispahan, which, however, is there cultivated as a fruit tree.

Pêcher de Chine à fleurs de Camellia. Fortune's Camellia-flowered China Peach.—Leaves with reniform glands; flowers very large, and very double, of a deep purplish red. Fruit rather below middle-size, roundish oval; skin pale green, sometimes slightly tinged with red.

Pêcher-Brugnon Hardwick's Seedling. — Leaves glandless; flowers large. Flesh parting from the stone, greenish white next the skin, tinged with red at the stone, juicy, sugary, and agreeably perfumed. Season, end of August. [The tree is a vigorous grower, and it is, as far as we are aware, the only Nectarine that has large flowers, serrated leaves, and melting flesh; for although the Newingtons agree with it as regards the leaves being serrated, without glands, and the flowers large, yet they differ in being clingstones instead of having melting flesh.]

Pêcher Gain de Montreuil.—[Resembles the Belle-garde in appearance, but in this respect only, and is noticed in order that it may be avoided. It was purchased by M. Alexis Lepère, of Montreuil, the well-known Peach cultivator there; but finding it of inferior quality, and utterly void of flavour, he refrained from propagating and from selling it. In this he doubtlessacted best not only for himself, but for others.]

Pêcher de Chine à fleurs de Rosier. Fortune's Rose-flowered China Peach.—Leaves with reniform glands; flowers large, very bright red, and nearly double. Fruit below the middle size, roundish; skin pale greenish white; flesh firmly adhering to the stone, at which it is very slightly tinged with rose; elsewhere it is pale green, very juicy, and agreeable. Although not of the first excellence it may, however, give rise to improved varieties from the stones. It ripened at Paris as a standard towards the end of September.

Pêcher Beurré. The Beurré Peach.—Leaves without glands; flowers small. Fruit middle-size, deep red next the sun, pale yellowish-green on the shaded side, and sprinkled with small red dots; flesh white, except near the stone, where it is rayed with bright red, melting, with abundance of sugary, highly perfumed juice. Season, end of August. This Peach belongs to the group of Madeleines (Royal George and Red Magdalen of the English). It ought to be gathered before it acquires perfect maturity, otherwise it becomes rather mealy; [but from this circumstance it appears well adapted for carriage, as it may be packed before it gets too soft; and this is an object now that so many Peaches are conveyed from the south, where they are generally in superabundance in the season, to supply the demand in the north where the climate is not adapted for their production, except far short of perfection and with difficulty, whilst in the south an almost unlimited supply might be obtained with comparative ease. Any sort, therefore, that will bear carriage deserves notice.]

Poire Zéphirin-Grégoire.—Tree pyramidal; shoots slender; leaves oval or lanceolate; flowers very large. Fruit middle-sized, or somewhat under, roundish turbinate; stalk short and thick; eye open, level with the surface; skin smooth, citron yellow, sprinkled with fawn or brownish dots, sometimes tinged with red next the sun; flesh white, very fine, buttery, and melting, with a rich, deliciously perfumed, sugary juice. Season, September and October. This excellent Pear was raised from seed by M. Grégoire, of Jodoigne. The tree has the aspect of the Passe Colmar, of which it is probably a descendant. The fruit resembles in flavour that well-known sort, and some amateurs think it even superior in point of fine delicate aroma. According to the "Ann. Pomol. Belge," and the "Pomol. de la France," it is stated to ripen from November to February, instead of September and October, as above. Hence it appears to be one of those sorts which vary much as regards the period of ripening.

Poire Sucre Jaune.—Fruit roundish or Apple-shaped middle-sized; stalk variable in length, of medium thickness, sunk at its insertion, which is in the axis of the fruit; eye in a regularly formed depression; skin smooth, of a uniform pale yellow, regularly sprinkled with very small brown dots; flesh white, fine, somewhat granular, very juicy and sugary, perfumed and slightly musky. Season, September. This good Pear, which is common in the department of the Lower Alps, bears much resemblance to the Goubault Pear, but differs in the time of its maturity, and in its flavour.

Poire de Fosse.—Fruit rather small, round or turbinate; stalk short; skin green or greenish yellow, sprinkled with large fawn-coloured spots; flesh white, crisp; juice sweet and very musky. Season, end of August. The Poirier de Fosse is plentiful in France, especially in Le Perche, La Brie, and La Champagne. The tree attains a large size, and with trunks 6 to 7 feet in circumference are frequently to be met with. It was described by Merlet in 1675.

Poire de Tongres.—Fruit large, 5½ inches long and 12⅝ in circumference, oblong, tapering, obtuse at the stalk, which is generally inserted obliquely; eye situated in a shallow, regularly-formed depression, segments of the calyx rather prominent and erect; skin cinnamon-coloured in the shade, brownish orange next the sun, sprinkled with some carmine streaks; flesh very white, melting, juicy, sugary, rich and perfumed, but not musky. Ripens towards the end of October. This fine fruit should be gathered before it appears in full perfection; this it acquires in the fruit room, like Williams's Bon Chrétien and Beurré Clairgeau. The former of these, gathered before it readily parts from the tree, it is well known, is rich, juicy, and melting; but if it be allowed to hang too long it becomes mealy, and disagreeably musky. The above remark is therefore necessary to be borne in mind as regards the gathering of the Poire de Tongres. The Belgian pomologists are not agreed on the name which this interesting fruit ought to bear. For my own part, says Professor Decaine, I have not hesitated to adopt that under which it was first figured and very well described by M. Bivort in his "Album Pomologique," and likewise in the "Annales de Pomologie Belge." It is evident that a description accompanied with a figure ought to be preferred to an oral tradition, when the choice and adoption of a name is concerned. There is, however, a letter which I received from M. Pynaert, one of the *chefs de culture* of M. Van Houtte, and as this is likely to be considered an important fruit, a short extract may not be unacceptable. The Pear Durondeau, and not Durandeau, is very generally cultivated under this name, and under that of Beurré Durandeau in our Walloon provinces. I cannot then understand why M. Bivort, and after him the Pomological Congress of Namur, have adopted in preference the name of Poire de Tongres, especially as this last denomination implies an error for the variety in question did not originate at the city of Tongres, the ancient capital of Aduatiques, as people might be led to believe, but by M. Dorondeau, at Tongre-Notre-Dame, a small commune in the vicinity of Ath.

CATALOGUES RECEIVED.—*B. Bracker's* (Wincanton) *Autumn Catalogue of Coniferæ:* a useful descriptive list. *T. S. Ware's* (Tottenham) *Catalogue of Evergreens, Deciduous Trees, &c.:* an extensive general list. *F. & A. Dickson & Sons'* (Chester) *Forest Trees, &c.:* well arranged and comprehensive, with the heights carefully marked. *J. Dickson & Sons'* (Chester) *Forest Trees, &c.:* similar to the preceding. *W. Urquhart & Sons'* (Dundee) *Catalogue:* a brief, consisting mostly of trees and shrubs, Ferns, and Auriculas. *T. Sampson's* (Yeovil) *General Catalogue* includes various nursery stock. *T. Cripps'* (Tunbridge Wells) *Wholesale Catalogue of Nursery Stock:* an extensive and carefully compiled list. *S. Stafford's* (Hyde) *Stove and Greenhouse Plants, &c.* contains amongst other things an extensive descriptive list of Orchids and stove plants. *R. Edwards & Son's* (Nuthall) *Catalogue of Ferns* comprises many choice British varieties. *J. J. Chater's* (Cambridge) *Catalogue of New Pelargoniums* describes upwards of 300 sorts, arranged according to Mr. Chater's classification. *Sutton & Sons' Amateur's Guide:* a very extensive seed list for spring, with descriptions and abundant cultural notes. *W. Barron's* (Borrowash) *Select Catalogue of Ornamental Plants:* chiefly devoted to hardy trees and shrubs, and comprising an extensive list of Conifers; the sizes of the plants are given.—To this we may add, that Mr. Ward, of Ipswich, has issued coloured illustrations of his two new Roses, Mrs. Ward and Mrs. John Berners, and also of three of Mr. Groom's new zonal Pelargoniums.

We have also received of Foreign lists the following:—*Vilmorin-Andrieux et Cie.'s* (Paris) *Extrait Général des Catalogues; Oignons à Fleurs; Supplément aux Catalogues;* and *Graines de Fleurs*, all worth consulting. *Courtois Gérard & Pavard's* (Montreuil-sous-Bois) *List of Bulbs, Strawberries, &c. C. Verdier fils'* (Paris) *des Espèces et Variétés du Genre Rosier*, in which, besides Roses, 9 of M. Bleu's new Caladiums are offered; M. Verdier also offers 100 varieties of Pæonia arborea, 25 of P. officinalis, and 100 of P. edulis and albiflora; also 100 of Iris germanica. *H. Laurentius'* (Leipzig) *Plant Catalogue*, in which, among a variety of novelties, a fine double Amaryllis, called A. Alberti, is announced. *J. M. Thorburn & Co.'s* (New York) *Wholesale List of American-grown Seeds* comprises many interesting subjects, and among them what is called the Whortleberry Tomato, a new Solanum from California, producing edible fruit described as having the size, colour, and general appearance of the Whortleberry.

Florists' Flowers.

GLADIOLUS BOWIENSIS.—Permit me to fully endorse the remarks of "Bowiensis" (pp. 1196-97) as to the superiority of this variety; it seems but little known or cultivated, compared with Brenchleyensis, but for general usefulness it is much to be preferred. As "Bowiensis" remarks, you may have it in bloom by December. We began cutting spikes from this variety—for the purpose of decorating the Loan Exhibition held here this past summer—early in July, at the rate of 60 or 80 spikes per week, besides large quantities for other purposes, and continued to do so up till the middle of November, at which time the spikes were even finer than in the summer, although not quite so bright in colour, and this from bulbs, none larger than a good-sized Hazel Nut, and the greater portion merely "spawn," about the size of Peas. This is in fact the chief merit of this variety, viz., its blooming from such small bulbs—a merit which I believe no other variety possesses. A good way of planting this variety in borders, shrubberies, &c., is to plant in clumps of say 20, from the size of Walnuts down to that of Peas; all these would bloom in succession from July to November, and so the clump would always look gay, instead of, as in the case of Brenchleyensis, a bloom of a few weeks in duration. I may remark that they like plenty of manure. Our best bed, which produced magnificent spikes, was heavily manured at planting time (in February—plant early) with pig manure, trenched in; this may not suit the more delicate French varieties, but I can confidently assert that it does the variety in question. *Wm. Windebank, Jun., Bevois Mount Nursery, Southampton.*

CHRYSANTHEMUMS.—However small a place may be, these showy winter-flowering plants cannot be dispensed with. They even make cottage walls look gay at this season of the year. One mode of growing them is to put in cuttings in August, numbering from six to 10 in a 48 or 32-sized pot; place them in a close frame, attend to shading and watering them until they are rooted, and then harden them off gradually until they will stand the open air. Attend regularly to watering, and by the end of November they will be nicely in flower, and being very dwarf and bushy will make fine objects for indoor decoration. I may add that they are not taken out of the cutting pot. Pompon varieties are most suitable for this purpose, and have the neatest appearance, but other kinds will flower equally well under the same kind of treatment. *W. Brown, Merivale Hall.*

The Apiary.

THE EGYPTIAN BEE (*concluded from p.* 1223).—After the lapse of a few days, when I considered that the population had received a sufficient accession of numbers from the young bees, which were rapidly hatching out from the Ligurian brood-combs, I transferred the contents of the nucleus-box, bees and combs, into an eight-frame box, supplying them with four additional combs, chiefly of advanced brood, which I had previously selected from another stock. It would not have been safe to give this quantity of brood earlier, as there would have been too scanty a population to keep up a sufficient amount of heat, or to have attended to the wants of the less matured grubs, consequently a large proportion of the brood must have been sacrificed and destroyed, which would have been not merely a loss of valuable brood, but would have endangered the ultimate prosperity of the stock, from the presence of a large quantity of abortive brood. In giving brood-combs to a weak stock, for the purpose of strengthening it, it is always necessary to act with caution, otherwise more harm than good may be done. The hive in question rapidly increased in strength, and appeared likely to throw off a natural swarm. To prevent this I gave the bees a super, in which, while no attempt at swarming took place, but very little work was done. The bees, up to a very late period of the autumn, always exhibited very considerable activity, and appeared to be doing a great amount of real work, though it ended in their being able to store sufficient only for the coming winter's requirements.

No. 3 was an artificial swarm, very similar in character to the other, and was headed, as before stated, by a twin-sister of the queen of that hive. Mr. Woodbury did not send either of them to me, as he did not wish to remove them from the neighbourhood of his own apiary when the second swarm until some days later than the first. The history of this colony is much the same as that of its sister hive. Similar means were adopted for building it up into a sufficiently populous state to enable it to shift for itself, but it has never been quite so strong in bees, neither did it succeed in storing enough food for the winter's supply. It has had therefore to be liberally fed. I do not think that it received quite so much aid at the commencement by the addition of sealed brood-combs from other stocks. The worker bees of this hive do not all appear to be so invariably pure-bred, though at the time of its first reception I thought the queen rather the more beautiful of the two. The drones were equal in appearance to their relations. They were reared in large numbers, notwithstanding the youth of the mother bees, in both hives, and were active in flight on fine days up to the second week in October. They are really beautiful creatures, far superior to the Ligurian or common male bees. No drones of any other hives being in existence, I had an excellent opportunity, had I been so disposed, of propagating a large number of pure-breeding queens, but I had not as yet overcome my apprehension of destroy-

ing the hitherto amiable and peaceful disposition of my home apiary, nor could I well have kept the Egyptians at a more distant one.

No. 14, the last of the three Egyptian hives which I obtained from Mr. Woodbury, was one of a totally different character from either of the two just described. It was a populous colony in a full-sized Woodbury frame-hive. The queen, one of the batch raised from the one originally imported, was fertilised by a Ligurian drone, so that the workers, the majority of which were well marked, could not be quite pure. The drones, however, exhibited no falling off, and were, as might be expected, very beautiful. Though contrary to my own judgment, by Mr. Woodbury's desire, the bees were kept confined for 36 hours to prevent their returning to his garden, and endangering the lives of his own young Ligurian queens in the vicinity of their old quarters. This prolonged confinement I deeply regretted, as although the hive was stationed in a darkened room, the excitement kept up by the bees was so great, that thousands of them were destroyed, and even after the liberation of the survivors, the work of death still continued, owing to a ruthless internecine war. I do not think the queen was lost or injured at this time, eggs and young larvæ being found some days later, when I effected the transfer of the combs into my own frames. This promised to be an operation of more than ordinary difficulty, having to secure with screws every bar, with its comb attached, to the bars of my own frames. It was, however, effected with much less difficulty than I had imagined would have been the case, by first driving all the bees out into an empty hive. Having the combs free of bees, I was easily enabled to adapt the bars to their new frames. As each was completed, it was placed in its proper position; and when all the combs had been so transferred, the bees were knocked out on the top of the bars, quickly finding their way below.

When I commenced the bees were very savage, but the driving proved a wonderful sedative to their irascibility, and I was but little molested after having forced them to vacate their combs and cluster in the upper box. There was a renewal of the fighting among themselves after the operation was concluded, and the hive shut up; and I fear that it was at this time that the life of the queen was sacrificed. After several careful inspections, during which the bees fully maintained their claim to the character of little savages, I could discover no trace of a queen or newly deposited eggs. I waited some days for signs of the construction of any royal cells, but discovering none, I at length inserted a sealed royal cell from a Ligurian hive, not being sufficiently enamoured of the breed of African savages to take much trouble in the rearing of fresh royal cells from the Egyptian brood. On the following day the queen had emerged, and apparently in a natural way, but I could find no trace of her, or any other, and then I discovered the commencement of one or two royal cells or combs, which had been bred in by the former queen. In due time a princess was hatched out, but I have always had strong doubts as to her being an Egyptian at all, as her progeny are much more like Ligurians. As the old bees died off, the hive seems also greatly to have changed its character, for on the last occasion of my overhauling the interior, the bees were as peaceable as those of any Ligurian stock in my garden.

I may then consider my Egyptian hives to be reduced to two, one of these being more prized than the other on account of the apparently greater purity of the bees. From this one, if then living, I hope to be able to raise a number of pure queens next April and May, or before the appearance of the drones of ordinary or Ligurian stocks, as the drones of this species appear very early.

On coming into possession of the Egyptians, I resolved to disturb them as little as possible. To that resolution I have adhered, only meddling with them when it was advisable to strengthen the hives by the addition of brood-combs, or, later in the season, for the purpose of ascertaining their state in order for starting the winter. When unmolested for some time, I have found the bees as peaceably disposed, while in pursuit of their daily duties, as any others. During the month of October I inspected the interior of all the hives in my home apiary to ascertain exactly how they were provisioned and garrisoned for the coming winter. Some hives have been broken up, the bees and combs containing honey being united to others; some which possessed a superabundance were deprived of a portion, the combs thus obtained being distributed where most needed; and I must confess that while the Ligurian and common bees exhibited but little manifestation of anger, the two Egyptian hives which may be considered as most pure, showed no decrease in irascibility, as I was covered with assailants from head to foot. The third stock, as previously stated, allowed me to meddle with its contents almost with impunity.

I have come to the conclusion that these very beautiful insects are a decided acquisition to the scientific apiarian, but my experience with them, as regards their economic properties, has been as yet too limited to warrant my recommending them to any less experienced beekeepers. At some future time I hope to be able to give them a good character as honey producers, but I much doubt their ever coming up to the Ligurian or common bees in that respect.
S. Bevan Fox.

Miscellaneous.

Eau de Cologne.—Next to Hungary-water, the most ancient perfume now in use is Eau de Cologne, or Cologne water, which was invented in the last century by an apothecary residing in that city. It can, however, be made just as well anywhere else, as all the ingredients entering into its composition come from the south of France and Italy. Its perfume is extracted principally from the flowers, leaves, and rind of the fruit of the Bitter Orange, and other trees of the Citrus species, which blend well together, and form an harmonious compound. *Rimmel's Book of Perfumes.*

The Driver Ant.—Sometimes, as is usual in tropical countries, the rain descends like a flood, converting in a few minutes whole tracts of country into a temporary lake. The dwellings of the driver ant are immediately deluged, and, but for a remarkable instinct which is implanted in the insects, most of the ants, and all the future brood, would perish. As soon as the water encroaches upon their premises, they run together and agglomerate themselves into balls, the weakest (or the 'women and children,' as the natives call them) being in the middle, and the large and powerful insects on the outside. These balls are much lighter than water, and consequently float on the surface, until the floods retire and the insects can resume their place on dry land. The size of the ant-balls is various; but they are, on average, as large as a full-sized cricket-ball. One of these curious balls was cleverly caught in a handkerchief, put in a vessel, and sent to Mr. F. Smith, of the British Museum, who has kindly presented me with several specimens of the insect. *Homes without Hands.*

The Hop a Textile Plant.—M. Van der Scheldon makes use of the stalk of the Hop plant as a textile material by adopting the following process:—After the flowers of the Hop have been gathered, the stalks are cut, made into bundles, and steeped like Hemp. The maceration is the most important operation, for if it is not done with proper care, it is very difficult to separate the threads of the bark from the woody substance. After the stalks have been well steeped, they are then dried in the sun, beaten like Hemp with a wooden beater, and thus the threads are loosened easily. They are then carded, and are ready for weaving in the usual manner. By this means a strong cloth is obtained. The thickest stalks also produce a thread suitable for the manufacture of rope. *Mechanics' Magazine.*

Calendar of Operations.

(*For the ensuing week.*)

NOW is a good time for preparing a Ranunculus bed, and as the roots will not require to be planted till spring, let us hope to induce some of our readers to attempt the formation of a large and effective bed. Choose a spot in the lowest part of the grounds, where the rays of the sun will only fall for about three or four hours a day, either in the morning or evening, although the former is much to be preferred. The soil of the garden may be taken as it is, without any admixture, unless it is very poor, when a little leaf-mould, or very rotten frame manure, may be added. Dig up the bed thoroughly to the depth of 12 inches, and leave it rough until frost has pulverised it. Then level, and after some heavy rains have settled the soil, any time in February the planting may take place. In the meantime, however, carefully survey the domain, and cautiously choose the site, which should be such as will best secure fresh air, moisture, and shelter in the heat of midsummer. That done, boldly commence operations, and in an hour or two you will have done all that can at present be accomplished.

FLOWER GARDEN AND PLANT HOUSES.

Let neatness prevail in every department. Lawns should be carefully looked over and cleared of dead spray from trees, worm-casts, &c. Walks should be freed from weeds, and well rolled—operations which in the majority of cases require attention rather than much additional labour. In plant houses the principal work will consist in keeping them and their inmates scrupulously clean. Moderate fires, and frequent washing will be necessary. Conservatories, and indeed all show houses, should soon be tolerably gay with forced plants, of which a supply must be kept up by means of successions introduced into heat as often as may be necessary.

AZALEAS.—If an early display is required, a few of the most forward plants should be placed where they can have a temperature of from 50° to 55°. Water carefully when necessary, and in mild weather ventilate freely.

CAMELLIAS.—Some of these will now be in flower. Water must therefore be liberally supplied, and air given tolerably freely during fine weather.

CHINESE PRIMROSES.—Plants in bloom should be introduced to the greenhouse or conservatory, and others brought on to succeed them as their beauty fades. Do not let them suffer from want of water.

FORCED FLOWERS.—These will at present consist chiefly of Tulips and a few other early blooming bulbs, of which successions, equal to the requirements of the establishment, must be at short intervals continually introduced into the forcing pit; as must also be Azaleas, Roses, Lilacs, Rhododendrons, and plants of that description. See that they have a healthy moist atmosphere, which must not, however, be over warm. A temperature of from 70° to 80° will be amply sufficient for the present.

JASMINUM NUDIFLORUM.—The bright yellow Primrose-like blossoms of this hardy Jasmine have such a cheerful look soon after this time of the year, that a few plants of it should always be kept in pots for decoration indoors, where, intermixed with green-leaved plants, they have a fine effect.

PELARGONIUMS.—These must be kept free from dead leaves and insects. Specimens intended for flowering in May should be placed as near the glass as possible; let the temperature at night be about 45°. That for the later blooming plants should not be above 40°.

SOLANUM CAPSICASTRUM.—This, together with S. Pseudo-Capsicum and other sorts bearing small round bright-coloured fruit, are very useful at this season for purposes of decoration. See therefore that those in conspicuous situations do not suffer from want of water, especially if unavoidably placed in the neighbourhood of hot pipes.

VIOLETS.—Both Neapolitan and Russian varieties will now, or very soon, be in flower. Let the pits in which the Neapolitan is grown have plenty of air while the weather is mild.

FORCING GARDEN.

During the occurrence of open weather, fire-heat should be used with as much moderation as possible. Keep an eye to the maintenance of constant successions of crops.

ASPARAGUS.—Make a bed to come into use early. On fine days draw off the lights, to allow the heads to acquire their natural flavour and colour.

CUCUMBERS.—Keep down thrips and red spider on these by maintaining a moist healthy atmosphere.

FIGS.—Trees in pots may soon be started, beginning gradually at first, and increasing both heat and moisture by slow degrees as the plants progress in growth.

MUSHROOMS.—Prepare horse-droppings for beds to succeed such as may soon become exhausted.

PEACHES.—Give abundance of air during the day, keeping gentle fires at the same time, so that during the present mild weather little fire-heat may be required at night.

PINES.—Plants intended for fruiting during the summer must now have careful attention. Let them have a steady earth temperature, and a top heat of about 65° at night. It is not too early to excite the general stock, which, however, must not be allowed to become drawn.

VINES.—See that there is always a steady warmth in the covering on the outside borders of early houses. Attend to the stopping and tying in of young shoots as they advance in growth. Let Hamburghs have a night temperature of about 65°. Muscats should be kept 5° or 5° higher.

HARDY FRUIT AND KITCHEN GARDEN.

While the weather keeps favourable, fruit trees may be planted. Where old trees too are not growing well, a portion of the soil might be carefully removed from their roots and replaced by better material. All unoccupied ground should be rough dug, trenched, or ridged, regulating these operations according to the nature of the soil and the character of the preceding and contemplated future crops. Keep frost, should it occur, out of fruit rooms, and remove all decayed fruit. Diligently proceed also with pruning, nailing, and training.

APPLES.—Let all trees infested with insects have a thorough cleaning and washing with Gishurst Compound, used according to Mr. Wilson's directions.

CAULIFLOWERS.—Keep slugs from these, and should severe weather set in, see that the plants are properly protected.

ENDIVE.—Continue to tie up some of the finest heads to blanch, on dry days; protect also from hard frosts.

LETTUCE.—Protect in very bad weather, but expose freely on all other occasions.

RHUBARB AND SEAKALE.—Continue to introduce into warmth successions of these, as plants in use become worn out.

STRAWBERRIES.—A few may now be pushed forward; but do not drive them too fast, or the blossoms are apt to become "blind." During mild weather those in frames for succession should have plenty of air in the day time, but at night the lights should be put on in order to secure them against frost.

STATE OF THE WEATHER AT CHISWICK, NEAR LONDON, For the Week ending Dec 26, 1866, as observed at the Horticultural Gardens

Dec.	Moon's Age.	Barometer. Max	Barometer. Min.	Temperature. Of the Air. Max.	Min.	Mean	Of the Earth 1 foot deep.	Of the Earth 2 feet deep	Wind	Rain.
Thurs 20	13	30.436	30.367	39	29	34.0	45	45	W.	.01
Friday 21	●	30.388	30.279	40	26	33.0	45	45	W.	.00
Satur. 22	15	30.340	30.301	42	32	37.0	45	45	S.W.	01
Sunday 23	16	30.233	30.113	46	31	38.5	45	45	W.	.00
Mon. 24	17	30.241	30.222	44	28	45.5	45	45	S.W.	.01
Tues. 25	18	30.192	30.072	54	38	46.0	45	45	S.W.	.00
Wed 19	19	29.988	29.912	53	37	45.0	46	44	S.	.10
Average		30.260	30.212	43.5	31.0	37.2	44.7	43.8		0.13

Dec. 20—Frosty and foggy; foggy throughout, slight frost
— 21—Hazy, fine, foggy, very fine at night, slight frost.
— 22—Foggy throughout the day.
— 23—Hazy, overcast, fine at night
— 24—Hazy and very mild for the season, drizzling rain, slight frost.
— 25—Very fine, overcast, very fine throughout.
— 26—Densely overcast, remarkably fine, boisterous, with rain at night.

Mean temperature of the week, 1·5th deg. below the average.

STATE OF THE WEATHER AT CHISWICK.

During the last 41 years, for the ensuing Week, ending Jan 5, 1867

December and January.	Average Highest Temp.	Average Lowest Temp.	Mean Temp.	No. of Years in which it Rained	Greatest Quantity of Rain.	Prevailing Winds. %	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.
Sunday.. 30	44.7	32.3	38.5	16	0.18 in.	1	6	2	2	5	13	12	1	
Mon ..31	44.3	33.2	38.7	14	0.44	1	8	1	3	6	12	5	4	
Tues. .. 1	44.4	30.9	37.6	12	0.36	1	5	3	3	4	10	8	4	
Wed .. 2	42.5	29.7	36.1	17	0.21	1	3	5	2	7	9	11	6	7
Thurs .. 3	43.4	30.8	37.2	19	0.56	1	4	3	2	7	7	12	9	6
Friday .. 4	42.7	31.7	37.1	17	0.26	1	1	7	6	5	3	11	3	2
Satur. .. 5	41.9	27.5	34.7	15	0.40	1	4	8	4	4	4	11	5	1

The highest temperature during the above period occurred on the 3d, 1869—therm. 57 deg., and the lowest on the 2d, 1851—therm. 4 deg

Notices to Correspondents.

AHANTUS: *Old Subscriber.* The wood is hard, fine-grained, and satiny, and is very well adapted for cabinet work when thoroughly seasoned.

TREE ONION: *Scotch Jim.* What is called the Tree Onion is a viviparous variety of the common Onion, bearing small bulbs instead of flowers. It is sometimes called the Rocambole Onion, but is different from the true Rocambole, Allium Scorodoprasum. It is not of much value for its produce, but is grown as a curiosity, and the small viviparous bulbs serve for pickling.

COMMUNICATIONS RECEIVED.—Wm. Greenshields.—W. E.—J. A.—Practical Gardener—J. B.—An Old Subscriber.—W. G. Shaw.—R. C.—W. Earley.—J. Mitchell.

THE LANDS IMPROVEMENT COMPANY.
Incorporated by Special Act of Parliament in 1853.
To LANDOWNERS, the CLERGY, ESTATE AGENTS, SURVEYORS, &c., in ENGLAND and WALES, and in SCOTLAND.

The Company advances money, unlimited in amount, for the following works of Agricultural Improvement, the whole outlay and expenses in all cases being liquidated by a rent-charge for 25 years.

1. Drainage, Irrigation, and Warping, Embanking, Inclosing, Clearing, Reclaiming, Planting, or any beneficial purpose.
Engines or Machinery for Drainage or Irrigation.
Farm Roads, Tramways and Railroads for agricultural or farming purposes.
3. Jetties or Landing places on the sea-coast or on the banks or navigable rivers or lakes.
4. The Erection of Farm Houses, Labourers' Cottages, and other Buildings required for Farm purposes, and the improvement of and additions to Farm Houses and other buildings for Farm purposes.

Landowners assessed under the provisions of any Act of Parliament, Royal Charter, or Commission in respect of any public or general works of Drainage or other improvements, may borrow their proportionate share of the cost, and charge the same with the expenses on the lands improved.

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No investigation of title is required, and the Company being of a strictly financial character, do not interfere with the plans and execution of the Works, which are controlled only by the Government Enclosure Commissioners.

Apply to GRANVILLE R. RYDER, Esq., Managing Director, 3, Parliament Street, London, S.W.

SOUTHERN COUNTIES ASSOCIATION.
President 1866-67—His GRACE THE DUKE OF RICHMOND.
The ANNUAL EXHIBITION of HORSES, POULTRY, IMPLEMENTS, FLOWERS, WORKS of ART, &c., will be held at BRIGHTON in JUNE NEXT.
SUMMARY OF PRIZES OFFERED:—
CATTLE.—Shorthorns, £125; Sussex, £125; other Breeds, £50.
SHEEP.—Southdowns, £90; Hants Downs, £90; Oxford Downs, £90; Kent Sheep, £90.
HORSES.—Agricultural, £110; Hunters, £95; Hacks, £15; Ponies, £10.
PIGS.—Berkshire, £32; other Breeds, £32.
POULTRY.—Various, £93.
The PRIZE LIST may be obtained of the Secretary.
By order of the Council,
Yately, Farnborough. G. B. H. SHUTE, Secretary.

The Agricultural Gazette.

SATURDAY, DECEMBER 29, 1866.

WE have been much interested in the following remarks in a recent number of the *Times*, occurring in its review of the Smithfield Cattle Show:—

"Some new features are presented in the machinery for steam cultivation. Messrs. JOHN FOWLER & Co. have brought out a six-furrow plough, and a plough turning eight furrows at once is being constructed. Now, although this piece of information may appear of slight importance, we believe that it is practically one of the greatest steps yet made in steam-power husbandry, because it involves a successful application of the system upon light lands. The vast advantage of deep and expeditious tillage upon strong soils has been proved in numberless cases, but farmers have doubted whether a costly apparatus can profitably cultivate those soils where a thin staple necessitates a shallow furrow, and where a pair of light horses can plough with ease 1½ acre per day, with few interruptions occasioned by wet weather. Norfolk is precisely the county to test the question properly, and during the past two or three months a pair of 10-horse engines (that is, one "double engine set") from the Leeds firm has been making some extraordinary results upon the farms of Mr. CLARE SEWELL READ, M.P.; Mr. JOHN HUDSON, of Castle Acre; and several other large occupiers." *

Now, as we happen to occupy a farm the whole of which is upon sandy loam, or else the brash of the inferior oolite, and as we have thereon pursued steam cultivation for the past three years, and are now preparing for the fourth, we hope that the following notes on our mode of procedure will not be without interest at the present time.

It should be mentioned that our sand lands rest upon the pure sands of the inferior oolite, which are with us full 100 feet thick. Upon these rest the lower bed of the inferior oolite freestone, which makes the brash lands of the higher parts of the farm.

When we took to this farm in October, 1863, we determined to use steam cultivation for our principal crop of roots of 26 acres, and so, having hauled out all the dung we could spare on the Wheat stubble, it was ploughed in by two horses to the depth of 5 inches, and left for the winter.

In the first week in March, 1864, it was smashed up to a depth of 10 inches by a set of Cambridge tackle, and afterwards cultivated and cleaned by horse labour preparatory to the drilling of Swedes and Mangels, and in the notoriously dry season that followed it was one of the best crops of roots in the district.

In 1864, the same previous treatment was employed upon a 40-acre piece after Barley, and in the first week of March, 1865, the same tackle was used in the manner previously described. Here the crop of Swedes was enormous — the judges estimated them at 41 tons per acre, and to them was awarded the Silver Cup by the neighbouring Agricultural Society. The Mangels, of which there were about 8 acres, were at the same time estimated at a little under 56 tons per acre.

In the autumn of 1865 we followed the same plan as regards ploughing in the manure, and in the first week of May, 1866, the field of 30 acres was broken up by means of a FOWLER'S "double engine set," the whole being completed in three days, and the portion assigned to Mangels top-dressed with 3 cwt. of PROCTOR'S root manure to the acre, and drilled with Mangel Wurzel on the 7th of the month, and to this crop the Silver Cup has been awarded this year. We are now busy ploughing in our manure on a 50-acre piece, preparatory to the same method of cultivation for our root crop of 1867.

Here, then, it will be seen that we have employed steam cultivation successfully for the last three years, and it has encouraged us to go on—not indeed by steam ploughing, which we do not consider an advance, but by broad-soled cultivators, which, while they thoroughly break up the soil to a depth impossible by horse labour, cut off underground weeds sufficiently deep to make them harmless, and brings the Couch, Agrostis stolonifera, to which our light soils are peculiarly liable, up to the surface without that cutting into bits which the plough necessitates, as the cultivator gets under it.

The cultivator too only brings a portion of the subsoil to the surface, while with us the plough to the same depth would make a surface of almost pure sand. We think then that the first ploughing of from 4 to 5 inches covers up the dung, which rots and cuts off surface weeds which are mostly killed by the frost. The cultivator then thoroughly incorporates the soil and manure, and the land is ready for the crop in an incredibly short space of time.

That ploughing in its progress looks neater we are ready to confess, but we look upon the plough in its old estate as a clumsy antiquated machine which there can be no reason for keeping up in steam tackle; and though it is true we have as above described used RANSOME & SIMS', and HOWARD'S ploughs to cover up manure at the fall, yet if our holding consisted of a thousand acres instead of a third of that, we should employ a set of tackle of our own to smash up and mix manures in the fall and to cultivate in the spring, but as it is we consider that light ploughing in the ordinary way in winter, steam cultivation in spring, is not only our best but our cheapest plan.

We all know how work presses in the spring if we have to get in Lent corn and prepare for roots at the same time; how much horse-power is then required which would be comparatively inactive during a great part of the year; how by steam cultivation for our main root crop we are enabled to do with from two to three less horses during the whole year, and, indeed, we consider that steam cultivation for roots offers the following advantages:—

1. The soil is cultivated more expeditiously to a greater depth, manure is more thoroughly incorporated.

2. The root crop is increased.

3. The Barley crop is better in quality,* and more in quantity.

4. The land is no longer Clover-sick, but Clover and seeds are mostly luxuriant after steam cultivation.

5. Finally, the saving in horse-flesh and horse-keep nearly, if not quite, pays for the hire of the machine, labour, and coals. *B.*

* These results are described at p. 1226 of the *Agricultural Gazette*.

* Ours in the steam-cultivated field fetched 54*s.* per quarter this year.

—— WE lament to announce the Death of Mr. JAMES MARSH READ, of the Manor Farm, Elkstone, Cheltenham, which took place on December 16, at the early age of 41. Mr. READ was one of the foremost pioneers of steam cultivation on the Cotswolds, carrying out FOWLER'S system with great energy and considerable success on a farm of extremely various soil and irregular surface. His experience of it has been referred to frequently in these columns, and was related by himself in an essay which was "Highly Commended" by the Royal Agricultural Society of England. He was also distinguished as a stock breeder. His history of the Cotswold sheep was first published in the *Agricultural Gazette*. His own flock won many local prizes; and his Hereford herd gained him even more distinction than his flock. He won prizes at Leeds, Battersea, and Plymouth, and was successful as an exhibitor of fat stock in the Agricultural Hall only a week before his death. We have lost a valued correspondent, and it is right that his name should appear in the list of those to whom English agriculture is indebted for examples of enterprise and public spirit.

——Among other signs of healthful life and progress to be put against Fenianism and other indications of disaffection in Ireland, a number of most excellent and well-managed Farmers' Clubs must be named. At Athy and Ballymahon we have repeatedly heard papers on different branches of farm practice, unexcelled by any reported from any other quarter, even from Hanover Square or the Farmers' Club. They are sometimes elaborate treatises, sometimes short collections of maxims or terse accounts of actual experience, but almost always characterised by practical and even scientific knowledge. We are to-day indebted to Professor CAMERON and Mr. DAVIDSON for excellent lectures on Cattle Feeding, before the Athy Farmers' Club, and a shorter account by Mr. DOWDALL, at Ballymahon, of the earlier process of feeding veal, may be still further shortened here. He places his calf in a box with a wooden floor, 6 feet by 8 feet, provides it with a muzzle, and keeps it clean and warm on a good dry lair. He lets the cow suckle it morning and evening, and gives it a midday meal from the pail, which by-and-by has an egg beaten up with the milk. At a month old he sops white bread in the midday meal of milk. And at eight weeks old he has a well-finished calf, worth 6*l.*, which will increase in value up to 12 weeks at the rate of close upon 20*s.* a week. This is the result of "keeping to" old Nature's laws, for artificials cannot crush them out; and it is related as the experience of an Irish farmer. Can any English feeder beat it? So long as veal sells for from 8*d.* to 10*d.* a lb., you can get a good price for your milk in this way.

—— The need of Cattle Classes for the attractiveness of a Cattle Show has been illustrated by the contrast between Birmingham and Islington at their respective Shows this year. At Bingley Hall the receipts have been about one-half those of previous years, the attendance having been 61,530, 62,533, 41,844, and 21,511 respectively during the years 1863, '64, '65, and '66. At the Agricultural Hall we understand that the attendance has been upwards of 150,000 during the week, many thousands more than has ever previously been known.

—— Mr. WILLOUGHBY WOOD thus describes his experience in Laying-down Land to Grass. We quote from *Bell's Weekly Messenger*:—I have adopted a plan which with me has been successful, and I think would be so generally on soils of a similar character to mine, which is a clay, interspersed more or less with round stones, on the formation of the variegated marl. The fields on which the trial has been made had been prepared the previous year by cleaning thoroughly and manuring heavily, for Mangel or Swedes. In the spring, at the usual time, I have sown, with the corn crop, a mixture, intended to remain down two years, consisting of Cow-grass, common White Clover, a few pounds of Alsike Clover, Italian Rye-grass, and sometimes a very small proportion of Timothy Grass. The Grass seeds are usually sown a few days after the corn, in order to secure a fixed tilth, and great care is taken that the land is in a proper state—neither too wet nor too dry. My first year's seeds are commonly mown, and are, as a rule, a more than usually abundant crop. The second year I generally find that the yield of herbage is nearly, if not quite, equal to the first. I ought to have stated that, after mowing the first year's crop, I generally pasture the after-growth with sheep, which are supplied with cake or corn. I continue this system during the following years, usually contriving that the field in question shall be pastured during some portion of the year by either sheep or calves which have a daily supply of artificial food. In this manner I have been induced to leave fields down year after year, because the supply of herbage which they yielded was so abundant that they were more profitable in this state than they would have been under a corn crop. Of course I do not wish to draw a general inference from my limited trials; but in this district, or in others which have a similar soil and climate, I should feel no hesitation in practising it on an extended scale. It is a great recommendation, that the yield of herbage is so considerable during the first few years; and, according to my observation, the more permanent Grasses indigenous to the district gradually introduce themselves into the vacant spaces left by the dying out of the biennial species. Of course this process is greatly accelerated by putting on a compost in the spring, and sowing hay or mixed Grass seeds among it. I have at this moment a field divided into two equal portions, half of which was laid down according to the plan I have described, and the other half with permanent Grass seeds of the most expensive description. Wishing to give this portion every advantage, it was limed previous to the corn and Grass crop being sown. Its high condition was proved by its yielding, in spite of exceptionally thin seeding, a very heavy crop of Barley. The first year's mow of Grass was, however, miserable; and the subsequent herbage, notwithstanding repeated manurings, has continued most scanty. The other portion of the field is a complete contrast to this, presenting in the fourth year after it was laid down every promise of becoming a valuable permanent pasture. Most persons, in walking over this field, imagine that the facts are the very reverse of what is actually the case, namely, that the worst portion was sown with temporary Grasses which have died out, and that the other was sown with permanent Grass seeds. A friend of mine in this neighbourhood laid down a field without a corn crop some years ago, with permanent Grass procured from an eminent seedsman. Although neither trouble nor expense had been spared from first to last, the result was so unprofitable that, after waiting in vain during seven or eight years for improvement, he has broken the field up. During the last year or two he has adopted my plan, with every prospect of success. On a large proportion of strong lands, the practice of keeping Clover and Rye-grass down for two years presents many advantages. It is a saving of expense both in seed and labour; it rests the land, and improves its condition, while

it allows of a rotation during which Clover occurs at longer intervals. If the relative prices of mutton, wool, and corn, which have prevailed during many years, continue to hold, an acre of good sheep pasture pays better than an acre of corn. Whether or not it is advisable to extend the time during which land is allowed to remain in Grass will of course depend upon many circumstances which will occur in different cases. But it is important to know that the occupier has it in his power to do this without incurring loss. I consider the Alsike Clover quite essential to the success of this plan. In selecting the proportion of Cow-grass and Italian Rye-grass the farmer will, of course, be guided by circumstances. Where the Clovers are certain to stand, the proportion of Rye-grass may be reduced very low.

"T. B." AND MR. MECHI.

YOUR correspondent, who signs himself "T. B.," and whose object appears to be to write down Mr. Mechi, says that I am his apologist, and that I stated that the extraordinary crops which this gentleman claims to have obtained were merely "failures." Now I do not know whether this monstrous assertion, and the strange perversion of language, is to be ascribed to the potency of the beverage with which "T. B." treated his visitors, and of which he may possibly have partaken himself, or not, but however well entitled he may be to the character of a poet in respect to the liberties he takes with facts and statements, he certainly must lay no claim to that of a philosopher, or diligent searcher after truth. My acquaintance with Mr. Mechi is very limited; I have visited his farm on two occasions only, and years ago, when I saw large crops procured at very considerable expense in the way of manures. I am not the apologist of Mr. Mechi, and there is no reason why I should be, but I belong to that large class of Englishmen to which I am pleased to say the great body of farmers also belong, who love to see fair play; who do not like to see a blow unfairly given, or a statement misconstrued, and who on such an occasion feel tempted to interfere, even at the risk of calling down on one's own head the same unfair misconstruction that Mr. Mechi has received. Mr. Mechi, as I read him in the *Agricultural Gazette*, stated that for many years past he had dibbled in a peck of seed on an acre of land, and the yield on one occasion was 7 qrs. and 1 bus., whilst on the bulk of his Wheat crop he drilled at the rate of 4½ pecks, and the result was higher. On this he is abused in no measured terms for having, as was alleged, stated or implied that it was his custom to drill the peck per acre over the whole or the greater part of his farm, whereas he said nothing of the sort. That Mr. Mechi gets large crops of Wheat we cannot be surprised, seeing that he applies at least twice as much manure in his rotation as that used by ordinary farmers, his land at the same time being well adapted for retaining manure. But, so far as the trial between 1 peck and 4½ pecks goes, it is very much in favour of the latter, inasmuch as by using 3½ pecks extra seed per acre he gained 6 bushels at no extra expense; showing that moderate seeding (although about one-half that usually employed) is really the best, as well as regards the enemies of the plant, considerably the safest. I do not recollect anywhere reading that Mr. M. claims that he grew 15 qrs. per acre two years following; it must have been the man who drank too much cider that said so, not he; "he didn't zay zo, but t'other zaid that he zaid zo!" The 15 qrs., as I understood, not having the Paper before me, were grown in two years instead of one.

My remarks on failures had no reference whatever to thin seeding. Whoever tries many experiments will meet with many failures. as I well know from experience, but experiments are not the less valuable because they are often followed by negative results. Dr. Voelcker says that all the experiments made with potash this last year have ended in failure. I am not the least surprised at this, having experienced the same result nearly twenty years ago, and I was then struck with the importance of waiting till a plausible theory was stamped by the seal of successful practice, before it was recommended for general adoption. Mr. Mechi, I should think, would be the last man to deny that he has had many failures in his agricultural experience. The man who maintains that he has little to learn, has, I fear, learnt but little. *W. B. Spooner.*

FARM BOOK-KEEPING.

IT has been said that no business can prosper without correct and systematic book-keeping. Whether this applies to farming in its various branches is now the question before us. I think we shall all agree that the better a man understands his business the more likely he is to succeed. Whilst I do not pretend to say that book-keeping alone is to do this, I do insist that it is one important means, and to a certain extent a most effective means, within the reach of every farmer. With all deference to my brother farmers as a class, I do think it is this want of understanding which is the most serious difficulty in the way of progress; intelligence, and a thorough understanding of all the varied branches of the business, is now-a-days quite necessary to satisfactory and successful farming. If we cannot have the good old times, with the old-fashioned prices of corn, we must look to producing cheaper and larger crops. The farmer, of all men, is ever learning, and systematic and correctly kept books are a most important source of information to his mind. They form a most valuable work of reference; but to be either valuable or interesting they must be correct, and to be correct they must be systematic. There must be a proper set of books, correcting each other, and the small cash book constantly corrected by the cash in hand, without which your books will be quite incorrect, and if incorrect will be comparatively worthless. With a proper system, however, and ordinary attention, they may be absolutely correct. Some people profess to keep account of their principal transactions, but avoid a regular system of book-keeping under the false impression that it is too much trouble. I am decidedly of opinion that correctly kept books do save a good deal of time and trouble, preventing losses, and are much less trouble than loosely kept accounts. Such accounts cause endless trouble from their very incorrectness. A proper system may involve more writing, but it is not the writing that takes the time so much as the knowing what and where to write; and how very much more satisfactory to the mind to know that the books are absolutely correct than the perplexing doubt as to whether anything has been omitted, without any means of ascertaining whether such is the case. There are books specially prepared for farm book-keeping, with printed forms, heading, index, &c., but I have not yet met with anything printed at all calculated to save time or labour. On the contrary, they are generally intended for one year only, a farm ledger should be intended for one year only, should be properly paged simple and comprehensive, should be properly paged and indexed, so that any item, either of expenditure or of produce, may be quickly found; and it should be a good large book, to last for many years. The larger and the older the book the more valuable for reference. The balance-sheet should be regularly made up at Michaelmas. I prefer Michaelmas to either Christmas or Lady-day, because immediately after harvest, before any produce is marketed, we obtain the account of one year's produce and one year's expenditure without being in the least mixed up with other years—a result which cannot be obtained at any other time. Many farmers make no attempt, or any pretensions whatever to book-keeping, and assign as a reason, evidently satisfactory to themselves, that book-keeping takes too much time and trouble; and yet the same men will work hard all day at the most menial drudgery, whereas ten minutes per day spent in book-keeping might be of more real bene fit than a hard day's work. A certain poet says—

> "If ignorance be bliss,
> 'Tis folly to be wise;"

but in this case ignorance is not bliss, 'tis misery. Surely any intelligent farmer should be pleased to have all the affairs of his farm in black and white before him, and whilst he is delighted to see the records of the good and profitable—the more profitable and the most profitable—he must also know the worst, for here, most emphatically, "knowledge is power." If he does not fully understand where and how losses come, how is he to avoid them? In addition to the regular set of books I would strongly recommend a debtor and creditor account with each separate field, in a book kept for the especial purpose, showing the exact cost of each crop each year, and per contra creditor the produce. It will be a most instructive book. I will venture to assert that it will prove several things most conclusively—that there is no profit, but a certain loss; in the cultivation of little fields you will find, in the average of seasons, the expenditure so much higher and the produce so much lower per acre than a good-sized field, that profits are out of the question. You will also find that undrained, wet, summer fallow-land is very unprofitable; that bad or cheap farming does not pay; but that high or good farming, in the average of seasons, does pay. Modern agriculture, especially in connection with modern machinery, is changing the character of the demand for labour. Time was when any man short of a fool would do for an agricultural labourer; but now we must have intelligent labour, and I suppose we must expect to pay for it. How the demand for intelligence is much greater upon the farmer himself a few years ago a man doing as his father and grandfather had done before him might be considered a most exemplary character, but that won't do now. We must be up with the times or go to the wall. The man who neglects and repudiates book-keeping will often be penny-wise and pound-foolish; whereas the man who has a proper and comprehensive understanding of the connection between a judicious expenditure and its results, whilst he is not lavish in his expenditure, will ever be ready with a profitable expenditure. I believe if we could only see and understand our business better we should increase our expenditure to some extent, but we should increase our profit in a much greater ratio. A farmer, of all men under the sun, is most dependent on his judgment, and what so likely to guide and correct his judgment as correct and reliable data upon which to found that judgment? As in all other businesses, a man with a small business may to some extent rely on his memory, but not so if his business be more extensive. And why should the farmer grope in the dark, and guess, or jump at his conclusions? A farmer's book should enable him readily and explicitly to answer any question that may arise in his own mind, and in order to do this, all domestic and family expenses should be kept quite separate from the farm accounts. This does not entail any additional trouble; it is simply entering sundry items in a separate book kept for the purpose. Where in some cases a number of farm men are boarded, this may be somewhat difficult, but it can be done by charging the farm with the estimated expense of their weekly board, and the farm should be credited with everything produced on the farm, although it be consumed in the house. For instance, when a pig is killed for the use of the farmer's family, it can be entered as so many stones of pork sold to self. By this means you will not only show what the farm is making in pigs, but your domestic account will also be something reliable. The same remarks also apply to everything consumed on the farm, such as horse-corn, pig-meal, and seeds sown. For instance, in order to ascertain what is the produce of the Oat crop, all the Oats consumed must be entered as Oats sold to self, and as corn and pulse bought. When Oats are relatively cheap we are apt to consume them freely, but when they are relatively dear, and foreign produce, such as Maize, Lentils, &c., cheap, as it has been for several years, then we sell nearly all our Oats and buy foreign corn. Unless this plan be adopted, our books must be very inexplicable. By this means we can know what is the exact produce of each crop, as well as what the animals cost. In reference to farm seeds, sometimes the seeds sown may be almost exclusively the produce of the farm. At other times we purchase a change of seed Wheat, or Oats, or anything else, and why should not the account of Wheat sold, or any other grain, represent the entire produce of the farm, and the seed required be sold to self, and also entered as seed or seed-corn bought? By this means your farming accounts will be much more comprehensive and satisfactory, much more interesting and instructive at a future period. Thus, you may look over years of accounts of produce, &c., and see the exact average produce per acre, the exact average price per quarter, &c., and who will say that it is not both interesting and instructive? Anything worth doing at all is worth doing well. There is pleasure and profit in keeping correct books, but none whatever in keeping loose accounts.

In conclusion, I may be allowed to remark that the man, especially the young man, without reliable data upon which to base his thoughts and calculations, is very apt in unfavourable seasons, or a succession of unfavourable seasons and low prices, such as 1860, 1861, and 1862, to become unnecessarily dejected, and perhaps paralysed in his efforts, and in good seasons and higher prices he is likely to become unduly elated. Not so with the man who has registered facts to refer to, who has the experience of years past to guide him. He knows he can not only produce the average of past seasons, but he knows, as surely as effects follows causes, that with better cultivation and improved appliances, he can and will exceed the average doings of former years.

[The above remarks were made by Mr. Stables at a late meeting of the Croydon Farmers' Club. A discussion ensued, of which the following is an epitome:—]

Mr. BROWN said he had regularly kept his accounts for many years, and he found it highly satisfactory to look over them from time to time. In his books he generally made some short remarks about the progress made, and those remarks often acted as a guide to him. By keeping accounts correctly, a farmer at the end of the year was able to see what had been done during the 12 months, and if he found that his business had been successful he could congratulate himself; but if he found that he had been unsuccessful, then he could take measures to improve his position. It was a kind of check upon the farmer's doings. No doubt the keeping of accounts took up a considerable amount of time; but they became very instructive. He had not kept accounts of all trifling items, and in consequence they would say, perhaps, that he had not kept them correctly, but the way in which he kept them answered every purpose of his own. Had he not kept his accounts pretty correctly, he should never have got off the property-tax in 1851. By showing correct accounts he got off the property-tax for two years. When his income was under 200*l.* he got clear of the property-tax, and thus saved himself 5*l.* a year. When he went to appeal he showed that he had lost 250*l.* clear money. "But," said they, "how about house-keeping?" He confessed he never kept a house-keeping account, but he was sure it would not reach 250*l.* He considered his house-keeping came to about 200*l.*, and looking at those circumstances he was struck off the list. They would thus see it was advisable to keep correct accounts. He generally made up his accounts to October. In 1851 he found his expenditure between 450*l.* and 460*l.*; but last year it was nearly 700*l.* Still he got a fair return. He believed the more a farmer spent on his land the larger would be his returns. He considered it would be well for every farmer to take account of all items and balance them every week or month.

Mr. HUNT considered the subject of keeping correct accounts was of more importance than many persons considered it. Numbers of farmers did keep accounts; and instances were frequent where farmers had said to him, "We must trust to your books, for we do not know how our accounts stand." If he did not keep books they would often both be in the wrong. For the last 20 years he had kept books in farming. When he commenced as a farmer he kept a diary of every-day work on the farm, and this he continued with advantage for seven years. The books he kept now were what he called the board book, the day journal, and the ledger. He always kept a separate debtor and creditor account, and one for produce, stock, pigs, cows, horses, &c., and of what he bought and sold; and at Michaelmas he took stock. His was a system he had adopted with advantage, as it was exceedingly simple. With all transactions he had he sent out tickets, keeping the counterpart in his board book. From that book he entered the transactions in the day journal, and from the journal into the ledger. By means of his books he could take stock every year to within a few shillings. All that was wanted was three books, which could be bought for about 1*l.*, and would last many years. To illustrate the evil effects of not keeping correct accounts he might mention that he knew a farmer at the present time who had a dispute with another about the supply of some hay. The dispute was that a load more had been supplied than was acknowledged; and in consequence of having no accounts he would no doubt lose the value of the load of hay. He (Mr. Hunt) had sold as many as 200 loads of hay in one year, and had never had a dispute, and that he attributed to his having kept correct accounts.

Mr. WILSON said he had hoped to hear more as to which systems were the best for farmers to adopt; but it appeared most of them had systems of their own,

In some respects his plan was similar to that adopted by Mr. Hunt. He kept a diary of everything that took place upon the farm. He had a ledger besides, and one of Peat's account-books. The account-book was a very simple one, and contained separate accounts for every month in the year, one side for receipts and the other for payments. He also kept a weekly wages account-book and a stock-book, in which details were kept with regard to the sale and purchase of stock, grain, &c., and this he balanced at the end of the year. Then he had had a field-book; but the accounts of the fields he certainly found difficult to keep. However, he managed to keep them pretty accurately, as Mr. Fuller could tell them, as he had just valued him out of 50 acres.

The CHAIRMAN said it happened in the early part of his life that he obtained an appointment in the Court of Bankruptcy, and while there he had many opportunities of observing and considering how it was men stumbled in their business. It occurred to him that many of the mistakes made in life were not through extravagance, but through the men not knowing in what position their finances stood. That opinion was strengthened by what was said by one of the Commissioners. His words were, "If men kept their accounts better we should have far less come into this court." He agreed with the remarks made, that in order to keep accounts properly several books were required, but it was necessary these books should be clear and simple. He believed Michaelmas was the proper time to take stock. He had used Beasley's book, and he had found no difficulty whatever with it. It set forth the whole of the produce, and showed a distinct account for labour. In fact, it was one of the most perfect books he had seen. He had one in his possession he should be most happy to show any of the members. He felt the subject they had discussed that evening was a very important one, and he was sure they were all convinced that correct book-keeping in farming was as necessary to success as in any other business.

AYRSHIRE DAIRY STATISTICS.

MOST decidedly, that cow which gives the largest return in butter or cheese, upon equal feeding and for the whole season's milking, is the best milch cow, whatever her "points" may be. Too little circumspection in the choice of cows for holding on is given by our farmers. If the milk from each cow was regularly subjected to close scrutiny, and only those kept on whose milk bore the test of rich quality along with good quantity, a vast amount more money might be realised in the aggregate. A capacious, well-formed, and well-set udder, is certainly the chief point of excellence to which a purchaser should look, who intends to earn his living from the cow's produce, whilst quietness and docility of temper probably rank second. As a general rule amongst Ayrshires, the larger cows yield more milk than the smaller ones, but for several years back the tendency of selection by the judges at cattle-shows has been to lower the breed in size, and which, of course, affects the cows injuriously also as beefers. The purest stock of Ayrshires is in Cunninghame and the northern parts of Kyle.

The Grass should always be allowed a fair start, but the ordinary time of putting the cows on is the beginning of May, and most of them are drying up in the beginning of November, so that only six good milking months can be reckoned upon in the year. The earlier the cows calve, the sooner they dry up, and *vice versâ*; although the milk may be greatly prolonged in either case by plentiful house feeding. Except on farms in close proximity to towns, where a ready sale of milk or butter can be depended on, early calving is the reverse of profitable. Generally over the county the time of calving is most convenient and remunerating, for the earliest to begin from a month to six weeks before the Grass is ready; and when numbers of cows may be reared are thus most of them about off the milk when cheese-making commences. But such farmers, for instance, as Mr. Thomas Speirs, Skerrington Mains, Hurlford, and Mr. Hugh Woodburn, Annandale, who dispose of the whole produce nearly in the form of milk or butter, time their cows to begin to calve so early as before the new year, and thus have a continual supply all year round for their customers.

The quantity of milk drawn daily from the cows varies considerably in different animals, and also at different times of the year in the same animal, according to the state of the pasture or the measure of other food she may be receiving. The reporter cannot set down the average daily yield of milk from each cow, all over Ayrshire, and for six months of the year, at more than five Scots pints, equal to 15 imperial pints. He is perfectly aware that is below the amount given by most writers on the subject, yet is confident that five Scots pints is if anything above the average, even for the period stated. Various writers speak of 8, 10, and 12 Scots pints daily, or even more, and all that is very true in some individual cases of extra-good milchers, for a short time in the height of their milk, and the Grass at the best. Professor Lowe estimated the total yearly yield of a cow, in good dairies and on good farms, at 6000 imperial pints, which amount, allowing 210 milking days, gives us 9½ Scots pints per day for seven months! There is not a kind of cow on the best Grass farm in the kingdom which will yield such a quantity regularly for that length of time. It just amounts to about 20*l.* worth of full-milk cheese from each cow!

A writer in the *Mark Lane Express* (May 1863) stated the average annual produce of cows at 4400 imperial pints each. Should his average be anything near the truth in respect to Britain at large, then all the reporter can say is, that the Ayrshire pastures, generally and proportionally, must be more defective than even he supposed them, and that is poor enough in all conscience. Our estimate for Ayrshire, over all, would be about 3400 imperial pints from each cow per annum.* The fault of the small average produce over the county, if it is small compared with other dairy counties, must not attach in any degree to the cows in that they are unable to yield more, but should be placed mostly to the general poor state of the Grass, and somewhat to a deficiency in house feeding.

Much depends upon the assistant feeding for getting good and regular yield of milk. It is possible that house food may be given in such measure as that the cost will "overgang" the profit, but with cheese selling at 12*s.* per 24 lb., and good Bean meal or Maize meal to be had under 20*s.* per 280 lb., or Oats for 15*s.* per quarter, house feeding might be profitably increased over that presently supplied on the majority of farms. Not only is the quantity of milk increased from extra house feeding, but the quality is also improved, and part of the expense is paid back in the richer manurial composition of the dung. Salt given regularly to dairy cows increases the flow of milk, besides rendering the milk richer in butter and curd, and the advantage to each in the best English dairy districts is from 3 to 4 oz., never exceeding the 4 oz.; yet such a beneficial practice is almost unknown in Ayrshire, although salt can be had at 9*d.* per cwt. Probably just as well, for the cows must have good allowance of food when salt is given along with it. It excites an appetite, and unless that appetite be supplied, the beasts lose flesh even more rapidly. Mr. Thomson, of Grange, who manages in every department most systematically, effects great saving of fodder by having it cut into chaff, and often keeps his cows for weeks together, without roots, by substituting 12 oz. of treacle daily along with the cut straw and meal. His average daily allowance of Bean meal, whilst being given, is about 4½ lb., and of roots 56 lb.

The cows when put on the Grass are generally in the leanest condition of body. They get in most cases literally nothing from the time they dry up until a week or two before calving but bare Oat straw and water, or, sometimes, that equally nourishing (!) food, threshed Rye-grass, is substituted, if the Oat straw runs short. And thus the summer-flush and best of the Grass, namely, June, mostly goes to reclothe with flesh their wasted frames. Though it is their nature to secrete a large quantity of milk for the first two or three months after calving, the poor beasts are neither in condition of mind (so to speak), nor of body, to yield milk freely and copiously. The cows now in Ayrshire are nearly in all cases most comfortably housed—in many cases better than their masters and mistresses—and are generally well supplied with dry litter to lie on, and fresh clean water to drink; yet if a fuller allowance of more nutritious food was given them throughout the whole year, the cost would not be money thrown away: "the cow gives her milk by the mouth."

Varying according to season of year and quality of milk, about 190 imperial pints, on an average, turn out an Ayrshire stone, 24 lb., of new sweet-milk or full-milk cheese. Fifteen pints per cow will thus give us 14½ stones of new cheese from each cow for the six months, or 18 stones annually from each cow if all the milk was converted into cheese. The season's make of six months in some of the best grazing districts, as in the parishes of Kilmaurs, Stewarton, Dreghorn, Dailly, &c., may average fully 16 stones; but against these we can easily find other cold-clay districts, as in most parts of the parishes of Kilwinning, Mauchline, Dalry, Sorn, Stair, Coylton, &c., where the average will not exceed 12 stones. Take it another way: suppose that all the stocks of 20 milch cows, over the county, turn out on an average one cheese daily of 36 lb. weight for the season of six months, that gives us only 13⅓ stones to each cow.

The reader will observe that "new cheese" is the term used above. The cheeses dry in and lose weight the longer they are kept. The amount of indrink may be from 3 to 5 lb. with each cheese, or the whole—that is, if the whole "kane" is kept on hand by the farmer till about Martinmas. The custom in most cases, however, is to sell the whole season's make some time during June or July, and deliver the cheeses into the merchants' stores as made, in two or three separate lifts, so that a share of the indrink thus falls upon the merchant. Half a stone of indrink may therefore be placed against the make from each cow. Cheese fairs (three annually) were lately established at Kilmarnock under the auspices of the "Ayrshire Agricultural Association," the principal one being held on the last Thursday of October, but these have been poorly supported as yet by the farmers, only some 20 to 25 tons being brought forward on an average at each, and it may be years (if ever) ere they come to be much patronised. Farmers, as a rule, will not readily "happ" or "wyson" in any direction save that which pleases themselves, and haply in most cases rightly so, for they ought to be the best judges of their own business. Auld use and wont practice holds the reins with very many, and this it is, we believe, not the high prices so much, which continues the Rye-grass seeding custom in these advanced times of farming.

The average number of cows in milk in Ayrshire in 1856-57 was 38,573, but we may reasonably suppose a greater acreage now under Grass, from green cropping and corn crops gradually diminishing of late years, and that more milch cows consequently will be kept—say 40,000. These, at 3400 pints of milk each, or 17½ stones of cheese (allowing for indrink) each, at 54*s.* per cwt., will give the value of the annual produce in milk—viz., 405,000*l.*; to which add the price of 39,000 newly-dropped calves (allowing for abortions) at 7*s.* each, or 13,650*l.*, and we have the total value of the annual produce from the milch cows—viz., 418,650*l.* The 405,000*l.* from the milk may be apportioned as follows:—Sweet or full-milk cheese, 320,000*l.*; half-and-half and skim-milk cheese, 25,000*l.*; butter, butter-milk, sweet-milk, skim-milk, 60,000*l.*; milk given to the calves reared, 20,000*l.* The whey for feeding pigs, over and above, is worthless.

The remarkable insignificance of the cheese-interest," so remark occasionally Messrs. Primefat, Bullocks, & Co. of Dunse and Dunfermline. Not so very insignificant, gentlemen, as we proceed to think it.

Value of total annual produce from milch cows	..	£418,650
Number of Grass fed cattle annually sold and exported—say 6000, young and old, at 5*l.* 10*s.* per head, exclusive of the 78. per head formerly charged as calves ..	..	76,500
Grass-fattening of sheep of all ages along the coast, and pet sheep, drafted ewes, &c., inland	..	10,000
Value of the whey for pig-feeding	..	18,000
		£523,150
Deduct—		
Value of the cabbage arrears	£8,000	
Value of the Mangel acreage	16,500	
Value of the Vetches acreage	2,000	
Value of Bean meal and other feeding stuffs given to milch cows	15,000	41,500
		£481,650

The fodder is compensated for by the manure.

Divide the last sum by the acreage in rotation-pasture, including the rouped permanent Grass—135,000 acres, and we get the sum realised per acre of Grass-land over the county—namely, 3*l.* 10*s.*, or an approximation to it at all events. From the 3*l.* 10*s.* per acre deduct rent, servants' wages and board, keep for the farmer and family, lime, deaths of cows, &c., and a nutshell will hold in copper all that is left "to bank"—if anything at all. A living may be made by dairy-farming in Ayrshire, but to "make money" by it is plainly impossible. The dairy farmers are pretty comfortable, however, for all that, and the outcry occasionally sent forth, more so we suspect than their stock-and-crop brethren in the shore districts; but they have far from a "gentleman's life" of it, in the usual acceptation of that term—themselves, wives, sons and daughters, fitting "from cockcrow till mock from noon till dewy eve," and all the year round, being worked like slaves. Still our farmers' sons, and daughters as well, are generally well-educated, and they are none the worse of the hard work; and no county in Scotland sends out so many young men as land-stewards, &c., to England and Ireland, proportionally even to size of county, as does Ayrshire. *Transactions of Highland Society.*

* In Morton's "Farmer's Almanack" for 1866, the average annual yield per cow in five known dairies is given as 4092 pints, but which is stated as being above the average of ordinary Grass-fed cows. A Gloucestershire dairy is said to yield about 4320 pints per cow, although we find that the average yearly yield of milk per cow at Frocester Court farm, near Stonehouse, in a dairy of 80 cows, was 3862 pints for the year 1865, and only 3300 pints for 1864, owing to the drought in the latter year.

THE SEA PASSAGE FOR IMPORTED CATTLE.

[The following is a continuation of Mr. Irwin's paper on the Foreign Cattle Trade, before the Society of Arts.]

In the regular cattle-boats (and, as far as the importation of London is concerned, the rule is to have boats specially fitted), attendants are provided whose sole duty is to look after the cattle, to feed them, to give them water, and, in the event of any bullock being off his legs, or what is technically called "down," to get him up again in all cases in which he can be trodden upon by his fellow-bullocks. Every regard is paid to proper ventilation of the vessels, so much so, indeed, that on a recent inspection of some of the regular cattle-boats to London by Dr. Thudichum it was found that the ventilation was so perfect that he could suggest no improvement. On arrival at the destined landing-place on the river the vessel is put alongside the wharf without any delay, and the discharge of the cargo proceeded with as expeditiously as possible, which usually occupies one to two hours, according to the state of the tide, the vessels regularly constructed for such service generally, when fully laden, bringing from 400 to 600 oxen, and 1000 sheep at one time.

The whole of the animals walk out of the holds by means of inclined planes, and are at once claimed according to their brands by the respective consignees, who take charge of them, water having been provided, and as soon as each man obtains the quantity for which he holds bills of lading. The scene which occurs on the landing of a cargo of cattle is something so bewildering to the unpractised eye, that I can easily appreciate the feeling conveyed of utter confusion and awful cruelty, especially if (as occasionally happens) there are one or two casualties amongst the cargo; but, considering all the circumstances, the operation of landing can scarcely, if at all, be much improved. On landing, or as soon after as circumstances will allow, every animal is examined by the veterinary inspectors appointed by the Commissioner of Customs, of whom there are two for London, who are members of the Royal Veterinary College, and perhaps more experienced than any other two men in the world for the functions with which they are charged, having yearly under their inspection more foreign cattle than any one else in this kingdom.

It has been sometimes alleged that the veterinary inspector, on landing, is not sufficiently strict; but if this assertion is tested by the logic of facts, it will be found utterly untenable, and in the opinion of those who are competent to discuss the question, and who are actually conversant with the inspection in force, any error will be granted to be in too harsh, rather than too lax a system in this respect. Nothing is allowed to leave the landing wharf until the medical inspector has given his permission, after which the process of delivery goes on, and the clearing of a large cargo completed. The cattle are, if up on the Saturday, driven to the respective lairs of the consignees, or to the Cattle Market, as occasion requires, and after sale are driven to the premises of the slaughtering butcher, or to the abattoirs at the Cattle Market. At one time about one-third of the cattle exposed for sale in the Metropolitan Cattle Market were bought for sending into the country, but, owing to the recent Orders in Council, this privilege has been withdrawn, and I am told the consequence is enhanced prices in many districts, where butchers are now compelled to come to London to buy in the dead meat market. The question of compulsory slaughter at public abattoirs having been so completely shelved by the report of the Committee on Trade in Animals, calls for no remark. Assuming, then, that the importation of cattle from abroad is essential to our great meat-consuming community, I submit that the arrangements at present in force are quite equal to the necessities of the occasion, and although much might be said on the plea of humanity, much more must be considered on the grounds of necessity.

Without the supplies which we derive from continental Europe, we should unquestionably have to pay for meat in

England, and notably so in London, a much higher price than we can prevail upon them to give, often exorbitantly high prices, and hence it became a matter of grave consideration how far the existing regulations bearing upon the importation of cattle could be facilitated with advantage to the public, and a Select Parliamentary committee was appointed to inquire into the trade in foreign animals, and although, in the opinion of many gentlemen connected with the import trade, several members of the said committee entered on their functions apparently with a decided feeling in favour of the present system, it is a noteworthy fact that the report of the committee, with minor recommendations, pronounced the trade in foreign animals to be conducted in such a manner that there was absolutely nothing whatever to improve. From the inquiry in question, after a most searching series of evidence on the subject, this one point has come to me as being entirely avoided, and it is all the more remarkable from the fact that it is about one of the most disputable matters of the trade in animals, whether by rail or steamer, I allude to the cruelties of the drivers who take charge of the cattle on arrival in London. Why the men employed for such a duty, and that there is most undoubtedly room for improvement in the present system in this respect, I do not profess to understand, but that there is a most marked difference, even if the foreigner is an accepted fact, and I regret the circumstance, not only as a question of humanity, but because I believe that the irregularities of the casual drover, or "outsider," have done more than any other circumstance to bring the cattle trade in London into disrepute.

In the course of my usual vocation, which brings me into personal contact with most or nearly all the drovers who frequent the river-side, for the purpose of receiving the cattle brought into London by way of the Thames, I have been struck by their general good conduct, and they have in reality, as the master-drovers—a respectable and careful class of men, all charged with the responsibility of delivering valuable consignments to their employers, the salesmen in the market—being utterly unable to obtain such assistance in their business as will prevent them from using unnecessary cruelty, more observable on the occasion of cattle being either landed, or driven, or exposed for sale in the market; indeed it is no uncommon occurrence that the cattle when in the market are less forcibly used than occasion requires, and this in the immediate presence of the salesman, who is powerless to check such brutality.

As a rule each master drover has leading men to take charge of each drove of cattle, and he usually trusts this charge to those who have themselves proved worthy to a certain extent, but his duties require he should patrol the various points, and he cannot follow every particular lot of cattle he may have to attend to, consequently he must, in a great measure, rely on his foreman. I would not for one moment like it understood that the master drovers are themselves guilty of all the enormities laid to their charge, but I am satisfied that the extra hands, men who are known as "outsiders," called in on special occasions, are not to be trusted. And such parties are allowed to be maltreated as they have been, a thing no man of humanity would like to see, I refer. I have myself on many occasions interfered at the wharves when I have observed any cruelty being practised, and it has occurred that, when I have turned from the offender, he has made the poor brute suffer all the more for my interference, a fact that calls for no comment. The thing in itself is sufficiently disgraceful, but I have the testimony of some of the leading master drovers in London of a corroborative character. In conversing with them I have asked what remedy they themselves would suggest, but they seem at a loss to recommend any measure, and the reply that they would be glad to find men who would do their work more carefully and more free from the unnecessary brutalities they are reluctantly obliged to pass over as though unseen. I have learnt with something akin to horror, that in the lower grades of drover nothing but cruelty with unbridled spirits strive to attain is the superior dexterity with which the stick can be so applied as to produce the keenest suffering to a passing bullock, and if the operation is neatly performed, and the animal follows out its agony and rushes frantically off, the operator is looked upon as thoroughly qualified and has attained his profession.

Such a scene is not imaginary, as every one connected with the cattle trade can vouch, but it was only a few weeks ago that I had what I consider ample proof that the practice of cruelty has been elevated to a science. I was complaining of the difficulties of managing cattle, especially in large droves, and that coercion of some kind is absolutely necessary, as otherwise it would be impossible to get the work done; but the master drover pleaded not only a scandal, but cause actual destruction of property, the value of hundreds of the animals being very often reduced in consequence of the bruising sustained by the superfluous thwacking they get. The remedy is one of so simple a character that Sir Richard Mayne could at once introduce it, were the police force instructed to keep a close watch on it, were the men to blame, and to press for heavy punishment at the hands of the magistrate in whose district the offender should be detected. In the case of foreign cattle driven to the Metropolitan Cattle Market from the various wharves on the river, the only routes which are permitted by the Police Commissioners being clearly defined as authorised for that purpose, and at each landing-wharf the roads, streets, &c., to be taken being set forth on a large board, a little vigilance on each line of driving would be quite sufficient to deter even the most accomplished wielder of the goad, after a few cases had been detected and heavily punished by the magistrates, followed by the withdrawal of the regular license which all drovers are required to have. This, supplemented by placards in the metropolitan market, and Parliamentary enactment, would, I feel satisfied, have a most determent effect, and lead to much alleviation of the suffering inflicted by the drovers.

Thames Haven is an out-of-the-way place, consisting of some dozen small cottages, situated some nine miles below Tilbury, on the Essex side of the river, and about the same above the Nore, and in direct communication with London by the Tilbury and Southend line, and may be known to some present as being a passenger route much used in the summer season between London and Margate and Ramsgate. Attention having been drawn to it in 1856 by a desirable landing-place for cattle, when a few cargoes were landed there from Bremen as an experiment, it was found that the anticipations of the railway lessees in whose hands it then was vested were well founded, and, had not the loss of the boat which was the pioneer of the system put an end to it for the moment, the operation, there is no doubt the trade would have been gradually developed. Subsequently, however, a new Bremen Company started a line of seven steamers to London, and, whether from action by the railway lessees, or from the conviction that the Thames Haven route presented greater facilities I am unable to say, but they determined to adopt the new route to the Metropolitan Cattle Market, and it was found to answer remarkably well. In the meantime, the attention of the trade was directed to the practicability of relieving the over-crowded streets of London of the cattle traffic, and at the same time getting the cattle into the market both in better condition and in less time than by coming up to the landing wharves at Blackwall. About 12 months ago some gentlemen interested in the trade as cattle salesmen and cattle steamboat owners determined to secure the lease of the premises, with a view to extending the accommodation for landing and forwarding cattle to the Copenhagen Fields Cattle Market, which has been done, and their operations are now in full force, such cargoes as they can influence being landed there and sent at once to London to the cattle station of the London and North-Western Railway, in Maiden Lane, Caledonian Road, whence they have to be driven only two yards into the lairs of the cattle market. The advantages of landing cattle at places down the river consist of an avoidance of a three or four hours' passage up the river, where the navigation is subject to greater impediments, and where the vessels have to proceed up the river; and in autumn especially, when fogs prevail, it is almost invariably the fact that the majority of vessels who are detained from that cause, have to bring up this side of the Lower Hope a little below Gravesend, indeed I have known as low as Sheerness, and the time of the passing Thames Haven have encountered below Gravesend, and been compelled to come to anchor for some hours, during which time the cattle of course suffer very considerably from excessive heat. The advantages are equally manifest to the ship owner, inasmuch as he saves eight hours' fuel per voyage, as well as other minor expenses, and avoids the risk of navigation in a crowded river, a fact of considerable importance, inasmuch as the majority of collision cases in the Thames occur this side of Gravesend. It would therefore appear that the benefits of landing places down the river, and direct communication with the London cattle market, are worthy of consideration, and the experience to be gained during the ensuing year will be the best criterion to work upon.

A DISCUSSION ensued on the conclusion of Mr. Irwin's paper. In the course of which Mr. S. SIDNEY said his avocations brought him continually into contact with graziers, wholesale butchers, farmers, and country gentlemen, and he was at a loss to know where the cattle plague came from, indeed I have the idea that there was any considerable class of persons, exercising the slightest political influence, who desired at the present day to limit the importation of foreign cattle into this country. Mr. Irwin might have met with a firmer smarting under recent losses from the murrain, which, he might say, he had said something about the loss he would sustain if an unrestricted foreign cattle trade was permitted, but as far as his experience went, all classes agreed in the importance of taking every means to secure as large a supply as possible of healthy meat. He had been told on the best authority that pleuro-pneumonia was just as much to be feared amongst cattle as amongst human beings; but he could not support the view which Mr. Irwin had enunciated, rather than stated fully, that rinderpest was not a foreign imported disease, and therefore that it was not necessary to have the animals slain which might have died. There were three or four facts in connection with this disease which were somewhat striking, even to persons not possessed of technical knowledge on the subject. It was in June, 1865, they first heard of the disease existing in this country, and since then it was well known how the pestilence had perished. When it first appeared in France, by the adoption of severe restrictive measures it was checked at once. In Ireland prompt measures had been taken to prevent the transmission of cattle from England to that island, and the result was that, with a trifling exception, Ireland had been free from the disease. In this country we allowed it to rage unmitigatedly for some time. The Government hesitated to adopt stringent steps, and the disease spread; but from the moment they did adopt really stringent measures it was gradually lessened. All that proved, he considered, was, what system ought we to adopt in future for regulating our foreign cattle trade? It appeared to him that we ought to give every facility for the importation of cattle from countries which had a healthy bill of health, and that the most stringent regulations should be adopted with regard to countries that were not in that condition. Holland was one of the countries where the disease was treated mildly; the consequence was, while we had succeeded in stamping it out, the rinderpest still raged in Holland. With respect to the quality of the cattle imported into this country we were well enough aware that, as a rule, they were equal to the second-class meat, but seldom equal to the first-class meat produced in this country. The best qualities of meat were supposed to go to the west-end of London, and it was probable that, as a rule, the butchers of that locality had very little to do with foreign meat. He agreed with the author of the paper on the question of the importation of dead meat, that where there was not a market for the offal, the beasts could not be slaughtered without considerable loss. But here again they must look ahead. He believed the best way of disposing of an animal was that when killed it should be taken to a well-regulated slaughter house, and there slain, and all parts of the meat distributed. Nothing would be a more severe tax for the meat-eaters of the metropolis than that they should be compelled to concentrate the work of slaughtering in one or two months in the year, not weather of summer be obliged to distribute the meat from those spots alone.

Mr. BAILEY DENTON suggested that the discussion should not turn on the cattle plague, but on the question treated in the paper, viz., our trade in foreign cattle. One thing he did think an important element had been omitted—that was, the question of the establishment of abattoirs. He would not state any opinion of his own as to their desirability, nor was he going to endorse the views of Mr. Sidney, that the wholesale killing of animals at the port of arrival was the only thing to do; but he suggested to those who entered into the discussion to consider whether the extension of abattoirs would not have the effect of preventing a great deal of cruelty in the treatment of the animals, besides other advantages. He could not quite endorse the views of Mr. Irwin with regard to the diminution from cruelty which prevailed in the transit of cattle across the Channel. Notwithstanding the excellence of the arrangements in many respects, he had himself witnessed the greatest cruelties in the passage.

Dr. CRISPE expressed his astonishment that in the present day any one should be found to support the doctrine of the spontaneous origin of the cattle plague; moreover, he felt certain that, during the incubation of the disease, it was impossible for any inspector to detect it so as to be able to select from a herd of cattle those that were capable of free from infection. His own impression was that until all foreign cattle underwent quarantine at the ports where they landed, or were slaughtered at those ports, we should never be free from the disease. The rinderpest itself was a matter of even less importance than other diseases. During the last 30 years there had been two other distinct forms of disease among cattle, viz., the foot-and-mouth disease, which, though it seldom killed, deteriorated the condition of the animals very much; and pleuro-pneumonia, which was more destructive than the cattle plague. There was no question in his own mind but that the disease was imported into this country by foreign cattle. He had been in the neighbourhood of Harwich where he had seen a great many sheep affected with small-pox, which had been communicated by foreign sheep landed there, and in the early stage of that disease it was impossible for a veterinary surgeon to detect it in the animal. He thought there could scarcely be a person present who believed that the foreign trade in cattle could be stopped entirely. It must increase, but the countries mentioned in the paper were but little to be depended upon for our supplies, which, he thought, ought to come in the form of dead meat from Canada, South America, and Australia.

Mr. REDMAN believed the observations with respect to the very objectionable practice of driving cattle through the streets of London would be endorsed by every person who understood the matter. He believed more cruelty was exercised by the over-driving of cattle than by the use of the goad by the drovers. Animals that arrived at Blackwall late on market morning were driven through the streets at speeds which were most unjustifiable; and between the Cattle Market and the Liverpool Road he had seen 10 or 12 beasts "down" from over-driving. He believed a large proportion of the London drovers set their faces against cruelty as much as the community at large did. He considered the system that had existed for many years past of carrying on the trade in cattle in the metropolis was one that had worked well up to a certain period; but now that London had increased to such an extent, the traffic of the streets was so great that the question was how to relieve it in any way; and public convenience demanded that the driving of cattle through the streets should cease. The time would arrive when the driving of cattle in the streets would not be necessary, and when abattoirs would be established in suitable situations, and the slaughter-house and cow-house system be abolished.

Mr. WOODRUFF, as one largely connected with the carcase trade, wished to state that, as far as his own experience went, the reported cases of alleged cruelty on the part of the drovers were greatly exaggerated, and he believed a person might remain in the market all day and not see a single act of cruelty. With reference to the driving of cattle through the streets, he would remark that the route provided was generally through streets in which the traffic was very great. The manufacturers of meat, as he might style the carcase butchers, were not limited to the Metropolitan Market for their supply. He bought cattle in the country largely, and the bulk of them never came to the Metropolitan Cattle Market, but were taken direct to his premises and slaughtered as he or his customers required, and the carcases sold. The whole of the East End of London was supplied by an extensive row of shops, in which great quantities of meat were sold daily. It would, therefore, be surprising if them and himself of their businesses if the slaughtering were taken to public abattoirs, as had been recommended. In the case of the great bulk of the meat only one removal took place, which was effected by the retail butchers. With regard to the condition in which imported dead meat arrived, he could say even at the present season the loss was very considerable, and the prices as well as the supply fluctuated very greatly. If the animals were brought alive the prices could be better regulated, and it was desirable that in so valuable an article as meat the loss should be as small as possible from deterioration.

Mr. BONSER said, with reference to dead meat imported from abroad, it was alleged that it sometimes came in very bad condition; but it must be borne in mind that this was a new trade, without proper organisation at present. It was only last summer that a first consignment of dead meat came from Holland, and a large portion was slaughtered by men unaccustomed to the work; the consequence was the meat arrived here in a worse condition than it would have been if the slaughtering had been properly done. Large quantities of dead meat were received from Scotland every day, in excellent condition, though it was known that in the transmission was longer than from Holland, being in the one case 40 hours on an average, and in the other 30 hours. He believed when this trade had been longer established the arrangements would be made so as to enable meat to be received from Holland in as good condition as that which came from Scotland. He considered it undesirable to have unnecessary restrictions upon the live cattle trade. As soon as it could be done safely, let the trade be thrown open, and let the exporter send the article dead or alive, as might be found most convenient.

Mr. WITHER remarked that the tendency of the discussion had been to throw them back upon old ideas. Mr. Rudkin had told them that the live cattle market had been very properly taken away from the town, while the great dead meat markets were to be retained in the city, a proposition which he thought very objectionable. Wapping might be a good position for a foreign dead meat market. Formerly the great centre of the Potato market was in Tooley Street, now it was at King's Cross. The City authorities might build markets as they liked, but every trade would have its instinct of the most suited for its purposes, and he believed the time would come when there would not be a single market of any kind in the City. If there was one objectionable trade which should be cast from the centre of a city it was the selling of cattle, and the system of abattoirs at various points of the metropolis would not only tend to the advantage of the trade, but to that of the City itself.

The CHAIRMAN, Mr. C. S. Read, M.P., remarked that they had heard the question discussed from all points of view, except his own, the agricultural point of view. This was a very important discussion, but he thought it was to be regretted that it had confined itself too much to the details of trade, rather than taking up the broad question in which all were interested—how best to supply this great country with meat from abroad. As a farmer he might say that they wanted no sort of protection whatever. They did not dread competition, but they did dread foreign diseases, and against them they asked this country, and societies like this, to do all they could to protect them. He not only asked that on the part of the farmers, but also on the part of every consumer of meat in the kingdom; for he was sure if there was a re-introduction of the cattle plague, and a recurrence of the sad devastation they had witnessed during the last 18 months, it would not only be a most serious loss to the public, but cause almost entire ruin to the agricultural interest. He was sure they would not desire to separate without passing a cordial vote of thanks to Mr. Irwin for his most comprehensive and valuable paper.

IRISH AGRICULTURE.

IN Scotland there are four different classes of breeders and feeders:—1st, the extensive tillage farmer, who stall-feeds largely, and finishes off the stock for the market; 2d, the dairy farmer, who produces cheese and butter; 3d, the hill breeder, who holds the best class of hill pasture, as the Cheviot sheep range. On this he crosses the mountain breeds of cattle and sheep with the Short-born bull and Leicester tup, and with this produce supplies feeder No. 1 with stock to consume his Turnips; 4th, there is the hill breeder, who holds the higher ranges of hills, and breeds the mountain stock pure, and with them supplies dams of this breed for breeder No. 3 to cross with on the better class of hill pasture. By this arrangement, or even by a farmer breeding and feeding the class of cattle and sheep suited to his land, each finds a ready market for their stock. It is not so here, where that foolish system of Grass—Grass and all Grass—is the general practice, filling the markets with half-fed stock, and nothing to finish them on. In many of the late fairs large lots of fine cattle were standing unsold, and looking as if they understood that they had to go back again to their bare pasture, to look all day for their breakfast, and go to bed without their supper, and their owners standing lamenting that they had not a few acres of Cabbage or Turnips to give them to finish

them off. The climate and soils here differ in some respects from those of Scotland; and, therefore, the various classes of breeders and feeders must also differ accordingly.

Here we have the valuable feeding Grass lands, of which in Scotland they have very little:—1st, we have the grazier who holds the first-class Grass land, and can finish off his stock for the butcher on his Grass alone; 2d, we have the grazier who holds second-class Grass land, and who either feeds or keeps a dairy; 3d, the tillage farmer who holds first-class tillage land, and who finishes all his stock with root crops; 4th, the farmer who holds light second-class tillage land; 5th, the hill feeder (that should be); and 6th, the small farmer under 10 acres. By such an arrangement, or by every farmer understanding the system and stock suitable to the farm he holds, and sticking steadily to his system, there would always be a ready purchaser for his stock, and the cattle would all be finished before leaving this country, instead of English and Scotch feeders getting them at a price that enables them to make more profit for six months' keep than is generally got for three years' rearing of them, and the production of this feeding would give employment to all our labourers.

First, then, I will consider the system suitable to feeder No. 1, as I will here style him, and he has generally the lion's share of the profit from cattle feeding in this country. I need say little with regard to the system carried on by them; for, to those who were fortunate enough to get possession of such lands, the management of it is as plain as A. B. C; in fact, these farmers were born with the bite in their mouth. They buy in part of their stock at November, run them then on the Grass through winter, giving them some hay during stormy weather; the rest of the stock are bought in at spring, and all are fed off on the summer pasture. The owner only requires to have some knowledge of buying and selling to make a good profit; and if a new beginner does happen to make a blunder in buying or selling, it is not much noticed, as they generally hold such land so cheap, considering its great value. Feeder No. 2, who holds second-class grazing land, should also carry on the same system of buying and feeding, or keep a dairy stock, and produce butter, for which this class of land is suitable. If the feeding system is carried on, a few acres of Cabbage and Turnips should be produced annually, to finish off the culls of the stock for the Christmas market. The Grass being only second-class, there will always be some of them unfinished, and often 50 or 60 beasts will have to be finished off on a few acres of roots. For this purpose I consider the concentrated system of stall-feeding best—that is, pulping the roots, cutting the hay or straw, and placing it in a large box, and pouring over it hot gruel made of different kinds of meal and cake, and allowing all to sweat together for some time. By this method a larger number of stock can be kept on a small quantity of roots, in order to meet a certain market, which is very often of more importance to this class of feeders as the quantity of beef put on. If the farm is well sheltered, the stock can be kept on the field, and finished in this way; but when fed outside, Cabbage should be used instead of Turnips, and the meal given dry. On this the cattle will scour less, and do better than with Turnips and cake on the Grass. From the high terms in which Dr. Cameron spoke of Cotton-cake, it might be valuable for this class of feeding, for if any injurious effect was seen on any of the stock, they could be sold without much loss; but the danger of forming a ball in the intestines of valuable store stock and causing their death afterwards is the objection I have to using Cotton-seed cake. Dairy stock answers on this class of land well, and is generally found more profitable on such soils; but to get the full profits of a dairy, the manager requires to grow some roots, to keep the cows up to milk during the winter, and the best roots to grow for them are Cabbages and Mangel Wurzel; the former for use in the early part of the season, and the Mangels for spring. The roots should be steamed and mixed with bran and some crushed grain—Oats is best—and on this they will give butter as well as on the Grass, and the produce is more valuable at this period of the season. The best breed of cows to keep for the dairy are those having one or two crosses (not more) of the Short-horn and the old Irish cow or pure-bred Ayrshires, which, I believe, are the best dairy stock. Also the cross from a Short-horn bull and an Ayrshire cow makes excellent feeding stock. The calves should be sold to Farmer No. 3 to rear, after getting a few days on their mother's milk, without which, to clear out their stomachs, many of them would die. A first-class Short-horn bull should always be kept, which would ensure them a better price for their calves. This is much neglected by many large dairy farmers in the south of Ireland, and even proprietors who keep large dairy stocks run with them a runt of a bull, and sell the calves to their own tenants; and when asked why they keep such a brute, they tell you, "We sell our calves, and don't care." It is this selfishness which is so injurious to the interests of all, both with regard to stock and the improvement of the soil. Feeder No. 3, or the farmer who holds good tillage land, should breed and rear most of his own stock, and finish them all off with roots grown by himself; and this is a class of feeding which requires more talent and experience to carry it on properly than either of the former systems, there being more difficulties to contend with from adverse seasons and other causes. But, again, farmers of this class render more service to their country and fellow creatures than any of the other grazing men, as all he produces is the result of labour.

I will not here treat upon the rotation of cropping to pursue, but taking it for granted that the system is right, I will now describe the system of breeding and feeding that should be adopted. According to my system, a stock of strong three-part bred cows should be kept to produce and rear the calves; two crosses of the Short-horn bull is enough of breeding for this purpose, as anything higher bred would be too tender for a profitable stock. Crosses from the Short-horn and Devon or Hereford are much used in England for feeding; and from the Short-horn and Galloway, polled Angus, and West Highland in Scotland. The former I consider too light milkers, and the latter better adapted to hill breeding. The calves should all be reared, and also those bought from the dairy farmers, class No. 2. These calves should get six quarts of sweet milk per day for the first six weeks, then three quarts sweet and three quarts of skimmed for the next fortnight, with some oatmeal gruel through it; after that age the sweet milk should be stopped, and 4 quarts of skimmed milk per day should be given and the gruel increased, by adding some Bean and Pea meal to the mixture, to make them grow strong of bone and muscle. This feeding should be continued till they are six months old, when they should be put to winter keep, on Cabbage, Turnips, and straw; and if the early maturity system of feeding is carried on, they should get ½ lb. of Linseed cake per day during the first winter, but if they are kept till two and a half years old before putting up to feed, they will do the first and second winter on roots and straw alone. During the feeding of calves on milk, they should be kept in pens by themselves for some time after being fed, or they will get the habit of sucking each other's ears. They should be turned out in a paddock of short, sweet pasture at night, but should be kept in their pens during the heat of the summer days. Calves that are reared on the pail should get the hand to suck for some time when drinking their milk, so as to form as much saliva as possible in the mouth, which helps to digest their milk, and when the fingers are taken from them they should get their milk and gruel in a vessel wide and shallow, so as to keep them sucking at it as long as possible. By swallowing a quantity of cold milk quickly the calves often take scour, and if not looked after many of them will die. When a calf is noticed to have dysentery, it should get a dose of castor oil to clear out all inflammatory matter in the bowels, then a little Wheat flour gruel with some opium should be given to allay any irritation. Lately I have used Day & Hewitt's medicine, which I find very useful for this purpose. Some breeders believe that eating straw kills many young calves; but I think that the curdling of the milk in the stomach causes this craving for foreign substances, and then the straws are picked up; but I believe they are more the result of existing disease than the cause of it. When a young calf appears to have curdled milk in the stomach, it should get some soda to dissolve it (or some of Killeen's calf medicine, which is a judicious mixture for the purpose), and then a few doses of castor oil to clear it off. Many calves also die of what is called joint ill. This disease proceeds from curdled milk in the stomach also, which affects the joints, but this swelling is the result of the disease, and not the cause of it. Black-quarter carries off a great many calves, and when once affected there is no cure—prevention is the only remedy, and for this there are many things tried, the most effectual I have yet found being the use of a little Linseed cake to keep the bowels regular. Some lands are subject to it—low, damp land, and sudden cold, chilling winds are mostly the cause. Many breeders put great faith in inoculating with garlic. I would prefer giving a few doses of garlic and sweet spirits of nitre, to purify the blood.

There is great diversity of opinion when good, well-bred cattle should be fed off, some advocating putting up to feed at one year and six months old, while others are for keeping them another year. When the calves are well bred and well reared, I like them finished off for the butcher at two years old; but to do this the stock requires to be well kept from the day they were calved, and always kept improving. They should also get some cut Vetches, or other soiling, when on the Grass in racks; or if bog stuff can be had to bed with, better to keep them in the sheds during the heat of the day (on soil), and turn them out at night. A great number can be kept on the pasture by this plan, but some prefer keeping them altogether in the house on soil during summer. They don't do so well, however; neither do they thrive near so well on the winter keep afterwards, and they are also more liable to disease. When young stock are put to fatten at 18 months old, they should get an allowance of meal (bruised Oats and Barley) from the first, about 2 lb. per day until the new year, along with the Cabbage and Turnips: Cabbage is best to commence with, as it prevents any looseness from the change of feeding. After the 1st of January 3 lb. per day more meal should be added, consisting of Bean and Pea meal mixed, and at 1st of March 2 lb. of Linseed-cake per day additional ought to be given. On this feeding I have seen a lot of two-year-old cattle average over 20*l.* at that age, which pays well. If the cattle are run over till two-and-a-half years old before putting up to feed, they should not get so much artificial food; for they will feed well on 2 lb. of mixed meal per day throughout the winter, and by adding a little cake at the finish, it will make them handle better. Rape cake I consider is of no value as a feeding stuff, and of Cotton cake I have not had much experience. I once tried it, and lost some valuable sheep by it, and since then I have been afraid to give it to store stock; but for finishing cattle it might be safely tried. I see some of our town friends are now recommending the Cotton seed ground into meal, which they say is more free from fibre than the cake. It is rather astonishing how these gentlemen are so zealous in finding out what is likely to be useful to the farmers.

Perhaps I may be a little prejudiced against foreign stuffs; but I cannot help putting much confidence in feeding produced on the farm, and a mixture of Bean, Pea, Barley, and Oat meal is best, as one produces bone, another muscle, another lean meat, and another fat. If any feeding is bought, I would prefer the best Linseed cake; and at the beginning of winter, when the Turnips are not ripe, meal is better than cake, but as the Turnips get ripe and the cattle more advanced, cake can be used to advantage. In England hay is used largely instead of Turnips for feeding cattle; but I believe more could be made by grazing the hay-ground during the summer, and using straw; for, along with Turnips, straw is as good as hay if properly harvested.

There is a great diversity of opinion with regard to the proper method of housing cattle when feeding off. There are several ways, and each has its advocates, as, for instance, there is the hamel system, the box, the stalls, and the old court system. I consider the hamel system the best; but it takes more room and more bedding than the tying up. However, cattle thrive very fast in them. A shed 14 feet square with a small yard, same size in front, will do two large cattle, in which they can move about a little, breathe the fresh air, and ease their joints, and keep all itch from their skin. Altogether, it is a more natural system than being tied up by the neck. The box system I consider the next best, and the box for a large beast requires to be 10 feet square. The manure made in these boxes is superior to anything made by tying up, as it is always under cover and receives all the urine, and by the constant treading of the cattle it is kept from heating, and remains in that state which is now recommended as containing most strength. The old court system, when the shed and yard was large enough to feed five beasts together, was a good one, and although much out of practice lately, it is again coming more into use. I remember the cart going round each court with the Turnips, and throwing them to the cattle as they went round, and the same way with the straw. In this manner one man could attend 50 cattle, as the Turnips were carted to the trough for him, and the bedding also. I remember my father turning out as good cattle from these courts as I have ever been able to do since by modern and more expensive systems. Tying up in the stalls is the most general way of feeding; and the reason why it is so much used is the saving of house room. It does for old, quiet cattle very well, but young cattle are much better in hamels or boxes, and I think a great deal of disease is brought on by crowding cattle together in an over-heated house, where they breathe only foul air, proper ventilation being often neglected or not understood; and no matter how well ventilated, the air is not so good as when the front of a box or the yard of a hamel are opened to the air.

Lately saw a very fine feeding shed, erected by Mr. James Hardy on his farm at Clinstown, in the county of Kilkenny. It is all under one roof, supported by pillars, and covered with boards and asphalte roofing; each apartment holds three or four beasts, the Turnips are given through openings in the wall above the feeding troughs, and the cart can go round the house and leave the Turnips down at the outside, ready for throwing in; and the straw is also convenient, so that one man attends a large lot of cattle. The Turnips are given just as they come from the field, the cattle being their own Turnip-cutters. The quality of the manure, being always under cover, is excellent. Mr. Hardy's system may appear rather a rough one to some feeders of a more refined system; but I believe that gentleman is well pleased with the quality of the cattle going out to the butcher, the appearance of his green and grain crops on such valuable manure, and last, but not least, the reduction of his labour bill. There is also much difference of opinion about giving cattle cut or whole Turnips. Those who are in favour of cutting say the cattle fill themselves sooner and have more time to sleep and rest, but I am not yet convinced that this is an advantage. Filling the stomach hurriedly with a great weight of cold food can be of no advantage; and the animal system is so beautifully arranged by an all-wise Creator that a certain amount of chewing the food is necessary to form saliva, the great assistant to digestion. As proof of this, it is a well-known fact that cattle fed on whole Turnips are sooner ready and more eager for their next meal than those fed on cut Turnips. Another great proof is, that when cattle are getting a large quantity of cake and grain, if it is given in the shape of meal or ground too fine, and pigs allowed access to their droppings, they will not only consume them, but even fatten on them, whereas if the cake is given in lumps and the corn only roughly crushed, without kiln-drying, they will scarcely touch the droppings of the cattle. But it is sometimes difficult to get right-in cattle, that never saw Turnips before, to scoop for themselves, and in such instances I think it would be well to cut the Turnips into large slices for them; but when cattle are reared on the farm and accustomed to Turnips from the first, I believe they do better on whole Turnips.

I think feeders often make a mistake when buying in cattle for the stalls, in selecting aged cattle at a large price. I think well-bred two and a half year olds (or even a year younger, if they could be got properly fed up to that time) pay more from the rapid growth they make, and they are always a great deal cheaper. No doubt, the older cattle come out sooner; but this is no advantage, as they then are ready when the growers are sending out their culls, and beef is then at its lowest price. I could always make more of ten well-bred young bullocks, for six months' keep, than I could of twenty aged ones for three months' keep. Young farmers are often at a loss to know how to value a lot of stock in a fair that they want to buy: there is only one way of doing it, and that is to make a calculation as near as possible to what it will bring when it is to be sold, and then some guess can be made what could be given for it at the time. About twenty-four years ago, my father went to a situation where the gentleman was partial to aged

long-horn cattle, and they fed me a lot of five-year old long-horn heifers: there were also some good two and a half year old cross-bred Short-horns—they were also tied; but the owner was rather against feeding them at that age. However, when they went out, they brought as much as the aged cattle, although £5 per head behind them in a fair when tied up; and I have often seen the same result since. With regard to the quantity of Turnips cattle should eat when fattening, I believe the cattle are the best judges themselves. When first put up they should get them sparingly and be made to eat more straw, but when they get accustomed to them they should be allowed as many as they like to take. There is a great deal said by chemists about the quantity of water used by feeding on Turnips; but I believe this is arranged better than human skill can do it. Every one knows that cattle getting a full supply of Turnips drink no water; and I should like to see it calculated and proved by experiment whether a beast eating twelve stones of Turnips daily, or one fed on hay and meal, and allowed as much water as it likes, would have taken most water at night. Besides, there must be some difference in the quality of water from the Turnips and spring water. With regard to regular hours of feeding, keeping clean, caring, &c., these matters are now so well understood that I need not say anything about them; but very few farm-yards are constructed so as to allow feeders to do their cattle justice, and many cattle are tied up in stalls because they have not proper accommodation to do otherwise. Even yards that are being erected at the present time are put up on wrong principles, and costing double what one built and planned properly should cost. Most of them are constructed to cause a deal of unnecessary labour, instead of saving it—indeed boxes, hamels, and courts could be put up at less expense. No doubt, they might not look so well as a square yard of large buildings, but they would be more profitable. There should be no removing about of manure several times a day, to the great waste of its most valuable constituents and the loss of time. If hands and boxes—even for the work-horses—the manure could be removed at certain periods by contract, and by trampling under the cattle for months it would never heat or lose its bulk. An experiment with hamels and boxes against tying up in the stalls was carried out by Mr. Tompleton when managing the Clandeboye demesne for Lord Dufferin, the result being in favour of the hamels and boxes; and the experiment was so minutely carried out and described by that well-known stock-feeder that the committee of the Highland Society gave him a prize for the valuable essay he wrote on the subject.

(*To be Continued.*)

Home Correspondence.

Poultry Breeding.—The improvement of our domestic poultry has become one of the popular movements in these days of agricultural progress, and almost universal in our rural economy. The movement is not confined to that eminently useful individual to whom we are accustomed to look for our eggs and poultry supplies—the farmer's wife, but poultry amateurs have sprung up everywhere. There is scarcely a "London Cit" who does not keep his yard of poultry at his "out-of-town residence." This is highly commendable as well as pleasing and useful. It is not so much for profit that so many amateurs are breeding poultry, as for the interest and pleasure such engagements bring with them. Many breeds of our poultry are very beautiful in form and feather, others are prized for their larger size and stately appearance, others for the very smallest of proportions and beauty, &c., so that all our breeds meet with patronisers, and their continuation and improvement as distinct breeds are kept up. We rejoice at all this. It is a course deserving of praise, and adds wealth and happiness to the country. How pleasant and recreative at even it is for a busy "Cit," or a country town resident, to have a bevy of such handsome and attractive birds to command his attention, and give him health and quiet employment after the close confinement at office, study, shop, or counting-house during the day. To my mind it is beyond comparison preferable to cards, chess, and the many attractive games and amusements of the parlour. It is to these amateurs that I desire to say a word or two on poultry breeding. It is indispensable to success that you breed from pure and good stocks of whatever variety of fowl you adopt. If your accommodation for poultry is limited in extent, you should adopt the quiet tribes, such as do well in close confinement, *i. e.*, the Cochin China, Brahma Pootra, or Malay kinds. They will almost prosper in a tea-chest. If space is plentiful you are independent, and may adopt any variety you like. The Dorkings are most serviceable as a whole, both as layers and setters, and many specimens are very pretty, and for table fowl unsurpassed. They will bear rather close confinement, such as a small yard, and would roost in a hogshead. The Game variety is very handsome, and the quality of flesh exceedingly good, but require plenty of room for their active habits. The pencilled Hamburghs are the prettiest of our farm-yard poultry, and the most prolific layers, but are small and rather wild in character. The Black Spanish are very fine jet-blacks, and lay the largest eggs and many of them. These are very attractive to amateurs. The Black Polands, with their large and handsome top-knots are put the fowls for gentlemen's lawns—noble and proud of carriage, they always attract notice, and as a breed are of very useful character. The pretty little Bantams are quite the ladies' birds, perfect models of poultry, and where amusement and recreation are chiefly prized are the most pleasing of any to adopt—the very kind to have—their common habits are so attractive, so fussy, self-important, courageous, and pugnacious, that it is quite laughable to witness. The Game Bantams are the prettiest of their kind, and for beauty, symmetry, and plumage, unequalled. There has been of late some other foreign sorts introduced into the kingdom, but I would advise sticking to our established breeds. They are acclimatised. The Houdans, a French fowl, is probably the best of the recent introductions. In the management of poultry, considerable attention and close watchfulness is requisite to good success. One cockerel to eight hens is the recognised number to keep for profit; more will entail much, and many extras. A hen under first-class management will bring off three broods in a year. Their nests may consist of the simplest contrivance, to be about 15 inches diameter. Their coops, for the hen and young chickens, should have covered tops. Their food as inexpensive as possible, or the profit will be small, *i. e.*, Potatos boiled and mashed, Mangels cut into slices, Cabbage, Greens, in moderation, corn of any kind sparingly, and plenty of pure water. If in confinement they must have grit and lime. A little straw, upon which grain may be thrown, is very conducive to health in promoting much scratching. In fatting, Barley meal is probably the best food, mixed stiffly. If troubled with fleas use flour of brimstone. If medicine is requisite, put charcoal, camphor, or iron in their water. *O. F.*

Steam Cultivation.—On behalf of steam cultivation I thank Mr. J. K. Fowler for his article in your Paper this week. Mr. Fowler met Mr. Griffin very fairly about making a profit with horses besides obtaining their work. Mr. Griffin knows full well that horses just unhooked from the plough seldom or ever make 50*l.*; and that they require after being unhooked a lot of good costly stuff to make them worth that sum; and besides all that, he knows that they are liable to numerous diseases and accidents. These 50*l.* horses are never all gain. Now I can tell Mr. Griffin that if men of good judgment wish to make a profit with horses, they can do so better with the use of a steam-engine than they can without one. Common sense might tell him that if a number of horses are kept (and I repeat what I have long since said, that we shall always be obliged to keep some), and a steam-engine, the latter to take the heavy work, these young growing horses would have the better chance, even if kept at a much lower cost. Indeed as their work would be much lighter they would need much less corn to keep them in working condition. Here is some substantial evidence upon the point. Last year I kept a strict account of what my three horses did throughout the year. Here is the sum total of hay—

One Horse:—

	Days
Carting, &c.	75
Carting, hay	74
Job-work	117
Cultivating	94
Rolling, &c.	23
Carting hay	17
Ploughing	86
	506

Surely young horses under the eye of a good judge and manager might get as good a chance of paying something where a steam-engine is used, as where it is not; indeed practice has long since proved to me that the evidence is greatly on the side of the steam-engine. Now, I must look at your account from "Norfolk." John Hudson, of Castleacre," says, "it smashed up 40 acres of Wheat-stubble, 9 inches deep, with the cultivator. This and the digging I consider the best part of it." Here then is another witness on my side showing the injustice the Council of the Royal Agricultural Society did me at Chelmsford. My cultivator then is the same that I am using now—Fowler's (a copy of mine) was not in existence for years afterwards; besides this, Mr. C. S. Read's evidence goes for the cultivator as everybody else's does. Mr. J. K. Fowler, of Aylesbury, has given me my true position when he "jumped over the gap of time" and placed the Buckinghamshire farmer as the practical starter of steam cultivation in 1856. The "Royals" may go on as they like, the evidence is too complete for them ever to get ahead of me now. My farm cultivated ever since the Chelmsford meeting with the Chelmsford implement is their master. They cannot withhold it because it does not comply with practical conditions. It is the great stopper against their great 500*l.* prize carrying honour with it. *William Smith, Woolston, Bletchley Station, Bucks, Dec. 24.*

Farmers' Clubs.

LONDON.—At the General Annual Meeting of this Club Mr. Corbet, the Secretary, read the following Report of the Committee:—

In reporting on the prospects of the Club in December, 1865, the Committee stated there was little doubt but that by the expiration of another 12 months the monetary condition of the Club would stand as well or better than it ever had done. It is satisfactory to say that this expectation has been fully realised, as during the past year no less than 97 new names have been added to the list of Members—a larger increase than has occurred within the same period since the establishment of the Society. There are, further, nearly 20 more candidates now for election, so that the reliable strength of the Club appears safely based upon 600 Members. As a consequence, the Committee has been enabled to increase the amount of the annual investment, and, since the last General Meeting, 200*l* more stock has been purchased in the Great India Peninsula Railway.

The Committee continues the occupation of the rooms in the Salisbury Hotel at the same moderate hire (60*l*. per annum), subject to a six months' notice from either side previous to the termination of the yearly tenancy at Midsummer next.

Since the last Report was agreed to, the Committee has held several meetings on the subject of the Cattle Plague, and also had an interview upon the same subject at the Privy Council Office, when a Memorial was presented, a copy of which has already appeared in the Club Journal. The recommendations embodied in that paper were not only received with every attention by the Home Secretary, but their spirit very generally adopted by other deputations, the Farmers' Club being the first of any of the Agricultural Societies that sought the Government with reference to this terrible visitation. The question came again under the consideration of a full meeting of the members in March; since when the disease would appear to have been gradually dying out, though the Committee will, of course, be prepared for any further action which may be found necessary in guarding against the spread or reintroduction of the disease.

At the Meeting of the Committee in January, the Cup for the best Paper read during the preceding year was unanimously awarded to Mr. E. Edmunds, of Rugby, for his address on Middle Class Education. It is not, however, proposed to continue this offer, as the award, under anything like close competition, might appear to be invidious, or otherwise unsatisfactory in its results. It is still hoped that the character of the Discussion Meetings may be maintained without such an inducement, and that members will continue to send in topics, bearing upon practical agriculture, scientific research, or any collateral question affecting the rural interest, from which a selection will be made for the ensuing year.

The Committee cannot close this Report without some expression of regret, which they feel will be shared by the general body, at the decease of three of their oldest members. Since the last General Meeting Mr. Charles Stokes, of Kingston, Nottinghamshire; Mr. Richard Garrett, of Leiston, Suffolk; and Mr. Fisher Hobbs, of Bocking, Essex, have been taken from amongst us. These gentlemen were not only well known to most members of the Farmers' Club, but their names stood deservedly high in the annals of British Agriculture, and their loss will be lamented by all whose sympathies are with the cause in support of which they laboured so long and so sedulously.

ATHY.—At a recent meeting of this energetic Farmers' Club, Professor Cameron gave a very interesting lecture on food for animals, from which we make the following extracts:—

There is no question as to the advisability of keeping fattening animals in a warm place. If the temperature of the stall be equal to that of the animal's body there will be less food consumed in the increase of its fat; because less of the fat-forming materials will be expended in the production of heat. In this sense, therefore, heat is an equivalent to food, but only within certain limits. No matter how high the temperature of the air may be, heat will be developed within the animal body. Why it should be evolved under such circumstances is not very clear. Perhaps it is partly owing to the fact that animal substances are bad conductors of heat, and that, consequently, an animal, if solely dependent upon the heat of the sun, would not have its deep-seated organs maintained by it at a sufficiently high temperature. I do not know that the experiment has ever been made; but it would be worth the trouble to ascertain whether the centre of the heart of a dead animal has the same temperature as that of the air, when the latter is, say, 90° or 100°; I do not think it has. Perhaps the combustion of carbon in the animal organism is involved in the production of nervous force, and that the evolution of heat is an incidental action. Be the cause what it may, it is quite certain that heat is developed in large quantity within the animal body, independently of the temperature of the air. There is, therefore, no object to be attained by having the stalls heated beyond 70° or 80°. Indeed, it is to be questioned whether or not stalls artificially heated are ever properly ventilated. If they be not, the health of the animal will suffer, and its appetite—so essential a point in fattening stock—will become impaired. On the whole, then, I think we may safely eliminate from the facts I have detailed the following conclusions:—Firstly, that animals, when fattening, should be kept in a temperature not under 70° nor above 90° Fahrenheit; secondly, that the mode of heating must be such that there is as little wasteful combustion of fuel as is possible under the circumstances; and lastly, that no motives of economy of fuel should prevent the feeding places from being thoroughly ventilated.

The sheltering of animals is, perhaps, of more importance than the heating of their bodies by the combustion of fuel. Nothing lowers the temperature of the surface so rapidly as a cold wind. Mr. Nesbit relates a case bearing on this point, which is so instructive that I shall repeat it to you. A farmer in Dorsetshire put up 20 or 30 sheep, under the protection of a series of upright double hurdles lined with straw, having as a sort of roof, or lean-to, a single hurdle, also lined with straw. A like number of sheep of the same weight were fed in the open field, without sheter of any kind. Each set was fed with Turnips *ad libitum*. The result was that those without shelter increased in weight 1 lb. per week for each sheep; whilst those under shelter, although they consumed less food, increased respectively 2 lb. per week.

Linseed Cake.—In the year 1839 the average weight of fat horned beasts from Ireland sold in the London market was only 640 lb., whereas at the present time their average weight is about 740 lb. This remarkable advance in the production of meat is in great part due to the cattle being more liberally supplied with food, and that, too, of a more concentrated nature. The practice of feeding animals destined for the shambles exclusively on roots, containing 90 and even 95 per cent. of water, which once prevailed so generally in this country, is now limited to the farmsteads of a few old-fashioned feeders; and the necessity for the admixture of highly nutritious aliment with the bulky substances which form the staple food of stock is almost universally recognised.

Of concentrated foods used for fattening stock none stands higher in the estimation of the farmer than Linseed cake, although it appears to me that the price of the article is somewhat too high in relation to its amount of nutriment, and that corn, if its price be moderate, is a more economical food. Straw, Turnips, and Mangels form the bone and sinew of the animals, and enable them to carry on the vital operations which

are essential to their existence. Oil-cake and similar foods are supplemental, and contribute directly to the animal's increase, so that their nutritive value appears to be greater than it really is. If an animal were fed exclusively upon oil-cake, the greater part of it would be appropriated to the reparation of the waste of the body, and the rest would be converted into permanent flesh—the animal's "increase." The addition of straw would produce a still further increase in the animal's weight—an increase which would be directly proportionate to the amount of straw consumed. Thus, it will be seen that whatever the staple food may be, it will have to sustain the life of the animal, and will be principally expended for that purpose; whereas the supplemental food will be chiefly, if not entirely, made use of in increasing the weight of flesh. To me it appears manifestly incorrect to consider, as feeders practically do, the value of Linseed cake to be seven or eight times greater than that of Oat straw and 20 times greater than that of roots. Let us assume the case of an animal fed upon roots, straw, and oil-cake. 75 per cent. of its food, say, is expended in repairing the waste of its body and 25 per cent. is stored up in its increase. Now, if the three kinds of food contributed proportionately to the reparation of the body and to its increase, the roots and straw would be found to possess a far higher nutritive value, in relation to the oil-cake, than is usually ascribed to them.

The quantity of oil-cake given to fattening stock varies from 2 lb. to 14 lb. per diem. I believe there is no greater mistake made by feeders than that of giving excessive quantities of this substance to stock. If their object in so doing be to enrich their manure heap, they would find it far more economical to add the cake directly to the manure—or rather of adding Rape-cake to it, for this variety of cake is fully as valuable for manurial purposes as the Linseed-cake, and is nearly 50 per cent. cheaper. A larger quantity of oil-cake than 7 lb. daily should not be given to even the largest sized milch-cow or fattening bullocks. If a larger amount is enjoyed it will pass unchanged through the animal's body. Young cattle may with advantage be supplied with from 1 to 4 lb.—according to their size—and from ½ to 1 lb. will be a sufficient quantity for sheep. Intelligent feeders have remarked that cattle, which had been always supplied with a moderate allowance of this food, fattened more readily upon it during their finishing stage than did stock which had not been accustomed to its use.

Adulteration of Linseed-cake.—The great drawback to the use of Linseed-cake is the liability of the article to be adulterated. The sophistication is sometimes of a harmless nature—if we except its injurious effect on the farmer's pocket; but not unfrequently the substances added to the cakes possess properties which completely unfit them to be used as food. Amongst the injurious substances found in Linseed and Linseed-cake I may mention the seeds of the purging Flax, Darnel, Spurry, Corn-cockel, Cucus Beans, and Castor-oil beans. Several of these seeds are highly drastic purgatives, and they have been known to cause intense inflammation of the bowels of animals fed upon oil-cake of which they composed but a small proportion. Amongst the adulterations of Linseed-cake which lower its nutritive value without imparting to it any injurious properties are the seeds of the cereals and the Grasses, bran, and Flax-straw. Little black seeds belonging to various species of Polygonum are very often present in even good cakes; they are very indigestible, but otherwise are not injurious. Rape-cake is stated to be occasionally used as an adulterant of the more costly Linseed, but I have never met with an admixture of the two articles.

Good cake is hard, of a reddish brown colour, uniform in appearance, and possesses a rather pleasant flavour and odour: the adulterated cake is commonly of a grayish hue, and has a disagreeable odour. A weighed quantity of the cake—say 100 grains—in the state of powder should be formed into a paste with an ounce of water; if it be good the paste will be light coloured, moderately stiff, and endowed with a pleasant odour and flavour. If the paste be thin, the presence of bran, or of Grass seeds, is probable; the latter are easily seen through a magnifying glass—indeed, most of them are readily recognisable by the unassisted eye; they may, therefore, be picked out and their weight determined. Sand—a frequent adulterant—may be detected by mixing a small weighed quantity of the powdered cake with about 12 times its weight of water, allowing the mixture to stand for half an hour, and collecting and weighing the sand which will be found at the bottom of the vessel employed. If there be bran present it will be found lying on the sand, and its structure is sufficiently distinct to admit of its detection by a mere glance.

Rape-cake.—The use of Rape-cake was limited almost completely to the fertilising of the soil until the late Mr. Pusey, in a paper published in the 10th volume of the "Journal of the Royal Agricultural Society of England," advocated its employment as a substitute for the more costly Linseed-cake. The recommendation of this distinguished agriculturist has not been disregarded, and since his time the use of this cake as a feeding stuff has been steadily on the increase, and at the present time its annual consumption is not far short of 50,000 tons.

In relation to the nutritive value of Rape-cake there exists considerable diversity of opinion. Mr. Mechi says:—"I invariably give to all my animals as much Rape-cake as they choose to eat, however abundant their roots or green food may be. It pays in many ways: and not to do this is a great pecuniary mistake. Even when fed on green Rape they will eat Rape-cake abundantly. My cattle are now under cover, eating the steamed chaff, Rape-cake, malt combs, and bran, all mixed together in strict accordance with the proportions named by Mr. Horsfall in the 'Journal of the Royal Agricultural Society,' vol. xviii., p. 150," which I find by far the most profitable mode of feeding bullocks and cows." Mr. Hope, of Edinburgh, states that Rape-cake is the best substitute for Turnips, and that, excepting cases where spurious kinds had been used, he never knew bullocks or milch cows to refuse it. This gentleman states that it is best given in combination with Locust Beans, or a mixture of Locust Beans and Indian Corn, and suggests the proportions set down in the Tables as the best adapted for lean cattle; but I think about two-thirds of the quantities would be quite sufficient.

	Feed 1 Wk.	Per week.
	lb.	s. d.
Rape-cake at 12*l.* per ton	70	3 6
Do. do.	70	5 3
Mixture of two thirds Rape-cake and one third Locust Beans, 6*l.* ...	8	3 0
Do. do.	10	3 9
Rape-cake, Locust Beans, and Indian Corn, in equal proportions ...	8	3 3
Do. do. do. ...	10	3 11

An intelligent Scotch dairy farmer bears the following testimony in favour of this cake:—

"I have tried Pea meal, Bean meal, Oatmeal, and Linseed-cake, and after carefully noting the results, I consider Rape-cake, weight for weight, at least equal to any of them for milch cows; and, if I give the same money value for each, I get at least one-third more produce, and the butter is always of a very superior quality. Two years ago I took some of my best Oats (41 lb. per bushel), and ground them for the cows; and although I was about one-third more expense, I lost fully one-third of the produce that I had by using Rape-cake. I always dissolve it by pouring boiling water on it, and give each cow 6 lb. daily. I have tried a larger quantity, and found I was fully repaid for the extra expense. I generally use it the most of the summer, but always during the spring months. A number of my neighbours who have tried it all agree that it is the best and cheapest feed for milch cows they have used."†

The best kinds of Rape-cake come from Germany and Denmark. When fresh, and of a pale green colour, these foreign cakes are tolerably well flavoured, and are but slightly inferior to good Linseed-cake. Most varieties of this cake, however, contain a small proportion of an acrid matter, which often renders them more or less distasteful to stock, more particularly to cattle. This substance may be rendered quite innocuous by steaming or boiling the cake; either of these processes will also, according to Mr. Lawrence, destroy the disagreeable flavour which Mustard seed—a frequent adulterant of Rape-cake—confers upon that article. Molasses or treacle is an excellent adjunct to the cake, as it serves in a great measure to correct its somewhat unpleasant flavour. Carob or Locust Beans answer, perhaps, better the same purpose. It is better, as a general rule, to give less Rape-cake than Linseed-cake, unless the pale green kind to which I have referred is obtainable; that variety may be largely employed. The animals should be gradually accustomed to its use. At first—in the case of bullocks—they should get only 1 lb. per diem, and the quantity should be gradually increased to about 4 lb.; but I would not advise, under any circumstances, a larger daily allowance than 5 lb. Given in moderate amounts it will, supposing it to be of fair quality, be found to give a better return in meat than almost any other kind of concentrated food; and, what is of great importance, it will not injuriously affect the animal's health. "Our experience of the use of Rape-cake," says Mr. Lawrence, "thus used (cooked) extends over a period of 10 years of feeding from 20 to 24 bullocks annually. We have not had a single death during that period, and the animals have been remarkably free from any kind of ailment."

Tests for Rape-cake.—Rape-cake of good quality possesses a dark-green colour (the greener the better), and when broken, exhibits a mottled aspect—yellowish and dark-brown spots. Sometimes a tolerably good specimen has a brownish colour; but the German and Danish cakes are always of a greenish hue. The odour is stronger than that of Linseed-cake, and differs but little from that of Rape-oil. The only serious adulteration of Rape-cake is the addition to it of Mustard seed—sometimes accidentally, less frequently, as I believe, intentionally. This sophistication admits of easy detection. Scrape into small particles about half an ounce of the cake, add six times its weight of water, form the solid and liquid into a paste, and allow the mixture to stand for a few hours. If the cake contain Mustard, the characteristic odour of that substance will be evolved, and its intensity will afford a rough indication of the amount of the adulterant. As some specimens of genuine Rape-cake possess a somewhat pungent odour, care must be taken not to confound it with that of Mustard: but, indeed, it is not difficult to discriminate the latter. The paste of Rape-cake which contains an injurious proportion of Mustard has a very pungent flavour.

Cotton Seed-cake is one of the most valuable feeding stuffs that have come into use of late years. At present, owing to the late American war, it is rather scarce, but there is no doubt of its becoming, sooner or later, a favourite with the British feeder. The chemical composition of this cake shows it to be slightly superior to the best Linseed-cake, and as its price is much lower than that of the latter, it may be fairly considered a more economical food. These remarks apply only to the shelled or decorticated seed-cake: for the article prepared from the whole seed is of very inferior composition, and should never be employed. The use of the cake made from the whole seed has proved fatal in many instances, not from its possessing any poisonous quality, but in consequence of its hard, indigestible husk, accumulating in, and inflaming, the animal's bowels. The composition of this cake varies somewhat. The following analysis of a sample from one of the Western States of North America, imported by Messrs. G. Seagrave and Co., of Liverpool, was made by me: the specimen was one of the best ever imported into England.

Composition of Decorticated Cotton-seed Cake.

Water	9·20
Oil	16·10
Albuminous, or flesh-forming principle ...	45·87
Gum, sugar, &c.	21·13
Fibre	5·75
Ash (chiefly earthy matter)	1·95
	100·00

The purchaser of cotton seed-cake should be certain that it is not old and mouldy—which is frequently the case. The recently prepared cake has a very yellow colour, which becomes fainter as the cake becomes older. Freshness is a very desirable quality in every kind of cake. I have known animals to have a greater relish for, and thrive better upon, home-made Linseed-cake than upon cake of foreign manufacture, of superior composition, but of greater age. Rape-cake, however, should not be used when too fresh, owing to its acrid flavour, which time partly removes.

Palm-nut Meal is an article which has recently been introduced as food for stock. I have recently examined a specimen of it sold by Messrs. Wright, of Eustace Street, Dublin, and found it extremely rich in nutritive elements. Except Linseed-oil and the seeds of a few oil-bearing plants occasionally given to stock, Palm-nut meal is the richest source of oil with which I am acquainted. It contains about 27 per cent. of fatty substances, 15 per cent. of flesh-forming elements, and about 36 per cent. of digestible non-nitrogenous matters. I would strongly recommend it as a suitable food for fattening pigs; but it is also an excellent food for all kinds of stock, and at its present price I look upon it as the cheapest source of ready-formed fatty food.

Molasses constitute a useful food, more especially as a flavouring adjunct. It furnishes only fat-forming matter, in which respect 2½ lb. of it are about equivalent to a pound of oil or fat from Linseed-cake, Palm-nut meal, or similar sources.

The learned Professor, on concluding his important and practical paper, resumed his seat amid the warm applause of his audience.

IVERK: *Stock Farming in Ireland.*—Mr. Fisher, of Waterford, said:—I had not the pleasure of being with you this time twelvemonth, as I was in Holland, where I was surprised at the great agricultural activity which pervades that industrial people. The area of Holland is not much greater than that of Munster, the population is more than one half of that of Ireland, yet her exports of butter and cheese are increasing, while those of Irish butter have diminished. We have been listening for years to assertions respecting the improvement in Irish agriculture, but where are the proofs that it exists? I hold in my hand Mr. Donnelly's last returns, and I find that the area under crops is less by eleven thousand acres than it was last year. Your secretary tells us that there is less labour applied to land in this district, and that it costs more; his assertions are supported by the emigration from Ireland, which this year exceeded that of last year by nearly twelve thousand persons. I think he has overlooked one element of cost. The farm labourers have been driven into the towns, and have to spend their strength and time on the roads instead of in the fields. To remedy this you must adopt Union Rating, and encourage the erection of labourers' cottages. I am rejoiced to see the feelings which subsist between our noble Chairman [the Earl of Bessborough] and his tenants; there is mutual confidence and mutual goodwill. He has tried to improve the condition of the farmers, and he has not overlooked the labourers. I therefore consider that if we want a specimen of the relation between landlord and tenant under the most favourable circumstances, we can hardly select a better illustration than the Bessborough estates. And what are the results? They are recorded in the facts that there is from this and other districts round Waterford, a decrease in the exports of cattle, of butter, and of corn. I would call the attention of this meeting, and of the Irish farmers generally, to the facts which are brought under our attention by the Registrar-General. He tells us in his report that there are 94,000 more milch cows in Ireland than there were last year; this would be satisfactory if they were making money, but I hold in my hand the reports of the London and Liverpool butter markets. It appears that the arrivals of Irish butter in London from the 1st May to the 25th September this year, were 40,984 firkins, against 56,663 the corresponding portion of last year. Then, if I turn to that of Liverpool, I find that the arrivals from the 1st April were 346,766 firkins this year, against 373,367 last year. The reduction in the arrivals at both places is 42,280 firkins, worth about 160,000*l.* The state of the dairy returns for Ireland is this—an increase of 94,000 milch cows, and a decrease of 160,000*l.* for butter. This suggests an idea—are the new breeds of cattle as well adapted for the dairy as the old?—are we not "losing at the bung what we save at the spigot?" Are we not sacrificing overmuch to the eye? Let me go one step further. These returns show that there are now in Ireland 250,384 cattle, and 575,671 more sheep than last year; but when I look forward to the winter I would ask how are they to be fed? There are less cereals by 13,000 acres, so that the fodder will be reduced to that extent. Then there are less green crops by 23,000 acres, and less meadow and hay by 78,000 acres. Can it, my lord, be creditable to the farmers of Ireland to have such a state of things? Is

* 3 lb. Rape-cake, ½ lb. malt combs, 2 lb. bran, steamed together, with a sufficient quantity of straw.

† *North British Agriculturist*, Edinburgh, Feb. 29, 1860.

this good farming, or improved agriculture? Already the weather is telling upon the condition of your stock. That which was exhibited to-day was not in good condition; and what is to be the fate of this large overstock in winter? It is very true that the exports of cattle in 1864, 1865, and this year were considerably less than in 1863; but surely this ought to have urged our farmers to have grown more food for the winter; but alas, they have not done so! I was glad to hear your lordship speak of being consulted by your tenants respecting the investment of their savings, and I would venture to suggest that, if you would set other Irish landlords the example of encouraging tenants to buy their land, you would do vast good. The late Lord Lieutenant mentioned to me that he had sold land to the value of nearly 100,000*l.* to his tenants, some in lots as small as 100*l.* I believe in my heart if this were done, if the small farmers were made proprietors, if their house and land were made their own, we should soon see a better state of things than that which exists. *Waterford Mail.*

Reviews.

The Almanacs.

"The Farmers' Almanac" (Ridgway), which Mr. Cuthbert Johnson has issued now for 20 years, appears to us fresher and heartier than ever. Beginning with a cheery salutation to its readers—

"A happy and more prosperous year to all our readers! May better prices and a far healthier season for their live stock attend them than that of the year 1866!"—

it runs through the whole circle of agricultural experience during the past year, and epitomises most of the agricultural authorship of the same period; and presents the whole with the liveliest garnishing of pithy maxims, poetry, and natural history:

"And thus we wend our way to December—I owe shall not forget our readers on New Year's Eve), and towards the close of winter, of whose "shipwreck" Ogilvy has sung."

Morton's "New Farmers' Almanac" (Cassell, Petter, & Galpin),—we take them in the order of their publication—is a closely-packed compilation, lacking the liveliness of its predecessor, but endeavouring to make up for that by substantial information.

Shorleyr's "Illustrated Farmer's Almanac" is the same barefaced advertisement it has ever been. A picture is given of the Celestials in council, in which Jupiter and Ceres, Pan and Mercury, discourse on cattle plague, on the excellence of medicated food for its prevention, on the merits of Joseph Thorley, and the demerits of "one Lawless, a vendor of mineral phosphates."

The "Rural Almanac," edited by contributors to the *Field*, is a very handsomely illustrated thin quarto, full of information useful to the sportsman and interesting to the naturalist.

The "Illustrated Farmer's and Gardeners' Almanac," published at the *Farmer* office, 150, Fleet Street, is a very *thick* quarto, weighing close upon one pound, and a marvel of cheapness—as compared with quality. It is, more largely than we had expected to find it, a reprint of last year's edition, but there is a considerable quantity of original matter added, and the illustrations, especially those of horticultural subjects, are wonderfully fine.

Farm Memoranda.

DAIRY MANAGEMENT.—The following is a continuation of the paper on this subject begun in last week's *Agricultural Gazette*:—

4. *Farm Capital and Profit.*—It is extremely difficult to apply an average experience to circumstances which ought to be rather than which are, and so to indicate the fair probabilities of this subject in those cases where the proportion of arable land, and the quality of the pasture land, and the accommodation afforded at the farmery, are all what one would like.

The following is however an attempt:—

The case is that of a 500-acre farm, of good ordinary pasture and quality of soil; the rent and taxes being 36*s.* per acre. There are 350 acres of pasture arranged in convenient fields, each supplied with water. There are 120 arable acres in twelve 10-acre fields, or thereabouts. There is accommodation in yards and stalls for 120 cows, and 30 heifer-calves, yearlings, and two-year olds; there are also sufficient pigsties, and there is enough of dairy accommodation. Take the case of the arable land first:—

Arable Land.—120 acres may be cropped as follows:—

		Green Food.	Hay.	Grain.	Straw.
		Tons.	Tons.	Bushels.	Tons.
1. Wheat	20 ,,	..	..	800	32
2. Mangel Wurzel	20 ,,	600	—	—	—
3. Beans	20 ,,	..	..	700	40
4. ½ Cabbages ..	15 ,,	450	—	—	—
½ Carrots ..	5 ,,	90	—	—	—
5. Wheat ..	20 ,,	..	..	700	32
6. Clover ..	20 ,,	160	240	—	—
Pasture Land—To this add the estimated produce of pasture land:—					
1. Grazed ..	250 ,,	2500	—	—	—
2. Mown ..	130 ,,	400	280	—	—
Total ..	500 ,,	4290	520	—	105
Or, in all for—					
7 summer months ..		3080	—	—	—
5 winter months ..		1140	220	—	105
		4220	220	—	105

The summer produce is equal to more than 400 tons of green food monthly; and that for winter, putting a ton of hay as equal to more than 4 tons of green food, and straw as equal to twice its weight of green food, is also equal to more than 400 tons a month. We will assume, therefore, that we have thus 30,000 lb. of succulent food, or its equivalent, supplied daily by the farm throughout the year. This will be enough for the ample keeping of

12 cows, at 150 lb.	18,000 lb.
80 calves, at 40 lb.	1,200 ,,
30 yearlings, at 80 lb.	2,400 ,,
30 two-year olds, at 120 lb.	3,600 ,,
Consuming in all	25,200 lb.

and still leave more than enough for the three pairs of horses which will be required for the cultivation of the arable land, and for the haulage needed on the pasture; and it will moreover enable us to retain the 30 old cows which will annually be sold until they are worth more money than they would otherwise fetch.

The above, therefore, is the stock which may be kept upon the farm. In most farms of this kind the whole force of the land would not be so entirely devoted to the production of dairy produce as has been here imagined: a number of oxen would be reared and grazed, and a flock of sheep would be kept. On this last point it may be observed that too many sheep upon a dairy farm are not allowable: they interfere with the quality of the cheese produced. Where sheep are kept with cows the cheese will neither make so well nor taste so well; it will heave, and otherwise exhibit the effects of fermentation; and it will be strong-tasted. This, whatever the explanation of it may be, is the experience of Gloucestershire dairy farmers, and they therefore will not keep sheep on the cow pastures in summer or autumn. During winter a breeding flock of sheep may be thinly sprinkled over the pasture fields with advantage, and if there is sufficient arable land, they and their lambs may be kept on the Clovers during summer, or in pastures set apart for them; but they are never allowed to run in the cow pastures while the cows are giving milk.

In the following rough estimate of the produce of the farm they are left out of consideration, and the whole force of the farm is assumed to be devoted exclusively to the dairy.

The following, then, is the probable produce of the farm, estimating the money produce of the cows at what it would be, supposing them let to an Ayrshire "bower" or a Dorset dairyman.

ANNUAL PRODUCE.

1700 bushels of Wheat, at 5*s.*	£430
700 bushels of Beans, at 5*s.*	190
120 cows, dairy produce at 9*l.* 10	1140
30 old cows, sold at 4*l.*	90
30 calves sold	220
Total	£2170

ANNUAL COST.

1. Rent and taxes, 500 acres, at 36*s.*	£900	
2. Seeds (50*l.*) and manure (50*l.*) for the arable Land	100	
3. Labour: arable land, 50*s.* per acre £300		
Do. pasture land,* 5*s.* per acre 100		
	—	400
4. Tradesmen's bills, say		80
5. Loss by death and disease of live stock, say 5 per cent. and by depreciated value of dead stock, say 10 p. cent.		180
Total		£1660

This leaves a clear profit of 510*l.* The capital required for such a busines includes—

1. Rent and taxes for one year	£900
2. Seeds and manure	100
3. Unexhausted labour	400
4. Live stock, 120 cows at £30 .. .. £3600	
30 yearlings 180	
30 two-year olds 360	
6 horses 90	
Swine, &c. 60	
—	4290
5. Implements, which would not cost much, but will estimate highly at	300
Total	£4790

That a less sum than the 9*l.* per acre, which this amounts to, suffices for the management, after a fashion, of the dairy districts of this country, a very little examination suffices to determine. But the use of this large capital, the returns at the rates assumed, yield an annual profit equal to about 12 per cent., after deducting enough to meet the risks of so large a stock of cattle.

Let me add as a postscript that the selection and maintenance of the herd—gentle, regular, and punctual treatment of the animals throughout the year; provision of sufficient wholesome food for them, and abundant water, with frequent change of pasturage when at milk—these are the special maxims of successful dairying. If on the one side of these we have the proper cultivation and management of the land, and on the other, cleanly, careful, and skilful management in the dairy, then a maximum of dairy produce may be expected. But this depends essentially on the health, and therefore on the treatment, of the animals which yield it. *Morton's Dairy Handbook.*†

* This includes the labour of managing the young stock, as the labour of the land—but it does not include the labour of the dairy or of the dairy cattle, the cost of which is considered in the reduced returns for the cows.

† Warne & Co.

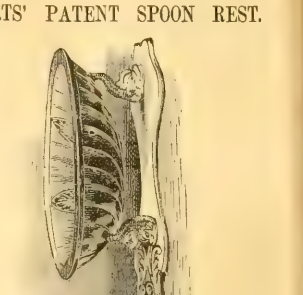
Miscellaneous.

Agricultural Implements.—It is estimated that the iron consumed in South Staffordshire in iron fencing, farm gates, hurdles, and such like articles used for agricultural purposes exceeds 10,000 tons per annum; upwards of 4000 tons are consumed by one firm alone, and many other manufactories of similar articles have sprung into existence of late years in the neighbourhood of Wolverhampton and Bilston. *Journal of the Society of Arts.*

Notices to Correspondents.

BACON. *X Y.* Bacon should be dried very gradually, and only by heat from *wood* fire. Bacon will very soon become "rusty" if kept within the reach of the least smoke from coal fire. To prevent the ill effects from this, it has been known to keep well tied, when quite dry, in a new hempen bag, such as those used for grain and flour, the bacon not touching the bottom of the bag. This also saves it from flies in the hot weather. An airy dry place on the north side of the house, where the temperature is as equal as you can find it, is the best preventive to its becoming rusty. Bacon is sometimes kept in chests in layers of malt dust, or Oat or Bean-meal—but hanging it in thick bags long in an airy cool place answers better.

ROBERTS' PATENT SPOON REST.



This admirable appendage to the Dinner Table was invented as a remedy for evils which are apt to beset the best of carvers. Attention is called to some of the advantages arising from its use, to wit:—

1st. There is much more room in the dish for the operations of the carver.

2d. There is no fear of the handle of the spoon getting into the dish, and it is consequently kept clean.

3d. The spoon is always in its place, and ready for use.

4th. The dinner cloth is kept much cleaner; and finally, the Spoon Rest is an ornament worthy of a place on every well-furnished table.

It may also be considered a handsome and acceptable present.

Price in German or Nickel Silver .. £1 10*s.*

Packing Cases, 1*s.* each.

The Spoon Rests are made in a variety of Elegant Patterns.

Orders accompanied by remittances will receive prompt attention

This Invention is Manufactured exclusively by Messrs. HOWES & BROWETT, Birmingham, to whom all Trade Orders should be addressed.

THE PATENT AMERICAN CAMP STOOL.

This is a most simple and durable little Chair for Cricket Grounds, Excursionists, Tourists, Croquet Players, and Volunteer Camp Grounds.

It can be folded into the most compact form, and stowed away into the smallest possible compass for Travelling.

Price for Single Chair .. .. .. 5*s.* each.

Price for Lots of Six or upwards .. £2 10*s.* per dozen.

"THE RANTOONE."

(SECURED BY ROYAL LETTERS PATENT.)

Manufactured in Wrought Iron of different sizes, with all the Latest Improvements.

It is Light, Compact, and Symmetrical in appearance. Can be propelled at the rate of from 8 to 12 miles per hour, and will be found unequalled as a means of healthy, agreeable exercise and amusement.

The simplicity of this invention is its great recommendation. Heretofore carriages of this kind, known by the name of Velocipedes, have lacked power, and have been found to be cumbersome, bulky, and laborious to work. By an ingenious Combination of Hand Levers and Treadles connected to the Cranked Axle, these objections are overcome, and the operator is enabled to work with the hands and feet at one and the same time. To one of the Hand Levers are attached a Brass Chain and Pulley, which communicate with the Axle of the Guide Wheel, and by this simple contrivance the Carriage may be turned in any direction required, and with the utmost ease.

It is in itself a gymnasium in miniature; for by its peculiar action all the principal muscles of the body are brought into play, and thus judiciously developed, none being overtaxed, as is often the case in rowing, fencing, dumb-bell exercise, &c.

Price, with 2 ft. 6-in. Driving Wheels, for Youths, £10 10*s.*

,, 3 ft. ,, Adults, £12 12*s.*

,, 3 ft. 6 in. ,, ,, £14 14*s.*

Closed Packing Case extra, £1 10*s.*; Skeleton ditto, 18*s.*

THE ELEVATOR RIFLE.

DESIGNED for TRAVELLERS, EMIGRANTS, ORNITHOLOGISTS, SPORTSMEN, &c.

INVALUABLE for HOUSEHOLD DEFENCE.

Great Reduction in Price.

36 or 32-bore now selling at £4 4*s.*

CHARLES POMEROY BUTTON,

142 and 143, Cheapside, London, E.C.

COCOA-NUT REFUSE is becoming scarce, the old reserves will soon be gone. Now sold in bags, 1 for 2s., 10 for 16s., 2 for 30s., 50 for 66s., 100 for £6.

Fourpence allowed for each bag returned carriage-paid.

A Railway Truck-load (not in bags), 40s.

Postage Stamps or Post-office Order, payable to J. BARSHAM & Co., Kingston-on-Thames, S.W.

BARLEY, OATS, &c., CLEANSED, PURIFIED, and BLEACHED by a Patent process, without the slightest injury to growth, &c.

Apply to Rev. R. POTTER, M.A., Bedworth, Nuneaton.

LAWES' MANURES.

The Manures manufactured by J. B. LAWES for the present season of 1866 are now ready for delivery at his Factories, at the following prices, per ton:—

	£	s.	d.
LAWES' PATENT TURNIP MANURE, and BONE SUPERPHOSPHATE of LIME	6	0	0
LAWES' SUPERPHOSPHATE of LIME from BURNT BONE or MINERAL PHOSPHATES	5	5	0
LAWES' WHEAT, BARLEY, GRASS, and MANGEL MANURES	8	0	0
CONCENTRATED CORN and GRASS MANURE	12	0	0

These Manures can be obtained of Mr. LAWES, or through the appointed Agents in all parts of the United Kingdom, at prices varying according to cost of carriage.

Genuine Peruvian Guano direct from the Importers. Nitrate of Soda, Sulphate of Ammonia, and other Chemical Manures.

American and other Cakes at market prices.

Address, JOHN BENNET LAWES, 1, Adelaide Place, London Bridge, E.C.; and 22, Eden Quay, Dublin.

THE LONDON MANURE COMPANY
(ESTABLISHED 1840).

Have now ready for delivery in dry fine condition,
CORN MANURE, for Spring Use
DISSOLVED BONES, for Dressing Pasture Lands
SUPERPHOSPHATES of LIME
PREPARED GUANO
MANGEL and POTATO MANURES

Also Genuine PERUVIAN GUANO, and NITRATE of SODA, ex Dock Warehouse; SULPHATE of AMMONIA, FISHERY SALT, &c.

Offices, 116, Fenchurch Street, E.C. E. PURSER, Secretary.

FOWLER'S PATENT STEAM PLOUGH and CULTIVATOR may be SEEN at WORK in every Agricultural County in England.

For particulars apply to JOHN FOWLER & Co., 71, Cornhill, London, E.C.; and Steam Plough Works, Leeds.

THE IMPROVED LEATHER DRIVING STRAPS for MACHINERY are stronger, more durable, drive better, and cost less than other kinds of Driving Belts SPECIAL STRAPS for PORTABLE ENGINES. Price Lists free by post.

TURNER'S Patent Strap and Hose Company.
Manufactory: Armit Works, Greenfield, near Manchester.
Warehouse: 81 Mark Lane, London, E.C.
Mr. H. FERRABEE, Agent.

Important Reduction in the Prices of Portable Engines for 1866.

CLAYTON, SHUTTLEWORTH AND CO., ENGINEERS, Manufacturers of Portable and Fixed Steam Engines, Machinery for Pumping, Hoisting, Grinding, Sawing, &c.; Engines for Steam Cultivation, Self-moving Engines for Common Roads and Agricultural Purposes generally.

Stamp End Works, Lincoln; and 78, Lombard Street, London; also at Lowengasse No. 41, Landstrasse, Vienna; and Gegonuber dem Bahnhof, Pesth.

Descriptive, Illustrated, and Priced Catalogues Free per Post. Special Drawings when required. The best Steam Threshing Machinery made.

Winter Dress all Fruit Trees with GISHURST COMPOUND.

Red Spider Magnified

Copy of a Letter from Mr. RIVERS, *Nurseries, Sawbridgeworth, Herts, 22nd Oct., 1861.*

"I must tell you what head-way from a very clever gentleman farmer, Anthony Babb, Esq., of Witcombe Court, Gloucester. He has a wall to which Peach trees are trained. Well, last autumn they were in a wretched blighted state. As a desperate remedy he unnailed them all, early last February, and gave all but one a thorough painting with Gishurst Compound, 1 lb. to the gallon of water; his trees, all but the one, commenced to grow favourably in spring, and are now pictures of health. The tree not painted is in a Lazarus-like blighted state. He used the same dressing to his Apple trees; it killed the woolly Aphis entirely, and has made his trees clean and vigorous in their growth. He intends to paint his wall trees annually, and tells all his friends to do the same. I shall certainly serve all my young Peach trees against my walls in the same manner. The Compound is, I believe, more efficacious than the usual offensive mixtures of clay, soot, sulphur, &c.; and it does not blacken the shoots on the wall."

For Orchard-house Trees, 6ozs. to the gallon will be found a good strength; when used stronger some buds on weakly trees may be injured.

GISHURST COMPOUND is sold Retail by Nurserymen and Seedsmen, in boxes, 1s., 3s., and 10s. 6d. each.

Wholesale by PRICE'S PATENT CANDLE COMPANY, LIMITED, Belmont, Vauxhall, London, S.

Gishurst Compound has more recent testimonials to its efficacy, but none more conclusive than the above, which has been published before.

Asphalte Roofing Felt,
ONE PENNY per Square Foot.

CROGGON AND CO., MANUFACTURERS, {67, New Earl Street, / 34, Broad Street, } London, E.C.
59, GEORGE SQ., GLASGOW; 2, GOREE PIAZZAS, LIVERPOOL.

E. T. ARCHER'S "FRIGI DOMO."

Patronised by Her Majesty The Queen, the Duke of Northumberland for Syon House, His Grace the Duke of Devonshire for Chiswick Gardens, Professor Lindley for the Horticultural Society, Sir Joseph Paxton for the Crystal Palace, Royal Zoological Society, &c.

PROTECTION from COLD WINDS and MORNING FROSTS.

"FRIGI DOMO," a Canvas made of Patent prepared Hair and Wool, a perfect Non-conductor of Heat and Cold, keeping, whereever it is applied, a fixed temperature. It is adapted for all Horticultural and Floricultural purposes, for Preserving Fruits and Flowers from the Scorching Rays of the Sun, from Winds, from Attacks of Insects, and from Morning Frosts. To be had in any required lengths.

Two yards wide	1s. 9d. per yard run.
Four yards wide	2s. 6d. per yard.
An improved make, 2 yards wide	1s. 6d. per yard.
An improved make, 3 yards wide	2s. 3d. per yard run. Also

FRIGI DOMO" NETTING, 2 yards wide, 1s. 6d. per yard run.

ELISHA THOMAS ARCHER, Wholesale and Sole Manufacturer, 7, Great Trinity Lane, Cannon Street, City, E.C., and of all Nurserymen and Seedsmen throughout the Kingdom.

"It is much cheaper than Mats as a covering."

LOCK'S PATENT POTASH MANURES.

TRADE LOCK'S POTASH MANURE MARK

This is the only "*perfect*" MANURE ever yet offered to the Agricultural Public, containing, as it does, that most *important element* of every cultivated plant—POTASH. It is far superior in efficiency to Peruvian or any other Guano, as it supplies EVERY *constituent requisite for each* SPECIAL *Crop*.

Each Manure is specially prepared for the Crop for which it is intended, and is sold in Bags containing the necessary Dressing for *One Acre*.

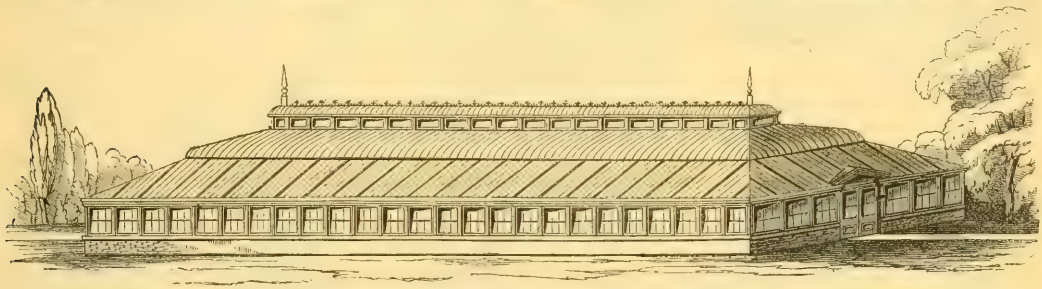
The WHEAT, BARLEY, and OAT MANURE will effectually PREVENT the LODGING of the Corn, so frequent on lands deficient in Silica.

The CLOVER MANURE is a CERTAIN CURE for CLOVER SICKNESS, so prevalent in some Counties.

The GRASS MANURE contains an abundance of SILICATE of POTASH, which is by far the *predominating element* in all GRASSES, and which has never before been offered for Sale by any Manufacturer.

For full particulars see Circulars, for which apply to the
SOUTH of ENGLAND MANURE COMPANY, LIMITED, REDBRIDGE, HAMPSHIRE,
who are the SOLE MANUFACTURERS.

*** AGENTS WANTED for the UNITED KINGDOM.



HORTICULTURAL BUILDINGS,

COMBINING STRENGTH AND DURABILITY,

MANUFACTURED BY STEAM-POWER MACHINERY.

LOWEST PRICES AND BEST MATERIALS.

ORMSON'S

PATENT WROUGHT-IRON MULTITUBULAR BOILERS.

PRICES ON APPLICATION.

IRON AND WOOD CONSERVATORIES OF THE MOST CHASTE AND ELABORATE DESIGN.

VINERIES, PINERIES, PEACH HOUSES, FORCING HOUSES, GLASS CASES FOR WALL TREES, PITS, &c.,

Designed and Built, combining all the latest Improvements, so as to answer their intended purposes without risk of disappointment.

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HORTICULTURAL BUILDER TO HER MAJESTY, AND HOT-WATER APPARATUS MANUFACTURER TO THE COMMISSIONERS OF HER MAJESTY'S ROYAL PALACES AND PUBLIC BUILDINGS, AND TO THE ROYAL HORTICULTURAL SOCIETY,

STANLEY BRIDGE, KING'S ROAD, CHELSEA, LONDON, S.W.

HOT-WATER APPARATUS, of every description, fixed complete in any part of the country, or the materials, with Drawings, Estimates, and Instructions for Erection, forwarded on application to
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W. J. HOLLANDS, IRON MERCHANT, 8, Bath-row, London, S.E.
HOT WATER PIPES, from Stock, per yard:—2-inch, 1s. 2d.; 3-inch, 1s. 7½d.; 4-inch, 2s.; 6-inch, 3s. 6d.; 8-inch, 5s. 6d.; and 10-inch, 7s. 6d. Elbow Pipes, Bends, Valves, &c., and all other Castings at equally low prices, and all goods of first-class manufacture. Estimates given, and orders by post punctually attended to the same day.

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HOT-WATER PIPES and CONNECTIONS, SADDLE and 2-in. BOILERS.
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HOT-WATER APPARATUS (Portable) for Heating Greenhouses, Pits, Frames, Fern Cases, Churches, Chapels, Schools, Halls, &c., with expedition and economy, from 4s. 6d. complete.
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Wrightsbridge Road, Clapham Railway Junction, London, S.W.

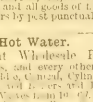
COTTAM AND COMPANY, Conservatory and Hothouse Builders, &c., Iron Works, 2, Winsley Street, Oxford Street, London, W.
SADDLE BOILERS

20	24	30 inches long,	each.
15s.	17s.	20s.	

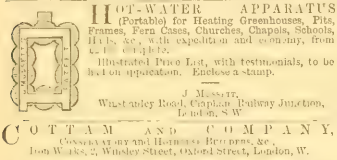
HOT-WATER PIPES.

Inch			
2	3	4	
1s. 6d.	2s. 1d.	2s. 9d.	per yard

Materials supplied in sheets, or Estimates given, and Complete to Drawings or specification by Cottam & Co., Iron Works, 2, Winsley Street, Opposite the Pantheon, Oxford Street, London, W.



JAMES WATTS AND CO., HOTHOUSE BUILDERS and Hot-Water Apparatus Manufacturers, 355, Old Kent Road, London, S.E.



200 CUCUMBER and MELON BOXES and LIGHTS, all sizes, Glazed and Painted complete, ready for use, dust-free, packed and sent to all parts of the Kingdom.
Strong ZINC HAND GLASSES, all sizes.
References to the Nobility, Gentry, and Trade in most of the Counties in England.

CRANSTON'S PATENT BUILDINGS for HORTICULTURE.
"Dry Glazing without Putty."
"Glass without Laps."
"Ventilation without Moving Lights."
Highly Commended by the Royal Horticultural Society, South Kensington.

Plans and Estimates free on application. Descriptive Book fully illustrated, post free for 2s. stamps, from the Author and Patentee, JAMES CRANSTON, Architect, Birmingham.
Works: Hitchcroft Street, Birmingham.
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Greenhouses of Improved and Portable Construction

MAY BE HAD ENLARGED AT
JOSEPH SMITH'S HORTICULTURAL WORKS,
New Road, Hammersmith.

SPAN-ROOFS.—21 ft. by 11 ft. 6 in., with Stage	..	£32 0s.
,, 24 ft. by 9 ft. 6 in. ,,	..	27 0
,, 28 ft. by 12 ft. 9 in. ,,	..	37 0
,, 50 ft. by 24 ft. ,,	..	70 0
LEAN-TO. 12 ft. by 7 ft.	..	7 10
,, 20 ft. by 9 ft. 6 in.	..	14 0
,, 21 ft. by 12 ft. 9 in.	..	21 0
,, 24 ft. by 13 ft.	..	30 0
Fifty strong 24in. Lights, 6 ft. 8 in. by 4 ft., Glazed 21-oz., and well painted, £40.	..	27 0

Twenty-five 24 in. by 9 in. 7 in., ditto, £14 10s.
CONSERVATORIES, GREENHOUSES, or VINERIES made to order at 1s. 2d. per foot.
MELON FRAMES of an improved make, ready at low prices.
Estimates for Heating effectually by Hot-Water.
A VINERY or PEACH-HOUSE, 41 ft. by 9 ft., with 14 ft. Rafters, £40.

HOTHOUSES for the MILLION.—Medal, 1862.
INVENTED BY THE LATE SIR JOSEPH PAXTON.
Manufactured in London; Newton in Cartmel, Lancashire; Gloucester, Coventry; Paisley, and Aberdeen.

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Also, a HANDBOOK of VINE and FRUIT TREE CULTIVATION, price 1s.; post free, 1s. 1d.

Cheap Greenhouse Stoves.

DEANE AND CO.'S Patent VENTILATING and SUSPENSION STOVES are simple, cheap, and efficient; have been largely adopted and approved, will burn many hours without attention, and at a small cost for fuel. Prices of Suspension Stoves, 20s., 30s., 35s., and upwards. Ventilating Stoves, 50s., 60s., 70s., 90s.
HOT-WATER APPARATUS for Conservatories, Greenhouses, Hothouses, Forcing Pits, &c., erected and fitted up complete.
DEANE & Co., 46, King William Street, London Bridge, E.C.
Established A.D. 1700.

GREEN'S IMPROVED NEW PATENT GARDEN ROLLER.
The above Rollers possess many advantages over all others. They are made in two parts, and so fastened together as to allow of the axis adjusting greater facilities for turning, and the other edges are rounded off or turned inwards, thus avoiding the unsightly marks left by other Rollers.

Diameter, 30 inches; Length 32 inches,	£7 10 0
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Prices for Rollers fitted with Shafts suitable for Pony or Horse Power, free on application.
Delivered carriage paid to all the principal Railway Stations and Shipping Ports in England.
THOMAS GREEN & SON, Smithfield Iron Works, Leeds; 54 and 55, Blackfriars Road, London, S.; and 19, Eden Quay, Dublin.
N.B. All orders executed on the day they are received.

PRIZE MEDALS AWARDED to GREEN'S PATENT LAWN-MOWERS.
INTERNATIONAL EXHIBITION, LONDON, 1862.
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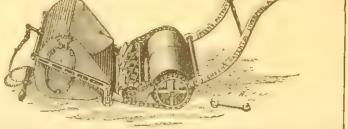
The above Lawn Mowers have proved to be the best, and have carried off every Prize that has been given in all cases of Competition.
Sold by all respectable Ironmongers, Seedsmen, &c., in the Kingdom. Illustrated Price Lists free on application.



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Garden Engines, Syringes, Water Barrows, Ornamental Garden Seats, Chairs, Tables, Iron Fountains, Vases, &c.
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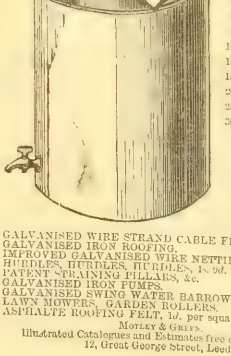
GALVANISED IRON WATER CISTERNS.
Cheap, light, and durable, will not rust or corrode, and keep water perfectly sweet.



To hold	Each.
20 gallons,	20s. 0d.
50 gallons,	24s. 0d.
80 gallons,	32s. 0d.
100 gallons,	38s. 0d.
125 gallons,	45s. 0d.
150 gallons,	49s. 0d.
200 gallons,	63s. 0d.
250 gallons,	73s. 0d.
300 gallons,	84s. 0d.

With Lid and Brass Tap.

GALVANISED WIRE STRAND CABLE FENCING.
GALVANISED IRON ROOFING.
IMPROVED GALVANISED WIRE NETTING.
HURDLES, HURDLES, HURDLES, 1s. 9d. to 3s. 9d. per yard.
PATENT SPRAINING PILLARS, &c.
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LAWN MOWERS, GARDEN ROLLERS.
ASPHALTE ROOFING FELT, 1d. per square foot.
MORLEY & GREIG.
Illustrated Catalogues and Estimates free on application.
12, Great George Street, Leeds.

Glass for Garden Purposes.

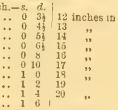
JAMES PHILLIPS AND CO. beg to submit their REDUCED PRICES as follows:—

PROPAGATING GLASSES.

Each.—s. d.		Each.—s. d.
2 inches in diameter 0 3½	12 inches in diameter	.. 1 9
3 ,, ,, .. 0 4½	13 ,, ,,	.. 2 0
4 ,, ,, .. 0 6½	14 ,, ,,	.. 2 6
6 ,, ,, .. 0 8	15 ,, ,,	.. 3 0
7 ,, ,, .. 0 8	16 ,, ,,	.. 3 6
8 ,, ,, .. 0 10	17 ,, ,,	.. 4 0
9 ,, ,, .. 1 0	18 ,, ,,	.. 5 0
10 ,, ,, .. 1 2	19 ,, ,,	.. 6 0
11 ,, ,, .. 1 4	20 ,, ,,	.. 7 0
,, ,, .. 1 6		

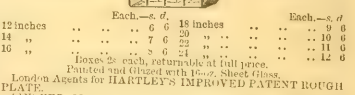
HYACINTH and FLOWER DISHES.
6 inches diameter .. .. 1s. 0d. | 10 inches diameter 1 0
12 inches diameter .. .. 2s. 6d.
Hyacinth Dishes are intended to contain a number of Roots Bedded in and covered with Moss, instead of the common Hyacinth Glass.
LACTOMETERS, for Testing the Quality of Milk.
Four Tubes .. .. 6s. 6d. | Six Tubes .. .. 6s. 6d.
With Stands complete.

HAND GLASSES, WITH OPEN TOPS.

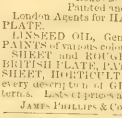


Each.—s. d.		Each.—s. d.
12 inches 6 6	18 inches	.. .. 9 6
14 ,, ... 7 6	20 ,,	.. .. 10 6
16 ,, ... 8 6	22 ,,	.. .. 11 6
	24 ,,	.. .. 12 6

Boxes 2s. each, returnable in full price.
Painted and Glazed with 16-oz. Sheet Glass.
London Agents for HARTLEY'S IMPROVED PATENT ROUGH PLATE.
LINSEED OIL, Genuine WHITE LEAD, CARSON'S PAINTS, PAINTS of various colours, ground ready for use.
SHEET and ROUGH PLATE GLASS, SLATES of all sizes, BRITISH PLATE, PATENT PLATE, ROLLED PLATE, CROWN, SHEET, HORTICULTURAL, ORNAMENTAL, COLOURED, and every description of GLASS, of the best Manufacture, on the lowest terms. Lists of prices and estimates forwarded on application to
JAMES PHILLIPS & Co., 180, Bishopsgate Street Without, E.C.



GARDEN BORDER EDGING TILES, in great variety of patterns and material, the planner sorts being especially suited for KITCHEN GARDENS, as they harbour no Slugs and Insects, take up little room, and once put down, require no further labour and expense, as do "grown" Edgings, consequently being much cheaper.
GARDEN VASES, FOUNTAINS, &c., in Artificial Stone, of great durability, and in great variety of design.
F. & G. ROSHER, Manufacturers, Upper Ground Street, Blackfriars, S.; Queen's Road West, Chelsea, S.W.; Kingsland Road, Kingsland, N.E.



Sole London Agents for FOXLEY'S PATENT GARDEN WALL BRICKS. Illustrated Price Lists free by post. The Trade supplied

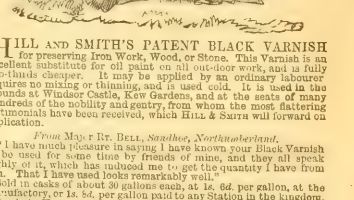
ORNAMENTAL PAVING TILES for Conservatories, Halls, Corridors, Balconies, &c., as cheap and durable as Stone, in blue, red, and buff colours, and capable of forming a variety of designs.
Also TESSELATED PAVEMENTS of more enriched designs than the last.
WHITE GLAZED TILES, for Lining Walls of Dairies, Larders, Kitchen Ranges, Baths, &c. Grooved and other Stable Paving Bricks of great durability, Dutch and Adamantine Clinkers, Wall Copings, Red and Stoneware Drain Pipes, Slates, Cements, &c.
To be obtained of F. & G. ROSHER, at their Premises as above.

SILVER SAND (REIGATE, best quality), at the above Addresses—14s. per Ton, or 1s. 3d. per Bushel; 2s. per Ton extra for delivery within three miles, and 1s. per Ton for any London Railway or Wharf. Quantities of 4 Tons, 1s. per Ton less.
FLINTS, BRICK BURRS or CLINKERS, for Rockeries or Grotto Work. F. & G. ROSHER.—Addresses see above.
N.B. Orders promptly executed by Railway.

SWING WATER BARROW.—This is the best and cheapest article yet introduced for use in Gardens, Farm Yards, &c. The Water may be dipped out, or the Tub tilted and poured out, or by merely raising the Handle it can be placed on the ground, and the Frame detached. To hold about 20 or 30 gallons, price 42s. Carriage paid to any station on Great Eastern Line.

POWERFUL GARDEN ENGINE, suitable for the above, price 45s
IMPROVED WATER and LIQUID MANURE CARTS.
Catalogues on application.
Manufactured by W. S. BOULTON, Rose Lane Iron Works, Norwich.

Oil Paint no longer Necessary.



HILL AND SMITH'S PATENT BLACK VARNISH for preserving Iron Work, Wood, or Stone. This Varnish is an excellent substitute for oil paint on all out-door work, and is fully two-thirds cheaper. It may be applied by an ordinary labourer requires no mixing or thinning, and is used cold. It is used in the grounds at Windsor Castle, Kew Gardens, and at the seats of many hundreds of the nobility and gentry, from whom the most flattering testimonials have been received, which HILL & SMITH will forward on application.

From Major RT. BELL, *Swaithoe, Northumberland.*
"I have much pleasure in saying I have known your Black Varnish to be used for some time by friends of mine, and they all speak highly of it, which has induced me to get the quantity I have from you. That I have used looks remarkably well."
Sold in casks of about 30 gallons each, at 5s. 6d. per gallon, at the Manufactory, or 1s. 8d. per gallon paid to any Station in the kingdom.
Apply to HILL & SMITH, Brierly Hill Iron Works, near Dudley, and 22, Cannon Street West, E.C., from whom only it can be obtained.

JOHN WARNER AND SONS,
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BELL and BRASS FOUNDERS to HER MAJESTY.

No. 35.

No. 42.

PATENT CAST-IRON PUMP, fitted with J. W. & Sons' Metal Bucket and Valve, which cannot clog in action, for Wells not exceeding 25 feet.

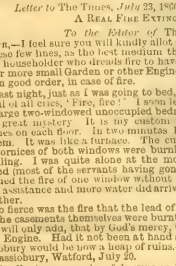
Diam.	Height.	£ s. d.
24 in. short	1 ft. 7 in.	1 1 0
24 in long	3 ft. 3 in.	1 5 0
3 in long	3 ft. 6 in.	2 1 0
3½ in. long	3 ft. 6 in.	2 6 0
4 in long	3 ft. 6 in.	2 14 0
24 in. short, with 15 feet of lead pipe attached, ready for fixing		2 0 0
2 in. long, do. do.		2 14 0

Price of 4½-inch Liquid Manure Pump, with legs, £2 15s ; 2-inch Flexible Rubber and Canvas Suction Pipe, 2s 5d per foot. The Barrel is 27½ inches long, and the legs are 5 feet high.

IMPROVED LIQUID MANURE or GENERAL PORTABLE PUMP.—These Pumps are fitted with J. W. & Sons' Patent Bucket and Valve, and cannot clog in action. The Barrel is made of Galvanised Iron, not likely to corrode, and can be raised or lowered at pleasure on the stand, the legs of which fold together, and it may be carried with ease by one man to tank or pond.

WARNERS' PORTABLE FIRE or GARDEN ENGINE.

£2 2s.


No. 5681.

For use by one Person .. .. price £2 2s.
No. 5678, ditto ditto, on Wheels .. .. „ £2 10s.

The above are complete in themselves, and may be always kept filled with water, and ready for use.

Letter to The Times, *July* 23, 1866, *from* Earl ESSEX.
A REAL FIRE EXTINGUISHER.

To the Editor of The Times.

"SIR,—I feel sure you will kindly allot a small space in the *Times* to these few lines, as the best medium through which I would urge every householder who dreads fire to have on each floor of his house one or more small Garden or other Engines on wheels, always charged and in good order, in case of fire.

"Last night, just as I was going to bed, I was startled by that most fearful of all cries, 'Fire, fire!' I soon learned that a fire was raging in a large two-windowed unoccupied bedroom. How caused is to us all a great mystery. It is my custom to keep one of these small Engines on each floor. In two minutes I was in the room with one of them. It was like a furnace. The curtains, shutters, casements, and cornices of both windows were burning and cracking from floor to ceiling. I was quite alone at the moment, yet before assistance arrived (most of this servants having gone to bed), I had completely subdued the fire of one window without exhausting the Engine, and when assistance and more water did arrive, we very soon extinguished the other.

"So fierce was the fire that the lead of the casements was melted, and the casements themselves were burnt off their hinges.

"I will only add, that by God's mercy, the house was saved by this small Engine. Had it not been at hand and in order, most assuredly Cassiobury would be now a heap of ruins.—Yours faithfully,

"Cassiobury, Watford, July 20. "ESSEX.

"The Engine, even when full, runs so light on the floor, that any woman might draw it, and also work it."

SHAW'S TIFFANY.
For samples and prices apply to
J. SHAW & Co., 29, Oxford Street, Manchester.

Seed Drawers Wanted.

WANTED, a CASE of GARDEN SEED DRAWERS, to suit a space 6 feet broad by 6 feet high, to contain about Eighty Drawers. Apply, stating cost per cubic inch price, to R. & C., *Gardeners' Chronicle* Office, W.C.

Caution to Gardeners.—When you ask for SAYNOR AND COOKE'S WARRANTED PRIZE PRUNING and BUDDING KNIVES, see that you get them Observe the mark SAYNOR, also the corporate mark OBTAIN WARRANTED, without which none are genuine.

S. & C. regret having to caution Gardeners and others, but are compelled to do so, in consequence of an imitation, of common quality, having been sold for the genuine one, and which has caused many complaints to be made to them of Knives which were not of their make, all of which are warranted both by Sellers and Makers.

S. & C.'s Pruning and Budding Knives are the best and the cheapest in the market.

Paxton Works, Sheffield. Established upwards of 125 years.

Lawn Mower Repairs.

ALEXANDER SHANKS AND SON would suggest to their numerous friends the desirability and importance of having their Lawn Mowers put into proper order before the commencement of the Mowing season. Attention is paid to the required close adjustment of the blades, which is necessary, in order to avoid, because in the early spring the necessary time for repairing Machines is to some extent denied them, on account of the press of business connected with the manufacture and despatch of new Machines.

Machines for Repair can be addressed, ALEX. SHANKS & SON, 37, Leicester Street, London, W.C. (where Repairs are executed), or to the Manufactory, Dens Iron Works, Arbroath, N.B.

COTTAM'S PATENT PORTABLE UNITED COW FITTINGS.

Their advantages are—Portability, not Features, removable at pleasure, no Woodwork or Partitions to impede Ventilation or breed Vermin, Hay Rack dispensed with as unnecessary, increased width and depth of Feeding Troughs, Water Pastern, and Patent Iron Cover to prevent over-gorging. Cleanly, durable, and impervious to infection, being all Iron. Price of Fittings per Cow, 55s.

Prospectuses free of COTTAM & Co., Iron Works, 2, Winsley Street (opposite the Pantheon), Oxford Street, London, W., where the above are exhibited, together with several important Improvements in Stable Fittings just secured by Patent.

J. B. BROWN AND CO.'S
NEW IMPROVED PREMIUM WIRE NETTING.

Great Improvement. Reduced Prices, February, 1866.
PRICES PER LINEAL YARD 24 INCHES HIGH.

Size of Mesh.	Mostly used for	Light. Jap	Light. Gal	Medium Strong. Jap	Medium Strong. Gal	Extra Strong. Jap	Extra Strong. Gal
		s. d	s. d	s. d	s. d	s. d	s. d
in. 2½	Dogs or Poultry	0 3½	0 4	0 4	0 5	0 5	0 6
2	Poultry	0 3½	0 4	0 4½	0 5½	0 5½	0 7
1½	Small Rabbits, Hares, &c.	0 3½	0 4	0 4½	0 5½	0 6½	0 8
1	Smallest Rabbits	0 4½	0 5½	0 6½	0 8	0 8½	0 10
	Aviaries, Window Guards, &c	0 11	1 1	1 4	1 4	1 7	.. ..

Quantities of 100 Yards or upwards delivered free at all Railway Stations.

*** Every description of Netting warranted to give satisfaction, and if not approved will be exchanged, or may be returned unconditionally.

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Silver Plate.

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The Pamphlet, illustrated by Drawings, and containing the Weights and Prices of articles required in family use, may be had on application, or will be sent post free to any part of Great Britain.

GOLDSMITHS' ALLIANCE LIMITED, 11 & 12, Cornhill, London, E.C.

Tea Cheaper than Ever.

PHILLIPS AND COMPANY'S TEAS ARE BEST AND CHEAPEST.
STRONG BLACK TEAS, 1s. 6d., 2s., 2s. 6d.
Very Excellent BLACK TEA .. .. .. 3s. 4d. per lb.
PHILLIPS & Co., Tea Merchants, 8, King William Street, City, London, E.C.

Rare choice genuine COFFEE, 1s. 6d. per lb.
A Price Current post free. Sugars at Market prices.
PHILLIPS & Co. have no Agents.

PHILLIPS & Co. Sugar at Cost. Goods not approved of exchanged or Cash returned within eight days. Nos. 8, King William Street, City; and 34 and 35, Strand. Teas, Coffees, and Spices, carriage free, to any Railway Station or Market Town in the United Kingdom, if to the value of 40s. or upwards.

CHRISTMAS PRESENTS and NEW YEAR'S GIFTS for the Promotion of Personal Attraction. ROWLANDS' MACASSAR OIL creates and sustains a luxuriant Head of Hair. ROWLANDS' KALYDOR renders the Skin soft, fair, and blooming, and eradicates all defects. ROWLANDS' ODONTO, or Pearl Dentifrice, imparts a pearl like whiteness to the Teeth, and a delicious fragrance to the Breath.—Sold at 20, Hatton Garden, and by Chemists and Perfumers. "Ask for "ROWLANDS'" Articles.

JOHN GIBSON, JUN., begs to announce that he is prepared to Furnish PLANS and ESTIMATES for LAYING OUT GROUND attached to Mansions and Villa or other Residences, or for the FORMATION of PUBLIC PARKS or GARDENS, and to carry out the same by Contract or otherwise.

Address Mr. JOHN GIBSON, JUN., Surrey Lane, Battersea, S.W.

BOROUGH OF LIVERPOOL.
SEFTON PARK COMPETITION.
To LANDSCAPE GARDENERS and others.

The Council of the Borough of Liverpool offer TWO PREMIUMS for the best PLANS for LAYING OUT the SEFTON PARK, viz.—a First Premium of 200 Guineas, and a Second Premium of 150 Guineas.

The conditions of the Competition, together with a Lithographed Contour Plan of the Site, will be sent to any address on receipt of Post Office Order for One Guinea, which latter will be returned if Plans are received in time for the competition.

The time for sending in the Plans has been extended to Tuesday, the 26th of March.

Applications to be made to Mr. E. R. ROBSON, Architect and Surveyor, Town Hall, Liverpool.

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GREY DORKING FOWLS, of purest breed, in any numbers.
Imported TOULOUSE GEESE, the largest and most productive breed known.
Improved NORFOLK TURKEYS, large, hardy, and good breeders.
AYLESBURY and ROUEN DUCKS.
Imported BELGIAN HARE RABBITS, for size and early maturity.
BRAHMA-POUTRA, CREVECŒUR, and LA FLECHE FOWLS, for constant laying.
Priced Lists and Estimates on application
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Advantageous Chance.

TO BE LET, a small NURSERY and SEED BUSINESS. For particulars apply by letter to C. J., care of Mr. C. Hunt, Post Office, Loughton, Essex.

To Seedsmen, Potato Growers, &c.

TO BE LET, till Michaelmas, 1867, about 60 ACRES of productive ARABLE LAND at Leytonstone. Immediate possession.

For terms apply to Messrs. DRIVER & Co., Auctioneers, Surveyors and Land Agents, 1, Whitehall, S.W.

PROMENADE GARDENS, GREAT MALVERN.—In consequence of the Death of Mr. William Simons these Gardens are TO LET for a Term, and the Tenant will be required to Purchase the Stock of Shrubs, Trees, Greenhouses, &c., at a Valuation. The late Proprietor has for many years carried on an extensive business, which a man of energy may greatly extend in this fashionable and rapidly increasing place.

For further particulars apply to Mr. CHAMBERLAIN, Solicitor, Ledbury, Herefordshire.

Sales by Auction.

SALE THIS DAY AT HALF-PAST 12 O'CLOCK PRECISELY.

Greenhouse Plants from Ghent.

FRUIT TREES AND ROSES FROM FRANCE, AND BULBS FROM HOLLAND.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on SATURDAY, Dec. 29, at half-past 12 o'clock precisely, a Consignment from an old established Nursery at Ghent, consisting of CAMELLIAS, INDIAN AZALEAS, HARDY RHODODENDRONS, ORANGE TREES, EVERGREEN BOXWOOD, &c.; also DWARF ROSES from France; FRUIT TREES and SHRUBS; BULBS from Holland, &c.

On view the Morning of Sale, and Catalogues had.

Periodical Sale of Poultry and Pigeons.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY, January 1, at half-past 12 o'clock precisely, upwards of 250 Pens of choice POULTRY and PIGEONS, from the yards and lofts of well-known Breeders and Exhibitors.

On view the Morning of Sale, and Catalogues had.

Choice Collection of Hardy Plants.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, January 2, at half-past 12 o'clock precisely, specimen CONIFERS, ARBOR VITÆS, RETINOSPORAS, JUNIPERS, CARNATIONS, PICOTEES, and PINKS, GLADIOLI, WEIGELAS, PENTSTEMONS, ROCKETS, IVIES, CURRANT and GOOSEBERRY TREES, RASPBERRY CANES, VINES, PYRAMID and DWARF FRUIT TREES, &c., &c.

On view the Morning of Sale, and Catalogues had.

Seedlings of Picea nobilis.

MR. J. C. STEVENS will include in his Sale at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, January 3, 500 fine healthy Plants of PICEA NOBILIS, from 12 to 18 inches high.

On view the Morning of Sale, and Catalogues had.

Lilium auratum.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, January 3, at half-past 12 o'clock precisely, a splendid Consignment of the true LILIUM AURATUM, just arrived per Mail Steamer from Japan, in the finest possible condition, and for sale without the least reserve.

On view the Morning of Sale, and Catalogues had.

Gastronema sanguineum.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, January 3, several hundreds of the beautiful Greenhouse bulb GASTRONEMA SANGUINEUM, a charming figure of which is published by Sir WILLIAM HOOKER in CURTIS'S *Botanical Magazine*. It is extremely hardy in the open air, adapted for the open Greenhouse or Conservatory, producing handsome-shaped blossoms 3 to 4 inches across, of a brilliant orange-tinted scarlet colour. Dr. Lindley, writing upon it, said he considered it as being "very beautiful, deserving general cultivation, even in the most select collections." A Drawing may be seen of the Flower when offered.

On view the Morning of Sale, and Catalogues had.

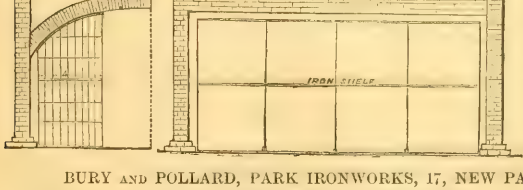
MR. W. PEASE will SELL by AUCTION, on WEDNESDAY and THURSDAY, January 16 and 17, 1867, at 12 o'Clock each day, on the Premises of the late Mr. JOHN SCHOLEY, Nurseryman, the valuable STOCK of SHRUB, FRUIT, FOREST TREES, and GREENHOUSE PLANTS, &c.

Catalogues may be had on application to Mr. T. JOWELL, Mr. L. STONE, and the Auctioneer, Pontefract; or of Mr. ED. HALL, Nurseryman, Wakefield.—Pontefract, Dec. 20.

WROUGHT-IRON WINE BINS.

BURY & POLLARD

CALL ATTENTION TO ANNEXED SKETCHES OF THEIR WINE BINS.



Noblemen, Gentlemen, Wine Merchants, and Hotels are now being supplied by BURY & POLLARD with their

WROUGHT-IRON BINS,

made to any size for their Cellars, economising space, cost, &c.

Apply, giving dimensions of Cellar,

BURY AND POLLARD, PARK IRONWORKS, 17, NEW PARK STREET, SOUTHWARK, LONDON, S.E.

Estimates Free. Cellars fitted complete in any part of the Kingdom.

THE AERIAL CHAIR.

WONDERFUL APPLICATION OF THE PRINCIPLE OF OSCILLATION.

FOR THE GARDEN, CONSERVATORY, AND NURSERY.

Entirely "Self-acting," the operator requiring no assistance whatever, and so easy of motion that a Child can propel itself to any desired altitude without the slightest danger of accident. It has been pronounced a marvel of ingenious mechanism, and cannot fail to become a necessary adjunct to every well-appointed Garden and Nursery, while for Invalids it will be hailed as a means of recreation and hygienic exercise never before offered them. They are very easily fitted up in any ordinary-sized room, and can be attached to the ceiling by means of a few common iron bolts. The only instructions necessary for the use of this invention are, that the person upon being seated simply presses the feet against the footboard, which will at once set the Chair in motion.

For Gardens or Lawns the "AERIAL CHAIR" can be secured to the branch of a tree or to the framework of an ordinary Swing.

Manufactured of Wrought Iron, in three different sizes, to wit:—

Size No. 1, suitable for Children ... ... price £2 2s. | Size No. 2, suitable for Youths ... ... £2 10s.

No. 3, suitable for Adults ... ... £3 3s.

These prices include packing, but not carriage. The suspending rods are about 8 feet in length. Extra rods can be obtained, if required, at 2*s.* 6*d.* per foot. The Seat to the "AERIAL CHAIR" is of wood, and moveable. Iron Seats, in imitation of Cane, can be had at 15*s.* each.

Attached to the head-board of the "AERIAL CHAIR" is a brass label, with the following words:—"AERIAL CHAIR, SECURED BY ROYAL LETTERS PATENT. MANUFACTURED BY PEYTON & PEYTON, METALLIC BEDSTEAD MANUFACTURERS, BIRMINGHAM. CHARLES POMEROY BUTTON, PROPRIETOR, NOS. 142 AND 143, CHEAPSIDE, LONDON."

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Printed by JAMES MATTHEWS, at the Office of Messrs. Bradbury, Evans, & Co., Lombard Street, Precinct of Whitefriars, City of London, in the Co. of Middlesex, and Published by the said JAMES MATTHEWS at the Office, No 41, Wellington Street, Parish of St Paul's, Covent Garden, in the said County.—SATURDAY, December 29, 1866.

The Gardeners' Chronicle Newspaper.

SATURDAY, FEBRUARY 24, 1866.

Card.

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Reference permitted to the Nobility and Gentry throughout Great Britain and Ireland.

HOT-WATER APPARATUS, of every description, fixed complete in any part of the country, or the materials, viz., Boilers, Pipes, &c., delivered to any Station.
Estimates on application.
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200 CUCUMBER and MELON BOXES and LIGHTS, and from 400 to 500 LIGHTS for PITS of all SIZES kept in STOCK. Glazed and Painted complete, ready for immediate use. Packed and sent to all parts of the kingdom. Public and Private Buildings, Warehouses, &c., Heated on the most approved scientific and economical principles. References to the Nobility, Gentry, and Trade in most of the Counties in England

Midland Steam Power Horticultural and Hot-water Works, Loughborough.

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HOTHOUSES for the MILLION,
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Manufactories: London, Norwich, Chelmsford (Lancashire), Gloucester, Coventry, Aberdeen, and Paisley only
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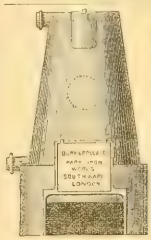
HOT WATER PIPES and FITTINGS of the best description supplied by
BURY & POLLARD, 17, New Park Street, Southwark, London, S.E.



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These BOILERS are adapted for setting in Brickwork, or as shown in sketch they require no Brickwork
BURY AND POLLARD
(Successors to John B. Pell),
Sole Manufacturers of the Improved CONICAL BOILERS, which are in actual use, and which Boilers have for their durability and economy, attained a celebrity far surpassing any other Boilers ever invented
Park Iron Works, 17, New Park street, Southwark, London, S.E.
N.B. Patent WINDMILLS for Pumping and Driving Farm Machinery, from half Horse Power upwards. To be seen daily at work as above

Heating by Hot Water.

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HOT WATER PIPES, fit to Stock, per yard:—2-inch, 1s. 2d.; 3-inch, 1s. 6d.; 4-inch, 2s. 3d. BENDS, from stock, 1s. 6d., 2s. 6d., and 3s. each. THROTTLE VALVES, 1s., 1s. 6d., and 1s. 6d. each. Other Conveniences at equally low prices, and all goods of first-class manufacture. Estimates given, and orders by post put carefully attended to the same day.

Dublin Exhibition Medal, 1865.

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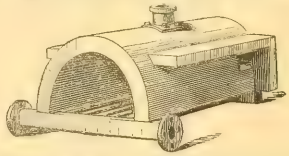
By Her Majesty's Royal Letters Patent.



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(Moule's Patent.)

THE EARTH CLOSET is intended to remedy the evils arising from the common Cesspool; or as a substitute for Water when the Drainage is defective, or the supply insufficient; and as a means for preventing any offensive Smell in Bedrooms, Hospital-wards, &c.

It is founded upon the well-known power of earth as a deodoriser. THE EARTH CLOSET practically applies this power: a given quantity of earth mechanically fulfilling the object, destroying all smell, and entirely preventing noxious vapours and other discomforts; the product being a valuable Manure.

The principle of THE EARTH CLOSET consists in an Apparatus for Measuring and Delivering the requisite quantity of Earth, and in a reservoir for containing it. The quantity of Earth required for each use of the Closet is not more than 2 lb., whilst its supply and removal are as easy as the supply of coal and the removal of ashes.

On view at MESSRS. WHITE AND CO.'S, 29, BEDFORD STREET, COVENT GARDEN, W.C.
Where Prospectuses and every information may be had on application.

BY ROYAL LETTERS PATENT.

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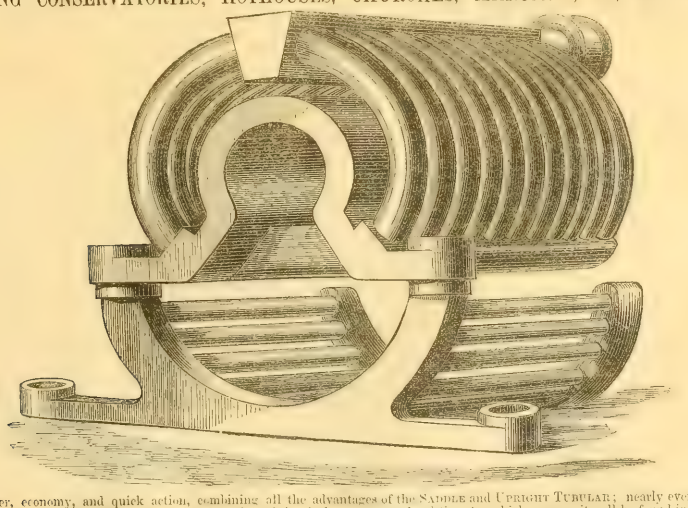
CAST-IRON TUBULAR ARCHED SADDLE BOILER,
FOR HEATING CONSERVATORIES, HOTHOUSES, CHURCHES, MANSIONS, &c., BY HOT WATER.



A BOILER of great power, economy, and quick action, combining all the advantages of the SADDLE and UPRIGHT TUBULAR; nearly every portion being subject to the close and direct radiating action of the fire. It is particularly adapted for fixing in low, swampy localities, for which purpose it will be found invaluable, and capable of being fixed in ONE-THIRD LESS DEPTH than the Upright Tubular, or any other Boiler, either of wrought or cast-iron, of equal capacity.

A WRITTEN GUARANTEE GIVEN WITH EACH BOILER.

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CONSERVATORY ARCHITECTS, HORTICULTURAL BUILDERS, AND HOT-WATER APPARATUS MANUFACTURERS,
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DOUBLE GLAZING.

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HEREBY GIVE NOTICE, that in future the ROOFS of FORCING and GREENHOUSES Manufactured at their Steam-Power Works may, *at the option and free of any additional cost to the purchaser*, be prepared on WEEKS'S DOUBLE-GLAZING PRINCIPLE.

This provisional arrangement, whenever called into requisition for converting Roofs to Double Glazing, will materially economise expense, and if never adopted will be rather ornamental than otherwise. The cost of the whole Apparatus, when fixed and Glazed complete, is, from its simplicity, almost nominal beyond the expense of the Glass.

☞ *For further description see Advertisement in last week's Paper.*

J. WEEKS AND CO., HORTICULTURAL BUILDERS AND HOT-WATER APPARATUS MANUFACTURERS,
KING'S ROAD, CHELSEA, S.W.

JOHN WARNER & SONS, LONDON, MANUFACTURERS.

J. WARNER AND SONS

Have much improved the construction of their

GARDEN **ENGINES**

in some important particulars for this Season.

They may be obtained of the Trade generally throughout the Kingdom at the following prices :—

No. 547. WARNER'S best ENGINES, in Wood Tubs, and fitted with WARNER'S Registered Spreaders—

24	Gallons,	£6	10 0
14	,,	5	10 0

No. 547A. WARNER'S strong ENGINES, in Galvanised Iron Tubs, well painted—

10	Gallons,	£2	19 0
16	,,	3	14 0
24	,,	4	19 0
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20	Gallons,	£2	2 0
30	,,	2	13 0
38	,,	3	17 0
50	,,	5	12 0

The 50-Gallon Barrow is made extra strong throughout, and fitted with handle for two men.

No. 568½. AMERICAN ENGINE, is now well known and appreciated. It throws a continuous stream, and is complete in itself. £2 2*s*.

SYRINGES in great variety, from 7*s*. 6*d*. to 18*s*. 6*d*.

The DISC SYRINGE, No. 557A, will recommend itself by the ease with which it is filled, and non-liability to get out of order. Price 9*s*.

WARNER'S **AQUAJECT**

Is recommended to the notice of Horticulturists as possessing the following advantages :—It is simple in construction, portable, and easily worked. It throws a continuous stream, and is low in price.

The Aquaject, 30s.

The Small AQUAJECT is the most perfect form of Syringe yet introduced. It throws a continuous stream, with very slight movement, and with it blight, &c., is readily washed from the under side of foliage. 18*s*.

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No. 36. IRON FORCE PUMPS for raising water above their level, or Watering Yards, Gardens, &c., through hose—2½-in., 59*s*.; 3-in., 65*s*.; 3½-in., 77*s*.; 4-in., 89*s*.

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No. 42. WARNER'S PORTABLE PUMPS on Folding Legs, are of a superior construction.

Price 55*s*.; Rubber Suction, 2*s*. 6*d*. per ft.

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RUBBER HOSE in all sizes.

FOUNTAIN JETS in great variety, from 8*s*. to 25*s*.

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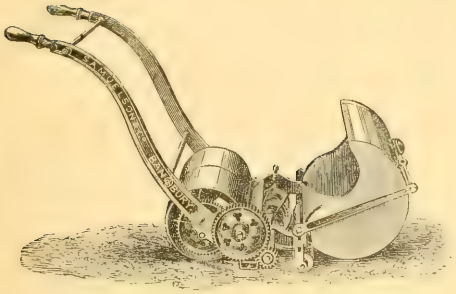
EVERY MACHINE WARRANTED.



PRICES.

Delivered Free to any Railway Station in Great Britain.

Cutting 12 inches wide, suitable for a Boy	£4 10 0
Cutting 14 inches wide, suitable for a Boy	5 5 0
Cutting 16 inches wide, suitable for a Man	6 0 0
Cutting 19 inches wide, suitable for a Man and Boy	6 10 0
Cutting 22 inches wide, suitable for Two Men	7 10 0
Cutting 25 inches wide, suitable for Pony Power..	11 0 0
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Great Improvements have been made in these Machines during the last few years, in regard to all those small but important points of superiority which the practical working of a Lawn Mower suggests; while for elegance of appearance, lightness of draft, and efficiency in working they cannot be excelled. They possess the following advantages:—

1st, Motion is given to the Cutting Apparatus by toothed gearing, which experience has proved to be by far the best method of driving.

2d, The whole of the Driving Wheels are on one side of the Machine, a point of great importance in preventing damage to Shrubs and Flowers, when mowing round the edges of beds.

3d, All the smaller working parts of the Machine are made of Malleable Iron, and are not liable to break.

Illustrated Price Lists, with selections from several thousand Testimonials, free by post on application.

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LONDON OFFICES: 18, CANNON STREET, E.C. WAREHOUSE (where Stock is kept): 10, LAURENCE POUNTNEY LANE, E.C.
AND OF ALL SEEDSMEN AND IRONMONGERS.

GREEN'S PATENT SILENS MESSOR,

OR

NOISELESS LAWN MOWING, ROLLING, and COLLECTING MACHINES.

FITTED WITH PATENT SELF-SHARPENING CYLINDER CUTTERS.

BY SPECIAL APPOINTMENT,
SOLE MANUFACTURER

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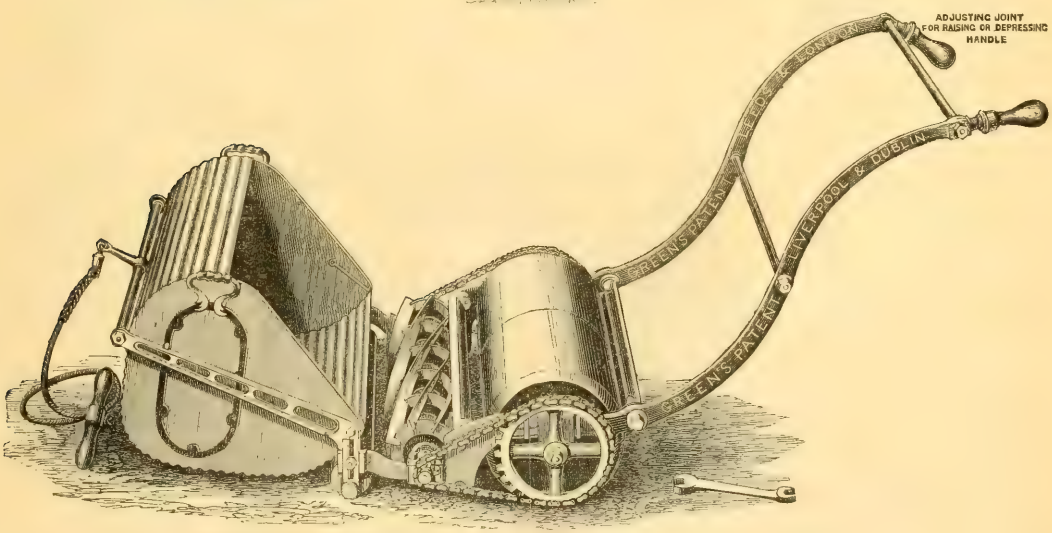

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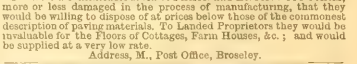

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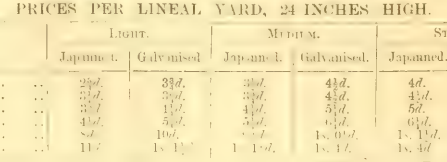

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The Right Hon. Lord RAVEN, Chairman.

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Under the Company's Act, Tenants for Life, Trustees, Mortgagees, Guardians, Committees of Incompetent Persons, Beneficial Lessees, Copyholders (Enfranchised or Manorial), Incumbents, Churchwardens, and Parishioners, and all Bodies having Land Improvements, and charges to apply, and Money to borrow, are empowered, by way of redrainage, to be paid back in 21 years' instalments, by

1 All works of Drainage, Irrigation, Warping, and Embankment.

2 The Erection of Farmhouses, Cottages for Agricultural Labourers, and all Kinds of Farm Buildings.

3. The Construction of Roads.

4. The Grubbing and Clearing of old Woodlands, Enclosing, Fencing, and Reclaiming Land.

The owners of Estates, not entailed, who may be desirous to avoid the expense or inconvenience of a Legal Mortgage, may also charge their Estates with an Outlay in Improvements under the simple and inexpensive process of the Company's Act.

The Term of Years for the Repayment is fixed by the Landowner, and is decided by the amount of Annual Payment to be consistent with the means of the Tenants.

No Investigation of Title being required, and the Charge not being affected by Encumbrances, no Legal Expenses are incurred.

The Arrangements for letting Improvements are the best —

No. 1. The Works may be Designed and Executed entirely by the Landowner's Agents, and the annual amount agreed only to supply the Loan and conduct the matter through all the official Forms for Charging the Outlay on the Estate.

No. 2. The Company will supply Plans, Specifications, and Estimates for any Improvements to be executed by the Landowner's Agents as under No. 1. In each of these cases the Landowner will be solely under the control of the Engineer of the Company.

No. 3. The Company will undertake the entire responsibility of the Improvements, prepare the Plans, execute the Works, and finally charge on the Estate the total amount expended only to supply the Loan and conduct the matter through all the official Forms for Charging the Outlay on the Estate.

No. 2. The Company will supply Plans, Specifications, and Estimates for any Improvements to be executed by the Landowner's Agents as under No. 1. In each of these cases the Landowner will be solely under the control of the Engineer of the Company.

No. 3. The Company will undertake the entire responsibility of the Improvements, prepare the Plans, execute the Works, and finally charge on the Estate the total amount expended only to supply the Loan and conduct the matter through all the official Forms for Charging the Outlay on the Estate.

Landowners may thus obtain what assistance they require from the Company, and no more, in effecting the objects in view.

Works of Drainage and other Improvements are also executed on Commission for Landowners, who merely require the skill and experience of the Company's Officers and a Staff in constant practice.

Applications to be addressed to Warren Anderson, the Secretary, at the Office of the Company, 22, Whitehall Place, London, S.W.

THE LANDS IMPROVEMENT COMPANY.

Incorporated by Special Act of Parliament in 1853.

Right Hon. Lord NAAS, M.P., Chairman.

TO LANDOWNERS, TO CLERGY, ESTATE AGENTS, SURVEYORS, &c., IN ENGLAND AND WALES, AND IN SCOTLAND.

The Company advances money, unlimited in amount, for the following works of Agricultural Improvement, upon the whole outlay and expenses in all cases being liquidated by a rent-charge for 25 years.

1. Drainage, Irrigation, and Warping, Embanking, Inclosing, Clearing, Reclaiming, Draining, for any beneficial purpose, Engines or Machinery for Drainage or Irrigation.
2. Farm Roads, Tramways and Railways for agricultural or farming purposes.
3. Jetties on Landing places on the seacoast or on the banks of navigable rivers or lakes.
4. The Erection of Farm Houses, Labourers' Cottages, and other Buildings required for Farm purposes, and the improvement of and additions to Farm Houses and other buildings for Farm purposes.

Landowners assessed under the provisions of any Act of Parliament, Royal Charter, or Commission in respect of any public or general works of Drainage or other Improvements, may borrow their proportionate share of the cost, and charge the same with the expenses on the lands improved.

The Company will also negotiate the Rent-charges obtained by Landowners under the Improvement of Land Act, 1864, in respect of their Subscription of Shares in a Railway or Canal Company.

No investigation of title is required, and the Company being of a strictly Public character, and in intimate relation with the plans and execution of the Works, which are controlled only by the Government Enclosure Commissioners.

Apply to the Honourable WILLIAM NAPIER, Managing Director, 3, Parliament Street, London, S.W.

ROYAL SCHOOL of MINES, Jermyn Street.—Professor WILLIS, M.A., F.R.S., &c., will COMMENCE a COURSE of TWELVE LECTURES on MECHANICS on MONDAY NEXT, February 26, at 12 o'Clock, to be continued on each succeeding Tuesday, Wednesday, Thursday, Friday, and Monday at the same hour. Fee for the Course, £2.

THOMAS REES, Registrar.

IN the House of Lords on Saturday the Bill for the suspension of the Habeas Corpus Act in Ireland was brought up from the Commons and read a first time, when Earl RUSSELL moved the suspension of the Standing Orders to enable it to pass through its remaining stages. The motion having been agreed to, the Bill was read a second and a third time. The House met again at 11 o'clock, and about half an hour after midnight the Royal Assent, which had been received from Osborne, was given by Commission, and the Bill became law. The Cattle Diseases Bill was brought up from the Commons and read a first time. On Monday the Telegraph Act Amendment Bill, the object of which was to give the LORD LIEUTENANT of Ireland the power of taking possession of the telegraph wires in that country, was brought in, and, the Standing Orders having been suspended, the Bill was read a third time and passed. The Cattle Diseases Bill was read a second time, and the Standing Orders having been suspended, the House went into Committee on the Bill. The Earl of AIRLIE moved an amendment to the 12th clause, giving the local authorities power to slaughter or refrain from slaughtering animals certified to be recovering from the disease. After a long discussion, the amendment, which was supported by Lord STANLEY of ALDERLEY, the Duke of ARGYLL, the Duke of BUCCLEUCH, and other peers, was negatived on a division by 52 to 15. An amendment, moved by the Earl of LICHFIELD, requiring inspectors to assign a reason for slaughtering a diseased animal in preference to a farmer's premises prior to inspection, was negatived on a division by 20 to 21. The Bill then passed through committee, and was

THE SIMULTANEOUS RE-ISSUE OF

THE ENGLISH CYCLOPÆDIA

IN CHEAP WEEKLY NUMBERS, IS NOW IN COURSE OF PUBLICATION,

No. I. of "BIOGRAPHY," price 4d., ready this day.

*** "ARTS and SCIENCES," First Monthly Part, price 2s. 6d., on the 28th.

LONDON: BRADBURY, EVANS, AND CO., 11, BOUVERIE STREET, E.C.

read a third time and passed. On Tuesday the Royal Assent was given by commission to the Cattle Diseases Bill. In answer to the Earl of Derby, Earl GRANVILLE said that measures had been taken to prevent the spread of the small-pox in sheep, which had recently broken out in Northamptonshire. On the motion of Lord STANLEY of ALDERLEY, the Art Bill, authorising trustees to lend pictures and other works of art to the National Portrait Exhibition and the Paris Exhibition, was read a second time. On Thursday, on the motion of Earl RUSSELL, addresses were agreed to in answer to the Messages from the QUEEN, declaring the readiness of the House to concur with the Commons in making provision for the Princess HELENA on her approaching marriage, and for the establishment of Prince ALFRED on his coming of age. The Sale of Land by Auction Bill and the Art Bill passed through Committee.

In the Commons on Friday the consideration of the Cattle Diseases Bill was resumed in Committee, when Sir G. GREY intimated his readiness to divide the measure into two parts, the first to include that part of it which related to compulsory slaughter, compensation, and the prohibition to move cattle by railway; the second to embody the other and more permanent provisions. Sir G. GREY subsequently consented to withdraw the provision in the clause relating to the imposition of a cattle rate. The remaining clauses were agreed to. Mr. WARD-HUNT's Bill was then committed *pro formâ*. On Saturday the House met at one o'clock, when Sir G. GREY moved for leave to bring in a Bill for suspending the Habeas Corpus Act in Ireland for six months. After a long discussion the motion was carried by 364 to 6. The Bill was then passed through all its stages without further discussion. The report of amendments on the Cattle Diseases Bill was brought up and agreed to, and the Bill was read a third time and passed. The House again met shortly before midnight, and went to the House of Lords to hear the Royal Assent given to the Bill for suspending the Habeas Corpus in Ireland. On Monday the House went into committee on the Cattle Plague Bill of Mr. WARD-HUNT, the object of which was absolutely to prohibit the movement of cattle on all highways, railways, rivers, and canals up to the 25th of March next, with certain exceptions. After a long discussion, several amendments were agreed to, and on arriving at the 26th clause the CHAIRMAN was ordered to report progress. The National Debt Reduction Bill and the Savings Banks and Post Office Savings Banks Bill passed through committee. Mr. M'CULLAGH TORRENS obtained leave to bring in a Bill to provide better dwellings for artisans and labourers in the metropolis and other large towns. Mr. CLAY obtained leave to introduce a Bill to extend the elective franchise for cities and boroughs by the creation of an educational qualification. Mr. BOUVERIE obtained leave to bring in a Bill to repeal certain portions of the Act of Uniformity. The House went into Committee on Mr. HUNT's Cattle Plague Bill, and was occupied for several hours in the discussion of the clauses. On Wednesday Sir C. O'LOGHLEN moved the second reading of the Juries in Criminal Cases Bill, the objects of which were to empower the judges to discharge juries in case of illness or inability to agree to a verdict; to enable judges to allow reasonable refreshments to juries during a trial, and to take verdicts on a Sunday. After some discussion it was resolved, at the suggestion of the SOLICITOR-GENERAL, to postpone the second reading until the Exchequer Chamber has given judgment in the case of CHARLOTTE WINSOR, by which the law will practically be settled. The Telegraph Act Amendment Bill passed through Committee. On Thursday the House went into Committee on two Messages from the QUEEN relating to a provision for the Princess HELENA on her approaching marriage, and for the establishment of Prince ALFRED on attaining his majority. The CHANCELLOR of the EXCHEQUER moved the grant of a dower of 30,000*l*., and an annuity of 6000*l*. to the PRINCESS, to commence from the date of her marriage, and the grant of an annuity of 15,000*l*. to Prince ALFRED, to commence from the day on which he attained his majority. Mr. DISRAELI seconded the motion, which was agreed to. The CHANCELLOR of the EXCHEQUER next moved an Address to the QUEEN for the erection of a monument in Westminster Abbey to the memory of Lord PALMERSTON. Mr. DISRAELI also seconded this motion, which was agreed to. The Jamaica Bill was read a second time. The House resumed in Committee the consideration of Mr. HUNT's Cattle Plague Bill, when an amendment, moved by Mr. AYRTON, to allow the movement of imported cattle within the Metropolitan District, was carried, on a division, by 156 to 102. Several new clauses were added, and the Bill was eventually ordered to be reported. The National Debt Reduction Bill was read a third time and passed.

The Prussian Chambers were closed yesterday by a Royal decree, and are to remain adjourned for the remainder of the Session. In closing the Chamber of Deputies, which was quite unprepared for such a measure on the part of the Government, the PRESIDENT expressed his hope that the Prussian people would stand by their representatives, and consider the constitution as sacred as ever.

Accounts from Dublin state that the effects of the proposal to suspend the Habeas Corpus Act made themselves manifest even before it had been carried into execution. On Saturday morning many of the Fenian agents from America made preparations to leave the country, but before night upwards of 100 of them were arrested. Numerous arrests have since been made, including PATRICK M'DONNELL, the "Vice Head Centre for Ireland," whose apprehension is considered the most important which has been effected since that of STEPHENS. It is also understood that among those now in custody are three general officers, four lieutenant-colonels, and 25 officers of inferior grades, who had served in the Federal army during the civil war in America.

Home News.

RETURN OF THE COURT TO WINDSOR.—The Queen and Royal family arrived at Windsor Castle on Wednesday afternoon from Osborne. On Thursday Earl Russell had an audience of her Majesty. It is understood that the Queen will lay the first stone of the Central Hall of Science and Art at Kensington in June next.

COURT ARRANGEMENTS.—It is announced that the Queen will hold during the ensuing season, at Buckingham Palace, five Courts for the reception and presentation of a certain number of ladies and gentlemen. They will take place on the 9th, 16th, and 24th of March, at 3 o'clock, and on the 14th of May and 19th of June at 4 o'clock. In order to avoid fatigue to her Majesty, the number attending each Court will be limited to 250. The Princess of Wales will also, on behalf of her Majesty, hold two Drawing Rooms at St. James's Palace, to receive those who cannot be included at her Majesty's Courts under the above regulations. The Prince of Wales will also hold Levees at St. James's Palace on her Majesty's behalf, on Wednesday, the 7th, and Monday, the 19th of March.

THE PRINCE AND PRINCESS OF WALES.—On Friday the Prince and Princess intended to have hunted with the Prince's hariers at Windsor, but the weather was so bad that it was determined not to take out the hounds. Their Royal Highnesses remained at Cumberland Lodge on Friday night, and on Saturday morning enjoyed an hour's fox-hunting with Mr. Garth's pack, in the neighbourhood of Virginia Water, Sunningdale, Sunninghill, and Ascot. In the afternoon the Prince and Princess returned to town. On Sunday morning their Royal Highnesses attended Divine service at the Chapel Royal, St. James's. On Monday morning the Prince went to the South Kensington Museum, and presided at a meeting of her Majesty's Commissioners for the French International Exhibition of 1867. In the afternoon his Royal Highness went to the House of Lords, and in the evening attended the performance at the Olympic theatre. On Tuesday the Prince went to the House of Lords, and in the evening the Prince and Princess dined with the Duke of Cambridge at Gloucester House. On Wednesday morning the Prince presided at a meeting of the Council of the Duchy of Cornwall. In the afternoon the Prince and Princess left town for Belvoir Castle, on a visit to the Duke of Rutland. The visit of their Royal Highnesses to the Earl and Countess Spencer at Althorp Hall has been postponed in consequence of the death of Lord Clifden, the Countess Spencer's brother-in-law.

RETURN OF PRINCE ALFRED.—On Sunday last Prince Alfred arrived at Spithead in her Majesty's ship Racoon, from Gibraltar. His Royal Highness proceeded to Osborne on a visit to the Queen, and returned to his ship on Wednesday, after accompanying her Majesty to Gosport on her way to Windsor. The *Gazette* of last night announces the promotion of his Royal Highness to the rank of Captain in the Fleet. The Prince has therefore passed over the rank of Commander.

THE CABINET.—A Cabinet Council was held on Wednesday at the official residence of the First Lord of the Treasury, in Downing Street. At the Court at Osborne on Friday the Marquis of Hartington was sworn in as a Privy Councillor, and kissed hands on his appointment as Secretary of State for War. Sir Charles Wood had an audience of her Majesty, and resigned the seals as Secretary of State for India. Earl de Grey had an audience and received from her Majesty the seals of the India Department.

THE PEERAGE.—The *Gazette* of Tuesday announces the elevation of Sir Charles Wood to the second order in the peerage, by the title of Viscount Halifax.

PARLIAMENTARY MOVEMENTS.—Lord John Hay, a younger son of the Marquis of Tweeddale, is a candidate for Ripon, vacant by the elevation of Sir C. Wood to the peerage. Mr. Sussex Milbank was announced on Tuesday as a candidate for Richmond, vacant by the death of Mr. Dundas, but has since retired in favour of Mr. Marmaduke Wyvill, who represented the borough for several years in the Whig interest. The election for the City of London rendered necessary by Mr. Göschen's acceptance of office is fixed for Monday next. There is no opposition to Mr. Göschen's re-election.

THE GOVERNMENT OF INDIA.—Sir Charles Wood has concluded his Indian administration by creating a fourth High Court for the Upper Provinces. Mr. Justice Morgan, one of the High Court Judges, is Chief Justice, and Mr. Turner, of the Western Circuit, is the second barrister Judge. Mr. Markby, of the Norfolk Circuit, succeeds Mr. Morgan at Calcutta. Sir Charles Wood has also recommended, with Sir J. Lawrence's approval, a second and a third class of the Order of the Star of India, for English and natives of India.

THE BARONETCY.—Mr. Stirling, of Keir, M.P. for Perthshire, having submitted a statement of his right to the baronetcy of Maxwell of Pollok to counsel of the highest eminence, has been advised that it has devolved upon him under the regrant by Queen Anne, which extended the limitation to the heirs of entail whatsoever in the lands and estates of Lord Pollok, the second baronet. In accordance with these opinions, and the wishes of his uncle, the late Sir John Maxwell, as expressed in his settlements, Mr. Stirling now becomes Sir William Stirling Maxwell, tenth Baronet of Pollok.

THE PARIS EXHIBITION.—Her Majesty's Commissioners for the Paris Exhibition of 1867 held a meeting at the South Kensington Museum on Monday. The Prince of Wales presided, and there were present—Earl Granville, the Duke of Buckingham, the Duke of Sutherland, the Marquis of Lansdowne, the Marquis of Salisbury, the Earl of Derby, Earl Stanhope, Earl de Grey and Ripon, Lord Elcho, Lord Overstone, Lord Taunton, Lord Houghton, Sir G. Clerk, Sir J. Pakington, Right Hon. R. Lowe, Right Hon. C. B. Adderley, Right Hon. H. A. Bruce, Sir S. H. Northcote, Sir A. Y. Spearman, Sir R. Murchison, Sir F. Sandford, Mr. Edgar Bowring, Sir Morton Peto, Mr. E. Akroyd, Mr. Thomas Baring, M.P., Mr. Charles Forster, Mr. T. F. Gibson, Mr. W. H. Gregory, Mr. W. Smyth, Mr. W. Hawes, Mr. M. D. Hollins, Mr. Beresford-Hope, Mr. C. Duffin, Mr. John Fowler, Mr. J. F. Maguire, Mr. D. Lupton, Mr. Skynner Miles, Mr. Redgrave, General Sabine, Mr. W. Scholefield, Mr. F. Taylor, Mr. Thring, and Mr. Cole, secretary. In opening the business of the commission, the Prince delivered the following address:—

"My lords and gentlemen,—I have great satisfaction in finding myself for the second time in the chair of this important commission. Since we met here last year considerable progress has been made on the other side of the water for the Exhibition of next year. Possession has been taken of the well known Champ de Mars. On it is now in course of erection perhaps the largest building that has ever been constructed, surrounded by a large park, with the Seine at the north side, both to be made available for the purposes of the Exhibition. The Imperial commission propose to attempt much that has not been tried before. Many things, although calculated to increase the interest of the Exhibition, will be attended with difficulty. I venture to state, on behalf of this Commission, and especially its committees, that we shall be ready on these and all other points to give the best assistance in our power."

The minutes of the last meeting were then read, and the business of the meeting was proceeded with.

THE REFORM QUESTION.—A deputation appointed by a large meeting held in Glasgow was received by Earl Russell at Downing Street on Monday. Among those present were Mr. Graham, M.P., Mr. Dalglish, M.P., Mr. Dunlop, M.P., Mr. M'Laren, M.P., Admiral Erskine, M.P., Mr. Baines, M.P., Mr. Crawfurd, M.P., the Hon. A. Kinnaird, M.P., Colonel Sykes, M.P., &c. Mr. Dalglish read the resolutions

adopted at the public meeting, which requested an extension of the franchise and a re-distribution of seats. He remarked that the meeting was attended by about 3000 people of different grades from the highest to the lowest, and introduced Mr. Govan, a letter-press printer, who had moved one of the resolutions. Mr. Govan hoped that in framing the Bill the Government would introduce a comprehensive measure. A 10*l.* rental in counties and a 6*l.* rental in boroughs would be satisfactory to the people of Scotland. By an extension of the franchise the fair character of the country would not be tarnished or her stability endangered. Messrs. Cranstoun, Campbell, and Muir coincided in stating that the Government was strong, not only in its parliamentary majority, but in the confidence of the people, and the antecedents of his lordship and his colleagues encouraged them in the hope that their interests would be attended to. They trusted that not only would a large number of working men be admitted to the right of voting, but that there would be a re-distribution of seats. Mr. Graham, M.P., said the confidence of the country was so universal and so unlimited in his lordship's deep and true interest in the cause of reform, that whatever he proposed the reformers of the country were prepared to support. Mr. Dunlop presented a petition from the town of Greenock, to the same effect as the resolutions adopted at the Glasgow meeting, and remarked that a re-distribution of seats was greatly wished for in Scotland. Mr. Duncan M'Laren referred to the progress made in education since the passing of the Reform Bill, and said the holders of 6*l.* houses were as intelligent as holders of 10*l.* houses at the passing of the Reform Bill. He deprecated a rating system; the lawyers in Scotland would not be able to tell what a rating suffrage meant. A petition from Paisley, praying for reform, was also presented. Earl Russell, in reply, said:—

"I have listened with great attention to the observations you have made, and I can only say that of course it will not be in my power, nor would it be my duty, to state to you the nature of the measures which will be introduced by the Government. I may say, however, that any measures that shall be introduced will not be founded upon theories that have been done in other countries—in France or the United States, or upon the institutions that the people of France may possess or that the people of the United States may possess. I think it becomes us, having had representative institutions for 600 years, to found any amendments we may make upon those great representative institutions, not upon the state of foreign countries, but upon our own experience. With regard to this question, I think you will agree with me that there are many elements to be considered in any system of representation. Property and intelligence must be considered, and not only these, but other circumstances must likewise be taken into account. If, for instance, we were to frame a plan of representation entirely from numbers, and to give to each place a representation according to the number of its inhabitants, this great metropolis would have six times the number of members that it has at present. But considering how identical the interests of this metropolis are, and how different and varied are those of Scotland, such a representation would not be fair. But we have to deal with nothing theoretical; we have to consider the present state of affairs in 1830 and 1831, when the cry for large concessions to Parliament on the subject of reform, the abuses were so gross and so glaring that, immediately the subject was broached by Government, excitement ran all through the nation, and there was an enthusiasm sufficient to carry the proposition. But in those days boroughs such as Gatton and Old Sarum, places virtually without inhabitants, were entitled to send representatives to Parliament, while Manchester, Birmingham, and Leeds had no members whatever. This was so striking that the people were quite willing to agree to reform the state of things. But now the state of things is wholly different. There is nothing so glaring and so defective. The state of matters now is different in degree, if not different entirely. It has seemed to me for some years that, considering what we did in 1832, it is an obvious and, I should say, a pressing defect that there should be in our towns, men who have property and intelligence, are to so great a degree excluded from the power of electing members. Although the opposite position has been maintained, I am convinced that the skilled artisan, if industrious and frugal, must pay 10*l.* a-year; that a man who receives good wages, and who wishes to clothe and educate his children in a manner that it befits him to do, cannot give 10*l.* for his house in addition to his other expenses. But I am not going to discuss with you the observations that have been made—the 10*l.* franchise for counties, and the 6*l.* franchise for boroughs. I am not going to discuss the question, because it is evidently a matter that must be considered by those who frame the measure. The matter of redistribution of seats is one on which there is much to be said, but it does not appear to me that the defect is so enormous or so immediately requiring a remedy. It is, besides, one of considerable difficulty. When Lord Derby prepared his bill, it was proposed that every 15 boroughs should send a member. That would hardly be likely to form a permanent settlement of the question. On the other hand, to say that the number of representatives should be fitted exactly to the amount of population would be so great a change that I should say it would be entirely out of the question to hope to carry such a measure in Parliament, without saying whether it would be mischievous or beneficial. I do not intend to say anything definite, because I really think while we are considering the measure we have a right to keep our counsel to ourselves. A member said many years ago in the House of Commons that we were like bees working in a glass hive. I have heard that bees which live in a glass hive take the precaution of filling up the part made of glass with wax, and I think the bees in doing so are very wise. As I have said, I do not intend to tell you our intentions, but to work in secret at least until the Bill is introduced."

REVISION OF THE LITURGY. — Earl Russell has returned the following answer to Lord Ebury upon the subject of the Revision of the Liturgy:—

"Downing Street, Feb. 12.

"My dear Lord Ebury,—After consulting my colleagues, and communicating with the Archbishop of Canterbury, I have to state to you the decision of her Majesty's Government not to propose the issuing of a Commission for the Revision of the Liturgy. The former Commission upon the terms of subscription arrived at a conclusion which gave greater freedom of opinion to every person in holy orders; but a Commission for the revision of the Liturgy would in all probability lead to heated discussions, and its report, if it framed any, would be sure to offend and irritate a large party in the Church. As her Majesty's Government are most anxious to promote peace and goodwill, and not to open the way to discord, they must decline to adopt the proposal which your Lordship and the deputation which accompanied you have made. Thanking your Lordship for the manner and courtesy of your communication, I remain, &c.,

"RUSSELL."

On Saturday an address against ritual innovations was presented to the Bishop of London by the Archdeacon of Middlesex and more than 220 of the clergy of the archdeaconry. The Bishop replied at great length. He said that he distinguished between those ritualists who only attempted to revive in parish churches what had always been the forms in cathedrals and college chapels and those who adopted Romish vestments and forms in the celebration of the Communion. The former, he thought, should only be attempted with the consent of the parishioners and the sanction of the Bishop. But the ritualising of a more directly Romeward tendency, was at least he feared engaged in by some from a deliberate design to undermine the Church. If nothing else would stop these men, he thought the law must be defined by a declaratory Act of Parliament and Convocation.

Foreign.

FRANCE.—The deputation appointed to present the Address of the Senate to the Emperor had an audience of his Majesty on Sunday. On receiving the address the Emperor said:—

"This eloquent commentary upon my speech develops what I merely pointed out, and explains all that I wished to convey. You desire, as I do, stability, the rational and progressive development of our institutions, and the maintenance intact of the national honour and dignity. This accord is a force in the moral as well as in the physical world, and obeys general laws which cannot be violated without danger. It is not by daily disturbing the basis of an edifice that its completion is hastened. My Government is not stationary. It is advancing, and wishes to advance, but upon firm ground, capable of supporting power and liberty."

The following are the most salient points of the draught of the Address of the Corps Législatif in reply to the Emperor's Speech:—

"We are happy to state that the relations of France with foreign Powers are of a pacific character. We still entertain hopes of a reconciliation between Italy and the Papacy. This reconciliation is necessary for their interests, for the peace of Europe, and for the tranquillity of consciences. The September Convention, honestly carried out, will be a fresh guarantee of the Pope's temporal sovereignty, the maintenance of which is indispensable to the independent exercise of the spiritual power. The country has received with satisfaction the assurance that our expedition to Mexico is drawing to a close. The United States Government will take umbrage at the presence of our troops in Mexico. To render their recall dependent upon any other than our own convenience would be to attack our rights and our honour, which your Majesty guards with a solicitude worthy of France and of the name of Napoleon." After referring to Algeria, the law upon coalitions, agriculture, and public instruction, the Address expresses satisfaction at the improvement which has taken place in the finances, and at the economy effected in the different departments of the public service. It concludes by saying:—"The stability of our institutions, the basis of which repose upon the free and solemn right of voting, is by no means irreconcilable with the judicious progress of our liberties. This your Majesty has already proved. The experience of the past is a guarantee for the future."

The Emperor Napoleon has addressed the following letter to the Minister of the Interior in reference to M. Hausmann's proposal to destroy the Luxembourg Gardens in order to make a new Boulevard:—

"I have paid a visit to the Jardin du Luxembourg, and am convinced that there would be every advantage in leaving the western portion of that useful promenade undisturbed. I request you, therefore, to have the first plans altered accordingly."

M. Boitelle, Prefect of Police, has been appointed Senator; and M. Pietri, Prefect of the Department du Nord, has been appointed to succeed him as Prefect of Police. The Minister of Agriculture has sent M. Delpech, Professor of Medicine; M. Raynal, Veterinarian; and M. Alfort, to Germany, to examine and report upon the trichinæ disease prevalent in pork. The *Patrie* says:—

"It is rumoured that at a Cabinet Council recently held in Washington, Mr. Seward presented the draught of a despatch to the French Government, manifesting the most conciliatory intentions towards France, and intimating the readiness of the United States to proclaim their neutrality in Mexico, subject to certain conditions."

The same paper states that certain proposals, emanating from the Emperor Maximilian, render possible the return of 5000 French troops from Mexico by the end of May. The Emperor has commuted to 10 years' hard labour in Algeria the sentence of death recorded against the Zouaves who were recently tried in the city of Mexico for mutiny at Martinique. The *Constitutionnel* publishes an article regretting the sentiments with which, according to a recently published despatch of the Spanish Minister at Vienna, the Austrian Government had viewed the negotiations of Signor Vegezzi with the Holy See. The article also expresses indignation against the Spanish Ambassador for accusing France of endeavouring to profit by the speedy execution of the September Convention in order to obtain from the Pope humiliating concessions. It proceeds to point out that the dangerous and fanatical party who use this language have given the Pope no efficient assistance, but have only proffered rash counsels and perfidious insinuations; whereas France, even at the present time, is assisting the Papacy to find both men and money. It is reported that orders have been sent to the authorities at Brest to continue to watch the Peruvian ironclad Huascar, which has been detained in that port since her arrival from the Thames on her trial trip, and at the same time to observe the movements of an English vessel suspected of carrying arms and ammunition to the Huascar. M. Emile de Girardin, M. Duvernois, and M. Vermorel are about to relinquish their posts on the editorial staff of the *Presse*.

SPAIN.—In the Chamber of Deputies on Wednesday Señor Molina announced, in the name of the press, that he intended to address a question to the Government with a view to the improvement of the position of journalism in Spain. On the demand of the Government Señor Molina postponed his motion. On Thursday the Chamber rejected Señor Moyano's amendment to the Address, proposing reductions in the Budget to the amount of 300 million reals. The Senate on the same day appointed a committee to consider the Bill recently introduced for the suppression of negro traffic in the Spanish colonies. The proposal of the Committee in reference to the Bill to prevent any person from being at the same time a Government functionary and a member of the Chamber of Deputies has been adopted. The *Diario Espanol* of Friday says:—

"The questions that may be raised by the execution of the September Convention do not concern France and Italy alone. The Roman question affects Catholic interests, and the Catholic Powers cannot leave the settlement of this question to hazard or perfidy. They have the right, and it is their duty to seek to discover the causes of the political changes which may take place at Rome after the departure of the French, and even to oppose changes by every means in their power."

Señor Bermudez Castro, Minister for Foreign Affairs, has forwarded to the Spanish Minister at Florence a lengthy despatch, in reply to that of General della Marmora on the Roman question. Señor Castro's despatch says, in conclusion,—

"Spain, faithful to her engagements, and strongly interested on behalf of Pontifical rights, is equally desirous of maintaining a good understanding with Italy."

PORTUGAL.—The Chamber of Deputies have approved the Boundary Treaty recently concluded between Spain and Portugal. The Government has ordered General Prim to leave Portugal. A resolution deprecating this decision was moved in the Chamber of Deputies, and was rejected on Wednesday after an animated debate. It is said that General Prim will go to Gibraltar.

THE DUCHIES.—It is stated that the Prussian Cabinet, taking as a precedent the solution arrived at in the Lauenburg question, has resolved to propose to Austria to cede her rights of possession in the Duchies in consideration of a pecuniary indemnity. It is also asserted that Prussia is about to send a Note to the Austrian Cabinet, declaring the personal union of the Duchies with Prussia to be the only solution of the Schleswig-Holstein question. An address has been transmitted to Count Bismark, dated January 23, and signed by Baron Scheel-Plessen and 18 members of the Holstein nobility. This address deplores the incalculable mischief arising from the provisional state of things in the Duchies, and the political agitation fostered by the Duke of Augustenburg, and concludes as follows:—

"We unhesitatingly declare that we consider the welfare of our country can only consist in union with Prussia. We rely upon the wisdom of the King for his Majesty to take all the necessary steps to that end, and hope that he will maintain the institutions peculiar to the Duchies which will shortly be united to Prussia. We wish that this much-desired object may soon be attained, in order that a state of uncertainty may not inflict still deeper injury upon our country."

PRUSSIA.—In the sitting of the Chamber of Deputies on Friday, the report of the Committee on the conclusion of a Navigation Treaty between Prussia and England was read. The Committee, from reasons of national economy, and having regard to the principle of free trade, recommend the adoption of the treaty. Herr Orienwerder spoke against its adoption, in order that foreign countries should not believe that any understanding has been arrived at between the Prussian Diet and the Government. The Chamber finally agreed to the different Articles and passed the whole treaty, a few members only voting against it. A debate then ensued on the resolution proposed by the Committee relative to the measures taken by the authorities on the occasion of the banquet given by the inhabitants of Cologne to the members of the Prussian Diet. This resolution was passed by a large majority. During the discussion the Minister of the Interior justified the conduct of the authorities. On Saturday a meeting of the members of the Working Men's Association of Berlin, called together by the President, Herr Bandow, and attended by 3,000 persons, was dissolved by the police. The object of the meeting was to express the approval of the working class of the position taken up by the Chamber of Deputies. On Monday Count Bismark addressed a letter to the President of the Chamber of Deputies, declaring that the resolutions of the Chamber relative to the Duchy of Lauenburg, the Supreme Court, and the Cologne Banquet were unconstitutional, and therefore could not be accepted by the Government. For these reasons he returned the resolutions to the President of the Chamber. At a meeting of the advanced Liberal party, on Tuesday, it was resolved, by 49 to 47 votes, to request the Government to withdraw Count Bismark's letter, and to notify that in case of refusal the Chamber would not discuss

any future Bills presented by the Government. On Thursday afternoon Count Bismarck communicated to the Chamber of Deputies a Royal decree, ordering both Houses of the Diet to be closed on the next day, and to remain adjourned until the end of the present Session. This step was entirely unexpected. Even Herr Grabow, the President of the Chamber of Deputies, was not aware that such a measure was impending. After the reading of the Royal order Herr Grabow said :—

"I hope that the Prussian people will stand by their representatives; and that they will consider the Constitution sacred, except. I close the Session with the cry—'Long live the King!'"

AUSTRIA.—A report circulated on Thursday on the Bourse that the Emperor would shortly issue an important manifesto. The rumours of a Ministerial crisis are still prevalent. Disquieting war rumours are afloat in the commercial circles of Vienna in reference to the relations between Austria and Prussia. It is asserted that Austria and Italy are about to conclude an arrangement for the improvement of their mutual consular and commercial relations. Austria, without recognising the Kingdom of Italy, will consent to extend the provisions of the Austro-Sardinian Treaty of Commerce of 1852 to all merchandise arriving in Austria from any part of the Italian Kingdom. The Emperor of Austria is said to be willing to furnish the Emperor Maximilian with any troops he may require, provided they be incorporated with the Mexican army, and that all the expenses be defrayed by Mexico. The Emperor Napoleon has sent the Grand Cross of the Legion of Honour to the Austrian Crown Prince. The insignia of the Order will be presented to his Imperial Highness by the French Ambassador, the Duc de Gramont, on the return of the Emperor from Hungary.

HUNGARY.—The Address of the Upper House of the Hungarian Diet in reply to the Speech from the Throne, expressing the same sentiments and wishes as the Address of the Lower House, was agreed to on Thursday by a large majority. The Transylvanian Metropolitan, Monsignor Zaguna, took his seat in the Upper House on Thursday, for the first time, and several Transylvanian Deputies also made their first appearance in the Lower House. The debate on the Address in the Lower House was resumed on Tuesday, and, after a speech by M. Deak, the Address was unanimously adopted. The deputation of the Croatian Diet commissioned to present to the Emperor an address in reference to the union of Hungary and Croatia was expected at Pesth on Tuesday. The deputation was to be received by the Emperor on Thursday in the Castle of Buda.

ITALY.—In the sitting of the Chamber of Deputies on Thursday, Signor Minghetti made a speech in which he expressed his approval of the policy and financial proposals of the Ministry. He eulogised General Della Marmora's note to the Spanish Government, and ascribed to that Power a wish to change the nature of the September Convention. Alluding to the Roman question, he said :—

"The manner in which I believed concurrently to effect the [illegible] authority established by the withdrawal of the French troops from Rome, Italy has duly fulfilled. The obligations imposed upon her by the September Convention. As to the future composition of the [illegible] army, that the delegation recently made by the Imperial Government that the Spanish Island, the Italian Army should remain [illegible] against any intervention on the part of Italy in Rome. That should not be required to do but that the possession of the Church of Rome without French subjects does not imply the presence of the French flag."

Cardinal Antonelli has addressed a despatch to the Papal representatives abroad, wherein he communicates the views of the Roman Government on the manner in which the political, military, and financial position of the Holy See will be affected by the execution of the September Convention.

RUSSIA.—An official despatch has been addressed by Prince Gortschakoff to Cardinal Antonelli, announcing to the Papal Government that Russia has no intention of disavowing the sentiments recently expressed by Baron Meyendorff towards the Pope. Diplomatic relations are, therefore, completely broken off between Russia and the Holy See.

TURKEY.—Accounts from Constantinople state that Kibrisli Mehemet Pasha has been appointed to succeed Moustapha Pasha as Minister of Finance. On the 14th inst. Dervish Pasha left with troops for Tripoli. He was invested with the rank and powers of Extraordinary Commissioner for the pacification of the Lebanon. It was stated that the Turkish Government intended to institute proceedings against the builders of the iron-clad frigates recently constructed in England.

EGYPT.—The Sultan has telegraphed his approval of the Convention concluded between the Viceroy and the Suez Canal Company. The terms of the Convention will be given *in extenso* in the Imperial Firman, which will be issued as soon as the report of the Commissioners reaches Constantinople.

SYRIA.—Advices from Syria state that on the 31st ult. 4000 Turks attacked 1500 Maronites, commanded by Joseph Karam, at Benachey, five leagues from Tripoli. Karam repulsed three assaults, captured four guns, and made several prisoners. Emin Pasha (Baron Schwartzenburg) was nearly taken prisoner at the gates of Tripoli. Daoud Pasha was collecting reinforcements.

INDIA.—The disturbances on the North-West frontier have been settled satisfactorily without warfare, and the British forces assembled there have now been withdrawn. Affairs in Bhootan are unsatisfactory, and war is again probable. The Armstrong guns have not yet been returned, and the Gooroo Lama, who has returned from an unsuccessful mission to Toungsoo Penlow, states that that chieftain positively refuses to give them up, and has been constructing stockades, and otherwise strengthening his position against our arms, and against the Bhooteas, should they attempt to force him to comply with the terms of the treaty. The rumoured retirement of the Viceroy has been authoritatively contradicted. The Postmaster-General of India, among other improvements, is now arranging for a weekly mail with England. Sir Bartle Frere had presided at a public meeting for raising funds to complete the Victoria and Albert Museum. Nearly 4000*l.* was subscribed at the meeting. The Bombay Chamber of Commerce has petitioned Parliament for an inquiry into the working of the Indo-European Telegraph. The public health is satisfactory. The new cotton crop will be short by 400,000 bales.

CHINA.—A despatch from Hong-Kong of Feb. 1 mentions a report that a large rebel force is within 30 miles of Nunkan (Nankin ?)

JAPAN.—Intelligence from Japan states that Belgium is endeavouring to conclude a treaty with the Japanese Government.

AUSTRALIA.—A telegram from Melbourne of Jan. 25 states that the severe drought which prevailed has at length terminated, and rain has fallen over the whole continent.

NEW ZEALAND.—Accounts from New Zealand announce that General Chute had attacked and captured a large rebel pah. The war was virtually over, and the troops were leaving for England.

UNITED STATES.—The New York press universally express extreme satisfaction at the Emperor Napoleon's announcement of preparations for the withdrawal of the French troops from Mexico, which they regard as an augury of peace between France and the United States. The *New York Tribune* states that the Marquis de Montholon and Mr. Seward have had a final interview on Mexican affairs, at which it was positively understood that the Emperor Napoleon had ordered the withdrawal of all the French troops from Mexico, leaving Maximilian to his own resources. A delegation of coloured men has visited President Johnson, and urged upon him that, as the negroes are taxed, they should be allowed the right of suffrage and representation. In reply, the President declared himself to have always been the advocate of the negro, but he believed that the negroes in the South would not be benefited by enfranchisement; it would breed a war of races. The question was one for the people's decision, and it would be tyrannical for him to attempt to force it upon the people against their will. President Johnson thought the negroes would do better to emigrate than to remain crowded together in the South. The delegation respectfully expressed their non-concurrence in the President's views. They have since published an address to the President, controverting his opinions, and declaring them, besides, prejudicial to the interests of the negro. A delegation from Montana has visited the President to express satisfaction at his policy, to whom he replied that he intended to adhere to the doctrines expressed in his Annual Message, adding that he was not a candidate for re-election, desired no office, and could afford to do right. The Senate have passed the Freedmen's Bureau Bill as amended by the House of Representatives. The House of Representatives have passed a Bill extending the privileges of the Homestead Law to freedmen, and giving 80 acres of public land in Mississippi, Louisiana, Florida, or Arkansas to each settler, without distinction of colour, on payment of 5 dollars at the time of settlement. Over 10,000,000 acres have been appropriated to this purpose. A Bill has also been passed by the House of Representatives requiring foreign and non-resident holders of American railway bonds to pay taxes on their dividends. Both Houses have passed a Bill forbidding the re-issue of the American register to American vessels placed under foreign flags during the rebellion without special Congressional authority. The Federal Commission appointed to investigate the Bagdad affair have made their report, in which the blame in the matter is thrown upon General Crawford. The report also states that the Federal soldiers engaged in the affair were acting contrary to the orders given them, and that they were sent to Bagdad at the request of the Mexican Republican authorities to keep order. General Weitzel has arrived at New Orleans. He has stated that he did not think Mexico worth fighting for; and the American officers on the Rio Grande are represented as concurring in that opinion. Señor Mackenna (alleged to be the confidential agent of the Chilian Government) and Dr. Rogers have been arrested at New York, charged with preparing a military expedition against Spain, in violation of the neutrality laws. The grand jury have indicted them. At New York the police have arrested a man late at night with a waggon full of arms and ammunition. O'Mahony claimed the property as belonging to the Fenians, and the man, together with the arms and ammunition, was discharged.

CANADA.—The Canadian Commissioners have failed to agree with the United States Congressional Committee of Ways and Means on the terms of a new Reciprocity Treaty. It is supposed that the treaty expiring next month will not be prolonged. The Fenian alarm has abated at Toronto. Sweeny is said not to be in Canada.

MEXICO.—Despatches from the Rio Grande, published by the Havannah *Diario de la Marina*, assert positively that Bagdad was seized, sacked, and defended by Federal coloured troops, led by Federal officers, some of whose names it publishes.

CHILI AND PERU.—Intelligence from Panama to the 1st inst. announces that Peru had formed an offensive and defensive alliance with Chili, and declared war against Spain. Three Peruvian frigates and two corvettes had left to join the Chilian fleet, with orders to commence hostilities immediately. The Spaniards at Lima had been ordered not to leave the country, and to have their names registered for surveillance. The Peruvian Government had taken other precautions to have reprisals in hand in case the Spaniards take possession of any part of the coast or inflict other damage. The Spanish fleet had thoroughly blockaded Valparaiso, and an attack on the city was expected. It was hoped at Lima that the other South American Republics would join the alliance formed between Peru and Chili.

Parliament.

HOUSE OF LORDS.

FRIDAY.—*5 hours.*—In answer to the Earl of MARCH MONT, who thought that the National Life-boat Institution was inadequate to meet the demands upon it, and that the Government ought to take the duty upon itself, the Duke of SOMERSET bore testimony to the value of the National Life-boat Institution, and deprecated the idea that the Government should undertake a duty which was already so efficiently discharged by voluntary agency.—The Earl of TOWN called attention to the impediment offered to the beneficial working of the *Public Loans Act* by the Treasury minute of 1857, binding to require the interest below 4 per cent. But the Act of the Public Loan Act empowered the Treasury to fix the rate of interest, according to the value of money, but as great inconvenience was found to arise from the practice, it was decided to fix a leading rate and.—Lord LYVEDEN objected to any interference with the Government with the rate of interest. After the present rate of interest [illegible] was below the current value of the money employed [illegible] Public.—Lord TAUNTON asked whether cattle had been [illegible] into Ireland from Scotland; and if so, what steps had been taken to prevent such a proceeding. He also asked whether an Order in Council had been issued allowing sheep and lambs to be imported into Ireland under certain conditions.—Earl GRANVILLE replied that the disease communicated to Ireland was imported from Gloucester. The Lord Lieutenant, under the advice of Professor Simonds, the able and eminent veterinary surgeon, was adopting every possible measure to keep the cattle plague out of Ireland.

SATURDAY.—*Suspension of the Habeas Corpus Act in Ireland.*—The House met at 4 P.M., when the Habeas Corpus (Ireland) Suspension Bill was laid upon the table, and read a first time.—Lord DERBY then moved the suspension of the standing order in order that the Bill might pass through all its stages at that sitting. In [illegible] he expressed the [illegible] which the Government felt in [illegible] Parliament to depart from its usual practice, but the [illegible] necessity was great, and the step had been recommended by the experienced wisdom of the Irish Executive. The Fenian conspiracy, which had rendered this measure necessary, was notoriously directed to the overthrow of the Queen's authority, to the forcible transfer of property from the present possessors, and to the subversion of all religion. The conspiracy had been fomented and furnished with funds from the United States, where large numbers of persons of Irish birth and descent were settled, and the conclusion of the civil war in that country had set free a large number of reckless and desperate men, many of whom were now [illegible] as emissaries from the Fenian Brotherhood in America. The ordinary processes of law had been put in force by the Irish Government against a number of persons, and judges and juries had alike discharged their duties, but it had been found that other measures were required. The Lord-Lieutenant had deferred as long as possible any recommendation to depart from the constitution, but it had been found that the conspiracy was still spreading, that fresh emissaries from America were continually arriving, and that large sums of money were being sent over for the purpose of exciting rebellion, and therefore Lord Wodehouse had been compelled to acquaint the Government that without greater powers than he ordinarily possessed he could not be responsible for the peace of Ireland. The Government could not hesitate for a moment to act upon that declaration, and therefore, although with regret, they had now to ask the House to assent to this Bill, which would for a time suspend the operation of the Habeas Corpus Act in Ireland, and would enable the Lord-Lieutenant to arrest the foreign agents who were now industriously engaged in seeking to mislead the Irish people, and to seduce the Irish soldiers from their allegiance. The standing orders were then suspended, and, on the motion for reading the Bill a second time, the Earl of DERBY said that Ireland was at the present moment in a most perilous position, and it was not the time to ask the Government to enter on a special vindication of the step which they had taken. If the Bill were necessary, then it was also necessary that it should pass through all its stages without delay, and, therefore, he gave his cordial assent to the measure, at the same time abstaining from entering upon any consideration of the causes which have led to the present condition of Ireland. He could not, however, admit that the Fenian conspiracy was entirely due to the framing of the American war, because he knew that in 1859 the Phœnix conspiracy prevailed in Ireland, and had numerous branches in America. But the Government, upon their responsibility, having proposed this measure, and the House of Commons having pressed it with every insignificant majority of dissentients, he hoped their lordships would not hesitate to give their unanimous support. The Bill was then read a second time, and subsequently passed through all its stages. *The Irish Telegraphs.*—Lord STANLEY OF ALDERLEY laid

on the table a Bill to enable the Irish Government to take possession of telegraph lines in that country. The sitting was then suspended until the Royal assent could be procured to the Habeas Corpus Suspension (Ireland) Bill. On the House resuming at 11 o'clock, the *Derby Day Bill Act Bill* was read a first time, and notice was given that on Monday the suspension of the standing orders would be moved, in order to pass the Bill on that day. At 25 minutes to 1 o'clock the *Royal Assent* was given by Commissioners, and a quarter to 2 o'clock on Sunday morning.

MONDAY.—*The Irish Telegraphs.*—Lord STANLEY of ALDERLEY moved the second reading of the Telegraph Act Amendment Bill, the object of which is to confer upon the Lord Lieutenant of Ireland the same powers with respect to telegraphs which are possessed in this country by the Home Secretary. The motion was agreed to, and by a suspension of the standing orders the Bill passed through all its remaining stages in the House.—Earl GRANVILLE, in moving the second reading of the *Cattle Diseases Bill*, briefly explained its nature, and, in consideration of the importance and urgency of the occasion, invited their Lordships' concurrence with the House of Commons in this endeavour to meet the great emergency that had presented itself.—The Duke of BEDFORD objected to the unnecessary haste in introducing the measure, which, he thought, gave time to the House practically to consider the Bill.—Earl GRANVILLE again urged the necessity of immediate action.—The Earl of DALHOUSIE objected to the principle of indiscriminate slaughter as unjust to the farmer, and unnecessary in the present state of the public. If the second reading of the Bill were agreed to, he hoped that the Bill would follow the ordinary course in its future stages.—The Duke of MONTROSE also urged the necessity for a thorough discussion of the Bill, especially as another Bill which was to follow was the Bill of the Session, and more important.—After a few words from Earl GRANVILLE in reply, the Bill was read a second time. The standing orders were then suspended, and the House went into Committee upon the Bill. On the 4th clause the Duke of DEVONSHIRE proposed an amendment, the effect of which was to make provision for the commissioners of supply as the "local authority."—The Duke of ARGYLL explained that the commissioners of supply had been accepted because they were the only body in Scotland who were empowered to levy rates.—Earl GRANVILLE inquired whether the clause could be amended so as to dispense with the interference of the privileges of the Commons.—The Earl of DERBY, whilst complaining of the manner in which the Bill had been brought forward, deprecated any step that would be likely to raise a question of privilege between the two Houses of Parliament.—The Duke of MARLBOROUGH recommended that the amendment should be withdrawn.—The Duke of BUCCLEUCH withdrew the amendment.—On Clause 11., the Earl of AIRLIE said that the summary powers given by the clause would destroy all the animals which had recovered from the disease, and which were the most likely to be valuable for future breeding. He therefore moved an amendment, that where animals were certified by an inspector and justices to be recovering, it should be optional, and not compulsory, on the local authorities to direct the slaughter of such cattle.—Earl GRANVILLE said that he could not agree with to be taken in favour of the amendment, but as the Bill was only a temporary measure, designed to meet a temporary evil, he thought the fewer exceptions to its stringent execution that were made the better.—The Earl of DALHOUSIE supported the amendment, which was opposed by the Earl of CARNARVON and Lord SUDELEY of ALDERLEY in regard to the clause as too stringent.—The Duke of BUCCLEUCH also urged the necessity of granting some discretion to the local authorities.—Lord SPENCER pointed out the difficulty of distinguishing between possible cases of recovery and those which were beyond redemption, and it would be better to destroy all animals in which the seeds of disease might be latent after attack rather than to rely upon doubtful methods of cure, which might be successful in some cases and completely fail in others.—Lord MALMESBURY objected to the clause as too stringent.—Lord CARNARVON and the Marquis of BATH supported the amendment.—After some remarks by the Earl of DERBY on the differences of opinion which existed among members of the Government upon the merits of the clause, the House divided, when the amendment was negatived by a majority of 7 (the numbers were—Contents, 36; Not-Contents, 43). Some other amendments were then disposed of, after some discussion; but upon Clause 10, which had been postponed, the Earl of LICHFIELD moved an amendment requiring inspectors to state in writing their reasons before entering upon any premises. This amendment was negatived upon a division by a majority of one. The Bill was reported to the House and passed.

TUESDAY.—The Royal Assent was given by Commission to the *Cattle Diseases Bill*.—Earl GRANVILLE stated, in answer to Earl STANHOPE, that measures had been taken to secure more perfect and complete returns of the ravages of disease among the cattle plague.—The Earl of DERBY, having called attention to the Order in Council with respect to the *Small-pox amongst Sheep* in Northamptonshire, and inquired how far that disease had extended, Earl GRANVILLE said that the Government had only just heard of the renewal of the disease among sheep in that county, and that the Order in Council was at once issued, in the hope that it would be as successful as a similar order had been two months since. It was extremely doubtful how the disease had originated. *The Royal Family.*—Earl RUSSELL brought up Messages from Her Majesty and the House to concur in making adequate provision for the Princess Helena on her marriage, and also for Prince Alfred on attaining his majority. The Messages were ordered to be taken into consideration on Thursday.—Lord STANLEY of ALDERLEY, in moving the second reading of the *Art Bill*, explained that its object was to enable the trustees of works of art to lend them to the proposed National Portrait Exhibition in London and to the Paris Exhibition of 1867. After a brief conversation, which turned mainly on the possibility of injury being done to works of art by being lent as contemplated by the measure, the Bill was read a second time.

THURSDAY.—Viscount HALIFAX (Late Sir Charles Wood) took the oaths and his seat as a peer of Parliament. *The Royal Family.*—On the motion of Earl RUSSELL, addresses to her Majesty were agreed to, declaring the readiness of the House to concur with the Commons in making provision for the Princess Helena and Prince Alfred.—The *Sale of Land by Auction Bill*, and the *Art Bill* passed through committee. *The Cattle Plague.*—In reply to a question by the Duke of BUCCLEUCH, relative to the Order in Council now in force, discussing the Duke of ARGYLL said that as there was some doubt whether the Cattle Plague Bill of Mr. Ward Hunt, now in the House of Commons, could be passed into law before the 1st of March, a dangerous interregnum might occur with regard to the powers of the local authorities, to obviate which it might be necessary to renew the Order in Council.—Lord RUTLANDE expressed his opinion that it would be absolutely impossible to pass the Bill.

FRIDAY.—*The Cattle Plague.*—In answer to the Earl of DERBY, Earl GRANVILLE said that the Government did not intend to take charge of Mr. Walpole's Bill, but would give every facility to its passing through the House.—In reply to Lord WHARNCLIFFE, Earl GRANVILLE said the words of the Cattle Plague Act would not authorise the local authorities to apply the county rate to the payment of rewards for the information so illegally removed. In reply to the Earl of ARGYLL he stated that the Royal Commissioners appointed by the Government were making experiments on the Warsaw mode of treatment by chalybeate waters.

HOUSE OF COMMONS.

FRIDAY.—*Cattle Plague Bill.*—The House went into committee on this Bill, when Sir G. GREY consented to divide the measure into two separate Bills, the one to apply to compulsory slaughter, compensation, and the summary powers to move cattle by railway, and the other to empower more permanent provisions in a separate Bill. To give effect to this arrangement clauses from 22 to 30 inclusive were struck out. On Clause 31.—expenses of local authority.—Mr. AYRTON objected to one-third of the expenses of the Bill being levied on the rate, and said that the whole sum should be raised from the local rates.—Mr. J. S. MILL concurred that farmers, in the long run, would suffer only in their capacity as consumers, and in consequence of the rise in prices would suffer no more than any other class of consumers. It would be a great hardship to the consumers if they were called on to pay a rate to compensate the producers for a loss which would ultimately be made good by the natural course of trade. He maintained that the producers would not suffer as a class, but only as individuals by the unequal manner in which the loss fell, and that consequently, the only part of the clause which he approved was the rate on cattle.—Mr. B. COCHRANE and Sir J. PAKINGTON thought that a portion of the compensation ought to be thrown upon the Consolidated Fund.—The CHANCELLOR of the EXCHEQUER pointed out that the question resolved itself into a consideration of how those who were infected had not a special interest in the means used for checking the cattle plague, and therefore a duty in contributing in a greater degree and more directly than the inhabitants of districts which were exempt from the effects of the plague. As to the suggestion that the Consolidated Fund should contribute, he would feel bound to resist it to the last.—Mr. LOWE said that Mr. Mill's argument as to the ultimate incidence of the loss on the consumer was based on the fallacy that this was a fall to indemnify for losses, and not an object of this part of the measure, which was an inducement to the farmer to disclose the existence of disease among his cattle. He asked Mr. Mill to mention a case in which producers had been indemnified for a great calamity of this kind by a rise in price, and reminded him that English cattle grazed on Irish land had no competition in foreign imports. But, admitting formidable competition in foreign imports, he contended that the argument was sound. He contended that the consumers were not absolved from making every effort to avert a great national emergency. He showed the difficulty of levying a cattle rate on a temporary emergency, and urged the advantage of using the existing machinery in the county rate.—In Mr. MILL'S remarks in reply, and after a short discussion, Sir G. GREY intimated that the Government, seeing the feeling of the House, would give up their proposal of a cattle rate. The clause was amended to this effect and agreed to.—On clause 50, which gives a discretion to the Privy Council to slaughter cattle, a long discussion was raised by a proviso, proposed by Mr. H. VIVIAN, which was ultimately agreed to, with amendments, and which suspends the prohibition in large districts having well defined boundaries, and declared by the Privy Council free from the disease.—Mr. MILL moved to omit the words which made orders to prevent the introduction of diseased cattle, and to regulate the movement of cattle within those districts.—On clause 14, which allows cattle moved from one part to another of the same farm to pass along a high road for a distance of not more than 2 miles, carried an amendment, by a majority of 146 to 56 votes, allowing them to travel any further distances under a licence, and on the suggestion of Lord CRANBORNE the further distance was limited to two miles. The discussion of the first 27 clauses, some of which, however, were postponed, occupied the House until nearly 2 o'clock, when the House resumed to report next morning. The *National Debt Reduction Bill* and the *Savings Banks and Post Office Savings Banks Bill* passed through Committee.

TUESDAY.—*Election Petitions.*—Petitions were presented complaining of undue returns for Galway, Limerick, Beverley, Bandonshire, Lewes, Harwich, West Norfolk, Banbury, King's Lynn, Frome, Canterbury, Londonderry, Portsmouth, Barnstaple, Tipperary, and the North Riding of Yorkshire. *Indian Redemption.*—In reply to Mr. GIBBS, Mr. STANSFELD said that it was not the intention of the Government to introduce the Labore Bishopric Bill.—In answer to questions from Sir R. PEEL and Mr. LOWE, the CHANCELLOR of the EXCHEQUER said it was not in contemplation to grant any new charter or constitution to the *Queen's Colleges in Ireland*; and that, with respect to any changes in the Queen's Universities, such as had already been indicated and explained by the Secretary for the Home Department, Sir R. PEEL complained that the Chancellor was not sufficiently frank and explicit in the answer which he had given. *Palace of Justice.*—In reply to Mr. C. FORTESCUE, the CHANCELLOR of the EXCHEQUER said that those who had been invited to compete for a design for the new courts of law were Messrs Scott, R.A., Barry, Street, Waterhouse, Wyatt, and Hardwick. *Proposed Buildings at South Kensington.*—In reply to Mr. BENTINCK, the CHANCELLOR of the EXCHEQUER stated that it was not the intention of the Government to submit votes to Parliament, one for a building to be erected on the vacant ground at South Kensington for the reception of a portion of the contents of the British Museum, and another for the erection of a Patent Office in the same neighbourhood. *The Royal Family.*—The CHANCELLOR of the EXCHEQUER brought up two messages from the Queen, inviting the House to make provision for the Princess Helena on her approaching marriage, and for Prince Alfred on his coming of age. He gave notice that he would ask the House to consider the messages on Thursday. *Abatement to Lord Palmerston.*—The CHANCELLOR of the EXCHEQUER gave notice that he would on Thursday move an address to the Crown requesting her Majesty to give directions for the erection of a monument in Westminster Abbey to record the great public services of Lord Palmerston.—Leave was given to Mr. DARBY GRIFFITH to bring in a Bill to enable the *Postmaster General* to sit in the House of Commons, and to Mr. WHALLEY to introduce a Bill to provide for the maintenance of the *Turnpike Roads of England and Wales* as public highways, and for the discharge of the debts due thereon by voluntary commutation.—Mr. M'C. TORRENS moved for leave to bring in a Bill to provide *Better Dwellings for Artisans and Labourers*, by authorising the Public Works Commissioners to advance funds to those large towns where, disease and overcrowding abounded, to enable the parishes to erect improved dwellings, to be secured on

the table.—The motion was seconded by Mr LOCKE, and supported by Mr KINNAIRD.—Mr. CHILDERS, on behalf of the Government, replied to the motion, leave was given to bring in the Bill. Mr. CLAY moved for leave to introduce a Bill to abolish the 10*l.* Franchise for cities and boroughs in England and Wales, by the creation of an *Educational Qualification*. He proposed that every man of full age should have the right to acquire himself to be examined before the Civil Service Commissioners, and on such examination being passed before them, should receive a certificate which would entitle him to the exercise of the franchise. The subject of examination would be reading, writing, spelling, and the four rules of arithmetic.—Mr. ARMSTRONG seconded the motion, contending that the Bill, if passed into law, would have the effect of admitting the *élite* of the working classes to the possession of the franchise, whilst at the same time it would not let in an overwhelming majority to counterbalance the superior claims of education and property.—Lord ELCHO approved of the intellectual test which Mr. Clay proposed to supply, and described his Bill as far more intelligible and practical than the scheme of Mr. Baines.—Mr. HADFIELD hoped that some one on the Treasury bench would state what were the views of the Government on the subject of reform, for which the leaders of the Radical party, with Mr. Bright at their head, had exhibited so much indifference, after all the pro-reform clamour with which their names were associated out of doors. Mr. Bright, for instance, so far from exploding at the ordinary manner in which reform had been treated in the Queen's Speech, had remained perfectly reticent on the subject. He had exploded on Jamaica and the cattle plague, and had gone off at half-cock on Ireland, but he had not a single word to say on the subject of reform. In fact, it seemed as if the advanced reformers in the House had been completely put by passage in the Queen's Speech. The present Bill, in his opinion, was infinitely superior to that of Earl Russell, whose only idea of reform appeared to be to get a House of Commons elected by a mob.—The CHANCELLOR of the EXCHEQUER denied that the Government were responsible for delay, and said he should probably be able in a few days to say when the information they were collecting would be laid before the House. Meanwhile he flattered himself that on the subject of the proposed Bill, neither his admiration for his hon. friend's abilities, the curiosity of the House, nor the ingenuity of the plan, would be sufficiently potent to extract from him a single particle of information. The motion for leave to bring in the Bill was then agreed to.—In committee of the whole House, leave was given to Mr BOUVERIE to bring in a Bill to repeal certain portions of the Act 9 & 10 Vict. c. 74, "For Regulating the Importation of Beasts, Sheep, and Cattle, and Preventing the Spreading of Contagious Diseases." The Bill to amend the Law relating to the *Expenses of Prosecutions*, and to make provision for expenses in *Criminal Informations and Appeals*, was also read a third time and passed.—The *Select Committee on Fisheries* was nominated at the instance of Sir J. Pakington. The House having resumed in committee the consideration of the *Cattle Plague Bill* of Mr Ward Hunt, a number of clauses were agreed to, which others were postponed. The Bill was then reported to the House and passed.

WEDNESDAY.—*Mr. Wards* were ordered for Everton, Brecknock, South Lincolnshire, the City of London, the County of Limerick, Sunderland, Ripon, and Leominster.—Mr. GLADSTONE HAMO intimated that, having been returned for the City and County of Dublin, as well as for Limerick, he had elected to sit for the University. *The Cattle Plague.*—Sir B. BENNET asked the Secretary for the Home Department what, if any, was the intention of the Government to recommend the appointment of a day for national fast and humiliation in consequence of the cattle plague.—Sir G. GREY said that the Government adhered to the opinion which they had already expressed on the subject in the letter which he had addressed to the Archbishop of Canterbury.—Sir C. O'LOGHLEN moved the second reading of the *Juries in Criminal Cases Bill*, and explained that his object was to empower the Crown to change juries in criminal cases when it seemed unreasonable to expect that they would agree to exercise so unfair a power as to take talesmen during a trial, and also to take verdicts on Sunday.—The motion was seconded by Mr NEATE, supported by Mr WARD, and opposed by Mr HENNESSY and Mr. Serjeant GUBBINS. It was ultimately agreed to postpone the further consideration of the subject until after the Court of Error had given its judgment in the case of Charlotte Winsor, now pending. The *Telegraph Act Amendment Bill* passed through committee.

THURSDAY.—The *London (City) Traffic Regulations Bill*, after some discussion, was read a second time, on the understanding that it should be referred to a Select Committee of 12 members, five to be named by the Committee of Selection. *The Royal Family.*—The House went into Committee on the Messages from her Majesty with respect to the establishment of Prince Alfred and Princess Helena.—The CHANCELLOR of the EXCHEQUER reminded the House of the contract between Parliament and the Sovereign at each accession, which, while it included all the expenses of the training of a family, did not include provision for the members of the Royal family as they came of age and went out into the world. In the case of Princess Helena, who, he said, even at her early age had been the life and stay of her Royal mother under her heavy bereavement, it was proposed to follow the precedent of Princess Alice, and to ask the House to grant to the Princess an annuity of 1000*l.*, and a dowry of 30000*l.*, to be settled as her Majesty might direct. He proposed, further, that the House should vote an annuity of 6000*l.* to Prince Alfred, and intimated that contingencies might arise, either on the Prince attaining a proper age or where, to some extent independent of this country, or on the event of his marriage, which would make it necessary to review this arrangement.—Mr. DISRAELI considered that the proposals of the Government were wise and well-considered, and congratulated the House on this fresh opportunity of testifying to her Majesty the respect and affection of her grateful and devoted people.—Mr. BOUVERIE, referring to the contingency mentioned by the Chancellor of the Exchequer, suggested that it would be desirable to ask the Prince, if not unless embarrassing to future Parliaments, if it were now distinctly provided that the annuity should be absolute, or that it should cease when he succeeded to the Duchy of Saxe-Coburg-Gotha. He would rather see the grant absolute than the Prince placed in the invidious position of having the question raised on her.after.—Mr. HADFIELD asked whether the annuity would be inalienable.—The CHANCELLOR of the EXCHEQUER replied that it would be settled on such conditions as her Majesty should direct. It would be impossible to define absolutely the contingency in which the cessation should take place, but suggested that he should wait to see the Bill.—After some remarks by Sir G. BOWYER, the resolutions were agreed to, and ordered to be reported. *Mr. Ward's Bill Postponed.*—The consideration of the EXCHEQUER moved an address to her Majesty praying that a monument be erected in Westminster Abbey to the memory of Lord Palmerston. In this case, he said, a monument would be a tribute not of a Ministry or a party, but of Parliament and the nation. He referred to the precedents of the two Pitts and Perceval, and touched on the principal points in Lord Palmerston's career, particularly on his connection with the extension of constitutional liberty on the Continent, and his deep and unfailing interest in the suppression of the slave trade. He eulogised his genial temper, which was incapable of enduring anger, his courage, his tact, and ingenuity, and his old English delight in a good stand-up fight. He remarked that though his Parliamentary successes were not due to mere rhetorical skill, his great speech in 1850 showed that he was capable of rising to the highest pitch of Parliamentary eloquence, and concluded by expressing a conviction that as Lord Palmerston had been rewarded for his long labours by the attachment and trust of all classes of the people, so this proposal to perpetuate his memory would meet with the enthusiastic support of all parties.—Mr. DISRAELI, in seconding the motion, expressed the cordiality with which his side of the House concurred in the proposal to honour a statesman who had left behind him, not merely the memory of great achievements, but the wide influence of personal affection and social charm.—Mr B. HALL hoped that the proposed monument would be worthy as a work of art of the man and of the building in which it was to be placed.—Sir J. PAKINGTON hoped that its completion would not be delayed so long as that voted 13 years ago to the Duke of Wellington. The resolution was then agreed to.—On the second reading of the *Jamaica Government Bill*, Sir J. PAKINGTON pressed the House not to enter on this occasion into a discussion on the recent events in Jamaica. He concurred in the Bill, though he lamented the necessity for so retrograde a step.—After some remarks by Mr. HADFIELD, Mr. CRUM-EWING, and Colonel EDWARDES, Mr. CARDWELL said that though the Bill was but temporary in its operation, he did not anticipate that the House, when in possession of full information, would feel disposed to revert to the old form of government. The Bill was then read a second time.—Mr. Hunt's *Cattle Plague Bill* passed through Committee with the addition of many new clauses and with several amendments, including one moved by Mr. AYRTON to allow the movement of imported cattle within the metropolitan district, which was carried on a division by 156 to 107. The *Metropolitan Poor Rates Bill* was read a third time and passed.

FRIDAY. *Business of State.*—In answer to Sir J. WALSH, Mr. BRUCE said that the attention of Government had been drawn to the appearance of a new disease in swine, which rendered the flesh poisonous and dangerous to human life, and that a report had been made on the subject. *The Queen's University in Ireland.*—In answer to Sir R. PEEL and Mr. LOWE, the CHANCELLOR of the EXCHEQUER said that the Government intended to advise the Crown to make certain alterations in the Charter of the Queen's University, on their own responsibility, without first consulting the House. [Left sitting.]

City Intelligence.

BANK RATE OF DISCOUNT.—The Bank of England on Thursday reduced their rate of discount from 8 per cent., at which it was fixed seven weeks ago, to 7 per cent.

MONEY MARKET, FRIDAY. — BRITISH FUNDS: Consols closed at 87½ to ⅝ for Money, and 87⅝ to ¾ for the Account (March 8th).—FOREIGN: Greek, 1¼ to 1; Mexican, 23½ to ¾; Spanish Passive, 27¼ to ½; Ditto Certificates, 16⅝ to ¾; Turkish, 1865, 38½ to ⅝; Brazilian Scrip, 2 to 1 pm.; Egyptian Scrip, 1 to 1¼ pm.; Italian, 1861, 60⅜ to ⅝.

Bank of England.

ISSUE DEPARTMENT.

Notes issued	£37,670,000	Government Debt	£11,015,100
		Other Securities	281,800
		Gold Coin and Bullion	12,371,100
		Silver Bullion	—
	£37,670,000		£37,670,000

BANKING DEPARTMENT.

Proprietors Capital	£14,553,000	Government Securities (including Dead Weight Annuity)	£9,015,100
Rest	2,992,087	Other Securities	18,586,800
Public Deposits (including Exchequer, Savings Banks, Commissioners of National Debt, and Dividend Accts.)	5,615,777	Notes	7,460,160
Other Deposits	12,991,191	Gold and Silver Coin	881,249
Seven Days and other bills	15,783		
	£36,148,838		£36,148,838

Feb. 22, 1866. W. MILLER, Chief Cashier.

Metropolis and its Vicinity.

NATIONAL GALLERY.—Mr. Layard, M.P., has been appointed a Trustee of the National Gallery. The report of the Trustees for the past year has just been published. It states that in Sir C. Eastlake's last journey to the continent with the view of acquiring further examples for the national collection, there was purchased, with the concurrence of the trustees and the Treasury, an altar-piece by Vittore Carpaccio, representing a Doge of the Moreninго family kneeling before the Virgin and Child enthroned, to whom he is presented by John the Baptist; on the right hand of the Virgin is St. Christopher, with his staff, supporting the infant Christ. The figures are nearly life-sized. The price was 3400*l.* But the chief purchase of the year was Raphael's "Virgin and Child and St. John," formerly known as the Aldobrandini Raphael, now called the Garvagh Raphael, purchased from the Garvagh family for 9000*l.*; the "A Dead Warrior," ascribed to Velasquez; a portrait of Philip IV. of Spain, a landscape by Ruysdael, and some other purchases, were also added to the collection in 1865; and the year witnessed the arrival at South Kensington of Mr. Jacob Bell's bequests, the "Horse Fair" and the "Derby Day." Mr. Watson presented to the gallery the portrait of Sir D. Brewster, by the donor's brother, Sir J. W. Gordon. The work of repairing and varnishing damaged pictures, and protecting with glass, was carried on successfully during the year, and five early German pictures lent to the Department of Science and Art at South Kensington having become greatly blistered, were safely transferred from wood to canvas and repaired. The number of visitors to the Gallery, which is shown to the public four days in the week, was 694,854 during the year; and the number at South Kensington, which is open six days in the week and three evenings, was 692,900. In 1864 the numbers were 713,300 and 653,069. More than 16,000*l.* was expended last year in purchases, above half the amount being derived from savings from former grants. It appears that Sir C. Eastlake's last purchase was a picture of the "Virgin and Child," ascribed to Giovanni Santi, the father of Raphael, purchased for 120*l.* in November last, from Signor Gualandi, of Bologna; it is painted in *tempera* on wood.

DECAY OF THE PICTURES AT SOUTH KENSINGTON.—A commission, consisting of Professor Graham (Master of the Mint), Professor Tyndall, Dr. Percy, Dr. Franklin, Colonel Scott, R.E., and Captain Donelly, R.E., has been appointed to inquire into the cracking and gradual destruction of the pictures in the South Kensington Museum. The committee seek evidence from all possessors of pictures and others competent to give it.

GROSVENOR PLACE IMPROVEMENTS.—The important alterations involving the demolition of Messrs. Tattersall's old establishment and numerous private residences at Grosvenor Place are being carried out with energy. On Monday three family mansions in the locality were disposed of by auction, the extensive area they occupy being required for the immediate purposes of the projected improvements.

THE LOSS OF THE LONDON.—Captain Daniel Price, the master of the ship Courier, of Newport, has made a sworn declaration as to the vessel he saw in distress in the Bay of Biscay on the 10th ult. From his description there is no doubt that the vessel was the London. He describes her wrecked condition and the way she laboured in the sea, but says that no signal of distress was flying. He lost sight of her as night came on.

LAUNCH OF THE CIGAR SHIP.—One of the most extraordinary vessels that were ever launched on the Thames, not even excepting the Great Eastern or the Minotaur, was launched on Monday from the building yard of Mr. Hepworth, at the Isle of Dogs. She is called the cigar ship from being built in the form of an immensely long and perfectly round cigar, the two ends, however, being finely pointed at both ends, instead of only one end as in a cigar. She is constructed of wrought iron, from the designs and at the cost of Mr. Winan, an American gentleman, who intends to use her as his private yacht. An immense number of persons assembled to witness the launch, and in a few weeks more she will be ready for sea, when some most important and interesting experiments will be made as to her speed and seagoing capabilities.

THE PUBLIC HEALTH.—The Registrar-General's Weekly Return states that in the week that ended on Saturday, Feb. 17, the births registered in London and 12 other large towns of the United Kingdom were 4459; the deaths registered, 3301. The annual rate of mortality was 28 per 1000 persons living, being 23 per 1000 in London, 28 in Edinburgh, 29 in Dublin, 27 in Bristol, 32 in Birmingham, 44 in Liverpool, 34 in Manchester, 31 in Salford, 31 in Sheffield, 38 in Leeds, 26 in Hull, 31 in Newcastle-on-Tyne, and 30 in Glasgow. The rate in Vienna was 44 per 1000 during the week ending the 10th inst. In London the births of 1069 boys and 1024 girls, in all 2093 children, were registered in the week. In the corresponding weeks of the 10 years 1856-65, the average number, corrected for increase of population, was 2132. The deaths registered in London during the week were 1365. In the corresponding week of the 10 years the average number, corrected for increase of population, was 1467. The present return is therefore 102 below the average.

Provincial.

AYLESBURY.—On Friday night the family vault of the Duke of Buckingham, at Wootton Church, was broken open, and a sword with a silver hilt, an engraved steel blade, an embossed scabbard, and some silver coffin ornaments, were stolen.

CAMBRIDGE.—At a Congregation held on Thursday the grace for allowing the use of a lecture-room for the admission of a lecturer from Harvard University to deliver lectures on American history, institutions, and literature, on the terms proposed by Mr. S. Y. Thompson, of Trinity, was rejected by the Senate by 107 votes to 81. A great many non-residents came up to vote. The strength of the opposition seemed to be mainly due to a fear lest the lectures should be made a means of diffusing Unitarian opinions.

OXFORD.—The Earl of Derby, as Chancellor of the University, has nominated the Rev. Henry Hubert Cornish, M.A., of Magdalen Hall, to be Principal of New Inn Hall, vacant by the death of Dr. Wellesley.

STRATFORD-ON-AVON.—A few days since some labourers employed in getting gravel on the farm at Milcote, occupied by Mr. J. C. Atkins, discovered an immense number of skeletons in an excellent state of preservation. Their appearance suggests either that a great battle must have been fought upon or near the spot in some remote age, or that the persons there buried died of some great plague at or near the same time. The bodies were laid in pretty regular order, with the heads to the west, and it is calculated that the ground contains upwards of 3000 of them. They lie at only 18 inches below the surface of the soil. The skeletons are

those of men, women, and children, the ages ranging from 6 to extreme old age. No crockery, flints, or warlike implements were found among the bones, nor did any of the skulls show any mark of violence.

Ireland.

DESPATCH OF TROOPS TO IRELAND.—On Monday afternoon an order was issued directing the 1st Battalion of the Coldstream Guards to proceed without delay to Ireland. No time was lost in making preparations for departure, and they left London on Tuesday night, and embarked at Liverpool on Wednesday. The battalion consisted of 20 officers and 513 rank and file. The 85th Regiment, collected from Manchester, Chester, Newcastle, and Tynemouth, also embarked at Liverpool on Wednesday. The regiment mustered 24 officers and 743 rank and file. The Carabineers, from Hounslow, have begun their march, and will also embark for Ireland. The 75th Regiment, at Gosport, and the 92d Highlanders, at Aldershot, have been under orders for Ireland for some days past; and another Line regiment—probably the 1st battalion 6th Foot, now in the Channel Islands—will proceed to the same destination. It is said that the arrival of the military has given a sense of relief to the smaller towns, where there was previously no garrison whatever.

ARRESTS OF SUSPECTED PERSONS.—On Saturday, before the intention of the Government to suspend the Habeas Corpus Act was known, upwards of 100 American Fenians were arrested in Dublin, and numerous others took to flight. Additional arrests were made on Sunday and Monday, including Vice Head Centre M'Donnell, and Austen O'Mealy, paymaster of the Fenian agents in Dublin. Numerous arrests have been made in Athlone, Limerick, Cork, Drogheda, and other provincial towns. Many of those arrested are from England, and belong to London, Greenwich, Sheffield, Oldham, Ashton-under-Lyne, Liverpool, and Hartlepool. Among the others arrested the following were officers in the American army:—Captain D. J. Mykins, 107th Regiment; Captain E. J. O'Doherty, aide-de-camp to General Owen, Brigadier-General Gleeson, and his brother Captain Gleeson. At Limerick four non-commissioned officers have been arrested on a charge of Fenianism. A man named O'Neill, alleged to be the Centre of Belfast, has been arrested in that city. Warrants were despatched on Wednesday to Liverpool with a strong force of detectives for the apprehension of Fenians who fled to that port on Saturday. On Thursday night the police arrested in a public-house at Dublin 18 persons, including 12 soldiers belonging to the 60th Rifles, 61st Regiment, and the 5th Dragoons. Four of the civilians were armed with revolvers, and two are "Centres." A detachment of the 8th Regiment assisted in the arrest. The *Freeman* of Thursday says that the capture of Stephens is now spoken of, as if some clue had been received and the rewards offered were doing their work.

FLIGHT OF FENIANS.—There was a rapid migration of strangers from Dublin on Monday, and the familiar Yankee hat and beard suddenly vanished. Those who ventured to remain sacrificed their beards, and the barbers had some hours' hard work. By the steamers which arrived on Saturday night and Sunday morning at Liverpool, a large number of well-dressed and able-bodied men arrived from Ireland. They were all Fenians, who, affrighted at the measures adopted in Ireland, had thought it most prudent to decamp. Some have since taken passage for America, others remain in Liverpool and its neighbourhood.

FIRING ON THE POLICE.—On Saturday night a body of armed Fenians, assembled for drill in a house at Cullen, near Oula, in Tipperary, fired repeatedly on a patrol of police, and shot one of the constables, who has since died of his wounds. Among the Fenians was a private of the 17th Regiment on furlough. The Fenians fled, but most of them are known, and some have already been arrested. On Wednesday, in Newcastle, county Limerick, Head Constable O'Sullivan was shot by a man named Geary, whom he was in the act of arresting. Geary escaped, and it is reported that O'Sullivan, who was wounded in the shoulder and body, has died of his wounds. The report that the guard of a mail train had been fired at while passing through Capel Street, but was not wounded, and that a large force, with artillery, was sent south on Sunday on account of riotous disturbances, was without foundation.

SEIZURE OF ARMS.—On Wednesday the police discovered in a house in a lane off Dame Street, 142 pikes completed, and about 36 pike handles in a rough state. The place seemed to have been deserted for some days. A regular workshop was attached to it.

THE COURTS MARTIAL ON FENIAN SOLDIERS.—The Courts Martial at Cork have been sitting for some days, but the results will not be made known until they have been submitted to head-quarters. The trial of Private Rose, on the charge of having told a police-constable that he was a Fenian, and that Irish soldiers, if an insurrection should occur, would never fire upon the people, terminated on Wednesday. At the trial of Sergeant Darrah, of the 2d Regiment, on Thursday, evidence was given that he was a sworn Fenian, and was told by the Head Centre that all commanders in garrison were to be destroyed when the rising took place, and that all soldiers not joining in the rising were to be destroyed.

THE SPECIAL COMMISSION, which was adjourned to Monday, not being reopened, has ceased to exist. Another Commission will be appointed after the assizes.

ATTEMPTED ASSASSINATION.—On Saturday night Mr. Byers, the owner of a public-house at Glasnevin, was quietly sitting in his parlour talking to a policeman off duty, when a car drove rapidly to the door. He heard the well-known voice of a customer, Mr. Joseph T. Sutcliffe, a clerk in Balls' banking-house, asking for 1*s.* to pay the fare, and in another minute or two Mr. Sutcliffe stood beside him, pulled a revolver from his breast-pocket, and shot him in the neck. He was taken before the magistrate on Monday, charged with shooting Mr. Byers, but was remanded, as the latter is not out of danger. The prisoner alleges that he did not know the pistol was charged.

GREAT WILL CASE.—The Irish Court of Probate has been occupied for more than 20 days with a will case, in which Sir Augustine Fitzgerald sought to invalidate the will of Sir Edward Fitzgerald, the late baronet, on the ground of mental imbecility and undue influence on the part of Lady Fitzgerald his widow. On Friday the jury, after 10 minutes' deliberation, returned a verdict finding the will invalid, owing to incapacity and undue influence.

Railways.

ACCIDENT ON THE NORTH-WESTERN.—The Preston branch of the London train, which left town at 5 P.M. on Thursday, ran into a disabled engine attached to a goods train a short distance from Preston station. Two passengers were slightly injured. The mails for Scotland and the North were much delayed by the accident.

Obituary.

THE COUNTESS DOWAGER OF CAWDOR died on the 16th inst., after a lingering illness, at her residence in Tybuy Street. She was the eldest daughter of the second Marquis of Bath; sister of the Rev. Lord John Thynne, D.D., canon and subdean of Westminster, the Duchess of Buccleuch, and Lord Edward Thynne; and aunt of the present Marquis of Bath. She was born in 1793, and married in 1810 the late Earl of Cawdor, by whom she had John Frederick, the present earl; Lady Emily, married to the Hon. Octavius Duncombe, M.P.; Lady Georgiana, married to Mr. John Balfour, of Balbirnie, the Hon. and Rev. Archibald G. Campbell, rector of Knipton, Leicestershire; and Captain the Hon. Henry Campbell.

THE EARL OF KINNOUL died on the 18th inst. at St. Clair, Torquay, where he had been residing for the last six months. He was born in 1785, and was consequently in his 81st year. He succeeded to the earldom on the death of his father in 1804, and married in 1808 the second daughter of the late Admiral Sir C. Rowley, G.C.B. By that lady, who survives him, he leaves issue, Lady Louisa, married to Sir T. Moncrieffe; Lady Frances, married to Mr. R. Lloyd; Lady Elizabeth, married to Sir F. Arthur; and Lady Augusta, married to the Hon. J. F. D. Hay; and three sons—George, Viscount Dupplin, Captain Arthur Hay, R.N., and Colonel the Hon. Charles Rowley Hay, late of the Scots Fusilier Guards. The late Earl was Lord-Lieutenant of Perthshire, and up to 1855 was colonel of the Perthshire Militia. He filled the high post of Lord Lyon King of Arms in Scotland, an office equivalent to that of Earl Marshal in England. In politics he was a Conservative, but of late years has been incapacitated by mental infirmity from taking any part in public affairs. He is succeeded in the title by his eldest son Viscount Duppiin, born in 1827, married in 1853 to Margaret Harriet, third daughter of the seventh Duke of Beaufort, by whom he has three sons and two daughters. He was formerly in the 1st Life Guards, but he retired in 1856, and since leaving the army he has principally lived with his family at Dupplin Castle, Perthshire.

THE EARL OF DONOUGHMORE died on Thursday, after a protracted illness. He was born in 1825, and married in 1847 the Hon. Margaret, eldest daughter and co-heir of Mr. Walter Steele, of Moynalty, county Monaghan. He was a Conservative in politics, and occasionally took part in Irish debates in the House of Lords. The late Lord Donoughmore Administration he was Vice-President of the Board of Trade, when he was made a Privy Councillor, and was President of the Board of Trade from February to June, 1859. He was also Lieutenant-Colonel of the Tipperary Militia. He is succeeded in his title and estates in Ireland by his eldest son, John Luke George, Viscount Suirdale, born in 1848.

VISCOUNT CLIFDEN died on Tuesday at Dover House, Whitehall, in his 41st year. The late Right Hon. Henry Agar-Ellis, Viscount and Baron Clifden, of Gowran, in the peerage of Ireland; Baron Mendip and Baron Dover in the peerage of Great Britain, was the eldest son of the Hon. George James Welbore Agar-Ellis, by Lady Georgiana Howard, daughter of the sixth Earl of Carlisle. His father, the late Lord Dover, was a man of great promise, and his premature death in 1833 was considered by his political and literary friends a great loss to the country. Viscount Clifden was for some years a minor, and on reaching his majority he devoted himself to the Turf. For a time he had one of the largest and most successful studs belonging to any member in the Jockey Club, and his success for a time was very great. He achieved the double victory of the Derby and St. Leger with Surpilice in 1848, won the Steward's Cup at Goodwood, the Ascot Stakes in 1850, the Liverpool Cup in 1851, and the Great Northamptonshire Stakes in 1852. He expended a princely sum in supporting his racing stable; and a large accumulated fortune vanished in a few years in his connection with the Turf. On his marriage in 1861 he broke up his racing establishment and devoted himself to home pursuits. His Lordship was born in 1825, and married in 1861, the eldest daughter of Mr. and Lady Augusta Seymour, by whom he has a twin-daughter surviving, and a son, the heir apparent to the family honours, born in 1864. Shortly after the birth of his son and heir unmistakable symptoms of weakness of constitution manifested themselves. His illness at once excited alarm, and it was soon found by his medical attendants that softening of the brain had set in. Latterly his disease became a confirmed malady. On Monday a change occurred, which ended in his death in the course of a few hours.

THE HON. JOHN CHARLES DUNDAS, M.P. for Richmond, died at Nice on the 14th inst., in his 58th year. He was the second surviving son of the first Earl of Zetland, and his presumptive heir was the late Earl. He was born in 1808, educated at Trinity College, Cambridge, and called to the bar of the Middle Temple in 1834. He had been Lord Lieutenant of Orkney and Zetland since 1839. From 1840 till 1857 he represented Richmond in the House of Commons, when in the latter year he was elected for York, but at the general election in 1857 he again presented himself for the family borough of Richmond, for which he was returned, and continued its member till his death. He married in 1843 the eldest daughter of Mr. James Talbot, of Maryville, Wexford, by whom he leaves a numerous family.

THE HON. MAURICE R. WINGFIELD died at St. Leonards-on-Sea on the 14th inst., after a short illness. He was the brother and heir-presumptive of Viscount Powerscourt, and second son of the Marchioness of Londonderry by her first marriage. He was formerly in the navy, but abandoned the service and joined the 1st Life Guards as cornet in 1861. He was born in 1839, and was consequently in his 27th year.

THE REV. SIR JOHN PAGE WOOD, BART., Rector of St. Peter's, Cornhill and Vicar of Cressing, died on Wednesday last at Hollins, Essex, the seat of his son-in-law, Sir Thomas Leonard, after a long and lingering illness. He was the eldest son of Alderman Sir Matthew Wood, who was twice Lord Mayor, and M.P. for the City of London in nine successive Parliaments. He was born at Stoneleigh, Surrey, in 1796. For some time he acted as secretary and chaplain to Queen Caroline, and was also domestic chaplain to the Duke of Sussex. He married, in 1820, the daughter of Admiral Michel. He is succeeded in his title and estates by his son Francis, born at Cressing in 1834, and married to the daughter of Robert Hodgson, Esq., of Hylands, Essex, and granddaughter of the late General Hodgson. The late baronet was the elder brother of the late Mr Western Wood, and of Vice Chancellor Sir William Page Wood.

Markets.

COVENT GARDEN.—Feb. 24.

Supplies of English goods are still well kept up, and foreign produce is also largely imported. A few forced Strawberries have made their appearance. Dessert Pears continue to consist of Beurré Rance, Ne Plus Meuris, and Easter Beurré. Apples are confined to Nonpareil, Fearn's Pippin, and Blenheim Orange. Hothouse Grapes comprise Barbarossa, Lady Downes' Seedling, Trebbiano, and a few Muscats. Prices of English forced Vegetables, such as Asparagus, French Beans, and Tomatoes, have not altered since our last report. Flowers chiefly consist of Poinsettia pulcherrima, Orchids, Heaths, Chinese Primulas, Camellias, and Roses.

FRUIT.

Apples, per ½ sieve, 3*s* to 5*s*		Oranges, per 100, 4*s* to 10*s*	
Grapes, per lb., 10*s* to 18*s*		Pears, kitchen, p. doz. 4*s* to 8*s*	
Lemons, per 100, 6*s* to 10*s*		— dessert, do., 4*s* to 12*s*	
Melons, each, 3*s* to 5*s*		Pine-apples, per lb., 8*s* to 12*s*	
Nuts, Cob, per 100 lb., 160*s*		Walnuts per bush., 14*s* to 20*s*	
— Filberts, per lb., 9*d* to 1*s*		Chesnuts, per bush., 8*s*. to 16*s*	

VEGETABLES.

Artichokes, per doz., 4*s* to 6*s*		Mustard & Cress, p. punn., 2*d*	
Asparagus, p. bundle, 8*s* to 12*s*		Onions, p. bush., 3*s* to 5*s*	
Beans, Kidney, p. 100, 3*s* to 4*s*		— pickling, p. qt., 6*d*	
Beet, per doz., 2*s* to 3*s*		Parsley, per ½ sieve, 1*s* to 1*s* 6*d*	
Broccoli, p. bundle, 1*s* to 2*s*		Parsnips, per doz., 1*s* to 2*s*	
Brus. Sprouts, p. ½ sieve, 2*s* to 3*s*		Potatos, York Regents, p. ton.	
Cabbage, per doz., 2*s* 6*d* to 4*s* 6*d*		Ditto, 90*s*	
Carrots, per bunch, 4*d* to 8*d*		— Rocks, do., 55*s* to 65*s*	
Cauliflowers, p. doz., 2*s* to 6*s*		— Flukes, 100*s* to 120*s*	
Celery, per bundle, 1*s* to 1*s* 6*d*		— do. Kidneys, 8*s* to 12*s*	
Cucumbers, each, 3*s* to 6*s*		per cwt.	
Endive, per score, 1*s* to 2*s* 6*d*		Radishes, p. 12 bun., 6*d* to 1*s*	
Garlic and Shallots, p. lb., 2*s*		Rhubarb, per bundle, 9*d* to 1*s*	
Herbs, per bunch, 6*d*		Savoys, per doz., 9*d* to 1*s* 6*d*	
Horse Radish, p. bund, 2*s* 6*d* to 4*s*		Sea Kale, per punnet, 2*s* 6 to 3*s*	
Leeks, per bunch, 3*d*		Spinach, per bush, 3*s* to 4*s*	
Lettuces, per doz., 1*s*		Turnips, per bunch, 4*d* to 6*d*	
Mushrooms, p. pott., 1*s* 6*d* to 2*s* 6*d*			

NEWGATE.—Feb. 23.

Best Fresh Butter	.. ..	18*s*. per dozen lb.
Second do. do.	.. ..	12*s*. "
Pork, 4*s*. 4*d*. to 5*s*. 4*d*. per 8 lb.		

HAY.—Per load of 36 Trusses.

SMITHFIELD, Thursday, Feb. 22.

Prime Meadow Hay	100*s* to 110*s*	Clover, old	126*s* to 142*s*
Inferior do.	90 95	Inferior do.	110 120
New do.	— —	Prime second cut	90 115
Rowen	— —	Inferior do.	— —
Straw	36 42	CHARLES JAMES EASTON.	

CUMBERLAND MARKET, Thursday, Feb. 22.

Sup. Meadow Hay	105*s* to 114*s*	Inferior Clover ..	105*s* to 118*s*
Inferior do.	84 96	New do.	— —
New do.	— —	Straw	42 47
Superior Clover ..	128 134	JOSHUA BAKER.	

WHITE HALL, Thursday, Feb. 22.

Fine Meadow Hay	100*s* to 112*s*	Prime 1st cut Clover	130*s* to 135*s*
Inferior do.	100 105	Inferior do. do. ..	115 120
Prime New Hay ..	— —	Second cut do. ..	108 112
Inferior	— —	Inferior do.	95 100
Straw	37 40	Rowen	— —

COALS.—Feb. 21.

Cowpen Hartley, 16*s.*; Hastings Hartley, 16*s.*; Hollywell Main, 17*s.*; Tanfield Moor Butes, 15*s.*; Walls End Harton, 15*s.* 9*d.*; Eden Main 16*s.* 6*d.*; Walls End Braddyll's Hetton, 17*s.*; Walls End Hetton Hall, 18*s.*; Walls End Hetton, 18*s.*; Walls End Hetton Lyons, 15*s.* 9*d.*; Walls End South Hetton, 17*s.* 9*d.*; Walls End Tunstall, 15*s.* 9*d.*; Walls End Caradoc, 17*s.* 9*d.*; Walls End Hartlepool, 17*s.* 9*d.*; Walls End Kelloe, 17*s.*; Walls End East Hartlepool, 17*s.* 9*d.*; Walls End South Hartlepool, 17*s.*; Walls End Tees, 17*s.* 6*d.*; Shaw's Hartley, 18*s.* 6*d.*; Walls End North Staffordshire, 17*s.*—Ships at market, 75; sold, 44.

HOPS.—BOROUGH MARKET, Friday, Feb. 23.

Messrs. Pattenden & Smith report that the market during the past week has shown somewhat improved signs of activity, some considerable quantity of new Hops having changed hands at a slight reduction on late prices.

METROPOLITAN CATTLE MARKET.

MONDAY, Feb. 19.

We have a smaller supply of Beasts. Trade is not very brisk, yet prices on the average have improved. The number of Sheep is considerably less than last week. Choice qualities are readily disposed of at higher rates. Trade is slow for inferior descriptions, but a good clearance is effected. Calves are lower. From Germany and Holland there are 1720 Beasts, 5620 Sheep, 138 Calves, and 100 Pigs; from France, 40 Beasts; from Scotland, 800; from Ireland 250; from Norfolk

...and sold to the Northern and Midland Counties.

	s.	d.	s.	d.		s.	d.	s.	d.
Inferior Beef	4	0	4	4	Best Long wools	5	8	6	0
Middling do.	4	4	4	8	Do. Short	—	—	—	—
Prime do.	4	8	5	0	Inferior Sheep	—	—	—	—
Coarse Calves	4	0	4	4	Middling do.	5	0	5	4
Prime do.	4	6	4	8	Prime do.	5	6	5	10
Large Coarse Pigs	3	8	4	0	Lambs	—	—	—	—
Small Pigs	4	0	4	4					

Beasts, 2,000; Sheep & Lambs, 13,200; Calves, 146; Pigs, 145.

Portsoken, Feb. 22.

We have a large supply of Beasts and a few Calves. Prices of the former are from 2s. to 4d. per stone lower than on Monday last, but the quality is not quite so good. The number of Sheep is quite equal to the demand, and the quality is fully as good as last week. Calves are dull, and prices quite 2s. per stone lower. Pigs are also dull, and 2s. per stone lower.

	s.	d.	s.	d.		s.	d.	s.	d.
Inferior Beef	4	0	4	4	Best Long wools	5	8	6	0
Middling do.	4	4	4	8	Do. Short	—	—	—	—
Prime do.	4	8	5	0	Inferior Sheep	4	8	5	0
Coarse Calves	4	0	4	4	Middling do.	5	0	5	4
Prime do.	4	6	4	8	Prime do.	5	6	5	10
Large Coarse Pigs	3	8	4	0	Lambs	—	—	—	—
Small Pigs	4	0	4	4					

Beasts, 2,589; Sheep & Lambs, 5,809; Calves, 161; Pigs, 1...

MARK LANE, Monday, Feb. 19.

Fresh supply of English, Wheat was in fair demand for Monday. Barley, Beans, and Peas, with, however, the arrival of Scotch and Irish Oats, the week's supply of foreign grain has been very large, and the day's market. English, Wheat met a good sale at full prices for the best qualities; damp parcels were still dull, but no lower. Foreign Wheat was in limited demand, but prices were well supported. Town Flour was unaltered. Country marks were steady in value and demand. French and Spanish were offered on former terms. Americans not so readily pressed for sale. Malting Barley was in good request, and fully as dear. All the best and secondary sorts were more saleable at full prices. Malt supported former rates steadily. Beans were firm. Peas as before. Oats were taken off to a moderate extent at rather less money for feeding qualities, good samples selecting more inquiry. Linseed was fully as dear, and better to place. Rapeseed was dull, and value...ll. English lower-end was held high. Foreign on former values. Foreign Tares abundant, prices steady. Large Seed very scarce.

Peas (per 180 lbs.)	s.	s.	
Wheat (per 8 bush.)	s.	s.	
— fine selected pale do.	s.	Red	s.
— Talavera	2	60	
— Nocella	—	Red	—
— Taganrog	44	50	
Barley (per 4 dz. Standard)	Oats	33—37	Malting
— Foreign grinding and distilling	23	31	Malting
Oats, Less or Sidleslip	25	29	
— Scotch and Lincolnshire	Potato	23	Feed
— Irish	25	29	
— Foreign	Potato and Brew	23	Feed
Beans			
Rye-meal, Foreign			
Beans, Mazagan	35s to 37s	Tick	Harrow
— Pigeon	38s to 43s	White	Large
— Foreign		Small	
Peas, White, Essex, and Kent	Boilers	37—39	Suffolk
— Maple, 35s to 40s	Grey	35—37	Foreign
Maize		White	Yellow

Flour best marks delivered in London, per 196 lbs. 36—40

— 2d ditto ditto 32—36 Country 32—38

— Foreign per barrel 24—30 Per sack 32—40

FRIDAY, Feb. 23.

Since the last, most the weather has been of a more wintery character, with sharp frosts at night, and by mid the day, since when there has rather constantly been foggy. The Wheat trade has continued in a very inactive state; the entire dries samples of English being very scarce, are eagerly taken at full prices, but all other sorts are neglected, Banat and South Russian descriptions being the turn lower. Fine Malting Barley has been extremely scarce required, and commanded an advance of fully 1s. per qr. while grinding sorts support previous quotations. Oats were generally firm, and in several instances made a slight advance. Beans and Peas have remained much the same as last quoted. Flour has been difficult of disposal. Fifteen grain cargoes have arrived off the coast for orders. The sales have been limited, without any quotable variation in prices, except Baltic for spring shipment, which was 6d. per qr. lower. The Wheat was held with increased firmness, and left off price have been fixed sent to-day. Barley was in moderate request. Since Monday flour has been a speculative inquiry for shipments of Wheat from the Black Sea, at about the prices now quoted for small cargoes, but no sales have transpired. Paris, Feb. 22.—The value of Wheat remains unaltered. There is an abundant supply of country Flour, which continues to arrive in large quantities, but no sales have transpired. Paris, Feb. 23.—The value of Wheat remains unaltered. There is an abundant supply of country Flour, which continues to arrive in large quantities, but no sales have transpired. Paris, Feb. 24.—The value of Wheat remains unaltered. There is an abundant supply of country Flour, which continues to arrive in large quantities, but no sales have transpired. Paris, Feb. 25.—The value of Wheat remains unaltered. 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